

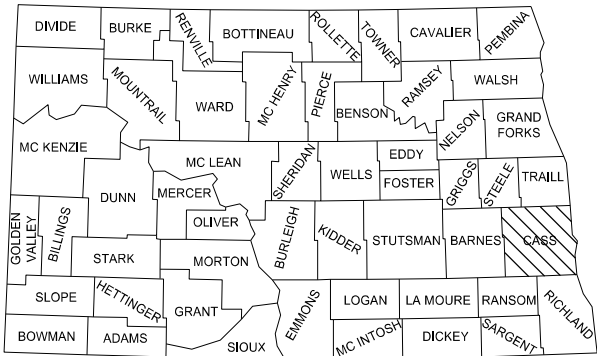
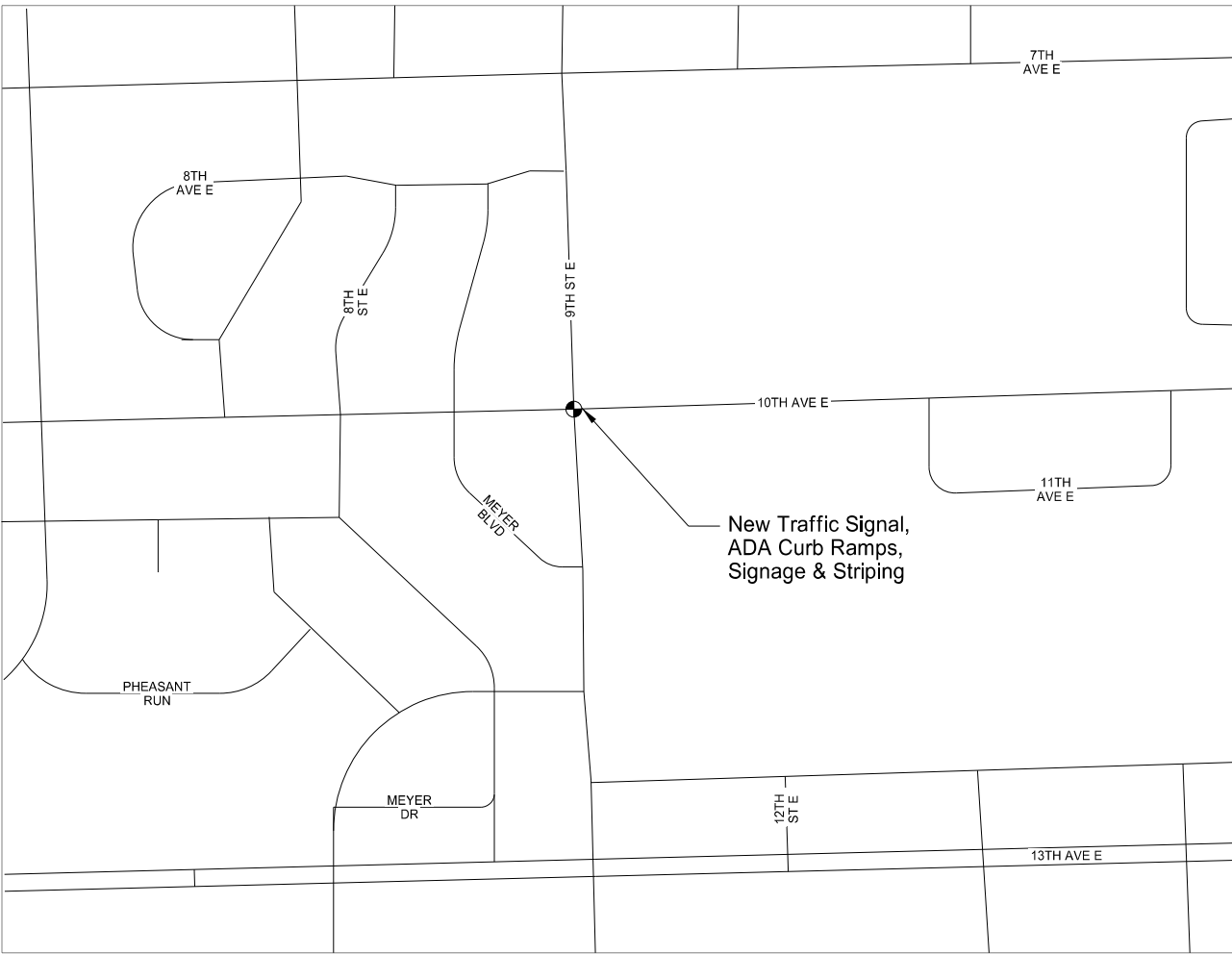
STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	2263		1	1

CITY OF WEST FARGO

PROJECT NUMBER 2263
 CASS COUNTY
 WEST FARGO, NORTH DAKOTA
 TRAFFIC SIGNAL AT 9TH ST E & 10TH AVE E

GOVERNING SPECIFICATIONS	Date Published and Adopted
NDDOT Standard Specifications	1/1/2022
City of West Fargo Engineering Specifications	5/9/2022

PROJECT NUMBER \ DESCRIPTION
 2263 Traffic Signal at 9th St E and 10th Ave E



STATE COUNTY MAP

DESIGNER Traci Sletmoe
DESIGNER Chris Dahl
DESIGNER Alex Maki

CITY OF WEST FARGO	
Approval Name	Date Signed

Bolton & Menk

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TABLE OF CONTENTS

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	2263	2	1

PLAN SECTIONS

LIST OF STANDARD DRAWINGS

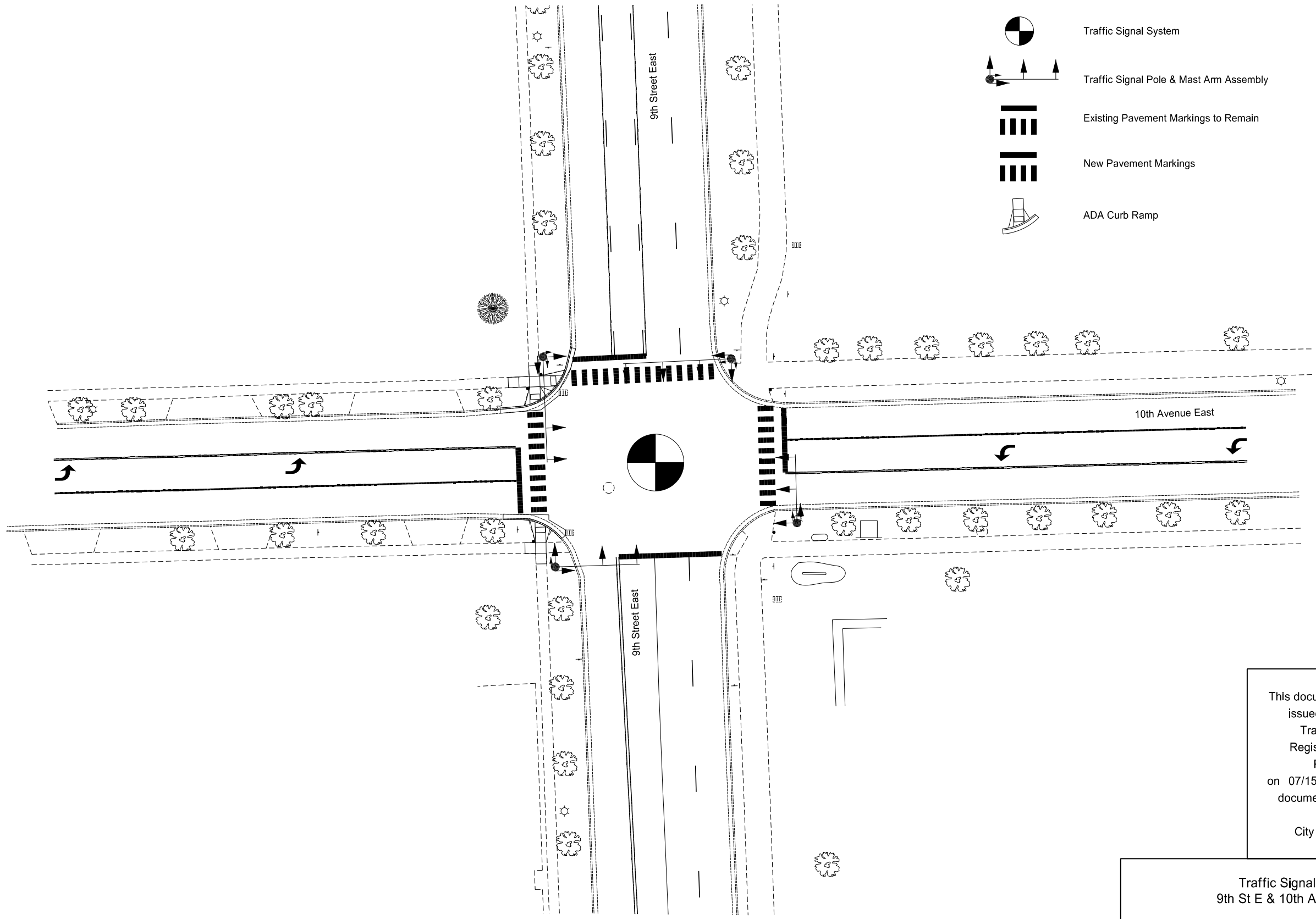
Section	Page(s)	Description
1	1	Title Sheet
2	1	Table of Contents
4	1	Scope of Work
6	1 - 4	Notes
8	1	Quantities
20	1 - 4	ADA Curb Ramps and General Details
76	1	Temporary Erosion Control
110	1 - 2	Signing
120	1	Pavement Marking
150	1 - 8	Signals
160	1 - 3	ITS


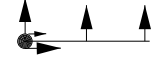



Number	Description
D-101-1, 2, 3, 4	NDDOT Abbreviations
D-101-10	NDDOT Utility Company and Organization Abbreviations
D-101-20, 21	Line Styles
D-101-30, 31, 32, 33	Symbols
D-256-1	Erosion And Siltation Controls
D-261-1	Erosion Control - Fiber Roll Placement Details
D-748-1	Curb & Gutter And Valley Gutter
D-750-2	Sidewalk
D-750-3	Curb Ramp Retrofit Details
D-750-4	Curb Ramp Retrofit Transitional Area Details
D-762-1	Pavement Marking Message Details
D-762-4	Pavement Marking
D-770-1	Concrete Foundations (Traffic Signals & Highway Lighting)
D-770-3	Pull Box Details
D-770-4	Lighting And Signal Details
D-772-1	Feed Point - Traffic Signals
D-772-2	Traffic Signal Standards
D-772-3	Traffic Signal Standards (Mast Arm Type)
D-772-4	Traffic Signal Head Mounting

SPECIAL PROVISIONS

Number	Description
647(14)	Buffer Tube Fan Out Kit
648(14)	Fiber Optic Cable (Single Mode)
649(14)	Fiber Optic Pre-Connectorized
650(14)	Fiber Optic Splice Closure
651(14)	Fiber Optic Termination Panel

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	2263	4	1



-  Traffic Signal System
-  Traffic Signal Pole & Mast Arm Assembly
-  Existing Pavement Markings to Remain
-  New Pavement Markings
-  ADA Curb Ramp

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Traffic Signal
 9th St E & 10th Ave E
 Scope of Work

NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	2263	6	1

100-P01 NOISE ORDINANCE: A noise ordinance is in affect within the City of West Fargo between the hours of 10 pm and 6 am. No work will be performed during these hours unless otherwise approved by the Engineer. Submit request to Engineer a minimum of 48 hours in advance.

100-P02 CONTRACTOR PARKING / STAGING AREA RESTRICTIONS: Parking of personal vehicles, construction equipment, storage of construction materials, or work areas on private property is prohibited without written permission by the property owner.

Staging of construction materials, storing of personal vehicles or construction equipment in the City's Right-of-Way outside of the construction work zone is prohibited.

105-P01 PAVEMENT SWEEPING: Sweep paved areas that were used by construction traffic before opening these areas to public traffic. Sweep pedestrian detour routes as needed to the satisfaction of the Engineer. Sweep all newly constructed pavement no more than 24 hours before a scheduled final inspection. Use a vacuum or pick-up type sweeper to perform this work.

105-P02 PLAN STATIONING: All stations and offsets are measured from 10th Avenue East.

105-P03 TOPSOIL: Restore topsoil depths and existing ground surface within grading limits to pre-construction condition or better. Salvage existing topsoil and stockpile for re-use onsite after improvements are complete. Volume of topsoil to salvage & stockpile assumes existing depth is 6-inches. After improvements are complete spread stockpiled topsoil at an even depth equal to or greater than 6-inches. The cost to salvage, stockpile, and spread topsoil to be included in the price bid for TURF ESTABLISHMENT & PERMANENT EROSION CONTROL.

105-P04 PROTECTION OF UTILITIES: The vertical and horizontal utility locations shown in the plans are approximate. Plan locations should not be interpreted as exact for bidding or construction purposes. Cover and protect all manholes, catch basins, water gate valve boxes, monument boxes, and appurtenances from the milling and paving operations.

The contractor is responsible for locating and protecting all private sprinkling services that may be within the construction limits.

105-200 UTILITY COORDINATION: A utility coordination meeting is required.

202-P01 PAVEMENT REMOVALS: Removal of pavement consists of concrete sidewalk & ADA ramps. Existing pavement thicknesses are averaged based on historical plan set as-built information and maintenance data. The existing concrete sidewalk & ADA ramp thickness is 4-inches. Assumed 2.0 Tons/CY for concrete. The cost to remove concrete sidewalk pavement to be included in the price bid for REMOVAL OF PAVEMENT.

Removal of concrete street pavement that is integral to adjacent concrete curb and gutter is incidental to the bid item REMOVAL OF CURB & GUTTER.

251-P01 TURF ESTABLISHMENT & PERMANENT EROSION CONTROL: The Contractor will perform permanent erosion control by establishing turf to a condition equal to or greater than currently exists. Turf establishment consists of topsoil salvage, stockpile, and respreading after the improvements are made, planting grass seed, applying hydraulic mulch, and watering and fertilizing as necessary to germinate planted grass seed.

251-P02 SEEDING: Use the following sunny seed mix for all permanent seeding.

Species	Pounds Live Seed / Acre
Kentucky Bluegrass	120
Fine Lead Perennial Ryegrass	60
Creeping Red Fescue	20

Rate of seeding = 200 lbs / Acre = 4 to 6 lbs./1,000 sq. ft.

Prior to or during grading and tillage operations, rake and clear the ground surface of all brush, sticks, roots, stones larger than ½ inch in diameter, concrete chunks, rebar, wire or any other material that may hinder seeding operations and future maintenance operations such as mowing. Dispose of any accumulated material at no additional cost to the City/State.

Spread seed mixture evenly to the ground either by hand or with equipment. Ensure embedment within the topsoil so the seed does not blow away. Apply hydraulic mulch after seed application.

Include all costs for labor, equipment and materials necessary to complete the work in the contract unit price for "TURF ESTABLISHMENT & PERMANENT EROSION CONTROL".

704-P01 TEMPORARY TRAFFIC CONTROL: Maintain vehicle traffic on 9th St E and 10th Ave E and pedestrian traffic on adjacent sidewalks & marked crosswalks at all times. Notify Engineer 48 hours in advance if single lane closures are needed to facilitate work. Contractor will provide the Engineer with detailed traffic control plans showing all necessary closures. Contractor will provide temporary pedestrian detour route and maintain ADA-compliant access of sidewalks and crosswalks at all times during construction.

Include all costs for labor, equipment and materials necessary to complete the work in the contract unit price for "TEMPORARY TRAFFIC CONTROL".

708-P01 INLET PROTECTION SPECIAL: Place inlet protection as per the details. Include all costs for furnishing, installing, maintaining (cleaning), and replacing damaged devices in the bid price for "Inlet Protection Special". Keep all installed devices in place until the turf has been established.

748-P01 CURB AND GUTTER: Place tie bars, at the interface of existing curb and gutter with new curb and gutter, into pre-drilled holes that have been cleaned and grouted with an approved epoxy grout. Include all costs, materials, equipment and labor in the contract unit price for "CURB & GUTTER TYPE I".

Replacement of concrete street pavement that is integral to adjacent concrete curb and gutter is incidental to the bid item "CURB & GUTTER TYPE I".

750-P01 SIDEWALK CONCRETE 4IN: Place tie bars, at the interface of existing sidewalk with new sidewalk, into pre-drilled holes that have been cleaned and grouted with an approved epoxy grout. Include all costs, materials, equipment and labor in the contract unit price for "SIDWALK CONCRETE 4IN".

See section 20 detail for continuous steel reinforcement bars in sidewalk concrete.

750-P02 CURB RAMPS AND LANDINGS: Ensure that all reconstructed curb ramps and landings meet current design standards.

The concrete landings, as designated in Section 20 detail sheets and labeled "D", must be installed first prior to adjacent curb ramps and/or sidewalks allowing for a minimum of 24 hours of cure time.

Adjust the elevations of the landings so that maximum grades are not exceeded. Any reconstructed sidewalk, curb ramp, or landing found to exceed maximum grades will be considered "non-compliant" and be required to be removed and replaced with the correct grades by the Contractor at their own expense.

Construct sidewalk, curb ramps and landings in accordance with the details shown in Section 20.

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NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	2263	6	2

750-P03 DETECTABLE WARNING PANELS: Install painted, cast iron detectable warning panels. Color to be Safety Yellow U.S. ANSI Z535.1-1991, 6.3.

772-P01 REMOVE LIGHT STANDARD: Remove and salvage the existing luminaires and light standard poles as shown on the plans. Dispose of existing conventional HPS luminaries. Remove and dispose of the concrete foundation. Deliver the existing light standards, LED luminaires and decorative HPS Luminaires to the City of West Fargo Sign Shop located at 327 34th Avenue East. Coordinate delivery with the City of West Fargo Sign Shop Foreman, Dan Birnbaum or Scott Tiffany-701-515-5400 a minimum of 24 hours in advance. Any equipment deemed not salvageable by the city is to be disposed of by the contractor. Include all cost associated with removing, transporting, and disposing of the luminaires in the bid price for "Traffic Signal System – Site 1"

772-P02 ORNAMENTAL LIGHT FIXTURE-150 WATT (Decorative Teardrop 30'): Provide only one of the decorative luminaires listed below, or an approved equal, for installation on a City of West Fargo decorative light standard.

Conventional Luminaire	
Company	Catalog Number
Philips Lumec Lighting	Renaissance RN20 145W64LED3K T ACDR LE3R SMA series
Acuity Holophane Lighting	Esplanade ESL2 P35S 30K AS BK TG 3 series

Luminaires are required to meet the following:

Decorative Style	Teardrop, Acrylic Globe Refractor, No Skirt, No Uplight, Spike Finial
Light Source	LED
Light Color (correlated color temperature)	3000K CCT
Color Accuracy (color rendering index)	70 CRI (minimum)
Optical Distribution	Type III
Light Output (minimum permitted)	13,600 Lumens
Wattage (maximum permitted)	150 W
BUG rating (maximum permitted)	B2-U3-G4
Operating Temperature Range	-40° to +40° C ambient
Luminaire Housing	Aluminum, corrosion resistant
Vibration Testing	ANSI/NEMA C136.31 Level 2, 3G
Surge Suppression Rating	ANSI/IEEE C62.41 Category C
Outdoor Rating	IP66 and listed by an OSHA NRTL
Input Driver Voltage	240V
Lumen Maintenance TM-21 (50,000 hours, 25°C)	>83%
Photo Control on each luminaire	No
Tool-less Access	Yes
Finish	Black, Powder-Coated
House Side Shield	No

Adjust luminaire at night in the presence of the engineer and/or owner. Adjust luminaires so they are level and plumb. Mount luminaires level with no tilt.

772-P03 FEED POINT-COMBO LIGHTING AND SIGNAL: Coordinate with the electric utility (Xcel Energy – 701-241-8645) for providing new electrical services for the new feed point cabinets. Coordinate the installation of new service conductors and conduit between the feed point and utility transformer. Verify the feed point location and elevation with the project engineer and Xcel Energy before installation.

Provide 3" conduit for the service conductors between the metersocket on the Feed Point cabinet to the utility transformer. Provide rigid steel conduit where exposed. Contractor to provide continuous conduit, at 24" below grade, between the utility transformer and the metersocket.

Feed Point cabinet assembly to be pedestal, pad-mounted type, prefabricated UL 508 listed, service entrance rated, stainless steel, with 1 metersocket. Provide a metersocket with lever bypass meeting utility requirements meters to be provided by the utility company. Prefabricated feed point enclosure to be assembled by Milbank, States Electric, Povolny, or approved equivalent.

Provide permanent, typed, etched labeling for contactors, breakers, and control switch. Provide gasketed doors. Face the photocell north, provide button type. Install all conduit within the concrete foundation. Include in the price bid for "Traffic Signal System - Site 1" all materials, labor, and coordination required to install the service, furnish and install the feed point, service conduit, and electrical service equipment.

772-P04 CONCRETE FOUNDATION-FEED POINT-TYPE B: Install top of concrete foundation level and at an elevation to prevent flood damage of cabinet. Duct seal all conduits with wire. Provide two spare 2" PVC conduits in the foundation. Provide conduit caps, with an oil-tight plug and wing nut, on the spare conduit sweeps and label each as to the direction each sweep faces.

772-P05 SIGNAL POLES AND COMBINATION LIGHT AND SIGNAL STANDARDS: Provide signal poles with rotatable mast arms.

772-P06 TRAFFIC SIGNAL STANDARDS BASE: Provide traffic signal standards with "T" transformer base type standards. Include all costs, labor, materials and equipment necessary for furnishing and installing this item in the price bid for "Traffic Signal System – Site 1".

772-P07 SIGNAL COMPONENT COLOR: Paint all traffic signal system components black.

772-P08 TRAFFIC SIGNAL CONTROLLER: Provide Econolite ATC Cobalt G controllers for all intersections. The controllers will be NEMA Standard ATC volume density controllers with the traffic counting capability operational.

Construct the concrete foundations as shown on standard drawing D770-1 along with three spare 2" conduit sweeps. Provide a GFCI receptacle in each controller cabinet. Include in the price bid for "Traffic Signal System – Site 1" all labor, materials and equipment required to install the new controllers. This includes but is not limited to the cabinet, new detector amplifiers (furnished and installed), other ancillary signal components (such as load switches, conflict monitors, etc.), concrete foundation, and controller cabinet components connected as required to make the new controller equipment operational with the proposed signal equipment. This also includes any programming and data entry (i.e., signal timing plans) necessary to provide fully functional traffic signal controllers. Face the cabinet doors as indicated in the plans.

772-P09 CONTROLLER WORKING SLAB: Install 4" thick controller working slabs that are 6 feet wide and extend a minimum of 4 feet from the face of the controller foundations. Reinforce the slabs with 6" x 6" x 10 GA welded wire fabric and tie the slabs to the controller foundations with 18-inch long #3 rebar spaced 18 inches on center. Provide a slope of .25 inches per foot away from the controller cabinet foundations. Install the slabs to be 2" higher than the closest point of the top of the slab to finished grade. Furnishing and installing the working slabs is included in the price bid for "Traffic Signal System – Site 1".

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NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	2263	6	3

772-P10 **BATTERY BACK-UP:** Equipped the traffic signal controllers with an “on-line” type Uninterruptible Power Supply (UPS) that provides power conditioning in both normal and backup mode. Provide UPS that are ethernet capable. Size the UPS to provide backup power to the system for a minimum of 2 hours in full signalized operation and a minimum of 8 hours in flash operation. Provide aux contacts to put the system into flash operation. The UPS will incorporate full power management and diagnostic function.

The UPS will automatically provide battery back-up power to the controller system with no interruption when the electric utility power supply de-energizes. The UPS will operate such that it does not provide power to the de-energized incoming electric utility service conductors.

Install the UPS in a temperature and humidity controlled environment. Install the UPS in a separate enclosure on the same pad as the signal controller cabinet. Extend the controller cabinet pad mount foundation so there is a minimum of 3” of clearance from the outside edge of the cabinets to the outside edge of the foundation on any side, even if the battery back-up cabinet is mounted on the controller cabinet and not the foundation. Include all materials, labor and equipment necessary to furnish and install the battery back-up in the price bid for “Traffic Signal System – Site 1”.

772-P11 **SIGNAL EQUIPMENT:**
 A. Provide steel signal plumbizer and pedestal adapters/collars.
 B. Provide 16” pedestrian with countdown displays.
 C. Provide vehicle and pedestrian heads constructed of cast aluminum and installed level on all sides. Provide stainless steel fasteners and use anti-seize lubricant on all threaded components.
 D. Astro brackets are approved for use on mast arm mounted left turn heads located at the end of the mast. Mast arm length may need to be adjusted if Astro bracket is used. Indicated in the work drawings for signal heads the type of mounting.
 E. Provide louvered aluminum traffic signal backplates.
 F. Provide LED indications on all new signal heads.
 G. Furnishing and installing signal equipment is included in the price bid for “Traffic Signal System – Site 1”.

772-P12 **VIDEO DETECTION SYSTEM:** Provide Autoscope Vision Video Detection Equipment for the signalized intersection. Provide all cable connections, camera aiming and system set-up, including programming detection zones and verification of reliable operation by the manufacturer’s representative. The location of cameras in the plans are for reference only. Include an extra camera / processor, interface panel and detector port master for each Video Detection System. Provide a supplier warranty for the video detection system that is for a minimum of three years after final inspection and acceptance. Provide ongoing software support by the supplier and include updates of the MVP sensor and application software. Provide these updates free of charge for one year after final inspection and acceptance.

Provide all labor and equipment necessary for the video detection system to be fully operational. Include all costs, labor, materials and equipment necessary for furnishing and installing the video detection system in the price bid for Traffic Signal System – Site 1”.

772-P13 **EMERGENCY VEHICLE PRE-EMPTION:** Notify the fire chief when the proposed signalized intersections EVP systems are tested and operable. Provide EVP equipment that is GPS based and fully compatible with the EVP equipment used within the City of West Fargo. Provide confirmation lights that are LED. The City of West Fargo is responsible for setting the range of the system.

772-P14 **CONDUIT:** Seal all conduits with duct seal at the controller cabinet and at the traffic signal standard foundations. Install two spare 2” conduit sweeps in the controller cabinet foundation and one spare 2” conduit sweep in each traffic signal standard base. Cap spare conduits with an oil-tight plug with wing nut and labeled as to which direction they face.

772-P15 **LABEL ALL FIELD CABLES:** Provide labeling materials as approved by the City. Install the labels so they are readable without moving the cables. Label all field cables with the cable designations:

Type	Label	Label Location
Communication cable	Comm./address of other end	Within 12" of conduit
Pedestrian push button	Phase/location (i.e., NW, SW, etc.)	Within 6" of terminals
Video detection cable	Approach Detection (i.e., NW, SW, etc.)	Within 6" of terminals
Control cable	Cable number & location (i.e., NW, SW, etc.)	Within 12" of conduit
EVP cable	Pre-empt number/location (i.e., NW, SW, etc.)	Within 6" of terminal

Cost to be included in the price bid for “Traffic Signal System – Site 1”.

772-P16 **CONTROLLER CABINET WIRING DIAGRAM:** Label the following items on the cabinet wiring diagram, in addition to information required by NDDOT Standard Specification.
 A. Label the camera number (i.e., D2-1) from the plan on the detector panel drawing adjacent to the point for termination.
 B. Label the field wire terminals for the vehicle/pedestrian head control cables with the phase number and direction (i.e., Ø2, SB).
 C. Label the field wire terminals for the EVP cable with the pre-empt number (i.e., P.E. #1).
 D. Label the field wire terminal for the pre-empt indicator lamps with the pre-empt number and direction (i.e., P.E. #1, NB).
 E. Label the field wire terminals for the pedestrian push-button cables with the phase number (i.e., Ø8 PED).
 F. Provide an intersection diagram on cabinet door showing phasing of intersection and camera numbering and detection zone numbering
 G. Provide a CAD drawing file of the as-built cabinet wiring diagram.

Use a heat-shrink labeling system. Do not strip the cables back from the connection more than 12 inches. Include the cost in the price bid for “Traffic Signal System– Site 1”.

772-P17 **WIRE SPLICING:** No splicing is allowed in pull boxes. Splicing may only take place at the signal transformer base terminal block, controller cabinet terminal blocks, and traffic signal head terminal blocks.

772-P18 **TRAFFIC SIGNAL PULL BOXES:** Provide polymer concrete type pull boxes for the traffic signal systems. Clearly mark the cover as “Traffic Signal” as required. See standard drawing D770-3 for details. Duct seal all conduits entering and exiting pull boxes. Provide the style as shown on the standard drawings and include the stackable bottom extension with knockouts. Include all costs, labor, materials and equipment necessary for furnishing and installing this item in the price bid for “Traffic Signal System – Site 1”.

772-P19 **FIBER OPTIC PULL BOXES:** Provide polymer concrete type pull boxes for the fiber optic interconnect. See Section 20 for the fiber optic pull box detail. Clearly mark the cover as “Fiber Optic” as required. Provide pull boxes with dimensions no less than 30” x 48” for fiber optic cables. Provide pull boxes with a bottom extension to obtain a depth of 26”. Duct seal all conduits entering and exiting pull boxes. Fiber splicing is only allowed in pull boxes as identified in the plans. Only cut the fibers that are to be spliced. Include all costs, labor, materials and equipment necessary for furnishing and installing this item in the price bid for “IT SYSTEM”.

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NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	2263	6	4

772-P20 ACCESSIBLE PEDESTRIAN SIGNALS (APS) PUSHBUTTON AND SIGN: Provide pedestrian pushbuttons that meet the requirements of accessible pedestrian signal (APS) pushbuttons and include the features, installation procedures and be compliant with the following:

A. Features:

1. Rapid tick WALK indication, no more than 2–5dBA above ambient sound
2. Vibrotactile WALK indication
3. Speaker and vibrotactile indication located at pushbutton
4. Pushbutton locator tone
5. Tactile arrow on each device aligned in direction of travel on the crosswalk

B. Code Compliance:

1. Functionality: MUTCD 2009 - 4E
2. Temperature and Humidity: NEMA TS 2
3. Transient Voltage Protection: NEMA TS 2
4. Transient Suppression: IEC 61000-4-4, IEC 61000-4-5
5. Electronic Noise: FCC Title 47, Part 15, Class A
6. Mechanical Shock and Vibration: NEMA TS 2
7. EN4 PBS Enclosure: NEMA 250 - Type 4X
8. Electrical Reliability: NEMA TS 4

Include the cost for the accessible pedestrian signals pushbutton and sign in the item "Traffic Signal System – Site 1".

772-P21 FIBER OPTIC CONNECTION: Supply MOXA EDS-P510 switches in the traffic signal controller cabinets. Include all labor, equipment, and material to install the switches in the traffic signal cabinets in the price bid for "IT SYSTEM".

772-P22 SIGNAL TIMINGS: Contact Michael Bittner with Bolton & Menk for the signal timings to be programmed into the traffic signal controllers. Include all costs, labor, materials and equipment necessary to program the signal timings into all controllers in the price bid for "Traffic Signal System – Site 1".

772-P23 PADLOCKS: Obtain pad locks for feed points from the City of West Fargo.

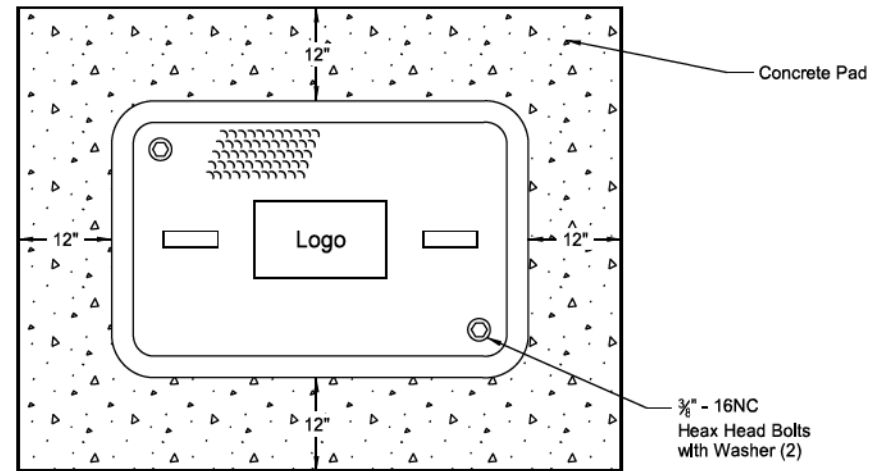
772-P24 CONDUIT INSTALLATION: All conduit under roadways shall be installed using directional boring. No open cutting of the roadway will be allowable. All costs associated with the directional boring and installation of the conduit shall be included in the price bid for "Traffic Signal System – Site 1".

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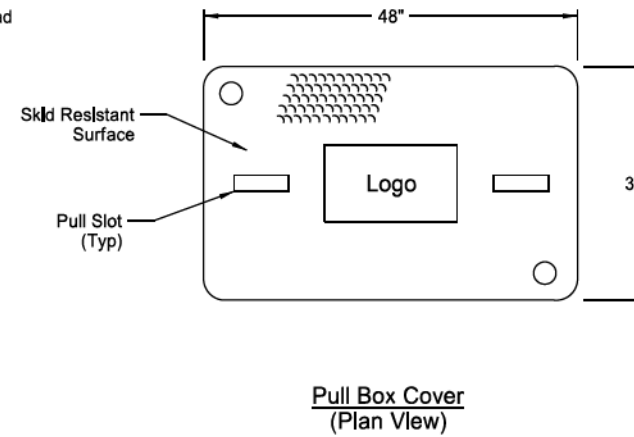
Estimated Quantities

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	2263	8	1

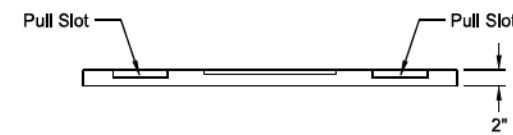
SPEC	CODE	ITEM DESCRIPTION		UNIT	Mainline	TOTAL
103	0100	CONTRACT BOND	Traffic Signal	L SUM	1	1
202	0130	REMOVAL OF CURB & GUTTER	Traffic Signal	LF	65	65
202	0136	REMOVAL OF PAVEMENT	Traffic Signal	TON	14	14
251		TURF ESTABLISHMENT & PERMANENT EROSION CONTROL	Traffic Signal	L SUM	1	1
253	0200	HYDRAULIC MULCH	Traffic Signal	SY	150	150
261	0112	FIBER ROLLS 12IN	Traffic Signal	LF	130	130
261	0113	REMOVE FIBER ROLLS 12IN	Traffic Signal	LF	130	130
302	0121	AGGREGATE BASE COURSE CL 5	Traffic Signal	CY	5	5
702	0100	MOBILIZATION	Traffic Signal	L SUM	1	1
704		TEMPORARY TRAFFIC CONTROL	Traffic Signal	L SUM	1	1
708	1540	INLET PROTECTION-SPECIAL	Traffic Signal	EA	2	2
708	1541	REMOVE INLET PROTECTION-SPECIAL	Traffic Signal	EA	2	2
748	0140	CURB & GUTTER-TYPE I	Traffic Signal	LF	65	65
750	0115	SIDEWALK CONCRETE 4IN	Traffic Signal	SY	27	27
750	2115	DETECTABLE WARNING PANELS	Traffic Signal	SF	22	22
754		SALVAGE SIGN ASSEMBLY	Traffic Signal	EA	5	5
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	Traffic Signal	SF	67	67
762	0110	EPOXY PVMT MK 4IN LINE-GROOVED	Traffic Signal	LF	350	350
762	0132	EPOXY PVMT MK 8IN LINE-GROOVED	Traffic Signal	LF	350	350
762	0135	EPOXY PVMT MK 24IN LINE-GROOVED	Traffic Signal	LF	152	152
762	0136	EPOXY PVMT MK MESSAGE-GROOVED	Traffic Signal	SF	64	64
772	9200	IT SYSTEM	Traffic Signal	EA	1	1
772	9811	TRAFFIC SIGNAL SYSTEM - SITE 1	Traffic Signal	EA	1	1



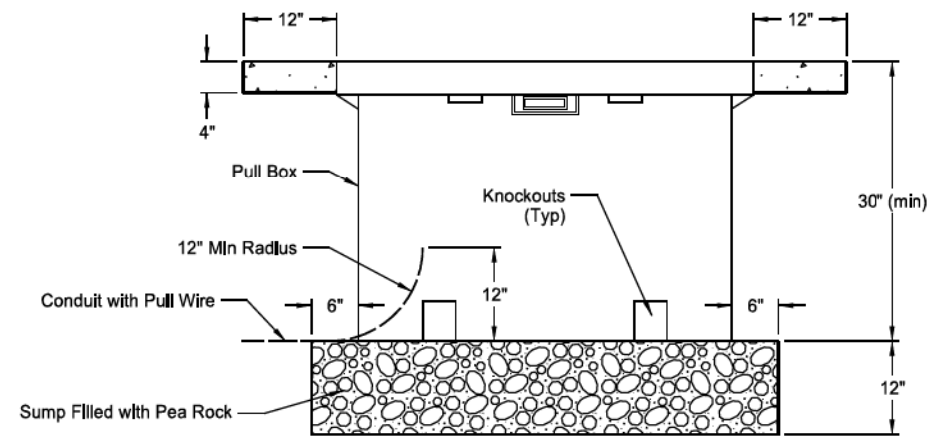
Polymer Concrete Pull Box
 Polymer Concrete Reinforced by a Heavy Weave Fiberglass
 (Plan View)



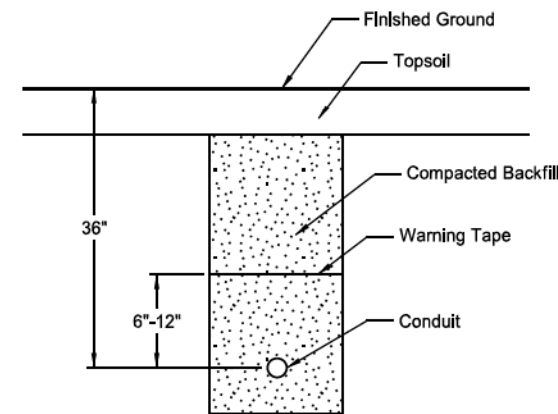
Pull Box Cover
 (Plan View)



Pull Box Cover
 (Elevation View)



Polymer Concrete Pull Box
 Polymer Concrete Reinforced by a Heavy Weave Fiberglass
 (Elevation View)



Conduit Trench
 (Elevation View)

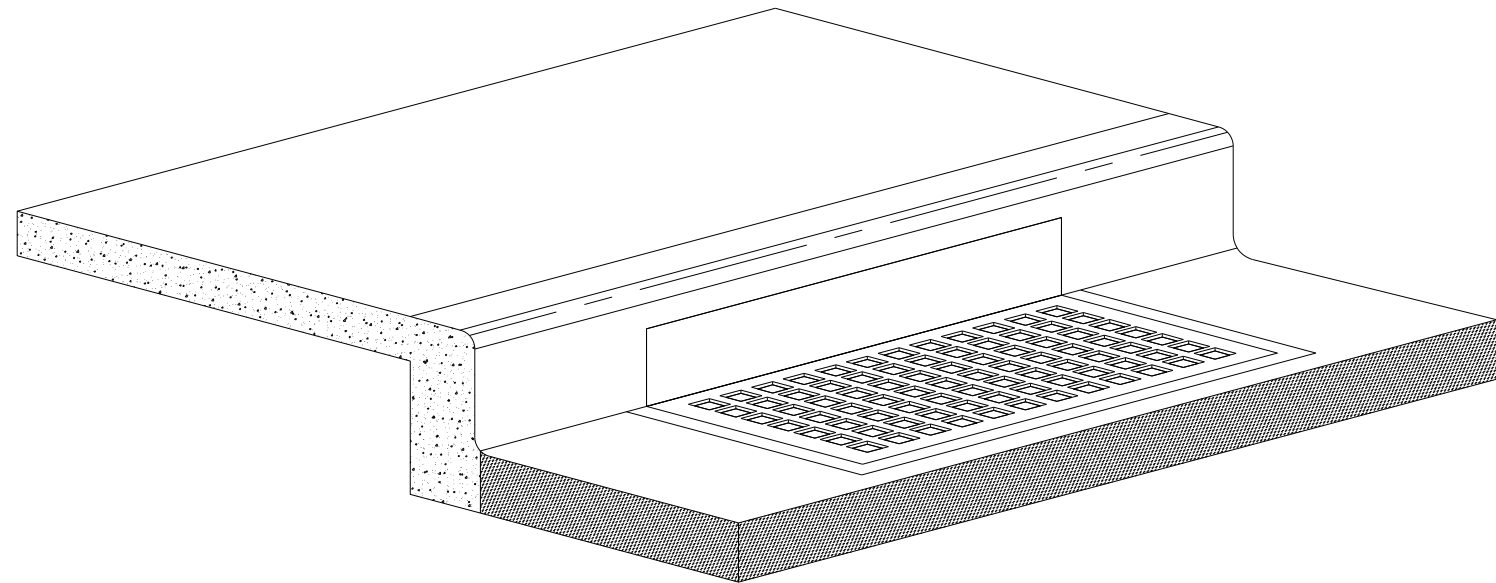
Notes:

1. Install all conduit and pull boxes after completion of all grading and heavy equipment work that may cause damage to the conduit and pull boxes unless otherwise noted in the plans.
2. Match the top of pull boxes final elevation to the surrounding finished dirt grade elevations, unless pull box is elevated in ditch bottom. Elevate the top of pull boxes in the ditches to a minimum of 12" above the bottom of the ditch. Provide topsoil around the elevated pull boxes. Grading of topsoil not to exceed 1:10 slopes. Or as directed by the Engineer.
3. Cap the conduit with Tyco plugs or approved equal after installation or placement to prevent plugging.
4. Install the conduit a minimum of 36 inches below the finished grade.
5. Place pull box on pea rock with a minimum depth of 12 inches and extend a minimum width of 6 inches beyond the sides of the pull box.
6. After pull box & conduit installation, make all inside walls & cover water tight to the satisfaction of the Engineer.
7. The 2" conduit runs shall be orange, plastic innerduct type of SDK 13.5 (non-corrugated).
8. Fuse all conduit connections together to maintain a continuous run between pull boxes.
9. Hex head bolts and nuts will be austenitic stainless steel. Other fasteners to be galvanized as per AASHTO M-232
10. Conduit depths will be field adjusted to accommodate for all existing pipe, and utilities as directed by the Engineer
11. Seed & mulch all areas disturbed by trenching or as directed by the Engineer. Include all costs for seeding & mulching in the price bid for "TURF ESTABLISHMENT & PERMANENT EROSION CONTROL".

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Traffic Signal
 9th St E & 10th Ave E
 IT Pull Box & Conduit Trench Details

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	2263	20	2



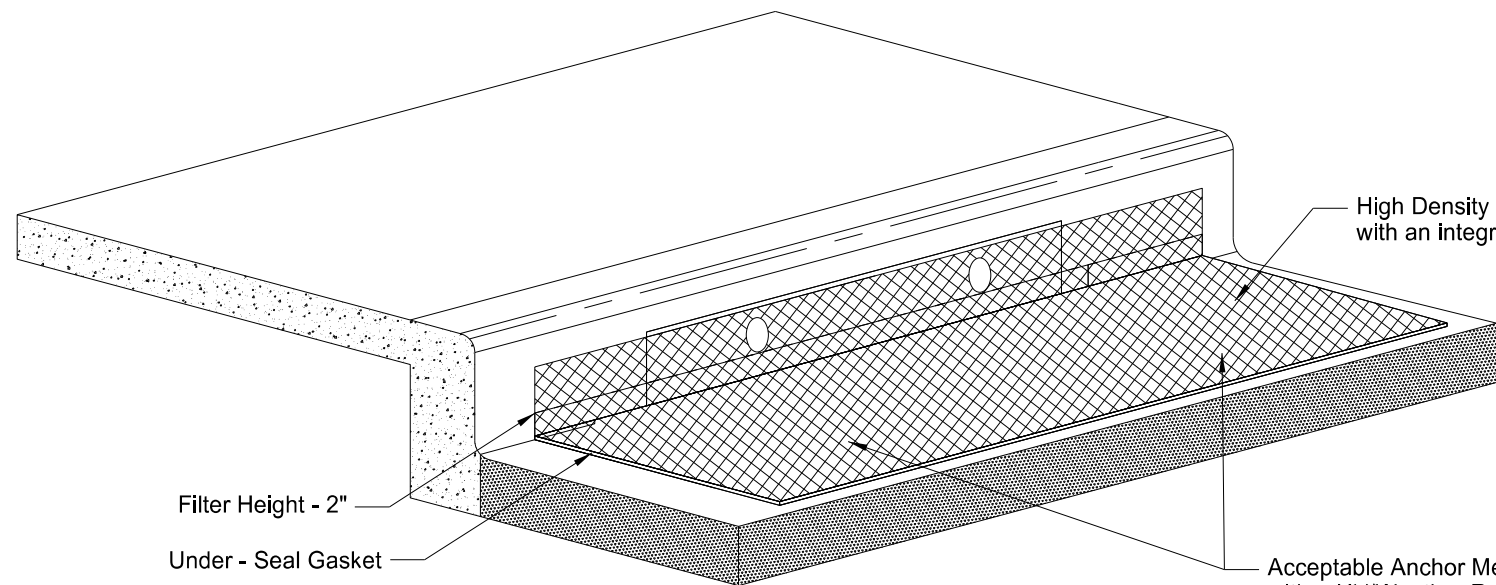
Inlet Protection Device

Installation Notes:

1. Place device tightly against drain opening and cover entire grate. Extend the device at least 2 inches past the grate toward the street.
2. Overlap the segments at longer openings.
3. Anchor the device so that water cannot flow behind it.

General Notes:

1. Remove material that falls into the inlet during maintenance or removal of the device.



High Density Polyethylene (HDPE) high flow jacket filter (8,000 opening per SY) with an integrated 425 um (micron meter) fine filter particle mesh

Filter Height - 2"

Under - Seal Gasket

Acceptable Anchor Method: Fasten to inlet casting grate with a UV/Weather Resistant Plastic Cable Zip Ties - 16 to 24 in. Install zip ties at each corner of the inlet near the perimeter and two additional zip ties near the middle of the casting. Punch hole through filter and run cable tie downward around grate and back up to fasten.

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Traffic Signal
9th St E & 10th Ave E
Inlet Protection Device Detail

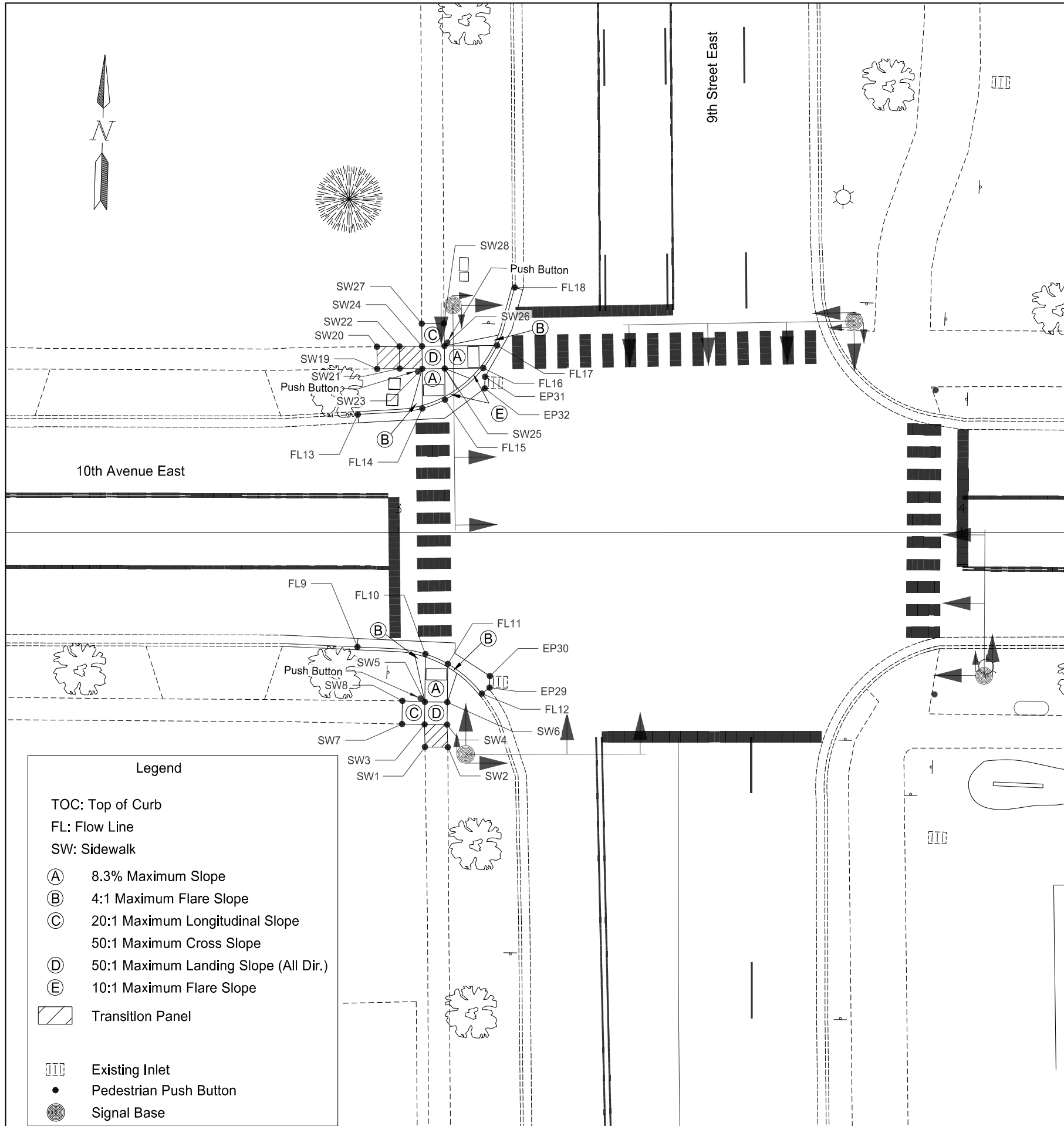
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	2263	20	3

SPEC CODE	BID ITEM	QUANTITY	UNIT
202 130	REMOVAL OF CURB & GUTTER	65	LF
202 136	REMOVAL OF PAVEMENT SIDEWALK 4 IN	14	TON
302 121	AGGREGATE BASE COURSE CL 5	5	CY
748 140	CURB & GUTTER-TYPE I	65	LF
750 115	SIDEWALK CONCRETE 4IN	27	SY
750 2115	DETECTABLE WARNING PANELS	22	SF

Name	Easting (X)	Northing (Y)	Elevation
SW1	455922.9194	2866421.4321	901.02
SW2	455922.9971	2866425.4966	900.86
SW3	455926.9168	2866421.2547	901.03
SW4	455926.9932	2866425.2540	900.99
SW5	455930.9160	2866421.1783	900.99
SW6	455930.9793	2866425.1778	900.95
SW7	455926.8761	2866417.2547	901.14
SW8	455930.9735	2866417.1764	901.14
FL9	455940.3117	2866408.9397	900.84
FL10	455939.4089	2866421.0259	900.77
FL11	455937.7683	2866425.0567	900.73
FL12	455932.6739	2866431.2356	900.70
FL13	455981.5617	2866407.7777	901.24
FL14	455982.9673	2866419.1820	900.70
FL15	455984.6357	2866423.1569	900.66
FL16	455990.4431	2866429.7863	900.64
FL17	455994.5386	2866432.1281	900.68
FL18	456004.9122	2866434.9451	900.87
SW19	455989.7484	2866410.9588	901.14
SW20	455993.6808	2866410.8019	901.33
SW21	455989.9252	2866414.9550	901.07
SW22	455993.8403	2866414.7987	901.18
SW23	455990.0033	2866418.9621	901.00
SW24	455993.9998	2866418.7956	901.04
SW25	455990.1625	2866422.9519	900.96
SW26	455994.1593	2866422.7924	901.00
SW27	455997.9970	2866418.6446	901.02
SW28	455998.1539	2866422.5772	901.03
EP29	455933.7763	2866432.5857	900.53
EP30	455935.8403	2866432.5857	900.40
EP31	455988.9204	2866430.1487	900.62
EP32	455986.8564	2866430.1487	900.50

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Traffic Signal
9th St E & 10th Ave E
ADA Curb Ramps



Legend

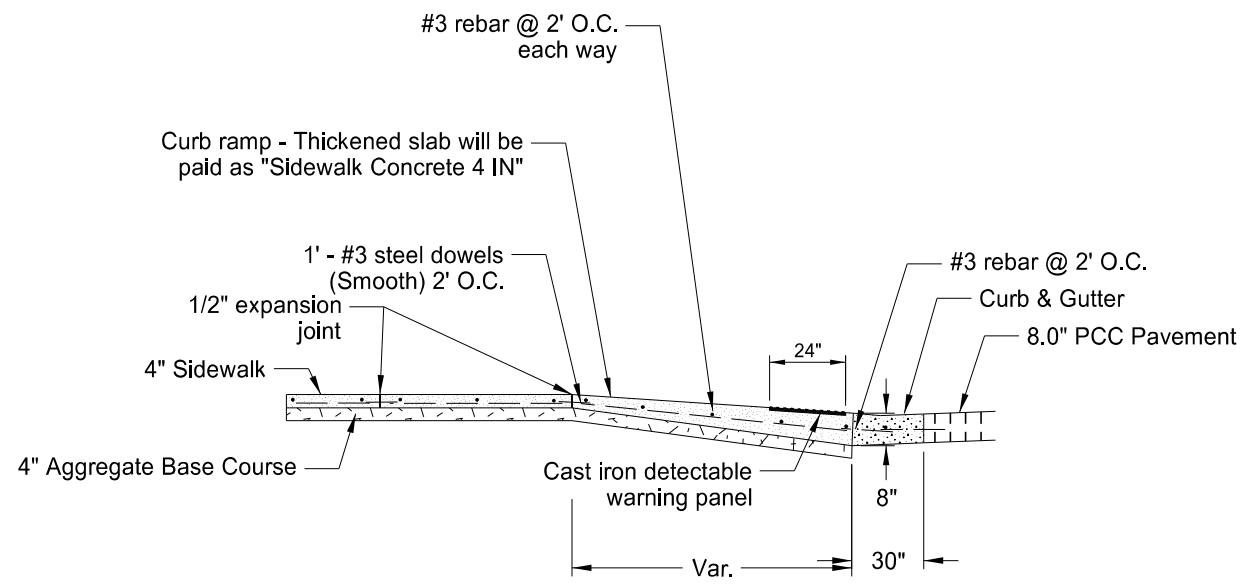
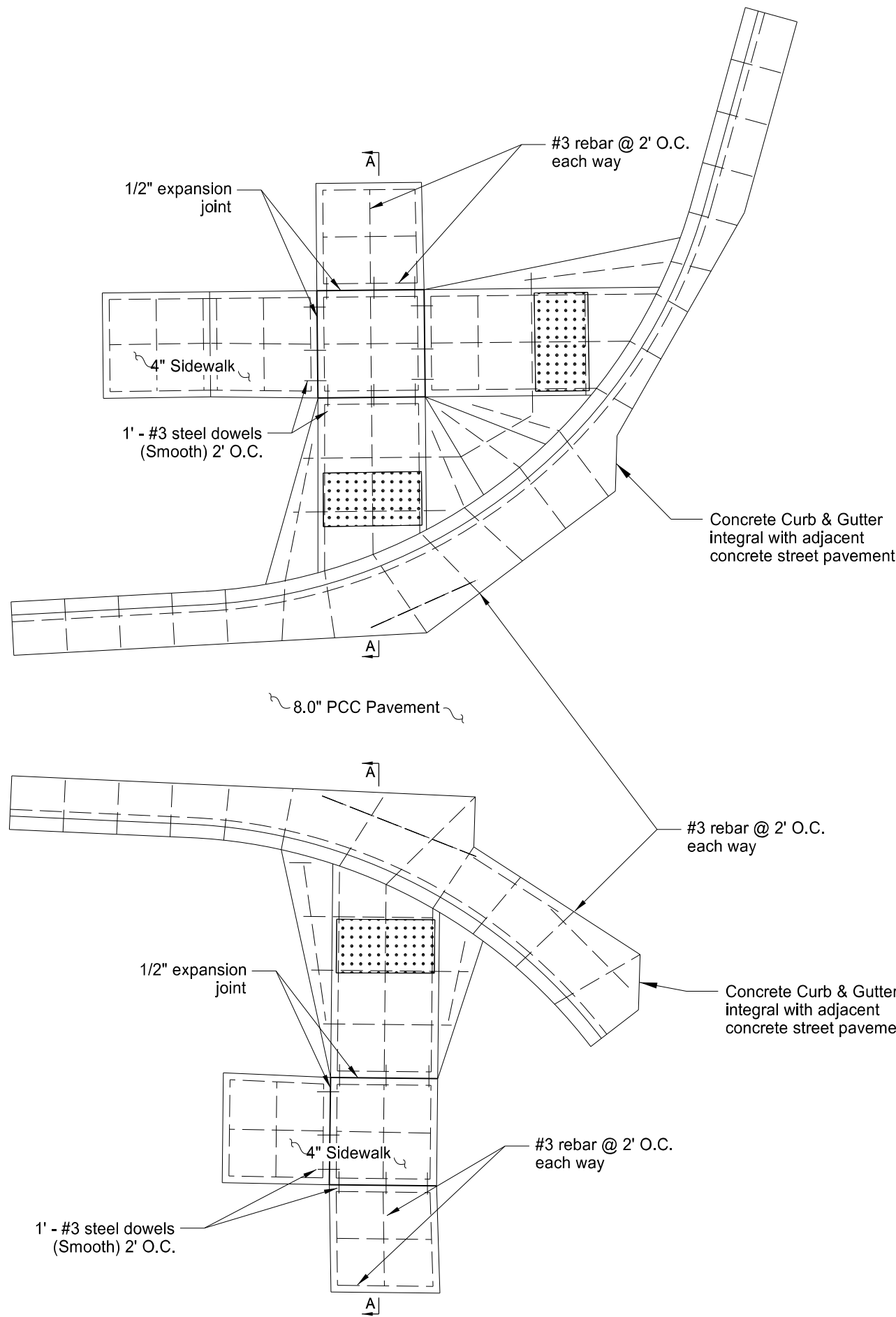
TOC: Top of Curb
 FL: Flow Line
 SW: Sidewalk

(A) 8.3% Maximum Slope
 (B) 4:1 Maximum Flare Slope
 (C) 20:1 Maximum Longitudinal Slope
 50:1 Maximum Cross Slope
 (D) 50:1 Maximum Landing Slope (All Dir.)
 (E) 10:1 Maximum Flare Slope

Transition Panel

Existing Inlet
 Pedestrian Push Button
 Signal Base

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	2263	20	4



SECTION A-A
ADA Ramp & Sidewalk Reinforcing Detail

Note:




1. Detectable warning panels will be cast-in-place, unpainted cast iron manufactured by East Jordan Iron Works, Neenah Foundry, or approved equal.
2. All sidewalk reinforcement, rebar ties, and dowels included in price bid for "Sidewalk Concrete 4 IN"
3. Concrete street pavement that is integral to curb & gutter will be measured and paid by the linear foot per the contract unit price for "Removal of Curb & Gutter" and "Curb & Gutter - Type I".

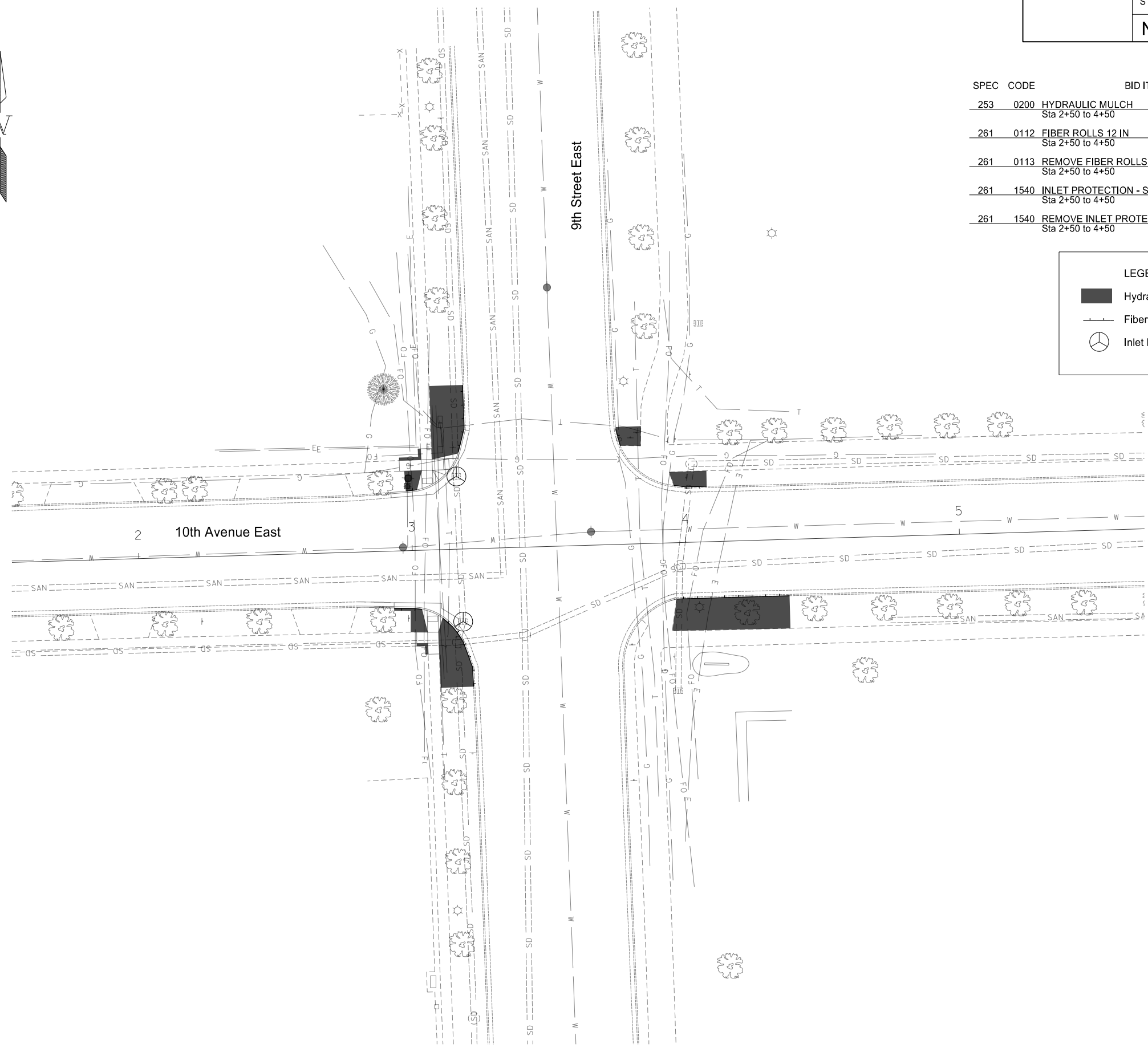
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Traffic Signal
9th St E & 10th Ave E
ADA Curb Ramps

SPEC CODE	BID ITEM	QUANTITY	UNIT
253 0200	HYDRAULIC MULCH Sta 2+50 to 4+50	150	SY
261 0112	FIBER ROLLS 12 IN Sta 2+50 to 4+50	130	LF
261 0113	REMOVE FIBER ROLLS 12 IN Sta 2+50 to 4+50	130	LF
261 1540	INLET PROTECTION - SPECIAL Sta 2+50 to 4+50	2	EA
261 1540	REMOVE INLET PROTECTION - SPECIAL Sta 2+50 to 4+50	2	EA

LEGEND

-  Hydraulic Mulch
-  Fiber Roll 12 IN
-  Inlet Protection - Special



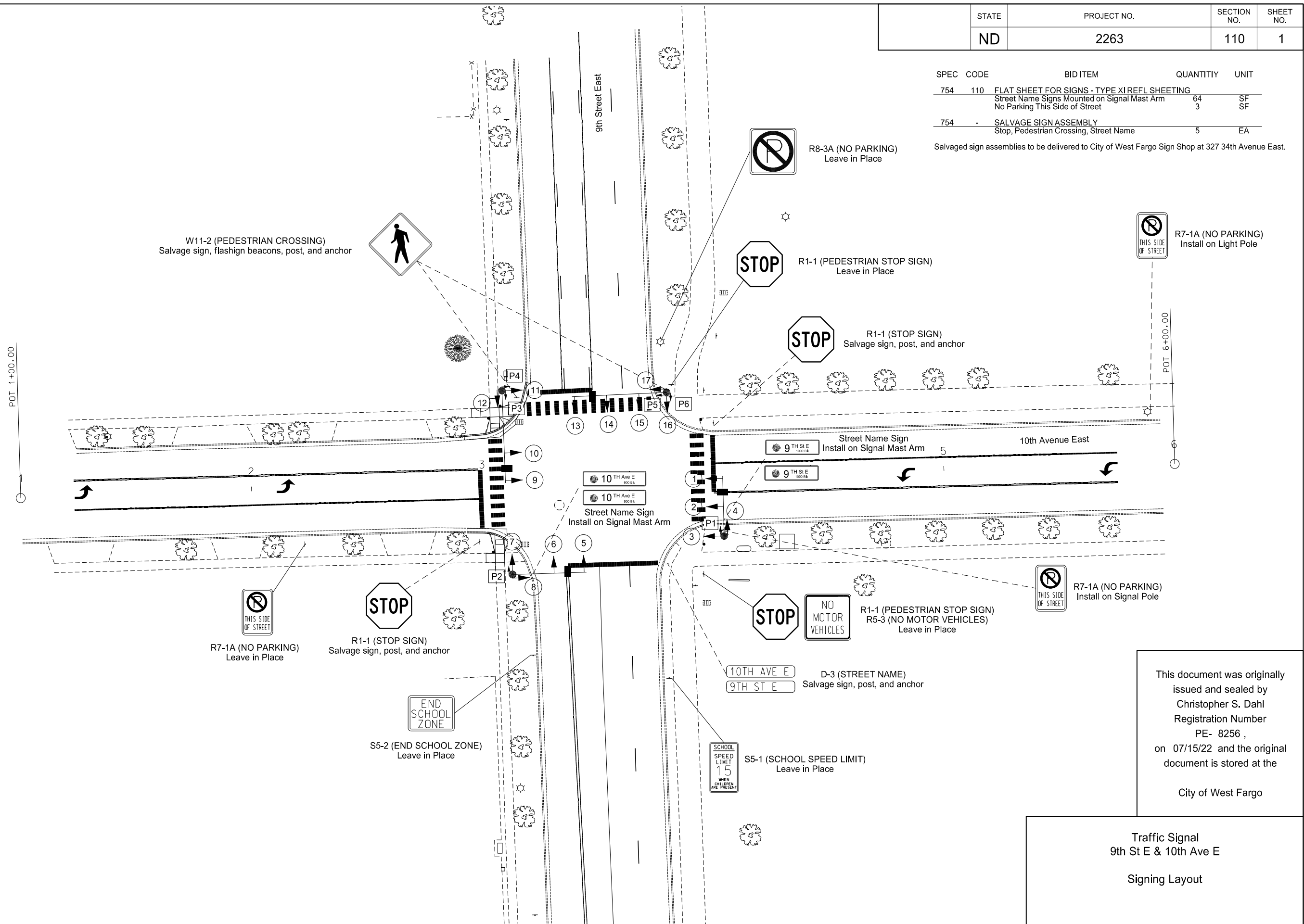
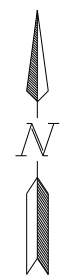
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Traffic Signal
 9th St E & 10th Ave E
 Temporary Erosion Control

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	2263	110	1

SPEC CODE	BID ITEM	QUANTITY	UNIT
754 110	FLAT SHEET FOR SIGNS - TYPE XI REEL SHEETING		
	Street Name Signs Mounted on Signal Mast Arm	64	SF
	No Parking This Side of Street	3	SF
754 -	SALVAGE SIGN ASSEMBLY		
	Stop, Pedestrian Crossing, Street Name	5	EA

Salvaged sign assemblies to be delivered to City of West Fargo Sign Shop at 327 34th Avenue East.

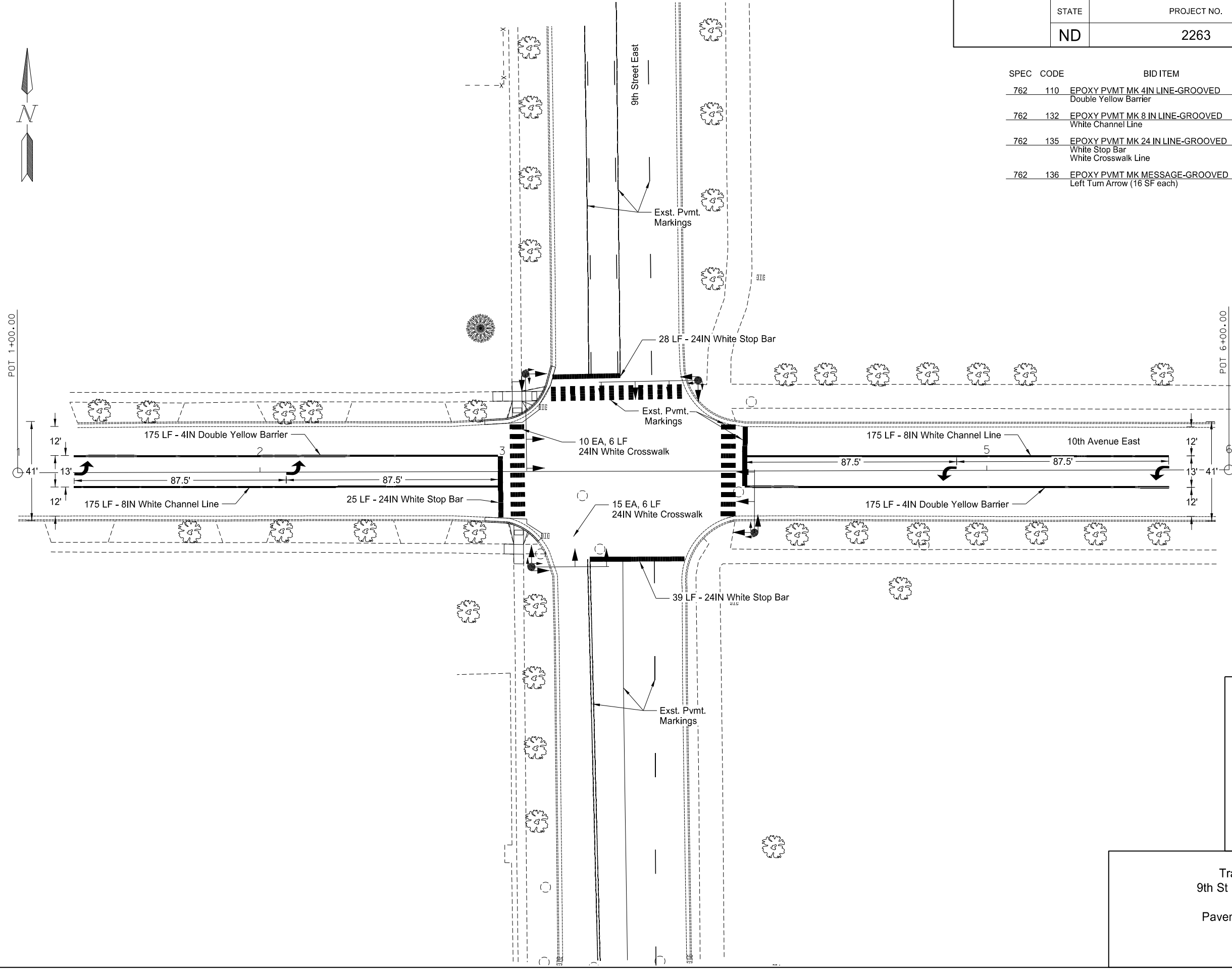


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Traffic Signal
9th St E & 10th Ave E
Signing Layout

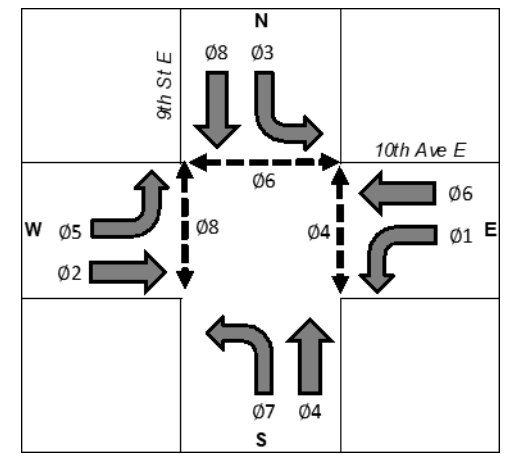
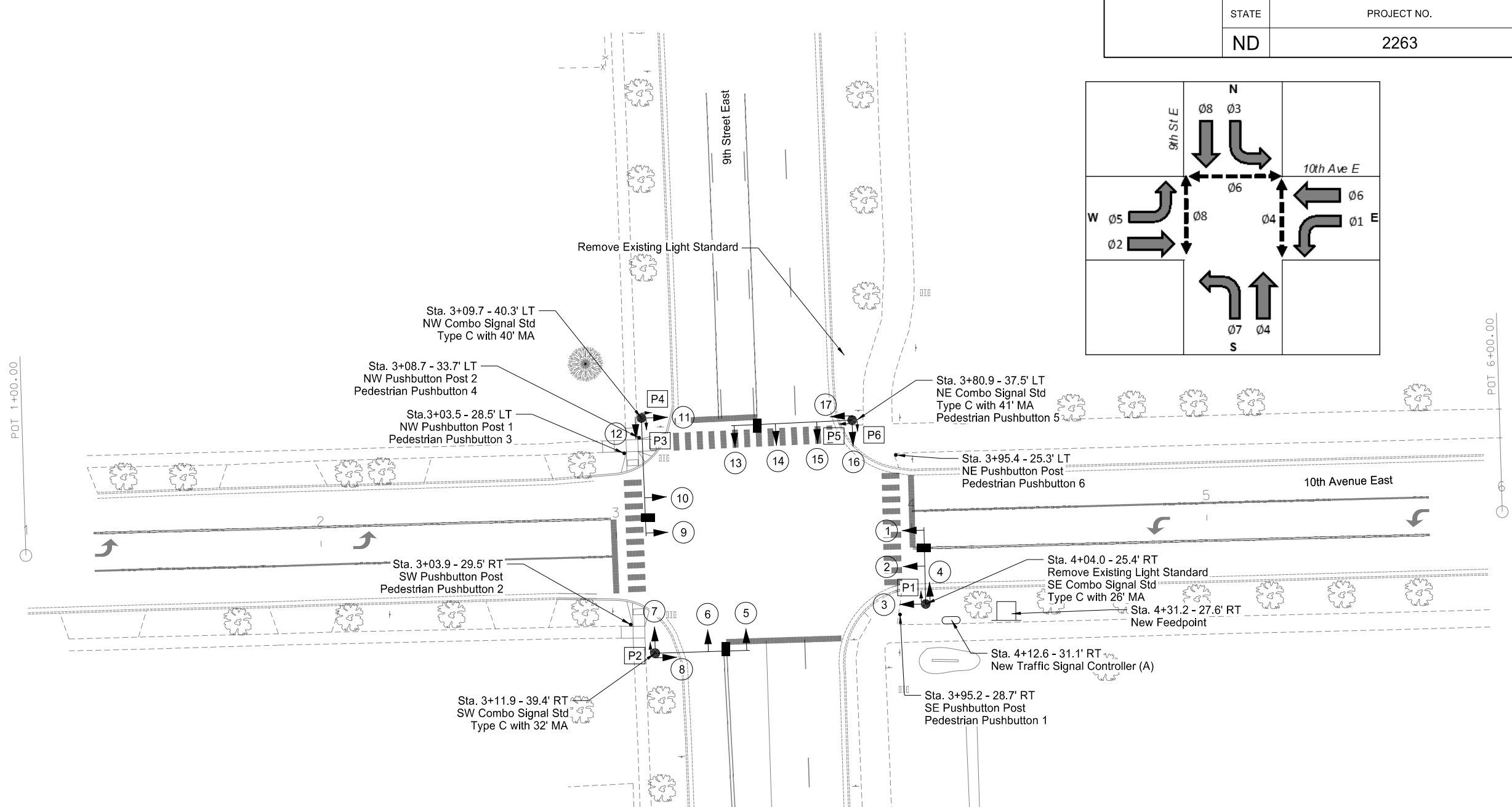
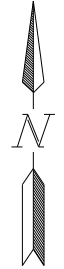
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	2263	120	1

SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	110	EPOXY PVMT MK 4IN LINE-GROOVED Double Yellow Barrier	350	LF
762	132	EPOXY PVMT MK 8 IN LINE-GROOVED White Channel Line	350	LF
762	135	EPOXY PVMT MK 24 IN LINE-GROOVED White Stop Bar White Crosswalk Line	92 60	LF LF
762	136	EPOXY PVMT MK MESSAGE-GROOVED Left Turn Arrow (16 SF each)	64	SF



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Traffic Signal
9th St E & 10th Ave E
Pavement Markings



Pedestrian Pushbutton Schedule			
Location	Pushbutton & Sign Location on Pole	Direction of Arrow on Sign	Message of Roadway to Cross
Pushbutton 1	West	Left	"Tenth Avenue"
Pushbutton 2	East	Right	"Tenth Avenue"
Pushbutton 3	East	Left	"Tenth Avenue"
Pushbutton 4	South	Right	"Ninth Street"
Pushbutton 5	South	Left	"Ninth Street"
Pushbutton 6	West	Right	"Tenth Avenue"

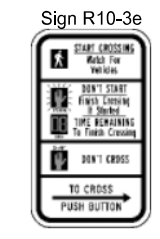
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1" Yellow Type XI Reflective Sheeting

All Signal Heads: 12" LED Lenses & 5" Louvered Backplates

Legend

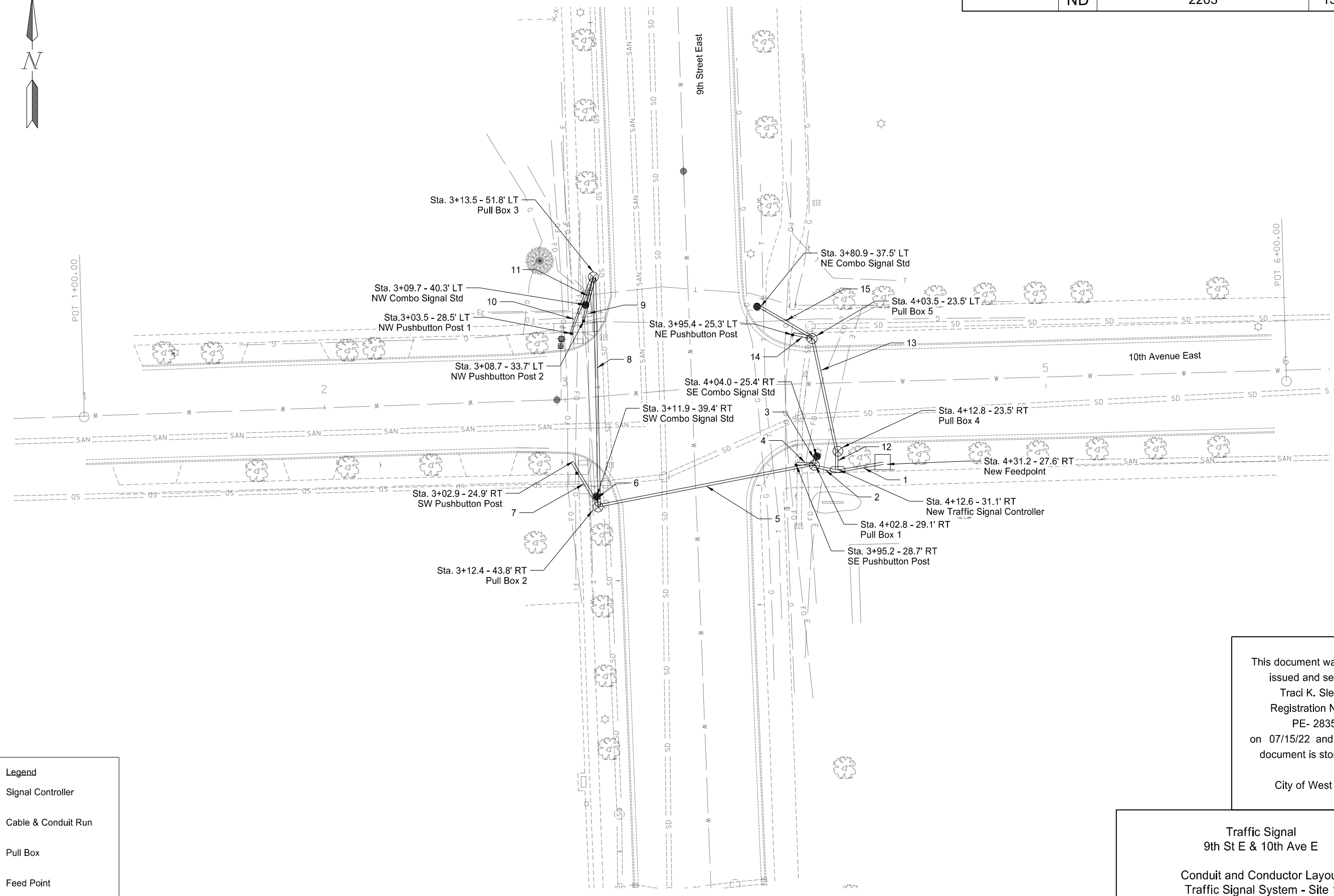
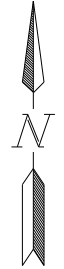
- Signal Controller
- Signal Head
- Feed Point
- Video Detection Unit
- Signal Standard
- Pushbutton Post
- Pedestrian Head



Traffic Signal
 9th St E & 10th Ave E

Signal Layout
 Traffic Signal System - Site 1

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	2263	150	2

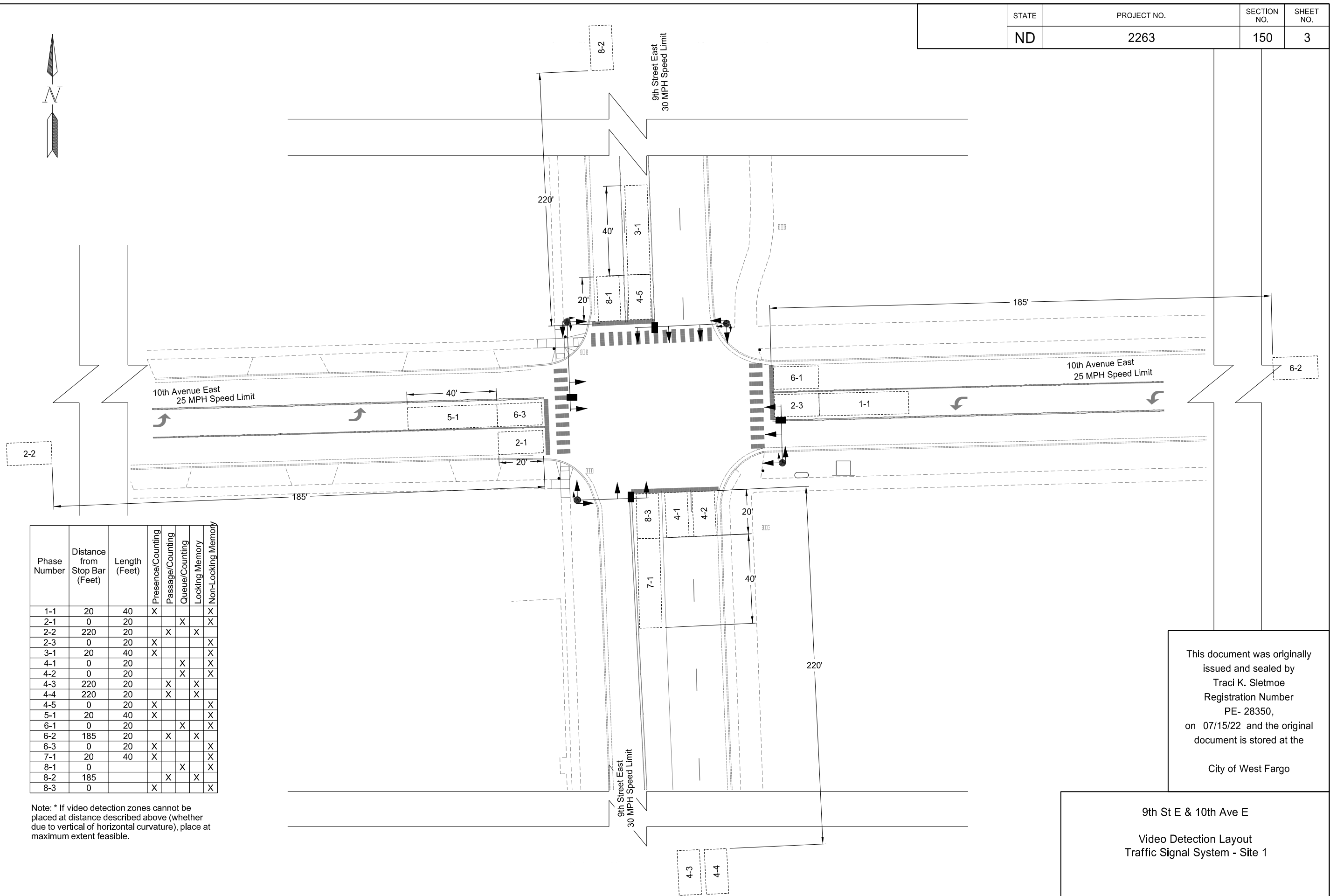


Legend

	Signal Controller
	Cable & Conduit Run
	Pull Box
	Feed Point
	Signal Pole

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Traffic Signal
 9th St E & 10th Ave E
 Conduit and Conductor Layout
 Traffic Signal System - Site 1



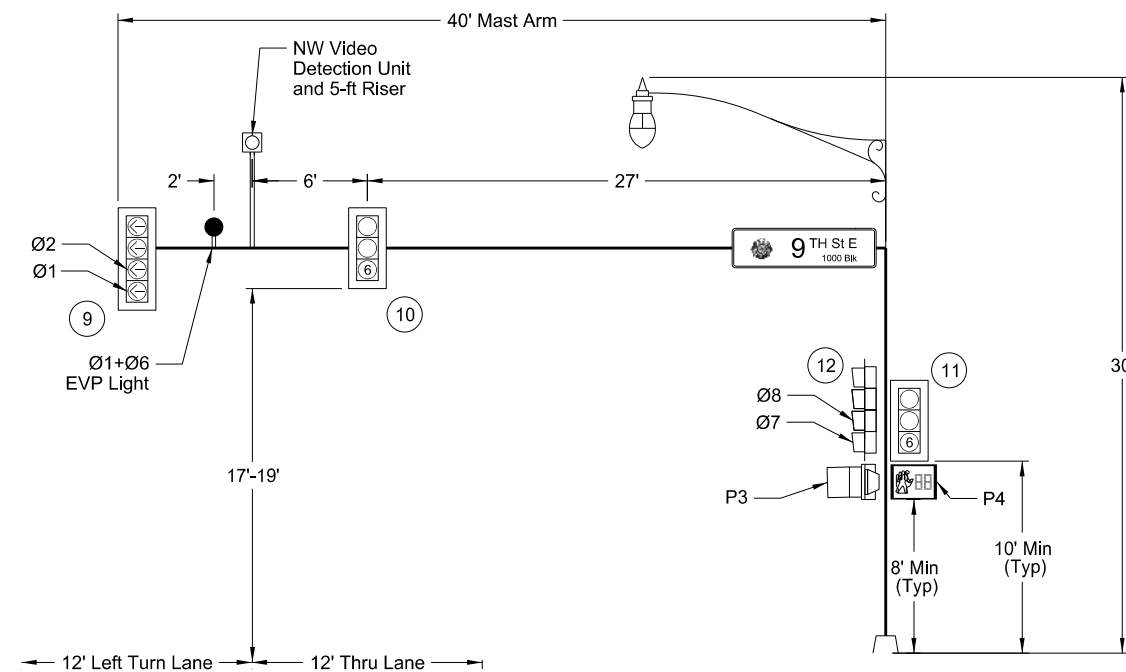
Phase Number	Distance from Stop Bar (Feet)	Length (Feet)	Presence/Counting	Passage/Counting	Queue/Counting	Locking Memory	Non-Locking Memory
1-1	20	40	X				X
2-1	0	20		X			X
2-2	220	20		X	X	X	
2-3	0	20	X				X
3-1	20	40	X				X
4-1	0	20			X		X
4-2	0	20			X		X
4-3	220	20		X		X	
4-4	220	20		X		X	
4-5	0	20	X				X
5-1	20	40	X				X
6-1	0	20			X		X
6-2	185	20		X		X	
6-3	0	20	X				X
7-1	20	40	X				X
8-1	0				X		X
8-2	185			X		X	
8-3	0		X				X

Note: * If video detection zones cannot be placed at distance described above (whether due to vertical or horizontal curvature), place at maximum extent feasible.

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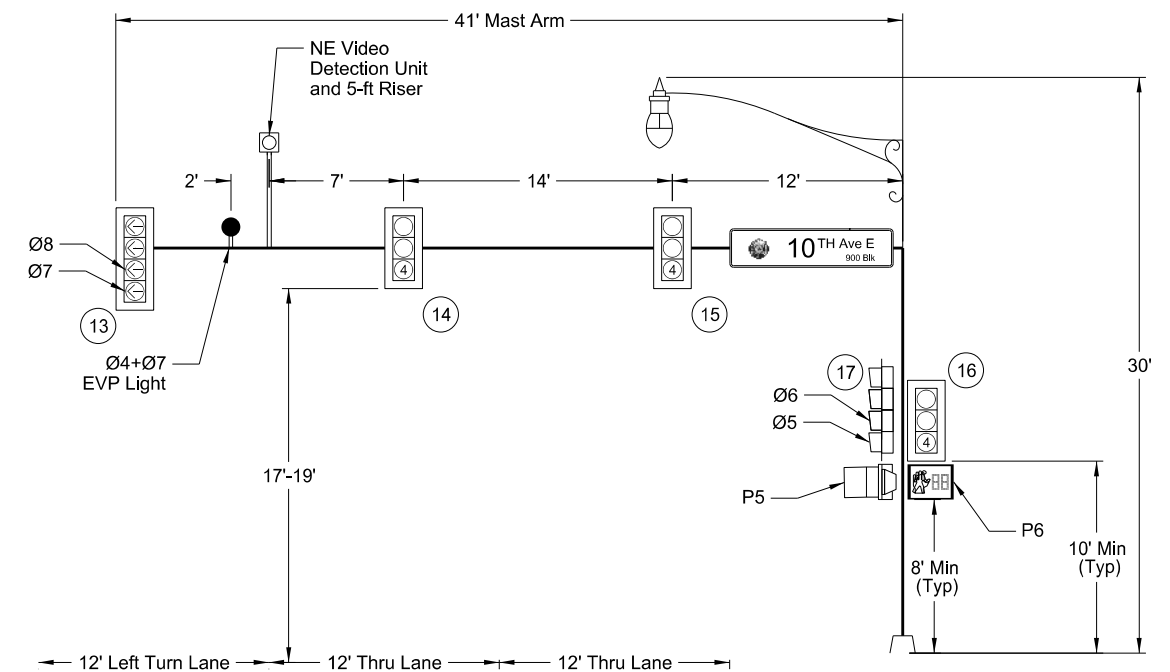
9th St E & 10th Ave E
 Video Detection Layout
 Traffic Signal System - Site 1

Northwest Combo Signal Standard



Westbound

Northeast Combo Signal Standard



Northbound

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Traffic Signal
 9th St E & 10th Ave E
 Signal Heads & Head Locations
 Traffic Signal System - Site 1

SIGNAL CABLE & CONDUIT SCHEDULE

#	RUN		CONDUIT		CABLE					TITLE
	ITEM		SIZE (IN)	LF	Origin	Destination	# of Cables	SIZE/TYPE	Total LF	
1	Origin	Feed Point	2	15	Feed Point	Traffic Signal Controller	2	UNDERGROUND CONDUCTOR NO6-TYPE RHW	68	
	Destination	Traffic Signal Controller				1	UNDERGROUND CONDUCTOR NO6-TYPE THW	34		
2	Origin Destination	Traffic Signal Controller Pull Box 1	4	10	Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller	Pull Box 1	6	14 AWG 12 CONDUCTOR CABLE	150	SES1, SES2, SWS1, SWS2, NWS1, NWS2 SEV, SWV, NWV ED EL16, EL25, EL38 PB1, PB2, PB3, PB4
						Pull Box 1	3	VIDEO DETECTION CABLE	75	
						Pull Box 1	1	EMERGENCY VEHICLE DETECTOR CABLE	25	
						Pull Box 1	3	14 AWG 2 CONDUCTOR CABLE	75	
						Pull Box 1	4	16 AWG 2 CONDUCTOR CABLE	100	
3	Origin Destination	Pull Box 1 Southeast Combo Signal Std	2	4	Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1	Southeast Combo Signal Std Transformer Base	2	14 AWG 12 CONDUCTOR CABLE	30	SES1, SES2 SEV ED EL25
						Southeast Video Detection Unit	1	VIDEO DETECTION CABLE	53	
						Emergency Preemption Detector	1	EMERGENCY VEHICLE DETECTOR CABLE	40	
						Southeast Emergency Preemption Lamp	1	14 AWG 2 CONDUCTOR CABLE	55	
4	Origin Destination	Pull Box 1 SE Pushbutton Post	2	8	Pull Box 1	Pushbutton 1	1	16 AWG 2 CONDUCTOR CABLE	22	PB1
5	Origin Destination	Pull Box 1 Pull Box 2	3	92	Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1	Pull Box 2	4	14 AWG 12 CONDUCTOR CABLE	416	SWS1, SWS2, NWS1, NWS2 SWV, NWV EL38, EL16 PB3, PB4
						Pull Box 2	2	VIDEO DETECTION CABLE	208	
						Pull Box 2	2	14 AWG 2 CONDUCTOR CABLE	208	
						Pull Box 2	2	16 AWG 2 CONDUCTOR CABLE	208	
6	Origin Destination	Pull Box 2 Southwest Combo Signal Std	2	5	Pull Box 2 Pull Box 2 Pull Box 2	Southwest Combo Signal Std Transformer Base	2	14 AWG 12 CONDUCTOR CABLE	32	SWS1, SWS2 SWV EL38
						Southwest Video Detection Unit	1	VIDEO DETECTION CABLE	59	
						Southwest Emergency Preemption Lamp	1	14 AWG 2 CONDUCTOR CABLE	61	
7	Origin Destination	Pull Box 2 SW Pushbutton Post	2	20	Pull Box 2	Pushbutton 2	1	16 AWG 2 CONDUCTOR CABLE	34	PB2
8	Origin Destination	Pull Box 2 Pull Box 3	2	96	Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2	Pull Box 3	2	14 AWG 12 CONDUCTOR CABLE	216	NWS1, NWS2 NWV EL16 PB3, PB4
						Pull Box 3	1	VIDEO DETECTION CABLE	108	
						Pull Box 3	1	14 AWG 2 CONDUCTOR CABLE	108	
						Pull Box 3	2	16 AWG 2 CONDUCTOR CABLE	216	
9	Origin Destination	Pull Box 3 NW Pushbutton Post 2	2	18	Pull Box 3	Pushbutton 4	1	16 AWG 2 CONDUCTOR CABLE	32	PB4
10	Origin Destination	Pull Box 3 NW Pushbutton Post 1	2	28	Pull Box 3	Pushbutton 3	1	16 AWG 2 CONDUCTOR CABLE	42	PB3
11	Origin Destination	Pull Box 3 Northwest Combo Signal Std	2	13	Pull Box 3 Pull Box 3 Pull Box 3	Northwest Combo Signal Std Transformer Base	2	14 AWG 12 CONDUCTOR CABLE	48	NWS1, NWS2 NWV EL16
						Northwest Video Detection Unit	1	VIDEO DETECTION CABLE	76	
						Northwest Emergency Preemption Lamp	1	14 AWG 2 CONDUCTOR CABLE	78	
12	Origin Destination	Traffic Signal Controller Pull Box 4	3	8	Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller	Pull Box 4	2	14 AWG 12 CONDUCTOR CABLE	46	NES1, NES2 NEV EL47 PB5, PB6
						Pull Box 4	1	VIDEO DETECTION CABLE	23	
						Pull Box 4	1	14 AWG 2 CONDUCTOR CABLE	23	
						Pull Box 4	2	16 AWG 2 CONDUCTOR CABLE	46	
13	Origin Destination	Pull Box 4 Pull Box 5	3	48	Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4	Pull Box 5	2	14 AWG 12 CONDUCTOR CABLE	120	NES1, NES2 NEV EL47 PB5, PB6
						Pull Box 5	1	VIDEO DETECTION CABLE	60	
						Pull Box 5	1	14 AWG 2 CONDUCTOR CABLE	60	
						Pull Box 5	2	16 AWG 2 CONDUCTOR CABLE	120	
14	Origin Destination	Pull Box 5 NE Pushbutton Post	2	9	Pull Box 5	Pushbutton 6	1	16 AWG 2 CONDUCTOR CABLE	23	PB6
15	Origin Destination	Pull Box 5 Northeast Combo Signal Std	2	27	Pull Box 5 Pull Box 5 Pull Box 5 Pull Box 5	Northeast Combo Signal Std Transformer Base	2	14 AWG 12 CONDUCTOR CABLE	76	NES1, NES2 NEV EL47 PB5
						Northeast Video Detection Unit	1	VIDEO DETECTION CABLE	90	
						Northeast Emergency Preemption Lamp	1	14 AWG 2 CONDUCTOR CABLE	92	
						Pushbutton 5	1	16 AWG 2 CONDUCTOR CABLE	41	

NWS1 = Northwest Combo Signal Standard
NWS2 = Northwest Combo Signal Standard
NES1 = Northeast Combo Signal Standard
NES2 = Northeast Combo Signal Standard
SES1 = Southeast Combo Signal Standard
SES2 = Southeast Combo Signal Standard
SWS1 = Southwest Combo Signal Standard
SWS2 = Southwest Combo Signal Standard
NWV = Northwest Video Detection Unit
NEV = Northeast Video Detection Unit
SEV = Southeast Video Detection Unit
SWV = Southwest Video Detection Unit
ED = EVP Detection Unit
EL16 = Ø1 + Ø6 EVP Light
EL25 = Ø2 + Ø5 EVP Light
EL38 = Ø3 + Ø8 EVP Light
EL47 = Ø4 + Ø7 EVP Light
PB1 = Pushbutton 1
PB2 = Pushbutton 2
PB3 = Pushbutton 3
PB4 = Pushbutton 4
PB5 = Pushbutton 5
PB6 = Pushbutton 6

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INTERNAL MAST ARM/STANDARD SIGNAL HEAD CABLE

Origin	Destination	# of Cables	SIZE/TYPE	Total LF	Origin	Destination	# of Cables	SIZE/TYPE	Total LF
Southeast Combo Signal Std Transformer Base	Vehicle Head 1	1	14 AWG 7 CONDUCTOR CABLE	54	Northwest Combo Signal Std Transformer Base	Vehicle Head 9	1	14 AWG 7 CONDUCTOR CABLE	68
	Vehicle Head 2	1	14 AWG 5 CONDUCTOR CABLE	42		Vehicle Head 10	1	14 AWG 5 CONDUCTOR CABLE	56
	Vehicle Head 3	1	14 AWG 5 CONDUCTOR CABLE	20		Vehicle Head 11	1	14 AWG 5 CONDUCTOR CABLE	20
	Vehicle Head 4	1	14 AWG 7 CONDUCTOR CABLE	20		Vehicle Head 12	1	14 AWG 7 CONDUCTOR CABLE	20
	Pedestrian Head 1	1	14 AWG 3 CONDUCTOR CABLE	17		Pedestrian Head 3	1	14 AWG 3 CONDUCTOR CABLE	17
Vehicle Head 5	1	14 AWG 5 CONDUCTOR CABLE	60	Pedestrian Head 4		1	14 AWG 3 CONDUCTOR CABLE	17	
Southwest Combo Signal Std Transformer Base	Vehicle Head 6	1	14 AWG 5 CONDUCTOR CABLE	46	Northeast Combo Signal Std Transformer Base	Vehicle Head 13	1	14 AWG 7 CONDUCTOR CABLE	69
	Vehicle Head 7	1	14 AWG 5 CONDUCTOR CABLE	20		Vehicle Head 14	1	14 AWG 5 CONDUCTOR CABLE	55
	Vehicle Head 8	1	14 AWG 7 CONDUCTOR CABLE	20		Vehicle Head 15	1	14 AWG 5 CONDUCTOR CABLE	41
	Pedestrian Head 2	1	14 AWG 3 CONDUCTOR CABLE	17		Vehicle Head 16	1	14 AWG 5 CONDUCTOR CABLE	20
				Vehicle Head 17		1	14 AWG 7 CONDUCTOR CABLE	20	
				Pedestrian Head 5		1	14 AWG 3 CONDUCTOR CABLE	17	
				Pedestrian Head 6	1	14 AWG 3 CONDUCTOR CABLE	17		

Traffic Signal
9th St E & 10th Ave E
Cable & Conduit Schedule
Traffic Signal System - Site 1

ITEM DESCRIPTION	UNIT	SITE 1
CONCRETE FOUNDATION-TRAFFIC SIGNALS	EA	4
PULLBOX	EA	4
2IN DIAMETER RIGID CONDUIT	LF	243
3IN DIAMETER RIGID CONDUIT	LF	148
EMERGENCY VEHICLE DETECTOR CABLE	LF	65
VIDEO DETECTION CABLE	LF	752
NO16 AWG 2 CONDUCTOR CABLE	LF	884
NO14 AWG 1 CONDUCTOR CABLE	LF	1,134
NO14 AWG 2 CONDUCTOR CABLE	LF	760
NO14 AWG 3 CONDUCTOR CABLE	LF	85
NO14 AWG 5 CONDUCTOR CABLE	LF	380
NO14 AWG 7 CONDUCTOR CABLE	LF	271
NO14 AWG 12 CONDUCTOR CABLE	LF	1,134
COMBO SIGNAL STD 16FT MA	EA	1
COMBO SIGNAL STD 37FT MA	EA	1
COMBO SIGNAL STD 39FT MA	EA	1
COMBO SIGNAL STD 45FT MA	EA	1
1-WAY 3 SEC HEAD W/12IN LENS-POST MTD	EA	4
1-WAY 3 SEC HEAD W/12IN LENS-MA MTD	EA	5
1-WAY 4 SEC HEAD W/12IN LENS-POST MTD	EA	4
1-WAY 4 SEC HEAD W/12IN LENS-MA MTD	EA	4
PEDESTRIAN COUNTDOWN SIGNAL HEAD-POST MTD	EA	6
PEDESTRIAN PUSHBUTTON POST	EA	5
PEDESTRIAN PUSHBUTTON & SIGN	EA	6
VIDEO DETECTION CABLE	LF	752
VIDEO DETECTION SYSTEM (A)	EA	1
CONTROLLER TYPE 1(B)	EA	1
BATTERY BACKUP SYSTEM	EA	1
EMERGENCY VEHICLE PRE-EMPTION UNIT (C)	EA	1
FLASHING YELLOW ARROW SIGN (D)	EA	4
STREET NAME SIGN (D)	EA	4
REMOVE LIGHT STANDARD	EA	2

(A) Includes cameras, video monitor, access point and all other equipment required for a fully operational video detection system.
(B) Includes cabinet, working slab, conflict monitor, load switches, flashers, bus interface units and all other equipment required for a fully operational traffic signal controller.
(C) Includes detectors, lights and all other equipment required for a fully operation preemption system.
(D) Includes signs, brackets, and all other equipment for fully compliant sign installation.

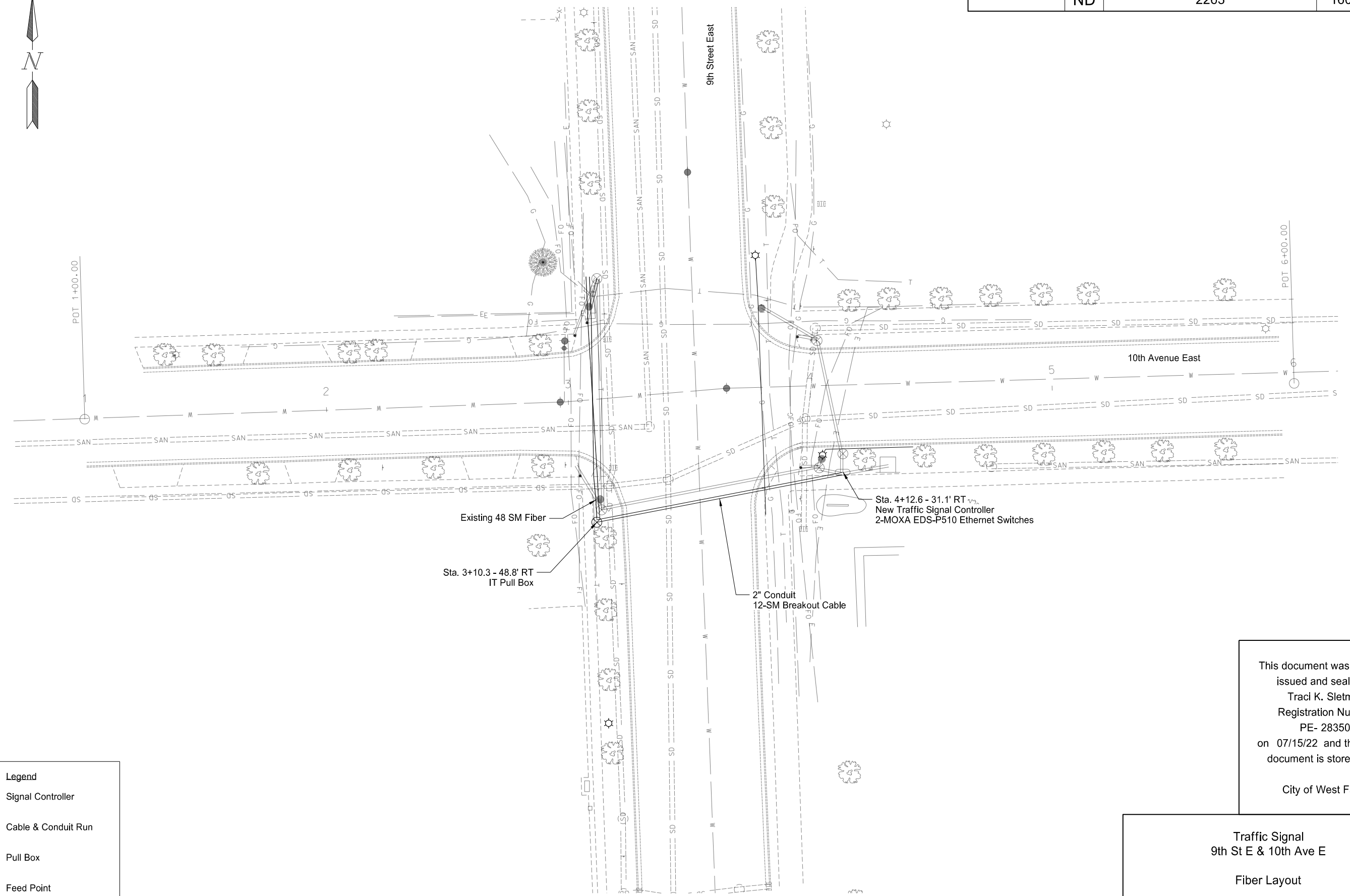
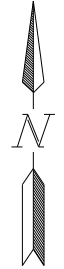
Items shown above are for informational purposes, contractor is to provide all labor and equipment necessary for the signal system to be fully operational as shown in the plans.

Items shall be included in the corresponding price bid "TRAFFIC SIGNAL SYSTEM - SITE 1"

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Traffic Signal
9th St E & 10th Ave E
Quantities
Traffic Signal System - Site 1

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	2263	160	1



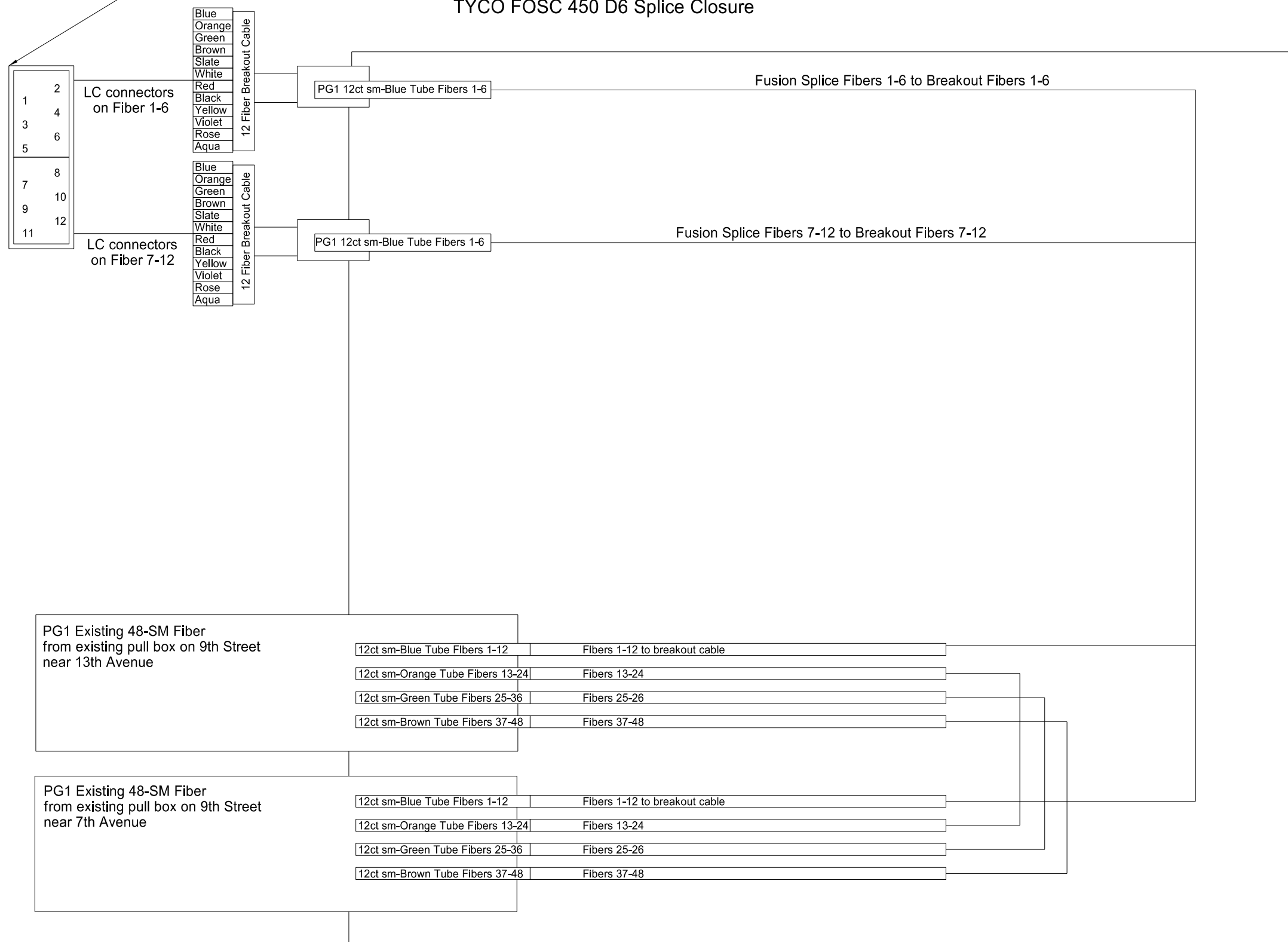
Legend	
	Signal Controller
	Cable & Conduit Run
	Pull Box
	Feed Point
	Signal Pole

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Traffic Signal
 9th St E & 10th Ave E
 Fiber Layout

Traffic Signal Cabinet Distribution Panel

TYCO FOSC 450 D6 Splice Closure



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Traffic Signal
9th St E & 10th Ave E
Fiber Splice Closure Detail

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	2263	160	3

ITEM DESCRIPTION	UNIT	IT SYSTEM
2IN DIAMETER RIGID CONDUIT	LF	103
IT PULL BOX	EA	1
12-SM FIBER OPTIC CABLE	LF	118
12 PORT TERMINATION PANEL	EA	1
MOXA EDS-P510 ETHERNET SWITCH	EA	1
FIBER OPTIC SPLICE CLOSURE	EA	1

Items shown above are for informational purposes, contractor is to provide all labor and equipment necessary for the signal system to be fully operational as shown in the plans.

Items shall be included in the corresponding price bid "IT SYSTEM"

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Traffic Signal
9th St E & 10th Ave E

IT System Quantities