CITY AND COUNTY OF DENVER STATE OF COLORADO



Department of Public Works

Contract Documents

Contract No: 201733316

19TH & 20TH 2-WAY CONVERSION

March 1, 2017



NOTICE OF APPARENT LOW BIDDER

JALISCO INTERNATIONAL, INC. 6663 Colorado Boulevard Commerce City, CO 80022

The EXECUTIVE DIRECTOR OF PUBLIC WORKS has considered the Bids submitted on **April 5**, **2017**, for work to be done and materials to be furnished in and for:

CONTRACT #201733316 19th & 20th 2-WAY CONVERSION

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: 202-00019 through 630-86800 (One Hundred Twelve [112]) total base bid items, plus, 1 add alt 202-00821 through 630-00008 (Twenty-Nine [29]) total add alt bid items, the total bid estimated cost thereof being: Two Million Five Hundred Eighty-Four Thousand One Hundred Eighty-Four Dollars and Forty-Six Cents (\$2,584,184.46).

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 Package Documents.

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

- a. Insurance Certificates: General Liability and Automotive Liability, Workman's Compensation and Employer Liability;
- b. Payment and Performance Bond along with One original 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 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).



cc:

NOTICE OF APPARENT LOW BIDDER

CONTRACT NO. 201733316 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 27 day of 2017.

CITY AND COUNTY OF DENVER

Jose M. Cornejo, P.E.

Executive Director of Public Works

Kristen Moore (CAO), Cynthia Bills (Treasury/Tax Compliance), Sophia Hassman (Treasury/Tax Compliance), Cindy Ackerman, (DSBO), Kim Blair, (PM), (PW-Aud), File.

CITY AND COUNTY OF DENVER STATE OF COLORADO



Department of Public Works

Bid Form Packet

Contract No: 201733316

19TH & 20TH 2-WAY CONVERSION

March 1, 2017

CITY AND COUNTY OF DENVER DEPARTMENT OF PUBLIC WORKS Engineering Division

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This Checklist is provided solely for the assistance of the bidders, and need <u>not</u> 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 <u>at the time of Bid Opening</u>. 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.) Legal name, address, Acknowledgment signature and attestation (if required.) 	
BF-6+	a.) Fill in individual bid item dollars and totals in Numerical	
	figures only	
	b.) Complete all blanks	
	c.) Legal name required	
BF-7	a.) Write out bid total or bid totals in words and figures in the blank form space(s) provided	
	b.) Calculate Textura® Construction Payment Management	
	System Fee from chart on pg. BF-3 and write % and fee in	
	the space provided	
BF-8	a.) List all subcontractors who are performing work on this	
	project	_
BF-9 – BF-10	a.) Fully complete List of Proposed Minority /Woman Business	
	Enterprise Bidders, Subcontractors, Suppliers, Manufacturers, or	
	Brokers – check appropriate boxes.	
BF-11	a.) Complete all blanks	
	b.) If Addenda have been issued, complete bottom section.	
BF-12	a.) Complete appropriate sections - signature(s) required.	
	b.) If corporation, then corporate seal required.	
BF-13	a.) Fully complete Commitment to Participation	
BF-16	a.) If applicable, fully complete Joint Venture Affidavit	
	(Submit 10 days prior to Bid Opening date)	
BF-17 – BF-19	a.) If applicable, fully complete Joint Venture Eligibility Form	
	(Submit 10 days prior to Bid Opening date)	
BF-20	a.) Fill in all Bid Bond blanks	
	b.) Signatures required	
	c.) Corporate Seal if required	
	d.) Dated	
	e.) Attach Surety Agents Power of Attorney	
	or	
	Certified or cashier's check made out to the Manager of Revenue	
	referencing Bidder's Company and Contract Number.	
BF-21- BF-24	a.) Each bidder, as a condition of responsiveness to this	
	solicitation, shall complete and return the "Diversity and	
	Inclusiveness in City Solicitations Information Request	
	Form" with their Bid.	

Textura ® Construction Payment Management System (CPM System)

Contractor recognizes and agrees that it shall be required to use the Textura® Construction Payment Management System (CPM System) for this Project. All fees associated with the CPM System are to be paid by the Contractor for billings for work performed. Bidders are required, when preparing a bid, to enter the price of the CPM service on the line provided for the service. The fee is all inclusive of all subcontractor, project and subscription fees associated with the CPM system. The bidder will calculate the fee based on a percentage of their total bid, and then should include it on the line item provided in the bid form labeled "Textura® Construction Payment Management System Fee". This expense becomes part of the contract and billable to the City. All costs including but not limited to costs associated with training, entering data or utilizing Textura other than the Textura Construction Payment Management System Fee are overhead and shall not be reimbursed by the City. Contractor is responsible for any tax on Textura fee. As with other taxes, the City will not reimburse Contractor for this cost and therefore this cost should be included in Contractor's bid. Textura will invoice the awarded contractor directly.

PROJECT SIZE	FEE (% OF BID)
<\$1,000,000	0.22% (.0022)
\$1,000,001 - \$5,000,000	0.17% (.0017)
\$5,000,001 - \$20,000,000	0.12% (.0012)
\$20,000,001 - \$50,000,000	0.10% (.0010)
\$50,000,001 - \$100,000,000	0.08% (.0008)
\$100,000,001 - \$500,000,000	0.05% (.0005)
> \$500,000,000	CONTACT TEXTURA FOR PROGRAM PRICING

For more information:

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

CITY AND COUNTY OF DENVER DEPARTMENT OF PUBLIC WORKS

Engineering Division

BID FORM AND SUBMITTAL PACKAGE ACKNOWLEDGMENT

CONTRACT NO. 201733316

19TH & 20TH 2-WAY CONVERSION

BIDDER:	Jalisco International, Inc (Legal Name per Colorado Secretary of State)				
ADDRESS:	6663 Colorado Blvd				
	Commerce City, CO 80022				

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. 201733316, 19TH & 20TH 2-WAY CONVERSION, made available to the undersigned bidder pursuant to Notice of Invitation for Bids dated March 1, 2017.

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

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

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

Bid Form and Submittal Package Acknowledgment Form
Bid Form
List of Proposed Minority/Woman Owned Business Enterprise(s)
Commitment to Minority/Woman Owned Business Enterprise Participation
Minority/Woman Owned Business Enterprise(s) of Intent
Joint Venture Affidavit (if applicable)
Joint Venture Eligibility Form (if applicable)
Bid Bond
Certificate of Insurance

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

Notice of Invitation for Bids Instructions to Bidders Addenda (as applicable)

Equal Employment Opportunity Provisions (Appendix A and Appendix F)

Contract Form

General Contract Conditions Special Contract Conditions

Performance and Payment Bond

Notice to Apparent Low Bidder

Notice to Proceed

Contractor's Certification of Payment Form

Final/Partial Lien Release Form

Final Receipt

Change Orders (as applicable)

Federal Requirements (as applicable)

Prevailing Wage Rate Schedule(s)

Technical Specifications

Contract Drawings

Accepted Shop Drawings

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

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

BIDDER:

Name. Jalisco International, Inc.

Richard Ledezma

Title: President

ATTEST:

Natalia Ledezma Rollins, Secretary

CITY AND COUNTY OF DENVER DEPARTMENT OF PUBLIC WORKS

Engineering Division

BID FORM

CONTRACT NO. 201733316 19TH & 20TH 2-WAY CONVERSION

BIDDER Jalisco International, Inc.

(Legal Name per Colorado Secretary of State)

TO: The Manager of Public Works

City and County of Denver c/o Contract Administration 201 West Colfax, Dept. 614 Denver, Colorado 80202

The Undersigned Bidder, having examined the plans, technical specifications, and remainder of the proposed Contract Documents as designated and enumerated in the General and Special Contract Conditions and any and all addenda thereto; having investigated the location of and conditions affecting the proposed Work; and being acquainted with and fully understanding the extent and character of the Work covered by this bid, and all factors and conditions affecting or which may be affected by Work, HEREBY SUBMITS THIS BID, pursuant to an advertisement of a Notice of Invitation for Bids as published on March 1, 2017, to furnish all required materials, tools, appliances, equipment and plant; to perform all necessary labor and to undertake and complete: CONTRACT NO. 201733316, 19TH & 20TH 2-WAY CONVERSION, in Denver, Colorado, in full accordance with and conformity to the Plans, Technical Specifications, and Contract Documents hereto attached or by reference made a part hereof, at and for the following price(s) set forth on this Bid Form.

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

Advertisement of Notice of Invitation for Bids

Instructions to Bidders

Commitment to M/WBE Participation

Article III, Divisions 1 and 3 of Chapter 28, D.R.M.C.

Bid Bond

Addenda (as applicable)

Equal Employment Opportunity Provisions (Appendix A and Appendix F)

Bid Form

Contract Form

General Contract Conditions

Special Contract Conditions

Performance and Payment Bond

Notice to Apparent Low Bidder

Notice to Proceed

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Change Orders (as applicable)

Federal Requirements (as applicable)

Prevailing Wage Rate Schedule(s)

Technical Specifications

Contract Drawing

Accepted Shop Drawings

Certificate of Insurance

Item No.	Description and Price	Estimated Quantity	Estimated Cost
202-00019	Removal of Inlet at the unit price of \$ 1525 per EACH.	15 EA	\$ 22,875
202-00035	Removal of Pipe at the unit price of \$ 48 per LINEAR FOOT.	121 LF	\$_5,808-
202-00200	Removal of Sidewalk at the unit price of \$ 23 per SQUARE YARD.	1,057 SY	\$ 24,839 \$
202-00203	Removal of Curb and Gutter at the unit price of \$_2 per LINEAR FOOT.	2,142 LF	\$ 44,982
202-00206	Removal of Concrete Curb Ramp at the unit price of \$_\(\frac{26}{\sigma} \) per SQUARE YARD.	320 SY	\$ 8,320-
202-00207	Removal of Brick Pavers at the unit price of \$\(21^{-} \) per SQUARE YARD.	179 SY	\$ 3,759-
202-00210	Removal of Concrete Pavement at the unit price of \$ 35 per SQUARE YARD.	83 SY	\$ 2,905
202-00220	Removal of Asphalt Mat at the unit price of \$Z5 per SQUARE YARD.	2,699 SY	\$ <u>Le7,475</u>
202-00810	Removal of Ground Sign at the unit price of \$_58 - per EACH.	108 EA	\$_6,264-
202-00821	Removal of Sign Panel at the unit price of \$ 52 per EACH.	110 EA	\$_5,720-
202-00828	Removal of Traffic Signal Equipment at the unit price of \$ 32,000 - per LUMP SUM.	1 LS	\$_32,000
203-01597	Potholing at the unit price of \$ 260 per HOUR.	80 HOUR	s_1L,000 -
203-01598	Potholing (Special) at the unit price of \$ 400 per EACH.	14 EA	\$_5,600

Item No.	Description and Price	Estimated Quantity	Estimated Cost
208-00035	Aggregate Bag at the unit price of \$ \(\frac{26}{} \) per LINEAR FOOT.	29 LF	\$ 7574
208-00045	Concrete Washout Structure at the unit price of \$\\ \\ \\ \\ \\ \\ \\ \\ \\ \ \ \ \ \	1 EA	\$_8,500-
208-00053	Storm Drain Inlet Protection (Type 1) at the unit price of \$_450 - per EACH.	18 EA	\$_8,100-
208-00054	Storm Drain Inlet Protection (Type 2) at the unit price of \$ 640 - per EACH.	9 EA	\$ 5,760
208-00206	Erosion Control Supervisor at the unit price of \$_500 - per DAY.	30 DAY	\$_15,000 -
210	Reset Trash Can at the unit price of \$_750^ per EACH.	3 EA	\$ 2,280
210	Reset Newspaper Stand at the unit price of \$_750per EACH.	2 EA	\$_1,520~
210	Reset Pedestrian Handrail at the unit price of \$ //5 per LINEAR FOOT.	30 LF	\$ 3,450
210-00815	Reset Sign Panel at the unit price of \$ 29 - per EACH.	115 EA	\$ 3,335
210-00831	Reset Traffic Signal Head at the unit price of \$_420 - per EACH.	1 EA	\$_420
210-00842	Reset and Modify Traffic Signal Mast Arm at the unit price of \$ 3,260 per EACH.	2 EA	\$_6,520-
210-00861	Reset Wiring at the unit price of \$ 875 per EACH.	5 EA	\$_ <i>4,375</i>
210-00867	Reset Fire Preemption Unit at the unit price of \$	4 EA	\$ 2,500

Item No.	Description and Price	Estimated Quantity	Estimated Cost
210-00890	Reset Intersection Detection System (Camera) at the unit price of \$	3 EA	\$ 3,060
210-00827	Reset Pull Box at the unit price of \$_625 - per EACH.	17 EA	\$ 10,625-
210	Reset Structure (Special) (ETS) at the unit price of \$ /700 per EACH.	2 EA	\$ 3,400-
210-01000	Reset of Fence at the unit price of \$	10 LF	\$ 690-
210-01710	Reset Valve at the unit price of \$ 1650 per EACH.	1 EA	\$_1650-
210-04010	Adjust Manhole at the unit price of \$ 925 per EACH.	6 EA	\$ 5,530-
210-04015	Modify Manhole at the unit price of \$ 5,500 per EACH.	4 EA	\$_2Z,000 ⁻
210-04050	Adjust Valve Box at the unit price of \$ 410 per EACH.	17 EA	\$_6970
210-04060	Adjust Water Meter at the unit price of \$ 3200 - per EACH.	4 EA	\$_12,800 ⁻
212	Landscape Restoration at the unit price of \$	6,000 SF	\$ ZZ, 800 ⁻
304-06000	Aggregate Base Course (Class 6) at the unit price of \$	497 TON	\$ <u>13,916</u>
403-33841	Hot Mix Asphalt (Grading S)(100)(PG 64-22) at the unit price of \$_/30^per TON.	34 TON	s_4420 ⁻

Item No.	Description and Price	Estimated Quantity	Estimated Cost
403	HBP Patch/Overlay at the unit price of \$/OO per SQUARE YARD.	1,384 SY	\$_138,400 -
411-10255	Emulsified Asphalt (Slow Setting) at the unit price of \$ 2275 per GALLON.	4 GAL	\$
412-00800	Concrete Pavement (8 Inch) at the unit price of \$//7 per SQUARE YARD.	67 SY	\$ 7839-
412-00801	Concrete Pavement (11 Inch) at the unit price of \$ \(\frac{127}{27} \) per SQUARE YARD.	155 SY	\$ 19,685 -
503-00200	Drilled Caison (Special) (36 Inch) at the unit price of \$	109 LF	\$_50,140 ⁻
603-01150	15 Inch Reinforced Concrete Pipe at the unit price of \$ 165 per LINEAR FOOT.	160 LF	\$_24,400 -
603-01180	18 Inch Reinforced Concrete Pipe at the unit price of \$ 225 per LINEAR FOOT.	305 LF	\$_68,625-
603-01240	24 Inch Reinforced Concrete Pipe at the unit price of \$ 425 per LINEAR FOOT.	5 LF	\$ _ Z1125 -
604-	at the unit price of \$ 5,800 per EACH.	15 EA	\$ 8,7000
604-	at the unit price of \$ 5,570 per EACH.	2 EA	\$
604-	at the unit price of \$ 9,200 per EACH.	1 EA	\$ 9,200 -
604-	Manhole Slab Base (4 Foot) (Flat Top) at the unit price of \$_5, 200 per EACH.	11 EA	\$ 57,200
604-	Manhole Slab Base (4 Foot) at the unit price of \$_5,175per EACH.	2 EA	\$\$

Item No.	Description and Price	Estimated Quantity	Estimated Cost
604-	Manhole Slab Base (5 Foot) (Flat Top) at the unit price of \$ 5,250 per EACH.	1 EA	\$ 5,250
608-00000	Concrete Sidewalk (4 Inch) at the unit price of \$	932 SY	\$ 52,192-
608-00006	at the unit price of \$	941 SY	\$_60,224-
608-00010	at the unit price of \$ 30F 175 per SQUARE YARD.	301 SY	\$ 52,675
608-00015	Detectable Warnings at the unit price of \$ /50 per SQUARE FOOT.	10 SF	\$_1,500-
608-00050	Brick Pavers (Special) at the unit price of \$32 per SQUARE FOOT.	1,231 SF	\$ <u>39,39Z</u>
608-01000	Bituminous Sidewalk at the unit price of \$ 225 per TON.	35 TON	\$ 7,8,75
609-20010	Curb Type 2 (Section B) at the unit price of \$ 33 per LINEAR FOOT.	59 LF	\$_1,947
609-21020	Curb and Gutter Type 2 (Section II-B) at the unit price of \$ 24 per LINEAR FOOT.	2,149 LF	\$ 51,576
609-71000	at the unit price of \$_54per LINEAR FOOT.	910 LF	\$ 49,140
612-00041	Delineator (Flexible) (Type 1) at the unit price of \$_92^ per EACH.	17 EA	\$_1,564-
613-01200	2 Inch Electrical Conduit (Plastic) at the unit price of \$ 2952 per LINEAR FOOT.	740 LF	\$ Z1,835 -
613-01300	3 Inch Electrical Conduit (Plastic) at the unit price of \$	720 LF	\$ Z5, Z60 -

Item No.	Description and Price	Estimated Quantity	Estimated Cost
613-07001	Type One Pull Box at the unit price of \$\frac{1,075}{} per EACH.	4 EA	\$_4,306 -
613-07002	Type Two Pull Box at the unit price of \$ 1,360 per EACH.	9 EA	\$ <u>12,240</u> ~
613-07003	Type Three Pull Box at the unit price of \$ / 1606 per EACH.	1 EA	\$_1,600-
613-10000	Wiring at the unit price of \$_15,900 - per LUMP SUM.	1 LS	\$_15,900 -
613-13000	Luminare (LED) at the unit price of \$_/,/76 per EACH.	4 EA	\$_4,486
613-50150	Secondary Service Pedestal at the unit price of \$41106 per EACH.	1 EA	\$ 4,100 -
613-70250	Luminare High Pressure Sodium (250 Watt) at the unit price of \$\frac{2}{1/15}\$ per EACH.	4 EA	\$ 8,460-
614-00011	Sign Panel (Class I) at the unit price of \$ 26 per SQUARE FOOT.	1,110 SF	\$ 22,200 -
614-00216	Steel Sign Post (2 Inch x 2 Inch Tubing) at the unit price of \$_/8\frac{9}{2}	1,791 LF	\$ <u>33,133 ^{s2}</u>
614-70150	Pedestrian Signal Face (16) (Countdown) at the unit price of \$_476^- per EACH.	16 EA	\$ 10,720-
61470336	Traffic Signal Face (LED) (12-12-12) at the unit price of \$ 985 per EACH.	40 EA	\$ 39,400
614-72855	Traffic Controller Cabinet at the unit price of \$_/7,500 per EACH.	1 EA	\$17,526

Item No.	Description and Price	Estimated Quantity	Estimated Cost
614-72860	Pedestrian Push Button at the unit price of \$_4/5 - per EACH.	2 EA	\$
614-72864	Fire Preemption Unit at the unit price of \$_\(\frac{1800}{}\) per EACH.	1 EA	\$_1,800
614-72866	Fire Preemption Unit and Timer at the unit price of \$_5,320 - per EACH.	2 EA	\$ 10,640
614-72886	Intersection Detection System (Camera) at the unit price of \$ 12,600 - per EACH.	1 EA	\$ 12,600-
614-80000	Flashing Beacon at the unit price of \$ 7, 106 - per EACH.	1 EA	\$_7,100-
614-81301	Traffic Signal-Light Pole Steel (1 Mast Arm) (Install Only) at the unit price of \$	8 EA	\$_6,800-
614-84100	Traffic Signal Pole Aluminum at the unit price of \$ 3,555 per EACH.	1 EA	\$ <u>3</u> ,506-
614-86105	Telemetry (Field) at the unit price of \$_10,500 - per EACH.	1 EA	\$_10,500-
614-86238	Traffic Signal Controller (SS) (FA) (8) at the unit price of \$ 141,150 per EACH.	1 EA	\$ 14,150-
614-87350	Test Fiber Optic Cable at the unit price of \$_4,525per LUMP SUM.	1 LS	\$_4,525 ⁻
620-00020	Sanitary Facility at the unit price of \$	1 EA	\$
625-00000	Construction Surveying at the unit price of \$	1 LS	\$ 48,000 - 40,800.00 Pillell
626-00000	Mobilization at the unit price of \$ \(\frac{205,000}{} \) per LUMP SUM.	1 LS	\$ 205,000

Item No.	Description and Price	Estimated Quantity	Estimated Cost
626-01000	Public Information Services at the unit price of \$_/3,000 - per LUMP SUM.	1 LS	\$ <u>13,000</u> -
627-00005	Epoxy Pavement Marking at the unit price of \$per GALLON.	84 GAL	\$ <u>Le, 804</u> -
627-30405	Preformed Thermoplastic Pavement Marking (Word-Symbol) at the unit price of \$ _ Z/ per SQUARE FOOT.	1,093 SF	\$ ZZ,953 ⁻
627-30410	Preformed Thermoplastic Pavement Marking (Xwalk-Stop Line) at the unit price of \$/O < per SQUARE FOOT.	7,298 SF	\$ 74,629
627-30411	Preformed Thermoplastic Pavement Marking (Special) at the unit price of \$ 2050 per SQUARE FOOT.	2,588 SF	\$_53,054
629-01006	Survey Monument (Type 6) at the unit price of \$	9 EA	\$ 2,025
629-	Survey Monument at the unit price of \$ 1,360 - per EACH.	3 EA	\$_4,080-
630-00000	Flagging at the unit price of \$ 24 - per HOUR.	4 520 7, 500 HR	\$_108,000
630-00003	Uniformed Traffic Control at the unit price of \$ 位と per HOUR.	88 HR	\$ 5,456
630-00007	Traffic Control Inspection at the unit price of \$ /35 per DAY.	120 DAY 72	\$ 9,720-
630-00012	Traffic Control Management at the unit price of \$ 750 per DAY.	280 -DAY 17∆	\$_127,520-
630-80335	Barricade (Type 3 M-A) (Temporary) at the unit price of \$_/75 - per EACH.	25 EA	\$_4,375 ⁻

Item No.	Description and Price	Estimated Quantity	Estimated Cost
630-80336	Barricade (Type 3 M-B) (Temporary) at the unit price of \$235per EACH.	20 EA	\$ <u>4,720</u>
630-80341	Construction Traffic Sign (Panel Size A) at the unit price of \$per EACH.	350 EA	\$ <u>24,500</u>
630-80342	Construction Traffic Sign (Panel Size B) at the unit price of \$ /24 - per EACH.	90 EA	\$_11,160-
630-80344	Construction Traffic Sign (Special) at the unit price of \$ per SQUARE FOOT.	700 SF	\$
630-80355	Portable Message Panel at the unit price of \$_6,100 per EACH.	6 EA	\$_36,600
630-80357	Advance Warning Flashing or Sequencing Arrow Panel (B Flash Arrow Panel (B Ty) at the unit price of \$\frac{2}{125}\$ per EACH.	4 EA	\$_8,570-
630-80360	Drum Channelizing Device at the unit price of \$per EACH.	500 EA	\$ 28,500
630-80370	Concrete Barrier (Temporary) at the unit price of \$	400 LF	\$_10,400-
630-80380	Traffic Cone at the unit price of \$ /7 per EACH.	400 EA	\$_6,800-
630-80384	Tubular Marker at the unit price of \$ 58 per EACH.	400 EA	\$ <u>23,200</u> -
630-86800	Traffic Signal (Temporary) at the unit price of \$_4,385 - per EACH.	2 EA	\$_8,770-
	Total Base Bid Items		s 2,387,917

Item No.	Description and Price	Estimated Quantity	Estimated Cost
	ADD ALTERNATE #1		
202-00821	Removal of Sign Panel at the unit price of \$ per EACH.	7 EA 🖊	s_483 ⁻
202-00828	Removal of Traffic Signal Equipment at the unit price of \$ 6,275 per LUMP SUM.	1 LS	\$ 6,275
203-01598	Potholing (Special) at the unit price of \$ 400 per EACH.	6 EA 🖊	\$ 2,400
210-00815	Reset Sign Panel at the unit price of \$	4 EA 🗸	\$68
503-00200	Drilled Caison (Special) (36 Inch) at the unit price of \$460 per LINEAR FOOT.	39 LF 🖊	\$ 17,940
613-01200	2 Inch Electrical Conduit (Plastic) at the unit price of \$per LINEAR FOOT.	210 LF $ u$	\$_6,930-
613-01300	3 Inch Electrical Conduit (Plastic) at the unit price of \$per LINEAR FOOT.	410 LF 🗸	s_ 14,760 ⁻
613-07002	Type Two Pull Box at the unit price of \$ 1,360 per EACH.	4 EA 🗸	\$_5,440
613-07003	Type Three Pull Box at the unit price of \$_1,585_per EACH.	2 EA 🖊	\$_3,170-
613-10000	Wiring at the unit price of \$ 5,320 per LUMP SUM.	1 LS V	\$_5,320-
613-13000	Luminare (LED) at the unit price of \$ 1,170 per EACH.	4 EA :	s_4,680 ⁻
613-40010	Light Standard Foundation at the unit price of \$ 2,100 per EACH.	1 EA 🗸	\$_2,100

Item No.	Description and Price	Estimated Quantity	Estimated Cost
613-50150	Secondary Service Pedestal at the unit price of \$ 4,100 per EACH.	1 EA 🗸	\$ 4,100
614-00011	Sign Panel (Class I) at the unit price of \$_per SQUARE FOOT.	57.5 SF	\$_1,150
614-00216	Steel Sign Post (2 Inch x 2 Inch Tubing) at the unit price of \$per LINEAR FOOT.	-41 LF	s <u>-779</u>
614-70150	Pedestrian Signal Face (16) (Countdown) at the unit price of \$ 750 per EACH.	8 EA	s_6,000 ⁻
61470336	Traffic Signal Face (LED) (12-12-12) at the unit price of \$ 985 per EACH.	11 EA ~	s_10,835 ⁻
614-72855	Traffic Controller Cabinet at the unit price of \$ 17,500 per EACH.	1 EA	\$17,500 ⁻
614-72866	Fire Preemption Unit and Timer at the unit price of \$ 5,350 per EACH.	1 EA	\$_5,350
614-81300	Traffic Signal-Light Pole Steel (Install Only) at the unit price of \$_565_ per EACH.	1 EA	s_565
614-81301	Traffic Signal-Light Pole Steel (1 Mast Arm) (Install Only) at the unit price of \$ 850 per EACH.	3 EA	\$_2,550~
614-86105	Telemetry (Field) at the unit price of \$_4,800 per EACH.	1 EA	s_4,800 ⁻
614-86238	Traffic Signal Controller (SS) (FA) (8) at the unit price of \$_14_150^ per EACH.	1 EA 🗸	s_14,150 ⁻
614-87350	Test Fiber Optic Cable at the unit price of \$ 1,415 per LUMP SUM.	1 LS	s_1,415 ⁻

Item No.	Description and Price	Estimated Quantity	Estimated Cost
627-00005	Epoxy Pavement Marking at the unit price of \$ / 00 per GALLON.	6 GAL	s_600 ⁻
627-30405	Preformed Thermoplastic Pavement Marking (Word-Symbol) at the unit price of \$	-79 SF	\$_1,659-
627-30410	Preformed Thermoplastic Pavement Marking (Xwalk-Stop Line) at the unit price of \$	530 SF	\$_5,565
630-00003	Uniformed Traffic Control at the unit price of \$ 62.50 per HOUR.	8 HR	\$_500_
630-00008	Construction Traffic Control (Special) at the unit price of \$_50,000 _ per LUMP SUM.	1 LS	\$_50,000
	Total Add Alt #1		\$ 142,208

Adding a hid item		
Adding a bid item		
a	Sweeping (Sediment Removal) at the unit price of \$ 760 per 40 HR HOUR.	\$ 8,000
New totals includi		0.00
total base bid ite	Items 202-00019 through 630-86800 (One Hundred Thirteen[113]) ems. From table on Page BF-3 67 % of Bid Items Total Amount	\$ 2,387, 917 °° \$ 4,059 46 \$ 2,391,976 46
Total Base Bid I	Items Amount plus Textura® Fee equals Total Bid Amount	\$ <u>Z,391,97</u> 6
Total Bid Amou	unt: Two Million Three hundred trin undred seventy six dollars and for Dollars (\$	ter one thousand

Add Alternat	d Home 20	2-00821 through 6	530-00008 (Twen	ty-Nine[2	29]) țotal a	dd alt bid	items.	. 0	
Amount of	One	Hundred	nintex	two	thous	and	two	nundred	4
eight	asy	curs		Do	ollars (\$	192,	708 E)	School

Total Base Bid Items 202-00019 through 630-86800 (One Hundred	\$
Twelve[112]) total base bid items. Textura ® Fee from table on Page BF-3% of Bid Items Total Amount	\$
Total Base Bid Items Amount plus Textura® Fee equals Total Bid Amount	\$
Total Bid Amount:	
Dollars (\$)
Add Alternate #1 Add Alt #1 Bid items 202-00821 through 630-00008 (Twenty-Nine[29]) Amount of Dollars (\$	
If the Manager mails a written Notice of Apparent Low Bidder, addressed to the Bidder's the Undersigned Bidder shall, in accordance with the Contract Documents, be ready to date of the Notice: (i) execute the attached form of Contract in conformity with this bid; (ii and (iii) furnish the required bond or bonds in the sum of the full amount of this bid, exe the Manager.	, and shall, within five (5) days after the) furnish the required proofs of insurance;
The, a corporation of the State of, If such surety is not approved by the Manager, another and satisfactory surety company s	is hereby offered as Surety on said bond. shall be furnished.
Enclosed with this bid is a bid guarantee, as defined in the attached Instruction . The Undersigned Bidder agrees that the entire amount become the property of the City as liquidated damages, and not as a penalty, if: (i) the bid (ii) the City notifies the Undersigned Bidder that it is the Apparent Low Bidder; and (iii) the Contract in the form prescribed or to furnish the required bond and proofs of insurar such notification.	of this bid guarantee is to be paid to and d is considered to be the best by the City; the Undersigned Bidder fails to execute
The following persons, firms or corporations are interested with the Undersigned Bidder	in this bid:
Name:Name:	
Address:Address:	
If there are no such persons, firms, or corporations, please so state in the following space	:

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 Sin the Environmental All 1490 W 1215 Ave. From Distriction (E)
Tulots	3.42	Standard Come 2521 E 68th Have Dewer CO
Striping	6.19	American Striping 3095 S. Tojon ST Enfance (CO)
Agplus 4	4.98	Loya Construction In Do Box 211555 Denser Co
Flaggive	1,47	Flaggers Tue 420 + 58th Ave # 116 Dawer



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

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

City & County of Denver Contract No.: 201733316					
The undersigned Bidder proposes to utilize all listed firms. The following MWBE(s) firms listed are CURRENTLY certified by the City and County of Denver. Only the level of MWBE participation listed at the bid opening will count toward satisfaction of the project goal. Only bona fide commissions may be counted for Brokers. MWBE prime bidders must detail their bid information below. Please copy and attach this page to list additional MWBE.					
B M	Prime B	idder			
Business Name: Jalisco Internatio			act Person: Richard Le		7100
Address: 6663 Colorado Blvd, Com	merce City, CO 80022	Cont	act Person: RICHARD LE	1	
Type of Service: Prime Co	ntractor	Dolla	r Amount: \$:		rcent of oject:
And the second	Certified MWBE	Prime	Bidder		
Business Name:					
Address:		Cont	act Person:		
Type of Service:		Dollar Amount: \$: Percent of Project:			
Subcontractors	Suppliers Manufa	cturer	s or Brokers (check one b	ox)	The Ley
X Subcontractor (√)	Supplier (√)		Manufacturer (√)		Broker (√)
Business Name: Standard (arrete				
Address: 2521 £ 68 th	Pl. Dawer	Туре	of Service: In lets		
Contact Person: Rene Mu		Dollar Amount: \$: 81,730 50 Percent of Project:			roent of 42 oject: 3 42
X Subcontractor (√)	Supplier (√)		Manufacturer (√)		Broker (√)
Business Name: American	Stripina				
Address: 3075 S. Tele	, -),		of Service: Stuping		
Contact Person: Alexandra Harry			r Amount: \$: 148,000	Pe Pro	roent of 19 oject: 6
X Subcontractor (√)	Supplier (√)		Manufacturer (√)		Broker (√)
Business Name: Lova Co					
Address: PO Rex 211553		Туре	of Service: Asphal4		
Contact Person: Yesina Loya Dollar Amount: \$: 119,000 Percent of 49 Project: 49				roent of 498 oject: 498	

Rev 031816JE

	Subcontractors	Suppliers Manufa	cture	rs or Brokers (check one	box)	
X	Subcontractor (√)	Supplier (√)		Manufacturer (√)		Broker (√)
Busi	ness Name: Flaggers	Lo				
Addr		## # 16 Denser		e of Service: Flaggi	hy	
Cont	act Person: Andrea U		Doll	ar Amount: \$: 35,000	Pe	roent of 46 oject: / 46
Subcontractor (√) Supplier (√)		Supplier (√)		Manufacturer (√)		Broker (√)
Busi	ness Name:					
Addr	P\$5:		Тур	e of Service:		
Cont	act Person:		Doll	ar Amount: \$:		rcent of oject:
	Subcontractor (√)	Supplier (√)		Manufacturer (√)		Broker (√)
Busi	ness Name:					
Addr	P\$\$:		Тур	e of Service:		
Contact Person:			Dollar Amount: \$:		Percent of Project:	
	Subcontractor (√)	Supplier (√)		Manufacturer (√)		Broker (√)
Busin	iess Name:		M.			
Addr	P\$\$:		Type of Service:			
Cont	act Person:		Dollar Amount: \$:		Percent of Project:	
	Subcontractor (√)	Supplier (√)		Manufacturer (√)		Broker (√)
Busin	ess Name:					
Addr	PSS:		Type of Service:			
Cont	act Person:		Dollar Amount: \$: Percent Project		rcent of oject:	
	Subcontractor (√)	Supplier (√)		Manufacturer (√)		Broker (√)
Busin	ess Name:					
Address:			Type of Service:			
Contact Person:		Dollar Amount: \$:		Percent of Project:		
	Subcontractor (√)	Supplier (√)		Manufacturer (√)		Broker (√)
Busir	ess Name:					
Addr	255:		Тур	e of Service:		
Cont	act Person:		Doll	ar Amount: \$:		rcent of oject:

Rev 031816JE

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

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

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

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

Business Address of Bidder:	6663 Colorado E	Blvd
City, State, Zip Code:	Commerce City,	, CO 80022
Telephone Number of Bidder:	303-287-8905	Fax No. 303-287-0511
Social Security or Federal Employ	ver ID Number of Bidder:	84-0995655
		plated upon which the Bidder was engaged:
For information relative thereto, p		
Name: Jeff Ham	pton	
Title: Project E		
Address: 4201 E Arkans	as Ave, Denver, C	O 80222
		l consideration of the following addenda to the Contract Documents
Add	lenda Number 1	_{Date} 3/22/17
Add	lenda Number 2	
Add	lenda Number	Date
Dated this 5	of April	_, 20_17

Signature of Bidder:			
If an Individual:			doing business
	as		·
If a Partnership:			
	by:		General Partner.
If a Corporation:	Jalisco International, Inc.		
	a Colorado by:	Del Del	Corporation,
Attest: Secretary Natalia Ledezma Rollins	nterna TO SEAL COCOPPORA OCOPPORA OCOPPORA		
If a Joint Venture, signature of all J	11. 4		
Firm:			
Corporation (), Partnership	() or () Limited Liability Co	ompany	
•		(If a Corporation) Attest:	
Title:		Secretary	(Corporate Seal)
Firm:			
Corporation (), Partnership	() or () Limited Liability Co	mpany	
		(If a Corporation) Attest:	
Title:		Secretary	(Corporate Seal)
Firm:			
Corporation (), Partnership	() or () Limited Liability Co	mpany	
Ву:		(If a Corporation) Attest:	
Title:		Secretary	(Corporate Seal)



Office of Economic Development Division of Small Business Opportunity Compliance Unit

201 W. Colfax Ave. Dept. 907 Denver, CO 80202 Phone: 720-913-1999 DSBO@denvergov.org

COMMITMENT TO MWBE PARTICIPATION

The undersigned has satisfied the MWBE participant requirements in the following manner (Please check the appropriate box): ■ The Bidder/Proposer is committed to the minimum ____16__% MWBE utilization on the project, and will submit Letters of Intent (LOI) for each subcontractor/subconsultant listed in the Bid Forms as follows: Hard Bids: Three (3) business days after the bid opening. Request for Proposals/Qualifications: With the proposal when due. Compliance Plans: With each task/work order ☐ The Bidder/Proposer is unable to meet the project goal of ______% MWBE, but is committed to a minimum of ______ % MWBE utilization on the project. The Bidder/Proposer understands that they must submit a detailed statement of their good faith effort under sealed bid procedures, as a matter of responsiveness, or with initial proposals, under contract negotiation procedures; or no later than three (3) days after bid opening as a matter of responsibility as in accordance with DRMC Section 28-62 and 28-67 of Ordinance 85 to the Division of Small Business Opportunity. ☐ The Bidder/Proposer is a certified **MWBE** in good standing with the City and is committed to self-perform a minimum of _____% of the work on the contract. Bidder/Proposer (Name of Firm): Jalisco International, Inc. Firm's Representative (Please print): Richard Ledezma Signature (Firm's Representative): Title: President Address: 6663 Colorado Blvd $_{Zip:}80022$ State: CO City: Commerce City Phone: 303-287-8905 Fax: 303-287-0511 Email: rwl@jalisco.org A copy of the MWBE Certification letter must be attached to each Letter of Intent (LOI).



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

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

Office of Economic Development Division of Small Business Opportunity Compliance Unit 201 West Colfax Ave., Dept. 907 Denver, CO 80202 Phone: 720-913-1999		0 0 0	Submi Email	t the a to <u>deb</u>	Letter must ttached cor o@denverg	be subm npleted o lov.org .	iitted with L hecklist wit	or Not Applica OI h this letter luded with Si		
-		Towns new								
Contract No.: 201733316	Project Na									
A. The Follow This Letter of Intent Mus				plete /Con	ed by the I	Bidder/(Consultan	t BE or DBE		
Name of Bidder/Consultant: Jalisco International, Inc. Self-Perform						ig:	Phone: 303.287.8905			
Contact Person: Natalia Ledezma Rollin	าร				@jalisco.o		Fax: 303.287.0511			
Address: 6663 Colorado Blvd.			City: Co	mme	rce City		State: Co		22	
B. The Following Section This Letter of Intent Mu	n is To Be Co st be Signed	ompi	eted by	the M	I/WBE, SE BE, EBE o	BE, EBE	or DBE	it any Tier		
Name of Certified Firm: Loya Constr	uction, Inc.					the same of the same		20-254-37		
Contact Person: Yesenia Loya		Ema	ail loyaco	nstru	ction@yaho	oo.com				
Address: PO Box 211555			y: Denver				Fax: State: CC	Zip: 8022		
Please check the designation which applies to the certified firm.	(√)	X	SB	E		EBE		DBE (V)		
Indirect Utilization: If this M/WBE, S broker to the Bidder/ Consultant, pleas utilizing the participation of this firm:	N/A	nam	e or the :	oodus	ntractor/st	ibconsul	tant, supp	lier or brokei	lier or which is	
A Copy of the M/WBE Identify the scope of the work to be per price bids only, identify which bid lin 403 - HMA 1408 B	formed or sup	ply it	on that	. 21.7.					unit onds to.	
Subcontractor/Subconsultant (Su	pplier	V)			Br	oker (v)		
Bidder intends to utilize the aforemental of the work and percentage of the total s	oned M/WBE, subcontractor	SBE M/W	, EBE or BE, SBE	DBE . EBE	for the Wo	ork/Supp		ed above. T	he cost	
\$119,000.00							4.98 %			
Consultant intends to utilize the aforem the Work/Supply described above. The consultant MAWBE, SBE, EBE or DBE will the fee amount of the work to be performance.	percentage of	fthe	work of	he to	tal sub				%	
Bidder/Consultant's Signature:						Date: 4 7/17				
Title: Convact Admin MWBE, SBE, EBE or DBE or Self-Perfo	ming///	1	Sec	1			/			

Firm's Signature:

Title: Presiden

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

Date:



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

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

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

		necestada.	-	-			Attended	-		
Contract No.: 201733316	Project Name: 19th & 20th 2-Way									
A. The Following Section Is To Be Completed by the Bidder/Consultant This Letter of Intent Must be Signed by the Bidder/Consultant and M/WBE, SBE, EBE or DBE										
Name of Bidder/Consultant: Jalisco International, Inc. Self-Performing: Yes No Phone: 303.287.8905							.8905			
Contact Person: Natalia Ledezma Rollins Email: natalial@jalisco.org Fax: 303.287.0511										
Address: 6663 Colorado Blvd. City: Commerce City							Sta	ite:CO	Zip:800	22
B. The Following Section is To Be Completed by the M/WBE, SBE, EBE or DBE, at any Tier This Letter of Intent Must be Signed by the M/WBE, SBE, EBE or DBE and Bidder/Consultant										
Name of Certified Firm: American Striping Company Phone: 303-495-5950								50		
Contact Person: Alejandra Harvey		Em	ail: alej	andra@am	ericanstripingco	mpany.com				
Address: 3075 S. Tejon Street		City		Englev				e:Co		10
Please check the designation whice applies to the certified firm.	h M/WBE (√)	>		SBE (√)		EBE (v)			DBE (√)	
Indirect Utilization: If this M/WBE, SBE, EBE or DBE is not a direct first tier subcontractor/subconsultant, supplier or broker to the Bidder/ Consultant, please indicate the name of the subcontractor/subconsultant, supplier or broker which is utilizing the participation of this firm:										
A Copy of the M/WBE, SBE, EBE or DBE Letter of Certification must be Attached										
Identify the scope of the work to be performed or supply item that will be provided by the M/WBE/SBE/DBE. On unit price bids only, identify which bid line items the M/WBE/SBE/EBE/DBEs scope of work or supply corresponds to.										
1027 - Pavement Marking/Striping										
71		<i>J</i> ′								
Subcontractor/Subconsultant (√) Supplier (√)							Bro	ker (√)		
Bidder intends to utilize the aforementi of the work and percentage of the total									d above.	The cost
\$148,000.00 6.19								%		
Consultant intends to utilize the aforementioned M/WBE, SBE, EBE or DBE for the Work/Supply described above. The percentage of the work of the total subconsultant M/WBE, SBE, EBE or DBE will perform is:										
f the fee amount of the work to be performed is requested, the fee amount, is:										
Bidder/Consultant's Signature: Date: 4 7 17										
Title: Contract Administr	Title: Contract Administer / Sec									
MWBE, SBE, EBE or DBE or Self-Performing Firm's Signature: Date: 2/7/7										
Fille: PLUS ident ((FQ)										
f the above named Bidder/Consultant is not determined to be the successful Bidder/Consultant, this Letter of Intent shall be null and void.										



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

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

- All lines must be completed or marked N/A for Not Applicable
- Certification Letter must be submitted with LOI

- Submit the attached completed checklist with this letter
 Email to debo@denvergov.org.
 FOR RFPs and RFQs: LOIs should be included with Submittal

Contract No.: 201733316 Project Name: 19th & 20th 2-Way										
A. The Following Section is To Be Completed by the Bidder/Consultant This Letter of Intent Must be Signed by the Bidder/Consultant and M/WBE, SBE, EBE or DBE										
Name of Bidder/Consultant: Jalisco	g:	Phone: 3	03.287.8905							
Contact Person: Natalia Ledezma Rolli	g	Fax: 303.2	87.0511							
Address: 6663 Colorado Blvd. City: Commerce City State: CO Zip: 8002										
B. The Following Section is To Be Completed by the M/WBE, SBE, EBE or DBE, at any Tier This Letter of Intent Must be Signed by the M/WBE, SBE, EBE or DBE and Bidder/Consultant										
Name of Certified Firm: Flaggers, In	c.						Phone: 30	3-428-4268 Ext 1		
Contact Person: Andrea Willems		Em	ail: an	ndy.flagge	rsinc@hotm	ail.com	Fax: 303-3	395-1467		
Address: 420 E. 58th Avenue, Sui	te 116	City	y: [Denver			State: CO	Zip: 80216		
Please check the designation whice applies to the certified firm.	M/WBE (v)	-		SBE		EBE (v)		DBE (v)		
Indirect Utilization: If this M/WBE, SBE, EBE or DBE is not a direct first fier subcontractor/subconsultant, supplier or broker to the Bidder/ Consultant, please indicate the name of the subcontractor/subconsultant, supplier or broker which is utilizing the participation of this firm:										
A Copy of the M/WBE, SBE, EBE or DBE Letter of Certification must be Attached										
Identify the scope of the work to be performed or supply item that will be provided by the M/WBE/SBE/DBE. On unit price bids only, identify which bid line items the M/WBE/SBE/EBE/DBEs scope of work or supply corresponds to.										
	630 - Flagging									
Subcontractor/Subconsultant (\forall) Supplier (\forall)							Bro	oker (v)		
Bidder intends to utilize the aforementioned M/WBE, SBE, EBE or DBE for the Work/Supply described above. The cost of the work and percentage of the total subcontractor M/WBE, SBE, EBE or DBE bid amount is:										
\$35,000.00 1.46								º/ ₀		
Consultant intends to utilize the aforementioned M/WBE, SBE, EBE or DBE for the Work/Supply described above. The percentage of the work of the total sub-consultant M/WBE, SBE, EBE or DBE will perform is:										
If the fee amount of the work to be performed is requested, the fee amount, is:							S			
Bidder/Consultant's Signature: Date: 4/10/17								117		
Title: Confract, Administrator / Sec										
M/WBE, SBE, EBE or DBE or Self-Performing Date: 4-10-17								-/7		
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.										
in the above framed proper consultant is not dete	ermined to be the	PRICO	ב ונוופני	prodet/Cons	suitant, this Le	etter or in	tent shall be no	and Void.		



Office of Economic Development Division of Small Business Opportunity Compliance Unit 201 West Colfax Ave., Dept. 907 Denver, CO 80202 Phone: 720-913-1699

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

- All lines must be completed or marked N/A for Not Applicable
- Certification Letter must be submitted with LO!

- Submit the attached completed checklist with this letter
 Email to <u>disbo@denveroov.oro</u>,
 FOR RFPs and RFQs: LOIs should be included with Submittal

									-
Contract No.: 201733316	Contract No.: 201733316 Project Name: 19th & 20th 2-Way								
A. The Following Section Is To Be Completed by the Bidder/Consultant This Letter of Intent Must be Signed by the Bidder/Consultant and M/WBE, SBE, EBE or DBE									
Name of Bidder/Consultant: Jalisco International, Inc. Self-Performing: Phone. 303.287.8905									
Contact Person, Natalia Ledezma Rollins Email: natalial@jalisco.org Fax: 303.819.0606									
Address: 6663 Colorado Blvd. City: Commerce City							State-CO	Zip:80022	
B. The Following Section is To Be Completed by the M/WBE, SBE, EBE or DBE, at any Tier This Letter of Intent Must be Signed by the M/WBE, SBE, EBE or DBE and Bidder/Consultant									
Name of Certified Firm: Standard Co	oncrete, Inc	C.					Phone: 30	3-931-3608	
Contact Person: Rene Munoz		Em	ail: stand	ardcon	crete@ms	n.com	Fax: 303-439-2699		
Address: 2521 E. 68th Pl.		Cit	y: Der	nver			State: CO	Zip: 80229	
Please check the designation whice applies to the certified firm.	M/WBE		(SB	_		EBE (v)		DBE (v)	
Indirect Utilization: If this M/WBE, SBE, EBE or DBE is not a direct first tier subcontractor/subconsultant, supplier or broker to the Bidder/ Consultant, please indicate the name of the subcontractor/subconsultant, supplier or broker which is utilizing the participation of this firm:									
A Copy of the M/WBE, SBE, EBE or DBE Letter of Certification must be Attached									
Identify the scope of the work to be performed or supply item that will be provided by the M/WBE/SBE/DBE. On unit price bids only, identify which bid line items the M/WBE/SBE/EBE/DBEs scope of work or supply corresponds to. 1004 - Wets Storm Sewer Construction									
▼ Subcontractor/Subconsultant (∀) Supplier (∀)						See in section	Bro	oker (v)	
Bidder intends to utilize the aforementioned M/WBE, SBE, EBE or DBE for the Work/Supply described above. The cost of the work and percentage of the total subcontractor M/WBE, SBE, EBE or DBE bid amount is:									
\$81.730.50						3.42			
Consultant intends to utilize the aforementioned M/WBE, SBE, EBE or DBE for the Work/Supply described above. The percentage of the work of the total sub consultant M/WBE, SBE. EBE or DBE will perform is: 15 the fee amount of the work to be performed is requested, the fee amount, is:									
Bidder/Consultant's Signature. Date: 4/11/17									
MWBE, SBE, EBE or DBE/OF, gelf-Performing									
Firm's Signature: [4] 11/17									
Title: President If the above named Bioder/Consultant is not determined to be the successful Bioder/Consultant, this Letter of Intent shall be not also you									
if the above named Bidder/Consultant is not det	ermined to be to	ne succ	esstul Blook	eriConsu	litant this Le	tter of In	tent shall be n	ull and void	ì

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 ✓	
	Project Number & Project Name
	Section A: Name of Bidder/Consultant, Contact Person, Address, City, State, Zip, Phone, Email
	Section B: Name of Certified Firm, Contact Person, Address, City, State, Zip, Phone, Email
	Designation checked for MBE/WBE, SBE, EBE or DBE
	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.
	Scope of work performed or item supplied by M/WBE, SBE, EBE or DBE
	Line items performed, if line-item bid.
	Copy of M/WBE, SBE, EBE or DBE Letter of Certification Attached
	Designation checked for Subcontractor/Subconsultant, Supplier or Broker
	If project is a hard bid
	Bidder has indicated dollar amount for value of work going to Subcontractor/ Subconsultant, Supplier or Broker
	Bidder has indicated percentage for value of work going to Subcontractor/ Subconsultant, Supplier or Broker
	If project is an RFP/RFQ
	Consultant has indicated percentage for value of work going to Subcontractor/ Subconsultant, Supplier or Broker Name & contact name for MWBE.
	Fee amount if fee amount of work to be performed is requested.
	Bidder/Consultant's Signature, Title & Date
	M/WBE, SBE, EBE or DBE Firm's Signature, Title and Date
	SUBMITTED VIA For Construction Hard Bids ONLY, Bidders are strongly urged to
Select One ✓	deliver the LOI via one of the methods below. (The preferred method is to scan/email completed forms to email address below. Delivery to any other point cannot be guaranteed timely delivery.)
	Email to DSBO@denvergov.org

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



Joint Venture Affidavit

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

The <u>Undersigned</u> swears that the foregoing statements are correct and include all material information necessary to identify and explain the terms and operation of our joint venture and the intended participation by each joint venturer in the undertaking. Further, the <u>Undersigned</u> 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 initialing action under Federal or State laws concerning false statements.

concerning false statements.	* ***	
Name of Firm:		
Print Name:	81	Title
Signature:		Date:
	Notary P	ublic
County of	State of	My Commission Expires:
Subscribed and sworn before me this	State of	my commont are a
Subscribed and sworn before the dis		
day of	. 20	
		Notary Seal
N-4 8:		
Notary Signature:		
Notary Commission #:		
Address:		
Name of Firm:		

Print Name:		Title
Fint Name.		
Signature:		Date:
	Notary P	ublic
County of	State of	My Commission Expires:
Subscribed and sworn before me this		
day of	. 20	
		Notary Seal
		THOUSE SECTION
Notary Signature:		
Notary Commission #:		
Address:		



JOINT VENTURE **ELIGIBILITY FORM**

Office of Economic Development **Division of Small Business Opportunity Compliance Unit** 201 W. Colfax Ave. Dept. 907

Denver, CO 80202 Phone: 720-913-1999 DSBO@denvergov.org

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

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

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

If you have questions regarding this proce	ess, please contact [OSBO at 720-913-	-1999.
	Joint Ventu	re Information	
Name:	ame: Contact Person:		
Address:			
City:	State:	Zip:	Phone:
	Joint Ventur	re Participants	
Name:			Contact Person:
Address:			
City:	State:	Zip:	Phone:
% Ownership: Certifying Entity:			Type Certification & Date: (S/E/M/W or DBE)
Type of Work for which Certification was g	granted:		
Name:			Contact Person:
Address:			2
City:	State:	Zip:	Phone:
% Ownership: Certifying Entity:			Type Certification & Date: (S/E/M/W or DBE)
Type of Work for which Certification was g	granted:		- 3
	General I	nformation	
SBE/EBE/MBE/WBE/DBE Initial Capital C	ontributions: \$		96
Future capital contributions (explain require	rements) (attach add	litional sheets if ne	ecessary):
Source of Funds for the SBE/EBE/MBE/W	BE/DBE Capital Cor	ntributions:	
Describe the portion of the work or elemen			BE/EBE/MBE/WBE or DBE: (attach additional
sheets if necessary)	-37		

Describe the portion of the work or elements of the business controlled by non-SBE/EBE/MBE/WBE or DBE: (attach additional sheets if necessary)		
JOINT VENTURE ELIGIBILITY FORM		
General information		
Describe the SBE/EBE/MBE/WBE or DBE's involvement in the overall management of the joint venture (e.g., participation on a management committee or managing board voting rights, etc.) (attach additional sheets if necessary)		
Describe the SBE/EBE/MBE/WBE or DBE's share in the profits of the joint venture:		
Describe the SBE/EBE/MBE/WBE or DBE's share in the risks of the joint venture:		
Describe there roles and responsibilities of each joint venture participant with respect to managing the joint venture (use additional sheets if necessary): a. SBE/EBE/MBEWBE or DBE joint venture participant:		
b. Non- SBE/EBE/MBE/WBE or DBE joint venture participant:		
Describe the roles and responsibilities of each joint venture participant with respect to operation of the joint venture (use additional sheets if necessary):		
a. SBE/EBE/MBE/WBE or DBE joint venture participant:		
b. Non- SBE/EBE/MBE/WBE or DBE joint venture participant:		
D. NOIP ODE/EDE/MOE/MOE OF DDE JOHN VEHILUTE PARADIPARIE.		

Which firm will be res	ponsible for accounting functions relative t	o the joint venture's business?	
	each party will have to commit or obligate subcontractors, and/or other parties?	e the other to insurance and bonding o	ompanies, financing
			W
	05 200 05 20 20 20 20 20 20 20 20 20 20 20 20 20		
management employe	ation relating to the approximate <u>number</u> ses that will be required to operate the bus - S/E/MWBE/DBE or joint venture:		
	Non-SBE/EBE/M/WBE/DBE	SBE/EBE/M/WBE/DBE	Joint Venture
Management			
Administrative			
Support			
Hourly Employees			
	IOINT VENTURE	ELIGIBILITY FORM	
		Information	
Please provide the na	me of the person who will be responsible to		re.
Who will they be empl	oyed by?		
Are any of the propose partners?	ed joint venture employees currently emplo	oyees of any of the joint venture	Yes No (√)
If yes, please list the necessary)	number and positions and indicate which fi	rm currently employs the individual(s),	(use additional sheets if
Number of employees	Position	Employe	ed By
egitaria, la companya			
	roposed joint venture agreement, promisso the joint venture partners.	ory note or loan agreement (if applicab	le), and any and all written
List all other business parties are jointly invol	relationships between the joint venture pa ived.	rticipants, including other joint venture	agreements in which the
If there are any signific of Small Business Opp	cant changes in or pertaining to this submit contunity.	ttal, the joint venture members must in	nmediately notify the Division

COMP-FRM-015

CITY AND COUNTY OF DENVER DEPARTMENT OF PUBLIC WORKS

BID BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT Jalisco International, Inc., 6663 Colo	orado Blvd., Commerce City, CO 80022 , as Principal, and
Employers Mutual Casualty Company, P.O. Box	712, Des Moines, IA 50306, a corporation organized and existing under and
by virtue of the laws of the State of lowa	, and authorized to do business within the State of Colorado, as Surety, are
held and firmly bound unto the City and County of	f Denver, Colorado, as Obligee, in full and just sum of
Five Percent of Amount Bid	Dollars, (\$5%), lawful money of the United States, for
	made, we bind ourselves, our heirs, executors, administrators, successors and
assigns, jointly and severally, firmly by these prese	
WHEREAS, the said Principal is herewith	submitting its bid, dated March 30 , 20 17, for the
construction of: Contract No. 201733316, 19TH	H & 20TH 2-WAY CONVERSION, as set forth in detail in the Contract
	lorado, and said Obligee has required as a condition for receiving said bid that
	mount of not less than five percent (5%) of the amount of said bid, as it relates
	d that in event of failure of the Principal to execute the Contract, for such
	Payment Bond if the contract is offered him that said sum be paid immediately
to the Obligee as liquidated damages, and not as a p	
	at if the aforesaid Principal shall, within the period specified therefore, on the
	r into a written contract with the Obligee in accordance with his bid as accepted
	d and sufficient surety or sureties, upon the form prescribed by the Obligee, for
	t of said Contract, or in the event of withdrawal of said bid within the time
	e sum determined upon herein, as liquidated damages and not as penalty, in the
this Obligation shall be null and void, otherwise to 1	and give such Performance and Payment Bond within the time specified, then
this Congation shall be fluit and void, otherwise to i	remain in full force and effect.
2446	Marsh
Signed, sealed and delivered this 24th	day ofMarch, 20_17.
	200
ATTEST	Jalisco International, Inc.
	Principal
1 / X A X MARRION	
terna	By Richard Ledezma
Secretary Navalia Lederma Rollins	
S.C. ORPORA . DE	Title President
SFAI " ==	
1985	
ORAD	Surety Employers Mutual Casualty Company
The state of the	By Alercetta Heasta
Secretary Navia Fina Kede ma Rollins SEAL 1985 CORAD Seal if Bidder is Corporation	Florietta Acosta, Attorney-In-Fact
THE ACTION OF THE PERSON	The state of the s

(Attach Power-of-Attorney)

[SEAL]



P.O. Box 712 • Des Moines, IA 50306-0712

No. B41310

CERTIFICATE OF AUTHORITY INDIVIDUAL ATTORNEY-IN-FACT

KNOW ALL MEN BY THESE PRESENTS, that:

- 1. Employers Mutual Casualty Company, an Iowa Corporation
- 2. EMCASCO Insurance Company, an Iowa Corporation
- 3. Union Insurance Company of Providence, an Iowa Corporation
- 4. Illinois EMCASCO Insurance Company, an Iowa Corporation
- 5. Dakota Fire Insurance Company, a North Dakota Corporation
- 6. EMC Property & Casualty Company, an Iowa Corporation
- 7. Hamilton Mutual Insurance Company, an Iowa Corporation

hereinafter referred to severally as "Company" and collectively as "Companies", each does, by these presents, make, constitute and appoint:
TODD BENGFORD, DONALD E. APPLEBY, MARK SWEIGART, SARAH BROWN, FLORIETTA ACOSTA, SUSAN J. LATTARULO, LEEANNE MEAUX

its true and lawful attorney-in-fact, with full power and authority conferred to sign, seal, and execute its lawful bonds, undertakings, and other obligatory instruments of a similar nature as follows:

ANY AND ALL BONDS

and to bind each Company thereby as fully and to the same extent as if such instruments were signed by the duly authorized officers of each such Company, and all of the acts of said attorney pursuant to the authority hereby given are hereby ratified and confirmed.

The authority hereby granted shall expire ___

APRIL 1, 2018

unless sooner revoked.

AUTHORITY FOR POWER OF ATTORNEY

This Power-of-Attorney is made and executed pursuant to and by the authority of the following resolution of the Boards of Directors of each of the Companies at a regularly scheduled meeting of each company duly called and held in 1999:

RESOLVED: The President and Chief Executive Officer, any Vice President, the Treasurer and the Secretary of Employers Mutual Casualty Company shall have power and authority to (1) appoint attorneys-in-fact and authorize them to execute on behalf of each Company and attach the seal of the Company thereto, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof; and (2) to remove any such attorney-in-fact at any time and revoke the power and authority given to him or her. Attorneys-in-fact shall have power and authority, subject to the terms and limitations of the power-of-attorney issued to them, to execute and deliver on behalf of the Company, and to attach the seal of the Company thereto, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof, and any such instrument executed by any such attorney-in-fact shall be fully and in all respects binding upon the Company. Certification as to the validity of any power-of-attorney authorized herein made by an officer of Employers Mutual Casualty Company shall be fully and in all respects binding upon this Company. The facsimile or mechanically reproduced signature of such officer, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power-of-attorney of the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN WITNESS THEREOF, the Companies have caused these presents to be signed for each by their officers as shown, and the Corporate seals to be hereto affixed this

Seals

Seals

SEAL

Bruce G. Kelley, Chairman of Companies 2, 3, 4, 5 & 6; President of Company 1; Vice Chairman and CEO of Company 7

On this 20th day of NOVEMBER AD 2015 before me a Notary Public in and for the State of Iowa, personally appeared Bruce G. Kelley and Michael Freel, who, being by me duly sworn, did say that they are, and are known to me to be the Chairman, President, Vice Chairman and CEO, and/or Assistant Vice President/Assistant Secretary, respectively, of each of The Companies above; that the seals affixed to this instrument are the seals of said corporations; that said instrument was signed and sealed on behalf of each of the Companies by authority of their respective Boards of Directors; and that the said Bruce G. Kelley and Michael Freel, as such officers, acknowledged the execution of said instrument to be the voluntary act and deed of each of the Companies.

My Commission Expires October 10, 2016.

Notary/Public M and for the State of Iowa

CERTIFICATE

are true and correct and are still in full force and effect.

+ 20X

Vice President



Office of Economic Development
Division of Small Business Opportunity
201 W. Colfax Ave, Dept. 907
Denver, CO 80202
p: 720.913.1989
f: 720.913.1809
www.denvergov.org/dsbo

Diversity and Inclusiveness * in City Solicitations Information Request Form

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

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

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

Business Email Address: antol	niol@jalisco.org	e de la companya de l
Please include the Email address City and County of Denver:	s of the contact person facilitat diane.urbina@denvergov.or	ing this solicitation for the
Agency Name:Arts and VenueAuditor OfficeCommunity PlanningDenver International AirportEnvironmental HealthFire Department	Purchasing DivisionHuman ServicesEconomic DevelopmentParks and RecreationPolice Department X_Public Works	Sheriff Department Technology Services Other
Project Name: 19TH & 20TH BID / RFP No.: 201733316 Name of Contractor/Consultant:		
What industry is your business? Address: 6663 Colorado Blvd	Highway Construction	
Commerce City, CO 8002	2	
Business Phone No.: 303-287- Business Facsimile No.: 303-2		

OED - Executive Order No. 101 Diversity and Inclusiveness in City Solicitations Information Request Form

Rev. 12/29/2015

1. How many	employees do	es your	company empl	oy?		
	1-10 11-50		51-100 over 100			
1.1. How man	ny of your comp	any's	employees are:			
Full-	time <u>75</u>		Part-Time 2			
2. Do you hav	ve a Diversity ar	nd Incl	usiveness Progr	ram? X Yes	☐ No	
	your company s and sign the for		ess than 10 em	ployees continu	e to question 13	L.
If Yes, doe 2.1 Employ 2.2 Procur 2.3 Custon	es it address: yment and rete ement and sup ner service?	ntion? ply cha	ain activities?	⊠ Yes ⊠ Yes ⊠ Yes	No No No	
programs. programs, for workpla	This may included equal opportunity	de, for nity pol (ii) div	example, (i) dive icies, and the b	diversity and inclusionsity and inclusion ersity and inclusion udget amount spusiveness training	veness employe ent on an annu	ee training al basis
	ded semi annu ent practices.	ıal trai	ning on EEO,	diversity, inclus	siveness, and	fair
employees If Yes	? s, how does you	r comp	pany regularly co	iversity and incluo ommunicate its c ect all that apply)	diversity and	es to
	Employee Trai Pamphlets Public EEO pos Other Not Applicable	stings				
	чот друпсавте					

	that you do not have a diversity and any may have to adopt such a prog	d inclusiveness program, describe an ram.
6. How often do you	a provide training in diversity and inc	clusiveness principles?
Monthly Quarterly	AnnuallyNot Applicable	Other 6 Months
6.1 What percentag	ge of the total number of employees	generally participate?
0 - 25% 26 - 50%		☐ Not Applicable
supplier diversity EEO policies a	description of budget spent on an a r and inclusiveness. are included in contract language correspondence.	
3. Do you have a di	versity and inclusiveness committee	e? 🗌 Yes 🛛 No
.1 If Yes, how often	n does it meet?	
Monthly Quarterly	Annually Other	No Committee
	d that you do not have a diversity ar ompany may have to establish such	nd inclusiveness committee, describe a committee.
No plans, evalu	ate effectiveness of current pr	rogram on a quarterly basis.

Antonio Ledezma Printed Name of Person Completing Form		
Signature of Person Completing Form	Date) (II) (II) (II) (II)
do fush	3/30/1	7
I attest that the information represented herein my knowledge.	is true, correct and co	omplete, to the best of
If yes, please email X0101@denvergov.org.		
11. Would you like information detailing how to program? ☐ Yes ☐ No	implement a Diversity	and Inclusiveness
 Does your company integrate diversity and into executive/manager performance evaluation 		es Yes No
Do you have a budget for diversity and inclu-	siveness efforts?	Yes 💢 No

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

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

CITY AND COUNTY OF DENVER STATE OF COLORADO



Department of Public Works
Addendums #1 & #2

Contract No: 201733868

Wellshire GC Irrigation Renovation

April 6, 2017

CITY AND COUNTY OF DENVER DEPARTMENT OF PUBLIC WORKS

CONTRACT NO: 201733316
PROJECT NAME: 19th & 20th 2-Way Conversion

ADDENDUM NO. 2 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 Documents

- A bid item was added to the previous addendum #1 but a new bid item total page was not included.
 Attached is a new bid item total page, including the added bid item, 208-00106.
- Bid Opening is postponed until April 5, 2017 at 1:00 p.m. at the WEBB Building, 201 W Colfax Ave, 6th floor conference room 6.G.7., Denver, CO 80202.

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

Lesley B. Thomas
City Engineer

3.29.17

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. 2

DATE: 4/5/17

Adding a bid item Sweeping (Sediment Removal) s 8,000 208-00106 40 HR at the unit price of \$ \\ \ \ \ \ \ \ \ \ \ per HOUR.

New totals including 208-00106

Total Base Bid Items 202-00019 through 630-86800 (One Hundred Thirteen[113]) \$ 2,387,917 \(\frac{9}{46} \) total base bid items.

Textura ® Fee from table on Page BF-3 \(\frac{17}{2} \) % of Bid Items Total Amount \$ \(\frac{4}{2} \) 391,976 \(\frac{46}{2} \)

Total Base Bid Items Amount plus Textura® Fee equals Total Bid Amount \$ \(\frac{2}{391},976 \) \(\frac{46}{2} \)

Total Bid Amount:

Add Alt #1 Bid items 202-00821 through 630-00008 (Twenty-Nine[29]) total add alt bid items.

Amount of One Hundred nintex two thousand two nundred eight dollars

CITY AND COUNTY OF DENVER

DEPARTMENT OF PUBLIC WORKS

Contract No. 201733316 19th & 20th 2-Way Conversion

Notice is hereby given that Sealed Bids for Contract No. 201733316 – 19th & 20th 2-Way Conversion is hereby postponed. Sealed bids will be received in Room 6.G.7, 201 West Colfax., Denver, CO 80202, no later than:

1:00 p.m., Local Time April 5, 2017

Bids will also be opened in Room 6.G.7

Prior to submitting a bid, the bidder shall consult the Contractor's bulletin board, located on the 2nd floor at 201 W. Colfax Avenue, Denver, CO 80202 and www.work4denver.com.

Executive Director of Public Works Jose M. Cornejo, P.E.

Published in the Daily Journal: March 31, April 3, 4, 2017

CITY AND COUNTY OF DENVER DEPARTMENT OF PUBLIC WORKS

CONTRACT NO: 201733316
PROJECT NAME: 19th & 20th 2-Way Conversion
ADDENDUM NO. 1 TO CONTRACT DOCUMENTS
Bidders are hereby instructed that the drawings, specifications, and other contract documents are modified, corrected, supplemented and/or superseded for the above mentioned project as hereinafter described in the following attachments:
TECHNICAL SPECIFICATION & DRAWINGS
(See attached)
This ADDENDUM shall be attached to, become a part of, and be returned with the Bid Proposal.
Lesley B. Thomas
City Engineer
3/22/17
Date
The undersigned bidder acknowledges receipt of this Addendum. The Proposal submitted herewith is in accordance

with the stipulations set forth herein.

ADDENDUM NO. 1

Contractor

19TH & 20TH 2-WAY ADDENDUM

REVISION OF PROJECT SPECIAL SPECIFICATION

Spec changes are in RED.

Clarification on a few changes:

Updated section 208 to match CCD common Spec

Added 40 hours of 208-00106 Sweeping (Sediment Removal)

Delete current page 34 and replace it with the updated 208 page

Revision of section 614 TRAFFIC SIGNAL POLES

Removed Flashing Beacon Paragraph and Item Flashing Beacon on P 127

Force Account Specification has been deleted

Added a spec for 626 Public Information

For the changes made in the 630 items on the Summary of Quantities see the revised spec page 156

Index of changes:

Project Special Provision pages:

<u>Page</u>	Description		
2	Calendar days		
7	Remove Ref to SC-20		
9	Added missing removals		
32-34	Updated to CCD 208 Spec - Added 40 hours of Street Sweeping (Sediment Removal)		
37	Updated missing resets		
38	Revised 210		
39	Revised 210		
50-51	Revised HMA Patching		
57	Revised CC Thickness		
62	Changed Pay Items to match Bid Item description		
65	Added sidewalk thickness and truncated domes		
66	Changed Brick Paver units to SF		
127	Removed Flashing Beacon		
139	Change Test Fiber Optic Cable Pay Unit to LS		
141	Revised Spec References to 625		
142	Removed reference to Allowance		
144	Added (Special)		
156	$\label{lem:construction} \mbox{Added (Special) and clarification that LS Construction Traffic Control (special) is for \mbox{Bid Alt only}.$		
169	Changed Xcel Coordination References		
174	Changed Xcel Coordination References		
Add delay Dublic Information Code Policion of coction 626			

Added New Public Information Spec Revision of section 626

Plan page changes:

Sheet	Description
4	Miscellaneous notes 1-3 adjusted for 150 day project duration
5	Added 208-00106 Sweeping (Sediment Removal)
	Added (includes P.E. Oversight) to 208-00206 ECS
	Changed description of 403-0072 HMA Patching
	630 Traffic Control items are described in PSPs page 156

Section 626 of the Standard Specifications is hereby revised for this project as follows:

DESCRIPTION

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 introduce the Public Information Manager (PIM) for the project and present a public information plan and strategies or methods for communicating project activities. The Contractor shall prepare and submit a preliminary list of stakeholder groups and specific stakeholders that need to receive ongoing communication about the project.

The Contractor's PIM shall be a professional, having graduated from an accredited college or university with a bachelor's degree in Public Relations, Communications, or a closely related field of study. In addition, the PIM shall have two years experience in community outreach and partnership development or a comparable field. Related work experience may be substitute for the type of degree. The Project Manager, after consulting with the City's Public Relations Manager, will approve the Contractor's PIM prior to the preconstruction conference. The identity of the PIM and the PIM'S qualifications shall be submitted to the Project Manager five days in advance of the preconstruction conference.

The PIM shall be available as requested by the Project Manager. Leading up to the actual conversion from 1-way to 2-way the PIM shall be available on every working day, accessible and on call by cell phone or pager at all times and available upon the request of the Project Manager at other than normal working hours. The PIM shall communicate with the Project Manager daily. The PIM shall attend project meetings as directed by the Project Manager. The PIM shall be aware of special events noted elsewhere in the project specifications.

The Contractor shall establish a Public Information office (PIO) equipped with a telephone and an answering machine or answering device with the capability to record a message from the caller. This may be a cell phone, but must be a local number. The PIO shall be equipped with a computer and an e-mail account. The PIO may or may not be located within the Contractor's regular office provided that the telephone has a local call number. The PIM shall record a friendly greeting on the project's published phone line each week, updating the message throughout the week, as necessary, depending on changes in work schedule, activities and traffic impacts. The recording shall include each week's forthcoming activities including work days, hours and expected traffic delays, posted detours, project completion date, and office hours. The PIM shall check the answering machine at least twice every calendar day, including weekends. The PIM shall respond to callers and e-mail inquiries as soon as possible, but at least within 24 hours. The PIM shall keep a logbook of all calls including the contact name, date of contact, date responded, the contact's comments, and the action the PIM took. A copy of this log shall be submitted to the Project Manager weekly or as requested by the Project Manager.

The PIM shall maintain communications with businesses and individual residences, commuters, local government entities and all other stakeholders that are directly adjacent to and affected by the project. Using a communications method or strategy approved by the Project Manager, the Contractor shall notify stakeholders about the project two weeks prior to beginning any lane restrictions or project activities.

Depending upon project impacts, contact with stakeholders may be required daily, weekly, monthly or periodically throughout the duration of the project as directed by the Project Manager. Communications tools could include hand flyers, door hangers, newsletters, mailers, using e-mail distribution lists, etc. All public information correspondence and subsequent updates must be approved by the Project Manager 48 hours before distribution.

Each communication tool shall include contact information, PIM's name, office phone, City and County of Denver Web-site address with City and County of Denver logo. Cell phone numbers and e-mail addresses shall be provided where service is available. The communication shall include the description of work, lane restrictions, a detour map if warranted, the anticipated start and completion dates, hours of operation and work schedule, and a Slow for the Cone Zone message.

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's or PIM's phone number at each major approach to the project. The signs shall conform to the requirements of Section 630 and shall be erected at least one week prior to the beginning of construction.

An individual project web-site will be developed and will be hosted on City and County of Denver's web site using the City and County of Denver template. The Contractor shall coordinate with the Project Manager to develop information for the project website in accordance with the City and County of Denver standard template. The site will be revised and maintained by the City and County of Denver.

The City and County of Denver's Project Manager will write and distribute all News Releases to the media and handle all media relations and outreach. The Contractor shall not provide information to the media without first consulting with Denver's Project Manager.

The Contractor superintendent or PIM shall submit weekly lane closure reports using the template provided by the Project Manager for posting on the project website.

The Public Information Services Contact Sheet shall include the following:

Owners:

City and County of Denver

Name: Kim D. Blair, P.E., Project Manager

Address: 201 West Colfax Avenue, Department 506, Denver, CO 80202

Phone: 720-865-3141 Email: kim.blair@denvergov.org

Other Contacts:

Denver Fire Department

Phone: 720-913-3473 (Headquarters) 720-913-3421 (Division 1 – Operations)

Denver Police Department Phone: 720-913-2000

Denver Public Works Department:

Phone: 720-913-1311

And area hospitals

BASIS OF PAYMENT

Subsection 626.02 shall include the following:

The Project Manager 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 public information services as directed 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 acceptable public information services are provided by the Contractor.

For the purpose of public information services, 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
Public Information Services

Pay Unit Lump Sum

COMMENCEMENT AND COMPLETION OF WORK (WORKING HOURS, SCHEDULE)

The Contractor shall commence work under the Contract per the City General Contract Conditions. The Contractor shall complete all work within 150 calendar days in accordance with the "Notice to Proceed."

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

- 1. Mobilization
- 2. Detour(s)
- 3. Clearing and Grubbing
- 4. Best Management Practices
- 5. Relocate Utilities (Sanitary Sewer, Electric, ITS, Fiber Optic, Gas, Water) (by others)
- 6. Removal of Sidewalks
- 7. Removal of Curb & Gutter
- 8. Storm Sewer
- 9. Curb and Gutter
- 10. Sidewalk
- 11. Final Signing
- 12. Final Striping
- 13. Lighting and Electrical Conduit
- 14. ITS (City and County of Denver)
- 15. Traffic Signals
- 16. Landscape Restoration
- 17. Anticipated Substantial Completion
- 18. Anticipated Final Completion
- 19. Project Cleanup

Contractor Schedule

The Contractor's progress schedule shall be a Critical Path Method Schedule. The schedule shall include 30 days of down time (float) for utility conflicts and delays.

The Contractor will not be compensated for administrative or management costs incurred during down time for utility or other delays.

No additional payment will be made for out of sequence work.

Work Restrictions - Nights and Weekends

No work shall be conducted at night or on weekends without prior written approval of the Project Manager unless otherwise noted in these special provisions. Contractor shall comply with Revision of Section 107 Worker Safety in these Special Provisions.

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

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

All equipment, labor, hauling, sorting, removal, delivery, and documentation of recyclable materials as per Special Contract Condition "Greenprint Denver Requirements" will not be paid separately; all costs incurred by the Contractor to meet the Greenprint Denver Requirements shall be included in the removal of the related appurtenance.

Subsection 202.02 shall be revised to include the following:

The Contractor will mark the limits of removals in the field. The Engineer will verify these limits prior to commencement of removal efforts. Removals in the vicinity of trees to remain shall conform to applicable provisions of the Tree Retention and Protection specification, as prepared by Denver Forestry.

Subsection 202.03 is hereby replaced as follows:

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

Subsection 202.05 Pavement Marking, the third paragraph is hereby revised as follows:

The pavement surface area to be covered with pavement marking material shall be blast cleaned by an approved method prior to the application of pavement primer or prior to the placing of pavement marking material when used without a pavement primer. A dustless-abrasive shot blasting, power washing, or other approved cleaning method may be used to do the removal work. Cleaning method will be applied to remove all dirt, laitance, curing compound residue, and existing pavement markings. All loose dust and dirt shall be removed before application of pavement primer or pavement marking material.

Subsection 202.07 is hereby replaced as follows:

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

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

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

-3-REVISION OF SECTION 202 REMOVAL OF STRUCTURES, ASPHALT MAT, AND OBSTRUCTIONS

Payment will be made under:

Pay Item	Pay Unit
Removal of Inlet	Each
Removal of Pipe	Linear Foot
Removal of Sidewalk	Square Yard
Removal of Curb and Gutter	Linear Foot
Removal of Curb Ramp	Square Yard
Removal of Brick Pavers	Square Yard
Removal of Concrete Pavement	Square Yard
Removal of Asphalt Mat	Square Yard
Removal of Ground Sign	Each
Removal of Sign Panel	Each

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

Removal of stone curb shall be paid for as Removal of Curb and Gutter.

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REVISION OF SECTION 208 EROSION CONTROL

- K) <u>SUBSTANTIAL COMPLETION OF EROSION CONTROL</u>: 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) <u>FINAL STABILIZATION:</u> Granting of Final Stabilization must be requested by the Contractor and be approved by the Permit Enforcement Authority. Other permanent soil stabilization techniques may be proposed, in writing, by the Contractor and used upon approval, in writing, by the Project Manager and Permit Enforcement Authority.

The Contractor shall follow the following procedures for approval of Final Stabilization:

- (i) The Contractor shall file Inactivation Request for Construction Activities Stormwater Discharge Permit (available within CASDP guidance documents) with the Permit Enforcement Authority.
- (ii) The Contractor shall coordinate with the Permit Enforcement Authority to hold a Final Inactivation Inspection.
- (iii) If passing, the Permit Enforcement Authority transmits a letter of approval for Final Stabilization.
- (iv) If not passing, the Permit Enforcement Authority transmits a letter of denial for Final Stabilization with associated inspection report to Contractor.
- (v) Stabilization, inspection and maintenance requirements shall continue until confirmation of having met final closure requirements have been granted in writing by the Permit Enforcement Authority.
 - When Final Stabilization has been reached, the Permit Enforcement Authority shall issue a "Certificate of Final Stabilization".
- (vi) Once the Inactivation request is approved by the City and County of Denver, the contractor can apply to close the State Stormwater Permit.

M) FINAL ACCEPTANCE:

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

PART VI: CONSTRUCTION OF BMPs

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

PART VII: METHOD OF MEASUREMENT

Erosion Control Supervisor (ECS) will be measured by the total number of days 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.

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 and disposal of sediment, concrete & trash 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 at the contract unit price.

Payment will be made under:

Pay Item	Pay Unit
Erosion Control Supervisor (includes P.E. oversight)	Day
Aggregate Bag	Linear Foot
Concrete Washout Structure	Each
Storm Drain Inlet Protection (Type 1)	Each
Storm Drain Inlet Protection (Type 2)	Each
Street Sweeping (Sediment Removal)	Hour

Temporary BMPs will be measured and paid by the BMPs used, except that surface roughening, removal and disposal of sediment, and removal of trash will not be measured and paid 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 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 the Contractor beyond the area included in the Bid shall be installed per requirements of the Permit Authority and Permit Enforcement Authority without any additional compensation.

Payment for 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 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 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 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

-2-REVISION OF SECTION 210 RESET STRUCTURES

Subsection 210.12 shall include the following:

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

Subsection 210.13 shall be revised to include the following:

Pay Unit
Each
Linear Foot
Each
Each
Linear Foot

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

REVISION OF SECTION 210 RESET TRAFFIC SIGNAL HEAD

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

Subsection 210.12 shall include the following:

Traffic control to accomplish the reset of traffic signal heads is considered included in the lump sum cost for project-wide Construction Traffic Control and will not be measured and paid separately.

Subsection 210.13 shall be revised to include the following:

Pay Item Reset Traffic Signal Head Pay Unit Each

REVISION OF SECTION 210 RESET SIGN PANEL

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

Subsection 210.12 shall include the following:

Traffic control to accomplish the reset of overhead sign panels is considered included in the lump sum cost for project-wide Construction Traffic Control and will not be measured and paid separately.

REVISION OF SECTION 401 & 403 HOT MIX ASPHALT

Sections 401 and 403 of the Standard Specifications is hereby deleted and replaced with Item 9 "Hot Mix Asphalt Pavement" Specifications from the Metropolitan Government Pavement Engineers Council (MGPEC), Volume 1 Pavement Design Standards and Construction Specification, latest version.

This work consists of one or more courses of asphalt mixture constructed on a prepared foundation in accordance with these specifications and the specific requirements of the type under contract, and in conformity with the lines, grades, thicknesses, and typical cross sections shown on the plans or established.

HMA Patching or Asphalt Patching, shall be paid by the square yard. Tack Coat will not be measured and paid separately but shall be included in the cost of the work.

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

Contact MGPEC at 303-979-2190 for MGPEC membership information and to receive full design standards and construction specifications. This Item 9 specification is available online at www.mgpec.org.

Warm Mix Asphalt Technology may be considered, upon approval by the Project Manager.

CONSTRUCTION REQUIREMENTS

The Contractor shall be required to place all HMA paving, wide enough for a paver, using a bituminous paver that has been certified to have met the National Institute for Occupational Safety and Health (NIOSH) emission guidelines as set forth in Engineering Control Guidelines for Hot Mix Asphalt Pavers, Part 1: New Highway-Class Pavers (Department of Health and Human Services (NIOSH) Publication No. 97-105, April 1997 printing)

METHOD OF MEASUREMENT

Subsection 9.16 of the MGPEC Specifications, first paragraph shall be replaced with the following:

The measurement for payment of Hot Mix Asphalt Pavement will be the actual tonnage of hot mix asphalt, in place, complete as pavement, and accepted by the Project Manager. No measurement for payment will be made for hot mix asphalt placed in areas not specifically approved by the Project Manager, nor required due to careless or unauthorized operation by the Contractor.

REVISIONS OF SECTIONS 401 & 403 HOT MIX ASPHALT BASIS OF PAYMENT

Subsection 9.17 of the MGPEC Specifications is hereby deleted and replaced with the following:

Payment will be made under:

Pay Item	Pay Unit
Hot Mix Asphalt (Grading S)(100)(PG 64-22)	Ton
Hot Mix Asphalt (Patching)(Asphalt)	SY

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

- (1) Project Number
- (2) Date
- (3) Ticket Number
- (4) Haul Unit Number
- (5) Gross Weight
- (6) Tare Weight
- (7) Net Weight
- (8) Material Type
- (9) Name of Certified Weigher

The scale tickets shall be available on site for the Project Manager to inspect.

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

- 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 or Excel Spreadsheets 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.

REVISION OF SECTION 412 PORTLAND CEMENT CONCRETE PAVEMENT

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

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

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

Subsection 412.22 shall be deleted and replaced with the following:

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

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

Subsection 412.24 shall be revised to include the following:

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

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

Pay Item	Pay Unit
Concrete Pavement (8 Inch)	Square Foot
Concrete Payement (11 Inch)	Square Foot

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

REVISION OF SECTION 604 MANHOLES AND INLETS

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

Subsections 604.02 through 604.06 shall be replaced with the City and County of Denver (CCD), Department of Public Works document "Storm Drainage and Sanitary Sewer Construction Detail and Technical Specifications". This document can be found at the following web address:

https://www.denvergov.org/Portals/711/documents/2012updates/All%20Tech%20Specs%209-10-12.pdf

Delete all references in this document to measurement and payment and item numbers referencing CCD's Standard Construction Specifications.

Subsection 604.04(b) shall include the following:

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

Subsection 604.06 shall include the following:

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

Subsection 604.07 shall include the following:

Pay Item	Pay Unit
CCD Type14 Inlet 6'	Each
CCD Type 16 (Single)	Each
CCD Type. 16 (Valley)(Triple)	Each
Manhole Slab Base (4 Foot)(Flat top)	Each
Manhole Slab Base (4 Foot)	Each
Manhole Slab Base (5 Foot)(Flat top)	Each

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

Pay Items Triple No. 16 Inlet Valley, Type No. 14 Inlet, 4' I.D. Manhole, 4' I.D. Flat Top Manhole (4' I.D. MH with Flat Top), 5' I.D. Flat Top Manhole (Flat Top with Eccentric Opening (5' I.D. Manholes)), and 5' I.D. Manhole shall conform to City and County of Denver, Department of Public Works, Wastewater Management Division, Standard Details 2015. This document can be found at the following web address:

https://www.denvergov.org/content/dam/denvergov/Portals/711/documents/Standard%20Detail%20Drawings%20Full%20Set.pdf

-3-REVISION OF SECTION 608 SIDEWALKS AND BIKEWAYS

Payment will be made under:

Pay Item	
Concrete Sidewalk (4	Inch)
Concrete Sidewalk (6	Inch)
Concrete Curb Ramp	
Truncated Domes	

Pay Unit Square Yard Square Yard Square Yard SF

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

Excavation to proposed subgrade elevation will not be paid separately but shall be included in the work.

REVISION OF SECTION 608 BRICK PAVERS (SPECIAL)

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

Subsection 608.02 shall be revised as follows:

Brick pavers to be used in locations as shown on the plans shall match materials used in existing condition in color, size, jointing, and texture.

Subsection 608.03 shall be revised as follows:

Payment will be made under:

Pavers shall be installed on substrate which matches the existing substrate material for the existing brick pavers. Contractor shall excavate, compact, construct similar substrate material, and secure and place pavers in a manner which matches existing conditions, aligns with proposed grades as shown on the plans, and limits opportunity for differential settlement and heaving of surface paver material.

Subsection 608.06 shall be revised to include the following:

Pay Item	Pay Unit
Brick Pavers (Special)	SF

Payment shall be full compensation for labor and materials including, but not limited to, reconditioning, grading, backfill, subgrade materials, curing compound, control and expansion joint, sealant, and brick pavers as required to complete this Pay Item.

Excavation to proposed subgrade elevation will not be paid separately but shall be included in the work.

-3-REVISION OF SECTION 614 TRAFFIC SIGNAL POLES

Subsection 614.13 shall include the following:

Traffic Signal-Light Poles (With and Without Mast Arm):

Installation of traffic signal-light poles shall be measured and paid by the number of poles installed. All labor and materials required to install the pole and arms at the required mounting heights are considered included. Costs that may be incurred by the Contractor to pick-up poles, arms or mounting hardware and transport same to the project site are included in the unit cost for this item and will not be measured and paid for separately. Foundations, traffic control devices and luminaires are tabulated and paid separately under the respective Sections.

Traffic Signal-Light Pole Steel (1 Mast Arm) (Install Only) shall refer to all traffic signal poles to be installed with both luminaire arms and mast arms.

Traffic Signal-Light Pole Steel (Install Only) shall refer to all traffic signal poles to be installed with a luminaire arm but no mast arm.

Pedestal Poles:

Pedestal poles shall be measured and paid by the number of poles furnished and installed. All labor and materials required to furnish and install the pole is considered included. Costs that may be incurred by the Contractor to pick-up poles or associated hardware and transport same to the project site are included in the unit cost for this item and will not be measured and paid for separately. Traffic control devices for pedestal poles are tabulated and paid separately. Foundations for pedestal poles are considered included in the unit cost of the pedestal pole and are not measured and paid separately.

Subsection 614.14 shall include the following:

Pay Item	Pay Unit
Traffic Signal-Light Pole Steel (Install Only)	Each
Traffic Signal-Light Pole Steel (1 Mast Arm) (Install Only)	Each
Traffic Signal Pedestal Pole Aluminum	Each

-8-REVISION OF SECTION 614 TEST FIBER OPTIC CABLE

- 1. Fiber splice location;
- 2. Fiber splice configuration; and
- 3. Termination layout.

Subsection 614.13 shall include the following:

The lump sum cost to Test Fiber Optic cable under the Base Bid shall include two activities: 1] adjusting existing fiber assignments as directed at the five cabinets to remain; and 2] testing system communications between the referenced five cabinets and the TMC; and between the new cabinet at 19th & Clarkson and the TMC.

The lump sum cost to Test Fiber Optic cable under Bid Alternate 2 shall include testing system communications between the new cabinet at 18th & Logan and the TMC.

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.

All labor and materials required to provide bi-directional test and acceptance of fiber optic cable shall be considered included in the lump sum cost of this item.

The lump sum cost to test fiber optic cable shall also include all labor and materials required to adjust communications channels at the five intersections designated to remain under partial reconstruction.

Cost of all required coordination with the City to determine appropriate system configuration, correct channels and routing shall be considered included in the lump sum price.

Subsection 614.14 shall include the following:

Pay Item	Pay Unit
Test Fiber Optic Cable	LS

REVISION OF SECTION 625 CONSTRUCTION SURVEYING

625.05 Staking. It is the responsibility of the Contractor's PLS to adhere to industry standards and acceptable practices in 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. Contractor shall coordinate with the City Surveyor's Office regarding electronic submittals.

-3-REVISION OF SECTION 625 CONSTRUCTION SURVEYING

METHOD OF MEASUREMENT

625.12 Construction surveying will not be measured but will be paid as a fixed percentage of the construction items.

BASIS OF PAYMENT

625.13 Payment for construction surveying will be the contract lump sum bid. Payment will be full compensation for all surveying work necessary to complete the project to include all resetting of stakes, marks, and monuments and preparing survey documentation as required.

Partial payment for construction surveying, as determined by the Engineer, will be made as the work progresses.

Traffic control for construction surveying will be paid in accordance with Section 625.

When the contract does not include pay items for Construction Surveying, this item will not be paid separately but shall be included in the work.

-2-REVISION OF SECTION 627 PAVEMENT MARKING

All preformed pavement markings that include non-white or non-yellow colors, be those green, gray, red or otherwise, shall be measured by the square foot of marking installed and accepted and paid as Preformed Thermoplastic Pavement Marking (Special).

Subsection 614.14 shall include the following:

Pay Item	Pay Unit
Epoxy Pavement Marking	Gallon
Preformed Thermoplastic Pavement Marking (Word-Symbol)	Square Foot
Preformed Thermoplastic Pavement Marking (Crosswalk-Stopline)	Square Foot
Preformed Thermoplastic Pavement Marking (Special)	Square Foot

REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL

All MHT, TCP and AMP preparation and submittal is considered included in the lump sum price. All rental, purchase, installation, maintenance (including cleaning), resetting and removal of all equipment, signs and other devices is considered included. All labor costs including inspectors, flaggers, Traffic Control Supervisors, Traffic control Inspection, and Traffic Control management are considered included. Costs of electrical power, including batteries, for all devices, temporary lighting or temporary signals are considered included.

Payment will be made on a percentage basis of the Lump Sum bid corresponding to the percentage of work complete as determined by the Engineer.

Payment for the temporary traffic signal shall be by the number of locations and shall include furnish of all equipment, installation, maintaining the temporary operation for the required duration, removal of temporary equipment and surface restoration as directed by the Engineer. Costs of providing temporary signal layout for approval are included in the unit cost.

Subsection 630.15 is hereby revised to include the following:

Pay Item	Pay Unit
Construction Traffic Control (Special)*	Lump Sum
Traffic Signal Temporary	Each

*Construction Traffic Control (Special) is for the bid Alt only. Line Items pertaining to this lump sum are included elsewhere in the base bid estimate.

-3-UTILITIES

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 notice, as specified in Part 2, immediately prior to the time the utility work must begin to meet the project schedule.

Prior to excavating, the Contractor shall positively locate all potential conflicts with existing underground utilities and proposed construction, as determined by the Contractor according to the 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 member facilities – other facilities, such as ditches and drainage facilities may exist, and it is the Contractor's responsibility to investigate, locate and avoid such facilities.

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. Note that coordination with XCEL Energy is required.

The Contractor shall allow the number of work days required for each utility work element in the construction schedule. The number of days expected for construction and number of days of prior notice is specified for each utility owner.

Provide traffic control, as directed by the Engineer, for any utility work performed by the utility owner within the project limits 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 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.

Obtain written acceptance from the utility owner for work performed by the Contractor.

Denver Transportation and Mobility (T&M) and Traffic Operations Divisions:

General

Coordinate all required scheduling and inspections with Denver TES and/or Traffic Operations Divisions.

Notify the utility owner 5 days immediately prior to required inspections of utility work performed by the Contractor.

Project-Wide

Adjust and/or replace communications pull boxes throughout the project to match proposed finish grades as shown in the plans.

-8-UTILITIES

Clarkson Street & Park Avenue West

No XCEL Energy work is required. The existing cabinet and power source will be maintained at Clarkson Street & Park Avenue West.

18th Avenue & Logan Street (Bid Alternate 2 Only)

After the Contractor has removed signal heads and ancillary equipment (including indications, signs, span wire, push buttons, etc.) on signal poles to be removed, XCEL Energy forces shall remove traffic signal poles with attached luminaires as shown in the plans. Contractor shall partially or completely remove the pole foundations after XCEL Energy forces have completed removal of the existing signal poles and luminaires. This work must be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

Identify and provide new metered traffic signal power sources (including power meter) for the new controller location. Provide notification to the Engineer regarding location of each new power source. This work shall be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

After the Contractor has completed construction of the proposed traffic signals, connect power source to the new power feed wiring for the respective signal. Note that all new cabinet installations shall be metered, although metering equipment except for power meter will be furnished and installed by the Contractor in this project. This work shall be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

After the Contractor has completed construction of the proposed traffic signals and they are operational and accepted, XCEL Energy forces shall disconnect wiring for previous signal to be removed at the power source. This work must be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

General

It is anticipated that Xcel Energy's work will be completed before NTP. The Contractor shall coordinate work zones with Xcel Energy if their work is not yet complete. For street lighting and electric distribution elements, notification shall be provided to the following individual or designated representative:

Ms. Marisa Montoya Design Manager XCEL Energy, Design / Layout Department 1123 W. 3rd Avenue Denver, CO 80223-1351

All costs incidental to the foregoing requirements shall not be paid for separately, but shall be included in the work. Full compensation for compliance and cooperation, as required by this section, shall be considered included in the unit prices paid for various Contract items of work, and no additional compensation will be allowed.

- If concrete replacement is necessary, the entire affected slab or panel must be replaced.
- The contractor shall select and use a boxout at catch basins, manholes, and other roadway appurtenances of similar and larger size. See CCD STD DMG MO. 11.5. 5
- Sidewalk shall be Class P Concrete. The use of X in. (#67) top size aggregate is allowed. 3)
- Bender boards (two inch minimum thickness) shall be used on all curves of less than 75 foot radius. 4
- Curb and gutter angle breaks shall be smoothed with a 1 ft. radius unless otherwise shown on the plans.

5

- The Contractor shall install X in. expansion joint material between the curb, curb and gutter, and the sidewalk, and around injet structures or blockouts or as directed by the Project Manager. 6)
- Curb ramps shall be constructed using truncated domes as shown in the City and County of Denver Standard Details. Truncated domes shall not be paid separately, but shall be included in the cost of the concrete curb namp. 2
- Contractor shall coordinate planned jointing for sidewalk with CCD project manager prior to sidewalk construction.

The Contractor shall provide a 2 ft. curb and gutter transition at each end of inlets.

6

- The Contractor shall not spray, cut, or trim thems or other landscaping within the MOM unless such work is otherwise specified in this contract or clearly indicated on the approved plans.
- Seeding, sodding, and planting in the RDM shall be as specified or otherwise approved by the City. Construction, maintenance, and watering requirements shall conform to City Standard Specifications. 5
- Per City Gode, all tree removals in Denver limits must be performed by the property owner or a tree contractor licensed by Denver Forestry (including trees in ROM and on private property). For a current list of Licensed Tree Contractors, visit 3)
- For Forestry-approved tree removals in public Right(s) OF May: A tree removal permit issued by the Office of the City Forester is required prior to removal. In order to obtain free removal permit, context forestry (forestry@denvergov.org) with name of the licensed contractor or property owner perforating removal. Include D Log number (2015-MOJMSTR. 00000033) when requesting removal permit. 4
 - for trees on private property: A Forestry-issued tree removal permit is not required prior to removal. However, per City Code, all tree removals in benner must be performed by property owner or a tree contractor licensed by the Office of the City Forester. 3
- Contractor shall contact adjacent property owner(s) when existing trees in public Rights of Way or private property are to be impacted by proposed construction. (9
 - Existing trees to be preserved in public Right Of Way shall be protected per Forestry standards & practices. Tree protection shall be installed prior to issue of devolition premit, approved by Forestry, and shall read; in in place throughout construction. Me construction activities or storage of materials shall take place within tree protection zones without prior written authorization from the Office of the City forester. 2

8) If pruning for construction clearance is necessary, contractor shall consult with Forestry staff prior to commencement of work.

ENVIRONMENTAL

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- Contractor shall take reasonable measures to prevent particulate matter from becoming airborne and to prevent the visible discharge of fugitive particulate emissions beyond the property on which the emissions originate. The measures taken must be effective in the control of the fugitive particulate emissions at all times on the site, including periods of inactivity such as eventings, weekends, and holidays as will as any other period of inactivity.
 - Any fill material or soils to be moved to and placed on CCD-cumed property or placed on real property to be transferred to the CCD must be free of known contamination (observed or previously documented) and be acceptable for unrestricted residential use. Contact Dave Erickson, Dernver Environmental Health (720-865-5433) for clarification, if needed, regarding this CCD requirement.
 - If unknown/unidentified underground storage tamks, drums, odorous soil, stained soil, asbestos-cement pipe, transite, building debris or waste materials are encountered during the project, the Contractor shall immediately stop work in the area of the discovery until Denver Environmental health (DBH) makes a determination of how to proceed. The Contractor shall immediately notify DBH of the discovery via the phone number 728-468-1786. 3)
- Noise control. Exempted hours for construction in the City and County of Denver are from 7 A.M. to 9 P.M. Monday through Friday and 8 A.M. to 9 P.M. Monday through Friday and 8 A.M. to 9 P.M. Monday through Friday and 8 M.M. to 9 P.M. Monday through Friday and 8 M.M. to 9 P.M. Monday Control of Control of Manicipal Code (DMC). If there is an anticipated need to work out of the excepted hours for construction: 1) The Contractor will need to make a request for a highting moise variance as allowed for in settion 86.7.(5)C. of the DMC and 3) the variance process hours. Any noise was minima of the to three smooths prior to the delivered start date of any work meding to occur outside of exempted hours. Any noise variance questions should be directed to Paul Richestal, Department of Environmental Health, Denver Community hoise Program, (Phone 720-865-5410: Fax 720-865-5322) A minimum of three wonths prior to the start of the project. 4

MISCEL LANEOUS

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- It is estimated that 72 days of Traffic Control Inspection will be required on this project. It is estimated that 4500 hours of Flagging will be required on this project.
 - 4) It is estimated that 1 Sanitary Facility will be required on this project.
- It is estimated that 1 LS Public Information Services will be required on this project.
- It is estimated that 80 hours will be required for potheling. The Contractor shall be responsible for contacting and coordinating with the appropriate utility representatives to be onsite during potholing and shall likewise be responsible for determining the type and location of underground utilities as maybe necessary to avoid damage thereto. The Contractor shall requirements. 69
- No Right-Of-May acquisition will be needed for this project. All work will be completed entirely within the existing Right-Of-May. 2

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CITY AND COUNTY OF DENVER STATE OF COLORADO



Department of Public Works

Bid Documents

Contract No: 201733316

19TH & 20TH 2-WAY CONVERSION

March 1, 2017

CITY AND COUNTY OF DENVER

DEPARTMENT OF PUBLIC WORKS Engineering Division

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202-00019	Removal of Inlet	15	EA
202-00035	Removal of Pipe	121	LF
202-00200	Removal of Sidewalk	1,057	SY
202-00203	Removal of Curb and Gutter	2,142	LF
202-00206	Removal of Concrete Curb Ramp	320	SY
202-00207	Removal of Brick Pavers	179	SY
202-00210	Removal of Concrete Pavement	83	SY
202-00220	Removal of Asphalt Mat	2,699	SY
202-00810	Removal of Ground Sign	108	EA
202-00821	Removal of Sign Panel	110	EA
202-00828	Removal of Traffic Signal Equipment	1	LS
203-01597	Potholing	80	HOUR
203-01598	Potholing (Special)	14	EA
208-00035	Aggregate Bag	29	LF
208-00045	Concrete Washout Structure	1	EA
208-00053	Storm Drain Inlet Protection (Type 1)	18	EA
208-00054	Storm Drain Inlet Protection (Type 2)	9	EA
208-00206	Erosion Control Supervisor	30	DAY
210	Reset Trash Can	3	EA

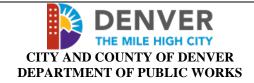
Item No.	Description	Estimated Qu	ıantity
210	Reset Newspaper Stand	2	EA
210	Reset Pedestrian Handrail	30	LF
210-00815	Reset Sign Panel	115	EA
210-00831	Reset Traffic Signal Head	1	EA
210-00842	Reset and Modify Traffic Signal Mast Arm	2	EA
210-00861	Reset Wiring	5	EA
210-00867	Reset Fire Preemption Unit	4	EA
210-00890	Reset Intersection Detection System (Camera)	3	EA
210-00827	Reset Pull Box	17	EA
210	Reset Structure (Special) (ETS)	2	EA
210-01000	Reset of Fence	10	LF
210-01710	Reset Valve	1	EA
210-04010	Adjust Manhole	6	EA
210-04015	Modify Manhole	4	EA
210-04050	Adjust Valve Box	17	EA
210-04060	Adjust Water Meter	4	EA
212	Landscape Restoration	6,000	SF
304-06000	Aggregate Base Course (Class 6)	497	TON
403-33841	Hot Mix Asphalt (Grading S)(100)(PG 64-22)	34	TON

Item No.	Description	Estimated Qua	ntity
403	HBP Patch/Overlay	1,384	SY
411-10255	Emulsified Asphalt (Slow Setting)	4	GAL
412-00800	Concrete Pavement (8 Inch)	67	SY
412-00801	Concrete Pavement (11 Inch)	155	SY
503-00200	Drilled Caison (Special) (36 Inch)	109	LF
603-01150	15 Inch Reinforced Concrete Pipe	160	LF
603-01180	18 Inch Reinforced Concrete Pipe	305	LF
603-01240	24 Inch Reinforced Concrete Pipe	5	LF
604-	CCD Type 14 Inlet, 6'	15	EA
604-	CCD Type 16, (Single)	2	EA
604-	CCD Type 16 (Valley) (Triple)	1	EA
604-	Manhole Slab Base (4 Foot) (Flat Top)	11	EA
604-	Manhole Slab Base (4 Foot)	2	EA
604-	Manhole Slab Base (5 Foot) (Flat Top)	1	EA
608-00000	Concrete Sidewalk (4 Inch)	932	SY
608-00006	Concrete Sidewalk (6 Inch)	941	SY
608-00010	Concrete Curb Ramp	301	SY
608-00015	Detectable Warnings	10	SF
608-00050	Brick Pavers (Special)	1,231	SF

Item No.	Description	Estimated Quantity	
608-01000	Bituminous Sidewalk	35	TON
609-20010	Curb Type 2 (Section B)	59	LF
609-21020	Curb and Gutter Type 2 (Section II-B)	2,149	LF
609-71000	Curb (Precast) (Special) (Cycletrack)	910	LF
612-00041	Delineator (Flexible) (Type 1)	17	EA
613-01200	2 Inch Electrical Conduit (Plastic)	740	LF
613-01300	3 Inch Electrical Conduit (Plastic)	720	LF
613-07001	Type One Pull Box	4	EA
613-07002	Type Two Pull Box	9	EA
613-07003	Type Three Pull Box	1	EA
613-10000	Wiring	1	LS
613-13000	Luminare (LED)	4	EA
613-50150	Secondary Service Pedestal	1	EA
613-70250	Luminare High Pressure Sodium (250 Watt)	4	EA
614-00011	Sign Panel (Class I)	1,110	SF
614-00216	Steel Sign Post (2 Inch x 2 Inch Tubing)	1,791	LF
614-70150	Pedestrian Signal Face (16) (Countdown)	16	EA
61470336	Traffic Signal Face (LED) (12-12-12)	40	EA
614-72855	Traffic Controller Cabinet	1	EA

Item No.	Description	Estimated Quantity	
614-72860	Pedestrian Push Button	2	EA
614-72864	Fire Preemption Unit	1	EA
614-72866	Fire Preemption Unit and Timer	2	EA
614-72886	Intersection Detection System (Camera)	1	EA
614-80000	Flashing Beacon	1	EA
614-81301	Traffic Signal-Light Pole Steel (1 Mast Arm) (Install Only)	8	EA
614-84100	Traffic Signal Pole Aluminum	1	EA
614-86105	Telemetry (Field)	1	EA
614-86238	Traffic Signal Controller (SS) (FA) (8)	1	EA
614-87350	Test Fiber Optic Cable	1	LS
620-00020	Sanitary Facility	1	EA
625-00000	Construction Surveying	1	LS
626-00000	Mobilization	1	LS
626-01000	Public Information Services	1	LS
627-00005	Epoxy Pavement Marking	84	GAL
627-30405	Preformed Thermoplastic Pavement Marking (Word-Symbol)	1,093	SF
627-30410	Preformed Thermoplastic Pavement Marking (Xwalk-Stop Line)	7,298	SF
627-30411	Preformed Thermoplastic Pavement Marking (Special)	2,588	SF

Item No.	Description	Estimated Quantity	
629-01006	Survey Monument (Type 6)	9	EA
629-	Survey Monument	3	EA
630-00000	Flagging	7,500	HR
630-00003	Uniformed Traffic Control	88	HR
630-00007	Traffic Control Inspection	120	DAY
630-00012	Traffic Control Management	280	DAY
630-80335	Barricade (Type 3 M-A) (Temporary)	25	EA
630-80336	Barricade (Type 3 M-B) (Temporary)	20	EA
630-80341	Construction Traffic Sign (Panel Size A)	350	EA
630-80342	Construction Traffic Sign (Panel Size B)	90	EA
630-80344	Construction Traffic Sign (Special)	700	SF
630-80355	Portable Message Panel	6	EA
630-80357	Advance Warning Flashing or Sequencing Arrow Panel (B Flash Arrow Panel (B Ty)	4	EA
630-80360	Drum Channelizing Device	500	EA
630-80370	Concrete Barrier (Temporary)	400	LF
630-80380	Traffic Cone	400	EA
630-80384	Tubular Marker	400	EA
630-86800	Traffic Signal (Temporary)	2	EA



Item No.	Description	Estimated Quantity	
	ADD ALT #1		
202-00821	Removal of Sign Panel	7	EA
202-00828	Removal of Traffic Signal Equipment	1	LS
203-01598	Potholing (Special)	6	EA
210-00815	Reset Sign Panel	4	EA
503-00200	Drilled Caison (Special) (36 Inch)	39	LF
613-01200	2 Inch Electrical Conduit (Plastic)	210	LF
613-01300	3 Inch Electrical Conduit (Plastic)	410	LF
613-07002	Type Two Pull Box	4	EA
613-07003	Type Three Pull Box	2	EA
613-10000	Wiring	1	LS
613-13000	Luminare (LED)	4	EA
613-40010	Light Standard Foundation	1	EA
613-50150	Secondary Service Pedestal	1	EA
614-00011	Sign Panel (Class I)	57.5	SF
614-00216	Steel Sign Post (2 Inch x 2 Inch Tubing)	-41	LF
614-70150	Pedestrian Signal Face (16) (Countdown)	8	EA
61470336	Traffic Signal Face (LED) (12-12-12)	11	EA

Item No.	Description	Estimated Quanti	ty
614-72855	Traffic Controller Cabinet	1	EA
614-72866	Fire Preemption Unit and Timer	1	EA
614-81300	Traffic Signal-Light Pole Steel (Install Only)	1	EA
614-81301	Traffic Signal-Light Pole Steel (1 Mast Arm) (Install Only)	3	EA
614-86105	Telemetry (Field)	1	EA
614-86238	Traffic Signal Controller (SS) (FA) (8)	1	EA
614-87350	Test Fiber Optic Cable	1	LS
627-00005	Epoxy Pavement Marking	6	GAL
627-30405	Preformed Thermoplastic Pavement Marking (Word-Symbol)	-79	SF
627-30410	Preformed Thermoplastic Pavement Marking (Xwalk-Stop Line)	530	SF
630-00003	Uniformed Traffic Control	8	HR
630-00008	Construction Traffic Control (Special)	1	LS

CITY AND COUNTY OF DENVER

DEPARTMENT OF PUBLIC WORKS Engineering Division

NOTICE FOR INVITATION FOR BIDS FOR CONTRACT NO. 201733316

19TH & 20TH 2-WAY CONVERSION

BID SCHEDULE: 11:00 a.m., Local Time March 30, 2017

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

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

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

GENERAL STATEMENT OF WORK:

Convert 19th Ave and 20th Ave from Broadway to Park Avenue from 1-Way to 2-Way streets, convert Grant from of 18th to 20th from 1-Way to 2-Way street. Modify existing traffic signals at 19th & Broadway, 19th & Lincoln, 19th & Park Ave, and 20th & Park Ave, and add a new signal at 19th & Clarkson. Replace existing intersection curb returns to incorporate curb extensions and curb ramps. Installation of storm drain manholes and inlets. Installation of bike lane elements and striping.

ESTIMATED CONSTRUCTION COST:

The estimated cost of construction for this project is between \$2,446,490.00 and \$2,990,154.00.

TEXTURA CONSTRUCTION PAYMENT MANAGEMENT:

Bidders are required, when preparing a bid, to agree that it shall use the Textura® Construction Payment Management System (CPM System) for this Project and recognizes that all fees associated with the CPM System are to be paid by the awarded Contractor for billings for work performed. Use the pricing scale provided in Instructions to Bidders to price the Textura service appropriately. For details on the company and service contact the Textura® Corporation 866-TEXTURA or www.texturacorp.com.

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 #4869463. Contact QuestCDN at 952-233-1632 or info@questcdn.com for assistance.

PRE-BID CONFERENCE:

A **mandatory** pre-bid conference will be held for this Project at 1:30 p.m., local time, on March 14, 2017. This meeting will take place at: The WEBB Building, 201 W Colfax Ave, 4th floor conference room 4.I.5., Denver, Colorado 80202.

DEADLINE TO SUBMIT QUESTIONS: March 21, 2017 by 2:00 p.m. local time.

PREQUALIFICATION REQUIREMENTS:

Each bidder must be prequalified as 1F2 Concrete or D1 Traffic Signals 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

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submitted a prequalification application a minimum of ten (10) calendar days prior to the bid opening date. Applications must be submitted to the Department of Public Works, Prequalification Section, 201 W. Colfax Ave., Department 614, Denver, CO 80202. To view the Rules and Regulations and to obtain a prequalification application, please visit our website at www.denvergov.org/prequalification or call 720-865-2539 for prequalification information ONLY.

MINORITY AND WOMAN BUSINESS ENTERPRISE PARTICIPATION:

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

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

16 % Minority and Woman Business Enterprise (M/WBE) Participation

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

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

MISCELLANEOUS:

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

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

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

Publication Dates: March 1, 2, 3, 2017 Published In: The Daily Journal

CITY AND COUNTY OF DENVER

DEPARTMENT OF PUBLIC WORKS Engineering Division

INSTRUCTIONS TO BIDDERS

IB-1 INSTRUCTION TO BIDDERS

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

IB-2 BIDDING

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

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

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

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

IB-3 CONTRACT DOCUMENTS AS PUBLISHED BY CITY

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

IB-4 COMPLETING AND SIGNING THE BID FORMS

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

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

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

IB-5 UNACCEPTABLE BIDS

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

IB-6 INFORMAL AND UNBALANCED BIDS

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

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

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

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

IB-7 ONLY ONE BID ACCEPTED

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

IB-8 BID GUARANTEE

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

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

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

IB-9 SITE INSPECTION AND INVESTIGATIONS

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

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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 at 201 W. Colfax, 2nd Floor, Denver, CO 80202, in the Wellington E. Webb Municipal Office Building.

IB-13 PRE-BID MEETING

Attendance at the pre-bid meeting scheduled for this project is MANDATORY. Bidders will be held responsible for all information presented at this meeting. Only bidders who attend this meeting and sign-in will be eligible to bid.

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

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

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

IB-17 NOTICE TO APPARENT LOW BIDDER

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

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

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

IB-18 EXECUTION OF CONTRACT

The process of executing a contract requires action by both the apparent low bidder and the City. After it notifies the Apparent Low Bidder, the City will prepare the Contract Documents by incorporating all of the documents submitted by the Apparent Low Bidder into one or more executable copies. Upon notification that contracts documents are ready for execution the Apparent Low Bidder shall execute the contract documents. At this time, the successful bidder shall also provide certain supplemental documents for incorporation into the Contract Documents. These supplemental documents shall include: the properly executed Certificate of Insurance Forms evidencing the apparent low bidder's satisfactory compliance with

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

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

IB-19 BONDING REQUIREMENTS

In accordance with the provisions of General Contract Conditions, Title 15, PERFORMANCE AND PAYMENT BONDS, the minimum bonding requirements for this Contract are set forth in the form CITY AND COUNTY OF DENVER PERFORMANCE AND PAYMENT BOND contained in the Special Conditions Section of the Contract Documents. Upon receipt of Notice to Apparent Low Bidder, the apparent low bidder must cause this form bond to be purchased, executed and furnished, along with appropriate Powers of Attorney and a surety authorization letter (in form similar to the one attached), to the City in accordance with the instructions contained herein.

IB-20 INSURANCE REQUIREMENTS

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

IB-21 PERMITS AND LICENSES

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

IB-22 PREVAILING WAGE REQUIREMENTS

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

Date bid or request for qualifications/proposals was advertised: March 1, 2017.

Prevailing wage and fringe rates will adjust on, and only on, the anniversary of the date the Contract was fully executed. Unless expressly provided for in this Agreement, Contractor will receive no additional compensation for increases in prevailing wages or fringe benefits.

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

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

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

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

IB-23 TAX REQUIREMENTS

<u>General</u>. 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.

<u>Sales and Use Tax.</u> 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.

<u>Denver Occupational Privilege Tax</u>. 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 are subject to such tax.

IB-24 DIVERSITY AND INCLUSIVENESS IN CITY SOLICITATIONS

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

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

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

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

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

Meeting Established Goal

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

- 1. Under the M/WBE Ordinance, the Director of DSBO ("Director") is directed to establish project goals for expenditures on construction, reconstruction, and remodeling work performed for the City and County of Denver. The specific goal for this project is stated in the Notice of Invitation for Bids bound herein.
- 2. In preparing its bid, each bidder shall list on the Bid Form pages entitled "List of Proposed MWBE Bidders, Subcontractors, Suppliers, Manufacturers, Manufacturers' Representatives or Brokers" the name, address, work description/supply, committed level of participation and other required information for each M/WBE of any tier which the bidder intends to use in performing the work on this Project. Only the M/WBEs identified and the precise levels of participation listed for each on the Bid Form page, at the time of bid opening, will be considered in determining whether the bidder has met the designated participation goal. Additional, revised or corrected participation submitted after bid opening will not be considered. M/WBE bidders may count self-performance or joint venture activity in meeting the M/WBE project goal, but only for the scope of work performed as a commercially useful function and at a percentage level the M/WBE will be performing itself.
- 3. If a bidder/proposer is participating in a joint venture with a certified M/WBE firm, complete the Joint Venture Eligibility Form and Joint Venture Affidavit contained in this bid document/RFP. Submit the aforementioned forms with the firm's Joint Venture Agreement, to the DSBO Director, at least 10 working days prior to the proposal submittal. The Joint Venture must be approved prior to the bid opening or proposal submittal by the DSBO Director. Approval by the DSBO Director includes determining the amount the Joint Venture will count towards meeting the project goal.
- 4. All M/WBEs listed on the Bid Form must be properly certified by the City on or before the date bids are opened in order to count towards meeting the designated goal. DSBO maintains an M/WBE Directory ("Directory"), which is a current listing of M/WBEs that have been certified by the City. A copy of the DSBO Directory is located at DSBO web site at https://www.denvergov.org/dsbo. Bidders are encouraged to use the Directory to assist in locating M/WBEs for the work and supplies required on the Project. Bidders are reminded that changes may be made to the Directory at anytime in accordance with the City's M/WBE Ordinance and procedures established to administer this program and a current copy of the Directory must always be used in preparing a bid. M/WBE

- certification or listing in the Directory is not a representation or warranty by the City as to the qualifications of any listed M/WBE.
- 5. In accordance with the provisions of the M/WBE Ordinance, DSBO will evaluate each bid to determine the responsiveness of the bid to the requirements of the M/WBE Ordinance. In determining whether a bidder's committed level of participation meets or exceeds the stated M/WBE goal, DSBO shall base its calculation of applicable amounts and percentages on the total base bid amount, not including any listed alternates, of each bid as follows:
 - a. The bid information provided by the agency will be used to determine the total base bid amount of each bid. Each bidder's total base bid amount will be multiplied by the M/WBE percentage established for the project to determine the exact dollar amount of required M/WBE participation for the Project. This amount will then be compared against the exact dollar amounts for the M/WBE committed for participation by the bidder. If the total dollar amount of participation listed meets or exceeds the established M/WBE dollar amount goal listed, then DSBO will determine that the goal has been met.
 - b. In addition, DSBO will determine the exact commitment percentage for each listed M/WBE by dividing the dollar amount listed for each M/WBE by the total base bid dollar amount submitted by the bidder. These individual percentages, when totaled for all listed M/WBE, will establish the total committed percentage level of M/WBE participation that the bidder must comply with during the life of the contract. In all cases, the committed percentage level of M/WBE participation must equal or exceed the assigned M/WBE goal for the Project.
 - c. In providing the exact dollar amount of participation for each listed M/WBE, a bidder should take care never to round up in determining whether or not the total of these amounts meets or exceeds the established percentage goal. The goal must be met or exceeded by dollar amounts and percentages in order for DSBO to determine that the bidder has met or exceeded the applicable M/WBE goal.
 - d. As previously mentioned, compliance with the M/WBE goal will be determined on the base bid alone. If a bid contains alternates, participation contained in any alternate will not count towards satisfaction of the Project goal. However, should any designated alternate be selected by the City for inclusion in the contract ultimately awarded, the M/WBE goal percentage level submitted at bid time, on the base bid, will also apply to the selected alternates and must be maintained for the life of the contract on the total contract amount, including any alternate work. Thus, even though such participation will not be considered in evaluating bids, bidders are urged to consider participation in preparing bids for designated alternates.
 - e. On projects where force account or allowance bid items have been included, bidders must meet the M/WBE goal percentage based upon the total base bid, including all such items that are submitted to the City. However, when a force account or allowance is designated by the City to be either performed or purchased from a specific company, the bidder may back out the dollar amount of the force account or allowance from the total base bid and meet the M/WBE goal on the remaining reduced amount.
 - f. On bids which, at the time of bid opening, are equal to or exceed Five Million Dollars (\$5,000,000.00), including any alternates which may be selected, only sixty percent (60%) of the value of the commercially useful function performed by M/WBE suppliers shall count toward satisfaction of the Project goal. On Projects under Five Million (\$5,000,000.00) the value of the commercially useful function of M/WBE supplier(s) will count at a one hundred percent (100%) level. Manufacturer's representatives and packagers shall be counted in the same manner as brokers.
 - g. In utilizing the M/WBE participation of a Broker only the bona fide commissions earned by such Broker for its performance of a commercially useful function will count toward

meeting the Project goals. The bidder must separate the bona fide brokerage commissions from the actual cost of the supplies or materials provided to determine the actual dollar amount of participation that can be counted towards meeting the goal.

On or before the third (3rd) working day after bid opening, all of the Bidders are required to submit 6. an executed "Letter of Intent" for each M/WBE listed on the Bid Form as a joint venture member, subcontractor, supplier, manufacturer, manufacturers' representative or broker of any tier. An MBE or WBE Prime Bidder needs to submit a Letter of Intent for itself for self performed work, and must identify their level of participation on the designated M/WBE participation page bound herein. A Letter of Intent shall be submitted only for the M/WBEs listed at the time of bid opening, since this is the only participation that will be counted toward satisfaction of the project goal. A form for the M/WBE Letter of Intent is included with the Bid Form. The M/WBE Letter of Intent is a written communication from the Bidder to the City evidencing an understanding that the Bidder has or will enter into a contractual relationship with the M/WBE or that its subcontractor(s) and supplier(s), manufacturer(s), manufacturers' representative(s) and broker(s) will do so. Each M/WBE Letter of Intent shall be accompanied by a copy of the City and County of Denver's M/WBE certification letter for each proposed M/WBE identified at bid time. Bidders are urged to carefully review these Letters before submission to the City to ensure that they are properly completed and executed by the appropriate parties.

Good Faith Effort.

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

- 1. If the bidder or proposer has not fully met the project goal as provided in section 28-60, then it shall demonstrate that it has made good faith efforts to meet such goal. The bidder or proposer shall furnish to the director, within three (3) working days after bid opening by the City or on or before the time of the final project-specific proposal submitted to and authorized by the City pursuant to a competitive selection process, or bid selection by a private owner, a detailed statement of its good faith efforts to meet the project goal set by the director. This statement shall address each of the items in subsection (b) and any additional criteria that the director may establish by rule or regulation consistent with the purposes of this division 3. Good faith efforts must be demonstrated to be meaningful and not merely for formalistic compliance with this Division 3. The scope and intensity of the efforts will be considered in determining whether the bidder or proposer has achieved a good faith effort.
- 2. The statement of good faith efforts shall include a specific response and verification with respect to each of the following good faith effort categories, which may be further defined by rule or regulation. A bidder or proposer may include any additional information it believes may be relevant. Failure of a bidder or proposer to show good faith efforts as to any one (1) of the following categories shall render its overall good faith effort showing insufficient and its bid or proposal non-responsive:
 - a. If prebid or preselection meetings are scheduled by the City at which MBEs and WBEs may be informed of subcontracting or joint venture opportunities under a proposed contract to be bid, or procured pursuant to the competitive selection process, attendance at such prebid or preselection meetings is not mandatory; however, bidders and proposers are responsible for the information provided at these meetings.
 - b. The bidder or proposer must solicit through all reasonable and available means, the interest of all MBEs and WBEs certified in the scopes of work of the contract. The bidder or proposer must solicit the interest of such MBEs and WBEs within sufficient time, prior to the bid opening or date of final project-specific proposal in the case of a competitive selection process, to allow such MBEs and WBEs to respond to the solicitation. The bidder or proposer must determine with certainty if the MBEs and WBEs are interested by demonstrating appropriate steps to follow up initial solicitations.
 - c. The bidder or proposer must select portions of the work of the contract to be performed by MBEs and WBEs in order to increase the likelihood that the project goal will be achieved. This includes, where appropriate, breaking out contract

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work items into economically feasible units to facilitate MBE and WBE participation as subcontractors or joint venturers, and for bidder or proposer self-performed work, as suppliers, manufacturers, manufacturer's representatives and brokers, all reasonably consistent with industry practice, even when the bidder or proposer would otherwise prefer to perform these work items with its own forces. The bidder or proposer must identify what portions of the contract will be self-performed and what portions of the contract will be opened to solicitation of bids, proposals and quotes from MBE and WBEs. All portions of the contract not self-performed must be solicited for MBE and WBE participation. The ability or desire of a bidder or proposer to perform the work of a contract with its own forces does not relieve the bidder or proposer of the responsibility to meet the project goal or demonstrate good faith efforts to do so.

- d. The bidder or proposer, consistent with industry practice, must provide MBEs and WBEs at a clearly stated location with timely, adequate access to and information about the plans, specifications, and requirements of the contract, including bonding and insurance requirements, if any, to assist them in responding to a solicitation.
- e. The bidder or proposer must negotiate in good faith with interested MBEs and WBEs and provide written documentation of such negotiation with each such MBE or WBE.
- f. For each MBE or WBE which contacted the bidder or proposer or which the bidder or proposer contacted or attempted to subcontract or joint venture with, consistent with industry practice, the bidder or proposer must supply a statement giving the reasons why the bidder or proposer and the MBE or WBE did not succeed in negotiating a subcontracting, supplier, manufacturer, manufacturer's representative, broker or joint venture agreement, as applicable.
- 3. The bidder or proposer must provide verification that it rejected each non-utilized MBE and WBE because the MBE or WBE did not submit the lowest bid or it was not qualified. Such verification shall include a verified statement of the amounts of all bids received from potential or utilized subcontractors, suppliers, manufacturers, manufacturer's representatives, brokers or joint venturers on the contract, whether or not they are MBEs or WBEs. In making such a determination of not being qualified, the bidder or proposer shall be guided by the definition of qualified in section 28-54(42), but evidence of lack of qualification must be based on factors other than solely the amount of the MBE's or WBE's bid. For each MBE or WBE found not to be qualified by the bidder or proposer, the verification shall include a statement giving the bidder's or proposer's reasons for its conclusion. A bidder's or proposer's industry standing or group memberships may not be the cause of rejection of an MBE or WBE. A bidder or proposer may not reject an MBE or WBE as being unqualified without sound reasons based on a reasonably thorough investigation and assessment of the MBE's or WBE's capabilities and expertise.
- 4. If requested by a solicited MBE or WBE, the bidder or proposer must make reasonable efforts to assist interested MBEs and WBEs in obtaining bonding, lines of credit, or insurance as required by the City or by the bidder or proposer, provided that the bidder or proposer need not provide financial assistance toward this effort.
- 5. If requested by a solicited MBE or WBE, the bidder or proposer must make reasonable efforts to assist interested MBEs and WBEs in obtaining necessary and competitively priced equipment, supplies, materials, or related assistance or services for performance under the contract, provided that the bidder or proposer need not provide financial assistance toward this effort.
- The bidder or proposer must use the DSBO MBE/WBE directories to identify, recruit, and place MBEs and WBEs.
- 7. In determining whether a bidder or proposer has satisfied good faith efforts as to a project goal, the success or failure of other bidders or proposers on the contract in meeting such project goal may be considered.

Continuing Commitments.

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

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

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

IB-26 DISCLOSURE OF INFORMATION

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

IB-27 GENERAL BIDDING INFORMATION

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

IB-28 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. All fees associated with the CPM System are to be paid by the Contractor for billings for work performed. Bidders are required, when preparing a bid, to enter the price of the CPM service on the line provided for the service. The fee is all inclusive of all subcontractor, project and subscription fees associated with the CPM system. The bidder will calculate the fee based on a percentage of their total bid, and then should include it on the line item provided in the bid form labeled "Textura® Construction Payment Management System Fee". This expense becomes part of the contract and billable to the City. Textura will invoice the awarded contractor directly. All costs including but not limited to costs associated with training, entering data or utilizing Textura other than the Textura Construction Payment Management System Fee are overhead and shall not be reimbursed by the City. Contractor is responsible for tax on Textura fee. As with other taxes, the City will not reimburse Contractor for this cost and therefore this cost should be included in Contractor's bid. Textura will invoice the awarded contractor directly.

PROJECT SIZE	FEE (% OF BID)
< \$1,000,000	0.22% (.0022)
\$1,000,001 - \$5,000,000	0.17% (.0017)
\$5,000,001 - \$20,000,000	0.12% (.0012)
\$20,000,001 - \$50,000,000	0.10% (.0010)
\$50,000,001 - \$100,000,000	0.08% (.0008)
\$100,000,001 - \$500,000,000	0.05% (.0005)
> \$500,000,000	CONTACT TEXTURA FOR PROGRAM PRICING

For more information:

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

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 prebid 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.

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CITY AND COUNTY OF DENVER

DEPARTMENT OF PUBLIC WORKS Engineering Division

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

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compliance. The Contractor further agrees to refrain from entering into any contract or contract modification subject to Article III, Division 2 of Chapter 28 of the Revised Municipal Code with a contractor debarred from, or who has not demonstrated eligibility for, City contracts.

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

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

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

CITY AND COUNTY OF DENVER

DEPARTMENT OF PUBLIC WORKS 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/
Executive Director of Public Works

City and County of Denver

A. REQUIREMENTS - AN AFFIRMATIVE ACTION PLAN:

Contractors shall be subject to the provisions and requirements of these bid conditions including the goals and timetables for minority* and female utilization, and specific affirmative action steps set forth by the Division of Small Business Opportunity (DSBO). 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 FACH TRADE

From January 1, 1982 to Until Further Notice

21.7% - 23.5%

GOALS FOR FEMALE PARTICIPATION FOR EACH TRADE

From January 1, 1982 to Until Further Notice

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.

B. CONTRACTORS SUBJECT TO THESE BID CONDITIONS:

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

- 1. Where the Office of Contract Compliance finds that a contractor failed to comply with the requirements of Article III, Division 2 of Chapter 28 of the Revised Municipal Code or the implementing regulations and the obligations under these Bid Conditions, and so informs the Manager, the Manager shall take such action and impose such sanctions, which include suspension, termination, cancellation, and debarment, as may be appropriate under the Ordinance and its regulations. When the Manager proceeds with such formal action it has the burden of proving that the Contractor has not met the goals contained in these Bid Conditions. The Contractor's failure to meet its goals shall shift to it the requirement to come forward with evidence to show that it has met the good faith requirements of these Bid Conditions.
- 2. The pendency of such proceedings shall be taken into consideration by the Department of Public Works in determining whether such contractor can comply with the requirements of Article III, Division 2 of Chapter 28 of the Revised Municipal Code, and is therefore a "responsible prospective contractor".
- 3. The Division of Small Business Opportunity shall review the Contractor's employment practices during the performance of the contract. If the Division of Small Business Opportunity determines that the Contractor's Affirmative Action Plan is no longer an acceptable program, the Director shall notify the Manager.

C. OBLIGATIONS APPLICABLE TO CONTRACTORS:

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

D. GENERAL REQUIREMENTS:

Contractors are responsible for informing their subcontractors in writing regardless of tier, as to their respective obligations. Whenever a Contractor subcontracts a portion of work in any trade covered by these Bid Conditions, it shall include these Bid Conditions in such subcontracts and each subcontractor shall

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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

CONTRACT NO. 201733316

19TH & 20TH 2-WAY CONVERSION

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

JALISCO INTERNATIONAL, INC. 6663 Colorado Boulevard Commerce City, CO 80022

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

WITNESSETH, commencing on March 1, 2017, and for at least three (3) days the City advertised that sealed bids would be received for furnishing all labor, tools, supplies, equipment, materials, and everything necessary and required for the following:

CONTRACT NO. 201733316

19TH & 20TH 2-WAY CONVERSION

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

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

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

1. CONTRACT DOCUMENTS

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

Advertisement of Notice of Invitation for Bids
Instructions to Bidders
Commitment to M/WBE Participation
Article III, Divisions 1, 2, and 3 of Chapter 28, D.R.M.C.
Bid Bond
Addenda (as applicable)

Equal Employment Opportunity Provisions (Appendix A and Appendix F)

Bid Form

Contract Form

General Contract Conditions

Special Contract Conditions

Performance and Payment Bond

Notice to Apparent Low Bidder

Notice to Proceed

Contractor's Certification of Payment Form

Final/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 **150** (One Hundred Fifty 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 202-00019 through 630-86800 (One Hundred Twelve[112]) total base bid items, plus, 1 add alt, bid item numbers 202-00821 through 630-00008 (Twenty-Nine[29]) total add alt bid items, the total estimated cost thereof being: Two Million Five Hundred Eighty-Four Thousand One Hundred Eighty-Four Dollars and Forty-Six Cents (\$2,584,184.46). 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. COMPLIANCE WITH M/WBE REQUIREMENT

This Contract is subject to all applicable provisions of Divisions 1 and 3 of Article III, of Chapter 28, Denver Revised Municipal Code (D.R.M.C.), designated as Sections 28-31 – 28-36 and 28-52 – 28-90 D.R.M.C. and referred to in this Contract as the "M/WBE Ordinance". Without limiting the general applicability of the foregoing, the Contractor acknowledges its continuing duty, pursuant to Sections 28-72, 28-73 and 28-75 of the D.R.M.C., to maintain throughout the duration of this Contract, compliance with the level of minority and Woman business enterprise participation, upon which the City approved the award of this Contract to

the Contractor and the Contractor further acknowledges that failure to maintain such participation commitments or otherwise comply with the requirements of the M/WBE Ordinance shall subject the Contractor to sanctions in accordance with Section 28-77 of the D.R.M.C. Nothing contained in this provision or in the M/WBE Ordinance shall negate the City's right to prior approval of subcontractors, or substitutes therefore, under this Contract

7. WAGE RATE REQUIREMENTS

In performance of all Work hereunder, the Contractor agrees to comply with and be bound by all requirements and conditions of the City's Payment of Prevailing Wages Ordinance, Sections 20-76 through 20-79, D.R.M.C. and any determinations made by the City pursuant thereto.

8. APPLICABILITY OF LAWS

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

9. APPROPRIATION

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

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

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

10. APPROVALS

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

11. ASSIGNMENT

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

12. DISPUTES RESOLUTION PROCESS

It is the express intention of the parties to this Contract that all disputes of any nature whatsoever regarding the Contract including, but not limited to, any claims for compensation or damages arising out of breach or default under this Contract, shall be resolved by administrative hearing pursuant to the provisions of Section

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56-106, D.R.M.C., or, as applicable, Section 28-33 D.R.M.C. for Minority and Woman Business Enterprise disputes. The Contractor expressly agrees that this dispute resolution process is the only dispute resolution mechanism that will be recognized by the parties for any claims put forward by the Contractor, notwithstanding any other claimed theory of entitlement on the part of the Contractor or its subcontractors or suppliers.

13. CONTRACT BINDING

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

14. PARAGRAPH HEADINGS

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

15. SEVERABILITY

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

16. 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 No. 201733316 BDP - 29 March 1, 2017

Contract Control Number:	
IN WITNESS WHEREOF, the parties h Denver, Colorado as of	ave set their hands and affixed their seals at
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:	201733316
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Vendor	N	am	e:
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JALISCO INTERNATIONAL, INC

Richard Ledezma Name:

(please print)

Title:

President (please print)

ATTEST: [if required]

Natalia Ledezma Rollins

(please print)

Secretary Title:

(please print)



CITY AND COUNTY OF DENVER DEPARTMENT OF PUBLIC WORKS

General Contract Conditions

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CITY AND COUNTY OF DENVER

DEPARTMENT OF PUBLIC WORKS 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.

Transportation Standards and Details for the Engineering Division

City and County of Denver Traffic Standard Drawings

Wastewater Management Division

- Standard Detail Drawings
- Public Works Wastewater Capital Projects Management Standard Construction Specifications

Colorado Department of Transportation:

Standard Specifications for Road and Bridge Construction (Sections 200 through 700 of the 2011 Edition)

Federal Highway Administration:

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

Building & Fire Codes:

Building Code of the City and County of Denver (International Building Code 2009 Series, City and County of Denver Amendments 2011)

National Fire Protection Association Standards
(As referenced in the Building Code of the City and County of Denver)

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

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

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

SC-2 DEPUTY MANAGER / CITY ENGINEER

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

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

SC-3 ENGINEERING DIVISION / CITY ENGINEER

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

SC-4 WASTEWATER MANAGEMENT DIVISION

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

SC-5 CITY DELEGATION OF AUTHORITY

With reference to General Contract Condition 109, DEPUTY MANAGER and General Contract Condition 212, CITY'S CONTRACT ADMINISTRATION LINE OF AUTHORITY, the Manager hereby designates the City Engineer as the City official responsible for those certain actions and decisions designated as the responsibility of the Deputy Manager under the General Conditions and delegates to the City Engineer the authority necessary to undertake those responsibilities under this Contract. The 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>City Project Manager</u> <u>Telephone</u> Kim D. Blair, P.E. (720) 865-3141

Design ConsultantConsultant ContactTelephoneDavid Evans & AssociatesSara K Ciasto, P.E.(720) 225-4642

SC-6 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.

Contract No. 201733316 BDP - 37 March 1, 2017

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

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

SC-7 SUBCONTRACTS

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

SC-8 RESERVED

SC-9 PAYMENTS TO CONTRACTORS

The application for payment shall be submitted through Textura® Corporations Construction Management Website. Contractor recognizes and agrees that it shall be required to use the Textura Construction Payment Management System for this Project. 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:

Agency/FirmNameTelephonePublic Works/Engineering DivisionKim Blair, P.E.(720)865-3141

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, <u>AND/OR</u> 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 as follows.

DEPARTMENT OF PUBLIC WORKS Engineering Division

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

		Date:	, 20
(PROJECT NO. and NAM	E)		
		Subcontract #:	
(NAME OF CONTRACTO	OR)		
		Subcontract Value: \$	<u> </u>
(NAME OF SUBCONTRACTOR/S	SUPPLIER)	Date:	D
Check Applicable Box:	. 611 21211)	Date: Total Paid to Date: \$	<u>.</u>
[] MBE [] WBE		Date of Last Work:	
The Undersigned hereby certifies that all costs, of undersigned for any work, labor or services performabove referenced Project or used in connection with duly paid in full.	ormed and for any mate	rials, supplies or equipme	ent provided on the
The Undersigned further certifies that each of the to be incurred, on their behalf, costs, charges or above referenced Project have been duly paid in	expenses in connection		
In consideration of \$ representing the lof the Total Paid to Date, also referenced above, the undersigned this day of and County of Denver (the "City"), the above referenced Contractor from all claims, liens, righ of every nature arising out of or in connection wi	and other good and valu , 20, the Undersignerenced City Project, the ts, liabilities, demands a	nable consideration receive gned hereby releases and e City's premises and propertion obligations, whether k	yed and accepted by discharges the City perty and the above
As additional consideration for the payments reference and hold harmless the City, its officers, employed against all costs, losses, damages, causes of action connection with any claim or claims against aperformance of the Work Effort and which may be of any tier or any of their representatives, officerally its acknowledged that this release is for the best of the second of the	es, agents and assigns and an in, judgments under the state of the City or the Contract asserted by the Undersity, agents, or employees.	and the above-referenced C subcontract and expenses actor which arise out of igned or any of its supplier	Contractor from and a arising out of or in the Undersigned's rs or subcontractors
Contractor.	renefit of and may be	renea upon by the enty	and the referenced
The foregoing shall not relieve the undersign subcontract, as the subcontract may have be Undersigned's work effort including, without indemnities.	en amended, which by	y their nature survive	completion of the
STATE OF COLORADO) ss.			
CITY OF		(Name of Subcontractor)	
Signed and sworn before me this day of, 20 B		(Classic of Succession)	
<u> </u>	itle:		
My Commission Expires	<u> </u>		

DENVER							Office of Economic	Development	
	City and County of Denver					Compliance Unit 201 W. Colfax Ave., Dept. 907			
OFFICE OF ECONO DEVELOPMENT									
DEVELOPMENT		Div	ision	of Small Business	Oppor	tunity			r, CO 80202
								Phone: 7	720.913.1999
		Contractor's/	Cons	ultant's Certifica	tion of	Payment (CCP)			
Prime Contractor or Consultant:			Phone:			Project Manager:			
Day Application #		Day Davids				Assessed December 6			
Pay Application #:		Pay Period:				Amount Requested: \$			
Project #:		Project Name:							
Current Completion Date:		Percent Complete:				Prepared By:			
(I) - Original Contract Amount: \$					(II) - Cum	ent Contract Amount: \$			
		A	В	C	U	E	ŀ	G	Н
	M/W/S/E DBE/	Original Contract	% Bid	Current Contract Amount	% Revised	Requested Amount of this	Amount Paid on the Previous Pay	Net Paid	Paid % Achieved
Prime/Subcontractor/Supplier Name	NON	Amount	(A/I)	including Amendments	(C/II)	Pay Application	Application #	To Date	(G/II)
				_					· ·
			_						
			-						
			+						+
									+
									+
			_						
			_						1
			+						+
Totals			_						+
The undersigned certifies that the info	ormation	contained in this docum	nent is t	l rue, accurate and that the	paymen	l ts shown have been made	to all subcontractors a	and suppliers used on t	this project
and listed herein. Please use an add	itional fo	rm, if more space is nec	essary.						
Prepared By (Signature):						Date:			
, , , , , , , , , , , , , , , , , , , ,				Page	of				
				•				COMP-FRM-027	rev 031816



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 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. Please complete an additional CCP if there is second tier-ing involved.

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

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

Contractor/Subcontractor or Subconsultant/Supplier Name: In the space provided, list all subcontractors/

subconsultants and suppliers used on the project. For all M/W/S/E/DBEs use the exact name listed in the

DSBO Directory.

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

Column A: Provide the contract amount, as listed at bid time, for the Contractor/Consultant and each

subcontractor/subconsultant or supplier.

Column B: Provide the percentage portion of each listed subcontractor/subconsultant or supplier contract amount

(Column A) compared to the total original contract amount in (I).

Column C: Provide the original contract amount (Column A) for each subcontractor/subconsultant or supplier plus any

awarded alternate and/or change order amounts applicable. If an alternate/change order does not apply

to the listed firm, re-enter the original contract amount (Column A).

Column D: Provide the percent portion of each listed subcontractor/subconsultant or supplier contract amount

(Column C) compare to the current total contract amount in (II).

Column E: Provide the amount requested for work performed or materials supplied by each listed

subcontractor/subconsultant or supplier for this pay application. The sum of the items in this column

should equal the estimated amount requested for this pay application.

Column F: Provide the amount paid to each subcontractor/subconsultant or supplier on the previous pay

application. Enter the previous pay application number in the column heading. The sum of the items listed in this column should equal the warrant amount paid to the Contractor/Consultant on the previous pay application. The amounts paid to the subcontractor/subcontractor or suppliers should be the actual

amount of each check issued.

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

or supplier.

Column H: Provide the percent portion of the net paid to date (Column G) for the Contractor/Subconsultant and each

listed subcontractor/subconsultant or supplier of the current total contract amount in (II).

Rev 031816

SC-10 CONTRACT FORMS

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

- 1. Performance and Payment Bond
- 2. Performance and Payment Bond Surety Authorization Letter (Sample)
- 3. Final/Partial Lien Release.

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

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

SC-11 CONSTRUCTION INSPECTION BY THE CITY

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

- 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 were conducted by the inspector or a City tests
- .2 Building Inspection will perform building code compliance inspections for structures designed for human occupancy. It is the General Contractor's responsibility to schedule and obtain these inspections. If a code compliance inspection results in identification of a condition which will be at variance to the Contract Documents, the General Contractor shall immediately notify the Project Manager and confirm such notification with formal correspondence no later than forty-eight (48) hours after the occurrence.
- .3 When any unit of government or political subdivision, utility or Railroad Corporation is to pay a portion of the cost of the Work, its respective representatives shall have the right to inspect the Work. This inspection shall not make any unit of government or political subdivision, utility or Railroad Corporation a party to the Contract, and shall not interfere with the rights of either party.

SC-12 DISPOSAL OF NON-HAZARDOUS WASTE AT DADS

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

SC-13 PROHIBITION ON USE OF CCA-TREATED WOOD PRODUCTS

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

SC-14 WAIVER OF: PART 8 OF ARTICLE 20 OF TITLE 13, COLORADO REVISED STATUTES.

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

SC-15 ATTORNEY'S FEES

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

Because the City Attorney 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-16 INSURANCE

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

- 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.
- **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) <u>Additional Insureds:</u> 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) <u>Waiver of Subrogation:</u> For all coverages, Contractor's insurer shall waive subrogation rights against the City.
- (5) <u>Subcontractors and Subconsultants:</u> 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) <u>Commercial General Liability:</u> 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) <u>Business Automobile Liability:</u> 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-17 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.

 $\underline{http://www.denvergov.org/constructioncontracts/Home/ContractorResources/tabid/443154/Default.aspx}$

CITY AND COUNTY OF DENVER DEPARTMENT OF PUBLIC WORKS

PERFORMANCE AND PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned <u>Jalisco International</u>, <u>Inc. 6663 Colorado Boulevard</u>, <u>Commerce City</u>, <u>CO 80022</u>, a corporation organized and existing under and by virtue of the laws of the State of <u>Colorado</u>, hereafter referred to as the "Contractor", and <u>Employers Mutual Casualty Company</u>, a corporation organized and existing under and by virtue of the laws of the State of <u>Iowa</u>, 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 <u>Two Million Five Hundred Eighty-Four Thousand One Hundred Eighty-Four Dollars and Forty-Six Cents (\$2,584,184.46)</u>, 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. 201733316 19TH & 20TH 2-WAY CONVERSION, 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

Jalisco International, Inc. Attest President RICHARD LEDEZMA NATALIA LEDEZMA Secretary Employers Mutual Casualty (Accompany this bond with Attorney-in-Factors) Company Surety Attorney-In-Fact Florietta A

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

Ву: EXECUTIVE DIRECTOR OF PUBLIC WORKS



P.O. Box 712 • Des Moines, Iowa 50306-0712

CERTIFICATE OF AUTHORITY INDIVIDUAL ATTORNEY-IN-FACT

KNOW ALL MEN BY THESE PRESENTS, that:

- 1. Employers Mutual Casualty Company, an Iowa Corporation
- 2. EMCASCO Insurance Company, an Iowa Corporation
- 3. Union Insurance Company of Providence, an Iowa Corporation
- 4. Illinois EMCASCO Insurance Company, an Iowa Corporation

- 5. Dakota Fire Insurance Company, a North Dakota Corporation
- 6. EMC Property & Casualty Company, an Iowa Corporation
- 7. Hamilton Mutual Insurance Company, an Iowa Corporation

hereinafter referred to severally as "Company" and collectively as "Companies", each does, by these presents, make, constitute and appoint:
TODD BENGFORD, DONALD E. APPLEBY, MARK SWEIGART, SARAH BROWN, FLORIETTA ACOSTA, SUSAN J. LATTARULO, LEEANNE MEAUX, INDIVIDUALLY, GREENWOOD VILLAGE, COLORADO

its true and lawful attorney-in-fact, with full power and authority conferred to sign, seal, and execute the following Surety Bond:

ANY AND ALL BONDS

and to bind each Company thereby as fully and to the same extent as if such instruments were signed by the duly authorized officers of each such Company, and all of the acts of said attorney pursuant to the authority hereby given are hereby ratified and confirmed.

The authority hereby granted shall expire April 1, 2018 unless sooner revoked.

AUTHORITY FOR POWER OF ATTORNEY

This Power-of-Attorney is made and executed pursuant to and by the authority of the following resolution of the Boards of Directors of each of the Companies at the first regularly scheduled meeting of each company duly called and held in 1999:

RESOLVED: The President and Chief Executive Officer, any Vice President, the Treasurer and the Secretary of Employers Mutual Casualty Company shall have power and authority to (1) appoint attorneys-in-fact and authorize them to execute on behalf of each Company and attach the seal of the Company thereto, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof; and (2) to remove any such attorney-in-fact at any time and revoke the power and authority given to him or her. Attorneys-in-fact shall have power and authority, subject to the terms and limitations of the power-of-attorney issued to them, to execute and deliver on behalf of the Company, and to attach the seal of the Company thereto, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof, and any such instrument executed by any such attorney-in-fact shall be fully and in all respects binding upon the Company. Certification as to the validity of any power-of-attorney authorized herein made by an officer of Employers Mutual Casualty Company shall be fully and in all respects binding upon this Company. The facsimile or mechanically reproduced signature of such officer, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power-of-attorney of the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN WITNESS THEREOF, the Companies have caused these presents to be signed for each by their officers as shown, and the Corporate seals to be hereto affixed this 21st day of January, 2016.

Seals



Bruce G. Kelley, Chairman of Companies 2, 3, 4, 5 & 6; President of Company 1; Vice Chairman and CEO of Company 7 Michael Freel Assistant Secretary

On this 22nd day of June, AD 2010 before me a Notary Public in and for the State of Iowa, personally appeared Bruce G. Kelley and Michael Freel, who, being by me duly sworn, did say that they are, and are known to me to be the Chairman, President, Vice Chairman and CEO, and/or Assistant Secretary, respectively, of each of the Companies above; that the seals affixed to this instrument are the seals of said corporations; that said instrument was signed and sealed on behalf of each of the Companies by authority of their respective Boards of Directors; and that the said Bruce G. Kelley and Michael Freel, as such officers, acknowledged the execution of said instrument to be their voluntary act and deed, and the voluntary act and deed of each of the Companies.

My Commission Expires November 1, 2017.

Notary Public in and for the State of lo

CERTIFICATE

I, James D. Clough, Vice President of the Companies, do hereby certify that the foregoing resolution of the Boards of Directors by each of the Companies, and this Power of Attorney issued pursuant thereto on 22nd day of June, 2010, are true and correct and are still in full force and effect.

In Testimony Whereof I have subscribed my name and affixed the facsimile seal of each Company this _____ day or

2 // Vice President



THINKING AHEAD

FAX NUMBER:

720-913-3183

TELEPHONE NUMBER: 720-913-3267

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

RE: Jalisco International, Inc.

Project Name: Contract No. 201733316 – 19th & 20th 2-Way Conversion

Amount: \$2,584,184.46

Performance and Payment Bond No.: S447296

The Performance and Payment Bonds covering the above captioned project were executed by this agency through Employers Mutual Casualty Company on May 4, 2017. We hereby authorize the City and County of Denver 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.

Sincerely, Georetta Acesta

Florietta Acosta

Client Service Consultant, Bonds



PERFORMANCE AND PAYMENT BOND SURETY AUTHORIZATION (SAMPLE)

FAX NUMBER: TELEPHONE NUMBER:	720-913-318 720-913-326	
Assistant City Attorney 201 W. Colfax Ave. Dept 1207 Denver, Colorado 80202		
RE: (Company name)		
Contrac Project N Contract Am Performance and Payment Bond	ame: 19T ount:	733316 TH & 20TH 2-WAY CONVERSION
Dear Assistant City Attorney,		
The Performance and Payment Bo	nds covering t	he above captioned project were executed by this agency, through
		insurance company
on	_, 20	
We hereby authorize the City and	County of Der	nver, 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 co	oncerns, please don't hesitate to give me a call at
Thank you.		
Sincerely,		

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

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Current Date

NOTICE OF APPARENT LOW BIDDER (SAMPLE)

To:			
Gentlemen:			

The EXECUTIVE DIRECTOR OF PUBLIC WORKS has considered the Bids submitted on <u>March 30, 2017</u> for work to be done and materials to be furnished in and for:

PROJECT No. 201733316 19TH & 20TH 2-WAY CONVERSION

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

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

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

- a. Insurance Certificates: General Liability and Automotive Liability, Workman's Compensation and Employer Liability; or any other coverage required by the contract; and
- b. One original plus four copies of the Power of Attorney relative to Performance and/or Payment Bond;

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

Prior to issuance of Notice to Proceed, all Equal Opportunity requirements must be completed. Additional information may be obtained by contacting the Director of Contract Compliance at (720-913-1700).

NOTICE OF APPARENT LOW BIDDER (SAMPLE)

PROJECT NO. <u>201733316</u> 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
	Ву
	Executive Director of Public Works

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

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Current Date

NOTICE TO PROCEED (SAMPLE)

Name Company Street City/State/Zip

CONTRACT NO. 201733316, 19TH & 20TH 2-WAY CONVERSION

In accordance with General Contract Condition 302 of the Standard Specifications for Construction
General Contract Conditions, 2011 Edition, you are hereby authorized and directed to proceed on
with the work of constructing contract number <u>201733316</u> , as set forth in detail in the contract
documents for the City and County of Denver.
With a contract time of calendar days, the project must be complete on or before
·
If you have not already done so, you must submit your construction schedule, in accordance with General Contract Condition 306.2.B, to the Project Manager within 10 days. Additionally, you must submit your tax exempt certificate, and copies of your subcontractors' certificates, in accordance with General Contract Condition 323.5, to the Project Manager as soon as possible. Failure to submit these certificates will delay processing of payment applications.
Sincerely,
Lesley B. Thomas
City Engineer
cc:

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

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Certificate of Contract Release (SAMPLE)

Date

Name
Company
Street
City/State/Zip

RE: Certificate of Contract Release for 201733316, 19TH & 20TH 2-WAY CONVERSION

Received this date of the City and County of Denver, as full and fi	nal payment of the cost of the impro	ovements		
provided for in the foregoing contract,	dollars and	cents		
(\$), in cash, being the remainder of the full amount a	accruing to the undersigned by virtu	ue of said		
contract; said cash also covering and including full payment f	for the cost of all extra work and	material		
furnished by the undersigned in the construction of said improv	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	n any and all claims or demands wh	atsoever,		
regardless of how denominated, growing out of said contract.				
And these presents are to certify that all persons performing vimprovements under the foregoing contract have been paid in fu final payment.	•			
Contractor's Signature	Date Signed			
If there are any questions, please contact me by telephone at (72)				
document via facsimile at (720) 913-1805 and mail to original to	the above address.			

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

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CITY AND COUNTY OF DENVER STATE OF COLORADO



Department of Public Works
Prevailing Wage Rates
Contract No: 201733316

19TH & 20TH 2-WAY CONVERSION

March 1, 2017

Career Service Authority



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

TO: All Users of the City of Denver Prevailing Wage Schedules

FROM: Susan Keller, Human Resources Technician

DATE: Friday, January 27, 2017

DENVER

SUBJECT: Latest Change to Prevailing Wage Schedules

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

The effective date for this publication is **Friday**, **January 27**, **2017** and applies to the City and County of Denver for **HIGHWAY CONSTRUCTION PROJECTS** in accordance with the Denver Revised Municipal Code, Section 20-76(c).

General Wage Decision No. CO170019
Superseded General Decision No. CO20160019
Modification No. 1
Publication Date: 1/27/2017
(8 pages)

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

For questions call (720) 913-5726.

Attachments as listed above.



General Decision Number: CO170019 01/27/2017 CO19

Superseded General Decision Number: CO20160019

State: Colorado

Construction Type: Highway

Counties: Denver and Douglas Counties in Colorado.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.20 for calendar year 2017 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.20 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2017. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number Publication Date

0 01/06/2017 1 01/27/2017

* CARP9901-008 11/01/2016

	Rates	Fringes
CARPENTER (Form Work Only)	\$ 25.50	7.47
ELEC0068-016 03/01/2011		

Rates

Fringes

TRAFFIC SIGNALIZATION:		
Traffic Signal Installation		
Zone 1\$	26.42	4.75%+8.68
Zone 2\$	29.42	4.75%+8.68

TRAFFIC SIGNAL INSTALLER ZONE DEFINITIONS

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

Colorado Springs - Nevada & Bijou

Denver - Ellsworth Avenue & Broadway

Ft. Collins - Prospect & College

Grand Junction - 12th & North Avenue

Pueblo - I-25 & Highway 50

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

ENGI0009-008 10/23/2013

POWER EQUIPMENT OPERATOR: (3)-Hydraulic Backhoe (Wheel Mounted, under 3/4 yds), Hydraulic Backhoe (Backhoe/Loader combination), Drill Rig Caisson (smaller than Watson 2500 and similar),		
Loader (up to and including 6 cu. yd.)\$ (3)-Loader (under 6 cu. yd.)	24.73	9.15
Denver County\$ (3)-Motor Grader (blade- rough)	24.73	9.15
Douglas County\$ (4)-Crane (50 tons and under), Scraper (single	24.73	9.15
bowl, under 40 cu. yd)\$ (4)-Loader (over 6 cu. yd)	24.88	9.15
Denver County\$ (5)-Drill Rig Caisson (Watson 2500 similar or larger), Crane (51-90 tons), Scraper (40 cu.yd	24.88	9.15
<pre>and over),\$ (5)-Motor Grader (blade- finish)</pre>	25.04	9.15
Douglas County\$ (6)-Crane (91-140 tons)\$		9.15 9.15
SUCO2011-004 09/15/2011		
	Rates	Fringes
		Fringes 5.08
CARPENTER (Excludes Form Work)\$ CEMENT MASON/CONCRETE FINISHER Denver\$	19.27	5.08
CARPENTER (Excludes Form Work)\$ CEMENT MASON/CONCRETE FINISHER Denver\$ Douglas\$	19.27	5.08
CARPENTER (Excludes Form Work)\$ CEMENT MASON/CONCRETE FINISHER Denver\$ Douglas\$	19.27 20.18 18.75	5.08
CARPENTER (Excludes Form Work)\$ CEMENT MASON/CONCRETE FINISHER Denver	19.27 20.18 18.75	5.08 5.75 3.00
CARPENTER (Excludes Form Work)\$ CEMENT MASON/CONCRETE FINISHER Denver\$ Douglas\$	19.27 20.18 18.75 35.13	5.08 5.75 3.00
CARPENTER (Excludes Form Work)\$ CEMENT MASON/CONCRETE FINISHER Denver	19.27 20.18 18.75 35.13	5.08 5.75 3.00
CARPENTER (Excludes Form Work)\$ CEMENT MASON/CONCRETE FINISHER Denver	19.27 20.18 18.75 35.13 13.02 12.89	5.08 5.75 3.00 6.83
CARPENTER (Excludes Form Work)\$ CEMENT MASON/CONCRETE FINISHER Denver	19.27 20.18 18.75 35.13 13.02 12.89	5.08 5.75 3.00 6.83 3.20 3.20
CARPENTER (Excludes Form Work)\$ CEMENT MASON/CONCRETE FINISHER Denver	19.27 20.18 18.75 35.13 13.02 12.89	5.08 5.75 3.00 6.83 3.20 3.20
CARPENTER (Excludes Form Work)\$ CEMENT MASON/CONCRETE FINISHER Denver	19.27 20.18 18.75 35.13 13.02 12.89	5.08 5.75 3.00 6.83 3.20 3.20
CARPENTER (Excludes Form Work)\$ CEMENT MASON/CONCRETE FINISHER Denver\$ Douglas\$ ELECTRICIAN (Excludes Traffic Signal Installation)\$ FENCE ERECTOR (Excludes Link/Cyclone Fence Erection)\$ GUARDRAIL INSTALLER\$ HIGHWAY/PARKING LOT STRIPING:Painter Denver\$ Douglas\$ IRONWORKER, REINFORCING (Excludes Guardrail	19.27 20.18 18.75 35.13 13.02 12.89	5.08 5.75 3.00 6.83 3.20 3.21 3.21
CARPENTER (Excludes Form Work)\$ CEMENT MASON/CONCRETE FINISHER Denver	19.27 20.18 18.75 35.13 13.02 12.89	5.08 5.75 3.00 6.83 3.20 3.20

Installation)\$	18.22	6.01
I ADODED		
LABORER Asphalt Raker\$	16 29	4.25
Asphalt Shoveler\$		4.25
Asphalt Spreader\$		4.65
Common or General	10.30	1.05
Denver\$	16.76	6.77
Douglas\$		4.25
Concrete Saw (Hand Held)\$	16.29	6.14
Landscape and Irrigation\$	12.26	3.16
Mason Tender-		
Cement/Concrete		
Denver\$		4.04
Douglas\$	16.29	4.25
Pipelayer		
Denver\$		2.41
Douglas\$		2.18
Traffic Control (Flagger)\$	9.55	3.05
Traffic Control (Sets		
Up/Moves Barrels, Cones,		
Install Signs, Arrow Boards and Place		
Stationary Flags)(Excludes		
Flaggers)\$	12 /2	3.22
riaggeis/	12.43	3.44
PAINTER (Spray Only)\$	16 99	2.87
immillar (oping only)	10.77	2.07
POWER EQUIPMENT OPERATOR:		
Asphalt Laydown		
Denver\$	22.67	8.72
Douglas\$		8.47
Asphalt Paver		
Denver\$	24.97	6.13
Douglas\$	25.44	3.50
Asphalt Roller		
Denver\$		7.55
Douglas\$		6.43
Asphalt Spreader\$	22.67	8.72
Backhoe/Trackhoe	00.00	
Douglas\$		6.00
Bobcat/Skid Loader\$		4.28
Boom\$	22.07	8.72
Broom/Sweeper Denver\$	22 47	8.72
Douglas\$		8.22
Bulldozer\$		5.59
Concrete Pump\$		5.21
Drill	21.00	3.21
Denver\$	20.48	4.71
Douglas\$		2.66
Forklift\$		4.68
Grader/Blade		
Denver\$	22.67	8.72
Guardrail/Post Driver\$	16.07	4.41
Loader (Front End)		
Douglas\$	21.67	8.22
Mechanic		
Denver\$		8.72
Douglas\$	23.88	8.22
Oiler		

Denver\$ Douglas\$ Roller/Compactor (Dirt and Grade Compaction)		8.41 7.67
Denver\$ Douglas\$ Rotomill\$ Screed	22.78	5.51 4.86 4.41
Denver\$ Douglas\$ Tractor\$	29.99	8.38 1.40 2.95
TRAFFIC SIGNALIZATION: Groundsman		
Denver\$ Douglas\$		3.41 7.17
TRUCK DRIVER Distributor		
Denver\$ Douglas\$ Dump Truck		5.82 5.27
Denver\$ Douglas\$ Lowboy Truck\$ Mechanic\$	16.39 17.25	5.27 5.27 5.27 3.50
Multi-Purpose Specialty & Hoisting Truck		
Denver\$ Douglas\$ Pickup and Pilot Car		3.17 2.88
Denver\$ Douglas\$ Semi/Trailer Truck\$	16.43	3.77 3.68 4.13
Truck Mounted Attenuator\$ Water Truck		3.22
Denver\$ Douglas\$		5.27 2.58

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

Office of Human Resources Supplemental rates

(Specific to the Denver Projects) (Supp 35, Date: 01-13-2012)

<u>Classification</u>		<u>Base</u>	<u>Fringe</u>
Millwrights		\$28.00	\$10.00
Line Construction:			
	Lineman, Gas Fitter/Welder	\$36.88	\$9.55
	Line Eq Operator/Line Truck		
	Crew	\$25.74	\$8.09
Power Equipment Operators			
(Tunnels Above and Below			
Ground, shafts and raises):			
	GROUP 1	\$25.12	\$10.81
	GROUP 2	\$25.47	\$10.85
	GROUP 3	\$25.57	\$10.86
	GROUP 4	\$25.82	\$10.88
	GROUP 5	\$25.97	\$10.90
	GROUP 6	\$26.12	\$10.91
	GROUP 7	\$26.37	\$10.94
Power Equipment Operators:			
	GROUP 1	\$22.97	\$10.60
	GROUP 2	\$23.32	\$10.63
	GROUP 3	\$23.67	\$10.67
	GROUP 4	\$23.82	\$10.68
	GROUP 5	\$23.97	\$10.70
	GROUP 6	\$24.12	\$10.71
	GROUP 7	\$24.88	\$10.79
Ironworkers (Ornamental)		\$24.80	\$10.03
Laborers (Removal of			
Asbestos)		\$21.03	\$8.55
Plumbers		\$30.19	\$13.55
Pipefitters		\$30.45	\$12.85
Truck Drivers:			
	GROUP 1	\$18.42	\$10.00
	GROUP 2	\$19.14	\$10.07
	GROUP 3	\$19.48	\$10.11
	GROUP 4	\$20.01	\$10.16
	GROUP 5	\$20.66	\$10.23
	GROUP 6	\$21.46	\$10.31

<u>POWER EQUIPMENT OPERATOR CLASSIFICATIONS</u> (TUNNELS ABOVE AND BELOW GROUND, SHAFTS, AND RAISES):

GROUP 1 - Brakeman

GROUP 2 - Motorman

GROUP 3 - Compressor

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

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

GROUP 6 - Mechanic Welder

GROUP 7 - Mole

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

POWER EQUIPMENT OPERATOR CLASSIFICATIONS:

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

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

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

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

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

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

GROUP 7 - tower cranes all types.

TRUCK DRIVER CLASSIFICATIONS:

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

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

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

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

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

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

CITY AND COUNTY OF DENVER STATE OF COLORADO



Department of Public Works

Technical Specifications

Contract No: 201733316

19TH & 20TH 2-WAY CONVERSION

March 1, 2017

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

STANDARD CONSTRUCTION SPECIFICATIONS

The Standard Specifications for Construction for this Project shall consist of the applicable sections and subsections, numbered Section 200 through Section 700, of the 2011 "Colorado Department of Transportation Standard Specifications for Road and Bridge Construction."

The Colorado Department of Transportation General Provisions consists of Sections 100 through 109 of the above mentioned specifications. With the exception of General Provision Sections 101, 107.06 and 107.12 all other General Provisions are not applicable to this Project and are hereby deleted. In place of the deleted sections, the City and County of Denver "Standard Specifications for Construction, General Contract Conditions," 2011 Edition, shall apply to this contract. Supplements or amendments to the Standard Specifications for Construction, General Contract Conditions are listed in the Special Contract Conditions.

The following Project Special Provisions take precedence over Specifications or Plans and supplement or amend the referenced "Standard Specifications for Road and Bridge Construction" adopted in 2011 by the Colorado Department of Transportation, which is to be used to control construction of this Project.

DETAILED CONSTRUCTION SPECIFICATIONS

The Detailed Specifications for this project are defined in the City of Denver Contract Requirements and Contract Documents

STANDARD CONSTRUCTION DETAILS

It is the intent of the City to use applicable details from the Colorado Department of Transportation M&S Standards, the City of Denver's Wastewater Management Division Standard Details, and the Denver Water Department's Standard Drawings, most recent editions. Drainage-related appurtenances shall follow the City and County of Denver (CCD), Department of Public Works document titled "Storm Drainage Design and Technical Criteria". This document, along with the City's standard specifications and details, can be found at the following web address:

https://www.denvergov.org/content/denvergov/en/right-of-way-services/engineering-regulatory-analytics/engineering-plan-review/manuals-regulations.html

The Colorado Department of Transportation's Standard Specifications for Road and Bridge Construction, dated 2011, controls construction of this project. The following Special Provisions supplement or modify the Standard Specifications and take precedence over the Standard Specifications and Plans.

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CDOT STANDARD SI ECIAL I ROVISIONS		NT -
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CONSTRUCTION LIMITS

The "construction limits" for the Site are defined as 19th Avenue from Broadway to Park Avenue, 20th Avenue from Lincoln to Park Avenue, and Glenarm Street from 18th Avenue to Broadway. The limits also include Grant and Logan Streets between 18th Avenue and 20th Avenue. Furthermore, the construction limits include cross streets as necessary to complete the Work and placement of signage on any street to be used for construction detours on the Contract Drawings.

All Work shall occur within the City and County of Denver right-of-way. Impacts to existing landscaping, concrete, sidewalk, structures, sprinklers, curbs, gutters, etc. that occur beyond the right-of-way shall be repaired by the Contractor at their own expense. Impacts to existing landscaping, concrete, sidewalk, structures, sprinklers, curbs, gutters, etc. that occur within the right-of-way but are not specifically designated to be removed by the Contract Drawings or by the Project Manager, shall be repaired by the Contractor at their own expense.

BID ALTERNATE

All references within these Special Provisions, the plans, and the contract documents to either Bid Alternate 1 or Bid Alternate 2 all refer to a single Bid Alternate for the project. This Bid Alternate includes the signal work at the intersection of 18th and Logan as well as additional work along Logan Street.

COMMENCEMENT AND COMPLETION OF WORK (WORKING HOURS, SCHEDULE)

The Contractor shall commence work under the Contract per the City General Contract Conditions. The Contractor shall complete all work within 150 calendar days in accordance with the "Notice to Proceed."

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

- 1. Mobilization
- 2. Detour(s)
- 3. Clearing and Grubbing
- 4. Best Management Practices
- 5. Relocate Utilities (Sanitary Sewer, Electric, ITS, Fiber Optic, Gas, Water) (by others)
- 6. Removal of Sidewalks
- 7. Removal of Curb & Gutter
- 8. Storm Sewer
- 9. Curb and Gutter
- 10. Sidewalk
- 11. Final Signing
- 12. Final Striping
- 13. Lighting and Electrical Conduit
- 14. ITS (City and County of Denver)
- 15. Traffic Signals
- 16. Landscape Restoration
- 17. Anticipated Substantial Completion
- 18. Anticipated Final Completion
- 19. Project Cleanup

Contractor Schedule

The Contractor's progress schedule shall be a Critical Path Method Schedule. The schedule shall include 30 days of down time (float) for utility conflicts and delays.

The Contractor will not be compensated for administrative or management costs incurred during down time for utility or other delays.

No additional payment will be made for out of sequence work.

Work Restrictions - Nights and Weekends

No work shall be conducted at night or on weekends without prior written approval of the Project Manager unless otherwise noted in these special provisions. Contractor shall comply with Revision of Section 107 Worker Safety in these Special Provisions.

-2-

COMMENCEMENT AND COMPLETION OF WORK (WORKING HOURS, SCHEDULE)

Work Restrictions for City Holidays

Work shall not occur on holidays listed below. Work shall cease at 12:00 p.m. (noon) the day before the holiday or on the Friday before a Monday holiday. Work may resume at 8:00 a.m. the day after the holiday or the Monday after a Thursday and/or Friday holiday. All travel ways shall be open to the public and clear of obstructions during the holiday non-working periods listed above.

Holidays:

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

Work Restrictions for City sponsored or sanctioned events

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

Work Restrictions for City Noise Ordinance and Street Occupancy Permit

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

Substantial Completion

Substantial completion will be granted for facilities open to the Public upon approval by Project Manager.

REVISION OF SECTION 107 WORKER SAFETY

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

Subsection 107.06 shall include the following:

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

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

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

The Contractor is responsible for fulfilling the requirements set forth by CCD and is responsible for obtaining the permit variance prior to the construction startup date. All exemption requests and permitting requirements will not be paid separately but will be included in the work.

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

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

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

REVISION OF SECTION 107 PROTECTION OF EXISTING VEGETATION

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

Subsection 107.12 shall include the following:

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

 $(Vegetation\ size)\ x\ (Species)\ x\ (Location)\ x\ (Condition)\ x\ (Arborist\ or\ Wetland\ Specialist) = Vegetation\ value$

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

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

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

REVISION OF SECTION 201 CLEARING AND GRUBBING

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

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

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

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

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

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

Subsection 201.02 is hereby revised to include:

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

Subsection 201.04 is hereby revised to include:

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

Tree protection and the temporary fencing required for said protection will not be measured separately but will be considered as subsidiary obligation of the Contractor under the contract.

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

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

All equipment, labor, hauling, sorting, removal, delivery, and documentation of recyclable materials as per Special Contract Condition, "Greenprint Denver Requirements" will not be paid separately; all costs incurred by the Contractor to meet the requirements of SC-20 shall be included in the removal of the related appurtenance.

Subsection 202.02 shall be revised to include the following:

The Contractor will mark the limits of removals in the field. The Engineer will verify these limits prior to commencement of removal efforts. Removals in the vicinity of trees to remain shall conform to applicable provisions of the Tree Retention and Protection specification, as prepared by Denver Forestry.

Subsection 202.03 is hereby replaced as follows:

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

Subsection 202.05 Pavement Marking, the third paragraph is hereby revised as follows:

The pavement surface area to be covered with pavement marking material shall be blast cleaned by an approved method prior to the application of pavement primer or prior to the placing of pavement marking material when used without a pavement primer. A dustless-abrasive shot blasting, power washing, or other approved cleaning method may be used to do the removal work. Cleaning method will be applied to remove all dirt, laitance, curing compound residue, and existing pavement markings. All loose dust and dirt shall be removed before application of pavement primer or pavement marking material.

Subsection 202.07 is hereby replaced as follows:

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

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

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

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

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

Subsection 202.09 shall be revised to include the following:

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

Subsection 202.11 shall be revised to include the following:

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

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

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

Removal of stone curb shall be measured by the linear foot along the curb line.

Subsection 202.12 is hereby deleted and replaced as follows:

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

-3-REVISION OF SECTION 202 REMOVAL OF STRUCTURES, ASPHALT MAT, AND OBSTRUCTIONS

Payment will be made under:

Pay Item	<u>Pay Unit</u>
Removal of Sidewalk	Square Yard
Removal of Curb and Gutter	Linear Foot
Removal of Concrete Pavement	Square Yard
Removal of Asphalt Mat	Square Yard

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

Removal of stone curb shall be paid for as Removal of Curb and Gutter.

REVISION OF SECTION 202 REMOVAL OF PAVEMENT MARKING

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

Subsection 202.05 shall include the following:

Painting existing markings black, gray, or any other color shall not be considered an acceptable means of removing existing markings.

In Subsection 202.11, delete the second paragraph and replace with the following:

Removal of pavement marking will not be measured and paid separately but shall be considered included in the work.

Traffic control to accomplish pavement marking removal is considered included in the lump sum cost for project-wide Construction Traffic Control and will not be measured and paid separately.

REVISION OF SECTION 202 REMOVAL OF GROUND SIGN

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

Subsection 202.04 shall include the following:

Following sign post removal, Contractor shall remove sign footing or sign anchor to a minimum depth of one foot below proposed finish grade. Removed portions of ground signs are the property of the Contractor and shall be disposed of in accordance with the Standard Specifications as well as in accordance with applicable laws and ordinances. Contractor shall backfill areas where existing foundations have been removed with clean fill material, flow fill, or other acceptable material as directed by the Engineer.

Contractor shall restore surface areas disturbed by removal of the described ground signs in-kind equal to or exceeding original condition. In grass or landscaped locations, Contractor shall reseed backfilled areas as directed by the Engineer. In sidewalks or curb ramps, new sidewalk or curb ramp shall be installed by the Contractor as directed by the Engineer. In cases where sidewalk or curb ramp has been damaged, disturbed, or otherwise requires restoration, the entire sidewalk panel or curb ramp shall be replaced.

Existing sidewalk or curb ramp materials removed by the Contractor during the course of such operations shall be disposed of by the Contractor in accordance with the Standard Specifications, as well as in accordance with applicable laws and ordinances.

Subsection 202.11 shall include the following:

Surface restoration for areas disturbed by ground sign removal shall be considered included in the unit cost for Removal of Ground Sign and will not be measured and paid for separately.

REVISION OF SECTION 202 REMOVAL OF PARKING METER POST

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

Subsection 202.01 shall include the following:

This work consists of the removal of parking meter posts in the project area. Existing meter posts designated for removal have: 1] a parking meter head; or 2] a sign panel attached thereto.

Subsection 202.02 shall include the following:

At locations throughout the project area, existing parking meter assemblies will: 1] be retained; 2] be removed; 3] have the existing meter head reset; 4] have the existing meter head replaced.

In instances where the existing meter head will be retained, reset, or replaced, the existing post will be retained. In cases where the existing meter head will be removed, the Contractor shall remove and dispose of the existing meter post.

Where existing meter heads are removed, reset, or replaced, physical removal, resetting, or replacement will be completed by the City. Contact CJ Musman, Denver Transportation and Mobility Parking Operations, at 720-913-1731 to coordinate work efforts and to schedule the work by City forces. Such coordination with the City shall be accomplished a minimum of two weeks prior to any construction impacting existing metered parking within the project limits.

Where the City has permanently removed the existing meter head, or in cases where an existing meter post supporting a sign is designated for removal, the Contractor is responsible for removal and disposal of the existing meter post.

Subsection 202.04 shall include the following:

Following meter post removal, Contractor shall remove post footing or anchor to a minimum depth of one foot below proposed finish grade. Removed portions of meter posts, anchors, or footings are the property of the Contractor and shall be disposed of in accordance with the Standard Specifications as well as in accordance with applicable laws and ordinances. Contractor shall backfill areas where existing meter posts, anchors, or footings have been removed with clean fill material, flow-fill, or other acceptable material as directed by the Engineer.

Contractor shall restore surface areas disturbed by removal of the described meter posts in-kind equal to or exceeding original condition. In grass or landscaped locations, Contractor shall reseed backfilled areas as directed by the Engineer. In sidewalks or curb ramps, new sidewalk or curb ramp shall be installed by the Contractor as directed by the Engineer. In cases where sidewalk or curb ramp has been damaged, disturbed, or otherwise requires restoration, the entire sidewalk panel or curb ramp shall be replaced.

Existing sidewalk or curb ramp materials removed by the Contractor during the course of such operations shall be disposed of by the Contractor in accordance with the Standard Specifications, as well as in accordance with applicable laws and ordinances.

-2-REVISION OF SECTION 202 REMOVAL OF PARKING METER POST

Subsection 202.11 shall include the following:

Removal of parking meter posts shall be measured by the number of posts physically removed. All such work will be reimbursed at the contract unit price for Removal of Ground Sign.

Surface restoration for areas disturbed by meter post removal shall be considered included in the unit cost for Removal of Ground Sign and will not be measured and paid for separately.

REVISION OF SECTION 202 REMOVAL OF SIGN PANEL

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

Subsection 202.11 shall include the following:

Traffic control to accomplish the removal of overhead sign panels is considered included in the lump sum cost for project-wide Construction Traffic Control and will not be measured and paid separately.

REVISION OF SECTION 202 REMOVAL OF TRAFFIC SIGNAL EQUIPMENT

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

Subsection 202.01 shall include the following:

This work consists of the disconnection and removal of existing traffic signal equipment located at the following intersections:

- 1. 20th Avenue and Grant Street (complete removal)
- 2. 20th Avenue and Logan Street (complete removal)
- 3. 20th Avenue, Washington Street and Park Avenue West (partial removal)
- 4. 19th Avenue and Broadway (partial removal)
- 5. 19th Avenue and Lincoln Street (partial removal)
- 6. 19th Avenue and Sherman Street (complete removal)
- 7. 19th Avenue and Grant Street (complete removal)
- 8. 19th Avenue and Logan Street (complete removal)
- 9. 19th Avenue and Clarkson Street (complete removal)
- 10. 19th Avenue and Park Avenue West (partial removal)
- 11. Clarkson Street and Park Avenue West (partial removal)
- 12. 18th Avenue and Logan Street (complete removal) (<u>Bid Alternate 1 only</u>)

See the plans for additional information regarding specific items to be removed at each intersection.

Contractor shall safeguard salvageable materials so designated in the plans or as requested by the Denver Transportation and Mobility Division and shall be responsible for the expense of repairing or replacing damaged or missing material until it is delivered to the City traffic maintenance yard at 5440 Roslyn Street. Designation of salvageable material and times for delivery of such items shall be coordinated with Chris Lillie at 720-865-4066 or Greg Salazar at 303-591-7146.

Selected communications, vehicle detection, and fire preemption detection equipment may be reset at specific locations as shown in the plans. Reset of such items will be measured and paid separately under the appropriate pay item.

For those intersections to remain signalized after completion of the project, traffic signal operations shall be maintained throughout construction.

Subsection 202.04 shall include the following:

Signal Heads, Pedestrian Heads, and Push Buttons

Remove existing traffic signal heads, pedestrian signal heads, and pedestrian push buttons as shown in the plans and retain these items for salvage. Deliver all such items designated for salvage to the City & County of Denver traffic signal maintenance facilities located at 5440 Roslyn Street, Denver. Ancillary elements thereto including mounting hardware, wiring, and back-plates are the property of the Contractor and shall be properly disposed of in accordance with the Standard Specifications as well as in accordance with applicable laws and ordinances.

All Light Emitting Diode (LED) signal lenses in existing signal heads shall be removed prior to the removal of the signal head. These LED lenses shall be protected from damage and delivered to the City traffic signal maintenance facilities at 5440 Roslyn Street.

REVISION OF SECTION 202 REMOVAL OF TRAFFIC SIGNAL EQUIPMENT

Mast Arms and Span Wire

Remove existing mast arms and span wire from all traffic signal poles so identified in the plans and as directed by the Engineer. All removed items not designated for salvage including mast arms and span wire are the property of the Contractor and shall be disposed of in accordance with the applicable sections of the Standard Specifications as well as in accordance with applicable laws and ordinances.

All mast arms to be removed on the project are hereby designated for salvage by the City and shall be delivered to 5440 Roslyn Street upon removal.

Traffic Signal Poles with Luminaire

Signal-light poles (span wire and mast arm types), luminaire arms, and luminaires are owned by XCEL Energy. In all such cases, the Contractor shall remove the mast arm or span wire. XCEL Energy shall remove the pole, and the Contractor shall remove portions of the existing foundation as described below.

Following mast arm or span wire removal by the Contractor and pole removal by XCEL Energy forces, Contractor shall remove existing traffic signal-light pole foundation to a minimum depth of one foot below proposed finish grade. Removed portions of traffic signal-light pole foundations are the property of the Contractor and shall be disposed of in accordance with the Standard Specifications as well as in accordance with applicable laws and ordinances. Contractor shall backfill areas where existing foundations have been removed with clean fill material or flow-fill as directed by the Engineer.

Contractor shall coordinate as required with XCEL Energy to schedule activities and facilitate timely removal of poles. Contractor is also referred to the Project Special Provision section entitled "Utilities" for additional information.

Pedestal Poles and Traffic Signal Poles without Luminaires

Remove all existing pedestal poles and traffic signal poles without luminaires as shown in the plans. Work shall include removal of the existing pedestal pole or signal pole foundation to a minimum depth of one foot below finished grade. All removed items including poles, mast arms and removed portion of pole foundations are the property of the Contractor and shall be disposed of in accordance with the applicable sections of the Standard Specifications as well as in accordance with applicable laws and ordinances. Contractor shall backfill areas where existing foundations have been removed with clean fill material or flow-fill as directed by the Engineer.

Cabinets, Controllers, and Conductors

Remove existing cabinets and controllers and retain cabinets and all appurtenances for salvage. Deliver cabinet including all appurtenances not designated for reset to the City traffic signal maintenance facilities located at 5440 Roslyn Street, Denver. Coordinate all deliveries a minimum of two working days in advance with Chris Lillie at 720-865-4066 or Greg Salazar at 303-591-7146.

Work shall include removal of the existing cabinet foundation in its entirety. The removed foundation is the property of the Contractor and shall be disposed of in accordance with the Standard Specifications as well as in accordance with applicable laws and ordinances. Contractor shall

-3-REVISION OF SECTION 202 REMOVAL OF TRAFFIC SIGNAL EQUIPMENT

backfill areas where existing foundations have been removed with clean fill material or flow-fill as directed by the Engineer.

Care shall be taken to not damage existing signal conductors, fiber optic cable, or other wiring to ensure that wiring can be reused upon installation of the new cabinet, if required. Conduits and any existing wiring shall be preserved for future use as described in the plans. If a new cabinet is not to be immediately placed on the foundation, the Contractor shall take appropriate measures to protect existing conduits, conductor cables, and other signal wiring from damage or tampering.

Existing underground and overhead wiring not designated for reuse shall be removed by the Contractor and disposed of in accordance with the Standard Specifications as well as in accordance with local laws and ordinances.

Delivery of Salvaged Items

Proposed delivery times and dates for the salvaged items shall be agreed to by the City prior to delivery and shall be coordinated with Chris Lillie of the City & County of Denver at 720-865-4066.

Items to be Abandoned

Existing conduits and loop detectors not designated for reuse shall be abandoned in place.

Pull Boxes

Contractor shall remove existing pull boxes and/or valve boxes from sidewalks, roadways, or landscaped areas not within the existing or proposed roadway.

In grass or landscaped locations, Contractor shall backfill areas where existing boxes have been removed with clean fill material as directed by the Engineer. Where valve boxes are to be removed from paved areas, Contractor shall backfill excavated area with flow-fill or other material as approved by the Engineer. See the Surface Restoration Section for additional information.

Pull box removal is limited to those boxes not required for ongoing street lighting and those boxes not required to house fiber optic communications equipment and associated facilities designated to remain.

Surface Restoration

Contractor shall restore surface areas disturbed by removal of the described traffic signal items in-kind equal to or exceeding original condition.

In grass or landscaped locations, Contractor shall reseed backfilled areas as directed by the Engineer. In sidewalks or curb ramps, new sidewalk or curb ramp shall be installed by the Contractor as directed by the Engineer. In cases where sidewalk or curb ramp has been damaged, disturbed, or otherwise requires restoration, the entire sidewalk panel or curb ramp shall be replaced. For all Denver streets, related work includes permanent backfill with CLSM (flow-fill or flash-fill), permanent asphalt patches in asphalt roadway, and new concrete panel for sidewalk if so directed by the Engineer, and new concrete street panel if so directed by the Engineer. Follow CCD TS&D for restoration.

REVISION OF SECTION 202 REMOVAL OF TRAFFIC SIGNAL EQUIPMENT

Existing street, sidewalk, or curb ramp materials removed by the Contractor during the course of such operations shall be disposed of by the Contractor in accordance with the Standard Specifications, as well as in accordance with applicable laws and ordinances.

Where existing valve boxes or other in-street items have been removed, Contractor shall backfill excavated area with flow-fill or other material as approved by the Engineer.

Subsection 202.11 shall include the following:

Base Bid

Removal of Traffic Signal Equipment shall be paid on a lump sum basis for all intersection locations combined and shall include physical disconnection, disassembly, and removal of the described items; disposal of non-salvageable material including removed foundations, pedestal poles, and so on; backfill of excavated removal areas; and surface restoration of grass, landscaped, sidewalk, curb ramp, or on-street areas disturbed by the removal activities. Delivery of salvaged items to the City maintenance yard shall be considered included in the unit price and will not be measured and paid separately. The Base Bid lump sum is considered to include all project intersections EXCEPT 18th and Logan.

Bid Alternate 1

Removal of Traffic Signal Equipment shall be paid on a lump sum basis for all intersection locations combined and shall include physical disconnection, disassembly, and removal of the described items; disposal of non-salvageable material including removed foundations, pedestal poles, and so on; backfill of excavated removal areas; and surface restoration of grass, landscaped, sidewalk, curb ramp, or on-street areas disturbed by the removal activities. Delivery of salvaged items to the City maintenance yard shall be considered included in the unit price and will not be measured and paid separately. The Bid Alternate 1 lump sum is considered to include 18th and Logan ONLY.

In its bid, Contractor shall provide separate, stand-alone lump sum prices for the work identified for inclusion in the Base Bid and Bid Alternate 1.

Items to be reset will be measured and paid separately under the appropriate pay item.

No separate measurement or payment will be made for removal of cabinet bases, nor for any associated saw-cutting, excavation, backfilling, surface restoration, delivery of salvageable materials, or disposal of unsalvageable material.

Traffic control to accomplish the removals is considered included in the lump sum cost for project-wide Construction Traffic Control and will not be measured and paid separately.

Subsection 202.12 shall include the following:

Pay ItemPay UnitRemoval of Traffic Signal EquipmentLump Sum

REVISION OF SECTION 203 POTHOLING (SPECIAL)

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

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

(e) Potholing for Traffic Signal Pole and Flashing Beacon Installation. Potholing will be measured by the individual number of potholes required or otherwise requested by the Engineer. All other related work, including removal of existing pavement, backfilling, shoring, and labor will not be measured and paid separately but shall be included in the work. All surface materials disturbed by potholing operations shall be restored in kind in accordance with the provisions of the Standards and Details for the City & County of Denver (Latest Revisions). For all Denver streets, related work includes permanent backfill with CLSM (flow-fill or flash-fill), permanent asphalt patches in asphalt roadway, and new concrete panel for sidewalk if one pothole in sidewalk, new concrete street panel if three (3) or more potholes result after work is done. Follow CCD TS&D for restoration.

Subsection 203.13 shall include the following:

Potholing to identify utility conflicts for conduit installation shall be considered included in the unit cost for conduit and will not be measured and paid for separately.

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

Payment will be made under:

Pay ItemPay UnitPotholing (Special)Each

REVISION OF SECTION 203 EXCAVATION AND EMBANKMENT

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

Subsection 203.04 shall include the following:

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

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

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

Subsection 203.07 shall include the following:

Unless otherwise indicated on the plans, the density requirements for embankment material shall be: clay soils – 95% of the maximum density determined in accordance with AASHTO T-99; granular soils – 95% of the maximum density determined in accordance with AASHTO T-180.

REVISION OF SECTION 208 EROSION CONTROL

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

PART I: DEFINITIONS

Definitions used for this Section shall consist of those listed in Title 1 of the City and County of Denver "Standard Specifications for Construction, General Contract Conditions", 2011 edition.

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

Additional Definitions applicable to this Section are listed heretofore:

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

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

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

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

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

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

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

Final Stabilization: Point of construction when all ground surface disturbing activities at the site have been completed and uniform vegetative cover has reached 70% of pre-disturbance vegetative cover, or equivalent permanent features have been employed. At this point, all temporary BMPs can be

-2-REVISION OF SECTION 208 EROSION CONTROL 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 Statues require that all construction sites/development Projects, which, by definition, disturb one or more acres in area, shall be covered by a State issued general permit for construction activities. Information on the application requirements for the State permit can be obtained by phone at 303-692-3500; or by visiting their offices located at 4300 Cherry Creek Drive South, Denver, CO 80246 – 1530, or on the Web at: https://www.colorado.gov/pacific/cdphe/news/water-quality-permits

-3-REVISION OF SECTION 208 EROSION CONTROL

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

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

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

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

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

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

-4-REVISION OF SECTION 208 EROSION CONTROL

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 predisturbance 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, drainage ways, MS4, State Waters, and/ or wetlands. Work under this Section includes the Contractor obtaining required Permits, utilizing SWMP elements provided in the Contract, and/ or SWMP elements specifically prepared by the Contractor as defined herein. The work shall also consist of providing on-going maintenance and monitoring of the SWMP as may be necessary due to the specific and/or dynamic needs of the Project as well as meet all requirements set forth within the CASM.

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

When a provision of this Section or an order by the Permit Enforcement Authority requires that an action be immediate or taken immediately, it shall be understood that the Contractor shall at once begin effecting completion of the action and pursue it to completion in a manner acceptable to the Permit Enforcement Authority, and in accordance with applicable Permitting requirements.

PART III: MATERIALS

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

PART IV: EROSION CONTROL PERMIT STATUS

The current SWMP status for the Project is as follows:

A SWMP is currently not required for this project as the proposed disturbed area and/or proximity to stream does not meet the minimum criteria for requiring a CASDP. All provisions of the following Parts V-VIII of this Section are hereby deleted and shall not be made part of the Project. However, the responsibilities for minimizing sediment pollution from the Project have not been waived, and as such, the City hereby requires the Contractor to perform as specified in the following notes. Because a SWMP and CASDP are not necessary for the Project, all cost for performance of the following notes shall not be paid separately, but shall be included in the work unless otherwise specified in the section.

A CASDP Permit will not be required for this project, however, the <u>Contractor and/or their authorized agents</u> shall ensure that all potential pollutants generated during demolition, excavation, trenching, boring, grading, or other construction Work associated with this permit, be prevented from discharge to stormwater conveyance systems in the vicinity of the Project.

-5-REVISION OF SECTION 208 EROSION CONTROL

The Contractor and/or their authorized agents shall remove all sediment, mud, construction debris, or other potential pollutants that may have been discharged to or, accumulate in the flow lines of storm drainage appurtenances and public rights of ways of the City and County of Denver and CDOT as a result of construction activities associated with this Project. All removals shall be conducted in a timely manner.

The Contractor shall be held responsible for remediation of any adverse impacts to the CCD or CDOT MS4, State Waters, waterways, wetlands, and or other public or private properties, resulting from work done as part of this Project.

The <u>Contractor and/or their authorized agents</u> shall insure that all loads of cut and fill material imported to or exported from the Project shall be properly covered to prevent loss of the material during transport on public rights of way." (Sec.49-552; Revised Municipal Code)

Approved erosion and sediment control 'Best Management Practices' shall be maintained and kept in good repair for the duration of the Project. All necessary maintenance and repair shall be completed immediately upon discovery of any deficiency or defect.

The <u>Contractor and/or their authorized agents</u> shall implement the following Best Management Practices (BMPs) on site during construction. Best Management Practice (BMP) installation details and maintenance shall conform to the Urban Storm Drainage Criteria Manual, Vol. 3, "Best Management Practices", most current version as issued by the Urban Drainage and Flood Control District (UDFCD), or those established by the City's Department of Public Works.

- 1. VEHICLE TRACKING CONTROL: This BMP is required at all access points for ingress/egress from off-site impervious surfaces to construction site pervious areas that are used by vehicular traffic or construction equipment.
- 2. INLET PROTECTION: This BMP is required on all existing or proposed storm sewer inlets in the vicinity of the construction site that may receive site runoff. The BMP must be appropriate to the type of storm inlet and appropriate for the ground surface at the inlet.
- 3. INTERIM SITE STABILIZATION: This BMP is required to provide a measure for preventing the discharge of sediment from construction sites where over lot grading or other site disturbance has occurred. This BMP is particularly necessary on sites where construction activities/disturbance will be limited to small areas of the Project site. Acceptable BMPs include:
 - a) Preserving existing vegetation
 - b) Seeding and planting
 - c) Mulching
 - d) Mulching and seeding
 - e) Temporary/Permanent re-vegetation operations
 - f) Chemical soil stabilizer application (requires WMD approval)

-6-REVISION OF SECTION 208 EROSION CONTROL

- 4. WASTE MANAGEMENT/CONTAINMENT: This BMP requires that all construction wastes, fuels, lubricants, chemical wastes, trash, sanitary wastes, contaminated soils or debris shall be contained on site, protected from contact with precipitation or surface runoff, periodically removed from the construction site, and properly disposed of.
- 5. SPILL PREVENTION /CONTAINMENT: This BMP defines the measures proposed for preventing, controlling, or containing spills of fuel, lubricants, or other pollutants; and protecting potential pollutants from contact with precipitation or runoff.
- 6. CHUTE WASHOUT CONTAINMENT: Water used in the cleaning of cement truck delivery chutes shall be discharged into a predefined, bermed containment area on the job site. The required containment area is to be bermed so that wash water is totally contained. Wash water discharged into the containment area shall be allowed to infiltrate or evaporate. Dried concrete waste shall be removed from the containment area and properly disposed of. The direct or indirect discharge of water containing waste concrete to the storm sewer system is prohibited (Sec.56-102a, c; Revised Municipal Code, City and County of Denver).
- 7. SWEEPING: This BMP requires that impervious surfaces which are adjacent to or contained within construction sites be swept on a daily basis or as needed during the day when sediment and other materials are tracked or discharged on to them. Either sweeping by hand or use of Street Sweepers is acceptable. Street sweepers using water while sweeping is preferred in order to minimize dust. Flushing off paved surfaces with water is prohibited.
- 8. PERIMETER CONTROL: This BMP requires that a construction site install a perimeter control measure along the edge of the construction Site, to prevent, or filter the discharge of surface runoff from the construction site. The type of perimeter control used shall be determined based on site conditions and location. Maintenance and repair of the control measure shall occur as needed, in a timely manner.
- 9. STOCK PILES: Soils that will be stockpiled for more than thirty (30) days shall be protected from wind and water erosion within fourteen (14) days of stockpile construction. Stabilization of stockpiles located within 100 feet of receiving waters, or with slopes 3 to 1 or greater shall be completed within seven (7) days following stockpile construction. Stabilization and protection of the stockpile may be accomplished by any of the following: Mulching, Temporary/Permanent Revegetation Operations, Chemical Soil Stabilizer Application (requires Denver Public Works approval), or erosion control matting/Geotextiles. If stockpiles are located within 100 feet of receiving waters, a drainage way or the site perimeter, additional sediment controls shall be required.

-7-REVISION OF SECTION 208 EROSION CONTROL

10. SAW CUTTING OPERATIONS: The Contractor shall protect all storm sewer facilities adjacent to any location where pavement cutting operations involving wheel cutting, saw cutting, or abrasive water jet cutting are to take place. The Contractor shall remove and properly dispose of all waste products generated by said cutting operations on a daily basis or as needed throughout the work day. The discharge of any water contaminated by waste products from cutting operations to the storm sewer system is prohibited. (Sec.56-102a, c; Revised Municipal Code, City and County of Denver)

PART V: CONSTRUCTION REQUIREMENTS

A) SCHEDULES:

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

B) CONSTRUCTION IMPLEMENTATION:

The Contractor shall incorporate into the Project all BMPs that are appropriate for the current phase of work, as outlined in the accepted schedule.

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

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

D) PERMITS:

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

-8-REVISION OF SECTION 208 EROSION CONTROL

E) EROSION CONTROL SUPERVISOR:

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

The ECS shall be responsible for oversight of the implementation, maintenance, and revision of the SWMP for the duration of the Project. CCD requires the ECS to fulfill responsibilities as outlined by CDPS such as having financial control and authority to implement BMPs. The ECS's responsibilities shall be as follows:

- 1) Ensure compliance with all water quality permits or certifications in effect during the construction work.
- 2) Supervise the installation, construction, and maintenance of all BMPs specified in the Contract and coordinate the construction of BMPs with all other construction operations.
- 3) Direct the implementation of suitable BMPs as necessary to correct unforeseen conditions or emergency situations. Direct the dismantling of those features when their purpose has been fulfilled due to completion of each Project phase unless the Permit Enforcement Authority agrees that the features be left in place.
- 4) Attend the preconstruction conference, erosion control preconstruction inspection, Project scheduling meetings, weekly construction/ field meetings, substantial completion and final stabilization inspections, and other meetings regarding construction that could impact water quality.
- 5) Evaluate all non-stormwater coming onto the site, such as springs, seeps, and landscape irrigation return flow. If such flow is identified, the ECS shall propose appropriate SWMP modifications to the Contractor to protect off-site water from becoming contaminated with sediment or other pollutants.
- 6) Coordinate with the Contractor to implement necessary actions to reduce anticipated or presently existing water quality or erosion problems resulting from construction activities.
- 7) Coordinate with the Contractor to ensure all labor, material, and equipment deployed to meet SWMP requirements is judged appropriately.
- 8) During construction, update and record the following items in the SWMP as changes occur:
 - (i) Construction boundaries (may require Major SWMP Modification)
 - (ii) Areas of disturbance (may require Major SWMP Modification)
 - (iii) Areas used for storage of construction materials, equipment, soils, or wastes.
 - (iv) Location of any dedicated asphalt or concrete batch plants.
 - (v) Location of construction offices and staging areas.
 - (vi) Location of work access routes during construction.
 - (vii) Location of borrow and waste.
 - (viii) Location of temporary and permanent stabilization

-9-REVISION OF SECTION 208 EROSION CONTROL

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

- 9) Amend the SWMP whenever there are: additions, deletions, or changes in locations of BMPs. SWMP revisions shall be recorded immediately. Items shall be dated and signed at time of occurrence. Specifically, amendments shall include the following:
 - (i) A change in design, construction, operation, or maintenance of the site which would require the implementation of new or revised BMPs; or
 - (ii) Changes when the SWMP proves to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with construction activity.
 - (iii) Changes when temporary BMPs are no longer necessary from changes in Project phase and are removed. All inspection and maintenance activities or other repairs shall be documented.

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

- 10) Modify the site map with arrows to indicate direction of surface and storm water flowing across the Project site.
- 11) When adding or revising BMPs in the SWMP, amend the narrative to explain what, when, where, why, and how the BMP is being used, and add a detail to the SWMP.
- 12) If using existing topography, vegetation, etc. as a BMP, label it as such in the SWMP site map; amend the Narrative to explain when, why, and how the BMP is being used in the SWMP.
- 13) Record on the SWMP, and implement the approved plan for concrete and asphalt saw cutting, grinding, and milling containment and removal.
- 14) Update the potential pollutants list in the SWMP throughout construction meeting CASDP requirements.
- 15) Spills, leaks, or overflows that result in the discharge of pollutants shall be documented on the inspection form. The ECS shall record the time and date, weather conditions, reasons for spill, and how it was remediated. The ECS shall immediately report to the Contractor and Project Manager the following instances of noncompliance:
 - (i) Noncompliance which may endanger health or environment.
 - (ii) Spills or discharge of hazardous substance or oil which may cause pollution of the City MS4 or State Waters.
 - (iii) Discharge of stormwater which may cause an exceedance of a water quality standard.
- 16) Perform a thorough inspection of the stormwater management system at least every seven (7) days and within 24 hours after any precipitation or snowmelt event with the potential to cause surface erosion. If no land disturbing construction activities are present during a storm event, post-storm event inspections shall be conducted prior to commencing any new land disturbing construction activities, but no later than seventy-two (72) hours following the storm event. The inspection records shall be kept on-site in a written or previously approved format. Inspections shall be conducted during the progress of the work, during work suspensions, or until Final Stabilization of all disturbed areas is approved by Permit Enforcement Authority and shall include the following services at a minimum:
 - (i) The construction site perimeter, disturbed areas, and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. BMPs identified in the SWMP shall be observed to ensure that they are operating correctly.

-10-REVISION OF SECTION 208 EROSION CONTROL

- (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 shall be taken to ensure compliance with all regulatory requirements at site.
- (iv) Seven (7) day inspections are required during construction and at all times until Final Stabilization has been achieved. Seeding and mulching of disturbed areas does NOT count as final stabilization until such time as 70% pre disturbed vegetative cover has been achieved. Sites with growth in place sufficient to deter erosion that have not yet achieved final stabilization may petition the City to grant an alternative inspection schedule while awaiting additional growth for final stabilization. These inspections must be conducted in accordance with the above paragraphs.

F) APPLYING BMPs TO STABILIZE SITE:

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

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

-11-REVISION OF SECTION 208 EROSION CONTROL

- G) <u>WORK OUTSIDE LIMITS OF CONSTRUCTION</u>: Non-contiguous areas outside the limits of construction that are used by the Contractor that include, but are not limited to, borrow pits, haul routes, storage and disposal areas, field offices, maintenance, batching areas, etc., shall have appropriate BMPs implemented by the Contractor at the Contractor's expense. Should said areas meet applicable CASDP Permit criteria, the Contractor shall obtain a separate CASDP or amend existing CASDP for each area as applicable at no additional expense to the City.
- H) <u>MAINTENANCE</u>: 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) <u>MINOR SWMP MODIFICATIONS</u>: Shall be made in the field by the Contractor and thoroughly documented in the Contractor's SWMP narrative and drawings. Should the Permit Enforcement Authority deem minor field modifications inadequate, the Contractor may be required to a) make specific modifications as requested by the Permit Enforcement Authority or b) return to the original approved design specifications. Minor SWMP Modifications are allowed, covered under the original CASDP, and required as part of standard maintenance and operation.
- J) MAJOR SWMP MODIFICATION: The City reserves the right to require changes in the Work or Project Limits that may require a Major Modification to the SWMP and/ or CASDP due to unforeseen circumstances. Should this occur, the Contractor will be responsible for the following (as applicable) and applying for CASDP amendment:
 - (i) Make required revisions to comply with changing Federal or State rulemaking if it occurs within timeframe of the Project
 - (ii) Make required revisions due to unforeseen or unplanned conditions leading to deficient Drawings/ SWMP (hazardous materials encountered, landfills, expansion of work limits, etc.)
 - (iii) Prepare revised SWMP elements endorsed by a Professional Engineer licensed in the State of Colorado.

-12-REVISION OF SECTION 208 EROSION CONTROL

- K) <u>SUBSTANTIAL COMPLETION OF EROSION CONTROL</u>: 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) <u>FINAL STABILIZATION</u>: Granting of Final Stabilization must be requested by the Contractor and be approved by the Permit Enforcement Authority. Other permanent soil stabilization techniques may be proposed, in writing, by the Contractor and used upon approval, in writing, by the Project Manager and Permit Enforcement Authority.

The Contractor shall follow the following procedures for approval of Final Stabilization:

- (i) The Contractor shall file Inactivation Request for Construction Activities Stormwater Discharge Permit (available within CASDP guidance documents) with the Permit Enforcement Authority.
- (ii) The Contractor shall coordinate with the Permit Enforcement Authority to hold a Final Inactivation Inspection.
- (iii) If passing, the Permit Enforcement Authority transmits a letter of approval for Final Stabilization.
- (iv) If not passing, the Permit Enforcement Authority transmits a letter of denial for Final Stabilization with associated inspection report to Contractor.
- (v) Stabilization, inspection and maintenance requirements shall continue until confirmation of having met final closure requirements have been granted in writing by the Permit Enforcement Authority.
 - When Final Stabilization has been reached, the Permit Enforcement Authority shall issue a "Certificate of Final Stabilization".
- (vi) Once the Inactivation request is approved by the City and County of Denver, the contractor can apply to close the State Stormwater Permit.

M) FINAL ACCEPTANCE:

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

PART VI: CONSTRUCTION OF BMPs

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

PART V: BASIS OF PAYMENT

Because a SWMP and CASDP are not necessary for the Project, all cost for performance of the Work to furnish, install, maintain, replace (if not due to contractor negligence), remove, and dispose of BMPs specified in the Contract shall not be paid separately, but shall be included in the work.

-13-REVISION OF SECTION 208 EROSION CONTROL

Only Storm Drainage Inlet Protection will be measured and pay for separately in accordance with Section 608 of the Storm Drain Inlet Protection of this specification.

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

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

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

REVISION OF SECTION 208 STORM DRAIN INLET PROTECTION

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

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

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

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

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

Subsection 208.12 shall include the following:

Payment will be full compensation for all work, materials, and equipment required to complete the item, including surface preparation, maintenance throughout the project, and removal upon completion of the project.

Pay ItemPay UnitStorm Drain Inlet ProtectionEach

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 separately but shall be included in the work.

REVISION OF SECTION 210 RESET STRUCTURES

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

Subsection 210.01 is hereby revised to include the following:

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

Subsection 210.02 shall include the following:

The Contractor shall be required to maintain the landscaping planting in accordance with Section 214.

Subsection 210.09 shall include the following:

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

Subsection 210.10 shall include the following:

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

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

Reset Newspaper Stand shall include the removal, storage, and replacement of newspaper boxes in existing locations.

Reset Trash Can shall include the removal, storage, and replacement of each trash can in existing locations

Reset Pedestrian Handrail shall include the removal, storage, and replacement of all handrail as identified on the plans. Handrail should be restored to its existing location and to elevations which comply with all applicable accessibility and building codes and standards.

Reset Structure (Special) (ETS) shall include the reset of the electronic testing stations and the associated boxes, covers, risers, or any other fixture of said stations.

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

-2-REVISION OF SECTION 210 RESET STRUCTURES

Subsection 210.12 shall include the following:

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

Subsection 210.13 shall be revised to include the following:

Pay Item	Pay Unit
Reset Ground Sign	Each
Adjust Manhole, Meter, Valve	Each
Reset Newspaper Stand	Each
Reset Trash Can	Each
Reset Pedestrian Handrail	Each
Reset Structure (Special) (ETS)	Each

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

REVISION OF SECTION 210 RESET TRAFFIC SIGNAL HEAD

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

Subsection 202.11 shall include the following:

Traffic control to accomplish the reset of traffic signal heads is considered included in the lump sum cost for project-wide Construction Traffic Control and will not be measured and paid separately.

REVISION OF SECTION 210 RESET SIGN PANEL

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

Subsection 202.11 shall include the following:

Traffic control to accomplish the reset of overhead sign panels is considered included in the lump sum cost for project-wide Construction Traffic Control and will not be measured and paid separately.

REVISION OF SECTION 210 RESET AND MODIFY TRAFFIC SIGNAL MAST ARM

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

Subsection 210.01 shall include the following:

This work shall consist of the temporary disconnection of the existing eastbound (southeast corner) mast arm at 19th Avenue and Lincoln Street, modification thereto, and re-installation following modification.

Two locations are required.

- 1. 19th & Lincoln. Contractor shall remove approximately 10' from the remote end of the existing mast arm, such that a 35' mast arm remains for reinstallation following the length reduction.
- 2. Park & Clarkson. Contractor shall remove approximately 15' from the remote end of the existing mast arm, such that a 35' mast arm remains for reinstallation following the length reduction.

Subsection 210.09 shall include the following:

All work shall be coordinated with the City & County of Denver traffic maintenance shops. Contact Chris Lillie at 720-865-4066 or Greg Salazar at 303-591-7146 to schedule and coordinate all activities.

Contractor shall remove the existing southeast corner mast arm at 19th and Lincoln for modification off-site. A temporary span-wire signal installation will be provided across the intersection east leg while this work is accomplished and will be paid separately as a Temporary Traffic Signal under Section 630.

Contractor shall remove the existing northeast corner mast arm at Park Avenue West and Clarkson for modification off-site. A temporary span-wire signal installation will be provided across the intersection north leg while this work is accomplished and will be paid separately as a Temporary Traffic Signal under Section 630.

Prior to beginning work to adjust length of the existing mast arm, Contractor shall provide the City with a written description of its proposed methodology to accomplish modification and recap the modified arm. Contractor shall schedule the modification work such that a Denver representative may observe these activities, if so desired by the City.

Upon length reduction by the approved method, Contractor shall remove rough or sharp edges, burrs or other irregularities caused by the modification. The remote end of the arm to be reinstalled shall be capped using the approved method and the arm shall be repainted. Paint shall be in accordance with pole manufacturer's recommendation; color shall be dark olive green in accordance with Federal Specification 14056. Reinstallation shall be as directed by the Engineer.

The removed portion of the mast arm is the property of the Contractor and shall be disposed of in accordance with the applicable sections of the Standard Specifications, as well as in accordance with applicable laws and ordinances.

-2-REVISION OF SECTION 210 RESET AND MODIFY TRAFFIC SIGNAL MAST ARM

Subsection 210.12 shall include the following:

Reset Traffic Signal Mast Arm shall be measured and paid by the number of mast arms, removed, modified, and reinstalled. Work shall include all required labor and materials to remove, modify, prepare for re-attachment, and reinstall the item. All required coordination with the City specific to the activity is considered included in the unit price.

Preparation of the item prior to re-installation, including removal of irregularities, recapping the arm, and painting is considered included in the unit price. Traffic control to remove the item, install a temporary signal, reinstall the item and remove the temporary signal is considered included in the lump sum cost for project-wide Construction Traffic Control and will not be measured and paid separately.

Subsection 210.13 shall include the following:

Pay Item	Pay Unit
Reset and Modify Traffic Signal Mast Arm	Each

REVISION OF SECTION 210 RESET WIRING

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

Subsection 210.01 shall include the following:

This work consists of the disconnection of lateral fiber optic cable from controller cabinets identified for permanent removal; pulling excess cable back into adjacent pull boxes; and coiling, capping, and otherwise protecting the cable such that it can be indefinitely stored in the backbone communications pull box at these locations. Five locations are included:

- 1. 20th Avenue and Grant Street
- 2. 20th Avenue and Logan Street
- 3. 19th Avenue and Sherman Street
- 4. 19th Avenue and Grant Street
- 5. 19th Avenue and Logan Street

Subsection 210.02 shall include the following:

All existing in-cabinet material including patch panels, patch cords, pigtails, connectors, modems, Ethernet switches, and so on shall be considered salvageable material and shall be returned to the City as part of the existing cabinet removal.

Contractor shall disconnect lateral fiber optic cable from the patch panel and pull said cable back into the adjacent communications pull box. Lateral cable shall be coiled and bundled in a neat, workmanlike manner, using cable ties or other approved method. Cable ends shall be capped or otherwise protected, and the entire lateral cable coil shall be placed into a watertight covering or container system for indefinite or permanent storage. All existing backbone to lateral cable splices shall remain.

Subsection 210.13 shall include the following:

At all intersections where the cabinet is to be removed, lateral interconnect cable shall be disconnected, pulled to adjacent pull box, protected, and stored to the satisfaction of the Engineer's designee.

Work shall be measured and paid by the number of intersections at which the work is to occur.

Subsection 210.14 shall include the following:

Pay Item	<u>Pay Unit</u>
Reset Wiring	Each

REVISION OF SECTION 210 RESET FIRE PREEMPTION UNIT

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

Subsection 210.01 shall include the following:

This work consists of removal and reinstallation of optical fire-preemption detectors on existing, new, or modified mast arms.

In some cases, existing lead-in cable for these devices can be re-attached to the reset devices and reused accordingly; however new lead-in cable shall be provided if existing lead-in length is insufficient or if so directed by the Engineer.

Subsection 210.02 shall include the following:

The following subsection summarizes the required work at the two (2) cabinet locations listed:

- 1] 19th Avenue and Park Avenue West
- 2] Park Avenue West and Clarkson Street

19th & Park

Reset one fire preemption detector on northeast corner from existing to new mast arm. Provide all required wiring connections at the detector and in the cabinet (if necessary) to reestablish successful preemption operations. Reset one fire preemption detector on southeast corner as required to accommodate signal head shifts and overhead signing changes at that location.

Once initially removed, it is the Contractor's responsibility to maintain the devices in service if so directed by the Engineer or temporarily store all units designated for reset such that the units are protected from physical damage until the items can be successfully reinstalled.

If required, install new lead-in cable between optical detector and cabinet. No splices are allowed in the lead-in cable. If required, new lead-in cable shall be Opticom Model 138 or approved equal. Removed cable shall be disposed of in accordance with the applicable sections of the Standard Specifications as well as in accordance with all applicable laws, ordinances, and regulations.

Park and Clarkson

Reset one fire preemption detector on northeast corner from existing to proposed modified and reset mast arm. Provide all required wiring connections at the detectors and in the cabinet (if necessary) to reestablish successful preemption operations. Reset one fire preemption detector on southwest corner as required to accommodate signal head shifts and overhead signing changes at that location.

Once initially removed, it is the Contractor's responsibility to maintain the devices in service if so directed by the Engineer or temporarily store all units designated for reset such that the units are protected from physical damage until the items can be successfully reinstalled.

If required, install new lead-in cable between optical detector and cabinet. No splices are allowed in the lead-in cable. If required, new lead-in cable shall be Opticom Model 138 or approved equal. Removed cable shall be disposed of in accordance with the applicable sections of the Standard Specifications as well as in accordance with all applicable laws, ordinances, and regulations.

-2-REVISION OF SECTION 210 RESET FIRE PREEMPTION UNIT

Subsection 210.12 shall include the following:

Reset Fire Preemption Unit shall be measured by the number of mast-arm or span-wire mounted devices for which the work is required and shall include all labor and materials required to reset all fire preemption devices; reset for temporary operation during construction as directed by the Engineer; protect the devices during resetting operations; remove and dispose of existing lead-in cable (if required); install new lead-in cable (if required); and provide all wiring connections at the detectors and at the cabinets to reestablish successful emergency vehicle preemption operations.

Contractor shall be required to demonstrate successful emergency vehicle preemption operations to the Engineer prior to acceptance of this item for payment.

If new mounting hardware is required to facilitate resetting the preemption devices, cost of such hardware is considered included in the unit price for this item and will not be measured and paid separately.

Subsection 210.13 shall include the following:

Pay Item	Pay Unit
Reset Fire Preemption Unit	Each

REVISION OF SECTION 210 RESET INTERSECTION DETECTION SYSTEM (CAMERA)

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

Subsection 210.01 shall include the following:

This work consists of the removal and reinstallation of existing video camera detectors on existing mast arms.

In some cases, existing lead-in cable for these devices can be reattached to the reset devices and reused accordingly; however new lead-in cable shall be provided if existing lead-in length is insufficient or if so directed by the Engineer.

Subsection 210.02 shall include the following:

The following subsection summarizes the required work at the two (2) cabinet locations listed:

- 1] 19th Avenue and Park Avenue West
- 2] Park Avenue West and Clarkson Street

19th & Park

Reset one detection camera on southeast corner as required to accommodate signal head shifts and overhead signing changes at that location.

Once initially removed, it is the Contractor's responsibility to maintain the devices in service if so directed by the Engineer or temporarily store all units designated for reset such that the units are protected from physical damage until the items can be successfully reinstalled.

If required, install new lead-in cable between camera and cabinet. No splices are allowed in the lead-in cable. If required, new lead-in cable shall match camera manufacturer's recommendation. Removed lead-in cable shall be disposed of in accordance with the applicable sections of the Standard Specifications as well as in accordance with all applicable laws, ordinances, and regulations.

Clarkson and Park

Reset one detection camera on northeast corner from existing to proposed modified and reset mast arm. Provide all required wiring connections at the camera and in the cabinet (if necessary) to reestablish successful video detection operations. Reset one detection camera on southwest corner as required to accommodate signal head shifts and overhead signing changes at that location.

Once initially removed, it is the Contractor's responsibility to maintain the devices in service if so directed by the Engineer or temporarily store all units designated for reset such that the units are protected from physical damage until the items can be successfully reinstalled.

If required, install new lead-in cable between camera and cabinet. No splices are allowed in the lead-in cable. If required, new lead-in cable shall match camera manufacturer's recommendation. Removed lead-in cable shall be disposed of in accordance with the applicable sections of the Standard Specifications as well as in accordance with all applicable laws, ordinances, and regulations.

-2-REVISION OF SECTION 210 RESET INTERSECTION DETECTION SYSTEM (CAMERA)

Subsection 210.12 shall include the following:

Reset Intersection Detection System (Camera) shall be measured by the number of mast-arm or spanwire mounted devices for which the work is required and shall include all labor and materials required to reset all cameras; reset and calibrate for temporary operation during construction as directed by the Engineer; protect the devices during resetting operations; remove and dispose of existing lead-in cable (if required); install new lead-in cable (if required); and provide all wiring connections at the cameras and at the cabinets to reestablish successful vehicle detection.

Contractor shall be required to demonstrate successful video detection operations to the Engineer prior to acceptance of this item for payment.

If new mounting hardware is required to facilitate resetting the preemption devices, cost of such hardware is considered included in the unit price for this item and will not be measured and paid separately.

Subsection 210.13 shall include the following:

Pay Item	Pay Unit
Reset Intersection Detection System (Camera)	Each

REVISION OF SECTION 210 MODIFY MANHOLE

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

Subsection 210.01 shall include the following:

Modify manholes consists of raising existing storm sewer manholes to the new grade lines established with construction of the roadway improvements. This item may also include providing openings for new pipes and plugging existing holes in inlets and manholes specified in the plans.

Subsection 210.02 shall include the following:

Modification of manholes shall be done in accordance with the details included in the plans and in conformance with the appropriate M Standard Plan.

Subsection 210.12 shall include the following:

Modify manholes will be measured by the actual number modified which shall include all work required to remove portion of existing manholes to the top of the barrel, build new barrel to the required height, build new eccentric cones to the required height, add additional steps as required, and reset the manhole ring and cover to the finished grade. If the rings and covers are destroyed or in the opinion of the Engineer cannot be reused, new manhole rings and covers shall be provided at no additional cost to the project.

Subsection 210.13 shall include the following:

Payment will be made under:

Pay ItemPay UnitModify ManholeEach

Structure excavation and structure backfill required for "Modify Manhole" will not be measured and paid for separately but shall be included in the work. Reinforcing steel, structural concrete, manhole rings and covers, as well as all other materials required to complete the item, shall be included in the work

REVISION OF SECTION 212 LANDSCAPE RESTORATION

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

Subsection 212.01 shall include the following:

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

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

Subsection 212.07 shall include the following:

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

Subsection 212.08 shall include the following:

Pay Item	<u>Pay Unit</u>
Landscape Restoration	Square Foot

REVISION OF SECTION 304 AGGREGATE BASE COURSE

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

Subsection 304.06 is revised as follows:

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

Subsection 304.08 is hereby revised as follows:

Payment will be made under:

Pay ItemPay UnitAggregate Base Course (Class 6)Ton

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

REVISION OF SECTION 401 & 403 HOT MIX ASPHALT

Sections 401 and 403 of the Standard Specifications is hereby deleted and replaced with Item 9 "Hot Mix Asphalt Pavement" Specifications from the Metropolitan Government Pavement Engineers Council (MGPEC), Volume 1 Pavement Design Standards and Construction Specification, latest version.

This work consists of one or more courses of asphalt mixture constructed on a prepared foundation in accordance with these specifications and the specific requirements of the type under contract, and in conformity with the lines, grades, thicknesses, and typical cross sections shown on the plans or established.

HMAP patching or overlay shall be paid by the square yard. Tack Coat will not be measured and paid separately but shall be included in the cost of the work.

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

Contact MGPEC at 303-979-2190 for MGPEC membership information and to receive full design standards and construction specifications. This Item 9 specification is available online at www.mgpec.org.

Warm Mix Asphalt Technology may be considered, upon approval by the Project Manager.

CONSTRUCTION REQUIREMENTS

The Contractor shall be required to place all HMA paving, wide enough for a paver, using a bituminous paver that has been certified to have met the National Institute for Occupational Safety and Health (NIOSH) emission guidelines as set forth in Engineering Control Guidelines for Hot Mix Asphalt Pavers, Part 1: New Highway-Class Pavers (Department of Health and Human Services (NIOSH) Publication No. 97-105, April 1997 printing)

METHOD OF MEASUREMENT

Subsection 9.16 of the MGPEC Specifications, first paragraph shall be replaced with the following:

The measurement for payment of Hot Mix Asphalt Pavement will be the actual tonnage of hot mix asphalt, in place, complete as pavement, and accepted by the Project Manager. No measurement for payment will be made for hot mix asphalt placed in areas not specifically approved by the Project Manager, nor required due to careless or unauthorized operation by the Contractor.

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REVISIONS OF SECTIONS 401 & 403 HOT MIX ASPHALT BASIS OF PAYMENT

Subsection 9.17 of the MGPEC Specifications is hereby deleted and replaced with the following:

Payment will be made under:

Pay Item	Pay Unit
Hot Mix Asphalt (Grading S)(100)(PG 64-22)	Ton
HBP Patch/Overlay	SY

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

- (1) Project Number
- (2) Date
- (3) Ticket Number
- (4) Haul Unit Number
- (5) Gross Weight
- (6) Tare Weight
- (7) Net Weight
- (8) Material Type
- (9) Name of Certified Weigher

The scale tickets shall be available on site for the Project Manager to inspect.

Each day, the Contractor shall provide to the Project Manager 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 or Excel Spreadsheets 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 containing the following information for each vehicle that is used to deliver Hot Mix Asphalt to the project:

- (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

-4-REVISIONS OF SECTIONS 401 & 403 HOT MIX ASPHALT

Agency: City and County of Denver	Project Number:	
Date:	Project Name: 19th & 20th	Two-Way Conversion
MGPEC Form # 9 October 2008		n Requirements for It Pavements (HMA)
Project Special Provis	sion Sheet for Hot Mix	Asphalt Pavements (HMA)
This MGPEC Form #9 is a mandatory part of the bid documents , and → shall be filled out by the AGENCY for each mix specified. The Contractor shall include a copy of this form with each Mix Design submittal after the contract is awarded.		
Street Classification: Collector (examples: Residential, Collector, Arterial, Industrial, Parking Lot or actual name for Project)		
→ Construction Application:	☐ Top Lift ☐ Intermed ☐ Other_	diate Lift(s)
→ Aggregate Gradation:	☐ Grading SX (2.5" or less lifts) ☐ Grading S (2.5+" to 3.5" lifts) ☐ Grading SG (3.5" or thicker lifts) - for lower lift(s) only, may need approval of surface texture by Agency ☐ SMA (Top lift only) The SMA gradation for this project shall be	
→ RAP Quantity, Maximum: □ 0% □ 15% ☑ 20% □ 25% Notes: A quality control plan for RAP will be required when RAP is used Top lift Maximum RAP content allowed is 20%		
→ Superpave Gyratory Mix Design Compaction Level, Recommended usage and Recommend binder(s):		
□ N _{design} =50 Low volur □ N _{design} =75 0 to <3 m □ N _{design} =100 3 million t Notes: - The binders are show - Polymer modified PG	illion ESALs o <30 million ESALs n in order they should be considere Binders are typically used in the to	
 Target job Mix Optimum Asphalt Content Selection, Choose target % as close to 4.0 as possible (3.5% to 4.5% air voids per MGPEC 2008) Target Job Mix optimum Binder content for SMA grading at 3.0% to 4.0% air voids 		
A completed MGPEC Form #9 shall supplement the MGPEC Construction Specifications defining the contract specific requirements of Item 9: Hot Mix Asphalt Pavement (HMA) & Stone Matrix Asphalt (SMA). Refer to the Item #9 Specifications for details. MGPEC Form #9 to be used with: MGPEC – Volume 1 - Pavement Design Standards and Construction Specifications October 2008 Version Item 9 Hot Mix Asphalt Pavements (HMA) & Stone Matrix Asphalt (SMA) - Mixture Design Requirements		

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REVISION OF SECTION 412 PORTLAND CEMENT CONCRETE PAVEMENT

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

Subsection 412.01 shall be revised to include the following:

This work shall also include driveway, crosspan, bus pad, and alley paving.

Subsection 412.03 shall be revised to include the following:

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

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

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

Subsection 601.05, Paragraph 12, referencing use of fly ash, shall be revised to remove "20 percent Class C or" from the second line.

Subsection 412.10 (d) shall be deleted and replaced with the following revisions:

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

Subsection 412.12 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.

-2REVISION OF SECTION 412 PORTLAND CEMENT CONCRETE PAVEMENT

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

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

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

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

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

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

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

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

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

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

The time schedule for sawing weakened plane joints shall be as follows: Every second joint shall be sawed 2 to 12 hours after pavement placement, provided the concrete has sufficiently set so as to preclude the dislodging of aggregate particles by the saw. Unless otherwise directed by the Engineer,

-3-REVISION OF SECTION 412 PORTLAND CEMENT CONCRETE PAVEMENT

the exact time of sawing shall be determined by the Contractor and will be dependent on weather conditions, ambient temperature, mix characteristics, and other factors that may affect the setting time of the concrete. Every effort shall be made to saw early enough to control or limit random cracking. The intermediate joints shall be sawed prior to opening to traffic, but in no case longer than 48 hours after placement of the concrete.

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

Subsection 412.18 shall be deleted and replaced with the following:

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

Cleaning, repairing, and proper curing of any spalls, fractures, breaks, or voids in the concrete surface of the joints shall be accomplished at least 4 days prior to installing the backer rod material or joint sealant. Joint sealing or resealing shall be performed only when the ambient and pavement temperatures are 50 degrees F or higher, unless otherwise approved by the Engineer. The pavement surface and joints shall be dry and the sealant shall not be placed unless the weather conditions are dry. The sealant shall be placed a minimum of 4 days after joints are washed clean. Sealant shall be silicone as per the requirements of Section 705.01.

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

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

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

REVISION OF SECTION 412 PORTLAND CEMENT CONCRETE PAVEMENT

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

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

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

Subsection 412.22 shall be deleted and replaced with the following:

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

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

Subsection 412.24 shall be revised to include the following:

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

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

Pay Item	<u>Pay Unit</u>
Concrete Pavement (6 Inch)	Square Yard
Concrete Pavement (8 Inch)	Square Yard

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

REVISION OF SECTION 503 CAISSON (SPECIAL)

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

Subsection 503.01 shall include the following:

This work consists of installing foundations for new mast-arm style traffic signal-light poles, traffic signal poles with no mast arms, pedestal poles, and flashing beacon poles. Individual traffic signal-light poles with and without mast arms are furnished by the City & County of Denver and installed by the Contractor, and in the case of pedestal poles or flashing beacons, furnished and installed by the Contractor. Locations of all foundations shall be field-verified and approved by the Engineer prior to excavation.

All traffic signal-light pole locations: For each traffic signal-light pole with mast arm, work will occur in three stages: 1] Contractor will install a new foundation for the proposed traffic signal-light pole in accordance with City & County of Denver standards; 2] Contractor will install the pole; and 3] Contractor will install the mast arm, luminaire arm, and luminaire.

All pedestal poles and all flashing beacons project-wide: For each pedestal pole and flashing beacon pole, work will occur in three stages: 1] Contractor will install a new foundation for the proposed pole in accordance with City & County of Denver standards; 2] Contractor will install the pole; and 3] Contractor will install traffic signal devices.

New Subsection 503.01(a) is hereby included:

Drilling and vacuuming are considered acceptable means of excavation; however, given the location of the project in central Denver and the anticipated age and density of existing utilities, it is believed that vacuuming will be the preferred construction method for most foundation locations.

Vacuumed Caisson

This work consists of constructing traffic signal pole foundations using a vacuum method. Use of a vacuum method in lieu of drilling at these locations shall be to protect existing utilities including but not limited to fiber optic, gas, and underground electric lines. The traffic signal foundation holes will be excavated using a vacuum method in lieu of drilling, and the Contractor shall place reinforcing steel and concrete in the excavated holes in accordance with these specifications and in conformity with the lines and grades on the plans or established.

Subsection 503.03 shall include the following:

Materials and installation shall conform to the requirements of the City & County of Denver's Traffic Signal Standard Detail sheet no 16.1.8 and details no. 12-14.

-2-REVISION OF SECTION 503 CAISSON (SPECIAL)

New Subsection 503.03(a) is hereby included:

Vacuumed Caisson

Caisson excavation shall be performed with a vacuum pothole machine to prevent drilling through existing utilities.

Section 503.08 is hereby revised to include the following:

Regardless of installation method, foundations for traffic signal-light poles shall be measured and paid by the linear foot of caisson installed and approved as Caisson (Special) (36 Inch).

Base plate(s), anchor bolts, nuts, and nut covers will be furnished to the Contractor by the City & County of Denver and installed by the Contractor as part of the unit price for this item. Transportation costs incurred by the Contractor to pick up the referenced materials are considered included in the unit cost for this item.

Items also included in the unit price for the foundation include raking and/or plumbing of the poles after loading and all required grouting. All required coordination with the City to accomplish the work and facilitate scheduling is included in the caisson item and will not be measured and paid separately.

Foundations for light poles with no mast arm are paid separately under Section 613 as Light Standard Foundation. Foundations for traffic signal pedestal poles or flashing beacon poles are considered included in the unit cost for Traffic Signal Pedestal Pole and/or Flashing Beacon as appropriate and are not measured and paid separately. Note that in each of these cases, vacuuming shall also be considered an acceptable method for foundation installation.

Section 503.09 is hereby revised to include the following:

Pay ItemPay UnitCaisson (Special) (36 Inch)Linear Foot

The unit price for Caisson (Special) (36 Inch) shall be full compensation for making all excavations; hauling and disposal of excavated material; performing all necessary pumping; furnishing and placing required concrete and reinforcement steel, including the reinforcement projecting above the tops of the caissons necessary for splicing; all backfilling; removing casings; and for furnishing all tools, labor, equipment, and incidentals necessary to complete the work. No extra payment will be made for casing left in place. Costs of coordination with the City and transportation costs to pick up or drop off materials shall be considered included in the unit price and will not be measured and paid separately.

REVISION OF SECTION 601 STRUCTURAL CONCRETE

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

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

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

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

Subsection 601.06, Item 7, is modified as follows:

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

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

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

REVISION OF SECTION 603 CULVERTS AND SEWER

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

Section 603.02 is hereby revised to include the following:

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

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

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

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

Section 603.03 through 603.11 shall be replaced with the following:

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

https://www.denvergov.org/content/denvergov/en/right-of-way-services/engineering-regulatory-analytics/engineering-plan-review/manuals-regulations.html

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

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

Section 603.12 is hereby revised to include the following:

Pay Item	<u>Pay Unit</u>
15-Inch Reinforced Concrete Pipe	Linear Foot
18-Inch Reinforced Concrete Pipe	Linear Foot
24-Inch Reinforced Concrete Pipe	Linear Foot

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

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

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

REVISION OF SECTION 604 MANHOLES AND INLETS

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

Subsections 604.02 through 604.06 shall be replaced with the City and County of Denver (CCD), Department of Public Works document "Storm Drainage and Sanitary Sewer Construction Detail and Technical Specifications". This document can be found at the following web address:

 $\underline{\text{https://www.denvergov.org/Portals/711/documents/2012updates/All%20Tech\%20Specs\%209-10-12.pdf}$

Delete all references in this document to measurement and payment and item numbers referencing CCD's Standard Construction Specifications.

Subsection 604.04(b) shall include the following:

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

Subsection 604.06 shall include the following:

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

Subsection 604.07 shall include the following:

Pay Item	Pay Unit
Type No. 14 Inlet (6 Foot)	Each
Type No. 14 Inlet (9 Foot)	Each
Triple No. 16 Inlet Valley	Each
Single No. 16 Inlet Special	Each
4' I.D. Manhole Slab Base (5 Foot)	Each
4' I.D. Manhole Slab Base (10 Foot)	Each
5' I.D. Manhole Slab Base (5 Foot)	Each
5' I.D. Manhole Slab Base (10 Foot)	Each

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

Pay Items Triple No. 16 Inlet Valley, Type No. 14 Inlet, 4' I.D. Manhole and 5' I.D. Manhole shall conform to City and County of Denver, Department of Public Works, Wastewater Management Division, Standard Details 2015. This document can be found at the following web address:

https://www.denvergov.org/content/dam/denvergov/Portals/711/documents/Standard%20Detail%2 https://www.denvergov.org/content/dam/denvergov/Portals/711/documents/Standard%20Detail%2 https://www.denvergov.org/content/dam/denvergov/Portals/711/documents/Standard%20Detail%2 https://www.denvergov/Portals/711/documents/Standard%20Detail%2 Drawings%20Full%20Set.pdf

REVISION OF SECTION 608 SIDEWALKS AND BIKEWAYS

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

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

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

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

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

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

Materials shall meet the requirements specified in the following subsections: Joint Fillers 705.01.

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

Detectable warnings on curb ramps shall be Armor-Tile Tactile Systems or approved equal. Installation of the detectable warnings on ADA curb ramps shall be in strict accordance with the manufacturer's recommendations.

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

Concrete shall be cured with a non-pigmented "clear" combination cure-seal compound.

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

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

-2-REVISION OF SECTION 608 SIDEWALKS AND BIKEWAYS

Subsection 608.03(a) shall include the following:

Delete the third sentence and add:

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

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

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

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

For Bikeways, control joints shall be zip strip or saw cut to a minimum depth of ¼ of the total slab thickness and no greater than ¼ inch wide. Control joints shall be spaced at 10 feet on center or as noted on the plans. Any damage to the concrete such as spalling, dislodging of aggregate particles, or cracking will be repaired by the Contractor at no additional cost to the Project. If said damage cannot be adequately repaired to the satisfaction of the Engineer, the Contractor shall remove and replace the damaged concrete at no additional cost to the Project.

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

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

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

Subsection 608.06 shall be revised to include the following:

Excavation to proposed subgrade elevation will not be paid separately but shall be included in the work.

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

-3-REVISION OF SECTION 608 SIDEWALKS AND BIKEWAYS

Payment will be made under:

Pay ItemPay UnitConcrete SidewalkSquare YardConcrete Curb RampSquare Yard

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

Excavation to proposed subgrade elevation will not be paid separately but shall be included in the work.

REVISION OF SECTION 608 BRICK PAVERS (SPECIAL)

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

Subsection 608.02 shall be revised as follows:

Brick pavers to be used in locations as shown on the plans shall match materials used in existing condition in color, size, jointing, and texture.

Subsection 608.03 shall be revised as follows:

Pavers shall be installed on substrate which matches the existing substrate material for the existing brick pavers. Contractor shall excavate, compact, construct similar substrate material, and secure and place pavers in a manner which matches existing conditions, aligns with proposed grades as shown on the plans, and limits opportunity for differential settlement and heaving of surface paver material.

Subsection 608.06 shall be revised to include the following:

Payment will be made under:

Pay ItemPay UnitBrick Pavers (Special)Square Yard

Payment shall be full compensation for labor and materials including, but not limited to, reconditioning, grading, backfill, subgrade materials, curing compound, control and expansion joint, sealant, and brick pavers as required to complete this Pay Item.

Excavation to proposed subgrade elevation will not be paid separately but shall be included in the work.

REVISION OF SECTION OF 609 CURB AND GUTTER

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

Subsection 609.02 shall be revised as follows:

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

Paragraph 2 shall be deleted and replaced with the following:

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

Subsection 609.03(a) shall be revised as follows:

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

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

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

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

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

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

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

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

Subsection 609.07 shall be revised to include the following:

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

Excavation to proposed subgrade elevation will not be paid separately but shall be included in the work.

REVISION OF SECTION 612 DELINEATOR (FLEXIBLE)

Section 612 of the Standard Specifications is hereby revised for this project as follows:

Subsection 612.01 shall include the following:

This work consists of furnish and installation of flexible delineator posts to be placed on the end of raised bicycle lane buffers as shown in the plans at various intersections within the project.

Delineators may have sign panels and object markers attached as depicted in the plans.

Subsection 612.02 shall include the following:

Contractor shall submit list of materials to the Engineer for approval prior to installation. Construction shall be in accordance with the manufacturer's recommendation for surface-mounted installation.

REVISION OF SECTION 613 ELECTRICAL CONDUIT

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

Subsection 613.01 shall include the following:

This work includes furnishing and installing new High Density Polyethylene (HDPE) or Polyvinyl Chloride (PVC) electrical conduit for use with and without fiber optic or other signal cables. All materials furnished, assembled, fabricated, or installed under this item shall be new, corrosion resistant, and in accordance with the plans and these Special Provisions.

Subsection 613.02 shall include the following:

All conduits shall be fully compatible with fiber optic cable. Plastic conduit shall be Schedule 80 in the diameters, quantities and depths indicated in the plans and shall be compliant with Bellcore TW-NWT-000356 requirements. Plastic PVC conduit shall be certified by the manufacturer as meeting ANSI/UL 6 and 651. The manufacturer shall be ISO 9000 compliant.

Subsection 613.07 shall include the following:

Directional boring is the preferred method of conduit installation to avoid impacting existing sidewalks, curbs, gutters, curb ramps, pavement, landscaping, and other surface features. Open trenching will only be allowed if specified in the plans or as allowed by the Engineer.

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

Any excavations required for the installation of conduit shall be performed in such a manner as to avoid unnecessary damage to streets, sidewalks, curbs, landscaping, sprinkler systems, and other existing structures or facilities. Excavation shall not be performed until immediately before installation of conduits. All trenches shall be backfilled by the end of a work shift. Material from the excavation shall be placed in a position to not cause damage or obstruction to vehicular or pedestrian traffic or to 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 backfilling. The machine shall be equipped with shields to direct the spoil downward and away from passing vehicles, workers, and pedestrians.

If trenching is used, all off-street trenches shall be backfilled 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 backfilled with CDOT-approved Structure Backfill (Flow-Fill) and capped with 9" minimum of Hot Mix Asphalt Pavement (Patching) in accordance with Section 403 and City & County of Denver Street Cut Regulations, as applicable. If surrounding pavement depth is greater than 9 inches, the HMA (Patching) depth shall match the existing pavement.

The Contractor shall restore all surface materials to their preconstruction condition or better, including but not limited to pavement, sidewalks, curb ramps, sprinkler systems, landscaping, shrubs, sod grass, or native growth vegetation that is disturbed by the conduit installation operation.

-2-REVISION OF SECTION 613 ELECTRICAL CONDUIT

All such surface restoration shall be considered included in the cost of conduit installation and will not be measured and paid for separately.

Conduit shall always enter a pull box, manhole, cabinet base, or any other type structure from the direction of the run only.

All conduit runs that will not have a copper conductor installed shall have a #12 AWG stranded copper conductor placed inside for locating purposes.

All conduit installation shall conform to guidelines of the National Electric Code (NEC).

Each individual conduit shall be equipped with either a pull rope or a pull tape, depending upon the length between pull boxes as follows: 1] each conduit with a segment more than 400' between pull boxes shall be equipped with a pull tape in the final product having minimum tensile strength of 1250lbs and of a design and manufacture that prevents cutting or burning into the conduit during cable installation; and 2] each conduit with a length of less than 400' between pull boxes shall be equipped with a pull rope in the final product having minimum tensile strength of 1250lbs.

The Contractor shall have the option of using pull tape in all conduit installations regardless of length. Splices in the pull tape, pull rope, and tracer wire shall not be permitted. Locating conductor and tape will not be measured and paid separately, but shall be included in the unit prices for conduit.

The Contractor shall take all necessary precautions to avoid overexcavating a trench or heaving damage to the existing asphalt or concrete mat, whether caused by equipment directly or by dislodging of rocks or boulders. Any such overexcavation or heaving shall be repaired or replaced at the Contractor's expense. The Contractor shall bear the cost of backfilling all over-excavated areas with the appropriate backfill material as approved by the Engineer.

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 metal 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 water/air tight seals of at least 100psi, and shall cause no damage to the cable when installed.

All conduit bends shall have a minimum acceptable radius – hereby established as 48" for 90° bends and 24" for all other bends. All conduit runs for fiber optic cable shall have a limited number of bends. The sum of the individual conduit bends, both horizontal and vertical, on a single conduit run between any two pull boxes shall not exceed 360°. The preferred limit is 270°. No individual bend shall exceed 90°.

Conduits shall use sweeps to elevate buried conduits to final grade within a pull box or manhole as shown in the plans. Sweeps shall be terminated within pull boxes and manholes to allow for easy installation and removal of conduit plugs. Sweeps shall be set above the ground surface within the pull box at a height that does not interfere with coiling of cables.

-3-REVISION OF SECTION 613 ELECTRICAL CONDUIT

At some locations (as illustrated on the plans or in these specifications or as directed by the Engineer or the Engineer's designee) new conduits may require installation within an existing pull box. At such locations, the Contractor shall carefully excavate around the existing pull box and sweep the new conduit into the pull box in a manner that meets or exceeds the requirements of this Special Provision.

The Contractor shall avoid damaging existing pull boxes. If the existing pull boxes, concrete collars, or lids are cracked or damaged during conduit installation, the Contractor shall be required to replace either or both at no additional cost to the project.

At locations that require conduit to be installed above ground, such as connections to surface-mounted pull boxes, Liquid-Tight Flexible Metal Conduit (LMFC) shall be provided with appropriate fittings and connection hardware. Such conduit shall have a galvanized, high-tensile strength, flexible steel strip inner core (helically wound with sealing cord), and the outer core shall be a UV resistant, liquid-tight smooth PVC sheath that is "keyed" into the inner steel core.

Subsection 613.10 shall include the following:

Electrical Conduit shall be measured by the actual linear foot of conduit installed and accepted and shall include all groundwork, lubricants, anchors, bands, skids, sweeps, pull rope, pull tape, copper tracer wire, adaptors, fittings, conduit plugs, foam sealant, installation equipment, splice couplings, mounting brackets and hardware, structure anchors, adhesives, labor, and all other items necessary to complete the work.

Utility location or potholing for the purposes of conduit installation will not be measured and paid for separately but will be considered included in the unit price for conduit.

Surface restoration shall be considered included in the unit price for this item and will not be measured and paid separately. No separate measurement or payment shall be made for irrigation system or landscape restoration required to be undertaken as a consequence of conduit installation. No separate measurement shall be made for any excavation or backfilling.

Subsection 613.11 shall include the following:

All new conduits shall be trenched or directionally bored at the Contractor's option as allowed by the Engineer. All new conduits shall be measured and paid as Electrical Conduit (Plastic) regardless of installation method.

Electrical Conduit unit prices shall be full compensation for the work shown in the plans and described above; complete and in place.

Payment will be made under:

Pay ItemPay Unit2 Inch Electrical Conduit (Plastic)Linear Foot3 Inch Electrical Conduit (Plastic)Linear Foot

REVISION OF SECTION 613 PULL BOXES

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, Contractor shall install the indicated number of new pull boxes of the size and type indicated. Pull box locations depicted in the plans are approximate. Work may also include removal and replacement of existing pull boxes at locations specified in the plans and as directed by the Engineer.

All pull boxes shall comply with Denver Traffic Standard Drawing No. 16.1.7. Pull boxes within this project shall be further identified as follows:

Type One Pull Box shall be used as an equivalent name to identify Denver Type A Pull Boxes. Type One Pull Boxes shall have the word "ELECTRIC" physically impressed (not painted) on the lid and have minimum dimensions of 23.25" long by 13.75" wide by 12" deep.

Type Two Pull Box shall be used as an equivalent name to identify Denver Type B Pull Boxes. Type Two Pull Boxes shall have the words "TRAFFIC SIGNAL" physically impressed (not painted) on the lid and have minimum dimensions of 30.5" long by 17.5" wide by 12" deep.

Type Three Pull Box shall be used as an equivalent name to identify Denver Type C Pull Boxes. Type Three Pull Boxes shall have the words "TRAFFIC COMM" physically impressed (not painted) on the lid and have minimum dimensions of 34.25" long by 22.5" wide by 24" deep.

Subsection 613.07 shall include the following:

The pull box shall have a detachable cover that has a skid-resistant surface. The cover 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. Non-standard bolts shall not be used.

All traffic signal pull boxes outside the traveled way, except surface-mounted ones, shall be made of fiberglass-reinforced polymer concrete designed to support a minimum service load of 20,000 pounds over a 10" x 10" square. Pull boxes shall be of the type specified in the plans.

New pull boxes in traveled ways shall be outfitted with traffic bearing lids rated for HS-44 loading. The pull boxes shall have a special concrete footing extending 8 inches around the outside and 6 inches around the inside of the pull box bottom, as shown in the plans. Pull boxes installed in dirt or landscape areas shall have a 12-inch-wide by 6-inch-thick concrete collar placed around the top in lieu of the concrete footing, as shown in the plans. All concrete collars, footings and location marker supports shall be Portland Cement Concrete Class B and shall be in accordance with Section 601. When the plans call for a fiber optic location marker to be installed at pull box locations, the concrete foundation support for the location marker shall be placed monolithically with the concrete collar.

At some intersections, existing pull boxes and conduits may need to be modified to accommodate minimum bend requirements of interconnect cable and/or splice closures. As shown in the plans or as directed by the Engineer, the Contractor shall remove existing pull boxes and replace with a new

-2-REVISION OF SECTION 613 PULL BOXES

pull box having dimensions as listed in the plans or herein. Replacement of such boxes will be paid at the unit price for new pull boxes.

Pull Box (Surface Mounted) shall be metal type with a hinged front door and have at least a NEMA 3R rating. The hinged door shall be provided with both a weather tight seal and key lock mechanism. Surface mounted pull boxes shall be of the dimensions shown in the plans, and shall be mounted on or embedded into hard surfaces such as bridge decks, concrete barriers, retaining walls, or buildings as shown in the plans. Surface mounted pull boxes shall be attached using 3/8-inch epoxy anchors or other methods, as approved by the Engineer. Surface mounted pull boxes shall not be used for ground installations.

Subsection 613.10 shall include the following:

Type and location of pull boxes shall be as shown and tabulated in the plans. Pull boxes will be measured and paid for by the number of actual pull boxes installed and accepted. Pull boxes shall include installation of new pull box, modification of conduit ends if required, and all excavation, backfill, and surface restoration.

The unit price shall include the removal and replacement of existing surface materials in-kind to match existing grade and pre-construction condition – including landscaped areas. All other labor and materials necessary to complete the item are included. Seeding, mulching, and associated items required for landscape restoration around individual pull boxes shall be considered included in the unit price for this item and will not be measured and paid separately.

Removal and disposal of existing pull boxes and associated material will not be measured and paid separately but shall be included in the work.

Subsection 613.11 shall include the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Type One Pull Box	Each
Type Two Pull Box	Each
Type Three Pull Box	Each

REVISION OF SECTION 613 WIRING

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

Subsection 613.01 shall include the following:

This work furnishes and installs electrical wiring for new and modified traffic signals within the project limits. Work also includes replacing any damaged field wires or wires of insufficient length that are encountered on the project due to controller cabinet or device replacements or resets.

Subsection 613.08 shall include the following:

All new field wiring shall meet current City & County of Denver standards. All work required to provide intersection wiring in accordance with National Electric Code (NEC) requirements is considered included in the unit price for this item.

Intersection Wiring

Contractor shall establish or reestablish all required wiring and/or wiring connections required for successful operation of the controller and cabinet assembly in accordance with the NEC. This shall include all wiring and/or wiring connections between in-cabinet components as well as those between the cabinet and field equipment including but not limited to signal heads, push buttons, detectors, cameras, and emergency vehicle preemption detectors.

Separate feeds shall be provided for traffic signals and street lights.

Conductors shall be permanently identified as to function. Identification shall be placed on each conductor, or each group of conductors comprising a signal phase, in each pull box and near the end of terminated conductors. Identification shall be by bands fastened to conductors in such a manner that they will not move along the conductor.

Grounds and bonding wire, straps, and electrodes shall conform to NEC Article 250. Wiring and splices shall conform to applicable NEC Articles. Wiring within cabinets, hand-holes, and junction boxes shall be neatly arranged and shall be laced. Conductors shall be stranded, tinned copper wire, rated at 600 volts and individually insulated with heat stabilized polyethylene. Conductors and cables shall conform to International Municipal Signal Association (IMSA) Specification 19-1.

Metallic cable sheaths, conduit, metal poles, and pedestals shall be made mechanically and electrically secure to form a continuous system and shall be effectively grounded. Bonding and grounding jumpers shall be a bare copper wire or copper strap of the same cross-sectional area, No. 8 AWG, for all systems. Sheath for detectors shall be grounded in the controller cabinet only. The other end of the sheath shall be taped and left ungrounded.

A ground electrode shall be installed at each controller cabinet. Each ground electrode shall be a one-piece copper-weld rod of 5/8-inch diameter and eight (8) feet in length, driven to a depth of at least 8 feet below the surface of the ground (flush with ground or top of cabinet base). The ground terminal of each controller shall be connected to the ground rod with a No. 8 AWG bare copper wire with an approved ground rod clamp.

-2-REVISION OF SECTION 613 WIRING Splices shall be made in hand-holes or cabinets. No splices shall be allowed in pull boxes or conduits. Method shall be as approved by the City & County of Denver.

Bonding of poles and pedestals shall be by means of connecting to the ground rod a bonding strap attached to the anchor bolt or a 3/16-inch or larger brass or bronze bolt installed in the lower portion of the shaft.

Sufficient numbers of signal head conductors shall be provided to perform the functional operation of the signal. Additional conductors for electrical service or interconnect shall be as noted herein or in the plans. Signal head conductors shall conform to the red-yellow-green color sequencing with different colored tracers for each phase provided. Three (3) spare conductors shall be provided throughout the signal head circuit. All signal head conductors shall have individual terminal lugs for connection to terminal strips in the cabinet.

When conductors and cables are pulled into conduit, ends of said cables and conductors shall be taped to exclude moisture and shall be so kept until splices are made or terminal appliances attached. Ends of spare conductors shall be taped to exclude moisture. Powdered soapstone, talc, or other approved lubricant shall be used in placing conductors in conduit.

A ¹/₄-inch nylon pull rope shall be installed in all new conduits and all existing conduits where a cable is added or an existing cable is replaced. At least 2 feet of pull rope shall be doubled back into the conduit at each termination.

Five (5) feet of slack shall be left for each conductor at each support pole and 2 feet of slack at each pull box containing cable connections.

Multi-conductor cable shall be spliced and insulated to provide a watertight joint to prevent absorption of moisture by the cable.

All required wiring shall be performed in a neat, workmanlike manner. Wiring shall be routed to match existing cabinet wiring and fix to existing cabling or the cabinet chassis using wire ties or other approved connectors.

All new wiring shall conform to NEC, IMSA, and City and County of Denver standards.

Subsection 613.11 shall include the following:

Labor and materials to provide traffic signal and flashing beacon wiring on this project in accordance with this Project Special Provision shall be measured and reimbursed on a lump sum basis. No additional reimbursement for wiring shall be made outside of this item.

The lump sum provided in the Contractor's Base Bid shall include wiring for all traffic signal and flashing beacon locations within the project limits except for 18th & Logan. The lump sum provided in the Contractor's estimate for Bid Alternate 1 shall be limited to wiring for 18th & Logan only.

-3-REVISION OF SECTION 613 WIRING

Subsection 613.11 shall include the following:

Pay Item
WiringPay Unit
Lump Sum

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 street light, 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 where, 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 AND 75' WEST
THEN TO HIGHWAY SIGN
FEEDS FROM XFMR
250' SOUTH AND EAST
200' WEST

Uniform tags are available in a Tag Kit. The Tag Kit consists of: 100 tags, 3-part yellow with one hole, 100 black nylon ties, and one black permanent ink marker.

<u>Manufacturers</u> <u>Catalog Number</u>

Uticom Systems, Inc. U5025Y1

Or Approved Equal

Subsection 613.11 shall include the following:

Electrical conductor tagging will not be measured and paid separately but shall be considered included in the work.

REVISION OF SECTION 613 LUMINAIRE (LED)

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

Subsection 613.01 shall include the following:

This work shall consist of furnishing and installing LED luminaires atop traffic signal poles. Within this project, two locations apply: 1] 19th & Clarkson and 2] 18th & Logan (Bid Alternate 1 only).

Subsection 613.02 shall include the following:

The Contractor shall furnish and install LED Street Light Luminaires at locations as shown on the plans. The LED Street Light Luminaire shall be 5300 Lumens, compatible or interchangeable with standard LED Street Light Luminaires currently stocked by the City and County of Denver.

The current LED Street Light Luminaire compatible with that stocked by the City is as follows:

Manufacturer Catalog Numbers

E-Lite Star ESU-CA012M03042S-525CCD1-1

The luminaire shall include a photo cell (S-T P124-1.5-PTW or equal). Finish on the exterior luminaire housing shall be dark green in accordance with Federal Specification 14056.

The Contractor shall submit a lighting materials list to the City and Denver for approval prior to ordering. Contact Chris Lillie at 720-865-4066.

Subsection 613.08 shall include the following:

At least one grounding electrode shall be installed adjacent to each light standard. Wiring shall be a 120/240 volt or 120/208 volt, 3-wire system with individual luminaires wired for 120 volts.

Subsection 613.11 shall include the following:

Luminaire (LED) shall be measured and paid by the number of individual luminaires furnished, installed, and accepted.

Subsection 613.11 shall include the following:

Payment will be made under:

Pay Item
Luminaire (LED)

Pay Unit
Each

REVISION OF SECTION 613 LIGHT STANDARD FOUNDATION

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

Subsection 613.01 shall include the following:

This work consists of installing concrete footings (foundations) for traffic signal street light poles (no mast arm). Locations of the concrete footing shall be verified in the field by the Engineer before excavation begins.

Foundations for traffic signal street light poles with mast arms shall be as described under the Project Special Provision for Section 503 – Caisson (Special). Note that vacuumed caissons may be required.

Work under this pay item is only required at 18th & Logan (Bid Alternate 1).

Subsection 613.04 shall include the following:

Light Standard Foundation for Traffic Street Light Poles with no mast arm shall conform to the requirements of the City & County of Denver's Traffic Signal Standard Detail sheet no. 16.1.15, Foundations for XCEL Facilities, and detail no. 9.

For each Traffic Signal-Light Pole with no mast arm, work will occur in the following stages: 1] Contractor will install a new foundation for the proposed traffic signal-light pole in accordance with City & County of Denver standards; and 2] Contractor will install the pole, luminaire arm, traffic signal equipment, the luminaire, and/or required signing on the pole as shown in the plans.

Subsection 614.11 shall include the following:

Concrete footings for traffic street light poles with no mast arm shall be measured and paid each by the total number of footings, complete, in place, and accepted by the Engineer.

Concrete footings for traffic signal street light poles with mast arms shall be measured and paid as described under Section 503 – Caisson (Special). Foundations for Traffic Signal Pedestal Poles are not measured and paid separately but are considered included in the unit cost for Pedestal Poles. Foundations for Flashing Beacons are not measured and paid separately but are considered included in the unit cost for Flashing Beacons.

Subsection 613.12 shall include the following:

Pay Item
Light Standard Foundation
Each

REVISION OF SECTION 613 SECONDARY SERVICE PEDESTAL

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

Subsection 613.07 shall include the following:

New traffic signal installations at 19th and Clarkson (Base Bid) and 18th and Logan (Add Alternate A) require an electrical meter pedestal cabinet and base for the new traffic signal. Xcel Energy will furnish and install only the electric meter. The Contractor shall furnish the electric meter pedestal cabinet and shall install the pedestal cabinet and base. Work shall be accomplished by a licensed journeyman at the locations shown in the plans and in accordance with the City & County of Denver's Standard Drawings 16.1.19 and 16.1.20.

Subsection 613.10 shall include the following:

Work will be measured and paid as Secondary Service Pedestal.

Secondary Service Pedestal will be measured by the number of locations such work is provided. All installation shall be in accordance with this Special Provision, City Standards and City Standard Drawings, and as directed by the Engineer or the Engineer's Designee. The installation shall include all required groundwork, sweeps, pull cord, copper tracer wire, adapters, fittings, splice couplings, conduit plugs, equipment, labor, and all other items necessary to complete the work.

All required coordination between the Contractor, the City & County of Denver, and XCEL Energy that may be required to facilitate the installation shall be considered included in the unit cost for this item and will not be measured and paid separately.

Contractor shall submit a materials list and materials specifications to the Engineer for approval prior to ordering any equipment or materials.

Subsection 613.11 shall include the following:

Pay Item	Pay Unit
Secondary Service Pedestal	Each

REVISION OF SECTION 613 LUMINAIRE (HPS)

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

Subsection 613.01 shall include the following:

This work shall consist of furnishing and installing HPS luminaires atop traffic signal poles for project locations at which only a single corner will be rebuilt. Within this project, four locations apply: 1] 19th & Broadway; 2] 19th & Lincoln; 3] 19th & Park; and 4] 20th & Park.

Subsection 613.02 shall include the following:

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

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

Curvilinear Luminaires on City and County of Denver traffic poles are as follows:

Manufacturer Catalog Numbers

Gardco CA2213120250HPSFGPPC1069 Mast Arm Fitter

Kim Lighting CCS25A3/250HPS 120/FG-P/A-25MAF

Sterner FTA25A103HP250S120NS-RF2

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

Subsection 613.08 shall include the following:

At least one grounding electrode shall be installed adjacent to each light standard. Wiring shall be a 120/240 volt or 120/208 volt, 3-wire system with individual luminaries wired for 120 volts.

Subsection 613.11 shall include the following:

Payment will be made under:

Pay Item
Luminaire (High Pressure Sodium) (250 Watt)

Pay Unit
Each

REVISION OF SECTION 614 TRAFFIC SIGNAL INSTALLATION PERSONNEL REQUIREMENTS

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

Subsections 614.06 and 614.09 are hereby revised for this project as follows:

Contractor shall adhere to the following requirements regarding Traffic Signal construction and maintenance personnel. Current Certificates showing qualifications shall be submitted at the preconstruction meeting.

- (1) For any work inside the traffic signal cabinet, Signal and Signal Bench Technician shall be minimum IMSA Level II certified. This includes the completion of training in construction, corrective maintenance, and signal turn-on.
- (2) For all work external to the signal cabinet, a minimum IMSA Level I Traffic Signal Field Technician/Electrician or Traffic Signal Bench Technician/Signal Technician is required. An IMSA Level II Traffic Signal Electrician shall be on the job site at all times that signalization work is taking place to ensure proper construction. A maximum ratio of four IMSA Level I to one IMSA Level II will be allowed for work external to the signal cabinet.

The United States Department of Labor – Bureau of Apprenticeship and Training may be substituted for the IMSA Level I Traffic Signal Electrician requirement.

REVISION OF SECTION 614 LED PEDESTRIAN SIGNAL HEADS (COUNTDOWN)

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 furnish and installation of Light Emitting Diode (LED) Pedestrian Signal Heads with countdown timers as shown in the Contract.

Subsection 614.08 (h) shall include the following:

Pedestrian signal heads with countdown timers shall meet the following requirements:

- i. The dimensions of the signal housing and the LED symbols, as well as moisture and dust resistance requirements, shall be in accordance with the current ITE PTCSI Standards.
- ii. Signal housing shall be aluminum, painted dark green in accordance with Federal Specification 14056 and "Clam-shell" Mounted.
- iii. The signal shall have user-selectable modes for countdown for walk-cycle only, pedestrian cycle only, or both walk and pedestrian clearance.
- iv. The countdown module shall have an internal conflict monitor to prevent any possible conflicts between the Hand/Person signal indications and the time display. The display shall not count down during a Solid hand indication.
- v. LED symbols shall be solid icons and shall provide uniform light dispersion such that the "pixel" effect is minimized. Lettered or outlined symbol styles shall not be permitted.
- vi. The Hand/Person configuration shall provide clear and distinct lamination where either symbol is in use.
- vii. The LED module shall be rated for use in an ambient temperature range of -40° to +165° Fahrenheit.
- viii. The signal shall meet NEMA Standard TS2 for voltage surge protection, and shall have an automatic reset in case of a power outage.

Subsection 614.13 shall include the following:

LED Pedestrian Signal Heads (Countdown) will be measured and paid by the number of units installed and accepted.

Subsection 614.14 shall include the following:

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

REVISION OF SECTION 614 LED TRAFFIC SIGNAL HEADS

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, and Green signal displays. The LED signal lenses for the 12" and 8" circular balls and 12" circular arrows are hereby added to the Standard Specifications and shall comply with the following requirements.

- A. Manufacturer Requirements and Approvals:
- i. The manufacturer supplying products to this specification shall have a minimum of 13 years' experience manufacturing LED traffic signals with high flux LEDs used in the North American market.
- ii. Manufacturers supplying products to this specification must be a registered participant and have the unique long life module part numbers to be provided certified and listed on the Intertek-ETL LED Traffic Signal Modules Certification Program approved products website prior to bid opening.
- iii. Manufacturers supplying products to this specification shall manufacture and assemble products on an Intertek-ETL audited line located in the United States.
- iv. Unique part number shall be listed on manufacturers label proving differences between standard modules and long-life modules.
- v. If requested, documentation shall be provided by the manufacturer demonstrating the changes made to their standard product that allows for ITE specification compliance over 15-year warranty period.
- B. Physical and Mechanical Requirements General
- i. Tinted or Non-Tinted Lens. Unless designated otherwise the standard lens color shall be tinted with a color meeting the colors required in paragraph 4.2 of the ITE Specification. The products shall be available with non-tinted lenses as an option.
- ii. LED module shall utilize high-flux LEDs rated at 1 watt or higher and have an incandescent, non-pixilated appearance when illuminated. The use of low power LEDS, for example 5mm LEDs, is not permitted in the design and production of long-life arrow products.
- iii. The external lens shall have a smooth outer surface to prevent the build-up of dirt/dust and shall be designed to minimize the potential for sun phantom signals.
- iv. All LEDS used to illuminate circular signal modules shall be LEDs that have been manufactured using materials with industry acceptance as being suitable for use in outdoor applications. At no time is the use of LEDs that utilize AIGaAs technology acceptable.
- v. The thermal management system used in the traffic ball must be self-contained and internal to the traffic module. At no time shall the thermal management system used for the power supply or LEDs form any part of the external surface of the LED module.
- vi. All plastic components shall be molded and assembled in the United States. This includes back housing, spreading lens and front lens. Certificate of manufacturing location must be available and supplied at time of bid requested.
- vii. All lenses shall be hard coated in the United States. Certificate of manufacturing location must be available and supplied at time of bid requested. All reflectors shall be metalized in the United States. Certificate of manufacturing location must be available and supplied at time of bid requested.

-2-REVISION OF SECTION 614 LED TRAFFIC SIGNAL HEADS

C. Module Identification.

In addition to the required ITE labeling, all modules must be delivered with an ETL Verification label. This label designates the compliance and listing with the Intertek-ETL Traffic Signal Certification Program.

D. Electrical - General

- i. The following color scheme shall be used for all module AC power leads: White for common, Red for the red ball signal, Yellow for the yellow ball signal and Brown for the green ball signal.
- ii. The AC power leads shall exit the module via a rubber-grommet strain relief, and shall be terminated with insulated female quick connect terminals with spade/tab adaptors. The leads shall be separate at the point at which they leave the module.
- iii. All external wiring used in the LED traffic signal module shall be anti-capillary type wire to prevent the wicking of moisture to the interior of the module.
- iv. LED module and power supply shall be designed for ITE-compliance over a 15-year life.
- v. To minimize the temperature exposure of the power supply, all power supplies shall be located at the bottom of the module when the arrow is facing left.
- vi. For additional protection from moisture, all power supplies shall be conformal coated for additional protection.

E. Electrical Transient Voltage Protection.

In addition to the transient test requirements defined in the Design Qualification Testing section of the ITE Vehicle Traffic Control Signal Heads (VTCSH) specifications all power supplies used in the circular signals supplied to this specification shall be capable of passing an additional ring-wave surge testing in accordance with the IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000V and less) AC Power Circuits. ANSI/IEEE C62.41.2-2002, 6KV, 100kHz ring-wave with an output impedance of 30 ohms. The short circuit current shall be 200 Amps.

F. Electrical - Power

- ii. Typical wattages at 25° C for the 12" circular LED Traffic Signal Modules shall be: Red 8 watts; Yellow 13 watts; and Green 8 watts.
- iii. Typical wattages at 25° C for the 8" circular LED Traffic Signal Modules shall not exceed: Red 8 watts; Yellow 10 watts; and Green 8 watts.

G. Quality Assurance.

- i. Upon request, the supplier must provide an Intertek-ETL test report for the base model being supplied to this specification.
- ii. The base products must be listed in the Intertek Directory of LED Traffic Signal Modules Certified Products listing at the time of bid. Upon request, the supplier must provide a copy of the listing in the bid package.

-3-REVISION OF SECTION 614 LED TRAFFIC SIGNAL HEADS

- H. Warranty Requirements. Manufacturers shall provide a detailed written warranty issued by the factory of module origin with the following minimum provisions.
- i. Modules shall, at the manufacturer's option, be repaired or replaced if the module fails to function as intended due to workmanship or materials defects within the first 15 years from date of delivery.
- ii. Modules, shall, at the manufacturer's option, be repaired or replaced if the module exhibits luminous intensities less than the minimum specified values within the first 15 years from date of delivery.
- iii. Upon request, the LED lamp module manufacturer shall provide written documentation of its ability to satisfy a worst-case, catastrophic warranty claim.
- iv. A current corporate annual report duly certified by an independent auditing firm, containing financial statements illustrating sufficient cash on hand and net worth to satisfy a worst-case, catastrophic warranty claim is an example of suitable documentation.
- v. The documentation shall clearly disclose: 1] country in which the factory of module origin is located; and 2] name of the company/organization owning the factory of module origin including any/all of its parent companies and/or organizations, and their respective country of corporate citizenship.
- vi. For firms with business and/or corporate citizenship in the United States of less than fifteen (15) 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 a 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:

LED signal lenses shall be included in the unit cost of the item for Traffic Signal Face and will not be measured and paid separately.

Subsection 614.14 shall include the following:

Pay Item	Pay Unit
Traffic Signal Face (12-12-12)	Each

REVISION OF SECTION 614 TRAFFIC SIGNAL HEADS

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

Subsection 614.09 shall include the following:

Black back-plates shall be provided on all signal heads except for those pole mounted heads installed on two-way spacers.

Subsection 614.13 shall include the following:

Furnish and installation of back-plates shall be included in the unit price for traffic signal faces.

REVISION OF SECTION 614 TRAFFIC SIGNAL CONTROLLER CABINET BASE

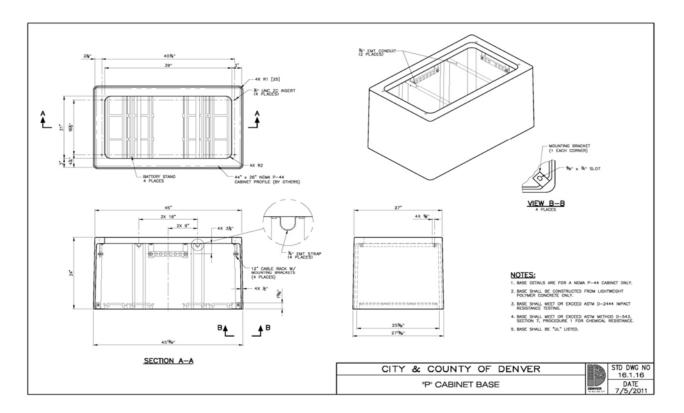
Section 614 of the Standard Specifications is hereby revised for this project as follows.

Subsection 614.01 shall include the following:

This work shall consist of installing a composite Traffic Signal Controller Cabinet Base as shown in the plans and in accordance with City & County of Denver standard detail 16.1.16.

The base shall fit the P-size traffic signal controller cabinet in accordance with the City and County of Denver standard detail 16.1.17.

Dimensions of the traffic signal cabinet base are as shown in the following drawing:



Subsection 614.10 shall include the following:

Prior to starting cabinet base installation, Contractor shall obtain field verification of the location of the cabinet from the Engineer or the Engineer's designee.

Cabinet base installation shall include all labor and materials to completely install a new P-size cabinet base as directed in the plans.

The item shall include all excavation, conduit installation and modification work, backfill and restoration of adjacent surface area.

The Engineer or Engineer's designee shall field locate the proposed cabinet location as well as orientation of the proposed cabinet prior to installation.

Subsection 614.13 shall include the following:

Installation of the traffic signal controller cabinet base shall not be measured and paid for separately, but shall be included in the cost of the Traffic Signal Controller Cabinet installation.

REVISION OF SECTION 614 TRAFFIC SIGNAL CONTROLLERS AND CABINETS

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 completed Traffic Signal Controller and Cabinet assembly; to include malfunction management unit (MMU), vehicle detector amplifiers, uninterrupted power supply (UPS), Ethernet switch and other ancillary hardware per City and County of Denver standards. The cabinet assembly shall be furnished with full system capabilities, such that no modifications by the Contractor need be provided to achieve complete system operations, up to and including Ethernet Switch, UPS, MMU, and all required software and in-cabinet power supplies.

Fire preemption, camera detection, and closed-circuit television subsystems are considered external to the requirements of this specification and will be measured and paid for separately.

Delete Subsection 614.08 (b), and replace with the following:

<u>Traffic Signal Controllers - General</u>

This specification sets forth the minimum requirements for a shelf-mounted, two through sixteen phase, fully-actuated, digital, solid-state traffic controller. The controller shall be configurable to meet, as a minimum, all applicable sections of the NEMA Standards Publications for TS2 and NTCIP 1202 and ATC standard 6.10. Where differences occur, these specifications 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 controller.

The controller shall meet or exceed the specifications of the Econolite Cobalt 2100-C Fully Actuated controller (http://www. econolite.com/files/4413/9949/2986/controller-cobalt-datasheet.pdf), or an equivalent approved by the City and County of Denver Transportation & Mobility.

Delete Subsection 614.08 (c) and replace with the following:

Traffic Signal Controller Cabinets - General

All new cabinets are the P-type cabinets as per the City & County of Denver Traffic Standards. Each cabinet shall be installed on a newly installed traffic signal controller cabinet base unless otherwise specified on the plan. Contact Chris Lillie at 720-865-0466 for cabinet assembly requirements and specifications for all other necessary auxiliary hardware. Controller cabinet assemblies shall include MMU, Ethernet Switch and an integrated uninterrupted power supply (UPS) unit that complies with the City and County of Denver standards. Refer to the stand-alone specifications for these items.

Subsection 614.09 shall include the following:

The Contractor shall deliver the traffic signal controller and cabinet assemblies including auxiliary hardware to Denver Traffic Operations at 5440 Roslyn Street, Building E, Denver, Colorado 80216 six (6) weeks before installation for controller inspection and limited programming. Contractor shall coordinate pick-up of the controller and cabinet assembly from the City and install same at the proper location. Contractor shall coordinate pick-up times with Chris Lillie at (720) 865-4066.

REVISION OF SECTION 614 TRAFFIC SIGNAL CONTROLLERS AND CABINETS

The controller shall be installed in accordance with the details shown in the plans and in accordance with manufacturer's recommendations.

Subsection 614.10 shall include the following:

The Contractor shall demonstrate successful traffic signal operations at all new cabinet locations to the satisfaction of the Engineer or Engineer's designee prior to acceptance of the controller and cabinet items. Contractor shall contact the Engineer or Engineer's designee a minimum of 3 working days before turning on new cabinet. 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.

Locations of all new cabinets shall be field-verified by the Engineer before installation activities begin. Contact the Engineer to schedule field meeting(s) with the appropriate City personnel.

For the new (rebuilt) signals at 19th and Clarkson; and on 18th and Logan, new power sources shall be used. For all other locations where an existing signal installation is to be modified, the existing power source shall be kept and maintained throughout construction.

At new power source locations, Contractor shall install new service wiring in conduit from power source to new cabinet(s) as per NEC requirements. After the power connection has been provided to the new cabinet, the Contractor shall remove unnecessary service wiring between the power source pull box or power pole and the cabinet to be removed. All required power-down activities shall be scheduled and coordinated with the City & County of Denver and XCEL Energy at least 3 business days prior to intended shut down.

Initial activation shall be between the hours of 9:00am and 2:00pm on a weekday unless otherwise requested or authorized by the Engineer. Prior to final turn-on, all intersection equipment shall be installed and operable including but not limited to signal heads, pedestrian heads, pedestrian push buttons, vehicle detectors, cameras and emergency vehicle preemption equipment; unless otherwise authorized by the Engineer. Contractor shall notify Engineer a minimum of 2 business days prior to intended activation, such that City representatives may be present at turn-on.

Activation shall be accomplished only after all traffic signal circuits have been successfully tested to the satisfaction of the Engineer.

Contractor shall furnish and install a new cabinet foundation, sized to accommodate a new P-sized cabinet. Cabinet foundation shall be considered included in the unit cost for the new cabinet and will not be measured and paid separately. See the stand-alone Project Special Provision for Traffic Signal Controller Cabinet Base.

-3-REVISION OF SECTION 614 TRAFFIC SIGNAL CONTROLLERS AND CABINETS

Subsection 614.13 shall include the following:

The unit price for furnish and installation of traffic signal controllers shall include all required labor to install and program the unit. Phasing and timing information at each location shall be furnished to the Contractor by the City.

The unit price for furnish and installation of traffic signal controller cabinets shall include ancillary hardware, cabinet base, in-cabinet wiring and wiring connections (including new XCEL Energy power feed) and testing required to provide a fully operational and complete traffic signal installation to the satisfaction of the Engineer or the Engineer's designee. Furnish, installation and programming of MMU, UPS and Ethernet Switch is considered included in the unit cost for the cabinet assembly and is not measured and paid for separately. All required coordination and transportation costs are considered included in the unit cost for the cabinet and will not be measured and paid separately.

Fire preemption subsystems will be measured and paid separately under the appropriate item. Camera detection subsystems will be measured and paid separately under the appropriate item.

Connection of the new cabinet to the fiber optic interconnect system shall be paid for separately under Item 614 – Telemetry (Field).

Subsection 614.14 shall include the following:

Pay Item	Pay Unit
Traffic Signal Controller Cabinet	Each
Traffic Signal Controller (SS) (FA) (8)	Each

REVISION OF SECTION 614 ETHERNET MANAGED SWITCH

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

Subsection 614.01 shall include the following:

This work consists of furnishing and installation of an Ethernet Managed Field Switch, in new CCD controller cabinets. The switch shall be compatible with the existing system.

Subsection 614.08 shall include the following:

The Ethernet Managed Field Switch shall comply with the following specifications:

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

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

The field switch must also meet the following requirements:

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

The unit shall be configured as a minimum:

Filtering/Forwarding Rate Performance:

- Ethernet (10Mb):14,880 pps
- Fast Ethernet (100Mb): 148,800 pps
- Gigabit Ethernet (1000Mb): 1, 488,000 pps
- Switching Processing: Store and Forward with IEEE 802.3x full duplex flow control, non-blocking
- Data Rate: 10Mbps, 100Mbps and 1000Mbps
- Address Table Capacity: 4K node, self-learning with address aging
- Packet buffer size: 240KB for 10/100 and 120KB for 1000Mb
- Latency: 5 μ s + packet time (100 to 100Mbps); 15 μ s + packet time (10 to 10 Mbps, and 10 to 100Mbps)
- Throughput with 12 10/100 and 2Glink max. 4.76M pps (Transmit)
- Back plane- 2.66 GB/s per slot LEDs
- Per Port (one set at the port, one set on swivel top on right side)

-2-REVISION OF SECTION 614 ETHERNET MANAGED SWITCH

- LK: Steady ON when media link is operational
- ACT: ON with receiver port activity
- FDX/HDX: ON = Full-Duplex Mode; OFF = Half-Duplex Mode
- 100/10: ON = 100Mbps speed; OFF = 10 Mbps

Network cable connectors:

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

Operating Environment:

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

Alarm Relay Contacts:

• One NC indicating internal power, one NC software controllable

DC Power Supply:

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

Vertical mounting normal:

• Suitable for wall or DIN-Rail mounting

Test Requirements - Contractor shall supply one unit of Ethernet Managed Switch to the Engineer for specification compliance testing and approval. If the product passes the compliance test and evaluation, Contractor will be notified to complete the order. If the product does not pass the specification compliance testing and approval evaluation by CCD-TES, the unit will be returned to the Contractor. Contractor shall supply other units until satisfactory test results are achieved

Subsection 614.13 shall include the following:

The Ethernet Managed Switch will be not be measured and paid separately but shall be considered included in the unit cost for the controller cabinet. Furnish, installation and testing of the units are considered included in the work, as are labor and materials required for completion and acceptance of the item. Each individual package shall contain one Ethernet Managed Field Switch, set of mounting bracket(s), Installation and User guides, and Product Registration Card.

REVISION OF SECTION 614 UNINTERRUPTED POWER SUPPLY SYSTEM

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

Subsection 614.08 shall include the following:

The double conversion uninterrupted power supply system (UPS) shall provide emergency battery power to the traffic signal controller. The UPS shall conform to the following specifications:

Operation:

The UPS system shall be capable of producing a fully regenerated, conditioned, pure sine wave AC. The online operational mode shall be continuous to all loads. It shall incorporate a high frequency Pulse-Width Modulated technology and shall use an input rectifier, charger, battery and inverter in a single board configuration. The UPS double conversion UPS shall provide a clean, pure AC sine-wave output at all times with a voltage input variation of 85VAC to 145VAC while providing 120VAC to the connected load at all times. The UPS shall be capable of operating in the voltage range of 85VAC to 135VAC without using the batteries and always provide a regulated output to the protected loads.

The Input rectifier shall be rated at 2.5 times the output rating of the inverter.

The Inverter circuit shall be in continuous operation at all times (constant duty). The inverter shall be rated for 100% duty cycle and simultaneously fed from the rectifier and battery to eliminate any switching to battery or transitions during power fluctuations or power interruption. The inverter's output shall be pure clean sine wave with an efficiency of up to 85%.

The constant duty operation shall be rated in total watts. This will enable the traffic UPS to support any combination of signal heads whether Incandescent, LED or Neon, by any manufacturer, regardless of power-factor.

The UPS shall be capable of operating from a generator source without the need for over-sizing the UPS system. During operation from a generator source, the UPS shall operate in a normal fashion and provide filtered and regulated power with or without automatic input/output frequency synchronization. Upon excessive generator frequency drift, the UPS shall compensate through regeneration and supplying both continuous frequency and voltage regulation to the protected load.

The UPS shall be capable of glitch ride through capabilities and provide a seamless output to the connected load during this anomaly without the use of the batteries.

The UPS shall be capable of providing an overload output rating of 120% for 60 seconds, 150% for 10 seconds to any combinations of signal types whether Incandescent, LED or Neon during inrush or overload conditions.

The UPS shall have an internal static bypass that will transfer to line power if over load exceeds 150% for more than 5 sec. This bypass will maintain the load until this overload has cleared.

The UPS shall have a separate Neutral detecting circuit that shall monitor loss of utility neutral and completely disconnect any input source to the UPS system.

-2-REVISION OF SECTION 614 UNINTERRUPTED POWER SUPPLY SYSTEM

The UPS shall have an input back feed relay operating in series with the Neutral monitoring circuit.

Upon loss of utility power, the UPS inverter shall continue to provide seamless pure sine-wave AC from the batteries without switching, transfer or changing its' operating status. The UPS will use the battery mode in '0' ms. This will insure that the UPS provides pure sine wave power under all conditions, at all times without interruption.

The UPS will continue to provide generated AC from the inverter until the batteries are depleted.

When the batteries have been depleted, the UPS will ensure upon the return of Utility Power that the UPS will restart automatically and provide regenerated AC to the protected equipment and allow the equipment to resume normal operation.

The UPS shall be capable of operating in a full regenerated, power-conditioning mode with depleted batteries or failed batteries. The regenerative power conditioning will ensure that there will be regulated and conditioned pure AC power to the equipment. This regenerative mode will provide extended brown-output protection with wide input line regulation, noise filtering and surge protection.

The UPS shall operate in an uninterruptible regenerative on-line mode during flash or normal signal operation.

The UPS shall be rated at Unity Power Factor. The output VA and Watts rating shall be equal on the output at all times.

The UPS shall be capable of COLD starting without AC present and provide AC power to the load.

The UPS shall be capable of self-diagnostics during start up or with the use of the front panel TEST button.

The UPS case shall be constructed from .064 aluminum and carbon steel.

The UPS input and output connections shall be Anderson Power Pole quick lock connector to eliminate exposed terminals or connections.

The UPS to bypass interconnect harness shall be reversible with matching Anderson Power connectors that will prevent risk of shock, or damage to the connected equipment.

The UPS shall be capable of Hot-Swapping the batteries or battery bank, without shutting down the UPS.

The UPS shall be capable of being Hot-Swapped during normal operation when used with the external Hot Swap Bypass. The UPS may also be shut-off with the Hot Swap Bypass in place without loss of AC to the loads.

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The UPS shall be capable or providing a replaceable relay card with relay output contacts for AC fail, Inverter ON, Low Battery, Battery Fail, Bypass and Alarms.

The UPS shall provide a programmable Dry Relay output for flash.

The UPS relay card may be replaced with an SNMP card for SNMP communications and information.

The contacts shall be provided in N/O and N/C positions. The delay timer shall be a maximum of 10 hours.

- Timer shall be front panel mounted.
- Timer dial shall be 4.7 inches in circumference.
- Timer shall have a scale in increments of 1s to 10seconds. This scale can be changed to indicate 1 minute, to 10 minutes or a maximum scale of 1 hour to 10 hours.
- Scale shall be controlled by two (2) separate dip switches on the timer face.
- Timer shall indicate using a flashing RED LED that the timing function is operating.
- Timer shall use a steady RED LED to indicate that the timing is now completed
- Timer shall count in a down mode to '0' from the preset time indicated on the scale.

LED indicators shall provide status for AC line, UPS Battery Mode, Charging, Low Battery, Fault, Bypass, Percentage of Load and Battery Charge.

The Event counter and Hour meter may be rest to '0' using separated buttons.

UPS shall have a battery changer rated at 200 watts @ 36VDC with an optional of 400 watts. This charger shall be completely separate from the rectifier/inverter included with the main UPS board. The UPS chargers may be used in a parallel configuration for increased charger ratings. The UPS uses a redundant internal 1 amp charger that will continue to charger the batteries if the separate board charger fails.

The UPS may be used with redundancy in mind with the use of the Dual Hot Swap Option. That will provide a secondary UPS source in less than 20ms. The Secondary UPS may be connected to the alternate input of the Hot Swap Bypass

The Flash programming shall be a simple and field programmable without the use an external connected device such as a laptop or computer.

The Hot swap Bypass shall allow the UPS to be removed or installed at any time during normal load operation.

The UPS shall include standard graphical real time software and connection cable.

The UPS shall be capable of sending programmable system alarms to the Econolite "icons" Traffic Management System.

REVISION OF SECTION 614 UNINTERRUPTED POWER SUPPLY SYSTEM

Physical Description:

The UPS shall consist of 3 major components. The Main board Rectifier/Inverter, charger and control board

The Main Board shall consist of a True-Sine-Wave constant duty high frequency inverter utilizing High-Frequency Pulse-Width Modulated technology.

The Input Rectifier shall be rated for the total wattage output rating of the UPS including the 150% overload and the charger rating. The inverter shall be a high efficiency constant duty design with and efficiency of 83%. The inverter shall include its' own static bypass which provides an alternate AC path during overload and or Inverter alarm conditions.

The heat-sink shall be a continuous aluminum extrusion design with plenum directed airflow cooling. The 12VDC dual stage cooling fans shall be variable speed controlled by the logic board.

The charger portion shall be a 3 stage Hysterisis .5 amp, 36 or 72VDC charger with temperature compensation. The supplementary charger is a parallel design rated for 200, 500 and 1000 watts.

The Electronic Control board shall monitor the Rectifier and Inverter functions. It shall also provide the overall control of all the UPS functions and or operational capabilities.

Mounting Configuration:

The UPS shall be shelf mounted or rack mounted per the documents. Shelves and cabinets shall be supplied by others. Where rack mounting is required, the 170 style mounting method shall be 19" rack mount. Rack mounting ears shall be removable.

A separate stand-alone NEMA Traffic cabinet may be supplied if required in the plans and specifications.

4 rubber feet shall be installed on the bottom of the unit for shelf mounting.

Battery System:

The batteries shall be comprised of a quantity of three (3), high temperature, deep cycle (45AH) batteries which have been proven under extreme temperature conditions. The battery system or configuration shall consist of one string. Each string shall be 36 VDC. The batteries shall be provided with the appropriate interconnect cables. The battery cables shall have a minimum conductor size rating of #10.

The battery cable shall consist of a quick release Anderson connector rated at 25 amps. For the purpose of safety, the connector shall have recessed pins and keyed interlock to prevent reversal of connection or separation.

Battery construction shall be of a polycarbonate high temperature design combined with high, pure lead content with internal resistance of .0028 ohms and a high impact poly case construction, to with stand high vibration and shock. The connections shall be of stainless steel 3/8 stud, with 3/8 stainless nut and locking washer. Removable lifting handle shall be standard.

REVISION OF SECTION 614 UNINTERRUPTED POWER SUPPLY SYSTEM Batteries shall also meet the following characteristics:

Nominal voltage: 12VDC Capacity@ 25C: 45AH Approximate weight: 13.5Kg Internal Resistance: 9.5 mOhms

Dimensions: 197mm x 165mm x 170mm (7.76 x 6.50 x 6.69)

Capacity (10hr rate): 75c-112%

65c-108% 55c-105% 25c-100% 0c-85% -15c-65%

Self-Discharge: 3 months 91% capacity remaining

6 months 82% capacity remaining 12 months 65% capacity remaining

Operating Temperature: -15c to +75C
Float Voltage: 13.5 to 13.80
Cyclic charging voltage: 14.5 to 14.90
Maximum charge current: 12A
Terminal material: Copper
Maximum discharge current: 400A (5 sec)

The system must be 36 volt DC maximum (no exception).

Electrical Specifications:

The unit shall meet the following electrical specifications:

Design: Double Conversion true on line.

Nominal input: 110, 115 & 120v AC single phase dip switch selectable.

Input Voltage Range: 80v to 140v AC Input frequency: 50/60hz (47 to 63)

Efficiency: 83 %

Input configuration: 3 wire with ground

Input Protection: 15 amp re-settable breaker (on UPS 700)
Input Current: 10.4 amps (includes charger) (on UPS 700)
Power Rating Continuous: 700 watts, 1400watts, 2100 watts

Output Current: @ 700 watts 5.8 amps / 11.6 @1400/ 17.7@2100

Output regulation: +/- 3% with 100% resistive load
Output regulation w/low battery: +/- 3% with 100% resistive load

Output Voltage: 120v AC
Output Wave Form: Pure sine wave

Harmonic Distortion: 3% Linear Load; 5% Non Linear Load Dynamic Response: +/- 5% RMS for 100% step load change

1 ms recovery time

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REVISION OF SECTION 614 UNINTERRUPTED POWER SUPPLY SYSTEM

Overload Capability: 120% for 60 sec

150% watts for 10 sec

Charger: 200 watt 36VDC UPS 700, 72VDC on UPS 1400

Parallel 400, 1000 and 2000 watt.

Surge: ANSI-C62.41

Fault Clearing: Current Limit and automatic to bypass
Short Circuit protection: Output Breaker / Fuse, then shut down

Load Power Factor: 6 leading to .6 lagging

Output Connection:

DC Connection:

Anderson Power Pole Connector 6 pin keyed.

Anderson 50 amp Keyed Recessed connector

Recognition:

UL Recognized & IEE 587 / C62.41 on main UPS board

Mechanical:

The UPS shall meet the following physical dimensions for 700W UPS:

Size: 6.00" H x 10.5" D x 15.15" W

Weight: 18 lbs.

The enclosure shall be constructed of 0.064 Carbon steel and aluminum. The enclosure shall be painted with powder coat paint with a minimum of 1.5 mil thickness.

Environmental:

The UPS shall meet or exceed NEMA temperature standards from -40c to +74c.

Communications, Control & Diagnostics:

LED indicators shall be provided for line monitoring, battery mode, charging, low battery, fault / bypass load level, battery level and ground fault. Manual test functions shall be available for alarm function, low battery, battery fail, bypass and overload. An RS 232 port with communication software shall be provided for real time UPS operational status in place of a relay status card when required.

The relay status card shall have the following I/O via contact closure:

- 1. Bypass ON
- 2. AC fail or out of tolerance.
- 3. AC normal or in tolerance.
- 4. Inverter is operating (ON)
- 5. Battery low
- 6. Battery failed or bad
- 7. UPS general alarm
- 8. Ground (logic)
- 9. Apply 6 to +25VDC
- 10. Between pin 9 and 10, will shut the UPS down

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Options:

The UPS must be able to accept the following future options

- SNMP/WEB monitoring.
- 24/7 Adjustable perpetual timer.
- Generator input option for hot swap bypass switch.
- Rack mount hot swap bypass switch.

In place of the relay card, an SNMP card can be installed that shall support TCP/IP, UDP, SNMP, and HTTP protocols and shall provide the SNMP MIB for UPS monitoring and UPS status.

Remote access to UPS real time information including unit identification, data logging and UPS status in real time shall also be provided on a by unit basis. It shall be possible to use Microsoft Internet Explorer for remote viewing of the following:

- 1. UPS load
- 2. Battery Charger status
- 3. UPS operation Normal/Alarm
- 4. Input Voltage
- 5. Output Voltage
- 6. Battery Voltage
- 7. UPS Temperature
- 8. UPS information logging
- 9. Remote UPS battery testing.
- 10. Send output email if UPS status has changed
- 11. Built in reset with panel mounted led indicators for SNMP status.

The SNMP card shall have the following status LEDs:

- LED (1) Green LED: Status receiving; Yellow LED: Data Transmitting
- LED (2) Green LED: SNMP connecting; Yellow LED: SNMP functioning

The optional 24/7 timer shall be integral to the UPS. It shall include a DB9 connector to provide the connection and programming to the timer. This timer shall be programmable for any number of flash delays related to the time of day. It allows the complete flexibility of flash delay or skipping the flash during that particular event related to traffic flow and even holidays. The time shall have the follow features:

- 1. 7 days, 24 hrs Flash delay timing.
- 2. Perpetual Clock.
- 3. Maximum of 31 setting per day.
- 4. Timing resolution to the minute.
- 5. 4 Possible commands per event.
- 6. Real-time operation, editing functions will not interrupt the unit's functions.
- 7. J-Tag port for instant preload of complete 7-day schedule file.
- 8. SPDT 10 amp 240VAC /24VDC ratings.

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- 9. Input Voltage 110 to 240VAC or 24VDC unregulated supply.
- 10. Plus! Capable of scheduling for holidays or specific year/dates.
- 11. Capable of operating at 2400 baud micro-modem for direct phone connection
- 12. Capable of operating at 1200 to 230,000 baud rate on a serial port.
- 13. Capable of log retention

An optional generator input shall be available for the UPS.

Reliability:

Calculated MTBF shall be 120,000 hours based on component ratings. When bypass switch is installed, system MTBF shall increase to 160,000 hours.

Hot Swap Bypass Switch:

A hot bypass switch shall be provided and wired to function within the UPS system. The bypass switch shall have the following characteristics:

Bypass Rating: 30 amps maximum

Bypass Transfer: Automatically to line in 20ms, '0' crossing at full load Control: Rocker On/Off switch indicating 'Auto' and Bypass

Relays: AC internal Load relay at 'Zero Crossing' with parallel function DC relay for

interlocking and protection failsafe mode to N/C for AC power direct to load when

failure occurs or in Bypass position.

Protection: Internal Snubber circuit for spike attenuation during transfer at 'Zero' crossing.

Internal fuse required.

Connections: Flush mounted Anderson Power connector. With locked and keyed. Indicators: LED for Line Available, Bypass, Ups On Line, UPS Available.

Dimensions: 7.5 x 5 x 2.5 Weight: 1.4 lbs.

Warranty:

A standard (2) two-year manufacturer warranty shall be provided for all electronic components. All batteries shall carry a one-year warranty.

Subsection 614.13 shall include the following:

The UPS assembly will not be measured and paid separately but shall be considered included in the unit cost for the controller cabinet. Furnish, installation, and testing of the units are considered included in the work, as are labor and materials required for completion and acceptance of the item.

REVISION OF SECTION 614 MALFUNCTION MANAGEMENT UNIT (MMU)

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

Subsection 614.01 shall include the following:

This work shall consist of furnishing and installing a Malfunction Management Unit (MMU) in new traffic signal controller cabinets.

Subsection 614.08 shall include the following:

This special provision sets forth the minimum requirements for a shelf-mountable, sixteen channel, solid-state MMU. The MMU shall meet, as a minimum, all applicable sections of NEMA Standards Publication No. TS2-1992. An independent testing laboratory shall verify the MMU will perform all defined functions under the conditions set forth in Section 2 of the NEMA Standard (Environmental Standards and Test Procedures). Where differences occur, this special provision shall govern.

1. Enclosure

The MMU shall be compact so as to fit in limited cabinet space. It shall be installable on a shelf that is at least 177 mm deep. Overall dimensions, including mating connectors and harness, shall not exceed 267 x 115 x 280 mm (H x D x W). The enclosure shall be constructed of sheet aluminum with a minimum thickness of 1.6 mm, and shall be finished with a durable protective coating. Model, serial number and program information shall be permanently displayed on the rear surface.

2. Electronics

A microprocessor shall be used for all timing and control functions. Continuing operation of the microprocessor shall be verified by an independent monitor circuit, which shall force the OUTPUT RELAY to the de-energized "fault" state and indicate an error message if a pulse is not received from the microprocessor within a defined period.

In the interest of reliability, only the PROM memory device for the microprocessor firmware shall be socket mounted. The PROM memory socket shall be a precision screw machine type socket with a gold contact finish providing a reliable gas tight seal. Low insertion force sockets or sockets with "wiper" type contacts shall not be acceptable.

A built-in, high-efficiency power supply shall generate all required internal voltages. All voltages shall be regulated and shall be monitored with control signals. Failure of the internal power supply to provide proper operating voltages shall force the OUTPUT RELAY top the de-energized "fault" state and indicate an error message. A front panel mounted fuse shall be provided for the 120 VAC input.

User-programmed configuration settings shall be stored in an electronically erasable programmable read-only memory (EEPROM) or via front panel DIP switches. Designs using a battery to maintain configuration data shall not be acceptable.

All 120 VAC field terminal inputs shall provide an input impedance of at least 150k ohms and be terminated with a resistor having a power dissipation rating of 0.5 Watts or greater. Each 120 VAC field terminal input shall be sensed by a separate precision voltage comparator device.

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All electrical components used in the MMU shall be rated by the component manufacturer to operate over the full NEMA temperature range of -30 degrees to +74 degrees Celsius. All printed circuit boards shall meet the requirements of the NEMA Standard plus the following requirements to enhance reliability: 1] All plated-through holes and exposed circuit traces shall be plated with solder; 2] Both sides of the printed circuit board shall be covered with a solder mask material; 3] The circuit reference designation for all components and the polarity of all capacitors and diodes shall be clearly marked adjacent to the component. Pin #1 for all integrated circuit packages shall be designated on both sides of all printed circuit boards; 4] All electrical mating surfaces shall be gold-plated; 5] All printed circuit board assemblies shall be coated on both sides with a clear, moisture-proof and fungus-proof sealant.

3. Front Panel and Connectors

All displays, configuration switches, and connectors shall be mounted on the front panel of the MMU. All MMU configuration inputs beyond those required by the NEMA Standard shall be provided by front panel mounted DIP switches and shall be clearly labeled. Configuration DIP switches shall be provided for the following functions: 1] Field Check / Dual Enables 1-16; 2] Green/Yellow-Dual Indication Enable; 3] BND Test Disable; 4] External Watchdog Enable.

The connectors on the MMU shall have a metallic shell and shall be attached to the chassis internally. They shall be manufactured to meet MIL-C-26482 specifications. The connectors shall be mounted on the front of the unit in accordance with the following: Connector A shall mate with an MS 3116 22-55 SZ, and Connector B shall mate with an MS 3116 16-26 S. In the interest of reliability and repair-ability, printed circuit board mounted MS connectors shall not be acceptable. Internal MS harness wire shall be a minimum of AWG #22, 19 strands.

All indicator lights shall be water-clear, T-1 package, Red Super Bright type LED's. Indicators shall be provided for the following items: 1] Channel Status 1-16; 2] Conflict; 3] Red Fail; 4] CVM / External watchdog; 5] 24V-2; 6] 24V-1; 7] Clearance Fail; 8] Port 1 Fail; 9] Diagnostic / Program Card; 10] Field Check Fail; 11] Dual Indication; 12] Type 12 Mode; 13] Power; 14] Port 1 Receive; 15] Port 1 Transmit.

4. Operating Modes

The MMU shall operate in both the Type 12 mode and Type 16 mode as required by the NEMA Standard.

5. Monitoring Functions

The following monitoring functions shall be provided in addition to those required by NEMA Standard Section 4.

5.1 Dual Indication Monitoring. Sixteen switches labeled FIELD CHECK/DUAL ENABLES shall be provided on the MMU front panel to enable Dual Indication Monitoring on a per channel basis. The Dual Indication Monitor function shall provide two modes of operation, Dual Indication fault and Green/Yellow-Dual Indication Fault. When voltages on two inputs of a channel are sensed as active for more than 1000 msec, the MMU shall enter the fault mode, transfer the OUTPUT relay contacts to the Fault position, and illuminate the DUAL INDICATION indicator. The MMU shall

-3-REVISION OF SECTION 614 MALFUNCTION MANAGEMENT UNIT (MMU)

remain in the fault mode until the unit is reset by the RESET button or the EXTERNAL RESET input.

When voltages on two inputs of a channel are sensed as active for less than 700 msec, the MMU shall not transfer the OUTPUT relay contacts to the Fault position.

When operating in the Type 16 mode with Port 1 communications enabled, Bit #68 (Spare Bit #2) of the Type #129 response frame shall be set to indicate a Dual Indication Fault has been detected.

Dual Indication Monitoring shall be disabled when RED ENABLE input is inactive. When operating in Type 16 mode with Port 1 communications enabled, Dual Indication Monitoring shall also be disabled if the LOAD SWITCH FLASH bit is set to "1" in the Type #0 message from the Controller.

5.2 Dual Indication Monitor. Dual Indication Monitoring shall detect simultaneous input combinations of active Green (Walk), Yellow, or Red (Don't Walk) field signal inputs on the same channel. In Type 12 mode this monitoring function detects simultaneous input combinations of active Green and Yellow, Green and Red, Yellow and Red, Walk and Yellow, or Walk and Red field signal inputs on the same channel.

Green Yellow-Dual Indication Monitor. Green Yellow-Dual Indication Monitoring shall detect simultaneous inputs of active Green and Yellow field signal inputs on the same channel. It will be used to monitor channels which have an unused Red field signal input tied to AC LINE such as a five section signal head. Green Yellow-Dual Indication Monitoring shall be enabled by a front panel option switch. When the Green Yellow-Dual Indication Monitoring option is enabled, all channels which have the front panel FIELD CHECK/DUAL ENABLE switches OFF shall be individually monitored for simultaneous active Green and Yellow field signal inputs. All channels which have the front panel FIELD CHECK / DUAL ENABLE switches ON (i.e. enabled for Dual Indication Monitoring) shall function as described in Dual Indication Monitoring.

- 5.4 Field Check Monitoring. Sixteen switches labeled FIELD CHECK / DUAL ENABLES shall be provided on the MMU front panel to enable Field Check Monitoring on a per channel basis. The Field Check Monitor function shall provide two modes of operation; Field Check Fault and Field Check Status. Field Check Monitoring shall be disabled when the RED ENABLE input is not active. When operating in the Type 16 mode with Port 1 communications enabled, Field Check Monitoring shall also be disabled if the LOAD SWITCH FLASH bit is set to "1" in the Type #0 message from the Controller Unit. The Field Check Monitoring function shall be disabled in the Type 12 mode.
- 5.5 Field Check Monitor. In Field Check Fault mode, when the field signal input states sensed as active or inactive by the MMU do not correspond with the data provided by the Controller Unit in the Type #0 message for 10 consecutive messages, the MMU shall enter the fault mode, transfer the OUTPUT relay contacts to the Fault position, and illuminate the FIELD CHECK FAIL indicator. The Channel Status Display shall indicate the channels on which the Field Check fault was detected. Bit #67 (Spare Bit #1) of the Type #129 response frame shall be set to indicate a Field Check fault has been detected. The MMU shall remain in the fault mode until the unit is reset by the RESET button or the EXTERNAL RESET input.

REVISION OF SECTION 614 MALFUNCTION MANAGEMENT UNIT (MMU)

- 5.6 Field Check Status. Field Check Status mode shall work in combination with the other fault monitoring functions of the MMU. When Conflict, Red Fail, Clearance Fail, or Dual Indication Fail triggers the MMU, the Channel Status Display and Fault Status Display shall correspond to that detected fault. If Field Check errors were detected while the fault was being timed, the FIELD CHECK FAIL indicator shall illuminate and double pulse once every 2 seconds. The channels on which the Field Check errors were detected shall double pulse at the same time as the FIELD CHECK FAIL indicator. Bit #67 (Spare Bit #1) of the Type #129 response frame shall also be set to indicate Field Check errors have been detected.
- 5.7 BND Error Detection Monitoring. The BND Error Detection function shall be designed to detect and respond to irregular field input wave-forms such as: irregularity blinking (flickering); having constant extraneous noise; being dimmed in-validly under Controller Unit software control. Detection of a BND Error shall place the MMU into the fault mode, transfer the OUTPUT relay contacts to the Fault position, and illuminate the BND FAIL indicator. The Channel Status display shall indicate the channels on which the fault occurred. When operating in the Type 16 mode with Port 1 communications enabled, Bit #69 (Spare Bit #3) of the Type #129 response frame shall be set to indicate a BND Error Detection fault has been detected. The MMU shall remain in the fault mode until the unit is reset by the RESET button or the EXTERNAL RESET input. An MMU Power Failure shall reset the BND Fail fault state of the monitor.
- 5.8 External Watchdog Monitor. The MMU shall provide the capability to monitor an optional external logic level output from a Controller Unit or other external cabinet circuitry. If the MMU does not receive a change in state on the EXTERNAL WATCHDOG input for 1500 msec (+/- 100 msec), the MMU shall enter the fault mode, transfer the OUTPUT relay contacts to the Fault position, and illuminate the CVM/WATCHDOG indicator. The MMU shall remain in the fault mode until the unit is reset by the RESET button or the EXTERNAL RESET input. An MMU Power Failure shall reset the CVM/WATCHDOG fault state of the monitor. When operating in the Type 16 mode with Port 1 communications enabled, Bit #70 (Spare Bit #4) of the Type #129 response frame shall be set to indicate an External Watchdog fault has been detected.
- 5.9 Type Fault Monitor. The MMU shall verify at power-up that the Type 12 or Type 16 operating mode as determined by the TYPE SELECT input is consistent with the mode set by the last external reset. Detection of a Type fault shall place the MMU into fault mode, transfer OUTPUT relay contacts to the Fault position, illuminate DIAGNOSTIC indicator, and flash TYPE 12 indicator at a 2Hz rate. The MMU shall remain in the fault mode until the unit is reset by the RESET button or the EXTERNAL RESET input. An MMU Power Failure shall reset the Type Fault state of the monitor.

6. Display Functions

The following display functions shall be provided in addition to those required by the NEMA Standard Section 4.

6.1 Yellow Plus Red Clearance Interval Display. The MMU Channel Status display shall indicate with a steadily illuminated LED indicator, those channels that had the short Yellow plus Red interval (i.e. those channels that did not meet the minimum Yellow Change plus Red Clearance Interval). The conflicting channel(s) sensed as active Green causing the Minimum Yellow Change plus Red Clearance Fault shall also be indicated with a single pulsed LED indicator.

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REVISION OF SECTION 614 MALFUNCTION MANAGEMENT UNIT (MMU)

6.2 Field Check Status Display. The FIELD CHECK FAIL indicator shall illuminate when a Field Check Fault is detected. The Channel Status display shall show the channels on which the Field Check fault occurred. If Field Check errors occurred during a Conflict Fault, Red Fail, Clearance Fail, or Dual Indication Fail the FIELD CHECK FAIL indicator shall illuminate and double pulse every 2 seconds. The channels on which the Field Check Status was detected during the fault shall double pulse on the Channel Status Display at the same time as the FIELD CHECK FAIL indicator.

7. Display Indicators

The following display indicators shall be provided in addition to those required by the NEMA Standard Section 4.

- 7.1 Type 12 Mode Indicator. The TYPE 12 indicator shall illuminate when the MMU is programmed for Type 12 operation. If a Type Fault is detected the DIAGNOSTIC/PGM CARD indicator shall illuminate and the TYPE 12 indicator shall flash at a rate of 2Hz.
- 7.2 BND Fail Indicator. The BND FAIL indicator shall illuminate when a BND Fault is detected. The Channel Status display shall show the channels which were detected as BND FAIL.
- 7.3 Dual Indication Indicator. The DUAL INDICATION indicator shall illuminate when a DUAL INDICATION Fault is detected. The Channel Status display shall show the channels which were detected as DUAL INDICATION.
- 7.4 Power Indicator. The POWER indicator shall flash at a rate of 2Hz when the AC LINE voltage is below the drop-out level. It shall illuminate steadily when the AC LINE voltage returns above the restore level.
- 7.5 Port 1 Receive Indicator. The RECEIVE indicator shall illuminate for a 33 msec pulse each time a Port 1 message is correctly received from the Controller Unit.
- 7.6 Port 1 Transmit Indicator. The TRANSMIT indicator shall illuminate whenever the MMU has the Port 1 transmitter enabled
- 7.7 *Program Card Indicator*. The DIAGNOSTIC/PGM CARD indicator shall flash at a 2Hz rate if the Programming Card is absent or not seated properly in its mating connector.

8. Additional Features

The MMU shall include automatic and operator-initiated diagnostics. Automatic diagnostics verify memory and microprocessor operation each time power is reapplied to the MMU. After power is applied, diagnostics continually verify operation of essential MMU elements including at a minimum: PROM, EEPROM, communications, internal power supply, and the microprocessor. Operator initiated diagnostics shall allow the operator to verify proper operation of all indicator lights, PROM, EEPROM, RAM and microprocessor.

-6-REVISION OF SECTION 614 MALFUNCTION MANAGEMENT UNIT (MMU)

Subsection 614.13 shall include the following:

MMUs will not be measured and paid separately but shall be considered included in the unit price for Traffic Signal Controller Cabinets.

REVISION OF SECTION 614 PEDESTRIAN PUSH BUTTON ASSEMBLY

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

Subsection 614.08 (f) shall include the following:

Push Button Assembly

Push button assemblies shall be of direct push button solid state contact type and shall not have any levers, handles or toggle switches externally or internally. The push button shall be tamperproof and of all-weather construction. The push button shall have a protective shroud that is an integral part of the cover and it shall encircle the push button actuator to deter vandalism. The assembly shall be made weatherproof and shockproof by means of synthetic rubber gaskets between the cover and the enclosure and between the plunger and the cover so that it shall be impossible to receive an electrical shock under and weather conditions. The front cover plate shall be secured with stainless steel vandal-resistant screws. The push button shall operate on logic ground.

Solid State Switch

The solid state switch shall be entirely insulated from the housing and operating button. The push button shall consist of a 2-inch 303 stainless steel metal plunger and oil and gasoline resistant Piezo driven solid state switch, all encased in a high impact thermoplastic enclosure with four (4) stainless steel mounting screws. The solid state switch shall be normally open and shall be closed with a minimum of pressure on the button (3 lb. \pm 1 lb.), restoring immediately to the normally open position when the pressure is released.

The aluminum housing shall be the flat black frame type with adjustable mounting staves that will readily enable it to be mounted on any size traffic signal pole or push button standard. The housing shall have a ½-inch access hole and shall be provided with a threaded plug so that access is only possible from the rear of the housing. The plug shall not be removable with ordinary tools. The housing shall be painted Dark Olive/Federal Green baked enamel conforming to Federal Standard 595A color number 14056.

The frame shall have a cast aluminum attachment to allow the mounting of a 9" x 12" pedestrian instruction sign. By removal of four (4) screws the frame shall convert to allow the mounting of a 5" \times 7- 3 4" pedestrian instruction sign.

A. Pedestrian Instruction Sign

Pedestrian instruction signs shall conform to the latest version of the MUTCD, published by the US Department of Transportation, Federal Highway Administration.

Pedestrian instruction signs shall be Type R10-3a, Type R10-3b, Type R10-3c, Type R10-3d, and Type R10-3e as specified in the contract documents.

Pedestrian instruction signs shall be constructed in accordance with the applicable provisions of the current City & County of Denver Standard Specifications. Pedestrian instruction signs need not be reflectorized. The sign shall be fabricated with 0.063" aluminum. Signs shall be mounted using four (4) 5/16" mounting holes 4" x 6-3/4" for the 5" x 7-3/4" sign and 7" x 10" for the 9" x 12" sign. The pedestrian instruction signs shall have rounded corners 3/4" radius for the 5" x 7-3/4" sign and 1-1/2" radius for the 9" x 12" sign.

-2-REVISION OF SECTION 614 PEDESTRIAN PUSH BUTTON ASSEMBLY

Subsection 614.13 shall include the following:

Pedestrian push button assemblies shall be measured by the number of units installed and accepted. The finished unit shall include the instruction sign and all required mounting hardware. All labor and materials required for furnish, installation, test and acceptance shall be considered included.

Subsection 614.14 shall include the following:

Pay Item	Pay Unit
Pedestrian Push Button	Each

REVISION OF SECTION 614 FIRE PREEMPTION SYSTEM

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 complete new fire preemption system at three locations depicted in the plans.

Work includes all in-cabinet equipment including preemption modules, mounting racks and power supplies; new optical detectors oriented toward the approach directions; lead-in cable; and all ancillary work required to connect the elements and establish a functioning preemption system. Four channels of detection shall be provided at the three referenced locations, which are:

- 1. 19th Avenue and Lincoln Street
- 2. 19th Avenue and Clarkson Street
- 3. 18th Avenue and Logan Street (Bid Alternate 1 only)

This work also consists of furnishing and installing a modified, partial fire preemption systems at one location depicted in the plans. In this location, an existing fire preemption system is in place, however additional fire preemption detectors and lead-in cable shall be provided; and in-cabinet work will be required to increase the number of detection channels.

Work includes all in-cabinet equipment including preemption modules, mounting racks and power supplies; new optical detectors oriented toward the approach directions; lead-in cable; and all ancillary work required to connect the elements and establish a functioning preemption system. Two additional channels of detection shall be provided at this locations, which is:

1. 20th Avenue and Park Avenue

For fire preemption detectors to be reset, refer to Section 210 – Reset Fire Preemption Unit for construction requirements.

Subsection 614.08 shall include the following:

The emergency vehicle preemption system shall match the type and manufacture currently deployed in similar applications throughout the City & County of Denver. All equipment furnished for this project shall be new, and shall be the manufacturer's latest available make and model of the required system element.

The following equipment specification is provided for Contractor reference.

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.

-2-REVISION OF SECTION 614 FIRE PREEMPTION SYSTEM

The system shall consist of the following components:

- A. Vehicle Emitter which shall be mounted on the emergency vehicle and shall transmit optical energy signals only in the forward direction. If the municipality presently uses optical pre-emption, the emitters shall be of the same manufacture currently used by the City and County of Denver Fire Department.
- B. Phase Selector (minimum 2 channels) which shall cause the signal controller to advance to and/or hold the desired traffic signal display for the emergency vehicle. A pre-emption system chassis shall house two phase selectors.
- C. Optical Detector which shall be mounted on or near a traffic signal and shall receive the optical energy signals generated by the Vehicle Emitter.
 - 1. Detector (Type A), 1 Direction, 1 Channel
 - 2. Detector (Type B), 2 Direction, 1 Channel
 - 3. Detector (Type C), 2 Direction, 2 Channel
- D. Detector Cable (Optical).

<u>System Operations</u>: The operating sequence shall be initiated when the optical detector receives the required optical energy signal from the Emitter. The phase selector shall cause the traffic signal controller to advance to and/or hold the desired traffic signal display for the emergency vehicle. 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. The phase selector shall allow the traffic signal controller to resume normal operation within ten seconds after optical energy signals cease after the desired traffic signal display is obtained. The phase selector shall not respond to optical energy signals from an emergency vehicle if it is already processing optical energy signals from another emergency vehicle.

System Components:

A. Vehicle Emitter: The emitter assembly consists of an emitter and power supply and an emitter control switch assembly. The emitter assembly is mounted on a vehicle and produces a flashing optical signal when in operation. The following shall apply to the vehicle emitter:

- 1. Shall operate on ten to fifteen volts DC input voltage, but shall not be damaged by input voltage surges up to twenty-five volts DC.
- 2. Shall be controlled by a single on/off switch that requires no other adjustments by the operator. The on/off condition shall be indicated by a light located adjacent to the switch.
- 3. Shall be automatically disabled or de-activated by one or a combination of the following: seat switch, emergency brake switch, door switch, and transmission safety switch.
- 4. Shall operate over an ambient temperature range of minus 340 C to plus 600 C. (minus 300 F. to plus 1400 F.)
- 5. Shall operate in 0 to 95 % humidity.
- 6. Shall be a pulsed optical energy source with a controlled repetition rate.

-3-REVISION OF SECTION 614 FIRE PREEMPTION SYSTEM

- 7. Shall not generate voltage transients on the battery input line which exceed battery voltage by more than four volts.
- 8. Shall produce optical energy in a cone of not more than 90 degrees horizontal and not more than 30 degrees vertical. The detectors and/or phase selector shall not sense a pre-emption signal from an emitter outside this cone.
- B. Optical Detector: The optical detector receives the high intensity optical pulses produced by the emitter. These optical energy pulses are transformed by the detector into appropriate electrical signals which are transmitted to the phase selector. The optical detector is mounted at or near the intersection in a location which permits an unobstructed line of sight to vehicular approaches. The units may be mounted on signal span wires, mast arms or other appropriate structures. The following shall apply to the optical detector:
 - 1. Shall produce optical energy in a cone of not more than 90 degrees horizontal and not more than 30 degrees vertical. The detectors and/or phase selector shall not sense a pre-emption signal from an emitter outside this cone.
 - 2. Shall be of solid state construction.
 - 3. Shall operate over an ambient temperature range of minus 340 C to plus 600 C. (minus 300 F. to plus 1400 F.)
 - 4. Shall have internal circuitry potted in a semi-flexible compound to ensure moisture resistance.
 - 5. Shall operate in 0 to 95 % humidity.
 - 6. Shall have a cone of detection of not more than 13 degrees. The detector and/or phase selector shall not sense a pre-emption signal from an emitter outside this cone.
- C. Phase Selector: The phase selector supplies power to and receives electrical signals from the optical detector. When detector signals are recognized as a valid call, the phase selector causes the signal controller to advance to and/or hold the desired traffic signal display. This is accomplished by activating the pre-empt input to the controller. The phase selector is capable of assigning priority traffic movement to one of two channels on a first-come, first-serve basis. Each channel is connected to select a particular traffic movement from those normally available within the controller.

Once a call is recognized, "commit to green" circuitry in the phase selector functions so that the desired green indication will be obtained even if optical communication is lost. After serving a priority traffic demand, the phase selector will release the controller to follow normal sequence operation. The following shall apply to the phase selector:

- 1. Shall include an internal power supply to supply power to the optical detectors.
- 2. Shall have minimum two-channel operation with the capability of interfacing with an additional phase selector for expansion of channels of operation.
- 3. Shall have adjustable detector range controls for each channel of operation, from 12M (40 feet) to 548M (1800 feet).
- 4. Shall have solid state indicator lights for power on and channel called.
- 5. Shall operate over an ambient temperature range of minus 340 C to plus 600 C (minus 300 F. to plus 1400 F.)
- 6. Shall operate in 0 to 95 % humidity.

-4REVISION OF SECTION 614 FIRE PREEMPTION SYSTEM

- D. Detector Cable (Optical): The following shall apply to the detector cable:
 - 1. 3-Conductor cable with shield and ground wire.
 - 2. AWG #20 (7x28) stranded.
 - 3. Individually tinned copper strands.
 - 4. Conductor insulation: 600 volt, 75 deg. C (1670 F.).
 - 5. 1 Conductor-yellow; 1 Conductor-blue; 1 Conductor-orange.
 - 6. Aluminized Mylar shield tape or equivalent.
 - 7. AWG #20 (7x28) stranded uninsulated drain wire
 - 8. DC resistance not to exceed 11.0 ohms per 305M (1000 feet).
 - 9. Capacitance from one conductor to other two conductors and shield not to exceed 157pf/M (48pf/ft.).
 - 10. Jacket: 600 volts, 80 deg. C (1760 F.), minimum average wall thickness 1.14mm (.045").
 - 11. Finished O.D.: 7.62mm (0.3") max.

System Interface: System shall be capable of operating in a computerized traffic management system when appropriate interfacing is provided by the computer supplier.

General: The Contractor shall furnish the manufacturer the phasing diagrams indicating controller sequence and timing.

The Contractor shall secure from the manufacturer a guarantee for the equipment for a period of sixty (60) months, which time shall commence from the date of delivery. Manufacturer shall certify upon request that all materials furnished will conform to this specification. The manufacturer or his designated representative shall be responsible for determining and setting all required range and emitter intensity for the emergency vehicle operation.

Construction Methods: All equipment except the vehicle emitter assembly shall be installed and wired in a neat and orderly manner in conformance with the manufacturers' instructions. The vehicle emitter assembly shall be delivered to a designated City representative.

Installation of the vehicle emitter assembly shall be the responsibility of the City and County of Denver Fire Department.

Traffic signals owned and maintained by the State that have optical pre-emption equipment owned and maintained by the town shall have an Auxiliary Equipment Cabinet (AEC) attached to the controller cabinet. The optical pre-emption equipment shall be housed in the AEC. Traffic signals owned and maintained by the town do not require an AEC to house the pre-emption equipment.

Detector cables shall be continuous with no splices between the optical detector and the AEC.

Detector locations shown on the plan are for illustration purposes only. Exact location shall be determined by the contractor or the designated representative for the best possible line of sight.

-5-REVISION OF SECTION 614 FIRE PREEMPTION SYSTEM

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

- Controller "D" harness and adapter.
- Pre-emption termination panel with terminal block and relay bases.
- Pre-emption disconnect switch, mounted on the emergency switch panel (on inside of cabinet door).
- Pre-emption test buttons, mounted on the pre-emption termination panel.

All connections from the phase selector to the "D" harness and to the cabinet wiring shall be made at the termination panel. The termination panel shall have AC+ Lights, AC-, and a switched logic ground. The switched logic ground feeds all the pre-empt inputs to the phase selector.

When switched off by the pre-emption disconnect switch, the traffic controller shall not be affected by pre-empt calls from the optical pre-emption system. A minimum of two test buttons shall be provided. If there are more than two pre-empt runs, a button for each shall be installed. A chart or print out indicating the program steps and settings shall be provided along with the revised cabinet wiring diagrams.

Test the Pre-emption System According to the following guidelines:

- 1. Notify the system owner/user, such as the Municipal Fire Chief or City Traffic Engineer, of the scheduled inspection
- 2. Request a fire department representative and an emergency vehicle, which has an emitter to conduct the test. If not available, the contractor shall provide an emitter.
- 3. In the presence of the Engineer and the municipal representative, test each pre-empted approach with the emergency vehicle. Test the following items of the system:
 - a. Confirm that the emitter activates the phase selector and the phase selector activates the correct pre-emption input to the controller.
 - b. Confirm adequate range. The traffic signal must be pre-empted to green sufficiently in advance of the emergency vehicle arrival. The vehicle emitter shall initiate pre-emption at a minimum distance of 548.6M (1800 feet).
 - c. Confirm there are no false calls. Keep the emitter active as the emergency vehicle passes through the intersection. No other optical detectors shall sense the strobe.
- 4. Document the test. Provide the Engineer and, upon request, the municipality copies of the test results. If a malfunction is found or the system needs adjustment (such as range, emitter intensity, or detector location), schedule a follow-up test. Repeat the above steps for all approaches that did not pass. All adjustments such as emitter intensity, phase selector range, sensitivity, detector placement, shall be made at the intersection by the contractor so that the optical pre-emption operates correctly with other major manufacturers' equipment currently owned by the town.

Subsection 614.09 shall include the following:

Installation shall be in accordance with the manufacturer's recommendations. No splices are allowed in the lead-in cable.

-6-REVISION OF SECTION 614 FIRE PREEMPTION SYSTEM

Four-channel installations are required at all locations referenced for complete re-build. Separate detectors shall be provided for each approach.

At the location identified for modification of the preemption system, two channels of additional detection are required. If existing preemption equipment is shelf-mounted, additional detection shall be shelf-mounted. If existing preemption equipment is rack-mounted, additional detection shall be rack-mounted. At these locations, separate one-way detectors shall be provided for each approach so designated in the plans.

Subsection 614.13 shall include the following:

The Emergency Vehicle Traffic Signal Priority Control System units shall include a new two- or four-channel card as specified and the number of detectors shown on the plans.

Work shall be measured and paid by the number of intersections at which the system is to be furnished and installed. The item will include all labor, materials, and ancillary hardware to provide a fully-functional system to the satisfaction of the Engineer.

The locations at which a complete new fire preemption system is to be provided shall be measured by the total number of intersections at which the work is required and paid as Fire Preemption Unit and Timer.

The locations at which a partial, modified fire preemption system is to be provided shall be measured by the total number of intersections at which the work is required and paid as Fire Preemption Unit.

Work shall include all labor and materials required to furnish and install all in-cabinet preemption equipment; furnish and install all new optical detectors as shown in the plans; furnish and install new lead-in cable; and provide all wiring connections at the detectors and in the cabinet to successfully establish successful emergency vehicle preemption operations. All labor, materials and ancillary mounting hardware is considered included. Contractor shall be required to test and demonstrate successful emergency vehicle preemption operation to the satisfaction of the Engineer prior to acceptance of this item for payment.

Subsection 614.14 shall include the following:

Pay Item	<u>Pay Unit</u>
Fire Preemption Unit and Timer	Each
Fire Preemption Unit	Each

REVISION OF SECTION 614 CLOSED CIRCUIT TELEVISION CAMERAS

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

Subsection 614.10 shall include the following:

Removal and installation for all closed circuit television cameras within the project limits shall be completed by City & County of Denver forces. Contractor shall coordinate all work schedules for removal and installation with Landree Snyder at 720-337-1193 such that the City is able to remove or install new equipment in a timely manner. Referenced coordination work shall be considered included in the project and will not be measured and paid separately.

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 intersections specified on the plans. For this project, work consists of adding one new camera to an existing video detection system at 20th Avenue, Park Avenue West and Washington Street. The new camera shall match make and manufacture of the existing detection system currently in place.

Subsection 614.08 shall include the following:

Detection Camera: The detection camera shall consist of a thermal camera, thermal lens, and enclosure; and shall meet the following specifications:

- Thermal Camera & Lens. The detection camera shall be a 320 x 240 (minimum) and 10 frames per second (minimum) thermal camera that fits into the camera enclosure specified herein. The lens shall be a fixed thermal lens. Digital zooming is allowed.
- Camera Enclosure. The camera enclosure shall consist of a dustproof and waterproof outdoor camera housing designed specifically to fit the thermal camera and thermal lens specified herein. The enclosure shall have a sun shield to prevent direct and indirect sunlight entering the lens. A thermostatically controlled heater for window defogging and defrosting is allowed.
- *Power*. The detection camera shall be powered by a 120/240VAC, 50/60Hz power source or by a 24VDC ($\pm 10\%$) power source.
- *Reliability*. The interface card shall be designed and manufactured to have a MTBF (mean time between failures) prediction figure of greater than or equal to 10 years continuous operation.
- *Certifications & Environmental:* The detection camera shall meet the following Certifications and Environmental specifications:

Certifications: Comply with Electromagnetic Compatibility - 2004/108/EG

Comply with FCC Part 15, Class A

Weatherproof: IP66 ingress protection standards (minimum)
Operating Temperature: -34°C to +74°C (-29°F to +165°F) (minimum)

Relative Humidity: Up to 100% non-condensing

Shock & Vibration: NEMA II

- Mounting Brackets: A versatile mounting bracket shall be supplied to mount the camera enclosure, specified herein, to a horizontal luminaire or vertical traffic signal pole. All mounts shall be secured with stainless steel mounting straps or bolts. The mounts, including the mass and size of the detection camera, shall be designed to withstand a wind load of 120km/h (or 75mph) with a 30-second gust factor.
- Camera to Controller Cabinet Cable: Cable needed to power the detection camera specified herein, transmit thermal video and data information to the controller cabinet shall be provided and meet the specifications of the thermal video imaging detection system manufacturer.

REVISION OF SECTION 614 INTERSECTION DETECTION SYSTEM (CAMERA)

Thermal Video Processor: A thermal video processor shall be included in the detection camera, specified herein, or in the interface card, specified herein; and shall meet the following specifications:

• Functionality

The thermal video processor shall provide the following functionality:

Detector Display: Capable of displaying bike detection regions on the

thermal video image with associated outputs with output

status shown on the screen

Detector Placement: By using a portable PC with graphical user interface

software or web server

Detector Function: Capable of detecting within the view of the connected

detection camera the presence of bicycles in user defined

bicycle detection regions

Detector Type: Configurable as presence, count, delay, extension, or pulse

mode of either arrival or departure of bicycles. The detector shall be capable of detecting pedestrians and

small motorcycles too.

Detector Modification: All detectors and parameters shall be able to be changed

without interrupting detection. When one detector is modified, all existing detectors shall continue to operate, including the one that is being modified. When the new detector position is confirmed, the new detector shall have no learning phase and shall be operating while the one

being modified ceases to operate

Detector Failure State: Provide a constant call on each active detection channel,

in the event of unacceptable interference or loss of the

thermal video signal

Regions per Video Output: Up to 4 (minimum)

Detector Delay & Extension: Defined between 0.1-99 seconds and pulse mode between

0-500ms in 10ms increments.

Direction Sensitivity: Able to make a detector directional sensitive

Camera Interface/Surge Suppression Panel: When the thermal video processor is in the detection camera, a UV resistant signal cable with 3 wires (maximum) of wire diameter AWG18 (minimum) shall be provided to power the detection camera, transmits detection information to the interface card specified herein, and provides remote communication specified herein. The cable distance between detection camera and interface card is 300m or 1,000ft (maximum).

When the thermal video processor is in the interface card with coax thermal video cables being used between the detection camera and the interface card, a surge suppression panel shall be provided that powers the detection camera with high-voltage transient protection and power isolation, and suppresses electrical spikes on the thermal video coax cable.

The camera interface/surge suppression panel shall meet the following specifications:

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REVISION OF SECTION 614 INTERSECTION DETECTION SYSTEM (CAMERA)

• Certifications and Environmental: The interface card shall meet the following Certifications and Environmental specifications:

Certifications: Comply with Electromagnetic Compatibility –

2004/108/EG

Comply with FCC Part 15, Class A

Weatherproof: IP66 ingress protection standards (minimum)
Operating Temperature: -34°C to +74°C (-29°F to +165°F) (minimum)

Relative Humidity: 0-95% non-condensing (minimum)

Shock & Vibration: NEMA II

• Interface Card: Input/output main and expansion cards shall be supplied that are designed to convert real-time detection signals from the video processor, specified herein, into contact closure signals to the traffic light controller; and to relay traffic signal phase status to the video processor, specified herein. The interface card shall meet the following specifications:

• Functionality: The interface card shall provide the following functionality:

Cabinet/Controller EDGE card for TS-1 cabinet and 2070 TS-1 and TS-2

Compatibility: controllers

Status Indicators: Visual for state of each detection output, visual state of

power status (ON/OFF), visual state of camera status

(operational/not operational)

Identification: Individually addressable with serial number, MAC

address, IP-address, subnet mask and default gateway

Program Retention: Continue to operate in accordance with previous program

after recovering from communication system or power

failure

Time Synchronization: Manually or NTP time source

Detector Failure State: Provide a constant call on each active detection channel,

in the event of unacceptable interference or loss of the

thermal video signal

Regions per Video Output: Up to 4 (minimum)

Detector Delay & Extension: Defined between 0.1-99 seconds and pulse mode between

0-500ms in 10ms increments.

Direction Sensitivity: Able to make a detector directional sensitive

• Communication: The interface card shall meet the following specifications:

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REVISION OF SECTION 614 INTERSECTION DETECTION SYSTEM (CAMERA)

Controller Interface Output: Contact closure via interface backplane, providing up to

four channels of vehicle detection with no front panel

connectors being used

Ethernet: RJ45 port for hard-wired system set-up and monitoring USB: USB 2.0 (minimum) on front panel for connecting a USB

dongle to allow wireless set-up and monitoring via portable PC, tablet and/or smart phone $4^{\circ}C$ to $+74^{\circ}C$ (-

 $29^{\circ}F$ to $+165^{\circ}F$) (minimum)

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- Remote Communications: Remote communications to allow remote management specified herein shall be provided via the interface card and shall meet the following specifications:
 - a) Functionality: Remote communications shall provide the following functionality:

Compatibility: TS-1 cabinet and 2070 TS-1 and TS-2 controllers

Thermal Video MJPEG, MPEG-4 (ISO 14496-2) and/or H.264 (ISO/IEC

Compression: MPEG-4 AVC)

Thermal Video Frame Rate: Constant and variable 10 frames per second (minimum)

Thermal Video Bandwidth: Between 32 kbps and 4 Mbps (minimum)

Status Indicators: Ethernet link/activity

Identification: Individually addressable with serial number, MAC

address, IP-address, subnet mask and default gateway

Program Retention: Continue to operate in accordance with previous program

after recovering from communication system or power

failure

b) Communication: The remote communications shall meet the following specifications:

Ethernet Port: One 10/100Base-T front-panel RJ45 port (minimum)

Thermal Video Input: Via front panel connector

• *Power:* The interface card shall meet the following power specifications:

Input Voltage: $24VDC \pm 10\%$ (via cabinet detector rack backplane)

Power Consumption: 10W (maximum)

• *Physical Properties:* The interface card shall meet the following physical properties specifications:

Size: Fits directly into NEMA TS-1 cabinet detector rack or fits

on DIN-rail

• *Reliability:* The interface card shall be designed and manufactured to have a MTBF (mean time between failure) prediction figure of greater than or equal to 10 years continuous operation.

REVISION OF SECTION 614 INTERSECTION DETECTION SYSTEM (CAMERA)

• Certifications and Environmental

The input/output main and expansion cards shall meet the following Certifications and Environmental specifications:

Certifications Comply with FCC Part; 15 NEMA TS 2-2003 v02.06

Operating Temperature -37°C to 74°C (-35°F to 165°F) (minimum)

Humidity 0-95% non-condensing

Remote Management System: Remote management system shall be provided to monitor, control, and troubleshoot the thermal video imaging detection devices remotely via the Ethernet communication system. The vendor shall provide all software that will be loaded and configured by staff on furnished server hardware that is connected to the thermal video imaging detection devices via the Ethernet communication system.

Remote management shall meet the following minimum requirements:

• Diagnostic & Health Monitoring:

Management Status: Provide real-time status display of services required to

access, troubleshoot, and archive data from the thermal video imaging detection system network connected

devices

Network Device View: Provide view of all thermal video imaging detection

system network connected devices

Operation Log: Support retrieving, displaying, and saving operational

messages, warnings, and errors

• Remote Management & Maintenance:

Video Viewing/Recording: Support viewing and recording streaming video including

detector overlay

Device Management: Support creating, editing, downloading, and uploading

detector configurations

Remote Firmware Updates: Support updating firmware of any device from a remote

location

Remote Backup/Restore: Support backup/restore device configuration from remote

location

Access Permissions: Support password implementation

Clock Synchronization: Support the Network Time Protocol (NTP) to synchronize

the internal clocks of the thermal video imaging detection system network connected devices a minimum of once a

day

Subsection 614.13 shall include the following:

Intersection Detection System (Camera) shall be measured and paid by the number of cameras to be installed. The item shall include all labor, materials, and ancillary hardware required to provide a fully-functional camera system to the satisfaction of the Engineer.

-6-REVISION OF SECTION 614 INTERSECTION DETECTION SYSTEM (CAMERA)

Subsection 614.14 shall include the following:

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

REVISION OF SECTION 614 FLASHING BEACON ASSEMBLY

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 installing flashing school beacon assemblies as depicted in the plans and in accordance with Denver standards.

Subsections 614.06 shall include the following:

For each flashing beacon assembly, work will occur in three stages: 1] Contractor will install a new foundation for the proposed pole in accordance with City & County of Denver standards; 2] Contractor will install the pole; and 3] Contractor will install required traffic control devices. Contractor shall be reimbursed only for new beacon assembly as a unit. Foundations and traffic control devices are considered included in the unit price and are not reimbursed separately.

Following installation of all equipment, the Contractor shall rake the pole to provide a true vertical after loading. Work shall include grouting by the Contractor after pole rake is approved by the Engineer.

Subsection 614.13 shall include the following:

Installation of flashing beacons shall be measured and paid by the number of full beacon assemblies furnished and installed. All labor and materials required to install the item are considered included. Transportation costs that may be incurred by the Contractor to pick-up poles or other associated hardware and transport same to the project site are included in the unit cost for this item and will not be measured and paid for separately.

Traffic control devices for flashing beacons are considered included in the unit cost of the beacon assembly and are not are measured and paid separately. Foundations for flashing beacons are considered included in the unit cost of the item and are not measured and paid separately.

Subsection 614.14 shall include the following:

Pay Item	<u>Pay Unit</u>
Flashing Beacon	Each

REVISION OF SECTION 614 TRAFFIC SIGNAL POLES

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 installing traffic signal poles. Traffic-signal-light poles shall be furnished by the City and installed by the Contractor. Traffic signal pedestal poles and poles for flashing beacon assemblies shall be furnished and installed by the Contractor.

Note that at the time of project advertisement for bid, the City has ordered the traffic-signal-light poles including arms for all Base Bid locations. Should the City decide to award Bid Alternate 1, the City will order poles and arms for those locations at that time.

Subsections 614.06, 614.08 and 614.09 shall include the following:

Foundation Installation Overview:

Materials and installation for foundations of traffic signal poles with mast arms shall conform to the requirements of the City & County of Denver's Traffic Signal Standard Detail Sheet No. 16.1.8 and the Project Special Provision for Section 503 – Caisson (Special).

Materials and installation for foundations of traffic signal poles without mast arms shall conform to the requirements of the City & County of Denver's Traffic Signal Standard Detail Sheet No. 16.1.15, Foundations for XCEL Facilities, and the Project Special Provision for Section 613 – Light Standard Foundation.

Materials and installation for concrete footings of pedestal poles shall conform to the requirements of the City & County of Denver's Traffic Signal Standard Detail Sheet No. 16.1.13.

Materials and installation for concrete footings of flashing beacon poles shall conform to the requirements of the City & County of Denver's Traffic Signal Standard Detail Sheet No. 16.1.21 and Detail 5 of Sheet No. 16.1.13.

Pole Installation Overview:

For each traffic signal-light pole with mast arm, work will occur in three stages: 1] Contractor will install a new foundation for the proposed traffic signal-light pole in accordance with City & County of Denver standards; 2] Contractor will install the pole; and 3] Contractor will install the mast arm, luminaire arm and luminaire. For traffic-signal-light pole locations without a mast arm, work shall occur in the same stages, except that no mast arm installation is required. Following installation of luminaire and all pole- and mast-arm mounted equipment by the Contractor, the Contractor shall rake the pole to provide a true vertical after loading. Foundation work shall include grouting by the Contractor after pole rake is approved by the Engineer. Contractor shall be reimbursed for new foundation, new pole installation (including mast arm and luminaire arm), traffic control devices and new luminaire.

-2-REVISION OF SECTION 614 TRAFFIC SIGNAL POLES

For each pedestal pole and flashing beacon pole, work will occur in three stages: 1] Contractor will install a new foundation for the proposed pole in accordance with City & County of Denver standards; 2] Contractor will install the pole; and 3] Contractor will install required traffic control devices. At locations specific to pedestal poles or flashing beacons, Contractor shall be reimbursed only for new pole or beacon. Foundations are considered included in the unit price and are not reimbursed separately. Traffic control devices on the pedestal pole will be measured and paid separately under the appropriate Sections. Traffic control devices on the flashing beacon pole are considered included in the unit cost of the beacon assembly and are not measured and paid separately.

Following installation of all equipment, the Contractor shall rake the pole to provide a true vertical after loading. Work shall include grouting by the Contractor after pole rake is approved by the Engineer.

Subsection 614.08(g) shall include the following:

<u>Traffic Signal Poles</u>:

All traffic signal poles, mast arms, and luminaire arms shall conform to City and County of Denver Standards and XCEL Energy requirements as applicable.

All traffic signal-light poles shall include a 10 foot long luminaire arm. At locations where only one corner is to be rebuilt, the proposed luminaire shall be a 250 Watt high pressure sodium curvilinear style luminaire in accordance with the current City and County of Denver Standards. At locations where the signal is to be completely rebuilt, the proposed luminaire shall be a 5300 Lumen LED style luminaire in accordance with current Denver standards. See the Project Special Provisions for Luminaires of both types for additional information.

Traffic Signal Pedestal Poles shall conform to the requirements of the City's Traffic Signal Standard Detail 16.1.13. Flashing Beacon Poles shall conform to the requirements of the City's Traffic Signal Standard Detail 16.1.21.

Contractor shall pick up poles, arms and all associated pole hardware from the City Maintenance Yard at 5440 Roslyn Street, Denver and deliver same to the project site for installartion. Pick-up times and dates shall be coordinated with Chris Lillie at 720-865-4066 or Greg Salazar at 303-591-7146 a minimum of three working days prior to desired pick-up time.

Procedure for Field Touch-Up: The City 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 614.09 shall include the following:

Throughout traffic signal installation, Contractor shall coordinate as required with the City & County of Denver to schedule work activities, determine delivery and/or pick-up of materials as may be required, and to facilitate efficient construction to the extent possible.

-3-REVISION OF SECTION 614 TRAFFIC SIGNAL POLES

Subsection 614.13 shall include the following:

Traffic Signal-Light Poles (With and Without Mast Arm):

Installation of traffic signal-light poles shall be measured and paid by the number of poles installed. All labor and materials required to install the pole and arms at the required mounting heights are considered included. Costs that may be incurred by the Contractor to pick-up poles, arms or mounting hardware and transport same to the project site are included in the unit cost for this item and will not be measured and paid for separately. Foundations, traffic control devices and luminaires are tabulated and paid separately under the respective Sections .

Traffic Signal-Light Pole Steel (1 Mast Arm) (Install Only) shall refer to all traffic signal poles to be installed with both luminaire arms and mast arms.

Traffic Signal-Light Pole Steel (Install Only) shall refer to all traffic signal poles to be installed with a luminaire arm but no mast arm.

Pedestal Poles:

Pedestal poles shall be measured and paid by the number of poles furnished and installed. All labor and materials required to furnish and install the pole is considered included. Costs that may be incurred by the Contractor to pick-up poles or associated hardware and transport same to the project site are included in the unit cost for this item and will not be measured and paid for separately. Traffic control devices for pedestal poles are tabulated and paid separately. Foundations for pedestal poles are considered included in the unit cost of the pedestal pole and are not measured and paid separately.

Flashing Beacons:

Flashing beacons shall be measured and paid by the number of full beacon assemblies furnished and installed. All labor and materials required to install the item is considered included. Costs that may be incurred by the Contractor to pick-up poles or other associated hardware and transport same to the project site are included in the unit cost for this item and will not be measured and paid for separately. Traffic control devices for flashing beacons are considered included in the unit cost of the beacon assembly and are not are measured and paid separately. Foundations for flashing beacons are considered included in the unit cost of the item and are not measured and paid separately.

Subsection 614.14 shall include the following:

Pay Item	Pay Unit
Flashing Beacon	Each
Traffic Signal-Light Pole Steel (Install Only)	Each
Traffic Signal-Light Pole Steel (1 Mast Arm) (Install Only)	Each
Traffic Signal Pedestal Pole Aluminum	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 temporary disconnection of existing lateral fiber optic communications connections from traffic signal cabinets to be removed, temporary storage of the fiber optic equipment in adjacent pull boxes during construction, and reinstallation and re-attachment of the fiber optic communications to new traffic signal cabinets.

Work shall be provided at the following two locations:

- 1. 19th Avenue and Clarkson Street
- 2. 18th Avenue and Logan Street (Bid Alternate 1 only)

The existing fan-out shall be retained, however all other equipment required to terminate the fiber in the new cabinet and establish communications to the new controller shall be new.

Color-coded fibers and buffer tubes shall be used throughout the entire project. At the terminal points the jackets shall be stripped and the ends taped. Gel filled compound shall be removed using filled cable cleaner.

At every cabinet or optical closure, only the fibers identified in the plans to be spliced and/or connected to a patch panel or other internal device are required to be landed. All cut and unconnected fibers shall be sealed in a manner recommended by the fiber optic cable manufacturer and coiled neatly in a splice organizer.

The same color-coded pairs of fibers and/or wires shall be used throughout the entire project unless otherwise directed by the Denver Transportation and Mobility Division or as otherwise shown 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 MM fibers housed individually in protective jackets. Both ends of the cable shall be connected. Fiber optic patch cord cable shall be suitable for operation over a temperature range of -30° to $+60^{\circ}$ Celsius.

Cables shall be suitably long to be connected between the interconnect panel and the communications equipment (i.e. fiber optic transceivers). Patch cord couplings shall be compatible with termination points. Appropriate strain relief in the cabinet (through cable ties) shall be installed a minimum of three locations. Sufficient slack shall be left to allow relocation of the equipment anywhere in the cabinet. Attenuation of a fiber optic patch cord cable after installation, not including connector loss, shall not exceed 0.1 dB measured at 850nm and 1300nm

-2-REVISION OF SECTION 614 TELEMETRY (FIELD)

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 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 -25dB. Return loss when the connector is mated with previously installed connectors shall be less than -18dB. Connector insertion loss shall not be greater than 0.20 dB typical. Connector loss shall not vary more than 0.20dB after 1000 repeated mattings. Tensile strength shall withstand an axial load of 20lb. with less than 0.20dB change.

Index matching fluids or gels shall not be used. 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. Connector shall be suitable for the intended environment and shall meet the following environmental conditions.

Operating temperature: -40° to +80°C Storage temperature: -40° to +85°C

Connector loss shall not vary more than 0.20dB over the operating temperature range. Connectors shall be protected by a suitably installed waterproof protection cap.

Fiber Optic Patch Cords:

Fiber optic patch cords shall be fiber optic jumper cable, duplex, ceramic ferrule, MM 62.5 nm, adaptable to AT&T ST style connectors, 2 meters in length, ITT Canon Model 161001-4020 or approved equal. Cable from modem to Port 3 controller harness shall be 25-pin cable Model 44982G4 or approved equal.

Optical Splice Closures:

Coyote Runt or Coyote Pup type enclosures shall be provided for splicing lateral fiber optic cables to the main (Backbone) fiber cable in all pull box locations that are identified in the plans. All closures shall include 1-inch future port kit (part number 8003408, Pre-Formed Line Products).

The Coyote Runt Closure shall be used at locations with three fiber optic cables. In locations requiring more than three cables, a Coyote Pup Closure shall be installed.

Subsection 614.09 shall include the following:

Local Intersection Telemetry:

All existing backbone to lateral cable splices shall remain.

Local intersection telemetry work shall be provided at the following two locations:

- 1. 19th Avenue and Clarkson Street
- 2. 18th Avenue and Logan Street (Bid Alternate 1 only)

-3-REVISION OF SECTION 614 TELEMETRY (FIELD)

Typically, lateral cable from outside terminates inside existing cabinets on a wall- or rack-mounted patch panel; from which patch cords relay optical communications to the transceiver or Ethernet switch, which connects to the controller. The following section is written to that configuration.

Contractor shall disconnect existing fiber optic communications cabling and pull same back into adjacent, upstream communications junction box prior to removing the existing cabinet. All such cable shall be bundled, protected and placed in said junction box for the duration of the cabinet change-out period.

Existing patch panel, patch cords, fiber modem and all ancillary connectors and other existing communications hardware shall be considered salvageable material and shall be returned to the City with the existing cabinet.

Contractor shall install new patch panel into new cabinet (wall- or rack-mounted as applicable) as directed by the Engineer, install new modem or Ethernet Switch as directed, and install new pigtails and patch cords. Pull fiber optic cable into new cabinet and terminate same on new patch panel using new connectors, and re-establish all required system-level connections.

Work to disconnect, pull and bundle cable at removal, and re-pull and reconnect cable following installation of new cabinet shall be considered included in the unit price for this item and will not be measured and paid separately.

System Level Telemetry:

All existing backbone to lateral cable splices shall remain.

Due to the adjacent cabinet removals across the adjacent project area, existing fiber assignments are likely to change. Signals will be removed at the following intersections:

- 1. 20th & Grant
- 2. 20th & Logan
- 3. 19th & Sherman
- 4. 19th & Grant
- 19th & Logan

Due to the number of traffic signals to be removed and the consequent (probable) disruption to the existing fiber optic communications system, all or some of the remaining signals will likely be required to be placed on new fibers and/or channels for rerouting of system communications from the intersection in question back to the City's Traffic Management Center (TMC).

The following traffic signals will remain, but *may* require adjustments to existing communications routing and/or fiber assignments as directed by the Engineer:

- 1. 20th & Park
- 2. 19th & Broadway
- 3. 19th & Lincoln
- 4. 19th & Park.
- 5. Park & Clarkson

-4-REVISION OF SECTION 614 TELEMETRY (FIELD)

In cabinets to remain, Contractor *may* be directed by the Engineer to disconnect existing fibers and reconnect the controller to two previously broken out fibers within the same tube. Consequently, at each intersection to remain, the Contractor shall reattach only those specific broken-out fibers as directed by the City. Contact Chris Lillie at 720-865-4066 to coordinate these efforts

Following reconnection of the proposed fibers, Contractor will be required to demonstrate successful system communications to the Engineer prior to acceptance. New fiber assignments (if required) will be provided to the Contractor by the City.

Subsection 614.13 shall include the following:

Telemetry (Field) shall be measured and paid by the number of intersections at which the work is required and shall include the following activities: remove in-cabinet communications equipment; disconnect and pull cable away from the existing cabinet; pull cable into the new cabinet; and provide all required connections and terminations in the new cabinets using new communications equipment to re-establish successful system communications. All labor and materials required to provide the work described, including furnish and installation of all equipment, strain relief, cable termination and connection is considered included in the unit price. All new pigtails, connectors and patch cords that may be required to facilitate the reset are considered included. Prior to disconnection, Contractor shall demonstrate to the Engineer that existing signal system communications are working. Following reset and reconnection of all equipment, Contractor shall demonstrate successful system communications to the Engineer prior to acceptance of this item for payment. All required coordination with the City is considered included in the unit cost for this item and will not be measured and paid for separately.

At intersections where the cabinet is to be removed, lateral interconnect cable shall be disconnected, pulled to adjacent pull box, protected and stored to the satisfaction of the Engineer or the Engineer's designee. The described fiber optic work at cabinets to be removed shall be paid under Section 210 as Reset Wiring.

At locations where changes to fiber assignments are requested by the Engineer, Contractor shall provide new connections within the existing cabinet as directed by the Engineer or the Engineer's designee. Referenced fiber work at the System Level shall be paid under Section 614 under the Contractor's lump sum cost for Test Fiber Optic Cable.

Subsection 614.14 shall include the following:

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

REVISION OF SECTION 614 TEST FIBER OPTIC CABLE

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

Subsection 614.01 shall include the following:

Due to the number of traffic signals to be removed across the project area and the consequent disruption to the existing fiber optic communications system, all or some of the remaining signals will likely be required to be placed on new fibers and/or channels for rerouting of system communications from the intersection in question back to the City's Traffic Management Center (TMC).

The following traffic signals will be removed as part of this project:

- i. 20th & Grant
- ii. 20th & Logan
- iii. 19th & Sherman
- iv. 19th & Grant
- v. 19th & Logan

The following traffic signals will remain, but *may* require adjustments to existing communications routing and/or fiber assignments as directed by the Engineer:

- i. 20th & Park
- ii. 19th & Broadway
- iii. 19th & Lincoln
- iv. 19th & Park
- v. Park & Clarkson

The Contractor may be required to change fiber connections at these five locations and will subsequently be required to test fiber optic communications between the intersections and the TMC. All such adjustments to these locations shall be as directed by the Engineer or Engineer's designee and reimbursed under the lump sum cost for this item.

Finally, the following two traffic signals will be rebuilt in their entirety.

- i. 19th & Clarkson
- ii. 18th & Logan (Bid Alternate 1)

Communications routing and fiber assignment will be as directed by the Engineer. The Contractor will be required to test fiber optic communications between the intersections and the TMC. All communications work at these two locations shall be paid under Section 614 – Telemetry (Field).

Subsection 614.08 shall include the following:

For this project, work shall consist of the testing of existing hybrid single mode (SM) and multimode (MM) fiber optic cable. Test procedures involve an OTDR test and an Optical Power Meter Test.

-2-REVISION OF SECTION 614 TEST FIBER OPTIC CABLE

Guidelines for fiber optic cable testing include:

- i. Test jumpers/patch cords must be the same fiber core size and connector type as the cable system: a] MM fiber 62.5/125nm; b] SM fiber 8.3/125nm.
- ii. The light source and OTDR must operate within the range of 850±30nm or 1300±20nm for MM testing in accordance with ANSI/EIA/TIA-526-14; and within the range of 1310±10nm or 1550±20nm for SM testing in accordance with ANSI/EIA/TIA-526-7.
- iii. Power meter and light source must be set to the same wavelength during testing.
- iv. Power meter must be calibrated and traceable to the requirements of the National Institute of Standards and Technology (NIST).
- v. All system connectors, adapters and jumpers must be cleaned as per manufacturer's instructions before measurements are taken.

Test Equipment

The following is required to perform fiber optic cable tests:

- i. OTDR;
- ii. Test reel, if necessary;
- iii. Light source at the appropriate wavelength;
- iv. Optical Power Measurement Equipment; and
- v. Test Jumpers: CPR Test Jumper-1 and Test Jumper-2 shall be 1-5 meters long with connectors compatible with both light source and power meter and have the same fiber construction as the link segment being tested.

Fiber Optic Cable Testing with OTDR

Contractor shall perform an OTDR test of all fibers in all tubes on the reel prior to installation of the fiber. The test results shall be supplied to the Engineer prior to installation of the cable.

If the fiber is specified as "Install Only", the Contractor shall test the fiber on the reel and provide the test results to the Engineer prior to accepting the cable. After installation, if there are unused portions of cable remaining on the reel, the Engineer may request the Contractor or other qualified technician to perform a reel test.

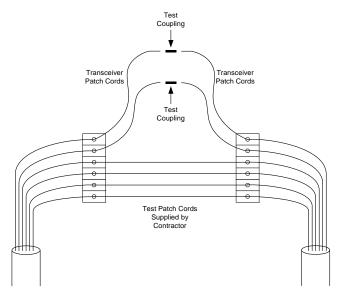
The Contractor shall provide the Engineer the test results prior to delivering the cable to the Engineer. Any cable damaged while in the Contractor's possession shall be replaced at the Contractor's expense.

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 850nm and 1300nm for MM fibers and 1310nm 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

-3-REVISION OF SECTION 614 TEST FIBER OPTIC CABLE

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 not 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. 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:

- i. Names of personnel conducting the test.
- ii. Type of test equipment used (manufacturer, model, serial number, calibration date).
- iii. Date test is being performed.
- iv. Optical source wavelength and spectral width.
- v. Fiber identification.
- vi. End point locations.
- vii. Launch conditions.
- viii. Method of calculation for the attenuation or attenuation coefficient.
- ix. Acceptable link attenuation.

-4-REVISION OF SECTION 614 TEST FIBER OPTIC CABLE

Fiber Optic Cable Testing with Optical Power Meter

The Contractor shall conduct an Optical Power Meter Test for each fiber installed. MM segments shall be tested in one direction at both the 850nm and the 1300nm wavelength. SM segments shall be tested in one direction at both the 1310nm and 1550nm wavelength.

In compliance with TIA/EIA-526-14A "Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant" and TIA/EIA-526-7 "Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant," the following information shall be recorded in English units during the test procedure:

- i. Names of personnel conducting the test.
- ii. Type of test equipment used (manufacturer, model, serial number, calibration date).
- iii. Date test is being performed.
- iv. Optical source wavelength and spectral width.
- v. Fiber identification.
- vi. End point locations.
- vii. Test direction.
- viii. Reference power measurement (when not using power meter with a Relative Power Measurement Mode).
- ix. Measured attenuation of the link segment.
- x. Acceptable link attenuation.

Minor attenuation differences due to test direction are on par with accuracy and repeatability of the test method. Lateral segments in a building are limited to 90m. 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. A connection is defined as the joint made by mating two fibers terminated with re-mateable connectors (e.g. ST, SC, LC).

MM FIBER – The general attenuation equation for any MM link segment is as follows:

 $Acceptable\ Link\ Attenuation = Cable\ Attenuation + Connection\ Attenuation + Splice\ Attenuation + Coupled\ Power\ Ratio\ (CPR)\ Adj.$

62.5nm MM Attenuation Coefficients:

- i. Cable Attenuation = Cable Length (km) x (3.40 dB/km@850nm or 1.00 dB/km@1300nm)
- ii. Connection Attenuation (ST or SC connectors) = (# of Connections x 0.39 dB) + 0.42 dB
- iii. Connection Attenuation (LC connectors) = (# of Connections x 0.14 dB) + 0.24 dB
- iv. Splice Attenuation (Mechanical or Fusion) = Splices x = 0.30 dB
- v. CPR Adjustment = See table below

-5-REVISION OF SECTION 614 TEST FIBER OPTIC CABLE

MM Light Source CPR Adjustment									
	Cat. 1	Cat. 2	Cat. 3	Cat. 4	Cat. 5				
	Overfilled				Underfilled				
Links with ST or SC	+0.50	0.00	-0.25	-0.50	-0.75				
Connections									
Links with LC Connections	+0.25	0.00	-0.10	-0.20	-0.30				

Coupled Power Ratio of a light source is a measure of the modal power distribution launched into a multimode fiber. A light source that launches a higher percentage of its power into the higher order modes of a multimode fiber produces a more over-filled condition and is classified as a lower category than a light source that launches more of its power into just the lower order modes producing an under-filled condition. Under-filled conditions result in lower link attenuation, while over-filled conditions produce higher attenuation. Therefore, adjusting the acceptable link attenuation equation to compensate for a light source's launch characteristics increases the accuracy of the test procedure.

SM FIBER – The general attenuation equation for any SM link segment is as follows:

 $Acceptable\ Link\ Attenuation = Cable\ Attenuation + Connector\ Attenuation + Splice\ Attenuation$

8.3nm SM Attenuation Coefficients:

- i. Cable Attenuation = Cable Length (km) x (0.34 dB/km@1310nm or 0.25 dB/km@1550nm)
- ii. Connection Attn. (ST or SC connectors) = (# of Connections x 0.39 dB)+0.42dB.
- iii. Connection Attn. (LC connectors) = (# of connectors X0.14 dB)+0.24dB.
- iv. Splice Attenuation (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.

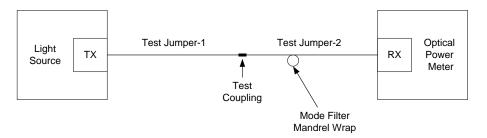
[1] MM FIBER – The MM fiber cable test shall be conducted as follows:

- i] Clean test jumper connectors and test coupling per manufacturer's instructions.
- ii] Follow the test equipment manufacturer's initial adjustment instructions.
- iii] Connect Test Jumper-1 between the light source and the power meter. Avoid placing bends in the jumper that are less than 100mm (4 inches) in diameter.
- iv] If meter has Relative Power Measurement (PM) Mode, use it. If not, reduce the Reference PM (P_{ref}). If meter can display power levels in dBm, select this unit to simplify calculations.



-6-REVISION OF SECTION 614 TEST FIBER OPTIC CABLE

- v] Disconnect Test Jumper-1 from power meter. Do NOT disconnect test jumper from light source.
- vi] Connect Test Jumper-2 between power meter and Test Jumper-1 using test coupling. Test Jumper-2 should include a high order mode filter. This is done by wrapping jumper 3 times around 30mm (1.2") diameter mandrel.



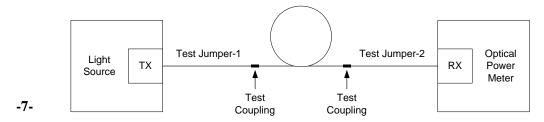
- vii] Record PM (P_{sum}). If power meter is in Relative PM Mode, reading represents CPR value. If meter does not have Relative PM Mode, perform the following calculation:
 - a] If P_{sum} and P_{ref} are in the same logarithmic units: CPR (dB) = P_{sum} P_{ref}
 - b] If P_{sum} and P_{ref} are in watts: CPR (dB) = 10 x log10 [O_{sum}/P_{ref}]
- [2] SM FIBER The SM Optical Power Meter fiber test shall be conducted as follows:
 - i] Clean the test jumper connectors and test coupling per manufacturer's instructions.
 - ii] Follow the test equipment manufacturer's initial adjustment instructions.
 - iii] Connect Test Jumper-1 between the light source and the power meter. Avoid placing bends in the jumper that are less than 100mm (4 inches) in diameter.



- iv] If the power meter has a Relative Power Measurement Mode, select it. If it does not, reduce the Reference Power Measurement (Pref). If the meter can display power levels in dBm, select this unit to simplify subsequent calculations.
- v] Disconnect Test Jumper-1 from power meter. Do NOT disconnect test jumper from light source.
- vi] Attach Test Jumper-1 to one end of the cable plant to be measured and attach Test Jumper-2 to the other end.

-7-REVISION OF SECTION 614

TEST FIBER OPTIC CABLE



- vi] Record the PM (P_{sum}) . If the power meter is in Relative PM Mode, the meter reading represents the true value. If the meter does not have a Relative PM Mode, perform the following calculation:
 - a] If P_{sum} and P_{ref} are in the same logarithmic units: CPR (dB) = P_{sum} P_{ref}
 - b] If P_{sum} and P_{ref} are in watts: CPR (dB) = 10 x $\log_{10} [O_{\text{sum}}/P_{\text{ref}}]$

Test Acceptance

Contractor shall demonstrate that each Optical Power Test results in acceptable attenuation values.

Contractor, solely at the Contractor's cost, shall remake any fusion splices and/or connectors that have test results exceeding acceptable attenuation values.

Contractor, solely at the Contractor's cost, shall retest any fiber links that have been re-spliced.

Contractor, solely at the Contractor's cost, shall bring any link not meeting the requirements of this specification into compliance.

Submittals

Contractor shall submit test results documentation as both a hard copy and electronic copy.

After each reel test, Contractor shall submit two hard copies of the OTDR trace for every fiber on the reel.

After installation, Contractor shall submit two hard copies 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" 3-ring hard cover binder in addition to other documentation listed in this Special Provision and other splicing documentation listed in the project Special Provision package.

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 two (2) copies of all Optical Power Test results.

The Contractor shall submit two (2) copies of the contract plans, including additional drawings issued as part of any change orders, with any deviations clearly marked in color. Deviations to be noted shall include but not be limited to the following:

-8-REVISION OF SECTION 614 TEST FIBER OPTIC CABLE

- 1. Fiber splice location;
- 2. Fiber splice configuration; and
- 3. Termination layout.

Subsection 614.13 shall include the following:

The lump sum cost to Test Fiber Optic cable under the Base Bid shall include two activities: 1] adjusting existing fiber assignments as directed at the five cabinets to remain; and 2] testing system communications between the referenced five cabinets and the TMC; and between the new cabinet at 19th & Clarkson and the TMC.

The lump sum cost to Test Fiber Optic cable under Bid Alternate 1 shall include testing system communications between the new cabinet at 18th & Logan and the TMC.

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.

All labor and materials required to provide bi-directional test and acceptance of fiber optic cable shall be considered included in the lump sum cost of this item.

The lump sum cost to test fiber optic cable shall also include all labor and materials required to adjust communications channels at the five intersections designated to remain under partial reconstruction.

Cost of all required coordination with the City to determine appropriate system configuration, correct channels and routing shall be considered included in the lump sum price.

Subsection 614.14 shall include the following:

Pay ItemPay UnitTest Fiber Optic CableEach

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 to include but not be limited to such surveying equipment including Electronic Distance Meters (EDM), total stations, theodolites, levels, rods, tapes, tripods, tribrachs, and Global Positioning System (GPS) receivers and equipment.

If any survey equipment is found to be functioning outside the manufacturer's specified tolerance, certification from an approved repair facility showing that the instruments have been repaired, properly adjusted, or both if necessary shall be included in the survey records and submitted to the City Surveyor's Office before being used.

CONSTRUCTION REQUIREMENTS

625.03 The Contractor shall check and verify all established Primary horizontal and vertical control points.

All survey records generated shall be the property of the City and shall be available to the City Surveyor's Office for inspection or reproduction at all times. All survey records shall be transmitted to the City Surveyor's Office for inclusion into the project records before final project acceptance.

Electronic formats may be acceptable, please coordinate with the City Surveyor's Office. Copies of any new Monument Records filed by the PLS with the State Board of Registration shall be submitted to the City Surveyor prior to filing.

625.04 Contractor Surveying. The Contractor's PLS shall perform all construction surveying and staking that is necessary for construction of the project.

-2-REVISION OF SECTION 625 CONSTRUCTION SURVEYING

625.05 Staking. It is the responsibility of the Contractor's PLS to adhere to industry standards and acceptable practices in 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.

629.09 Changes. All changes in lines and grades required by field conditions and all discrepancies in grades, alignment, location, or dimensions detected by the Contractor shall be immediately submitted to the Engineer in writing. No changes in given data or plans will be allowed unless approved by the Engineer in writing. All changes shall be documented by the contractor.

629.10 Pay Quantities Measurements. The Engineer will perform all interim and final measurements deemed necessary by the City to determine contract pay quantities. The Contractor shall establish and maintain Control points and stationing as required for these measurements.

629.11 Survey Records. Survey records shall be completed as the work is done. Field survey notes for construction surveying and checking by the Contractor shall be recorded in survey records in conformance with industry standards and acceptable practices.

All survey records generated shall be the property of the City and shall be available to the City Surveyor's Office or the Engineer for inspection or reproduction at all times. All survey records shall be transmitted to the City Surveyor's Office for inclusion into the project records before final project acceptance. All survey records shall be stamped with the seal of, and signed by, the responsible PLS.

Electronic submittal of survey records may be acceptable. Contractor shall coordinate with the City Surveyor's Office regarding electronic submittals.

-3-REVISION OF SECTION 625 CONSTRUCTION SURVEYING

METHOD OF MEASUREMENT

625.12 Construction surveying will not be measured but will be paid as a fixed percentage of the construction items.

BASIS OF PAYMENT

625.13 Payment for construction surveying will be a lump sum payment in accordance with the Standard Specifications.

Partial payment for construction surveying, as determined by the Engineer, will be made as the work progresses.

Traffic control for construction surveying will be paid in accordance with Section 625.

When the contract does not include pay items for Construction Surveying, this item will not be paid separately but shall be included in the work.

REVISION OF SECTION 627 PAVEMENT MARKING

Section 627 of the Standard Specifications is hereby revised for this project as follows:

Subsection 627.03 shall include the following:

Contractor is responsible for removal of existing pavement marking as directed, and installation removal of temporary pavement markings installed for construction traffic control. Contractor shall coordinate the work efforts of the striping subcontractor and traffic control subcontractor as required to provide clear, standard, pavement markings at all times throughout the Contract.

Control points shall be approved marking tabs installed as directed by the Engineer. At a minimum, tabs shall be installed at the beginning and end of each stripe and at a maximum of 40-foot spacing.

Contractor shall replace permanent pavement markings damaged or removed as a result of the work. Pavement marking material shall be new material of the same type which existed prior to the work commencing.

Subsection 627 (c) is hereby deleted and replaced with the following:

Roadways Constructed Under Traffic. All center lines, lane lines, turn lane lines, tapers, and transitions shall be installed using Pavement Marking Paint if temporary and Epoxy Pavement marking if permanent within 48 hours of the work on a street segment unless otherwise authorized by the Engineer. Materials used for temporary and permanent pavement markings shall be as shown in the plans or as directed by the Engineer.

Subsection 627.09 shall include the following:

Surface preparation and all other aspects of the installation shall be as per the manufacturer's recommendation and shall be considered included in the unit price for new markings.

Subsection 627.12 shall include the following:

The materials and installation of pavement markings shall be price reduced for failure to reinstall within 14 days of work on a street segment as follows:

>14 days and <30 days after: 10% price reduction ≥30 days and ≤60 days after: 25% price reduction ≥60 days and <90 days after: 50% price reduction

≥90 days after: 75% price reduction

Preformed Thermoplastic Pavement markings shall be measured and paid as follows.

Conventional white word and symbol markings shall be measured by the square foot of marking installed and accepted and paid as Preformed Thermoplastic Pavement Marking (Word-Symbol).

Conventional white crosswalk and stop line markings shall be measured by the square foot of marking installed and accepted and paid as Preformed Thermoplastic Pavement Marking (Crosswalk-Stopline).

-2-REVISION OF SECTION 627 PAVEMENT MARKING

All preformed pavement markings that include non-white or non-yellow colors, be those green, gray, red or otherwise, shall be measured by the square foot of marking installed and accepted and paid as Preformed Thermoplastic Pavement Marking (Special).

Subsection 614.14 shall include the following:

Pay Item	Pay Unit
Epoxy Pavement Marking	Gallon
Preformed Thermoplastic Pavement Marking (Word-Symbol)	Square Foot
Preformed Thermoplastic Pavement Marking ((Crosswalk-Stopline)	Square Foot
Preformed Thermoplastic Pavement Marking	Square Foot

REVISION OF SECTION 629 SURVEY MONUMENTATION

Section 629 of the Standard Specifications is hereby deleted and replaced with the following:

DESCRIPTION

629.01 This work consists of locating, preserving, referencing, installing and restoring the following types of land monuments by a Colorado-licensed Professional Land Surveyor (PLS). The following types of monuments, if required, shall be considered included: Primary Control monuments from which Right of Way (ROW) or any land boundary will be calculated, described, or monumented; Public Land Survey System (PLSS) monuments; General Land Office (GLO) monuments; Bureau of Land Management (BLM) monuments; Mineral Survey (MS) monuments; ROW monuments; property boundary monuments; and offsets, City of Denver range points, benchmarks, easement monuments, and other monuments that are required by law or regulation to be established by a PLS, along with installing or adjusting Monument Boxes.

The production of additional documentation may be required by the City Surveyor's Office. All such work included in this section shall be performed under the supervision of a Colorado- licensed PLS.

MATERIALS AND EQUIPMENT

629.02 The Contractor shall furnish all personnel, survey equipment, safety equipment, materials and traffic control necessary to perform the required Monumentation and related surveying.

CONSTRUCTION REQUIREMENTS

629.03 A construction survey conference shall be held with the City Surveyor's Office prior to performing any surveying work under this section. The Contractor's Surveyor (PLS) and party Chief shall attend. A construction survey checklist shall be completed and signed by the City Surveyor's Office and the Contractor.

The Contractor shall check and verify all established primary horizontal and vertical control points.

All survey records generated shall be the property of the City & County of Denver and shall be available to the City Surveyor's Office for inspection or reproduction at all times. All survey records shall be transmitted to the City Surveyor's Office for inclusion into the project records before final project acceptance.

Electronic formats may be acceptable; please coordinate with the City Surveyor's Office.

Copies of any new Monument Records filed by the PLS with the State Board of Registration shall be submitted to the City Surveyor prior to filing.

629.04 Locating Monuments. This work consists of field locating all survey Monumentation as discussed in 629.01 which is in place within the project limits. A diligent search of construction zones and project limits shall be performed by the PLS.

629.05 Preserving and Referencing Monuments. All monuments as described in 629.01 shall be preserved, referenced, and reset by a PLS within the project limits.

-2-REVISION OF SECTION 629 SURVEY MONUMENTATION

629.05 Installing Monuments. All monuments described in 629.01 shall be preserved throughout construction. If any monuments as described in 629.01 are to be disturbed or removed during construction, it will be the responsibility of the Contractor's PLS to reset all monuments to current City & County of Denver standards. Appropriate documentation will be required for all reset monuments.

629.07 Monument Box. If required, this work shall consist of installing or adjusting monument boxes to current City or CDOT requirements. If required, this work shall also consist of installing an aluminum cap with minimum 5/8-inch (#5) rebar for property corners.

METHOD OF MEASUREMENT

Survey monuments, monument boxes, and adjustment of monument boxes will be measured by the actual number of the various types installed and accepted by the Engineer. Measurement for locating survey monuments, preserving, and referencing monuments will not be measured and paid separately.

BASIS OF PAYMENT

629.09 The accepted items and quantities will be paid at the contract unit price per each. Approval of the Engineer is required prior to undertaking any work identified as part of this Section.

Payment will be made under:

Pay ItemPay UnitSurvey MonumentEachSurvey Monument (Type 6)Each

Prior to payment, all survey records and documentation must be submitted and accepted by the City Surveyor's Office.

The construction survey checklist, equipment calibrations, and survey records will not be paid separately but shall be included in the work. The locating of monuments, and preserving and referencing monuments will not be paid separately but shall be included in the work.

REVISION OF SECTION 630 UNIFORMED TRAFFIC CONTROL

Section 630 of the Standard Specifications is hereby revised for this project as follows:

Subsection 630.09 shall include the following:

Uniformed Officers - The Contractor shall employ off-duty police officers to provide traffic control and traffic enforcement throughout the project as required by the Engineer. Authorization must be made by the Engineer in advance of working arrangements for Uniformed Traffic Control. Arrangements for officers shall be made at least 2 weeks in advance by contacting the following police agency:

Denver Police Department (Special Events Unit)

Phone Number: (720) 913-6034

Subsection 630.13 shall include the following:

The quantity to be measured for Uniformed Traffic Control will be the total number of hours that Uniformed Traffic Control is actually used as authorized. Note that 4 hours is the smallest increment of time to be used.

Subsection 630.14 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 ItemPay UnitUniformed Traffic ControlHour

REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL

Section 630 of the CDOT Standard Specifications is hereby revised for this project as follows:

Subsection 630.01 shall include the following:

The key elements of the Contractor's Traffic Control Plan (TCP) and Method of Handling Traffic (MHT) are outlined in Subsection 630.09.

Components of the TCP for this project are included in the following documents in descending order of precedence:

- 1. These Special Provisions and Sections 104.04 and 630 of the Standard Specifications;
- 2. Standard Plan S-630-1, Traffic Controls for Highway Construction;
- 3. Manual on Uniform Traffic Control Devices (MUTCD) (2009 Edition); and
- 4. Guide for Work Area Traffic Control, American Traffic Safety Services Association (ATSSA).

Contractor shall submit, in writing, the proposed Method of Handling Traffic (MHT) for review and approval of the Engineer. MHT plans shall be developed in accordance with this section and the construction plans.

MHT construction traffic control shall be as required by, in descending order of precedence: 1] the MUTCD; 2] the ATSSA Guide, 3] the plans and specifications for this project; 4] CDOT Standard Specifications (2011 Edition); and 5] CDOT Standard Plans (2012 Edition) as applicable.

Subsection 630.05 shall include the following:

Steel drum channelizing devices shall not be used for traffic control.

Subsection 630.07 shall include the following:

Non-metallic drums or tubular markers may be substituted for vertical panel channelizing devices.

Subsection 630.09 shall include the following:

STOP/SLOW sign paddles for flaggers shall be 18 inches with letters six inches high.

Contractor and subcontractors shall equip their construction vehicles with flashing amber lights. Flashing amber lights on vehicles and equipment shall be visible from all directions.

All on-site contractor personnel including superintendents are required to wear appropriate colored, reflective safety vests.

REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL

Subsection 630.10 is hereby revised to include the following:

MHT and TCP

Submission of MHT and/or TCP to the Engineer is required for this project as per the Standard Specifications. Discrete and separate MHT and/or TCP submittals are required for each of the proposed phases of work. When a different MHT is required for a subsequent construction phase, it must be submitted at least two weeks prior to starting that phase.

All proposed MHT shall be approved, in writing, by the Engineer following approval of the Denver Transportation and Mobility (T&M) Department.

Approval of the proposed MHT does not relieve Contractor of liability specifically assigned to it under the contract. Contractor shall erect and maintain warning lights, signs, barricades, and sufficient safeguards around all excavations, embankments, and obstructions. Failure of Contractor to submit detailed, comprehensive, and clearly legible TCP and/or MHT will constitute grounds for rejection of TCP and/or MHT without extensive elaboration or comment from the City.

Contractor shall notify the Engineer on or before Thursday at 3:00pm which streets and specific blocks it intends to work on the following week. Such notification will be made for all phases of construction throughout the contract.

MHT submittals shall include a tabulation of the anticipated number of hours required for uniformed traffic control. The Contractor shall submit required MHTs and all appropriate Traffic Control Supervisor and Flagger documentation to the Engineer for approval prior to setting any traffic control device.

If the Contractor requires a temporary full closure of any city street, all such requests are subject to the approval of the Engineer. Each full closure request shall be made at least two weeks in advance of the time the full closure is to be implemented.

All proposed lane closures are subject to the approval of the Engineer and T&M Department. Requests for such lane closures shall be submitted with appropriate MHT at least 24 hours in advance of the time the lane closure is to be implemented. Lane closures will not be allowed to remain unless utilized in continuum for the duration of each working period. Contractor shall make all reasonable efforts to fashion its lane closure proposal to close a minimum number of lanes at any given time.

Certifications

The contractor's superintendent and all others serving in similar supervisory capacity shall have completed two-day Traffic Control Supervisor training as offered by the CCA. The one-day ATSSA Traffic Control Technician (TCT) training along with the two-day ATSSA Traffic Control Supervisor training will serve as an alternate. If the alternate is chosen, the Contractor shall provide written evidence that 80% score was achieved in both of the two training classes. The certifications of completion or certifications of achievement for all appropriate staff shall be submitted to the Engineer at the preconstruction conference.

-3-REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL

All flaggers used on this project shall be certified.

Permitting and Coordination

Contractor shall obtain all required access and construction permits from the City prior to initiating work along City rights of way. Contractor's project superintendent shall have copies of applicable permits in-hand at all times while on site.

Contractor shall maintain frequent communication with the Engineer regarding all aspects of the daily and weekly work schedule.

Contractor shall coordinate and cooperate fully with the City & County of Denver, utility owners and other contractors; to assure adequate and proper traffic control is provided at all times. The Contractor shall coordinate and cooperate fully with any others providing traffic control for other operations in the vicinity of the work to ensure that work or traffic control devices do not interfere with the free flow of traffic except as allowed by the approved MHT.

Subsection 630.13 shall include the following:

Bus Stops

Contractor shall be required to make arrangements with the Regional Transportation District (RTD) prior to closing any existing bus stops within the project limits. Temporary stops will be required as directed by the Engineer and as required by RTD. For bus stop/route conflicts, RTD shall be contacted at least two business days prior to the start of construction in and adjacent to the bus stop in question. Contact name at RTD shall be obtained through the Engineer.

General Requirements

During construction of this project, traffic shall use the present traveled roadway at all times unless otherwise directed or authorized by the Engineer.

Contractor shall provide normal movements for vehicular and pedestrian traffic at all times, unless otherwise authorized or directed by the Engineer.

Contractor shall not have construction equipment or materials in the lanes open to traffic at any time unless otherwise approved by the Engineer. All personal vehicle and construction equipment parking is prohibited where it conflicts with safety, access or the flow of traffic. Personal vehicles and construction equipment parking is prohibited in all private parking lots without payment or the respective property owner's permission.

Vertical cuts or fills greater than 1 inch resulting from construction operations adjacent to traffic lanes or within the clear zone shall be temporarily sloped at a 6:1 or flatter grade, and delineated at 35 foot (or more dense) intervals immediately after cutting or filling operations to help safeguard the traveling public.

Construction equipment used on this project shall meet the same minimum exhaust requirements as those specified by the manufacturer of the equipment.

REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL

Excavations or holes shall be backfilled or fenced when unattended. During non-construction periods (weekends, holidays, etc.), all work shall be adequately protected to provide for the safety of vehicular, bicycle and pedestrian traffic, as detailed in the contractor's approved TCP and/or MHT.

Location, Positioning and Maintenance of Equipment and Devices

Contractor shall not have construction equipment or materials in the lanes open to traffic any time, unless approved by the Project Manager.

Contractor shall install construction traffic control devices in locations where they do not block or impede other existing traffic control devices; or sidewalks for pedestrians, disabled persons or bicyclists.

Construction signing shall be removed unless work is in progress or construction equipment has been left on the job site.

All portable signs shall be removed from the roadway at the end of each work shift.

When storing portable signs or supports within the project they shall be removed beyond the clear zone and shall not be visible to traffic. All storage areas shall be approved. The minimum clear zone distance shall be 18 feet, measured from the edge of the traveled way. If the signs cannot be stored at least 18 feet from the traveled way, they shall be removed. Signs shall not be stored on paved surfaces.

All advanced construction signing shall be installed prior to any construction activity and remain in place for all work periods.

Resetting construction signs during construction as required by the work is considered incidental to the project and will not be paid separately.

Masking of existing or temporary signs as may be required by the work is considered incidental to the project and will not be paid for separately.

All personal / employee vehicle and construction equipment parking is prohibited when it conflicts with safety, access, or the flow of traffic.

Traffic control devices used on this project shall be kept clean and in good working order at all times. The City Project Manager shall make the ultimate determination regarding the explicit definition of "good working order."

Existing signs, traffic signals, or other City-owned traffic control devices damaged due to Contractor's operations shall be replaced in-kind or repaired by the Contractor at no additional cost to the project.

Road Work Ahead advance signs shall be reset as required to match the location of the work zone.

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REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL

Night flagging is allowed on this project subject to the master construction schedule however proper illumination of all flagging stations must be provided in accordance with the MUTCD.

All construction traffic control devices including signs installed under this project shall be installed as depicted in the MUTCD and CDOT M & S Standards.

At locations where such traffic is normally allowed, Contractor shall maintain continuous access through the project for pedestrians, bicyclists and disabled persons. When the existing access route is disrupted by construction or construction-related activities, a temporary access shall be provided. All pedestrian access shall be delineated through the work zone using proper channelizing devices.

During non-construction periods (weekends, holidays, etc.) all work shall be adequately protected to ensure the safety of vehicular, pedestrian and bicycle traffic, as detailed in the Contractor's MHT. Excavations, drop-offs or holes shall be backfilled, fenced, or barrier-separated when unattended. Costs of removing, resetting, or reinstalling construction traffic control devices shall be considered included in the work and will not be measured and paid for separately.

Access

Contractor shall maintain access to all roadways, side streets, walkways, alleyways, driveways, hike/bike paths and major building entrances at all times unless otherwise approved by the Engineer.

Parking areas temporarily disturbed by construction activities shall be restored to a usable condition during non-working hours. Such temporary parking shall utilize an all-weather surface. The Contractor shall develop an Access Maintenance Plan (AMP) in coordination with, and based on the requirements of, the affected property owners and tenants, and submit same to the Engineer for approval prior to commencement of work. The plan shall detail all barricades, ramps, signs, and temporary means of access required by the property owners or tenants. Prior to commencing any work that affects property access, the AMP for that property shall be submitted to, and approved by, the Engineer.

The AMP shall be coordinated with all affected owners and tenants. The AMP shall include documentation of this coordination, including the approval signatures of the affected owner or tenant. The owner's signature (or owner's representative or Home Owners Association representative) signature shall be considered sufficient approval for temporary access changes for multiple unit apartment or condominium buildings. Should the Contractor be unable to obtain approval and signatures, documentation of the effort made to obtain said approval and signatures must be submitted. All access shall be maintained on surfaces equal to or exceeding those in place at the time the access is first disturbed. For short periods of time only as allowed by the Engineer, access may be maintained on an aggregate base course surface.

Contractor shall maintain continuous access throughout the project for pedestrians, bicyclists and disabled persons. When the existing access route is disturbed by construction, a temporary all-weather access shall be provided. All temporary access shall be a minimum of 5' wide and meet Americans with Disabilities Act (ADA) requirements. Acceptable all-weather surfacing shall be concrete or asphalt construction or as approved by the Engineer. Delineation of pedestrian access through the work zone shall be accomplished using temporary plastic fencing.

-6-REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL

Access to individual properties shall be maintained at all times unless otherwise approved by the Engineer. The sole exception to this requirement is that the City will permit full closures of access to all alleyways, walkways, driveways, and hike/bike paths *directly adjacent* to an active work zone for a maximum of one (1) week. If the Contractor wishes to exercise this exception, a request for same shall be submitted to the Engineer for review and approval including proposed method for Public Notice per City requirements. If access restrictions are approved by the Engineer, the Contractor shall coordinate with all owners and/or tenants affected by alley and/or access closures two weeks prior to closure.

Access to driveways shall be maintained 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.

Costs incurred by the Contractor to maintain vehicular and pedestrian access will not be paid for separately.

Noise Control

Exempted hours for construction in the City & County of Denver are 7:00am to 9:00pm Monday through Friday and 8:00am to 5:00pm on Saturdays and Sundays per Sections 36-6(B)(7) and 36-7(5)A, B and C of Denver's Noise Ordinance, Chapter 36 "Noise Control", Denver Revised Municipal Code (DRMC).

If there is an anticipated need to work outside of the exempted hours of construction:

- 1. The Contractor will need to make a request for a nighttime noise variance as allowed for in Section 36-7(5)C of the DRMC, and
- 2. The variance process needs to be started a minimum of two to three months prior to the desired start of any work needing to occur outside the exempted hours.

Any noise variance questions should be directed to Paul Riedsel, City Department of Environmental Health, Denver Community Noise Program (T: 720-865-5410; Fax: 720-865-5532) a minimum of three months prior to the start of the project.

Restricted and Allowable Work - General

The project includes restrictions to work times and days that affect traffic during peak traffic times, weekdays, nighttime hours, holidays, holiday evenings, holiday weekends, and other circumstances as described herein. Wherever other laws, ordinances, regulations or orders are more restrictive, they shall take precedence over these requirements.

Night-time work will not be allowed on this project. All night work requires the prior approval of the Engineer as well as an approved variance to the Noise Ordinance.

Weekend work shall be allowed as directed or authorized by the Engineer. Requests for weekend work shall be submitted to the Engineer by no later than close of business on Wednesday preceding the weekend during which the Contractor desires to work.

-7-REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL

Weekday work occurring on the roadway shall generally occur between 8:30am and 3:30pm as approved by the Engineer. Project-related work outside the indicated hours is permitted with the prior approval of the Engineer. If the City permit authorizes work outside the hours indicated herein, the language on the permit shall control.

The contractor may be allowed to work weekdays prior to 8:30am and after 3:30pm Monday through Friday if: 1] the work is accomplished during daylight hours; 2] the work takes place off the roadway and does not interfere with the flow of traffic; and 3] the given activity has been approved by the Engineer.

Weekday work will not be permitted that directly or indirectly interferes with traffic flow between the hours of 5:30am and 8:30am Monday through Friday; between the hours of 3:00pm to 6:30pm Monday through Thursday; and after 2:00pm on Fridays unless otherwise authorized by the Engineer.

The contractor is allowed to work on multiple work areas, streets, blocks or intersections simultaneously if that work schedule is so approved by the Engineer.

Wherever other laws, ordinances, regulations or orders are more restrictive, they shall take precedence over these requirements.

Holidays

Work that interferes with traffic on any day of a holiday; or 3-day or 4-day holiday weekend shall generally not be permitted.

Holidays shall be as defined in Subsection 101.33 of the Standard Specifications. Section 108.07 of the Standard Specifications places additional restrictions on work occurring on weekends, holidays and extended holiday weekends. Work after 12:00 noon on the day preceding such a holiday weekend is similarly included in the restricted times. Exceptions to these requirements must be approved by the Engineer and Denver T&M.

Special Events and Other Considerations

The City may place restrictions on allowable work periods during specific heavily-traveled periods to account for athletic events such as Colorado Rockies baseball games and other events such as "A Taste of Colorado." The Engineer will notify the Contractor of any such restrictions during the course of normal coordination for this project.

Any proposed work on the roadway during all City-defined special events shall be coordinated with the Engineer.

Temporary Traffic Signal

A temporary span wire traffic signal is required across the east leg of Lincoln Street at 19th Avenue during the time that the Contractor removes the existing east leg mast arm for modification. Similarly, a temporary span wire signal is required across the north leg of Clarkson Street at Park Avenue West during the time that the Contractor removes the existing north leg mast arm for modification.

-8-REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL

Contractor shall use 12" indications for all temporary signal faces and the temporary signal heads shall be operated through the existing controller.

At both locations, prior to initiating construction, Contractor shall submit a plan of the proposed installation to the Engineer for approval by the Denver T&M Division.

Contractor will not be allowed to use existing mast arm poles to support temporary span wire unless explicitly permitted by the Denver T&M Division.

Subsection 630.15 is hereby deleted and replaced with the following:

Contractor shall furnish all personnel and materials necessary to perform the Construction Zone Traffic Control as required by the approved MHT. Except as noted within this Project Special Provision, these quantities will not be measured.

The accepted number of hours of Uniformed Traffic Control will be paid at the contract unit price per hour.

Construction traffic control devices (including but not limited to flagging, signs, barricades, traffic control management, traffic control inspection, drums, temporary concrete barrier, traffic cones and so on) will not be measured and paid for separately, but shall be included in the lump sum payment for Construction Traffic Control. Separate lump sum totals shall be provided in the Contractor's bid documents for: 1] the Base Bid; and 2] Bid Alternate 1.

The lump sum payment includes all labor and materials needed to provide construction traffic control throughout the project including but not limited to furnishing, erecting, maintaining, resetting, repairing, moving, removing, cleaning and disposing of the construction traffic control devices.

No reimbursement for individual pay items will be made. Contractor shall be responsible for all labor and materials required to establish construction traffic control in accordance with the MUTCD.

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

Placement and removal of temporary pavement markings for traffic control during applicable construction phases will not be measured and paid for separately, but shall be included in the work.

Subsection 630.16 is hereby deleted and replaced with the following:

Payment for Construction Zone Traffic Control shall include all devices; Traffic Control Supervisor and all required Traffic Control Inspection; temporary Changeable Message Signs as specified, detours, addition and/or adjustments to traffic signal heads or span wire configurations as needed to support phased construction traffic control, placement and removal of temporary pavement markings and signs, and all other personnel and resources necessary to complete the work.

-9-REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL

All MHT, TCP and AMP preparation and submittal is considered included in the lump sum price. All rental, purchase, installation, maintenance (including cleaning), resetting and removal of all equipment, signs and other devices is considered included. All labor costs including inspectors, flaggers, Traffic Control Supervisors, Traffic control Inspection, and Traffic Control management are considered included. Costs of electrical power, including batteries, for all devices, temporary lighting

Payment will be made on a percentage basis of the Lump Sum bid corresponding to the percentage of work complete as determined by the Engineer.

Payment for the temporary traffic signal shall be by the number of locations and shall include furnish of all equipment, installation, maintaining the temporary operation for the required duration, removal of temporary equipment and surface restoration as directed by the Engineer. Costs of providing temporary signal layout for approval are included in the unit cost.

Subsection 630.15 is hereby revised to include the following:

or temporary signals are considered included.

Pay Item
Construction Traffic Control
Traffic Signal Temporary

Pay Unit Lump Sum Each

REVISION OF SECTION 630 RETROREFLECTIVE SIGN SHEETING

Section 630 of the Standard Specifications is hereby revised for this project as follows:

In subsection 630.02, delete the sixth and seventh paragraphs, including Table 630-1, and replace them with the following:

Retro reflective sheeting for all signs requiring an orange background shall be Type VI or Type Fluorescent.

Retro reflective sheeting for all signs requiring a yellow background shall be Type Fluorescent.

Table 630-1 Retroreflective Sheeting Types

		Sheeting Types	
		Type VI	
Sheeting	Type IV	(Roll-up sign material)	Type Fluorescent ¹
Application	Work Zone	Work Zone	Work Zone
All Orange Construction Signs			X
Orange Construction Signs that			
are used only during daytime		X^4	X
hours for short term or mobile		A	Λ
operations			
Barricades (Temporary)	X		X
Vertical Panels	X		X
Flaggers Stop/Slow Paddle	X		X
Drums ²	X		X
Non-orange Fixed Support signs with prefix "W"	X		
Special Warning Signs			X
STOP sign (R1-1)			
YIELD sign (R1-2)			
WRONG WAY sign (R5-1a)	X		
DO NOT ENTER sign (R5-1)			
EXIT sign (E5-1a)			
DETOUR sign (M4-9) or			X
(M4-10)			71
All other fixed support signs ³	X		X
All other signs used only during	X		X
working hours	71		21
All other signs that are used			
only during daytime hours for	X	X ⁵	X
short term or mobile operations			

- 1 Fluorescent Sheeting shall be of a brand that is on the CDOT Approved Products List.
- 2 Drum Sheeting shall be manufactured for flexible devices.
- 3 Fixed support signs are defined as all signs that must remain in use outside of working hours. They shall be mounted in accordance with Standard Plan S-630-1.
- 4 RS 24 only.
- 5 White only.

REVISION OF SECTION 705 JOINT, WATERPROOFING, AND BEARING MATERIALS

Section 705 of the Standard specifications is hereby revised for this project as follows:

Subsection 705.01(a) shall be revised to include the following:

Sealant shall be heated only for the time limit recommended by the manufacturer. Also, the sealant shall not be reheated more times than recommended by the manufacturer.

Subsection 705.01 shall be revised to include the following:

(c) Hot Joint Sealants, Concrete Pavement. Hot-poured joint sealer material for concrete slab joints shall conform to the requirements of ASTM D 1190 or ASTM D 3405 and to the following:

Mortar blocks for the bond test shall be as described in ASTM D 1191 Coal tar base material is not acceptable.

The shipping containers shall be marked by the manufacturer with the name of the material, the name and brand of the manufacturer, the weight, the batch number and the safe heating temperature.

The materials shall be stored in accordance with manufacturer's recommendations, but they shall not be exposed to ambient temperatures in excess of 125 degrees F, or stored in direct sunlight.

The sealer material shall be melted in a heating kettle, or tank, constructed as a double boiler, with a space between the inner and outer shells filled with oil, asphalt, or other material for heat transfer and for positive temperature control.

The heating and melting unit shall be equipped so that the heat may be adjusted to provide control of the temperature of the heating medium used for melting the sealer material. The sealer material shall not be subjected to temperatures in excess of 450 degrees F at any stage or time during the melting operation.

REVISION OF SECTION 713 TRAFFIC CONTROL MATERIALS

Delete Subsection 713.14 Preformed Thermoplastic Material and replace with the following:

(a) General. Preformed thermoplastic markings shall be composed of aggregates, pigments, binders and Glass beads, and shall conform to AASHTO designation M 249 with the exception of the relevant differences due to the fact that the material is supplied in a preformed state. The material shall be either alkyd or hydrocarbon based. Only preformed thermoplastic pavement markings material listed on the Departments approved products list may be used.

(b) Physical Requirements.

- 1) Graded Glass Beads. The material shall contain a minimum of 30 percent graded glass beads by weight. The beads shall be clear and transparent. Twenty percent or less shall consist of irregular, fused spheroids, or silica. The refractive index shall be at least 1.50.
- 2) Pigments. White Sufficient titanium dioxide pigment shall be used to insure a color similar to Federal Highway White, Color Number 17886, conforming to Federal Standard 595.

Yellow – Sufficient yellow pigment shall be used to insure a color similar to Federal Highway Yellow, Color Number 13655, conforming to Federal Standard 595. The yellow pigment shall be organic and contain no lead chromate.

Green - The color of the pavement marking material shall be accordance with FHWA Memorandum dated April 15, 2011: Interim Approval for Optional Use of Green Colored Pavement for Bike Lanes (IA-14). 3.1.1. Daytime chromaticity coordinates for the color used for green colored pavement shall be as follows:

2	١
))

	1		2	2		3	4	4
	X	y	X	y	X	у	X	y
(0.230	0.754	0.266	0.500	0.367	0.500	0.444	0.555

Nighttime chromaticity coordinates for the color used for green colored pavement shall be as follows:

1		2	2		3		4				
	X	y		X	y		X	у		X	y
0	.230	0.754		0.336	0.540		0.450	0.500		0.479	0.520

- 4) Skid Resistance. The surface of the preformed thermoplastic markings shall provide a minimum resistance value of 45 BPN when tested according to ASTM E 303.
- 5) Thickness. The material shall be supplied at a minimum thickness of 90 mils.
- 6) Environmental Resistance. The preformed thermoplastic material shall be resistant to deterioration due to exposure to sunlight, water, oil, gasoline, salt and adverse weather conditions

-2-REVISION OF SECTION 713 TRAFFIC CONTROL MATERIALS

- 7) Application. The top surface material must have regularly-spaced indents which provide a visual cue during application that the material has reached a molten state indicating satisfactory adhesion and proper bead embedment has been achieved. Installation must be a no preheated of surface material.
- 8) Concrete surface adhesive. When Preformed Thermoplastic material is installed on concrete surfaces the materials manufacturer recommended sealer for concrete application shall be used by the installer to ensure the best application on concrete surfaces.

DENVER (ONLY) NOISE ORDINANCE – PERMIT VARIANCE APPLICATION TEMPLATE

Date

Subject: Request for Variance to Noise Ordinance

[location where work is to be performed]

Dear Ms. VanDerLoop,

- Name of company/organization seeking the variance
- What is being proposed, where it will occur, expected duration of project
- Brief history regarding proposed project
- Description of the community in the vicinity of the proposed project area

6 (a) Type and Timing of Claim:

- Specific description of proposed project (figures are helpful)
- Why does work need to be conducted at night? (CDOT can provide details to contractor)
- Are there limiting factors preventing this work from being conducted during the day? (CDOT can provide details to contractor)
- Requested variance duration; start and end dates
- Proposed work hours
- Types/categories of equipment being used for the project (if known, a detailed list should be provided as an appendix)
- Is this variance request contingent on other regulatory approvals/permits? (construction, demo, remediation)

6 (b) Date of Payment:

• [The Company's] date of payment is the date shown of this letter/request.

6 (c) Objections to Manager's Determinations:

 Specific items applicant may be in disagreement with concerning Department's recommendations or requirements

6 (d) (1) Hardship if Variance is Not Granted:

- Public safety concerns (CDOT can provide details to contractor)
- Logistical concerns
- Time constraints with a detailed explanation as to why they are necessary
- Cost considerations (specifics desirable)
- Document and evaluate possible alternatives

6 (d) (2) No Adverse Affects to Public Health:

- List expected noise levels to be generated (1) at the site where work is being performed, and (2) at the nearest sensitive receptor (CDOT can provide details to contractor from Roadway Construction Noise Model)
- Detail existing ambient sound levels (L90, Leq, Lmax) for the same areas (at least 1 night of pre-work monitoring; 9 p.m. to 7 a.m.; two nights (one weekday, one weekend) if work will occur on weekdays and weekends)
- How do the proposed levels compare with existing EPA or other guidance? (CDOT can

DENVER (ONLY) NOISE ORDINANCE – PERMIT VARIANCE APPLICATION TEMPLATE

- provide details to contractor)
- Are there adverse health effects other than noise to be concerned with as a result of the proposed work? (CDOT can provide details to contractor)

6(d) (3) Maintain Harmony with the Spirit and Purpose of the Ordinance:

(CDOT can provide details to contractor for sec 6(d) (3)

- Is the scope of work considerate of present and future community concerns?
- How does the scope of work seek to minimize impacts to the community?
- Have noise mitigation techniques been included and/or considered?
- Has a noise monitoring plan been considered or proposed?
- How will community outreach be conducted prior to the start of work?
- Has a community response plan been developed to deal with any future complaints? (contact name and number of on-site representative)

6 (e) Project Location and Haul Routes:

• Figures are preferable (CDOT can provide details to contractor)

6 (f) Petitioner Information

[Company Name and Address]

[Contact Person/Project Manager info]

6 (g) Petitioner's Signature

Sincerely,

[Name and Title]

Note: In addition to this template, CDOT can provide an example of a previously written (City and County of Denver) variance application at the contractor's request.

The following field work summary of requirements will be the sole responsibility of the contractor for maintaining compliance with the Denver (only) Permit Variance agreements once granted by the Department of Environmental Health.

- 1) **Construction Activity Allowable Noise Levels:** Unless the accommodations described in below are provided, construction noise levels shall not exceed:
 - a. an hourly Leq of 75 dBA, or 5 dBA greater than an ambient hourly Leq measuring more than 75 dBa, or
 - b. an Lmax of 86 dBA during the hours of 9:00 p.m. to 7:00 a.m. (Nighttime Hours)

DENVER (ONLY) NOISE ORDINANCE – PERMIT VARIANCE APPLICATION TEMPLATE

- 2) **Hotel accommodations within eligibility zones:** (Contractor) shall make hotel accommodations available for persons residing within eligibility zones where Nighttime construction noise levels exceed allowable noise levels. The eligibility zone shall be determined by a sound study conducted by the (contractor) and approved by DEH prior to a seven-day notification period. During nighttime construction, (contractor) shall conduct noise monitoring to verify the sound study results and shall expand and may restrict the eligibility zone to the areas where the actual noise levels exceed an hourly Leq of 75 dB(A) or an Lmax of 86 dB(A). (Contractor) shall consider any special circumstances brought to their attention regarding individuals in the eligibility zone who cannot utilize hotel vouchers and who may be at risk during this period of time, e.g., residents of 24-hour health care facilities. (Contractor) shall make their best effort to accommodate the needs of such individuals during Construction Activity.
- 3) **Notifications:** Not less than seven days prior to commencement of construction during Nighttime Hours, (contractor) shall notify individual households located within a 1000 foot radius of the construction, as well as representatives of each affected Registered Neighborhood Organizations. Notice shall be in writing or by direct personal contact from (contractor) representative, and shall include the expected start time, expected duration, character of work activity planned, names and telephone numbers of available contact persons (for additional information or questions), contact numbers for complaints, and any other relevant parameters or programs. Households within the eligibility zone shall receive notice regarding their eligibility for hotel vouchers at the same time or earlier.
- 4) **Mitigation Requirements/Activity Restraints:** When construction is conducted during Nighttime Hours and such activity emits noise levels that exceed ambient noise levels at residential properties, (contractor) shall utilize best reasonable management practices to mitigate construction noise impacts to the adjacent property owners. Best reasonable management practices include the following:
 - a. Using reasonable best efforts to complete the construction as quickly as possible.
 - b. Minimizing nighttime construction duration near residential areas whenever possible.
 - c. Re-routing of truck traffic away from residential streets when possible.
 - d. Conducting truck loading, unloading and hauling operations so that noise levels are kept to a minimum
 - e. Configuring equipment on the site to minimize back-up alarm noise, where practical and feasible (for example, by using circular movement of trucks).
 - f. Shielding jackhammers, saws, and pavement breakers through use of an existing sound barrier wall or temporary barrier where practicable
 - g. Maintaining all equipment to meet manufacturer's specifications.
 - h. Informing employees, contractors and subcontractors performing construction of the general requirements of this variance and exercising best efforts to ensure that such employees, contractors and subcontractors follow best management practices in mitigating construction noise

DENVER (ONLY) NOISE ORDINANCE – PERMIT VARIANCE APPLICATION TEMPLATE

- 5) **Monitoring:** (Contractor) shall perform monitoring sufficient to demonstrate compliance with the requirements of the noise variance and to demonstrate to the community the noise levels that are present.
 - a. Noise measurements shall be collected using ANSI guidelines for community noise monitoring
 - i. Manufacturer's specifications for appropriate meter use shall be followed.
 - ii. All noise measurements shall be made using the A-weighted scale (dB(A)) and a slow response. Fast response measurements may be used to measure impact noise levels
 - iii. Noise measurements shall be made at the nearest residential property line, unless physically impractical.
 - b. All nighttime construction activity shall be initially monitored. Monitoring shall include spot measurements, as appropriate and hourly Leq. Monitoring shall be required for the following activity groups, but not be limited to:
 - i. Joint Repair
 - ii. Milling Operations
 - iii. Rubble load-out
 - iv. Paving operations
 - c. Monitoring shall meet the following requirements:
 - i. Each construction activity shall be monitored a minimum of two days for Lmax and hourly Leq levels to establish an activity baseline for each activity when initially undertaken, and to establish the expected worst case situation (outside lane).
 - ii. Noise monitoring shall be provided in response to all noise complaints.
 - iii. All noise monitoring data and documentation shall be provided to DEH at least weekly when applicable, and such data shall be available to the public from DEH. DEH and their designated representatives may inspect collected data more frequently.
 - d. The following documentation, in a manner and form mutually agreed upon by CDOT, (contractor) and DEH, shall be provided for noise monitoring that is conducted:
 - i. Manufacturer names, model numbers, and serial numbers of each SLM and acoustical calibrator used.
 - ii. Software manufacturer, program and version.
 - iii. Dates of annual certified calibration of SLM, microphone and acoustical calibrator.
 - iv. Pre- and post- monitoring calibration data for the Sound Level Meter.
 - v. Date and specific location (address if appropriate) of monitoring.
 - vi. Start time and end time of monitoring
 - vii. Ambient weather conditions including temperature, relative humidity, wind speed and cloud cover.
 - viii. Signature of technician collecting the data
 - ix. List of each hourly Leq for the monitoring period, with associated Lmax levels.

DENVER (ONLY) NOISE ORDINANCE – PERMIT VARIANCE APPLICATION TEMPLATE

- x. All measurements associated with any unusual noise events that occurred, cause of such event if known, correction of such event (if any), and adjusted and unadjusted measurements.
- 6) **Complaint Notification and Response:** (Contractor) shall ensure that methods are available to receive, address, and respond to concerns raised by people in the community, through:
 - a. Assuring that a field representative is available to respond to complaints regarding construction noise levels and provide monitoring. The field representative shall be empowered to shut down construction activity, authorize correction or remediation of sources of excess noise, and authorize resumption of construction activity as necessary to maintain compliance with allowable noise levels.
 - b. Providing telephone access to a field representative during hours of project activities to receive complaints or comments from the public for the duration of the project. All complaints immediately shall be recorded, investigated and addressed as appropriate by the field representative and reported to DEH in a manner mutually agreed by DEH, CDOT and (contractor). A response, in a reasonable form requested by the caller, summarizing the investigation and any corrective actions taken by CDOT and (contractor) shall be provided to the caller. Written copies of complaints received and responses by (contractor) shall be provided weekly to DEH and CDOT.

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

UTILITIES

It shall be the Contractor's responsibility to make all arrangements with the utility owners for utility relocations or adjustments and to coordinate the sequence of such work to eliminate possible conflicts with construction progress.

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.

Contact the Utility Notification Center of Colorado (UNCC) (telephone #811) to have locations of UNCC registered lines marked by member companies. All other underground facilities shall be located by contacting the respective company. Utility service laterals shall also be located prior to beginning excavating or grading by whatever means necessary.

Utility lines shown on the plan sheets are plotted from the best available information. The Contractor's attention is directed to subsection 105.11 of the Standard Specifications concerning utilities.

It shall be the Contractor's responsibility to determine the exact location of utilities that may interfere with construction of this project by exploratory excavation sufficiently in advance of beginning construction in an area so that potential conflicts may be resolved. Cost for exploratory excavation shall not be paid separately, but shall be included in the work.

The Contractor shall provide two (2) weeks advance notice to the utility companies prior to commencing any scheduled utility work. Work involving changes in or interference with utility service shall be done at such times and in such a manner that it will cause the least interference with the proper handling and delivery of the utility service to the receiving customers. The Contractor shall notify all parties that will be affected 24 hours prior to the time water, sewer or gas service is disconnected or interrupted.

All services so disconnected, interrupted or damaged shall be immediately repaired and restored to service. Repair work shall be continuous until the service is restored. No service shall be left inoperative overnight. When work is being performed in the vicinity of utilities, the Contractor shall take appropriate measures to provide for the protection of the utility.

Due to utility relocation operations that may have occurred after preparation of the plans, attention is directed to the possible existence of underground facilities not known to the City & County of Denver or in a location different from that which is indicated on the plans or in the Special Provisions. The Contractor is also directed to subsequent sections of this specification which outline utility efforts to be completed concurrent with this project.

The Contractor shall take reasonable steps to ascertain the exact location of all underground facilities prior to doing work that may damage such facilities or interfere with their service. If the Contractor discovers underground facilities not indicated on the plans or in the Special Provisions, it shall immediately give the Engineer and the utility owner written notification of the existence of such facilities and coordinate the rearrangement of the facility as provided above.

-2-UTILITIES

Known utilities in or adjacent to the project are include:

UTILITY OWNER	CONTACT/E-MAIL	PHONE
Denver Traffic Operations 5440 Roslyn Street Denver, CO 80216	Chris Lillie Chris.lillie@denvergov.org	720-865-4066
Denver Water Department 1600 W. 12 th Avenue Denver, Co 80223	Raquel Cowan Raquel.cowan@denverwater.org	303-628-6104
Denver Wastewater Engineering 201 W. Colfax Avenue, Dept. 507 Denver, CO 80202	Zhixu Yuan, PE Zhixu.yuan@denvergov.org	720-865-3140
Denver Wastewater Management 2000 W. 3 rd Avenue, 3 rd Floor Denver, CO 80223	Walt Hime Walt.hime@denvergov.org	303-446-3663
CDOT Region 1 Traffic Operations 18500 E. Colfax Avenue Aurora, CO 80011	Jim Chase <u>Jim.chase@state.co.us</u>	303-365-7336
CDOT CTMC – ITS 425C Corporate Circle Golden, CO 80401	Jill Scott Jill.k.scott@state.co.us	303-512-5805
CenturyLink 7759 S. Wheeling Court Englewood, CO 80112	Ron Hickman Ron.hickman@centurylink.com	720-578-5139
Comcast Cable 1601 Mile High Stadium Circle Denver, CO 80204	Greg Aylesworth Gregory.aylesworth@cable.comcast.com	720-557-0060
XCEL Energy – Electric 1123 W. 3 rd Avenue Denver, CO 80223	Linda Rudel Linda.rudel@xcelenergy.com	303-571-3110
XCEL Energy – Gas 1123 W. 3 rd Avenue Denver, CO 80223	Jared Ivie Jared.m.ivie@xcelenergy.com	303-571-3143

The work described in these plans and specifications requires full cooperation between the Contractor and the utility owners in accordance with Subsection 105.11 of the CDOT Standard Specifications for Road and Bridge Construction (2011 Edition) and the City & County of Denver General Contract Conditions, in conducting their respective operations, to complete the utility work with minimum delay to the project.

PART 1 – CONTRACTOR SHALL PERFORM THE WORK LISTED BELOW:

Coordinate project construction with performance of utility owners of each utility work element listed in Part 2 below. Perform preparatory work specified in Part 2 for each utility work element. Provide an accurate construction schedule that includes all utility work elements to the owner of each impacted utility. Provide each utility owner with periodic updates to the schedule. Conduct necessary utility coordination meetings, and provide other necessary accommodations as directed by the Engineer.

-3-UTILITIES

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 notice, as specified in Part 2, immediately prior to the time the utility work must begin to meet the project schedule.

Prior to excavating, the Contractor shall positively locate all potential conflicts with existing underground utilities and proposed construction, as determined by the Contractor according to the 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 member facilities – other facilities, such as ditches and drainage facilities may exist, and it is the Contractor's responsibility to investigate, locate and avoid such facilities.

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. Note that advance notice to XCEL Energy is 120 calendar days.

The Contractor shall allow the number of work days required for each utility work element in the construction schedule. The number of days expected for construction and number of days of prior notice is specified for each utility owner.

Provide traffic control, as directed by the Engineer, for any utility work performed by the utility owner within the project limits 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 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.

Obtain written acceptance from the utility owner for work performed by the Contractor.

Denver Transportation and Mobility (T&M) and Traffic Operations Divisions:

General

Coordinate all required scheduling and inspections with Denver TES and/or Traffic Operations Divisions.

Notify the utility owner 5 days immediately prior to required inspections of utility work performed by the Contractor.

Proiect-Wide

Adjust and/or replace communications pull boxes throughout the project to match proposed finish grades as shown in the plans.

-4-UTILITIES

XCEL Energy Work Elements:

General Coordination

Contractor shall coordinate the following elements of work with XCEL throughout the construction period: 1] removal of existing power poles, overhead electric lines, and light poles by XCEL Energy forces where required; 2] removal of existing traffic signal-light poles and luminaires; 3] provision of new power sources by XCEL Energy forces; 4] final connection of new traffic signal wiring to new power source by XCEL Energy forces including installation of electric meter pedestal and meter by Contractor; 5] disconnection of old signal wiring at previous power source; 6] adjustment of existing electrical pull boxes if required.

North Side of 19th Avenue

This roadway segment requires detailed coordination with XCEL. Several existing overhead power lines run east/west along the north side of 19th Avenue and conflict with a number of project elements, therefore XCEL is planning to underground the overhead facilities between Broadway and Pearl Street. XCEL Energy forces will accomplish this work, therefore Contractor shall communicate frequently with XCEL to coordinate schedules and logistical assistance that may be required from the Contractor, such as traffic control during normal business hours.

PART 2 – UTILITY OWNERS SHALL PERFORM THE WORK LISTED BELOW:

Although the Contractor shall provide traffic control for utility work expected to be coordinated with construction, traffic control for utility work outside of typical project work hours shall be the responsibility of the utility owner. The utility owner shall prepare and submit to the Engineer a Method of Handling Traffic (MHT) for utility work to be performed outside typical project work hours. The utility owner shall obtain acceptance of the MHT from the Engineer prior to beginning the utility work to be performed outside typical project work hours.

Denver Transportation and Mobility (T&M) and Traffic Operations Divisions:

Inspect traffic signal and traffic signal system communications work performed by the Contractor listed in Part 1 above including but not limited to: controller cabinets and various internal elements such as controller, UPS, MMU and Ethernet Switch; and detection devices, signal indications, push buttons and stand-alone items such as flashing beacons.

-5-UTILITIES

XCEL Energy – Street Lighting and Electric Distribution Work Elements:

North Side of 19th Avenue

XCEL Energy forces will place the existing overhead power lines running along the north side of 19th Avenue underground. Although the design for this activity is not complete, the work will result in the removal of overhead lines, power poles, street lights along the north side of 19th Avenue, and some power pole and street light poles along the south side as well. Locations of the proposed underground facilities are not known at present but will include a substantial conduit bundle, underground vaults and above-ground cabinets.

20th Avenue & Grant Street

The existing traffic signal is to be removed in its entirety. After Contractor has removed existing traffic control devices from the signal poles, span wire, and one mast arm, XCEL Energy will remove the existing span wire-light poles and one mast arm pole and shall disconnect wiring for previous signal to be removed at the power source. This work must be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

20th Avenue & Logan Street

The existing traffic signal is to be removed in its entirety. After the contractor has removed existing traffic control devices from the signal poles and span wire, XCEL Energy will remove the existing span-wire light poles and shall disconnect wiring for previous signal to be removed at the power source. One overhead power line extends from the northeast corner pole to an adjacent street light pole and requires relocation. This work must be coordinated by the Contractor with XCEL Energy during construction and is expected to take 2 working days to complete.

20th Avenue & Park Avenue West

After the Contractor has removed signal heads and ancillary equipment (including indications, signs, mast arm, push buttons, etc.) on signal poles to be removed, XCEL Energy forces shall remove traffic signal poles with attached luminaires as shown in the plans. Contractor shall partially or completely remove the pole foundations after XCEL Energy forces have completed removal of the existing signal poles and luminaires. This work must be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

New traffic signal poles at this location will be furnished by the City and installed by the Contractor, thus participation by XCEL during the installation phase is not required..

The existing cabinet and power source will be maintained at 20th Avenue & Park Avenue West.

19th Avenue & Broadway

After the Contractor has removed signal heads and ancillary equipment (including indications, signs, mast arm, push buttons, etc.) on signal poles to be removed, XCEL Energy forces shall remove traffic signal poles with attached luminaires as shown in the plans. Contractor shall partially or completely remove the pole foundations after XCEL Energy forces have completed removal of the existing signal

-6-UTILITIES

poles and luminaires. This work must be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

New traffic signal poles at this location will be furnished by the City and installed by the Contractor, thus participation by XCEL during the installation phase is not required.

The existing cabinet and power source will be maintained at 19th Avenue & Broadway.

19th Avenue & Lincoln Street

After the Contractor has removed signal heads and ancillary equipment (including indications, signs, mast arm, push buttons, etc.) on signal poles to be removed, XCEL Energy forces shall remove traffic signal poles with attached luminaires as shown in the plans. Contractor shall partially or completely remove the pole foundations after XCEL Energy forces have completed removal of the existing signal poles and luminaires. This work must be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

New traffic signal poles at this location will be furnished by the City and installed by the Contractor, thus participation by XCEL during the installation phase is not required.

The existing cabinet and power source will be maintained at 19th Avenue & Lincoln Street.

19th Avenue & Sherman Street

The existing traffic signal is to be removed in its entirety. After the contractor has removed existing traffic control devices from the signal poles and span wire, XCEL Energy will remove the existing span-wire light poles and shall disconnect wiring for previous signal to be removed at the power source. Overhead power lines extend from both the southwest and northwest corner poles to adjacent street light poles and require relocation. This work must be coordinated by the Contractor with XCEL Energy during construction and is expected to take 2 working days to complete.

19th Avenue & Grant Street

The existing traffic signal is to be removed in its entirety. After Contractor has removed existing traffic control devices from the signal poles, span wire, and one mast arm, XCEL Energy will remove the existing span wire-light poles and one mast arm pole and shall disconnect wiring for previous signal to be removed at the power source.

-7-UTILITIES

19th Avenue & Logan Street

The existing traffic signal is to be removed in its entirety. After Contractor has removed existing traffic control devices from the signal poles, span wire, and one mast arm, XCEL Energy will remove the existing span wire-light poles and one mast arm pole and shall disconnect wiring for previous signal to be removed at the power source. This work must be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

19th Avenue & Clarkson Street

After the Contractor has removed signal heads and ancillary equipment (including indications, signs, span wire, push buttons, etc.) on signal poles to be removed, XCEL Energy forces shall remove traffic signal poles with attached luminaires as shown in the plans. Contractor shall partially or completely remove the pole foundations after XCEL Energy forces have completed removal of the existing signal poles and luminaires. This work must be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

Identify and provide new metered traffic signal power sources (including power meter) for the new controller location. Provide notification to the Engineer regarding location of each new power source. This work shall be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

After the Contractor has completed construction of the proposed traffic signals, connect power source to the new power feed wiring for the respective signal. Note that all new cabinet installations shall be metered, although metering equipment except for power meter will be furnished and installed by the Contractor in this project. This work shall be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

After the contractor has completed construction of the proposed traffic signals and they are operational and accepted, XCEL Energy forces shall disconnect wiring for previous signal to be removed at the power source. This work must be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

19th Avenue & Park Avenue West

After the Contractor has removed signal heads and ancillary equipment (including indications, signs, mast arm, push buttons, etc.) on signal poles to be removed, XCEL Energy forces shall remove traffic signal poles with attached luminaires as shown in the plans. Contractor shall partially or completely remove the pole foundations after XCEL Energy forces have completed removal of the existing signal poles and luminaires. This work must be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

New traffic signal poles at this location will be furnished by the City and installed by the Contractor, thus participation by XCEL during the installation phase is not required.

The existing cabinet and power source will be maintained at 19th Avenue & Park Avenue West.

-8-UTILITIES

Clarkson Street & Park Avenue West

No XCEL Energy work is required. The existing cabinet and power source will be maintained at Clarkson Street & Park Avenue West.

18th Avenue & Logan Street (Bid Alternate 1 Only)

After the Contractor has removed signal heads and ancillary equipment (including indications, signs, span wire, push buttons, etc.) on signal poles to be removed, XCEL Energy forces shall remove traffic signal poles with attached luminaires as shown in the plans. Contractor shall partially or completely remove the pole foundations after XCEL Energy forces have completed removal of the existing signal poles and luminaires. This work must be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

Identify and provide new metered traffic signal power sources (including power meter) for the new controller location. Provide notification to the Engineer regarding location of each new power source. This work shall be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

After the Contractor has completed construction of the proposed traffic signals, connect power source to the new power feed wiring for the respective signal. Note that all new cabinet installations shall be metered, although metering equipment except for power meter will be furnished and installed by the Contractor in this project. This work shall be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

After the Contractor has completed construction of the proposed traffic signals and they are operational and accepted, XCEL Energy forces shall disconnect wiring for previous signal to be removed at the power source. This work must be coordinated by the Contractor with XCEL Energy during construction and is expected to take 1 working day to complete.

General

The Contractor shall provide the utility owner written notice immediately prior to the need for each utility work element. For street lighting and electric distribution elements, notification shall be provided to the following individual or designated representative:

Ms. Marisa Montoya Design Manager XCEL Energy, Design / Layout Department 1123 W. 3rd Avenue Denver, CO 80223-1351

All costs incidental to the foregoing requirements shall not be paid for separately, but shall be included in the work. Full compensation for compliance and cooperation, as required by this section, shall be considered included in the unit prices paid for various Contract items of work, and no additional compensation will be allowed.

Appendix A

City and County of Denver – Public Works Department Minimum Frequency of Materials Sampling and Testing Standard (December 8, 2010)

City and County of Denver – Public Works Department Minimum Frequency of Materials Sampling and Testing Standard (December 8, 2010)

DESCRIPTION

This Standard sets forth Denver's Minimum FREQUENCY OF MATERIALS SAMPLING AND TESTING requirements to be used for Quality Assurance by the City, as part of its Acceptance of the Work incorporated into any project. This Standard is based upon current Denver and other local agency and state practices to obtain adequate test coverage, which in combination with good inspection, will assure high quality Work, and is recommended for all projects initiated by the City and County of Denver for work in the Public Right of Way.

Section 1 DEFINITIONS

The definitions used in this Section are presented for clarification.

DEFIN	DEFINITIONS (supplements or may repeat those in CCD General Contract		
AASHTO	American Association of State Highway & Transportation Officials- Standard Specifications for Transportation Materials and Methods of Sampling and Testing		
ACI	American Concrete Institute		
ASTM	American Society for Testing & Materials, (Annual Book of ASTM Standards)		
CCD-R+R-Specs	City and County of Denver – Public Works Rules and Regulations – Governing Street Cuts and Roadway Excavation Specifications		
CCD-WMD-Specs	City and County of Denver – Public Works – <u>Storm Drainage and Sanitary Sewer</u> <u>Construction – Detail and Technical Specifications</u>		
CDOT	Colorado Department of Transportation		
CDOT-Spec	Colorado Department of Transportation- Standard Specifications for Road & Bridge Construction		
City	to be meant, when the word AGENCY is used in some referenced specifications Denver		
Contractor	See CCD_ General Contract Conditions		
CP ##	Field or Lab Testing Procedures in CDOT's Field Materials Manual (Colorado Procedure)		
CP-L # # # #	Lab Testing Procedures in CDOT's: <u>Laboratory Manual of Test Procedures</u> (Colorado Lab Procedure)		
FHWA	Federal Highway Administration		
LabCAT	The Laboratory for Certification of Asphalt Technicians, a part of Colorado Asphalt Producers Association (CAPA) and in partnership with CDOT & FHWA		
MGPEC-Specs	Metropolitan Government Pavement Engineers Council (<u>Pavement Design Standards and Construction Specifications</u> (available from 303-979-2190)		
MTS = Materials Testing Service	A professional construction materials engineering testing company, qualified per section 801.4 B, C, D; and under the direction of a Professional Engineer registered in the State of Colorado.		
OSHA	Occupational Safety and Health Administration		

Project Manager	See CCD_ General Contract Conditions
QC Testing (Quality Control Testing) also Process Control Testing)	Contractor provided sampling and testing. This is performed to frequently check their own processes and work, allow the work to be compared to the specification or intent, and the process improved as needed for the work to always pass the specification or meet the intent. There are other activities that contribute to the overall Quality Control of a Project.
QA Testing (Quality Assurance Testing)	City provided sampling and testing. When combined with inspection of the contractor's work by the City, these activities allow the City to determine if the work and products meet project specifications.
Schedule	See CCD_ General Contract Conditions (example is #306)
Work	See CCD_ General Contract Conditions (example is #121)

Section 2 RESPONSIBILITIES OF THE CITY

The City is recommended to provide a Materials Testing Service (MTS) per forthcoming specifications to provide the required minimum amount of QA Testing. Section 6 below outlines these QA Testing amounts in various tables, called Schedules for Minimum Frequency of QA Testing.

The amount of testing will depend on the Project quantities, the number of testing visits, and time needed to test the various phases set by the Contractor's schedule. The amount of MTS visits and required testing will be estimated by the City and Contractor. Responsibility for any payment for additional visits or testing needed by the Contractor because of its varied Schedule and sequence of Work will be negotiated by both parties. The final amount of minimum QA testing required and paid for by the City will be determined by the City Project Manager with input from the Contractor.

The City may, at its discretion, modify the amount of QA testing depending upon the Contractors' performance. The City may also use any Contractor provided QC testing results for the City's benefit in deciding the current acceptable progress of the Work.

The Project Manager will evaluate all test results and the quality of Work in progress to judge if the Work is acceptable prior to allowing placement of additional material or pavement.

Section 3 RESPONSIBILITIES OF THE CONTRACTOR

A. Scope of QA Testing

The Contractor shall provide his proposed construction schedule to the Project Manager well in advance of the actual start of construction, within 2 weeks of Notice to Proceed or as agreed upon. The schedule shall indicate the number of test visits anticipated, and the estimated dates when each individual or group and type of each QA test event that will be needed. The City will use this schedule, as agreed upon, to finalize the amount of testing effort and testing visits the City will provide.

B. Scheduling the QA Testing

The Contractor shall schedule all QA testing with the City provided MTS directly, with enough advance notice to satisfy the contractor's schedule. The contractor shall also notify the City of upcoming scheduled QA tests. The Contractor shall normally be present at these test events. The Contractor shall be expected to rework all Work that is not acceptable to the City, as directed by the Project Manager.

Any Material that has not been tested shall be uncovered in order that testing may be performed. Any Material or Work that has not been passed and approved shall be reworked, or removed and reworked until it is approved by the City. Failure of the Contractor to schedule adequate testing or retesting with passing results shall be sufficient cause for rejection of the Material or Work in question.

The use of the City provided Materials Testing Services does not relieve the Contractor of the responsibility to furnish the required materials and to perform the required construction in full compliance with all Specifications. Passing test results do not constitute acceptance of the work or materials represented by the test.

The Contractor is responsible for any quality control testing of its own process and work, at its own expense, so as to achieve passing QA tests.

C. Provide Access and Assistance to Testing Service

The Contractor shall allow the MTS access to the Project at all times; furnish any labor required to assist the MTS in safely obtaining, handling materials or performing tests. This shall also mean providing a safe means of ingress to and egress from trench or excavation bottoms or other parts of the Work. The Contractor shall provide safe bracing or trench boxes when required by OSHA or the City. The Contractor shall provide and maintain, for the sole use of the MTS, adequate facilities for safe storage and proper curing of concrete test specimens on the Project as required by AASHTO T 23. The Contractor shall allow the MTS access to samples at the source of Project material.

D. City Provided QA testing is separate from Specification Required QC Testing by the Contractor

When the Contractor is required to perform Quality Control (QC) (also referred to as Process Control) testing according to any CDOT or City Specification section, the contractor shall not use the same City provided Material Testing Service. The requirements for such QC testing is not included here, shall be according to the applicable specification, and shall be separate from the City provided QA testing.

E. Provide Certification of Compliance

The Contractor shall provide Certification of Compliance or Shop Drawings (materials test or design reports) showing compliance with Technical Specifications for Materials supplied to the Project, as required in Section 6, or by the applicable Project or Technical Specifications. This is required either as part of the Materials Submittal Process before using on the Project; or for the City process to complete the Contract. This compliance does not involve the MTS.

Section 4 RESPONSIBILITIES OF THE MATERIALS TESTING SERVICE (MTS)

All materials and operations shall be tested in accordance with the Project Technical Specifications and as directed by the Project Manager. If any materials furnished or the work performed by the Contractor fails to fulfill the Specification requirements, such deficiencies shall be immediately reported verbally to the City's Project Manager and the Contractor.

A. Reporting and Reports

Preliminary written field reports of all tests and observation results by the MTS shall be given to the City's Project Inspector and Contractor immediately after they are performed. Additional field reports or copies shall be made available to the City Project Manager upon request. Final reports shall be forwarded to the Project Manager no later than 1 week following the testing. Results of all tests taken, including failing tests, shall be reported.

Final reports shall bear the seal and signature of a Professional Engineer licensed in the State of Colorado and competent in the required testing practice. All test reports shall indicate the location where the test

was performed or at what location the work or batch represented by the test was placed. Tests shall be referenced from either:

- #1) Street address with dimensions referenced from permanent structure features, or
- #2) Stationing and distance from centerline using approved project plans, or
- #3) GPS locations, with reference to pertinent stationing points that relate to the approved project plans.

Test reports shall include all information specified in the applicable AASHTO, ASTM or CDOT test procedure used, and shall show PASS or FAIL for the particular segment tested, as well as showing the specified minimum or maximum values or range allowed for a passing test. All related test results shall be provided, and referenced on the main test report page. Testing report submittals shall be included with a spreadsheet that summarizes the type of test, location, date, pertinent results, specification limits and pass/fail status.

Improperly completed reports will not be accepted. The MTS's Professional Engineer or its designee, shall make the final determination whether a test 'Passes' or 'Fails', and must do so either verbally or in writing to the City's field personnel or Project Manager prior to the Contractor adding material or pavement that covers the Work.

The final payment to the MTS shall not be issued until all final QA test reports indicating test results that agree with prior communication with the City Project Manager and/or compliance with the specifications are reviewed, accepted and placed on file by the City.

B. Responsibility

The MTS's personnel are not authorized to stop work, to revoke, alter, relax, enlarge, or release any requirements of the Specifications. They may be empowered by the City Project Manager to reject any Work, any material, or any component of the Work which is not as specified in the Contract. Such rejection shall be confirmed in writing by the Project Manager to the Contractor. Only the City may approve or accept any portion of the Work.

C. Testing

All testing methods and procedures performed by the MTS personnel shall be in accordance with the applicable AASHTO, ASTM or CDOT requirements and procedures (see Section 5 and 6 tables below). All testing shall be at the expense of the City, and all retesting shall be at the expense of the Contractor as per Sections 2 and 3 of this Standard.

When changes in materials or proportions are encountered during construction, or when the Work fails to pass tests or fails to meet the Specifications; then additional tests shall be taken as directed by the Project Manager or Project Inspector. The cost of additional tests resulting from site anomalies shall be paid for by the City. The cost of additional tests resulting from a change in Contractors materials or methods shall be paid for by the Contractor. Failure of the Contractor to schedule adequate testing or retesting with passing results shall be sufficient cause for rejection of the work in question.

D. Laboratory and Testing Equipment

The MTS shall meet the requirements of ASTM E 329. Additionally, it must meet requirements of ASTM D 3740 when testing soil or rock, ASTM D 3666 when testing asphalt related paving, and ASTM C 1077 when testing concrete or related paving.

A copy of the MTS's Quality Systems Manual, their list of qualified testing technicians, and inspection comments and documentation of the action taken by the MTS to correct any deficiencies in procedures or equipment shall be made available to the City upon request.

E. Personnel Qualifications

The MTS person responsible for and/ or supervising the testing shall be registered as a Professional Engineer in the State of Colorado and practicing in this field.

The MTS Technicians shall be a trained and properly qualified representative of the Materials Testing Service, and shall have the following certifications:

- 1. Technicians performing Quality Control or Quality Assurance sampling, splitting or testing on soil, aggregate or modified soil blends for field or lab tests, and/or running field moisture-density tests must possess a valid from the following bodies:
 - a. NICET (National Institute for Certification in Engineering Technologies) level II, or
 - b. WAQTC (Western Alliance for Quality Transportation Construction) certificate for an Embankment and Base Testing Technician.
- 2. Technicians performing Quality Control or Quality Assurance sampling, splitting or testing on Concrete or related materials must possess a valid ACI certificate as follows:
 - a. Technicians taking concrete samples and conducting field tests must posses a valid ACI Field certification or equivalent or higher.
 - b. Technicians conducting tests of concrete for compressive strength shall posses either a valid ACI Laboratory Grade I or a valid ACI Strength certification or equivalent or higher.
 - c. Technicians conducting tests of concrete for flexural strength shall possess a valid ACI Strength certification or higher.
 - d. Technicians conducting tests related to determining mixture design characteristics shall possess a valid ACI Laboratory Grade II certification or equivalent.
- 3. Technicians performing Quality Control or Quality Assurance sampling, splitting or testing on Hot Mix Asphalt Pavement materials in the field and laboratory must possess one or more of the following qualifications:
 - a. Technicians sampling hot mix asphalt materials or conducting nuclear asphalt density tests must possess a valid LabCAT Level A certification.
 - b. Technicians conducting tests of Asphalt Content, Bulk Specific Gravity, Maximum Specific Gravity or Asphalt Aggregate Gradation for hot mix asphalt must possess a valid LabCAT Level B certification.
 - c. Technicians determining Asphalt Mixture Volumetric Properties, Hveem Stability or Resistance to Moisture Induced Damage must possess a valid LabCAT Level C certification.
- 4. Technicians performing Quality Control or Quality Assurance testing on Pavement Smoothness for either HMA (Hot Mix Asphalt) or PCCP (Portland Cement Concrete Pavement) must possess LabCAT Level S certification.

Section 5 LINK TO APPLICABLE TESTING FREQUENCY SCHEDULE BY SPECIFICATION TYPE

The following table of various Specifications used by the City is provided as a resource for linking to the appropriate Testing Frequency Tables in Section 6.

Table 5 – Test Frequency Table Cross Reference for Various Specification Types.

** (refer to tables in Section 6)

	(refer to tables in Section 6)				
** Reference to Section 6 Tables	Element to Test	CDOT-Spec Construction Detail Section Number, as may be revised by Project Special Provision for the CITY Project	CCD-R+R-Specs Section (Roman Numerals) CCD-WMD-Specs Section (*numbers)	Parks and CPM- Vertical Using CSI format	MGPEC- specs: Specification. Item #
A	EARTHWORK (including Subgrade for Roadway, Structures or Features placed or built in the project, Reconditioning subgrade, Imported Materials)	203, 206, 306	XII, XI-C7 to <u>XI-D6</u> *5.0, *12.0, *26.0	Div	3
В	MOISTURE TREATMENT (for expansive subgrade)	203, 206, 306	XII, XI-C6 n/a	Div	4
С	CHEMICALLY STABILIZED SUBGRADE	307 (for Lime Treated Subgrade)	XII, XI-C6 n/a	Div	5
D	MECHANICALLY STABILIZED SUBGRADE	n/a	XII, XI-C6 n/a	Div	5.2 , (Item 5, Part 2)
Е	CONCRETE for CURBS, GUTTERS, SIDEWALKS, EXTERIOR ELEMENTS or STRUCTURAL USE (note #1)	608, 609 includes, but not limited to: 503, 601, 604, 610, 614	XIII, C.7 or 1.08 in R+R Appendix C *6.6	Div	6
F	AGGREGATE BASE COURSE	304	<u>n/a</u> *5.0	Div	7
G	GEOSYNTHETICS	420, 420.07	n/a *5.02 *Detail S- 301.2 filter fabric	Div	5 Geotextiles 8 Separator Fabric
Н	HOTMIX ASPHALT (HMA) & STONE MATRIX ASPHALT (SMA) PAVEMENT	401, 403 CCD typically replaces with MGPEC Item 9	XIII B. *25.0	Div	9
Ι	PORTLAND CEMENT CONCRETE PAVEMENT	412	XIII-C n/a	Div	11
J	BACKFILL of TRENCHES and UTILITY CUTS	203, 206, 306	<u>XI</u> *5.0	Div	18
K	FOUNDATIONS (footings, sheet piling, driven or drilled piles, drilled caissons or piers, other)	501, 502, 503, Others	<u>n/a</u> n/a	Div	n/a

Note #1): Structural Use includes drilled caissons, structural concrete, manholes, inlets, vaults, median cover, traffic control supports

Section 6 SCHEDULES for MINIMUM FREQUENCY of QA TESTING

The minimum amount of testing required for QA (Quality Assurance) of the project is presented in the following Tables. Refer to the Sections 2, 3 and 4 above for Responsibilities of various parties. The Contractor must coordinate testing with the MTS and the City. All Work must be tested and passed to the satisfaction of the City Project Manager before the Work is covered with new material or Work.

Additional Requirements may be included in Project Special Provisions or other sections of the Contract that will add or modify the responsibilities of the Contractor or MTS.

- A. Earthwork (including Roadway Subgrade, Reconditioning and Imported Materials)
- **B.** Moisture Treatment (for Expansive Subgrade)

Testing of Embankment, Roadway Subgrade or Moisture Treatment of expansive subgrade soils and Imported Materials shall be performed in accordance with the following combined table.

Table A - EARTHWORK (including Subgrade for Roadway, Structures or Features placed or built in the project, Reconditioning subgrade) ***additional applies for Imported Materials

Table B - MOISTURE TREATMENT (for Expansive Subgrade),

SCHEDULE FOR MINIMUM FREQUENCY of QA TESTING			
Test Type	Test Standard (note #1)	Minimum Frequency of Tests ➤ (denotes possible work elements)	
Probing soil surface note #1 (A only items)	Pinpoint weakest areas to test with gauge, or problem areas needing improvement	One per each 50 square feet when not accessible during a proof-roll.	
In Place Soil Density & Moisture Content	Nuclear-CP 80 (modifies AASHTO T 310) Sand Cone-(AASHTO T 191,	Features: One per 200 lane feet, each layer (1 per 90 cubic yards) (not less than 2 tests per day, prior to covering) (note#2)	
(A+B items)	ASTM D 2167 & D 2216 may also be used when conditions require it)	Embankment - One per 50 cubic yards for structure support and small compacting equipment, to One per 200 cubic yards for earthwork using large compaction equipment.	
Moisture Density Relationships (A+B items)	AASHTO T 99 AASHTO T 180	One per soil type.	
Classification; Liquid Limit (LL) & Plasticity Index (PI) (A+B items)	AASHTO M 145, AASHTO T 89 & T 90	One per soil type.	
Water-Soluble Sulfate (site or import material) (A+B items)	CP 30, CP-L 2103	One per 2,000 cubic yards, 1 per source	
Proof-Roll prior to adding more soil, base or paving materials. (A items only)	No cracking nor excess deflection (visual)	 Two passes of truck per full length of lane, staggered in lane. -Use Jumping Jack compactor in smaller areas. 	
*** Gradation	AASHTO T27 and T11	One per 200 cubic yards	
*** Atterberg Limits (LL & PI) If part of material specification	AASHTO T89 & T90	One per 200 cubic yards, 1 per source	
*** Water-Soluble Sulfate	CP 30, CP-L 2103	One per 200 cubic yards, 1 per source	

Note #1): Passing Test for this category shall mean that the particular surface elevation tested has no loose soil above it, and the material tested is similar to and represents surrounding material and conditions, and meets specifications. Non-uniform materials shall be tested and accounted for separately. When more material is to be added to achieve final grade, then the test shall be noted to indicate "Passing test but not at final grade", or "Pass for elevation or depth below final grade". Otherwise it is a Failing Test.

Note #2): "covering" means placing next layer of soil, or placing concrete or asphalt on soils.

C. Chemically Stabilized Subgrade

Testing of Chemically Stabilized Subgrade shall be performed by the MTS in accordance with the following table.

This testing shall be performed after the Contractor completes any required Moisture Treatment per the applicable Specification. The purpose of Chemically Stabilized Subgrade is to achieve a suitable paving platform after Moisture Treatment of expansive soil.

The Contractor may be required to perform Quality Control (QC), (also referred to as Process Control) testing per Technical Specification for this material. That QC testing is not included here, and shall be separate from the City provided QA testing.

Table C - CHEMICALLY STABILIZED SUBGRADE			
SCHEDULE FOR MINIMUM FREQUENCY of QA TESTING			
Test Type Test Standard		Minimum Frequency of Tests	
Sampling Sample Preparation	AASHTO T 87 ASTM D 3551	One per 1,000 square yards.	
Maximum Dry Density and Optimum Moisture Content	ASTM D 698 (lime), ASTM D 558 (cement)	Minimum one per soil type or variation in soil appearance.	
In Place Soil Density	ASTM D 6938 (nuclear), ASTM D 1556 (sand cone)	 One test for each 200 lane feet 	
In Place Moisture Content	ASTM D 6938 (nuclear), ASTM D 2216 (lab)	 At least two tests per day). 	
рН	ASTM D 6276	One test per 1,000 square yards.	
Swell	ASTM D 4546 Method B	Minimum one test per 1,000 square yards.	
Unconfined Compressive Strength (Lime)	ASTM D 5102 (Procedure B)	One set of four cylinders per 1,000 square yards. (Sealed and moist cured at 100° F for 5 days.)	
Compressive Strength Cementitious Agents	ASTM D 1633 (Method A)	One set of four cylinders per 1,000 square yards. (Sealed and moist cured at 100° F for 5 days.)	
Atterberg Limits (Liquid Limit & Plastic Limit)	AASHTO T 89 & T 90	One test per 1,000 square yards.	
Stabilization Thickness	Geotechnical designer to recommend method to City	One test every 500 feet per lane.	
Water-Soluble Sulfate	CP 30, CP-L 2103		

D. Mechanically Stabilized Subgrade

Testing of Mechanically Stabilized Subgrade shall be performed by the MTS, and Certificates of Compliance shall be submitted by the Contractor in accordance with the following table.

Table D - MECHANICALLY STABILIZED SUBGRADE			
SCHEDULE FOR MINIMUM FREQUENCY of QA TESTING			
Test Type	Test Standard	Minimum Frequency of Tests	
Various Properties of Geogrid or Geotextile	Various in specification	One certification of compliance for each lot of geogrid or geotextile.	
Proof-Roll prior to applying paving materials or final aggregate base course or overall acceptance.	No cracking nor excess deflection (visual). Any applied aggregate base course required for the approved pavement section shall pass compaction specifications	 2 passes of truck per full length of lane, staggered in lane. Use Jumping Jack compactor in smaller areas. 	

E. Concrete for Curbs, Gutters, Sidewalks, Exterior Elements or Structural Use

Testing of Portland Cement Concrete for curbs, gutters and sidewalks, exterior elements or structural use (drilled caissons, structural concrete, manholes, inlets, vaults, median cover, traffic control supports) shall be performed in accordance with the following table.

Table E - CONCRETE for CURBS, GUTTERS, SIDEWALKS, EXTERIOR ELEMENTS or STRUCTURAL USE				
SCHED	SCHEDULE FOR MINIMUM FREQUENCY of QA TESTING			
Test Type Test Standard Minimum Frequency of Tests				
Compressive Strength	AASHTO T 22 or ASTM C 39	One set of four cylinders per 100 cubic yards. Exterior: minimum 1 set per 2 days. Structures: minimum 1 per day		
Air Content Note: air may be adjusted on the Project by the concrete supplier, adhering to time limits, when requested by the Contractor.	AASHTO T 152 or ASTM C 231	 One test per each of first three trucks, then one for every third truck thereafter. Repeat cycle if out of spec. 		
Slump	AASHTO T 119 or ASTM C 143	One per Air Content Test		
Temperature	ASTM C 1064	One per Air Content Test		
Thickness (cores)	ASTM C 174	As required for project.		

F. Aggregate Base Course

Testing of Aggregate Base Course shall be performed in accordance with the following table.

Table F - AGGREGATE BASE COURSE			
SCHEDULE FOR MINIMUM FREQUENCY of QA TESTING			
Test Type	Test Standard	Minimum Frequency of Tests	
In Place Soil Density & Moisture Content	Nuclear - CP 80 (modifies AASHTO T 310) Sand Cone - AASHTO T 191, ASTM D 2167 & D 2216 as needed)	 One for each: 400 square yards (1 per 100 cubic yards or -1 per 180 tons at 9 inches deep). At least two tests per day. 	
Moisture Density Relationships	AASHTO T 180	One test per base source.	
Gradation	AASHTO T 27 and T 11	One each per initial use of source.At least one per 2,000 tons.	
Atterberg Limits (Liquid Limit & Plastic Limit)	AASHTO T89 & T90	One test per 2,000 tons.	
Thickness	measure	One test per 1,000 lane feet	
LA Abrasion	AASHTO T 96	 One each per initial use of source One per 10,000 tons or 12,000 lane feet. 	
R-Value (when used in HMA+ABC pavement section)	CP-L 3101, CP-L 3102 (both to be used with AASHTO T 190)	 One each per initial use of source One per 10,000 tons or 12,000 lane feet. 	
Resilient Modulus	AASHTO T 294	Optional, In lieu of R-Value.	
Proof Roll prior to adding more base material or paving materials.	No cracking nor excess deflection (visual)	 2 passes of truck per full length of lane, staggered in lane. Use Jumping Jack compactor in smaller areas. 	

G. Geosynthetics

Testing of Geosynthetics (also geotextiles, geogrid, and separator fabric) shall be performed by the supplier, and Test Results or Certificates of Compliance shall be submitted by the Contractor in accordance with the following table.

Table G - GEOSYNTHETICS			
SCHEDULE FOR MINIMUM FREQUENCY of QA TESTING			
Test Type	Test Standard Minimum Frequency of Tests		
Various Properties of Geosynthetics, geotextiles, or separator fabrics	Various in specification	One test report and certification of compliance for each lot of Geosynthetics. Lot number shall also be indicated on delivered product at Project site.	

H. Hot Mix Asphalt (HMA) & Stone Matrix Asphalt (SMA) Pavement

Testing of HMA and SMA Pavement shall be performed in accordance with the following table.

The Contractor may be required to perform Quality Control (QC), (also referred to as Process Control) testing on certain elements for HMA or SMA, per applicable Technical Specification for this material. That QC testing is not included here, and shall be separate from the City provided QA testing. The Contractor shall provide assistance in sampling and testing at all facilities and at the job site.

Table H - HOT MIX ASPHALT (HMA) & STONE MATRIX ASPHALT (SMA) PAVEMENT			
SCHEDULE FOR MINIMUM MATERIALS SAMPLING AND TESTING			
Test Type	Test Standard	Minimum Frequency of Tests	
Field Sampling	CP 41, AASHTO T 168, ASTM D 979 & ASTM D 3665	One test for each day. (note #1)	
Field Density (In Place % Compaction)	CP 44, CP 81 & CP 82	One for each 250 lineal feet per Lane.At least 4 per day.	
Field Density (In Place % Compaction) - Longitudinal Joint	CP 44, CP 81 & CP 82	One for each 500 lineal feet per Lane.At least 2 per day.	
Thickness (Core)	ASTM D 3549	One test for each 1000 lineal feet per lane.	
VTM (Percent Voids in the Total Mix) & VMA (Percent Voids in the Mineral Aggregate). (Use most current aggregate specific gravity, Gsb.)	CP-L 5115, CP 44 & CP 48	One test for each day. (note #1)	
Stability - Hveem on gyratory samples on HMA, SMA (as applicable to SMA design)	CP-L 5106	One test for each day. (note #1)	
Maximum Theoretical Specific Gravity (Rice value)	CP 51	One test for each day.	
Percent Asphalt Content (%AC)	CP-L 5120 or other methods agreed upon between City and Contractor	One test for each day. (note #1)	
Gradation	CP 31A, CP 31B	One test for each day. (note #1)	
Lottman (Tensile Strength Retained Ratio, Dry Strength, Voids, Saturation)	CP-L 5109, Method B	One per 5,000 tons.	
Micro-Deval (aggregates)	CP-L 4211 (modifies AASHTO T 327)	One per 5,000 tons.At least 1 per project.	
Aggregate Moisture	CP 60	One per 2,000 tons.At least 1 per project.	
Aggregate Fractured Faces	CP 45	One per 5,000 tons.At least 1 per project.	
Fine Aggregate Voids	AASHTO T 304A	One per 5,000 tons.At least 1 per project.	
Temperature	(note #2)	As needed. (note #2)	

Note #1): When placing less than 100 tons per day, may reduce sampling and testing to one per 300 tons over 2 to 4 days.

<u>Reports</u> of all tests taken, including failing tests, shall be reported to the City and to the Contractor no later than 1 week following the sampling. Density test results will be given in writing at the time the testing occurs.

Note #2): Inspector shall be responsible for checking temperatures of mix in the truck and on pavement, segregation, rolling patterns and other construction means and methods that affect the performance of the pavement system.

I. Portland Cement Concrete Pavement

Testing of Portland Cement Concrete Pavement shall be performed in accordance with the following table.

The Contractor may be required to perform Quality Control (QC), (also referred to as Process Control) testing per Technical Specification for this material. That QC testing is not included here, and shall be separate from the City provided QA testing.

Table I - PORTI	Table I - PORTLAND CEMENT CONCRETE PAVEMENT		
SCH	SCHEDULE FOR MINIMUM MATERIALS SAMPLING AND TESTING		
Test Type	Test Standard	Minimum Frequency of Tests - see notes below	
Compressive Strength	AASHTO T 22; ASTM C 39	One set of at least 4 cylinders per 100 cubic yards (minimum of one/day) [@@= 1 per 500 cubic yards after first 200 cubic yards]	
Air Content	AASHTO T 152; ASTM C 231	One test per each first three trucks. If all in spec, then one for every five trucks **, [@@= 1 per 10 trucks after the first 3 trucks]	
Slump	AASHTO T 119; ASTM C 143	One test per each first three trucks. If all in spec, then one for every five trucks **, [@@= 1 per 10 trucks after the first 3 trucks]	
Temperature	ASTM C 1064	One test with every air and slump test.	
Thickness	CP 68, ASTM C 174	One core test per 500 linear feet per lane. 3" maximum diameter core hole. Note #3	
Unit Weight	AASHTO T 121; ASTM C 138	One per air content test	
Dowel Bar placement	Dimensions per CDOT-Spec 412.13 (b) 2	 Six transverse joint locations per first 600 linear feet Six transverse joint locations per each next 1,200 linear feet 	
Pull Out Test for Tie Bars	Per CDOT-Spec 412.13 (a)	Performed By Contractor when using bars inserted into plastic concrete, or drilled & epoxied.	
Tining or Saw Cut Depth	CP 66	Two per 528 linear feet, or fraction, per lane or shoulder	
Joint Sealant Pull Test	CP 67 (modifies MGPEC 11.6.4)	Six each transverse and longitudinal in first 2,500 linear feet per lane, 3 each thereafter.	

Note #1) - note for ** - If out of specification, reject trucks if slump or air adjustment not possible, then test all trucks until next 3 trucks are in specification.

Note #2) - note for [@@=] - [- When daily yardage exceeds 500 yards, then may reduce frequency to amount shown.]

Note #3) - Use high strength compound to patch, 2,500 psi in 1 hr. (Rapid Set 'DOT repair mix' or CeraTech 'Pavement 5.0' or equal

J. BACKFILL of TRENCHES and UTILITY CUTS

Testing of Backfill for Trenches and Utility Cuts shall be performed in accordance with the following table. These minimum test frequencies may be adjusted for allowed open trench length other than 50 feet.

Table J - BACKFILL of TRENCHES and UTILITY CUTS								
SCHEDULE FOR MINIMUM MATERIALS SAMPLING AND TESTING								
Test Type	Test Standard	Minimum Frequency of Tests						
Probing soil surface	Identify weak areas to test with gauge, or problem areas needing improvement	One probe per each 50 square feet not accessible to a normal compaction or proof-roll.						
In Place Soil Density & Moisture Content for material placed in the "backfill zone", above the "bedding zone." See - (note #1, #2) See also - note #5 concerning "per layer" and "lift thickness".	Nuclear - CP 80 (modifies AASHTO T 310) Other - (AASHTO T 191 (sand cone), ASTM D 2167 (rubber balloon & D 2216 (moisture) may also be used when needed)	 Trench width ≤8 ft. – Two Tests per 50 linear feet, per each layer, (approx one per each 25 square yards of backfill placed. Trench width >8 ft., but <15 ft. – Three Tests per 50 linear feet, per each layer, (approx one per each 15 to 27 square yards of backfill placed. Trench width ≥15 ft., but <30 ft. – Four Tests per 50 linear feet, per each layer, (approx one per each 21 to 42 square yards of backfill placed. One test within 2 feet of each obstacle or structure, per each layer. All cases - not less than 2 tests per day. See note # 5 "per layer" and "lift thickness". 						
Moisture Density Relationships (Proctors) (note #3)	AASHTO T 99 (standard), or AASHTO T 180 (modified)	One Test as applicable per each soil type.						
Classification; Liquid Limit & Plastic Limit	AASHTO M 145; AASHTO T 89 & T 90	One Test per soil type.						
Proof-Roll on Top Layer, and 4 feet Below Top Layer (note #4)	No cracking nor excess deflection (visual)	 Use 2 passes of truck per full length of trench, staggered in lane. Use Jumping Jack type compactor in smaller areas. 						

- Note #1) The Contractor may be required to excavate an area of the layer in order to facilitate the taking of density tests. Replacement and compaction of the removed material in the area shall be at the Contractor's expense.
- Note #2) All field tests for compaction and moisture will be performed using nuclear methods described by AASHTO T 310, unless the trench widths are too narrow to test backfill density and moisture by nuclear methods; in which case the density determinations shall be made by the sand-cone method, AASHTO T-191, or the rubber balloon method ASTM D 2167 & D 2216.
- Note #3) A relative density relationship shall be used when testing clean (non-cohesive) sands and gravels, according to ASTM D 4253 and D 4254.
- Note #4) The Contractor shall conduct proof roll of the completed backfill, while the City observes to determine if any soft, yielding or otherwise unacceptable areas exist. These areas shall be removed and replaced without additional payment. The proof roller vehicle shall be a pneumatic tired vehicle (100 psi tire pressure) provided by the Contractor, capable of applying ground loads of not less than 18,000 pounds per axle. Complete coverage of the proof roll vehicle will be required, and shall be operated at between 2 and 6 miles per hour.

 Areas not accessible to the vehicle shall be performed with jumping jack type impact equipment.
- Note #5) Normally each lift (finished 6 inches thick) shall be tested. When the Contractor can demonstrate with the soils and equipment used, and the on site inspector can verify consistency of the process; that thicker lifts have obtained passing compaction throughout the entire lift, then the lift thickness to be tested can be adjusted for the particular process. This "lift thickness adjustment" shall be verified in writing by the City and Contractor for each soil type and group of equipment used on the project. Variation from these minimums must be approved by the agency approving the project plans

K. Foundations

Testing or Inspection of Foundations including footings, sheet piling, driven or drilled piles, drilled caissons or piers, or other types shall be performed by the City Inspector and / or MTS in accordance with the following table.

Table K FOUNDATIONS						
SCHEDULE FOR MINIMUM FREQUENCY of QA TESTING						
Test Type Test Standard Minimum Frequency of Tests						
Soil support bearing capacity	Verification of Geotechnical Report Recommendations	One verification per project. Each element or phase to be considered in Verification Report by Geotechnical Engineer.				

Section 7 METHOD OF MEASUREMENT

The amount of Passing QA events (field visits, inspections, tests or lab tests) will be counted separate from Failing QA events which will require retesting. Any unresolved Failing QA events will limit the amount of Work that the City will accept.

Section 8 BASIS OF PAYMENT

The costs paid by the City to the MTS which are the result of retesting previously failed QA events (field visits and tests or lab tests) will be deducted from Contractor's payment, as applicable and determined by the Project Manager.

Any and all testing required for retesting due to failing QA tests, or any QC testing that may be requested by the Contractor for its own use, shall be at the Contractor's additional expense. Such additional expenses for additional testing may be withheld from Contractor's pay request as agreed upon by the City and Contractor, or paid for directly by the Contractor.

End Of Standard

CITY AND COUNTY OF DENVER STATE OF COLORADO



Department of Public Works Drawings

Contract No: 201733316

19TH & 20TH 2-WAY CONVERSION

March 1, 2017

19TH AND 20TH TWO-WAY CONVERSION

CITY AND COUNTY OF DENVER

DEPARTMENT OF PUBLIC WORKS - ENGINEERING DIVISION SE 1/4 AND NE 1/4 OF SECTION 34, TOWNSHIP 3S, RANGE 68W

PROJECT NO. 2015-PROJMSTR-0000631 PWT2015-020

BEGIN HCL 20TH AVE. END HCL GRANT ST. STA. 10+94 STA. 207+63 END HCL LOGAN ST STA. 18+44 END HCL CLARKSON ST. E. 20TH AVE. STA. 13+92 END HCL 20TH PROJECT LIMITS STA. 232+50 END HCL GLENARM PL . 19TH AVE STA. 5+50.00 BEGIN HCL 19TH AVE END HCL 19TH AVE. STA. 136+09 STA. 103+87 18TH AVE BEGIN HCL LOGAN ST. BEGIN HCL GLENARM PL. BEGIN HCL GRANT ST. STA. 7+00 STA. 3+48 STA. 7+03 BEGIN HCL CLARKSON ST STA. 10+04

SUMMARY OF APPROXIMATE QUANTITIES ROADWAY TABULATIONS 11 TYPICAL SECTIONS 13 CIVIL DETAILS SURVEY CONTROL SHEETS REMOVAL PLANS 35 PROTECTED BIKE LANE PLAN INTERSECTION PLAN AND PROFILES GEOMETRY TABLES DRAINAGE PLANS 71 88 EROSION CONTROL PLANS SUMMARY OF TRAFFIC ENGINEERING ITEMS STRIPING PLANS SIGNING PLANS SIGNAL PLANS

COVER SHEET

GENERAL NOTES

INDEX OF SHEETS

AD JAN 2017

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

PROJECT LOCATION MAP



DESIGN DATA	19TH	20TH	GRANT ST	LOGAN ST
MAXIMUM DESIGN SPEED (POSTED SPEED + 5 MPH)	35 MPH	35 MPH	35 MPH	35 MPH
2012 TRAFFIC	PHV = 705	PHV = 700	PHV = 725	PHV = 460
	ADT = 6,500	ADT = 4,900	ADT = 5,500	ADT = 3,800
FORECASTED DESIGN TRAFFIC	PHV = 740	PHV = 580	PHV = 490	PHV = 480
	ADT = 7,300	ADT = 4,500	ADT = 5,300	ADT = 4,200
CLEAR ZONE DISTANCE (TANGENT, CURB AND GUTTER)(35 MPH)	4FT.	4 FT.	4FT.	4 FT.
CONSTRUCTION CLEAR ZONE (MIN 18')	14 FT.	14 FT.	14 FT.	14 FT.

EXECUTIVE DIRECTOR OF PUBLIC WORKS	2/14/17 DATE
Sesly 5 hm CITY ENGINEER	2.13.17 DATE
DIRECTOR OF ENGINEERING CAPITAL PROJECTS	_ Zlioli7
Steven O. Harren	2/13/17

	Horiz. Scale: 1:1000 City Project Manager	Vert. Scale: As Noted KIM D. BLAIR	
)	Mayid Evans		

		Sheet Revisions	
	Date:	Comments	Init.
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FEET ROADWAY

3222

2,487

202

941

1144

529 8525

FEET

1.61 MILES

	DEPARTMENT OF PUBLIC
	201 WEST COLFAX AVENUE DENVER, CO 80202
DENVER*	PHONE: (720) 913–450 ⁻ FAX: (720) 913–4544

DEPARTMENT OF PUBLIC	WORKS
201 WEST COLFAX AVENUE	
DENVER, CO 80202	
PHONE: (720) 913-4501	

$\overline{}$	As Constructed	Contract Information	Project Number	
۱ د		Contractor:		
	No Revisions:	Resident Engineer: KIM D. BLAIR	2015-PROJMSTR-0000631	
	Revised: Project Engineer: KIM D. BLAIR		FOR AD	
		Project Started: / / Accepted: / /		
	Void:	Comments:	Sheet Number 1	

CITY TRAFFIC ENGINEER

SHEET NO.

TABULATION OF LENGTH

BEGIN 2015-PROJMSTR-0000631=

STA. 103+87 ON 19TH AVE.

STA. 136+09 ON 19TH AVE.

STA. 207+63 ON 20TH AVE.

STA. 232+50 ON 20TH AVE.

STA. 3+48 ON GLENARM PL.

STA. 5+50 ON GLENARM PL.

END 2015-PROJMSTR-0000631=

BEGIN 2015-PROJMSTR-0000631=

END 2015-PROJMSTR-0000631=

BEGIN2015-PROJMSTR-0000631=

END 2015-PROJMSTR-0000631 =

BEGIN 2015-PROJMSTR-0000631=

STA. 7+03 ON GRANT ST.-(SOUTH)

END 2015-PROJMSTR-0000631 = STA. 10+94 ON GRANT ST.-(NORTH)

BEGIN 2015-PROJMSTR-0000631=

END 2015-PROJMSTR-0000631 = STA. 18+44 ON LOGAN ST.

BEGIN 2015-PROJMSTR-0000631= STA. 10+04 ON CLARKSON ST.-(SOUTH-02)

END 2015-PROJMSTR-0000631= STA. 13+92 ON CLARKSON ST.-(NORTH)

SUMMARY OF PROJECT LENGTH

PROJECT GROSS LENGTH

STA. 7+00 ON LOGAN ST.

STATION

MATERIALS

1) For preliminary plan quantities of pavement materials, the following rates of application were used:

Tack Coat Diluted Emulsified Asphalt......@ 0.1 Gals./Sq. Yd.(Diluted)
Bituminous Pavement.......@ 110 Lbs./Sq. Yd./Inch
Aggregate Base Course Class-6.............@ 133 Lbs./Cu. Ft.

- 2) Diluted emulsified asphalt for tack coat shall consist of 1 part emulsified asphalt and 1 part water.
- 3) Any layer of bituminous pavement that is to have a succeeding layer placed thereon shall be completed full width before succeeding layer is placed.
- 4) Asphalt joints shall fall on lane lines, shoulder lines or median lines, except where stated in the plans.
- 5) The Contractor shall not park any vehicles or equipment in, or disturb any areas not approved by the Engineer.
- 6) Prior to placing bituminous pavement, the paved surface shall be swept and cleaned. This will not be paid for separately, but shall be included in the cost of the Hot Mix Asphalt Pavement item.
- 7) The pavement shall be sawcut to a neat line as shown on plans. This will not be paid for separately, but shall be included in the Hot Mix Asphalt Pavement item.

Surveying

1) Prior to beginning of work on the project, the Contractor's Surveyor shall perform a survey to verify all survey control points, City of Denver Range Points, section corners, and benchmarks as shown on the Survey Control Diagram. The Contractor shall be responsible for replacing all land survey monuments disrupted by the construction activities or by negligence on the part of the Contractor. The Contractor is required to follow Colorado State Law regarding survey monuments. The Contractor shall retain a Colorado Licensed Professional Surveyor to reset any affected survey monuments. This will not be paid for separately, but shall be included in the work unless specified otherwise in Section 629. For further information contact:

Public Works Survey Department ATTN: City Surveyor 201 W. Colfax Ave. Denver, CO 80202 720-865-3121

- 2) After completion of the paving operations, the Contractor shall upgrade temporary range points with permanent range point monuments at the locations as indicated on the Land Survey Control Diagram. See Point Nos. 120, 124, and 130 (3 Total). Monuments shall meet current City and County of Denver standards.
- 3) A survey shall be deposited with the City and County of Denver per State Statute. City monument tie out sheets shall be prepared for all range points within the project and deposited with the City Surveyor.
- 4) Any person who knowingly removes, alters, or defaces any Public Land Survey Monument and/or Boundary Monument or accessory, commits a Class Two (2) misdemeanor pursuant to State Statute C.R.S. Section 18-4-508.
- 5) All stations and offsets shown on the plans are to the control lines unless otherwise noted. The use of control monuments for construction staking other than those shown on the plans or approved by the PW department is prohibited, and use of such monuments is at the Contractor's sole risk.

- 6) Proposed finished ground elevations for items to be adjusted, reset, or modified shall be field verified by the Contractor.
- 7) Bearings shown on the accompanying map are based on the assumption that the 20 foot Range Line for Washington Street between 19th and 20th Avenue bears S00°11'07"W 458.89 feet. Said Range line being monumented at both ends of Washington Street with a 3" brass cap marked "LS 1208" at 19th and 20th Avenue.
- 8) The primary benchmark used to determine elevations for this map is BM 48B, a 2" brass cap marked "BM 48B Denver City Engineering 2009". Said benchmark is located at the Southeast Corner of Clarkson and Colfax on the top of curb, 24 feet south of an inlet. NAVD88 Published elevation = 5281.85 U.S. Survey feet. All elevations were transferred by GPS RTK methods.
- 9) The basis of modified plane (GROUND) coordinates for this map is The City and County of Denver Low Distortion Transverse Mercator projection, based locally at latitude=39°45′19.0(N), longitude=104°53′53.0(W), having a false Northing of 400,000.0sft, a false Easting of 600,000.0sft with a combined scale factor of 1.0002540300. Projection provided by City and County of Denver Surveyor's office.
- 10) The U.S. Survey foot was used for all measurements on this map, pursuant to C.R.S. 38-52.103(2). Metric Conversion is: one meter equals 3937/1200 feet.
- 11) This map does not constitute a title search of Public or Private records by David Evans and Associates, Inc, or determination of title, ownership, rights-of-way, easements or other encumbrances. David Evans and Associates, Inc. recommends a complete boundary survey and title commitment for all adjacent parcels.
- 12) Date of last field inspection: July 7, 2016.

GENERAL

- 1) Height of the face of curb may be less than 6" per CCD standard at tie-in locations. Contractor shall taper curb face height per flowline grades and elevations provided on plans.
- 2) The Contractor shall be responsible for all aspects of safety including, but not limited to excavation, trenching, shoring, traffic control, and security.
- 3) The Contractor should remove materials and equipment from the roadway ROW at the close of daily operations. The traffic control plan (TCP) must include protective measures where materials and equipment may be stored in the ROW, but ensure five feet of pedestrian clearance on sidewalks. The Contractor shall not stockpile material in the clear zone of the traveled way.
- 4) The Contractor is responsible for obtaining all project permits associated with construction. The Contractor is responsible for being aware of, notifying, coordinating, and scheduling all inspections required for final approvals and project acceptance. All work, including correction work, is subject to notification and inspection requirements.
- 5) If any of the Contractor's operations destroy or damage any property, public or private, the Contractor shall promptly repair or replace such property, to the satisfaction of the Project Manager, before the City will accept or pay for the work performed under the contract. If the Contractor fails to repair or replace such property, the City, at the sole discretion of the Manager, may undertake such repair or replacement and deduct the cost of the same from amounts payable to the Contractor under the contract.
- 6) The Contractor shall be responsible for recording as-built information on a set of record drawings kept on the construction site, and available to the City Inspector at all times. Upon completion of the work, the Contractor shall submit record drawings, in an AutoCAD compatible format, to the City. The production of these documents will not be paid for separately, but shall be included in the cost of the work.
- 7) All work shall conform to current City and County of Denver Standards and Specifications. The City reserves the right to accept or reject any materials and workmanship that does not conform to the latest edition of the City Standards Specifications, or halt construction until the conflict is resolved.
- 8) Prior to the commencement of construction, all storm drain inlets, laterals, mains and other storm runoff appurtenances within the project limits shall be cleared of sediment and debris in accordance with Denver Wastewater Management Division Standards. After construction, the Contractor shall remove any sediment or debris from the storm sewer system at no cost to the City.

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Horiz. Scale: NTS Vert. Scale: AS NOTED

City Project Manager Kim D. Blair

DENVICENANS

THE MILE HIGH CITY

THE MILE HIGH CITY

DEPARTMENT OF PUBLIC WORKS

()	As Constructed	19TH & 2			CONVERSION	Project Number
	No Revisions:		GENERAL	_ NOTE	.5	2015-PROJMSTR-0000631
	Revised:	Designer:	A. MILLER	Structure	N/A	FOR AD
		Detailer:	A. MILLER	Numbers	N/A	
	Void:	Sheet Subset:	GEN NOTES		1 of 3	Sheet Number 2

- 9) Prior to final acceptance, all disturbed portions of roadway ROW shall be cleaned up and restored to their original condition, subject to City approval.
- 10) No work shall be permitted on weekends or holidays without prior authorization or unless otherwise specified. The City may restrict work in the ROW during adverse weather conditions or during periods of high traffic volume.
- 11) No cleated or tracked equipment may work in or move over paved surfaces without mats.
- 12) Protection and replacement of street improvements are the responsibility of the Contractor until these improvements are fully completed and accepted by the City.
- 13) Contractor shall coordinate the removal and reset of all benches or other RTD-owned appurtenances at bus stops with Pete Muniz (303-299-6561). RTD shall be responsible for the physical removal and reset of all appurtenances as noted. Contractor shall not be paid for this coordination but it will be considered subsidiary to the work.

PROJECT PLANS, SPECIFICATIONS, PERMITS

- 1) All material, equipment, installation and construction within the ROW shall be in accordance with the latest edition of the following standard references as applicable:
 - A. CITY AND COUNTY OF DENVER, STANDARDS AND DETAILS FOR ENGINEERING DIVISION
 - B. STORM DRAINAGE AND SANITARY SEWER CONSTRUCTION DETAIL AND TECHNICAL SPECIFICATIONS
 - C. DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS FOR CONSTRUCTION GENERAL CONTRACT CONDITIONS
 - D. WASTEWATER MANAGEMENT DIVISION STANDARD DETAILS
 - E. TRAFFIC STANDARD DRAWINGS AND TRAFFIC ENGINEERING SERVICES PROJECT SPECIALS
 - F. COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND STANDARD PLANS, (M&S STANDARDS)
 - G. FEDERAL HIGHWAY ADMINISTRATION (FHWA), MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS AND THE COLORADO SUPPLEMENT THERETO
 - H. AMERICAN ASSOCIATION OF STATE AND HIGHWAY TRANSPORTATION OFFICIALS (AASHTO) ROADSIDE DESIGN GUIDE
- 2) The Contractor shall have onsite at all times: one copy of the approved plans, one copy of the appropriate standards and specifications, and copies of any permits and extension agreements needed for the job.
- 3) If during the construction process, conditions are encountered which could indicate a situation that is not identified on the plans or specifications, the Contractor shall contact the Project Manager immediately.

UTILITIES

- 1) The type, size, location, and number of all known underground utilities are approximate when shown on the drawings, unless otherwise noted. It shall be the responsibility of the Contractor to verify the existence and location of all underground utilities along the route of the work before commencing new construction. Responsibilities for the relocation of utility lines are as noted in the Project Special Provisions. The Contractor shall cooperate with companies trying to coordinate the relocation effort. Lines not relocated shall be protected by the Contractor in place. The Contractor shall contact the Utility Notification Center of Colorado (UNCC) at 1-800-922-1987, at least 2 working days prior to beginning excavation or grading.
- 2) The Contractor shall be responsible for protecting utilities during construction and shall hold the City and its Engineers harmless for damages arising from the Contractor's failure to adequately protect existing utilities. Damaged utilities shall be repaired by and at the expense of the Contractor.
- 3) The Contractor is required to reset, adjust, or replace any utilities that are impacted by construction and are designed to remain within the project limits.
- 4) Locations for potholing shall be as approved by the Project Manager.

REMOVALS, EXISTING ITEMS, SAW CUTTING

- 1) All items to be removed and not reset shall become the property of the Contractor and shall be removed from the site and disposed of properly.
- 2) Signs and / or signal equipment designated as removal items shall be carefully removed and delivered by the Contractor to the City Yard at 5440 Roslyn Street, Building E. Any material designated for salvage that is damaged after removal shall be repaired or replaced by the Contractor to the satisfaction of the Engineer. No separate payment shall be made for loading, hauling, unloading, or placing salvaged materials in the City Yard.
- 3) Where it is required to remove existing concrete or asphalt, cutting shall be done to a neat work line to full depth using a saw, cutting wheel, or other method approved by the Project Manager. This will not be paid separately, but shall be included in the work.
- 3) Removal of existing curb and gutter, sidewalk, driveways, curb cuts, and other concrete items that are attached or adjacent to other concrete items shall be removed to the nearest joint, as needed to avoid damaging the remaining concrete items. The Contractor shall be responsible for damage to adjacent sidewalk during curb and gutter removal and shall replace damaged sections at no additional cost to the project.
- 4) The Contractor is required to reset, adjust, or replace any utilities, landscaping, sprinkler systems, signs, sidewalks, etc. that are impacted by construction and are not designated to be removed.
- 5) The Contractor shall use aggregate base course or asphalt millings to fill area left by removal of driveway or curb ramp prior to placement of new sidewalk, driveway or curb ramp. This work shall not be measured or paid for separately, but will be considered incidental to the work.

PAVEMENT

- 1) A tack coat is required prior to the placement of subsequent lifts of HMA.
- 2) Where new construction is to abut existing pavement, the existing pavement shall be removed to a neat vertical line to create a clean construction joint.
- 3) Patch asphalt pavement as necessary to join new gutters with existing pavement.
- 4) When an existing asphalt street is cut, the street must be restored to a condition equal to or better than its original condition. The existing street condition shall be documented before any cuts are made. Patching shall be done in conformance with the project standards. The finished patch shall blend smoothly into the existing surface. All large patches shall be paved with an asphalt lay-down machine.

EARTHWORK AND EXCAVATIONS

- 1) The Contractor shall limit construction activities to those areas within the Limits of Disturbance and toes of slope as shown on the plans. Any disturbance beyond these limits shall be restored to original conditions at the expense of the Contractor.
- 2) The depth of reconditioning and for the bases of cuts and fills shall be 6 inches. The project specified moisture density control shall be applied for the specified depth. The excavation required for compaction of bases of cuts and fills will be considered subsidiary to that operation and will not be paid for separately.
- 3) During each phase of construction, the Contractor shall shape to drain and compact the work area to a uniform cross-section. Eliminate all ruts and low spots that could hold water. Areas and facilities subjected to flooding, regardless of the source of water, shall be promptly dewatered and restored at no additional cost to the City.
- 4) All work shall be properly backfilled prior to the end of the workday. No open holes are allowed overnight.
- 5) Where consistent with safety and space considerations, excavated material is to be placed on the uphill side of trenches.
- 6) Material removed from any portion of the roadway prism must be replaced in like kind with equal or better compaction. No segregation of materials will be permitted.
- 7) All excavation required for placement of curb, gutter, sidewalk, curb ramps, driveways, or pavement patching shall not be measured or paid for separately but will be considered incidental to the work.

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Horiz. Scale: NTS Vert. Scale: AS NOTED

City Project Manager Kim D. Blair

DENVER® THE MILE HIGH CITY

DEPARTMENT OF PUBLIC WORKS

s	As Constructed	19TH & 2			CONVERSION	Project Number
	No Revisions:	GENERAL NOTES			2015-PROJMSTR-0000631	
	Revised: Designer: A. MILLER		Structure N/A		FOR AD	
ı		Detailer:	A. MILLER	Numbers	N/A	
	Void:	Sheet Subset:	GEN NOTES		2 of 3	Sheet Number 3

- If concrete replacement is necessary, the entire affected slab or panel must be replaced.
- 2) The contractor shall select and use a boxout at catch basins, manholes, and other roadway appurtenances of similar and larger size. See CCD STD DWG NO. 11.5.
- 3) Sidewalk shall be Class P Concrete. The use of % In. (#67) top size aggregate is allowed.
- 4) Bender boards (two inch minimum thickness) shall be used on all curves of less than 75 foot radius.
- 5) Curb and gutter angle breaks shall be smoothed with a 1 ft. radius unless otherwise shown on the plans.
- 6) The Contractor shall install ½ in. expansion joint material between the curb, curb and gutter, and the sidewalk, and around inlet structures or blockouts or as directed by the Project Manager.
- 7) Curb ramps shall be constructed using truncated domes as shown in the City and County of Denver Standard Details. Truncated domes shall not be paid separately, but shall be included in the cost of the concrete curb ramp.
- 8) The Contractor shall provide a 2 ft. curb and gutter transition at each end of inlets.
- Contractor shall coordinate planned jointing for sidewalk with CCD project manager prior to sidewalk construction.

LANDSCAPING

- The Contractor shall not spray, cut, or trim trees or other landscaping within the ROW unless such work is otherwise specified in this contract or clearly indicated on the approved plans.
- Seeding, sodding, and planting in the ROW shall be as specified or otherwise approved by the City. Construction, maintenance, and watering requirements shall conform to City Standard Specifications.
- 3) Per City Code, all tree removals in Denver limits must be performed by the property owner or a tree contractor licensed by Denver Forestry (including trees in ROW and on private property). For a current list of Licensed Tree Contractors, visit www.denvergov.org/Forestry.
- 4) For Forestry-approved tree removals in public Right(s) Of Way: A tree removal permit issued by the Office of the City Forester is required prior to removal. In order to obtain free removal permit, contact Forestry (Forestry@denvergov.org) with name of the licensed contractor or property owner performing removal. Include D-Log number (2015-PROJMSTR-0000631) when requesting removal permit.
- 5) For trees on private property: A Forestry-issued tree removal permit is not required prior to removal. However, per City Code, all tree removals in Denver must be performed by property owner or a tree contractor licensed by the Office of the City Forester.
- 6) Contractor shall contact adjacent property owner(s) when existing trees in public Rights of Way or private property are to be impacted by proposed construction.
- 7) Existing trees to be preserved in public Right Of Way shall be protected per Forestry standards & practices. Tree protection shall be installed prior to issue of demolition permit, approved by Forestry, and shall remain in place throughout construction. No construction activities or storage of materials shall take place within tree protection zones without prior written authorization from the Office of the City Forester.

8) If pruning for construction clearance is necessary, contractor shall consult with Forestry staff prior to commencement of work.

ENVIRONMENTAL

- 1) Contractor shall take reasonable measures to prevent particulate matter from becoming airborne and to prevent the visible discharge of fugitive particulate emissions beyond the property on which the emissions originate. The measures taken must be effective in the control of the fugitive particulate emissions at all times on the site, including periods of inactivity such as evenings, weekends, and holidays as well as any other period of inactivity.
- 2) Any fill material or soils to be moved to and placed on CCD-owned property or placed on real property to be transferred to the CCD must be free of known contamination (observed or previously documented) and be acceptable for unrestricted residential use. Contact Dave Erickson, Denver Environmental Health (720-865-5433) for clarification, if needed, regarding this CCD requirement.
- 3) If unknown/unidentified underground storage tanks, drums, odorous soil, stained soil, asbestos-cement pipe, transite, building debris or waste materials are encountered during the project, the Contractor shall immediately stop work in the area of the discovery until Denver Environmental Health (DEH) makes a determination of how to proceed. The Contractor shall immediately notify DEH of the discovery via the phone number 720-460-1706.
- 4) Noise control. Exempted hours for construction in the City and County of Denver are from 7 A.M. to 9 P.M. Monday through Friday and 8 A.M. to 5 P.M. on Saturdays and Sundays per Sections 36-6.(B)(7) and 36-7.(5)A., B. and C. of Chapter 35 Noise Control, Denver Revised Municipal Code (DRMC). If there is an anticipated need to work outside of the exempted hours for construction: 1) The Contractor will need to make a request for a nighttime noise variance as allowed for in section 36-7.(5)C. of the DRMC and 2) the variance process needs to be started a minimum of two to three months prior to the desired start date of any work needing to occur outside of exempted hours. Any noise variance questions should be directed to Paul Riedesel, Department of Environmental Health, Denver Community Noise Program, (Phone 720-865-5410: Fax 720-865-5532) A minimum of three months prior to the start of the project.

MISCELLANEOUS

- 1) It is estimated that 280 days of Traffic Control Management will be required on this project.
- 2) It is estimated that 120 days of Traffic Control Inspection will be required on this project.
- 3) It is estimated that 7500 hours of Flagging will be required on this project.
- 4) It is estimated that 1 Sanitary Facility will be required on this project.
- 5) It is estimated that 1 LS Public Information Services will be required on this project.
- 6) It is estimated that **80 hours** will be required for **potholing**. The Contractor shall be responsible for contacting and coordinating with the appropriate utility representatives to be onsite during potholing and shall likewise be responsible for determining the type and location of underground utilities as maybe necessary to avoid damage thereto. The Contractor shall refer to the utility specification for additional requirements.
- 7) No Right-Of-Way acquisition will be needed for this project. All work will be completed entirely within the existing Right-Of-Way.

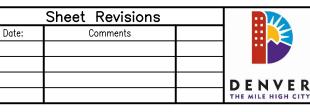
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City Project Manager Kim D. Blair

AND ASSOCIATES INC.



DEPARTMENT OF PUBLIC WORKS

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		Detailer:	A. MILLER	Numbers	N/A	
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INDEX	CONTRACT	CONTRACTITEM	UNIT	ROADWAY	חפת	AINAGE		RAFFIC				SE BID CT TOTALS		O ALT 1 CT TOTALS
BOOK PAGE SH	ITEM NO.	CONTRACT ITEM		PLAN AS CONST.	PLAN	AS CONST.	PLAN				PLAN	AS CONST.	PLAN	AS CONST.
BOOK PAGE SF		Removal of Inlet	ГА	PLAN AS CONST.		AS CONST.	PLAN	AS CONST.				AS CONST.	PLAN	AS CONST
	I		EA		15						15		'	
		Removal of Pipe	LF	1057	121						121		'	
		Removal of Sidewalk	SY	1057							1057		 	
		Removal of Curb and Gutter	LF	2142							2142		'	
		Removal of Concrete Curb Ramp	SY	320							320		'	
		Removal of Brick Pavers	SY	179							179		<u> </u>	
	I	Removal of Concrete Pavement	SY	83							83		'	
		Removal of Asphalt Mat	SY	2699							2699		'	
		Removal of Ground Sign	EA				108				108		<u> </u>	
	I	Removal of Sign Panel	EA				110				110		117	
		Removal of Traffic Signal Equipment	LS				1				1		1	
	203-01597		HR	80							80			
	203-01598	Potholing (Special)	EA				14				14		20	
	208-00035	Aggregate Bag	LF		29						29		'	
	208-00045	Concrete Washout Structure	EA		1						1		'	
	208-00053	Storm Drain Inlet Protection (Type 1)	EA		18						18			
		Storm Drain Inlet Protection (Type 2)	EA		9						9		'	
			DAY		30						30		'	
	210	Reset Trash Can	EA	3							3			
	210	Reset Newspaper Stand	EA	2									'	
	210	Reset Pedestrian Handrail	LF	30							30		'	
		Reset Sign Panel	EA				115				115		119	
			EA				1						113	
		Reset and Modify Traffic Signal Mast Arm	EA				2						'	
		Reset Wiring	EA				5				5		\vdash	
		Reset Fire Preemption Unit	EA				4				3		'	
	I						'						'	
		· · · · ·	EA	47			3				3		 '	
		Reset Pull Box	EA	17							17		'	
	210	Reset Structure (Special) (ETS)	EA	2							2		'	
			LF	10							10		 	
		Reset Valve	EA	1									'	
	I	Adjust Manhole	EA	6							6		'	
		Modify Manhole	EA		4						4		<u> </u>	
		Adjust Valve Box	EA	17							17		'	
	210-04060	Adjust Water Meter	EA	4							4		'	
	212	Landscape Restoration	SF	6000							6000			
		Aggregate Base Course (Class 6)	TON	497							497		'	
		Hot Mix Asphalt (Grading S)(100)(PG 64-22)	TON	34							34		'	
	403	HBP Patch/Overlay	SY	1384							1384		'	
		Emulsified Asphalt (Slow Setting)	GAL	4							4			
		Concrete Pavement (8 Inch)	SY	67							67		'	
		Concrete Pavement (11 Inch)	SY	155							155		'	
		Drilled Caison (Special) (36 Inch)	LF				109				109		148	
		15 Inch Reinforced Concrete Pipe	LF		160						160		'	
		18 Inch Reinforced Concrete Pipe	LF		305						305		'	
		24 Inch Reinforced Concrete Pipe	LF		5			1			5	1		
	604-	CCD Type 14 Inlet, 6'	EA		15						15		'	
	604-	CCD Type 14 fillet, 0	EA		2						2		'	
	604-	CCD Type 16, (Single) CCD Type 16 (Valley) (Triple)	EA		1		-	+ +	+ +		1			
	604-	Manhole Slab Base (4 Foot) (Flat Top)	EA										'	
					11						11		'	
	604-	Manhole Slab Base (4 Foot)	EA		2			+		+ +	2		 '	
	604-	Manhole Slab Base (5 Foot) (Flat Top)	EA		1						1		'	
	I	, ,	SY	932							932		'	
		Concrete Sidewalk (6 Inch)	SY	941				1			941		<u> </u>	
		Concrete Curb Ramp	SY	301							301		'	
		Detectable Warnings	SF	10							10		'	
	608-00050	Brick Pavers (Special)	SF	1231							1231		'	

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DEPARTMENT OF PUBLIC WORKS

As Constructed				CONVERSION	Project Number
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Revised:	Designer:	A. MILLER	Structure	N/A	FOR AD
	Detailer:	A. MILLER	Numbers	N/A	
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BOOK PAGE SHEET						PLAN	AS CONST.	PLAN	AS CONS	ST. PLAN	AS CONST.								PLAN	AS CONST.	PLAN	1
		Bituminous Sidewalk			TON	35													35			
	1	Curb Type 2 (Section B)			LF	59													59			
		Curb and Gutter Type 2 (Section II-B)			LF	2149													2149			+
	1	Curb (Precast) (Special) (Cycletrack) Delineator (Flexible) (Type 1)			LF EA	910				17									910 17			
		2 Inch Electrical Conduit (Plastic)			LF					740									740		950	
		3 Inch Electrical Conduit (Plastic)			LF				1	720									720		1130	+
		Type One Pull Box			EA					4									4		1130	
	1	Type Two Pull Box			EA					9									9		13	
		Type Three Pull Box			EA					1									1		3	+
	613-10000				LS					1									1		1	
	613-13000	Luminare (LED)			EA					4									4		8	
	613-40010	Light Standard Foundation			EA					0									0		1	T
	613-50150	Secondary Service Pedestal			EA					1									1		2	
		Luminare High Pressure Sodium (250 Wat	t)		EA					4									4			
		Sign Panel (Class I)			SF					1110									1110		1167.5	- 1
	1	Steel Sign Post (2 Inch x 2 Inch Tubing)			LF					1791									1791		1750.5	
		Pedestrian Signal Face (16) (Countdown)			EA					16									16		24	+
	1	Traffic Signal Face (LED) (12-12-12)			EA					40									40		51	
		Traffic Controller Cabinet			EA					1									1		2	
		Pedestrian Push Button			EA				-	2									2			+
		Fire Preemption Unit			EA					1									1 2		3	
		Fire Preemption Unit and Timer Intersection Detection System (Camera)			EA EA					2									2		3	
		Flashing Beacon			EA					1									1			+
		Traffic Signal-Light Pole Steel (Install Only	١		EA					0									0		1	
		Traffic Signal-Light Pole Steel (1 Mast Arm		nlv)	EA					8									8		11	
		Traffic Signal Pole Aluminum	ij (motan on	,,	EA					1									1			+
	1	Telemetry (Field)			EA					1									1		2	
		Traffic Signal Controller (SS) (FA) (8)			EA					1									1		2	
		Test Fiber Optic Cable			LS					1									1		1	T
	620-00020	Sanitary Facility			EA	1													1			
	625-00000	Construction Surveying			LS	1													1			
	626-00000	Mobilization			LS	1													1			
		Public Information Services			LS	1													1			
		Epoxy Pavement Marking			GAL					84									84		90	\perp
	l	Preformed Thermoplastic Pavement Marl			SF					1093									1093		1014	
		Preformed Thermoplastic Pavement Marl			SF					7298									7298		7828	
		Preformed Thermoplastic Pavement Marl	ting (Special	l)	SF					2588									2588			+
	l	Survey Monument (Type 6)			EA	9													9			
	629- 630-00000	Survey Monument			EA	3				7500									3 7500			
		Uniformed Traffic Control			HR HR					88									88		96	+
		Traffic Control Inspection			DAY					120									120		30	
	l	Construction Traffic Control (Special)			LS					1 1 1									1		1	
		Traffic Control Management			DAY			1	+	280									280			+
		Barricade (Type 3 M-A) (Temporary)			EA					25									25			
		Barricade (Type 3 M-B) (Temporary)			EA					20									20			
		Construction Traffic Sign (Panel Size A)			EA					350									350			+
		Construction Traffic Sign (Panel Size B)			EA					90									90			
	630-80344	Construction Traffic Sign (Special)			SF					700									700			\perp
		Portable Message Panel			EA					6									6			
		Advance Warning Flashing (B Flash Arrow	Panel (B Ty	')	EA					4									4			
		Drum Channelizing Device			EA					500									500			4
		Concrete Barrier (Temporary)			LF					400									400			
	l	Traffic Cone			EA					400									400			
	630-80384	Tubular Marker			EA					400									400			Т
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		630-86800	Traffic Signal (Temporary)	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		2					2			

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201 WEST (COLFAX AVENUE
DENVER,	CO 80202
PHONE: (7	20) 913-4501
FAX: (72	0) 913–4544

As Constructed	19TH & 2		Project Number			
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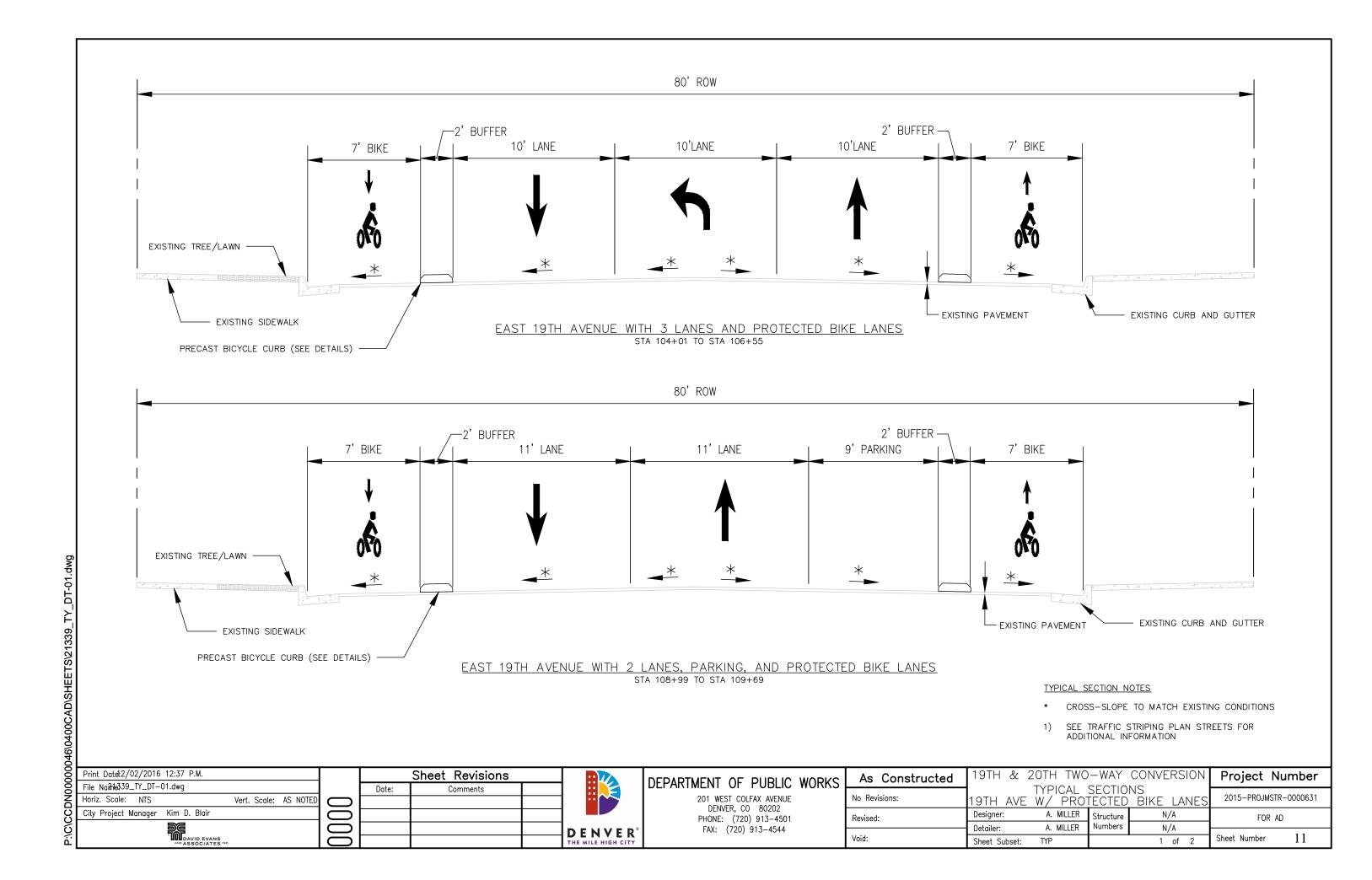
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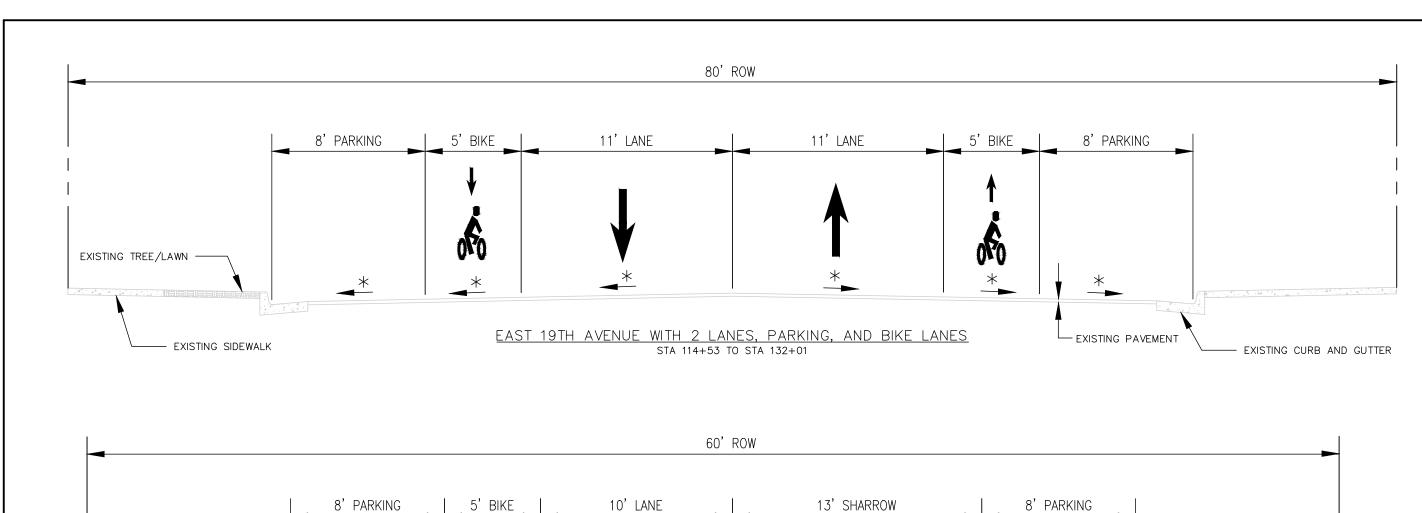
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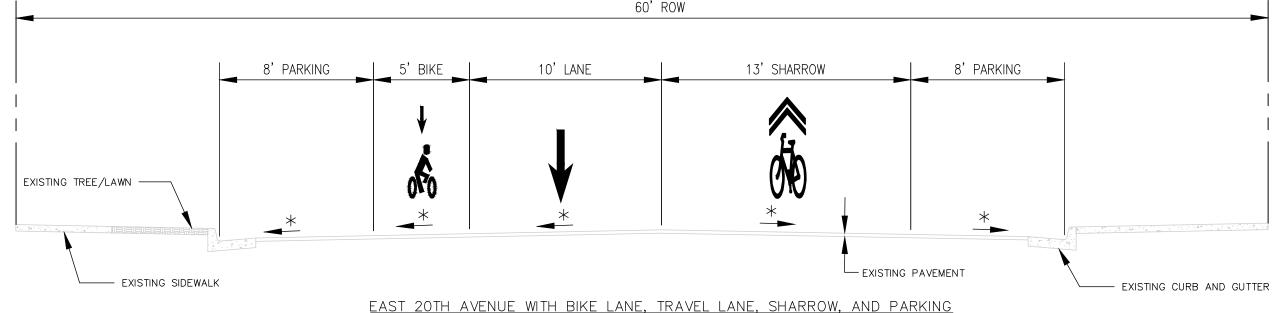
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DEPARTMENT OF PUBLIC WORKS 201 WEST COLFAX AVENUE

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TYPICAL SECTION NOTES

- * CROSS-SLOPE TO MATCH EXISTING CONDITIONS
- 1) SEE TRAFFIC STRIPING PLAN STREETS FOR ADDITIONAL INFORMATION

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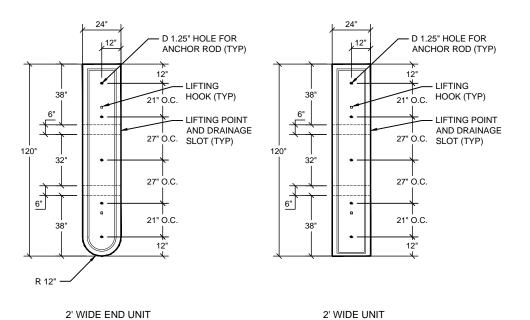
- 1. Office of the City Forester Tree Retention and Protection Specifications shall be followed throughout duration of project.
- 2. Damage to protected trees is subject to penalty per City Ordinance.
- 3. Tree protection shall be installed prior to commencement of demolition/construction activities, approved by Office of the City Forester staff, and shall remain in place until Certificate of Occupancy is issued by the City & County of Denver.
- 3. Once approved by the Office of the City Forester, the Tree Protection Zone shall not be resized, modified, removed, or altered in any manner without prior written approval.
- 4. Entrance/access to the Tree Protection Zone is not permitted without prior written approval from the Office of the City Forester.
- 5. No materials, debris, equipment, or site amenities shall be stored within the Tree Protection Zone without prior written approval from the Office of the City Forester.
- 6. While tree protection fencing is in place, trees shall be deep-root watered at an interval of once per week when temperatures are at or above 50-degrees F. Trees shall be watered at the rate of 10 gallons per inch caliper.
- 7. Minimum Tree Protection Zone, Area 1 fencing shall be "orange plastic safety fencing," min. 48" in height, top secured to metal T-posts with 12-gauge wire woven through top of fencing for entire length.
 - Heavy duty T-posts shall be placed so that wire & fence are taut.
 - Chain link fencing is recommended and may be required by the Office of the City Forester where heavy construction activity is adjacent to
 - "Tree Protection Zone" signs shall remain in place as posted by Office of the City Forester and shall be maintained in the condition in which they were installed.

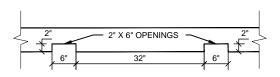
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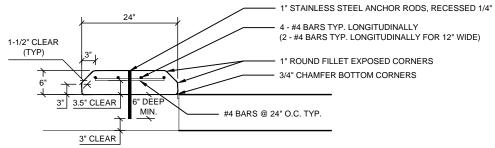
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ပ္ပ	City Project Manager Kim D. Blair				PHONE: (720) 913–4501	Revised:	Designer:	A. MILLER	Structure	N/A
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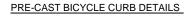


LIFTING POINT AND DRAINAGE SLOT SECTION



DRILL & EPOXY SMOOTH 1" ANCHOR RODS IN CONCRETE PAVEMENT. ANCHORS SHALL BE A MINIMUM OF 3" CLEAR FROM ALL CONCRETE PAVEMENT JOINTS. IF AHNCHOR ROD PLACEMENT CONFLICTS WITH PAVEMENT JOINT, THAT ANCHOR ROD SHALL NOT BE INSTALLED. IF MORE THAN ONE ANCHOR ROD PER CURB UNIT CONFLICTS WITH PAVEMENT JOINT, THE CONTRACTOR SHALL CONTACT THE ENGINEER.

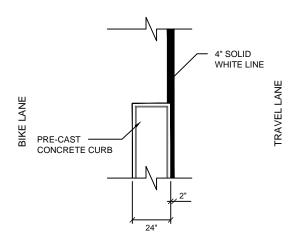
CROSS SECTION AT PINS (CONCRETE PAVEMENT)



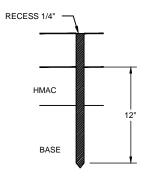


TOP AND SIDES OF UNITS 1/2" CHAMFER ON ALL NON-ROUNDED EXPOSED CORNERS OF UNITS

UNIT CROSS SECTION



PRE-CAST BICYCLE CURB PLACEMENT



DRIVE SMOOTH 1" STAINLESS STEEL ANCHOR RODS @ 2'-0" OC IN HMAC PAVEMENTS TO 12" DEPTH

HMAC OPTION

NOTES:

- SEE SIGNING DETAILS FOR ADDITIONAL INFORMATION ON FLEXIBLE DELINEATORS.
- SEE SIGNING PLANS FOR ADDITIONAL INFORMATION ON FLEXIBLE DELINEATOR PLACEMENT.

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City Project Manager Kim D. Blair				
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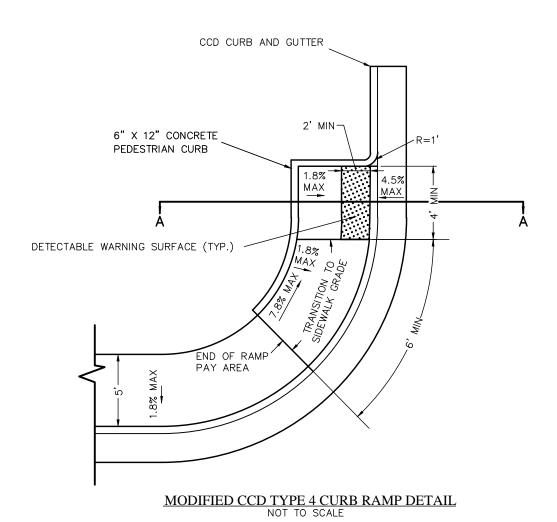
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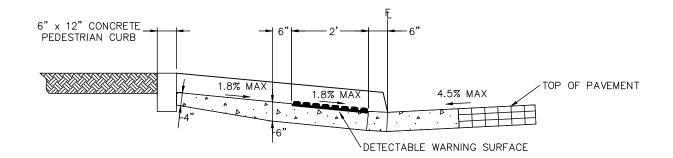
201 WEST COLFAX AVENUE DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544

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	Revised:	Designer:	A. MILLER	Structure	N/A	FOR AD
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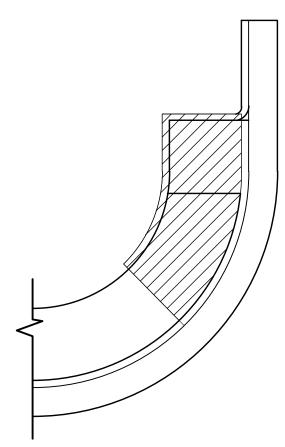
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SECTION A - A

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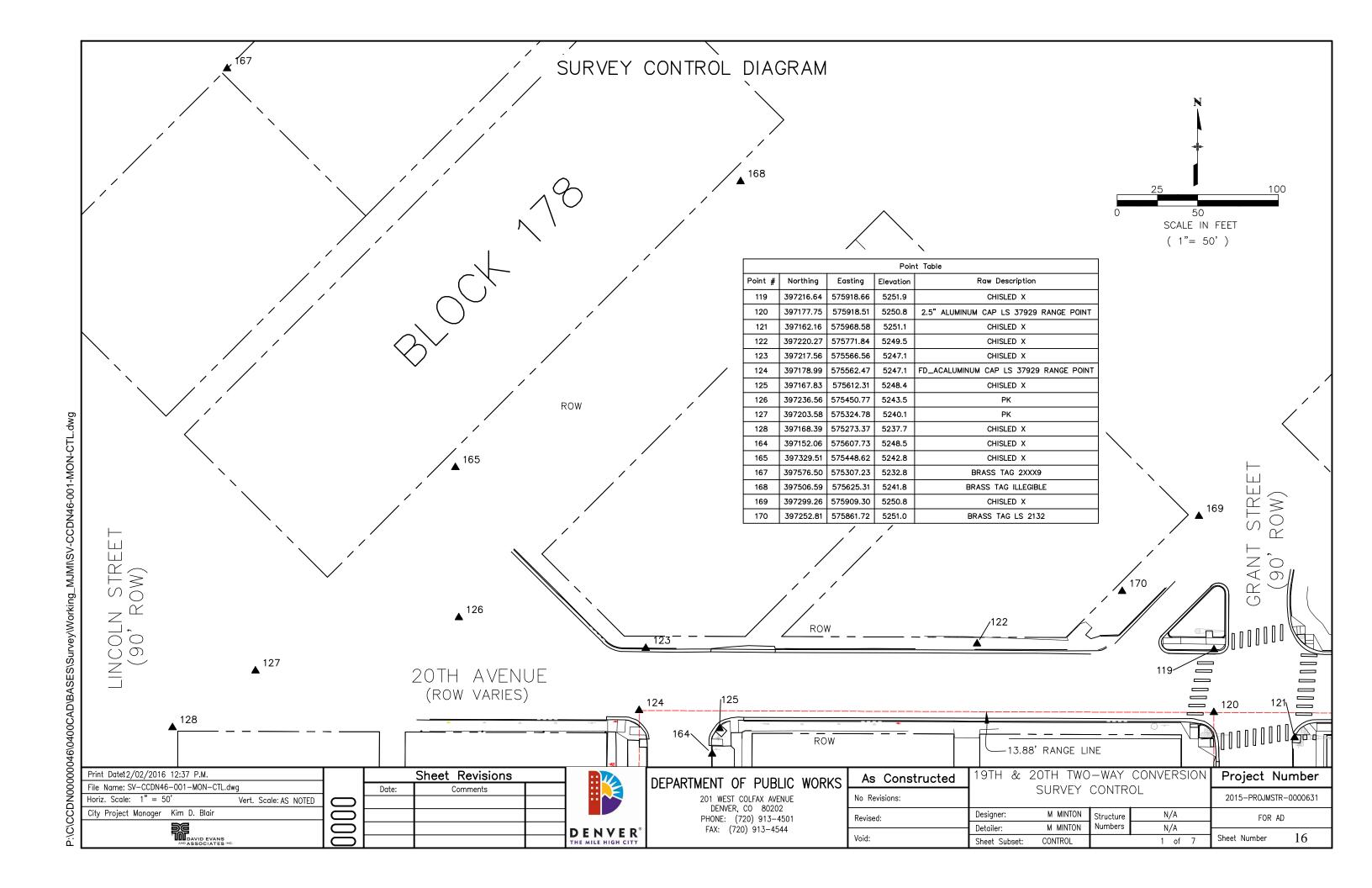
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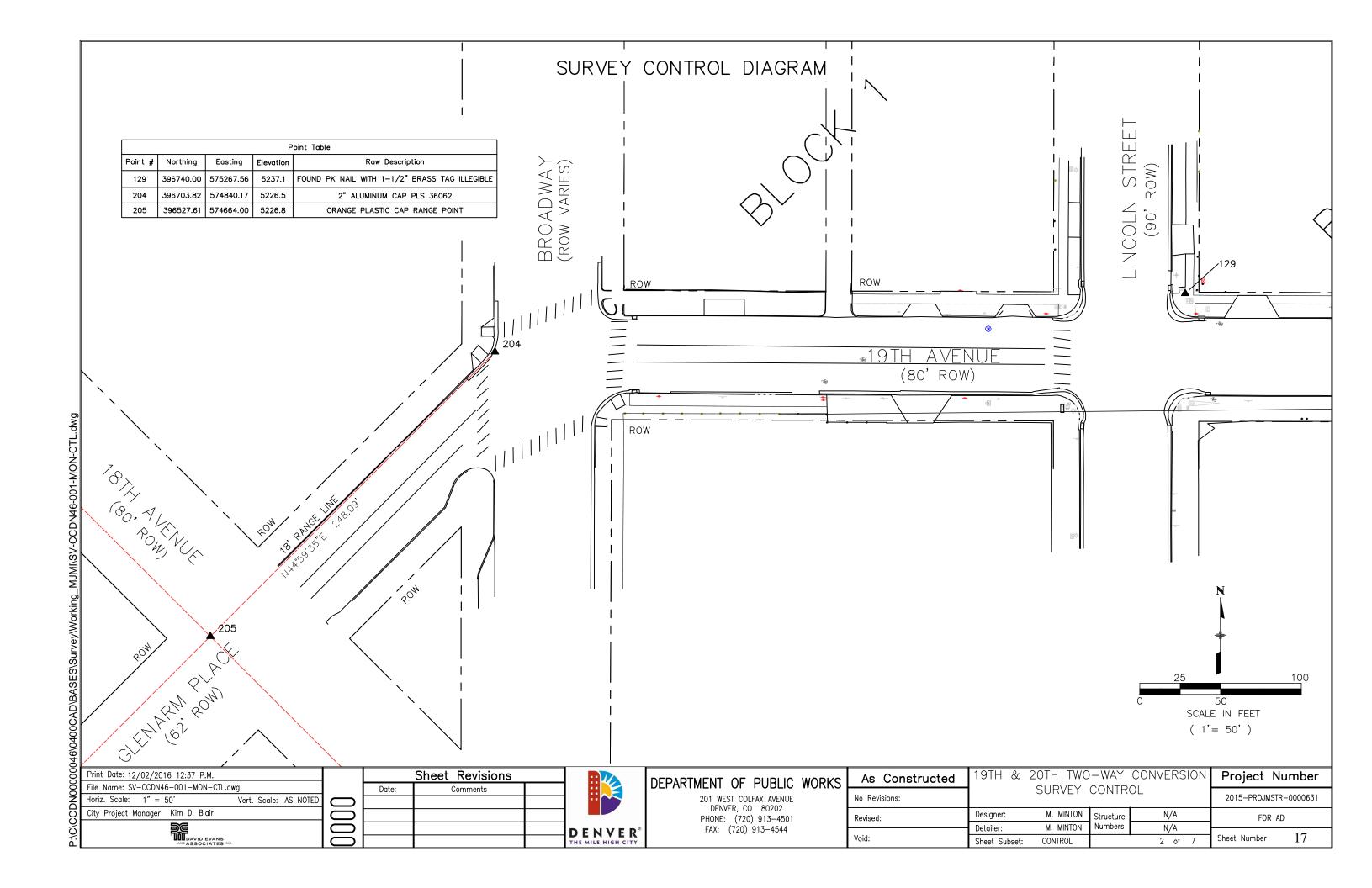


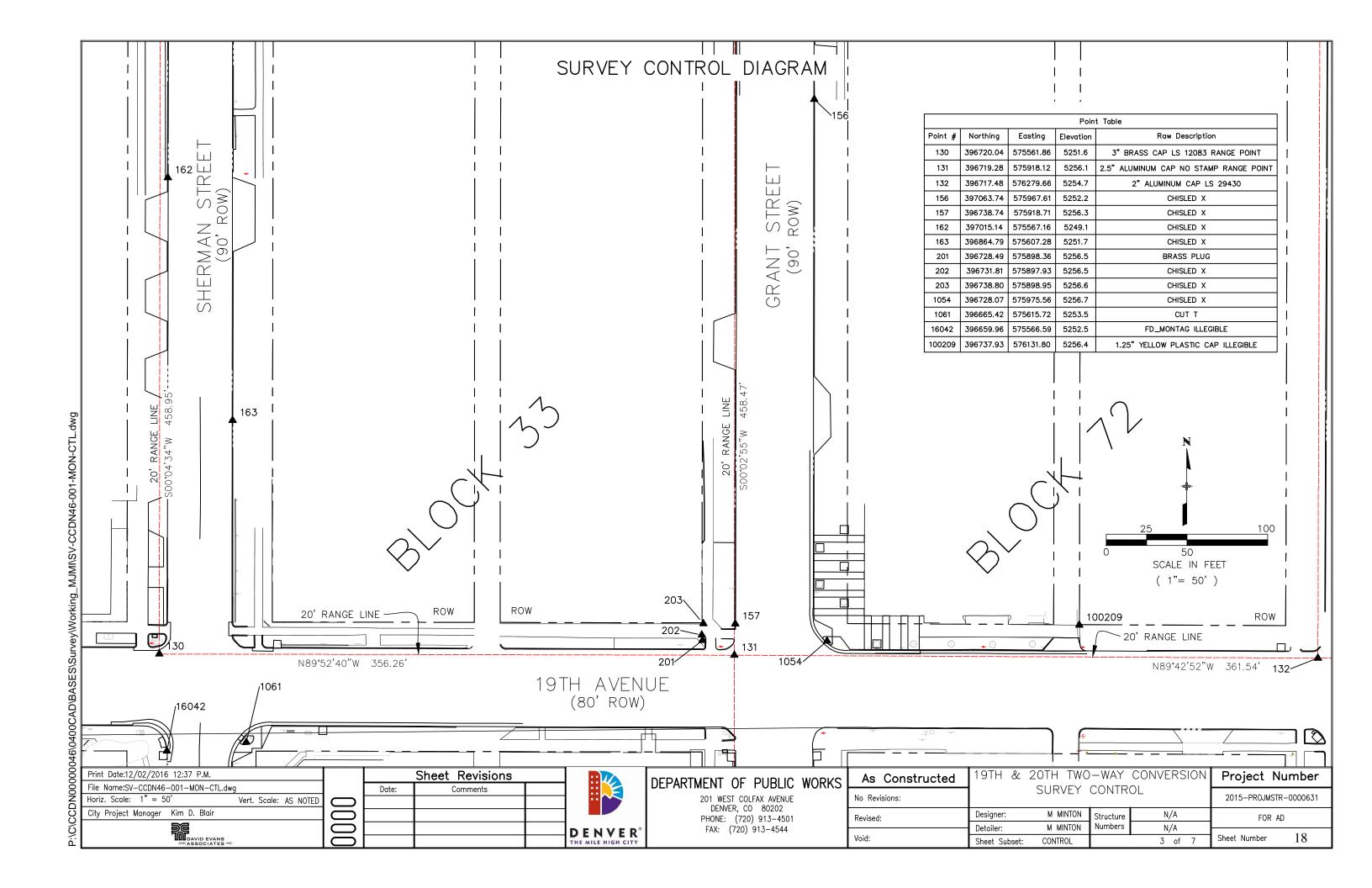
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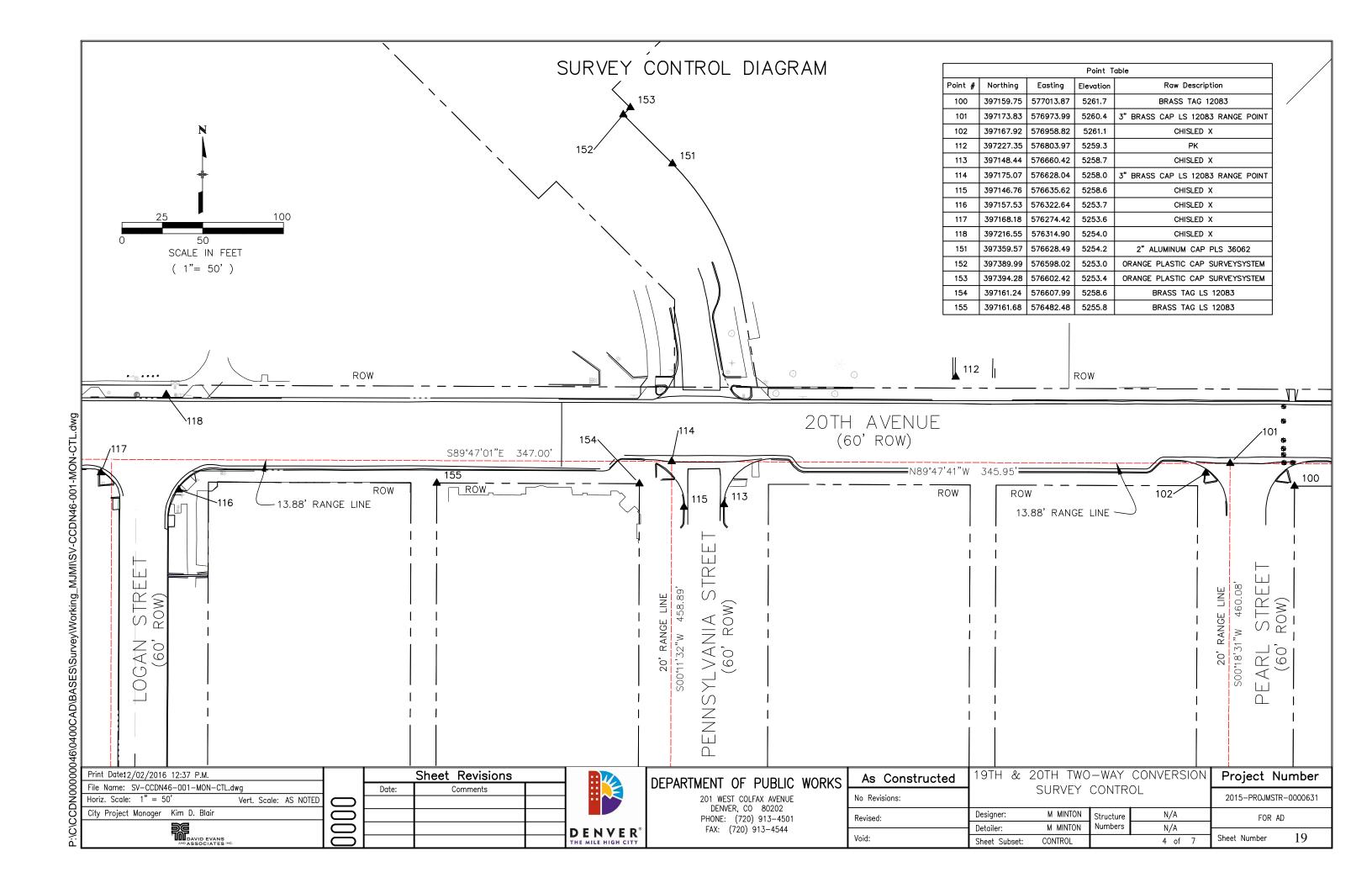
201 WEST COLFAX AVENUE DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544

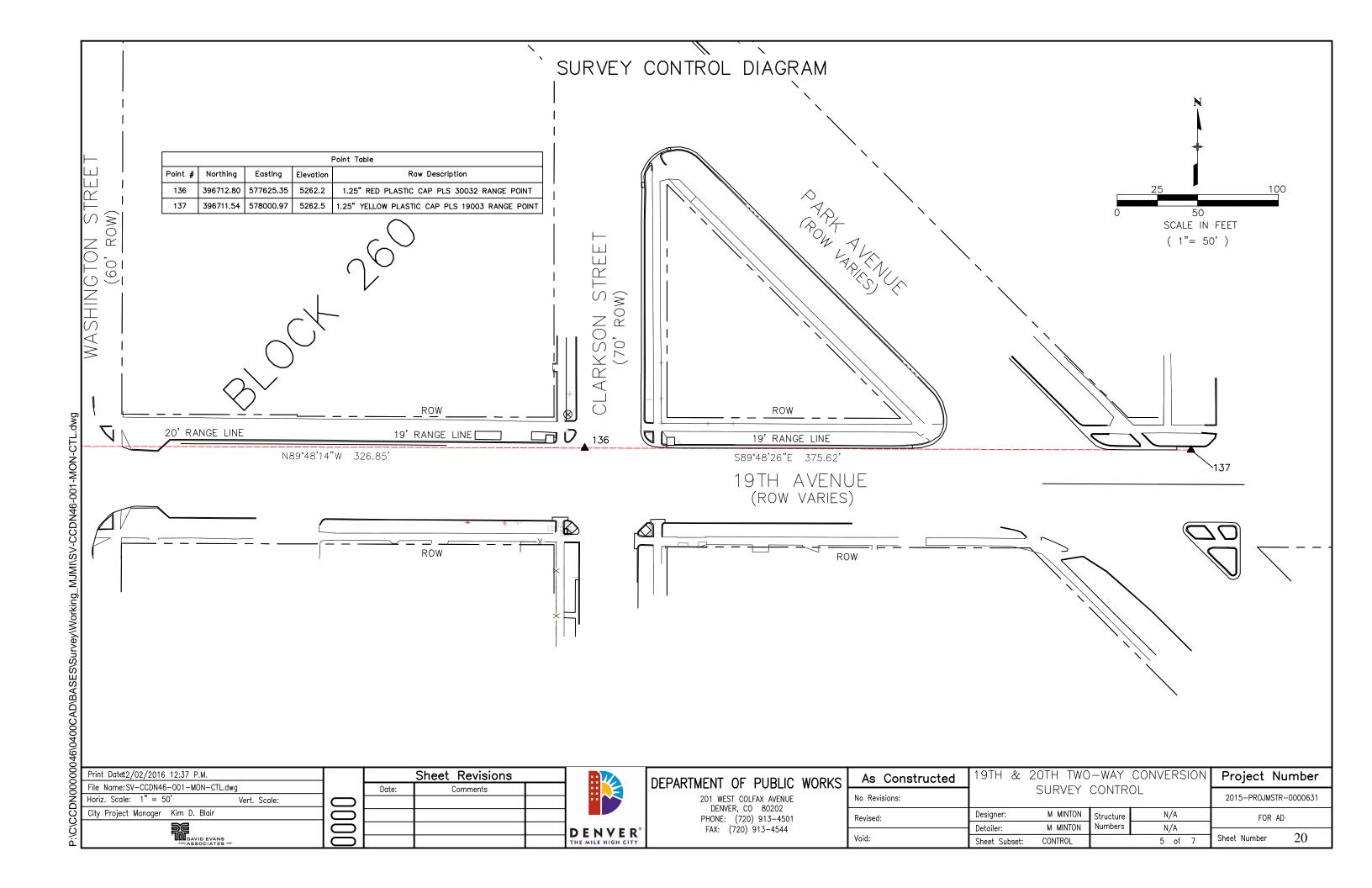
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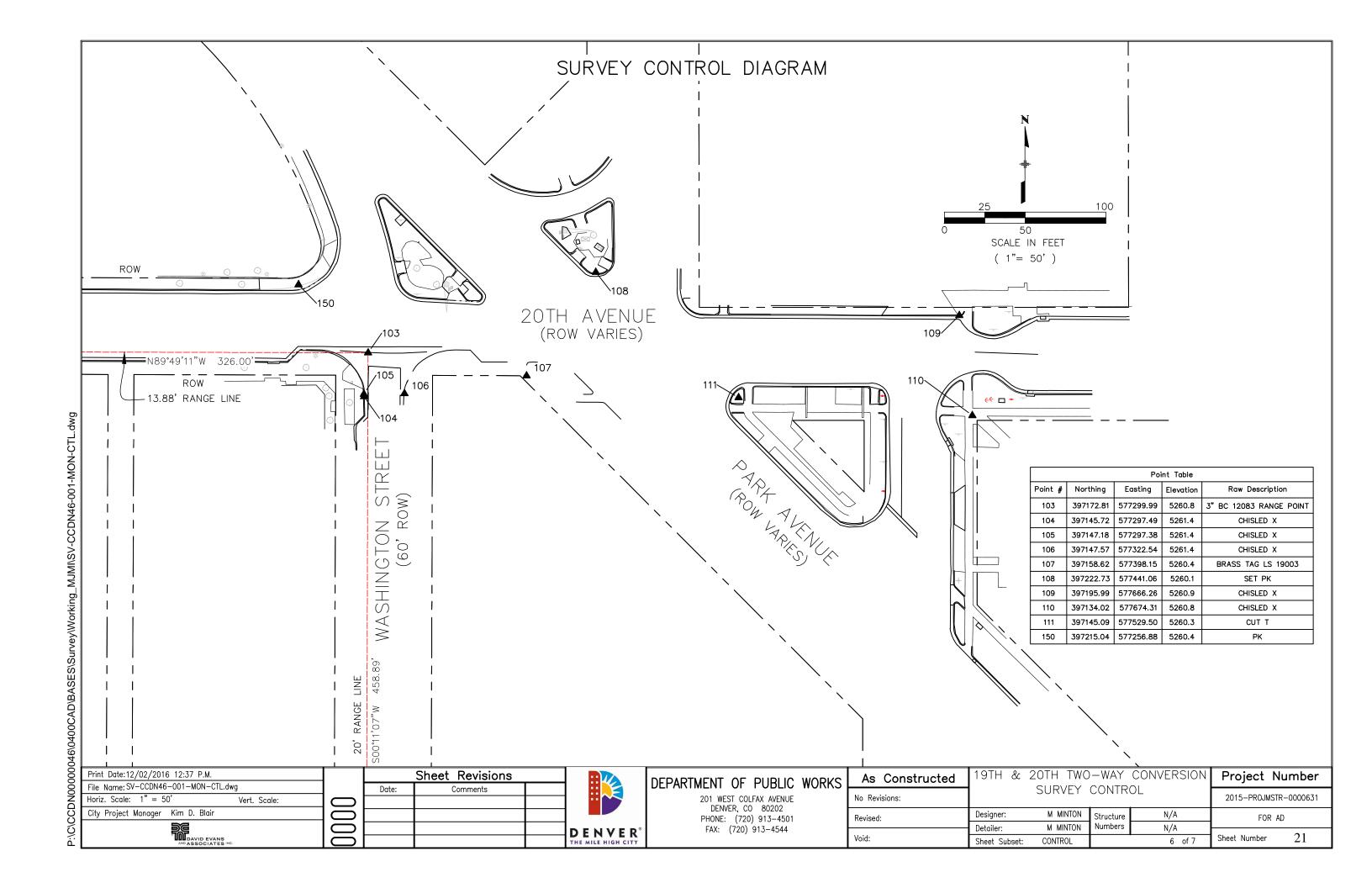


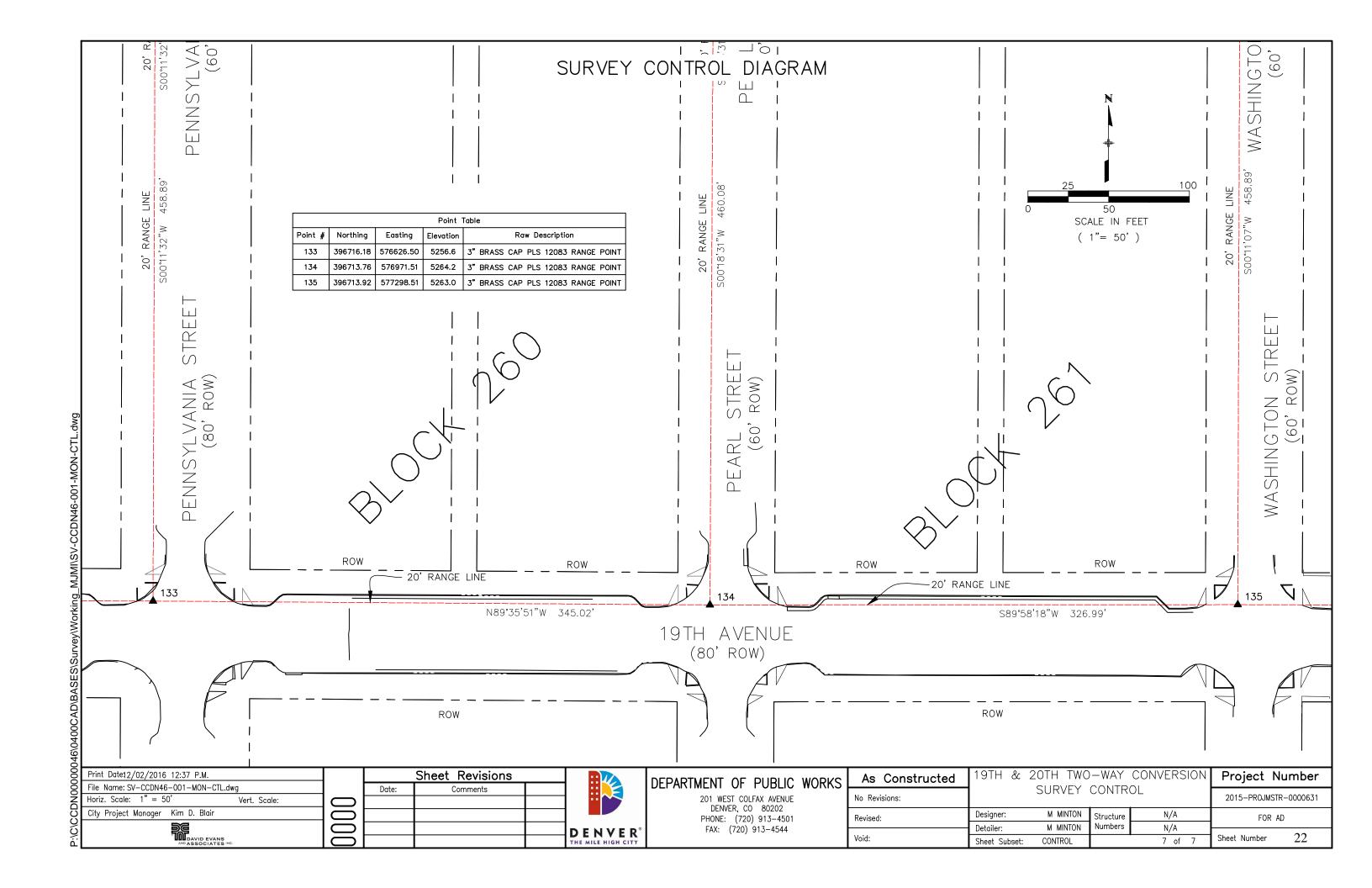


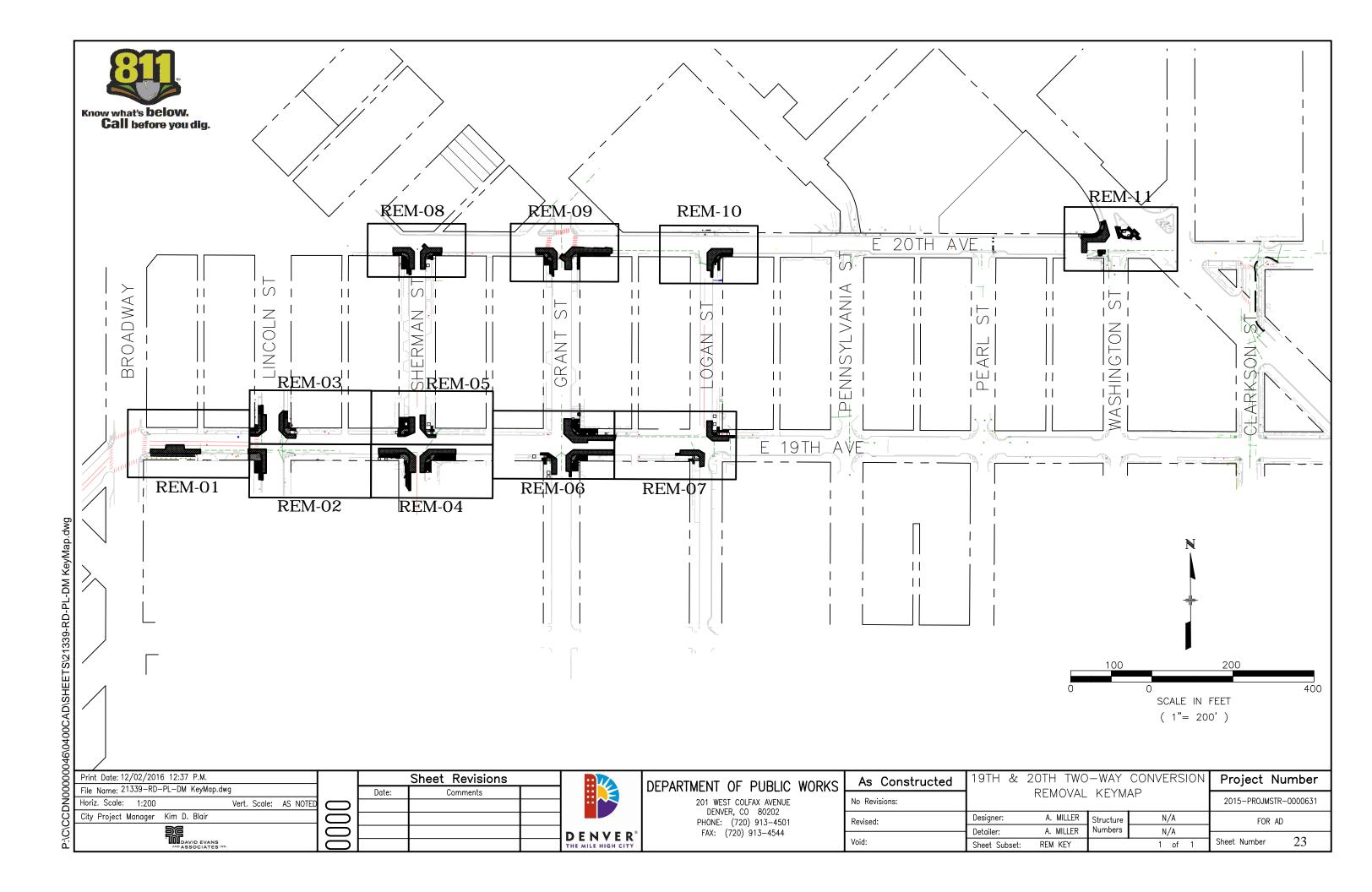


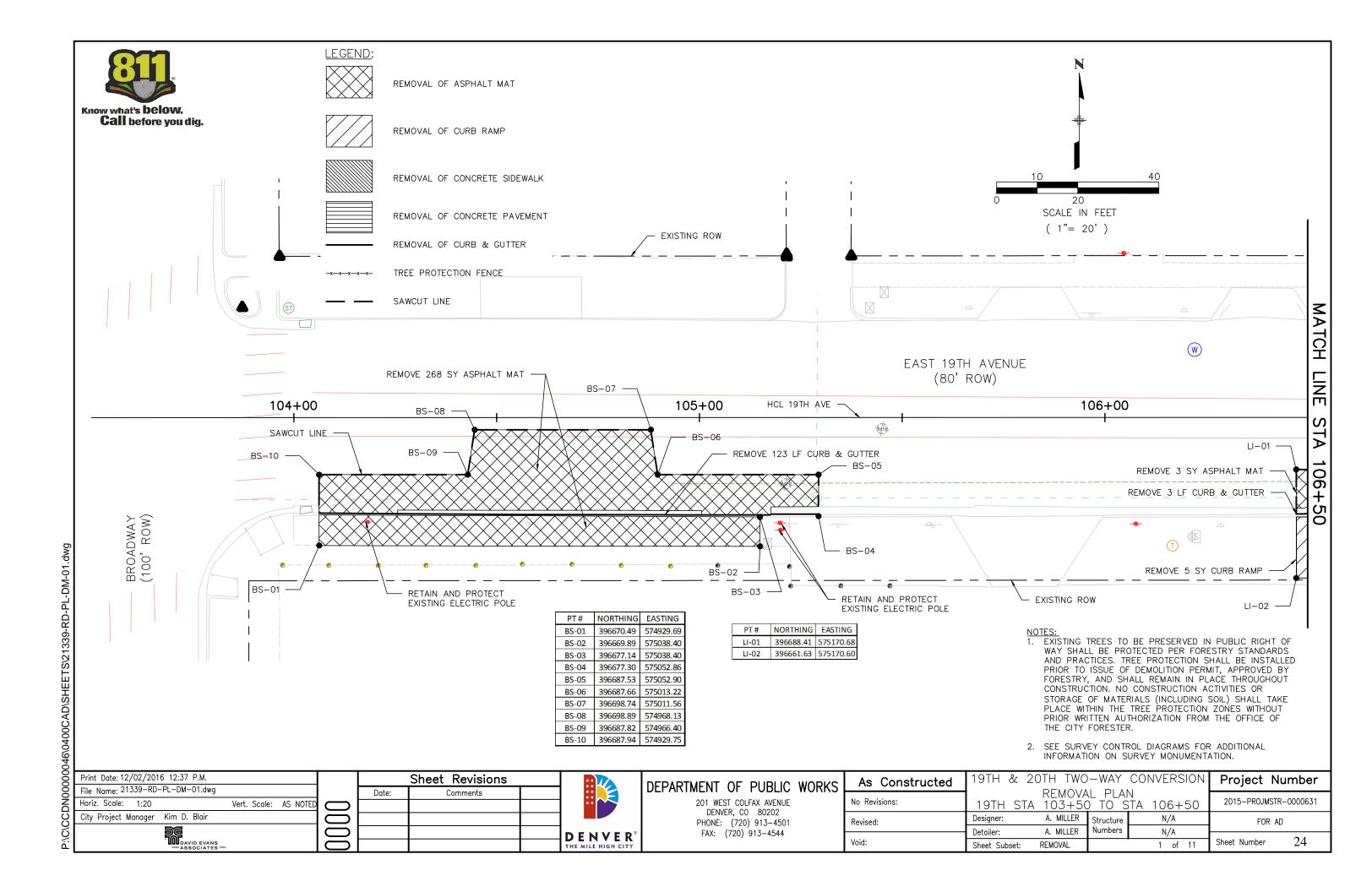


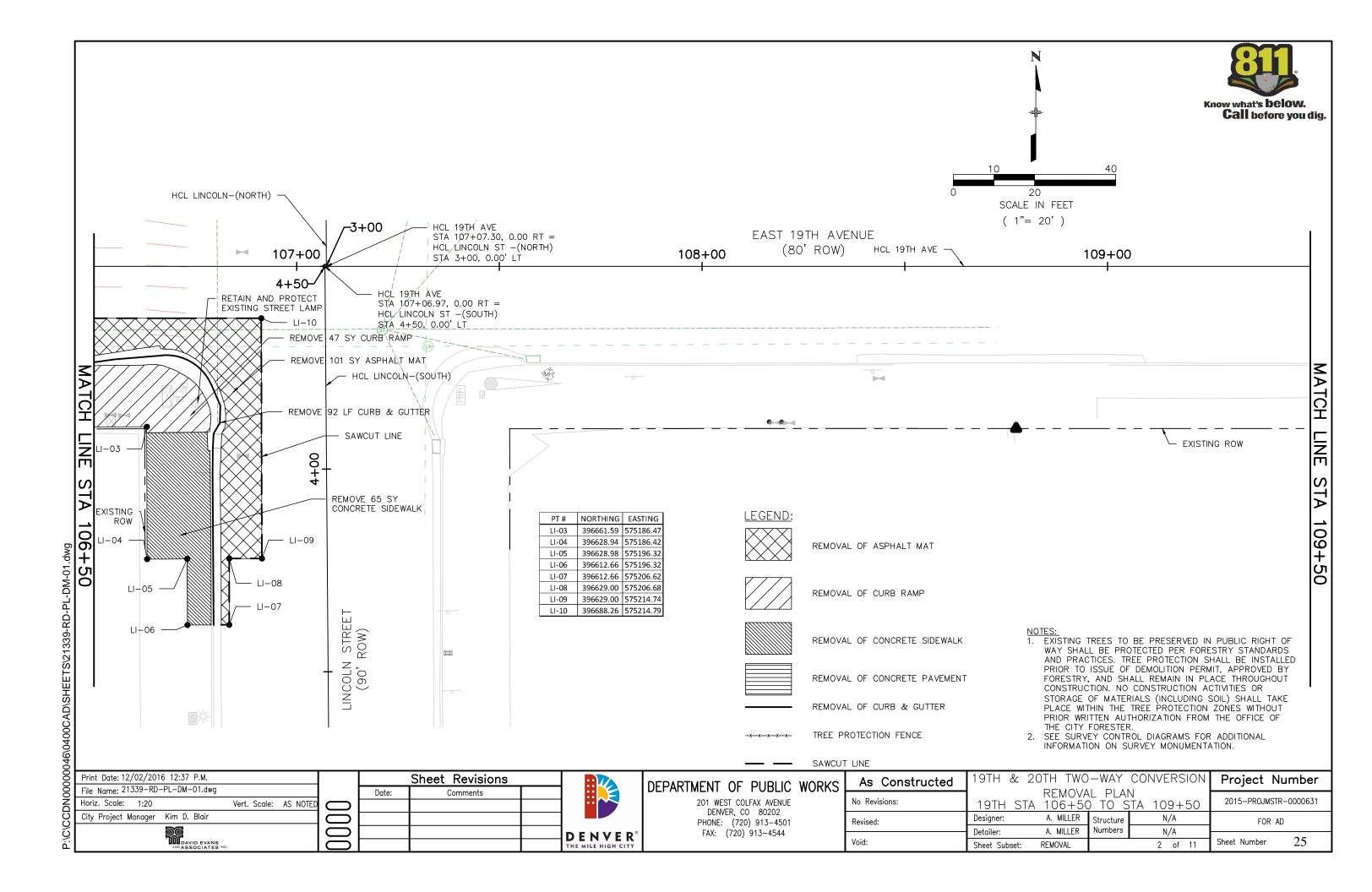


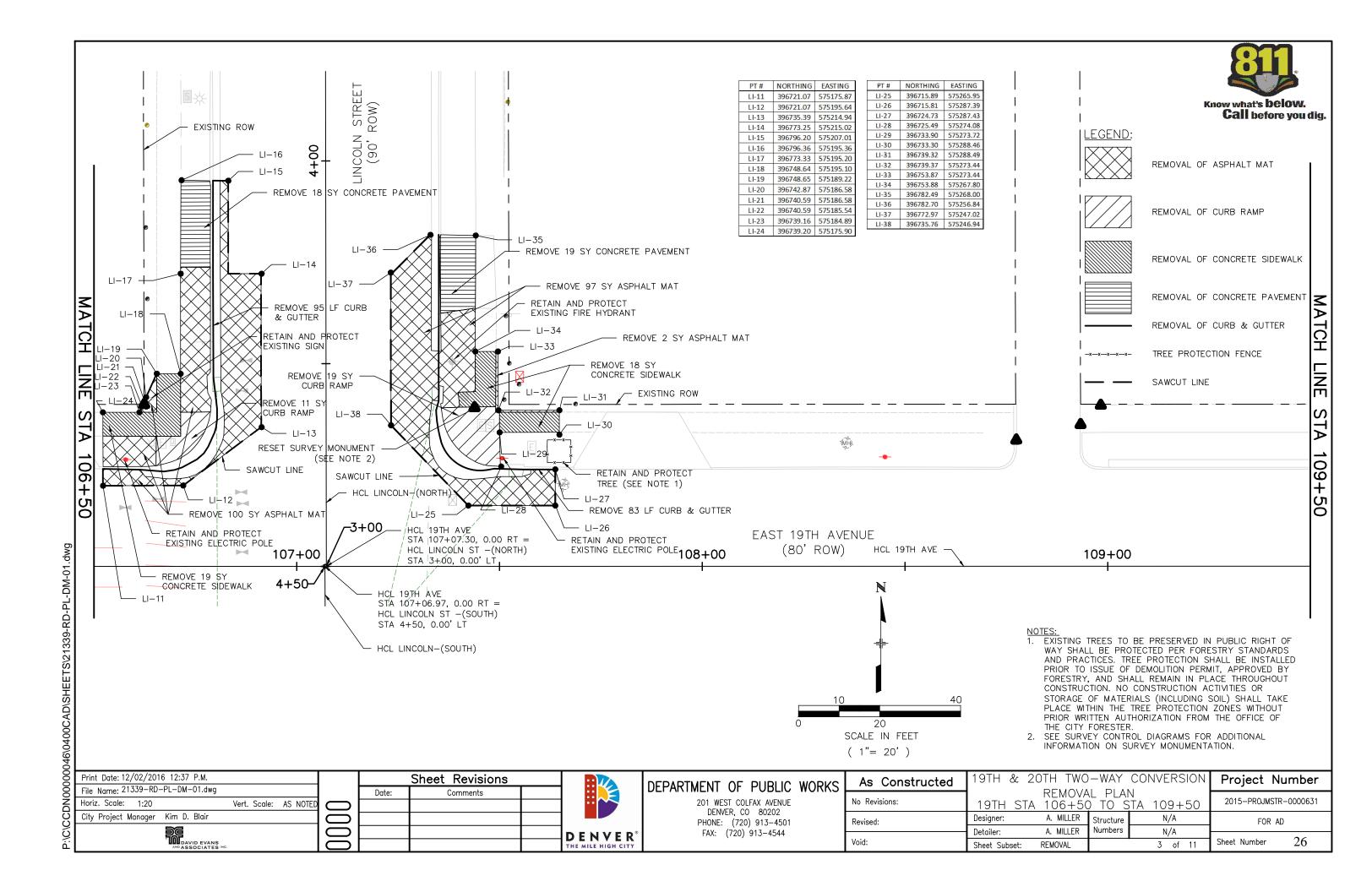


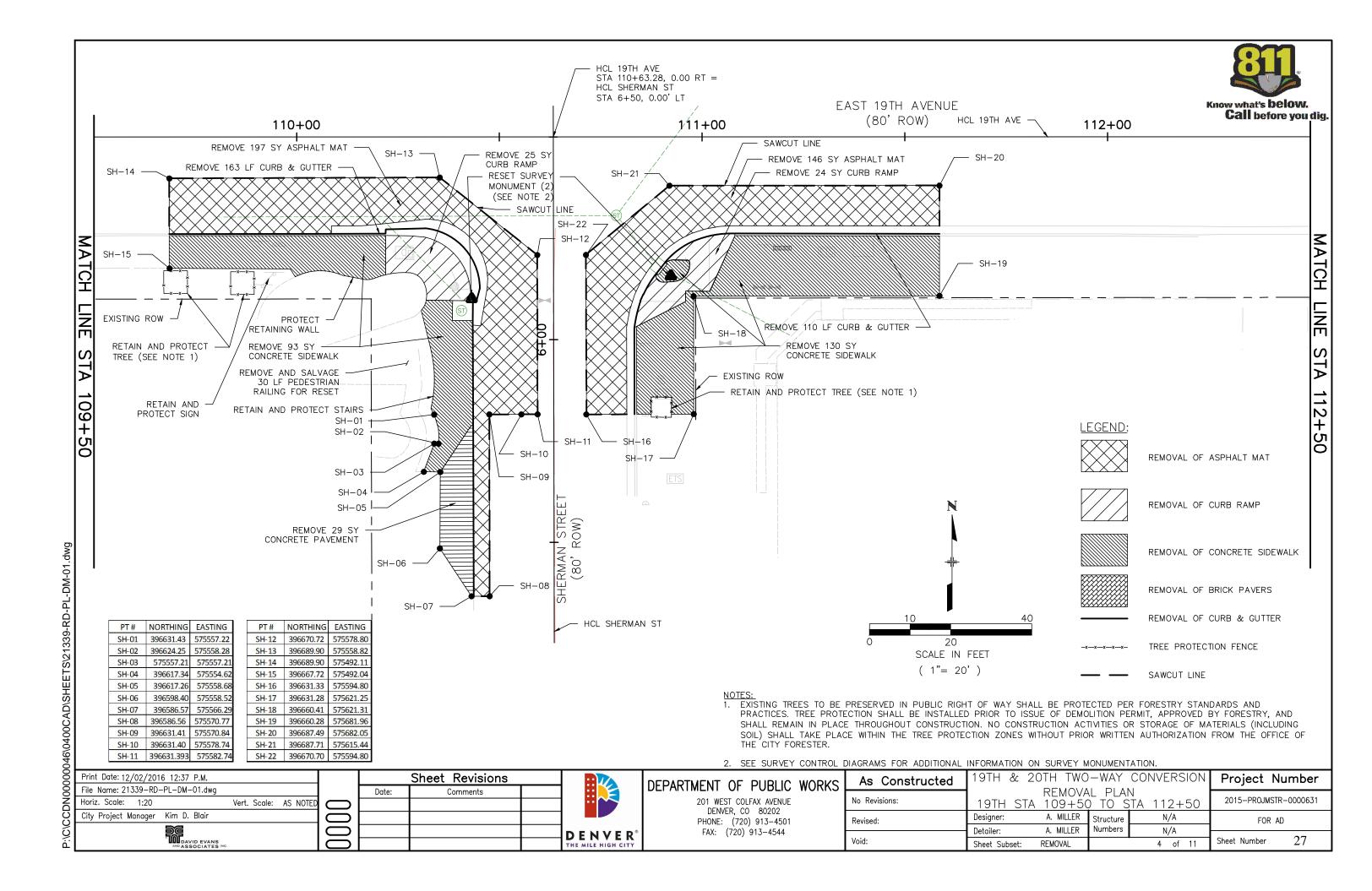


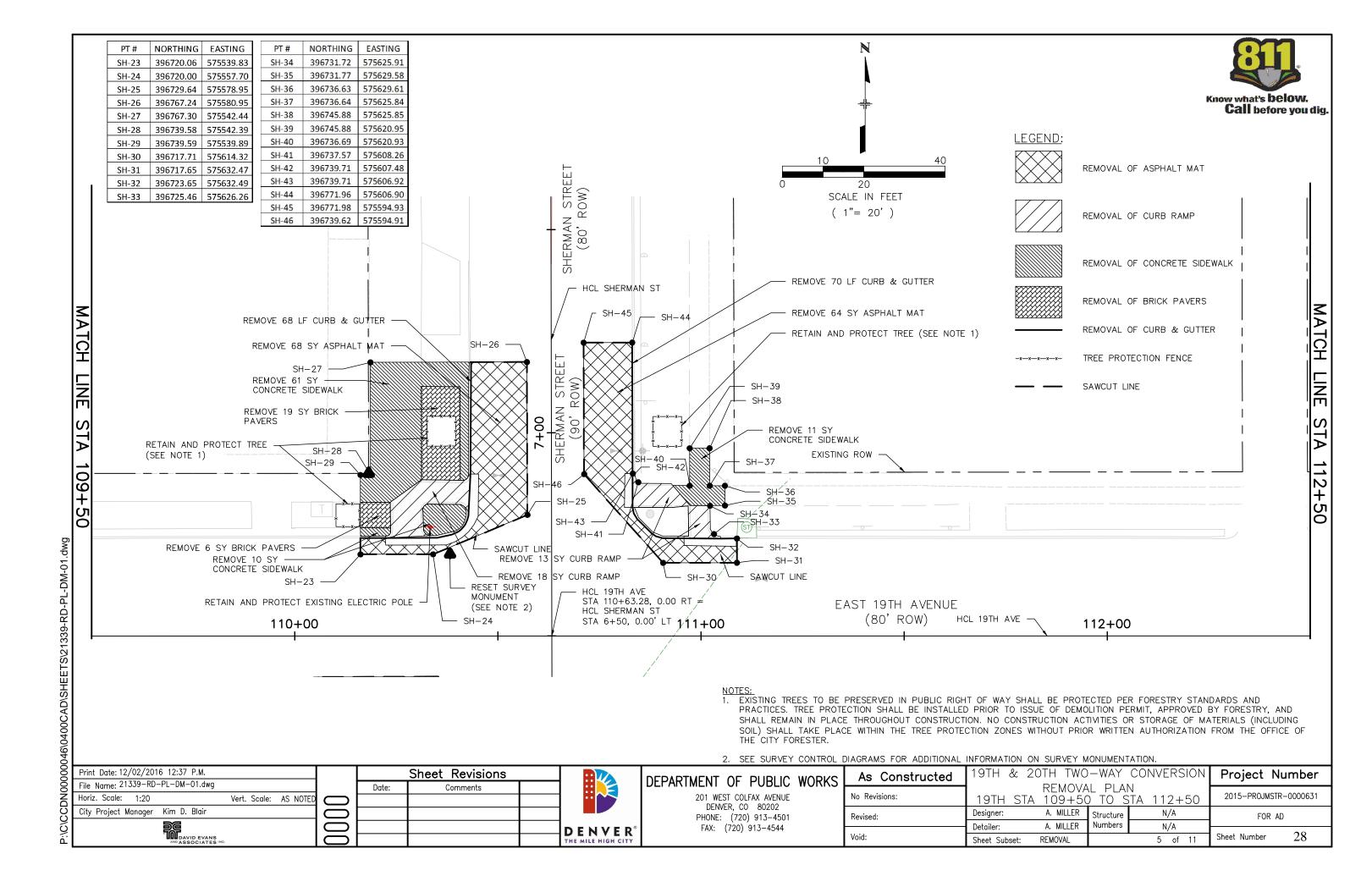


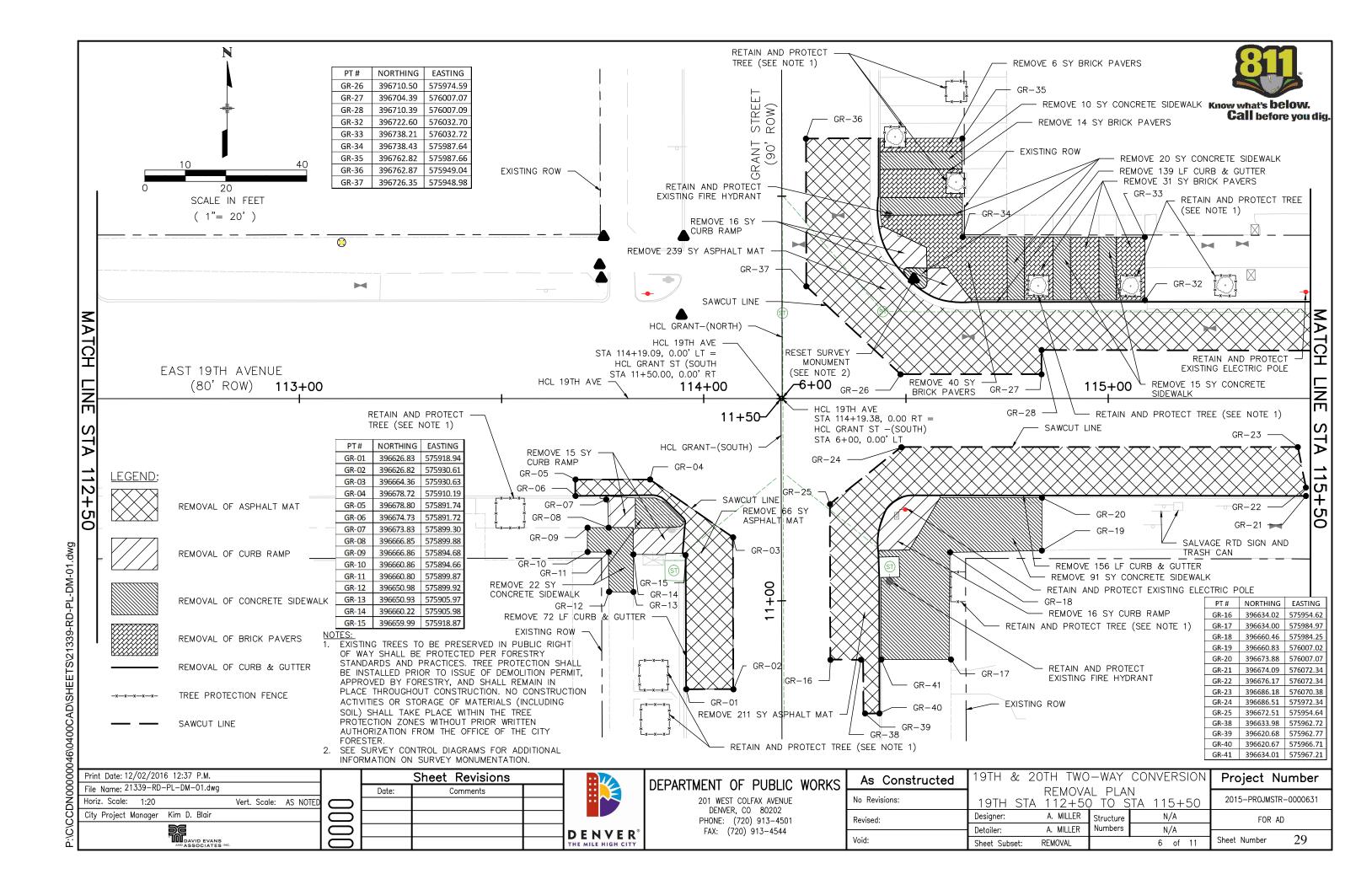


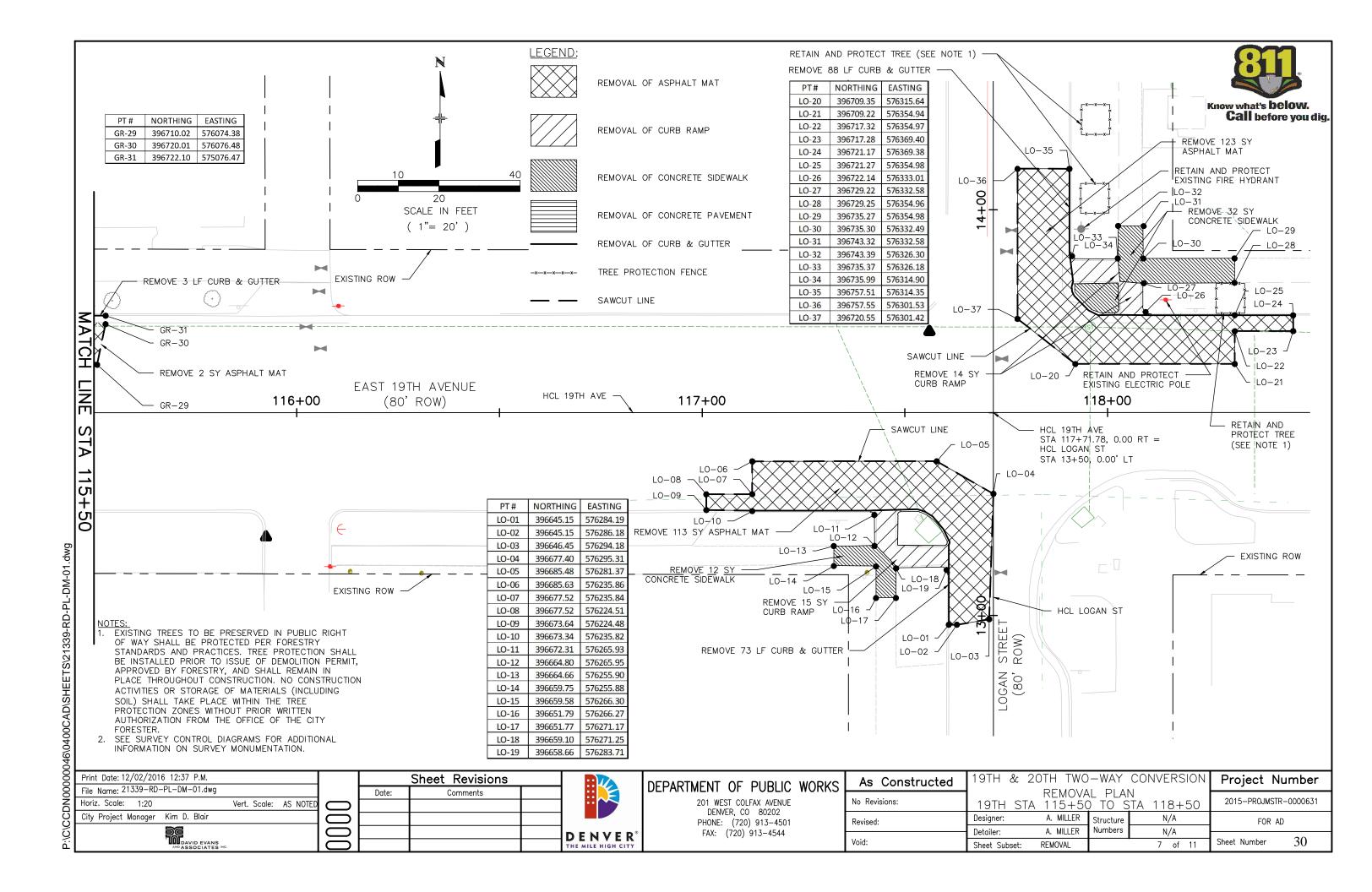


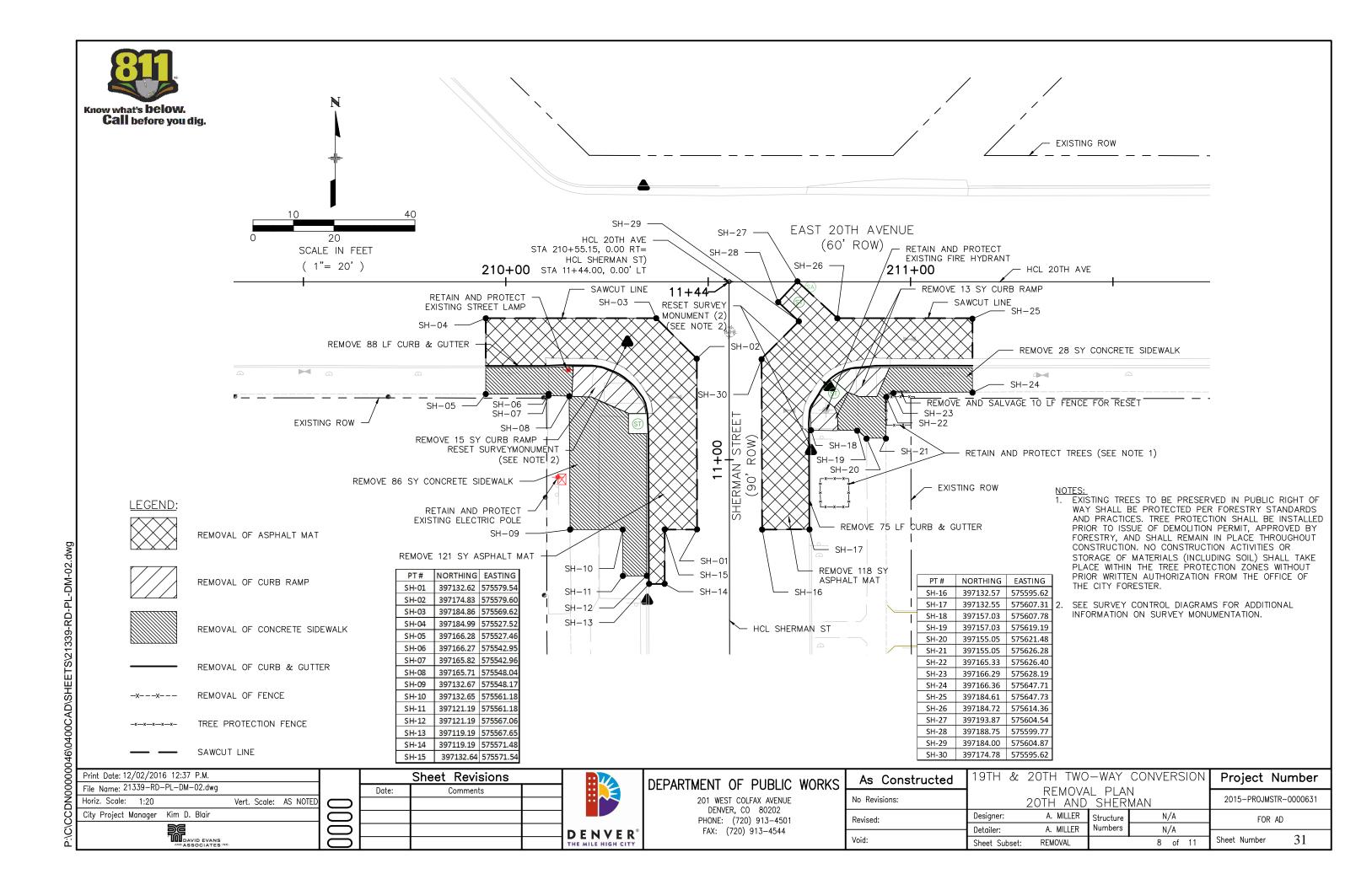


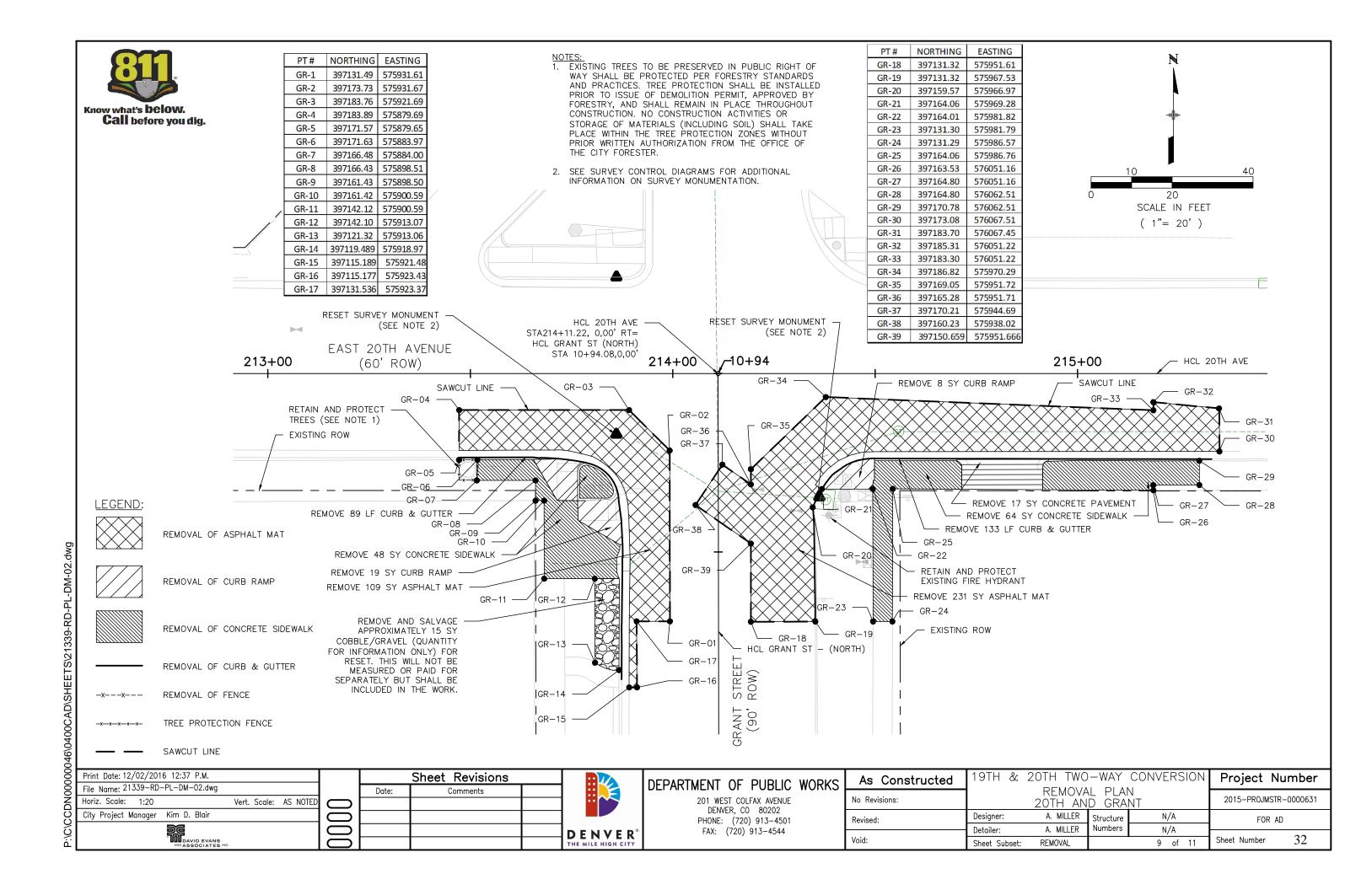


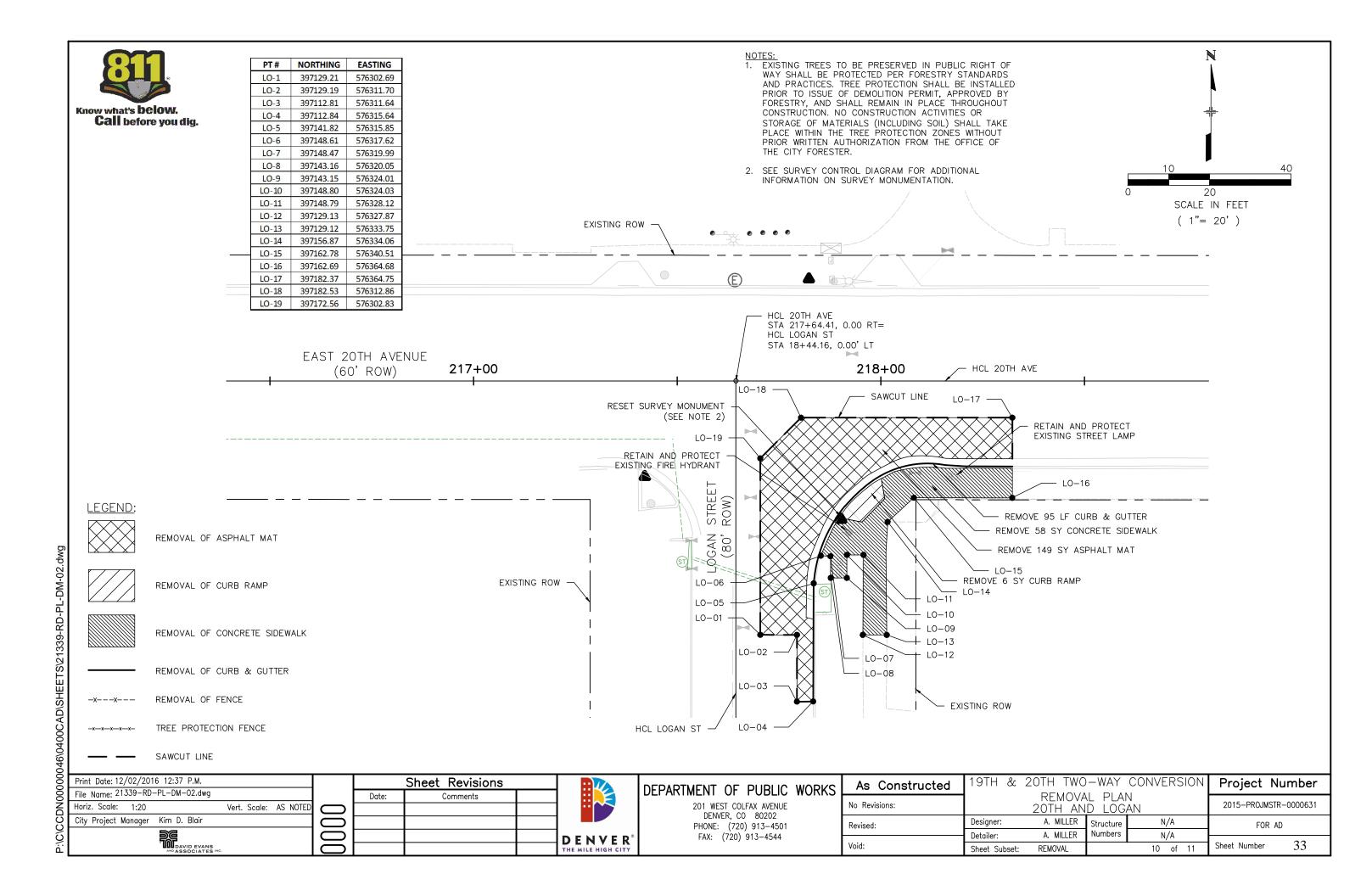


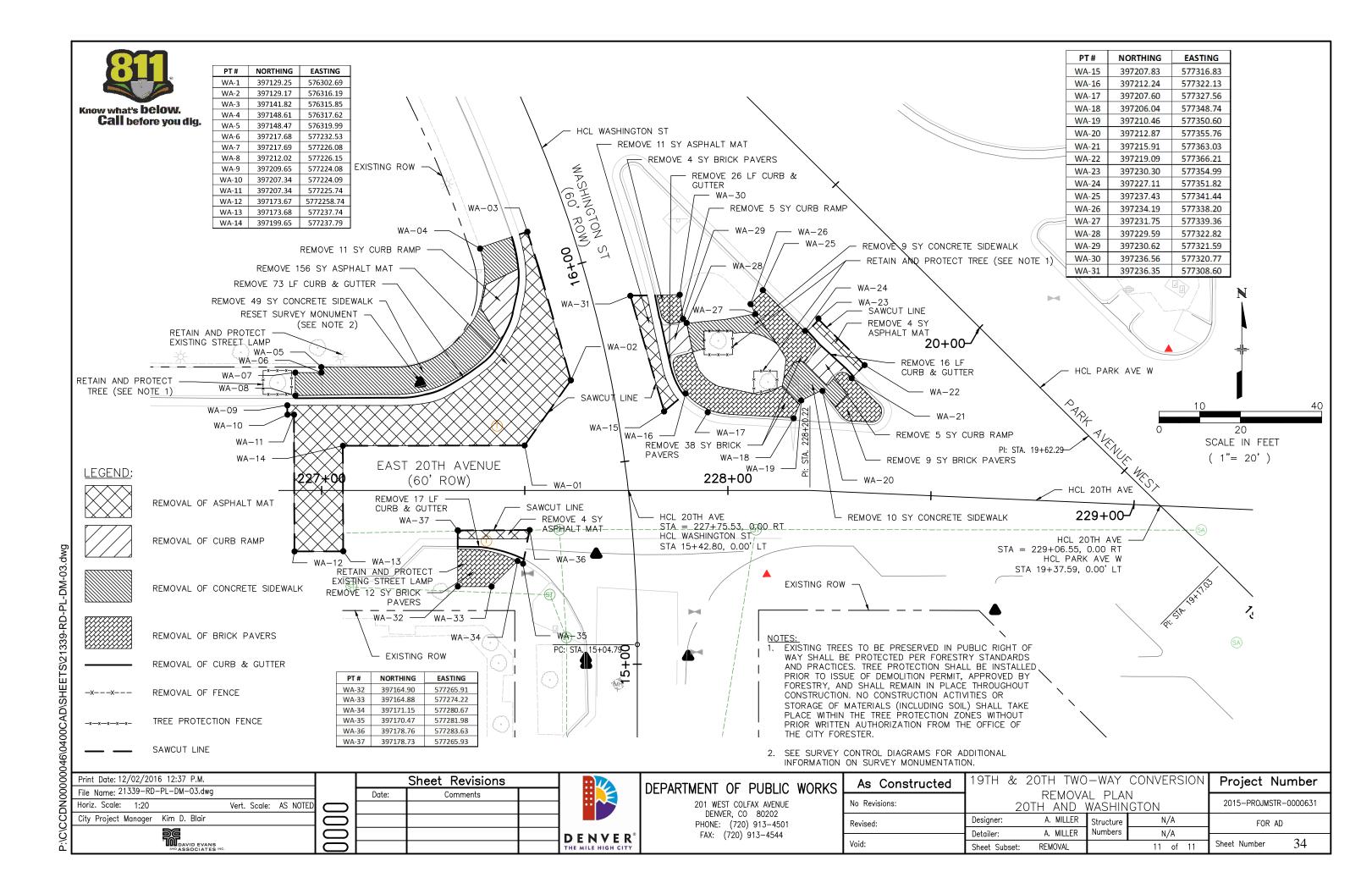


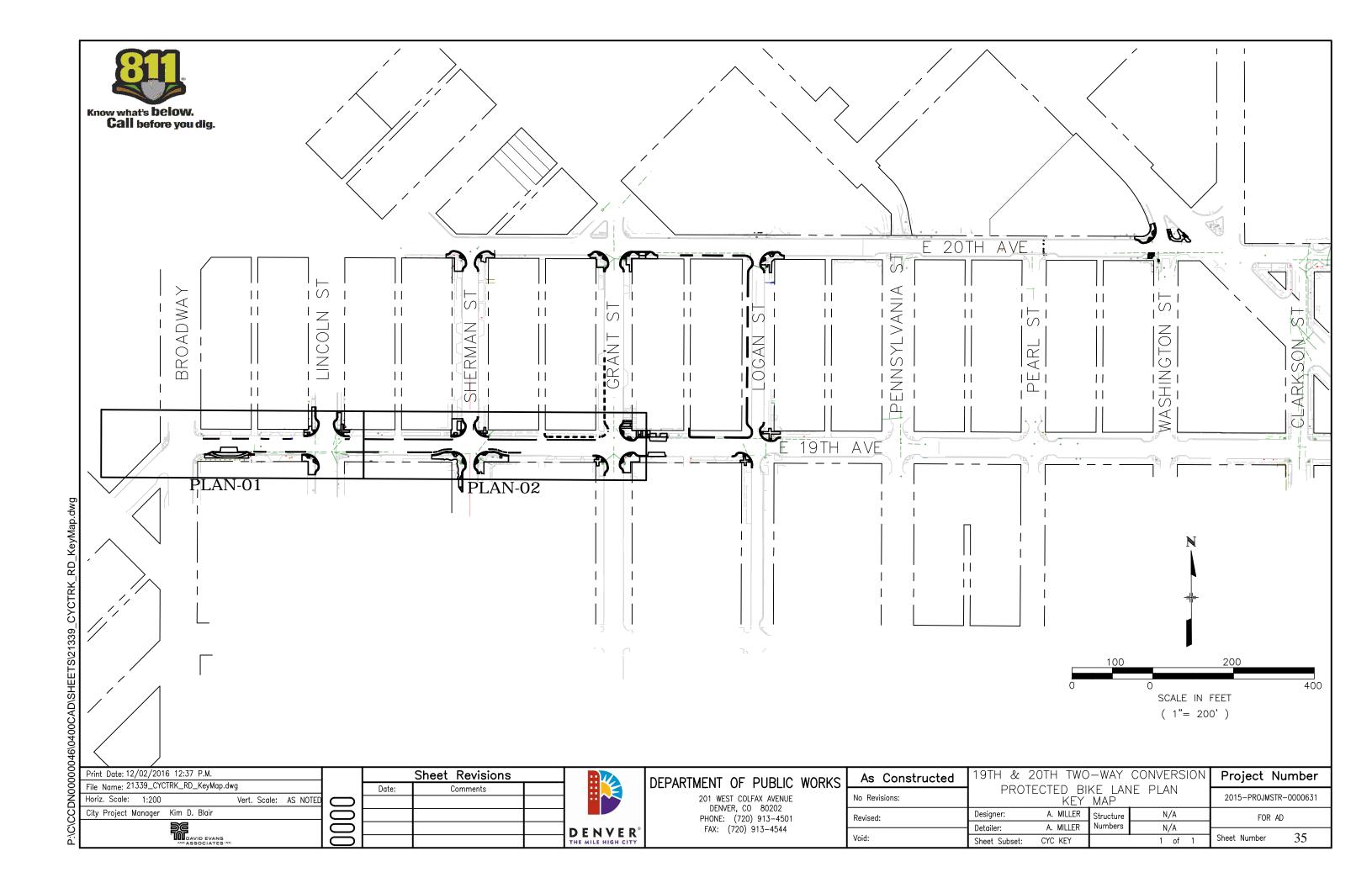


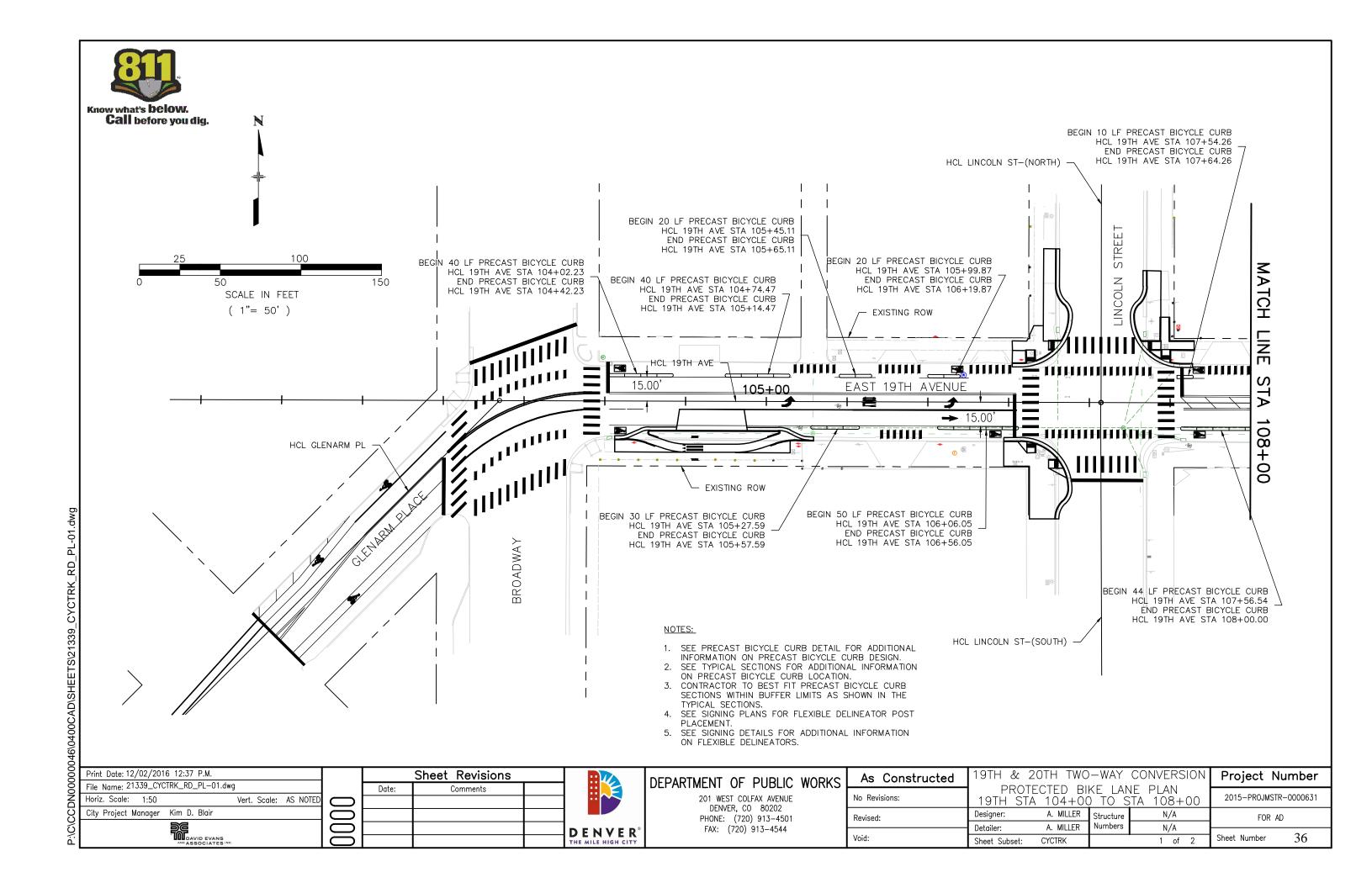


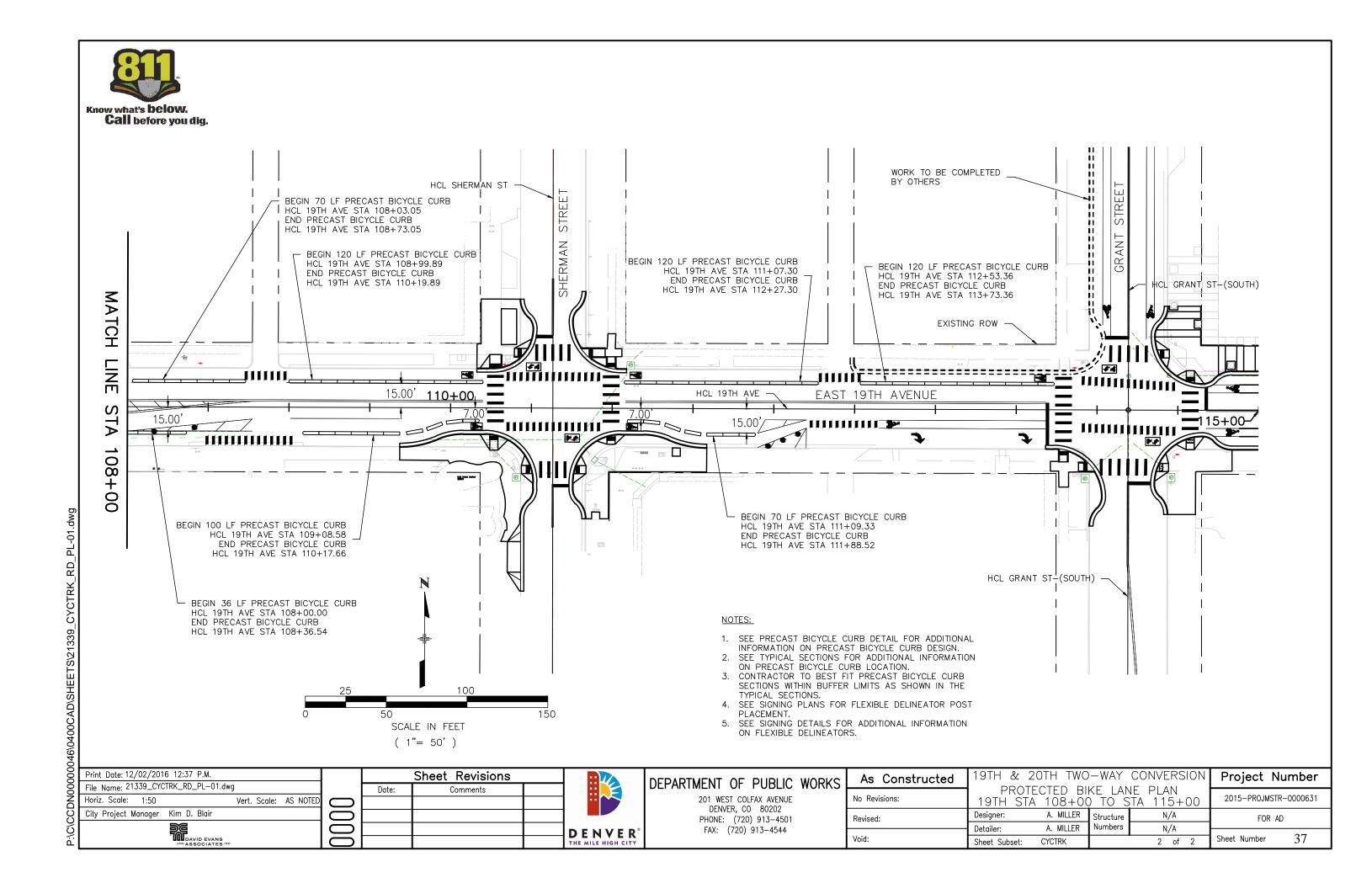


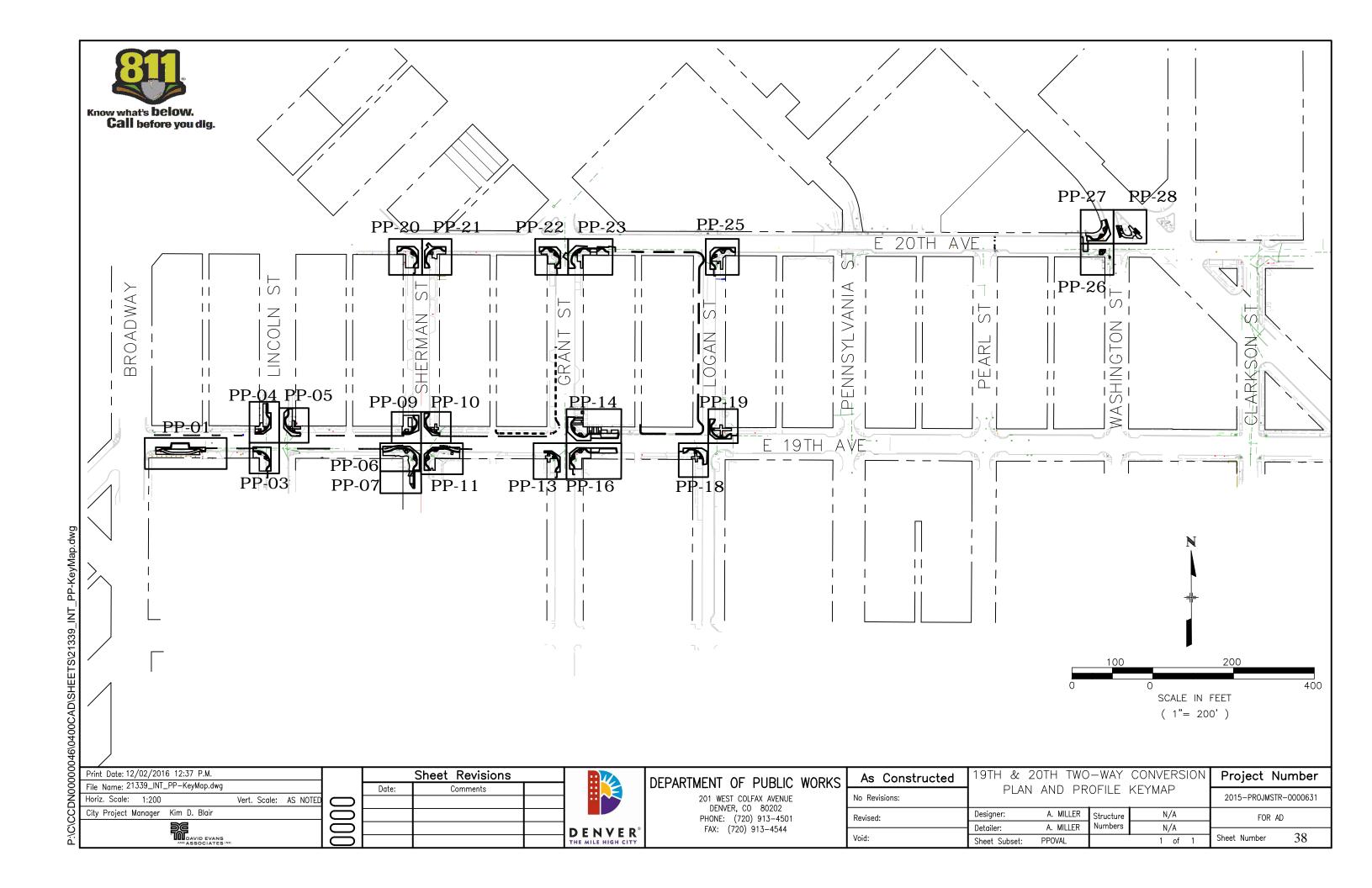


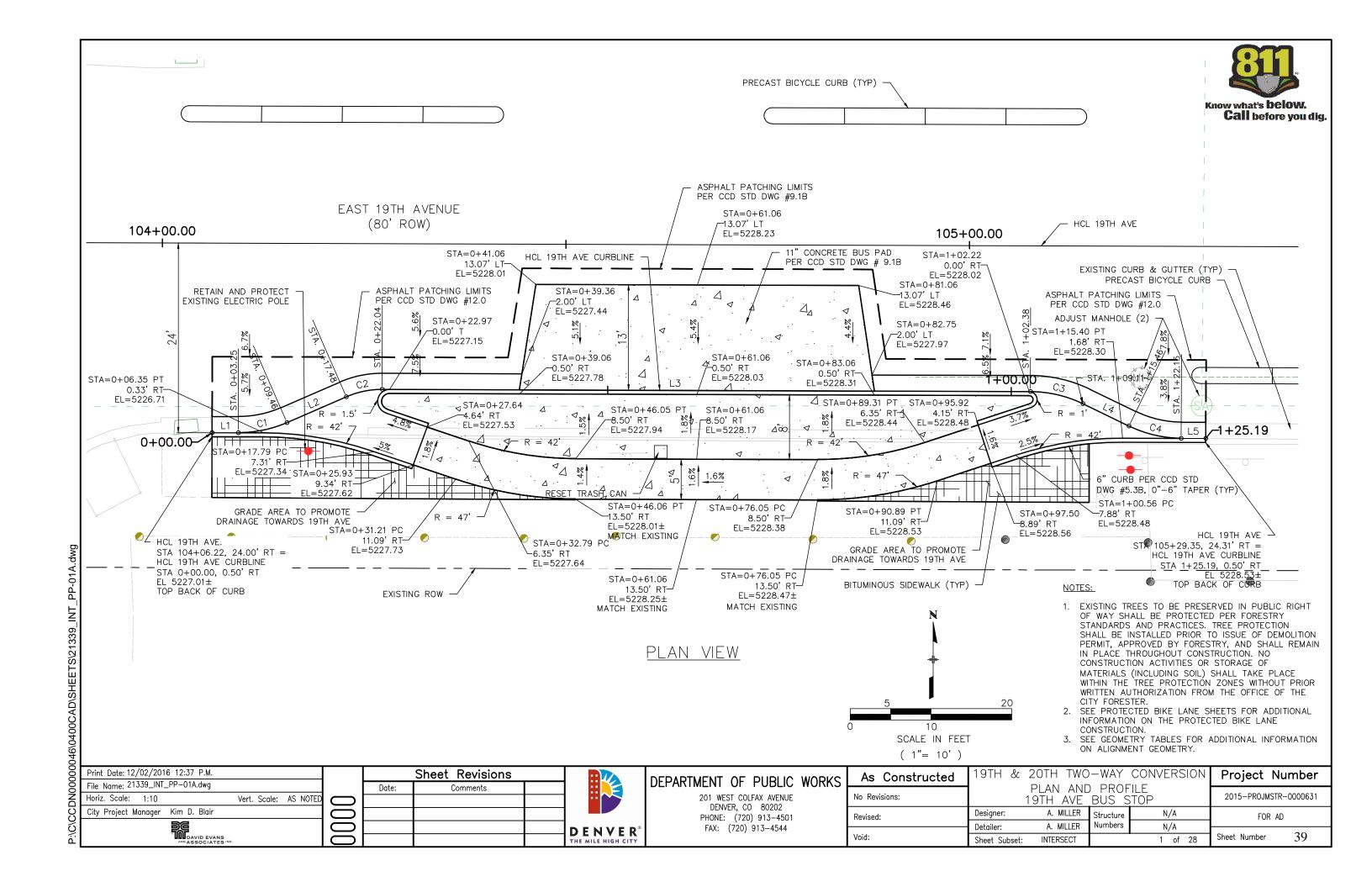




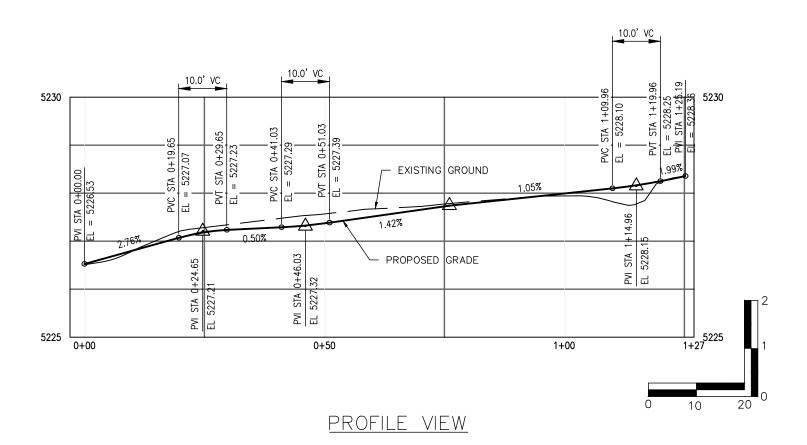












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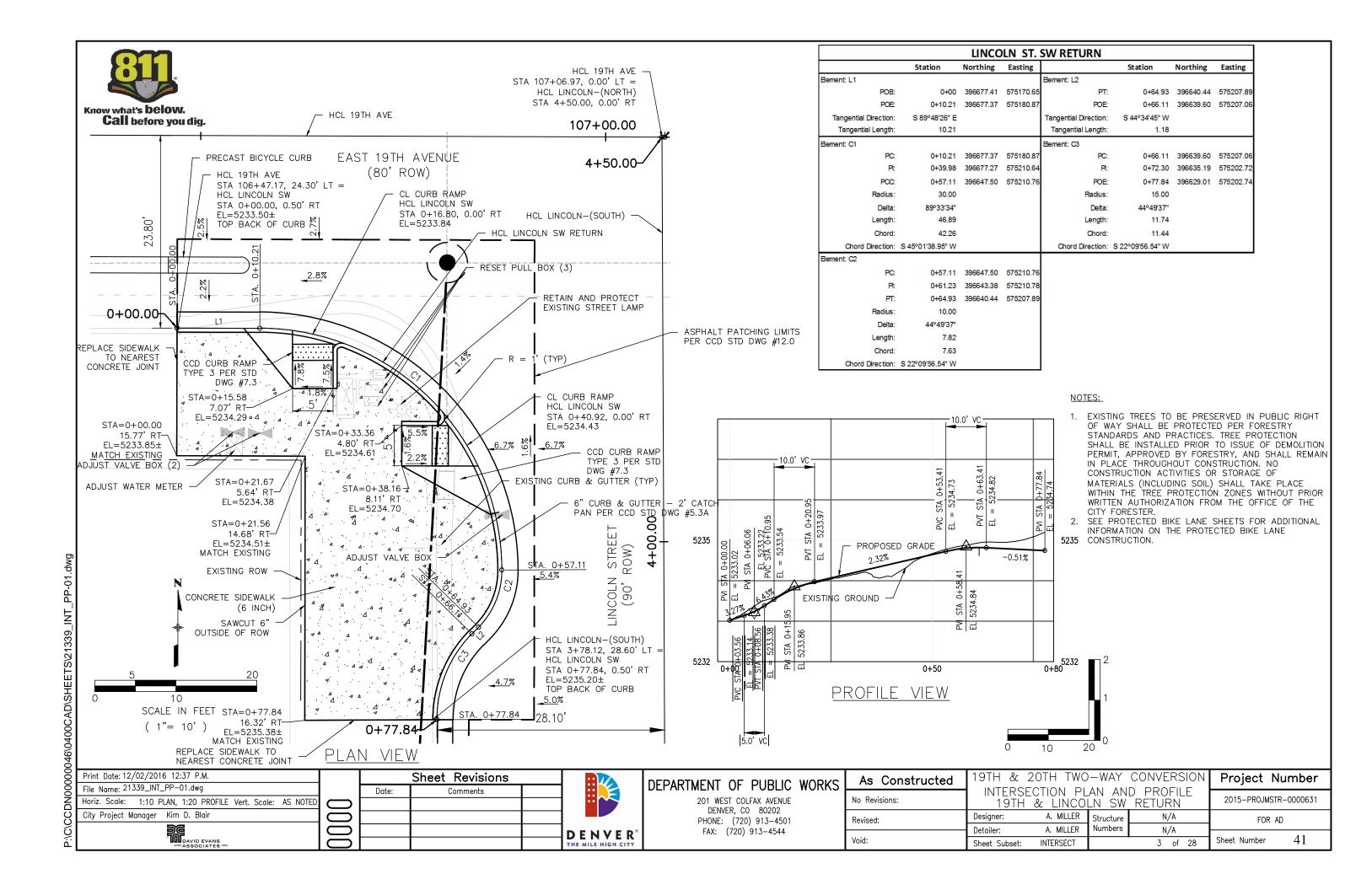
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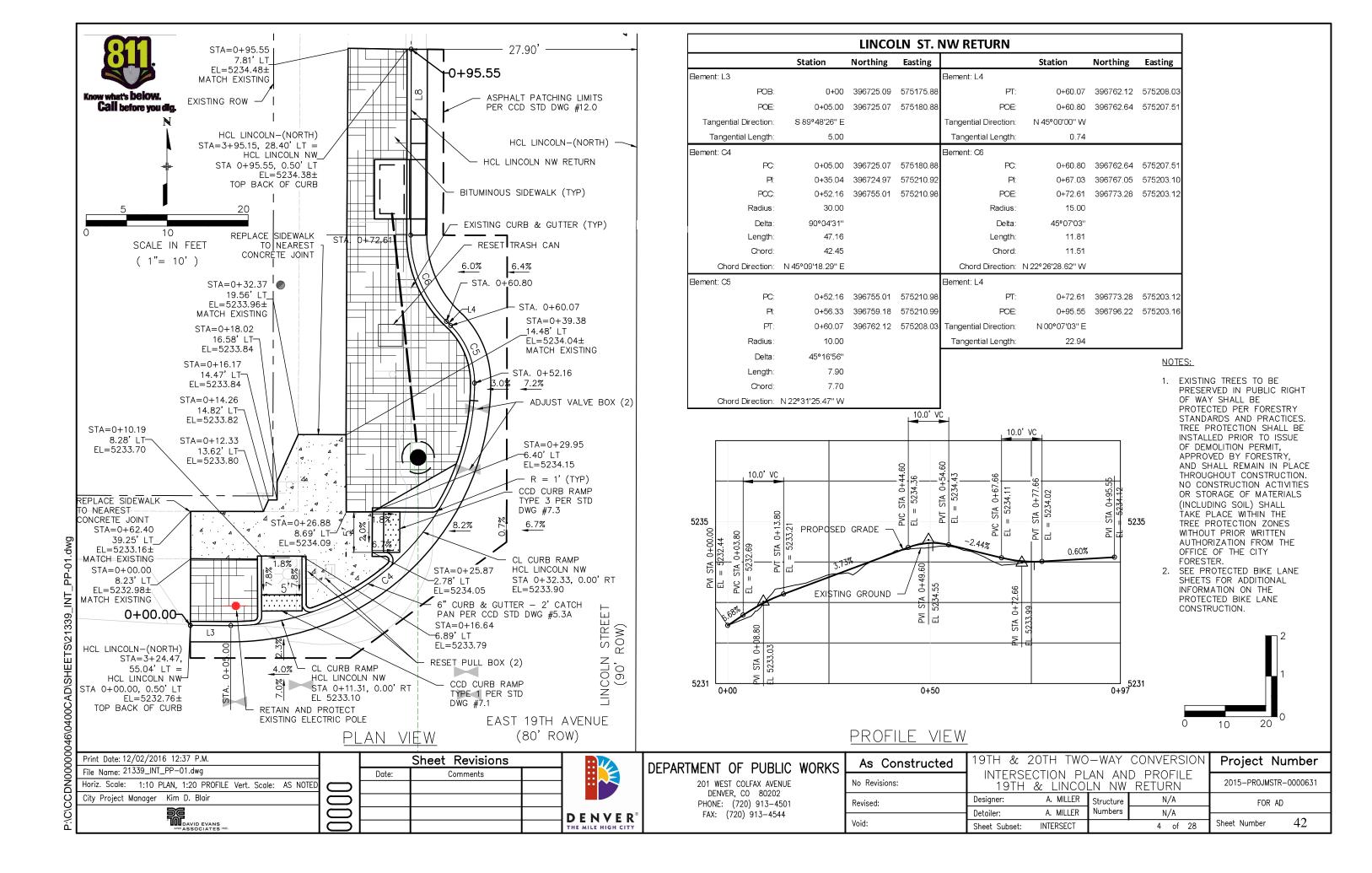
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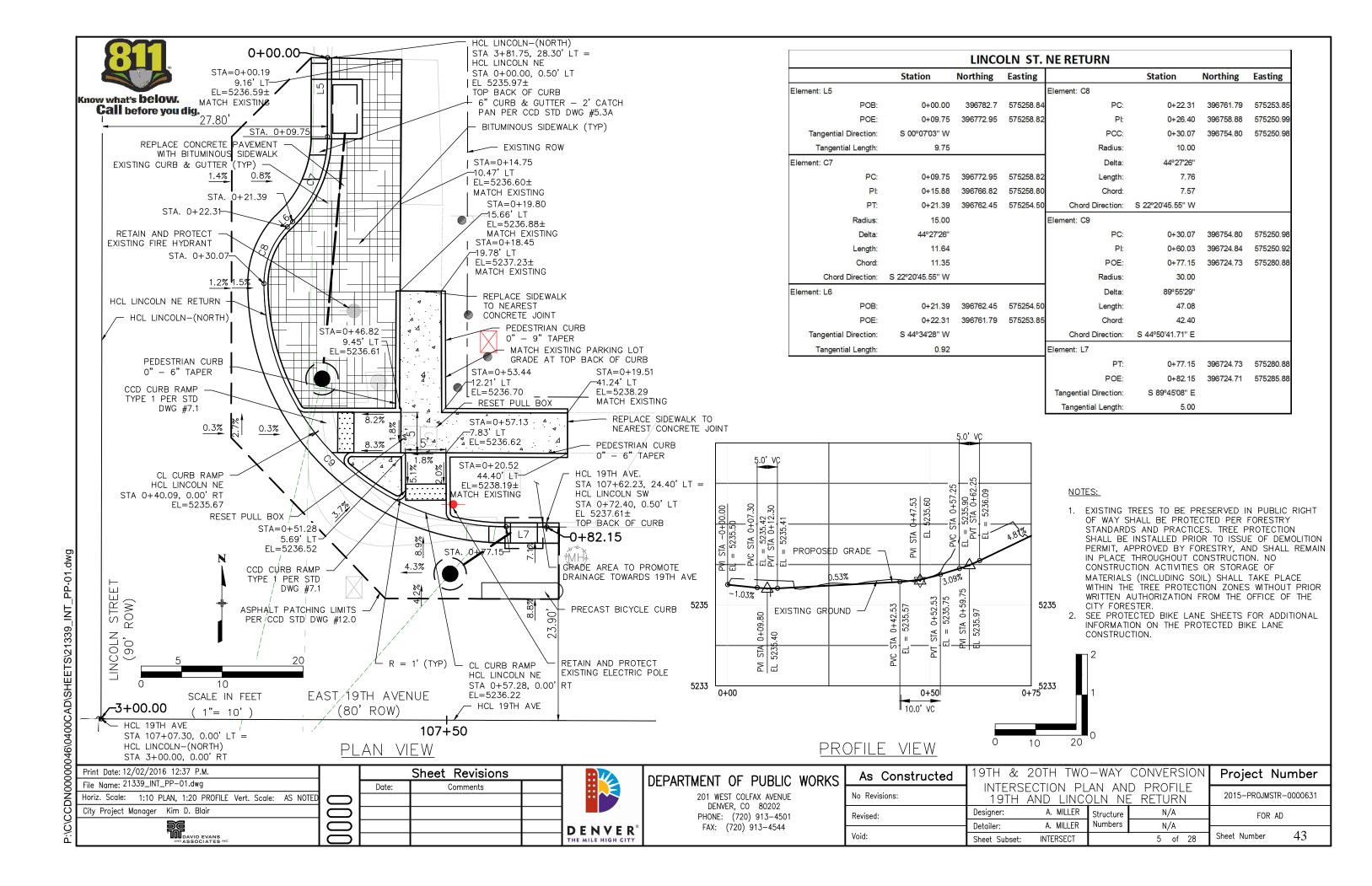
DEPARTMENT OF PUBLIC WORKS 201 WEST COLFAX AVENUE DENVER, CO 80202 PHONE: (720) 913–4501 FAX: (720) 913–4544

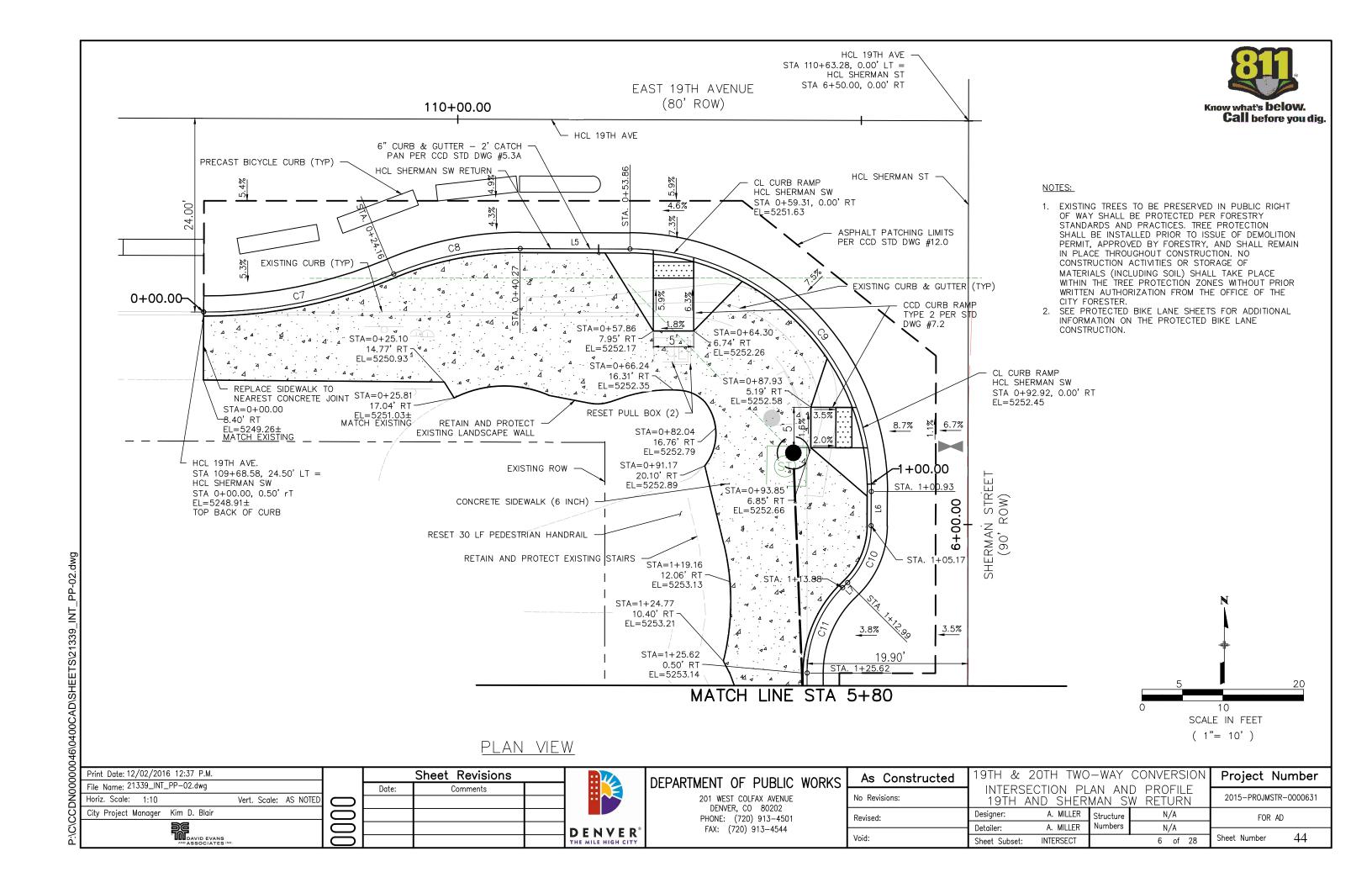
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Revised:	Designer:	A. MILLER	Structure	N/A	FOR AD
	Detailer:	A. MILLER	Numbers	N/A	40
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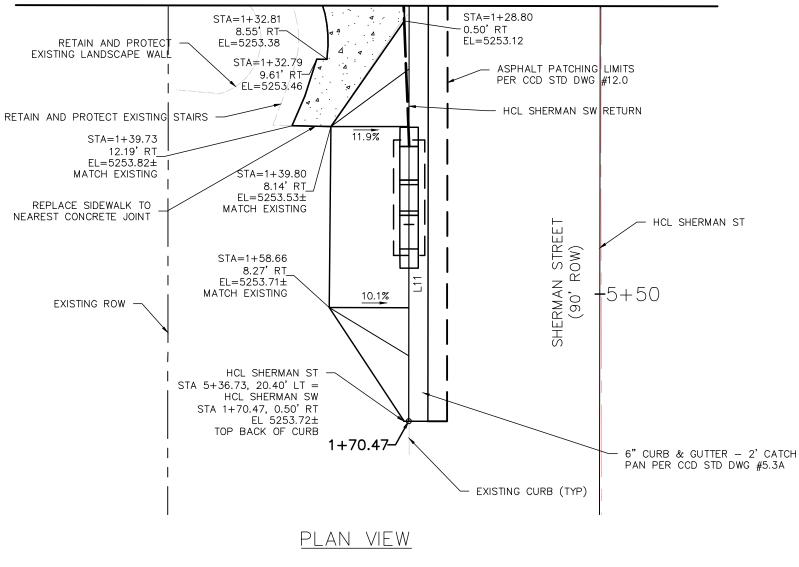






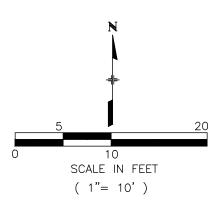


MATCH LINE STA 5+80



NOTES:

1. EXISTING TREES TO BE PRESERVED IN PUBLIC RIGHT OF WAY SHALL BE PROTECTED PER FORESTRY STANDARDS AND PRACTICES. TREE PROTECTION SHALL BE INSTALLED PRIOR TO ISSUE OF DEMOLITION PERMIT, APPROVED BY FORESTRY, AND SHALL REMAIN IN PLACE THROUGHOUT CONSTRUCTION. NO CONSTRUCTION ACTIVITIES OR STORAGE OF MATERIALS (INCLUDING SOIL) SHALL TAKE PLACE WITHIN THE TREE PROTECTION ZONES WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE OFFICE OF THE CITY FORESTER.



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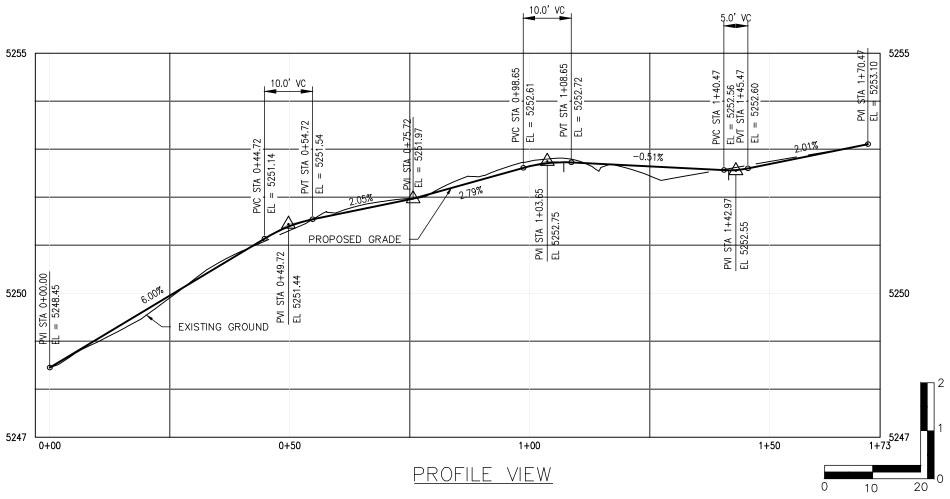
DEPARTMENT OF PUBLIC	WORKS
201 WEST COLFAX AVENUE	
DENVER, CO 80202	
PHONE: (720) 913-4501	

FAX: (720) 913-4544

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		Detailer:	A. MILLER	Numbers	N/A		ı
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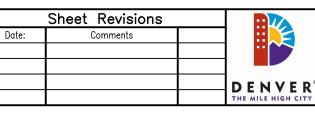
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		SHERN	IAN ST.	SW RETURN			
	Station	Northing	Easting		Station	Northing	Easting
Element: C7				Element: L6			
PC:	0+00.00	396676.12	575492.07	PT:	1+00.93	396653.90	575574.
PI:	0+12.25	396676.08	575504.31	POE:	1+05.17	396649.66	575574.
PT:	0+24.16	396680.84	575515.60	Tangential Direction:	S 00°05'30" W		
Radius:	60.00			Tangential Length:	4.23		
Delta:	23°04'26"			Element: C10			
Length:	24.16			PCC:	1+05.17	396649.66	575574.
Chord:	24.00			PI:	1+09.29	396645.54	575574
Chord Direction:	N 78°39'20.77" E			POE:	1+12.99	396642.62	575571
Element: C8				Radius:	10.00		
PC:	0+24.16	396680.84	575515.60	Delta:	44°50'59"		
PI:	0+32.33	396684.02	575523.12	Length:	7.83		
PCC:	0+40.27	396683.99	575531.29	Chord:	7.63		
Radius:	40.00			Chord Direction:	S 22°30'59.85" W		
Delta:	23°04'26"			Element: L7			
Length:	16.11			POB:	1+12.99	396642.62	575571
Chord:	16.00			POE:	1+13.88	396641.99	575571
Chord Direction:	N 78°39'20.77" E			Tangential Direction:	S 44°56'29" W		
Element: L5				Tangential Length:	0.88		
POB:	0+40.27	396683.99	575531.29	Element: C11			
POE:	0+53.86	396683.95	575544.87	PC:	1+13.88	396641.99	575571
Tangential Direction:	S 89°48'26" E			PI:	1+20.07	396637.61	575566
Tangential Length:	13.59			PT:	1+25.62	396631.42	575566
Element: C9				Radius:	15.00		
PC:	0+53.86	396683.95	575544.87	Delta:	44°50'59"		
PI:	0+83.81	396683.85	575574.82	Length:	11.74		
PT:	1+00.93	396653.90	575574.77	Chord:	11.44		
Radius:	30.00			Chord Direction:	S 22°30'59.44" W		
Delta:	89°53'56''			Element: L7			
Length:	47.07			POB:	1+25.62	396631.42	575566
Chord:	42.39			POE:	1+70.47	396586.56	575566
Chord Direction:	S 44°51'28.07" E			Tangential Direction:	S 00°05'30" W		
				Tangential Length:	44.85		

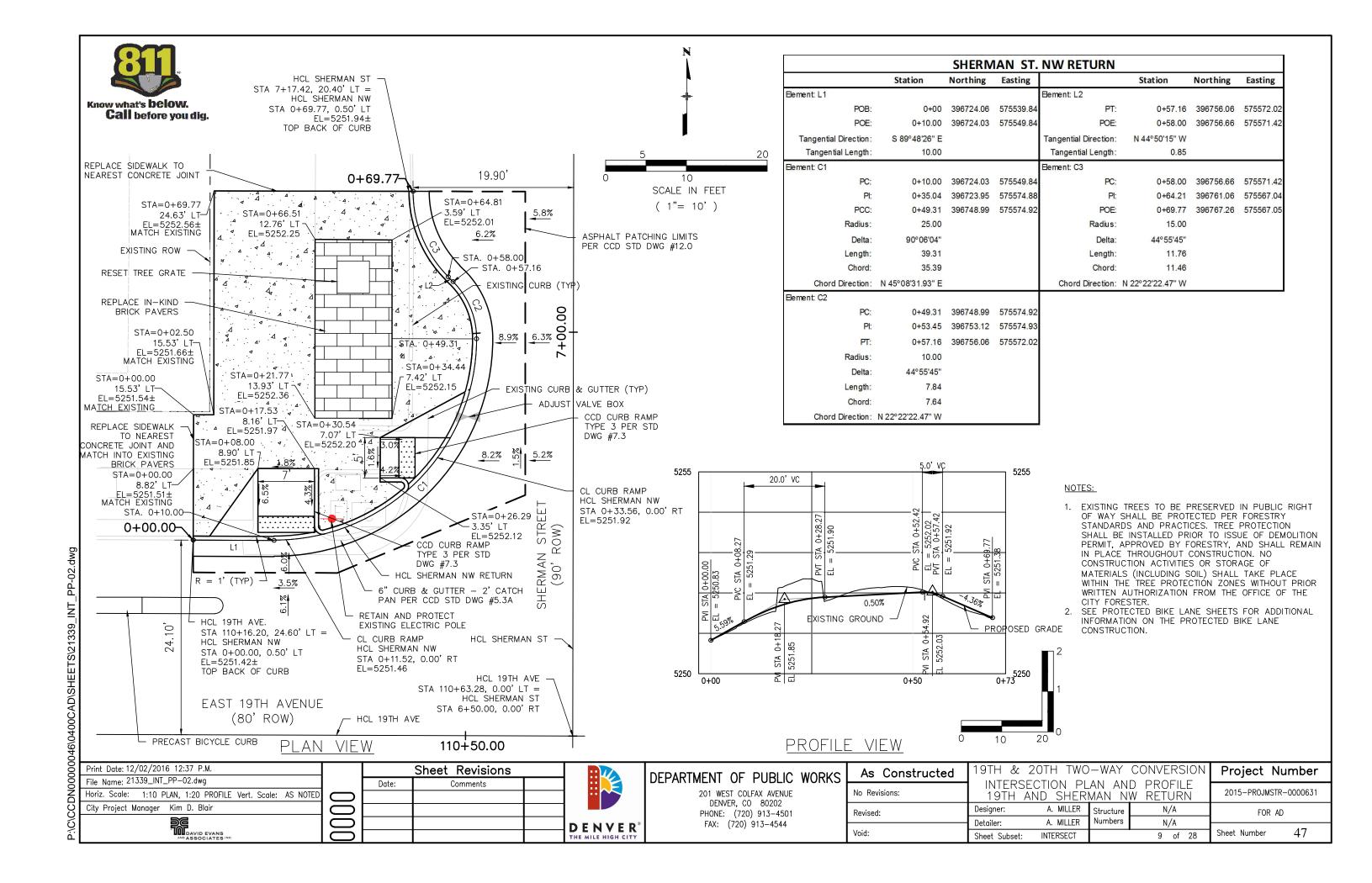
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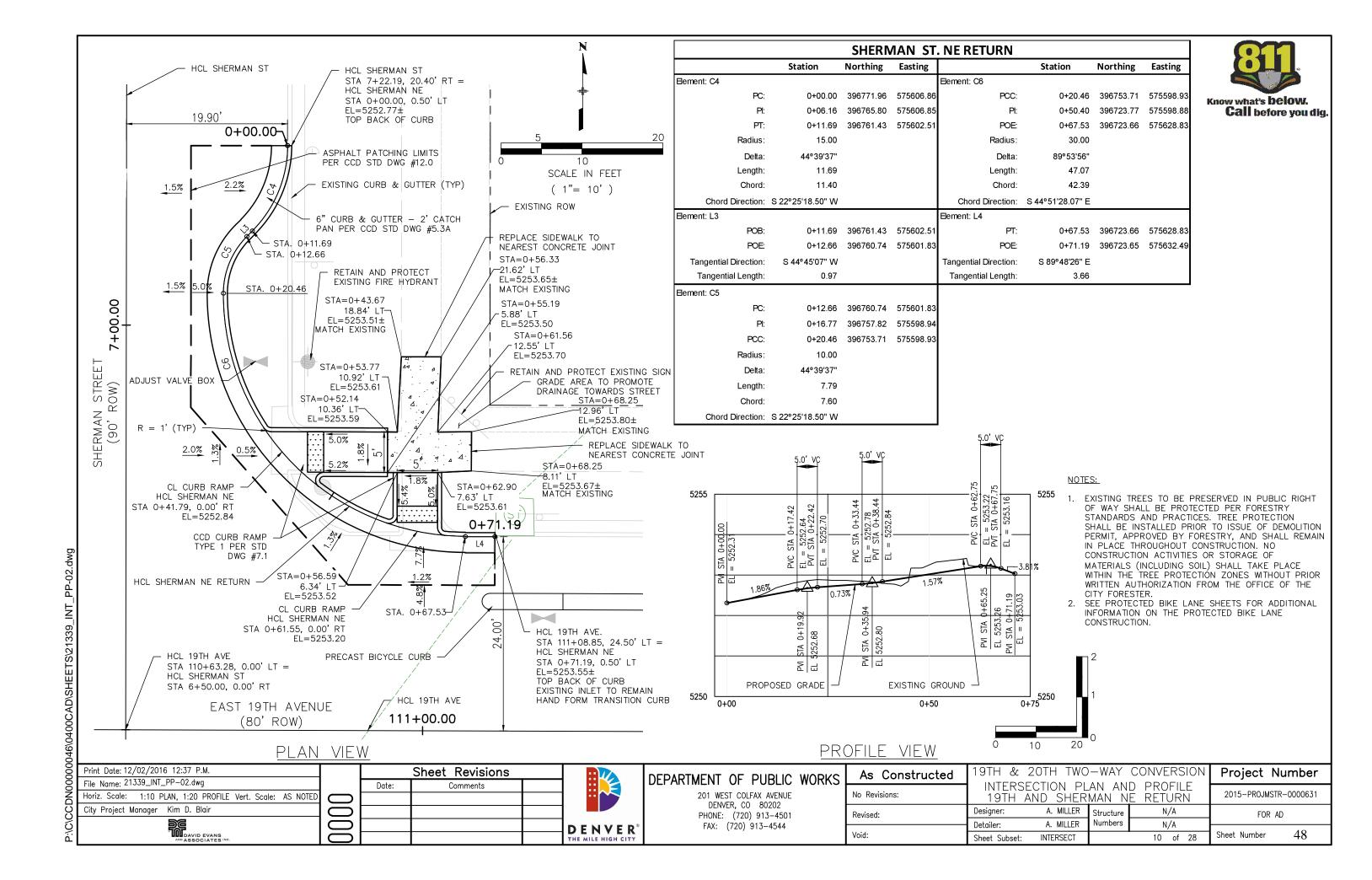


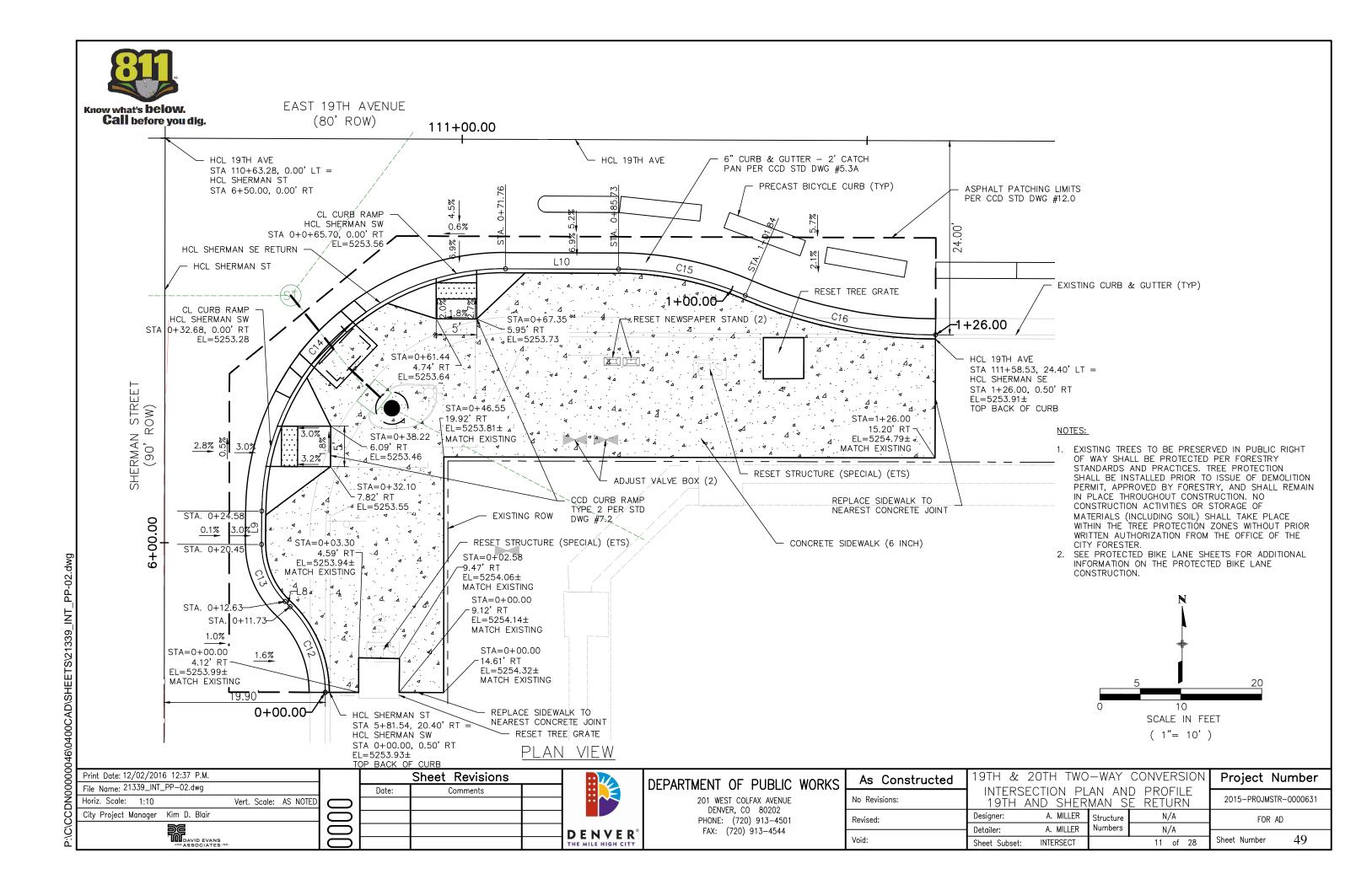
DEPARTMENT OF PUBLIC WORKS
201 WEST COLFAX AVENUE

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PHONE:	(720)	913-	4501
FAX:	(720) 9	13-45	544

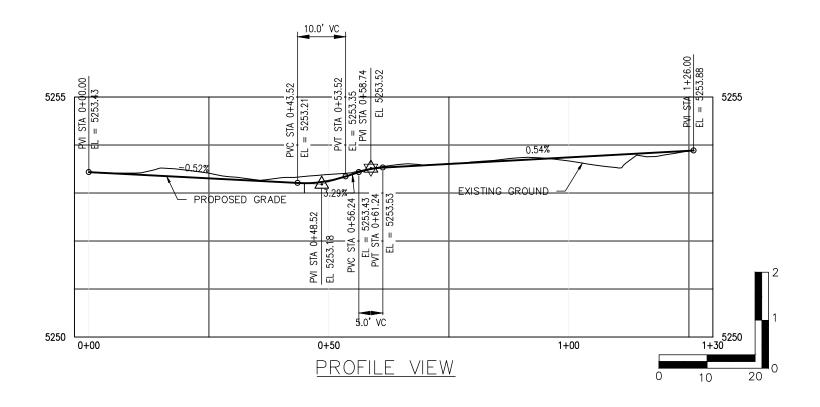
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Revised:	Designer:	A. MILLER	Structure	N/A	FOR AD		
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Sheet Revisions

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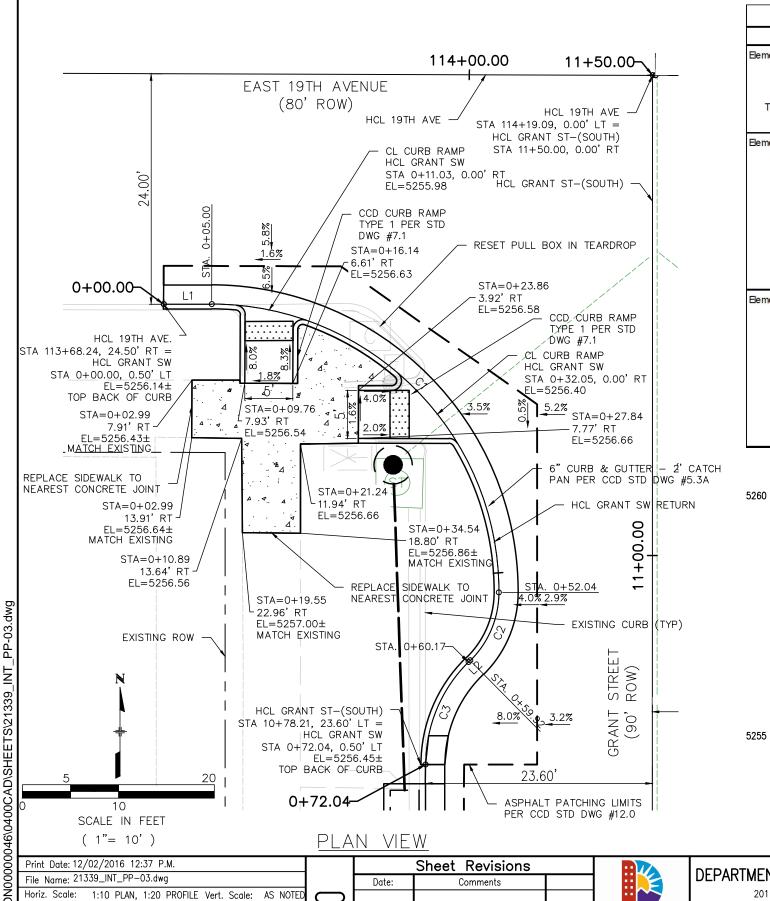
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	Station	Northing	Easting		Station	Northing	Easting
Element: C12				⊟ement: C14			
PC:	0+00.00	396631.31	575606.64	PC:	0+24.58	396653.71	575598.7
PI:	0+6.19	396637.50	575606.65	PI:	0+54.64	396683.77	575598.8
PT:	0+11.73	396641.89	575602.29	PT:	0+71.76	396683.66	575628.8
Radius:	15.00			Radius:	30.00		
Delta:	44°49'25"			Delta:	90°06'04"		
Length:	11.73			Length:	47.18		
Chord:	11.44			Chord:	42.46		
Chord Direction:	N 22º19'12.32" W			Chord Direction:	N 45°08'31.93" E		
Element: L8				⊟ement: L10			
POB:	0+11.73	396641.89	575602.29	POB:	0+71.76	396683.66	575628.8
POE:	0+12.63	396642.53	575601.66	POE:	0+85.73	396683.62	575642.84
Tangential Direction:	N 44° 43'55" W			Tangential Direction:	S 89° 48'26" E		
Tangential Length:	0.90			Tangential Length:	13.97		
Element: C13				⊟ement: C15			
PC:	0+12.63	396642.53	575601.66	PCC:	0+85.73	396683.62	575642.8
PI:	0+16.76	396645.46	575598.76	PI:	0+93.89	396683.59	575651.0
PCC:	0+20.45	396649.58	575598.77	POE:	1+01.84	396680.36	575658.5
Radius:	10.00			Radius:	40.00		
Delta:	44°49'25"			Delta:	23°04'26"		
Length:	7.82			Length:	16.11		
Chord:	7.63			Chord:	16.00		
Chord Direction:	N 22º19'12.32" W			Chord Direction:	S 78º16'13.12" E		
Element: L9				⊟ement: C16			
PT:	0+20.45	396649.58	575598.77	PC:	1+01.84	396680.36	575658.5
POE:	0+24.58	396653.71	575598.77	PI:	1+14.08	396675.53	575669.7
Tangential Direction:	N 00°05'30" E			PT:	1+26.00	396675.49	575682.0
Tangential Length:	4.13			Radius:	60.00		
<u> </u>				Delta:	23°04'26"		
				Length:	24.16		
				Chord:	24.10		
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DEPARTMENT OF PUBLIC WORKS

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		Detailer:	A. MILLER	Numbers	N/A		
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City Project Manager Kim D. Blair

GRANT ST. SW RETURN							
	Station	Northing	Easting		Station	Northing	Easting
Element: L1				Element: L2			
POB:	0+00.00	396674.78	575891.72	PT:	0+59.92	396637.67	575923.65
POE:	0+05.00	396674.76	575896.72	POE:	0+60.17	396637.49	575923.47
Tangential Direction:	S 89°48'26" E			Tangential Direction:	S 45°21'39" W		
Tangential Length:	5.00			Tangential Length:	0.25		
Element: C1				Element: C3			
PC:	0+05.00	396674.76	575896.72	PC:	0+60.17	396637.49	575923.47
PI:	0+34.91	396674.66	575926.64	PI:	0+66.43	396633.09	575919.01
PCC:	0+52.04	396644.75	575926.62	POE:	0+72.04	396626.83	575919.01
Radius:	30.00			Radius:	15.00		
Delta:	89°50'13"			Delta:	45°19'51"		
Length:	47.04			Length:	11.87		
Chord:	42.37			Chord:	11.56		
Chord Direction:	S 44°53'19.47" E			Chord Direction:	S 22°41'42.89" W		
Element: C2							
PC:	0+52.04	396644.75	575926.62				
PI:	0+56.20	396640.59	575926.61				
PT:	0+59.92	396637.67	575923.65				
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- 1. EXISTING TREES TO BE PRESERVED IN PUBLIC RIGHT OF WAY SHALL BE PROTECTED PER FORESTRY STANDARDS AND PRACTICES. TREE PROTECTION SHALL BE INSTALLED PRIOR TO ISSUE OF DEMOLITION PERMIT, APPROVED BY FORESTRY, AND SHALL REMAIN IN PLACE THROUGHOUT CONSTRUCTION. NO CONSTRUCTION ACTIVITIES OR STORAGE OF MATERIALS (INCLUDING SOIL) SHALL TAKE PLACE WITHIN THE TREE PROTECTION ZONES WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE OFFICE OF THE CITY FORESTER.
- 2. SEE PROTECTED BIKE LANE SHEETS FOR ADDITIONAL INFORMATION ON THE PROTECTED BIKE LANE CONSTRUCTION.

PROFILE VIEW

PROPOSED GRADE

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	DEPARTMENT OF PUBLIC WORKS	ò
	201 WEST COLFAX AVENUE DENVER, CO 80202	
	PHONE: (720) 913-4501	
DENVER®	FAX: (720) 913-4544	

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Radius:

Length:

Chord:

Chord Direction: S 22º 46'36.18" W

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EXISTING GROUND

Delta:

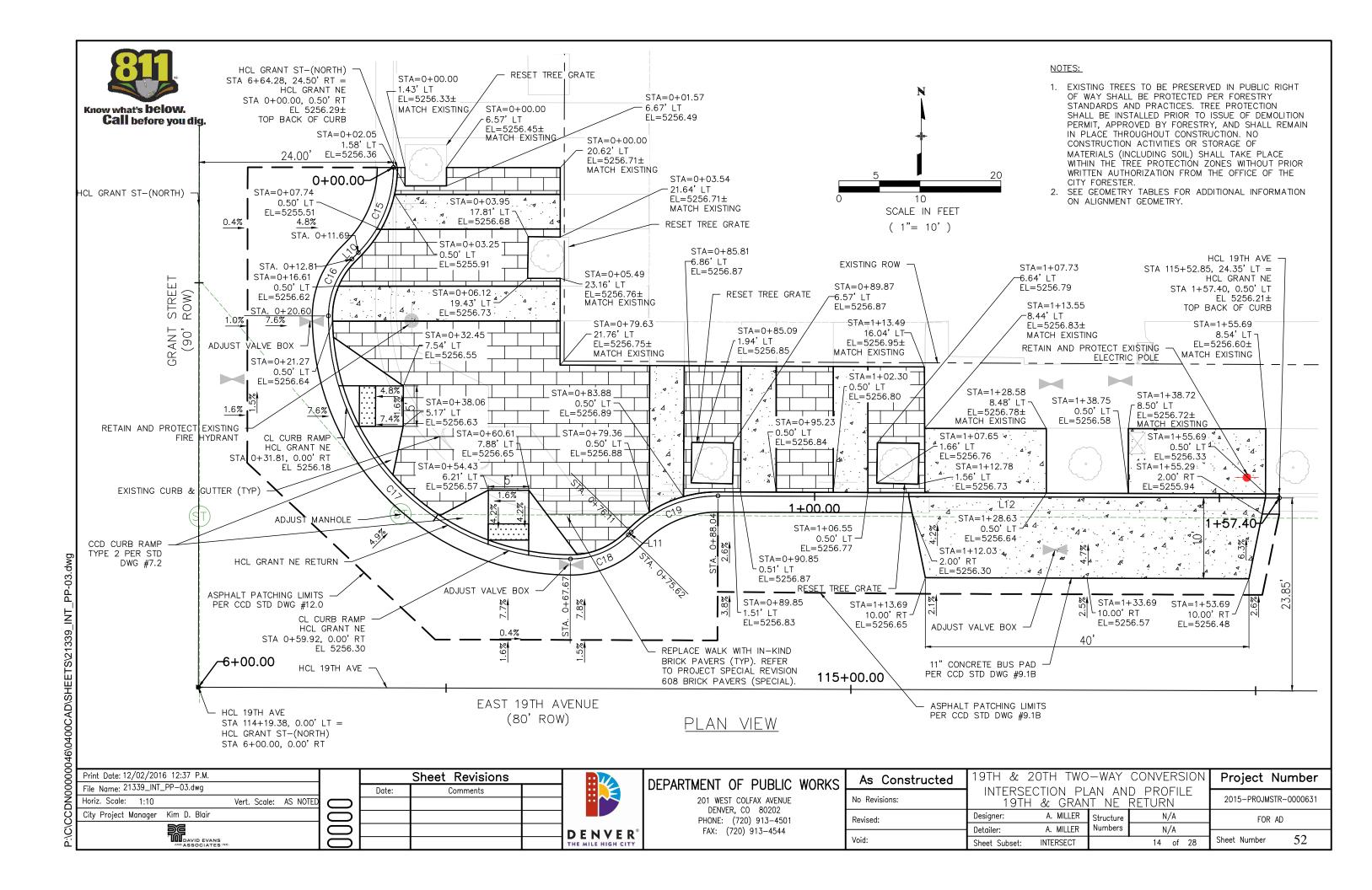
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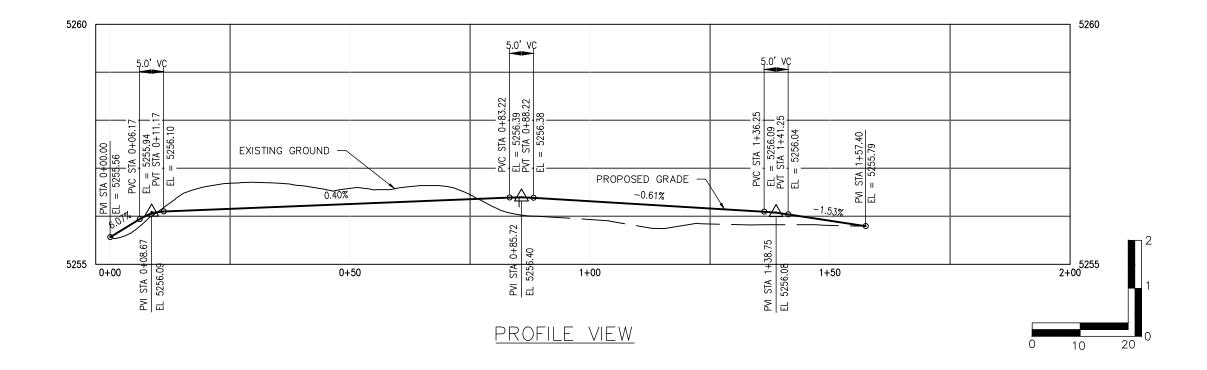
7.68

45°10'05"

As Constructed	19TH & 20TH TWO-WAY CONVERSION			Project Number		
No Revisions:	INTERSECTION PLAN AND PROFILE 19TH & GRANT SW RETURN				2015-PROJMSTR-0000631	
Revised:	Designer:	A. MILLER	Structure	N/A	FOR AD	
	Detailer:	A. MILLER	Numbers	N/A	7 311 112	
Void:	Sheet Subset:	INTERSECT		13 of 28	Sheet Number 51	







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ξ١	City Project Manager Kim D. Blair			
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Sheet Revisions

Comments

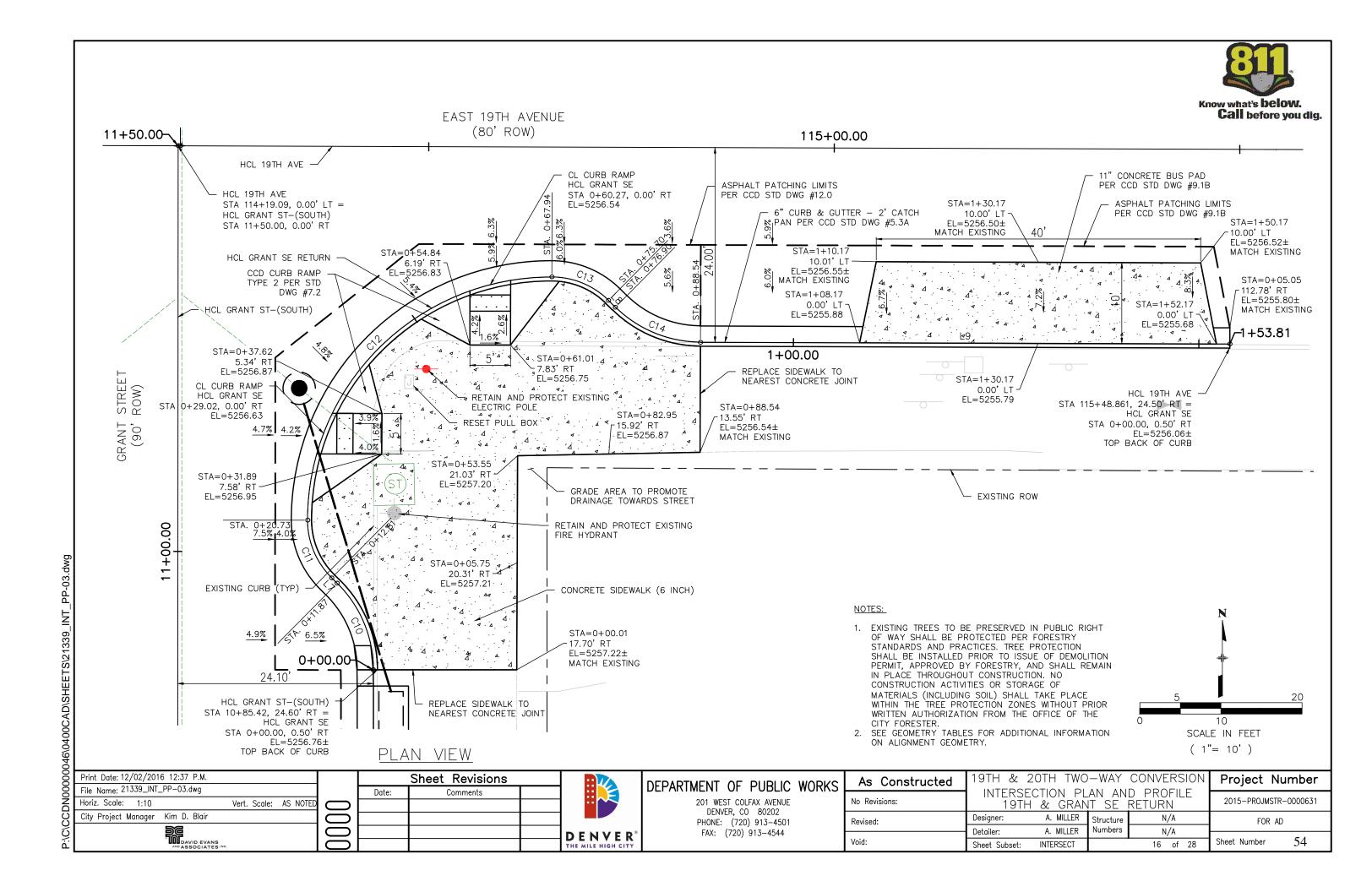
Date:

DEPARTMENT OF PUBLIC WORKS
201 WEST COLFAX AVENUE

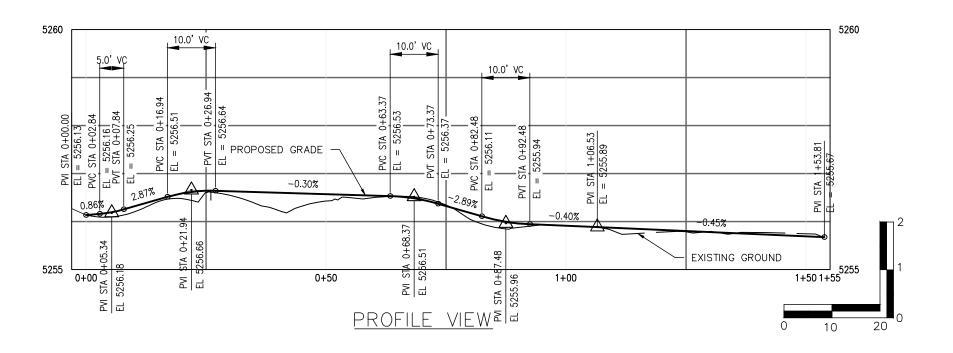
201 W	EST COL	FAX AVE	NUE
	NVER, CC		
PHONE	: (720	913–4	501
FAX:	(720)	913-45	44

S	As Constructed	19TH & 20TH TWO-WAY CONVERSION INTERSECTION PLAN AND PROFILE			Project Number			
	No Revisions:	INTERSE 19TH	_ : : - : - :		D PROFILE RETURN	2015-PROJMSTR-0000631		
	Revised:	Designer:	A. MILLER	Structure	N/A	FOR AD		
		Detailer:	A. MILLER	Numbers	N/A			
	Void:	Sheet Subset:	INTERSECT		15 of 28	Sheet Number 53		

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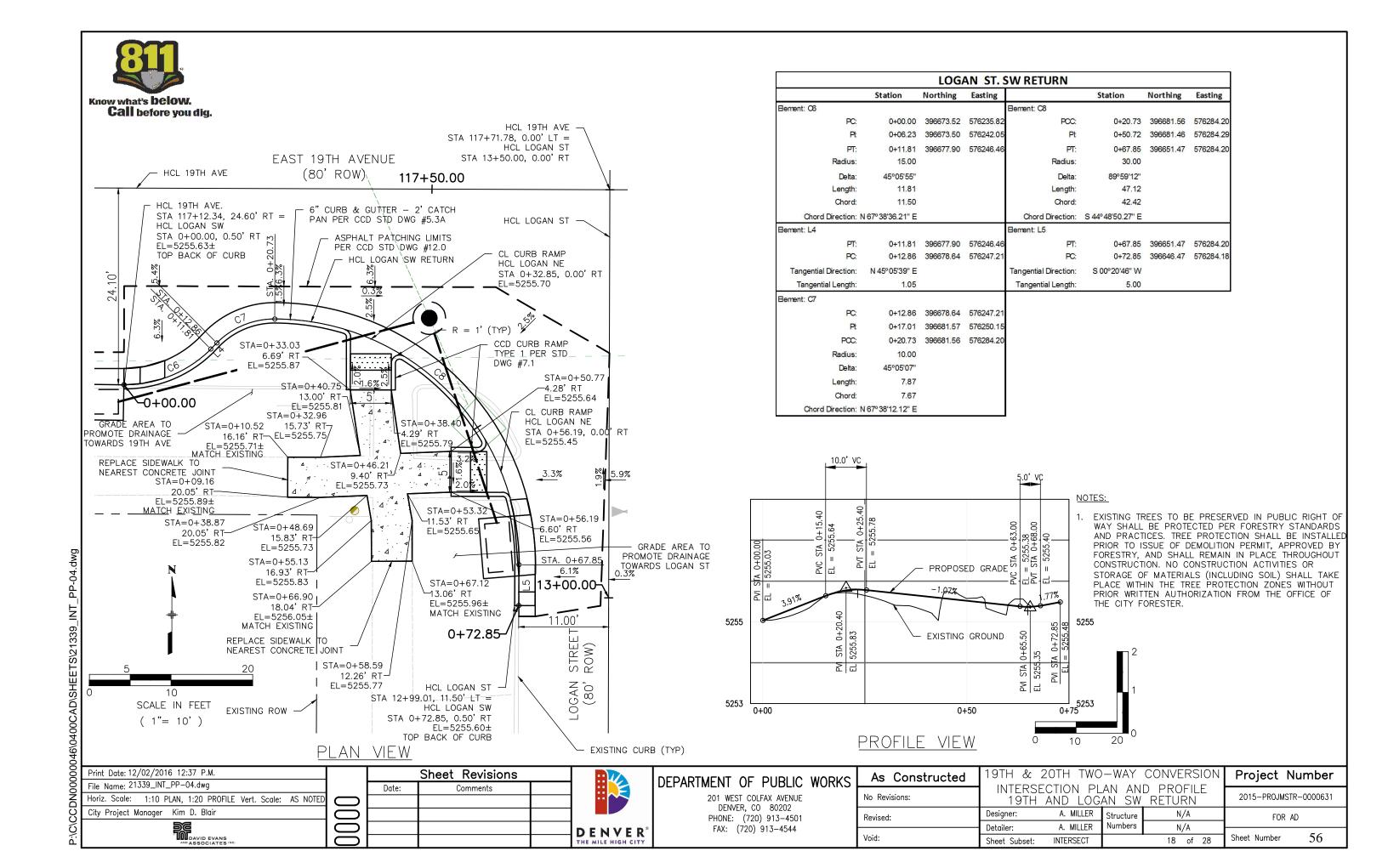
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3	File Name: 21339_INT_PP-03.dwg	
5	Horiz. Scale: 1:20 Vert. Scale: AS NOTE	
٥	City Project Manager Kim D. Blair] č
-000000100000	DAVID EVANS AND ASSOCIATES INC.	

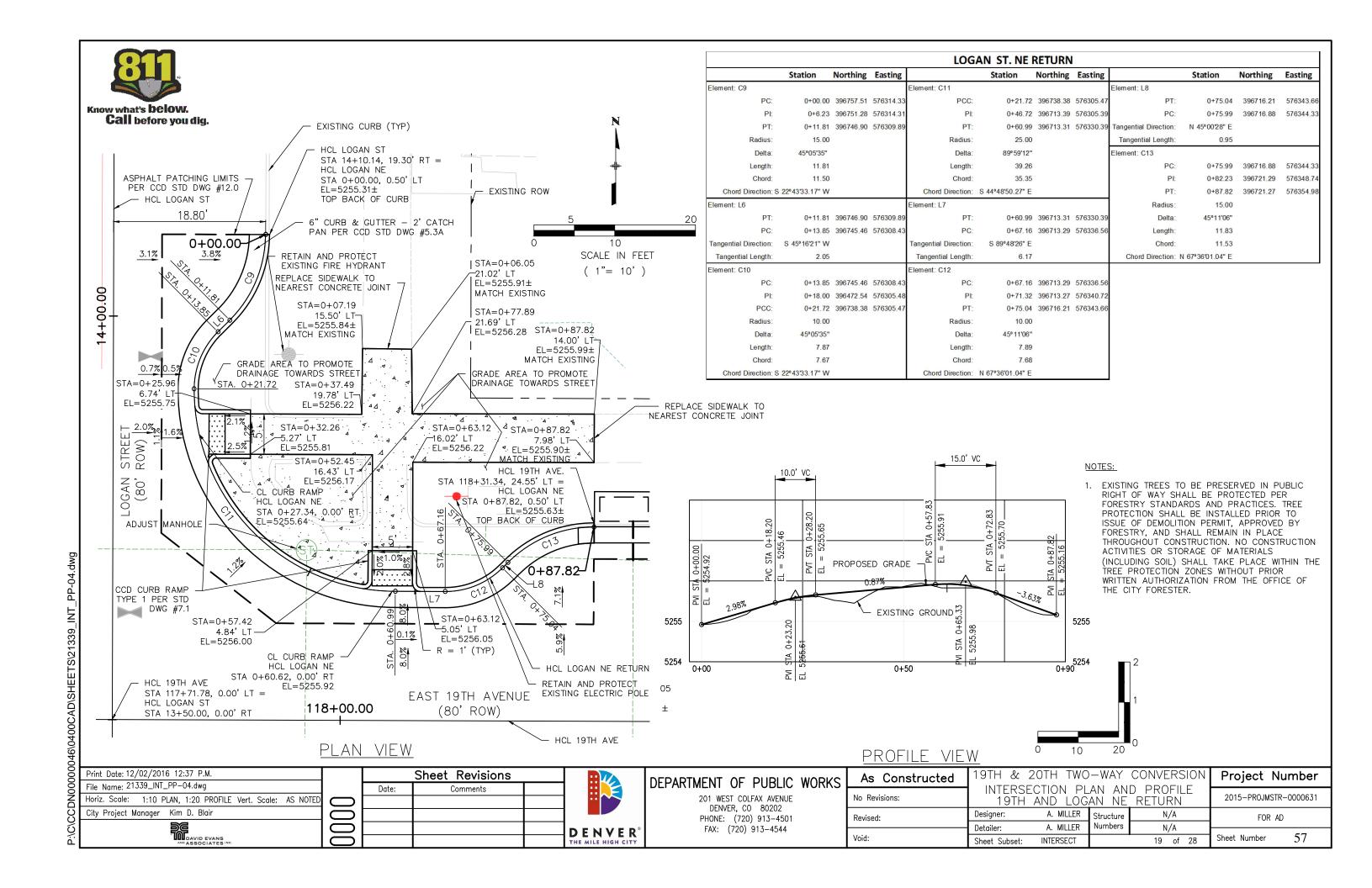
	Sheet Revisions	
	Comments	Date:
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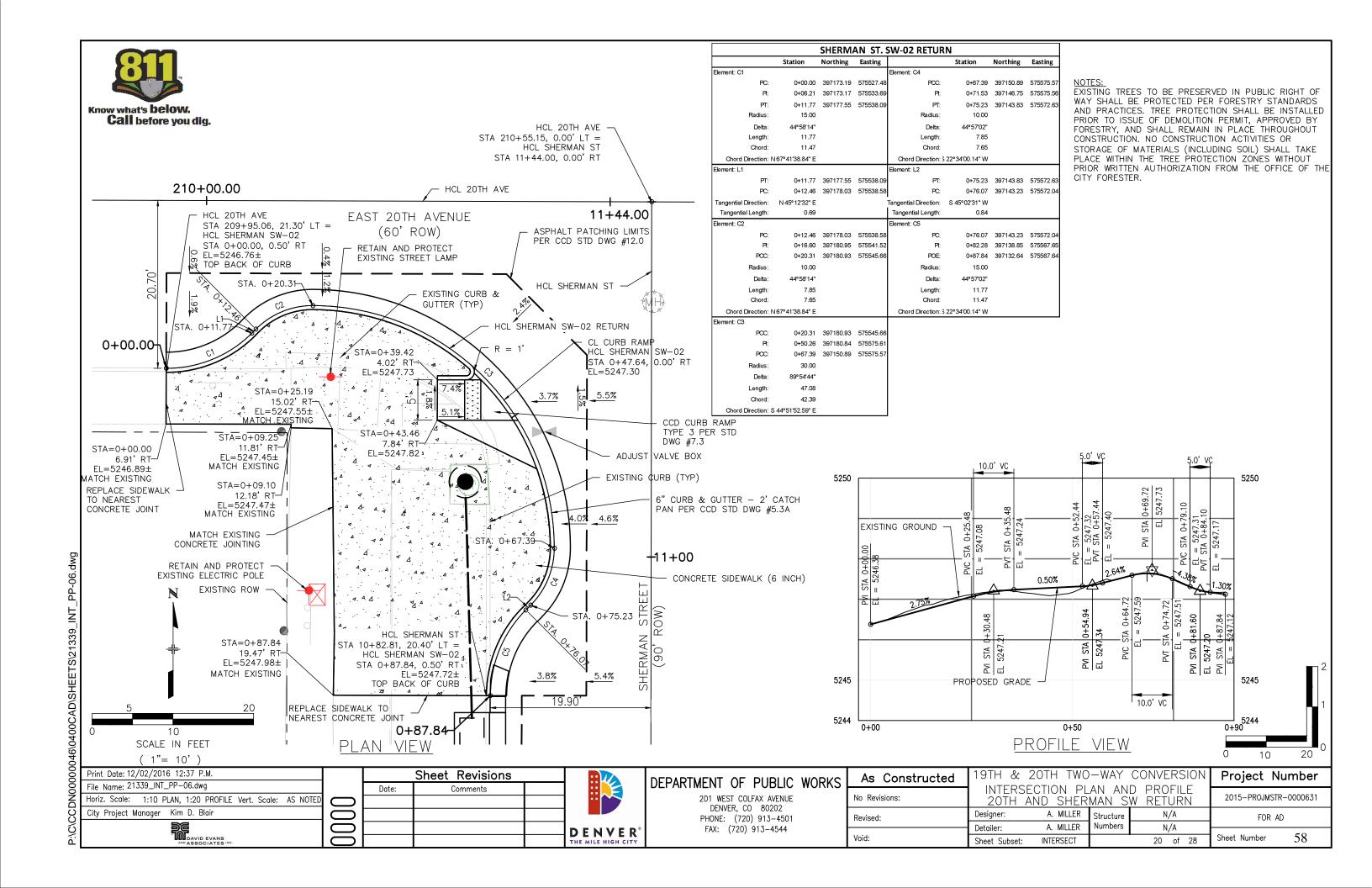
DEPARTMENT OF PUBLIC	WORKS
201 WEST COLFAX AVENUE DENVER, CO 80202	
PHONE: (720) 913–4501 FAX: (720) 913–4544	

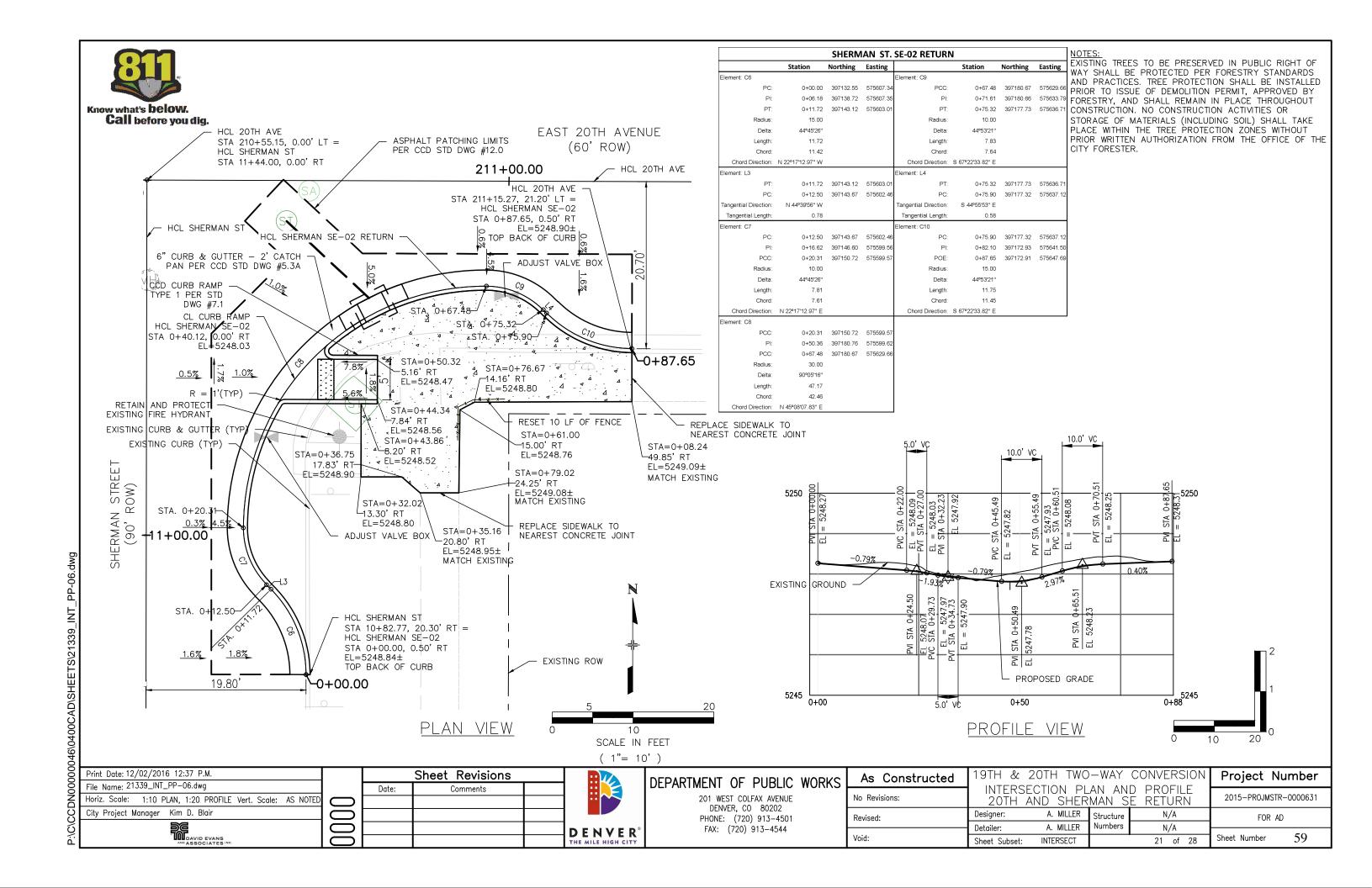
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	No Revisions:					2015-PROJMSTR-0000631			
	Revised:	Designer:	A. MILLER	Structure		/A	FOR A	D	
		Detailer:	A. MILLER	Numbers	N _.	/A			
	Void:	Sheet Subset:	INTERSECT		17	of 28	Sheet Number	55	

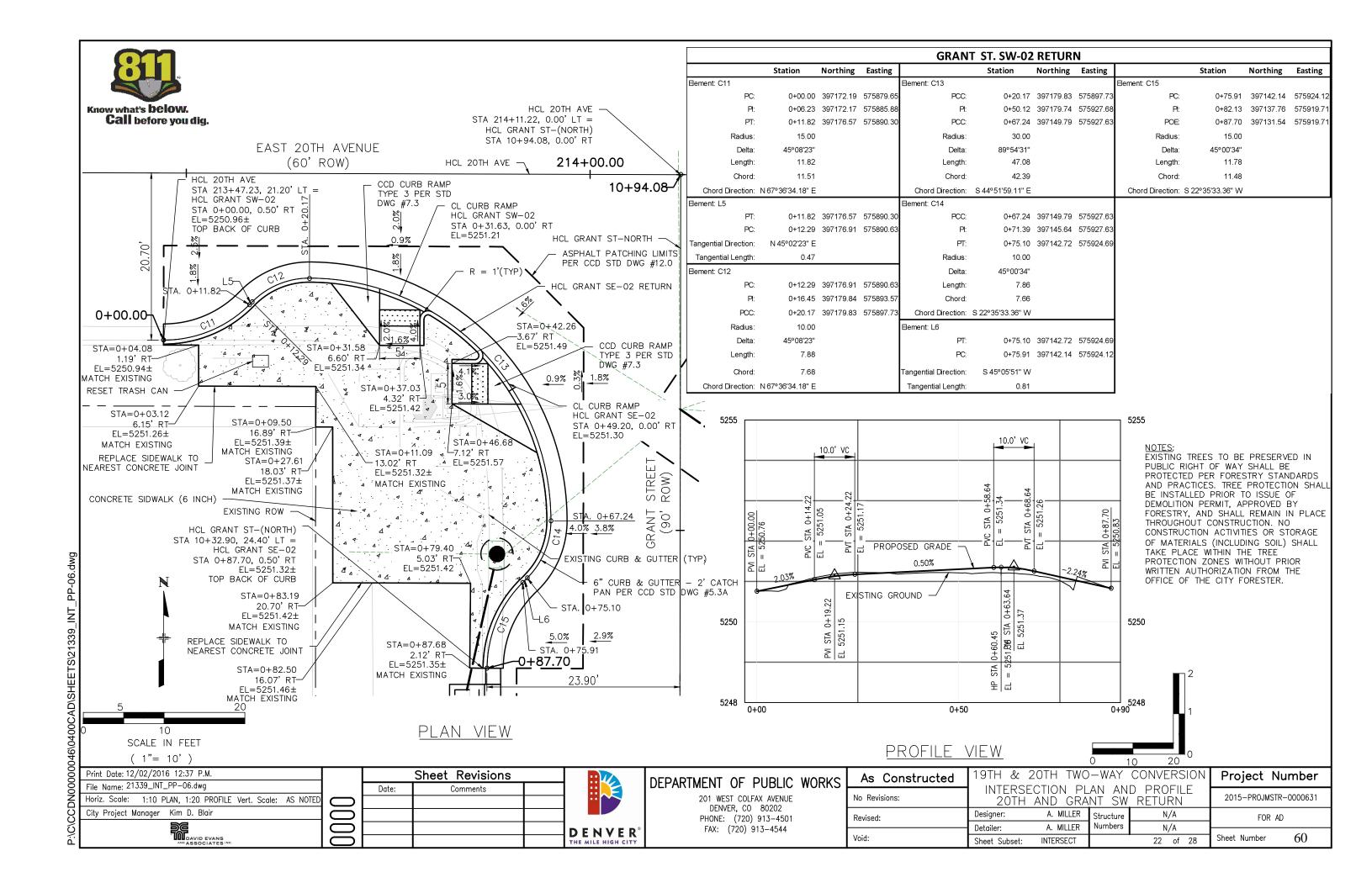
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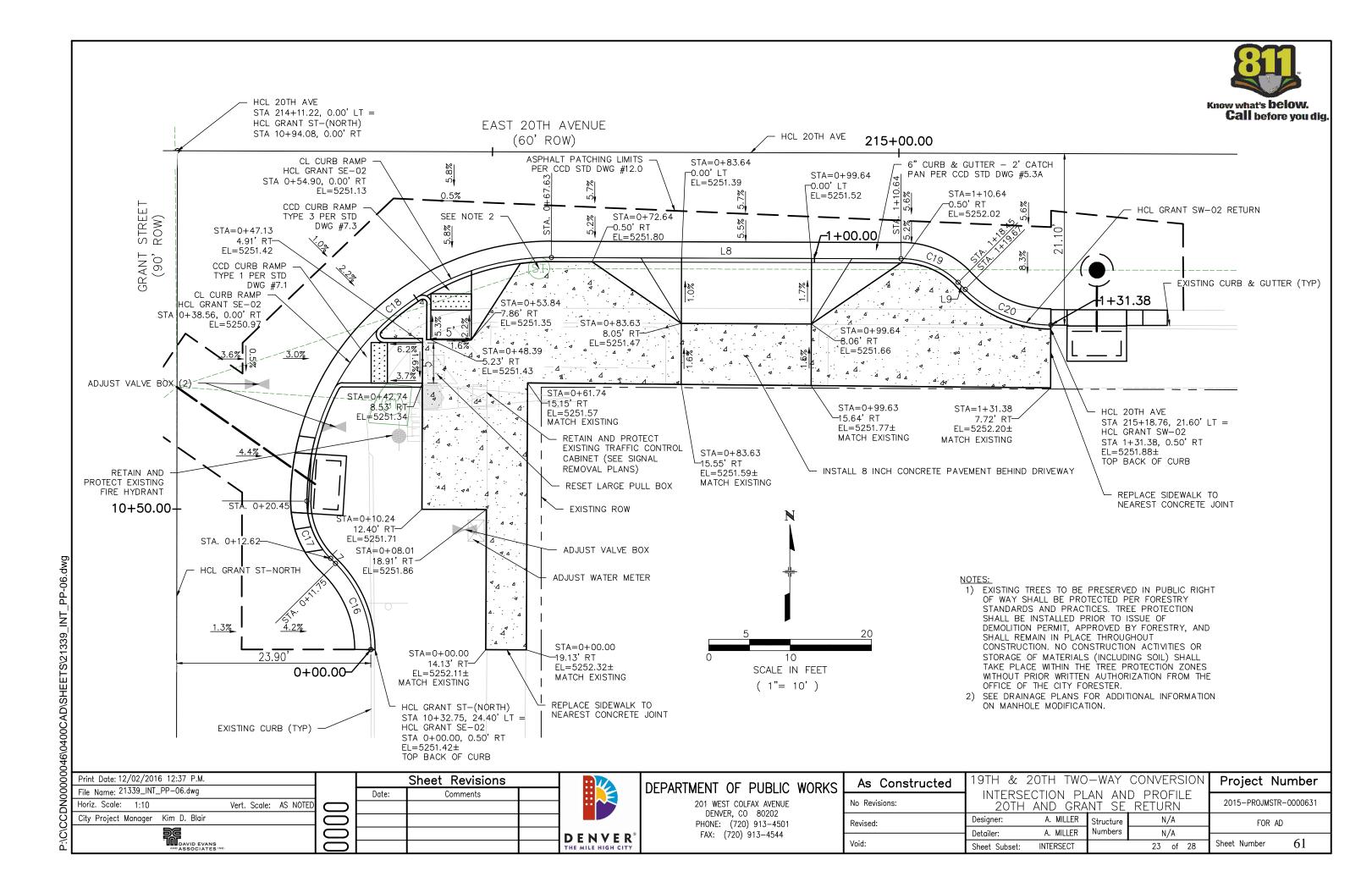




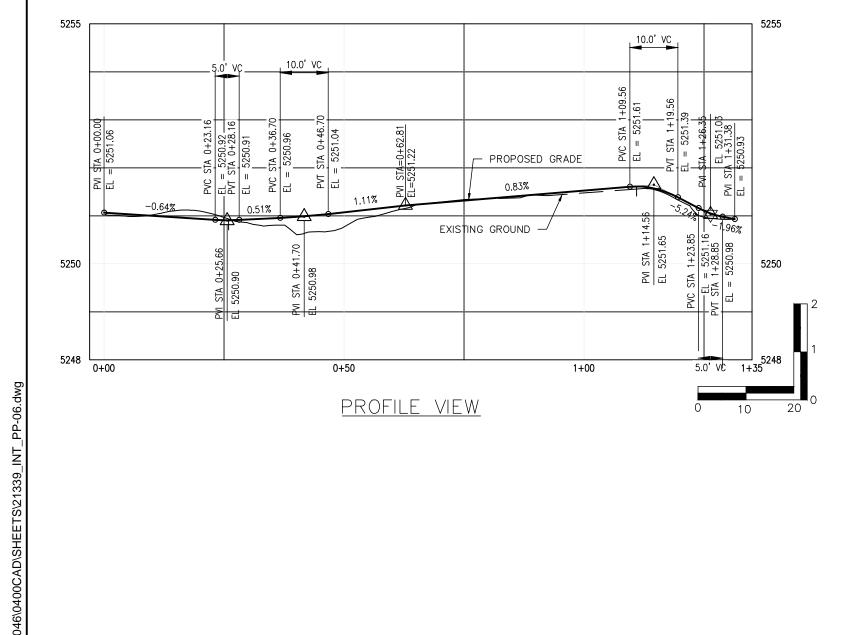












Sheet Revisions

Comments

Date:

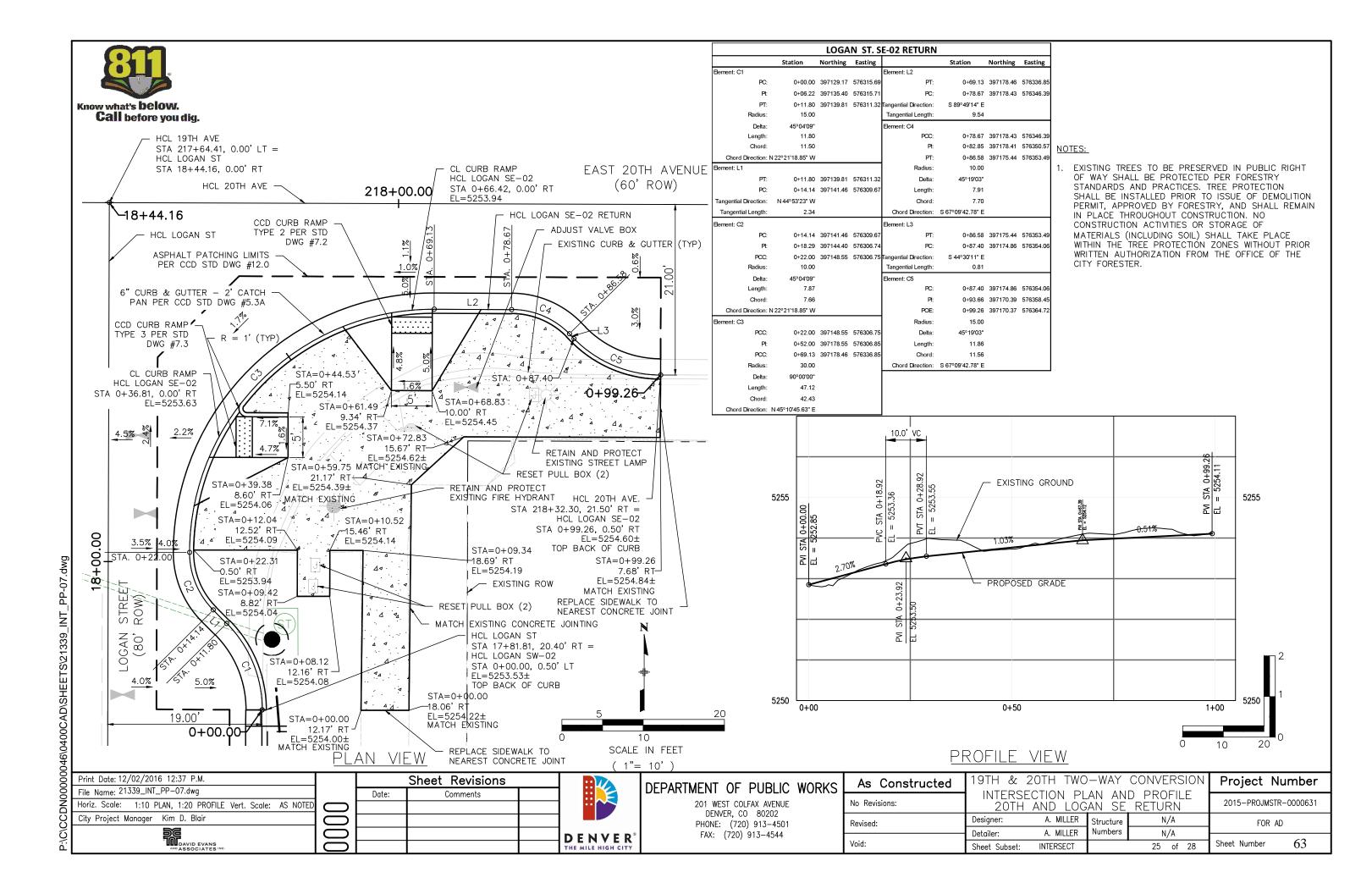
	Station	Northing	Easting		Station	Northing	Easting
Element: C16			_	⊟ement: L8			
PC:	0+00.00	397131.32	575967.51	PT:	0+67.63	397179.54	575989.7
PI:	0+06.19	397137.51	575967.51	PC:	1+10.64	397179.41	576032.7
PT:	0+11.75	397141.91	575963.15	Tangential Direction:	S 89°49'14" E		
Radius:	15.00			Tangential Length:	43.02		
Delta:	44°52'03"			⊟ement: C19			
Length:	11.75			PCC:	1+10.64	397179.41	576032.7
Chord:	11.45			PI:	1+14.76	397179.40	576036.8
Chord Direction:	N 22°20'45.32" W			PT:	1+18.45	397176.49	576039.7
⊟ement: L7				Radius:	10.00		
PT:	0+11.75	397141.91	575963.15	Delta:	44°44'55"		
PC:	0+12.62	397142.53	575962.53	Length:	7.81		
Tangential Direction:	N 44°46'47" W			Chord:	7.61		
Tangential Length:	0.88			Chord Direction:	S 67°26'46.73" E		
⊟ement: C17				⊟ement: L9			
PC:	0+12.62	397142.53	575962.53	PT:	1+18.45	397176.49	576039.7
PI:	0+16.75	397145.46	575959.63	PC:	1+19.67	397175.63	576040.6
PCC:	0+20.45	397149.59	575959.63	Tangential Direction:	S 45°04'19" E		
Radius:	10.00			Tangential Length:	1.21		
Delta:	44°52'03"			⊟ement: C20			
Length:	7.83			PC:	1+19.67	397175.63	576040.6
Chord:	7.63			PI:	1+25.84	397171.27	576045.0
Chord Direction:	N 22°20'45.32" W			POE:	1+31.38	397171.25	576051.1
⊟ement: C18				Radius:	15.00		
PCC:	0+20.45	397149.59	575959.63	Delta:	44°44'55"		
PI:	0+50.50	397179.64	575959.68	Length:	11.72		
PCC:	0+67.63	397179.54		Ĭ	11.42		
Radius:	30.00			Chord Direction:	S 67°26'46.73" E		
Delta:	90°05'29"						
Length:	47.17						
Chord:	42.46						
	N 45°08'00.89" E						

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۵I	Print Date: 12/02/2016 12:37 P.M.			
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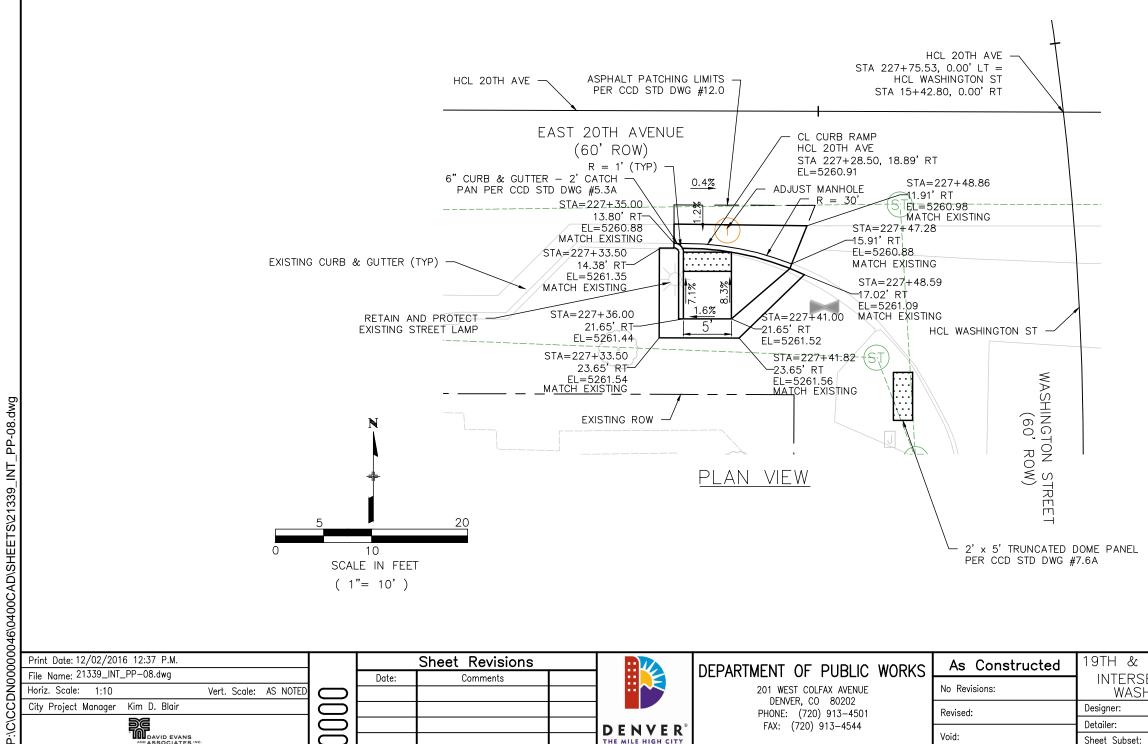
DENVER
THE MILE HIGH CITY

DEPARTMENT OF PUBLIC WORKS

As Constructed				CONVERSION	Project Number
No Revisions:	INTERSECTION PLAN AND PROFILE 20TH AND GRANT SE RETURN				2015-PROJMSTR-0000631
Revised:	Designer:	A. MILLER	Structure	N/A	FOR AD
	Detailer:	A. MILLER	Numbers	N/A	
Void:	Sheet Subset:	INTERSECT		24 of 28	Sheet Number 62







NOTES:

1. EXISTING TREES TO BE PRESERVED IN PUBLIC RIGHT OF WAY SHALL BE PROTECTED PER FORESTRY STANDARDS AND PRACTICES. TREE PROTECTION SHALL BE INSTALLED PRIOR TO ISSUE OF DEMOLITION PERMIT, APPROVED BY FORESTRY, AND SHALL REMAIN IN PLACE THROUGHOUT CONSTRUCTION. NO CONSTRUCTION ACTIVITIES OR STORAGE OF MATERIALS (INCLUDING SOIL) SHALL TAKE PLACE WITHIN THE TREE PROTECTION ZONES WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE OFFICE OF THE CITY FORESTER.

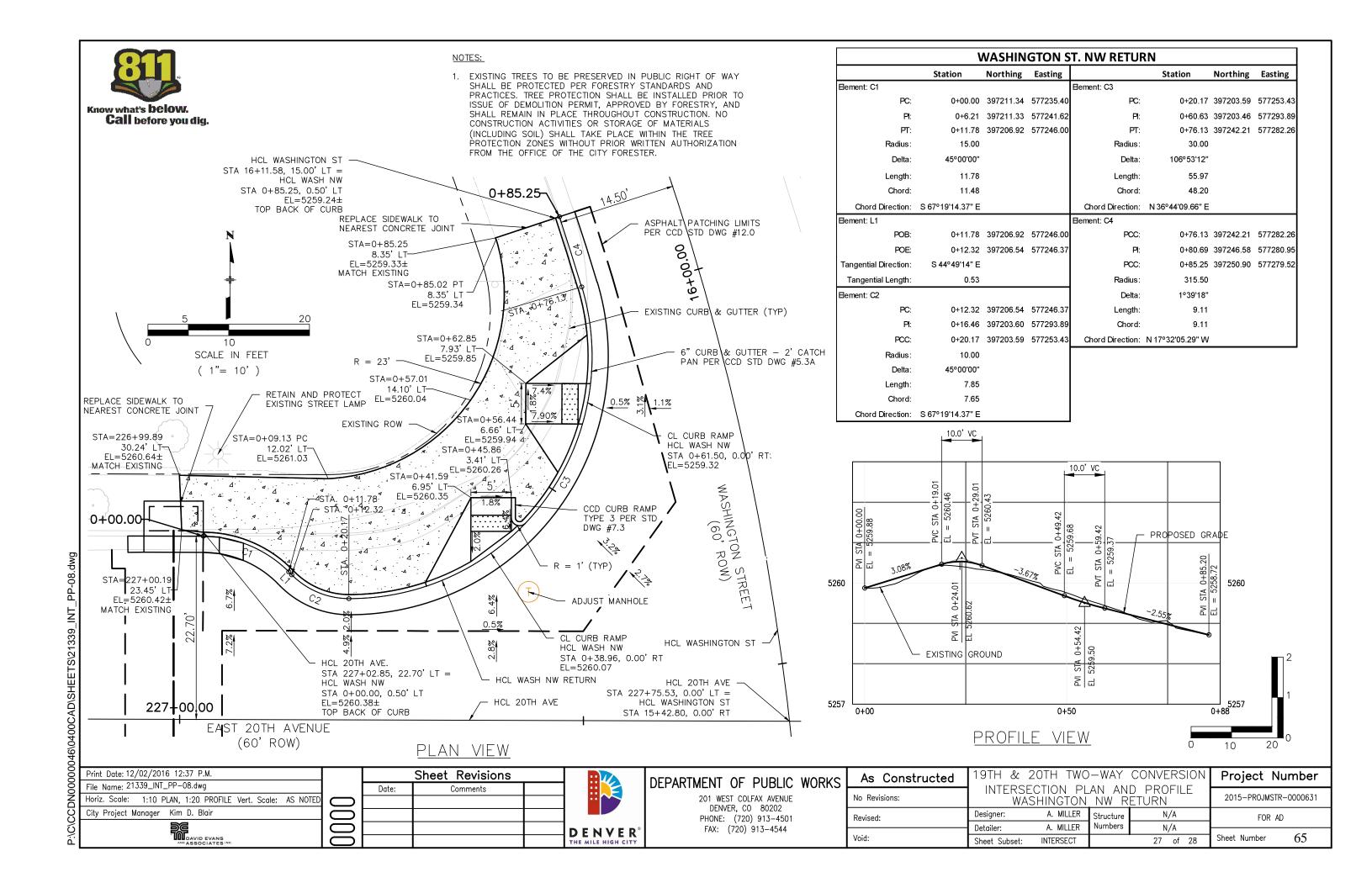
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File Name: 21339_INT_PP-08.dwg						
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City Project Manager	Kim D. Blair			lò		
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	DAVID EVANS					

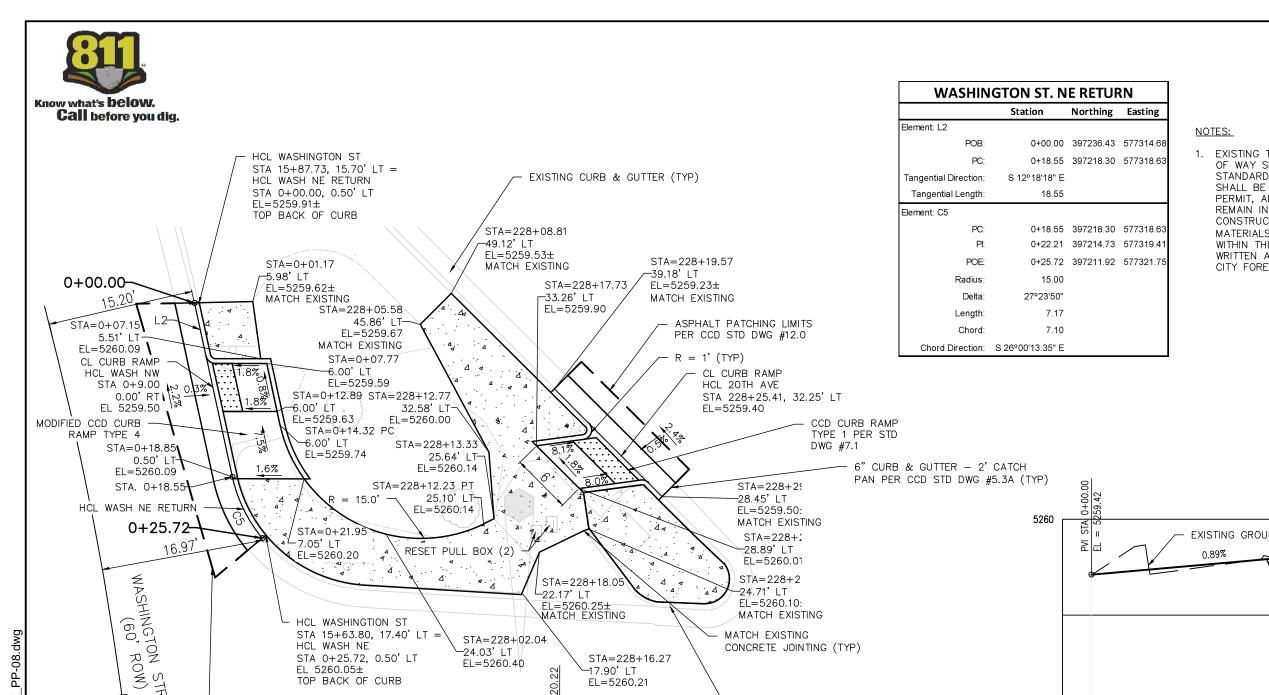
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DEPARTMENT OF PUBLIC WORKS

201 WE	ST COLF	AX AVENUE
DENV	ÆR, CO	80202
PHONE:	(720)	913-4501
FAX:	(720) 9	13-4544

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s	As Constructed	19TH & 20TH TWO-WAY CONVERSION					Project N	umber
	No Revisions:	INTERSECTION PLAN AND PROFILE WASHINGTON SW CURB RAMP				2015-PROJMSTR	-0000631	
	Revised:	Designer:	A. MILLER	Structure	N,	/A	FOR AD	
		Detailer:	A. MILLER	Numbers	N.	/A		
	Void:	Sheet Subset:	INTERSECT		26	of 28	Sheet Number	64





STA=228+16.27

RETAIN AND PROTECT

AND CURB RAMP

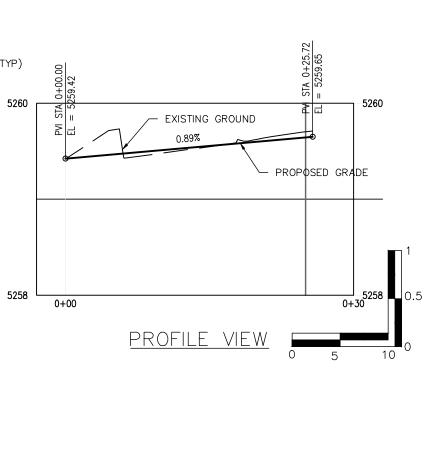
EXISTING CURB & GUTTER

-17.90' LT

HCL 20TH AVE -

EL=5260.21

1. EXISTING TREES TO BE PRESERVED IN PUBLIC RIGHT OF WAY SHALL BE PROTECTED PER FORESTRY STANDARDS AND PRACTICES. TREE PROTECTION SHALL BE INSTALLED PRIOR TO ISSUE OF DEMOLITION PERMIT, APPROVED BY FORESTRY, AND SHALL REMAIN IN PLACE THROUGHOUT CONSTRUCTION. NO CONSTRUCTION ACTIVITIES OR STORAGE OF MATERIALS (INCLUDING SOIL) SHALL TAKE PLACE WITHIN THE TREE PROTECTION ZONES WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE OFFICE OF THE CITY FORESTER.



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Print Date: 12/02/2016 12:37 P.M. File Name: 21339_INT_PP-08.dwg Horiz. Scale: 1:10 Vert. Scale: AS NOTED City Project Manager Kim D. Blair	
DAVID EVANS AND ASSOCIATES INC.	
	Print Date: 12/02/2016 12:37 P.M. File Name: 21339_INT_PP-08.dwg Horiz. Scale: 1:10 Vert. Scale: AS NOTED City Project Manager Kim D. Blair

Ξ

STA 0+25.72, 0.50' LT

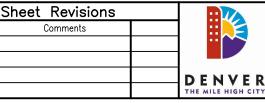
TOP BACK OF CURB

EL 5260.05±

ASPHALT PATCHING LIMITS

PER CCD STD DWG #12.0

HCL WASHINGTON ST 228+00.00



EL=5260.40

EAST 20TH AVENUE

(60' ROW)

PLAN VIEW

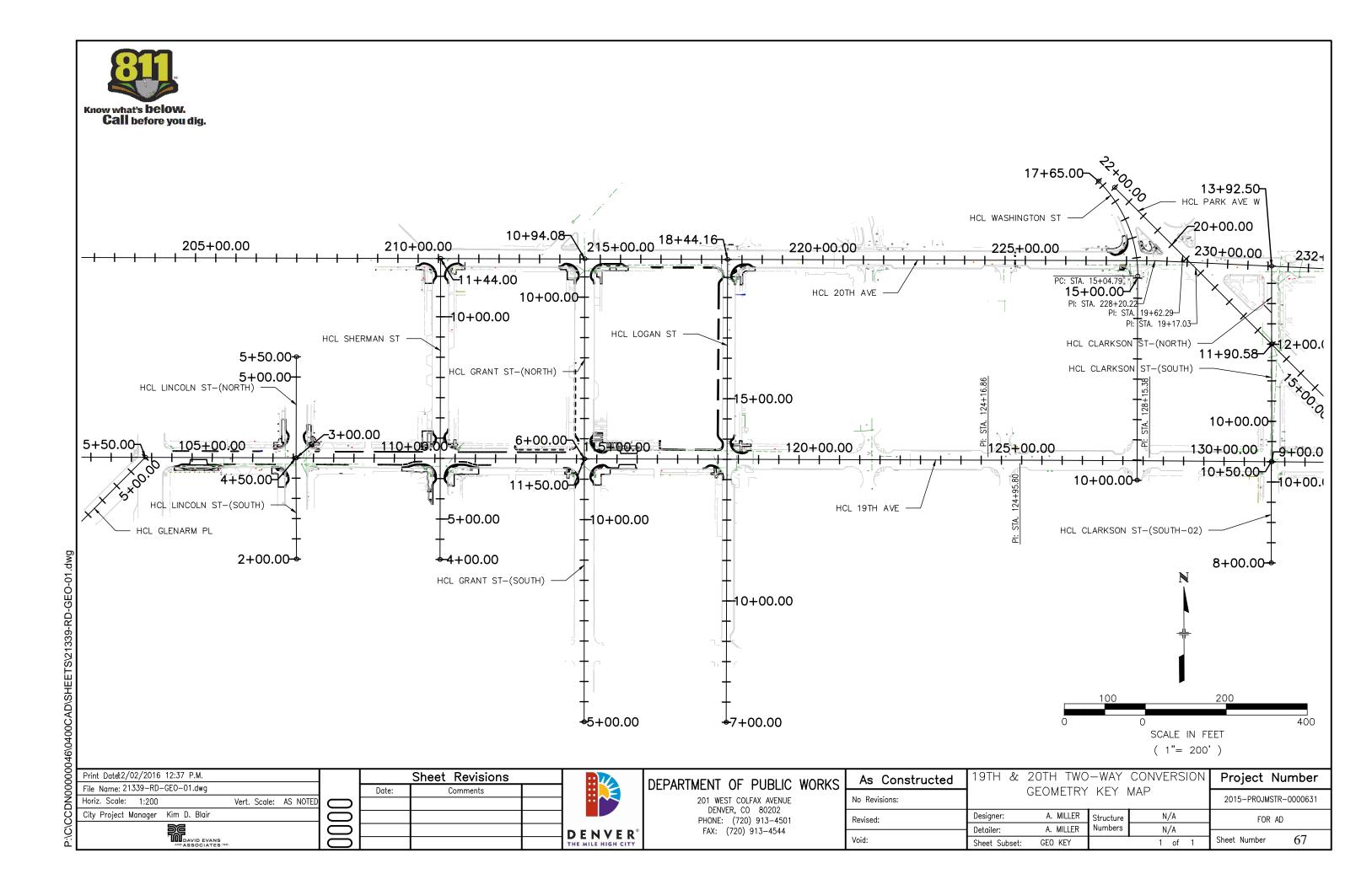
Date:

DEPARTMENT OF PUBLIC WORKS

10

SCALE IN FEET (1"= 10'

As Constructed	19TH & 2		Project Number		
No Revisions:	INTERSECTION PLAN AND PROFILE WASHINGTON NE CURB ISLAND				2015-PROJMSTR-0000631
Revised:	Revised: Designer: A. MILLER Structure N/A		FOR AD		
	Detailer:	A. MILLER	Numbers	N/A	
Void:	Sheet Subset:	INTERSECT		28 of 28	Sheet Number 66



HCL 20TH AVE				
	Station	Northing	Easting	
Element: LINE				
POB:	200+00.00	397197.11	574532.49	
PI:	228+20.22	397188.28	577352.70	
Tangential Direction:	S 89°49'14" E			
Tangential Length:	2820.22			
Element: LINE				
PI:	228+20.22	397188.28	577352.70	
POE:	232+49.92	397168.21	577781.92	
Tangential Direction:	S 87°19'22" E			
Tangential Length:	429.70			

HCL GLENARM PL					
	Station	Northing	Easting		
Element: LINE					
POB:	1+00.00	396383.96	575540.25		
POE:	5+50.00	396702.26	574858.34		
Tangential Direction:	N 44°58'54" E				
Tangential Length:	450.00				

HCL LINCOLN ST-(SOUTH)					
	Station	Northing	Easting		
Element: LINE					
POB:	2+00.00	396451.01	575231.61		
POE:	4+50.00	396701.00	575230.53		
Tangential Direction:	N 00°14'52" W				
Tangential Length:	250.00				

HCL LINCOLN ST-(NORTH)					
	Station	Northing	Easting		
Element: LINE					
POB:	3+00.00	396701.01	575230.87		
POE:	5+50.00	396951.01	575231.38		
Tangential Direction:	N 00°07'03" E				
Tangential Length:	250.00				

HCL SHERMAN ST					
	Station	Northing	Easting		
Element: LINE					
POB:	4+00.00	396449.81	575586.45		
POE:	11+44.00	397193.80	575587.63		
Tangential Direction:	N 00°05'18" E				
Tangential Length:	744.00				

HCL GRANT ST-(SOUTH)				
Station	Northing	Easting		
5+00.00	396048.61	575942.31		
11+50.00	396698.61	575942.65		
N 00°01'47" E				
650.00				
	Station 5+00.00 11+50.00 N 00°01'47" E	Station Northing 5+00.00 396048.61 11+50.00 396698.61 N 00°01'47" E		

HCL GRANT ST-(NORTH)				
	Station	Northing	Easting	
Element: LINE				
POB:	6+00.00	396698.61	575942.94	
POE:	10+94.08	397192.69	575943.70	
Tangential Direction:	N 00°05'16" E			
Tangential Length:	494.08			

HCL LOGAN ST				
	Station	Northing	Easting	
Element: LINE				
POB:	7+00.00	396047.43	576293.31	
POE:	18+44.16	397191.58	576296.89	
Tangential Direction:	N 00°10'46" E			
Tangential Length:	1144.16			

HCL CLARKSON ST-(SOUTH-02)				
	Station	Northing	Easting	
Element: LINE				
POB:	8+00.00	396441.50	577639.81	
POE:	10+50.00	396691.50	577640.16	
Tangential Direction:	N 00°04'47" E			
Tangential Length:	250.00			

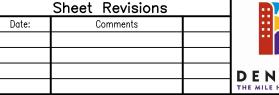
HCL CLARKSON ST-(SOUTH)					
	Station	Northing	Easting		
Element: LINE					
POB:	9+00.00	396691.49	577641.36		
POE:	11+90.58	396982.07	577641.16		
Tangential Direction: N 00°02'19" W					
Tangential Length:	290.58				

HCL CLARKSON ST-(NORTH)				
	Station	Northing	Easting	
Element: LINE				
POB:	12+00.00	396982.30	577640.93	
POE:	13+92.50	397174.80	577640.99	
Tangential Direction:	N 00°01'03" E			
Tangential Length:	192.50			

HCL PARK AVE W					
	Station	Northing	Easting		
Element: LINE					
POB:	11+00.00	396591.76	578030.98		
PI:	19+17.03	397169.85	577453.62		
Tangential Direction:	N 44°57'48" W				
Tangential Length:	817.03				
Element: LINE	Element: LINE				
PI:	19+17.03	397169.85	577453.62		
PI:	19+62.29	397201.53	577421.29		
Tangential Direction:	N 45°34'49" W				
Tangential Length:	45.26				
Element: LINE					
PI:	19+62.29	397201.53	577421.29		
POE:	22+00.00	397369.51	577253.10		
Tangential Direction:	N 45°02'08" W				
Tangential Length:	237.71				

HCL WASHINGTON ST						
⊟ement: LINE						
POB:	10+00.00	396645.69	577308.50			
PC:	15+04.79	397150.48	577310.08			
Tangential Direction:	N 00° 10'46" E					
Tangential Length:	504.79					
Element: CURVE						
PC:	15+04.79	397150.48	577310.08			
PI:	16+42.08	397287.77	577310.51			
PCC:	17+65.00	397384.85	577213.43			
Radius:	330.00					
Delta:	45° 10'42"					
Length:	260.21					
Chord:	253.52					
Chord Direction:	N 22°24'35.53" W					

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DAVID EVANS			C





DEPARTMENT OF PUBLIC WORKS

As Constructed	19TH & 2			CONVERSION	Project Number
No Revisions:]	GEOMETR	, IABL	.ES	2015-PROJMSTR-0000631
Revised:	Designer:	A. MILLER	Structure	N/A	FOR AD
	Detailer:	A. MILLER	Numbers	N/A	
Void:	Sheet Subset:	GEO		1 of 3	Sheet Number 68

	Station	Northing	Easting
Element: L1			
PT:	0+00.00	396678.52	574929.71
PC:	0+03.25	396678.50	574932.95
Tangential Direction:	S 89°48'26" E		
Tangential Length:	3.25		
Element: C1			
PC:	0+03.25	396678.50	574932.95
PI:	0+06.40	396678.49	574936.10
PT:	0+9.46	396679.75	574938.99
Radius:	15.00		
Delta:	23°43'48" LT		
Length:	6.21		
Chord:	6.17		
Chord Direction:	N 78°19'39.78" E		
Element: L2			
PT:	0+9.46	396679.75	574938.99
PC:	0+17.48	396682.96	574946.34
Tangential Direction:	S66°27'46" W		
Tangential Length:	8.02		
Element: C2			
PC:	0+17.48	396682.96	574946.34
PI:	0+19.79	396683.88	574948.47
PT:	0+22.04	396683.87	574950.78
Radius:	11.00		
Delta:	23°43'48" RT		
Length:	4.56		
Chord:	4.52		
Chord Direction:	N 78°19'39.78" E		
Element: L3	1470 1000.70 E		
PT:	0+22.04	396683.87	574950.78
PC:	1+02.38 S 89°48'26" E	396683.60	575031.12
Tangential Direction:			
Tangential Length:	80.34		
Element: C3	4.00.00		575004.46
PC:	1+02.38	396683.60	575031.12
PI:	1+05.80	396683.59	
PT:	1+09.11	396682.09	575037.62
Radius:	15.00		
Delta:	25°43'18" RT		
Length:	6.73		
Chord:	6.68		
Chord Direction:	S 76°56'46.93" E		

HCL 19TH AVE CURBLINE

HCL 19TH AVE CURBLINE (CONT.)							
Station Northing Easting							
Element: L4							
PT:	1+09.11	396682.09	575037.62				
PC:	1+15.46	396679.32	575043.33				
Tangential Direction:	S 64°05'08" E						
Tangential Length:	6.35						
Element: C4							
PCC:	1+15.46	396679.32	575043.33				
PI:	1+18.86	396677.83	575046.39				
PT:	1+22.15	396677.81	575049.79				
Radius:	15.00						
Delta:	25°33'06" LT						
Length:	6.69						
Chord:	6.63						
Chord Direction:	S 76°51'40.81" E						
Element: L5							
PT:	1+22.15	396677.81	575049.79				
PC:	1+25.19	396677.79	575052.84				
Tangential Direction:	S 89°38'14" E						
Tangential Length:	3.04						

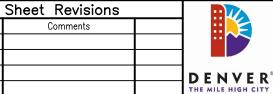
HCL GRANT SE RETURN							
Station Northing Easting							
0+00.00	396634.01	575966.72					
0+06.27	396640.27	575966.72					
0+11.87	396644.68	575962.26					
15.00							
45°21'26"							
11.87							
11.57							
N 22°38'55.78" W							
0+11.87	396644.68	575962.26					
0+12.81	396645.34	575961.59					
N 45°19'39" W							
0.94							
	0+00.00 0+06.27 0+11.87 15.00 45°21'26" 11.87 11.57 N 22°38'55.78" W 0+11.87 0+12.81 N 45°19'39" W	Station Northing 0+00.00 396634.01 0+06.27 396640.27 0+11.87 396644.68 15.00 45°21'26" 11.87 11.57 N 22°38'55.78" W V 0+11.87 396644.68 0+12.81 396645.34 N 45°19'39" W					

HCL GRA	NT SE RETUI	RN (CON	T.)				
Station Northing Easting							
Element: C11							
PC:	0+12.81	396645.34	575961.59				
PI:	0+16.99	396648.28	575958.62				
PCC:	0+20.73	396652.46	575958.62				
Radius:	10.00						
Delta:	45°21'26"						
Length:	7.92						
Chord:	7.71						
Chord Direction:	N 22°38'55.78" W						
Element: C12							
PCC:	0+20.73	396652.46	575958.62				
PI:	0+50.81	396682.54	575958.64				
PCC:	0+67.94	396682.44	575988.73				
Radius:	30.00						
Delta:	90°09'47"						
Length:	47.21						
Chord:	42.49						
Chord Direction:	N 45°06'40.53" E						
Element: C13							
PCC:	0+67.94	3976682.44	575988.73				
PI:	0+72.03	396682.43	575992.81				
PT:	0+75.70	396679.55	575995.72				
Radius:	10.00						
Delta:	44°28'30"						
Length:	7.76						
Chord:	7.57						
Chord Direction:	S 67°34'11.05" E						
Element: L8							
PT:	0+75.70	396679.55	575995.72				
PC:	0+76.90	396678.71	575996.57				
Tangential Direction:	S 45°19'56" E						

1.20

HCL GRANT SE RETURN (CONT.)							
	Station Northing Easting						
Element: C14							
PC:	0+76.90	396678.71	575996.57				
PI:	0+83.03	396674.40	576000.94				
PT:	0+88.54	396674.38	576007.07				
Radius:	15.00						
Delta:	44°29'12"						
Length:	11.65						
Chord:	11.36						
Chord Direction:	S 67°34'32.07" E						
Element: L9							
PT:	0+88.54	396674.38	576007.07				
PC:	1+53.81	396674.17	576072.34				
Tangential Direction:	S 89°49'08" E						
Tangential Length:	65.27						

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City Project Manager Kim D. Blair			
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Date:

DEPARTMENT OF PUBLIC WORKS

Tangential Length:

As Constructed	19TH & :			CONVERSION	Project Number
No Revisions:		GEOMETR	, IABL	ES .	2015-PROJMSTR-0000631
Revised:	Designer:	A. MILLER	Structure	N/A	FOR AD
	Detailer:	A. MILLER	Numbers	N/A	
Void:	Sheet Subset:	GEO		2 of 3	Sheet Number 69

	Station	Northing	Easting
Element: C15			
PC:	0+00.00	396762.85	575967.0
PI:	0+06.16	396756.69	575967.0
PT:	0+11.69	396752.31	575962.6
Radius:	15.00		
Delta:	44°39'26"		
Length:	11.69		
Chord:	11.40		
Chord Direction:	S 22º24'59.16" W		
Element: L10			
PT:	0+11.69	396752.31	575962.6
PC:	0+12.81	396751.52	575961.9
Tangential Direction:	S 44°44'42" W		
Tangential Length:	1.11		
Element: C16			
PC:	0+12.81	396751.52	575961.9
PI:	0+16.91	396748.61	575959.0
PCC:	0+20.60	396744.50	575959.0
Radius:	10.00		
Delta:	44°39'26"		
Length:	7.79		
Chord:	7.60		
Chord Direction:	S 22°24'59.16" W		
Element: C17			
PCC:	0+20.60	396744.50	575959.0
PI:	0+50.54	396714.55	575958.9
PCC:	0+67.67	396714.45	575988.9
Radius:	30.00		
Delta:	89°53'42"		
Length:	47.07		
Chord:	42.39		
Chord Direction:	S 44°51'35.02" E		
Element: C18			
PCC:	0+67.67	396714.45	575988.9
PI:	0+71.87	396714.44	575993.1
PT:	0+75.62	396717.43	575996.0
Radius:	10.00		
Delta:	45°34'29"		
Length:	7.95		
Chord:	7.75		
	N 67°24'19.57" E		

HCL GRANT NE RETURN (CONT.)							
Station Northing Easting							
Element: L11							
PT:	0+75.62	396717.43	575996.0				
PC:	0+76.11	396717.78	575996.4				
Tangential Direction:	N 44°37'05" E						
Tangential Length:	0.49						
Element: C19							
PC:	0+76.11	396717.78	575996.4				
PI:	0+82.41	396722.26	576000.8				
PT:	0+88.04	396722.24	576007.1				
Radius:	15.00						
Delta:	45°34'29"						
Length:	11.93						
Chord:	11.62						
Chord Direction:	N 67°24'19.57" E						
Element: L12							
PT:	0+88.04	396722.24	576007.1				
PC:	1+57.40	396722.01	576076.4				
Tangential Direction:	S 89°48'26" E						
Tangential Length:	69.36						

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

As Constructed	19TH & 2			CONVERSION	Project Number
No Revisions:		GEOMETR	, IABL	ES	2015-PROJMSTR-0000631
Revised:	Designer:	A. MILLER	Structure	N/A	FOR AD
Void:	Detailer: Sheet Subset:	A. MILLER GEO	Numbers	N/A 3 of 3	Sheet Number 70

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- 1. Contractors performing work on any wastewater facility or appurtenance must be properly licensed and have a licensed plumber or drainlayer on site during the work. (General Contract Conditions (G.C.C.) 317.1)
- The current edition of the Wastewater Management Division Standard Details shall apply to all work and will be the
 edition current as of the advertisement date. The Contractor must be in possession of the Standard Details at the preconstruction conference and a copy must remain on the job site at all times during construction. Wastewater
 Management Division Standard Details can be obtained at www.denvergov.org. (Special Contract conditions (SC-1),
 contract form-8 (Applicable laws)).
- 3. The Contract specified edition of the City and County of Denver's Transportation Standards and Details for the Engineering Division shall be followed for all roadway work in the plan set and will be the edition current as of the advertisement date. These Standards and Details can be obtained at www.denvergov.org. (SC-1, Contract form-8 (Applicable laws)).
- 4. The construction activities stormwater discharge permits (state and local floodplain permits), street-cut permit, and street occupancy permit (including the associated traffic control plans) may be required and it is the Contractor's responsibility to obtain all of these permits. Approved copies of all required permits must be submitted to the City Construction Project Manager prior to the start of construction. (G.C.C. 301.2, 317.1 & 317.5; Contract form-8 (Applicable laws)).
- 5. A Parks permit will be required for any work or occupancy of park land; this includes but is not limited to: designated city parks, parkways, open space, trails and bike paths. (G.C.C. 301.2, 317.1 & 317.2 & 317.5; Contract form-8 (Applicable laws)).
- 6. All design drawings provided as part of this Contract are formatted for printing full size, on standard 22 x 34 inch (ANSI D) paper size and to half-size (and scale where appropriate) on standard 11 x 17 paper size. It is the Contractor's responsibility to ensure that hard copies of plans utilized for bidding or construction are printed on the proper media size and that scales provided within the drawings are correctly interpreted.
- 7. "Red-lined" drawings and prints are to be maintained by the Contractor and submitted to the City Construction Project Manager at the completion of the project. Any and all field changes made during construction must be noted. The drawings will state "red lines" in large block letters. The red-lined drawings must be received and accepted by the City Construction Project Manager prior to final acceptance and settlement.
- 8. The Contractor shall notify the City Construction Project Manager immediately of "any" discrepancies or variations in drawings & specifications that effect pricing or that could require modification to the design. (G.C.C. 1103).
- 9. The City and County of Denver assumes no responsibility for utility locations. The utilities shown on these drawings have been plotted from the best available information. All utilities must be located by the Contractor. All costs associated with field verification of location and depths of utilities shall be borne by the Contractor and shall be completed prior to the commencement of construction. (G.C.C. 701, 804).
- 10. All range points or other survey monuments which may be damaged or destroyed during construction shall be tied out and reset per City Surveying Standards. (G.C.C. 318, 319).
- 11. All elevations shown are NAV88 Datum, unless otherwise noted.
- 12. Inlets and manholes are not shown to scale on the plan and profile sheets.
- 13. Invert elevations and calculated pipe slopes on storm and sanitary profiles are to the center of manhole or structure. Pipe lengths are two-dimensional lengths center to center between manholes and to the inside edge of inlets.

- 14. Northing and Easting callouts on Type 16 and Type 14 inlets are to the center of the structure at the flowline. Northing and Easting callouts on manholes are to the center of manhole.
- 15. Location of inlets and/or inlet connectors may be adjusted in the field at the direction of the City Construction Project Manager in conjunction with design intention. All inlet connections shown in plan and profile are approximate locations and depths.
- 16. Depths or bottom of structure elevations will not be provided for inlets within the project plans, as these are required to be determined based on field conditions in accordance with applicable Standard Detail Drawings. It shall be the responsibility of the General Contractor to establish inlet depths and complete construction in conformance with applicable Standard Detail Drawings based on clearances of adjacent utilities while maintaining minimum required grades on lateral connections.
- 17. All sewer manholes must be maintained and accessible during construction.
- 18. All sanitary manholes are 4' diameter with "A" base and concentric cone unless noted otherwise.
- 19. All manholes built within this project shall include either a 4" or 8" cast iron riser with 3" steel adjusting rings.

DENVER WATER

- 20. It shall be the Contractor's responsibility to take whatever steps necessary to protect all water facilities. If any water facilities cannot be adequately protected, then said water facilities shall be relocated or removed in accordance with Denver Water Department requirements, by a Denver Water prequalified contractor.
- 21. Construction activities by any party that disturb, relocate, sever, or in any other way impact a service line shall be required to meet current Denver Water requirements for service lines as specified in Chapter 3 of the latest Denver Water Standards. In the event lead water lines are encountered, do not disturb, IMMEDIATELY STOP WORK, and notify the City Construction Project Manager.

TREE PROTECTION

- 22. If existing trees are to be removed they must first be evaluated by the City and County of Denver Forestry (Parks)
 Department and a permit must be obtained. Existing trees to remain must have Forestry approved tree protection set up around them during the construction as shown in the "Individual Tree Protection Detail" in the Denver Parks
 Department Standard Plans. The Contractor must follow all of the City and County of Denver Tree Retention and Protection Guidelines. Refer to Denver Parks Department Specification 01 56 39.
- 23. Metro Wastewater Reclamation District must be notified at least 48 hours prior to construction on Metro facilities in order for a District Inspector to be present during construction. Contractor must contact Metro Wastewater Reclamation District to schedule the inspection 303-286-6000.

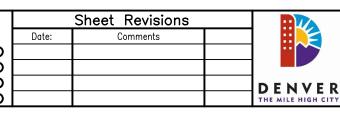


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City Project Manager Kim D. Blair



DEPARTMENT OF PUBLIC WORKS

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ı	Revised:	Designer:	G. PATARINI	Structure Numbers	N/A	FOR AD
	Void:	Detailer: Sheet Subset:	G. PATARINI DRAINAGE	numbers	N/A 1 of 17	Sheet Number 71

								PIPE					
	INLET		MANHOLE			REINFORCED CONCRETE PIPE		REMOVAL	. REMOVAL	MODIFY			
LOCATION		TYPE		TYPE	TYPE TYPE		CL 3		CL 3		OF PIPE	OF INLET	MANHOLE
	DENVER TYPE 14, 6'	TRIPLE DENVER TYPE	SINGLE NO. 16	DENVER TYPE 4' I.D.	DENVER TYPE 4' I.D.	DENVER TYPE 5' I.D.		LF					
		16 (VALLEY)	INLET	FLATTOP		FLAT TOP							
	H (PAY)	H (PAY)	H (PAY)	H (PAY)	H (PAY)	H (PAY)	15"	18"	24"	LF	EA	EA	
19th Avenue and Lincoln Street SW	1					1	62.2			26	1		
19th Avenue and Lincoln Street NW	1			1				30.3			1		
19th Avenue and Lincoln Street NE	1		1	2			39.5			6	2		
19th Avenue and Sherman Street SW		1		1			43.6				1		
19th Avenue and Sherman Street SE	1			1				15.8		15	1		
19th Avenue and Grant Street SW	1			1				33.9			1		
19th Avenue and Grant Street SE	1				1			39.1		15	1		
19th Avenue and Logan Street SW	2			1				65.8		12	1		
19th Avenue and Logan Street NE	1								4.8		1	1	
20th Avenue and Sherman Street SW	1			1				29.3			1		
20th Avenue and Sherman Street SE			1				14.0			22	1	1	
20th Avenue and Grant Street SW	1			1				17.1			1		
20th Avenue and Grant Street SE	2			1				28.3		25	1	2	
20th Avenue and Logan Street SE	1			1				11.4			1		
20th Avenue and Washington Street NW	1				1			33.9					
PROJECT TOTALS:	15	1	2	11	2	1	159.3	304.9	4.8	121	15	4	

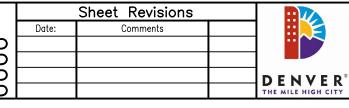
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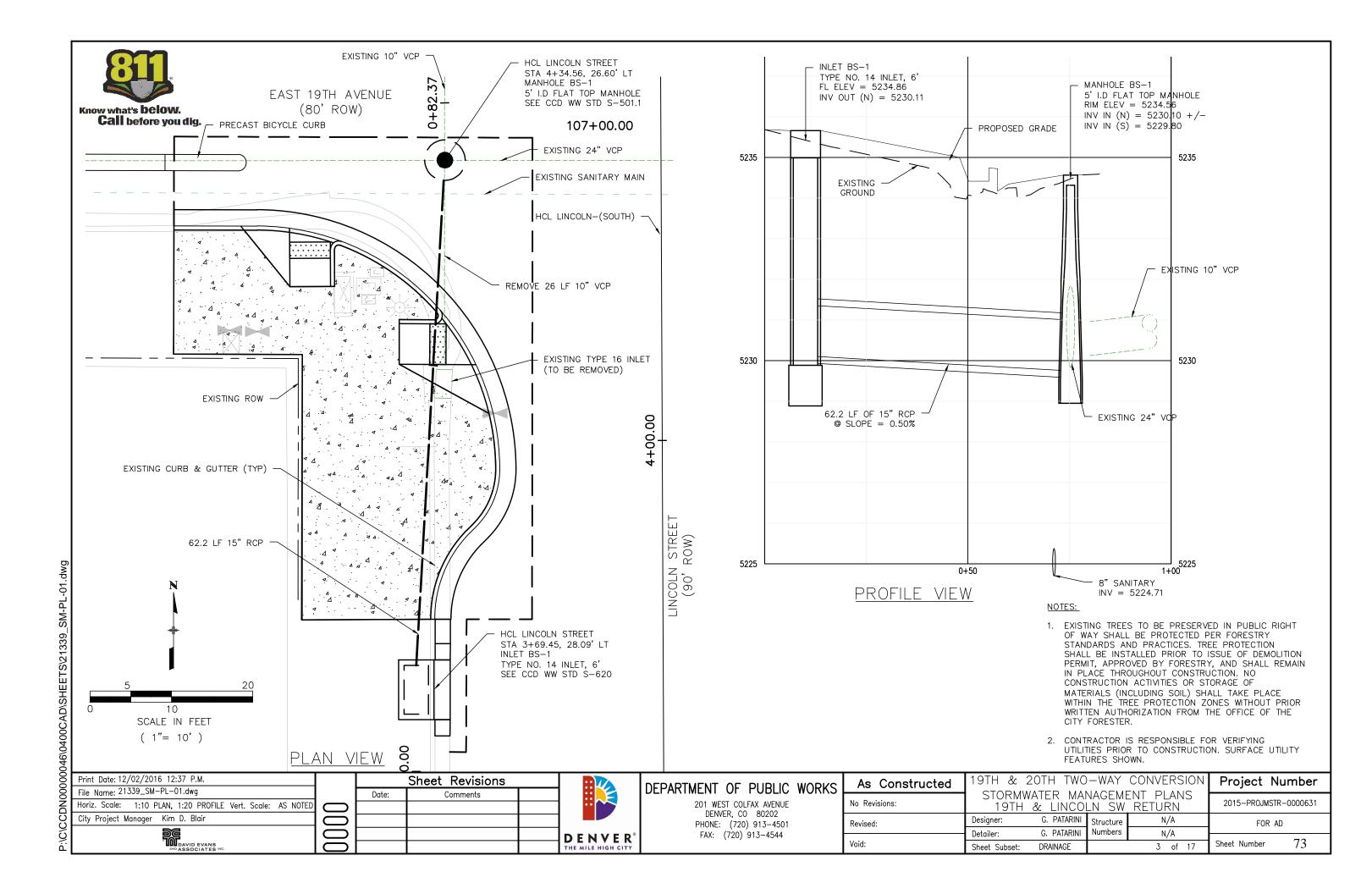
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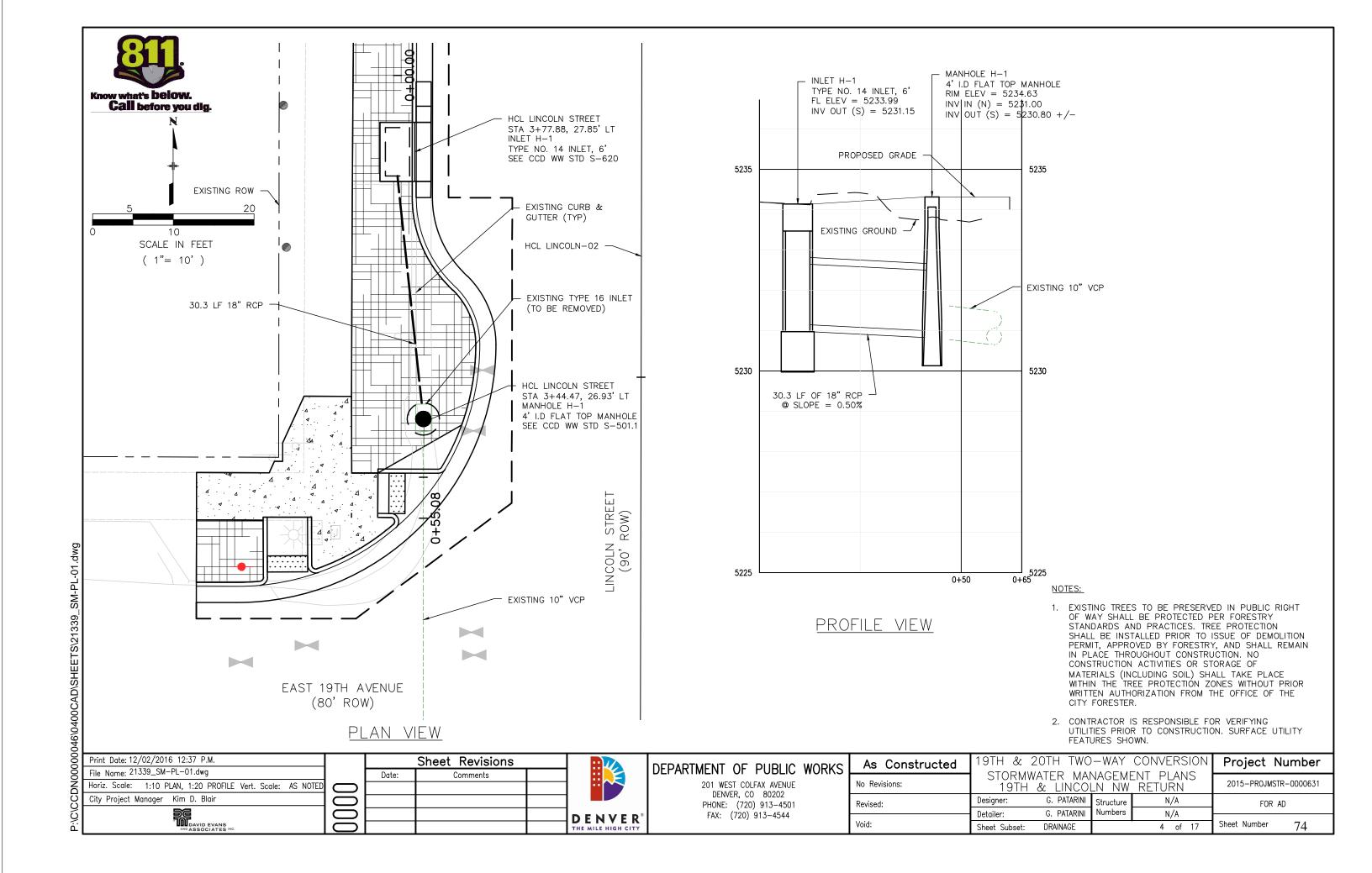
City Project Manager Kim D. Blair

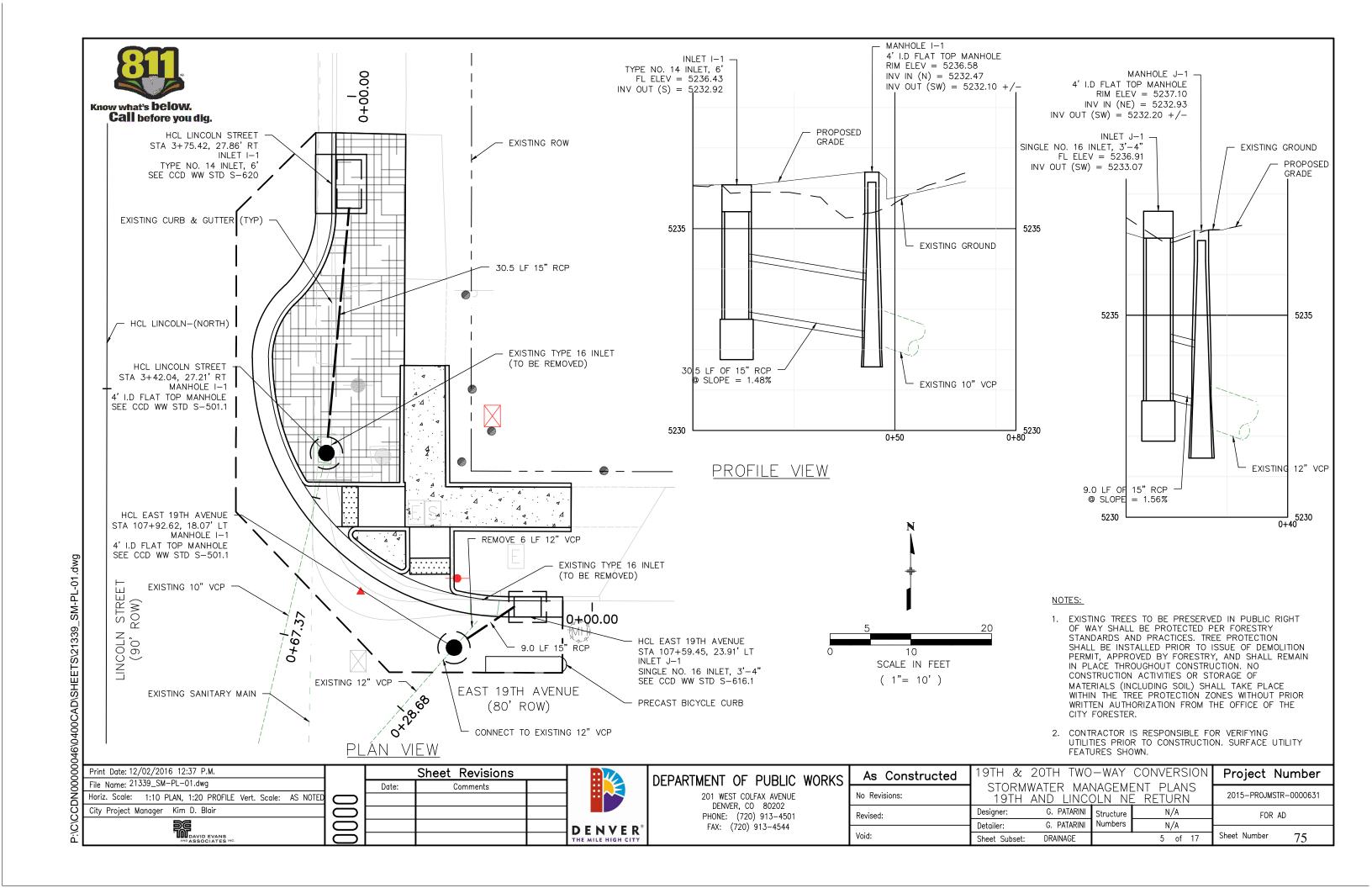


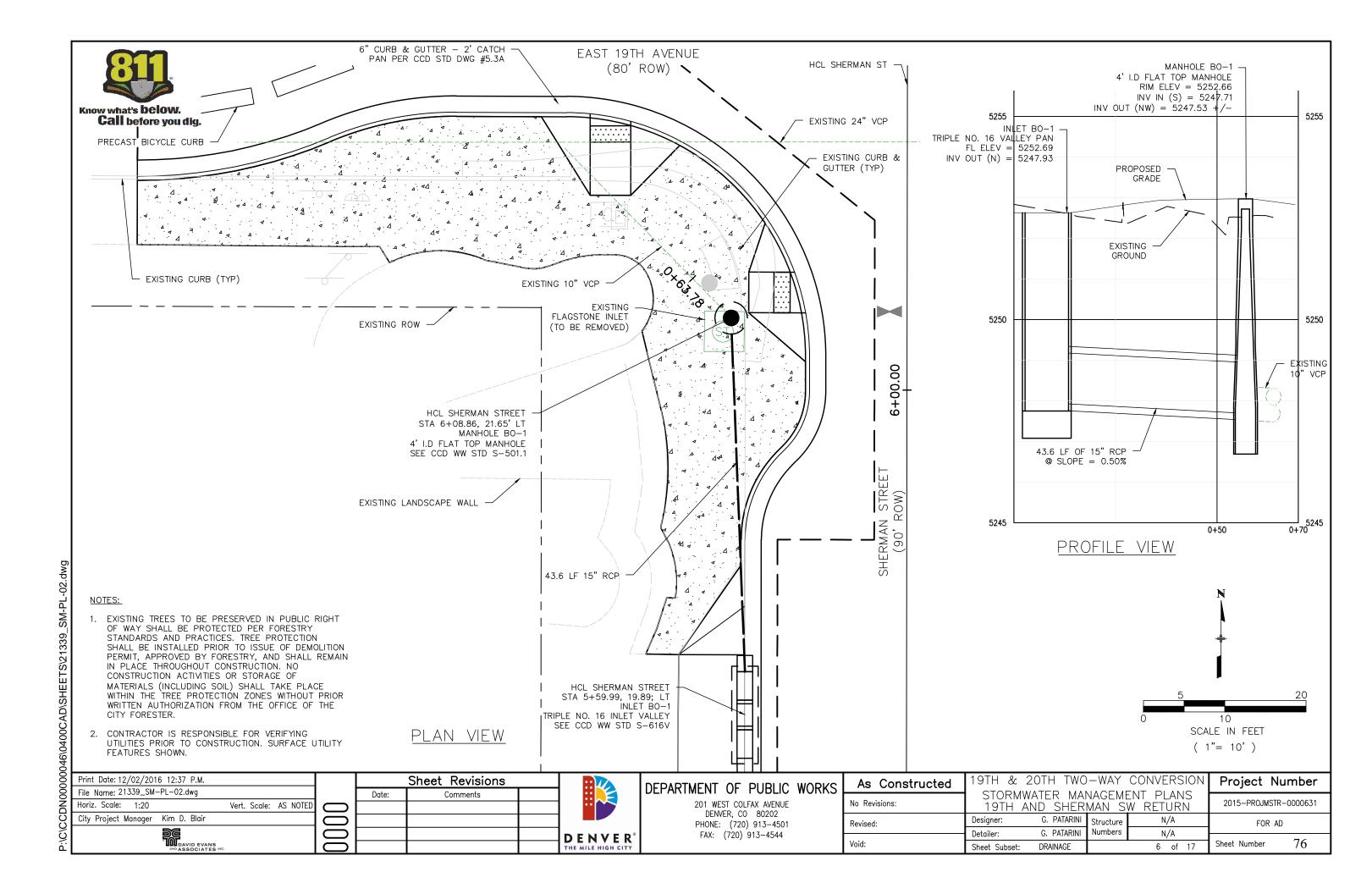
DEPARTMENT OF PUBLIC WORKS

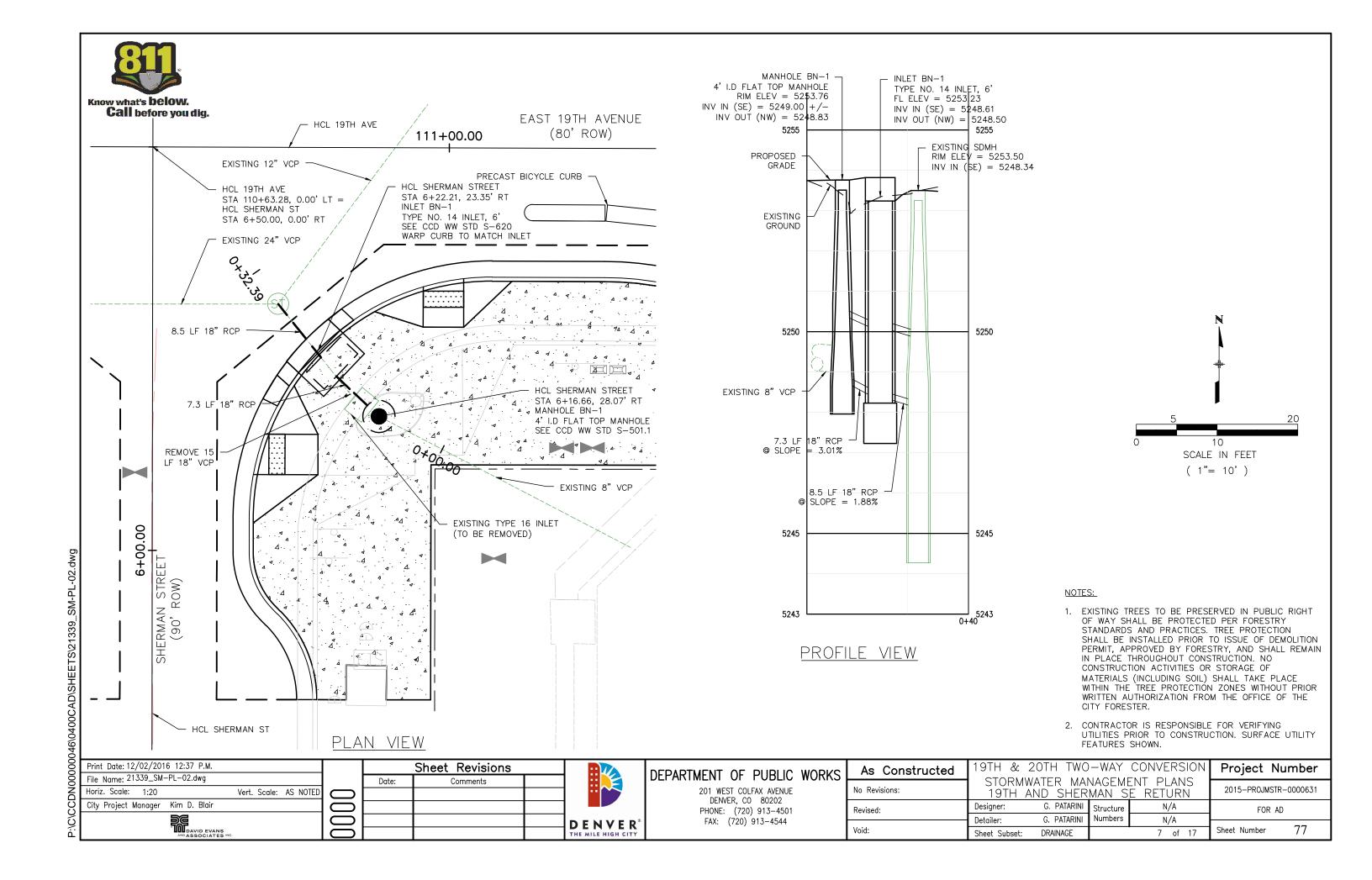
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	No Revisions:	DRAINAGE TABULATION				
	Revised:	Designer:	G. PATARINI	Structure	N/A	FOR AD
		Detailer:	G. PATARINI	Numbers	N/A	
	Void:	Sheet Subset:	DRAINAGE		2 of 17	Sheet Number 72

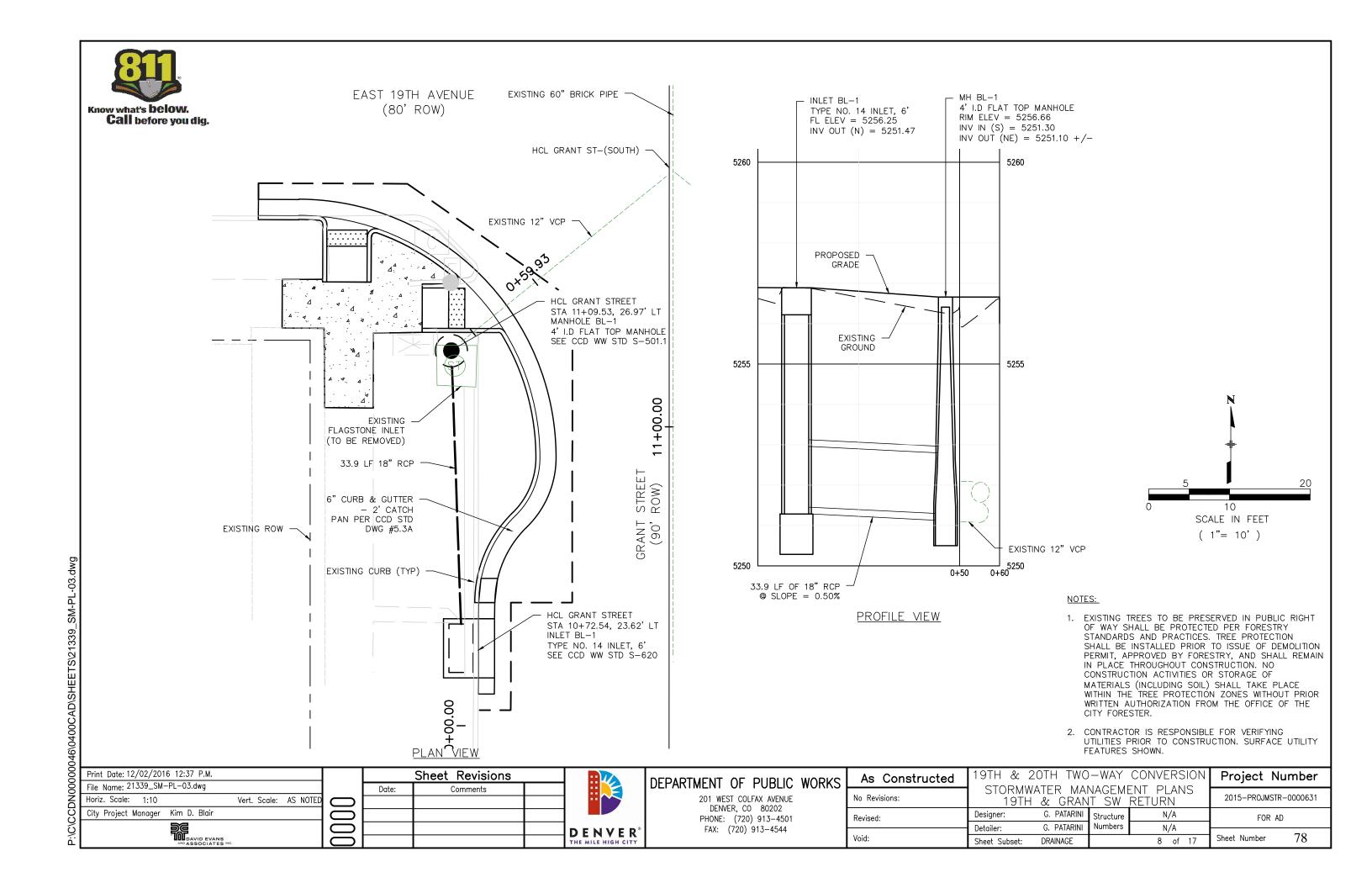


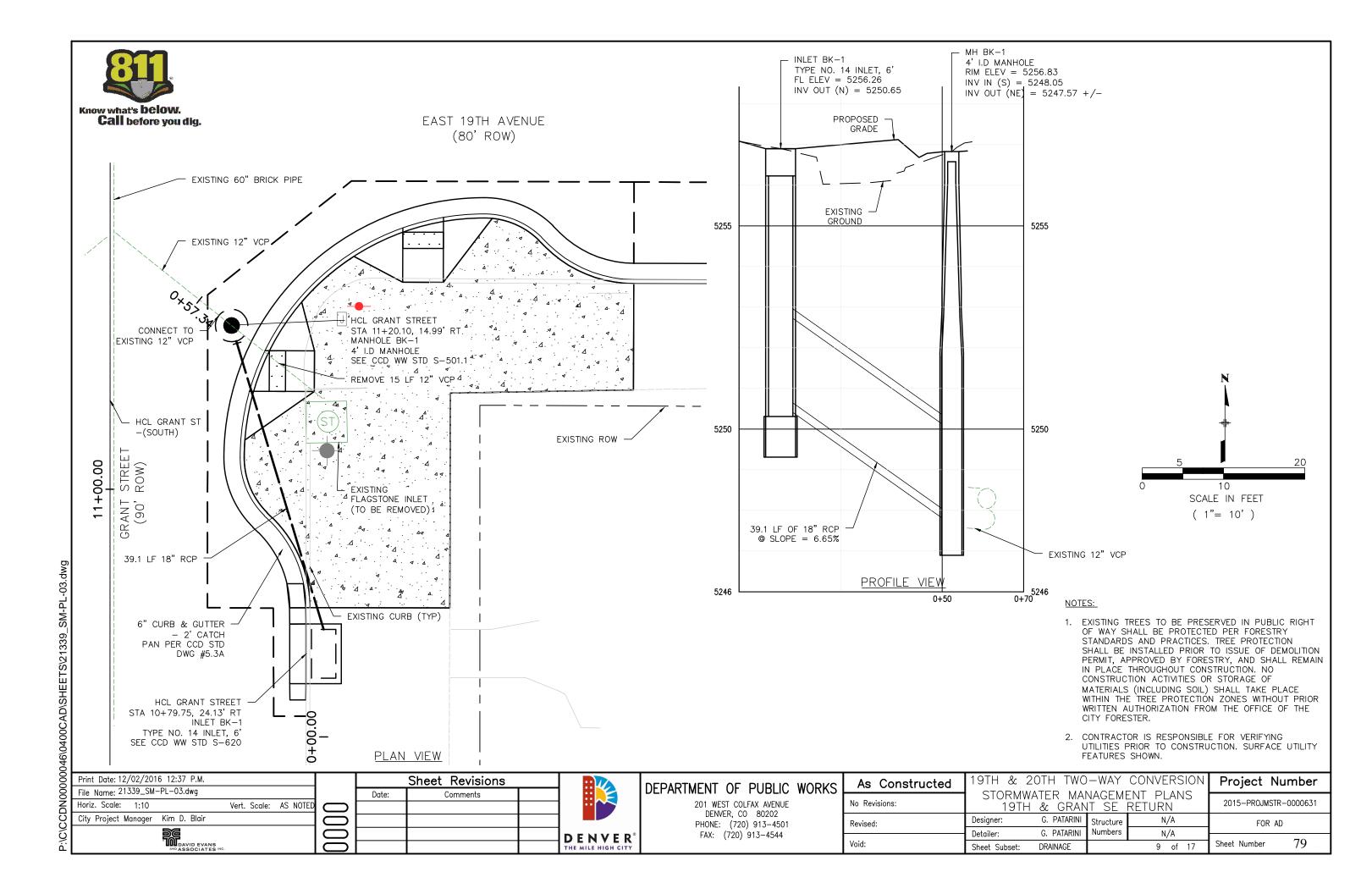


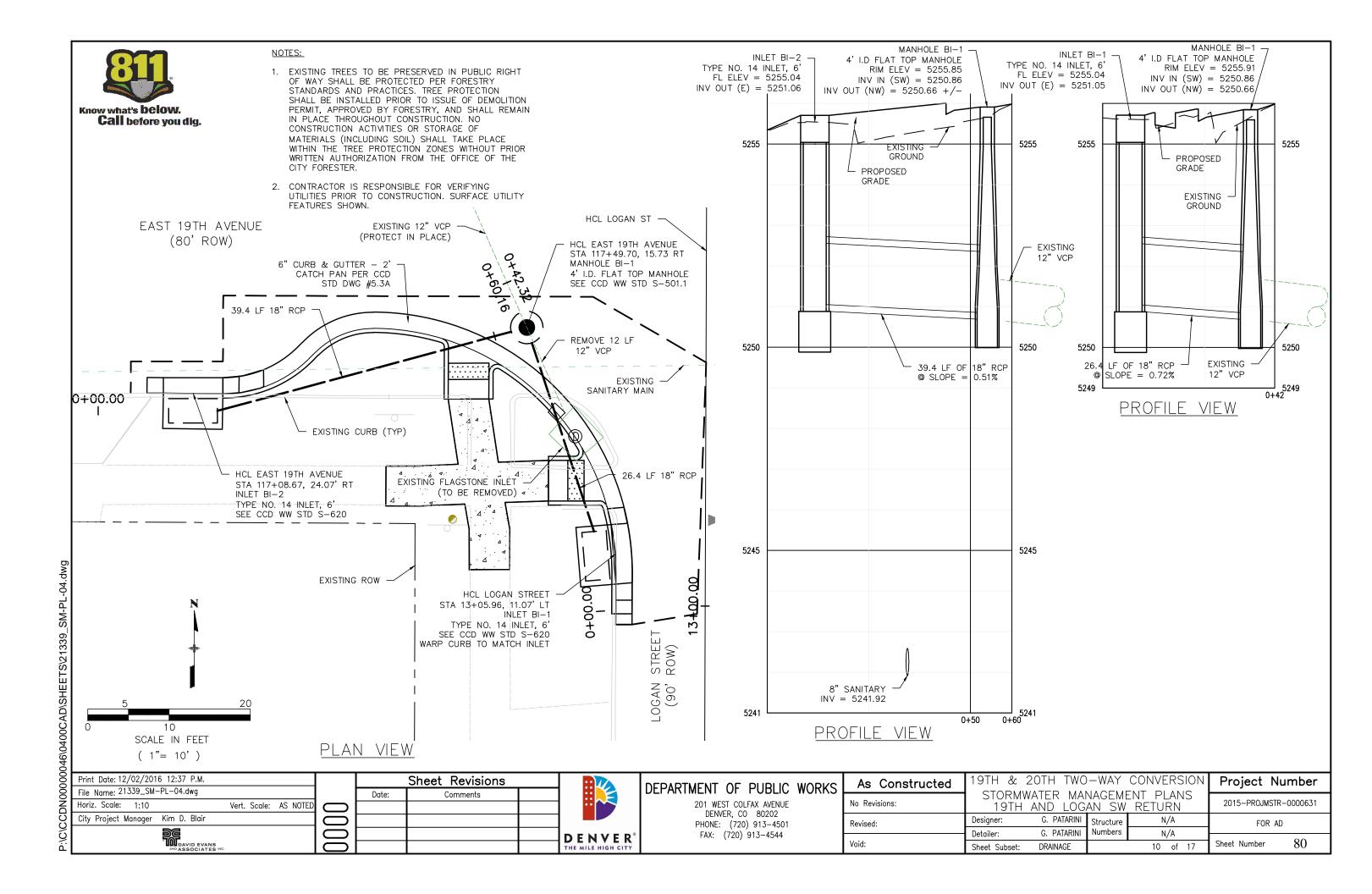


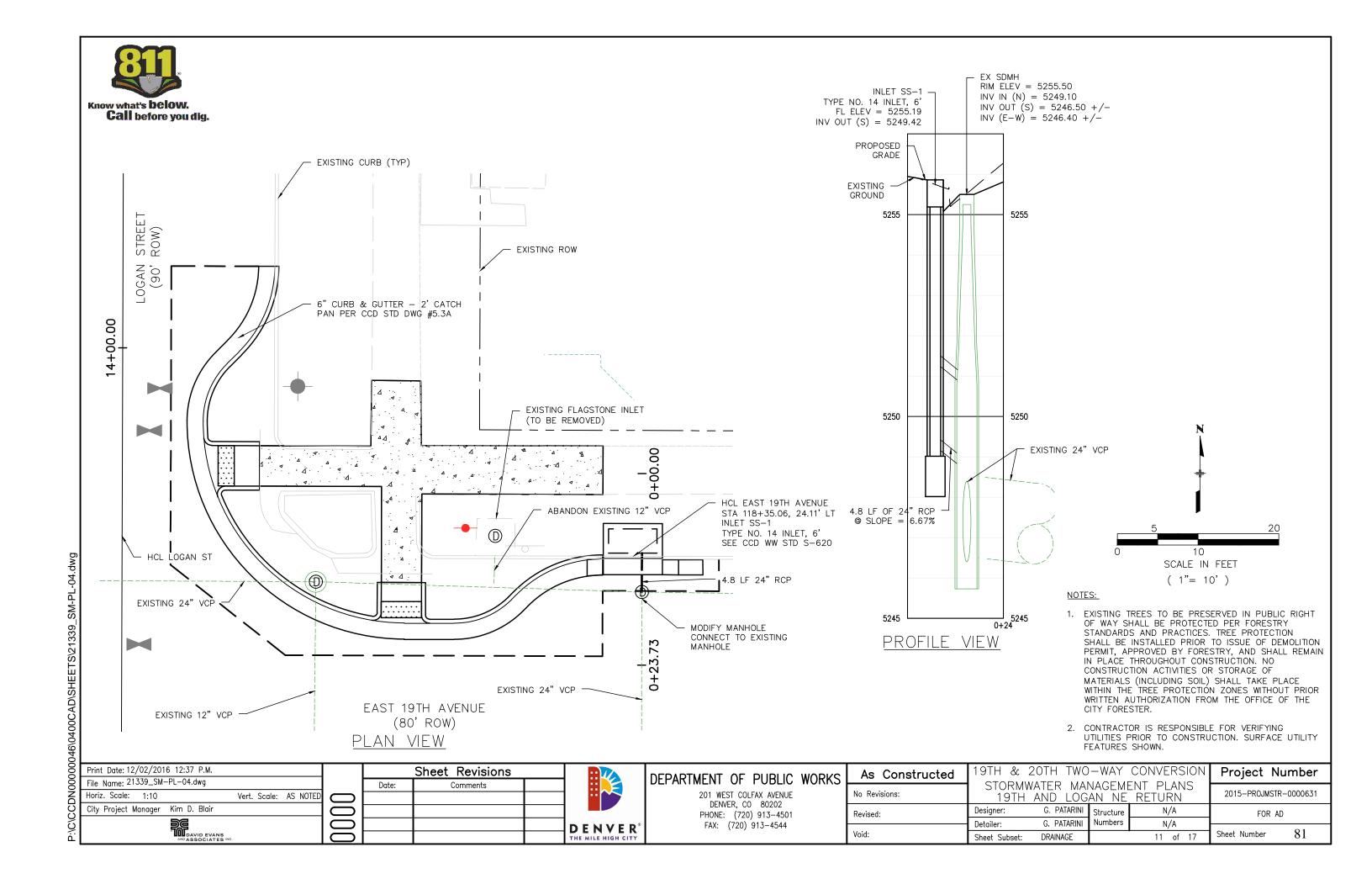


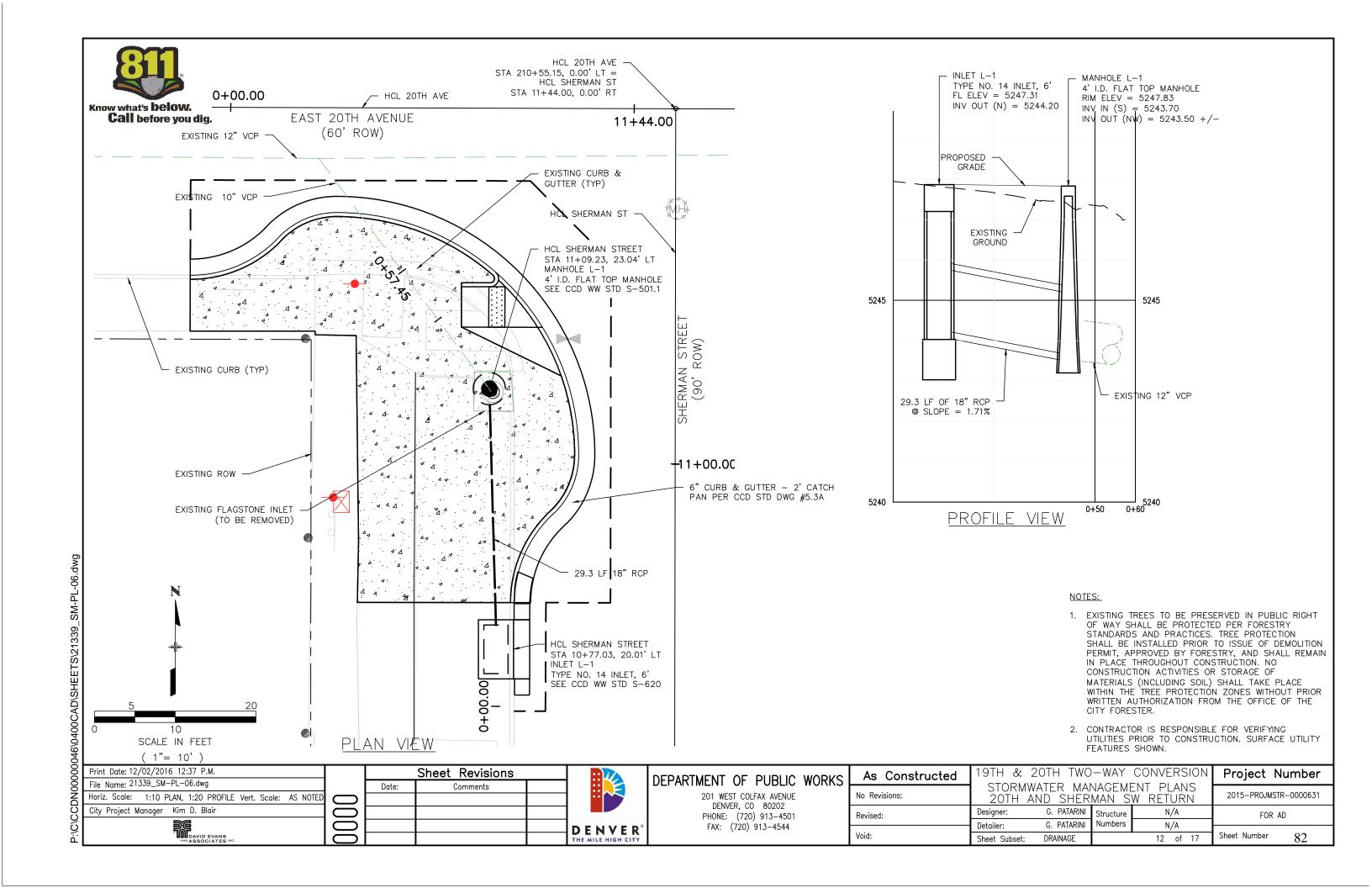


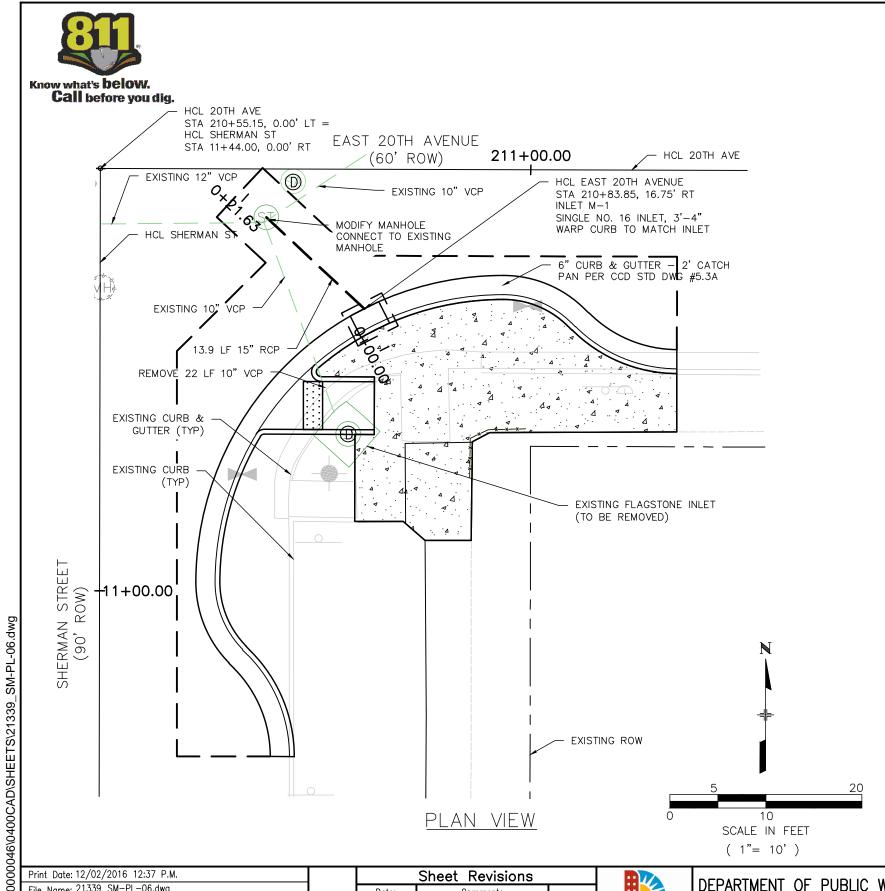


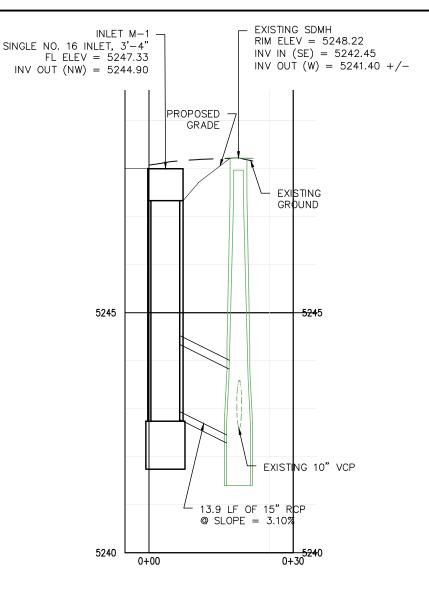








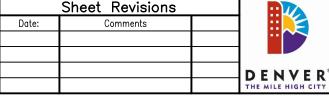




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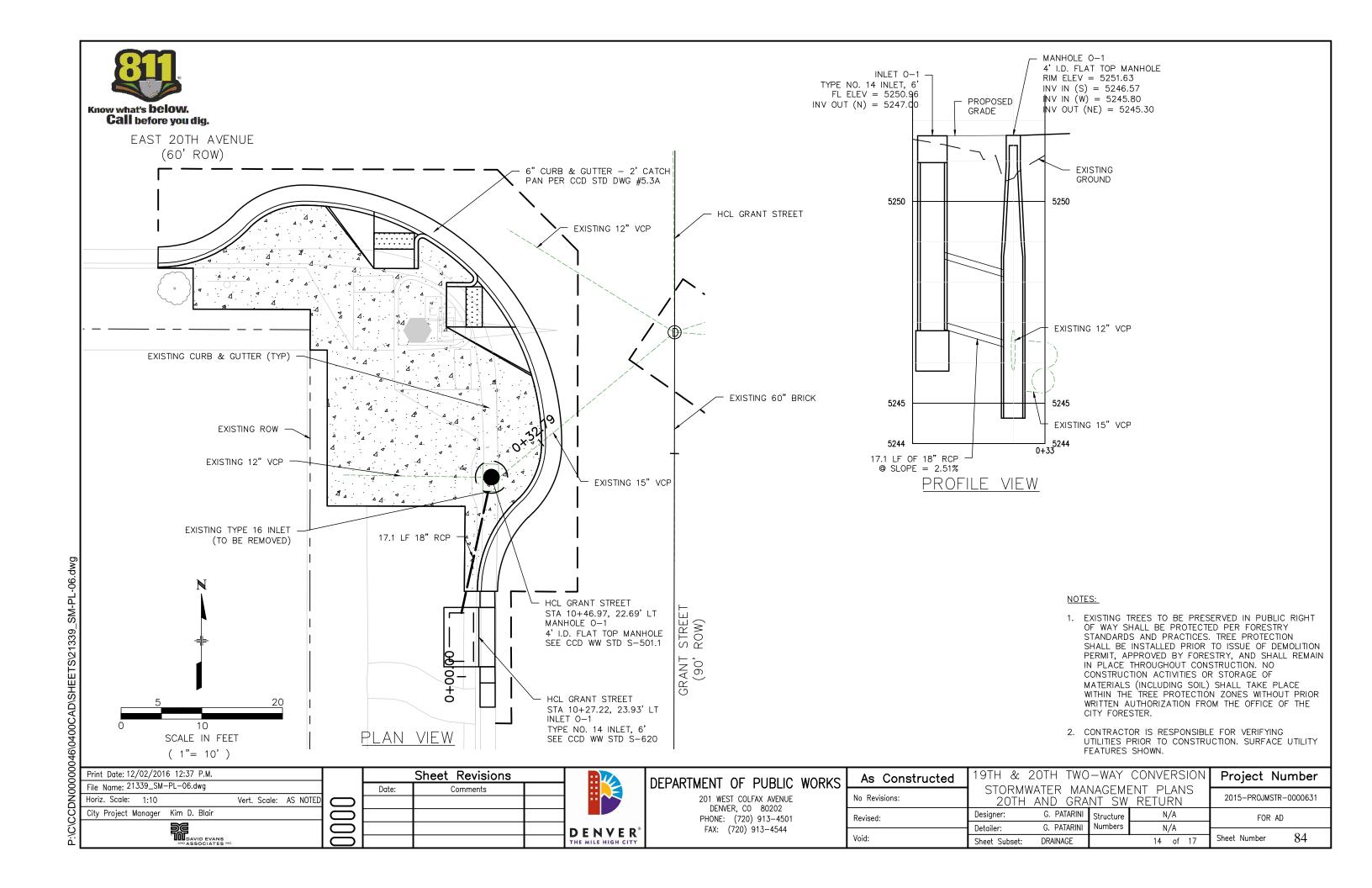
- 1. EXISTING TREES TO BE PRESERVED IN PUBLIC RIGHT OF WAY SHALL BE PROTECTED PER FORESTRY STANDARDS AND PRACTICES. TREE PROTECTION SHALL BE INSTALLED PRIOR TO ISSUE OF DEMOLITION PERMIT, APPROVED BY FORESTRY, AND SHALL REMAIN IN PLACE THROUGHOUT CONSTRUCTION. NO CONSTRUCTION ACTIVITIES OR STORAGE OF MATERIALS (INCLUDING SOIL) SHALL TAKE PLACE WITHIN THE TREE PROTECTION ZONES WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE OFFICE OF THE CITY FORESTER.
- 2. CONTRACTOR IS RESPONSIBLE FOR VERIFYING UTILITIES PRIOR TO CONSTRUCTION. SURFACE UTILITY FEATURES SHOWN.

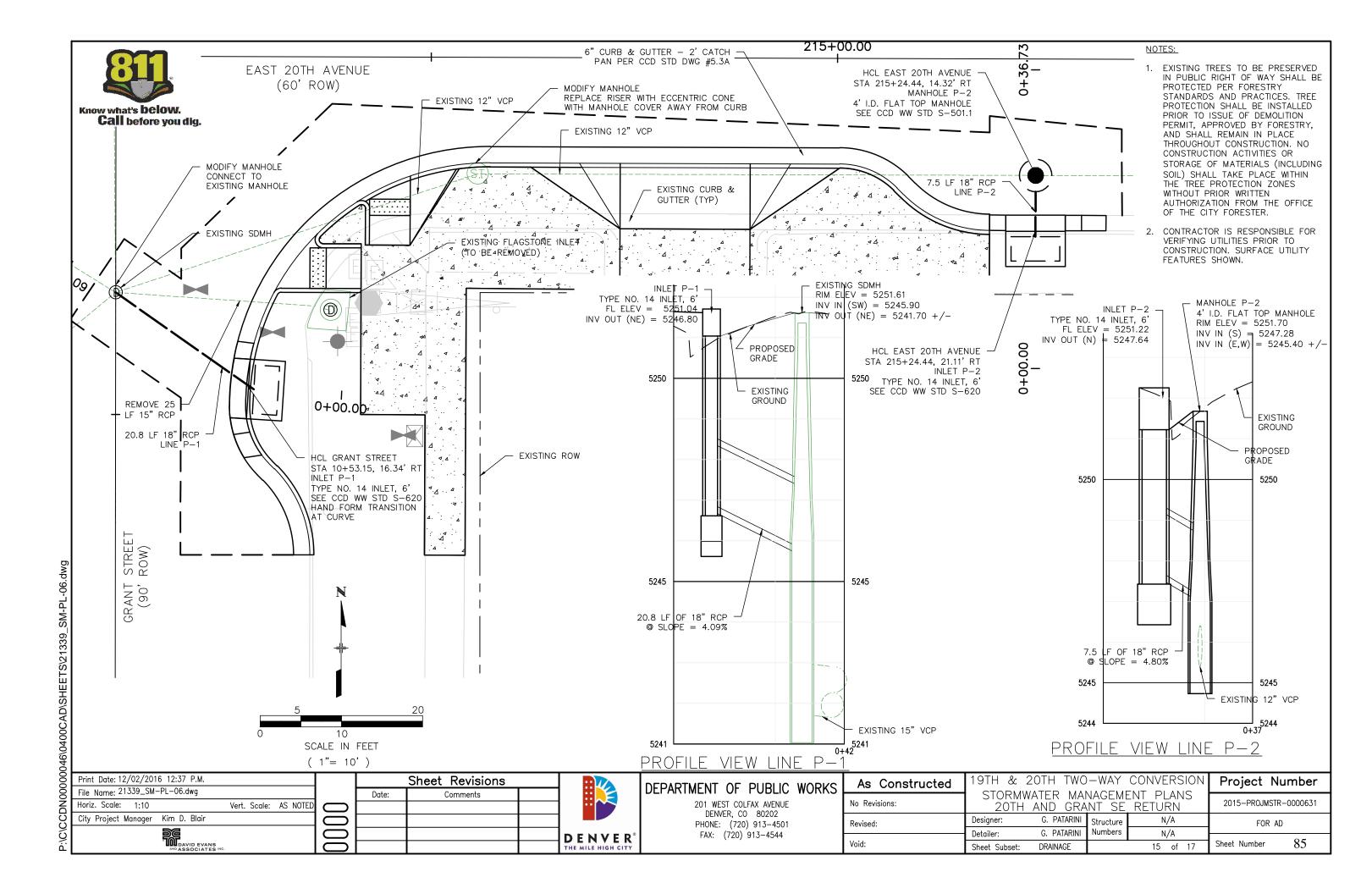
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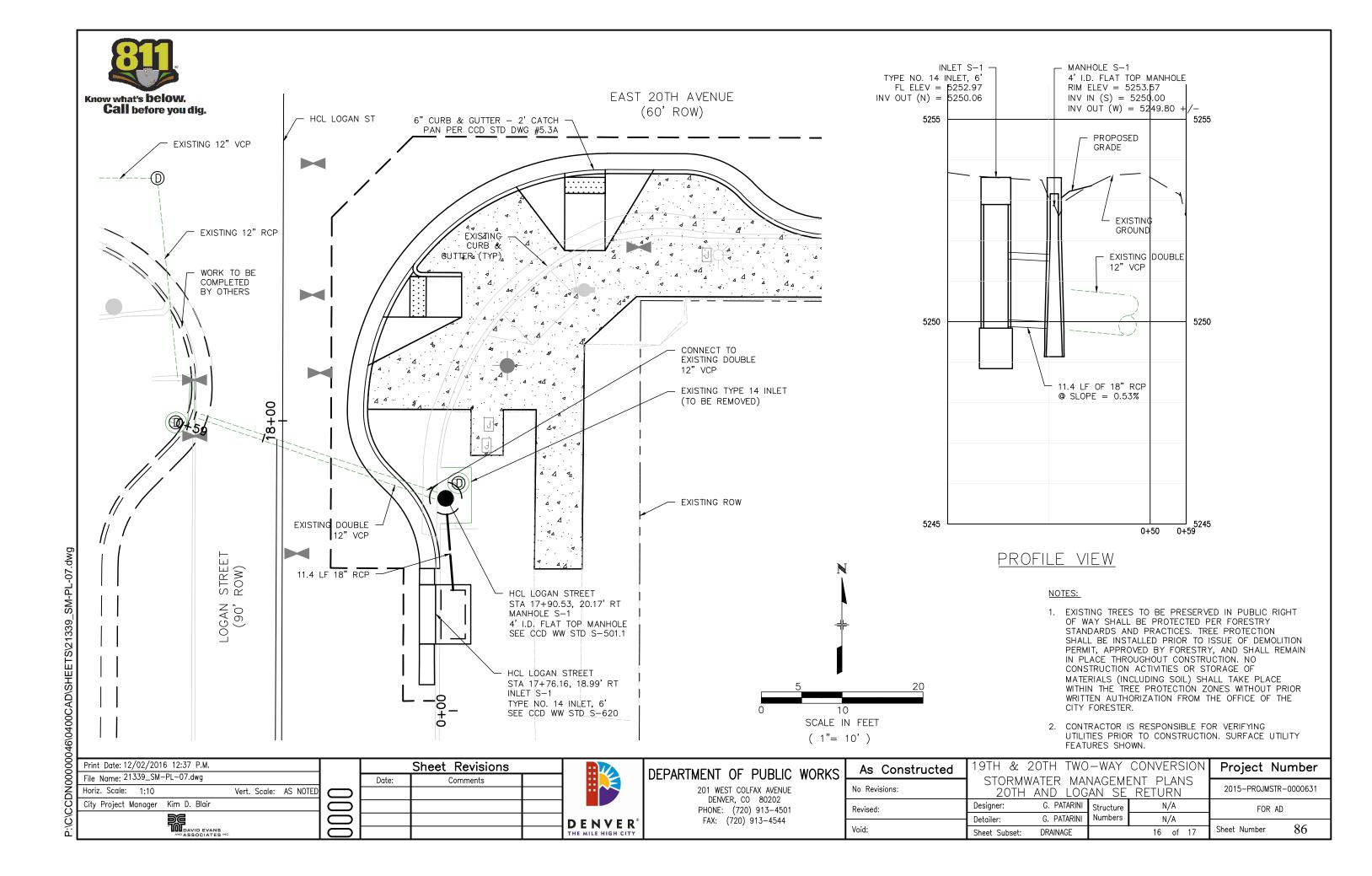


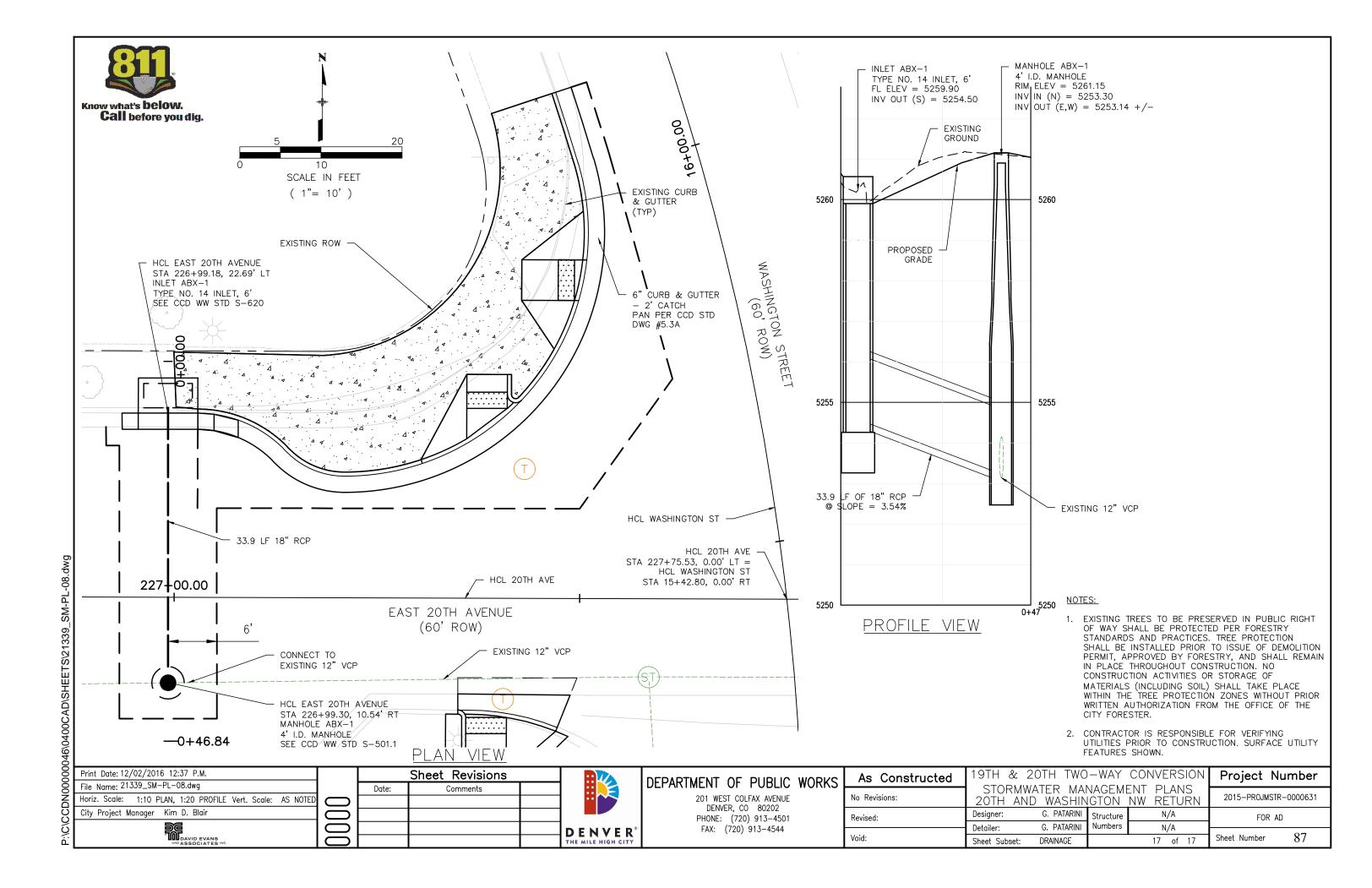
DEPARTMENT OF PUBLIC WORKS 201 WEST COLFAX AVENUE

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If a separate Construction Activities Stormwater Discharge Permit (CASDP) is required for this project, the permittee must implement and comply with the approved CASDP (EC Permit) and associated documents for this project.

If a separate CASDP (EC Permit) is not required, the Owner, Site Developer, Contractor and/or their authorized agents shall ensure that all potential pollutants generated during demolition or construction work associated with this Project, be prevented from discharge to stormwater conveyance systems in the vicinity of this Project Site in accordance with the following:

- 1. The Owner, Site Developer, Contractor and/or their authorized agents shall prevent sediment, debris and all other pollutants from entering the storm sewer system during all demolition, excavation, trenching, boring, grading, or other construction operations that are part of this Project. The Owner, Site Developer, Contractor and/or their authorized agents shall be held responsible for remediation of any adverse impacts to the Municipal Separate Storm Sewer System, receiving waters, waterways, wetlands, and or other public or private properties, resulting from work done as part of this Project.
- 2. The Owner, Site Developer, Contractor and/or their authorized agents shall remove all sediment, mud, construction debris, or other potential pollutants that may have been discharged to or, accumulate in the flow lines storm drainage appurtenances, and public rights of ways of the City and County of Denver as a result of construction activities associated with this Project. All removals shall be conducted in a timely manner.
- 3. The Owner, Site Developer, Contractor and/or their authorized agents shall insure that all loads of cut and fill material imported to or exported from this site shall be properly covered to prevent loss of the material during transport on public rights of way." (Sec.49-552; Revised Municipal Code)
- 4. The use of rebar to anchor best management practices, other than portable toilets, is prohibited.
- 5. The Owner, Site Developer, Contractor and/or their authorized agents shall implement the following Best Management Practices (BMPs) on site during construction:
 - i. VEHICLE TRACKING CONTROL: VEHICLE TRACKING CONTROL: This BMP is required at all access points for ingress/egress from off-site impervious surfaces to construction site pervious areas that are used by vehicular traffic or construction equipment.
 - ii. INLET PROTECTION: This BMP is required on all existing or proposed storm sewer inlets in the vicinity of the construction site that may receive site runoff. The BMP must be appropriate to the type of storm inlet and appropriate for the ground surface at the inlet.
 - iii. INTERIM SITE STABILIZATION: This BMP is required to provide a measure for preventing the discharge of sediment from construction sites where overlot grading or other site disturbance has occurred. This BMP is particularly necessary on sites where construction activities/disturbance will be limited to small areas of the Project site. Acceptable BMPs include:
 - a) Preserving existing vegetation
 - b)Seeding and planting
 - c) Mulching
 - d) Mulching and seeding
 - e) Temporary/Permanent re-vegetation operations
 - f) Chemical soil stabilizer application (requires WMD approval)
 - iv. WASTE MANAGEMENT/CONTAINMENT: This BMP requires that all construction wastes, fuels, lubricants, chemical wastes, trash. Sanitary wastes, contaminated soils or debris shall be contained on site, protected from contact with precipitation or surface runoff, periodically removed from the construction site, and properly disposed of.
 - v. SPILL PREVENTION /CONTAINMENT: This BMP defines the measures proposed for preventing, controlling, or containing spills of fuel, lubricants, or other pollutants; and protecting potential pollutants from contact with precipitation or runoff.
 - vi. CHUTE WASHOUT CONTAINMENT: Water used in the cleaning of cement truck delivery chutes shall be discharged into a predefined, bermed containment area on the job site. The required containment area is to be bermed so that wash water is totally contained. Wash water discharged into the containment area shall be

allowed to infiltrate or evaporate. Dried cement waste is removed from the containment area and properly disposed of.

- a) Should a predefined bermed containment area not be available due to the project size, or lack of an area with a suitable ground surface for establishing a containment area, proper disposal of ready mix washout and rinse off water at the job site shall conform to approved techniques and practices.
- b)The direct or indirect discharge of water containing waste cement to the storm sewer system is prohibited (Sec.56-102a, c; Revised Municipal Code, City and County of Denver).
- vii. SWEEPING: This BMP requires that impervious surfaces which are adjacent to or contained within construction sites be swept on a daily basis or as needed during the day when sediment and other materials are tracked or discharged on to them. Either sweeping by hand or use of Street Sweepers is acceptable. Street sweepers using water while sweeping is preferred in order to minimize dust. Flushing off paved surfaces with water is prohibited.
- riii. PERIMETER CONTROL: This BMP requires that a construction site install a perimeter control measure along the edge of the construction Site, to prevent, or filter the discharge of surface runoff from the construction site.

 The type of perimeter control used shall be determined based on site conditions and location. Maintenance and repair of the control measure shall occur as needed, in a timely manner.
- ix. STOCK PILES: Soils that will be stockpiled for more than thirty (30) days shall be protected from wind and water erosion within fourteen (14) days of stockpile construction. Stabilization of stockpiles located within 100 feet of receiving waters, or with slopes 3 to 1 or greater shall be completed within seven (7) days following stockpile construction. Stabilization and protection of the stockpile may be accomplished by any of the following: Mulching, Temporary/Permanent Revegetation Operations, Chemical Soil Stabilizer Application (requires Denver Public Works approval), or erosion control matting/Geotextiles. If stockpiles are located within 100 feet of receiving waters, a drainageway or the site perimeter, additional sediment controls shall be required.
- x. SAW CUTTING OPERATIONS: "The Contractor shall protect all storm sewer facilities adjacent to any location where pavement cutting operations involving wheel cutting, saw cutting, or abrasive water jet cutting are to take place. The Contractor shall remove and properly dispose of all waste products generated by said cutting operations on a daily basis or as needed throughout the work day. The discharge of any water contaminated by waste products from cutting operations to the storm sewer system is prohibited." (Sec.56-102a, c; Revised Municipal Code, City and County of Denver)
- xi. Structural controls: Development sites that are required to provide detention and water quality enhancement facilities for storm runoff need to install the detention facilities early in the construction build-out of the site. Projects that are using underground detention are required to install a pretreatment structure or sedimentation basins as a means of treating potentially polluted storm water prior to entering the detention structure. Use of these structures is required for entrapping sediment and construction debris during the active construction phase of the project. The narrative section of the Management Plan is also required to address operation and maintenance of the structural controls being used as an active construction BMP.
- 6. Erosion and sediment control 'Best Management Practices' shall be maintained and kept in effective operating condition for the duration of this Project. All necessary maintenance and repair shall be completed immediately upon discovery of any deficiency or defect.

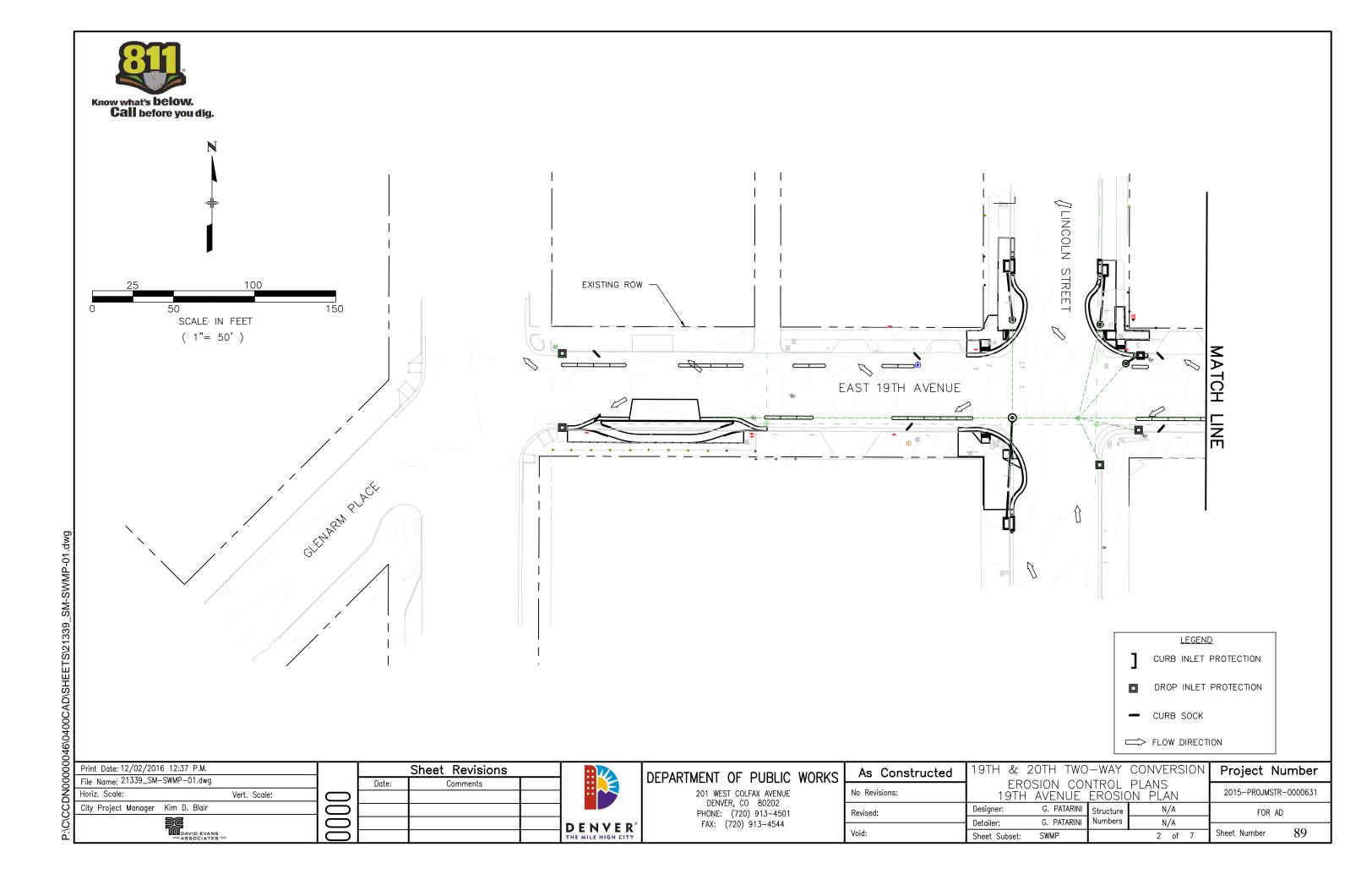
TABULATION OF EROSION CONTROL QUANTITIES

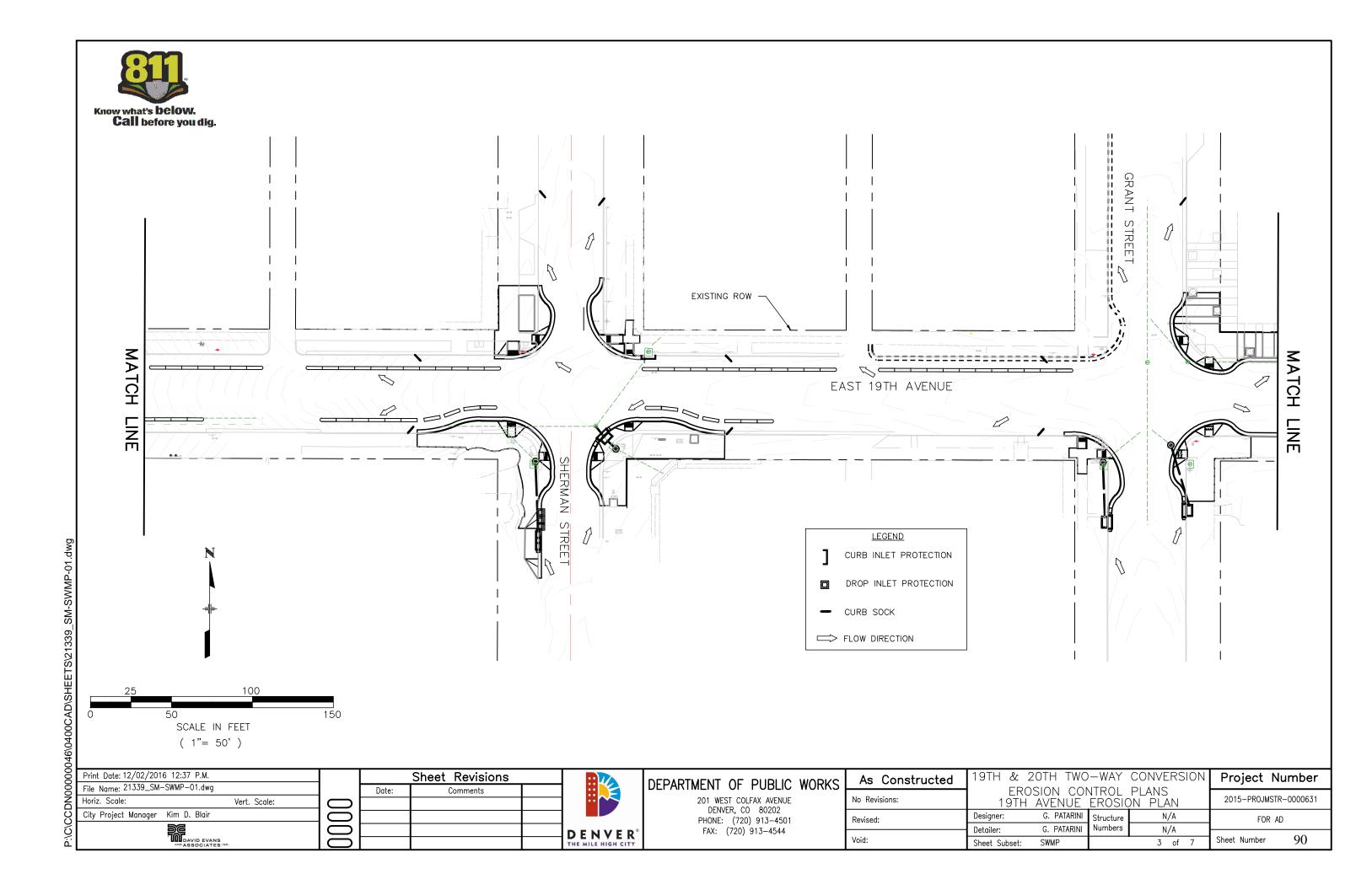
<u>Item</u>	Quantity	<u>Unit</u>
Curb Inlet Protection	18	Each
Drop Inlet Protection	9	Each
Curb Sock	29	Each

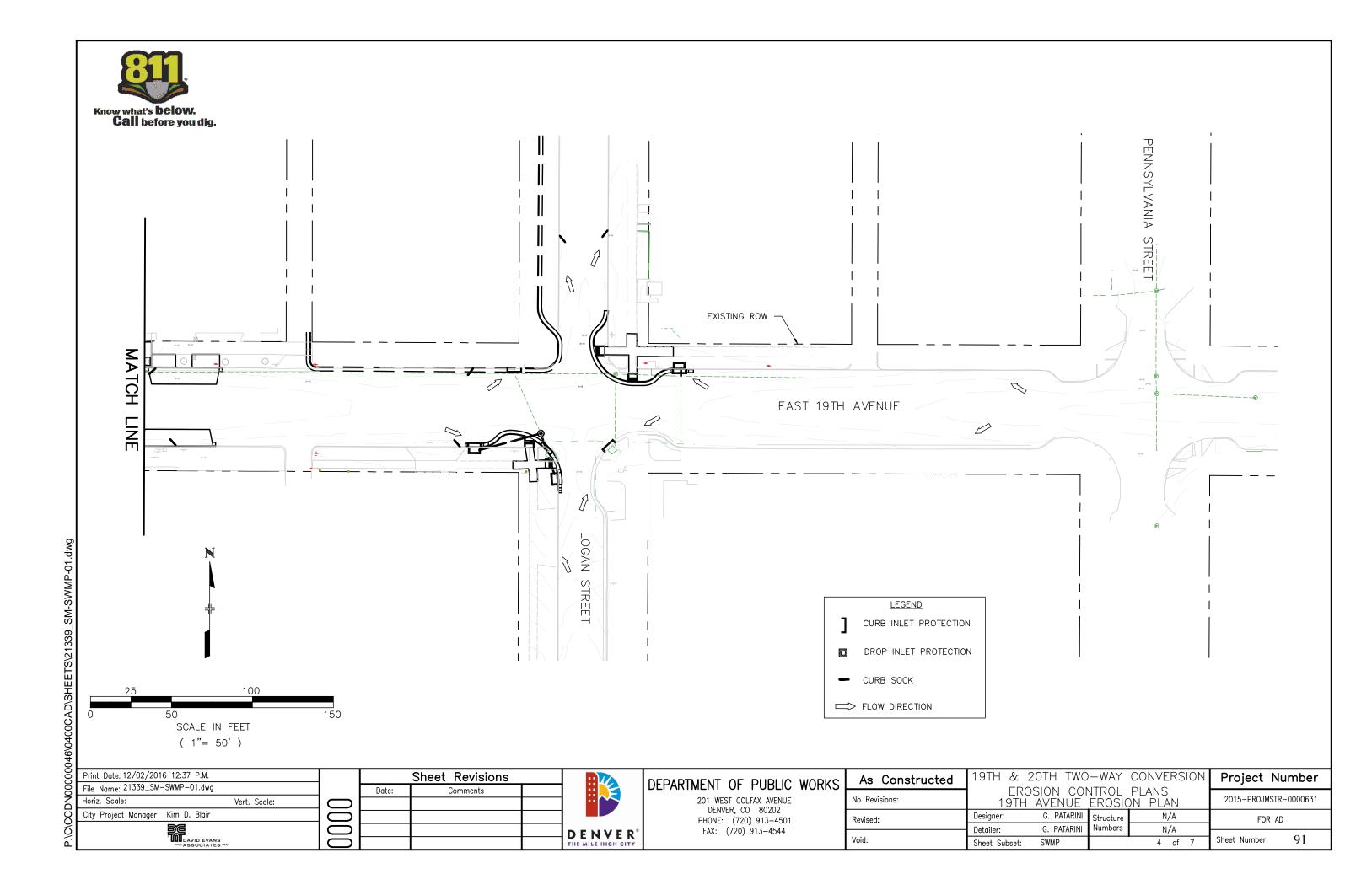
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AND ASSO	EVANS CIATES INC.			THE MILE HIGH CITY

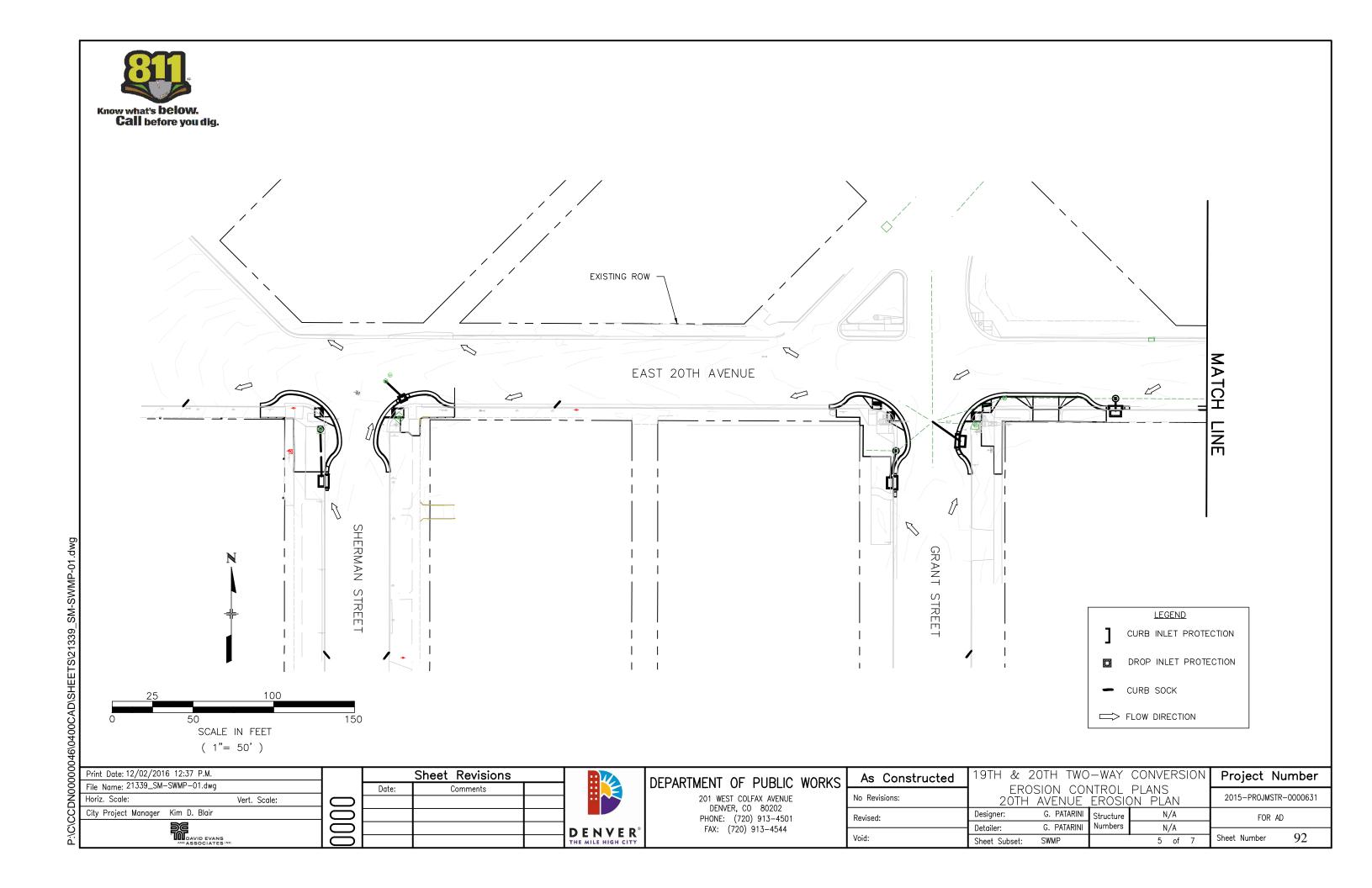
DEPARTMENT OF PUBLIC WORKS

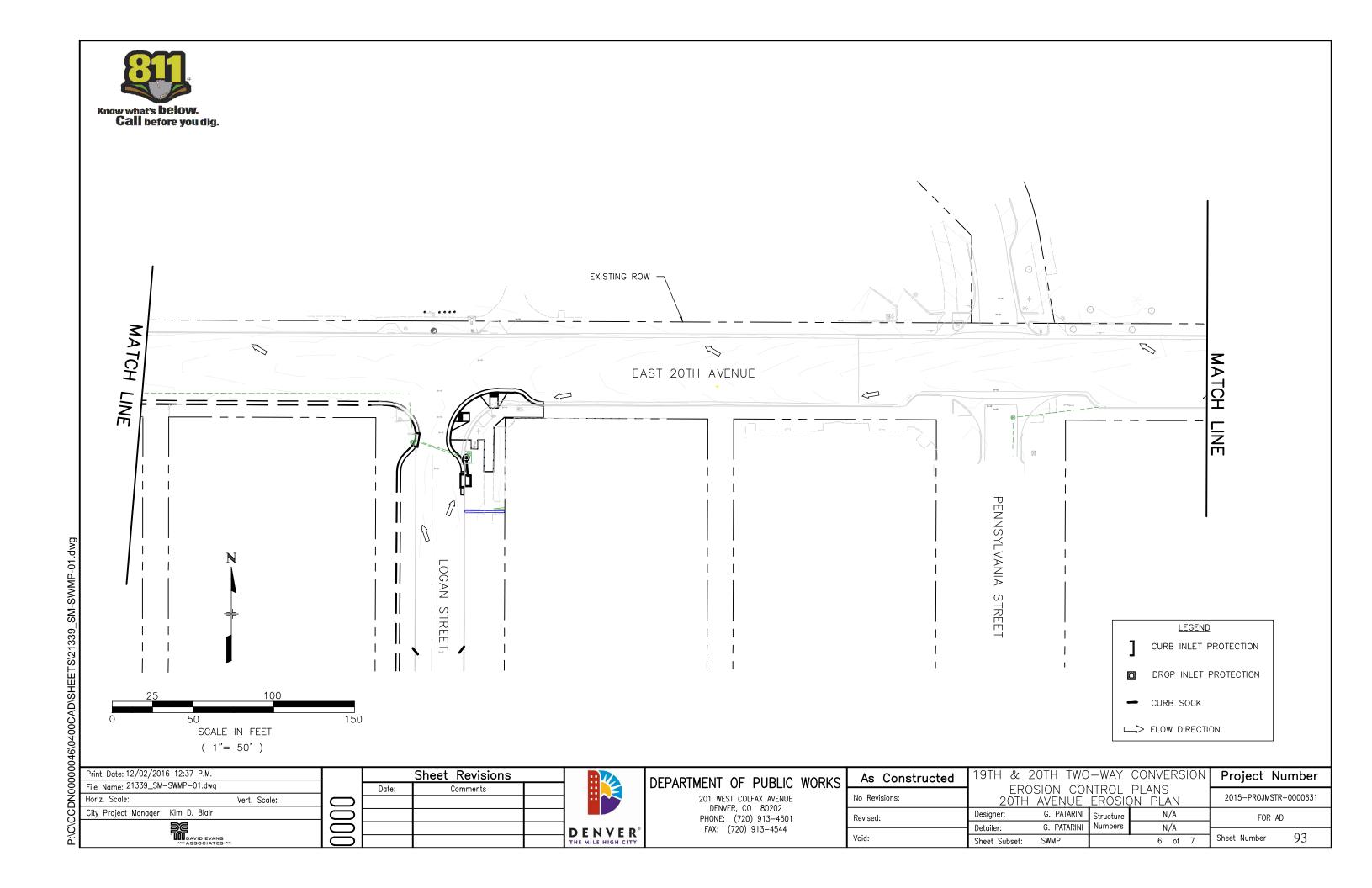
S	As Constructed				CONVERSION	Project Number
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	Revised:	Designer:	G. PATARINI	Structure	N/A	FOR AD
		Detailer:	G. PATARINI	Numbers	N/A	
	Void:	Sheet Subset:	SWMP		1 of 7	Sheet Number 88

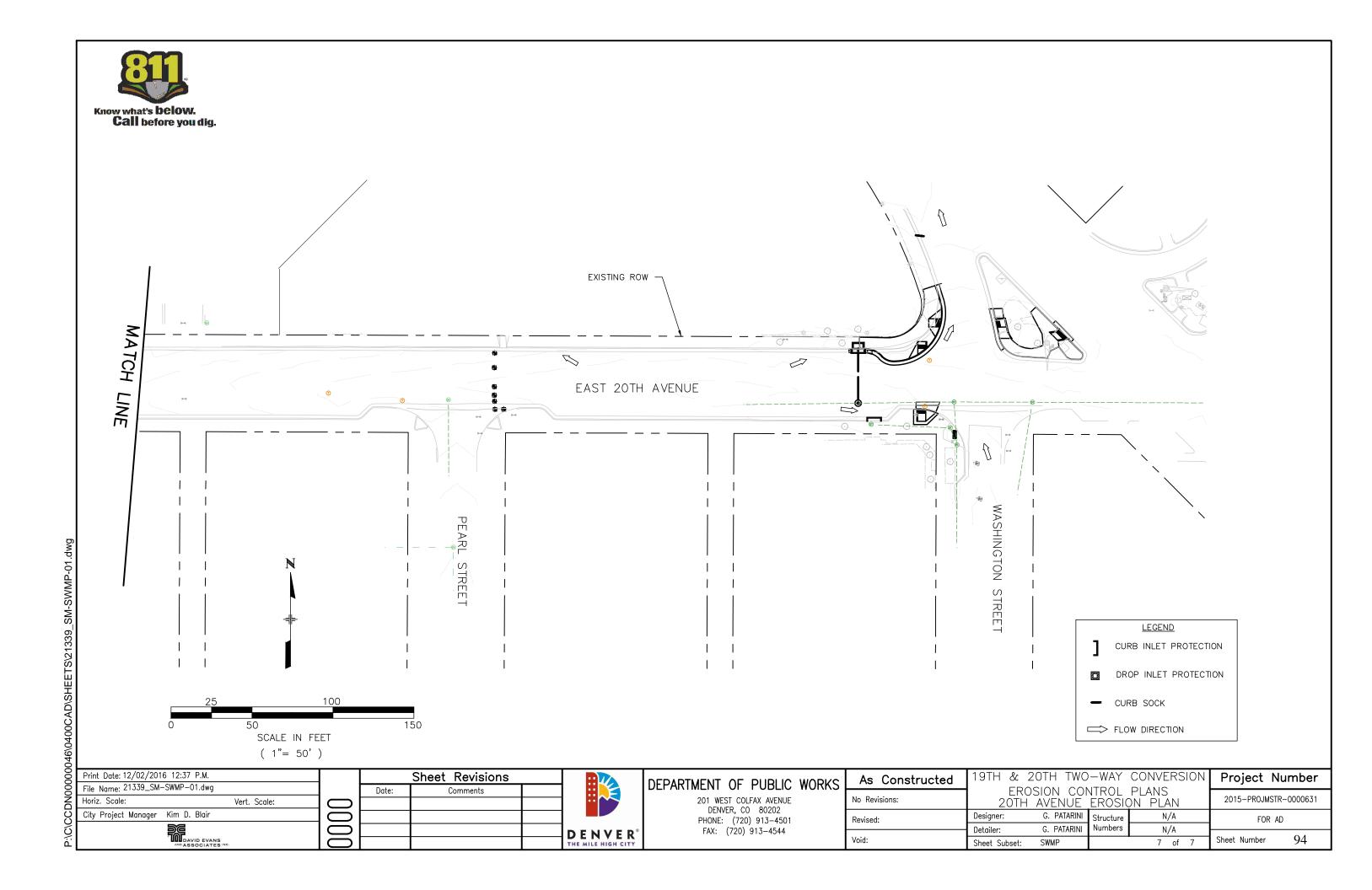












ITEM NO.	DESCRIPTION	UNIT	BASE BID QUANTITY	BID ALT 2 QUANTITY
202-00810	Removal of Ground Sign	EACH	108	QUANTITI
202-00821	Removal of Sign Panel	EACH	110	7
202-00828	Removal of Traffic Signal Equipment	LS	1	1
203-01598	Potholing (Special)	EACH	14	6
210-00815	Reset Sign Panel	EACH	115	4
210-00831	Reset Traffic Signal Head	EACH	1	
210-00842	Reset and Modify Traffic Signal Mast Arm	EACH	2	
210-00861	Reset Wiring	EACH	5	
210-00867	Reset Fire Preemption Unit	EACH	4	
210-00890	Reset Intersection Detection System (Camera)	EACH	3	
503-00200	Caisson (Special) (36 Inch)	LF	109	39
612-00041	Delineator (Flexible) (Type I)	EACH	17	
613-01200	2 Inch Electrical Conduit (Plastic)	LF	740	210
613-01300	3 Inch Electrical Conduit (Plastic)	LF	720	410
613-07001	Type One Pull Box	EACH	4	
613-07002	Type Two Pull Box	EACH	9	4
613-07003	Type Three Pull Box	EACH	1	2
613-10000	Wiring	LS	1	1
613-13000	Luminaire (LED)	EACH	4	4
613-40010 613-50150	Light Standard Foundation Secondary Service Pedestal	EACH EACH	1	1 1
613-70250	Luminaire High Pressure Sodium (250 Watt)	EACH	4	1
614-00011	Sign Panel (Class I)	SF	1110	57.5
614-00216	Steel Sign Post (2x2 Inch Tubing)	LF	1791	-40.5
614-70150	Pedestrian Signal Face (16) (Countdown)	EACH	16	8
614-70336	Traffic Signal Face (12-12-12)	EACH	40	11
614-72855	Traffic Signal Controller Cabinet	EACH	1	1
614-72860	Pedestrian Push Button	EACH	2	
614-72864	Fire Preemption Unit	EACH	1	
614-72866	Fire Preemption Unit and Timer	EACH	2	1
614-72886	Intersection Detection System (Camera)	EACH	1	
614-80000	Flashing Beacon	EACH	1	
614-81300	Traffic Signal Light Pole Steel (Install Only)	EACH		1
614-81301	Traffic Signal-Light Pole Steel (1 Mast Arm) (Install Only)	EACH	8	3
614-84100	Traffic Signal Pedestal Pole Aluminum	EACH	1	
614-86105	Telemetry (Field)	EACH	1	1
614-86238	Traffic Signal Controller (Solid State) (Full-Actuated) (8 Phase)	EACH	1	1
614-87350	Test Fiber Optic Cable	LS	1	1
627-00005	Epoxy Pavement Marking	GAL	84	6
627-30405	Preformed Thermoplastic Pavement Marking (Word-Symbol)	SF	1093	-79
627-30410	Preformed Thermoplastic Pavement Marking (Xwalk-Stop Line)	SF	7298	530
627-30411	Preformed Thermoplastic Pavement Marking (Special)	SF	2588	2
630-00003	Uniformed Traffic Control	HOUR	88	8
630-00008	Traffic Control (Special)	LS	1	1
630-86810	Traffic Signal (Temporary)	EACH	2	

Print Date: 1/8/2017	
File Name: summ-tei.dgn]
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City Project Manager Kim D. Blair] (
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403] (
ACL Inc. Golden, CO 80403 720-943-0955	1

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

As Constructed)-WAY OF TRA	CONVERSION	Project Nu	ımber			
No Revisions:			ING ITE		2015-PROJMSTR	-0000631			
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	Detailer:	J. Mills	Numbers		0				
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											BAS	SE BID															
									TA	BULATI	ON OF P	AVEMEN	IT MARK	INGS													
					PAVE	MENT MAR	RKING LINE	ES (LF)											MOPLASTIC PAVEMENT MARKING (LF / EA)								
			E	DGE		LANE		CENTER		CHANN	ELIZING	CROSS	OSSWALK STOP PVMT	PVMT	PVMT	PVMT	PVMT	G/W BIKE	G/W BIKE	G/W BIKE 2	WHITE	WHITE	GRAY/W	PVMT	PVMT		
SHEET	STATION	YELLOW SOLID 4 INCH	WHITE SOLID 4	WHITE X- HATCH 4 INCH	DASHED 4 INCH	WHITE SOLID 4 INCH	YELLOW SOLID 4 INCH	YELLOW X HATCH 4 INCH	YELLOW DASHED 4 INCH	WHITE SOLID 8 INCH	WHITE DASHED 8 INCH	WHITE SOLID 12 INCH	WHITE SOLID 18 INCH	WHITE SOLID 24 INCH	DLID DOUBLE SINGLE	SINGLE	SYMBOL SHARROW	SYMBOL BIKE	ZONE	SYMB	STAGE LT BOX	BIKE DBL CHEV	YIELD MKG	LOOK MKG	LETTER "BUS"	LETTER "ONLY"	
	BASE BID:	INOIT	INOIT	114011	411011	7111011	411011	INOIT	INCII	Onton	INCII	IIVOIT	10111011	24111011	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
1A of 24	20th Ave at Lincoln	300				80																				+	
1B of 24	20th Ave at Sherman	150				80	540						50	15												+	
2 of 24	20th Ave at Grant	100	640		27	10	810						260	67			2	4								+	
3 of 24	20th Ave; Logan-Pennsylvania		520			10	530			52			230	50		2	2	2								+	
4 of 24	20th Ave; Pennsylvania-Pearl		575				580			02			200	36		_	2	2								+	
7 01 2 7	2001 AVC, 1 chinsylvania-1 can		070				000							00			_										
5 of 24	20th Ave; Washington-Park		480		60		460		52				240	110			3	3				4				+	
6 of 24	20th Ave; Park-Clarkson		225	29	48		405		52	30			250	85			4	1				3				\vdash	
7 of 24	Glenarm; 18th Street-Broadway		540	35	78	30	510		56				472	125				3	24	2							
8 of 24	19th Ave at Lincoln		210				370			100	32	20	350	90		3			60	2			3	2		1	
9 of 24	19th Ave at Sherman		500	26			960	54					210	25					58	6	2					\vdash	
10 of 24	19th Ave at Grant		630	35	104		770						240	75		2		5	48	1	2						
11 of 24	19th Ave at Logan		1190				620						180	22	2			4									
12 of 24	19th Ave at Pennsylvania		1115		28		620							67				4									
13 of 24	19th Ave at Pearl		930		76		620							26				6									
14 of 24	19th Ave; Washington-Clarkson		1025				600			45			240	89	1	2		6							1		
15 of 24	19th Ave at Park		475	28	158		945		80	260			280	119	1	3	3	7	12			6					
16 of 24	Lincoln																										
17 of 24	Grant St 19th-20th		1230				615																				
18 of 24	Grant St South of 19th					60	585																		·		
19 of 24	Grant St at 18th					10	85						90	30											<u> </u>		
20 of 24	Logan St 19th-20th									48						2											
21 of 24	Logan St South of 19th									40																+	
22 of 24	Logan St at 18th																									+	
23 of 24	Clarkson at Park						85			30	74		210	61		2	1									1	
24 of 24	Clarkson 19th-Park		55		22		260			125			50	41	1	1	·	1							1	1	
BASE BID	Total LF Epoxy	450	10340	153	601	270	10970	54	240	690	106																
BASE BID	Total SF Epoxy	150	3447	51	200	90	3657	18	80	460	71																
BASE BID	Total Gallons Epoxy	1.5	34.5	0.6	2.0	0.9	36.6	0.2	0.8	4.6	0.8		8			0	İ		İ								
BASE BID	Total LF or EA Preformed Markings											20	3352	1133	5	17	17	48	202	11	4	13	3	2	2	3	
BASE BID	Total SF Preformed Markings											20	5028	2250	138	258	153	384	2020	308	240	52	3	20	37	68	
	-																										

	PROJECT SUMMARY - BASE BID											
	SUMMARY OF PAVEMENT MARKING QUANTITIES											
COLOR			EPOXY PAVEMENT MARKING (GAL)	PREFORMED THERMOPLASTIC PAVEMENT MARKING (WORD- SYMBOL)(SF)	PREFORMED THERMOPLASTIC PAVEMENT MARKING (XWALK- STOPLINE)(SF)	PREFORMED THERMOPLASTIC PAVEMENT MARKING (SPECIAL)						
BASE BID:						9						
YELLOW			40	0	0	0						
WHITE			44	1093	7298	0						
GREEN/WHITE OR GRAY/WHITE			0	0	0	2588						
TOTAL			84	1093	7298	2588						

- Fifteen left or right arrows; two thru arrows
 All composite green/white or gray/white pavement markings will be measured and paid as Preformed Thermoplastic Pavement Marking (Special)
- 3 Total includes one transverse line at 18th & Glenarm

Print Date: 1/5/2017		Sheet Revisions		DEPARTMENT OF PUBLIC WORKS	As Constructed		D-WAY CONVERSION	Project Number
File Name: stripe01.1_soq01.dgn Horiz. Scale: 1:1 Vert. Scale:	Date:	Comments		201 WEST COLFAX AVENUE	No Revisions:		NG PLAN AVEMENT MARKINGS	2015-PROJMSTR-0000631
City Project Manager Kim D. Blair				DENVER, CO 80202 PHONE: (720) 913-4501	Revised:	Designer: S. Sabinash	Structure	FOR AD
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955			DENVER THE MILE HIGH CITY	FAX: (720) 913-4544	Void:	Detailer: J. Mills Sheet Subset: STR	Numbers Subset Sheets: 1 of 35	Sheet Number 96

										В	D ALT	ERNA	TES													
									T/	BULATI	ON OF P	AVEMEN	T MARK	INGS												
					PAVE	MENT MAR	KING LINE	S (LF)								PRE	FORMED TH	ERMOPLA	STIC PAVE	EMENT MAI	RKING (LF	/ EA)				
			E	DGE		LANE		CENTER		CHANN	ELIZING	CROSS	WALK	STOP	PVMT	PVMT	PVMT	PVMT	G/W BIKE		G/W BIKE 2	WHITE			PVMT	PVMT
SHEET	STATION	YELLOW SOLID 4	WHITE SOLID	WHITE X- 4 HATCH 4	WHITE DASHED	WHITE SOLID	SOLID	YELLOW X- HATCH 4	DASHED 4	WHITE SOLID		WHITE SOLID 12	WHITE SOLID	WHITE SOLID	ARROW DOUBLE	OUBLE SINGLE SI			CNFLCT ZONE	G/W BIKE SYMB	STAGE LT BOX	BIKE DBL CHEV	WHITE YIELD MKG	GRAY/W LOOK MKG	LETTER "BUS"	LETTER "ONLY"
		INCH	INCH	INCH	4 INCH	4 INCH	4 INCH	INCH	INCH	8 INCH	INCH	INCH	18 INCH	24 INCH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH
	BID ALTERNATE:																									
	BID ALTERNATE 2:																									
3 of 24	20th Ave; Logan-Pennsylvania						104			-52				-11		-2										
11 of 24	19th Ave at Logan						185							Net 0	-2											
20 of 24	Logan St 19th-20th						615			-48						-2										
21 of 24	Logan St South of 19th						590									1										1
22 of 24	Logan St at 18th	20					95			200	42		280	82		3										
ADD ALT	Total LF Epoxy	20	0	0	0	0	1589	0	0	100	42	ĺ														
ADD ALT	Total SF Epoxy	7	0	0	0	0	530	0	0	67	28															
	Total Gallons Epoxy	0.1	0	0	0	0	5.3	0	0	0.7	0.3															
	Total LF or EA Preformed Markings											0	260	70	-2	-3	0	0	0	0	0	0	0	0	0	1
ADD ALT	Total SF Preformed Markings											0	390	140	-55	-47	0	0	0	0	0	0	0	0	0	23

	PROJE	CT SUMMARY - BI	D ALTERNATES		
	SUMN	MARY OF PAVEMENT MAR	KING QUANTITIES		
COLOR	EPOXY PAVEMENT MARKING (GAL)		PREFORMED THERMOPLASTIC PAVEMENT MARKING (XWALK- STOPLINE)(SF)	PREFORMED THERMOPLASTIC PAVEMENT MARKING (SPECIAL)	
BID ALTERNATE:					
YELLOW	na	na	na	na	
WHITE	na	na	na	na	
GREEN/WHITE OR GRAY/WHITE	na	na	na	na	
TOTAL	na	na	na	na	
BID ALTERNATE 2:				4	
YELLOW	5	0	0	0	
WHITE	1	-79	530	0	
GREEN/WHITE OR GRAY/WHITE	0	0	0	0	
TOTAL	6	-79	530	0	

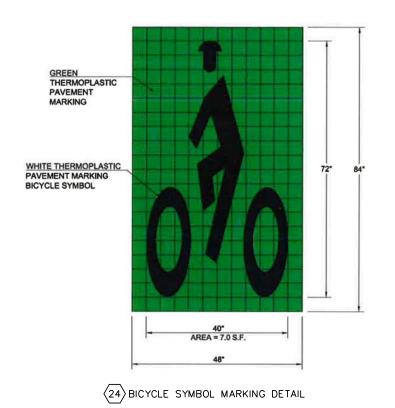
⁴ All composite green/white or gray/white pavement markings will be measured and paid as Preformed Thermoplastic Pavement Marking (Special)

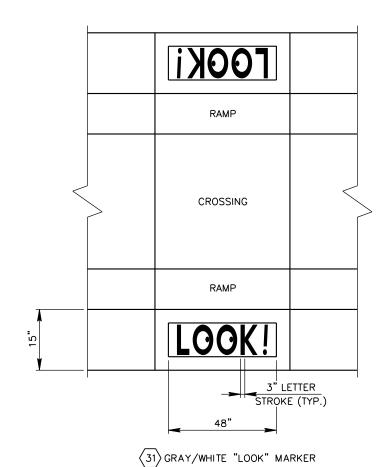
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City Project Manager Kim D. Blair				
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955	00			

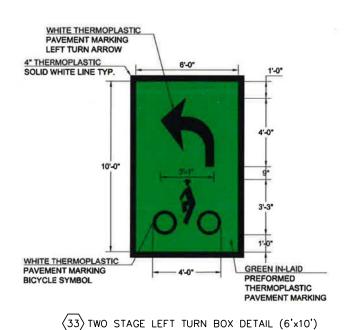


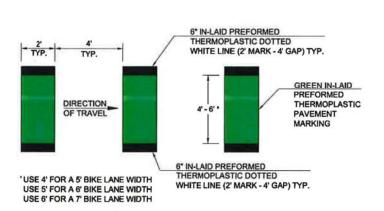
DEPARTMENT OF PUBLIC WORKS
201 WEST COLFAX AVENUE

S	As Constructed	19TH &	20TH TWC STRIPIN		CONVERSION	Project N	umber	
-	No Revisions:	TABULATI			T MARKINGS	2015-PROJMSTR	-0000631	
	Revised:	Designer:	S. Sabinash	Structure		FOR AD		
		Detailer:	J. Mills	Numbers				
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(23) GREEN BICYCLE CONFLICT MARKING DETAIL

PAVEMENT MARKINGS GENERAL NOTES:

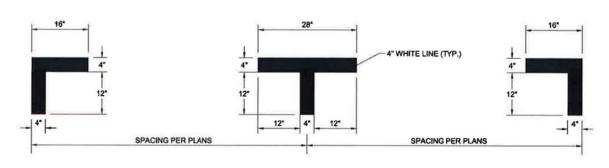
- 1. INSTALLATION OF ALL PAVEMENT MARKINGS SHALL BE AS PER MANUFACTURER'S RECOMMENDATION.
- 2. CONTRACTOR SHALL SUBMIT CUT SHEETS AND/OR DETAILS TO THE ENGINEER FOR THE FOLLOWING PREFORMED MARKINGS PRIOR TO ORDERING MATERIALS. THE LIST OF MARKINGS REQUIRED FOR SUBMITTAL TO THE ENGINEER INCLUDES ALL WHITE PREFORMED THERMOPLASTIC MARKINGS THAT DEPICT WORDS OR SYMBOLS, ALL GREEN AND WHITE PREFORMED THERMOPLASTIC BICYCLE MARKINGS, AND ALL GRAY AND WHITE "LOOK!" MARKINGS.
- GRAY AND WHITE "LOOK!" MARKING IS INTENDED TO MATCH THOSE MARKINGS CURRENLTY IN PLACE ALONG BIKE LANE FACILITIES AT 18TH STREET AND MARKET STREET INTERSECTION IN DOWNTOWN DENVER.
- 4. PRIOR TO INSTALLATION OF MARKINGS, CONTRACTOR SHALL CONDUCT A BLOCK-BY-BLOCK WALK THROUGH WITH THE ENGINEER'S REPRESENTATIVE TO OBTAIN OWNER'S FINAL VERIFICATION AND APPROVAL FOR TYPE AND LOCATION OF ALL PAVEMENT MARKINGS.

Print Date: 1/5/2017			Sheet Revisions	
File Name: stripe01.3—details01.dgn		Date:	Comments	
Horiz. Scale: 1:1 Vert. Scale:				
City Project Manager Kim D. Blair				
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955	00			

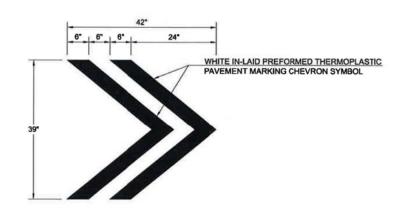


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\leq	As Constructed	19TH & 20TH TWO PAVEMENT MAP	Project Number	
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	Revised:	Designer: S. Sabinash		FOR AD
		Detailer: J. Mills	Numbers	
	Void:	Sheet Subset: STR	Subset Sheets: 3 of 35	Sheet Number 98

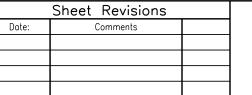


PARKING "T" DETAIL



29 CHEVRON MARKING DETAIL

Print Date: 1/5/2017		
File Name: stripe01.4—details02.dgn		
Horiz. Scale: 1:1 Vert. Scale:		
City Project Manager Kim D. Blair		
ACL Inc. Transportation Engineering 17877 W. 53rd Drive Golden, CO 80403 720-943-0955	00	





DEPARTMENT OF PUBLIC WORKS
201 WEST COLFAX AVENUE
DENVER, CO 80202

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DENVER, CO 80202
PHONE: (720) 913-4501
FAX: (720) 913-4544

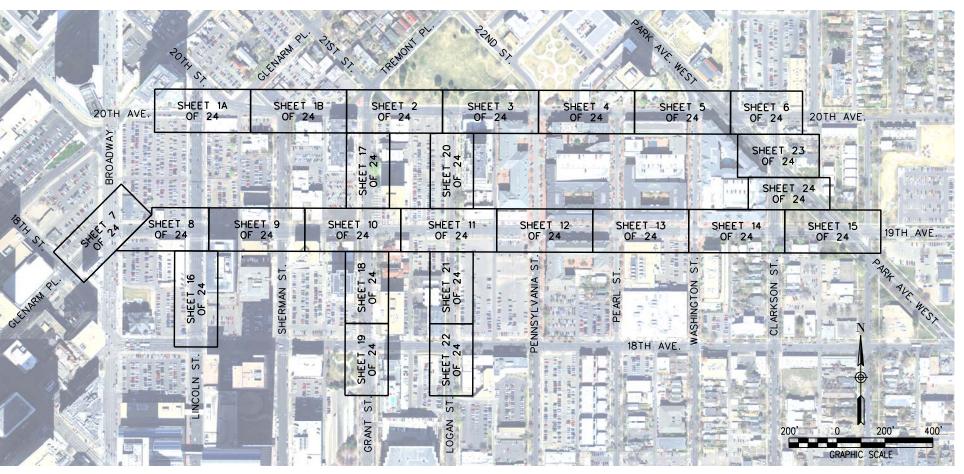
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	Revised:	Designer:	S. Sabinash	Structure		FOR AD
ł		Detailer:	J. Mills	Numbers		
	Void:	Sheet Subset:	STR	Subset Sh	eets: 4 of 35	Sheet Number 99

STRIPING LEGEND:

- 1 4" DOUBLE YELLOW CENTERLINE WITH 4" SEPARATION
- 3 4" YELLOW SOLID EDGE LINE
- 5 4" WHITE LANE LINES; 10' LINES WITH 30' GAPS
- 6 4" WHITE SOLID EDGE LINE
- (7) 4" SOLID WHITE 45" DIAGONAL CROSSHATCH @ 15' SPACING
- 8 8" WHITE SOLID CHANNELIZING LINE
- 9 8" WHITE DASHED LINE; 2' DASHES WITH 4' GAPS
- (15) 18" WHITE TRANSVERSE CROSSWALK LINE
- (16) 18"x10' WHITE CROSSWALK BAR
- $\langle 18 \rangle$ 24" WHITE STOP LINE
- (19) PAVEMENT MESSAGES (LETTERS)
- 21 WHITE BIKE SYMBOL

STRIPING LEGEND (CONT.):

- (22) WHITE SHARROW SYMBOL
- (23) GREEN/WHITE BIKE LANE CONFLICT MARKING
- 24 GREEN/WHITE CYCLE TRACK BIKE SYMBOL
- 25 4" WHITE DASHED LINE; 2' DASHES WITH 4' GAPS
- 26 WHITE PAVEMENT ARROW
- (27) WHITE YIELD LINE; 12"x18" TRIANGLES
- 6" WHITE DOUBLE CHEVRON; INSTALL IN CENTER OF CONFLICTING LANE OR AS DESCRIBED BY THE ENGINEER
- 30 12"x10' WHITE CROSSWALK BAR
- (31) GRAY/WHITE "LOOK!" WARNING MARKER
- (32) 4" SOLID YELLOW 45' DIAGONAL CROSSHATCH @ 15' SPACING
- (33) GREEN/WHITE BIKE LANE TWO STAGE LEFT TURN BOX



KEY MAP/SHEET INDEX

Print Date: 11/30/2016		Sheet Revisions	
File Name: stripe01.5_key.dgn	Date:	Comments	Γ
Horiz. Scale: 1:1 Vert. Scale:			ſ
City Project Manager Kim D. Blair			r
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403			ľ
ACL Inc. Golden, CO 80403 720-943-0955			Γ



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	As Constructed	19TH &)—WAY G PLAN		Project Number
	No Revisions:	PAVEMENT			AND KEY MAP	2015-PROJMSTR-0000631
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ı		Detailer:	J. Mills	Numbers		100
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LINCOLN TO SHERMAN STRIPING:

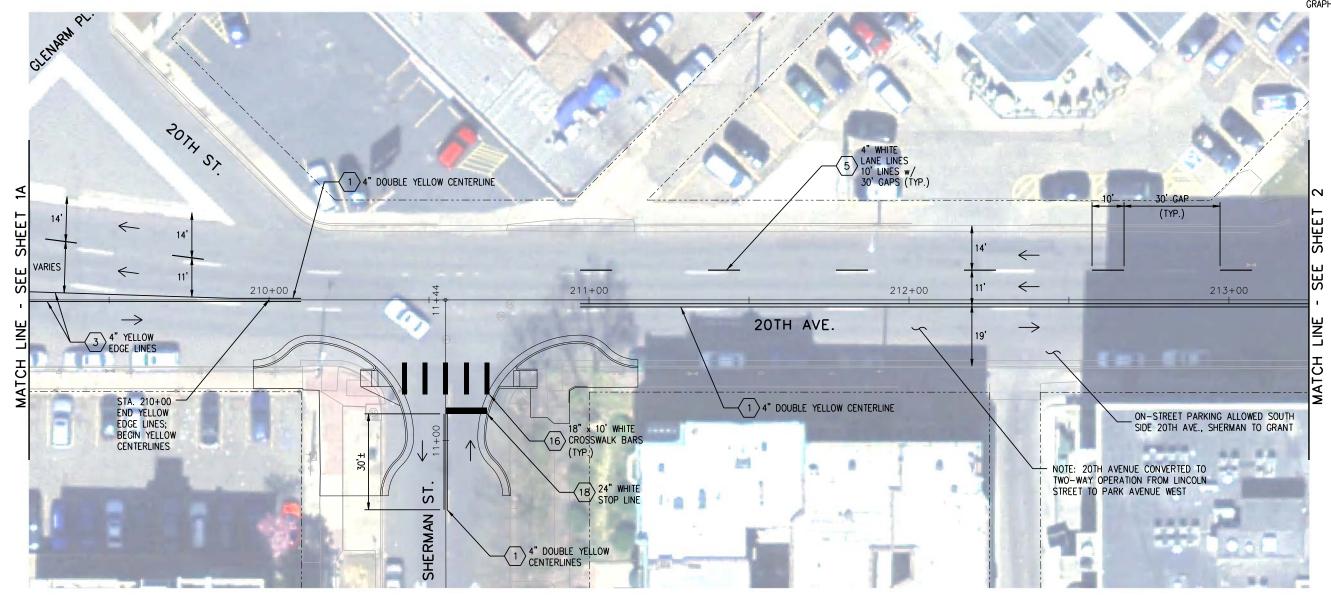
- 1. PRIOR TO INSTALLING PERMANENT MARKINGS, PROVIDE TEMPORARY ON-STREET LAYOUT (USING SPRAY PAINT DOTS OR OTHER TEMPORARY MEANS) FOR APPROVAL BY THE CITY. WALK-THROUGH FOR APPROVAL BY THE CITY TO BE SCHEDULED THROUGH THE ENGINEER.
- ALL LABOR AND MATERIALS NEEDED TO ESTABLISH TEMPORARY LAYOUT AND OBTAIN CITY APPROVAL SHALL BE CONSIDERED INCLUDED IN THE WORK AND WILL NOT BE PAID SEPARATELY.

Print Date: 11/30/2016		Sheet Revisions	
File Name: stripe01a-20th01.dgn	Date:	Comments	
Horiz. Scale: 1:30 Vert. Scale:			
City Project Manager Kim D. Blair			
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720_9043_0055			
ACL Inc. Golden, CO 80403 720-943-0955			



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, C	As Constructed	19TH &	20TH TWC)-WAY	CONVERSION	Project Number
72	7.5 00.151.40104	1	STRIPING PLAN			
	No Revisions:		SHEET 1	A OF 2	24	2015-PROJMSTR-0000631
	Revised:	Designer:	S. Sabinash	Structure		FOR AD
		Detailer:	J. Mills	Numbers		
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LINCOLN TO SHERMAN STRIPING:

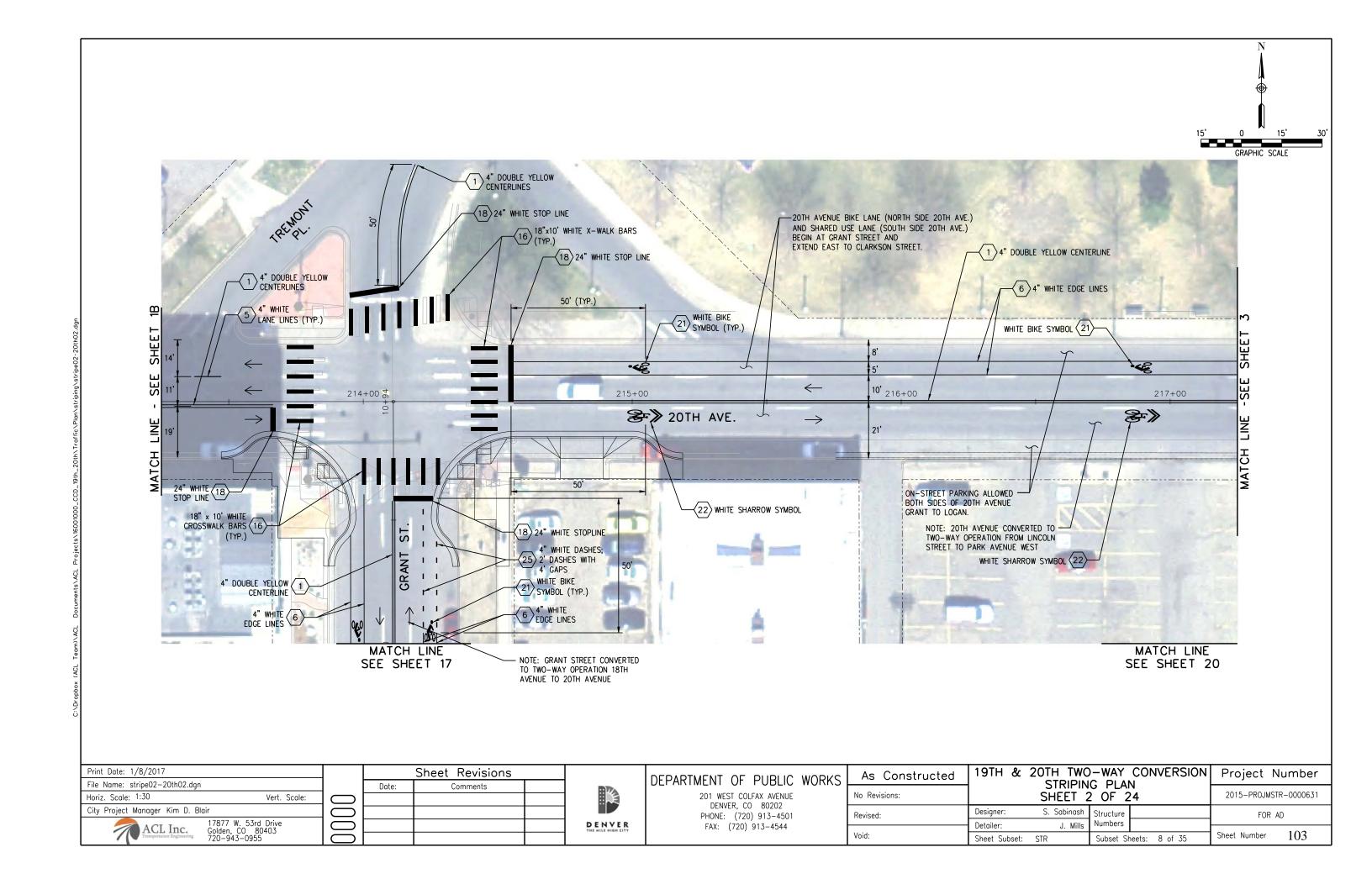
- 1. PRIOR TO INSTALLING PERMANENT MARKINGS, PROVIDE TEMPORARY ON-STREET LAYOUT (USING SPRAY PAINT DOTS OR OTHER TEMPORARY MEANS) FOR APPROVAL BY THE CITY. WALK-THROUGH FOR APPROVAL BY THE CITY TO BE SCHEDULED THROUGH THE ENGINEER.
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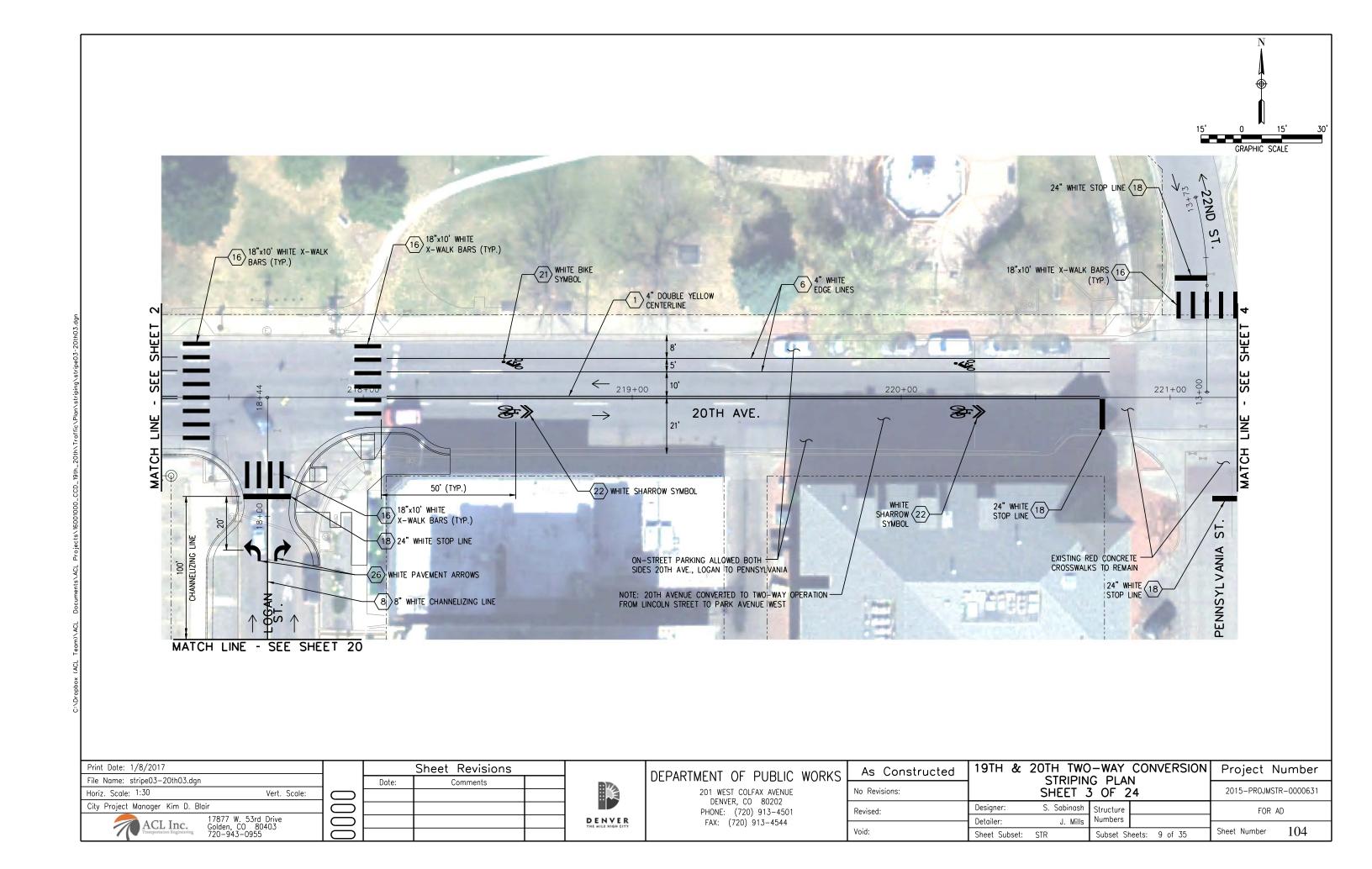
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City Project Manager Kim D. Blair				
ACL Inc. 17877 W. 53rd Drive				
Transportation Engineering 720-943-0955				
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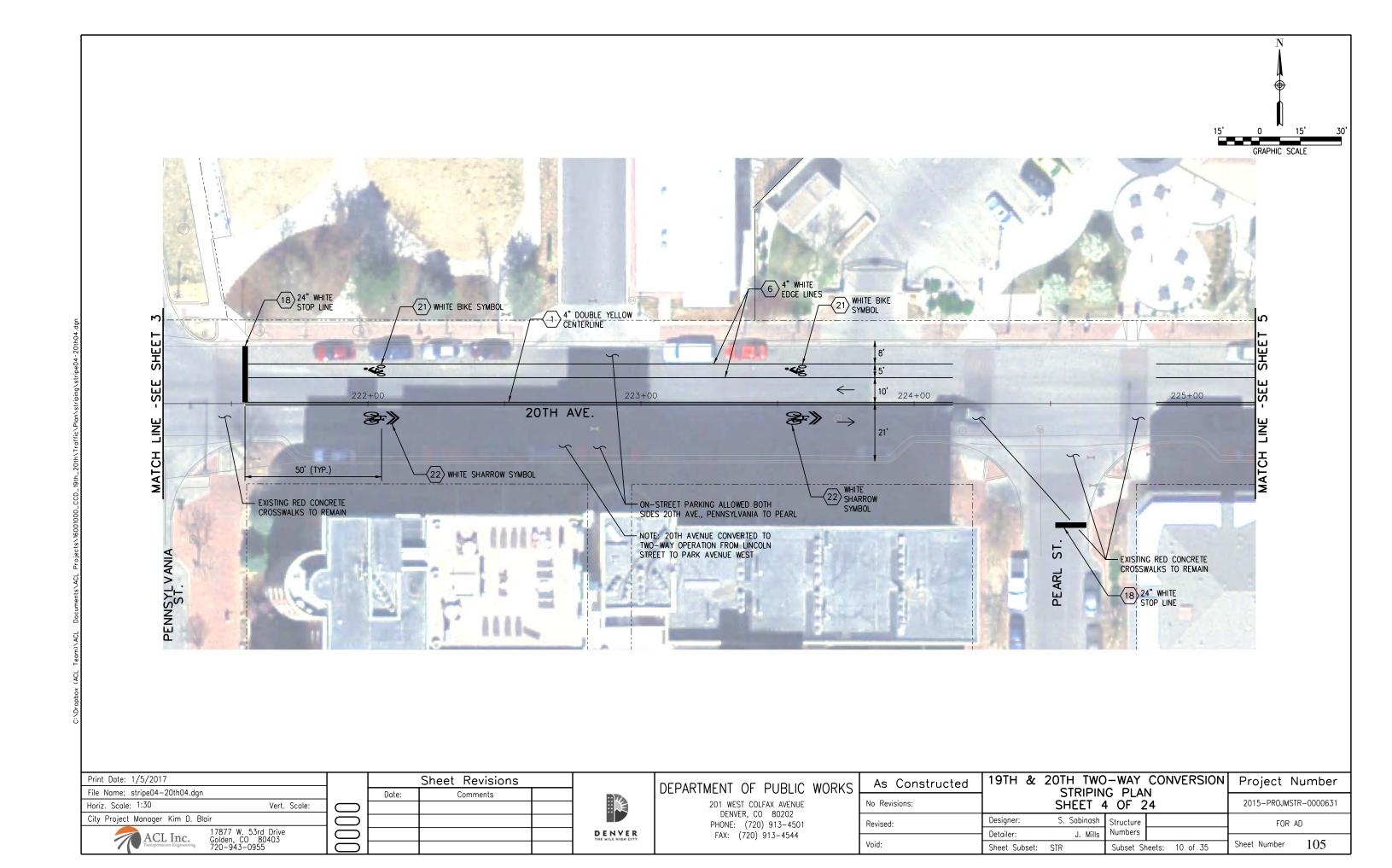


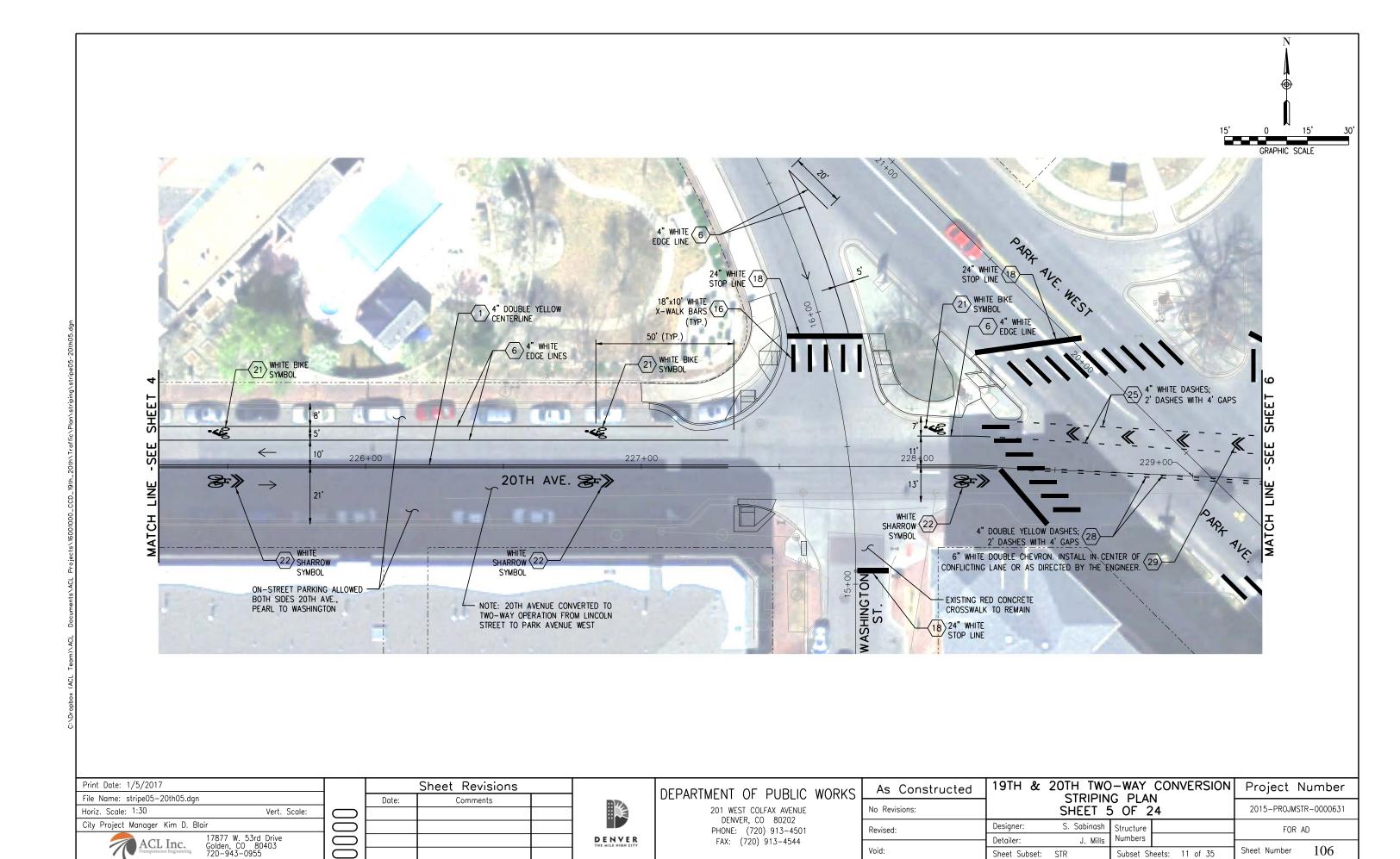
DEPARTMENT OF PUBLIC WORKS

$\frac{1}{2}$	As Constructed	19TH &)-WAY CO G PLAN	ONVERSION	Project N	umber
	No Revisions:			B OF 24		2015-PROJMSTF	R-0000631
	Revised:	Designer:	S. Sabinash	Structure Numbers		FOR AI	D
	Void:	Detailer: Sheet Subset:	J. Mills STR	Subset Sheets	s: 7 of 35	Sheet Number	102



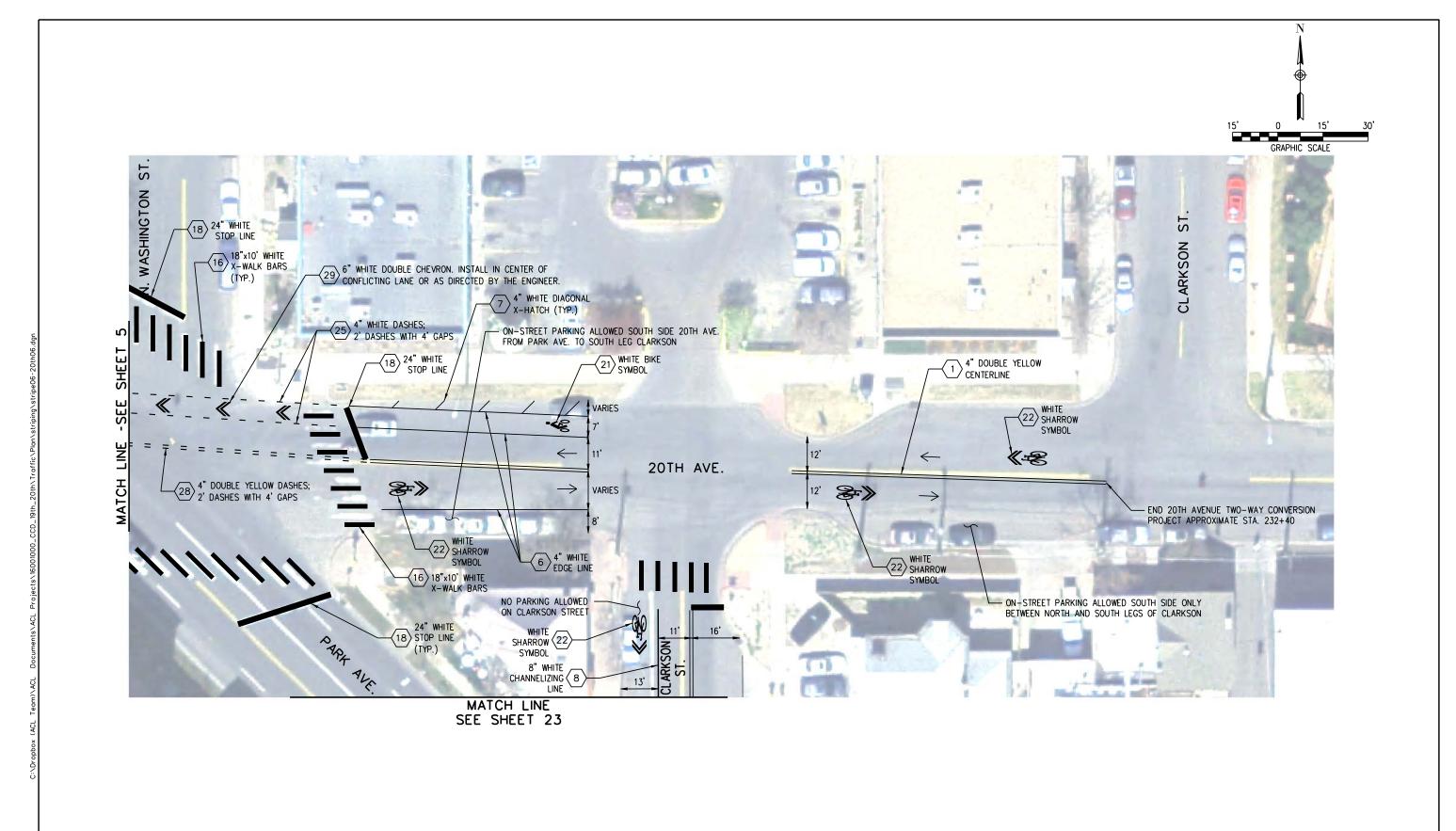






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City Project Manager Kim D. Blair	
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955	



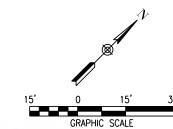
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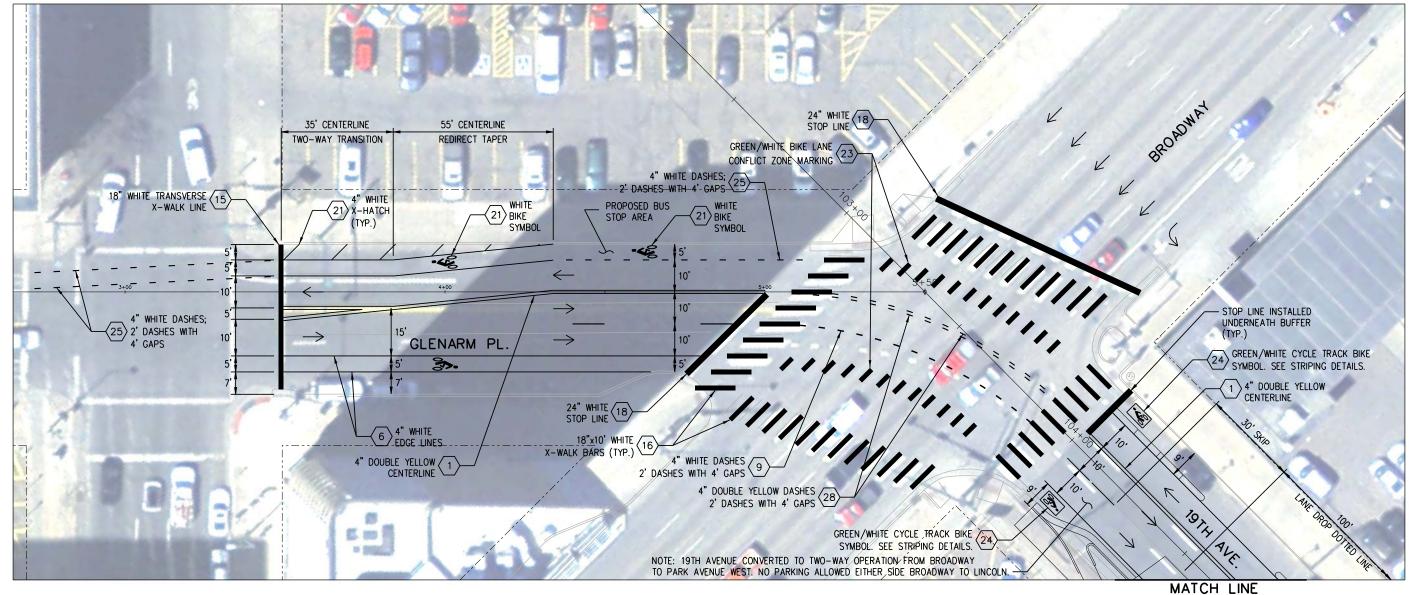
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201 V	VEST C	OLFAX	AVENUE
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PHON	E: (7	20) 9	13-4501
FAX:	(720	0) 913	3-4544

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City Project Manager Kim D. Blair			
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720–943–0955			
Transportation Engineering 720-943-0955			

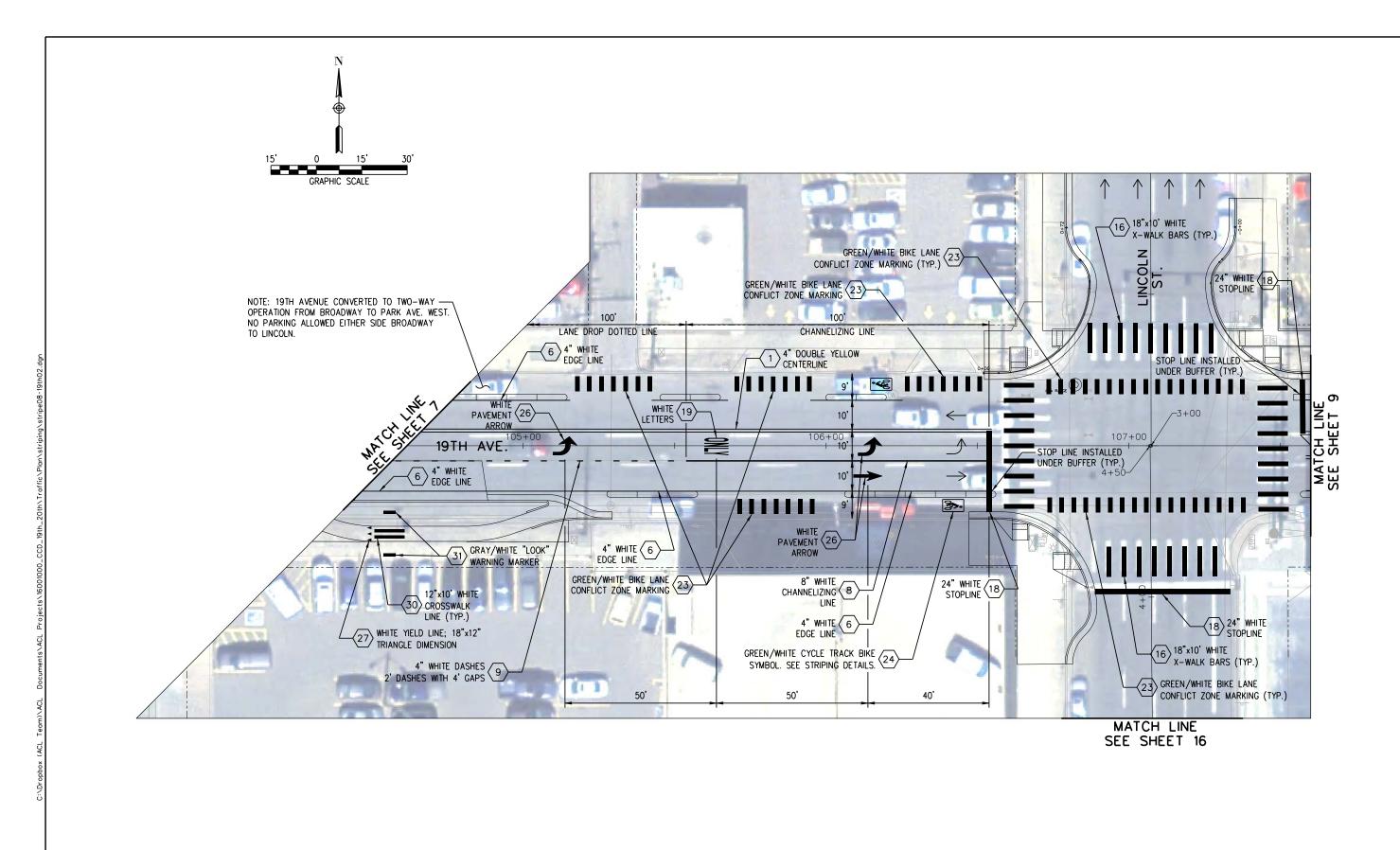


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City Project Manager Kim D. Blair				
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955	00			

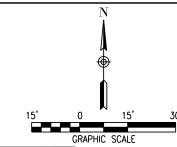


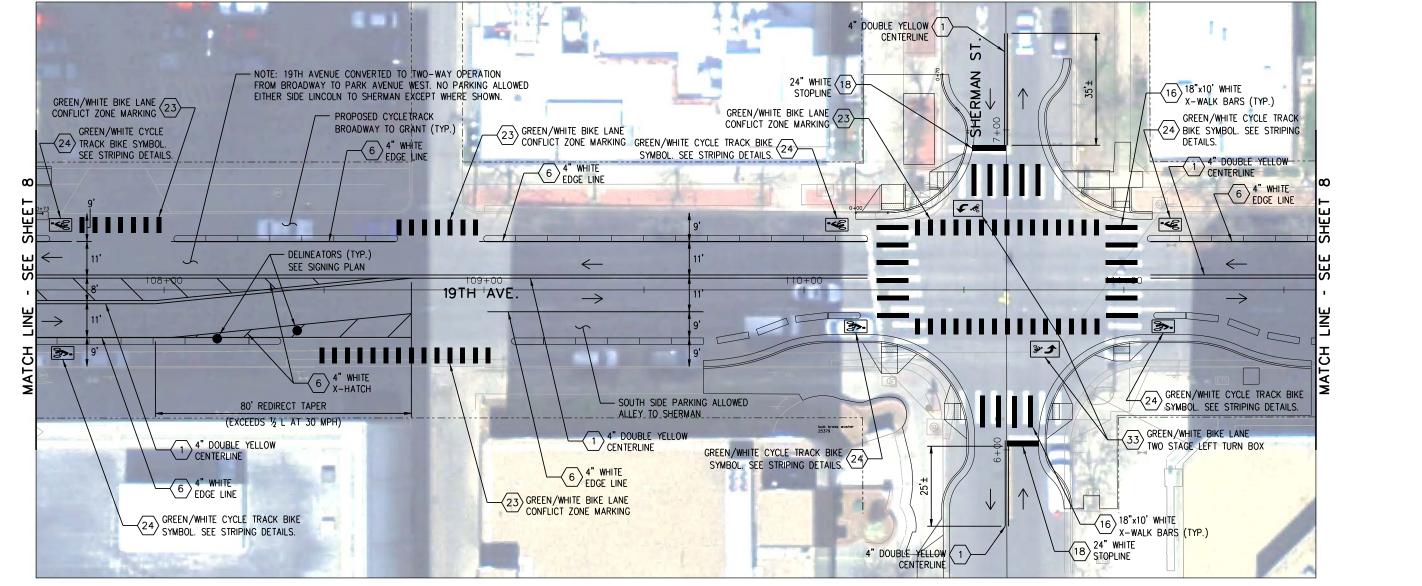
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DENVER, CO 80202

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

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ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720_043_0655		
ACL Inc. Golden, CO 80403 720-943-0955		

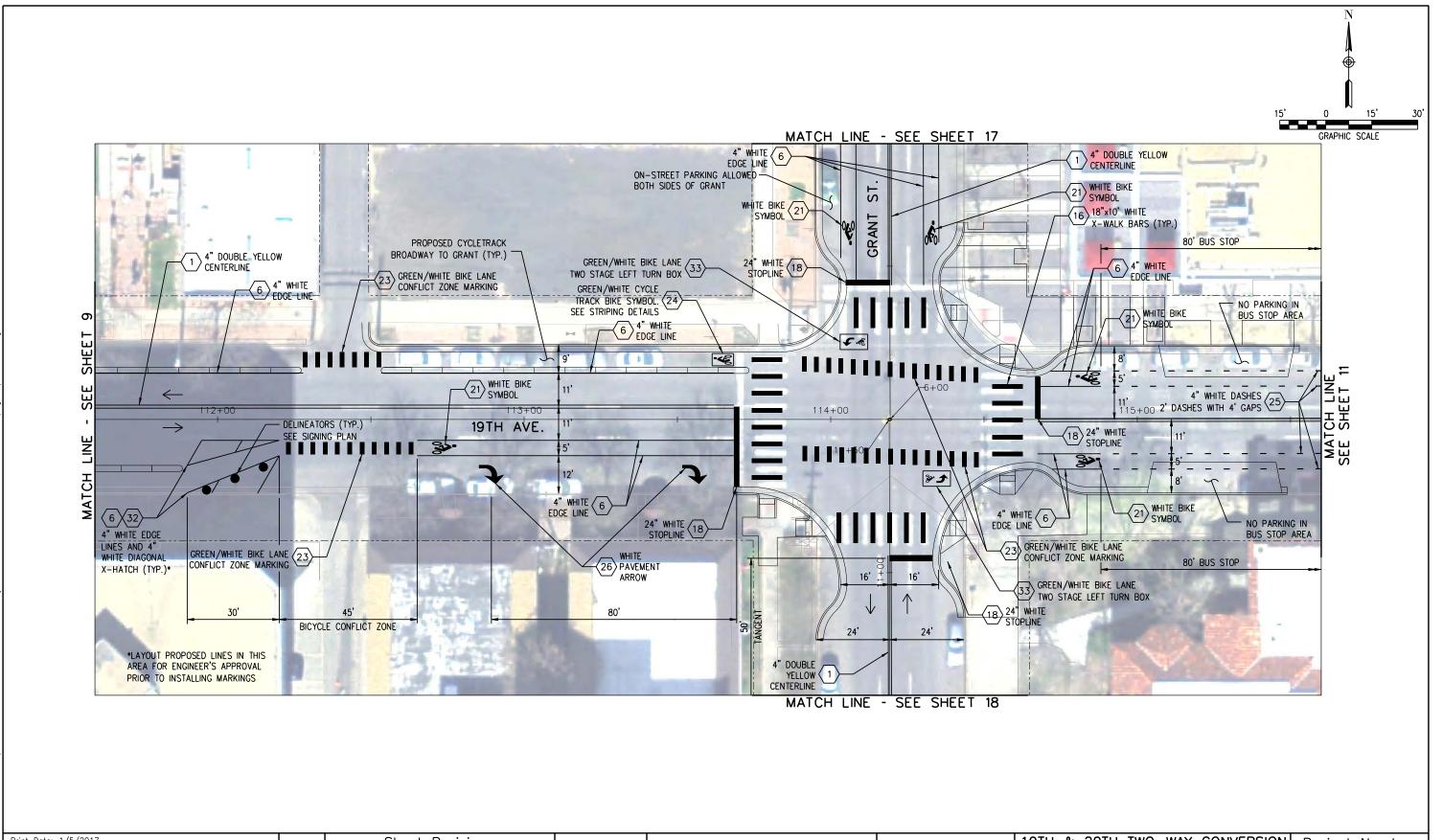


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201 WEST COLFAX AVENUE DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544

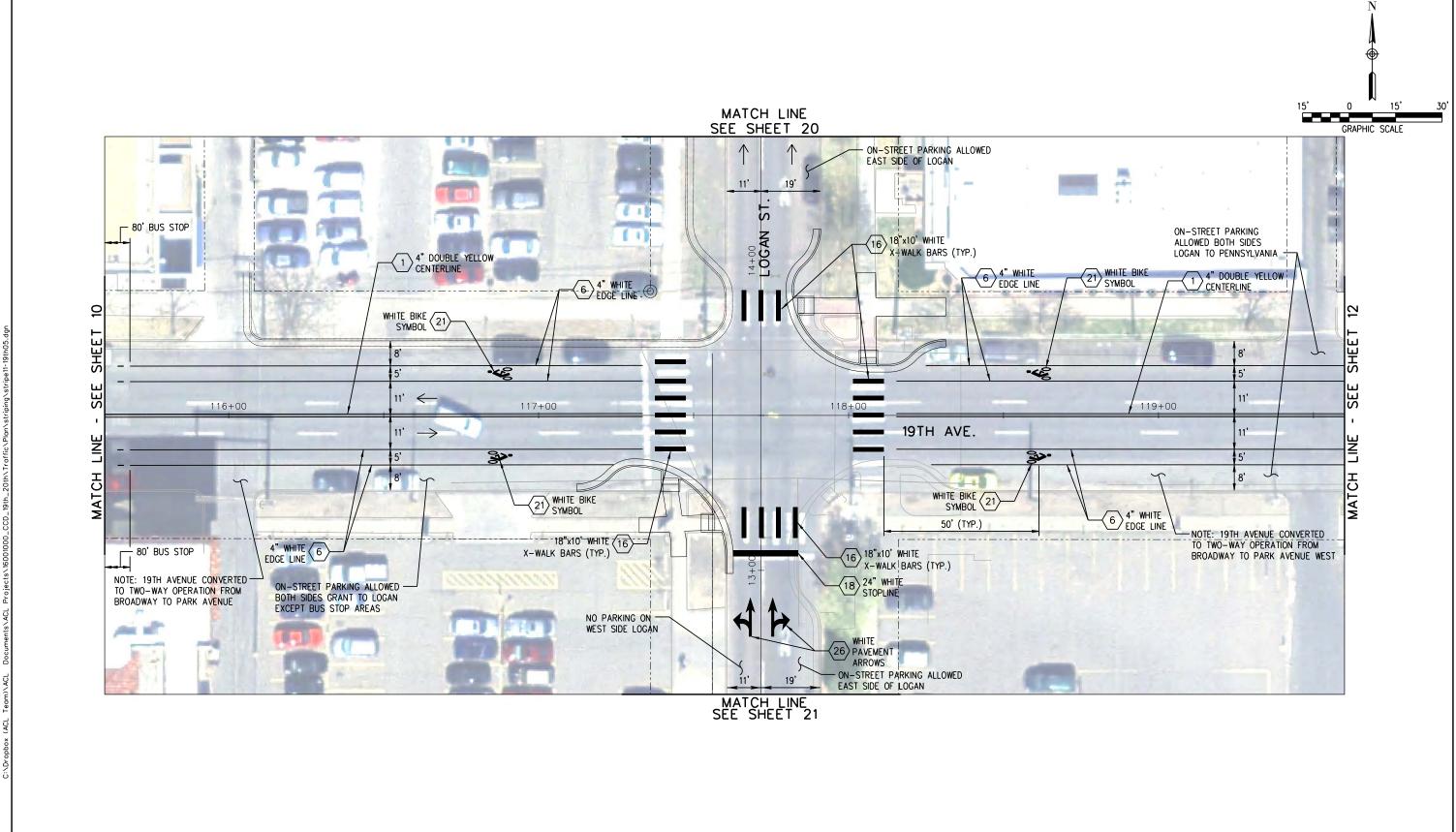
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City Project Manager Kim D. Blair					DENVER, CO 80202 PHONE: (720) 913-4501
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403				DENVER THE MILE HIGH CITY	FAX: (720) 913-4544
Transportation Engineering 720-943-0955					

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ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955	00



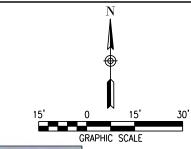
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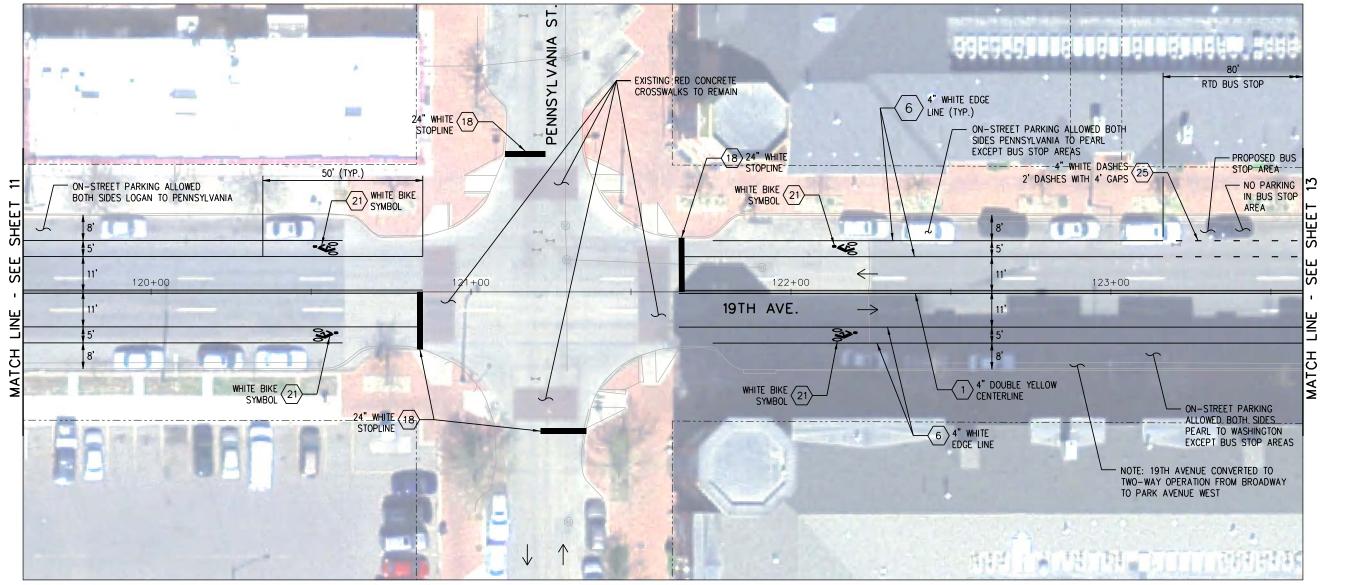
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ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955	00



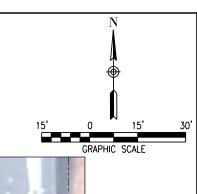
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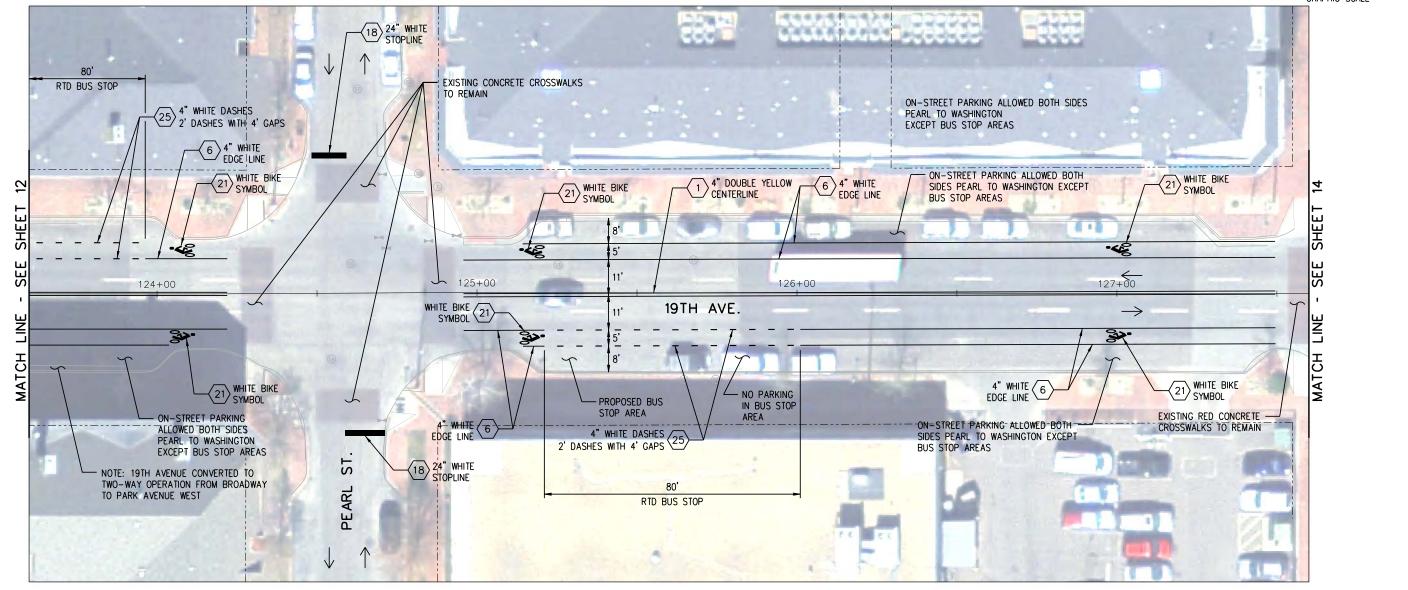
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DENVER, CO 80202
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FAX: (720) 913-4544

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ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955	00



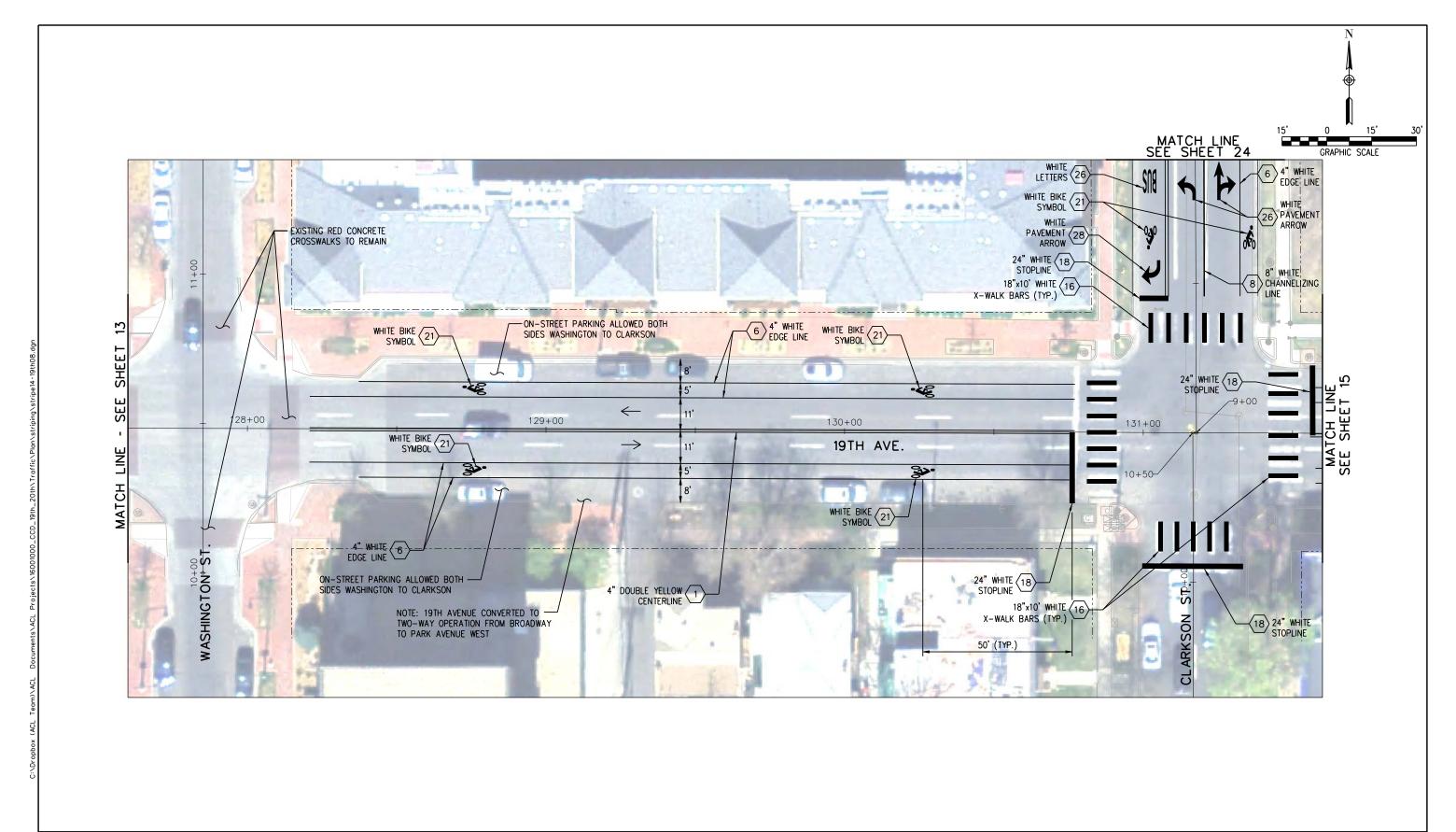
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201 WEST COLFAX AVENUE

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PHONE:	(720) 913-4501
FAX: ((720) 913-4544

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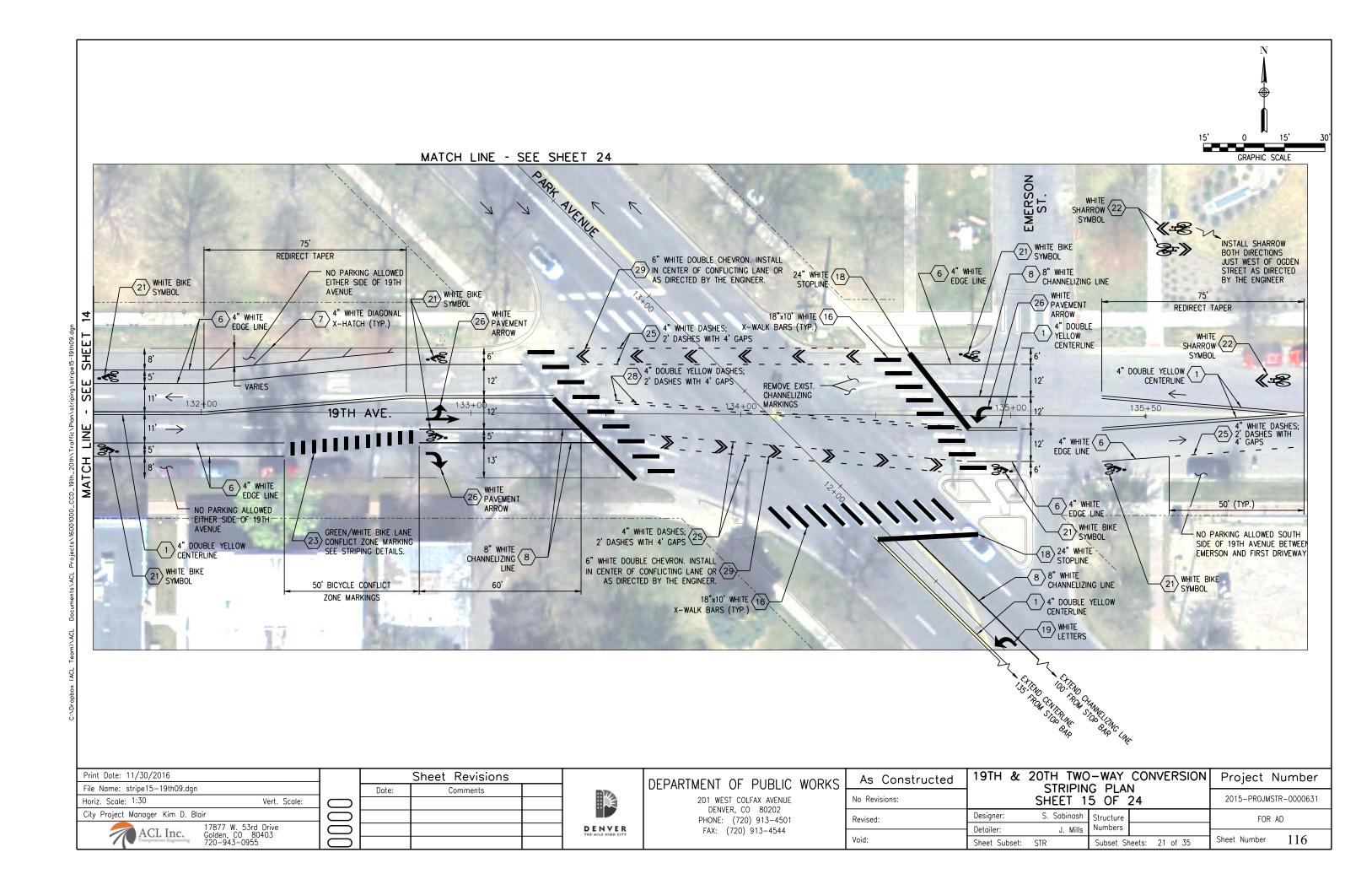
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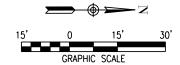
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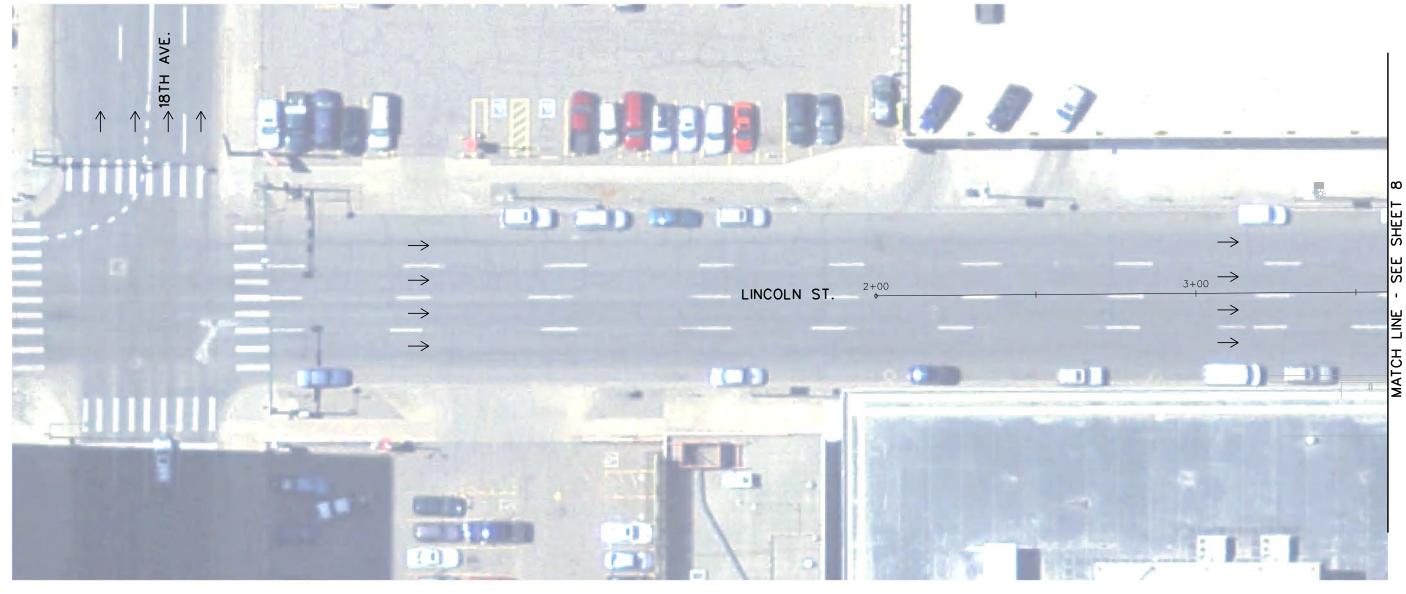
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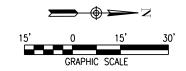


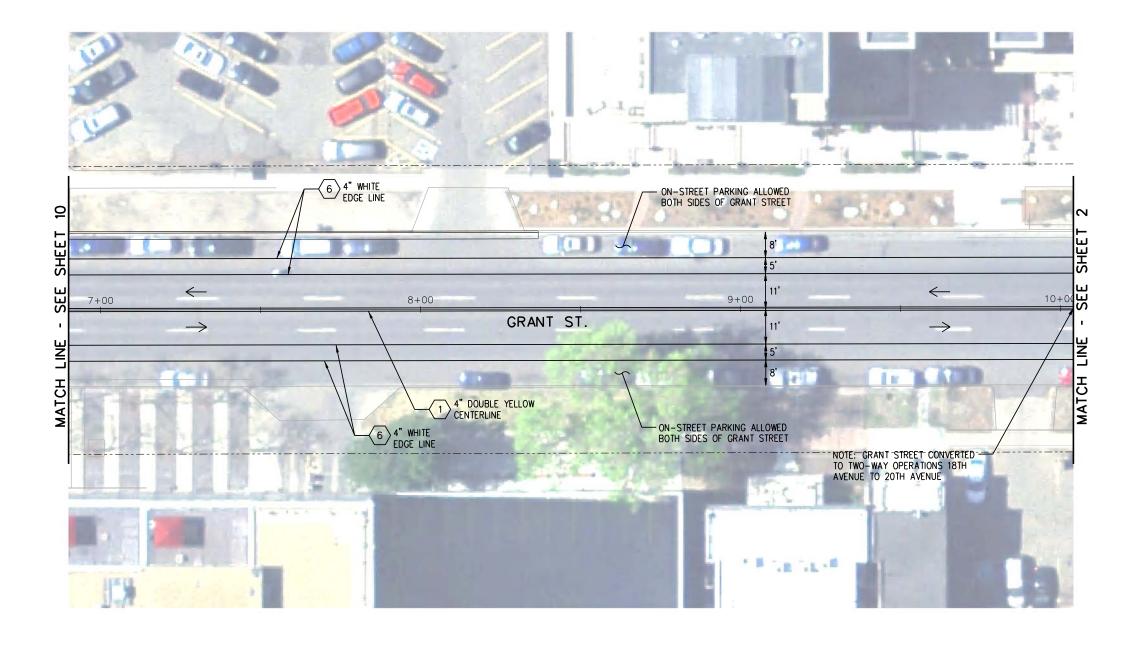
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City Project Manager Kim D. Blair	
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955	00



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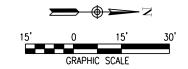
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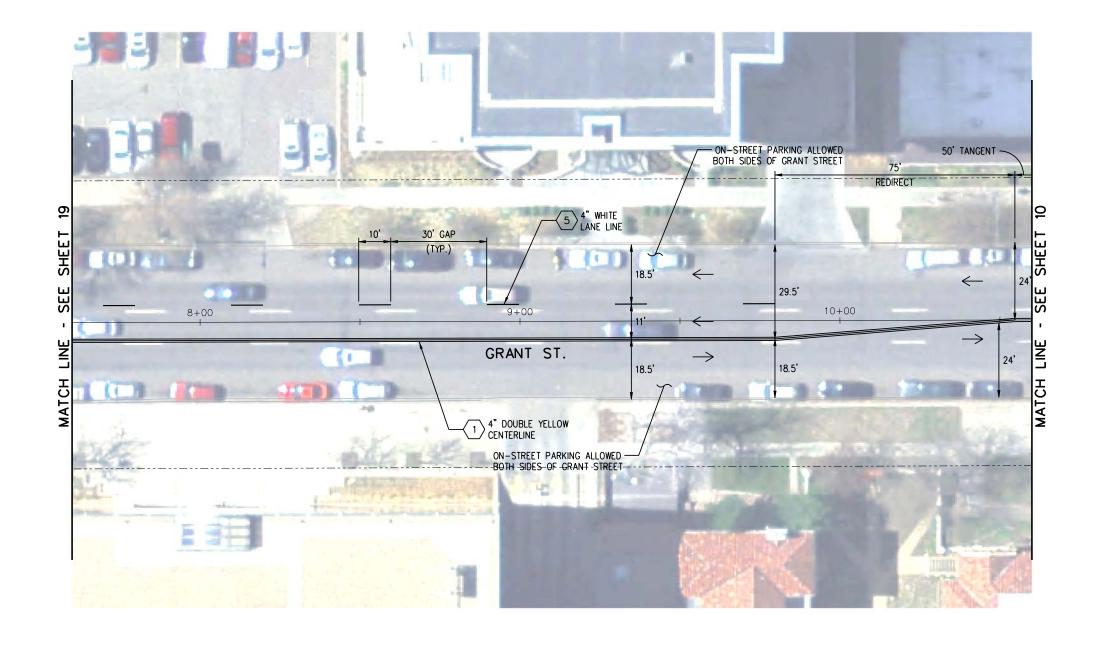
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FAX: (720) 913-4544

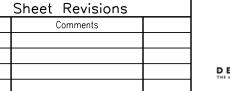
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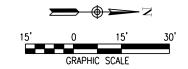
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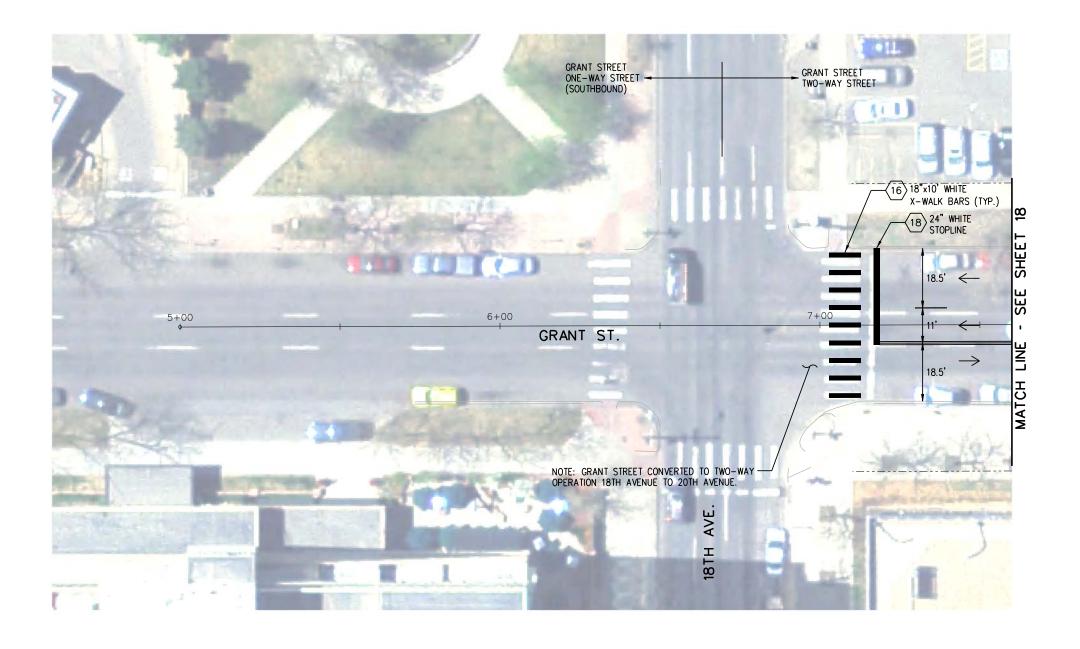
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FAX: (720) 913-4544

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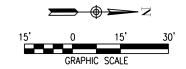
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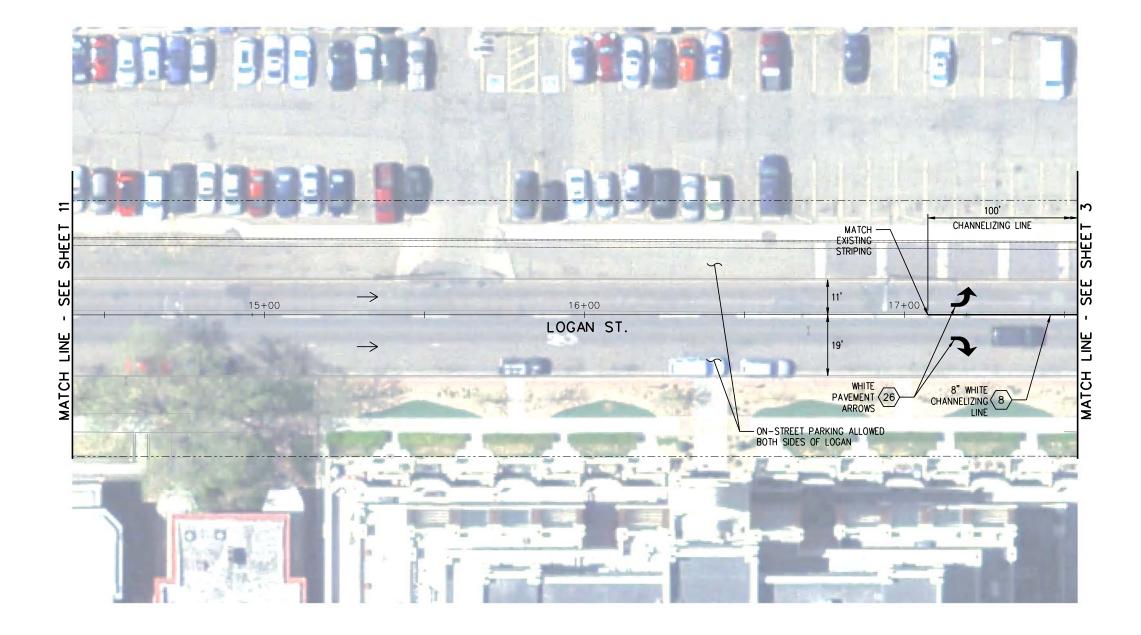
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DENVER, CO 80	0202
PHONE: (720) 91.	3-4501
FAX: (720) 913-	-4544

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ACL Inc. Transportation Engineering	17877 W. 53rd Drive Golden, CO 80403 720-943-0955	$\cup \cup$

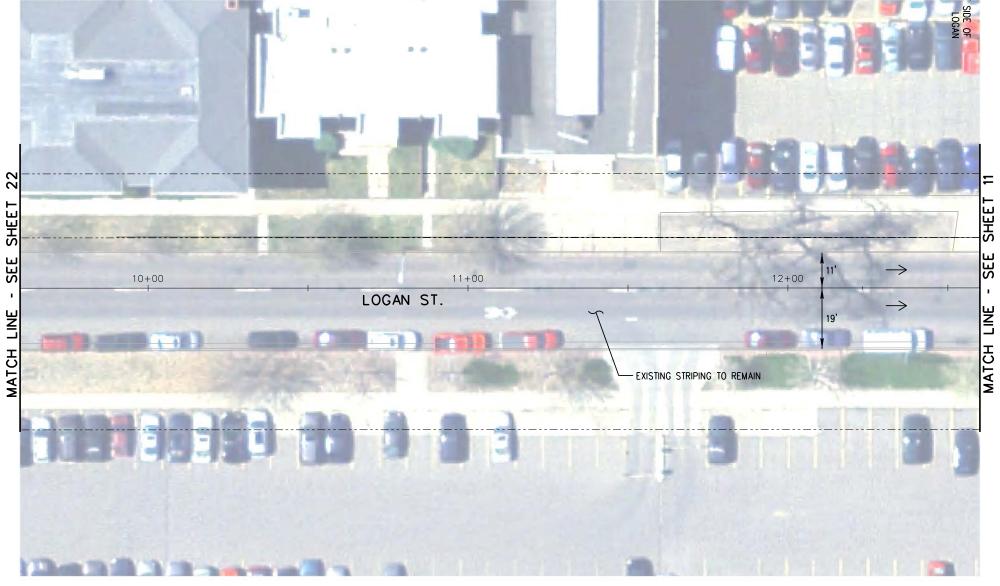
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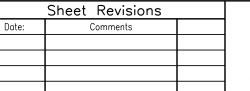
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DENVER, CO 80202
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FAX: (720) 913-4544

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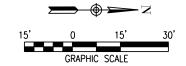




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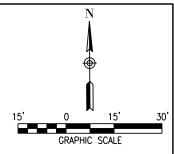


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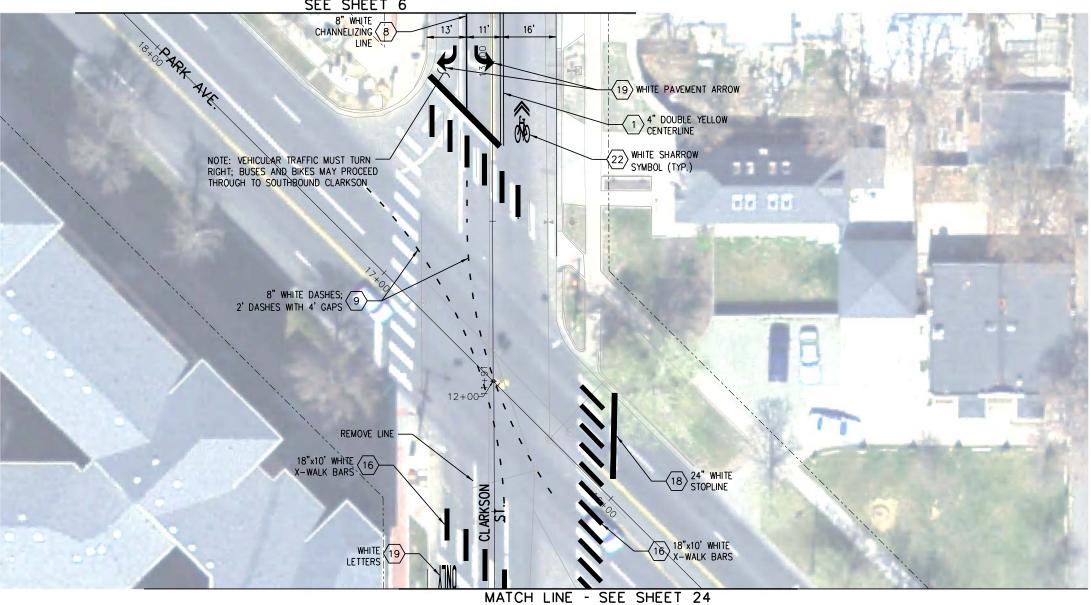
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DENVER, CO 80202

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Transportation Engineering 720-943-0955			



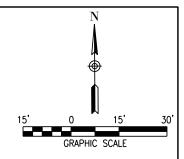
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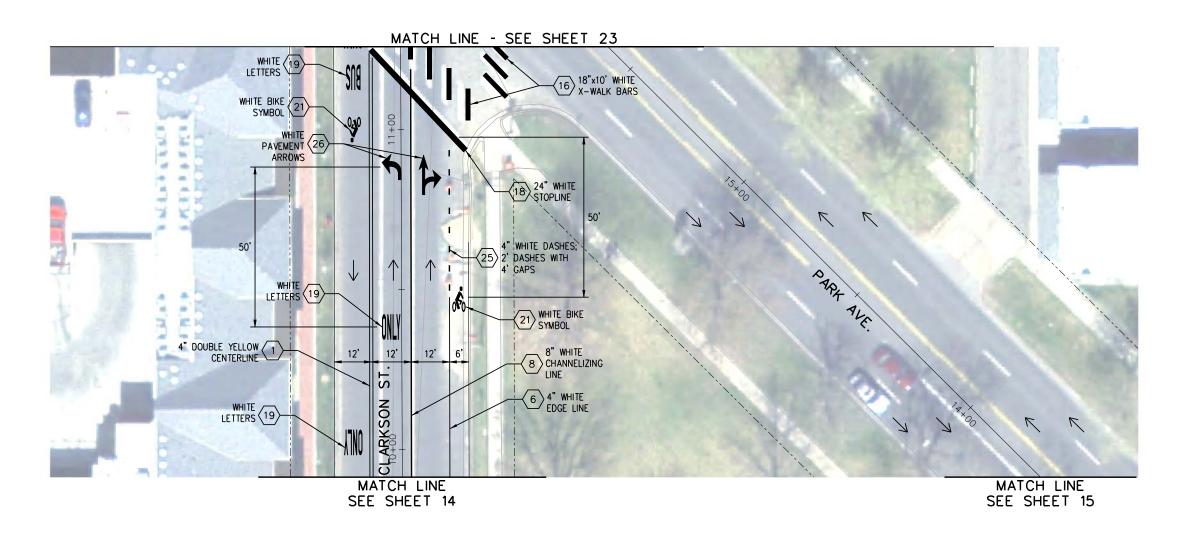
201 WEST COLFAX AVENUE

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ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955	



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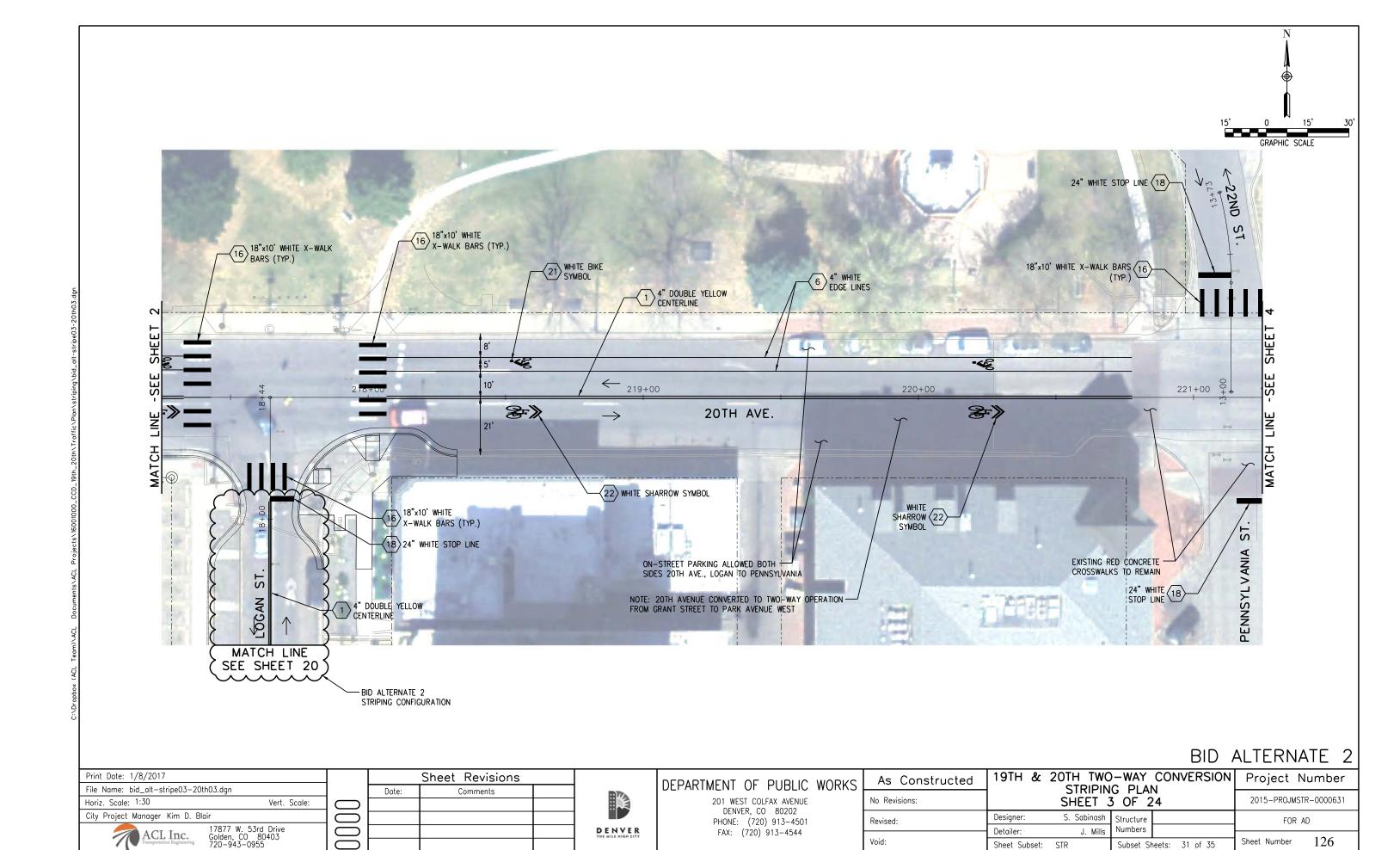
DEPARTMENT OF PUBLIC WORKS

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DENVER CO. 80202

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DENVER, CO 80202
PHONE: (720) 913-4501
FAX: (720) 913-4544

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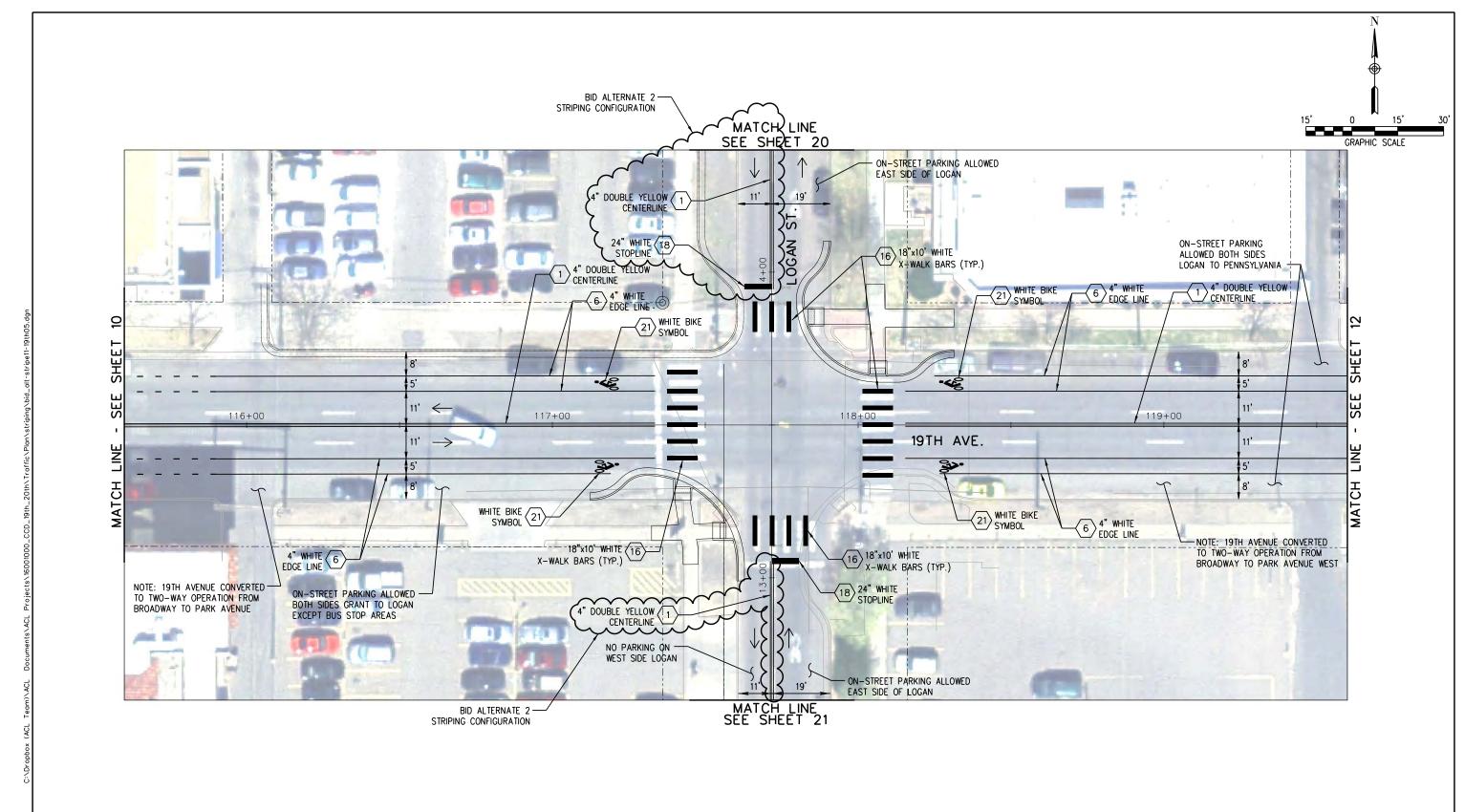
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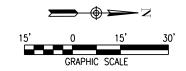
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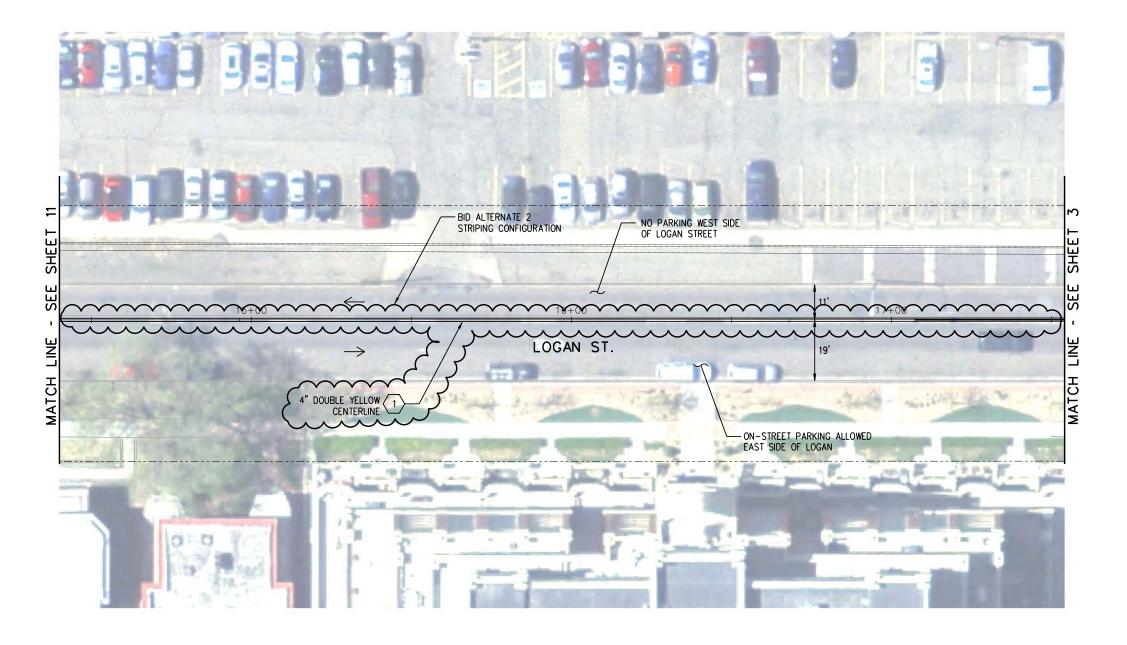
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126

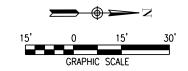


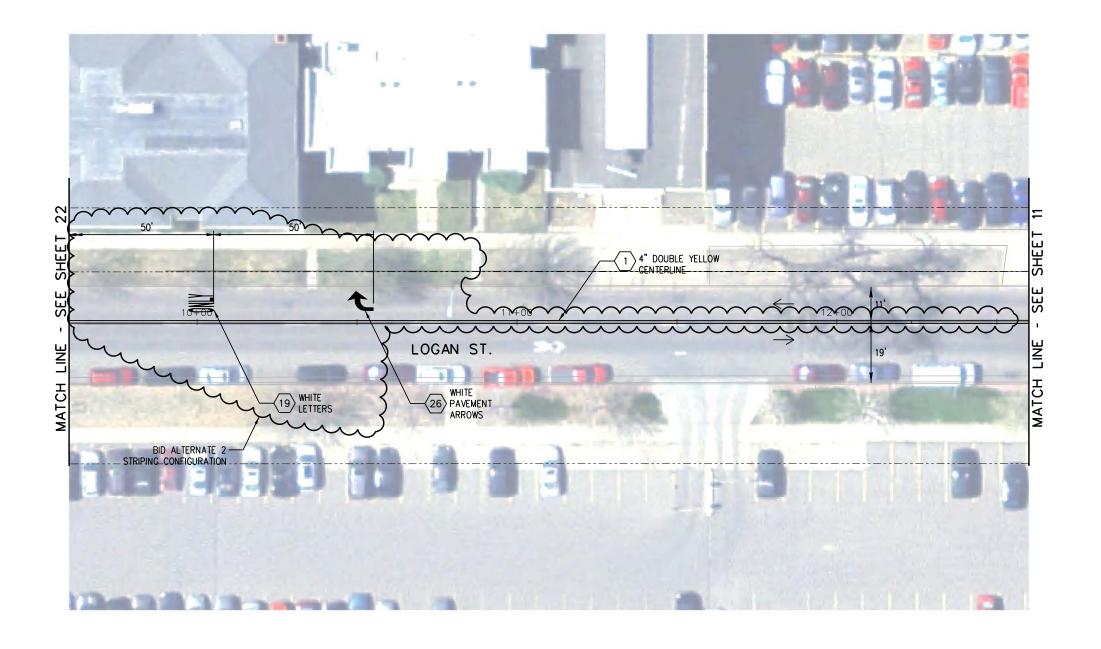
Print Date: 11/30/2016		Sheet Revisions				DEPARTMENT OF PUBLIC WORKS	As Constructed	19TH & 20TH TWO	Project Number	
File Name: bid_alt-stripe11-19th05.dgn		Date:	Comments			1	No Revisions:	STRIPIN SHEET 1	2015-PROJMSTR-0000631	
Horiz. Scale: 1:30 Vert. Scale:	-1						NO REVISIONS.		2013 11(00)(631)	
City Project Manager Kim D. Blair						PHONE: (720) 913-4501	Revised:	Designer: S. Sabinash	1 -	FOR AD
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955					DENVER THE MILE HIGH CITY	FAX: (720) 913-4544		Detailer: J. Mills	Numbers	107
Transportation Engineering 720-943-0955						l Vo	Void:	Sheet Subset: STR	Subset Sheets: 32 of 35	Sheet Number 127



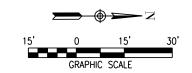


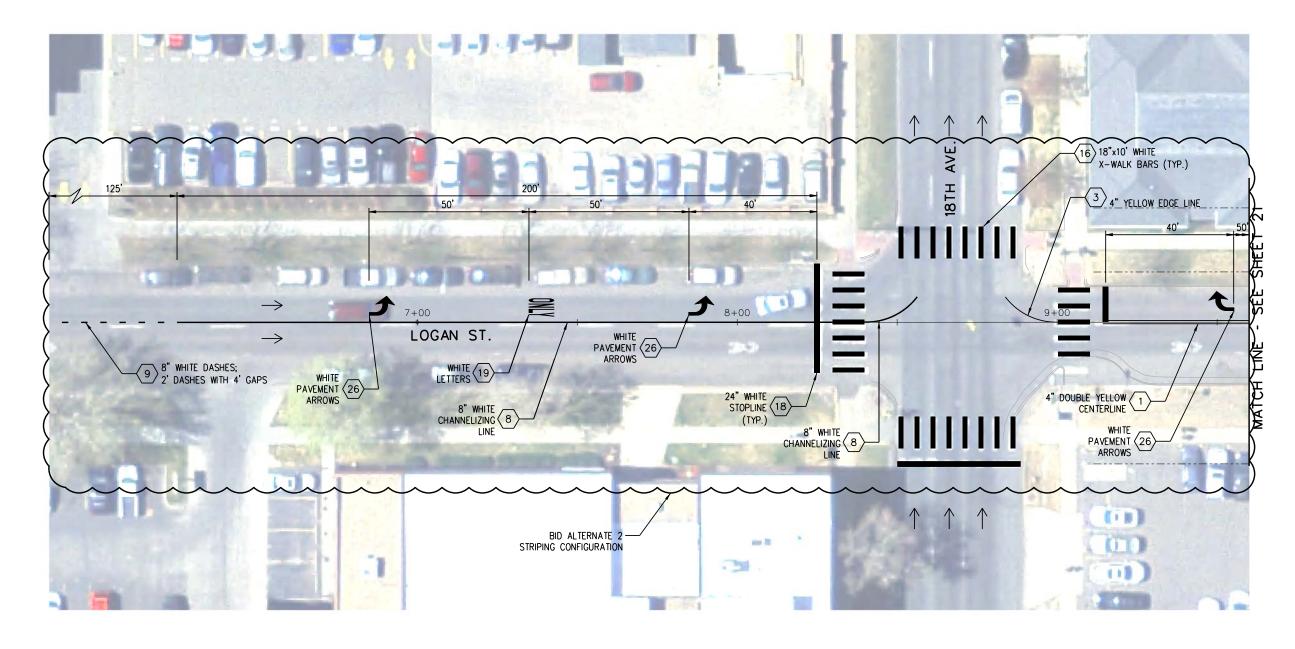
Print Date: 11/30/2016 File Name: bid_alt-stripe20-logan01.dgn			Sheet Revisions		DEPARTMENT OF PUBLIC WORKS	As Constructed	19TH & 20TH TWO-WAY CONVERSION STRIPING PLAN	Project Number
Horiz. Scale: 1:30 Vert. Scale:		Date:	Comments		201 WEST COLFAX AVENUE	No Revisions:	SHEET 20 OF 24	2015-PROJMSTR-0000631
City Project Manager Kim D. Blair				DENVER		Revised:	Designer: S. Sabinash Structure	FOR AD
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955)()			DENVER THE MILE HIGH CITY	FAX: (720) 913-4544	Void:	Detoiler: J. Mills Numbers Sheet Subset: STR Subset Sheets: 33 of 35	Sheet Number 128





Print Date: 11/30/2016			Sheet Revisions			DEPARTMENT OF PUBLIC WORKS	As Constructed		-WAY CONVERSION	Project Number
File Name: bid_alt-stripe21-logan02.dgn		Date:	Comments			201 WEST COLFAX AVENUE DENVER, CO 80202	No Revisions:	STRIPIN	2015-PROJMSTR-0000631	
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City Project Manager Kim D. Blair							Revised:	Designer: S. Sabinash	Structure	FOR AD
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955					DENVER THE MILE HIGH CITY			Detailer: J. Mills	Numbers	
Transportation Engineering 720-943-0955							Void:	Sheet Subset: STR	Subset Sheets: 34 of 35	Sheet Number 129





Print Date: 11/30/2016			Sheet Revisions			DEPARTMENT OF PUBLIC WORKS	As Constructed		D-WAY CONVERSION	Project Number
File Name: bid_alt-stripe22-logan03.dgn		Date:	Comments			201 WEST COLFAX AVENUE DENVER, CO 80202		STRIPIN	2015-PROJMSTR-0000631	
Horiz. Scale: 1:30 Vert. Scale:							No Revisions:	SHEET 2		
City Project Manager Kim D. Blair							Revised:	Designer: S. Sabinash	Structure	FOR AD
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955					DENVER THE MILE HIGH CITY			Detailer: J. Mills	Numbers	
Transportation Engineering 720-943-0955							Void:	Sheet Subset: STR	Subset Sheets: 35 of 35	Sheet Number 130

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Projects/16001000_CCD_19th_20th/Traffic\Plan\signing\sign-tab01.dgn	
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							BAS	SE BID TA	ABULATIO	ON OF SIG	3NS (1)					
SIGNING PLAN SHEET	SIGN NO.	ACTION	SIGN CODE	LOC.	STA.	SIGN LEGEND	PANEL SIZE	COLOR	REMOVE GROUND SIGN (EA)	REMOVE SIGN PANEL (EA)	RESET	RESET SIGN PANEL (EA)	STEEL SIGN POST 2" x 2" TUBING (LF)	FLEXIBLE WHITE DELINEATOR (EA)	SIGN PANEL CLASS I (SF)	COMMENT
1A of 24	SIGNS															
1A of 24	A1	Remain		Lincoln	207+30L											
1A of 24	A2	Remain		20th Street	207+50L 207+60L											
1A of 24	A3	Remove / Reset Panels		Glenarm	NA					2		3				Existing Post to Remain
1A of 24	A4	Remain		20th Street	208+30L					_						
1A of 24	A4a	New Panel	24R6-6	20th Street	208+30L	Begin One Way	24" x 30"	White					Light Pole		5	Mount to Light Pole
1A of 24	A5	New Sign	30R3-2	Gleanarm	208+80L	No Left Turn	30" x 30"	White					11.5		6.25	
1A of 24	A6	Remove Sign		E 20th Ave	207+45L				1							
1A of 24	A7	Reset Panel		E 20th Ave	207+75L							1				Existing Post to Remain
1A of 24	A8	New Sign	24R6-7	E 20th Ave	208+10L	End One Way	24" x 30"						11.5		5	
44 - (04	A8a	New Panel	24R4-7	E 20th Ave	208+10L	Keep Right	24" x 30"						With #A8		5	Shared Post With #A8
1A of 24	A9	Remain		Lincoln	207+30R											
1A of 24 1A of 24	A10 A11	Remain New Sign	12R7-10AR	Lincoln E 20th Ave	207+30L 207+50R	NPAT>	12" x 18"	White					10.5		1.5	
1A of 24	A12	Remove Panel / New Panel	36R6-1R	Lincoln	207+30R 207+30R	One Way>	36" x 12"	Black		1			10.5		3	Existing Post to Remain
1A of 24	A13	Remove Sign	30110-111	E 20th Ave	207+36R 207+45R	One way>	30 X 12	Diack	1	'					3	Existing Fost to Remain
1A of 24	A14	New Panel	30R2-1	E 20th Ave	208+65R	Speed Limit 25	30" x 36"	White					Utility Pole		7.5	Mount to Utility Pole
1A of 24	A15	New Panel	12R7-10AL	E 20th Ave	208+65R	<npat< td=""><td>12" x 18"</td><td>White</td><td></td><td></td><td></td><td></td><td>Utility Pole</td><td></td><td>1.5</td><td>Mount to Utility Pole</td></npat<>	12" x 18"	White					Utility Pole		1.5	Mount to Utility Pole
1A of 24	A16	New Panel	12R7-10AR	E 20th Ave	209+90R	NPAT>	12" x 18"	White					Utility Pole		1.5	Mount to Utility Pole
1A of 24	METERS															
1A of 24	P1	Remove Post		E 20th Ave	207+55R				1							City to Remove Meter Head
1A of 24	P2	Remain		E 20th Ave	207+77R											City to Reset Meter Head
1A of 24	P3	Remain		E 20th Ave	208+00R											City to Replace Meter Head
1A of 24	P4	Remain		E 20th Ave	208+45R											To Remain
1A of 24	P5	Remain		E 20th Ave	209+15R											City to Replace Meter Head
1B of 24	SIGNS	D		0011-011	000 - 001											
1B of 24	1	Remain		20th Street	209+60L											
1B of 24 1B of 24	1a 2	Remain		20th Street 20th Ave	209+75L 211+00R				1							
1B of 24	3	Remove Sign New Sign	36SNS (Sherman)	E 20th Ave	210+30R	200E/Sherman St	36" Hybrid	Green	<u>'</u>				10.25		3	
10 01 24	3	New Panel	36SNS (Sherman)	L Zotti Ave	210+3010	200E/Sherman St	36" Hybrid	Green					With #3		3	
1B of 24	4	Reset Panel	cocito (circiniai)	E 20th Ave	210+05R	2002/01101111011101	oo riyana	0.00.1				1	***************************************			Existing Post to Remain
1B of 24	5	Remain		Sherman	10+65L											
1B of 24	6	Remain		Sherman	10+85R											
1B of 24	7	Remove / Reset Panels		Sherman	11+15R					1		3				Existing Post to Remain
1B of 24	8	New Sign	12R7-10AR	E 20th Ave	211+10R	NPAT>	12" x 18"	White					10.5		1.5	
1B of 24	9	Remain		E 20th Ave	211+95L											
1B of 24	10	Remain		Tremont	213+20L											
1B of 24	11	New Sign	12R7-155L	E 20th Ave	212+02R	<pass load<="" td=""><td>12" x 18"</td><td>White</td><td></td><td></td><td></td><td></td><td>10.5</td><td></td><td>1.5</td><td></td></pass>	12" x 18"	White					10.5		1.5	
1B of 24	12	New Sign	24R7-10AL-155R	E 20th Ave	212+24R	<npat load="" pass=""></npat>	24" x 18"	White					10.5		3	
1B of 24	13	New Sign	12R7-10AR	E 20th Ave	212+70R	NPAT>	12" x 18"	White					10.5		1.5	
1B of 24	14-17 METERS	Not Used														
1B of 24	P6	Remain		E 20th Ave	209+36R											City to Replace Meter Head
1B of 24	P7	Remove Post		E 20th Ave	209+56R 209+58R				1							City to Remove Meter Head
1B of 24	P8	Remain		E 20th Ave	209+80R				<u> </u>							City to Replace Meter Head
1B of 24	P9	Remove Post		E 20th Ave	211+12R				1							City to Remove Meter Head
1B of 24	P10	Remain		E 20th Ave	211+34R											City to Replace Meter Head
1B of 24	P11	Remove Post		E 20th Ave	211+57R				1							City to Remove Meter Head
1B of 24	P12	Remain		E 20th Ave	211+80R											City to Replace Meter Head
1B of 24	P13	Remove Post		E 20th Ave	212+02R				1							No Meter Head on P13
1B of 24	P14	Remove Post		E 20th Ave	212+54R				1							City to Remove Meter Head
1B of 24	P15	Remain		E 20th Ave	212+98R											City to Replace Meter Head
2 of 24	SIGNS															
2 of 24	18	Remain		Tremont	213+50L											
2 of 24	19	Remain		Grant	213+90L								40.5			Description Doct Install New Port Board D. W.
2 of 24	20	Reset Panel / New Post		E 20th Ave	213+50R				1			1	10.5			Remove Existing Post; Install New Post; Reset Panel(s)
2 of 24 2 of 24	21 21a	Reset Panel / New Post	24R3-17	E 20th Ave Grant St	213+55L 9+70R	Bike Lane	24" x 18"	Black/White	1			1	10.5 12		3	Remove Existing Post; Install New Post; Reset Panel(s)
∠ ∪1 ∠4	∠ ld	New Sign	24R3-17 24R3-17bP	Grant St	9+/UK	Ends	24" x 18" 24" x 8"	White					12 With #21a		1.33	
			2410-1701			Lilus	24 7 0	***************************************					**************************************		1.55	
	!	1	Tabulation Shee	t 1 Subtota	ls (Rasa P	lid)		i	11	4	0	10	118.75	0	54.08	
			abulation once	t i Gubiola	is (Dase D	nu)				-	U	10	110.75	U	34.00	

Print Date: 1/6/2017

File Name: sign-tab01.dgn

Horiz. Scale: 1:1

City Project Manager Kim D. Blair

ACL Inc. Transports ion Engineering 720-943-0955

Sheet Revisions

Date: Comments

Table 17877 W. 53rd Drive Colden, CO 80403 720-943-0955



DEPARTMENT OF PUBLIC WORKS

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

As Constructed	19TH &	20TH TWO)-WAY	CONVERSION	Project Number
No Revisions:] 7	ABULATON			2015-PROJMSTR-0000631
Revised:	Designer:	S. Sabinash	Structure		FOR AD
	Detailer:	J. Mills	Numbers		
Void:	Sheet Subset:	SGN	Subset St	neets: 1 of 45	Sheet Number 131

BASE BID

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NING	SIGN								ABULATION REMOVE	REMOVE	RESET	RESET		FLEXIBLE WHITE		COMMENT
PLAN HEET	SIGN NO.	ACTION	SIGN CODE	LOC.	STA.	SIGN LEGEND	PANEL SIZE	COLOR	GROUND SIGN (EA)	SIGN PANEL (EA)	GROUND SIGN (EA)	SIGN PANEL (EA)	POST 2" x 2" TUBING (LF)	DELINEATOR (EA)	CLASS I (SF)	COMMENT
of 24	SIGNS	CONTINUED														
of 24	22	New Sign	30R1-1	E 20th Ave	213+70R	Stop	30" x 30"	Red					14.25		6.25	
			30R1-1			Stop	30" x 30"	Red					With #22		6.25	
			36SNS (Grant) 36SNS (Grant)			300E/Grant St 300E/Grant St	36" Hybrid 36" Hybrid	Green Green					With #22 With #22		3	
			18R1-3P			All Way	18" x 6"	Red					With #22		0.75	
			18R1-3P			All Way	18" x 6"	Red					With #22		0.75	
of 24	23	New Sign	24R7-36A	Grant St	10+35L	Sweep 1st Tues	24" x 12"	White					12.5		2	
			24R7-140L-10AR			<2Hr/NPAT>	24" x 18"	White					With #23		3	
of 24	24	Remove Panel		Grant St	10+15L					1			10.5			
of 24 of 24	25 26	Reset Panel / New Post New Sign	30R1-1	Grant St Grant St	10+35 R 10+60R	Stop	30" x 30"	Red	1			1	12.5 14.25		6.25	
01 24	20	New Sign	30R1-1	Giani Si	10+60K	Stop	30" x 30"	Red					With #26		6.25	
			36SNS (20th)			20th Ave/2000N	36" Hybrid	Green					With #26		3	
			36SNS (20th)			20th Ave/2000N	36" Hybrid	Green					With #26		3	
			18R1-3P			All Way	18" x 6"	Red					With #26		0.75	
- (0:		N: 0:	18R1-3P		44.0=:	All Way	18" x 6"	Red					With #26		0.75	
of 24	27	New Sign	30R1-1	Grant St	11+30L	Stop	30" x 30"	Red					14.25		6.25	
			30R1-1 36SNS (20th)			Stop 20th Ave/2000N	30" x 30" 36" Hybrid	Red Green					With #27 With #27		6.25	
			36SNS (20th)			20th Ave/2000N	36" Hybrid	Green					With #27		3	
			18R1-3P			All Way	18" x 6"	Red					With #27		0.75	
			18R1-3P			All Way	18" x 6"	Red					With #27		0.75	
of 24	28	New Sign	30R1-1	E 20th Ave	214+55L	Stop	30" x 30"	Red					14.25		6.25	
			30R1-1			Stop	30" x 30"	Red					With #27		6.25	
			36SNS (Grant)			300E/Grant St	36" Hybrid	Green					With #27		3	
			36SNS (Grant) 18R1-3P			300E/Grant St All Way	36" Hybrid 18" x 6"	Green Red					With #27 With #27		3 0.75	
			18R1-3P			All Way	18" x 6"	Red					With #27		0.75	
of 24	29	New Sign	24R7-10AL-140R	E 20th Ave	214+90L	<npat 2hr=""></npat>	24" x 18"	White					10.5		3	
of 24	30	New Sign	24R3-17	E 20th Ave	215+25L	Bike Lane	24" x 18"	Black/White					13.75		3	
			24R3-17bP			Ends	24" x 8"	White					With #30		1.33	
			12R9-6L			Bike Lts Use Lt Lane	12" x 18"	White					With #30		1.5	Submit Panel Detail for Approval Before Fabrication
of 24	31	New Sign	12R7-10AR	E 20th Ave	215+20R	NPAT>	12" x 18"	White					10.5		1.5	
of 24	32	Remove Panels; New Panel	21M5-1R	E 20th Ave	215+75L	Rt Arrow	21" x 15"	White		3		1			2.2	Remove From/Install On Existing Light Pole
of 24 of 24	33 34	Reset Panel New Sign	36D-Special	E 20th Ave E 20th Ave	215+85L	[Bicycle Wayfinding]	36" x 18"	Green					10.5		4.5	Legend to be provided by the City
of 24	35	New Sign	24R7-140L-10AR	E 20th Ave	216+10R	<2hr/NPAT>	24" x 18"	White					10.5		3	Legend to be provided by the Oity
of 24	36	New Panel	12R7-140	E 20th Ave	216+30L	<2Hr>	12" x 18"	White					Light Pole		1.5	Mount to Light Pole
of 24	37	New Sign	30R3-1	E 20th Ave	216+65R	No Right Turn	30" x 30"	White					11.5		6.25	
of 24	38	New Sign	24R7-10AL-140R	E 20th Ave	217+05R	<npat 2hr=""></npat>	24" x 18"	White					10.5		3	
of 24	39	Remain		E 20th Ave	216+65L											
of 24	40	New Sign	24R7-140L-10AR	E 20th Ave	217+00L	<2Hr/NPAT>	24" x 18"	White					10.5		3	
of 24	41-42 METERS	Not Used														
of 24	P16	Remain		E 20th Ave	213+45R											City to Replace Meter Head
of 24	P17	Remove Post		E 20th Ave	215+04R				1							City to Remove Meter Head
of 24	P18	Remove Post		E 20th Ave	215+26R				1							City to Remove Meter Head
of 24	P19	Remain		E 20th Ave	215+48R											City to Replace Meter Head
	010															
of 24	SIGNS 43	Now Sign	36R6-1L	E 20th Ave	217+35R	One May I	26" v 12"	Black					12.25		3	
of 24	43	New Sign	36R6-1L 36R6-1R	E 20th Ave	211+35K	One Way L One Way R	36" x 12" 36" x 12"	Black					12.25 With #43		3	
			36SNS (Logan)			400E/Logan St	36" Hybrid	Green					With #43		3	
			36SNS (Logan)			400E/Logan St	36" Hybrid	Green					With #43		3	
of 24	44	New Sign	30R1-1	Logan	18+07L	Stop	30" x 30"	Red					14.25		6.25	
			36SNS (20th)			20th Ave/2000N	36" Hybrid	Green					With #44		3	
			36SNS (20th)			20th Ave/2000N	36" Hybrid	Green					With #44		3	
of 24	45	Reset Panel		E 20th Ave	218+30R							1	Light Pole			Mount to Light Pole
of 24 of 24	46 47	Reset Panel New Sign	48W1-7	E 20th Ave E 20th Ave	218+90R 217+65L	Double Arrow	48" x 24"	Yellow				1	14.5		8	Existing Post to Remain
JI 24	4/	New Sign	48VV1-7 30R3-8X	L ZUIII AVE	21/+00L	Lt / Rt Lane Use	30" x 30"	White					14.5 With #47		6.25	Submit Panel Detail for Approval Before Fabrication
			55110 571			2.7.1. 24.10 000	33 X 30	***************************************							0.20	and Botali for Approval Before Labitedition
		٦	abulation Shee	t 2 Subtota	ls (Base B	id)			3	4	0	4	211.25	0	157.28	

Print Date: 1/6/2017	
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City Project Manager Kim D. Blair	
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955	00

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Comments	
	DENVER THE MILE HIGH CITY

Date:

DEPARTMENT OF PUBLIC WORKS

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		Detaile	er:	J. Mills	Numbers						
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2 -4 24					210
3 of 24	54	Reset Panel / New Post		E 20th Ave	219
3 of 24	55	New Panel	12R7-140	E 20th Ave	219
	55a	Remove Panel		E 20th Ave	219
3 of 24	56	Reset Panel / New Post		E 20th Ave	219
3 of 24	57	New Sign	24R7-140L-10AR	E 20th Ave	220
	57a	Remove Sign / Reset Panel		E 20th Ave	220
3 of 24	58	Reset Panel / New Post		E 20th Ave	220
3 of 24	59	Remove/Reset/New Panels	30R1-1	E 20th Ave	220
			18R1-3P		
			18R1-3P		
3 of 24	60	New Sign	30R1-1	E 20th Ave	220
			30R1-1		
			18R1-3P		
			18R1-3P		
	61-64	Not Used			
4 of 24	SIGNS				
4 of 24	65	New Sign	30R1-1	E 20th Ave	211
			30R1-1		
			18R1-3P		
			18R1-3P		
4 of 24	66	Remove/Reset/New Panels	30R1-1	E 20th Ave	221
			18R1-3P		
			18R1-3P		
4 of 24	67	Reset Panels		E 20th Ave	22
4 of 24	68	New Sign	24R7-10AL-140R	E 20th Ave	22
4 of 24	68a	Remove Sign		E 20th Ave	221
4 of 24	69	New Sign	24R7-140L-10AR	E 20th Ave	221
4 of 24	70	New Panel	24R7-140L-10AR	E 20th Ave	222
4 of 24	71	New Panel	12R7-140	E 20th Ave	222
4 of 24	72	New Sign	24R7-10AL-140R	E 20th Ave	223
4 of 24	73	Reset Sign / New Post		E 20th Ave	223
4 of 24	74	New Panel	24R7-140L-10AR	E 20th Ave	223
4 of 24	74a	Remove Panel		E 20th Ave	223
4 of 24	75	New Sign	24R7-10AL-140R	E 20th Ave	223
4 of 24	76	Remove Sign		E 20th Ave	224
4 of 24	77	New Sign	48W1-7	E 20th Ave	224
4 of 24	78	Remove / Reset Panels		E 20th Ave	224
4 of 24	79	Reset Panels / New Post		E 20th Ave	224
4 of 24	80	New Sign	36SNS (Pearl)	E 20th Ave	224
			36SNS (Pearl)		
4 of 24	81	Remove By Others		E 20th Ave	224
4 of 24	82	New Panel	24R7-10AL-140R	E 20th Ave	22
	82a	Remove Panel		E 20th Ave	22
4 of 24	83	New Sign	24R7-140L-10AR	E 20th Ave	225
	84-85	Not Used			
					<u> </u>
					<u> </u>

Vert. Scale:

17877 W. 53rd Drive Golden, CO 80403 720-943-0955

SIGNING

PLAN SHEET

3 of 24

3 of 24

3 of 24

3 of 24

Print Date: 1/6/2017

Horiz. Scale: 1:1

File Name: sign-tab03.dgn

City Project Manager Kim D. Blair

ACL Inc.

SIGN

NO.

SIGNS

48

49

50

ACTION

CONTINUED

Remain

New Sign

SIGN CODE

30R1-1

36R6-1L

36R6-1R

36SNS (20th)

36SNS (20th)

36SNS (Logan)

LOC.

Logan St

Logan St

STA.

17+85R

18+05R

SIGN LEGEND

Stop

One Way L

One Way R

20th Ave/2000N

20th Ave/2000N

400E/Logan St

PANEL SIZE

30" x 30"

36" x 12"

36" x 12"

36" Hybrid

36" Hybrid

36" Hybrid

COLOR

Red

Black

Black

Green

Green

Green

N.	
DENVE!	

DEPARTMENT OF PUBLIC WORKS 201 WEST COLFAX AVENUE

9

DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544

20

210

As Constructed	19TH & 20TH TWO)-WAY CONVERSION G PLAN	Project Number
No Revisions:		I OF SIGNS	2015-PROJMSTR-0000631
Revised:	Designer: S. Sabinash	Structure	FOR AD
	Detailer: J. Mills	Numbers	
Void:	Sheet Subset: SGN	Subset Sheets: 3 of 45	Sheet Number 133

121

RASE RID

36SNS (Logan) 400E/Logan St 36" Hybrid Green With #50 3 of 24 51 Remove Sign E 20th Ave 217+75L 52 3 of 24 New Sign 30R3-2 E 20th Ave 218+80L No Left Turn 30" x 30" White 14 6.25 24R7-10AL-140R <NPAT/2Hr> 24" x 18" White With #52 Light Pole; Second Panel Owned/Removed by RTD 3 of 24 53 Remove Panel 218+80L 9+05R 10.5 19+55L <2Hr> 12" x 18" White Existing Post 1.5 19+55L 19+60R 10.5 <2Hr/NPAT> 20+45L 24" x 18" White 14 20+60L Park Sign With #57 temove Ground Sign; Reset One Panel to #57 20+55R 10.5 220+90L Stop 30" x 30" Red Existing Post 6.25 All Way 18" x 6" Red With #59 0.75 All Way 18" x 6" Red With #59 0.75 20+75R Stop 30" x 30" Red 14.25 6.25 Includes Two Street Name Panels Reset From #59 30" x 30" Red With #60 6.25 Stop All Way 18" x 6" Red With #60 0.75 Red 0.75 All Way 18" x 6" With #60 11+57L 30" x 30" Red 14.25 6.25 Includes Two Street Name Panels Reset From #67 Stop 30" x 30" Red With #65 6.25 All Way Red With #65 18" x 6" 0.75 All Way 18" x 6" Red With #65 0.75 21+55R Stop 30" x 30" Red Existing Post 6.25 All Way 18" x 6" Red With #59 0.75 Red All Way 18" x 6" With #59 0.75 21+45R With #65 Reset Pennsylvania Street Name Panels to #65 21+65L <NPAT/2Hr> 24" x 18" White 10.5 21+65L 21+75R <2Hr/NPAT> 24" x 18" White 10.5 222+45L <2Hr/NPAT> 24" x 18" White Light Pole 22+80R <2Hr> 12" x 18" White Light Pole 1.5 23+15L <NPAT/2Hr> White 10.5 3 24" x 18" 223+50L 13 23+65L <2Hr/NPAT> 24" x 18" White Existing Post 223+65L 23+90R <NPAT/2Hr> 24" x 18" White 10.5 24+50L 24+50L Two Way Arrow 48" x 24" Yellow 11 8 24+60R Existing Post Reset Pearl Street Name Panels to #79 24+10R Panels Reset From #78 10.25 24+95L 600E/Pearl St 36" Hybrid Green 10.25 600E/Pearl St Green With #80 36" Hybrid 24+35L RTD Sign Removed by RTD 225+10L <NPAT/2Hr> 24" x 18" White Existing Post 225+10L 25+10R <2Hr/NPAT> 24" x 18" White 10.5

BASE BID TABULATION OF SIGNS (3)

SIGN (EA)

REMOVE REMOVE

(EA)

RESET

GROUND SIGN PANEL GROUND SIGN PANEL POST 2" x 2"

(EA)

SIGN (EA)

RESET | STEEL SIGN | FLEXIBLE WHITE | SIGN PANEL

TUBING (LF)

14.75

With #49

With #49

With #49

With #49

10.25

DELINEATOR

(EA)

CLASS I

(SF)

6.25

3

3

COMMENT

(Base Bid)

Sheet Revisions

Comments

Date:

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SIGNING PLAN SHEET	SIGN	ACTION	SIGN CODE	LOC.	STA.	SIGN LEGEND	PANEL SIZE			REMOVE SIGN PANEL	RESET GROUND	RESET SIGN PANEL	STEEL SIGN POST 2" x 2" TUBING (LF)	FLEXIBLE WHITE DELINEATOR	SIGN PANEL CLASS I	COMMENT
DHEET	NO.	ACTION	SIGN CODE	LUC.	STA	SIGN LEGEND	PANEL SIZE	COLOR	SIGN (EA)	(EA)	SIGN (EA)	(EA)	TUBING (LF)	(EA)	(SF)	
5 of 24	SIGNS															
5 of 24	86	New Panel	12R7-140	E 20th Ave	226+00L	<2Hr>	12" x 18"	White					Light Pole		1.5	
5 of 24	87	New Panel	12R7-140	E 20th Ave	226+05R	<2Hr>	12" x 18"	White					Light Pole		1.5	
5 of 24 5 of 24	88 89	New Sign	24R7-140L-10AR 24R7-10AL-140R	E 20th Ave E 20th Ave	226+95L 227+00R	<2Hr/NPAT> <npat 2hr=""></npat>	24" x 18" 24" x 18"	White White					10.5 10.5		3	
5 of 24	90	New Sign Remain	24K7-10AL-140K	E 20th Ave	227+00R 227+25R	<nfa 1="" 201=""></nfa>	24 X 10	vvriite					10.5		3	
5 of 24	91	Remove / Reset / New	36SNS (20th)	Washington	15+90L	20th Ave/2000N	36" Hybrid	Green	1	3		4	14.75		3	
			36SNS (20th)	J		20th Ave/2000N	36" Hybrid	Green					With #91		3	
5 of 24	92	Remove / Reset Panels		Washington	15+80R					2		4				
5 of 24	93	Remian		Park/Wash	Island											
5 of 24	94	Remove / Reset Panels		Washington	15+03R					2		3				
5 of 24	95	Remove Sign		E 20th Ave	228+10L				1							
5 of 24	96	New Sign	12R7-10A	E 20th Ave	228+00L	<npat></npat>	12" x 18"	White					12.75		1.5	
5 of 24	96a 96a	New Panel	42SNS (Wash)			700E/Washington St	42" Hybrid	Green					With #96 With #96		3.5 3.5	
5 of 24	96a 97	New Panel Remove / Replace Panel	42SNS (Wash) R1-2	Park/Wash	N Corner	700E/Washington St Yield	42" Hybrid 30" x 30" x 30"	Green Red		1			Existing Post		6.25	
5 of 24	98	Remain	1(1-2	Park/Wash	N Corner	rieid	30 X 30 X 30	rteu					Existing 1 ost		0.23	
5 of 24	99	Remain		Park/Wash	N Corner											
5 of 24	100	New Sign	12R7-10A	E 20th Ave	228+40R	<npat></npat>	12" x 18"	White					10.5		1.5	
	101-105	Not Used														
6 of 24	SIGNS															
6 of 24	106	New Sign	12R7-10A	E 20th Ave	230+00L	<npat></npat>	12" x 18"	White					10.5		1.5	
6 0f 24	107	New Sign	24R7-36P	E 20th Ave	230+10R	Sweep 4th Thurs	24" x 12"	White					12.5		2	
	100	N 0'	24R7-140L-10AR		200 201	<2Hr/NPAT>	24" x 18"	White					With #107		3	
6 of 24	108	New Sign	36D-Special	E 20th Ave	230+20L	[Bicycle Wayfinding]	36" x 18"	Green					10.5		4.5	Legend to be provided by the City
6 of 24 6 of 24	109 110	Remain Remain / Remove Panel		20th/Park E 20th Ave	SE Corner 230+40L					1						
6 of 24	111	Remain		E 20th Ave	230+40L 230+70R					ı						
6 of 24	112	Remove Sign		Clarkson	13+50L				1							
6 of 24	113	New Sign	12R7-10A	Clarkson	13+35L	<npat></npat>	12" x 18"	White					10.5		1.5	
6 of 24	114	Remove Sign		Clarkson	13+20L				1							
6 of 24	115	New Sign	24R3-17	20th/Clarks	NW Corner	Bike Lane	24" x 18"	Black/White					13.75		3	
			24R3-17aP (sp)			Begins	24" x 8"	White					With #115		1.33	
			12R7-10A			<npat></npat>	12" x 18"	White					With #115		1.5	
6 of 24	116	Remain		Clarkson	13+40R											
6 of 24	117	Remain		E 20th Ave	231+45L											
6 of 24	118	Remain		E 20th Ave	231+60L											
6 of 24	119	Remain		E 20th Ave	231+80R											
6 of 24	120 121-125	Remain Not Used		20th/Clarks	SE Corner											
	121-125	Not Oseu														
7 of 24	SIGNS															
7 of 24	126	Remain		Glenarm	3+85R											
7 of 24	127	Remain		Glenarm	4+20L											
7 of 24	128	Remain		Glenarm	4+50R											
7 of 24	129	New Sign by Others		Glenarm	4+55L											RTD Sign Installed by RTD
7 of 24	130	Remain		19th/Bwy	NW Corner											
7 of 24	131	New Sign	12R3-Special	E 19th Ave	104+10R	Bike Only (Symb)	12" x 18"	White						1	1.5	Delineator Mounted
	10-		6-OM2-1V	·	404 :	3 Dot Object Marker	6" x 12"	White						With #131	0.5	Delineator Mounted
7 of 24	132	Remain		E 19th Ave	104+15R											On Power Pole
7 of 24 7 of 24	133 134	Remain Remain		E 19th Ave 19th/Bwy	104+15R NE Corner											On Power Pole
7 of 24 7 of 24	134	Remove Sign		E 19th Ave	104+05L				1							
7 of 24	136	New Sign	12R7-10A	E 19th Ave	104+05L	<npat></npat>	12" x 18"	White	'				10.5		1.5	
7 of 24	137	Remove Sign	.2.0.1071	E 19th Ave	104+40L		12 4 10		1							
7 of 24	138	Remove Sign		E 19th Ave	104+75L				1							
7 of 24	139	New Delineator		E 19th Ave	104+03L									1		Nose of Buffer Section
	140-145	Not Used														
				L	L		I		-							
		•	Fabulation Shee	t 4 Subtota	Is (Base B	id)			7	9	0	11	127.25	2	53.08	İ

Print Date: 1/6/2017

File Name: sign-tab04.dgn

Horiz. Scale: 1:1 Vert. Scale:

City Project Manager Kim D. Blair

ACL Inc.

Transportation Engineering Tolden, CO 80403
720-943-0955

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Comments	
	DENVER THE MILE HIGH CITY

Date:

DEPARTMENT OF PUBLIC WORKS
201 WEST COLFAX AVENUE

11		127.25 2 53.08							BASE	BID	
$\dot{\delta}$	A	s Constr	ucted	19T	H & 20	TH TWO		Project Number			
	No	Revisions:			TAE	BULATON			2015-PROJMSTR-0000631		
	Revised:		Designer: S. Sabinash			Structure		FOR AD			
				Detaile	er:	J. Mills	Numbers				101
Void:			Sheet Subset: SGN			Subset St	neets: 4 of 45	Sheet	Number	134	

							BAS	SE BID TA	ABULATIO							
IGNING PLAN SHEET	SIGN NO.	ACTION	SIGN CODE	LOC.	STA.	SIGN LEGEND	PANEL SIZE	COLOR	REMOVE GROUND SIGN (EA)	REMOVE SIGN PANEL (EA)	RESET GROUND SIGN (EA)	RESET SIGN PANEL (EA)	STEEL SIGN POST 2" x 2" TUBING (LF)	FLEXIBLE WHITE DELINEATOR (EA)	SIGN PANEL CLASS I (SF)	COMMENT
7 of 24	METERS															
7 of 24 7 of 24	P20	Remain		Glenarm	4+21R											No Change
7 of 24	P21	Remain		Glenarm	4+43R											No Change
7 of 24	P22	Remain		Glenarm	4+65R											No Change
7 of 24	P23	Remove Post		E 19th Ave	104+40L				1							City to Remove Meter Head
. 0.2.	1 20	Tromble 1 det		2 107110	1011102											only to remote meter risea.
8 of 24	SIGNS															
8 of 24	146	Remove Sign		E 19th Ave	104+65R				1							
8 of 24	147	Reset By Others		E 19th Ave	104+65R											RTD Sign Reset by RTD
3 of 24	148	Remain		E 19th Ave	104+85R											Wood Utility Pole
3 of 24	149	Remove Sign		E 19th Ave	105+25R				1							
3 of 24	150	Remove Sign		E 19th Ave	105+30R				1							
3 of 24	150a	Remove Panel	2002 7	E 19th Ave	105+18L	I t I ama Musat Tura I t	20" 20"	\/\bita		1			14		0.05	
3 of 24	151	New Sign	30R3-7L 12R7-10A	E 19th Ave	105+10R	Lt Lane Must Turn Lt <npat></npat>	30" x 30" 12" x 18"	White White					With # 151		6.25 1.5	
3 of 24	152	New Sign	12R7-10A	E 19th Ave	105+45L	<npat></npat>	12 x 18 12" x 18"	White					10.5		1.5	
of 24	153		12K7-10A	E 19th Ave	105+45L 106+00L	<npa 1=""></npa>	12 X 10	vvriite	1				10.5		1.5	
of 24	154	Remove Sign Remove Sign		E 19th Ave	105+60R				1							
of 24	155	Remove Panel		E 19th Ave	105+60R 106+10R				 	1						Existing Power Pole
of 24	156	Remain		E 19th Ave	106+20R											Flashing School Beacon Assembly
of 24	157	New Sign	12R3-Special	E 19th Ave	106+20L	Bike Only (Symb)	12" x 18"	White						1	1.5	Delineator Mounted
0.2.		Tion Oign	6-OM2-1V	2 107110	1001202	3 Dot Object Marker	6" x 12"	White						With #157	0.5	Delineator Mounted
of 24	158	Reset Panel / New Post	0 0.0.2 17	E 19th Ave	106+50L	o Bot Object marker	0 X 12	***************************************				1	10.5	***************************************	0.0	Dominator mounted
of 24	158a	Remove Panel		E 19th Ave	106+50L					1						
of 24	159	Reset Panel / New Post		Lincoln	5+25L							1	10.5			
of 24	160	Reset Panel / New Post		Lincoln	3+95L							1	10.5			
of 24	161	Remain		Lincoln	5+10R											
of 24	162	Remove Panel		E 19th Ave	107+55L					1						Existing Power Pole; One Panel to Remain
of 24	163	New Sign	12R3-Special	E 19th Ave	107+55R	Bike Only (Symb)	12" x 18"	White						1	1.5	Delineator Mounted
			6-OM2-1V			3 Dot Object Marker	6" x 12"	White						With #163	0.5	Delineator Mounted
of 24	164	Remain		Lincoln	3+65R											
of 24	165	New Panel	12R7-10A	E 19th Ave	106+10R	<npat></npat>	12" x 18"	White					Utility Pole		1,5	
of 24	166	New Delineator		E 19th Ave	106+55R									1		Nose of Buffer Section
of 24	167	New Delineator		E 19th Ave	107+52L									1		Nose of Buffer Section
	168-169	Not Used														
of 24	METERS															
of 24	P24	Remove Post		E 19th Ave	104+95L				1							City to Remove Meter Head
of 24	P25	Remove Post		E 19th Ave	105+17L				1							City to Remove Meter Head
of 24	P26	Remove Post		E 19th Ave	105+65L				1							City to Remove Meter Head
of 24	P27	Remove Post		E 19th Ave	106+20L				1							City to Remove Meter Head
of 24	P28	Remove Post		E 19th Ave	105+55R				1							City to Remove Meter Head
of 24	P29	Remove Post		E 19th Ave	106+32R				1							City to Remove Meter Head
	010110															
of 24	SIGNS	N 0'	4007.404	E 400 A	407.05	NDAT	40" - 40"	VA (1-1)					40.5		4.5	
of 24 of 24	170 171	New Sign	12R7-10A 12R7-10A	E 19th Ave E 19th Ave	107+65L 107+70R	<npat></npat>	12" x 18" 12" x 18"	White White					10.5 10.5		1.5 1.5	
of 24	171	New Sign New Sign	12R7-10A 12R7-10A	E 19th Ave	107+70R 108+70L	<npat></npat>	12" x 18" 12" x 18"	White					10.5		1.5	
of 24	172	Remove Sign	12R/-1UA	E 19th Ave	108+70L 108+85R	<inpa 1=""></inpa>	12 X 18	vvriite	1				10.5		1.5	
of 24	173	Remove Sign		E 19th Ave	108+85R 108+85R				1							
of 24	173	Install Delineators		E 19th Ave	108+40R				<u> </u>					2		Install Delineators Along Taper
of 24	175	New Sign	12R7-10A	E 19th Ave	108+40R	<npat></npat>	12" x 18"	White					10.5		1.5	
of 24	176	Remove Ground Sign	.2107 1074	E 19th Ave	108+60R	51117117	x 10	***************************************	1				10.0		1.0	
of 24	177	Remain		Lincoln	5+90L				<u> </u>							
of 24	178	Reset Panel / New Post		E 19th Ave	108+98L							1	12.5			
of 24	179	Remain		E 19th Ave	109+10R								-			
of 24	180	Reset Panel		E 19th Ave	109+45R							1	Existing Pole			Power Pole; School Zone Panels to Remain
of 24	181	Reset Panel / New Post		E 19th Ave	109+85R							1	11.5			
of 24	182		12R7-10A	E 19th Ave	110+15L	<npat></npat>	12" x 18"	White					10.5		1.5	
of 24	183	New Sign	12R3-Special	E 19th Ave	110+15L	Bike Only (Symb)	12" x 18"	White						1	1.5	Delineator Mounted
			6-OM2-1V			3 Dot Object Marker	6" x 12"	White						With #183	0.5	Delineator Mounted
of 24	183a	Remain		Lincoln	7+10L											
\longrightarrow																
			<u> </u>			1			1						1	<u> </u>
			Tabulation Shee	t 5 Subtota	is (Base B	sid)			15	4	0	6	132.5	7	22.75	

Print Date: 1/6/2017 File Name: sign-tab05.dgn Horiz. Scale: 1:1 Vert. Scale: City Project Manager Kim D. Blair 17877 W. 53rd Drive Golden, CO 80403 720-943-0955 ACL Inc.

HEEL IVENISIONS	
Comments	
	DENVER THE MILE HIGH CITY
	THE MICH CITY

Date:

DEPARTMENT OF PUBLIC WORKS

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

As Constructed)-WAY G PLAN	CONVERSION	Project N	lumber
No Revisions:			OF S		2015-PROJMST	「R−0000631
Revised:	Designer: S.	Sabinash	Structure		FOR A	AD
	Detailer:	J. Mills	Numbers			
Void:	Sheet Subset: SGN		Subset St	neets: 5 of 45	Sheet Number	135

BASE BID

Projects/16001000_CCD_19th_20th\Traffic\Plan\signing\sign-tab06.dgn	
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FLAN SHEET											` ` '	-				
	SIGN NO.	ACTION	SIGN CODE	LOC.	STA	SIGN LEGEND	PANEL SIZE	COLOR	REMOVE GROUND SIGN (EA)	REMOVE SIGN PANEL (EA)	RESET GROUND SIGN (EA)	RESET SIGN PANEL (EA)	STEEL SIGN POST 2" x 2" TUBING (LF)	FLEXIBLE WHITE DELINEATOR (EA)	SIGN PANEL CLASS I (SF)	COMMENT
9 of 24	SIGNS	CONTINUED														
9 of 24	184	New Sign	30R1-1	19th/Sherm	NW Corner	Stop	30" x 30"	Red					13.75		6.25	
			30R1-1			Stop	30" x 30"	Red					With #184		6.25	
			36SNS (19th)			19th Ave/1900N	36" Hybrid	Green					With #184		3	
			36SNS (19th)			19th Ave/1900N	36" Hybrid	Green					With #184		3	
9 of 24	184a	Reset Panel	22212 (21	Sherman	7+20R	0005/01	001111111					1	40.05			Reset to Parking Meter Post #P37
9 of 24	184b	New Sign	36SNS (Sherman) 36SNS (Sherman)	E 19th Ave	110+95L	200E/Sherman St 200E/Sherman St	36" Hybrid	Green					10.25 With #184		3	
			303N3 (Sheiman)			200E/SHeilian St	36" Hybrid	Green					VVIIII #104		3	
9 of 24	185	New Sign	30R1-1	19th/Sherm	SE Corner	Stop	30" x 30"	Red					13.75		6.25	
			30R1-1			Stop	30" x 30"	Red					With #185		6.25	
			36SNS (19th)			19th Ave/1900N	36" Hybrid	Green					With #185		3	
			36SNS (19th)			19th Ave/1900N	36" Hybrid	Green					With #185		3	
9 of 24	185a	New Sign	36SNS (Sherman)	E 19th Ave	110+33R	200E/Sherman St	36" Hybrid	Green					10.25		3	
- 1			36SNS (Sherman)			200E/Sherman St	36" Hybrid	Green					With #185a		3	
9 of 24	186	Reset Panel to New Post		Sherman	6+00R				1			1	10.5			Remove 2 Posts; Reset Panels to New Post
9 of 24 9 of 24	186a 187	Reset Panel		Sherman E 19th Ave	6+05R 111+15L				1			1				Reset to Parking Meter Post
9 of 24	188	Remove Sign New Sign	12R7-10A	E 19th Ave	111+15L 111+50L	<npat></npat>	12" x 18"	White	1				10.5		1.5	
9 of 24	189	Remove Sign	12.1. 10/1	E 19th Ave	111+40L	33 / / / /	.2 10		1				.5.0			
9 of 24	189a	New School Flasher													1	Tabulated on Signal Plans; Panel Not Paid Separately
9 of 24	190	New Sign	12R3-Special	E 19th Ave	111+05R	Bike Only (Symb)	12" x 18"	White						1	1.5	Delineator Mounted
			6-OM2-1V			3 Dot Object Marker	6" x 12"	White						With #190	0.5	Delineator Mounted
9 of 24	191	Remove Sign		E 19th Ave	111+10R				1							
9 of 24	192	Remove Sign by Others		E 19th Ave	111+25R											RTD Sign Removed by RTD
9 of 24	193	New Delineator		E 19th Ave	110+18R									1		
9 of 24	194	New Delineator		E 19th Ave	111+07L									1		
9 of 24	195-200 METERS	Not Used														
9 of 24	P30	Remove Post		E 19th Ave	108+23L				1							City to Remove Meter Head
9 of 24	P31	Remove Post		E 19th Ave	108+45L				1							City to Remove Meter Head
9 of 24	P32	Remove Post		E 19th Ave	108+67L				1							City to Remove Meter Head
9 of 24	P33	Remove Post		E 19th Ave	109+20L				1							City to Remove Meter Head
9 of 24	P34	Remove Post		E 19th Ave	109+42L				1							City to Remove Meter Head
9 of 24	P35	Remove Post		E 19th Ave	109+64L				1							City to Remove Meter Head
9 of 24	P36	Remove Post		E 19th Ave	109+86L				1							Panel Removal Not Paid Separately
9 of 24	P37	Remain		Sherman	7+37R				4							City to Remove Meter Head; Panel Reset From #184a
9 of 24 9 of 24	P38 P39	Remove Post Remove Post		Sherman Sherman	7+15R 6+04R				1							City to Remove Meter Head
9 of 24	P40	Remain		Sherman	5+82R				1							City to Remove Meter Head; Panel Reset From #186a
5 51 24	1 40	roman		Onomian	OTOZIC											only to remove meter riedd, runer resett rism mrood
10 of 24	SIGNS															
10 of 24	201	Remove Sign		E 19th Ave	111+65L				1							
10 of 24	202	Remove Sign		E 19th Ave	111+90L				1							
10 of 24	203	Reset Panel / New Post		E 19th Ave	111+70R				1			1	13			Reset to 111+45; New Post
10 of 24	204	Reset Panel / New Post	400= :-:	E 19th Ave	112+20R	ND : =	40"	14/11/2	1			1	13			Reset to 112+00; New Post
10 of 24	205	New Sign	12R7-10A	E 19th Ave	112+55L	<npat></npat>	12" x 18"	White	4				10.5		1.5	
10 of 24 10 of 24	206 207	Remove Sign New Sign	36R4-4	E 19th Ave E 19th Ave	112+60R 112+20R	Begin Rt Ln/Yield Bikes	36" x 30"	White	1				11.5		7.5	
10 of 24	207	Remove Sign	30114-4	E 19th Ave	112+20R 112+85L	Degin N. Li/ Fleid Dikes	30 X 30	VVIIILE	1				11.0		7.5	
10 of 24	209	Remove Sign		E 19th Ave	113+00R				1							
10 of 24	210	Remove Sign		E 19th Ave	113+60L				1							
10 of 24	211	New Sign	12R7-10A	E 19th Ave	113+70L	<npat></npat>	12" x 18"	White					10.5		1.5	
10 of 24	212	New Sign	12R3-Special	E 19th Ave	113+70L	Bike Only (Symb)	12" x 18"	White						1	1.5	Delineator Mounted
			6-OM2-1V			3 Dot Object Marker	6" x 12"	White						With #212	0.5	Delineator Mounted
10 of 24	213	New Sign	30R3-7R	E 19th Ave	113+20R	Rt Ln Must Turn Rt	30" x 30"	White					11.5		6.25	
10 of 24	214	Remove Sign	2004.4	E 19th Ave	113+25R	04	20" - 20"	Ded	1				44.05		0.05	
10 of 24	215	New Sign	30R1-1 30R1-1	19th/Grant	SW Corner	Stop Stop	30" x 30" 30" x 30"	Red Red					14.25 With #215		6.25 6.25	
\longrightarrow			36SNS (Grant)			300E/Grant St	30 x 30 36" Hybrid	Green					With #215		3	
$\overline{}$			36SNS (Grant)			300E/Grant St	36" Hybrid	Green					With #215		3	
			18R1-3P			All Way	18" x 6"	Red					With #215		0.75	
			18R1-3P			All Way	18" x 6"	Red					With #215		0.75	
· <u> </u>		-	Tabulation Sheet	t 6 Subtota	ls (Base B	id)			22	0	0	5	153.25	4	91.25	

Print Date: 1/6/2017

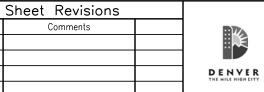
File Name: sign-tab06.dgn

Horiz. Scale: 1:1 Vert. Scale:

City Project Manager Kim D. Blair

ACL Inc.

Transportation Engineering 720-943-0955



Date:

DEPARTMENT OF PUBLIC WORKS

201 WEST COLFAX AVENUE

	153.25	4		91.25					BASE	E BID
/	As Constructed 19TH & 20TH TWO SIGNING							Pr	oject N	lumber
No	Revisions:				ULATON			2015-PROJMSTR-0000631		R-0000631
Rev	rised:		Desigr	ner: S	. Sabinash	Structure			FOR A	۷D
\vdash			J. Mills	Numbers						
Void:			Sheet	Subset: SGN	١	Subset Sheets: 6 of 45			t Number	136

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BASE BID TABULATION OF SIGNS (7)																
GNING									REMOVE	REMOVE	RESET	RESET		FLEXIBLE WHITE		
PLAN HEET	SIGN NO.	ACTION	SIGN CODE	LOC.	STA.	SIGN LEGEND	PANEL SIZE	COLOR	GROUND SIGN (EA)	SIGN PANEL (EA)	GROUND SIGN (EA)	SIGN PANEL (EA)	POST 2" x 2" TUBING (LF)	DELINEATOR (EA)	CLASS I (SF)	COMMENT
		7.6.1.6.1	0.0.1.002		0.72	0.01.1202112	. /	002011	0.0 (2.9	(=- 4	5.5 (2.)	(=: 4		(=, 4	(0.7	
10 of 24	SIGNS	CONTINUED	36D Chaoial	E 10th Ave	112 - EOD	[Biovolo Wovfinding]	26" v 10"	Croon					10.5		4.5	Legend to be provided by the City
10 of 24 10 of 24	216 216a	New Sign New Delineator	36D-Special	E 19th Ave	113+50R 113+71R	[Bicycle Wayfinding]	36" x 18"	Green					10.5	1	4.5	Legena to be provided by the City
10 of 24	217	Reset Panel / New Post		Grant	10+80L				1			1	11.5			
10 of 24	217a	Remove Sign by Others		Grant	10+80L											RTD Owned; Removal by RTD
10 of 24	217b 218	Remove Sign by Others		Grant	10+95L											RTD Owned; Removal by RTD
10 of 24 10 of 24	218	Remain New Sign	30R1-1	Grant 19th/Grant	12+10L NW Corner	Stop	30" x 30"	Red					14.25		6.25	
	2.0	. toli e.g	30R1-1	Total Volume	1117 0011101	Stop	30" x 30"	Red					With #219		6.25	
			36SNS (19th)			19th Ave/1900N	36" Hybrid	Green					With #219		3	
			36SNS (19th)			19th Ave/1900N	36" Hybrid	Green					With #219		3	
			18R1-3P 18R1-3P			All Way All Way	18" x 6" 18" x 6"	Red Red					With #219 With #219		0.75 0.75	
10 of 24	220	Reset Panel / New Post	IOIX I-OF	Grant	12+15R	All Way	10 X 0	Neu	1			1	11.5		0.73	Existing Post; Orient Toward NB Traffic
0 of 24	221	New Sign	30R1-1	19th/Grant	NE Corner	Stop	30" x 30"	Red					14.25		6.25	
			30R1-1			Stop	30" x 30"	Red					With #221		6.25	
			36SNS (Grant)			300E/Grant St 300E/Grant St	36" Hybrid	Green					With #221		3	
			36SNS (Grant) 18R1-3P			All Way	36" Hybrid 18" x 6"	Green Red					With #221 With #221		0.75	
			18R1-3P			All Way	18" x 6"	Red					With #221		0.75	
10 of 24	222	Reset Panel / New Post		Grant	10+90R	·			1			1	11.5			Existing Post; Orient Toward NB Traffic
10 of 24	223	New Sign	30R1-1	19th/Grant	SE Corner	Stop	30" x 30"	Red					14.25		6.25	
			30R1-1 36SNS (19th)			Stop 19th Ave/1900N	30" x 30" 36" Hybrid	Red Green					With #223 With #223		6.25	
			36SNS (19th)			19th Ave/1900N	36" Hybrid	Green					With #223		3	
			18R1-3P			All Way	18" x 6"	Red					With #223		0.75	
			18R1-3P			All Way	18" x 6"	Red					With #223		0.75	
10 of 24	224	Remove Sign		E 19th Ave	114+90L				1							
10 of 24 10 of 24	225 226	Remove Sign Remove Sign		E 19th Ave	115+10L 114+70R				1							
10 of 24	227	Remove Sign by Others		E 19th Ave	115+10R											RTD Sign Removed by RTD
10 of 24	228	New Sign	12R7-10A	E 19th Ave	115+15L	<npat></npat>	12" x 18"	White					10.5		1.5	
10 of 24	229	Remove Panel		E 19th Ave	115+30L					1						Utility Pole
10 of 24 10 of 24	230 231	New Sign by Others Remove Sign		E 19th Ave	115+25L 115+40R				1							RTD Sign Installed by RTD
10 of 24	232	New Sign	12R7-10A	E 19th Ave	115+30R	<npat></npat>	12" x 18"	White	<u> </u>				10.5		1.5	
10 of 24	233	Install Delineators		E 19th Ave	112+00R									3		Install Delineators Along Bike Lane Taper
	234-239	Not Used														
11 of 24	SIGNS															
11 of 24	240	New Sign	24R7-10AL-140R	E 19th Ave	115+60L	<npat 2hr=""></npat>	24" x 18"	White					10.5		3	
11 of 24	241	Reset Panel / New Post		E 19th Ave	115+80L				1			1	10.5			
11 of 24	242	Remove Panel		E 19th Ave	116+15L					1						Power Pole
11 of 24	243	New Sign	24R7-10AL-140R	E 19th Ave	116+15L	<npat 2hr=""></npat>	24" x 18"	White					10.5		3	
11 of 24 11 of 24	244 245	New Sign Remove Sign	24R7-140L-10AR	E 19th Ave	115+65R 115+90R	<2Hr/NPAT>	24" x 18"	White	1				10.5		3	
11 of 24	246	Remain		E 19th Ave	116+35R											
11 of 24	247	New Sign	36D-Special	E 19th Ave	116+55L	[Bicycle Wayfinding]	36" x 18"	Green					10.5		4.5	Legend to be provided by the City
11 of 24	248	Remove Sign	0407.4701.404.5	E 19th Ave	117+20L	011-/017-17	0.411 4.011	NA (2. 11	1				40.5			
11 of 24 11 of 24	249 250	New Sign New Sign	24R7-140I-10AR 30R3-1	E 19th Ave E 19th Ave	117+30L 116+60R	<2Hr/NPAT> No Rt Turn (Symb)	24" x 18" 30" x 30"	White White					10.5 11.5		6.25	
11 of 24	251	New Sign	24R7-10AL-140R	E 19th Ave	117+10R	<npat 2hr=""></npat>	24" x 18"	White					10.5		3	
11 of 24	252	Remove Sign		E 19th Ave	117+35R			Black	1							
11 of 24	253	New Sign	36R6-1L	19th/Logan	SW Corner	<one td="" way<=""><td>36" x 12"</td><td>Black</td><td></td><td></td><td></td><td></td><td>12.25</td><td></td><td>3</td><td></td></one>	36" x 12"	Black					12.25		3	
			36R6-1R			One Way> 400E/Logan St	36" x12"	Black Green					With #253 With #253		3	
			36SNS (Logan) 36SNS (Logan)			400E/Logan St 400E/Logan St	36" Hybrid 36" Hybrid	Green					With #253 With #253		3	
11 of 24	254	New Sign	30R1-1	19th/Logan	NW Corner	Stop	30" x 30"	Red					12.75		6.25	
			36SNS (19th)			19th Ave/1900N	36" Hybrid	Green					With #254		3	
44 -654	055	D	36SNS (19th)	1	44.000	19th Ave/1900N	36" Hybrid	Green					With #254		3	
11 of 24 11 of 24	255 256	Remain Remain		Logan Logan	14+30R 12+80R											
11 of 24	256a	New Sign	12R7-10AR	Logan	12+60K	<npat></npat>	12"x18"	White					10.5		1.5	
			Tabulation Shee	t 7 Subtota	als (Base B	id)			11	2	0	4	229.25	4	119	

Print Date: 1/6/2017

File Name: sign-tab07.dgn

Horiz. Scale: 1:1 Vert. Scale:

City Project Manager Kim D. Blair

ACL Inc. 17877 W. 53rd Drive Golden, C0 80403 720-943-0955

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	Comments
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Date:

DENVER THE MILE HIGH CITY DEPARTMENT OF PUBLIC WORKS

As Constructed	19TH &	20TH TWC)-WAY	CONVERSION	Project Number	ſ
No Revisions:	1	ABULATON			2015-PROJMSTR-000063	1
Revised:	Designer:	S. Sabinash			FOR AD	
W-14.	Detailer:	J. Mills	Numbers		Sheet Number 137	_
Void:	Sheet Subset: SGN		Subset Sh	neets: 7 of 45	Sheet Number 137	

							BAS	SE BID TA	ABULATI	ON OF SI	GNS (8)					
IGNING PLAN SHEET	SIGN NO.	ACTION	SIGN CODE	LOC.	STA	SIGN LEGEND	PANEL SIZE	COLOR	REMOVE GROUND SIGN (EA)	REMOVE SIGN PANEL (EA)	RESET	RESET SIGN PANEL (EA)	STEEL SIGN POST 2" x 2" TUBING (LF)	FLEXIBLE WHITE DELINEATOR (EA)	SIGN PANEL CLASS I (SF)	COMMENT
11 of 24	SIGNS	CONTINUED														
11 of 24	257	New Sign	30R1-1	19th/Logan	SE Corner	Stop	30" x 30"	Red					12.75		6.25	
			36SNS (19th)			19th Ave/1900N	36" Hybrid	Green					With #257		3	
			36SNS (19th)			19th Ave/1900N	36" Hybrid	Green					With #257		3	
11 of 24	258	Reset Panel / New Post		E 19th Ave	118+35L				1			1	10.5			
11 of 24	258a	New Sign	30R3-2	E 19th Ave	118+55L	No Left Turn	30" x 30"	White					11.5		6.25	
11 of 24	259	Reset Panel		E 19th Ave	119+40L							1	Existing Post			
1 of 24	260	Remain		E 19th Ave	118+30R											
1 of 24	261	Remain		E 19th Ave	118+85R											
1 of 24	262	Remain	2000 41	E 19th Ave E 19th Ave	119+40R	One West	36" x 12"	Disale					12.25		3	
11 of 24	263	New Sign	36R6-1L 36R6-1R	E 19th Ave	118+08L	<one one="" way=""></one>	36" x 12"	Black Black					With #263		3	
			36SNS (Logan)			400E/Logan St	36" Hybrid	Green					With #263		3	
			36SNS (Logan)			400E/Logan St	36" Hybrid	Green					With #263		3	
	264-270	Not Used	22212 (209011)				22 1,70.10	00.1								
2 of 24	SIGNS															
2 of 24	271	Remove Panel / Reset Panel		E 19th Ave	119+65L					1		1	10.5			New Post
12 of 24	272	Reset Panel		E 19th Ave	120+00L							1	Existing Post			
2 of 24	273	Reset Panel / New Post		E 19th Ave	120+60L				1			1	10.5			
2 of 24	274	Remove Sign		E 19th Ave	120+70L				1							
2 of 24	275	Remain Not Upod		E 19th Ave	120+60R											
2 of 24 2 of 24	276 277	Not Used Remove/Reset/New Panels		19th/Penn	NW Corner					2		5	Existing Post			Reset Two Street Name Panels to #280
2 01 24	277a	New Panels	30R1-1	19th/Penn	NW Corner	Stop	30" x 30"	Red		2		3	With #277		6.25	Neset 1wo Street Name Fanels to #200
	2110	14CW 1 dileis	18R1-3P	1301/1 61111	1444 Comer	All Way	18" x 6"	Red					With #277		0.75	
			18R1-3P			All Way	18" x 6"	Red					With #277		0.75	
2 of 24	278	New Sign	30R1-1	19th/Penn	SW Corner	Stop	30" x 30"	Red					14.25		6.25	Two Panels Reset From #281
			30R1-1			Stop	30" x 30"	Red					With #278		6.25	
			18R1-3P			All Way	18" x 6"	Red					With #278		0.75	
			18R1-3P			All Way	18" x 6"	Red					With #278		0.75	
2 of 24	279	Remove Sign		19th/Penn	NE Corner				1							
2 of 24	280	New Sign	30R1-1	19th/Penn	SW Corner	Stop	30" x 30"	Red					14.25		6.25	Two Panels Reset From #277
			30R1-1			Stop	30" x 30"	Red					With #280		6.25	
			18R1-3P			All Way	18" x 6"	Red					With #280		0.75	
2 of 24	201	Pomovn/Ponet/Novy Ponelo	18R1-3P	19th/Penn	SE Corner	All Way	18" x 6"	Red		2		5	With #280		0.75	
2 of 24	281 281a	Remove/Reset/New Panels New Panels	30R1-1	19th/Penn	SE Corner	Stop	30" x 30"	Red		2		5	Existing Post With #281		6.25	Reset Two Street Name Panels to #278
	2010	14CW 1 dilei3	18R1-3P	1301/1 61111	OL COME	All Way	18" x 6"	Red					With #281		0.75	reset two offeet Name 1 and 3 to #210
			18R1-3P			All Way	18" x 6"	Red					With #281		0.75	
2 of 24	282	Reset Panel / New Post		E 19th Ave	121+90L	,			1			1	10.5			
2 of 24	283	Remain		E 19th Ave	121+90R											
2 of 24	284	Remain		E 19th Ave	123+00R											
of 24	285	Remove Panel		E 19th Ave	123+00L					1						Existing Light Pole
2 of 24	286	New Panel	24R7-140L-10AR		123+00L	<2Hr/NPAT>	24" x 18"	White					Light Pole		3	
	287	New Sign by Others		E 19th Ave	123+40L											RTD Sign Installed by RTD
	288-289	Not Used														
of 24	290	Remove Sign		E 19th Ave	123+95L											
3 of 24	290	Remove Sign New Sign	12R7-10A	E 19th Ave	123+95L 123+95L	<npat></npat>	12" x 18"	White					10.5		1.5	
3 of 24	292	Remain	12.17 10/1	E 19th Ave	123+90R	///	12 × 10						. 5.5			
3 of 24	293	Remove Sign by Others		E 19th Ave	124+15R											RTD Sign Removed by RTD
3 of 24	294	Remove / Reset Panels		19th/Pearl	NW Corner					2		5	Existing Post			Reset Two Street Name Panels to #296b
	294a	New Panel	30R1-1			Stop	30" x 30"	Red					With #294		6.25	
3 of 24	295	Remove / Reset Panels		19th/Pearl	SE Corner					2		5	Existing Post			
	295a	New Panel	30R1-1			Stop	30" x 30"	Red					With #295		6.25	
3 of 24	296	Remain		E 19th Ave	124+95R								10.5			Two Panels Reset From #295
3 of 24	296a	Reset Panels / New Post		19th/Pearl	SW Corner								10.5			Two Panels Reset From #294
3 of 24	296b	Reset Panels / New Post	45=- : :	19th/Pearl	NE Corner		1.5									
3 of 24	297	New Sign	12R7-10A	E 19th Ave	125+10R	<npat></npat>	12" x 18"	White					10.5		1.5	
3 of 24	298	Remove Sign		E 19th Ave	125+15R				1			4	Eviation Desi			Orient Toward WR Treffic
13 of 24 13 of 24	299 300	Reset Panel New Sign by Others		E 19th Ave	125+20L							1	Existing Post			Orient Toward WB Traffic RTD Sign Installed by RTD
13 01 24	300	New Sign by Others														INTO Organ installed by INTO
			Tabulation Ch.	4 0 Cubtata	do (Bess Di	۸۱			_	40	_	07	440		00.5	
			Tabulation Shee	ι ο Subtota	us (Dase Bl	u)			6	10	0	27	149	0	92.5	

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Transportation Engineering

Sheet Revisions	
Comments	

Date:

DENVER THE MILE HIGH CITY

DEPARTMENT OF PUBLIC WORKS 201 WEST COLFAX AVENU DENVER, CO 80202 PHONE: (720) 913-450 FAX: (720) 913-4544

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As Constructed	19TH &	20TH TWO		CONVERSION	Project	Number
No Revisions:	T	ABULATON			2015-PROJM	STR-0000631
Revised:	Designer:	S. Sabinash	Structure		FOR	AD
	Detailer:	J. Mills	Numbers			
Void:	Sheet Subset:	SGN	Subset Sh	neets: 8 of 45	Sheet Number	138

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GNING PLAN SHEET	SIGN NO.	ACTION	SIGN CODE	LOC.	STA	SIGN LEGEND	PANEL SIZE	COLOR	REMOVE GROUND SIGN (EA)	REMOVE SIGN PANEL (EA)	RESET GROUND SIGN (EA)	RESET SIGN PANEL (EA)	STEEL SIGN POST 2" x 2" TUBING (LF)	FLEXIBLE WHITE DELINEATOR (EA)	SIGN PANEL CLASS I (SF)	COMMENT
3 of 24	SIGNS	CONTINUED														
13 of 24	301	Remain		E 19th Ave	126+40R											
13 of 24	302	Reset Panel		E 19th Ave	126+35L							1	Light Pole			
13 of 24	303	Remain		E 19th Ave	126+95R											
13 of 24	304	Remove Sign		19th/Wash	SW Corner				1							
3 of 24	305	New Sign	36R6-1L	19th/Wash	SW Corner	<one td="" way<=""><td>36" x 12"</td><td>Black</td><td></td><td></td><td></td><td></td><td>12.25</td><td></td><td>3</td><td></td></one>	36" x 12"	Black					12.25		3	
			36R6-1R			One Way>	36" x 12"	Black					With #305		3	
			42SNS (Wash)			700E/Washington St	42" Hybrid	Green					With #305		3.5 3.5	
3 of 24	306	Reset Panel / New Post	42SNS (Wash)	E 19th Ave	127+25L	700E/Washington St	42" Hybrid	Green	1			1	With #305 10.5		3.3	Orient Toward WB Traffic
01 24	307-310	Not Used		LISHITA	1271202				·				10.0			Onone roward W.B. Framo
f 24	SIGNS															
of 24	311	Remove / Reset Panels		19th/Wash	NW Corner					2		5	Existing Post			Reset Two Street Name Panels to #311a
of 24	311a	New Sign		19th/Wash	NE Corner								10.25			Two Street Name Panels Reset Fron #311
of 24	312	Remain		19th/Wash	NE Corner											
of 24	313	Remain		19th/Wash	NE Corner											
of 24	314	Remain		101 0	25.6	4011 4 (1									_	
4 of 24	315	New Panels	36SNS	19th/Wash	SE Corner	19th Ave/1900N							Light Pole		3	
-101	040	D /D /N D	36SNS	401-04/	05.0	19th Ave/1900N	00" 40"						With #315			Barrers A Barrel Barrel A Barrel A New Barrel
of 24	316	Remain/Remove/New Panel	2407 1401 1400	19th/Wash	SE Corner	36R6-1L <2Hr/NPAT>	36" x 12"	\\/hi+a		1		1	Light Pole		3	Remove 1 Panel; Reset 1 Panel; 1 New Panel
of 24 of 24	317 318	New Sign Remove Sign	24R7-140L-140R	E 19th Ave	128+35R 128+45L	<201/NPA 1>	24" x 18"	White	1				10.5		3	
of 24	218a	New Sign	24R7-10AL-140R	L ISHIAW	120+43L	<npat 2hr=""></npat>	24" x 18"	White	1				10.5		3	
of 24	319	Reset Panel	E-TO TOPIE 140IX	E 19th Ave	129+35L	NI DI/4112	27 X 10	**III.G				1	Light Pole		,	Existing; Reset on Light Pole
of 24	320	Remove Sign		E 19th Ave	128+50R				1			'	g 1 010			
f 24	321	New Panel	12R7-140A	E 19th Ave	129+25R		12" x 18"	White					Light Pole		1.5	Mount to Light Pole
of 24	322	New Sign	36D-Special	E 19th Ave	129+80L	[Bicycle Wayfinding]	36" x 18"	Green					10.5		4.5	Legend to be provided by the City
of 24	323	Reset Panel; New Post		E 19th Ave	130+60L				1			1	10.5			
of 24	324	Reset Panel		E 19th Ave	130+65R				1			1	With #324a			Remove Post; Reset Panel with #324a
of 24	324a	New Sign	30R3-1	E 19th Ave	130+65R	No Right Turn (Symb)	30" x 30"	White					11.5		6.25	
of 24	325	New Sign	30R3-7L	Clarkson	11+40R	Lt Lane Must Turn Lt	30" x 30"	White					13.5		6.25	
			30-Special			"At Park"	30" x 12"	White					With #325		2.5	Submit Panel Detail to Engineer Prior to Fabrication
of 24	326	Remove Sign		Clarkson	11+00R				1							
of 24	327	New Sign	30W6-3	Clarkson	10+90R	2-Way Traffic (Symb)	30" x 30"	Yellow					15		6.25	
of 24	220	Ponet Danel: New Deet	12R7-10A	E 19th Ave	121 . EEI	<npat></npat>	12" x 18"	White	1			1	With #327 10.5		1.5	
of 24	328 329	Reset Panel; New Post Remove Sign		E 19th Ave	131+55L 131+50R				1			1	10.5			
of 24	330	New Sign	24R3-17	Clarkson	11+10R	Bike Lane	24" x 18"	Black/White	'				12.25		3	
51 24	000	Tion Oign	24R3-17aP (sp)	Cidikson	1111010	Begins	24" x 8"	White					With #330		1.33	
	331-335	Not Used	(-p)			Dogino	24 70	Willia					VVIII1 #000		1.00	
of 24	SIGNS															
of 24	336	New Sign	24R7-140L-10AR	E 19th Ave	132+00L	<npat 2hr=""></npat>	24" x 18"	White					10.5		1.5	
f 24	337	Remove Sign		E 19th Ave	132+10L				1							
24	338	New Panel	12R7-10A	E 19th Ave	132+80L					1			Existing Post		1.5	Remove Damaged Panel; Install New Panel
of 24	339	New Sign	24R7-140L-10AR	E 19th Ave	131+65R	<2Hr/NPAT>	24" x 18"	White					10.5		1.5	
of 24	340	New Sign	36R4-4	E 19th Ave	132+25R	Begin Rt Ln/Yield Bikes	36" x 30"	White		ļ			14		7.5	
-404	244	Daw -1-	24R7-10AL-140R			<npat 2hr=""></npat>	24" x 18"	White					With #340		1.5	
of 24	341	Remain Not Used								-			Power Pole			
of 24 of 24	342 343	Not Used Remove Sign		E 19th Ave	132+95R				1							
of 24	344	New Sign	30R3-7R	E 19th Ave	132+95R 133+00R	Rt Lane Must Turn Rt	30" x 30"	White	'				14		6.25	
	544	. totr Orgit	12R7-10A	om Ave	.5510010	<npat></npat>	12" x 18"	White					With #344		1.5	
of 24	345	Remove Sign	10/1	19th/Park	NW Corner				1							
of 24	346	Remove Sign		19th/Park	SW Corner				1							
of 24	347	New Sign	36D-Special	19th/Park	NE Corner	[Bicycle Wayfinding]	36" x 18"	Green					10.5		4.5	Legend to be provided by the City
of 24	348	Reset Panel / Remove Post	·	E 19th Ave	134+75L				1			1	With #348a			
	348a	New Panel	24R3-17	E 19th Ave	134+75L	Bike Lane	24" x 18"	Black/White					12.25		3	
			24R3-17aP(sp)			Begins	24" x 8"	White					With #348a		1.33	
of 24	349	Remain		19th/Emrsn	NW Corner											
of 24	350	Remain		E 19th Ave	134+90L											
		i														
			abulation Sheet					U.	14	4	0	13	209.5	0	88.16	

Print Date: 1/6/2017

File Name: sign-tab09.dgn

Horiz. Scale: 1:1

City Project Manager Kim D. Blair

ACL Inc. Transports ion Engineering 720-943-0955

Sheet Revisions

Date: Comments

Table 17877 W. 53rd Drive Colden, CO 80403 720-943-0955



DEPARTMENT OF PUBLIC WORKS
201 WEST COLFAX AVENUE

	A:	s Constru	ıcted	19TH	1 & 2)-WAY G PLAN	CONVERSION	Project 1	Number
	No F	Revisions:			TA			OF S		2015-PROJMS	TR-0000631
	Revis	ed:		Designe	er:	S. Sc	abinash	Structure		FOR	AD
ı				Detailer	:		J. Mills	Numbers			
	Void:					SGN		Subset Sh	eets: 9 of 45	Sheet Number	139

SHEET	NO.	ACTION	SIGN CODE	LUC.	SIA	SIGN LEGEND	FANEL SIZE	COLOR	SIGN (EA)	(EA)	SIGN (EA)	(EA)	TOBING (LF)	(CA)	(37)	
4- 4-		A-11771														
15 of 24	SIGNS	CONTINUED														
15 of 24	351	Remain		19th/Park	SE Corner											
15 of 24	352	Remain		19th/Emrsn	SW Corner											
15 of 24	353	Remain		19th/Emrsn	SE Corner											
15 of 24	354	Remain		Emerson	S of 19th											
15 of 24	355	New Sign	24R3-17	E 19th Ave	135+55R	Bike Lane	24" x 18"	Black/White					12.25		3	
			24R3-17bP			Ends	24" x 8"	White					With #355a		1.33	
	355-360	Not Used	2410 1761			Liido	24 × 0	vviiite					VVIIII #3558		1.55	
	333-300	Not Osed														
16 of 24	SIGNS															
16 of 24	361	Remain		Lincoln	0+15L											
16 of 24	362	Remain		Lincoln	0+35L											
16 of 24	363	Remain		Lincoln	0+80L											
16 of 24	364	Remain		Lincoln	0+20R											
16 of 24	365	Remain		Lincoln	1+25R											
16 of 24	366	Remain		Lincoln	1+15R											
16 of 24	367	Remain		Lincoln	1+15L											
					+											
16 of 24	368	Remain		Lincoln	1+70L											
16 of 24	369	Remain		Lincoln	1+80R											
16 of 24	370	Remain		Lincoln	2+05R											
16 of 24	371	Remain		Lincoln	2+80L						<u> </u>					
16 of 24	372	Remain		Lincoln	2+75R											
16 of 24	373	Remain		Lincoln	3+20R											
	374-380	Not Used														
17 of 24	SIGNS															
17 of 24		Ponet Danel / New Doot		Cront	7.0ED				1			1	10 F			
	381	Reset Panel / New Post		Grant	7+05R							1	10.5			
17 of 24	382	Reset Panel / New Post		Grant	7+35R				1			1	10.5			
17 of 24	383	New Sign	24R7-36A	Grant	7+70L	Sweep 1st Tues	24" x 12"	White					12.5		2	
17 of 24			24R7-140L-10AR			<2Hr/NPAT>	24" x 18"	White					With #383		3	
17 of 24	384	Remove Sign		Grant	7+85L				1							
17 of 24	385	Reset Panel / New Post		Grant	8+00R				1			1	12.5			
17 of 24	386	New Sign	24R7-10AL-140R	Grant	8+40L	<npat 2hr=""></npat>	24" x 18"	White					10.5		3	
17 of 24	387	Remove Sign		Grant	8+95L				1							
17 of 24	388	Reset Panels		Grant	9+10R							2	Existing Post			
17 of 24					+											
17 01 24	389	Reset Panel / New Post	400= 4404	Grant	9+30L	011	40" 40"	14/1/2				1	14			
		New Panel	12R7-140A			<2Hr>	12" x 18"	White					With #389		1.5	
17 of 24	390	Remove Sign by Others		Grant	9+60L											Removal of RTD Sign by RTD
17 of 24	391	Reset Panel / New Post		Grant	9+35R				1			1	11.5			
	391-395	Not Used														
18 of 24	SIGNS															
18 of 24	396	Remain		Grant	7+70L											
18 of 24	397	Reset Panel / New Post		Grant	8+80R				1			1	10.5			
18 of 24	398	Reset Panel		Grant	9+25R							1	Existing Post			
					+								LAISTING FOST			
18 of 24	399	Remain		Grant	9+15L											
18 of 24	400	Remain		Grant	9+50L											
18 of 24	401	Remain		Grant	10+20L											
	402-405	Not Used														
19 of 24	SIGNS															
19 of 24	406	Remain		Grant	6+10L											
19 of 24	407	New Sign	24R6-5A	Grant	6+20L	Begin One Way	24" x 30"	White					11.5		5	
19 of 24	408	New Panel	36R6-1L	18th/Grant	SW Corner	<one td="" way<=""><td>36" x 12"</td><td>Black</td><td></td><td></td><td></td><td></td><td>Signal Pole</td><td></td><td>3</td><td></td></one>	36" x 12"	Black					Signal Pole		3	
10 01 24	400	New Panel	36R6-1R	18th/Grant	SW Corner	One Way>	36" x 12"	Black					Signal Pole		3	
40 = 4.04	400		3010-110			One way>	30 X 12	Diack		4			Signal Fole		3	
19 of 24	409	Remove Panel		18th/Grant	NW Corner					1						
19 of 24	410	Remain		Grant	7+20L											
19 of 24	411	New Sign	24R6-5	Grant	6+20R	Begin One Way	24" x 30"	White					11.5		5	
19 of 24	412	New Panel	36R6-1L	18th/Grant	SE Corner	<one td="" way<=""><td>36" x 12"</td><td>Black</td><td></td><td></td><td></td><td></td><td>Signal Pole</td><td></td><td>3</td><td></td></one>	36" x 12"	Black					Signal Pole		3	
19 of 24	413	Remove Panel		18th/Grant	NE Corner					1						
19 of 24	414	Reset Panel / New Post		Grant	7+30				1			1	12.5			
	415-420	Not Used		1												
			l	1				I	1		 				-	
		T	Tabulation Shee	t 10 Subtot	als (Base E	3id)			8	2	0	10	140.25	0	32.83	
<u>L</u>					-										•	
				Sheet	Revisio	ns I		l				^	s Constru	icted 19Ti	- 8 20T	H TWO-WAY CONVERSION Pro
) dan				1				I DFP/	ARTMENT	OF PUI	BLIC WOF	≀KS I — ^A	s constit	יייים ו		SICNING DI ANI

BASE BID TABULATION OF SIGNS (10)

SIGN (EA)

REMOVE REMOVE RESET RESET STEEL SIGN GROUND SIGN PANEL GROUND SIGN PANEL POST 2" x 2"

(EA)

TUBING (LF)

(EA) SIGN (EA)

STEEL SIGN | FLEXIBLE WHITE | SIGN PANEL

DELINEATOR

(EA)

CLASS I

(SF)

COMMENT

SIGNING

PLAN

SHEET

SIGN

NO.

ACTION

SIGN CODE

Date:

Vert. Scale:

17877 W. 53rd Drive Golden, CO 80403 720-943-0955

Comments

LOC.

STA.

SIGN LEGEND

PANEL SIZE

COLOR

Print Date: 1/6/2017

Horiz. Scale: 1:1

File Name: sign-tab10.dgn

City Project Manager Kim D. Blair

ACL Inc.

BASE BID

DENVER

DEPARTMENT OF PUBLIC WORKS 201 WEST COLFAX AVENUE

DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544

As Constructed	19TH &	20TH TWO)-WAY	CONVERSION	Project Number
No Revisions:] 7	TABULATON			2015-PROJMSTR-0000631
Revised:	Designer:	S. Sabinash	1		FOR AD
	Detailer:	J. Mills	Numbers		
Void:	Sheet Subset:	SGN	Subset St	neets: 10 of 45	Sheet Number 140

							BAS	E BID TA	BULATIC	N OF SIG	SNS (11)					
SIGNING									REMOVE	REMOVE	RESET	RESET	STEEL SIGN	FLEXIBLE WHITE		
PLAN SHEET	SIGN NO.	ACTION	SIGN CODE	LOC.	STA	SIGN LEGEND	PANEL SIZE	COLOR	GROUND SIGN (EA)	SIGN PANEL (EA)	GROUND SIGN (EA)	SIGN PANEL (EA)	POST 2" x 2" TUBING (LF)	DELINEATOR (EA)	CLASS I (SF)	COMMENT
									,		,			` ′	(- /	
20 of 24	SIGNS	D		1	40 : 00D											
20 of 24 20 of 24	421 422	Remain Remain		Logan	16+20R 16+50R											
20 of 24	423	New Sign	30R3-8X	Logan Logan	17+45R	Lt/Rt Lane Use	30" x 30"	White					11.5		6.25	Submit Panel Detail for Approval Before Fabrication
20 of 24	424	New Sign	12R7-10AR	Logan	16+00L	<npat></npat>	12" x 18"	White					10.5		1.5	Submit Famel Detail for Approval Belore Fabrication
20 01 24	425-430	Not Used	12117 107111	Logan	101002	Sili 7112	12 x 10	VVIIICO					10.0		1.0	
21 of 24	SIGNS															
21 of 24	431	Remain		Logan	10+90R											
21 of 24	432	Remain		Logan	11+35R											
21 of 24	433	Remain		Logan	11+90R											
21 of 24	434	Remain		Logan	12+40R											
	435-440	Not Used														
00 - 1 0 1	010::0															
22 of 24	SIGNS	Damaia		4046/1.555	CW Com ::											Occident Plans for Add Allowers A. Olympia
22 of 24	441	Remain Remain		18th/Logan	SW Corner SE Corner				-							See Sgnal Plans for Add Alternate A Changes
22 of 24 22 of 24	442 443	Remain		18th/Logan 18th/Logan	NE Corner											See Sgnal Plans for Add Alternate A Changes See Sgnal Plans for Add Alternate A Changes
22 of 24	444	Remain		Logan	Logan											See Syriai Flans for Add Alternate A Changes
22 of 24	445	Remain		18th/Logan	NW Comer											See Sgnal Plans for Add Alternate A Changes
22 01 24	446-449	Not Used		Tottiv Logari	1444 Comer											dee Ognai Flans for Add Alternate A Onlanges
	110 110	1101 0000														
23 of 24	SIGNS															
23 of 24	450	Remove Sign		Clarkson	13+05L				1							
23 of 24	451	Remain		Park Ave	17+00R											
23 of 24	452	New Sign	30R3-7R	Clarkson	13+05L	Rt Lane Must Turn Rt	30" x 30"	White					14		6.25	
			30R3-1FA			Bus/Bike Excepted	30" x 18"	White					With #452		3.75	
23 of 24	453	New Sign	30R5-1	Clarkson	11+50L	Do Not Enter	30" x 30"	Red/White					14		6.25	
			30R3-1FA			Bus/Bike Excepted	30" x 18"	White					With #453		3.75	
23 of 24	454	Remove Sign							1							
	455-459	Not Used														
24 of 24	SIGNS	New O'-	4007.404	Clade	40.00	MDAT	40" - 40"	\A/I:'-					40.5		4.5	
24 of 24	460	New Sign	12R7-10A	Clarkson	10+80L	<npat></npat>	12" x 18"	White					10.5		1.5	Lancada ha maridadha tha Ch
24 of 24	461	New Sign	36D-Special 30R3-5R	Clarkson	10+60L	[Bicycle Wayfinding]	36" x 18"	Green White					10.5 12		4.5 7.5	Legend to be provided by the City
24 of 24 24 of 24	462 463	New Sign New Sign	30R3-5R 30R5-1	Clarkson Clarkson	10+20L 10+95R	Right Only (Symb) Do Not Enter	30" x 36" 30" x 30"	vvnite					12		6.25	
27 01 24	700	146W SIGIT	30R3-1FA	CiaiksUii	10+301	Bus/Bike Excepted	30" x 18"		 			<u> </u>	With #463		3.75	
24 of 24	464	Remain	0010-11 A	Park Ave	14+70R	Duo, Dino Excepted	30 × 10						***************************************		0.70	
24 of 24	465	Remove Sign		Clarkson	10+75R				1							
24 of 24	466	Remain		Park Ave	13+95R											
	467	Remove Panel		Clarkson	10+45R							1				Existing Post to Remain
	467a	New Panel	12R7-10A	Clarkson	10+45R	<npat></npat>	12" x 18"						Existing Post		1.5	
24 of 24	468	New Sign	24R3-17	Clarkson	10+20R	Bike Lane	24" x 18"	Black/White					12.25		3	
			24R3-17bP			Ends	24" x 8"	White					With #468a		1	
24 of 24	469	Removal by Others		Clarkson	10+05R											RTD Sign Removed by RTD
		-	Cobulation Chart	11 Cubici	olo (Basa 5); _d \			_		_		400.05		EC 75	
			Tabulation Sheet	i i Subtota	ais (Dase E	oiu)			3	0	0	1	109.25	0	56.75	
			BASE BID Tot	tal Canina	Ougntities		1		100	48	^	111	1790.25	47	888.68	
			DASE BID 10	tai əyning i	<u>wuantities</u>				108	48	0	111	1790.25	17	80.666	

BASE BID

Print Date: 1/6/2017			Sheet Revisions		DEPARTMENT OF PUBLIC WORKS	As Constructed		-WAY CONVERSION	Project Number
File Name: sign—tab11.dgn Horiz. Scale: 1:1 Vert. Scale:		Date:	Comments		201 WEST COLFAX AVENUE	No Revisions:		G PLAN I OF SIGNS	2015-PROJMSTR-0000631
City Project Manager Kim D. Blair	\int				DENVER, CO 80202		Designer: S. Sabinash	 	
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403				DENVER	PHONE: (720) 913-4501 FAX: (720) 913-4544	Revised:		Numbers	FOR AD
Transportation Engineering 720–943–0955				THE MILE HIGH CITY	, , , , , , ,	Void:	Sheet Subset: SGN	Subset Sheets: 11 of 45	Sheet Number 141

	BID ALTERNATE 2 - TABULATION OF SIGNS															
SIGNING									REMOVE	REMOVE	RESET	RESET	STEEL SIGN	FLEXIBLE WHITE	SIGN PANEL	
PLAN	SIGN								GROUND	SIGN PANEL	GROUND	SIGN PANEL	POST 2" x 2"	DELINEATOR	CLASS I	COMMENT
SHEET	NO.	ACTION	SIGN CODE	LOC.	STA.	SIGN LEGEND	PANEL SIZE	COLOR	SIGN (EA)	(EA)	SIGN (EA)	(EA)	TUBING (LF)	(EA)	(SF)	
											<u> </u>	, ,		, ,		
BID ALT 2	SIGNS															
2 of 24	37	Not Installed	30R3-1	E 20th Ave	216+65R	No Right Turn (Symb)	30" x 30"						-11.5		-6.25	Not Installed Under Bid Alt 2
3 of 24	46	Not Installed	36R6-1R	20th/Logan	SW Corner	One Way>	36" x 12"						-1		-3	2 Panels Not Installed; Shorter Post Length
		Not Installed	36R6-1L	20th/Logan	SW Corner	<one td="" way<=""><td>36" x 12"</td><td></td><td></td><td></td><td></td><td></td><td>With #46</td><td></td><td>-3</td><td></td></one>	36" x 12"						With #46		-3	
	47	Panel Not Installed	30R3-8X	20th/Logan	North Side	Lt/Rt Lane Use	30" x 30"						-2.5		-6.25	1 Panel Not Installed; Shorter Post Length
3 of 24	49	Not Installed	36R6-1R	20th/Logan	SE Corner	One Way>	36" x 12"						-1		-3	2 Panels Not Installed; Shorter Post Length
		Not Installed	36R6-1L	20th/Logan	SE Corner	<one td="" way<=""><td>36" x 12"</td><td></td><td></td><td></td><td></td><td></td><td>With #49</td><td></td><td>-3</td><td></td></one>	36" x 12"						With #49		-3	
3 of 24	52	Panel Not Installed	30R3-1	E 20th Ave	216+65R	No Right Turn (Symb)	30" x 30"						-2.5		-6.25	1 Panel Not Installed; Shorter Post Length
3 of 24	A601	Not Used														
11 of 24	250	Not Installed	30R3-1	E 19th Ave	116+60R	No Right Turn (Symb)	30" x 30"						-11.5		-6.25	Not Installed Under Bid Alt 2
11 of 24	253	Not Installed	36R6-1L	19th/Logan	SW Corner	<one td="" way<=""><td>36" x 12"</td><td></td><td></td><td></td><td></td><td></td><td>-1</td><td></td><td>-3</td><td>2 Panels Not Installed; Shorter Post Length</td></one>	36" x 12"						-1		-3	2 Panels Not Installed; Shorter Post Length
		Not Installed	36R6-1R			One Way>	36" x 12"						With #253		-3	
11 of 24	254	New Panel	30R1-1	19th/Logan	NW Corner	Stop	30" x 30"	Red							6.25	
11 of 24	257	New Panel	30R1-1	19th/Logan	SE Corner	Stop	30" x 30"	Red							6.25	
11 of 24	258a	Not Installed	30R3-2	E 19th Ave	118+55L	No Left Turn (Symb)	30" x 30"						-11.5		-6.25	Not Installed Under Bid Alt 2
11 of 24	263	Not Installed	36R6-1L	19th/Logan	NE Corner	<one td="" way<=""><td>36" x 12"</td><td></td><td></td><td></td><td></td><td></td><td>-1</td><td></td><td>-3</td><td>2 Panels Not Installed; Shorter Post Length</td></one>	36" x 12"						-1		-3	2 Panels Not Installed; Shorter Post Length
		Not Installed	36R6-1R			One Way>	36" x 12"						With #263		-3	
11 of 24	A602	Not Used														
11 of 24	A603	Reset Panels		Logan	West Side							4				
11 of 24	A604	Not Used														
20 of 24	423	Not Installed	30R3-8X	Logan	17+50L	Lt/Rt Lane Use	30" x 30"						-11.5		-6.25	
20 of 24	424	Not Installed	30R3-7R	Logan	17+50R	Rt Lane Must Turn Rt	30" x 30"						-11.5		-6.25	
21 of 24	A605	New Sign	30R3-5R	Logan	10+20L	Rt Turn Only	30" x 36"	White					14.5		7.5	
						<npat></npat>	12" x 18"	White					With #A605			
22 of 24	A606	New Sign	30R3-7L	Logan	7+25L	Lt Lane Must Turn Lt	30" x 30"	White					11.5		6.25	
			BID ALTERN	ATE 2 Tota	l Signing (Quantities		•	0	0	0	4	-40.5	0	-41.5	

Print Date: 1/6/2017		Sheet Revisions		DEPARTMENT OF PUBLIC WORKS	As Constructed		-WAY CONVERSION	Project Number
File Name: sign-tab12.dgn	Date:	Comments			No Revisions:		G PLAN	2015-PROJMSTR-0000631
Horiz. Scale: 1:1 Vert. Scale:			::\ E	201 WEST COLFAX AVENUE DENVER, CO 80202	NO REVISIONS.		I OF SIGNS	2013-FR03M31R-0000031
City Project Manager Kim D. Blair				PHONE: (720) 913-4501	Revised:	Designer: S. Sabinash	1 -	FOR AD
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403			DENVER THE MILE HIGH CITY	FAX: (720) 913-4544		Detailer: J. Mills	Numbers	2
Transportation Engineering 720-943-0955					Void:	Sheet Subset: SGN	Subset Sheets: 12 of 45	Sheet Number 142

SIGNING NOTES AND LEGENDS:

SIGN PL	<u>AN LEC</u>	<u> ENI</u>	<u>):</u>
<u>-</u>	EXISTING	SIGN	PANEL

NEW SIGN

✓ SIGN PANEL AND POST

SIGNING NOTES:

 CONTRACTOR SHALL VERIFY DAYS OF WEEK AND TIMES OF DAY FOR ALL STREET SWEEPING SIGNS PRIOR TO FABRICATING NEW PANELS.

PARKING METER ADJUSTMENTS:

- 1. WHERE ELECTRONIC PARKING METER HEAD ASSEMBLIES ARE TO BE REMOVED, RESET OR INSTALLED, ALL WORK RELATED TO THE METER HEAD SHALL BE COMPLETED BY THE CITY & COUNTY OF DENVER. SCHEDULE AND COORDINATE ALL SUCH WORK WITH C.J. MUSMAN, DENVER PUBLIC WORKS PARKING OPERATIONS UNIT, AT 720-913-1731.
- 2. WHERE EXISTING PARKING METER POSTS ARE TO BE REMOVED, WORK SHALL BE COMPLETED BY THE CONTRACTOR. IN THESE CASES, WORK WILL BE MEASURED AND PAID AS REMOVAL OF GROUND SIGN AND INCLUDE SURFACE RESTORATION.
- 3. NO WORK RELATED TO PARKING METERS SHALL BE UNDERTAKEN BY THE CONTRACTOR WITHOUT SPECIFIC DIRECTION TO PROCEED BY THE CITY PARKING OPERATIONS UNIT.

PARKING METER KEY NOTES:

- 1) CITY TO REMOVE EXISTING PARKING METER HEAD
- 2 CITY TO RESET EXISTING PARKING METER HEAD TO FACE OPPOSING TRAFFIC DIRECTION.
- 3 CITY TO INSTALL NEW ONE-STALL (SINGLE) PARKING METER HEAD.
- (4) CITY TO INSTALL NEW TWO-STALL (DOUBLE) PARKING METER HEAD.
- (5) EXISTING PARKING METER AND POST TO REMAIN.
- (6) CONTRACTOR TO REMOVE EXISTING PARKING METER POST.

PARKING METER KEY NOTES:

- EXISTING SINGLE HEAD PARKING METER (ARROW INDICATES METERED SPACE)
- CID EXISTING DOUBLE HEAD PARKING METER (ARROW INDICATES METERED SPACE)
- PROPOSED SINGLE HEAD PARKING METER (ARROW INDICATES METERED SPACE)
- PROPOSED DOUBLE HEAD PARKING METER (ARROW INDICATES METERED SPACE)

Print Date: 11/30/2016		
File Name: sign-notes-01.dgn		
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City Project Manager Kim D. Blo	air	$\overline{\Box}$
ACL Inc.	17877 W. 53rd Drive Golden, CO 80403 720-943-0955	



Sheet Revisions

Comments

Date:

DEPARTMENT OF PUBLIC WORKS

S	As Constructed	19TH & 20TH TWO-WAY CONVERSION SIGNING PLAN		Project Number		
	No Revisions:	NOTES AND LEGENDS			2015-PROJMSTR-0000631	
	Revised:	Designer:	S. Sabinash			FOR AD
		Detailer:	J. Mills	Numbers		
	Void:	Sheet Subset:	SGN	Subset St	neets: 13 of 45	Sheet Number 143



BIKE LANE DELINEATOR SIGN DETAIL



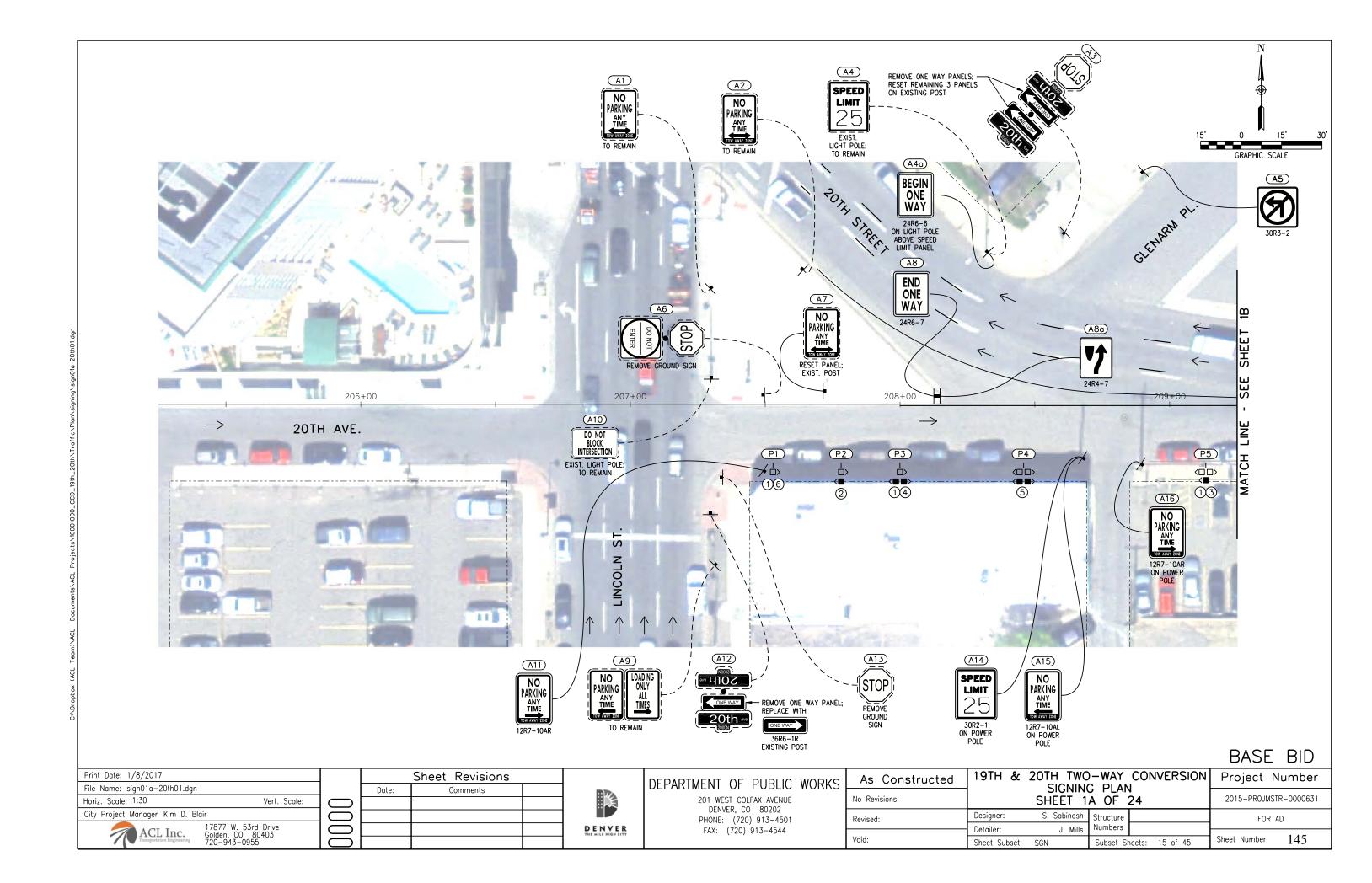
- NOTE: DESTINATIONS SHOWN ARE FOR INFORMATION ONLY AND DO NOT MATCH SPECIFIC LEGENDS USED ON THIS PROJECT. LEGENDS FOR ALL WAYFINDING SIGNS SHALL BE PROVIDED TO THE CONTRACTOR BY THE CITY PRIOR TO PANEL FABRICATION.

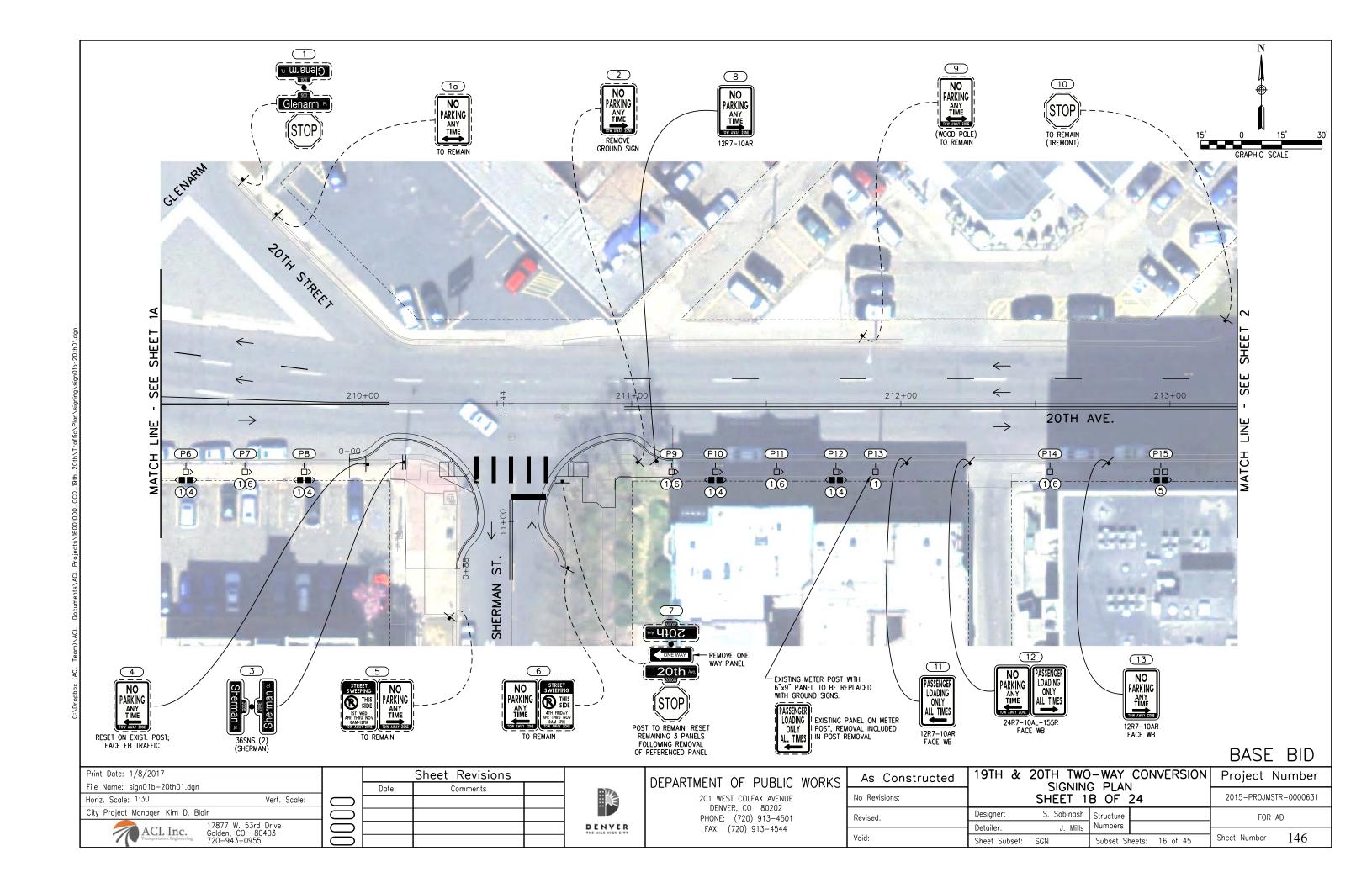
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City Project Manager Kim D. Blair				
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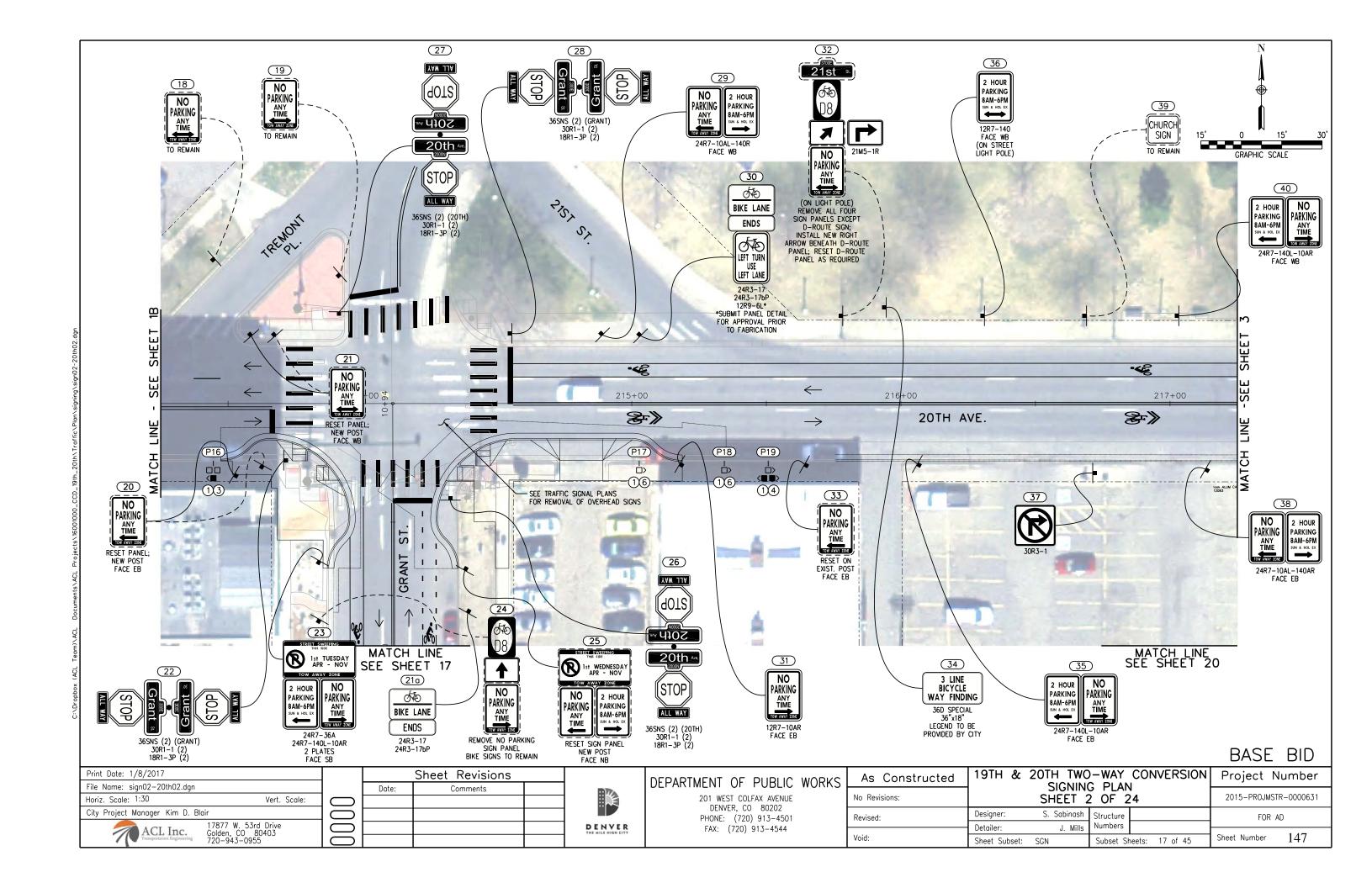


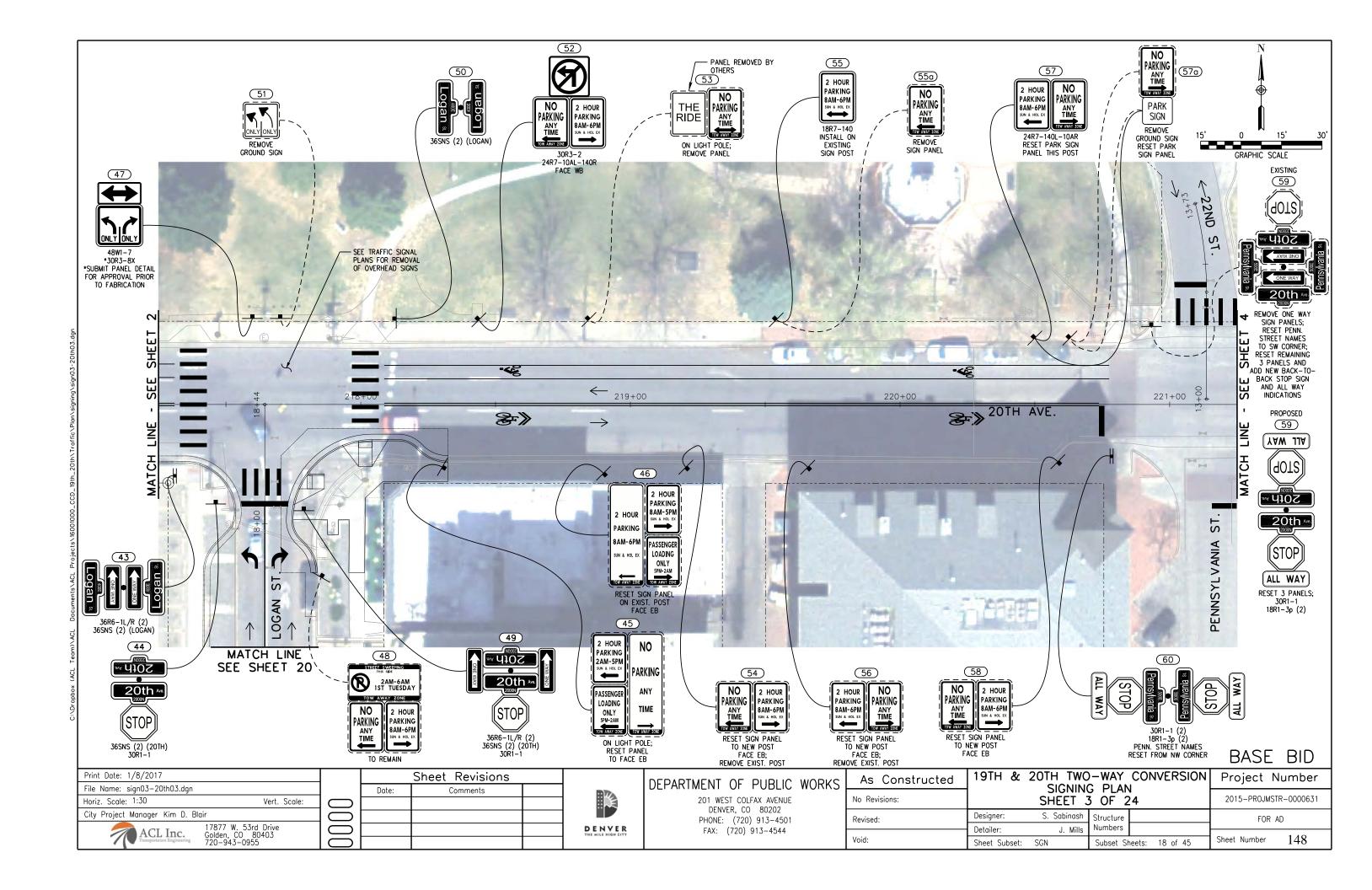
DEPARTMENT OF PUBLIC WORKS

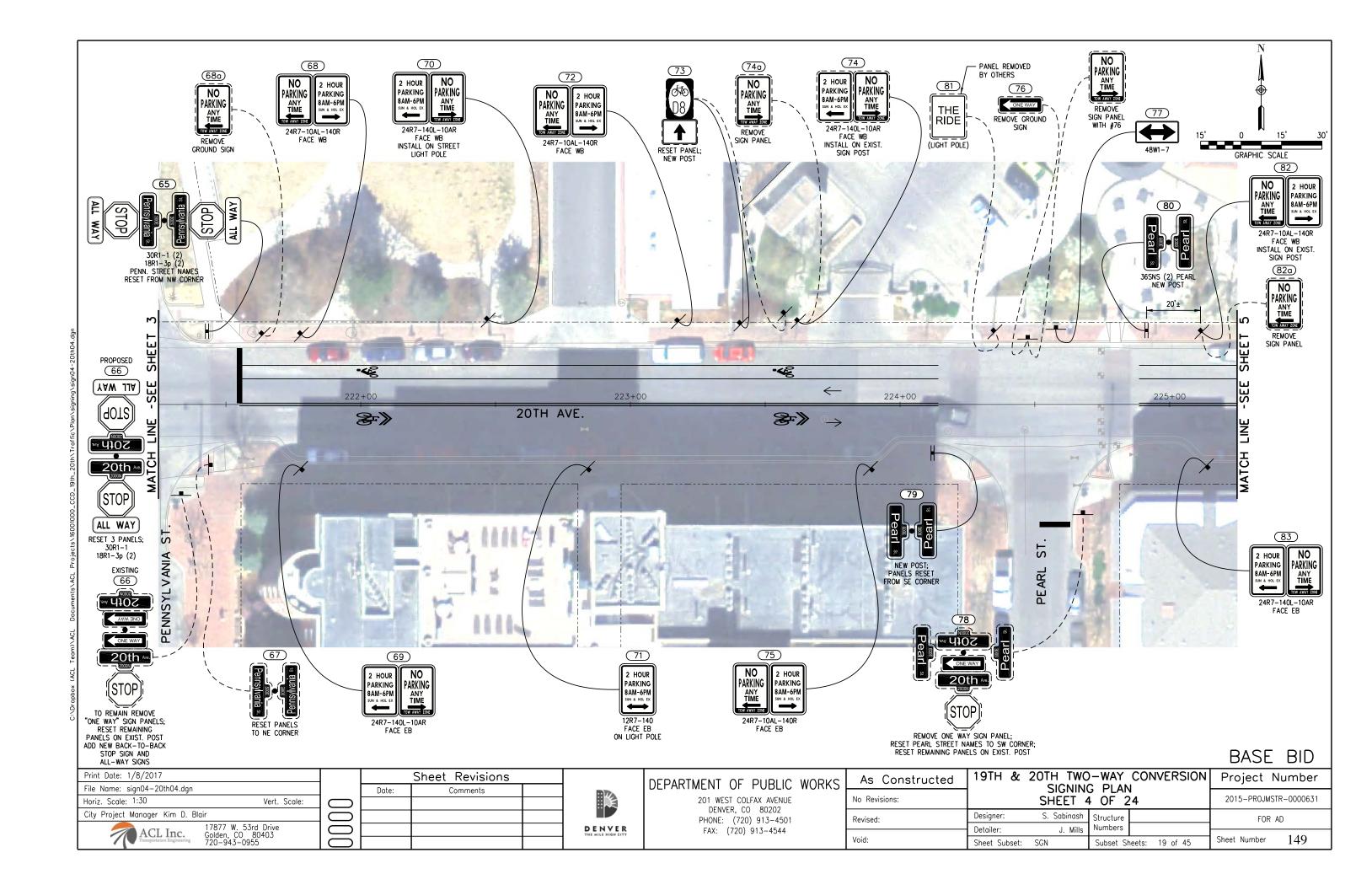
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	No Revisions:		SIGNING	2015-PROJMSTR-0000631	
	Revised:	Designer:	S. Sabinash		FOR AD
ŀ		Detailer:	J. Mills	Numbers	
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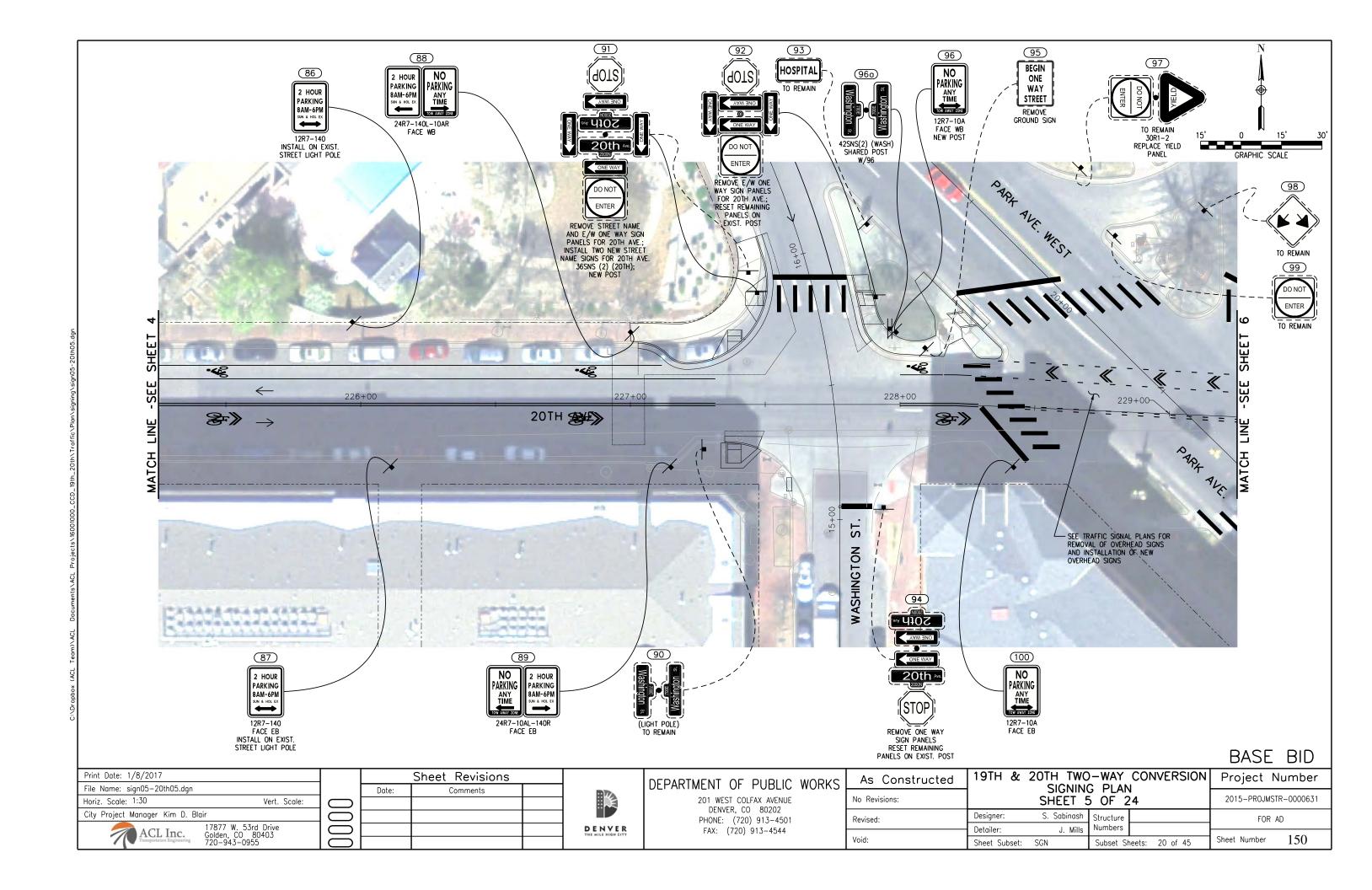


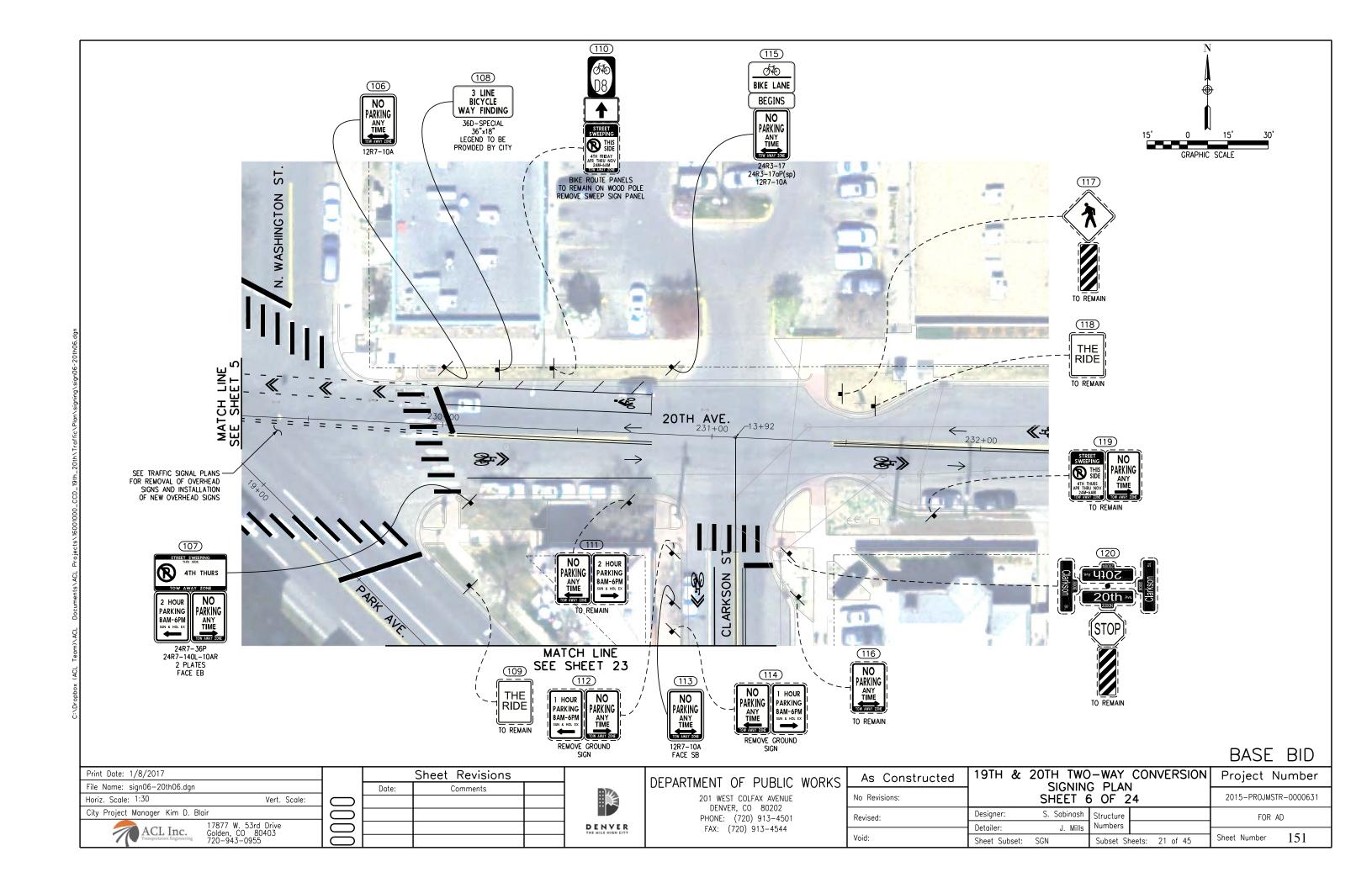


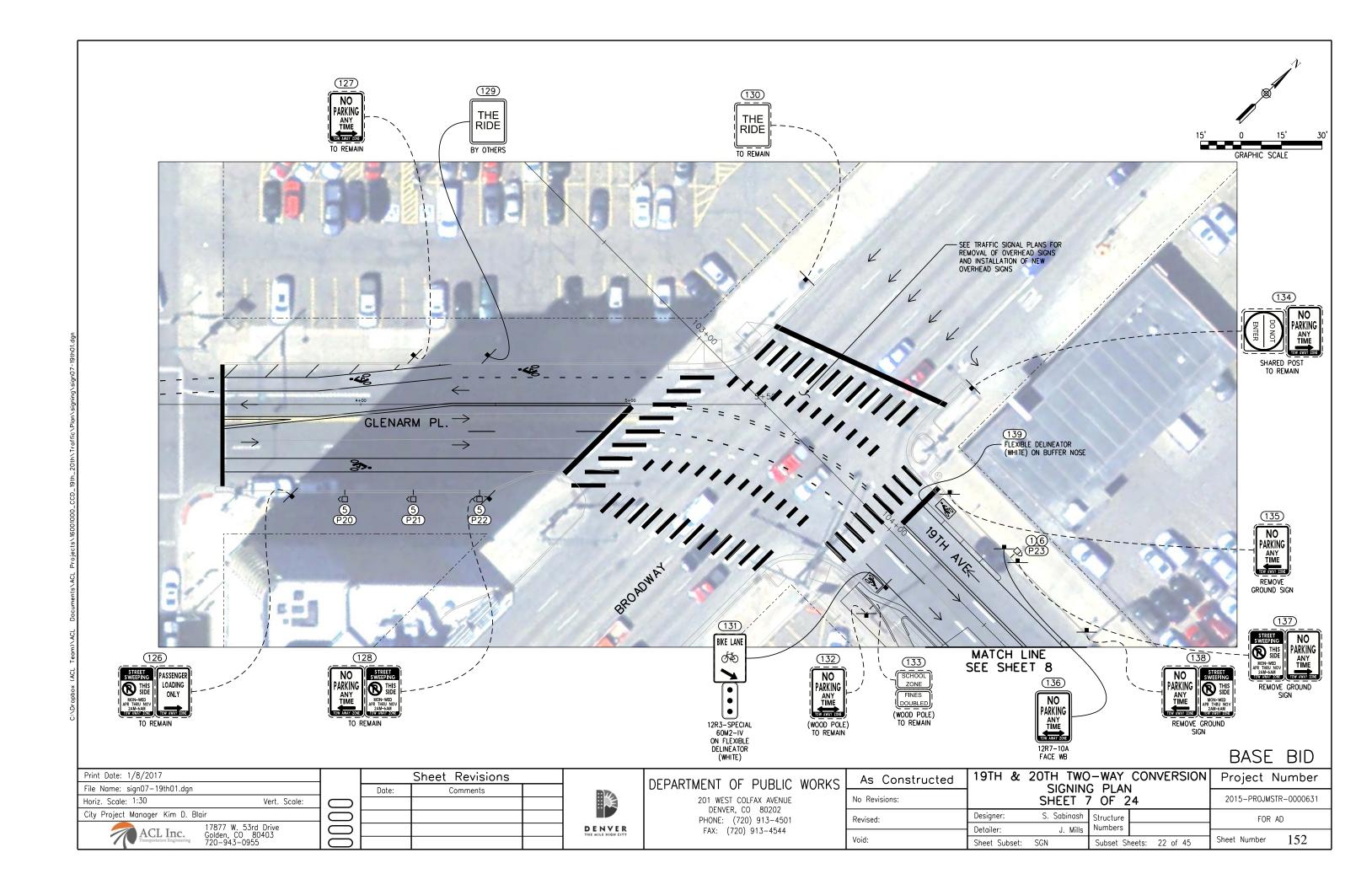


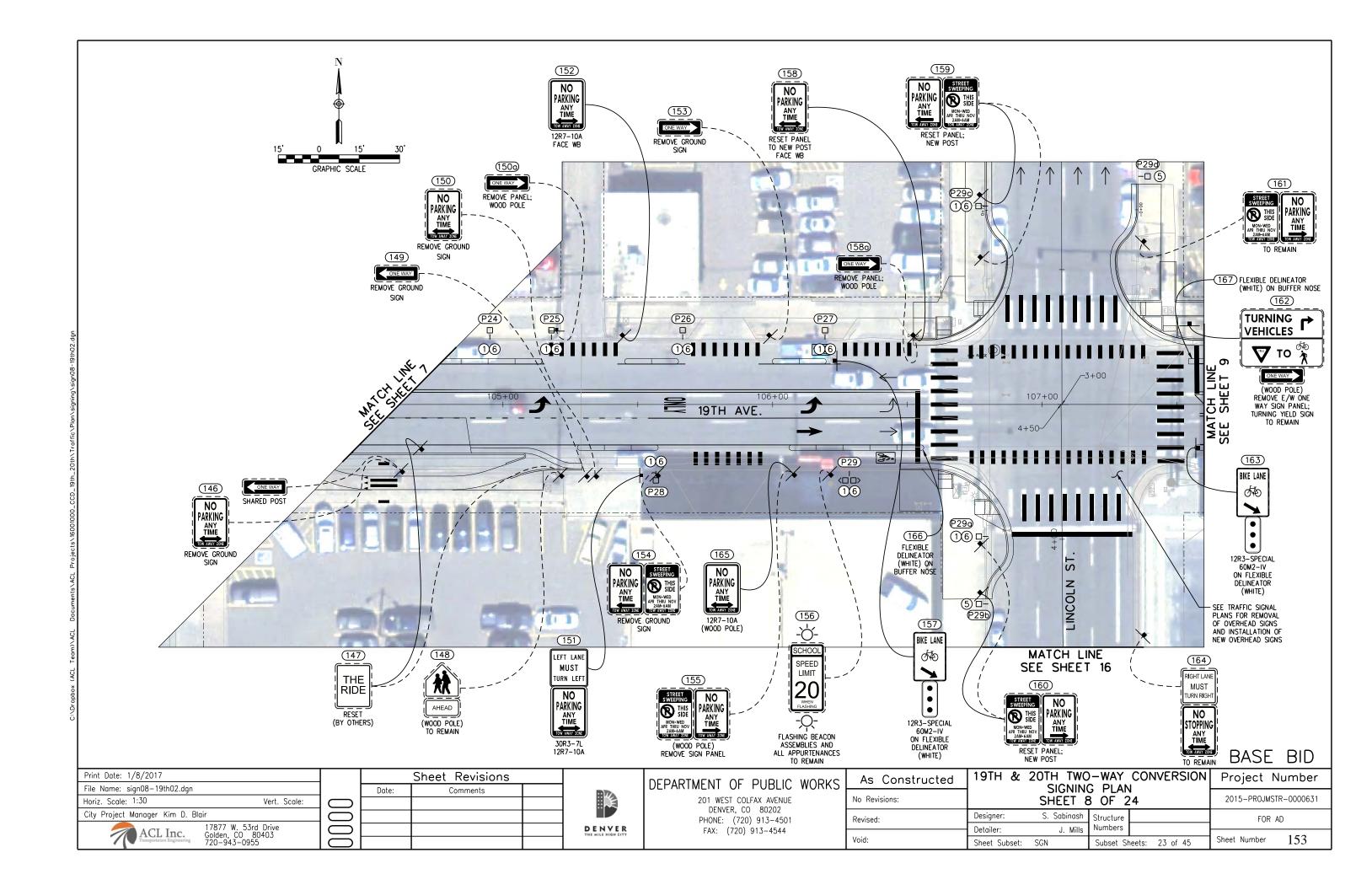


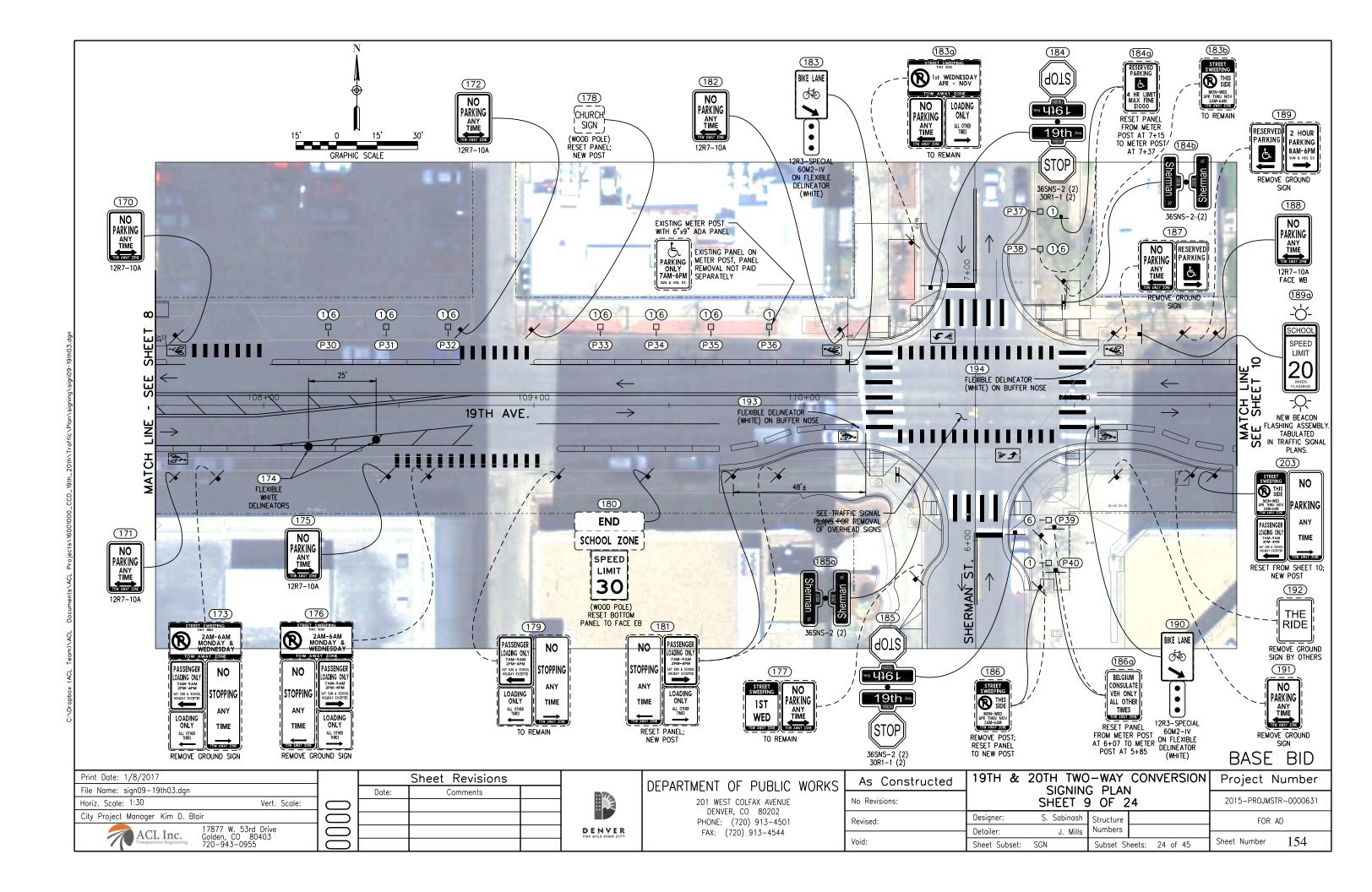


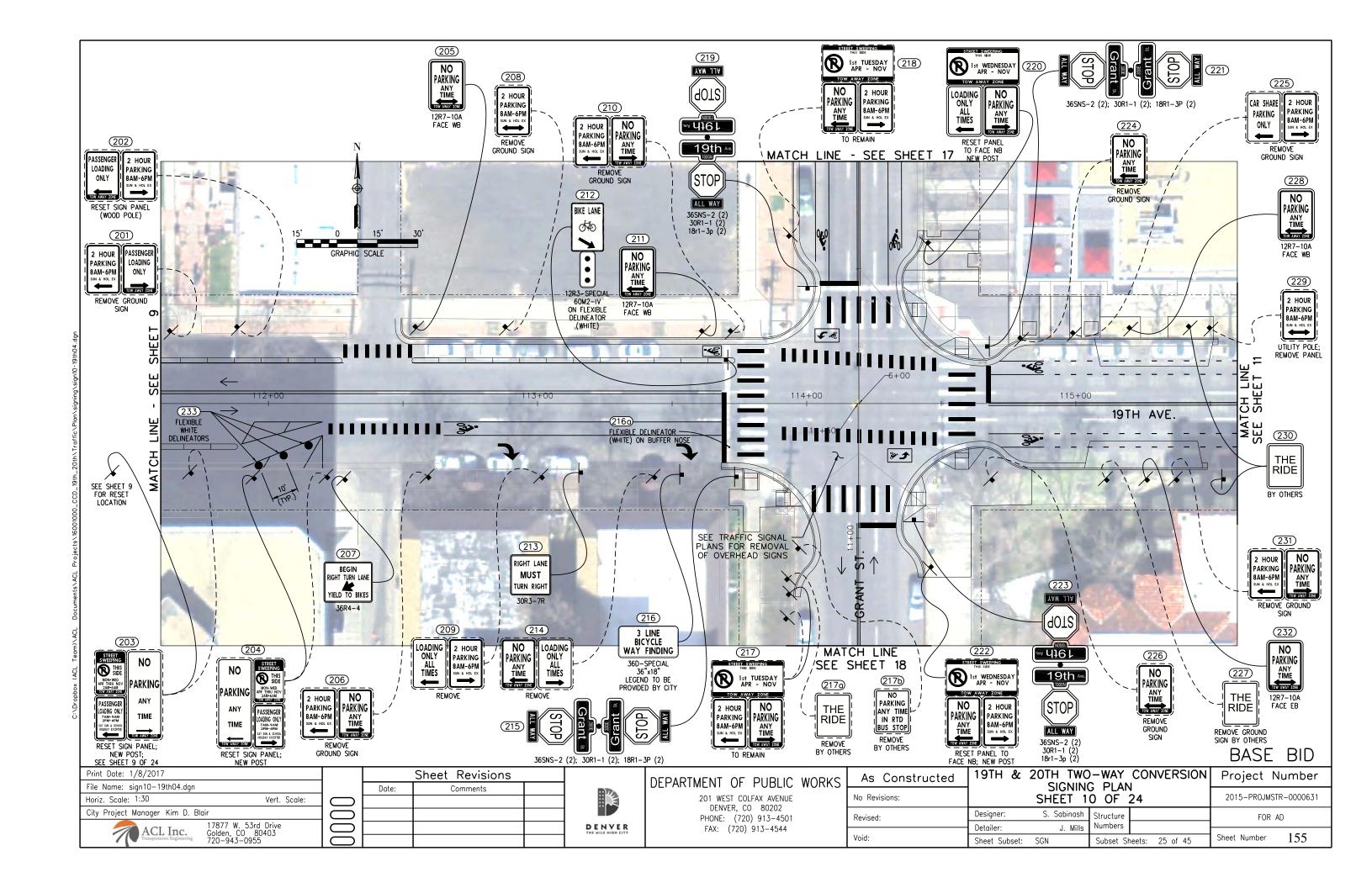


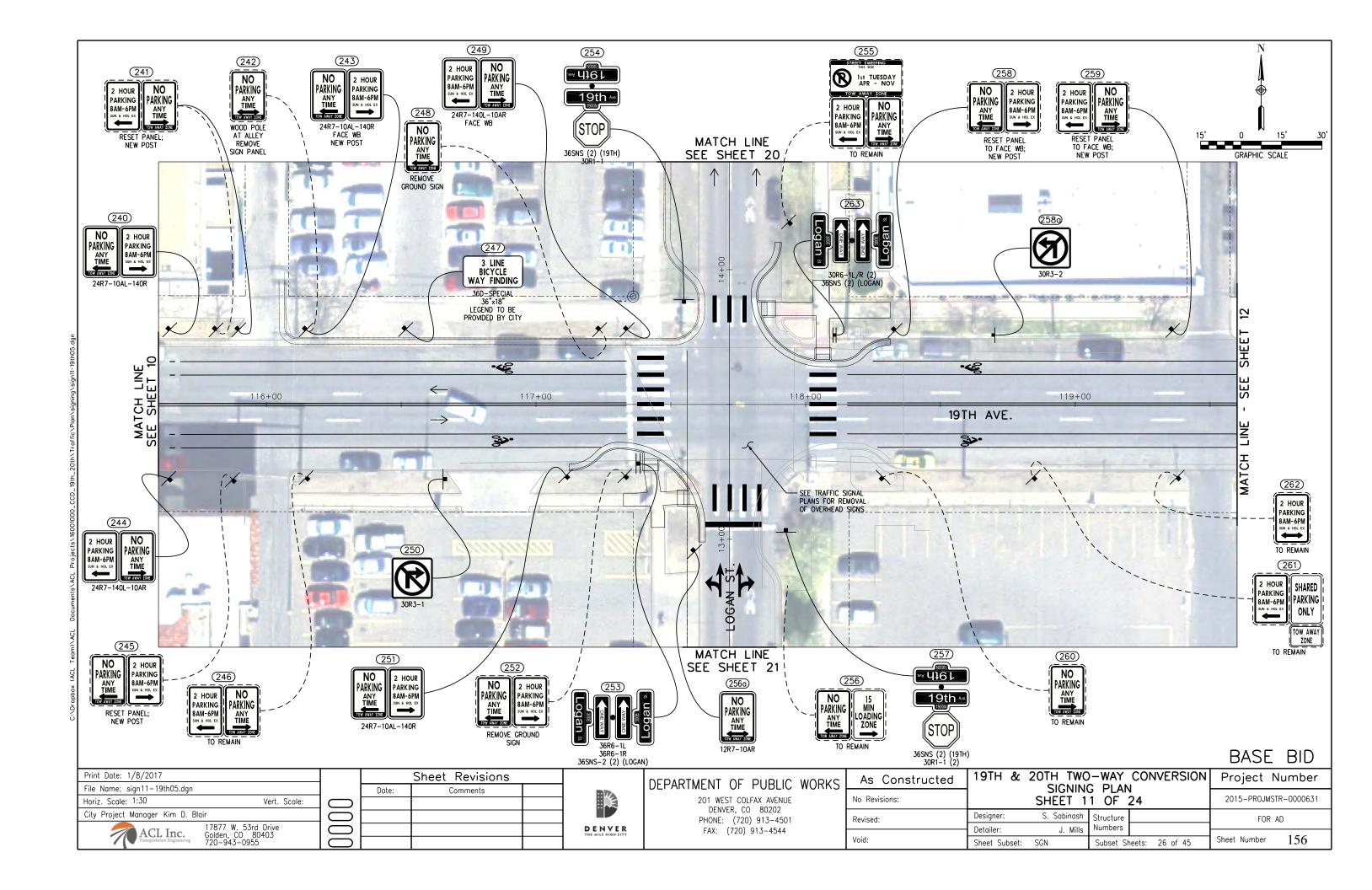


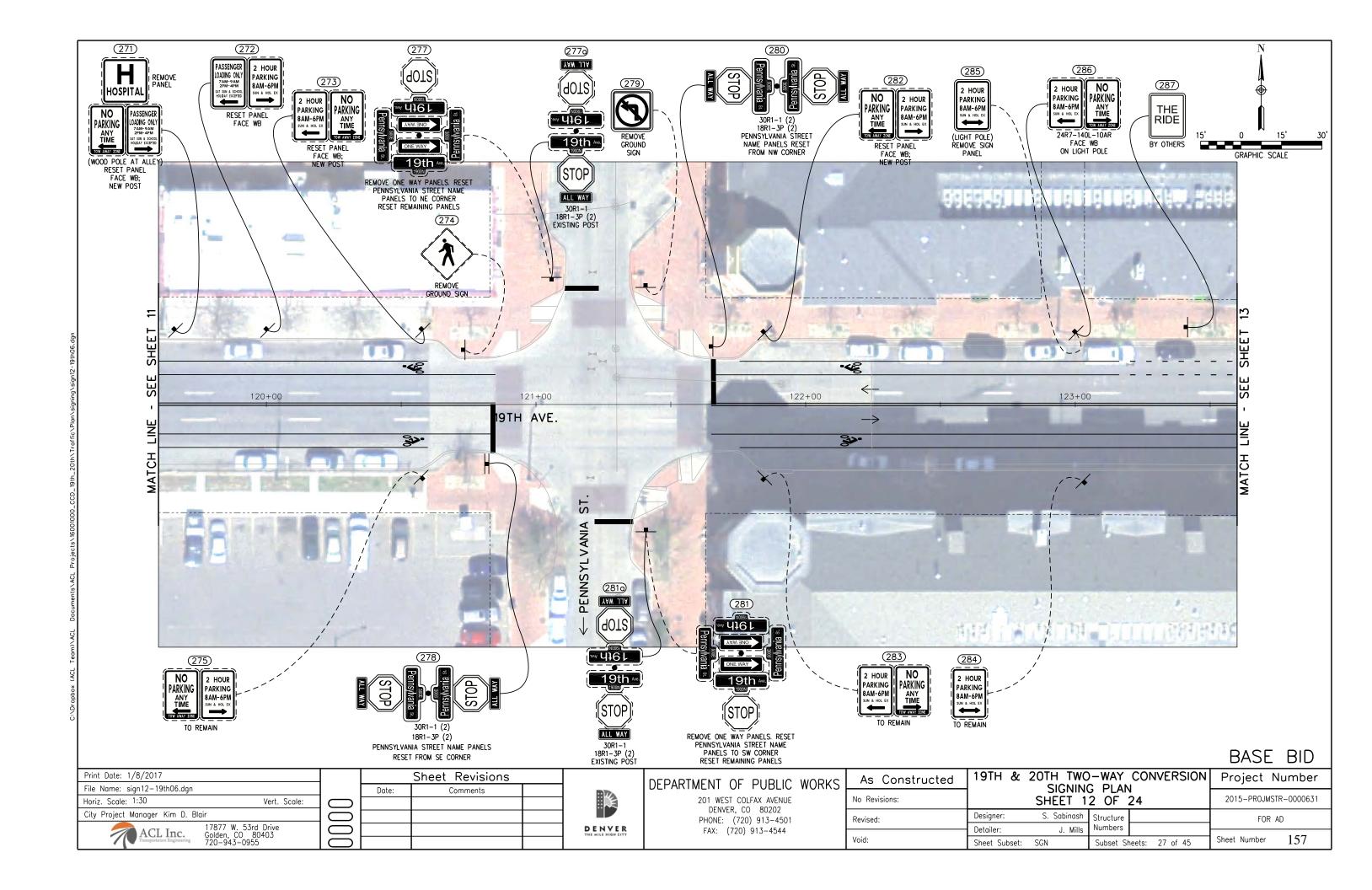


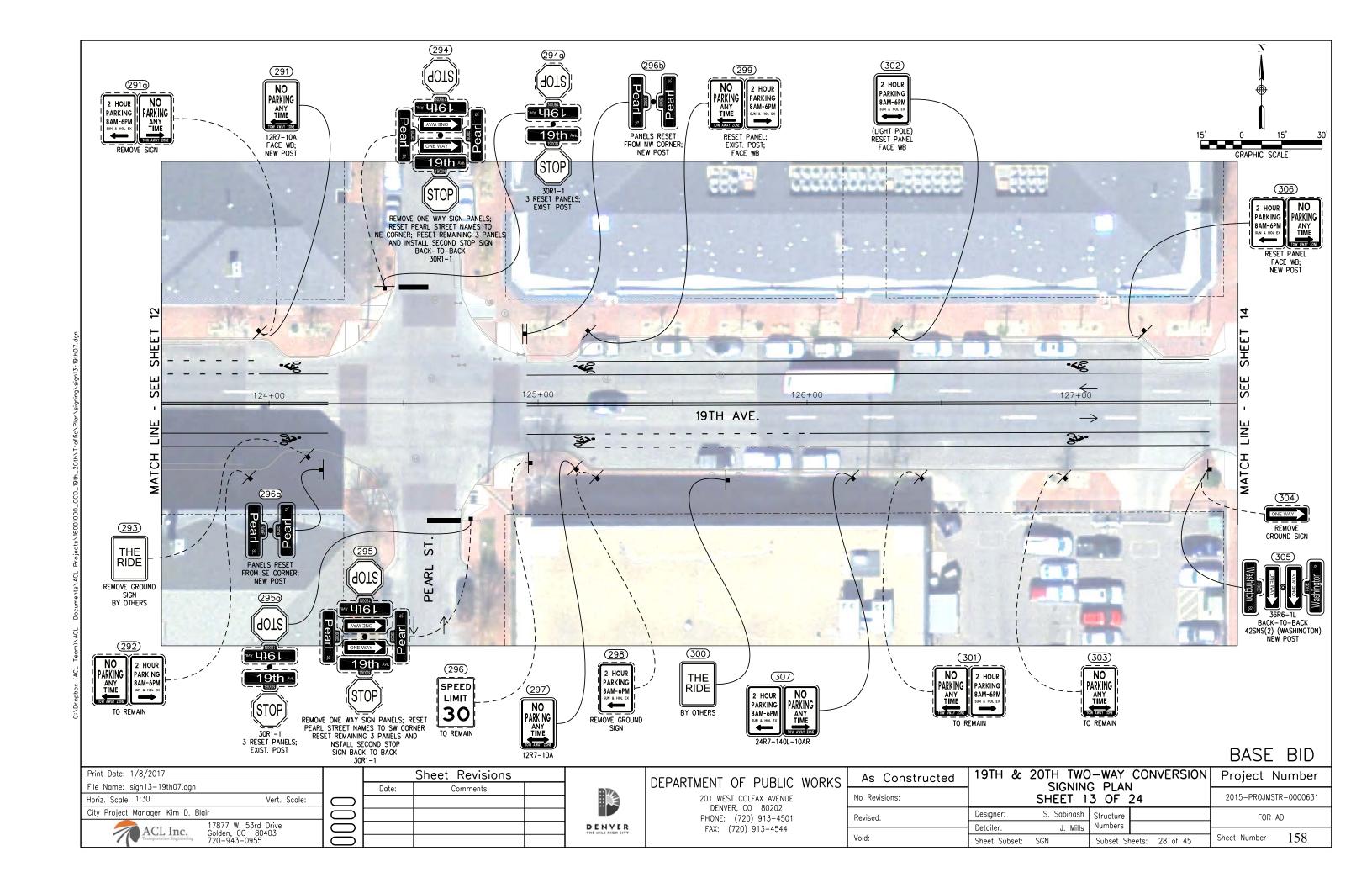


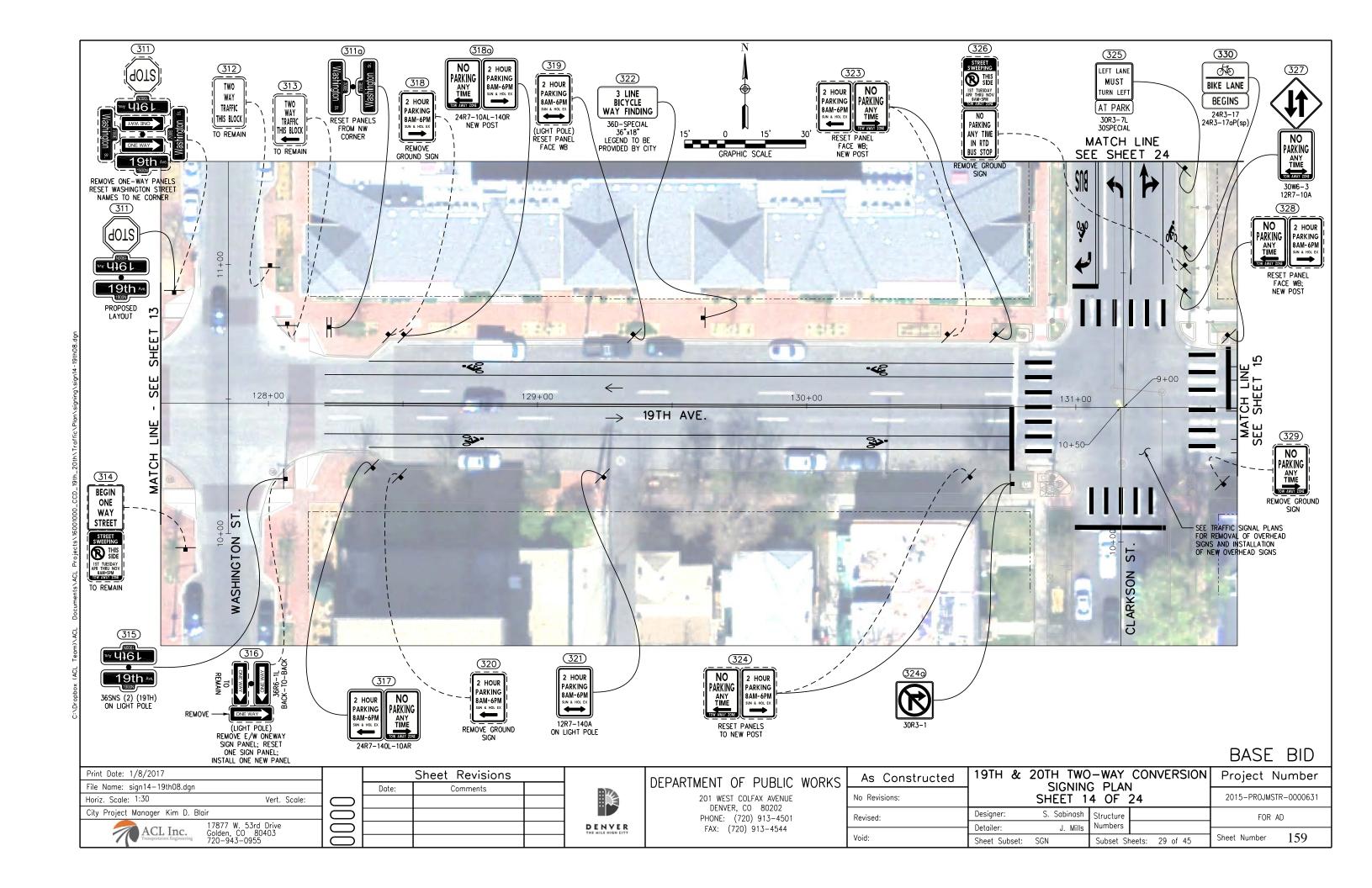


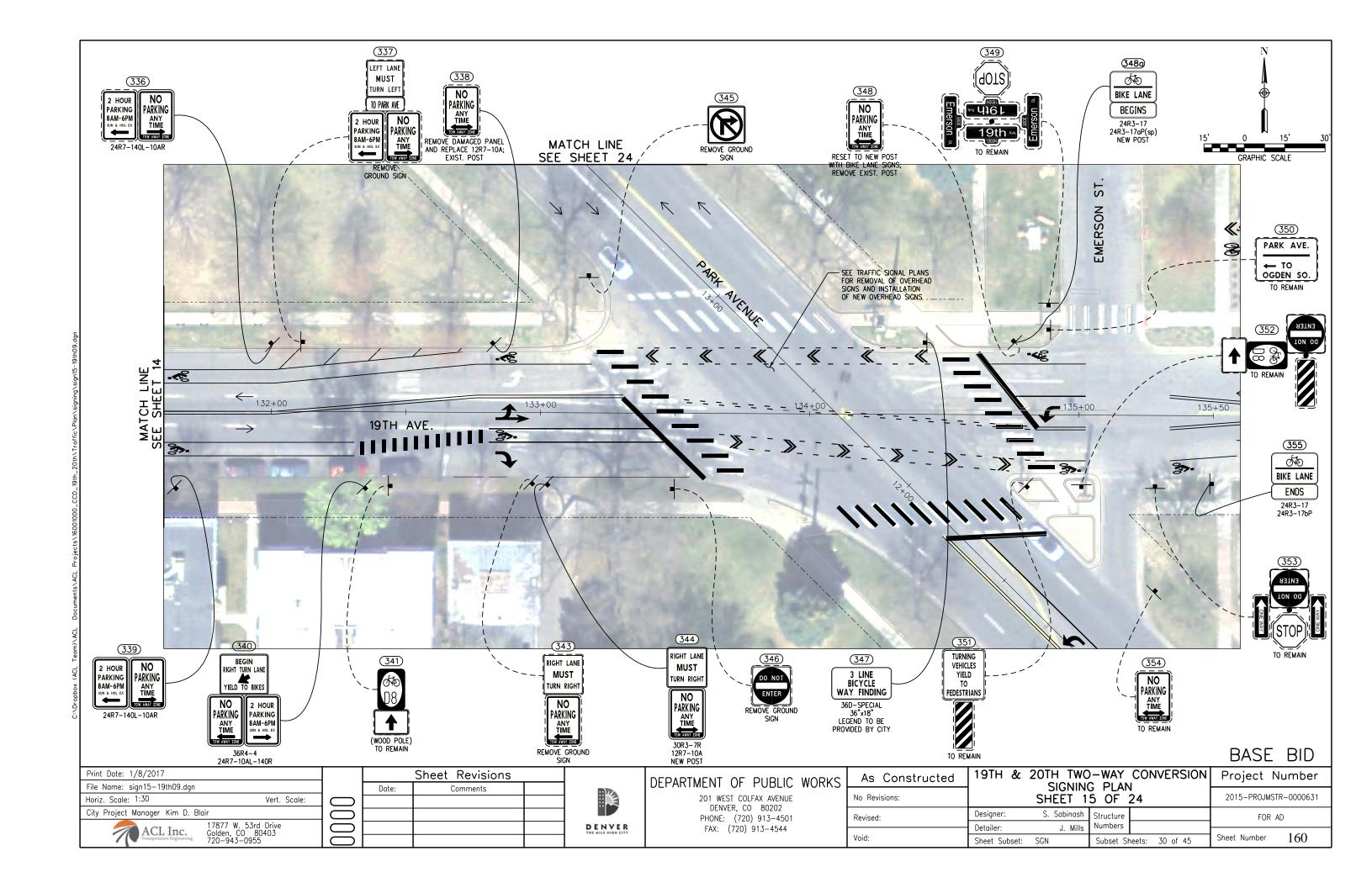


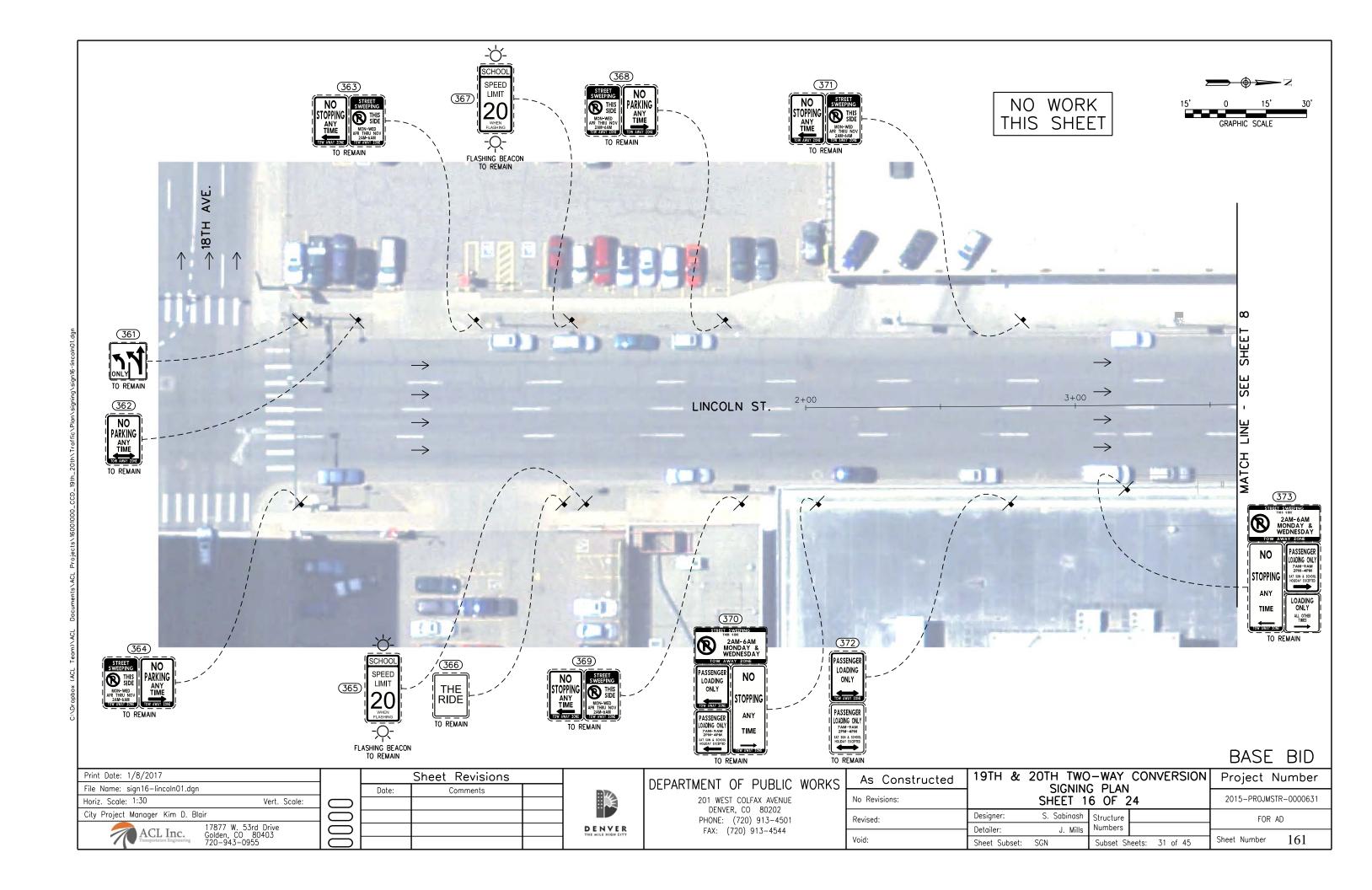


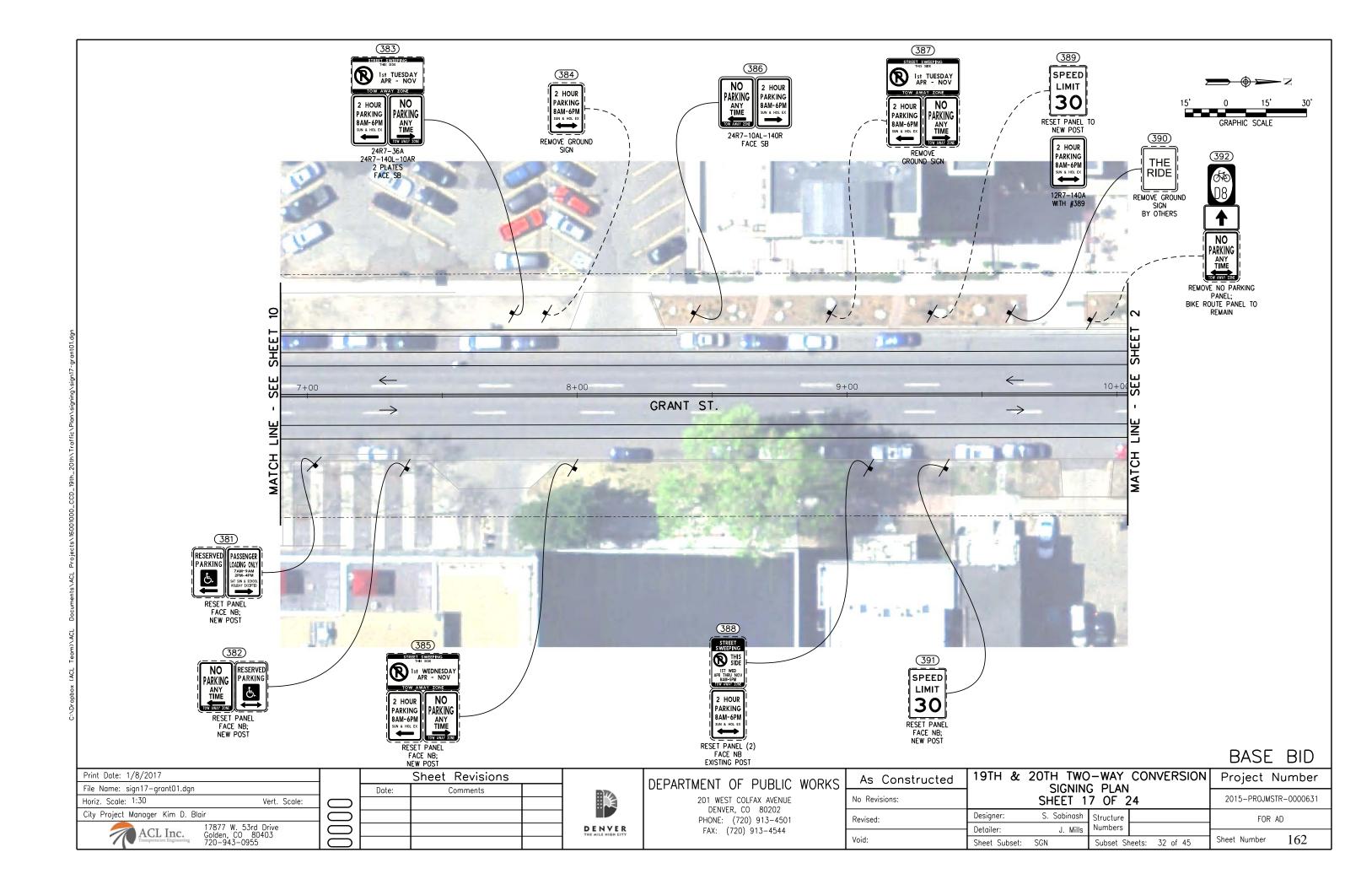


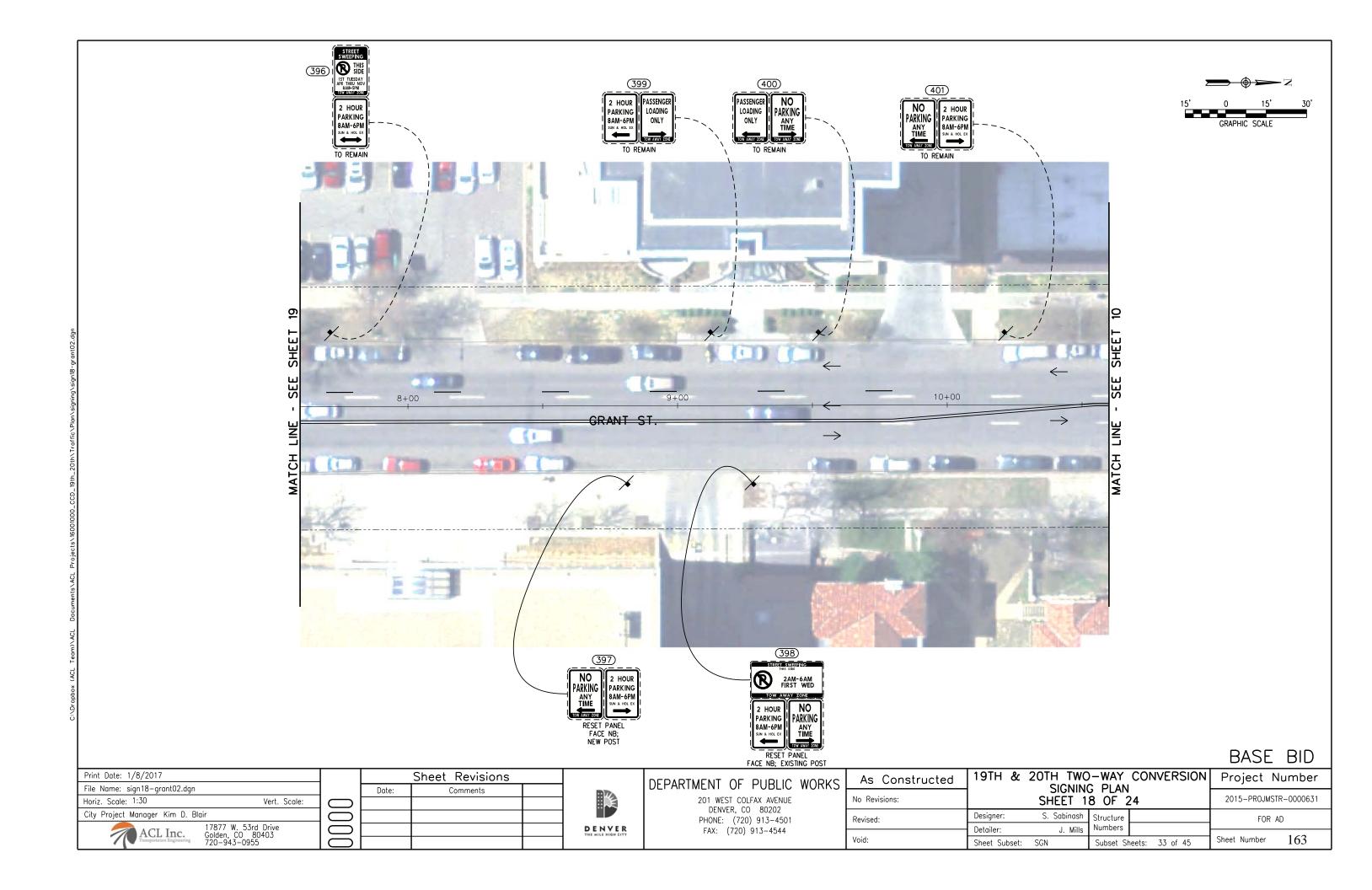


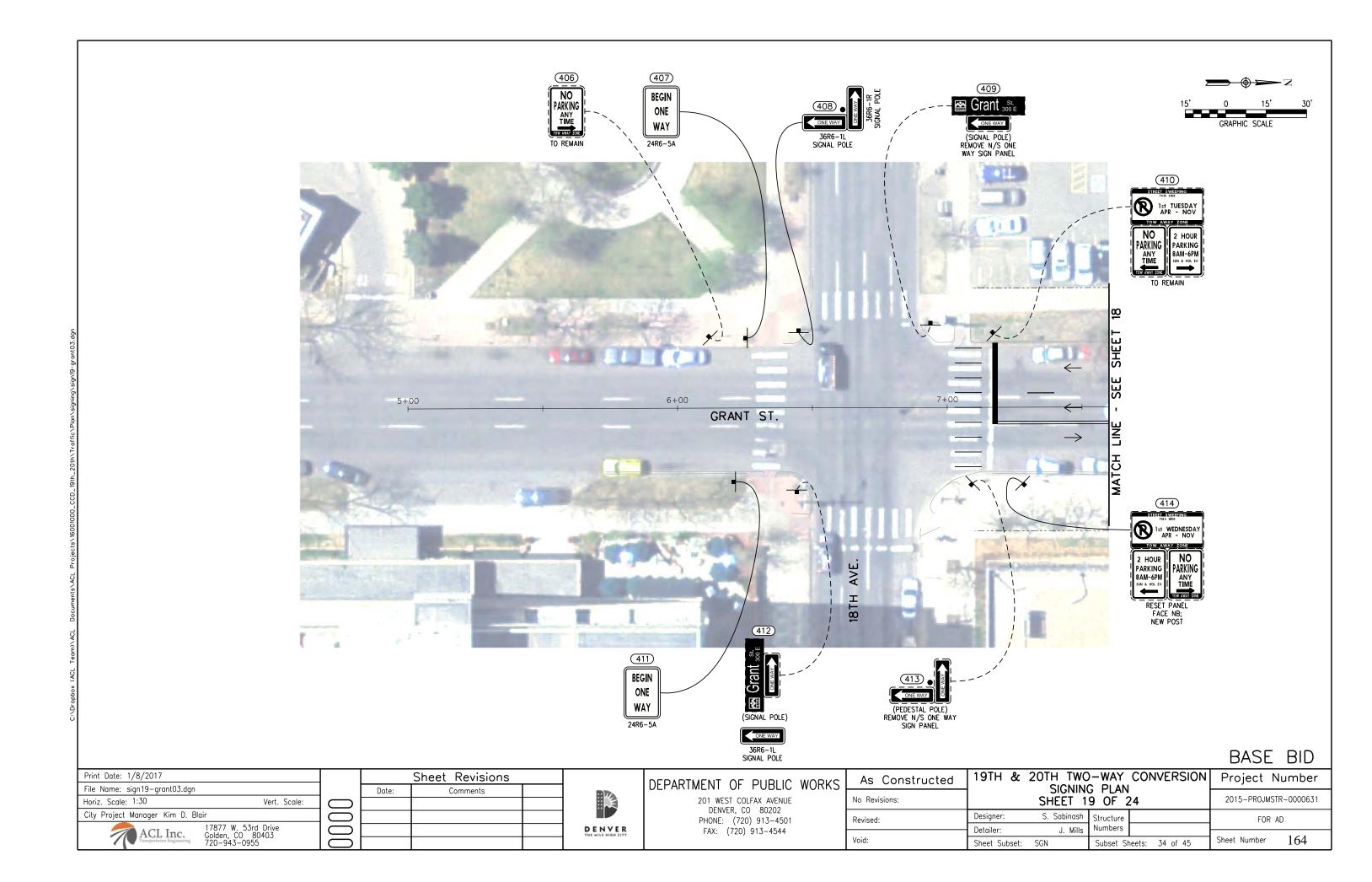


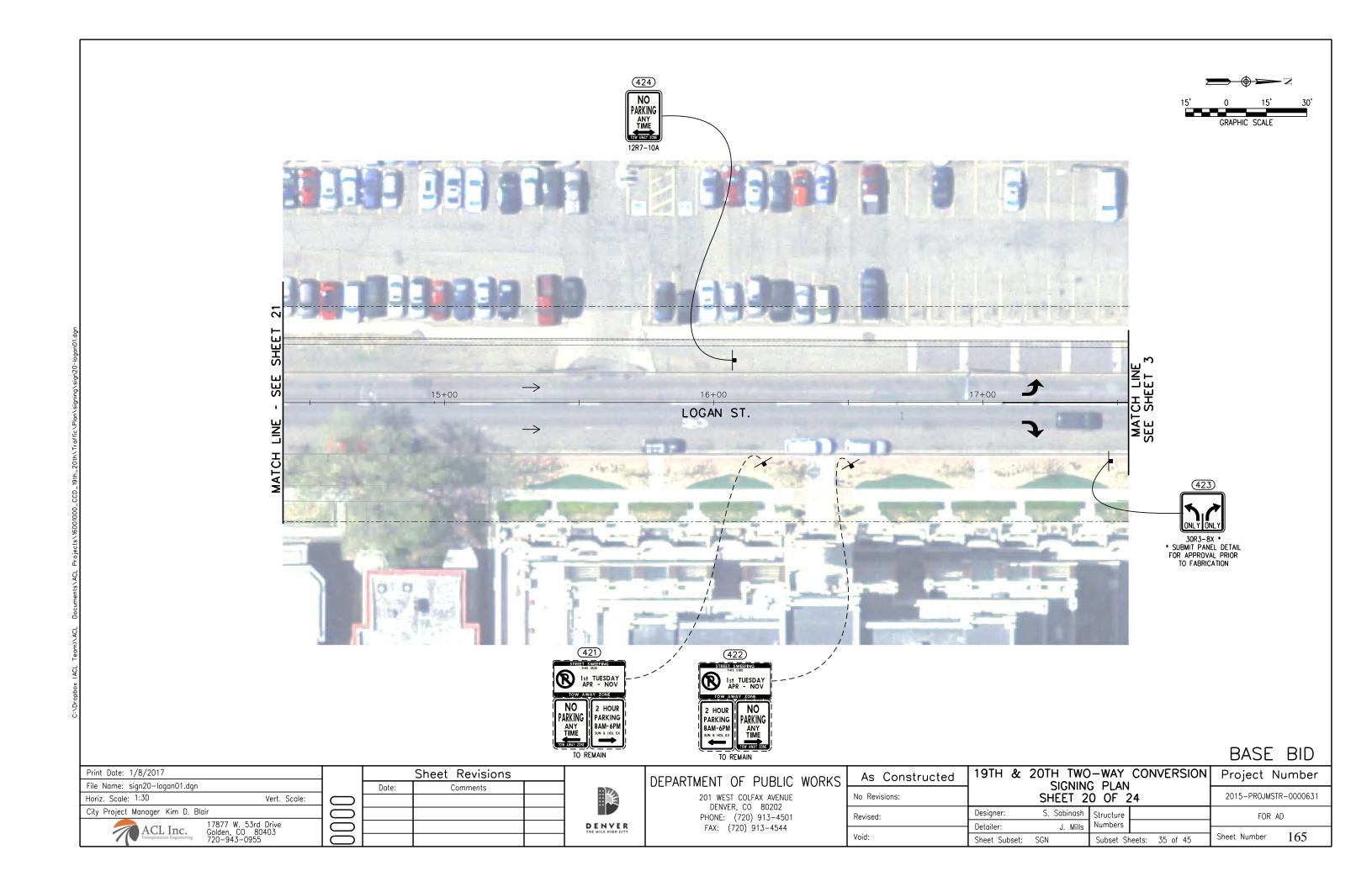


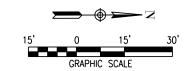




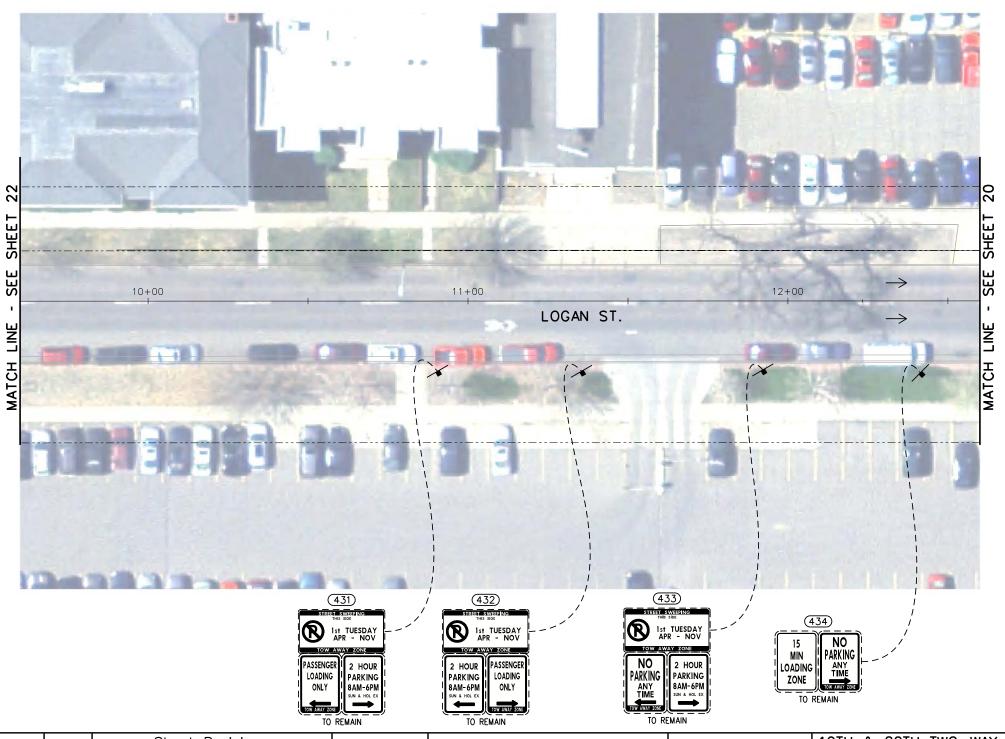








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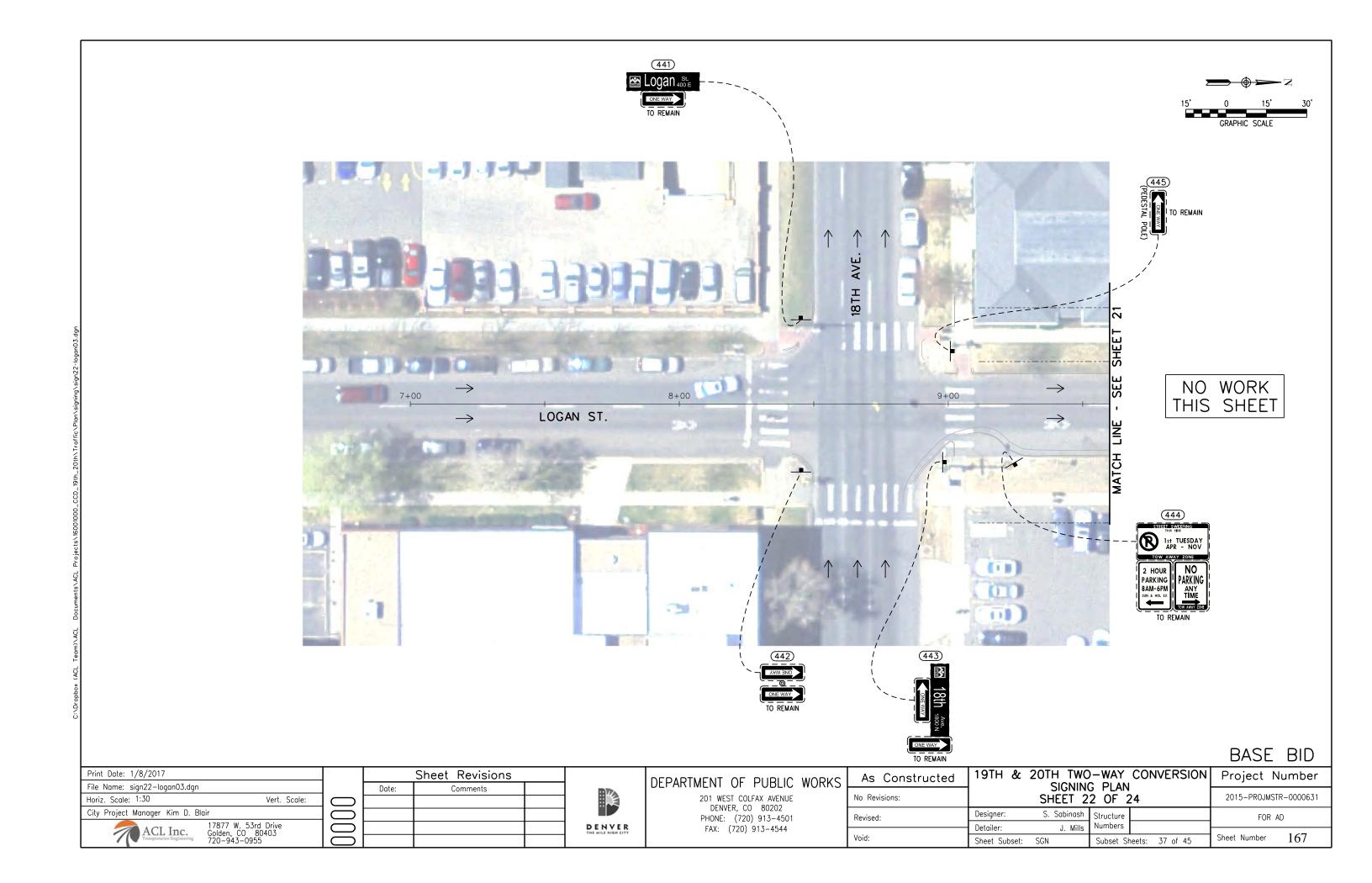
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City Project Manager Kim D. Bl	air	C
ACL Inc.	17877 W. 53rd Drive Golden, CO 80403 720-943-0955	0

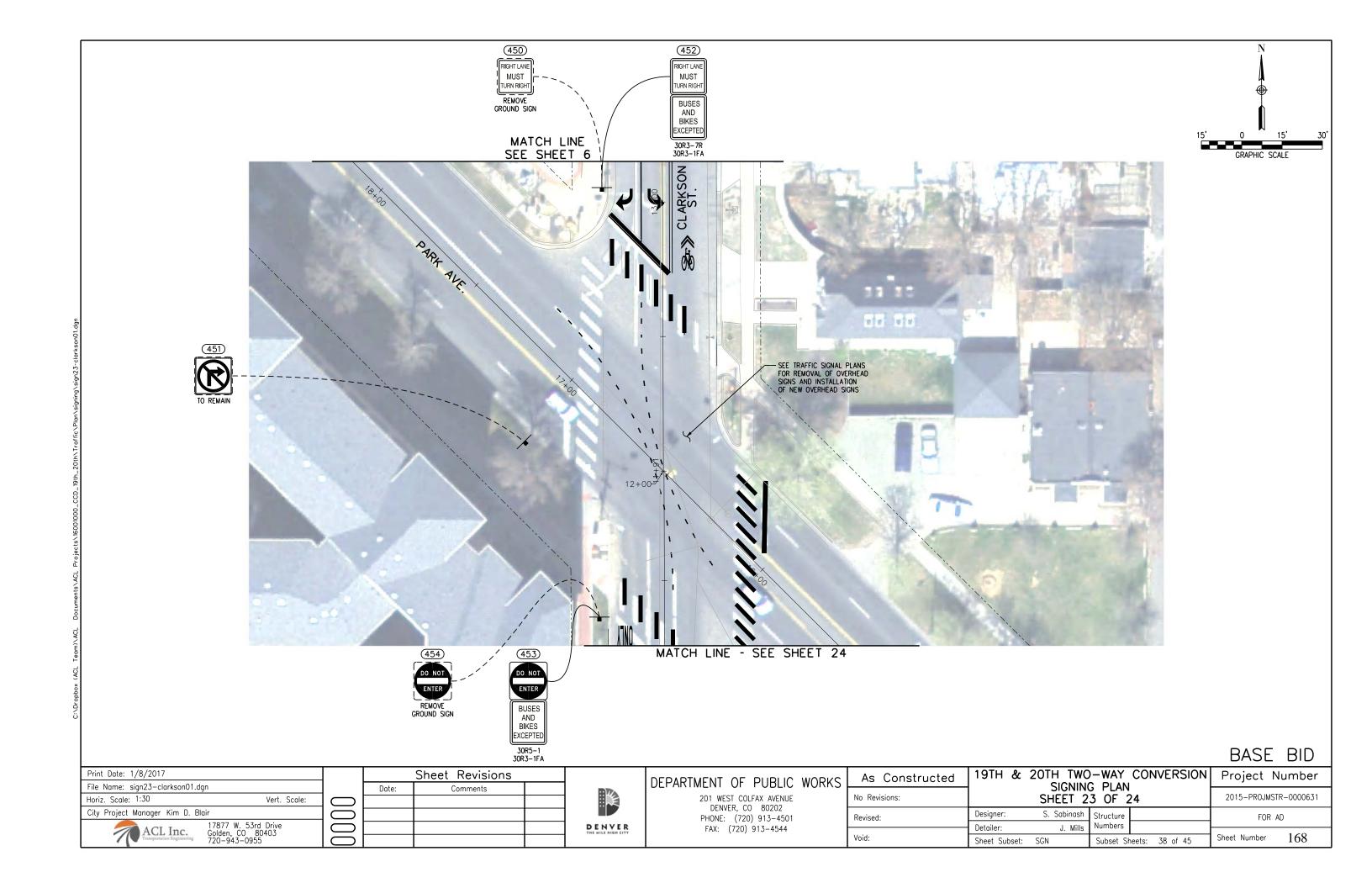
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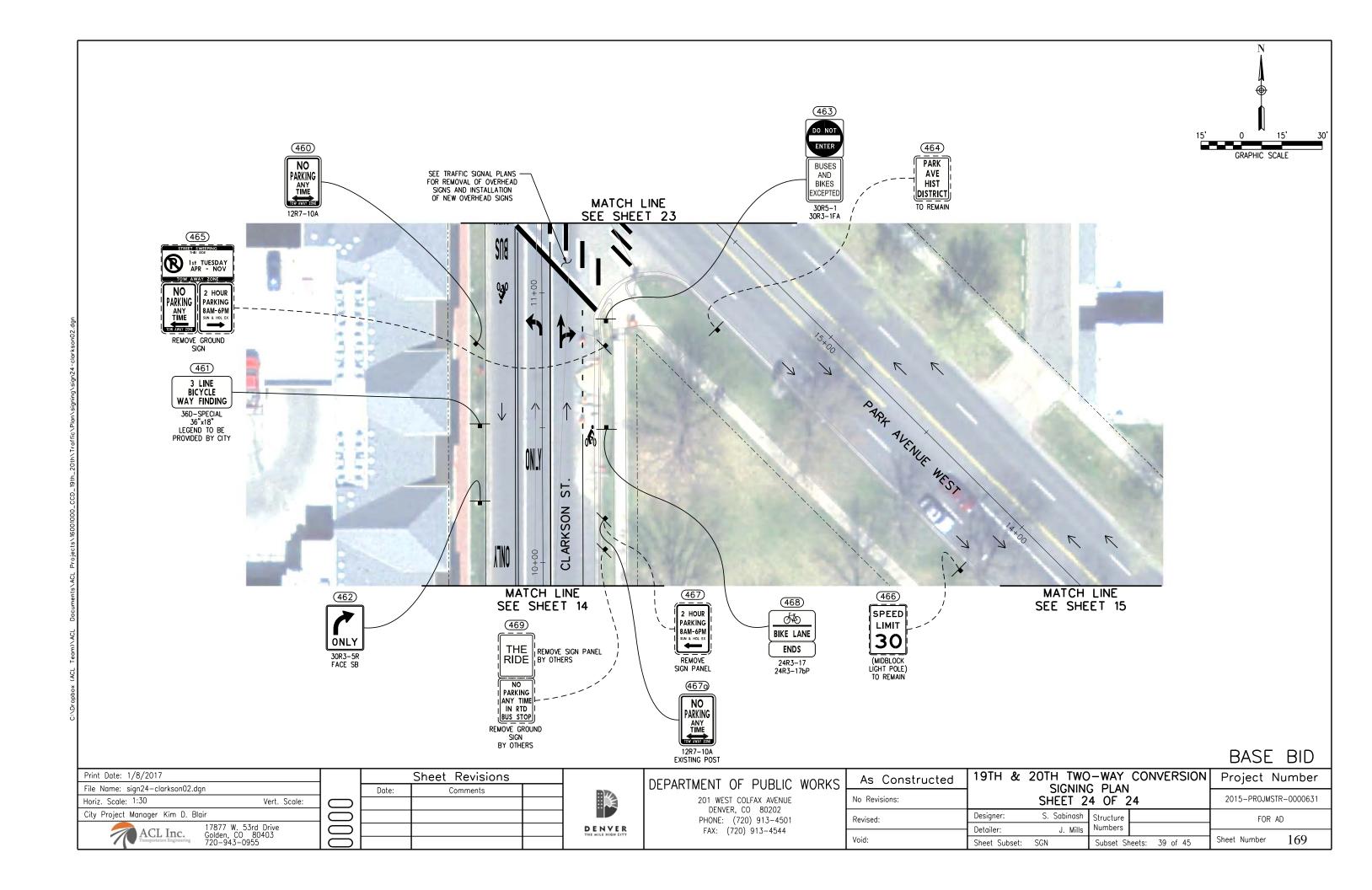
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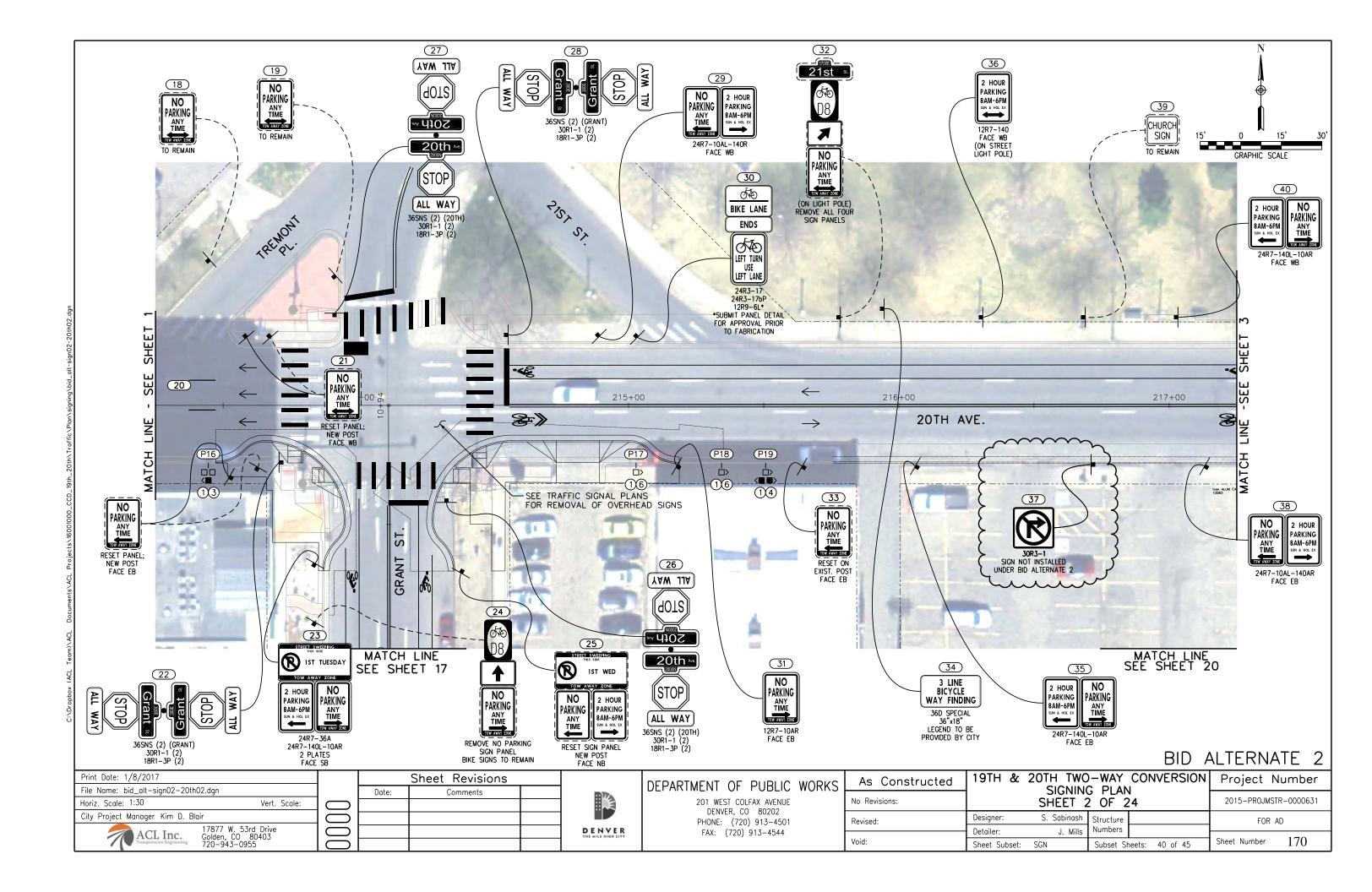
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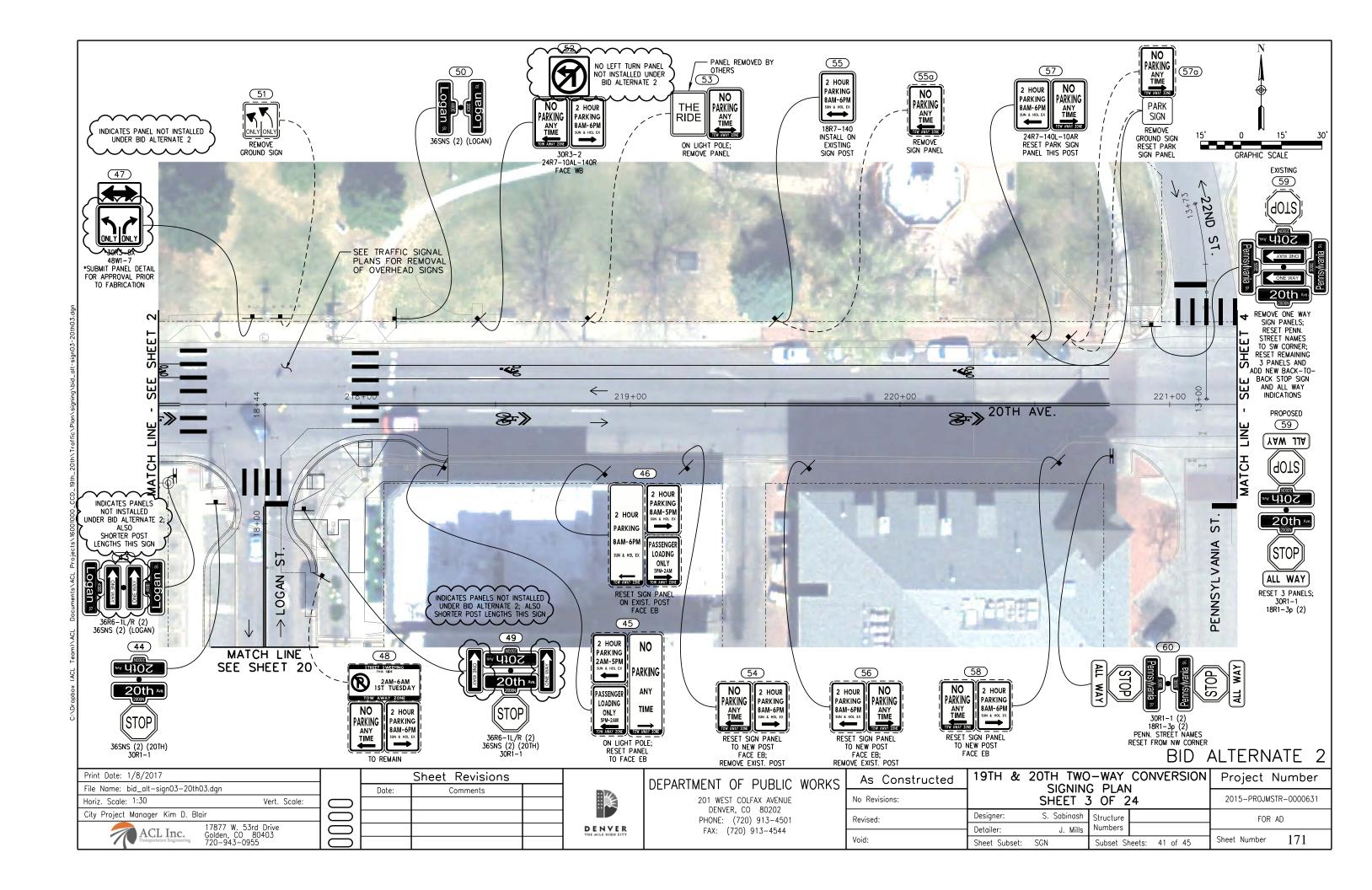
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Void:	Detailer: J. Mills Sheet Subset: SGN	Subset Sheets: 36 of 45	Sheet Number 166

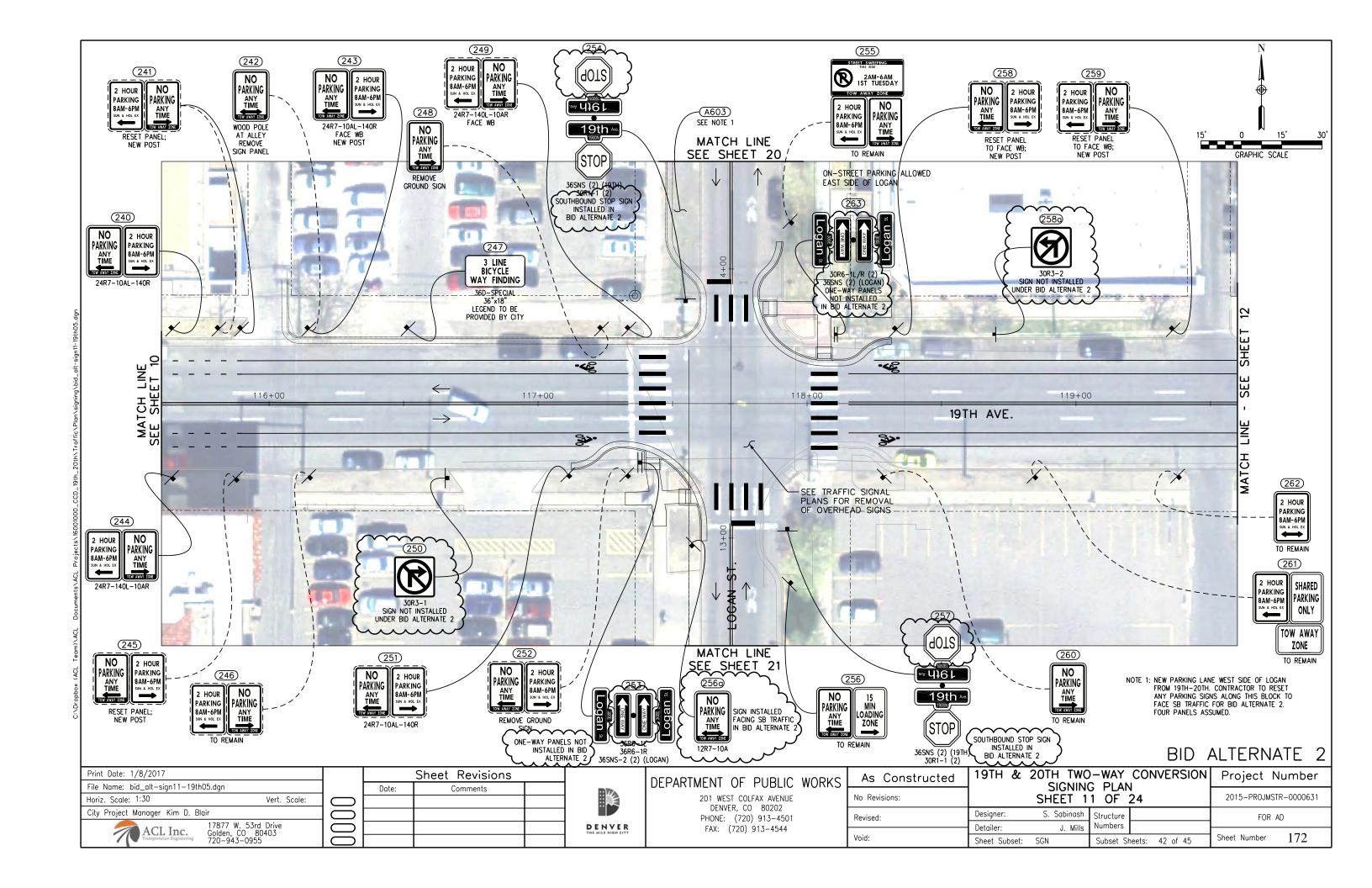


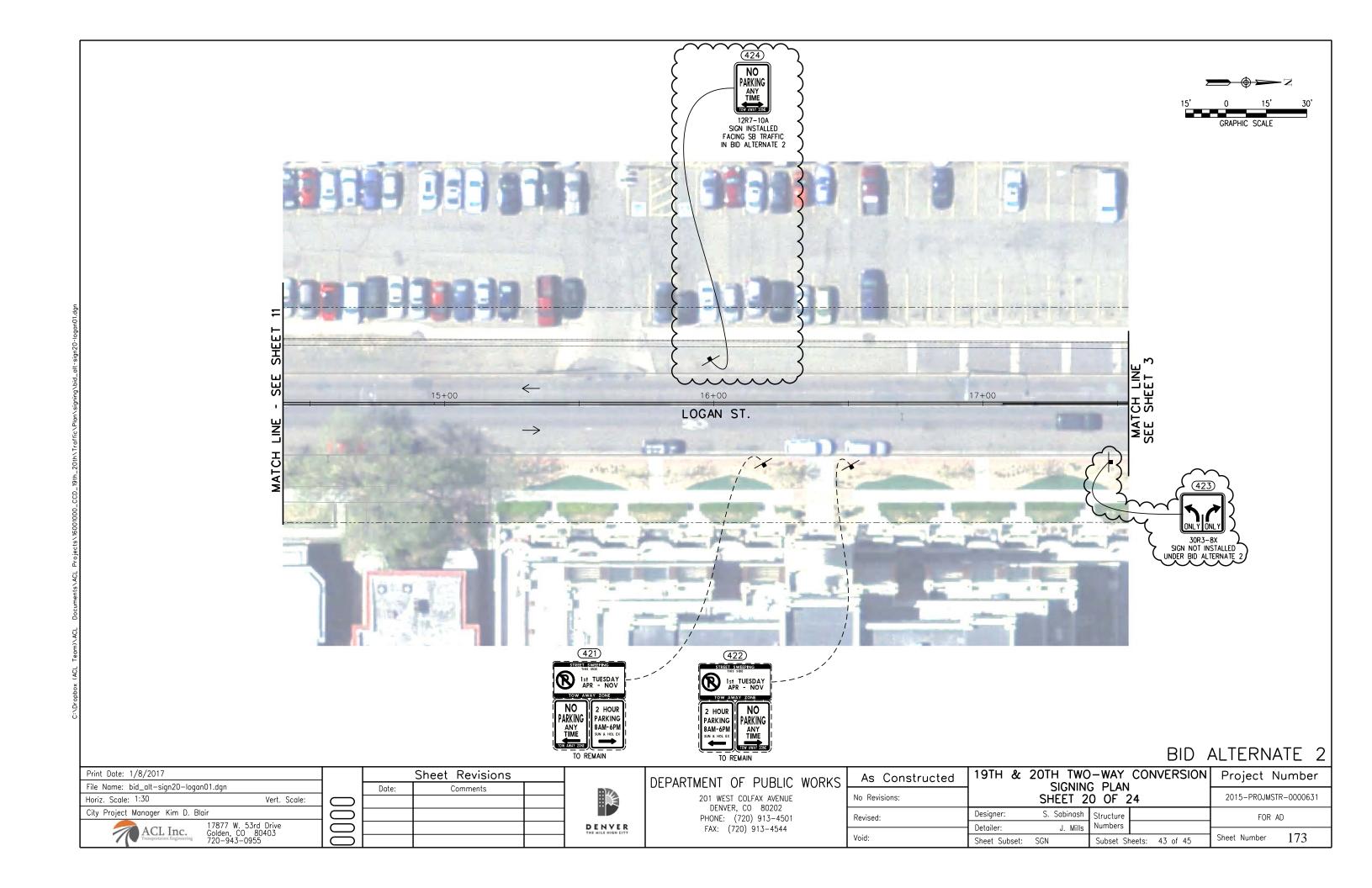


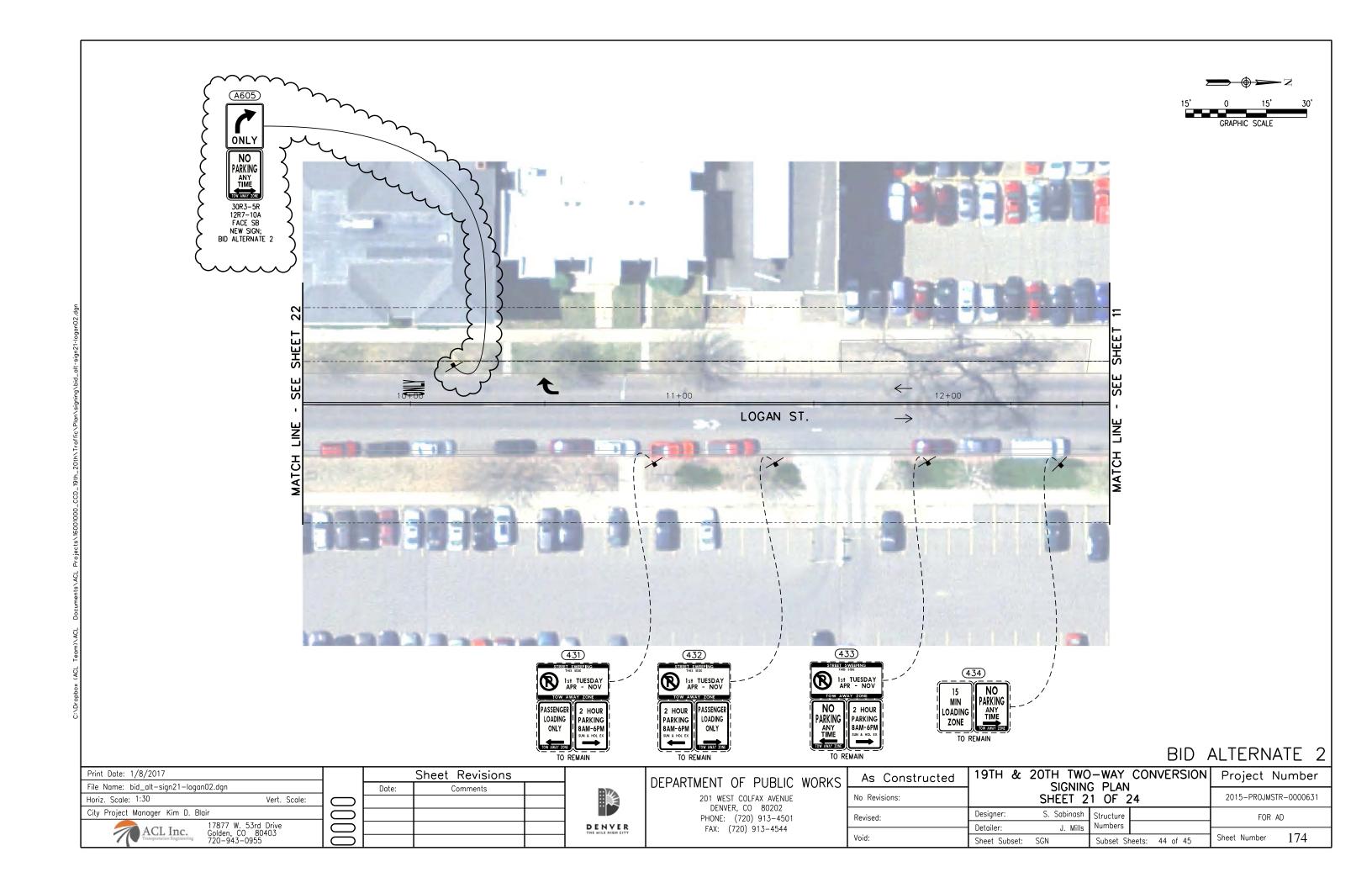


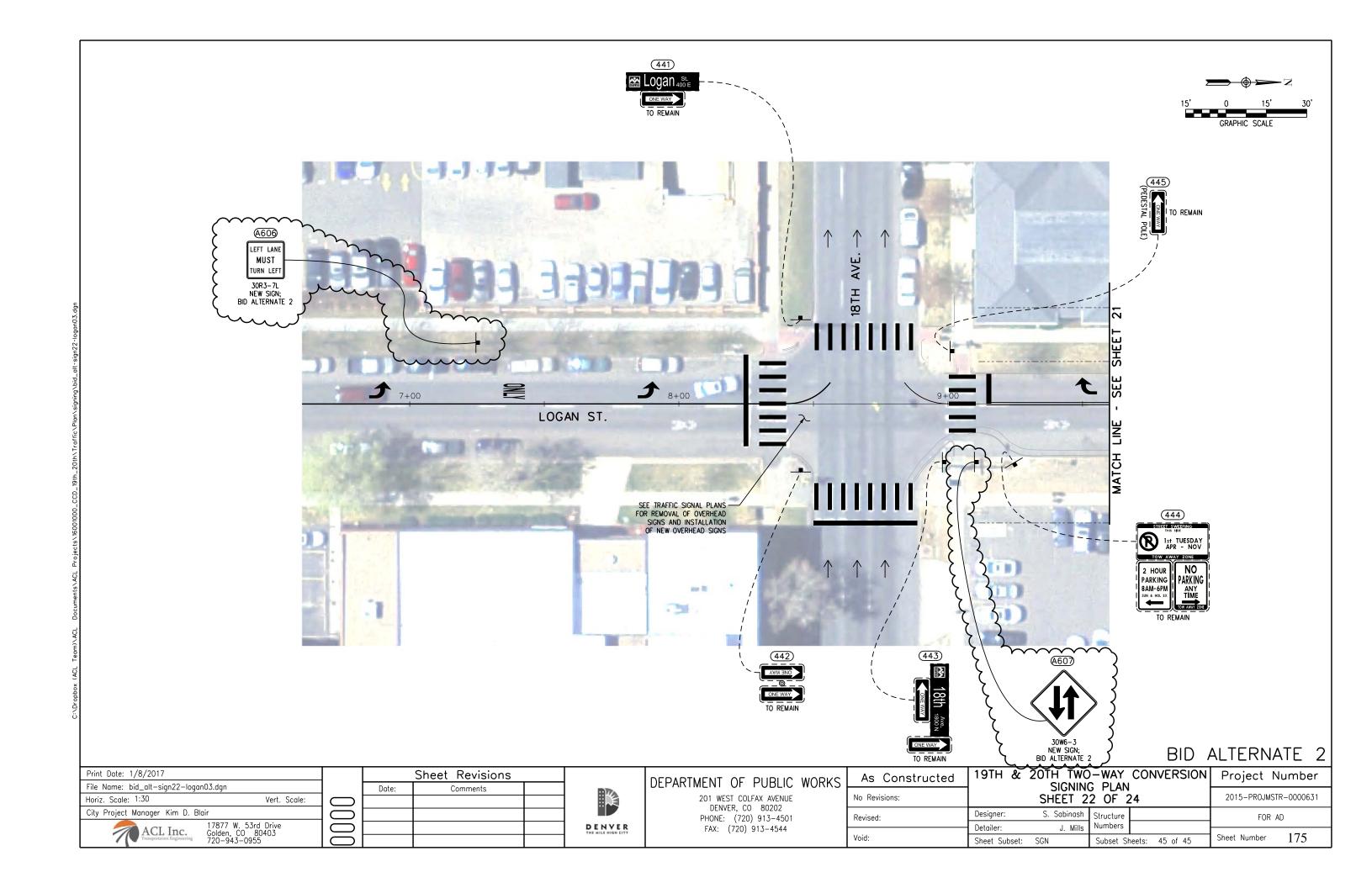












BASE BID							BID ALT 2								
									QUANTITIES						
		1	•	JUNINAK I	OF IKAFI	TIC SIGNA	L QUANTII	IES	1	1 1		T	I		QUANTITIES
ITEM NO.	DESCRIPTION	UNIT	20th & Grant	20th & Logan	20th & Park	19th & Broadway	19th & Lincoln	19th & Sherman	19th & Grant	19th & Logan	19th & Clarkson	19th & Park	Park & Clarkson	PROJECT TOTALS	18th & Logan
202-00821	Removal of Sign Panel	EACH	5	6	2	5	6	7	7	4	6	8	6	62	7
202-00828	Removal of Traffic Signal Equipment	LUMP SUM	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	1	1
							_								
210-00821	Reset Sign Panel	EACH					3						1	4	
210-00831	Reset Traffic Signal Head	EACH					1						1	1	
210-00842	Reset and ModifyTraffic Signal Mast Arm	EACH	1	1			l l	1	1	1			I	2	
210-00861 210-00867	Reset Wring	EACH EACH	I	l l				I	l	l		2	2	5	
	Reset Fire Preemption Unit Reset Intersection Detection System (Camera)											2	2	4	
210-00890	Reset thei section Detection System (Camera)	EACH	-									1	2	3	+
503-00200	Caisson (Special) (36 Inch)	LF			13	13	13				52	18		109	39
613-01200	2 Inch Electrical Conduit (Plastic)	LF			10	10	75	380			225	40		740	210
613-01300	3 Inch Electrical Conduit (Plastic)	LF			20	20	150				450	80		720	410
613-07001	Type One Pull Box	EACH					2	2						4	
613-07002	Type Two Pull Box	EACH					3				4	2		9	4
613-07003	Type Three Pull Box	EACH			0.0	0.2	0.2				1	0.2		1	2
613-10000	Wring	LUMP SUM EACH			0.2	0.2	0.2				0.2	0.2		1	1
613-13000	Luminaire (LED) Light Standard Foundation										4			4	4
613-40010 613-50150	Secondary Service Pedestal	EACH EACH									1			1	1
613-70250	Luminaire (High Pressure Sodium) (250 Watt)	EACH			1	1	1				1	1		4	<u> </u>
013-70230	Luminalie (riigii riessure Soulum) (250 Wall)	LACIT			1	'	'					ı		4	
614-00011	Sign Panel (Class I)	SF			11	58.25	23.25				76	18.5	33.75	221	99
614-70150	Pedestrian Signal Face (16) (Countdown)	EACH			2	2	2				8	2	50.75	16	8
614-70336	Traffic Signal Face (12-12-12)	EACH			4	4	6				13	10	3	40	11
614-72855	Traffic Signal Controller Cabinet	EACH									1		-	1	1
614-72860	Pedestrian Push Button	EACH			1							1		2	
614-72864	Fire Preemption Unit	EACH			1									1	
614-72866	Fire Preemption Unit and Timer	EACH					1				1			2	1
614-72886	Intersection Detection System (Camera)	EACH			1									1	
614-80000	Flashing Beacon	EACH						1						1	
614-81300	Traffic Signal-Light Pole Steel (Install Only)	EACH													1
614-81301	Traffic Signal-Light Pole Steel (1-Mast Arm) (Install Only)	EACH			1	1	1				4	1		8	3
614-84100	Traffic Signal Pedestal Pole Aluminum	EACH										1		1	
614-86105	Telemetry (Field)	EACH									1			1	1
614-86238	Traffic Signal Controller (SS) (FA) (8)	EACH									1			1	1
614-87350	Test Fiber Optic Cable	LUMP SUM									1	1		1	1
		1													
630-00003	Uniformed Traffic Control	HOUR			8	12	24				12	16	16	88	8
630-86800	Traffic Signal (Temporary)	EACH					1						1	2	

Print Date: 1/9/2017		Sheet Revisions	
File Name: signal01—soq.dgn	Date:	Comments	
Horiz. Scale: 1:1 Vert. Scale:			
City Project Manager Kim D. Blair			
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ACL Inc. Golden, CO 80403 720-943-0955			



DEPARTMENT OF PUBLIC WORKS
201 WEST COLFAX AVENUE

201 WEST COLFAX AVEN	UE
DENVER, CO 80202	
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FAX: (720) 913-454	4

۲S	As Constructed	19TH & 20TH TWO-WAY CONVERSION TRAFFIC SIGNAL PLAN			Project N	lumber	
	No Revisions:		MMARY OF			2015-PROJMST	R-0000631
	Revised:	Designer:	S. Sabinash	Structure Numbers		FOR A	/D
	Void:	Detailer:	J. Mills		1 1 1 00	Sheet Number	176
	void:	Sheet Subset:	TS	Subset Sh	neets: 1 of 28	Sheet Number	1/0

REMOVALS

- (1A) REMOVE SIGNAL HEAD
- (1B) REMOVE SIGNAL POLE
- (1D) REMOVE SIGNAL CABINET, CONTROLLER, PULL BOXES & WATER VALVE PULL BOXES
- (1E) REMOVE MAST ARM
- (1F) REMOVE SPAN WIRE, CABLE AND ALL ATTACHED SIGNAL HEADS AND EQUIPMENT
- (1G) REMOVE PUSH BUTTON
- (1H) ELECTRIC UTILITY COMPANY TO REMOVE EXISTING POLE
- (1) ELECTIC UTILITY COMPANY TO REMOVE, RAISE OR RELOCATE EXISTING OVERHEAD POWER LINE
- (1K) REMOVE CCTV CAMERA
- REMOVE EXISTING POLE FOUNDATION TO MINIMUM DEPTH OF 1' BELOW FINISH GRADE RESETS
- (2A) RESET SIGNAL HEAD
- (2B) RESET SIGNAL POLE
- 2C RESET SIGNAL CONTROLLER, CABINET AND ASSOCIATED EQUIPMENT
- (2D) RESET PUSH BUTTON
- (2E) RESET/MODIFY MAST ARM
- (2G) RESET SPAN WIRE
- (2H) RESET SPAN WIRE AND ALL ATTACHED SIGNAL EQUIPMENT
- (2J) RESET DETECTOR
- 2K ELECTRIC UTILITY COMPANY TO RESET EXISTING POLE

INSTALLATIONS

- (3A) INSTALL SIGNAL HEAD OR HEADS (LED)
- (3B) INSTALL SIGNAL CABINET, CONTROLLER AND ASSOCIATED EQUIPMENT
- (3C) INSTALL PUSH BUTTON
- (3D) INSTALL CONDUIT
- (3) INSTALL THREE CONDUITS (TWO 3-INCH CONDUITS AND ONE 2-INCH CONDUIT)
- (3E) INSTALL SIGNAL POLE
- (3F) INSTALL MAST ARM (LENGTH AS SHOWN)
- (3G) INSTALL SPAN WIRE
- (3H) INSTALL PULL BOX; SIZE AS SHOWN
- (3H) (SPECIAL) INSTALL PULL BOX MARKED "TRAFFIC COMM" ON LID
- (2) INSTALL TWO PULL BOXES ONE MARKED "TRAFFIC" ONE MARKED "ELECTRIC" ON LIDS
- (3J) INSTALL DETECTOR
- (3K) ELECTRIC UTILITY COMPANY TO INSTALL SIGNAL POLE
- (3L) ELECTRIC UTILITY COMPANY TO INSTALL POWER FEED. CONTRACTOR TO EXTEND TO CONTROLLER
- (3M) ELECTRIC UTILITY COMPANY TO INSTALL LUMINAIRE
- (3N) INSTALL LUMINAIRE

KEY NOTES (CONT.):

INSTALLATIONS

- ③P INSTALL WATER VALVE PULL BOX
- (3Q) NO CHANGE
- (3S) INSTALL STREET LIGHT STANDARD
- (3T) INSTALL OPTICOM
- (3U) INSTALL INTERCONNECT (SIZE & TYPE AS SHOWN)
- (3V) INSTALL VIDEO DETECTION CAMERA
- (3W) INSTALL ELECTRIC METER ASSEMBLY
- (3X) INSTALL CCTV CAMERA ON LUMINAIRE ARM
- (3Y) INSTALL COMPOSITE CABINET BASE FOR P-SIZED CONTROLLER CABINET
- (3Z) INSTALL FLASHING SCHOOL BEACON ASSEMBLY
- (4A) INSTALL SIGNAL POLE FOUNDATION CAISSON SPECIAL
- (4B) INSTALL PEDESTAL POLE FOUNDATION
- (4C) INSTALL LIGHT STANDARD FOUNDATION
- 4D INSTALL COUNTDOWN PEDESTRIAN SIGNAL HEAD (LED)

SYMBOLS:

- □ PULL BOX EXISTING
- PULL BOX NEW
- ☐ CONTROLLER CABINET EXISTING
- CONTROLLER CABINET NEW
- EXISTING POLE
- NEW POLE
- —

 ✓ EXISTING FIRE PREEMPTION DETECTOR
- NEW FIRE PREEMPTION DETECTOR
- ——O PEDESTRIAN PUSH BUTTON EXISTING
- PEDESTRIAN PUSH BUTTON NEW
- --- UNDERGROUND CONDUIT
- — SPAN WIRE CABLE
- OHE OVERHEAD ELECTRIC LINE
- —

 UMINAIRE EXISTING
- ── LUMINAIRE NEW
- EXISTING SIGNAL HEAD WITH BACKPLATE
- NEW SIGNAL HEAD WITH BACKPLATE
- —> EXISTING SIGNAL HEAD
- NEW SIGNAL HEAD
- ELECTRIC METER ASSEMBLY
- POWER SOURCE
- CLOSED CIRCUIT TELEVISION CAMERA
- VIDEO DETECTION CAMERA
- PEDESTAL POLE EXISTING
- PEDESTAL POLE NEW
- -□ FLASHING BEACON
- —————— EXISTING THREE-ARROW SIGNAL HEAD
- —**○○○** NEW THREE-ARROW SIGNAL HEAD

Į	Print Date: 11/30/2016		Sheet Revisions	
L	File Name: signal02—key.dgn	Date:	Comments	
L	Horiz. Scale: 1:1 Vert. Scale:			
	City Project Manager Kim D. Blair			
	ACL Inc. Transportation Engineering 720, 043, 0855			
-	ACL Inc. Golden, CO 80403 720-943-0955			



DEPARTMENT OF PUBLIC WORKS

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Designer: S. S

19TH & 20TH TWO-WAY CONVERSION Project Number TRAFFIC SIGNAL PLAN 2015-PROJMSTR-0000631 **KEY NOTES & SYMBOLS** S. Sabinash Structure FOR AD Numbers Detailer: J. Mills Sheet Number 177 Sheet Subset: TS Subset Sheets: 2 of 28

TRAFFIC SIGNAL GENERAL NOTES:

- TRAFFIC SIGNAL MATERIALS AND INSTALLATION SHALL COMPLY WITH THE CITY & COUNTY OF DENVER TRAFFIC STANDARD DRAWINGS (MAST ARM SIGNAL DESIGN), THE COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION 2011 EDITION, THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE NATIONAL ELECTRIC CODE, AND ALL OTHER PERTINENT LOCAL REGULATIONS AND ORDINANCES.
- 2. ITEMS NOT SHOWN IN THE SUMMARY OF QUANTITIES SHALL BE CONSIDERED INCIDENTAL TO THE TRAFFIC SIGNAL INSTALLATION AND SHALL NOT BE MEASURED AND PAID SEPARATELY.
- 3. NEW CABINET LOCATIONS FOR CONTROLLERS AND POWER METER ASSEMBLIES SHALL BE CONFIRMED IN THE FIELD BY THE CITY & COUNTY OF DENVER TRANSPORTATION AND MOBILITY DEPARTMENT PRIOR TO INITIATING FOUNDATION WORK FOR THE NEW ITEMS.
- 4. FIVE INCH SOLID BLACK BACKPLATES SHALL BE FURNISHED BY THE CONTRACTOR AND INSTALLED ON ALL TRAFFIC SIGNAL HEADS WHICH ARE SO LABELED ON THE PLANS. BACKPLATES SHALL BE CONSIDERED INCLUDED IN THE UNIT PRICE FOR TRAFFIC SIGNAL HEADS AND WILL NOT BE MEASURED AND PAID SEPARATELY. BACKPLATES SHALL NOT BE INSTALLED ON THOSE POLE-MOUNTED HEADS INSTALLED ON TWO-WAY SPACERS.
- 5. ALL SIGNAL HEADS AND HARDWARE INCLUDING SPACERS, ELBOWS, PLUMBIZERS AND PLATES SHALL BE PAINTED DARK GREEN TO MATCH SIGNAL POLES IN CONFORMANCE WITH FEDERAL SPECIFICATION 14056.
- 6. ALL SURFACE MATERIALS INCLUDING LANDSCAPING AND SPRINKLER SYSTEMS WHICH ARE DISTURBED BY EXCAVATION AND BACKFILLING OPERATIONS SHALL BE REPLACED IN KIND EQUAL TO OR EXCEEDING ORIGINAL CONDITION AT NO ADDITIONAL COST TO THE PROJECT. ANY CONCRETE INCLUDING SIDEWALKS AND CURB RAMPS DAMAGED BY OPERATIONS OF THE CONTRACTOR SHALL BE REMOVED AND REPLACED TO THE NEAREST EXISTING JOINT AT NO ADDITIONAL COST TO THE PROJECT.
- 7. ALL NEW CONTROLLER CABINETS SHALL INCLUDE LIGHTWEIGHT POLYMER CONCRETE BASE SIZED FOR A NEMA P-44 CABINET. SEE CITY STANDARD DRAWING 16.1.16. COST OF P-CABINET BASE SHALL BE CONSIDERED INCLUDED IN THE UNIT COST FOR THE CABINET AND WILL NOT BE MEASURED AND PAID SEPARATELY.
- 8. PAY ITEM FOR PEDESTRIAN PUSH BUTTON SHALL INCLUDE INFORMATION SIGN AS PER CITY STANDARDS.

CONDUIT AND PULL BOXES:

- 9. ALL NEW CONDUIT CROSSING EXISTING STREETS SHALL BE DIRECTIONALLY BORED UNLESS OTHERWISE APPROVED BY THE ENGINEER. ALL NEW OFF-STREET CONDUITS SHALL BE TRENCHED OR BORED AT THE CONTRACTOR'S OPTION. ALL NEW CONDUITS SHALL BE MEASURED AND PAID AS ELECTRICAL CONDUIT (PLASTIC) REGARDLESS OF INSTALLATION METHOD.
- 10. DIRECTIONALLY BORED CONDUIT, IF APPROVED, SHALL BE SCHEDULE 80 HDPE. ALL OTHER CONDUIT SHALL BE SCHEDULE 80 PVC OR HDPE.
- 11. ALL PULL BOXES TO BE PROVIDED SHALL BE SIZE A, B OR C AS DEPICTED IN CITY STANDARD DRAWING 16.1.7. SIZE A PULL BOXES SHALL BE MEASURED AND PAID AS TYPE ONE PULL BOX. SIZE B PULL BOXES SHALL BE MEASURED AND PAID AS TYPE TWO PULL BOX. SIZE C PULL BOXES SHALL BE MEASURED AND PAID AS TYPE THREE PULL BOX.

DETECTION ITEMS:

- 12. FIRE PREEMPTION UNIT AND TIMER SHALL APPLY TO THOSE INTERSECTIONS WHERE NO CURRENT FIRE PREEMPTION SYSTEM IS IN PLACE. THE ITEM SHALL INCLUDE OPTICAL DETECTORS FOR ALL INTERSECTION APPROACHES AND ALL REQUIRED IN—CABINET EQUIPMENT AT EACH INTERSECTION.
- 13. FIRE PREEMPTION UNIT SHALL APPLY TO THOSE INTERSECTIONS WHERE A CURRENT FIRE PREEMPTION SYSTEM IS IN PLACE. THE ITEM SHALL INCLUDE FURNISH AND INSTALLATION OF NEW OPTICAL DETECTORS FOR ALL APPROACHES SO INDICATED IN THE PLANS.
- 14. AS APPLICABLE, CONTRACTOR SHALL FIELD VERIFY CAMERA LOCATIONS AND ANGLES WITH CITY & COUNTY OF DENVER TRANSPORTATION AND MOBILITY STAFF PRIOR TO INSTALLATION OF DETECTION EQUIPMENT AND MOUNTING HARDWARE THERETO. CONTRACTOR SHALL COORDINATE SET—UP, DEBUGGING AND VERIFICATION OF VIDEO PHASE DETECTION WITH CITY FORCES DURNING INSTALLATION OF THE VIDEO DETECTION SYSTEM. THIS REQUIREMENT APPLIES TO BOTH NEW AND CAMERA INSTALLATIONS.

INTERSECTION POWER:

- 15. ALL NEW TRAFFIC SIGNALS SHALL BE PROVIDED WITH NEW POWER SOURCES BY XCEL ENERGY. LABOR AND MATERIALS TO PROVIDE FEED, CONNECT, EXTEND TO OR OTHERWISE FACILITATE POWER SERVICE AT THE INTERSECTION ARE CONSIDERED INCLUDED IN THE CONTRACTOR'S WORK AND WILL NOT BE MEASURED AND PAID SEPARATELY. IN SOME CASES, THE EXISTING POWER SOURCE MAY BE RETAINED.
- 16. POWER METER ASSEMBLY IS REQUIRED AT NEW TRAFFIC SIGNAL LOCATIONS. ITEM SHALL BE MEASURED AND PAID UNDER SECTION 613 AS SECONDARY SERVICE PEDESTAL. XCEL ENERGY WILL FURNISH AND INSTALL THE METER. CONTRACTOR SHALL FURNISH AND INSTALL THE METER PEDESTAL. WORK SHALL BE IN ACCORDANCE WITH DENVER SIGNAL STANDARD DRAWING NO. 16.1.19 AND 16.1.20.
- 17. SEPARATE POWER FEEDS SHALL BE PROVIDED FOR TRAFFIC SIGNALS AND STREET LIGHTING CIRCUITS.

POLE FOUNDATIONS (GENERAL):

- 18. CONTRACTOR SHALL HAVE THE OPTION OF DRILLING OR VACUUMING EXCAVATION AREAS FOR NEW TRAFFIC SIGNAL POLE CAISSONS DEPENDING UPON SITE CONDITIONS AND APPARENT UTILITY CONFLICTS SPECIFIC TO EACH NEW POLE LOCATION. CONTRACTOR MAY BE DIRECTED TO USE ONE METHOD OVER THE OTHER BY THE ENGINEER. ALL CAISSONS FOR MAST ARM POLES SHALL BE MEASURED BY THE LINEAR FOOT AND PAID UNDER SECTION 614 AS CAISSON (SPECIAL), REGARDLESS OF INSTALLATION METHOD.
- 19. PEDESTAL POLE FOUNDATIONS FOR TRAFFIC SIGNALS OR SCHOOL FLASHING BEACONS SHALL BE IN ACCORDANCE WITH CITY STANDARD DRAWING 16.1.13. COST OF PEDESTAL POLE FOUNDATIONS AND FLASHING BEACON FOUNDATIONS SHALL BE CONSIDERED INCLUDED IN THE UNIT COST OF THE PEDESTAL POLE OR BEACON ASSEMBLY AS APPLICABLE AND WILL NOT BE MEASURED AND PAID SEPARATELY.
- 20. FOUNDATIONS FOR NEW STREET LIGHT POLES, STREET LIGHT POLES TO BE RESET, OR TRAFFIC SIGNAL POLES WITH STREET LIGHTS BUT NO MAST ARM SHALL BE MEASURED AND PAID BY THE NUMBER EACH OF SUCH INSTALLATIONS AND PAID UNDER SECTION 613 AS LIGHT STANDARD FOUNDATION. SEE CITY STANDARD DRAWING 16.1.15. NOTE THAT INSTALLATION REQUIREMENTS DIFFER FOR STREET LIGHT POLES VERSUS TRAFFIC SIGNAL POLES WITH NO MAST ARM.
- 21. CONTRACTOR SHALL INSTALL FOUNDATIONS FOR NEW POLES TO BE INSTALLED BY XCEL ENERGY AND RAKE THE POLES FOLLOWING INSTALLATION OF LUMINAIRE ARM, LUMINAIRES, MAST ARMS AND ALL SIGNAL EQUIPMENT AND SIGNS BY XCEL AND CONTRACTOR FORCES. BASE PLATE, ANCHOR BOLTS, NUTS AND NUT COVERS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. POLE RAKE SHALL INCLUDE PROVISION OF A TRUE VERTICAL AFTER LOADING. FOUNDATION WORK SHALL INCLUDE GROUTING BY THE CONTRACTOR AFTER POLE RAKE IS APPROVED. THIS WORK SHALL BE MEASURED AND PIAD UNDER CAISSON (SPECIAL).

POLE REMOVALS (ALL EXISTING TRAFFIC SIGNAL LOCATIONS):

- 22. XCEL ENERGY OWNS ALL EXISTING POLES, LUMINAIRE ARMS AND LUMINAIRES WITHIN THE PROJECT LIMITS HOWEVER THE CITY OWNS ALL EXISTING MAST ARMS. WHERE EXISTING MAST ARM OR SPAN—WIRE POLES ARE TO BE REMOVED, CONTRACTOR SHALL DETACH ALL EXISTING SIGNAL AND PEDESTRIAN HEADS, PUSH BUTTONS, DETECTION UNITS, MAST ARMS AND ASSOCIATED MOUNTING HARDWARE. XCEL ENERGY FORCES WILL PHYSICALLY REMOVE THE REMAINING POLE. THE CONTRACTOR SHALL THEN REMOVE PORTIONS OF THE EXISTING FOUNDATION TO A MINIMUM DEPTH OF 1' BELOW PROPOSED FINISH GRADE. ALL REMOVAL WORK IS INCLUDED IN THE LUMP SUM PRICE FOR REMOVAL OF TRAFFIC SIGNAL EQUIPMENT.
- 23. IN SOME LOCATIONS WITHIN THE PROJECT LIMITS, EXISTING POLES AND SPAN WIRE INSTALLATIONS MAY REMAIN TO PROVIDE STREET LIGHTING.

NEW POLES TO BE FURNISHED BY CITY & COUNTY OF DENVER (19TH AT BROADWAY, LINCOLN, CLARKSON AND PARK; 20TH AT PARK):

24. THE CITY SHALL FURNISH ALL POLES, LUMINAIRE ARMS AND MAST ARMS AT THESE LOCATIONS. CONTRACTOR SHALL INSTALL:

1] ALL REQUIRED POLE FOUNDATIONS, WITH WORK MEASURED AND PAID AS CAISSON (SPECIAL); 2] LUMINAIRES, WITH WORK MEASURED AND PAID UNDER THE LUMINAIRE PAY ITEM; AND 3] MAST ARMS, WITH WORK INCLUDED IN THE UNIT COST FOR POLE INSTALLATION. ALL REQUIRED COORDINATION AND SCHEDULING EFFORTS THAT MAY BE REQUIRED TO FACILITATE TIMELY DELIVERIES, PICK-UPS OR COMPLETION OF WORK BETWEEN THE FORCES OF THE CONTRACTOR AND THE CITY ARE CONSIDERED INCLUDED IN THE UNIT COST FOR THE POLE INSTALLATION AND WILL NOT BE MEASURED AND PAID SEPARATELY.

NEW POLES TO BE FURNISHED BY THE CITY & COUNTY OF DENVER (18TH AT LOGAN - BID ALTERNATE 2 ONLY):

25. SHOULD THE CITY ELECT TO CONSTRUCT BID ALTERNATE 2, THE CITY SHALL ORDER AND FURNISH POLES FOR THIS LOCATION FOLLOWING AWARD. ALL INSTALLATION SHALL BE IN ACCORDANCE WITH NOTE 24 ABOVE.

Print Date: 1/8/2017 File Name: signal03-notes.dgn Horiz. Scale: 1:1 City Project Manager Kim D. Blair 17877 W. 53rd Drive Golden, CO 80403 720-943-0955 Sheet Revisions Date: Comments



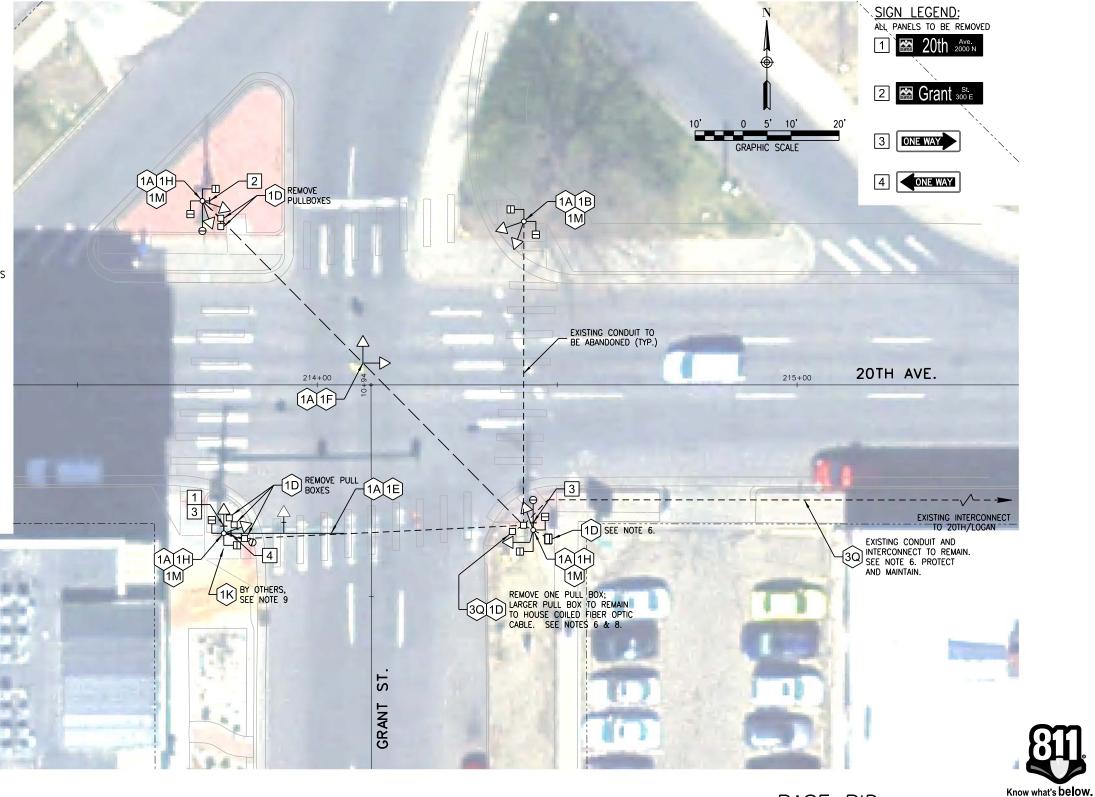
DEPARTMENT OF PUBLIC WORKS

S	As Constructed	19TH & 20TH TWO TRAFFIC SI	Project Number	
-	No Revisions:		L NOTES	2015-PROJMSTR-0000631
	Revised:	Designer: S. Sabinash	Structure Numbers	FOR AD
	Void:	Detailer: J. Mills Sheet Subset: TS	Subset Sheets: 3 of 28	Sheet Number 178

NOTES:

- 1. EXISTING CABINET BASE SHALL BE REMOVED.
- EXISTING TRAFFIC SIGNAL CONDUIT SHALL BE ABANDONED. EXISTING COMMUNICATIONS CONDUIT AND ASSOCIATED PULL BOXES SHALL BE MAINTAINED.
- 3. EXISTING PEDESTAL POLE FOUNDATIONS SHALL BE REMOVED IN THEIR ENTIRETY. EXISTING TRAFFIC SIGNAL-LIGHT POLE FOUNDATIONS SHALL BE REMOVED TO MINIMUM DEPTH OF 1' BELOW FINISHED GRADE.
- 4. ALL REMOVED TRAFFIC SIGNAL EQUIPMENT EXCEPT LUMINAIRES, LUMINAIRE ARMS, AND TRAFFIC SIGNAL LIGHT POLES (SPAN-WIRE OR MAST ARM TYPE) SHALL BE DELIVERED TO DENVER TRAFFIC OPERATIONS AT 5400 ROSYLN STREET.
- 5. LUMINAIRES, LUMINAIRE ARMS AND TRAFFIC SIGNAL-LIGHT POLES (SPAN-WIRE OR MAST ARM TYPE) SHALL BE REMOVED BY XCEL ENERGY. CONTRACTOR SHALL COORDINATE AS REQUIRED WITH XCEL ENERGY TO SCHEDULE ACTIVITIES AND FACILITATE TIMELY REMOVAL OF EXISTING POLES.
- 6. AS APPLICABLE, PRIOR TO REMOVING EXISTING CABINET, CONTRACTOR SHALL DISCONNECT FIBER OPTIC LATERALS FROM EXISTING CONTROLLER AND PULL SAID CABLES BACK INTO ADJACENT SIGNAL OR COMMUNICATIONS PULL BOX, WHERE THEY SHALL BE CAPPED AND COILED NEATLY FOR FUTURE USE BY THE CITY. ALL COMMUNICATIONS EQUIPMENT WITHIN THE EXISTING CABINET TO BE REMOVED SHALL BE CONSIDERED SALVAGEABLE MATERIAL AND SHALL BE RETURNED TO THE CITY ALONG WITH THE EXISTING CABINET.
- 7. REMOVAL OF TRAFFIC SIGNAL EQUIPMENT SHALL BE PAID ON A LUMP SUM BASIS AND SHALL REQUIRE PHYSICAL DISCONNECTION, DISASSEMBLY AND REMOVAL OF THE INDICATED ITEMS. DISPOSAL OF NON-SALVAGEABLE MATERIAL INCLUDING REMOVED FOUNDATIONS, SPAN WIRE AND RELATED ITEMS; BACKFILL OF EXCAVATED REMOVAL AREAS; SURFACE RESTORATION OF AREAS DISTURBED BY THE REMOVAL ACTIVITIES; AND DELIVERY OF SALVAGED ITEMS TO THE CITY MAINTENANCE YARD SHALL BE CONSIDERED INCLUDED IN THE LUMP SUM COST AND WILL NOT BE MEASURED AND PAID SEPARATELY.
- 8. ALL FIBER OPTIC WORK SHALL BE PAID UNDER RESET WIRING.

 CCTV CAMERA ON SOUTHWEST CORNER OF 20TH & GRANT SHALL BE REMOVED BY THE CITY. COORDINATE CCTV REMOVAL SCHEDULE WITH LANDREE SNYDER AT 720-337-1193. IN CABINET CCTV EQUIPMENT SHALL BE RETURNED TO THE CITY AS PART OF THE CABINET REMOVAL.



SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
202	REMOVAL OF SIGN PANEL	EA	5
202	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	LS	1
210	RESET WIRING	EA	1

BASE BID

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No Revisions:		& GRANT ST.	2015-PROJMSTR-0000631
Revised:	Designer: S. Sabinash	1 —	FOR AD
Void:	Detailer: J. Mills Sheet Subset: TS	Numbers Subset Sheets: 4 of 28	Sheet Number 179

Print Date: 12/1/2016		Sheet Revisions	
File Name: signal04—20th_grant—removal.dgn	Date:	Comments	
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City Project Manager Kim D. Blair			
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Transportation Engineering 720-943-0955			



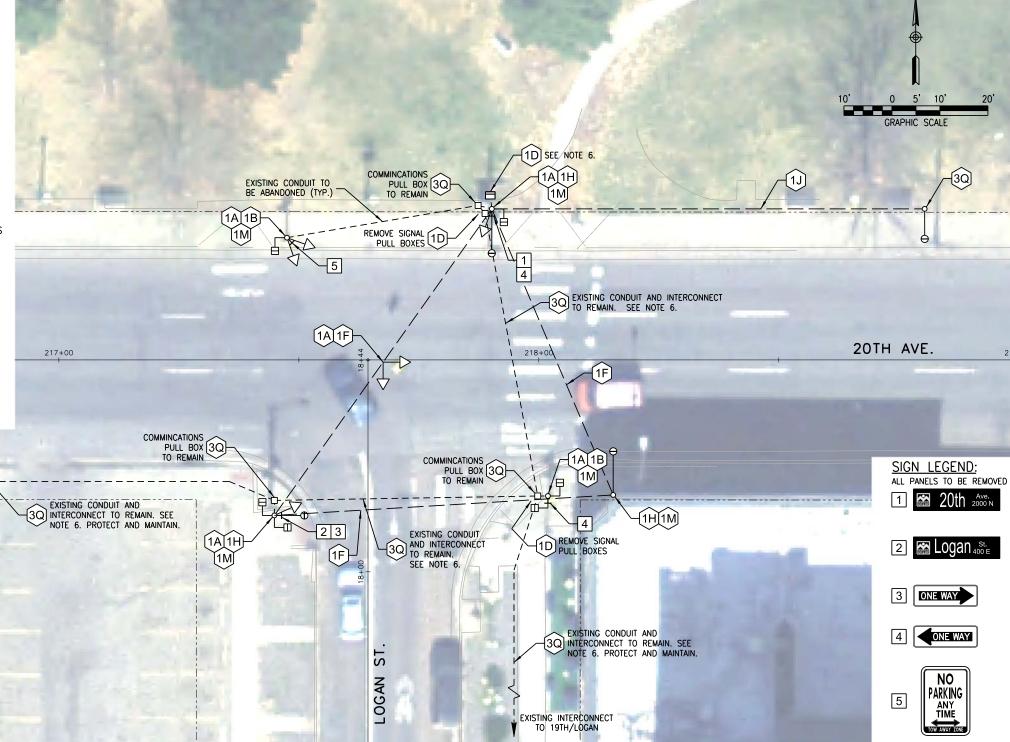
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- 3. EXISTING PEDESTAL POLE FOUNDATIONS SHALL BE REMOVED IN THEIR ENTIRETY. EXISTING TRAFFIC SIGNAL-LIGHT POLE FOUNDATIONS SHALL BE REMOVED TO MINIMUM DEPTH OF 1' BELOW FINISHED GRADE.
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8. ALL FIBER OPTIC WORK SHALL BE PAID UNDER RESET WIRING.

EXISTING INTERCONNECT

TO 20TH/GRANT



SUMMARY OF QUANTITIES	;
DESCRIPTION	10

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
202	REMOVAL OF SIGN PANEL	EA	6
202	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	LS	1
210	RESET WIRING	EA	1

BASE BID

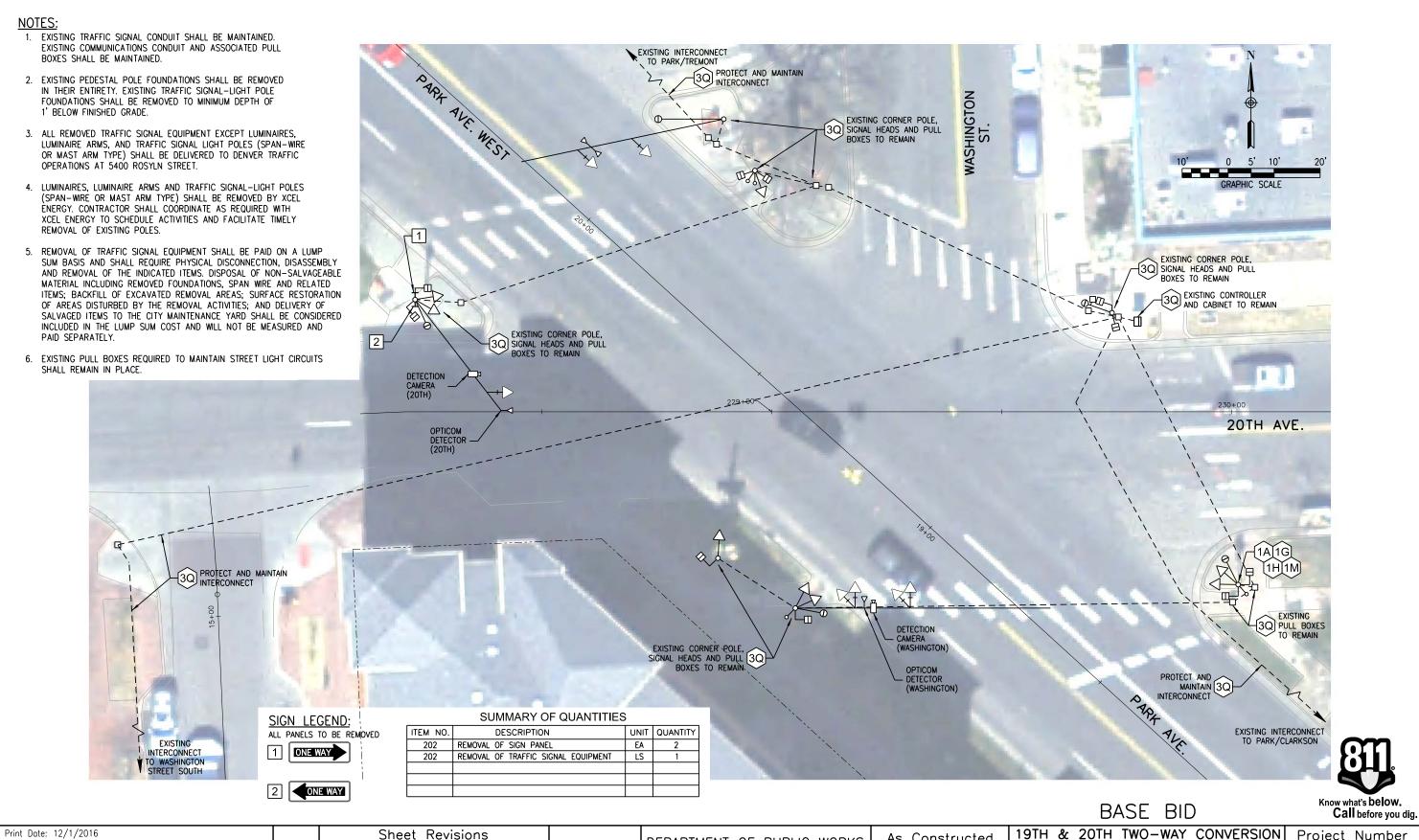
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City Project Manager Kim D. Blair			Γ	
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403				
ACL Inc. Golden, CO 80403 720-943-0955			Г	



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No Revisions:		& LOGAN ST.	2015-PROJMSTR-0000631				
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	Detailer: J. Mills	Numbers					
Void:	Sheet Subset: TS	Subset Sheets: 5 of 28	Sheet Number 180				



File Name: signal06-20th_park-removal.dgn

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Sheet Revision

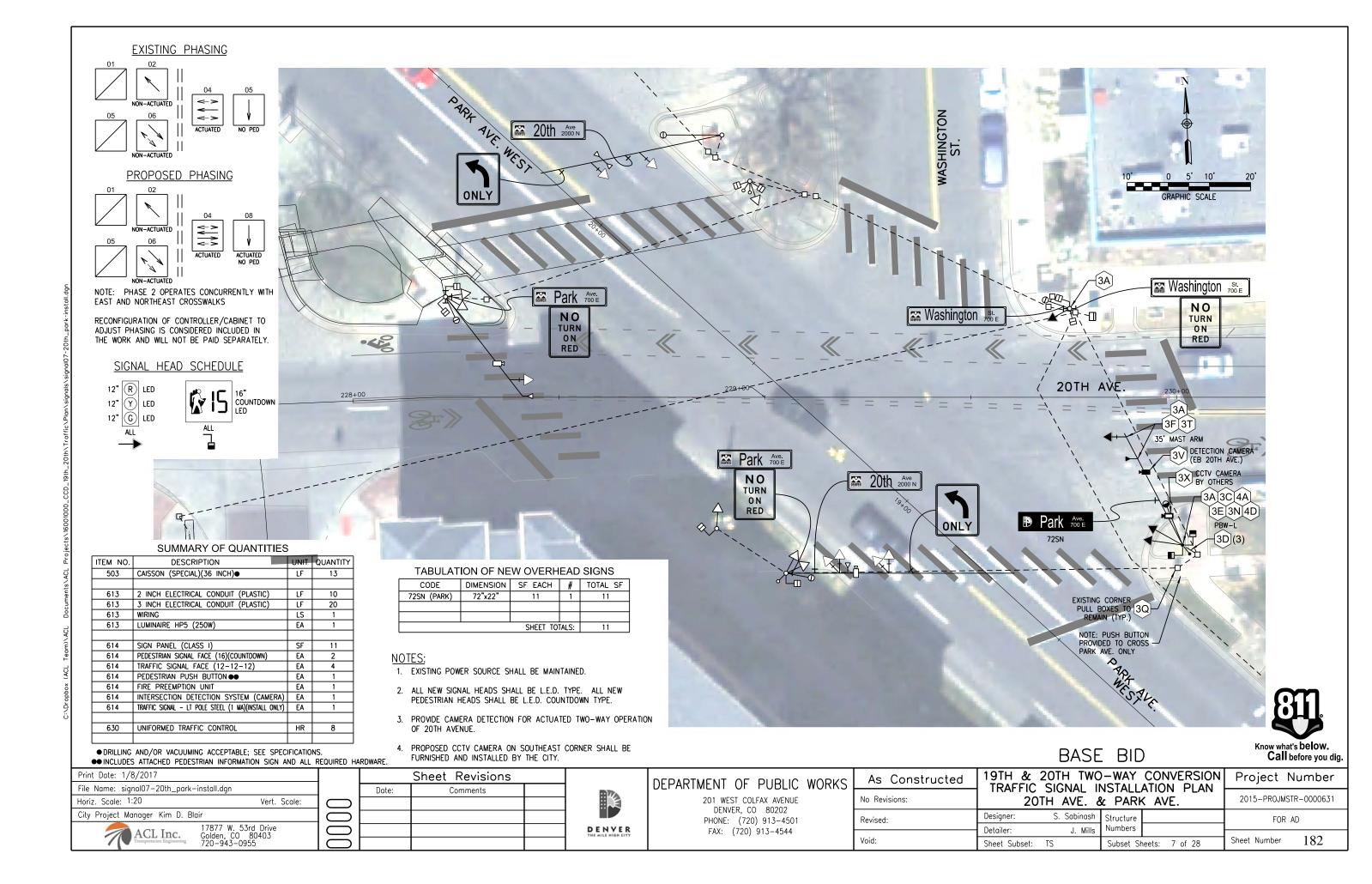
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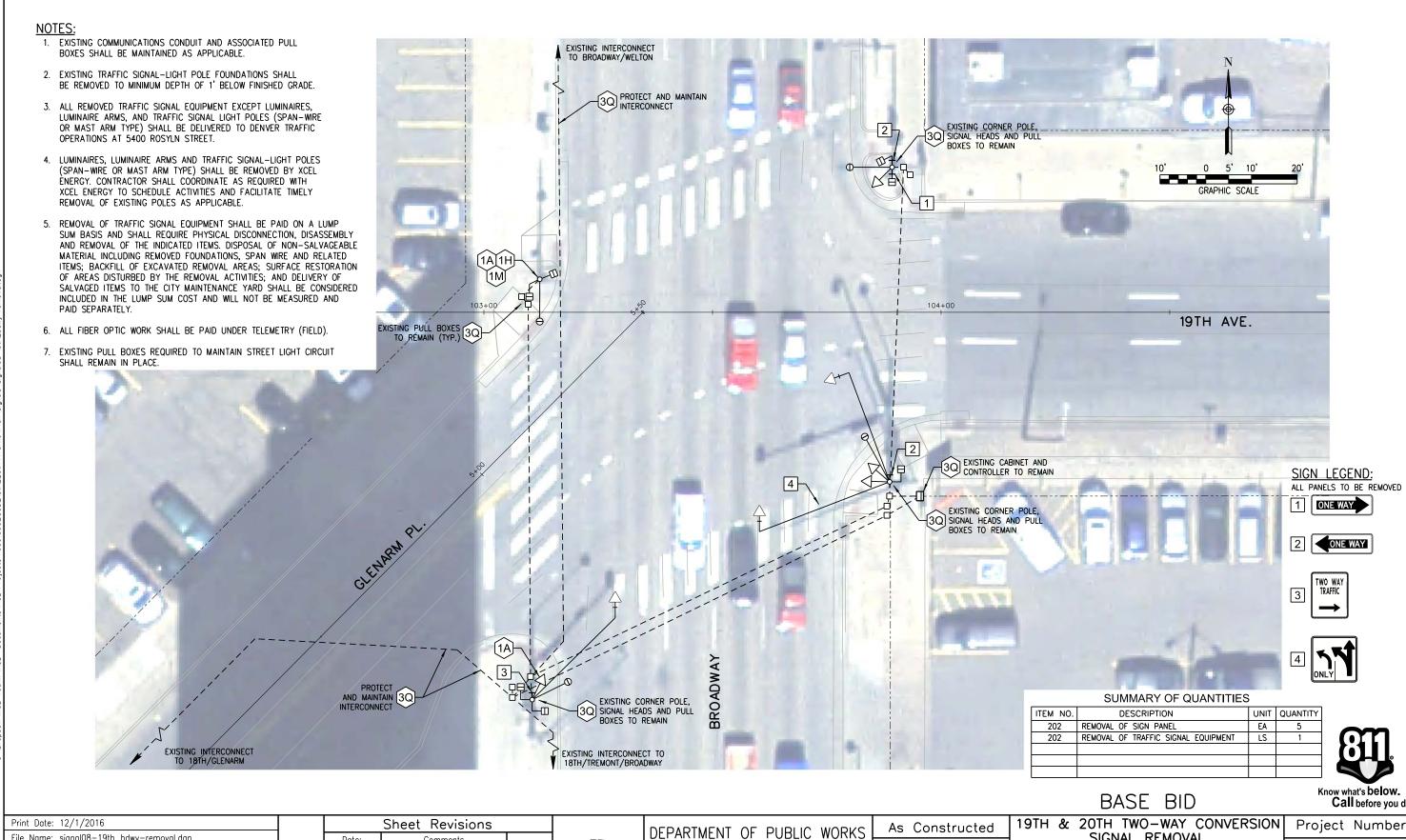


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201 WEST COLFAX AVENUE

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FAX:	(720) 9	913-4544

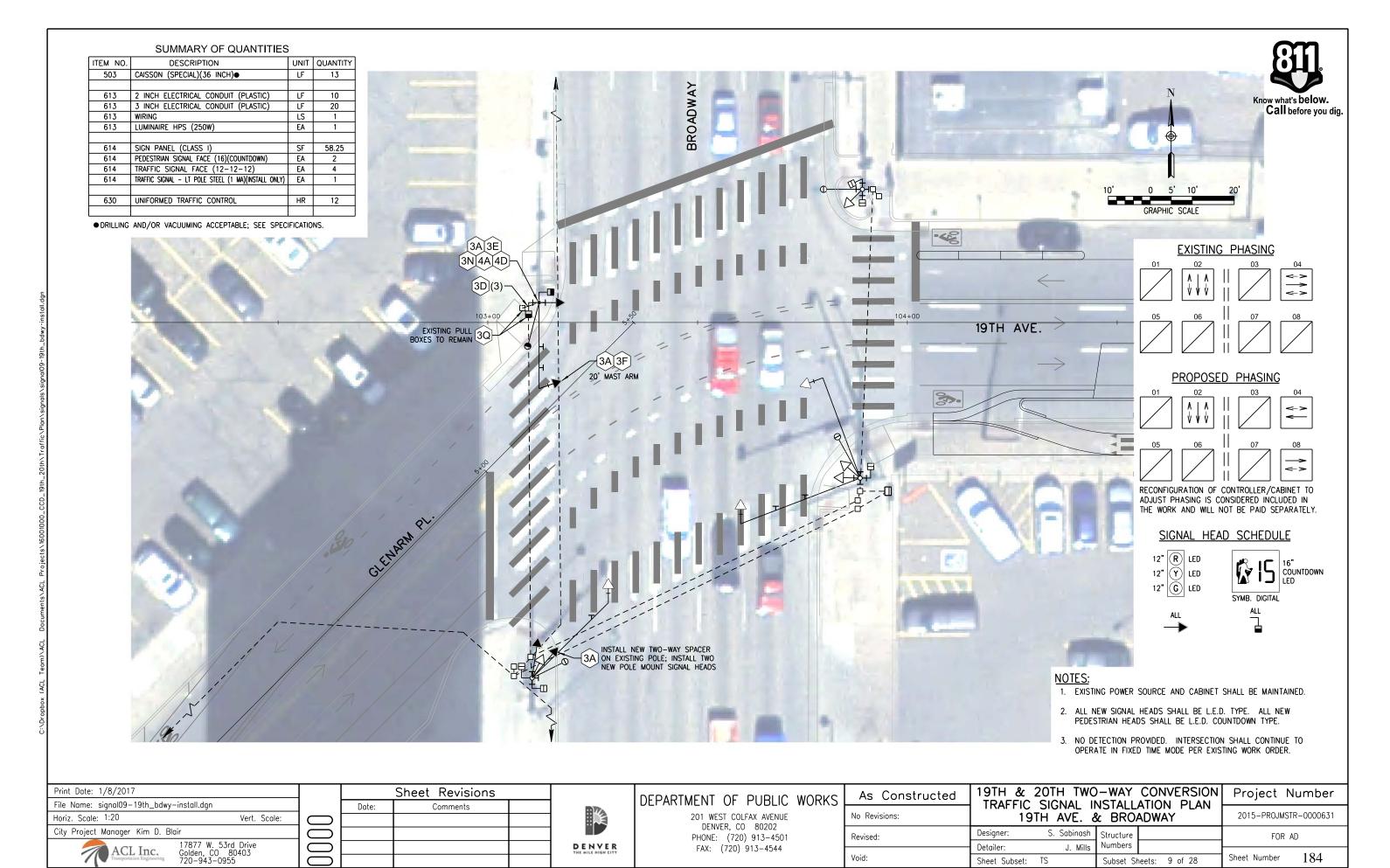
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	Detailer: J. Mills	Numbers	
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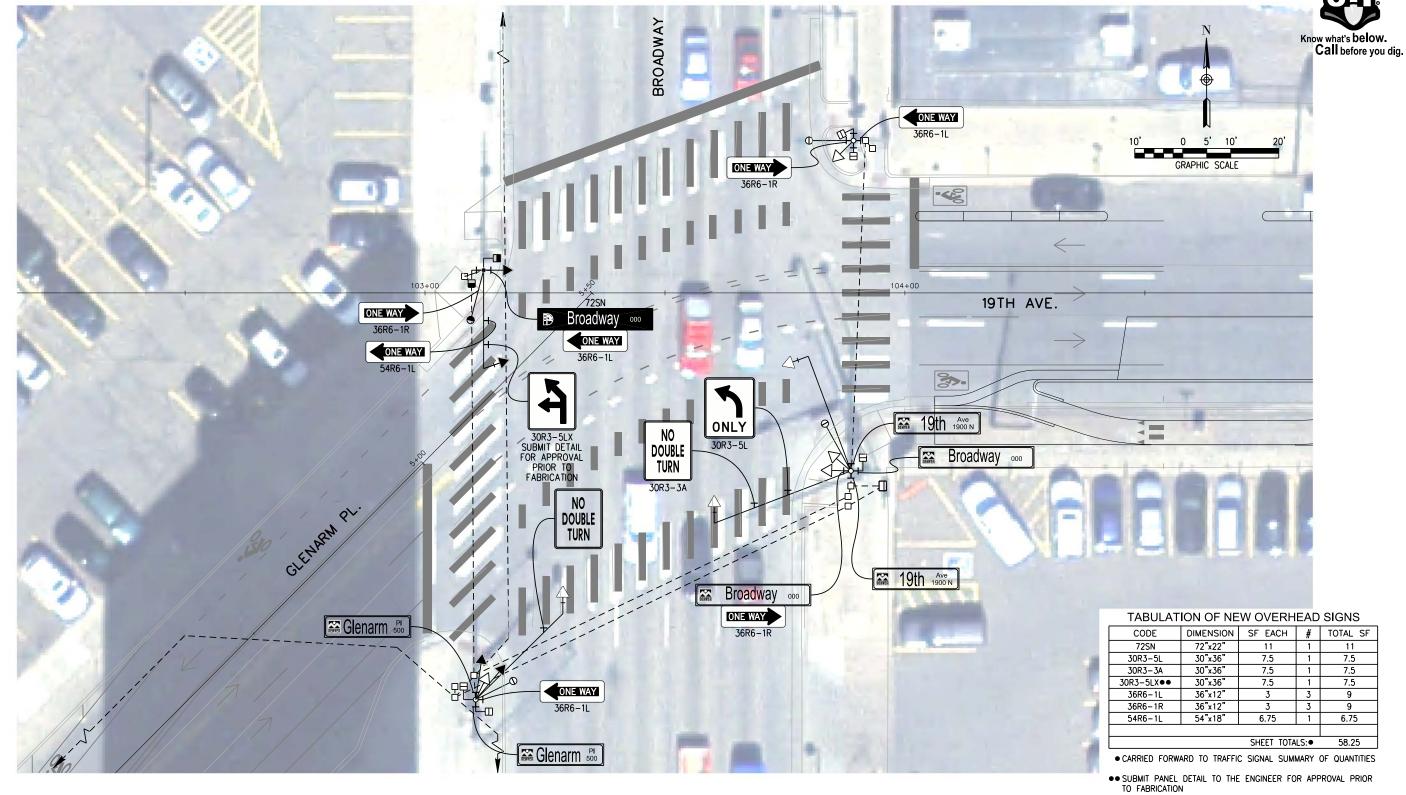




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No Revisions:		& BROADWAY	2015-PROJMSTR-0000631		
Revised:	Designer: S. Sabinash Detailer: J. Mills	Structure Numbers	FOR AD		
Void:	Sheet Subset: TS	Subset Sheets: 10 of 28	Sheet Number 185		

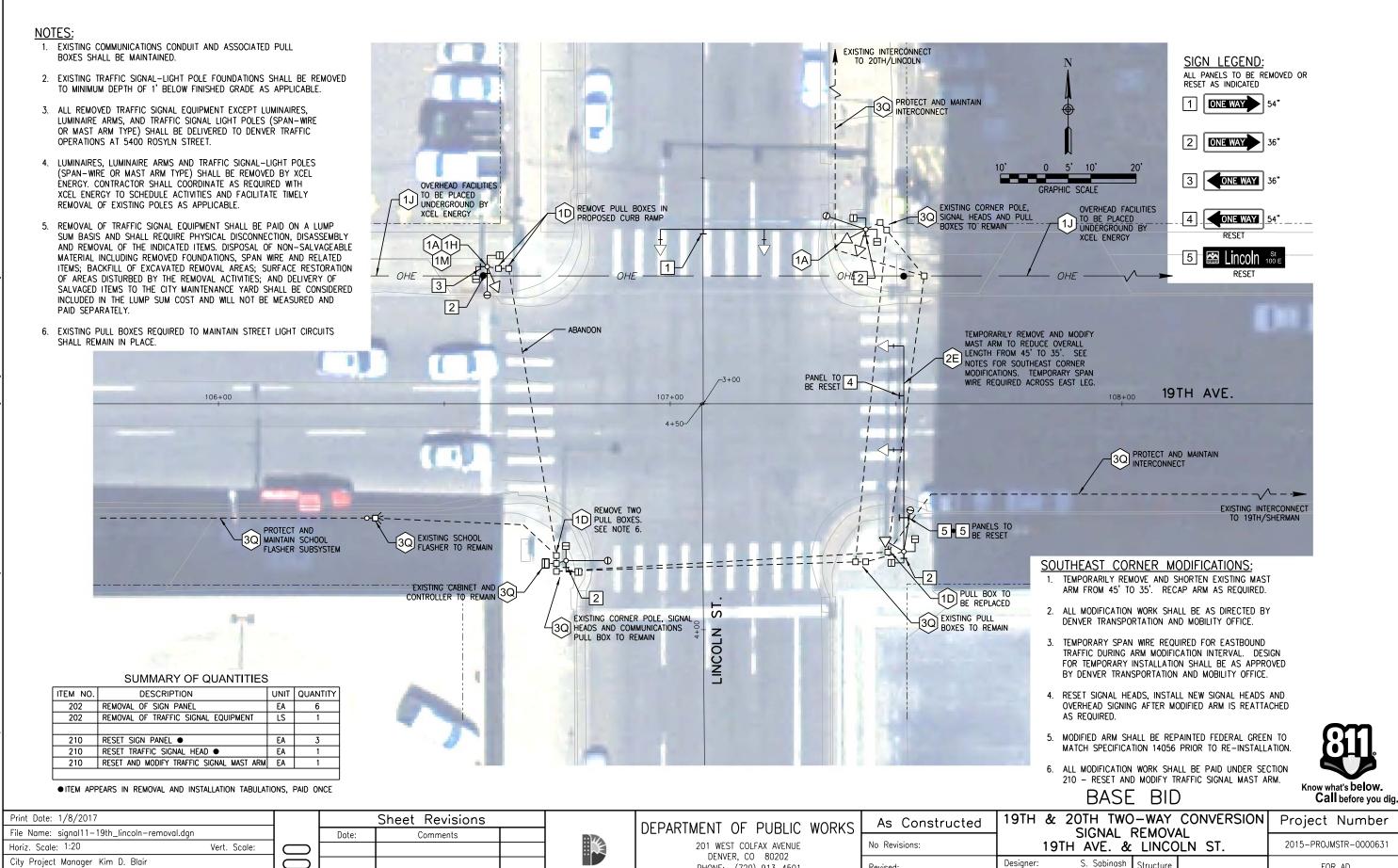
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File Name: signal10-19th_bdwy-signs.dgn

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S. Sabinash

TS

J Mills

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Numbers

Subset Sheets: 11 of 28

FOR AD

Sheet Number

186

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Detailer:

Sheet Subset:

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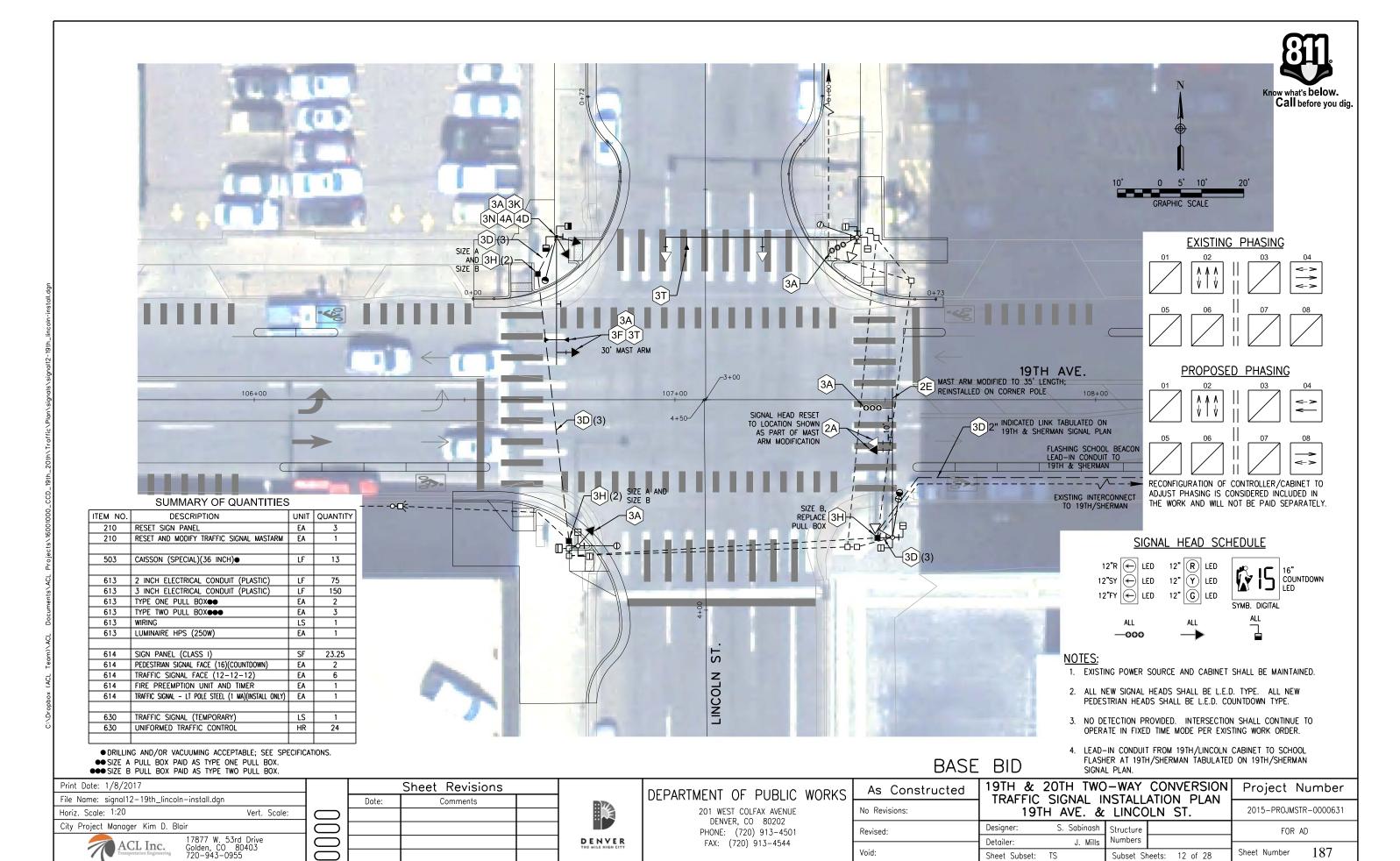
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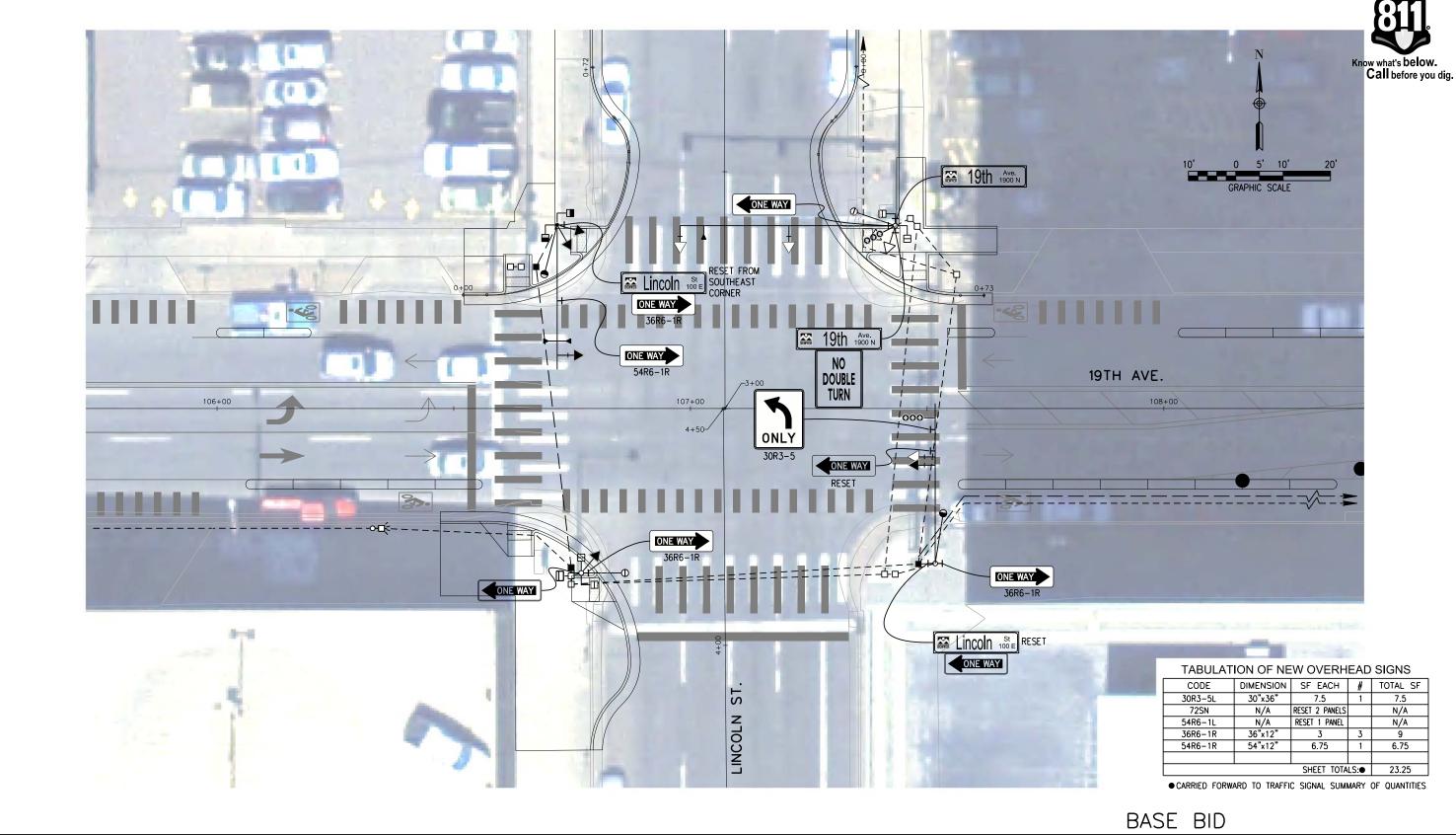
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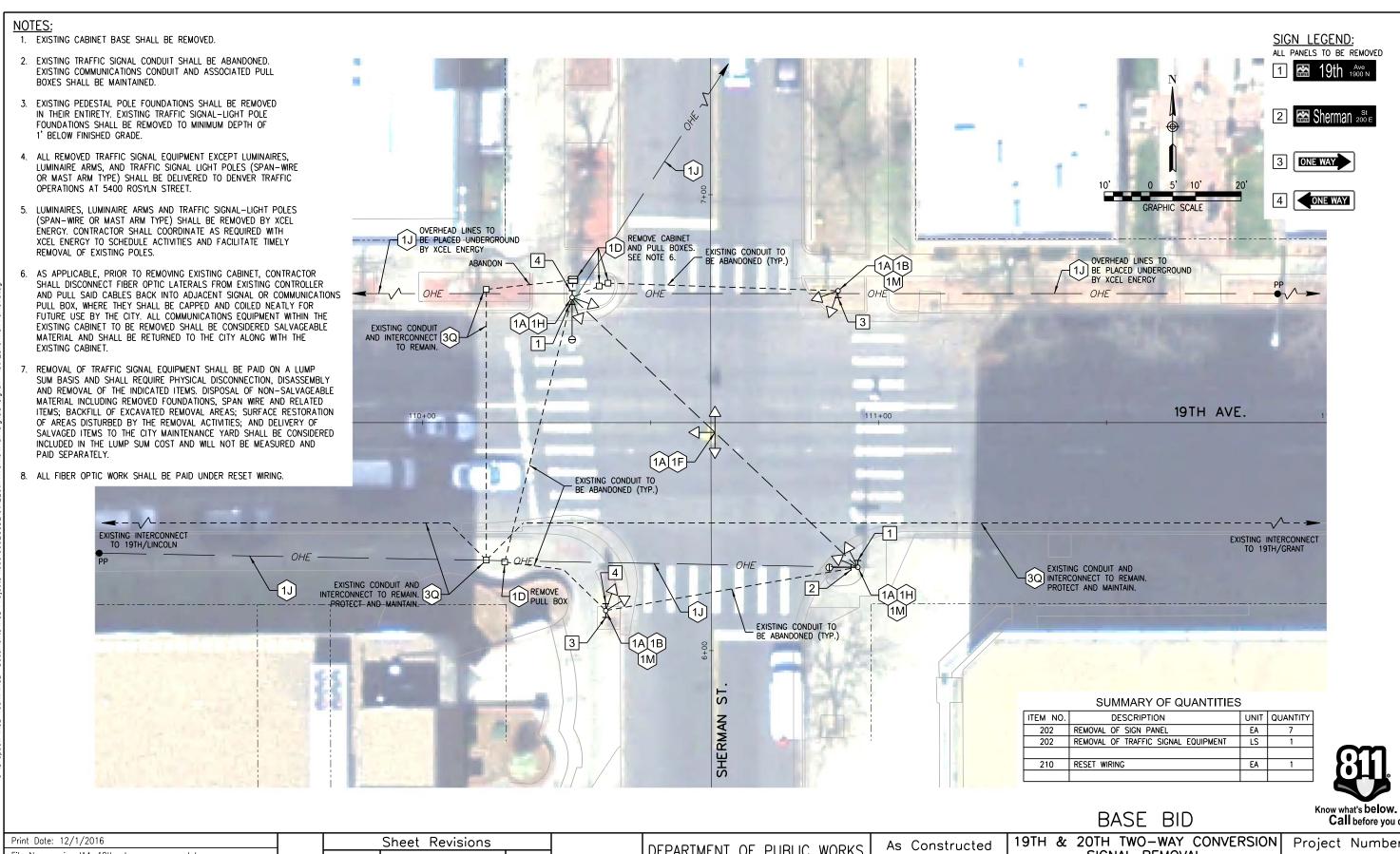
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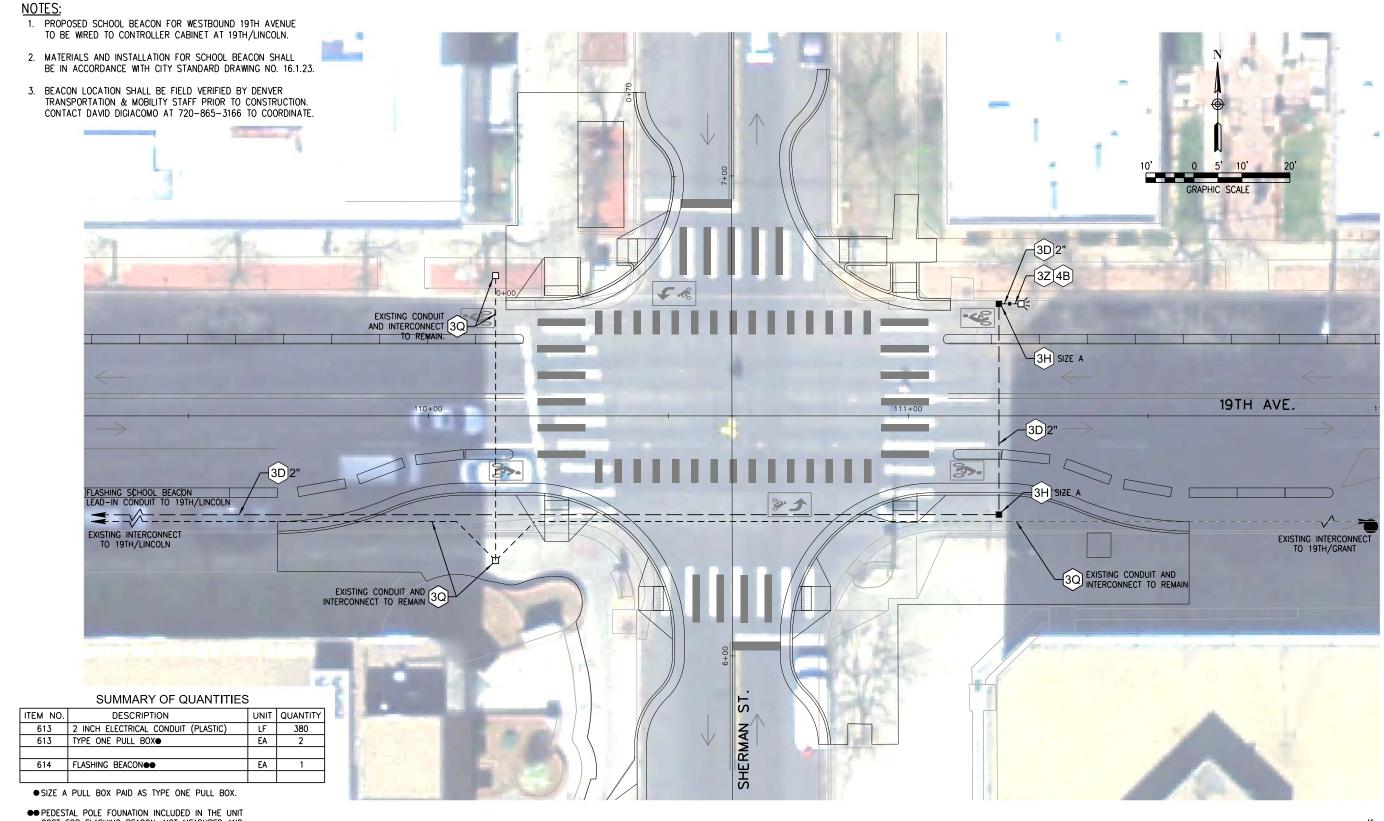


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City Project Manager Kim D. Blair				DENVER, CO 80202 PHONE: (720) 913–4501	Revised:	Designer: S. Sabinash	Structure	FOR AD
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955			DENVER THE MILE HIGH CITY	FAX: (720) 913-4544		Detailer: J. Mills	Numbers	
ACL Inc. Golden, CO 80403 720-943-0955			THE MILE HIGH CITY	, ,	Void:	Sheet Subset: TS	Subset Sheets: 13 of 28	Sheet Number 188



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File Name: signal14—19th_sherman—removal.dgn	Date:	Comments		DEPARTMENT OF PUBLIC WORKS			REMOVAL	
Horiz. Scale: 1:20 Vert. Scale:				201 WEST COLFAX AVENUE	No Revisions:	19TH ST. &	SHERMAN ST.	2015-PROJMSTR-0000631
City Project Manager Kim D. Blair				DENVER, CO 80202 PHONE: (720) 913-4501	Revised:	Designer: S. Sabinash	Structure	FOR AD
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955			DENVER THE MILE HIGH CITY	FAX: (720) 913-4544		Detailer: J. Mills	Numbers	100
Transportation Engineering 720-943-0955					Void:	Sheet Subset: TS	Subset Sheets: 14 of 28	Sheet Number 189



 PEDESTAL POLE FOUNATION INCLUDED IN THE UNIT COST FOR FLASHING BEACON; NOT MEASURED AND PAID SEPARATELY.

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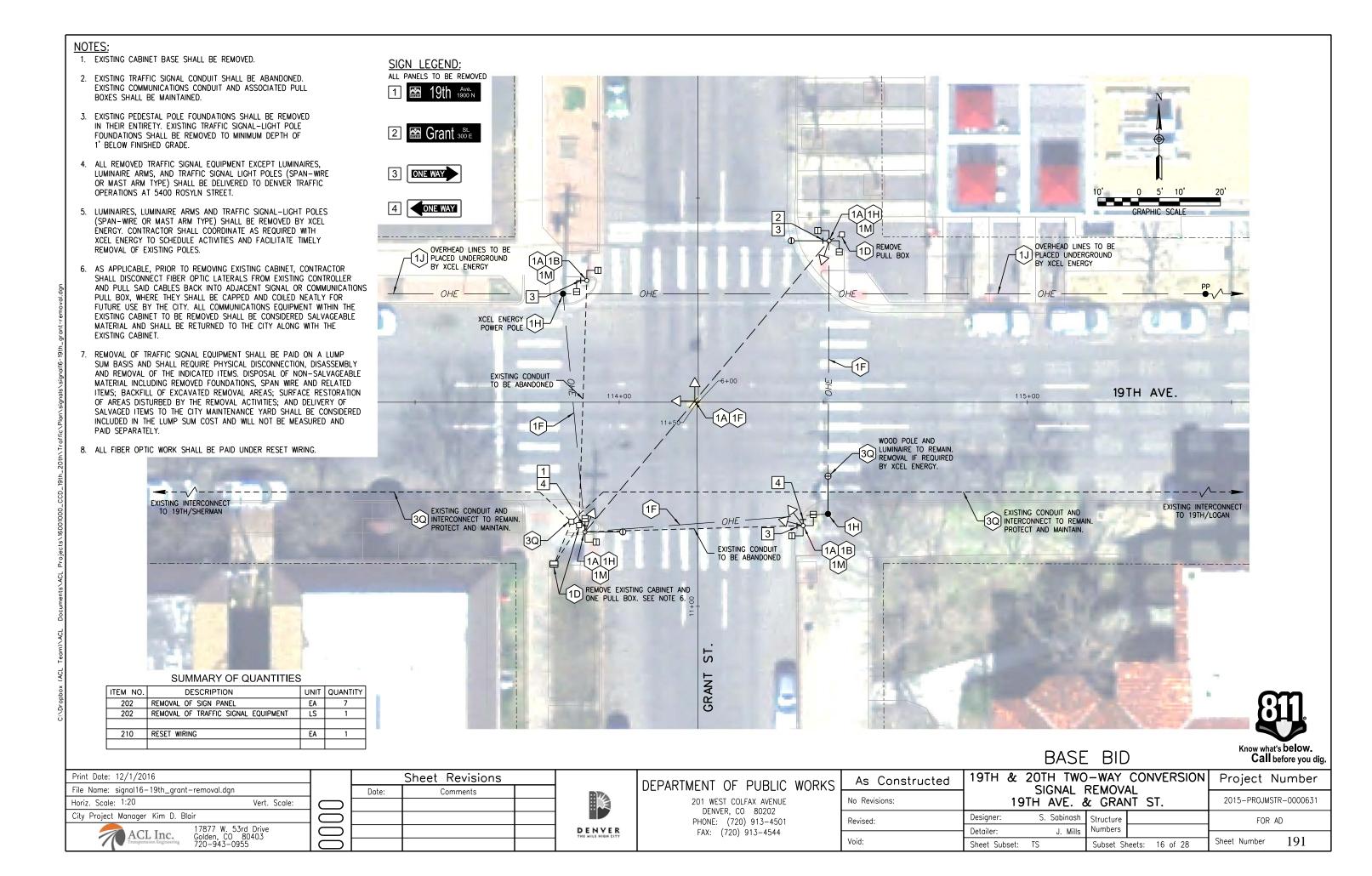
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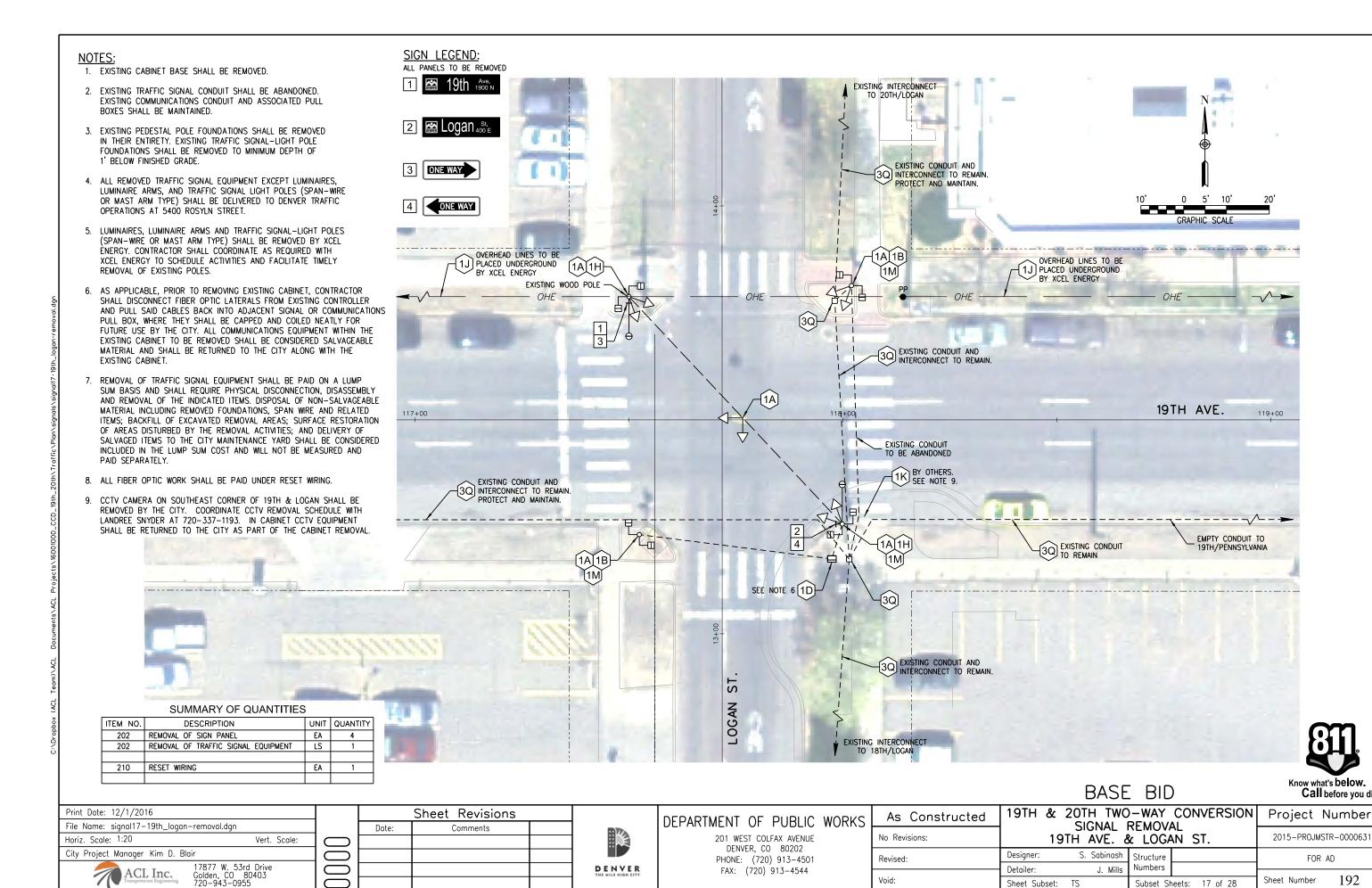
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Horiz. Scale: 1:20 Vert. Scale:			
City Project Manager Kim D. Blair			
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No Revisions:		SHERMAN ST.	2015-PROJMSTR-0000631	
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File Name: signal18–19th_clarkson-removal.dgn

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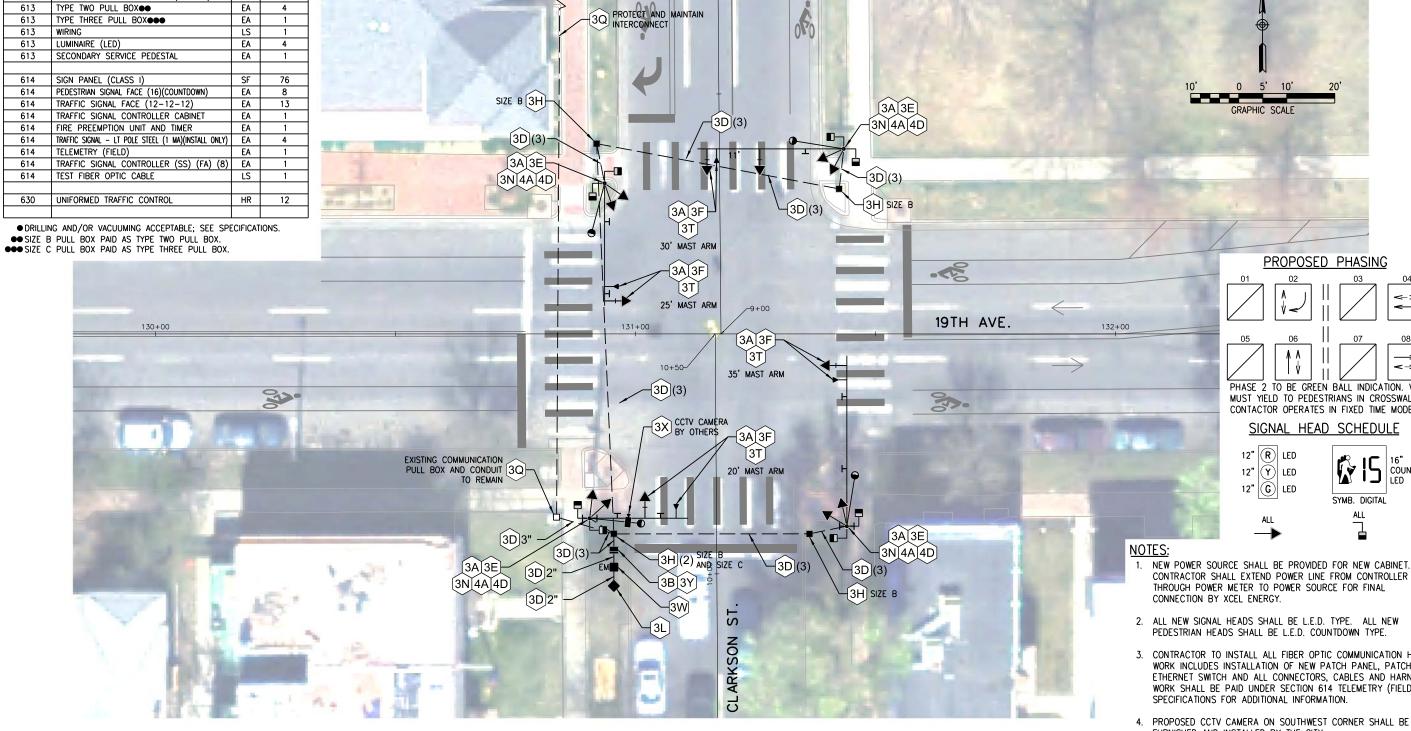
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No Revisions:		CLARKSON ST.	2015-PROJMSTR-0000631
Revised:	Designer: S. Sabinash		FOR AD
	Detailer: J. Mills	Numbers	
Void:	Sheet Subset: TS	Subset Sheets: 18 of 28	Sheet Number 193

SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
503	CAISSON (SPECIAL)(36 INCH)●	LF	52
613	2 INCH ELECTRICAL CONDUIT (PLASTIC)	LF	225
613	3 INCH ELECTRICAL CONDUIT (PLASTIC)	LF	450
613	TYPE TWO PULL BOX●●	EA	4
613	TYPE THREE PULL BOX	EA	1
613	WIRING	LS	1
613	LUMINAIRE (LED)	EA	4
613	SECONDARY SERVICE PEDESTAL	EA	1
614	SIGN PANEL (CLASS I)	SF	76
614	PEDESTRIAN SIGNAL FACE (16)(COUNTDOWN)	EA	8
614	TRAFFIC SIGNAL FACE (12-12-12)	EA	13
614	TRAFFIC SIGNAL CONTROLLER CABINET	EA	1
614	FIRE PREEMPTION UNIT AND TIMER	EA	1
614	TRAFFIC SIGNAL - LT POLE STEEL (1 MA)(INSTALL ONLY)	EA	4
614	TELEMETRY (FIELD)	EA	1
614	TRAFFIC SIGNAL CONTROLLER (SS) (FA) (8)	EA	1
614	TEST FIBER OPTIC CABLE	LS	1
630	UNIFORMED TRAFFIC CONTROL	HR	12

• DRILLING AND/OR VACUUMING ACCEPTABLE; SEE SPECIFICATIONS.



PROPOSED PHASING

PHASE 2 TO BE GREEN BALL INDICATION. VEHICLES MUST YIELD TO PEDESTRIANS IN CROSSWALK. CONTACTOR OPERATES IN FIXED TIME MODE.

SIGNAL HEAD SCHEDULE

12" (R) LED 12" (Y) LED 12" G LED

SYMB. DIGITAL

16" COUNTDOWN LED

Know what's below. Call before you dig.

CONTRACTOR SHALL EXTEND POWER LINE FROM CONTROLLER THROUGH POWER METER TO POWER SOURCE FOR FINAL CONNECTION BY XCEL ENERGY. 2. ALL NEW SIGNAL HEADS SHALL BE L.E.D. TYPE. ALL NEW

PEDESTRIAN HEADS SHALL BE L.E.D. COUNTDOWN TYPE.

- 3. CONTRACTOR TO INSTALL ALL FIBER OPTIC COMMUNICATION HARDWARE. WORK INCLUDES INSTALLATION OF NEW PATCH PANEL, PATCH CORDS, ETHERNET SWITCH AND ALL CONNECTORS, CABLES AND HARNESSES. WORK SHALL BE PAID UNDER SECTION 614 TELEMETRY (FIELD). SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- 4. PROPOSED CCTV CAMERA ON SOUTHWEST CORNER SHALL BE FURNISHED AND INSTALLED BY THE CITY.

BASE BID

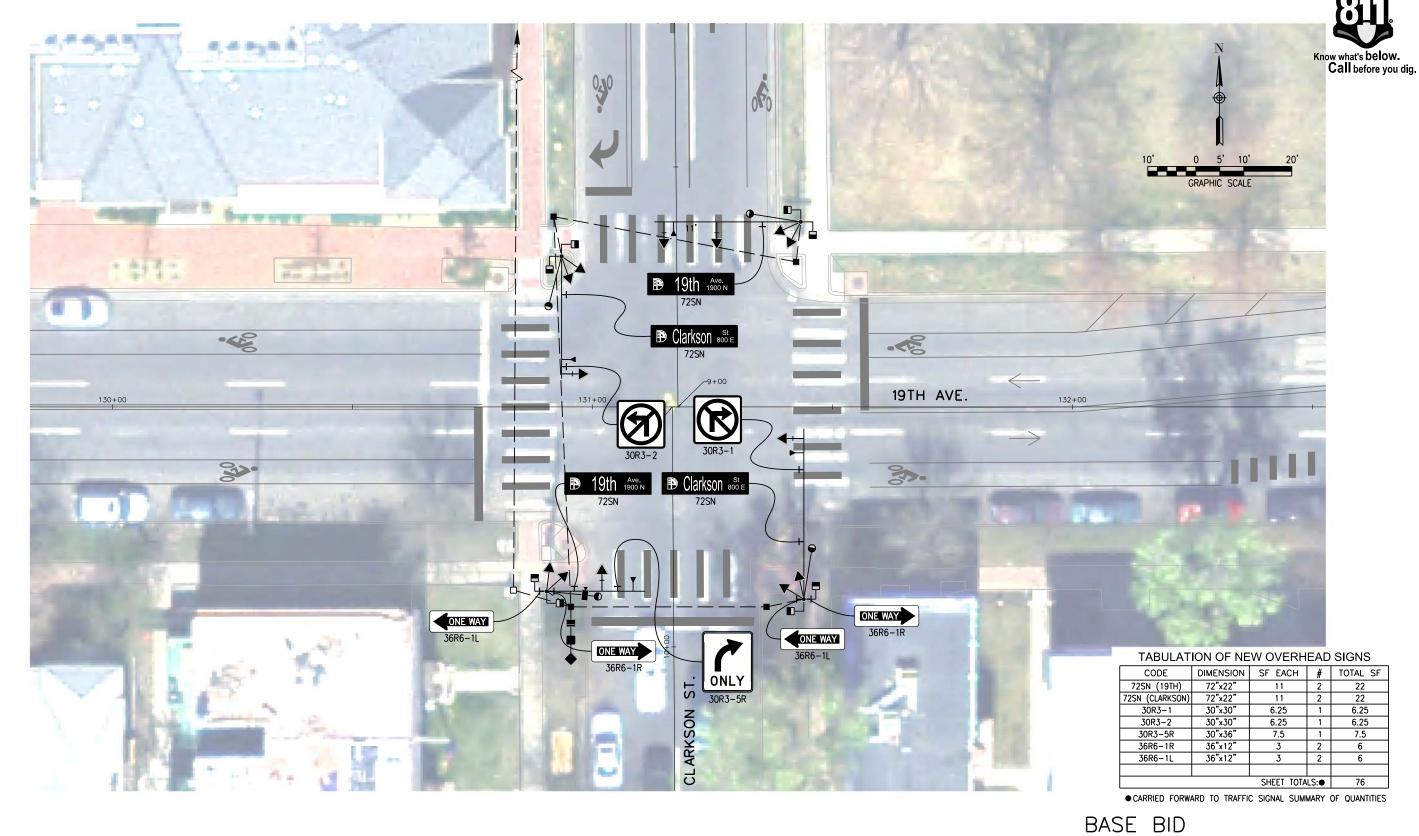
Print Date: 1/8/2017		Sheet Revisions
File Name: signal19—19th_clarkson—install.dgn	Date:	Comments
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Print Date: 1/8/2017

File Name: signal20–19th_clarkson-signs.dgn

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720–943–0955

Date: Comments

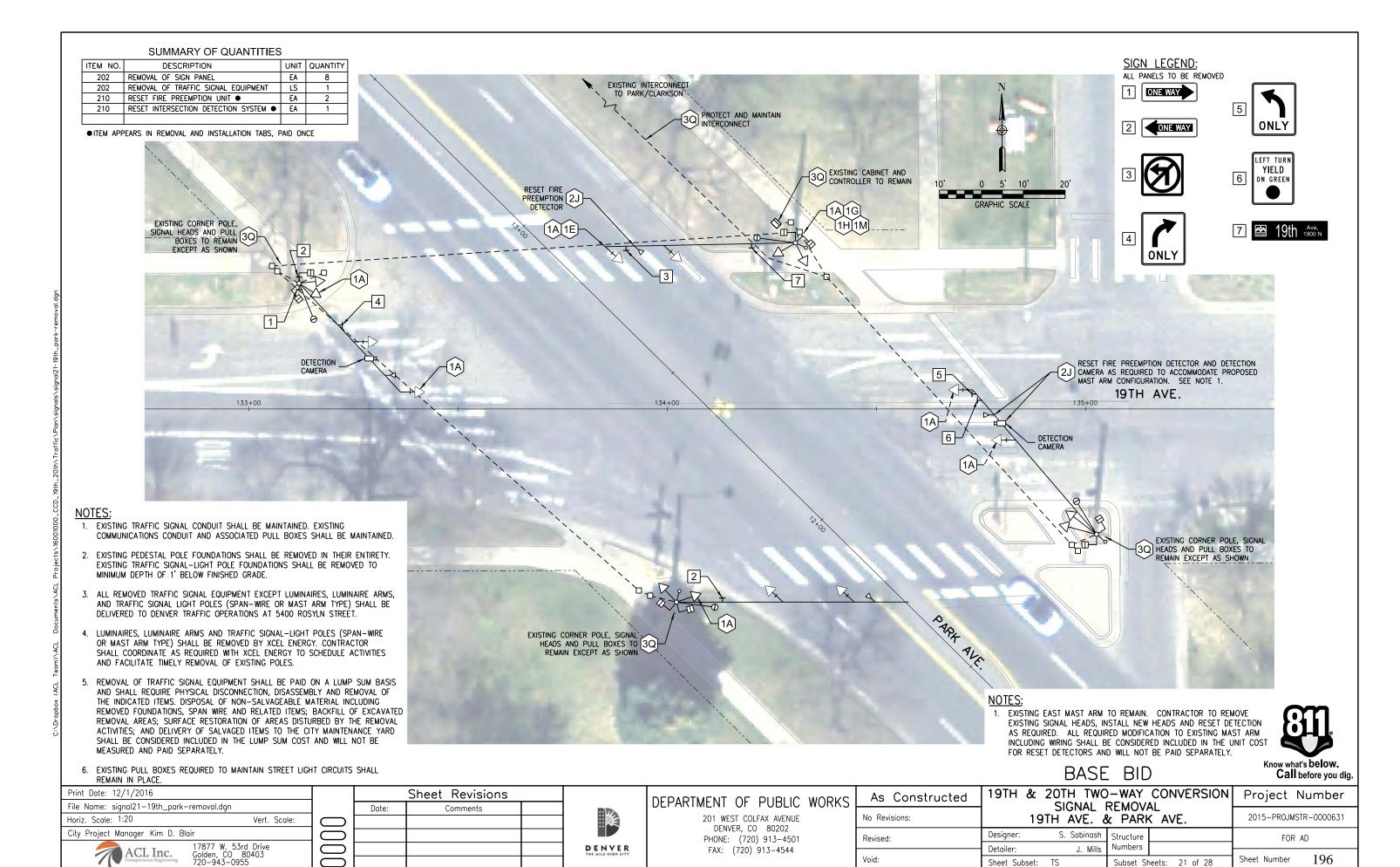
Sheet Revisions

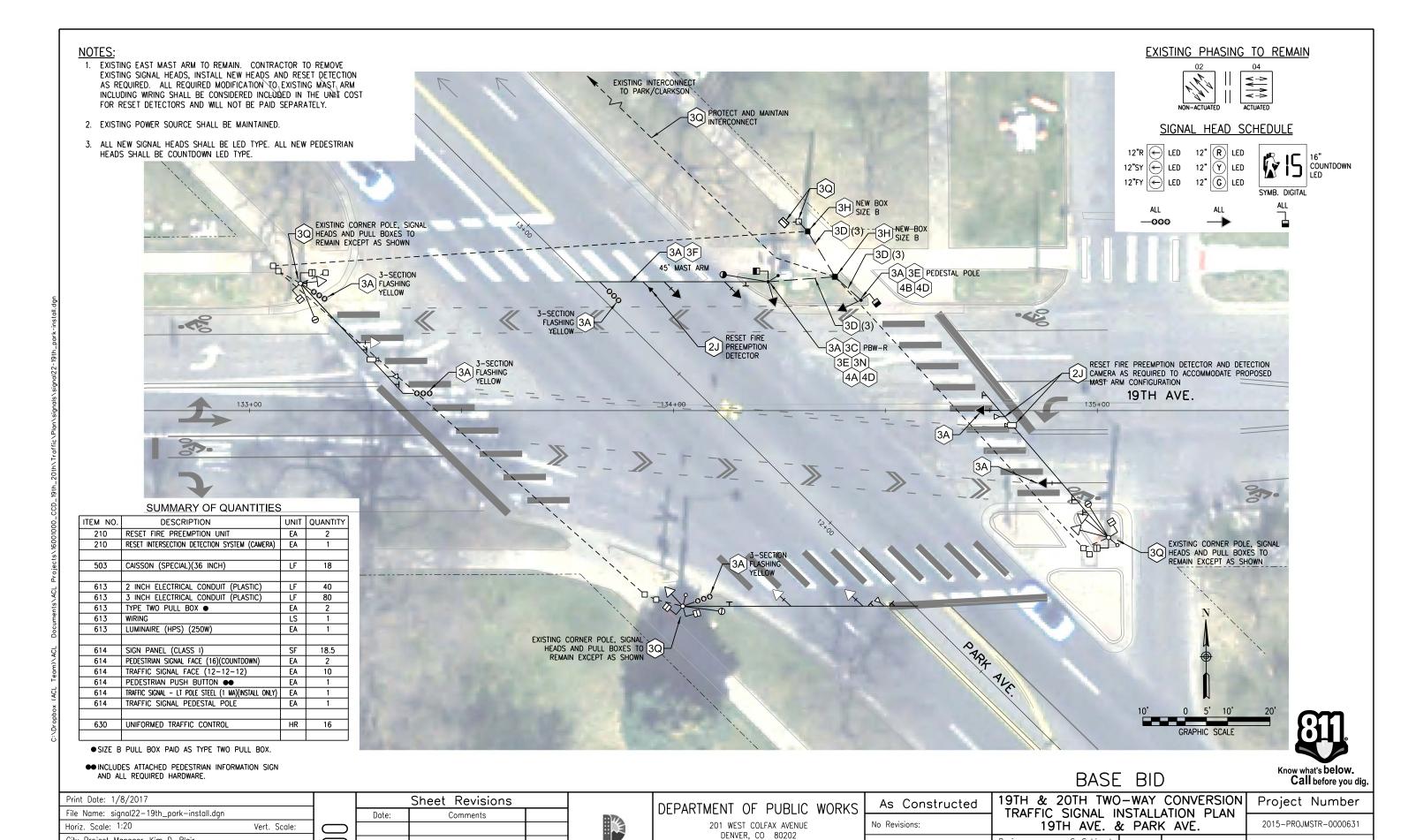


DEPARTMENT OF PUBLIC WORKS

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

As Constructed		-WAY CONVERSION	Project Number
No Revisions:		CLARKSON ST.	2015-PROJMSTR-0000631
Revised:	Designer: S. Sabinash		FOR AD
Void:	Detailer: J. Mills Sheet Subset: TS	Numbers Subset Sheets: 20 of 28	Sheet Number 195





PHONE: (720) 913-4501

FAX: (720) 913-4544

DENVER

Revised:

Void:

Designer:

Detailer:

Sheet Subset:

S. Sabinash

J Mills

Structure

Numbers

Subset Sheets: 22 of 28

FOR AD

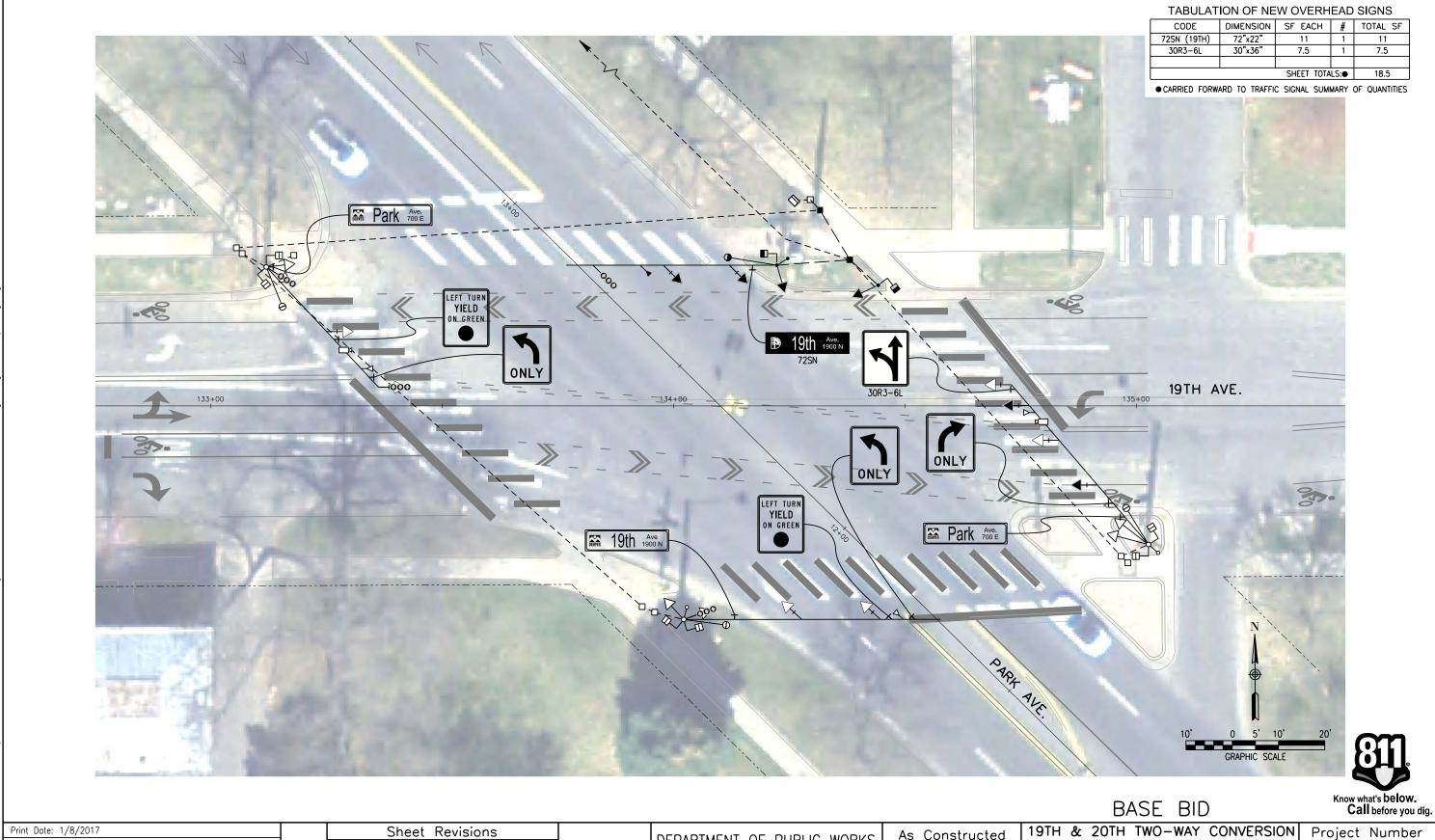
197

Sheet Number

City Project Manager Kim D. Blair

ACL Inc.

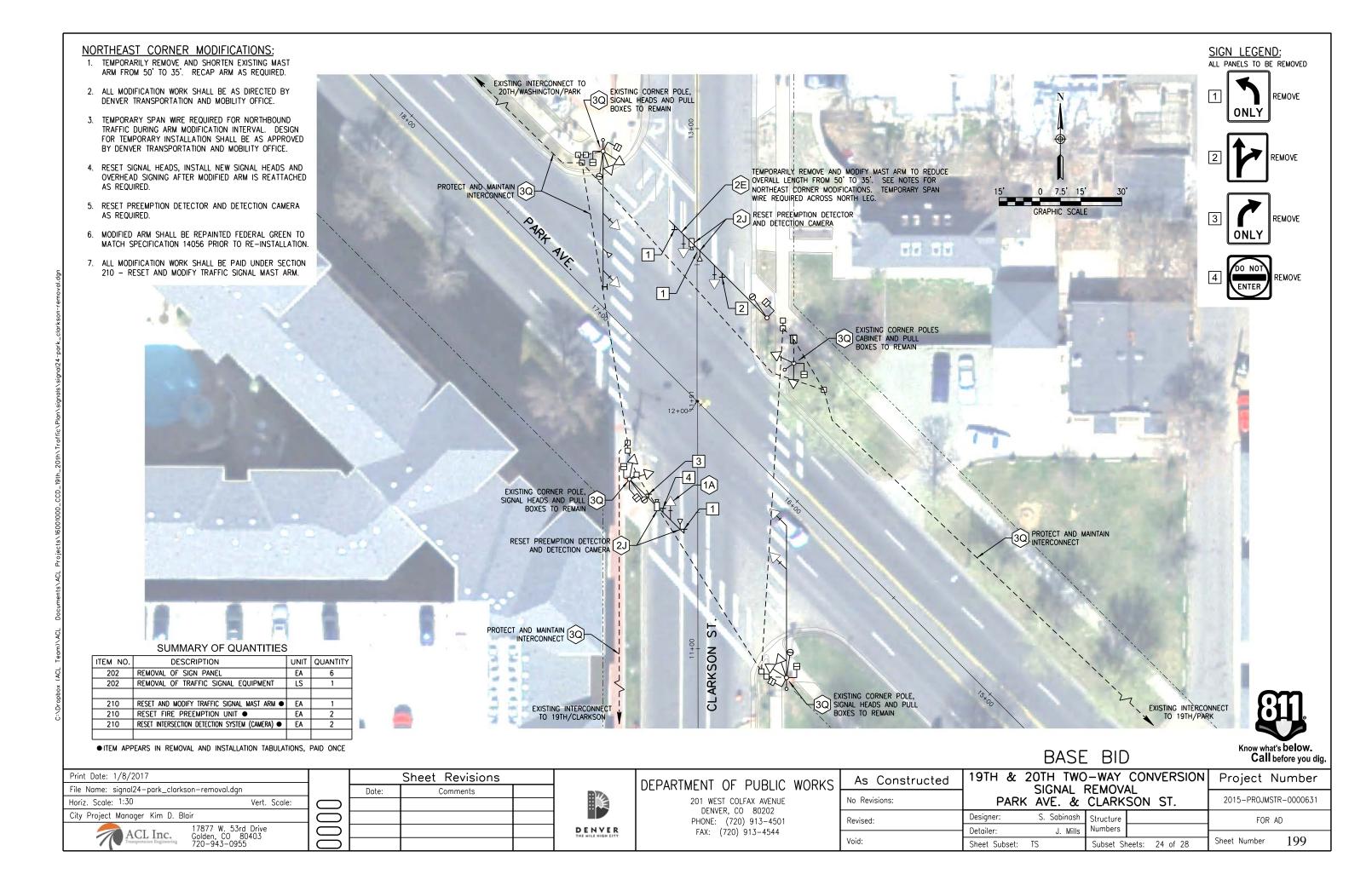
17877 W. 53rd Drive Golden, CO 80403 720-943-0955

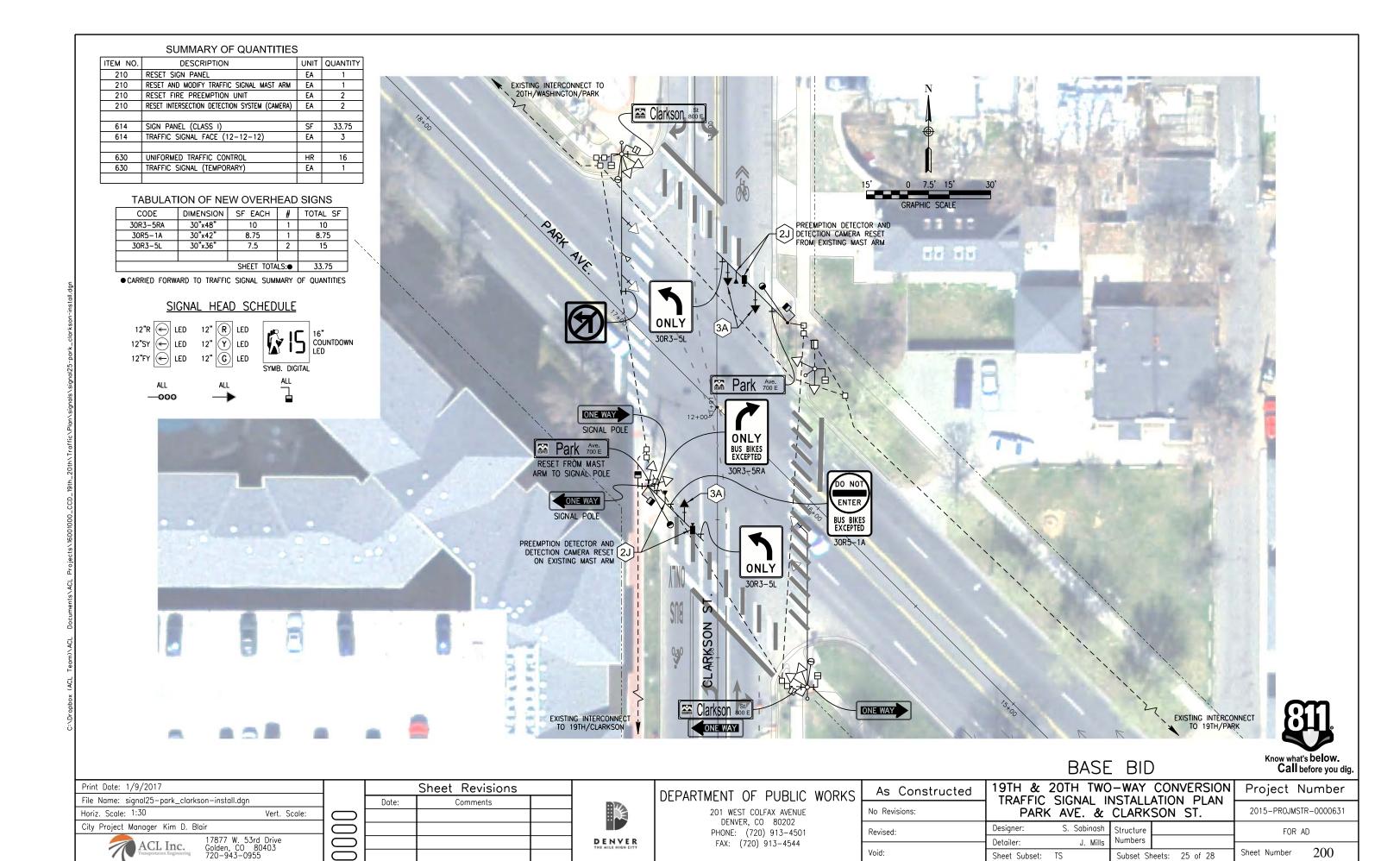


File Name: signal23-19th_park-signs.dgn	Date:	Comments	D)7>	DEPARTMENT OF PUBLIC WORKS	\vdash
Horiz. Scale: 1:20 Vert. Scale:				201 WEST COLFAX AVENUE	No
City Project Manager Kim D. Blair				DENVER, CO 80202 PHONE: (720) 913-4501	Re
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403			DENVER THE MILE HIGH CITY	FAX: (720) 913-4544	<u> </u>
Transportation Engineering 720-943-0955					Vo

DEDAPTMENT OF DURING WORKS

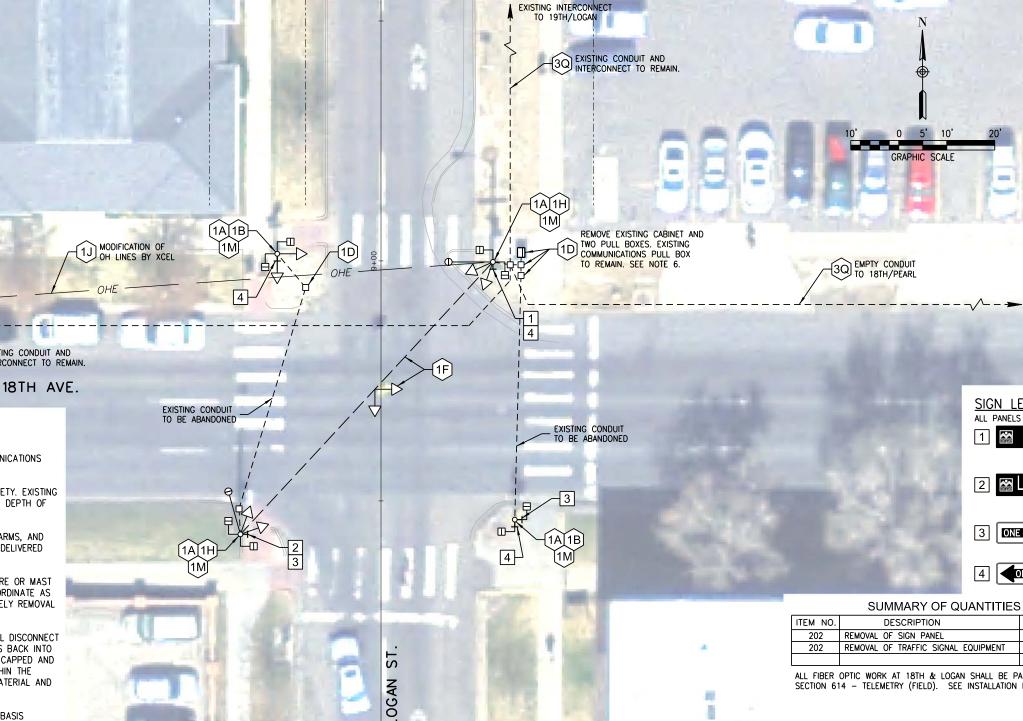
As Constructed		O-WAY CONVERSION	Project Number
No Revisions:		& PARK AVE.	2015-PROJMSTR-0000631
Revised:	Designer: S. Sabinash	1 —	FOR AD
Void:	Detailer: J. Mills Sheet Subset: TS	Subset Sheets: 23 of 28	Sheet Number 198





THE INDICATED ITEMS. DISPOSAL OF NON-SALVAGEABLE MATERIAL INCLUDING REMOVED FOUNDATIONS, SPAN WIRE AND RELATED ITEMS; BACKFILL OF EXCAVATED REMOVAL AREAS; SURFACE RESTORATION OF AREAS DISTURBED BY THE REMOVAL ACTIVITIES, AND DELIVERY OF SALVAGED ITEMS TO THE CITY MAINTENANCE YARD SHALL BE CONSIDERED INCLUDED IN THE LUMP SUM COST AND WILL NOT BE

MEASURED AND PAID SEPARATELY.



ITEM NO.	DESCRIPTION	UNIT	QUANTITY
202	REMOVAL OF SIGN PANEL	EA	7
202	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	LS	1

ALL FIBER OPTIC WORK AT 18TH & LOGAN SHALL BE PAID UNDER SECTION 614 - TELEMETRY (FIELD). SEE INSTALLATION PLAN.

SIGN LEGEND:

ALL PANELS TO BE REMOVED

2 Logan St.

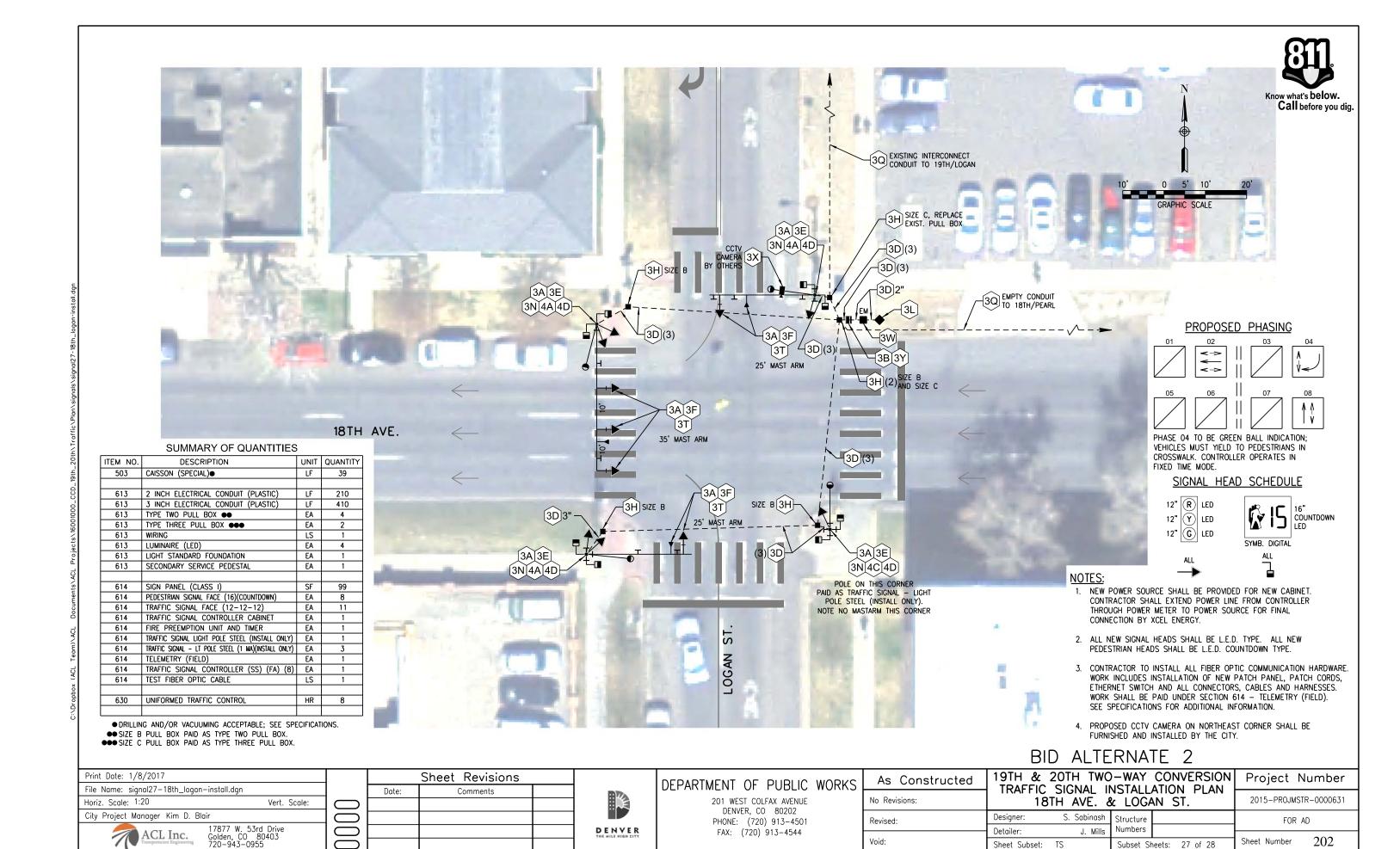
3 ONE WAY

4 ONE WAY

BID ALTERNATE 2

Know what's below. Call before you dig.

Print Date: 12/1/2016		Sheet Revisions		DEPARTMENT OF PUBLIC WORKS	As Constructed)-WAY CONVERSION REMOVAL	Project Number
File Name: signal26-18th_logan-removal.dgn	Date:	Comments						2015-PROJMSTR-0000631
Horiz. Scale: 1:20 Vert. Scale:			:: J E	201 WEST COLFAX AVENUE	No Revisions:	181H AVE. 6	& LOGAN ST.	2015-PROJMSTR-0000631
City Project Manager Kim D. Blair				DENVER, CO 80202 PHONE: (720) 913-4501	Revised:	Designer: S. Sabinash	Structure	FOR AD
ACL Inc. 17877 W. 53rd Drive Golden, CO 80403 720-943-0955			DENVER THE MILE HIGH CITY	FAX: (720) 913-4544		Detailer: J. Mills	Numbers	
Transportation Engineering 720-943-0955					Void:	Sheet Subset: TS	Subset Sheets: 26 of 28	Sheet Number 201



Void:

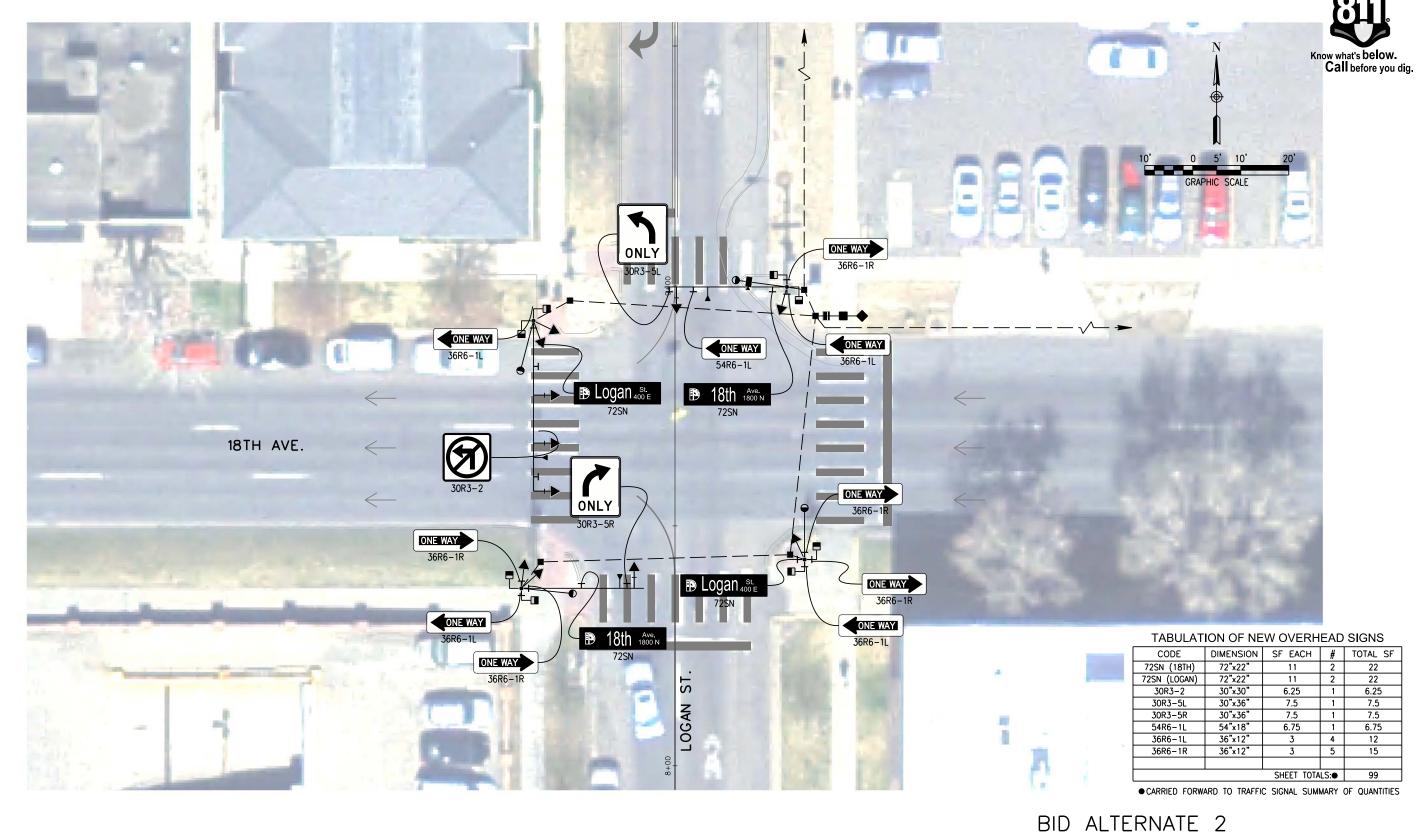
Sheet Subset:

Sheet Number

Subset Sheets: 27 of 28

202

ACL Inc.



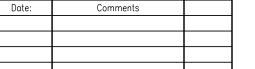
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Horiz. Scale: 1:20 Vert. Scale:

City Project Manager Kim D. Blair

ACL Inc.
Transportation Engineering Total College, CO 80403
720–943–0955

Print Date: 1/8/2017



Sheet Revisions



DEPARTMENT OF PUBLIC WORKS 201 WEST COLFAX AVENUE

DENVER, CO 80202 PHONE: (720) 913-4501 FAX: (720) 913-4544

As Constructed	19TH & 20 OVE	Project Number				
No Revisions:		AVE. 8	2015-PROJMSTR-0000631			
Revised:	Designer: S	5. Sabinash	Structure		FOR /	AD OA
	Detailer:	J. Mills	Numbers			
Void:	Sheet Subset: TS		Subset Sh	eets: 28 of 28	Sheet Number	203