DERRY-LONDONDERRY EXIT 4A
13065

May 19, 2020

S P E C I A L P R O V I S I O N

AMENDMENT TO SECTION 616 – TRAFFIC SIGNALS

Item 616.101 – Traffic Signals

Item 616.161 – Traffic Signals (Temporary)

Item 616.191 – Alterations to Existing Signals

Permanent Install or Alterations:

This special provision provides for signal work at following location:

Signal ID#:
Town/City:
Intersection: &

This intersection is coordinated with the following intersections:

1.
2.

Temporary Install

This special provision provides for the construction of temporary traffic signals. The Design-Build Team will use the system to provide alternating one-way traffic:

Town/City:
Approximate Location:
Intersection: &

TEMPORARY INSTALL GENERAL:

1. The Design-Build Team shall furnish and install the traffic signal controller and detector amplifiers in a pole-mounted cabinet. The cabinet and controller shall remain the property of the Design-Build Team.

2. The Design-Build Team shall furnish and install wooden poles, back-guys, screw type anchors, span wire, signal heads and necessary hardware to complete the signal installation.

3. Minimum clearance to the bottom of overhead signal housing shall be 16 feet/maximum 19 feet.

4. The Design-Build Team shall upon completion of the project remove the signal installation and salvage all material back to the Design-Build Team.

5. The Design-Build Team shall make arrangements with the local utility company to supply electrical power for the traffic signal and beacons and shall be responsible for all of the utility company's electrical costs including installation and monthly charges.

6. The Design-Build Team shall adjust the signal system as required due to the construction phasing. All adjustments shall be subsidiary to Item 616.

SIGNAL GENERAL NOTES:

All provisions of Section 616, except as modified or changed below, shall apply.

1. The Design-Build Team shall be responsible for signal operation and maintenance once alterations to the existing signals, excavation or other work within 75 feet or 400 feet (if advanced detection is in place) of the stop bar at any leg of the intersection has begun. At this point in time the Design-Build Team shall notify the Bureau of Traffic and furnish the Engineer and *the Transportation Systems Management and Operations (TSMO) (tel. 603-271-6862)* with names and phone numbers of persons to be contacted in case of a malfunction. The Contact person must be available 24 hours a day, seven days a week. The Design-Build Team shall also keep a signal log in the cabinet to track all maintenance work completed on the signal system. This log shall be placed within a plastic cover and shall at least include the description of the trouble call, corrective action taken, date, time, and personnel who completed the work.

2. The traffic signal must be inspected and approved by the Bureau of Traffic prior to placing *in/removing* from flash operation. The Design-Build Team shall contact Peter Crouch at the Bureau of Traffic at (603) 271-2291 one week prior to turning the signals on flash. If the Design-Build Team does not speak directly with Peter Crouch they must leave a detailed message and expect a call back. Leaving a message does not constitute an approval.

3. The Design-Build Team shall be responsible for the dismantling and removing of the existing signal heads, mast arms and poles, foundations, existing electrical service, and controller cabinet. All surplus equipment shall be salvaged and delivered to the Department of Transportation, Bureau of Traffic in Concord, within normal business hours.

4. The Design-Build Team shall install a generator – anchoring system to the new traffic controller cabinet's concrete foundation. The location of the anchoring system will be on the side of the cabinet that houses the controller's power supply. The anchoring system shall be a 1/2 " x 13 tpi galvanized wrought eyebolt with a thread length of 1 5/8". The eyebolt shall be installed in a 5/8" diameter drilled hole into the concrete foundation. The eyebolt shall be bonded into the concrete foundation by an epoxy compound [Component "A" (105 resin) and Component "B" (205 hardener)], with the epoxy compound filling the drilled hole and covering the threads of the eyebolt. The epoxy compound shall be a product as included on the NHDOT's Qualified Product List (See Attachment "A" – Detail Plan).

5. The traffic controller cabinet concrete foundation may need to be extended to accommodate the footprint of the new traffic signal cabinet. See Attachment "B" Detail Plan for reference on how this concrete foundation extension should be installed.

6. The Design-Build Team shall install a generator – anchoring system to the new traffic controller cabinet's concrete foundation.

7. The initial power hook-up will be paid for by the Design-Build Team during the construction contract. The monthly billing for the power costs for operating the traffic signal shall be paid for by the following:

    i. *NHDOT – Bureau of Traffic, S269-05, PO Box 483, Concord, NH 03302-0483.*

8. The cabinet hardwired equipment shall be protected with a plug in surge suppressor with LED indicators for warnings or failure. HescoRLS HE 1750, Edco SHA-1250 or approved equal.

9. For all intersections with pedestrian signal features a relay shall be installed to serve as a non-proprietary pedestrian button isolator in order to isolate the pedestrian button call wires from the cabinet back panel.

10. Interconnect cables shall be fiber optic and shall be terminated on a 12-position patch panel within the traffic signal cabinet.

11. Conductor intersection signal cable shall be a home run from the signal cabinet to each mast arm. A *Temporary Traffic Signal Erection Permit*, attached as Appendix A to this specification, shall be filled out by the Design-Build Team and submitted for approval to the Bureau of Traffic (Peter Crouch, 603-419-0254, Peter.Crouch@dot.nh.gov). The approved permit shall be placed in the signal cabinet(s), along with the 11"x17" Temporary Traffic Control Signal plan, upon inspection.

12. For intersections utilizing the flashing yellow arrow (FYA) signal indication the signal cabinet shall be set up for the following:

a. All phases with a FYA signal indication shall have a 15 second detector delay before initiating a call to the controller for an exclusive left turn phase.
b. No resisters, diodes, or extra relays shall be used.
c. Be sure if using a smart monitor to have it set to mode "G"
c. All approved makes of controllers and monitors shall be able to be interchangeable with approved cabinets without back panel wiring.
d. Controller and signal cabinet shall be programmed and wired for the following conditions:
   1. Flashing Yellow Arrow Phase 1 shall come out of Phase 2 Pedestrian Clearance Terminal.
   2. Flashing Yellow Arrow Phase 3 shall come out of Phase 4 Pedestrian Clearance Terminal.
   3. Flashing Yellow Arrow Phase 5 shall come out of Phase 6 Pedestrian Clearance Terminal.
   4. Flashing Yellow Arrow Phase 7 shall come out of Phase 8 Pedestrian Clearance Terminal.

Add to 2.1:

2.1.3 List of Major Materials:

Cabinet & Components:

1 - ATC & NEMA specification compliant signal controller. Input and output connections shall be TS2 Type 2 configuration. Econolite Corp., Model ASC/3, PEEK Traffic Inc., Model ATC-1000, Naztec ATC or approved equal. The controller shall utilize a removable memory card capable of storing user input data, and shall include two. Equipment to be housed in a P Type cabinet assembled by the equipment manufacture which will include telemetry harness and panel with surge protection. The MMU shall be the same manufacturer as the controller. Depending on application, a 12, 15 or 18-inch extension base will be used. The exterior of the Controller Cabinet shall be natural aluminum finish; the interior shall be painted white. The interior of the cabinet shall be illuminated by an LED light strip mounted to the ceiling of the cabinet between 12 and 18 inches long and will be controlled by a door switch. The cabinet shall also include a slide out drawer mounted below the lower shelf.

1 – GPS Technology Equipment, Model TR-3/TR-4 GPS Assembly (501661F), mounted inside the controller cabinet. Model TR-3/TR-4 GPS Receiver (501532), mounted on top of the controller cabinet. GPS Receiver Simulator Software (501638TR). PC Cable for Simulator Software (504567). RTC Manufacturing, Inc. or approved equal.

1 - 30 Amp 125 V semi-flush Traffic Signal Generator Transfer switch with confirmation pilot light to indicate restored power mounted to the controller cabinet. Parallax Power Supply Model ATS-301, GenTran Corp or approved equal. The lock will utilize a different key than used to open the cabinet door.

Poles and Signal Heads:

X - Galvanized steel mast arm poles with foundation, the signal arm shall be *XX* ft. Mast arm poles shall be manufactured by Valmont Industries, Inc., or Union Metal Corp., or approved equal. **(NOTIFY PROJECT MANAGER AND JERRY IN BRIDGE WE NEED STEEL INSPECTION NOTIFY SPEC OFFICE WE NEED ANGIE SPEC).**

X - Galvanized steel mast arm poles with street light luminaires arm at a *40* ft mounting height with mast arms. The signal arms shall be *XX* ft. Mast arm poles shall be manufactured by Valmont Industries, Inc., or Union Metal Corp., or approved equal. **(NOTIFY PROJECT MANAGER AND JERRY IN BRIDGE WE NEED STEEL INSPECTIONNOTIFY SPEC OFFICE WE NEED ANGIE SPEC).**

X - 8 ft. signal pole and square base on new foundation, Alloy Castings Co., Inc. Model ACTB-20-695, Pelco PB-5102-8PNC with PB-5334-Blank-15-GL-PNC.

X - 10 ft. signal pole and square base.

X – Mast arm bases shall be sealed with stainless steel wire cloth/mesh secured to mast arm base to keep out small nesting animals. The cloth shall be SS 304, 4x4, .047 or similar wrapped around the anchor bolts between the bottom surface of the mast arm plate and the top surface of the concrete base.

X - One-way, three-section, 12-inch aluminum signal heads with LED modules mounted on mast arms with Pelco Stellar Series or CAN-BRAC Universal Signal Assembly, 1 -way Cable Mount, with a 5-inch louvered backplate. The LED modules shall be supplied by Dialight or approved equal, and the manufacturer shall provide a 15-year full performance warranty for the LED modules. The backplates shall have a 2-inch fluorescent yellow retroreflective border placed on the outer perimeter.

X - One-way, three-section, 12-inch bracket mounted aluminum signal heads with LED modules shall be supplied by Dialight or approved equal, and the manufacturer shall provide a 15-year full performance warranty for the LED modules The backplates shall have a 2-inch fluorescent yellow retroreflective border placed on the outer perimeter

X- One-way, four-section, 12-inch aluminum signal heads with LED modules mounted on mast arms with with Pelco Stellar Series or CAN-BRAC Universal Signal Assembly, 1 -way Cable Mount, with a 5-inch louvered backplate. The LED modules shall be supplied by Dialight or approved equal, and the manufacturer shall provide a 15-year full performance warranty for the LED modules. The backplates shall have a 2-inch fluorescent yellow retroreflective border placed on the outer perimeter.

X - One-way, four-section, 12-inch bracket mounted aluminum signal heads with LED modules and 5-inch louvered backplate. The LED modules shall be supplied by Dialight or approved equal, and the manufacturer shall provide a 15-year full performance

warranty for the LED modules. The backplates shall have a 2-inch fluorescent yellow retroreflective border placed on the outer perimeter.

X - Class IV, 40' wood poles with back guy and screw type anchors.

X - Class IV, 35' wood poles with back guy and screw type anchors.

X - 3/8" diameter, messenger cable.

X - Aerial signal cable.

Vehicle Detection:

X - Quadrupole roadway loop detectors, *6.0* ft x *50.0* ft, with 2-4-2 turns as per plan.

X - Rectangular roadway loop detectors, 3 turns *6.0* ft x *6.0* ft as per plan.

X – Loop detection wires shall be marked where terminated in the cabinet. Street, direction and lane marked with a permanent marker onto a purpose made tag.

X - Spare power supply unit or BIU for rack mount detectors (NOT USUALLY REQUIRED-ONLY UNDER SPECIAL CIRCUMSTANCES)

X - Dual Channel, rack mounted loop detector amplifiers, self-tuning, with Delay/extension capabilities, Reno C-1000, Naztec, Inc. Model 722L, or EDI 622T or an approved equal.

X –- Video detection system with vehicle counting and reporting functionality by Aldis - Gridsmart System with Performance Module software; Miovision Spectrum Smartlink with Spectrum 360 camera and Spectrum Data Pro. The video detection device shall be mounted per manufacturer's recommendations. The video detection system shall be such that every lane approach has video detection. Video detection system software shall be installed and viewed on NHDOT servers. The Design-Build Team shall submit a test plan for approval for all signal component communications configure central control testing (as part of Item 616.141 Computer Equipment and Software).

X - Rack Mounted Video Detection Processor, phase selector and cable and any other equipment for a complete working detection system. Camera system software shall be installed and viewed on NHDOT TSMO servers.

X - 7" LCD color video display, mounting hardware and all associated wiring to monitor detection cameras.

Pedestrian:

X - Accessible pedestrian systems Campbell Company Advisory Guide Accessible Pedestrian Station (AGPS), Polara Navigator Accessible Pedestrian Signals, or approved equal. System shall also include attaching R10-3e sign.

X - Bracket mounted 16-inch x 18-inch, LED pedestrian signal heads with solid hand symbol and solid walking man symbol with countdown timer display.

X - Pedestal mounted 16-inch x 18-inch, LED pedestrian signal heads with solid hand symbol and solid walking symbol with countdown timer display.

X - Pedestrian push buttons, Pelco model SE-2172-P29, Polara Bulldog III RBDL3-Y-2H, or approved equal.

X – A relay shall be installed to serve as a non-proprietary pedestrian button isolator in order to isolate the pedestrian button call wires from the cabinet back panel.

X – 9 inch by 12 inch Aluminum Blank Face Station, with pedestrian push-button housing.

X – 9 inch by 15 inch Adapter Plate Assembly.

X - R10-3e (No Arrow), 9 inch by 15 inch, Count-Down Pedestrian Sign.

Emergency Preemption:

X - Optical Fire Preemption Phase Selector, GTT Opticom Model 764, with a Model 760 Card Rack, Tomar 4140 OSP with 1881 Card Cage and harness, or approved equal.

X - Optical Fire Preemption receivers GTT Opticom Model 711, Tomar 4090SD, or approved equal.

X - Confirmation strobe light, 120 VAC, with red Lexan optic lens. Whelan Model, IAC 12 RP, Tomar 804-110 MAXI or approved equal.

X - 2-Way temporary fire preemption including 1 confirmation strobe light, receivers for each leg of the intersection, and optical fire preempter phase selector.

X – Temporary cab mounted preemption emitter.

Communication:

X - Closed loop system master to facilitate direct software communications from system master to NHDOT TSMO in Concord NH. Design-Build Team shall submit a test plan for approval to configure central control software testing.

X - Industrially-hardened managed Ethernet switch capable of Ethernet communication over fiber (for signals located to the south of this cabinet).

X - Industrially-hardened managed Ethernet switch capable of Ethernet communication over existing copper (for signals located to the direction of this cabinet).

X - Industrially-hardened managed Ethernet switch capable of Ethernet communication over wireless broadband radio.

X - 5.8 GHz point-to-point radio/antenna capable of broadband capacity with ability to transmit video images (EnCom Energy series, or compatible equivalent)

X- 12 fiber patch panel with splice trays.

Signs:

X - R10-12, 24 inch by 30 inch, "Left Turn Yield on Green" (Green Ball).

X - R10-11a(M), 24 inch by 30 inch, "No Turn On Red Arrow".

X - R10-6, 24 inch by 30 inch, "STOP HERE ON RED (arrow)".

X - Designated as sign "*D-3a*", *96* inch by *30* inch, Type BB aluminum sign "*SIGN TEXT*" mast arm mounted using Pelco Stellar Series or CAN-BRAC Universal Sign Bracket Assembly. The center of the street sign shall be mounted on the mast arm half the sign width distance plus two (2) feet from the signal pole.

X - Designated as sign "*D-3b*", *96* inch by *16* inch, Type BB aluminum sign "*SIGN TEXT*" mast arm mounted using Pelco Stellar Series or CAN-BRAC Universal Sign Bracket Assembly. The center of the street sign shall be mounted on the mast arm one half the sign width distance plus two (2) feet from the signal pole.

X - R10-6 - 24" x 36" BLACK ON WHITE SIGNS ?verify size, otherwise no different than above?

X - W3-3 - 36" x 36" ORANGE BACKGROUND SIGNS

X - R10-15R, 30 inch by 30 inch, "Turning Vehicles (Rt Arrow Symbol), (Yield Symbol) to (Pedestrian Symbol)". Two (2) signs mounted on existing signal mast arm upright pole and one (1) sign mounted on the existing signal mast arm.

X - R10-15L, 30 inch by 30 inch, "Turning Vehicles (Lt Arrow Symbol), (Yield Symbol) to (Pedestrian Symbol)". All three (3) signs are mounted on the existing signal mast arms.

Other:

X - Meter pedestal with 30 amps disconnect switch.

X – Electric service complete.

X - Meter sockets shall be of the bypass type so that power to the cabinet can be maintained while the utility company services the meter.

X – Linear feet of ¼ inch 3 strand polypropylene yellow rope shall be installed within the conduit for future use. Adequate length of slack shall be left in each pull box such that it can be tied to the conduit should future hand hole work be required.

X – Linear feet of preemption wire

X – Linear feet of 12 conductor signal cable

For Temp Signals:

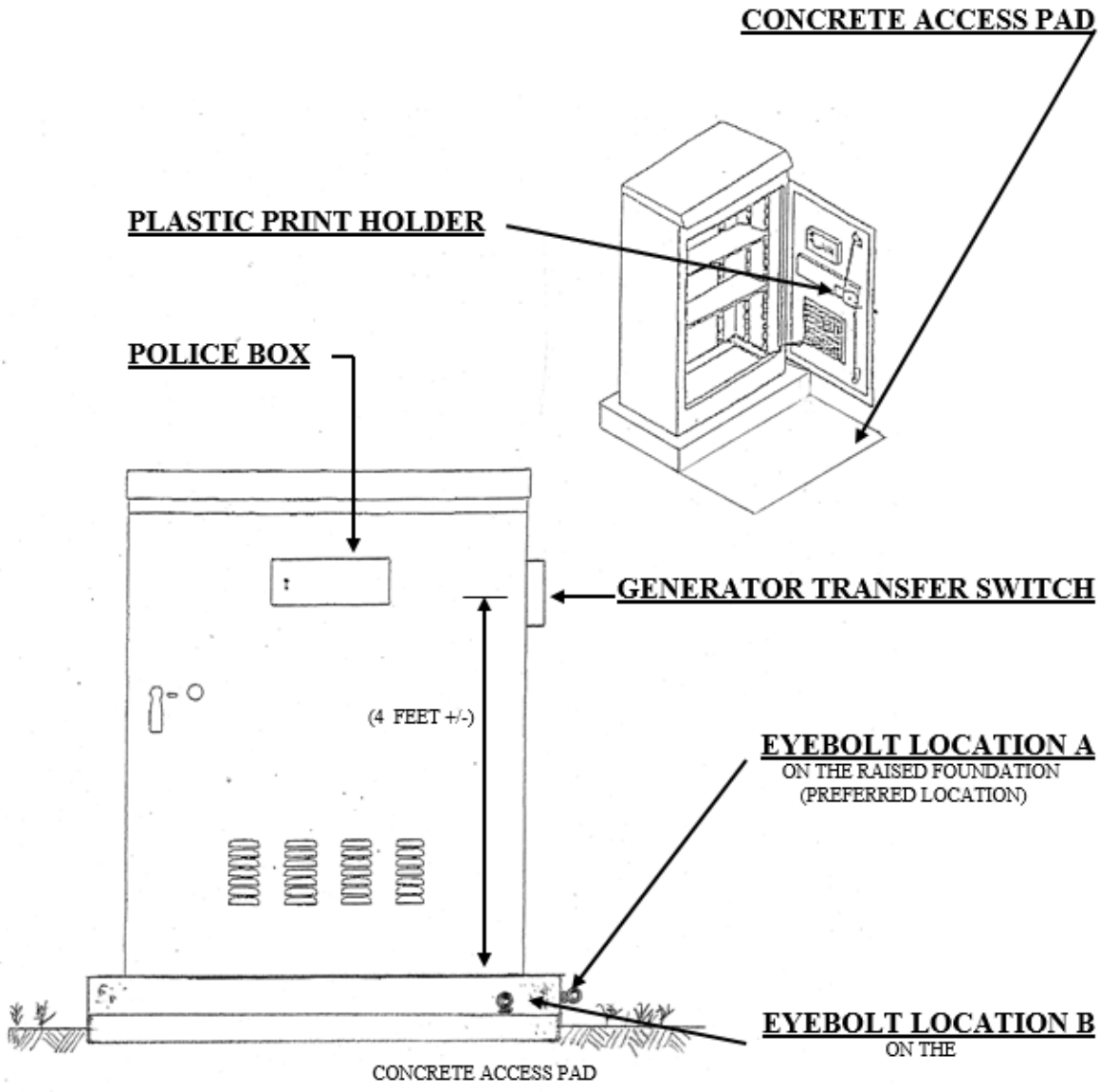
QUANTITY	MATERIAL DESCRIPTION
x	x-phase NEMA menu-driven traffic signal controller with 3 detector amplifier(s) in a pole-mounted cabinet;
x	One-way, three section, 12 inch span wire mounted signal head with 5-inch louvered backplates;

x	Class IV, 40' wood poles with back guy and screw type anchors;
x'	3/8" diameter, messenger cable;
x'	Aerial signal cable;
x	6' x 25' Roadway loop detector, 3 turns as shown on the plan; and
x	6' x 15' Roadway loop detector, 3 turns as shown on the plan; and
x	x-Way temporary fire preemption including 1 confirmation strobe light, receivers for each leg of the intersection, and optical fire preempter phase selector.
x	R10-6 - 24" x 36"
x	W3-3 - 36" x 36"
x	Temporary cab mounted preemption emitter

Add to 5.1

5.1.1 All work for failures due to pre-existing conditions will be negotiated and paid for as extra work as provided in 109.04. The labor and equipment necessary to complete this application will be subsidiary.

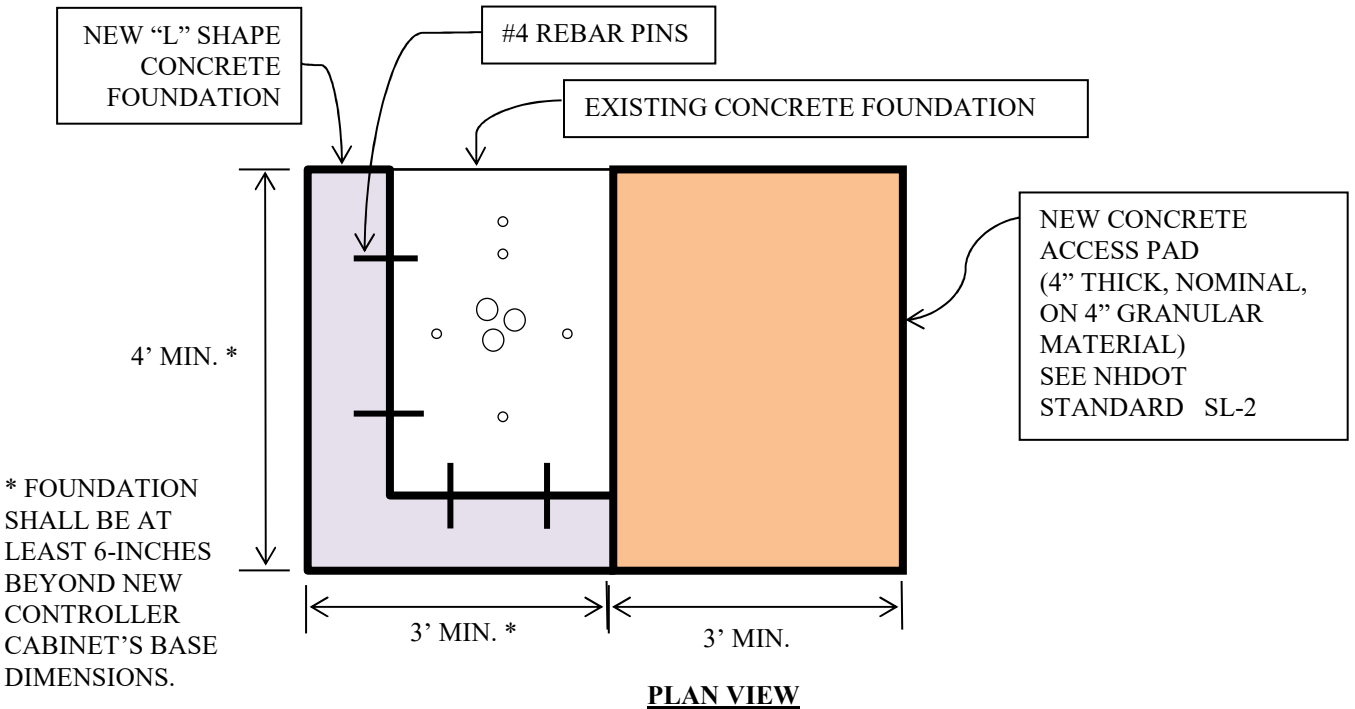
ATTACHMENT "A"



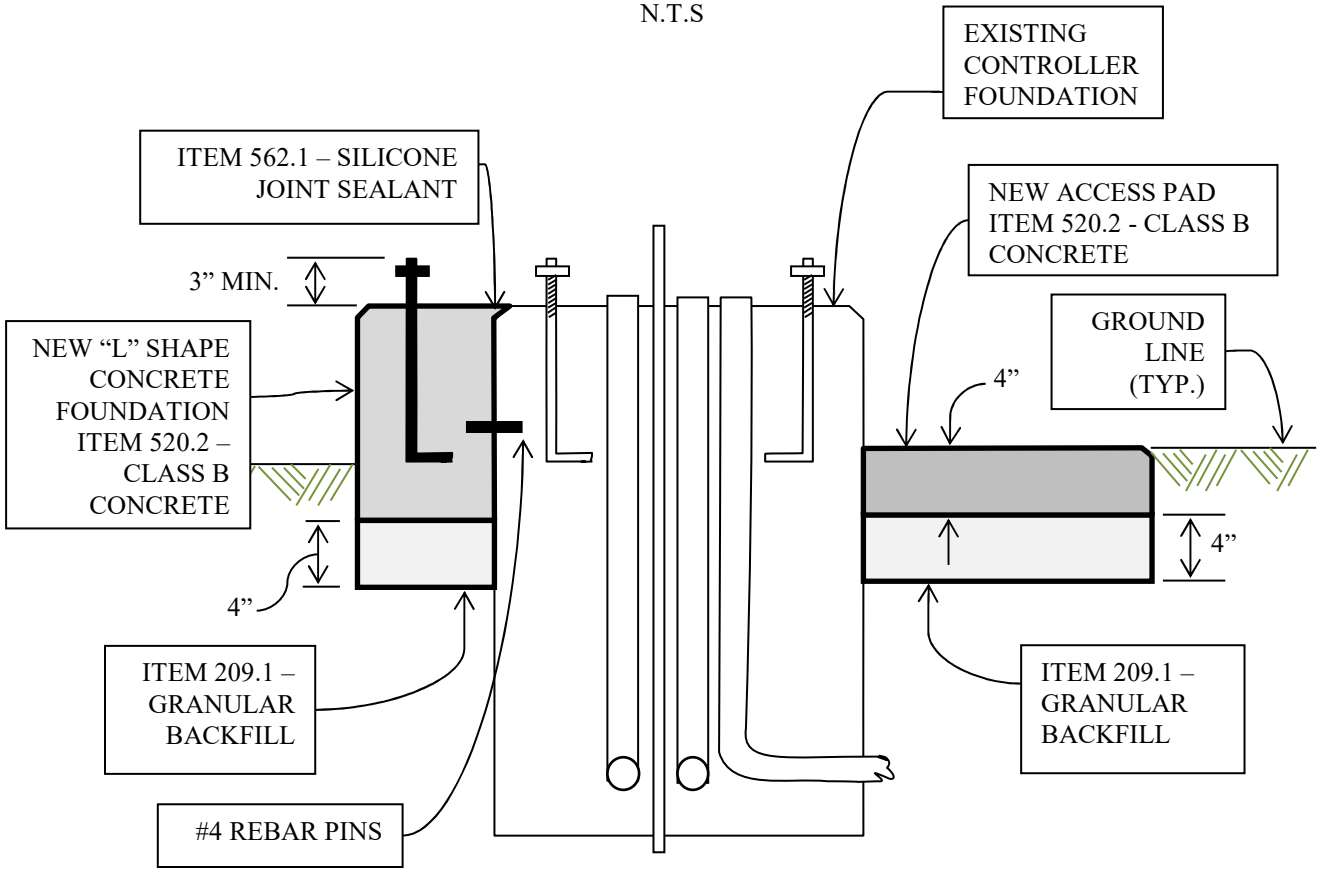
TRAFFIC CONTROLLER CABINET

N.T.S.

ATTACHMENT "B"



PLAN VIEW
N.T.S



SECTION VIEW
N.T.S