

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MAINTENANCE AND OPERATIONS



PLANS AND SPECIFICATIONS FOR
Contract Number: T201687701
Federal Aid Project Number: ESTP-2016(21)
Guardrail Repair, New Castle County, Open End, FY16-18

PLANS PREPARED BY: he ke
NORTH DISTRICT CONTRACTS ENGINEER

DATE: 1/6/16

DATE RECOMMENDED: 1/6/16

R. Schilling
NORTH DISTRICT DESIGN ENGINEER



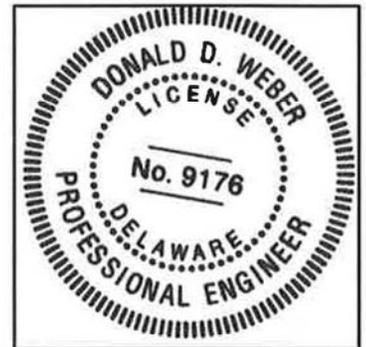
DATE RECOMMENDED: 6 January 2016

Wendy Galdo
NORTH DISTRICT MAINTENANCE ENGINEER



DATE APPROVED: 1/8/16

[Signature]
NORTH DISTRICT ENGINEER



DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

CONTRACT DESCRIPTION

The purpose of this contract is to repair damaged guardrail, guardrail components and end treatments as required for all State maintained roads within DelDOT North District. This includes interstate roads I-95, I-295 and I-495, and all other State maintained roads within North District. The work shall include but not be limited to Maintenance of Traffic, removal of damaged guardrail, components and end treatments, repair/replacement of damaged guardrail, components and end treatments, topsoil, seeding and mulching as required or directed by the Engineer on the individual work orders.

The specific work sites for guardrail repairs are not listed herein, but will be assigned as available by North District Maintenance.

The contract also includes removal of existing guardrail turned down ends, replacement with new attenuators, curb removal and replacement, and related paving and grading as shown on the plans. The locations for the turned down removal work are specifically detailed in the plans and include work in both North and Canal Maintenance Districts. Additional locations may be added as directed by the Engineer.

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Guardrail Repair, North District, Open End, FY16-18

GENERAL NOTES FOR OVERALL CONTRACT

1. All work shall be performed in accordance with the Delaware Department of Transportation Standard Specifications dated August 2001 (as amended by the Supplemental Specifications), the Special Provisions, the Standard Construction Details, the current Delaware MUTCD (including revisions up to the day of contract advertising) and these Notes.
2. This contract shall be for a period of two (2) years from the date of Initial Notice to Proceed, with the option to extend the contract for one (1) additional one-year period. The one-year extension must be approved by both parties in writing, at least 30 days prior to the expiration of the existing contract. The Performance Bond shall be submitted with the contract extension and shall be subject to any such agreed upon renewal for the extension period. Failure on the part of the Contractor to submit the Performance Bond for the extension period prior to the last working day before end of the previous period may result in the contract being cancelled. It shall be the contractor's responsibility to obtain the forms necessary to renew the Performance Bond each year the contract is in force.
3. An updated Performance Bond shall be submitted at the beginning of each fiscal year. Failure on the part of the Contractor to submit the Performance Bond shall result in the Contract being cancelled. Costs to be included in the price bid for item 763000, Initial Expense.
4. Whenever the word "Contractor" is used in this contract, it shall refer to the person or persons, company or corporation furnishing the services required.
5. Whenever the word "Department" or "Engineer" is used, it shall refer to the person or persons, representing the Delaware Department of Transportation (DelDOT).
6. Tasking of work for Fiscal Years relevant to this contract are contingent upon authorization of Federal and State funding.
7. Section 101.91(4) is amended. There will not be a winter shutdown from December 16th to March 15th. The Department reserves the right to issue work and charge time between these dates.
8. No utility relocation involvement is anticipated. Should any conflicts be encountered during construction requiring adjustment and/or relocation of the agencies' existing 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.
9. Environmental permits are not required for this work provided that waters or wetlands, under the jurisdiction of the U.S. Army Corps of Engineers and/or DNREC, are not impacted. If there is a question as to whether or not a water or wetland is jurisdictional, contact the DelDOT Environmental Studies Section at (302) 760-2264. In the event that a jurisdictional water or wetland is impacted, the Environmental Studies Section will be responsible for securing the appropriate permit authorizations.
10. 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 DelDOT Project Manager to secure such trespass needs.

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11. 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 DelDOT Railroad Coordinator and obtain written authorization before entering.
12. 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.
13. Underground utilities may be present at all locations. Therefore, all standard practices and procedures regarding utilities shall be followed. The Contractor shall contact Miss Utility of Delaware prior to starting each work order. The Contractor is responsible for the support and protection of all utilities when excavating. The Contractor is responsible for ensuring proper clearances, including safety clearances, from overhead utilities for construction equipment. The Contractor is advised to check the site for access purposes for his equipment, and make arrangements directly with utility companies for field adjustments for adequate clearances if necessary.
14. Contractor shall comply with DelDOT Standard Construction Details for all work performed in this Contract.
15. The Contractor shall not trespass on private property unless the District has acquired a "Temporary Trespass Agreement" from the property owner. If the work is within a permanent easement, the work shall not begin until the adjacent property owners have been notified. Prior to starting work on private property, the Contractor shall notify affected property owners of proposed work dates.
16. Work located within Municipalities requires a Town Agreement. The Engineer will contact DelDOT TEAM Support section at (302) 760-2251 prior to commencing work within Municipalities to process a town agreement.
17. Excavated material not needed on the project shall be removed at Contractor's expense.
18. Clearing and grubbing of grass, weeds, trees, shrubs, or other vegetation less than 6 inches in diameter shall be incidental to the applicable repair or replacement item. Grubbing activities performed in wetland areas requires environmental permit approvals.
19. The Contractor shall provide residents 24-hour prior written notice for all phases of contract work. This notice shall be given to all residents whose property is adjacent to the street on which work is to be performed. Failure to give notice will result in a suspension of work.
20. The Contractor shall acquire all necessary materials and equipment prior to starting work at a specific location. The equipment and material shall remain accessible and on-site until completion of work at that particular location unless prior approval from the Engineer is given.
21. Grass and soil areas within State right-of-way that have been damaged by equipment during this Contract shall be restored with topsoil, seed and mulch at Contractor's expense. Pay Items 908001 and 908014 are intended for use only on the "Turned Down End" removal portion of the project with details shown on plan sheets 19 through 76.

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22. Delete Section 104.05 of the DelDOT Standard Specifications, and replace with the following:

The Department reserves the right to, at any time prior to completion of the contract, issue plan revisions, make adjustments in Contract item quantities, or make such alterations considered necessary to satisfactorily complete the Contract.

The Department reserves the right to increase or decrease the quantities of Pay Items specified in the Contract. Such additions or deletions shall not be cause for an increase or decrease in Contract unit bid prices. The "Change" threshold of plus or minus 25%, as described in Subsection 104.05 of the DelDOT Standard Specifications dated August 2001 shall not apply to this Contract. Quantity increases or decreases of plus or minus 25% or greater shall not be justification for adjustments to unit prices.

The plan revisions and quantity adjustments described above do not invalidate the Contract or release the Contract surety. Payment for these changes shall exclude any amount for loss of anticipated profits alleged to result from the change.

When payment for the Contract work cannot be agreed upon by the Contractor and the Department prior to starting such work ordered, the Department may direct the Contractor to perform the work under Force Account provisions of Subsection 109.04. The Contractor will proceed immediately with the work so ordered and such direction shall neither invalidate the Contract, nor release the surety.

23. All additional work shall be performed using Contract unit bid prices. When contract unit bid prices are not available, then prices will be negotiated or performed by Force Account procedures in accordance with Section 109.04 of the DelDOT Standard Specifications.

24. Performance and progress of work:

Work to be performed under this Contract shall be generated through work orders issued to the Contractor by the DelDOT North District.

Execution of each work order is to begin within five (5) days of its being issued to the Contractor, unless required materials are not available. Work shall be completed within five (5) working days. For example, work associated with a work order issued on a Monday shall begin the following Monday and be completed by the end of that Friday. Non-availability of material shall be verified by at least three (3) different sources, with the verification formally presented in writing by the Contractor to the Department within five (5) working days. Contractor shall present shipping tickets, which upon verification North District, will establish the date of material availability for *Items 720588, 720585, and 720586*, and for any other previously unavailable Items. For the purpose of this Contract, Saturdays and Sundays are not considered working days.

If work does not commence, or non-availability of materials is not presented, in writing, within the specified five (5) working days, time charges equal to Liquidated Damages for the work order shall commence. If there is a verified non-availability of materials, time charges shall commence on the fifth (5th) working day following the delivery date.

The Department will attempt to assign work-orders in a manner that will keep the distance between job order locations to a minimum and in logical sequence.

Failure to complete a work order in the specified time shall constitute "failure to pursue the work" and subjects the Contractor to Liquidated Damages as outlined in Subsection 108.08 of the Standard Specifications. Each work-order is to be completed within five (5) working days. Additional Items and/or working days may be added to any work-order as needed, at the discretion of the Engineer. If work on a

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specific work order is not completed within the allotted time, Liquidated Damages will be assessed in accordance with Subsection 108.09 based on the total value of that work order.

25. The Contractor is reminded that Section 105.07 of the Standard Specifications requires the Contractor to maintain a competent Superintendent or Foreman on the job site at all times.
26. Payment will be monthly for the completed work as outlined in Section 109.07.
27. Payment for re-setting of posts knocked out of position is incidental to the applicable rail item, there will be no additional pay for re-setting posts knocked out of position.
28. Backfill holes created by post removal in compacted lifts. Providing and installing rail backup plates, bolts, nuts, and washers, providing and setting up traffic cones and/or patterns are incidental to the Bid Items. Cost for the placement of one-third (1/3) of a cubic yard of Portland Cement Concrete around the base of unstable posts, as directed by the Engineer, is incidental to the unit price bid for *Item 720007, Galvanized Steel Post or Item 720549, Galvanized Steel Post, extra-length*. Cost for excavating and disposing of up to one (1) cubic yard of material and/or grading (up to a 6" depth) to meet the manufacturer's slope requirements is incidental to the unit price bid for *Items 720585, 720586, or 720588*. If excavation in excess of one (1) cubic yard is required, then the entire excavation necessary to meet the grading requirements at the location in question will be measured and paid for under item 202000, Excavation and Embankment. If additional borrow is needed to construct the required grading zone, payment shall be made under Item 209006, (Borrow, Type F).
29. For the purpose of this Contract, the replacement guardrail type and location shall be identical to the damaged guardrail, except in the instances when an upgrade to the current standard of guardrail is deemed necessary, or when otherwise directed by the Engineer. The Engineer shall determine for the Contractor what, if any, guardrail elements shall be reused on each project. Any guardrail elements not to be reused, as determined by the Engineer, become the property of the Contractor. Removal and legal disposal of the unused elements, including, but not limited to, rails, posts, end attachments, and anchors are the responsibility of the Contractor with costs incidental to the item being repaired. Certain types of rope guardrail hardware, however, will become the Department's property, as specified by the Engineer. Pay Items 211002 and 607000 are intended for use only on the "Turned Down End" removal portion of the project with details shown on plan sheets 19 through 76.

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30. GUARDRAIL/END TREATMENT/ATTENUATOR, TYPE I

All bolts, washers and nuts shall be incidental to repairs.

a) LEVEL I REPAIR

A Level I Repair shall be used when the Attenuator is damaged up to, but not including, the third post.

The following Items shall be reused or replaced in-kind at the discretion of the Engineer:

A Level I Repair shall consist of the following:

Guardrail Extruder	(Reuse)
Bearing Plate	(Reuse)
Assembly Cable	(Reuse)
Strut	(Reuse)
Cable Anchor	(Reuse)
Deep Beam Guardrail	(Replace)
Post	(Replace)
Impact Head	(Reuse)
Ground Strut	(Reuse)
W-Beam Guardrail End	(Replace)

b) LEVEL II REPAIR

A Level II Repair shall be used when the Attenuator is damaged up to but not including the fifth post. The following Items shall be replaced in-kind unless otherwise directed by the Engineer.

All Items specified in Level I Repair plus the following:

Block	(Replace)
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c) LEVEL III REPAIR

A Level III Repair shall be a complete in-kind replacement of the attenuator unit.

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31. GUARDRAIL/END TREATMENT ATTENUATOR TYPE II

All bolts, washers and nuts shall be incidental to repairs.

a) LEVEL I REPAIR

A Level I Repair for Impact Attenuator Type II shall be used when the Attenuator is damaged to but not past the second post. The following Items shall be replaced in-kind, unless otherwise directed by the Engineer.

- Barrier (Terminal)
- Strut Assembly
- Cable
- Cable Anchor Bracket
- Back up Plate
- Post
- Bearing Plate
- Pipe
- Guardrail

b) LEVEL II REPAIR

A Level II Repair for Impact Attenuator Type II shall be used when the Attenuator is damaged to but not past the third post. The following Items shall be replaced in-kind, unless otherwise directed by the Engineer.

- Posts
- Block
- Back up Plate
- Guardrail

c) LEVEL III REPAIR

Shall be the complete in-kind replacement of the damaged unit, which shall include parts and labor to bring unit up to standard.

NOTE: If damage to 5' tube sleeve occurs, this will be considered a LEVEL II Repair. Soil Plate may also need to be replaced.

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32. GUARDRAIL/END TREATMENT ATTENUATOR TYPE III

All bolts, washers and nuts shall be incidental to repairs.

a) LEVEL I REPAIR

A Level I Repair for Impact Attenuator Type III shall be used when the Attenuator is damaged to but not including the second post. The following Items shall be replaced in-kind, unless otherwise directed by the Engineer.

Nose Plate/Rolled
Channel Strut
Side Plate
Bearing Plate
Pipe Sleeve
Cable Assembly
Bent Plate Sleeve
Post
Block

b) LEVEL II REPAIR

A Level II Repair for Impact Attenuator Type III shall be used when the Attenuator is damaged to but not including the third post, the following Items shall be replaced in-kind, unless otherwise directed by the Engineer.

All Items in Level I plus the following:

Spacer Channel
Guardrail
Block
Pipe
** Post
Tube Sleeve
Soil Plate

** Note: Tube sleeve and soil plate may need to be replaced in this level if damaged.

c) LEVEL III REPAIR - will be the complete in-kind replacement of the unit

33. Shop Drawings detailing the attenuator Items 720585 and 720586 shall be submitted and approved by the Department prior to any installation of these units in the field. Documentation verifying compliance with NCHRP 350 and/or MASH requirements should accompany the shop drawings.

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GENERAL MAINTENANCE OF TRAFFIC NOTES FOR OVERALL CONTRACT

1. All work shall be performed in a manner that will reasonably provide the least practicable obstruction to all road users, including vehicular, pedestrian and bicycle traffic, and shall conform to the requirements of the 2011 Delaware Manual on Uniform Traffic Control Devices, Part 6, including all revisions up to the date of advertisement for bids.
2. All shoulder or travel lane closures on I-95, I-495, I-295 and interstate ramps shall be performed during day-time between 9:00 AM to 3:00 PM, Monday through Friday. All other lane and shoulder closures shall be performed during 8:00 AM and 4:00 PM unless otherwise directed by the Engineer with direction from the North District Safety Officer. Any deviation from this time restriction must be approved by the North District Engineer and DelDOT Safety Officer prior to commencement of work.
3. No lane closures will be permitted on holidays, holiday weekends or during special events as outlined in Section 743 of the Standard Specifications and/or the Transportation Management Plan, unless approved by the Engineer with consultation with the Safety Section.
4. The Contractor shall have an American Traffic Safety Services Association (ATSSA) Certified Supervisor assigned to this project. The Contractor's general superintendent for this project or another ATSSA certified member of the Contractor's project staff shall not be the ATSSA supervisor. Costs for the ATSSA Supervisor shall be incidental to Item 763000, Initial Expense.
5. If a road closure is required, the Contractor shall be required to submit the proposed detour route to the DelDOT Safety Officer for approval, unless specified otherwise in the plans. Payment for detour plan preparation shall be included in the bid price for Item 763000 (Initial Expense). The Department will coordinate with the Safety Section and be responsible for the necessary notifications. The detour route requires approval by the Department prior to closure. A 30-day detour review lead time shall be required for any proposed detour. The Contractor shall be responsible for furnishing and maintaining the Maintenance of Traffic apparatus at the closure (i.e. Type III Barricade, Road Closed signs, etc.) and all signs. The Contractor shall be responsible for placement of detour trailblazers. Payment will be under Item 743024 (Temporary Warning Signs and Plaques).
6. Any existing signs that conflict with any construction signs shall be completely covered by the Contractor as needed, or as directed by the Engineer. Costs to supply, install, and remove covers are incidental to Item 743024. The Contractor shall stake out locations of warning signs in the field and receive approval from the Engineer for the location and method of mounting prior to ordering the signs. The Contractor, with the Engineer, shall inventory all existing signs within the Contract limits. Signs that must remain in place during the project shall be maintained by the Contractor. Any other existing signs shall be removed and properly stored by the Contractor to prevent loss or damage.
7. Unless details are provided in the plans, the Contractor shall submit a site-specific Traffic Control Plan for approval two (2) weeks before the start of each location. The Traffic Control Plan must be in accordance with the latest revision of the Delaware Manual on Uniform Traffic Control Devices, Part 6, and must clearly indicate orientation of traffic control devices to be used for each site.

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8. The safety measures outlined within this Contract and the Delaware MUTCD are not necessarily sufficient in every instance to guarantee the protection of the traveling public or the persons working on the project. Therefore, the provisions of this Contract do not relieve the Contractor of the sole responsibility for the safety of all persons working within or traveling through the work zone throughout the duration of the project. The Contractor shall implement any additional safety measures that are not expressly required by the Contract and are necessary to ensure the safety of all persons. The Contractor shall submit to the Engineer justification for deviations from the Traffic Control Plan or Traffic Management Plan. Final approval of the deviations or additions shall rest with the Engineer. All costs for this work shall be incidental to Item 763000 (Initial Expense).
9. Any deficiencies related to temporary traffic control that are reported to the Contractor in writing shall be corrected within 24 hours or as directed by the Engineer. Corrective actions on severe deficiencies as determined by the Engineer shall be taken immediately unless otherwise directed by the Engineer. Failure to comply will result in non-payment for those devices that are found to be deficient for the duration of the deficiency. Severe deficiencies that are not corrected immediately could result in possible suspension of work until items identified are brought back into compliance and/or the holding of the pay estimate until the severe deficiencies are corrected.
10. At the end of each workday, the Contractor shall correct all pavement edge drop-offs in accordance with the Delaware MUTCD. This corrective work shall be accomplished with Hot Mix Temporary Road Material. All ruts and potholes shall be filled with TRM as soon as possible, but no later than by the end of each workday. Placement of TRM shall be completed in accordance with the applicable sections of the Delaware Standard Specifications. If temporary elimination of a drop-off hazard cannot be accomplished, then the area shall be properly marked and protected with additional temporary barriers, barricades, warning signs, etc. as required by the Delaware MUTCD, and as approved by the Engineer. Payment for all work described in this Project Note shall be incidental to applicable Maintenance of Traffic Pay Items in the Contract. There shall be no additional compensation provided to the Contractor for this work.
11. If the Contractor does not complete the contract work within the contract completion time as listed on the Work Order (including approved time extensions), the Contractor shall be responsible for providing the necessary temporary traffic control devices that are required to complete any remaining work. The cost of such temporary traffic control shall be borne by the Contractor. No additional payment will be made to the Contractor to maintain traffic in accordance with the Delaware MUTCD, specifications, and these project notes.
12. All equipment shall be removed from the job sites on a daily basis, except when allowed by the Engineer.
13. All temporary traffic control devices used on all highways open to the public in this State shall be crashworthy in accordance with the National Cooperative Highway Research Program (NCHRP) Report 350 and the memorandum issued August 28, 1998 by The USDOT Federal Highway Administration Information: Crash Tested Work Zone Traffic Control Devices and/or MASH. It is the requirement of the Department that such certification be submitted for traffic control devices used on all projects, not just those involving the National Highway System.
14. The Department reserves the right to stop the Contractor's operations, if in the opinion of the Engineer the Contractor's operations are not in compliance with the Delaware MUTCD, the specifications, or the Contract Documents. The Department also reserves the right to stop the Contractor's operations if the Engineer deems the operation unsafe.

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15. The Department will not make payment to the Contractor for any and all temporary traffic control devices where the Contractor sets up temporary traffic control to perform work, but fails to perform any work.
16. The Contractor shall maintain access to and along pedestrian facilities at all times during construction. Earth, stone, and gravel surfaces are not acceptable for providing pedestrian access. Where pedestrian routes are closed or blocked, alternate pedestrian access shall be provided using TA-28 and/or TA-29 of the 2011 Delaware Manual on Uniform Traffic Control Devices or to the satisfaction of the Engineer. Pedestrian detour routes or alternate pedestrian facilities shall consist of ADA compliant facilities to the level of which exists on the pedestrian route. A smooth, continuous hard surface shall be provided throughout the entire length and width of the pedestrian route throughout construction. If new paving and/or base course is required, payment shall be made under Items 302008 and 401821. The cost for any other necessary provisions shall be incidental to Item 763000 (Initial Expense).
17. Item 743000, Maintenance of Traffic – Lump Sum, is not intended to be a bid item on this contract. Any costs related to Maintenance of Traffic that the Contractor feels would have been bid in this lump sum item shall be included in the various individual maintenance of traffic bid items proposed in the contract.
18. All flaggers utilized by the Contractor for this project shall be ATSSA certified by a Department approved certification program. All flaggers shall have certification cards and photo identification with them while working. Absence of a certification card will be justification for flagger dismissal from the site and corresponding suspension of work. All garments worn by flaggers shall comply with applicable regulations for visibility and reflectivity. All construction and Contractor vehicles and self-propelled equipment shall be equipped with an operating roof mounted amber flashing light or bar meeting the requirements of the Delaware MUTCD. For locations requiring a flagging operation, the flagger will be paid using the bid hourly rate under the applicable flagger Pay Item.
19. No separate payment shall be made for use of traffic cones. Traffic cones and/or work associated with their use, such as set up, removal, cleaning, etc., shall be incidental to the work for which they protect.
20. A Truck mounted attenuator, Type II (Item 743010) shall be required on roads for shoulder work, travel lane work and other operations as outlined in the DelDOT MUTCD, or as directed by the Engineer.

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ITEM SUMMARY

<u>ITEM #</u>	<u>ITEM DESCRIPTION</u>	<u>UNIT</u>	<u>QUANTITY</u>
202000	Excavation and Embankment	CY	848
209006	Borrow, Type F	CY	306
211002	Removal of Structures and Obstructions (Guardrail)	LF	6,023
302008	Graded Aggregate Base Course, Type B, Patching	CY	25
401821	Bituminous Concrete, Superpave, Type C, 160 Gyrations, PG 64-22, Patching	TON	394
401822	Bituminous Concrete, Superpave, Type B, 160 Gyrations, PG 64-22, Patching	TON	39
607000	Removal of Existing Masonry	CY	73
701014	Portland Cement Concrete Curb, Type 1-6	LF	275
701023	Integral Portland Cement Concrete Curb & Gutter, Type 3-6	LF	390
705007	Sidewalk Surface Detectable Warning System	SF	20
705009	Curb Ramp, Type 2, 3, and/or 4	SF	230
712020	Riprap, R-4	TON	229
713003	Geotextiles, Riprap	SY	282
720005	Steel Rail Element, Straight	LF	18,000
720006	Steel Rail Element, Curved	LF	2,200
720007	Galvanized Steel Posts	EACH	2,200
720008	Galvanized Steel Brackets	EACH	10
720009	Short Wood Breakaway Post, Treated	EACH	10
720010	Treated Wood Block	EACH	5,000
720013	End Section (Rounded)	EACH	50
720014	Terminal Connector, Bridge & Barrier	EACH	10
720022	Galvanized Rail Element, Thrie Beam	EACH	5
720023	Galvanized Transition Section, Thrie Beam	EACH	5
720024	Galvanized Steel Post, Thrie Beam	EACH	5
720025	Galvanized Steel Bracket, Thrie Beam	EACH	5
720041	Reflectorized Washers	EACH	2,500
720050	Galvanized Steel Beam Guardrail, Type 1-31	LF	3,510
720051	Galvanized Steel Beam Guardrail, Type 2-31	LF	325
720056	Treated Wood Guardrail Post	EACH	25
720057	Guardrail Over Culverts, Type 3-31	EACH	2
720509	Galvanized And Fusion-Bonded Polyester Coated Guardrail	LF	4,000
720514	Composite Offset Block	EA	200
720549	Galvanized Steel Post, Extra Length	LF	117
720566	Setting Guardrail Post in Rock	LF	10
720585	Guardrail End Treatment Attenuator, Type 1-31	EACH	126
720586	Guardrail End Treatment Attenuator, Type 2-31	EACH	32

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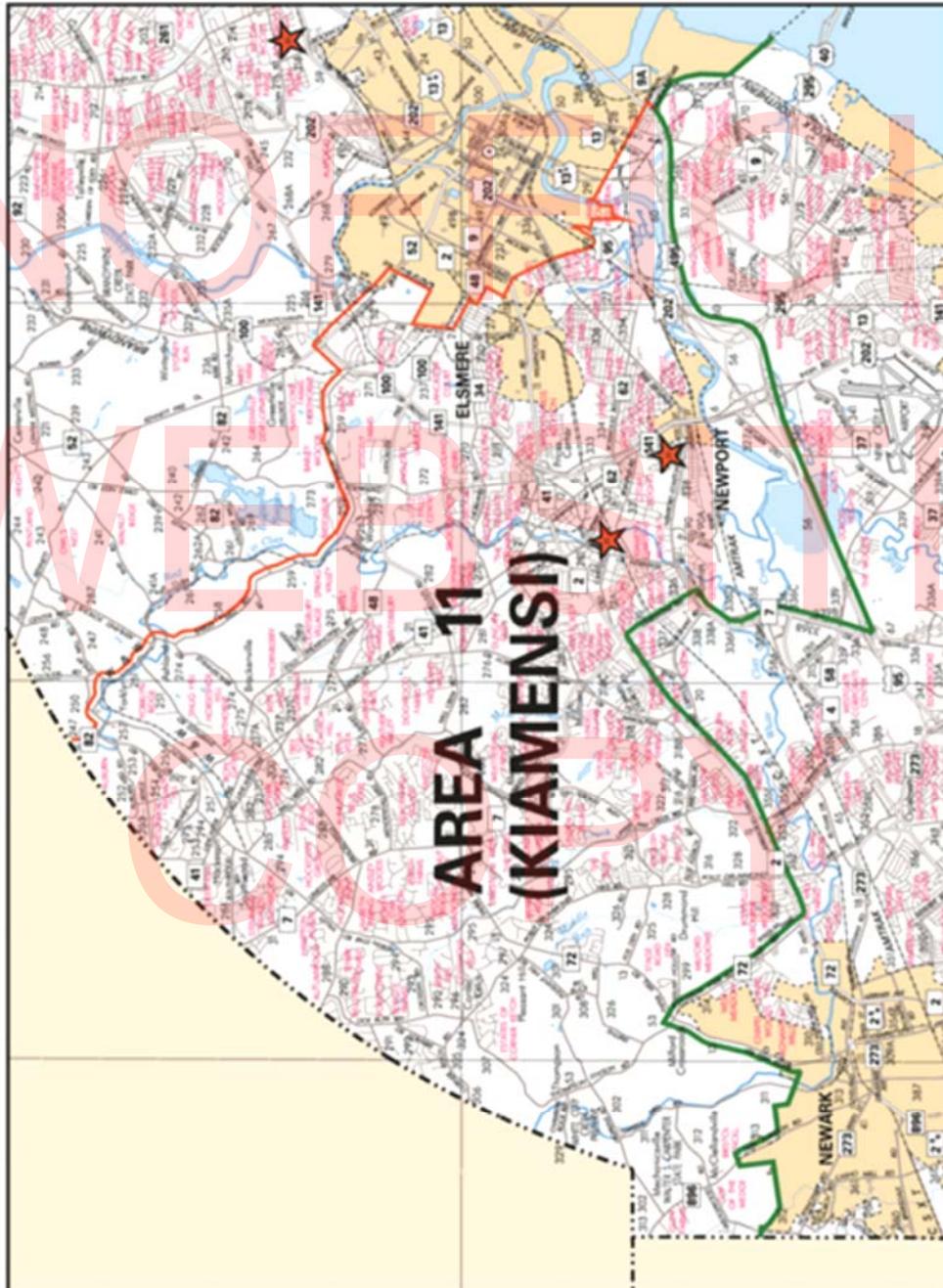
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720588	Guardrail End Treatment Attenuator, Type 3-31	EACH	10
720591	End Anchorage Repair	LS	1
720595	Guardrail End Treatment Attenuator, Type 1, Level I Repair	EACH	30
720596	Guardrail End Treatment Attenuator, Type 1, Level II Repair	EACH	30
720597	Guardrail End Treatment Attenuator, Type 2, Level I Repair	EACH	10
720598	Guardrail End Treatment Attenuator, Type 2, Level II Repair	EACH	10
720599	Guardrail End Treatment Attenuator, Type 3, Level I Repair	EACH	10
720600	Guardrail End Treatment Attenuator, Type 3, Level II Repair	EACH	5
720603	Remove & Reset Galvanized Steel Post & Offset Block	EACH	15
720663	Guardrail End Treatment Attenuator, Minor Repair	EACH	50
725001	Guardrail to Barrier Connection (Exit Type)	EACH	7
725002	Guardrail to Barrier Connection, Approach Type I-31	EACH	8
725003	Guardrail to Barrier Connection, Approach Type 2-31	EACH	5
725503	Guardrail to Barrier Connection (Approach) Repair	LS	1
726001	End Anchorage 31	EACH	18
726002	Buried End Section	EACH	11
743003	Arrow Panel, Type C	EADY	373
743004	Furnish and Maintain Portable Changeable Message Sign	EADY	180
743006	Plastic Drums	EADY	7,150
743007	Traffic Officers	HOUR	40
743010	Furnish and Maintain Truck-Mounted Attenuator, Type II	EADY	373
743023	Temporary Barricades, Type III	LFDY	300
743024	Temporary Warning Signs and Plaques	EADY	4,580
743050	Flagger, New Castle County, State	HOUR	2,440
743062	Flagger, New Castle County, State, Overtime	HOUR	69
748548	Permanent Pavement Striping, Epoxy Resin Paint, White/Yellow, 5"	LF	2,406
758000	Removal of Existing Portland Cement Concrete Pavement, Curb, Sidewalk, etc.	SY	137
762001	Saw Cutting, Hotmix	LF	4,273
762002	Saw Cutting, Concrete, Full	LF	22
763000	Initial Expense	LS	1
763501	Construction Engineering	LS	1
763507	Emergency Mobilization	EACH	5
905005	Inlet Sediment Control, Curb Inlet	EA	14
908001	Topsoil	TON	284
908014	Permanent Grass Seeding, Dry Ground	SY	3,742

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

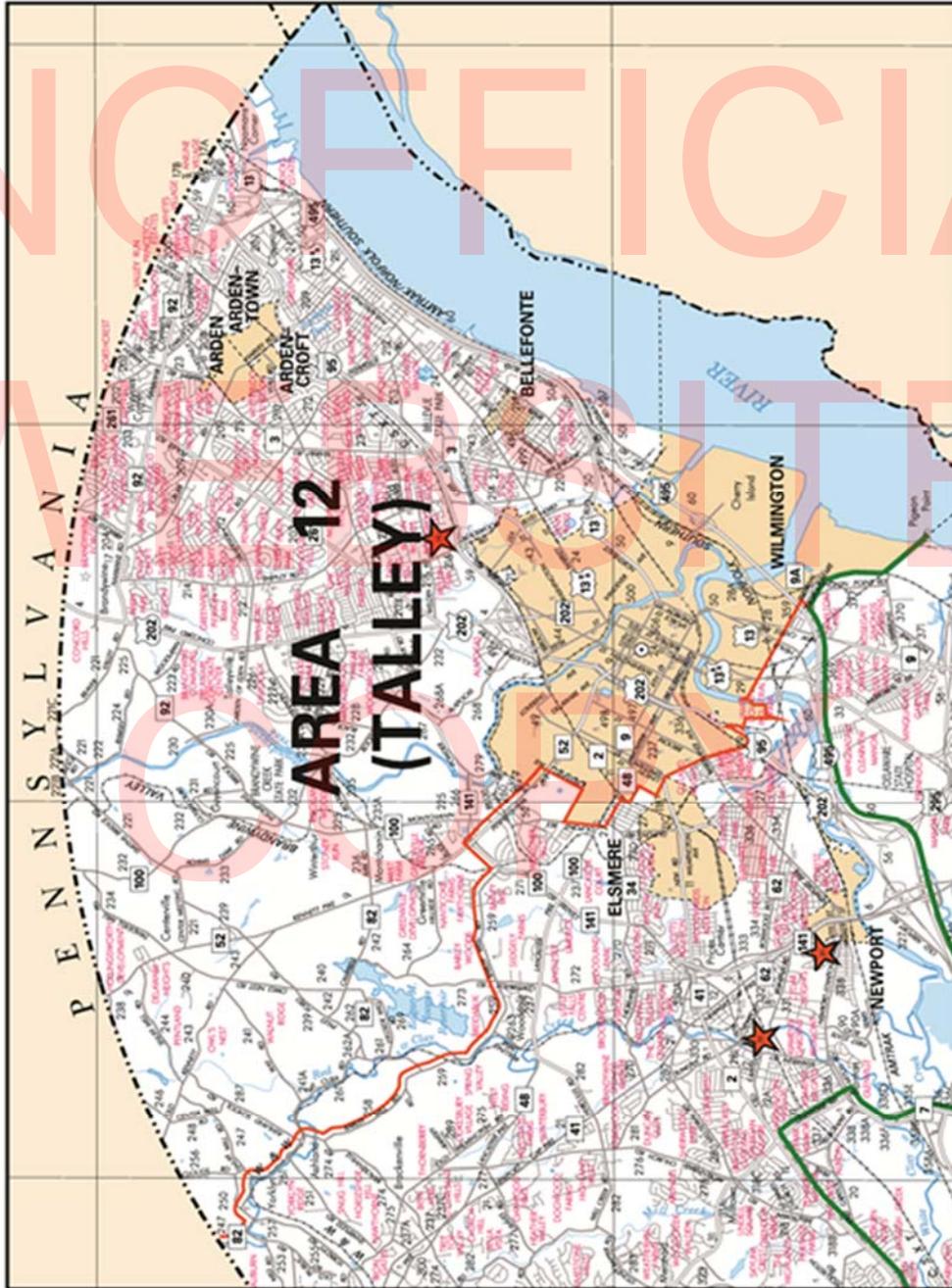
Guardrail Repair, North District, Open End, FY16-18



DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18



DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

THE NOTES AND DETAILS STARTING ON THIS PLAN SHEET THROUGH THE END OF THE CONTRACT APPLY ONLY TO THE WORK INVOLVING "TURNED DOWN GUARDRAIL END REMOVAL, REPLACEMENT, AND RELATED WORK". THE GENERAL NOTES ON PLAN SHEETS 3 THROUGH 12 ALSO APPLY TO THE FOLLOWING WORK.

PROJECT NOTES SPECIFIC TO PLAN SHEETS 19 THROUGH 76 ONLY

1. Item 211002 (Removal of Structures and Obstructions – Guardrail) shall be utilized for, and payment shall include, the removal and disposal of existing guardrail, Turned Down Ends, and all appurtenances attached to these elements including the rails, posts, blocks, washers, reflectors, bolts, turned down rail section, and any other incidentals within the length of material being removed. Measurement shall be made for the linear feet of rail and or turned down rail actually removed from the site. Note that costs to remove any concrete anchors that are part of the turned down end sections are to be paid separately under Item 607000 (Removal of Existing Masonry).
2. At locations where 27 inch guardrail exists, a transition section shall be installed between the attenuator and existing guardrail. Standard Construction Detail sheet B-7 shows this transition. Payment for the transition will be made using Items 720050 and 720051. No additional payment, other than these unit prices, will be made to construct the transitions unless otherwise approved by the Engineer.
3. If concrete curb (or curb and gutter) removal and replacement is to be performed at a work site, a one foot wide patch shall be placed in front of the new curb (or gutter pan). The excavation for the patch shall be paid under Item 202000. Items 762001 or 762002 shall be used to longitudinally sawcut the patch area. 2 inches of Bituminous Concrete, Type C (Item 401821) over 6 inches of Bituminous Concrete, Type B in two lifts (Item 401822) over 8 inches of GABC (Item 302008) shall be placed to complete the patch.
4. Hotmix curb shall be removed as directed in the field with payment to be made under item 202000 (if the total excavation at the location exceeds one cubic yard). If additional borrow is needed to construct the required grading zone, payment shall be made under Item 209006, (Borrow, Type F).
5. All runs of new guardrail shall utilize composite offset blocks. Payment for these blocks in new guardrail to be included in item 720050. Composite blocks shall conform to NCHRP Report 350, Test Level 4 and/or applicable MASH requirements. Unless specifically directed otherwise by the Engineer, no steel or wood blocks are to be utilized in these runs.
6. The Contractor shall acquire all necessary materials and equipment prior to starting work at a specific location. The equipment and material shall remain accessible and on-site until completion of work at that particular location unless prior approval from the Engineer is given.
7. Exposed soil must be stabilized with seed and mulch on this contract within seven (7) Calendar Days from the time that the excavation takes place.
8. Construction layout for guardrail runs, approach grading areas, curbs, and wheel chair ramps is the responsibility of the Contractor with costs included in Item 763501, Construction Engineering.
9. Tapers from one height of curb to another shall be made at a rate of 12" horizontal to 1" vertical with costs incidental to the new curb being constructed.

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

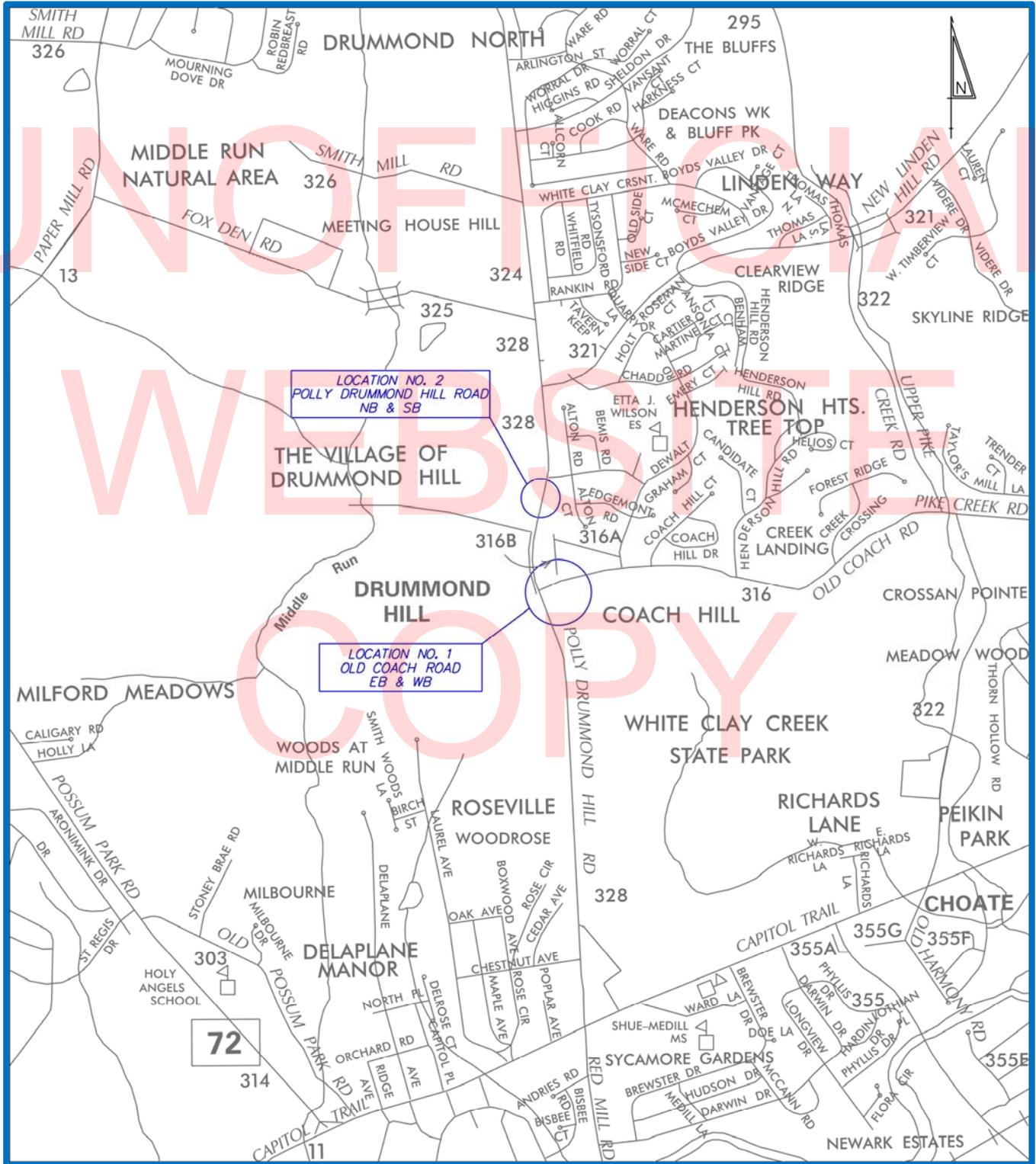
Guardrail Repair, North District, Open End, FY16-18

10. The Contractor shall field verify all dimensions and curved radius sections for proper fit prior to installing the guardrail. Costs to provide curved guardrail sections, if necessary, are to be included in and measured for payment under Items 720050 or 720051.
11. The cost to fine grade, compact, and prepare existing acceptable base materials for bituminous concrete or cement concrete placement shall be incidental to the bituminous or cement concrete item being placed on the base material.
12. Prior to the start of construction, the Contractor shall submit to the Engineer for review and approval, a Work Schedule in Bar Graph format showing the proposed sequence of the various work locations and the Calendar Day durations anticipated for each location. Work may be prosecuted on multiple sites concurrently, provided that no Maintenance of Traffic conflicts occur as a result. Additionally, the Contractor shall notify the Engineer at least 10 days in advance to confirm the starting date of each location of work in order that necessary public notice can be made by the Engineer.
13. Whenever guardrail, attenuators, and/or turned down end treatments are removed from a location of work that is not closed with a posted detour, the Contractor shall perform the work continually until the replacement guardrail and/or attenuators have been installed. Protection of these areas with only cones or drums is unacceptable.

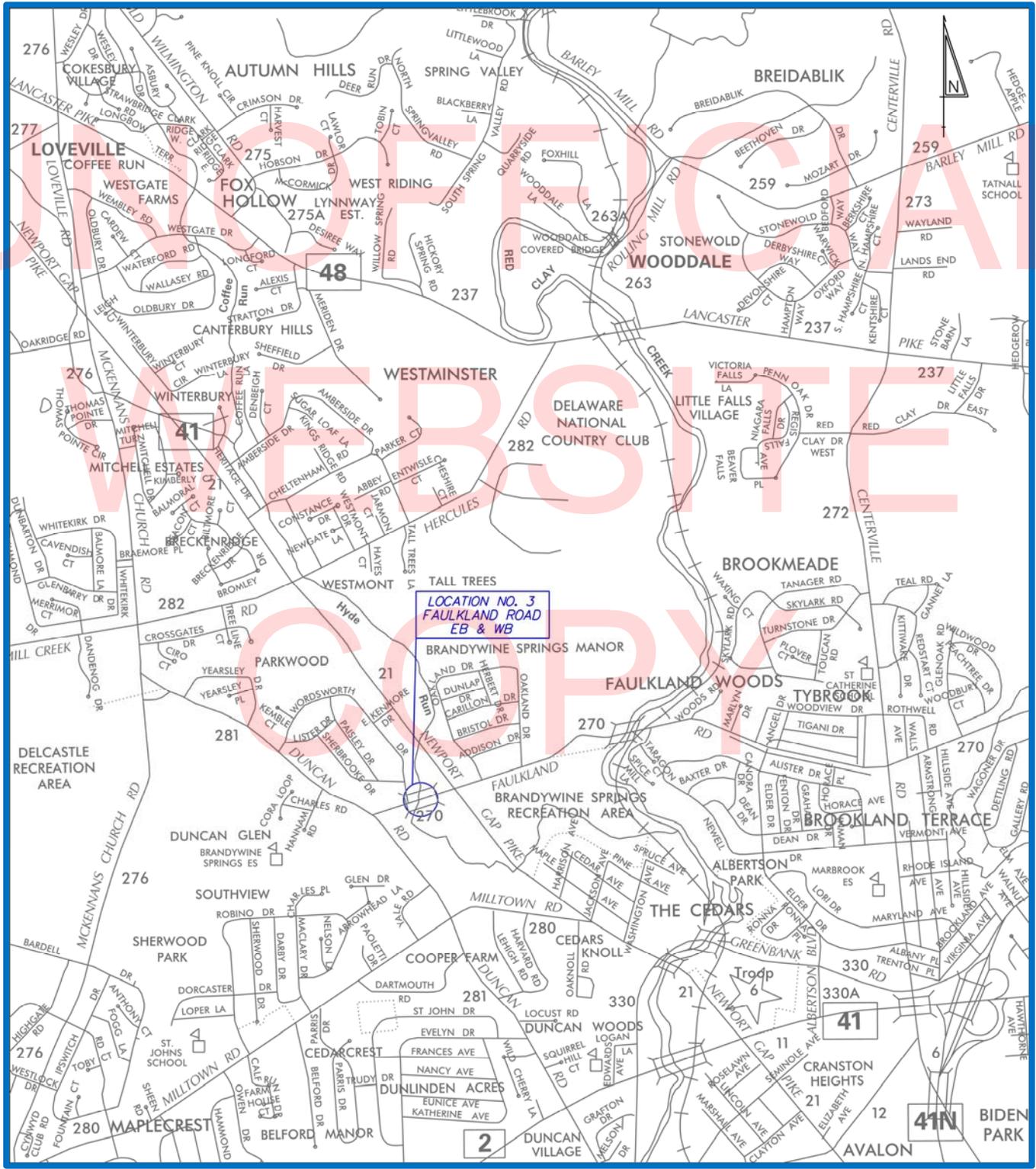
MAINTENANCE OF TRAFFIC NOTES SPECIFIC TO PLAN SHEETS 19 THROUGH 76 ONLY

1. The Plans will note the "Typical Applications" from the Delaware MUTCD that apply to the individual locations of work. Any additional or alternate Maintenance of Traffic measures required at specific locations shall be submitted to the Engineer and approved by DelDOT Safety Section prior to the starting work at the location in question.
2. If a road closure is being considered, it will be so noted on the Plans. Following contract award, the Contractor will be furnished approved detour plans for locations that are approved by the Department and agreed by the Contractor to be done under closed conditions. The Contractor shall be responsible for furnishing and maintaining the Maintenance of Traffic apparatus at the closure (such as Message Boards, Type III barricades, road closure signs, etc.) and all advance warning signs. The Contractor shall also be responsible for placement of detour trailblazers. Payment for detour trailblazers shall be made under Item 743024 (Temporary Warning Signs). Whenever the Contractor closes a lane or road, they shall contact DelDOT's TMC at (302) 659-4600 notifying them of the time the restriction is put into place and again when the restriction is lifted.
3. All open excavations shall be secured with plastic drums having retroreflective fluorescent orange and white prismatic sheeting and with orange plastic safety fence. Depending on the proximity of the excavation to the travelway, and its depth, steel plates may also be required. The safety fence, tie wire, steel plates, and associated items shall be incidental to the work being protected. If approved by the Engineer, Plastic Drums will be paid at the unit bid price for item 743006.
4. Work at locations 1, 2, 9A through 9E, 11, 12, and 13 shall be performed while nearby schools are out of session for the summer.

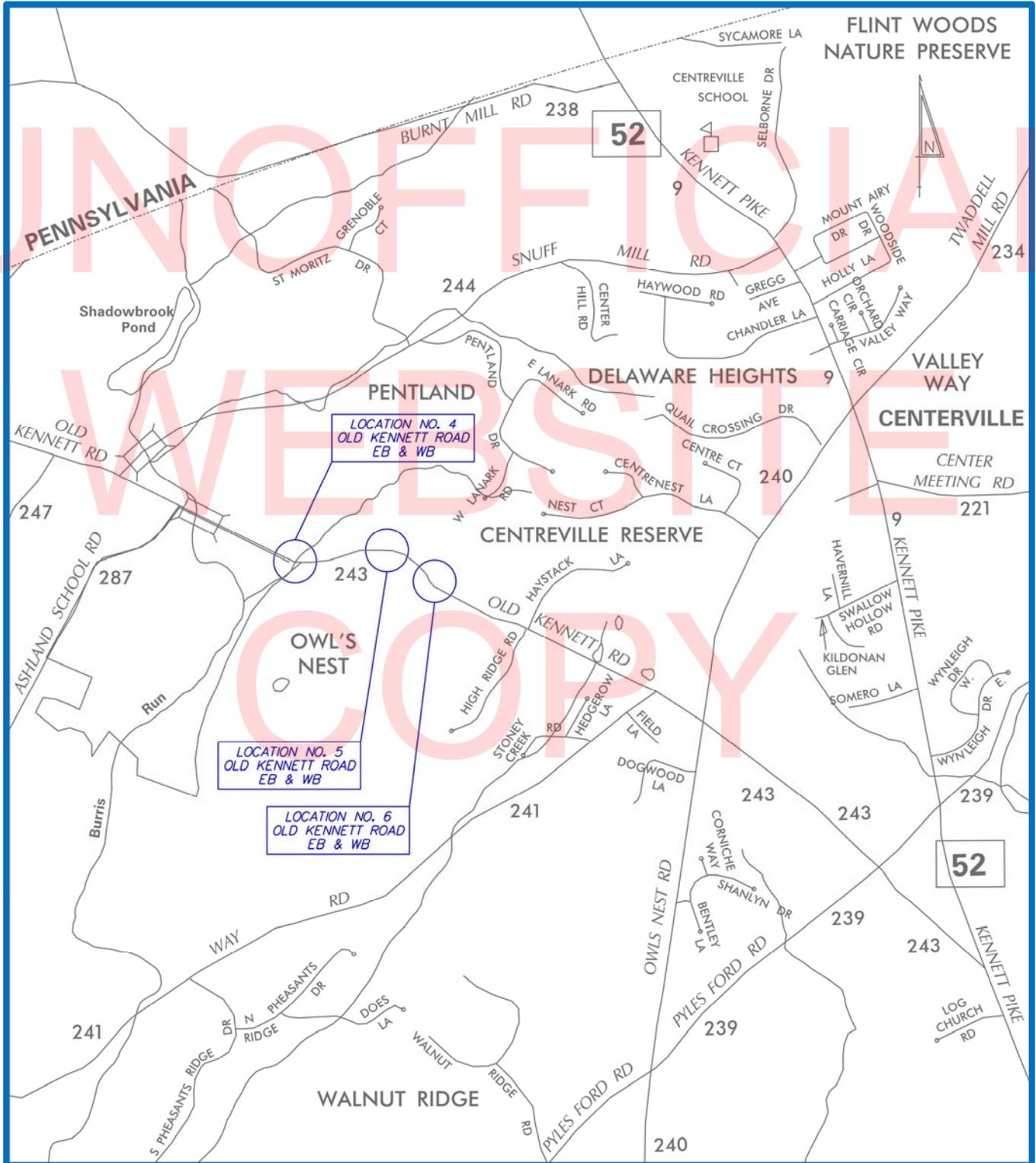
LOCATION MAP
Location Nos. 1 & 2



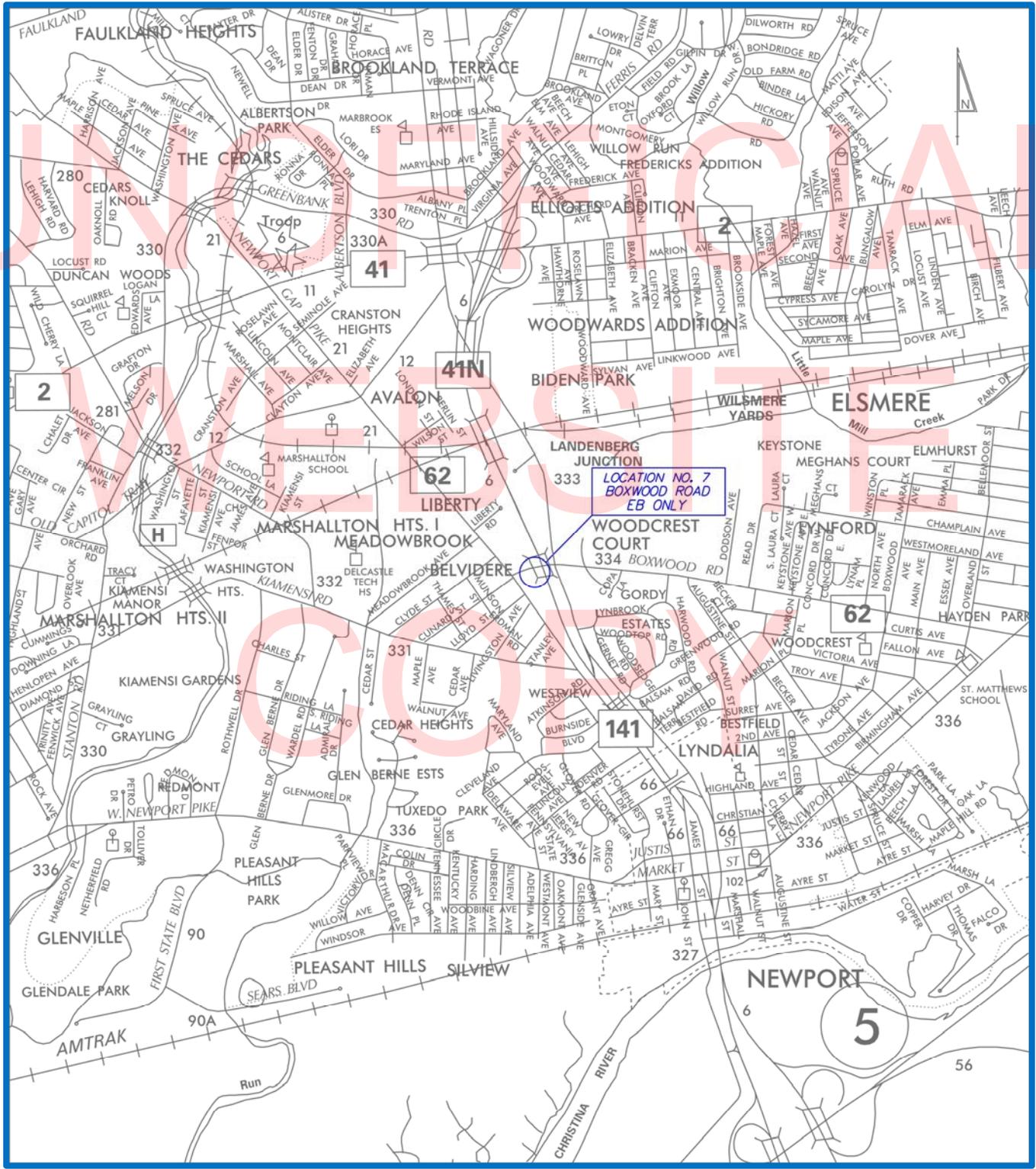
LOCATION MAP
Location No. 3



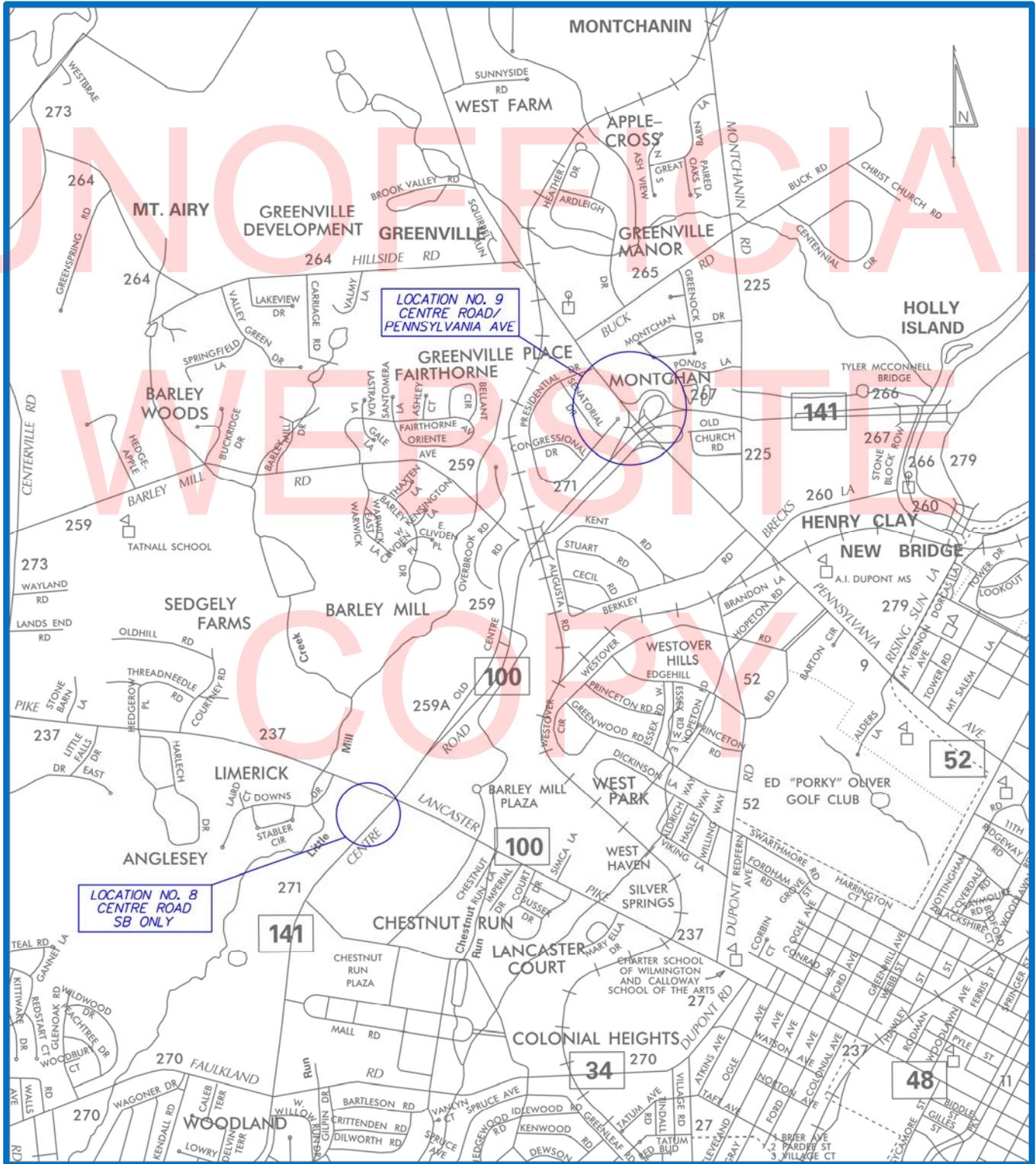
LOCATION MAP
Location Nos. 4, 5 & 6



LOCATION MAP
Location No. 7



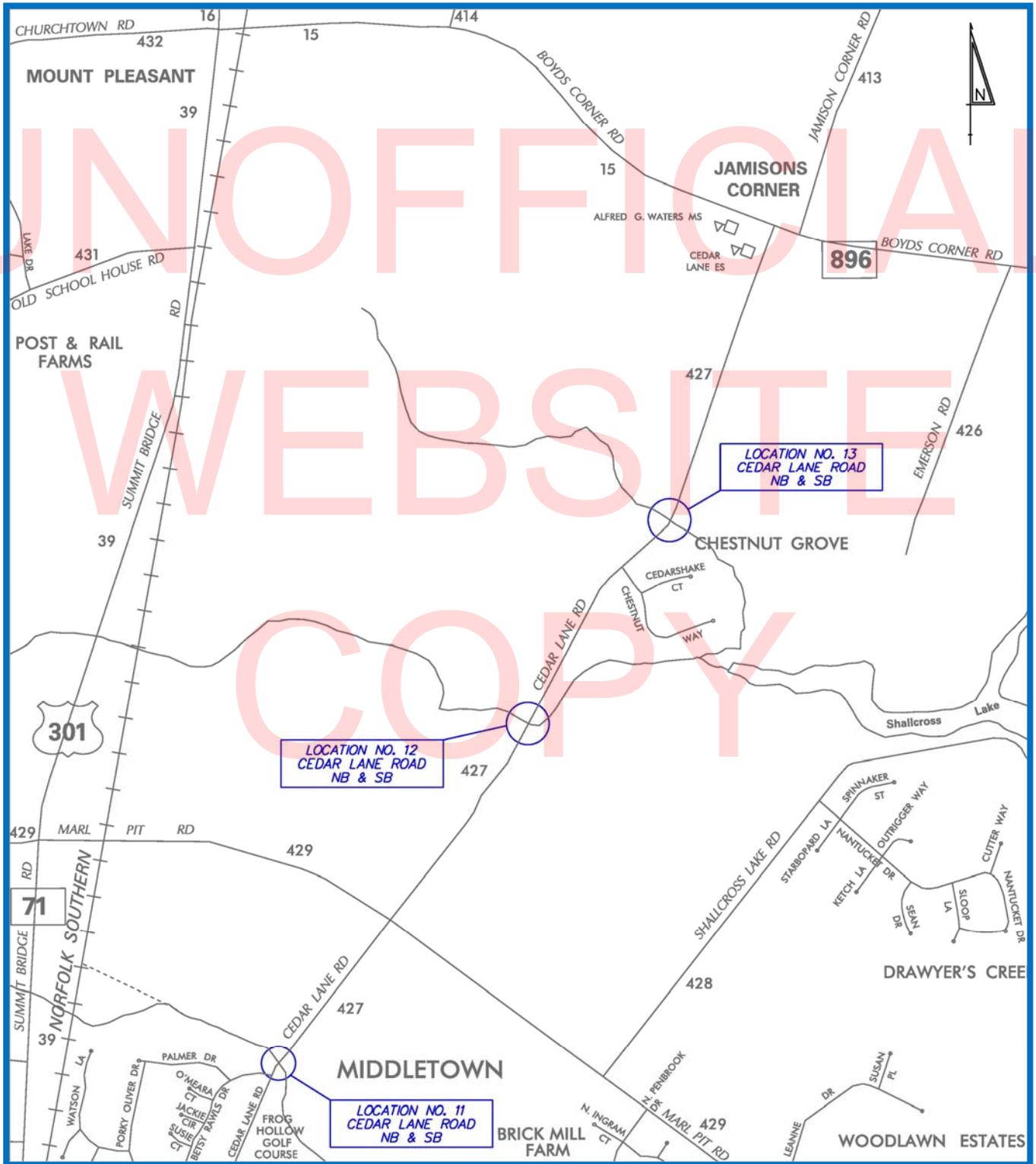
LOCATION MAP
Location Nos. 8 & 9



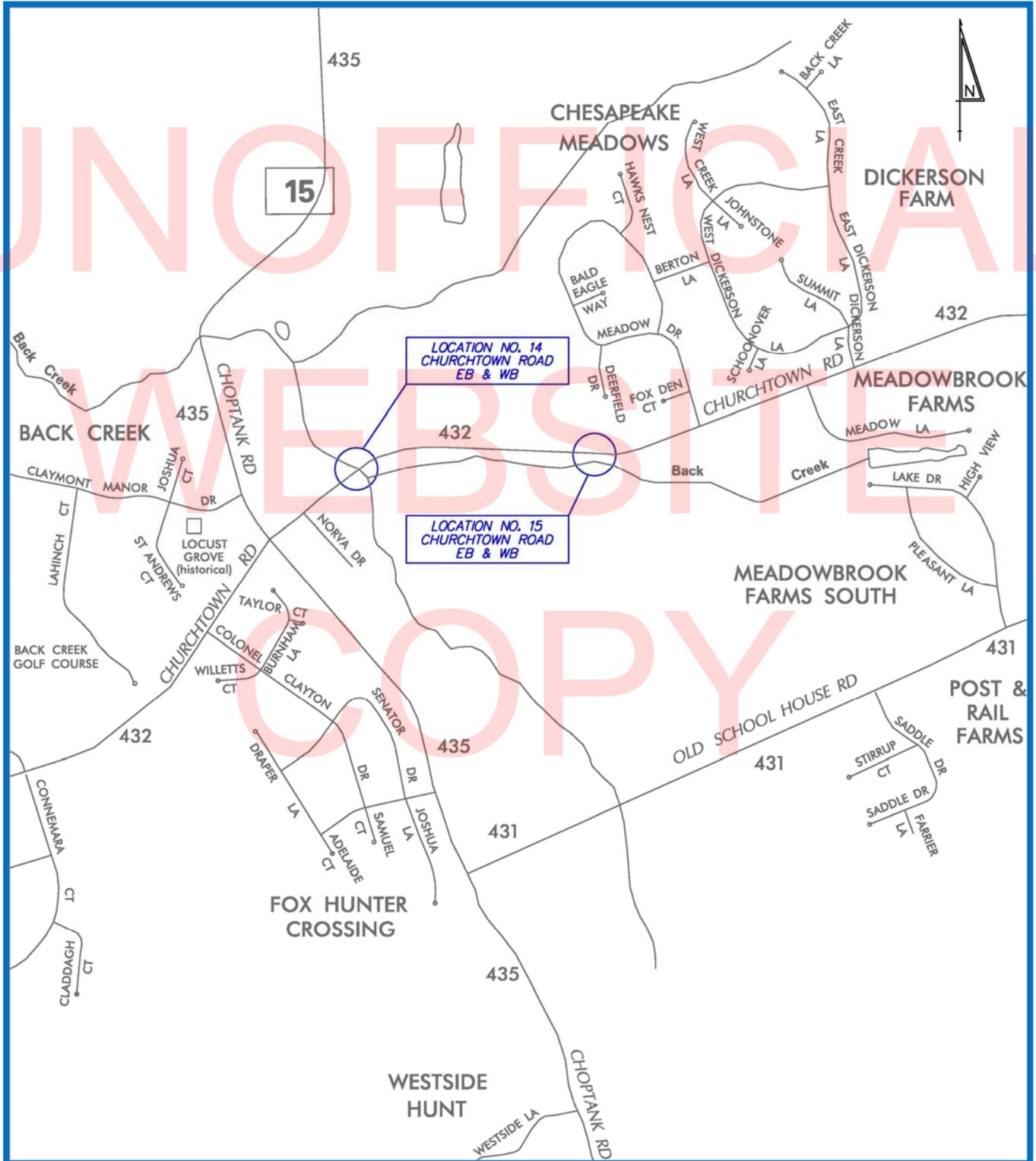
LOCATION MAP
Location No. 10



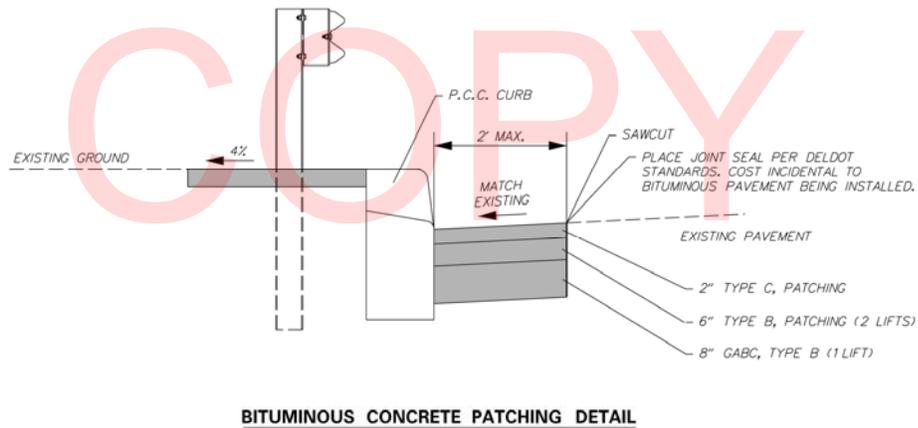
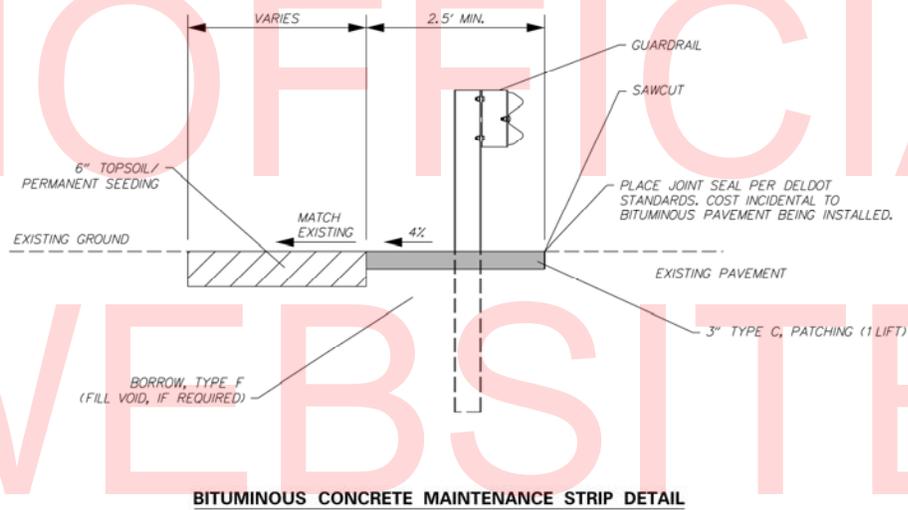
LOCATION MAP
Location Nos. 11, 12 & 13



LOCATION MAP
Location Nos. 14 & 15



CONSTRUCTION DETAILS



DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

LOCATION NO. 1: Old Coach Road (N316), Eastbound and Westbound

GENERAL IMPROVEMENTS:

Guardrail safety improvements by removing turned down end treatments and other noncompliant guardrail.

DESCRIPTION OF WORK:

1. Utilize lane closure details, TA-10 on Old Coach Road and TA-11b on Polly Drummond Road, from DEMUTCD.
2. Remove entire run of guardrail on the westbound side of Old Coach Road.
3. Remove existing maintenance strip, where applicable.
4. Fill existing guardrail holes with Borrow, Type F.
5. Place topsoil and permanent seeding, where applicable.
6. Remove entire run of guardrail on the eastbound side of Old Coach Road, around the radius of the intersection, and along northbound side of Polly Drummond Hill Road.
7. Remove existing maintenance strip and excavate for proposed maintenance strip, where applicable.
8. Fill existing guardrail holes with borrow, Type F.
9. Sawcut and remove PCC curb at end treatment location on Polly Drummond Hill Road.
10. Construct depressed PCC curb and gutter, Type 3-6, on northbound Polly Drummond Hill Road.
11. Place bituminous concrete patch in front of curb in shoulder.
12. Pave maintenance strip, using bituminous concrete, Type C, per the engineer in the field.
13. Install new compliant guardrail along eastbound Old Coach Road, beginning approximately 200' from the intersection of Old Coach Road and Polly Drummond Hill Road, and continuing around the radius.
14. Install guardrail end treatment attenuator, Type 1-31 on eastbound Old Coach Road
15. Install guardrail end treatment attenuator, Type 1-31 on northbound Polly Drummond Hill Road.
16. Place topsoil and permanent seeding, where applicable.
17. Remove turn down end treatment on the exiting end of the southbound guardrail on Polly Drummond Hill Road.
18. Excavate for proposed maintenance strip, where applicable.
19. Fill existing guardrail holes with Borrow, Type F.
20. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
21. Transition existing guardrail to the compliant 31" and flare guardrail outside of the clear zone.
22. Install end anchorage, Type 31.
23. Place topsoil and permanent seeding, where applicable.

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

ESTIMATE FOR LOCATION:

Location No. 1: Old Coach Road (N316)			
ITEM #	TITLE	UNIT	UNIT QUANTITY
202000	EXCAVATION AND EMBANKMENT	CY	198
209006	BORROW, TYPE F	CY	57
211002	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL)	LF	2,115
302008	GRADED AGGREGATE BASE COURSE, TYPE B, PATCHING	CY	8
401821	BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS,PG 64-22, PATCHING	TON	54
401822	BITUMINOUS CONCRETE, SUPERPAVE, TYPE B, 160 GYRATIONS,PG 64-22, PATCHING	TON	12
607000	REMOVAL OF EXISTING MASONRY	CY	6.0
701023	INTEGRAL PORTLAND CEMENT CONCRETE CURB & GUTTER, TYPE 3-6	LF	145
720050	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	LF	1,000.0
720585	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 1-31	EACH	2
726001	END ANCHORAGE 31	EACH	1
726002	BURIED END SECTION	EACH	0
743003	ARROWPANELS, TYPE C	EADY	14
743004	FURNISH AND MAINTAIN PORTABLE CHANGEABLEMESSAGE SIGN	EADY	0
743006	PLASTIC DRUMS	EADY	700
743007	TRAFFIC OFFICERS	HOUR	0
743010	FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR,TYPE II	EADY	14
743024	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	112
743050	FLAGGER, NEW CASTLE COUNTY, STATE	HOUR	112
743062	FLAGGER, NEW CASTLE COUNTY, STATE, OVERTIME	HOUR	12
758000	REMOVAL OF EXISTING PORTLAND CEMENTCONCRETE PAVEMENT, CURB,SIDEWALK, ETC.	SY	33
762001	SAW CUTTING, HOT MIX	LF	150
762002	SAW CUTTING, CONCRETE, FULL DEPTH	LF	4
905005	INLET SEDIMENT CONTROL, CURB INLET	EACH	4
908001	TOPSOIL (TON)	TON	222
908014	PERMANENT GRASS SEEDING, DRY GROUND	SY	954

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

LOCATION NO. 2: Polly Drummond Hill Road (N328), Northbound and Southbound

GENERAL IMPROVEMENTS:

Guardrail safety improvements by removing turned down end treatments and other noncompliant guardrail.

DESCRIPTION OF WORK:

1. Utilize lane closure details, TA-6 for the northbound side and TA-11b for the southbound side, from DEMUTCD.
2. Remove entire run of guardrail on the southbound side of Polly Drummond Hill Road, north of Old Coach Road.
3. Remove existing maintenance strip, where applicable.
4. Fill existing guardrail holes with Borrow, Type F.
5. Place topsoil and permanent seeding, where applicable.
6. Remove entire run of guardrail on the northbound side of Polly Drummond Hill Road, south of Forge Road.
7. Remove existing maintenance strip, where applicable.
8. Fill existing guardrail holes with Borrow, Type F.
9. Place topsoil and permanent seeding, where applicable.

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DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

ESTIMATE FOR LOCATION:

Location No. 2: Polly Drummond Hill Road (N328)			
ITEM #	TITLE	UNIT	UNIT QUANTITY
202000	EXCAVATION AND EMBANKMENT	CY	54
209006	BORROW, TYPE F	CY	22
211002	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL)	LF	720
607000	REMOVAL OF EXISTING MASONRY	CY	4.5
726002	BURIED END SECTION	EACH	0
743003	ARROWPANELS, TYPE C	EADY	2
743004	FURNISH AND MAINTAIN PORTABLE CHANGEABLEMESSAGE SIGN	EADY	0
743006	PLASTIC DRUMS	EADY	100
743007	TRAFFIC OFFICERS	HOURL	0
743010	FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR,TYPE II	EADY	2
743024	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	16
743050	FLAGGER, NEW CASTLE COUNTY, STATE	HOURL	16
743062	FLAGGER, NEW CASTLE COUNTY, STATE, OVERTIME	HOURL	2
905005	INLET SEDIMENT CONTROL, CURB INLET	EACH	2
908001	TOPSOIL (TON)	TON	75
908014	PERMANENT GRASS SEEDING, DRY GROUND	SY	320

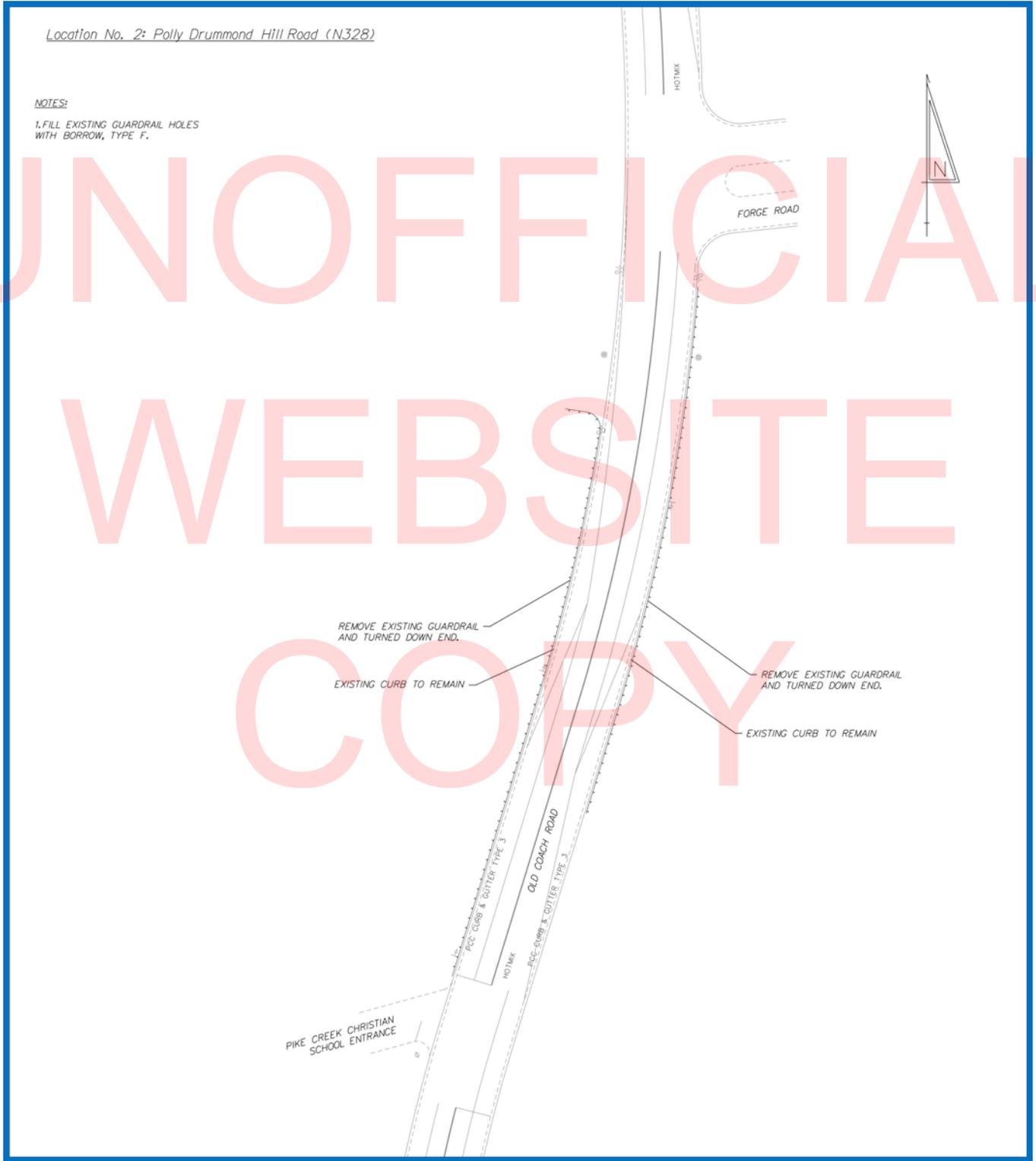
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DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

CONSTRUCTION PLAN:



DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

LOCATION NO. 3: Faulkland Road (N270), Eastbound and Westbound

GENERAL IMPROVEMENTS:

Guardrail safety improvements by removing turned down end treatments and other noncompliant guardrail.

DESCRIPTION OF WORK:

1. Utilize lane closure, TA-10, from DEMUTCD or implement road closure detour plan for this location.
2. Remove entire run of guardrail connecting to the bridge parapet along the eastbound side of Faulkland Road, west of Newport Gap Pike.
3. Sawcut and Remove existing PCC curb and hotmix in front of curb, as shown in the construction plan and construction detail.
4. Excavate for proposed maintenance strip, where applicable.
5. Fill existing guardrail holes with Borrow, Type F.
6. Construct depressed PCC curb and gutter, Type 3-6, as shown in the construction plan and construction detail.
7. Place bituminous concrete patch in front of curb in shoulder.
8. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
9. Install new bridge attached guardrail at the approach and exit. Install guardrail to barrier connection, Type 1-31, on both the approach and exiting sections. All holes in the concrete parapet walls shall be core drilled to minimize damage to the walls.
10. Install guardrail end treatment attenuator, Type 2-31 in the approach and an end anchorage on the exiting section.
11. Place topsoil and permanent seeding, where applicable.
12. Remove entire run of guardrail connecting to the bridge parapet along the westbound side of Faulkland Road.
13. Sawcut and Remove existing PCC curb and hotmix in front of curb, as shown in the construction plan and construction detail.
14. Excavate for proposed maintenance strip, where applicable.
15. Fill existing guardrail holes with Borrow, Type F.
16. Construct depressed PCC curb and gutter, Type 3-6, as shown in the construction plan and construction detail.
17. Place bituminous concrete patch in front of curb in shoulder.
18. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
19. Install new bridge attached guardrail at the approach and exit. Install guardrail to barrier connection, Type 1-31, on both the approach and exiting sections. All holes in the concrete parapet walls shall be core drilled to minimize damage to the walls.
20. Install two (2) guardrail end treatment attenuators, Type 1-31 in the approach and exiting sections.
21. Place topsoil and permanent seeding, where applicable.

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

ESTIMATE FOR LOCATION:

Location No. 3: Faulkland Road (N270)			
ITEM #	TITLE	UNIT	UNIT QUANTITY
202000	EXCAVATION AND EMBANKMENT	CY	36
209006	BORROW, TYPE F	CY	18
211002	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL)	LF	62.5
302008	GRADED AGGREGATE BASE COURSE, TYPE B, PATCHING	CY	5
401821	BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS,PG 64-22, PATCHING	TON	16
401822	BITUMINOUS CONCRETE, SUPERPAVE, TYPE B, 160 GYRATIONS,PG 64-22, PATCHING	TON	8
607000	REMOVAL OF EXISTING MASONRY	CY	3.0
701023	INTEGRAL PORTLAND CEMENT CONCRETE CURB & GUTTER, TYPE 3-6	LF	100
712020	RIPRAP, R-4	TON	17
713003	GEOTEXTILES, RIPRAP	SY	20
720585	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 1-31	EACH	3
725001	GUARDRAIL TO BARRIER CONNECTION (EXIT TYPE 31)	EACH	2
725002	GUARDRAIL TO BARRIER CONNECTION, APPROACH TYPE 1-31	EACH	2
726001	END ANCHORAGE 31	EACH	1
726002	BURIED END SECTION	EACH	0
743003	ARROWPANELS, TYPE C	EADY	7
743004	FURNISH AND MAINTAIN PORTABLE CHANGEABLEMESSAGE SIGN	EADY	0
743006	PLASTIC DRUMS	EADY	350
743007	TRAFFIC OFFICERS	HOURL	0
743010	FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR,TYPE II	EADY	7
743024	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	56
743050	FLAGGER, NEW CASTLE COUNTY, STATE	HOURL	56
743062	FLAGGER, NEW CASTLE COUNTY, STATE, OVERTIME	HOURL	6
748548	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 5"	LF	300
758000	REMOVAL OF EXISTING PORTLAND CEMENTCONCRETE PAVEMENT, CURB,SIDEWALK, ETC.	SY	23
762001	SAW CUTTING, HOT MIX	LF	100
762002	SAW CUTTING, CONCRETE, FULL DEPTH	LF	8
905005	INLET SEDIMENT CONTROL, CURB INLET	EACH	1
908001	TOPSOIL (TON)	TON	413
908014	PERMANENT GRASS SEEDING, DRY GROUND	SY	118

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

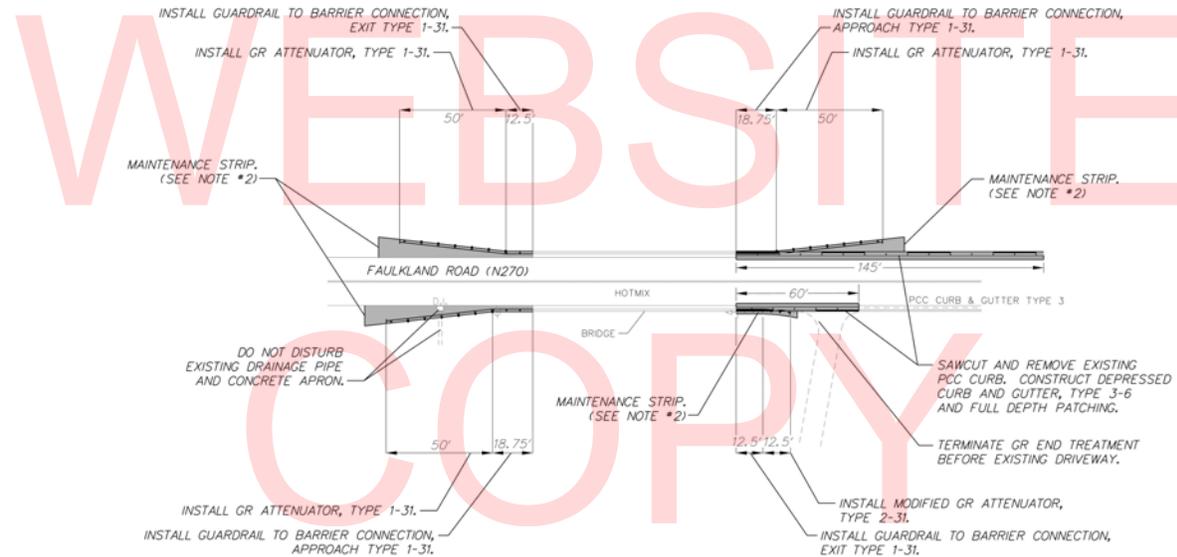
Guardrail Repair, North District, Open End, FY16-18

CONSTRUCTION PLAN:

Location No. 3: Faulkland Road (N270)

NOTES:

1. FILL EXISTING GUARDRAIL HOLES WITH BORROW, TYPE F.
2. SAWCUT EXISTING HOTMIX PAVEMENT AND EXCAVATE 3" DEPTH TO PLACE 3" TYPE C BITUMINOUS CONCRETE BENEATH NEW GUARDRAIL. MAINTENANCE STRIP SHALL BE MINIMUM 2.5' WIDE AND EXTEND 10' BEYOND GUARDRAIL END LIMIT.



DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

LOCATION NO. 4: Old Kennett Road (N243), Eastbound and Westbound (Burriss Run),
Approx. 1,900' West of High Ridge Road

GENERAL IMPROVEMENTS:

Guardrail safety improvements by removing turned down end treatments and other noncompliant guardrail.

DESCRIPTION OF WORK:

1. Utilize lane closure, TA-10, from DEMUTCD or implement road closure detour plan for this location.
2. Remove entire run of guardrail on the westbound side of Old Kennett Road.
3. Excavate for proposed maintenance, where applicable.
4. Fill existing guardrail holes with Borrow, Type F.
5. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
6. Install buried end section on the exiting end of the westbound side of the roadway.
7. Install galvanized steel beam guardrail, Type 1-31 and flare a guardrail end treatment attenuator, Type 1-31 outside of the clear zone on the approach section.
8. Place topsoil and permanent seeding, where applicable.
9. Remove entire run of guardrail on the eastbound side of Old Kennett Road.
10. Excavate for proposed maintenance, where applicable.
11. Fill existing guardrail holes with Borrow, Type F.
12. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
13. Install buried end section on the approach end of the eastbound side of the roadway.
14. Install galvanized steel beam guardrail, Types 1-31 and 2-31, as shown on the construction plan.
Install guardrail end treatment attenuator, Type 2-31.
15. Place riprap, as shown in the plans.
16. Place topsoil and permanent seeding, where applicable.

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

ESTIMATE FOR LOCATION:

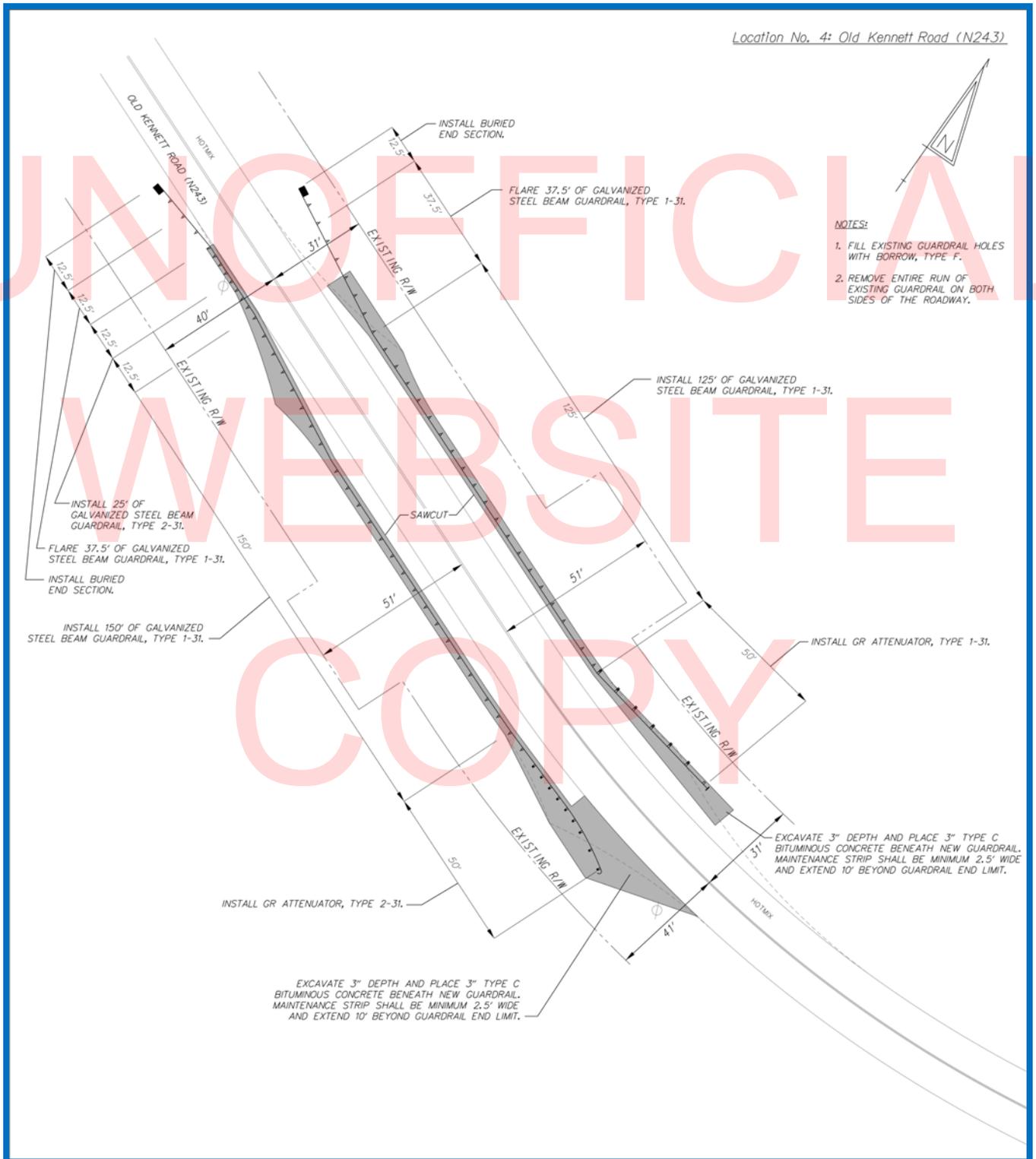
Location No. 4: Old Kennett Road (N243) - 1,900' West of High Ridge Road			
ITEM #	TITLE	UNIT	UNIT QUANTITY
202000	EXCAVATION AND EMBANKMENT	CY	39
209006	BORROW, TYPE F	CY	14
211002	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL)	LF	300
401821	BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22, PATCHING	TON	19
607000	REMOVAL OF EXISTING MASONRY	CY	6.0
712020	RIPRAP, R-4	TON	17
713003	GEOTEXTILES, RIPRAP	SY	20
720050	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	LF	375.0
720585	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 1-31	EACH	1
720586	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 2-31	EACH	1
726002	BURIED END SECTION	EACH	2
743003	ARROWPANELS, TYPE C	EADY	7
743004	FURNISH AND MAINTAIN PORTABLE CHANGEABLE MESSAGE SIGN	EADY	0
743006	PLASTIC DRUMS	EADY	350
743007	TRAFFIC OFFICERS	HOUR	0
743010	FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE II	EADY	7
743024	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	56
743050	FLAGGER, NEW CASTLE COUNTY, STATE	HOUR	56
743062	FLAGGER, NEW CASTLE COUNTY, STATE, OVERTIME	HOUR	6
762001	SAW CUTTING, HOT MIX	LF	395
908001	TOPSOIL (TON)	TON	41
908014	PERMANENT GRASS SEEDING, DRY GROUND	SY	176

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

CONSTRUCTION PLAN:



DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

LOCATION NO. 5: Old Kennett Road (N243), Eastbound and Westbound, Approx. 1,750'
West of High Ridge Road

GENERAL IMPROVEMENTS:

Guardrail safety improvements by removing turned down end treatments and other noncompliant guardrail.

DESCRIPTION OF WORK:

1. Utilize lane closure, TA-10, from DEMUTCD or implement road closure detour plan for this location.
2. Remove entire run of guardrail on the westbound side of Old Kennett Road.
3. Excavate for proposed maintenance strip, where applicable.
4. Fill existing guardrail holes with Borrow, Type F.
5. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
6. Install galvanized steel beam guardrail, Type 2-31.
7. On the approach section, install guardrail end treatment attenuator, Type 1-31, flared outside of the clear zone.
8. On the exiting section, install guardrail end treatment attenuator, Type 2-31. The exit end treatment attenuator should be placed ending before the existing tree line.
9. Place topsoil and permanent seeding, where applicable.
10. Remove entire run of guardrail on the eastbound side of Old Kennett Road.
11. Excavate for proposed maintenance strip, where applicable.
12. Fill existing guardrail holes with Borrow, Type F.
13. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
14. Install buried end section at the approach section.
15. Install galvanized steel beam guardrail, Type 1-31.
16. On the exiting section, install guardrail end treatment attenuator, Type 2-31.
17. Place topsoil and permanent seeding, where applicable.

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

ESTIMATE FOR LOCATION:

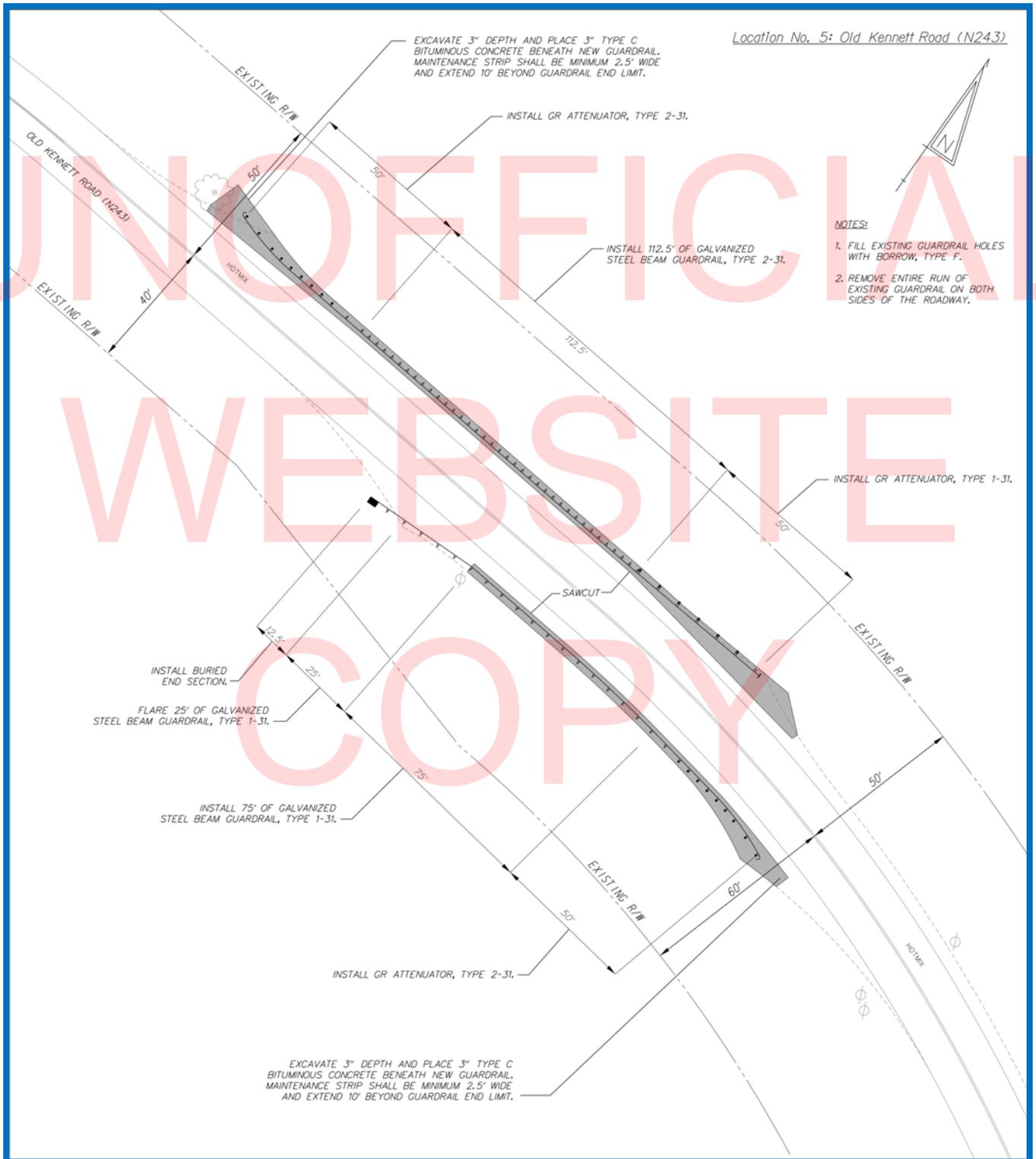
Location No. 5: Old Kennett Road (N243) - 1,750' West of High Ridge Road			
ITEM #	TITLE	UNIT	UNIT QUANTITY
202000	EXCAVATION AND EMBANKMENT	CY	40
209006	BORROW, TYPE F	CY	15
211002	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL)	LF	350
401821	BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22, PATCHING	TON	20
607000	REMOVAL OF EXISTING MASONRY	CY	6.0
720050	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	LF	112.5
720051	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 2-31	LF	112.5
720585	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 1-31	EACH	1
720586	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 2-31	EACH	2
726002	BURIED END SECTION	EACH	1
743003	ARROWPANELS, TYPE C	EADY	5
743004	FURNISH AND MAINTAIN PORTABLE CHANGEABLE MESSAGE SIGN	EADY	0
743006	PLASTIC DRUMS	EADY	250
743007	TRAFFIC OFFICERS	HOUR	0
743010	FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE II	EADY	5
743024	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	40
743050	FLAGGER, NEW CASTLE COUNTY, STATE	HOUR	40
743062	FLAGGER, NEW CASTLE COUNTY, STATE, OVERTIME	HOUR	4
762001	SAW CUTTING, HOT MIX	LF	405
908001	TOPSOIL (TON)	TON	42
908014	PERMANENT GRASS SEEDING, DRY GROUND	SY	180

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

CONSTRUCTION PLAN:



DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

LOCATION NO. 6: Old Kennett Road (N243), Eastbound and Westbound, Approx. 1,110'
West of High Ridge Road

GENERAL IMPROVEMENTS:

Guardrail safety improvements by removing turned down end treatments and other noncompliant guardrail.

DESCRIPTION OF WORK:

1. Utilize lane closure, TA-10, from DEMUTCD or implement road closure detour plan for this location.
2. Remove entire run of existing guardrail on the westbound side of Old Kennett Road.
3. Excavate for proposed maintenance strip, where applicable.
4. Fill existing guardrail holes with Borrow, Type F.
5. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
6. Install galvanized steel beam guardrail, Type 2-31, as shown on the plans.
7. On the approach, install guardrail end treatment attenuator, Type 1-31, flared outside of the clearzone.
8. Place riprap as shown in the plans.
9. On the exiting section, install guardrail end treatment attenuator, Type 1-31.
10. Place topsoil and permanent seeding, where applicable.
11. Remove entire run of existing guardrail on the eastbound side of Old Kennett Road.
12. Excavate for proposed maintenance strip, where applicable.
13. Fill existing guardrail holes with Borrow, Type F.
14. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
15. Install galvanized steel beam guardrail, Types 1-31 and 2-31, as shown on the plans.
16. Install guardrail end treatment attenuator, Type 1-31 at the approach section.
17. On the exiting section, install guardrail end treatment attenuator, Type 2-31.
18. Place topsoil and permanent seeding, where applicable.

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

ESTIMATE FOR LOCATION:

Location No. 6: Old Kennett Road (N243) - 1,110' West of High Ridge Road			
ITEM #	TITLE	UNIT	UNIT QUANTITY
202000	EXCAVATION AND EMBANKMENT	CY	35
209006	BORROW, TYPE F	CY	13
211002	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL)	LF	287.5
401821	BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22, PATCHING	TON	17
607000	REMOVAL OF EXISTING MASONRY	CY	6.0
712020	RIPRAP, R-4	TON	17
713003	GEOTEXTILES, RIPRAP	SY	20
720050	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	LF	62.5
720051	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 2-31	LF	100.0
720585	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 1-31	EACH	2
720586	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 2-31	EACH	2
726002	BURIED END SECTION	EACH	0
743003	ARROWPANELS, TYPE C	EADY	5
743004	FURNISH AND MAINTAIN PORTABLE CHANGEABLEMESSAGE SIGN	EADY	0
743006	PLASTIC DRUMS	EADY	250
743007	TRAFFIC OFFICERS	HOUR	0
743010	FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE II	EADY	5
743024	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	40
743050	FLAGGER, NEW CASTLE COUNTY, STATE	HOUR	40
743062	FLAGGER, NEW CASTLE COUNTY, STATE, OVERTIME	HOUR	4
762001	SAW CUTTING, HOT MIX	LF	352.5
908001	TOPSOIL (TON)	TON	37
908014	PERMANENT GRASS SEEDING, DRY GROUND	SY	157

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

LOCATION NO. 7: Boxwood Road (N334), Eastbound, Approx. 200' East of Newport Gap Pike

GENERAL IMPROVEMENTS:

Guardrail safety improvements by removing turned down end treatments and other noncompliant guardrail.

DESCRIPTION OF WORK:

1. Utilize lane closure detail, TA-33, from DEMUTCD.
2. Remove approach guardrail section to the bridge.
3. Excavate for proposed maintenance strip, where applicable.
4. Fill existing guardrail holes with Borrow, Type F.
5. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
6. Install guardrail to barrier connection, approach Type 1-31.
7. Install galvanized steel beam guardrail, Type 1-31, along sidewalk as shown on the plans.
8. Flare guardrail and install guardrail end treatment attenuator, Type 2-31.
9. Place topsoil and permanent seeding, where applicable.

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CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

ESTIMATE FOR LOCATION:

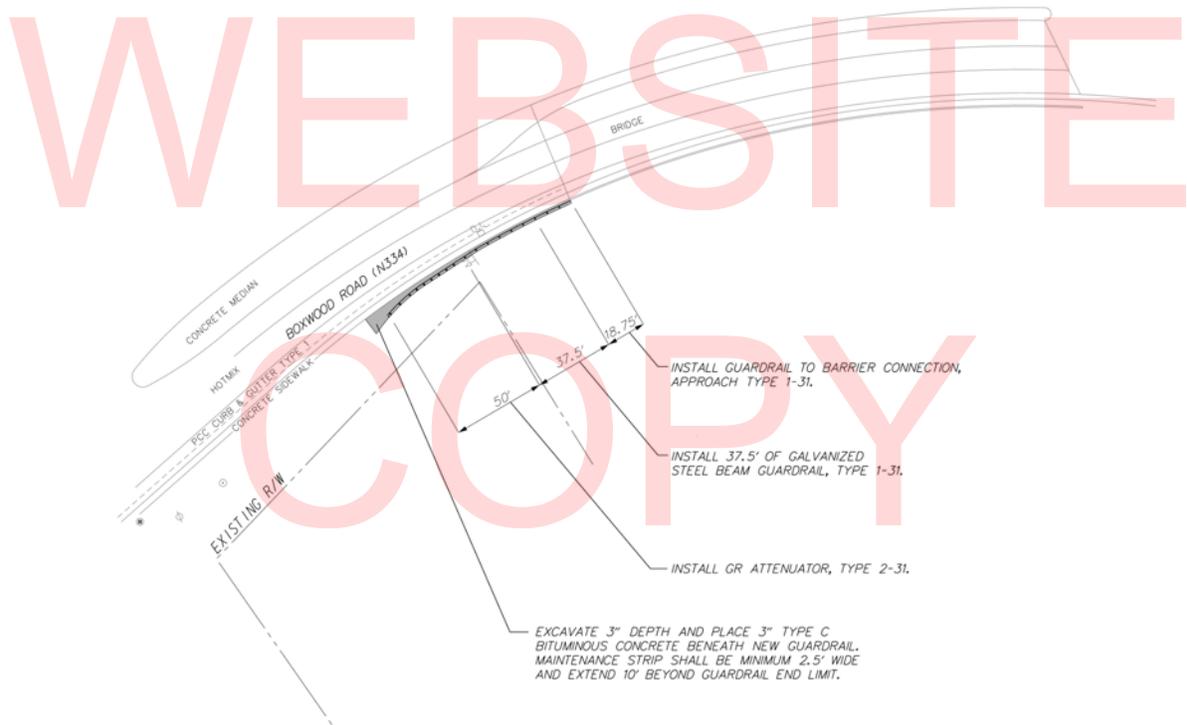
Location No. 7: Boxwood Road (N334)			
ITEM #	TITLE	UNIT	UNIT QUANTITY
202000	EXCAVATION AND EMBANKMENT	CY	12
209006	BORROW, TYPE F	CY	3
211002	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL)	LF	50
401821	BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22, PATCHING	TON	5.5
607000	REMOVAL OF EXISTING MASONRY	CY	1.5
720050	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	LF	37.5
720586	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 2-31	EACH	1
725002	GUARDRAIL TO BARRIER CONNECTION, APPROACH TYPE 1-31	EACH	1
726002	BURIED END SECTION	EACH	0
743003	ARROWPANELS, TYPE C	EADY	3
743004	FURNISH AND MAINTAIN PORTABLE CHANGEABLE MESSAGE SIGN	EADY	0
743006	PLASTIC DRUMS	EADY	150
743007	TRAFFIC OFFICERS	HOUR	0
743010	FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE II	EADY	3
743023	TEMPORARY BARRICADES, TYPE III	LFDY	24
743024	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	30
743050	FLAGGER, NEW CASTLE COUNTY, STATE	HOUR	24
743062	FLAGGER, NEW CASTLE COUNTY, STATE, OVERTIME	HOUR	3
908001	TOPSOIL (TON)	TON	12
908014	PERMANENT GRASS SEEDING, DRY GROUND	SY	52

CONSTRUCTION PLAN:

Location No. 7: Boxwood Road (N334)

NOTES:

1. FILL EXISTING GUARDRAIL HOLES WITH BORROW, TYPE F.
2. REMOVE ENTIRE RUN OF APPROACH SECTION OF EXISTING GUARDRAIL IN THE EASTBOUND DIRECTION.



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DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

LOCATION NO. 8: SR 141 (N271), Southbound, Approx. 560' South of Lancaster Pike

GENERAL IMPROVEMENTS:

Guardrail safety improvements by removing turned down end treatments and other noncompliant guardrail.

DESCRIPTION OF WORK:

1. Utilize lane closure detail, TA-33, from DEMUTCD.
2. Sawcut and remove existing curb at turned down end location on Centre Road to the limits shown (portion of hotmix curb and PCC curb and gutter.)
3. Remove turned down end treatment.
4. Excavate for proposed maintenance strip, where applicable.
5. Fill existing guardrail holes with Borrow, Type F.
6. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
7. Construct depressed PCC curb and gutter, Type 3-6.
8. Place bituminous concrete patch in front of curb in shoulder.
9. Install guardrail end treatment attenuator, Type 1-31.
10. Place topsoil and permanent seeding, where applicable.

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

ESTIMATE FOR LOCATION:

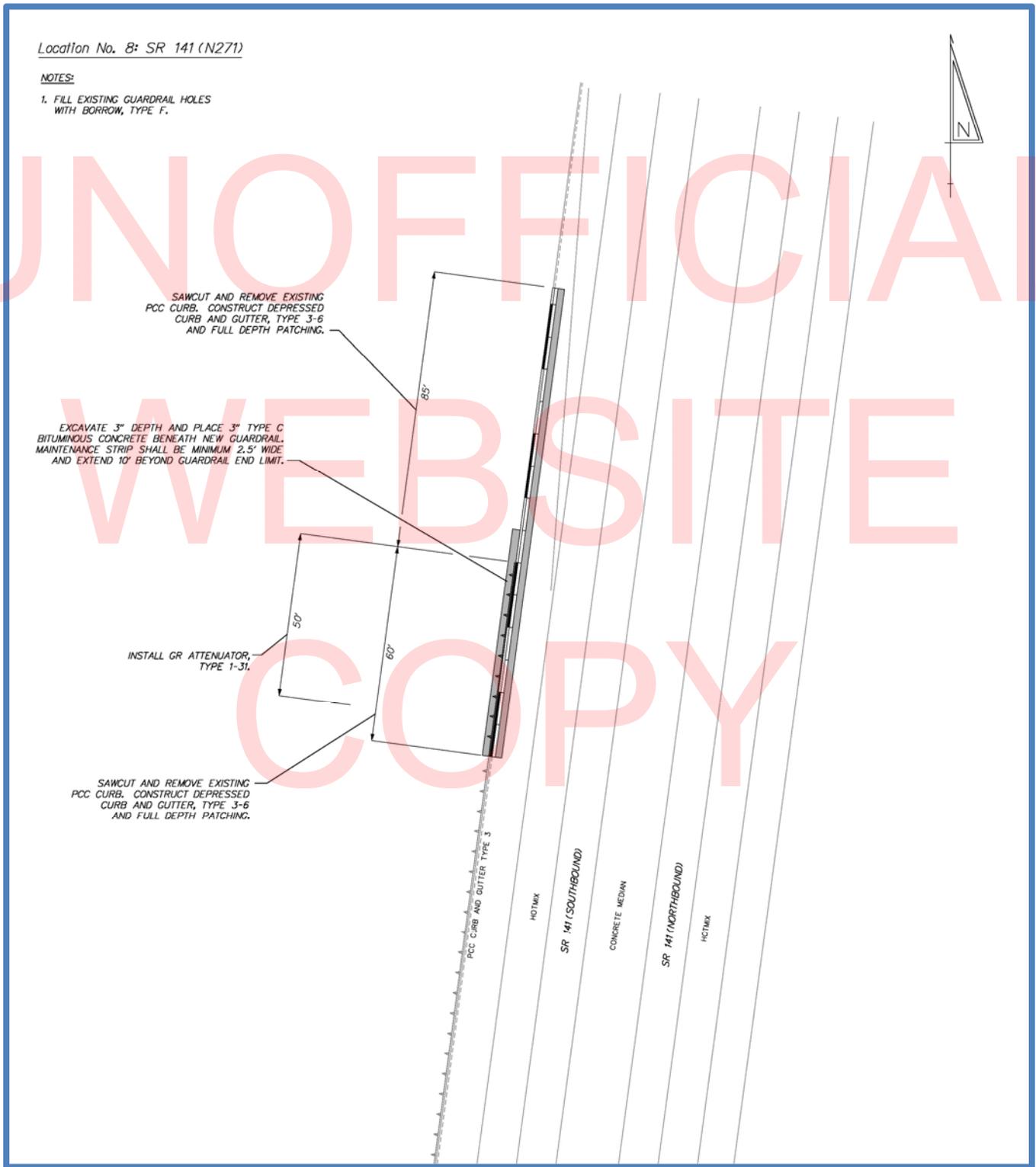
Location No. 8: Centre Road (N271)			
ITEM #	TITLE	UNIT	UNIT QUANTITY
202000	EXCAVATION AND EMBANKMENT	CY	21
209006	BORROW, TYPE F	CY	3
211002	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL)	LF	50
302008	GRADED AGGREGATE BASE COURSE, TYPE B, PATCHING	CY	8
401821	BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS,PG 64-22, PATCHING	TON	7
401822	BITUMINOUS CONCRETE, SUPERPAVE, TYPE B, 160 GYRATIONS,PG 64-22, PATCHING	TON	12
607000	REMOVAL OF EXISTING MASONRY	CY	1.5
701023	INTEGRAL PORTLAND CEMENT CONCRETE CURB & GUTTER, TYPE 3-6	LF	145
720585	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 1-31	EACH	1
726002	BURIED END SECTION	EACH	0
743003	ARROWPANELS, TYPE C	EADY	5
743004	FURNISH AND MAINTAIN PORTABLE CHANGEABLEMESSAGE SIGN	EADY	0
743006	PLASTIC DRUMS	EADY	250
743007	TRAFFIC OFFICERS	HOUR	0
743010	FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR,TYPE II	EADY	5
743024	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	40
743050	FLAGGER, NEW CASTLE COUNTY, STATE	HOUR	40
743062	FLAGGER, NEW CASTLE COUNTY, STATE, OVERTIME	HOUR	4
758000	REMOVAL OF EXISTING PORTLAND CEMENTCONCRETE PAVEMENT, CURB,SIDEWALK, ETC.	SY	19
762001	SAW CUTTING, HOT MIX	LF	149
762002	SAW CUTTING, CONCRETE, FULL DEPTH	LF	2
905005	INLET SEDIMENT CONTROL, CURB INLET	EACH	1
908001	TOPSOIL (TON)	TON	7
908014	PERMANENT GRASS SEEDING, DRY GROUND	SY	27

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

CONSTRUCTION PLAN:



DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

LOCATION NO. 9: Centre Road (N271) and Kennett Pike (N9) Interchange

GENERAL IMPROVEMENTS:

Guardrail safety improvements by removing turned down end treatments and other noncompliant guardrail.

DESCRIPTION OF WORK:

LOCATION NO. 9 (A): SR 141 NB to RT. 52 SB Ramp

1. Implement ramp closure detour.
2. Sawcut and remove PCC curb, 10' south of the drainage inlet, as shown in the plans. Do not disturb existing PCC pavement.
3. Remove existing turned down end treatment.
4. Excavate for proposed maintenance strip, where applicable.
5. Fill existing guardrail holes with Borrow, Type F.
6. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
7. Install galvanized steel beam guardrail, Type 1-31.
8. Install guardrail end treatment attenuator, Type 1-31.
9. Construct depressed PCC curb, Type 1-6, as shown in the plans.
10. Place topsoil and permanent seeding, where applicable.
11. Open ramp to traffic.

LOCATION NO. 9 (B): RT. 52 SB to SR 141 SB Ramp (150' south of Presidential Drive)

1. Utilize lane closure detail, TA-33, from DEMUTCD.
2. Remove existing turned down end treatment.
3. Excavate for proposed maintenance strip, where applicable.
4. Fill existing guardrail holes with Borrow, Type F.
5. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
6. Install guardrail end treatment attenuator, Type 1-31.
7. Place topsoil and permanent seeding, where applicable.

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

LOCATION NO. 9 (C): RT. 52 SB to SR 141 SB Ramp (in gore area)

1. Implement ramp closure detour.
2. Remove two (2) existing turned down end treatment and additional guardrail to the limits shown in the plans.
3. Excavate for proposed maintenance strip, where applicable.
4. Fill existing guardrail holes with Borrow, Type F.
5. Re-grade gore area to drain properly.
6. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
7. On SB Rt. 52, transition existing guardrail to the compliant 31" and install guardrail end treatment attenuator, Type 1-31.
8. On SB Rt. 52 to SB SR 141 ramp, transition existing guardrail to the compliant 31" and install guardrail end treatment attenuator, Type 2-31.
9. Place topsoil and permanent seeding, where applicable.
10. Open ramp to traffic.

LOCATION NO. 9 (D): RT. 52 NB to SR 141 SB Ramp

1. Implement ramp closure detour.
2. Sawcut and remove PCC curb, as shown in the plans.
3. Remove existing turned down end treatment.
4. Excavate for proposed maintenance strip, where applicable.
5. Fill existing guardrail holes with Borrow, Type F.
6. Construct depressed PCC curb, Type 1-6, as shown in the plans.
7. Place bituminous patching in front of new curb.
8. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
9. Transition existing guardrail to the compliant 31" and install guardrail end treatment attenuator, Type 1-31.
10. Place topsoil and permanent seeding, where applicable.
11. Open ramp to traffic.

LOCATION NO. 9 (E): SR 141 NB to RT. 52 NB Ramp

1. Implement ramp closure detour.
2. Sawcut and remove PCC curb and sidewalk, as shown in the plans. Do not disturb existing PCC pavement.
3. Remove existing turned down end treatment.
4. Excavate for proposed maintenance strip, where applicable.
5. Fill existing guardrail holes with Borrow, Type F.
6. Construct PCC curb ramp, Type 2 to meet ADA compliance.
7. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
8. Transition existing guardrail to the compliant 31" and install guardrail end treatment attenuator, Type 2-31.
9. Place topsoil and permanent seeding, where applicable.
10. Open ramp to traffic.

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

ESTIMATE FOR LOCATION:

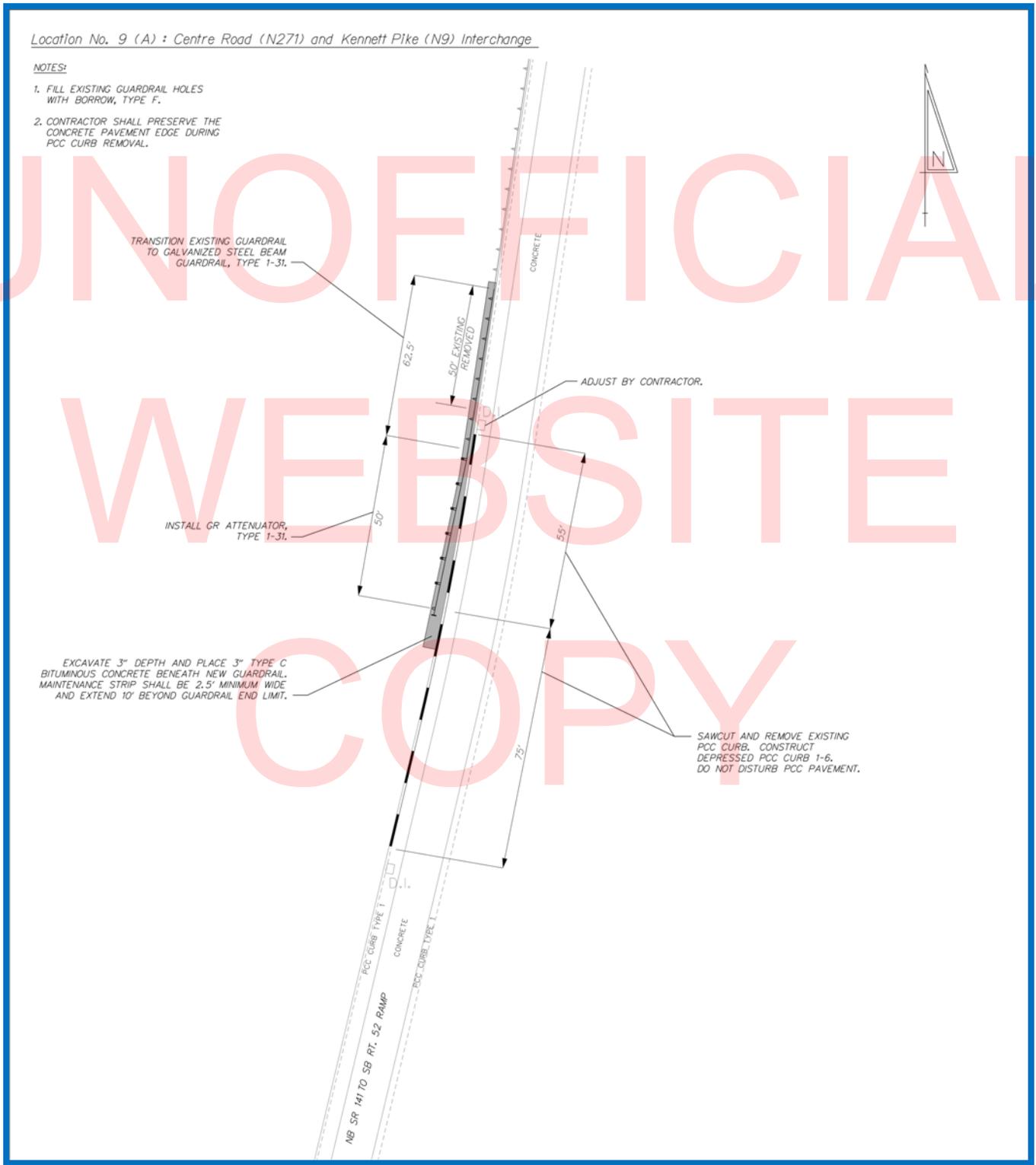
Location No. 9: Centre Road (N271) and Kennett Pike (N9) Interchange			
ITEM #	TITLE	UNIT	UNIT QUANTITY
202000	EXCAVATION AND EMBANKMENT	CY	125
209006	BORROW, TYPE F	CY	70
211002	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL)	LF	425
302008	GRADED AGGREGATE BASE COURSE, TYPE B, PATCHING	CY	4
401821	BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS,PG 64-22, PATCHING	TON	12
401822	BITUMINOUS CONCRETE, SUPERPAVE, TYPE B, 160 GYRATIONS,PG 64-22, PATCHING	TON	7
607000	REMOVAL OF EXISTING MASONRY	CY	9.0
701014	PORTLAND CEMENT CONCRETE CURB, TYPE 1-6	LF	275
705007	SIDEWALK SURFACE DETECTABLE WARNING SYSTEM	SF	20
705009	CURB RAMP, TYPE 2, 3, AND/OR 4	SF	230
720050	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	LF	137.5
720585	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 1-31	EACH	4
720586	GUARDRAIL END TREATMENT ATTENUATOR,TYPE 2-31	EACH	2
726002	BURIED END SECTION	EACH	0
743003	ARROWPANELS, TYPE C	EADY	20
743004	FURNISH AND MAINTAIN PORTABLE CHANGEABLEMESSAGE SIGN	EADY	80
743006	PLASTIC DRUMS	EADY	1,000
743007	TRAFFIC OFFICERS	HOUR	40
743010	FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR,TYPE II	EADY	20
743023	TEMPORARY BARRICADES, TYPE III	LFDY	40
743024	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	280
743050	FLAGGER, NEW CASTLE COUNTY, STATE	HOUR	160
743062	FLAGGER, NEW CASTLE COUNTY, STATE, OVERTIME	HOUR	16
758000	REMOVAL OF EXISTING PORTLAND CEMENTCONCRETE PAVEMENT, CURB,SIDEWALK, ETC.	SY	62
762001	SAW CUTTING, HOT MIX	LF	275
762002	SAW CUTTING, CONCRETE, FULL DEPTH	LF	8
905005	INLET SEDIMENT CONTROL, CURB INLET	EACH	6
908001	TOPSOIL (TON)	TON	431
908014	PERMANENT GRASS SEEDING, DRY GROUND	SY	670

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

CONSTRUCTION PLANS:

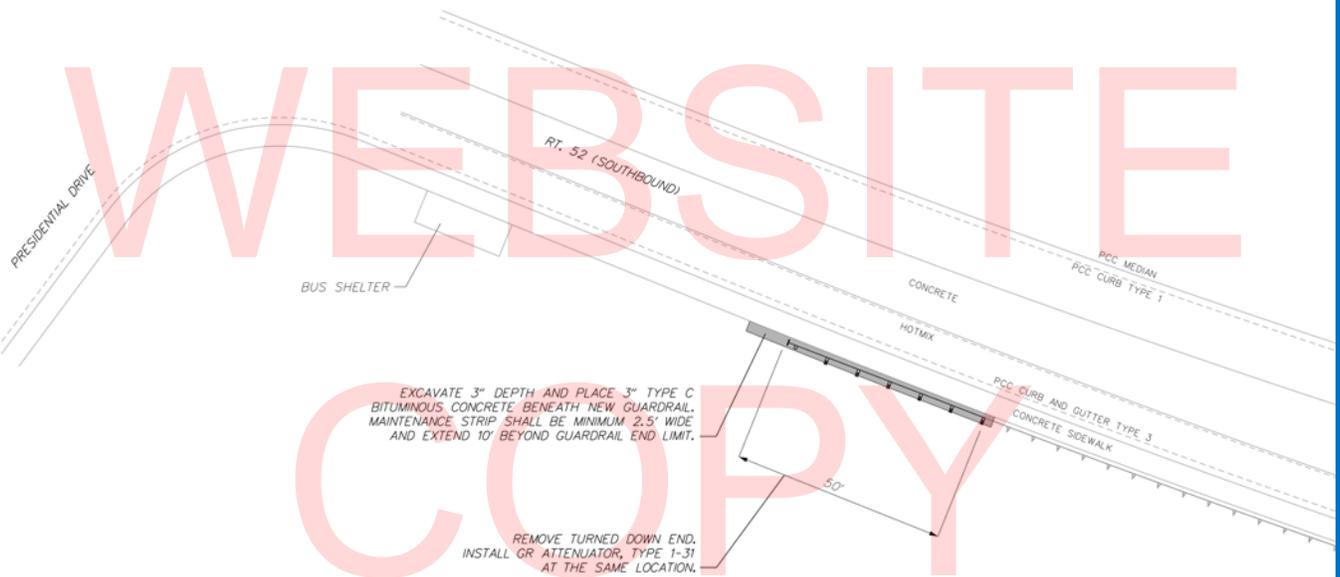


CONSTRUCTION PLANS:

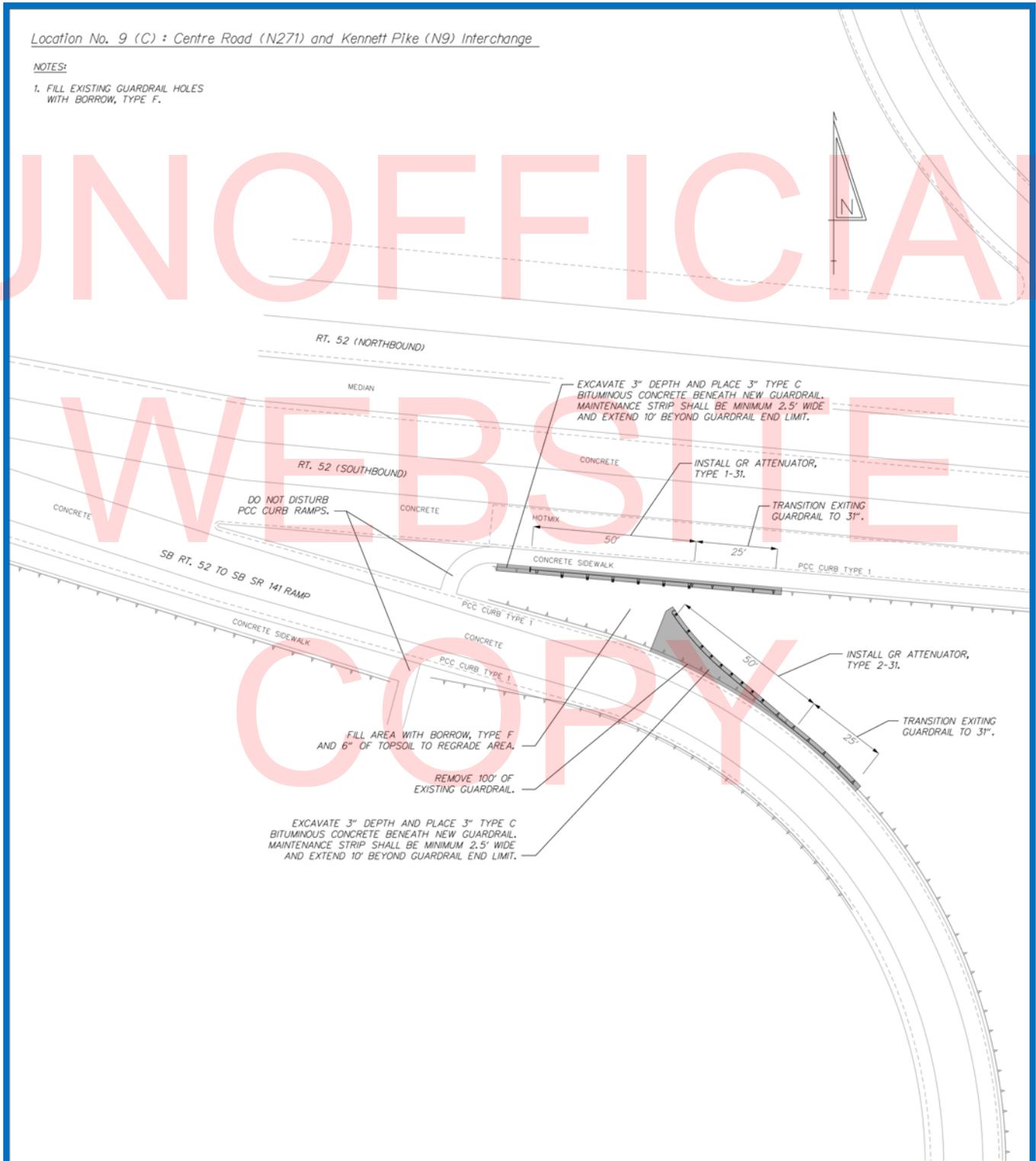
Location No. 9 (B) : Centre Road (N271) and Kennett Pike (N9) Interchange

NOTES:

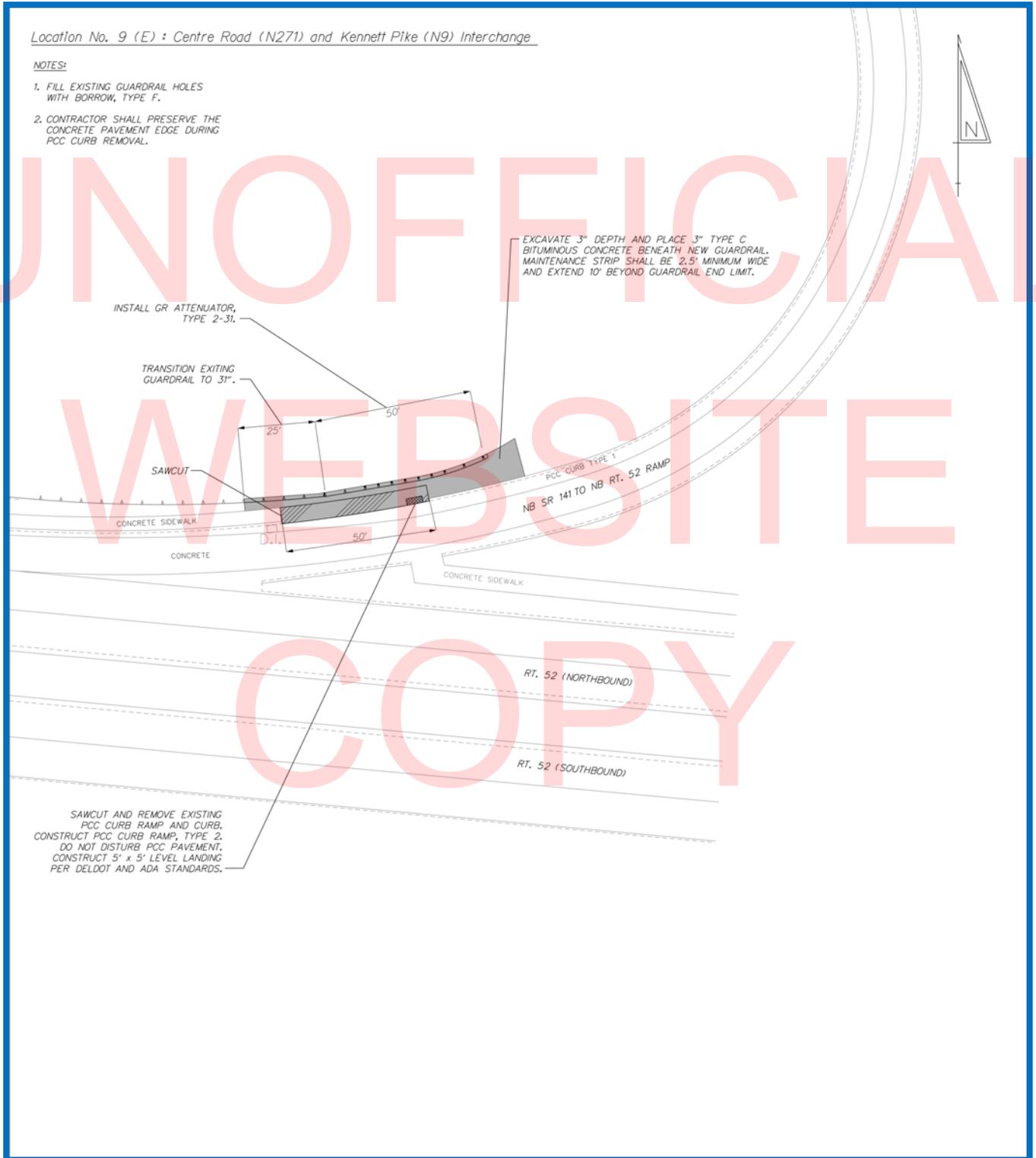
1. FILL EXISTING GUARDRAIL HOLES WITH BORROW, TYPE F.



CONSTRUCTION PLANS:



CONSTRUCTION PLANS:



DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

LOCATION NO. 10: Fox Den Road (N325), Eastbound

GENERAL IMPROVEMENTS:

Guardrail safety improvements by removing turned down end treatments and other noncompliant guardrail.

DESCRIPTION OF WORK:

1. Utilize lane closure detail, TA-10, from DEMUTCD.
2. Excavate for proposed maintenance strip and riprap installation, where applicable.
3. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
4. Install galvanized steel beam guardrail, Type 2-31.
5. Install buried end section at the approach section.
6. On the exiting section, install end treatment attenuator, Type 2-31.

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CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

ESTIMATE FOR LOCATION:

Location No. 10: Fox Den Road (N325)			
ITEM #	TITLE	UNIT	UNIT QUANTITY
202000	EXCAVATION AND EMBANKMENT	CY	38
209006	BORROW, TYPE F	CY	20
211002	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL)	LF	0
401821	BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22, PATCHING	TON	20
607000	REMOVAL OF EXISTING MASONRY	CY	0.0
712020	RIPRAP, R-4	TON	15
713003	GEOTEXTILES, RIPRAP	SY	20
720050	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	LF	310.0
720549	GALVANIZED STEEL POST, EXTRA LENGTH	LF	17
720586	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 2-31	EACH	1
726002	BURIED END SECTION	EACH	1
743003	ARROWPANELS, TYPE C	EADY	10
743006	PLASTIC DRUMS	EADY	500
743010	FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE II	EADY	10
743023	TEMPORARY BARRICADES, TYPE III	LFDY	40
743024	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	80
743050	FLAGGER, NEW CASTLE COUNTY, STATE	HOUR	80
743062	FLAGGER, NEW CASTLE COUNTY, STATE, OVERTIME	HOUR	8
748548	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 5"	LF	0
762001	SAW CUTTING, HOT MIX	LF	340
908001	TOPSOIL (TON)	TON	44
908014	PERMANENT GRASS SEEDING, DRY GROUND	SY	190

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

LOCATION NO. 11: Cedar Lane Road (N427), Northbound and Southbound, at Betsy Rawls Drive

GENERAL IMPROVEMENTS:

Guardrail safety improvements by removing turned down end treatments and other noncompliant guardrail.

DESCRIPTION OF WORK:

1. Utilize lane closure, TA-10, from DEMUTCD or implement road closure detour plan for this location.
2. Remove entire run of guardrail on the southbound side of Cedar Lane Road.
3. Sawcut and remove existing hotmix curb.
4. Excavate for proposed maintenance strip and riprap installation, where applicable.
5. Fill existing guardrail holes with borrow, Type F.
6. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
7. Install galvanized steel beam guardrail, Type 1-31.
8. On the approach, install guardrail end treatment attenuator, Type 1-31.
9. On the exiting section, flare the guardrail outside of the clear zone and install end anchorage, Type 31. The end anchorage shall be installed so that the bus stop is not disturbed.
10. Place riprap as shown in the plans.
11. Place topsoil and permanent seeding, where applicable.
12. Remove entire run of guardrail on the northbound side of Cedar Lane Road.
13. Sawcut and remove existing hotmix curb.
14. Excavate for proposed maintenance strip and riprap installation, where applicable.
15. Fill existing guardrail holes with borrow, Type F.
16. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
17. Install galvanized steel beam guardrail, Type 1-31.
18. On the approach, install guardrail end treatment attenuator, Type 2-31. The end treatment shall be installed so that the pedestrian pathway is not disturbed.
19. On the exiting section, install end treatment attenuator, Type 1-31.
20. Place riprap as shown in the plans.
21. Place topsoil and permanent seeding, where applicable.

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

ESTIMATE FOR LOCATION:

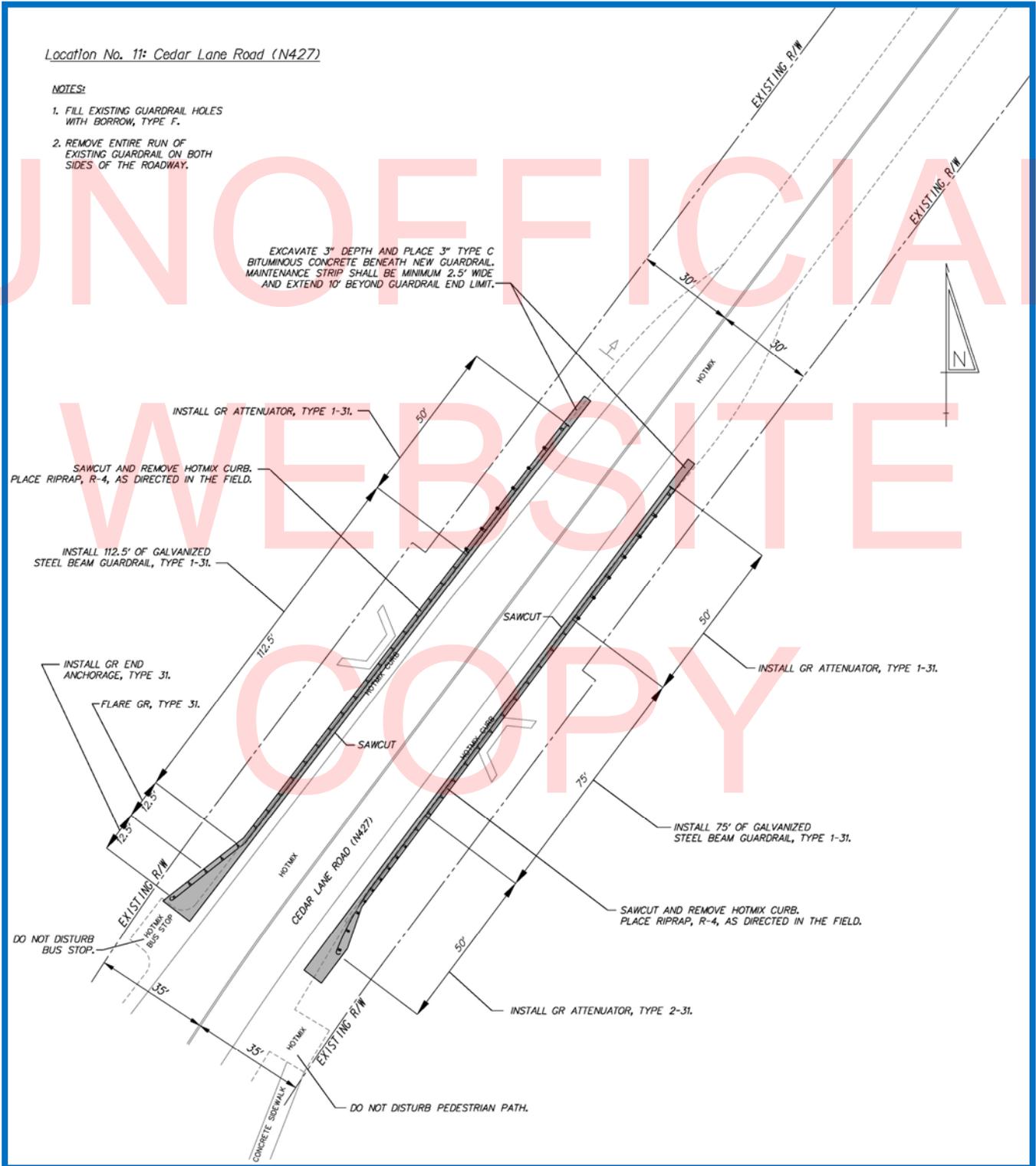
Location No. 11: Cedar Lane Road (N427) at Betsy Rawls Drive			
ITEM #	TITLE	UNIT	UNIT QUANTITY
202000	EXCAVATION AND EMBANKMENT	CY	34
209006	BORROW, TYPE F	CY	15
211002	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL)	LF	350
401821	BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22, PATCHING	TON	39
607000	REMOVAL OF EXISTING MASONRY	CY	6.0
712020	RIPRAP, R-4	TON	163
713003	GEOTEXTILES, RIPRAP	SY	202
720050	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	LF	200.0
720585	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 1-31	EACH	2
720586	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 2-31	EACH	1
726001	END ANCHORAGE 31	EACH	1
743003	ARROWPANELS, TYPE C	EADY	10
743006	PLASTIC DRUMS	EADY	500
743010	FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE II	EADY	10
743023	TEMPORARY BARRICADES, TYPE III	LFDY	40
743024	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	120
743050	FLAGGER, NEW CASTLE COUNTY, STATE	HOUR	80
743062	FLAGGER, NEW CASTLE COUNTY, STATE, OVERTIME	HOUR	8
748548	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 5"	LF	403
762001	SAW CUTTING, HOT MIX	LF	403
908001	TOPSOIL (TON)	TON	21
908014	PERMANENT GRASS SEEDING, DRY GROUND	SY	90

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

CONSTRUCTION PLAN:



DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

LOCATION NO. 12: Cedar Lane Road (N427), Northbound and Southbound, Approx. 3,200' North of Marl Pit Road

GENERAL IMPROVEMENTS:

Guardrail safety improvements by removing turned down end treatments and other noncompliant guardrail.

DESCRIPTION OF WORK:

1. Utilize lane closure, TA-10, from DEMUTCD or implement road closure detour plan for this location.
2. On the southbound side, remove entire run of existing guardrail.
3. Excavate for proposed maintenance strip, where applicable.
4. Fill existing guardrail holes with borrow, Type F.
5. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
6. Galvanized steel beam guardrail, Type 1-31 shall be installed 2' inside of the existing guardrail location, as shown in the plans. Guardrail over culverts, Type 3-31 shall be installed where indicated on the plans.
7. Install guardrail end treatment attenuator, Type 1-31 on the approach section.
8. On the exiting section, install guardrail end treatment attenuator, Type 1-31. The attenuator shall be installed so that the mailbox is not disturbed.
9. Place topsoil and permanent seeding, where applicable.
10. On the northbound side, remove entire run of existing guardrail.
11. Excavate for proposed maintenance strip, where applicable.
12. Fill existing guardrail holes with borrow, Type F.
13. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
14. Install galvanized steel beam guardrail, Type 3-31, over culvert 2' inside of the existing guardrail location, as shown in the plans.
15. Install guardrail end treatment attenuator, Type 1-31 at the approach and exiting sections.
16. Place topsoil and permanent seeding, where applicable.

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

ESTIMATE FOR LOCATION:

Location No. 12: Cedar Lane Road (N427), Approx. 3,200' North of Marl Pit Road			
ITEM #	TITLE	UNIT	UNIT QUANTITY
202000	EXCAVATION AND EMBANKMENT	CY	38
209006	BORROW, TYPE F	CY	13
211002	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL)	LF	275
401821	BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22, PATCHING	TON	30
607000	REMOVAL OF EXISTING MASONRY	CY	6.0
720050	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	LF	25.0
720057	GUARDRAIL OVER CULVERTS, TYPE 3-31	EACH	2
720585	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 1-31	EACH	4
743003	ARROWPANELS, TYPE C	EADY	10
743006	PLASTIC DRUMS	EADY	500
743010	FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE II	EADY	10
743024	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	120
743050	FLAGGER, NEW CASTLE COUNTY, STATE	HOUR	80
743062	FLAGGER, NEW CASTLE COUNTY, STATE, OVERTIME	HOUR	8
748548	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 5"	LF	315
762001	SAW CUTTING, HOT MIX	LF	315
908001	TOPSOIL (TON)	TON	33
908014	PERMANENT GRASS SEEDING, DRY GROUND	SY	140

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

LOCATION NO. 13: Cedar Lane Road (N427), Northbound and Southbound, Approx. 4,200'
South of Boyds Corner Road

GENERAL IMPROVEMENTS:

Guardrail safety improvements by removing turned down end treatments and other noncompliant guardrail.

DESCRIPTION OF WORK:

1. Utilize lane closure, TA-10, from DEMUTCD or implement road closure detour plan for this location.
2. Clear all vegetation within the limits of construction.
3. Remove two (2) turned down end treatments on the southbound side of Cedar Lane Road. The middle section of guardrail shall remain.
4. Excavate for proposed maintenance strip, where applicable.
5. Fill existing guardrail holes with borrow, Type F.
6. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
7. On the approach, transition existing guardrail to the compliant 31" and install guardrail end treatment attenuator, Type 1-31.
8. On the exiting section, extend and flare guardrail, and install buried end section, as shown to avoid utility conflicts.
9. Place topsoil and permanent seeding, where applicable.
10. Remove two (2) turned down end treatments on the northbound side of Cedar Lane Road. The middle section of guardrail shall remain.
11. Excavate for proposed maintenance strip, where applicable.
12. Fill existing guardrail holes with borrow, Type F.
13. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
14. On the approach, extend and flare guardrail, and install buried end section.
15. On the exiting section, transition existing guardrail to the compliant 31", flare guardrail and install guardrail end treatment attenuator, Type 1-31.
16. Place topsoil and permanent seeding, where applicable.

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

ESTIMATE FOR LOCATION:

Location No. 13: Cedar Lane Road (N427), Approx. 4,200' South of Boyds Corner Road

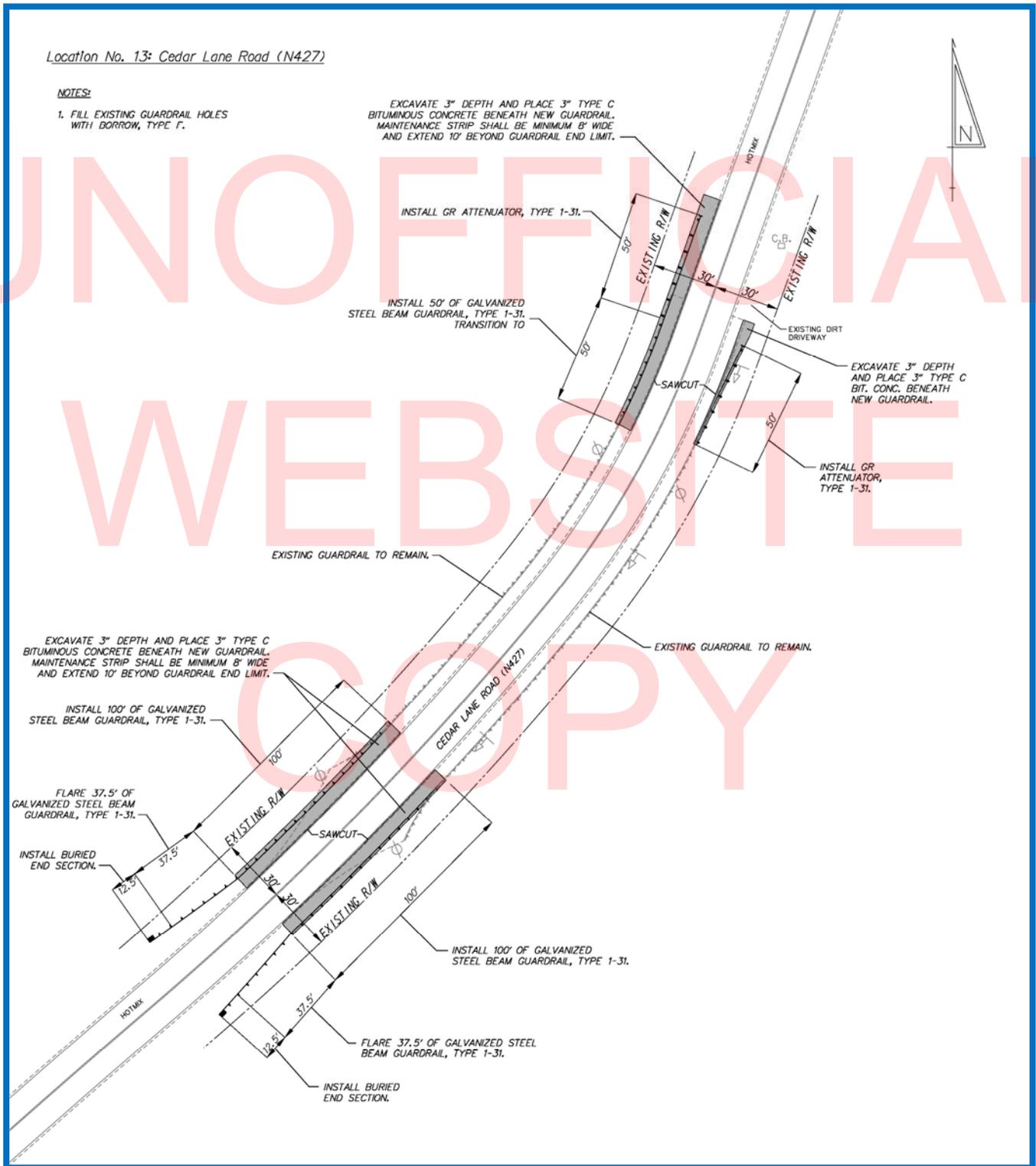
ITEM #	TITLE	UNIT	UNIT QUANTITY
202000	EXCAVATION AND EMBANKMENT	CY	55
209006	BORROW, TYPE F	CY	10
211002	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL)	LF	200.0
401821	BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22, PATCHING	TON	57
607000	REMOVAL OF EXISTING MASONRY	CY	4.5
720050	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	LF	325.0
720051	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 2-31	LF	0.0
720585	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 1-31	EACH	2
726002	BURIED END SECTION	EACH	2
743003	ARROWPANELS, TYPE C	EADY	15
743006	PLASTIC DRUMS	EADY	750
743010	FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE II	EADY	15
743024	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	180
743050	FLAGGER, NEW CASTLE COUNTY, STATE	HOUR	120
743062	FLAGGER, NEW CASTLE COUNTY, STATE, OVERTIME	HOUR	12
748548	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 5"	LF	370
762001	SAW CUTTING, HOT MIX	LF	370
908001	TOPSOIL (TON)	TON	39
908014	PERMANENT GRASS SEEDING, DRY GROUND	SY	165

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

CONSTRUCTION PLAN:



DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

LOCATION NO. 14: Churchtown Road (N432), Eastbound and Westbound, Approx. 1,200'
East of Choptank Road

GENERAL IMPROVEMENTS:

Guardrail safety improvements by removing turned down end treatments and other noncompliant guardrail.

DESCRIPTION OF WORK:

1. Utilize lane closure, TA-10, from DEMUTCD or implement road closure detour plan for this location.
2. Remove entire run of guardrail on the westbound side of Churchtown Road.
3. Excavate for proposed maintenance strip, where applicable.
4. Fill existing guardrail holes with borrow, Type F.
5. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
6. Install galvanized steel beam guardrail, Type 1-31, as shown in the plans.
7. Install two (2) guardrail end treatment attenuators, Type 1-31 on the approach and exiting sections.
8. Place topsoil and permanent seeding, where applicable.
9. Remove entire run of guardrail on the eastbound side of Churchtown Road.
10. Excavate for proposed maintenance strip, where applicable.
11. Fill existing guardrail holes with borrow, Type F.
12. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
13. Install galvanized steel beam guardrail, Type 1-31, as shown in the plans.
14. On the approach section, extend the guardrail twenty-five (25) feet and install guardrail end treatment attenuator, Type 1-31.
15. On the exiting section, install guardrail end treatment attenuator, Type 1-31 and the same location of the exiting turned down end.
16. Place topsoil and permanent seeding, where applicable.

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

ESTIMATE FOR LOCATION:

Location No. 14: Churchtown Road (N432), Approx. 1,200' East of Choptank Road			
ITEM #	TITLE	UNIT	UNIT QUANTITY
202000	EXCAVATION AND EMBANKMENT	CY	62
209006	BORROW, TYPE F	CY	18
211002	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL)	LF	487.5
401821	BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22, PATCHING	TON	49
607000	REMOVAL OF EXISTING MASONRY	CY	6.0
720050	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	LF	275.0
720586	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 2-31	EACH	4
743003	ARROWPANELS, TYPE C	EADY	5
743006	PLASTIC DRUMS	EADY	250
743010	FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE II	EADY	5
743024	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	60
743050	FLAGGER, NEW CASTLE COUNTY, STATE	HOUR	40
743062	FLAGGER, NEW CASTLE COUNTY, STATE, OVERTIME	HOUR	4
748548	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 5"	LF	515
762001	SAW CUTTING, HOT MIX	LF	515
908001	TOPSOIL (TON)	TON	54
908014	PERMANENT GRASS SEEDING, DRY GROUND	SY	229

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

LOCATION NO. 15: Churchtown Road (N432), Eastbound and Westbound, Approx. 1,000' West of Meadow Drive

GENERAL IMPROVEMENTS:

Guardrail safety improvements by removing turned down end treatments and other noncompliant guardrail.

DESCRIPTION OF WORK:

1. Utilize lane closure, TA-10, from DEMUTCD or implement road closure detour plan for this location.
2. Remove entire run of guardrail on the westbound of Churchtown Road.
3. Excavate for proposed maintenance strip, where applicable.
4. Fill existing guardrail holes with borrow, Type F.
5. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
6. Install galvanized steel beam guardrail, Type 2-31, as shown in the plans.
7. On approach section, install guardrail end treatment attenuator, Type 1-31.
8. On the exiting section, extend the guardrail to the location shown in the plans and install guardrail end treatment attenuator, Type 1-31.
9. Place topsoil and permanent seeding, where applicable.
10. Remove entire run of guardrail on the eastbound of Churchtown Road.
11. Excavate for proposed maintenance strip, where applicable.
12. Fill existing guardrail holes with borrow, Type F.
13. Pave maintenance strip, using bituminous concrete Type C, per the engineer in the field.
14. Install galvanized steel beam guardrail, Type 1-31 and Type 2-31, as shown in the plans.
15. On the approach section, install guardrail end treatment attenuator, Type 1-31.
16. On the exiting section, extend the guardrail to the location shown in the plans and install guardrail end treatment attenuator, Type 1-31.
17. Place topsoil and permanent seeding, where applicable.

DELAWARE DEPARTMENT OF TRANSPORTATION

CONTRACT No: T201687701

Guardrail Repair, North District, Open End, FY16-18

ESTIMATE FOR LOCATION:

Location No. 15: Churchtown Road (N432), Approx. 1,000' West of Meadow Drive			
ITEM #	TITLE	UNIT	UNIT QUANTITY
202000	EXCAVATION AND EMBANKMENT	CY	61
209006	BORROW, TYPE F	CY	15
211002	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL)	LF	350
401821	BITUMINOUS CONCRETE, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22, PATCHING	TON	48
607000	REMOVAL OF EXISTING MASONRY	CY	6.0
720050	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	LF	150.0
720051	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 2-31	LF	112.5
720585	GUARDRAIL END TREATMENT ATTENUATOR, TYPE 1-31	EACH	4
743003	ARROWPANELS, TYPE C	EADY	5
743006	PLASTIC DRUMS	EADY	250
743010	FURNISH AND MAINTAIN TRUCK MOUNTED ATTENUATOR, TYPE II	EADY	5
743024	TEMPORARY WARNING SIGNS AND PLAQUES	EADY	60
743050	FLAGGER, NEW CASTLE COUNTY, STATE	HOUR	40
743062	FLAGGER, NEW CASTLE COUNTY, STATE, OVERTIME	HOUR	4
748548	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 5"	LF	503
762001	SAW CUTTING, HOT MIX	LF	503
908001	TOPSOIL (TON)	TON	52
908014	PERMANENT GRASS SEEDING, DRY GROUND	SY	224

