

PROJECT MANAGER Wendy Block Sanford, City of Fairfax (703) 385-7889
SURVEYED BY Rinker Design Assoc., P.C. (703) 368-7373 (2011)
DESIGNED BY Adam D. Welschenbach, P.E., Rinker Design Assoc., P.C. (703) 368-7373
SUBSURFACE UTILITY PROVIDED BY Accumark (2011)

Project General Notes and Legend

Table with columns: REVISED, STATE, ROUTE, PROJECT, SHEET NO. Values: VA, 0029-151-105, P101, P102, R201, C501, 2

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

Survey Legend

Survey Legend table listing symbols for Survey Centerline, City Line, County Line, State Line, Property Line, Right of Way, Temporary Easement, Permanent Easement, Limited Access Easement, Drainage Easement, Utility Easement, Prescriptive Right of Way, Drainfield Limits, Individual Shrub or Bush, Individual Tree, Tree Drip Line, Dense Brush or Bushes, Hedgerow, Edge of Pavement, Paved Shoulder, Gravel Shoulder or Driveway, Edge or Center of Dirt Path, In-Pipe or Culvert, C&G, Curbs, Limits of Rip Rap, Direction of Water Flow, Guardrail, Railroad, Railroad Gate & Signal, Railroad Bridge, Fence, Overhead Power Line, Edge of Water, Wetland, Building or Shed, Porch, Steps, Tanks, Walk, Miscellaneous Object (Mailbox, etc.), Exist. Highlight Contour, Exist. Index Contour, Jersey Barrier, Paved Ditch, Retaining Wall, Obscure Area, Cemetery Outline, Tombstone, Water Well, Iron Property Pin, Property Monument, Metal or Wood Post, VDOT R/W Monument, Iron R/W Pin, RR Mile Marker, RR Signal Pole, RR Tele Pole, Drop Inlet, End Section, Sanitary Sewer Clean Out, Spot Elevation, Equality Symbol

Design Legend

Design Legend table listing symbols for Proposed Right of Way, Permanent Easement, Temporary Easement, Edge of Pavement, Curb and Gutter, Header Curb, Driveway, Limits of Cut, Limits of Fill, Graded V Ditch, Culvert of Pipe, Construction Baseline, 304 Grading Contour, Flow Arrow, Drainage Structure, Drop Inlet, End Section

GRADING GENERAL NOTES

- G-1 The grade line denotes top of finished pavement unless shown otherwise on typical sections or plans.
G-2 Not Used.
G-3 Earthwork quantities on this project are based on anticipated settlement and may require adjusting during construction. Payment will be made only for quantities actually moved.
G-4 The cost of removal of all existing concrete items located in the area to be graded, including, but not limited to the following, shall be included in the price bid for regular excavations: concrete, drainage box, headwalls, parking stops, sidewalk, entrance aprons, concrete pads, curb, asphalt curb, concrete curb/gutter, etc.
G-5 The excavation of unsuitable material as specified on these plans is based on previously conducted subsurface soil investigation. If, during construction, it is deemed necessary to change the depth more than 1 foot (0.3 m) or the limits of such excavation, such change shall be made at the direction of the Engineer and measurement and payment shall be made in accordance with Section 303 of the applicable VDOT Road and Bridge Specifications.
G-6 The borrow or embankment material for this project shall be a minimum CBR 42 or as approved by the Materials Engineer. All borrow materials shall have a liquid limit (LL) value of less than 45 and plasticity index (PI) value of less than 20 in their natural state.
G-7 Not Used.
G-8 All side slope fills shall be benched in accordance with section 303.04(h) of the VDOT Road and Bridge Specifications

DRAINAGE GENERAL NOTES

- D-1 The horizontal location of all drainage structures shown on these plans is approximate only, with the exception of structures showing specific stations, special design bridges and storm sewer systems.
D-2 The horizontal location and invert elevations shown for proposed culverts and storm sewer outfall pipes are based on existing survey data and required design criteria. If, during construction, it is found that the horizontal location or invert elevations shown on the plans differ significantly from the horizontal location or elevations of the stream or swale in which the culvert or storm sewer outfall pipe is to be placed, the Engineer shall confer with, and get approval from, the applicable City Engineer before installing the culvert or storm sewer outfall pipe.
D-3 The "H" dimensions shown on the plans for drop inlets and junction boxes and the "L.F." dimensions shown for manholes are for estimating purposes and are based on the proposed invert elevations shown for the structure and the anticipated top (rim) elevation based on existing or proposed finished grade. The actual "H" or "L.F." dimensions are to be determined by the contractor from field conditions.
D-4 Not Used.
D-5 Not Used.
D-6 Pipes shall conform to any of the allowable types shown on sheet number 2K(6) within the applicable height of cover limitations. For strength, sheet thickness, or class designation, available sizes, height of cover limitations and other restrictions for a particular pipe type or height of cover, see the VDOT Road and Bridge Standard PC-1. Structural plate pipe may be substituted for corrugated pipe of the same size and a structural plate pipe arch may be substituted for a corrugated pipe arch of the same size, provided the substitution complies with the applicable sections of the VDOT Road and Bridge Standard PC-1.
D-7 Not Used.
D-8 Not Used.
D-9 Not Used.
D-10 The proposed riprap may be omitted by the Engineer if the slope designated for placement of riprap is found to be comprised of solid rock or closely consolidated boulders with soundness, size and weight equal to, or exceeding, the specifications for the proposed riprap.
D-11 Not Used.
D-12 All existing drainage facilities labeled "To Be Abandoned" shall be left in place, backfilled and plugged in accordance with the VDOT Road and Bridge Standard PP-1. Basis of Payment will be C.Y. of Flowable Backfill.
D-13 Existing drainage facilities being utilized as a part of the drainage system, and designated on the plans "To Be Cleaned Out", shall be cleaned as directed by the Engineer. The cost incidental to this shall be included in the contract price for other items.
D-14 Proposed drop inlets with a height (H) less than the standard minimum shown in the VDOT Road and Bridge Standards shall be considered and paid for as Standard Drop Inlets for the type specified. Pipes with less than standard minimum finished height of cover shall be noted as such in the drainage description for the pipe. Specific pipe bedding and cover requirements are provided in the applicable PB-1 and PC-1 standard drawings of the VDOT Road and Bridge Standards.
D-15 Not Used.
D-16 When Standard CG-6 or CG-7 is specified on a radius (such as at a street intersection), the Engineer may approve a decrease in the cross slope of the gutter to facilitate proper drainage.
D-17 S'd SL-1 Safety slab locations are based on the assumed use of precast structures. If cast-in-place structures are utilized, and the interior chamber dimensions (length and width, or diameter) are less than 4 feet, the safety slabs shall not be installed.

PAVEMENT GENERAL NOTES

- P-1 Not Used.
P-2 The pavement materials on this project will be paid for on a tonnage basis. The weight will vary in accordance with the specific gravity of the aggregates and the asphaltic content of the mix actually used to secure the design depth. The weight of the asphalt concrete is based on 95% of theoretical maximum density. (See IIM-LD-158)

INCIDENTAL GENERAL NOTES

- I-1 Not Used.
I-2 Not Used.
I-3 Not Used.
I-4 All trees located within the Clear Zone or within a minimum of 30 feet of the edge of pavement, within the limits of the right of way or construction easement, unless otherwise noted on plans or directed by the Engineer, shall be removed, as provided for in Section 301 of the applicable VDOT Road and Bridge Specifications.
I-5 Not Used.
I-6 Certain trees shall be preserved as noted on plans or as directed by the Engineer.
I-7 When Standard slope roundoffs would damage trees, bushes or other desirable vegetation, they shall be omitted when so ordered by the Engineer.
I-8 Not Used.
I-8A Not Used.
I-9 When no centerline alignment is shown for a proposed entrance, the entrance shall be constructed in the same location as the existing entrance.
I-10 Not Used.
I-11 VOID
I-12 S'd RM-2 Right of Way Monuments shall be set by the Contractor.
I-13 Not Used.
I-14 Salvaged guardrail materials not used in the new construction shall become the property of the Contractor and shall be disposed of at a licensed landfill, recycled or be retained by the Contractor.
I-15 Not Used.
I-16 The "Underground Utilities" survey data on this project has been provided by consultant and copies are available from the Department/City.
I-17 For method of constructing Straight-Line Taper Lanes in Curb and/or Curb and gutter sections, see typical details on Sheet 2A(4).
I-18 All pavement markings and traffic flow arrows shown on the roadway construction plans are schematic only. The actual location and application of pavement markings shall be in accordance with Section 704 of the applicable VDOT Road and Bridge Specifications, MUTCD, sequence of construction/traffic control plans, pavement marking plan sheets 1Q thru 1Q(3) and as directed by the Engineer.
I-19 The following outside sources, under contract with VDOT, have provided information on this project:
Hydraulic Design: Rinker Design Associates, P.C. (RDA)
Roadway Design: RDA
Utility Design: RDA (Water/Sanitary Only)
Utility Designation: Accumark
Utility Location: Accumark
Surveys: RDA
Bridge Design: N/A
Geotechnical Investigation: DMF Engineering Consultants, LLC
Traffic Design: Vanasse Hangen Brustlin, Inc. and RDA
Landscape Design: N/A
If questions or problems arise during construction, please contact the City Engineer. DO NOT CONTACT THE OUTSIDE SOURCES.

I-20 The Official Electronic .pdf Version of the plans will override the paper copies or prints of specific layers. Portions of this plan assembly have been CADD generated. To assist in the preparation of the bid and construction of the project, Microstation format (.dgn) files will be made available to the prime contractor during bids and after award of the contract.

I-21 All electronic plan assemblies will include the construction plans in two formats: .pdf files and Microstation format (.dgn) files. Only the .pdf files will be considered as part of the official plan assembly.

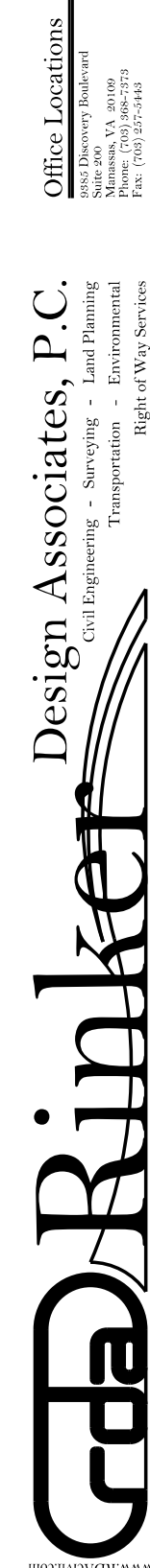
The Microstation format (.dgn) files are furnished only as information for the contractor. These plans are developed in layers (levels) to aid in readability. However, the construction items may or may not be in the proper layering scheme as described in the VDOT CADD Manual. The Microstation files will only match the scanned files if all required levels are turned on. A Microstation Software license is required to be able to read these files.

EROSION AND SEDIMENT CONTROL (ESC) GENERAL NOTES

E See Sheet IP(2) for the Erosion and Siltation Control General Notes.

Utility Legend

Utility Legend table listing symbols for Water Line, Water Line Duct, Water Valve, Water Meter, Water Manhole, Fire Hydrant, Underground Television Cable, Underground Television Cable Duct, Underground Television Cable Fiber Duct, Television Pedestal, Satellite Dish, TV Manhole, Underground Telephone Cable, Underground Telephone Cable Duct, Telephone Fiber Optic, Underground Fiber Optic, Underground Fiber Optic Duct, Fiber Optic Marker, Telephone Pedestal, Telephone Manhole, Telephone Pole, Telephone Guy Wire, Underground Traffic Control, Underground Traffic Control Duct, Underground Traffic Control Fiber Optic, Traffic Control Hand Hole, Traffic Control Manhole, Traffic Signal Pole, Underground Power Cable, Underground Power Cable Duct, Power Pole, Electric Box, Electric Manhole, Electric Guy Wire, Combination Pole, Light Pole, Overhead Power Line, Gas Line, Gas Line Duct, Gas Manhole, Gas Valve, Gas Meter, Gas Stub, Sanitary Force Main, Gravity Sewer, Sanitary Sewer, Sanitary Manhole, Sewer Clean Out, Storm Manhole, Sanitary Stub, Sanitary Sewer Arrow, Rail Road Signal / Gate, Rail Road Telephone Pole, Utility End Point, Unknown Utility Line, Depleted According To Utility Records, Abandoned According To Utility Records, Abandoned According To Field Inspection, Chemical Line, Fuel Line, Transmission Towers



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NOTE: PAVEMENT WIDTHS VARY AT TURN LANES, TAPERS AND CONNECTIONS. SEE PLAN SHEETS AND CROSS SECTIONS FOR PAVEMENT LENGTHS AND WIDTHS.

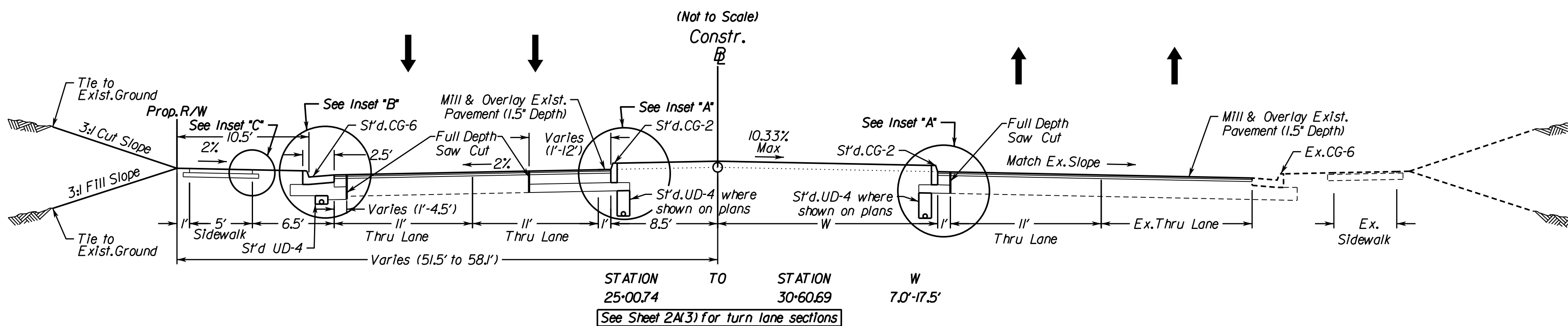
Typical Sections

		REVISED	STATE	ROUTE	PROJECT	SHEET NO.
			VA.	-	0029-151-105 P101, P102, R201, C501	2A
DMY Engineering Consultants Inc. Dulles, Virginia GEOTECHNICAL ENGINEER		Rinker Design Associates, P.C. Manassas, Virginia PROFESSIONAL ENGINEER				

REVISED	STATE	ROUTE	PROJECT	SHEET NO.
	VA.	-	0029-151-105 P101, P102, R201, C501	2A

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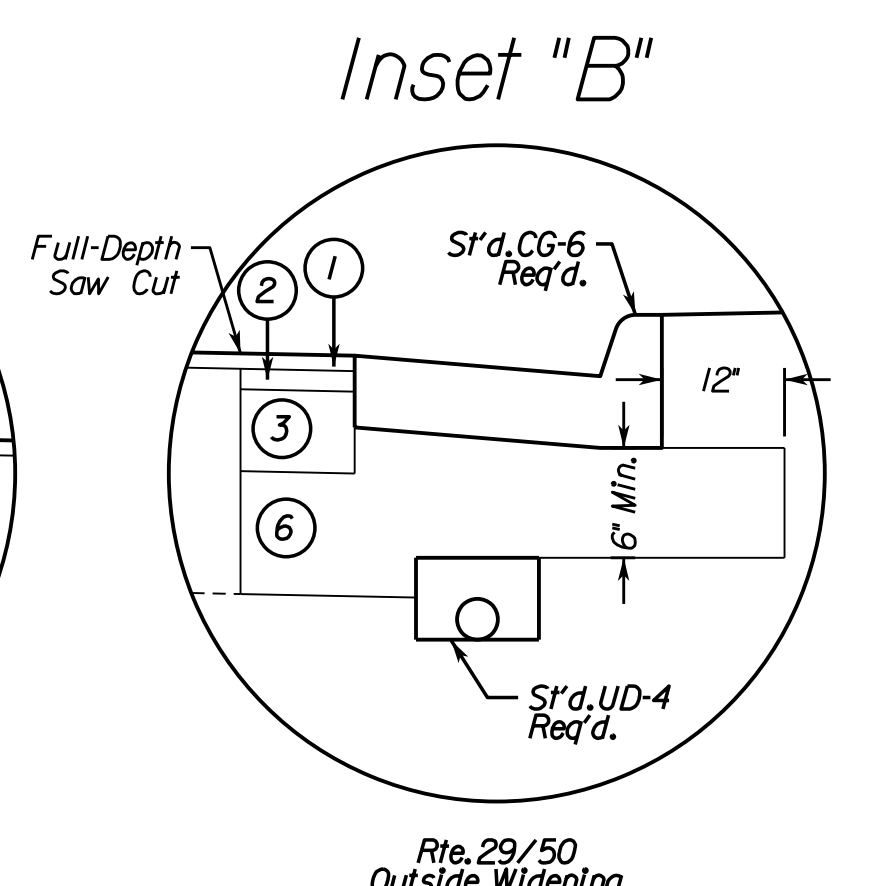
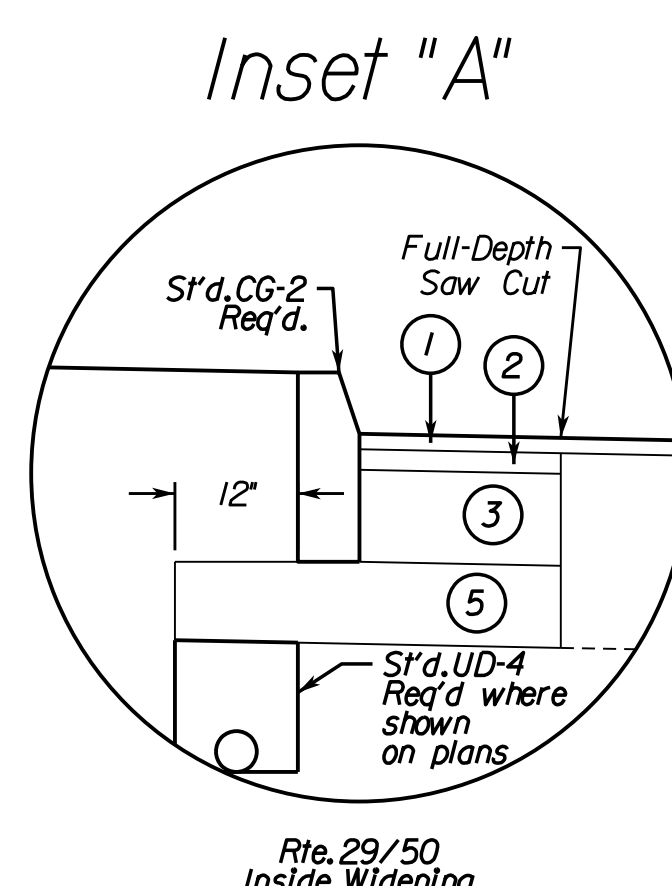
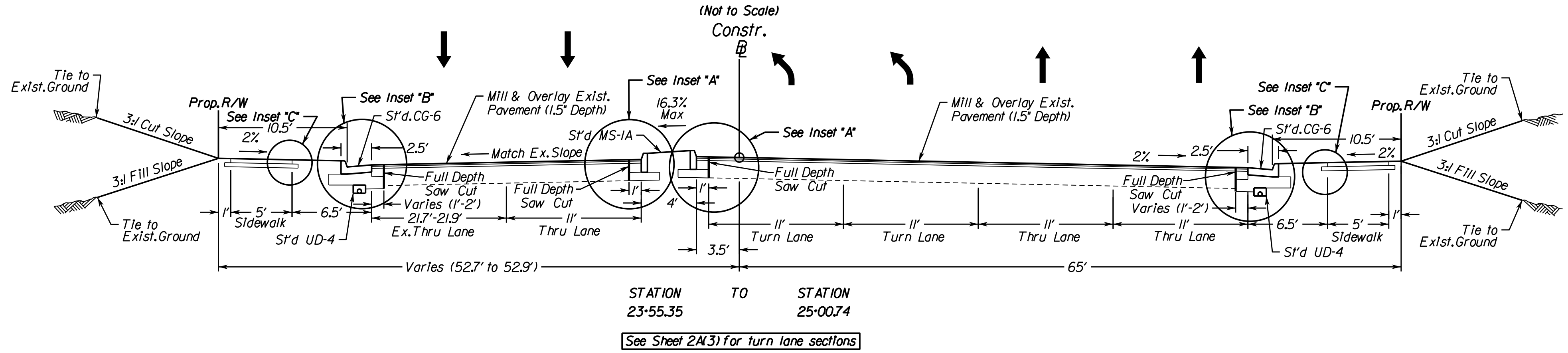
Fairfax Blvd., U.S. Route 29/50 Normal Crown, Four-Lane Section VDOT S'd.GS-5, V+35 MPH



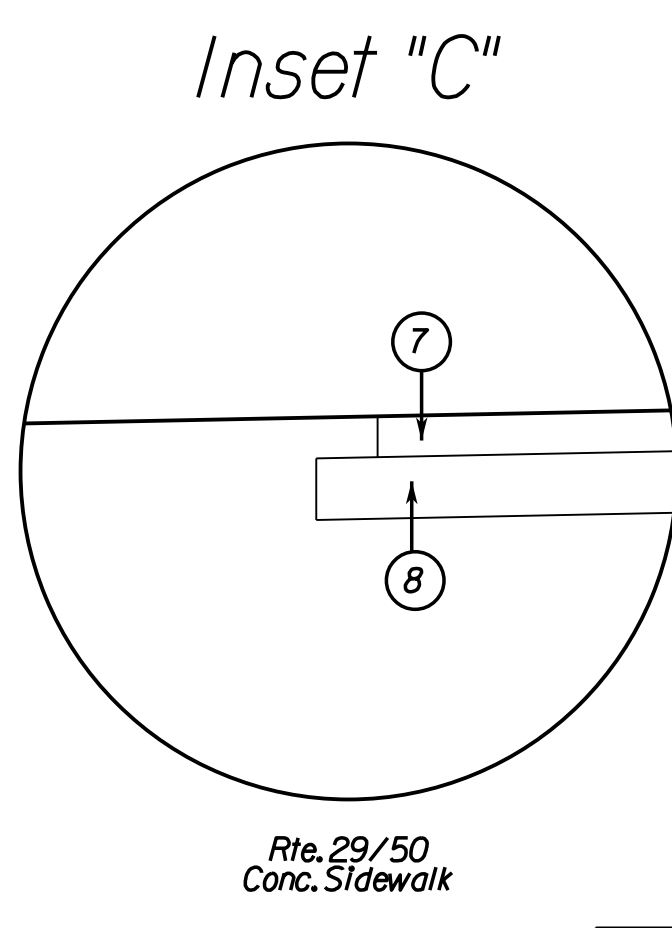
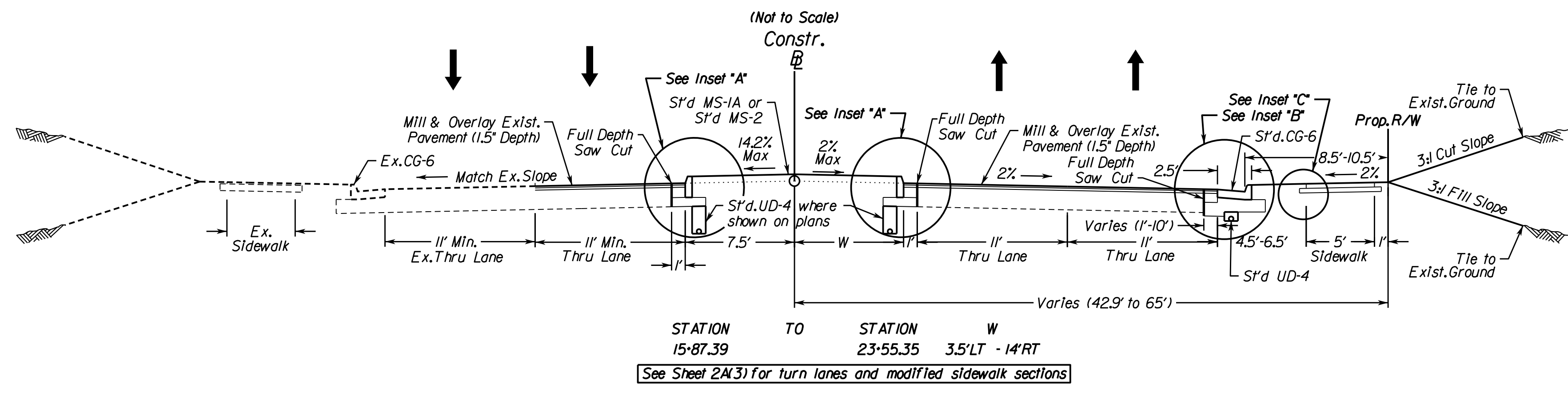
- ① Surface Course - (1.5") Asph. Conc., Type SM-9.5D
- ② Intermediate Course - (2") Asph. Conc., Type IM-19.0A
- ③ Base Course - (9") Asph. Conc., Type BM-25.0A
- ④ Base Course - (10") Asph. Conc., Type BM-25.0A
- ⑤ Sub-base Course - (8") Aggregate Base Material, Type F, Size 21A pugmill mixed with 4% hydraulic cement by weight (CTA) extended (12") behind the curb
- ⑥ Sub-base Course - (12") Aggregate Base Material, Type 1, Size No. 21B Connected to UD-4 underdrain.
- ⑦ Sidewalk - (4") Class A3 Hydraulic Cement Concrete
- ⑧ (4") Aggr. Base Material, Type 1, Size No. 21-B extended (4") either side of the Sidewalk

Note: All pavement widening shall be constructed in accordance with S'd WP-2. See Sheet 2A4 for details.

Fairfax Blvd., U.S. Route 29/50 Normal Crown, Four-Lane Section VDOT S'd.GS-5, V+35 MPH



Fairfax Blvd., U.S. Route 29/50 Normal Crown, Four-Lane Section VDOT S'd.GS-5, V+35 MPH



See Sheet 2A3 for turn lanes and modified sidewalk sections

PROJECT	SHEET NO.
0029-151-105	2A

Office Locations: Fairfax, VA; Manassas, VA; Reston, VA; Herndon, VA; Leesville, VA; Quantico, VA; Washington, DC
 Rinker Design Associates, P.C.
 Civil Engineering, Surveying, Transportation, Environmental, Right-of-Way Services

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Typical Sections Cont.

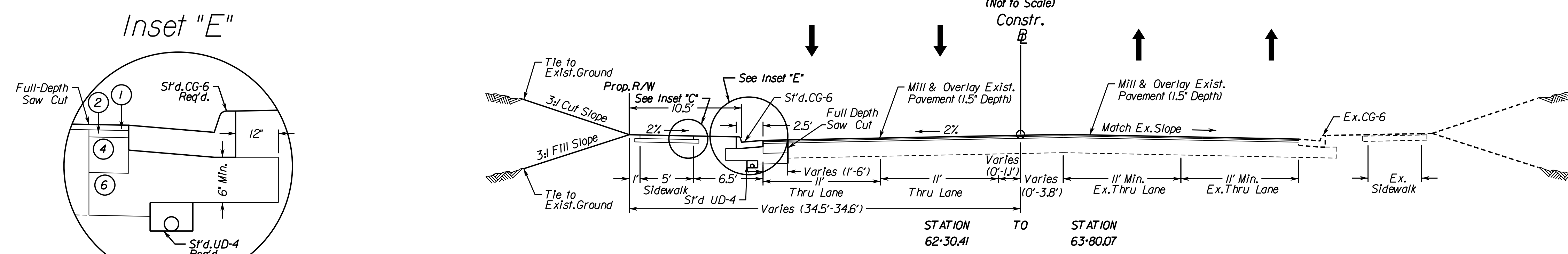
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			VA.	-	0029-151-105 P101, P102, R201, C501	2A(1)

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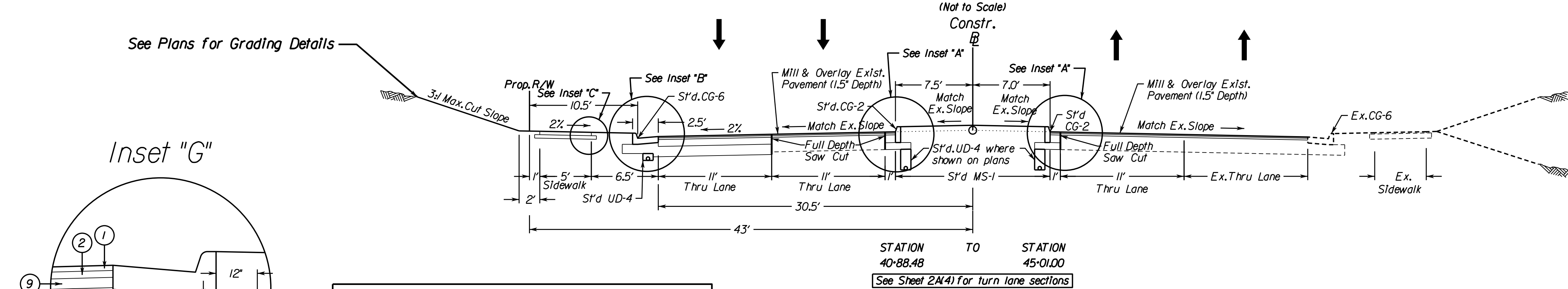
Chain Bridge Road, Route 123 Normal Crown, Four-Lane Section VDOT S'd.GS-5, V+30 MPH



- ① Surface Course - (1.5") Asph. Conc., Type SM-9.5D
- ② Intermediate Course - (2") Asph. Conc., Type IM-19.0A
- ③ Base Course - (9") Asph. Conc., Type BM-25.0A
- ④ Base Course - (10") Asph. Conc., Type BM-25.0A
- ⑤ Sub-base Course - (8") Aggregate Base Material, Type F, Size 2 1/4 pugmill mixed with 4% hydraulic cement by weight (CTA) extended (12") behind the curb
- ⑥ Sub-base Course - (12") Aggregate Base Material, Type I, Size No. 2/B Connected to UD-4 underdrain.
- ⑦ Sidewalk - (4") Class A3 Hydraulic Cement Concrete
- ⑧ (4") Aggr. Base Material, Type I, Size No. 2/B extended (4") either side of the Sidewalk
- ⑨ Base Course - (3") Asph. Conc., Type BM-25.0A
- ⑩ Sub-base Course - (8") Aggregate Base Material, Type I, Size No. 2/B Connected to UD-4 underdrain.

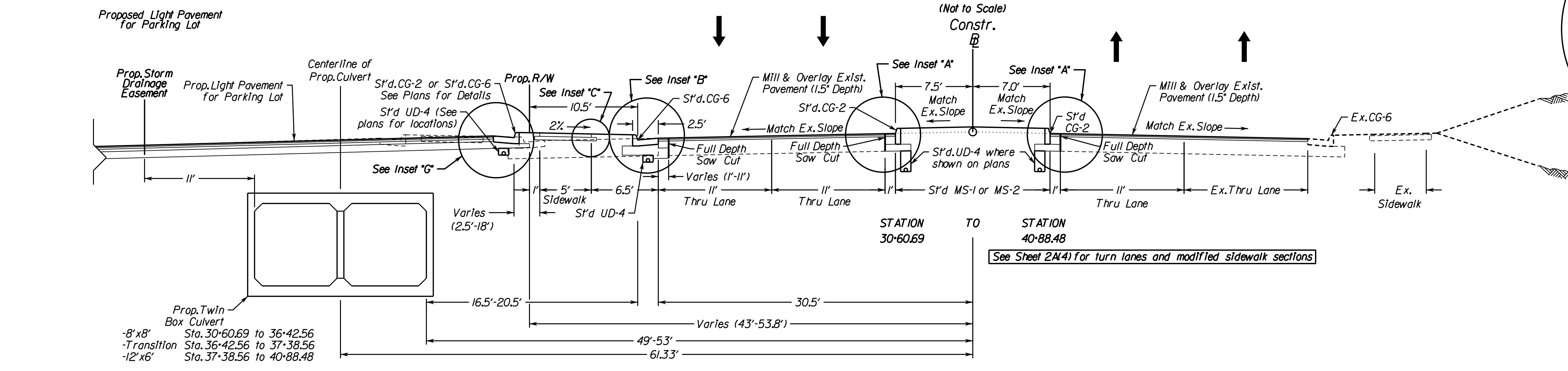
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Fairfax Blvd., U.S. Route 29/50 Normal Crown, Four-Lane Section VDOT S'd.GS-5, V+35 MPH

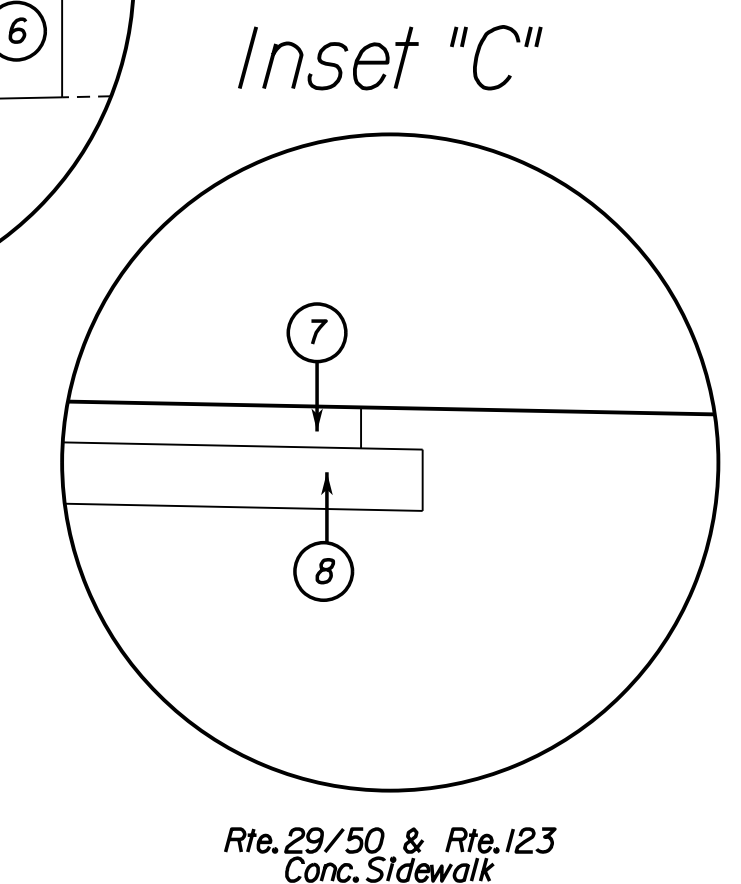
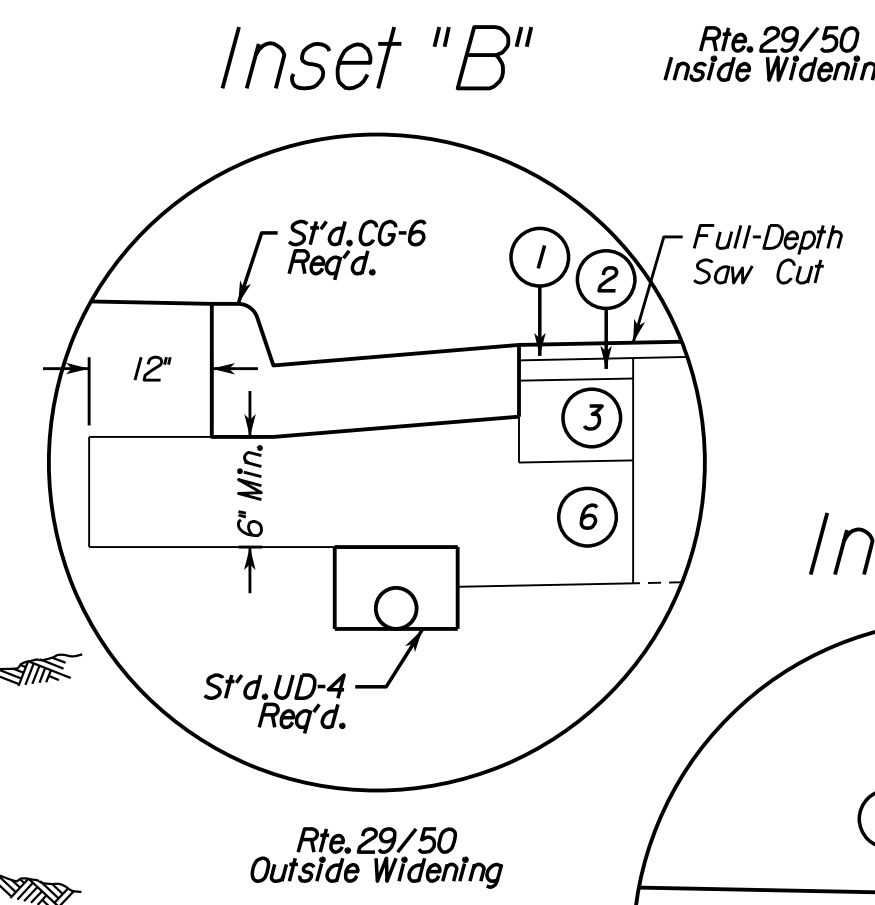
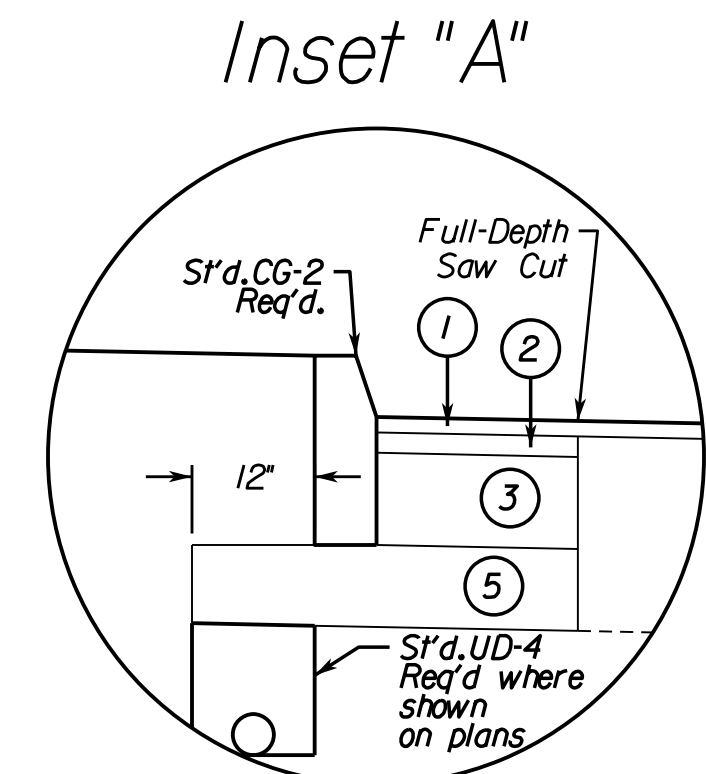
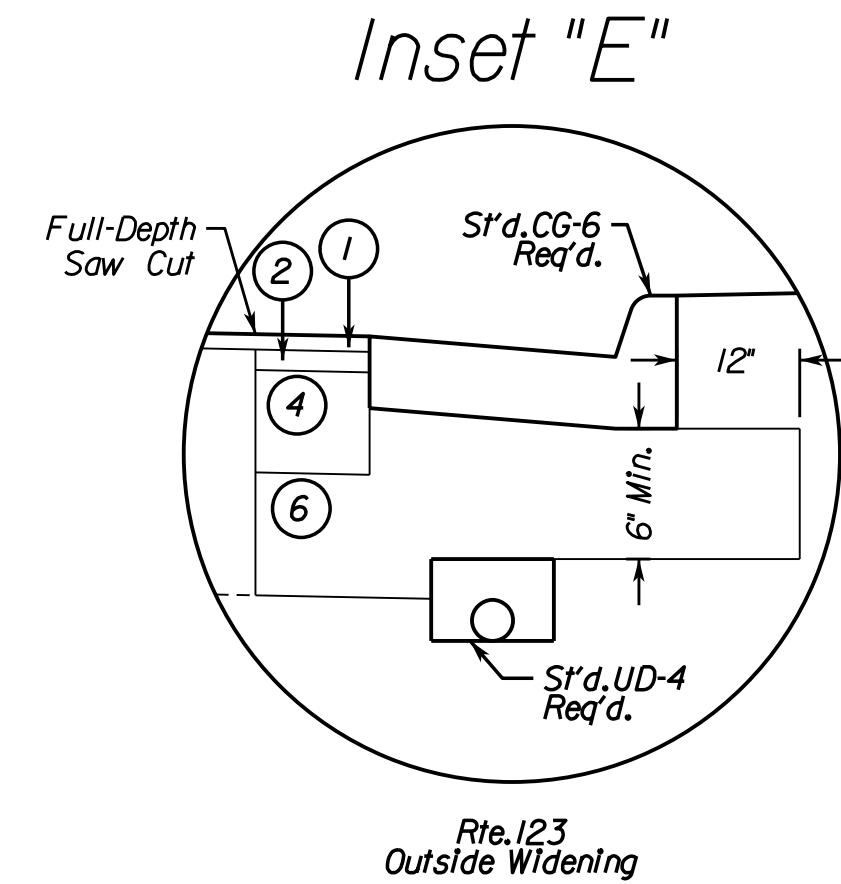


NOTE: See Sheet 2L Series for Box Culvert Location.

Fairfax Blvd., U.S. Route 29/50 Normal Crown, Four-Lane Section VDOT S'd.GS-5, V+35 MPH



Prop. Twin Box Culvert
 -8' x 8' Sta. 30+60.69 to 36+42.56
 -Transition Sta. 36+42.56 to 37+38.56
 -12' x 6' Sta. 37+38.56 to 40+88.48



Office Locations
 Rinker Design Associates, P.C.
 10000 Lee Highway, Suite 100
 Fairfax, VA 22031
 (703) 368-7373
 www.rinker.com

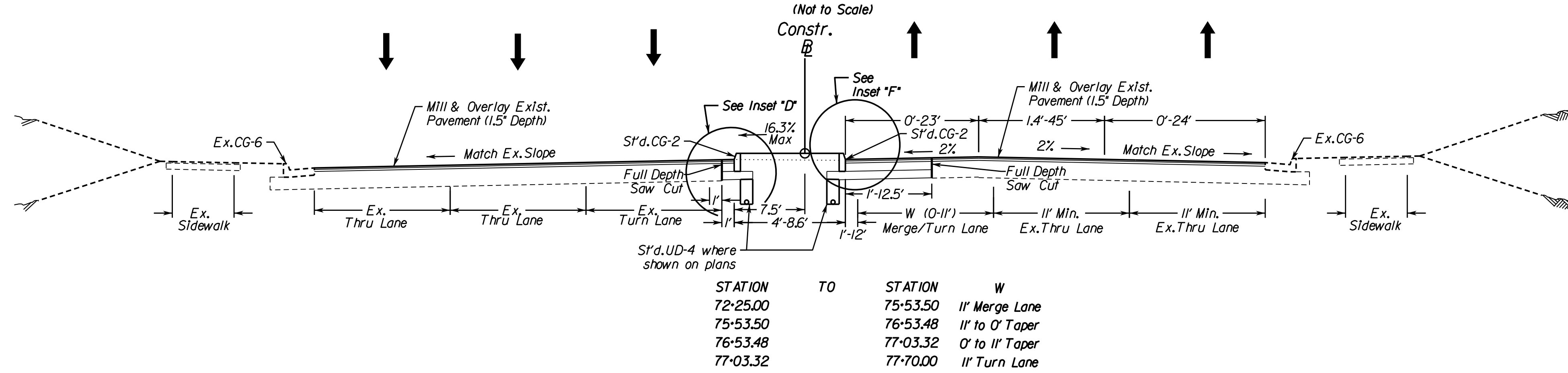
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Typical Sections Cont.

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		VA.	-	0029-151-105 P101, P102, R201, C501	2A(2)	
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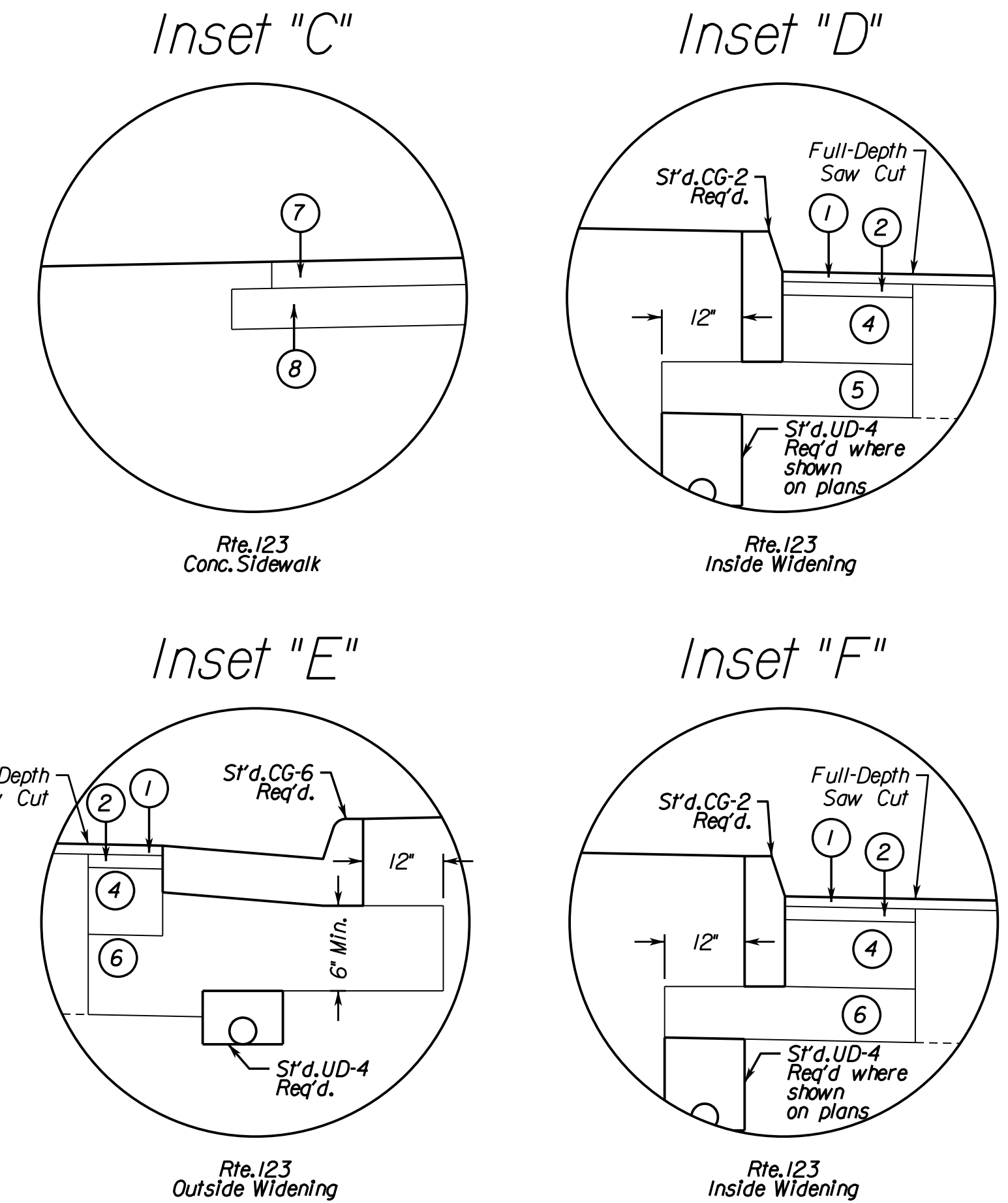
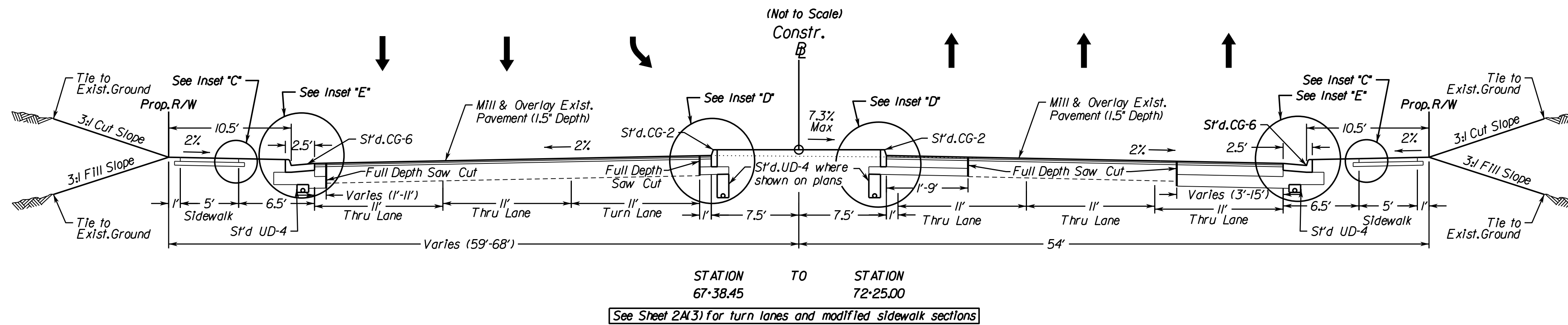
Chain Bridge Road, Route 123 Normal Crown, Four-Lane Section VDOT S'd.GS-5, V+30 MPH



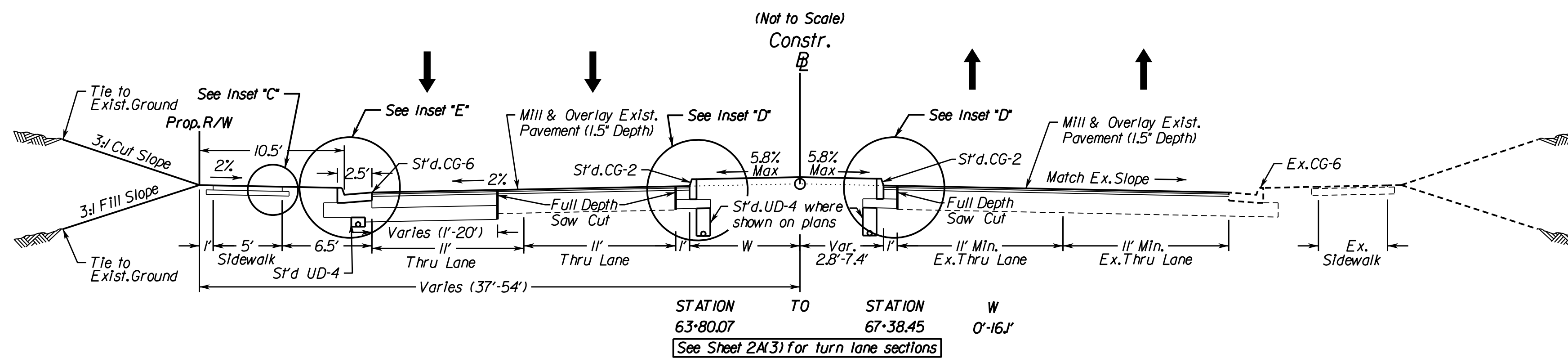
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Note: All pavement widening shall be constructed in accordance with S'd WP-2. See Sheet 2A(4) for details.

Chain Bridge Road, Route 123 Normal Crown, Four-Lane Section VDOT S'd.GS-5, V+30 MPH



Chain Bridge Road, Route 123 Normal Crown, Four-Lane Section VDOT S'd.GS-5, V+30 MPH


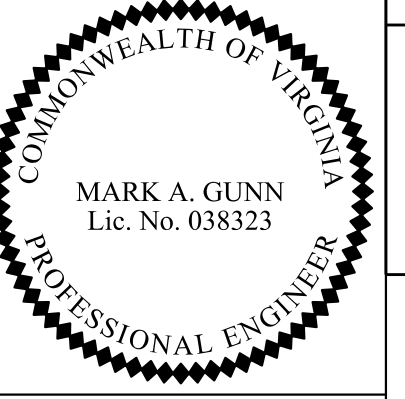


PROJECT	SHEET NO.
0029-151-105	2A(2)

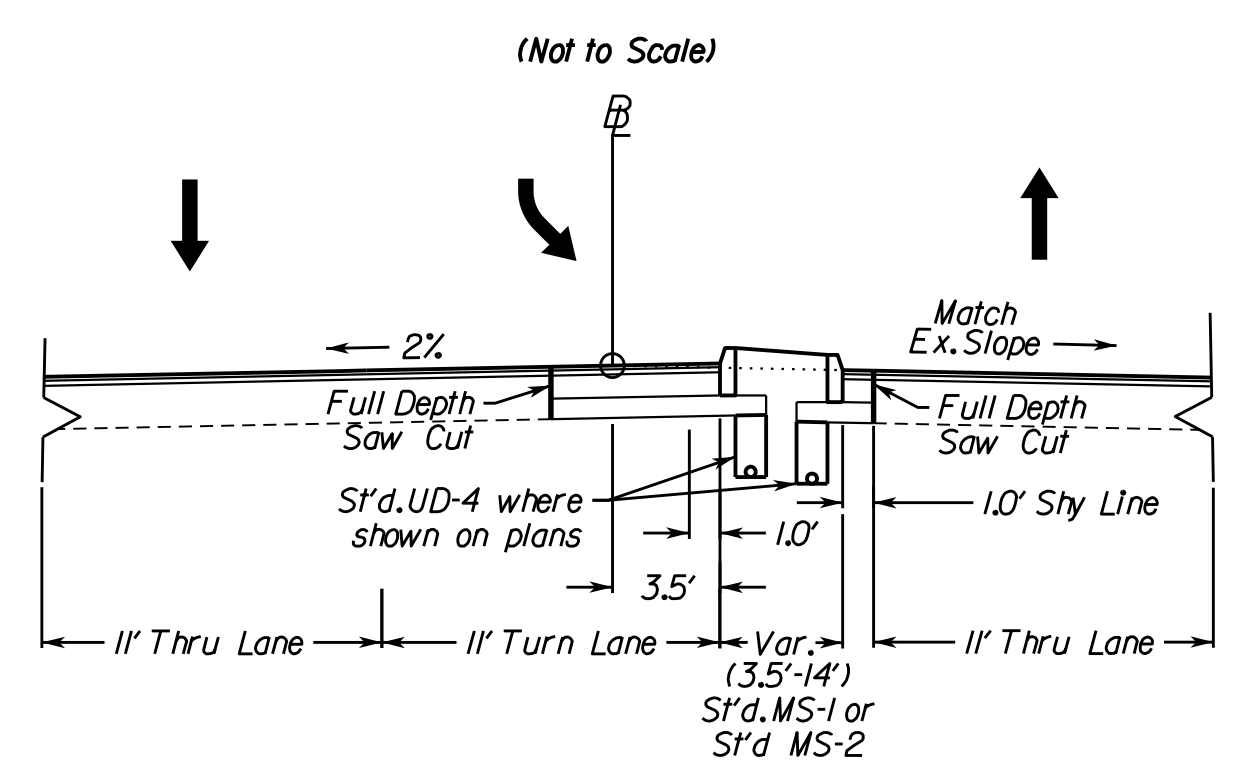
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Typical Sections Cont.

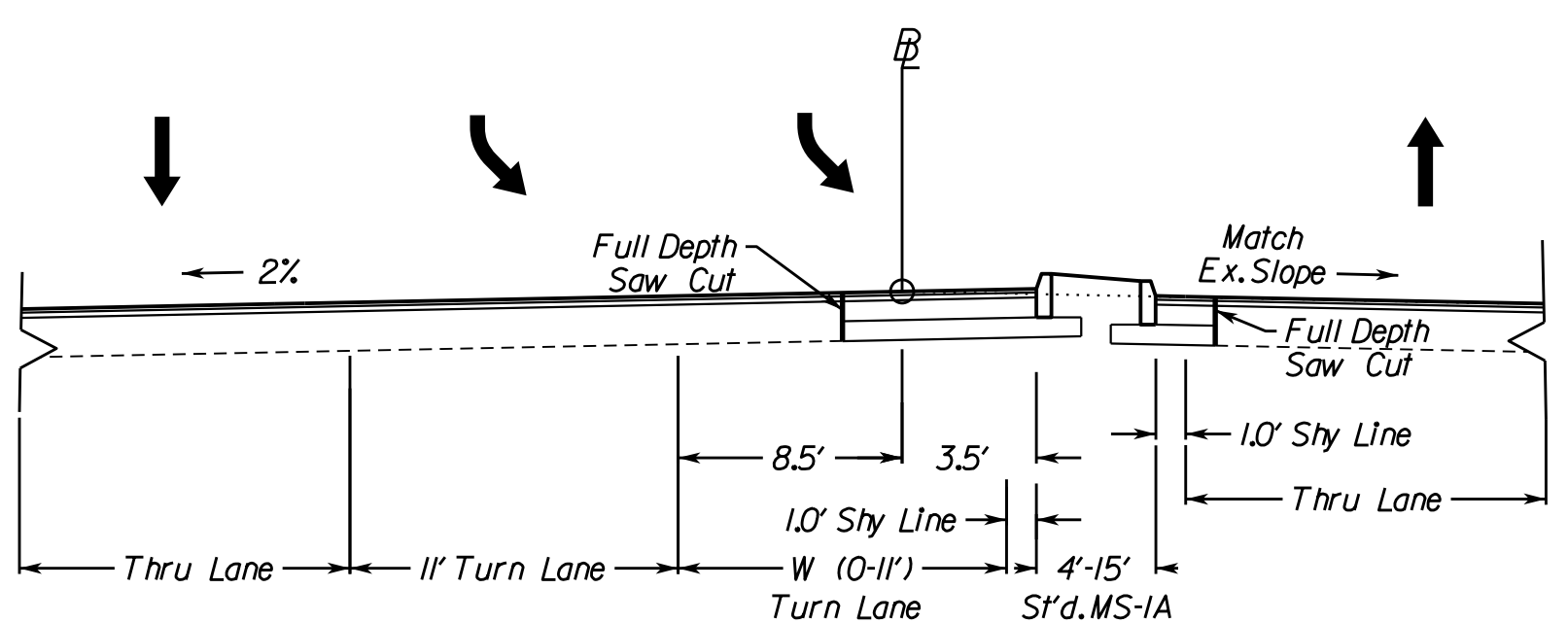
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Lee Highway, U.S. Route 29/50
 WB Left Turn Lane
 VDOT Srd.GS-5, V-35 MPH
 (Not to Scale)



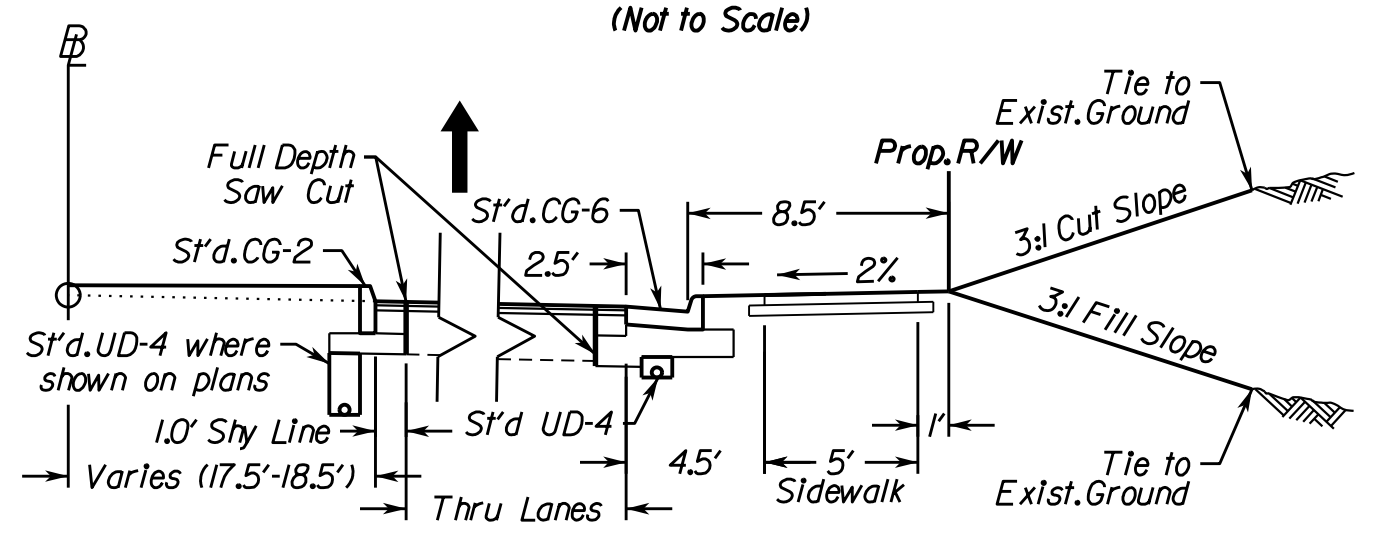
STATION	TO	STATION
26+25.00		32+15.00

Chain Bridge, Route 123
 SB Dual Left Turn Lane
 VDOT Srd.GS-5, V-30 MPH
 (Not to Scale)



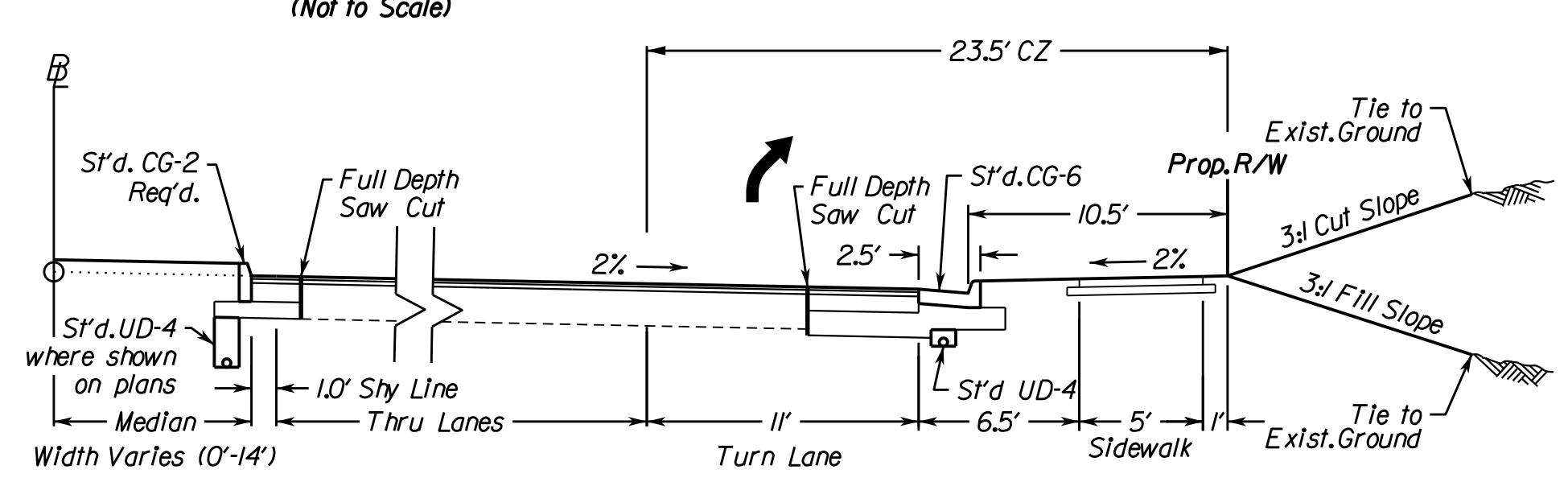
STATION	TO	STATION	W
68+29.60		71+43.66	11'
71+43.66		72+00.04	0' to 11'

Lee Highway, U.S. Route 29/50
 EB Modified Bench Section
 VDOT Srd.GS-5, V-35 MPH
 (Not to Scale)



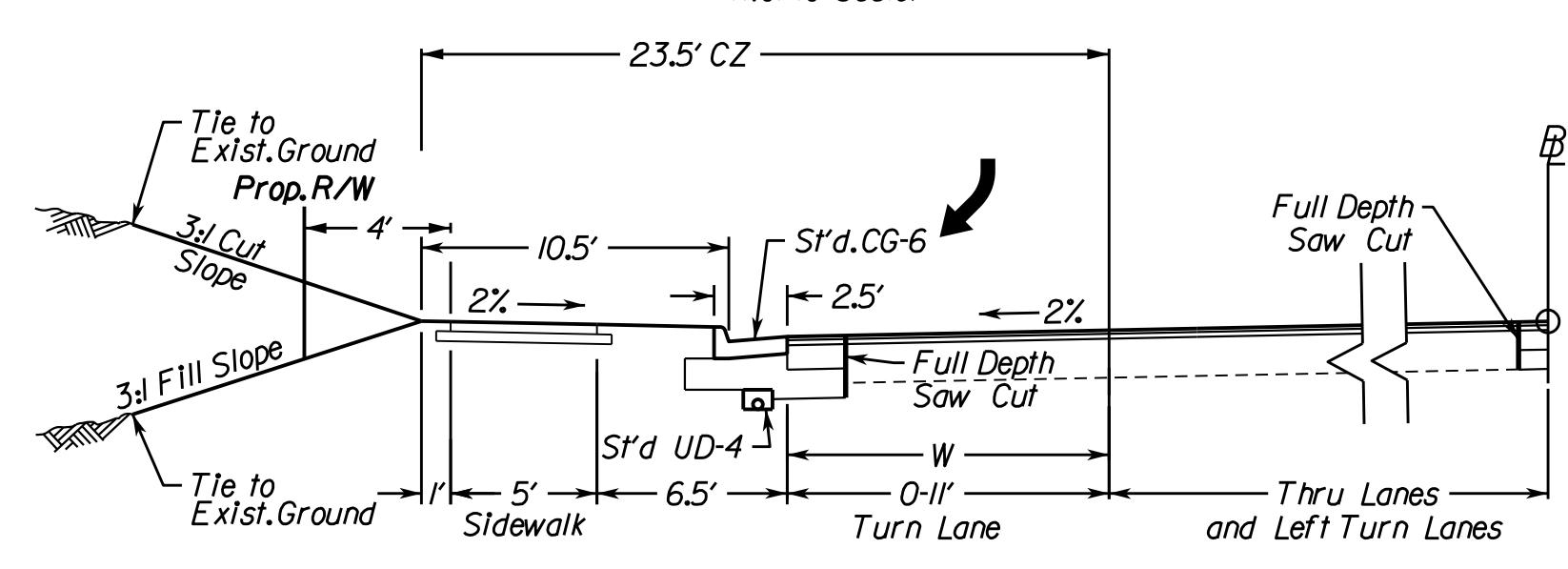
STATION	TO	STATION
18+21.63		19+81.57

Lee Highway, U.S. Route 29/50
 Right Turn Lane
 VDOT Srd.GS-5, V-35 MPH
 (Not to Scale)



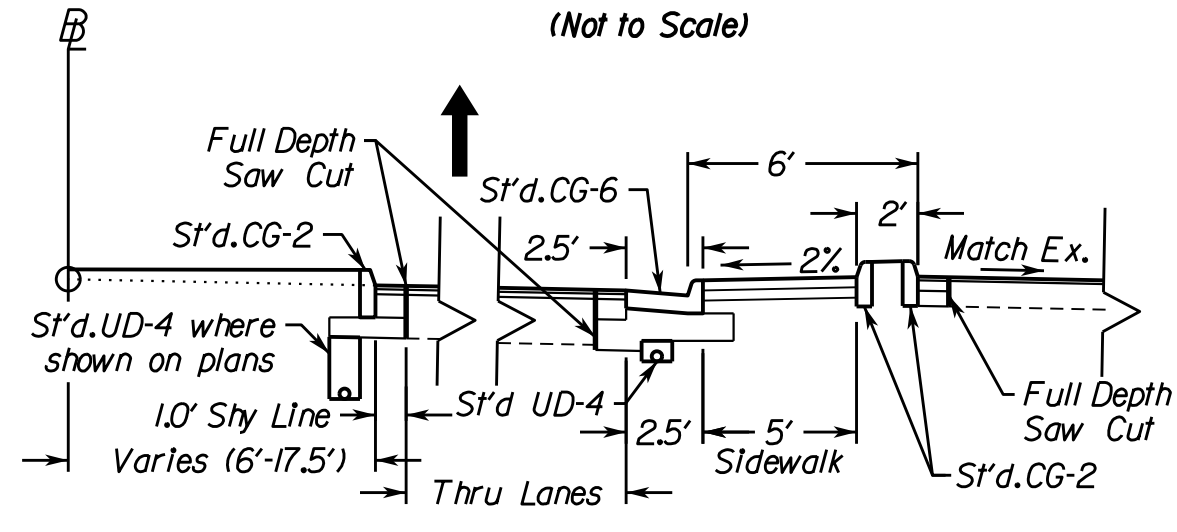
STATION	TO	STATION	(Eastbound)	(Westbound)
20+00.00		23+88.45		
26+25.00		30+00.00		

Chain Bridge, Route 123
 SB Right Turn Lane
 VDOT Srd.GS-5, V-30 MPH
 (Not to Scale)



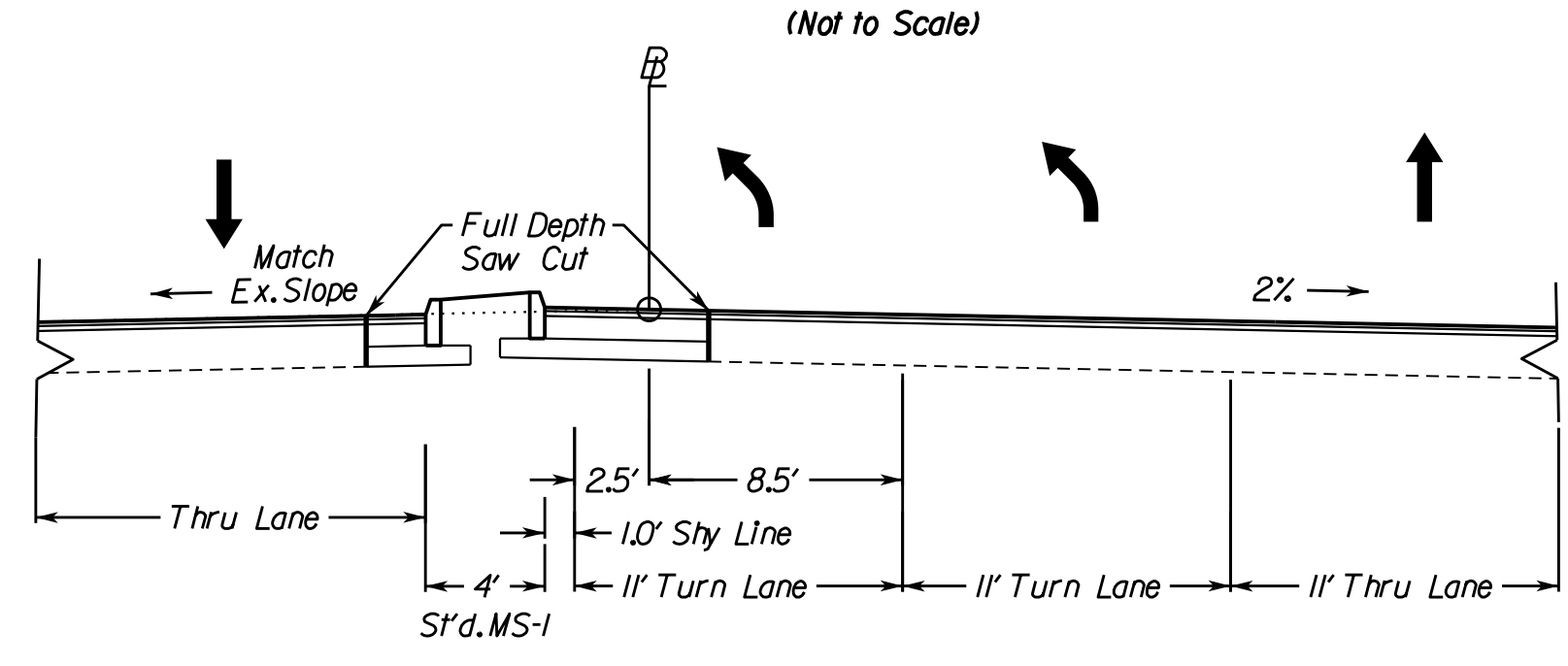
STATION	TO	STATION	W
68+29.55		69+32.00	11'
69+32.00		70+32.00	0' to 11'

Lee Highway, U.S. Route 29/50
 EB Curb Abutted Sidewalk Section
 VDOT Srd.GS-5, V-35 MPH
 (Not to Scale)



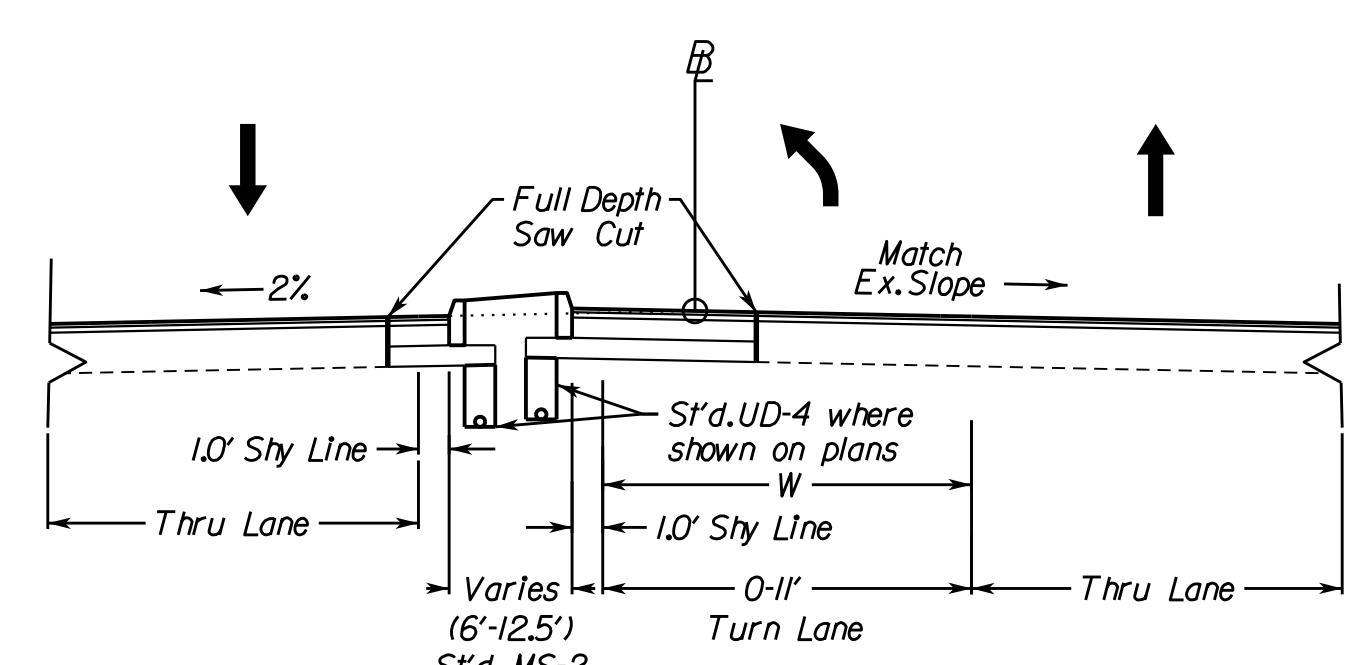
STATION	TO	STATION
16+83.40		18+21.63

Lee Highway, U.S. Route 29/50
 EB Dual Left Turn Lane
 VDOT Srd.GS-5, V-35 MPH
 (Not to Scale)



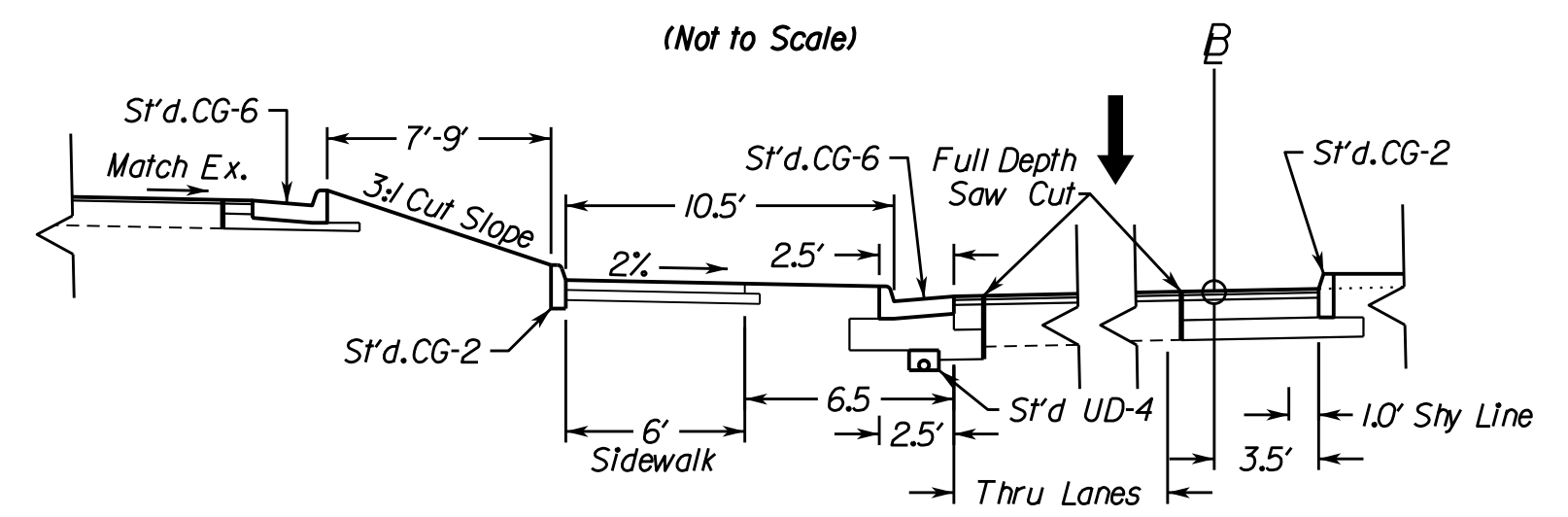
STATION	TO	STATION
17+50.00		23+88.45

Chain Bridge, Route 123
 NB Left Turn Lane
 VDOT Srd.GS-5, V-30 MPH
 (Not to Scale)



STATION	TO	STATION	W
64+20.23		65+20.00	0' to 11'
65+20.00		66+46.38	11'

Chain Bridge, Route 123
 SB 6' Sidewalk w/ CG-2 Section
 VDOT Srd.GS-5, V-30 MPH
 (Not to Scale)



STATION	TO	STATION
70+32.48		71+12.78

PROJECT	0029-151-105	SHEET NO.	2A(3)
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 DESIGNED BY *Adam D. Welschenbach, P.E., Rinker Design Assoc., P.C. (703) 368-7373*
 SUBSURFACE UTILITY PROVIDED BY *Accumack (2011)*

Typical Sections Cont.

 PENG ZHANG Lic. No. 048994 PROFESSIONAL ENGINEER	 MARK A. GUNN Lic. No. 038323 PROFESSIONAL ENGINEER	REVISED	STATE	ROUTE	PROJECT	SHEET NO.
		VA.	-	0029-151-105	P101, P102, R201, C501	2A(4)
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT						
DMY Engineering Consultants Inc. Dulles, Virginia GEOTECHNICAL ENGINEER		Rinker Design Associates, P.C. Manassas, Virginia PROFESSIONAL ENGINEER				

WP-2

CONSTRUCTION JOINT DETAIL

- REMOVE EXISTING ASPHALT LAYERS TO EXISTING SUBBASE AND REPLACE WITH PROPOSED ASPHALT WIDENING LAYERS
- PROPOSED MINIMUM 1 1/2 INCH THICK ASPHALT SURFACE COURSE (SEE NOTE 5)
- MINIMUM 12 INCHES, OR GREATER AS NECESSARY TO ABUT THE FULL THICKNESS OF EXISTING ASPHALT LAYERS AS DETERMINED BY CORES (SEE NOTE 3)

NOTES:

- ASPHALT PAVEMENT WIDENING SHALL HAVE A PAVEMENT DESIGN IN ACCORDANCE WITH CURRENT VDOT PROCEDURES AND BE APPROVED BY THE ENGINEER.
- THE PAVEMENT DESIGN FOR ASPHALT PAVEMENT WIDENING SHALL MEET OR EXCEED THE DEPTHS AND TYPES OF THE LAYERS OF EXISTING PAVEMENT. SUBSURFACE DRAINAGE OF THE EXISTING AND PROPOSED PAVEMENT SHALL BE ADDRESSED IN THE PAVEMENT DESIGN.
- A MINIMUM OF THREE CORES SHALL BE TAKEN ALONG THE CENTER OF THE ADJACENT TRAVEL LANE TO DETERMINE THE TYPE AND THICKNESS OF EXISTING PAVEMENT LAYERS. THESE CORES SHALL BE SPACED NO MORE THAN 500 FEET APART.
- THE ADJACENT TRAVEL LANE SHALL BE MILLED A MINIMUM DEPTH OF 1 1/2 INCHES AND REPLACED WITH AN ASPHALT SURFACE COURSE TO MATCH THE PROPOSED PAVEMENT WIDENING SURFACE COURSE, UNLESS WAIVED BY THE ENGINEER.
- THE ENGINEER MAY REQUIRE THE MILLING DEPTH OF THE EXISTING PAVEMENT TO BE ADJUSTED TO ACHIEVE AN ACCEPTABLE PAVEMENT CROSS-SLOPE AND EFFECTIVE SURFACE DRAINAGE.
- EXISTING PAVEMENT MARKINGS AND MARKERS WITHIN THE PROJECT LIMITS SHALL BE RESTORED SUBJECT TO THE APPROVAL OF THE ENGINEER.
- FINAL TRANSVERSE PAVEMENT TIE-IN SHALL CONFORM TO THE REQUIREMENTS OF SECTION 315.05(c) OF THE SPECIFICATIONS EXCEPT THAT ALL JOINTS AT TIE-IN LOCATIONS SHALL BE TESTED USING A 10 FOOT STRAIGHTEDGE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 315.07(c) OF THE SPECIFICATIONS.

VDOT ROAD AND BRIDGE STANDARDS	PAVEMENT WIDENING	SPECIFICATION REFERENCE
SHEET 1 OF 1	REVISION DATE	315
303.02		VIRGINIA DEPARTMENT OF TRANSPORTATION

Lee Highway, U.S. Route 29/50
WB Modified Bench Section
 VDOT S'd.GS-5, V+35 MPH
 (Not to Scale)

STATION TO STATION
 31+30.76 TO 32+51.28

Lee Highway, U.S. Route 29/50
Left Turn Lane
 VDOT S'd.GS-5, V+35 MPH
 (Not to Scale)

STATION	TO	STATION	W
33-84.42		36-00.71	(Eastbound) 4'
36-79.08		38-91.92	(Westbound) 3.5'
38-89.62		41-04.03	(Eastbound) 4'
41-67.75		42-96.23	(Westbound) 3.5'
42-37.94		44-20.44	(Eastbound) 4'

TYPICAL STRAIGHT - LINE TAPER LANE
 (Use with Curbs and/or Curb & Gutters)

Radius - Variable (To Be Field Set)
 Δ = Variable 2' - 11'
 T - See plans for Length of T.
 S/O - See plans for Stations and Offsets.

Temporary Pavement Design
 Note: See TMP/SOC for locations
 (Not to Scale)

Tie to Exist.

Private & Commercial Entrances
 VDOT S'd.PE-1, CG-9 & CG-11
 (Not to Scale)

NOTE:
 The type of entrance (I, II, III, IV) to be constructed will be determined by the existing condition at the time of construction. See VDOT Standards for private and commercial entrance details and additional information.

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 SUBSURFACE UTILITY PROVIDED BY Accumark (2011)

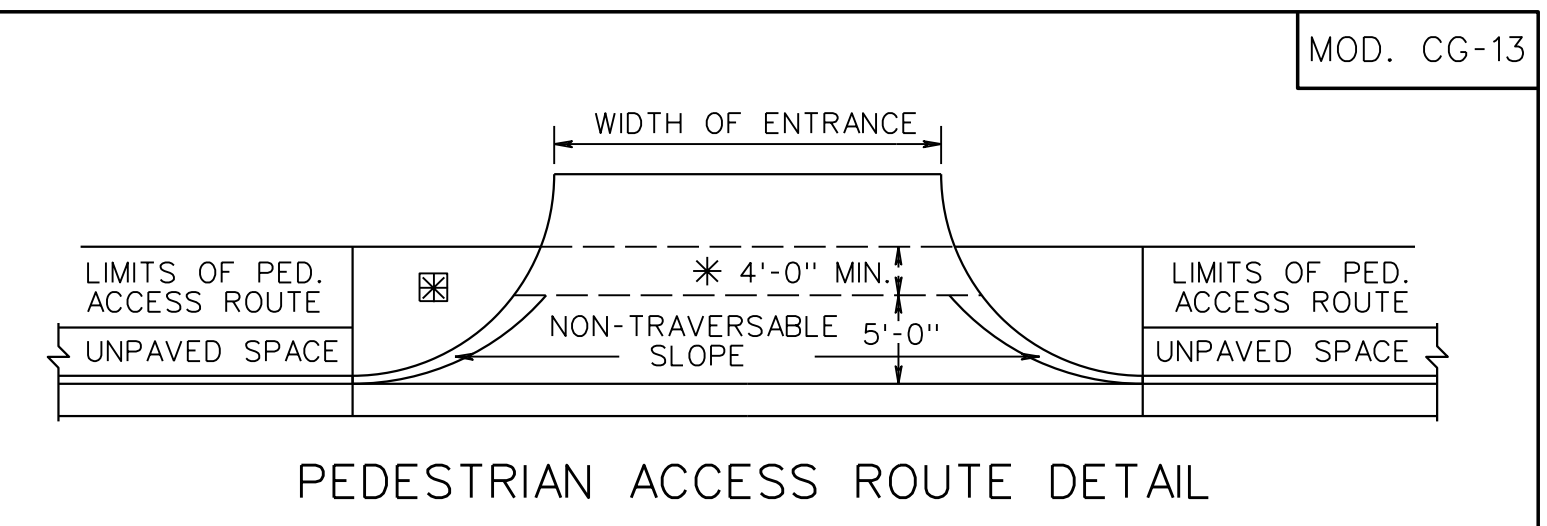
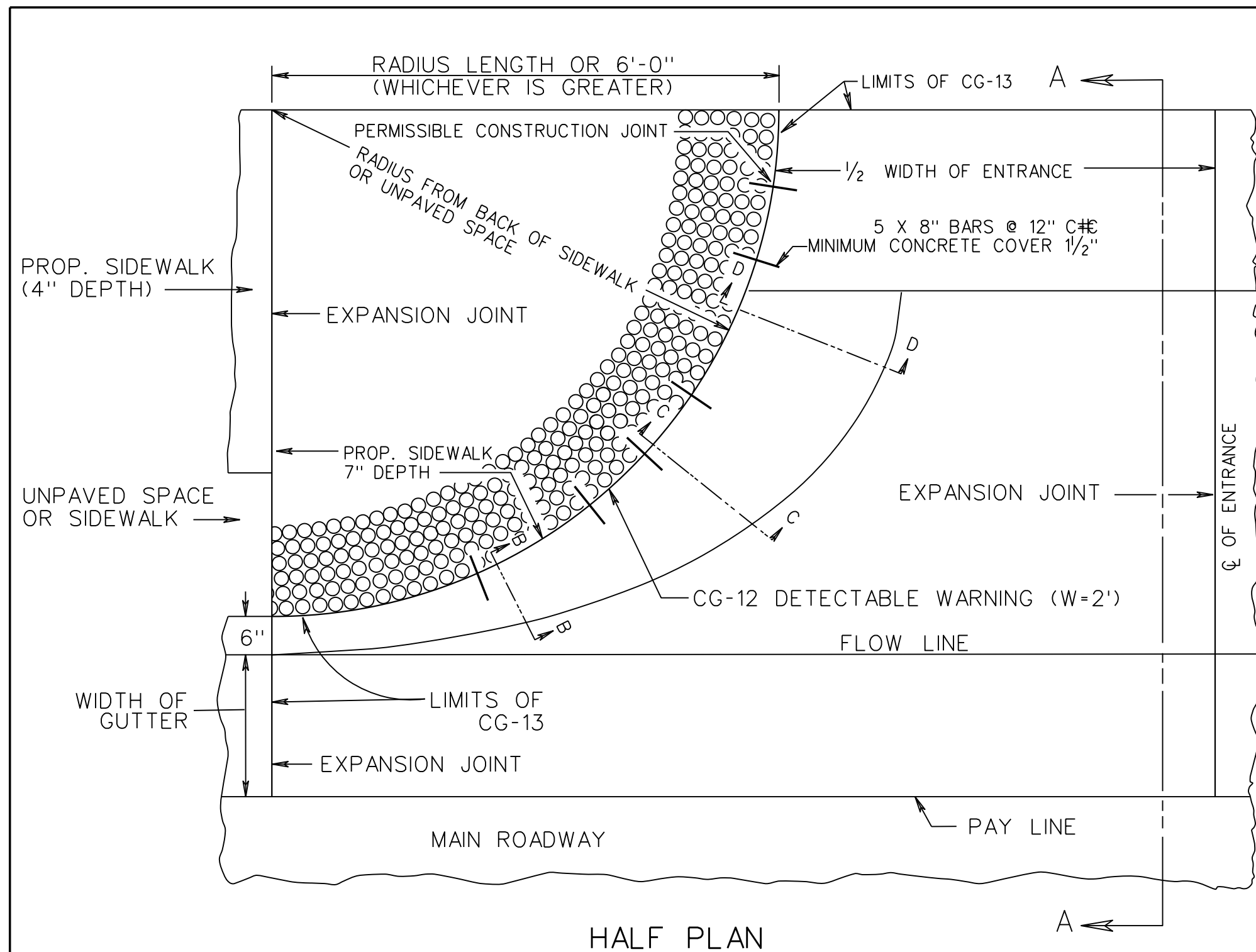
Typical Sections Cont.

MARK A. GUNN
Lic. No. 038323
PROFESSIONAL ENGINEER

REVISED	STATE	ROUTE	PROJECT	SHEET NO.
	VA.	-	0029-151-105 P101, P102, R201, C501	2A(5)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

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Manassas, Virginia
PROFESSIONAL ENGINEER

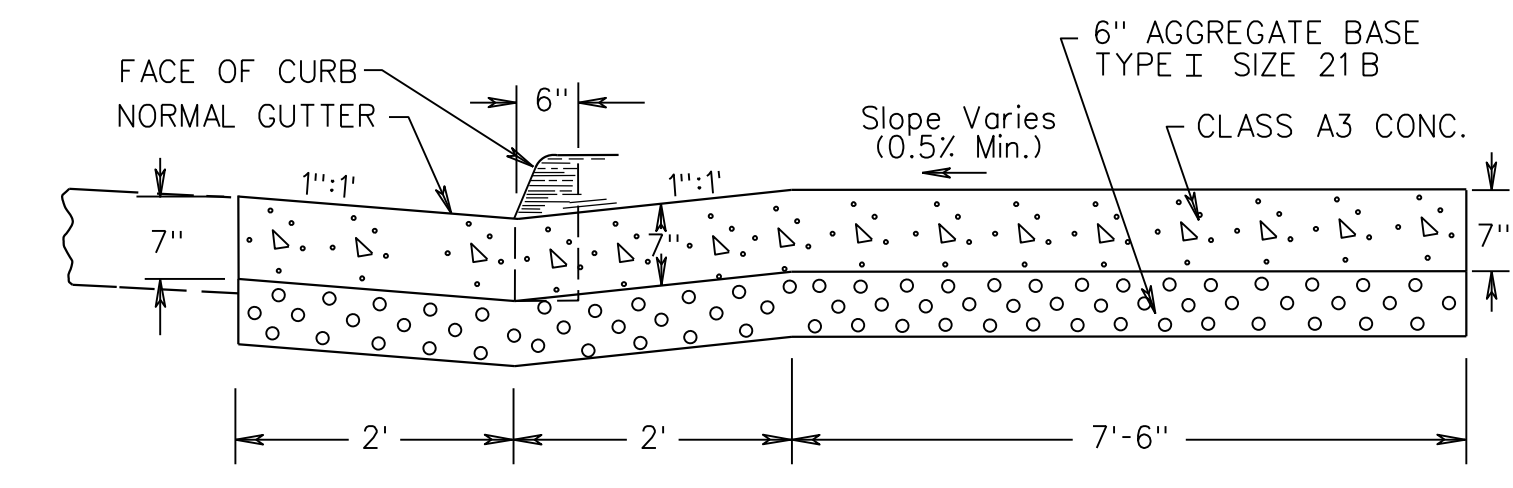


ADDITIONAL RIGHT-OF-WAY IS REQUIRED IF THE LIMITS OF PEDESTRIAN ACCESS ROUTE EXTEND BEYOND EXISTING OR PROPOSED VDOT RIGHT-OF-WAY.

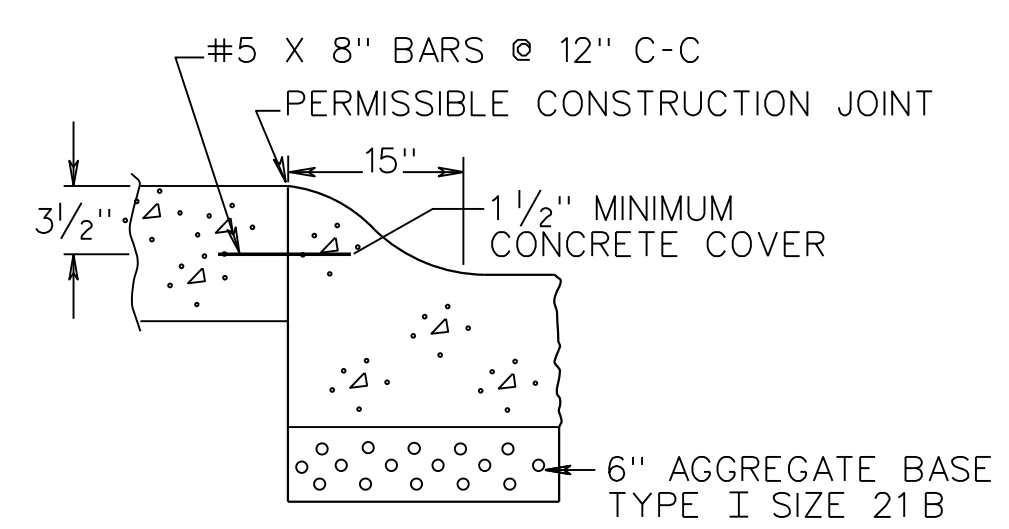
PEDESTRIAN ACCESS ROUTES PROVIDE A CONTINUOUS UNOBSTRUCTED, STABLE, FIRM AND SLIP RESISTANT PATH CONNECTING ALL ACCESSIBLE ELEMENTS OF A FACILITY THAT CAN BE APPROACHED, ENTERED AND USED BY PEDESTRIANS. IF ACCESS ROUTE IS ADJACENT TO BACK OF CURB, MINIMUM WIDTH SHOULD BE 6'.

* IF PEDESTRIAN ACCESS ROUTES ARE BEING PROVIDED, A MINIMUM 4' TRAVERSABLE WIDTH IS REQUIRED WITH MAX. 2% CROSS SLOPE.

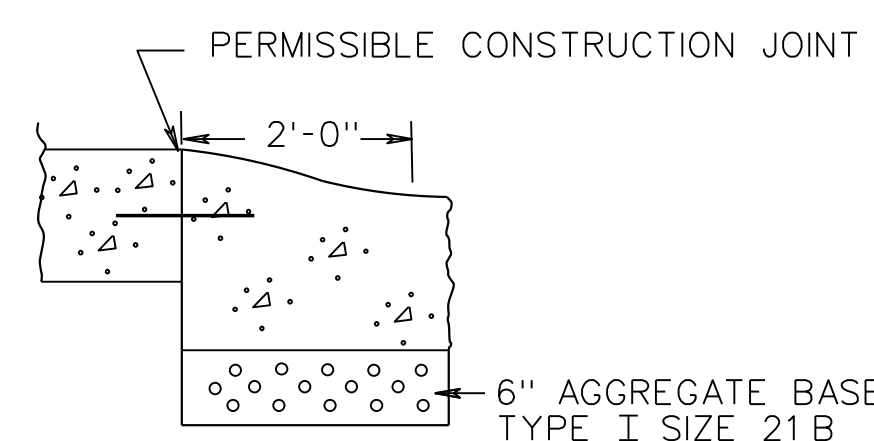
- NOTES:
- PROP. 7" SIDEWALK IS TO BE POURED MONOLITHICALLY WITH ENTRANCE OR BY USING PERMISSIBLE CONSTRUCTION JOINT WITH REQUIRED BARS.
 - PROPOSED 7" SIDEWALK TO BE CLASS A-3 CONCRETE.
 - REQUIRED BARS ARE TO BE NO. 5X8" PLACED 1' CENTER TO CENTER ALONG BACK OF CURB, MID-DEPTH OF SIDEWALK. MINIMUM CONCRETE COVER 1/2".
 - ALL DETAILS AND DIMENSIONS NOT SHOWN ARE THE SAME AS STANDARD CG-9D.
 - THIS DESIGN MAY ALSO BE APPLIED TO OTHER ENTRANCE STANDARDS AS THE NEED ARISES.
 - WHEN USED IN CONJUNCTION WITH STANDARD CG-3 OR CG-7, THE CURB FACE ON THIS STANDARD IS TO BE ADJUSTED TO MATCH THE MOUNTABLE CURB CONFIGURATION.
 - SEE STANDARD CG-12 FOR DETECTABLE WARNING DETAILS.
 - MODIFIED CG-13 SHALL BE PAID FOR (THE SAME AS), ST'D. CG-13 (ENTRANCE GUTTER CG-13) PAY ITEM. NO ADDITIONAL COMPENSATION SHALL PERMITTED FOR MODIFICATIONS SHOWN.



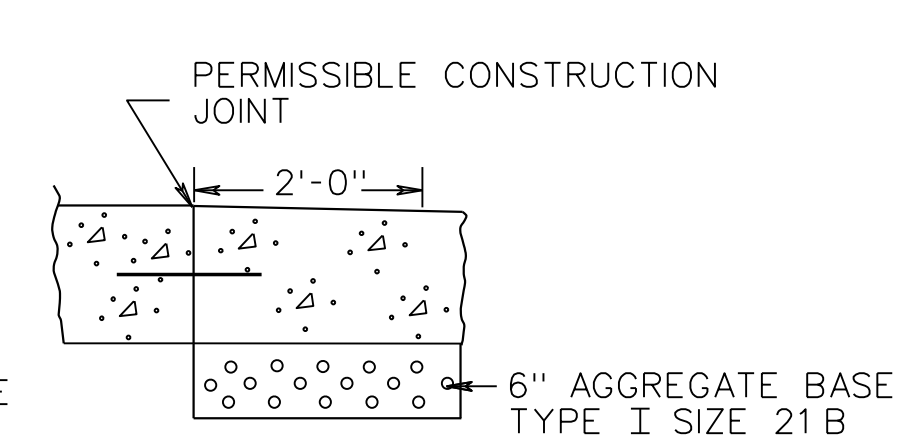
SECTION A-A



SECTION B-B



SECTION C-C

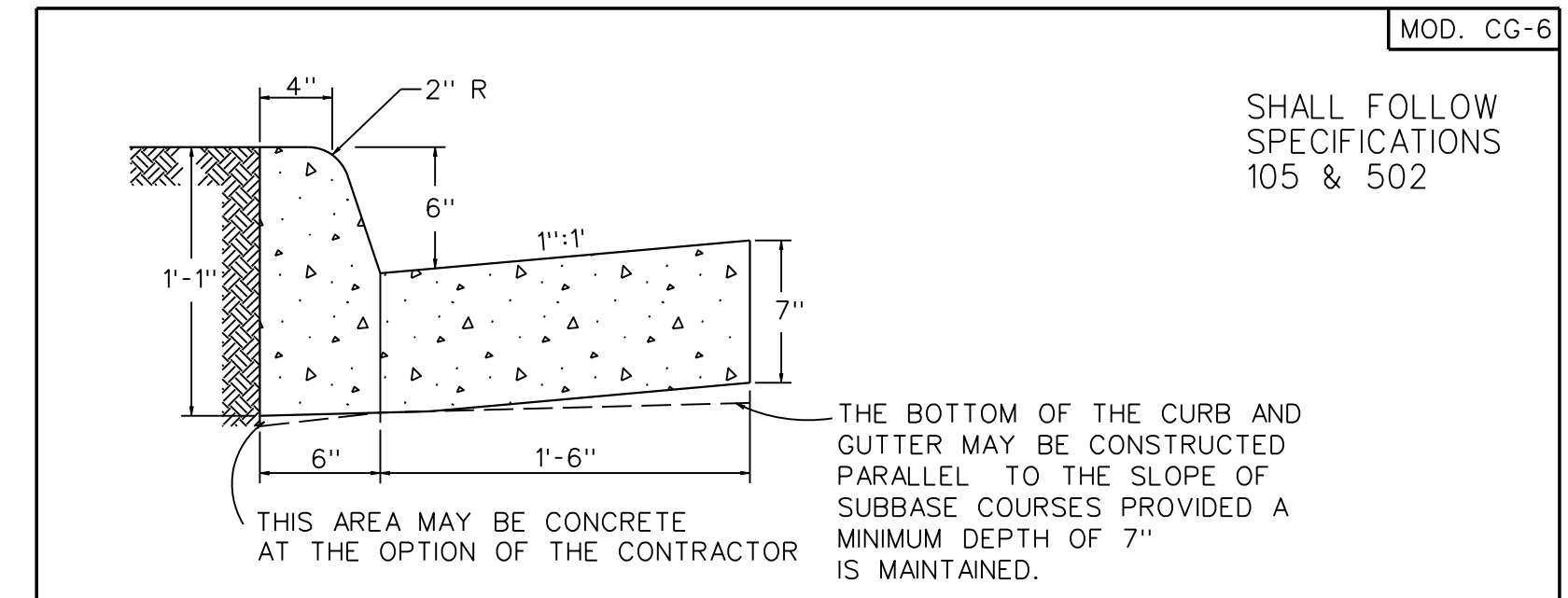


SECTION D-D

MODIFIED CG-13 COMMERCIAL ENTRANCE (HEAVY TRUCK TRAFFIC ANTICIPATED)

(NOT TO SCALE)

SHALL FOLLOW SPECIFICATIONS 502

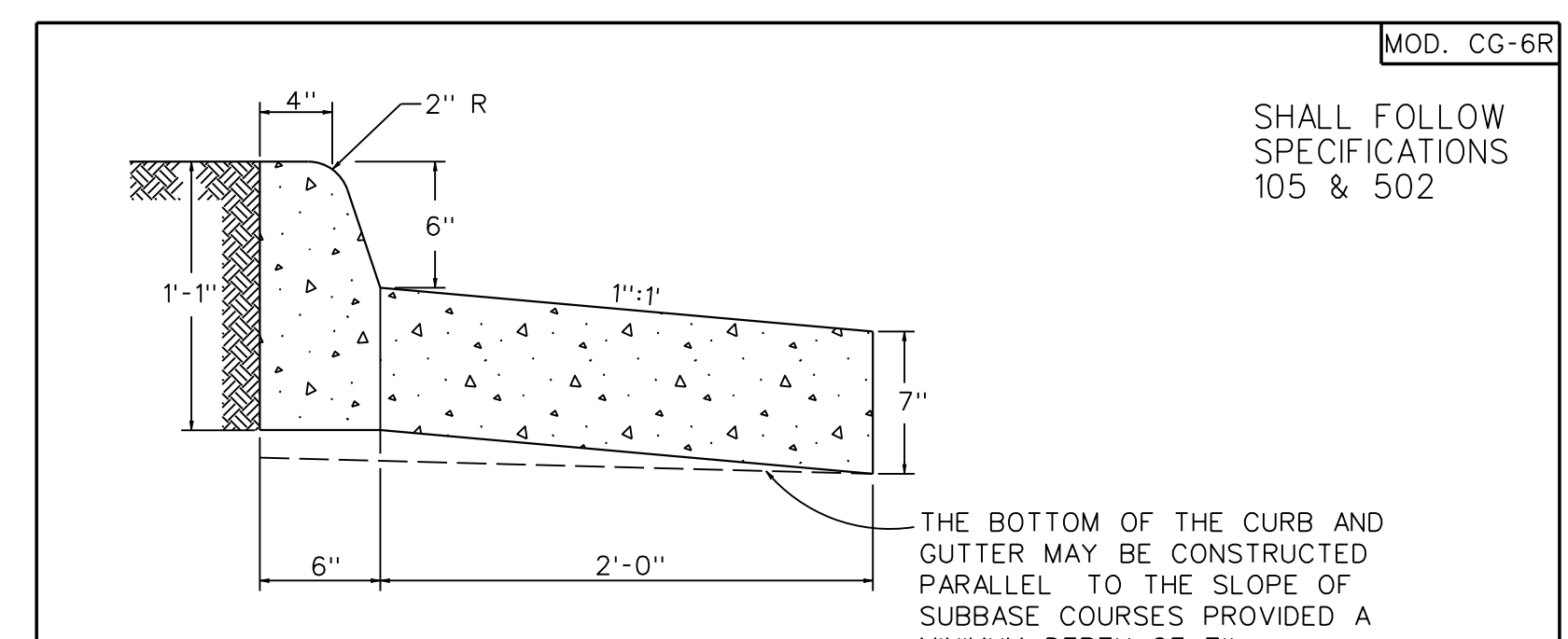


SHALL FOLLOW SPECIFICATIONS 105 & 502

NOTES:

- THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
- CONCRETE TO BE CLASS A3 IF CAST IN PLACE, 4000 PSI IF PRECAST.
- COMBINATION CURB & GUTTER HAVING A RADIUS OF 300 FEET OR LESS (ALONG FACE OF CURB) SHALL BE PAID FOR AS RADIAL COMBINATION CURB & GUTTER.
- FOR USE WITH STABILIZED OPEN-GRADED DRAINAGE LAYER, THE BOTTOM OF THE CURB AND GUTTER SHALL BE CONSTRUCTED PARALLEL TO THE SLOPE OF SUBBASE COURSES AND TO THE DEPTH OF THE PAVEMENT.
- ALLOWABLE CRITERIA FOR THE USE OF CG-6 IS BASED ON ROADWAY CLASSIFICATION AND DESIGN SPEED AS SHOWN IN APPENDIX A OF THE VDOT ROAD DESIGN MANUAL IN THE SECTION ON GS URBAN STANDARDS.

MODIFIED CG-6 COMBINATION 6" CURB & GUTTER



SHALL FOLLOW SPECIFICATIONS 105 & 502

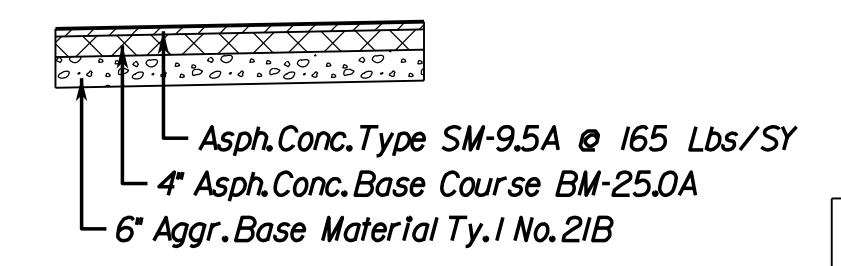
NOTES:

- THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
- CONCRETE TO BE CLASS A3 IF CAST IN PLACE, 4000 PSI IF PRECAST.
- COMBINATION CURB & GUTTER HAVING A RADIUS OF 300 FEET OR LESS (ALONG FACE OF CURB) SHALL BE PAID FOR AS RADIAL COMBINATION CURB & GUTTER.
- FOR USE WITH STABILIZED OPEN-GRADED DRAINAGE LAYER, THE BOTTOM OF THE CURB AND GUTTER SHALL BE CONSTRUCTED PARALLEL TO THE SLOPE OF SUBBASE COURSES AND TO THE DEPTH OF THE PAVEMENT.
- ALLOWABLE CRITERIA FOR THE USE OF CG-6 IS BASED ON ROADWAY CLASSIFICATION AND DESIGN SPEED AS SHOWN IN APPENDIX A OF THE VDOT ROAD DESIGN MANUAL IN THE SECTION ON GS URBAN STANDARDS.

MODIFIED CG-6R COMBINATION 6" CURB & REVERSE GUTTER

Parking Lot Pavement Design

(Not to Scale)



PROJECT	SHEET NO.
0029-151-105	2A(5)

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 SUBSURFACE UTILITY PROVIDED BY Accumark (2011)

Typical Sections Cont.

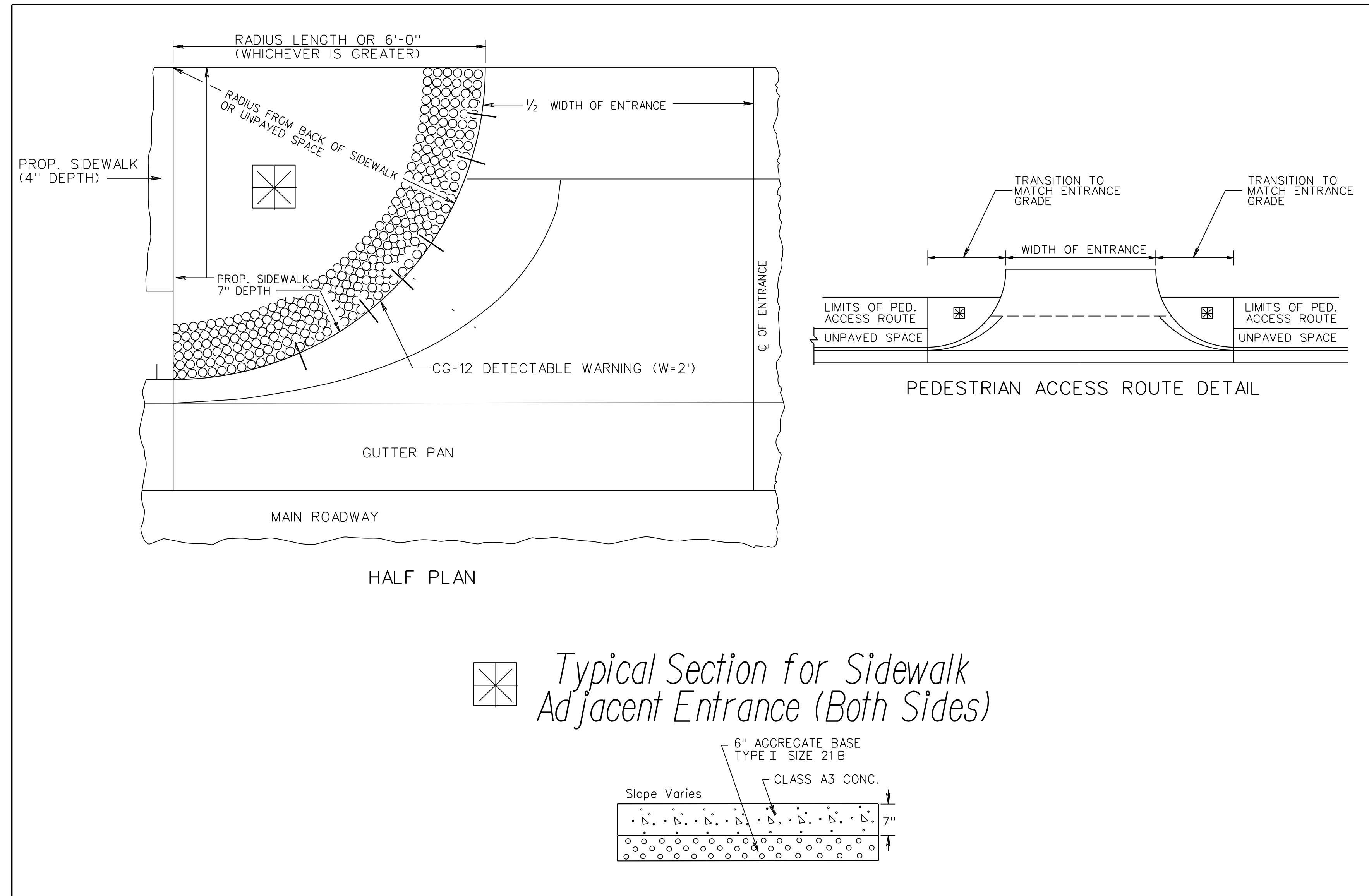
MARK A. GUNN
Lic. No. 038323

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Manassas, Virginia
PROFESSIONAL ENGINEER

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	-	0029-151-105 PI01, PI02, R201, C501	2A(6)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

ADDITIONAL DETAILS FOR ST'D CG-13 & MODIFIED CG-13 COMMERCIAL ENTRANCES



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SUBSURFACE UTILITY PROVIDED BY AccuMark (2011)-----

Geotechnical Recommendations
Note: See project's cross sections for details on unsuitable material locations, hard material locations, etc.

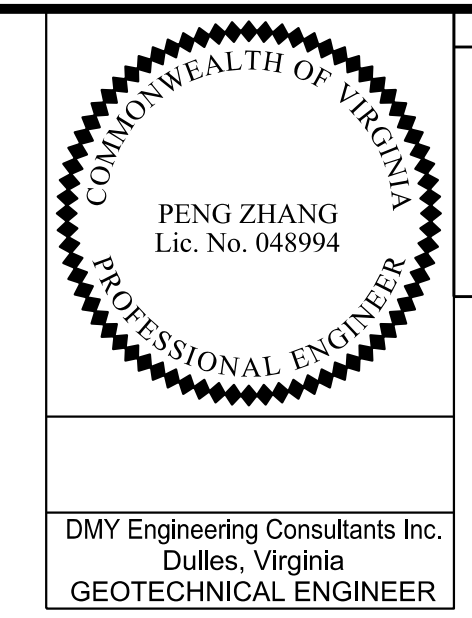


Table with columns: REVISED, STATE, ROUTE, PROJECT, SHEET NO. Values: VA, -, 0029-151-105 P101, P102, R201, C501, 2B

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

of tests shall be taken in each lift before the next lift is placed, on the order of at least three tests per lift. The elevation and location of the tests should be clearly identified and recorded at the time of fill placement.

7.3. CULVERT CONSTRUCTION

All culverts should be constructed in accordance with Section 302 - Drainage Structures of the VDOT 2007 Road and Bridge Specifications and the standard detail PB-1 of the VDOT 2008 Road and Bridge Standards.

Bedding

The stabilized groundwater table along the proposed box culvert alignment was above the proposed box culvert subgrade. After any dewatering measures, the groundwater table is anticipated to stay relatively close to the box culvert subgrade.

Excavation Support

All foundation excavations should be sloped or stepped back in accordance with Occupational Safety and Health Administration (OSHA) regulations for excavations.

Difficult Excavation

No rock or auger refusal material was encountered. However, subsoil with SPT N-values greater than 50 bpf was encountered within the anticipated excavation depth.

Table 7-5: List of Potential Difficult Excavation Areas

Table with columns: Locations, Depth to Hard Materials. Lists excavation locations and depths (e.g., 12+00± to 13+50±, 15± to 5± feet below surface).

Construction Monitoring

Settlement monitoring during construction should be provided for the buildings and structures in close vicinity of the culvert excavation.

7.4. GROUNDWATER CONTROL

Groundwater was not encountered within the boring termination depth in the roadway borings. It is anticipated that the roadway excavations will be impacted by groundwater.

Stabilized groundwater table along the proposed culvert ranged from approximate elevation of 324.8 to 340.5 feet (about 3.5 to 7 feet below existing ground surface).

Extreme cautions should be exercised by the contractor to avoid over-dewatering, which could induce excessive ground settlement around the dewatered areas.

Table with columns: PROJECT, SHEET NO. Values: 0029-151-105, 2B

6.0 GEOTECHNICAL RECOMMENDATIONS

6.1. CONCRETE BOX CULVERT

The subsurface conditions encountered in the soil test borings along the proposed culvert alignment indicate that the soils at the proposed culvert subgrade level should be able to provide a bearing capacity of 3,000 pounds per square foot (psf).

During construction, the culvert subgrade bearing capacity should be documented in the field by an authorized representative of the Geotechnical Engineer of Record to check that the in situ bearing capacity at the bottom of excavation is adequate for the design loads.

6.2. SLOPES

Based on our prior experience and the general subsurface conditions encountered at this site, we recommend that permanent slopes no steeper than 2H: 1V and temporary slopes no steeper than 1.5H: 1V be constructed for all cut and fill slopes on this project.

6.3. PAVEMENTS

The pavement design was performed in accordance with the Guidelines for 1993 AASHTO Pavement Design, which was published by VDOT and revised in July 2011. Detailed pavement design including the traffic load information and calculations are attached to this report in Appendix E.

The design CBR value for the pavement design was derived from the fourteen CBR tests on the soil samples collected. The laboratory CBR values ranged from 1.2 to 6.4 with an average value of 3.6.

We recommend the full depth pavement widening/reconstruction using the following sections:

Table with columns: Pavement Locations, Pavement Section. Lists details for Rt. 29/50 and Rt. 123 widening projects.

It should be noted that, based on the collected existing pavement data, the existing pavement is structurally deficient relative to the VDOT 30-year design standard. However, it is our understanding that, as an intersection improvement project, it is not intended to construct a pavement build-up to the existing pavement.

The pavement widening/reconstruction should be performed in accordance with VDOT standard detail WP-2 for asphalt pavement widening.

installed beneath the curb and gutter of all new pavements. The underdrain pipes should be either connected to existing underdrain or storm structures.

We recommend the following pavement section be used for temporary pavement during construction of the project. The temporary pavement section is designed for an 18 months life.

Table with columns: Pavement Location, Pavement Section. Lists temporary pavement section details.

Site specific traffic data for the parking lot along the north side of US 29/50 are not available for a detailed pavement design calculation.

Table with columns: Pavement Location, Pavement Section. Lists pavement section for parking lot.

7.0 CONSTRUCTION RECOMMENDATIONS

7.1. SITE PREPARATION

Site preparation should consist of any proposed demolition, removing existing underground utilities, existing structures, topsoil and vegetation, and any other soft or unsuitable material from the proposed construction areas.

7.2. EARTHWORK CONSTRUCTION

The earthwork for the proposed roadway construction should be performed in accordance with Section 303 - Earthwork of the VDOT 2007 Road and Bridge Specifications.

Subgrade Preparation

Following the site preparation and any required excavation, the newly exposed roadway subgrade should be evaluated by an authorized representative of the Geotechnical Engineer of Record.

If the subgrade exhibits excessive deflections or pumping when proof-rolled or soft subgrade is detected by probing, an appropriate remedial measure would be recommended by the Geotechnical Engineer of Record at that time.

The average optimum moisture content from the Proctor tests of soil samples collected from the proposed roadway widening areas is 14.9%. We have considered that soils with moisture content of greater than 17.9% (i.e., 120% of the average optimum moisture content) to be excessively moist.

amount of recent precipitation at the time construction is performed. Along some parts of the project alignment, the soils at/near the proposed grade were found to have in-place moisture contents far above the corresponding optimum moisture contents.

Table 7-1: List of Areas with Excessively Moist Subgrade

Table with columns: Roadway Stations, Widening Locations. Lists areas with excessively moist subgrade.

The soils at the proposed grade were found to have insufficient load carrying capacity in some areas as indicated by the very low CBR values. We recommend that the top 2 feet of the in-situ subgrade soils in these areas be removed and replaced with VDOT Select Material Type I (minimum CBR 30).

Table 7-2: List of Areas with Low CBR Subgrade

Table with columns: Roadway Stations, Widening Locations. Lists areas with low CBR subgrade.

Soft/loose soils (SPT N-Values less than 5 bpf) were encountered at/near the proposed subgrade in some areas. We recommend that the soft/loose subgrade soils be densified in place if feasible.

Table 7-3: List of Areas with Soft/Loose Subgrade

Table with columns: Roadway Stations, Widening Locations. Lists areas with soft/loose subgrade.

Engineered Fills and Placement

All engineered fills including roadway embankment and backfill around structures should have a Liquid Limit less than 45 and a Plasticity Index less than 20. Additionally, any borrow material to be used within 3 feet of the pavement subgrade elevation should have a CBR value of 5.0 or greater.

Based on the subsurface conditions observed in our exploration, the excavated onsite natural soils and clean fills can be re-used as engineered fill with the exception of the excavated soils from the proposed culvert at the following locations.

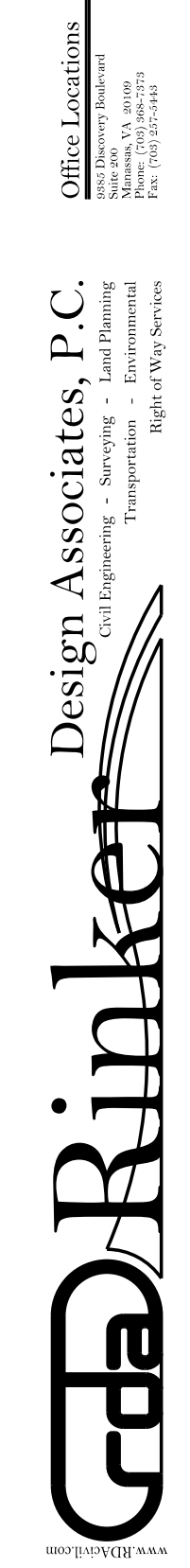
Table 7-4: List of Areas with Excessive Organic

Table with columns: Locations, Depth. Lists areas with excessive organic content.

Additionally, the soils excavated from the top 4 to 10 feet (average about 8 feet) of the proposed box culvert excavation are expected to have natural moisture contents greater than 120% of their respective optimum moisture contents.

Engineered fill materials should be placed in lifts not exceeding 8 inches in loose thickness for roadway embankments and not exceeding 6 inches in loose thickness for backfill around the box culvert structure.

All fill operations should be observed on a full-time basis by an authorized representative of the Geotechnical Engineer of Record to determine that compaction requirements are being met.



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 SUBSURFACE UTILITY PROVIDED BY *Accumack (2011)*

Areas of Potential Contaminated Soils

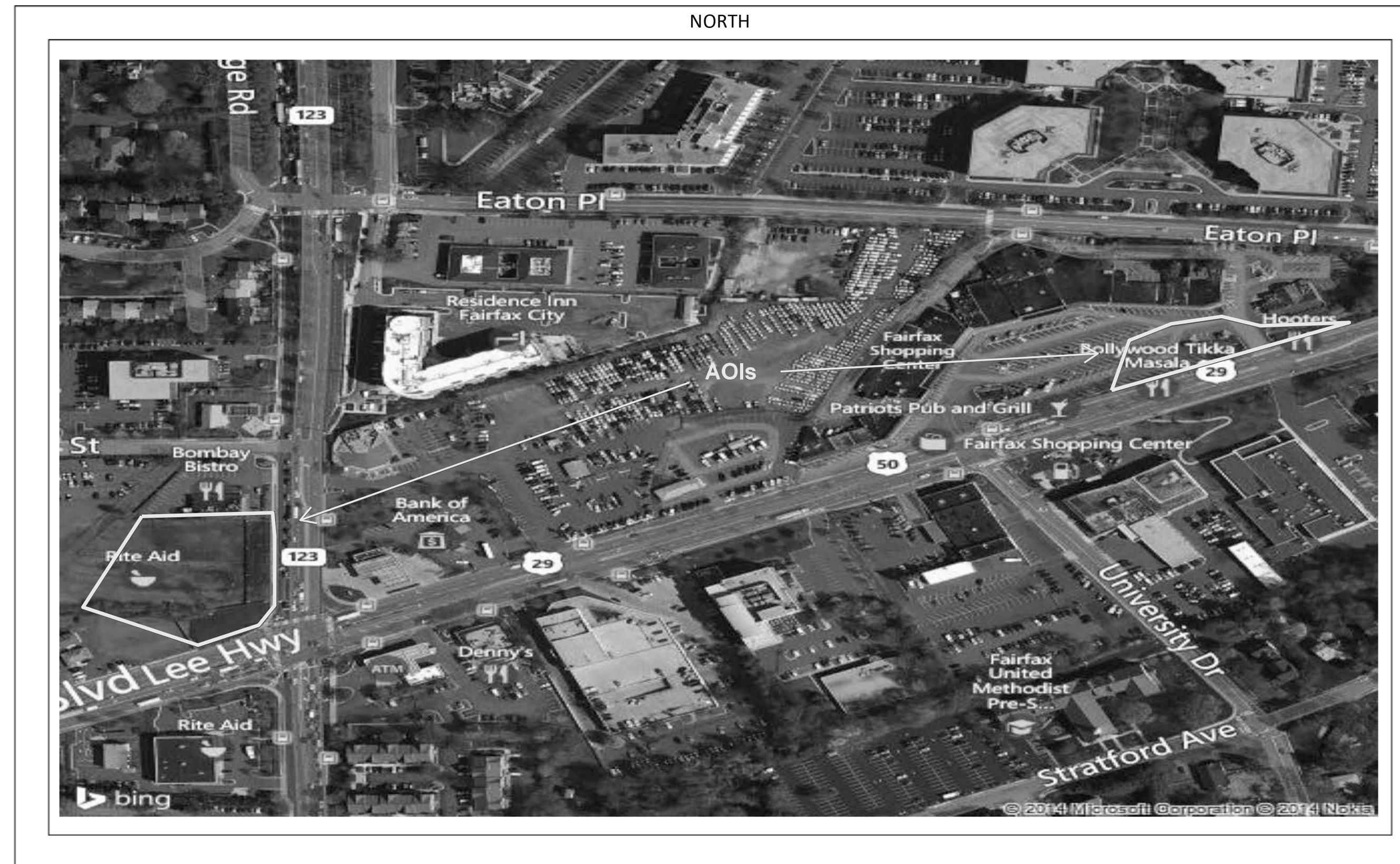
REVISED	STATE		STATE		SHEET NO.
	STATE	ROUTE	PROJECT		
	VA.	-	0029-151-105 P101, P102, R201, C501		2B(1)


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The figure below is from the Soil and Groundwater Management Plan prepared by Meridian Environmental Co. and dated January 14, 2015.

The Areas of Interest (AOIs) delineated in the figure are areas within the project limits that showed any anthropogenic impacts during investigation.

See the Contract Special Provisions for additional details on the steps for soil management required for this project.



<p>Soil & Groundwater Management Plan Aerial Map with Areas of Interest (AOI) VDOT Project 0029-151-105 Fairfax Boulevard Drainage Improvements Fairfax Boulevard (Rt. 29/50) & Chain Bridge Road (Rt. 123) City of Fairfax, Virginia</p>	<p>Source: Bing Maps Scale: NTS Meridian Project No.: 14-001ESA</p> <p>Figure 2</p>	<p>Drawn by: JBO Checked by: JBO Date: 12/30/2014</p> <p> MERIDIAN ENVIRONMENTAL CO. <i>a trusted partner in resolving environmental, geologic & hydrogeologic challenges</i></p>
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