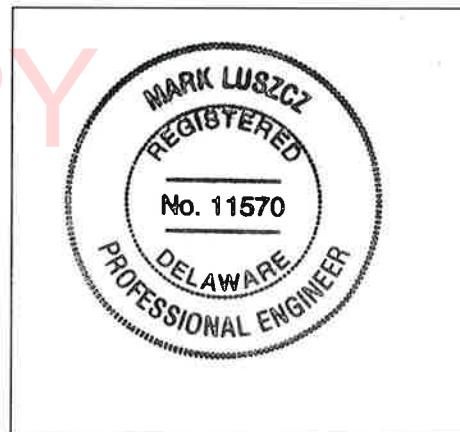
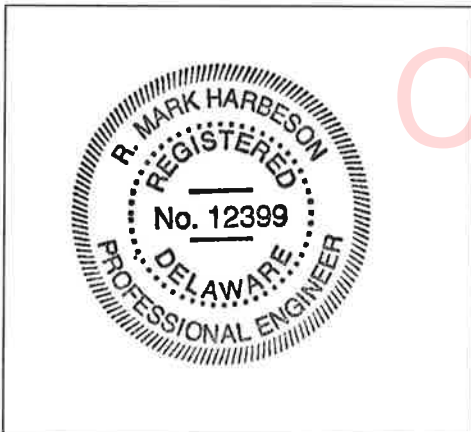


STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION



TRAFFIC SECTION

SPECIFICATIONS FOR
DOT1801 – TRAFFIC SIGNALS & ITS
TRAFFIC SIGNALS, LIGHTING, AND ITS



RECOMMENDED:


Traffic Operations Engineer

APPROVED:


Chief Traffic Engineer

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CONTRACT DESCRIPTION

This contract is to provide the material, equipment and labor for the installation and alteration of signalized intersections, signal coordination systems, pedestrian signals and associated curb ramps, highway lighting systems, fiber optic cable pathway and other traffic components or devices statewide. The specific work sites are not listed herein, but will be assigned as available by the Delaware Department of Transportation Traffic Section.

PROJECT NOTES

1. STANDARDS

All work will be done in accordance with the Delaware Department of Transportation Standard Specifications for Road and Bridge Construction, dated August 2016, as amended by the Supplemental Specifications; Standard Construction Details including all revisions up to the date of advertisement; Project Specific Plan Details; the Special Provisions; the most current edition of the Delaware MUTCD; and any plans included in specific work orders. If during the course of the Contract, changes to the standards are made and are to be implemented on this Contract, the Department will send the changes to the Contractor in advance of requiring their use.

2. CONTRACTOR REQUIREMENTS

A. Master Electrician Special

The Contractor shall provide a Delaware-licensed Master Electrician Special, who shall be qualified to direct work near energized primary circuits up to 34 KV and who shall be directly responsible for the workmanship as provided in Title 24, Chapter 14 of the Delaware Code. This Master Electrician - Special shall certify all of the work performed. The name, qualifications, and copy of the license shall be submitted and approved by the Engineer prior to beginning work on the contract.

B. Point of Contact

Upon award of the contract, the Contractor shall submit to the Engineer the name of a principle point of contact for the project including home and cell telephone numbers and/or pager number.

C. Deployment of Multiple Crews

Contractor crews may be required to be deployed to perform work at multiple work sites throughout the state simultaneously. The work locations and number of crews to be deployed shall be coordinated with the Engineer on a weekly basis.

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D. Crew Composition

A crew shall consist of a foreman who is a Journeyman Electrician and/or has a minimum of five years experience in related work and sufficient personnel to complete the work, unless an exception is granted in writing by the Engineer. The minimum size of any crew is two people. A loop installation crew and a restoration crew do not need a Journeyman Electrician or someone with five years experience as the foreman. Crews for aerial work must have a Journeyman Electrician as the foreman. Names and qualifications of all proposed Journeyman Electricians shall be submitted for approval prior to beginning work on the contract.

E. Contractor's Equipment and Resources

The Contractor shall provide a complete list of equipment and materials that will be available to perform the tasks outlined in this contract. All self-propelled equipment and vehicles shall be identified with the Contractor's company name, location of home office (city and state), phone number, and the electrical registration number of Licensed Master Electrician Special. This shall include any leased or rented equipment or vehicle that is in use for this contract for 14 or more continuous calendar days. Said information shall be visible on 2 (two) opposing sides of the equipment or vehicle. All equipment assigned to the contract shall be equipped with safety devices meeting the requirements of the Delaware MUTCD. The Contractor must have the capability of providing as many as 4 each bucket and/or line trucks concurrently if required at large intersections, such as those involving a suspended box span.

The Department reserves the right to inspect the Contractor's facilities, equipment, materials, and resources that will be available to perform the tasks outlined in this contract. The Department shall provide the Contractor with notification a minimum of seven (7) days prior to such an inspection.

F. Applicable Standards

All work performed under this contract shall comply with all applicable National Electrical Code, National Electrical Safety Code and industry and Bellcore standards to the extent not precluded by these specifications. Construction methods and techniques used by the Contractor shall be in accordance with the recommended practices and procedures published by leading industry manufacturers and trade associations, such as Bellcore Blue Book of Construction Practices.

The Contractor shall also follow all applicable local laws and standards. The Contractor shall be aware of all standards and their application within Delaware. Ignorance or lack of knowledge shall not be an excuse for improper work to occur. Any work constructed in violation of any applicable code shall be corrected and re-installed properly at the Contractor's expense.

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3. BIDDING PROCEDURE AND CONTRACT AWARD

The Delaware Department of Transportation will accept bids on Contract No. DOT1801 – TRAFFICSIG & ITS. The Department may award contracts to multiple contractors, based upon the lowest responsive, responsible bids received for the contract.

4. ALTERATIONS IN QUANTITIES

The quantities given in the proposal are approximate only, and will be the basis for comparing bids. Depending on fund availability, the Department reserves the right to increase or decrease the quantities of any and all items specified in this contract. Such additions or deletions shall not be cause for an increase or decrease in any contract unit bid prices, regardless of whether or not an item is classified as a “Major Item” (10% of the total contract value) as defined in Standard Specification 101.46. Negotiated prices will be the preferred method of establishing payment for new items added to the contract. Force Account payment, per Standard Specification 109.04 may be utilized if negotiated prices prove to be unsuccessful. Negotiated prices for new unit items will remain in effect for the original term of the contract, but will be eligible for renegotiation if the contract is extended (see “Price Adjustment” above).

5. ASSIGNMENT OF WORK

Work will be assigned to the Contractor on a work order basis by the Department. All work order assignments will be at the discretion of the Engineer. Issuance of each work order constitutes the notice to proceed with the work described on the work order.

Work assignments per month shall not exceed \$500,000.00, unless agreed upon by both parties in writing.

The Engineer shall establish the location of the work sites, the order in which the work sites are to be pursued, and the allowable Working Days to complete the work order. The Contractor shall, prior to beginning work at a particular location, submit a written schedule for approval for that work order in bar graph format showing completion within the number of Working Days determined by the Department. Additionally, the Contractor shall submit by email to the DelDOT Signal Construction and Inspection Section on a daily basis, a list of the locations and work items expected to be pursued that day. The Contractor shall make positive contact with the Signal Construction staff each work day, no later than 7:30am.

If the Department directs the Contractor to suspend work at a particular location and reassign crews due to emergencies or other high priority work, Working Day time charges for the suspended location will not be assessed until work resumes.

Unless specified otherwise, time shall be allocated per work assignment as follows:

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- assignments estimated to cost from one dollar thru \$100,000.00 shall be substantially completed in accordance with the Standard Specifications within a forty (40) working day period from the date of the work assignment Notice to Proceed.
- assignments estimated to cost \$100,000.01 thru \$200,000.00 shall be substantially completed in accordance with the Standard Specifications within a sixty (60) working day period from the date of the work assignment Notice to Proceed.
- assignments estimated to cost from \$200,000.01 and up shall be substantially completed in accordance with the Standard Specifications within a ninety (90) working day period from the date of the work assignment Notice to Proceed.
- At any given time, a maximum of one expedited work assignment may be required. This assignment is to be substantially completed in accordance with the Standard Specifications within 25 working days from the notice to proceed on that assignment.
- support assignments shall be excluded from the above parameters, unless otherwise directed by the Engineer.

6. LIQUIDATED DAMAGES

Liquidated damages assessed under this Contract shall be in accordance with Sections 108.08 and 108.09 of the Standard Specifications. These liquidated damages will be based on working days and the dollar value of the authorized work order.

If applicable, verification of non-availability of materials from at least three (3) independent sources shall be supplied by the Contractor in writing to the Signal Construction Supervisor immediately after the receipt of a work order or when they are notified that anticipated materials will not be available as scheduled. If there is a verified non-availability of materials, liquidated damages shall not be assessed until the Contractor fails to complete the revised work order on time as described in Section 108.08.

7. PROSECUTION AND PROGRESS OF WORK

Work assignments will be issued to the Contractor in the form of a letter along with all necessary sketches, engineering drawings and any additional special provisions required. At times, depending upon the nature and complexity of the work assignments, field meetings may be necessary at certain site locations.

The Contractor shall have sufficient work forces and Bid Item materials in stock to perform any assignment within the times specified.

The Contractor shall be actively working on at least one (1) and not more than six (6) active work orders at any one time until all assigned work has been completed statewide, unless

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otherwise approved by the Engineer. When directed by the Department, out of sequence and/or expedited work sites are not included in the maximum limit noted herein.

Failure to begin work as specified on the approved schedule constitutes “Failure to Pursue the Work” and shall result in Liquidated Damages as outlined in subsection 108.09 of the Standard Specifications. No liquidated damages will be charged when items that the Contractor needs in order to start the work are unavailable from at least three (3) independent sources. If work on a specific work order is not completed within the allotted time, Liquidated Damages based on the value of the work order will be assessed in accordance with Subsection 108.09.

8. NIGHT WORK

The Department may require Night Work to minimize traffic conflicts on some work sites. The Contractor should anticipate night time operations being required for work above, or affecting traffic lanes on multi-lane, high volume locations. All pay items which are not “furnish only” that are used for Night Work shall be allowed a 15% surcharge. Type I and Type II truck mounted attenuators, plastic drums, temporary barricades Type III, temporary warning signs, message boards, arrow panels, and portable light assemblies shall be paid under separate items in this contract for their use and shall not be subject to the 15% surcharge for night work.

Night work shall be defined as work being performed from the hours of 8:00 p.m. to 6:00 a.m.

Night work construction does not relieve the Contractor from day work scheduled for the following day. Failure to perform scheduled work will result in Liquidated Damages.

Construction work started prior to night work hours that carries over into those hours shall not be paid as night work unless authorized by the Engineer in writing before work is started.

9. INSPECTION AND PROJECT CONTROL

The Inspector shall determine and record in the contract diary the suitability of each day for work at the work site(s) and also on a Weekly Report form supplied by the Department. The foreman shall acknowledge the daily time charges by signature on the Weekly Report. In the event of a disagreement as to the suitability of any day for work, the circumstances of the disagreement shall be noted in the contract diary and the Contractor shall contact the Signal Construction Supervisor for a final determination.

At the completion of each work day, the foreman and inspector shall reconcile the work completed that day and acknowledge the work completed by signing the Inspector’s Daily Log.

Prior to final acceptance of a work location, the Department will schedule a Final Inspection. Attendees shall include the Contractor, DeIDOT’s inspector, and other DeIDOT personnel as necessary. A final punchlist will be generated listing any remaining

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work. A timeframe to complete the punchlist will also be determined. Failure to complete the punchlist within the established timeframe will result in the resumption of daily time charges and possible Liquidated Damage assessment. Upon completion of the punchlist by the Contractor, the location will be accepted by the Department and the acceptance date will be formally documented.

Method for Contractor’s Invoice Submission – All work for this contract will be paid per assignment upon receipt of an invoice from the contractor in accordance with the following schedule:

Work assignments that are 40 Working Days or less – The contractor will submit one invoice per work assignment at the completion of the assignment.

Work assignments that are greater than 40 Working Days – The contractor will typically submit two invoices per work assignment to the Department for payment. Invoice number one will be submitted upon completion of all underground work. Invoice number two will be submitted upon completion of the assignment.

All invoices shall contain the following information. Failure to include any of the information on the invoice may result in the invoice being returned to the contractor.

- Contractor name, address and federal ID number.
- Project location, Department contract and/or Federal Aid contract numbers.
- Invoice number and date.
- Inspector Daily Report (IDR)
- Material Certifications, Source of Supply and Bill of Lading
- The following statement:

In accordance with Chapter 8, Title 17 of the Delaware Code (Annotated Revised 1974, and as amended), the undersigned contractor certifies that payment to all Subcontractors and/or suppliers has been made as required and as detailed on the “Proof of Payment” form (CN-91). It is understood that no subsequent payment will be made to the Contractor until the “Proof of Payment” form for the previous pay period has been submitted and received by DeIDOT’s DBE Office.

Signature

Date

Title

All invoices must be accompanied by the inspector’s daily reports (IDR), all Material Certifications, Bill of Lading and source of supply for all materials used. Any discrepancy between measured quantities and contractor’s quantities must be resolved prior to submitting an invoice for payment.

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10. MAINTENANCE OF TRAFFIC

The only payment for maintenance of traffic shall be the separate pay items identified in the bid tabs. No separate payment will be made for the use of traffic cones. Traffic cones and/or the work associated with their use, such as set up, removal, cleaning, etc. shall be incidental to the work for which they protect.

For those items that are paid on an Each-Day basis, only one such payment will be made per day per unit, even if the item is used in multiple work sites or work orders in the same day. This applies to items such as plastic drums and truck mounted attenuators, but is not limited to these items.

Work hours may be restricted on some work orders as dictated by traffic volumes and/or roadway conditions. If so, working day time charges will be adjusted accordingly.

All traffic control devices shall be in new or refurbished condition, shall be in compliance with the Delaware MUTCD and with NCHRP Report 350 or MASH and shall be approved by the Engineer before installation. Traffic control devices shall be maintained in good condition for the duration of use.

The Contractor shall maintain vehicular, bicycle and pedestrian traffic through the project's work zones in a manner that will reasonably provide the least practicable obstruction to all road users and provide paths for all road users, including, but not limited to, the passage through the work zone of persons with disabilities in accordance with the Americans with Disabilities Act of 1990 (ADA) Title II, paragraph 35.130 and DelDOT's current ADA standards, directives and PAS Guidelines.

The project manager shall be responsible for coordinating with the Traffic Section relating to any impacts to Traffic Section facilities (including but not limited to traffic loops, junction wells etc.) at least 4 weeks in advance of the start of the activity. Prior to initiating any work on this contract (or sites), the Project Manager shall be responsible for preparing and submitting for approval of the Safety Section, a Maintenance of Traffic Plan. Sufficient time shall be provided for the review and approval of the plan. The Maintenance of Traffic Plan shall include proposed time restrictions on the closure of travel lanes subject to the approval of the Safety Section.

The Project Manager is responsible for ensuring any required documents and analysis as part of the adopted Work Zone Safety and Mobility Procedures and Guidelines has been completed prior to any work starting on this contract.

11. BASIS OF PAYMENT

The Contractor may bill the Department when the work order is completed. Payment will be issued to the Contractor monthly on a mutually agreed upon date. Partial payment will be considered for long term projects on a case by case basis. Approval for partial payment on a project must be received from the Engineer prior to the submission of any invoices on that project.

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Payment of said invoice shall not relieve the Contractor from obligations incurred in warranting the quality of the workmanship and materials, or for restoration at the work site. A One Year Warranty on all materials, installation, and workmanship will be in effect for each work location starting on the acceptance date of each individual location. Specific work items may carry a longer Warranty Period. In these cases, the longer of one year or the otherwise specified warranty period will govern for those particular items. The Contractor shall provide contact information for an employee responsible for arranging any warranty work during the one-year period. Any repairs required during the warranty period, including Maintenance of Traffic Items, shall be provided at no additional cost to the Department. Should any emergency repairs be required during the warranty period to work that was originally performed under this contract, contact will immediately be made with the Contractor and a response to the site of the emergency must be made within 3 hours of the time of contact. Should the Contractor be unable to respond to the emergency within the 3-hour timeframe, then the Department will pursue other means to make the repairs and deduct the costs from the Contract by means of a “negative” change order. Final acceptance as evidenced in writing after the completion of the entire contract or at such time as practical determination of the quality of the workmanship and materials can be made by the Engineer, will be necessary before any bonds or parts of bonds will be released.

12. ELECTRICAL TESTING BY DELDOT

The Contractor is advised that DelDOT may, at their discretion, perform independent electrical testing of the highway lighting system, signal system, and/or related electrical work items.

The roadway lighting system and signal system is comprised of all Contract items for traffic signals and lighting, including but not limited to, conduits, junction wells, cables, load centers, transformers, cabinet pads, pole bases, poles, light standards with and without davit arms, luminaires, signal heads, pedestrian heads, service installations, and reworked/relocated existing lighting facilities.

The roadway lighting and signal system will be considered defective if any of the following conditions are discovered by visual inspection or by inspection with testing equipment within the warranty period:

1. Defective lamps, LED's, or ballasts
2. Failure to operate, in whole or in part.
3. Power wire grounding less than ten megaohms.
4. Shifts in pole and/or foundation alignment.
5. Short circuits or open circuits anywhere within the system.
6. Deterioration of finishes, plating, or paint not normal and customary in the environment in which the equipment is installed.
7. Settlement of trench backfill.
8. Defective fuses.
9. Defective or improperly installed splices.

These conditions listed shall not be considered all inclusive.

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The Department reserves the right to conduct initial and periodic roadway lighting and/or signal system inspections after the Contractor has completed work. The initial inspection, to be conducted during the final construction inspection, will be to determine if initial performance requirements are met. Periodic reviews may be conducted through the warranty period to determine the sustained ability of the roadway lighting system to meet the stated performance requirements.

All defective areas identified by the Department during initial or periodic inspections shall be documented and the information will be shared with the Contractor. Necessary repairs or replacements shall be made by the Contractor at no additional cost to DelDOT. All roadway lighting and/or signal system repairs shall begin immediately following the notice to the Contractor of the defect unless weather limitations prevent the corrective work. The Department shall be given notification before the Contractor begins corrective work and shall be allowed full access to the areas being repaired.

When requirements, responsibilities, and furnishing of materials are outlined in the details and notes on the Plans and in the paragraphs preceding the "Basis of Payment" paragraph in the Standard Specifications or Special Provisions, no interpretation shall be made that such stipulations are excluded because reiteration is not made in the "Basis of Payment" paragraph.

13. GENERAL WORK ELEMENTS

- A. Backfill in trenches, around forms and junction wells, or at any other place shall be completed thoroughly, using a power tamper, in lifts of not more than 8 inches loose measurement as it is being placed, in accordance with Standard Specification Subsection 202.05 (c). Any paving material or fill removed for trenching shall be replaced in kind.
- B. At the Contractor's expense, all holes and trenches shall be protected from accidental entry by vehicles and pedestrians with steel plates or other approved materials as required by the Engineer. Should the Contractor fail to provide adequate protection to the surroundings of a work site or should the operations be carried out in such a way as to allow or cause damage to any roadway, street, sidewalk, the property of any utility, or other private or public property, then Liquidated Damages shall be assessed based on the total value of the work location in question. Should the repair not be undertaken and should it be necessary for the Department to protect the area and/or make the repair, the cost shall be deducted from monies due the Contractor.
- C. All concrete, including pole bases and cabinet bases, shall be finished to match any adjacent concrete. If no match is required, the surface area shall be broom finished and edged.
- D. No ground rod shall be driven into earth without a proper protective cap to prevent damage to the threads. If the threaded end of the sectional ground rod is damaged, it will be replaced at the expense of the Contractor.

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- E. Material substitutions must be submitted in writing to the Engineer at least 10 calendar days prior to use in order to allow time for review and approval by the Engineer. Faxes or e-mails are not acceptable methods of submission. A scanned, signed letter in "pdf format" will be acceptable.
- F. Work within waters/wetlands shall not begin on locations requiring environmental permits until all applicable permits have been obtained by the Department.
- G. It is the responsibility of the Traffic Systems Design Section to notify Team Support if any of the future locations are located within the incorporated limits of a municipality thus requiring a Town Agreement. Team Support should also be notified if any work at the yet to be named locations is anticipated to occur outside of the existing right-of-way.
- H. Traffic signal loops shall be installed within one week of receipt of work order unless otherwise directed by the Engineer.
- I. If seeding is required for restoration of a work area, the cost shall be incidental to Item 908001, Topsoil. If topsoil is not required, the cost of seeding shall be incidental to the item requiring restoration. For restoration of steep slopes, the contractor shall refer to DelDOT's E&S Manual.
- J. Signal heads, pedestrian signal indications, and signs that are in place, but not in service, shall be entirely covered with opaque burlap with costs incidental to the various maintenance of traffic items.

14. MATERIALS

A. Damaged

Once the Department transfers material or equipment to the Contractor, any damage to or loss of that material or equipment which occurs from handling or transport, or from any other source or way, shall be the sole responsibility of the Contractor and the value thereof shall be deducted from any monies due the Contractor.

B. Supplied By or Returned To the Department

The Department's Sign Shop, 14 Sign Shop Road, Dover, Delaware 19901, is the site where items to be supplied by the Department are available and where items to be returned are to be delivered.

C. Supplied By the Contractor

All materials supplied by the Contractor shall be new and unused and, where applicable, all materials and equipment supplied shall be UL approved. Catalog cuts and/or shop drawings shall accompany all requests for material source

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approval. 6 sets of such requests shall be sent to DelDOT's Traffic Sign Shop (attention: Signal Construction Manager). Following initial review by Traffic, 5 sets of the submittal will be forwarded to DelDOT's Materials and Research Section for final approval. Following their review and approval, 2 sets will be returned to the Contractor, one set will be retained by Materials and Research, and 2 sets will be returned to DelDOT's Traffic Sign Shop. If more approved copies are desired, the Contractor may elect to submit extras for review.

D. Transportation

Materials and/or equipment shall be transported in a legal fashion and shall be protected from damage or loss.

15. EROSION AND SEDIMENT CONTROL

The provisions of Section 110 of the Standard Specifications on erosion and sediment control apply to this contract. Those areas that have been disturbed for signal work shall be restored immediately after the ground disturbing portion of the work has been completed per DelDOT's Erosion and Sediment Manual. Restoration of long runs of conduit for fiber optic installation shall be restored at the end of each work day. Silt fences will not be required.

16. RIGHT OF WAY

It is anticipated that all work will occur within DelDOT's existing right of way or easement areas. Should the need occur to trespass onto private property; it will be the responsibility of the Project Manager to secure such trespass needs.

It is anticipated that all work will occur within DelDOT's right of way. Should the need occur to trespass onto railroad property, including the highway-rail crossing; it will be the responsibility of the project manager to contact the railroad chief engineer and obtain written authorization before entering.

The Contractor shall give a one (1) week notice to the Property Owner when any fixture, shrub, or other object must be removed from the Right of Way or Easement area. If the Owner has not attempted to salvage this property, the Contractor shall remove it without obligation. Compensation shall be incidental to the Contract.

17. ENVIRONMENTAL

No Environmental Permits are required for this work provided no jurisdictional wetlands or waters are impacted. If there is any question as to whether or not a water or wetland is jurisdictional, contact the DelDOT Environmental Section at 302-760-2264.

18. UTILITIES

No Utility relocation involvement is anticipated. Should any conflicts be encountered during construction requiring adjustment and/or relocation of the agencies' existing

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facilities, the necessary relocation work shall be accomplished by the respective agencies' forces, as directed by the Engineer. Any adjustments and/or relocations of Municipally Owned facilities shall be done by the State's Contractor in accordance with the respective agencies' Standard Specifications as directed by the Engineer.

19. PAVEMENT MARKINGS

Any erroneous marking will not be paid for and shall be corrected immediately at the contractor's expense. Erroneous markings or shadows that exceed one (1) inch in width shall be removed by either sand or water blasting. No other removal methods will be allowed. On bituminous pavements, a flat black paint or driveway sealer shall be applied in the area of the removed marking to mask the repair. Any damage to the pavement caused by removal of erroneous markings shall be repaired / replaced to the satisfaction of the engineer at the contractor's expense.

At the end of each day's operation and before traffic is returned to unrestricted roadway use, temporary striping shall be utilized at locations that require permanent striping per the latest version of the permanent marking section of the Delaware MUTCD. Temporary pavement markings shall be paid at the applicable contract unit price.

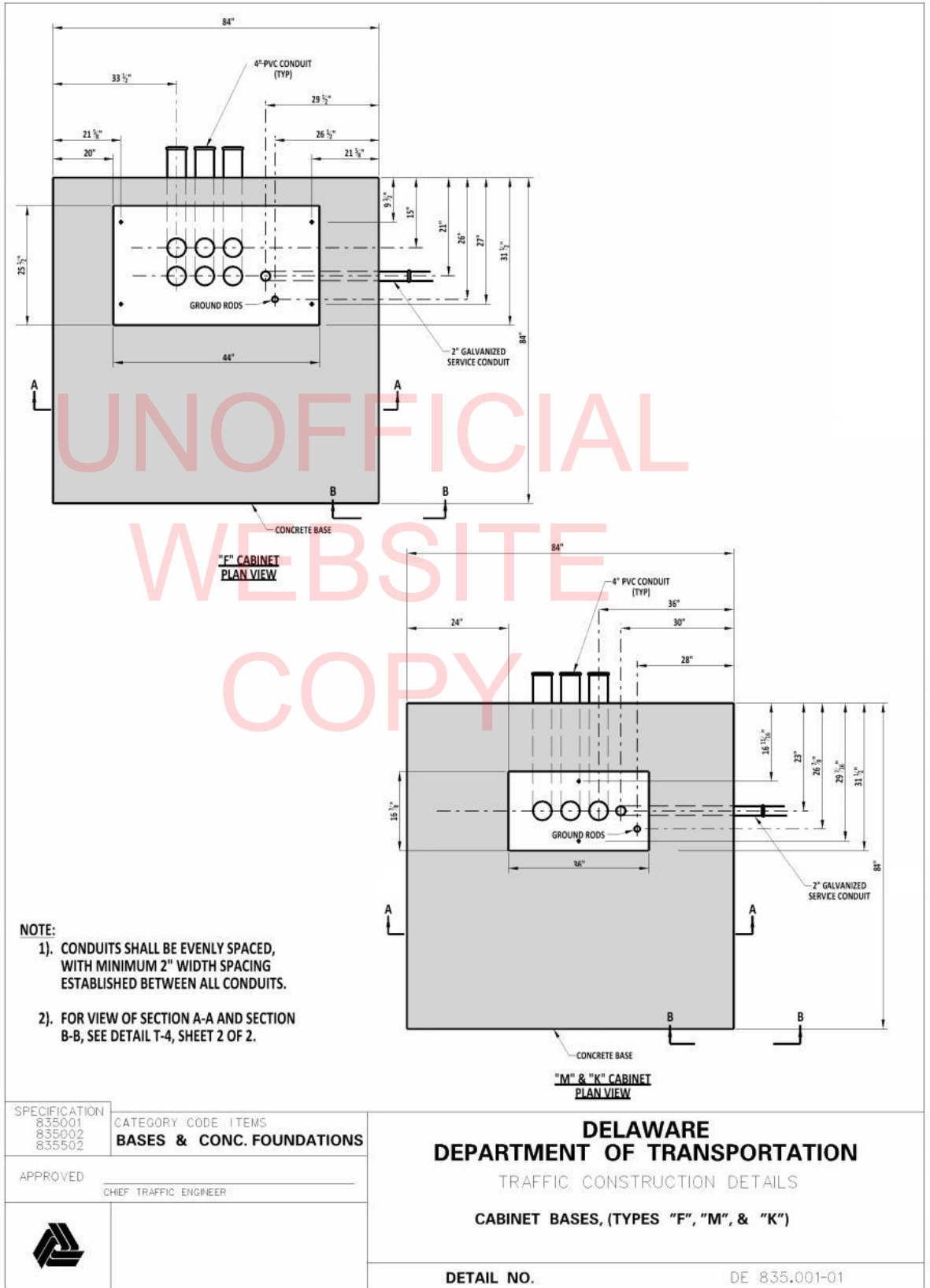
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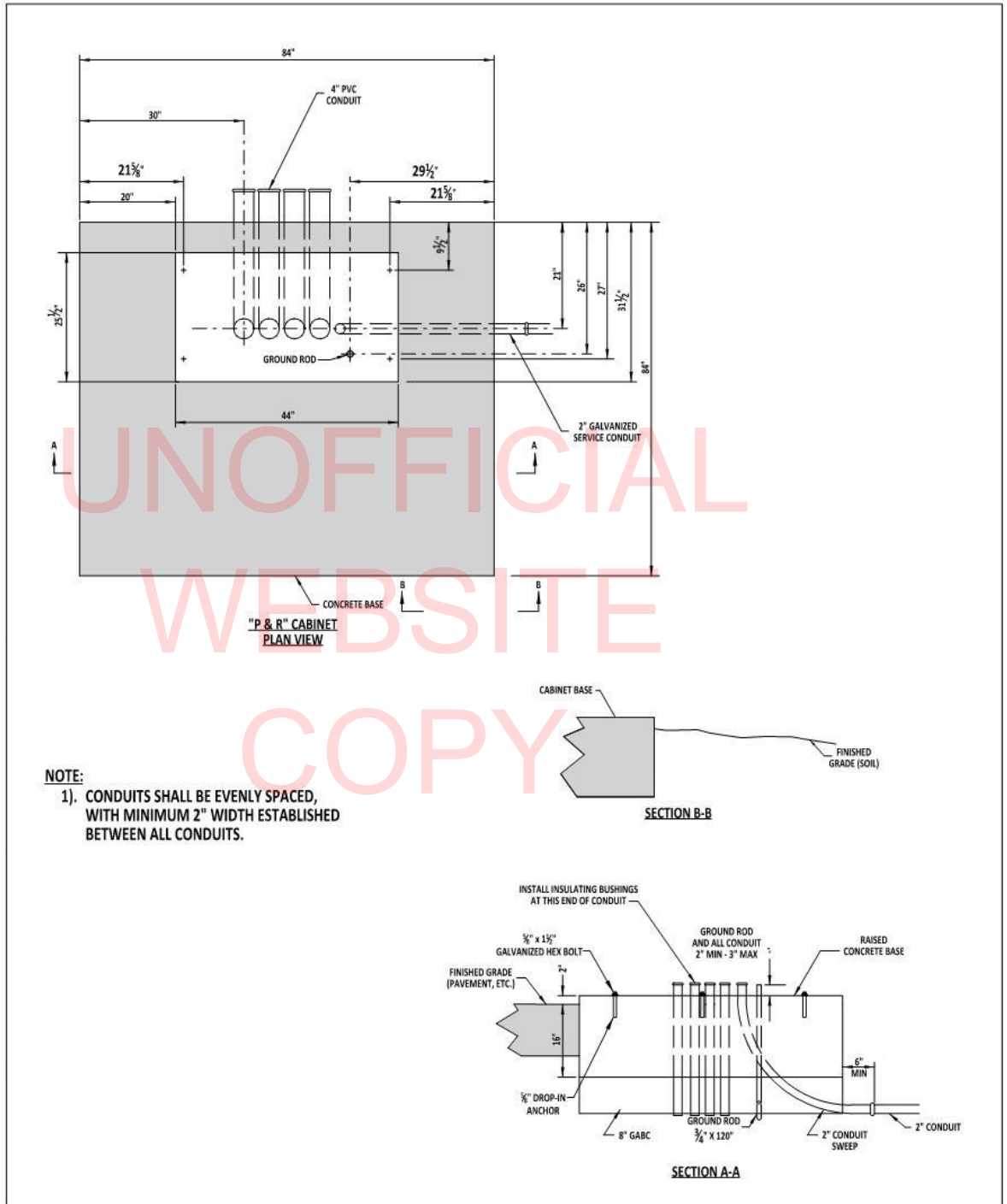


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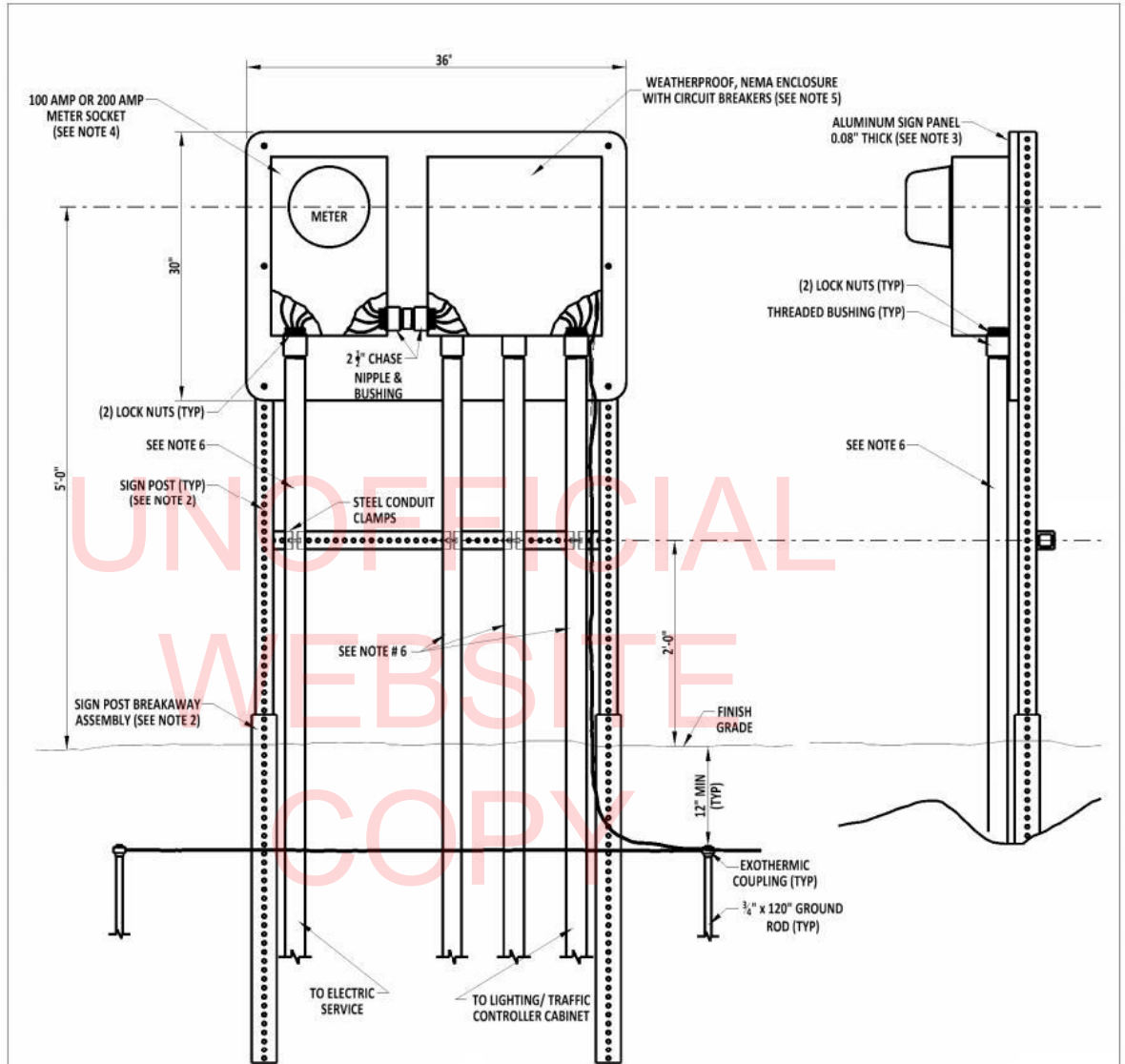
SPECIFICATION 835003 835004	CATEGORY CODE ITEMS BASES & CONC. FOUNDATIONS	<p style="text-align: center;">DELAWARE DEPARTMENT OF TRANSPORTATION</p> <p style="text-align: center;">TRAFFIC CONSTRUCTION DETAILS</p> <p style="text-align: center;">CABINET BASES, (TYPES "P" & "R")</p>	
APPROVED _____ CHIEF TRAFFIC ENGINEER			
			
		DETAIL NO.	DE 835.001-02

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NOTES:

1. INSTALLATION OF EQUIPMENT BETWEEN SERVICE PEDESTAL AND LIGHTING/CONTROLLER CABINET SHALL BE AS PER CONTRACT DRAWINGS/DETAILS.
2. SEE DETAIL T-15, SHEET 1, FOR SIGN POST AND BREAKAWAY ASSEMBLY DETAILS.
3. ATTACH ALUMINUM PANEL TO SIGN POSTS WITH (6) $\frac{5}{16}$ " x $2\frac{1}{2}$ " LONG GRADE 5 BOLTS, FLAT WASHERS, AND NYLON LOCK NUTS, 3 ON EACH SIDE.
4. MOUNT METER SOCKET TO ALUMINUM PANEL WITH (4) $\frac{5}{16}$ " x $\frac{3}{4}$ " STAINLESS STEEL BOLTS AND NYLON LOCK NUTS.
5. MOUNT CIRCUIT BREAKER BOX TO ALUMINUM PANEL WITH (4) $\frac{5}{16}$ " x $\frac{3}{4}$ " STAINLESS STEEL BOLTS AND NYLON LOCK NUTS.
6. ALL CONDUITS AND OTHER ASSOCIATED PIECES SHALL BE 2" PVC SCHEDULE 80 UNLESS SPECIFIED DIFFERENTLY ON THE PLANS OR BY LOCAL UTILITY COMPANY. ALL CONDUITS SHALL BE INSTALLED FROM ENCLOSURE TO TYPE 1 JUNCTION WELL. JUNCTION WELL SHALL BE PLACED WITHIN 10' OF SERVICE PEDESTAL, (OR PER PLAN).

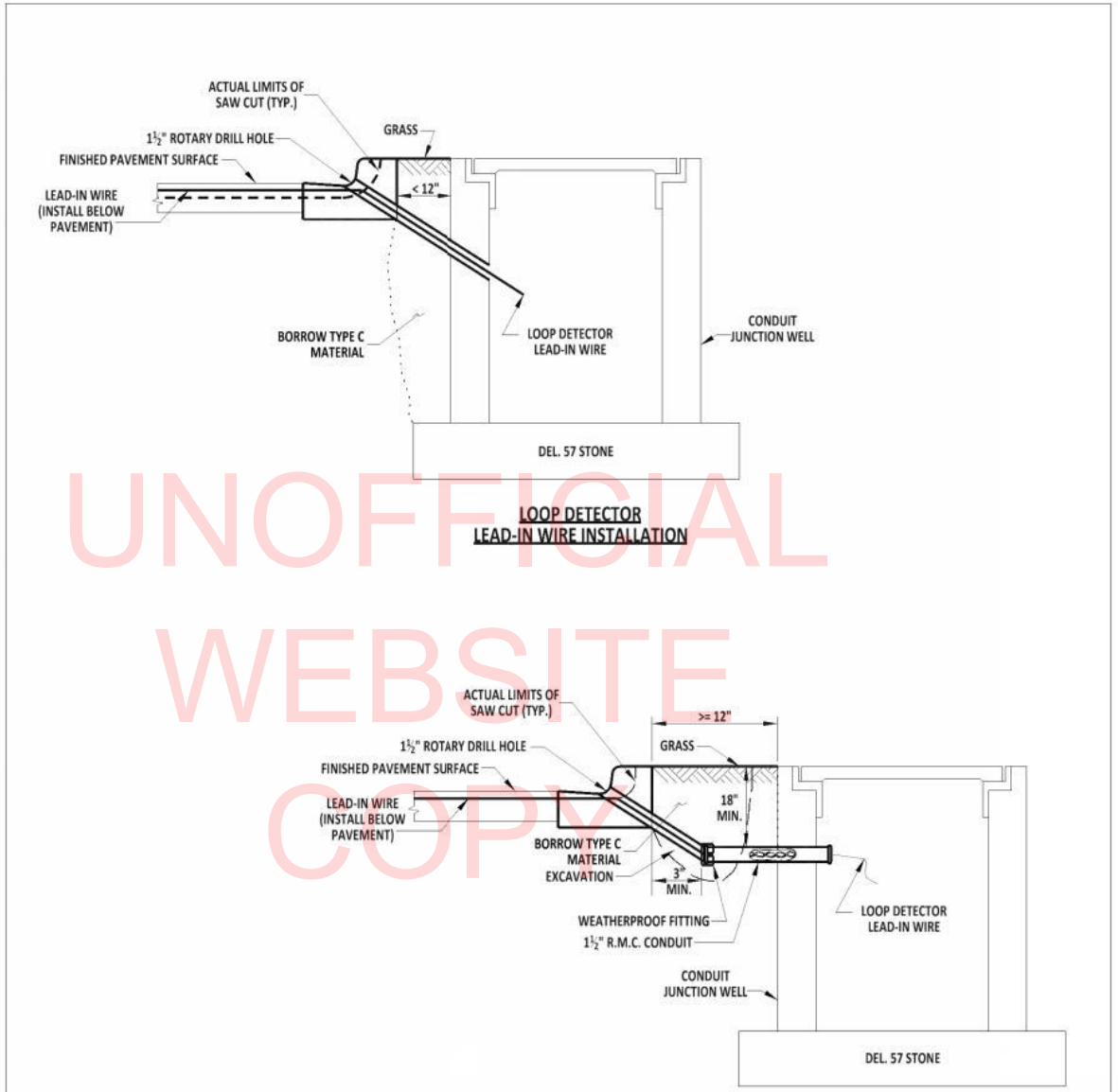
SPECIFICATION 842501 842502	CATEGORY CODE ITEMS POWER SERVICE	DELAWARE DEPARTMENT OF TRANSPORTATION TRAFFIC CONSTRUCTION DETAILS ELECTRIC SERVICE METER
APPROVED _____ CHIEF TRAFFIC ENGINEER	DETAIL NO.	
		DE 842.001-06

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- NOTES:
- 1). ALL SAWCUTS SHALL BE A DEPTH OF 3 1/2" ON ALL SURFACES.
 - 2). CONTRACTOR SHALL INSTALL LEAD-IN WIRE IN THE MOST DIRECT ROUTE TO THE JUNCTION WELL USING THE CLOSEST CONCRETE CURB JOINT.
 - 3). ALL SAWCUTS SHALL BE PATCHED WITH NON-SHRINK CONCRETE CAULK.
 - 4). CONTRACTOR SHALL CORE AT FULL DEPTH OF SAWCUT, 3 1/2".
 - 5). CONTRACTOR SHALL CONSOLIDATE LEAD-INS TO A SINGLE DRILL HOLE, WHENEVER FEASIBLE.
 - 6). CONTRACTOR SHALL INSTALL DETECTABLE WARNING TAPE IN TRENCH FOR LEAD-IN CONDUIT.

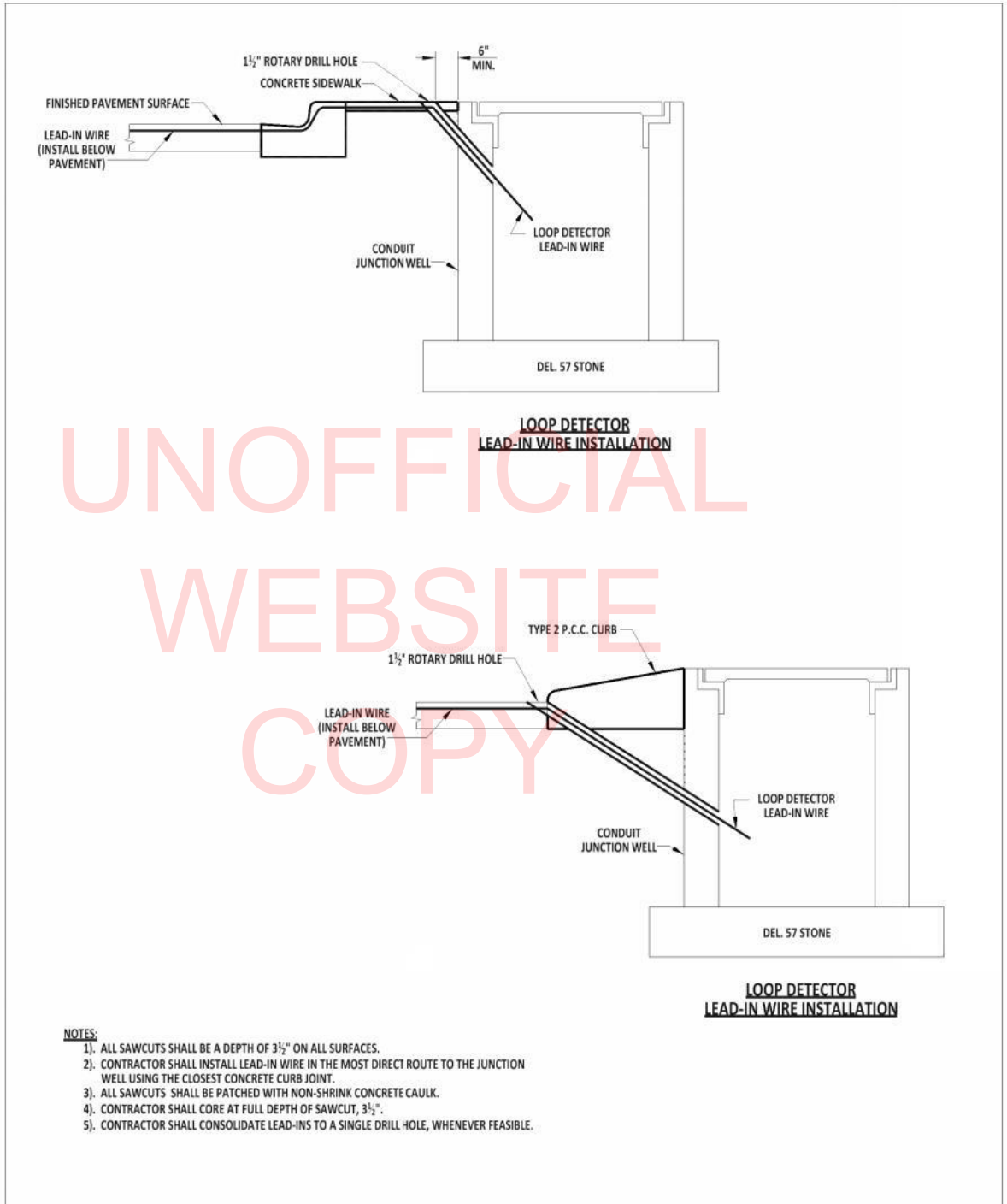
<p>SPECIFICATION 846001 846002</p>	<p>CATEGORY CODE DETECTION</p>	<p>DELAWARE DEPARTMENT OF TRANSPORTATION TRAFFIC CONSTRUCTION DETAILS LOOP DETECTOR LEAD-IN WIRE INSTALLATION</p>
<p>APPROVED _____ CHIEF TRAFFIC ENGINEER</p>		
		<p>DETAIL NO. DE 846.001-01</p>

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NOTES:

- 1). ALL SAWCUTS SHALL BE A DEPTH OF 3 1/2" ON ALL SURFACES.
- 2). CONTRACTOR SHALL INSTALL LEAD-IN WIRE IN THE MOST DIRECT ROUTE TO THE JUNCTION WELL USING THE CLOSEST CONCRETE CURB JOINT.
- 3). ALL SAWCUTS SHALL BE PATCHED WITH NON-SHRINK CONCRETE CAULK.
- 4). CONTRACTOR SHALL CORE AT FULL DEPTH OF SAWCUT, 3 1/2".
- 5). CONTRACTOR SHALL CONSOLIDATE LEAD-INS TO A SINGLE DRILL HOLE, WHENEVER FEASIBLE.

<p>SPECIFICATION 846001 846002</p>	<p>CATEGORY CODE DETECTION</p>	<p>DELAWARE DEPARTMENT OF TRANSPORTATION</p> <p>TRAFFIC CONSTRUCTION DETAILS</p> <p>LOOP DETECTOR LEAD-IN WIRE INSTALLATION</p>
<p>APPROVED _____ CHIEF TRAFFIC ENGINEER</p>		<p>DETAIL NO. DE 846.001-02</p>



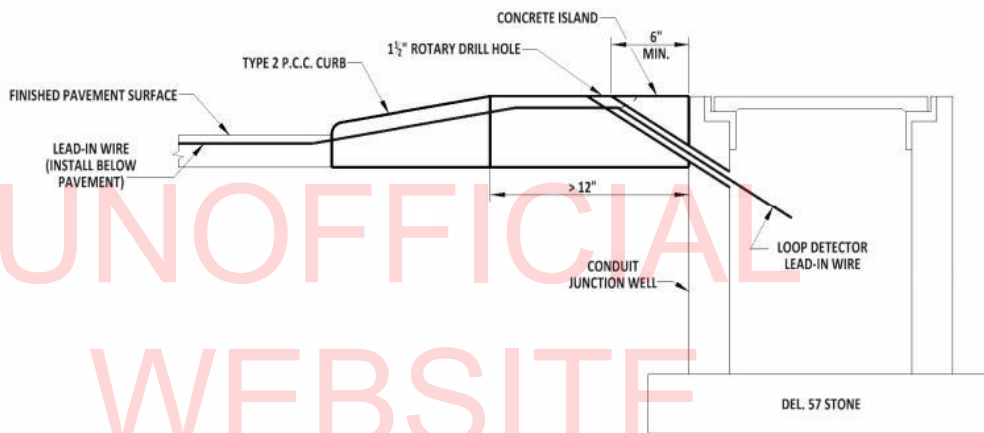
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**LOOP DETECTOR
LEAD-IN WIRE INSTALLATION**

NOTES:

1. ALL SAWCUTS SHALL BE A DEPTH OF 3 1/2" ON ALL SURFACES.
2. CONTRACTOR SHALL INSTALL LEAD-IN WIRE IN THE MOST DIRECT ROUTE TO THE JUNCTION WELL USING THE CLOSEST CONCRETE CURB JOINT.
3. ALL SAWCUTS SHALL BE PATCHED WITH NON-SHRINK CONCRETE CAULK.
4. CONTRACTOR SHALL CORE AT FULL DEPTH OF SAWCUT, 3 1/2".
5. CONTRACTOR SHALL CONSOLIDATE LEAD-INS TO A SINGLE DRILL HOLE, WHENEVER FEASIBLE.

SPECIFICATION 846001 846002	CATEGORY CODE ITEMS DETECTION	DELAWARE DEPARTMENT OF TRANSPORTATION TRAFFIC CONSTRUCTION DETAILS LOOP DETECTOR LEAD-IN WIRE INSTALLATION
APPROVED _____ CHIEF TRAFFIC ENGINEER		
DETAIL NO.		DE 846.001-03

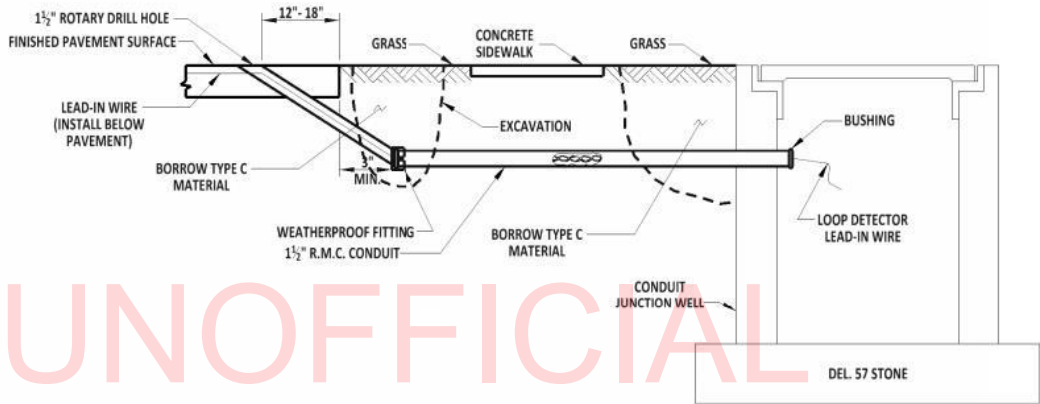
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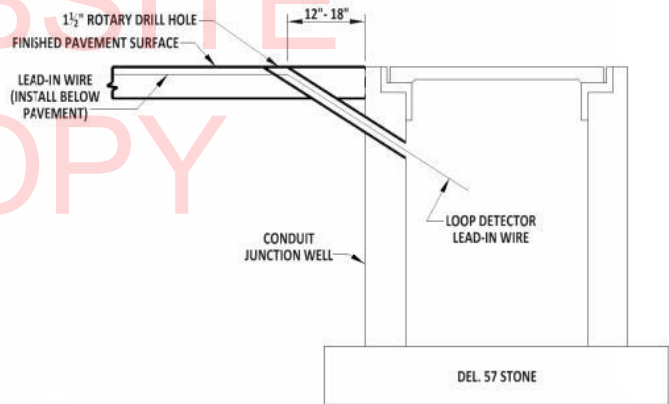
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**LOOP DETECTOR
LEAD-IN WIRE INSTALLATION**



**LOOP DETECTOR
LEAD-IN WIRE INSTALLATION**

NOTES:

1. ALL SAWCUTS SHALL BE A DEPTH OF 3 1/2" ON ALL SURFACES.
2. CONTRACTOR SHALL INSTALL LEAD-IN WIRE IN THE MOST DIRECT ROUTE TO THE JUNCTION WELL USING THE CLOSEST CONCRETE CURB JOINT.
3. ALL SAWCUTS SHALL BE SEALED WITH AN APPROVED LOOP DETECTOR SEALANT.
4. CONTRACTOR SHALL CORE AT FULL DEPTH OF SAWCUT, 3 1/2".
5. CONTRACTOR SHALL CONSOLIDATE LEAD-INS TO A SINGLE DRILL HOLE, WHENEVER FEASIBLE.
6. CONTRACTOR SHALL INSTALL DETECTABLE WARNING TAPE IN TRENCH FOR LEAD-IN CONDUIT.

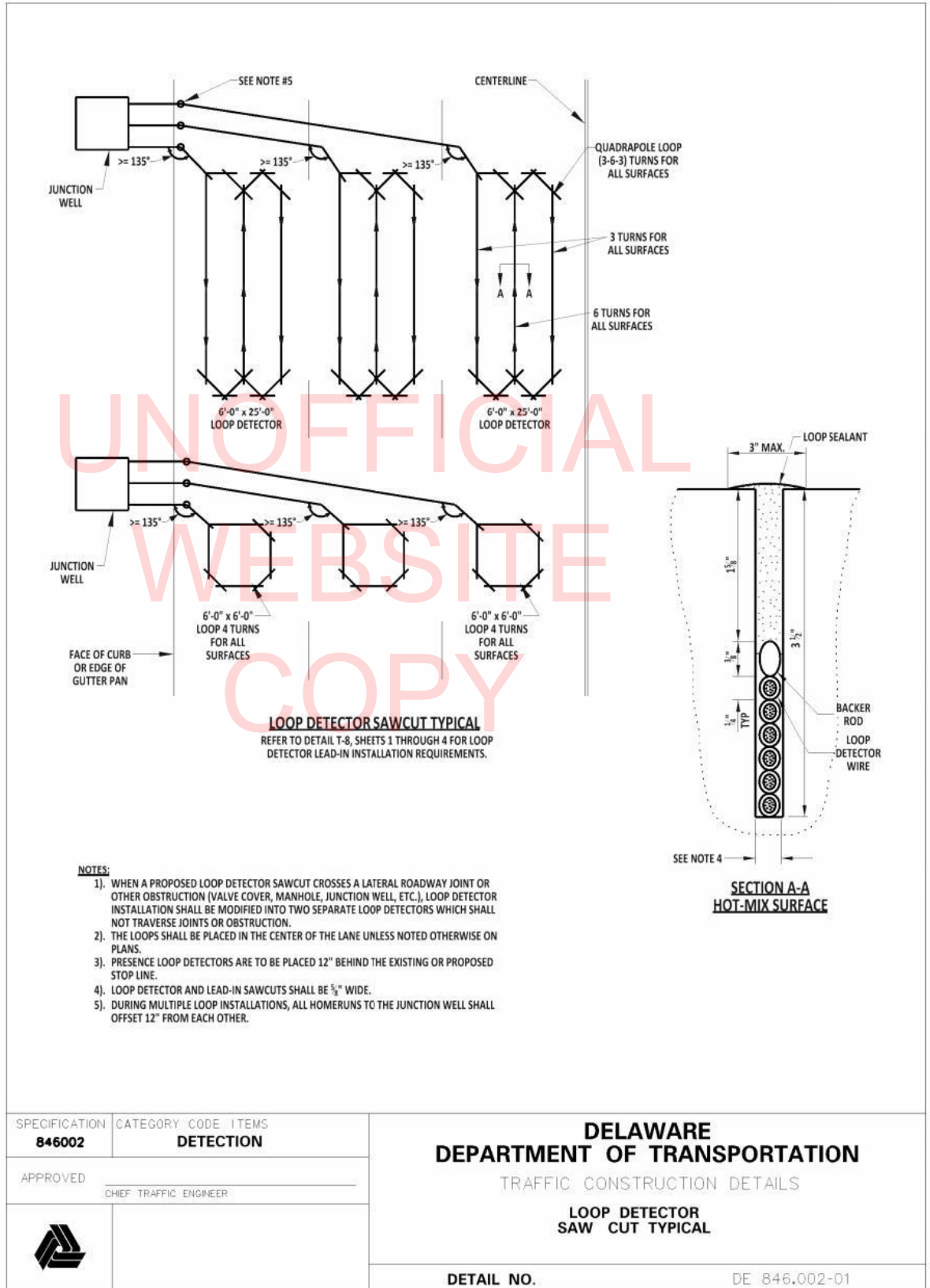
SPECIFICATION 846001 846002	CATEGORY CODE POWER SERVICE	DELAWARE DEPARTMENT OF TRANSPORTATION TRAFFIC CONSTRUCTION DETAILS LOOP DETECTOR LEAD-IN WIRE INSTALLATION
APPROVED _____ CHIEF TRAFFIC ENGINEER		
		DETAIL NO. DE 846.001-04

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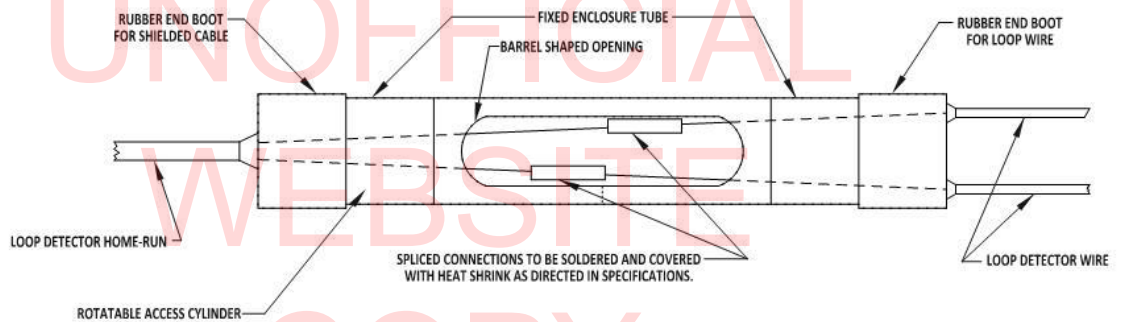




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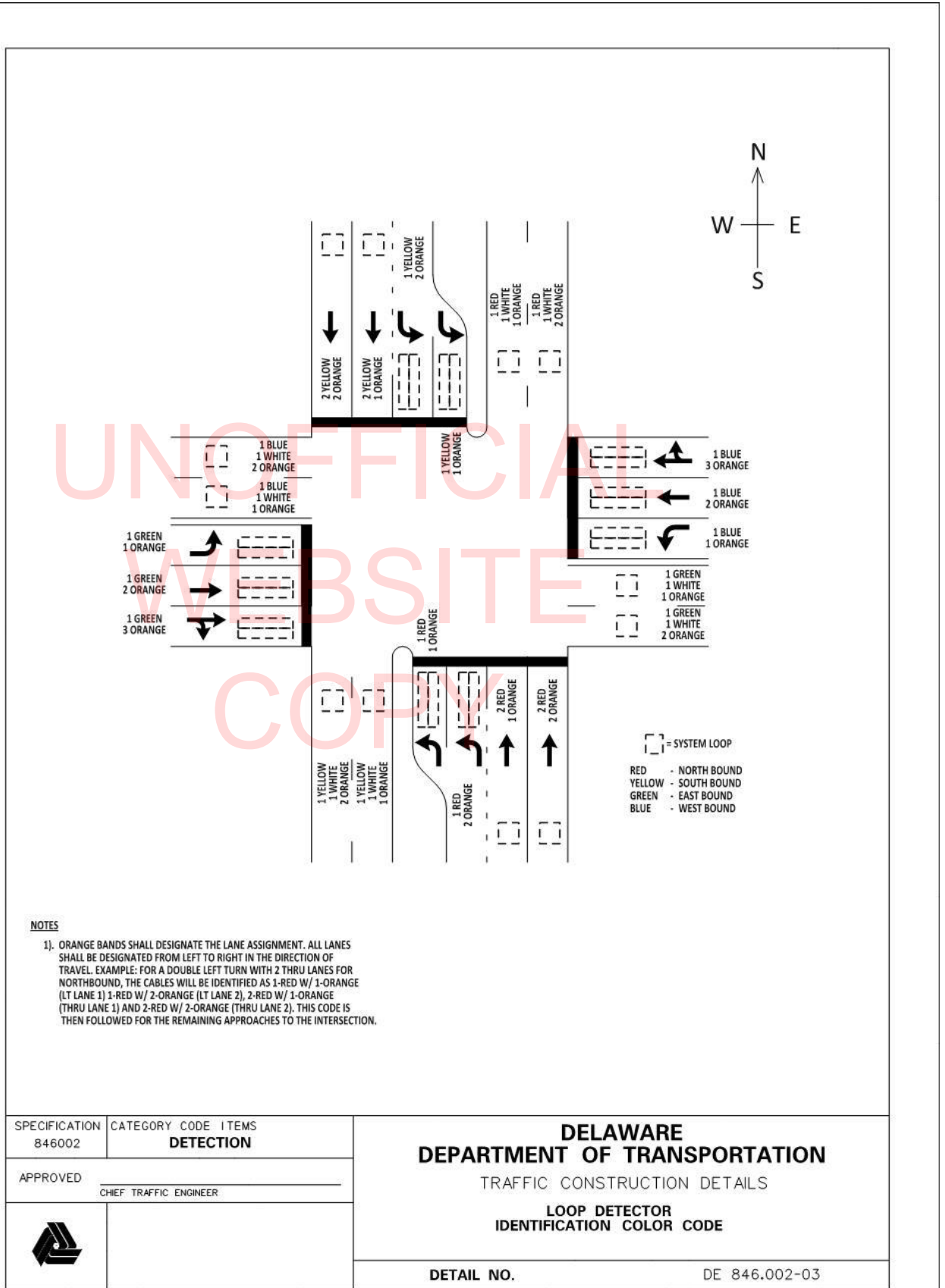
SPECIFICATION 846002	CATEGORY CODE ITEMS DETECTION	<p style="text-align: center;">DELAWARE DEPARTMENT OF TRANSPORTATION</p> <p style="text-align: center;">TRAFFIC CONSTRUCTION DETAILS</p> <p style="text-align: center;">SPLICE KIT FOR LOOP DETECTOR WIRE AND LOOP DETECTOR HOME-RUN</p>	
APPROVED  CHIEF TRAFFIC ENGINEER			
		DETAIL NO.	DE 846.002-02

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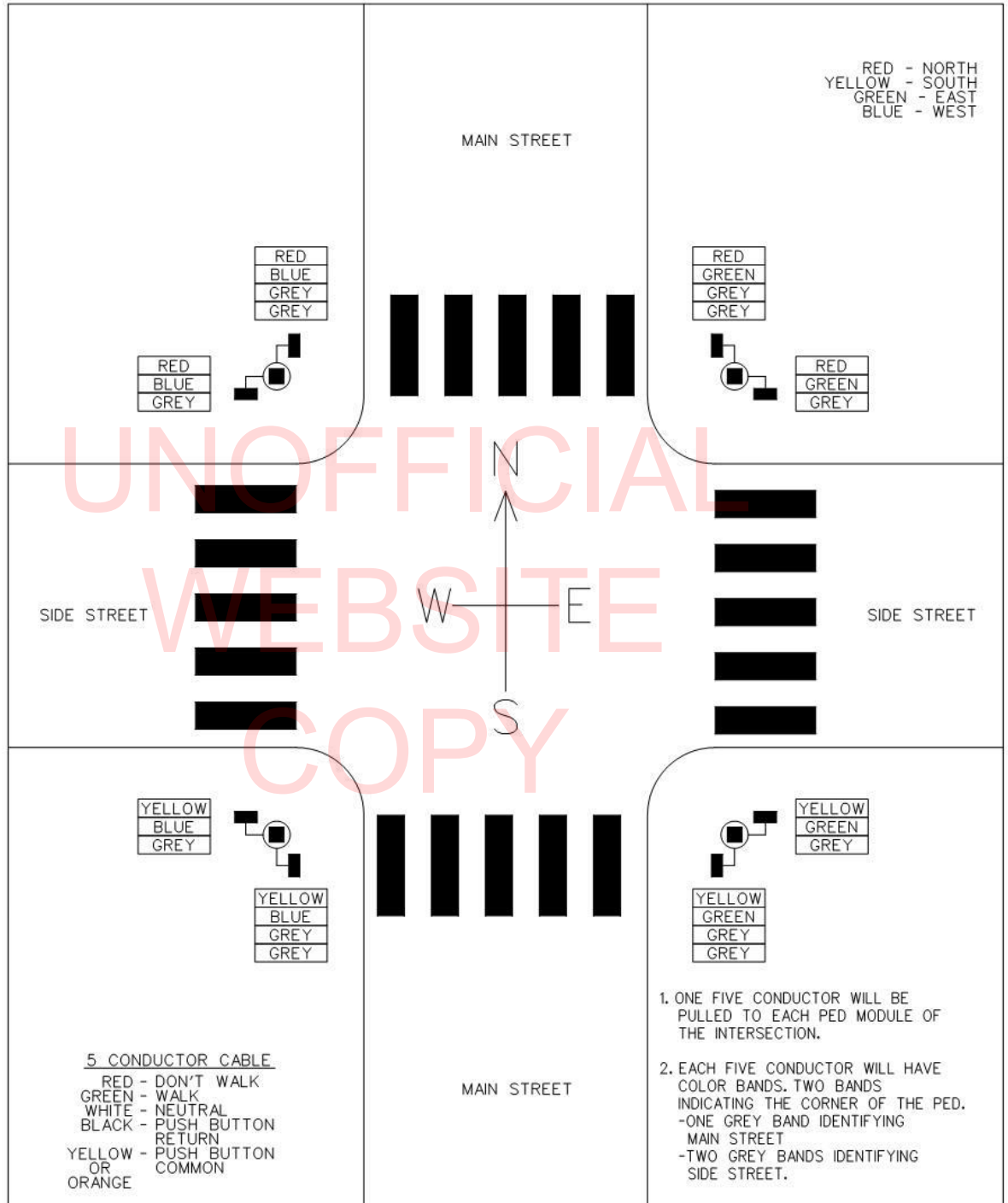
SPECIFICATION 846002	CATEGORY CODE ITEMS DETECTION	DELAWARE DEPARTMENT OF TRANSPORTATION TRAFFIC CONSTRUCTION DETAILS LOOP DETECTOR IDENTIFICATION COLOR CODE
APPROVED _____ CHIEF TRAFFIC ENGINEER		
		DETAIL NO. DE 846.002-03

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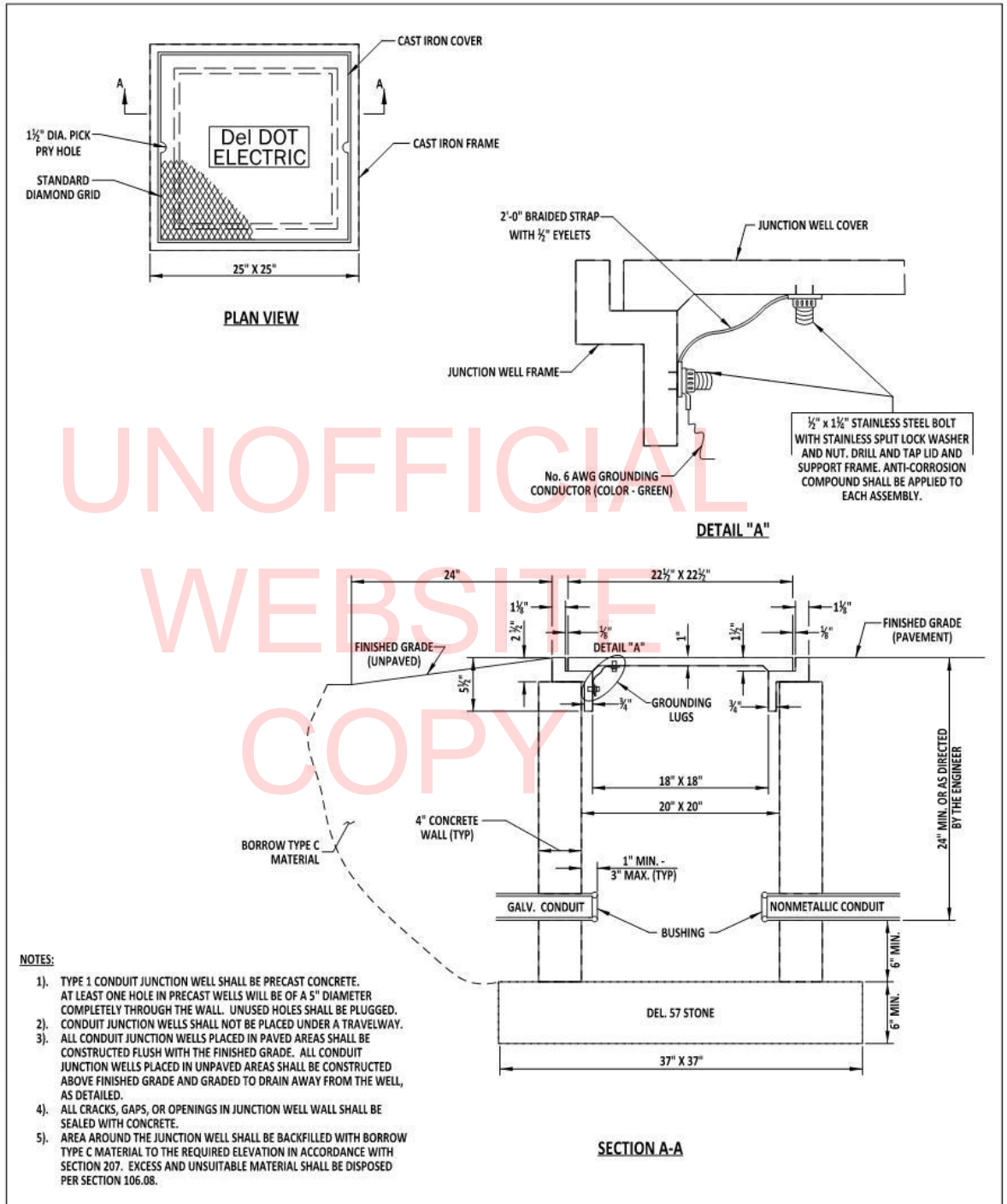
SPECIFICATION 8XXXXX	CATEGORY CODE ITEMS DETECTION	<p>DELAWARE DEPARTMENT OF TRANSPORTATION</p> <p>TRAFFIC CONSTRUCTION DETAILS</p> <p>PEDESTRIAN CROSSING IDENTIFICATION COLOR CODE</p>
APPROVED	_____ CHIEF TRAFFIC ENGINEER	
DETAIL NO.		DE 846.002-04


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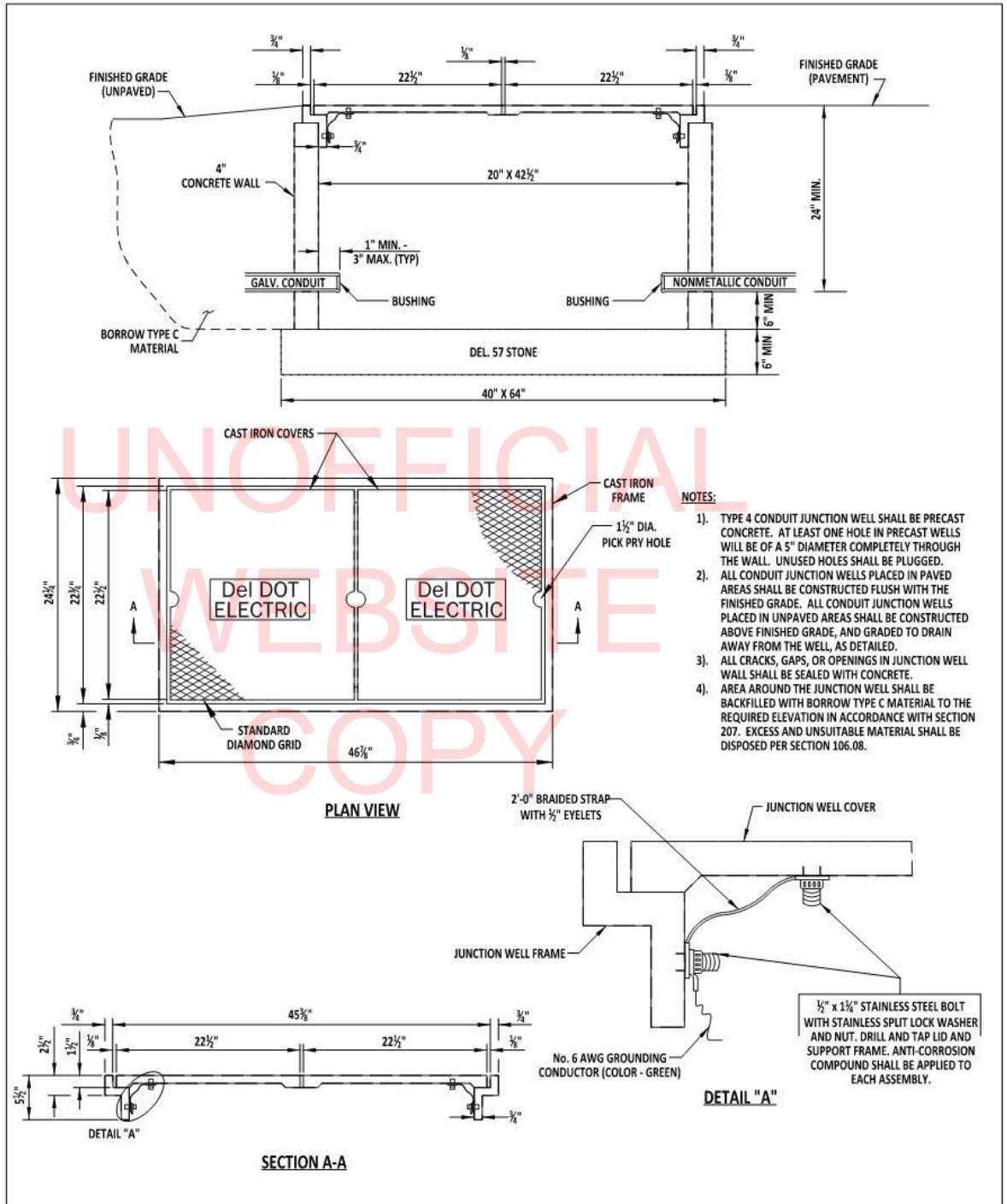
SPECIFICATION	CATEGORY CODE	ITEMS	DELAWARE DEPARTMENT OF TRANSPORTATION TRAFFIC CONSTRUCTION DETAILS CONDUIT JUNCTION WELL, TYPE 1
830001		CONDUIT JUNCTION WELLS	
APPROVED	_____ CHIEF TRAFFIC ENGINEER		
			DETAIL NO. DE 830.001-01


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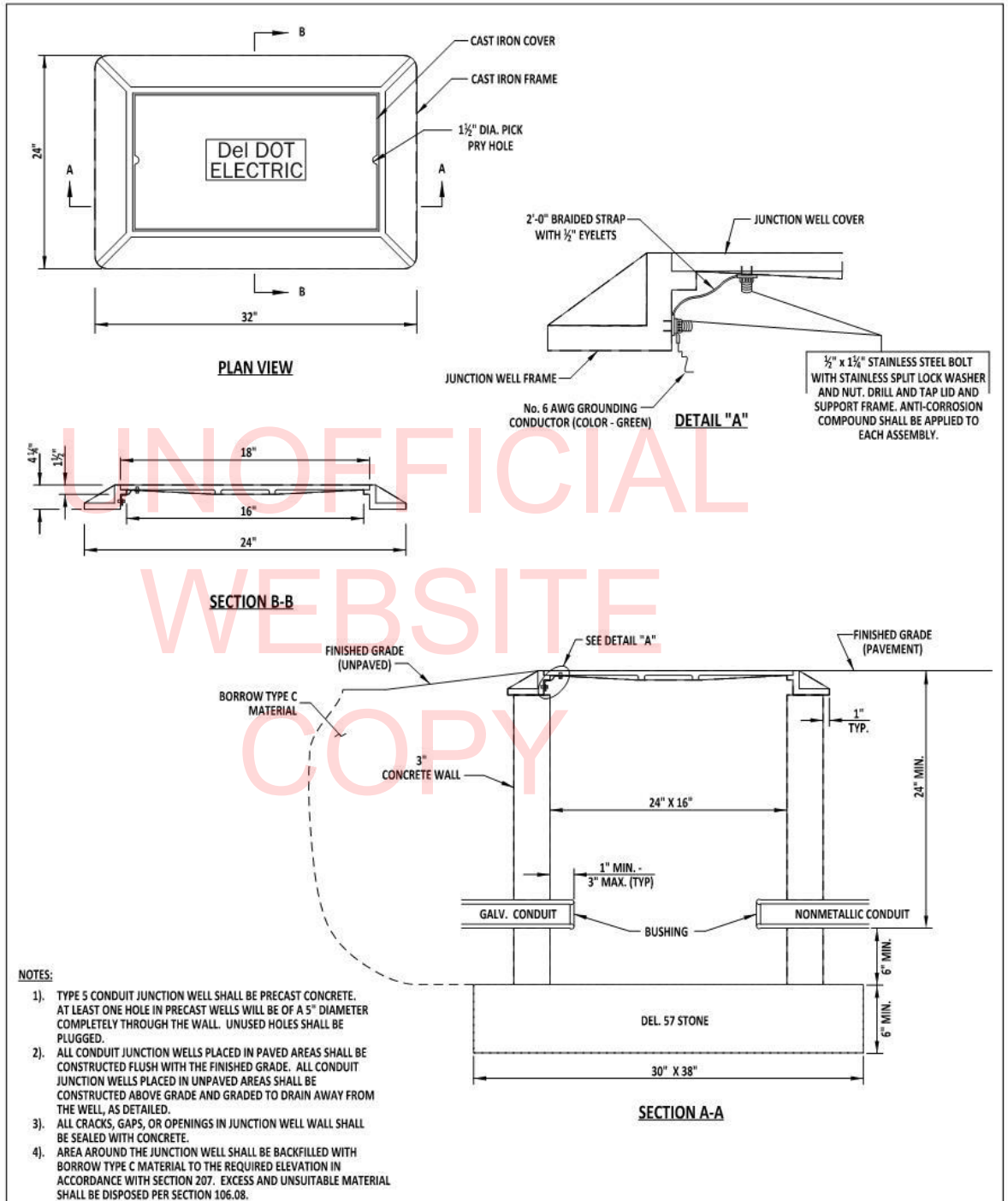
SPECIFICATION	CATEGORY CODE	ITEMS	DELAWARE DEPARTMENT OF TRANSPORTATION TRAFFIC CONSTRUCTION DETAILS CONDUIT JUNCTION WELL, TYPE 4
830002		CONDUIT JUNCTION WELLS	
APPROVED		_____ CHIEF TRAFFIC ENGINEER	
			DETAIL NO. DE 830.001-02


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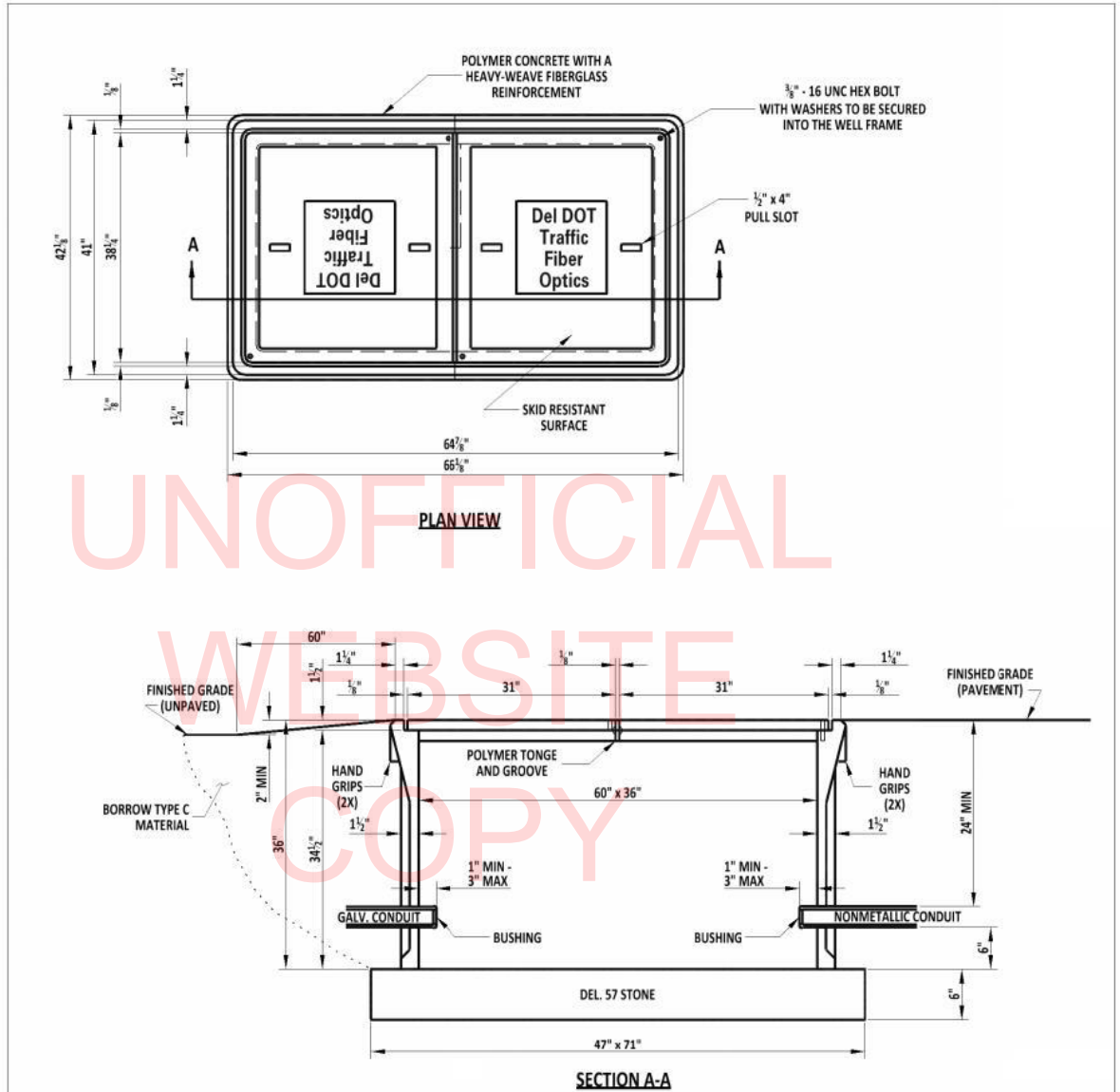
SPECIFICATION	CATEGORY CODE	ITEMS	DELAWARE DEPARTMENT OF TRANSPORTATION TRAFFIC CONSTRUCTION DETAILS CONDUIT JUNCTION WELL, TYPE 5
830003		CONDUIT JUNCTION WELLS	
APPROVED		_____ CHIEF TRAFFIC ENGINEER	
			DETAIL NO. DE 830.001-03

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- NOTES:**
- 1). TYPE 7 CONDUIT JUNCTION WELL SHALL BE PRECAST POLYMER CONCRETE.
 - 2). ALL CONDUIT JUNCTION WELLS CONSTRUCTED WITHIN PAVEMENT, SIDEWALKS, ETC. WILL BE CONSTRUCTED FLUSH WITH THE SURFACE OF THE SAME. INSTALLATION IN UNPAVED AREAS WILL BE CONSTRUCTED ABOVE GRADE AND GRADED TO DRAIN AWAY FROM THE CONDUIT JUNCTION WELL.
 - 3). POLYMER CONCRETE COVERS SHALL BE THE HEAVY DUTY TYPE WITH A DESIGN LOAD OF 15,000 LBS OVER A 10" SQUARE.

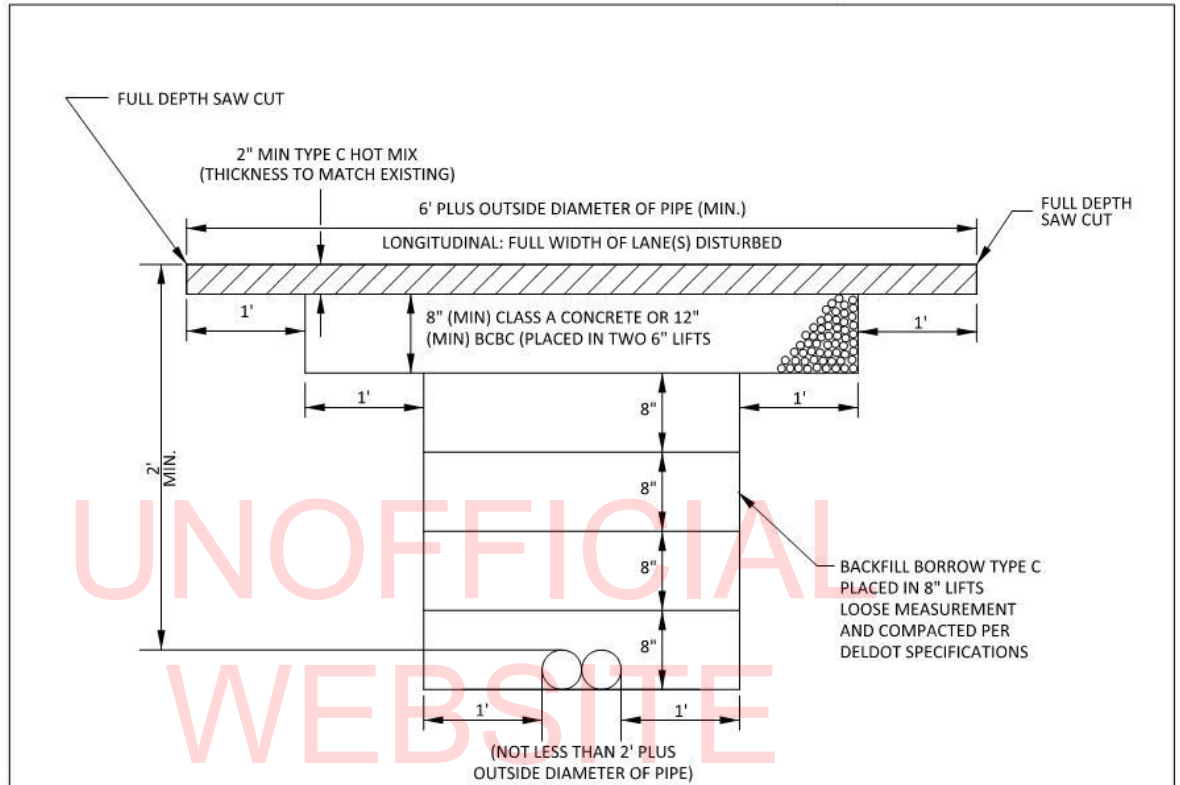
SPECIFICATION 830004	CATEGORY CODE ITEMS CONDUIT JUNCTION WELLS	DELAWARE DEPARTMENT OF TRANSPORTATION TRAFFIC CONSTRUCTION DETAILS CONDUIT JUNCTION WELL, TYPE 7
APPROVED _____ CHIEF TRAFFIC ENGINEER		
DETAIL NO.		DE 830.001-04

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PERMANENT CROSS-ROAD OR LONGITUDINAL PATCH DETAIL

N.T.S.

NOTES:

1. PATCHES MUST HAVE A MINIMUM WIDTH OF 6 FEET PLUS OUTSIDE DIAMETER OF THE PIPE (AS MEASURED ALONG THE ROADWAY CENTERLINE) AND THE WIDTH OF THE LANE OR LANES DISTURBED.
2. THIS IS A MINIMUM PATCH. IF THE EXISTING ROADWAY HAS A HEAVIER CROSS SECTION THAN SHOWN HERE, IT WILL BE REPLACED WITH THAT CROSS SECTION, OR AS DIRECTED BY THE ENGINEER.
3. ALL MATERIALS AND METHODS FOR CONSTRUCTION SHALL MEET THE REQUIREMENTS SET FORTH IN THE CURRENT DELAWARE DEPARTMENT OF TRANSPORTATION STANDARDS SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

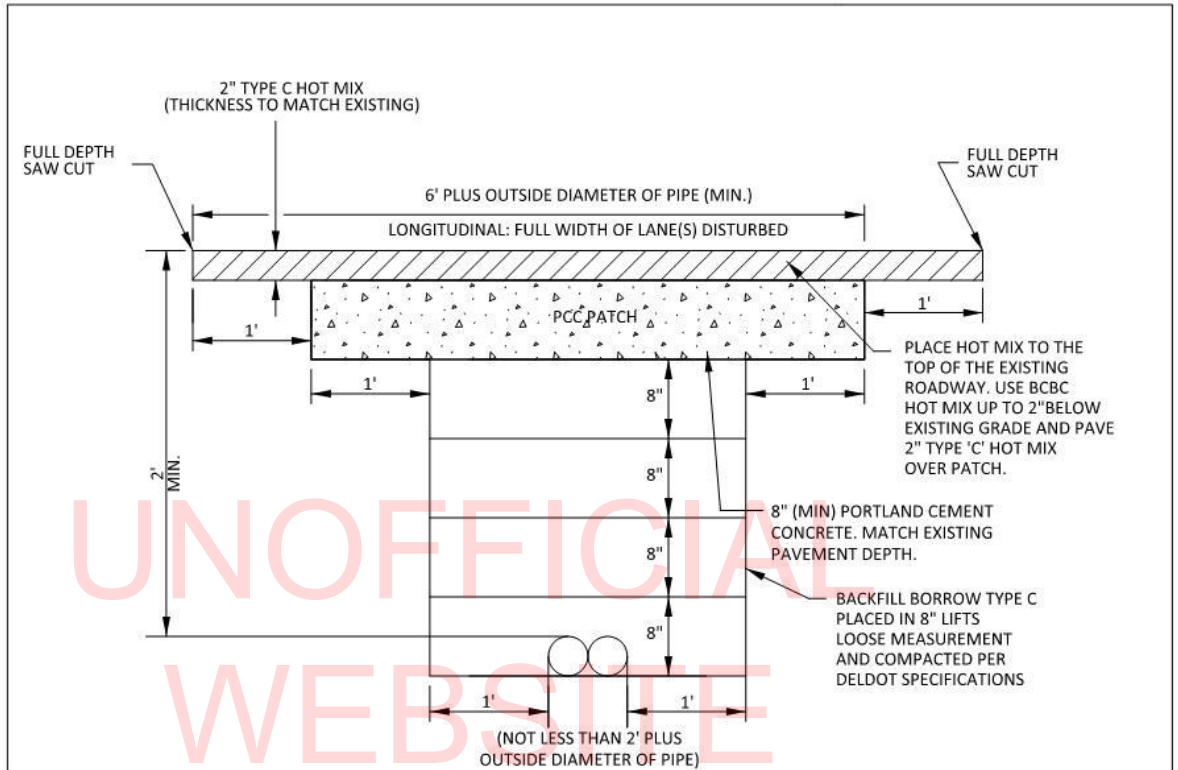
SPECIFICATION MULTIPLE ROADWAY ITEMS	CATEGORY CODE ITEMS MISC. DETAILS	<p>DELAWARE DEPARTMENT OF TRANSPORTATION TRAFFIC CONSTRUCTION DETAILS ROAD PATCH DETAIL – HOTMIX</p>
APPROVED	_____ CHIEF TRAFFIC ENGINEER	
		
		<p>DETAIL NO. DE 402.001-01</p>

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PERMANENT CROSS-ROAD OR LONGITUDINAL PATCH DETAIL

M. T. S.

* EXISTING CONCRETE PAVEMENT OVERLAYED WITH HOTMIX LOCATIONS

NOTES:

1. PATCHES MUST HAVE A MINIMUM WIDTH OF 6 FEET OR 4 FEET PLUS OUTSIDE DIAMETER OF THE PIPE (AS MEASURED ALONG THE ROADWAY CENTERLINE) AND THE WIDTH OF THE LANE OR LANES DISTURBED.
2. THIS IS A MINIMUM PATCH. IF THE EXISTING ROADWAY HAS A HEAVIER CROSS SECTION THAN SHOWN HERE, IT WILL BE REPLACED WITH THAT CROSS SECTION, OR AS DIRECTED BY THE ENGINEER.
3. ALL MATERIALS AND METHODS FOR CONSTRUCTION SHALL MEET THE REQUIREMENTS SET FORTH IN THE CURRENT DELAWARE DEPARTMENT OF TRANSPORTATION STANDARDS SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

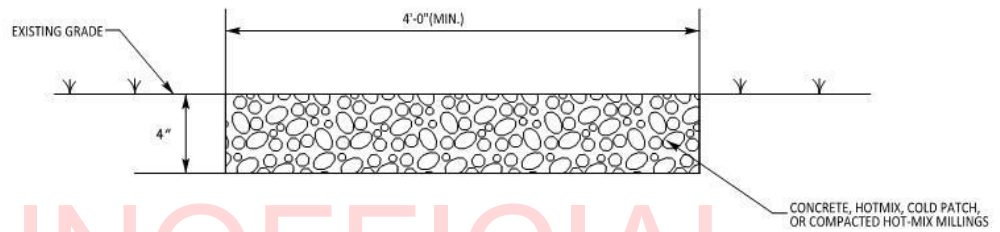
SPECIFICATION MULTIPLE ROADWAY ITEMS	CATEGORY CODE ITEMS MISC. DETAILS	DELAWARE DEPARTMENT OF TRANSPORTATION TRAFFIC CONSTRUCTION DETAILS ROAD PATCH DETAIL - CONCRETE
APPROVED	_____ CHIEF TRAFFIC ENGINEER	
		
		DETAIL NO. DE 503.001-01

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NOTES:

1. PROVIDE 4'-0" WIDE TEMPORARY PATHWAY, SUPPLY CONCRETE, HOTMIX, COLD PATCH OR MILLINGS TO A MINIMUM DEPTH OF 4", FLUSH WITH EXISTING GRADE.
2. IN THE EVENT THAT THE WALKING SURFACE OF THE TEMPORARY SIDEWALK IS LOCATED MORE THAN 30" FROM GRADE AT ANY POINT ALONG THE PROPOSED PATH, PROVIDE TYPE 2 TEMPORARY SIDEWALK.
3. ANY REQUIRED EXCAVATION TO CONSTRUCT THE PATHWAY IS INCIDENTAL TO ITEM 743553.
4. COST FOR SEEDING REQUIRED TO RESTORE THE AREA IS INCIDENTAL TO ITEM 732004, TOPSOIL. IF NO TOPSOIL IS REQUIRED, THEN SEEDING IS CONSIDERED INCIDENTAL TO ITEM 743553.

TEMPORARY PEDESTRIAN PATHWAY

N.T.S.

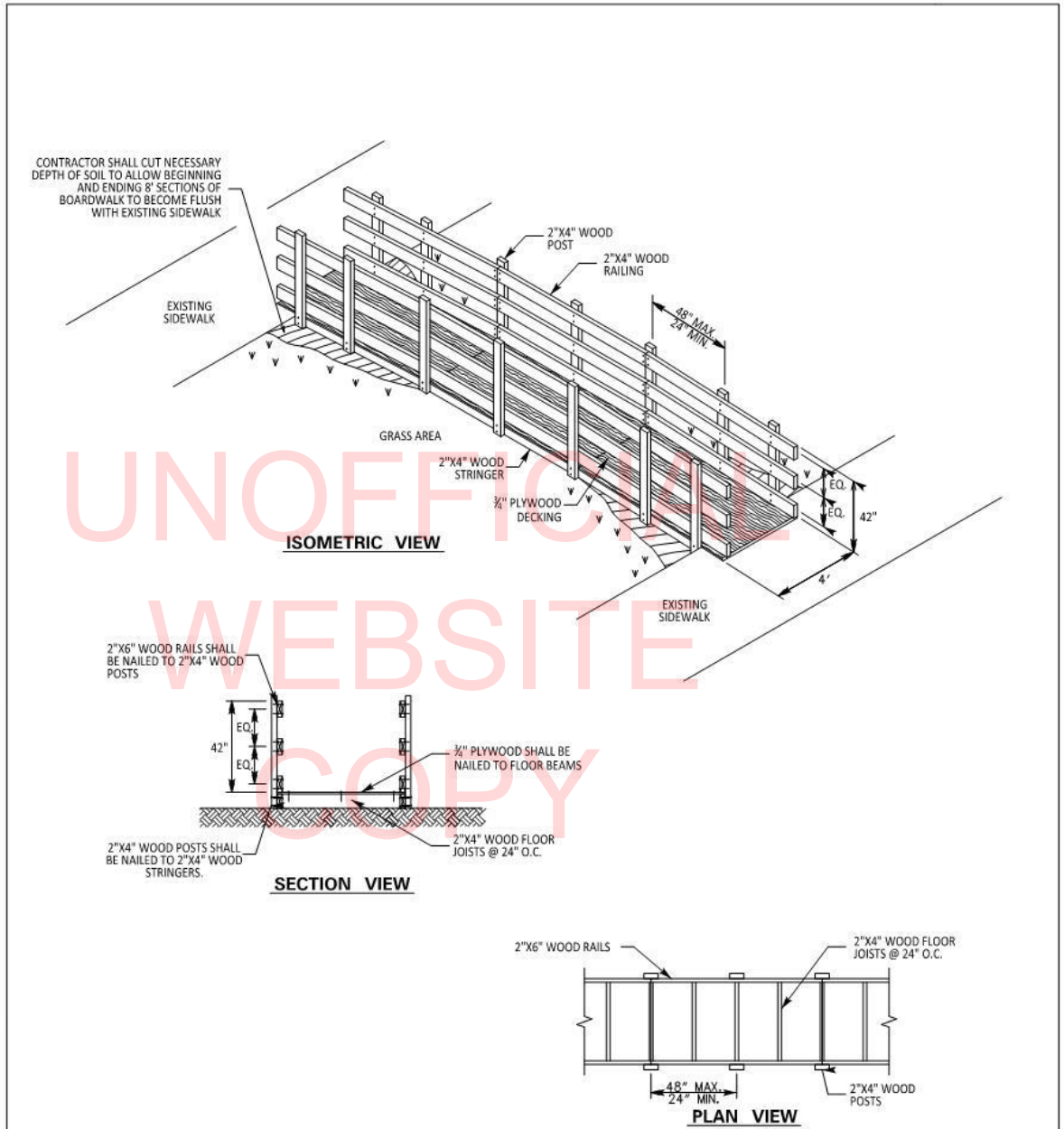
SPECIFICATION 813503	CATEGORY CODE ITEMS TEMP. TRAFFIC CONTROL	DELAWARE DEPARTMENT OF TRANSPORTATION TRAFFIC CONSTRUCTION DETAILS TEMPORARY PEDESTRIAN PATHWAY
APPROVED _____ CHIEF TRAFFIC ENGINEER		
		DETAIL NO. DE 813.001-01

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TEMPORARY SIDEWALK DETAIL - TYPE 2

N.T.S.

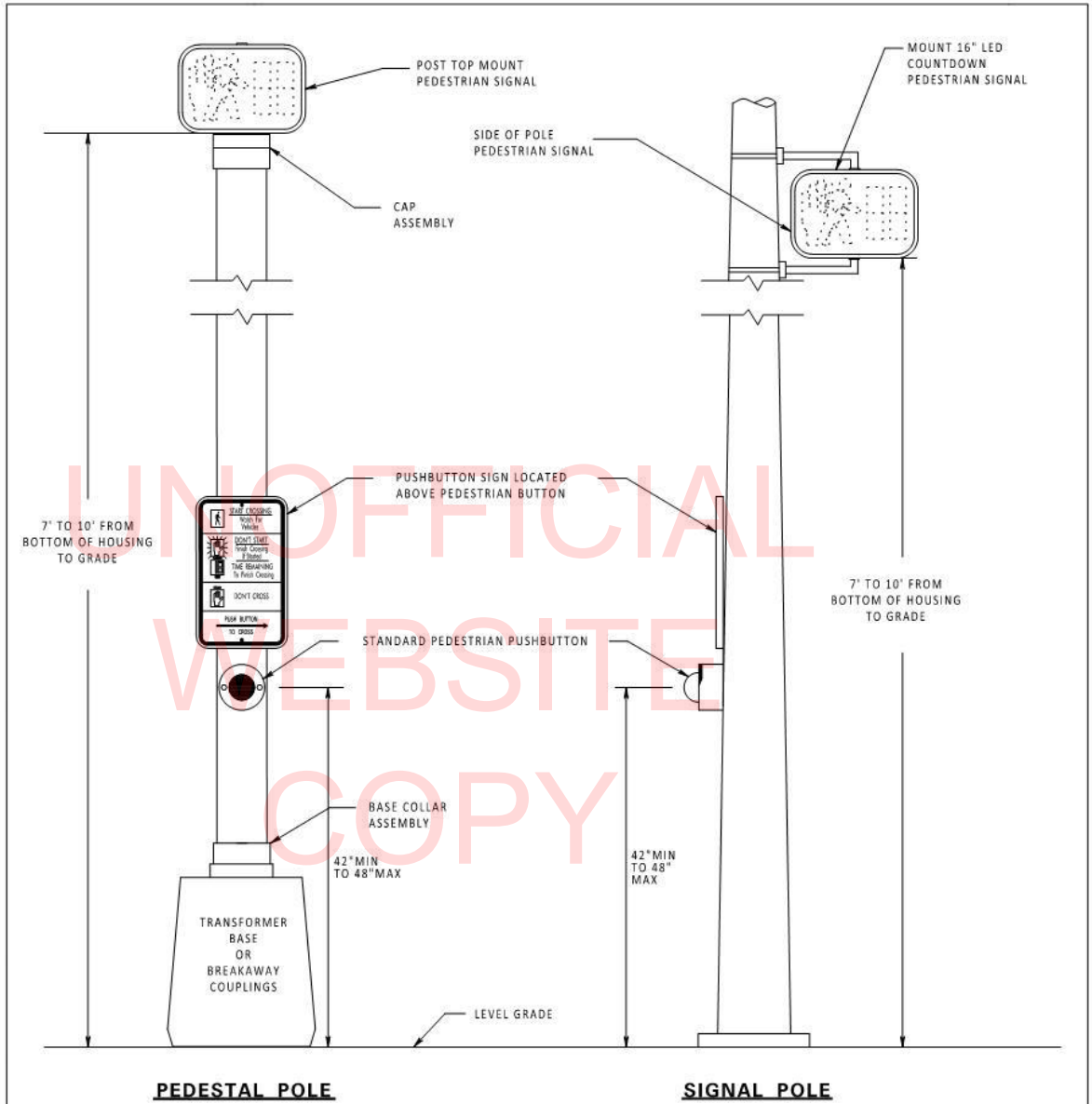
SPECIFICATION 813501	CATEGORY CODE ITEMS TEMP. TRAFFIC CONTROL	<p style="text-align: center;">DELAWARE DEPARTMENT OF TRANSPORTATION TRAFFIC CONSTRUCTION DETAILS TEMPORARY SIDEWALK DETAIL - TYPE 2</p>	
APPROVED 	_____ CHIEF TRAFFIC ENGINEER		
		DETAIL NO.	DE 813.001-02

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NOTES:

1. WHEN CUTTING IS REQUIRED, CONTRACTOR SHALL CONFIRM PROPER HEIGHT OF PEDESTAL IS MAINTAINED PRIOR TO CUTTING POLE.
2. REFER TO POLE MOUNTING FOR PEDESTRIAN SIGNAL HEADS STANDARD PLATES FOR DETAILS.

SPECIFICATION 837008 837009 837010	CATEGORY CODE ITEMS MISC. DETAILS	DELAWARE DEPARTMENT OF TRANSPORTATION TRAFFIC CONSTRUCTION DETAILS STANDARD PEDESTRIAN SIGNAL PUSHBUTTON LOCATION ON POLE
APPROVED _____ CHIEF TRAFFIC ENGINEER		DETAIL NO. DE 837.005-01

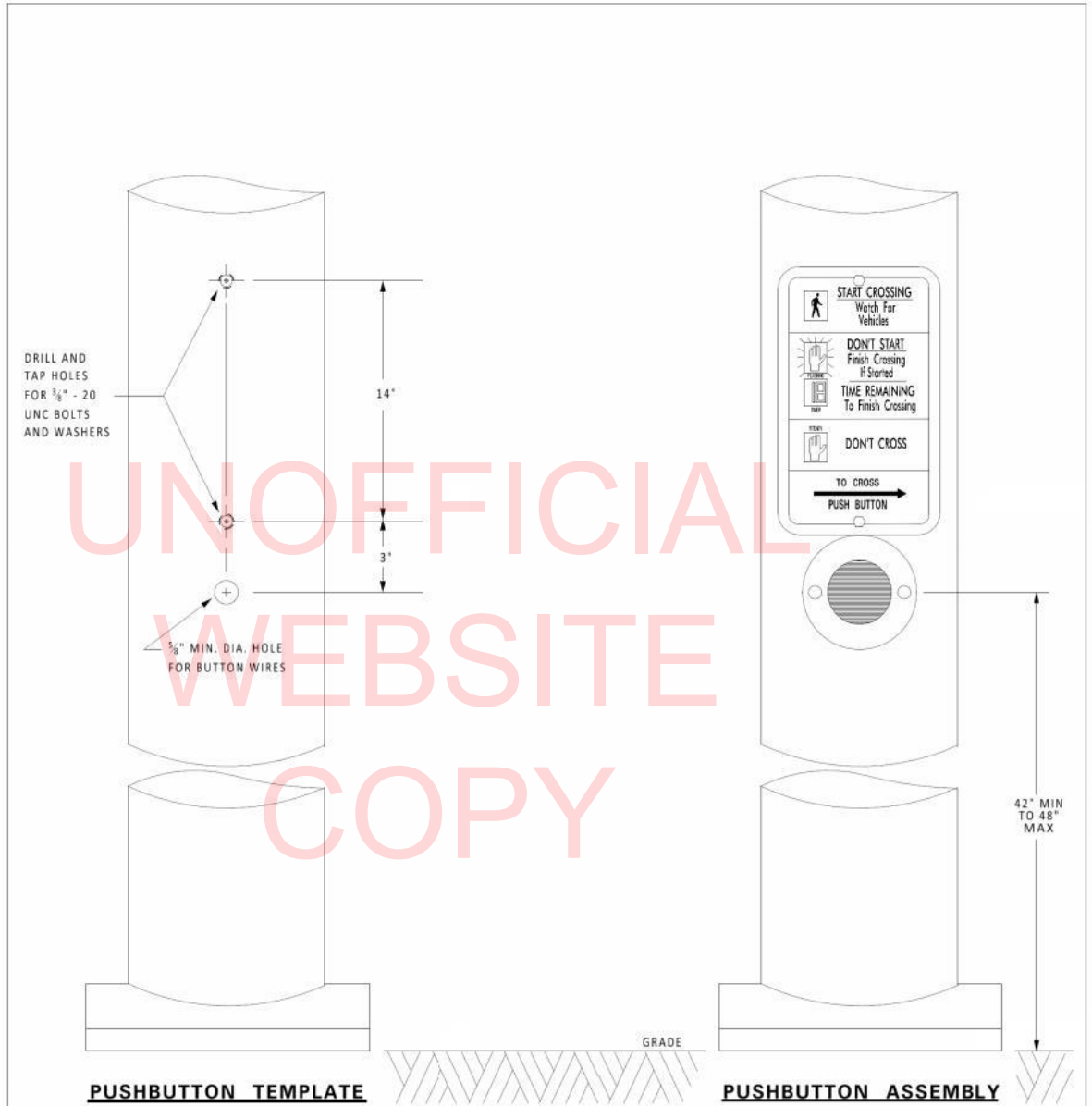


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NOTES:

1. PUSHBUTTON ASSEMBLY SHALL BE SECURED TO WOOD POLES WITH 2 $\frac{1}{2}$ " LAG BOLTS.

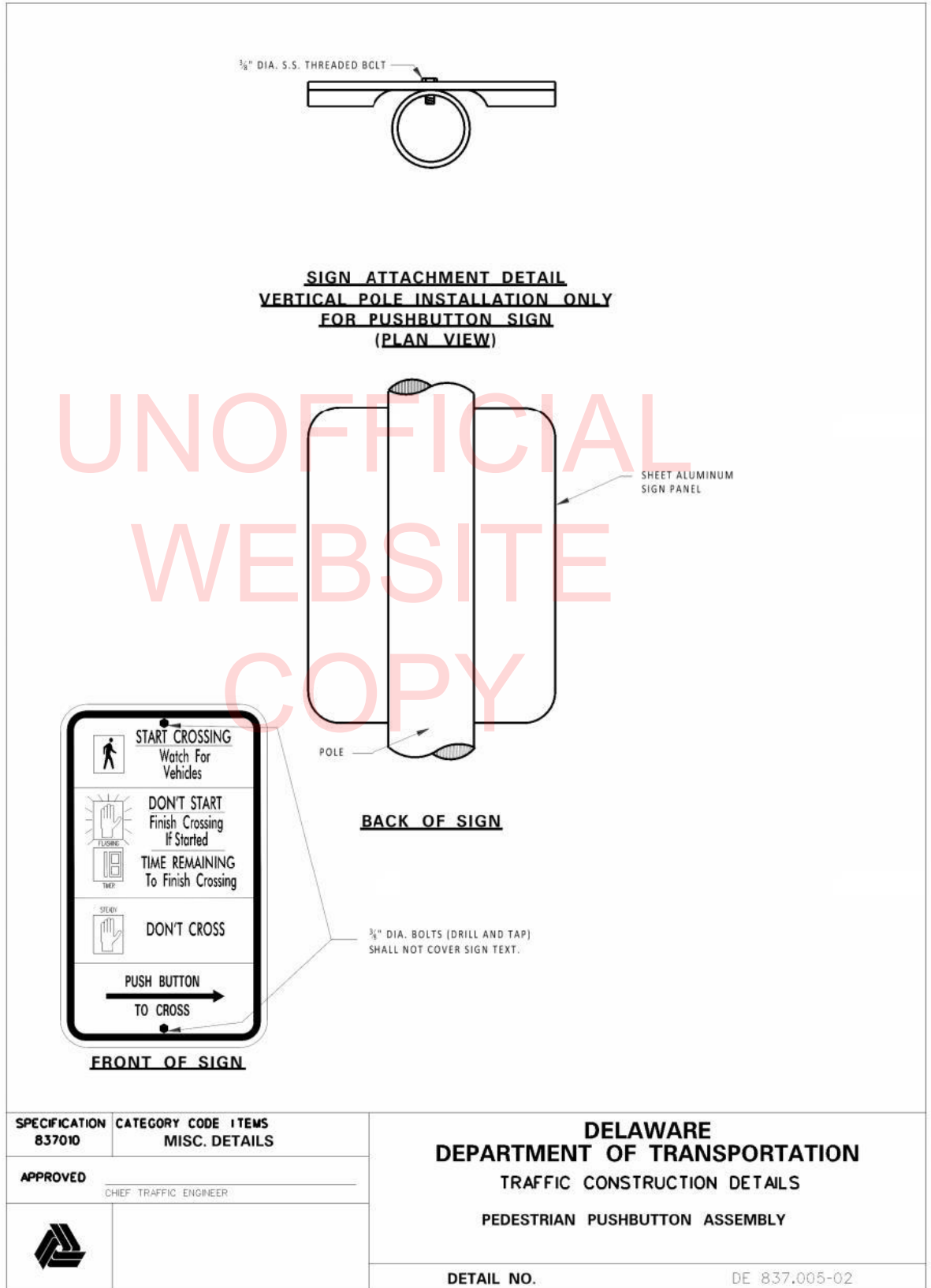
<p>SPECIFICATION 837010</p>	<p>CATEGORY CODE MISC. DETAILS</p>	<p style="text-align: center;">DELAWARE DEPARTMENT OF TRANSPORTATION TRAFFIC CONSTRUCTION DETAILS PEDESTRIAN PUSHBUTTON ASSEMBLY</p>
<p>APPROVED _____ CHIEF TRAFFIC ENGINEER</p>		
		<p>DETAIL NO. DE 837.005-02</p>


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SPECIFICATION 837010	CATEGORY CODE MISC. DETAILS	ITEMS
APPROVED		
		CHIEF TRAFFIC ENGINEER
		

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DEPARTMENT OF TRANSPORTATION
TRAFFIC CONSTRUCTION DETAILS
PEDESTRIAN PUSHBUTTON ASSEMBLY

DETAIL NO.

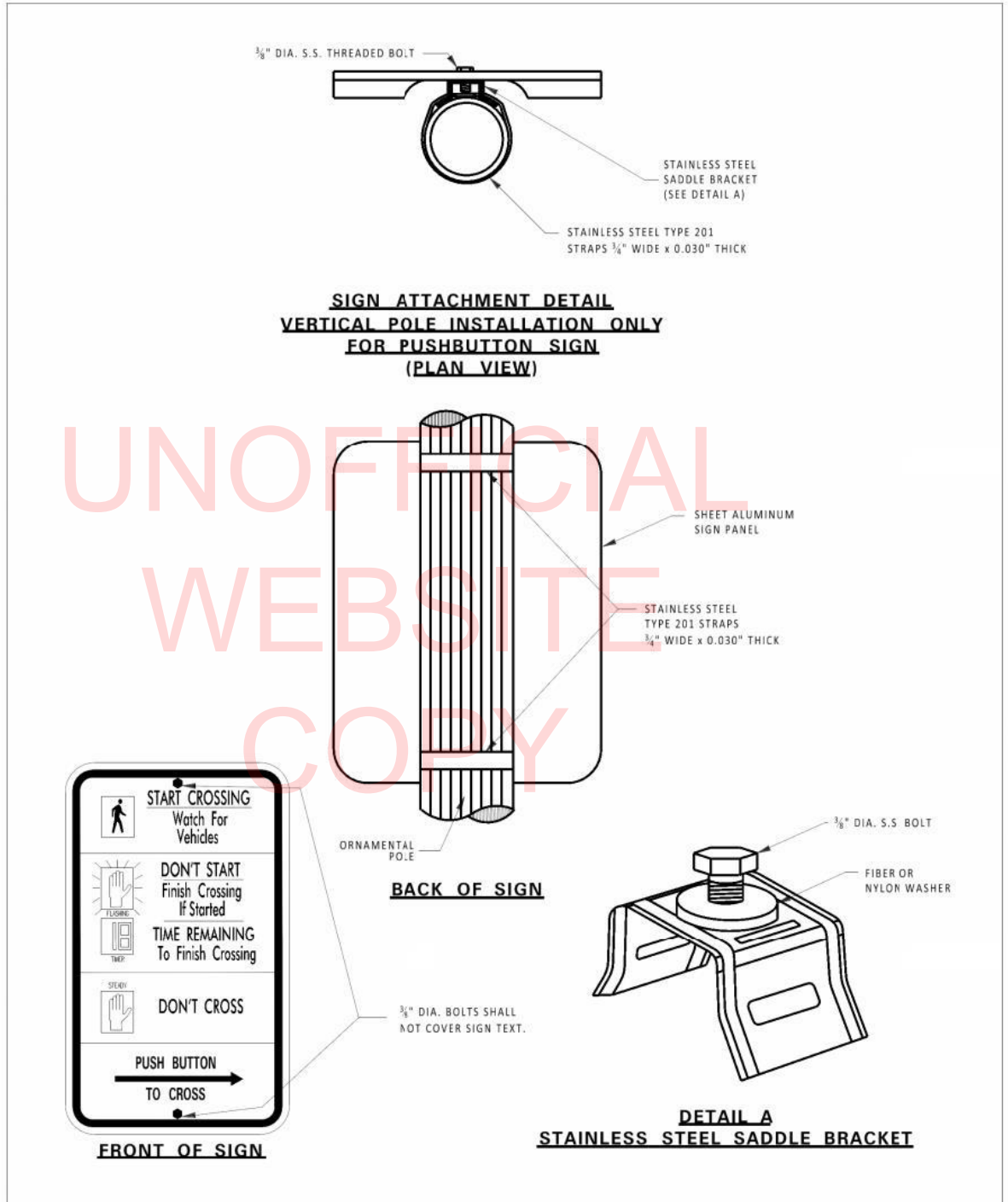
DE 837.005-02

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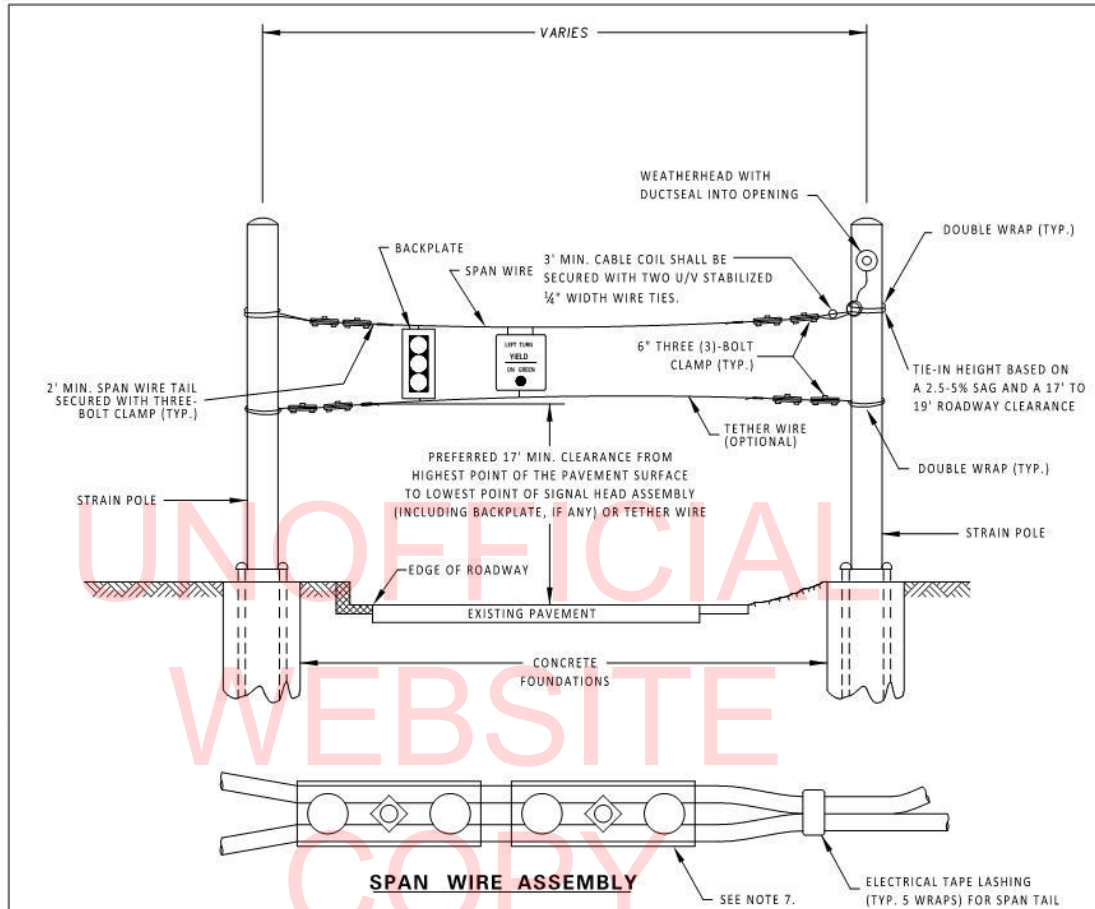
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<p>APPROVED</p> <p>_____ CHIEF TRAFFIC ENGINEER</p>			
			
<p>DETAIL NO.</p>			<p>DE 837.005-04</p>

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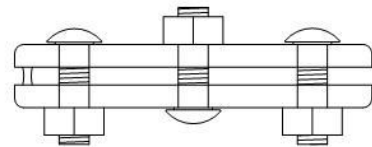
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NOTES:

1. ALL WIRES SHALL BE LASHED WITH FIVE (5) WRAP (12" O.C.) ELECTRICAL TAPE ACROSS SPAN WIRE.
2. POLES SHALL BE RAKED AS SPECIFIED BY THE PROJECT ENGINEER.
3. POLE PLACEMENT SHOULD BE OUTSIDE OF THE CLEAR ZONE BASED ON THE GUIDELINES OF THE MOST RECENT AASHTO ROADSIDE DESIGN GUIDE.
4. SPAN WIRE SHALL BE PLACED UNDER ALL RISERS.
5. SPAN WIRE SHALL BE 7/16" SEVEN (7)-WIRE GAL. STEEL STRAND. (STRENGTH SHALL BE SIEMENS-MARTIN 6.950 LBS.)
6. TETHER WIRE SHALL BE 1/4" SEVEN (7)-WIRE GAL. STEEL STRAND. (STRENGTH SHALL BE SIEMENS-MARTIN 3.150 LBS.)
7. TWO (2) THREE-BOLT CLAMPS SHALL BE USED FOR EACH END OF THE SPANS.



3-BOLT CLAMP

SPECIFICATION 838001 838002	CATEGORY CODE ITEMS OVERHEAD
APPROVED	CHIEF TRAFFIC ENGINEER
	

DELAWARE DEPARTMENT OF TRANSPORTATION
TRAFFIC CONSTRUCTION DETAILS
PLACEMENT OF STRAIN POLE AND INCIDENTAL HARDWARE

DETAIL NO. DE 838.001-01

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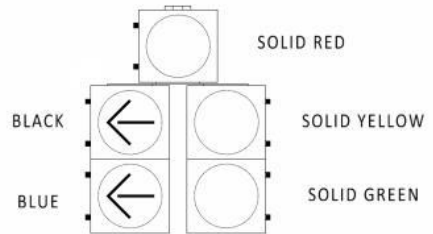
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**WIRING COLOR CODE FOR #14/16
SIGNAL CABLE FOR SIGNAL HEADS**

<u>MAIN STREET SIGNALS</u>	<u>WIRE COLORS</u> SOLID RED SOLID ORANGE SOLID GREEN SOLID WHITE	<u>SIGNAL INDICATION</u> RED YELLOW GREEN GROUND
<u>SIDE STREET SIGNALS</u>	<u>WIRE COLORS</u> BLACK TRACER/RED BLACK TRACER/ORANGE BLACK TRACER/GREEN BLACK TRACER/WHITE	<u>SIGNAL INDICATION</u> RED YELLOW GREEN GROUND
<u>NON-PERMISSIVE LEFT TURN SIGNALS</u>	<u>MAIN STREET WIRE COLORS</u> WHITE TRACER/RED WHITE TRACER/ORANGE WHITE TRACER/GREEN WHITE TRACER/BLUE	<u>SIDE STREET WIRE COLORS</u> BLACK/RED TRACER SOLID BLACK SOLID BLUE BLUE/BLACK TRACER
<u>5-SECTION SIGNAL ARROWS</u>	<u>MAIN STREET WIRE COLORS</u> SOLID BLUE SOLID BLACK	<u>SIDE STREET WIRE COLORS</u> BLACK/RED TRACER BLUE/BLACK TRACER
		<u>SIGNAL INDICATION</u> RED YELLOW GREEN GROUND
		<u>SIGNAL INDICATION</u> YELLOW ARROW GREEN ARROW

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SPECIFICATION 8.32034	CATEGORY CODE ITEMS SIGNAL HEADS	DELAWARE DEPARTMENT OF TRANSPORTATION TRAFFIC CONSTRUCTION DETAILS SIGNAL WIRE CABLE IDENTIFICATION COLOR CODE
APPROVED	_____	
	CHIEF TRAFFIC ENGINEER	
		DETAIL NO. _____ DE 8.32.001-01

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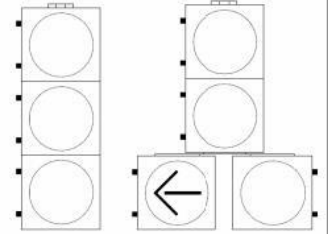
WIRING COLOR CODE FOR #14/9 TCC

MAST ARM:

MAIN STREET

WIRE COLORS
SOLID RED
SOLID YELLOW
SOLID GREEN
SOLID WHITE

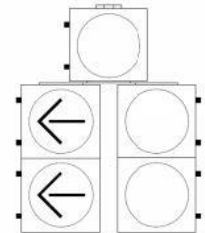
SIGNAL INDICATION
RED
YELLOW
GREEN
GROUND



MAIN STREET
PERMISSIVE LEFT

WIRE COLORS
SOLID BLACK
SOLID BLUE
SOLID WHITE

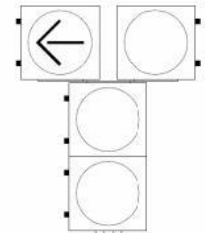
SIGNAL INDICATION
YELLOW
GREEN
NEUTRAL



MAIN STREET
FLASHING TOP "T"

WIRE COLORS
BLACK/RED TRACER
SOLID WHITE

SIGNAL INDICATION
RED
NEUTRAL

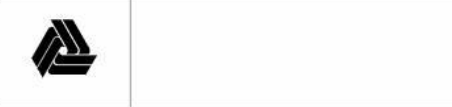


NOTES

1. HEAD CABLE SHALL BE MARKED WITH THE COLOR DESIGNATED FOR EACH DIRECTION OF TRAVEL. RED/NORTH, YELLOW/SOUTH, GREEN/EAST, BLUE/WEST.
2. SIDE STREET SIGNAL HEADS SHALL BE SPLICED INTO THE BLACK TRACER WIRES INSTEAD OF SOLID COLOR WIRES.
3. ALL SIGNAL HEADS INSTALLED ON MAST ARMS SHALL HAVE OWN SIGNAL CABLE AND SHALL BE SPLICED AT THE BASE.

SPECIFICATION 832033 832034	CATEGORY CODE ITEMS SIGNAL HEADS
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APPROVED	_____ CHIEF TRAFFIC ENGINEER
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**DELAWARE
DEPARTMENT OF TRANSPORTATION**

TRAFFIC CONSTRUCTION DETAILS

**SIGNAL WIRE CABLE
IDENTIFICATION COLOR CODE**

DETAIL NO.

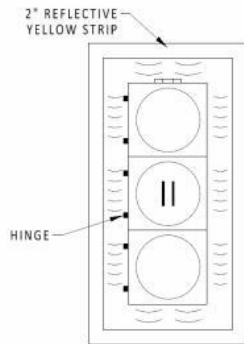
DE 832.001-02

DELAWARE DEPARTMENT OF TRANSPORTATION

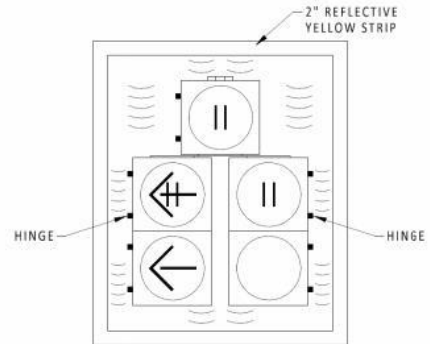
Contract No. DOT1801-TRAFFIC SIGNALS & ITS

Traffic Signals, Lighting and ITS

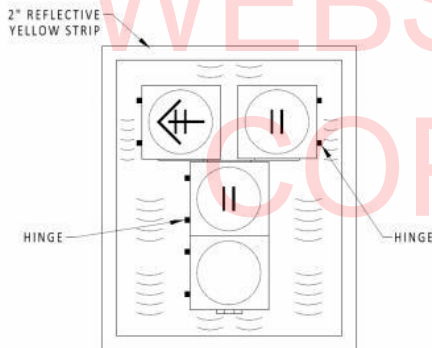
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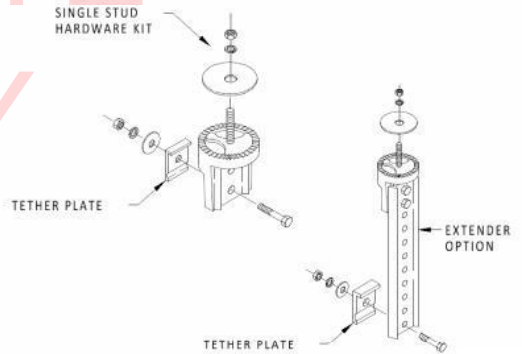
**ONE-WAY
THREE - SECTION
12" SIGNAL HEADS**



**ONE-WAY, FIVE-SECTION
12" SIGNAL HEADS**



**ONE-WAY
FOUR - SECTION
12" SIGNAL HEADS**




TETHER ASSEMBLY

LEGEND:

|| LOCATION OF TERMINAL BLOCK

NOTES:

1. ALL BOLTS SHALL BE STAINLESS STEEL.
2. ALL BACKPLATES SHALL BE POWDER-COATED ALUMINUM.
3. ALL BACKPLATES SHALL BE OUTLINED WITH A 2" REFLECTIVE YELLOW STRIP.

SPECIFICATION	CATEGORY	CODE	ITEMS
8.37007			SIGNAL HEADS
APPROVED	_____		
	CHIEF TRAFFIC ENGINEER		
			

**DELAWARE
DEPARTMENT OF TRANSPORTATION**
TRAFFIC CONSTRUCTION DETAILS
SIGNAL HEAD BACKPLATE DETAILS

DETAIL NO.

DE 8.37.004-01

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ITEM NUMBERS BY CATEGORY

To assist locating a particular item, the item numbers included in this contract have been divided into categories, as shown in the following table.

ITEM	DESCRIPTION	UOM	QTY
	CABINETS AND CABINET BASES		
835001	Cabinet Base Type F	EA	1
835002	Cabinet Base Type M	EA	4
835003	Cabinet Base Type P	EA	10
835004	Cabinet Base Type R	EA	2
847004	Lighting Control and Distribution Enclosure (100AMP)	EA	20
835502	Cabinet Base Type K (HIB)	EA	3
	CABLE AND SPLICES		
832001	Furnish & Install #4/0 AWG Stranded Copper	LF	500
832002	Furnish & Install #3/0 AWG Stranded Copper	LF	750
832003	Furnish & Install #2/0 AWG Stranded Copper	LF	1,000
832006	Furnish & Install 1- conductor #2 AWG Stranded Copper	LF	2,500
832007	Furnish & Install 1- conductor #4 AWG Stranded Copper	LF	1,700
832008	Furnish & Install 1- conductor #6 AWG Stranded Copper	LF	5,700
832009	Furnish & Install 1- conductor #8 AWG Stranded Copper	LF	25,000
832010	Furnish & Install 1- conductor #10 AWG Stranded Copper	LF	5,000
832025	Furnish & Install 4- conductor #18 AWG Shielded Opticom Cable	LF	6,500
832026	Furnish & Install 1- conductor #14 AWG Stranded Copper	LF	1,000
832027	Furnish & Install 2-Conductor #14 AWG Aluminum Shielded Cable	LF	20,000
832029	Furnish & Install #8/2 wire UF W/ground	LF	500
832031	Furnish & Install #6 Triplex Aluminum Service Cable	LF	2,000
832032	Furnish & Install 14/4 Traffic Control Cable	LF	700
832033	Furnish & Install 14/9 Traffic Control Cable	LF	8,000
832034	Furnish & Install 14/16 Traffic Control Cable	LF	6,000
846001	Furnish & Install Loop Wire 1-conductor # 14 AWG encased in 1/4" Flexible Tubing in a Loop Sawcut	LF	6,000
846002	Furnish & Install a 1-1/2 inch Galvanized Rigid Metal Conduit Detector Sleeve with Loop Wire	LF	1,000
832505	Furnish & Install #6 AWG Solid Copper	LF	10,000
832506	Furnish & Install #1/0 AWG Stranded Copper	LF	1,500
832507	Furnish & Install 14/5 Traffic Control Cable	LF	5,200
832504	Furnish & Install #8 THHN Stranded Copper	LF	3,000
832500	Splicing of Electrical Cable Underground	EA	800
832501	Splicing of Electrical Cable Above Ground	EA	250
832502	Triplex Splice	EA	1,000
	CONCRETE		
202000	Excavation & Embankment	CY	250

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209005	Furnishing Borrow Type "C" for Pipe, Utility Trench, and Structure Backfill	CY	35
301001	Graded Aggregate Base Course, Type B	CY	75
301002	Graded Aggregate Base Course, Type B, Patching	CY	100
401026	Bituminous Concrete, Superpave, Type C, 160 Gyrations, PG 64-22, Patching	TON	50
401027	Bituminous Concrete, Superpave, Type B, 160 Gyrations, PG 64-22, Patching	TON	75
401028	Bituminous Concrete, Superpave, Bituminous Concrete Basecourse, 160 Gyrations, PG 64-22 Patching	TON	125
503001	Patching P.C.C. Pavement, 6' to 15', Type A	SY	85
503002	Patching P.C.C. Pavement, Greater Than 15' To 100', Type B	SY	50
503006	Dowel Bars	EA	140
701011	Portland Cement Concrete Curb, Type 1 - 4	LF	85
701013	Portland Cement Concrete Curb, Type 1- 8	LF	340
701014	Portland Cement Concrete Curb, Type 2	LF	1,250
701018	Integral Portland Cement Concrete Curb and Gutter, Type 1 - 8	LF	85
701019	Integral Portland Cement Concrete Curb and Gutter, Type 2	LF	35
701022	Integral Portland Cement Concrete Curb and Gutter, Type 3 - 6	LF	85
701023	Integral Portland Cement Concrete Curb and Gutter, Type 3 - 8	LF	85
702000	Triangular Channelizing Island	SF	2,500
705001	Portland Cement Concrete Sidewalk, 4"	SF	2,300
705002	Portland Cement Concrete Sidewalk, 6"	SF	1,450
705007	Sidewalk Surface Detectable Warning System	SF	700
705008	Curb Ramp, Type 1	SF	700
705009	Curb Ramp, Type 2, 3 and/or 4	SF	2,500
705010	Curb Ramp, Type 5	SF	2,000
211001	Removal of Existing Portland Cement Concrete Pavement, Curb, & Sidewalk	SY	50
762000	Saw Cutting, Bituminous Concrete	LF	2,000
762001	Saw Cutting, Concrete, Full Depth	LF	340
	CONDUIT		
831542	Furnish and Install 2" HDPE SDR-13.5 Conduit (Bore)	LF	1,000
831543	Furnish and Install 2-1/2" HDPE SDR-13.5 Conduit (Bore)	LF	500
831544	Furnish and Install 3" HDPE SDR-13.5 Conduit (Bore)	LF	1,500
831545	Furnish and Install 4" HDPE SDR-13.5 Conduit (Bore)	LF	3,000
831505	Furnish and Install 1" Schedule 80 PVC Conduit (Open Cut)	LF	200
831560	Furnish and Install 1-1/2" Schedule 80 PVC Conduit (Open Cut)	LF	200
831504	Furnish and Install 2" Schedule 80 PVC Conduit (Open Cut)	LF	250
831503	Furnish and Install 2-1/2" Schedule 80 PVC Conduit (Open Cut)	LF	300
831502	Furnish and Install 3" Schedule 80 PVC Conduit (Open Cut)	LF	500
831501	Furnish and Install 4" Schedule 80 PVC Conduit (Open Cut)	LF	800
831512	Furnish and Install 1" Schedule 80 PVC Conduit (Trench)	LF	200
831561	Furnish and Install 1-1/2" Schedule 80 PVC Conduit (Trench)	LF	300
831513	Furnish and Install 2" Schedule 80 PVC Conduit (Trench)	LF	500

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831514	Furnish and Install 2-1/2" Schedule 80 PVC Conduit (Trench)	LF	3,000
831515	Furnish and Install 3" Schedule 80 PVC Conduit (Trench)	LF	1,800
831516	Furnish and Install 4" Schedule 80 PVC Conduit (Trench)	LF	1,500
831517	Furnish and Install 1" Schedule 80 PVC Conduit (On Structure)	LF	300
831562	Furnish and Install 1-1/2" Schedule 80 PVC Conduit (On Structure)	LF	350
831518	Furnish and Install 2" Schedule 80 PVC Conduit (On Structure)	LF	400
831519	Furnish and Install 2-1/2" Schedule 80 PVC Conduit (On Structure)	LF	450
831520	Furnish and Install 3" Schedule 80 PVC Conduit (On Structure)	LF	1,000
831521	Furnish and Install 4" Schedule 80 PVC Conduit (On Structure)	LF	1,200
831532	Furnish and Install 1" Galvanized Steel Conduit (Open Cut)	LF	200
831563	Furnish and Install 1-1/2" Galvanized Steel Conduit (Open Cut)	LF	200
831533	Furnish and Install 2" Galvanized Steel Conduit (Open Cut)	LF	300
831534	Furnish and Install 2-1/2" Galvanized Steel Conduit (Open Cut)	LF	400
831535	Furnish and Install 3" Galvanized Steel Conduit (Open Cut)	LF	1,000
831536	Furnish and Install 4" Galvanized Steel Conduit (Open Cut)	LF	1,500
831522	Furnish and Install 1" Galvanized Steel Conduit (Trench)	LF	200
831564	Furnish and Install 1-1/2" Galvanized Steel Conduit (Trench)	LF	300
831523	Furnish and Install 2" Galvanized Steel Conduit (Trench)	LF	500
831524	Furnish and Install 2-1/2" Galvanized Steel Conduit (Trench)	LF	3,000
831525	Furnish and Install 3" Galvanized Steel Conduit (Trench)	LF	1,800
831526	Furnish and Install 4" Galvanized Steel Conduit (Trench)	LF	1,500
831527	Furnish and Install 1" Galvanized Steel Conduit (Bore)	LF	100
831565	Furnish and Install 1-1/2" Galvanized Steel Conduit (Bore)	LF	200
831528	Furnish and Install 2" Galvanized Steel Conduit (Bore)	LF	250
831529	Furnish and Install 2-1/2" Galvanized Steel Conduit (Bore)	LF	350
831530	Furnish and Install 3" Galvanized Steel Conduit (Bore)	LF	500
831531	Furnish and Install 4" Galvanized Steel Conduit (Bore)	LF	750
831537	Furnish and Install 1" Galvanized Steel Conduit (On Structure)	LF	300
831566	Furnish and Install 1-1/2" Galvanized Steel Conduit (On Structure)	LF	300
831538	Furnish and Install 2" Galvanized Steel Conduit (On Structure)	LF	400
831539	Furnish and Install 2-1/2" Galvanized Steel Conduit (On Structure)	LF	450
831540	Furnish and Install 3" Galvanized Steel Conduit (On Structure)	LF	1,000
831541	Furnish and Install 4" Galvanized Steel Conduit (On Structure)	LF	1,200
831569	Furnish & Install Second and Subsequent Additional 1" PVC Conduits in Trench or Open Cut	LF	100
831570	Furnish & Install Second and Subsequent Additional 1-1/2" PVC Conduits in Trench or Open Cut	LF	150
831571	Furnish & Install Second and Subsequent Additional 2" PVC Conduits in Trench or Open Cut	LF	200
831572	Furnish & Install Second and Subsequent Additional 2-1/2" PVC Conduits in Trench or Open Cut	LF	300
831573	Furnish & Install Second and Subsequent Additional 3" PVC Conduits in Trench or Open Cut	LF	500
831574	Furnish & Install Second and Subsequent Additional 4" PVC Conduits in Trench or Open Cut	LF	1,000

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831575	Furnish & Install Second and Subsequent Additional 2" HDPE 13.5 SDR Conduit Conduits in Trench or Directional Bore	LF	500
831576	Furnish & Install Second and Subsequent Additional 2-1/2" HDPE 13.5 SDR Conduit Conduits in Trench or Directional Bore	LF	500
831577	Furnish & Install Second and Subsequent Additional 3" HDPE 13.5 SDR Conduit Conduits in Directional Bore	LF	500
831578	Furnish & Install Second and Subsequent Additional 4" HDPE 13.5 SDR Conduit Conduits in Directional Bore	LF	1,000
831579	Furnish & Install Second and Subsequent Additional 1" Galvanized Steel Conduit in Trench or Open Cut	LF	100
831580	Furnish & Install Second and Subsequent Additional 1-1/2" Galvanized Steel Conduit in Trench or Open Cut	LF	100
831581	Furnish & Install Second and Subsequent Additional 2" Galvanized Steel Conduit in Trench or Open Cut	LF	200
831582	Furnish & Install Second and Subsequent Additional 2-1/2" Galvanized Steel Conduit in Trench or Open Cut	LF	300
831583	Furnish & Install Second and Subsequent Additional 3" Galvanized Steel Conduit in Trench or Open Cut	LF	500
831584	Furnish & Install Second and Subsequent Additional 4" Galvanized Steel Conduit in Trench or Open Cut	LF	1,000
831585	Furnish & Install Second and Subsequent Additional 1" Galvanized Steel Conduit in Directional Bore	LF	100
831586	Furnish & Install Second and Subsequent Additional 1-1/2" Galvanized Steel Conduit in Directional Bore	LF	200
831587	Furnish & Install Second and Subsequent Additional 2" Galvanized Steel Conduit in Directional Bore	LF	250
831588	Furnish & Install Second and Subsequent Additional 2-1/2" Galvanized Steel Conduit in Directional Bore	LF	300
831589	Furnish & Install Second and Subsequent Additional 3" Galvanized Steel Conduit in Directional Bore	LF	500
831590	Furnish & Install Second and Subsequent Additional 4" Galvanized Steel Conduit in Directional Bore	LF	750
	ELECTRIC SERVICE		
842005	Removal of Electrical Service on Wood or Metal Pole	EA	10
842501	Furnish & Install Electrical Utility Service Equipment (100 AMP)	EA	100
842502	Furnish & Install Electrical Utility Service Equipment (200 AMP)	EA	100
835500	Furnish & Install Additional Disconnect Switch	EA	10
	JUNCTION WELLS		
830001	Conduit Junction Well, Type 1, Precast Concrete	EA	250
830002	Conduit Junction Well, Type 4, Precast Concrete	EA	50
830003	Conduit Junction Well, Type 5, Precast Concrete	EA	14
830004	Conduit Junction Well, Type 7, Precast Polymer Concrete	EA	10
830008	Adjust or Repair Existing Conduit Junction Well	EA	40
830009	Relocation of Existing Conduit Junction Well	EA	20

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830011	Furnish & Install Frame & Lid, for Junction Well, Type 1	EA	7
830012	Furnish & Install Frame & Lid, for Junction Well, Type 4	EA	4
830013	Furnish & Install Frame & Lid, for Junction Well, Type 5	EA	2
830015	Furnish & Install Precast Polymer Cover for Junction Well, Type 7	EA	4
833001	Bonding & Grounding Existing Junction Well	EA	100
	MISCELLANEOUS		
763655	Performance & Payment Bond, Open End Signal Contract	LS	1
	MAINTENANCE OF TRAFFIC		
802003	Arrow Panels, Type C	EA-DY	200
803001	Furnish & Maintain Portable Changeable Message Board	EA-DY	280
804001	Furnish & Maintain Portable Light Assembly (Flood Lights)	EA-DY	100
805001	Plastic Drums	EA-DY	6,000
806001	Traffic Officers	HR	800
808002	Furnish & Maintain Truck Mounted Attenuator, Type II	EA-DY	200
808500	Furnish and Maintain Straight Boom Lift, Up to 80', 4WD (Hourly)	EA-HR	60
808501	Furnish and Maintain Straight Boom Lift, Up to 80', 4WD (Daily)	EA-DY	600
810001	Temporary Warning Signs and Plaques	EA-DY	1,600
811001	Flagger, New Castle County, State	HR	500
811002	Flagger, Kent County, State	HR	170
811003	Flagger, Sussex County, State	HR	340
811013	Flagger, New Castle County, State, Overtime	HR	50
811014	Flagger, Kent County, State, Overtime	HR	17
811015	Flagger, Sussex County, State, Overtime	HR	35
813001	Temporary Barricades, Type III	LF-DY	2,400
813501	Temporary Sidewalk – Type 2	LF	250
813502	Relocate Temporary Sidewalk – Type 2	LF	500
813503	Temporary Pedestrian Pathway	SY	200
831500	Pedestrian Channelizing Barricade System	LF/DY	700
	POLES, MAST ARMS, POLE BASES		
833002	Furnish & Install Ground Rod	EA	40
834001	Pole Base Type 3	EA	20
834002	Pole Base Type 3A	EA	20
834003	Pole Base Type 3B	EA	20
834004	Pole Base Type 3C	EA	8
834005	Pole Base Type 4A	EA	60
834006	Pole Base Type 6	EA	35
834007	Pole Base Extension	CF	70
834512	Pole Base Type 1	EA	4
834513	Pole Base Type 2	EA	6
834514	Pole Base Type 2A	EA	6
834515	Pole Base Type 2B	EA	6
834511	Pole Base Type 4B	EA	15
834008	Sheeting for Pole Base	EA	6

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836001	Installation of Steel Pole (Less than 40')	EA	25
836002	Installation of Steel Pole (Equal to or Greater than 40')	EA	4
836502	Furnish and Install Pedestal Pole	EA	60
836504	Installation of Steel Mast Arm Pole with Single or Twin Mast arms up to 60'	EA	17
836505	Furnish 10' Pedestal Pole	EA	50
836506	Furnish 14' Pedestal Pole	EA	20
836507	Furnish Pedestal Pole Transformer Base	EA	30
839002	Cutting of Wood Pole	EA	10
839500	Furnish and Install Wood Pole, Class II (Heavy) – 30'	EA	4
839501	Furnish and Install Wood Pole, Class II (Heavy) – 40'	EA	6
839502	Furnish and Install Wood Pole, Class II (Heavy) – 50'	EA	8
839503	Furnish and Install Wood Pole, Class III – 30'	EA	4
839504	Furnish and Install Wood Pole, Class III – 40'	EA	6
839505	Furnish and Install Wood Pole, Class III – 50'	EA	8
841001	Furnish and Install Weatherhead, up to 3", on Steel Pole	EA	12
836500	Installation of Steel Mast Arm Pole with Single Mast Arm Greater than 70'	EA	10
	SIGNAL HEADS, PEDESTRIAN BUTTONS, EMERGENCY PREEMPTION		
837001	Furnish & Install 8" LED Signal Head Section, Rigid Mount	EA	7
837002	Furnish & Install 12" LED Signal Head Section, Rigid Mount	EA	145
837003	Furnish & Install 8" LED Signal Head Section, Span Mount	EA	10
837004	Furnish & Install 12" LED Signal Head Section, Span Mount	EA	220
837005	Furnish & Install 8" LED Traffic Signal Head Indication Module	EA	4
837006	Furnish & Install 12" LED Traffic Signal Head Indication Module	EA	35
837007	Furnish & Install Signal Head Backplate	EA	100
837008	Furnish & Install 16" LED Countdown Pedestrian Signal	EA	70
837009	Furnish & Install 16" LED Pedestrian Signal Head Indication Module	EA	7
837010	Furnish & Install Pedestrian Pushbutton with Sign	EA	70
837011	Realign or Slide Existing Signal Head or Opticom Detector	EA	35
844001	Furnish & Install Opticom Emergency Preemption Detector	EA	40
837501	Installation & Removal of Traffic Signal Head Indication/LED Module	EA	100
837502	Installation & Removal of Pedestrian Signal Head Indication/LED Module	EA	100
837503	Furnish 8" LED Signal Head Section	EA	15
837504	Furnish 12" LED Signal Head Section	EA	90
837505	Furnish 8" LED Traffic Signal Head Indication Module	EA	45
837506	Furnish 12" LED Traffic Signal Head Indication Module	EA	120
837507	Furnish 16" LED Countdown Pedestrian Signal Head	EA	40
837508	Furnish 16" LED Countdown Pedestrian Signal Head Indication Module	EA	40
837509	Furnish Pedestrian Pushbutton with Sign	EA	60
837510	Furnish Signal Head Backplate	EA	80
844504	Furnish and Install Microwave Detection Device	EA	20
844505	Furnish and Install Video Detection Device	EA	20

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844506	Furnish and Install Thermal Detection Device	EA	5
844507	Furnish Video Detection Device	EA	10
844508	Furnish Thermal Detection Device	EA	5
844509	Furnish Microwave Detection Device	EA	10
	SIGNS		
820018	Removal of Breakaway I-Beam Posts	EA	6
820020	Remove Sign Panel on Breakaway I-Beam Sign Support	EA	5
822002	Installation of Sign on/over Highway Structure	SF	300
822009	Removal of Sign on/over Structure	SF	200
823001	Installation of Sign on Span Wire or Mast Arm	EA	40
823003	Removal of Sign on Span Wire or Mast Arm	EA	30
819500	Furnish & Install Road Sign on Single Post	EA	50
819501	Furnish & Install Road Sign on Multiple Post	SF	400
834508	Remove Sign on Roadside I-Beam Structure	SF	200
822500	Install Overhead Sign	EA	50
	SOIL		
908514	Sodding	SY	300
908001	Topsoil	TON	100
908020	Erosion Control Blanket Mulch	SY	3,000
908021	Turf Reinforcement Matting, Type 1	SY	800
	SPAN, MESSENGER, AND GUY WIRE		
838001	Furnish & Install Span Wires, 7/16"	LF	4,000
838002	Furnish & Install Span Wires, 1/4"	LF	1,000
838003	Furnish & Install Dead End Messenger Wire Attachment	EA	4
838006	Adjustment of Span or Messenger Wire	EA	10
838008	Transfer of Existing Span or Messenger Attachment	EA	4
838009	Removal of Messenger Wire, Cable & Hardware	LF	1,000
840001	Furnish & Install Down Guy & Anchor	EA	35
838500	Removal of Span Wire Attachment	EA	10
	REMOVAL		
830010	Removal of Existing Junction Well	EA	20
831011	Removal of Conduit from Wood Pole	LF	200
832035	Removal of Cable from Conduit or Traffic/Lighting Pole	LF	3,000
834501	Partial Removal of Concrete Pole Bases & Cabinet Foundations	CY	10
836005	Remove Steel Pole (Equal to or Greater than 40')	EA	2
836006	Remove Pedestal Pole	EA	25
836503	Remove Steel Pole (Equal to or Greater than 15' & less than 40')	EA	16
839003	Removal of Wood Pole	EA	10
840005	Removal of Down Guy and Anchor	EA	8
840006	Removal of Overhead Guy	EA	2
842500	Installation or Removal of Pedestrian Pushbutton on Wood or Metal Pole	EA	100
847001	Installation or Removal of Pole or Post Mounted Cabinet	EA	4

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847002	Installation or Removal of Base or Pad Mounted Cabinet	EA	4
838503	Removal of Cable from Messenger Wire	LF	1,000
838504	Removal of Signal Head or Opticom Detector from Span Wire or Mast Arm	EA	120
837500	Removal of Signal or Pedestrian Head from Pole or Pedestal	EA	50
	LIGHTING		
834504	Light Standard Attachments	EA	100
834506	Removal of Street Lighting System	EA	50
850011	Removal of Luminaire	EA	50
850520	Luminaire (LED), 150 Watts HPS Equivalent	EA	10
850521	Luminaire (LED), 250 Watts HPS Equivalent	EA	100
850522	Luminaire (LED), 400 Watts HPS Equivalent	EA	10
850523	Luminaire (LED), 640 Watts HPS Equivalent (High Mast Only)	EA	50
850524	LED Wall Pack, 250 Watts HPS Equivalent	EA	5
850525	LED Wall Pack, 400 Watts HPS Equivalent	EA	5
850526	LED Wall Pack, 75 Watts HPS Equivalent	EA	10
850827	LED Wall Pack, 150 Watts HPS Equivalent	EA	5
851001	Aluminum Lighting Standard with Single Davit Arm, 30' Pole	EA	50
851003	Aluminum Lighting Standard with Single Davit Arm, 40' Pole	EA	50
851502	Aluminum Lighting Single Davit Arm, 8' Arm Spread	EA	50
851503	Aluminum Lighting Single Davit Arm, 12' Arm Spread	EA	50
851504	Aluminum Lighting Single Davit Arm, 15' Arm Spread	EA	50
851506	Aluminum Lighting Standard, 30' Pole	EA	100
851507	Aluminum Lighting Standard, 40' Pole	EA	100
851509	Aluminum Lighting Standard with Single Truss Arm, 30' Pole	EA	100
851520	Aluminum Lighting Single Davit Arm, 10' Arm Spread	EA	100
851522	Aluminum Lighting Single Davit Arm, 20' Arm Spread	EA	100
	PAVEMENT MARKINGS		
817002	Permanent Pavement Striping, Symbol/Legend Alkyd-Thermoplastic	SF	1,500
817003	Temporary Markings, Paint, 4"	LF	170
817004	Temporary Markings, Paint Symbol/Legend	SF	840
817005	Permanent Pavement Striping, Alkyd-Thermoplastic, 5"	LF	840
817006	Permanent Pavement Striping, Alkyd-Thermoplastic, 12"	LF	700
817007	Retroreflective Preformed Patterned Markings, 12"	LF	70
817008	Blackout Tape, 6"	LF	35
817009	Temporary Markings, Tape, 4"	LF	170
817010	Temporary Markings, Tape, Words/Symbols	SF	840
817011	Blackout Tape, 8"	LF	35
817012	Retroreflective Preformed Patterned Markings, Symbol/Legend	SF	1,350
817013	Permanent Pavement Marking, Epoxy Resin Paint White/Yellow, 5"	LF	20,000
817014	Permanent Pavement Striping, Epoxy Resin Paint, White/Yellow, 10"	LF	4,000
817571	Retroreflective Thermoplastic Markings, Bike Symbol, Poured in Place Using Template	EA	7

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817572	Retroreflective Thermoplastic Markings, Pedestrian Symbol, Poured in Place Using Template	EA	2
817573	Retroreflective Thermoplastic Markings, Handicap Symbol, Poured in Place Using Template	EA	3
817018	Permanent Pavement Striping, Epoxy Resin Paint, Black, 3"	LF	2,500
817019	Permanent Pavement Striping, Epoxy Resin Paint, Black, 5"	LF	5,000
817020	Retroreflective Preformed Patterned Markings, 5"	LF	170
817021	Retroreflective Preformed Patterned Markings, 10"	LF	2,500
817022	Retroreflective Preformed Patterned Markings, 8"	LF	340
817023	Retroreflective Preformed Patterned Contrast Markings, 13"	LF	120
817024	Permanent Pavement Striping, Epoxy Resin Paint, Black, 9"	LF	2,500
817026	Painting of White or Yellow 5" Line	LF	5,000
817027	Raised/Recessed Pavement Marker	EA	500
817029	Removal of Raised/Recessed Pavement Marker Lens	EA	425
817030	Removal of Raised/Recessed Pavement Marker Housing	EA	425
817031	Removal of Pavement Striping	SF	1,700
817033	Temporary Markings, Tape, 6"	LF	6,000
825001	Tubular Markers	EA	250

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