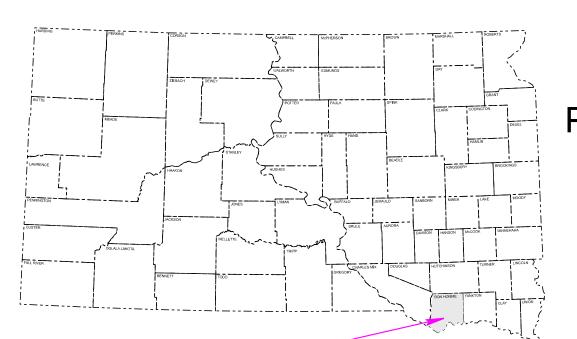
SECTION SHEET DOT PH 0037(173)30 Non 1 of 30



STATE OF SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION PLANS FOR PROPOSED

# PROJECT PH 0037(173)30 SD HWY 37 & 46 **BON HOMME COUNTY**

INTERSECTION LIGHTING PCN 09C9

#### **INDEX OF SHEETS**

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Traffic Control
Sign Detail
Old Plans Reference
Special Detail 22-24 26-30 Standard Plates

PH 0037(137)30 MRM = 30.44 + 0.000

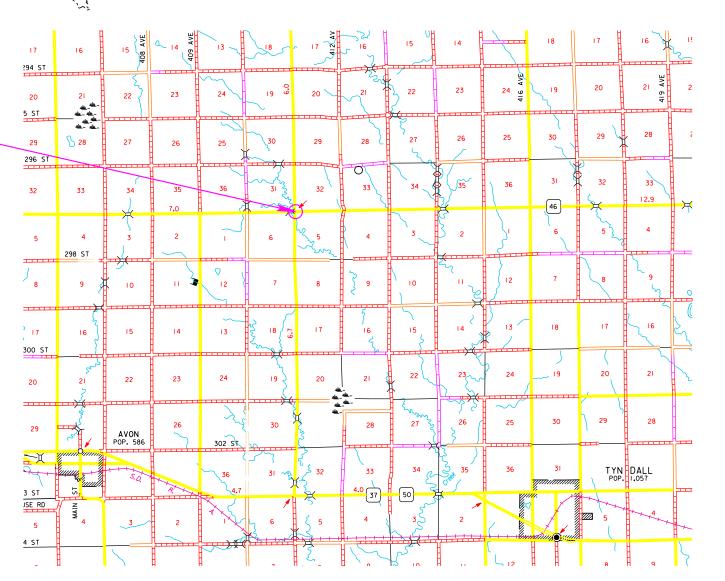
**PROJECT** 

#### **DESIGN DESIGNATION**

/	
AADT (2023) AADT (2053)	1327
AADT (2053)	2261
DHV ` ´	261
D	51%
DHV T%	12.5%
AADT T%	27.5%
V	65 mph

#### STORM WATER PERMIT

None Required



# **HOMME COUNTY**

September 18, 2024

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E5020	Salvage Traffic Sign	4	Each
250E0010	Incidental Work	Lump Sum	LS
632E1340	2.5"x2.5" Perforated Tube Post	102.0	Ft
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	117.2	SqFt
633E0225	Preformed Thermoplastic Pavement Marking, 24"	150	Ft
633E0245	Preformed Thermoplastic Pavement Marking, Message	12	Word
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	150	Ft
633E5035	Grooving for Cold Applied Plastic Pavement Marking, Message	12	Word
634E0010	Flagging	100.0	Hour
634E0110	Traffic Control Signs	196.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
635E0045	Breakaway Base Luminaire Pole with Arm, 45' Mounting Height	8	Each
635E3700	Roadway Luminaire, LED with Photoelectric Cell	8	Each
635E4010	1 Section Vehicle Signal Head	8	Each
635E5020	2' Diameter Footing	64.0	Ft
635E5301	Type 1 Electrical Junction Box	8	Each
635E6200	Miscellaneous, Electrical	Lump Sum	LS
635E8120	2" Rigid Conduit, Schedule 40	3,895	Ft
635E8220	2" Rigid Conduit, Schedule 80		Ft
635E9018	1/C #8 AWG Copper Wire	6,745	Ft
635E9020	1/C #10 AWG Copper Wire	12,125	Ft
635E9710	2/C #10 AWG Copper Pole and Bracket Cable	480	Ft

#### **SPECIFICATIONS**

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

#### **ENVIRONMENTAL COMMITMENTS**

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <a href="https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf">https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf</a>

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

#### COMMITMENT B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

#### Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pits, or staging areas associated with the project, cease construction activities in the affected area until the Whooping Crane departs and immediately contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

#### **COMMITMENT C: WATER SOURCE**

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species (AIS) positive waters within South Dakota without prior approval from the SDDOT Environmental Office. To prevent and control the introduction and spread of invasive species into the project vicinity, all equipment will be power washed with hot water (≥140 °F) and completely dried for a minimum of 7 days prior to subsequent use. South Dakota administrative rule 41:10:04:02 forbids the possession and transport of AIS; therefore, all attached dirt, mud, debris and vegetation must be removed and all compartments and tanks capable of holding standing water must be drained. This includes, but is not limited to, all equipment, pumps, lines, hoses and holding tanks.

#### Action Taken/Required:

The Contractor will obtain the necessary permits from the regulatory agencies such as the South Dakota Department of Agriculture and Natural Resources (DANR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

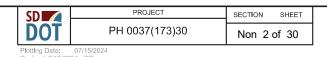
Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at: https://sdleastwanted.sd.gov/maps/default.aspx

South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species: https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04

#### **COMMITMENT E: STORM WATER**

Construction activities constitute less than 1 acre of disturbance.

#### Action Taken/Required:



At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

#### Action Taken/Required:

The DANR General Permit for Stormwater Discharges Associated with Construction Activities is required for construction activity disturbing one or more acres of earth and work in a waterway. The SDDOT is the owner of this permit and will submit the NOI to DANR 15 days prior to project start in order to obtain coverage under the General Permit. Work can begin once the DANR letter of approval is received.

The Contractor must adhere to the "Special Provision Regarding Storm Water Discharges to Waters of the State."

The Contractor will complete the DANR Contractor Certification Form prior to the pre-construction meeting. The form certifies under penalty of law that the Contractor understands and will comply with the terms and conditions of the permit for this project. Work may not begin on this project until this form is signed and submitted to DANR.

The form can be found at:

https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR CGPApp endixCCA2018Fillable.pdf

The Contractor is advised that permit coverage may also be required for offsite activities, such as borrow and staging areas, which are the responsibility of the Contractor.

#### COMMITMENT H: WASTE DISPOSAL SITE

The Contractor will furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

#### Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the Public ROW.

The waste disposal site(s) will be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Agriculture and Natural Resources.

The waste disposal site(s) will not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Environmental Office and the Project Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements will apply:

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in

#### COMMITMENT H: WASTE DISPOSAL SITE (CONTINUED)

accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with fences, gates, and placement of a sign or signs at the entrance to the site stating, "No Dumping Allowed".

2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period not to exceed the duration of the project. Prior to project completion, the waste will be removed from view of the ROW or buried, and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) will be incidental to the various contract items.

#### **COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES**

The SDDOT has obtained concurrence with the State Historic Preservation Office (SHPO or THPO) for all work included within the project limits and all department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

#### Action Taken/Required:

All earth disturbing activities not designated within the plans require a cultural resource review prior to scheduling the pre-construction meeting. This work includes but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor will arrange and pay for a record search and when necessary, a cultural resource survey. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review if the site was previously surveyed; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor will provide ARC with the following: a topographical map or aerial view in which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 150 feet of the inadvertent discovery will

immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

#### **SEQUENCE OF OPERATIONS**

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting. If changes to the sequence of operations are proposed during the project, these must be submitted for review a minimum of one week prior to potential implementation. Approval for changes to the sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work.

#### **GENERAL TRAFFIC CONTROL**

Existing guide, route, informational logo, regulatory, and warning signs will be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging, and resetting of existing traffic control devices, including delineation, will be the responsibility of the Contractor. Cost for this work will be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the State.

All temporary traffic control sign locations will be set in the field by the Contractor and verified by the Engineer prior to installation.

All construction operations will be conducted in the general direction of traffic movement.

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent will be used, as determined by the Engineer.

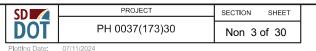
Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following pavement marking.

#### FLAGGING

Operations will be conducted so that the traveling public will not have to wait longer than 15 minutes at the flagger station.



It is required that the flaggers be able to communicate with one another. If an emergency vehicle needs to pass through the project, the Contractor will be required to expedite traffic movement. All costs associated with this will be incidental to the contract unit price per hour for "Flagging".

#### ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

			CONVENTIO	NAL ROAD	
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W20-1	ROAD WORK AHEAD	3	48" x 48"	16.0	48.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
W21-5	SHOULDER WORK	3	48" x 48"	16.0	48.0
G20-1	ROAD WORK NEXT 1.0 MILES	4	36" x 18"	4.5	18.0
G20-2	END ROAD WORK	4	36" x 18"	4.5	18.0
			VENTIONAL CONTROL SI		196.0

#### PREFORMED THERMOPLASTIC PAVEMENT MARKING

Stop bars and Word Messages will be grooved in Preformed Thermoplastic Pavement Marking.

#### General

- Made of prefabricated retroreflective, resilient thermoplastic material;
- Contains glass beads uniformly distributed through the entire crosssectional area;
- Capable of being affixed to bituminous or concrete pavement by heating;
- Resistant to deterioration due to exposure to sunlight, water, salt, and adverse weather conditions:
- Under traffic wear, shows no appreciable fading in accordance with the color requirements, lifting, or shrinkage throughout the life of the marking:
- Capable of conforming to pavement contours, breaks, and faults through the action of traffic at normal pavement temperatures;
- Possesses resealing characteristics, such that it is capable of fusing with itself and previous thermoplastic markings when heated; and
- Protected during shipment and in storage.

Apply the preformed thermoplastic pavement marking as recommended by the manufacturer to provide a neat, durable marking that will not flow, distort, or crack due to temperature if the pavement surface remains stable. Use equipment and application methods specified by the manufacturer. Primer as required by the manufacturer will be provided with the material.

Application of the markings will include the use of any manufacturer recommended sealers. Sealers may be required on concrete pavements, inside grooves, or on older asphalt pavements. Prior to placing any markings on new concrete, the Contractor will remove any curing compounds. Removal will be by sandblasting or other standard industry methods.

Any required primers or sealers will be included in the contract unit price for the various preformed thermoplastic pavement marking items.

Provide precut messages and symbols meeting the requirements of the MUTCD and the Standard Signs Manual in custom kits. Use separate pieces or segments to form individual letters or symbols only to the extent supplied by the manufacturer. Provide shapes, sizes, and colors as required by the contract.

#### PREFORMED THERMOPLASTIC PAVEMENT MARKING (CONTINUED)

#### Color

 Will meet the color specification limits and luminance factors for Cold Applied Plastic Pavement Marking and Legends (Section 983.2 D, Tables 1 and 2).

#### **Glass Beads**

- Ensure the preformed thermoplastic pavement marking contains a minimum 30% intermixed glass beads by weight and a minimum 80% true spheres.
- Ensure preformed thermoplastic pavement markings contain only clear beads.

#### Skid Resistance

 Ensure the surface of the preformed thermoplastic pavement marking provides a skid resistance value of at least 45 British Pendulum Number (BPN) when tested in accordance with ASTM E303.

#### Retroreflectivity

 Provide preformed thermoplastic pavement marking meeting the minimum initial pavement marking retroreflectivity values using 30 m geometry and meeting the testing procedures of ASTM E1710:

Minimum Initial Pavement Marking Retroreflectivity					
	White	Yellow			
Thermoplastic	400 mcd/sq. ft./ft.	250 mcd/sq. ft./ft.			
Thermoplastic, enhanced skid resistance (ESR)	250 d/sq. ft./ft.	150 d/sq. ft./ft.			

#### Thickness

- A longitudinal marking is a minimum 90 mils thick at the edges, and a maximum 125 mils thick at the center of the stripe.
- Transverse markings and symbols are a minimum 125 mils thick at the edges, and a maximum 160 mils thick at the center.

#### Sample

- Prior to application, the Contractor will provide a sample of the preformed thermoplastic pavement marking to be used on the project to the Region Traffic Engineer for inspection and approval.
- Do not begin application of the preformed thermoplastic pavement marking prior to obtaining the Region Traffic Engineer's approval of the preformed thermoplastic pavement marking material. The Region Traffic Engineer's approval of the preformed thermoplastic pavement marking does not void other preformed thermoplastic pavement marking requirements specified.

#### **GROOVING FOR PREFORMED THERMOPLASTIC PAVEMENT MARKING**

The Contractor will establish a positive means for the removal of the grinding and/or grooving residue. Residue from dry grooving will be vacuumed. Solid residue will be removed from the pavement surfaces before being blown by traffic action or wind. The Contractor will conduct this work to control and minimize airborne dust and similar debris that may become a hazard to motor vehicle operation or nuisance to property owners. Residue from wet grooving will not be permitted to flow across lanes being used by public traffic or into gutter or drainage facilities. Residue, whether in solid or slurry form, will be disposed of in a manner that will prevent it from reaching any waterway in a concentrated state. The cleaning of the residue for grooving will be to the

satisfaction of the Engineer and may require more than one pass to adequately remove material. All costs for removal of grinding and/or grooving residue will be included in the contract unit price per foot, for "Grooving for Cold Applied Plastic Pavement Marking" contract item.

#### **SPECIFICATIONS**

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

#### **SUPPLYING AS BUILT PLANS**

If the roadway lighting system is constructed differently than what is stated in the plans, the Contractor will supply as built plans to the Engineer and a copy will be sent to the Traffic Design Engineer. The as built plans may include conduit layouts, wiring diagrams, or other drawings depicting the changes from the original plans.

#### **SHOP DRAWING AND CATALOG CUTS SUBMITTALS**

The Contractor will submit shop drawings and catalog cuts in accordance with Section 985 of the Specifications.

PDF submittals will be sent to the following email addresses:

Stacy.Bartlett@state.sd.us Ryley.Rapp@state.sd.us

#### **LUMINAIRE POLES**

Luminaire poles L1 to L8 will have a mounting height of 45-feet with 8-feet arms.

The pole fabricator will be responsible for the determining the diameter, length, and number of anchor bolts.

#### **LUMINAIRES**

The lighting design used the following parameters and provides 0.8 and greater average maintained foot-candles and uniformity ratios of 3:1 (average maintained to minimum maintained foot-candles) and 5:1 (maximum to minimum maintained foot candles):

Pole Setback: 8 Ft.
Lamp Loss Factor (LLF): 0.8
Width of Lighted Area: Varies
Luminaire Cycle Length: NA
Configuration: Staggered
Mounting Height: 45 Ft.
Arm Length 8 Ft.

The following luminaires meet the requirements for this design:

SD	PROJECT	SECTION	SHEET
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DI D .	0711110001		

) AEL Autobahn: ATB0-P454-MVOLT-R3-P7

b.) Cooper VERD-M-CA3-160-740-U-T3-PR7

#### **TABLE OF FOOTING DATA**

Site	Footing	* Footing	**Spiral	**Spiral	Vertical
Designation	Diameter	Depth	Diameter	Length	Reinforcement
L1-L8	2' - 0"	8' - 0"	1' - 8"	54' - 9"	8-#7 x 7' - 6"

#### **SUBSURFACE**

During construction of the cylindrical footings, concrete placement operations should closely follow excavation procedures. The longer the excavations are left open, the more likely caving may occur.

Concrete will not be dropped through standing water. If water is present in the excavation it will be removed prior to concrete placement or the concrete will be tremied.

#### **INCIDENTAL WORK**

Incidental work includes, but is not limited to, the restoration of all disturbed areas to the satisfaction of the Engineer.

#### **EXISTING ELECTRICAL SERVICE**

The existing electrical service that is in place for the RICWS will be re-used for the new lighting and electrical needs in this project. All cost for labor and materials to disconnect and remove existing system wiring and any cost to energize new lighting and systems will be incidental to the contract lump sum price for "Miscellaneous, Electrical".

#### **WIRE SPLICING FOR LIGHTING**

All wire splices for lighting will be made using TE Connectivity GTAP connectors, NSI Industries Polaris Blue connectors, or an approved equal.

#### SIGN BEACONS

Yellow beacons will be installed on top of the "STOP AHEAD" signs, and red beacons will be installed on top of the "STOP" SIGNS. The beacons on each sign will have cap flashers. The Contractor will make all necessary connections to make the flashing beacon system operational.

All costs for the yellow and red beacons, flasher, conduit and wire to be installed on the warning signs to make the beacons fully functional will be incidental to the contract unit price per each for "1 Section Vehicle Signal Head". See Special Details for the conduit to be installed on the signs.

#### UTILITIES

The Contractor will contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It will be the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities.

If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the Contractor will contact the Engineer to determine modifications that will be necessary to avoid utility impacts.

#### **GENERAL PERMANENT SIGNING**

New sign installations will be staked in the field by the Contractor and checked by the Engineer. The Contractor will give the Engineer a minimum of one week to check staked locations prior to signpost installation. Lateral offset of signs will be as shown in the plans or as directed by the Engineer.

The Contractor will be responsible for contacting South Dakota One Call to locate the utilities at the staked sign installation locations.

The height of the post must not exceed the minimum height needed by more than 0.5 feet. Any portion that extends above the sign will be cut off. No separate payment will be made for cutting the post or for that length cut off.

Aluminum U-Channel stiffeners will be used on all signs 36 inches or greater in width and will conform to ASTM B221 Alloy 6063-T6 or 6061-T6. The U-Channel will be 2 inches in width and free of holes. The U-Channel stiffeners will also be used to connect various signs together so that an entire sign assembly can be erected on a single installation. Stiffeners may be fastened to signs by use of 1/4-inch diameter drive rivets.

The Contractor will use 3/8-inch diameter rust proof machine sign bolts, flat metal washers, neoprene washers (against the sign sheeting), lock washers, and nuts to fasten the sign to the channel aluminum and posts. A minimum of two bolts will extend through each post.

Prior to ordering signs, the Contractor will verify dimensions, background, border, and legend of the signs.

Prior to use, the Contractor will provide documentation for the sign support devices showing they meet the applicable NCHRP 350 or MASH requirements.

#### **NEW PERMANENT SIGNING**

All signs will be manufactured in accordance with the sheeting manufacturer's recommendations utilizing a matched component system, including inks, electronic cuttable films, and protective overlay films.

All Flat Aluminum Signs, Nonremovable Copy High Intensity will have sheeting in conformance with the requirements of ASTM D4956 Type IV. All Flat Aluminum Signs, Nonremovable Copy Super/Very High Intensity will have sheeting in conformance with the requirements of ASTM D4956 Type XI.

All costs associated with furnishing and installing the new permanent signs, and with furnishing and installing stiffeners and hardware will be incidental to the contract unit price per square foot for "Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity".

#### **DIGITALLY PRINTED SIGNS**

Digitally printed signs will be allowed on this project. If the Contractor elects to provide digitally printed signs, such signs will adhere to the following specifications.

#### PROTECTIVE OVERLAY FILM

Permanent traffic signs printed with digital ink systems will be fabricated with a full sign protective overlay film designed to provide a smooth surface needed for retroreflectivity, and to protect the sign from fading and UV degradation. The overlaminate will comply with the retroreflective sheeting manufacturer's recommendations to ensure proper adhesion and transparency and will also meet the reflective film durability as identified in Table 1.

Table 1: Retroreflective Film Minimum Durability Requirements

ASTM D4956	Full Sign	Sheeting
Туре	Replacement Term	Replacement Term
	(years)	(years)
I	0	7
III	7	10
IV	7	10
VIII	7	10
IX	7	12
XI	7	12

#### **FABRICATION**

Retroreflective sheeting will be applied to a properly cleaned and prepared aluminum sign blank in accordance with the retroreflective sheeting manufacturer's recommendations. Sign legend will be applied using digital print technologies and systems in accordance with the retroreflective sheeting manufacturer's recommendations and the requirements of these plans.

Finished signs will be free of ragged edges and must be supplied clean and free of scratches, grease, oil, lubricants or other contaminants. Minor blemishes (dirt speck, dust, etc.) may settle on the fresh ink surface or become entrapped between the sheeting surface and transparent overlay film due to static charge within the sign shop environment. Any blemish must be minor and not interfere with the communication of the sign message to the motorist. The blemish must not be visible to the naked eye when viewed from 30 feet or greater.

After application of the retroreflective sheeting, sign blanks will be stacked and packaged face to face, back to back, and protected in accordance with the sheeting manufacturer's recommendations. Finished signs will be securely packaged to prevent damage during transit or storage according to the sheeting manufacturer's recommendations.

#### TRAFFIC SIGN PERFORMANCE WARRANTY PROVISIONS

Based on the ASTM Type of sheeting specified, traffic control signs will be warranted for the duration shown in Table 1. Full product terms and conditions are as established by each sheeting manufacturer and may contain certain limitations based on sheeting and ink colors, and geographic exposure of the sign. A copy of the warranty document with complete details of terms and conditions will be supplied if requested by the Engineer.

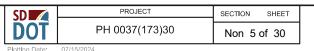
#### CERTIFIED DIGITAL SIGN FABRICATOR

Sign fabricators using digital imaging methods to produce regulated traffic signs must be certified by the reflective sheeting manufacturer whose materials are used to produce the delivered signs.

#### DATE TAGGING SIGNS WITH PERTINENT INFORMATION

All digitally printed signs are required to be date-tagged with the following 2 components:

1. Date tags on the back of signs

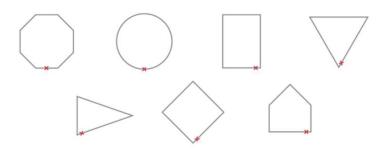


Tags will have the following information and be fabricated with material and printing system that are as durable as the warranted sign.

- Name of Sign Fabricator
- Date the sign was fabricated (month and year)
- Process that was used for sign fabrication (digitally printed)
- Supplier of sheeting that was used for fabricating the sign.

#### . Border date

The month and year (mm/yyyy) of sign fabrication will be printed in the border of the sign in 3/8" sans serif font. Border date will be printed with the same warranted printed system as the sign face. The date should be printed in the locations indicated below.



#### **SQUARE TUBE POST SLEEVE**

All 2.5" x 2.5", 10 Gauge perforated tube post will be sleeved with a 2-3/16" x 2-3/16" x 4', 10 Gauge perforated tube post.

#### **SALVAGE TRAFFIC SIGN**

All signs listed for salvage in the Sign Salvage Table will have the existing posts, bases, and signs dismantled and delivered to the Tyndall Maintenance Yard. The Contractor will notify the Engineer two days prior to time of delivery to the Maintenance Yard so correct placement for storage and inventory of materials can be made upon receipt. All bolts, nuts, and washers will be placed in individual 5-gallon pails. Wooden posts will be stockpiled separately from steel posts. All signs listed for salvage will be handled with care so that the signs are not damaged during removal or transport. The Contractor will replace and pay for any salvaged signs damaged in their care.

All costs for labor and equipment necessary to remove, dismantle, and deliver signs to the Tyndall Maintenance Yard will be incidental to the contract unit price per each for Salvage Traffic Sign. The quantity of signs to be salvaged is shown in the Sign Salvage Table. The plans quantity is shown as per assembly. Payment for salvaging signs will be paid per assembly at the contract unit price per each for "Salvage Traffic Sign".

Revised: 7/15/2024 - RR

	SIGN SALV	/AGE	T	۱B	LE		
MRM	SIGN ASSEMBLY DESCRIPTION	SIGN SIZE (IN)	110E5020 <b>SALVAGE</b>	632E3520 RESET	TYPE OF POST *	FIXED	BREAKAWAY
	SD 46 EASTBOUND						
305.42	STOP AHEAD	48 X 48	1		PT		1
305.59	STOP	48 X 48	1		PT		1
SD 46 WESTBOUND							
305.61	STOP	48 X 48	1		PT		1
305.75	STOPAHEAD	48 X 48	1		PT		1
		TOTALS	4	0		0	4
*PT	- PERFORATED TUBE						

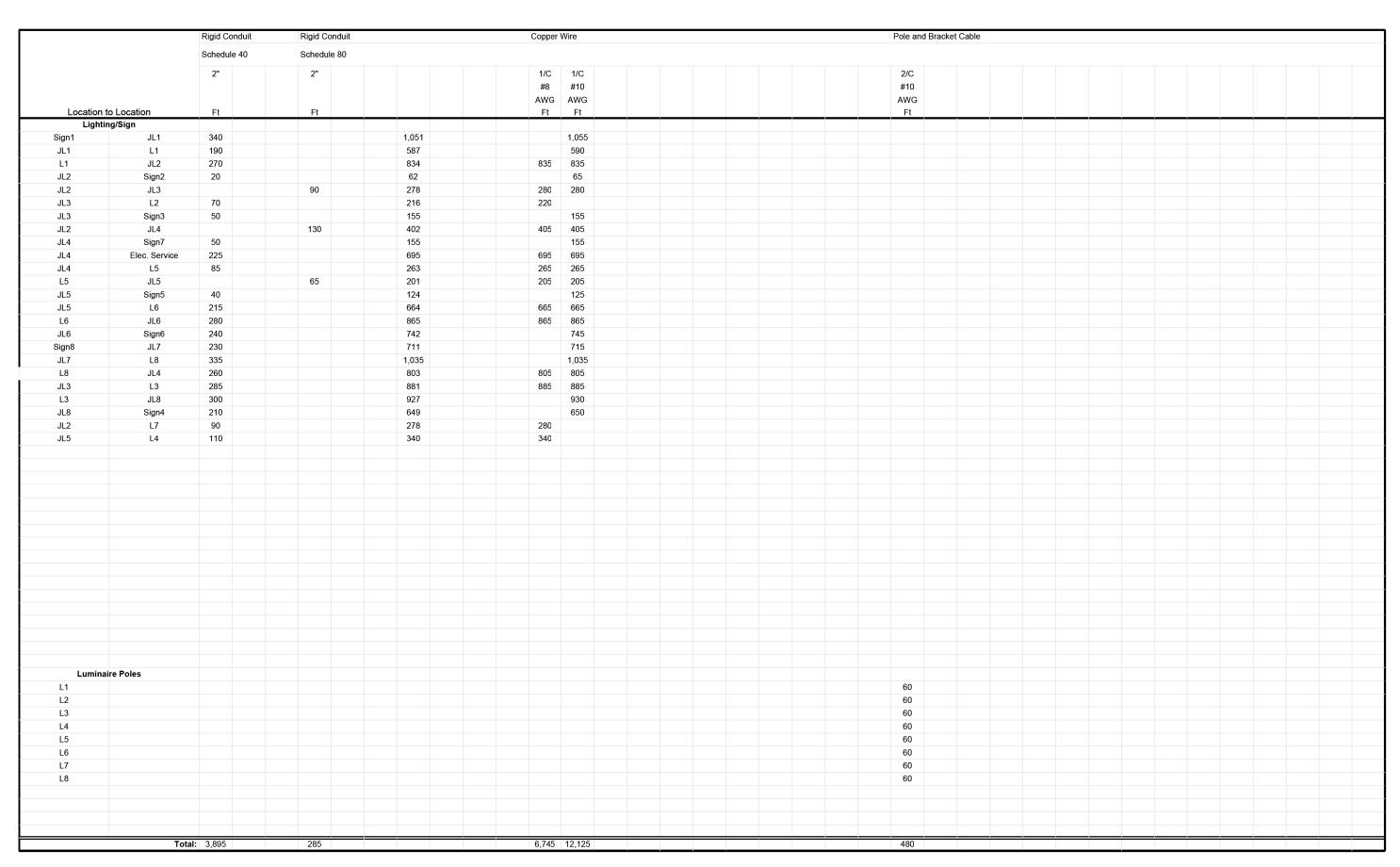
### **SIGN INSTALLATION TABLE**

		SIGN	DATA							POST [	ATA	
			SIGN	SIGN	AREA	OFFSET*	SIGN		POST	BREAK-	SIZE/QUA	NTITY (Ft)
MRM	DESCRIPTION	SIGN	SIZE	(Sc	ηFt)	(R)IGHT/	FACES	COMMENTS	LENGTHS X	AWAY	2.0"x2.0"	2.5"x2.5"
		CODE	(Ft)	Type IV	TYPEXI	(L)EFT			INSIDE OUTSIDE	#	TUBE	TUBE
SD 37 SB				632E3203	632E3205						632E1320	632E1340
30.59	STOP AHEAD (sym)	W3-1	4 X 4		16.0	16	N		14.3	S		14.3
30.45	STOP	R1-1	4 X 4		13.3	12	N		11.2	S		11.2
SD 37 NB												
30.28	STOP AHEAD (sym)	W3-1	4 X 4		16.0	16	S		14.3	S		14.3
30.42	STOP	R1-1	4 X 4		13.3	12	S		11.2	S		11.2
SD 46 EB												
	STOP AHEAD (sym)	W3-1	4 X 4		16.0	16			14.3	S		14.3
	STOP	R1-1	4 X 4		13.3	12			11.2	S		11.2
SD 46 WB												
	STOP	R1-1	4 X 4		13.3	12			11.2	S		11.2
	STOP AHEAD (sym)	W3-1	4 X 4		16.0	16			14.3	S		14.3
	TOTALS THIS SH	IEET		0.0	117.2						0.0	102.0

<sup>\* -</sup> Distance from edge of shoulder or back of curb to edge of Sign.

<sup># - (</sup>S)lip Base, (A)nchor Stub Post

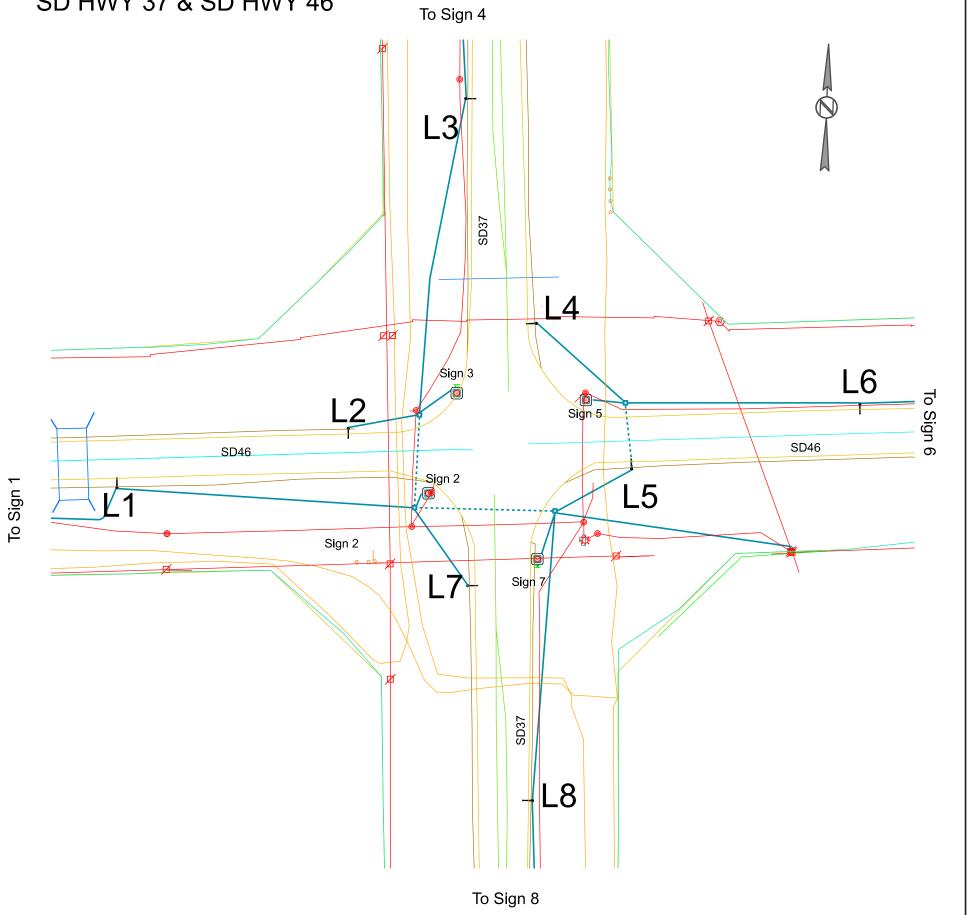
# CONDUIT AND CABLE QUANTITIES

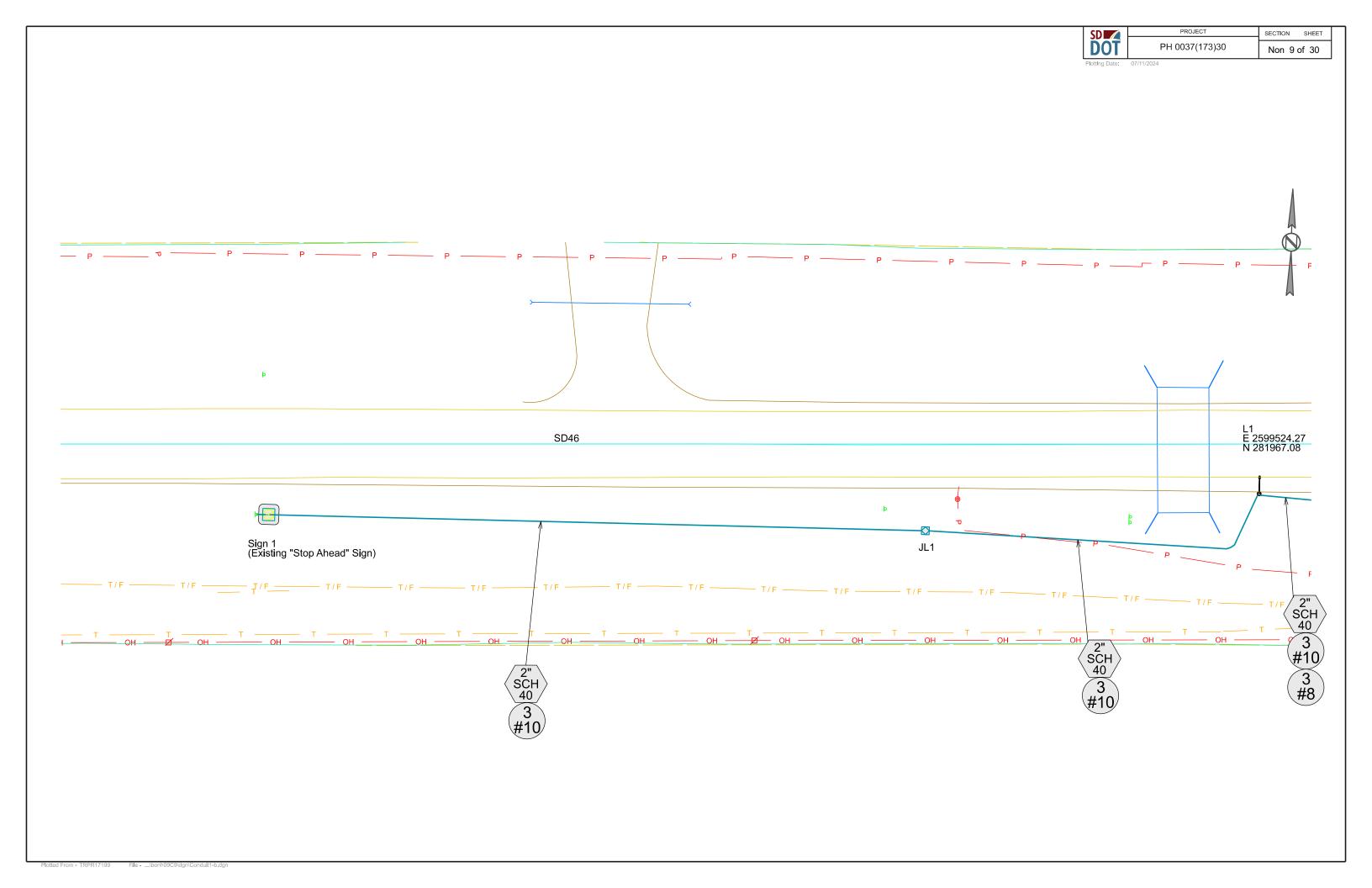


# INTERSECTION OVERVIEW SD HWY 37 & SD HWY 46

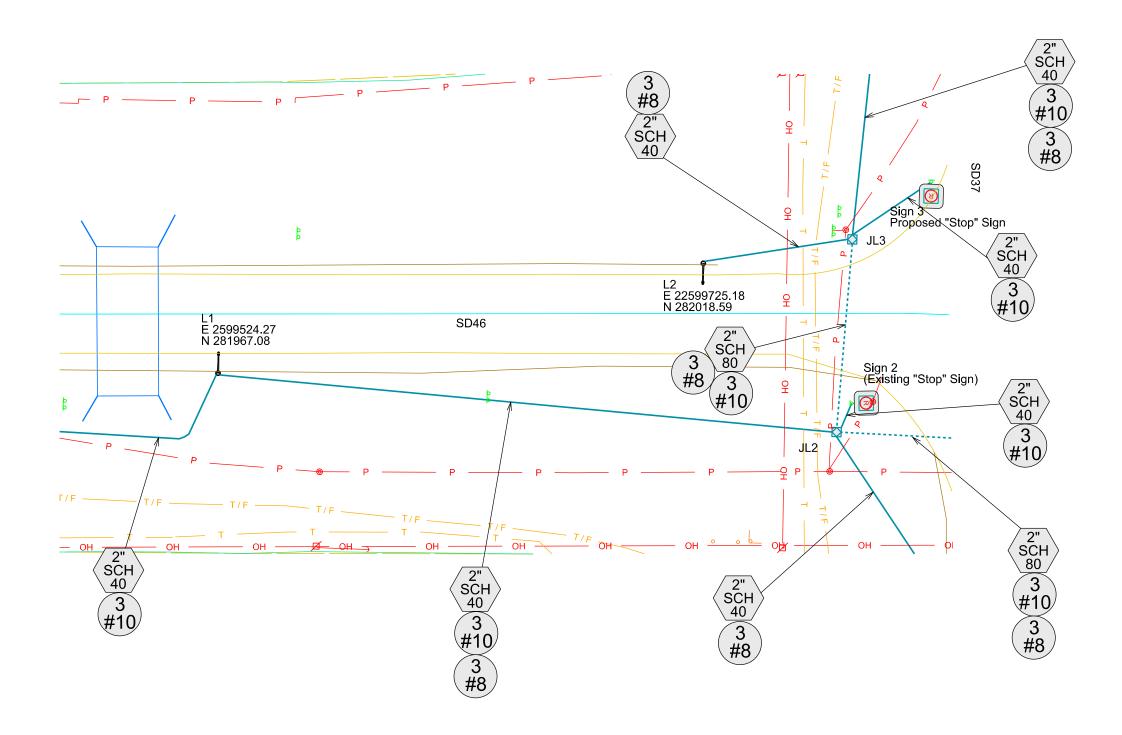
ESTIMATE OF QUANTITIES					
KEY	ITEM ODANT UNI				
G	Breakaway Base Luminaire Pole w/8' Arm 45' Mounting Height (L1-L8)	8	EACH		
	Roadway Luminaire, LED with Photoelectric Cell (L1-L8)	8	EACH		
0	2' Diameter Footing (L1-L8)	64	EACH		
	Type 1 Electrical Junction Box (JL1-JL8)	8	EACH		
2" SCH 40	2" Rigid Conduit, Schedule 40 3895 F		FT		
2" SCH 80	2" Rigid Conduit, Schedule 80 285 F		FT		
#8	1/C #8 AWG Copper Wire 6745 FT				
#10	1/C #10 AWG Copper Wire	12125	FT		
	2/C #10 AWG Copper Pole & Bracket Cable	480	FT		
	1 Section Vehicle Signal Head (Yellow)(Sign1,4,6,8)	4	FT		
R	1 Section Vehicle Signal Head (Red)(Sign2,3,5,7)	4	FT		

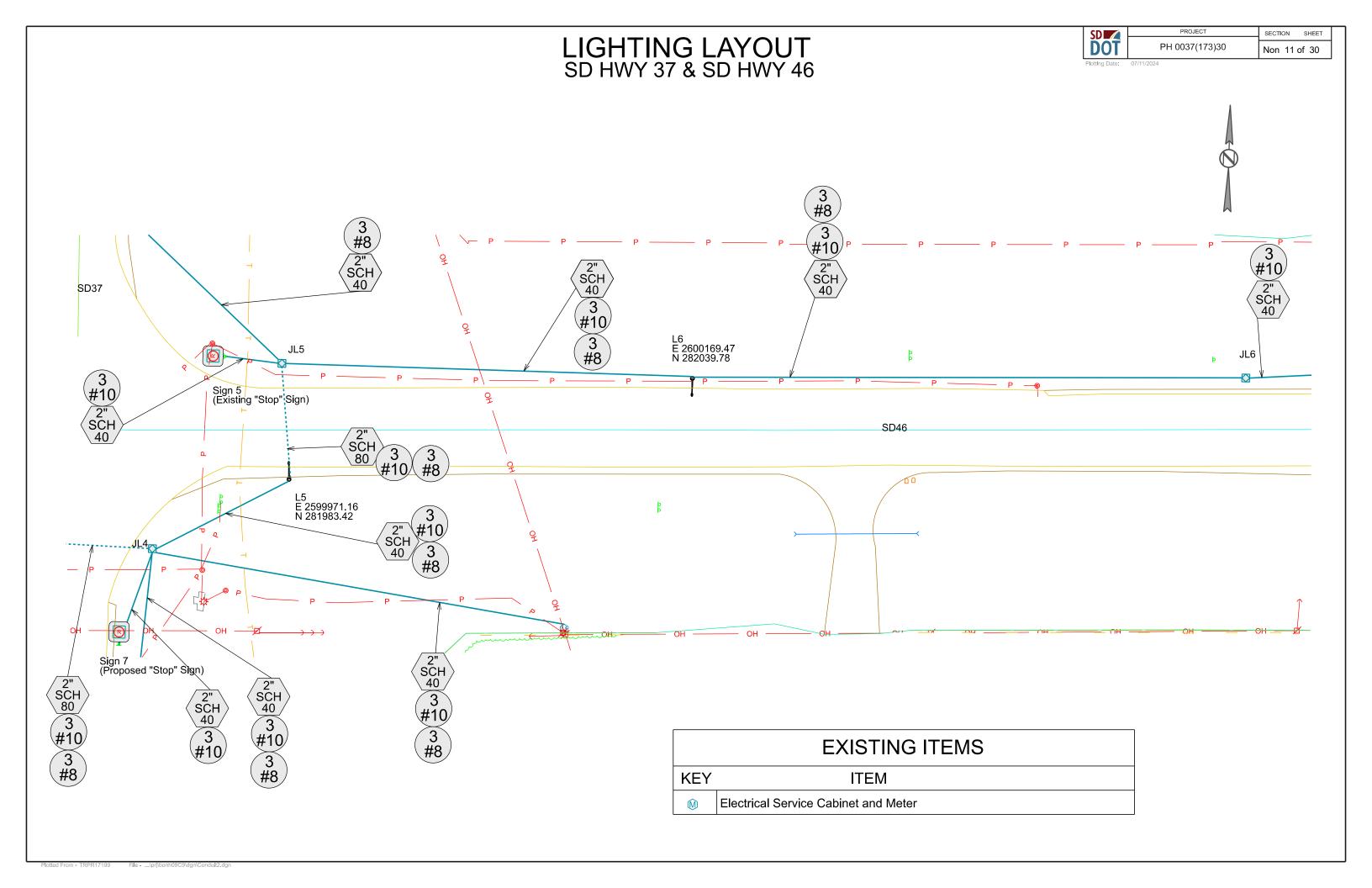
EXISTING ITEMS		
KEY	ITEM	
<b>M</b>	Electrical Service Cabinet and Meter	

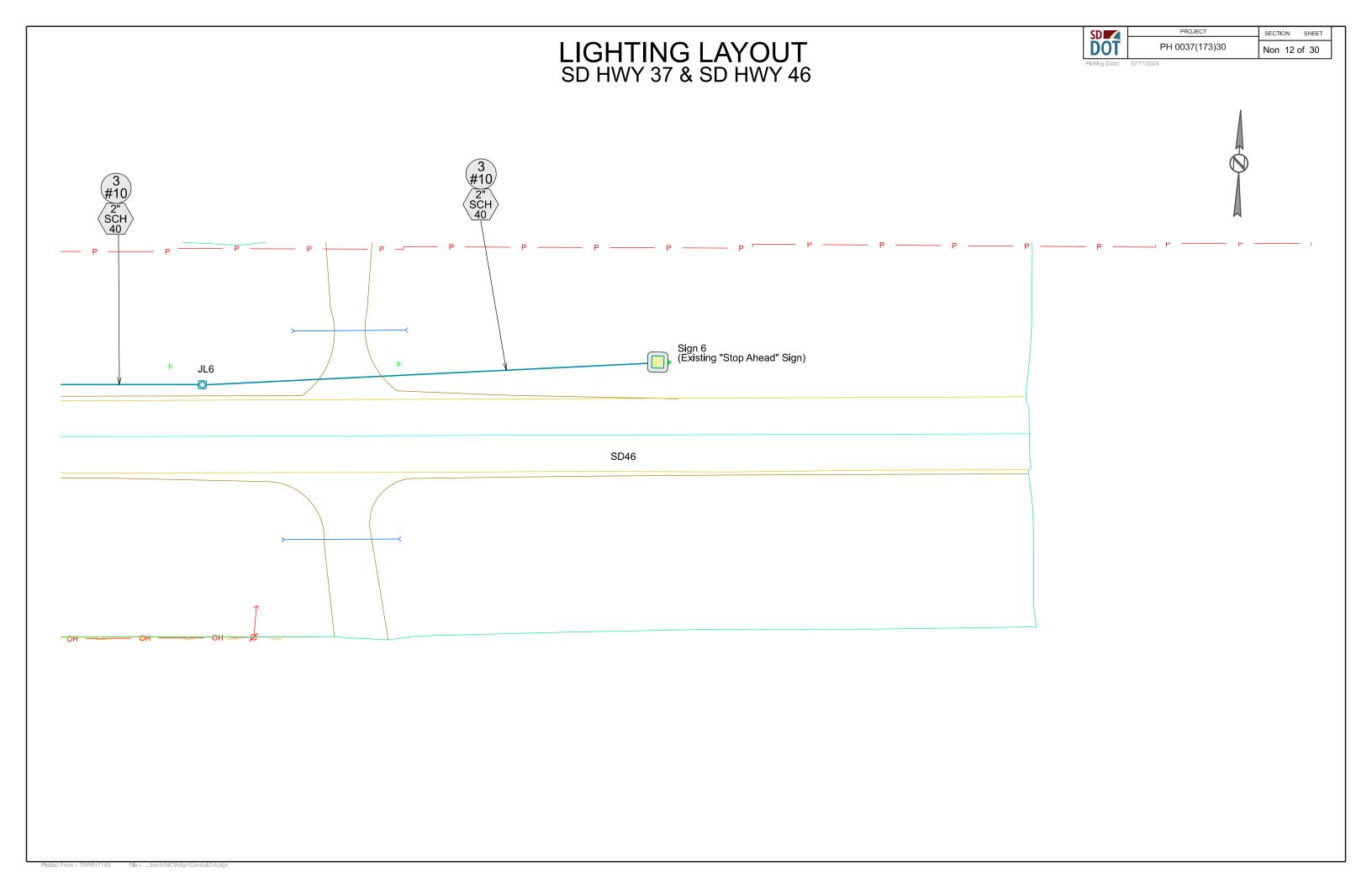




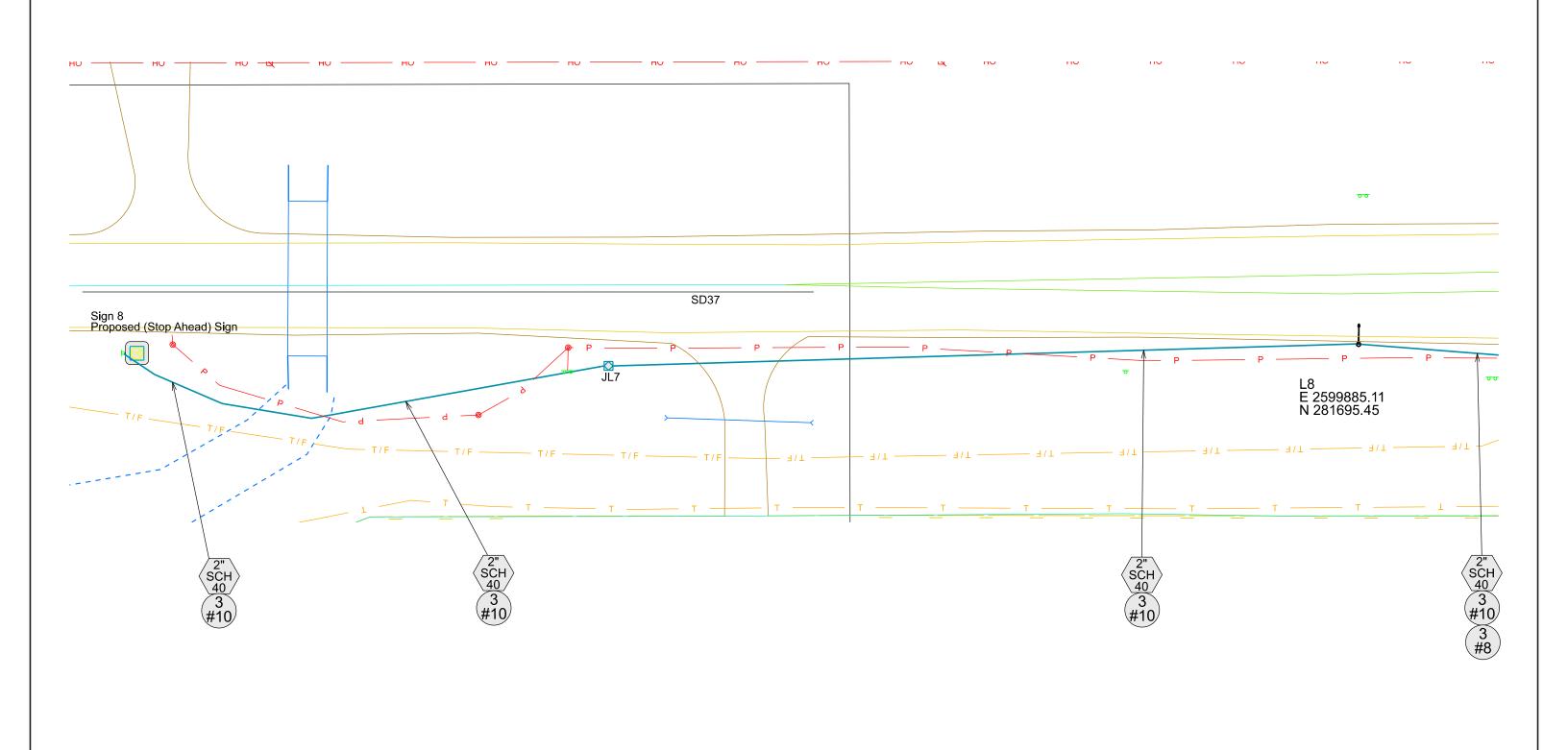




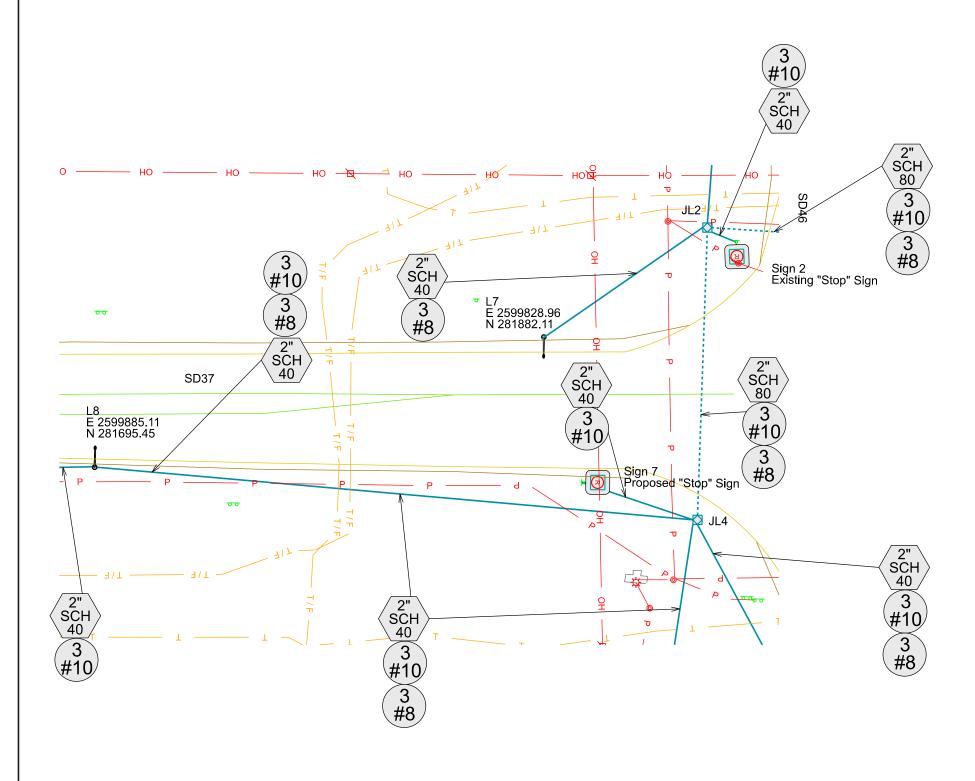




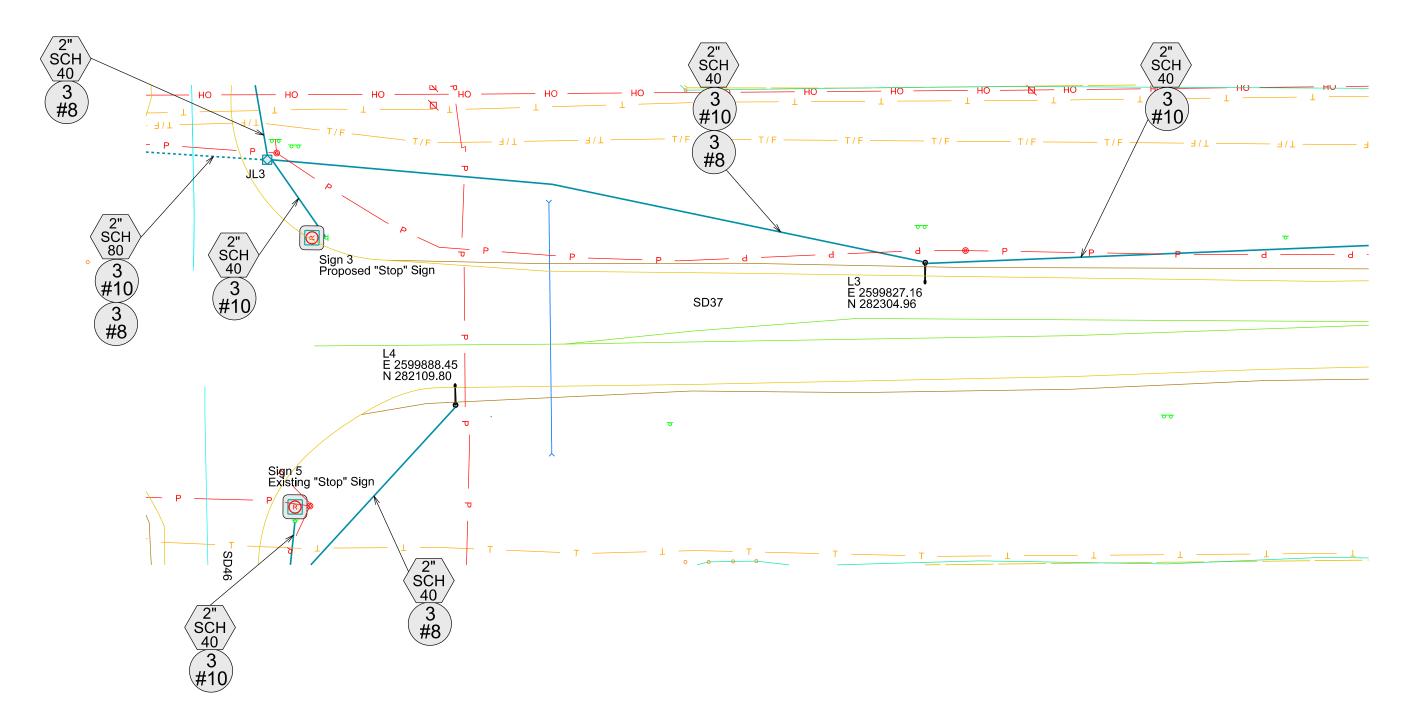




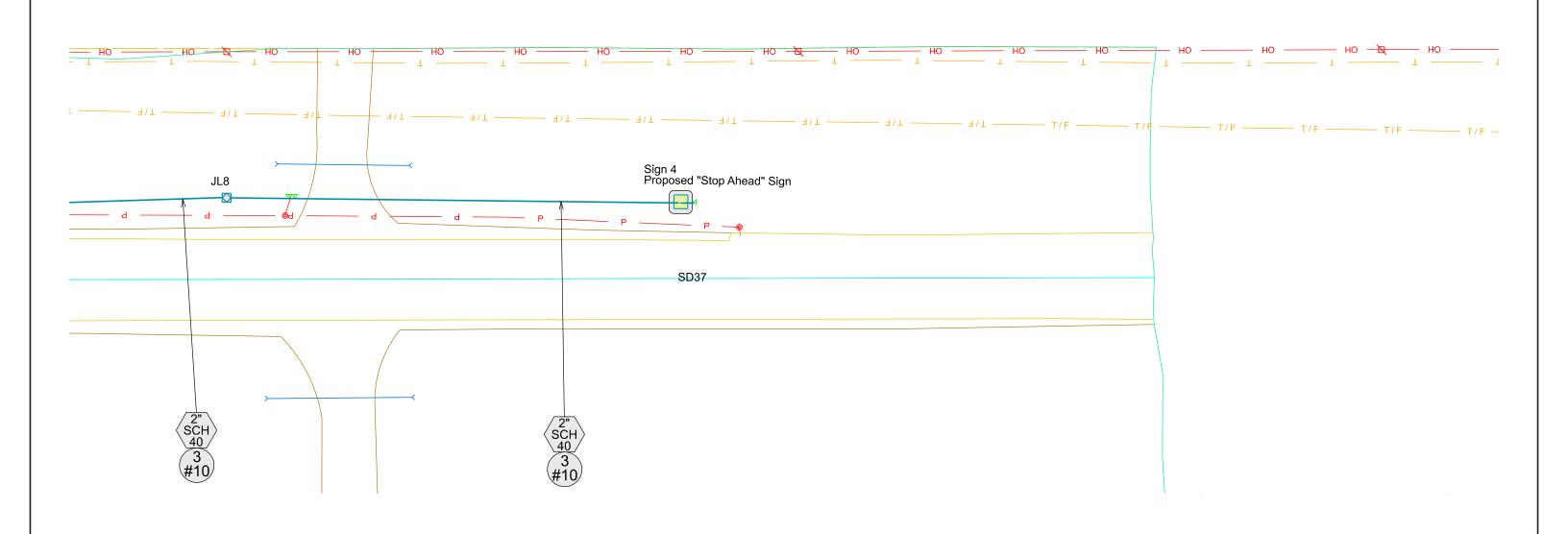


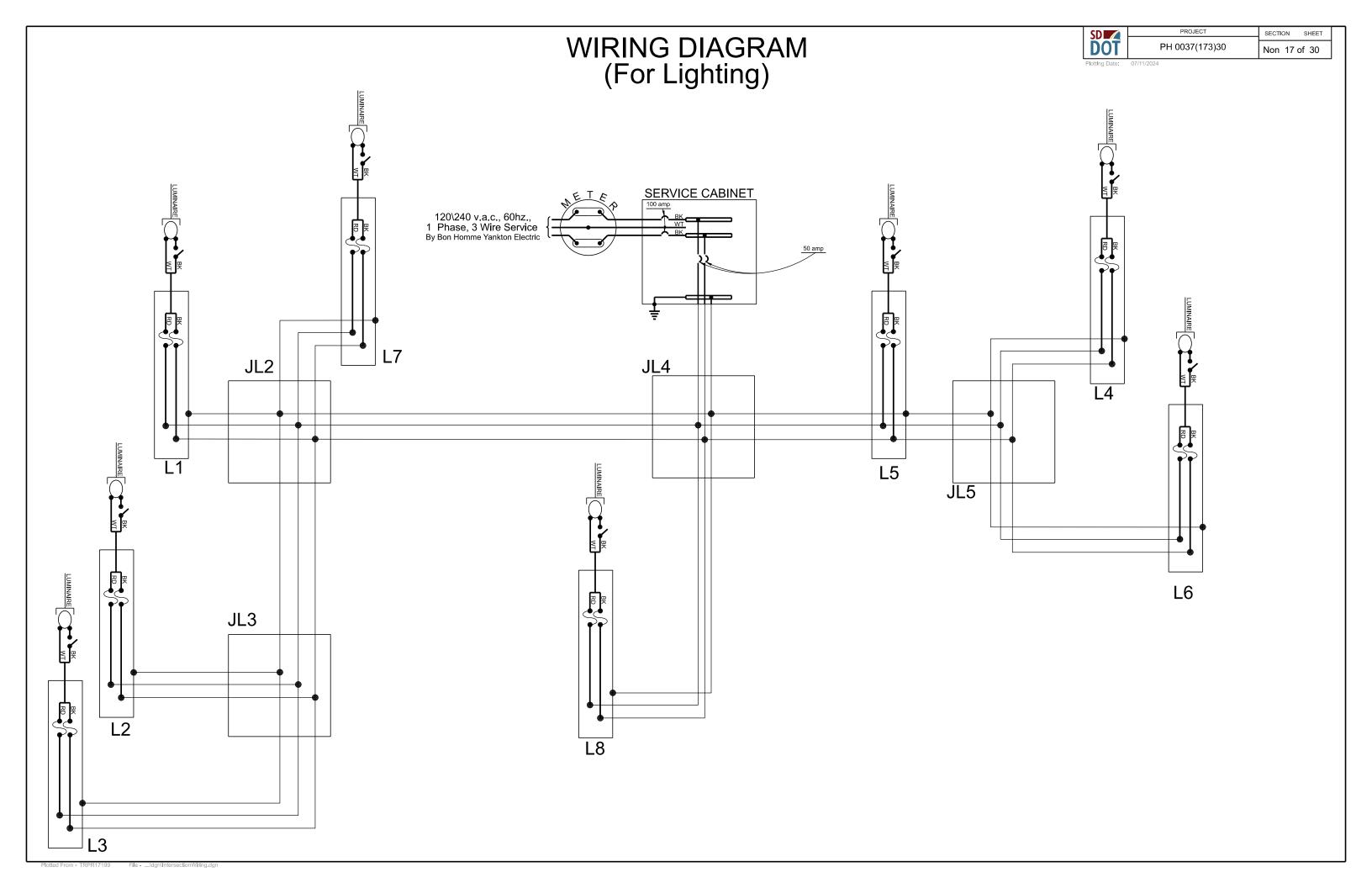






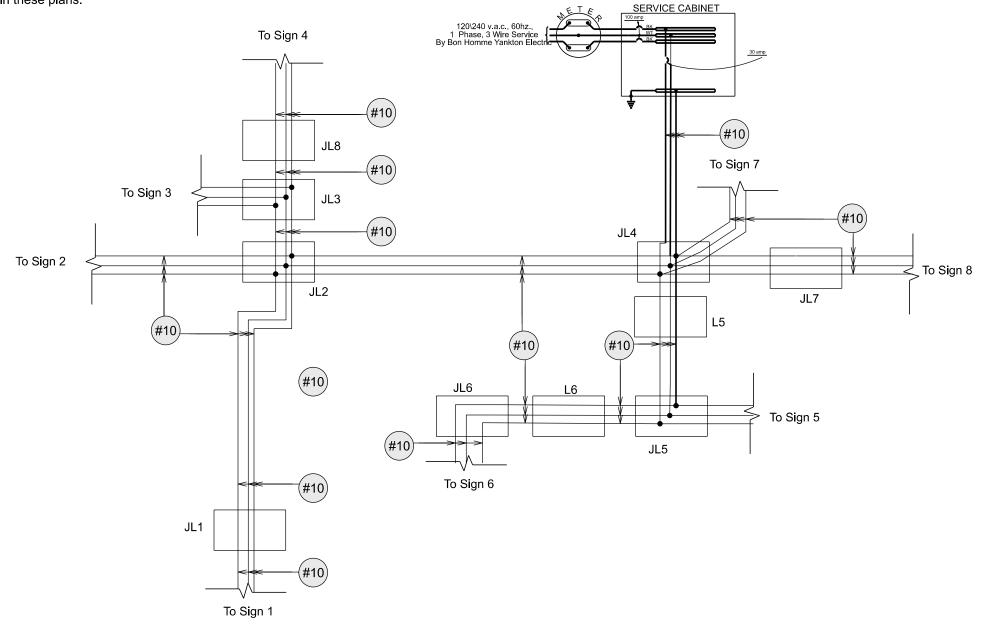






# WIRING DIAGRAM (For Signs)

NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

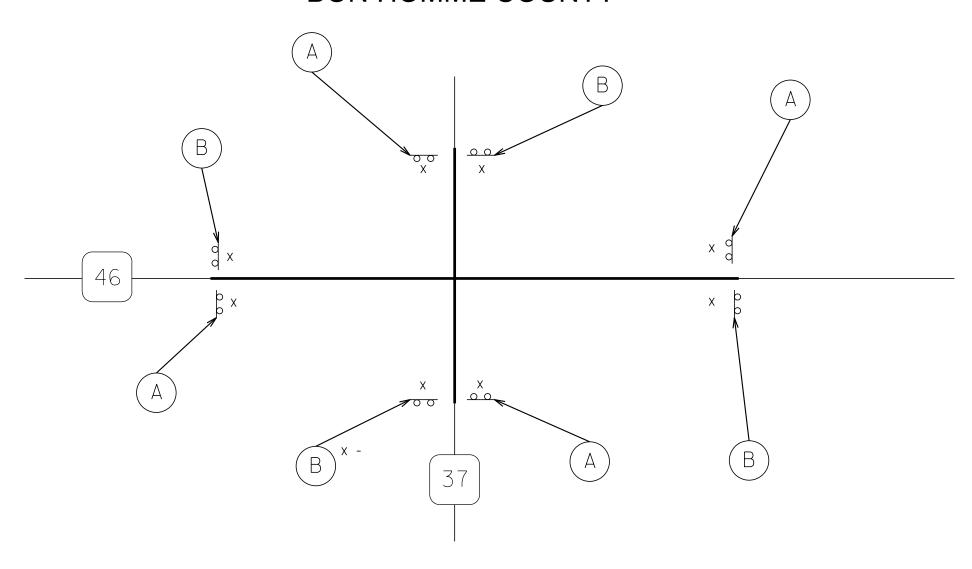


# TRAFFIC CONTROL

FIXED LOCATION SIGNS (GROUND MOUNTED SUPPORTS)

# SD46 & SD37 LIGHTING BON HOMME COUNTY





Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet)
0 - 30	200
35 <b>-</b> 40	350
45 <b>-</b> 50	500
55	750
60 - 65	1000
75	2600

NOTES:

Road Work Next xx Miles and End Road Work signs will remain in place until pavement marking is complete.

X - Signs will be placed 2600' from intersection. Exact location to be approved by the Engineer.

Construction signs will not obscure existing signs and must be installed a minimum of 100' from an existing sign.



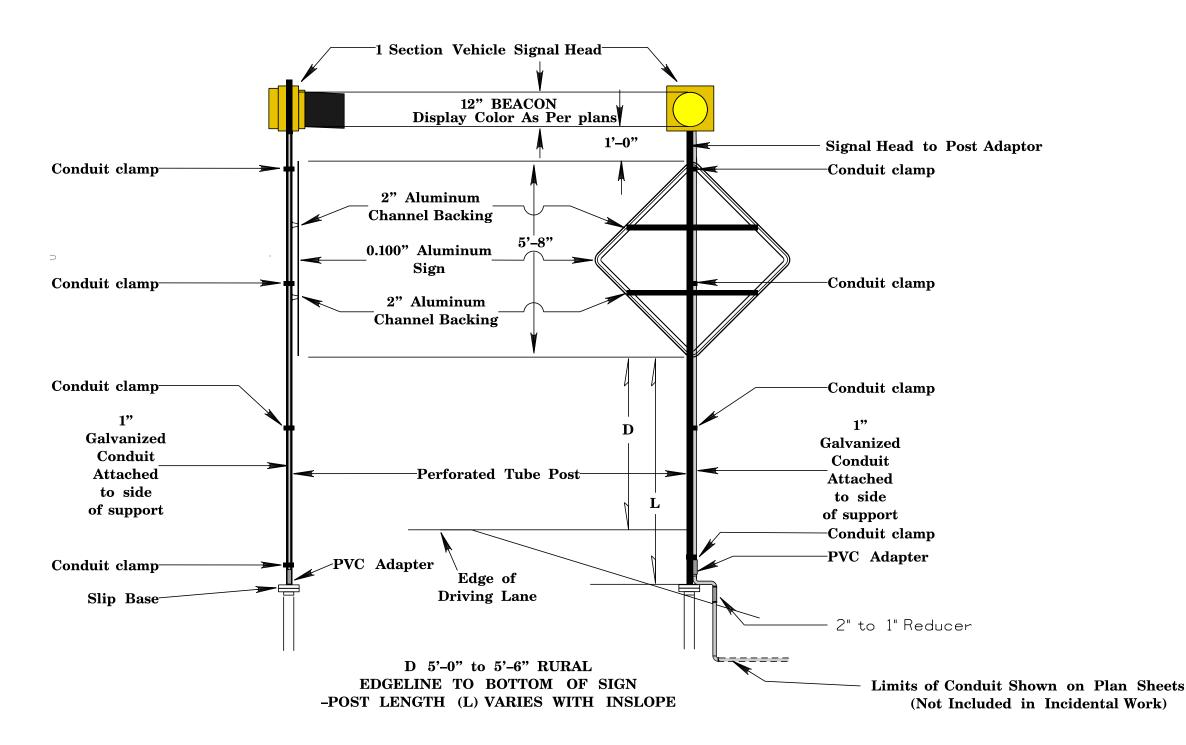
ROAD WORK
NEXT 1 MILES
G20-1



END ROAD WORK G20-2

# BEACON AND ELECTRICAL CONDUCTOR CONDUIT INSTALLATION

Revised: 7/15/2024 - RR

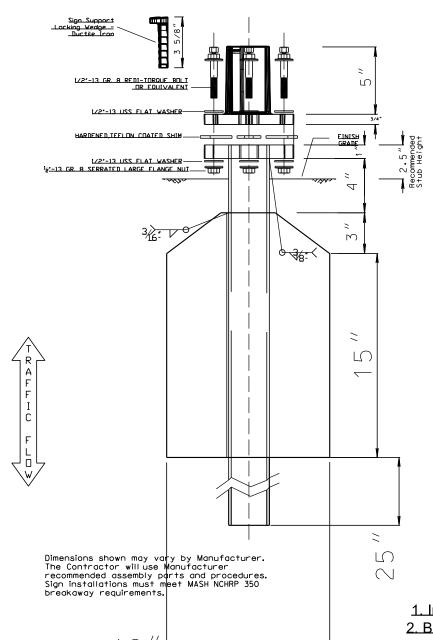


# WARNING SIGN ASSEMBLY WITH BEACON

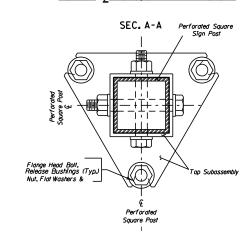
(Typical)

# PROJECT SECTION SHEET PH 0037(173)30 Non 21 of 30

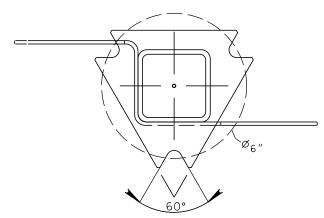
# 2 1/2" SQUARE STEEL PERFORATED TUBE POST WINGED BREAKAWAY ANCHOR DETAILS FOR SOIL INSTALLATIONS (Typical)



# TOP POST RECEIVER for 2-½" SQUARE POST



#### WINGED BOTTOM SOIL STUB



#### NOTES:

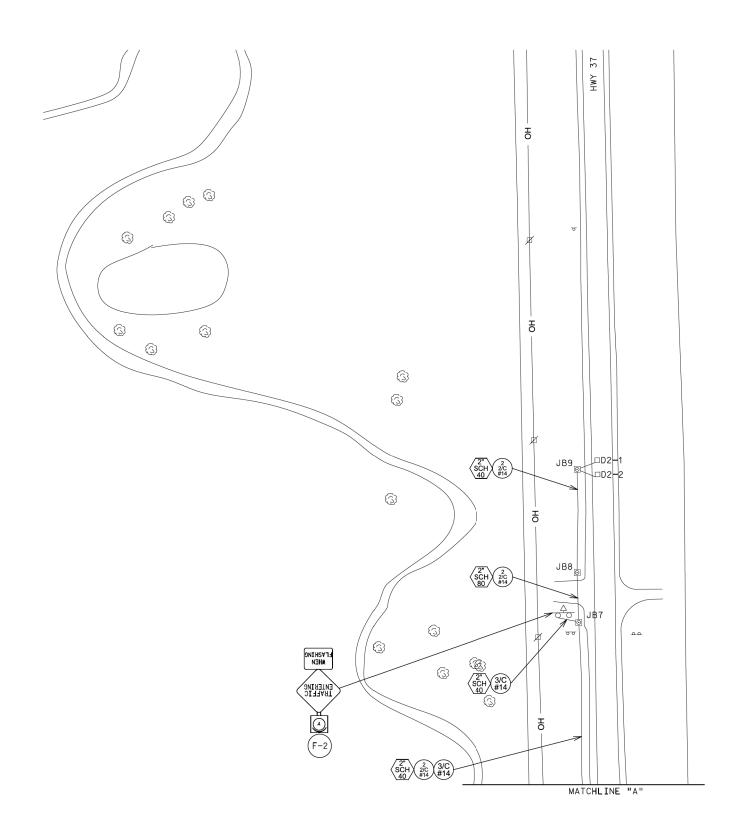
- 1. Install per manufactures recomendations.
- 2. Bolt system used will supply proper torque.

#### GENERAL NOTES-

- I. The manufacturer must provide certification that the breakaway system furnished will develop the full shear and bending yield strength of the sign post section being spliced.
- 2. All posts must be galvanized in accordance with ASTM A653, Des. G-90.
- 3. All hardware must be galvanized in accordance with ASTM AI53.

#### DOT SECTION Old Plans Bohn035V For Reference of Removing Existing Equipment PH 0037(173)30 Non 22 of 30 3' X 3' SIDEWALK (INCIDENTAL) 3' X 5' CONTROLLER CABINET FOOTING MATCHLINE "A" LEGEND GROUND ROD (CENTERED WITHIN CABINET) E ELECTRICAL SERVICE CABINET KEY 2" SCH 1/C 40 #10 WARNING SIGN FLASHING BEACON TYPE 2 ELECTRICAL JUNCTION BOX REROUTE INPLACE CONDUIT AND POWER CABLES INTO ELECTRICAL SERVICE CABINET (INCIDENTAL) ELECTRICAL SERVICE CABINET 2" SCH 2/C #14 40 #14 JB6 CONTROLLER CABINET PREFORMED DETECTOR LOOP 2" RIGID CONDUIT, SCHEDULE 40 3" RIGID CONDUIT, SCHEDULE 40 2" RIGID CONDUIT, SCHEDULE 80 1/C #10 AWG COPPER WIRE 2/C #14 AWG COPPER TRAY CABLE, K2 3/C #14 AWG COPPER TRAY CABLE, K2 5/C #14 AWG COPPER TRAY CABLE, K2 SCH 2/C 40 #14 2" 5/C SCH #14 JB5 JB10 g $\begin{array}{c|c} \hline 2" \\ SCH \\ \hline 2/C \\ 80 \\ \hline \end{array} \begin{array}{c} 2 \\ 2/C \\ \#14 \\ \end{array} \begin{array}{c} 3/C \\ \#14 \\ \#14 \\ \end{array} \begin{array}{c} 5/C \\ \#14 \\ \end{array}$ JB11 HWY 46 D4-2B D4-2A D8-1 JB1 JB3 JB2 2" SCH 2/C #14 2" SCH 2/C #14 2" SCH #14 (3) (3) MATCHLINE "B"

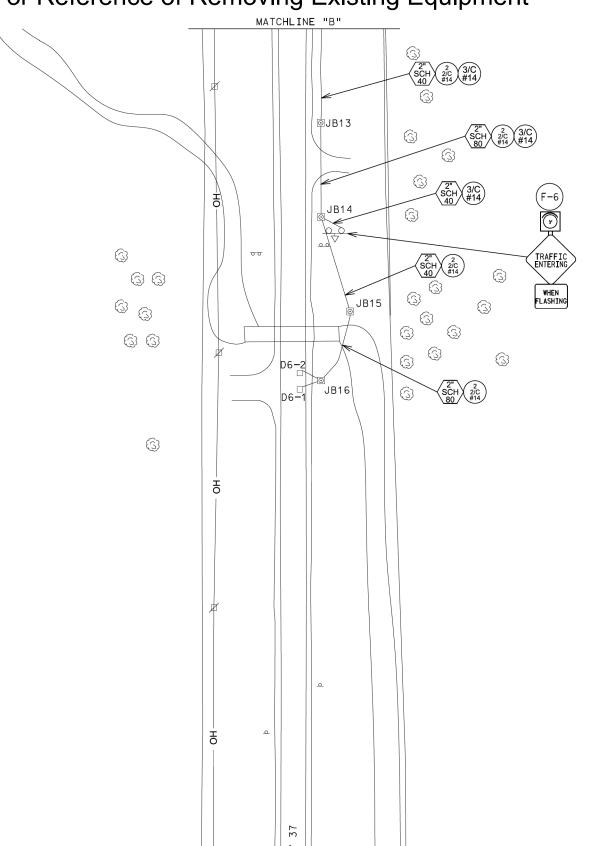
# Old Plans Bohn035V For Reference of Removing Existing Equipment

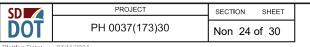


LEGEND					
KEY	ITEM				
9 9	WARNING SIGN				
$\Diamond$	FLASHING BEACON				
0	TYPE 2 ELECTRICAL JUNCTION BOX				
Δ	ELECTRICAL SERVICE CABINET				
⊠	CONTROLLER CABINET				
	PREFORMED DETECTOR LOOP				
SCH 40	2" RIGID CONDUIT, SCHEDULE 40				
SCH 40	3" RIGID CONDUIT, SCHEDULE 40				
SCH 80	2" RIGID CONDUIT, SCHEDULE 80				
(1/C) #10	1/C #10 AWG COPPER WIRE				
(2/C) #14	2/C #14 AWG COPPER TRAY CABLE, K2				
(3/C) #14	3/C #14 AWG COPPER TRAY CABLE, K2				
(5/C) #14	5/C #14 AWG COPPER TRAY CABLE, K2				



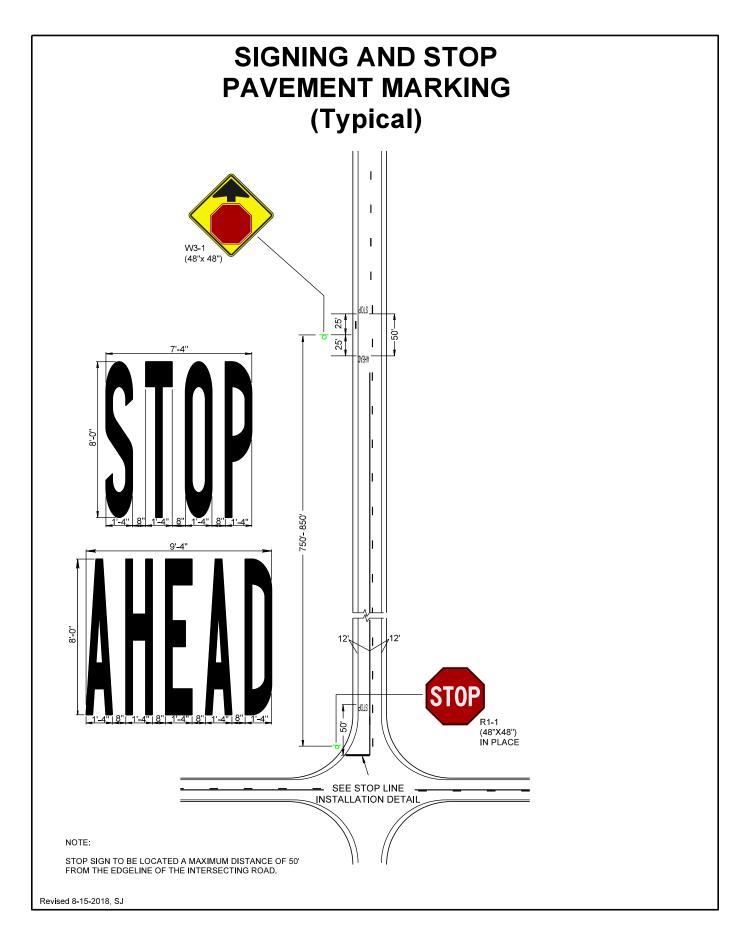
# Old Plans Bohn035V For Reference of Removing Existing Equipment

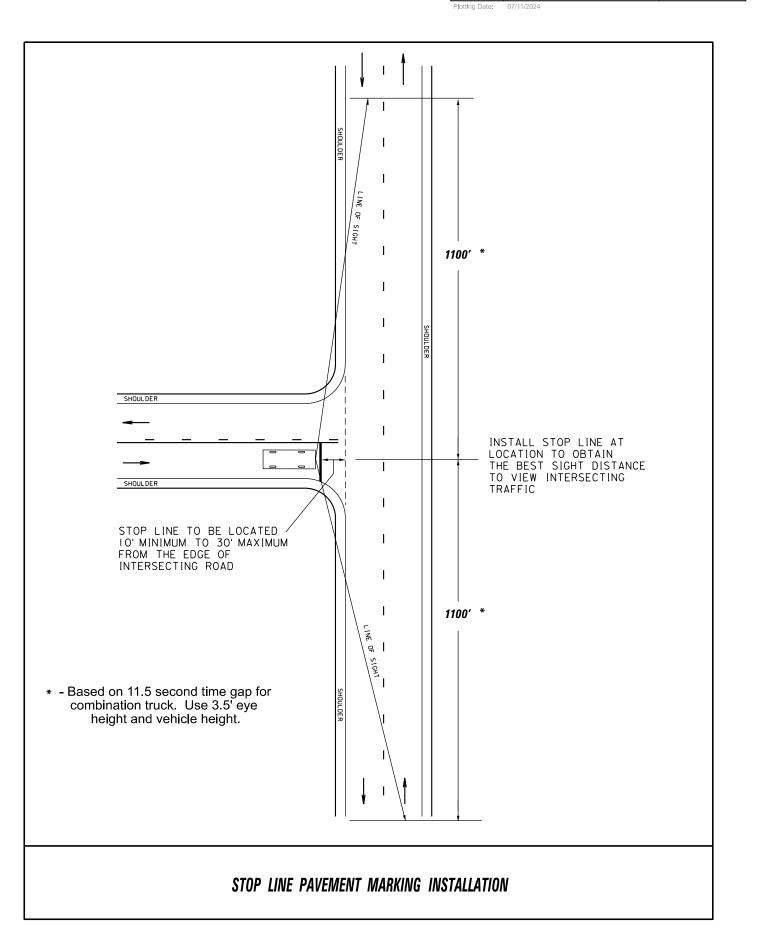




LEGEND					
KEY	KEY ITEM				
þ	WARNING SIGN				
$\rightarrow$	FLASHING BEACON				
0	TYPE 2 ELECTRICAL JUNCTION BOX				
Δ	ELECTRICAL SERVICE CABINET				
⊠	CONTROLLER CABINET				
	PREFORMED DETECTOR LOOP				
2" SCH 40	2" RIGID CONDUIT, SCHEDULE 40				
3" SCH 40	3" RIGID CONDUIT, SCHEDULE 40				
SCH 80	2" RIGID CONDUIT, SCHEDULE 80				
(1/C) #10	1/C #10 AWG COPPER WIRE				
2/C #14	2/C #14 AWG COPPER TRAY CABLE, K2				
(3/C) #14	3/C #14 AWG COPPER TRAY CABLE, K2				
(5/C) #14	5/C #14 AWG COPPER TRAY CABLE, K2				







			_	
Warni	na sian	sequer		

in opposite direction same

as below.

DOT

PROJECT

XXX FEET

ROAD WORK

SECTION

SHEET PH 0037(173)30 Non 26 of 30

The signs illustrated are not required Posted Spacing of if the work space is behind a barrier, Advance Warning Speed more than 2 feet behind the curb, or 15 Prior to Signs feet or more from the edge of any Work (Feet) (M.P.H.) roadway. (A) 0 - 30 200 The signs illustrated will be used where 350 35 - 40 there are distracting situations; such as: 45 - 50 500 vehicles parked on shoulder, vehicles 55 750 accessing the work site via the highway, 60 - 80 1000 and equipment traveling on or crossing the roadway to perform work operations. The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder. ★ If the work space is on a divided WORK highway, an advance warning sign SPACE should also be placed on the left side of the directional roadway. For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used. January 22, 2021 S D D O T PLATE NUMBER 634.01 WORK BEYOND THE SHOULDER

Posted	Spacing of	Spacing of		
	Advance Warning	Channelizing		
Prior to	Signs	Devices		
Work	(Feet)	(Feet)		
(M.P.H.)	(A)	(G)		
0 - 30	200	25		
35 <b>-</b> 40	350	25		
45	500	25		
50	500	50		
55	750	50		
60 - 65	1000	50		
<b>r</b> Flagger				

■ Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) will be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

The channelizing devices will be drums or 42" cones.

Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

ROAD WORK END

Channelizing devices and flaggers will be used at intersecting roads to control intersecting road traffic as required.

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

The length of A may be adjusted to fit field conditions.

> S D D 0

LANE CLOSURE WITH FLAGGER PROVIDED

PLATE NUMBER 634.23

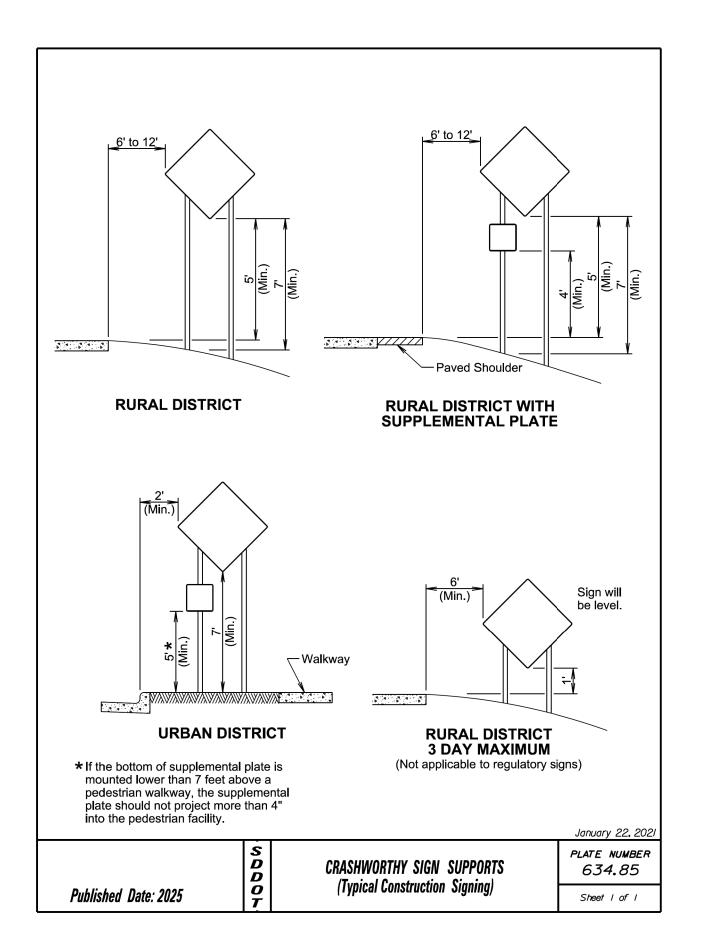
Sheet I of I

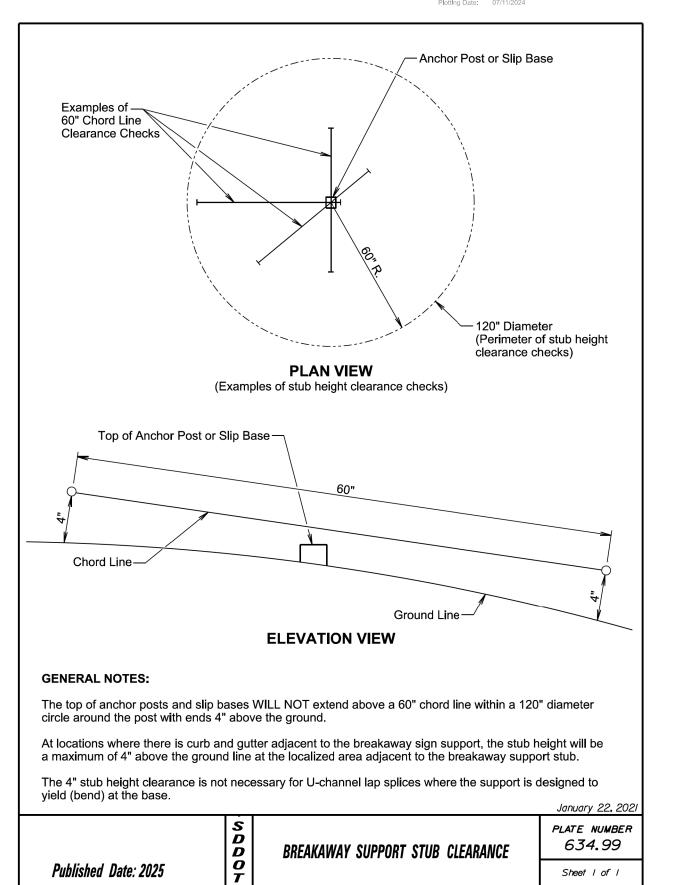
January 22, 2021

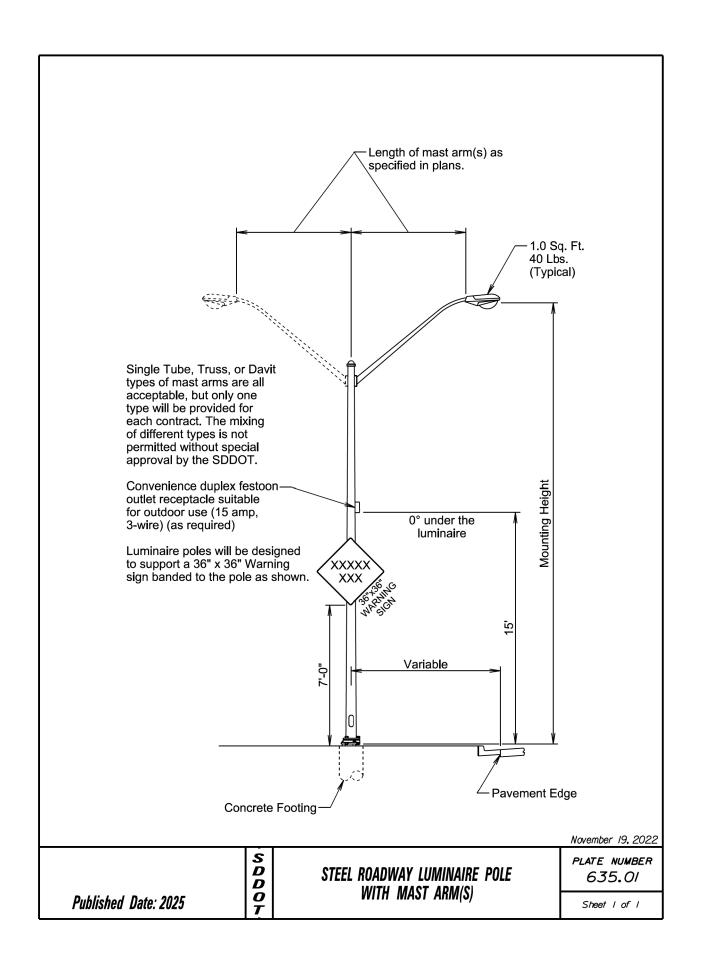
Published Date: 2025

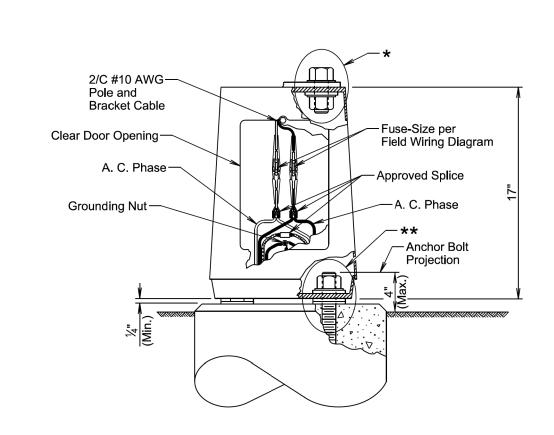
Sheet I of I

Published Date: 2025









#### **GENERAL NOTES:**

Base details are provided for example only and are not intended to be a complete design.

Fused connectors will be breakaway type.

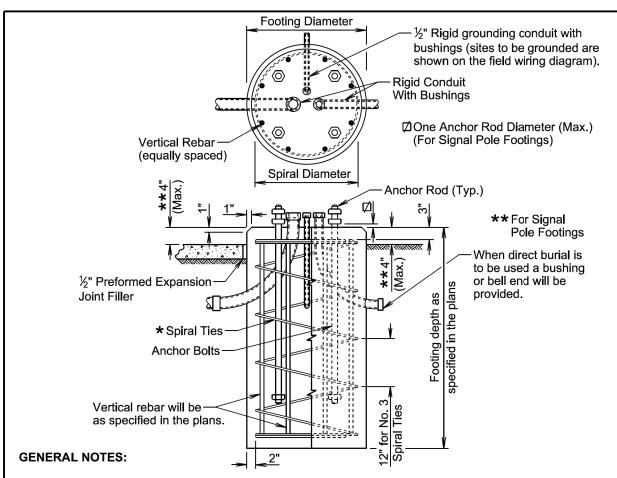
- \* Hardware connecting the pole to the base will be installed in accordance with the manufacturer's recommendation.
- \*\* Hardware connecting the base to the footing will be installed in accordance with the manufacturer's recommendation. The Contractor will install leveling devices in accordance with the manufacturer's recommendation if shimming is necessary to install the light poles plumb and level. The washers and shims will be installed around the anchor bolts.

November 19, 2022

ROADWAY LUMINAIRE POLE BREAKAWAY TRANSFORMER BASE PLATE NUMBER 635.21

Sheet I of I

Published Date: 2025



Circular ties may be used in lieu of the spiral ties. The No. 3 ties will be spaced 12 inches apart except for the top two which will be spaced 6 inches apart. The ties will be lapped 18 inches and the laps will be staggered around the cage.

Spiral ties will have 1-1/2 extra turns at each end.

See Section 985 of the Specifications for footing materials.

Conduits and bushings may project  $2\frac{1}{2}$  inches to 6 inches above footing for fixed base poles but will not project above the slip plane or fracture plane for breakaway poles.

Conduits will be sealed water-tight during all phases of construction until poles are in place.

The anchor rods will fit inside the reinforcing steel cage. If the anchor rods designed by the Pole Manufacturer do not fit, contact the Office of Bridge Design for footing redesign. No additional payment will be made for the redesigned footing.

Costs of conduit and conduit bushings shown on footing detail will be incidental to the footing bid item(s).

The pole will not be installed until the concrete has attained design strength (4000 psi).

The contour of the area surrounding the breakaway pole will be flat, though not necessarily level for a distance of 5 feet in all directions. The Contractor may be required to provide finish grading at some breakaway pole locations.

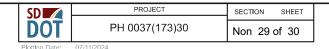
Published Date: 2025

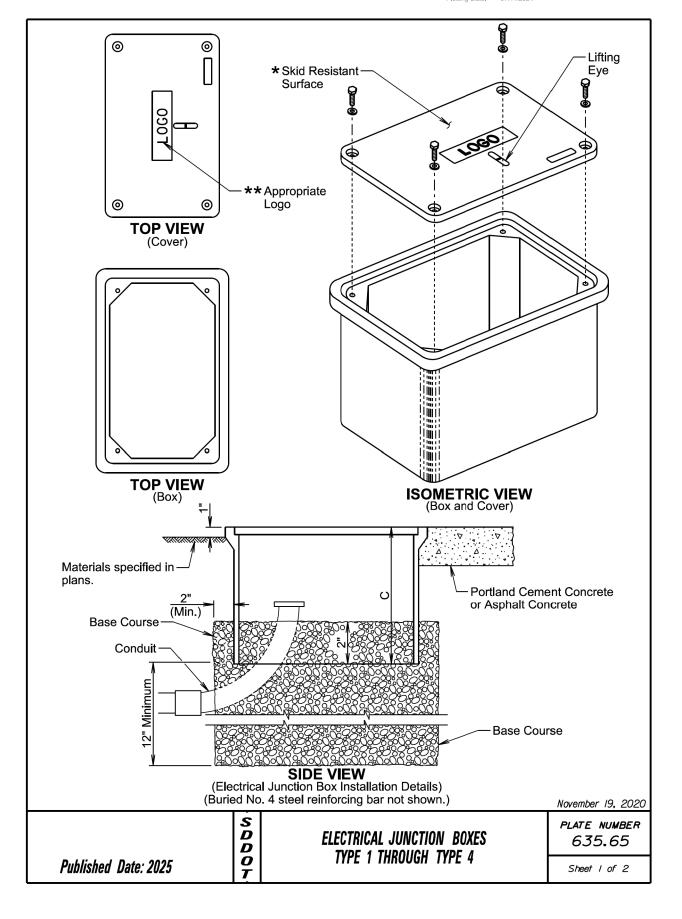
November 19, 2022

POLE FOOTING

Pole FOOTING

Sheet 1 of 1





ELECTRICAL JUNCTION BOX						
TYPE	DESCRIPTION		MINIMUM DEPTH (C)			
1	Open Bottom with Gasket	11"x18"	18"			
2	Open Bottom with Gasket	13"x24"	18"			
3	Open Bottom with Gasket	17"x30"	18"			
3A	Open Bottom with Gasket	24"x36" <b>**</b>	24"			
4	Open Bottom with Gasket	30"x48" <b>**</b>	24"			

#### **GENERAL NOTES:**

The cover will be gasketed with a minimum of two stainless steel bolts and washers.

The cover will have a lifting eye.

- \*The surface of the cover will have a minimum wet and dry coefficient of friction value of 0.5 as determined by ASTM F609.
- \*\* The cover of the junction box will have the appropriate logo in one inch size letters and will be recessed. When the junction box contains cables or wires for a traffic signal then the logo will be "Signal". When the junction box contains lighting conductors then the logo will be "Lighting".
- \*\*\* Two piece covers will be used for Type 3A and Type 4 junction boxes.

S D D O T

The electrical junction boxes will comply with the American National Standards Institute (ANSI)/Society of Cable Telecommunications Engineers (SCTE) 77 2007 Specification for Underground Enclosure Integrity. The loading requirement for all electrical junction boxes and covers will be Tier 22 of ANSI/SCTE 77 2007.

The electrical junction boxes will be UL listed.

For junction boxes located outside of pavement, a No. 4 steel reinforcing bar with a minimum length of 18" will be buried adjacent to the long side of the junction box. All costs associated with furnishing and placing the steel reinforcing bar will be incidental to the contract unit price per each for "Type \_ Electrical Junction Box".

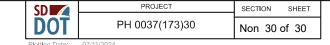
November 19, 2020

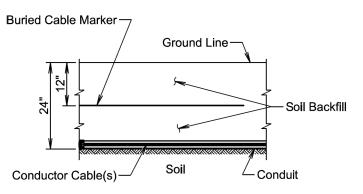
Published Date: 2025

ELECTRICAL JUNCTION BOXES
TYPE 1 THROUGH TYPE 4

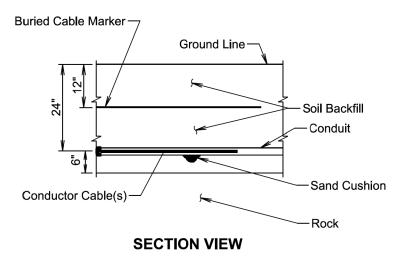
PLATE NUMBER 635.65

Sheet 2 of 2





#### **SECTION VIEW**



#### **GENERAL NOTE:**

The Buried Cable Marker will be plastic, approximately 6" wide, and will be capable of sustaining a minimum of a 350% tolerance of elongation without tearing. The Buried Cable Marker will have a life expectancy approximately equal to that of the conductor(s) beneath it. A phrase indicating the presence of a buried electric circuit below will be printed in a contrasting color on the cable marker. The Buried Cable Marker will be subject to approval by the Engineer. All costs associated with furnishing and installing the Buried Cable Marker will be incidental to the contract unit price per foot for the bid item used for the electrical conductor.

November 19, 2022

PLATE NUMBER
635.76

Published Date: 2025

CONDUIT INSTALLATION

Sheet 1 of 1