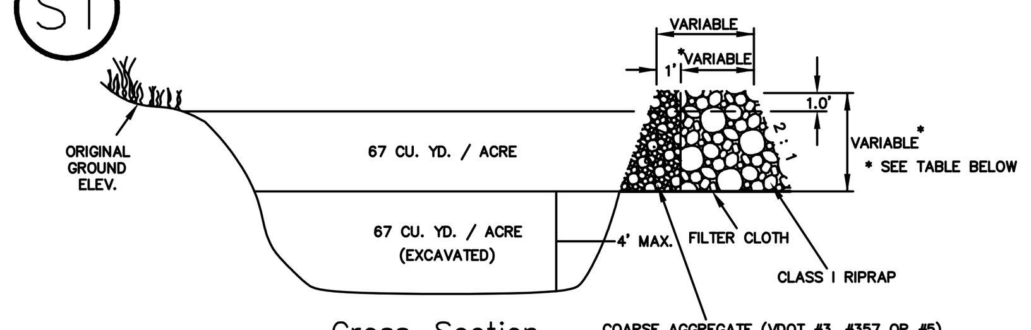
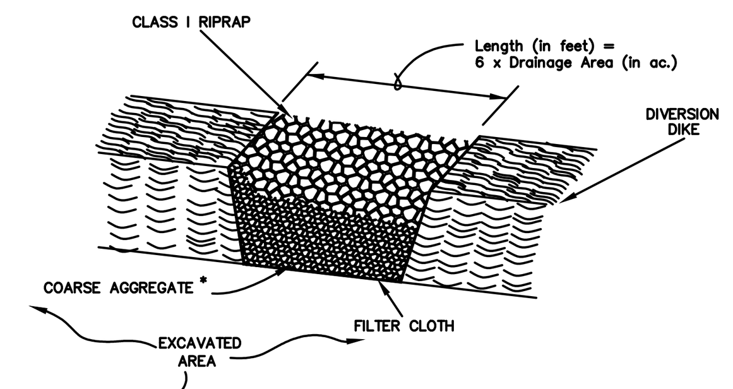
TEMPORARY SEDIMENT TRAP ***
DCR Standard & Spec. Number 3.13

ST

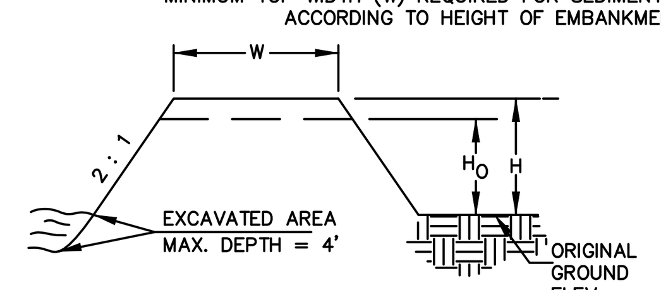


Cross–Section



Outlet (Perspective View)

MINIMUM TOP WIDTH (W) REQUIRED FOR SEDIMENT TRAP EMBANKMENTS ACCORDING TO HEIGHT OF EMBANKMENT (FEET)



H	H_O	W
1.5	0.5	2.0
2.0	1.0	2.0
2.5	1.5	2.5
3.0	2.0	2.5
3.5	2.5	3.0
4.0	3.0	3.0
4.5	3.5	4.0
5.0	4.0	4.5

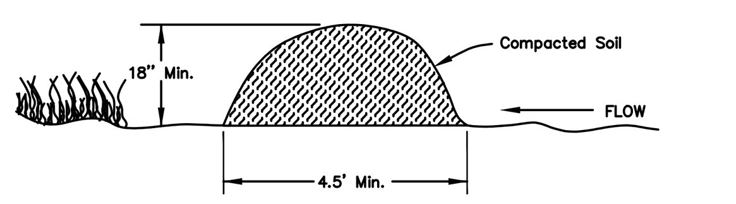
The maximum allowable drainage area is 3 acres. Sediment should be removed from the basin when the volume is reduced by one–half.

TEMPORARY SEDIMENT TRAP DATA

STRUCTURE	DRAINAGE AREA (ACRES)	STORAGE (C.Y.)		WEIR LENGTH (FEET)	WEIR HEIGHT (FEET)	BERM HEIGHT (FEET)
		REQUIRED	DESIGN			

TEMPORARY DIVERSION DIKE ***
DCR Standard & Spec. Number 3.13

DD

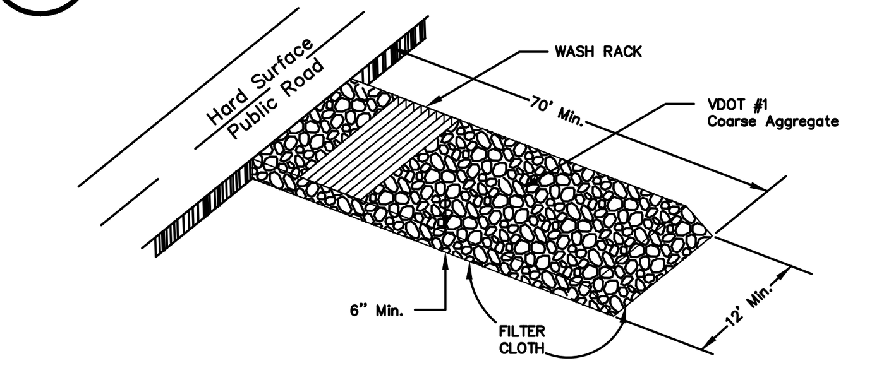


Below drainage areas of 5 acres or less.

The channel behind the dike shall have a positive grade to a stabilized outlet. If the channel slope is less than or equal to 2%, no stabilization is required. If the slope is greater than 2%, the channel shall be stabilized in accordance with Std. & Spec. 1.35 (STORMWATER CONVEYANCE CHANNEL) Virginia Erosion & Sediment Control Handbook, Third Edition, 1992.

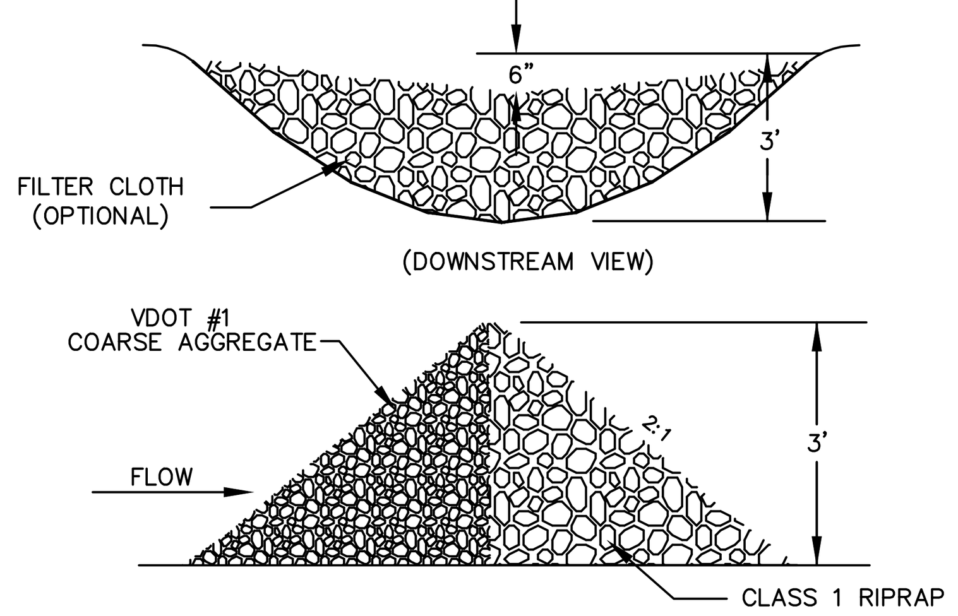
GRAVEL CONSTRUCTION ENTRANCE ***
DCR Standard & Spec. Number 3.02

CE



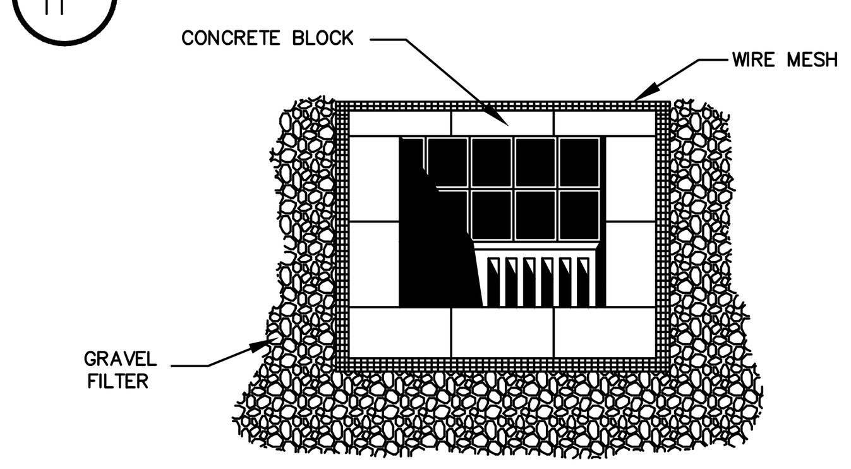
ROCK CHECK DAM ***
DCR Standard & Spec. Number 3.20
(2–10 Acres Of Drainage Area)

CD

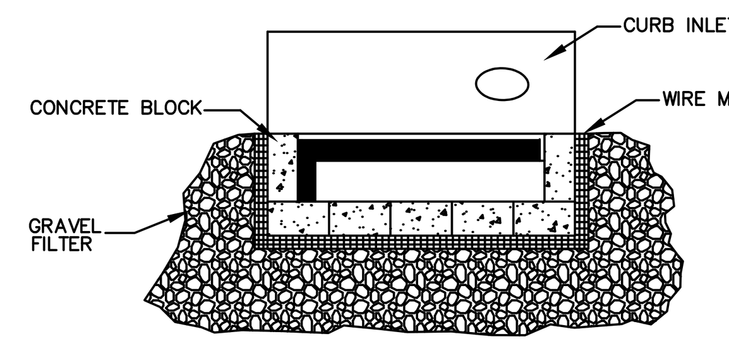


TEMPORARY BLOCK & GRAVEL DROP INLET FILTER ***
DCR Standard & Spec. Number 3.07

IP



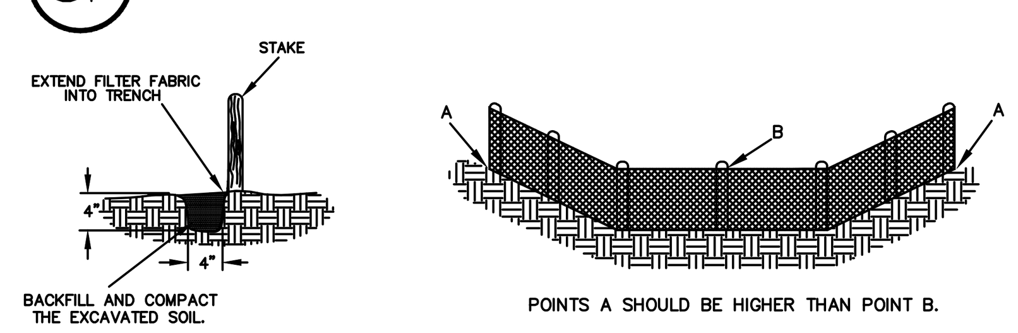
TEMPORARY BLOCK & GRAVEL CURB INLET FILTER ***



* GRAVEL SHALL BE #3, #357, OR # 5 COURSE AGGREGATE.

SILT FENCE ***
DCR Standard & Spec. Number 3.05

SF

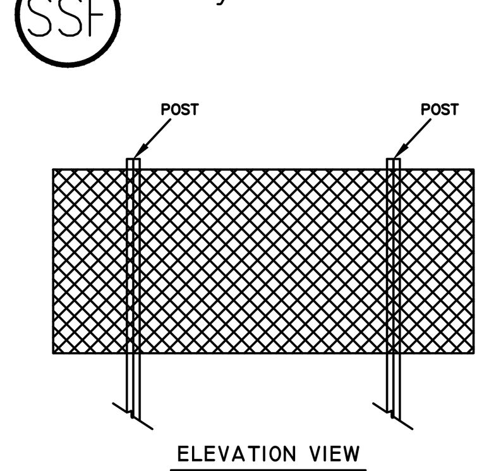


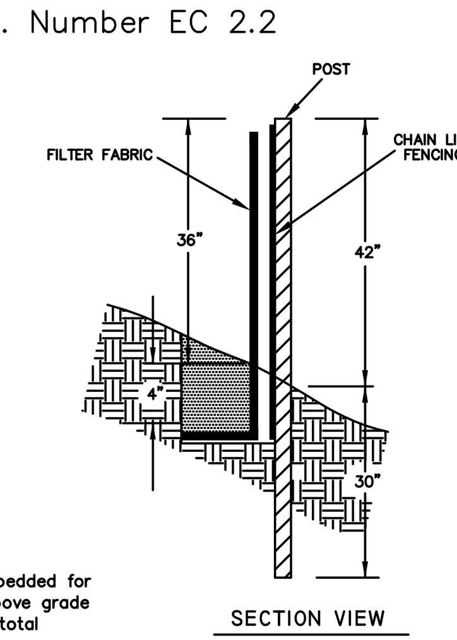
GENERAL NOTES – SILT FENCE

1) The height of a silt fence will be a minimum of 16 inches and a maximum of 34 inches above ground elevation.
2) Extra strength filter fabric shall be a continuous roll. When joints are unavoidable, a splice may be made at a support post with a 6 inch overlap.
3) The excavated trench shall be 4 inches wide and 4 inches deep on the upslope side of the proposed location.
4) Support posts shall be a maximum of 10 feet apart where wire support is used, and no more than 6 feet apart where wire is not used. When placing silt fence across a ditch or swale, the posts are to be set at a maximum 3 foot interval.
5) The trench shall be backfilled and the soil compacted over the filter fabric.
6) Silt fences shall be removed when the upslope area has been permanently stabilized.

SUPER SILT FENCE ***
City of Manassas Spec. Number EC 2.2

SSF





FENCING:

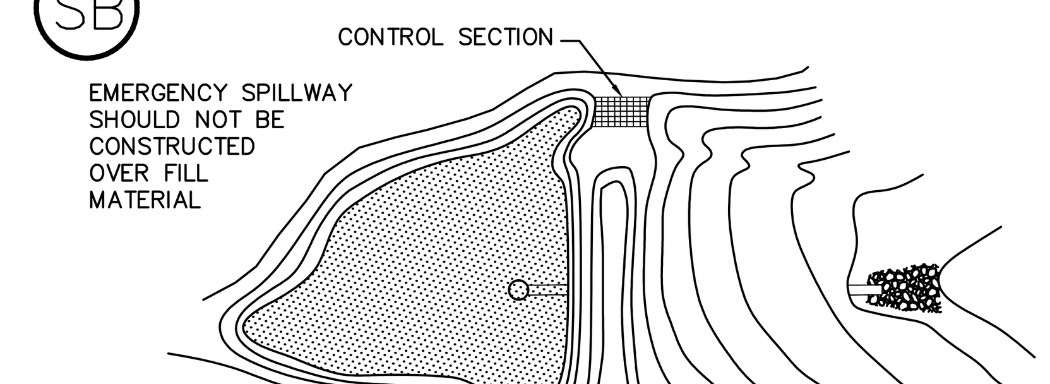
Chain link fence shall be 39" above grade with 3" embedded for a total fabric width of 42". The post shall be 42" above grade with 30" placed below grade (without concrete) for a total length of 72".

NOTES:

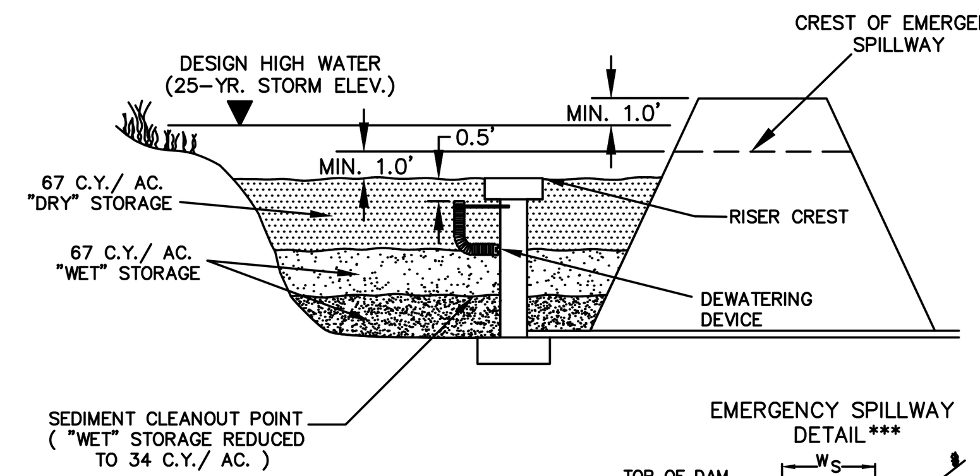
1. Chain link fence shall be fastened securely to fence posts with wire ties.
2. Filter fabric shall be fastened securely to chain link fence with ties spaced horizontally 24" at the top and midsection.
3. Physical properties of the filter fabric shall conform to the latest edition of the VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK.
4. When two sections of the filter fabric adjoin each other, they shall be overlapped by 6".
5. Maintenance shall be performed as needed and material shall be removed when sediment build–up reaches 50% of the height of the super silt fence.

TEMPORARY SEDIMENT BASIN ***
DCR Standard & Spec. Number 3.14

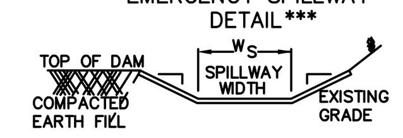
SB



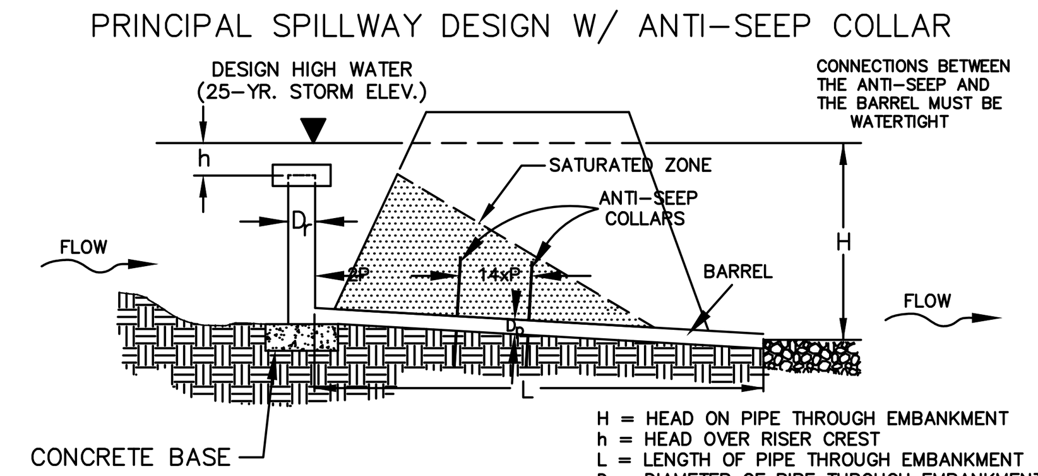
TEMPORARY SEDIMENT BASIN ***
(WITH EMERGENCY SPILLWAY)



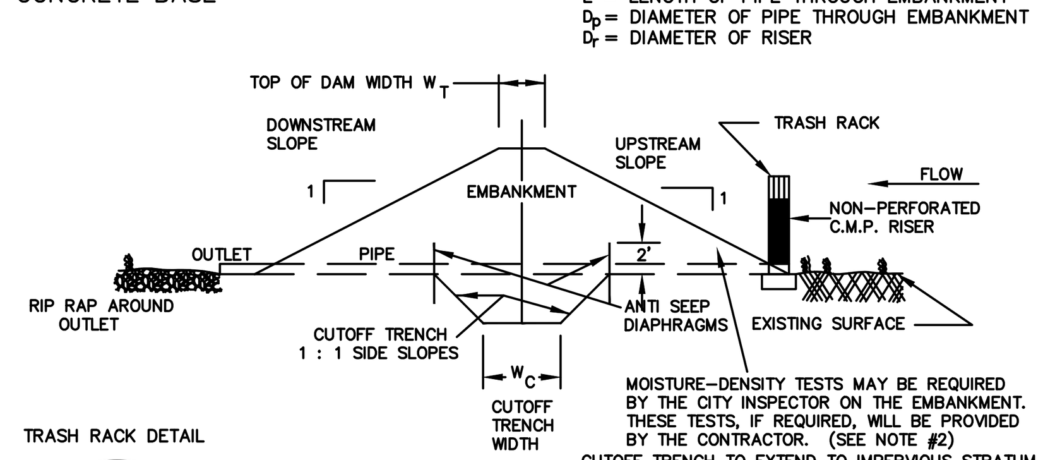
EMERGENCY SPILLWAY DETAIL***



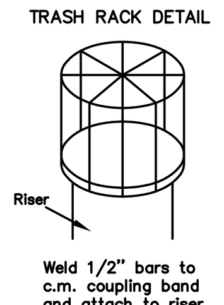
PRINCIPAL SPILLWAY DESIGN W/ ANTI–SEEP COLLAR



H = HEAD ON PIPE THROUGH EMBANKMENT
h = HEAD OVER RISER CREST
L = LENGTH OF PIPE THROUGH EMBANKMENT
D_p = DIAMETER OF PIPE THROUGH EMBANKMENT
D_r = DIAMETER OF RISER



TRASH RACK DETAIL



SECTION THRU DAM

GENERAL NOTES–SEDIMENT BASIN

1. The site shall be cleared and grubbed and unsuitable material removed.
2. Embankment material to be taken from approved borrow area, free from roots, woody vegetation and oversized stones. Material shall be placed in 6" layers (loose) and compacted to at least 95% density.
3. Reservoir area shall be cleared and grubbed.
4. The top and sides of the embankment shall be covered with topsoil and properly seeded, mulched and fertilized.
5. Emergency spillway shall be cut into natural ground and stabilized.
6. Clean out elevation to be marked on riser in red paint.
7. Silt shall not be dumped in the downstream side of the silt basin.
8. All construction shall conform to City of Manassas Standards and Specifications and the Virginia Erosion and Sediment Control Handbook, Third Edition, 1992.
9. Temporary silt basins to be constructed prior to beginning rough grading operations.
10. Temporary silt basins to be removed and disturbed area stabilized as per approved plan.
11. Temporary silt basins to be maintained by developer.
12. Construction stake–out to be proved for each dam.

EROSION AND SEDIMENT CONTROL NARRATIVE

ALL PROPOSED EROSION AND SEDIMENT CONTROL MEASURES ARE IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 3RD EDITION 1992. DESCRIPTIONS OF THE EROSION AND SEDIMENT CONTROL MEASURES THAT WILL BE USED FOR THE PROJECT ARE GIVEN BELOW:

SILT FENCE:
TEMPORARY SILT FENCE WILL BE PLACED OUTSIDE OF THE PROPOSED LIMITS OF DISTURBANCE TO TRAP SEDIMENT–LADEN RUNOFF FROM EXITING THE PROJECT SITE. THE SILT FENCE WILL BE SPECIFICALLY PLACED TO PROTECT ADJACENT PROPERTIES AND FLAT BRANCH.

INLET PROTECTION:
TYPES A, B, AND C INLET PROTECTION WILL BE PROVIDED ON EXISTING AND PROPOSED STORM DRAIN INLETS TO PROTECT SEDIMENT–LADEN WATER FROM ENTERING THE CLOSED STORM SYSTEM.

CULVERT INLET PROTECTION:
CULVERT INLET PROTECTION WILL BE PROVIDED ON EXISTING CULVERTS TO PROTECT SEDIMENT–LADEN WATER FROM ENTERING THE CROSS–CULVERT OR PIPE NETWORK.

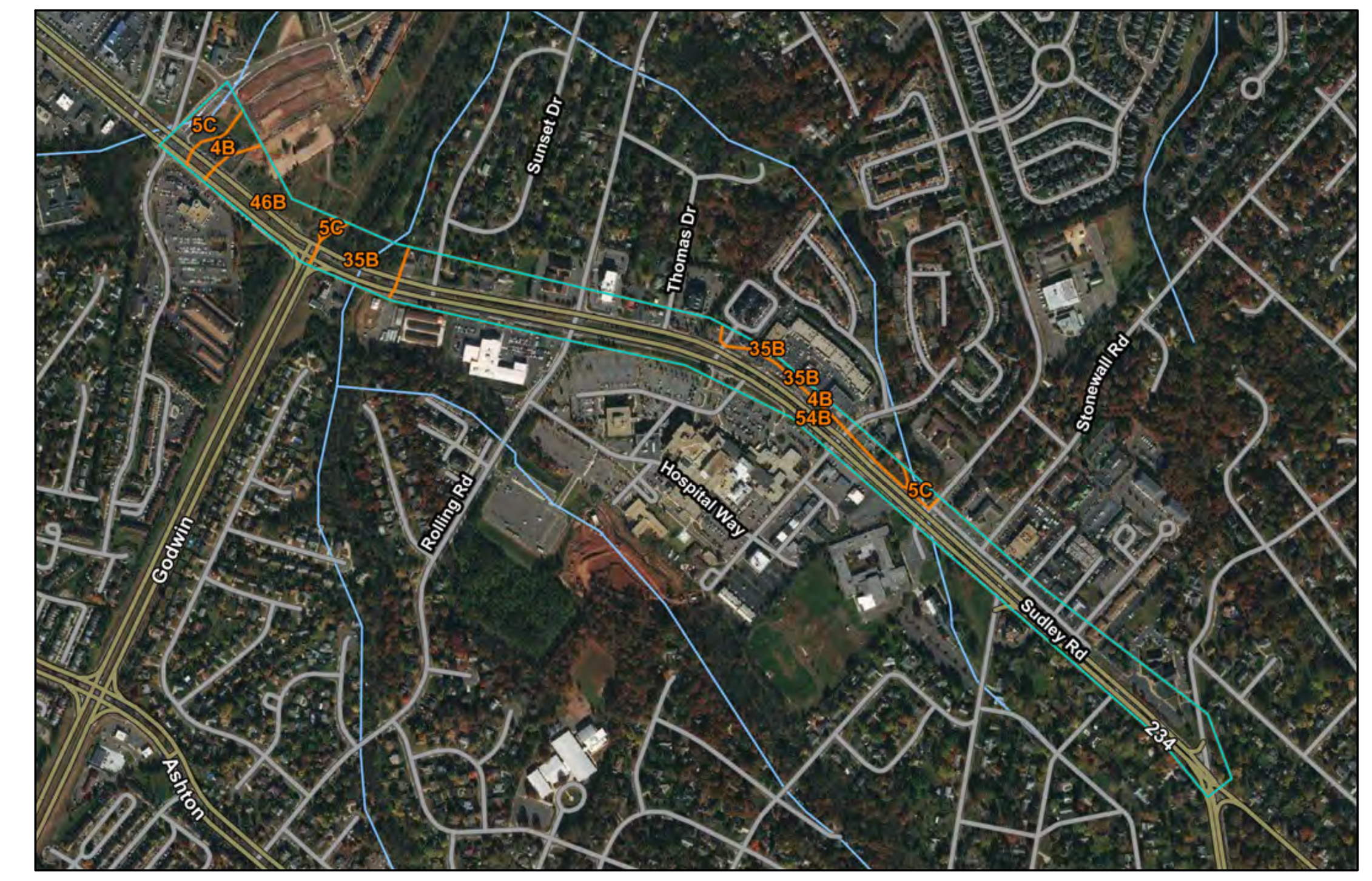
SOIL TYPE(S)

No.	Name	Slope	Soil Group
4B	Arcola Silt Loam	2–7%	C
5C	Arcola–Nestoria complex	7–15%	C/D
35B	Manassas silt loam	2–7%	B
46B	Panorama Silt Loam	2–7%	B
54B	Urban land–Udorthents complex	0–7%	–

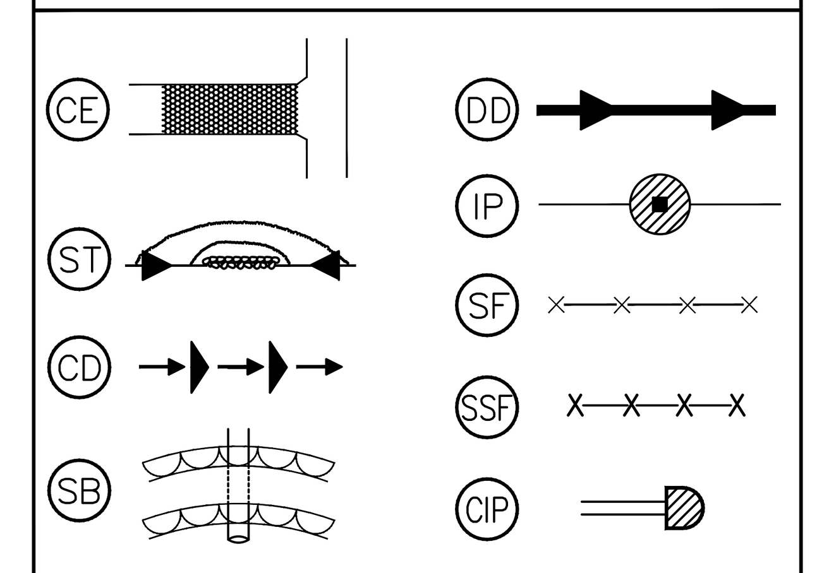
COMMONWEALTH OF VIRGINIA
MARK R. PHILLIPS
Lic. No. 058611
PROFESSIONAL ENGINEER

Kimley-Horn
Reston, Virginia
Hydraulic Engineer

SOILS MAP
1" = 883.33'



VIRGINIA UNIFORM CODING SYSTEM
for Erosion and Sediment Control Practices



Other E & S Uniform Codes Are Shown In The Current Virginia Erosion and Sediment Control Handbook

STORMWATER MANAGEMENT COMPLIANCE
(Check Appropriate Block)

[✓] Owner/developer will provide on–site stormwater management facility(ies) to accommodate additional storm drain run–off.

[ ] Owner/developer requests the ability to provide a pro–rata cash contribution in–lieu of providing on–site stormwater management facility(ies).

Less Than or Equal to 40% Impervious Formula: $/Acre = A x I
Greater Than 40% Impervious Formula: $/Acre = B + ($I^2$ x C)

Disturbed Acreage = ______________________

ENR Construction Cost Number = __________________

A = ________________ (3,400 x D)
B = ________________ (400 x D)
C = ________________ (6,000 x D)
D = ________________ (Current ENR Construction Cost Index / 3,726)
I = ________________ (Percent of Imperviousness, i.e., 40% = .40)

$______________ (Dollar Amount)
**To Be Computed With Final Submission

[ ] Owner/developer already complies with stormwater management requirements. Examples would include: a reduction in the impervious area or facility(ies) or existing on–site facilities which were installed to accommodate this proposed development. No fee is required or applicable in this circumstance.

COST ESTIMATE OF SILTATION CONTROL MEASURES (In–Place)

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
27012	SILT FENCE	L.F.	13,536	$10	$135,360
27451	INLET PROTECTION TYPE A	EACH	9	$380	$3,420
27461	INLET PROTECTION TYPE B	EACH	47	$500	$23,500
	INLET PROTECTION TYPE C	EACH	5	$500	$2,500
09149	RIP RAP	SY	81	$300	$24,300
27012	TOPSOIL	ACRE	1.21	$19,500	$23,595
27102	SEEDING	LB	380	$40	$15,200
27250	LIME	TON	5	$300	$1,500
27215	FERTILIZER	LB	170	$2	$340
					$229,715
15% ADMINISTRATIVE COST					$34,457
TOTAL PROJECT COST					$264,172

FOR ADDITIONAL INFORMATION PERTAINING TO THESE DRAWINGS, PLEASE REFERENCE THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, CURRENT EDITION, CHAPTER 3, ARTICLES 3.01 THRU 3.39.

ANY DEVIATION OR CHANGE IN THESE PLANS MUST BE APPROVED BY THE DEVELOPMENT SERVICES MANAGER PRIOR TO CONSTRUCTION.

*** ALL DRAWINGS NOT TO SCALE.

CITY OF MANASSAS
STANDARD DETAIL– EROSION CONTROL
REVISED: APRIL 28, 2010

100% DESIGN SUBMITTAL

CITY OF MANASSAS, VIRGINIA
DEPARTMENT OF ENGINEERING
8500 PUBLIC WORKS DRIVE
MANASSAS, VIRGINIA 20110

REVISIONS

DATE	BY	DESCRIPTION

MANASSAS PROJECT NO.: T–015
DATE OF PLAN ISSUANCE: TBD
CONSULTANT PROJECT ID.: 594002
DESIGNED BY: MP DATE: 04/02/2021
DRAWN BY: DHB DATE: 04/02/2021
CHECKED BY: CES DATE: 04/16/2021
APPROVED BY: ____ DATE: ____

SUDLEY ROAD THIRD LANE (T–015) VDOT UPC #109293

Kimley»Horn
11400 COMMERCE PARK DRIVE SUITE #400, RESTON, VA 20191
PHONE: 703–674–1300 FAX: 703–674–1350
WWW.KIMLEY–HORN.COM

SHEET
15(32) – EROSION CONTROL SHEET DETAILS
SCALE NTS

ENGINEER TO ADDRESS AND VERIFY ALL REQUIREMENTS INDICATED IN THE CHECKLISTS ARE MET PRIOR TO THE INITIAL SUBMISSION OF THE DEVELOPMENT PLANS.

PLAN REVIEW MINIMUM STANDARD CHECKLIST

YES	NO	NA		
✓	[ ]	[ ]	MS-1	Have temporary and permanent stabilization been addressed in narrative?
✓	[ ]	[ ]		Are practices shown on the plan?
✓	[ ]	[ ]		Seed specifications?
[ ]	[ ]	✓		Mulching?
✓	[ ]	[ ]		Gravel?

(Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 30 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.)

✓	[ ]	[ ]	MS-2	Has stabilization of soil stockpiles been addressed in narrative?
✓	[ ]	[ ]		Are sediment trapping measures provided?

(During construction of the project, soil stock piles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site.)

✓	[ ]	[ ]	MS-3	Has maintenance of permanent stabilization been addressed?

(A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion.)

✓	[ ]	[ ]	MS-4	Are sediment trapping facilities to be constructed as a first step in LDA?
✓	[ ]	[ ]		Has maintenance of practices been addressed? (i.e. repair of structures and removal accumulated sediment)

(Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.)

[ ]	[ ]	✓	MS-5	Has stabilization of earthen structures been addressed?

(Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.)

[ ]	[ ]	✓	MS-6	Are sediment basins required where needed?

(Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.)

a. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres.

b. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a 25-year storm of 24-hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.)

✓	[ ]	[ ]	MS-7	Has stabilization of cut and fill slopes been adequately addressed?

(Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.)

[ ]	[ ]	✓	MS-8	Are paved flumes, channels, or slope drains required where necessary?

(Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.)

[ ]	[ ]	✓	MS-9	Have water seeps from slope face, adequate drainage or other protection addressed?

(Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.)

✓	[ ]	[ ]	MS-10	Is adequate inlet protection required on all operational storm sewer inlets?

(All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.)

✓	[ ]	[ ]	MS-11	Are channel lining and/or outlet protection required on stormwater conveyance channels?

(Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.)

[ ]	[ ]	✓	MS-12	Are in-stream construction measures required so that channel damage is minimized?

(When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials.)

[ ]	[ ]	✓	MS-13	Are temporary stream crossings of non-erodible material required where necessary?

(When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of nonerodible material shall be provided.)

[ ]	[ ]	✓	MS-14	Are all applicable federal, state and local regulations pertaining to working in or crossing live watercourses being met?

(All applicable federal, state and local chapters pertaining to working in or crossing live watercourses shall be met.)

[ ]	[ ]	✓	MS-15	Has re-stabilization of areas subject to in-stream construction been adequately addressed?

(The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.)

[ ]	[ ]	✓	MS-16	Has stabilization of utility trenches been addressed?

(Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:

a. No more than 500 linear feet of trench may be opened at one time.

b. Excavated material shall be placed on the uphill side of trenches.

c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.

d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.

e. Restabilization shall be accomplished in accordance with this chapter.

f. Applicable safety chapters shall be complied with.

✓	[ ]	[ ]	MS-17	Has the prevention of transporting of soil and mud onto public roadways been adequately addressed? (i.e. Construction Entrances, Wash Racks, daily cleaning of roadways, transport of sediment to a trapping facility)

(Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities.)

✓	[ ]	[ ]	MS-18	Has the removal of temporary practices been addressed?

(All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the local program authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.)

✓	[ ]	[ ]	MS-19	Are properties and waterways downstream from the development adequately protected from erosion and sediment deposition due to increases in peak stormwater runoff?

(Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria:

a. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.

b. Adequacy of all channels and pipes shall be verified in the following manner:

:

(1) The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is one hundred times greater than the contributing drainage area of the project in question; or

(2) (a) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks.

(b) All previously constructed man-made channels shall be analyzed by the use of a ten-year storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and

(c) Pipes and storm sewer systems shall be analyzed by the use of a ten-year storm to verify that stormwater will be contained within the pipe or system.

c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:

(1) Improve the channels to a condition where a ten-year storm will not overtop the banks and a two-year storm will not cause erosion to channel the bed or banks; or

(2) Improve the pipe or pipe system to a condition where the ten-year storm is contained within the appurtenances;

(3) Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a ten-year storm to increase when runoff outfalls into a man-made channel; or

(1) Improve the channels to a condition where a ten-year storm will not overtop the banks and a two-year storm will not cause erosion to channel the bed or banks; or

(2) Improve the pipe or pipe system to a condition where the ten-year storm is contained within the appurtenances;

(3) Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a ten-year storm to increase when runoff outfalls into a man-made channel; or

(4) Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the plan approving authority to prevent downstream erosion.

d. The applicant shall provide evidence of permission to make the improvements.

e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development condition of the subject project.

f. If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the locality of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.

g. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipators shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transistion from the facility to the receiving channel.

h. All on-site channels must be verified to be adequate.

i. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.

j. In applying these stormwater management criteria, individual lots or parcels in a residential, commercial or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.

k. All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical and biological integrity of rivers, streams and other waters of the state.

CHECKLIST

NARRATIVE

- ✓* Project description – Briefly describes the nature and purpose of the land-disturbing activity, and the area (acres) to be disturbed.
- ✓* Existing site conditions – A description of the existing topography, vegetation and drainage.
- ✓* Adjacent areas – A description of neighboring areas such as streams, lakes, residential areas, roads, etc., which might be affected by the land disturbance.
- ✓* Off-site-areas – Describe any off-site land-disturbing activities that will occur (including borrow sites, waste or surplus areas, etc.). Will any other areas be disturbed?
- ✓* Soils – A brief description of the soils on the site giving such information as soil name, mapping unit, erodibility, permeability, depth, texture and soil structure.
- ✓* Critical areas – A description of areas on the site which have potentially serious erosion problems (e.g. steep slopes, channels, wet weather/underground springs, etc.).
- ✓ Erosion and sediment control measures – A description of the methods which will be used to control erosion and sedimentation on the site. (Controls should meet the specifications in Chapter 3.)
- ✓* Permanent stabilization – A brief description, including specifications, of how the site will be stabilized after construction is completed.
- ✓* Stormwater runnoff considerations – Will the development site cause an increase in peak runoff rates? Will the increase in runoff cause flooding or channel degradation downstream? Describe the strategy to control stormwater runoff.
- ✓* Calculations – Detailed calculations for the design of temporary sediment basins, permanent stormwater detention basins, diversions, channels, etc. Include calculations for pre- and post-development runoff.

SITE PLAN

- ✓ Vicinity map – A small map locating the site in relation to the surrounding area. Include any landmarks which might assist in locating the site.
- ✓ Indicate north – The direction of north in relation to the site.
- ✓ Limits of clearing and grading – Areas which are to be cleared and graded.
- ✓ Existing contours – The existing contours of the site.
- ✓ Final contours – Changes to the existing contours, including final drainage patterns.
- ✓ Existing vegetation – The existing tree lines, grassed areas, or unique vegetation.
- ✓ Soils – The boundaries of different soil types.
- ✓ Existing drainage patterns – The dividing lines and the direction of flow for the different drainage areas. Include the size (acreage) of each drainage area.
- ✓ Critical erosion areas – Areas with potentially serious erosion problems. (See Chapter 6 for criteria).
- ✓ Site Development – Show all improvements such as buildings, parking lots, access roads, utility construction, etc.
- ✓ Location of practices – The locations of erosion and sediment controls and stormwater management practices used on the site. Use the standard symbols and abbreviations in Chapter 3 of the Virginia Erosion and Sediment Control Handbook.
- ✓ Off-site areas – Identify any off-site land-disturbing activities (e.g., borrow sites, waste areas, etc.). Show location of erosion controls. (Is there sufficient information to assure adequate protection and stabilization?)
- ✓ Detail drawings – Any structural practices used that are not referenced to the E&S handbook or local handbooks should be explained and illustrated with detail drawings.
- ✓ Maintenance – A schedule of regular inspections and repair of erosion and sediment control structures should be set forth.

ANY DEVIATION OR CHANGE IN THESE PLANS MUST BE APPROVED BY THE DEVELOPMENT SERVICES MANAGER PRIOR TO CONSTRUCTION.

ENGINEER'S SEAL & SIGNATURE

*SEE SHEET 15(32) FOR DESCRIPTION OF EROSION AND SEDIMENT CONTROL MEASURES. FOR FURTHER INFORMATION RELATED TO EROSION AND SEDIMENT CONTROL, SEE THE DRAINAGE NARRATIVE INCLUDED IN THE PROJECT DOCUMENTS.

WATERSHED: _____

OUTFALL #1: (Description of bed and banks or on-site SWM.)

PRE-DEVELOPMENT (D.A. = _____ AC.)

Sub-area	Storm Event	D.A.(ac.)	C	Tc min.	I in./hr.	Q cfs.	
Pre Dev.	2 YR.						=Pre Q2
	10 YR.						=Pre Q10
	100 YR.						=Pre Q100

POST-DEVELOPMENT (D.A. = _____ AC.)

Sub-area	Storm Event	D.A.(ac.)	C	Tc min.	I in./hr.	Q cfs.	
	2 YR.						=Pre Q2
	10 YR.						=Pre Q10
	100 YR.						=Pre Q100
Uncontrolled							

OUTFALL #2: (Description of bed and banks or on-site SWM.)

PRE-DEVELOPMENT (D.A. = _____ AC.)

Sub-area	Storm Event	D.A.(ac.)	C	Tc min.	I in./hr.	Q cfs.	
Pre Dev.	2 YR.						=Pre Q2
	10 YR.						=Pre Q10
	100 YR.						=Pre Q100

POST-DEVELOPMENT (D.A. = _____ AC.)

Sub-area	Storm Event	D.A.(ac.)	C	Tc min.	I in./hr.	Q cfs.	
	2 YR.						=Pre Q2
	10 YR.						=Pre Q10
	100 YR.						=Pre Q100
Uncontrolled							

OUTFALL #3: (Description of bed and banks or on-site SWM.)

PRE-DEVELOPMENT (D.A. = _____ AC.)

Sub-area	Storm Event	D.A.(ac.)	C	Tc min.	I in./hr.	Q cfs.	
Pre Dev.	2 YR.						=Pre Q2
	10 YR.						=Pre Q10
	100 YR.						=Pre Q100

POST-DEVELOPMENT (D.A. = _____ AC.)

Sub-area	Storm Event	D.A.(ac.)	C	Tc min.	I in./hr.	Q cfs.	
	2 YR.						=Pre Q2
	10 YR.						=Pre Q10
	100 YR.						=Pre Q100
Uncontrolled							

Project: Designer:

Date:

Hydrologic and Channel Information

Q_1 =

Q_2 =

TW_1 =

TW_2 =

SKETCH

Station: _____

E.L. _____

AHW= _____

TW

E.L.

So= _____

L= _____

Allowable Outlet Velocity= _____

Culvert Type	Q	Size	Headwater Computation: Inlet Cont. HW/D	Inlet Cont. HW	Outlet Control Kc	Outlet Control dc	Outlet Control dc+0/2	Outlet Control ho	Outlet Control H	Outlet Control LSo	Outlet Control HW	Controlling HW	Outlet Velocity	Cost	Comments

Summary & Recommendations:

CITY OF MANASSAS

SEDIMENT CONTROL CHECKLIST & SWM

REVISED: APRIL 28, 2010 | SHEET OF SHEETS

SUBDIVISION / SITE PLAN NAME AND NUMBER: _____

100% DESIGN SUBMITTAL

SUDLEY ROAD THIRD LANE (T-015) VDOT UPC #109293

CITY OF MANASSAS, VIRGINIA
DEPARTMENT OF ENGINEERING
8500 PUBLIC WORKS DRIVE
MANASSAS, VIRGINIA 20110

REVISIONS
DESCRIPTION | BY | DATE

MANASSAS PROJECT NO.: T-015
DATE OF PLAN ISSUANCE: TBD
CONSULTANT PROJECT ID.: 594002
DESIGNED BY: MP DATE: 04/02/2021
DRAWN BY: DHB DATE: 04/02/2021
CHECKED BY: CES DATE: 04/16/2021
APPROVED BY: ____ DATE: ____

Kimley»Horn
11400 COMMERCE PARK DRIVE SUITE #400, RESTON, VA 20191
PHONE: 703-674-1300 FAX: 703-674-1350
WWW.KIMLEY-HORN.COM

SHEET
15(33) – EROSION CONTROL SHEET NOTES
SCALE NTS

SWM POND CALCULATIONS

VRRM CALCULATIONS:

Project Name:	Hatcher Avenue Pedestrian Improvements
Date:	9/17/2021
Linear Development Project?	Yes

CLEAR ALL (Ctrl+Shift+R)

data input cells
constant values
calculation cells
final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area *(acres)* → 4.48

Maximum reduction required:	*20%*
The site's net increase in impervious cover (acres) is:	*1.24*
Post-Development TP Load Reduction for Site (lb/yr):	*2.88*

Check:	
BMP Design Specifications List:	2013 Draft Stds & Specs
Linear project?	Yes
Land cover areas entered correctly?	✓
Total disturbed area entered?	✓

Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed forest/open space	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be	0.00	0.00	0.00	3.27	3.27
Impervious Cover (acres)	0.00	0.00	0.00	1.21	1.21
					4.48

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be	0.00	0.00	0.00	2.03	2.03
Impervious Cover (acres)	0.00	0.00	0.00	2.45	2.45
Area Check	OK.	OK.	OK.	OK.	4.48

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

LAND COVER SUMMARY – PRE-REDEVELOPMENT

Land Cover Summary-Pre Pre-ReDevelopment	Listed	Adjusted[1]
Forest/Open Space Cover (acres)	0.00	0.00
Weighted Rv(forest)	0.00	0.00
% Forest	0%	0%
Managed Turf Cover (acres)	3.27	2.03
Weighted Rv(turf)	0.25	0.25
% Managed Turf	73%	63%
Impervious Cover (acres)	1.21	1.21
Rv(impervious)	0.95	0.95
% Impervious	27%	37%
Total Site Area (acres)	**4.48**	**3.24**
Site Rv	**0.44**	**0.51**

Treatment Volume and Nutrient Load

Pre-ReDevelopment Treatment Volume (acre-ft)	0.1639	0.1381
Pre-ReDevelopment Treatment Volume (cubic feet)	7,140	6,015
Pre-ReDevelopment TP Load (lb/yr)	**4.49**	**3.78**
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	1.00	1.17
Baseline TP Load (lb/yr) (**0.41 lbs/acre/yr** applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)		*1.33*

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary-Post (Final) Post ReDev. & New Impervious	
Forest/Open Space Cover (acres)	0.00
Weighted Rv(forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	2.03
Weighted Rv (turf)	0.25
% Managed Turf	45%
Impervious Cover (acres)	2.45
Rv(impervious)	0.95
% Impervious	55%
Final Site Area (acres)	**4.48**
Final Post Dev Site Rv	**0.63**

Land Cover Summary-Post Post-ReDevelopment	
Forest/Open Space Cover (acres)	0.00
Weighted Rv(forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	2.03
Weighted Rv (turf)	0.25
% Managed Turf	63%
ReDev. Impervious Cover (acres)	1.21
Rv(impervious)	0.95
% Impervious	37%
Total ReDev. Site Area (acres)	**3.24**
ReDev Site Rv	**0.51**

Land Cover Summary-Post Post-Development New Impervious	
New Impervious Cover (acres)	1.24
Rv(impervious)	0.95

Treatment Volume and Nutrient Load

Final Post-Development Treatment Volume (acre-ft)	0.2363
Final Post-Development Treatment Volume (cubic feet)	10,291
Final Post-Development TP Load (lb/yr)	**6.47**
Final Post-Development TP Load per acre (lb/acre/yr)	1.44

Post-ReDevelopment Treatment Volume (acre-ft)	0.1381
Post-ReDevelopment Treatment Volume (cubic feet)	6,015
Post-ReDevelopment Load (TP) (lb/yr)*	**3.78**
Post-ReDevelopment TP Load per acre (lb/acre/yr)	1.17
Max. Reduction Required (Below Pre-ReDevelopment Load)	20%
TP Load Reduction Required for Redeveloped Area (lb/yr)	**0.76**

Post-Development Treatment Volume (acre-ft)	0.0982
Post-Development Treatment Volume (cubic feet)	4,276
Post-Development TP Load (lb/yr)	**2.69**
TP Load Reduction Required for New Impervious Area (lb/yr)	**2.18**

[1]Adjusted Land Cover Summary:
Pre ReDevelopment land cover minus pervious land cover (forest/open space or managed turf) acreage proposed for new impervious cover.

Adjusted total acreage is consistent with Post-ReDevelopment acreage (minus acreage of new impervious cover).

Column I shows load reduction requriement for new impervious cover (based on new development load limit, 0.41 lbs/acre/year).

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	**2.93**
Linear Project TP Load Reduction Required (lb/yr):	2.88

Nitrogen Loads (Informational Purposes Only)

Pre-ReDevelopment TN Load (lb/yr)	32.09
Final Post-Development TN Load (Post-ReDevelopment & New Impervious) (lb/yr)	46.26

Drainage Area A

CLEAR BMP AREAS

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)				0.74	0.74	0.25
Impervious Cover (acres)				0.80	0.80	0.95
				Total	1.54	

Total Phosphorus Available for Removal in D.A. A (lb/yr)	2.16
Post Development Treatment Volume in D.A. A (ft^3)	3,430

Stormwater Best Management Practices (RR = Runoff Reduction) --Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
8. Extended Detention Pond (RR)													
8.a. ED #1 (Spec #15)	0	0.74	0.80	0	0	3,430	3,430	15	0.00	2.15	0.32	1.83	
8.b. ED #2 (Spec #15)	15			0	0	0	0	15	0.00	0.00	0.00	0.00	
9. Sheetflow to Filter/Open Space (RR)													
9.a. Sheetflow to Conservation Area, A/B Soils (Spec #2)	75			0	0	0	0	0	0.00	0.00	0.00	0.00	
9.b. Sheetflow to Conservation Area, C/D Soils (Spec #2)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	
9.c. Sheetflow to Vegetated Filter Strip, A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	

Site Results (Water Quality Compliance)

Area Checks	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
FOREST/OPEN SPACE (ac)	0.00	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER (ac)	0.80	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER TREATED (ac)	0.80	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA (ac)	0.74	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA TREATED (ac)	0.74	0.00	0.00	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Site Treatment Volume (ft^3): 10,291

Runoff Reduction Volume and TP By Drainage Area

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	TOTAL
RUNOFF REDUCTION VOLUME ACHIEVED (ft^3)	0	0	0	0	0	0
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	2.16	0.00	0.00	0.00	0.00	2.16
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.32	0.00	0.00	0.00	0.00	0.32
TP LOAD REMAINING (lb/yr)	1.83	0.00	0.00	0.00	0.00	1.83
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	1.54	0.00	0.00	0.00	0.00	1.54

Total Phosphorus

		LINEAR PROJECT:
FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	--	6.47
TP LOAD REDUCTION REQUIRED (lb/yr)	--	2.88
TP LOAD REDUCTION ACHIEVED (lb/yr)	--	0.32
TP LOAD REMAINING (lb/yr):	--	6.14
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr):	--	2.55

Total Nitrogen (For Information Purposes)

POST-DEVELOPMENT LOAD (lb/yr)	46.26
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	1.54
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	44.72

LETTER OF AVAILABILITY:

res

Date: December 5, 2022

To: Mark R Phillips, P.E. (VA,WV)
Kimley-Horn

From: Amy Staley
Credit Sales Manager
Resource Environmental Solutions

Subject: Potomac Watershed – Nutrient Credit Availability

Project Reference: Sudley Road Widening Project, 2.55 Credits Requested; HUC 02070010

This letter is to confirm the availability of 2.55 authorized nutrient credits ("Nutrient Credits") from one or more of Resource Environmental Solutions' ("RES") Potomac nutrient bank facilities for use by permit applicants within the Potomac watershed, including HUC 02070010, to compensate for nutrient loadings in excess of state or local regulations, as per Virginia Code § 62.1-44.15:35 and § 62.1-44.19:14 and Virginia Administrative Code 9 VAC 25-820-10 et seq. These Nutrient Credits are generated and managed under the terms of the Banking Instruments known as the Whispering Hills Nutrient Reduction Implementation Plan ("NRIP").

Please feel free to contact me if you have any questions.

Sincerely,

Amy Staley

Amy Staley
Resource Environmental Solutions
astaley@res.us

AFFIDAVIT OF NUTRIENT CREDIT PURCHASE:

Exhibit B

AFFIDAVIT OF PHOSPHOUROUS OFFSET SALE

FIVE L FARMS, LLC, a Virginia limited liability company ("Seller"), hereby certifies the following:

1. Pursuant to that that certain Agreement for Purchase and Sale of Nonpoint Nutrient Offset Credits, dated as of the _____ day of __________ 2022 (the "Agreement", the terms of which are incorporated herein by reference and made a part hereof) between Seller and **CITY OF MANASSAS** ("Purchaser"), Seller, for the benefit of the Purchaser, agreed to sell 2.55 pounds of nonpoint source phosphorus offset credits to Purchaser and retire the associated ratio of nonpoint source nitrogen offsets at the offset generating facility in the amount of 34.64 pounds of nitrogen offsets from its Five L Farms Nutrient Bank (Potomac-024).

2. Seller and Purchaser, as of the date hereof, have closed the transaction contemplated by the Agreement and the Seller has sold to Purchaser **2.55 pounds** of nonpoint source phosphorus offset credits and retired the associated ratio of nonpoint source nitrogen offsets at the offset generating facility in the amount of 34.64 pounds of nitrogen offsets.

WITNESS the following signature:

FIVE L FARMS, LLC
a Virginia limited liability company

By: [illegible]
Name: [illegible]
Title: Managing Member
Date: 4/28/2022

Sworn to and subscribed before me this 28 day of April, 2022, by [illegible], its Managing Member on behalf of the FIVE L FARMS, LLC, a Virginia limited liability company.

My commission expires: 04/30/2025
City/County of: [illegible]
[illegible]
Notary Public

Project Name: Sudley Road Widening
Site Plan #: City Project #T-015 (VDOT VPC#109293)
Applicant: City of Manassas
Phosphorous Offsets: 2.55 pounds
Associated Nitrogen Offsets: 34.64 pounds

GENERAL NOTES:

1. SWM PONDS ARE TO BE OWNED AND MAINTAINED BY THE CITY OF MANASSAS.
2. PROPOSED PIPES ARE TO FOLLOW VDOT SPECIFICATION SECTION 232 (AASHTO M170).
3. PROPOSED PIPE GASKETS ARE TO FOLLOW VDOT SPECIFICATION 212 (AASHTO C443).

ALL EXCERPTS OBTAINED FROM VIRGINIA DCR STORMWATER DESIGN SPECIFICATION No.15 "Extended Detention Pond" Version 2.0

COMMONWEALTH OF VIRGINIA
MARK R. PHILLIPS
Lic. No. 058611
PROFESSIONAL ENGINEER

Kimley-Horn
Reston, Virginia
Hydraulic Engineer

100% DESIGN SUBMITTAL

SUDLEY ROAD THIRD LANE (T-015) VDOT UPC #109293

CITY OF MANASSAS, VIRGINIA
DEPARTMENT OF ENGINEERING
8500 PUBLIC WORKS DRIVE
MANASSAS, VIRGINIA 20110

DATE	REVISIONS BY	DESCRIPTION

MANASSAS PROJECT NO.: T-015
DATE OF PLAN ISSUANCE: TBD
CONSULTANT PROJECT ID.: 594002
DESIGNED BY: CAD DATE: 04/02/2021
DRAWN BY: CEV DATE: 04/02/2021
CHECKED BY: JDP DATE: 04/16/2021
APPROVED BY: ____ DATE: ____

Kimley»Horn
11400 COMMERCE PARK DRIVE SUITE #400, RESTON, VA 20191
PHONE: 703-674-1300 FAX: 703-674-1350
WWW.KIMLEY-HORN.COM

SHEET
15(34) – SWM POND CALCULATIONS

SCALE NTS

SWM POND CALCULATIONS

COMMONWEALTH OF VIRGINIA
MARK R. PHILLIPS
Lic. No. 058611
PROFESSIONAL ENGINEER

Kimley-Horn
Reston, Virginia
Hydraulic Engineer

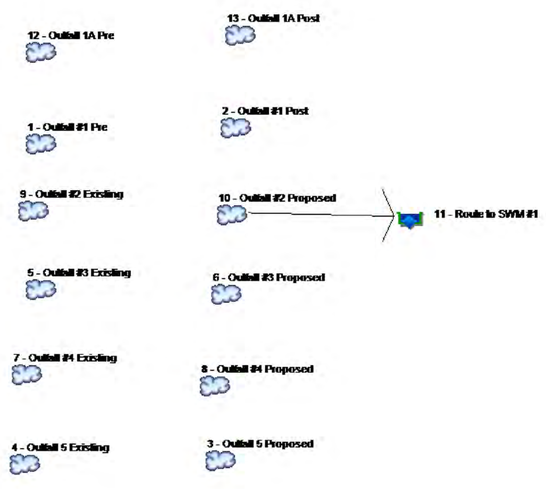
HYDROGRAPH TABLE CALCULATIONS:

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	4.552	6.676	------	------	14.06	------	24.86	30.66	Outfall #1 Pre
2	SCS Runoff	------	6.498	9.016	------	------	17.40	------	29.03	35.18	Outfall #1 Post
3	SCS Runoff	------	12.40	17.82	------	------	36.34	------	62.77	76.89	Outfall 5 Proposed
4	SCS Runoff	------	12.40	17.82	------	------	36.34	------	62.77	76.89	Outfall 5 Existing
5	SCS Runoff	------	61.17	84.31	------	------	160.08	------	265.39	321.13	Outfall #3 Existing
6	SCS Runoff	------	61.04	84.13	------	------	159.74	------	264.82	320.44	Outfall #3 Proposed
7	SCS Runoff	------	25.57	36.66	------	------	74.67	------	128.69	157.53	Outfall #4 Existing
8	SCS Runoff	------	25.78	36.95	------	------	75.26	------	129.72	158.79	Outfall #4 Proposed
9	SCS Runoff	------	7.765	11.82	------	------	26.26	------	47.82	59.52	Outfall #2 Existing
10	SCS Runoff	------	9.376	13.95	------	------	29.93	------	53.57	66.32	Outfall #2 Proposed
11	Reservoir	10	6.419	8.865	------	------	22.53	------	42.64	54.73	Route to SWM #1
12	SCS Runoff	------	3.381	4.630	------	------	8.732	------	14.37	17.34	Outfall 1A Pre
13	SCS Runoff	------	3.268	4.314	------	------	7.609	------	12.04	14.36	Outfall 1A Post

OUTFALL AND POND ROUTING DIAGRAM:



1-YEAR HYDROGRAPH FOR SWM POND:

Hydrograph Report

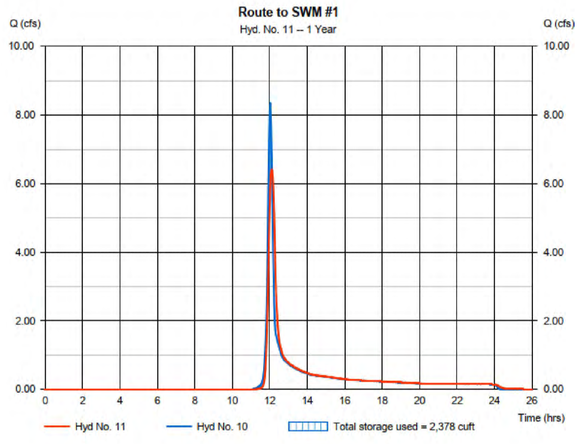
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4 — Tuesday, 08 / 31 / 2021

Hyd. No. 11

Route to SWM #1

Hydrograph type	= Reservoir	Peak discharge	= 6.419 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 22,516 cuft
Inflow hyd. No.	= 10 - Outfall #2 Proposed	Max. Elevation	= 193.11 ft
Reservoir name	= SWM #1	Max. Storage	= 2,378 cuft

Storage Indication method used.



10-YEAR HYDROGRAPH FOR SWM POND:

Hydrograph Report

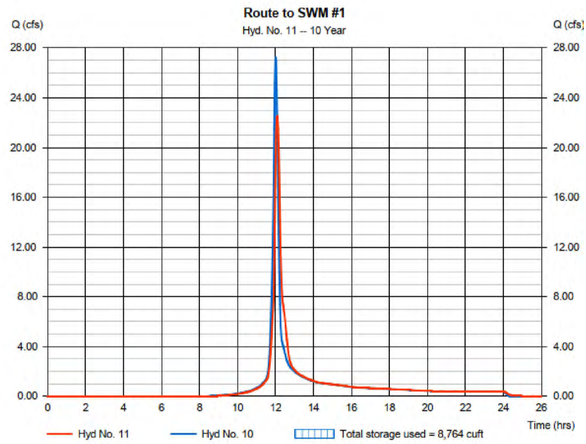
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4 — Tuesday, 08 / 31 / 2021

Hyd. No. 11

Route to SWM #1

Hydrograph type	= Reservoir	Peak discharge	= 22.53 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 70,604 cuft
Inflow hyd. No.	= 10 - Outfall #2 Proposed	Max. Elevation	= 195.21 ft
Reservoir name	= SWM #1	Max. Storage	= 8,764 cuft

Storage Indication method used.



GENERAL NOTES:

1. SWM PONDS ARE TO BE OWNED AND MAINTAINED BY THE CITY OF MANASSAS.
2. PROPOSED PIPES ARE TO FOLLOW VDOT SPECIFICATION SECTION 232 (AASHTO M170).
3. PROPOSED PIPE GASKETS ARE TO FOLLOW VDOT SPECIFICATION 212 (AASHTO C443).

ALL EXCERPTS OBTAINED FROM VIRGINIA DCR STORMWATER DESIGN SPECIFICATION No.15 "Extended Detention Pond" Version 2.0

100% DESIGN SUBMITTAL

SUDLEY ROAD THIRD LANE (T-015) VDOT UPC #109293

CITY OF MANASSAS, VIRGINIA
DEPARTMENT OF ENGINEERING
8500 PUBLIC WORKS DRIVE
MANASSAS, VIRGINIA 20110

REVISIONS

DESCRIPTION	BY	DATE

MANASSAS PROJECT NO.: T-015
DATE OF PLAN ISSUANCE: TBD
CONSULTANT PROJECT ID.: 594002
DESIGNED BY: CAD DATE: 04/02/2021
DRAWN BY: CEV DATE: 04/02/2021
CHECKED BY: JDP DATE: 04/16/2021
APPROVED BY: DATE:

Kimley»Horn
11400 COMMERCE PARK DRIVE SUITE #400, RESTON, VA 20191
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SHEET
15(35) – SWM POND CALCULATIONS

SCALE NTS

TRAFFIC SIGNAL NOTES

A. GENERAL

1. PRIOR TO BEGINNING ANY SIGNALIZATION WORK, THE PROJECT SHALL NOTIFY THE CITY OF MANASSAS DEPARTMENT OF PUBLIC WORKS SECTION IN WRITING AND PROVIDE THE FOLLOWING:
   1.1. PROJECT DAYTIME AND EMERGENCY CONTACT TELEPHONE NUMBER.
   1.2. LOCATION OF THE INTERSECTION WHERE WORK IS TAKING PLACE.
2. ALL WORK SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), THE CURRENT EDITION OF THE CITY OF MANASSAS'S DCSM, THE CURRENT EDITION OF THE VDOT ROAD AND BRIDGE STANDARDS, THE CURRENT EDITION OF VDOT ROAD AND BRIDGE SPECIFICATIONS AND SPECIAL PROVISIONS.
3. STANDARDS NOT SPECIFICALLY ADDRESSED IN THE CITY'S DCSM SHALL REVERT TO THE APPLICABLE VDOT STANDARD.
4. (S) DENOTES SHIELDED CABLE. (M) DENOTES METAL CONDUIT. (ECG) DENOTES ELECTRICAL GROUNDING CONDUCTOR.
5. FOR SIGNAL DESIGNS WITH NEW CONTROLLERS: THE PROJECT IS RESPONSIBLE FOR OBTAINING AN INTELLIGHT XN-2 TS-2 TY. 2 CONTROLLER AND TS-2 CABINET (2-DOOR) AND THE PROJECT'S QUALIFIED REPRESENTATIVE SHALL WIRE THE CABINET, PROGRAM AND TEST THE PHASING OF THE INTERSECTION AS SHOWN ON THE PLAN. THE PROJECT SHALL PROVIDE A CERTIFICATION LETTER TO THE CITY MANASSAS INDICATING THAT THE WORK IS IN COMPLIANCE WITH CITY STANDARDS AND IS CONSISTENT WITH THE PHASING AS PER THE SIGNAL PLAN. AS PART OF THE INSTALLATION, THE PROJECT IS RESPONSIBLE FOR PROVIDING THE CONCRETE FOUNDATION SPECIFIED AS ST'D. CF-1 AND COMMUNICATION ACCESS AS APPROVED BY THE CITY ENGINEER.THE PROJECT SHALL FURNISH AND INSTALL AN APPROVED BATTERY BACK-UP SYSTEM (UNINTERRUPTIBLE POWER SUPPLY/UPS.) THE ASSEMBLY SHALL BE TYPE ALPHA TECHNOLOGIES TYPE FXM HP 1100 AND SHALL MOUNT DIRECTLY TO THE CONTROLLER CABINET.
6. THE PROJECT SHALL MAKE ARRANGEMENTS TO HAVE TRAFFIC FIELD OPERATIONS PERSONNEL PRESENT FOR SIGNAL ACTIVATION. A 48 HOURS ADVANCE NOTICE IS REQUIRED. THE PROJECT SHALL HAVE HIS OR HER QUALIFIED REPRESENTATIVE PRESENT TO MONITOR TRAFFIC FLOW AND ADJUST TIMING AS NECESSARY THROUGH A MINIMUM OF TWO MORNING AND TWO EVENING RUSH HOUR PERIODS OR AS DIRECTED BY THE ENGINEER.
7. NO TRAFFIC SIGNAL SHALL BE PLACED INTO OPERATION UNTIL THE LOCATION IS 100% COMPLETE. THIS INCLUDES ANY NECESSARY PAVEMENT MARKINGS AND SIGNAGE SHOWN ON THE PLANS AND THAT THE TRAFFIC SIGNAL COMMUNICATION REQUIREMENTS ARE COMPLETE AND OPERATIONAL.
8. THE PROJECT SHALL BE RESPONSIBLE FOR CONTACTING MISS UTILITY AND THE CITY FOR SCHEDULING THE LOCATION OF UNDERGROUND UTILITIES. ALL UTILITIES MUST BE MARKED PRIOR TO INITIATION OF ANY CONSTRUCTION.
9. SIGNAL PLANS ARE ONLY VALID FOR ONE YEAR FROM THE DATE OF APPROVAL. PLANS WITH EXPIRED APPROVAL MUST BE SUBMITTED TO THE CITY FOR RE-APPROVAL.
10. THE PROJECT SHALL BE RESPONSIBLE FOR PROVIDING COMMUNICATION TO THE TRAFFIC SIGNAL CONTROLLER AT ALL TIMES. THE PROJECT IS RESPONSIBLE FOR ANY COSTS ASSOCIATED WITH PROVIDING COMMUNICATION TO THE TRAFFIC SIGNAL. THE PROJECT SHALL BE RESPONSIBLE FOR COORDINATING THE LOCATION AND INSTALLATION OF THE COMMUNICATION CIRCUIT CONDUIT(S) TO THE TRAFFIC SIGNAL CONTROLLER CABINET WITH THE DESIGNATED COMMUNICATION PROVIDER.

B. SIGNAL POLES, CONTROLLER, & FOUNDATIONS

1. MAST ARM LENGTH IS TO BE AS SHOWN ON PLAN AND ALL MAST ARMS ARE TO BE FIELD-DRILLED ONLY.
2. PEDESTAL POLES (PF-2) SHALL BE 9FT. IN HEIGHT.
3. POLE PLACEMENTS ARE TO BE VERIFIED BY THE CITY ENGINEER.
4. CONTROLLER AND CABINET SHALL BE ST'D. CF-1 TO INCLUDE TWO 4" CONDUITS, ONE 3", & TWO 2" CONDUITS TIED TO THE JB-S3. THE ST'D CF-1 FOUNDATION SHALL BE MODIFIED TO INCLUDE A SECOND CONCRETE SERVICE PAD FOR THE REAR CONTROLLER DOOR.
5. THE PROJECT SHALL USE A NEMA TYPE 'A' TS-2 TYPE 1 CABINET TO INCLUDE AN ALPHA TECHNOLOGIES FXM HP 1100 BACKUP BATTERY SYSTEM. INSTALL CABINET ON TOP OF A 12" CABINET RISER.
6. ELECTRICAL SERVICE SHALL BE METERED; THE METER SHALL BE MOUNTED TO THE SIDE OF THE CONTROLLER CABINET.
7. INITIAL CONTROLLER TIMINGS ARE TO BE PROVIDED BY CITY STAFF. THE PROJECT SHALL INSTALL AND ADJUST CONTROLLER TIMINGS TO PROVIDE AN ORDERLY FLOW OF TRAFFIC OR AS DIRECTED BY THE CITY ENGINEER.
8. THE PROJECT IS RESPONSIBLE FOR PROVIDING AND MAINTAINING POWER TO THE CONTROLLER AT ALL TIMES. THE PROJECT IS RESPONSIBLE FOR ANY COSTS RELATED TO PROVIDING POWER TO THE TRAFFIC SIGNAL. THE PROJECT SHALL BE RESPONSIBLE FOR COORDINATING THE LOCATION AND THE INSTALLATION OF THE ELECTRICAL SERVICE FOR THE TRAFFIC SIGNAL WITH THE LOCAL UTILITY COMPANY. ELECTRICAL SERVICE SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD SE-6 AS SHOWN ON THE PLAN AND SECTION 238.02 (H) OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS. ELECTRICAL SERVICE SHALL BE METERED.
9. THE PROJECT SHALL BE RESPONSIBLE FOR THE LOCATION OF BORE HOLES AT EACH SIGNAL POLE LOCATION, AND FOR THE FINAL DESIGN OF EACH SIGNAL POLE FOUNDATIONS PURSUANT TO SPECIAL PROVISION.
10. THE PROJECT SHALL FURNISH THE STRUCTURAL ENGINEER/DESIGNER WITH SOIL CONDITION, SLOPE CONDITION, AND OTHER SITE CHARACTERISTICS NECESSARY TO COMPLETE THE FOUNDATION DESIGN.
11. SIGNAL POLE, ARM AND FOUNDATION SHALL BE DESIGNED TO ACCOMMODATE THE SIGNAL HEADS SHOWN ON THE PLAN (EITHER PROPOSED OR FUTURE), THE SIGNS SHOWN ON THE PLAN, AND ADDITIONAL 5-SECTION SIGNAL HEAD FOUR FEET FROM THE TIP (FREE END) OF THE ARM AND AN ADDITIONAL MUTCD R10-12 (30"X36") SIGN ONE FOOT FROM THE TIP OF THE ARM.
12. FOUNDATION DESIGN TO BE PERFORMED BY A STRUCTURAL ENGINEER PURSUANT TO APPLICABLE STANDARDS. FOUNDATION DESIGNS TO BE APPROVED BY THE CITY PRIOR TO INSTALLATION.

C. CONDUIT, CONDUCTORS, & ELECTRICAL

1. FOR INSTALLATION OF CONDUIT, NO OPEN CUT WILL BE ALLOWED IN ROADWAY SURFACE.
2. JUNCTION BOX COVERS SHALL HAVE THE LETTERS "TRAF" CAST IN THE TOP SURFACE DEPRESSION FOR ALL SIGNAL RELATED JUNCTION BOXES CONTAINING CABLE WITH LESS THAN 50 VOLTS. ALL OTHER JUNCTION BOX COVERS SHALL HAVE THE LETTERS "ELEC" CAST IN THE TOP SURFACE DEPRESSION. NO JB-S1, S2, OR S3 SHALL BE INSTALLED IN A PAVED SHOULDER, SIDEWALK, OR MULTI-PURPOSE TRAIL.
3. ALL JUNCTION BOXES SHALL BE INSTALLED IN ACCORDANCE WITH ST'D. JB-S2 UNLESS OTHERWISE NOTED.
4. EXISTING CABLES AND CONDUITS LISTED ON PLANS ARE BASED ON AVAILABLE INFORMATION AND MAY DIFFER IN FIELD. CONTRACTOR SHALL VERIFY EXISTING CONDUITS PRIOR TO BEGINNING WORK AND NOTIFY THE CITY IMMEDIATELY IF A DISCREPANCY ARISES BETWEEN FIELD DATA AND INFORMATION INCLUDED IN THE PLANS.

D. DETECTORS

1. THE PROJECT SHALL FURNISH & INSTALL ECONOLITE VIDEO DETECTORS PURSUANT TO CITY STANDARDS.
2. THE PROJECT SHALL FURNISH & INSTALL CAMPBELL GUARDIAN MINI APS PUSHBUTTON UNITS FOR PEDESTRIAN ACTUATION.
3. ALL PEDESTRIAN PUSHBUTTONS AND PUSHBUTTON SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH ST'D. PA-2.

E. TRAFFIC SIGNAL HEADS

1. TRAFFIC SIGNAL HEAD SECTIONS SHALL BE POLYCARBONATE.
2. ALL TRAFFIC SIGNAL HEADS SHALL HAVE ALUMINIUM BACKPLATES WITHOUT RETROREFLECTIVE BORDERS.
3. HARDWARE SHALL BE STAINLESS STEEL.
4. ALL TRAFFIC SIGNAL HEAD SECTIONS SHALL BE LED.
5. PEDESTRIAN SIGNAL HEADS SHALL BE CAST ALUMINUM.
6. PEDESTRIAN SIGNAL HEADS SHALL BE IN ACCORDANCE WITH STANDARD SP-8.
7. PEDESTRIAN SIGNAL HEADS SHALL BE MOUNTED IN ACCORDANCE WITH STANDARD SMB-3 (ONE-WAY).

F. SIGNS

1. ALL MAST ARM MOUNTED SIGNS SHALL BE MOUNTED IN ACCORDANCE WITH ST'D. SMD-2.

G. LUMINAIRES

1. LUMINAIRES, ARMS, AND MOUNTING (CLAMP) SHALL BE BONDED BY THE PROJECT AND INSTALLED BY THE CITY ELECTRICAL DEPARTMENT PURSUANT TO THE CITY OF MANASSAS DCSM, ARTICLE 9, SECTION 9-720, PARAGRAPH B.

H. SIGNAL PREEMPTION

1. ALL NEW TRAFFIC SIGNALS AND MODIFICATIONS SHALL INCLUDE OPTICOM SIGNAL PRIORITIZATION PRE-EMPTION EQUIPMENT PURSUANT TO CITY STANDARDS.
2. THE CONTRACTOR SHALL INSTALL THE OPTICOM EVP SYSTEM AS SHOWN ON THE PLANS. THE OPTICOM EVP SYSTEM SHALL INCLUDE ALL OPTICAL DETECTORS, DETECTOR CABLES, PHASE SELECTORS, AND DISCRIMINATORS FOR A FUNCTIONAL SYSTEM.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PURCHASE AND INSTALLATION OF THE PRIORITY EQUIPMENT PER CURRENT ADOPTED CITY, COUNTY, & STATE SPECIFICATIONS.
4. ALL INSTALLED OPTICOM EVP EQUIPMENT SHALL BE COMPATIBLE WITH EXISTING OR PROPOSED SIGNAL EQUIPMENT.
5. THE CONTRACTOR SHALL INSTALL THE OPTICOM EVP EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATION AND THE OPTICOM EVP CABLING SHALL BE INSTALLED IN SEPARATE CONDUITS BETWEEN FOUNDATIONS. THESE SEPARATE CONDUIT RUNS SHALL HOUSE THE GTT 138, 4 CONDUCTOR, 16 GAUGE CABLE(S).

I. C.C.T.V.

1. INSTALL CCTV CAMERA: AXIS Q6075-E, P/N: 01682-004 WITH AXIS T144 POWER SUPPLY, OR APPROVED EQUAL. EQUIVALENT EQUIPMENT MUST BE APPROVED BY CITY.
2. MOUNTING BRACKET TO BE AXIS T94A01D P/N: 5502-431 WITH J-HOOK STYLE MOUNTING PIPE, OR APPROVED EQUAL. EQUIVALENT EQUIPMENT MUST BE APPROVED BY CITY.

LEGEND

EXISTING		PROPOSED	
	RIGHT OF WAY		JUNCTION BOX
	EASEMENT		PEDESTRIAN SIGNAL HEAD
[G]	TRAFFIC SIGNAL CABINET	X	SIGNAL PHASING
	JUNCTION BOX		PEDESTAL POLE
	TRAFFIC SIGNAL HEAD		PEDESTRIAN PUSH BUTTON WITH SIGN
	PEDESTRIAN SIGNAL HEAD		CONDUIT
X	SIGNAL PHASING	S-XX-	SIGN
	SIGNAL POLE AND MAST ARM		
	PEDESTAL POLE		
	SIGN		
	CONDUIT		
	VIDEO DETECTION		
	PRE-EMPTION		
CCTV	CCTV		

COMMONWEALTH OF VIRGINIA
ANDREW T. SMITH
Lic. No. 053042
PROFESSIONAL ENGINEER

Kimley-Horn
Reston, Virginia
Traffic Engineer

100% DESIGN SUBMITTAL

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DEPARTMENT OF ENGINEERING
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SUDLEY ROAD THIRD LANE (T-015) VDOT UPC #109293

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SHEET
16(1) – TSP – SIGNAL NOTES

SCALE N/A

TRAFFIC SIGNAL PLAN
SUDLEY ROAD – GODWIN DRIVE

PROPOSED SIGNALS

HEADS 1,4,5 — HEADS 2,6 — SP–8 P2,P4,P6

PROPOSED SIGNS

S–3 R10–3E 9" x 15" — S–4 R10–3E 9" x 15" — S–5 R3–5 (L) 30" x 36" — S–6 R3–5 (MOD) 30" x 36" — S–7 R10–15(R) 30" x 30"

EXISTING SIGNS TO BE RELOCATED

Sudley Rd (S–1) — Godwin Dr (S–2)

COLOR SEQUENCE CHART

PHASE	1	2	4	5	6	1+5	1+6	2+5	2+6	FLASH
SIGNAL	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	
1	~~G~~					~~G~~	~~G~~		G	Y
2		G						G	G	R
4			~~G~~							R
5				~~G~~		~~G~~		~~G~~	G	R
6					G		G		G	Y
P2	DW	W	DW	DW	DW	DW	DW	W	W	BLANK
P4	DW	DW	W	DW	DW	DW	DW	DW	DW	BLANK
P6	W	W	DW	DW	W	DW	W	DW	W	BLANK

NOTE: BLANK SPACES REPRESENT A RED DISPLAY. "WALK" INDICATION DISPLAYED AFTER PEDESTRIAN CALL IS SERVICED, OTHERWISE "DON'T WALK" INDICATION IS DISPLAYED.

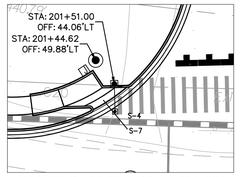
CONSTRUCTION NOTES

DESIGN OF NEW PAVEMENT MARKINGS IS SHOWN ON SIGNING AND MARKING PLANS.

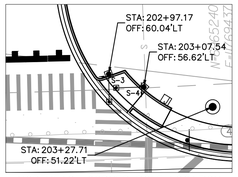
DESIGN OF NEW SIDEWALK AND CURB IS SHOWN IN ROADWAY PLANS.

ALL EXISTING TRAFFIC SIGNAL EQUIPMENT NOT SPECIFIED TO REMAIN OR BE RELOCATED SHALL BE REMOVED, INCLUDING SIGNAL POLES, PEDESTAL POLES, JUNCTION BOXES, AND THE CONTROLLER CABINET. TRAFFIC SIGNAL CABINET SHALL BE RETURNED TO THE CITY OF MANASSAS. THE REMAINING REMOVED EQUIPMENT SHALL BE DISPOSED OF.

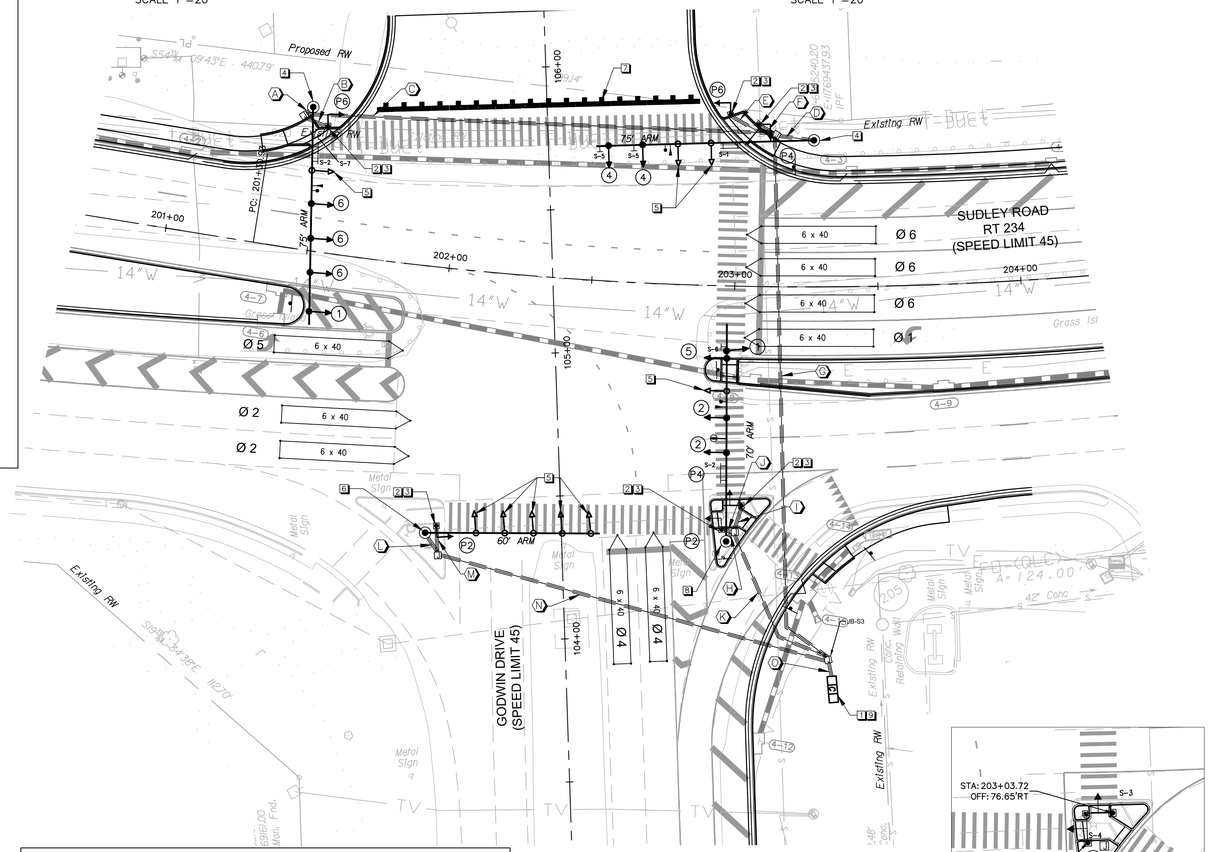
1. INSTALL TRAFFIC SIGNAL CONTROLLER CABINET WITH VDOT ST'D SE–6 SERVICE.
2. INSTALL VDOT ST'D PF–2 PEDESTAL POLE WITH ACCESSIBLE PUSH BUTTON, PUSH BUTTON SIGN, AND PEDESTRIAN SIGNAL HEAD.
3. PEDESTRIAN POLE FOUNDATION SHALL BE FLUSH WITH FACE OF CURB.
4. INSTALL MAST ARM SIGNAL POLE WITH SIGNAL HEADS, SIGNS, VIDEO DETECTOR, AND EMERGENCY VEHICLE PREEMPTION. POLE SHALL ACCOMMODATE LUMINAIRE (INSTALLED BY CITY).
5. FUTURE SIGNAL HEAD LOCATION SHOWN ONLY FOR THE PURPOSES OF DESIGNING THE SIGNAL POLE, MAST ARM, AND FOUNDATION. SIGNAL HEAD SHALL NOT BE INSTALLED AT THIS LOCATION AS A PART OF THIS PLAN.
6. INSTALL MAST ARM SIGNAL POLE. SIGNAL POLE, MAST ARM, AND FOUNDATION SHALL BE DESIGNED TO ACCOMMODATE THE FUTURE SIGNAL HEADS SHOWN, ONE 10' X 1.5' STREET NAME SIGN CENTERED 6' FROM THE END OF THE MAST ARM ATTACHED TO THE POLE, TWO 30" X 36" SIGNS 1' TO THE RIGHT OF THE SIGNAL HEADS, AND ONE VIDEO DETECTION CAMERA AND EMERGENCY PREEMPTION DETECTOR LOCATED HALFWAY ALONG THE MAST ARM. POLE SHALL ACCOMMODATE LUMINAIRE (INSTALLED BY CITY).
7. LOCATION OF TEMPORARY BARRIER
8. INSTALL MAST ARM SIGNAL POLE WITH SIGNAL HEADS, SIGNS, VIDEO DETECTOR, CCTV, AND EMERGENCY VEHICLE PREEMPTION. POLE SHALL ACCOMMODATE LUMINAIRE (INSTALLED BY CITY).
9. CONTRACTOR TO COORDINATE WITH CITY OF MANASSAS ELECTRIC DEPARTMENT FOR FINAL POWER SERVICE CONNECTION TO PROPOSED CONTROLLER CABINET.

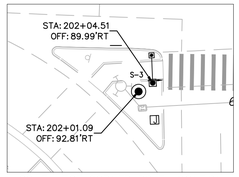


NORTHWEST CORNER POLE LOCATION AND PUSH BUTTON DETAIL
SCALE 1"=20'



NORTHEAST CORNER POLE LOCATION AND PUSH BUTTON DETAIL
SCALE 1"=20'





SOUTHWEST CORNER POLE LOCATION AND PUSH BUTTON DETAIL
SCALE 1"=20'

SOUTHEAST CORNER POLE LOCATION AND PUSH BUTTON DETAIL
SCALE 1"=20'

CABLE AND CONDUIT RUNS

(A) 1-3" CONDUIT
2-14/7C FOR SIGNAL HEADS 1,6
1-VIDEO DETECTION CABLE
1-LUMINAIRE CABLE
1-#6 AWG (EGC)

1-2" CONDUIT
1-EPDC
1-#6 AWG (EGC)

(B) 1-3" CONDUIT
1-14/7C FOR PED HEAD P6
1-14/4C FOR PED PUSH BUTTON
1-#6 AWG (EGC)

(C) 1-4" CONDUIT (BORED)
2-14/7C FOR SIGNAL HEADS 1,6
1-14/7C FOR PED HEAD P6
1-14/4C FOR PED PUSH BUTTON
1-VIDEO DETECTION CABLE
1-LUMINAIRE CABLE
1-#6 AWG (EGC)

1-2" CONDUIT (BORED)
1-EPDC
1-#6 AWG (EGC)

(D) 1-3" CONDUIT
1-14/7C FOR SIGNAL HEAD 4
1-VIDEO DETECTION CABLE
1-LUMINAIRE CABLE
1-#6 AWG (EGC)

1-2" CONDUIT (BORED)
1-EPDC
1-#6 AWG (EGC)

(E) 1-3" CONDUIT
1-14/7C FOR PED HEAD P6
1-14/4C FOR PED PUSH BUTTON
1-#6 AWG (EGC)

(F) 1-3" CONDUIT
1-14/7C FOR PED HEAD P4
1-14/4C FOR PED PUSH BUTTON
1-#6 AWG (EGC)

(G) 1-4" CONDUIT (BORED)
3-14/7C FOR SIGNAL HEADS 1,4,6
3-14/7C FOR PED HEAD P4, P6
3-14/4C FOR PED PUSH BUTTONS
2-VIDEO DETECTION CABLE
2-LUMINAIRE CABLES
1-#6 AWG (EGC)

1-2" CONDUIT (BORED)
2-EPDC
1-#6 AWG (EGC)

(H) 1-3" CONDUIT
3-14/7C FOR SIGNAL HEADS 1,2,5
1-VIDEO DETECTION CABLE
1-CCTV CABLE
1-LUMINAIRE CABLE
1-#6 AWG (EGC) (EXISTING)

1-2" CONDUIT
1-EPDC
1-#6 AWG (EGC)

(I) 1-3" CONDUIT
1-14/7C FOR PED HEAD P4
1-14/4C FOR PED PUSH BUTTON
1-#6 AWG (EGC)

(J) 1-3" CONDUIT
1-14/7C FOR PED HEAD P2
1-14/4C FOR PED PUSH BUTTON
1-#6 AWG (EGC)

(K) 1-4" CONDUIT (BORED)
3-14/7C FOR SIGNAL HEADS 1,2,5
2-14/7C FOR PED HEAD P2, P4
2-14/4C FOR PED PUSH BUTTONS
1-VIDEO DETECTION CABLE
1-CCTV CABLE
1-LUMINAIRE CABLE
1-#6 AWG (EGC)

1-2" CONDUIT
1-EPDC
1-#6 AWG (EGC)

(L) 1-3" CONDUIT
1-2" CONDUIT **(FOR FUTURE USE)**
1-LUMINAIRE CABLE
1-6# AWG (EGC)

(M) 1-3" CONDUIT
1-14/7C FOR PED HEAD P2
1-14/4C FOR PED PUSH BUTTON
1-#6 AWG (EGC)

(N) 1-4" CONDUIT (BORED)
1-2" CONDUIT (BORED) **(FOR FUTURE USE)**
1-14/7C FOR PED HEAD P2
1-14/4C FOR PED PUSH BUTTON
1-LUMINAIRE CABLE
1-#6 AWG (EGC)

(O) 2-4" CONDUIT
6-14/7C FOR SIGNAL HEADS 1,2,4,5,6
6-14/7C FOR PED HEADS P2, P4, P6
6-14/4C FOR PED PUSH BUTTONS
3-VIDEO DETECTION CABLES
1-CCTV
4-LUMINAIRE CABLES
2-#6 AWG (EGC)

1-2" CONDUIT
3-EPDC
2-#6 AWG (EGC)
1-2" CONDUIT (STUB-OUT FROM FOUNDATION, FOR ELECTRICAL SERVICE)

1-3" CONDUIT (SPARE)

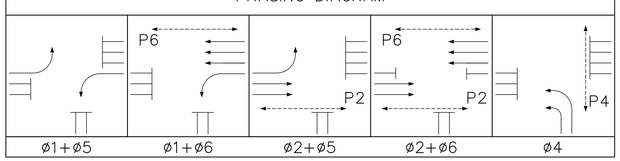
NOTES:

EGC - ELECTRICAL GROUNDING CONDUCTOR
EPDC - EMERGENCY PREEMPTION DETECTOR CABLE

PEDESTRIAN SIGNAL WALK MESSAGE LEGEND

PUSHBUTTON	WALK MESSAGE	ACTIVATION MESSAGE
P2 (BOTH CORNERS) P6 (BOTH CORNERS)	PERCUSSIVE TONE	"WAIT TO CROSS GODWIN AT SUDLEY"
P4 (BOTH CORNERS)	PERCUSSIVE TONE	"WAIT TO CROSS SUDLEY AT GODWIN"

PHASING DIAGRAM



GRAPHIC SCALE IN FEET
0 12.5 25 50

NORTH

ANDREW T. SMITH
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COMMONWEALTH OF VIRGINIA
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100% DESIGN SUBMITTAL

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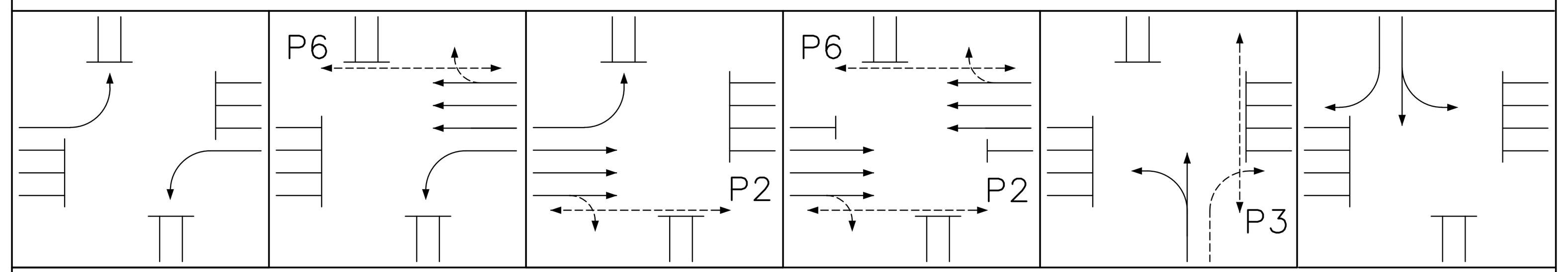
SHEET
16(2) – TSP – GODWIN DRIVE

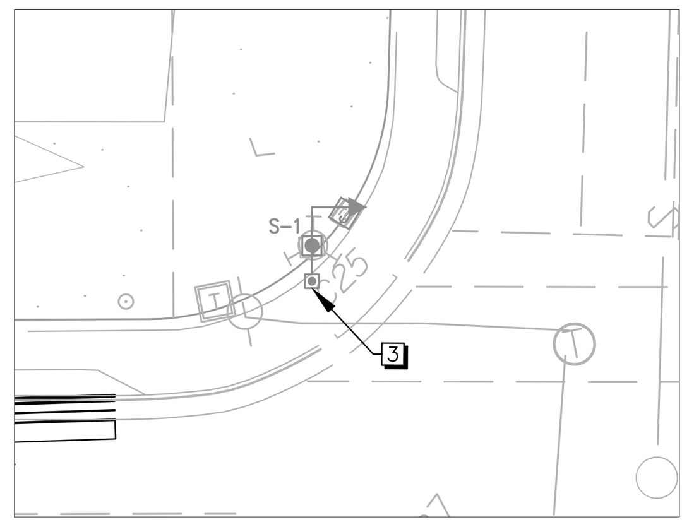
SCALE 1:25

TRAFFIC SIGNAL PLAN
SUDLEY ROAD – ROLLING ROAD

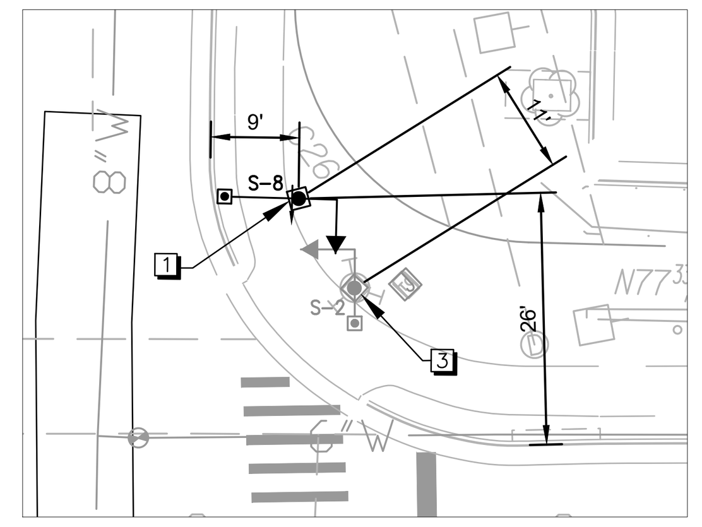
PHASING DIAGRAM



ø1+ø5	ø1+ø6	ø2+ø5	ø2+ø6	ø3	ø4



NORTHWEST CORNER POLE LOCATION AND PUSH BUTTON DETAIL
SCALE 1"=20'



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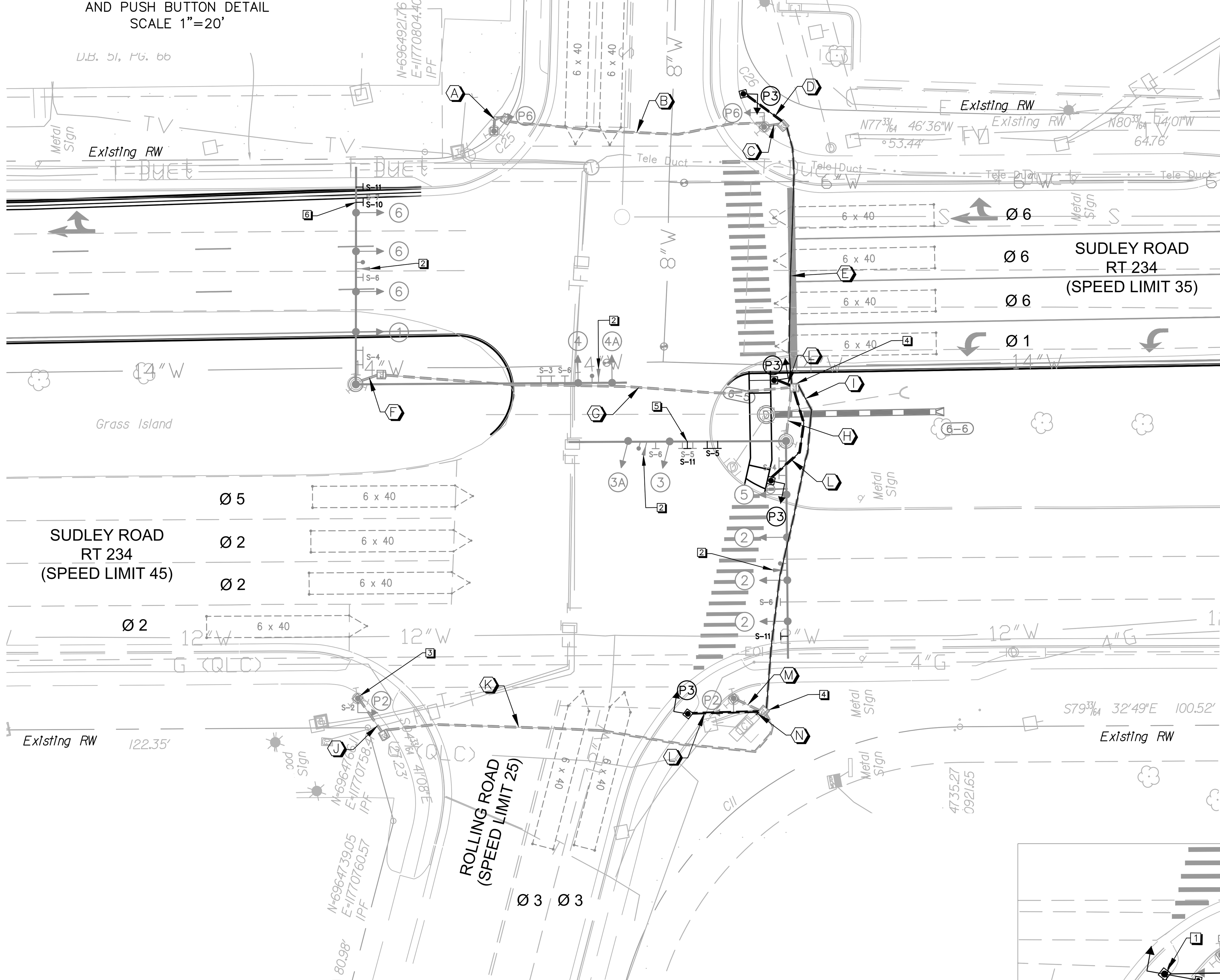
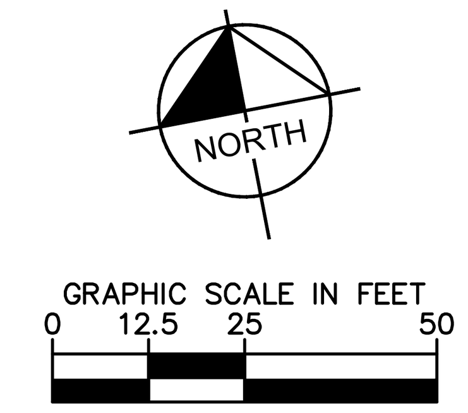


COLOR SEQUENCE CHART

PHASE	1	2	3	4	5	6	1+5	1+6	2+5	2+6	FLASH
SIGNAL	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	
1	←G						←G	←G		G	←R
2		G							G	G	Y
3			G								R
3A			G/←G								R
4				G							R
4A				G/←G							R
5					←G		←G		←G	G	←R
6						G		G		G	Y
P2	DW	W	DW	DW	DW	DW	DW	DW	W	W	BLANK
P3	DW	DW	W	DW	DW	DW	DW	DW	DW	DW	BLANK
P6	DW	DW	DW	DW	DW	W	DW	W	DW	W	BLANK

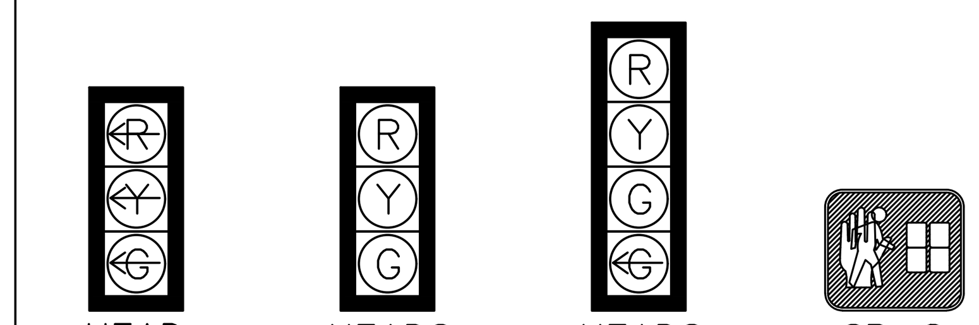
NOTE: BLANK SPACES REPRESENT A RED DISPLAY. "WALK" INDICATION DISPLAYED AFTER PEDESTRIAN CALL IS SERVICED, OTHERWISE "DON'T WALK" INDICATION IS DISPLAYED.



COMMONWEALTH OF VIRGINIA
ANDREW T. SMITH
Lic. No. 053042
PROFESSIONAL ENGINEER

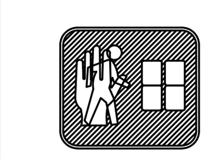
Kimley-Horn
Reston, Virginia
Traffic Engineer

EXISTING SIGNALS



HEAD 1,5 | HEADS 2,3,4,6 | HEADS 3A,4A | SP–8 P2,P6

PROPOSED SIGNALS

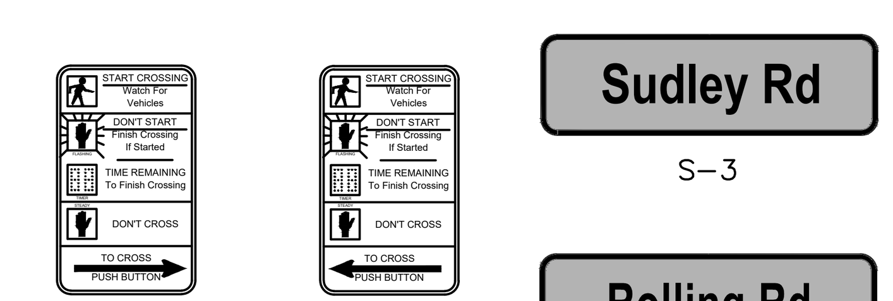


SP–8 P3

PEDESTRIAN SIGNAL WALK MESSAGE LEGEND

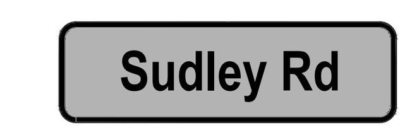
PUSHBUTTON	WALK MESSAGE	ACTIVATION MESSAGE
P2 (BOTH CORNERS) P6 (BOTH CORNERS)	PERCUSSIVE TONE	"WAIT TO CROSS ROLLING AT SUDLEY"
P3 (BOTH CORNERS AND MEDIAN)	PERCUSSIVE TONE	"WAIT TO CROSS SUDLEY AT ROLLING"

EXISTING SIGNS

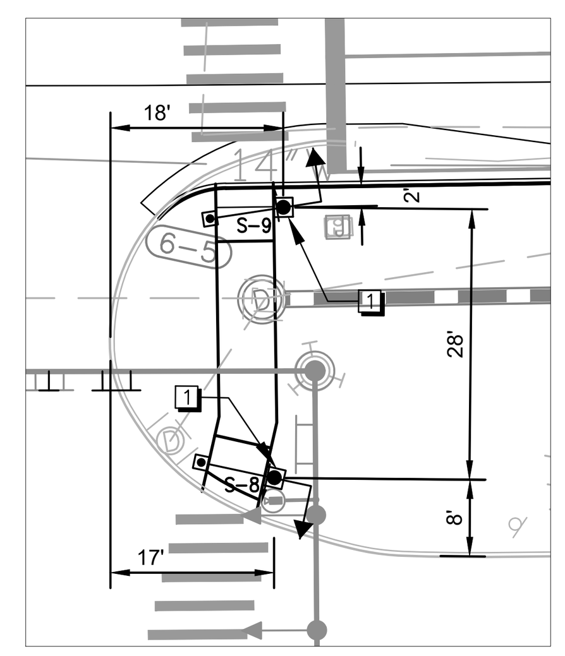


S–1 | S–2 | S–3 | S–4

EXISTING SIGNS TO BE RELOCATED

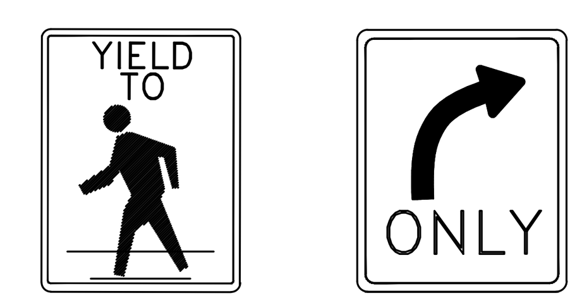


S–5



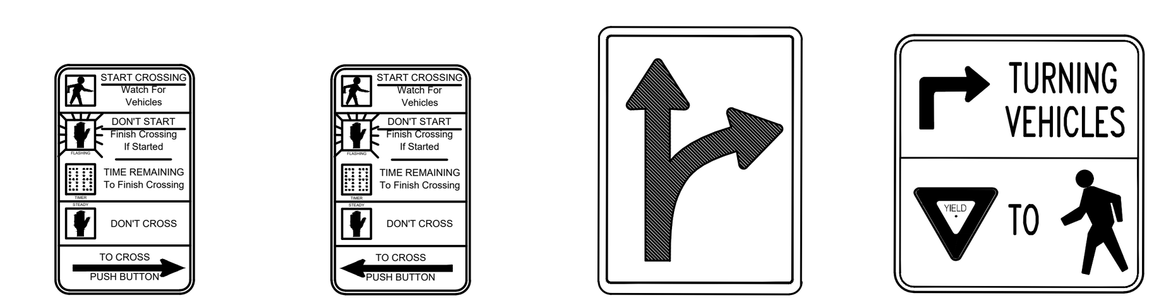
EAST LEG MEDIAN POLE LOCATION AND PUSH BUTTON DETAIL
SCALE 1"=20'

EXISTING SIGNS TO BE REMOVED

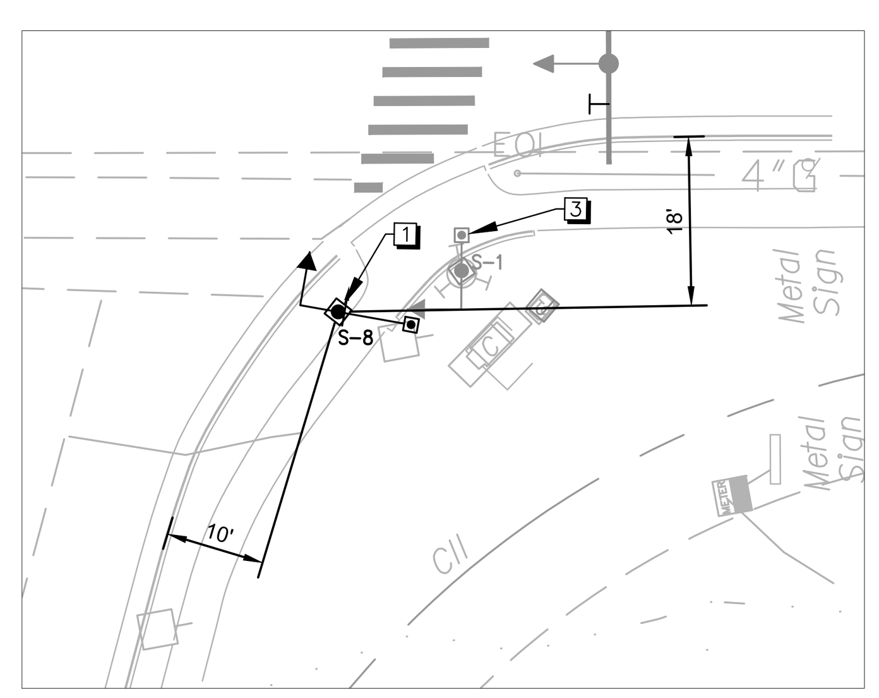


S–6 | S–7

PROPOSED SIGNS



S–8 R10–3E 9" x 15" | S–9 R10–3E 9" x 15" | S–10 R3–6R 30" x 36" | S–11 R10–15(R) 30" x 30"



SOUTHEAST CORNER POLE LOCATION AND PUSH BUTTON DETAIL
SCALE 1"=20'

CONSTRUCTION NOTES

1. INSTALL VDOT ST'D PF–2 PEDESTAL POLE WITH APS PUSH BUTTON, PUSH BUTTON SIGN, AND PEDESTRIAN SIGNAL HEAD.
2. REMOVE EMERGENCY VEHICLE PRE–EMPTION DETECTORS AND VIDEO DETECTION CAMERAS AND REPLACE WITH NEW, CITY–APPROVED REPLACEMENTS.
3. REMOVE EXISTING PUSH BUTTON AND REPLACE WITH ACCESSIBLE PEDESTRIAN PUSH BUTTON.
4. RE–ENTER EXISTING JUNCTION BOX.
5. RELOCATE SIGN S–5 TO PROPOSED LOCATION AND INSTALL NEW SIGN S–11.
6. REMOVE SIGN S–7 AND REPLACE WITH SIGN S–10.

CABLE AND CONDUIT RUNS

A EXISTING CONDUIT(S)
1-14/7C FOR PED HEAD P6 (EXISTING)
1-14/4C FOR PED PUSH BUTTON (EXISTING)
1-#6 AWG (EGC) (EXISTING)

B EXISTING CONDUIT(S)
1-14/7C FOR PED HEAD P6 (EXISTING)
1-14/4C FOR PED PUSH BUTTON (EXISTING)
1-#6 AWG (EGC) (EXISTING)

C EXISTING CONDUIT(S)
1-14/7C FOR PED HEAD P6 (EXISTING)
1-14/4C FOR PED PUSH BUTTON (EXISTING)
1-#6 AWG (EGC) (EXISTING)

D **1-3" CONDUIT (NEW)**
1-14/7C FOR PED HEAD P3 (NEW)
1-14/4C FOR PED PUSH BUTTON (NEW)
1-#6 AWG (EGC) (NEW)

E EXISTING CONDUIT(S)
2-14/7C FOR PED HEAD P6 (EXISTING)
2-14/4C FOR PED PUSH BUTTONS (EXISTING)
1-#6 AWG (EGC) (EXISTING)
1-14/7C FOR PED HEAD P3 (NEW)
1-14/4C FOR PED PUSH BUTTON (NEW)

F EXISTING CONDUIT(S)
3-14/7C FOR SIGNAL HEADS 1,4,4A,6 (EXISTING)
2-VIDEO DETECTION CABLE (EXISTING)
2-EPDC (EXISTING)
1-LUMINAIRE CABLE (EXISTING)
1-#6 AWG (EGC) (EXISTING)

G EXISTING CONDUIT(S)
3-14/7C FOR SIGNAL HEADS 1,4,4A,6 (EXISTING)
2-VIDEO DETECTION CABLE (EXISTING)
2-EPDC (EXISTING)
1-LUMINAIRE CABLE (EXISTING)
1-#6 AWG (EGC) (EXISTING)

H EXISTING CONDUIT(S)
3-14/7C FOR SIGNAL HEADS 2,3,3A,5 (EXISTING)
2-VIDEO DETECTION CABLE (EXISTING)
2-EPDC (EXISTING)
1-CCTV CABLE (EXISTING)
1-LUMINAIRE CABLE (EXISTING)
1-#6 AWG (EGC) (EXISTING)

I EXISTING CONDUIT(S)
6-14/7C FOR SIGNAL HEADS 1,2,3,3A,4,4A,5,6 (EXISTING)
2-14/7C FOR PED HEAD P6 (EXISTING)
2-14/4C FOR PED PUSH BUTTONS (EXISTING)
4-VIDEO DETECTION CABLE (EXISTING)
4-EPDC (EXISTING)
1-CCTV CABLE (EXISTING)
2-LUMINAIRE CABLES (EXISTING)
1-#6 AWG (EGC) (EXISTING)
3-14/7C FOR PED HEAD P3 (NEW)
3-14/4C FOR PED PUSH BUTTON (NEW)

J EXISTING CONDUIT(S)
1-14/7C FOR PED HEAD P2 (EXISTING)
1-14/4C FOR PED PUSH BUTTON (EXISTING)
1-#6 AWG (EGC) (EXISTING)

K EXISTING CONDUIT(S)
1-14/7C FOR PED HEAD P2 (EXISTING)
1-14/4C FOR PED PUSH BUTTON (EXISTING)
1-#6 AWG (EGC) (EXISTING)

L **1-3" CONDUIT (NEW)**
1-14/7C FOR PED HEAD P3 (NEW)
1-14/4C FOR PED PUSH BUTTON (NEW)
1-#6 AWG (EGC) (NEW)

M EXISTING CONDUIT(S)
1-14/7C FOR PED HEAD P2 (EXISTING)
1-14/4C FOR PED PUSH BUTTON (EXISTING)
1-#6 AWG (EGC) (EXISTING)

N EXISTING CONDUIT(S)
6-14/7C FOR SIGNAL HEADS 1,2,3,3A,4,4A,5,6 (EXISTING)
4-14/7C FOR PED HEAD P2,P6 (EXISTING)
4-14/4C FOR PED PUSH BUTTONS (EXISTING)
4-VIDEO DETECTION CABLE (EXISTING)
4-EPDC (EXISTING)
1-CCTV CABLE (EXISTING)
2-LUMINAIRE CABLES (EXISTING)
#6 AWG (EGC) (EXISTING)
4-14/7C FOR PED HEAD P3 (NEW)
4-14/4C FOR PED PUSH BUTTONS (NEW)

NOTES:

EGC - ELECTRICAL GROUNDING CONDUCTOR

EPDC - EMERGENCY PREEMPTION DETECTOR CABLE

EXISTING CABLES AND CONDUITS LISTED ARE BASED ON AVAILABLE INFORMATION AND MAY DIFFER IN FIELD. CONTRACTOR SHALL VERIFY PRIOR TO BEGINNING WORK.

100% DESIGN SUBMITTAL

SUDLEY ROAD THIRD LANE (T–015) VDOT UPC #109293

CITY OF MANASSAS, VIRGINIA
DEPARTMENT OF ENGINEERING
8500 PUBLIC WORKS DRIVE
MANASSAS, VIRGINIA 20110

REVISIONS

DATE	BY	DESCRIPTION

MANASSAS PROJECT NO.: T–015
DATE OF PLAN ISSUANCE: TBD
CONSULTANT PROJECT ID.: 594002
DESIGNED BY: MP DATE: 04/02/2021
DRAWN BY: DHB DATE: 04/02/2021
CHECKED BY: CES DATE: 04/16/2021
APPROVED BY: ____ DATE: ____

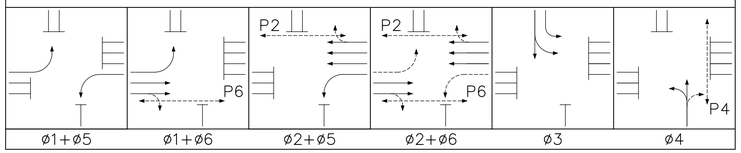
Kimley»Horn
11400 COMMERCE PARK DRIVE SUITE #400, RESTON, VA 20191
PHONE: 703–674–1300 FAX: 703–674–1350
WWW.KIMLEY–HORN.COM

SHEET 16(3) – TSP – ROLLING ROAD

SCALE 1:25

TRAFFIC SIGNAL PLAN
SUDLEY ROAD – PLANTATION LANE

PHASING DIAGRAM



COLOR SEQUENCE CHART

PHASE	1	2	3	4	5	6	1+5	1+6	2+5	2+6	FLASH
SIGNAL	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	
1	G					G	G	G/G		G	Y
2/2B		G							G	G	Y
3			G								R
3A			G/G								R
4				G							R
4A				G/G							R
5		G			G		G		G	G	Y
6						G		G		G	Y
P2/P2B	DW	W	DW	DW	DW	DW	DW	DW	W	W	BLANK
P4	DW	DW	DW	W	DW	DW	DW	DW	DW	DW	BLANK
P6	DW	DW	DW	DW	DW	W	DW	W	DW	W	BLANK

NOTE: BLANK SPACES REPRESENT A RED DISPLAY. "WALK" INDICATION DISPLAYED AFTER PEDESTRIAN CALL IS SERVICED, OTHERWISE "DON'T WALK" INDICATION IS DISPLAYED.

EXISTING SIGNALS

EXISTING SIGNALS TO BE REMOVED

PROPOSED SIGNALS

CONSTRUCTION NOTES

1. INSTALL VDOT ST'D PF-2 PEDESTAL POLE WITH ACCESSIBLE PUSH BUTTON, PUSH BUTTON SIGN, AND PEDESTRIAN SIGNAL HEAD.
2. REMOVE PEDESTRIAN SIGNAL HEAD AND PUSH BUTTON.
3. REMOVE SIGNAL HEAD 2A AND REPLACE WITH SIGNAL HEAD 2B.
4. REMOVE EMERGENCY VEHICLE PRE-EMPTION DETECTROS AND VIDEO DETECTION CAMERAS AND REPLACE WITH NEW, CITY-APPROVED REPLACEMENTS.
5. REMOVE EXISTING PUSH BUTTON(S) AND PUSH BUTTON SIGN(S) AND REPLACE WITH ACCESSIBLE PEDESTRIAN PUSH BUTTON(S) AND PUSH BUTTON SIGN(S).
6. RE-ENTER EXISTING JUNCTION BOX.
7. REMOVE SIGN S-9 AND REPLACE WITH SIGN S-12.
8. REMOVE SIGN S-10 AND REPLACE WITH RELOCATED SIGN S-7.
9. RELOCATE SIGN S-7 TO PROPOSED LOCATION AND INSTALL NEW SIGN S-13.

CABLE AND CONDUIT RUNS

(A) EXISTING CONDUIT(S)
2-14/7C FOR SIGNAL HEADS 2,5 (EXISTING)
1-VIDEO DETECTION CABLE (EXISTING)
1-EPDC (EXISTING)
1-LUMINAIRE CABLE (EXISTING)
1-#6 AWG (EGC) (EXISTING)
1-14/7C FOR PED HEAD P2A (TO BE REMOVED)
1-14/4C FOR PED PUSH BUTTON (TO BE REMOVED)

(B) EXISTING CONDUIT(S)
2-14/7C FOR SIGNAL HEADS 2,5 (EXISTING)
1-VIDEO DETECTION CABLE (EXISTING)
1-EPDC (EXISTING)
1-LUMINAIRE CABLE (EXISTING)
1-#6 AWG (EGC) (EXISTING)
1-14/7C FOR PED HEAD P2A (TO BE REMOVED)
1-14/4C FOR PED PUSH BUTTON (TO BE REMOVED)
1-14/7C FOR PED HEAD P2B (NEW)
1-14/4C FOR PED PUSH BUTTON (NEW)

(C) EXISTING CONDUIT(S)
1-14/7C FOR SIGNAL HEADS 3,3A (EXISTING)
1-14/7C FOR PED HEAD P6 (EXISTING)
1-14/4C FOR PED PUSH BUTTON (EXISTING)
1-VIDEO DETECTION CABLE (EXISTING)
1-EPDC (EXISTING)
1-LUMINAIRE CABLE (EXISTING)
1-#6 AWG (EGC) (EXISTING)

(D) EXISTING CONDUIT(S)
3-14/7C FOR SIGNAL HEADS 2,3,3A,5 (EXISTING)
1-14/7C FOR PED HEAD P6 (EXISTING)
1-14/4C FOR PED PUSH BUTTON (EXISTING)
2-VIDEO DETECTION CABLE (EXISTING)
2-EPDC (EXISTING)
2-LUMINAIRE CABLES (EXISTING)
1-#6 AWG (EGC) (EXISTING)
1-14/7C FOR PED HEAD P2A (TO BE REMOVED)
1-14/4C FOR PED PUSH BUTTON (TO BE REMOVED)
1-14/7C FOR PED HEAD P2B (NEW)
1-14/4C FOR PED PUSH BUTTON (NEW)

(E) EXISTING CONDUIT(S)
1-14/7C FOR SIGNAL HEADS 4,4A (EXISTING)
2-14/7C FOR PED HEADS P2,P4 (EXISTING)
2-14/4C FOR PED PUSH BUTTONS (EXISTING)
1-VIDEO DETECTION CABLE (EXISTING)
1-EPDC (EXISTING)
1-LUMINAIRE CABLE (EXISTING)
1-#6 AWG (EGC) (EXISTING)

(F) EXISTING CONDUIT(S)
2-14/7C FOR SIGNAL HEADS 1,6 (EXISTING)
2-14/7C FOR PED HEADS P4,P6 (EXISTING)
2-14/4C FOR PED PUSH BUTTONS (EXISTING)
1-VIDEO DETECTION CABLE (EXISTING)
1-EPDC (EXISTING)
1-LUMINAIRE CABLE (EXISTING)
1-CCTV CABLE (EXISTING)
1-#6 AWG (EGC) (EXISTING)

(G) EXISTING CONDUIT(S)
6-14/7C FOR SIGNAL HEADS 1,2,3,3A,4,4A,5,6 (EXISTING)
5-14/7C FOR PED HEADS P2,P4,P6 (EXISTING)
5-14/4C FOR PED PUSH BUTTONS (EXISTING)
4-VIDEO DETECTION CABLE (EXISTING)
4-EPDC (EXISTING)
4-LUMINAIRE CABLES (EXISTING)
1-#6 AWG (EGC) (EXISTING)
1-14/7C FOR PED HEAD P2A (TO BE REMOVED)
1-14/4C FOR PED PUSH BUTTON (TO BE REMOVED)
1-14/7C FOR PED HEAD P2B (NEW)
1-14/4C FOR PED PUSH BUTTON (NEW)

(H) **1-3" CONDUIT (NEW)**
1-14/7C FOR PED HEAD P2B (NEW)
1-14/4C FOR PED PUSH BUTTON (NEW)
1-#6 AWG (EGC) (NEW)

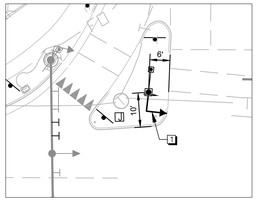
(I) **1-4" CONDUIT (BORED) (NEW)**
1-14/7C FOR PED HEAD P2B (NEW)
1-14/4C FOR PED PUSH BUTTON (NEW)
1-#6 AWG (EGC) (NEW)

NOTES:

EGC - ELECTRICAL GROUNDING CONDUCTOR

EPDC - EMERGENCY PREEMPTION DETECTOR CABLE

EXISTING CABLES AND CONDUITS LISTED ARE BASED ON AVAILABLE INFORMATION AND MAY DIFFER IN FIELD. CONTRACTOR SHALL VERIFY PRIOR TO BEGINNING WORK.

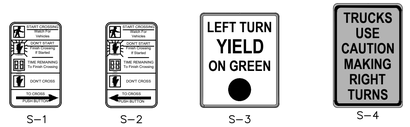


NORTHWEST CORNER POLE LOCATION AND PUSH BUTTON DETAIL
SCALE 1"=20'

PEDESTRIAN SIGNAL WALK MESSAGE LEGEND

PUSHBUTTON	WALK MESSAGE	ACTIVATION MESSAGE
P2 (NW CORNER) P6 (SW CORNER)	PERCUSSIVE TONE	"WAIT TO CROSS PLANTATION AT SUDLEY"
P2 (NE CORNER) P6 (SE CORNER)	"PLANTATION, WALK SIGN IS ON TO CROSS PLANTATION"	
P4 (BOTH CORNERS)	"SUDLEY, WALK SIGN IS ON TO CROSS SUDLEY"	"WAIT TO CROSS SUDLEY AT STONEWALL"

EXISTING SIGNS



S-1 S-2 S-3 S-4 S-5 S-6

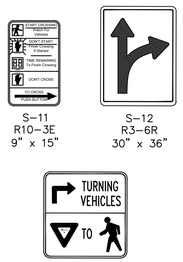
EXISTING SIGNS TO BE RELOCATED

S-7

EXISTING SIGNS TO BE REMOVED

S-8 S-9 S-10

PROPOSED SIGNS



S-11
R10-3E
9" x 15"

S-12
R3-6R
30" x 36"

S-13
R10-15(R)
30" x 30"

NORTH

GRAPHIC SCALE IN FEET
0 12.5 25 50

COMMONWEALTH OF VIRGINIA
ANDREW T. SMITH
Lic. No. 053042
PROFESSIONAL ENGINEER

Kimley-Horn
Reston, Virginia
Traffic Engineer

100% DESIGN SUBMITTAL

CITY OF MANASSAS, VIRGINIA
DEPARTMENT OF ENGINEERING
8500 PUBLIC WORKS DRIVE
MANASSAS, VIRGINIA 20110

REVISIONS
DATE | DESCRIPTION | BY

MANASSAS PROJECT NO.: T-015
DATE OF PLAN ISSUANCE: TBD
CONSULTANT PROJECT ID.: 594002
DESIGNED BY: MP DATE: 04/02/2021
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CHECKED BY: CES DATE: 04/16/2021
APPROVED BY: ____ DATE: ____

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PHONE: 703-674-1300 FAX: 703-674-1350
WWW.KIMLEY-HORN.COM

SUDLEY ROAD THIRD LANE (T-015) VDOT UPC #109293

SHEET
16(4) – TSP – PLANTATION LANE

SCALE 1:25

TRAFFIC SIGNAL PLAN
SUDLEY ROAD – STONEWALL ROAD

COLOR SEQUENCE CHART											
PHASE	1	2	3	4	5	6	1+5	1+6	2+5	2+6	FLASH
SIGNAL	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	
1	~~G~~					G	~~G~~	~~G~~/G		G	Y
2		G							G	G	Y
3			G								R
3A			G/~~G~~								R
4				G							R
4A				G/~~G~~							R
5		G			~~G~~		~~G~~		~~G~~/G	G	Y
6						G		G		G	Y
P2	DW	W	DW	DW	DW	DW	DW	DW	W	W	BLANK
P3/P3A	DW	DW	W	DW	DW	DW	DW	DW	DW	DW	BLANK
P6	DW	DW	DW	DW	DW	W	DW	W	DW	W	BLANK

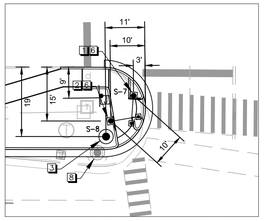
NOTE: BLANK SPACES REPRESENT A RED DISPLAY. "WALK" INDICATION DISPLAYED AFTER PEDESTRIAN CALL IS SERVICED, OTHERWISE "DON'T WALK" INDICATION IS DISPLAYED.

EXISTING SIGNALS

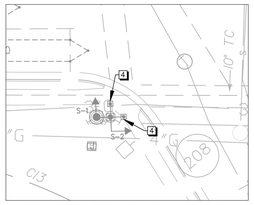
HEAD 1 | HEADS 3,6 | HEAD 3A | SP–8 P3,P6

PROPOSED SIGNALS

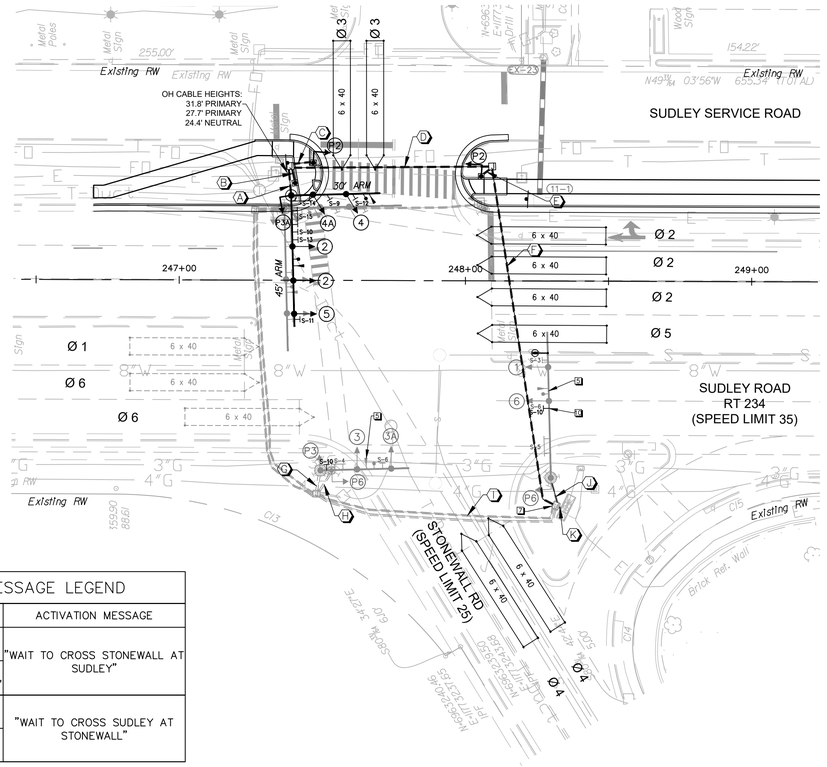
HEADS 2,4 | HEAD 4A | HEAD 5 | SP–8 P2,P3A

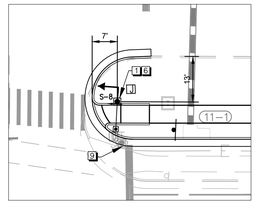


NORTHWEST CORNER POLE LOCATION AND PUSH BUTTON DETAIL
SCALE 1"=20'



SOUTHWEST CORNER POLE LOCATION AND PUSH BUTTON DETAIL
SCALE 1"=20'





NORTHEAST CORNER POLE LOCATION AND PUSH BUTTON DETAIL
SCALE 1"=20'

GRAPHIC SCALE IN FEET
0 12.5 25 50

CONSTRUCTION NOTES

DESIGN OF NEW PAVEMENT MARKINGS IS SHOWN ON SIGNING AND MARKING PLANS.

DESIGN OF NEW SIDEWALK AND CURB RAMPS IS SHOWN ON ROADWAY PLANS.

1. INSTALL VDOT ST'D PA–4 PEDESTAL POLE WITH ACCESSIBLE PUSH BUTTON, PUSH BUTTON SIGN, AND PEDESTRIAN SIGNAL HEAD.
2. INSTALL VDOT ST'D PF–2 PEDESTAL POLE WITH ACCESSIBLE PUSH BUTTON AND PUSH BUTTON SIGN.
3. INSTALL DUAL MAST ARM SIGNAL POLE WITH SIGNAL HEADS, PEDESTRIAN SIGNAL HEAD, VIDEO DETECTION CAMERAS, EMERGENCY VEHICLE PREEMPTION, CCTV, AND SIGNS. ENSURE ADEQUATE CLEARANCE FROM OVERHEAD UTILITY LINES. SIGNAL POLE SHALL NOT HAVE A LUMINAIRE. CONTRACTOR SHALL COORDINATE WITH NOVEC FOR PROCEDURE FOR INSTALLATION OF SIGNAL POLE IN VICINITY OF OVERHEAD ELECTRIC LINES.
4. REMOVE EXISTING PUSH BUTTON(S) AND PUSH BUTTON SIGN(S) AND REPLACE WITH NEW ACCESSIBLE PUSH BUTTON(S) AND PUSH BUTTON SIGN(S).
5. REMOVE EMERGENCY VEHICLE PRE–EMPTION DETECTORS AND VIDEO DETECTION CAMERAS AND REPLACE WITH NEW, CITY–APPROVED REPLACEMENTS.
6. PEDESTAL POLE FOUNDATION SHALL BE FLUSH WITH FACE OF CURB.
7. RE–ENTER EXISTING JUNCTION BOX.
8. REMOVE EXISTING SIGNAL POLE.
9. REMOVE EXISTING PEDESTAL POLE.
10. REMOVE SIGN S–6 AND REPLACE WITH SIGN S–10.

PEDESTRIAN SIGNAL WALK MESSAGE LEGEND

PUSHBUTTON	WALK MESSAGE	ACTIVATION MESSAGE
P2 (BOTH CORNERS) P6 (SE CORNER)	PERCUSSIVE TONE	"WAIT TO CROSS STONEWALL AT SUDLEY"
P6 (SW CORNER)	"STONEWALL, WALK SIGN IS ON TO CROSS STONEWALL"	
P3 (NW CORNER)	PERCUSSIVE TONE	"WAIT TO CROSS SUDLEY AT STONEWALL"
P3 (SW CORNER)	"SUDLEY, WALK SIGN IS ON TO CROSS SUDLEY"	

CABLE AND CONDUIT RUNS

A **1-3" CONDUIT (NEW)**
3-14/7C FOR SIGNAL HEADS 2,4,4A,5 (NEW)
1-14/7C FOR PED HEAD P3A (NEW)
2-VIDEO DETECTION CABLES (NEW)
1-#6 AWG (EGC) (NEW)

1-2" CONDUIT (NEW)
2-EPDC (NEW)
1-#6 AWG (EGC) (NEW)

B **1-3" CONDUIT (NEW)**
1-14/4C FOR PED PUSH BUTTON (NEW)
1-#6 AWG (EGC) (NEW)

C **1-3" CONDUIT (NEW)**
1-14/7C FOR PED HEAD P2 (NEW)
1-14/4C FOR PED PUSH BUTTON (NEW)
1-#6 AWG (EGC) (NEW)

D **1-4" CONDUIT (BORED) (NEW)**
3-14/7C FOR SIGNAL HEADS 2,4,4A,5 (NEW)
2-14/7C FOR PED HEADS P2,P3A (NEW)
2-14/4C FOR PED PUSH BUTTONS (NEW)
2-VIDEO DETECTION CABLES (NEW)
1-#6 AWG (EGC) (NEW)

1-2" CONDUIT (BORED) (NEW)
2-EPDC (NEW)
1-#6 AWG (EGC) (NEW)

E **1-3" CONDUIT (NEW)**
1-14/7C FOR PED HEAD P2 (NEW)
1-14/4C FOR PED PUSH BUTTON (NEW)
1-#6 AWG (EGC) (NEW)

F **1-4" CONDUIT (BORED) (NEW)**
3-14/7C FOR SIGNAL HEADS 2,4,4A,5 (NEW)
3-14/7C FOR PED HEADS P2,P3A (NEW)
3-14/4C FOR PED PUSH BUTTONS (NEW)
2-VIDEO DETECTION CABLES (NEW)
1-#6 AWG (EGC) (NEW)

1-2" CONDUIT (BORED) (NEW)
2-EPDC (NEW)
1-#6 AWG (EGC) (NEW)

G EXISTING CONDUIT(S)
1-14/7C FOR SIGNAL HEADS 3,3A (EXISTING)
1-VIDEO DETECTION CABLE (EXISTING)
1-EPDC (EXISTING)
1-LUMINAIRE CABLE (EXISTING)
1-#6 AWG (EGC) (EXISTING)

H EXISTING CONDUIT(S)
2-14/7C FOR PED HEADS P3,P6 (EXISTING)
2-14/4C FOR PED PUSH BUTTONS (EXISTING)
1-#6 AWG (EGC) (EXISTING)

J EXISTING CONDUIT(S)
1-14/7C FOR SIGNAL HEADS 3,3A (EXISTING)
2-14/7C FOR PED HEADS P3,P6 (EXISTING)
2-14/4C FOR PED PUSH BUTTONS (EXISTING)
1-VIDEO DETECTION CABLE (EXISTING)
1-EPDC (EXISTING)
1-LUMINAIRE CABLE (EXISTING)
1-#6 AWG (EGC) (EXISTING)
3-14/7C FOR SIGNAL HEADS 2,4,4A,5 (TO BE REMOVED)
3-14/7C FOR PED HEADS P2,P3 (TO BE REMOVED)
3-14/4C FOR PED PUSH BUTTONS (TO BE REMOVED)
2-VIDEO DETECTION CABLES (TO BE REMOVED)
2-EPDC (TO BE REMOVED)
1-LUMINAIRE CABLE (TO BE REMOVED)

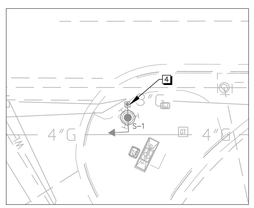
K EXISTING CONDUIT(S)
3-14/7C FOR SIGNAL HEADS 1,3,3A,6 (EXISTING)
3-14/7C FOR PED HEADS P3,P6 (EXISTING)
3-14/4C FOR PED PUSH BUTTONS (EXISTING)
2-VIDEO DETECTION CABLES (EXISTING)
2-EPDC (EXISTING)
2-LUMINAIRE CABLES (EXISTING)
#6 AWG (EGCs) (EXISTING)
3-14/7C FOR SIGNAL HEADS 2,4,4A,5 (NEW)
3-14/7C FOR PED HEADS P2,P3A (NEW)
3-14/4C FOR PED PUSH BUTTONS (NEW)
2-VIDEO DETECTION CABLES (NEW)
2-EPDC (NEW)
1-CCTV CABLE (NEW)
3-14/7C FOR SIGNAL HEADS 2,4,4A,5 (TO BE REMOVED)
3-14/7C FOR PED HEADS P2,P3 (TO BE REMOVED)
3-14/4C FOR PED PUSH BUTTONS (TO BE REMOVED)
2-VIDEO DETECTION CABLES (TO BE REMOVED)
2-EPDC (TO BE REMOVED)
1-LUMINAIRE CABLE (TO BE REMOVED)

NOTES:

EGC - ELECTRICAL GROUNDING CONDUCTOR

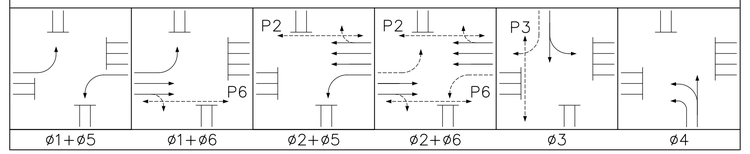
EPDC - EMERGENCY PREEMPTION DETECTOR CABLE

EXISTING CABLES AND CONDUITS LISTED ARE BASED ON AVAILABLE INFORMATION AND MAY DIFFER IN FIELD. CONTRACTOR SHALL VERIFY PRIOR TO BEGINNING WORK.



SOUTHEAST CORNER POLE LOCATION AND PUSH BUTTON DETAIL
SCALE 1"=20'

PHASING DIAGRAM



EXISTING SIGNS

S–1 | S–2 | S–3 | S–4 | S–5

EXISTING SIGNS TO BE REMOVED

S–6

PROPOSED SIGNS

S–7 R10–3E 9" x 15" | S–8 R10–3E 9" x 15" | S–9 R3–5L 30" x 36" | S–10 R10–15(R) 30" x 30" | S–11 R10–12 30" x 36"

S–12 R3–6L 30" x 36" | S–13 R3–6R 30" x 36" | S–14 D3–1 VARIES x 18" | S–15 D3–1 VARIES x 18"

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DEPARTMENT OF ENGINEERING
8500 PUBLIC WORKS DRIVE
MANASSAS, VIRGINIA 20110

REVISIONS	
DATE	DESCRIPTION
BY	
09/01/2023	CES

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CONSULTANT PROJECT ID.: 594002
DESIGNED BY: MP DATE: 04/02/2021
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CHECKED BY: CES DATE: 04/16/2021
APPROVED BY: DATE:

SUDLEY ROAD THIRD LANE (T–015) VDOT UPC #109293

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11400 COMMERCE PARK DRIVE SUITE #400, RESTON, VA 20191
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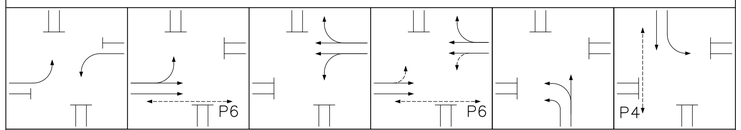
SHEET
16(5) – TSP – STONEWALL ROAD

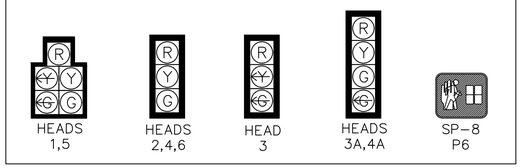
SCALE 1:25

TRAFFIC SIGNAL PLAN
SUDLEY ROAD – GRANT AVENUE

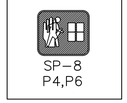
PHASING DIAGRAM



EXISTING SIGNALS



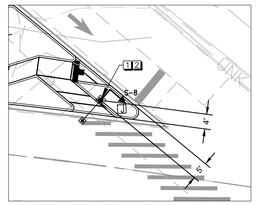
PROPOSED SIGNALS



COLOR SEQUENCE CHART

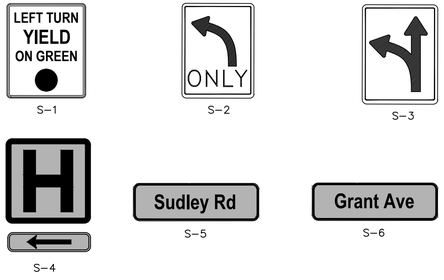
PHASE	1	2	3	4	5	6	1+5	1+6	2+5	2+6	FLASH
SIGNAL	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W	
1	⊖					G	⊖	⊖/G		G	Y
2		G							G	G	Y
3			⊖								R
3A			⊖/G								R
4				G							R
4A				⊖/G							R
5		G			⊖		⊖		⊖/G	G	Y
6						G		G		G	Y
P4	DW	DW	DW	W	DW	DW	DW	DW	DW	DW	BLANK
P6	DW	DW	DW	DW	DW	W	DW	W	DW	W	BLANK

NOTE: BLANK SPACES REPRESENT A RED DISPLAY. "WALK" INDICATION DISPLAYED AFTER PEDESTRIAN CALL IS SERVICED, OTHERWISE "DON'T WALK" INDICATION IS DISPLAYED.



NORTHWEST MEDIAN POLE LOCATION
AND PUSH BUTTON DETAIL
SCALE 1"=20'

EXISTING SIGNS



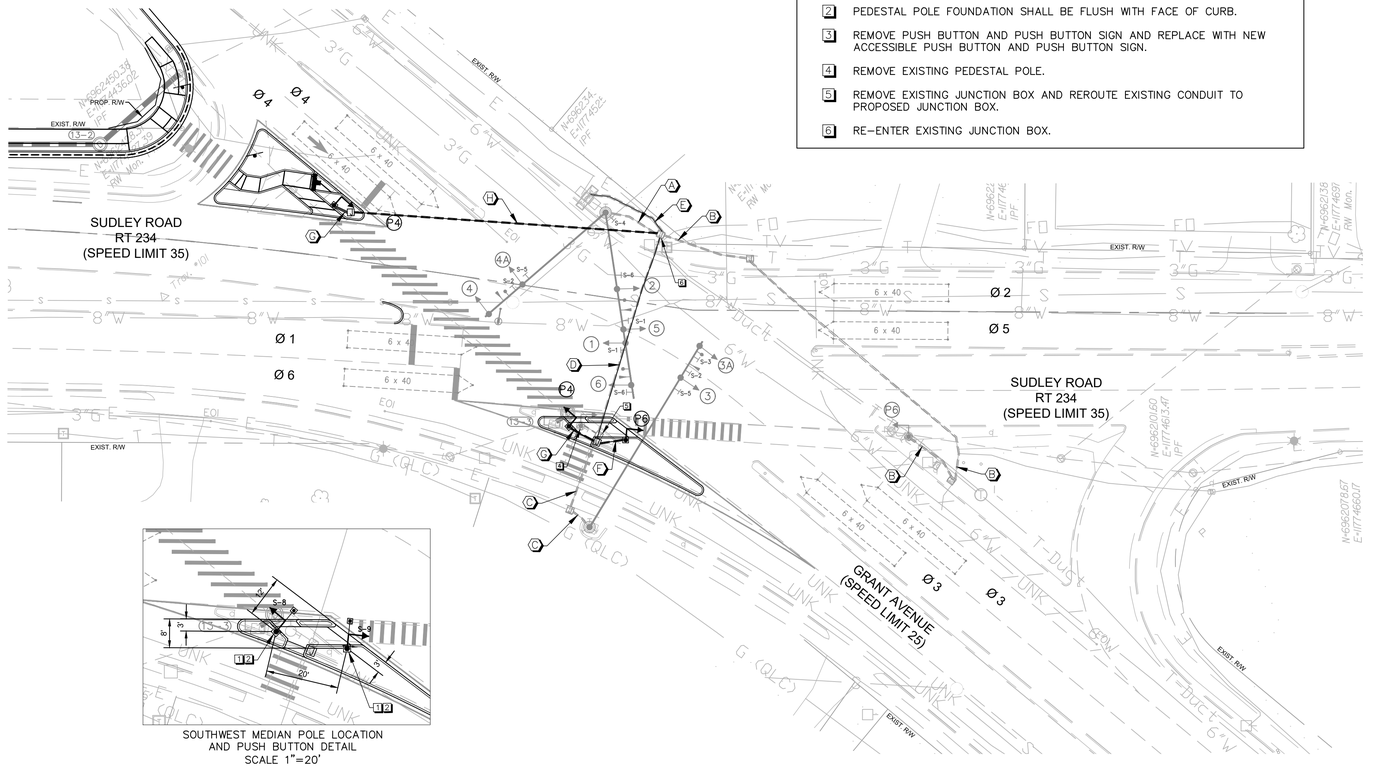
EXISTING SIGN TO BE REMOVED

S–7

PROPOSED SIGNS

PEDESTRIAN SIGNAL WALK MESSAGE LEGEND

PUSHBUTTON	WALK MESSAGE	ACTIVATION MESSAGE
P4 (BOTH CORNERS)	PERCUSSIVE TONE	"WAIT TO CROSS SUDLEY AT GRANT"
P6 (BOTH CORNERS)	PERCUSSIVE TONE	"WAIT TO CROSS GRANT AT SUDLEY"



SOUTHWEST MEDIAN POLE LOCATION
AND PUSH BUTTON DETAIL
SCALE 1"=20'

CONSTRUCTION NOTES

DESIGN OF NEW PAVEMENT MARKINGS IS SHOWN ON SIGNING AND MARKING PLANS.

DESIGN OF NEW SIDEWALK AND CURB RAMPS IS SHOWN IN ROADWAY PLANS.

1. INSTALL VDOT ST'D PF–2 PEDESTAL POLE WITH ACCESSIBLE PUSH BUTTON, PUSH BUTTON SIGN, AND PEDESTRIAN SIGNAL HEAD.
2. PEDESTAL POLE FOUNDATION SHALL BE FLUSH WITH FACE OF CURB.
3. REMOVE PUSH BUTTON AND PUSH BUTTON SIGN AND REPLACE WITH NEW ACCESSIBLE PUSH BUTTON AND PUSH BUTTON SIGN.
4. REMOVE EXISTING PEDESTAL POLE.
5. REMOVE EXISTING JUNCTION BOX AND REROUTE EXISTING CONDUIT TO PROPOSED JUNCTION BOX.
6. RE–ENTER EXISTING JUNCTION BOX.

CABLE AND CONDUIT RUNS

Ⓐ EXISTING CONDUIT(S)
5-14/7C FOR SIGNAL HEADS 1,2,4,4A,5,6 (EXISTING)
3-VIDEO DETECTION CABLES (EXISTING)
3-EPDC (EXISTING)
1-CCTV CABLE (EXISTING)
1-LUMINAIRE CABLE (EXISTING)
1-#6 AWG (EGC) (EXISTING)

Ⓑ EXISTING CONDUIT(S)
1-14/7C FOR PED HEAD P6 (EXISTING)
1-14/4C FOR PED PUSH BUTTON (EXISTING)
1-#6 AWG (EGC) (EXISTING)

Ⓒ EXISTING CONDUIT(S)
1-14/7C FOR SIGNAL HEADS 3,3A (EXISTING)
1-VIDEO DETECTION CABLE (EXISTING)
1-EPDC (EXISTING)
1-LUMINAIRE CABLE (EXISTING)
1-#6 AWG (EGC) (EXISTING)

Ⓓ EXISTING CONDUIT(S)
1-14/7C FOR SIGNAL HEADS 3,3A (EXISTING)
1-VIDEO DETECTION CABLE (EXISTING)
1-EPDC (EXISTING)
1-LUMINAIRE CABLE (EXISTING)
1-#6 AWG (EGC) (EXISTING)
2-14/7C FOR PED HEADS P4,P6 (NEW)
2-14/4C FOR PED PUSH BUTTONS (NEW)
1-14/7C FOR PED HEAD P6 (TO BE REMOVED)
1-14/4C FOR PED PUSH BUTTON (TO BE REMOVED)

Ⓔ EXISTING CONDUIT(S)
6-14/7C FOR SIGNAL HEADS 1,2,3,3A,4,4A,5,6 (EXISTING)
1-14/7C FOR PED HEAD P6 (EXISTING)
1-14/4C FOR PED PUSH BUTTON (EXISTING)
4-VIDEO DETECTION CABLES (EXISTING)
4-EPDC (EXISTING)
2-LUMINAIRE CABLES (EXISTING)
1-#6 AWG (EGC) (EXISTING)
3-14/7C FOR PED HEADS P4,P6 (NEW)
3-14/4C FOR PED PUSH BUTTONS (NEW)
1-14/7C FOR PED HEAD P6 (TO BE REMOVED)
1-14/4C FOR PED PUSH BUTTON (TO BE REMOVED)

Ⓕ **1-3" CONDUIT (NEW)**
1-14/7C FOR PED HEAD P6 (NEW)
1-14/4C FOR PED PUSH BUTTON (NEW)
1-#6 AWG (EGC) (NEW)

Ⓖ **1-3" CONDUIT (NEW)**
1-14/7C FOR PED HEAD P4 (NEW)
1-14/4C FOR PED PUSH BUTTON (NEW)
1-#6 AWG (EGC) (NEW)

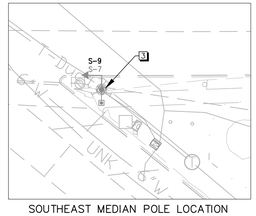
Ⓗ **1-4" CONDUIT (BORED) (NEW)**
1-14/7C FOR PED HEAD P4 (NEW)
1-14/4C FOR PED PUSH BUTTON (NEW)
1-#6 AWG (EGC) (NEW)

NOTES:

EGC - ELECTRICAL GROUNDING CONDUCTOR

EPDC - EMERGENCY PREEMPTION DETECTOR CABLE

EXISTING CABLES AND CONDUITS LISTED ARE BASED ON AVAILABLE INFORMATION AND MAY DIFFER IN FIELD. CONTRACTOR SHALL VERIFY PRIOR TO BEGINNING WORK.



SOUTHEAST MEDIAN POLE LOCATION
AND PUSH BUTTON DETAIL
SCALE 1"=20'

GRAPHIC SCALE IN FEET
0 12.5 25 50

NORTH

COMMONWEALTH OF VIRGINIA
ANDREW T. SMITH
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100% DESIGN SUBMITTAL

CITY OF MANASSAS, VIRGINIA
DEPARTMENT OF ENGINEERING
8500 PUBLIC WORKS DRIVE
MANASSAS, VIRGINIA 20110

REVISIONS

DESCRIPTION	BY	DATE

SUDLEY ROAD THIRD LANE (T–015) VDOT UPC #109293

MANASSAS PROJECT NO.: T–015
DATE OF PLAN ISSUANCE: TBD
CONSULTANT PROJECT ID.: 594002
DESIGNED BY: MP DATE: 04/02/2021
DRAWN BY: DHB DATE: 04/02/2021
CHECKED BY: CES DATE: 04/16/2021
APPROVED BY: DATE:

Kimley»Horn
11400 COMMERCE PARK DRIVE SUITE #400, RESTON, VA 20191
PHONE: 703–674–1300 FAX: 703–674–1350
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SHEET
16(6) – TSP – GRANT AVENUE

SCALE 1:25

SIGNING AND MARKING NOTES

EXISTING SIGN STRUCTURES

EXISTING SIGN PANEL:

SP-1 / E — TOP: TYPE OF PANEL
BOTTOM: INDICATES MEASUREMENT & PAYMENT ITEM

EXISTING SIGN POST:

STP-1 / E — TOP: TYPE OF POST
BOTTOM: INDICATES MEASUREMENT & PAYMENT ITEM

DEFINITION OF TYPES

SP-1	SIGN PANEL (0-100 S.F.)
SP-2	SIGN PANEL (101-200 S.F.)
WP-1	SINGLE WOOD POST
WP-2	TWO WOOD POST
WP-3	THREE WOOD POSTS
STP-1	BREAKAWAY SINGLE SQUARE TUBE POST
STP-2	BREAKAWAY TWO SQUARE TUBE POST
STP-3	BREAKAWAY THREE SQUARE TUBE POSTS

MEASUREMENT AND PAYMENT TYPES:
A. REMOVE EXISTING SIGN POST
B. REMOVE EXISTING SIGN PANEL
C. RELOCATE EXISTING SIGN PANEL

PROPOSED SIGN STRUCTURES

405 / 3 — TOP: SIGN NUMBER
BOTTOM: TEXT NUMBER

SEE SIGN SCHEDULE ON SHEET 17(2) FOR PANEL SIZE, STRUCTURE TYPE, AND FOUNDATION TYPE.

PAVEMENT MARKING LEGEND:

Ⓐ TYPE B, CLASS 1, YELLOW, 4" WIDE, DOUBLE LINE, 4" SPACING
Ⓑ TYPE B, CLASS 1, WHITE . 4" WIDE. 10' LONG, 30' SPACING
Ⓒ TYPE B, CLASS 1, WHITE, 4" WIDE
Ⓓ TYPE B, CLASS 1, WHITE, 24" WIDE
Ⓔ TYPE B, CLASS 1, WHITE, ELONGATED ARROW
Ⓕ TYPE B, CLASS 1, WHITE, 12" WIDE, 2' SPACING
Ⓖ TYPE B, CLASS 1, WHITE, 4" WIDE, 2' LONG, 6' SPACING
Ⓗ TYPE B, CLASS 1, YELLOW, 4" WIDE
Ⓘ TYPE B, CLASS 1, WHITE, 12" WIDE
Ⓙ TYPE B, CLASS 1, WHITE, 24" WIDE, 12' SPACING
Ⓚ TYPE B, CLASS 1, WHITE, 2' X 3' YIELD LINE TRIANGLES
Ⓛ TYPE B, CLASS 1, YELLOW, 24" WIDE, 12' SPACING
⊗ ERADICATE PAVEMENT MARKING
× REMOVE EXISTING SIGN

NOTE: ALL PROPOSED PAVEMENT MARKINGS SHOWN IN BLACK. EXISTING PAVEMENT MARKINGS WITHIN MILL AND OVERLAY OR FULL-DEPTH PAVEMENT LIMITS NOT TO BE REPLACED UNLESS SHOWN AS PROPOSED.

COMMONWEALTH OF VIRGINIA
CHARLES E. SMITH
Lic. No. 035657
PROFESSIONAL ENGINEER

Kimley-Horn
Reston, Virginia
Civil Engineer

100% DESIGN SUBMITTAL

SUDLEY ROAD THIRD LANE (T-015) VDOT UPC #109293

CITY OF MANASSAS, VIRGINIA
DEPARTMENT OF ENGINEERING
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SHEET
17(1) - SIGNING AND MARKING NOTES

SCALE TBD

SIGNING SCHEDULE

TEXT NO.	SIGN ASSEMBLY NO.	TEXT	SIGN ASSEMBLY COMPONENTS				SIGN PANEL AREA (S.F.)		PROP. SIGN STRUCTURE ST'D.	FOUNDATION TYPE ST'D.
			MUTCD ST'D.	PANEL SIZE W	PANEL SIZE H	QTY.	PER ASSEMBLY	ALL ASSEMBLIES		
1	301,401		R3-5 (MOD.)	30"	36"	2	7.5	15.0	STP-1 2 IN. 14 GA.	TYPE A, TYPE D, OR TYPE F AS SPECIFIED IN CONTRACT DOCUMENTS
2	901		R3-6R	30"	36"	1	7.5	7.5	STP-1 2 IN. 14 GA.	TYPE A, TYPE D, OR TYPE F AS SPECIFIED IN CONTRACT DOCUMENTS
3	404,405, 501		R3-1	36"	36"	3	9.0	27.0	STP-1 2 IN. 14 GA.	TYPE A, TYPE D, OR TYPE F AS SPECIFIED IN CONTRACT DOCUMENTS
4	1001, 1301		W11-2 W16-7pL	36" 24"	36" 12"	2	9.0 2.0	18.0 4.0	STP-1 2 1/2 IN. 12 GA.	TYPE A OR TYPE E
5	1002, 1302		W11-2 W16-7pR	36" 24"	36" 12"	2	9.0 2.0	18.0 4.0	STP-1 2 1/2 IN. 12 GA.	TYPE A OR TYPE E
6	403		R11-2	48"	30"	21	10.0	10.0	MOUNTED ON TYPE III BARRICADE	
7	502		R5-11	30"	24"	1	5.0	5.0	STP-1 2 IN. 14 GA.	TYPE A, TYPE D, OR TYPE F AS SPECIFIED IN CONTRACT DOCUMENTS
8	503		CUSTOM	30"	30"	1	6.25	6.25	STP-1 2 IN. 14 GA.	TYPE A, TYPE D, OR TYPE F AS SPECIFIED IN CONTRACT DOCUMENTS
9	402,406, 504		R4-7	30"	36"	2	7.5	15.0	STP-1 2 IN. 14 GA.	TYPE A, TYPE D, OR TYPE F AS SPECIFIED IN CONTRACT DOCUMENTS
10	1303		R9-11aR	48"	24"	1	8.0	8.0	MOUNTED ON TYPE III BARRICADE	
11	1201		R6-1R	54"	18"	1	6.75	6.75	STP-1 2 IN. 14 GA.	TYPE A, TYPE D, OR TYPE F AS SPECIFIED IN CONTRACT DOCUMENTS

COMMONWEALTH OF VIRGINIA
CHARLES E. SMITH
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Kimley»Horn
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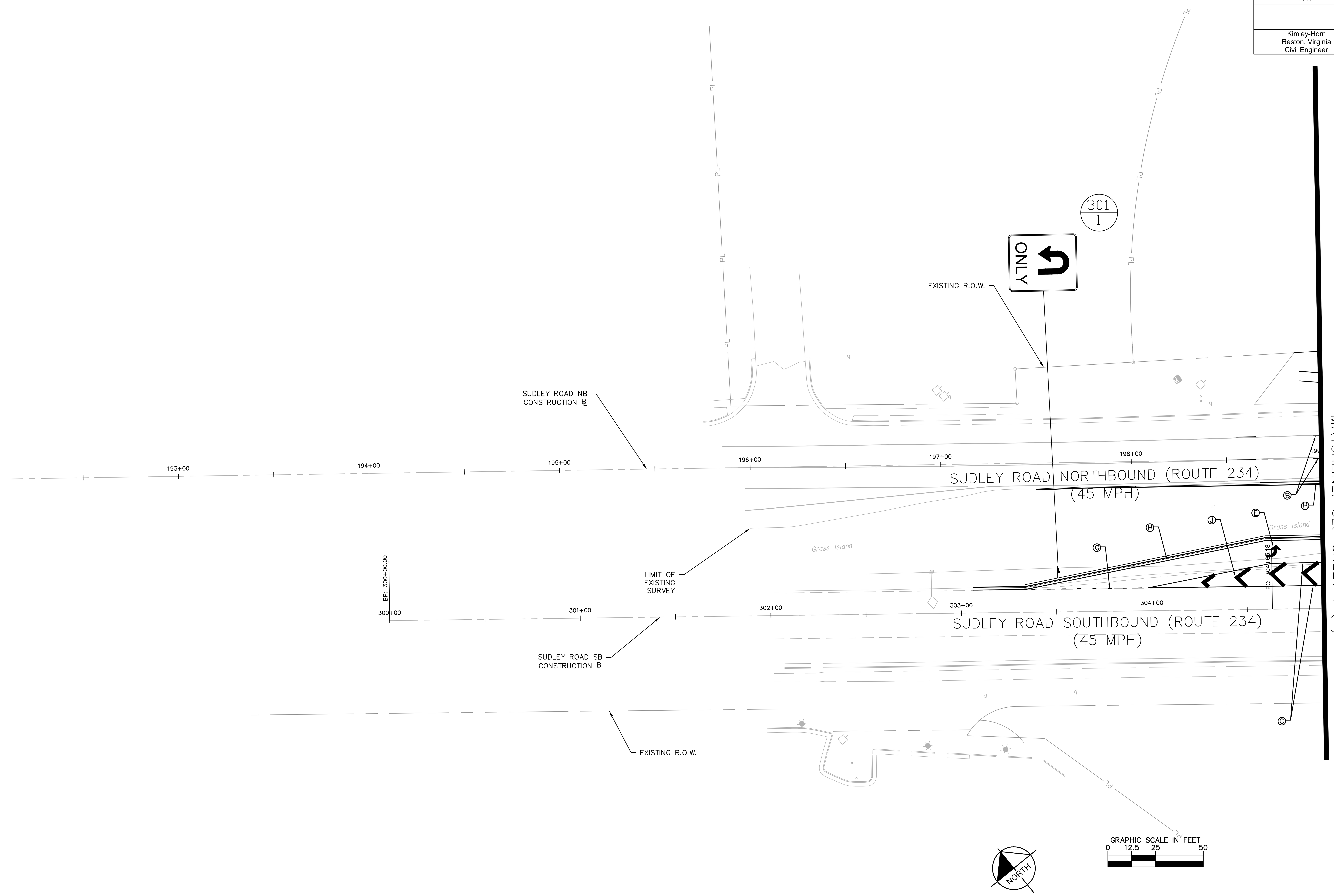
SHEET
17(2) SIGNING SCHEDULE

SCALE NTS

SIGNING AND MARKING PLAN



COMMONWEALTH OF VIRGINIA
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Lic. No. 035657
PROFESSIONAL ENGINEER

Kimley-Horn
Reston, Virginia
Civil Engineer

100% DESIGN SUBMITTAL

CITY OF MANASSAS, VIRGINIA
DEPARTMENT OF ENGINEERING
8500 PUBLIC WORKS DRIVE
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REVISIONS

DATE	BY	DESCRIPTION
09/01/2023	CES	

MANASSAS PROJECT NO.: T-015
DATE OF PLAN ISSUANCE: TBD
CONSULTANT PROJECT ID.: 594002
DESIGNED BY: MP DATE: 04/02/2021
DRAWN BY: DHB DATE: 04/02/2021
CHECKED BY: CES DATE: 04/16/2021
APPROVED BY: ____ DATE: ____

SUDLEY ROAD THIRD LANE (T-015) VDOT UPC #109293

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PHONE: 703-674-1300 FAX: 703-674-1350
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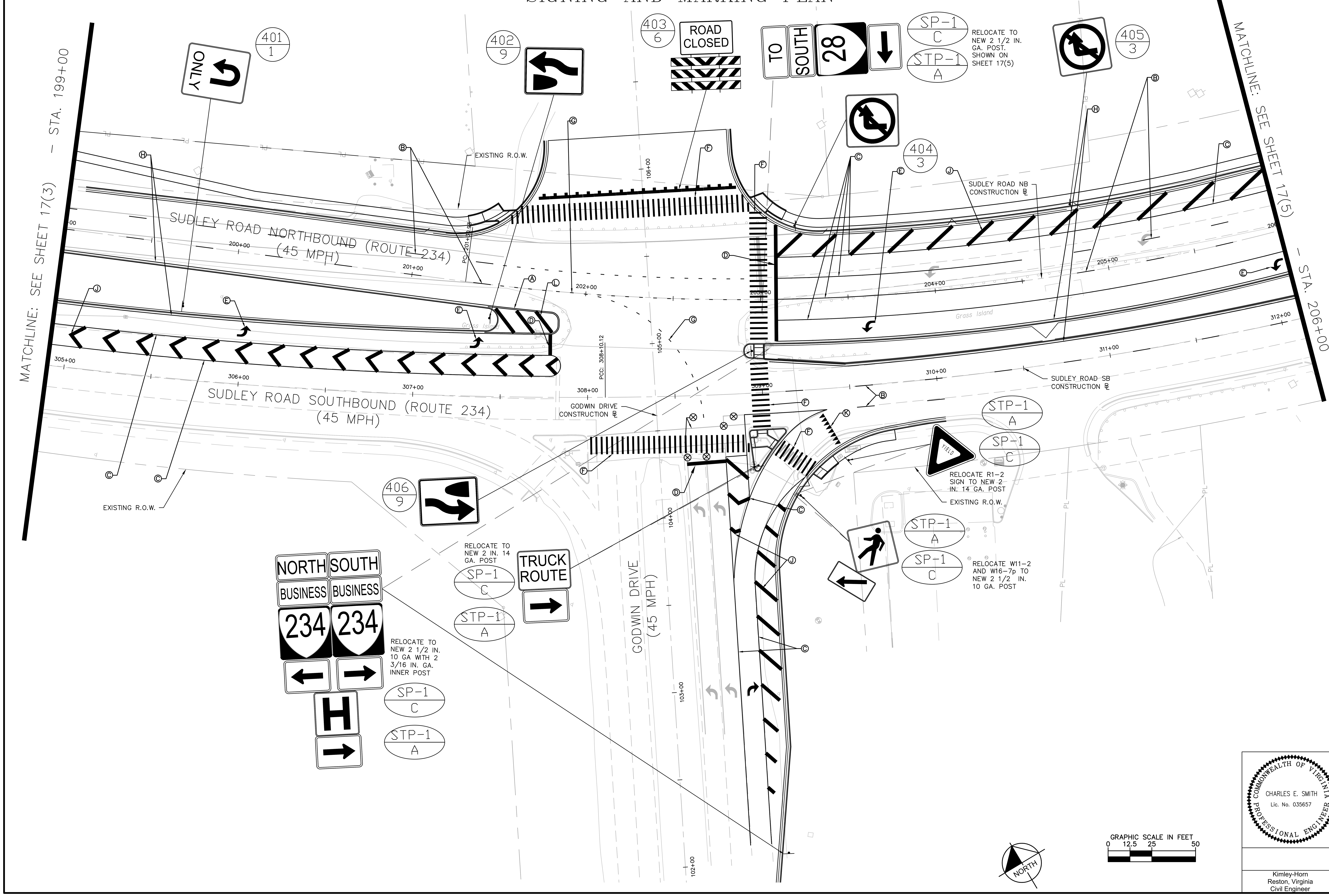
SHEET
17(3) SIGNING AND MARKING

SCALE 1:25

SIGNING AND MARKING PLAN



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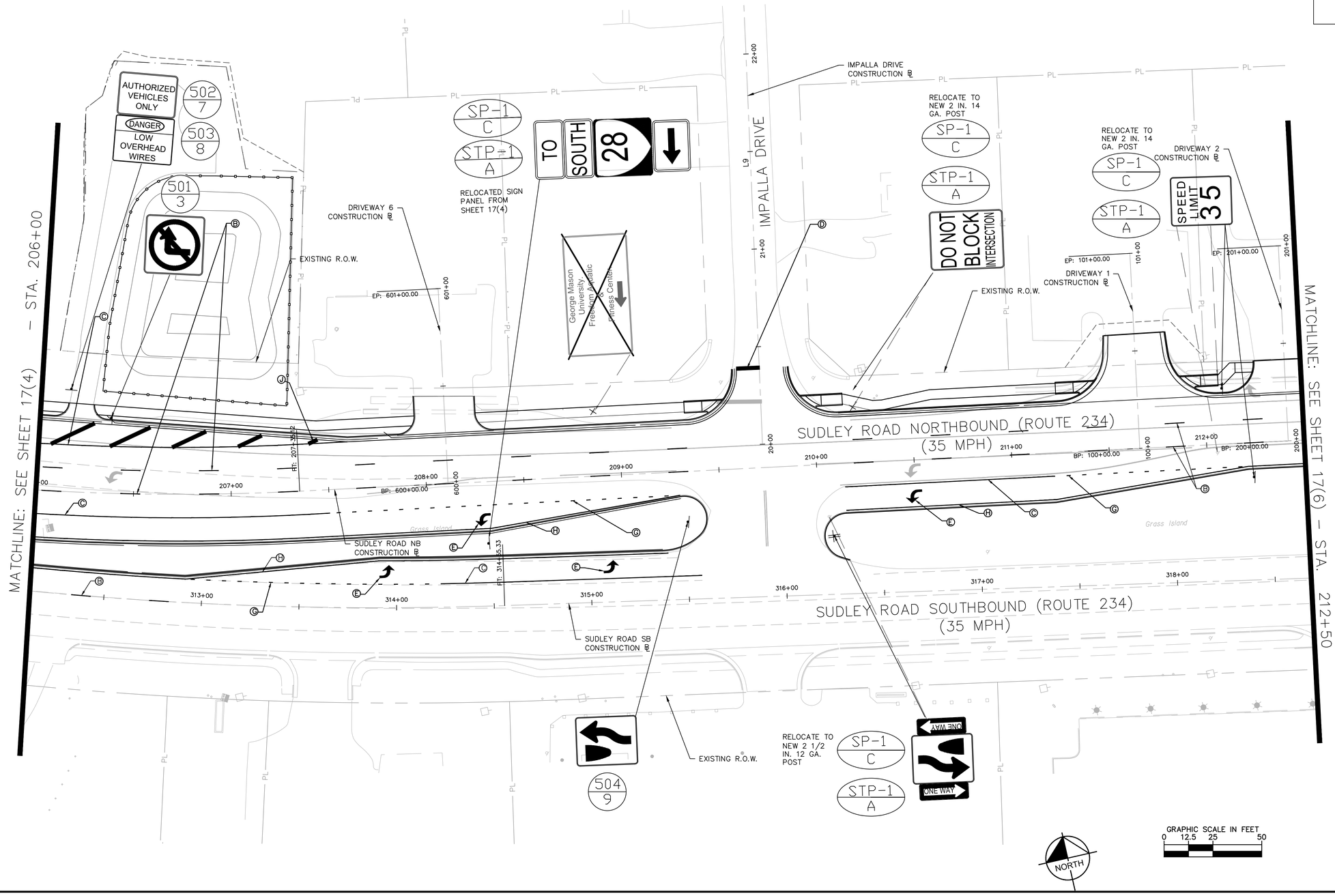
Kimley-Horn
Reston, Virginia
Civil Engineer

SHEET
17(4) SIGNING AND MARKING

SCALE 1:25

SIGNING AND MARKING PLAN



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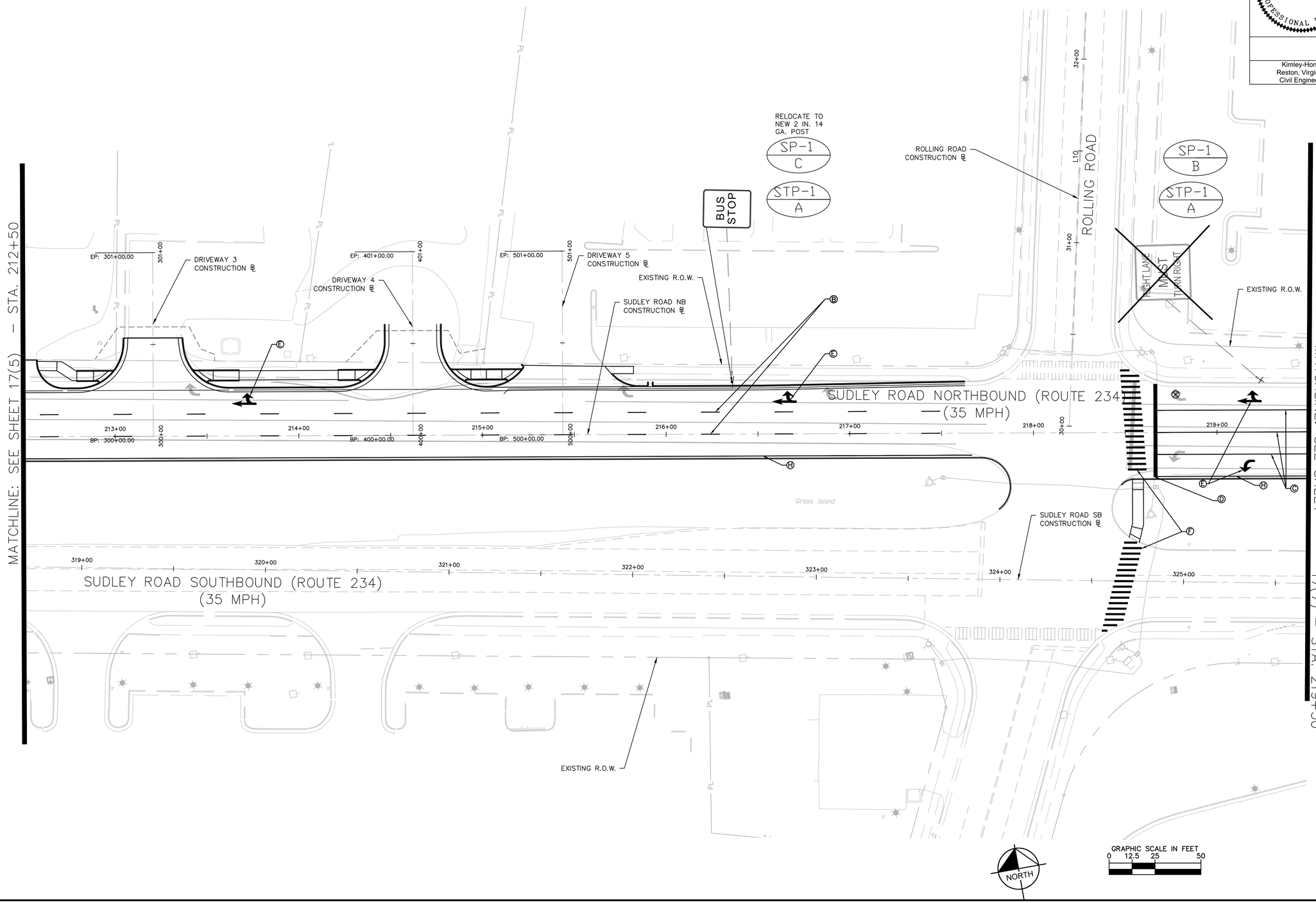
SUDLEY ROAD THIRD LANE (T-015) VDOT UPC #109293

SHEET
17(5) SIGNING AND MARKING

SCALE 1:25

SIGNING AND MARKING PLAN



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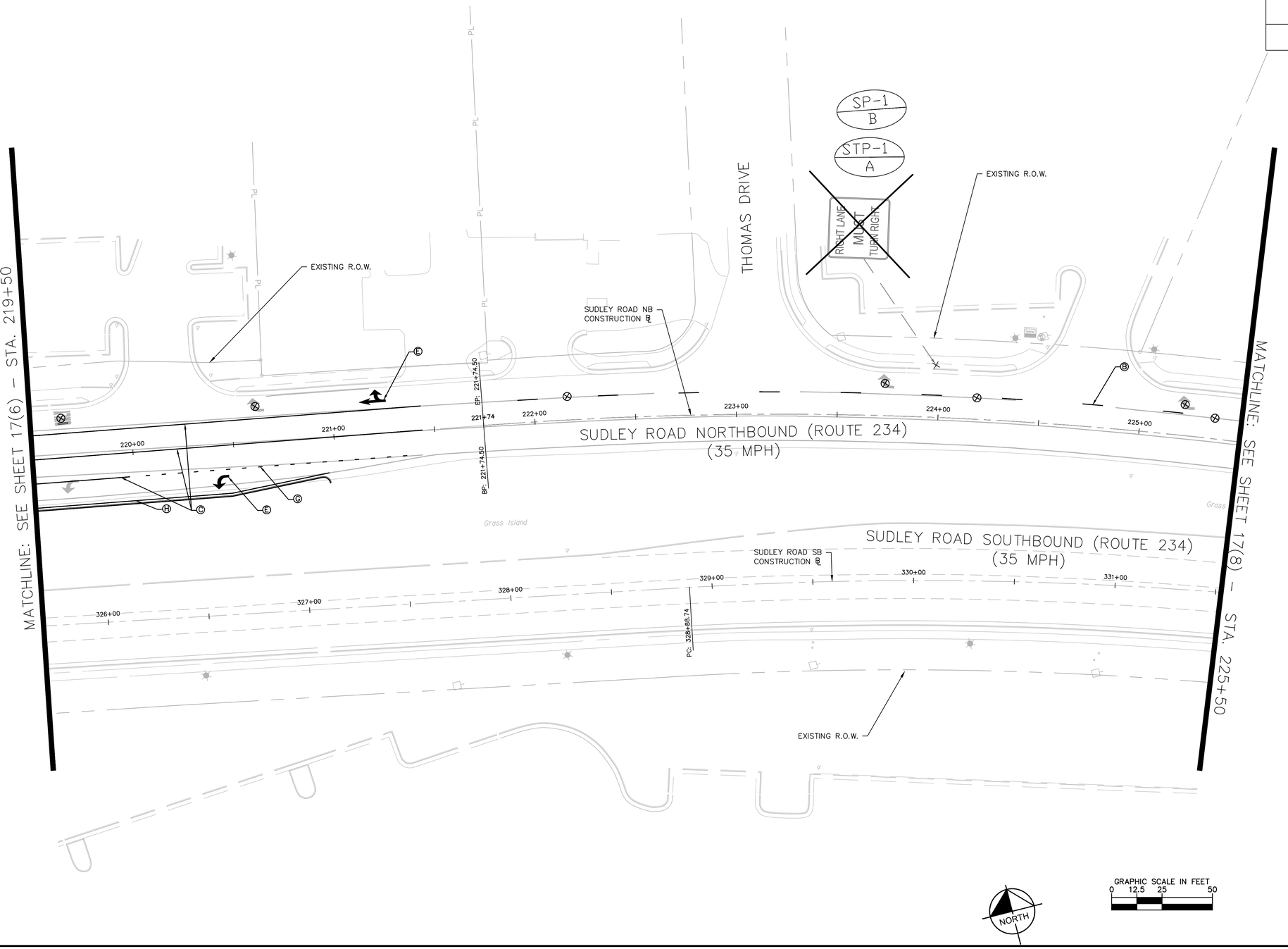
SUDLEY ROAD THIRD LANE (T-015) VDOT UPC #109293

SHEET
17(6) SIGNING AND MARKING

SCALE 1:25

SIGNING AND MARKING PLAN



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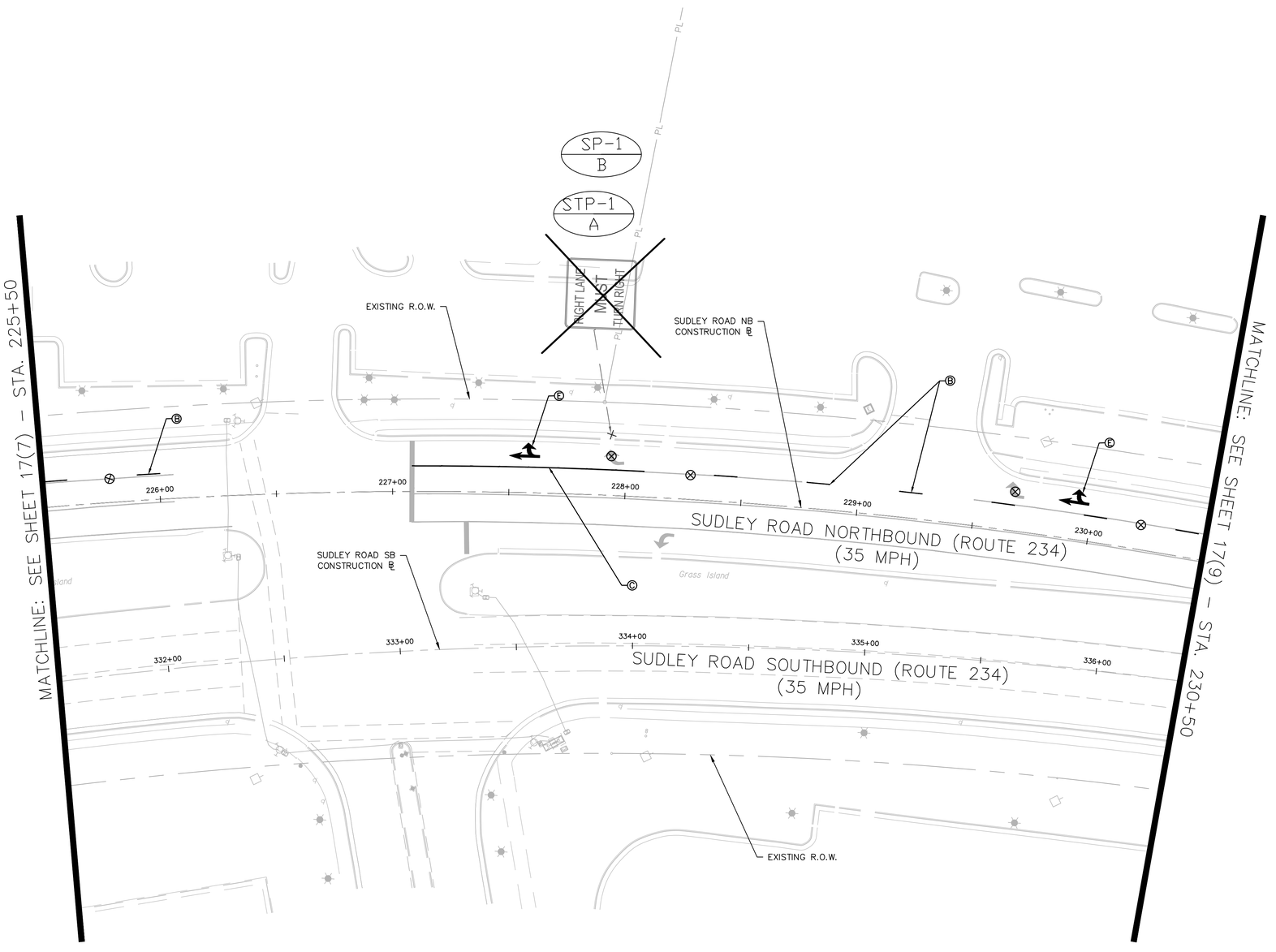
SHEET
17(7) SIGNING AND MARKING

SCALE 1:25

SUDLEY ROAD THIRD LANE (T-015) VDOT UPC #109293

SIGNING AND MARKING PLAN



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09/01/2023 | CES |

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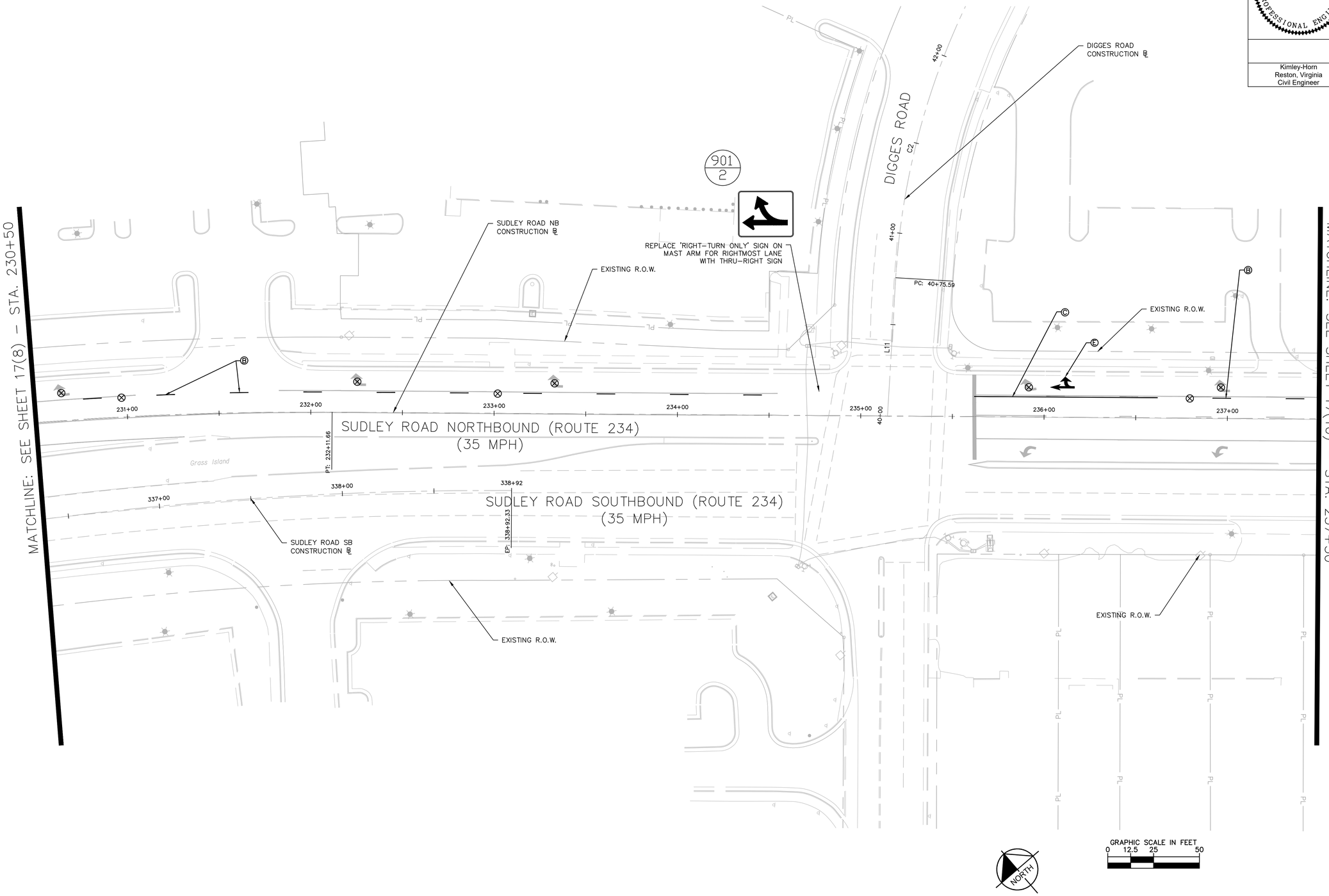
SHEET
17(8) SIGNING AND MARKING

SCALE 1:25

SUDLEY ROAD THIRD LANE (T-015) VDOT UPC #109293

SIGNING AND MARKING PLAN



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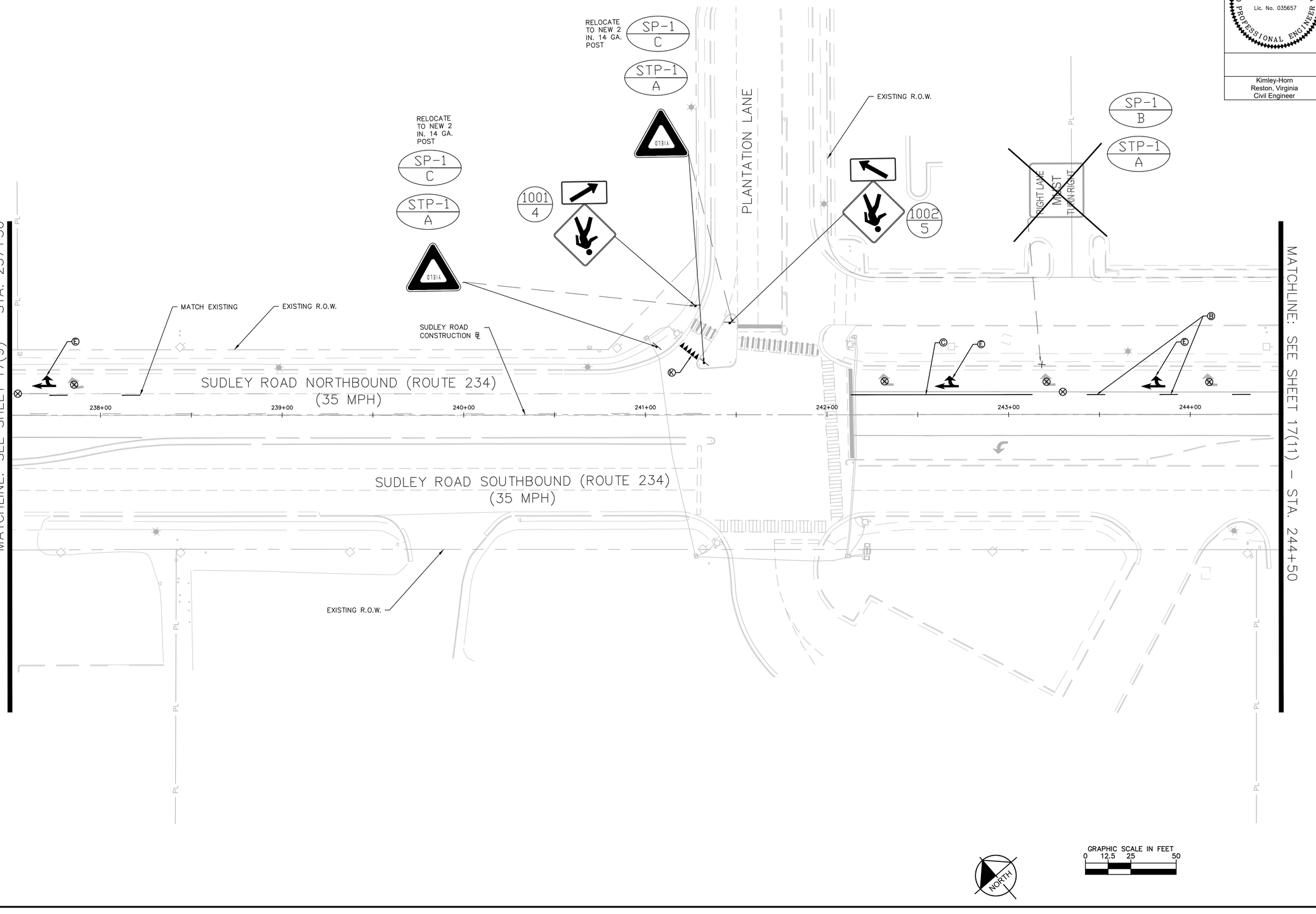
SHEET
17(9) SIGNING AND MARKING

SCALE 1:25

SUDLEY ROAD THIRD LANE (T-015) VDOT UPC #109293

SIGNING AND MARKING PLAN



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SHEET
17(10) SIGNING AND MARKING

SCALE 1:25

SUDLEY ROAD THIRD LANE (T-015) VDOT UPC #109293

SIGNING AND MARKING PLAN

MATCHLINE: SEE SHEET 17(10) - STA. 244+50

MATCHLINE: SEE SHEET 17(12) - STA. 251+50

STONEWALL

EXISTING R.O.W.

EXISTING R.O.W.

STOP

NO TURN ON RED

RELOCATE TO NEW 2 IN. 14 GA. POST

SP-1 C

STP-1 A

RELOCATE TO NEW 2 IN. 14 GA. POST

SP-1 C

STP-1 A

WRONG WAY

SUDLEY ROAD CONSTRUCTION ℄

245+00 246+00 247+00 248+00 249+00 250+00 251+00

53+00 54+00 54+25

SUDLEY ROAD NORTHBOUND (ROUTE 234)
(35 MPH)

SUDLEY ROAD SOUTHBOUND (ROUTE 234)
(35 MPH)

Grass Island

Grass Island

MATCH EXISTING

MATCH EXISTING

EXISTING R.O.W.

EXISTING R.O.W.

PL 52+51.44

52+00

STONEWALL ROAD (ROUTE 4359)
(25 MPH)

L12

STONEWALL ROAD CONSTRUCTION ℄

PL

PL

PL

PL

GRAPHIC SCALE IN FEET
0 12.5 25 50

NORTH

SUDLEY ROAD THIRD LANE (T-015) VDOT UPC #109293

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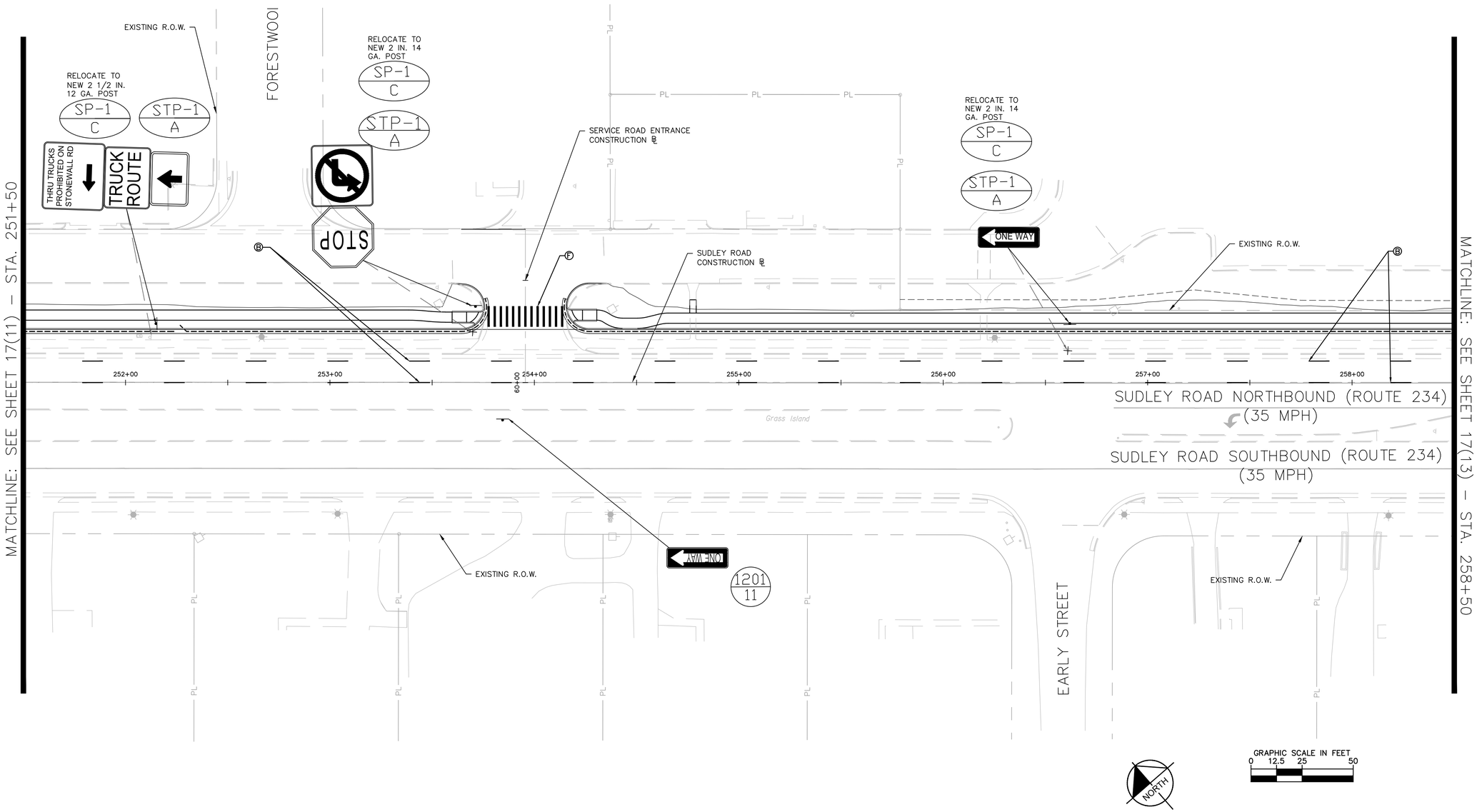
SHEET
17(11) SIGNING AND MARKING

SCALE 1:25

SIGNING AND MARKING PLAN



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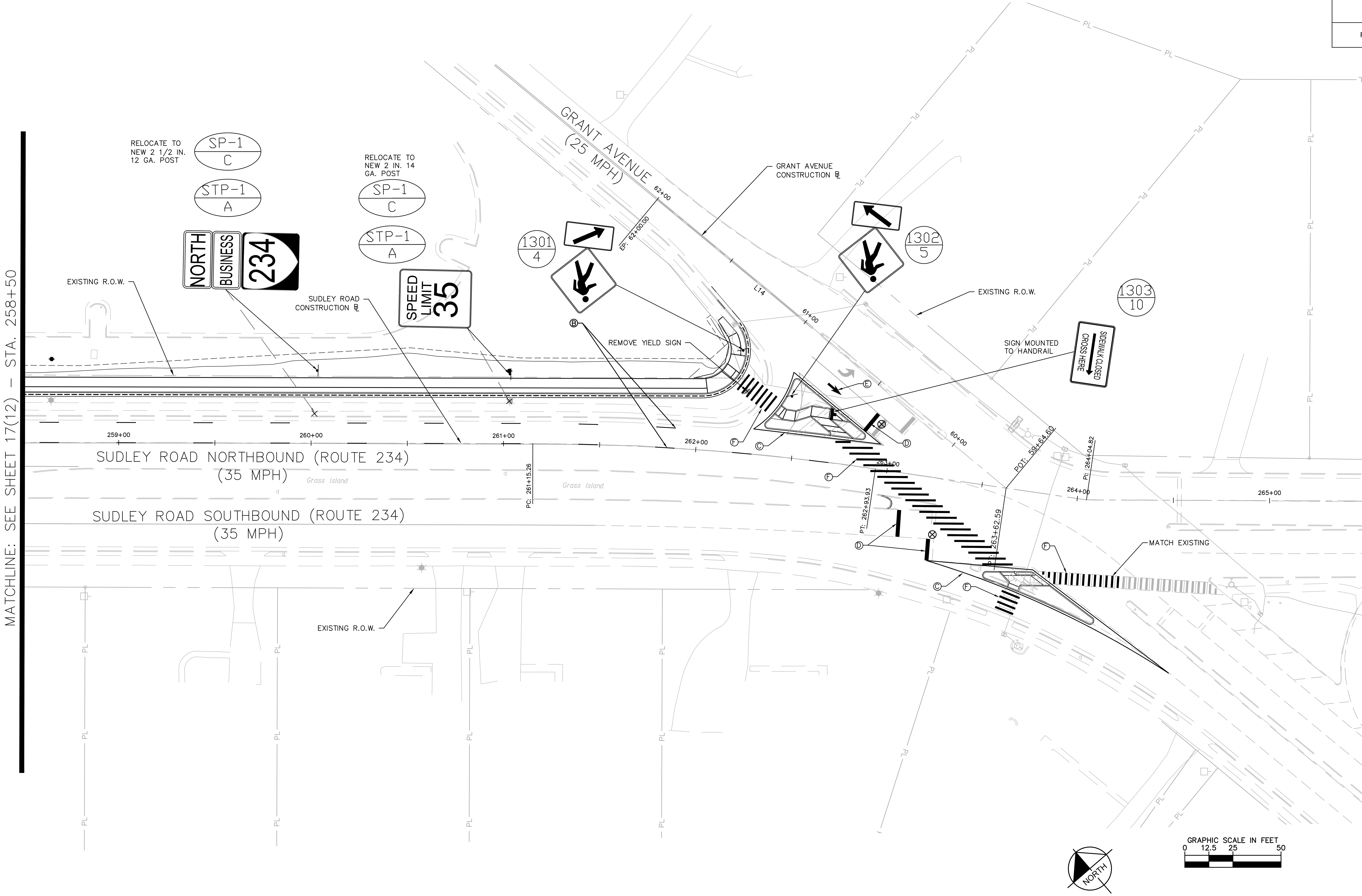
SHEET
17(12) SIGNING AND MARKING

SCALE 1:25

SIGNING AND MARKING PLAN



CHARLES E. SMITH
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COMMONWEALTH OF VIRGINIA PROFESSIONAL ENGINEER

Kimley-Horn
Reston, Virginia
Civil Engineer

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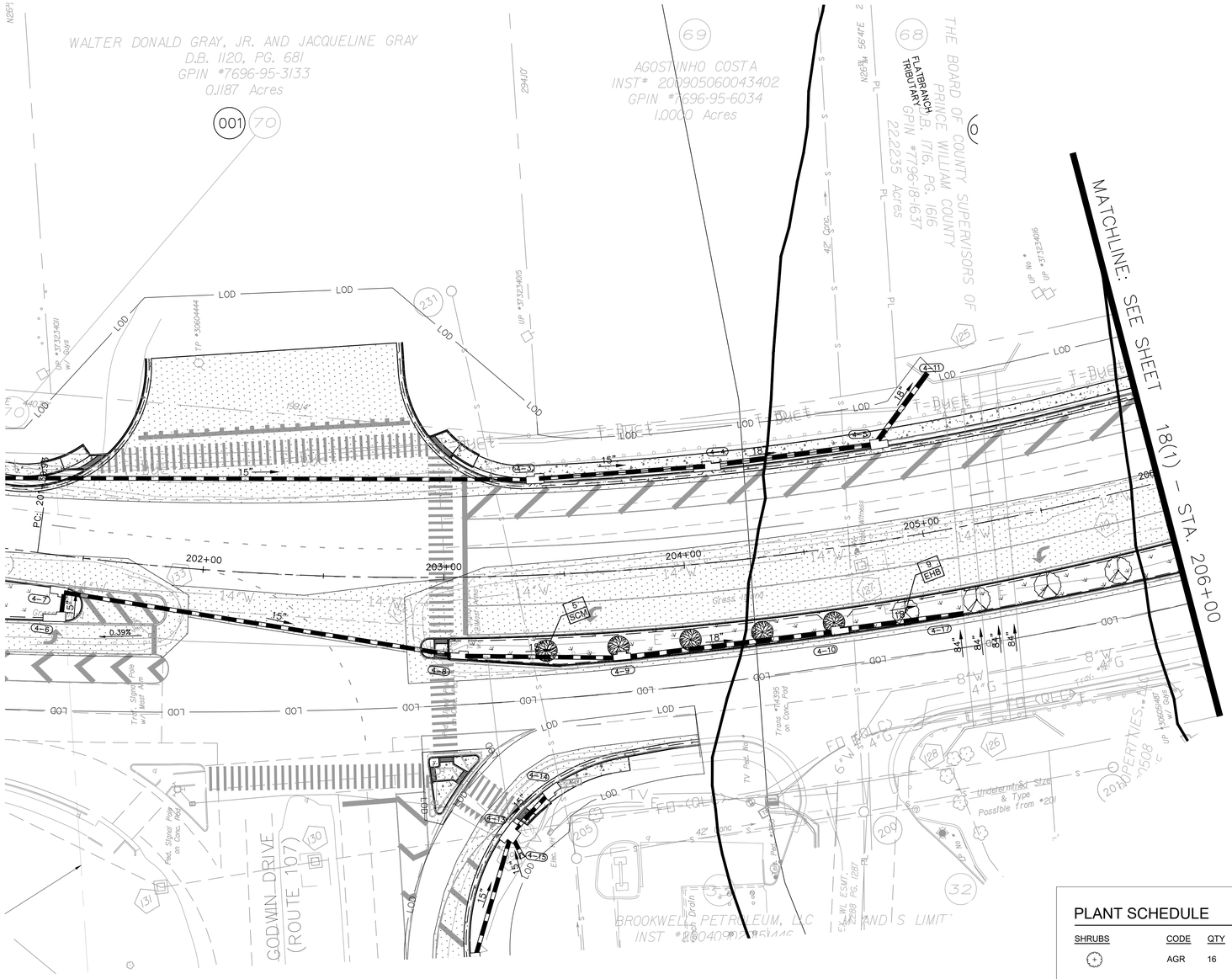
SHEET
17(13) SIGNING AND MARKING

SCALE 1:25

LANDSCAPE PLAN



GRAPHIC SCALE IN FEET
0 12.5 25 50

NORTH

PLANT SCHEDULE

SHRUBS	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT	HEIGHT
	AGR	16	Abelia x grandiflora `Rose Creek`	Rose Creek Abelia	Cont.	24" HT MIN.
	BBC	14	Buddleja x 'Blue Chip' TM	Lo & Behold Blue Chip Butterfly Bush	Cont.	24" HT MIN.
	CSC	23	Cornus sericea 'Cardinal'	Cardinal Red Twig Dogwood	Cont.	30" HT MIN.
	ICC	20	Ilex crenata 'Compacta'	Compact Japanese Holly	Cont.	24" HT MIN.
	PVS	31	Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass	3 Gal.	
	SBG	22	Spiraea x bumalda `Goldflame`	Goldflame Spirea	Cont.	24" HT MIN.
GROUND COVERS	**CODE**	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**CONT**	
	LMB	56	Liriope muscari 'Big Blue'	Big Blue Lilyturf	1 GAL.	

IRRIGATION NOTES

1. CONTRACTOR TO PROVIDE IRRIGATION FOR NEWLY INSTALLED LANDSCAPE
2. CONTRACTOR TO PROVIDE DESIGN DRAWINGS FOR APPROVAL PRIOR TO INSTALLATION
3. REFER TO UTILITY PLANS FOR WATERLINE TIE IN & METER LOCATION.
4. IRRIGATION CONTRACTOR TO PROVIDE AND INSTALL BACKFLOW PREVENTER

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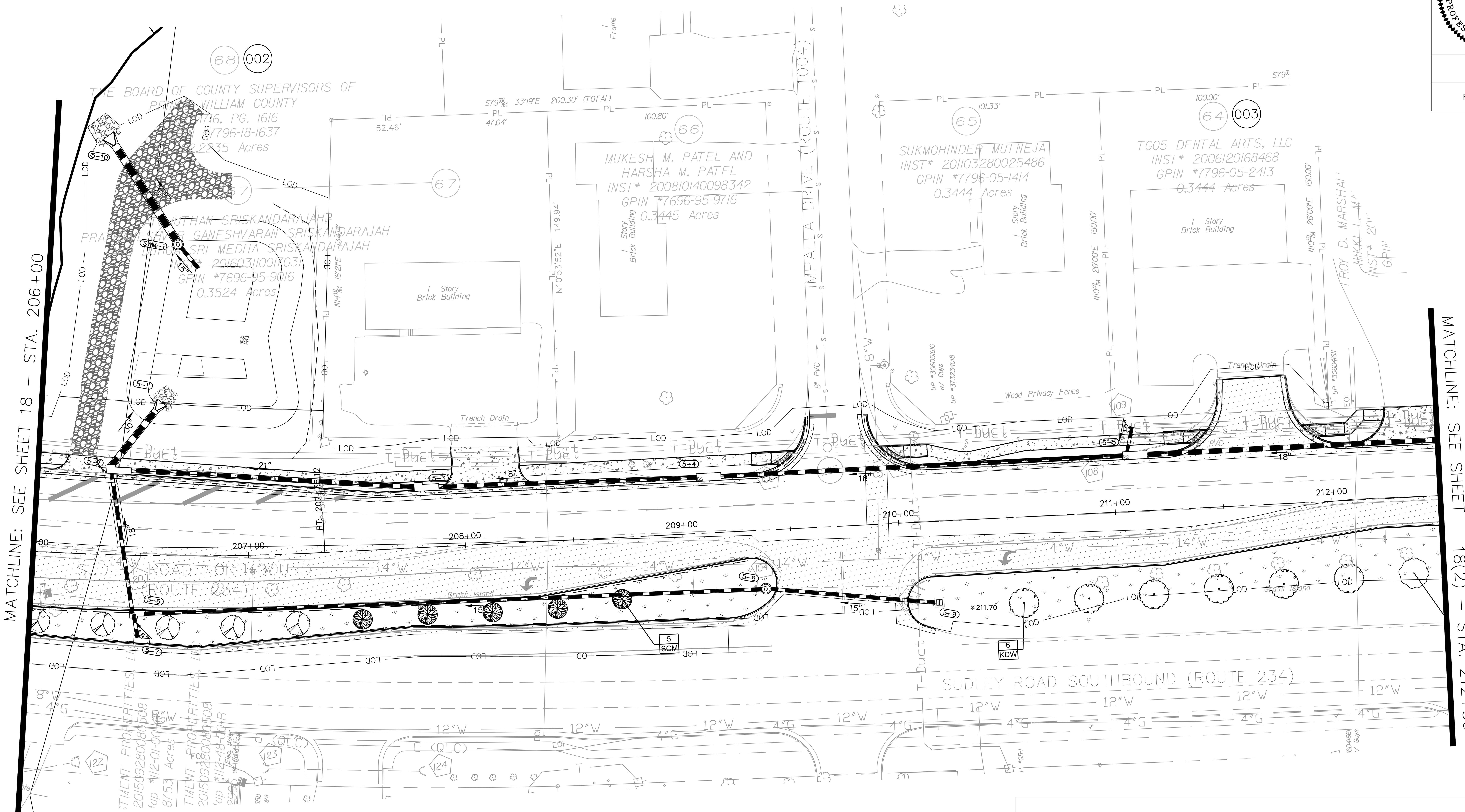
SUDLEY ROAD THIRD LANE (T-015) VDOT UPC #109293

SHEET
18 LANDSCAPE PLAN

SCALE 1:25

LANDSCAPE PLAN



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4. IRRIGATION CONTRACTOR TO PROVIDE AND INSTALL BACKFLOW PREVENTER

PLANT SCHEDULE

TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	CALIPER	
	SCM	10	Lagerstoermia indica 'Sioux'	Sioux Crape Myrtle	3 in.	30' o.c.
	EHB	9	Carpinus betulus 'Fastigiata'	European Hornbeam	3 in	30' o.c
	KGW	6	Cornus kousa	Kousa Dogwood	3 in.	30' o.c.
	AM	6	Acer ginnala	Acer Maple	3 in.	30' o.c.
	YCH	7	Prunus x yedoenis	Yoshino Cherry	3 in.	30' o.c.
	GRT	6	Koelreuteria paniculate	Golden Rain Tree	3 in.	30' o.c.

TOPSOIL B SEE SHEET 18(4) NOTE 2B FOR DETAILS

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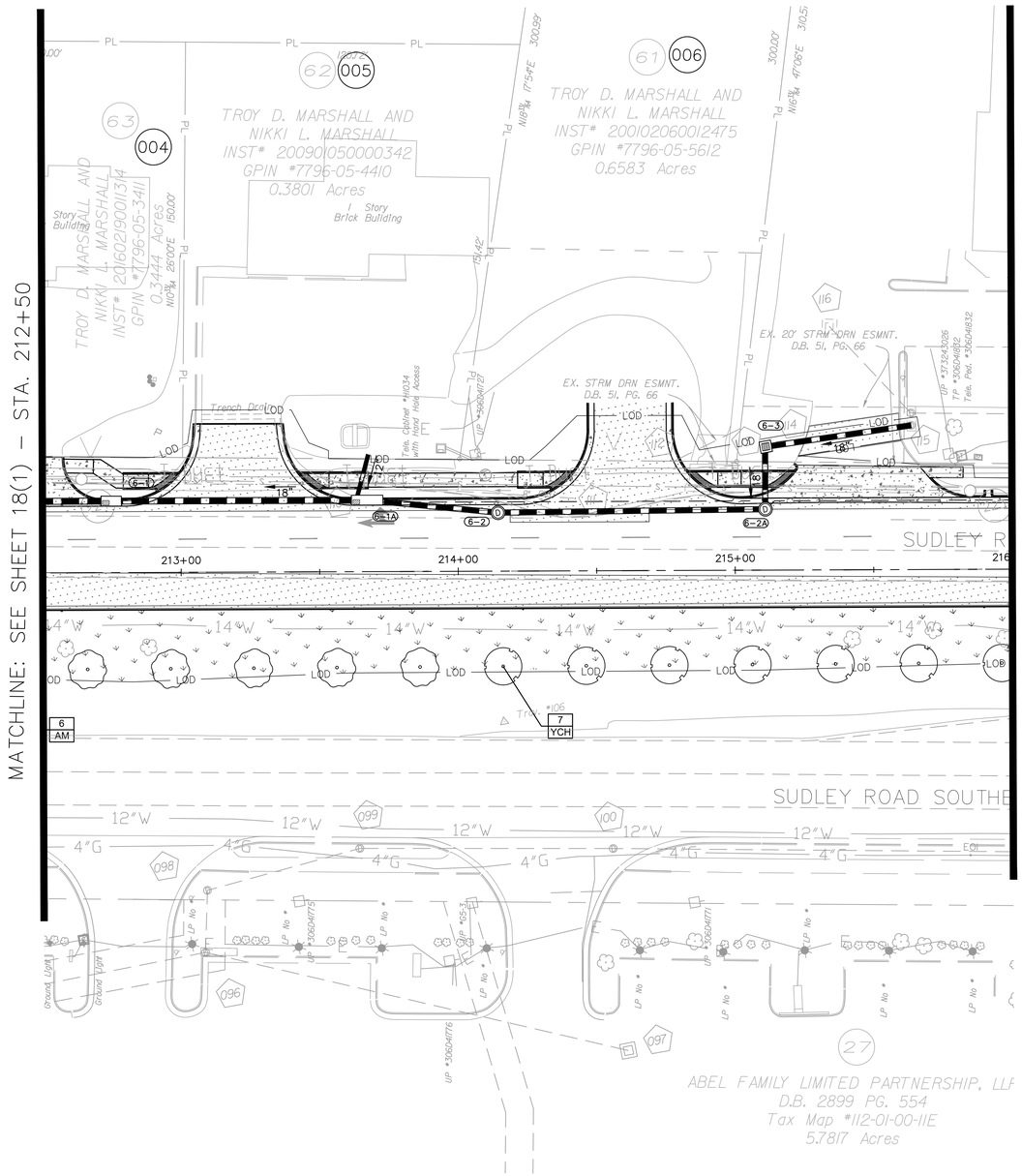
SHEET
18(1) LANDSCAPE PLAN

SCALE 1:25

LANDSCAPE PLAN



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GRAPHIC SCALE IN FEET
0 12.5 25 50

NORTH

PLANT SCHEDULE

TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	CALIPER	
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	EHB	9	Carpinus betulus 'Fastigiata'	European Hornbeam	3 in	30' o.c
	KGW	6	Cornus kousa	Kousa Dogwood	3 in.	30' o.c.
	AM	6	Acer ginnala	Acer Maple	3 in.	30' o.c.
	YCH	7	Prunus x yedoenis	Yoshino Cherry	3 in.	30' o.c.
	GRT	6	Koelreuteria paniculate	Golden Rain Tree	3 in.	30' o.c.

TOPSOIL B SEE SHEET 18(4) NOTE 2B FOR DETAILS

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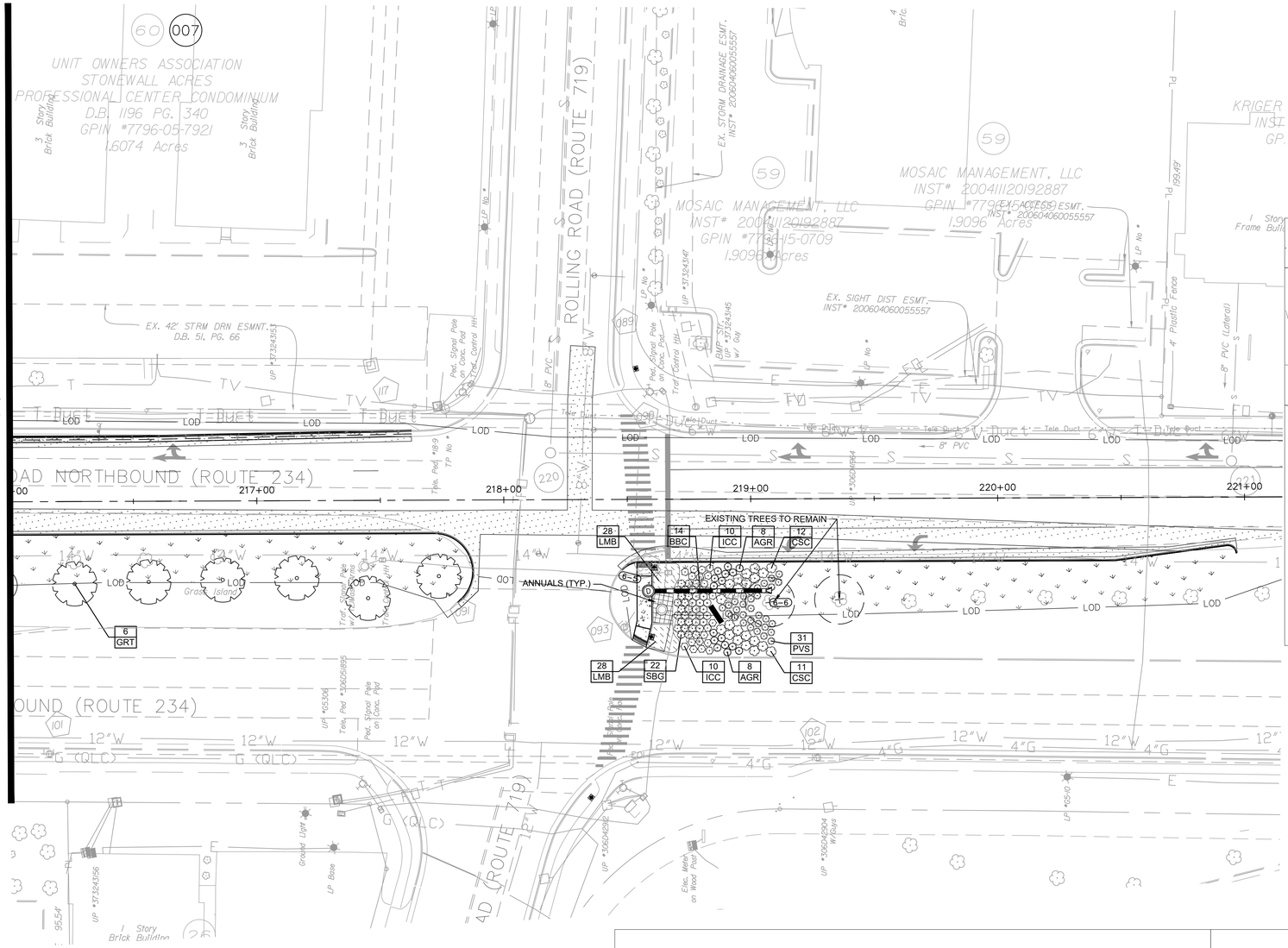
SHEET
18(2) LANDSCAPE PLAN

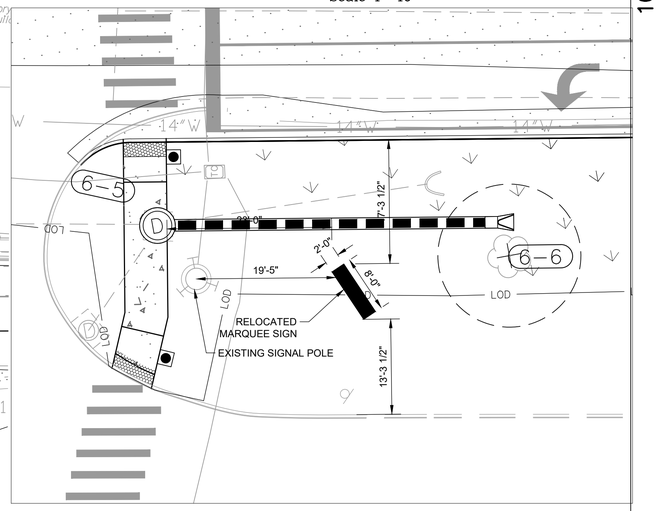
SCALE 1:25

LANDSCAPE PLAN



DIMENSION INSET

Scale 1"=10'



IRRIGATION NOTES

1. CONTRACTOR TO PROVIDE IRRIGATION FOR NEWLY INSTALLED LANDSCAPE
2. CONTRACTOR TO PROVIDE DESIGN DRAWINGS FOR APPROVAL PRIOR TO INSTALLATION
3. REFER TO UTILITY PLANS FOR WATERLINE TIE IN & METER LOCATION.
4. IRRIGATION CONTRACTOR TO PROVIDE AND INSTALL BACKFLOW PREVENTER

GRAPHIC SCALE IN FEET
0 12.5 25 50

NORTH

PLANT SCHEDULE

TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	CALIPER	
	SCM	10	Lagerstoermia indica 'Sioux'	Sioux Crape Myrtle	3 in.	30' o.c.
	EHB	9	Carpinus betulus 'Fastigiata'	European Hornbeam	3 in	30' o.c
	KGW	6	Cornus kousa	Kousa Dogwood	3 in.	30' o.c.
	AM	6	Acer ginnala	Acer Maple	3 in.	30' o.c.
	YCH	7	Prunus x yedoenis	Yoshino Cherry	3 in.	30' o.c.
	GRT	6	Koelreuteria paniculate	Golden Rain Tree	3 in.	30' o.c.
	TOPSOIL B SEE SHEET 18(4) NOTE 2B FOR DETAILS					

PLANT SCHEDULE

SHRUBS	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT	HEIGHT
	AGR	16	Abelia x grandiflora `Rose Creek`	Rose Creek Abelia	Cont.	24" HT MIN.
	BBC	14	Buddleja x 'Blue Chip' TM	Lo & Behold Blue Chip Butterfly Bush	Cont.	24" HT MIN.
	CSC	23	Cornus sericea 'Cardinal'	Cardinal Red Twig Dogwood	Cont.	30" HT MIN.
	ICC	20	Ilex crenata 'Compacta'	Compact Japanese Holly	Cont.	24" HT MIN.
	PVS	31	Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass	3 Gal.	
	SBG	22	Spiraea x bumalda `Goldflame`	Goldflame Spirea	Cont.	24" HT MIN.

GROUND COVERS	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT	SPACING
	LMB	56	Liriope muscari 'Big Blue'	Big Blue Lilyturf	1 GAL.	24" o.c.

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SUDLEY ROAD THIRD LANE (T-015) VDOT UPC #109293

CITY OF MANASSAS, VIRGINIA
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SHEET
18(3) LANDSCAPE PLAN

SCALE 1:25

PERFORMANCE SPECIFICATION

I. PLANTS

A. General

1. Live healthy plants free of dead branches and parts
2. Free of disease, insect, injury and damage
3. Unbroken, intact, dense and solid rootballs and containers, without cracks, flat sides or previously repaired damage.
4. Free of girdling roots or rootbound/circling container conditions
5. Plants of consistent in growth habit and healthy character
6. Free of compromising growth conditions such as weak crotch connections, crossed branches, snags and scars
7. Point of origin growing location within 100 miles of project site
8. Graded, standards, caliper, sizes and stock consistent with *ANSI Z60.1, American Standard for Nursery Stock* most current edition
9. Species identified consistent with *Hortus Third: Concise Dictionary of Plants Cultivated in the United States and Canada*, most current edition and *Manual of Woody Plants: Their Identification, Ornamental Characteristics, Culture, Propagation and Uses*, most current edition
10. All disturbed areas shall be grass seed unless otherwise identified on landscape plans

B. Trees:

1. Deciduous Single Trunk
   a. Full, straight and upright with consistent symmetrical natural branching pattern throughout
   b. Branching Height-seven (7) feet to lowest branch in two years unless otherwise required by local jurisdiction

2. Deciduous Multi-Trunk
   a. Full and upright with straight consistent symmetrical natural branching pattern throughout
   b. Canes evenly spaced and of similar growth habit
   c. Free of suckers and extraneous branching

3. Evergreen Single-Trunk
   a. Full and upright with continuous symmetrical dense natural habit
   b. Clear branching height twelve (12) inches above top of rootball
   c. Free of suckers and extraneous branching
   d. Do not shear or otherwise prune to shape plantings

C. Evergreen and Deciduous Shrubs

1. Full, dense and naturally symmetrical.
2. Consistent with container and/or balled and burlapped size
3. Free of suckers and extraneous branching
4. Do not shear or otherwise prune or shape plantings

D. Evergreen and Deciduous Groundcover

1. Full and dense in pots or flats

E. Perennials and Seasonal Color

1. Full and dense in pots or flats

F. Turf Grass

1. Subgrade

a. Soil Mix-10% Compost, 90% topsoil by volume
b. Preparation-loosen subgrade to a minimum depth of four (4) inches. Remove all non-natural materials including litter, stones, sticks and all items greater than ¾ inch in any dimension
c. Preparation-spread soil mix at a depth of four (4) inches continuously to meet grade elevations shown on drawings. Allow for thickness of sod when applicable

2. Grass Sod

a. Install not longer than twenty-four (24) hours from harvest
b. Grass bed not less than two (2) inches in continuous thickness
c. 100% continuous live sod coverage after first growing season and at end of warranty period.
d. Of uniform non-varying density and continuous texture quality capable of growth and development immediately upon installation. Weed and noxious plant free
e. Stagger installation rows and place aligned parallel to contours
f. Fill joints solidly with planting bed preparation soil
g. Provide anchor pins at twenty-four (24) inches on center for slopes greater than 4:1

3. Grass Seed

a. Mix approved by the Landscape Architect
b. Provide first and new of year seed crops in mix free of weed seeds and deleterious matter
c. Provide seed mix not greater than 15% annual or perennial rye
d. Coverage 85% continuous coverage live stand after first growing season and at end of warranty
e. Replacement or overseeding mixes consistent with original application/installation
f. Provide erosion blankets or other slope retention methods as noted on drawings

II. Materials and Appurtenances

A. Testing

1. Materials testing information/certificates/dated labels shall be current to the project and performed/certified not greater than 120 calendar previous days from current date of submittal for review

B. Top Soil

1. Neutral Ph balance 5.5 -7.5. Friable and containing 2.0-5.0% organic matter by dry weight. Continuously free of non-soil items such as stones, debris, sticks, trash, and deleterious matter greater than ¾ inch in any direction. Clay content shall not exceed 25%.Gravel content shall not exceed 10%. Silt shall not exceed 25%

C. Use of Existing Topsoil

1. Existing topsoil on-site may be repurposed with prior Owner approval. Contractor shall provide soil testing and additive program that demonstrates consistent performance and characteristics and composition as identified herein. Owner shall approve soil testing and soil amendment/additive methods and procedures

D. Shredded Hardwood Mulch

1. 100% organic shredded first year hardwood free of deleterious matter, rock, gravel and weed seed. Neutral Ph balance 5.5-7.5

E. Compost Ph

1. Balanced 5.0-8.5 mature, stable and weed free produced by natural aerobic decomposition. Free of visible contaminants and toxic substances. Not greater than 5% sand, silt, clay or rock by dry weight. Consistent with US-EPA CFR Title 40 Part 503 Standards for Class A biosolids

G. Compost Testing

1. Prior to delivery on-site, the following items are required for approval by Owner: Feedstock percentage in final compost product; statement that the products meets federal, state and local health safety requirements
2. Provide copy of lab analysis less than 120 calendar days old verifying that the product meets described physical requirements; chemical contaminants; Ph; physical contaminants; biological contaminants (including a statement that fecal coliform and salmonella testing and results comply with requirements of the US Composting Council Seal of Testing approval programs

H. Planting Mix

1. 85% topsoil and 15% Compost

I. Fertilizer

1. Granular 10% nitrogen, 6% Phosphorous, 4% Potassium granular form with 50% Nitrogen in organic form. Product and Material Safety Data as approved by Owner

J. Herbicide

1. Product and Material Safety Data as approved by Owner

K. Water

1. Potable only unless otherwise approved by Owner

L. Hardwood Stakes

1. 2 x 2 x 48 inch square of sound hardwood, painted flat black on all sides

M. Tree Ties

1. Villa Non-Abrasive Rubber Tree Ties or approved equal

N. Filter Fabric

1. Mirafi 140-N or approved equal

III. Execution

A. Site Conditions

1. Inspect site and notify Owner in writing of acceptance with indication that project conditions are acceptable are suitable to proceed with work. Notify Owner of any existing damage and/or other conflicting conditions.
2. Do not proceed with work until unsatisfactory conditions have been satisfactorily remedied. Notify Owner of acceptance prior to commencement of work.
3. Notify Owner in writing of any conditions that may preclude successful completion of work including items such as coordination with other trades, incomplete work, drainage, soil temperature and/or composition, access to storage/work areas, damage to conditions, etc.
4. Notify Owner in writing immediately of any items that may influence work schedule, timing of tasks, materials delivery and/or installation and warranty responsibilities.
5. Coordinate and cooperate with other trades working in and adjacent to work areas. Examine drawings of other trades which show development of the entire project and become familiar with the scope of required work by others.

B. Planting Seasons

Recommended seasons are a general guide based on historical climatic data and typical performance of plantings, and which vary dependent on project-specific environmental conditions. Due to construction schedules, recommended planting seasons may/may not coincide with request(s) for certificate of occupancy for projects. Coordination of planting installation and seasons shall be reviewed with Owner on an individual project basis.

1. Deciduous and Evergreen Trees

Do not install/plant the following trees between September 15 and March 15
1. Oaks (Quercus Sp., Such as Q. rubra, Q. alba, Q. phellos, Q. coccinnea)
2. Dogwood (Cornus Sp.)
3. Sweetgum (Liquidambar Sp.)
4. All Conifers and Evergreens except White Pine (Pinus strobus Sp.)

2. Deciduous and Evergreen Shrubs

a. Install/plant between March 15 and June 15 and/or September 15 and November 30

3. Perennials

a. Install/plant between March 15 and June 15 and/or September 15 and November 30

4. Turf Grass

a. Install/plant between March 15 and May 15 and/or September 15 and November 30
b. Do not install/plant seed or sod turf grass areas when ambient air temperature is below forty (40) degrees Fahrenheit, or forecast for a twelve (12) hour period after completion of work

7. No Plant Installation

a. Do not install plantings or turf grass between June 15 and September 15, without approval by Owner

C. Positioning & Location of Plantings

1. Position plants to show the most-prominent and well-formed face to most-public view
2. Field locate plants and location/spacing/dimension of planting beds on project site prior to beginning installation
3. Verify location of individual plants and plant beds prior to beginning installation. Do not proceed without Owner approval

D. Implementation

1. Pursue work continuously without delay or interruption until completion unless notified otherwise by Owner
2. Provide project submittals ahead of commencement of work. Landscape Architect requires a minimum of ten (10) working days from date of receipt for review of submittals and response to Owner and Contractor. Plan accordingly for procurement of materials
3. Continuously update implementation schedule and notify Owner of progress. Delays related to material availability are not cause for non-completion of scheduled delivery of work
4. Report delays due to weather or site conditions immediately upon finding. Provide recommendation for remedy of schedule delays. Do not work, place or modify frozen soil
5. Report delays due to extraordinary natural or other conditions beyond control of Contractor

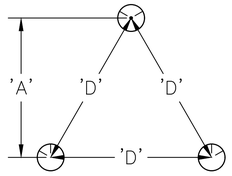
E. Clean Up

1. Remove trash, debris and work materials from site prior to request for substantial completion. Thoroughly clean surfaces impacted by work including building, parking areas, roadways, sidewalks, signs, lights, site furnishings, etc.
2. Repair any damage to existing conditions that occurred during execution of work.
3. All clean-up and demobilization procedures shall be performed to satisfaction of the Owner and Landscape Architect.

GENERAL NOTES

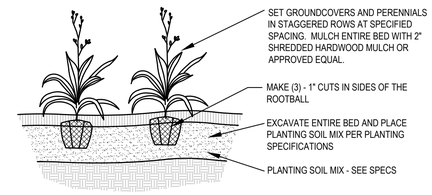
1. Plants shall be healthy, vigorous material, free of pests and diseases and are subject to approval/rejection of the Landscape Architect prior to, during and after installation.
2. Contractor shall identify all materials at growing location prior to purchase and submit digital photographs, and source list to the Landscape Architect for approval at a minimum of six (6) calendar weeks prior to installation. Plants not approved shall be resourced and resubmitted.
3. Planting beds and individual tree plantings shall be mulched continuously as specified.
4. Prior to construction the contractor shall be responsible for locating underground utilities and execute work in a manner that avoids damage to utilities during the course of work. Contractor shall be responsible or remedy of any damage to utilities, structures, site appurtenances that occur as a result of landscape related work.
5. Contractor is responsible for verifying quantities shown on documents. Field adjustments shall be approved by Landscape Architect prior to installation. Quantities indicated on drawings are for reference-it is the Contractor's responsibility to ensure full coverage of plants at the indicated spacing.
6. Contractor is responsible for maintenance of all plantings including, but not limited to watering, mowing, edging, spraying, mulching, fertilizing, of plantings and turf areas for one (1) calendar year from date of certificate of occupancy. Contractor is responsible for warranty of all plant material for a period of one (1) calendar year from date of certificate of occupancy. Warranty replacement planting shall meet or exceed the original specification identified on drawings. Replacement planting shall extend the same warranty as originally installed materials. Plantings and grass areas shall be flourishing and fully thriving at end of warranty period.
7. Plants identified for replacement by Owner, Landscape Architect shall be replaced immediately by the Contractor unless otherwise agreed upon. Plantings (trees, shrubs, groundcover) subject to replacement by warranty shall exhibit characteristics of 30% dead-per individual plant, non-contributing or disease compromised. Grass areas suitable for acceptance shall demonstrate 85% sustained/consistent and continuous, densely established coverage.
   Contractor shall perform a site review at end of warranty period and provide the Owner with written documentation of the site, including plant health, warranty replacement items, and conditions that may be influencing plant health. Contractor shall remove from plants and site, all staking and guying material at end of warranty period.
8. Contractor shall comply with all local, state and federal requirements, codes and regulations related to the work undertaken.
9. All material including planting operation appurtenances shall be of domestic origin manufacture and sourced within 100 miles of the project site.
10. Contractor is responsible for coordination among trades operating on site. Coordination and if necessary resulting modifications to schedules are responsibility of the Contractor.

NOTE: GROUNDCOVERS AND PERENNIALS TO BE INSTALLED WITH TRIANGULAR SPACING

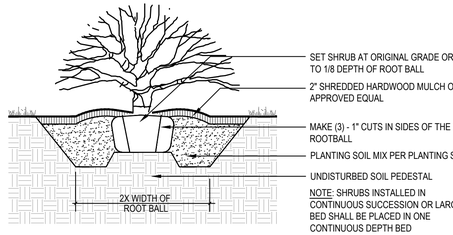


PLANT SPACING 'D'	ROW 'A'
8" O.C.	6.93" O.C.
10" O.C.	8.66" O.C.
12" O.C.	10.4" O.C.
18" O.C.	15.6" O.C.
24" O.C.	20.8" O.C.
36" O.C.	30.0" O.C.
48" O.C.	31.5" O.C.

A GROUNDCOVER SPACING
NOT TO SCALE



B GROUNDCOVER PLANTING
NOT TO SCALE



NOTE: SHRUBS INSTALLED IN CONTINUOUS SUCCESSION OR LARGE BED SHALL BE PLACED IN ONE CONTINUOUS DEPTH BED

C SHRUB PLANTING
NOT TO SCALE

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DESCRIPTION	BY	DATE

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APPROVED BY: DATE:

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SHEET
18(4) LANDSCAPE NOTES & PLANTING DETAILS
SCALE 1:25

LANDSCAPE PLAN – RPA PLANTING

	Botanical Name	Common Name
20.00 %	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype
19.00 %	*Andropogon gerardii, 'Prairie View'-IN Ecotype*	Big Bluestem, 'Prairie View'-IN Ecotype
18.10 %	*Sorghastrum nutans, PA Ecotype*	Indiangrass, PA Ecotype
16.40 %	*Schizachyrium scoparium, 'Camper'*	Little Bluestem, 'Camper'
5.00 %	*Panicum clandestinum, Tioga*	Deertongue, Tioga
5.00 %	*Panicum rigidulum, PA Ecotype*	Redtop Panicgrass, PA Ecotype
4.00 %	*Chasmanthium latifolium, WV Ecotype*	River Oats, WV Ecotype
3.00 %	*Rudbeckia hirta*	Blackeyed Susan
2.00 %	*Chamaecrista fasciculata, PA Ecotype*	Partridge Pea, PA Ecotype
2.00 %	*Senna hebecarpa, VA & WV Ecotype*	Wild Senna, VA & WV Ecotype
1.00 %	*Chamaecrista nictitans, NC Ecotype*	Sensitive Pea, NC Ecotype
1.00 %	*Lobelia siphilitica, PA Ecotype*	Great Blue Lobelia, PA Ecotype
0.70 %	*Asclepias incarnata, PA Ecotype*	Swamp Milkweed, PA Ecotype
0.50 %	*Aster prenanthoides, PA Ecotype*	Zigzag Aster, PA Ecotype
0.50 %	*Aster puniceus, PA Ecotype*	Purplestem Aster, PA Ecotype
0.40 %	*Monarda fistulosa, Fort Indiantown Gap-PA Ecotype*	Wild Bergamot, Fort Indiantown Gap-PA Ecotype
0.40 %	*Vernonia noveboracensis, PA Ecotype*	New York Ironweed, PA Ecotype
0.30 %	*Eupatorium perfoliatum, PA Ecotype*	Boneset, PA Ecotype
0.30 %	*Helenium autumnale, Northern VA Ecotype*	Common Sneezeweed, Northern VA Ecotype
0.20 %	*Eupatorium fistulosum, PA Ecotype*	Joe Pye Weed, PA Ecotype
0.20 %	*Solidago rugosa, PA Ecotype*	Wrinkleleaf Goldenrod, PA Ecotype

100.00 %

Seeding Rate: Seed at 20 lbs/acre with a cover crop. For a cover crop on areas that should not experience flooding, use one of the following: grain oats (30 lbs/acre; 1 Jan to 30 Apr), brown top millet (10 lbs/acre; 1 May to 31 Aug), or Grain Rye (30 lbs/acre; 1 Sep to 31 Dec). If flooding may occur, use grain rye (30 lbs/acre; 1 Sep to 30 Apr) or Japanese Millet (10 lbs/acre; 1 May to 31 Aug).

Reforestation Schedule — DCSM Sec 802.21.E.

Planting density shall be a minimum of 450 trees per acre

RPA Acreage RPA Area 6, 375 SF

Required Trees 66

Large Deciduous Tree

Total Qty.	Botanical Name	Common Name	Type	Spacing
43	*Acer rubrum*	Red Maple	Seedling - 12" HT Min.	10' x 10' Spacing
43	*Carya tomentosa*	Mockernut Hickory	Seedling - 12" HT Min.	
43	*Fagus grandifolia*	American Beech	Seedling - 12" HT Min.	
43	*Gleditia triacanthos inermis*	Thornless Honeylocust	Seedling - 12" HT Min.	
44	*Juglans nigra*	Black Walnut	Seedling - 12" HT Min.	
44	*Liquidambar styraciflua 'Rotundiloba*	Sweetgum	Seedling - 12" HT Min.	
44	*Liriodendron tulipfera*	Tulip Poplar	Seedling - 12" HT Min.	
44	*Platanus occidentalis*	American Sycamore	Seedling - 12" HT Min.	
44	*Quercus bicolor*	Swamp White Oak	Seedling - 12" HT Min.	
44	*Quercus phellos*	Willow Oak	Seedling - 12" HT Min.	
44	*Ulmus americana*	Princeton Elm	Seedling - 12" HT Min.	
44	*Zelkova serrata*	Zelkova	Seedling - 12" HT Min.	
Subtotal 524				

Small Deciduous Trees

Total Qty.	Botanical Name	Common Name	Type	Spacing
43	*Amelanchier arborea*	Downey Serviceberry	Seedling - 12" HT Min.	10' x 10' Spacing
43	*Carpinus caroliniana*	American Hornbeam	Seedling - 12" HT Min.	
43	*Cercis canadensis*	Eastern Redbud	Seedling - 12" HT Min.	
43	*Chionanthus virginicus*	Virginia Fringetree	Seedling - 12" HT Min.	
44	*Cornus florida*	Flowering Dogwood	Seedling - 12" HT Min.	
44	*Halesia carolina*	Carolina Silverbell	Seedling - 12" HT Min.	
44	*Lagerstoremia indica*	Crape Myrtle	Seedling - 12" HT Min.	
Subtotal 304				

Total 828	**Large Deciduous Tree %**	**Small Deciduous Tree %**	***Max Percentage***
	63.3%	36.7%	*70.0%*

Reforestation Notes:
1. Seedling Species shall be equally dispursed throughout and shall be equally spaced.
2. Protective tree shelters must be provided a minimum of 4' in height and weed mats or mulch shall be used for all trees. Install per manufacturers instructions.

GRAPHIC SCALE IN FEET
0 12.5 25 50

NORTH

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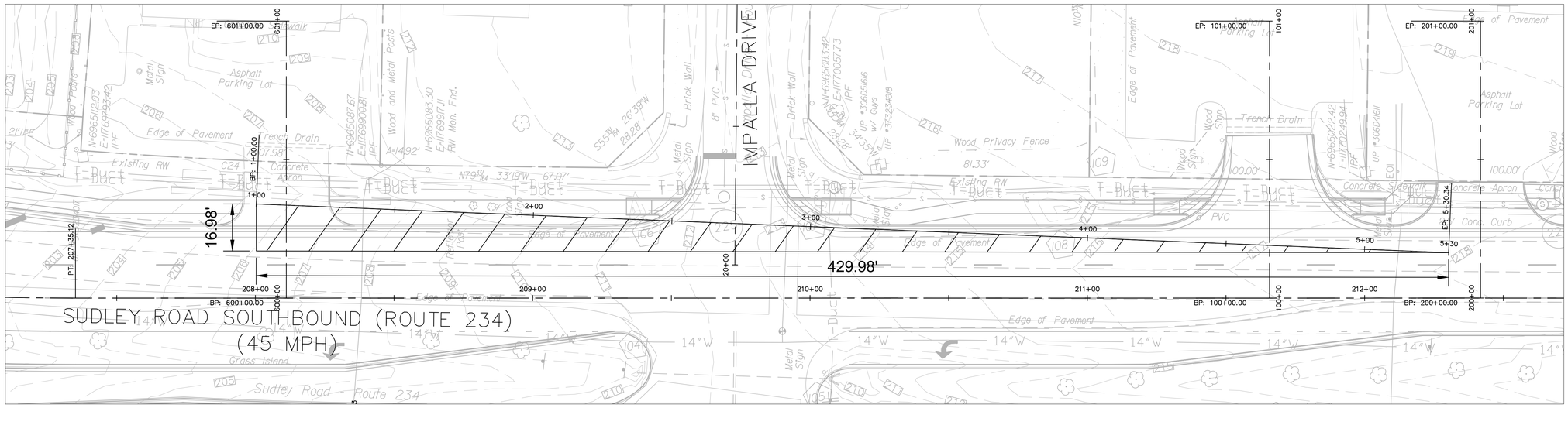
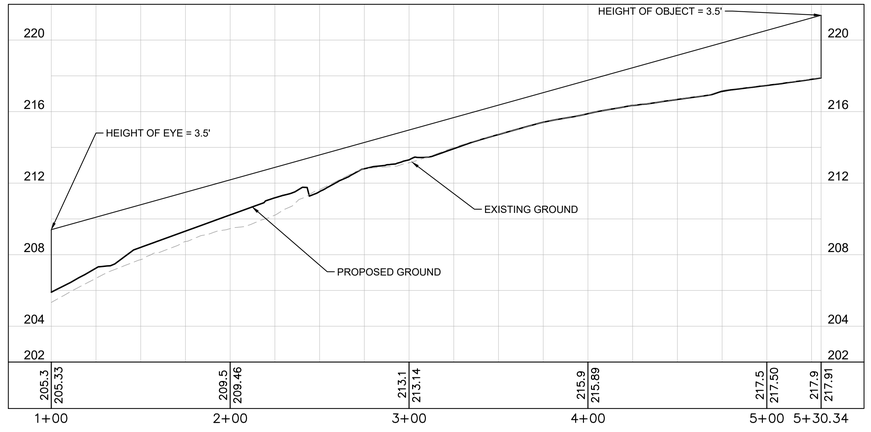
SHEET
18(5) LANDSCAPE PLAN – RPA PLANTING
SCALE 1:25

SIGHT DISTANCE EXHIBITS





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SHEET
19(1) – SIGHT DISTANCE
SCALE 1:20