



# North Dakota Department of Transportation

Thomas K. Sorel  
Director

Doug Burgum  
Governor

November 7, 2017

## ADDENDUM 2 – JOB 28

TO: All prospective bidders on project NHU-4-002(116)149, Job No. 28 scheduled for the November 17, 2017 bid opening.

The following plan and request for proposal revisions shall be made:

### Plan Revisions:

See attached summary from Jonathan P. Morgenroth, PE, SRF Consulting Group, Inc. dated November 6, 2017 for an explanation.

### Request for Proposal Revisions:

Remove and replace pages 7, 12, 13, 14, and 15 of 17 of the Proposal pages located at the beginning of the Request for Proposal, with the enclosed pages revised 11/7/2017.

The following changes were made to the Bid Items:

Spec No.	Code No.	Description	Description of Change
704	1080	STACKABLE VERTICAL PANELS	Added Bid Item at 228 EA
704	1081	VERTICAL PANELS-BACK TO BACK	Removed Bid Item
754	0214	GALV STEEL POSTS-W-SHAPE POSTS (TWO OR THREE)	Increased from 48.8 to 76.8 LF
754	1104	REMOVE SIGN FOUNDATION	Added Bid Item at 2 EA

This addendum is to be incorporated into the bidder's proposal for this project. AASHTOWare Project Bids files should be updated by downloading the addendum file from the Bid Express on-line bidding exchange at <http://www.bidx.com/> and load it into the AASHTOWare Project Bids program.

PHILLIP MURDOFF – CONSTRUCTION SERVICES ENGINEER

80:jwj

Enclosure

November 6, 2017

**ADDENDUM 2 – JOB 28**

TO: All prospective bidders on project NHU-4-002(116)149, Job No. 28 scheduled for the November 17, 2017 bid opening.

Addendum 2 is to address: Bid item, quantity changes, and signal standard types in medians.

The following plan and proposal revisions shall be made:

**Plan Revisions:**

**Remove and replace sheets 6-1, 8-1 to 2, 100-1 to 2, and 110-4 with the enclosed sheets revised 10/31/17.**

**Remove and replace sheets 6-6 to 8, 150-8, and 150-10 with the enclosed sheets revised 11/06/17.**

**Sheet 6-1:**

Added plan note to include Traffic Control Supervisor.

**Sheet 6-6:**

Revised plan note 772-P13 to include anchor bolt base text.

**Sheet 6-7:**

Notes moved down because of added text to Sheet 6-6.

**Sheet 6-8:**

Notes moved down because of added text to Sheet 6-6.

**Sheet 8-1:**

Changed item 704-1081 "Vertical Panels-Back to Back" to 704-1080 "Stackable Vertical Panels"  
Item 754 0214 Glav Steel Posts-W-Shape Post (Two or More) increased from 48.8 LF to 76.8 LF

**Sheet 8-2:**

Added item 754 1104 Remove Sign Foundation 2 EA

**Sheet 100-1:**

Changed item 704-1081 "Vertical Panels-Back to Back" to 704-1080 "Stackable Vertical Panels"

**Sheet 100-2:**

Changed item 704-1081 "Vertical Panels-Back to Back" to 704-1080 "Stackable Vertical Panels"

**Sheet 110-4:**

Added item 754 1104 Remove Sign Foundation 2 EA

Addendum 2 Job 28  
November 17, 2017 Bid Opening

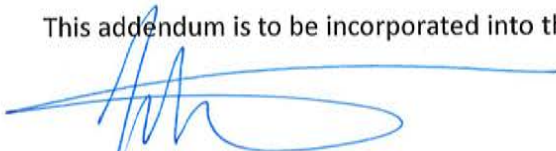
Sheet 150-8:

Revised legend to include Anchor Bolt Base and changed Signal S3 base to be Anchor Bolt Base.

Sheet 150-10:

Revised legend to include Anchor Bolt Base and changed Signal S8 base to be Anchor Bolt Base.

This addendum is to be incorporated into the bidder's proposal for this project.

A handwritten signature in blue ink, appearing to read 'J. Morgenroth', with a long horizontal flourish extending to the right.

Jonathan P. Morgenroth, PE  
SRF Consulting Group, Inc.

Enclosure

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002(116)149\_Addendum\_2\_Explanation.docx

**BID ITEMS**

Project: NHU-4-002(116)149 (PCN-21174)

**Bidder must type or neatly print unit prices in numerals, make extensions for each item, and total. Do not carry unit prices further than three (3) decimal places.**

Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
033	430	0045	SUPERPAVE FAA 45	TON	13,456.				
034	430	1000	CORED SAMPLE	EA	49.				
035	430	5828	PG 58-28 ASPHALT CEMENT	TON	498.				
036	430	6428	PG 64-28 ASPHALT CEMENT	TON	291.				
037	702	0100	MOBILIZATION	L SUM	1.				
038	704	0100	FLAGGING	MHR	1,200.				
039	704	1000	TRAFFIC CONTROL SIGNS	UNIT	4,489.				
040	704	1052	TYPE III BARRICADE	EA	70.				
041	704	1060	DELINEATOR DRUMS	EA	161.				
042	704	1080	STACKABLE VERTICAL PANELS	EA	228.				
043	704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	2.				
044	704	4011	PORTABLE CHANGEABLE MESSAGE SIGN	EA	5.				
045	706	0400	FIELD OFFICE	EA	1.				
046	706	0500	AGGREGATE LABORATORY	EA	1.				
047	706	0550	BITUMINOUS LABORATORY	EA	1.				
048	706	0600	CONTRACTOR'S LABORATORY	EA	1.				

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						\$\$\$\$	000	\$\$\$\$	00
113	754	0214	GALV STEEL POSTS-W-SHAPE POSTS(TWO OR MORE)	LF	76.800				
114	754	0563	REFERENCE MARKER-TYPE C	EA	2.				
115	754	0592	RESET SIGN PANEL	EA	3.				
116	754	0805	OBJECT MARKERS - CULVERTS	EA	22.				
117	754	1104	REMOVE SIGN FOUNDATION	EA	2.				
118	762	0110	EPOXY PVT MK 4IN LINE-GROOVED	LF	4,512.				
119	762	0113	EPOXY PVT MK 4IN LINE	LF	8,452.				
120	762	0122	PREFORMED PATTERNED PVT MK-MESSAGE(GROOVED)	SF	448.				
121	762	0132	EPOXY PVT MK 8IN LINE-GROOVED	LF	6,989.				
122	762	0134	EPOXY PVT MK 12IN LINE-GROOVED	LF	1,013.				
123	762	0430	SHORT TERM 4IN LINE-TYPE NR	LF	9,958.				
124	762	1307	PREFORMED PATTERNED PVT MK 6IN LINE-GROOVED	LF	187.				
125	762	1325	PREFORMED PATTERNED PVT MK 24IN LINE-GROOVED	LF	390.				
126	764	9011	ATTENUATING CRASH CUSHION TL-3	EA	2.				
127	766	0100	MAILBOX-ALL TYPES	EA	1.				
128	770	0020	CONCRETE FOUNDATION-HIGHWAY LIGHTING	EA	22.				

**BID ITEMS**

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
129	770	0220	CABLE TRENCH-TYPE II	LF	4,225.				
130	770	0330	2IN DIAMETER RIGID CONDUIT	LF	1,736.				
131	770	0504	UNDERGROUND CONDUCTOR NO4-TYPE RHW	LF	9,308.				
132	770	0604	UNDERGROUND CONDUCTOR NO4-TYPE THW	LF	4,654.				
133	770	1676	LT STD 6FT MA 40FT MT HT BREAKAWAY	EA	8.				
134	770	1778	LT STD 10FT MA 42FT MT HT BREAKAWAY	EA	14.				
135	770	4210	LED LUMINAIRE	EA	15.				
136	770	4220	LED LUMINAIRE - 150 WATT	EA	11.				
137	770	4567	REMOVE LIGHTING SYSTEM	EA	1.				
138	772	9811	TRAFFIC SIGNAL SYSTEM - SITE 1	EA	1.				
139	990	0230	TEMPORARY ACCESS	L SUM	1.				
			SUBTOTAL						
			<b>OPTION 1</b>						
140	714	4097	PIPE CONDUIT 15IN-STORM DRAIN	LF	653.				
141	714	4101	PIPE CONDUIT 18IN-STORM DRAIN	LF	367.				

**BID ITEMS**

Project: NHU-4-002(116)149 (PCN-21174)

**Bidder must type or neatly print unit prices in numerals, make extensions for each item, and total. Do not carry unit prices further than three (3) decimal places.**

Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$\$	000	\$\$\$\$\$	00
			SUBTOTAL OPTION 1						
			<b>OPTION 2</b>						
142	714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN	LF	653.				
143	714	0315	PIPE CONC REINF 18IN CL III-STORM DRAIN	LF	367.				
			SUBTOTAL OPTION 2						
			<b>OPTION 3</b>						
144	714	4097	PIPE CONDUIT 15IN-STORM DRAIN	LF	268.				
145	714	4101	PIPE CONDUIT 18IN-STORM DRAIN	LF	94.				
146	714	4107	PIPE CONDUIT 24IN-STORM DRAIN	LF	75.				
			SUBTOTAL OPTION 3						
			<b>OPTION 4</b>						
147	714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN	LF	268.				
148	714	0315	PIPE CONC REINF 18IN CL III-STORM DRAIN	LF	94.				

## North Dakota Department of Transportation

## BID ITEMS

Rev: 11/7/2017

Project: NHU-4-002(116)149 (PCN-21174)

**Bidder must type or neatly print unit prices in numerals, make extensions for each item, and total. Do not carry unit prices further than three (3) decimal places.**

Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$\$	000	\$\$\$\$\$	00
149	714	0620	PIPE CONC REINF 24IN CL III-STORM DRAIN	LF	75.				
			SUBTOTAL OPTION 4						
			SUBTOTAL + ALL OPTIONS						



		Revised Revised	10/11/17 10/31/17	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
				ND	NHU-4-002(116)149	6	1
<div>NOTES</div>							
100-P01	NOISE RESTRICTION: No construction activities or moving of equipment between the hours of 11:00 pm and 7:00 am.			If the difference in elevation between the shoulder and driving lane is less than 2", no slough is required.			
105-110	PAVEMENT SWEEPING: Sweep paved areas that were used by construction traffic before opening these areas to public traffic.			Sign assemblies will be measured and paid for according to Section 704 "Temporary Traffic Control".			
	Sweep all newly constructed pavement no more than 24 hours before a scheduled final inspection.			704-P01	PORTABLE CHANGEABLE MESSAGE SIGN: Install Portable Changeable Message Signs (PCMS) before work begins on the project. The Engineer will determine the locations for PCMS installation. Relocate the PCMS as directed by the Engineer.		
	Use a vacuum or pick-up type sweeper to perform this work			Provide an operator trained in the use of the PCMS.			
105-200	UTILITY COORDINATION: A utility coordination meeting is required.			The Engineer will determine the message to be displayed. The operator shall program the message within one hour of the Engineer's request to change the message.			
108-100	WEEKLY PLANNING & REPORTING MEETING: A weekly planning and reporting meeting is required.						
202-P01	REMOVAL OF PAVEMENT: Removal of pavement consists of removal of bituminous pavement and the underlying aggregate base. The tonnage is based on the existing typical sections shown in section 30.			704-P02	TRAFFIC CONTROL: The traffic control devices shall comply with the following Standard Drawings:		
203-010	SHRINKAGE: 25 percent additional volume is included for shrinkage in earth embankment.			<div><div>1. Standard D-704-12</div><div>2. Standard D-704-19, Type E &amp; F</div><div>3. Standard D-704-20, Type G</div><div>4. Standard D-704-21, Type I</div><div>5. Standard D-704-24, Type R</div><div>6. Standard D-704-26, Type BB, CC, Z, GG, EE, &amp; FF</div><div>7. Standard D-704-27</div><div>8. Standard D-704-32</div><div>9. Standard D-704-34</div><div>10. Standard D-704-35A</div></div>			
260-P01	SILT FENCE: 200 LF of Silt Fence is included in the estimate to be used at the Engineers discretion.						
302-110	BASE COURSE: Trim base course as specified in Section 302.04 C.1, "Surface Tolerance Type B."						
704-100	TRAFFIC CONTROL SUPERVISOR: Provide a Traffic Control Supervisor.						
704-255	TRAFFIC CONTROL FOR SHOULDER DROP-OFF: If the shoulder and adjacent driving lane are not even at the end of the day, the following criteria will apply:			704-P03	TRAFFIC CONTROL PHASING: Phase 1 must be completed prior to starting any work on any remaining phases. The traffic control phases are as follows:		
	Place the following sign assembly at the locations listed below.			Phase 1			
	Sign Assembly: Sign No. W8-9a-48 "Shoulder Drop Off" and supplemental plate Sign No. W20-52-54 to identify the distance.			<div><div>• Build temporary access on US Highway 2 for industrial traffic</div><div>• Build temporary access to Gooseneck property on west Frontage Road</div><div>• Build temporary access to Gooseneck property on east Frontage Road</div></div>			
	Locations:			Phase 2			
	<div><div>• In advance of the drop off;</div><div>• Spaced at each mile from the advance sign; and</div><div>• At major intersections (CMC routes, state and US highways, and Interstate Ramps).</div></div>			<div><div>• Close existing intersection and frontage roads and provide local roads detour</div><div>• Close inside lanes on US Highway 2</div><div>• Build median subgrade and bottom 8" of aggregate base</div><div>• Start work on 14th Avenue SE</div><div>• Start work on southeast portion of 42nd Street SE</div><div>• Start work on all Frontage Roads</div></div>			
	If the difference in elevation between the shoulder and the driving lane is 2" or greater, construct a slough on the driving lane that is 4:1 or flatter.						

This document was originally issued and sealed by Jonathan P. Morgenroth, Registration Number PE-6872, on 10/31/17 and the original document is stored at the North Dakota Department of Transportation

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Revised	11/06/17	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-4-002(116)149	6	6

- 772-P01 TRAFFIC SIGNAL SYSTEM: Include in the price bid for “Traffic Signal System – Site 1” all labor and equipment necessary for the signal system to be fully operational as shown in the plans upon construction completion. This includes but is not limited to, the installation of the following features: traffic signal standards and foundations, mast arms, vehicular heads, video detection system, street light extensions, traffic signal controller and all ancillary hardware (conflict monitor, load switch, flasher, etc.), controller battery back-up, Wi-Fi based interconnect system, cabinet, foundations, feed point installation, removal or revisions, emergency vehicle pre-emption system, and all cable, conduit, junctions boxes and appurtenances to install the traffic signal system completely.

772-P02 PADLOCKS: Provide padlocks to be used to secure feed point until project acceptance. After project acceptance, the City of Minot will provide padlocks to secure the feed points.

772-P03 FIELD VERIFICATION: Verify the location of all proposed signal and lighting features including all proposed conduit to avoid conflict with any utilities or any other features potentially encountered in the field.

772-P04 TRAFFIC SIGNAL CONTROLLER: Provide an Econolite Cobalt controller with graphics display. The controller will be a TS2 Type 1. Price bid for “TRAFFIC SIGNAL SYSTEM – SITE 1” includes all labor, materials and equipment required to install the new controller, Wi-Fi based interconnect system, including but not limited to the emergency vehicle pre-emption unit, Super P44 NEMA TS2 cabinet with Alpha Technologies battery backup system, new detector amplifiers (furnished and installed), other ancillary signal components (such as load switches, malfunction management unit, etc.) and controller cabinet components connected as required to make the new controller equipment operational with the proposed signal equipment.

772-P05 MALFUNCTION MANAGEMENT UNIT (MMU) TESTING: Complete an MMU test within one week after traffic signal system is operational.

772-P06 BATTERY BACKUP SYSTEM: Provide a battery backup system for the traffic signal system. The price bid for “TRAFFIC SIGNAL SYSTEM – SITE 1” includes all costs, labor, materials and equipment necessary for furnishing and installing the battery backup system. See Special Provision 483(14).

772-P07 EMERGENCY VEHICLE PRE-EMPTION: Provide Opticom EVP equipment that is fully compatible with the current City of Minot system. Notify the City of Minot Fire Chief Kelli Flermoen (701-857-4740) when the proposed signalized intersection EVP system is tested and operable. Price bid for “TRAFFIC SIGNAL SYSTEM – SITE 1” includes all costs, labor, materials and equipment necessary for furnishing and installing the EVP system.

772-P08 WORK DRAWINGS: Furnish work drawings and a complete listing of materials proposed for installation. Provide two copies to the City of Minot Traffic Engineer, plus any additional sets that need approval and that are to be returned for the Contractor’s use. Provide the Engineer with proof of purchase, and delivery and
- manufacturing schedules for traffic signal materials indicating that acquisition of these materials is consistent with progress and completion requirements of this contract.

772-P09 VEHICULAR TRAFFIC SIGNAL HEADS: Use 12 inch vehicular signal heads with aluminum housings for each section. Equip all sections with LED illuminating elements conforming to the Institute of Transportation Engineers Equipment and Materials Standards and Specifications. Price bid for “TRAFFIC SIGNAL SYSTEM – SITE 1” includes all costs, labor, materials and equipment necessary for furnishing and installing the vehicular traffic signal heads.

772-P10 TRAFFIC SIGNAL HEAD MOUNTINGS: Furnish piping to mount the vehicle and pedestrian signal heads to the side of the poles. Do not mount heads directly to the pole or on the face of the pole directly adjacent to the street. No banding permitted. Price bid for “TRAFFIC SIGNAL SYSTEM – SITE 1” includes all costs, labor, materials and equipment necessary for installing traffic signal heads.

772-P11 TRAFFIC SIGNAL HEAD BACK PLATES: Furnish traffic signal head back plates with a yellow retroreflective border. Install the one inch wide yellow border around the perimeter of the face of the back plate. Furnish the back plate with sheeting consisting of prismatic lenses formed in a transparent synthetic resin, sealed, and backed with and aggressive pressures sensitive adhesive protected by a removable liner. Use sheeting with a smooth surface, a distinctive interlocking diamond seal pattern and orientation marks visible on the face. Use Type XI reflective sheeting.

Price bid for “TRAFFIC SIGNAL SYSTEM – SITE 1” includes all costs, labor, materials and equipment necessary for furnishing and installing the traffic signal head back plates.

772-P12 COMBINATION LIGHT AND SIGNAL STANDARD: Use luminaire extensions of the Davit type with 10’ mast arm.

772-P13 TRAFFIC SIGNAL STANDARDS: Use “T” transformer base type standards for Signals S1, S2, S4, S5, S6, S7, S9, and S10. Use alternative signal standards (anchor bolt base) for Signals S3 and S8 which will be protected by a crash attenuator that meets MASH standards. Price bid for “TRAFFIC SIGNAL SYSTEM – SITE 1” includes all costs, labor, materials and equipment necessary for furnishing and installing the “T” transformer and anchor bolt bases.

This document was originally issued and sealed by Nicholas J. Erpelding, Registration Number PE-5870, on 11/06/17 and the original document is stored at the North Dakota Department of Transportation

NOTES

Revised	11/06/17	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-4-002(116)149	6	7

- 772-P14 SIGNAL STANDARD PAINT COLOR: Paint all traffic signal system components, except for the luminaire extensions, in accordance with the following:
- Transformer base – yellow
  - Mast arm – yellow
  - Signal head mounting hardware on pole – yellow
  - Pole shaft – yellow
  - Signal housing – yellow
  - Visors/tunnels – black
- Use #13538 of Federal Standard No. 595 for the color yellow.  
Use #27038 of Federal Standard No. 595B for the color black.
- 772-P15 PULL BOXES: Follow the specification outlined in the NDDOT standard drawing D770-3 and be precast concrete. Clearly mark the cover as “Traffic Signal”. Duct seal all conduits entering and exiting pull boxes. Provide dividers as per NEC for pull boxes that share power conductors for lighting and low voltage conductors for signals.
- 772-P16 CONDUIT: Install conduit at the locations shown on the plans. Bore conduit when crossing under existing pavement. Price bid for “TRAFFIC SIGNAL SYSTEM – SITE 1” includes furnishing and installing conduit, pushing and boring conduit, digging potholes and restoring the potholes with new material that ties into the existing surround material. Seal all conduits with duct seal at the controller cabinet and at the traffic signal standard foundations.
- 772-P17 ADDITIONAL CONDUIT: Install one additional 2-inch diameter conduit in each traffic signal standard foundation and the controller cabinet/feed point foundation. The direction of the conduit will be determined in the field by the Engineer and labeled in the cabinet by the Contractor. Plug each spare conduit with a 2” expandable pipe plug. Price bid for “TRAFFIC SIGNAL SYSTEM – SITE 1” includes all costs to supply and install the additional conduit.
- 772-P18 EXCAVATION AND RESTORATION: Any excavation required to install conduit, connect conduit to existing conduit sweeps, install pull boxes, foundations or any other feature proposed in the plans is included in the prices bid “TRAFFIC SIGNAL SYSTEM – SITE 1”. This includes restoring the excavated area with the appropriate fill material. The fill material shall match the surrounding surface material. At locations where the surrounding material is earth, include earth fill with 6” of topsoil and seed. At locations where the surround material is concrete, tie into the existing concrete. All removed material whether concrete or earth is the property of the Contractor and be disposed of accordingly. Compaction and density controls are in accordance with Section 203.04 E.2 of the Standard Specifications AASHTO T-180.
- 772-P19 CONDUCTOR COLOR CONTINUITY: Maintain conductor color continuity where any 12AWG 12 conductor cables are connected to 12 AWG 5 and/or 12 AWG 3 conductor cables within the terminal block of a traffic signal standard.

- 772-P20 WIRE SPLICING: No splicing will be allowed in pull boxes. Splicing may only take place in the signal base.
- 772-P21 LABEL ALL FIELD CABLES: All labeling materials must be approved by the City. Labels must be readable without moving the cables. When installing cable bundles in conduit, bundles will not be taped. 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
Coaxial Cables	Cameras Detection Zone (i.e. D2-1, D2-2, etc.)	Within 6” of Terminals
Control Cable	Cable Number & Location (i.e. NW, SW, etc.)	Within 12” of Conduit
Opticom Cable	Pre-Empt Number/Location (i.e. NW, SW, etc.)	Within 6” of Terminal

Price bid for “TRAFFIC SIGNAL SYSTEM – SITE 1” includes all costs, labor, materials and equipment necessary for labeling field cables.

- 772-P22 FEED POINT-COMBO LIGHTING & SIGNAL-PAD MOUNT: Install a pad mounted Combination Lighting and Signal Feed Point Type IV according to the plans and per NDDOT standard detail. Coordinate with the Utility for the incoming electrical service. Connect the traffic signal controller to the feed point. Install a 50 amp breaker Type BR at the feed point for traffic control signal purposes.

Verendrye Electric will provide direct buried cable from the transformer near Gooseneck Implement; contact Brian Johnson (701-852-0406). Coordinate with the Utility to establish the service connection to ensure a fully operational traffic signal controller feed point at this location.

Pay for all utility company costs for the feed point. Furnish and install conduit from the controller cabinet to the feed point. Furnish and install #6 U.S.E. cable between the new controller and the new feed point. Price bid for “TRAFFIC SIGNAL SYSTEM – SITE 1” includes all costs, labor, materials and equipment required for feed point connections.

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Revised	11/06/17	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-4-002(116)149	6	8

- 772-P23 WIRELESS INTERCONNECT, WI-FI PANEL AND ETHERNET SWITCH: Furnish and install an ethernet switch and a 5 GHz Wi-Fi panel as shown in the plans. Coordinate with the City of Minot to receive required configuration parameters. Input the parameters to connect the device to the City’s network. Install Wi-Fi Panel on the outside of the traffic signal cabinet at the intersection of US Highway 2 and 42nd Street SE. Connect the 16 amp breaker on the inside of the traffic signal cabinet to the Wi-Fi Panel. Enclose the Wi-Fi Panel in a Nema-Type 3 NR weather enclosure. Price bid for “TRAFFIC SIGNAL SYSTEM – SITE 1” includes all costs, labor, materials and equipment necessary for furnishing and installing wireless interconnect, Wi-Fi Panel, and ethernet switch.
- 772-P24 SIGNAL EQUIPMENT:
- A. Provide steel signal and pedestal adapters/collars.
  - B. Provide polycarbonate vehicle heads and ensure level installation on all sides. Provide stainless steel fasteners with anti-seize lubricant used.
  - C. Provide two-point mounting system such as Astro Brackets, Sky Brackets or approved equal for all mast arm mounted signals. Indicate the type of mounting in the work drawings for signal heads.
- 772-P25 UTILITY COORDINATION: Coordinate with the electric utility for the incoming electrical service to the signal control cabinet. All conductors, conduit and connections from the transformer to the meter will be supplied by the electric utility. All cable, conduit, meter socket and service disconnect from the meter to the signal control cabinet will be provided by the Contractor.
- 772-P26 VIDEO DETECTION SYSTEM AND SPARE EQUIPMENT: Furnish and install a video detection system manufactured by Autoscope. The manufacturer’s representative will provide all cable connections, camera aiming system setup, programming detection zones, and verification of reliable operation. Video detection camera locations in the plans are for guidance only; mount the cameras as needed to enable proper operation. Furnish and install a video monitor in the controller cabinet for video detection configuration. Meet LCDI-104-CCTV-LCD specifications for the video monitor. Provide the City of Minot Traffic Department with the following spare equipment (1 each) for future routine programming, maintenance, and operation: laptop equipped with programming software compatible with the cabinet equipment, camera, BIU, MMU, and EVP card. Price bid for “TRAFFIC SIGNAL SYSTEM – SITE 1” includes all costs, labor, materials and equipment necessary for making the video detection system fully operational.
- 772-P27 FLASHING BEACON AND ADVANCE WARNING SIGN: Supply and install four W3-4-48 “Be Prepared To Stop” and a W16-13P24 “When Flashing” supplemental signs as shown in the plans. Include 12 inch yellow LED flashing beacons with 5 inch louvered back plated mounted on each side of the sign assembly. Signs, supports, anchors and bracing are paid for as part of section 110. Price bid for “Traffic Signals System- Site 1” includes all cost, materials, labor, and equipment necessary for furnishing and installing the flashers and advance warning sign assemblies.

- 772-P28 CONCRETE FOUNDATION – TRAFFIC SIGNALS: The Signal Standard Foundation Table in the plans show the requirements for traffic signal foundations dependent on the traffic signal mast arm length for both traffic signal and the combination signal and light standard. The manufacturer’s bolt circle recommendation may require a larger foundation. Provide a minimum of 3” of concrete cover from the anchor bolts for the foundations. Increase the diameter at the top of the foundations to accommodate a larger bolt circle. Continue the depth of the increased diameter to 3” below the end of the anchor bolts. The signal manufacturer must provide the bolt circle requirements to the Contractor prior to the pouring of the foundations. Do not change the depth of the foundations. Price bid for “Traffic Signal System – Site 1” includes all costs, labor, materials, and equipment necessary for installing the foundations.
- 772-P29 FUTURE PEDESTRIAN PUSHBUTTON: Extend conduit 6 inches above ground level and cap for future pedestrian pushbutton number 1 located in the median (station 7914+91.28, offset 17.64 feet LT).

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Spec	Code	Item Description	Unit	Quantity				
				US Hwy 2	Urban Roads	Frontage Roads	100% Local	Total
103	0100	Contract Bond	L SUM	1				1
103	0200	Escrow of Bid Documentation	L SUM	1				1
201	0330	Clearing & Grubbing	L SUM	1				1
201	0380	Removal of Trees 18 IN	EA		6	4		10
201	0390	Removal of Trees 30 IN	EA			7		7
202	0130	Removal of Curb & Gutter	LF		1943	232		2175
202	0136	Removal of Pavement	TON	12991	3737	2904		19632
202	0174	Removal of Pipe All Types and Sizes	LF	901	30	58		989
202	0230	Removal of Inlets	EA			2		2
203	0101	Common Excavation-Type A	CY	27948	8104	10535		46587
203	0109	Topsoil	CY	7010	3007	3568		13585
203	0121	Topsoil - Wetland	CY	790		31		821
216	0100	Water	MGAL	1392				1392
230	0300	Subgrade Preparation-Type A	STA	36				36
251	0200	Seeding Class II	ACRE	10.8	2.7	3.4		16.9
251	1000	Wetland Seed	ACRE	1.1				1.1
251	2000	Temporary Cover Crop	ACRE	11.3	2.7	3.4		17.4
253	0101	Straw Mulch	ACRE	11.3	2.7	3.4		17.4
253	0201	Hydraulic Mulch	ACRE	10.8	2.7	3.4		16.9
255	0101	ECB - Type 1	SY	1270	110	974		2354
255	0104	ECB - Type 4	SY		108	655		763
260	0200	Silt Fence Supported	LF	200				200
260	0201	Remove Silt Fence Supported	LF	200				200
261	0112	Fiber Rolls 12 IN	LF	94	333	316		743
261	0113	Remove Fiber Rolls 12 IN	LF	74	117	213		404
261	0120	Fiber Rolls 20 IN	LF	5385	2087	2596		10068
261	0121	Remove Fiber Rolls 20 IN	LF	2190	916	908		4014
302	0100	Salvaged Base Course	TON	32277	8938	6298		47513
401	0050	Tack Coat	GAL	2645	409	502		3556
401	0060	Prime Coat	GAL	7039	1989	2456		11484
401	0160	Blotter Material CL 44	TON	213	61	74		348
411	0114	Milling Pavement Surface - 2 Inch	SY			14		14
430	0045	Superpave FAA 45	TON	9363	1989	2104		13456
430	1000	Cored Sample	EA	25	16	8		49
430	5828	PG 58-28 Asphalt Cement	TON	371	64	63		498
430	6428	PG 64-28 Asphalt Cement	TON	176	52	63		291
702	0100	Mobilization	L SUM	1				1
704	0100	Flagging	MHR	1200				1200
704	1000	Traffic Control Signs	UNIT	4489				4489
704	1052	Type III Barricades	EA	70				70
704	1060	Delineator Drums	EA	161				161
704	1080	Stackable Vertical Panels	EA	228				228
704	1087	Sequencing Arrow Panel - Type C	EA	2				2
704	4011	Portable Changeable Message Sign	EA	5				5
706	0400	Field Office	EA	1				1
706	0500	Aggregate Laboratory	EA	1				1
706	0550	Bituminous Laboratory	EA	1				1
706	0600	Contractor's Laboratory	EA	1				1
708	1540	Inlet Protection-Special	EA	6	22	6		34
708	1541	Remove Inlet Protection-Special	EA	6	22	6		34
709	0151	Geosynthetic Material Type R1	SY	3366	1858	2343		7567
714	0825	Pipe Conc Reinf 30IN CL III-Storm Drain	LF			8		8
714	4097	Pipe Conduit 15IN-Storm Drain	LF	45				45
714	4099	Pipe Conduit 18IN-Approach	LF		49	68		117
714	4101	Pipe Conduit 18IN-Storm Drain	LF	199				199
714	4106	Pipe Conduit 24IN-Approach	LF	396		85		481
714	4110	Pipe Conduit 30IN-Storm Drain	LF	180				180
714	4115	Pipe Conduit 36IN	LF	185				185
714	4117	Pipe Conduit 36IN-Storm Drain	LF	68				68
714	4121	Pipe Conduit 42IN-Storm Drain	LF	82				82
714	7040	Sanitary Sewer Service Connection	EA				1	1

Spec	Code	Item Description	Unit	Quantity				
				US Hwy 2	Urban Roads	Frontage Roads	100% Local	Total
714	7046	Pipe PVC 4" Sewer	LF				50	50
714	9660	Remove & Relay End Section-All Types and Sizes	EA			1		1
714	9680	Plug Pipe-All Types and Sizes	EA			2		2
720	0110	Right of Way Markers	EA	2	18	15		35
720	0125	Alignment Monuments	EA	2	10	19		31
720	0130	Iron Pin R/W Monuments	EA		16	14		30
720	0135	Iron Pin Reference Monuments	EA	2	2	2		6
722	0100	Manhole 48IN	EA		1	1		2
722	1100	Manhole Riser 48IN	LF		5.7	8.3		14
722	3510	Inlet - Type 2	EA		6	4		10
722	3520	Inlet-Type 2-Double	EA		1	2		3
722	3701	Inlet Special -Type 2 48IN	EA		1			1
722	3713	Inlet Special Mountable-Type B 48IN	EA	1	1			2
722	3761	Inlet Special-Type 2 60IN	EA			1		1
722	3766	Inlet Special-Type 2 72IN	EA	1				1
722	4060	Inlet Mountable Curb-Type B	EA	3	1			4
722	4565	Median Drain Precast Concrete-TypeA	EA	1				1
722	6140	Adjust Gate Valve Box	EA				5	5
722	6200	Adjust Manhole	EA		3	4		7
724	0270	Remove Gate Valve & Box	EA				3	3
724	0300	Gate Valve & Box 6IN	EA				3	3
724	0310	Gate Valve & Box 8IN	EA				1	1
724	0314	Gate Valve & Box 12IN	EA				1	1
724	0411	6IN Hydrant	EA				1	1
724	0427	Adjust Hydrant	EA				1	1
724	0430	Remove Hydrant	EA				2	2
724	0610	Water Service Line 1IN Copper	LF				29	29
724	0810	Watermain 6IN PVC	LF				43	43
724	0830	Watermain 8IN PVC	LF				794	794
724	0850	Watermain 12IN PVC	LF				684	684
724	0905	Curb Stop & Box 1IN	EA				1	1
724	0944	Connection to Existing Main	EA				5	5
724	5812	SS Wrap-Around 6IN With 1IN Tap	EA				1	1
724	6820	8IN 11.25Deg Bend	EA				2	2
724	6840	12IN 11.25Deg Bend	EA				2	2
724	6842	12IN 22.5Deg Bend	EA				2	2
724	6844	12IN 45Deg Bend	EA				1	1
724	7010	8IN x 6IN Reducer	EA				2	2
724	8097	12IN X 8IN Reducer	EA				1	1
744	0100	Polystyrene Insulation Board	BD FT				12800	12800
748	0120	Curb & Gutter Mountable-Type I	LF	502				502
748	0140	Curb & Gutter-Type I	LF	715	2723	2343		5781
750	0100	Sidewalk Concrete	SY		860			860
750	0200	Concrete Median Paving	SY	466	164			630
750	0210	Concrete Median Nose Paving	SY	40	10			50
750	1000	Driveway Concrete	SY		78			78
750	1020	Driveway Concrete 8IN	SY		175	112		287
750	2115	Detectable Warning Panels	SF	40	25.8			65.8
754	0110	Flat Sheet For Signs-Type XI Refl Sheeting	SF	238	48	66		352
754	0112	Flat Sheet For Signs-Type IV Refl Sheeting	SF	202	37			239
754	0206	Steel Glav Posts-Telescoping Perforated Tube	LF	582.6	175.8	243.3		1001.7
754	0214	Glav Steel Posts-W-Shape Posts(Two or More)	LF	76.8				76.8

Quantities

US Hwy 2 & 42nd St SE  
Intersection Improvements

Spec	Code	Item Description	Unit	Quantity				
				US Hwy 2	Urban Roads	Frontage Roads	100% Local	Total
754	0563	Reference Marker-Type C	EA	2				2
754	0592	Reset Sign Panel	EA	1	1	1		3
754	0805	Object Marker - Culvert	EA	8	5	9		22
754	1104	Remove Sign Foundation	EA	2				2
762	0110	Epoxy Pvmt Mk 4IN Line-Grooved	LF	1376	3136			4512
762	0113	Epoxy Pvmt Mk 4IN Line	LF	7070		1382		8452
762	0122	Preformed Patterned Pvmt Mk-Messaged-Grooved	SF	320	128			448
762	0132	Epoxy Pvmt Mk 8IN Line-Grooved	LF	5706	1283			6989
762	0134	Epoxy Pvmt Mk 12IN Line-Grooved	LF	1013				1013
762	0430	Short Term 4IN Line - Type NR	LF	9958				9958
762	1307	Preformed Patterned Pvmt Mk 6IN Line-Grooved	LF		187			187
762	1325	Preformed Patterned Pvmt Mk 24IN Line-Grooved	LF	289		101		390
764	9011	Attenuating Crash Cushion TL-3	EA	2				2
766	0100	Mailbox-All Types	EA		1			1
770	0020	Concrete Foundation-Highway Lighting	EA	13	9			22
770	0220	Cable Trench-Type II	LF	2650	1575			4225
770	0330	2IN Diameter Rigid Conduit	LF	995	741			1736
770	0504	Underground Conductor NO4-Type RHW	LF	5890	3418			9308
770	0604	Underground Conductor NO4-Type THW	Lf	2945	1709			4654
770	1676	LT Std 6FT MA 40FT MT HT Breakaway	EA		8			8
770	1778	LT Std 10FT MA 42FT MT HT Breakaway	EA	13	1			14
770	4210	LED Luminaire	EA	10	5			15
770	4220	LED Luminaire - 150 Watt	EA	7	4			11
770	4567	Remove Lighting System	EA		1			1
772	9811	Traffic Signal System - Site 1	EA	1				1
990	0230	Temporary Access	LSUM	1				1

Option 1: Pipe Conduit Storm Sewer (See Section 51 for Allowable Materials)

Spec	Code	Item Description	Unit	Quantity				
				US Hwy 2	Urban Roads	Frontage Roads	100% Local	Total
714	4097	Pipe Conduit 15IN-Storm Drain	LF		653	268		921
714	4101	Pipe Conduit 18IN-Storm Drain	LF		367	94		461
714	4107	Pipe Conduit 24IN-Storm Drain	LF			75		75

Option 2: Reinforced Concrete Pipe Storm Sewer

Spec	Code	Item Description	Unit	Quantity				
				US Hwy 2	Urban Roads	Frontage Roads	100% Local	Total
714	0210	Pipe Conc Reinf 15IN CL III - Storm Drain	LF		653	268		921
714	0315	Pipe Conc Reinf 18IN CL III - Storm Drain	LF		367	94		461
714	0620	Pipe Conc Reinf 24IN CL III - Storm Drain	LF			75		75

Quantities

US Hwy 2 & 42nd St SE  
Intersection Improvements

[illegible]

SPEC & CODE			
704-1000	TRAFFIC CONTROL SIGNS	TOTAL UNITS	4489

**NOTE:**  
If additional signs are required, units will be calculated using the formula from Section III-19.06 of the Design Manual.  
<http://www.dot.nd.gov/>

## Traffic Control Devices List

[illegible]

SPEC & CODE			
704-1000	TRAFFIC CONTROL SIGNS	TOTAL UNITS	4489

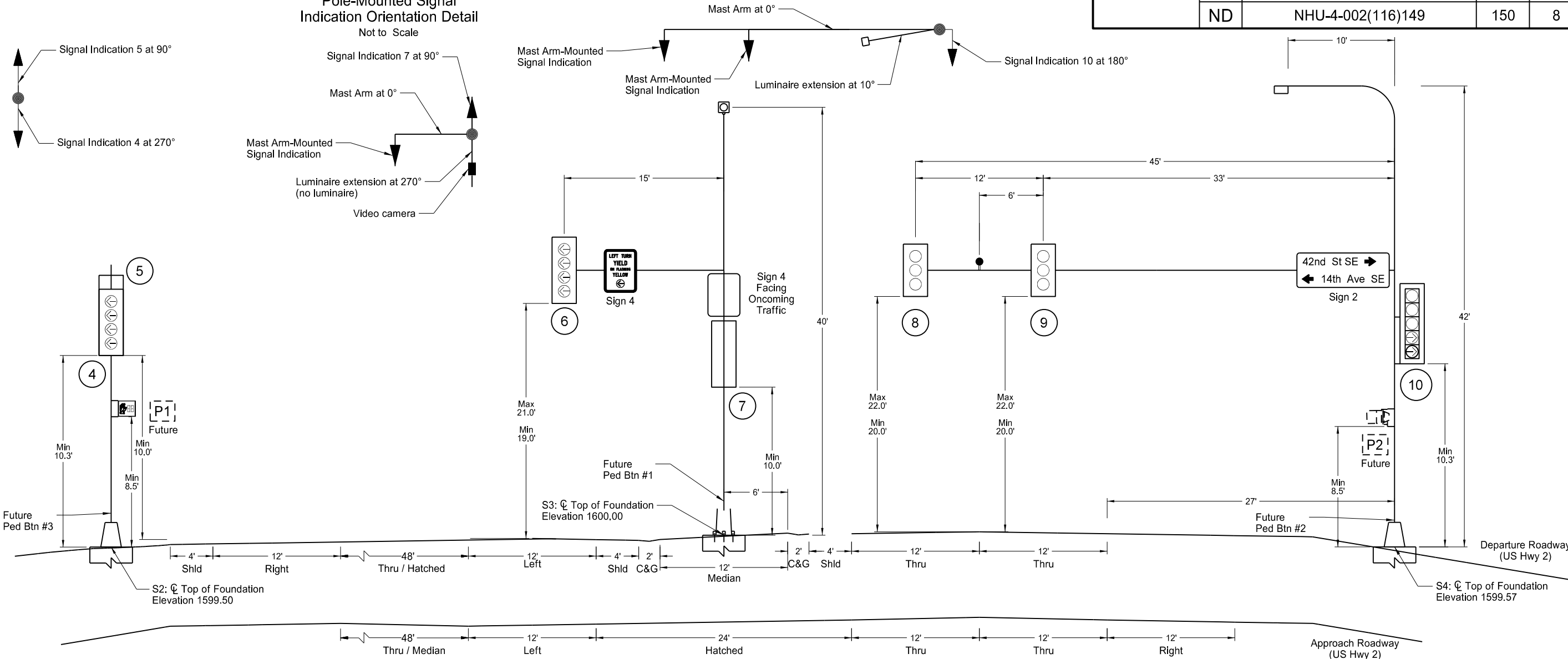
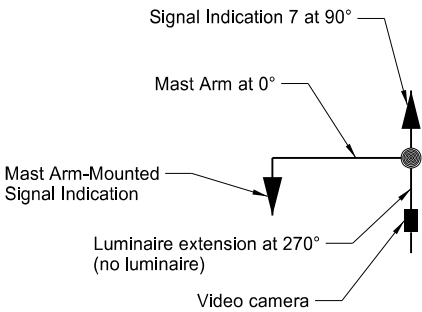
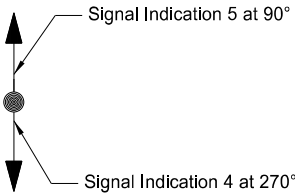
**NOTE:**  
If additional signs are required, units will be calculated using the formula from Section III-19.06 of the Design Manual.  
<http://www.dot.nd.gov/>

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Revised 10/31/17																							STATE	PROJECT NO.			SECTION NO.	SHEET NO.
																							ND	NHU-4-002(116)149			110	4
Sta/RP	Sign/ Assembly No.	Flat Sheet For Signs		Panel For Signs		Overlay Panel		Galv Steel Post Standard Pipe			Galv Steel Post W-Shape Posts			Max Post Len	Post Space	Revise Fuse Joint	Std Pipe Fdn			W-Shape Pile	Remove Sign Fdns		Reset Sign Panel	Reset Sign Support	Stub Post	Multi Dir Base	Comments	
		IV	XI	IV	XI	IV	XI	1st	2nd	Size	1st	2nd	3rd	LF	FT	EA	Dia	Dep	Vol	LF	Conc Fdn EA	W-Shape Pile EA	EA	EA	EA	EA		
		SF	SF	SF	SF	SF	SF	LF	LF		LF	LF	LF	LF			FT	FT	CY		EA	EA						
US Hwy 2																												
7909+54 Lt				0.0						W8x31	23.8	25.0		27.4	7.3					28	2		1					
Sub Total		0.0	0.0	0.0	0.0	0.0	0.0	Total	0.0		Total	48.8							0.0	28	2	0	1	0	0	0		
Grand Total		0.0	0.0	0.0	0.0	0.0	0.0	Total	0.0		Total	48.8							0.0	28	2	0	1	0	0	0		
Basis of Estimate Sign Support Lengths																												
The sign support lengths have been calculated using the following vertical clearances:																												
Areas where parking and/or pedestrian movement will occur - 84" Urban/rural expressway and freeway - 84" (Offset - 60") Rural Roadway - 60"																												
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Signing Summary																												
US Hwy 2 & 42nd St SE Intersection Improvements																												
Round Steel Pipe and W-Shape																												

Pole-Mounted Signal  
Indication Orientation Detail  
Not to Scale



Westbound US Hwy 2  
Phases 4 & 7  
(S2, S3, & S4)

Legend

Transformer Base

Anchor Bolt Base

Video Detection Camera

Traffic Signal Head

Pedestrian Signal Head

Vehicle Signal Head Number

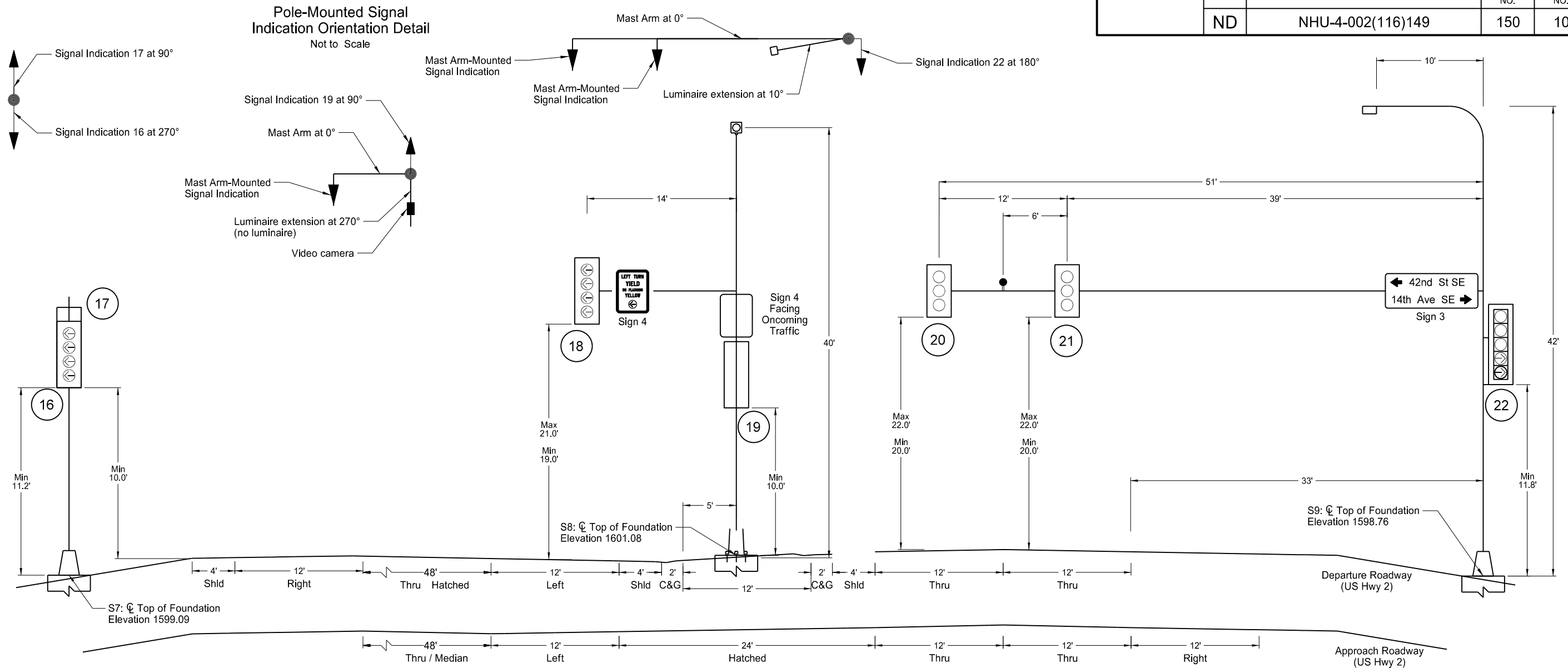
Pedestrian Head Number

Emergency Vehicle Detection Unit

- Notes:
- Luminaire extension on combo sig/lt std S4 shall be 42' mounting height and 10' mast arm. Luminaire extension on combo sig/lt std S3 shall be 40' mounting height and 10' mast arm.
  - Furnish and install LED luminaire on combo sig/lt std S4. See section 140 for details.
  - The final location of the video detection camera shall be determined by the contractor to provide a functional system.
  - Support brackets for pole mounted signal heads shall not restrict access to mast arm handhole.
  - See section 110 for sign details.

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Traffic Signal System  
US Hwy 2 & 42nd St SE  
Intersection Improvements  
Signal Standard & Head Locations



Eastbound US Hwy 2  
Phases 3 & 8  
(S7, S8, & S9)

- Notes:
1. Luminaire extension on combo sig/lt std S9 shall be 40' mounting height and 10' mast arm. Luminaire extension on combo sig/lt std S8 shall be 42' mounting height and 10' mast arm.
  2. Furnish and install LED luminaire on combo sig/lt std S9. See section 140 for details.
  3. The final location of the video detection camera shall be determined by the contractor to provide a functional system.
  4. Support brackets for pole mounted signal heads shall not restrict access to mast arm handhole.
  5. See section 110 for sign details.

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Traffic Signal System  
US Hwy 2 & 42nd St SE  
Intersection Improvements  
Signal Standard & Head Locations