CITY OF ALEXANDRIA
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

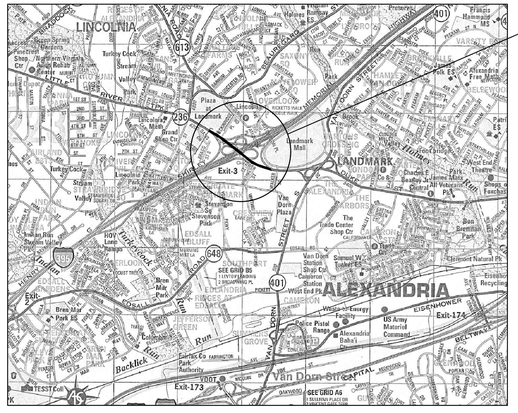
SHEET INDEX

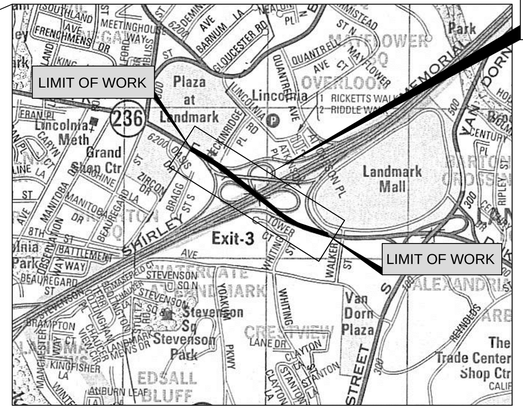
1	TITLE SHEET
2	GENERAL NOTES AND ABBREVIATIONS
3-4	TYPICAL SECTIONS
5-6	DETAIL SHEETS
7-11	ROADWAY PLANS
12-13	TRANSPORTATION MANAGEMENT PLANS
14	DRAINAGE DESCRIPTIONS
15	STORM DRAIN PROFILES
16	EROSION AND SEDIMENT CONTROL DETAILS
17-21	EROSION AND SEDIMENT CONTROL PLANS
22-23	STRUCTURE PLANS
24-28	SIGNING AND MARKING PLANS

CITYWIDE SIDEWALK CONNECTIONS
DUKE STREET PEDESTRIAN IMPROVEMENTS

STATE PROJECT # 0236-100-139, P101, M501
DECEMBER, 2013

UPC : 81077





LOCATION MAP

SOURCE: ADC MAP, NORTHERN VIRGINIA
Permitted Use No. 21003214

60% PLANS
NOT FOR CONSTRUCTION

RUMMEL, KLEPPER & KAHL, LLP
ENGINEERS | CONSTRUCTION MANAGERS | PLANNERS | SCIENTISTS
RESPONSIVE PEOPLE • CREATIVE SOLUTIONS
81 Mosher Street, Baltimore, MD 21217
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Ph: 410.728.2900 Fax: 410.728.3160

LOCALLY ADMINISTERED PROJECTS	
CITY OF ALEXANDRIA	
NAME OF LOCALITY	
(SIGNATURE)	
NAME OF RESPONSIBLE LOCAL GOVERNMENT OFFICIAL (TYPED)	
RECOMMENDED FOR APPROVAL FOR RIGHT OF WAY ACQUISITION	
DATE	TITLE OF POSITION
(SIGNATURE)	
NAME OF RESPONSIBLE LOCAL GOVERNMENT OFFICIAL (TYPED)	
RECOMMENDED FOR APPROVAL FOR CONSTRUCTION	
DATE	TITLE OF POSITION

RECOMMENDED FOR APPROVAL FOR CONSTRUCTION	
DATE	DISTRICT PLANNING AND INVESTMENT MANAGER
DATE	DISTRICT PROJECT DEVELOPMENT ENGINEER
APPROVED FOR CONSTRUCTION	
DATE	DISTRICT ADMINISTRATOR

GENERAL

1. ALL CONSTRUCTION METHODS AND MATERIAL SHALL CONFORM WITH THESE DRAWINGS, PROJECT SPECIFICATIONS, AND WITH ALL CURRENT APPLICABLE CODES AND THE LATEST REVISIONS OF THE FOLLOWING REFERENCE DOCUMENTS:
   - (A) VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) ROAD AND BRIDGE SPECIFICATIONS
   - (B) MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)
   - (C) VIRGINIA WORK AREA PROTECTION MANUAL
   - (D) VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH)
   - (E) VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) DRAINAGE MANUAL
   - (F) VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) ROAD AND BRIDGE STANDARDS
   - (G) CITY OF ALEXANDRIA DESIGN AND CONSTRUCTION STANDARDS
2. THE CONTRACTOR SHALL OBTAIN ALL APPLICABLE PERMITS AND LICENSES AND KEEP COPIES OF THE SAME ON SITE DURING CONSTRUCTION.
3. THE CONTRACTOR SHALL REVIEW THE SITE FOR THIS PROJECT PRIOR TO WORK.
4. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS. ANY DISCREPANCIES FOUND SHALL BE CALLED TO THE ATTENTION OF THE CITY OF ALEXANDRIA AND BE RESOLVED BEFORE PROCEEDING WITH THE WORK.
5. ALL INFORMATION SHOWN ON THESE DRAWINGS RELATIVE TO EXISTING CONDITIONS IS GIVEN AS THE BEST PRESENT KNOWLEDGE, BUT WITHOUT GUARANTEE OF ACCURACY. THE CONTRACTOR SHALL REPORT IMMEDIATELY TO CITY OF ALEXANDRIA ANY CONDITIONS CONFLICTING WITH THE DRAWINGS. FIELD MODIFICATIONS TO THE DRAWINGS SHALL NOT BE MADE WITHOUT THE CONSENT OF CITY OF ALEXANDRIA.
6. THE CONTRACTOR SHALL MAINTAIN A CLEAN WORK SITE, FREE FROM TRASH AND DEBRIS.
7. THE CONTRACTOR SHALL KEEP AND MAINTAIN A SET OF APPROVED PROJECT PLANS AND SPECIFICATIONS ON THE SITE AT ALL TIMES.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING WITH MATCHING MATERIALS ANY PAVEMENT, PAVEMENT MARKINGS, SIGNS, ETC. THAT MUST BE CUT OR REMOVED, OR THAT ARE DAMAGED DURING CONSTRUCTION.
9. THE APPLICANT SHALL BE RESPONSIBLE FOR REPAIRS TO THE ADJACENT CURB, GUTTER, AND RIGHT-OF-WAY, IF DAMAGED DURING CONSTRUCTION ACTIVITY.

UTILITIES

1. PRIOR TO CONSTRUCTION OR EXCAVATION, THE CONTRACTOR SHALL ASSUME THE RESPONSIBILITY OF LOCATING ANY AND ALL UNDERGROUND UTILITIES (PUBLIC OR PRIVATE) THAT MAY EXIST OR CROSS THROUGH THE AREA OF CONSTRUCTION WHETHER OR NOT THEY ARE SHOWN ON THE PLANS." BEFORE DIGGING, TO AVOID THE UTILITIES, THE CONTRACTOR SHALL CALL "MISS UTILITY OF VIRGINIA" AT 1-800-552-7001. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING, AT HIS SOLE EXPENSE, ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION.
2. THIS PLAN DOES NOT GUARANTEE THE EXISTENCE, NONEXISTENCE, SIZE, TYPE, LOCATION, ALIGNMENT, OR DEPTH OF ANY OR ALL UNDERGROUND UTILITIES OR OTHER FACILITIES. WHERE SURFACE FEATURES (MANHOLES, CATCH BASINS, VALVES, ETC.) ARE UNAVAILABLE OR INCONCLUSIVE, INFORMATION SHOWN MAY BE FROM UTILTY OWNER'S RECORDS AND/OR ELECTRONIC LINE TRACING, THE RELIABILITY OF WHICH IS UNCERTAIN. THE CONTRACTOR SHALL PERFORM TEST EXCAVATION OR OTHER REINVESTIGATION AS NECESSARY TO VERIFY LOCATION AND CLEARANCES.
3. STATE LAW MANDATES THE NOTIFICATION OF UTILITY OWNERS 48 HOURS IN ADVANCE OF EXCAVATION. FOR LOCATION OF UTILITIES CALL:

UTILITY OWNERS	TELEPHONE
DOMINION VIRGINIA POWER	888-667-3000
VERIZON COMMUNICATIONS	888-826-2355
COMCAST	888-683-1000
WASHINGTON GAS	703-750-1000
PEPCO	202-833-7500
VIRGINIA AMERICAN WATER	703-491-2136
SANITARY SEWER - CITY OF ALEXANDRIA	703-746-4488

4. CONTRACTOR SHALL CONFORM TO THE "OVERHEAD HIGH VOLTAGE ACT" (EFFECTIVE JULY 1, 2003) AND SHALL CONTACT THE NECESSARY AUTHORITIES PRIOR TO START OF CONSTRUCTION.

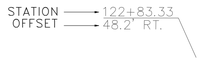
COORDINATION

1. CONSTRUCTION WILL TAKE PLACE ADJACENT TO ONGOING TRAFFIC OPERATIONS. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES WITH CITY OF ALEXANDRIA.
2. THE CONTRCTOR SHALL SUBMIT A SCHEDULE FOR CONSTRUCTION TO THE CITY OF ALEXANDRIA IN ACCORDANCE WITH PROJECT SPECIFICATIONS.

CONSTRUCTION NOTES

1. ALL CLEARING, GRUBBING, GRADING, AND PAVING SHALL BE PERFORMED IN ACCORDANCE WITH VDOT SPECIFICATIONS AND STANDARDS.
2. EXISTING VEGETATION SURROUNDING THE CONSTRUCTION AREA SHALL REMAIN IN A NATURAL STATE. TREES NEAR THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH DETAILS AND NOTES AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN.
3. THE CONTRACTOR SHALL STRIP TOPSOIL AND ANY ORGANIC LADEN SOIL AND STORE FOR USE IN BACKFILLING AND LANDSCAPING FOR SITE RESTORATION. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ANY EXCESS SOIL AFTER RESTORATION OF THE SITE.
4. WHEN MATERIALS WHICH ARE UNSUITABLE FOR FOUNDATIONS, SUBGRADES, OR ROADWAY PURPOSES OCCUR WITHIN THE LIMITS OF CONSTRUCTION, THE CONTRACTOR SHALL BE REQUIRED TO EXCAVATE SUCH MATERIAL BELOW THE GRADE SHOWN ON THE PLANS. THE AREAS SO EXCAVATED SHALL BE BACKFILLED WITH APPROVED SUITABLE SELECT FILL MATERIAL.
5. ALL UNPAVED SURFACES SHALL BE GRADED TO PROVIDE POSITIVE DRAINAGE AWAY FROM PAVED AREAS AND TOWARD DRAINAGE STRUCTURES.
6. ALL DISTURBED AREAS SHALL BE PREPARED, SEEDED, AND MULCHED.
7. DISTURBED AREAS WITHIN THE PROJECT LIMITS THAT WILL REMAIN INACTIVE FOR A PERIOD OF 14 CALENDAR DAYS OR LONGER SHALL BE TEMPORARILY STABILIZED WITH SEED AND STRAW, MULCH, OR OTHER ACCEPTABLE GROUNDCOVER.
8. THE CONTRACTOR IS REQUIRED TO NOTIFY CITY OF ALEXANDRIA THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION AND SPECIFICALLY REQUEST INSPECTION BEFORE BEGINNING:
   - A. INSTALLATION OF SILTATION AND EROSION CONTROL MEASURES
   - B. CLEARING AND GRUBBING
   - C. EARTHWORK
   - D. BACKFILL OF ANY STORM DRAINAGE PIPE, CULVERTS, INLET, AND OTHER UTILITIES
   - E. INSTALLATION OF ANY UNDERGROUND UTILITY, INCLUDING STORM PIPES, CULVERT & INLETS
   - F. BEFORE PLACING SUBBASE, BASE OR PAVING SURFACE
   - G. INSTALLATION OF ANY FORMS
   - H. PLACING OF ANY CONCRETE
   - I. BACKFILL OF ANY FOUNDATIONS OR WALLS.
9. WHERE STANDARD SLOPE ROUNDOFFS WOULD DAMAGE TREES, BUSHES, OR OTHER DESIRABLE VEGETATION THEY SHALL BE OMITTED WHEN SO ORDERED BY CITY OF ALEXANDRIA.

LABELS



ABBREVIATIONS

AC	ACRE	LF	LINEAR FEET
A/C	AIR CONDITIONING	LG	LONG
ADDL	ADDITIONAL	LP	LOW POINT
ALUM	ALUMNIUM	MB	MAILBOX
APPROX	APPROXIMATE(LY)	MH	MANHOLE
ARND	AROUND	MAX	MAXIMUM
ASPH	ASPHALT	MIN	MINIMUM
BC	BOTTOM OF CURB	MISC	MISCELLANEOUS
BIT	BITUMINOUS	MON	MONUMENT
BM	BENCHMARK	NO	NUMBER
BOT	BOTTOM	NTS	NOT TO SCALE
BRK	BRICK	OC	ON CENTER
BTWN	BETWEEN	OD	OUTSIDE DIAMETER
BW	BOTTOM OF WALL	OE	OVERHEAD ELECTRIC
CB	CATCH BASIN	PG	PAGE
CCFR	CENTRIGUALLY CAST FIBERGLASS REINFORCED	PL	PROPERTY LINE
		PP	POWER POLE
CCTV	CLOSED CIRCUIT TELEVISION	PROP	PROPOSED
CFS	CUBIC FEET PER SECOND	PSI	POUNDS PER SQUARE INCH
CIP	CAST IRON PIPE	PVC	POLYVINYL CHLORIDE
CJ	CONTRACTION JOINT	QTY	QUANTITY
CL	CENTERLINE	R/W	RIGHT-OF-WAY
CLF	CHAIN LINK FENCE	RAD	RADIUS
CLR	CLEAR	RCP	REINFORCED CONCRETE PIPE
CM	CONCRETE MONUMENT	REIF.	REINFORCE(D, ING)
CMP	CORRUGATED METAL PIPE	REQ'D	REQUIRED
CMV	CONCRETE MASONRY UNIT(S)	S	SLOPE
CONC	CONCRETE	SAN	SANITARY SEWER
C.O.	CLEANOUT	SD	STORM DRAIN
COMM	COMMUNCATIONS	SEG	SEGMENT
CONT	CONTINUOUS	SF	SEDIMENT FENCE
CS	COMBINED SEWER	SPEC	SPECIFICATION, SPECIFIED
CTR	CENTER(ED)	SR/S.R.	STATE ROUTE
D	DRAIN	SS	SANITARY SEWER
DI	DUCTILE IRON	ST	STREET
DIA	DIAMETER	STA	STATION
DIAG	DIAGONAL	STD	STANDARD
DIP	DUCTILE IRON PIPE	STL	STEEL
DWG	DRAWING	STRUC	STRUCTURE(S, URAL)
DL(S)	DOWEL(S)	SQ	SQUARE
EA	EACH	T	THICKNESS
EF	EACH FACE	T&B	TOP & BOTTOM
EJ	EXPANSION JOINT	TC	TOP OF CURB
EL	ELEVATION	TW	TOP OF WALL
EM	ELECTRICAL MANHOLE	TYP	TYPICAL
EOP	EDGE OF PAVFEMENT	UNO	UNLESS NOTED OTHERWISE
EW	EACH WAY	UT	UNDERGROUND TELEPOHONE
EX/EXIST	EXISTING	VCP	VITRIFIED CLAY PIPE
FH	FIRE HYDRANT	VDOT	VIRGINIA DEPARTMENT OF TRANSPORTATION
FM	FORCE MAIN		
FT	FEET/FOOT	W	WATER
FTG	FOOTING	W/	WITH
G	NATURAL GAS	WL	WATER LEVEL
GALV	GAS VALVE	W.M.	WATER METER
GV	GALVANIZED	WRPD	WRAPPED
IN	INCH	WS	WATER SURFACE
INV	INVERT	W.V.	WATER VALVE
ID	INSIDE DIAMETER		
JC	JUNCTION CHAMBER		

LEGEND

	PROPERTY LINE	TEL	TELEPHONE LINE
-X-X-	EX. FENCE	GAS	GAS LINE
	TREE	E	ELECTRIC LINE
	EVERGREEN	W	WATER LINE
	UTILITY POLE		
	LIGHT POLE		
	GAS VALVE		
	EX. SIGN		
	TRAVERSE POINT		
	MANHOLE		
	GUY		
	GRATE INLET		
	TELEPHONE POLE		
	GAS METER		
	EDGE OF CONCRETE		
250	EX. CONTOUR LINE		
	PROP. STORM DRAIN PIPE		
	PROP. INLET		
B-1	TEST BORING (SEE SPECIFICATIONS FOR TEST BORING LOGS)		

REVISIONS

GENERAL NOTES & ABBREVIATIONS

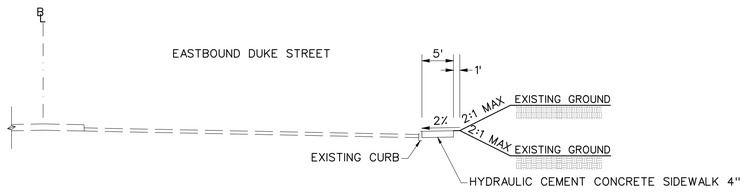
Scale: N/A Project: _____ Sheet: 2 of 28

Transportation & Environmental Services
Engineering & Design Division
P.O. Box 178 Alexandria, Va. 22313

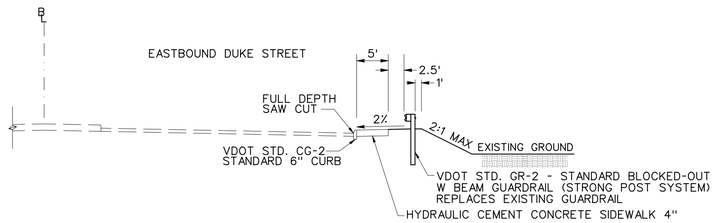
Duke Street Pedestrian Improvements

FILE NAME: \\vdotnx03\v20101\10037_Alexandria\Task 5_Duke-395\CADD\Plans\pGN-N001_Duke.dwg LAYOUT NAME: PLAN PLOTTED: Friday, December 20, 2013 - 10:59am

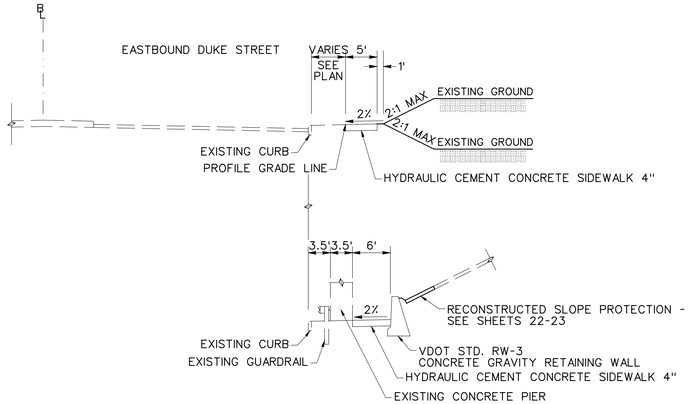
NOTE: SAW CUTS ARE INCIDENTAL TO THE CURB ITEMS.



DUKE ST – SECTION 1
STA. 102+49 TO STA. 104+81
STA. 119+76 TO STA. 126+21

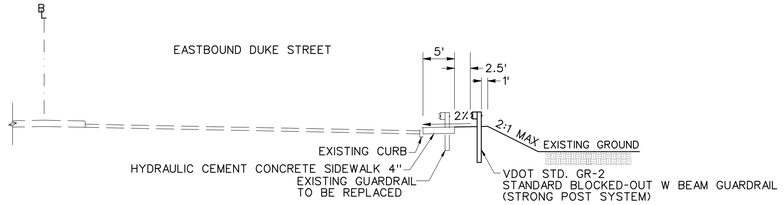


DUKE ST – SECTION 3
STA, 109+94 TO STA. 111+92

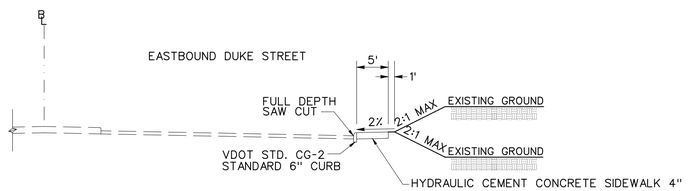


STA. 108+34 TO STA. 109+19

DUKE ST – SECTION 2
STA. 104+83 TO STA. 109+94



DUKE ST – SECTION 4
STA. 115+20 TO STA. 116+98



DUKE ST – SECTION 5
STA. 116+91 TO STA. 119+76

REVISIONS

Typical Sections

Scale: NTS Project: _____ Sheet: 3 of 28

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Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

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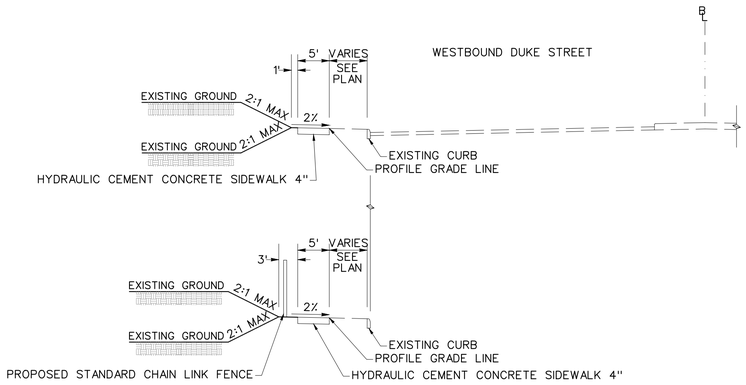
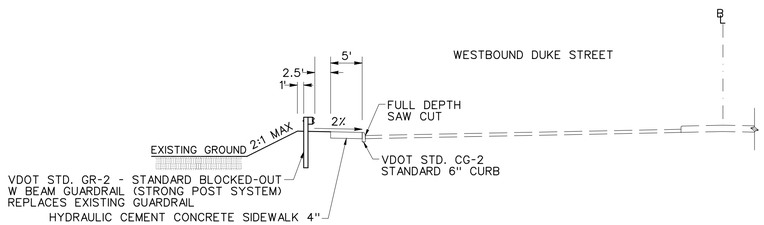


STA. 105+64 TO STA. 106+91

DUKE ST – SECTION 6
STA. 105+64 TO STA. 111+45



DUKE ST – SECTION 7
STA. 111+57 TO STA. 112+38
STA. 115+67 TO STA. 116+98

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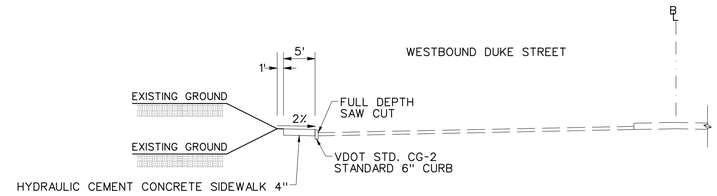
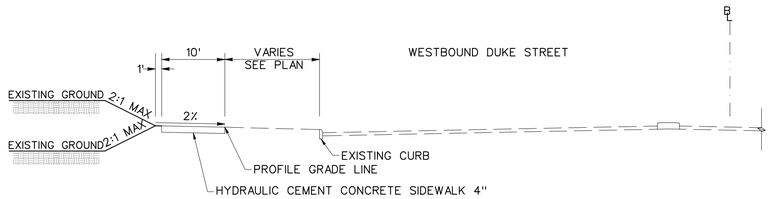


DUKE ST – SECTION 8
STA. 116+98 TO STA. 118+43



DUKE ST – SECTION 9
STA. 118+38 TO STA. 126+34

REVISIONS

Typical Sections

Scale: NTS Project: _____ Sheet: 4 of 28

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Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

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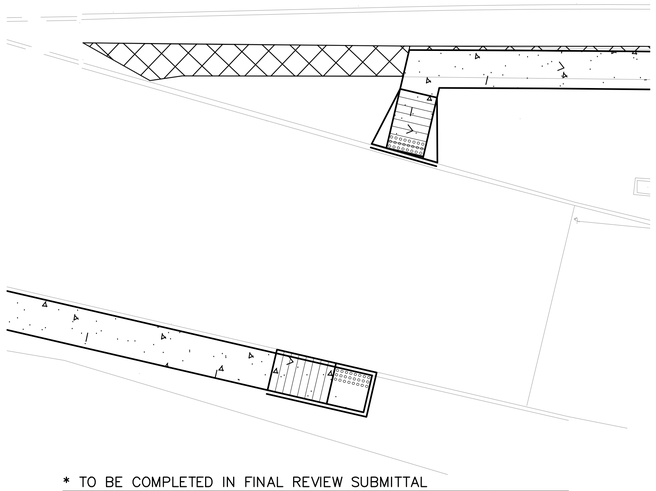
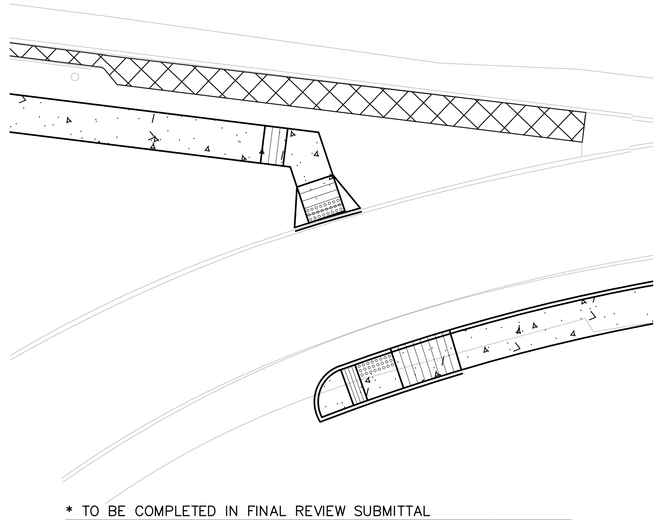


* TO BE COMPLETED IN FINAL REVIEW SUBMITTAL

POINT	BASELINE	STATION	OFFSET	NORTH	EAST	ELEVATION
A100						
A101						
A102						
A103						

DETAIL A
PEDESTRIAN RAMP



* TO BE COMPLETED IN FINAL REVIEW SUBMITTAL

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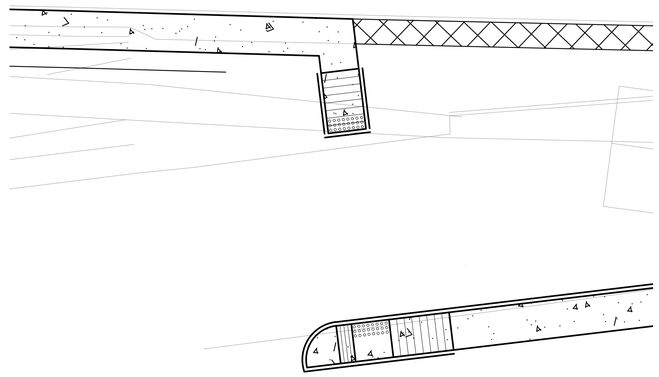
B101						
B102						
B103						

DETAIL B
PEDESTRIAN RAMP



* TO BE COMPLETED IN FINAL REVIEW SUBMITTAL

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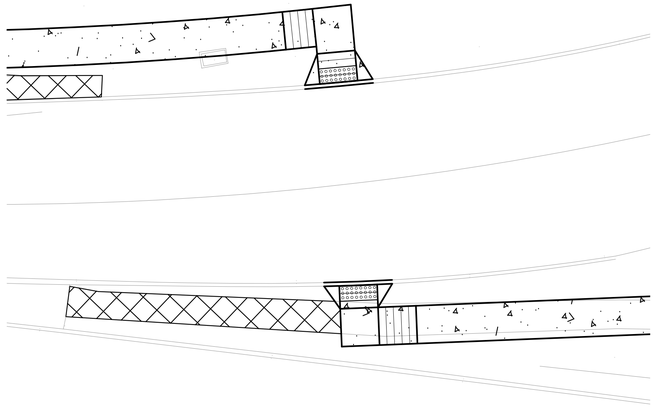
C100						
C101						
C102						
C103						

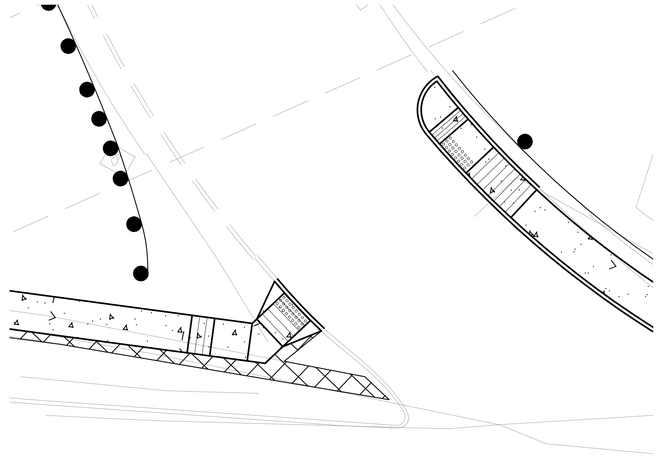
DETAIL C
PEDESTRIAN RAMP



* TO BE COMPLETED IN FINAL REVIEW SUBMITTAL

POINT	BASELINE	STATION	OFFSET	NORTH	EAST	ELEVATION
D100						
D101						
D102						
D103						

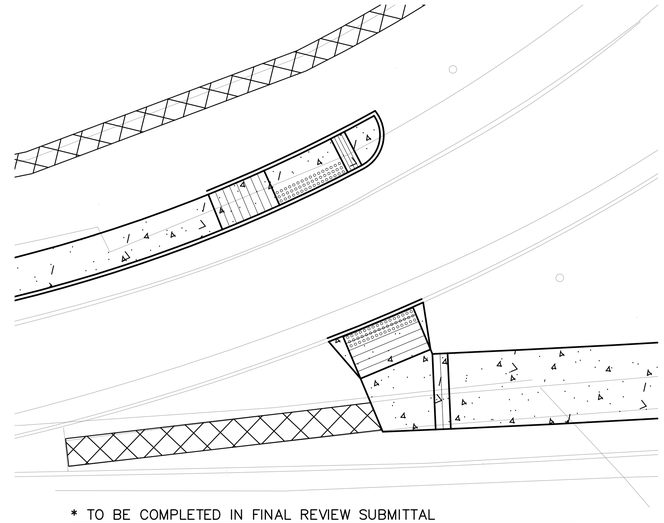
DETAIL D
PEDESTRIAN RAMP



* TO BE COMPLETED IN FINAL REVIEW SUBMITTAL

POINT	BASELINE	STATION	OFFSET	NORTH	EAST	ELEVATION
E100						
E101						
E102						
E103						

DETAIL E
PEDESTRIAN RAMP



* TO BE COMPLETED IN FINAL REVIEW SUBMITTAL

POINT	BASELINE	STATION	OFFSET	NORTH	EAST	ELEVATION
F100						
F101						
F102						
F103						

DETAIL F
PEDESTRIAN RAMP

REVISIONS

Detail
Sheet 1

Scale: 1"=10' Project: _____

Sheet: 5 of 28

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Engineering & Design Division
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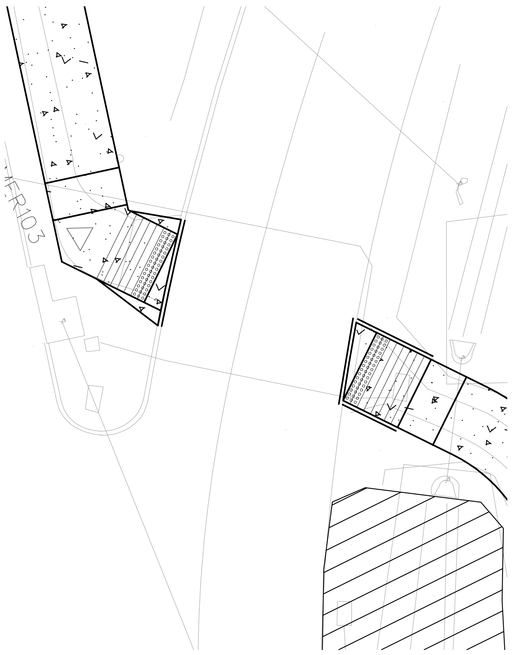
Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

FILE NAME: \\balsrv03\v2010\2010\10037_Alexandria\Task 5_Duke-395\CADD\Plans\pHD-D001_Duke.dwg LAYOUT NAME: Layout1 PLOTTED: Friday, December 20, 2013 - 10:22am



DETAIL G
PEDESTRIAN RAMP

POINT	BASELINE	STATION	OFFSET	NORTH	EAST	ELEVATION
G100						
G101						
G102						
G103						

* TO BE COMPLETED IN FINAL REVIEW SUBMITTAL

CITY OF ALEXANDRIA VIRGINIA

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Duke Street Pedestrian Improvements

Detail
Sheet 2

REVISIONS

Scale: 1"=10' Project: _____ Sheet: 6 of 28

FILE NAME: \\balsrv03\v2010\2010\10037_Alexandria\Task 5_Duke-395\CADD\Plans\pHD-D002_Duke.dwg LAYOUT NAME: Layout1 PLOTTED: Friday, December 20, 2013 - 9:31am

SURVEY CONTROL POINTS AND ELEVATIONS				
POINT	COORDINATES		ELEVATION	REMARKS
	NORTH	EAST		
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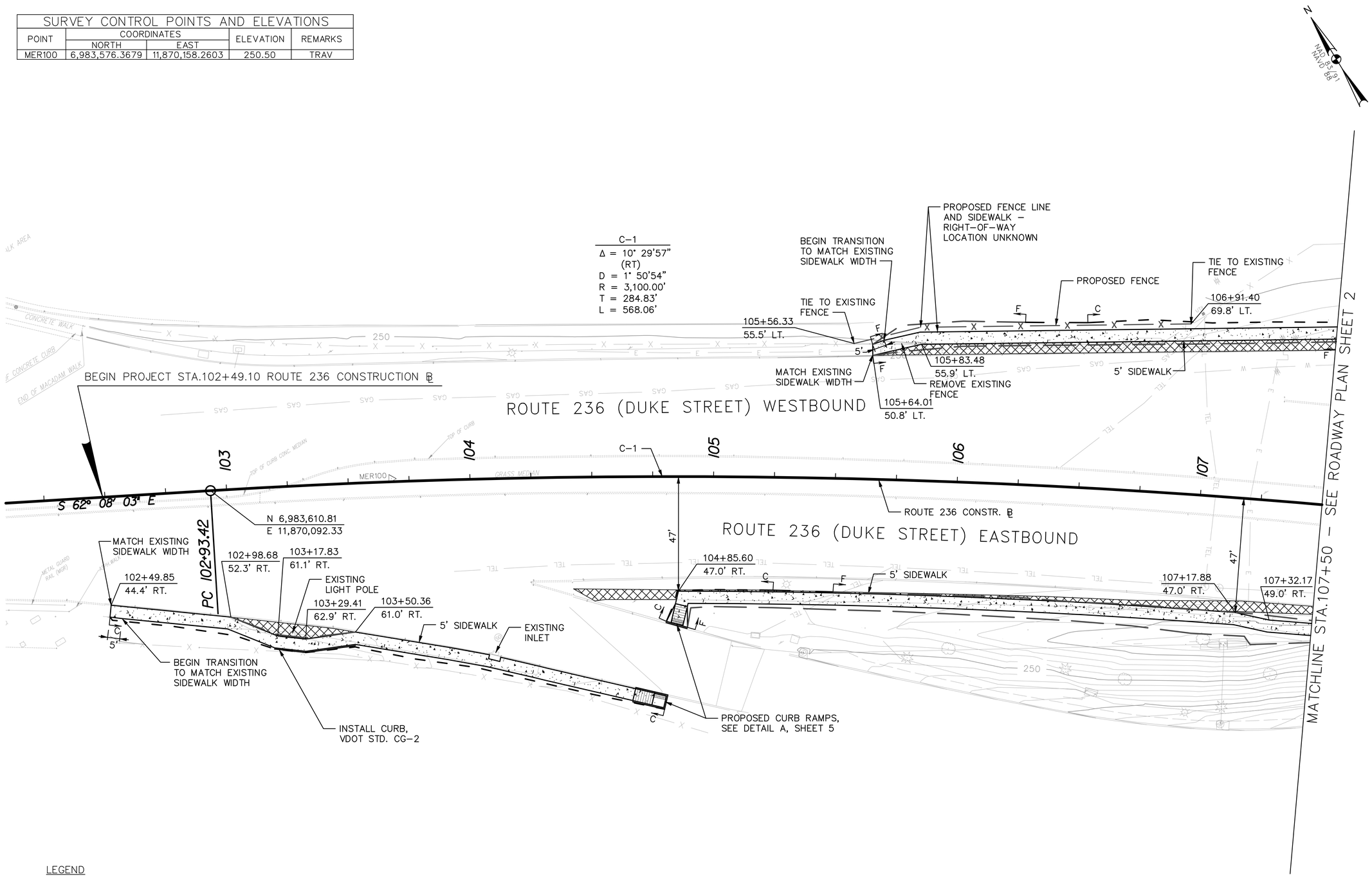


LEGEND

- PROPOSED CONCRETE SIDEWALK
- PROPOSED DETECTABLE WARNING SURFACE
- EXISTING PAVEMENT TO BE REMOVED
- CLEAR VEGETATION

60% PLANS
NOT FOR CONSTRUCTION

REVISIONS

Roadway Plan
Sheet 1

Scale: 1"=20' Project: _____

Sheet: 7 of 28

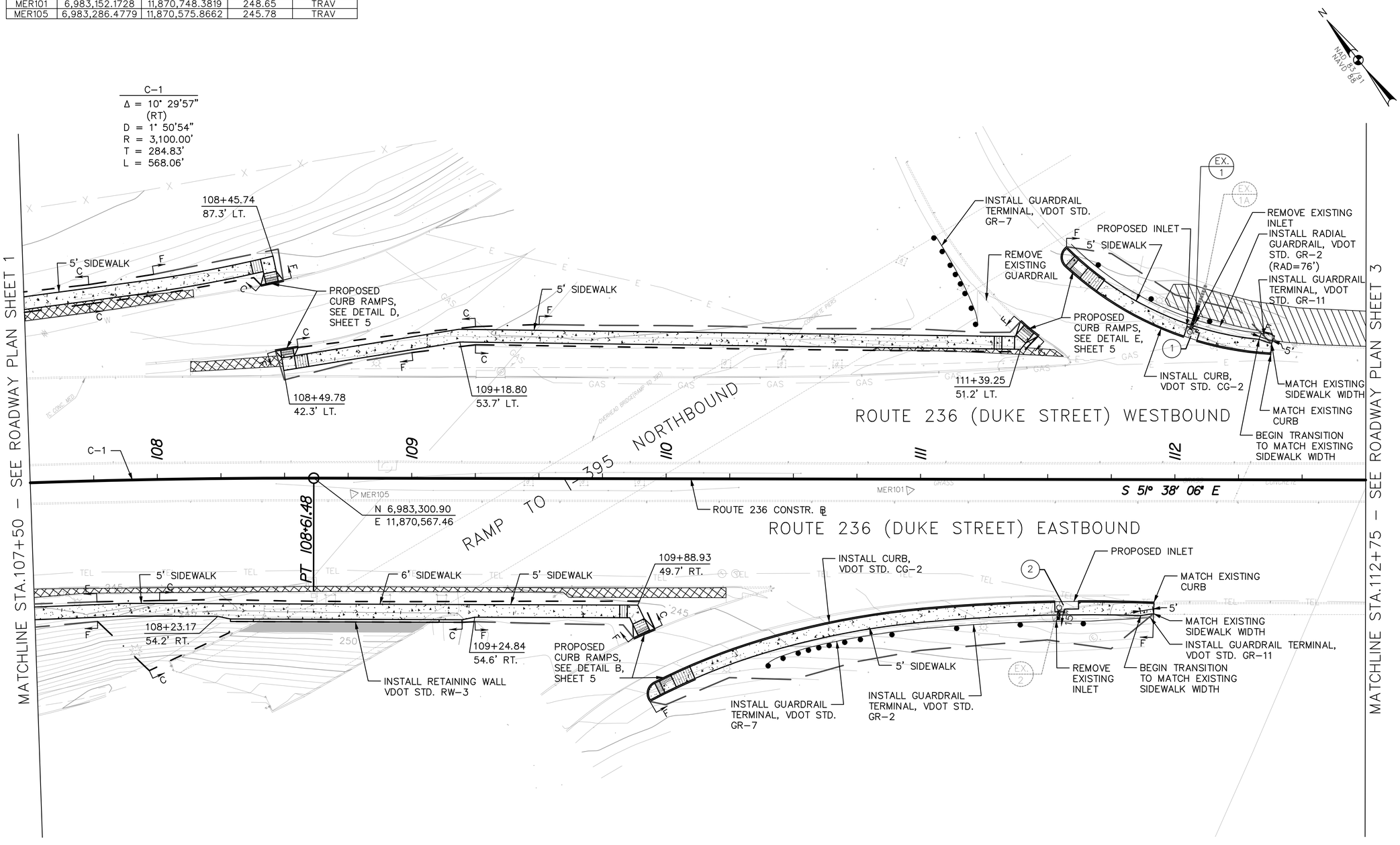
Transportation & Environmental Services
Engineering & Design Division
P.O. Box 178 Alexandria, Va. 22313

Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

FILE NAME: \\balsrv03\v2010\2010\10037_Alexandria\Task 5_Duke-395\CADD\Plans\pHD-P001_Duke.dwg LAYOUT NAME: Layout1 PLOTTED: Thursday, December 19, 2013 - 4:14pm

SURVEY CONTROL POINTS AND ELEVATIONS				
POINT	COORDINATES		ELEVATION	REMARKS
	NORTH	EAST		
MER101	6,983,152.1728	11,870,748.3819	248.65	TRAV
MER105	6,983,286.4779	11,870,575.8662	245.78	TRAV



LEGEND

- PROPOSED CONCRETE SIDEWALK
- PROPOSED DETECTABLE WARNING SURFACE
- EXISTING PAVEMENT TO BE REMOVED
- CLEAR VEGETATION
- RECONSTRUCT SLOPE PROTECTION

60% PLANS
NOT FOR CONSTRUCTION

REVISIONS

Roadway Plan
Sheet 2

Scale: 1"=20' Project: _____ Sheet: 8 of 28

Transportation & Environmental Services
Engineering & Design Division
P.O. Box 178 Alexandria, Va. 22313

Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

FILE NAME: \\bolsrv03\v2010\2010\10037_Alexandria\Task 5_Duke-395\CADD\Plans\pHD-P002_Duke.dwg LAYOUT NAME: Layout2 PLOTTED: Friday, December 20, 2013 - 9:40am

NOTES:

1) PAVED DITCH PG-2A TYPE E, SHALL BE ADDED FROM STA. 116+85, LT TO 117+40 LT. AS SHOWN THE PLAN.

2) EXISTING CONCRETE DITCH SHALL BE REMOVED FROM STA. 116+85, LT. TO 119+10, LT.

N
NAD 83/91
NAD 88

MATCHLINE STA.112+75 – SEE ROADWAY PLAN SHEET 2

I-395 SOUTHBOUND

I-395 HOV LANES

I-395 NORTHBOUND

ROUTE 236 (DUKE STREET) WESTBOUND

ROUTE 236 (DUKE STREET) EASTBOUND

S 51° 38' 06" E

PC 115+35.50

N 6,982,882.55
E 11,871,095.94

ROUTE 236 CONSTR. ℄

C-2
Δ = 41° 14'44" (LT)
D = 2° 51'53"
R = 2,000.00'
T = 752.66'
L = 1,439.74'

BEGIN TRANSITION TO MATCH EXISTING SIDEWALK WIDTH

INSTALL GUARDRAIL TERMINAL, VDOT STD. GR-11

MATCH EXISTING SIDEWALK WIDTH

MATCH EXISTING CURB

REMOVE EXISTING INLET

EX. 3

EX. 3A

INSTALL GUARDRAIL, VDOT STD. GR-2

INSTALL GUARDRAIL TERMINAL, VDOT STD. GR-7

PROPOSED INLET

INSTALL CURB, VDOT STD. CG-2

5' SIDEWALK

MATCHLINE STA.117+25 – SEE ROADWAY PLAN SHEET 4

MATCH EXISTING CURB

MATCH EXISTING SIDEWALK WIDTH

115+19.66
48.7' LT.

INSTALL GUARDRAIL TERMINAL, VDOT STD. GR-11

5' SIDEWALK

116+95.83
42.1' RT.

PROPOSED CURB RAMPS, SEE DETAIL C, SHEET 5

INSTALL CURB, VDOT STD. CG-2

INSTALL GUARDRAIL TERMINAL, VDOT STD. GR-11

INSTALL GUARDRAIL, VDOT STD. GR-2

BEGIN TRANSITION TO MATCH EXISTING SIDEWALK WIDTH

5' SIDEWALK

LEGEND

- PROPOSED CONCRETE SIDEWALK
- PROPOSED DETECTABLE WARNING SURFACE
- EXISTING PAVEMENT TO BE REMOVED
- CLEAR VEGETATION

60% PLANS
NOT FOR CONSTRUCTION

REVISIONS

Roadway Plan
Sheet 3

Scale: 1"=20' Project: _____ Sheet: 9 of 28

Transportation & Environmental Services
Engineering & Design Division
P.O. Box 178 Alexandria, Va. 22313

Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

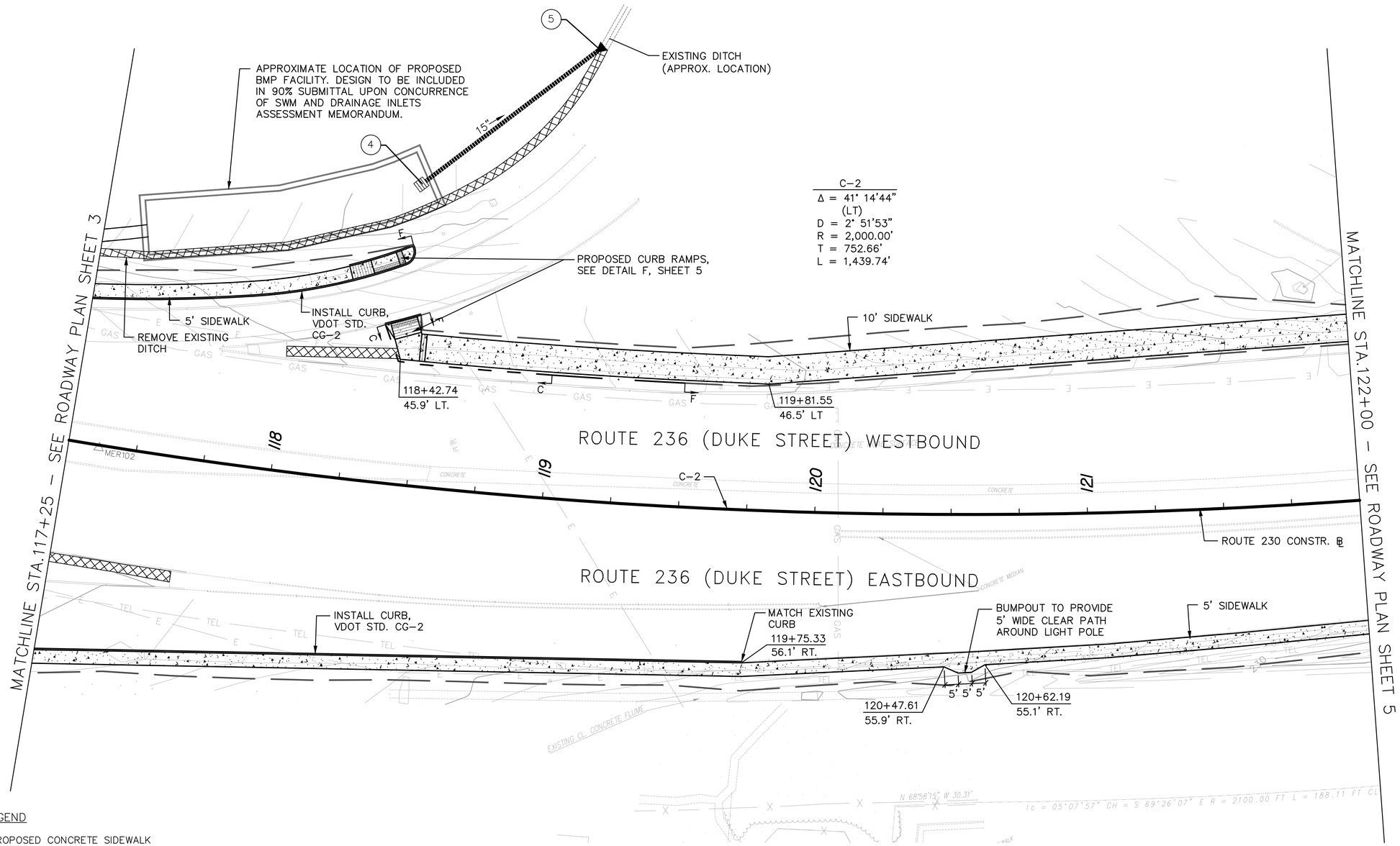
FILE NAME: \\alsinn03\v2010\2010\10037_Alexandria\Task 5_Duke-395\CADD\Plans\pHD-P003_Duke.dwg LAYOUT NAME: Layout3 PLOTTED: Thursday, December 19, 2013 - 3:43pm

SURVEY CONTROL POINTS AND ELEVATIONS				
POINT	COORDINATES		ELEVATION	REMARKS
	NORTH	EAST		
MER102	6,982,765.2496	11,871,258.8371	244.49	TRAV

NOTES:

1) PAVED DITCH PG-2A TYPE E, SHALL BE ADDED FROM STA. 116+85, LT TO 117+40 LT. AS SHOWN THE PLAN.

2) EXISTING CONCRETE DITCH SHALL BE REMOVED FROM STA. 116+85, LT. TO 119+10, LT.



LEGEND

- PROPOSED CONCRETE SIDEWALK
- PROPOSED DETECTABLE WARNING SURFACE
- EXISTING PAVEMENT TO BE REMOVED
- CLEAR VEGETATION

60% PLANS
NOT FOR CONSTRUCTION

REVISIONS

Roadway Plan
Sheet 4

Scale: 1"=20' Project: _____ Sheet: 10 of 28

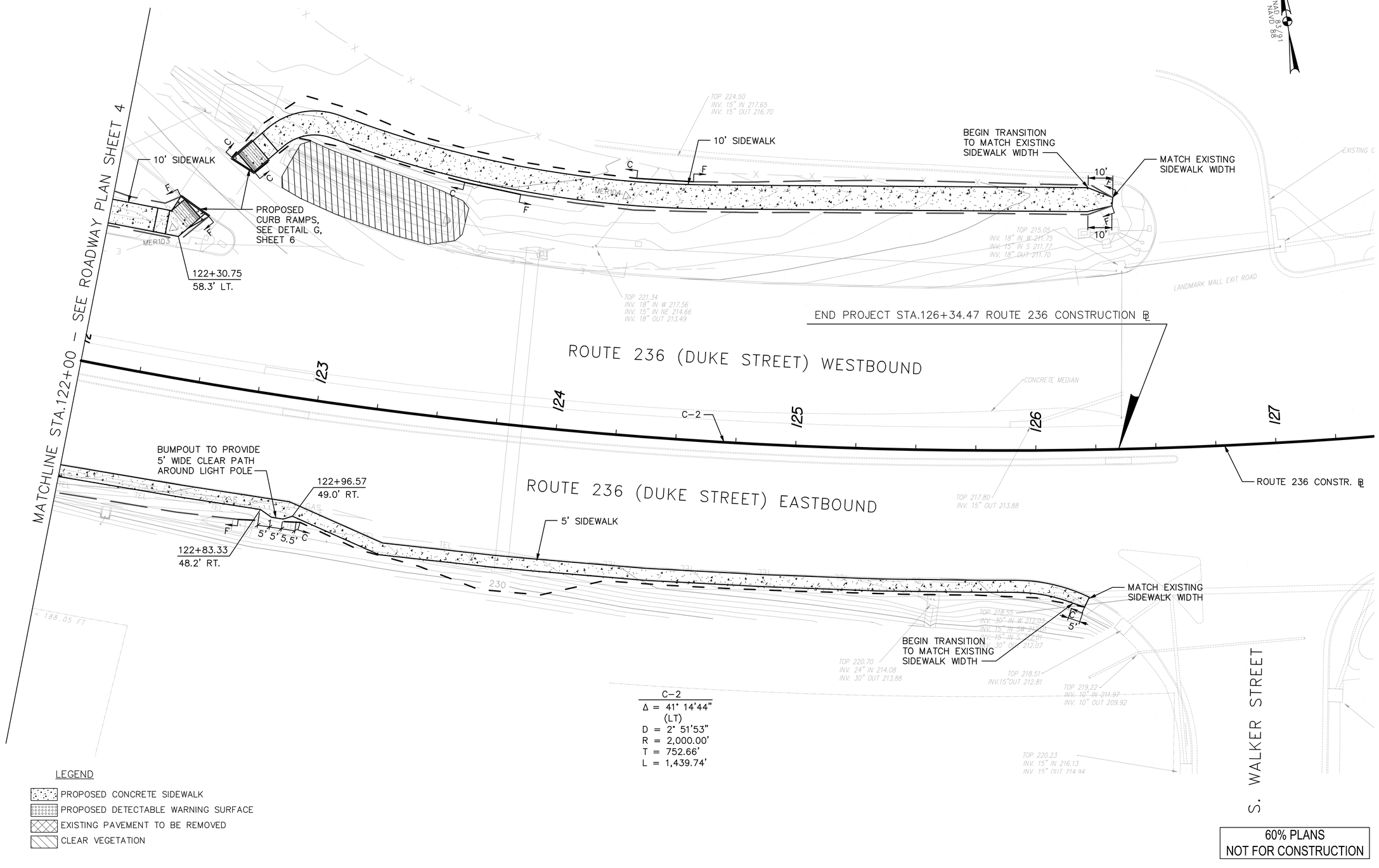
Transportation & Environmental Services
Engineering & Design Division
P.O. Box 178 Alexandria, Va. 22313

Duke Street Pedestrian Improvement

CITY OF ALEXANDRIA VIRGINIA

FILE NAME: \\testing03\v2010\2010\10037_Alexandria\Task 5_Duke-395\CADD\Plans\pHD-PH04_Duke.dwg LAYOUT NAME: Layout4 PLOTTED: Thursday, December 19, 2013 - 4:05pm

SURVEY CONTROL POINTS AND ELEVATIONS				
POINT	COORDINATES		ELEVATION	REMARKS
	NORTH	EAST		
MER103	6,982,612.6196	11,871,721.1347	227.37	TRAV
MER104	6,982,598.7481	11,871,909.8895	224.52	TRAV



C-2
Δ = 41° 14'44" (LT)
D = 2° 51'53"
R = 2,000.00'
T = 752.66'
L = 1,439.74'

LEGEND

- PROPOSED CONCRETE SIDEWALK
- PROPOSED DETECTABLE WARNING SURFACE
- EXISTING PAVEMENT TO BE REMOVED
- CLEAR VEGETATION

60% PLANS
NOT FOR CONSTRUCTION

REVISIONS

Roadway Plan
Sheet 5

Scale: 1"=20' Project: _____

Sheet: 11 of 28

Transportation & Environmental Services
Engineering & Design Division
P.O. Box 178 Alexandria, Va. 22313

Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

FILE NAME: \\balsrv03\v2010\2010\10037_Alexandria\Task 5_Duke-395\CADD\Plans\pHD-P005_Duke.dwg LAYOUT NAME: Layout5 PLOTTED: Thursday, December 19, 2013 - 4:12pm

TRANSPORTATION MANAGEMENT PLAN

Temporary Traffic Control/Maintenance of Traffic Notes:

GENERAL NOTES:

UNLESS OTHERWISE APPROVED OR DIRECTED BY THE ENGINEER THE CONTRACTOR SHALL PLAN AND PROSECUTE THE WORK IN ACCORDANCE WITH THE FOLLOWING:

1) PROJECT IS A TYPE A CATEGORY I PROJECT.

2) WORK ZONE
STA. 102+49.10 TO STA. 126+34.47

3) NORMAL CONSTRUCTION ACTIVITIES SHALL TAKE PLACE BETWEEN TBD AM AND TBD PM. THE CONTRACTOR SHALL MAINTAIN A MINIMUM OF 1 LANE 11 FT. WIDE, OR AS DIRECTED BY THE ENGINEER. WHERE A TURN LANE IS PROVIDED, MAINTAIN A 10 FT. MINIMUM WIDTH. NO LANE CLOSURES WILL BE ALLOWED BETWEEN TBD MONDAY THROUGH FRIDAY, OR AS DIRECTED BY THE ENGINEER.

4) NO RESTRICTIONS ON SHOULDER CLOSURES.

5) HOLIDAY RESTRICTIONS OUTLINED IN 2007 R&B SPECIFICATIONS APPLY. LANE CLOSURES WILL NOT BE PERMITTED FROM 12:00 NOON THE DAY BEFORE A HOLIDAY UNTIL 12:00 NOON THE DAY AFTER A HOLIDAY. IF A HOLIDAY OCCURS SUNDAY, THEN FROM 12:00 NOON FRIDAY UNTIL 12:00 NOON TUESDAY WILL BE APPLICABLE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

6) SUITABLE OFF-SITE DETOURS NOT AVAILABLE.

7) CONTRACTOR WILL BE RESPONSIBLE FOR SECURING STAGING AREA FOR EQUIPMENT AND MATERIALS.

8) CONTRACTOR SHALL LEAVE ROADWAY OPEN TO TRAFFIC WHEN NOT WORKING.

9) THE CLEAR ZONE AND SIGHT DISTANCE SHALL BE FREE OF STORED MATERIALS AND PARKED EQUIPMENT AFTER WORK HOURS.

10) IT IS NOT THE INTENT OF THIS PLAN TO ENUMERATE EVERY DETAIL WHICH MUST BE CONSIDERED IN THE CONSTRUCTION OF EACH STAGE, BUT ONLY TO SHOW THE GENERAL FEATURES NECESSARY TO PROVIDE FOR PROPER HANDLING OF TRAFFIC.

11) THE PHASES IN THIS SEQUENCE OF CONSTRUCTION SHALL BE FOLLOWED UNLESS THE CONTRACTOR SUBMITS AN ALTERNATE SEQUENCE AND SECURES THE APPROVAL OF THE ENGINEER FOR A SEQUENCE WHICH WILL BOTH EXPEDITE CONSTRUCTION AND LESSEN THE EFFECT OF SUCH CONSTRUCTION UPON THE TRAVELING PUBLIC. PORTIONS OF ROADWAYS IN OTHER PHASES MAY BE CONSTRUCTED PROVIDED THEY DO NOT INTERFERE WITH EXISTING TRAFFIC FLOW AND/OR DO NOT CAUSE ANY DELAY IN PROJECT COMPLETION.

12) IF THE CONTRACTOR DEVIATES FROM THIS TRANSPORTATION MANAGEMENT PLAN HE SHALL SUBMIT A REVISED TRAFFIC CONTROL PLAN TO THE ENGINEER FOR APPROVAL PRIOR TO THE BEGINNING OF WORK. THE REVISED CONTROL PLAN SHALL SHOW ALL NECESSARY TRAFFIC CONTROL DEVICES.

13) ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH THE CURRENT MUTCD, THE VIRGINIA WORK AREA PROTECTION MANUAL AND AS DIRECTED BY THE ENGINEER. ANTICIPATED APPLICATIONS INCLUDE:

- WORK BEYOND THE SHOULDER OPERATION (TTC-1.0)
- STATIONARY OPERATION ON A SHOULDER (TTC-4.0)
- STATIONARY OPERATION WITH MINOR ENCROACHMENT (TTC-5.0)
- SHOULDER CLOSURE WITH BARRIER OPERATION (TTC-6.0)
- SIDEWALK CLOSURE AND BYPASS SIDEWALK OPERATION (TTC-35.0)
- CROSSWALK CLOSURE AND PEDESTRIAN DETOUR OPERATION (TTC-36.0)
- WORK OPERATION IN THE VICINITY OF AN EXIT RAMP (TTC-37.0)
- PARTIAL EXIT RAMP CLOSURE OPERATION (TTC-38.0)
- WORK OPERATION IN THE VICINITY OF AN ENTRANCE RAMP (TTC-39.0)
- SIGNING FOR PROJECT LIMITS (TTC-53.0)

14) ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED AS PER TRANSPORTATION MANAGEMENT PLAN AND IN ACCORDANCE WITH SECTION 704 OF THE APPLICABLE VDOT ROAD AND BRIDGE SPECIFICATIONS, THE MUTCD, THE ROAD AND BRIDGE STANDARDS, THE VIRGINIA WORK AREA PROTECTION MANUAL 2011, OR AS DIRECTED BY THE ENGINEER.

15) WORK OPERATIONS WHICH WILL RESTRICT LANE WIDTHS SHALL NOT BE INITIATED UNTIL THE ENGINEER HAS NOTIFIED DMV OF THE WORK OPERATION AND LOCATION IN ORDER TO PROPERLY NOTIFY AND RE-ROUTE OVERSIZED TRAFFIC.

16) PRIOR TO CLOSING LANES OF A ROADWAY, LOCAL FIRE, RESCUE AND LAW ENFORCEMENT SHALL BE NOTIFIED BY THE ENGINEER. IN THE EVENT AN ACCEPTABLE ALTERNATE ROUTING FOR EMERGENCY SERVICES CANNOT BE OBTAINED THE CONTRACTOR SHALL MAKE ACCOMMODATIONS TO ROUTE EMERGENCY VEHICLES SAFELY THROUGH THE WORK ZONE UNDER APPROVAL AND DIRECTION OF THE ENGINEER.

17) THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE CONSTRUCTION SIGNING AND TRAFFIC MANAGEMENT PLAN WITH OTHER ADJACENT PROJECTS UNDER CONSTRUCTION.

18) ALL TRAFFIC CONTROL DEVICES SHALL BE APPROXIMATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN ADEQUATE PROPERTY OWNER ACCESS AT ALL TIMES.

19) ALL AREAS EXCAVATED BELOW EXISTING PAVEMENT SURFACES AT THE CONCLUSION OF EACH WORKDAY SHALL BE BACKFILLED TO FORM AN APPROXIMATE 6:1 WEDGE AGAINST THE EXISTING PAVEMENT SURFACE FOR THE SAFETY AND PROTECTION OF VEHICULAR TRAFFIC. ALL COST FOR PLACING, MAINTAINING AND REMOVING THE 6:1 WEDGE SHALL BE INCLUDED IN THE PRICE BID FOR OTHER ITEMS AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED. SEE WEDGE DETAIL BELOW.

6:1 WEDGE DETAIL

20) THE CONTRACTOR SHALL EXERCISE CAUTION WHILE WORKING IN THE VICINITY OF ALL OVERHEAD UTILITY LINES DURING CONSTRUCTION.

21) CONTRACTOR SHALL LOCATE FLAGGERS AND TRAFFIC CONTROL DEVICES TO PROVIDE SAFE ACCESS INTO AND OUT OF THE WORK AREA.

Sequence Of Construction

Phase 1A:

Station 104+25 to 110+25
- Place traffic control devices as per TTC-6.0.
- Detour pedestrian traffic to westbound Duke Street as per TTC-36.0 from Oasis Drive to Walker Street. Close sidewalk along southbound Walker Street as per TTC-36.0 and install pedestrian detour to sidewalk along northbound Walker Street at the intersection with Stevenson Avenue.
- Install erosion and sediment control items in accordance with the plans.
- Construct proposed sidewalk, retaining wall, and pedestrian beacons along eastbound Duke Street utilizing shoulder closures.

Phase 1B:

Station 109+75 to 117+75
- Maintain pedestrian traffic detour along westbound Duke Street as per TTC-36.0 from Oasis Drive to Walker Street.
- Place traffic control devices as per TTC-39.0.
- Install erosion and sediment control items in accordance with the plans.
- Close southbound I-395 to eastbound Duke Street entrance ramp outside shoulder as per TTC-39. Construct proposed inlet, curb, guard rail, pedestrian beacon, and adjacent sidewalk along eastbound Duke Street from Station 109+75 to Station 112+00.
- Maintain right lane closure along eastbound Duke Street as per TC-39.0 and construct proposed inlet, curb, guard rail, pedestrian beacon, adjacent sidewalk and pedestrian curb ramps, and final pavement markings along eastbound Duke Street from Station 115+20 to Station 117+75.
- Group II channelizing devices shall be installed at the edge of the construction area outside of working hours.

Phase 1C:

Station 102+49.85 to 108+25 and Station 116+75 to 126+25
- Maintain pedestrian traffic detour along westbound Duke Street as per TTC-36.0 from Oasis Drive to Walker Street.
- Place traffic control devices as per TTC-4.0, TTC-5.0, TTC-37.0, TTC-38.0 and TTC-39.0.
- Install erosion and sediment control items in accordance with the plans.
- Construct proposed sidewalk and pedestrian curb ramps, curb, pedestrian beacon, and final pavement markings from Station 102+49.85 to Station 105+00 along eastbound Duke Street utilizing shoulder closures with minor encroachment and partial exit ramp closure operation along eastbound Duke Street as per TTC-5.0 and TTC-38.0.
- Construct proposed sidewalk and pedestrian curb ramps, curb, pedestrian beacon, and final pavement markings from Station 116+75 to Station 126+25 along eastbound Duke Street utilizing shoulder closures and work operations in the vicinity of an entrance ramp along eastbound Duke Street as per TTC-4.0 and TTC-39.0. Maintain eastbound Duke Street right lane closure to limit of work.
- Group II channelizing devices shall be installed at the edge of the construction area outside of working hours.

Phase 2A:

Station 115+50 to 119+00
- Place traffic control devices as per TTC-1.0 and TTC-36.00.
- Detour pedestrian traffic to eastbound Duke Street as per TTC-36.0 from Oasis Drive to Walker Street.
- Install erosion and sediment control items in accordance with the plans.
- Construct proposed BMP facility as per TTC-1.0.

Phase 2B:

Station 111+50 to 119+00
- Maintain pedestrian traffic detour along westbound Duke Street as per TTC-36.0 from Oasis Drive to Walker Street.
- Place traffic control devices as per TTC-37.0, and TTC-39.0.
- Install erosion and sediment control items in accordance with the plans.
- Construct proposed inlets, sidewalk and pedestrian curb ramps, curb, guard rail, and pedestrian beacons along westbound Duke Street utilizing shoulder and lane closures along westbound Duke Street and I-395 ramps as per TTC-39.0 and TTC-37.0.
- Group II channelizing devices shall be installed at the edge of the construction area outside of working hours.

Phase 2C:

Station 105+50 to 111+50
- Maintain pedestrian traffic detour along westbound Duke Street as per TTC-36.0 from Oasis Drive to Walker Street.
- Place traffic control devices as per TTC-4.0.
- Install erosion and sediment control items in accordance with the plans.
- Construct proposed curb, sidewalk and pedestrian curb ramps, fence, guard rail, pedestrian beacons, and final pavement markings along eastbound Duke Street utilizing shoulder closures along eastbound Duke Street and I-395 ramps as per TTC-4.0.
- Group II channelizing devices shall be installed at the edge of the construction area outside of working hours.

Phase 2D:

Station 118+00 to 126+25
- Maintain pedestrian traffic detour along westbound Duke Street as per TTC-36.0 from Oasis Drive to Walker Street.
- Place traffic control devices as per TTC-1.0 and TTC-4.0.
- Install erosion and sediment control items in accordance with the plans.
- Construct proposed sidewalk and pedestrian curb ramps, pedestrian beacons, and final pavement markings along eastbound Duke Street utilizing shoulder closures along eastbound Duke Street as per TTC-1.0 and TTC-4.0.
- Group II channelizing devices shall be installed at the edge of the construction area outside of working hours.

REVISIONS

TRANSPORTATION MANAGEMENT PLAN

Scale: N/A Project: ______

Transportation & Environmental Services
Engineering & Design Division
P.O. Box 178 Alexandria, Va. 22313

Duke Street Pedestrian Improvements

FILE NAME: \\balsrv03\v2010\2010\10037_Alexandria\Task 5_Duke-395\CADD\Plans\pMT-N001_Duke.dwg LAYOUT NAME: Layout PLOTTED: Friday, December 20, 2013 - 9:25am

TRANSPORTATION MANAGEMENT PLAN

Typical Traffic Control

Shoulder Closure with Barrier Operation

(Figure TTC-6.0)

NOTES

Guidance:

1. *Sign spacing should be 1300'-1500' for Limited Access highways. For all other roadways, the sign spacing should be 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less.*

Standard:

2. **On divided highways having a median wider than 8', right and left sign assemblies shall be required.**
3. **Group 2 channelizing device spacing shall be at the following:**

Location	Posted Speed Limit (mph)	
	0 - 35	36 +
Transition Spacing	20'	40'
Travelway Spacing	40'	80'

4. **The minimum length for a shoulder taper should be 320' on Limited Access highways, and ⅓ L for all other roadways (see Note 7 of TTC-5 for values of L).**
5. **Barrier transition slope ratio shall be as follows:**

Speed Limit (mph)	Slope Ratio	Speed Limit (mph)	Slope Ratio	Speed Limit (mph)	Slope Ratio
70	22:1	55	17:1	40	13:1
65	20:1	50	16:1	35	11:1
60	19:1	45	14:1	≤30	10:1

When the barrier transition slope is on a horizontal alignment, the total offset shall be prorated around the curve in lieu of a straight-line slope.

6. **End treatment of a barrier in order of preference:**
   a. **Where guardrail exists, attach to barrier with appropriate fixed object attachment.**
   b. **Where cut slope exists, bury barrier into cut slope and provide for drainage as needed.**
   c. **Extend end of barrier until it is beyond the established clear zone (see Figure 2 on Page A-4 in Appendix A for clear zone values).**
   d. **When barrier end is inside the established clear zone, attenuator service Type I or Type II shall be used. Contact L&D Standards/Special Design Section for approved attenuators.**
7. **Barrier panels 8 inches in width and 12 inches in height shall be placed on top of the concrete barrier and spaced 80' on centers along the parallel or tangent sections and 40' on centers along the transition or taper sections. Reflectorized surface shall be fluorescent orange prismatic lens sheeting. The light at the beginning of the barrier run and at the breakpoint where the barrier becomes parallel to the roadway shall be a Type B flashing light. Barrier delineators shall be installed along the traffic side of the concrete barriers in-between and at the same spacing as the barrier panels approximately 24 inches up from the roadway surface.**

Option:

8. The barrier shown in this typical application is an example of one method that may be used to close a shoulder of a long-term project.
9. The RIGHT SHOULDER CLOSED (W21-5aR) sign may be eliminated from all roadways except Limited Access highways.

Guidance:

10. *If drivers cannot see a pull-off area beyond the closed shoulder, information regarding the length of the shoulder closure shall be provided in feet or miles, as appropriate.*
11. *An emergency pull-off area should be provided per Section 6G.18 and Temporary Traffic Control Figure TTC-8.*

Typical Traffic Control

Work Operation in the Vicinity of an Exit Ramp

(Figure TTC-37.0)

NOTES

Guidance:

1. *Sign spacing distance should be 1300'-1500' for Limited Access highways, and on all other roadways 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less.*
2. *When flaggers are used, care should be exercised when establishing the limits of the work zone to insure maximum possible sight distance in advance of the flagger station and transition, based on the posted speed limit and at least equal to or greater than the values in Table 6H-3. Generally speaking, motorists should have a clear line of sight from the graphic flagger symbol sign to the flagger.*

Standard:

3. **On divided highways having a median wider than 8', right and left sign assemblies shall be required.**
4. **A temporary EXIT (E5-V1) sign shall be located in the temporary gore. For better visibility, it shall be mounted a minimum of 7 feet from the pavement surface to the bottom of the sign.**
5. **Taper length (L) and channelizing device spacing shall be:**

Speed Limit (mph)	Taper Length (L) – Lane Width (Feet) 9	10	11	12
25	95	105	115	125
30	135	150	165	180
35	185	205	225	245
40	240	270	295	320
45	405	450	495	540
50	450	500	550	600
55	495	550	605	660
60	540	600	660	720
65	585	650	715	780
70	630	700	770	840
Minimum taper lengths for Limited Access Highways shall be 1000 feet.				
Shoulder Taper = ⅓ L Minimum				

Location	Channelizing Device Spacing – Speed Limit (mph) 0 - 35	36 +
Transition Spacing	20'	40'
Travelway Spacing	40'	80'
Construction Access*	80'	120'
* Spacing may be increased to this distance, but shall not exceed one access per ¼ mile.		

On roadways with paved shoulders having a width of 8 feet or more, channelizing devices shall be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the traveled way.

6. **The minimum distance between the end of the taper and the beginning of the off ramp shall be 1000'.**
7. **A shadow vehicle with either a Type B or C arrow board operating in the caution mode, or equipped with at least one high intensity rotating, oscillating, or amber strobe light shall be parked 80'-120' in advance of the first work crew. When the posted speed limit is 45 mph or greater, a truck-mounted attenuator shall be used**

Guidance:

8. *The guide signs should indicate that the ramp is open, and where the temporary ramp is located. However, if the ramp is closed, guide signs should indicate that the ramp is closed.*
9. *When the exit ramp is closed, a black on orange EXIT CLOSED (E5-2a) sign should be placed diagonally across the interchange/intersection guide signs.*
10. *An END ROAD WORK (G20-2 (V)) sign should be placed 500' past the temporary traffic control devices on the off ramp.*

Option:

11. The temporary EXIT sign placed in the temporary gore may be either black on orange or white on green.
12. An alternative procedure that may be used is to channelize exiting vehicular traffic onto the right-hand shoulder and close the lane as necessary.

Typical Traffic Control

Partial Exit Ramp Closure Operation

(Figure TTC-38.0)

NOTES

Guidance:

1. *Sign spacing distance should be 1300'-1500' for Limited Access highways, and on all other roadways 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less.*

Standard:

2. **To prevent accidental intrusion into the work area, channelizing device spacing shall not exceed 20' on centers.**
3. **Cone Taper Length (L) is equal to the Posted Speed Limit (S) times the Width of actual ramp closure (W). (Example: 55 mph x 6' = 330')**
4. **A shadow vehicle with either a Type B or C arrow board operating in the caution mode, or equipped with at least one high intensity rotating, oscillating, or amber strobe light shall be parked 80'-120' in advance of the first work crew. When the posted speed limit is 45 mph or greater, a truck-mounted attenuator shall be used.**
5. **If an advisory speed limit sign is used, the Regional Traffic Engineer shall determine the advisory speed limit.**

Guidance:

6. *A minimum 200' buffer space should be provided, when possible.*

Standard:

7. **Truck off-tracking shall be considered when determining whether the 10 foot minimum lane width is adequate.**
8. **For long term stationary work (occupying a location for longer than three consecutive days) when the distance between the edgeline and the channelizing devices is less than 14 feet, a RAMP NARROWS (W5-4) sign shall be used, along with a LANE WIDTH (W5-VP1) plaque displaying the width from edgeline to the channelizing devices in feet and inches rounded down to the nearest foot or half foot increment.**
9. **Due to blanket permits for over width loads, whenever a travel direction is reduced to less than 14 feet in width from edgeline to the face of channelizing devices, a 96" by 48" black on white sign displaying the message RESTRICTED WIDTH ROUTE, XX FT.- YY INCHES (R5-V1) with WORK ZONE (G20-5aP or G20-5aP (V)) plaque shall be installed 1000 feet ± prior to the last exit from the approached side of the restricted work zone route.**

Guidance:

10. *A traffic engineering study should determine if there is a need for a wide load detour and additional TTC.*

Typical Traffic Control

Work Operation in the Vicinity of an Entrance Ramp

(Figure TTC-39.0)

NOTES

Guidance:

1. *Sign spacing distance should be 1300'-1500' for Limited Access highways, and on all other roadways 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less.*
2. *Care should be exercised when establishing the limits of the work zone to insure maximum possible sight distance in advance of the transition, based on the posted speed limit and at least equal to or greater than the values in Table 6H-3.*
3. *An acceleration lane of sufficient length should be provided whenever possible as shown on the left diagram.*

Standard:

4. **For the information shown on the diagram on the right-hand side of the typical application, where inadequate acceleration distance exists for the temporary entrance, the YIELD (R1-2) sign shall be replaced with STOP (R-1-1) signs (one on each side of the approach).**
5. **On divided highways having a median wider than 8', right and left sign assemblies shall be required.**
6. **For taper lengths and channelizing device spacing, Note 5 of TTC-37 shall be used. The minimum length of a lane closure taper on a Limited Access highway shall be 1000'.**
7. **The buffer space length shall be as shown in Table 6H-3 on Page 6H-5 for the posted speed limit.**
8. **A shadow vehicle with either a Type B or C arrow board operating in the caution mode, or equipped with at least one high intensity rotating, oscillating, or amber strobe light shall be parked 80'-120' in advance of the first work crew. When the posted speed limit is 45 mph or greater, a truck-mounted attenuator shall be used.**
9. **For long-term work zones existing conflicting pavement markings and markers shall be removed and temporary pavement markings and markers shall be installed per Figure TTC-60.**

Guidance:

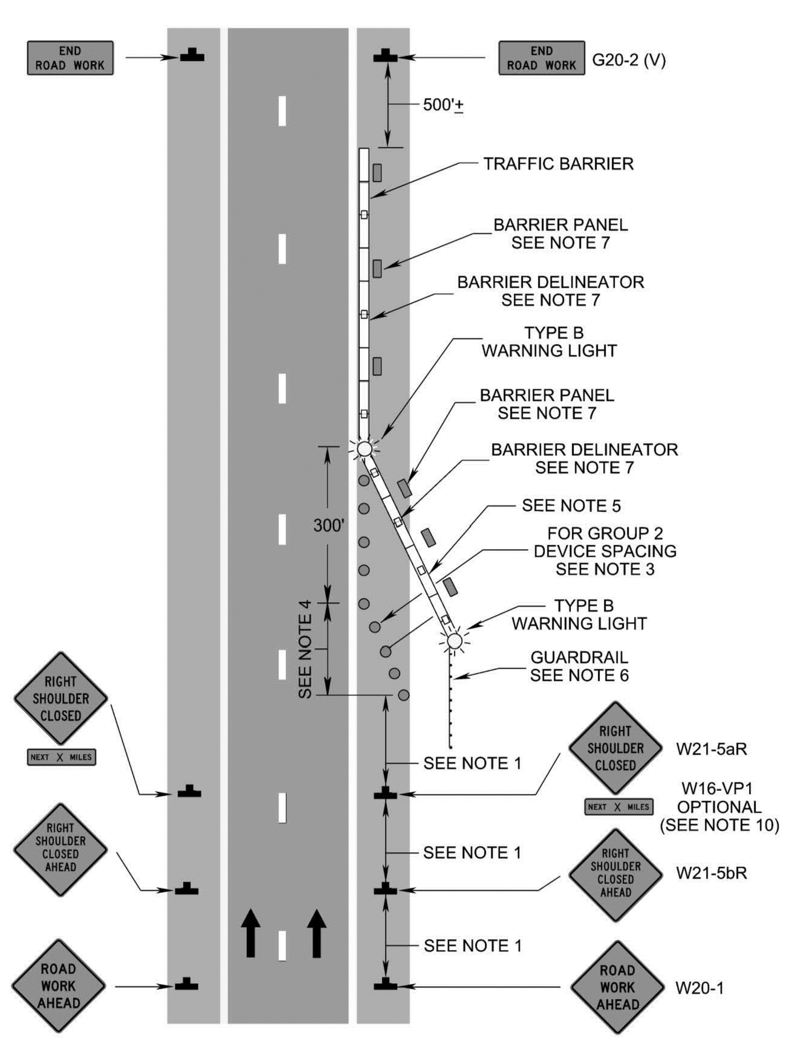
10. *When used, the YIELD or STOP sign should be located so that ramp vehicular traffic has adequate sight distance of oncoming mainline vehicular traffic to select an acceptable gap in the mainline vehicular traffic flow, but should not be located so far forward that motorists will be encouraged to stop in the path of the mainline traffic. Also, a longer acceleration lane should be provided beyond the sign to reduce the gap size needed. If insufficient gaps are available, consideration should be given to closing the ramp.*
11. *Where STOP signs are used, a temporary stop line should be placed across the ramp at the desired stop location.*
12. *The mainline merging taper with the arrow board at its starting point should be located sufficiently in advance so that the arrow board does not confuse the drivers on the entrance ramp, and so that the mainline merging vehicular traffic from the lane closure has the opportunity to stabilize before encountering the vehicular traffic merging from the ramp.*
13. *If the ramp curves sharply to the right, warning signs with advisory speeds located in advance of the entrance terminal should be placed in pairs (one on each side of the ramp).*

Option:

14. Where the acceleration distance is significantly reduced, a NO MERGE AREA (W4-5P) supplemental plaque may be placed below the Yield Ahead (W3-2) sign.
15. A Type B high-intensity flashing warning light with a red lens may be placed above the STOP sign.
16. When operations are 3 days or less in duration, lanes may be delineated by channelizing devices in lieu of temporary markings.

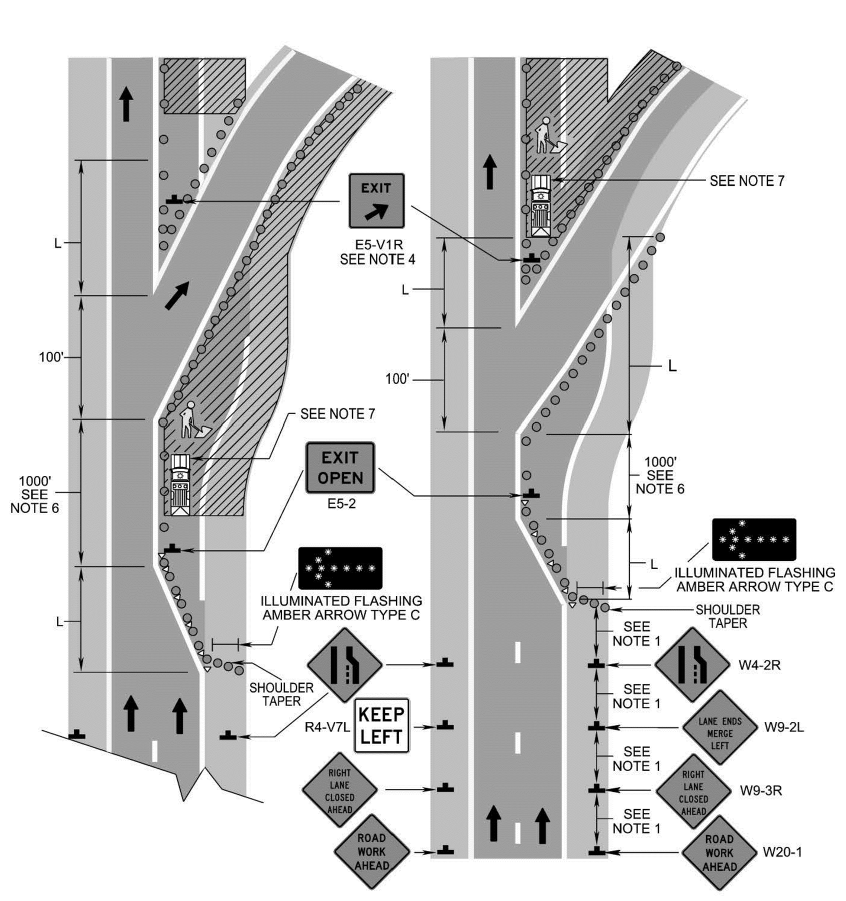
Shoulder Closure with Barrier Operation

(Figure TTC-6.0)



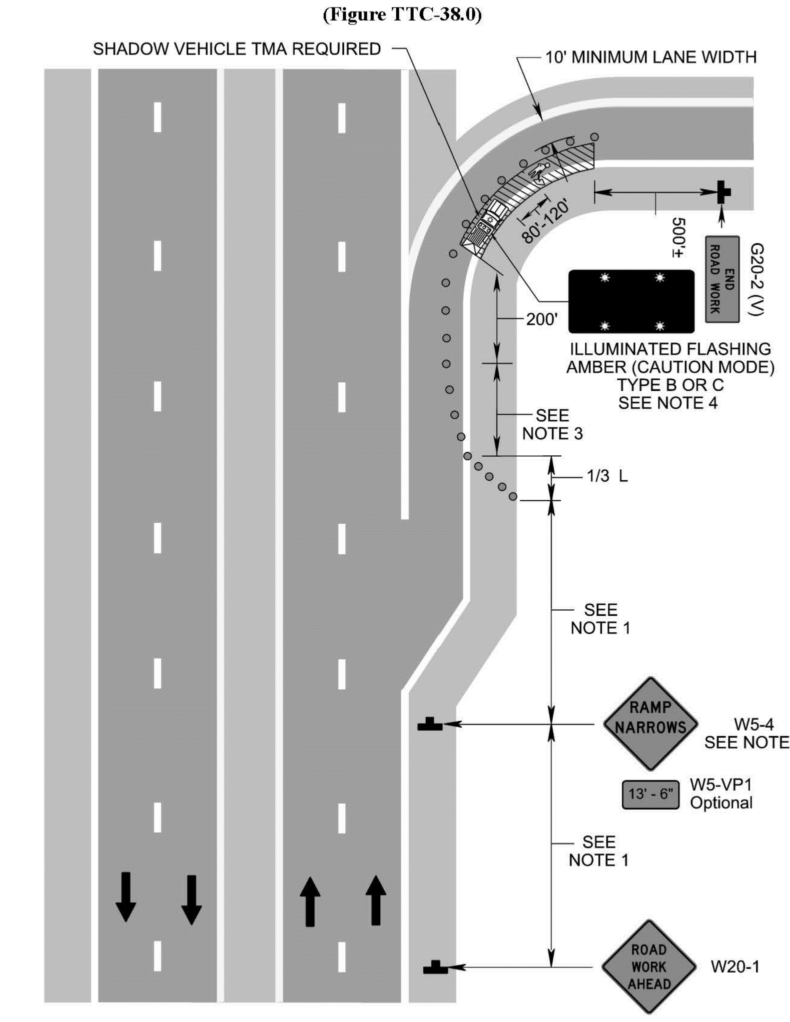
Work Operation in the Vicinity of an Exit Ramp

(Figure TTC-37.0)



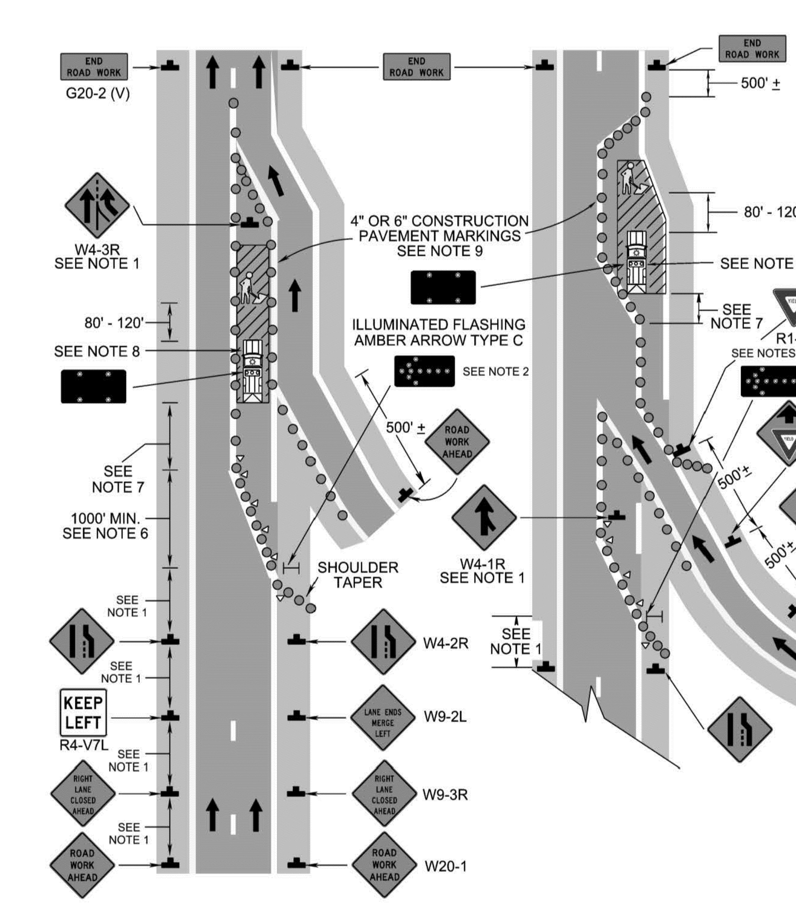
Partial Exit Ramp Closure Operation

(Figure TTC-38.0)



Work Operation in the Vicinity of an Entrance Ramp

(Figure TTC-39.0)



REVISIONS

TRANSPORTATION MANAGEMENT PLAN

Scale: N/A Project: ______ Sheet: 13 of 28

Transportation & Environmental Services
Engineering & Design Division
P.O. Box 178 Alexandria, Va. 22313

Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

FILE NAME: \\balsrv03\v2010\2010\10037_Alexandria\Task 5_Duke-395\CADD\Plans\pMT-N002_Duke.dwg LAYOUT NAME: Layout PLOTTED: Thursday, December 19, 2013 - 12:36pm

DRAINAGE DESCRIPTIONS

(1) 1 St'd DI–3B Req'd.
L=4', H=3.8', Inv. 244.3

(1) — (EX 1) 10' – 15" Storm Sewer Pipe (3' Cover)
Inv. (in) 244.3, Inv. (out) 243.7

(EX 1) Connect To Existing 15" Pipe
Inv. 243.7 (Based on Record Drawing)
To Be Cleaned Out
Field Verification needed

(2) 1 St'd DI–3B Req'd.
L=8', H=4.0', Inv. 245.4

(2) — (EX 2A) 4' – 15" Storm Sewer Pipe (3' Cover)
Inv. (in) 245.4, Inv. (out) 245.17

(EX 2A) Connect To Existing Flume
Inv. 245.17 (Based on Record Drawing)
Field Verification needed

(3) 1 St'd DI–3B Req'd.
L=8', H=4.0', Inv. 245.4

(3) — (EX 3) 20' – 15" Storm Sewer Pipe (3' Cover)
Inv. (in) 242.9, Inv. (out) 242.4

(EX 3) Connect To Existing 15" Pipe
Inv. 242.4

(4) 1 St'd DI–1 Req'd.
H=3.5', Inv. 229.9

(4) — (5) 82' – 15" Storm Sewer Pipe (3' Cover)
Inv. (in) 229.9, Inv. (out) 229.0

(5) 1 St'd 15" ES–1 Req'd. Inv. 229.0
Installation Type A Req'd.

REVISIONS

Drainage Descriptions

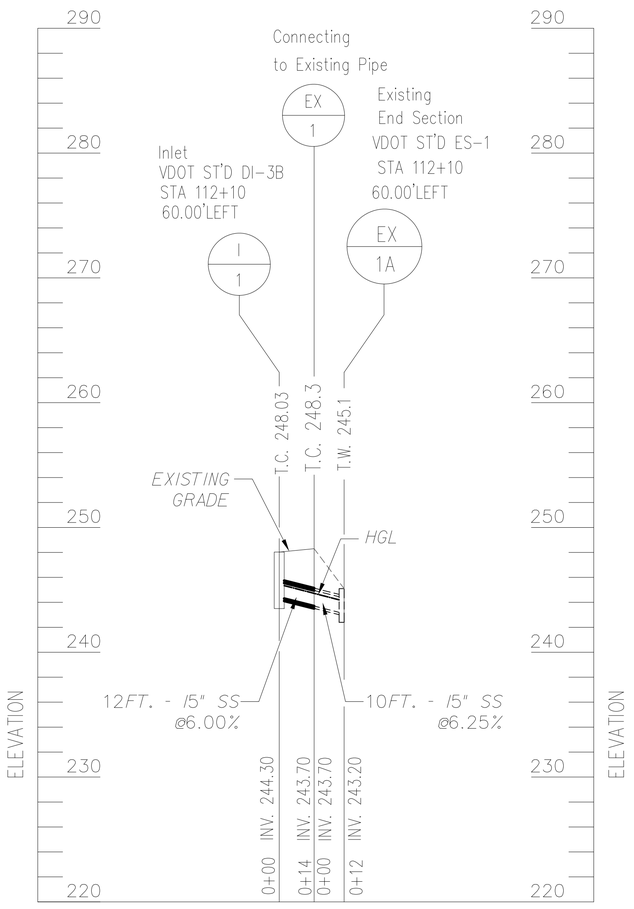
Scale: N/A Project: _____ Sheet: 14 of 28

Transportation & Environmental Services
Engineering & Design Division
P.O. Box 178 Alexandria, Va. 22313

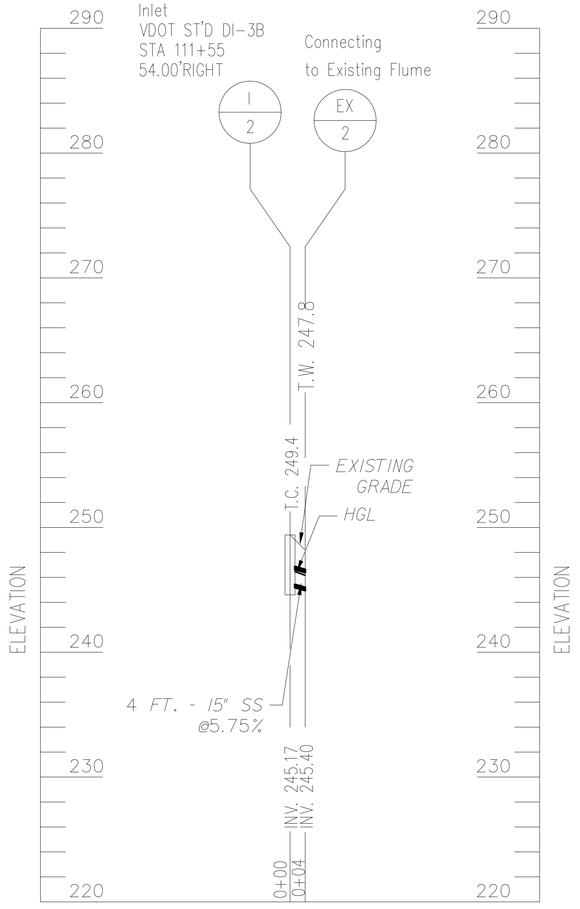
Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

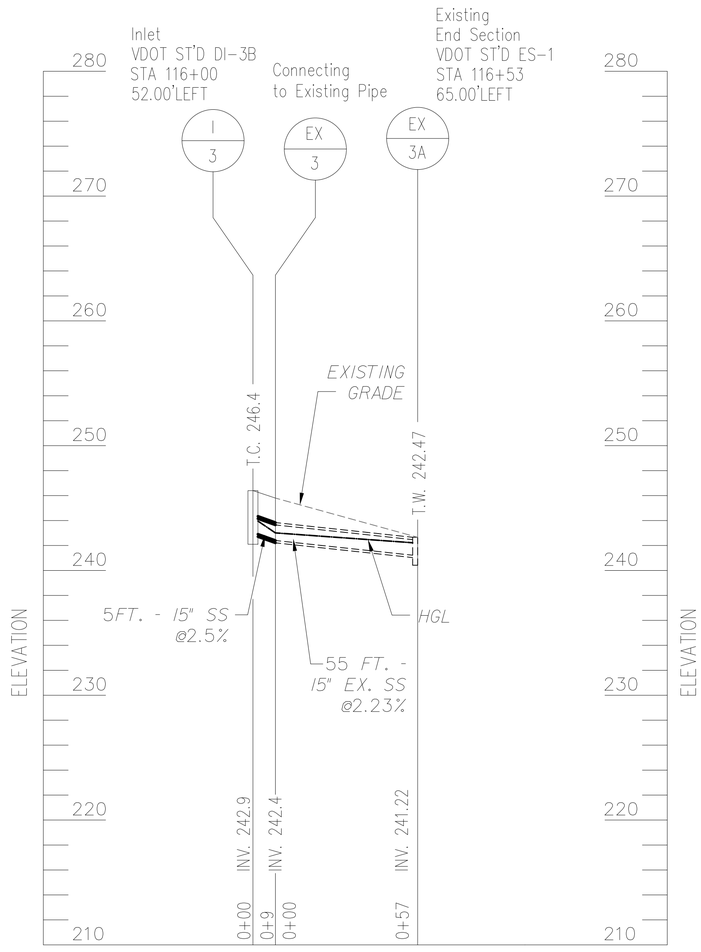
FILE NAME: \\BALSRV03\v2010\2010\10037_Alexandria\Task 5_Duke-395\CADD\Plans\p00-0001_Duke.dwg LAYOUT NAME: Layout1 PLOTTED: Thursday, December 19, 2013 - 2:02pm



PROFILE FROM STRUCTURE
I-1 TO EX-1A



PROFILE FROM STRUCTURE
I-2 to EX-2



PROFILE FROM STRUCTURE I-3 to EX-3A

NOTES:

1. SS PIPE DENOTES STORM SEWER PIPE.
2. HGL DENOTES HYDRAULIC GRADE LINE.
3. POST-CONSTRUCTION PIPE INSTALLATION INSPECTIONS TO BE PROVIDED AS REQUIRED PER SECTION 302.03(D) OF VDOT 2007 SUPPLEMENT ROAD & BRIDGE SPECIFICATIONS.

PROFILE SCALE: HORIZONTAL: 1"=30'
VERTICAL: 1"=6'

REVISIONS

Storm Drain Profiles

Scale: Project: _____ Sheet: 15 of 28

Transportation & Environmental Services
Engineering & Design Division
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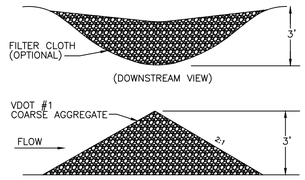
Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

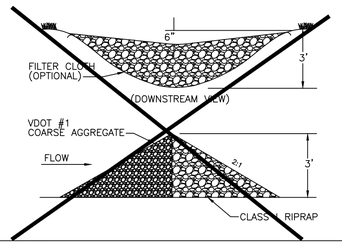
FILE NAME: \\BALSRV03\2010\10037_Alexandria\Task 5_Duke-395\CADD\Plans\pSD-0001_Duke.dwg LAYOUT NAME: Layout1 PLOTTED: Thursday, December 19, 2013 - 1:40pm

ROCK CHECK DAM

2 ACRES OR LESS OF DRAINAGE AREA:



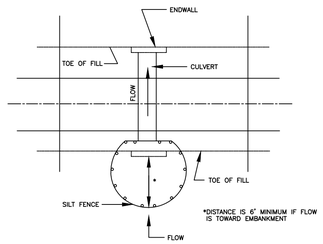
2–10 ACRES OF DRAINAGE AREA:



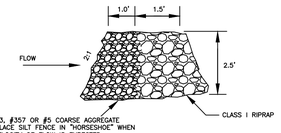
Source: Va. DSWC Plate 3.20–1

1992 3.08

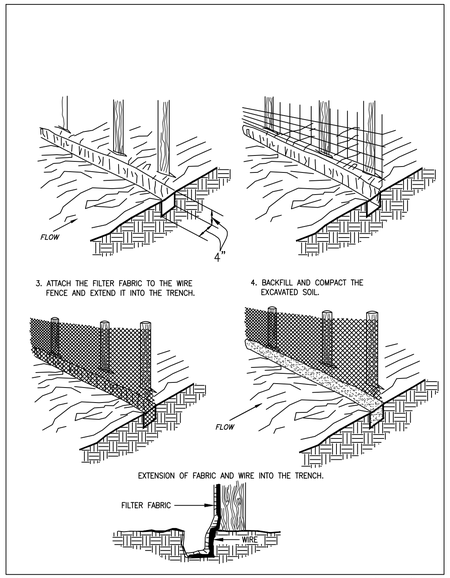
SILT FENCE CULVERT INLET PROTECTION



OPTIONAL STONE COMBINATION**



Source: Adapted from VDOT Standard Sheets and Va. DSWC Plate 3.08–1



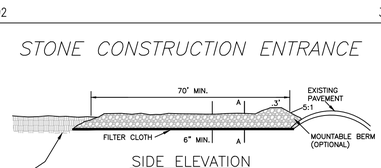
Source: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant Plate 3.05–1

SILT FENCE NOTES

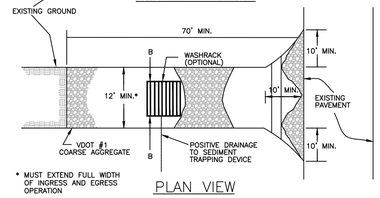
1. SILT FENCE AND FILTER FABRIC SHALL BE PLACED AS NECESSARY AND AS DIRECTED BY THE ENGINEER TO PREVENT ANY UNFILTERED STORM DRAIN FLOW FROM EXITING THE SITE.
2. SILT FENCE AND FILTER FABRIC MUST BE ENTRENCHED.
3. POSTS SHALL BE DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 24 INCHES DEEP.
4. SEDIMENT MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE–HALF THE HEIGHT OF THE BARRIER.
5. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED AND SEEDED.
6. SILT FENCE SHALL BE REMOVED UPON COMPLETION OF THE PROJECT.

1992 3.02

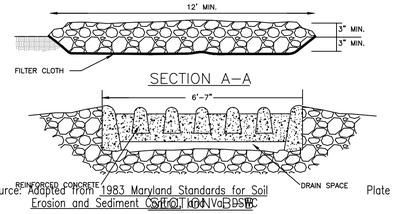
STONE CONSTRUCTION ENTRANCE



SIDE ELEVATION



PLAN VIEW



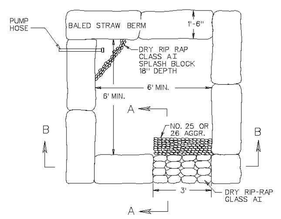
SECTION A–A

Source: Adapted from 1983 Maryland Standards for Soil Erosion and Sediment Control, and Va. DSWC Plate 3.02–1

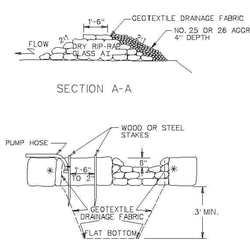
III–9

EC-8

TYPICAL DEWATERING BASIN



PLAN



SECTION A-A

SECTION B-B

* GEOTEXTILE DRAINAGE FABRIC TO COVER INSIDE FACE OF BALED STRAW BERM.

NOTES:

1. DEWATERING BASIN SIZE SHALL BE DETERMINED BY THE FORMULA 18 X GAL./MIN. OF PUMP = CU. FT. OF STORAGE CAPACITY.
2. THIS WORK SHALL CONSIST OF THE CONSTRUCTION OF A DEWATERING BASIN FOR THE PURPOSE OF RECEIVING SEDIMENT-LADENED WATER PUMPED FROM A CONSTRUCTION SITE TO ALLOW FOR FILTRATION BEFORE IT REENTERS THE WATERWAY. PUMPING INTO THESE BASINS SHALL CEASE WHEN THE FLOW FROM THE BASIN BECOMES SEDIMENT-LADENED.
3. SURFACE WATER FLOW SHALL BE DIVERTED AROUND THIS DEVICE.
4. THE OUTFALL FROM THE BASIN(S) SHALL HAVE A STABILIZED CONVEYANCE TO RECEIVING WATERS.
5. ONCE THE DEWATERING BASIN BECOMES FILLED TO HALF OF THE EXCAVATED DEPTH, ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED DISPOSAL AREA OUTSIDE OF THE 100-YEAR FLOODPLAIN UNLESS OTHERWISE APPROVED ON THE PLANS.
6. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED AND THE ENGINEER APPROVES THEIR REMOVAL. GROUND CONTOURS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION UNLESS SPECIFICALLY APPROVED OTHERWISE BY THE ENGINEER.
7. SYNTHETIC PRODUCTS APPROVED BY VDOT'S NEW PRODUCTS COMMITTEE AS A SUBSTITUTE MAY BE USED IN LIEU OF THIS DESIGN. HOWEVER, VDOT WILL ONLY COMPENSATE THE CONTRACTOR UP TO THE BID PRICE PER EACH AT EACH SITE.

SPECIFICATION REFERENCE
107 303

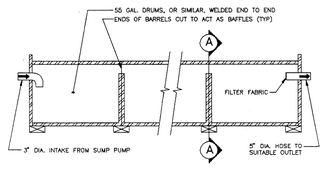
DEWATERING BASIN

VIRGINIA DEPARTMENT OF TRANSPORTATION

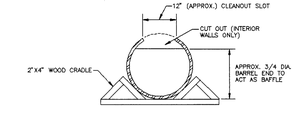
114.09

1992 3.26

PORTABLE SEDIMENT TANK



ELEVATION



CROSS–SECTION A–A

Source: USDA-SCS Plate 3.26-1

III - 240

REVISIONS

Erosion & Sediment Control Details

Scale: NTS Project: _____ Sheet: 16 of 28

Transportation & Environmental Services
Engineering & Design Division
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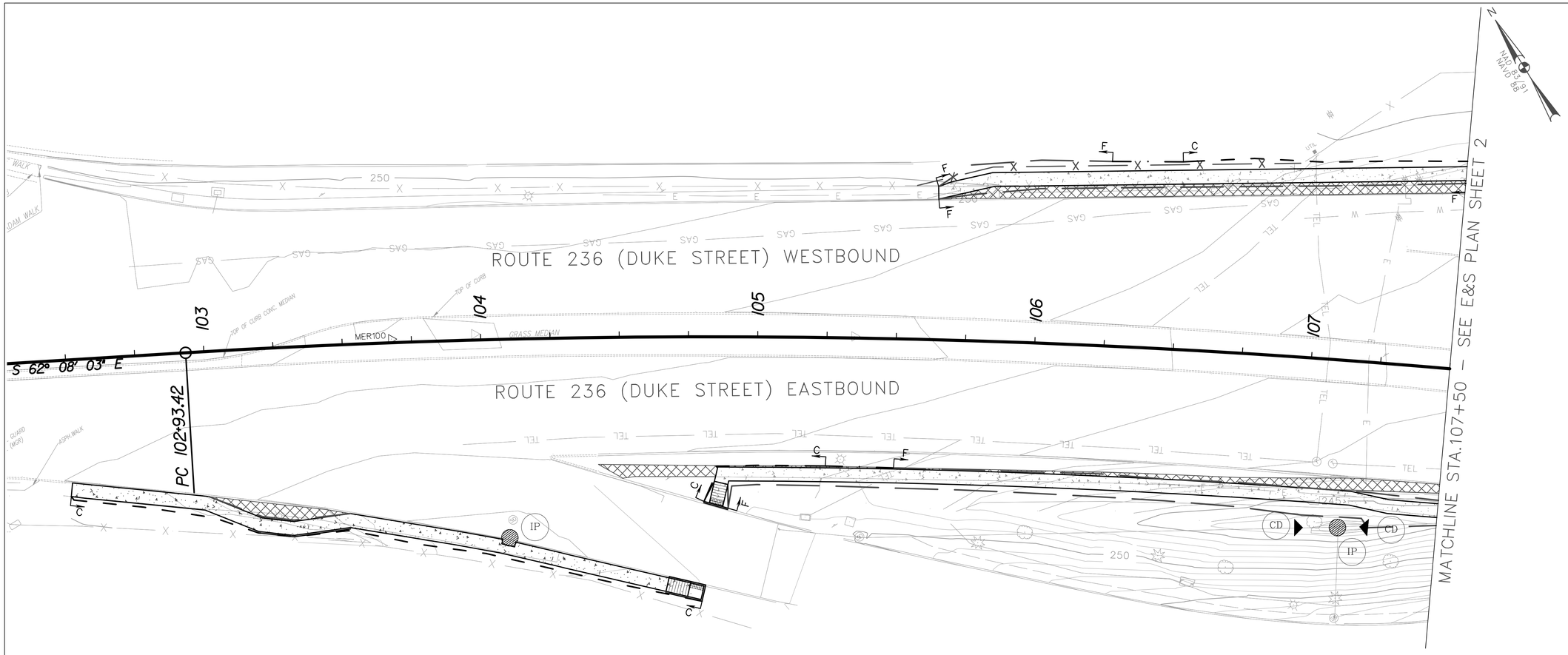
Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

FILE NAME: \\Data\03\v2010\2010\10037_Alexandria\Task 5_Duke-395\CADD\Plans\gED-0001_Duke.dwg LAYOUT NAME: Layout1 PLOTTED: Friday, December 20, 2013 - 10:33am



GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. TEMPORARY SILT FENCE HAS BEEN SHOWN ALONG THE PROPOSED IMPROVEMENT EDGES WHERE ADJACENT PROPERTIES ARE AT ELEVATIONS CLOSE TO THE PROPOSED GRADE. THE CONTRACTOR SHALL USE THIS PRACTICE AS NECESSARY AND AS DIRECTED BY THE ENGINEER OR INSPECTOR TO ENSURE THAT NO UNFILTERED STORM DRAIN RUNOFF EXITS THE SITE.
2. EROSION AND SILTATION MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN GRADING.
3. ALL STORM DRAIN INLETS SHALL HAVE SEDIMENT PROTECTION DURING CONSTRUCTION, MAINTAINED AND MODIFIED AS REQUIRED BY CONSTRUCTION PROGRESS AND AS DIRECTED BY THE ENGINEER OR INSPECTOR.
4. THE CONTRACTOR SHALL CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT EACH LOCATION OF INGRESS OR EGRESS FROM BARE SOIL TO A PAVED ROADWAY IN ORDER TO PREVENT DEPOSITION OF MATERIAL ONTO PUBLIC ROADS.
5. THE CONTRACTOR MAY PROPOSE ALTERNATE METHODS FOR STORM DRAIN INLET PROTECTION FOR APPROVAL. THESE PRACTICES MUST BE IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS SECTION 3.07 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
6. ALL EROSION CONTROL DEVICES MUST BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND THE VIRGINIA EROSION AND SEDIMENT CONTROL LAW, REGULATIONS, AND CERTIFICATION REGULATIONS OF THE VIRGINIA DIVISION OF SOIL AND WATER CONSERVATION.
7. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSPECT ALL EROSION CONTROL DEVICES PERIODICALLY AND AFTER EVERY RAINFALL. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.
8. ALL RUNOFF THAT ACCUMULATES WITHIN EXCAVATED AREAS SHALL BE PUMPED TO A PORTABLE SEDIMENT TANK OR DEWATERING BASIN PRIOR TO DISCARGE INTO THE STORM DRAIN SYSTEM.

GENERAL EROSION AND SEDIMENT CONTROL NOTES (CONTINUED)

9. IF ADDITIONAL EROSION CONTROL DEVICES ARE FOUND TO BE NECESSARY DURING CONSTRUCTION, THE ADDITIONAL DEVICES SHALL BE INSTALLED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER OR INSPECTOR.
10. ALL CONSTRUCTION DISCHARGE WATER SHALL BE ADEQUATELY FILTERED TO REMOVE SILT PRIOR TO DISCHARGE INTO WATERWAYS AND WETLANDS.
11. ALL ACTIVITIES ON THE SITE MUST COMPLY WITH SECTION 5-4 OF THE CITY OF ALEXANDRIA CODE OF ORDINANCES.

LEGEND:

CD	▶	DENOTES CHECK DAM
IP	▨	INLET PROTECTION
CIP	▨	CULVERT INLET PROTECTION
SF	--------X-------	SILT FENCE

REVISIONS

Erosion & Sediment Control Plan, Sheet 1

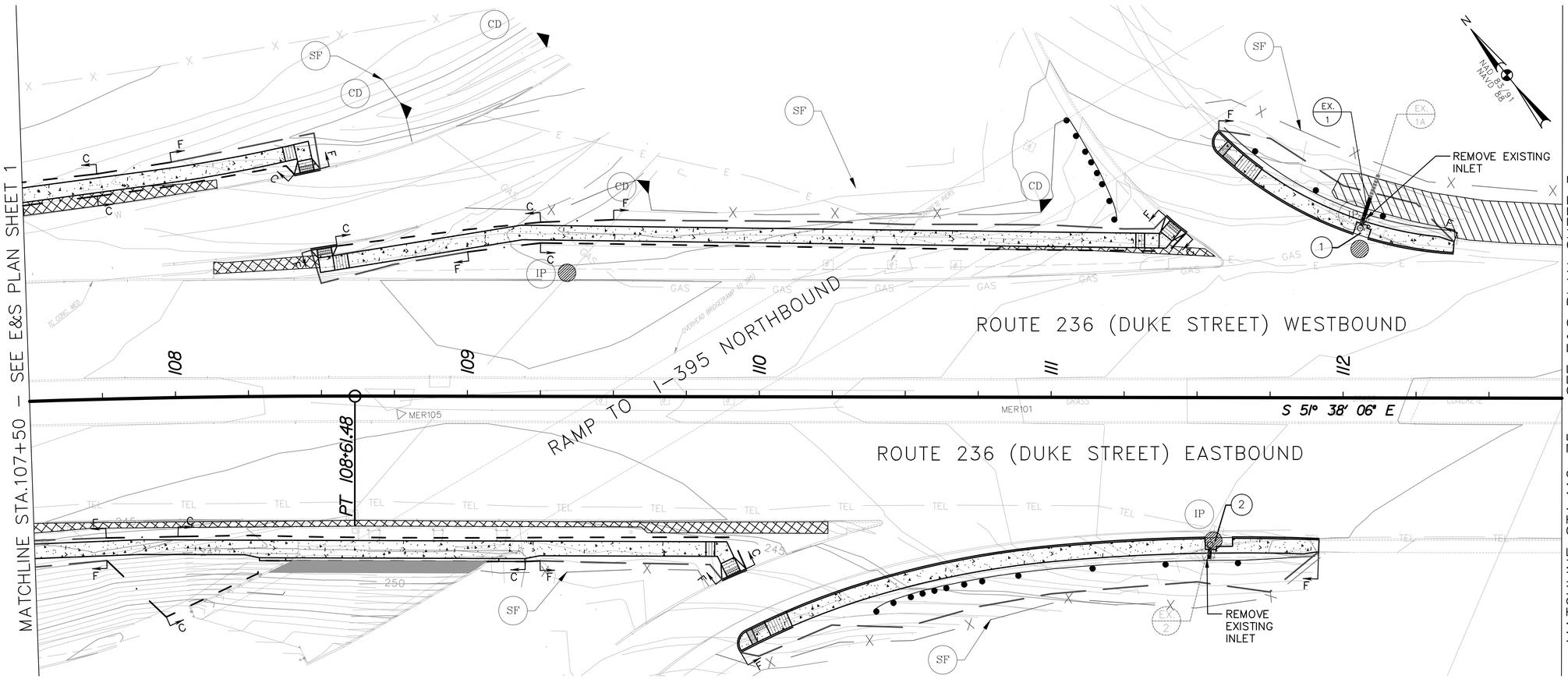
Scale: 1"=20' Project: _____ Sheet: 17 of 28

Transportation & Environmental Services
Engineering & Design Division
P.O. Box 178 Alexandria, Va. 22313

Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

FILE NAME: \\bolin-fs03\v2010\2010\10037_Alexandria\Task 5_Duke-395\CADD\Plans\pES-0001_Duke.dwg LAYOUT NAME: Layout1 PLOTTED: Friday, December 20, 2013 - 9:53am



GENERAL EROSION AND SEDIMENT CONTROL NOTES

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GENERAL EROSION AND SEDIMENT CONTROL NOTES (CONTINUED)

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LEGEND:

CD	▶	DENOTES CHECK DAM
IP	▨	INLET PROTECTION
CIP	▧	CULVERT INLET PROTECTION
SF	——x——	SILT FENCE

REVISIONS

Erosion & Sediment Control Plan, Sheet 2

Scale: 1"=20' Project: _____

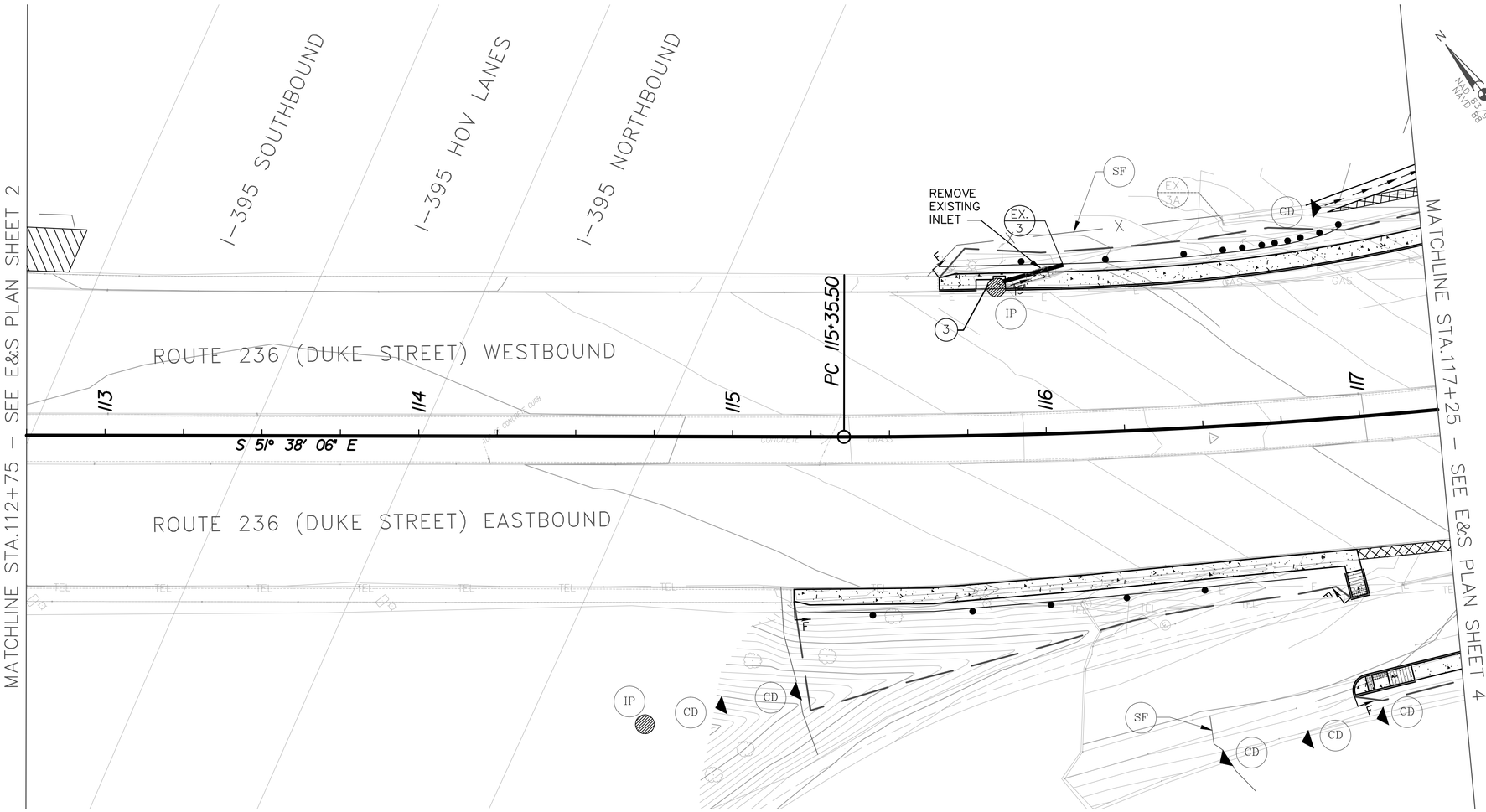
Sheet: 18 of 28

Transportation & Environmental Services
Engineering & Design Division
P.O. Box 178 Alexandria, Va. 22313

Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

FILE NAME: \\balsrv03\v2010\2010\10037_Alexandria\Task 5_Duke-395\CADD\Plans\pES-0002_Duke.dwg LAYOUT NAME: Layout1 PLOTTED: Friday, December 20, 2013 - 10:07am



GENERAL EROSION AND SEDIMENT CONTROL NOTES

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6. ALL EROSION CONTROL DEVICES MUST BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND THE VIRGINIA EROSION AND SEDIMENT CONTROL LAW, REGULATIONS, AND CERTIFICATION REGULATIONS OF THE VIRGINIA DIVISION OF SOIL AND WATER CONSERVATION.
7. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSPECT ALL EROSION CONTROL DEVICES PERIODICALLY AND AFTER EVERY RAINFALL. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.
8. ALL RUNOFF THAT ACCUMULATES WITHIN EXCAVATED AREAS SHALL BE PUMPED TO A PORTABLE SEDIMENT TANK OR DEWATERING BASIN PRIOR TO DISCARGE INTO THE STORM DRAIN SYSTEM.

GENERAL EROSION AND SEDIMENT CONTROL NOTES (CONTINUED)

9. IF ADDITIONAL EROSION CONTROL DEVICES ARE FOUND TO BE NECESSARY DURING CONSTRUCTION, THE ADDITIONAL DEVICES SHALL BE INSTALLED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER OR INSPECTOR.
10. ALL CONSTRUCTION DISCHARGE WATER SHALL BE ADEQUATELY FILTERED TO REMOVE SILT PRIOR TO DISCHARGE INTO WATERWAYS AND WETLANDS.
11. ALL ACTIVITIES ON THE SITE MUST COMPLY WITH SECTION 5-4 OF THE CITY OF ALEXANDRIA CODE OF ORDINANCES.

LEGEND:

CD	▶	DENOTES CHECK DAM
IP	▨	INLET PROTECTION
CIP	▨	CULVERT INLET PROTECTION
SF	--------x-------	SILT FENCE

REVISIONS

Erosion & Sediment Control Plan, Sheet 3

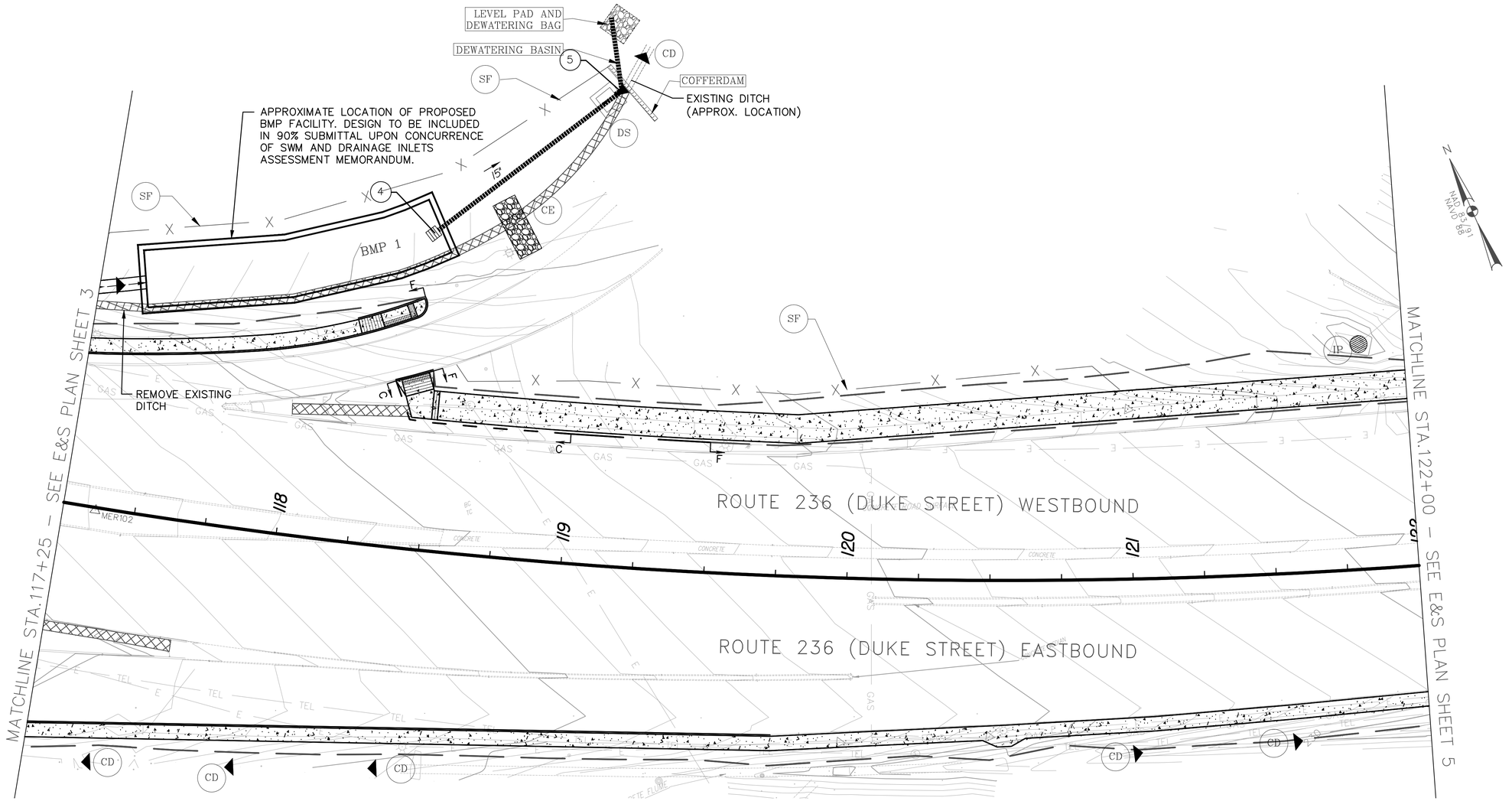
Scale: 1"=20' Project: _____ Sheet: 19 of 28

Transportation & Environmental Services
Engineering & Design Division
P.O. Box 178 Alexandria, Va. 22313

Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

FILE NAME: \\vdotsrv03\v2010\2010\10037_Alexandria\Task 5_Duke-395\CADD\Plans\pES-0003_Duke.dwg LAYOUT NAME: Layout1 PLOTTED: Friday, December 20, 2013 - 10:14am



GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. TEMPORARY SILT FENCE HAS BEEN SHOWN ALONG THE PROPOSED IMPROVEMENT EDGES WHERE ADJACENT PROPERTIES ARE AT ELEVATIONS CLOSE TO THE PROPOSED GRADE. THE CONTRACTOR SHALL USE THIS PRACTICE AS NECESSARY AND AS DIRECTED BY THE ENGINEER OR INSPECTOR TO ENSURE THAT NO UNFILTERED STORM DRAIN RUNOFF EXITS THE SITE.
2. EROSION AND SILTATION MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN GRADING.
3. ALL STORM DRAIN INLETS SHALL HAVE SEDIMENT PROTECTION DURING CONSTRUCTION, MAINTAINED AND MODIFIED AS REQUIRED BY CONSTRUCTION PROGRESS AND AS DIRECTED BY THE ENGINEER OR INSPECTOR.
4. THE CONTRACTOR SHALL CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT EACH LOCATION OF INGRESS OR EGRESS FROM BARE SOIL TO A PAVED ROADWAY IN ORDER TO PREVENT DEPOSITION OF MATERIAL ONTO PUBLIC ROADS.
5. THE CONTRACTOR MAY PROPOSE ALTERNATE METHODS FOR STORM DRAIN INLET PROTECTION FOR APPROVAL. THESE PRACTICES MUST BE IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS SECTION 3.07 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
6. ALL EROSION CONTROL DEVICES MUST BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND THE VIRGINIA EROSION AND SEDIMENT CONTROL LAW, REGULATIONS, AND CERTIFICATION REGULATIONS OF THE VIRGINIA DIVISION OF SOIL AND WATER CONSERVATION.
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GENERAL EROSION AND SEDIMENT CONTROL NOTES (CONTINUED)

9. IF ADDITIONAL EROSION CONTROL DEVICES ARE FOUND TO BE NECESSARY DURING CONSTRUCTION, THE ADDITIONAL DEVICES SHALL BE INSTALLED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER OR INSPECTOR.
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11. ALL ACTIVITIES ON THE SITE MUST COMPLY WITH SECTION 5-4 OF THE CITY OF ALEXANDRIA CODE OF ORDINANCES.

LEGEND:

CD	DENOTES CHECK DAM	DS	DEWATERING STRUCTURE		LEVEL PAD AND DEWATERING BAG
IP	INLET PROTECTION	SF	SILT FENCE		PUMP HOSE
CIP	CULVERT INLET PROTECTION	CE	CONSTRUCTION ENTRANCE		COFFERDAM

REVISIONS

Erosion & Sediment Control Plan, Sheet 4

Scale: 1"=20' Project: _____

Sheet: 20 of 28

Transportation & Environmental Services
Engineering & Design Division
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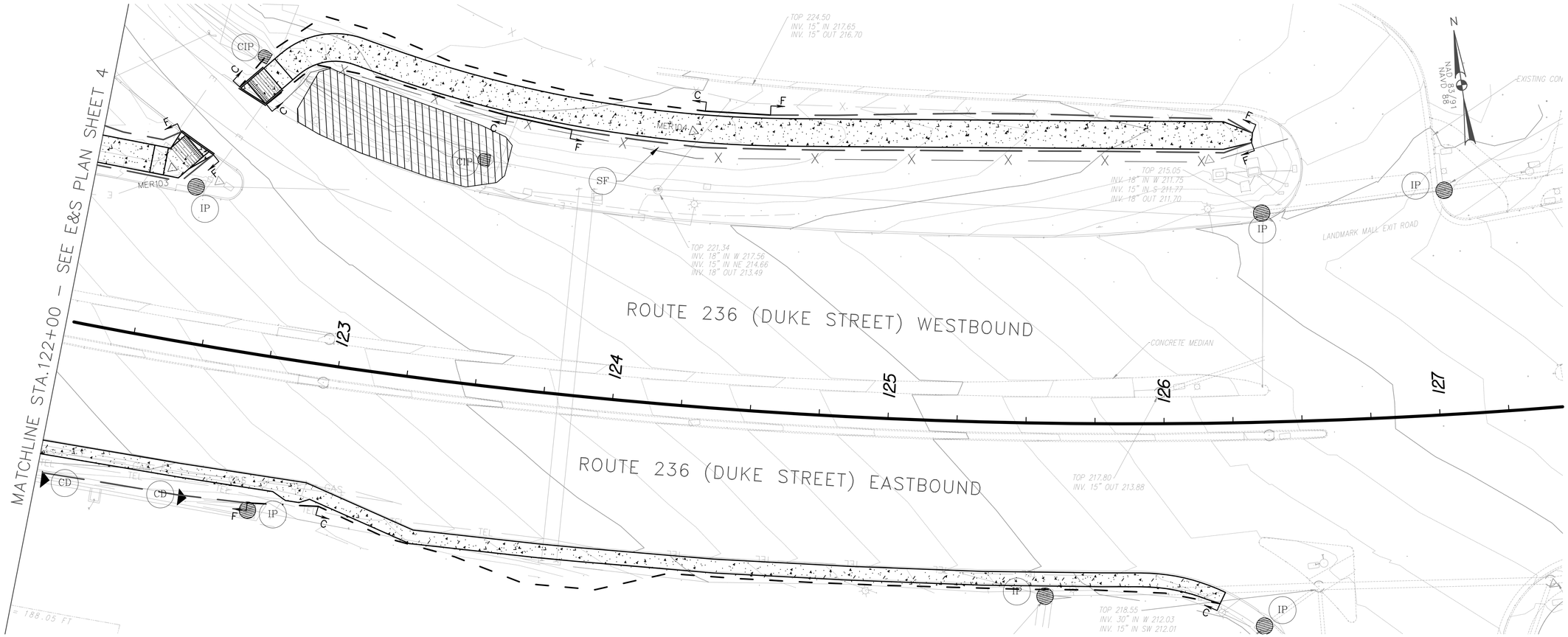
Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

FILE NAME: \\bolsrv03\v2010\10037_Alexandria\Task 5_Duke-395\CADD\Plans\pES-0004_Duke.dwg LAYOUT NAME: Layout1 PLOTTED: Friday, December 20, 2013 - 10:20am



GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. TEMPORARY SILT FENCE HAS BEEN SHOWN ALONG THE PROPOSED IMPROVEMENT EDGES WHERE ADJACENT PROPERTIES ARE AT ELEVATIONS CLOSE TO THE PROPOSED GRADE. THE CONTRACTOR SHALL USE THIS PRACTICE AS NECESSARY AND AS DIRECTED BY THE ENGINEER OR INSPECTOR TO ENSURE THAT NO UNFILTERED STORM DRAIN RUNOFF EXITS THE SITE.
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4. THE CONTRACTOR SHALL CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT EACH LOCATION OF INGRESS OR EGRESS FROM BARE SOIL TO A PAVED ROADWAY IN ORDER TO PREVENT DEPOSITION OF MATERIAL ONTO PUBLIC ROADS.
5. THE CONTRACTOR MAY PROPOSE ALTERNATE METHODS FOR STORM DRAIN INLET PROTECTION FOR APPROVAL. THESE PRACTICES MUST BE IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS SECTION 3.07 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
6. ALL EROSION CONTROL DEVICES MUST BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND THE VIRGINIA EROSION AND SEDIMENT CONTROL LAW, REGULATIONS, AND CERTIFICATION REGULATIONS OF THE VIRGINIA DIVISION OF SOIL AND WATER CONSERVATION.
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GENERAL EROSION AND SEDIMENT CONTROL NOTES (CONTINUED)

9. IF ADDITIONAL EROSION CONTROL DEVICES ARE FOUND TO BE NECESSARY DURING CONSTRUCTION, THE ADDITIONAL DEVICES SHALL BE INSTALLED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER OR INSPECTOR.
10. ALL CONSTRUCTION DISCHARGE WATER SHALL BE ADEQUATELY FILTERED TO REMOVE SILT PRIOR TO DISCHARGE INTO WATERWAYS AND WETLANDS.
11. ALL ACTIVITIES ON THE SITE MUST COMPLY WITH SECTION 5-4 OF THE CITY OF ALEXANDRIA CODE OF ORDINANCES.

LEGEND:

CD	▶	CHECK DAM
IP	▨	INLET PROTECTION
CIP	▨	CULVERT INLET PROTECTION
SF	--------X-------	SILT FENCE

REVISIONS

Erosion & Sediment Control Plan, Sheet 5

Scale: 1"=20' Project: _____ Sheet: 21 of 28

Transportation & Environmental Services
Engineering & Design Division
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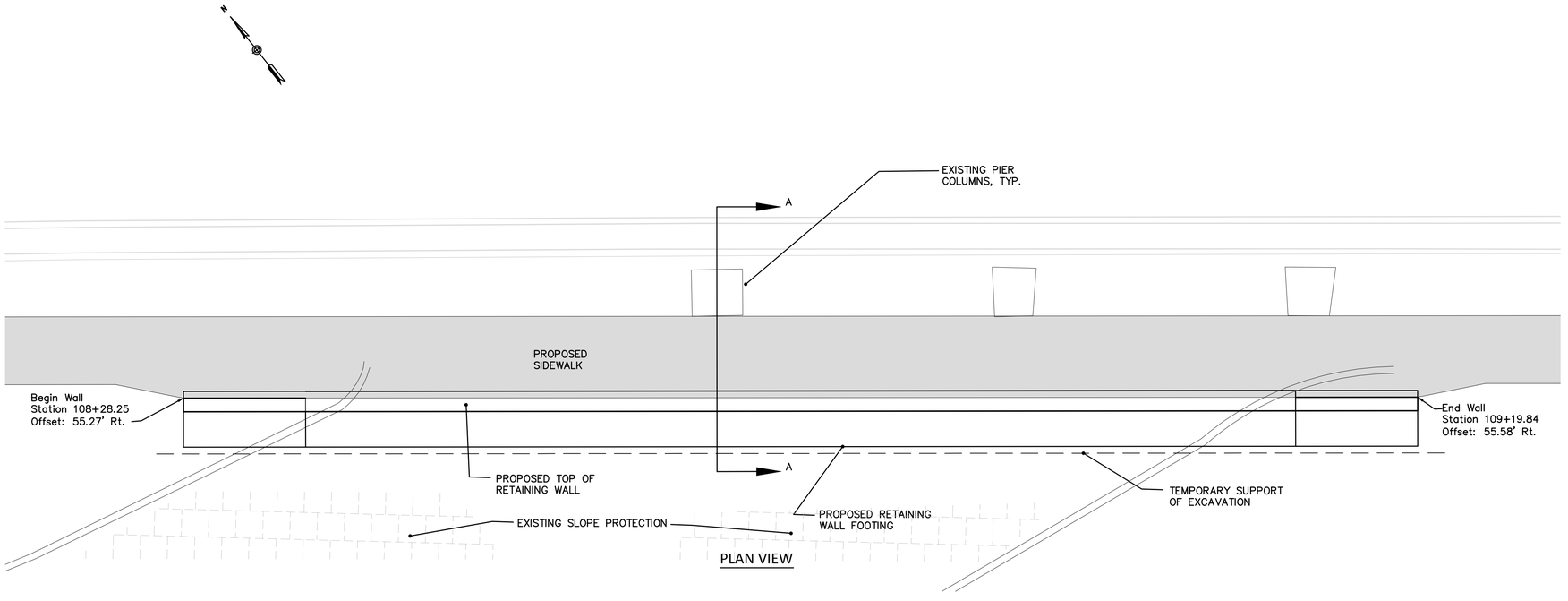
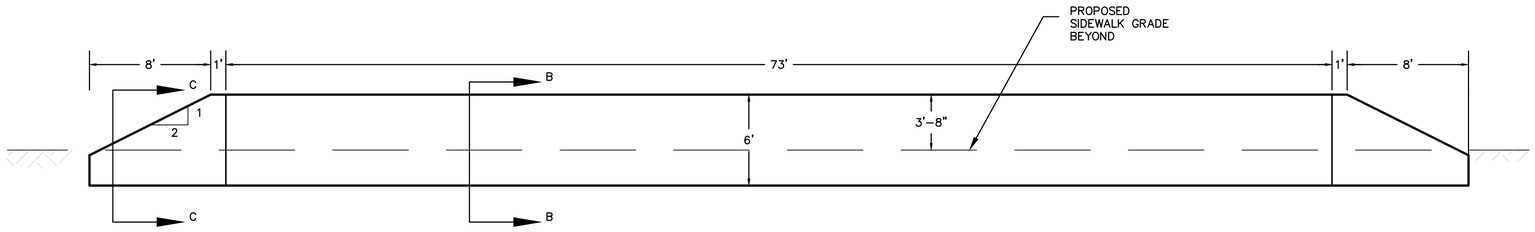
Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

FILE NAME: \\bolsrv03\v2010\2010\10037_Alexandria\Task 5_Duke-395\CADD\Plans\gES-0005_Duke.dwg LAYOUT NAME: Layout1 PLOTTED: Friday, December 20, 2013 - 10:32am



PLAN VIEW



ELEVATION VIEW

GENERAL NOTES:

SPECIFICATIONS:

CONSTRUCTION: VIRGINIA DEPT. OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS, 2007

DESIGN: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 6TH EDITION, 2012; AND VDOT MODIFICATIONS.

STANDARDS: VIRGINIA DEPT. OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS, 2008

RETAINING WALL SHALL BE CONSTRUCTED IN ACCORDANCE WITH VDOT RW-3 STANDARD, WITH THE EXCEPTION OF MODIFICATIONS SHOWN ON SHEET 23

FOR PORTION OF EXISTING CONCRETE SLOPE PROTECTION TO BE REMOVED, DEMOLITION SHALL BE DONE IN ACCORDANCE WITH VDOT ROAD AND BRIDGE SPECIFICATION, SECTION 413 AND VDOT SPECIAL PROVISION SS41301-0609.

PVC PIPE UNDER DRAIN SHALL BE INSTALLED IN ACCORDANCE WITH SECTIONS 232.02 AND 501 OF THE VDOT ROAD AND BRIDGE SPECIFICATION, AND SHALL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF THE RETAINING WALL.

TEMPORARY SUPPORT OF EXCAVATION TO BE DESIGNED BY CONTRACTOR. FEASIBLE OPTIONS INCLUDE SOIL NAILS OR SHEET PILING.

5 0 5 10
SCALE IN FEET

REVISIONS

RETAINING WALL
GENERAL PLAN AND
ELEVATION

Scale: 1" = 5' Project: _____ Sheet: 22 of 28

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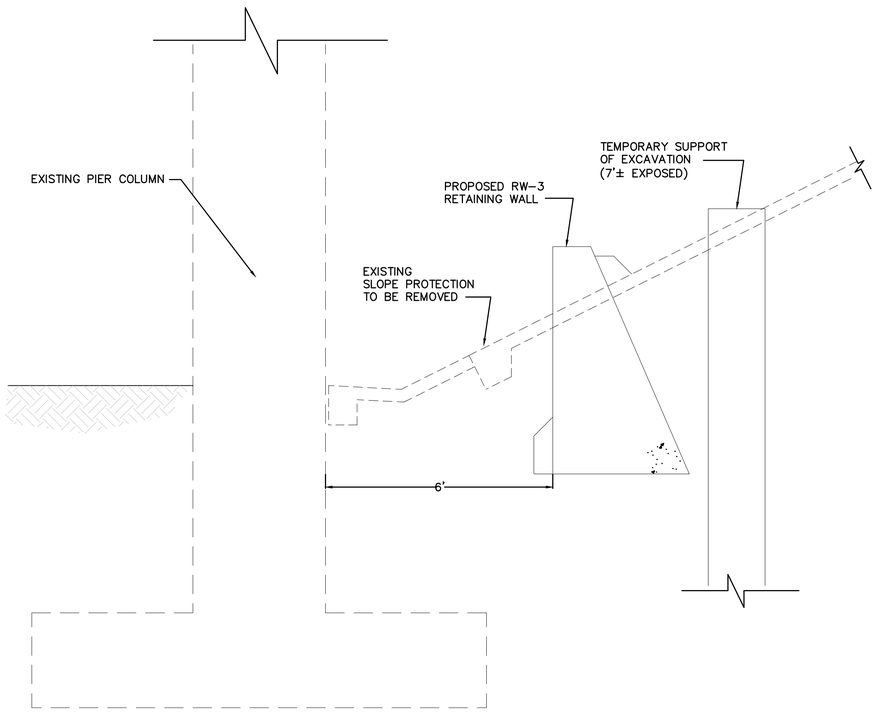
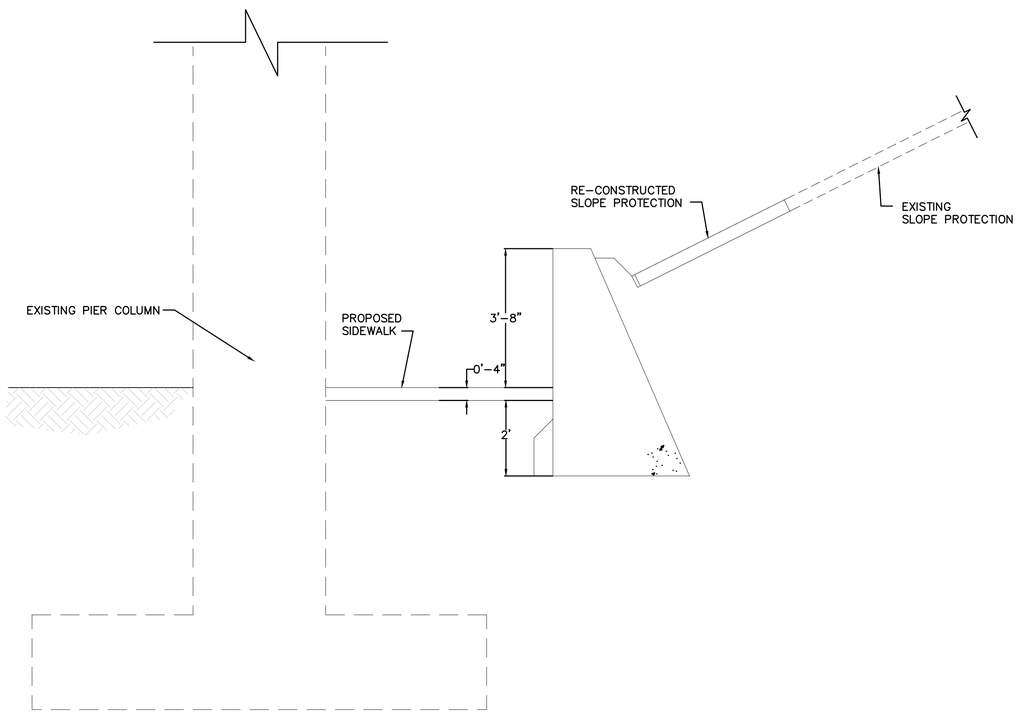
Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

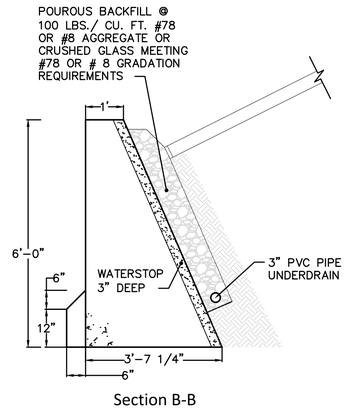
FILE NAME: \\balsrv03\V2010\2010\10037_Alexandria\Task 5_Duke-395\CADD\Structures\SHEET FILE.dwg LAYOUT NAME: Layout1 PLOTTED: Friday, December 20, 2013 - 9:57am



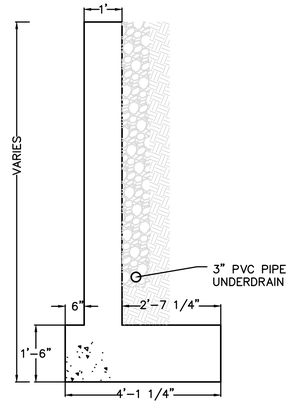
Section A-A @ During Construction



Finished Section A-A



Section B-B



Section C-C

SECTION VIEW

2 0 2 4
SCALE IN FEET

REVISIONS

RETAINING WALL
TYPICAL SECTIONS
AND DETAILS

Scale: 1" = 2' Project: _____ Sheet: 23 of 28

Transportation & Environmental Services
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Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA

FILE NAME: \\bdsnn03\v2010\2010\10037_Alexandria\Task 5_Duke-395\CADD\Structures\SHEET FILE.dwg LAYOUT NAME: Details PLOTTED: Friday, December 20, 2013 - 8:16am

General Notes

1. ALL PROPOSED SIGNING AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MOST CURRENT EDITION OF EACH OF THE FOLLOWING MANUALS, OR THE MOST RECENT REVISION THERETO:
   A. MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009.
   B. THE VIRGINIA SUPPLEMENT TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2011.
   C. THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS, 2007.
   D. THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE STANDARDS, 2008.

2. ALL PAVEMENT MARKINGS SHALL BE WHITE TYPE B, CLASS I.

3. PROPOSED SIGN LOCATIONS ARE APPROXIMATE AND SHALL BE MODIFIED IN THE FIELD TO AVOID CONFLICT WITH UNDERGROUND UTILITIES OR OTHER OBSTRUCTIONS, AND TO COMPLY WITH STANDARDS REFERENCED IN NOTE 1.

4. ANY EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH PROPOSED PAVEMENT MARKINGS SHALL BE COMPLETELY ERADICATED.

5. DISTANCE BETWEEN CROSSWALK AND YIELD LINE PAVEMENT MARKINGS SHALL BE NO LESS THAN 25 FEET.

6. EXISTING SIGNS ARE TO BE RETAINED UNLESS OTHERWISE NOTED.

7. RECTANGULAR RAPID FLASH BEACONS (RRFBs), POLE AND PEDESTAL BASE SHALL BE APPROVED BY THE CITY.

8. THE YELLOW INDICATIONS IN EACH RRFB SHALL FLASH IN A RAPIDLY ALTERNATING "WIG–WAG" (LEFT LIGHT ON, THEN RIGHT LIGHT ON) FLASHING SEQUENCE AND SHALL FLASH IN UNISON.

9. EACH RRFB SHALL CONSIST OF TWO $7\frac{1}{4}$" X 3" RECTANGULAR–SHAPED YELLOW VEHICLE INDICATIONS, AND TWO $1\frac{1}{2}$" X $3\frac{5}{8}$" SIDE–MOUNTED PEDESTRIAN INDICATIONS, EACH WITH AN LED–ARRAY BASED LIGHT SOURCE. SIDE–MOUNTED PEDESTRIAN INDICATIONS WILL FLASH CONCURRENTLY WITH FRONT–MOUNTED VEHICLE INDICATIONS.

10. EACH OF THE TWO YELLOW INDICATIONS SHALL HAVE 70 TO 80 PERIODS OF FLASHING PER MINUTE AND SHALL HAVE ALTERNATING BUT APPROXIMATELY EQUAL PERIODS OF RAPID PULSING LIGHT EMISSIONS AND DARK OPERATION. DURING EACH OF ITS 70 TO 80 FLASHING PERIODS PER MINUTE, ONE OF THE YELLOW INDICATIONS SHALL EMIT TWO RAPID PULSES OF LIGHT AND THE OTHER YELLOW INDICATION SHALL EMIT THREE RAPID PULSES OF LIGHT.

11. THE RAPID FLASH RATE OF EACH INDICATION, AS APPLIED OVER THE FULL ON–OFF SEQUENCE OF A FLASHING PERIOD OF THE INDICATION, SHALL NOT BE BETWEEN 5 AND 30 FLASHES PER SECOND, TO AVOID FREQUENCIES THAT MIGHT CAUSE SEIZURES.

12. THE DURATION OF A PREDETERMINED PERIOD OF OPERATION OF THE RRFBs FOLLOWING EACH ACTUATION SHALL BE BASED ON THE MUTCD PROCEDURES FOR TIMING OF PEDESTRIAN CLEARANCE TIMES FOR PEDESTRIAN SIGNALS. TIMING FOR 'WIG–WAG' FLASHING PATTERN SHALL BE A MAXIMUM OF 15 SECONDS.

13. EACH RRFB WILL UTILIZE A SOLAR–ASSISTED BATTERY–POWERED SYSTEM AND WILL NOT REQUIRE A SEPARATE POWER SOURCE.

14. EACH RRFB SHALL BE POSITIONED AND ADJUSTED TO PROVIDE MAXIMUM VISIBILITY AT THE BEGINNING OF THE CONTROLLED CROSSWALK.

15. EACH RRFB PUSHBUTTON SHALL BE ORIENTATED SO THAT IT IS ACCESSIBLE FROM THE SIDEWALK OR CURB RAMP.

16. W11–2 AND W16–7p WARNING SIGNS SHALL BE ON FLUORESCENT YELLOW AND GREEN BACKGROUND.

Measurement and Payment

PAVEMENT MARKING YIELD ARROW 36"
THIS WORK SHALL BE MEASURED AND PAID FOR AT THE CONTRACT UNTIL PRICE PER EACH. CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING 36" YIELD ARROW IN ACCORDANCE WITH THE DETAIL SHOWN ON THIS SHEET. THIS PRICE SHALL INCLUDE THE PAVEMENT MARKING MATERIAL SURFACE PREPARATION, QUALITY CONTROL TEST, DAILY LOG, GUARDING DEVICES, PRIMER/ADHESIVE, AND GLASS BEADS, AND ALL MATERIALS, EQUIPMENT, TOOLS AND LABOR NECESSARY TO COMPLETE THE WORK

PAY ITEM	PAY UNIT
PAVEMENT MARKING YIELD ARROW 36"	EA. (EA.)

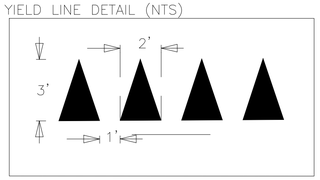
RECTANGULAR RAPID FLASH BEACON
THIS WORK SHALL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE OF EACH. CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING PEDESTRIAN ACTUATED RECTANGULAR RAPID FLASH BEACON (RRFB) AT THE LOCATION INDICATED ON THE PLANS OR WHERE DIRECTED BY THE ENGINEER. RRFB SHALL INCLUDE THE COST OF A SINGLE SIDED RRFB, 55–WATT SOLAR PANEL, CONTROLLER, WIRELESS TRANSMITTER, AND PUSHBUTTON WITH ALL NECESSARY EQUIPMENT, POLE, PEDESTAL BASE, FOUNDATION, PAINT AND ALL MATERIALS, EQUIPMENT, TOOLS AND LABOR NECESSARY TO COMPLETE THE WORK.

PAY ITEM	PAY UNIT
RECTANGULAR RAPID FLASHING BEACON (RRFB)	EA. (EA.)

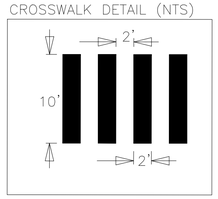
Signing Legend

DESCRIPTION	SYMBOL
RECTANGULAR RAPID FLASH BEACON (RRFB)	

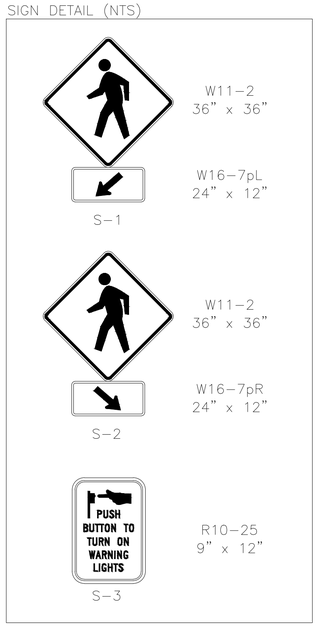
YIELD LINE DETAIL (NTS)



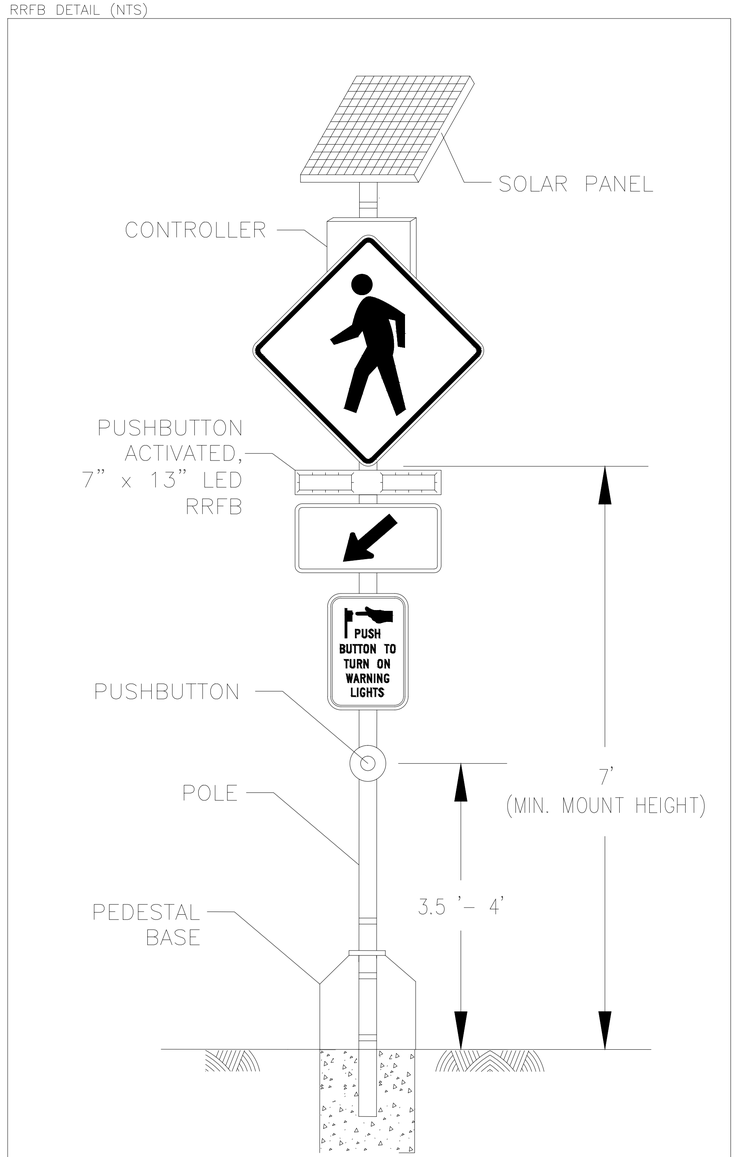
CROSSWALK DETAIL (NTS)



SIGN DETAIL (NTS)



RRFB DETAIL (NTS)



60% PLANS
NOT FOR CONSTRUCTION

REVISIONS

Signing & Marking Plan Sheet 1

Scale: 1"=20' Project: _____ Sheet: 24 of 28

Transportation & Environmental Services
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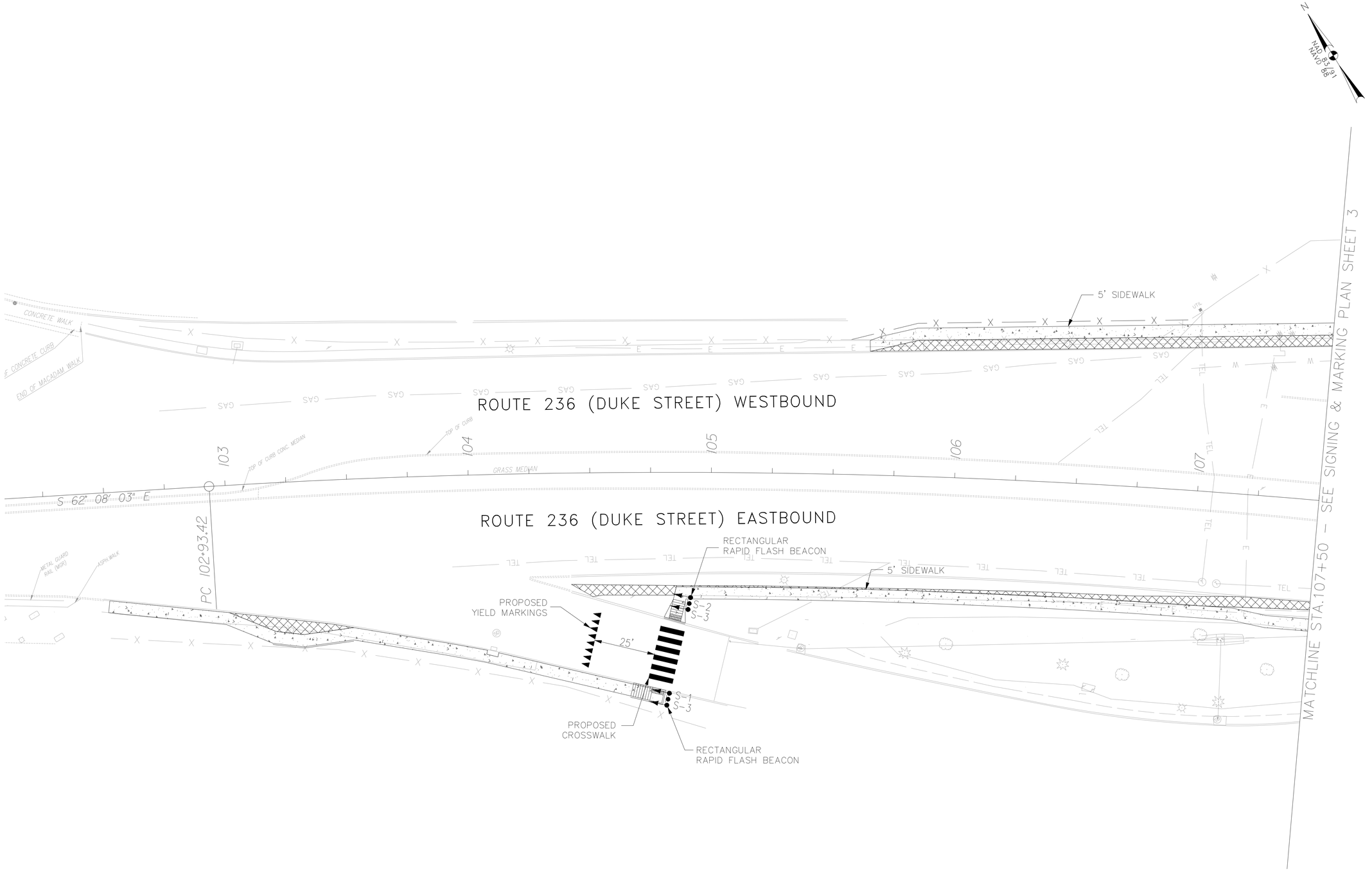
Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA



60% PLANS
NOT FOR CONSTRUCTION

REVISIONS

Signing & Marking Plan Sheet 2

Scale: 1"=20' Project: _____ Sheet: 25 of 28

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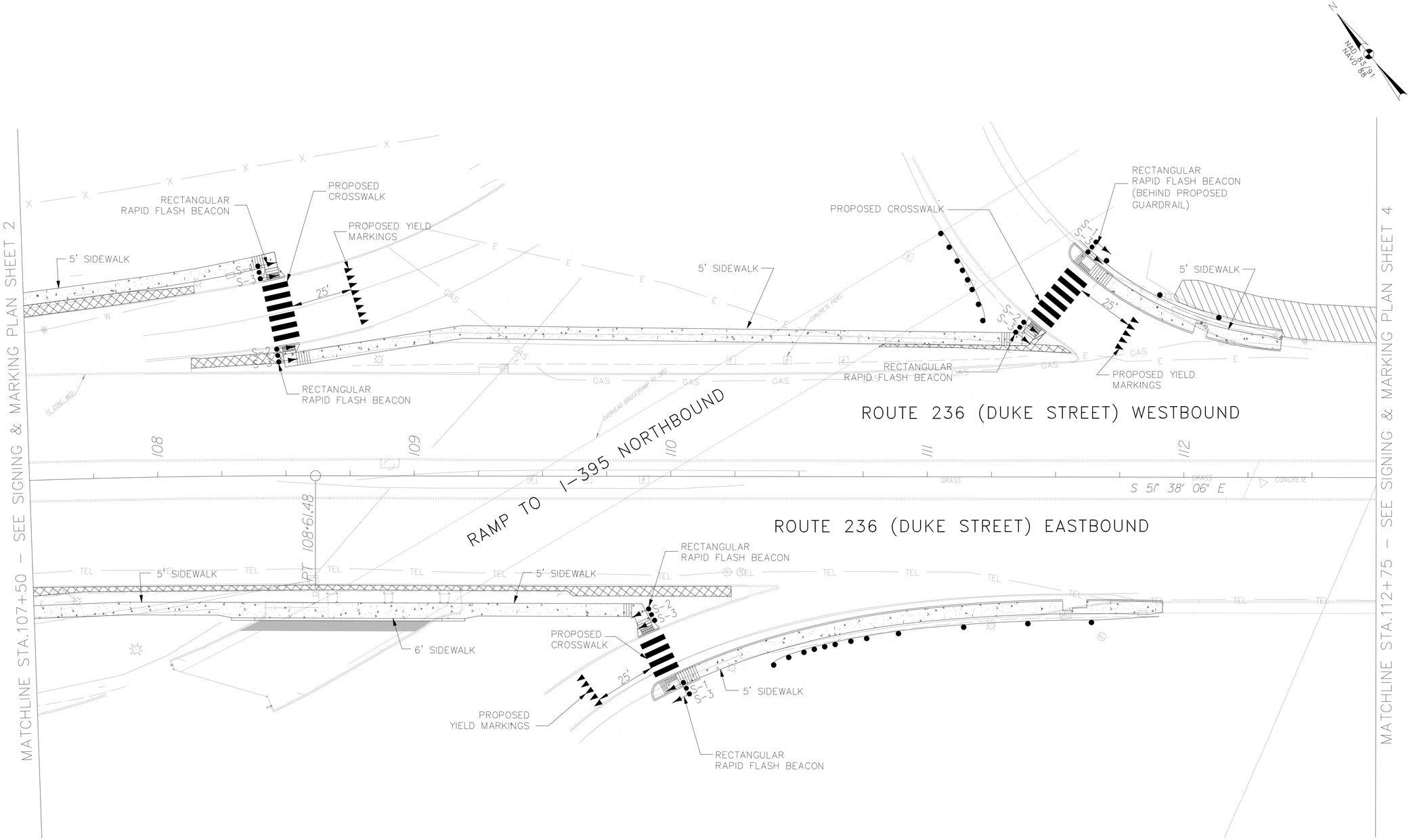
Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA



REVISIONS

Signing & Marking Plan Sheet 3

Scale: 1"=20' Project: _____ Sheet: 26 of 28

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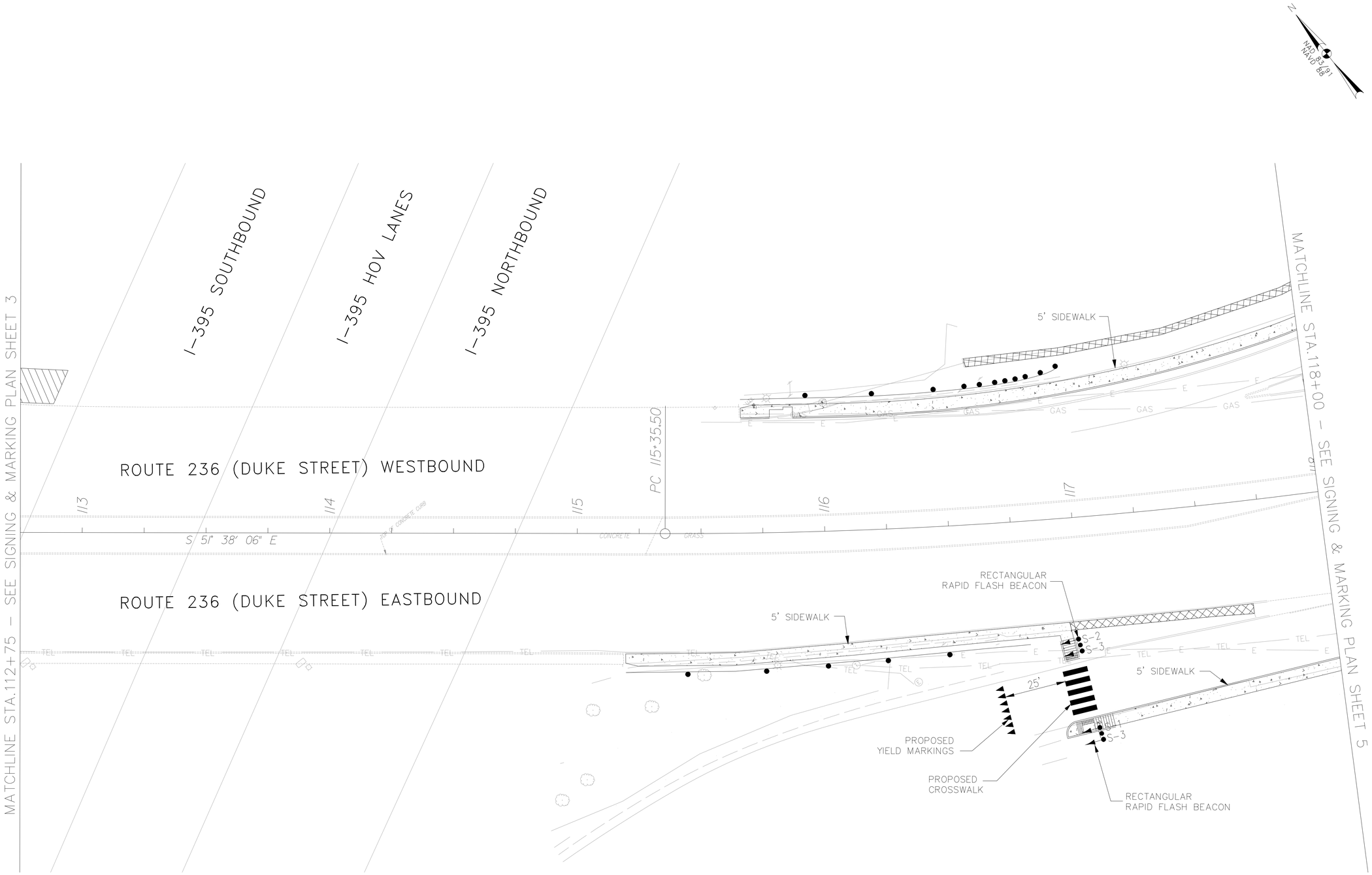
Duke Street Pedestrian Improvements

60% PLANS
NOT FOR CONSTRUCTION



60% PLANS
NOT FOR CONSTRUCTION

REVISIONS

Signing & Marking Plan Sheet 4

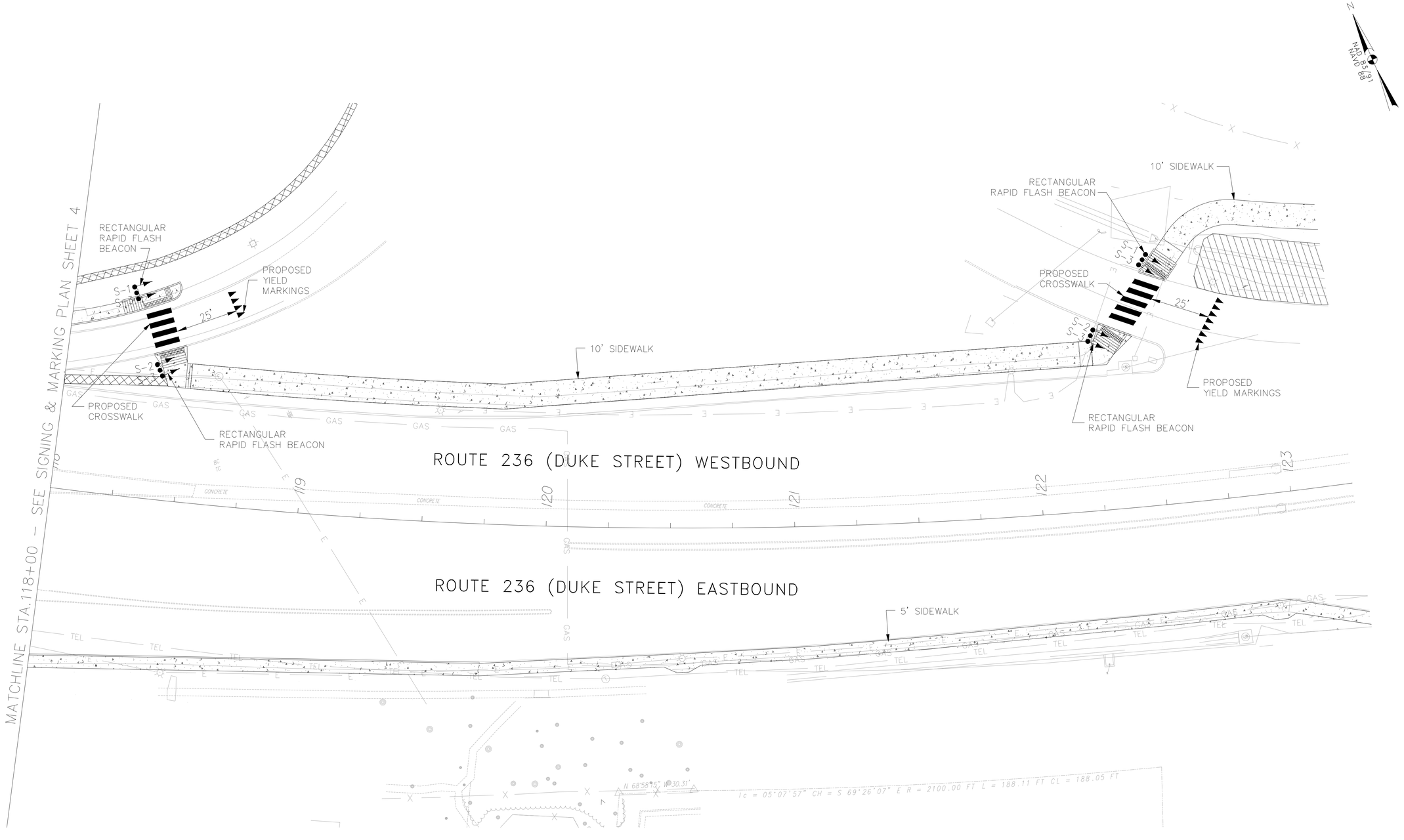
Scale: 1"=20' Project: _____

Sheet: 27 of 28

Transportation & Environmental Services
Engineering & Design Division
P.O. Box 178 Alexandria, Va. 22313

Duke Street Pedestrian Improvements

CITY OF ALEXANDRIA VIRGINIA



60% PLANS
NOT FOR CONSTRUCTION

REVISIONS

Signing & Marking Plan Sheet 5

Scale: 1"=20' Project: _____ Sheet: 28 of 28

Transportation & Environmental Services
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Duke Street Pedestrian Improvements