DESIGN DATA				
Traffic	Average Daily			
Current 2014	Pass: 5,005	Trucks: 1,290	Total: 6,295	
Forecast 2034	Pass: 7,460	Trucks: 2,120	Total: 9,580	
Clear Zone Dist. 34 Ft		Design Speed: 75 mph		
Minimum Sight Dist. for Stopping: 820 Ft		Bridges: HL-93		
Full Control of Access, No Point of Access Other Than at Interchange Ramps				
Pavement Design Life 30 (years)				
Design Accumulated One-Way Rigid ESALs: 27,405,486				

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	18985	1	1

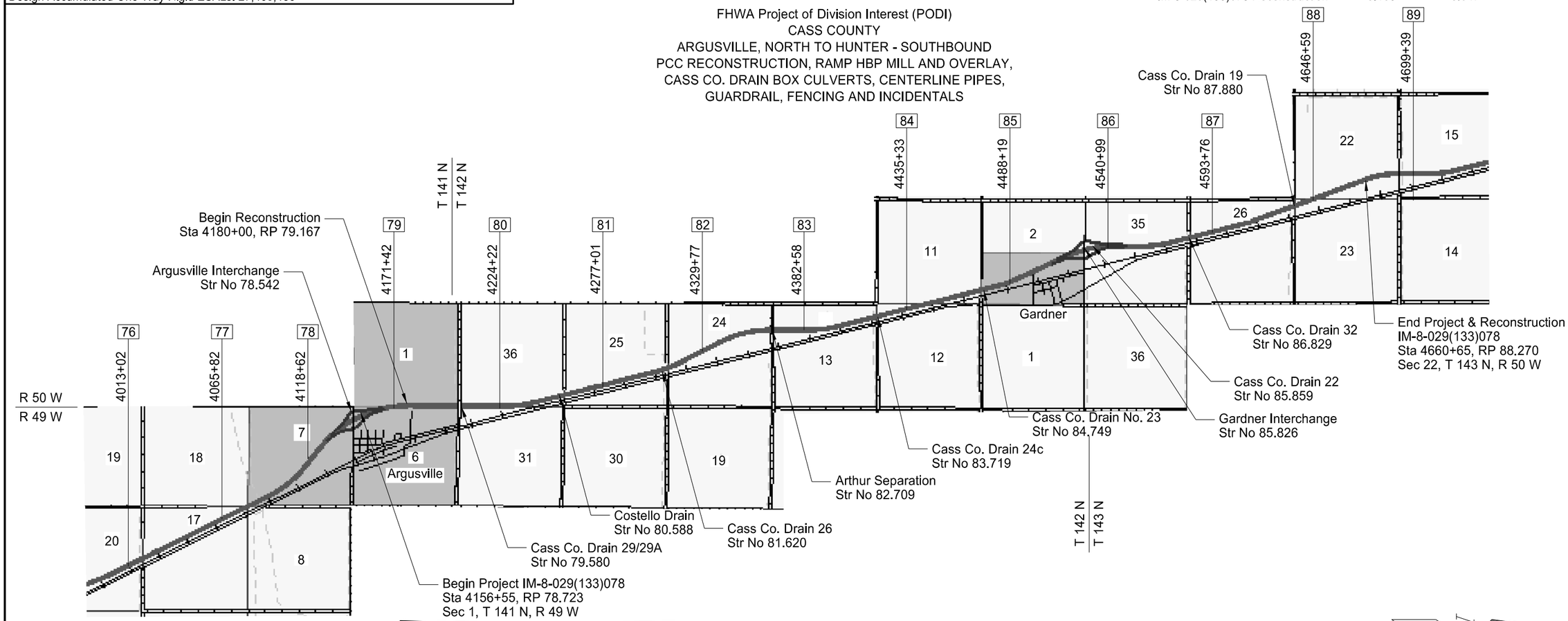
JOB # 14
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

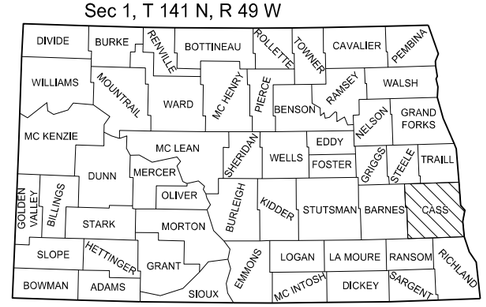
IM-8-029(133)078

FHWA Project of Division Interest (PODI)
CASS COUNTY
ARGUSVILLE, NORTH TO HUNTER - SOUTHBOUND
PCC RECONSTRUCTION, RAMP HBP MILL AND OVERLAY,
CASS CO. DRAIN BOX CULVERTS, CENTERLINE PIPES,
GUARDRAIL, FENCING AND INCIDENTALS

GOVERNING SPECIFICATIONS:
2014 Standard Specifications adopted by the North Dakota Department of Transportation and the Supplemental Specifications effective on the date the project is advertised.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
IM-8-029(133)078 Reconstruction	9.103	9.547





STATE COUNTY MAP

DESIGNERS

Adam R. Walker

Adam M. Ruud

Steven L. Strack

Ashley M. Roder

APPROVED DATE 8/13/2015

Roger Weigel /s/

OFFICE OF PROJECT DEVELOPMENT
ND DEPARTMENT OF TRANSPORTATION

I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.

APPROVED DATE 7/29/2015

Jeffrey T. Lansink /s/
Houston Engineering Inc.

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LIST OF STANDARD DRAWINGS (Included in Back of Plans)

Standard No.	Description
D-101-1-3, 10, 20, 21, 30-32	NDDOT Standards
D-255-2	Erosion and Siltation Control – Erosion Control Blanket Installation
D-256-1	Erosion and Siltation Controls
D-260-1	Erosion and Siltation Controls – Silt Fence
D-261-1	Erosion Control – Fiber Roll Placement Details
D-550-2	Longitudinal Joint Details
D-550-4	Transverse Expansion Joint Detail
D-550-5	Transverse Construction Joint
D-704-1	Attenuation Device
D-704-5	Contractor Sign Detail
D-704-7 & 8	Breakaway Systems for Construction Zone Signs
D-704-9, 10, 11	Construction Sign Details
D-704-12	Shoulder Closure Tapers
D-704-13	Barricade and Channelizing Device Details
D-704-14	Construction Sign Punching and Mounting Details
D-704-22	Construction Truck and Temporary Detour Layouts
D-704-24	Shoulder Closures and Bridge Painting Layouts
D-704-26	Miscellaneous Sign Layouts
D-704-27	Traffic Control Plan for Moving Operations
D-704-35	Sign Layout for One Lane Closure – Interstate System
D-704-38 & 39	Traffic Control for Median Crossovers
D-704-45	Construction Signing Median Crossover
D-704-50	Portable Sign Support Assembly
D-704-51	Portable Precast Concrete Median Barrier (Temporary Usage)
D-704-56	Mobile Operation (Grinding Shoulder Rumble Strips)
D-706-1	Field Laboratory
D-708-6	Erosion and Siltation Control – Median or Ditch Inlet Protection
D-714-1	Reinforced Concrete Pipe Culverts and End Sections (Round Pipe)
D-714-16	Jacked or Bored Pipe
D-714-22	Concrete Pipe or Precast Concrete Box Culvert Ties
D-714-25M	Transverse Mainline Pipe Excavation and Installation Detail for Multiple Pipes More Than 4 Feet
D-714-26	Transverse Mainline Pipe Excavation and Installation Detail for Pipes 4 Feet or Less Below the Top
D-714-26M	Transverse Mainline Pipe Excavation and Installation Detail for Multiple Pipes 4 Feet or Less
D-720-1	Standard Monuments and Right of Way Markers
D-752-3	Standard Woven Wire Fence

Standard No.	Description
D-754-1	Pipe or W-Shape Assembly Details
D-754-2	Breakaway Coupler System for Standard Pipe – Stub Post
D-754-3	Breakaway System for Standard Pipe Stub Post
D-754-4	Multi-Directional Breakaway System for Standard Pipe Stub Post
D-754-5	Foundation Data for Steel Supports
D-754-6	Hinge Plate, Fuse Plate, and Foundation Details for Standard Pipe
D-754-7	Pipe Support and Sign Mounting Details
D-754-9	Letter and Arrow Details for Variable Length Signs
D-754-12	Breakaway Coupler System – Structural Details for W-Shape Supports
D-754-13	Breakaway System Structural Details for W-Shape Supports
D-754-14	Wind Beams and Anchor Plates for W-Shape Supports
D-754-20	(Expressway-Freeway Use) Mile Posts
D-754-21	Reflectorized Delineators
D-754-22A	Typical Interchange Delineation
D-754-23	Perforated Tube Assembly Details
D-754-82	Object Markers
D-754-83	Object Markers - Culverts
D-760-1	Rumble Strips Interstate Highways
D-762-2	Interstate Pavement Marking 4 Lane Divided Highway
D-762-4	Pavement Marking
D-764-1	W-Beam Guardrail – General Details
D-764-5	Sequential Kinking Terminal
D-764-6	Flared Energy Absorbing Terminal
D-764-14	Special W-Beam Guardrail Anchor
D-764-23	Typical Grading at Obstructions with W-Beam Guardrail

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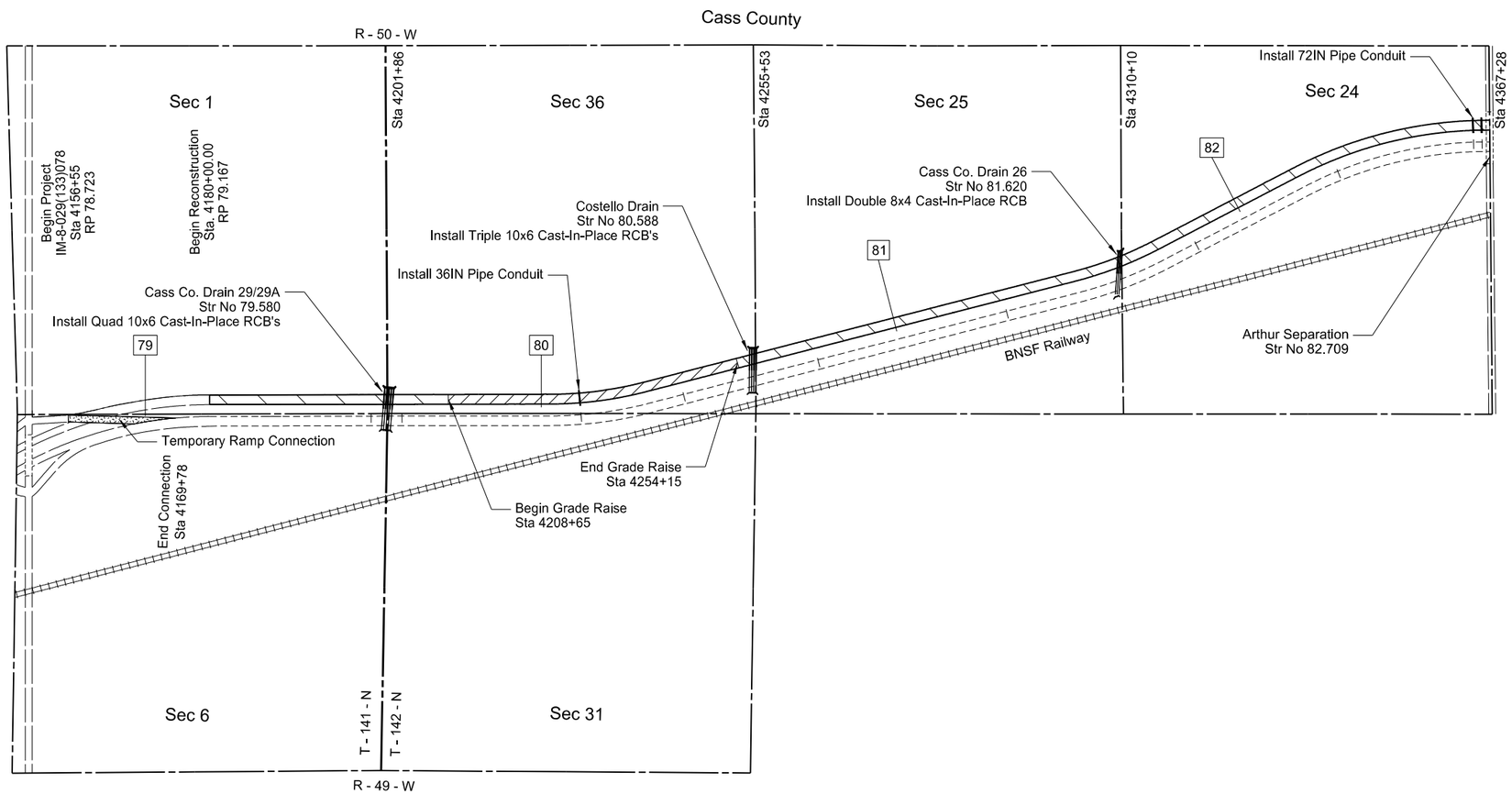

XX Reference Marker

PCC Reconstruction I-29 Southbound

PCC Reconstruction I-29 Southbound
12 IN Grade Raise

Mill & Overlay

Temporary Ramp Connection

Ramp Reconstruction

N

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Scope of Work

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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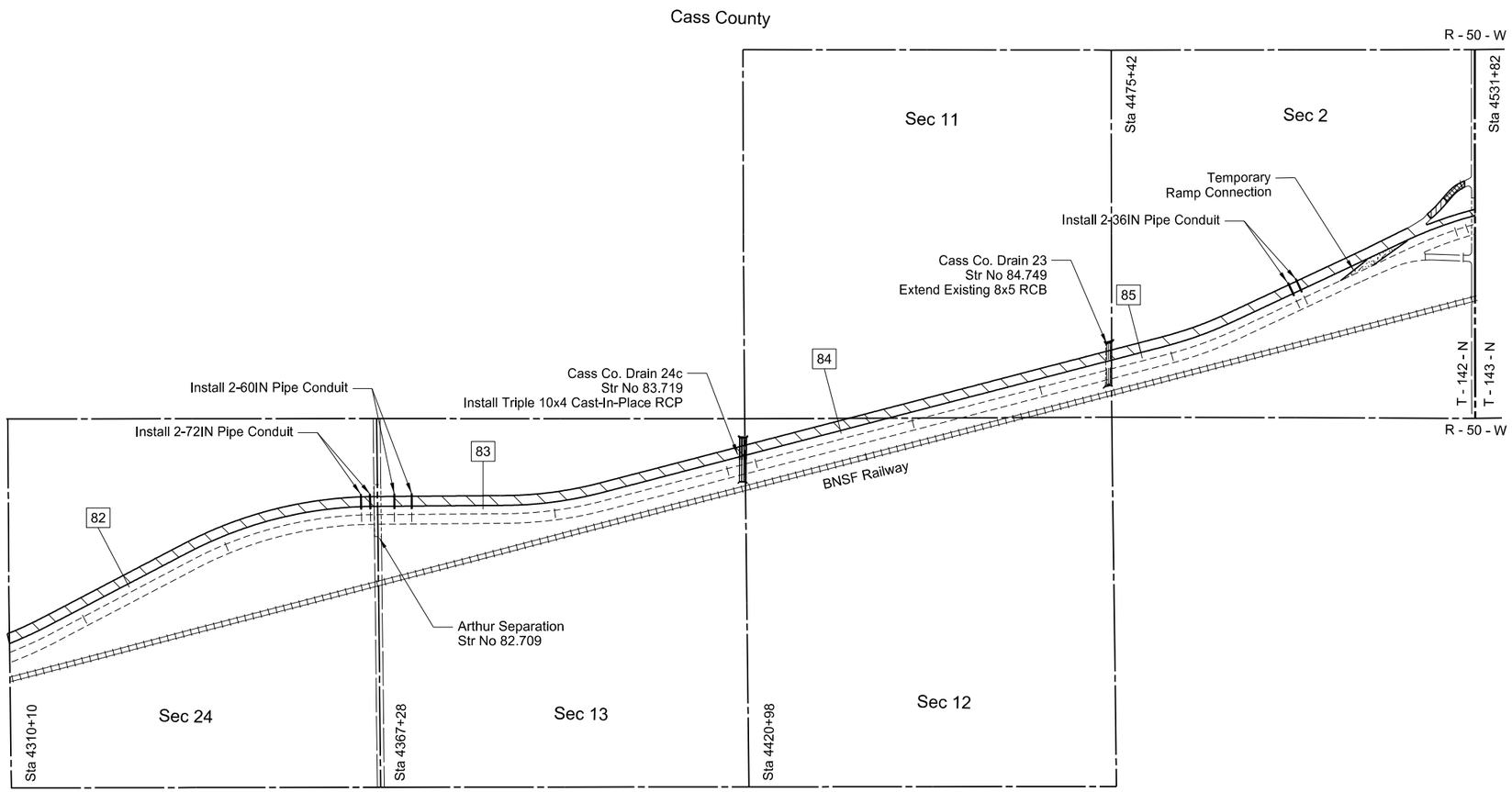

XX Reference Marker

PCC Reconstruction I-29 Southbound

PCC Reconstruction I-29 Southbound
12 IN Grade Raise

Mill & Overlay

Temporary Ramp Connection

Ramp Reconstruction

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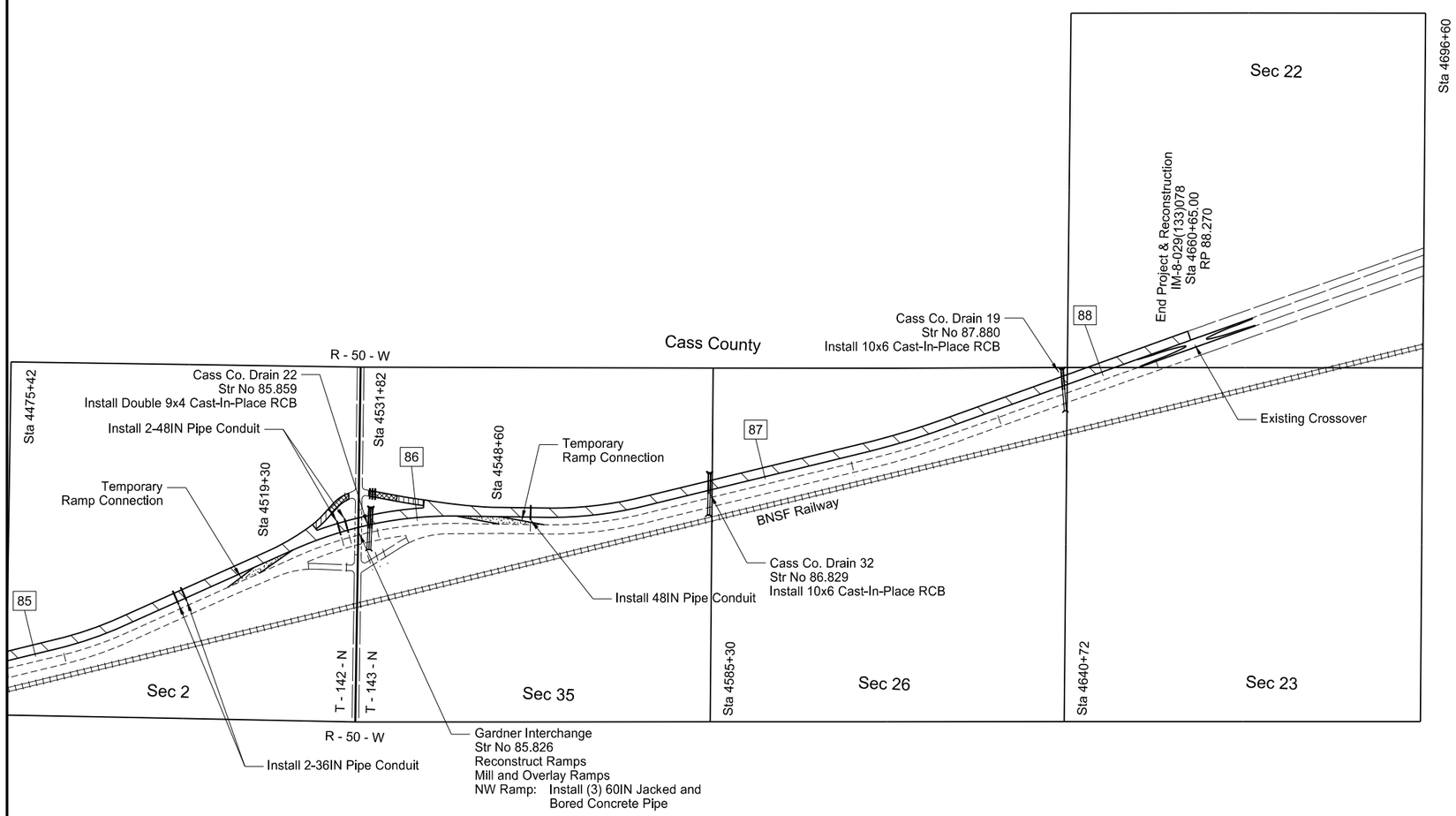
Scope of Work

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	4	3



XX Reference Marker

PCC Reconstruction I-29 Southbound

PCC Reconstruction I-29 Southbound
12 IN Grade Raise

Mill & Overlay

Temporary Ramp Connection

Ramp Reconstruction

N

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Scope of Work

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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NOTES

GENERAL NOTES

100-P01 WEEKLY PLANNING/REPORTING MEETING:

Organize the weekly meeting to coordinate efforts between subcontractors, utilities, local authorities, and others.

Send a knowledgeable representative to conduct the weekly reporting/planning meeting. Prepare minutes for each meeting and make the appropriate distribution of the minutes. Have the minutes approved by the Engineer before distribution.

Provide a written schedule of the next week's work and a tentative schedule of the following week. Include a discussion of problems encountered during the current week; also include information of interest to local authorities, subcontractors, and utilities.

Invite interested agencies to the meeting. Include the following agencies and any other agencies that are necessary:

a. North Dakota Department of Transportation
b. Local Government Agencies
c. Police department
d. Fire department
e. Ambulance service
f. Telephone Co.
g. Power Co.
h. Cable T.V.
i. Gas Co.
j. Railroad Co.
k. Subcontractors
l. Chamber of Commerce
m. FHWA

105-P01 SURVEYING: The Engineer will provide a control line for the contractor to use to establish rough grades. The Engineer will also provide no more than two string lines (hub lines) for trimming/concrete paving operation (same hub line). An additional string line may be provided for the trimming/paving of the wide shoulder as approved by the Engineer.

202-P01 REMOVAL OF PAVEMENT: Removal of pavement consists of removing and salvaging CRCP, doweled jointed pavement, median paving, bituminous pavement and aggregate base.

Existing pavement thicknesses are averages based on previous construction plans and maintenance data.

202-P02 REMOVAL OF TEMPORARY BYPASS: When the temporary ramp connections are no longer needed for traffic control they shall be removed.

This work will consist of:

1. Saw cutting the pavement to be removed at the edge of the finished shoulder.
2. Constructing an aggregate slough at the edge of the sawcut.
3. Shaping the median inslopes to 6:1, placing topsoil, and seeding.
4. Removal and disposal of all pavements. All material shall become the property of the Contractor and shall be removed off of the right-of-way.

All cost for this work will be included in the price bid for "Removal of Temporary Bypass".

203-P01 COMMON EXCAVATION SUBCUT: No subcuts are planned for the I-29 Southbound Mainline. However, if the Project Engineer determines that an area of the subgrade is too wet or unstable, a subcut may be required. A discretionary quantity for 500' of subcutting has been provided in the plans.

Place Geosynthetic Material Type R1 at the bottom of all subcut excavations and backfill with Salvaged Base Course.

203-P02 TOPSOIL: If additional topsoil is needed to provide a 6" uniform depth, it shall meet the requirements of Section 203.04 B.2, "Topsoil – Imported".

If additional topsoil is necessary due to the Contractor leaving topsoil in place during removal operations, the additional topsoil will be provided at no additional cost to the Department.

203-P03 DITCH BLOCKS: If any ditch blocks are disturbed during the project, they shall be rebuilt to their original size and elevation prior to other construction activities. The ditch blocks shall be cross sectioned prior to earth moving operations. All costs to restore any disturbed or damaged ditch blocks will be at the Contractor's expense unless identified in the plans.

203-P04 DRAINAGE: If areas of free water are encountered during construction, drainage must be provided. The Engineer will contact Materials and Research Division for drainage design.

203-P05 EXCAVATION AND FILL ELEVATIONS: All ditch grades and contours are given at the top of the topsoil.

203-P06 HAUL: No average haul has been computed for this project.

203-P07 FLATTEN DITCH BLOCK: All existing ditch blocks shall be flattened to 10:1 slopes transverse to the interstate roadway, within 100' from the surveyed centerline. The slopes shall be transitioned to match existing ground prior to impacts to existing drainage structures.

203-P08 COMPACTION AND DENSITY CONTROL: Compact material as specified in Section 203.04 E.2.b, "ND T-99".

Manipulate embankment material with disking equipment.

210-P01 CHANNEL EXCAVATION: Sediment from existing drains shall be cleaned out to the right-of-way to provide adequate drainage. Excavated soil may be utilized for wetland topsoil. All costs associated with the channel cleanout shall be included in the price bid for "Channel Excavation"

220-P01 STOCKPILE SITE: A Contractor obtained stockpile site shall be utilized for all salvaged materials.

230-P01 RESHAPING ROADWAY: Determine the optimum moisture and density, as specified in ND T 99, for each type of material encountered that requires compaction control. Perform a multi-point test using a minimum of 4 points. Submit the results to the Engineer along with a split sample of each material.

The Engineer will perform comparison tests using the same procedure on the split sample. The Engineer's results will be used for determining in place density of material.

230-P02 COMPACTION AND DENSITY CONTROL: Moisture and density controls for embankment used to reshape the roadway shall be in accordance with Section 203.04 E.2 of the Standard Specifications
ND T 99.

NOTES

230-P03 **EXCESS EXCAVATION:** All excess excavation shall remain the property of the NDDOT. Excess excavation quantities are shown on the Summary of Earthwork Quantity Table. Excess excavation shall be hauled and stockpiled at the following locations:

- County Road 20 Interchange of I-29 (within NDDOT Right of Way).

Prior to placement of the excess excavation, the storage site shall be cleared and stripped of existing topsoil. The excess excavation shall be placed and blended into the existing terrain. All placed material shall be made traversable as approved by the Engineer in the field. The Contractor shall restore topsoil and seed and mulch the stockpile upon grading approval by the Engineer in the field. All costs for topsoil stripping, clearing and grubbing, hauling, placing and grading of excess excavation and restoration and seeding of the stockpile site shall be included in the price bid for "Reshape Roadway".

230-P04 **SUBGRADE:** Construct the final subgrade elevation to within 0.08 feet of the proposed subgrade elevation.

Use low ground pressure equipment on the exposed subgrade.

251-P01 **SEED APPLICATION:** In addition to Class II Seeding, apply Temporary Cover Crop to the first 10 feet of disturbed topsoil adjacent to pavement surfaces. All costs associated with the placement of the additional Temporary Cover Crop to the first 10 feet of disturbed topsoil adjacent to pavement surfaces, shall be included in the unit price bid for "Seeding Class II".

251-P02 **FERTILIZER:** After placing topsoil, but prior to seeding, place fertilizer that meets the requirements of Section 251.03 G, "Fertilizer". Do not place fertilizer in locations where wetland topsoil will be placed. All costs associated with the placement of fertilizer shall be included in the price bid for "Seeding Class II".

256-P01 **REMOVE AND REPLACE RIPRAP:** The existing riprap placed in the median under project IM-8-029(132)078 shall be removed and salvaged. Stockpile the riprap in a location as specified in the Standard Specifications not to impact existing wetlands. All costs associated with the removal and stockpiling of existing riprap shall be included in the price bid for "Riprap - Salvaged".

The costs associated with the placement of salvaged riprap shall be included in the price bid for "Riprap Grade II". If additional riprap is needed to meet the requirements specified in the plans due insufficient salvaged material by the Contractor, the Contractor shall obtain additional material meeting requirements stated in Section 256.03 C of the Standard Specifications. No additional payment will be made for obtaining additional riprap material.

262-P01 **FLOTATION SILT CURTAIN:** A quantity of 100 LF of flotation silt curtain has been included to be used at the Engineer's discretion to supplement additional erosion control measures.

302-P01 **SALVAGED BASE COURSE:** Surface tolerance for the salvaged base course shall be in accordance with 302.04 C.1, Surface Tolerance Type B. Excess material removed from high points of the base course by the trimming operation shall be reincorporated into the base course.

302-P02 **SALVAGED BASE COURSE FOR SUBCUT REPAIRS:** Aggregate meeting the requirement of Class 3 or Class 5 specified in Section 816.02, "Miscellaneous Aggregates" may be used if no salvage based material is available at the time subcuts are filled.

Aggregate used in subcut repairs is subject to the requirements of note 230-P01, "Reshaping Roadway", except the optimum moisture and density shall be determined as specified in ND T 180.

Aggregate used in subcut repairs will be paid for at the contract unit price for "Salvaged Base Course" regardless of the class of material used.

302-P03 **SALVAGED BASE COURSE:** Section 817.01 D, "Salvage Base Course Containing Bituminous Material" is modified as follows:

"The maximum amount of bituminous material in salvaged base course placed beneath a concrete roadway is 65 percent."

302-P04 **HAULING:** The shoulder can be used as a haul route. Haul vehicles shall only drive on the subgrade. Do not drive on the base course and/or geosynthetic material, except when the haul vehicle is dumping. When dumping, the haul vehicle is allowed to drive on the base course in the immediate vicinity of where the load is dumped. Re-establish subgrade surface tolerance per contract requirements prior to placement of the salvaged base course.

302-P05 **SALVAGED BASE COURSE:** All salvaged concrete material shall be incorporated into the salvaged base course. All other material required for the salvaged base course shall be recycled HBP or virgin aggregate.

All excess HBP milled material shall be delivered to the NDDOT Storage Yard in Hillsboro, at 610 6th St. NW

401-P01 **TRIMMING AND PRIME:** Priming shall be within one mile or within 48 hours of the trimming operations unless, HBP paving is to take place within 24 hours of trimming.

411-P01 **MILLING PAVEMENT SURFACE:** All milled material from the NW and SW ramps of the Gardner Interchange shall become the property of the Contractor and shall be disposed of offsite.

430-P01 **CONTRACTOR MIX DESIGN:** The concrete mix design shall meet the following requirements:

Gyratory Effort, # Gyrations	N_{ini}=7, N_{des}=75, N_{max}=115	AASHTO R 35

430-P02 **SUPERPAVE FAA 43:** An additional quantity of 100 ton of Superpave FAA 43 and 6 ton of PG 58-28 Asphalt Cement has been included in the plans to be used at the tie in location of the mainline and north crossover.

550-P01 **CONCRETE PAVEMENT:** The development of a maturity curve specified in Section 550.04 B, "Mix Design" will not be required.

704-016 **TRAFFIC CONTROL SUPERVISOR:** A Traffic Control Supervisor shall be provided on this project.

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NOTES

704-030 **CONSTRUCTION TRAFFIC ACCESS:** Construction traffic shall access the area within Highway and/or Interstate R/W under construction only at interchanges unless a request for a temporary access for other locations has been otherwise approved. To receive temporary access allowance at other locations, the Contractor shall develop and submit to the Engineer a traffic control plan, a traffic impact analysis, a safety analysis, and an environmental impact analysis. The Engineer shall then request temporary access allowance and environmental clearance from FHWA. To be considered for approval, the construction traffic control plans along with the request for temporary access allowance at locations other than at interchanges must provide:

1. That the construction site and the plant site are on the same side of the interstate median;
2. That the construction traffic will not cross the lanes of traffic being used by the public at grade;
3. There are methods in place to prevent the public use of the temporary access during active construction and during shutdown periods;
4. The restoration of the access control fence and right-of-way to pre-project conditions prior to the completion of the project.

Any additional costs associated with the construction traffic control plan, traffic impact analysis, safety analysis, environmental clearance, and restoration of fence and R/W will be at the Contractor's expense.

704-P01 **PRECAST CONCRETE MEDIAN BARRIERS - STATE FURNISHED:** Obtain 79 barriers from the NDDOT Casselton Maintenance storage yard. Return barriers to the NDDOT Casselton Maintenance storage yard at 15482 37th St. SE.

Some 4 inch x 4 inch boards are available at the return location. Provide any additional 4 inch x 4 inch boards necessary to stack barriers. The boards will become property of the Department. Include the cost for boards in the contract unit price for "Precast Concrete Median Barrier - State Furnished".

704-P02 **TRAFFIC CONTROL PHASING:** The traffic control details, as indicated on the plans, have been developed based on the premise that this project will be constructed in six phases for I-29 and one phase for the ramps. The work zone traffic control summary lists include the required number of devices for each phase of each described work area. The Contractor shall be responsible for removing and resetting devices for each phase of construction. The costs associated with removing and resetting traffic control devices shall be included in the price bid for other items.

Phase 1: Phase 1 traffic control is for the outside lane closure of Northbound I-29 for the installation of w-beam guardrail end terminal at the Argusville Interchange.

Phase 2: Phase 2 traffic control is for the right lane closure of Southbound I-29 for construction of temporary ramp connections within the gore areas at the Argusville and Gardener Interchanges. Phases 1 & 2 may be completed concurrently. If the Contractor elects to construct Phases 1 & 2 concurrently, all additional devices shall be supplied by the Contractor and no additional payment will be made for the additional traffic control devices.

Phase 3: Phase 3 traffic control is for the left lane closure of Northbound and Southbound I-29 for construction of temporary ramp connections within the median at the Argusville and Gardener Interchanges, median grading, obliteration of pavement markings, and installation of new temporary traffic control striping in preparation for Phase 4 (head to head traffic on the Northbound I-29).

Phase 4: Phase 4 traffic control is for the closure of Southbound I-29, implementing head to head traffic on Northbound I-29, and activating the temporary access ramps and crossovers for the reconstruction of the Southbound I-29.

Phase 5: Phase 5 traffic control is for the left lane closure of Northbound and Southbound I-29 for removal of 3-cable guardrail installed under project IM-8-029(132)078, temporary ramp connections, south median crossover, and temporary embankment in the median.

Phase 6: Phase 6 traffic control is for the mill and overlay and reconstruction of the Gardner exit and entrance ramps and the removal of temporary ramp connections within the gore areas at the Argusville and Gardner Interchanges. The ramps will remain open to traffic during construction. Work will be performed in stages with traffic being switched between the left and right sides of the ramps. Work on the ramps will not begin until after Southbound I-29 is reopened to traffic and temporary construction ramps within the median have been removed.

Phase 7: Phase 7 traffic control is for the outside lane closure of Northbound I-29 for the removal of w-beam guardrail extensions and installation of end treatments at the Argusville Interchange, Arthur Separation, and Gardner Interchange.

704-P03 **TRAFFIC CONTROL DEVICES:** The traffic control devices list for each phase has been developed using traffic control signing layouts (shown in Section 100 of the plans) and Standard Drawings as listed below:

D-704-1	Attenuation Device
D-704-5, 7, 8, 9, 10, 11	Are applicable
D-704-12, 13, and 14	Are applicable.
D-704-22	Layouts Type K and L for construction trucks hauling material.
D-704-24	Layout Type HH for shoulder closure on freeway.
D-704-26	Layouts Type CC, EE, and GG for milling and paving operations on the Arthur and Gardner crossroads where needed.
D-704-27	For moving operations.
D-704-35	For one lane closure on Interstate system.
D-704-38, 39	For median crossovers.
D-704-45	For construction traffic median crossovers.
D-704-50	For portable sign support assemblies.
D-704-51	For portable precast concrete median barriers.
D-704-56	For grinding shoulder rumble strips.

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NOTES

704-P04 **CONSTRUCTION TRAFFIC MEDIAN CROSSOVERS:** The Contractor shall be allowed to construct median crossovers for the purpose of hauling material over the roadway being used by the motoring public. The Contractor shall not be allowed to haul pavement removals on the roadway being used by the public. Only right-hand on and off movements will be allowed. No crossing of opposing lanes of traffic will be allowed.

Construction traffic median crossovers used for entering the roadway used by the public shall have a stabilized construction access to prevent dust or mud problems on the public roadway. All of the Contractor's vehicles using this crossover must come to a complete stop before entering the public roadway. The Contractor's traffic shall always yield the right of way to the public traffic. A flag person and stop sign shall always be used as specified on Standard Drawing D-704-45.

The minimum distance between construction traffic median crossovers shall be 3,000 feet or the minimum distance required to install all traffic control required plus an additional 500'. See Standard Drawing D-704-45 for applicable traffic control devices. No more than two median crossovers shall be in use at any time and any crossovers not in use shall be barricaded with Type III barricades. Construction traffic median crossovers shall be barricaded at night and used only during daylight hours.

All vehicles using the construction traffic median crossovers shall be equipped with top mounted flashing beacons visible up to 500' in all directions.

The Contractor must restore the crossover area to pre-project conditions prior to the completion of the project.

The cost for materials, equipment, and labor for Construction Traffic Median Crossovers will not be paid for separately. Include the costs for Construction Traffic Median Crossovers in the contract unit price of other items.

704-P05 **INTERCHANGE RAMP CONNECTIONS:** During the period that the mainline pavement being utilized for temporary ramp connections is being reconstructed, the public traffic using the ramps shall be routed around the paving area as shown in Section 100 of the plans. The proposed interstate and ramp paving should be complete and fully cured to prevent the need for temporary paving. Traffic then may use the new ramp for access to the interchange. All costs associated with aggregate surfacing and shifting traffic control to accommodate paving operations shall not be paid for separately but included in the price bid for other items.

704-P06 **PAVEMENT MARKING REMOVAL:** The centerline and edge lines shall be obliterated as shown in Section 100 of the plans and Standard Drawings D-704-38 and D-704-39. At the interchange ramp connections, the centerline and edge lines shall be obliterated as shown in Section 100 of the plans. No grinding will be allowed on new pavement surfaces for obliteration of existing pavement marking. Masking of existing pavement markings on the Northbound roadway will be accepted. The obliteration of the markings shall be paid by the square yard removed. The cost of all equipment, material, and labor, including the removal of sheeting, if used, shall be included in the price bid for "Obliteration of Pavement Marking."

704-P07 **TUBULAR MARKERS:** There are **230** triple-weighted tubular markers that are currently in place at the locations of the existing median crossovers. These described tubular markers shall remain property of the NDDOT and are to be delivered to the NDDOT Casselton Maintenance yard, at 15482 37th St. SE, when no longer needed for current or future traffic control. The cost to remove, load, haul and deliver the existing tubular markers shall not be paid separately but shall be included in the price bid for traffic control items.

Upon completion of the project and returning traffic to normal operation, **40** of the removed triple-weighted tubular markers shall be installed at the north median crossovers. The tubular markers shall be spaced at 5' on center. The cost to install the tubular markers shall be included in the price bid for "Tubular Markers".

704-P08 **FLEXIBLE DELINEATORS:** All temporary flexible delineators to be installed within the southbound roadway shall be bolt mounted. Butyl pads will not be allowed. Upon removal of the devices, all bolt holes shall be filled and sealed as approved.

706-P01 **AGGREGATE LABORATORY:** In the Aggregate Laboratory, provide a phone and a printer capable of scanning 11x17 inch paper and producing 8.5x11 inch photocopies. Supply ink or toner for the duration of the project. Copier/printer machine shall have a Windows based operating software compatible with that used by NDDOT.

706-P02 **FIELD OFFICE:** Provide a field office which meets the following requirements:

1. The field office shall be a minimum of 450 square feet.
2. Indoor bathroom facilities
3. Air conditioner (20,000 BTU minimum)
4. Lighting (lumens required 110 foot- candles)
5. Minimum of 3 phone jacks (NDDOT to pay for phone service)
6. Heat, electric, sewer, and water hookups to be furnished by contractor, contractor to pay utility bills.
7. Cabinet space of a minimum of 32 cubic feet.
8. Counter space of a minimum of 40 square feet.
9. The floor is to be free of protrusions so that it will accommodate NDDOT furnished office equipment.
10. The location of the field office shall be on, or as close to the project as possible and approved by the Engineer. Any rental fees shall be paid by Contractor.
11. The field office shall be available for occupancy at the start of the project and remain available to project completion.
12. The following services will be furnished and paid for by the NDDOT and requested through the Work Management System:
    1. Telephone
    2. Broadband internet service including State Network access
    3. Printer/Photocopier

All requirements of the Field Office are subject to approval by the Engineer.

Payment for the field office shall be under the bid item "Field Office."
Schedule for Payments:

- 25% when set up on site
- 50% when 30% of work is complete
- 75% when 60% of work is complete
- 100% when project is complete

714-P01 **TEMP CHANNEL DIVERSION:** The Contractor shall be responsible for cleaning out and rerouting of all water channels at the proposed box culvert locations. The Contractor shall develop an erosion control plan for the proposed work. Exposed earthen berms shall not be allowed. If additional impacts to the drains or wetlands result from rerouting the water, the Contractor shall obtain a modified 404 permit from the US Army Corp of Engineers. All work associated with rerouting and reestablishing the existing channels shall not be paid for separately but included in the price bid for other items.

714-P02 **PIPE CONDUIT:** Aggregate used for bedding and backfill is subject to the requirements of note 230-P01, "Reshaping Roadway", except the optimum moisture and density shall be determined as specified in Section 714 of the Standard Specifications.

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NOTES

752-P01 **RIGHT OF WAY FENCE:** All right-of-way fence shall be removed and replaced throughout the I-29 project limits. The existing fence shall be removed and become property of the Contractor. The Contractor shall dispose of the materials offsite. All fence posts for corner assemblies, double brace assemblies, line posts, and terminal posts shall be steel. All costs associated with the removal and installation of the right-of-way fence shall be included in the price bid for "Fence Woven Wire" and associated post assemblies.

754-P01 **DELINEATORS:** The existing delineators within the construction area shall be removed and become the property of the Contractor.

New delineators shall be furnished and installed as shown on Standard Drawing D-754-21 and D-754-22A. The following are the approximate quantities required: Type A 115 Each, Type B 19 Each, and Type D 9 Each.

The cost for removal and disposal of the delineators shall not be paid for separately but shall be included in the price bid for the item "Diamond Grade Delineators – Type _."

754-P02 **REMOVED CONCRETE FOUNDATIONS:** Existing concrete foundations shall be either completely removed or obliterated to a minimum 3 foot depth below proposed finished grade.

754-P03 **REMOVED SIGNING:** All existing telescoping perforated tube, w-shape post supports, yellow faced signs and extruded aluminum sign panels shall become the property of the Contractor and shall be removed and disposed of outside the highway right-of-way. Existing round pipe supports shall remain the property of the NDDOT and shall be delivered to the Fargo District sign shop at 503 38th St South, Fargo. The Contractor shall contact the Fargo District sign shop 24 hours prior to delivery at (701) 239-8900. All costs associated with the removal and delivery of the sign panels and supports shall not be bid separately but shall be included in the price bid for the item "Remove Sign Foundation".

754-P03 **OBJECT MARKERS – TYPE III:** Type III object markers shall be installed at each box culvert installation site per standard drawing D-754-82.

762-P01 **RAISED PAVEMENT MARKERS:** Raised pavement markers shall be placed on the centerline of the two-lane two-way roadway. The markers shall be placed in pairs, 4 inches apart, spaced at 5 feet along the centerline. Raised pavement markers shall also be placed on the median crossovers at the beginning and end project locations and on the interchange ramp connections. The markers shall be placed as shown on the Traffic Control System Median Crossover sheets and Interchange Ramp Connection sheets. The spacing of raised pavement markers shall be 5 feet on median crossovers and interchange ramp connections. The raised pavement markers shall be Stimsonite NO. 66, Flex-O-Lite, RCM construction marker, or equal. The raised pavement markers shall be cleaned when necessary to retain reflectivity. At completion of the project, the markers shall be removed in accordance with the manufacturer's recommendations and when removed, shall have the adhesive pad removed down as close as possible to the pavement using a mechanical scraper such as a loader-type machine with a bucket. The raised pavement markers shall be measured by the number complete in place and accepted by the Engineer. The cost of furnishing, installing, maintaining, and removing shall be included in the price bid for "Raised Pavement Markers."

762-P02 **EPOXY PVMT MK MESSAGE-GROOVED:** Speed Measurement Pavement markings shall be placed on the shoulder every half mile beginning at RP 79.500 and ending at RP 88.000. The markings shall be 18" by 30" and shall be placed with the 18" side in the longitudinal direction.

764-P01 **W-BEAM GUARDRAIL END TERMINALS FOR TWO-WAY TRAFFIC:** The W-beam guardrail end terminals and additional guardrail materials required for two-way traffic shall be removed when no longer needed for two-way traffic operation and delivered to the NDDOT Maintenance Storage Yard in Fargo at 503 38th St South, Fargo and neatly stacked by the Contractor at the location in the storage yard. The Contractor shall notify the NDDOT Maintenance Storage Yard 24 hours prior to delivery at (701) 239-8900. All costs to remove and deliver temporary guardrail material shall be included in the price bid for "W-Beam Guardrail".

764-P02 **REMOVE 3-CABLE GUARDRAIL & POSTS:** Upon completion of work in the median, the 3-cable guardrail placed along the northbound and southbound median lane under project IM-8-029(132)078 shall be removed and the posts delivered to the NDDOT Maintenance Storage Yard in Fargo at 503 38th St South, Fargo and neatly stacked by the Contractor at the location in the storage yard. All additional intermediate and end anchors shall also be removed. All cable and anchors shall become the property of the Contractor and disposed of offsite. The Contractor shall notify the NDDOT Maintenance Storage Yard 24 hours prior to delivery at (701) 239-8900. All costs to remove and deliver temporary guardrail material shall be included in the price bid for "Remove 3-Cable Guardrail & Posts".

764-P03 **GUARDRAIL REFLECTOR:** Prior to head to head traffic on the northbound roadway, all guardrail reflectors shall be revised to be yellow from the southerly direction and white from the northerly direction. All costs associated with revising the reflectors shall not be paid for separately but included in the price bid for other items.

772-500 **FLASHING BEACONS AND SEQUENCING ARROW PANELS:** The Contractor shall furnish and install the flashing beacons and sequencing arrow panels as shown on the plans and standard drawings for crossovers.

The Contractor shall be responsible for obtaining the electrical source to operate the flashing beacons and sequencing arrow panels. The Contractor shall make arrangements with the utility company or provide generators for electrical service. Solar powered flashing beacons may be used. The Contractor shall be responsible for all costs of providing the electrical source and any costs required to operate and maintain the flashing beacons and sequencing arrow panels.

If the Contractor chooses to use solar power flashing beacons, the solar powered flashing beacons shall be MUTCD and ITE compliant. The beacons shall be visible to drivers for a distance of at least ¼ mile under normal atmospheric daylight conditions. The flashing beacons shall flash a minimum of 50 times per minute not to exceed 60 times per minute and shall be capable of operating 20 days without solar charging.
If the Contractor chooses to use the utility company, the poles and all equipment shall be placed at least 60 feet from the roadway centerline. The power shall be placed a minimum of 6 inches below the ground except it may be draped from barriers away from traffic. If poles are required in certain areas to get power to the median, the poles shall have attenuation devices placed to protect traffic. All the beacons and sequencing arrow panels on each crossover may be powered by the same power source.

If the Contractor chooses to use generators to provide power, the flasher and other equipment shall be placed at or near the generator. The generator shall be placed at least 60 feet from the roadway centerline. The beacons and sequencing arrow panels may have one generator.

Upon completion of the project and the traffic is returned to the closed roadway, all equipment shall be removed.

The cost of labor, materials, installation, providing electric source, operation and maintenance, power poles, flashing beacons, and sequencing arrow panels shall be included in the price bid for the items "Flashing Beacon - Post Mounted" and "Sequencing Arrow Panel – Type C - Crossover."

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	6	6

ENVIRONMENTAL COMMITMENTS

ENVIRONMENTAL COMMITMENTS: The North Dakota Department of Transportation and the Federal Highway Administration have made environmental commitments to secure approval of this project. The environmental commitments are as follows:

COMMITMENT NO. 1: Unavoidable impacts to wetlands will be mitigated onsite, adjacent to the project, or at a NDDOT approved mitigation site or bank.

Wetland Impact Table

Wetland Number	Location	Cowardin Classification	Wetland Type	Wetland Size (Acres)	Wetland Feature	USACE Jurisdictional Wetlands*	Wetland Impacts (Acres)		Wetland Mitigation			
									Mitigation Required		Location; Acreage; Wetland #; Ratio	Onsite Mitigation Acres
							Temp. Ac.	Perm. Ac.	EO 11990	USACE		
1	T142N, R49W Section 31	PEMCx	Ditch	0.19	Artificial	Yes	0.00	0.00	N	N	None	
2	T142N, R49W Section 31	PEMCx	Ditch	7.01	Artificial	Yes	0.00	0.00	N	N	None	
3	T142N, R49W Section 31	PEMCx	Ditch	0.28	Artificial	Yes	0.00	0.00	N	N	None	
4	T142N, R50W Section 25	PEMCx	Ditch	3.95	Artificial	Yes	0.00	0.00	N	N	None	
5	T142N, R50W Section 25	PEMCx	Ditch	0.16	Artificial	Yes	0.00	0.00	N	N	None	0.11****
6	T142N, R50W Section 24	PEMCx	Ditch	8.35	Artificial	Yes	0.00	0.00	N	N	None	
7	T142N, R50W Section 24	PEMCx	Ditch	0.85	Artificial	Yes	0.00	0.00	N	N	None	
8	T142N, R50W Section 13	PEMCx	Ditch	10.86	Artificial	Yes	0.00	0.00	N	N	None	
9	T142N, R50W Section 12	PEMCx	Ditch	6.52	Artificial	Yes	0.00	0.00	N	N	None	
10	T142N, R50W Section 2	PEMCx	Ditch	11.61	Artificial	Yes	0.00	0.00	N	N	None	
11	T142N, R50W Section 2	PEMCx	Ditch	5.07	Artificial	Yes	0.00	0.00	N	N	None	
12	T142N, R50W Section 2	PEMCx	Ditch	1.67	Artificial	Yes	0.00	0.00	N	N	None	
13	T143N, R50W Section 35	PEMCx	Ditch	1.40	Artificial	Yes	0.00	0.00	N	N	None	
14	T143N, R50W Section 35	PEMCx	Ditch	5.12	Artificial	Yes	0.00	0.00	N	N	None	
15	T143N, R50W Section 35	PEMCx	Ditch	0.43	Artificial	No	0.00	0.00	N	N	None	
16	T143N, R50W Section 35	PEMCx	Ditch	0.20	Artificial	No	0.00	0.00	N	N	None	
17	T143N, R50W Section 26	PEMCx	Ditch	1.31	Artificial	Yes	0.00	0.00	N	N	None	
18	T143N, R50W Section 26	PEMCx	Ditch	0.64	Artificial	No	0.00	0.00	N	N	None	
19	T143N, R50W Section 26	PEMCx	Ditch	2.69	Artificial	Yes	0.00	0.00	N	N	None	

Summary Impact Table

Total Permanent Impact Summary		Temporary Impacts and Additional Information	
Wetland Type	Total (Acres)	Wetland Type	Total (Acres)
Natural/JD	0	Natural/JD	0
Natural/Non-JD	0	Natural/Non-JD	0
Artificial/JD	0.50	Artificial/JD	8.51
Artificial/Non-JD	0	Artificial/Non-JD	0
Total	**0.50**	**Total**	**8.51**

Compensation Requirements by Agency and Water Type

Water Type	USACE Mitigation	EO 11990 Mitigation
Natural/JD Wetland	> 0.1 acre	All
Natural/Non-JD Wetland	No mitigation required	All
Artificial/JD Wetland	> 0.1 acre	No mitigation required
Artificial/Non-JD Wetland	No mitigation required	No mitigation required

ACTION TAKEN/REQUIRED: 0.11 acres of permanent impacts to jurisdictional waters will require mitigation. The NDDOT proposes to mitigate 0.11 acres onsite in the Red River Basin Regional Service Area as part of project IM-8-029(132)078, PCN 18984.

Wetland Impact Table

Wetland Number	Location	Cowardin Classification	Wetland Type	Wetland Size (Acres)	Wetland Feature	USACE Jurisdictional Wetlands*	Wetland Impacts (Acres)		Wetland Mitigation			
									Mitigation Required		Location; Acreage; Wetland #; Ratio	Onsite Mitigation Acres
							Temp. Ac.	Perm. Ac.	EO 11990	USACE		
20	T143N, R50W Section 26	PEMCx	Ditch	2.48	Artificial	Yes	0.27	0.01	N	N	None	
21	T143N, R50W Section 26	PEMCx	Ditch	0.18	Artificial	No	0.00	0.00	N	N	None	
22	T143N, R50W Section 26	PEMCx	Ditch	0.83	Artificial	No	0.00	0.00	N	N	None	
23	T143N, R50W Section 26	PEMCx	Ditch	0.56	Artificial	No	0.00	0.00	N	N	None	
24	T143N, R50W Section 35	PEMCx	Ditch	6.21	Artificial	Yes	0.74	0.04	N	N	None	
25	T143N, R50W Section 35	PEMCx	Ditch	3.27	Artificial	Yes	0.62	0.02	N	N	None	
26	T143N, R50W Section 35	PEMCx	Ditch	0.98	Artificial	Yes	0.34	0.002	N	N	None	
27	T142N, R50W Section 2	PEMCx	Ditch	0.39	Artificial	Yes	0.06	0.003	N	N	None	
28	T142N, R50W Section 2	PEMCx	Ditch	11.21	Artificial	Yes	1.34	0.08	N	N	None	
29	T142N, R50W Section 12	PEMCx	Ditch	5.94	Artificial	Yes	0.48	0.001	N	N	None	
30	T142N, R50W Section 12	PEMCx	Ditch	2.23	Artificial	Yes	0.26	0.001	N	N	None	
31	T142N, R50W Section 13	PEMCx	Ditch	7.54	Artificial	Yes	0.63	0.05	N	N	None	
32	T142N, R50W Section 24	PEMCx	Ditch	8.05	Artificial	Yes	0.90	0.09	N	N	None	
33	T142N, R50W Section 24	PEMFx	Ditch	0.19	Artificial	Yes	0.12	0.002	N	N	None	
34	T142N, R50W Section 25	PEMCx	Ditch	8.59	Artificial	Yes	1.31	0.003	N	N	None	
35	T142N, R50W Section 25	PEMCx	Ditch	0.29	Artificial	Yes	0.14	0.01	N	N	None	
36	T142N, R50W Section 36	PEMCx	Ditch	3.28	Artificial	Yes	0.33	0.08	N	N	None	
37	T142N, R50W Section 36	PEMCx	Ditch	16.75	Artificial	Yes	0.97	0.11	N	Y	Onsite 0.11 at WL 5 (1:1)	
TOTALS				**147.28**			**8.51**	**0.50**				**0.11**

*A wetland Jurisdictional Determination was issued by the USACE on 6/30/2011; NWO-2011-01296-BIS.

**All Impacts to natural wetlands (natural/jurisdictional and natural/non-jurisdictional), regardless of size, as well as impacts greater than 0.10 acre to artificial/jurisdictional wetlands require mitigation.

***All artificial/non-jurisdictional and temporary impacts do not require mitigation.

****Mitigation acres constructed as part of project IM-8-029(132)078, PCN 18984.

NOTIFICATIONS TO BE FILED BY CONTRACTOR:

- North Dakota Department of Health SFN 17987 Asbestos Notification of Demolition and Renovation for bridges and boxes.

This document was originally issued and sealed by Jeffrey T. Lansink, Registration Number PE-5244, on 10/22/15 and the original document is stored at the North Dakota Department Of Transportation.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	8	1

SPEC	CODE	ITEM DESCRIPTION	UNIT	MAINLINE	RAMPS	TOTAL
103	0100	CONTRACT BOND	L SUM	1		1
201	0330	CLEARING & GRUBBING	L SUM	1		1
202	0101	REMOVAL OF CONCRETE	EA	1		1
202	0136	REMOVAL OF PAVEMENT	TON	174,430	4,467	178,897
202	0153	SAW BITUMINOUS SURFACING-FULL DEPTH	LF	645	54	699
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	2,470		2,470
202	0312	REMOVE EXISTING FENCE	LF	48,100		48,100
202	0350	REMOVAL OF TEMPORARY BYPASS	EA	3		3
203	0109	TOPSOIL	CY	102,536		102,536
203	0121	TOPSOIL-WETLAND	CY	7,268		7,268
203	0138	COMMON EXCAVATION-SUBCUT	CY	2,255		2,255
203	0206	FLATTEN DITCH BLOCK	EA	14		14
210	0050	BOX CULVERT EXCAVATION	EA	8		8
210	0126	CHANNEL EXCAVATION	CY	1,500		1,500
210	0210	FOUNDATION FILL	CY	8,402		8,402
210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	8		8
216	0100	WATER	M GAL	1,279	79	1,358
220	0100	PREPARE STOCKPILE SITE	EA	1		1
220	0200	RESTORE STOCKPILE SITE	EA	1		1
230	0106	RESHAPING ROADWAY	MILE	9.10	0.16	9.26
251	0200	SEEDING CLASS II	ACRE	149.56		149.56
251	1000	WETLAND SEED	ACRE	9.01		9.01
251	2000	TEMPORARY COVER CROP	ACRE	126.90		126.90
253	0201	HYDRAULIC MULCH	ACRE	254.01		254.01
255	0103	ECB TYPE 3	SY	670	210	880
256	0200	RIPRAP GRADE II	CY	185		185
256	0600	RIPRAP-SALVAGED	CY	276		276
260	0200	SILT FENCE SUPPORTED	LF	33,024		33,024
260	0201	REMOVE SILT FENCE SUPPORTED	LF	33,024		33,024
261	0112	FIBER ROLLS 12IN	LF	66,468		66,468
261	0113	REMOVE FIBER ROLLS 12IN	LF	17,661		17,661
261	0120	FIBER ROLLS 20IN	LF	580		580
261	0121	REMOVE FIBER ROLLS 20IN	LF	290		290
262	0100	FLOTATION SILT CURTAIN	LF	100		100
262	0101	REMOVE FLOTATION SILT CURTAIN	LF	100		100
302	0101	SALVAGED BASE COURSE	CY	2,831	1,302	4,133
401	0050	TACK COAT	GAL		264	264
401	0060	PRIME COAT	GAL	1,843	657	2,500
401	0160	BLOTTER MATERIAL CL 44	TON	75	27	102
411	0105	MILLING PAVEMENT SURFACE	SY		2,564	2,564
430	0040	SUPERPAVE FAA 40	TON	93		93

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	8	2

SPEC	CODE	ITEM DESCRIPTION	UNIT	MAINLINE	RAMPS	TOTAL
430	0043	SUPERPAVE FAA 43	TON	100	852	952
430	0500	COMMERCIAL GRADE HOT MIX ASPHALT	TON		1,046	1,046
430	1000	CORED SAMPLE	EA		26	26
430	2000	PATCHING	TON	50		50
430	5828	PG 58-28 ASPHALT CEMENT	TON	75	52	127
602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	CY	1,428.6		1,428.6
612	0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	239,791		239,791
702	0100	MOBILIZATION	L SUM	1		1
704	0100	FLAGGING	MHR	2,175		2,175
704	1000	TRAFFIC CONTROL SIGNS	UNIT	7,014		7,014
704	1045	ATTENUATION DEVICE-TYPE B-75	EA	2		2
704	1052	TYPE III BARRICADE	EA	68		68
704	1060	DELINEATOR DRUMS	EA	217		217
704	1067	TUBULAR MARKERS	EA	1,132		1,132
704	1070	DELINEATOR	EA	225		225
704	1072	FLEXIBLE DELINEATORS	EA	674		674
704	1080	STACKABLE VERTICAL PANELS	EA	96		96
704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	3		3
704	1088	SEQUENCING ARROW PANEL-TYPE C-CROSSOVER	EA	2		2
704	1500	OBLITERATION OF PVMT MK	SF	4,524		4,524
704	3510	PRECAST CONCRETE MED BARRIER-STATE FURNISHED	EA	79		79
706	0400	FIELD OFFICE	EA	1		1
706	0500	AGGREGATE LABORATORY	EA	1		1
706	0550	BITUMINOUS LABORATORY	EA	1		1
706	0600	CONTRACTOR'S LABORATORY	EA	1		1
709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	20,240	1,680	21,920
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	370		370
714	4090	PIPE CONDUIT 12IN	LF	500		500
714	4115	PIPE CONDUIT 36IN	LF	276		276
714	4120	PIPE CONDUIT 42IN	LF	88		88
714	4125	PIPE CONDUIT 48IN	LF	188		188
714	4135	PIPE CONDUIT 60IN	LF	208	216	424
714	4145	PIPE CONDUIT 72IN	LF	212		212
714	4168	PIPE CONDUIT 60IN-JACKED OR BORED	LF		300	300
720	0125	ALIGNMENT MONUMENTS	EA	38		38
720	0130	IRON PIN R/W MONUMENTS	EA	2		2
720	0135	IRON PIN REFERENCE MONUMENTS	EA	18		18
752	0700	FENCE WOVEN WIRE	LF	48,810		48,810
752	3120	CORNER ASSEMBLY WOVEN WIRE	EA	21		21
752	4120	DOUBLE BRACE ASSEMBLY WOVEN WIRE	EA	49		49
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	20		20

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	8	3

SPEC	CODE	ITEM DESCRIPTION	UNIT	MAINLINE	RAMPS	TOTAL
754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	12		12
754	0195	DIAMOND GRADE DELINEATORS-TYPE A	EA	115		115
754	0196	DIAMOND GRADE DELINEATORS-TYPE B	EA		19	19
754	0198	DIAMOND GRADE DELINEATORS-TYPE D	EA		9	9
754	0210	GALV STEEL POSTS-STANDARD PIPE	LF	67	26	93
754	0214	GALV STEEL POSTS-W-SHAPE POSTS(TWO OR MORE)	LF		111	111
754	0534	PANEL FOR SIGNS-TYPE IV REFLECTIVE SHEETING	SF	127	63	190
754	0556	INTERSTATE MILE POSTS - TYPE B	EA	7		7
754	0592	RESET SIGN PANEL	EA		2	2
754	0596	RESET MILE POST	EA	2		2
754	0801	OBJECT MARKERS - TYPE I	EA	1		1
754	0803	OBJECT MARKERS - TYPE III	EA	16		16
754	0805	OBJECT MARKER - CULVERTS	EA	16		16
754	1100	CLASS AE CONCRETE-SIGN FOUNDATIONS	CY	2.7	0.5	3.2
754	1104	REMOVE SIGN FOUNDATION	EA	4	4	8
760	0001	RUMBLE STRIPS -CONCRETE SHOULDER	MILE	17.83		17.83
762	0110	EPOXY PVMT MK 4IN LINE-GROOVED	LF	216,292		216,292
762	0113	EPOXY PVMT MK 4IN LINE	LF		5,268	5,268
762	0132	EPOXY PVMT MK 8IN LINE-GROOVED	LF		2,211	2,211
762	0136	EPOXY PVMT MK MESSAGE-GROOVED	SF	135.00		135.00
762	0200	RAISED PAVEMENT MARKERS	EA	24,395		24,395
762	0430	SHORT TERM 4IN LINE-TYPE NR	LF	59,604		59,604
764	0131	W-BEAM GUARDRAIL	LF	313		313
764	0145	W-BEAM GUARDRAIL END TERMINAL	EA	3		3
764	2020	REMOVE 3-CABLE GUARDRAIL & POSTS	LF	15,560		15,560
772	2110	FLASHING BEACON-POST MOUNTED	EA	2		2

SPEC	CODE	ITEM DESCRIPTION	UNIT	MAINLINE	RAMPS	TOTAL
		ALTERNATE A - CONCRETE SHOULDERS				
216	0100	WATER	M GAL	2,236	38	2,274
302	0101	SALVAGED BASE COURSE	CY	59,630	1,013	60,643
550	0105	6IN NON-REINF CONCRETE PAVEMENT CL AE	SY	41,107		41,107
550	0320	12IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	160,217	4,081	164,298
709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	223,044		223,044
		ALTERNATE B - CONCRETE MEDIAN SHOULDER & 8' ASPHALT SHOULDER				
216	0100	WATER	M GAL	2,453	38	2,491
302	0101	SALVAGED BASE COURSE	CY	65,419	1,013	66,432
401	0050	TACK COAT	GAL	2,112		2,112
401	0060	PRIME COAT	GAL	10,919		10,919
401	0160	BLOTTER MATERIAL CL 44	TON	408		408
430	0040	SUPERPAVE FAA 40	TON	9,317		9,317
430	5828	PG 58-28 ASPHALT CEMENT	TON	559		559
550	0320	12IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	160,217	4,081	164,298
709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	223,044		223,044

BASIS OF ESTIMATE

Permanent Pavement Markings

EPOXY PVMT MK 4IN LINE-GROOVED

Southbound Mainline	Quantity
4" White Center Line, 10' Line, 30' Skip – 1,320 LF/Mi	
Sta 4180+00 to Sta 4660+65	12,016 LF
4" White Edge Line – 5,280 LF/Mi	
Sta 4180+00 to Sta 4660+65	48,065 LF
4" Yellow Edge Line – 5,280 LF/Mi	
Sta 4180+00 to Sta 4660+65	48,065 LF
Subtotal	**108,146 LF**

Northbound Mainline	Quantity
4" White Center Line, 10' line, 30' Skip – 1,320 LF/mi	
Sta 4180+00 to Sta 4660+65	12,016 LF
4" White Edge Line – 5,280 LF/Mi	
Sta 4180+00 to Sta 4660+65	48,065 LF
4" Yellow Edge Line – 5,280 LF/Mi	
Sta 4180+00 to Sta 4660+65	48,065 LF
Subtotal	**108,146 LF**
Total	**216,292 LF**

EPOXY PVMT MK 8IN LINE-GROOVED

Entrance Ramp – Gardner SE	Quantity
8" White Channel Line	597 LF

Exit Ramp – Gardner NE	Quantity
8" White Channel Line	394 LF

Entrance Ramp – Gardner SW	Quantity
8" White Channel Line	380 LF

Exit Ramp – Gardner NW	Quantity
8" White Channel Line	840 LF
Total	**2,211 LF**

EPOXY PVMT MK 4IN LINE

Entrance Ramp – Gardner SW	Quantity
4" White Dotted Line	1,012 LF
4" White Edge Line	804 LF
4" Yellow Edge Line	796 LF
Subtotal	**2,612 LF**

Exit Ramp – Gardner NW	Quantity
4" White Dotted Line	560 LF
4" White Edge Line	1,048 LF
4" Yellow Edge Line	1,048 LF
Subtotal	**2,656 LF**
Total	**5,268 LF**

EPOXY PVMT MK MESSAGE-GROOVED

Southbound Speed Measurement Pavement Markings	Quantity
18" x 30" White Line – 7.50 SF * 9 Miles	67.5 SF

Northbound Speed Measurement Pavement Markings	Quantity
18" x 30" White Line – 7.50 SF * 9 Miles	67.5 SF

SHORT TERM 4IN LINE – TYPE NR

Northbound Mainline – Painted (For Head-to-Head Traffic)	Quantity
Obliteration of Centerline Pavement Marking – 440 SF/Mi	4,524 SF
4" Yellow Edge Line - 5,280 LF/Mi	55,080 LF

SALVAGED BASE COURSE

Ditch Block Aggregate	Quantity
3 Ditch Blocks – 1,924 SF x 6" Depth Each	107 CY

HOT BITUMINOUS PAVEMENT CORES

Gardner Interchange SW Ramp	Quantity
Reconstruction – 394 LF	
394 LF/2000 LF/Sublot* 2 Lifts * 2 Lanes * 2 Cores/Sublot	8
Overlay – 407 LF	
407 LF/2000 LF/Sublot* 1 Lifts * 2 Lanes * 2 Cores/Sublot	4
Full Depth Core	
801 LF/5280 LF * 1 Core/Mile	1
Total	**13**

Gardner Interchange SW Ramp	
Reconstruction – 555 LF	
555 LF/2000 LF/Sublot* 2 Lifts * 2 Lanes * 2 Cores/Sublot	8
Overlay – 492 LF	
492 LF/2000 LF/Sublot* 1 Lifts * 2 Lanes * 2 Cores/Sublot	4
Full Depth Core	
1,047 LF/5280 LF * 1 Core/Mile	1
Total	**13**

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	10	2

BASIS OF ESTIMATE

Materials

Superpave FAA 40 & 43	2 TON/CY
Prime Coat	0.25 GAL/SY
PG 58-28 Asphalt Cement	6.0% of HBP
Tack Coat	0.05 GAL/SY
Salvaged Base Course	1.875 TON/CY
Aggregate Base Course	1.875 TON/CY
Salvaged Concrete	2 TON/CY
Remove Aggregate Base	1.875 TON/CY
Remove Bituminous Material	2 TON/CY
Blotter Material Cl 44	20 LBS/SY
Riprap	1.7 TON/CY

Water

Embankment	10 GAL/CY
Aggregate Base Course	20 GAL/TON
Salvaged Base Course	20 GAL/TON
Dust Palliative	135 MGAL/Mile

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Earthwork Summary

Location	Informational Purpose Only			Pay Items	
	Excavation (3)	Embankment In-Place Volume	Excess Excavation	Reshaping Roadway	Common Excavation - Subcut
	(CY)	(CY)	(CY)	(1)	(2)
	A	B	C = A - B	(Mile)	(CY)
I-29 Mainline (Southbound)					
Sta 4180+00 to 4660+65 - CL				9.10	
Alternate A - Concrete Shoulders	59,897	26,130	33,767		
Alternate B - Concrete Median and Asphalt Outside Shoulders	58,426	26,972	31,454		
500' Discretionary Subcut (as directed)					2,255
Subtotal Mainline	**58,426 - 59,897**	**26,130 - 26,972**	**31,454 - 33,767**	**9.10**	**2,255**
Interchange Ramps					
Gardner Interchange SW Ramp	295	362	-67	0.09	
Gardner Interchange NW Ramp	137	473	-336	0.07	
Subtotal Interchange Ramps	**432**	**835**	**-403**	**0.16**	**0**
TOTAL	**58,858 - 60,329**	**26,965 - 27,807**	**31,051 - 33,364**	**9.26**	**2,255**

1) Mainline I-29 Southbound and the Interchange ramp excavation and embankment will not be measured separately, but shall be included in the price bid for "Reshaping Roadway".
2) 500' of discretionary subcut excavation shall be paid for as "Common Excavation - Subcut".
3) All concrete and HBP pavements paid for as removal have been deducted from the excavation quantity.
4) All excavation from culvert replacement and box culvert installation shall remain the property of the NDDOT and may be utilized on the roadway inslopes only.
5) Excess excavated material shall be stockpiled within the County Road 20 Interchange.

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Earthwork Summary

Interstate 29 – Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	11	2

		Alternate A - Concrete Shoulders						Alternate B - Concrete Median and Asphalt Outside Shoulders					
		Excavation			Embankment			Excavation			Embankment		
Sta	Distance (FT)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)
4180+00.00		55.0			8.0			51.7			6.6		
4181+00.00	100.00	55.4	204	204	8.0	30	30	51.9	192	192	6.6	24	24
4182+00.00	100.00	58.7	211	415	7.9	29	59	56.6	201	393	6.7	25	49
4183+00.00	100.00	63.2	226	641	8.0	29	88	60.0	216	609	6.6	25	74
4184+00.00	100.00	54.0	217	858	8.0	30	118	51.9	207	816	7.0	25	99
4185+00.00	100.00	57.9	207	1,065	8.0	30	148	58.7	205	1,021	6.7	25	124
4186+00.00	100.00	81.6	258	1,323	8.0	30	178	83.2	263	1,284	6.7	25	149
4187+00.00	100.00	68.3	278	1,601	7.9	29	207	71.7	287	1,571	6.7	25	174
4188+00.00	100.00	70.1	256	1,857	8.0	29	236	72.1	266	1,837	6.7	25	199
4189+00.00	100.00	56.1	234	2,091	8.0	30	266	57.8	241	2,078	6.7	25	224
4190+00.00	100.00	41.2	180	2,271	8.0	30	296	43.0	187	2,265	6.6	25	249
4191+00.00	100.00	38.7	148	2,419	7.9	29	325	38.3	151	2,416	6.7	25	274
4192+00.00	100.00	38.3	143	2,562	7.9	29	354	36.3	138	2,554	6.6	25	299
4193+00.00	100.00	42.8	150	2,712	7.9	29	383	41.1	143	2,697	6.7	25	324
4194+00.00	100.00	49.3	171	2,883	8.0	29	412	49.1	167	2,864	6.7	25	349
4195+00.00	100.00	47.2	179	3,062	7.9	29	441	46.4	177	3,041	6.7	25	374
4196+00.00	100.00	40.4	162	3,224	7.9	29	470	39.6	159	3,200	6.6	25	399
4197+00.00	100.00	34.9	139	3,363	8.0	29	499	33.7	136	3,336	6.7	25	424
4198+00.00	100.00	23.1	107	3,470	8.0	30	529	22.1	103	3,439	6.8	25	449
4199+00.00	100.00	19.3	79	3,549	9.8	33	562	16.9	72	3,511	8.4	28	477
4200+00.00	100.00	16.4	66	3,615	14.5	45	607	14.2	58	3,569	13.4	40	517
4201+00.00	100.00	13.3	55	3,670	7.8	41	648	12.8	50	3,619	6.6	37	554
4202+00.00	100.00	8.5	40	3,710	57.6	121	769	7.7	38	3,657	61.9	127	681
4203+00.00	100.00	28.6	69	3,779	7.8	121	890	28.5	67	3,724	7.9	129	810
4204+00.00	100.00	27.5	104	3,883	8.3	30	920	26.9	103	3,827	7.4	28	838
4205+00.00	100.00	15.4	79	3,962	9.6	33	953	17.1	81	3,908	11.7	35	873
4206+00.00	100.00	28.1	81	4,043	8.0	33	986	28.3	84	3,992	6.9	34	907
4207+00.00	100.00	44.5	134	4,177	8.0	30	1,016	44.2	134	4,126	6.7	25	932
4208+00.00	100.00	51.3	177	4,354	8.0	30	1,046	51.6	177	4,303	6.8	25	957
4209+00.00	100.00	36.2	162	4,516	8.1	30	1,076	36.9	164	4,467	7.2	26	983
4210+00.00	100.00	38.6	139	4,655	8.0	30	1,106	38.5	140	4,607	6.7	26	1,009
4211+00.00	100.00	34.4	135	4,790	8.0	30	1,136	35.3	137	4,744	6.7	25	1,034
4212+00.00	100.00	15.4	92	4,882	11.1	35	1,171	15.7	94	4,838	12.6	36	1,070
4213+00.00	100.00	12.6	52	4,934	14.3	47	1,218	14.3	56	4,894	16.4	54	1,124
4214+00.00	100.00	17.0	55	4,989	9.2	44	1,262	16.8	58	4,952	11.1	51	1,175
4215+00.00	100.00	8.6	47	5,036	13.3	42	1,304	8.0	46	4,998	15.3	49	1,224
4216+00.00	100.00	5.0	25	5,061	10.2	44	1,348	5.0	24	5,022	13.5	53	1,277
4217+00.00	100.00	1.6	12	5,073	17.0	50	1,398	1.4	12	5,034	19.2	61	1,338
4218+00.00	100.00	1.4	6	5,079	21.2	71	1,469	1.2	5	5,039	23.3	79	1,417
4219+00.00	100.00	0.3	3	5,082	18.0	73	1,542	0.5	3	5,042	21.2	82	1,499
4220+00.00	100.00	0.1	1	5,083	27.8	85	1,627	0.1	1	5,043	31.5	98	1,597
4221+00.00	100.00	0.0	0	5,083	42.6	130	1,757	0.0	0	5,043	46.6	145	1,742
4222+00.00	100.00	0.0	0	5,083	29.8	134	1,891	0.0	0	5,043	32.0	146	1,888
4223+00.00	100.00	0.0	0	5,083	32.7	116	2,007	0.0	0	5,043	35.9	126	2,014
4223+36.53	36.53	0.0	0	5,083	35.0	46	2,053	0.0	0	5,043	38.4	50	2,064
4223+50.00	13.47	0.0	0	5,083	36.8	18	2,071	0.0	0	5,043	40.3	20	2,084
4224+00.00	50.00	0.0	0	5,083	46.0	77	2,148	0.0	0	5,043	49.6	83	2,167
4224+16.11	16.11	0.0	0	5,083	48.6	28	2,176	0.0	0	5,043	52.1	30	2,197
4224+50.00	33.89	0.0	0	5,083	50.6	62	2,238	0.0	0	5,043	54.0	67	2,264
4224+95.69	45.69	0.0	0	5,083	53.8	88	2,326	0.0	0	5,043	54.6	92	2,356
4225+00.00	4.31	0.0	0	5,083	51.7	8	2,334	0.0	0	5,043	54.8	9	2,365
4225+50.00	50.00	0.0	0	5,083	50.1	94	2,428	0.0	0	5,043	52.5	99	2,464
4225+60.11	10.11	0.1	0	5,083	49.5	19	2,447	0.0	0	5,043	52.0	20	2,484
4226+00.00	39.89	0.2	0	5,083	47.2	71	2,518	0.8	1	5,044	49.4	75	2,559
4226+50.00	50.00	0.3	0	5,083	45.5	86	2,604	0.8	1	5,045	47.8	90	2,649
4227+00.00	50.00	0.3	1	5,084	36.6	76	2,680	0.8	1	5,046	38.8	80	2,729
4227+50.00	50.00	0.0	0	5,084	37.0	68	2,748	0.3	1	5,047	39.2	72	2,801
4228+00.00	50.00	0.0	0	5,084	44.2	75	2,823	0.0	0	5,047	46.5	79	2,880

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Earthwork Average
End Area Tables

Interstate 29 – Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	11	3

		Alternate A - Concrete Shoulders						Alternate B - Concrete Median and Asphalt Outside Shoulders					
		Excavation			Embankment			Excavation			Embankment		
Sta	Distance (FT)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)
4228+50.00	50.00	0.0	0	5,084	49.4	87	2,910	0.0	0	5,047	51.5	91	2,971
4229+00.00	50.00	0.0	0	5,084	57.8	99	3,009	0.0	0	5,047	60.1	103	3,074
4229+50.00	50.00	0.0	0	5,084	73.0	121	3,130	0.0	0	5,047	76.0	126	3,200
4230+00.00	50.00	0.0	0	5,084	74.4	136	3,266	0.0	0	5,047	77.3	142	3,342
4230+50.00	50.00	0.0	0	5,084	53.5	118	3,384	0.0	0	5,047	56.0	123	3,465
4231+00.00	50.00	0.0	0	5,084	58.4	104	3,488	0.0	0	5,047	60.9	108	3,573
4231+50.00	50.00	0.0	0	5,084	64.1	113	3,601	0.0	0	5,047	67.3	119	3,692
4232+00.00	50.00	0.0	0	5,084	48.1	104	3,705	0.0	0	5,047	51.4	110	3,802
4232+50.00	50.00	0.0	0	5,084	47.8	89	3,794	0.0	0	5,047	50.4	94	3,896
4233+00.00	50.00	0.0	0	5,084	43.9	85	3,879	0.0	0	5,047	48.8	92	3,988
4233+50.00	50.00	0.0	0	5,084	45.5	83	3,962	0.0	0	5,047	49.1	91	4,079
4234+00.00	50.00	0.0	0	5,084	50.8	89	4,051	0.0	0	5,047	54.4	96	4,175
4234+50.00	50.00	0.0	0	5,084	47.0	91	4,142	0.0	0	5,047	50.1	97	4,272
4235+00.00	50.00	0.1	0	5,084	43.0	83	4,225	0.6	1	5,048	46.8	90	4,362
4235+50.00	50.00	0.1	0	5,084	36.8	74	4,299	0.5	1	5,049	40.4	81	4,443
4236+00.00	50.00	0.2	0	5,084	33.0	65	4,364	0.5	1	5,050	36.1	71	4,514
4236+50.00	50.00	0.2	0	5,084	29.5	58	4,422	0.5	1	5,051	32.5	64	4,578
4237+00.00	50.00	0.0	0	5,084	34.4	59	4,481	0.0	0	5,051	37.5	65	4,643
4237+50.00	50.00	0.0	0	5,084	30.2	60	4,541	0.0	0	5,051	33.1	65	4,708
4238+00.00	50.00	0.4	0	5,084	24.6	51	4,592	0.4	0	5,051	26.8	55	4,763
4238+50.00	50.00	0.3	1	5,085	27.1	48	4,640	1.6	2	5,053	29.6	52	4,815
4239+00.00	50.00	9.0	9	5,094	21.5	45	4,685	9.0	10	5,063	20.1	46	4,861
4239+06.22	6.22	9.5	2	5,096	22.3	5	4,690	8.0	2	5,065	21.1	5	4,866
4239+50.00	43.78	8.0	14	5,110	18.3	33	4,723	9.6	14	5,079	26.0	38	4,904
4239+70.64	20.64	7.8	6	5,116	21.1	15	4,738	9.6	7	5,086	26.0	20	4,924
4240+00.00	29.36	7.8	8	5,124	24.4	25	4,763	9.6	10	5,096	28.0	29	4,953
4240+50.00	50.00	6.0	13	5,137	23.4	44	4,807	8.0	16	5,112	26.7	51	5,004
4240+50.22	0.22	6.0	0	5,137	23.4	0	4,807	8.0	0	5,112	26.7	0	5,004
4241+00.00	49.78	6.7	12	5,149	20.0	40	4,847	9.0	16	5,128	23.2	46	5,050
4241+29.79	29.79	9.8	9	5,158	18.0	21	4,868	12.0	12	5,140	21.6	25	5,075
4242+00.00	70.21	19.6	38	5,196	9.9	36	4,904	22.0	44	5,184	13.1	45	5,120
4243+00.00	100.00	38.1	107	5,303	8.0	33	4,937	37.5	110	5,294	6.7	37	5,157
4244+00.00	100.00	40.8	146	5,449	8.0	30	4,967	43.5	150	5,444	6.9	25	5,182
4245+00.00	100.00	47.6	164	5,613	8.0	30	4,997	47.0	168	5,612	6.7	25	5,207
4246+00.00	100.00	45.9	173	5,786	8.0	30	5,027	45.6	171	5,783	6.7	25	5,232
4247+00.00	100.00	68.6	212	5,998	8.0	30	5,057	67.6	210	5,993	6.7	25	5,257
4248+00.00	100.00	60.0	238	6,236	8.0	30	5,087	59.8	236	6,229	6.7	25	5,282
4249+00.00	100.00	61.3	225	6,461	8.0	30	5,117	60.5	223	6,452	6.7	25	5,307
4250+00.00	100.00	43.9	195	6,656	8.3	30	5,147	43.6	193	6,645	7.0	25	5,332
4251+00.00	100.00	57.5	188	6,844	8.0	30	5,177	61.3	194	6,839	6.6	25	5,357
4252+00.00	100.00	61.5	220	7,064	8.0	30	5,207	63.1	230	7,069	6.7	25	5,382
4253+00.00	100.00	62.6	230	7,294	8.0	30	5,237	65.5	238	7,307	6.7	25	5,407
4254+00.00	100.00	40.8	191	7,485	8.7	31	5,268	42.4	200	7,507	7.4	26	5,433
4255+00.00	100.00	30.5	132	7,617	8.0	31	5,299	34.0	141	7,648	7.1	27	5,460
4256+00.00	100.00	28.9	110	7,727	9.1	32	5,331	33.3	125	7,773	8.8	29	5,489
4257+00.00	100.00	24.2	98	7,825	8.5	33	5,364	24.7	107	7,880	7.6	30	5,519
4258+00.00	100.00	18.7	79	7,904	8.9	32	5,396	19.2	81	7,961	8.0	29	5,548
4259+00.00	100.00	32.1	94	7,998	8.8	33	5,429	31.6	94	8,055	7.6	29	5,577
4260+00.00	100.00	31.2	117	8,115	8.3	32	5,461	32.2	118	8,173	7.5	28	5,605
4261+00.00	100.00	36.1	125	8,240	8.0	30	5,491	37.7	129	8,302	6.9	27	5,632
4262+00.00	100.00	27.3	117	8,357	8.1	30	5,521	27.0	120	8,422	7.2	26	5,658
4263+00.00	100.00	39.2	123	8,480	8.0	30	5,551	38.9	122	8,544	6.8	26	5,684
4264+00.00	100.00	37.5	142	8,622	8.0	30	5,581	35.9	139	8,683	6.7	25	5,709
4265+00.00	100.00	23.5	113	8,735	8.4	30	5,611	21.0	105	8,788	7.4	26	5,735
4266+00.00	100.00	23.9	88	8,823	8.9	32	5,643	22.7	81	8,869	7.6	28	5,763
4267+00.00	100.00	34.5	108	8,931	8.5	32	5,675	35.0	107	8,976	7.2	27	5,790
4268+00.00	100.00	27.7	115	9,046	10.5	35	5,710	27.4	116	9,092	9.1	30	5,820
4269+00.00	100.00	22.2	92	9,138	10.9	40	5,750	20.4	89	9,181	9.9	35	5,855

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Earthwork Average
End Area Tables

Interstate 29 – Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	11	4

		Alternate A - Concrete Shoulders						Alternate B - Concrete Median and Asphalt Outside Shoulders					
		Excavation			Embankment			Excavation			Embankment		
Sta	Distance (FT)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)
4270+00.00	100.00	20.3	79	9,217	9.7	38	5,788	20.3	75	9,256	9.0	35	5,890
4271+00.00	100.00	34.4	101	9,318	8.0	33	5,821	32.5	98	9,354	7.6	31	5,921
4272+00.00	100.00	38.2	134	9,452	7.9	29	5,850	37.6	130	9,484	6.7	26	5,947
4273+00.00	100.00	32.8	131	9,583	8.1	30	5,880	34.9	134	9,618	7.5	26	5,973
4274+00.00	100.00	30.6	117	9,700	8.1	30	5,910	25.8	112	9,730	7.1	27	6,000
4275+00.00	100.00	25.0	103	9,803	8.4	31	5,941	24.2	93	9,823	7.6	27	6,027
4276+00.00	100.00	62.9	163	9,966	8.0	30	5,971	63.8	163	9,986	6.6	26	6,053
4277+00.00	100.00	41.5	193	10,159	7.9	29	6,000	41.5	195	10,181	6.7	25	6,078
4278+00.00	100.00	37.7	147	10,306	7.9	29	6,029	34.3	140	10,321	6.6	25	6,103
4279+00.00	100.00	35.6	136	10,442	7.9	29	6,058	32.5	124	10,445	6.6	24	6,127
4280+00.00	100.00	33.7	128	10,570	8.0	29	6,087	32.5	120	10,565	6.8	25	6,152
4281+00.00	100.00	32.2	122	10,692	8.1	30	6,117	33.7	123	10,688	7.3	26	6,178
4282+00.00	100.00	32.4	120	10,812	8.0	30	6,147	33.1	124	10,812	6.8	26	6,204
4283+00.00	100.00	27.9	112	10,924	8.0	30	6,177	28.8	115	10,927	7.1	26	6,230
4284+00.00	100.00	36.5	119	11,043	8.0	30	6,207	37.4	123	11,050	6.6	25	6,255
4285+00.00	100.00	31.6	126	11,169	7.9	29	6,236	31.9	128	11,178	6.7	25	6,280
4286+00.00	100.00	23.2	101	11,270	8.2	30	6,266	22.2	100	11,278	7.3	26	6,306
4287+00.00	100.00	27.6	94	11,364	8.6	31	6,297	27.1	91	11,369	7.5	27	6,333
4288+00.00	100.00	38.7	123	11,487	8.0	31	6,328	38.3	121	11,490	6.7	26	6,359
4289+00.00	100.00	44.6	154	11,641	9.0	31	6,359	43.3	151	11,641	7.7	27	6,386
4290+00.00	100.00	36.7	151	11,792	8.2	32	6,391	35.4	146	11,787	6.9	27	6,413
4291+00.00	100.00	27.4	119	11,911	8.8	31	6,422	25.9	114	11,901	7.5	27	6,440
4292+00.00	100.00	37.2	120	12,031	8.8	33	6,455	35.5	114	12,015	7.5	28	6,468
4293+00.00	100.00	19.5	105	12,136	9.4	34	6,489	15.5	94	12,109	8.1	29	6,497
4294+00.00	100.00	28.8	89	12,225	8.1	32	6,521	27.3	79	12,188	7.0	28	6,525
4295+00.00	100.00	33.9	116	12,341	8.0	30	6,551	32.7	111	12,299	6.7	25	6,550
4296+00.00	100.00	56.0	166	12,507	8.0	30	6,581	54.8	162	12,461	6.7	25	6,575
4297+00.00	100.00	54.7	205	12,712	8.0	30	6,611	53.6	201	12,662	6.7	25	6,600
4298+00.00	100.00	33.6	164	12,876	8.0	30	6,641	33.5	161	12,823	6.7	25	6,625
4299+00.00	100.00	26.5	111	12,987	8.4	30	6,671	26.4	111	12,934	7.1	26	6,651
4300+00.00	100.00	50.8	143	13,130	8.0	30	6,701	50.4	142	13,076	6.7	26	6,677
4301+00.00	100.00	46.4	180	13,310	8.0	30	6,731	46.2	179	13,255	6.7	25	6,702
4301+67.27	67.27	62.7	136	13,446	8.0	20	6,751	63.0	136	13,391	6.7	17	6,719
4302+00.00	32.73	52.0	70	13,516	7.7	10	6,761	52.1	70	13,461	6.5	8	6,727
4302+46.85	46.85	51.1	89	13,605	7.4	13	6,774	50.9	89	13,550	6.1	11	6,738
4302+50.00	3.15	50.6	6	13,611	7.4	1	6,775	50.1	6	13,556	6.1	1	6,739
4303+00.00	50.00	31.9	76	13,687	7.8	14	6,789	31.3	75	13,631	6.6	12	6,751
4303+26.43	26.43	26.8	29	13,716	10.0	9	6,798	27.7	29	13,660	10.8	9	6,760
4303+50.00	23.57	29.3	24	13,740	11.2	9	6,807	30.8	26	13,686	10.2	9	6,769
4303+90.85	40.85	29.7	45	13,785	11.8	17	6,824	29.1	45	13,731	10.5	16	6,785
4304+00.00	9.15	28.1	10	13,795	11.3	4	6,828	27.7	10	13,741	10.1	3	6,788
4304+50.00	50.00	20.8	45	13,840	10.9	21	6,849	22.1	46	13,787	11.9	20	6,808
4305+00.00	50.00	21.2	39	13,879	11.1	20	6,869	22.7	41	13,828	12.4	23	6,831
4305+50.00	50.00	19.2	37	13,916	12.8	22	6,891	20.6	40	13,868	12.8	23	6,854
4306+00.00	50.00	19.0	35	13,951	11.1	22	6,913	20.0	38	13,906	10.8	22	6,876
4306+50.00	50.00	14.6	31	13,982	16.6	26	6,939	14.3	32	13,938	16.9	26	6,902
4307+00.00	50.00	10.9	24	14,006	15.4	30	6,969	12.6	25	13,963	15.9	30	6,932
4307+50.00	50.00	3.6	13	14,019	14.8	28	6,997	5.4	17	13,980	14.8	28	6,960
4308+00.00	50.00	5.0	8	14,027	14.4	27	7,024	6.9	11	13,991	15.1	28	6,988
4308+50.00	50.00	12.1	16	14,043	12.0	24	7,048	14.1	19	14,010	11.7	25	7,013
4309+00.00	50.00	15.3	25	14,068	11.5	22	7,070	17.4	29	14,039	11.5	21	7,034
4309+50.00	50.00	15.2	28	14,096	10.5	20	7,090	10.8	26	14,065	11.5	21	7,055
4310+00.00	50.00	27.3	39	14,135	10.7	20	7,110	17.4	26	14,091	9.0	19	7,074
4310+50.00	50.00	35.5	58	14,193	15.0	24	7,134	34.8	48	14,139	13.4	21	7,095
4311+00.00	50.00	14.9	47	14,240	15.1	28	7,162	16.3	47	14,186	15.5	27	7,122
4311+50.00	50.00	14.1	27	14,267	23.2	35	7,197	14.1	28	14,214	24.5	37	7,159
4312+00.00	50.00	16.7	29	14,296	13.2	34	7,231	13.9	26	14,240	12.0	34	7,193
4312+50.00	50.00	12.1	27	14,323	14.4	26	7,257	12.0	24	14,264	13.4	24	7,217

This document was originally issued and sealed by Jeffrey T. Lansink, Registration Number PE-5244, on 7/29/15 and the original document is stored at the North Dakota Department Of Transportation.

Earthwork Average
End Area Tables

Interstate 29 – Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	11	5

		Alternate A - Concrete Shoulders						Alternate B - Concrete Median and Asphalt Outside Shoulders					
		Excavation			Embankment			Excavation			Embankment		
Sta	Distance (FT)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)
4313+00.00	50.00	15.2	25	14,348	15.0	27	7,284	13.7	24	14,288	13.8	25	7,242
4313+50.00	50.00	2.7	17	14,365	19.3	32	7,316	2.9	15	14,303	20.8	32	7,274
4314+00.00	50.00	6.1	8	14,373	25.7	42	7,358	7.1	9	14,312	27.0	44	7,318
4314+50.00	50.00	5.0	10	14,383	26.4	48	7,406	6.7	13	14,325	27.8	51	7,369
4315+00.00	50.00	6.0	10	14,393	29.5	52	7,458	7.5	13	14,338	30.9	54	7,423
4315+50.00	50.00	1.3	7	14,400	29.5	55	7,513	3.1	10	14,348	30.7	57	7,480
4316+00.00	50.00	13.6	14	14,414	24.2	50	7,563	14.8	17	14,365	24.6	51	7,531
4316+00.93	0.93	13.7	0	14,414	24.4	1	7,564	14.9	1	14,366	24.7	1	7,532
4316+50.00	49.07	9.9	21	14,435	28.7	48	7,612	11.3	24	14,390	30.9	51	7,583
4316+65.35	15.35	7.5	5	14,440	26.9	16	7,628	9.0	6	14,396	31.8	18	7,601
4317+00.00	34.65	8.9	11	14,451	19.7	30	7,658	10.5	13	14,409	26.7	38	7,639
4317+44.93	44.93	11.2	17	14,468	12.9	27	7,685	12.8	19	14,428	17.5	37	7,676
4317+50.00	5.07	10.8	2	14,470	15.9	3	7,688	12.4	2	14,430	18.4	3	7,679
4318+00.00	50.00	10.4	20	14,490	20.9	34	7,722	12.2	23	14,453	23.6	39	7,718
4318+24.51	24.51	16.7	12	14,502	18.3	18	7,740	18.7	14	14,467	20.9	20	7,738
4319+00.00	75.49	20.4	52	14,554	20.3	54	7,794	22.4	57	14,524	23.0	61	7,799
4320+00.00	100.00	36.5	105	14,659	11.3	59	7,853	38.2	112	14,636	13.8	68	7,867
4321+00.00	100.00	35.6	134	14,793	15.4	49	7,902	36.9	139	14,775	17.8	59	7,926
4322+00.00	100.00	31.8	125	14,918	8.8	45	7,947	33.1	130	14,905	8.2	48	7,974
4323+00.00	100.00	45.9	144	15,062	8.8	33	7,980	47.5	149	15,054	8.4	31	8,005
4324+00.00	100.00	56.2	189	15,251	8.1	31	8,011	54.8	189	15,243	7.2	29	8,034
4325+00.00	100.00	57.0	210	15,461	8.0	30	8,041	55.4	204	15,447	6.9	26	8,060
4326+00.00	100.00	39.0	178	15,639	8.6	31	8,072	41.6	180	15,627	13.0	37	8,097
4327+00.00	100.00	23.2	115	15,754	9.2	33	8,105	26.3	126	15,753	9.1	41	8,138
4328+00.00	100.00	22.9	85	15,839	10.2	36	8,141	23.8	93	15,846	14.2	43	8,181
4329+00.00	100.00	37.1	111	15,950	8.0	34	8,175	38.5	115	15,961	6.8	39	8,220
4330+00.00	100.00	36.6	136	16,086	8.0	30	8,205	39.0	144	16,105	7.0	26	8,246
4331+00.00	100.00	39.0	140	16,226	8.0	30	8,235	38.0	143	16,248	6.7	25	8,271
4332+00.00	100.00	27.4	123	16,349	7.9	29	8,264	23.2	113	16,361	6.7	25	8,296
4333+00.00	100.00	38.0	121	16,470	7.9	29	8,293	39.3	116	16,477	6.8	25	8,321
4334+00.00	100.00	44.8	153	16,623	8.0	29	8,322	46.5	159	16,636	6.7	25	8,346
4335+00.00	100.00	46.9	170	16,793	7.9	29	8,351	46.9	173	16,809	6.7	25	8,371
4336+00.00	100.00	46.1	172	16,965	8.0	29	8,380	46.9	174	16,983	6.7	25	8,396
4337+00.00	100.00	66.8	209	17,174	8.0	30	8,410	66.9	211	17,194	6.7	25	8,421
4337+62.88	62.88	65.7	154	17,328	8.4	19	8,429	65.4	154	17,348	7.0	16	8,437
4338+00.00	37.12	54.7	83	17,411	8.1	11	8,440	54.2	82	17,430	6.7	9	8,446
4338+42.46	42.46	33.7	70	17,481	7.9	13	8,453	33.6	69	17,499	6.6	10	8,456
4338+50.00	7.54	29.8	9	17,490	7.8	2	8,455	29.7	9	17,508	6.9	2	8,458
4339+00.00	50.00	10.6	37	17,527	11.4	18	8,473	12.5	39	17,547	18.7	24	8,482
4339+22.04	22.04	6.9	7	17,534	22.1	14	8,487	8.7	9	17,556	27.4	19	8,501
4339+50.00	27.96	12.5	10	17,544	29.9	27	8,514	14.3	12	17,568	35.9	33	8,534
4339+86.46	36.46	23.4	24	17,568	29.4	40	8,554	25.8	27	17,595	35.6	48	8,582
4340+00.00	13.54	23.9	12	17,580	30.4	15	8,569	26.3	13	17,608	36.7	18	8,600
4340+50.00	50.00	47.2	66	17,646	11.8	39	8,608	49.3	70	17,678	12.5	46	8,646
4341+00.00	50.00	37.7	79	17,725	13.7	24	8,632	39.7	82	17,760	29.6	39	8,685
4341+50.00	50.00	36.5	69	17,794	20.7	32	8,664	38.4	72	17,832	26.9	52	8,737
4342+00.00	50.00	40.0	71	17,865	10.8	29	8,693	41.5	74	17,906	14.1	38	8,775
4342+50.00	50.00	32.9	68	17,933	11.0	20	8,713	34.4	70	17,976	11.3	24	8,799
4343+00.00	50.00	27.7	56	17,989	15.2	24	8,737	29.0	59	18,035	15.6	25	8,824
4343+50.00	50.00	22.5	46	18,035	30.3	42	8,779	20.7	46	18,081	36.8	49	8,873
4344+00.00	50.00	15.4	35	18,070	39.4	65	8,844	14.3	32	18,113	46.0	77	8,950
4344+50.00	50.00	16.6	30	18,100	13.6	49	8,893	15.8	28	18,141	14.2	56	9,006
4345+00.00	50.00	7.5	22	18,122	14.1	26	8,919	6.6	21	18,162	14.4	26	9,032
4345+50.00	50.00	12.6	19	18,141	17.3	29	8,948	11.2	16	18,178	43.2	53	9,085
4346+00.00	50.00	7.9	19	18,160	46.4	59	9,007	6.7	17	18,195	53.6	90	9,175
4346+50.00	50.00	12.0	18	18,178	45.7	85	9,092	11.0	16	18,211	52.9	99	9,274
4347+00.00	50.00	12.6	23	18,201	24.1	65	9,157	13.4	23	18,234	56.5	101	9,375
4347+50.00	50.00	12.7	23	18,224	51.7	70	9,227	13.2	25	18,259	59.0	107	9,482

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Earthwork Average
End Area Tables

Interstate 29 – Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	11	6

		Alternate A - Concrete Shoulders						Alternate B - Concrete Median and Asphalt Outside Shoulders					
		Excavation			Embankment			Excavation			Embankment		
Sta	Distance (FT)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)
4348+00.00	50.00	13.8	25	18,249	16.2	63	9,290	14.3	25	18,284	38.0	90	9,572
4348+50.00	50.00	16.0	28	18,277	12.9	27	9,317	17.3	29	18,313	35.0	68	9,640
4349+00.00	50.00	19.1	33	18,310	10.9	22	9,339	19.0	34	18,347	36.5	66	9,706
4349+50.00	50.00	15.2	32	18,342	26.4	35	9,374	15.1	32	18,379	33.5	65	9,771
4350+00.00	50.00	13.9	27	18,369	11.1	35	9,409	13.8	27	18,406	37.3	66	9,837
4350+50.00	50.00	14.9	27	18,396	30.3	38	9,447	14.9	27	18,433	37.4	69	9,906
4351+00.00	50.00	22.9	35	18,431	29.8	56	9,503	23.4	35	18,468	36.8	69	9,975
4351+50.00	50.00	33.4	52	18,483	12.3	39	9,542	36.4	55	18,523	28.6	61	10,036
4352+00.00	50.00	36.3	65	18,548	10.0	21	9,563	37.7	69	18,592	10.2	36	10,072
4352+50.00	50.00	33.7	65	18,613	9.8	18	9,581	34.7	67	18,659	9.8	19	10,091
4353+00.00	50.00	43.2	71	18,684	9.9	18	9,599	43.1	72	18,731	11.5	20	10,111
4353+50.00	50.00	36.3	74	18,758	9.5	18	9,617	35.9	73	18,804	9.4	19	10,130
4354+00.00	50.00	39.1	70	18,828	11.0	19	9,636	45.5	75	18,879	27.7	34	10,164
4354+50.00	50.00	24.9	59	18,887	11.4	21	9,657	19.1	60	18,939	23.5	47	10,211
4355+00.00	50.00	42.2	62	18,949	9.7	20	9,677	46.5	61	19,000	9.9	31	10,242
4355+50.00	50.00	47.6	83	19,032	9.8	18	9,695	51.7	91	19,091	10.0	18	10,260
4356+00.00	50.00	52.2	92	19,124	8.6	17	9,712	56.1	100	19,191	8.2	17	10,277
4356+50.00	50.00	52.4	97	19,221	9.1	16	9,728	53.9	102	19,293	9.2	16	10,293
4357+00.00	50.00	66.1	110	19,331	8.6	16	9,744	66.8	112	19,405	9.0	17	10,310
4357+50.00	50.00	79.2	135	19,466	7.8	15	9,759	78.7	135	19,540	6.8	15	10,325
4358+00.00	50.00	82.5	150	19,616	7.8	14	9,773	72.4	140	19,680	7.0	13	10,338
4358+50.00	50.00	90.8	160	19,776	7.7	14	9,787	87.0	148	19,828	6.9	13	10,351
4359+00.00	50.00	96.4	173	19,949	7.8	14	9,801	94.5	168	19,996	6.7	13	10,364
4359+50.00	50.00	88.6	171	20,120	7.8	14	9,815	87.6	169	20,165	6.7	12	10,376
4360+00.00	50.00	93.0	168	20,288	7.8	14	9,829	92.5	167	20,332	6.7	12	10,388
4360+50.00	50.00	106.1	184	20,472	7.8	14	9,843	105.8	184	20,516	6.7	12	10,400
4361+00.00	50.00	121.0	210	20,682	7.8	14	9,857	119.4	209	20,725	6.7	12	10,412
4361+50.00	50.00	114.5	218	20,900	7.7	14	9,871	80.8	185	20,910	7.3	13	10,425
4362+00.00	50.00	121.1	218	21,118	7.7	14	9,885	80.9	150	21,060	8.3	14	10,439
4362+50.00	50.00	123.4	226	21,344	7.7	14	9,899	86.8	155	21,215	8.3	15	10,454
4363+00.00	50.00	126.1	231	21,575	7.7	14	9,913	93.8	167	21,382	8.3	15	10,469
4363+50.00	50.00	136.3	243	21,818	7.8	14	9,927	91.9	172	21,554	1.3	9	10,478
4364+00.00	50.00	137.7	254	22,072	7.8	14	9,941	90.3	169	21,723	8.3	9	10,487
4364+50.00	50.00	144.1	261	22,333	8.9	15	9,956	139.7	213	21,936	6.6	14	10,501
4365+00.00	50.00	126.7	251	22,584	7.7	15	9,971	122.3	243	22,179	6.6	12	10,513
4365+50.00	50.00	103.5	213	22,797	7.7	14	9,985	99.7	206	22,385	6.6	12	10,525
4366+00.00	50.00	103.7	192	22,989	7.7	14	9,999	100.0	185	22,570	6.6	12	10,537
4366+08.69	8.69	101.0	33	23,022	7.9	3	10,002	97.0	32	22,602	6.6	2	10,539
4366+50.00	41.31	84.9	142	23,164	9.1	13	10,015	84.7	139	22,741	6.9	10	10,549
4366+73.12	23.12	77.2	69	23,233	7.4	7	10,022	77.6	69	22,810	7.5	6	10,555
4367+00.00	26.88	65.2	71	23,304	7.4	7	10,029	65.1	71	22,881	7.3	7	10,562
4367+50.00	50.00	57.7	114	23,418	7.9	14	10,043	61.4	117	22,998	9.9	16	10,578
4367+52.69	2.69	57.2	6	23,424	5.9	1	10,044	61.2	6	23,004	10.0	1	10,579
4368+00.00	47.31	61.0	104	23,528	5.2	10	10,054	66.2	112	23,116	10.8	18	10,597
4368+32.27	32.27	102.5	98	23,626	8.4	8	10,062	98.2	98	23,214	6.9	11	10,608
4369+00.00	67.73	105.5	261	23,887	7.9	20	10,082	101.1	250	23,464	6.6	17	10,625
4370+00.00	100.00	103.7	387	24,274	7.9	29	10,111	98.9	370	23,834	6.6	24	10,649
4371+00.00	100.00	79.1	339	24,613	8.0	29	10,140	75.4	323	24,157	6.6	24	10,673
4372+00.00	100.00	79.4	294	24,907	8.0	30	10,170	75.6	280	24,437	6.6	24	10,697
4373+00.00	100.00	92.9	319	25,226	7.9	29	10,199	88.8	304	24,741	6.6	24	10,721
4374+00.00	100.00	80.1	320	25,546	7.9	29	10,228	76.2	306	25,047	6.6	24	10,745
4375+00.00	100.00	73.2	284	25,830	7.9	29	10,257	69.5	270	25,317	6.6	24	10,769
4376+00.00	100.00	76.2	277	26,107	7.9	29	10,286	72.7	263	25,580	6.6	24	10,793
4377+00.00	100.00	82.7	294	26,401	7.9	29	10,315	82.3	287	25,867	6.7	25	10,818
4378+00.00	100.00	67.9	279	26,680	7.9	29	10,344	68.6	279	26,146	6.7	25	10,843
4379+00.00	100.00	55.9	229	26,909	7.9	29	10,373	52.8	225	26,371	6.6	25	10,868
4380+00.00	100.00	52.4	201	27,110	7.9	29	10,402	49.5	189	26,560	6.7	25	10,893
4381+00.00	100.00	55.1	199	27,309	7.9	29	10,431	51.9	188	26,748	6.6	25	10,918

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Earthwork Average
End Area Tables

Interstate 29 – Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	11	7

		Alternate A - Concrete Shoulders						Alternate B - Concrete Median and Asphalt Outside Shoulders					
		Excavation			Embankment			Excavation			Embankment		
Sta	Distance (FT)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)
4382+00.00	100.00	36.8	170	27,479	7.9	29	10,460	33.8	159	26,907	6.6	24	10,942
4383+00.00	100.00	5.3	78	27,557	13.1	39	10,499	5.0	72	26,979	16.2	42	10,984
4383+95.25	95.25	2.5	14	27,571	18.1	55	10,554	2.3	13	26,992	21.3	66	11,050
4384+00.00	4.75	2.6	0	27,571	18.7	3	10,557	2.4	0	26,992	21.7	4	11,054
4384+50.00	50.00	2.6	5	27,576	28.4	44	10,601	2.5	5	26,997	32.5	50	11,104
4384+74.82	24.82	2.4	2	27,578	25.8	25	10,626	2.4	2	26,999	30.0	29	11,133
4385+00.00	25.18	9.2	5	27,583	19.5	21	10,647	9.2	5	27,004	23.4	25	11,158
4385+50.00	50.00	8.9	17	27,600	25.4	42	10,689	8.9	17	27,021	28.9	48	11,206
4385+54.40	4.40	8.9	1	27,601	25.8	4	10,693	8.9	1	27,022	29.2	5	11,211
4386+00.00	45.60	15.8	21	27,622	21.0	40	10,733	15.8	21	27,043	25.1	46	11,257
4386+18.82	18.82	16.1	11	27,633	23.2	15	10,748	15.0	11	27,054	25.4	18	11,275
4386+50.00	31.18	14.2	17	27,650	20.6	25	10,773	14.0	17	27,071	26.1	30	11,305
4387+00.00	50.00	9.4	22	27,672	30.6	47	10,820	9.4	22	27,093	33.3	55	11,360
4387+50.00	50.00	19.6	27	27,699	30.2	56	10,876	19.8	27	27,120	32.9	61	11,421
4388+00.00	50.00	24.3	41	27,740	32.9	58	10,934	24.4	41	27,161	35.2	63	11,484
4388+50.00	50.00	26.1	47	27,787	39.8	67	11,001	26.1	47	27,208	42.1	72	11,556
4389+00.00	50.00	25.7	48	27,835	18.6	54	11,055	25.8	48	27,256	20.2	58	11,614
4389+50.00	50.00	25.6	48	27,883	26.1	41	11,096	25.8	48	27,304	28.0	45	11,659
4390+00.00	50.00	26.5	48	27,931	28.0	50	11,146	26.9	49	27,353	30.1	54	11,713
4390+50.00	50.00	25.5	48	27,979	28.8	53	11,199	25.8	49	27,402	31.0	57	11,770
4391+00.00	50.00	22.1	44	28,023	37.3	61	11,260	22.4	45	27,447	39.4	65	11,835
4391+50.00	50.00	21.5	40	28,063	37.9	70	11,330	21.6	41	27,488	39.9	73	11,908
4392+00.00	50.00	17.5	36	28,099	39.6	72	11,402	17.5	36	27,524	39.9	74	11,982
4392+50.00	50.00	12.2	28	28,127	37.7	72	11,474	12.2	28	27,552	38.3	72	12,054
4393+00.00	50.00	14.6	25	28,152	33.7	66	11,540	14.6	25	27,577	34.5	67	12,121
4393+50.00	50.00	9.5	22	28,174	40.2	68	11,608	9.5	22	27,599	41.0	70	12,191
4394+00.00	50.00	8.5	17	28,191	51.2	85	11,693	8.5	17	27,616	53.6	88	12,279
4394+50.00	50.00	11.0	18	28,209	45.5	90	11,783	11.1	18	27,634	47.5	94	12,373
4395+00.00	50.00	11.9	21	28,230	41.8	81	11,864	12.0	21	27,655	43.9	85	12,458
4395+50.00	50.00	12.4	23	28,253	36.2	72	11,936	12.5	23	27,678	36.9	75	12,533
4396+00.00	50.00	11.1	22	28,275	34.8	66	12,002	11.4	22	27,700	36.9	68	12,601
4396+50.00	50.00	9.8	19	28,294	32.3	62	12,064	9.8	20	27,720	34.5	66	12,667
4397+00.00	50.00	15.8	24	28,318	26.9	55	12,119	15.9	24	27,744	28.8	59	12,726
4397+50.00	50.00	10.6	24	28,342	30.4	53	12,172	10.6	25	27,769	32.7	57	12,783
4398+00.00	50.00	7.2	16	28,358	29.3	55	12,227	7.2	16	27,785	31.5	59	12,842
4398+50.00	50.00	15.9	21	28,379	31.3	56	12,283	16.3	22	27,807	33.1	60	12,902
4399+00.00	50.00	23.4	36	28,415	31.5	58	12,341	24.1	37	27,844	33.6	62	12,964
4399+35.13	35.13	28.9	34	28,449	34.6	43	12,384	28.9	34	27,878	36.3	45	13,009
4399+50.00	14.87	32.0	17	28,466	37.8	20	12,404	32.0	17	27,895	40.1	21	13,030
4399+99.55	49.55	27.8	55	28,521	23.4	56	12,460	27.8	55	27,950	25.9	61	13,091
4400+00.00	0.45	27.8	0	28,521	23.4	0	12,460	27.8	0	27,950	25.9	0	13,091
4400+50.00	50.00	27.3	51	28,572	17.8	38	12,498	27.0	51	28,001	20.0	43	13,134
4400+79.13	29.13	32.5	32	28,604	16.2	18	12,516	32.1	32	28,033	18.5	21	13,155
4401+00.00	20.87	33.8	26	28,630	15.0	12	12,528	33.7	25	28,058	17.2	14	13,169
4401+50.00	50.00	35.7	64	28,694	13.0	26	12,554	36.7	65	28,123	15.4	30	13,199
4401+58.71	8.71	37.1	12	28,706	13.0	4	12,558	38.1	12	28,135	15.4	5	13,204
4402+00.00	41.29	30.3	52	28,758	9.9	18	12,576	29.6	52	28,187	12.1	21	13,225
4403+00.00	100.00	33.7	119	28,877	9.3	36	12,612	33.3	116	28,303	9.2	39	13,264
4404+00.00	100.00	35.2	128	29,005	8.9	34	12,646	35.1	127	28,430	8.7	33	13,297
4405+00.00	100.00	40.4	140	29,145	8.0	31	12,677	37.8	135	28,565	6.6	28	13,325
4406+00.00	100.00	39.5	148	29,293	8.0	30	12,707	40.5	145	28,710	6.7	25	13,350
4407+00.00	100.00	45.8	158	29,451	7.9	29	12,736	46.6	161	28,871	6.7	25	13,375
4408+00.00	100.00	58.1	192	29,643	7.9	29	12,765	55.6	189	29,060	6.6	25	13,400
4409+00.00	100.00	61.7	222	29,865	7.9	29	12,794	59.2	213	29,273	6.6	24	13,424
4410+00.00	100.00	52.9	212	30,077	7.9	29	12,823	50.3	203	29,476	6.6	24	13,448
4411+00.00	100.00	41.2	174	30,251	7.9	29	12,852	40.3	168	29,644	8.3	28	13,476
4412+00.00	100.00	38.7	148	30,399	7.9	29	12,881	37.6	144	29,788	10.6	35	13,511
4413+00.00	100.00	34.9	136	30,535	7.9	29	12,910	32.5	130	29,918	6.6	32	13,543

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Earthwork Average
End Area Tables

Interstate 29 – Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	11	8

		Alternate A - Concrete Shoulders						Alternate B - Concrete Median and Asphalt Outside Shoulders					
		Excavation			Embankment			Excavation			Embankment		
Sta	Distance (FT)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)
4414+00.00	100.00	39.4	138	30,673	7.9	29	12,939	37.0	129	30,047	6.8	25	13,568
4415+00.00	100.00	47.9	162	30,835	8.3	30	12,969	47.7	157	30,204	8.0	27	13,595
4416+00.00	100.00	54.4	189	31,024	8.0	30	12,999	51.8	184	30,388	6.7	27	13,622
4417+00.00	100.00	36.4	168	31,192	8.2	30	13,029	36.1	163	30,551	7.8	27	13,649
4418+00.00	100.00	23.9	112	31,304	8.8	31	13,060	23.8	111	30,662	8.4	30	13,679
4419+00.00	100.00	15.0	72	31,376	10.7	36	13,096	14.9	72	30,734	10.5	35	13,714
4420+00.00	100.00	33.7	90	31,466	8.7	36	13,132	33.6	90	30,824	11.6	41	13,755
4421+00.00	100.00	34.4	126	31,592	8.4	32	13,164	33.1	124	30,948	7.6	36	13,791
4422+00.00	100.00	47.4	151	31,743	7.9	30	13,194	45.7	146	31,094	6.7	26	13,817
4423+00.00	100.00	46.3	174	31,917	8.1	30	13,224	41.7	162	31,256	7.2	26	13,843
4424+00.00	100.00	52.6	183	32,100	7.9	30	13,254	51.2	172	31,428	6.7	26	13,869
4425+00.00	100.00	50.4	191	32,291	7.9	29	13,283	48.2	184	31,612	6.6	25	13,894
4426+00.00	100.00	45.3	177	32,468	8.0	29	13,312	42.5	168	31,780	6.6	24	13,918
4427+00.00	100.00	39.6	157	32,625	7.9	29	13,341	36.7	147	31,927	6.6	24	13,942
4428+00.00	100.00	37.6	143	32,768	7.9	29	13,370	35.5	134	32,061	6.6	24	13,966
4429+00.00	100.00	41.5	146	32,914	7.9	29	13,399	39.6	139	32,200	6.6	24	13,990
4430+00.00	100.00	25.2	124	33,038	8.3	30	13,429	23.1	116	32,316	7.9	27	14,017
4431+00.00	100.00	12.9	71	33,109	8.9	32	13,461	12.9	67	32,383	9.4	32	14,049
4432+00.00	100.00	28.4	76	33,185	8.0	31	13,492	26.1	72	32,455	7.0	30	14,079
4433+00.00	100.00	22.0	93	33,278	8.9	31	13,523	22.0	89	32,544	8.6	29	14,108
4434+00.00	100.00	7.9	55	33,333	13.5	41	13,564	7.9	55	32,599	14.3	42	14,150
4435+00.00	100.00	21.9	55	33,388	20.0	62	13,626	25.2	61	32,660	19.8	63	14,213
4436+00.00	100.00	18.0	74	33,462	14.0	63	13,689	17.7	79	32,739	13.7	62	14,275
4437+00.00	100.00	30.0	89	33,551	9.2	43	13,732	29.9	88	32,827	8.8	42	14,317
4438+00.00	100.00	25.1	102	33,653	9.7	35	13,767	25.2	102	32,929	10.0	35	14,352
4439+00.00	100.00	17.0	78	33,731	14.4	45	13,812	16.9	78	33,007	14.3	45	14,397
4440+00.00	100.00	15.9	61	33,792	15.8	56	13,868	15.9	61	33,068	15.8	56	14,453
4441+00.00	100.00	23.8	74	33,866	14.3	56	13,924	21.9	70	33,138	14.0	55	14,508
4442+00.00	100.00	15.7	73	33,939	19.6	63	13,987	15.7	70	33,208	20.1	63	14,571
4443+00.00	100.00	18.1	63	34,002	14.5	63	14,050	18.1	63	33,271	15.0	65	14,636
4444+00.00	100.00	13.8	59	34,061	16.2	57	14,107	13.8	59	33,330	16.0	57	14,693
4445+00.00	100.00	12.5	49	34,110	16.6	61	14,168	9.1	42	33,372	16.2	60	14,753
4446+00.00	100.00	15.4	52	34,162	12.8	54	14,222	15.4	45	33,417	12.7	54	14,807
4447+00.00	100.00	9.9	47	34,209	14.9	51	14,273	9.9	47	33,464	15.7	53	14,860
4448+00.00	100.00	29.8	74	34,283	9.7	46	14,319	27.6	69	33,533	8.4	45	14,905
4449+00.00	100.00	22.2	96	34,379	8.1	33	14,352	20.1	88	33,621	7.5	29	14,934
4450+00.00	100.00	19.6	77	34,456	10.0	34	14,386	20.4	75	33,696	11.8	36	14,970
4451+00.00	100.00	16.0	66	34,522	9.5	36	14,422	16.0	67	33,763	10.3	41	15,011
4452+00.00	100.00	26.6	79	34,601	8.0	32	14,454	29.1	84	33,847	7.4	33	15,044
4453+00.00	100.00	38.3	120	34,721	7.9	29	14,483	35.8	120	33,967	6.6	26	15,070
4454+00.00	100.00	42.2	149	34,870	8.0	29	14,512	40.5	141	34,108	6.7	25	15,095
4455+00.00	100.00	43.8	159	35,029	8.0	30	14,542	41.8	152	34,260	6.7	25	15,120
4456+00.00	100.00	59.3	191	35,220	8.0	30	14,572	59.9	188	34,448	6.7	25	15,145
4457+00.00	100.00	54.7	211	35,431	8.0	30	14,602	56.0	215	34,663	6.7	25	15,170
4458+00.00	100.00	49.8	194	35,625	8.0	30	14,632	50.8	198	34,861	6.7	25	15,195
4459+00.00	100.00	31.2	150	35,775	8.3	30	14,662	30.2	150	35,011	7.1	26	15,221
4460+00.00	100.00	58.5	166	35,941	8.0	30	14,692	59.5	166	35,177	6.8	26	15,247
4461+00.00	100.00	42.2	186	36,127	8.2	30	14,722	43.1	190	35,367	6.9	25	15,272
4462+00.00	100.00	54.4	179	36,306	8.0	30	14,752	52.8	178	35,545	6.7	25	15,297
4463+00.00	100.00	34.1	164	36,470	8.2	30	14,782	32.7	158	35,703	6.9	25	15,322
4464+00.00	100.00	36.8	131	36,601	9.6	33	14,815	34.9	125	35,828	8.3	28	15,350
4465+00.00	100.00	45.0	151	36,752	8.8	34	14,849	42.9	144	35,972	7.6	29	15,379
4466+00.00	100.00	44.7	166	36,918	8.0	31	14,880	43.8	161	36,133	6.7	26	15,405
4467+00.00	100.00	26.8	132	37,050	7.9	29	14,909	23.4	124	36,257	6.9	25	15,430
4468+00.00	100.00	23.6	93	37,143	8.7	31	14,940	25.4	90	36,347	8.7	29	15,459
4469+00.00	100.00	20.8	82	37,225	9.8	34	14,974	18.0	80	36,427	8.6	32	15,491
4470+00.00	100.00	5.5	49	37,274	9.4	36	15,010	5.1	43	36,470	12.2	39	15,530
4471+00.00	100.00	11.7	32	37,306	14.9	45	15,055	11.6	31	36,501	18.1	56	15,586

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Earthwork Average
End Area Tables

Interstate 29 – Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	11	9

		Alternate A - Concrete Shoulders						Alternate B - Concrete Median and Asphalt Outside Shoulders					
		Excavation			Embankment			Excavation			Embankment		
Sta	Distance (FT)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)
4472+00.00	100.00	1.6	25	37,331	14.3	54	15,109	1.4	24	36,525	19.4	69	15,655
4473+00.00	100.00	15.8	32	37,363	8.5	42	15,151	15.9	32	36,557	8.2	51	15,706
4474+00.00	100.00	19.3	65	37,428	9.0	32	15,183	19.5	66	36,623	8.9	32	15,738
4475+00.00	100.00	0.6	37	37,465	13.3	41	15,224	0.6	37	36,660	15.0	44	15,782
4476+00.00	100.00	12.8	25	37,490	8.0	39	15,263	14.9	29	36,689	7.0	41	15,823
4477+00.00	100.00	22.6	66	37,556	8.1	30	15,293	19.7	64	36,753	7.1	26	15,849
4478+00.00	100.00	21.6	82	37,638	8.0	30	15,323	16.9	68	36,821	7.2	26	15,875
4479+00.00	100.00	22.2	81	37,719	8.6	31	15,354	21.5	71	36,892	8.2	29	15,904
4480+00.00	100.00	10.3	60	37,779	9.3	33	15,387	11.2	61	36,953	8.9	32	15,936
4481+00.00	100.00	19.7	56	37,835	9.2	34	15,421	20.3	58	37,011	8.9	33	15,969
4481+83.22	83.22	21.0	63	37,898	8.5	27	15,448	20.4	63	37,074	7.9	26	15,995
4482+00.00	16.78	17.4	12	37,910	8.7	5	15,453	16.6	11	37,085	8.1	5	16,000
4482+50.00	50.00	12.8	28	37,938	9.5	17	15,470	13.1	28	37,113	9.3	16	16,016
4482+62.80	12.80	13.1	6	37,944	9.8	5	15,475	13.9	6	37,119	9.5	4	16,020
4483+00.00	37.20	18.0	21	37,965	9.9	14	15,489	18.4	22	37,141	9.9	13	16,033
4483+42.38	42.38	25.5	34	37,999	10.2	16	15,505	26.2	35	37,176	9.8	15	16,048
4483+50.00	7.62	26.6	7	38,006	9.8	3	15,508	27.1	8	37,184	9.0	3	16,051
4484+00.00	50.00	29.7	52	38,058	17.1	25	15,533	27.9	51	37,235	16.0	23	16,074
4484+06.80	6.80	30.7	8	38,066	19.1	5	15,538	29.2	7	37,242	17.9	4	16,078
4484+50.00	43.20	29.5	48	38,114	10.5	24	15,562	27.1	45	37,287	8.9	21	16,099
4485+00.00	50.00	23.9	49	38,163	10.1	19	15,581	21.6	45	37,332	8.6	16	16,115
4485+50.00	50.00	11.9	33	38,196	10.3	19	15,600	10.0	29	37,361	9.5	17	16,132
4486+00.00	50.00	6.8	17	38,213	12.0	21	15,621	5.0	14	37,375	10.8	19	16,151
4486+50.00	50.00	2.4	9	38,222	12.5	23	15,644	2.9	7	37,382	12.7	22	16,173
4487+00.00	50.00	2.7	5	38,227	12.5	23	15,667	3.2	6	37,388	11.9	23	16,196
4487+50.00	50.00	8.0	10	38,237	10.8	22	15,689	5.6	8	37,396	9.5	20	16,216
4488+00.00	50.00	23.6	29	38,266	8.4	18	15,707	21.1	25	37,421	7.1	15	16,231
4488+50.00	50.00	24.9	45	38,311	8.0	15	15,722	22.1	40	37,461	6.8	13	16,244
4489+00.00	50.00	14.0	36	38,347	9.1	16	15,738	13.7	33	37,494	9.6	15	16,259
4489+50.00	50.00	14.9	27	38,374	9.1	17	15,755	14.7	26	37,520	9.2	17	16,276
4490+00.00	50.00	21.7	34	38,408	8.5	16	15,771	19.1	31	37,551	6.9	15	16,291
4490+50.00	50.00	30.2	48	38,456	8.4	16	15,787	27.8	43	37,594	6.8	13	16,304
4491+00.00	50.00	33.0	59	38,515	7.8	15	15,802	30.7	54	37,648	6.1	12	16,316
4491+50.00	50.00	29.7	58	38,573	7.6	14	15,816	27.8	54	37,702	6.0	11	16,327
4492+00.00	50.00	21.7	48	38,621	7.7	14	15,830	19.2	44	37,746	6.7	12	16,339
4492+50.00	50.00	38.8	56	38,677	7.7	14	15,844	32.2	48	37,794	2.7	9	16,348
4493+00.00	50.00	36.0	69	38,746	7.8	14	15,858	34.0	61	37,855	6.3	8	16,356
4493+50.00	50.00	32.9	64	38,810	8.2	15	15,873	30.2	59	37,914	6.6	12	16,368
4493+65.02	15.02	39.0	20	38,830	7.9	4	15,877	36.5	19	37,933	6.3	4	16,372
4494+00.00	34.98	37.6	50	38,880	7.4	10	15,887	36.1	47	37,980	6.3	8	16,380
4494+29.44	29.44	38.9	42	38,922	6.9	8	15,895	38.5	41	38,021	7.9	8	16,388
4494+50.00	20.56	34.6	28	38,950	7.0	5	15,900	32.8	27	38,048	5.9	5	16,393
4495+00.00	50.00	31.5	61	39,011	7.3	13	15,913	31.2	59	38,107	10.1	15	16,408
4495+09.02	9.02	29.3	10	39,021	7.4	2	15,915	29.1	10	38,117	11.1	4	16,412
4495+50.00	40.98	27.2	43	39,064	7.8	12	15,927	26.8	42	38,159	10.2	16	16,428
4495+88.60	38.60	27.9	39	39,103	8.3	12	15,939	27.5	39	38,198	7.6	13	16,441
4496+00.00	11.40	26.5	11	39,114	8.3	4	15,943	25.0	11	38,209	7.4	3	16,444
4497+00.00	100.00	29.1	103	39,217	9.7	33	15,976	28.7	99	38,308	11.1	34	16,478
4498+00.00	100.00	18.4	88	39,305	12.4	41	16,017	18.4	87	38,395	13.7	46	16,524
4499+00.00	100.00	9.5	52	39,357	7.9	38	16,055	8.5	50	38,445	9.1	42	16,566
4500+00.00	100.00	24.3	63	39,420	11.1	35	16,090	24.0	60	38,505	12.1	39	16,605
4501+00.00	100.00	27.5	96	39,516	9.1	37	16,127	27.3	95	38,600	10.3	41	16,646
4502+00.00	100.00	33.0	112	39,628	7.9	31	16,158	31.4	109	38,709	7.4	33	16,679
4503+00.00	100.00	35.6	127	39,755	7.9	29	16,187	33.3	120	38,829	6.6	26	16,705
4504+00.00	100.00	44.3	148	39,903	7.9	29	16,216	41.9	139	38,968	6.6	24	16,729
4505+00.00	100.00	58.6	191	40,094	7.9	29	16,245	56.6	182	39,150	6.6	24	16,753
4506+00.00	100.00	48.0	197	40,291	7.9	29	16,274	43.7	186	39,336	6.6	24	16,777
4507+00.00	100.00	43.0	169	40,460	7.9	29	16,303	39.7	154	39,490	6.6	24	16,801

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Earthwork Average
End Area Tables

Interstate 29 – Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	11	10

		Alternate A - Concrete Shoulders						Alternate B - Concrete Median and Asphalt Outside Shoulders					
		Excavation			Embankment			Excavation			Embankment		
Sta	Distance (FT)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)
4508+00.00	100.00	40.7	155	40,615	7.9	29	16,332	37.7	143	39,633	6.6	24	16,825
4509+00.00	100.00	50.2	168	40,783	7.9	29	16,361	47.7	158	39,791	6.6	24	16,849
4510+00.00	100.00	56.1	197	40,980	7.9	29	16,390	52.2	185	39,976	6.6	24	16,873
4511+00.00	100.00	51.9	200	41,180	7.9	29	16,419	49.3	188	40,164	6.6	24	16,897
4512+00.00	100.00	54.0	196	41,376	7.9	29	16,448	51.2	186	40,350	6.6	24	16,921
4513+00.00	100.00	66.1	222	41,598	7.9	29	16,477	61.6	209	40,559	6.6	24	16,945
4514+00.00	100.00	52.3	219	41,817	7.9	29	16,506	49.2	205	40,764	6.6	24	16,969
4515+00.00	100.00	43.1	177	41,994	5.1	24	16,530	45.9	176	40,940	6.6	24	16,993
4516+00.00	100.00	31.5	138	42,132	5.9	20	16,550	36.8	153	41,093	6.6	24	17,017
4517+00.00	100.00	52.7	156	42,288	5.2	21	16,571	62.6	184	41,277	6.6	24	17,041
4518+00.00	100.00	53.7	197	42,485	5.1	19	16,590	66.8	240	41,517	6.6	24	17,065
4519+00.00	100.00	64.8	219	42,704	5.1	19	16,609	85.1	281	41,798	6.6	24	17,089
4520+00.00	100.00	110.4	324	43,028	5.2	19	16,628	136.4	410	42,208	6.7	25	17,114
4520+01.47	1.47	114.1	6	43,034	5.2	0	16,628	139.1	7	42,215	7.0	0	17,114
4520+50.00	48.53	87.9	182	43,216	5.2	9	16,637	125.2	238	42,453	6.7	12	17,126
4520+81.05	31.05	91.4	103	43,319	5.2	6	16,643	127.9	146	42,599	6.5	8	17,134
4521+00.00	18.95	105.0	69	43,388	5.1	4	16,647	126.0	89	42,688	6.5	5	17,139
4521+50.00	50.00	114.9	204	43,592	5.2	10	16,657	132.7	240	42,928	6.3	12	17,151
4521+60.63	10.63	115.5	45	43,637	5.1	2	16,659	132.6	52	42,980	6.2	2	17,153
4522+00.00	39.37	116.9	169	43,806	10.7	12	16,671	128.9	191	43,171	6.5	9	17,162
4522+25.05	25.05	124.4	112	43,918	15.2	12	16,683	136.5	123	43,294	6.7	6	17,168
4522+50.00	24.95	125.5	115	44,033	14.4	14	16,697	139.4	127	43,421	6.7	6	17,174
4523+00.00	50.00	134.9	241	44,274	5.7	19	16,716	143.5	262	43,683	6.7	12	17,186
4523+50.00	50.00	150.7	264	44,538	5.8	11	16,727	147.0	269	43,952	6.7	12	17,198
4524+00.00	50.00	134.9	264	44,802	12.8	17	16,744	155.7	280	44,232	6.6	12	17,210
4524+50.00	50.00	145.1	259	45,061	14.1	25	16,769	75.5	214	44,446	0.8	7	17,217
4525+00.00	50.00	102.5	229	45,290	5.7	18	16,787	70.3	135	44,581	1.4	2	17,219
4525+50.00	50.00	104.6	192	45,482	5.7	11	16,798	70.1	130	44,711	1.3	3	17,222
4526+00.00	50.00	104.6	194	45,676	5.1	10	16,808	72.4	132	44,843	1.5	3	17,225
4526+50.00	50.00	109.9	199	45,875	5.1	9	16,817	82.3	143	44,986	1.8	3	17,228
4527+00.00	50.00	105.4	199	46,074	5.8	10	16,827	77.4	148	45,134	1.6	3	17,231
4527+50.00	50.00	105.5	195	46,269	7.8	13	16,840	77.1	143	45,277	3.5	5	17,236
4528+00.00	50.00	103.5	194	46,463	7.7	14	16,854	79.5	145	45,422	4.0	7	17,243
4528+50.00	50.00	121.6	208	46,671	7.8	14	16,868	92.0	159	45,581	3.0	6	17,249
4529+00.00	50.00	106.8	211	46,882	7.7	14	16,882	86.4	165	45,746	2.4	5	17,254
4529+50.00	50.00	101.2	193	47,075	7.7	14	16,896	78.6	153	45,899	3.2	5	17,259
4530+00.00	50.00	95.0	182	47,257	7.7	14	16,910	93.5	159	46,058	6.9	9	17,268
4530+50.00	50.00	87.4	169	47,426	7.7	14	16,924	85.2	165	46,223	6.5	12	17,280
4531+00.00	50.00	77.4	153	47,579	16.9	23	16,947	77.2	150	46,373	20.1	25	17,305
4531+50.00	50.00	70.3	137	47,716	8.0	23	16,970	70.1	136	46,509	7.6	26	17,331
4532+00.00	50.00	69.6	130	47,846	7.6	14	16,984	70.1	130	46,639	8.5	15	17,346
4532+50.00	50.00	75.4	134	47,980	7.7	14	16,998	68.9	129	46,768	8.5	16	17,362
4533+00.00	50.00	61.4	127	48,107	7.6	14	17,012	64.7	124	46,892	9.2	16	17,378
4533+50.00	50.00	68.2	120	48,227	7.7	14	17,026	63.5	119	47,011	6.7	15	17,393
4534+00.00	50.00	79.9	137	48,364	38.1	42	17,068	81.1	134	47,145	43.1	46	17,439
4534+50.00	50.00	80.1	148	48,512	7.7	42	17,110	54.4	125	47,270	3.1	43	17,482
4535+00.00	50.00	71.1	140	48,652	9.4	16	17,126	54.6	101	47,371	11.4	13	17,495
4535+50.00	50.00	74.2	135	48,787	13.9	22	17,148	60.4	106	47,477	19.1	28	17,523
4536+00.00	50.00	70.2	134	48,921	8.1	20	17,168	55.4	107	47,584	9.4	26	17,549
4536+50.00	50.00	69.2	129	49,050	8.8	16	17,184	50.2	98	47,682	10.2	18	17,567
4537+00.00	50.00	80.5	139	49,189	8.4	16	17,200	56.0	98	47,780	9.6	18	17,585
4537+50.00	50.00	67.3	137	49,326	8.5	16	17,216	70.5	117	47,897	8.5	17	17,602
4538+00.00	50.00	60.4	118	49,444	9.8	17	17,233	60.1	121	48,018	9.9	17	17,619
4538+50.00	50.00	59.9	111	49,555	16.5	24	17,257	59.5	111	48,129	19.8	28	17,647
4539+00.00	50.00	57.4	109	49,664	12.8	27	17,284	56.9	108	48,237	15.6	33	17,680
4539+50.00	50.00	54.1	103	49,767	16.9	28	17,312	53.9	103	48,340	19.7	33	17,713
4540+00.00	50.00	49.2	96	49,863	21.9	36	17,348	49.1	95	48,435	24.3	41	17,754
4540+50.00	50.00	44.4	87	49,950	20.8	40	17,388	44.3	86	48,521	22.6	43	17,797

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Earthwork Average
End Area Tables

Interstate 29 – Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	11	11

		Alternate A - Concrete Shoulders						Alternate B - Concrete Median and Asphalt Outside Shoulders					
		Excavation			Embankment			Excavation			Embankment		
Sta	Distance (FT)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)
4541+00.00	50.00	42.9	81	50,031	12.9	31	17,419	42.8	81	48,602	14.0	34	17,831
4541+50.00	50.00	34.1	71	50,102	9.0	20	17,439	34.0	71	48,673	8.7	21	17,852
4542+00.00	50.00	54.7	82	50,184	7.6	15	17,454	53.6	81	48,754	6.5	14	17,866
4542+50.00	50.00	38.9	87	50,271	7.9	14	17,468	38.9	86	48,840	7.0	13	17,879
4543+00.00	50.00	37.3	71	50,342	9.0	16	17,484	37.4	71	48,911	7.5	13	17,892
4543+50.00	50.00	55.6	86	50,428	27.3	34	17,518	39.0	71	48,982	7.2	14	17,906
4544+00.00	50.00	65.3	112	50,540	30.7	54	17,572	45.9	79	49,061	7.8	14	17,920
4544+50.00	50.00	66.8	122	50,662	16.2	43	17,615	45.0	84	49,145	7.3	14	17,934
4545+00.00	50.00	80.8	137	50,799	5.7	20	17,635	83.3	119	49,264	6.6	13	17,947
4545+50.00	50.00	63.9	134	50,933	8.4	13	17,648	66.5	139	49,403	6.9	13	17,960
4546+00.00	50.00	59.3	114	51,047	13.7	20	17,668	52.9	111	49,514	6.6	13	17,973
4546+29.42	29.42	51.7	60	51,107	18.4	17	17,685	37.4	49	49,563	7.5	8	17,981
4546+50.00	20.58	49.1	38	51,145	21.4	15	17,700	45.1	31	49,594	6.6	5	17,986
4546+93.84	43.84	34.3	68	51,213	20.0	34	17,734	34.4	65	49,659	6.9	11	17,997
4547+00.00	6.16	33.3	8	51,221	19.5	5	17,739	34.2	8	49,667	6.9	2	17,999
4547+50.00	50.00	17.1	47	51,268	15.6	33	17,772	31.9	61	49,728	6.3	12	18,011
4547+73.42	23.42	30.7	21	51,289	14.7	13	17,785	37.4	30	49,758	6.4	6	18,017
4548+00.00	26.58	17.4	24	51,313	12.6	13	17,798	36.9	37	49,795	6.6	6	18,023
4548+50.00	50.00	29.6	44	51,357	8.1	19	17,817	44.1	75	49,870	6.8	12	18,035
4548+52.99	2.99	30.2	3	51,360	7.8	1	17,818	45.2	5	49,875	6.9	1	18,036
4549+00.00	47.01	27.9	51	51,411	6.8	13	17,831	43.5	77	49,952	6.6	12	18,048
4550+00.00	100.00	30.2	108	51,519	10.7	32	17,863	37.5	150	50,102	6.6	24	18,072
4551+00.00	100.00	18.7	91	51,610	15.0	48	17,911	19.8	106	50,208	7.7	26	18,098
4552+00.00	100.00	23.5	78	51,688	9.4	45	17,956	22.8	79	50,287	18.9	49	18,147
4553+00.00	100.00	19.5	80	51,768	24.4	63	18,019	19.5	78	50,365	28.5	88	18,235
4554+00.00	100.00	20.8	75	51,843	17.8	78	18,097	20.8	75	50,440	21.4	92	18,327
4555+00.00	100.00	19.0	74	51,917	10.3	52	18,149	18.9	74	50,514	11.3	61	18,388
4556+00.00	100.00	24.2	80	51,997	11.7	41	18,190	24.2	80	50,594	15.4	49	18,437
4557+00.00	100.00	17.6	77	52,074	16.3	52	18,242	17.6	77	50,671	20.2	66	18,503
4558+00.00	100.00	21.9	73	52,147	10.5	50	18,292	22.0	73	50,744	13.8	63	18,566
4558+38.57	38.57	20.4	30	52,177	9.8	14	18,306	20.4	30	50,774	13.6	20	18,586
4558+50.00	11.43	20.1	9	52,186	10.1	4	18,310	20.1	9	50,783	13.9	6	18,592
4559+00.00	50.00	14.2	32	52,218	16.4	25	18,335	14.2	32	50,815	20.3	32	18,624
4559+18.15	18.15	12.0	9	52,227	19.0	12	18,347	12.0	9	50,824	22.9	15	18,639
4559+50.00	31.85	15.1	16	52,243	21.2	24	18,371	15.1	16	50,840	24.9	28	18,667
4559+97.72	47.72	19.0	30	52,273	22.6	39	18,410	19.0	30	50,870	26.5	45	18,712
4560+00.00	2.28	19.6	2	52,275	22.1	2	18,412	19.6	2	50,872	25.5	2	18,714
4560+50.00	50.00	17.1	34	52,309	19.5	39	18,451	17.1	34	50,906	21.5	44	18,758
4560+62.15	12.15	19.0	8	52,317	19.0	9	18,460	19.0	8	50,914	21.1	10	18,768
4561+00.00	37.85	20.9	28	52,345	16.1	25	18,485	21.0	28	50,942	17.6	27	18,795
4561+50.00	50.00	19.0	37	52,382	15.8	30	18,515	19.0	37	50,979	17.9	33	18,828
4562+00.00	50.00	13.8	30	52,412	17.6	31	18,546	13.8	30	51,009	20.1	35	18,863
4562+50.00	50.00	21.9	33	52,445	18.9	34	18,580	21.9	33	51,042	21.0	38	18,901
4563+00.00	50.00	20.2	39	52,484	21.5	37	18,617	20.3	39	51,081	23.6	41	18,942
4563+50.00	50.00	23.1	40	52,524	18.0	37	18,654	23.2	40	51,121	19.7	40	18,982
4564+00.00	50.00	23.4	43	52,567	14.5	30	18,684	23.6	43	51,164	16.1	33	19,015
4564+50.00	50.00	19.0	39	52,606	19.4	31	18,715	19.1	40	51,204	21.2	35	19,050
4565+00.00	50.00	24.9	41	52,647	18.0	35	18,750	25.0	41	51,245	19.3	38	19,088
4565+50.00	50.00	27.7	49	52,696	17.7	33	18,783	27.7	49	51,294	18.9	35	19,123
4566+00.00	50.00	33.4	57	52,753	18.3	33	18,816	33.4	57	51,351	19.4	35	19,158
4566+50.00	50.00	34.5	63	52,816	17.8	33	18,849	34.5	63	51,414	19.0	36	19,194
4567+00.00	50.00	33.1	63	52,879	14.6	30	18,879	29.6	59	51,473	15.2	32	19,226
4567+50.00	50.00	26.1	55	52,934	14.6	27	18,906	26.2	52	51,525	15.3	28	19,254
4568+00.00	50.00	21.0	44	52,978	16.0	28	18,934	21.1	44	51,569	17.0	30	19,284
4568+50.00	50.00	19.5	38	53,016	18.6	32	18,966	19.5	38	51,607	19.9	34	19,318
4569+00.00	50.00	22.8	39	53,055	17.7	34	19,000	22.9	39	51,646	19.1	36	19,354
4569+50.00	50.00	22.6	42	53,097	7.8	24	19,024	26.4	46	51,692	8.5	26	19,380
4570+00.00	50.00	18.1	38	53,135	9.0	16	19,040	41.8	63	51,755	8.3	16	19,396

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Earthwork Average
End Area Tables

Interstate 29 – Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	11	12

		Alternate A - Concrete Shoulders						Alternate B - Concrete Median and Asphalt Outside Shoulders					
		Excavation			Embankment			Excavation			Embankment		
Sta	Distance (FT)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)
4570+50.00	50.00	12.2	28	53,163	22.2	29	19,069	12.2	50	51,805	23.1	29	19,425
4571+00.00	50.00	21.1	31	53,194	22.8	42	19,111	19.9	30	51,835	22.9	43	19,468
4571+50.00	50.00	19.7	38	53,232	20.9	40	19,151	19.9	37	51,872	21.5	41	19,509
4572+00.00	50.00	18.8	36	53,268	20.6	38	19,189	18.8	36	51,908	21.9	40	19,549
4572+50.00	50.00	18.1	34	53,302	25.5	43	19,232	18.1	34	51,942	27.1	45	19,594
4573+00.00	50.00	17.8	33	53,335	27.5	49	19,281	17.7	33	51,975	26.2	49	19,643
4573+50.00	50.00	13.9	29	53,364	25.9	49	19,330	13.9	29	52,004	27.0	49	19,692
4574+00.00	50.00	16.1	28	53,392	28.0	50	19,380	16.1	28	52,032	29.2	52	19,744
4574+12.76	12.76	18.1	8	53,400	29.7	14	19,394	18.1	8	52,040	31.0	14	19,758
4574+50.00	37.24	17.9	25	53,425	30.5	42	19,436	17.9	25	52,065	32.4	44	19,802
4574+77.19	27.19	12.4	15	53,440	31.0	31	19,467	12.4	15	52,080	33.2	33	19,835
4575+00.00	22.81	13.6	11	53,451	29.2	25	19,492	13.6	11	52,091	31.3	27	19,862
4575+50.00	50.00	19.1	30	53,481	17.3	43	19,535	19.1	30	52,121	18.5	46	19,908
4575+56.76	6.76	20.5	5	53,486	16.7	4	19,539	20.3	5	52,126	17.8	5	19,913
4576+00.00	43.24	15.1	29	53,515	17.6	27	19,566	14.8	28	52,154	20.4	31	19,944
4576+36.34	36.34	16.8	21	53,536	13.5	21	19,587	16.8	21	52,175	16.4	25	19,969
4577+00.00	63.66	18.6	42	53,578	10.9	29	19,616	18.5	42	52,217	11.6	33	20,002
4578+00.00	100.00	14.8	62	53,640	16.8	51	19,667	14.4	61	52,278	19.3	57	20,059
4579+00.00	100.00	17.7	60	53,700	27.7	82	19,749	17.7	59	52,337	30.7	93	20,152
4580+00.00	100.00	30.4	89	53,789	16.5	82	19,831	32.5	93	52,430	17.8	90	20,242
4581+00.00	100.00	25.5	104	53,893	22.2	72	19,903	26.1	109	52,539	24.9	79	20,321
4582+00.00	100.00	17.9	80	53,973	32.2	101	20,004	17.9	81	52,620	33.4	108	20,429
4583+00.00	100.00	23.1	76	54,049	41.1	136	20,140	23.1	76	52,696	43.8	143	20,572
4584+00.00	100.00	36.7	111	54,160	15.4	105	20,245	34.0	106	52,802	14.2	107	20,679
4585+00.00	100.00	17.4	100	54,260	39.1	101	20,346	17.4	95	52,897	40.0	100	20,779
4586+00.00	100.00	22.4	74	54,334	28.4	125	20,471	19.6	69	52,966	27.6	125	20,904
4587+00.00	100.00	13.5	66	54,400	23.2	96	20,567	12.7	60	53,026	22.5	93	20,997
4588+00.00	100.00	10.5	44	54,444	23.2	86	20,653	10.4	43	53,069	23.7	86	21,083
4589+00.00	100.00	6.5	31	54,475	27.4	94	20,747	6.5	31	53,100	28.5	97	21,180
4590+00.00	100.00	8.3	27	54,502	23.1	94	20,841	2.4	16	53,116	23.3	96	21,276
4591+00.00	100.00	5.7	26	54,528	17.2	75	20,916	5.7	15	53,131	17.9	76	21,352
4592+00.00	100.00	9.6	28	54,556	19.0	67	20,983	9.6	28	53,159	21.1	72	21,424
4593+00.00	100.00	6.7	30	54,586	15.1	63	21,046	6.7	30	53,189	16.7	70	21,494
4594+00.00	100.00	8.0	27	54,613	18.6	62	21,108	8.0	27	53,216	20.4	69	21,563
4595+00.00	100.00	8.2	30	54,643	16.1	64	21,172	8.2	30	53,246	17.2	70	21,633
4596+00.00	100.00	25.7	63	54,706	13.2	54	21,226	25.4	62	53,308	12.1	54	21,687
4597+00.00	100.00	15.9	77	54,783	16.6	55	21,281	18.6	81	53,389	17.0	54	21,741
4598+00.00	100.00	8.5	45	54,828	19.8	67	21,348	12.4	57	53,446	20.8	70	21,811
4599+00.00	100.00	13.9	41	54,869	17.8	70	21,418	16.8	54	53,500	18.2	72	21,883
4600+00.00	100.00	15.2	54	54,923	17.1	65	21,483	18.4	65	53,565	18.1	67	21,950
4601+00.00	100.00	15.7	57	54,980	16.5	62	21,545	18.7	69	53,634	16.5	64	22,014
4602+00.00	100.00	16.7	60	55,040	21.8	71	21,616	18.2	68	53,702	21.3	70	22,084
4603+00.00	100.00	16.5	61	55,101	27.3	91	21,707	18.2	67	53,769	27.5	90	22,174
4604+00.00	100.00	21.0	69	55,170	20.0	88	21,795	22.7	76	53,845	19.9	88	22,262
4605+00.00	100.00	19.2	74	55,244	26.0	85	21,880	20.6	80	53,925	26.3	86	22,348
4606+00.00	100.00	24.1	80	55,324	23.7	92	21,972	24.2	83	54,008	24.8	95	22,443
4607+00.00	100.00	26.3	93	55,417	19.0	79	22,051	26.1	93	54,101	20.7	84	22,527
4607+81.92	81.92	28.3	83	55,500	13.3	49	22,100	28.6	83	54,184	13.1	51	22,578
4608+00.00	18.08	29.1	19	55,519	14.7	9	22,109	29.0	19	54,203	14.6	9	22,587
4608+50.00	50.00	25.5	51	55,570	21.6	34	22,143	24.4	49	54,252	21.0	33	22,620
4608+60.92	10.92	22.7	10	55,580	23.3	9	22,152	22.4	9	54,261	23.5	9	22,629
4609+00.00	39.08	24.4	34	55,614	30.4	39	22,191	24.9	34	54,295	31.1	40	22,669
4609+39.92	39.92	15.2	29	55,643	42.7	54	22,245	15.6	30	54,325	43.7	55	22,724
4609+50.00	10.08	13.3	5	55,648	44.7	16	22,261	13.6	5	54,330	47.2	17	22,741
4610+00.00	50.00	15.6	27	55,675	44.6	83	22,344	16.3	28	54,358	47.2	87	22,828
4610+50.00	50.00	18.0	31	55,706	34.7	73	22,417	18.7	32	54,390	36.5	78	22,906
4611+00.00	50.00	21.7	37	55,743	26.4	57	22,474	22.6	38	54,428	28.0	60	22,966
4611+50.00	50.00	24.5	43	55,786	26.2	49	22,523	25.4	44	54,472	27.4	51	23,017

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Earthwork Average
End Area Tables

Interstate 29 – Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	11	13

		Alternate A - Concrete Shoulders						Alternate B - Concrete Median and Asphalt Outside Shoulders					
		Excavation			Embankment			Excavation			Embankment		
Sta	Distance (FT)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)
4612+00.00	50.00	22.8	44	55,830	26.3	49	22,572	23.9	46	54,518	27.1	50	23,067
4612+50.00	50.00	29.9	49	55,879	25.6	48	22,620	32.0	52	54,570	25.8	49	23,116
4613+00.00	50.00	24.4	50	55,929	24.9	47	22,667	30.2	58	54,628	27.2	49	23,165
4613+50.00	50.00	19.6	41	55,970	29.5	50	22,717	17.4	44	54,672	29.4	52	23,217
4614+00.00	50.00	20.8	37	56,007	24.2	50	22,767	22.6	37	54,709	25.8	51	23,268
4614+50.00	50.00	17.2	35	56,042	27.2	48	22,815	19.1	39	54,748	29.9	52	23,320
4615+00.00	50.00	11.4	26	56,068	31.7	55	22,870	12.0	29	54,777	35.7	61	23,381
4615+50.00	50.00	13.8	23	56,091	31.8	59	22,929	15.6	26	54,803	34.3	65	23,446
4616+00.00	50.00	8.0	20	56,111	32.0	59	22,988	10.0	24	54,827	34.5	64	23,510
4616+50.00	50.00	15.4	22	56,133	28.3	56	23,044	16.7	25	54,852	30.0	60	23,570
4617+00.00	50.00	16.3	29	56,162	27.4	52	23,096	16.4	31	54,883	28.9	55	23,625
4617+50.00	50.00	12.1	26	56,188	26.6	50	23,146	12.6	27	54,910	28.0	53	23,678
4618+00.00	50.00	25.6	35	56,223	22.1	45	23,191	25.5	35	54,945	24.3	48	23,726
4618+50.00	50.00	19.0	41	56,264	25.9	44	23,235	18.9	41	54,986	29.8	50	23,776
4619+00.00	50.00	19.4	36	56,300	24.3	46	23,281	19.4	35	55,021	27.7	53	23,829
4619+50.00	50.00	19.7	36	56,336	29.4	50	23,331	19.5	36	55,057	32.8	56	23,885
4620+00.00	50.00	17.0	34	56,370	28.4	54	23,385	19.3	36	55,093	32.1	60	23,945
4620+50.00	50.00	9.9	25	56,395	29.8	54	23,439	11.5	29	55,122	33.2	60	24,005
4620+76.78	26.78	11.3	11	56,406	30.3	30	23,469	12.7	12	55,134	34.1	33	24,038
4621+00.00	23.22	10.8	10	56,416	28.7	25	23,494	12.1	11	55,145	30.6	28	24,066
4621+50.00	50.00	6.4	16	56,432	23.3	48	23,542	7.8	18	55,163	24.9	51	24,117
4621+55.78	5.78	7.8	2	56,434	22.6	5	23,547	9.2	2	55,165	24.3	5	24,122
4622+00.00	44.22	11.6	16	56,450	18.7	34	23,581	12.1	17	55,182	18.3	35	24,157
4622+34.78	34.78	26.7	25	56,475	9.9	18	23,599	27.2	25	55,207	8.8	17	24,174
4623+00.00	65.22	32.2	71	56,546	12.1	27	23,626	29.9	69	55,276	10.9	24	24,198
4624+00.00	100.00	32.8	120	56,666	11.4	44	23,670	31.4	114	55,390	10.0	39	24,237
4625+00.00	100.00	31.8	120	56,786	11.4	42	23,712	31.6	117	55,507	10.2	37	24,274
4626+00.00	100.00	25.9	107	56,893	13.9	47	23,759	24.8	104	55,611	12.7	42	24,316
4627+00.00	100.00	20.4	86	56,979	14.6	53	23,812	19.0	81	55,692	13.4	48	24,364
4628+00.00	100.00	12.8	61	57,040	19.5	63	23,875	12.8	59	55,751	21.6	65	24,429
4629+00.00	100.00	9.8	42	57,082	23.3	79	23,954	9.8	42	55,793	26.8	90	24,519
4630+00.00	100.00	25.9	66	57,148	19.6	79	24,033	23.2	61	55,854	18.5	84	24,603
4631+00.00	100.00	29.8	103	57,251	19.5	72	24,105	27.1	93	55,947	18.2	68	24,671
4632+00.00	100.00	20.6	93	57,344	23.2	79	24,184	18.5	84	56,031	22.8	76	24,747
4633+00.00	100.00	20.2	76	57,420	20.4	81	24,265	17.7	67	56,098	20.1	79	24,826
4634+00.00	100.00	20.9	76	57,496	13.5	63	24,328	19.5	69	56,167	14.3	64	24,890
4635+00.00	100.00	18.9	74	57,570	15.2	53	24,381	19.3	72	56,239	15.3	55	24,945
4636+00.00	100.00	15.9	64	57,634	15.2	56	24,437	15.9	65	56,304	17.0	60	25,005
4637+00.00	100.00	34.0	92	57,726	10.9	48	24,485	30.6	86	56,390	11.3	52	25,057
4638+00.00	100.00	22.2	104	57,830	12.5	43	24,528	19.0	92	56,482	13.9	47	25,104
4639+00.00	100.00	15.8	70	57,900	15.9	53	24,581	15.2	63	56,545	61.3	139	25,243
4640+00.00	100.00	12.4	52	57,952	10.8	49	24,630	12.2	51	56,596	34.2	177	25,420
4641+00.00	100.00	14.9	51	58,003	10.8	40	24,670	15.1	51	56,647	15.6	92	25,512
4642+00.00	100.00	40.8	103	58,106	24.9	66	24,736	35.4	94	56,741	20.3	66	25,578
4643+00.00	100.00	29.9	131	58,237	13.9	72	24,808	27.0	116	56,857	14.3	64	25,642
4644+00.00	100.00	23.2	98	58,335	14.3	52	24,860	23.2	93	56,950	15.7	56	25,698
4645+00.00	100.00	23.7	87	58,422	18.0	60	24,920	21.3	82	57,032	18.5	63	25,761
4646+00.00	100.00	20.4	82	58,504	17.7	66	24,986	20.4	77	57,109	19.5	70	25,831
4647+00.00	100.00	15.5	66	58,570	23.2	76	25,062	15.5	66	57,175	25.8	84	25,915
4648+00.00	100.00	14.5	56	58,626	24.7	89	25,151	14.6	56	57,231	25.1	94	26,009
4649+00.00	100.00	15.4	55	58,681	26.3	94	25,245	15.4	56	57,287	27.9	98	26,107
4650+00.00	100.00	30.3	85	58,766	25.9	97	25,342	25.8	76	57,363	25.7	99	26,206
4651+00.00	100.00	33.4	118	58,884	28.3	100	25,442	29.1	102	57,465	27.9	99	26,305
4652+00.00	100.00	20.0	99	58,983	26.4	101	25,543	19.9	91	57,556	25.4	99	26,404
4653+00.00	100.00	14.2	63	59,046	27.5	100	25,643	14.8	64	57,620	27.0	97	26,501
4654+00.00	100.00	34.2	90	59,136	25.5	98	25,741	30.7	84	57,704	24.3	95	26,596
4655+00.00	100.00	30.6	120	59,256	23.6	91	25,832	28.3	109	57,813	22.3	86	26,682
4656+00.00	100.00	34.2	120	59,376	15.2	72	25,904	31.7	111	57,924	13.9	67	26,749

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Earthwork Average
End Area Tables

Interstate 29 – Argusville to Hunter SB

		Alternate A - Concrete Shoulders						Alternate B - Concrete Median and Asphalt Outside Shoulders					
		Excavation			Embankment			Excavation			Embankment		
Sta	Distance (FT)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)	End Area (SF)	Volume (CY)	Accumulated Volume (CY)
4657+00.00	100.00	40.9	139	59,515	12.3	51	25,955	39.5	132	58,056	11.0	46	26,795
4658+00.00	100.00	18.5	110	59,625	15.9	52	26,007	18.0	106	58,162	16.0	50	26,845
4659+00.00	100.00	21.5	74	59,699	16.1	59	26,066	22.9	76	58,238	18.4	64	26,909
4660+00.00	100.00	36.7	108	59,807	8.0	45	26,111	34.0	105	58,343	6.8	47	26,956
4660+65.00	65.00	38.1	90	59,897	8.0	19	26,130	35.0	83	58,426	6.6	16	26,972
Total				**59,897**			**26,130**			**58,426**			**26,972**

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Earthwork Average
End Area Tables

Interstate 29 – Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	11	15

Salvaged Pavement Removals

	Ton	CY
Hot Bituminous Pavement	118,414	59,207
Concrete	60,483	30,242
Total Salvaged Material	178,897	89,449
Subtract 5% for Handling Loss	8,945	4,472
Available Salvaged Material	**169,952**	**84,977**

Salvaged Base Course Required

	Alternate A Concrete Shoulders		Alternate B Single Asphalt Shoulder	
Common	43,989	CY	43,989	CY
Alternate Dependent	22,422	CY	28,211	CY
Total Base Required	**66,411**	**CY**	**72,200**	**CY**

Surplus Salvaged Base Course Material

	Alternate A Concrete Shoulders		Alternate B Single Asphalt Shoulder	
Available Salvaged Material	84,977	CY	84,977	CY
Salvaged Base Course Required	66,411	CY	72,200	CY
Estimated Surplus Material	**18,566**	**CY**	**12,777**	**CY**

Salvaged Base Course Material Breakdown

	Alternate A Concrete Shoulders		Alternate B Single Asphalt Shoulder	
Recycled Concrete	30,242	CY	30,242	CY
Recycled Hot Bituminous Pavement	36,169	CY	41,958	CY
Total Salvaged Base Course Material	66,411	CY	72,200	CY
Percent HBP Content	**54.46**		**58.11**	

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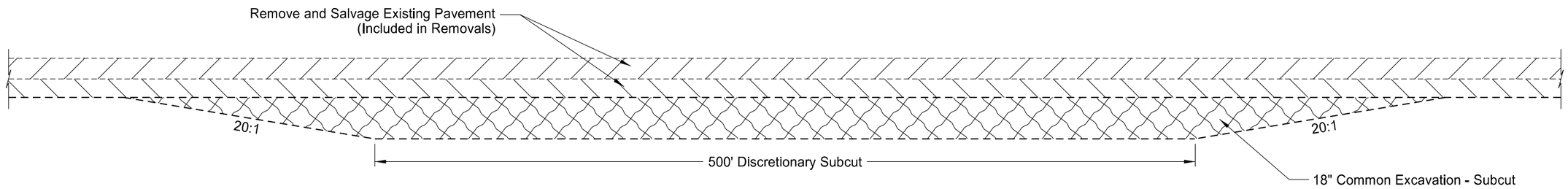
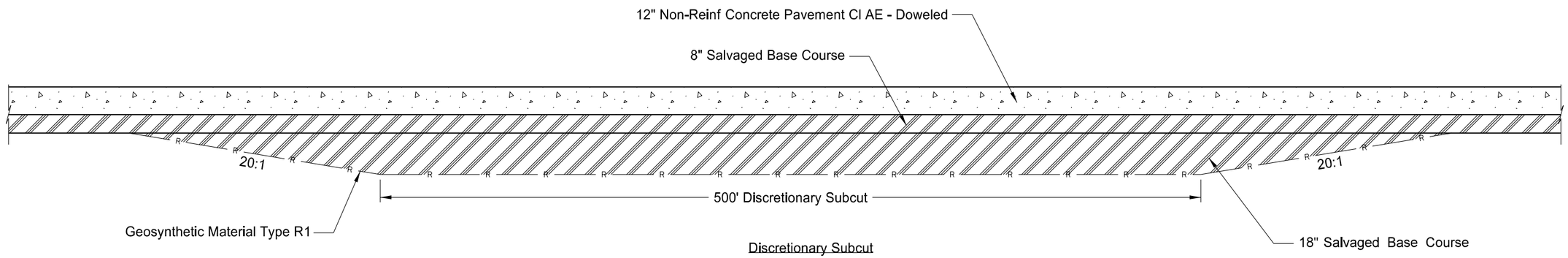
Salvaged Base Summary

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	20	1



Discretionary Subcut Removal



Discretionary Subcut

ESTIMATED QUANTITIES FOR DISCRETIONARY SUBCUT

203-0138	COMMON EXCAVATION - SUBCUT	2,255 CY
302-0101	SALVAGED BASE COURSE	2,255 CY
709-0151	GEOSYNTHETIC MATERIAL TYPE R1	4,667 SY

*Quantities based on 500 LF of subcut to be used at the Engineer's discretion.

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Discretionary Subcut

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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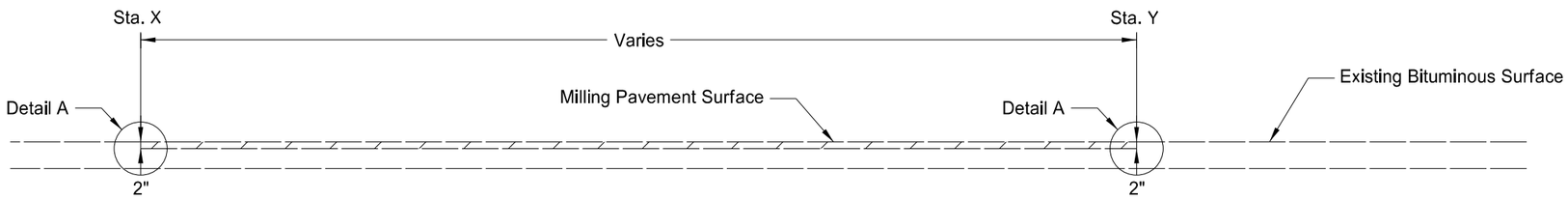
Milling Pavement Surface
Quantities shown in Section 80 plan sheets

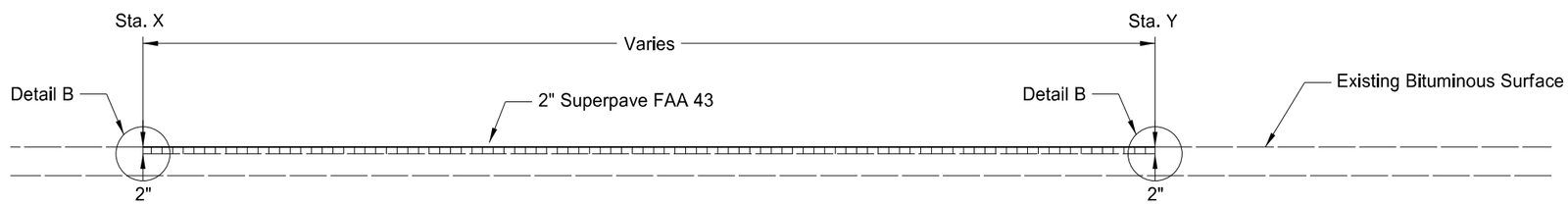
Gardner Interchange - Ramps

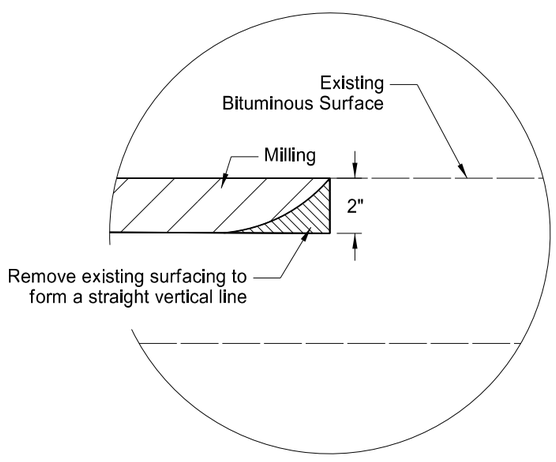
X = Station 1+02.37 NW Ramp Station 16+01.25 SW Ramp
Y = Station 6+56.91 NW Ramp Station 20+07.95 SW Ramp

Milling at Ramps

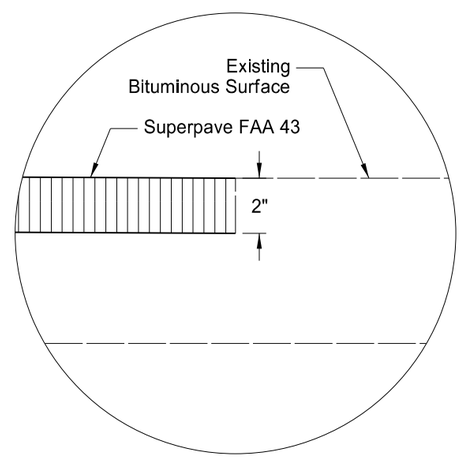


HBP Paving at Ramps





DETAIL A



DETAIL B

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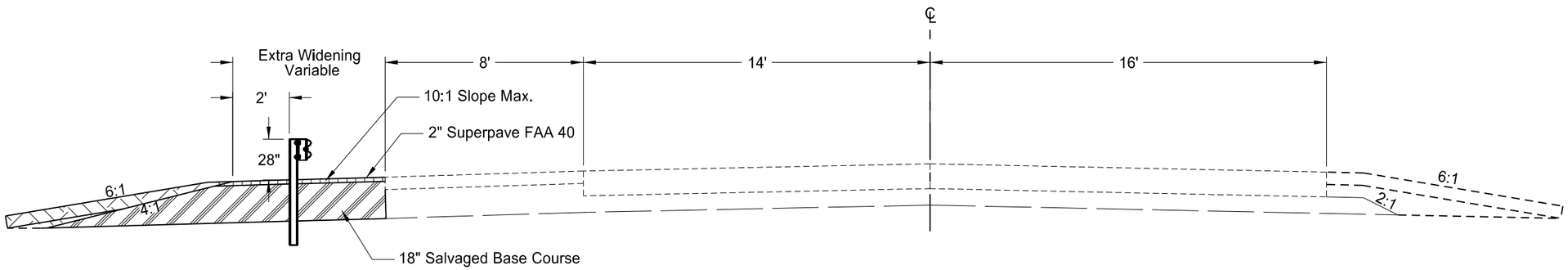
Mill and Overlay Transitions

Gardner Interchange Ramps

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	20	3



Note: Guardrail grading shall be in accordance with Standard Drawing D-764-23.

Mainline Detail - Obstructions at Bridge Piers

Sta 4366+84.39 to 4369+66.76 Lt
Sta 4531+71.22 to 4534+39.96 Lt

Sta 4366+84.39 to 4369+66.76 Lt

Estimated Quantities for Arthur Separation Pier Protection		
Material	Quantity	Unit
Salvaged Base Course	254	CY
Prime Coat	109	GAL
Blotter Material Class 44	5	TON
Superpave FAA 40	51	TON
PG 58-28 Asphalt Cement	3	TON

Sta 4531+71.22 to 4534+39.96 Lt

Estimated Quantities for Gardner Interchange Pier Protection		
Material	Quantity	Unit
Salvaged Base Course	215	CY
Prime Coat	90	GAL
Blotter Material Class 44	4	TON
Superpave FAA 40	42	TON
PG 58-28 Asphalt Cement	3	TON

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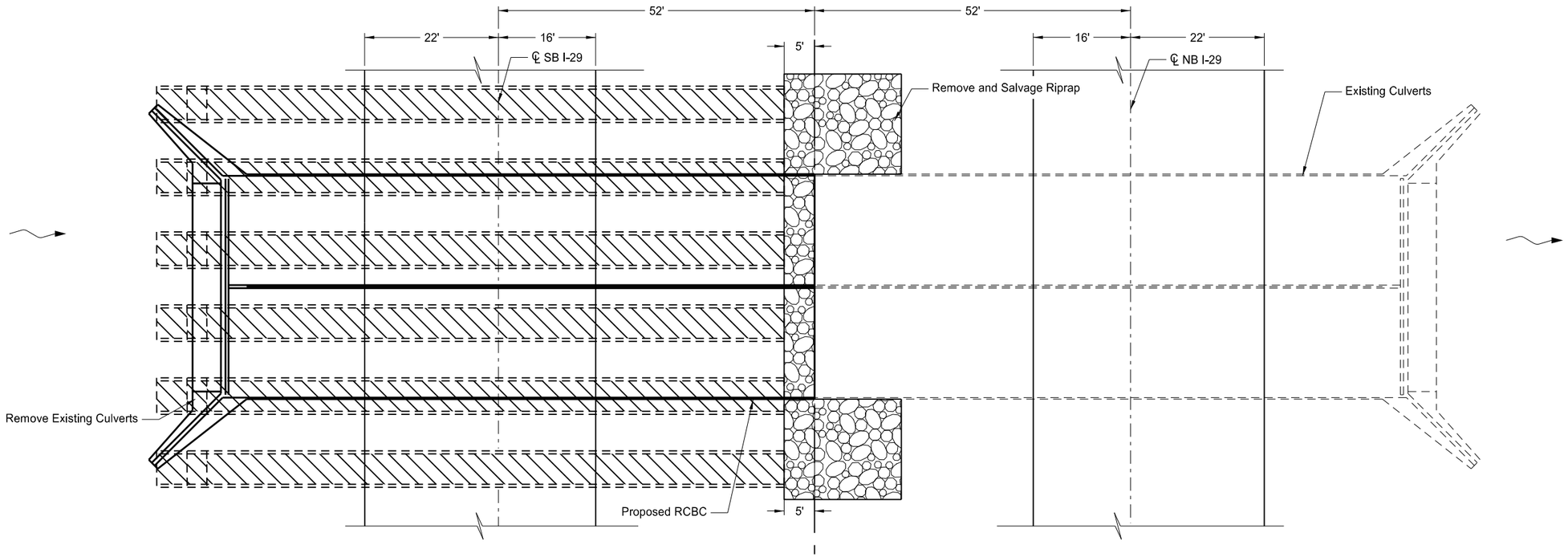
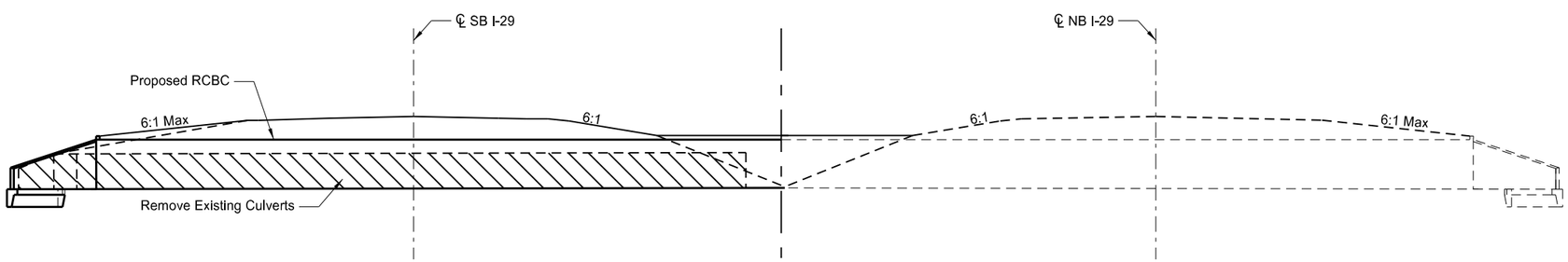
Typical Surfacing at Mainline Guardrail Locations

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	20	4



Typical Box Culvert/Drain Improvements - Plan View



Typical Box Culvert/Drain Improvements - Elevation View

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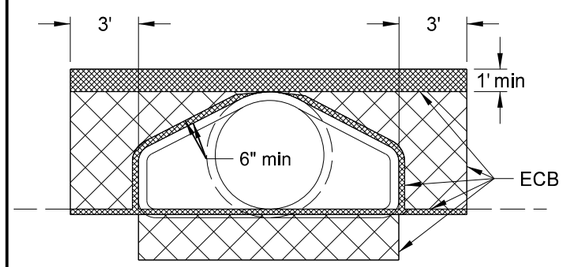
Note: This layout is typical of existing drain locations. However, existing and proposed drainage structures vary by location. This layout is for conceptual purposes only.

See Section 40 for removal quantities.

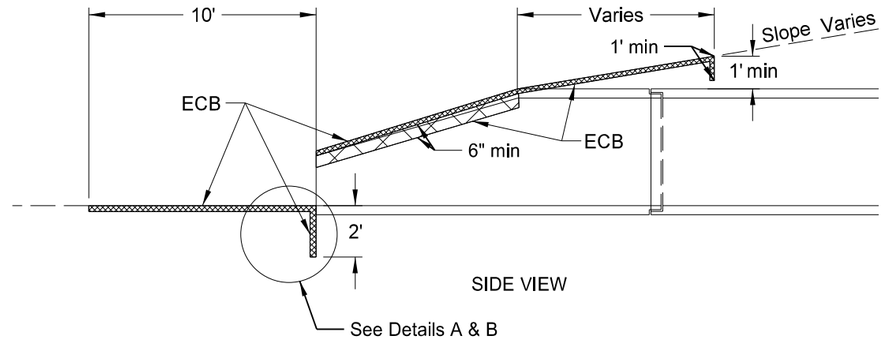
County Drain Pipe Replacement Phasing

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	20	5

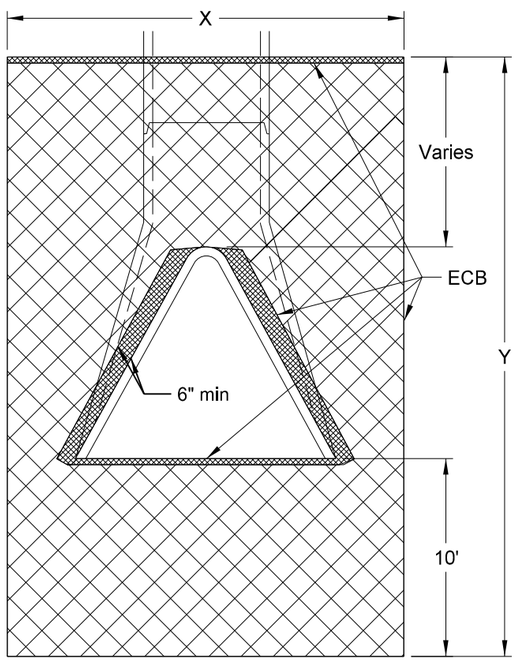


FRONT VIEW



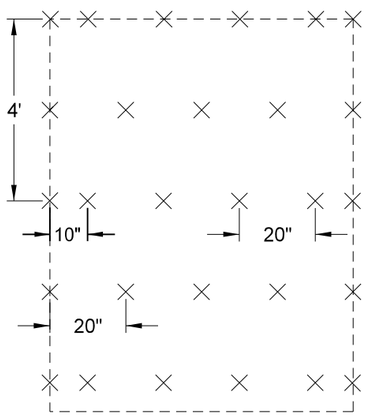
SIDE VIEW

Erosion Control Blanket (ECB)							
Location of Surface Area to be Protected	Pipe Diam	No	Unit Quantity	Total Quantity			
Station	(Inch)		(SY)	Type 1 (SY)	Type 2 (SY)	Type 3 (SY)	Type 4 (SY)
4229+71 Lt	36	2	30	-	-	60	-
4365+35 Lt	72	2	38	-	-	76	-
4365+60 Lt	72	2	38	-	-	76	-
4368+95 Lt	60	2	35	-	-	70	-
4369+95 Lt	60	2	35	-	-	70	-
4504+04 Lt	36	2	30	-	-	60	-
4504+23 Lt	36	2	30	-	-	60	-
4530+23 Lt	48	2	33	-	-	66	-
4530+43 Lt	48	2	33	-	-	66	-
4551+72 Lt	48	2	33	-	-	66	-
1+84 Lt & Rt	60	2	35	-	-	70	-
1+94 Lt & Rt	60	2	35	-	-	70	-
2+04 Lt & Rt	60	2	35	-	-	70	-
Total (SYs)				-	-	880	-



TOP VIEW

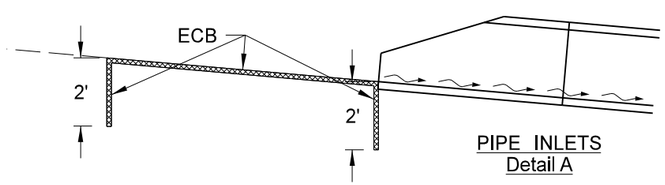
NOTE: The ECB shall be tucked a minimum of 1' into the embankment above the flared end section, a minimum of 6" into the embankment (against the flared end section) around the opening of the flared end section, and 2' into the ground at the end of the flared end section.



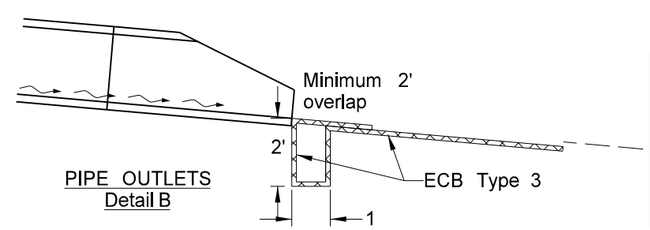
STAPLE PATTERN: 3.8 staples per square yard using 8-inch 11 gauge wire "u" staples

DIA	X	Y	Surface area to be protected	ECB
In	Ft	Ft	SF	SY
15	9.0	20.0	176.0	20
18	9.5	20.7	190.7	22
21	9.5	21.0	190.9	22
24	10.5	21.6	214.1	24
30	11.6	22.5	241.5	27
36	12.7	23.3	268.8	30
42	13.3	23.3	279.7	31
48	13.8	24.0	293.2	33
54	14.5	23.4	300.6	34
60	15.0	23.0	307.5	35
66	15.6	24.0	325.6	37
72	16.2	24.5	340.6	38

Note: Quantities based on 8:1 slope.



PIPE INLETS
Detail A



PIPE OUTLETS
Detail B

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Erosion Control at Culvert Flared End Sections

Interstate 29 - Argusville to Hunter SB

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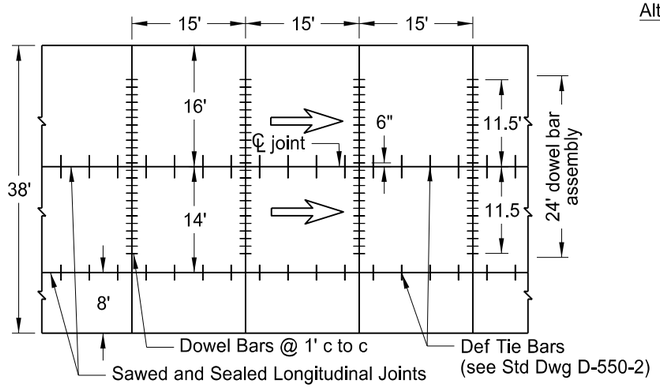
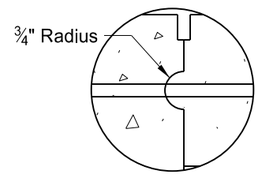
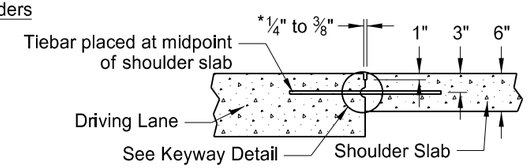
Alternate A - 15' Joint Spacing with PCC Shoulders

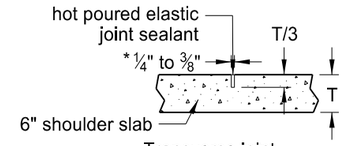




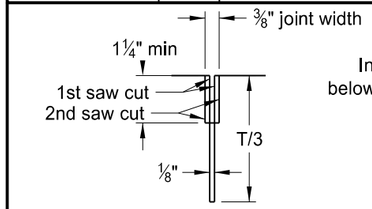
Keyway Detail



Longitudinal shoulder construction joint
(tied keyed joint)



Transverse joint
(non-doweled wide shoulder joints)



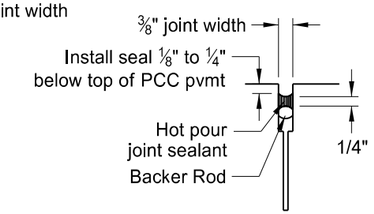
Transverse Jt sawing

Notes:

T = Pavement Thickness.

For T = 10" or less, use 1¼" x 18" dowel bars.
For T greater than 10", use 1½" x 18" dowel bars.

Dowel ramp tapers.

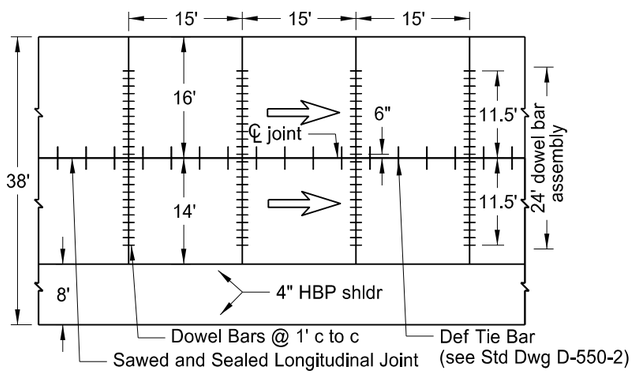


Transverse Jt sealing

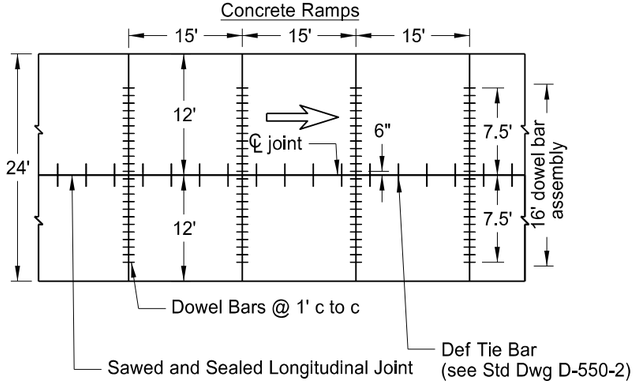
Notes:

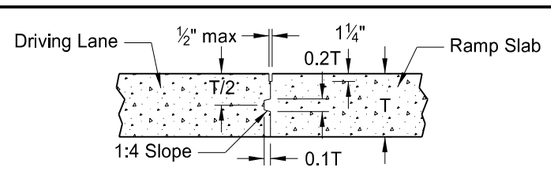
Contractor has the option to reduce transverse joint width to ¼". If this option is selected backer rod may be omitted.

Alternate B - 15' Joint Spacing with Concrete Median Shoulders and 8' Hot Bit Shoulders



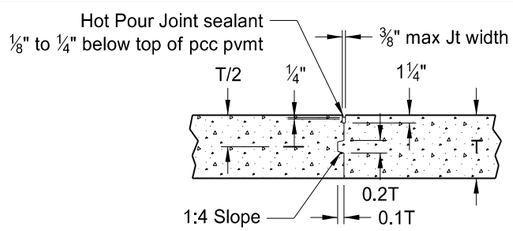
Concrete Ramps



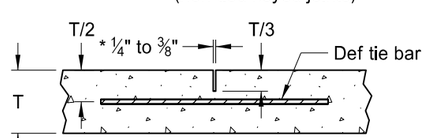


Longitudinal construction joint
(at ramps - non-tied keyed joints)

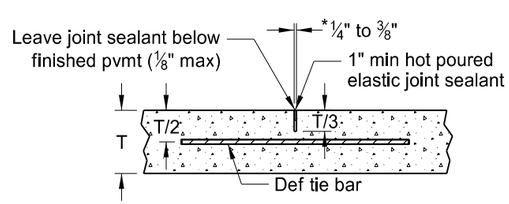
Longitudinal Joint Tie Bar Size, Length and Spacing**				
	Grade 40		Grade 60	
Pavement Depth	6"	12"	6"	12"
CL ML				
Spacing (S)	-	36"	-	45"
Size and Length	-	#6 Bar x 36"	-	#5 Bar x 42"
CL Ramp				
Spacing (S)	-	36"	-	45"
Size and Length	-	#6 Bar x 36"	-	#5 Bar x 42"
8' Shoulder				
Spacing (S)	45"	-	45"	-
Size and Length	#4 Bar x 24"	-	#3 Bar x 30"	-



Longitudinal construction joint
(non-tied keyed joints)



Joint sawing detail (all sawed and tied joints)



Joint sealing detail (all sawed and tied joints)

*Width requirement for top 1" only. Bottom portion of saw cut may be narrower.

Notes:

The hot poured elastic type joint sealer shall be in accordance with Section 826.02A.2 of the Standard Specifications

The longitudinal joint and seal shall be included in the price bid for the P.C.C. pavement.

Tie bars shall not be placed within 18 inches of a transverse skew joint.

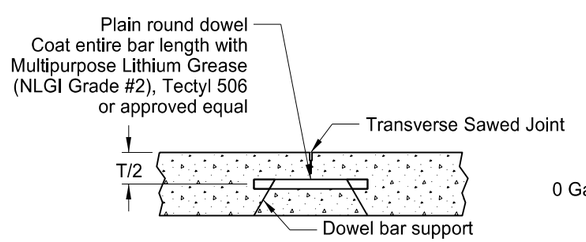
Where tie bars are installed bent and later straightened, Grade 40 steel shall be used.

Tie bar spacing can be increased up to 10% to facilitate construction.

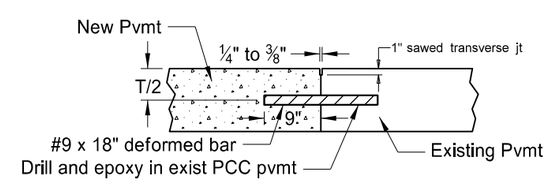
Tie bars shall be at a 48 inch maximum spacing.

A "Warp" joint is a sawed joint or a construction joint with a keyway.

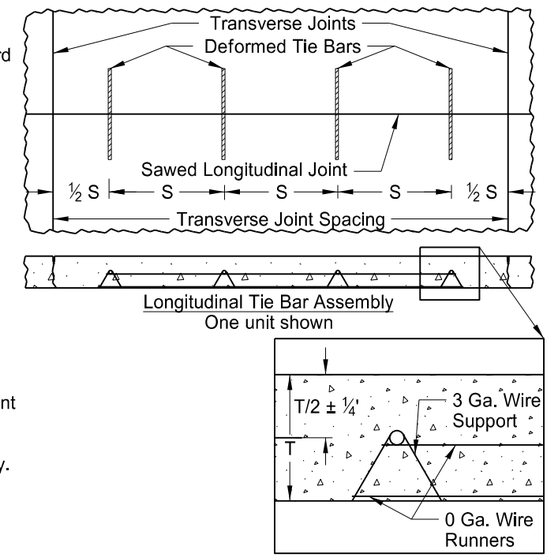
A "Butt Joint" is a construction joint with no keyway.



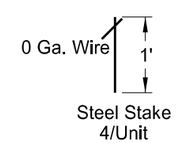
Doweled tranverse joint



Deformed bar installation (2'-0" c to c)
(Transverse Joints)



Longitudinal Tie Bar Assembly
One unit shown



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PCC Joint Details

Interstate 29 - Argusville to Hunter SB

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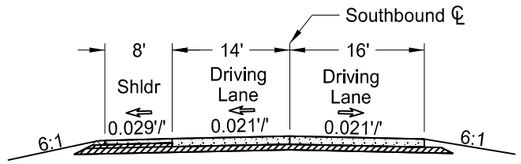
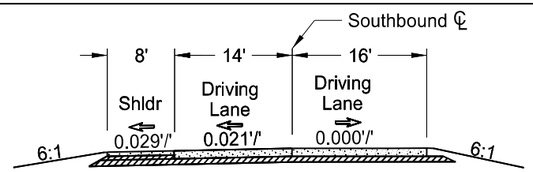
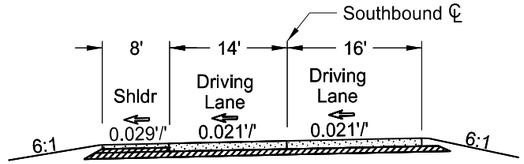
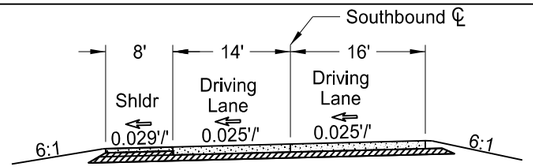
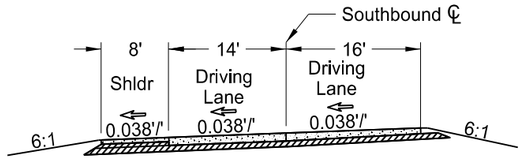
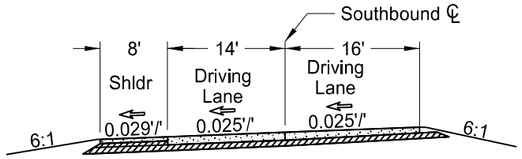
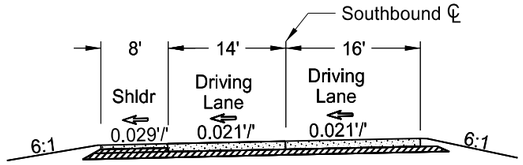
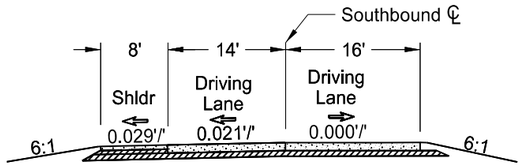
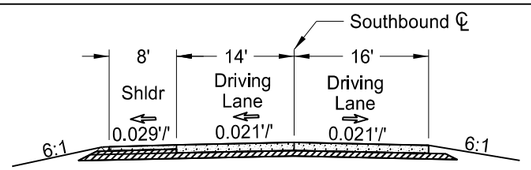
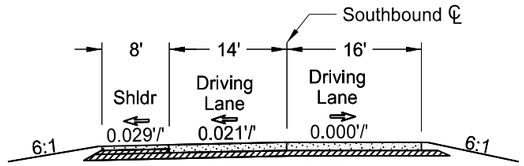
Normal Crown	 Sta 4180+00.00 to 4223+36.53
Transition from Normal Crown to Zero Crown	Sta 4223+36.53 to Sta 4224+16.11
Zero Crown	 Sta 4224+16.11
Transition from Zero Crown to Reverse Crown	Sta 4224+16.11 to Sta 4224+95.69
Reverse Crown	 Sta 4224+95.69
Transition from Reverse Crown to ⅔ Full Super	Sta 4224+95.69 to Sta 4225+12.11
⅔ Full Super	 Sta 4225+12.11
Transition from ⅔ Full Super to Full Super	Sta 4225+12.11 to Sta 4225+60.11
Full Super	 Sta 4224+60.11 to Sta 4239+06.22
Transition from Full Super to ⅔ Full Super	Sta 4239+06.22 to Sta 4239+54.21
⅔ Full Super	 Sta 4239+54.21
Transition from ⅔ Full Super to Reverse Crown	Sta 4239+54.21 to Sta 4239+70.64
Reverse Crown	 Sta 4239+70.64
Transition from Reverse Crown to Zero Crown	Sta 4239+71.64 to Sta 4240+50.22
Zero Crown	 Sta 4240+50.22
Transition from Zero Crown to Normal Crown	Sta 4240+50.22 to Sta 4241+29.79
Normal Crown	 Sta 4241+29.79 to Sta 4301+67.27
Transition from Normal Crown to Zero Crown	Sta 4301+66.29 to Sta 4302+46.85
Zero Crown	 Sta 4302+46.85

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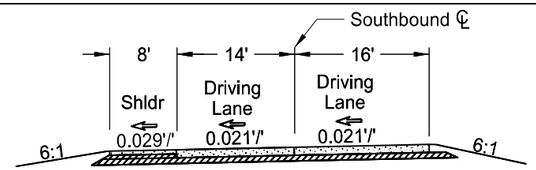
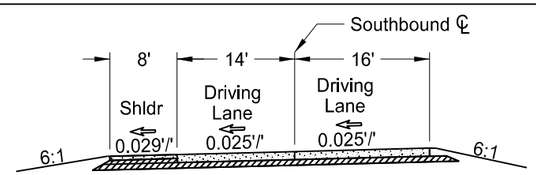
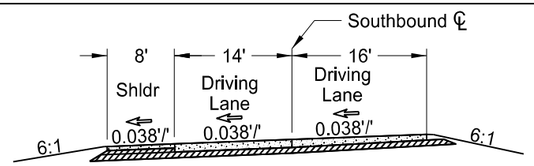
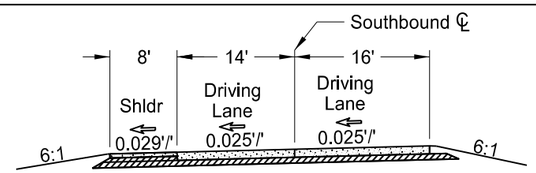
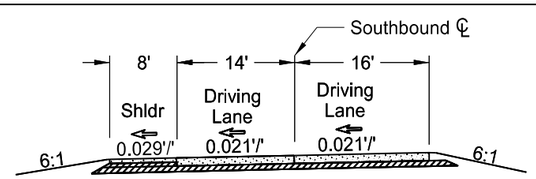
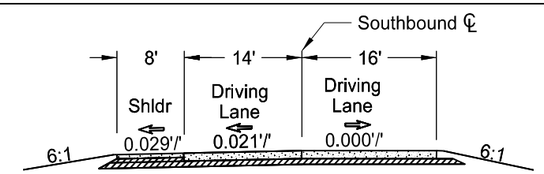
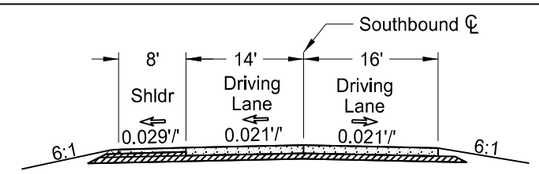
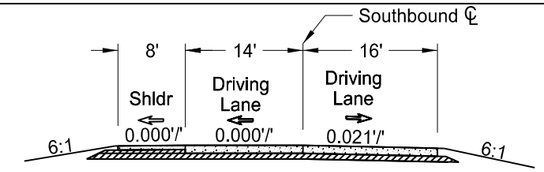
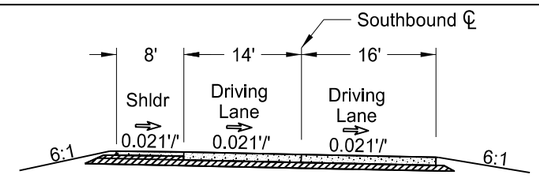
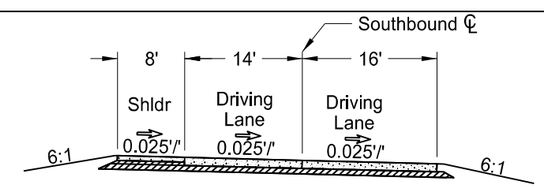
Transition from Zero Crown to Reverse Crown	Sta 4302+46.85 to Sta 4303+26.43
Reverse Crown	 Sta 4303+26.43
Transition from Reverse Crown to ⅔ Full Super	Sta 4303+26.43 to Sta 4303+42.85
⅔ Full Super	 Sta 4303+42.85
Transition from ⅔ Full Super to Full Super	Sta 4303+42.85 to Sta 4303+90.85
Full Super	 Sta 4303+90.85 to Sta 4316+00.93
Transition from Full Super to ⅔ Full Super	Sta 4316+00.93 to Sta 4316+48.92
⅔ Full Super	 Sta 4316+48.92
Transition from ⅔ Full Super to Reverse Crown	Sta 4316+48.92 to Sta 4316+65.35
Reverse Crown	 Sta 4316+65.35

Transition from Reverse Crown to Zero Crown	Sta 4316+65.35 to Sta 4317+44.93
Zero Crown	 Sta 4317+44.93
Transition from Zero Crown to Normal Crown	Sta 4317+44.93 to Sta 4318+24.51
Normal Crown	 Sta 4318+24.57 to Sta 4337+62.88
Transition from Normal Crown to Zero Crown	Sta 4337+62.88 to Sta 4338+42.46
Zero Crown	 Sta 4338+42.46
Transition from Zero Crown to Reverse Crown	Sta 4338+42.46 to Sta 4339+22.04
Reverse Crown	 Sta 4339+22.04
Transition from Reverse Crown to ⅔ Full Super	Sta 4339+22.04 to Sta 4339+38.47
⅔ Full Super	 Sta 4339+38.47

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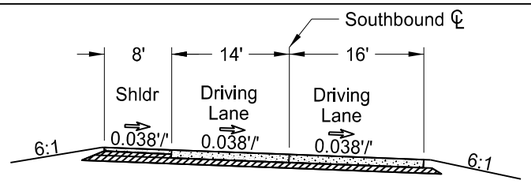
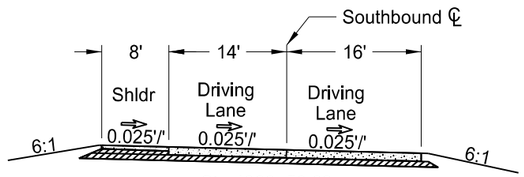
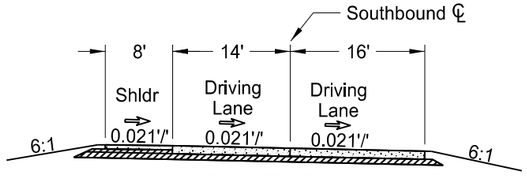
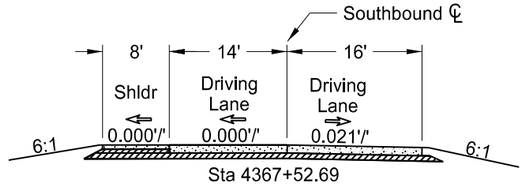
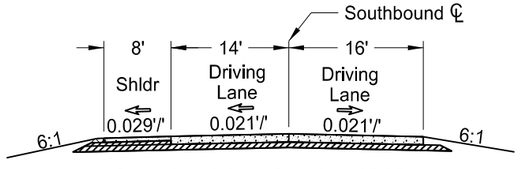
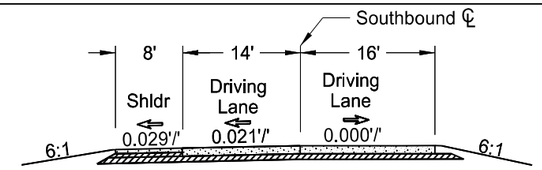
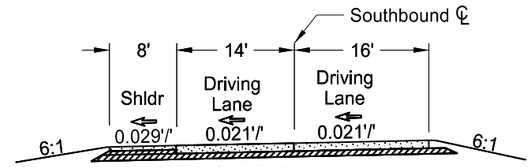
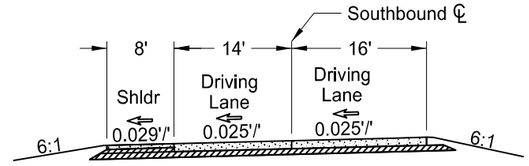
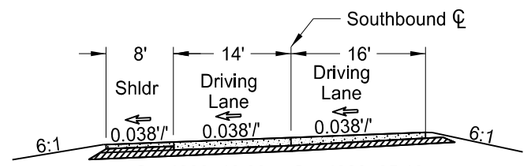
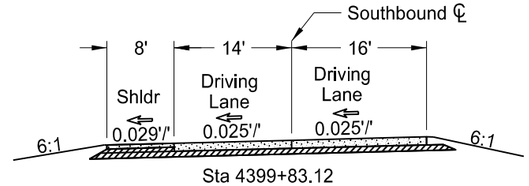
Transition from ⅔ Full Super to Full Super	Sta 4339+38.47 to Sta 4339+86.46
Full Super	 Sta 4339+86.46 to Sta 4366+08.69
Transition from Full Super to ⅔ Full Super	Sta 4366+08.69 to Sta 4366+56.69
⅔ Full Super	 Sta 4366+56.69
Transition from ⅔ Full Super to Reverse Crown	Sta 4366+56.69 to Sta 4366+73.12
Reverse Crown	 Sta 4366+73.12
Transition from Reverse Crown to Zero Crown	Sta 4366+73.12 to Sta 4367+52.69
Zero Crown	 Sta 4367+52.69
Transition from Zero Crown to Normal Crown	Sta 4367+52.69 to Sta 4368+32.27
Normal Crown	 Sta 4368+32.27 to Sta 4383+95.25

Transition from Normal Crown to Zero Crown	Sta 4383+95.25 to Sta 4384+74.82
Zero Crown	 Sta 4384+74.82
Transition from Zero Crown to Reverse Crown	Sta 4384+74.82 to Sta 4385+54.40
Reverse Crown	 Sta 4385+54.40
Transition from Reverse Crown to ⅔ Full Super	Sta 4385+54.40 to Sta 4385+70.83
⅔ Full Super	 Sta 4385+70.83
Transition from ⅔ Full Super to Full Super	Sta 4385+70.83 to Sta 4386+18.82
Full Super	 Sta 4386+18.82 to Sta 4399+35.13
Transition from Full Super to ⅔ Full Super	Sta 4399+35.13 to Sta 4399+83.12
⅔ Full Super	 Sta 4399+83.12

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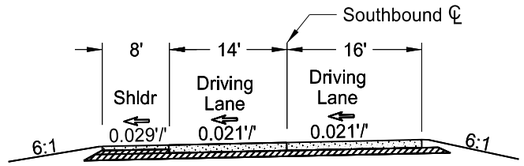
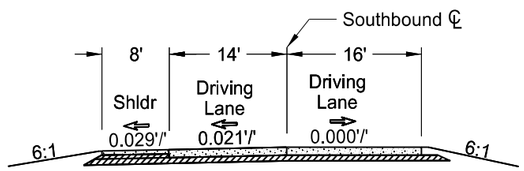
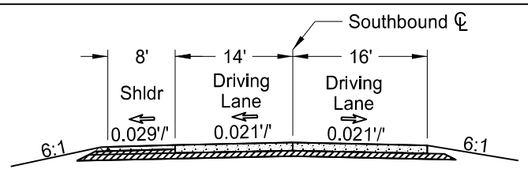
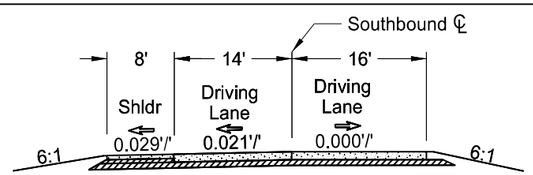
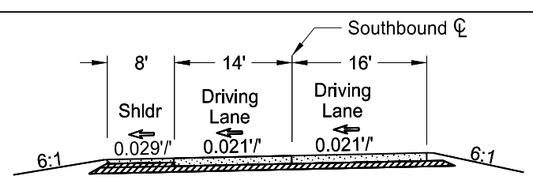
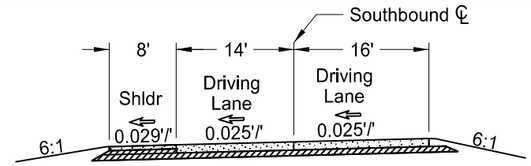
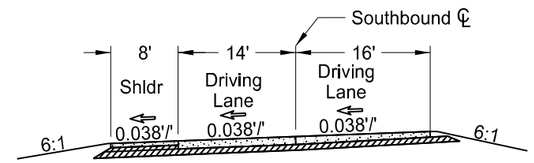
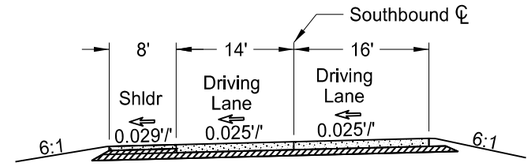
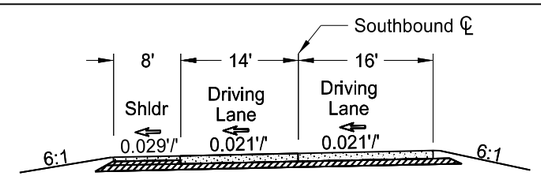
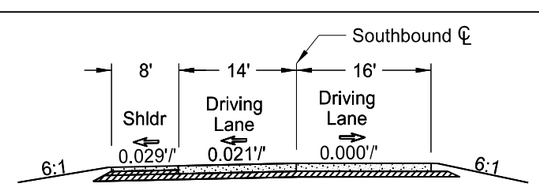
Transition from ⅔ Full Super to Reverse Crown	Sta 4399+83.12 to Sta 4399+99.55
Reverse Crown	 Sta 4399+99.55
Transition from Reverse Crown to Zero Crown	Sta 4399+99.55 to Sta 4400+79.13
Zero Crown	 Sta 4400+79.31
Transition from Zero Crown to Normal Crown	Sta 4400+79.31 to Sta 4401+58.71
Normal Crown	 Sta 4401+58.71 to Sta 4481+83.22
Transition from Normal Crown to Zero Crown	Sta 4481+83.22 to Sta 4482+62.80
Zero Crown	 Sta 4482+62.80
Transition from Zero Crown to Reverse Crown	Sta 4482+62.80 to Sta 4483+42.38
Reverse Crown	 Sta 4483+42.38

Transition from Reverse Crown to ⅔ Full Super	Sta 4483+42.38 to Sta 4483+58.80
⅔ Full Super	 Sta 4483+58.80
Transition from ⅔ Full Super to Full Super	Sta 4483+58.80 to Sta 4484+06.80
Full Super	 Sta 4484+06.80 to Sta 4493+65.02
Transition from Full Super to ⅔ Full Super	Sta 4493+65.02 to Sta 4494+13.01
⅔ Full Super	 Sta 4494+13.01
Transition from ⅔ Full Super to Reverse Crown	Sta 4494+13.01 to Sta 4494+29.44
Reverse Crown	 Sta 4494+29.44
Transition from Reverse Crown to Zero Crown	Sta 4494+29.44 to Sta 4495+09.02
Zero Crown	 Sta 4495+09.02

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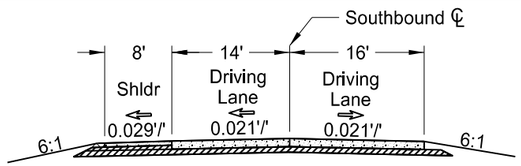
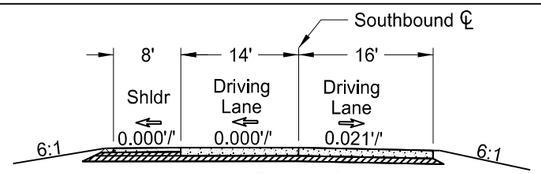
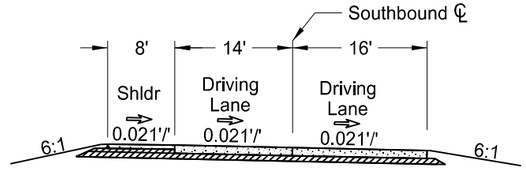
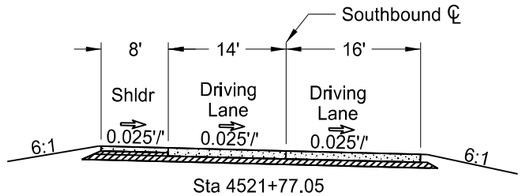
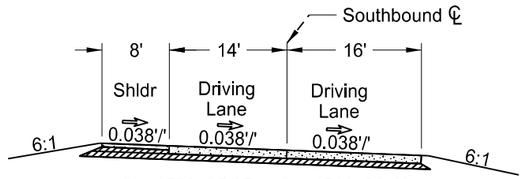
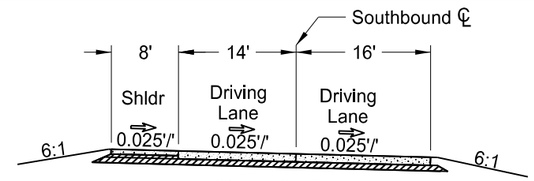
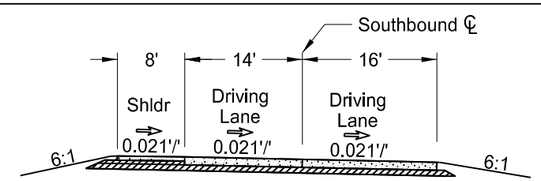
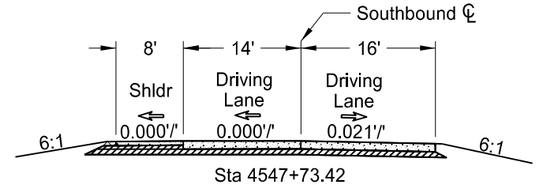
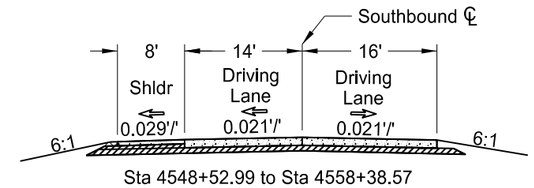
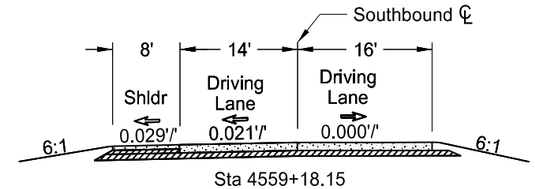
Transition from Zero Crown to Normal Crown	Sta 4495+09.02 to Sta 4495+88.60
Normal Crown	 Sta 4495+88.60 to Sta 4520+01.47
Transition from Normal Crown to Zero Crown	Sta 4520+01.47 to Sta 4520+81.05
Zero Crown	 Sta 4520+81.05
Transition from Zero Crown to Reverse Crown	Sta 4520+81.05 to Sta 4521+60.63
Reverse Crown	 Sta 4521+60.63
Transition from Reverse Crown to ⅔ Full Super	Sta 4521+60.63 to Sta 4521+77.05
⅔ Full Super	 Sta 4521+77.05
Transition from ⅔ Full Super to Full Super	Sta 4521+77.05 to Sta 4522+25.05
Full Super	 Sta 4522+25.05 to Sta 4546+29.42

Transition from Full Super to ⅔ Full Super	Sta 4546+29.42 to Sta 4546+77.41
⅔ Full Super	 Sta 4546+77.41
Transition from ⅔ Full Super to Reverse Crown	Sta 4546+77.41 to Sta 4546+93.84
Reverse Crown	 Sta 4546+93.84
Transition from Reverse Crown to Zero Crown	Sta 4546+93.84 to Sta 4547+73.42
Zero Crown	 Sta 4547+73.42
Transition from Zero Crown to Normal Crown	Sta 4547+73.42 to Sta 4548+52.99
Normal Crown	 Sta 4548+52.99 to Sta 4558+38.57
Transition from Normal Crown to Zero Crown	Sta 4558+38.57 to Sta 4559+18.15
Zero Crown	 Sta 4559+18.15

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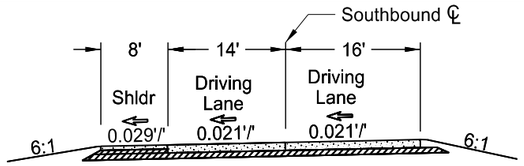
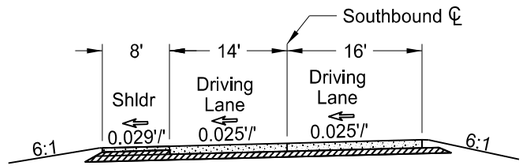
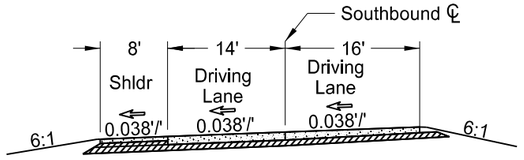
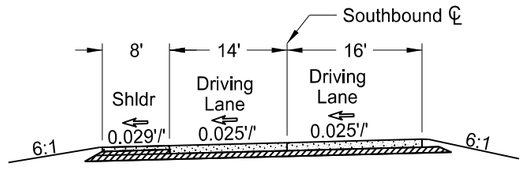
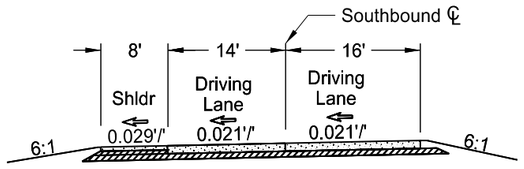
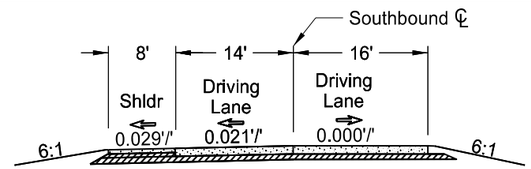
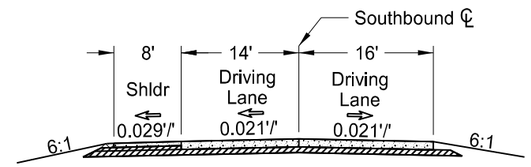
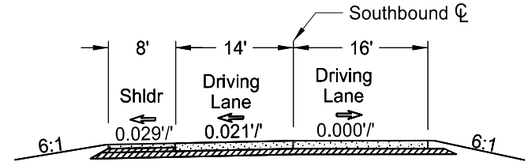
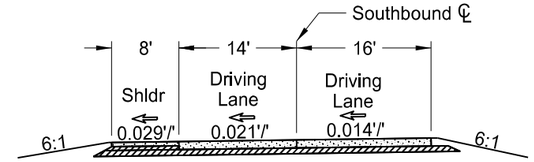
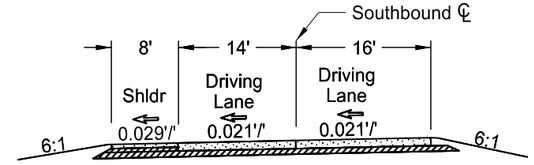
Proposed Superelevation Data

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	20	12

Transition from Zero Crown to Reverse Crown	Sta 4559+18.15 to Sta 4559+97.72
Reverse Crown	 Sta 4559+97.25
Transition from Reverse Crown to ⅔ Full Super	Sta 4559+97.72 to Sta 4560+14.15
⅔ Full Super	 Sta 4560+14.15
Transition from ⅔ Full Super to Full Super	Sta 4560+14.15 to Sta 4560+62.15
Full Super	 Sta 4560+62.15 to Sta 4574+12.76
Transition from Full Super to ⅔ Full Super	Sta 4574+12.76 to Sta 4574+60.76
⅔ Full Super	 Sta 4574+60.76
Transition from ⅔ Full Super to Reverse Crown	Sta 4574+60.76 to Sta 4574+77.19
Reverse Crown	 Sta 4574+77.19

Transition from Reverse Crown to Zero Crown	Sta 4574+77.19 to Sta 4575+56.76
Zero Crown	 Sta 4575+56.76
Transition from Zero Crown to Normal Crown	Sta 4575+56.76 to Sta 4576+36.34
Normal Crown	 Sta 4576+36.34 to Sta 4607+81.92
Transition from Normal Crown to Zero Crown	Sta 4607+81.92 to Sta 4608+60.92
Zero Crown	 Sta 4608+60.92
Transition from Zero Crown to ⅔ Full Super	Sta 4608+60.92 to Sta 4609+13.58
⅔ Full Super	 Sta 4609+13.58
Transition from ⅔ Full Super to Full Super	Sta 4609+13.58 to Sta 4609+39.92
Full Super	 Sta 4609+39.92 to Sta 4620+76.78

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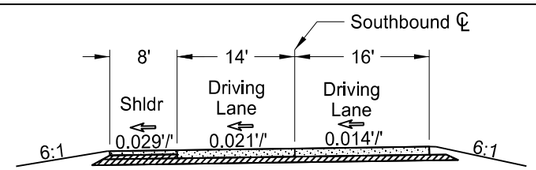
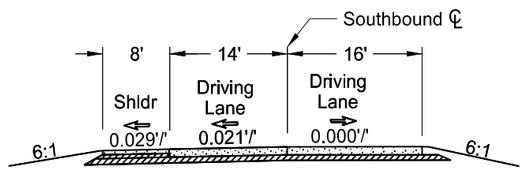
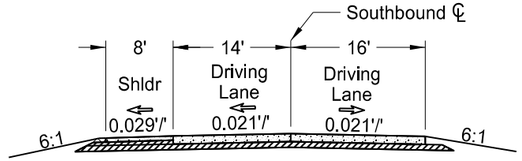
Proposed Superelevation Data

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	20	13

Transition from Full Super to ⅔ Full Super	Sta 4620+77.04 to Sta 4621+03.11
⅔ Super	 Sta 4621+03.11
Transition from ⅔ Full Super to Zero Crown	Sta 4621+03.11 to Sta 4621+55.78
Zero Crown	 Sta 4621+55.78
Transition from Zero Crown to Normal Crown	Sta 4621+55.78 to Sta 4622+34.78
Normal Crown	 Sta 4622+34.78 to Sta 4660+65.00

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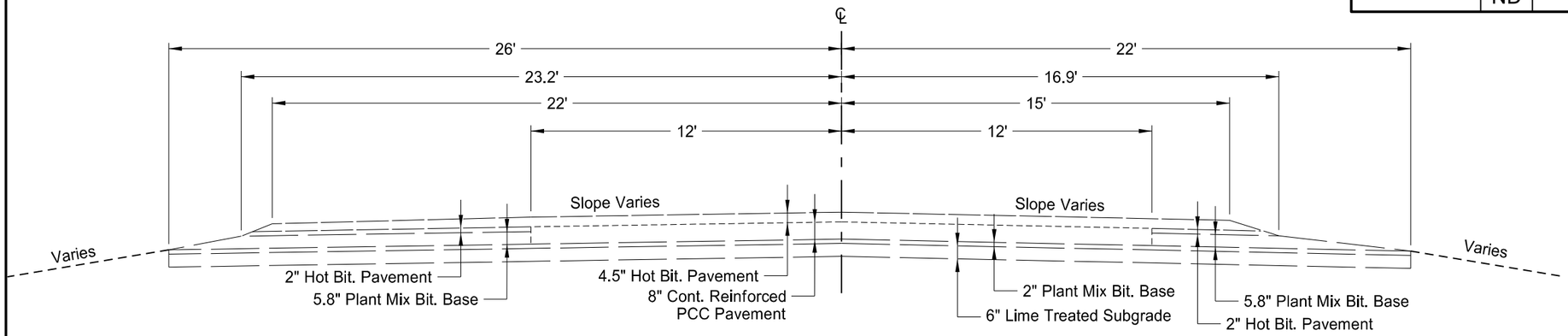
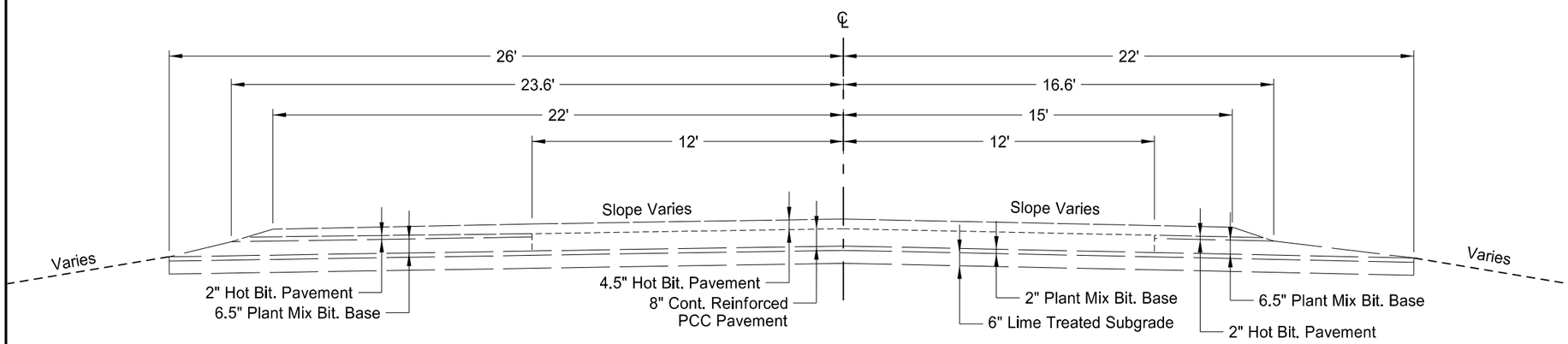
Proposed Superelevation Data

Interstate 29 - Argusville to Hunter SB

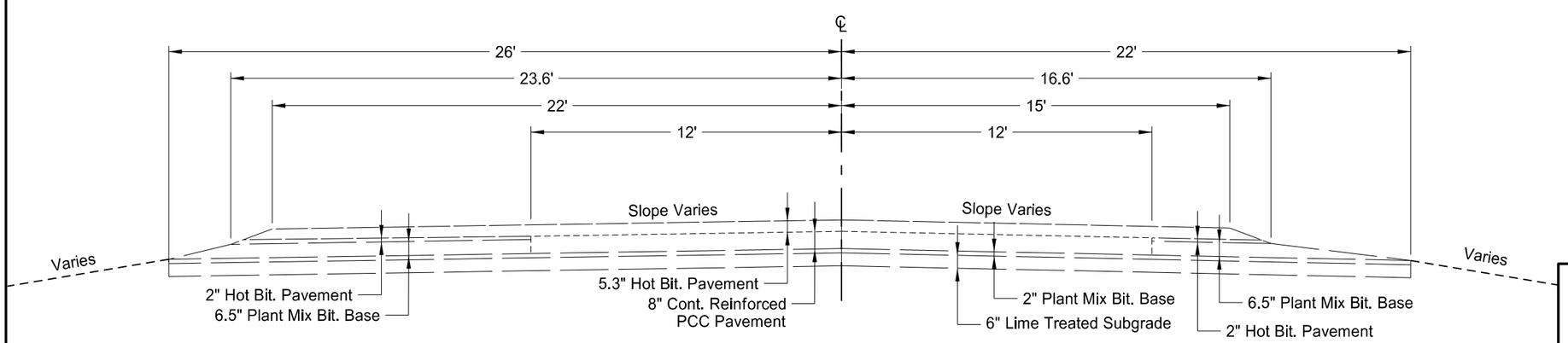
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	30	1



Existing Typical Section
Sta 4180+00 to Sta 4488+00



Existing Typical Section
Sta 4488+00 to Sta 4646+40



Existing Typical Section
Sta 4646+40 to 4660+65

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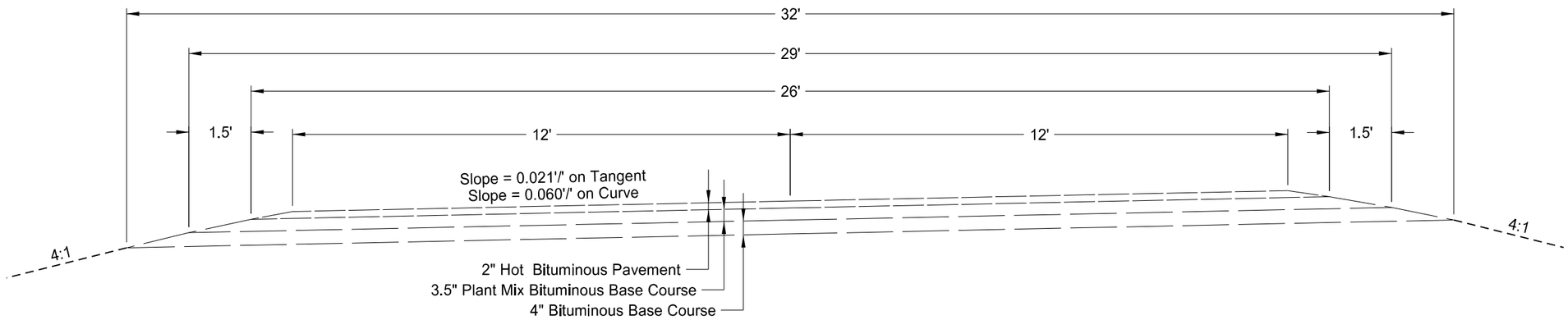
Existing Typical Sections

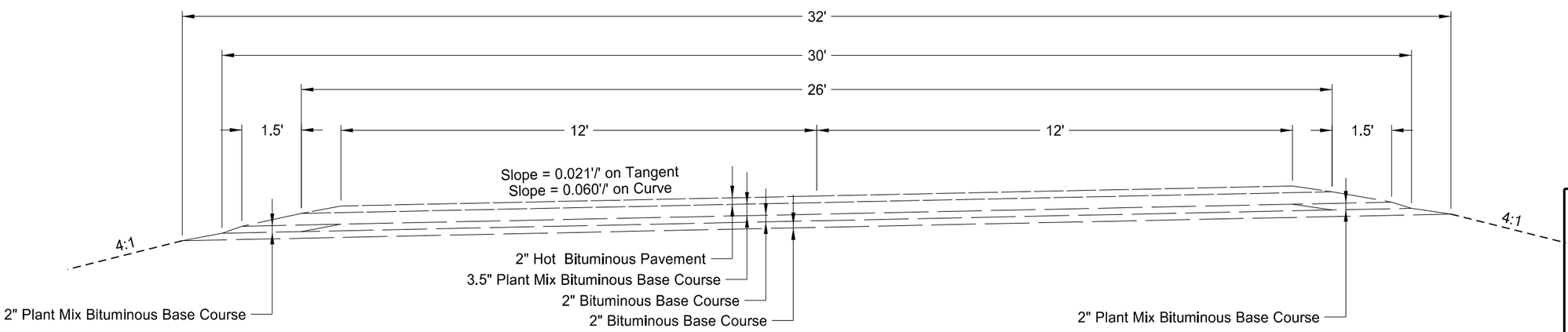
I-29 Southbound Mainline

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	30	2



Gardner Interchange
SW Ramp



Gardner Interchange
NW Ramp

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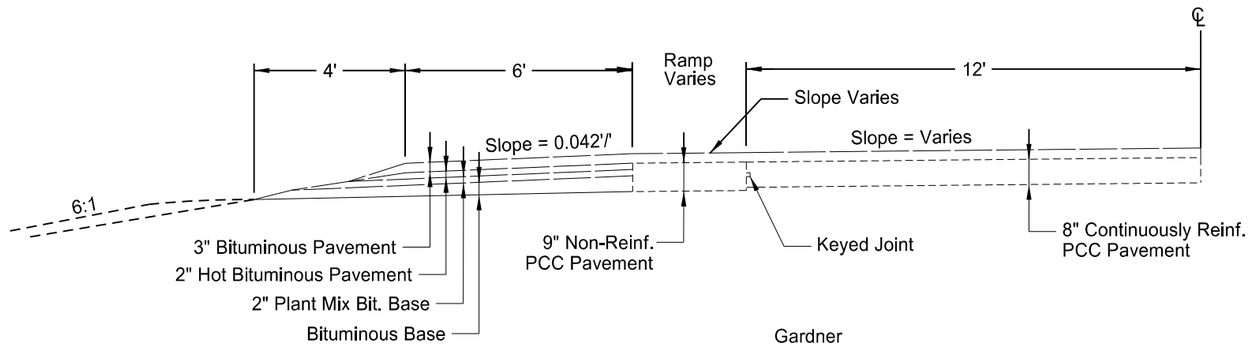
Existing Typical Sections

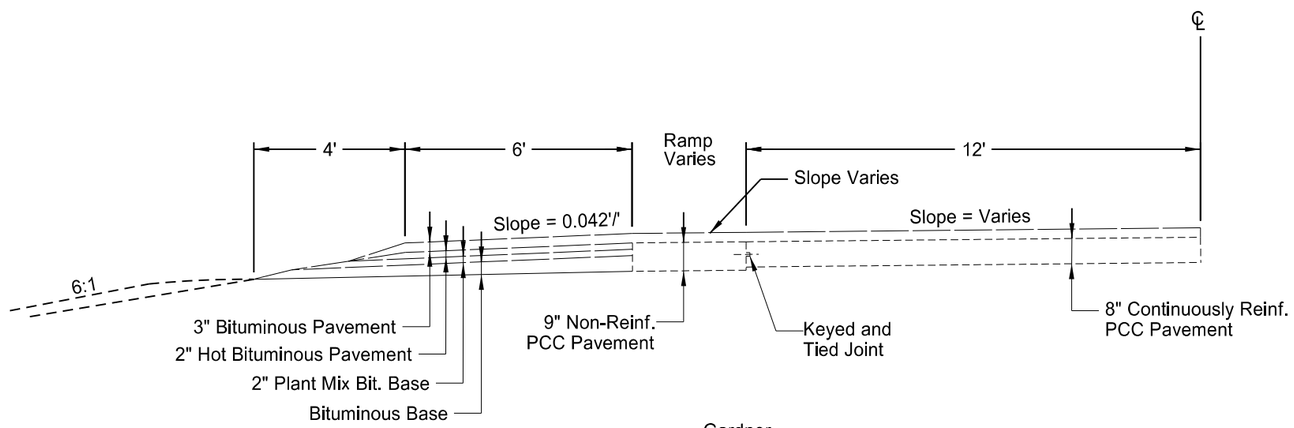
Gardner Interchange Ramps

Interstate 29 - Argusville to Hunter SB

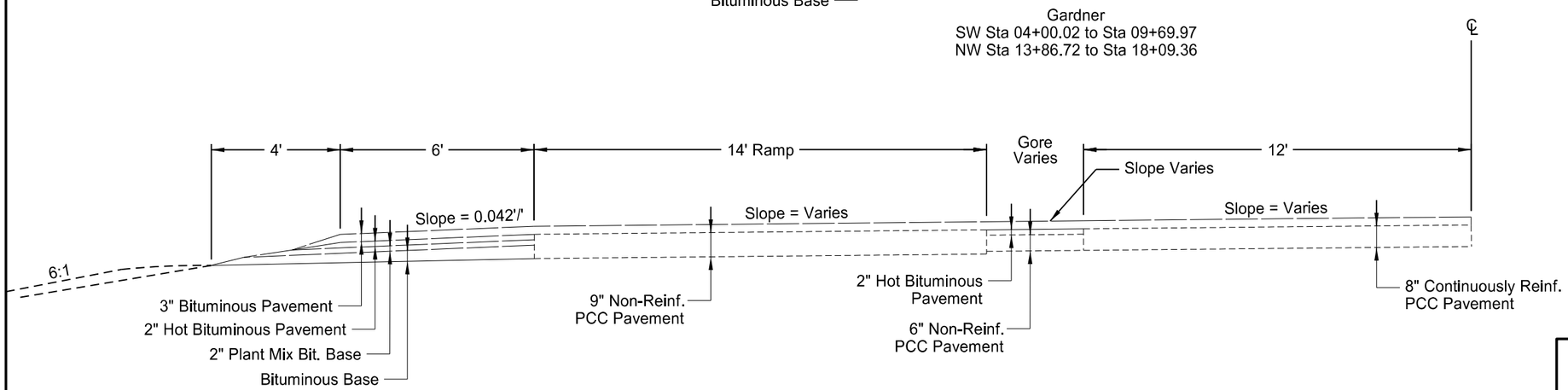
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	30	3



Gardner
SW Sta 02+00.10 to Sta 04+00.02
NW Sta 18+09.36 to Sta 19+69.26



Gardner
SW Sta 04+00.02 to Sta 09+69.97
NW Sta 13+86.72 to Sta 18+09.36



Gardner
SW Sta 09+69.97 to Sta 12+52.71
NW Sta 11+59.80 to Sta 13+86.72

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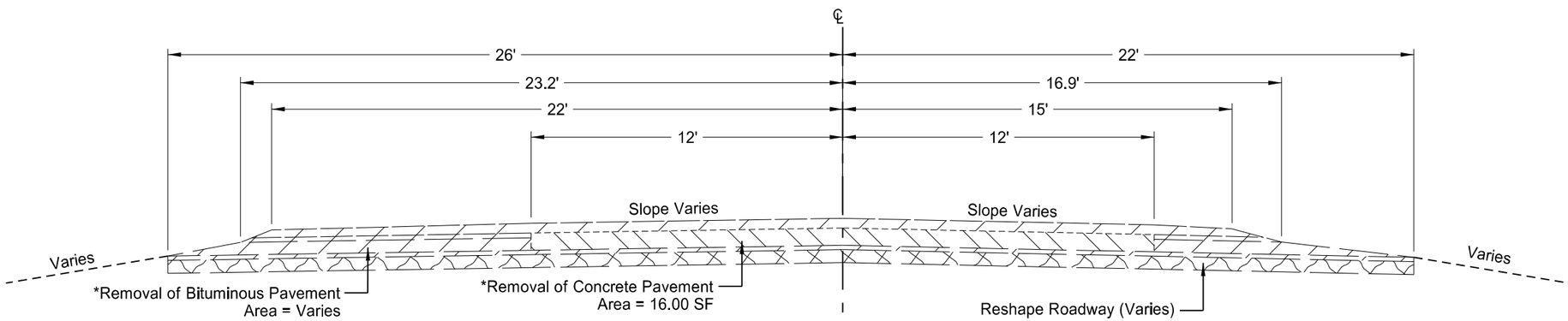
Existing Typical Sections

Gardner Interchange Ramp Tapers

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	30	4



Southbound Mainline
Sta 4180+00 to Sta 4660+65

*All removed materials shall be paid for as "Removal of Pavement".

**See Section 40 for removal quantities.

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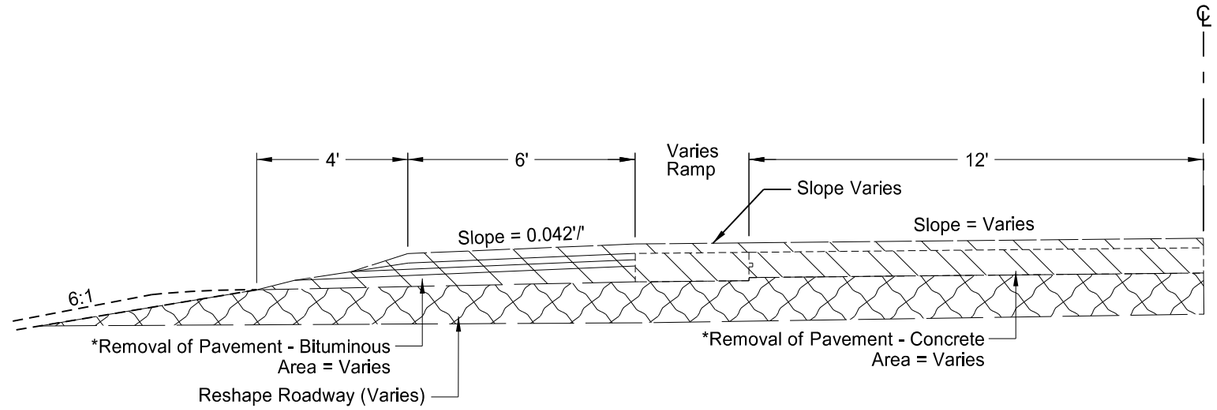
Removal Typical Sections

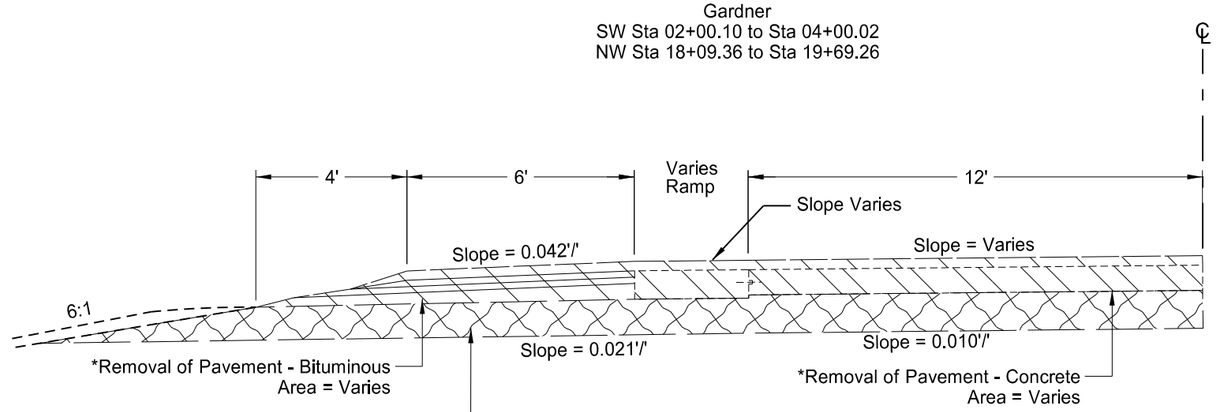
I-29 Southbound Mainline

Interstate 29 - Argusville to Hunter SB

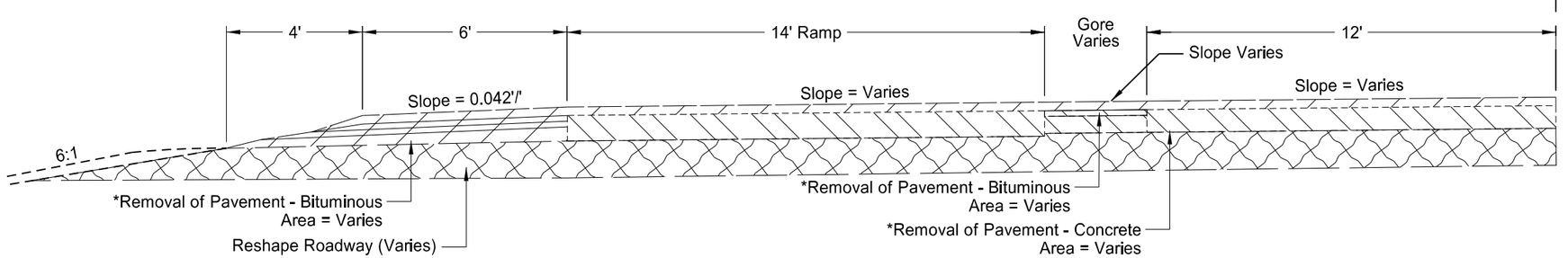
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	30	5



Gardner
SW Sta 02+00.10 to Sta 04+00.02
NW Sta 18+09.36 to Sta 19+69.26



Gardner
SW Sta 04+00.02 to Sta 09+69.97
NW Sta 13+86.72 to Sta 18+09.36



Gardner
SW Sta 09+69.97 to Sta 12+52.71
NW Sta 11+59.80 to Sta 13+86.72

*All removed materials shall be paid for as "Removal of Pavement".

**See Section 40 for removal quantities.

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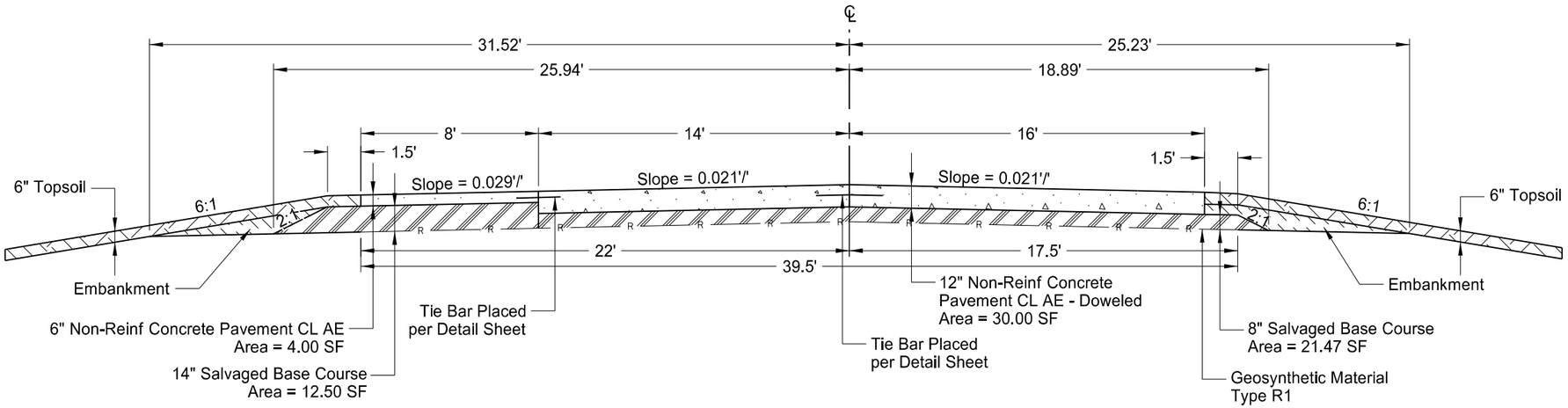
Removal Typical Sections

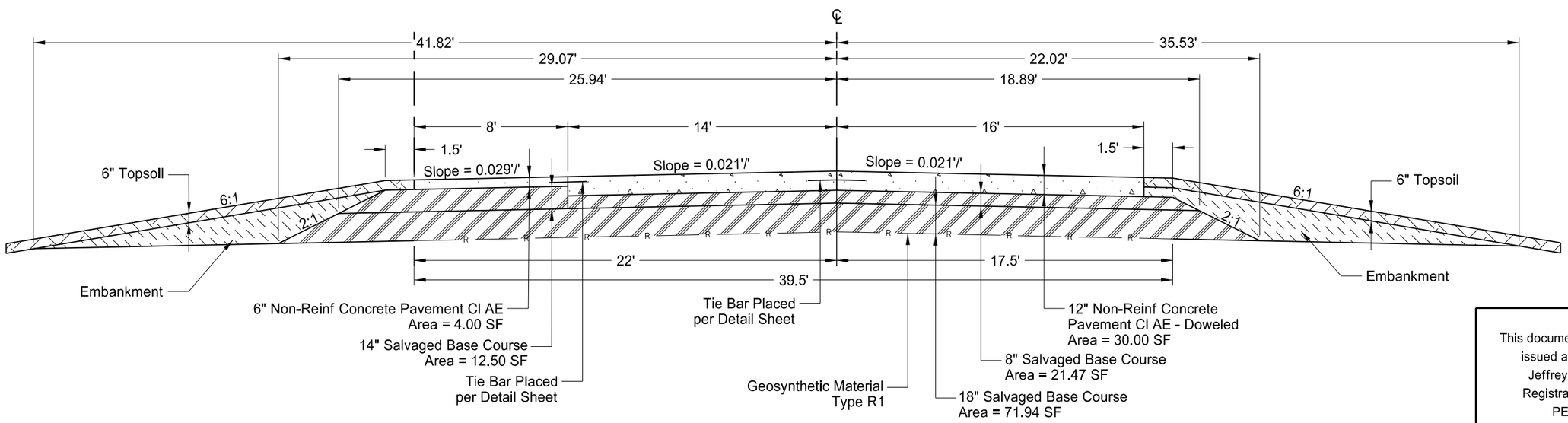
Gardner Interchange Ramp Tapers

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	30	6



Sta 4180+00 to Sta 4660+65



Discretionary Subcut
(As Directed)
See Sec 20 Sheet 1

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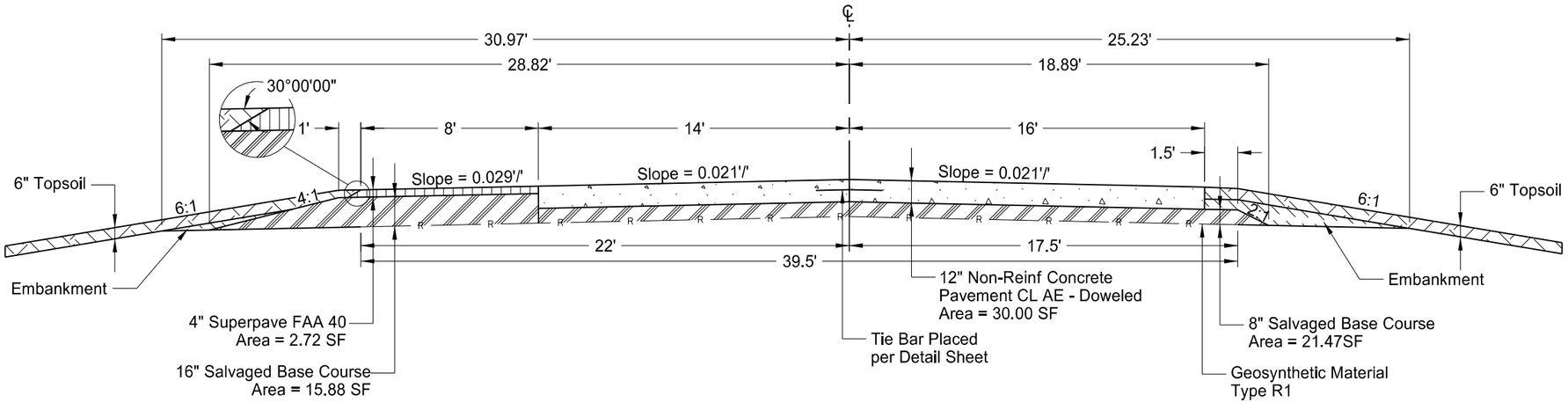
Proposed Typical Sections

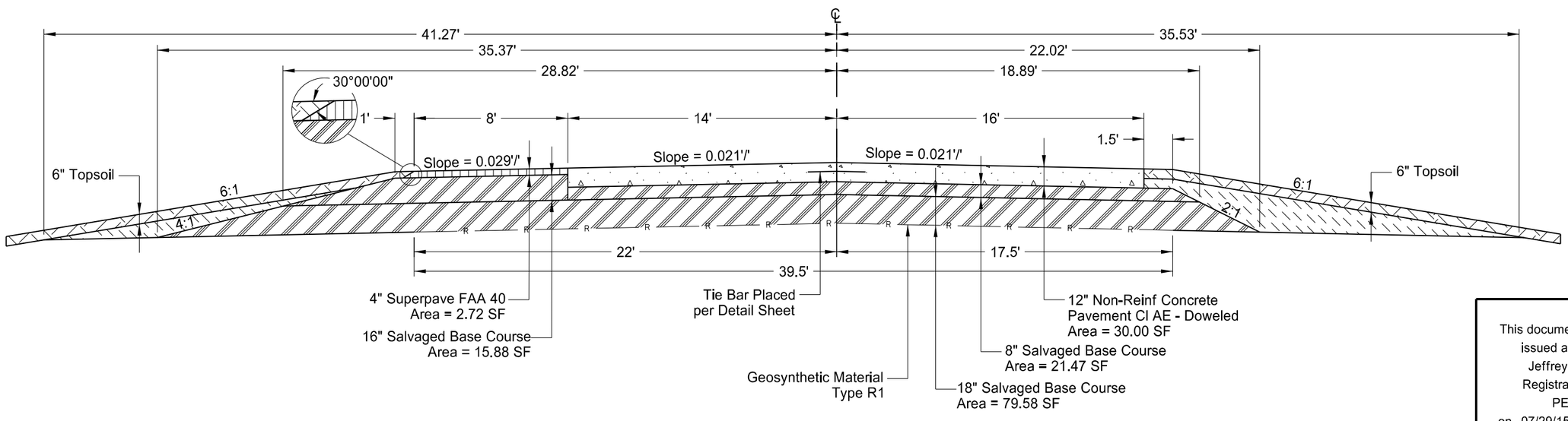
Alternate A - Concrete Shoulders

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	30	7



Sta 4180+00 to Sta 4660+65



Discretionary Subcut
(As Directed)
See Sec 20 Sheet 1

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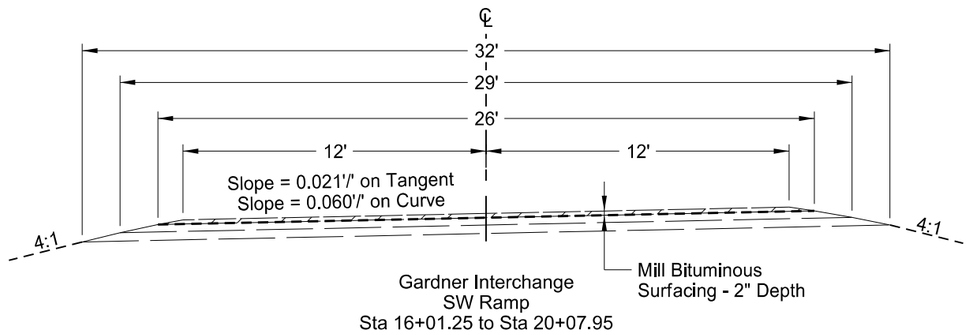
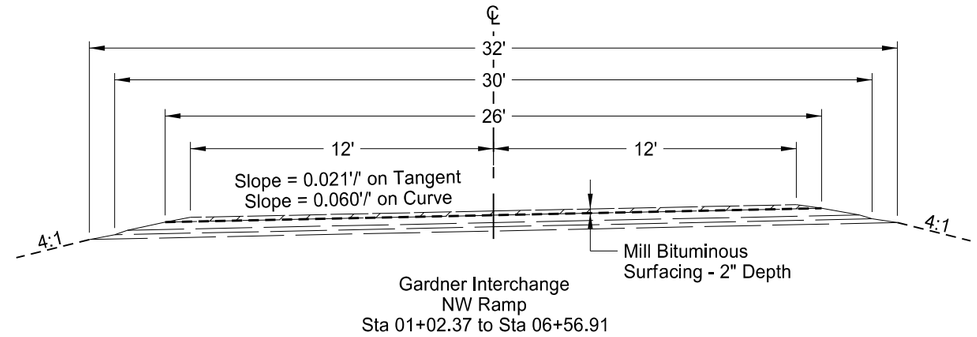
Proposed Typical Sections

Alternate B - Concrete Median Shoulder
8' Asphalt Shoulder
Interstate 29 - Argusville to Hunter SB

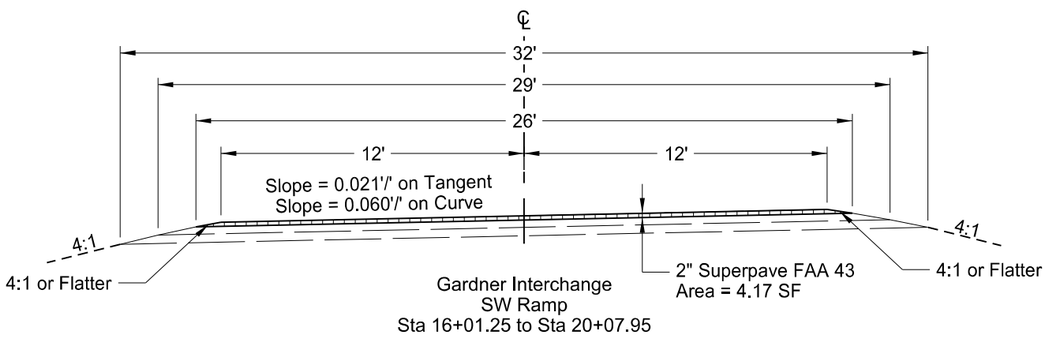
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	30	8



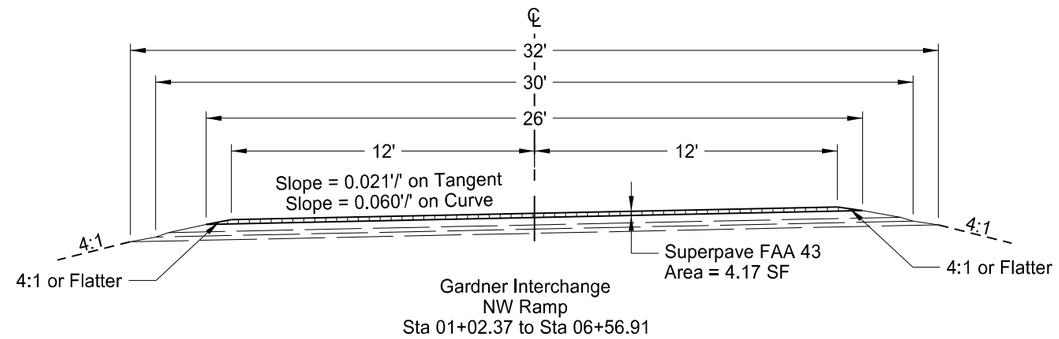
Gardner Interchange
SW Ramp
Sta 16+01.25 to Sta 20+07.95



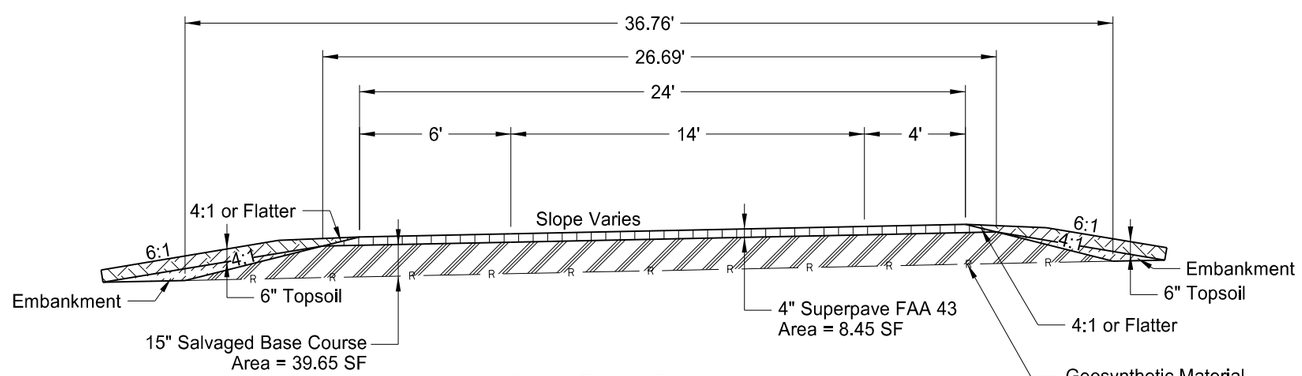
Gardner Interchange
NW Ramp
Sta 01+02.37 to Sta 06+56.91



Gardner Interchange
SW Ramp
Sta 16+01.25 to Sta 20+07.95



Gardner Interchange
NW Ramp
Sta 01+02.37 to Sta 06+56.91



Gardner Ramps - Reconstruct
SW Sta 12+07.25 to Sta 16+01.25
NW Sta 06+56.91 to Sta 11+49.28

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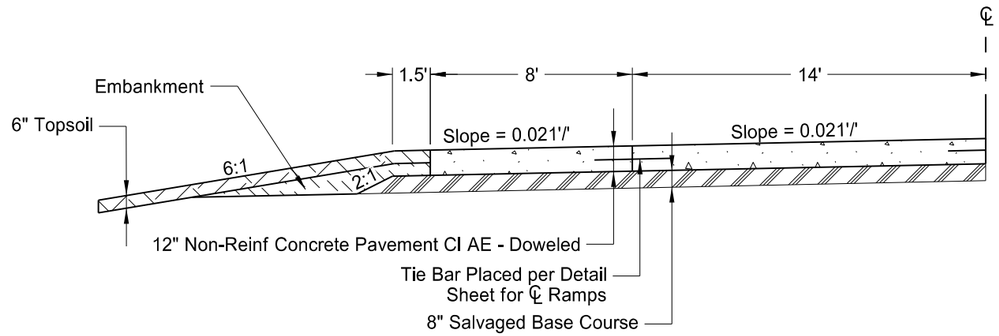
Proposed Typical Sections

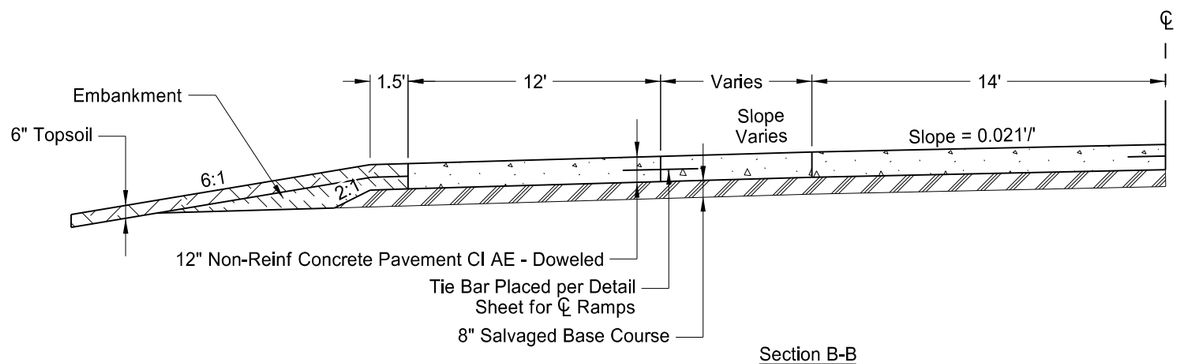
Gardner Interchange Ramps

Interstate 29 - Argusville to Hunter SB

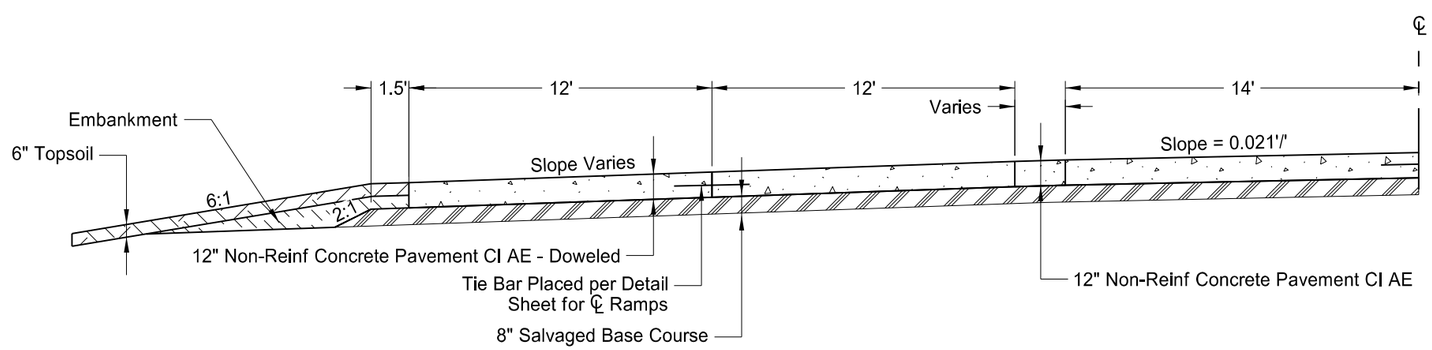
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	30	9



Section A-A
(See Section 90)



Section B-B
(See Section 90)



Section C-C
(See Section 90)

Gardner Interchange	
Southwest Ramp	
00+00.00 to 09+99.55	2.1% Lt.
09+99.55 to 11+09.44	Transition 2.1% Lt. to 5.70% Lt.
11+09.44 to 15+31.65	5.70% Lt.
15+31.65 to 16+41.54	Transition 5.94% Lt to Existing
16+41.54 to 21+21.12	Match Existing
Northwest Ramp	
00+00.00 to 06+45.14	Match Existing
06+45.14 to 06+95.99	Transition Existing to 3.71% Lt.
06+95.99 to 14+22.69	3.71% Lt.
14+22.69 to 14+73.55	Transition 3.71% Lt. to 2.10% Lt.
14+73.55 to 21+29.39	2.10% Lt.

Note:
See Section 90
Paving Layout Sheets

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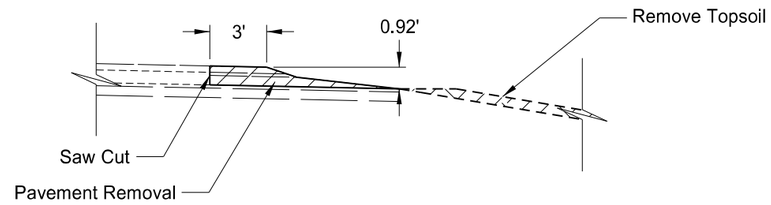
Proposed Typical Sections

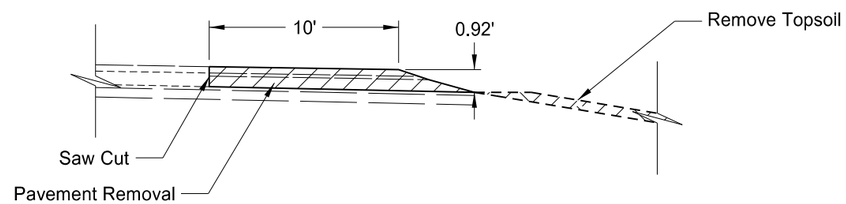
Gardner Interchange Ramp Tapers

Interstate 29 - Argusville to Hunter SB

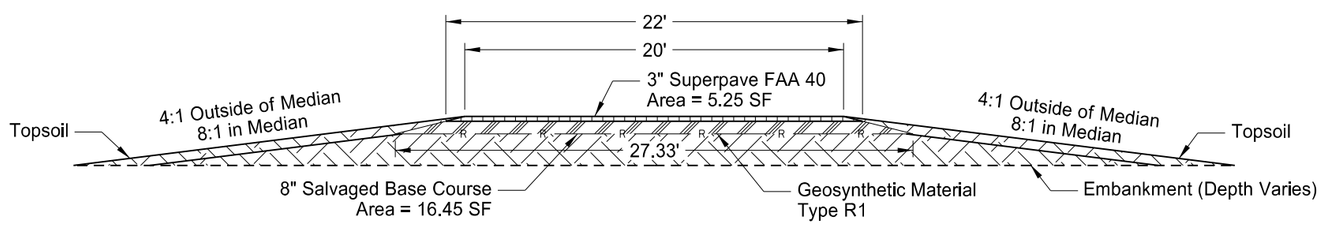
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	30	10



Median Shoulder
Removal Detail



Outside Shoulder
Removal Detail



Proposed Typical Section

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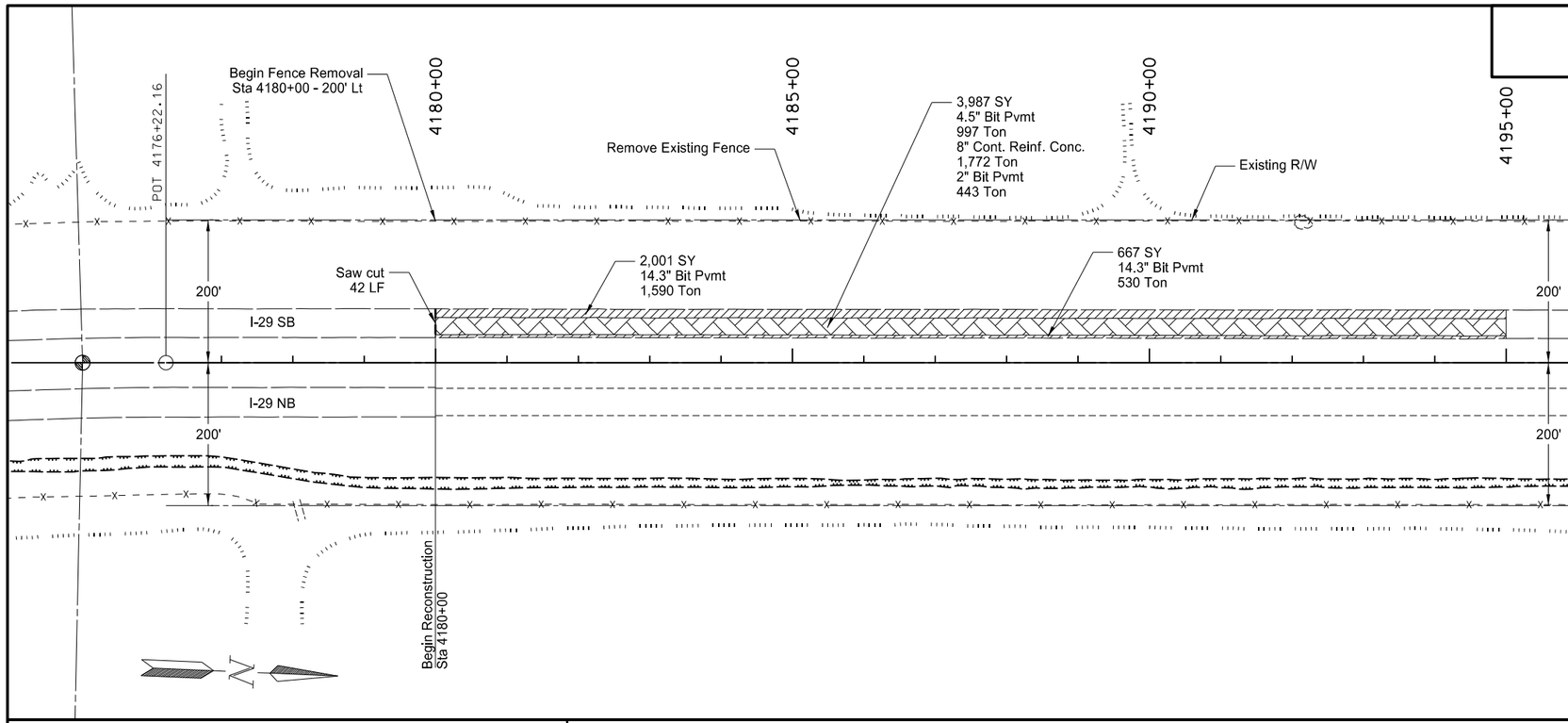
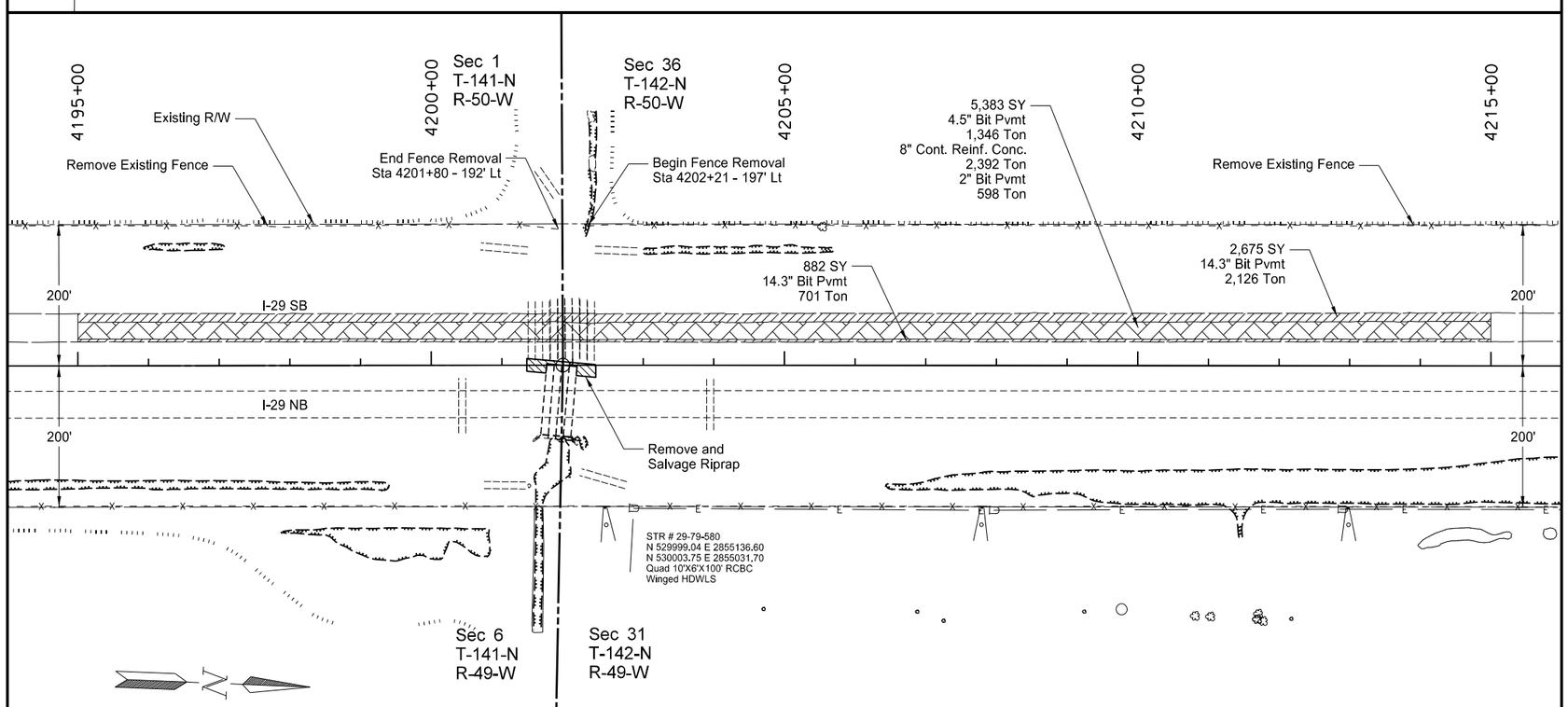
Proposed Typical Sections

Temporary Ramp Connections

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	40	1





Item	Description		Quantity	Unit
202-0136	REMOVAL OF PAVEMENT			
	Bituminous Pavement			
	4180+00 to 4195+00	Lt Shoulder	1,590	Ton
		Mainline	1,440	Ton
		Rt Shoulder	530	Ton
	4195+00 to 4215+00	Lt Shoulder	2,126	Ton
		Mainline	1,944	Ton
		Rt Shoulder	701	Ton
		Subtotal	8,331	Ton
	Concrete Pavement			
	4180+00 to 4195+00	Mainline	1,772	Ton
	4195+00 to 4215+00	Mainline	2,392	Ton
		Subtotal	4,164	Ton
		Total	12,495	Ton
202-0153	SAW BITUMINOUS SURFACING - FULL DEPTH			
	Sta 4180+00		42	LF
202-0312	REMOVE EXISTING FENCE			
	Sta 4180+00 Lt to 4201+80 Lt		2,182	LF
	Sta 4202+21 Lt to 4215+00 Lt		1,278	LF
	Total		3,460	LF
256-0600	RIPRAP-SALVAGED			
	Sta 4201+35 to 4202+33		86	CY

Note: See Section 60 sheets for culvert removals.

Bituminous Overlay on PCC Pavement

Bituminous Pavement

Remove and Salvage Riprap

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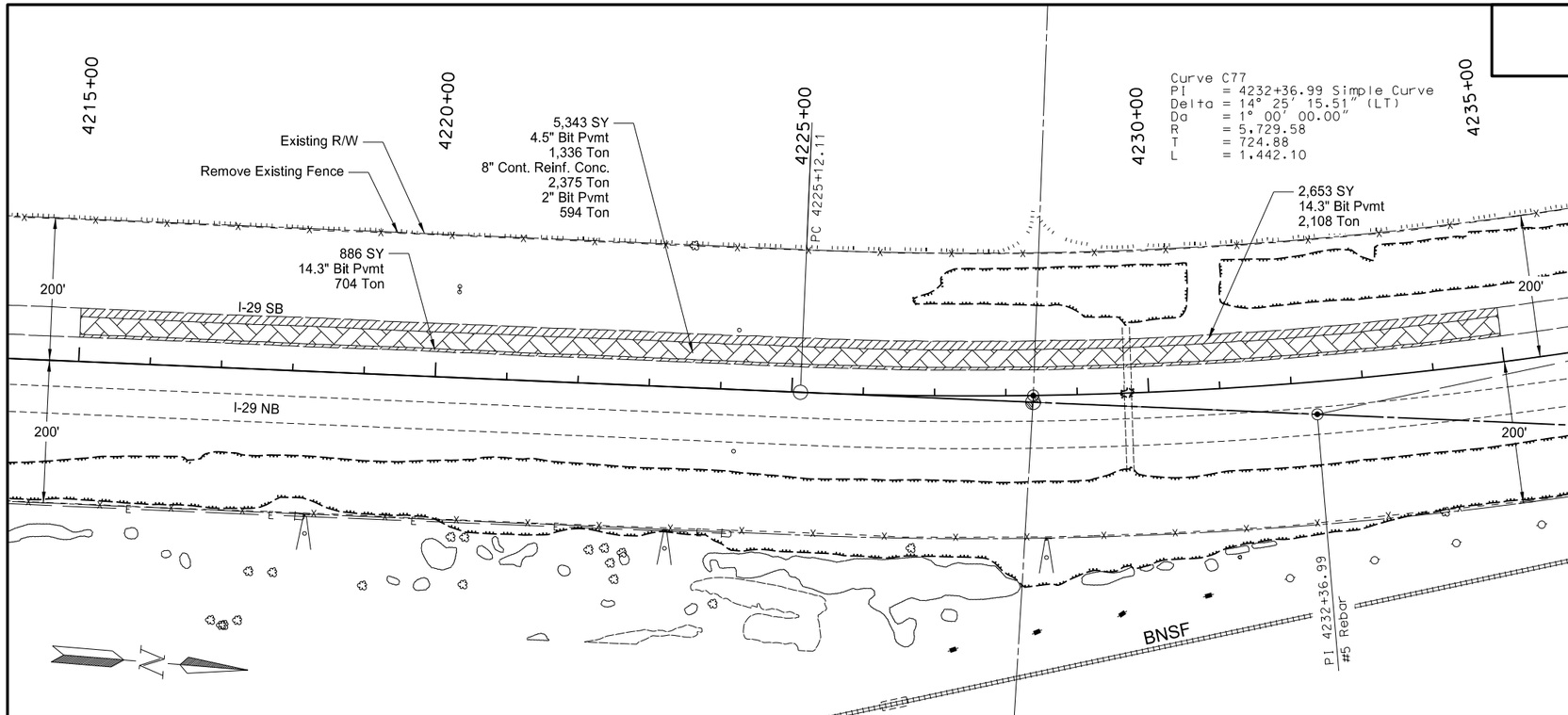
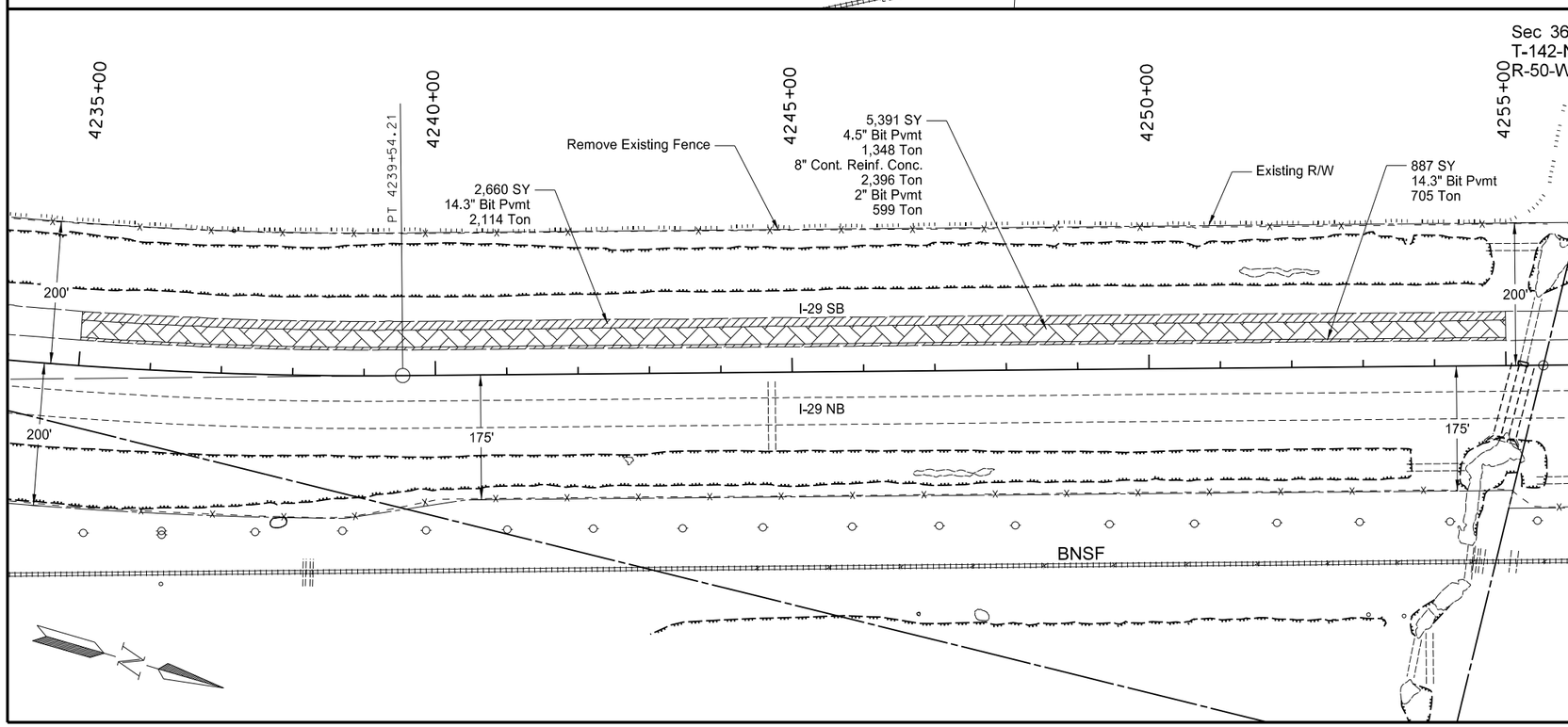
Removals

Interstate 29 - Argusville to Hunter SB
Sta 4180+00 to Sta 4215+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	40	2





Item	Description		Quantity	Unit
202-0136	REMOVAL OF PAVEMENT			
	Bituminous Pavement			
	4215+00 to 4235+00	Lt Shoulder	2,108	Ton
		Mainline	1,930	Ton
		Rt Shoulder	704	Ton
	4235+00 to 4255+00	Lt Shoulder	2,114	Ton
		Mainline	1,947	Ton
		Rt Shoulder	705	Ton
		Subtotal	9,508	Ton
	Concrete Pavement			
	4215+00 to 4235+00	Mainline	2,375	Ton
	4235+00 to 4255+00	Mainline	2,396	Ton
		Subtotal	4,771	Ton
		Total	14,279	Ton
202-0312	REMOVE EXISTING FENCE			
	Sta 4215+00 Lt to 4255+00 Lt		3,950	LF

Note: See Section 60 sheets for culvert removals.

Bituminous Overlay on PCC Pavement

Bituminous Pavement

Remove and Salvage Riprap

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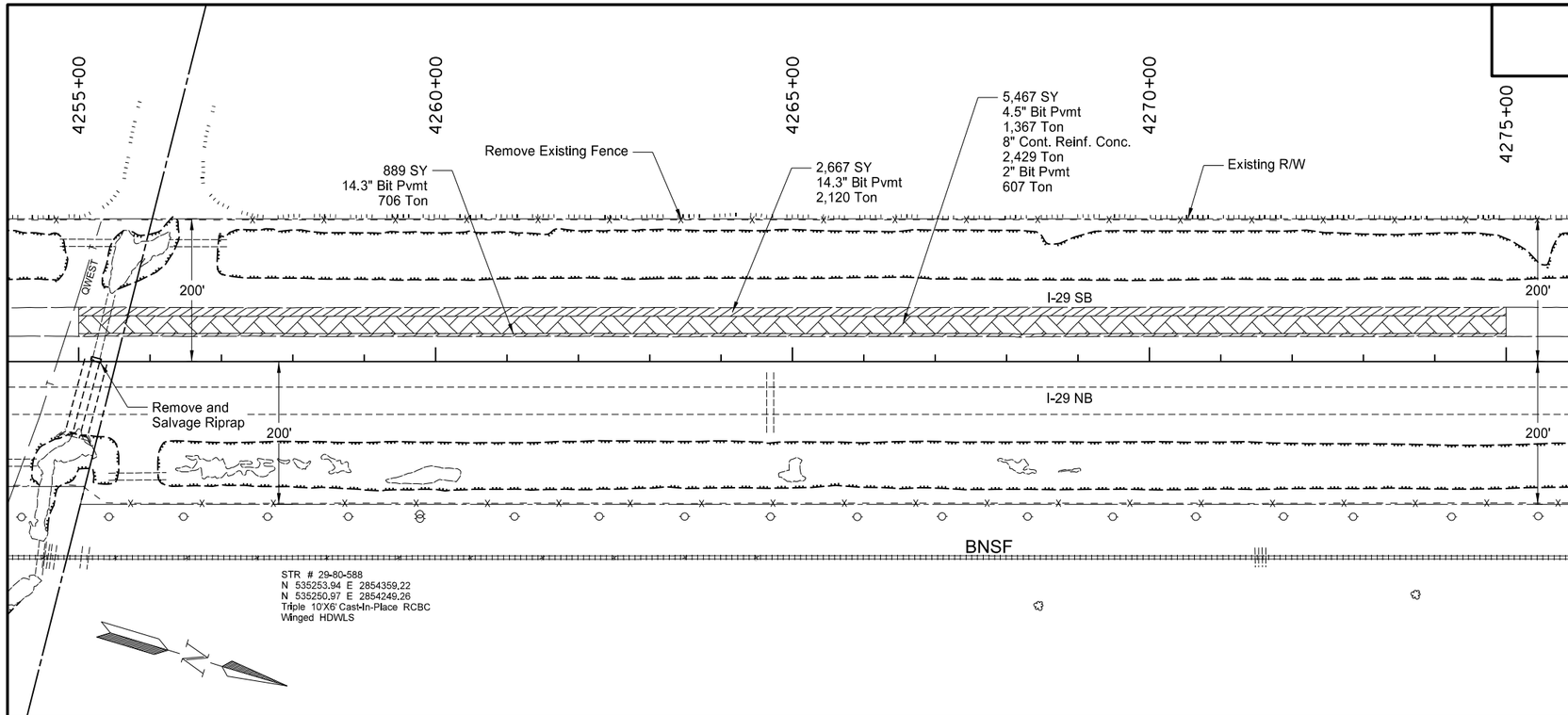
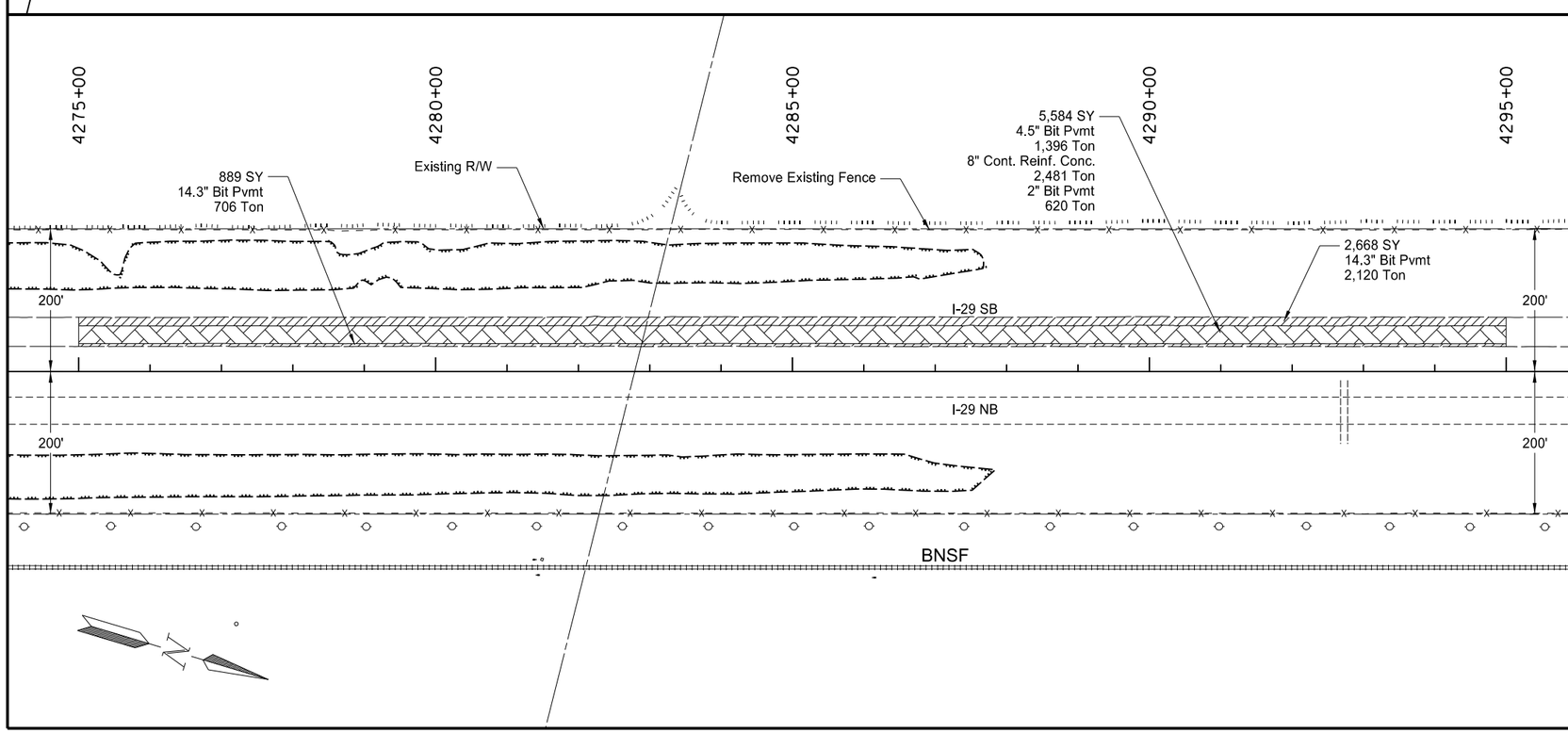
Removals

Interstate 29 - Argusville to Hunter SB
Sta 4215+00 to Sta 4255+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	40	3





Item	Description		Quantity	Unit
202-0136	REMOVAL OF PAVEMENT			
	Bituminous Pavement			
	4255+00 to 4275+00	Lt Shoulder	2,120	Ton
		Mainline	1,974	Ton
		Rt Shoulder	706	Ton
	4275+00 to 4295+00	Lt Shoulder	2,120	Ton
		Mainline	2,016	Ton
		Rt Shoulder	706	Ton
		Subtotal	9,642	Ton
	Concrete Pavement			
	4255+00 to 4275+00	Mainline	2,429	Ton
	4275+00 to 4295+00	Mainline	2,481	Ton
		Subtotal	4,910	Ton
		Total	14,552	Ton
202-0312	REMOVE EXISTING FENCE			
	Sta 4255+00 Lt to 4295+00 Lt		4,001	LF
256-0600	RIPRAP-SALVAGED			
	Sta 4255+17 to 4255+32		56	CY

Note: See Section 60 sheets for culvert removals.

Bituminous Overlay on PCC Pavement

Bituminous Pavement

Remove and Salvage Riprap

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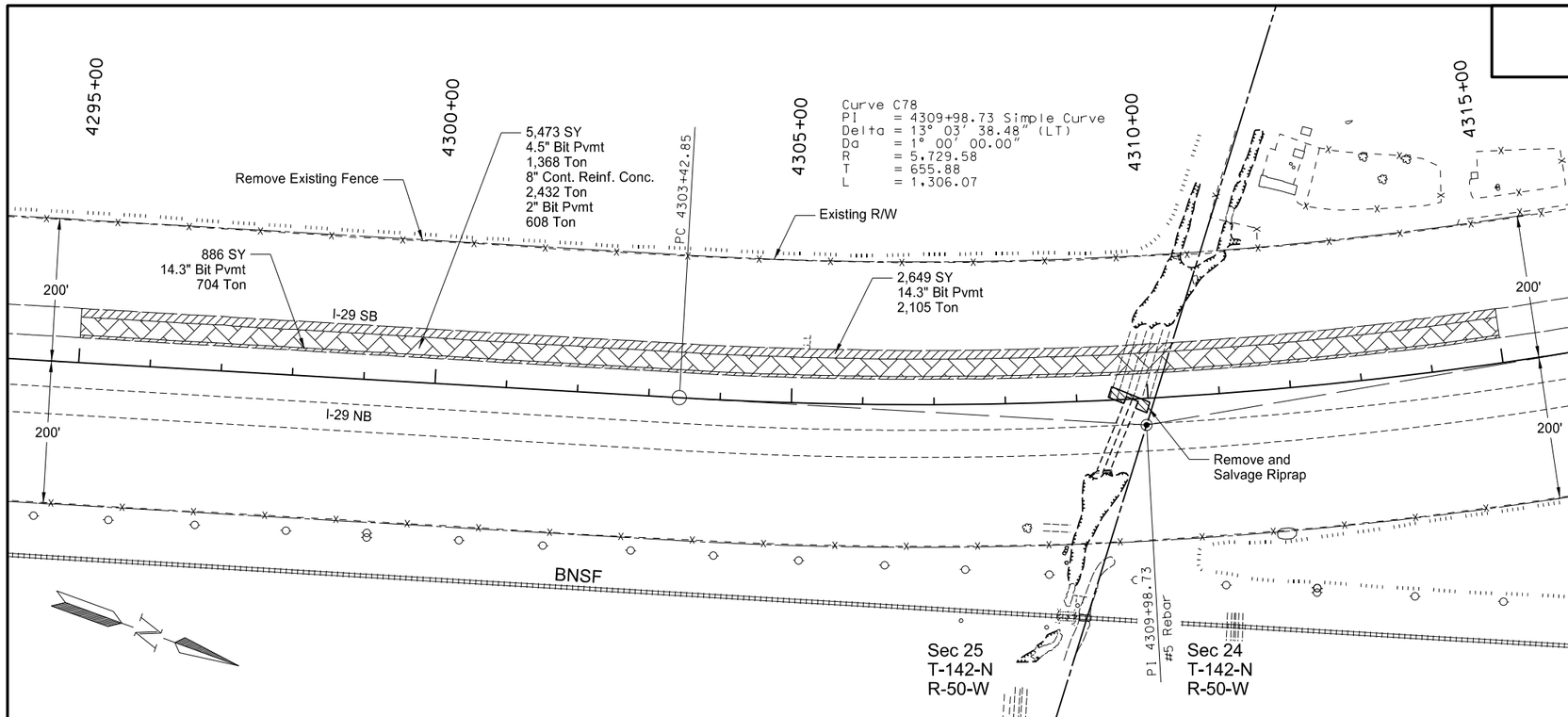
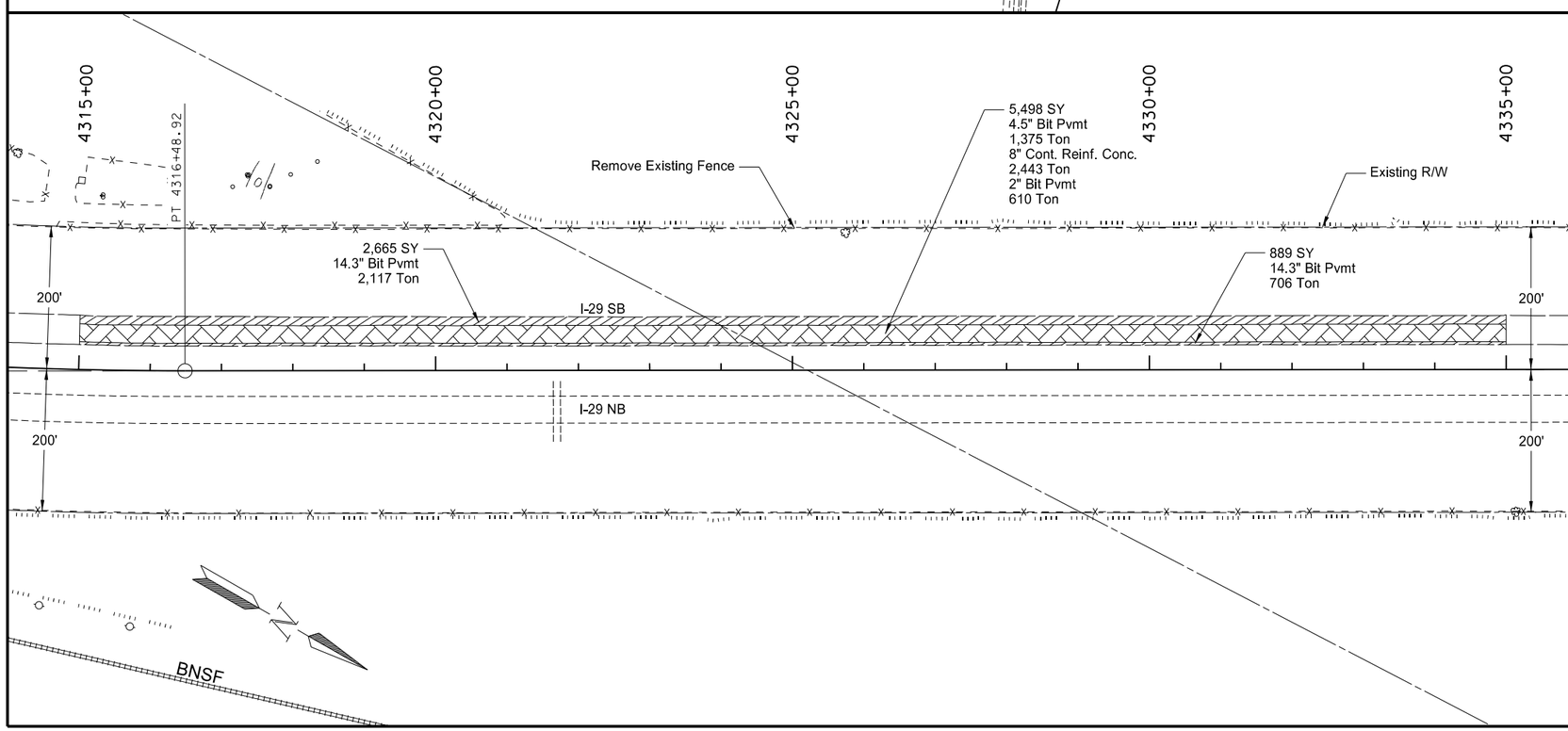
Removals

Interstate 29 - Argusville to Hunter SB
Sta 4255+00 to Sta 4295+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	40	4





Item	Description		Quantity	Unit
202-0136	REMOVAL OF PAVEMENT			
	Bituminous Pavement			
	4295+00 to 4315+00	Lt Shoulder	2,105	Ton
		Mainline	1,976	Ton
		Rt Shoulder	704	Ton
	4315+00 to 4335+00	Lt Shoulder	2,117	Ton
		Mainline	1,985	Ton
		Rt Shoulder	706	Ton
		Subtotal	9,593	Ton
	Concrete Pavement			
	4295+00 to 4315+00	Mainline	2,432	Ton
	4315+00 to 4335+00	Mainline	2,443	Ton
		Subtotal	4,875	Ton
		Total	14,468	Ton
202-0312	REMOVE EXISTING FENCE			
	Sta 4295+00 Lt to 4335+00 Lt		3,956	LF
256-0600	RIPRAP-SALVAGED			
	Sta 4309+45 to 4310+02		42	CY

Note: See Section 60 sheets for culvert removals.

Bituminous Overlay on PCC Pavement

Bituminous Pavement

Remove and Salvage Riprap

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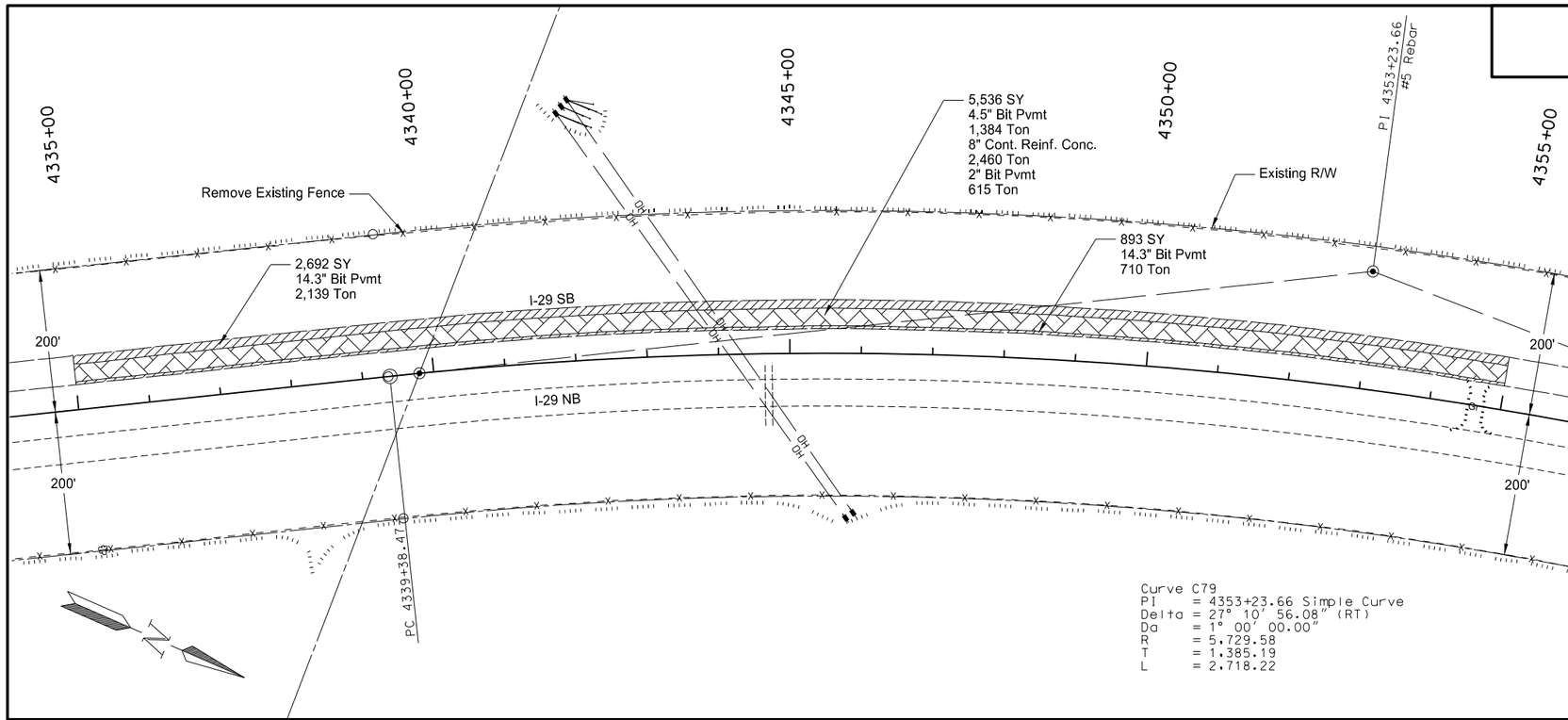
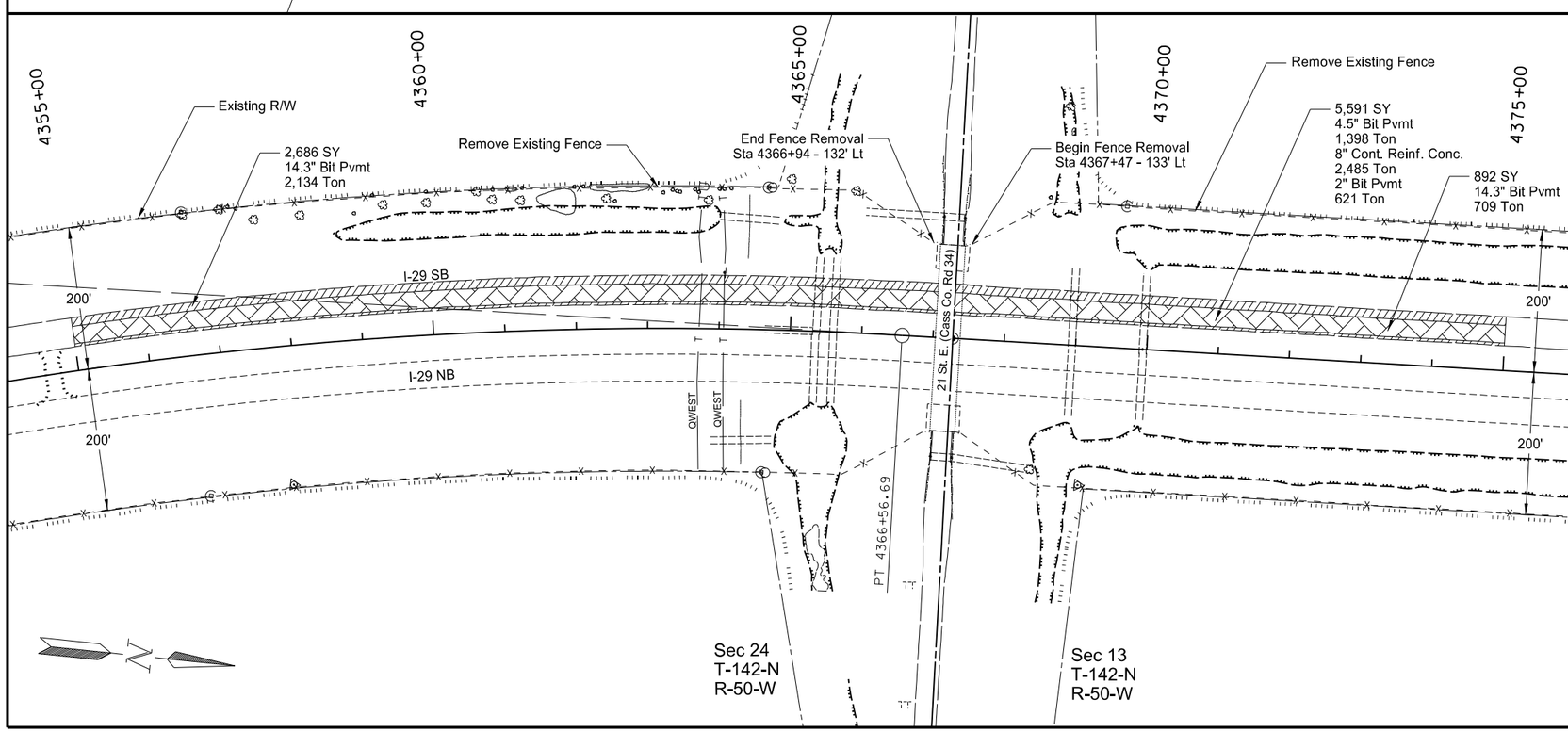
Removals

Interstate 29 - Argusville to Hunter SB
Sta 4295+00 to Sta 4335+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	40	5





Item	Description		Quantity	Unit
202-0136	REMOVAL OF PAVEMENT			
	Bituminous Pavement			
	4335+00 to 4355+00	Lt Shoulder	2,139	Ton
		Mainline	1,999	Ton
		Rt Shoulder	710	Ton
	4355+00 to 4375+00	Lt Shoulder	2,134	Ton
		Mainline	2,019	Ton
		Rt Shoulder	709	Ton
		Subtotal	9,710	Ton
	Concrete Pavement			
	4335+00 to 4355+00	Mainline	2,460	Ton
	4355+00 to 4375+00	Mainline	2,485	Ton
		Subtotal	4,945	Ton
		Total	14,655	Ton
202-0312	REMOVE EXISTING FENCE			
	Sta 4335+00 Lt to 4366+94 Lt		3,306	LF
	Sta 4367+47 Lt to 4375+00 Lt		771	LF
	Total		4,077	LF

Note: See Section 60 sheets for culvert removals.

Bituminous Overlay on PCC Pavement

Bituminous Pavement

Remove and Salvage Riprap

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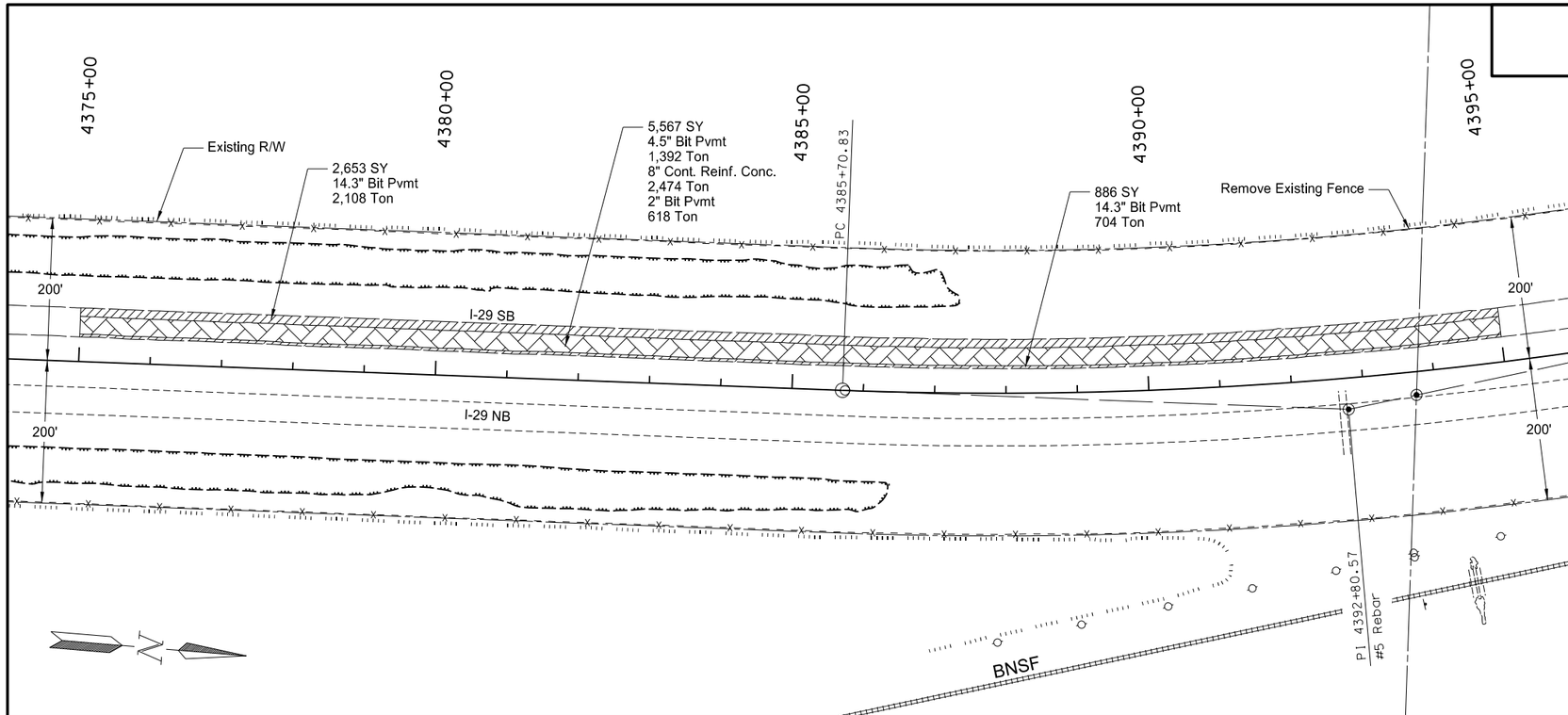
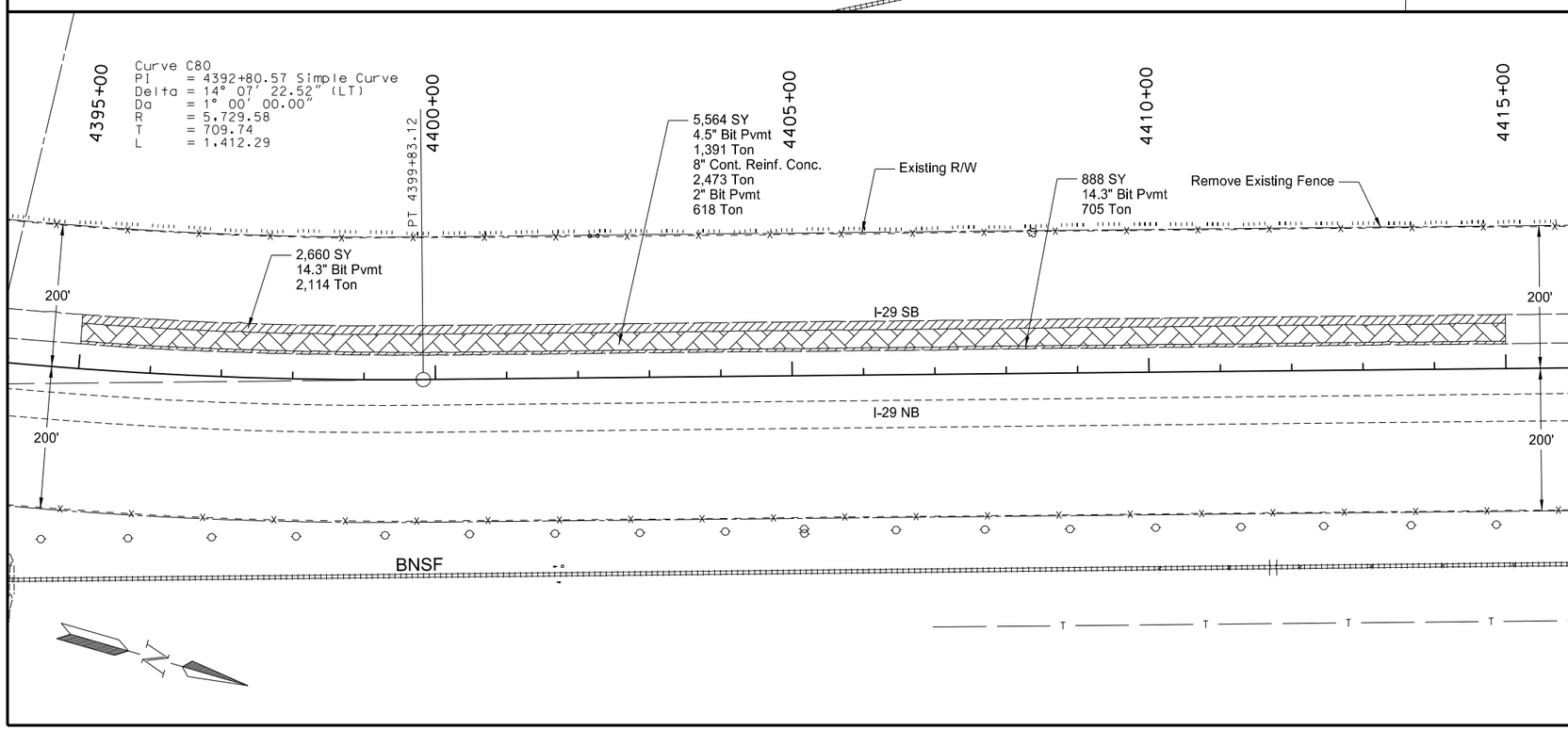
Removals

Interstate 29 - Argusville to Hunter SB
Sta 4335+00 to Sta 4375+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	40	6





Item	Description		Quantity	Unit
202-0136	REMOVAL OF PAVEMENT			
	Bituminous Pavement			
	4375+00 to 4395+00	Lt Shoulder	2,108	Ton
		Mainline	2,010	Ton
		Rt Shoulder	704	Ton
	4395+00 to 4415+00	Lt Shoulder	2,114	Ton
		Mainline	2,009	Ton
		Rt Shoulder	705	Ton
		Subtotal	9,650	Ton
	Concrete Pavement			
	4375+00 to 4395+00	Mainline	2,474	Ton
	4395+00 to 4415+00	Mainline	2,473	Ton
		Subtotal	4,947	Ton
		Total	14,597	Ton
202-0312	REMOVE EXISTING FENCE			
	Sta 4375+00 Lt to 4415+00 Lt		3,952	LF

Note: See Section 60 sheets for culvert removals.

Bituminous Overlay on PCC Pavement

Bituminous Pavement

Remove and Salvage Riprap

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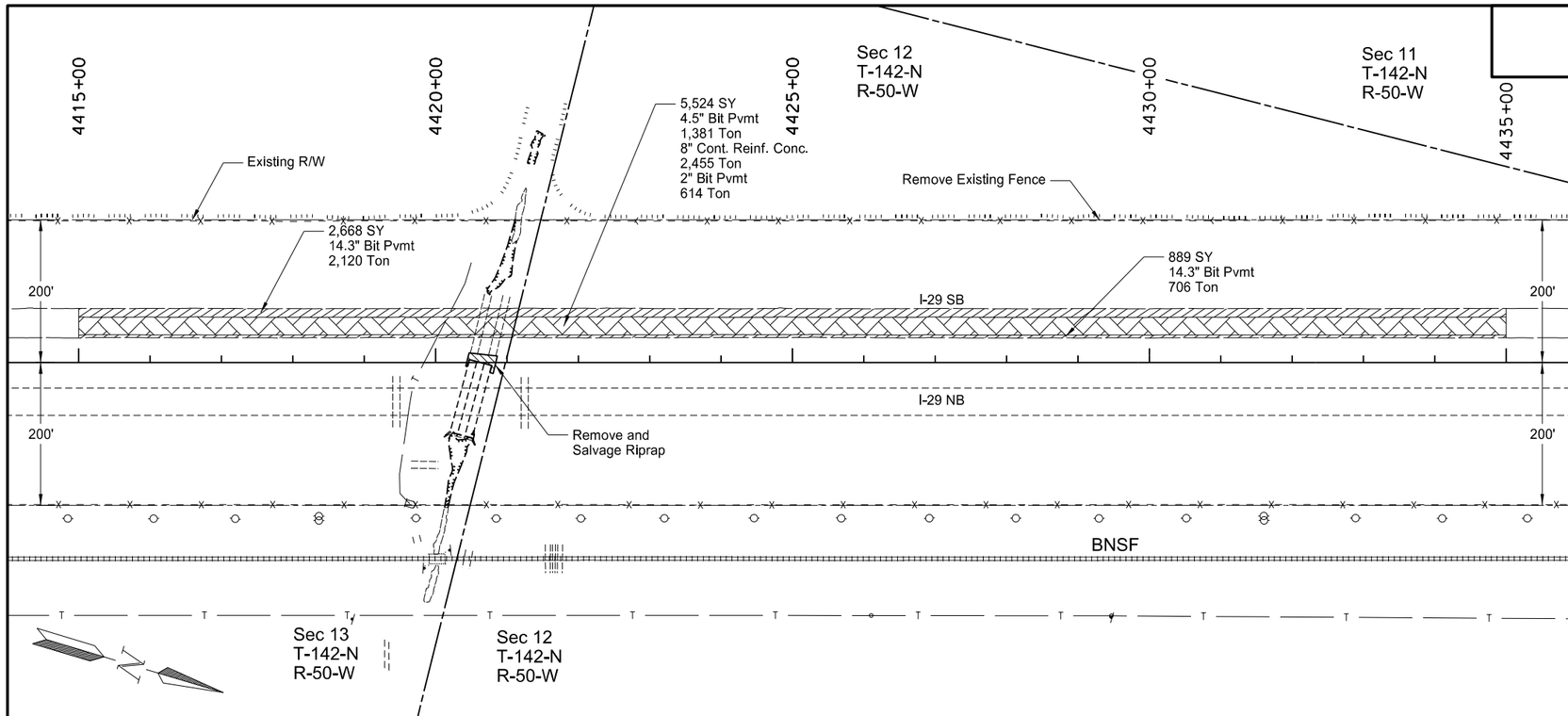
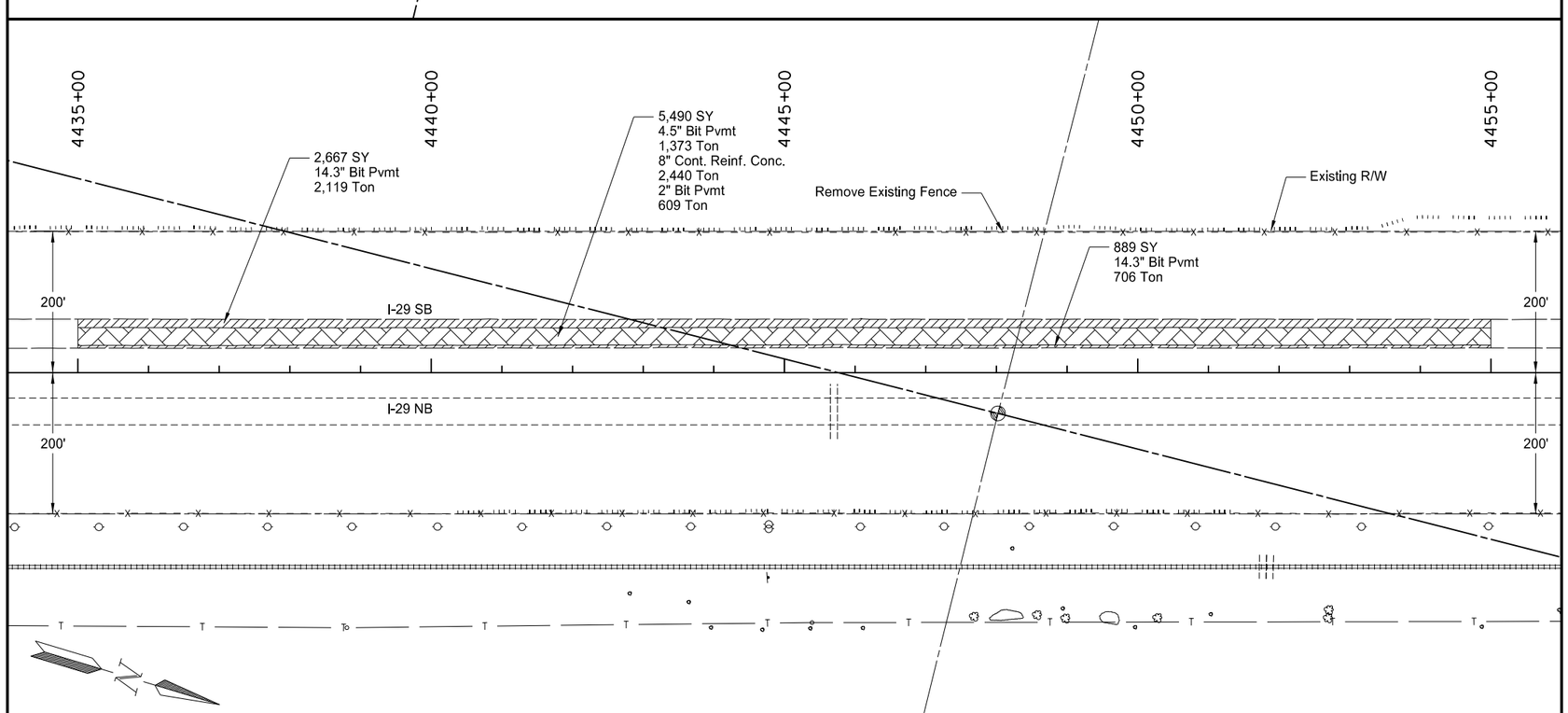
Removals

Interstate 29 - Argusville to Hunter SB
Sta 4375+00 to Sta 4415+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	40	7





Item	Description		Quantity	Unit
202-0136	REMOVAL OF PAVEMENT			
	Bituminous Pavement			
	4415+00 to 4435+00	Lt Shoulder	2,120	Ton
		Mainline	1,995	Ton
		Rt Shoulder	706	Ton
	4435+00 to 4455+00	Lt Shoulder	2,119	Ton
		Mainline	1,982	Ton
		Rt Shoulder	706	Ton
		Subtotal	9,628	Ton
	Concrete Pavement			
	4415+00 to 4435+00	Mainline	2,455	Ton
	4435+00 to 4455+00	Mainline	2,440	Ton
		Subtotal	4,895	Ton
		Total	14,523	Ton
202-0312	REMOVE EXISTING FENCE			
	Sta 4415+00 Lt to 4455+00 Lt		3,999	LF
256-0600	RIPRAP-SALVAGED			
	Sta 4420+42 to 4420+86		30	CY

Note: See Section 60 sheets for culvert removals.

Bituminous Overlay on PCC Pavement

Bituminous Pavement

Remove and Salvage Riprap

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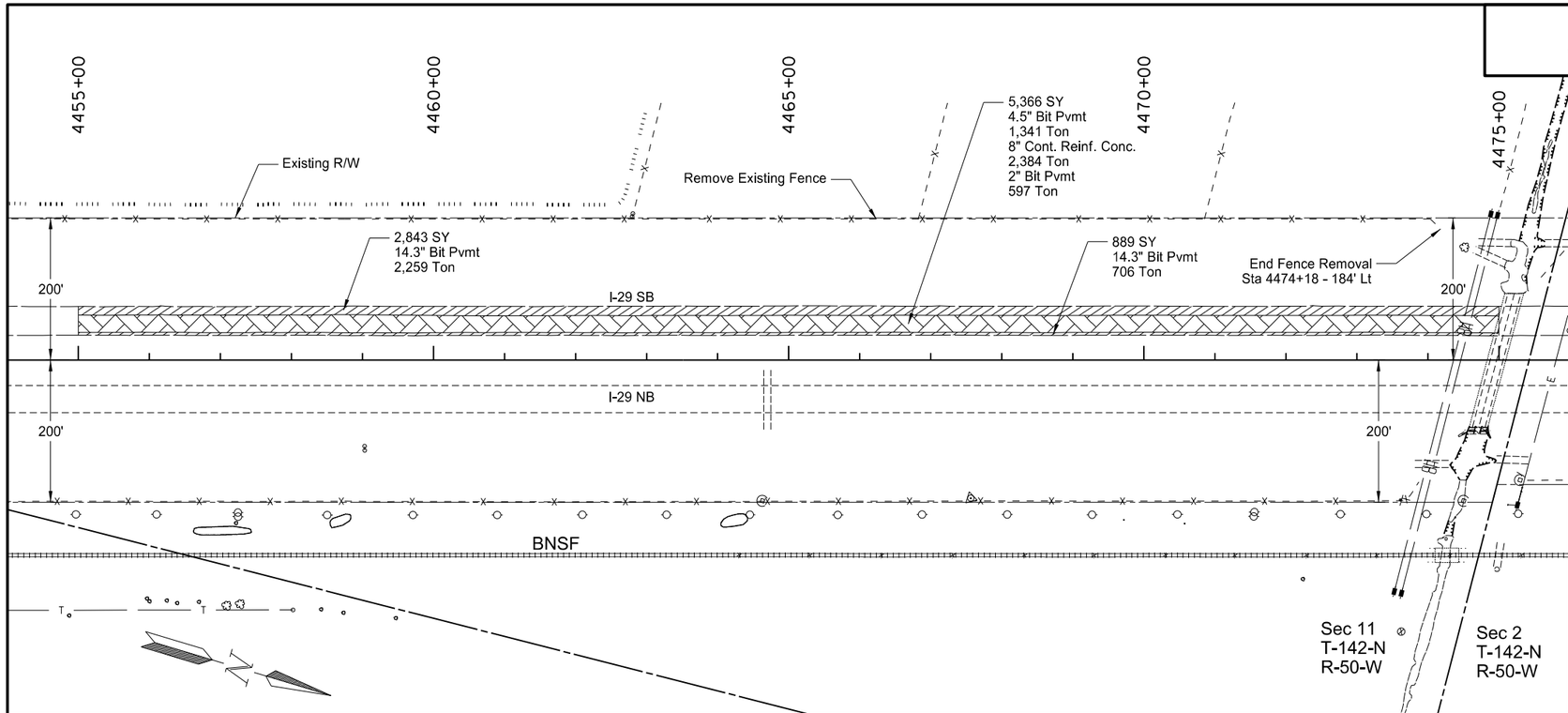
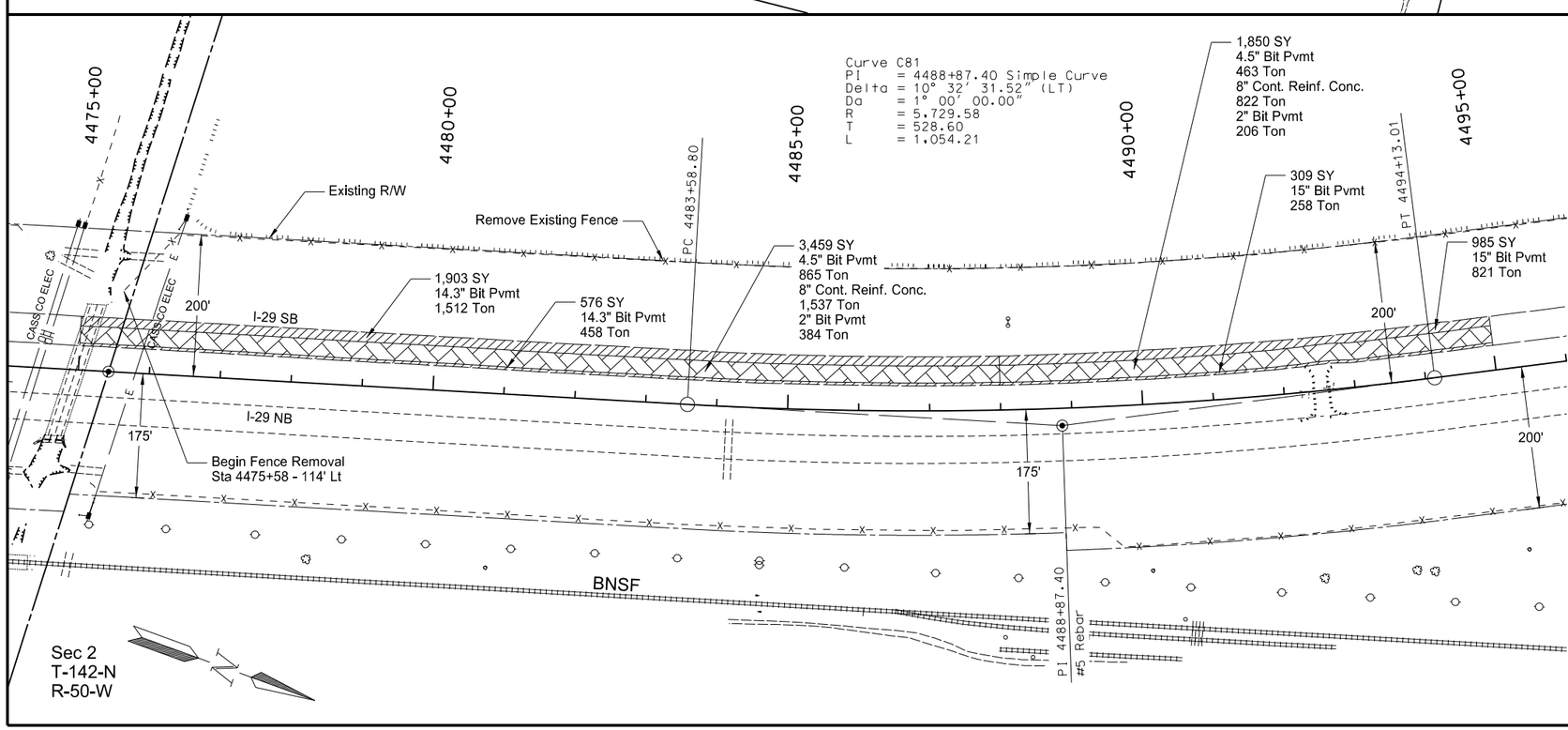
Removals

Interstate 29 - Argusville to Hunter SB
Sta 4415+00 to Sta 4455+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	40	8





Item	Description		Quantity	Unit
202-0136	REMOVAL OF PAVEMENT			
	Bituminous Pavement			
	4455+00 to 4475+00	Lt Shoulder	2,259	Ton
		Mainline	1,938	Ton
		Rt Shoulder	706	Ton
	4475+00 to 4488+00	Lt Shoulder	1,512	Ton
		Mainline	1,249	Ton
		Rt Shoulder	458	Ton
	4488+00 to 4495+00	Lt Shoulder	821	Ton
		Mainline	669	Ton
		Rt Shoulder	258	Ton
		Subtotal	9,870	Ton
	Concrete Pavement			
	4455+00 to 4475+00	Mainline	2,384	Ton
	4475+00 to 4488+00	Mainline	1,537	Ton
	4488+00 to 4495+00	Mainline	822	Ton
		Subtotal	4,743	Ton
		Total	14,613	Ton
202-0312	REMOVE EXISTING FENCE			
	Sta 4455+00 Lt to 4474+18 Lt		1,923	LF
	Sta 4475+58 Lt to 4495+00 Lt		1,944	LF
	Total		3,867	LF

Note: See Section 60 sheets for culvert removals.

Bituminous Overlay on PCC Pavement

Bituminous Pavement

Remove and Salvage Riprap

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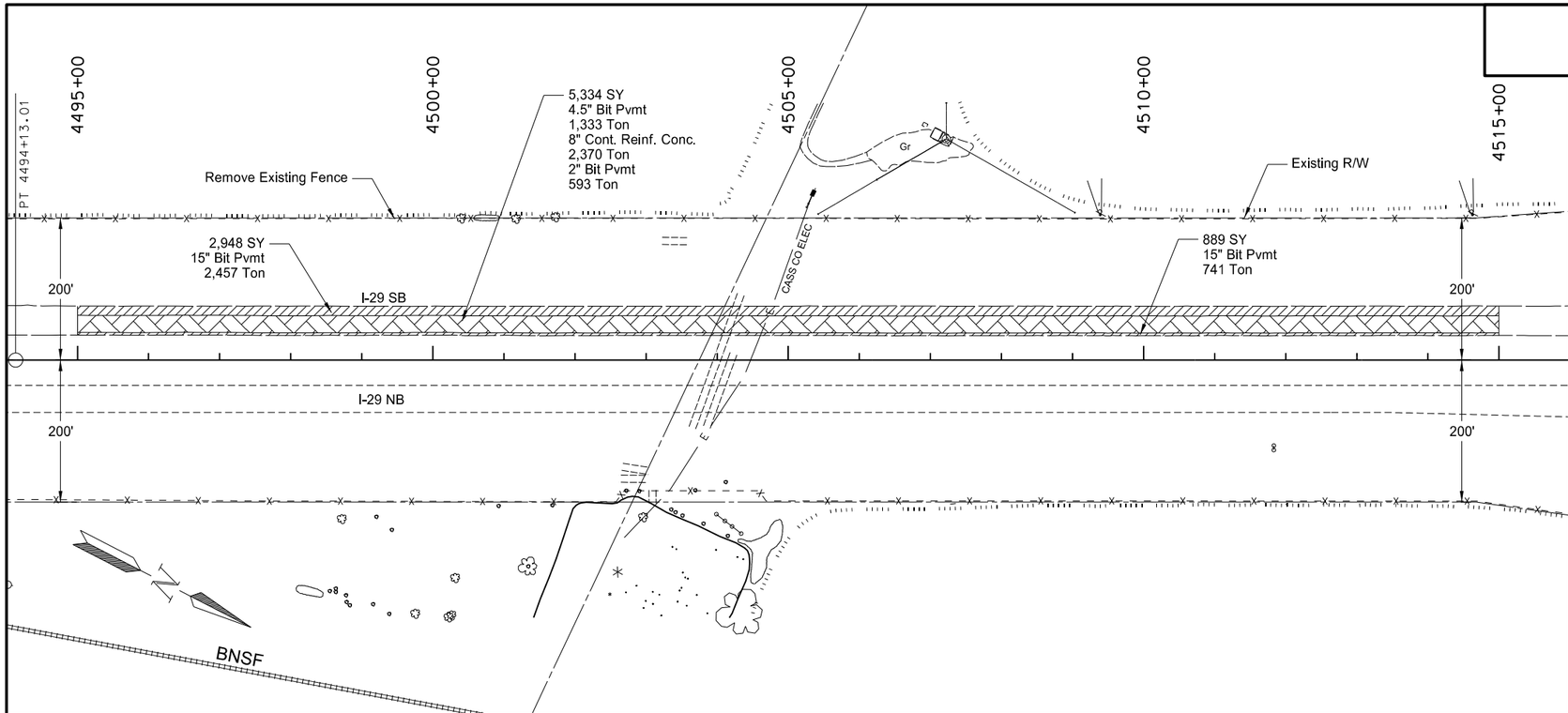
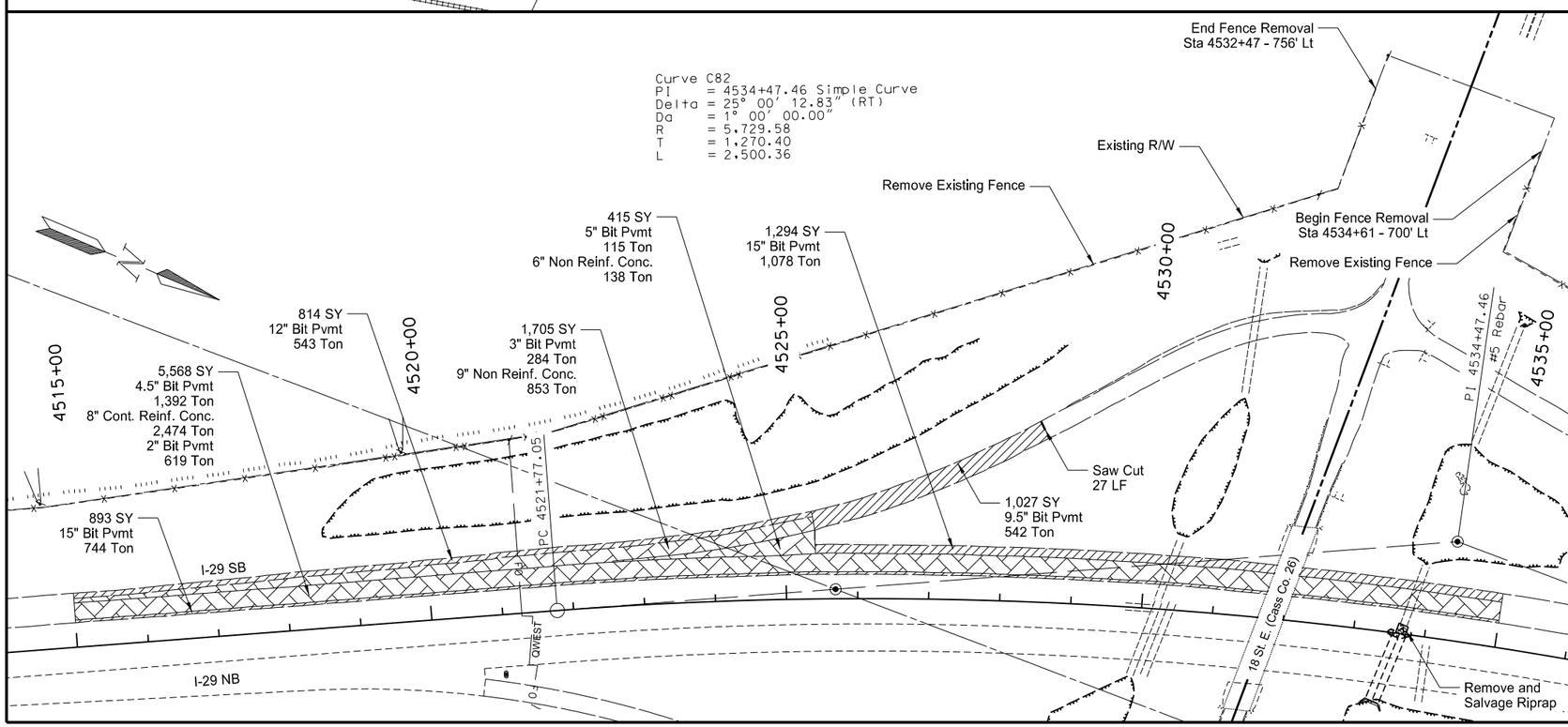
Removals

Interstate 29 - Argusville to Hunter SB
Sta 4455+00 to Sta 4495+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	40	9





Item	Description		Quantity	Unit
202-0136	REMOVAL OF PAVEMENT			
	Bituminous Pavement			
	4495+00 to 4515+00	Lt Shoulder	2,457	Ton
		Mainline	1,926	Ton
		Rt Shoulder	741	Ton
	4515+00 to 4535+00	Lt Shoulder	1,078	Ton
		Mainline	2,011	Ton
		Rt Shoulder	744	Ton
		Ramp	1,484	Ton
		Subtotal	10,441	Ton
	Concrete Pavement			
	4495+00 to 4515+00	Mainline	2,370	Ton
	4515+00 to 4535+00	Mainline	2,474	Ton
		Ramp	991	Ton
		Subtotal	5,835	Ton
		Total	16,276	Ton
202-0153	SAW BITUMINOUS SURFACING - FULL DEPTH			
	Sta 4528+38		27	LF
202-0312	REMOVE EXISTING FENCE			
	Sta 4495+00 Lt to 4532+47 Lt		3,999	LF
	Sta 4534+61 Lt to 4535+00 Lt		231	LF
	Total		4,230	LF
256-0600	RIPRAP-SALVAGED			
	Sta 4533+59 to 4533+76		10	CY

Note: See Section 60 sheets for culvert removals.

Bituminous Overlay on PCC Pavement

Bituminous Pavement

Remove and Salvage Riprap

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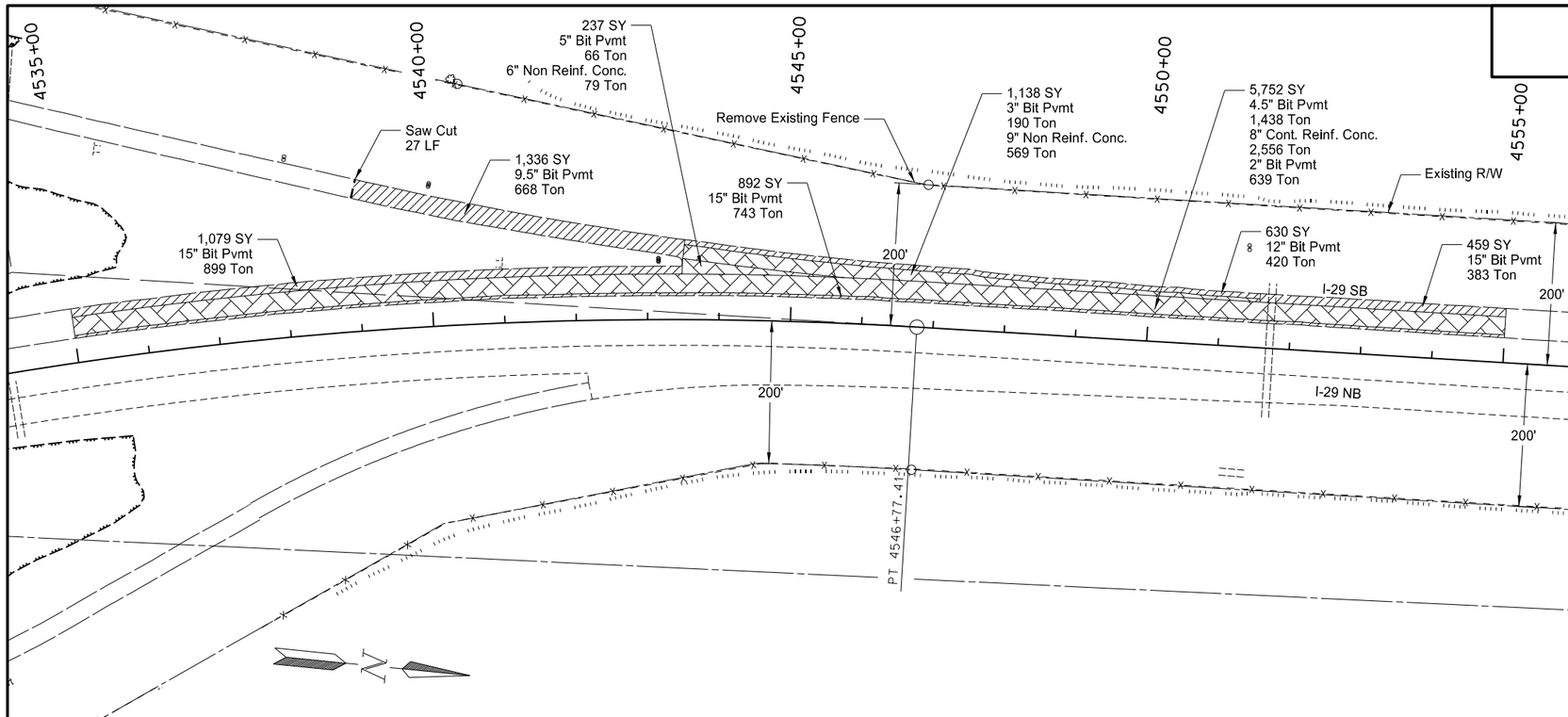
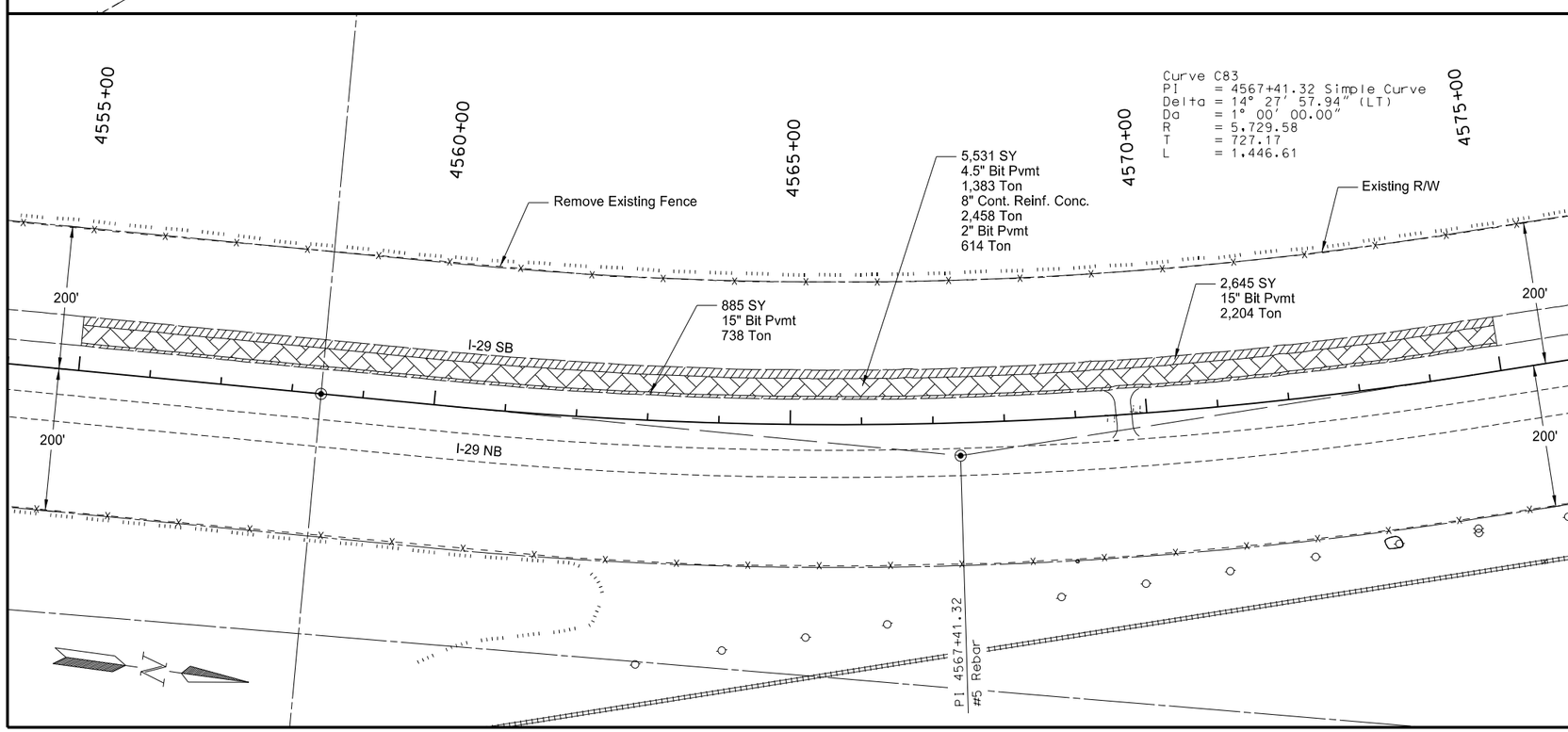
Removals

Interstate 29 - Argusville to Hunter SB
Sta 4495+00 to Sta 4535+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	40	10





Item	Description		Quantity	Unit
202-0136	REMOVAL OF PAVEMENT			
	Bituminous Pavement			
	4535+00 to 4555+00	Lt Shoulder	1,282	Ton
		Mainline	2,077	Ton
		Rt Shoulder	743	Ton
		Ramp	1,344	Ton
	4555+00 to 4575+00	Lt Shoulder	2,204	Ton
		Mainline	1,997	Ton
		Rt Shoulder	738	Ton
		Subtotal	10,385	Ton
	Concrete Pavement			
	4535+00 to 4555+00	Mainline	2,556	Ton
		Ramp	648	Ton
	4555+00 to 4575+00	Mainline	2,458	Ton
		Subtotal	5,662	Ton
		Total	16,047	Ton
202-0153	SAW BITUMINOUS SURFACING - FULL DEPTH			
	Sta 4539+05		27	LF
202-0312	REMOVE EXISTING FENCE			
	Sta 4535+00 Lt to 4575+00 Lt		4,063	LF

Note: See Section 60 sheets for culvert removals.

Bituminous Overlay on PCC Pavement

Bituminous Pavement

Remove and Salvage Riprap

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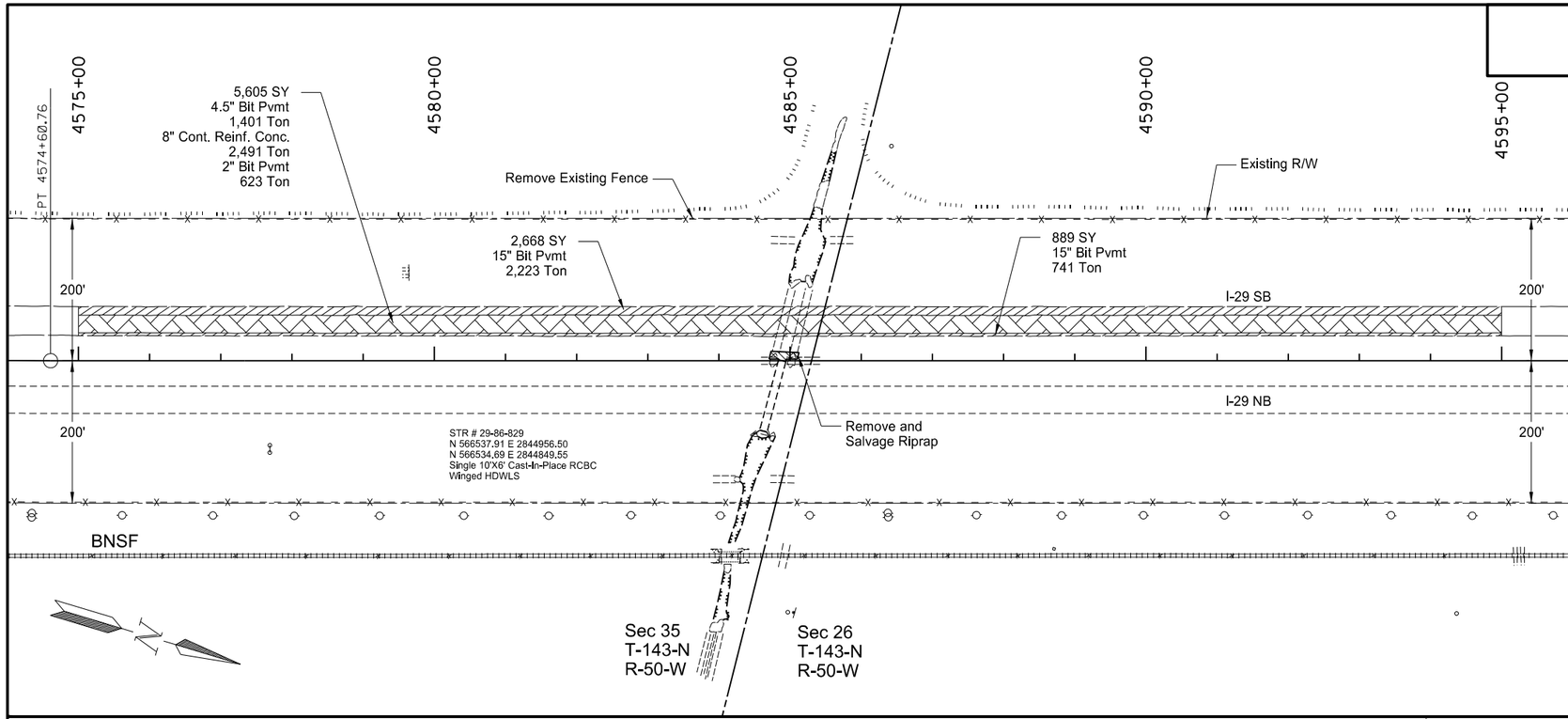
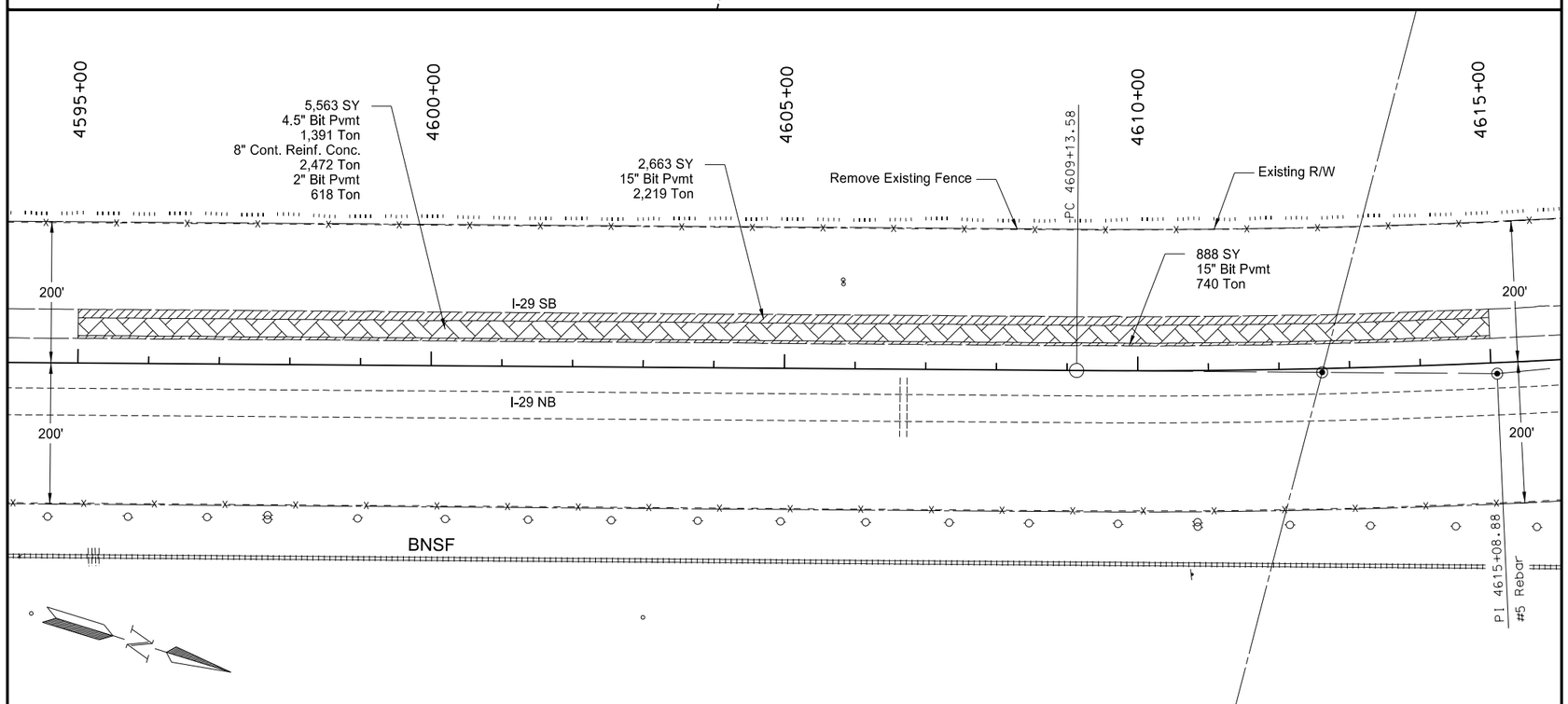
Removals

Interstate 29 - Argusville to Hunter SB
Sta 4535+00 to Sta 4575+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	40	11





Item	Description		Quantity	Unit
202-0136	REMOVAL OF PAVEMENT			
	Bituminous Pavement			
	4575+00 to 4595+00	Lt Shoulder	2,223	Ton
		Mainline	2,024	Ton
		Rt Shoulder	741	Ton
	4595+00 to 4615+00	Lt Shoulder	2,219	Ton
		Mainline	2,009	Ton
		Rt Shoulder	740	Ton
		Subtotal	9,956	Ton
	Concrete Pavement			
	4575+00 to 4595+00	Mainline	2,491	Ton
	4595+00 to 4615+00	Mainline	2,472	Ton
		Subtotal	4,963	Ton
		Total	14,919	Ton
202-0312	REMOVE EXISTING FENCE			
	Sta 4575+00 Lt to 4615+00 Lt		3,989	LF
256-0600	RIPRAP-SALVAGED			
	Sta 4584+70 to 4585+12		23	CY

Note: See Section 60 sheets for culvert removals.

Bituminous Overlay on PCC Pavement

Bituminous Pavement

Remove and Salvage Riprap

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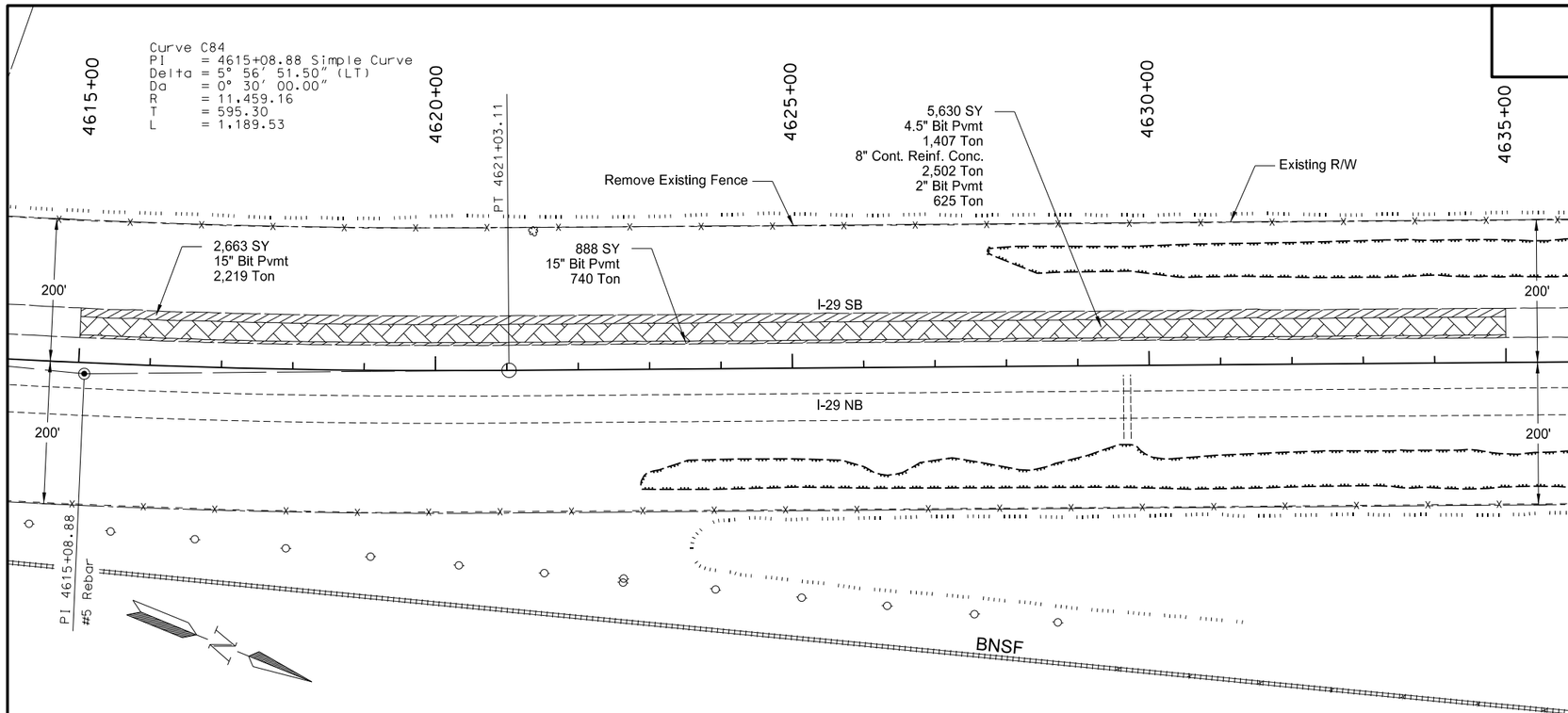
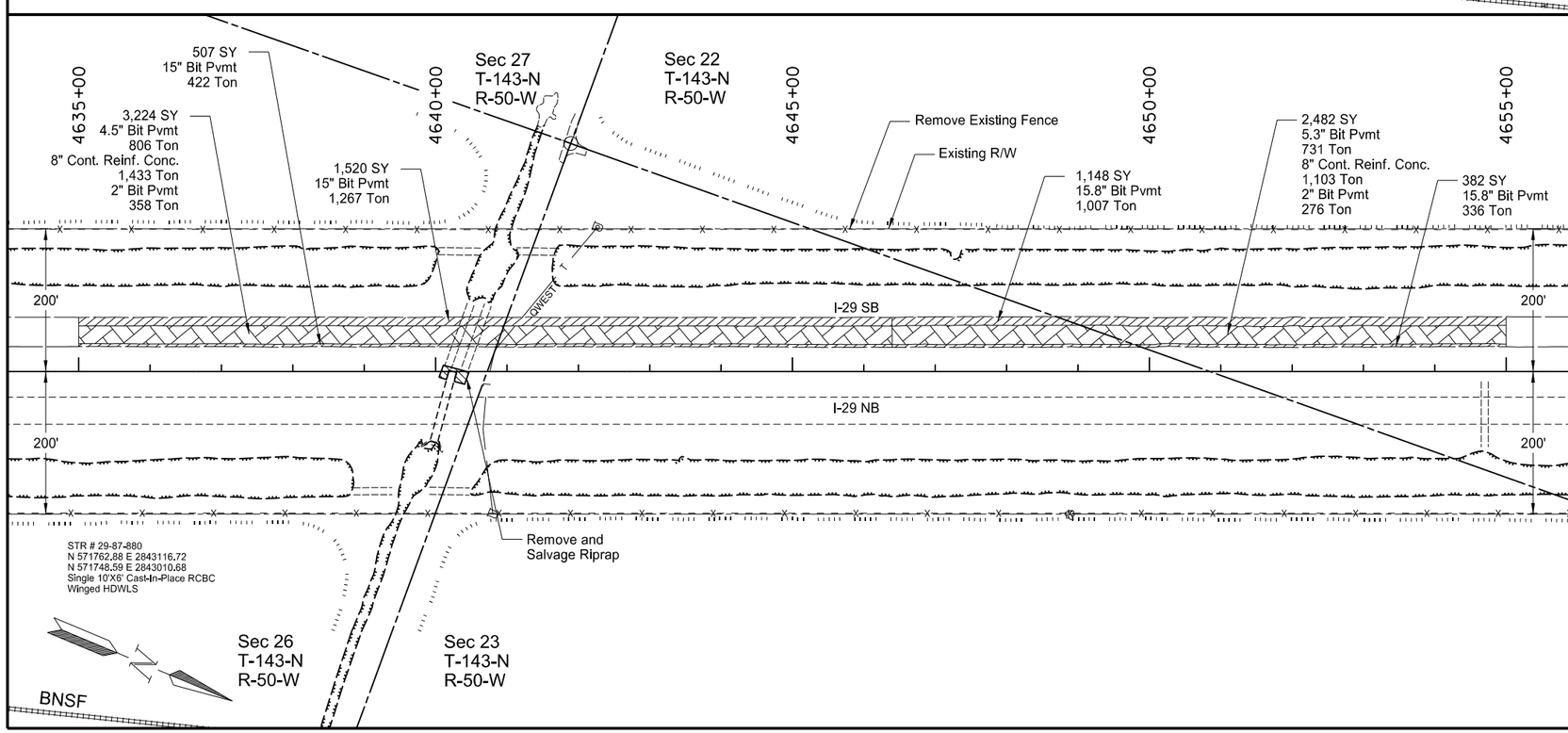
Removals

Interstate 29 - Argusville to Hunter SB
Sta 4575+00 to Sta 4615+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	40	12





Item	Description		Quantity	Unit
202-0136	REMOVAL OF PAVEMENT			
	Bituminous Pavement			
	4615+00 to 4635+00	Lt Shoulder	2,219	Ton
		Mainline	2,032	Ton
		Rt Shoulder	740	Ton
	4635+00 to 4646+40	Lt Shoulder	1,267	Ton
		Mainline	1,164	Ton
		Rt Shoulder	422	Ton
	4646+40 to 4655+00	Lt Shoulder	1,007	Ton
		Mainline	1,007	Ton
		Rt Shoulder	336	Ton
		Subtotal	10,194	Ton
	Concrete Pavement			
	4615+00 to 4635+00	Mainline	2,502	Ton
	4635+00 to 4646+40	Mainline	1,433	Ton
	4646+40 to 4655+00	Mainline	1,103	Ton
		Subtotal	5,038	Ton
		Total	15,232	Ton
202-0312	REMOVE EXISTING FENCE			
	Sta 4615+00 Lt to 4655+00 Lt		3,991	LF
256-0600	RIPRAP-SALVAGED			
	Sta 4640+05 to 4640+47		29	CY

Note: See Section 60 sheets for culvert removals.

Bituminous Overlay on PCC Pavement

Bituminous Pavement

Remove and Salvage Riprap

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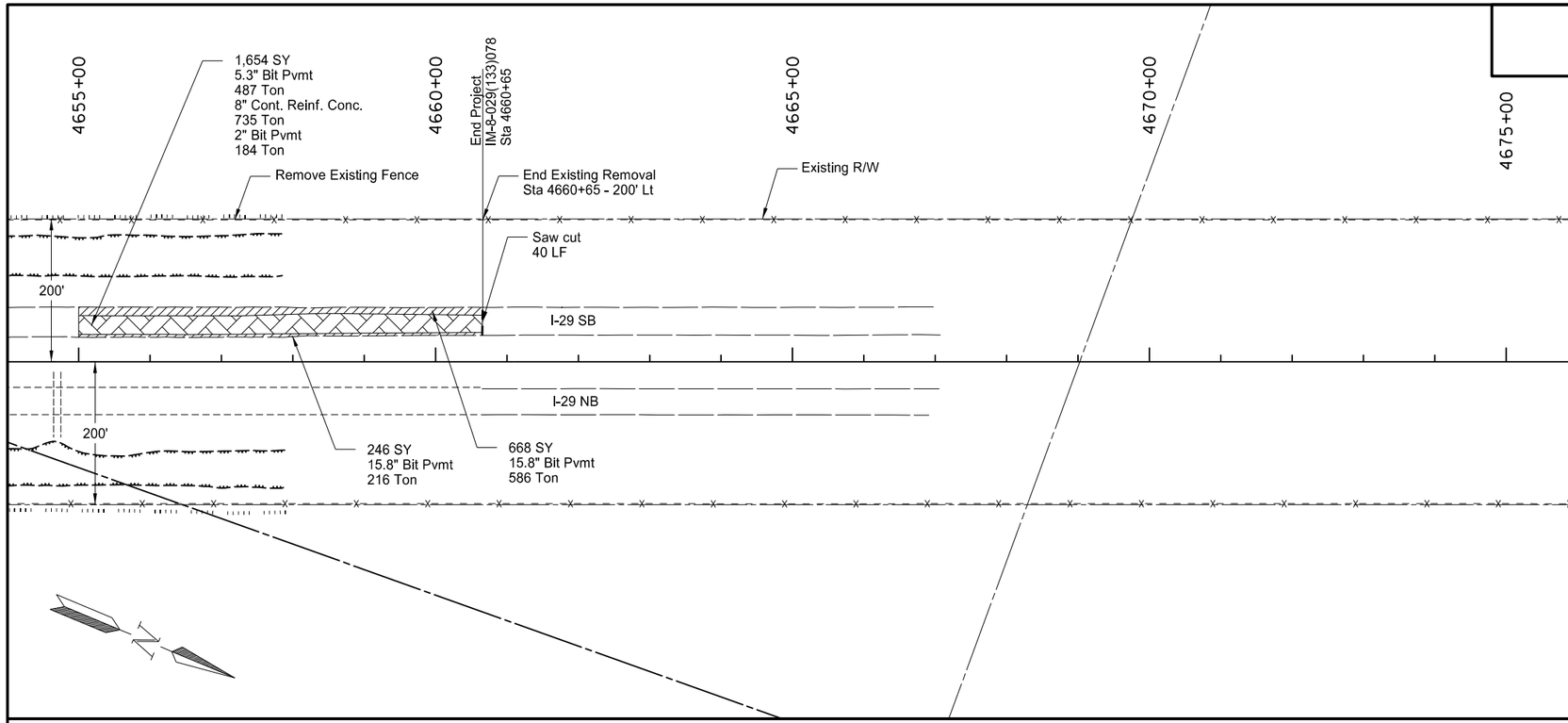
Removals

Interstate 29 - Argusville to Hunter SB
Sta 4615+00 to Sta 4655+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	40	13

Item	Description		Quantity	Unit
202-0136	REMOVAL OF PAVEMENT			
	Bituminous Pavement			
	4655+00 to 4660+65	Lt Shoulder	586	Ton
		Mainline	671	Ton
		Rt Shoulder	216	Ton
		Subtotal	1,473	Ton
	Concrete Pavement			
	4655+00 to 4660+65	Mainline	735	Ton
		Subtotal	735	Ton
		Total	2,208	Ton
202-0153	SAW BITUMINOUS SURFACING - FULL DEPTH			
	Sta 4660+65		40	LF
202-0312	REMOVE EXISTING FENCE			
	Sta 4655+00 Lt to 4660+65 Lt		565	LF

Note: See Section 60 sheets for culvert removals.

Bituminous Overlay on PCC Pavement

Bituminous Pavement

Remove and Salvage Riprap

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Removals

Interstate 29 - Argusville to Hunter SB
Sta 4655+00 to Sta 4660+65

Hydraulic Data for Proposed Conditions									
Centerline Station / Location	Existing Pipe	Proposed Pipe	Drainage Area	50 Year Design Data				100 Year Data	
				Design Discharge	Design Headwater	Design Velocity	Design Stage (NAVD 88)	100-Year Discharge	100-Year Stage
			(acres)	(cfs)	(Ft)	(fps)		(cfs)	(Ft)
4229+71	36" RCP	36"	Included with Costello Drain Drainage Area	16.0	8.1	2.2	887.8	18.0	888.0
4365+35	60" RCP	72"	2,618	241.5	10.1	8.6	890.7	270.5	891.5
4365+60	60" RCP	72"	2,618	241.5	10.1	8.6	890.7	270.5	891.5
4368+95	36" RCP	60"	406	84.5	8.4	4.3	889.0	100.0	889.4
4369+95	36" RCP	60"	406	84.5	8.4	4.3	889.0	100.0	889.4
4504+14	36" RCP	2 - 36"	307	86.0	5.4	6.1	889.1	100.0	890.0
4530+33	42" RCP	2 - 48"	653	148.0	5.1	5.9	890.0	176.0	890.7
4551+72	42" RCP	42"	Included with CD 22 Drainage Area	52.9	6.8	5.5	892.1	59.8	892.5
1+89	42" RCP	3 - 60", 1 - 42" *	Included with CD 22 Drainage Area	245.1	7.5	3.5	892.1	276.8	892.5

*I-29 Southbound exit ramp to have 3 additional 60" RCP pipes bored through embankment, and the existing 42" RCP will remain in place.

**Hydraulic data includes extensions of pipe conduits through both roadways.

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Drainage Summary

Interstate 29 - Argusville to Hunter SB

Plan & Profile Sheet Number	Begin Station / Location	Begin Offset	End Station / Location	End Offset	Length	Pipe Conduit Pay Size	Allowable Material	Required Diameter	Minimum Thickness	Geosynthetic Material Type R1 (Pay Item)	(A) End Sections		Applicable Backfill Detail
											Begin	End	
					LF	In		In	In	SY	EA	EA	
3	4229+71	13' Lt	4229+71	99' Lt	86	36	Reinforced Concrete Pipe - Class III (**barrel length = 84 LF**)	36		458	N	Y - Flared	D-714-26
10	4365+35	4' Lt	4365+35	102' Lt	98	72	Reinforced Concrete Pipe - Class III (**barrel length = 96 LF**)	72		409	N	Y - Flared	D-714-26M
10	4365+60	4' Lt	4365+60	102' Lt	98	72	Reinforced Concrete Pipe - Class III (**barrel length = 96 LF**)	72		409	N	Y - Flared	D-714-26M
10	4368+95	5' Rt	4368+95	99' Lt	104	60	Reinforced Concrete Pipe - Class III (**barrel length = 102 LF**)	60		637	N	Y - Flared	D-714-26
10	4369+95	5' Rt	4369+95	99' Lt	104	60	Reinforced Concrete Pipe - Class III (**barrel length = 102 LF**)	60		618	N	Y - Flared	D-714-26
17	4504+04	11' Lt	4504+36	100' Lt	94	36	Reinforced Concrete Pipe - Class III (**barrel length = 92 LF**)	36		331	N	Y - Flared	D-714-26M
17	4504+23	9' Lt	4504+56	99' Lt	96	36	Reinforced Concrete Pipe - Class III (**barrel length = 94 LF**)	36		331	N	Y - Flared	D-714-26M
18	4530+23	9' Lt	4530+51	99' Lt	94	48	Reinforced Concrete Pipe - Class III (**barrel length = 92 LF**)	48		346	N	Y - Flared	D-714-26M
18	4530+43	9' Lt	4530+70	99' Lt	94	48	Reinforced Concrete Pipe - Class III (**barrel length = 92 LF**)	48		346	N	Y - Flared	D-714-26M
19	4551+72	11' Lt	4551+72	99' Lt	88	42	Reinforced Concrete Pipe - Class III (**barrel length = 86 LF**)	42		470	N	Y - Flared	D-714-26
27	1+84 *	76' Lt	2+10	94' Rt	172	60	Reinforced Concrete Pipe - Class V (**barrel length = 166 LF**)	60		380	Y - Flared	Y - Flared	D-714-25M
27	1+94 *	76' Lt	2+20	94' Rt	172	60	Reinforced Concrete Pipe - Class V (**barrel length = 166 LF**)	60		380	Y - Flared	Y - Flared	D-714-25M
27	2+04 *	76' Lt	2+30	94' Rt	172	60	Reinforced Concrete Pipe - Class V (**barrel length = 166 LF**)	60		380	Y - Flared	Y - Flared	D-714-25M

(A) Not paid for separately, to be included in the price bid for Pipe Conduit.

* I-29 Southbound exit ramp to have 3 additional 60" RCP pipes bored through embankment, and existing 42" RCP will remain in place.

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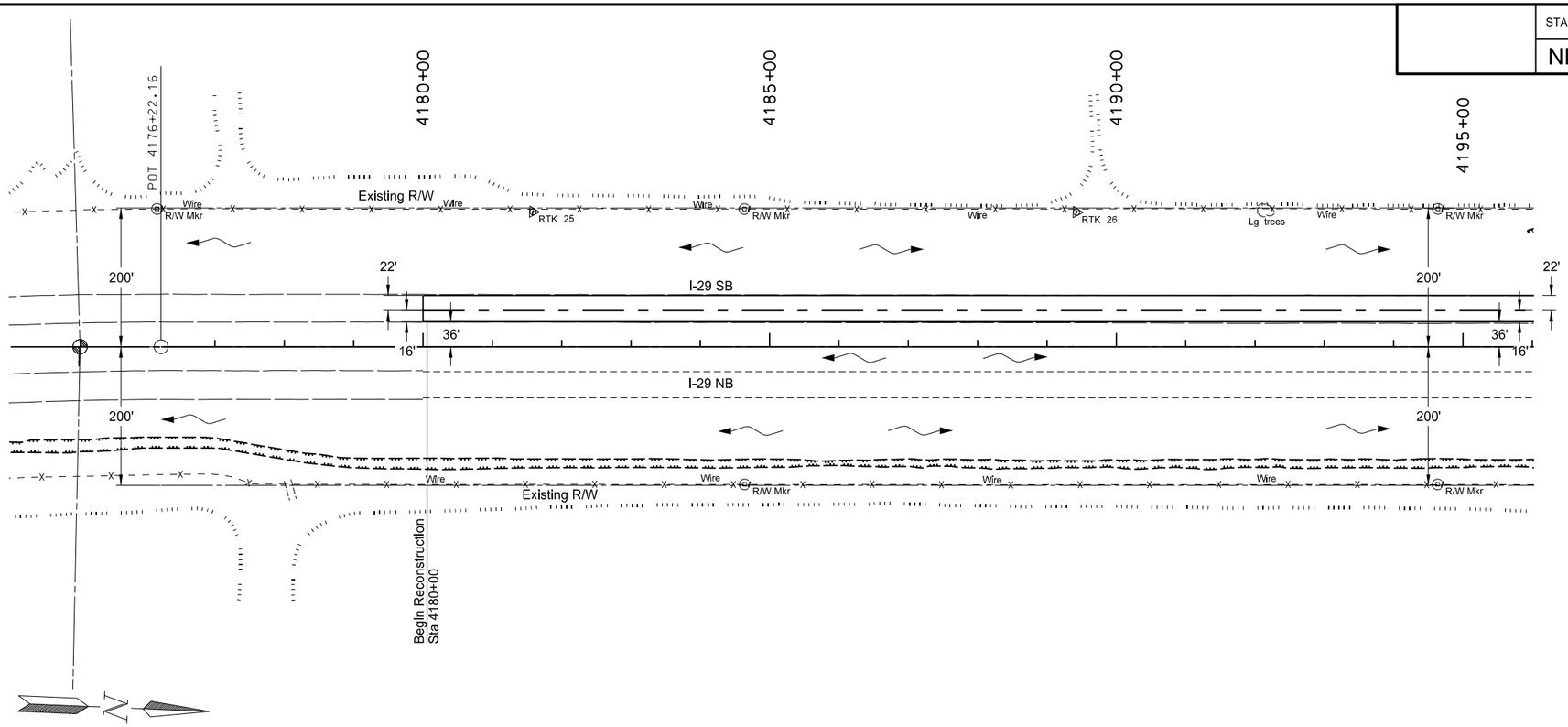
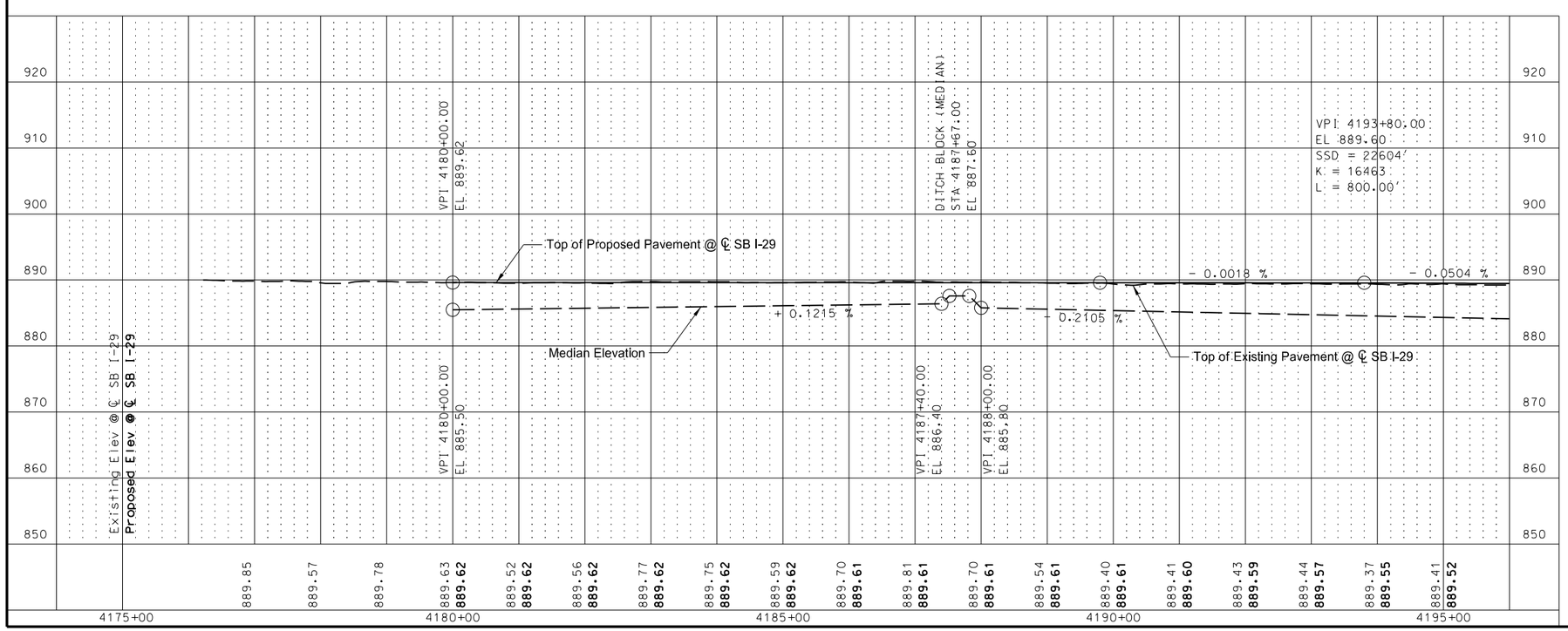
Allowable Pipe Material List

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	1





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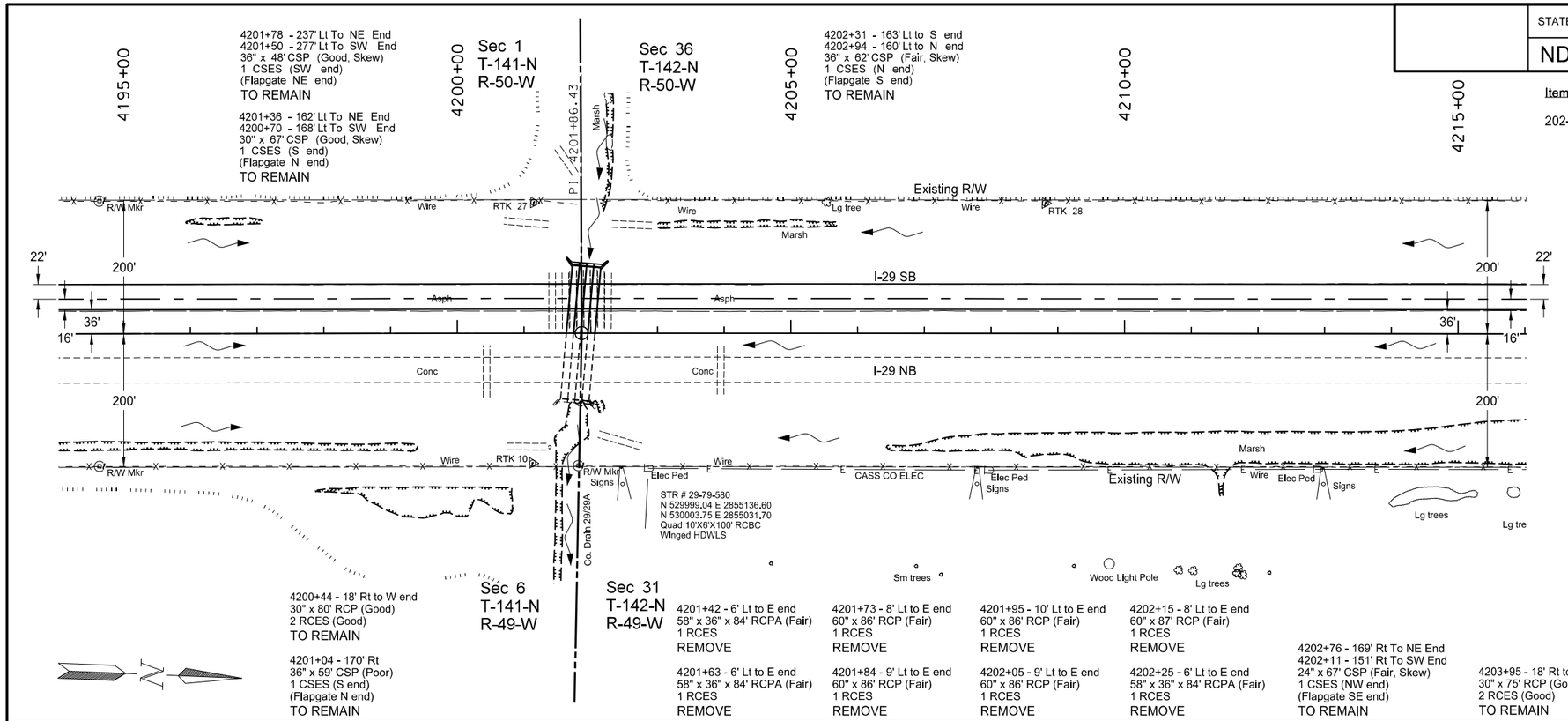
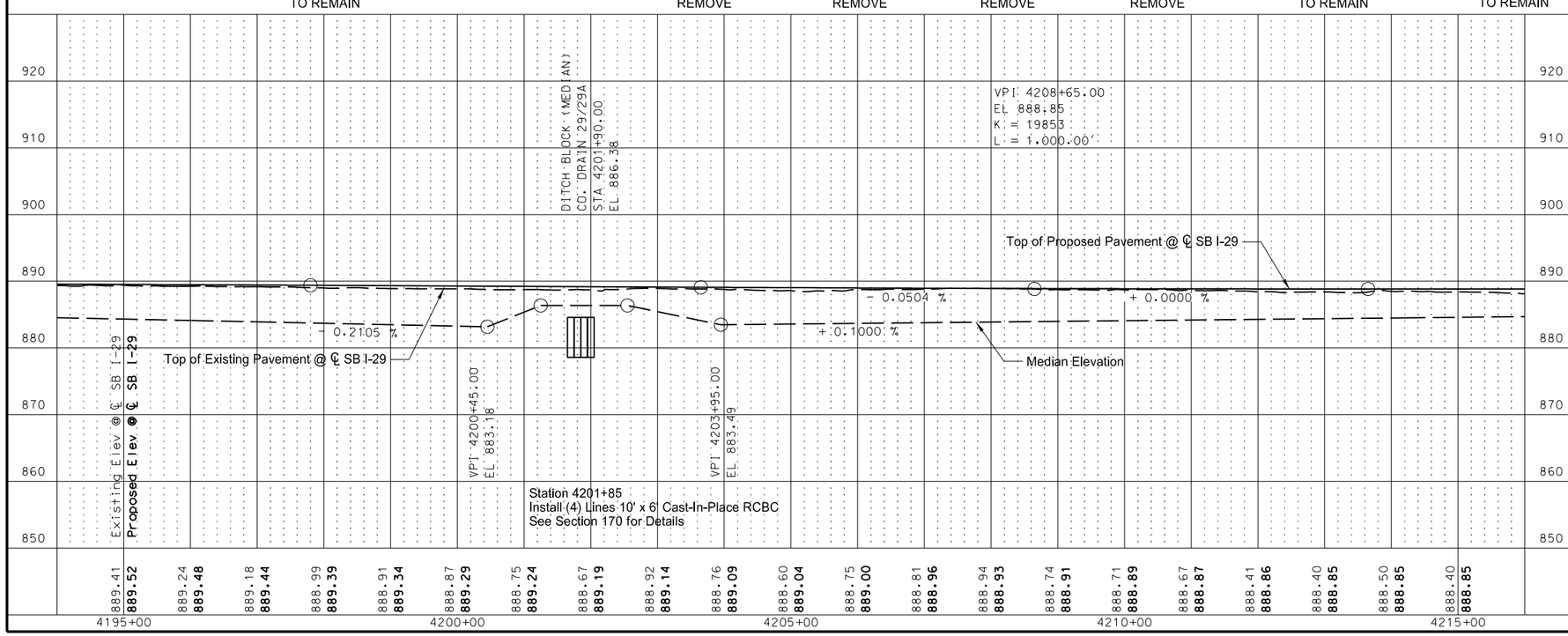
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4180+00 to Sta 4195+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	2



Item	Description	Quantity	Unit
202-0174	REMOVAL OF PIPE ALL TYPES AND SIZES		
	Sta 4201+42 ℄	84	LF
	Sta 4201+63 ℄	84	LF
	Sta 4201+73 ℄	86	LF
	Sta 4201+84 ℄	86	LF
	Sta 4201+95 ℄	86	LF
	Sta 4202+05 ℄	86	LF
	Sta 4202+15 ℄	87	LF
	Sta 4202+25 ℄	84	LF



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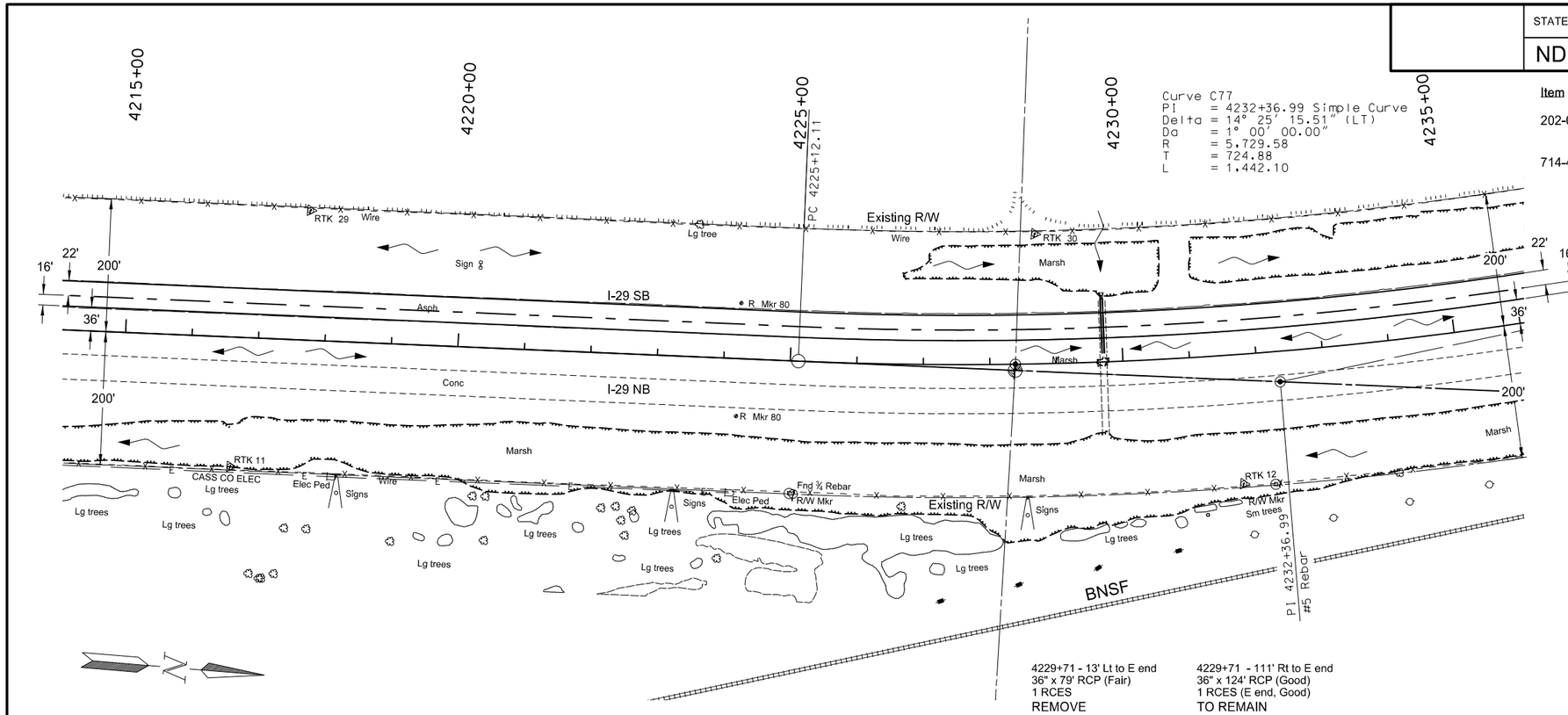
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4195+00 to Sta 4215+00

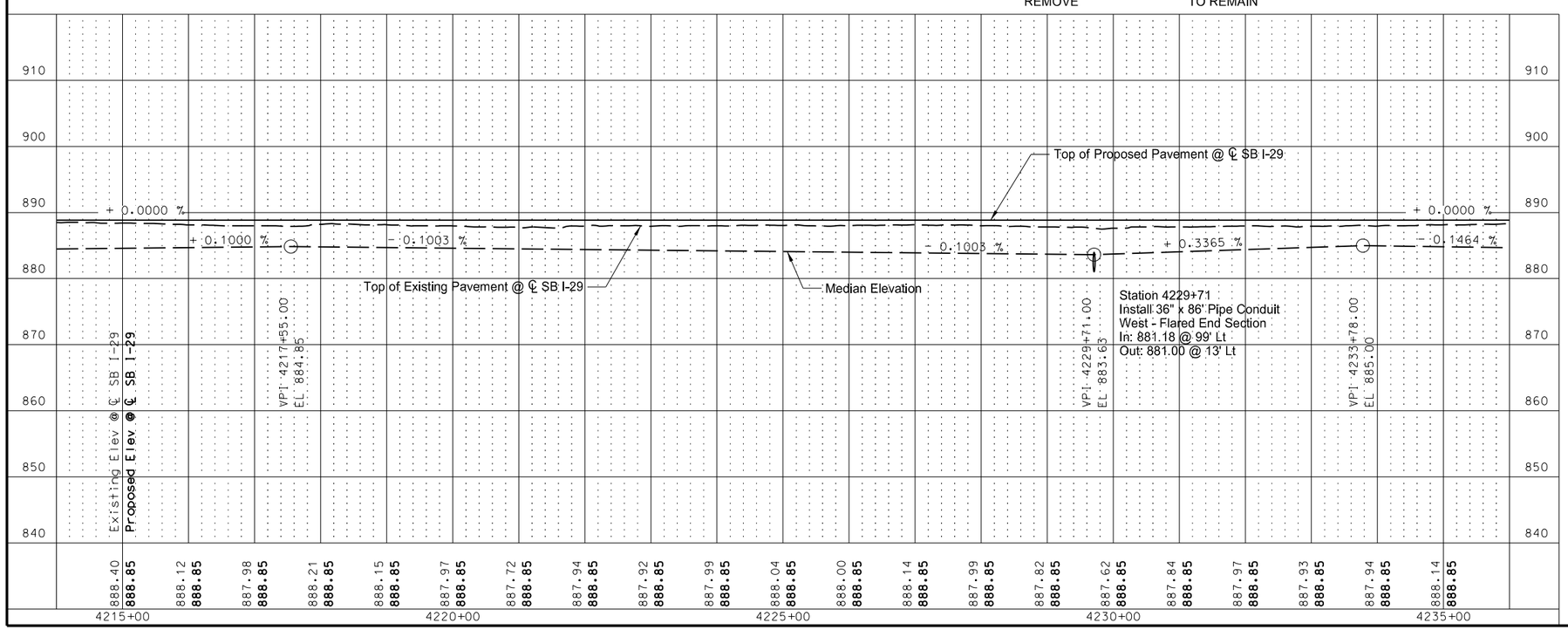
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	3

Item	Description	Quantity	Unit
202-0174	REMOVAL OF PIPE ALL TYPES AND SIZES Sta 4229+71 ℄	79	LF
714-4115	PIPE CONDUIT 36IN Sta 4229+71 Lt 13' to Lt 99'	86	LF



4229+71 - 13' Lt to E end
36" x 79' RCP (Fair)
1 RCES
REMOVE

4229+71 - 111' Rt to E end
36" x 124' RCP (Good)
1 RCES (E end, Good)
TO REMAIN



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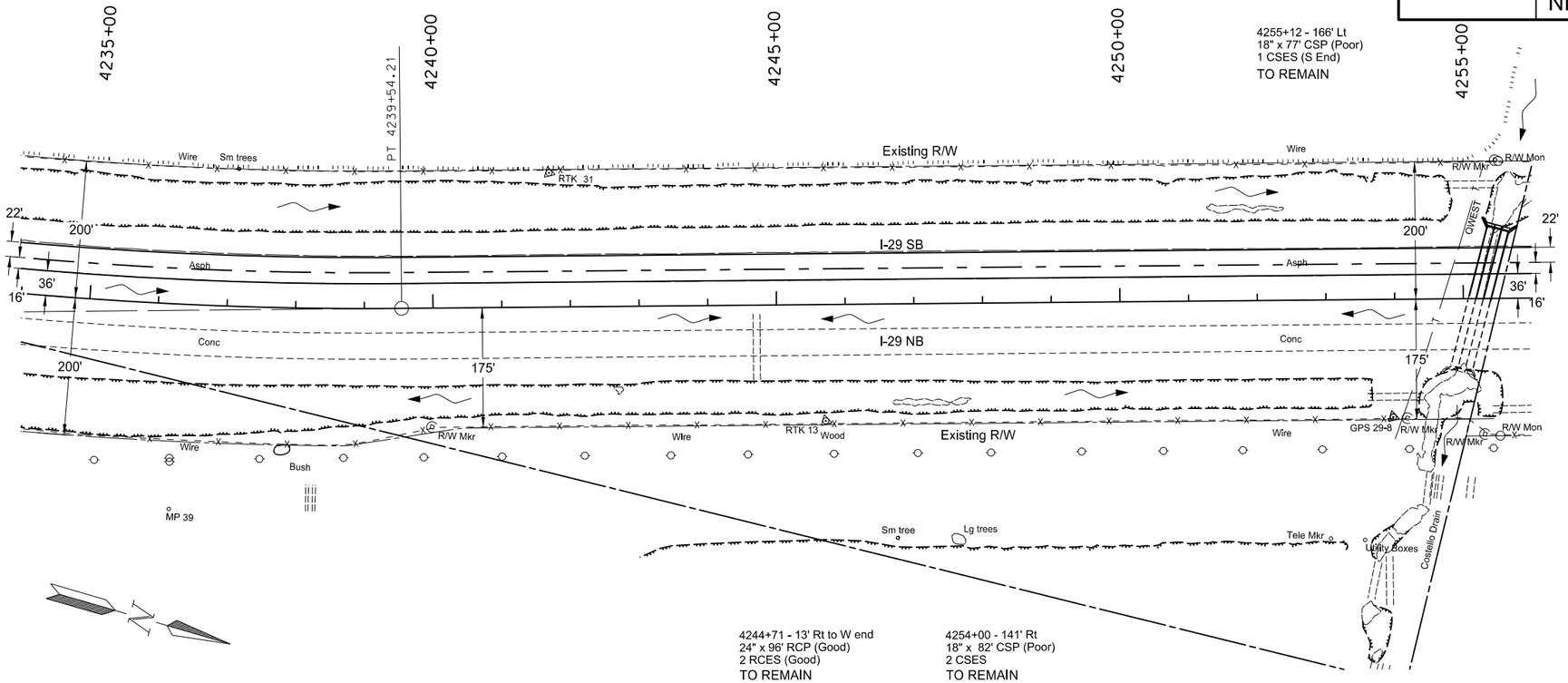
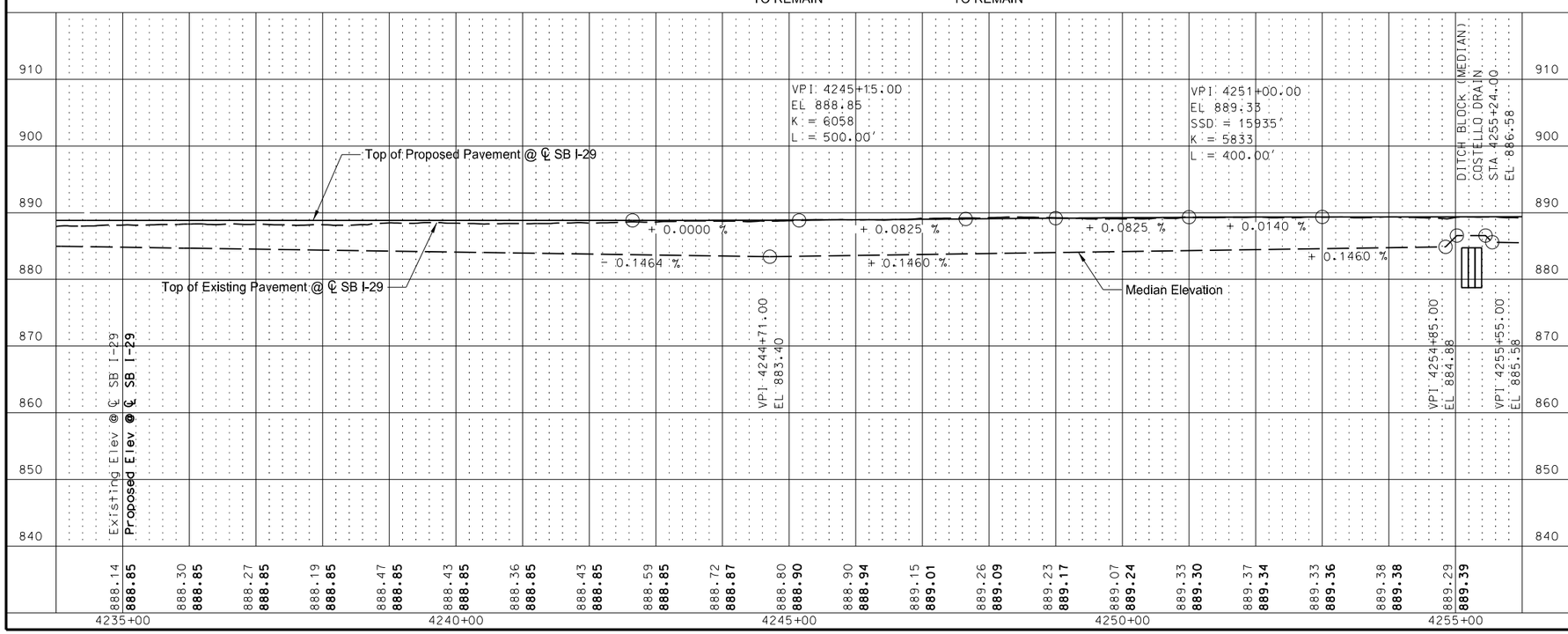
Interstate 29 - Argusville to Hunter SB
Sta 4215+00 to Sta 4235+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	4





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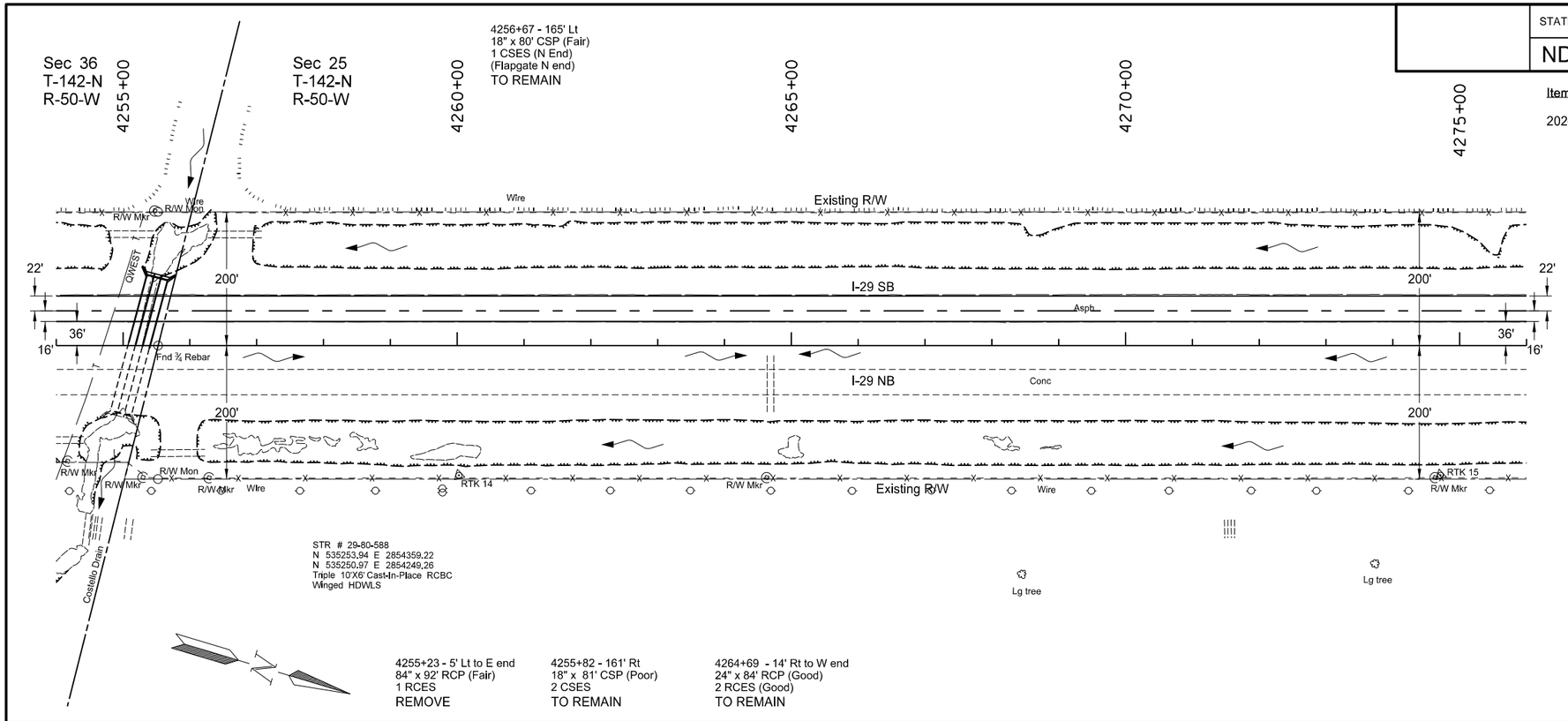
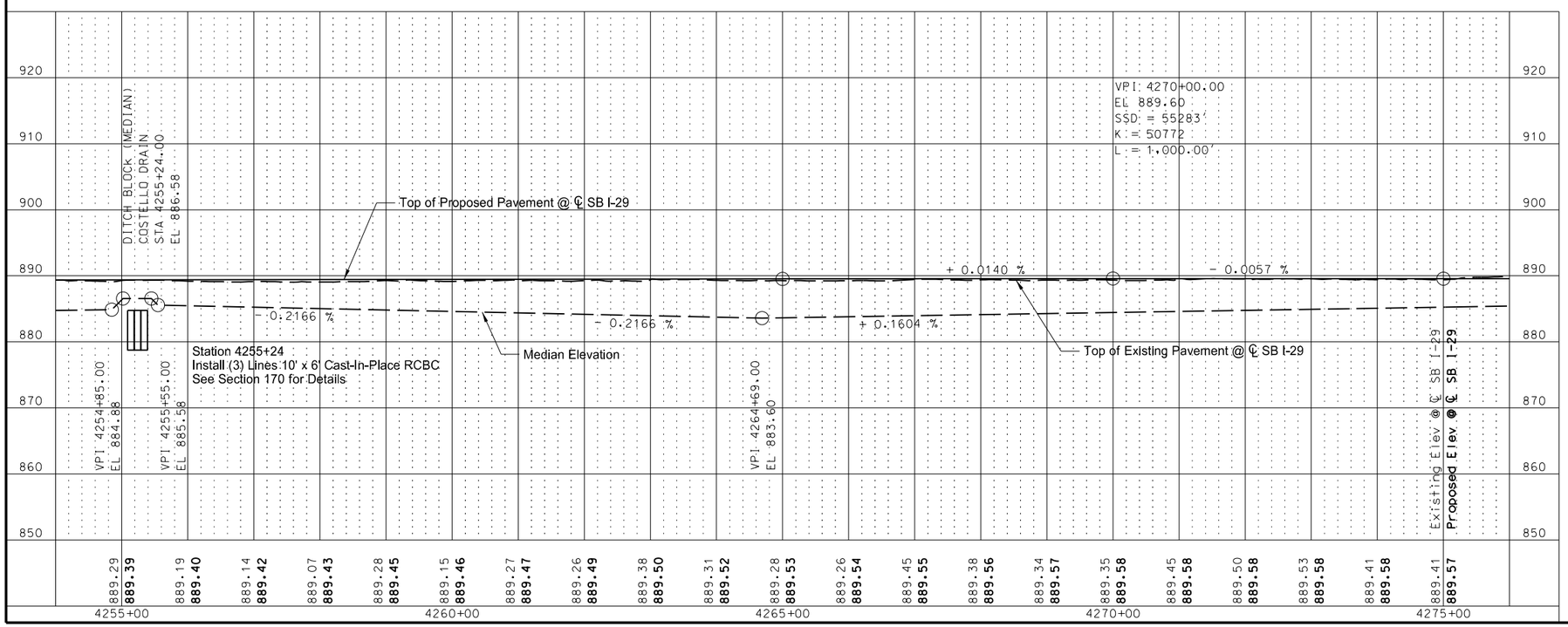
Interstate 29 - Argusville to Hunter SB
Sta 4235+00 to Sta 4255+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	5

Item	Description	Quantity	Unit
202-0174	REMOVAL OF PIPE ALL TYPES AND SIZES Sta 4255+23 ℄	92	LF





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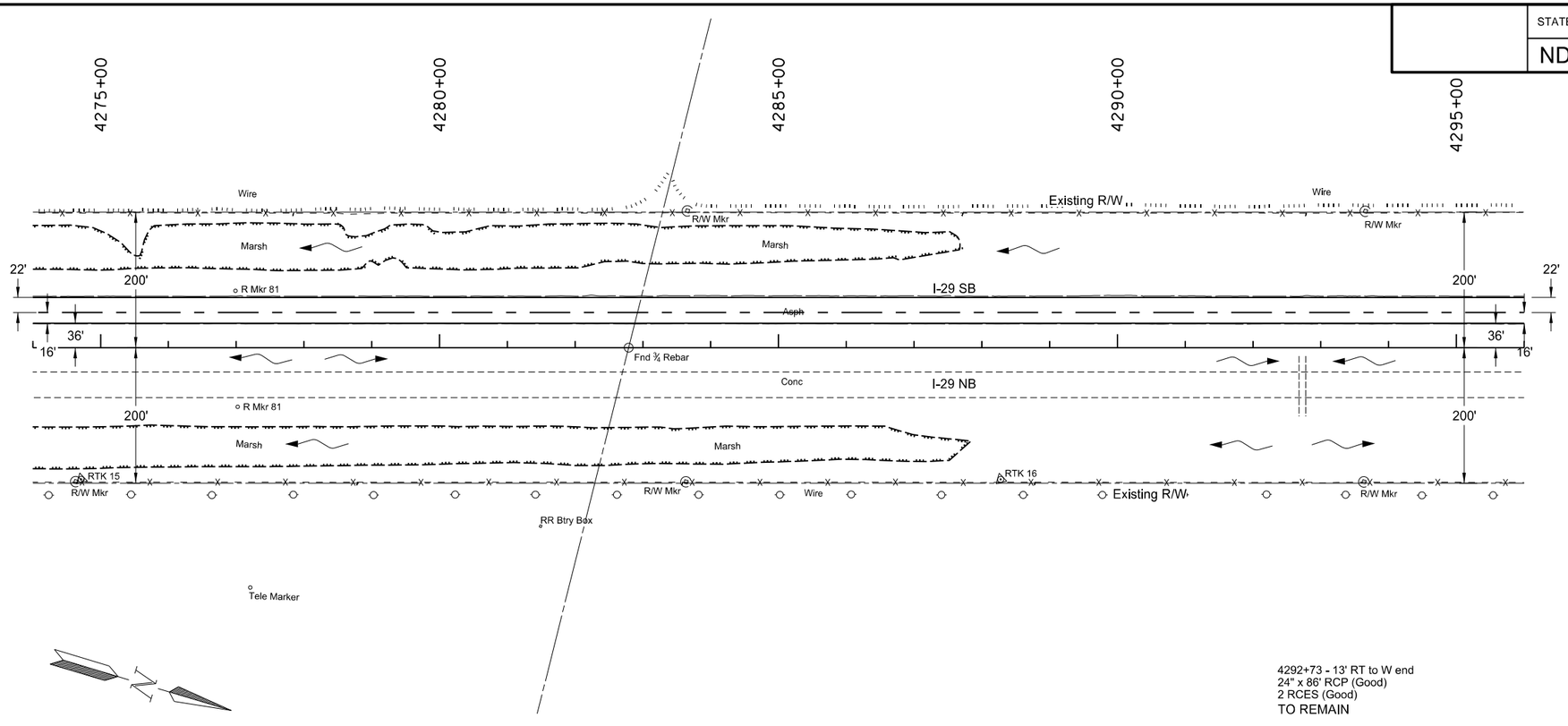
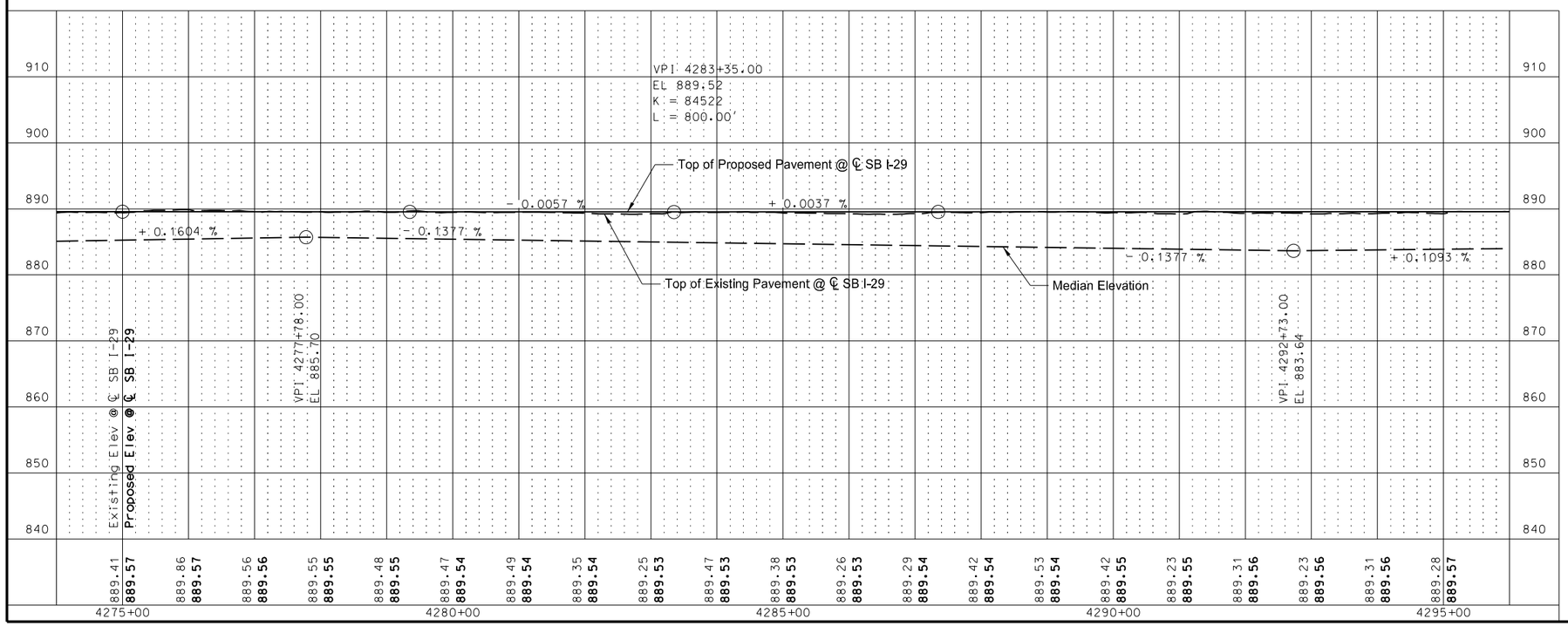
Interstate 29 - Argusville to Hunter SB
Sta 4255+00 to Sta 4275+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	6





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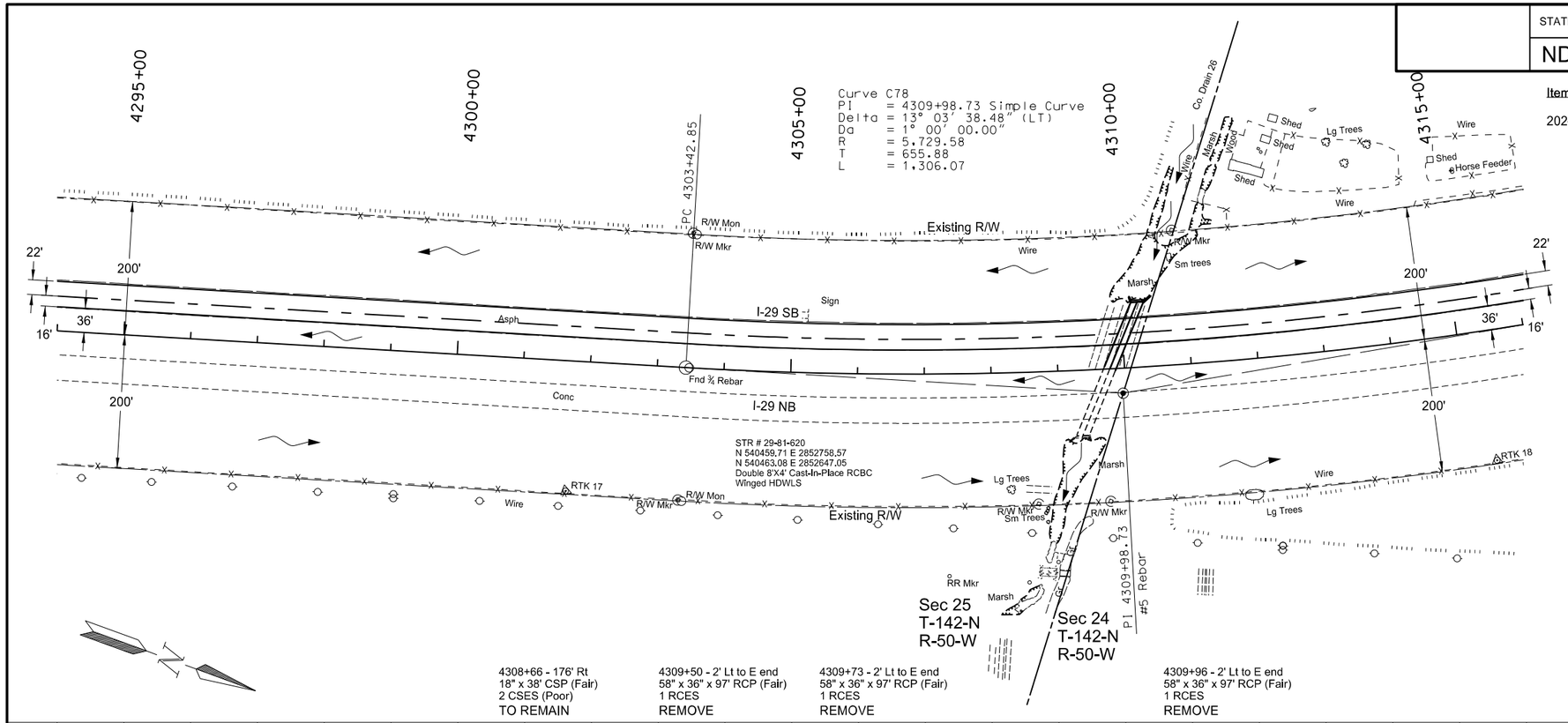
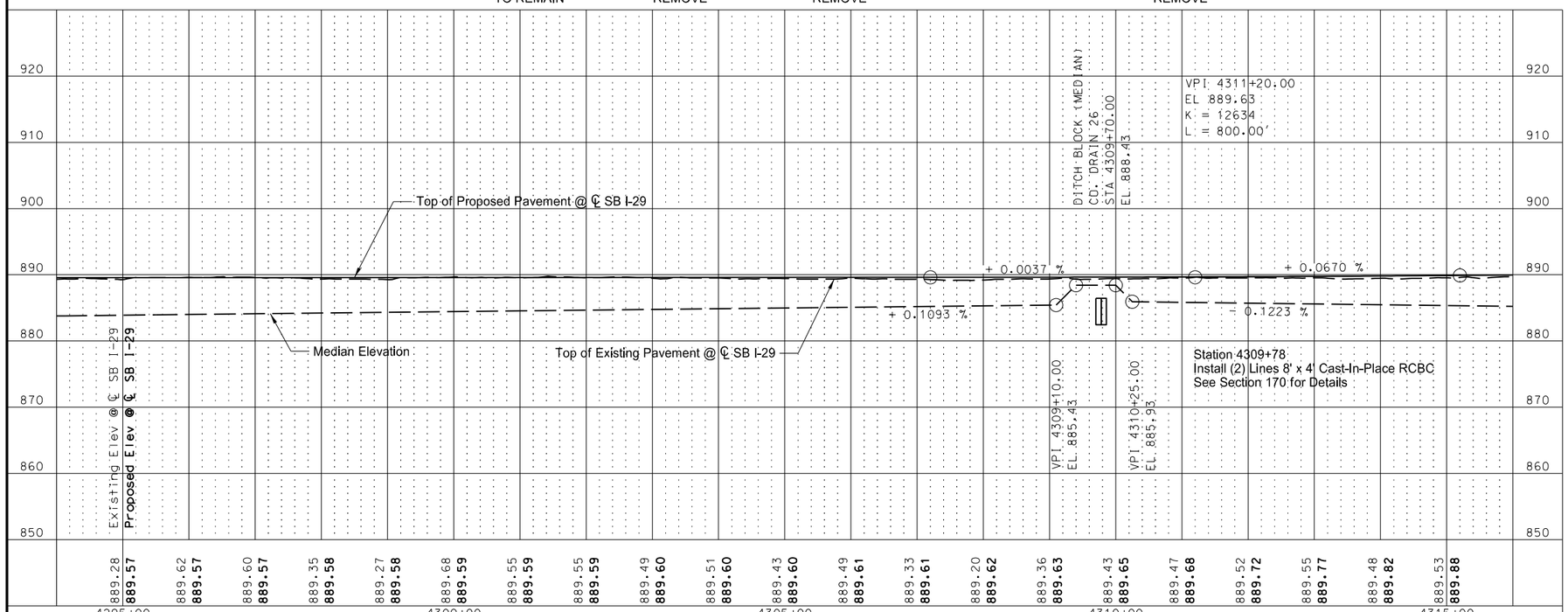
Interstate 29 - Argusville to Hunter SB
Sta 4275+00 to Sta 4295+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	7

Item	Description	Quantity	Unit
202-0174	REMOVAL OF PIPE ALL TYPES AND SIZES		
	Sta 4309+50 ℄	97	LF
	Sta 4309+73 ℄	97	LF
	Sta 4309+96 ℄	97	LF





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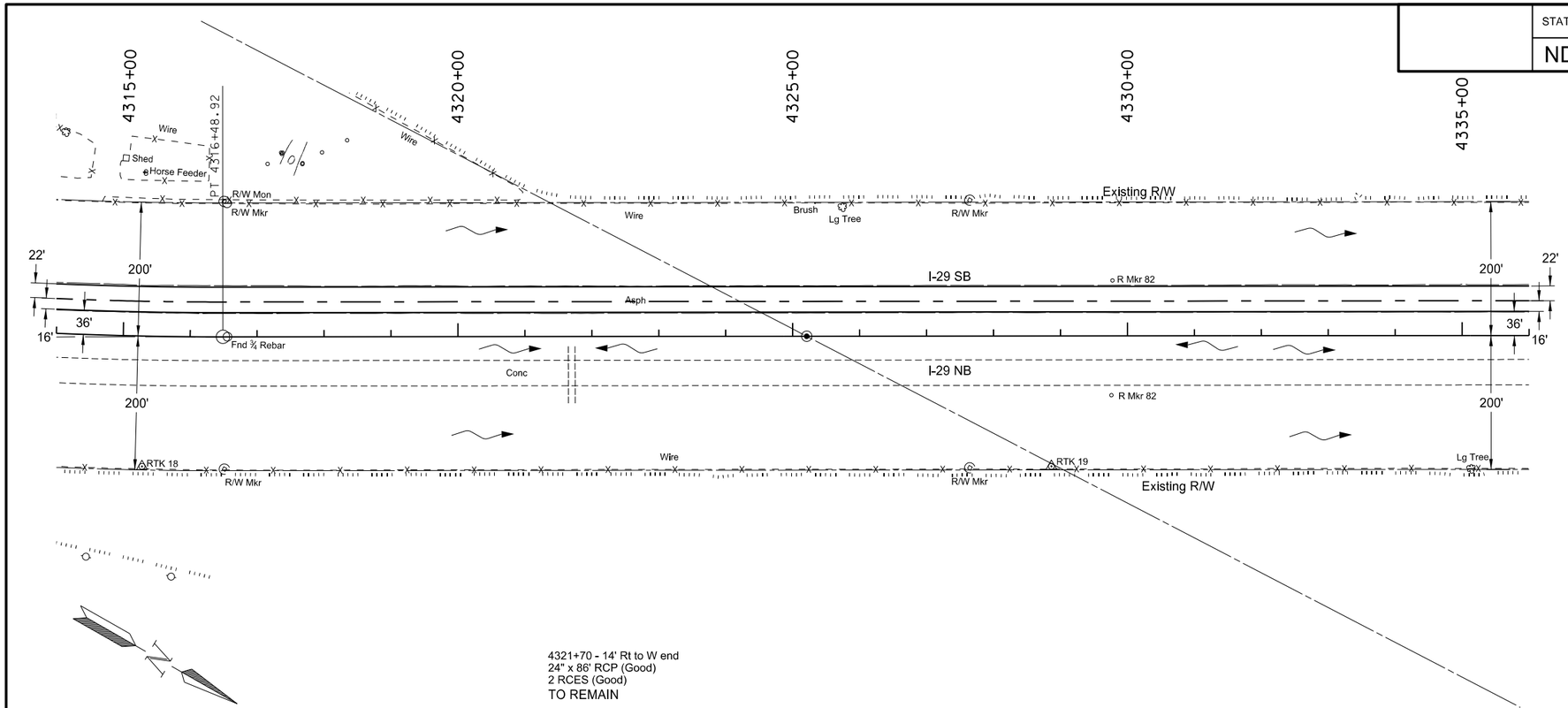
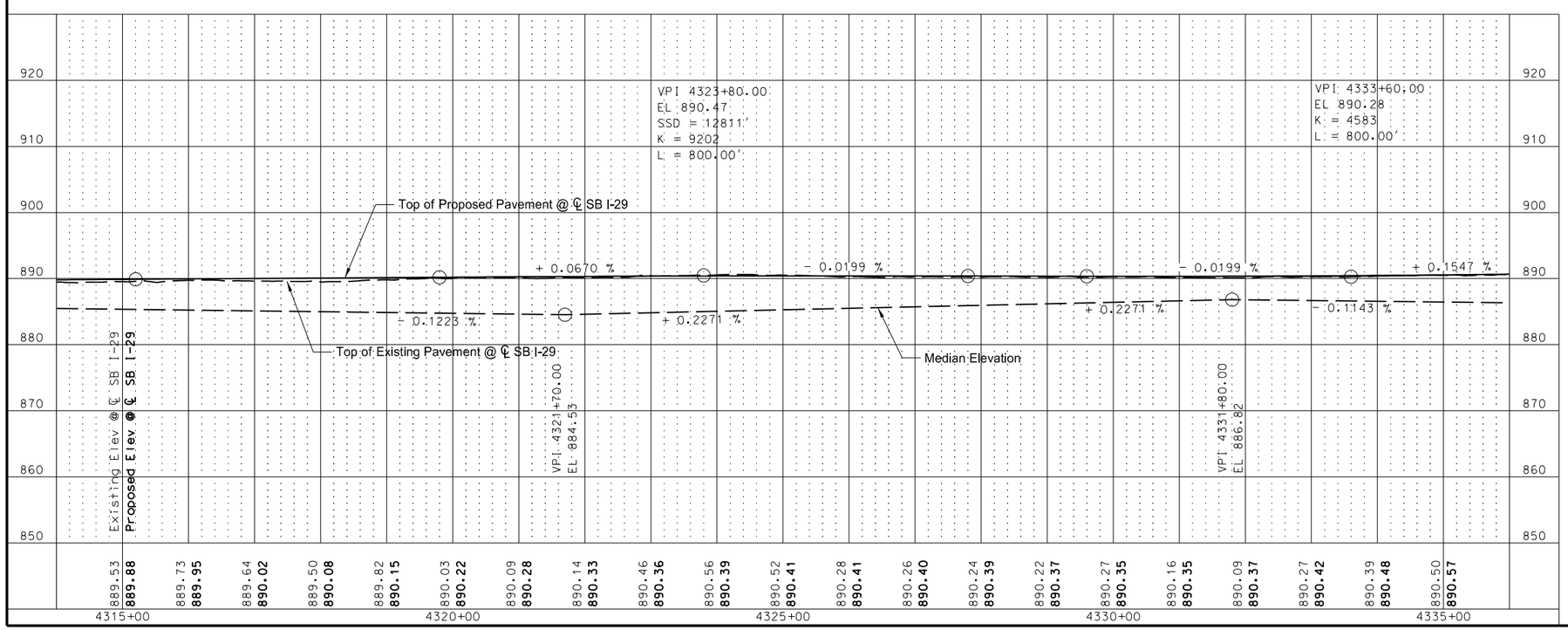
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4295+00 to Sta 4315+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	8





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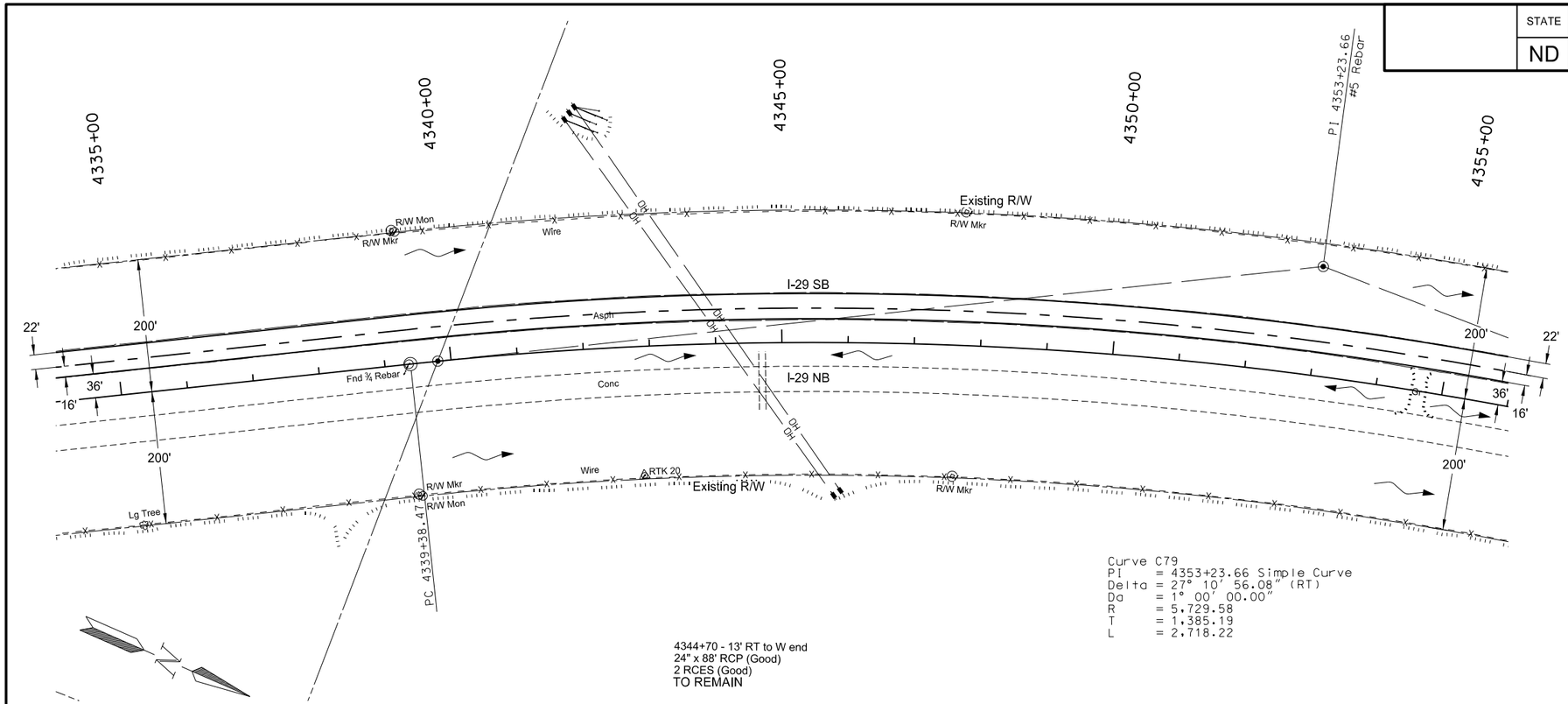
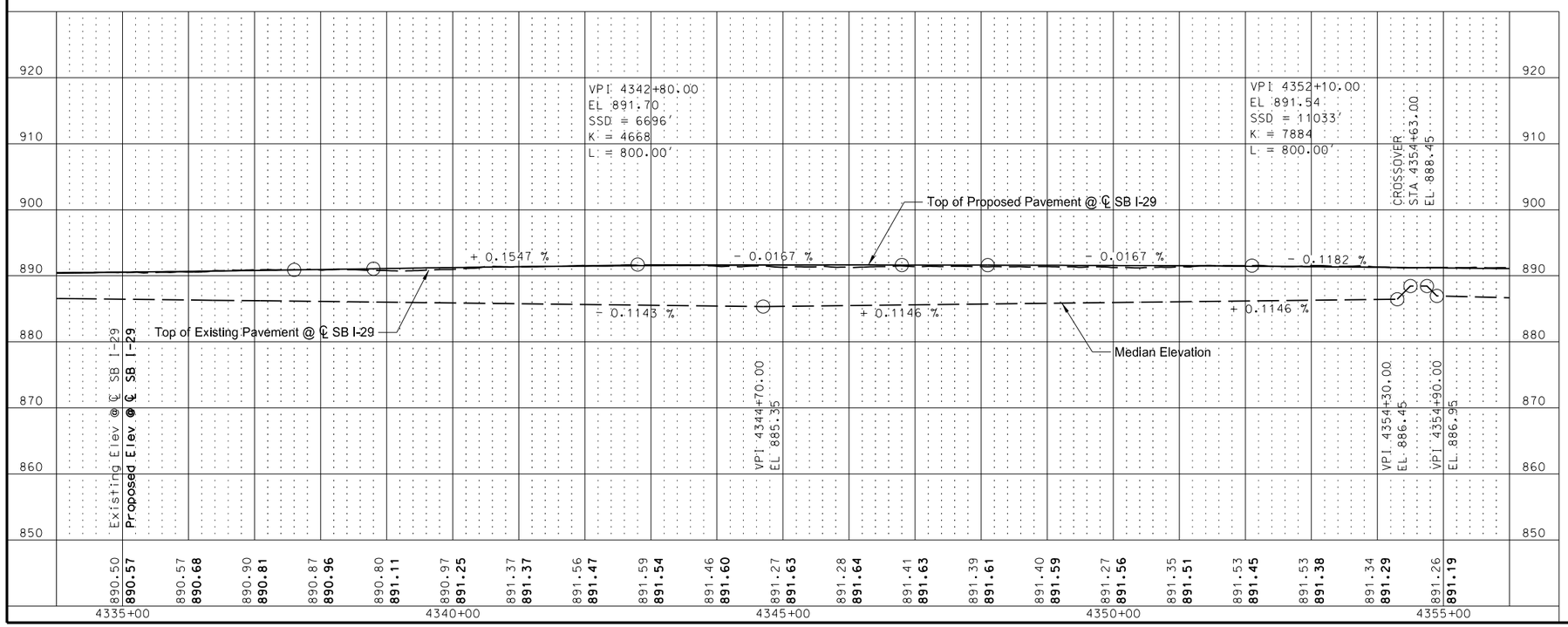
Interstate 29 - Argusville to Hunter SB
Sta 4315+00 to Sta 4335+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	9





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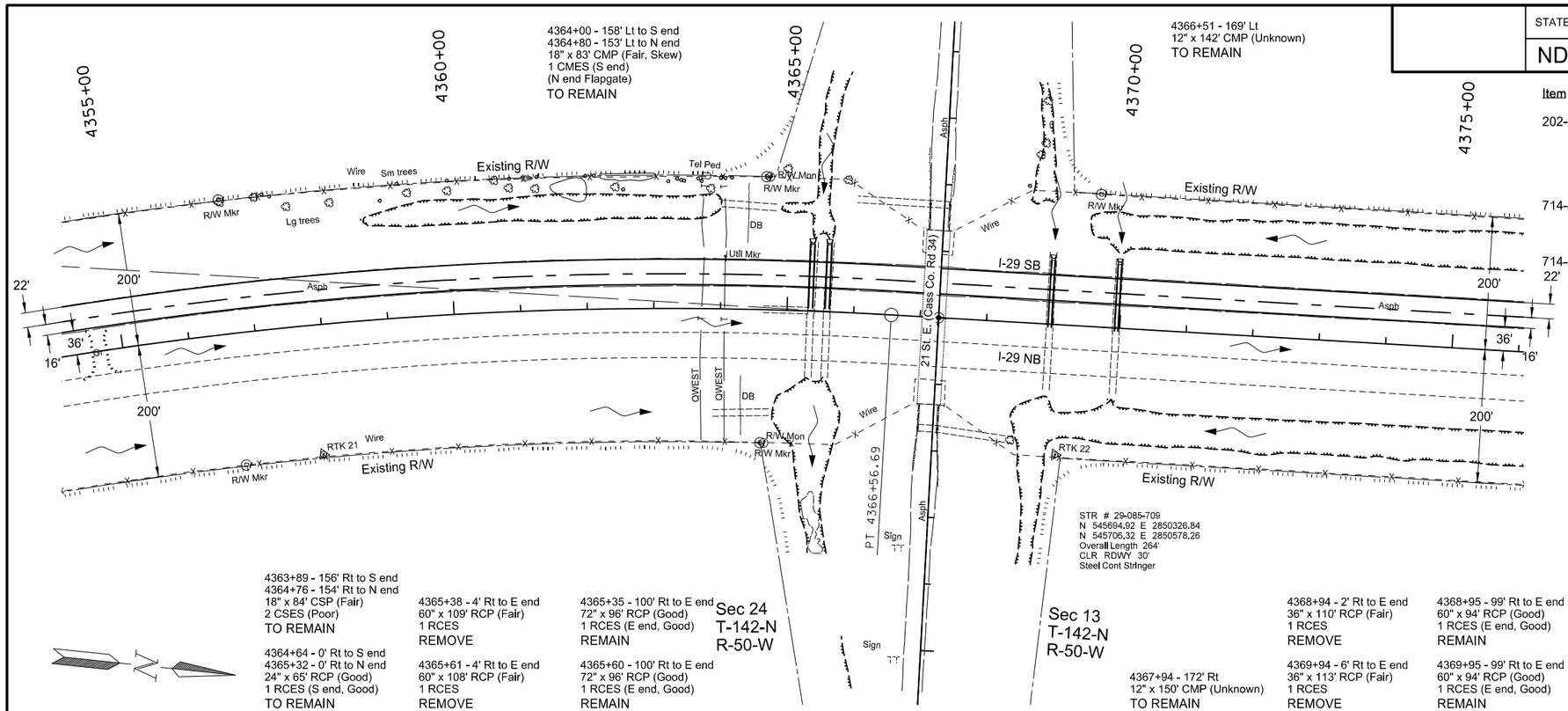
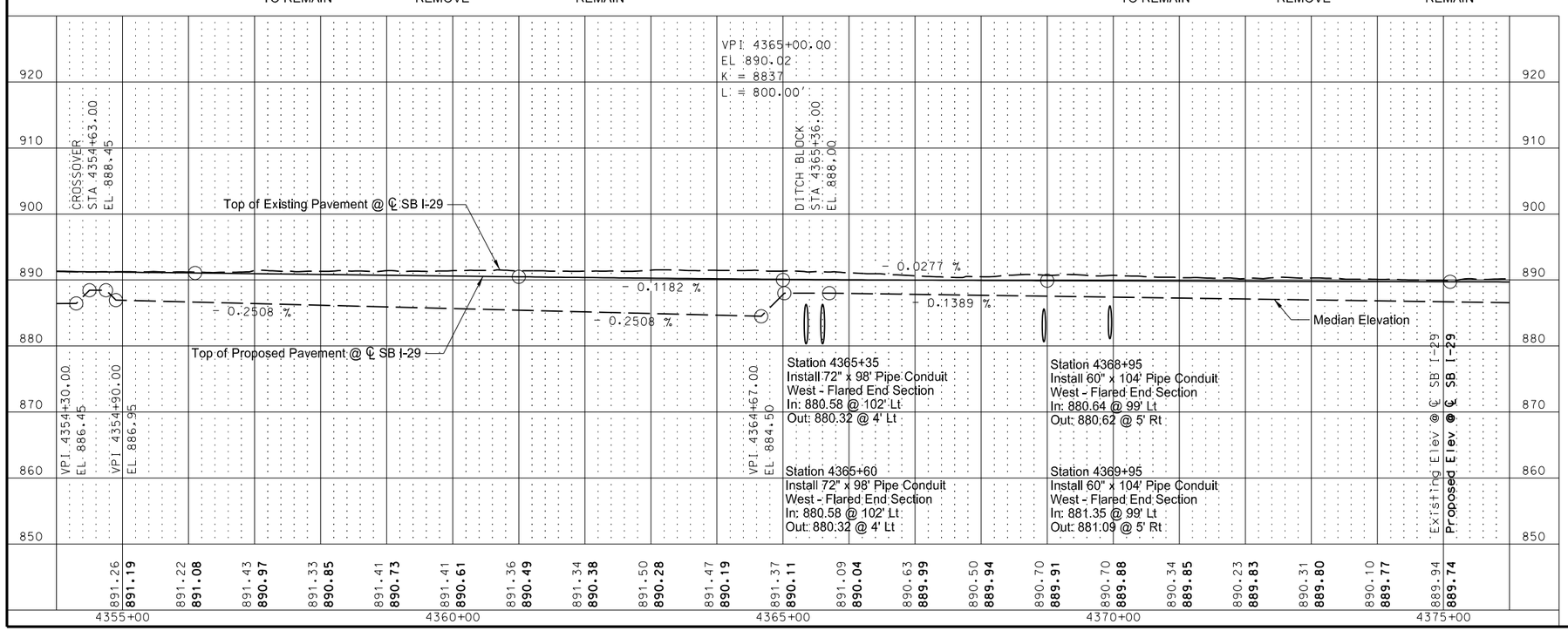
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4335+00 to Sta 4355+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	10



Item	Description	Quantity	Unit
202-0174	REMOVAL OF PIPE ALL TYPES AND SIZES		
	Sta 4365+38 ℄	109	LF
	Sta 4365+61 ℄	108	LF
	Sta 4368+94 ℄	110	LF
	Sta 4369+94 ℄	113	LF
714-4135	PIPE CONDUIT 60IN		
	Sta 4368+95 Rt 5' to Lt 99'	104	LF
	Sta 4369+95 Rt 5' to Lt 99'	104	LF
714-4145	PIPE CONDUIT 72IN		
	Sta 4365+35 Lt 4' to Lt 102'	98	LF
	Sta 4365+60 Lt 4' to Lt 102'	98	LF



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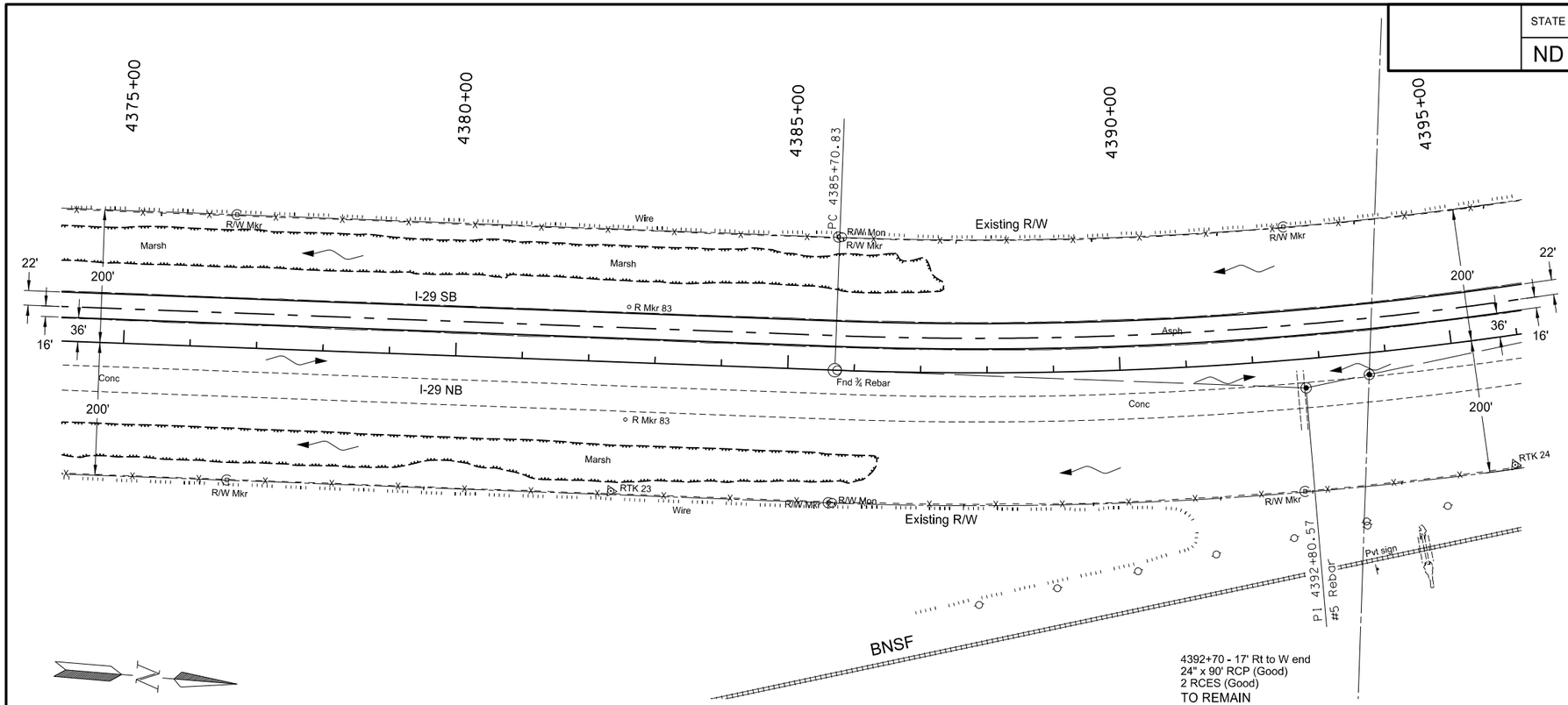
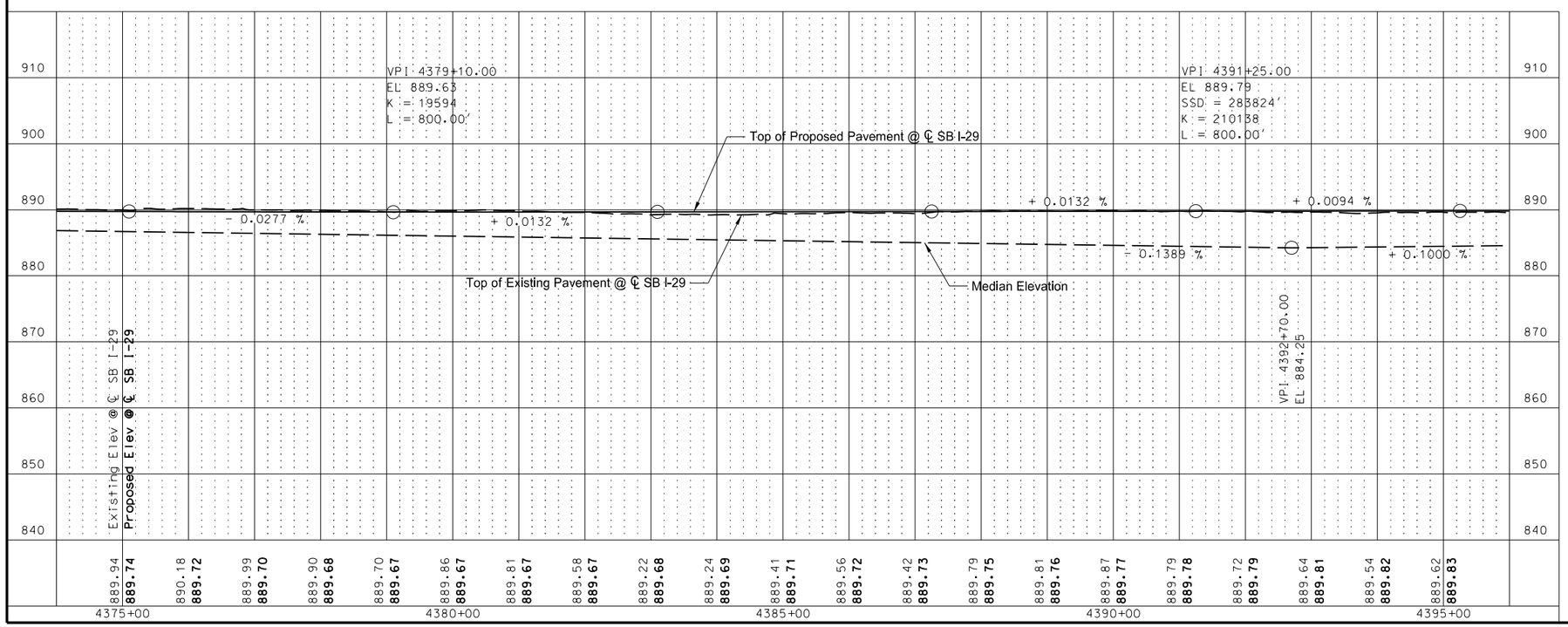
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4355+00 to Sta 4375+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	11





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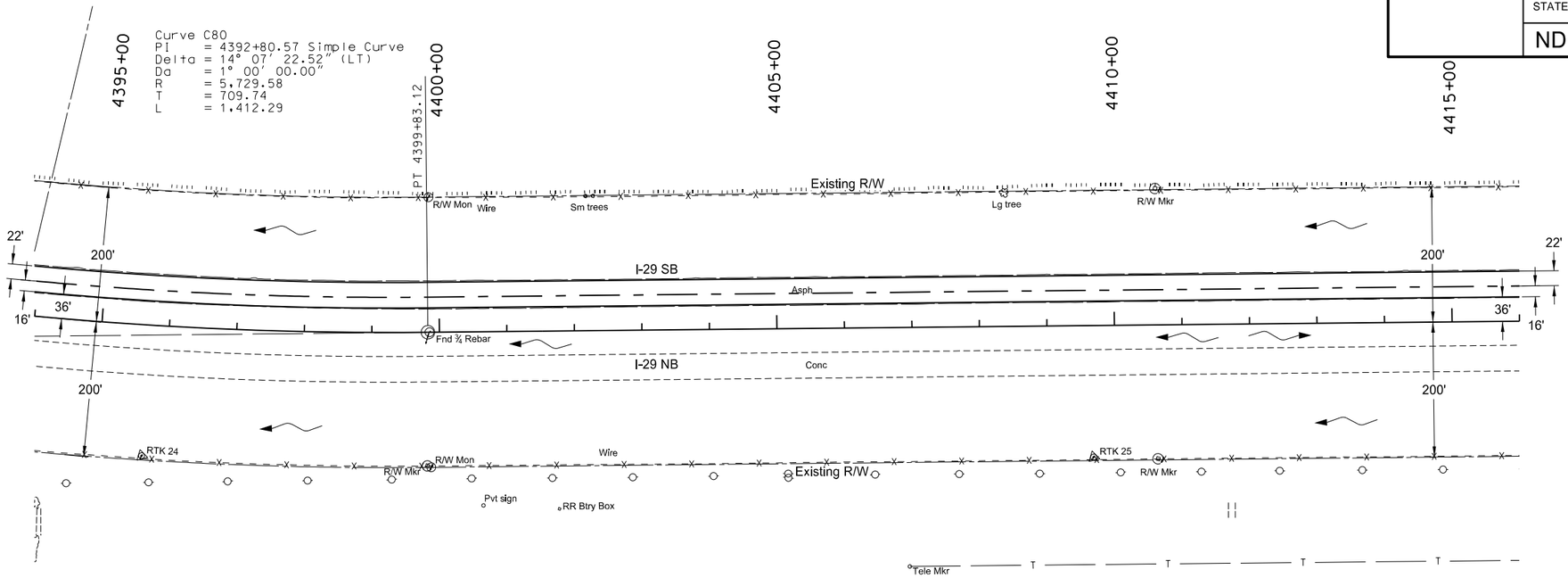
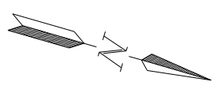
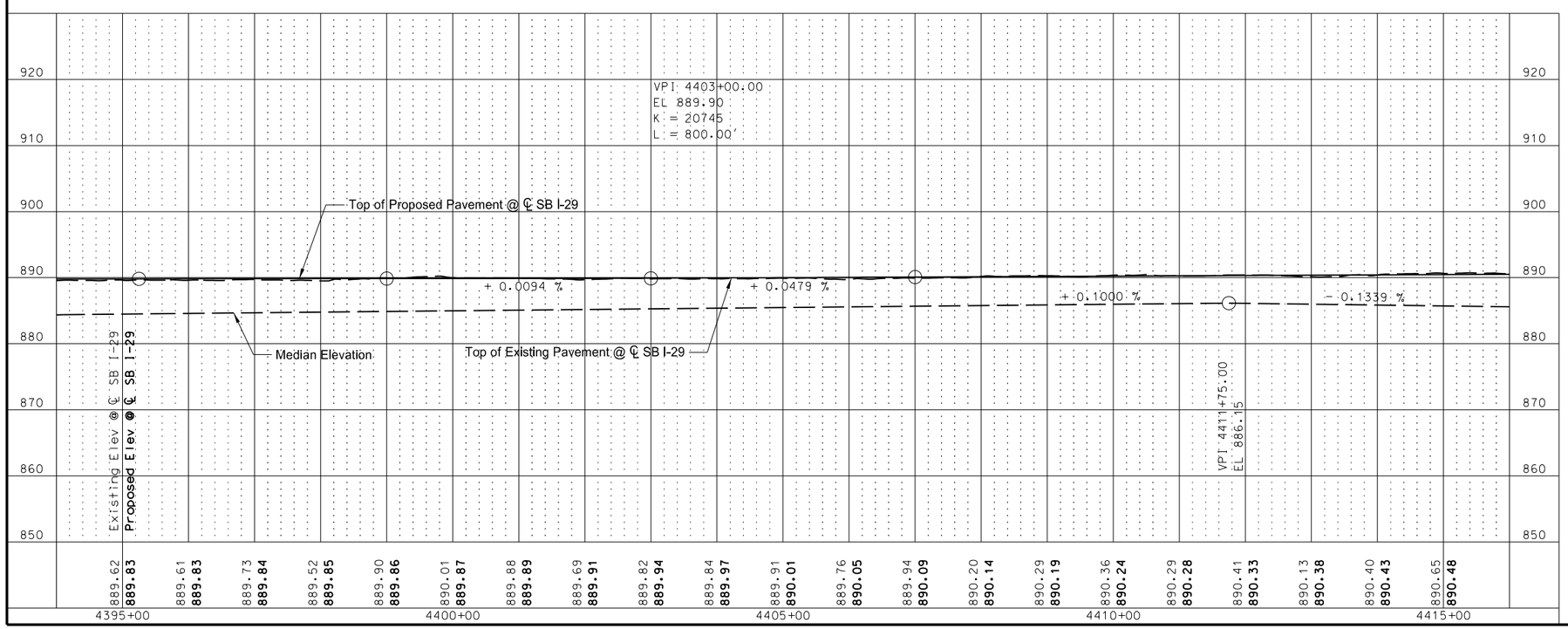
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4375+00 to Sta 4395+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	12







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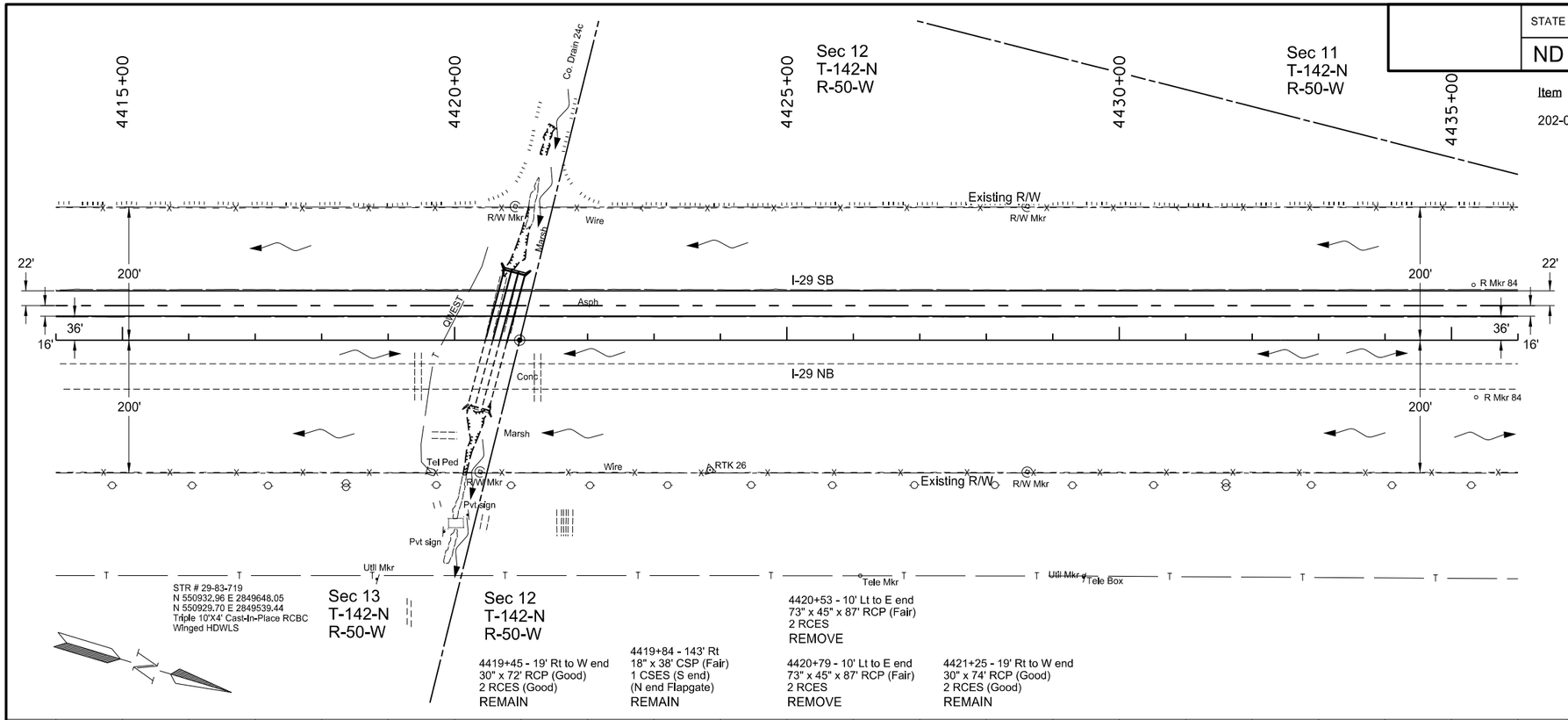
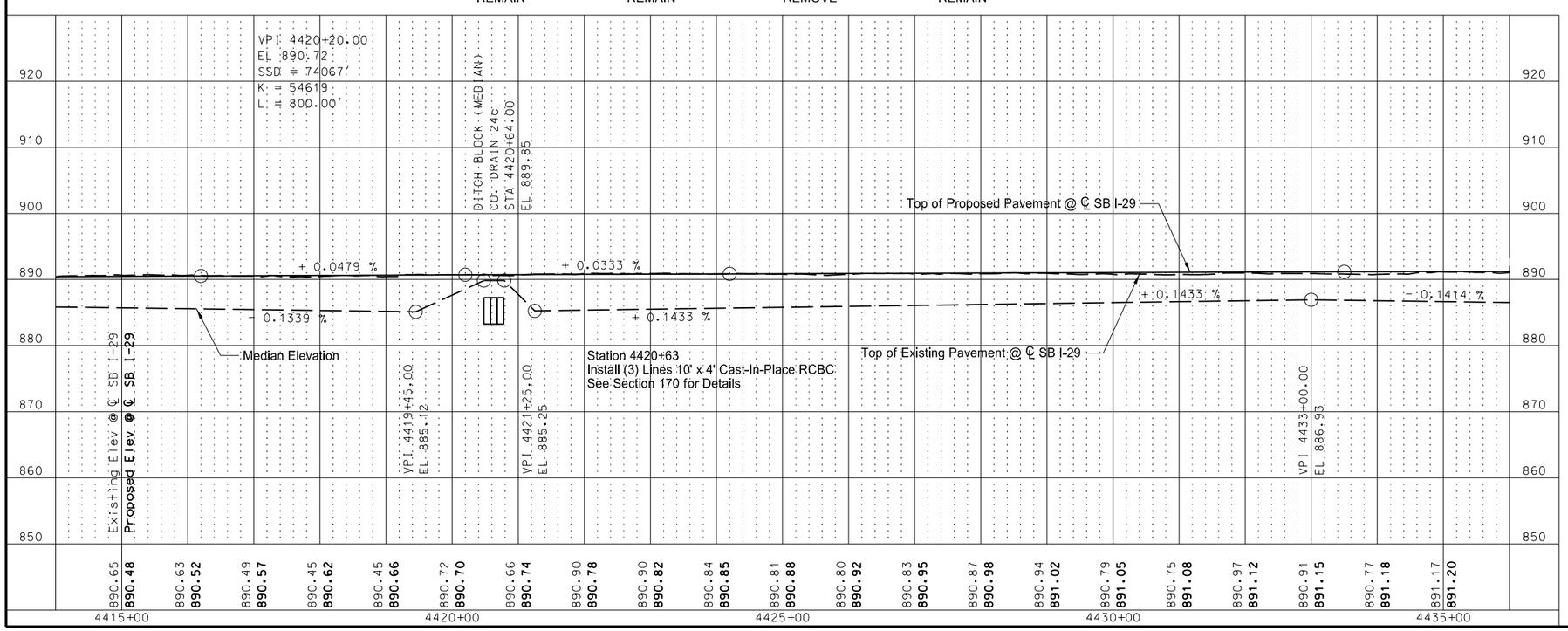
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4395+00 to Sta 4415+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	13

Item	Description	Quantity	Unit
202-0174	REMOVAL OF PIPE ALL TYPES AND SIZES		
	Sta 4420+53 ℄	87	LF
	Sta 4420+79 ℄	87	LF





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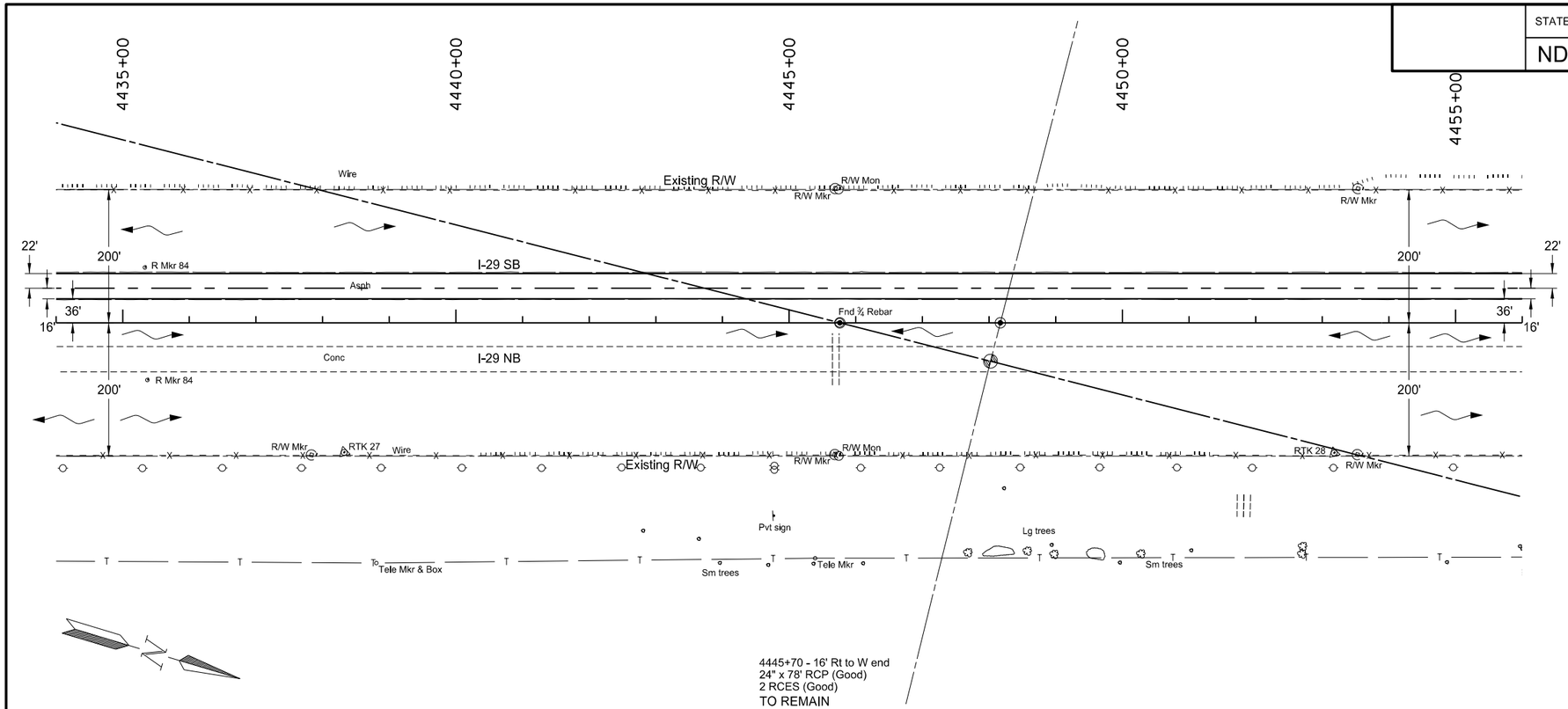
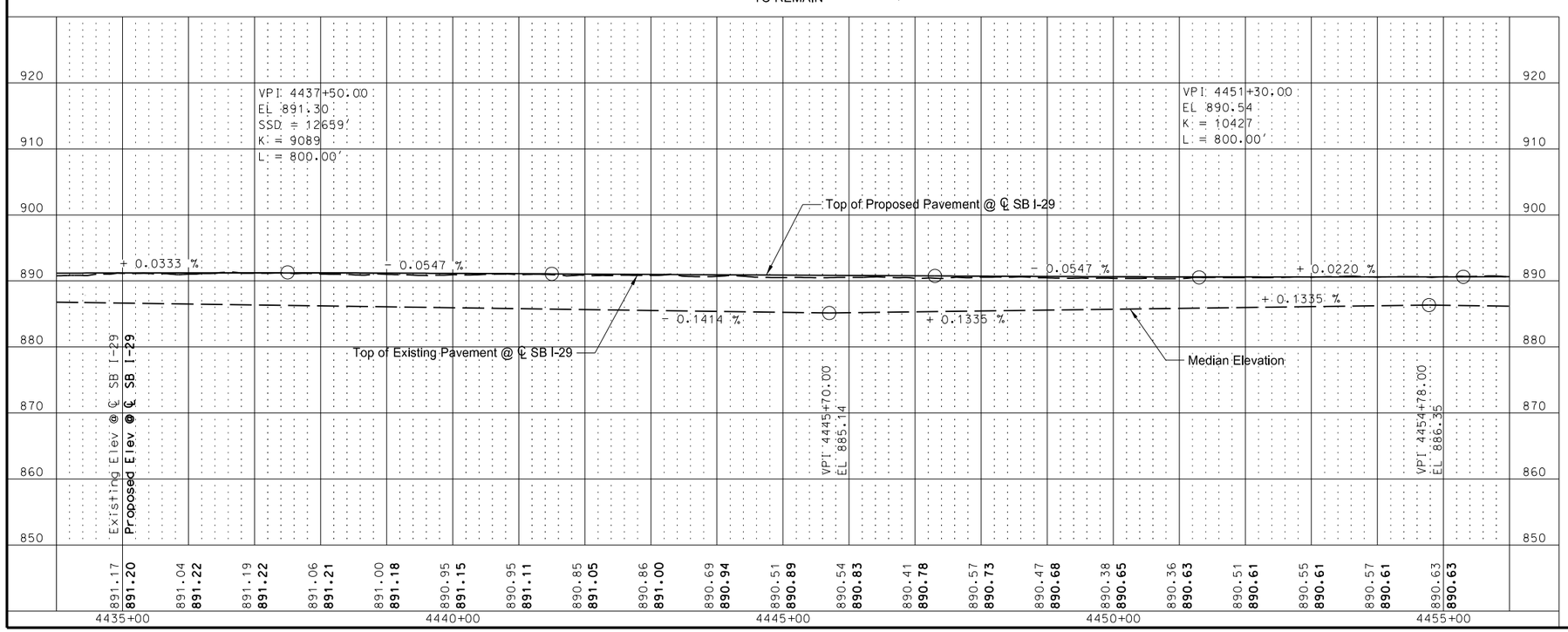
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4415+00 to Sta 4435+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	14





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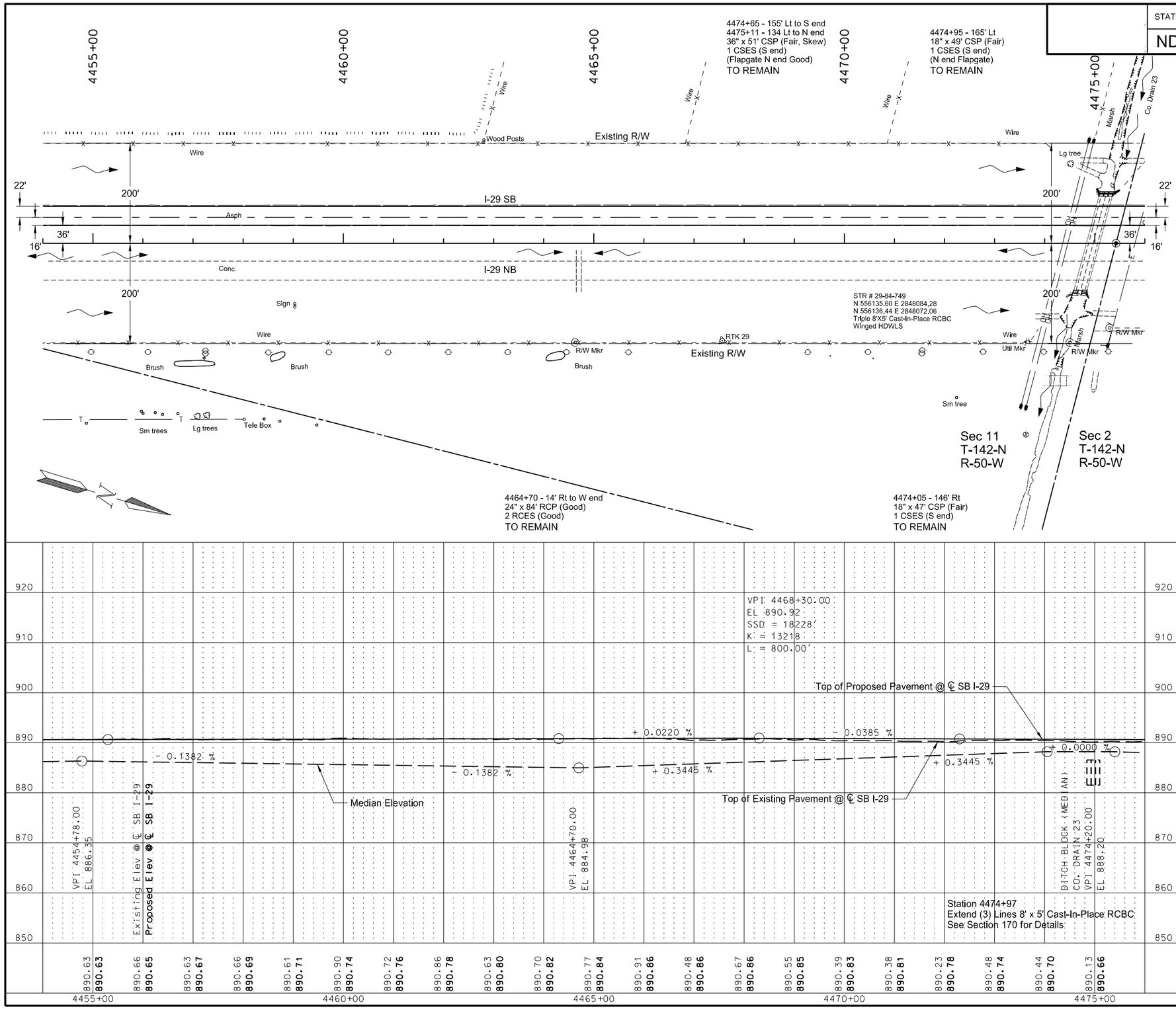
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4435+00 to Sta 4455+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	15



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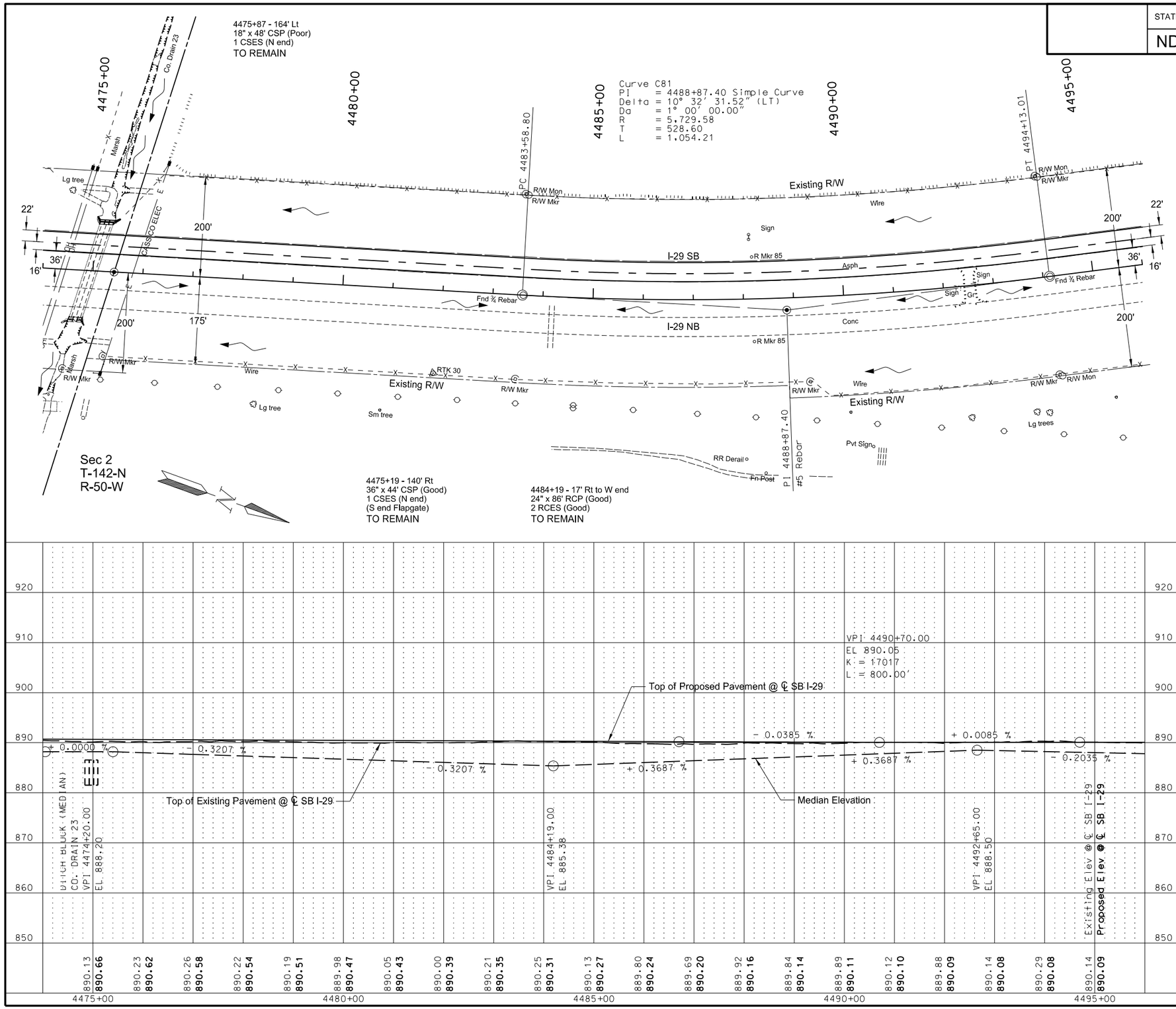
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4455+00 to Sta 4475+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	16



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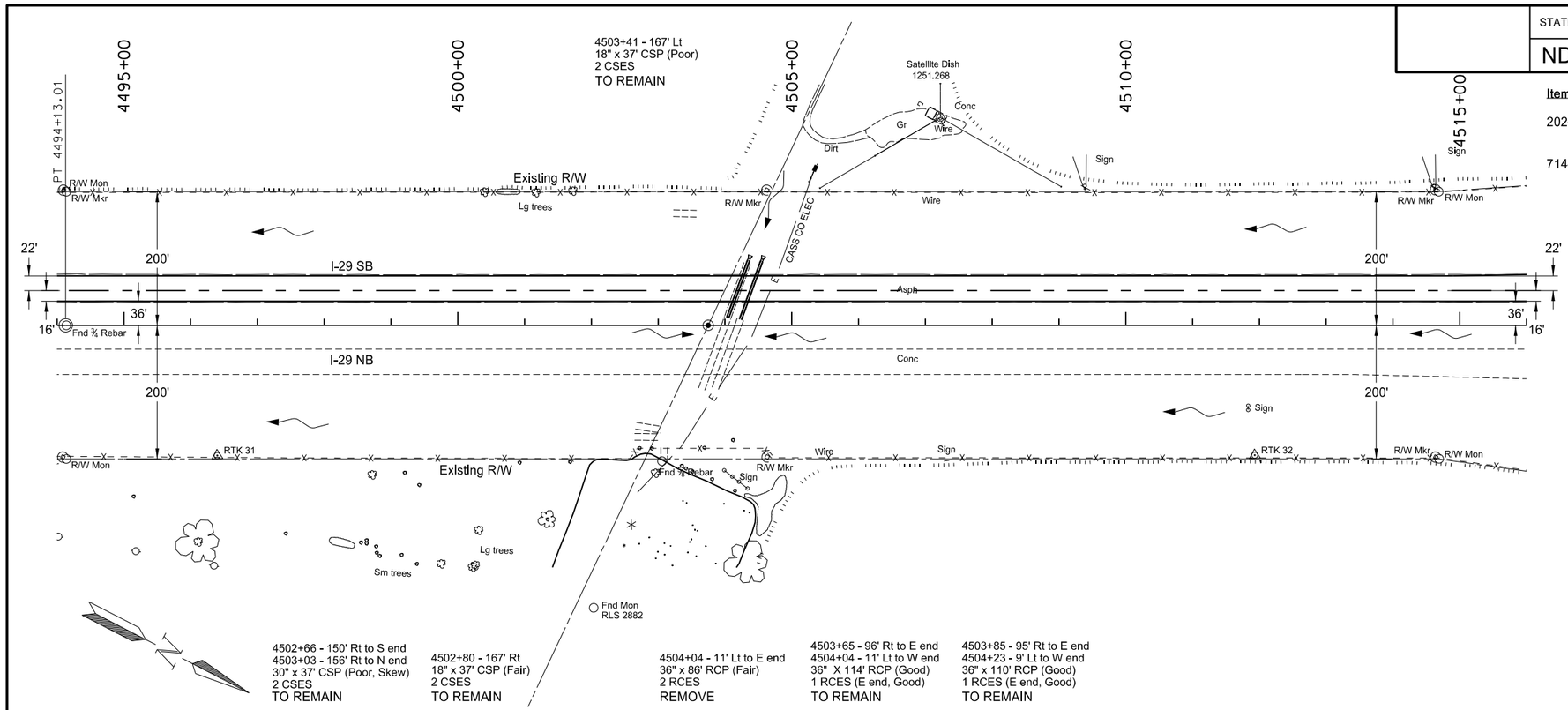
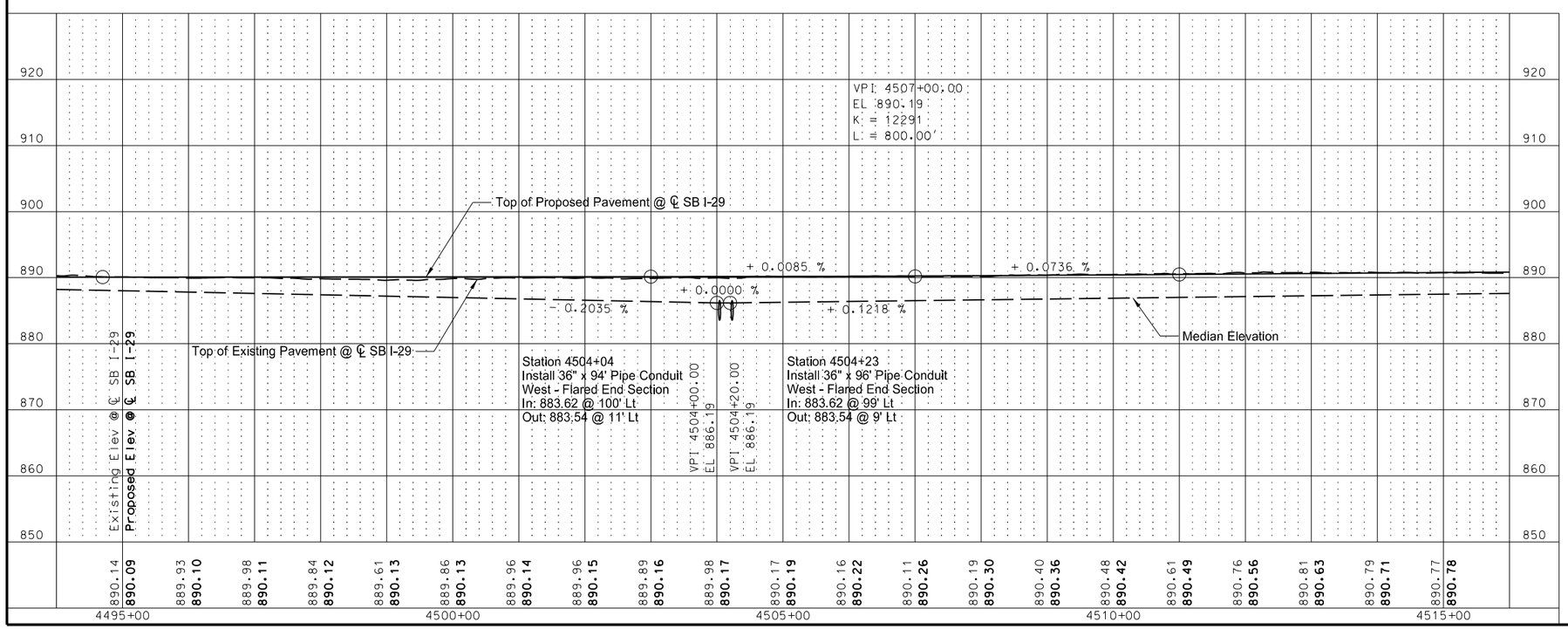
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4475+00 to Sta 4495+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	17

Item	Description	Quantity	Unit
202-0174	REMOVAL OF PIPE ALL TYPES AND SIZES		
	Sta 4504+04 ℄	86	LF
714-4115	PIPE CONDUIT 36IN		
	Sta 4504+04 Lt 11' to Lt 100'	94	LF
	Sta 4504+23 Lt 9' to Lt 99'	96	LF





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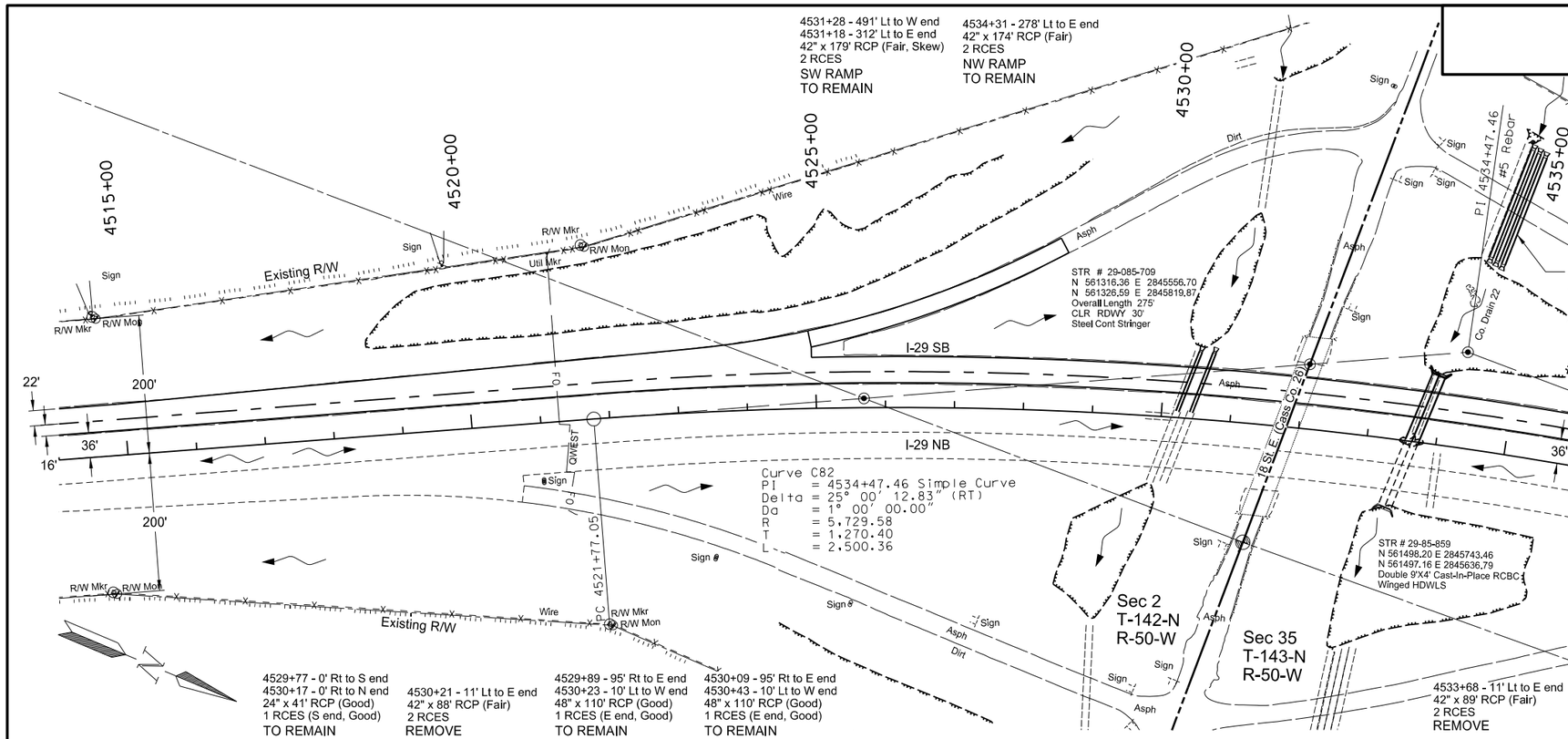
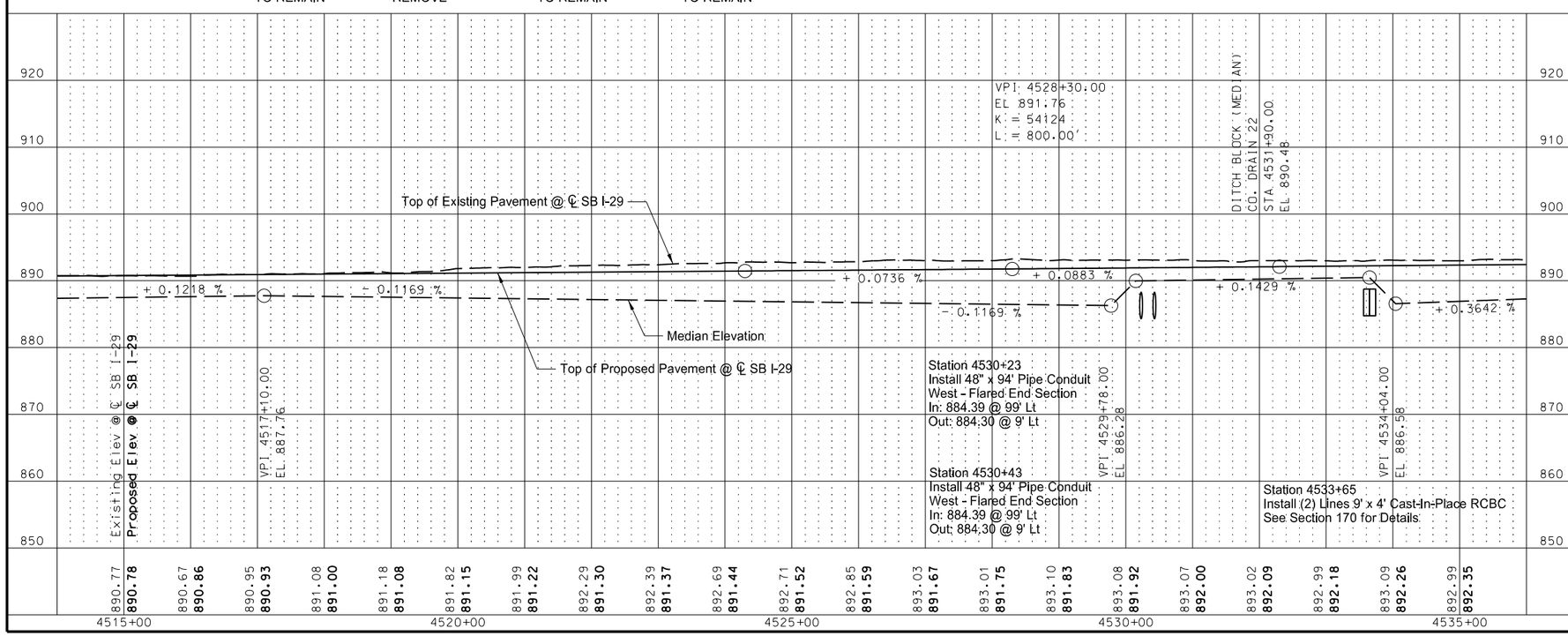
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4495+00 to Sta 4515+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	18



Item	Description	Quantity	Unit
202-0174	REMOVAL OF PIPE ALL TYPES AND SIZES		
	Sta 4530+21 ℄	88	LF
	Sta 4533+68 ℄	89	LF
714-4125	PIPE CONDUIT 48IN		
	Sta 4530+23 Lt 9' to Lt 99'	94	LF
	Sta 4530+43 Lt 9' to Lt 99'	94	LF



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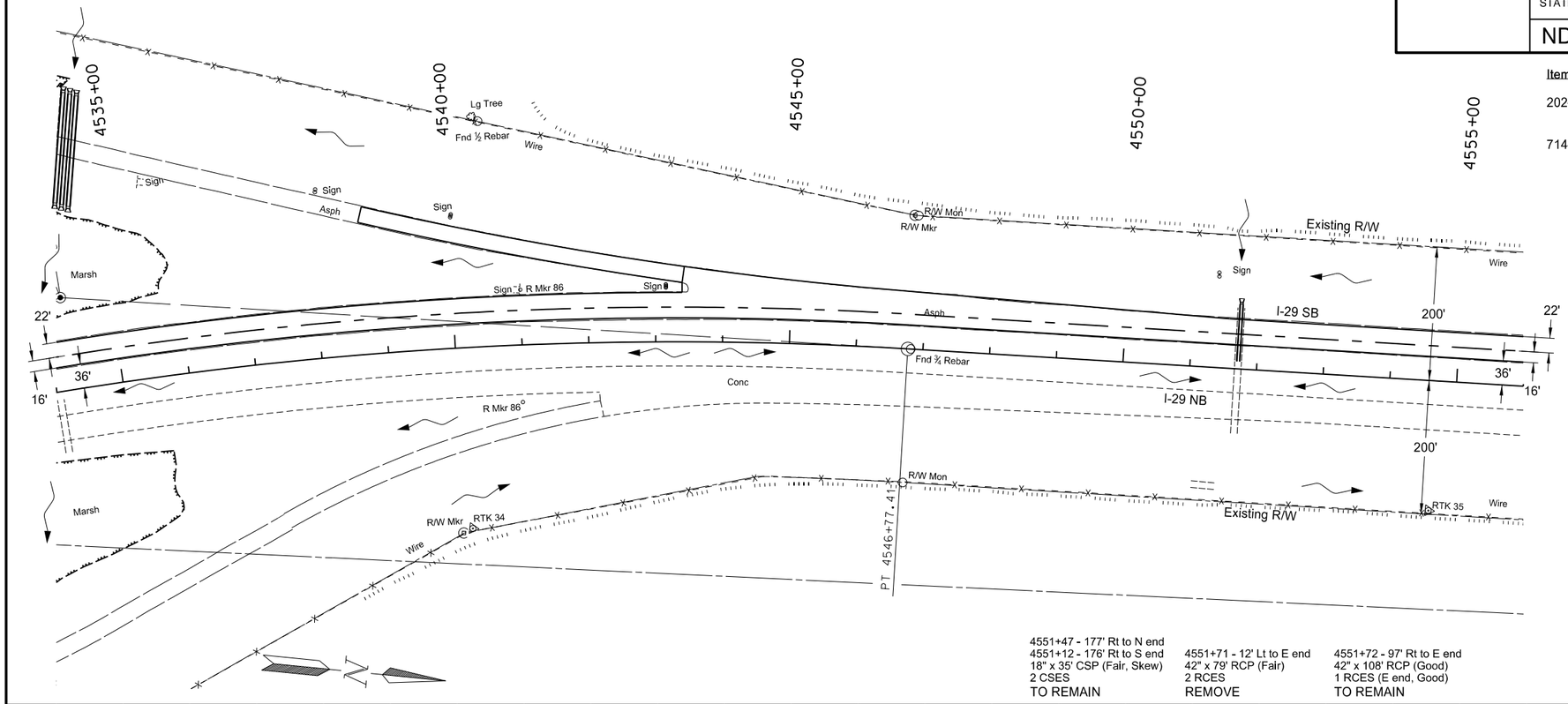
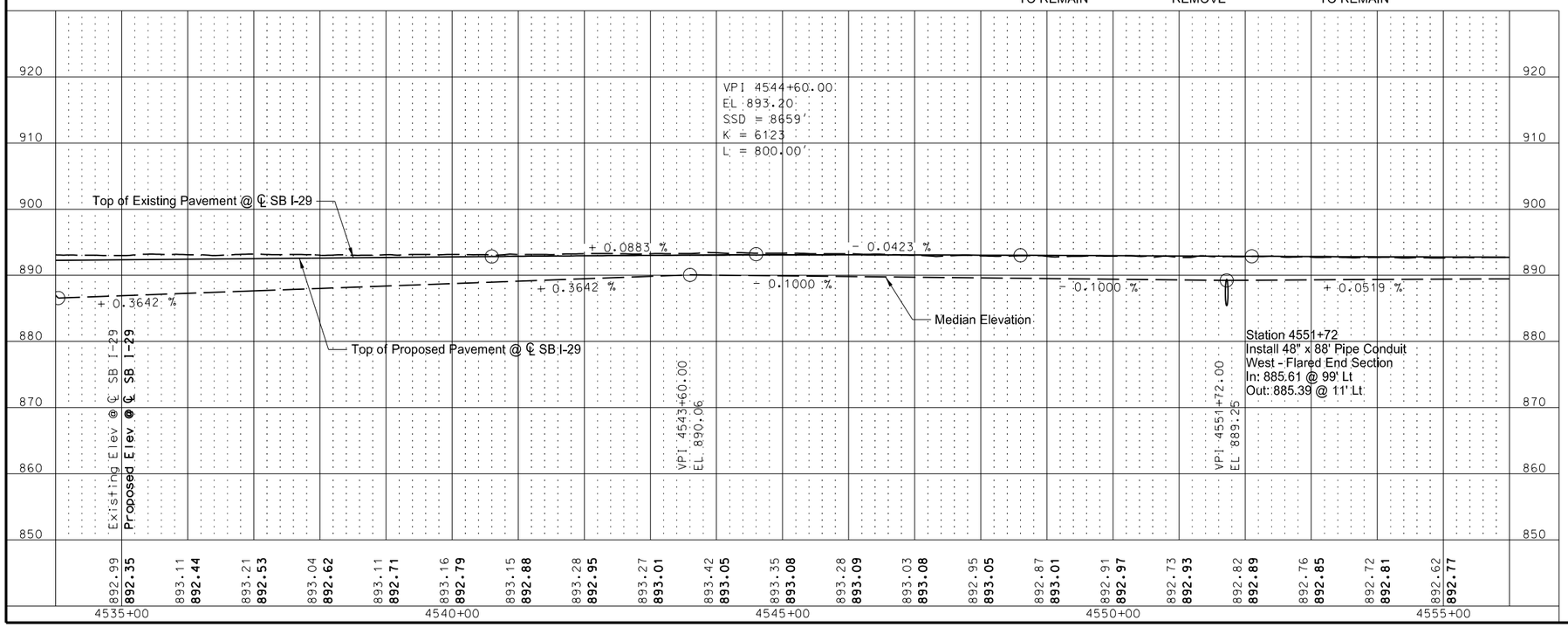
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4515+00 to Sta 4535+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	19

Item	Description	Quantity	Unit
202-0174	REMOVAL OF PIPE ALL TYPES AND SIZES Sta 4551+71 ℄	79	LF
714-4120	PIPE CONDUIT 42IN Sta 4551+72 Lt 11' to Lt 99'	88	LF





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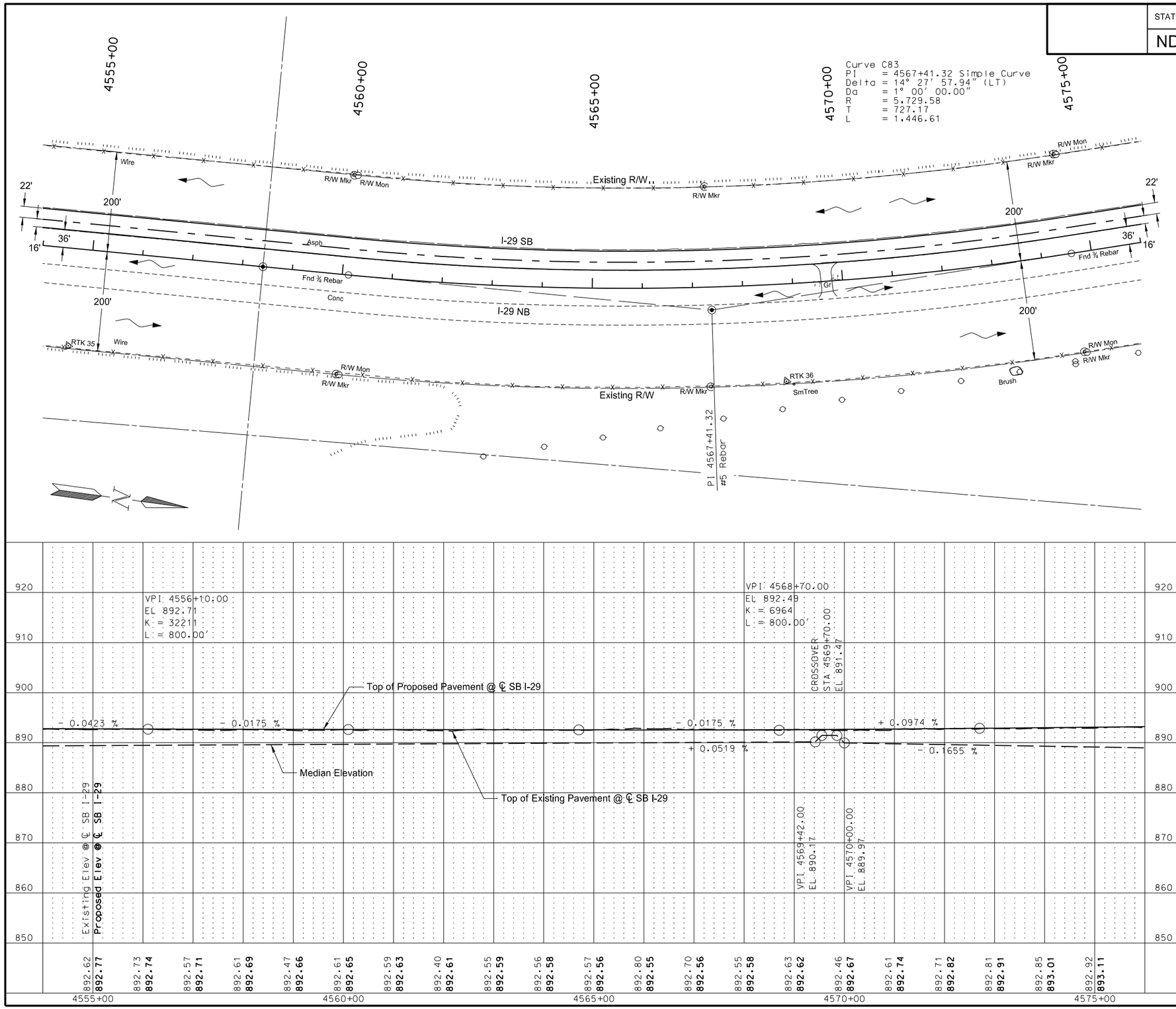
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4535+00 to Sta 4555+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	20



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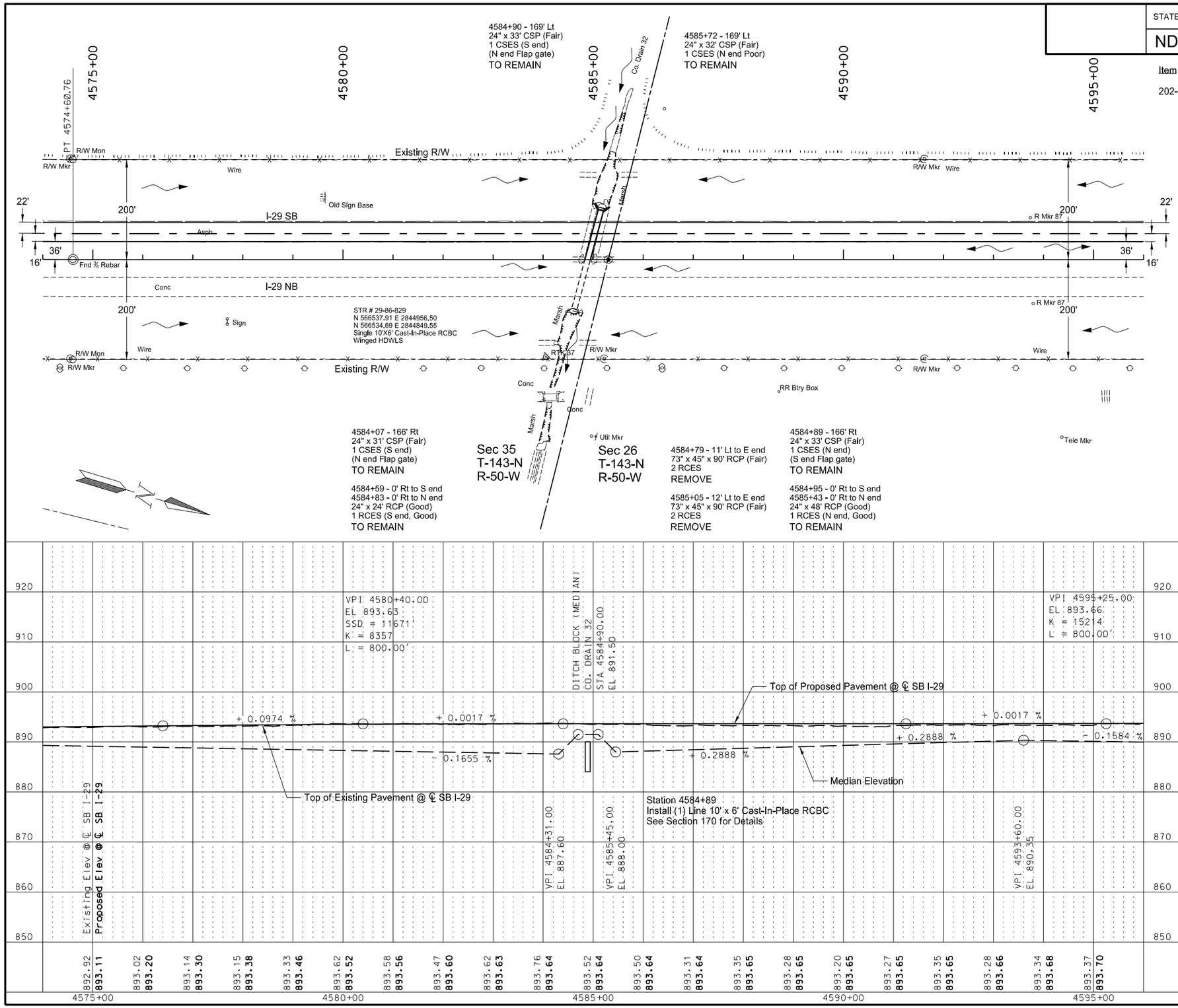
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4555+00 to Sta 4575+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	21

Item	Description	Quantity	Unit
202-0174	REMOVAL OF PIPE ALL TYPES AND SIZES		
	Sta 4584+79 ℄	90	LF
	Sta 4585+05 ℄	90	LF



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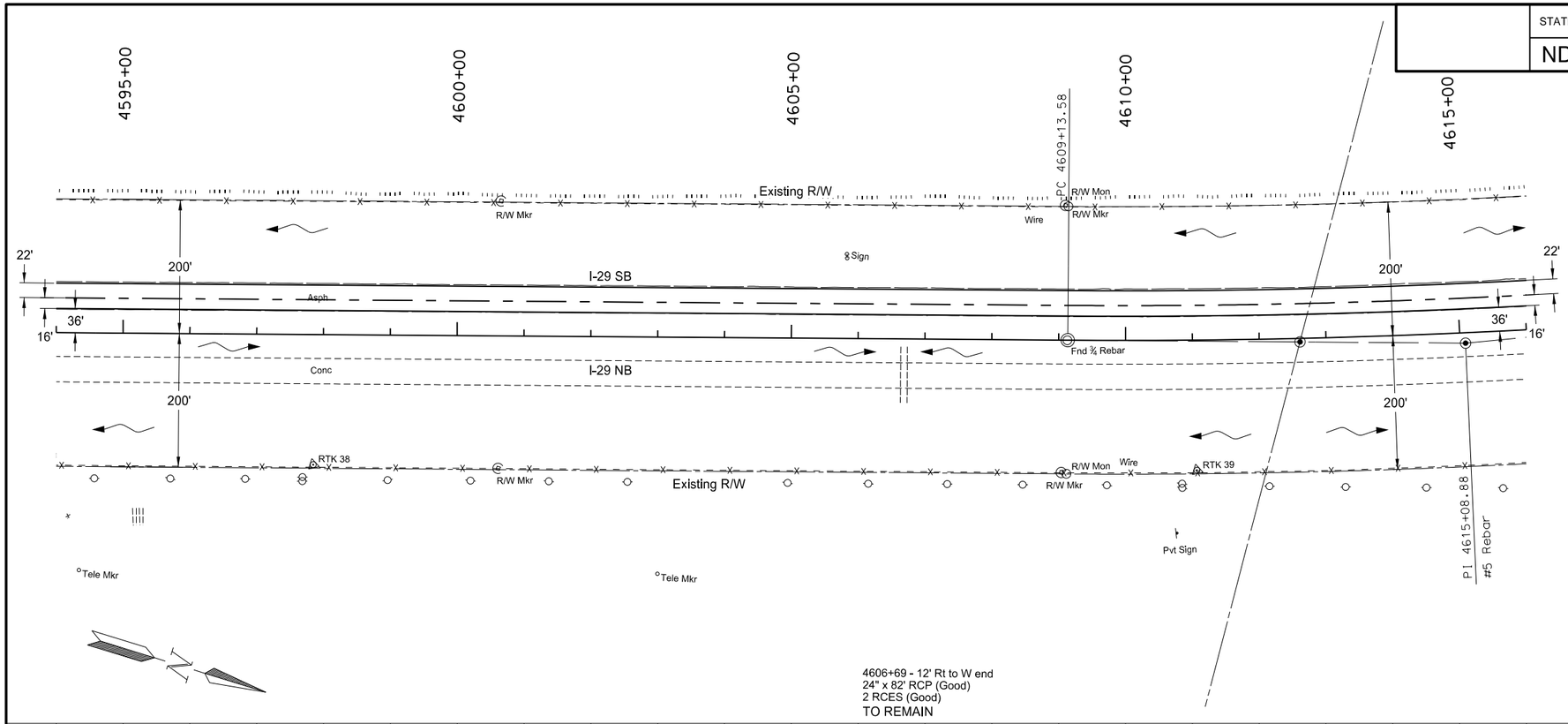
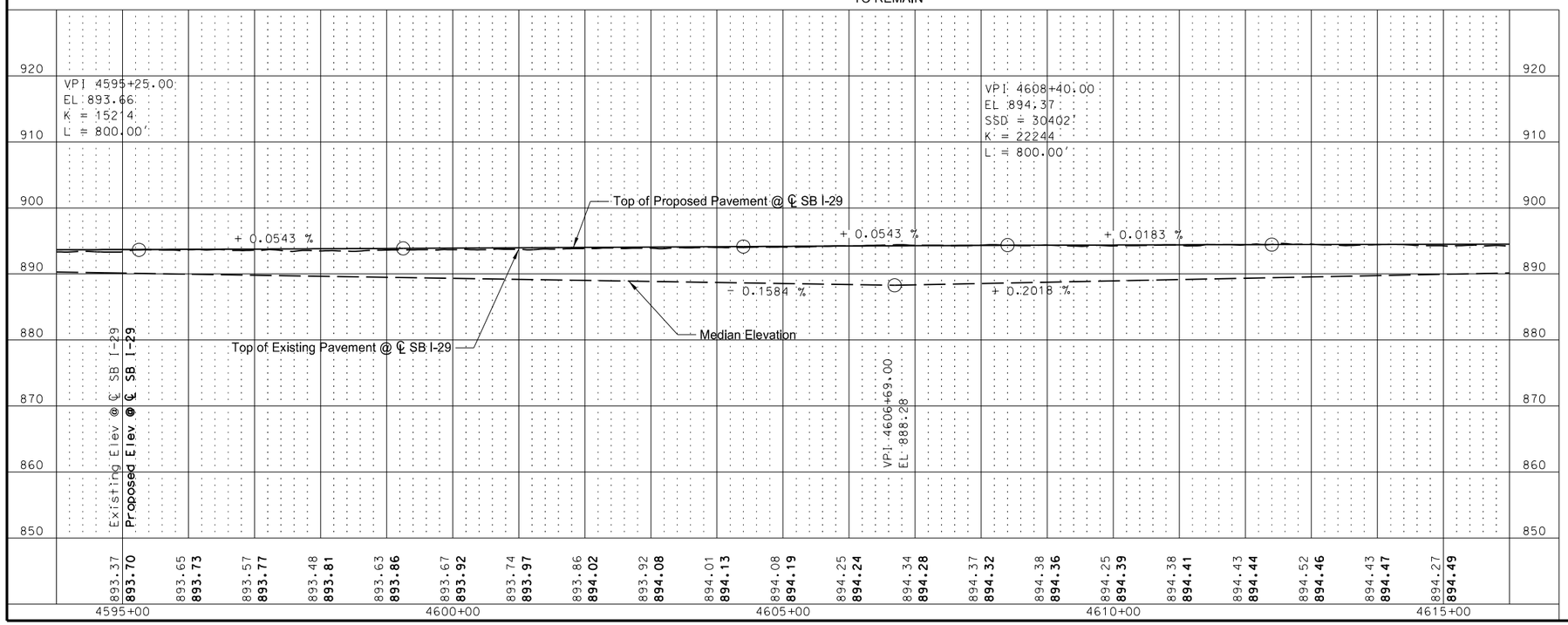
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4575+00 to Sta 4595+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	22





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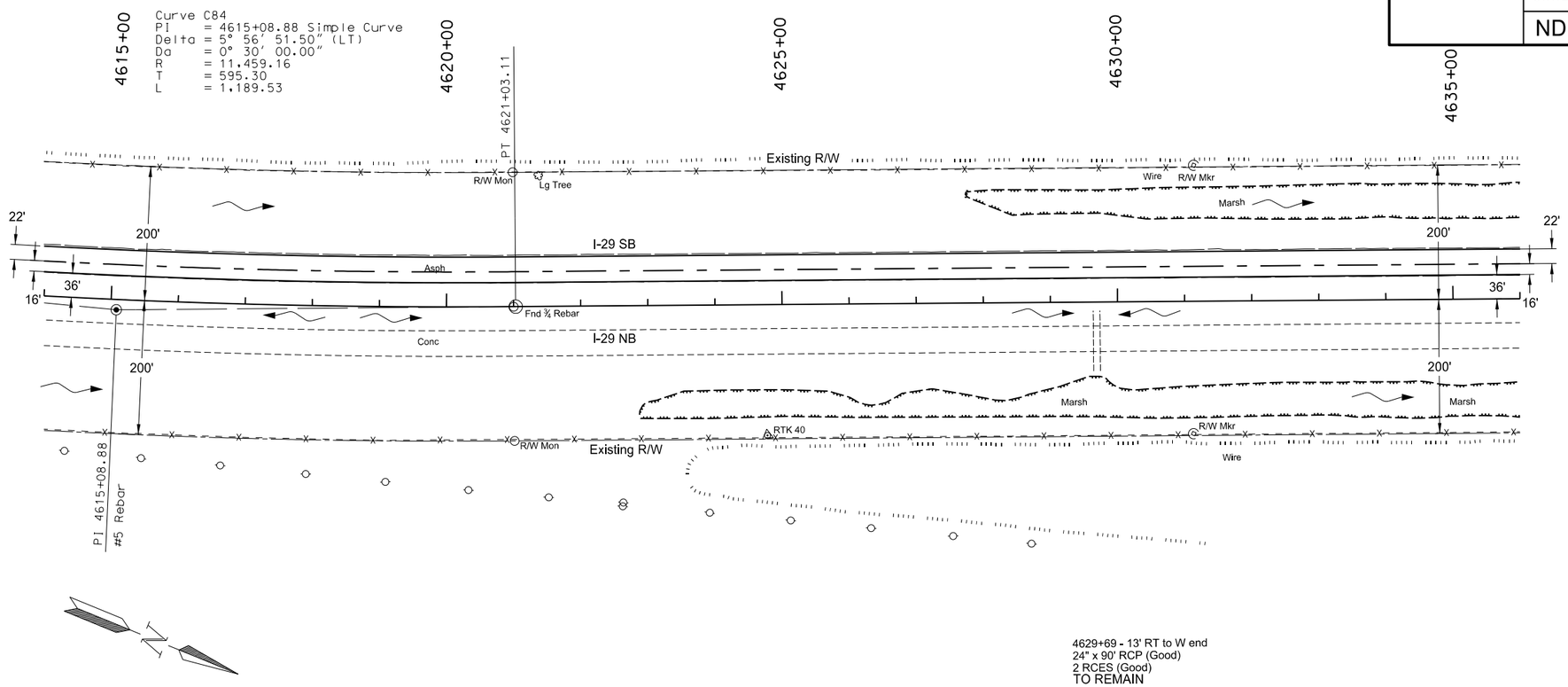
Plan and Profile

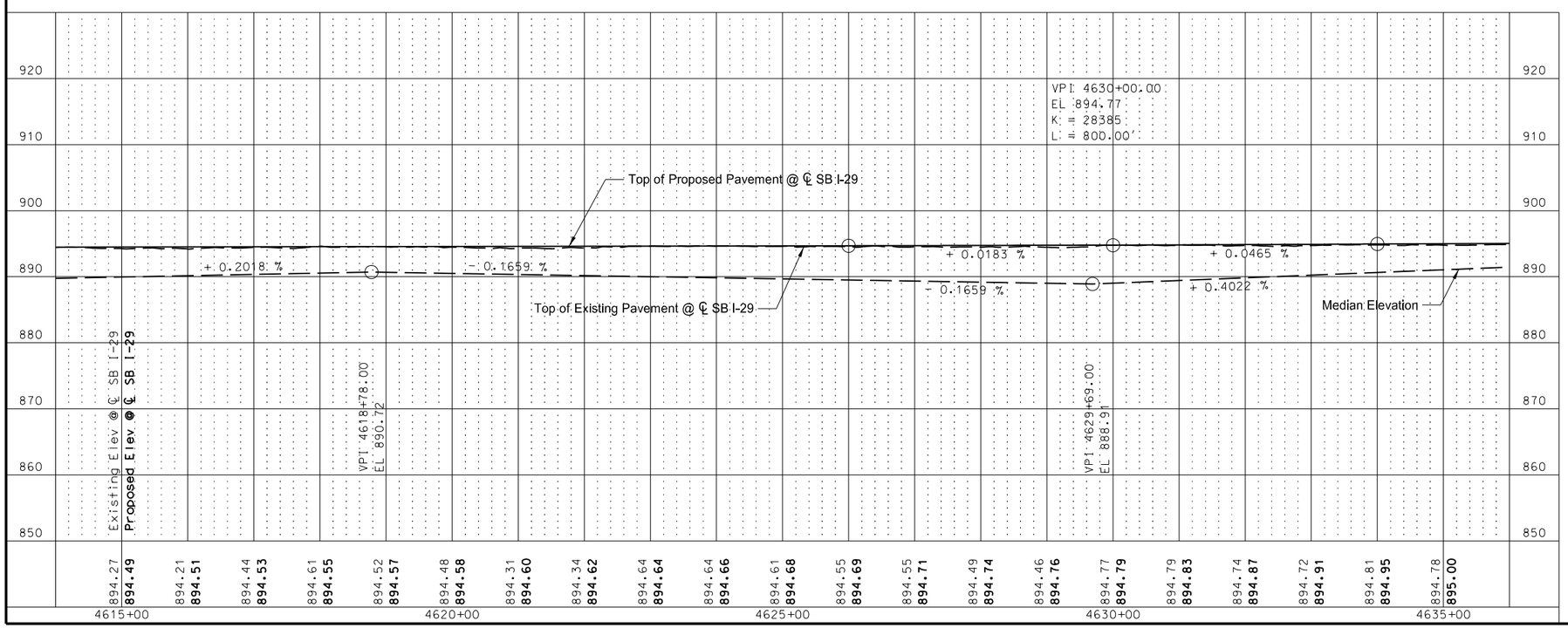
Interstate 29 - Argusville to Hunter SB
Sta 4595+00 to Sta 4615+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	23

Curve C84
PI = 4615+08.88 Simple Curve
Delta = 5° 56' 51.50" (LT)
Dg = 0° 30' 00.00"
R = 11,459.16
T = 595.30
L = 1,189.53



4629+69 - 13' RT to W end
24" x 90' RCP (Good)
2 RCES (Good)
TO REMAIN



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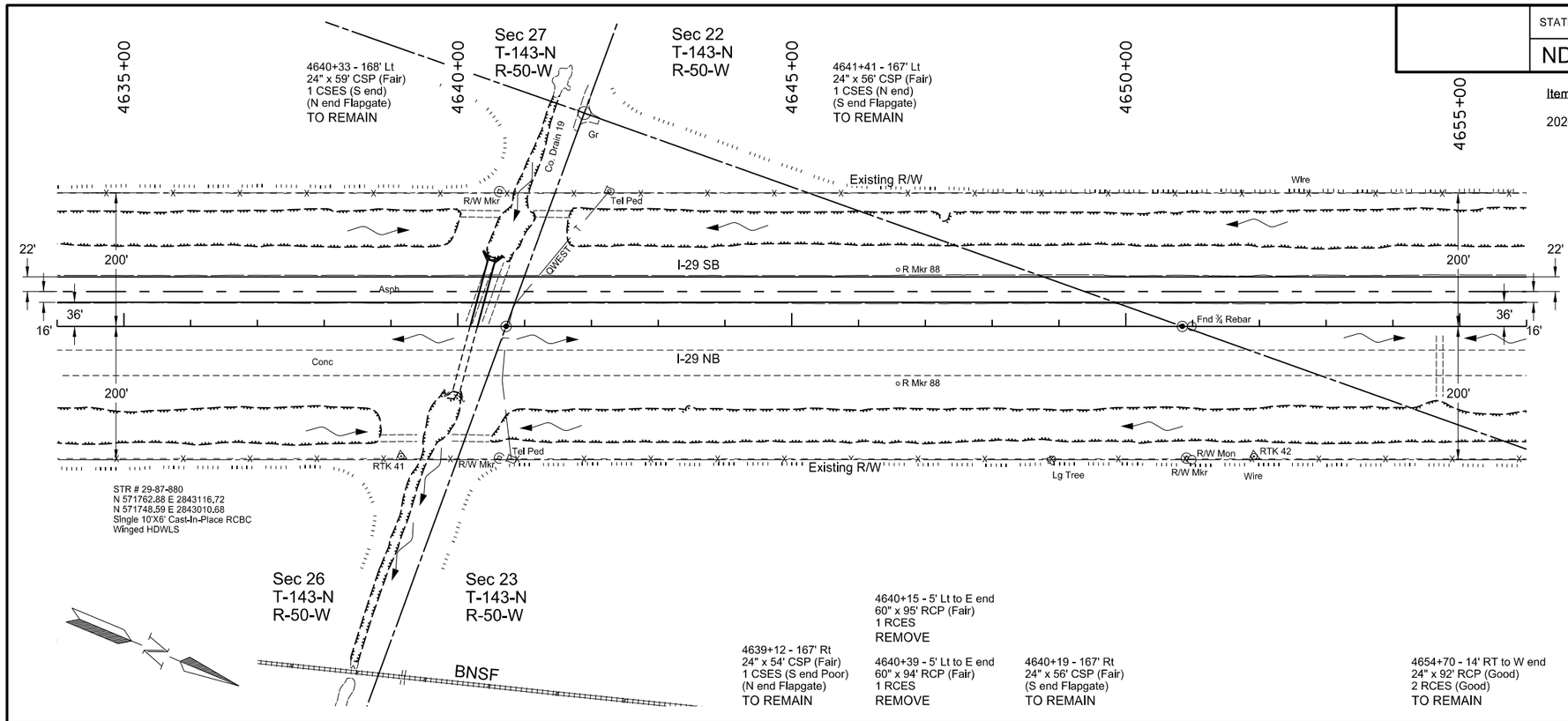
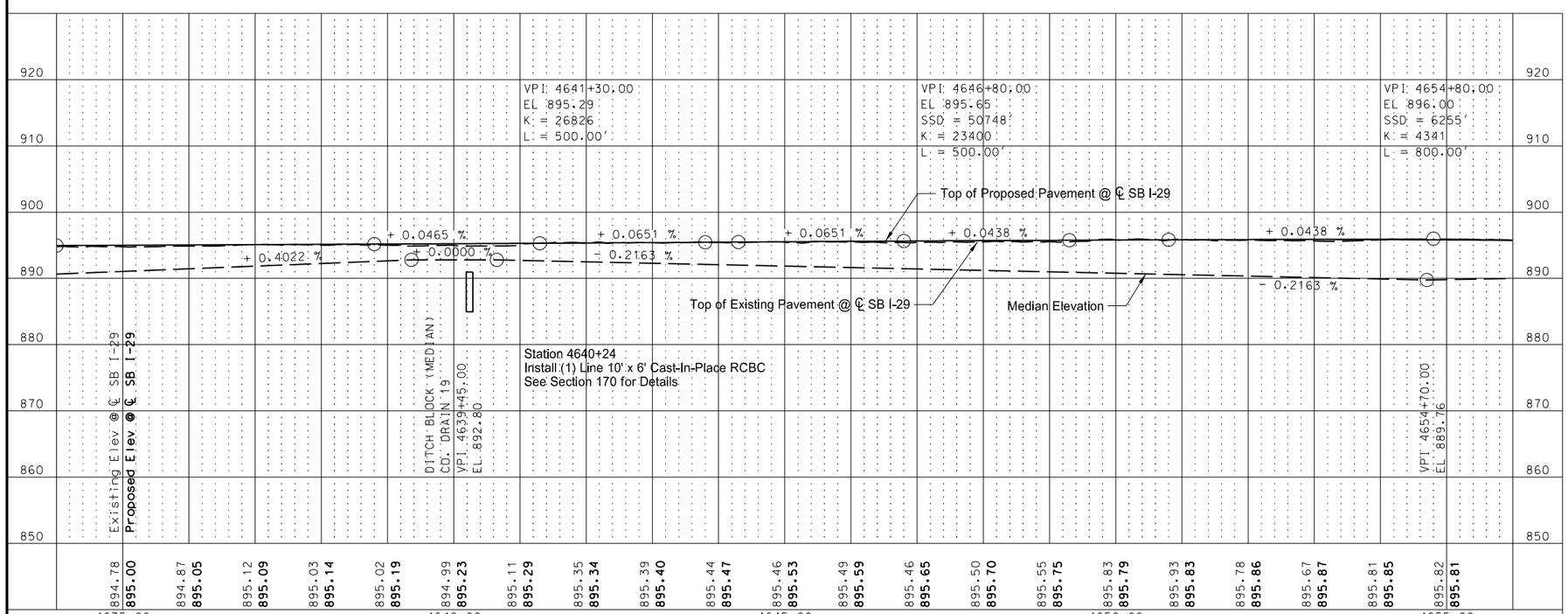
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4615+00 to Sta 4635+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	24

Item	Description	Quantity	Unit
202-0174	REMOVAL OF PIPE ALL TYPES AND SIZES		
	Sta 4640+15 ℄	95	LF
	Sta 4640+39 ℄	94	LF





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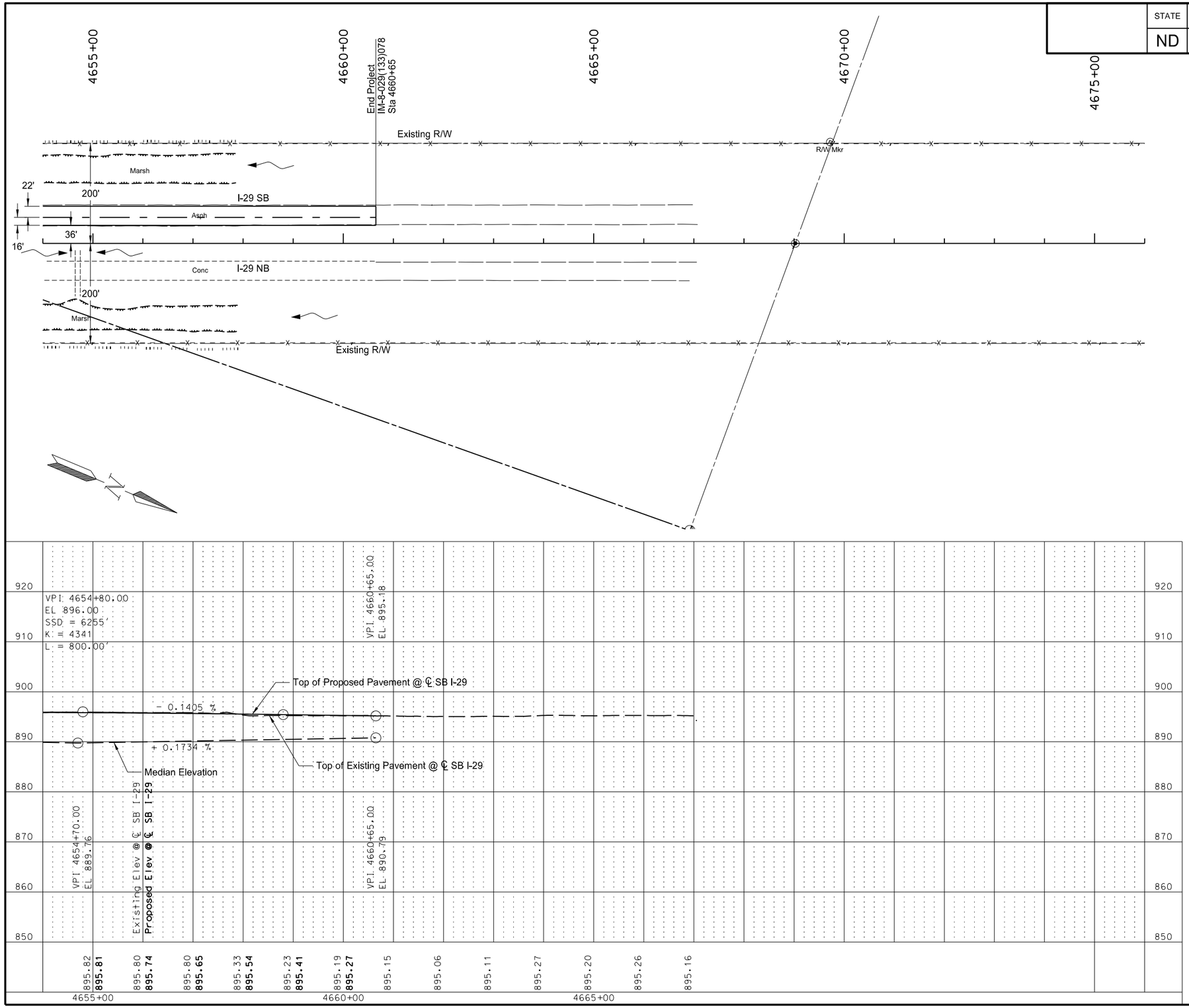
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4635+00 to Sta 4655+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	25



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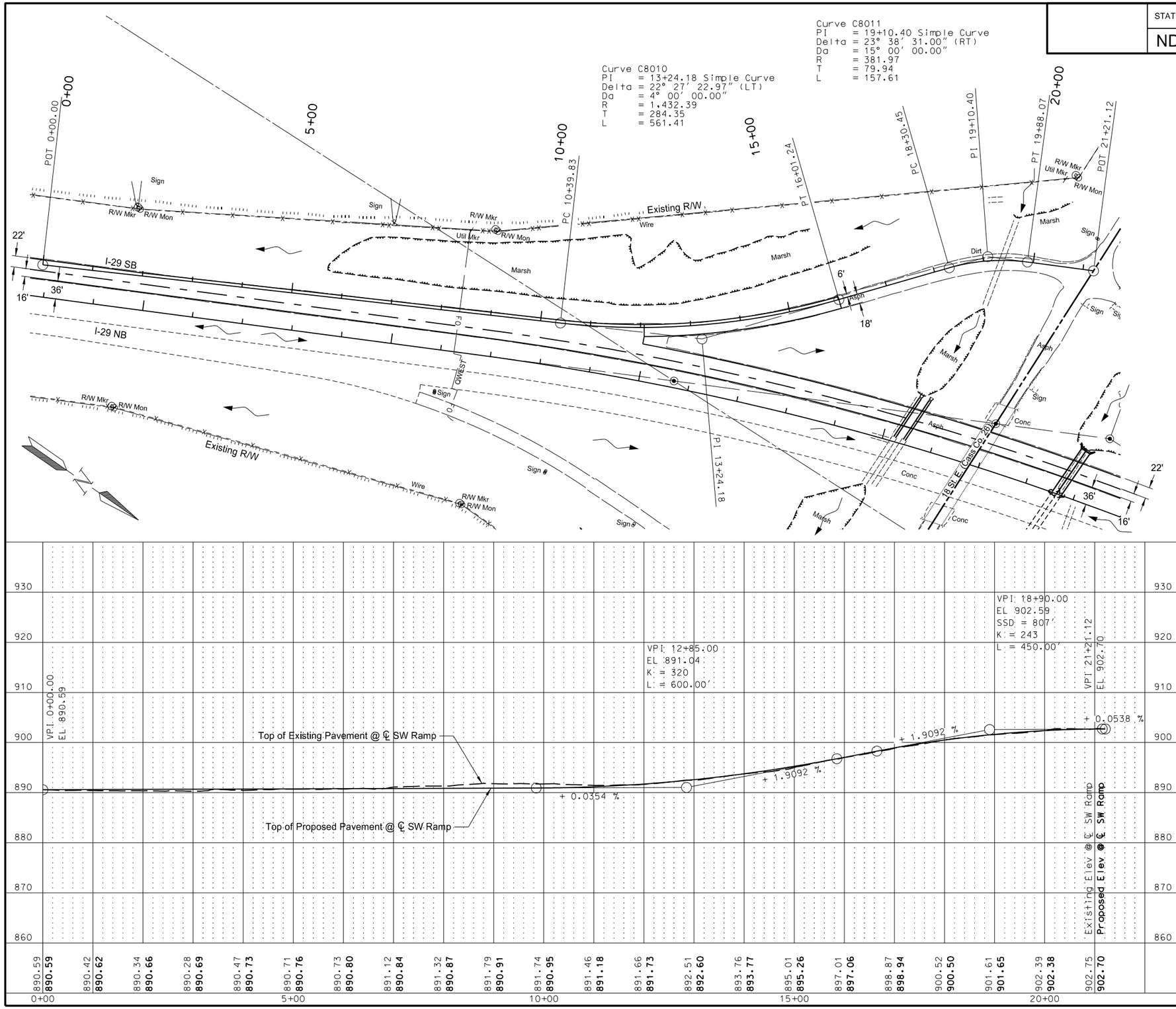
Plan and Profile

Interstate 29 - Argusville to Hunter SB
Sta 4655+00 to Sta 4660+65

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	26



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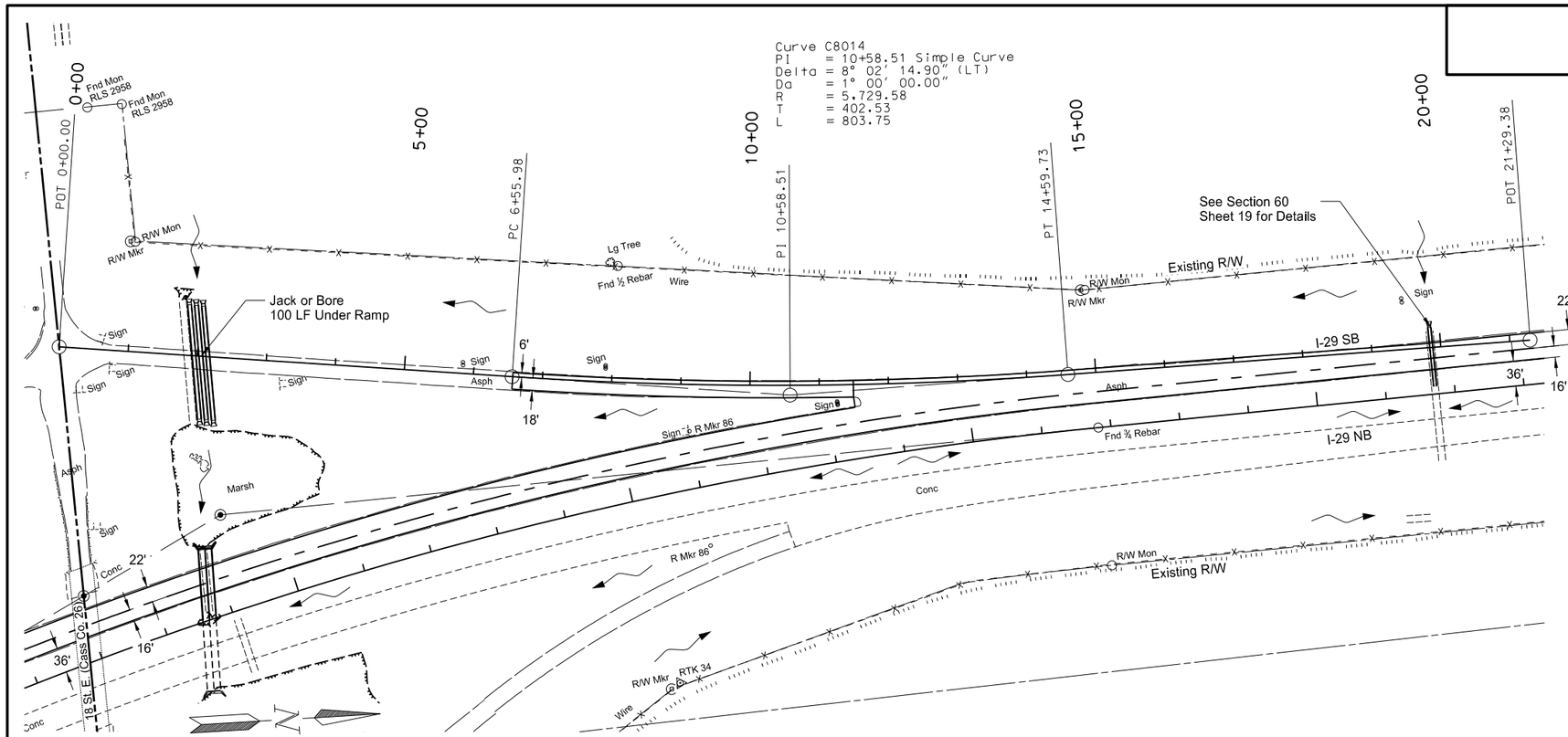
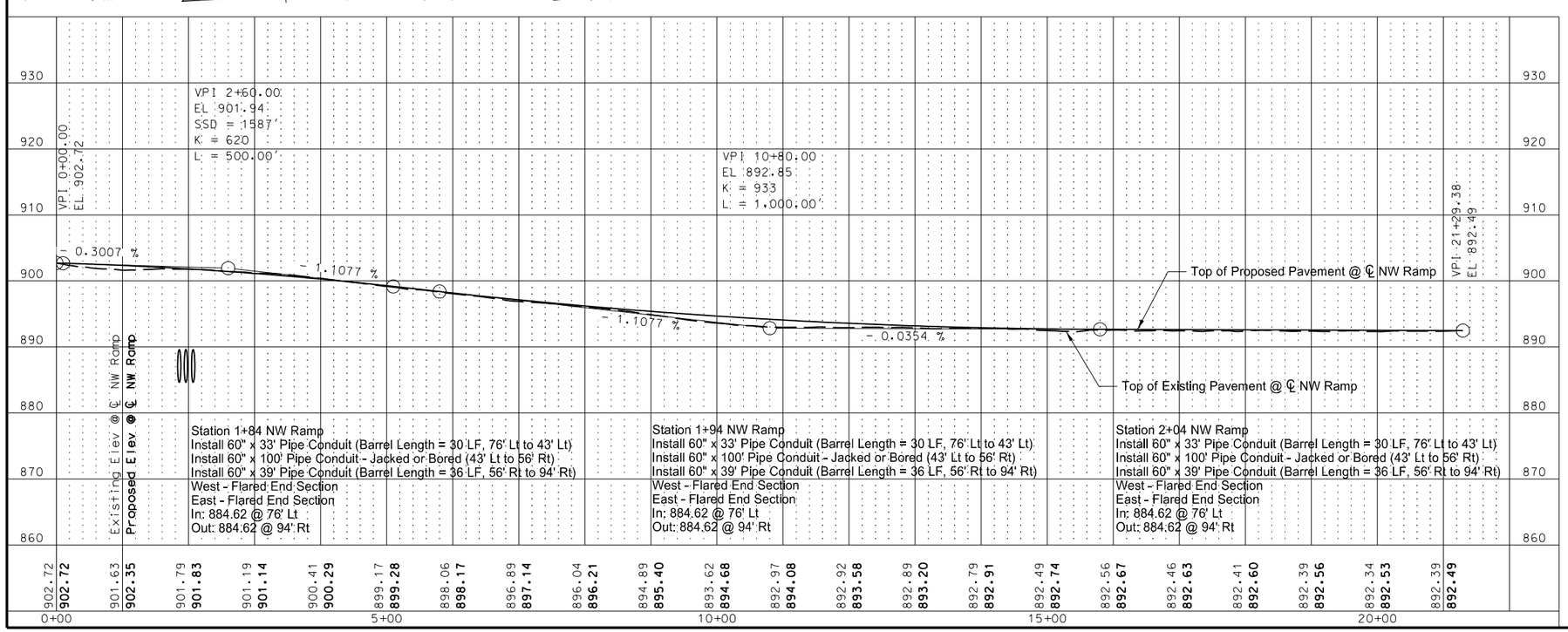
Plan and Profile
Gardner Interchange SW Ramp

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	60	27



Item	Description	Quantity	Unit
714-4135	PIPE CONDUIT 60IN		
	Sta 1+84 - NW Ramp - Lt 76' to Lt 43'	33	LF
	Sta 1+84 - NW Ramp - Rt 56' to Rt 94'	39	LF
	Sta 1+94 - NW Ramp - Lt 76' to Lt 43'	33	LF
	Sta 1+94 - NW Ramp - Rt 56' to Rt 94'	39	LF
	Sta 2+04 - NW Ramp - Lt 76' to Lt 43'	33	LF
	Sta 2+04 - NW Ramp - Rt 56' to Rt 94'	39	LF
714-4168	PIPE CONDUIT 60IN-JACKED OR BORED		
	Sta 1+84 - NW Ramp - Lt 43' to Rt 56'	100	LF
	Sta 1+94 - NW Ramp - Lt 43' to Rt 56'	100	LF
	Sta 2+04 - NW Ramp - Lt 43' to Rt 56'	100	LF



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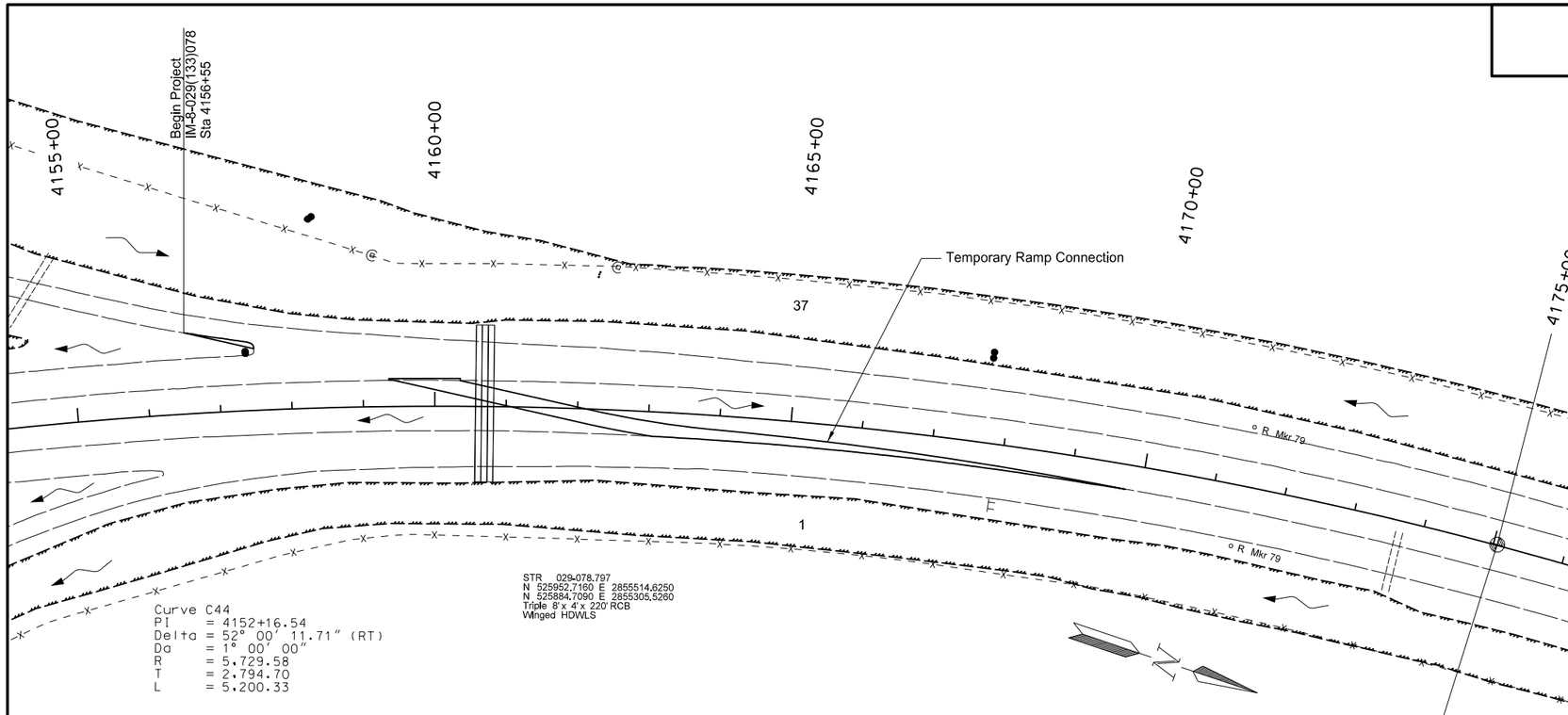
Plan and Profile
Gardner Interchange NW Ramp

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	75	1



Permanent Wetland Impact

Temporary Wetland Impact

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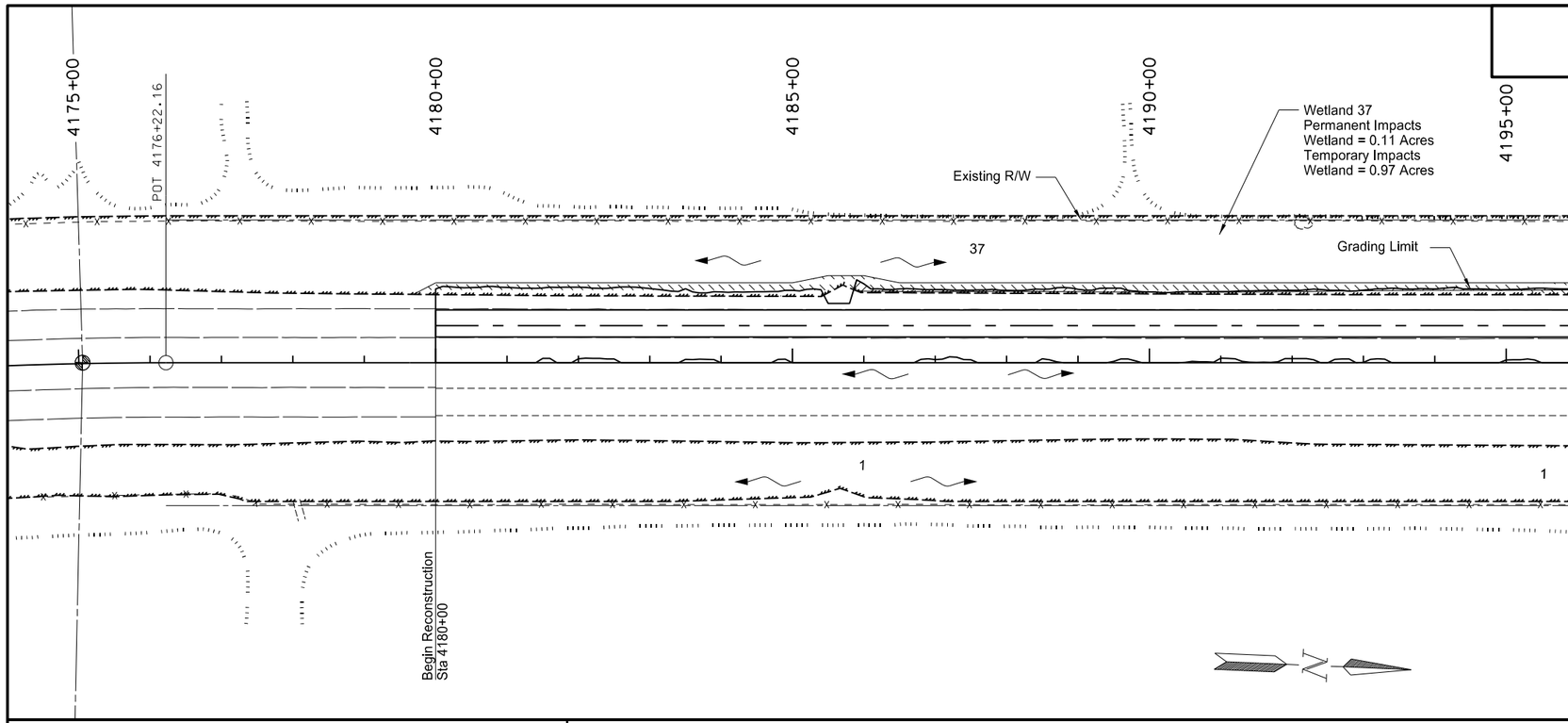
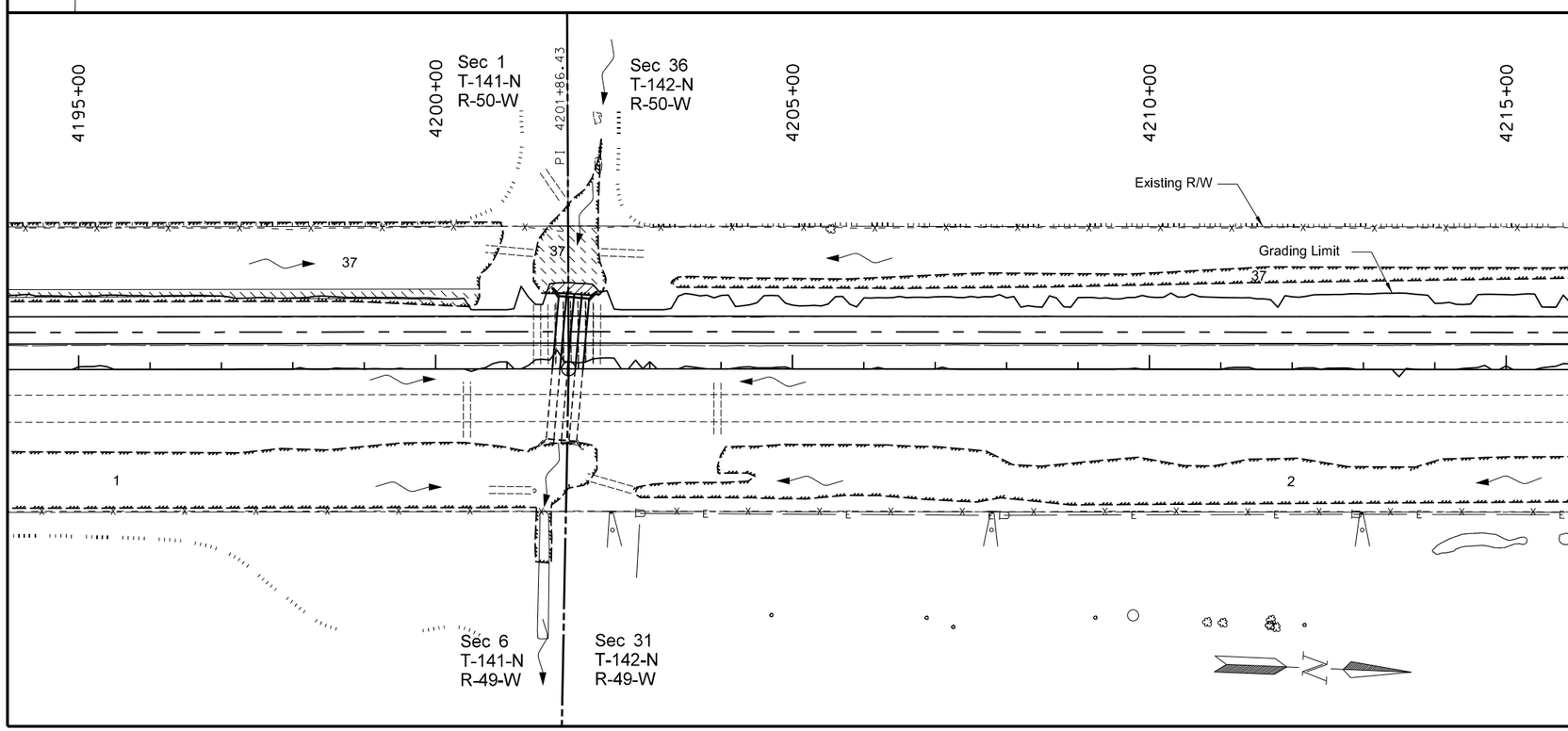
Wetlands, Mitigation & Environmental Impacts

Interstate 29 - Argusville to Hunter SB
Argusville NW Temporary Ramp Connection

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	75	2





Permanent Wetland Impact

Temporary Wetland Impact

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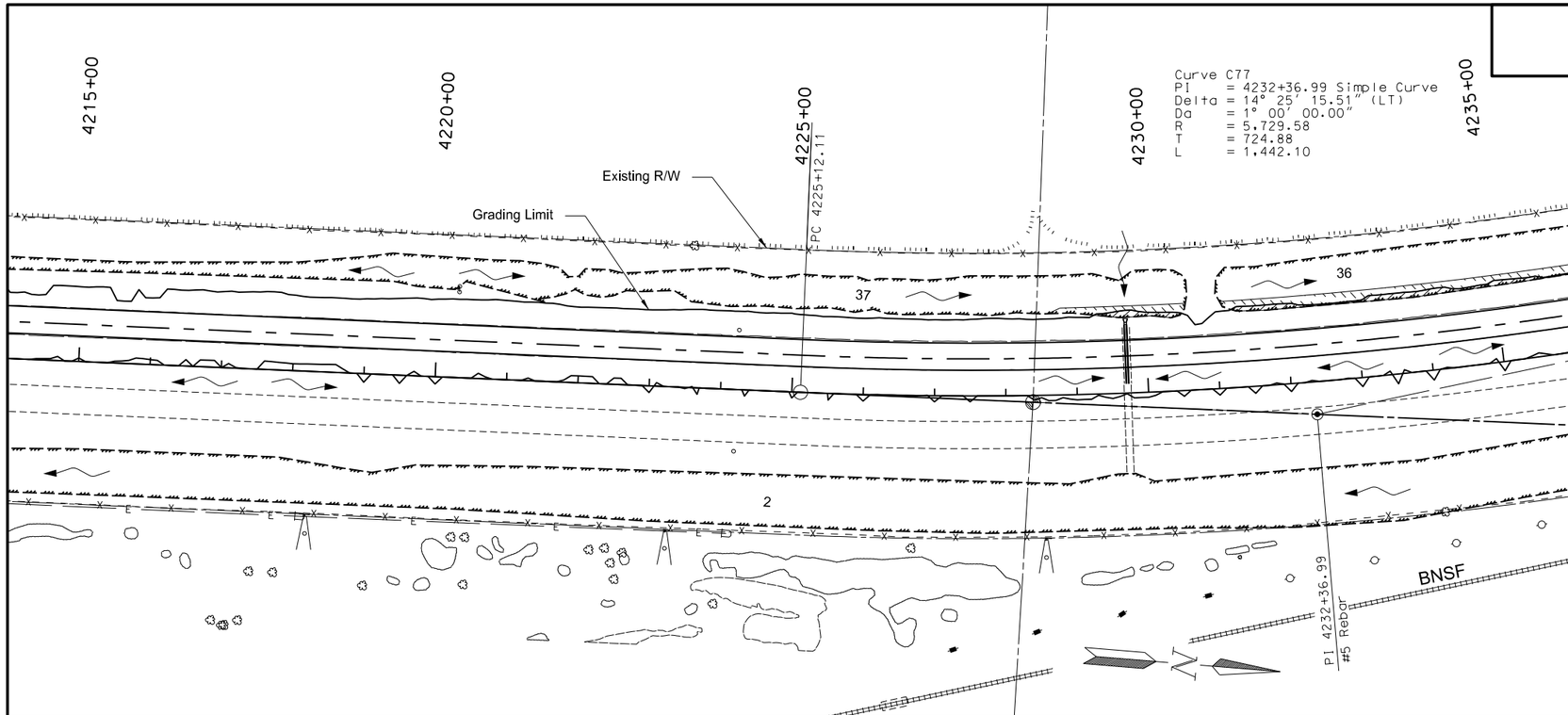
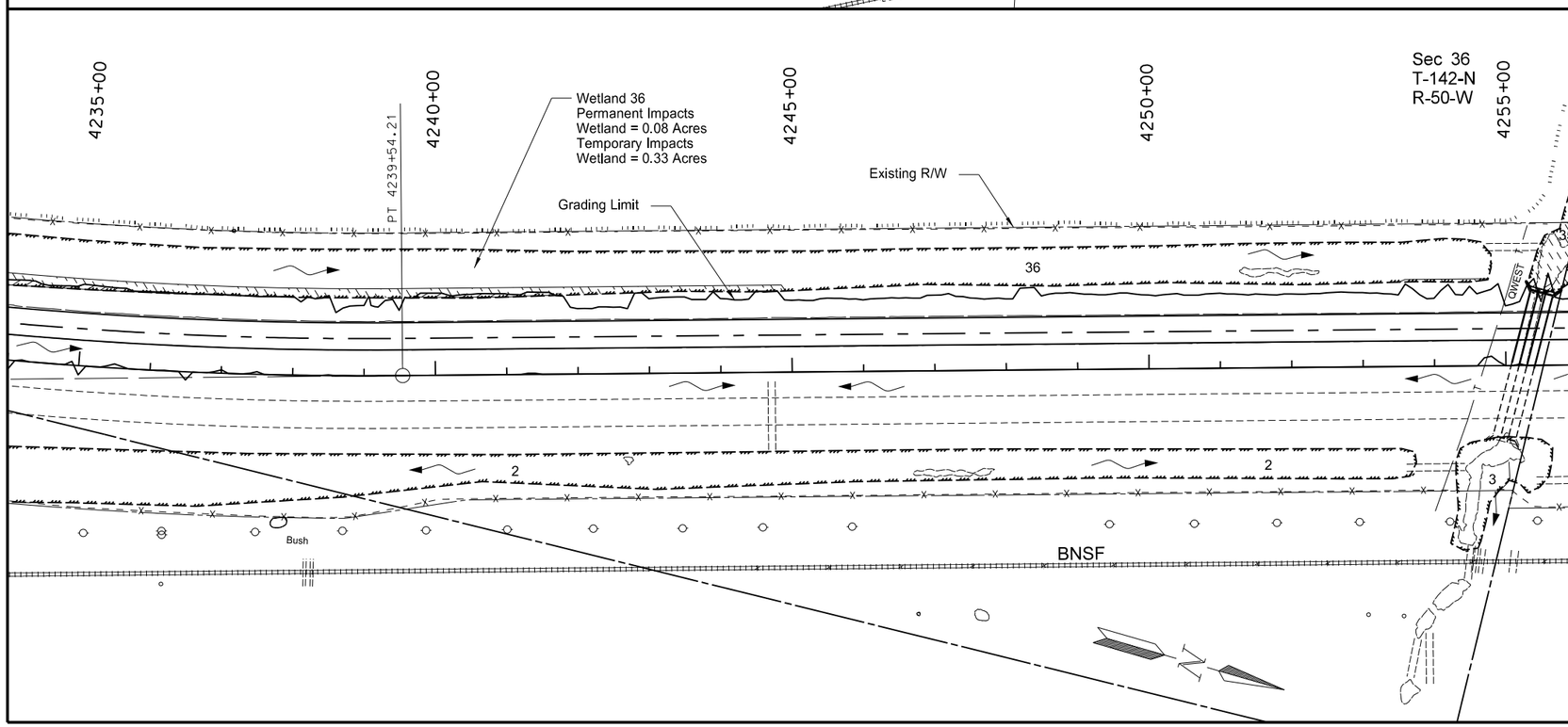
Wetlands, Mitigation & Environmental Impacts

Interstate 29 - Argusville to Hunter SB
Sta 4180+00 to Sta 4215+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	75	3





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Temporary Wetland Impact

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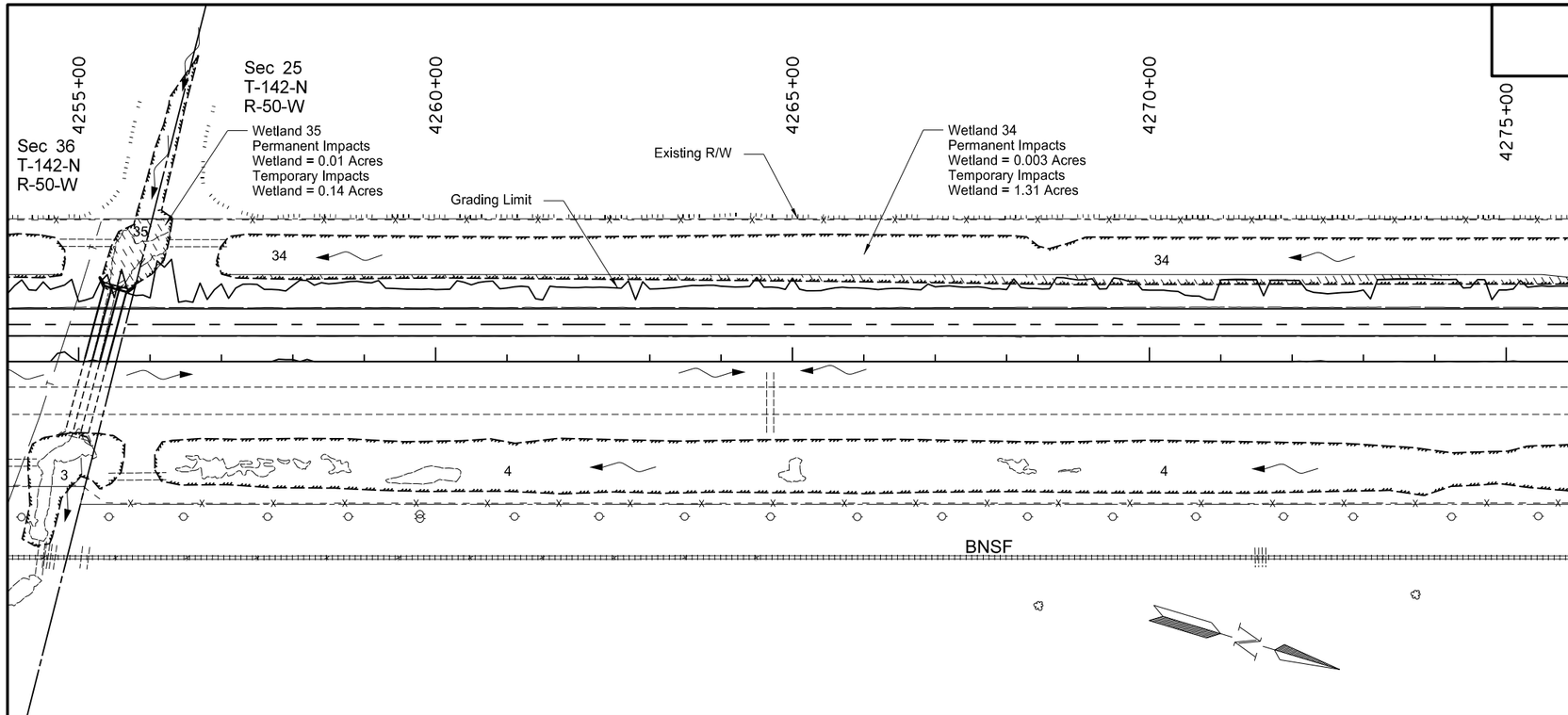
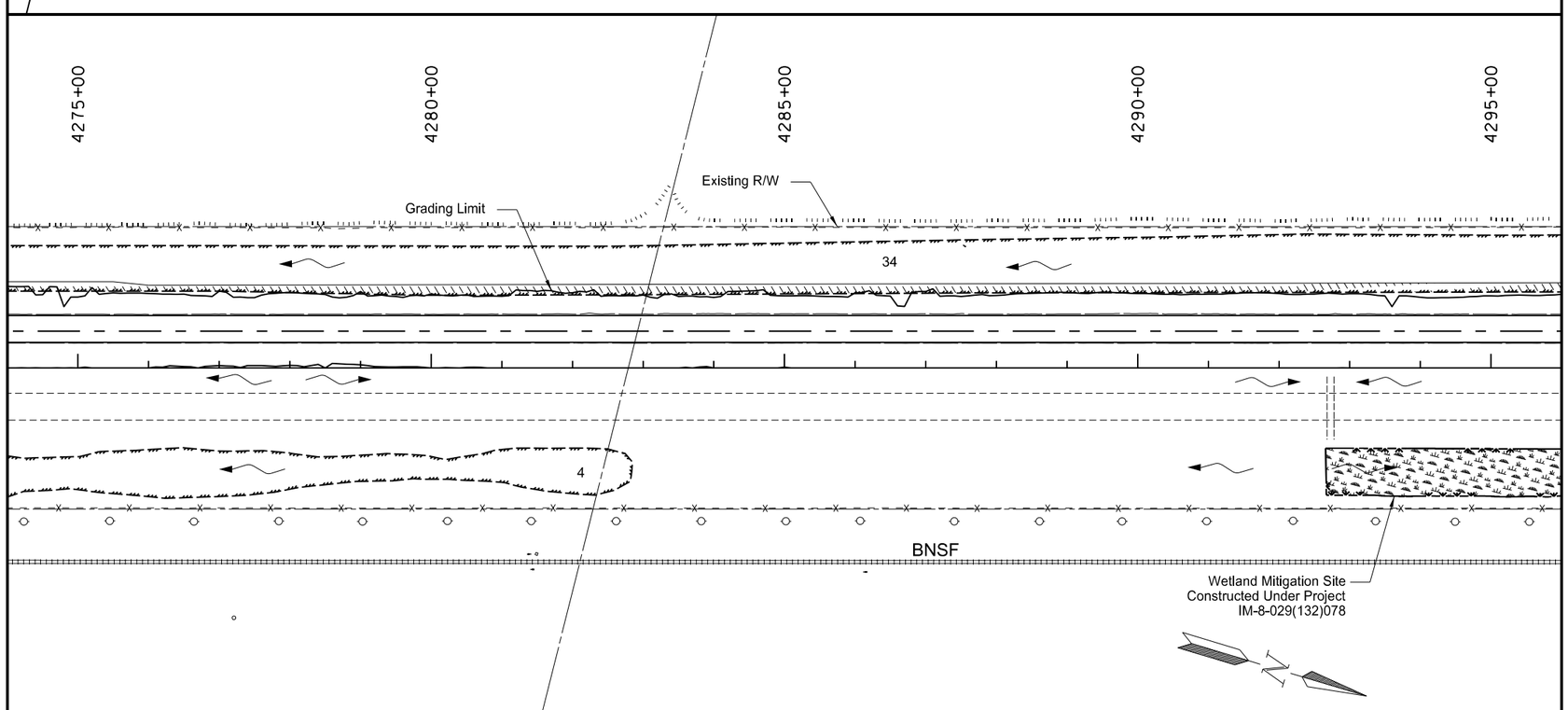
Wetlands, Mitigation & Environmental Impacts

Interstate 29 - Argusville to Hunter SB
Sta 4215+00 to Sta 4255+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	75	4





Permanent Wetland Impact

Temporary Wetland Impact

Wetland Mitigation

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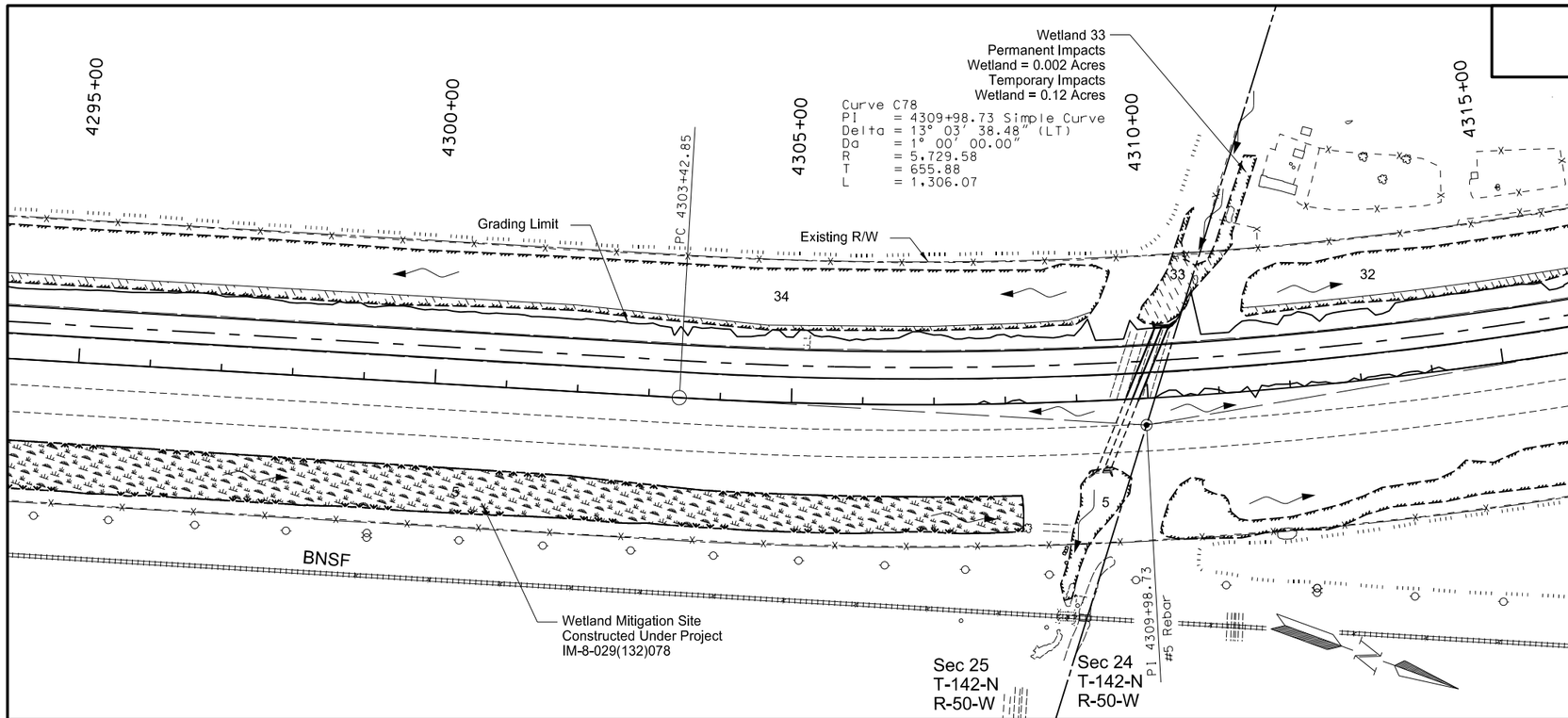
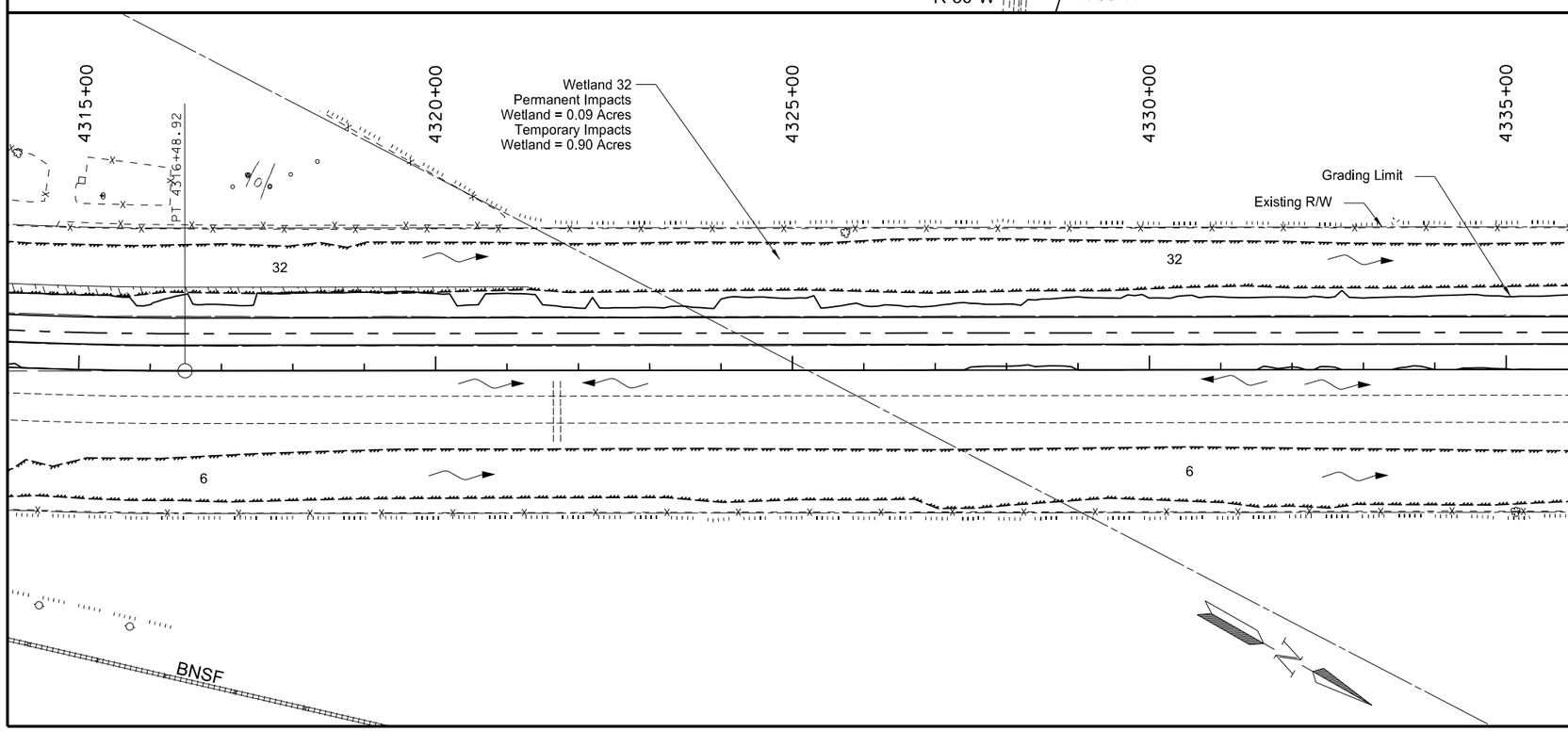
Wetlands, Mitigation & Environmental Impacts

Interstate 29 - Argusville to Hunter SB
Sta 4255+00 to Sta 4295+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	75	5





Permanent Wetland Impact

Temporary Wetland Impact

Wetland Mitigation

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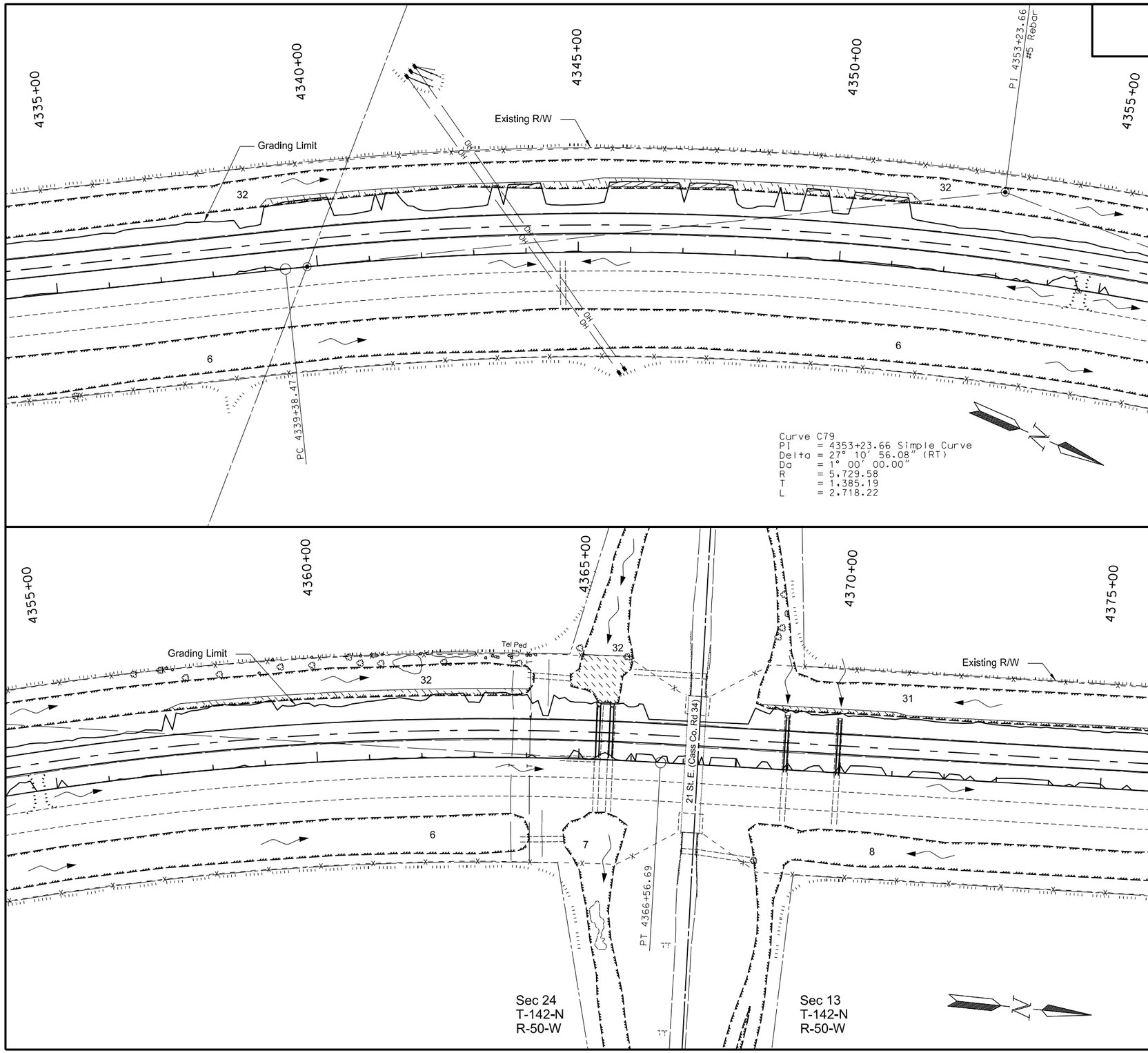
Wetlands, Mitigation & Environmental Impacts

Interstate 29 - Argusville to Hunter SB
Sta 4295+00 to Sta 4335+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	75	6



Permanent Wetland Impact

Temporary Wetland Impact

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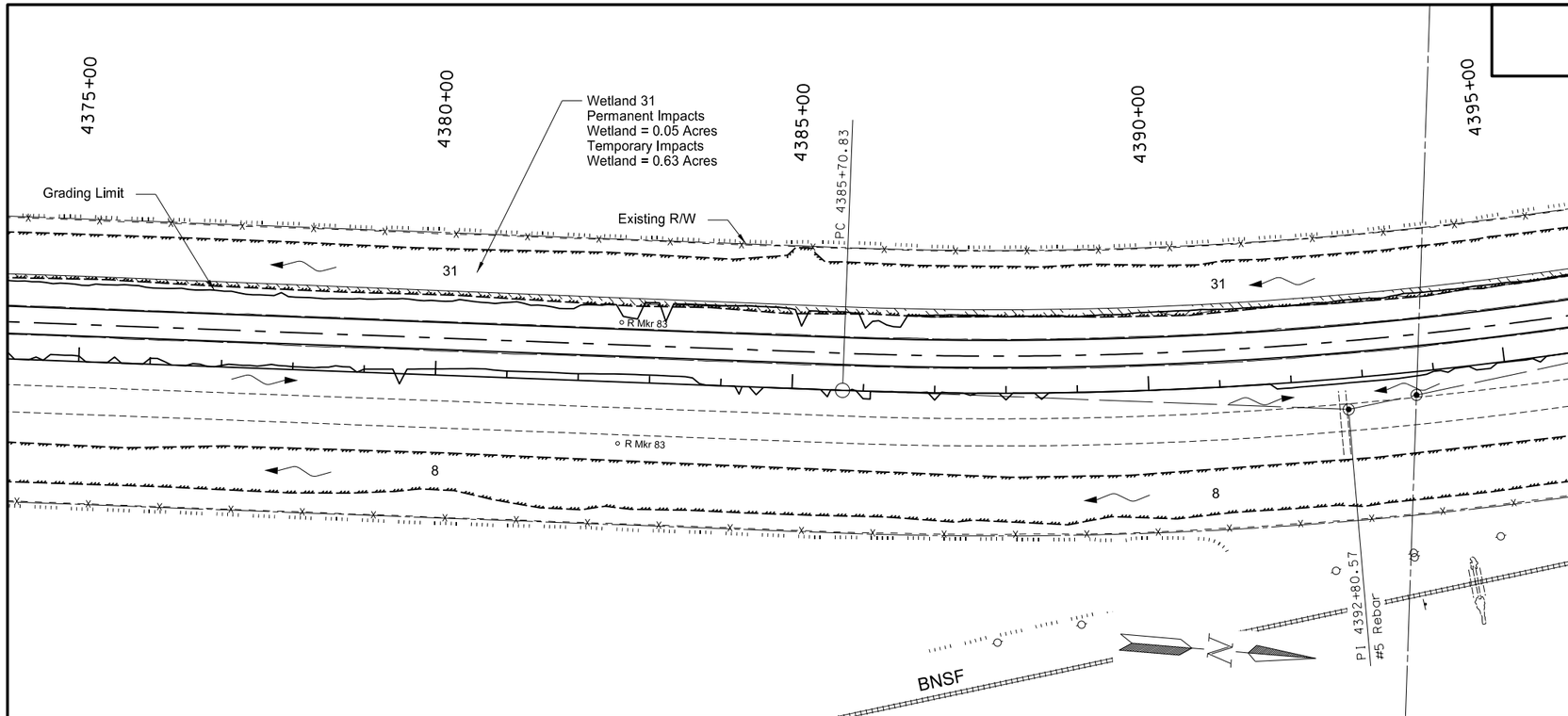
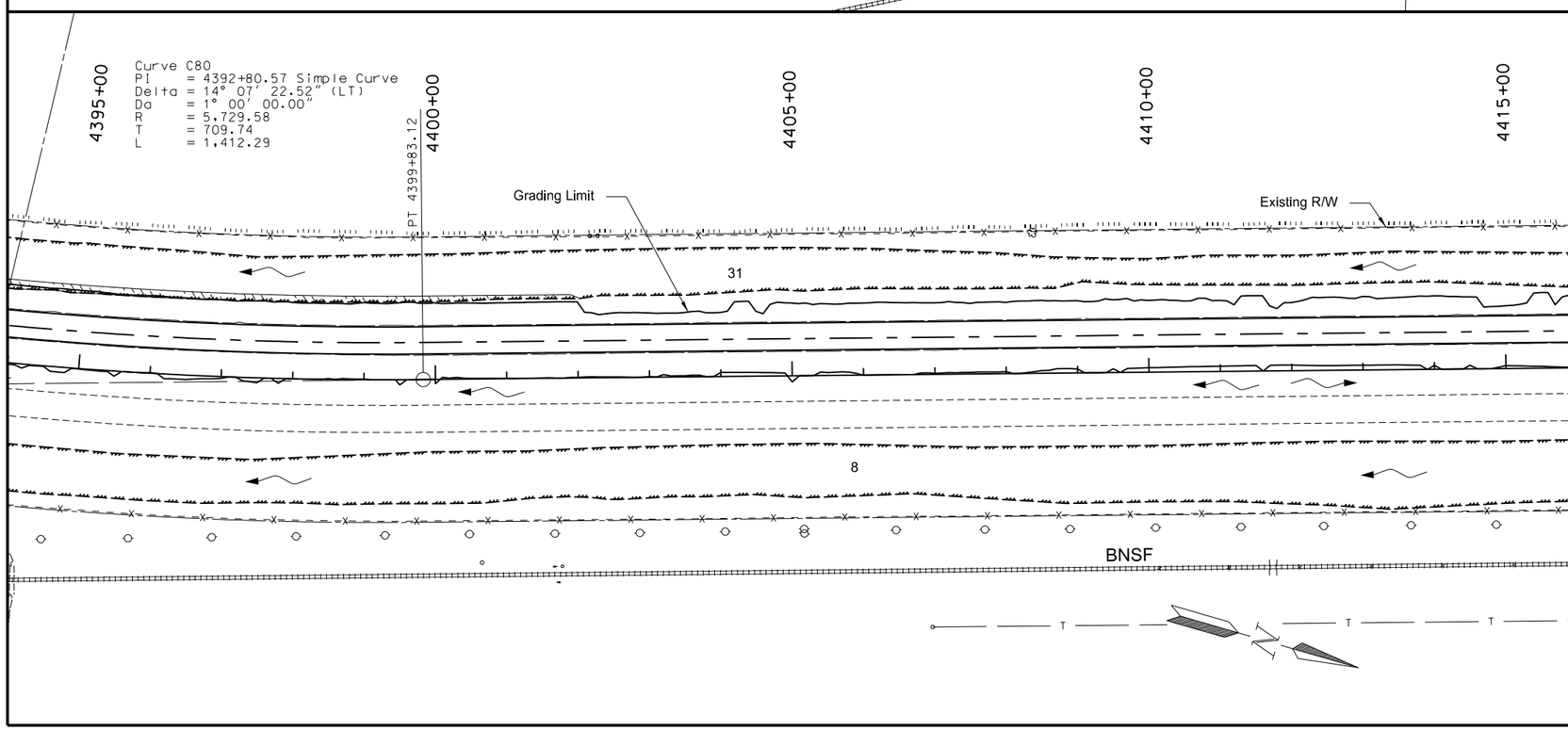
Wetlands, Mitigation & Environmental Impacts

Interstate 29 - Argusville to Hunter SB
Sta 4335+00 to Sta 4375+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	75	7





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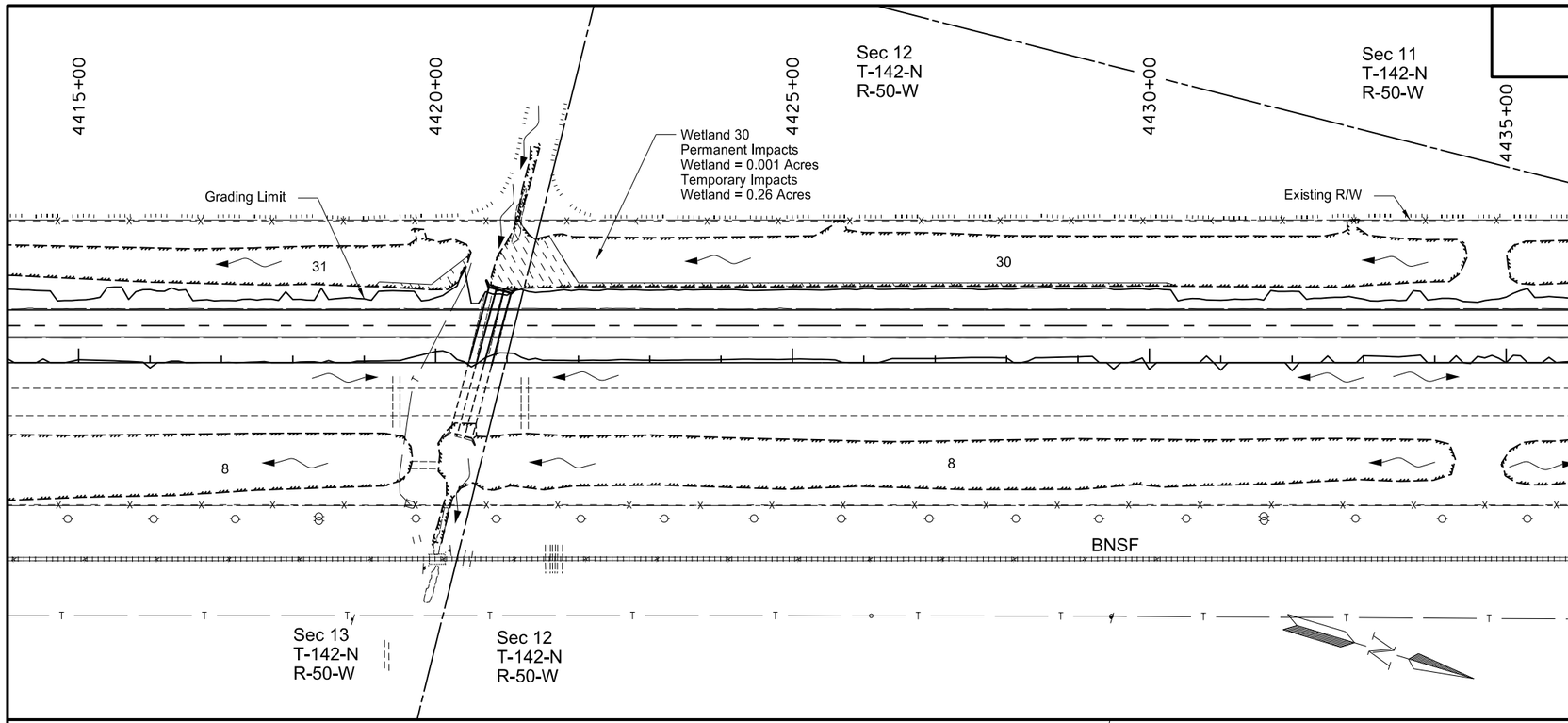
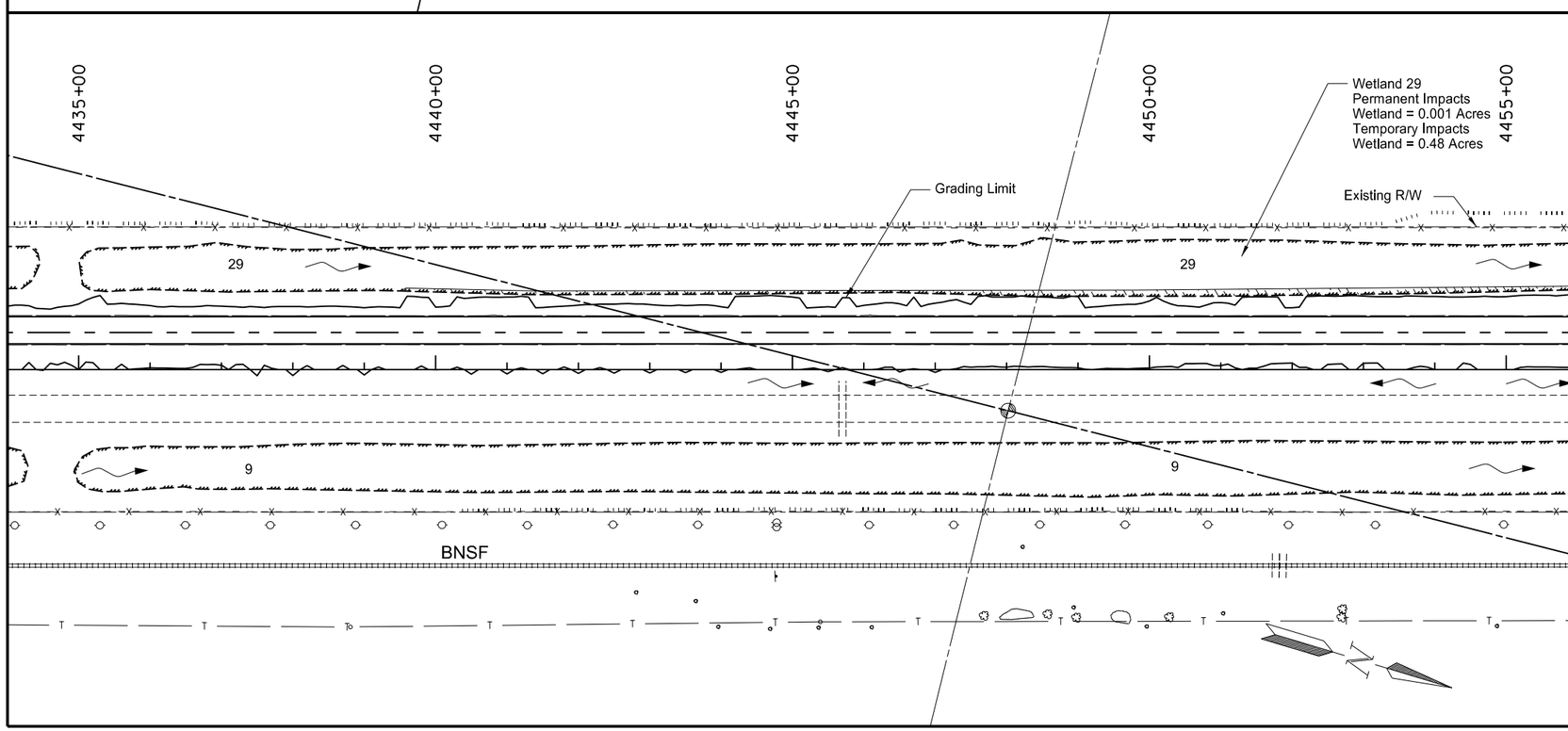
Wetlands, Mitigation & Environmental Impacts

Interstate 29 - Argusville to Hunter SB
Sta 4375+00 to Sta 4415+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	75	8





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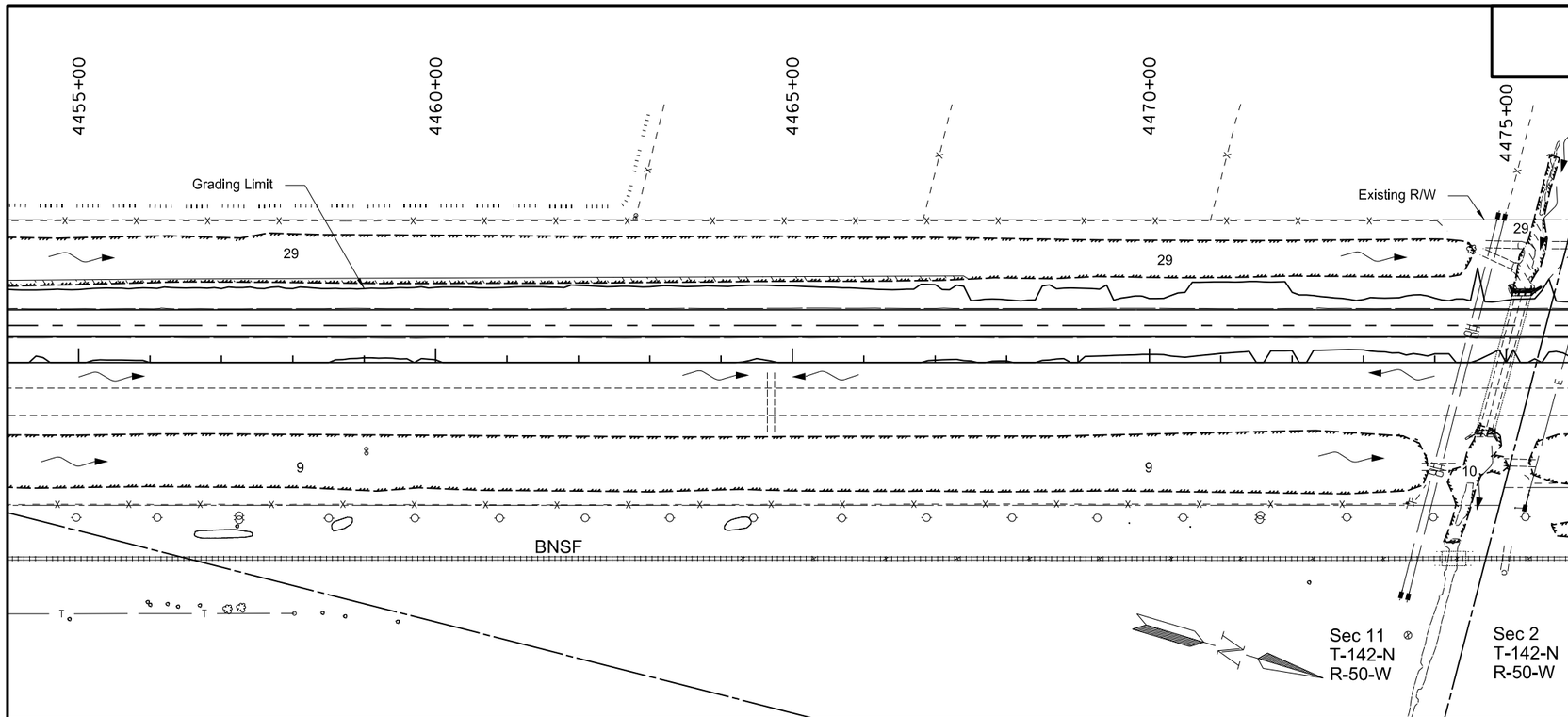
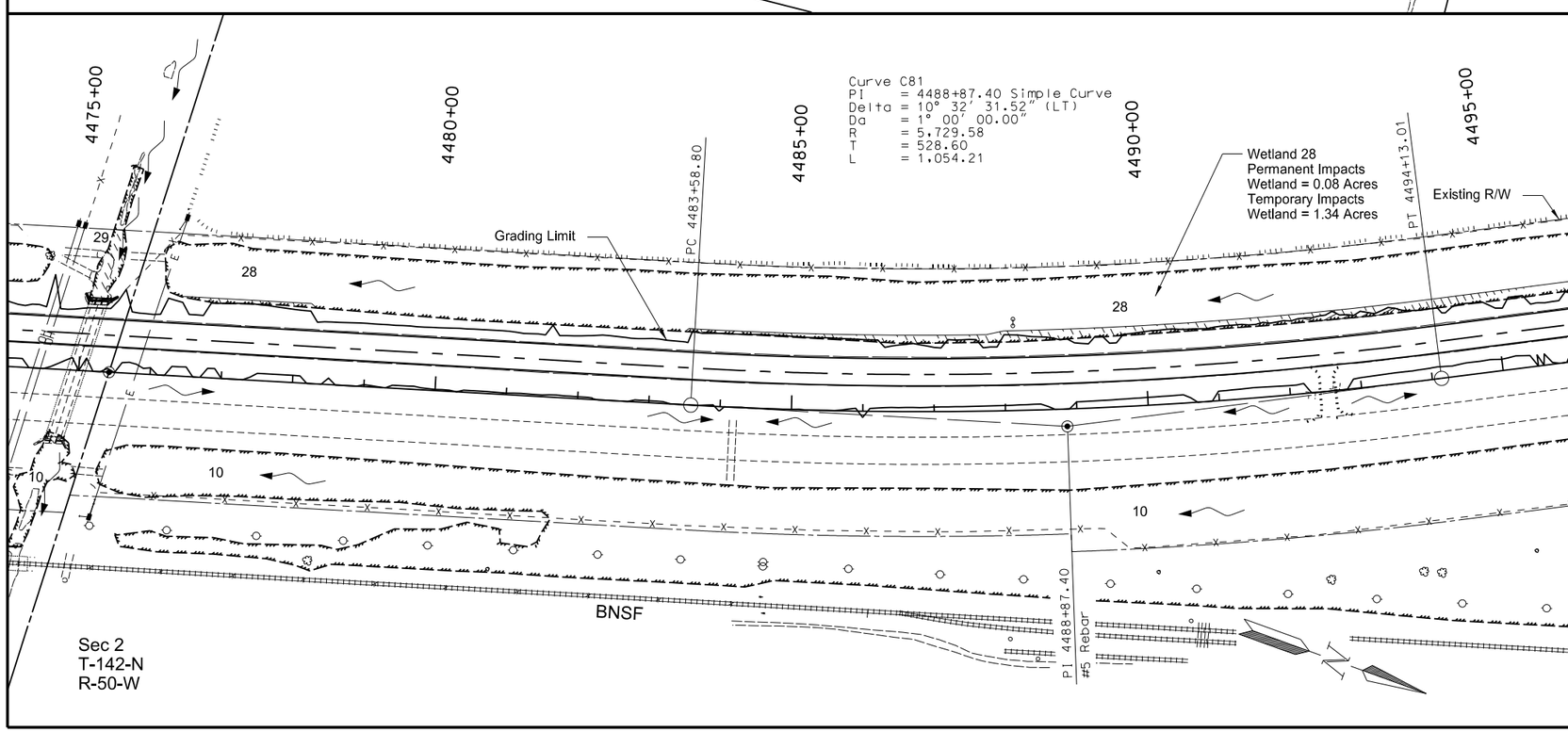
Wetlands, Mitigation & Environmental Impacts

Interstate 29 - Argusville to Hunter SB
Sta 4415+00 to Sta 4455+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	75	9





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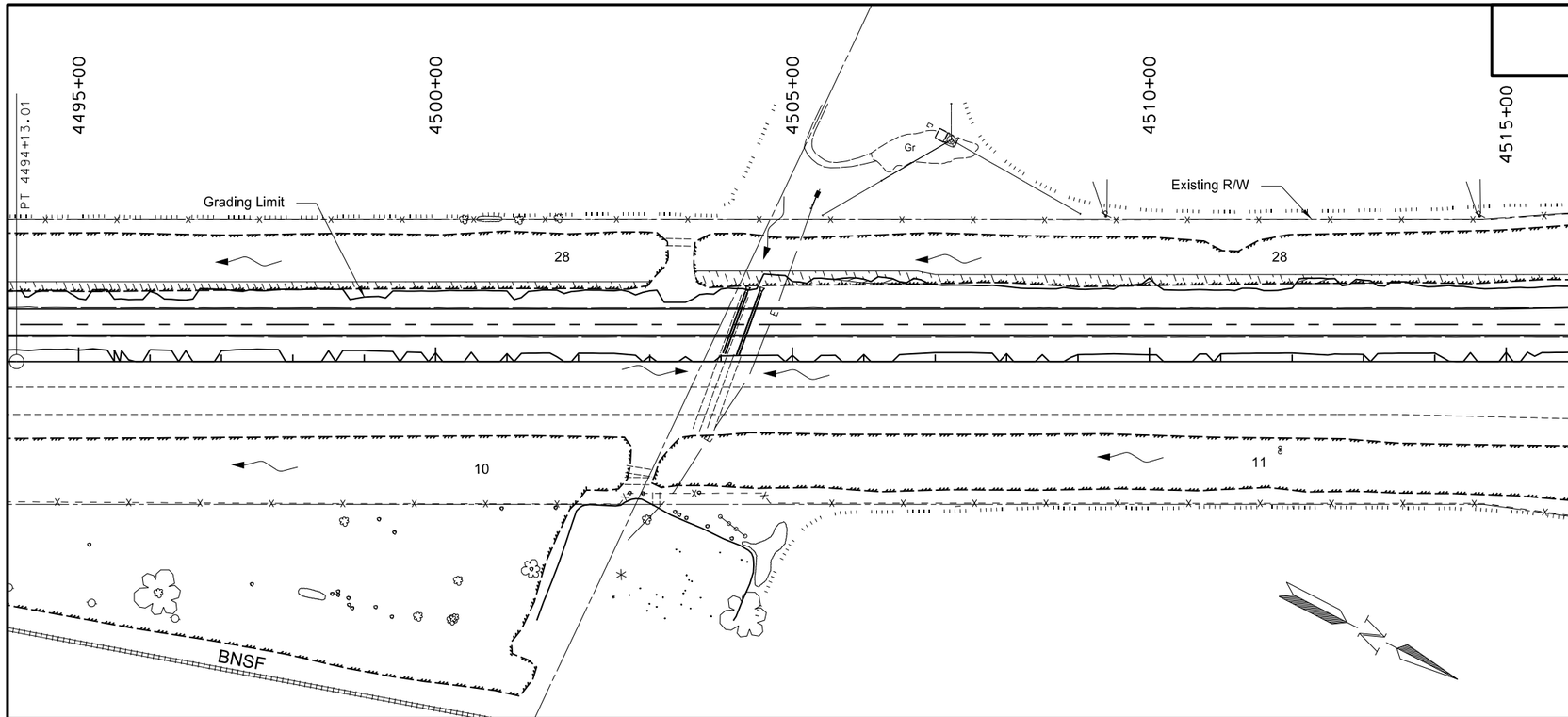
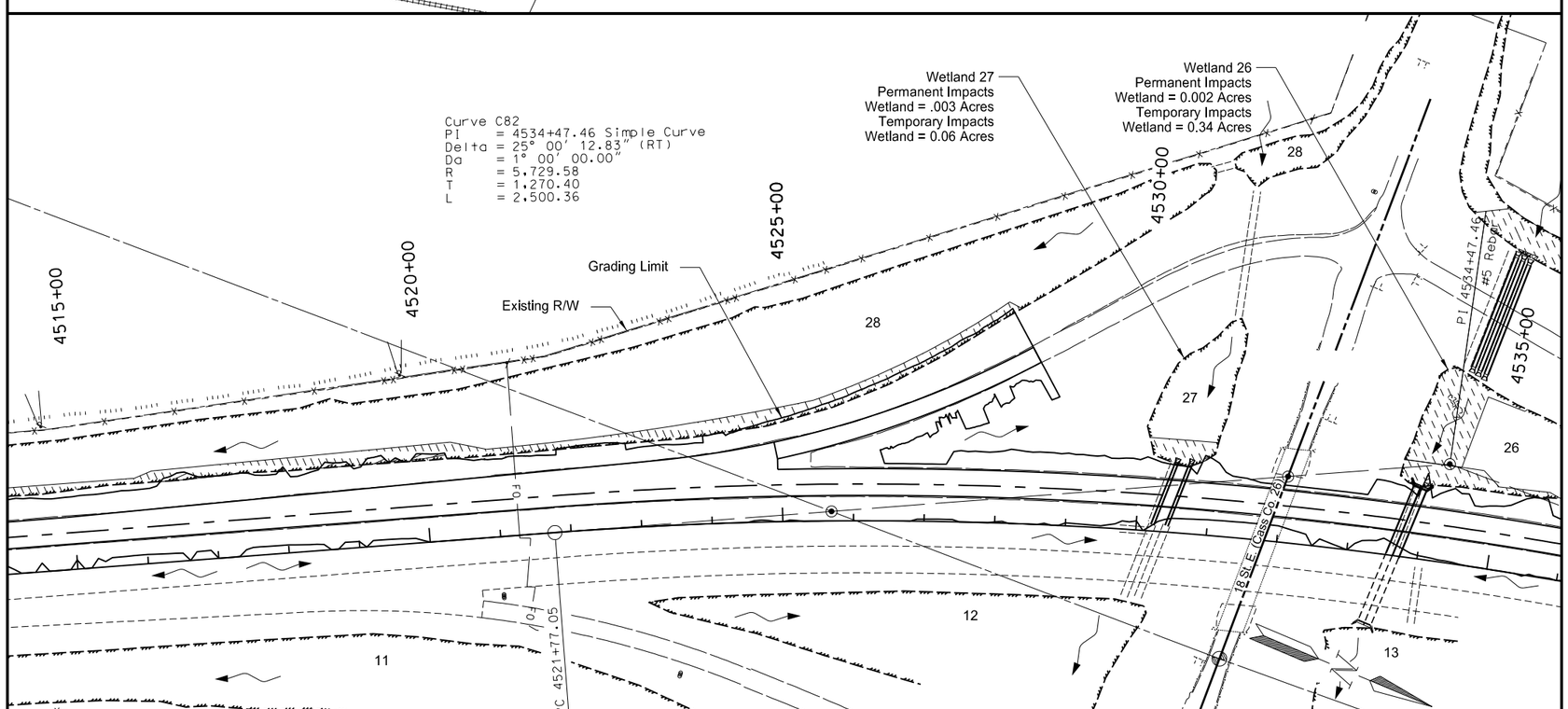
Wetlands, Mitigation & Environmental Impacts

Interstate 29 - Argusville to Hunter SB
Sta 4455+00 to Sta 4495+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	75	10





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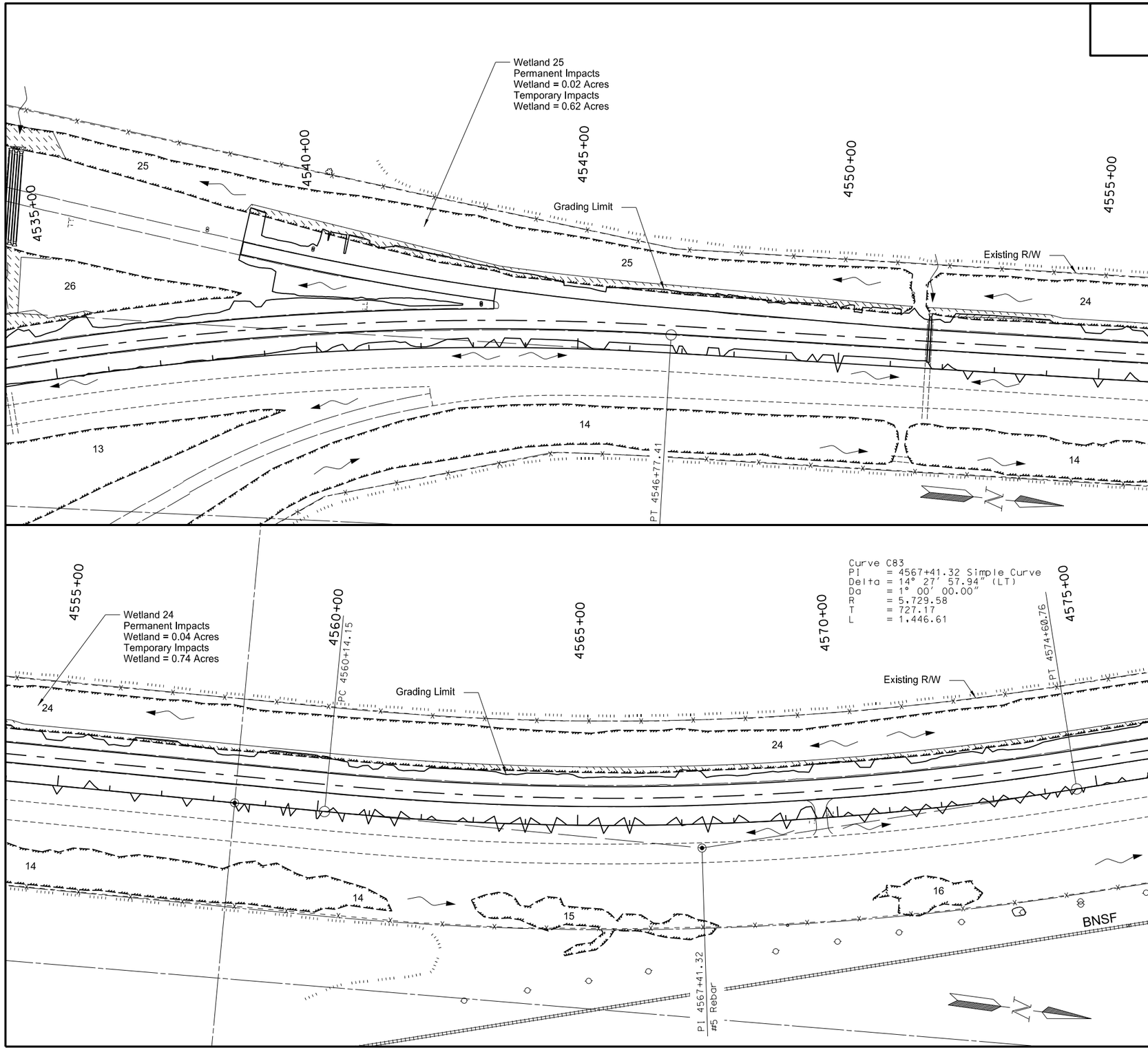
Wetlands, Mitigation & Environmental Impacts

Interstate 29 - Argusville to Hunter SB
Sta 4495+00 to Sta 4535+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	75	11



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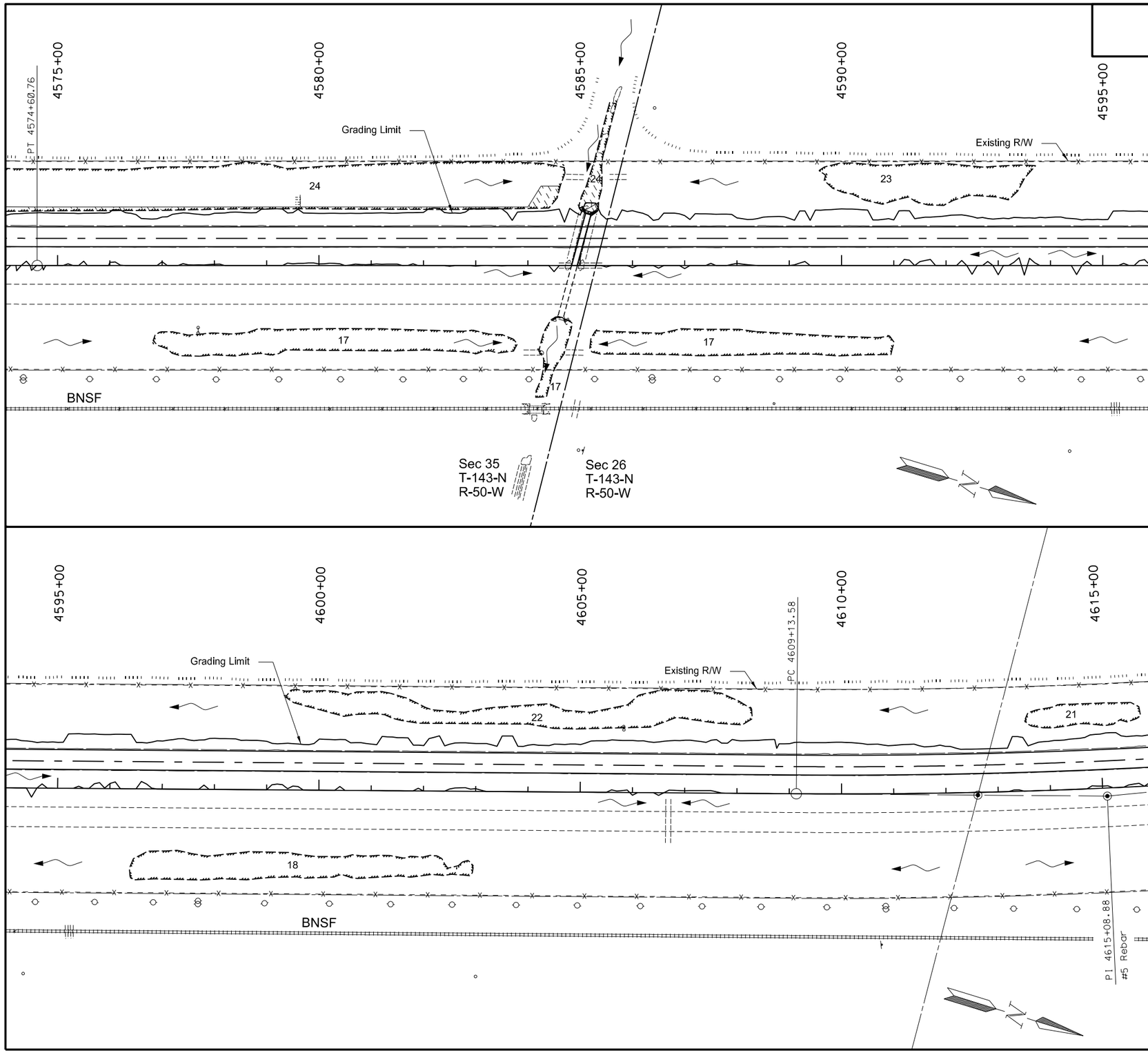
Wetlands, Mitigation & Environmental Impacts

Interstate 29 - Argusville to Hunter SB
Sta 4535+00 to Sta 4575+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	75	12



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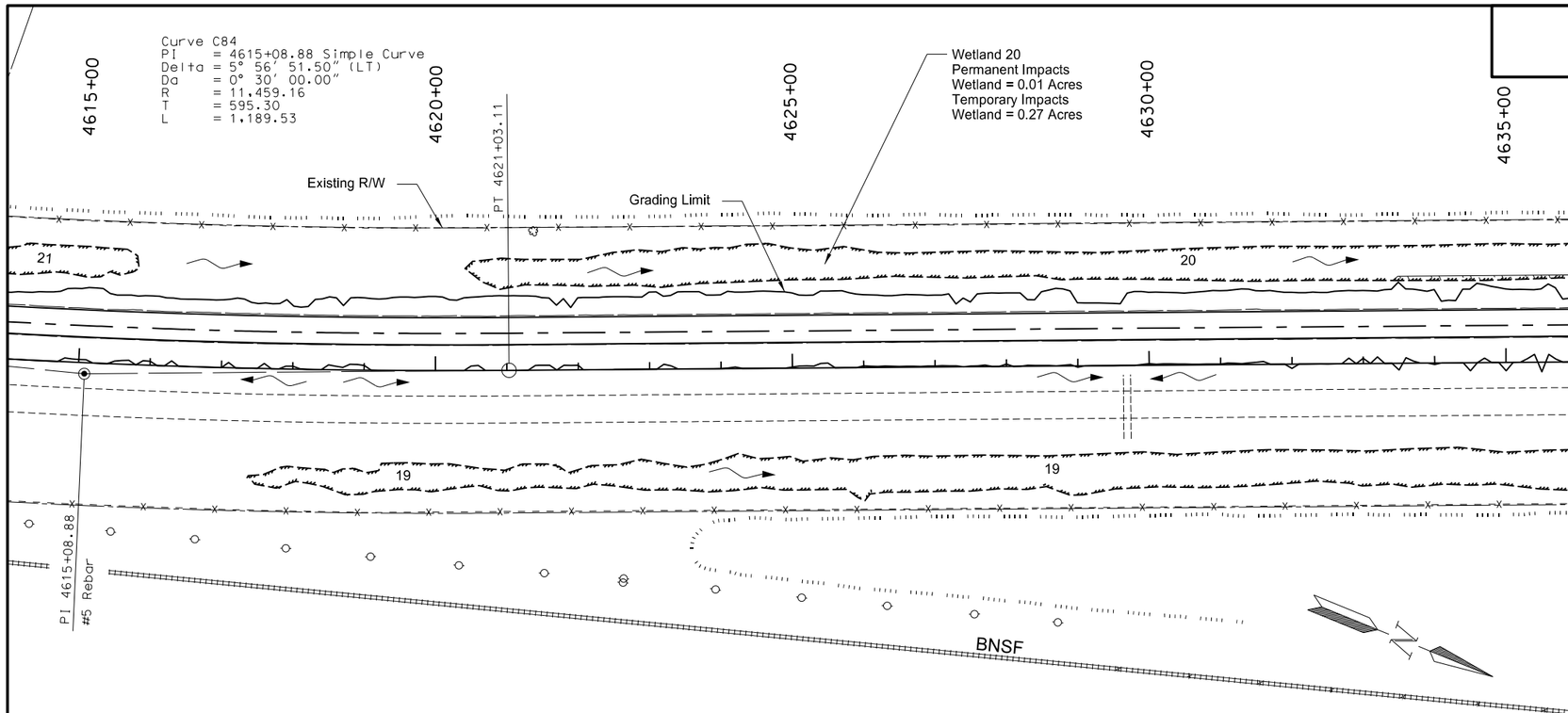
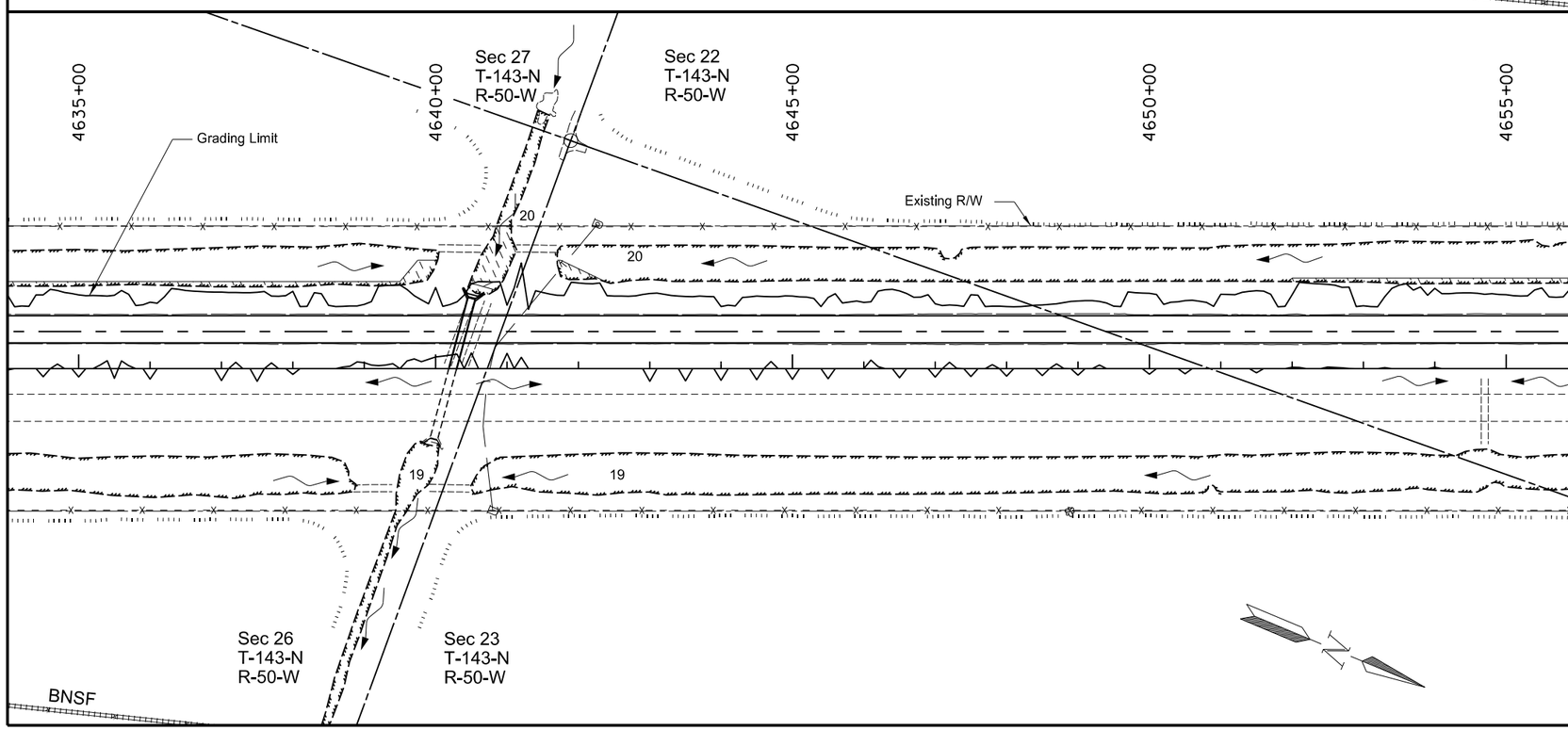
Interstate 29 - Argusville to Hunter SB
Sta 4575+00 to Sta 4615+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	75	13





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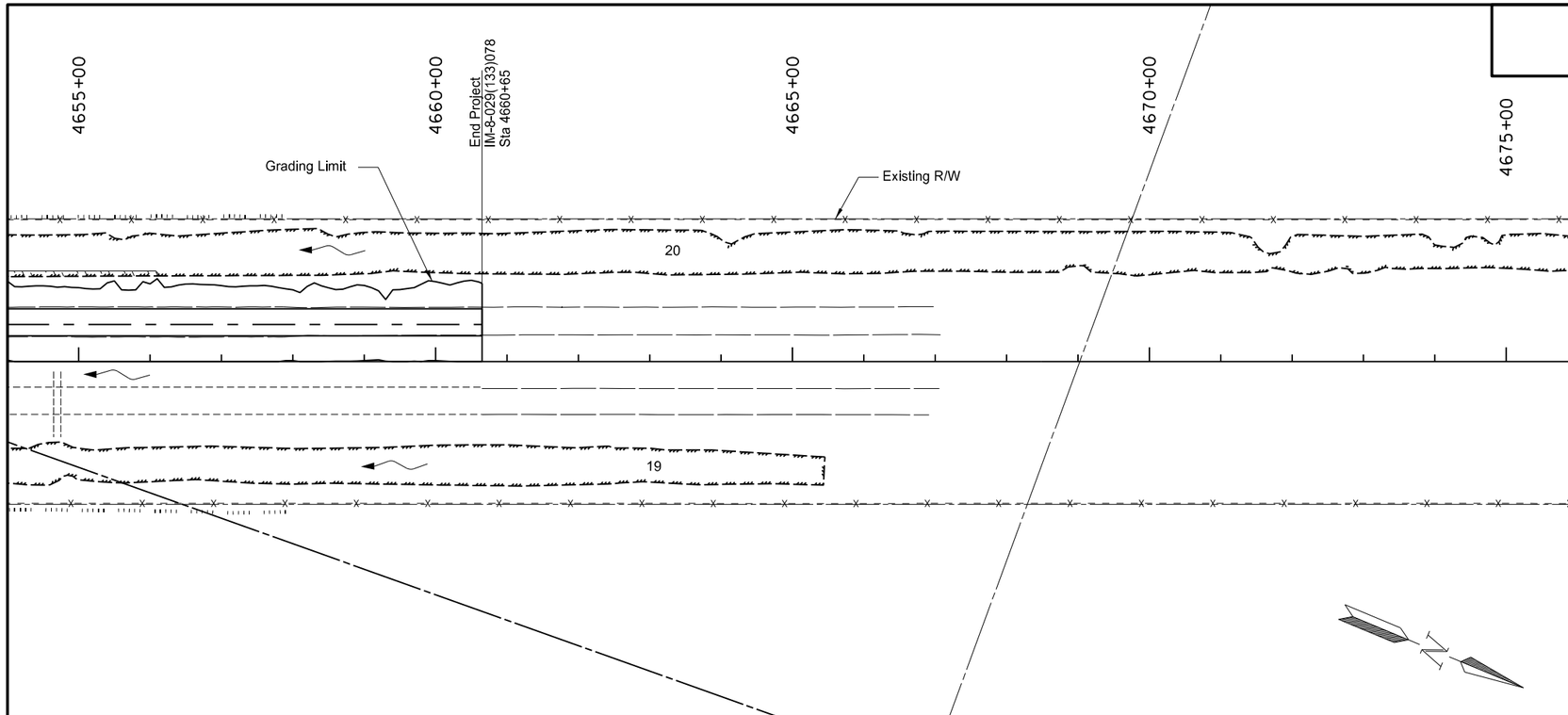
Wetlands, Mitigation & Environmental Impacts

Interstate 29 - Argusville to Hunter SB
Sta 4615+00 to Sta 4655+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	75	14



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Wetlands, Mitigation & Environmental Impacts

Interstate 29 - Argusville to Hunter SB
Sta 4655+00 to sta 4660+65