Application for URBAN DESIGN COMMITTEE Review

Department of Planning and Development Review
Planning & Preservation Division
900 E. Broad Street, Room 510
Richmond, Virginia 23219
(804) 646-6335
http://www.richmondgov.com/CommitteeUrbanDesign

Application Type

- [x] Addition/Alteration to Existing Structure
- [ ] New Construction
- [ ] Streetscape
- [ ] Site Amenity
- [ ] Encroachment
- [ ] Master Plan
- [ ] Sign
- [ ] Other

Review Type

- [ ] Conceptual
- [x] Final

Project Name: Belmont Road Roundabout

Project Address: Belmont Road and West Belmont Road

Brief Project Description (this is not a replacement for the required detailed narrative) : This project consists of one lane roundabout at the intersection of Belmont Road and West Belmont Road. The improvements will provide an enhance and safer gateway to the neighborhood, reducing neighborhood speeding and enhancing overall community livability. Please see plans for the details.

Applicant Information

(on all applications other than encroachments, a City agency representative must be the applicant)

Name: Michael B. Sawyer, P.E. 11/10/15 Email: Michael.Sawyer@richmondgov.com

City Agency: DPW - Transportation Engineering Division Phone: 804-646-3435

Address: 900 E Broad street, Room 707, Richmond, VA 23219 11/10/15

Main Contact (if different from Applicant): Maritza Feliz-Reyes

Company: DPW - Transportation Engineering Division Phone: 804-646-6334

Email: Maritza.reyes@richmondgov.com

Submittal Deadlines

All applications and support materials must be filed no later than 21 days prior to the scheduled meeting of the Urban Design Committee (UDC). Please see the schedule on page 3 as actual deadlines are adjusted due to City holidays. **Late or incomplete submissions will be deferred to the next meeting.**

Filing

Applications can be mailed or delivered to the attention of "Urban Design Committee" at the address listed at the top of this page. **It is important that the applicant discuss the proposal with appropriate City agencies, Zoning Administration staff, and area civic associations and residents prior to filing the application with the UDC.**

UDC Background

The UDC is a ten member committee created by City Council in 1968 whose purpose is to advise the City Planning Commission on the design of projects on City property or right-of-way. The UDC provides advice of an aesthetic nature in connection with the performance of the duties of the Commission under Sections 17.05, 17.06 and 17.07 of the City Charter. The UDC also advises the Department of Public Works in regards to private encroachments in the public right-of-way.

Traffic Control Improvements – Belmont Road Roundabout

This project consists of the installation of one (1) roundabout at the existing intersection of Belmont Road, S. Belmont Road and W. Belmont Road. Belmont Road and S. Belmont Road are four lane divided streets with curb and gutter. W. Belmont Road is a two lane street with shoulders and ditches. The W. Belmont Road is controlled by stop signs and the S. Belmont Road is free-flow.

A 2011 traffic study was performed and determined a traffic signal was not warranted. At this time northbound direction intersection sight distance was improved and intersection ahead warning signs with 25mph advisory signs and hazard identification beacons were installed. Neighborhood meetings followed later and a roundabout was recommended by the City Transportation Engineer.

The roundabout is estimated to cost $675,000. Design is 90% complete and construction is scheduled between July and October 2016. The design will require the acquisition of two small easements from two different parcels. The project will connect existing concrete sidewalks with similar materials. No on street parking loss is proposed.

The project as envisioned will include: "Mary Nell Holly", "Carissa Holly", "Dwarf Buford" and Blue Pacific Juniper" trees/shrubs; "Daffodil" and "Daylily" bulbs/perennials; and "Blue Pacific" ground covers inside the center roundabout.
The new roundabout will provide a traffic calming measure for all approach legs. These improvements will enhance driver, bicycle and pedestrian safety, while contributing to the beautification through new landscaping, and thereby enhancing the quality of life for our residents.

Below are our response to UDC/PC recommendations:

(1) That the applicant consider reducing the apron width, with the excess used to enlarge the central landscaped island. **The central landscaped island has been increased by 7′ from that which was shown at the preliminary meeting. The inside radius increased from 16′ to 24′ which allows for more area for vegetation and planting.**

(2) That the final plans include a landscape plan and schedule showing plant species, quantity, location and size at the time of installation. **The final plans include a landscape plan and schedule showing plant species, quantity, location and size as requested (sheets 6(1) thru 6(3).**

(3) That the applicant considers proving a larger shade tree (or multiple smaller trees) in the central landscaped portion of the roundabout in addition to the concentric rings of evergreen hedge, perennials/bulbs and an evergreen ground cover. **We considered utilizing larger shade trees in the central island portion of the roundabout in addition to the concentric rings of plantings as requested but determined that we would conflict with the existing underground utilities (city gas line, city sanitary sewer line, and city waterline) and the existing overhead (Dominion Virginia Power line).**

(4) That the applicant continues the existing median tree planting on Belmont Rd in the new median extensions. **The current plans do provide for additional green space within the extended median areas along Belmont Road which would be conducive for additional tree planting as requested. The current budget does not allow for additional tree plantings in the median extensions at this time, however the city has applied for additional funds and should those additional funds be allocated to the project, we would suggest that we consult with the city's urban forestry group to include additional trees.**

(5) That the applicant provides shade trees in the newly created, larger planting strips on Belmont Rd. **The current plans do provide for additional green space within the curb extension areas along Belmont Road which would be conducive for additional tree planting as requested. The current budget does not allow for additional tree plantings in the curb extensions at this time, however the city has applied for additional funds and should those additional funds be allocated to the project, we would suggest that we consult with the city's urban forestry group to include additional trees.**

(6) That the applicant landscapes the splitters on W Belmont Rd. **We have removed the plain concrete splitter islands at the noses of the new splitter islands as requested. These plantings are shown on the landscape plan.**

(7) That the applicant explores overhead utility relocation through the on the intersection to allow for larger tree species in the central landscaped island. **We have designed the intersection layout to avoid having to move the Dominion Virginia Power poles (thus associated overhead lines). This was done to keep the cost to a minimum and avoid the schedule and budget complications associated with moving the line. In the event that the city would like to move the line for aesthetics or other reason, it could require additional easements, most assuredly would add cost to the project, and would require time for Dominion Virginia Power to order materials and schedule a crew.**

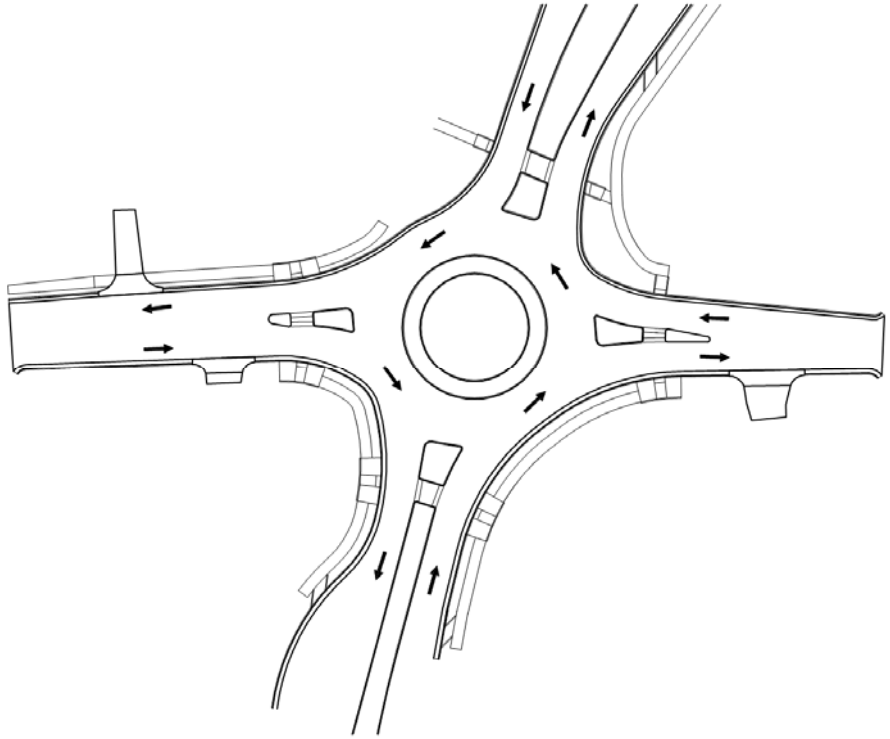
(8) That the final plans include lighting plan, showing make, model and finish for any light pole and fixture, as well as fixture light source and color. **These final plans include a lighting plan (sheet 7) as requested. Plan includes the requested information (wooden poles with a 5'-7' arm with American Electric Lighting Roadway series 115 (250 Watt high pressure sodium luminaries)).**

(9) That the final plans include a signage plan. **These final plans include a signage plan (sheets 2K(1) and 2K(2)) as requested.**

(10) That the applicant consider working with the Public Art Commission on an installation in the landscaped island. **This items has been sent the information to the Public Art Commission. It should be noted that if the Public Art Commission does add a feature to the central island that the landscape plan would need to be modified to work in conjunction with the feature(s) envisioned.**

(11)That the applicant work with Mr. Nicholas Smith, a citizen who spoke to the item, to improve bicycle access around the roundabout. **The applicant has met with and discussed the project with Mr. Nicholas Smith and has modified the design to include a dis-mount (coming into the roundabout areas) ramp and a re-mount (leaving the roundabout areas) ramp both north and south along Belmont Road as discussed and agreed upon.**

BELMONT ROAD ROUNDABOUT



BELMONT ROAD AT WEST BELMONT ROAD ROUNDABOUT

DECEMBER 5, 2015

URBAN DESIGN COMMITTEE MEETING

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

BELMONT ROAD ROUNDABOUT

LANDSCAPE PLAN

PLANT LIST

TREES & SHRUBS

ILEX CORNUTA 'CARISSA'
ILEX CORNUTA 'DWARF BURFORD'
ILEX X 'MARY NELL'

PERENNIALS & BULBS

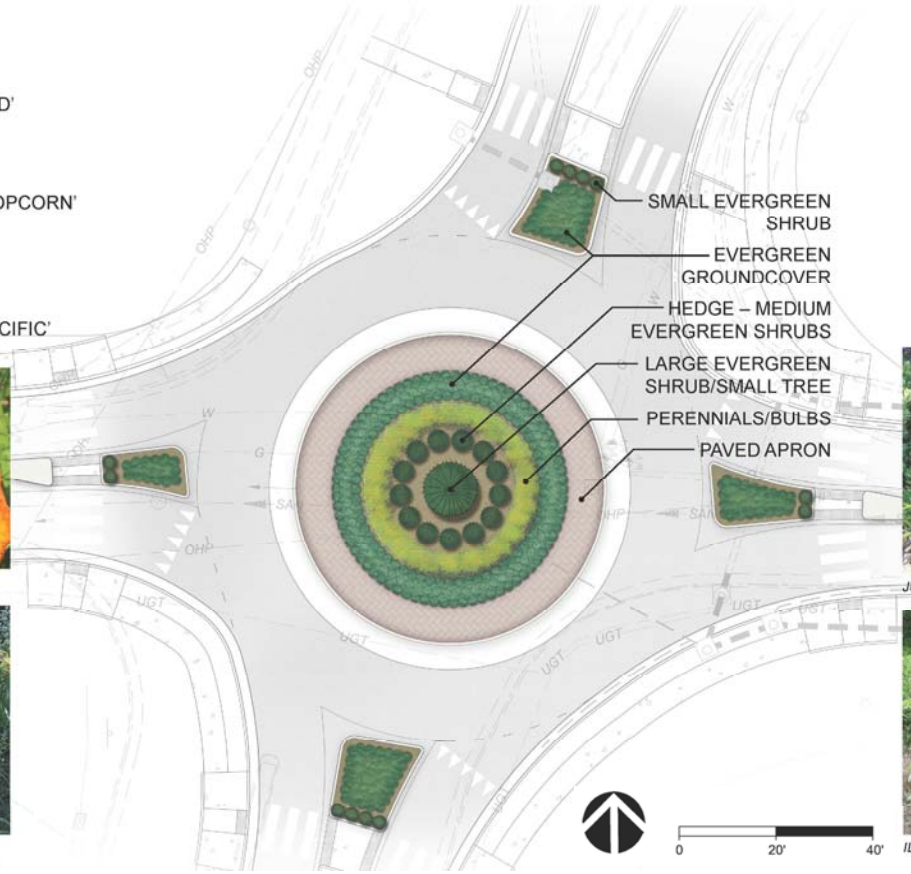
HEMEROCALLIS X 'BUTTERED POPCORN'
HEMEROCALLIS X 'FIRE KING'
NARCISSUS X 'CARLTON'

GROUNDCOVERS

JUNIPERUS CONFERTA 'BLUE PACIFIC'

HEMEROCALLIS X 'FIRE KING'

HEMEROCALLIS X 'BUTTERED POPCORN'



ILEX X 'MARY NELL'

JUNIPERUS CONFERTA 'BLUE PACIFIC'

ILEX CORNUTA 'DWARF BURFORD'

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BELMONT ROAD ROUNDABOUT

AERIAL VIEW OF THE INTERSECTION

TIMMONS GROUP
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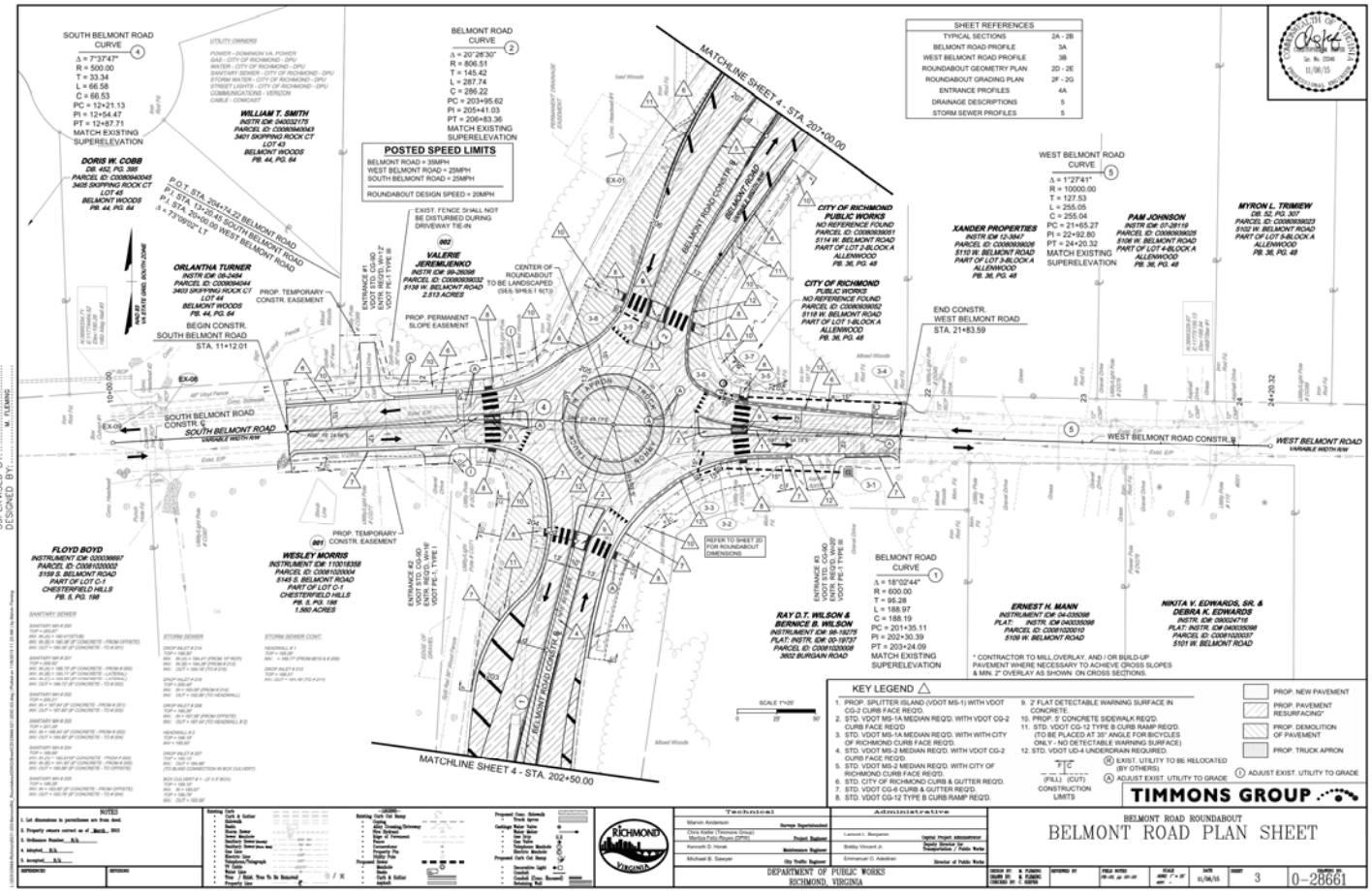
BELMONT ROAD ROUNDABOUT



PROJECT FOOTPRINT

FEATURES

- INTERSECTION CONTROL
- CENTER ISLAND
- TRUCK APRON
- CONCRETE SIDEWALK
- LANDSCAPE

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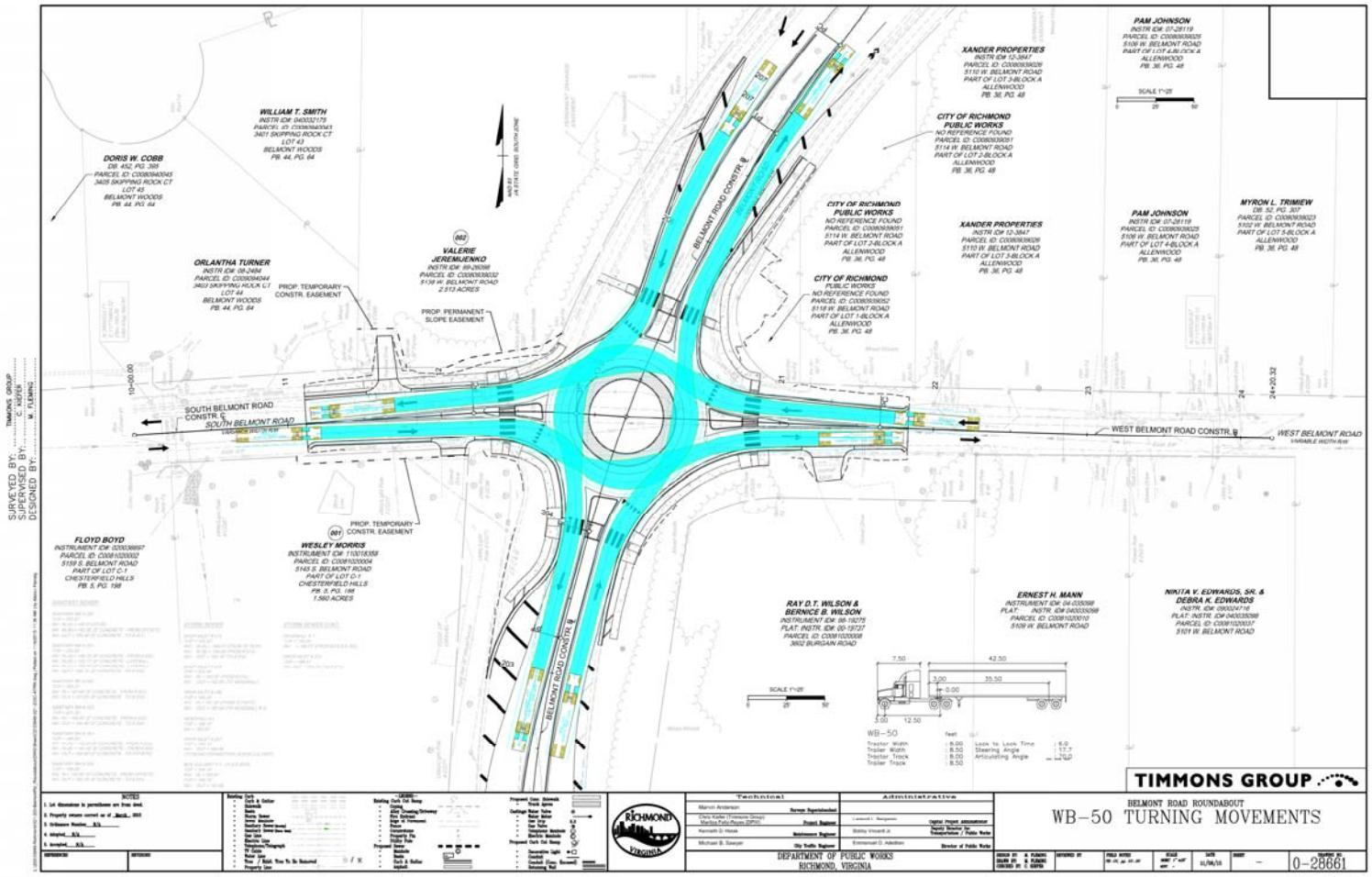
BELMONT ROAD ROUNDABOUT



AUTOTURN FOR WB-50 VEHICLE

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

CITY OF RICHMOND, VIRGINIA
DEPARTMENT OF PUBLIC WORKS
TRANSPORTATION ENGINEERING DIVISION

COMMONWEALTH OF VIRGINIA
CHRISTOPHER KIEFER
Lic. No. 23346
11/06/15
PROFESSIONAL ENGINEER

90% CONSTRUCTION PLANS
NOT FOR CONSTRUCTION

BELMONT ROAD ROUNDABOUT

(INTERSECTION OF BELMONT ROAD, SOUTH BELMONT ROAD, & WEST BELMONT ROAD)

CIP#: 040-290-8910-102656-500552

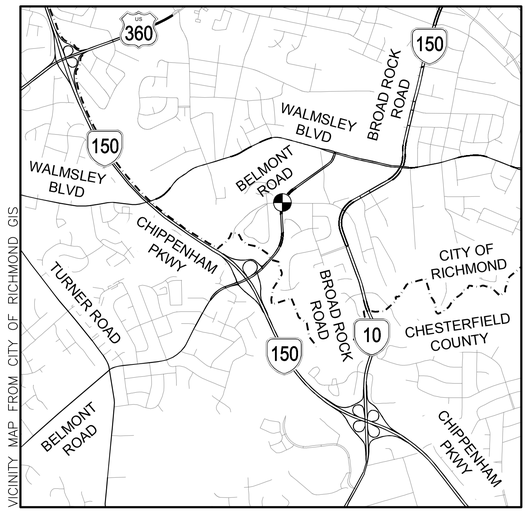
FUNCTIONAL CLASSIFICATION AND TRAFFIC DATA			
BELMONT ROAD GS-6 MINOR ARTERIAL 35 MPH MINIMUM DESIGN SPEED		WEST BELMONT ROAD GS-7 MAJOR COLLECTOR 25 MPH MINIMUM DESIGN SPEED	
ADT (2014)	5,900	ADT (2014)	760
ADT (2034)	8,800	ADT (2034)	1,130
DHV	610	DHV	91
D (%) (design hour)	51.0%	D (%) (design hour)	52.0%
T (%) (design hour)	1%	T (%) (design hour)	1%
V (MPH)	35 mph	V (MPH)	25 mph

SOUTH BELMONT ROAD GS-8 LOCAL STREET 35 MPH MINIMUM DESIGN SPEED	
ADT (2014)	-
ADT (2034)	-
DHV	-
D (%) (design hour)	-
T (%) (design hour)	-
V (MPH)	25 mph

INDEX OF SHEETS

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

THIS PROJECT IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST VERSIONS OF VDOT'S 2016 ROAD AND BRIDGE SPECIFICATIONS, 2008 ROAD AND BRIDGE STANDARDS, 2011 WORK AREA PROTECTION MANUAL, THE LATEST VERSION OF THE MUTCD AND AS AMENDED BY THE CONTRACT PROVISIONS.



VICINITY MAP

2,000' 0 2,000' 4,000'
SCALE: 1"=2,000'

11/06/15

DENOTES PROJECT LOCATION

CITY OF RICHMOND

APPROVED FOR RIGHT OF WAY	
DATE	PROJECT MANAGER
DATE	SURVEYS SUPERINTINDENT
DATE	MAINTENANCE ENGINEER
DATE	CITY TRANSPORTATION ENGINEER
DATE	CAPITAL PROJECTS ADMINISTRATOR
DATE	CITY ENGINEER
DATE	DIRECTOR OF PUBLIC WORKS

CITY OF RICHMOND

APPROVED FOR CONSTRUCTION	
DATE	PROJECT MANAGER
DATE	SURVEYS SUPERINTINDENT
DATE	MAINTENANCE ENGINEER
DATE	CITY TRANSPORTATION ENGINEER
DATE	CAPITAL PROJECTS ADMINISTRATOR
DATE	CITY ENGINEER
DATE	DIRECTOR OF PUBLIC WORKS

REVISIONS

NO.	DATE	COMMENTS

SURVEYED BY: TIMMONS GROUP
SUPERVISED BY: C. KIEFER
DESIGNED BY: M. FLEMING

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TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.
1001 Boulders Pkwy., Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com
JOB# 33948.021

DESIGN: M. FLEMING
CHECKED: C. KIEFER
APPROVED:

CITY OF RICHMOND
BELMONT ROAD ROUNDABOUT
TITLE SHEET
BELMONT ROAD, SOUTH BELMONT ROAD, & WEST BELMONT ROAD

DATE	SCALE	DRAWING NO.
11/06/15	1" = 2000'	0-28661

REVISIONS:

AS BUILT	PLAN NO.	PROJECT NUMBER	FILE NO.	SHEET NO.
NO		CIP-040-290-8910-102656-500552		1

COMMONWEALTH OF VIRGINIA
CHRISTOPHER M. KIEFER
Lic. No. 23346
11/06/15
PROFESSIONAL ENGINEER

RIGHT OF WAY DATA SHEET

PARCEL NO.	LANDOWNER	TAX PARCEL ID	SQ. FT (DO NOT USE)	SHEET NO.	AREA										
					TOTAL	FEE TAKING	PRESCRIPTIVE R/W	FEE REMAINDER	EASEMENTS						PROFFERS
									PERMANENT				TEMPORARY		
									DRAINAGE	DRAINAGE & SLOPE	SLOPE	SIGHT DISTANCE	ENTRANCE RECONSTRUCTION	CONSTRUCTION	
					ACRES	ACRES	ACRES	ACRES	ACRES	ACRES	ACRES	ACRES	ACRES	ACRES	YES/NO
001	*WESLEY MORRIS*	*C0081020004*		*03*	*1.560*	*0.000*	*0.000*	*1.560*	-	-	-	-	-	*0.013*	*NO*
002	*VALERIE JEREMIJENKO*	*C0080939032*		*03*	*2.513*	*0.000*	*0.000*	*2.513*	-	-	*0.013*	-	-	*0.017*	*NO*

SURVEYED BY: .....
SUPERVISED BY: .....
DESIGNED BY: .....
TIMMONS GROUP
C. KIEFER
M. FLEMING

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NOTES

1. Lot dimensions in parentheses are from deed.
2. Property owners correct as of March , 2015
3. Ordinance Number N/A
4. Adopted N/A
5. Accepted N/A

REFERENCES	REVISIONS

Existing Curb
- Curb & Gutter
- Sidewalk
- Basin
- Storm Sewer
- Sewer Manhole
- Sanitary Sewer (Gravity)
- Sanitary Sewer (Force Main)
- Gas Line
- Electric Line
- Telephone/Telegraph
- TV Cable
- Water Line
- Tree / Exist. Tree To Be Removed
- Property Line

--LEGEND:--

Existing Curb Cut Ramp
- Coping
- Alley Crossing/Driveway
- Fire Hydrant
- Edge of Pavement
- Fence
- Cornerstone
- Property Pin
- Utility Pole

Proposed Sewer
- Manhole
- Basin
- Curb & Gutter
- Asphalt

Proposed Conc. Sidewalk
- Truck Apron

Castings: Water Valve
- Water Meter
- Gas Drip
- Gas Valve
- Telephone Manhole
- Electric Manhole

Proposed Curb Cut Ramp
- Decorative Light
- Conduit
- Conduit (Conc. Encased)
- Retaining Wall

RICHMOND VIRGINIA

Technical		Administrative	
Marvin Anderson	Surveys Superintendent		
Chris Kiefer (Timmons Group) Maritza Feliz-Reyes (DPW)	Project Engineer	Lamont L. Benjamin	Capital Project Administrator
Kenneth D. Horak	Maintenance Engineer	Bobby Vincent Jr.	Deputy Director for Transportation / Public Works
Michael B. Sawyer	City Traffic Engineer	Emmanuel O. Adediran	Director of Public Works

DEPARTMENT OF PUBLIC WORKS
RICHMOND, VIRGINIA

TIMMONS GROUP

BELMONT ROAD ROUNDABOUT
RIGHT OF WAY DATA SHEET

DESIGN BY: M. FLEMING DRAWN BY: M. FLEMING CHECKED BY: C. KIEFER	REVIEWED BY	FIELD NOTES FB-XX, pp XX-XX	SCALE HORIZ. N/A VERT. -	DATE 11/06/15	SHEET 1B	DRAWING NO. 0-28661

TRAFFIC MANAGEMENT PLAN NARRATIVE

1. CONSTRUCTION FOR THIS PROJECT WILL TAKE PLACE PRIMARILY ALONG THE INTERSECTION OF BELMONT ROAD, SOUTH BELMONT ROAD, AND WEST BELMONT ROAD. PARTIAL ROAD CLOSURES ARE PLANNED FROM THE BEGINNING OF THE PROJECT TO THE END OF THE PROJECT TERMINUS. THE CLOSURE AND ACCESS TO PARCELS ALONG THE EACH ROAD SHALL BE COORDINATED WITH THE APPROPRIATE LAND OWNERS AND THE CITY DPW. INTERSECTION IMPROVEMENTS REQUIRING LANE CLOSURES SHALL BE IN ACCORDANCE WITH THIS PLAN. A MAJORITY OF THE CONSTRUCTION WILL BE COMPLETED WITHIN THE EXISTING RIGHT OF WAY AND WILL HAVE IMPACT TO THE TRAVELING PUBLIC. EACH CONSTRUCTION PHASE SHALL BE COMPLETE WITH FINAL STRIPING AND SIGNING IN PLACE PRIOR TO REOPENING OF EACH CONSTRUCTION ROAD CLOSURE.

2. THE WORK ZONE SHALL BE MAINTAINED ACCORDING TO THE CITY'S DEPARTMENT OF PUBLIC WORKS SPECIAL PROVISIONS AND THE 2011 VIRGINIA WORK AREA PROTECTION MANUAL. SPECIFICALLY, THE FOLLOWING 2011 VA WAPM TRAFFIC CONTROL SPECIFICATIONS OR A COMBINATION OF SUCH WILL BE USED REGULARLY:
   - 2.1. TYPICAL TRAFFIC CONTROL (TTC) STATIONARY OPERATION ON SHOULDER (FIGURE TTC-4.1)
   - 2.2. TTC SHOULDER OPERATION WITH MINOR ENCROACHMENT (FIGURE TTC-5.1)
   - 2.3. TTC FLAGGING OPERATION ON A SINGLE LANE ROUNDABOUT (FIGURE 31.1)
   - 2.4. TTC ROAD CLOSURE OPERATION WITH A DETOUR (FIGURE TTC-48.1)
   - 2.5. TTC SIGNING FOR PROJECT LIMITS (FIGURE TTC-53.0)

   NOTE: THIS OPERATION IS IN A LOW-TRAFFIC, URBAN SETTING, THE TTC FIGURES ABOVE ARE FOR REFERENCE ONLY. ANY COMBINATION OF THE ABOVE OR TTC'S NOT LISTED ABOVE MAY BE NECESSARY. DETOUR SIGNS AS SHOWN IN FIGURE TTC-48.0 MAY BE OMITTED AT THE DIRECTION OF THE ENGINEER. THE CONTRACTOR SHALL INSTALL ALL NECESSARY SIGNS, MARKINGS, DELINEATORS OR OTHER TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE CITY'S DPU SPECIAL PROVISIONS AND THE 2011 VA WAPM.

3. THE CONTRACTOR WILL MAKE ARRANGEMENTS TO STORE EQUIPMENT AND MATERIALS ON-SITE.

4. A PUBLIC COMMUNICATIONS PLAN IS NOT APPLICABLE TO THIS PROJECT ALTHOUGH PLANNED LANE CLOSURES SHALL BE ANNOUNCED TO THE ADJACENT LAND OWNERS.

TRANSPORTATION OPERATIONS PLAN

1. THE CONTRACTOR MUST ADVISE EMERGENCY COMMUNICATIONS AT 646-5700 OF THE CITY ON ALL PLANNED LANE CLOSURES 24 HOURS IN ADVANCE.

2. TRAFFIC INCIDENTS THAT MAY OCCUR IN THE WORK ZONE:
   - 2.1. INSPECTOR SHALL NOTIFY ENGINEER OF THE TRAFFIC INCIDENT AND TAKE PICTURES OF THE WORK ZONE SETUP.
   - 2.2. CONTRACTOR MAY HAVE TO SHUT DOWN THE WORK DEPENDING UPON THE INCIDENT SEVERITY.
   - 2.3. THE CITY POLICE WILL DETERMINE THE RESPONSE NECESSARY TO ALLOW TRAVELING PUBLIC AROUND INCIDENT, TAKE CONTROL OF THE INCIDENT, AND DIRECT ITS CLEARING AND RESTORATION TO NORMAL TRAFFIC CONDITIONS.

3. THE CITY POLICE INCIDENT REPORT WILL BE REVIEWED BY THE ENGINEER TO DETERMINE ANY NEEDED MODIFICATIONS TO THE WORK ZONE LAYOUT. IF CHANGES ARE NECESSARY THEN A MEETING WILL BE CALLED WITH THE CONTRACTOR, CITY INSPECTOR AND THE ENGINEER TO DISCUSS MODIFICATION AND IMPLEMENTATION OF AN IMPROVED TRAFFIC CONTROL PLAN.

4. ALL LANE CLOSURES AND STOPPING OF TRAFFIC FOR LONGER THAN FIVE MINUTES SHALL BE COORDINATED WITH THE ENGINEER, CITY OF RICHMOND DEPARTMENT OF PUBLIC WORKS AND IMPACTED PROPERTY OWNERS.

5. ALL AREAS EXCAVATED DEEPER THAN 2" BELOW EXISTING PAVEMENT SURFACE AND WITHIN THE CLEAR ZONE, AT THE CONCLUSION OF EACH WORKDAY, SHALL BE BACK FILLED TO FORM AN APPROXIMATE 6:1 WEDGE AGAINST THE PAVEMENT SURFACE FOR THE SAFETY AND PROTECTION OF VEHICULAR TRAFFIC. ALL COST OF PLACING, MAINTAINING AND REMOVING THE 6:1 WEDGE SHALL BE INCLUDED IN THE PRICE BID FOR OTHER ITEMS IN THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED. THIS APPLIES ONLY TO THE CONNECTION POINTS AT DEEPWATER TERMINAL ROAD AND GOODES STREET WHERE TRAFFIC IS PRESENT.

6. LANE CLOSURES WILL NOT BE PERMITTED ON HOLIDAYS OR WEEKENDS UNLESS OTHERWISE APPROVED IN ADVANCE BY THE CITY OF RICHMOND DEPARTMENT OF PUBLIC WORKS.

SURVEYED BY: ..... TIMMONS GROUP
SUPERVISED BY: ..... C. KIEFER
DESIGNED BY: ..... M. FLEMING

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COMMONWEALTH OF VIRGINIA
CHRISTOPHER M. KIEFER
Lic. No. 23346
11/06/15
PROFESSIONAL ENGINEER

Typical Traffic Control
Stationary Operation on a Shoulder
(Figure TTC-4.1)
NOTES

Standard

1. For long-term stationary work (more than 3 days) on divided highways having a median wider than 8', sign assemblies on both sides of the roadway shall be required as shown (ROAD WORK AHEAD (W20-1), RIGHT SHOULDER CLOSED AHEAD (W21-5bR), RIGHT SHOULDER CLOSED (W21-5aR)), even though only one shoulder is being closed. For operations less than 3 days in duration, sign assemblies will only be required on the side where the shoulder is being closed and a RIGHT SHOULDER CLOSED (W21-5aR) sign shall be added to that side.

Guidance

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

Option:

3. The SHOULDER WORK (W21-5) sign on an intersecting roadway may be omitted where drivers emerging from that roadway will encounter another advance warning sign prior to this activity area.

4. For short duration operations of 60 minutes or less, all signs and channelizing devices may be eliminated if a vehicle with activated high-intensity amber rotating, flashing, or oscillating lights is used.

Standard:

5. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity amber rotating, flashing, or oscillating lights. Vehicle hazard warning signals can be used to supplement high-intensity amber rotating, flashing, or oscillating, lights.

6. Taper length (L) and channelizing device spacing shall be at the following:

Taper Length (L)				
Speed Limit (mph)	Lane Width (Feet)			
	9	10	11	12
25	95	105	115	125
30	135	150	165	180
35	185	205	225	245
40	240	270	295	320
45	405	450	495	540
50	450	500	550	600
55	495	550	605	660
60	540	600	660	720
65	585	650	715	780
70	630	700	770	840
Minimum taper lengths for Limited Access highways shall be 1000 feet.				
Shoulder Taper = ½ L Minimum				

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

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

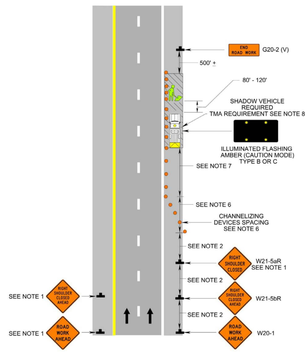
7. The buffer space length shall be as shown in Table 6H-3 on Page 6H-5 for the posted speed limit.

8. A truck-mounted attenuator (TMA) shall be used on the shadow vehicle on Limited Access highways and multi-lane roadways with posted speed limit equal to or greater than 45 mph for operations with a duration greater than 60 minutes.

9. When a side road intersects the highway within the temporary traffic control zone, additional traffic control devices shall be placed as needed.

1: Revision 1 – 4/1/2015

Stationary Operation on a Shoulder
(Figure TTC-4.1)



Typical Traffic Control
Shoulder Operation with Minor Encroachment
(Figure TTC-5.1)
NOTES

Standard

1. For required sign assemblies for multi-lane roadways see Note 1, TTC-4.

Guidance

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

3. When work takes up part of a lane on a high volume roadway; vehicular traffic volumes, vehicle mix, speed and capacity should be analyzed to determine whether the affected lane should be closed. Unless the lane encroachment analysis permits a remaining lane width of 10 feet, the lane should be closed. If the closure operation is on a Limited Access highway, the minimum lane width is 11 feet.

Option:

4. The ROAD WORK AHEAD (W20-1) sign on an intersecting roadway may be omitted where drivers emerging from that roadway will encounter another advance warning sign prior to this activity area.

Standard:

5. A shadow vehicle with either an arrow board operating in the caution mode, or at least one high-intensity amber rotating, flashing, or oscillating light shall be parked 80' - 120' in advance of the first work crew.

6. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity amber rotating, flashing, or oscillating lights. Vehicle hazard warning signals can be used to supplement high-intensity amber rotating, flashing, or oscillating lights.

7. Taper length (L) and channelizing device spacing shall be at the following:

Taper Length (L)				
Speed Limit (mph)	Lane Width (Feet)			
	9	10	11	12
25	95	105	115	125
30	135	150	165	180
35	185	205	225	245
40	240	270	295	320
45	405	450	495	540
50	450	500	550	600
55	495	550	605	660
60	540	600	660	720
65	585	650	715	780
70	630	700	770	840
Minimum taper lengths for Limited Access highways shall be 1000 feet.				
Shoulder Taper = ½ L Minimum				

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

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

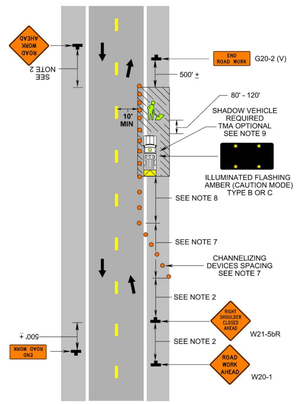
8. The buffer space length shall be as shown in Table 6H-3 on Page 6H-5 for the posted speed limit.

9. A truck-mounted attenuator (TMA) shall be used on Limited Access highways and multi-lane roadways with posted speed limit equal to or greater than 45 mph.

10. When a side road intersects the highway within the temporary traffic control zone, additional traffic control devices shall be placed as needed.

1: Revision 1 – 4/1/2015

Shoulder Operation with Minor Encroachment
(Figure TTC-5.1)



Typical Traffic Control
Flagging Operation on a Single Lane Roundabout
(Figure TTC-31.1)
NOTES

Support:

1. Each roundabout is unique and the traffic control must be developed to meet the specific conditions of the location and the work operation. A detour could possibly better serve traffic movement and must be consider as an alternative to the flagger operation. This traffic control layout can be used on a traffic circle.

Standard:

2. Flaggers shall control traffic flow on all approaches of the one-lane roundabout.

3. All flaggers shall be state certified and have their certification card in their possession when performing flagging duties. A head flagger shall be designated and radio communication shall be used by the flaggers.

4. Only one quadrant of traffic shall be released at a time.

5. Channelizing device spacing shall be as shown in Note 4 in TTC 32.0.

6. At night, flagger stations shall be illuminated, except in emergencies. Street lights and vehicle headlights shall not be used to illuminate the flagger station.

7. A shadow vehicle with at least one amber high intensity rotating, oscillating, or flashing light shall be parked 80'-120' in advance of the first work crew.

8. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity amber rotating, flashing, or oscillating lights. Vehicle hazard warning signals can be used to supplement high-intensity amber rotating, flashing, or oscillating lights.

9. A minimum of four (4) drum channelizing devices shall be placed on the shoulder in advance of the PCMS in a taper for delineation (see Figure 6F-6).

Guidance:

10. Sign spacing distance should be 350'-500' where the posted speed limit is 45 mph or less, and 500'-800' where the posted speed limit is greater than 45 mph.

11. A PCMS should be considered as part of the traffic control plan to provide clear guidance to motorist on all approaches of the roundabout.

12. Care should be exercised when establishing the limits of the work zone to ensure maximum possible sight distance to the flagger station, based on the posted speed limit and at least equal to or greater than the values in Table 6H-3. Generally speaking, motorists should have a clear line of sight from the graphic flagger symbol sign to the flagger.

13. When designing the traffic control and installing the channelizing devices for work activities at roundabouts, accommodations for the turning radius of tractor trailer vehicles and other large vehicles should be considered and the work zone designed accordingly.

Option:

14. Periodic adjustments to the channelizing devices may be allowed in an active work zone to accommodate the turning movements of tractor trailer vehicles and other large vehicles.

15. A supplemental flagger may be used in the roundabout island to help direct traffic and may be required on the approaches in advance warning of the flagging operation to slow traffic prior to reaching the flagger station or queued traffic.

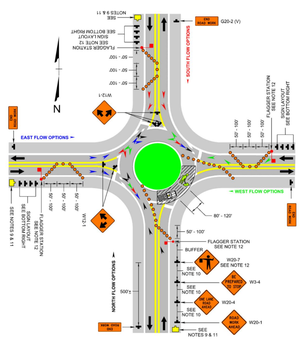
16. A guide sign with road names may be used in lieu of the Double Arrow (W12-1) sign.

17. On the approaches where traffic flow will be split, two pilot vehicles may be used to guide traffic through the roundabout.

18. Flagging operations may not be necessary when working on the shoulders or in the island of the roundabout. Necessary signage under other typical application must be followed.

1: Revision 1 – 4/1/2015

Flagging Operation on a Single Lane Roundabout
(Figure TTC-31.1)



Typical Traffic Control
Road Closure Operation with a Detour
(Figure TTC-48.1)
NOTES

Guidance:

1. Regulatory traffic control devices should be modified as needed for the duration of the detour.

2. Sign spacing distance should be 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less. The directional sign should be placed at the intersection.

3. If the road is opened for some distance beyond the intersection and/or there are significant origin/destination points beyond the Intersection, the ROAD CLOSED LOCAL TRAFFIC ONLY (R11-3a) and DETOUR (M4-10) signs on Type 3 Barricades should be located at the corners of Intersecting closed roadway or the traveled way.

Option:

4. If the road is open for some distance beyond the intersection the Route Sign Directional assembly may be placed in the travelway as shown to augment or replace the one shown on the corners.

5. Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

6. Cardinal direction plaques may be used with route signs.

Standard:

7. On divided highways having a median wider than 8', right and left sign assemblies shall be required.

8. For short-term duration work the M4-9 or M4-V4 series of signs shall be used. For long-term duration work the route shield assembly shall be used with the detour sign.

Option:

9. Long-term detours may be signed with a street name (M4-VP1a or M4-Vp(b) plaque above the DETOUR (M4-9 or M4-V4 series) sign (see Figure TTC-54).

Support:

10. See Chapter 6I for additional information on Incident management traffic control.

Guidance:

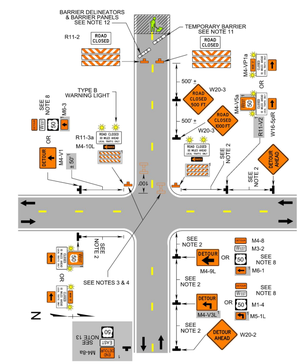
11. Temporary barrier should be placed at a 45° angle to the travelway a sufficient distance beyond the Type 3 Barricade but before the work space while providing equipment access to the work space.

Standard:

12. Barrier panels 8 inches in width and 12 inches in height shall be placed on top of the temporary concrete barrier, perpendicular to traffic, and spaced 20' on centers along the taper sections. Reflectorized surface shall be fluorescent orange prismatic lens sheeting. Barrier delineators shall be installed along the traffic side of the concrete barrier in-between and at the same spacing as the barrier panels approximately 24 inches up from the roadway surface.

13. An END DETOUR (M4-8a) sign shall be used with a Cardinal Route shiel and a Cardinal Directional sign to terminate the detour route.

Road Closure Operation with a Detour
(Figure TTC-48.1)



1: Revision 1 – 4/1/2015

Typical Traffic Control
Signing for Project Limits
(Figure TTC-53.0)
NOTES

Support:

1. This layout depicts signing requirements for notifying motorist when they are entering and exiting a potential construction/maintenance area with a duration equal to or greater than 60 days.

Standard:

2. The ROAD WORK AHEAD (W20-1) sign or the ROAD WORK NEXT XX MILES (G20-1 (V)) sign shall be placed far enough in advance of the project limits so that other warning signs in a series may be adequately placed prior to the condition they are warning about.

3. The ROAD WORK NEXT XX MILES sign shall be used for projects with activity areas greater than 2 miles in length, or when multiple work activities (such as pavement patching, guardrail installations, shoulder restoration, etc.) occur along a highway.

4. The distance displayed on the ROAD WORK NEXT XX MILES sign shall be stated to the nearest whole mile from the point of Installation to the END ROAD WORK (G20-2 (V)) sign.

5. On divided highways having a median wider than 8', right and left sign assemblies shall be required.

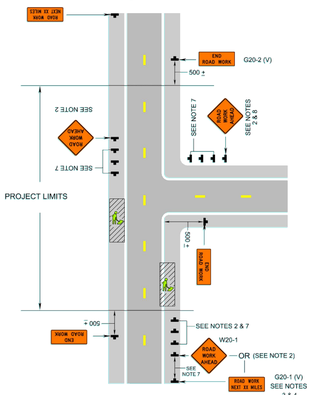
Guidance:

6. For projects with activity areas 2 miles or less in length, the ROAD WORK AHEAD sign should be the first sign motorist encounter.

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

8. All connections within the project limits should be identified with signs indicating to motorist they are entering or exiting a potential construction/maintenance area.

Signing for Project Limits
(Figure TTC-53.0)



TIMMONS GROUP

NOTES

1. Lot dimensions in parentheses are from deed.
2. Property owners correct as of March, 2015
3. Ordinance Number N/A
4. Adopted N/A
5. Accepted N/A

REFERENCES	REVISIONS

Existing Curb
- Curb & Gutter
- Sidewalk
- Basin
- Storm Sewer
- Sewer Manhole
- Sanitary Sewer (Gravity)
- Sanitary Sewer (Force Main)
- Gas Line
- Electric Line
- Telephone/Telegraph
- TV Cable
- Water Line
- Tree / Exist. Tree To Be Removed
- Property Line

--LEGEND:--

Existing Curb Cut Ramp
- Coping
- Alley Crossing/Driveway
- Fire Hydrant
- Edge of Pavement
- Fence
- Cornerstone
- Property Pin
- Utility Pole

Proposed Sewer
- Manhole
- Basin
- Curb & Gutter
- Asphalt

Proposed Conc. Sidewalk
- Truck Apron

Castings: Water Valve
- Water Meter
- Gas Drip
- Gas Valve
- Telephone Manhole
- Electric Manhole

Proposed Curb Cut Ramp
- Decorative Light
- Conduit
- Conduit (Conc. Encased)
- Retaining Wall

RICHMOND VIRGINIA

Technical		Administrative	
Marvin Anderson	Surveys Superintendent		
Chris Kiefer (Timmons Group) Maritza Feliz-Reyes (DPW)	Project Engineer	Lamont L. Benjamin	Capital Project Administrator
Kenneth D. Horak	Maintenance Engineer	Bobby Vincent Jr.	Deputy Director for Transportation / Public Works
Michael B. Sawyer	City Traffic Engineer	Emmanuel O. Adediran	Director of Public Works

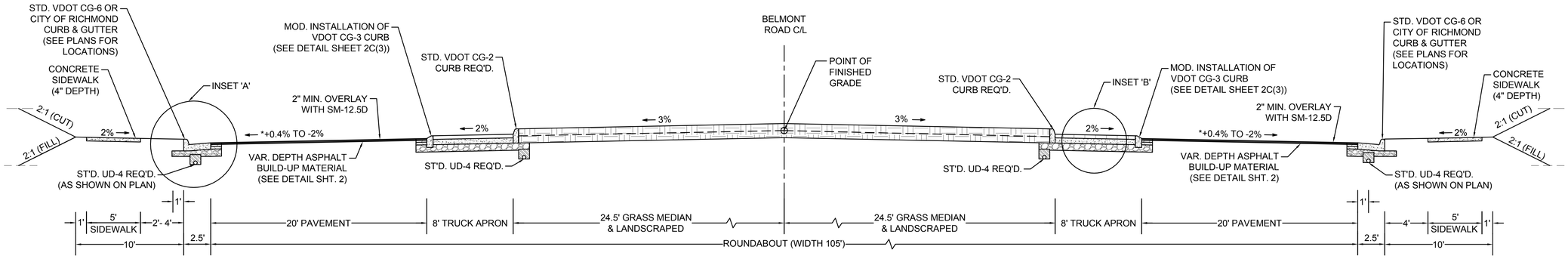
DEPARTMENT OF PUBLIC WORKS
RICHMOND, VIRGINIA

BELMONT ROAD ROUNDABOUT
TRAFFIC PLAN MANAGEMENT PLAN

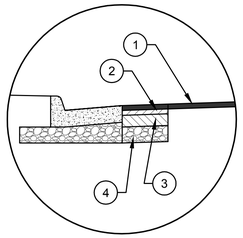
DESIGN BY: M. FLEMING DRAWN BY: M. FLEMING CHECKED BY: C. KIEFER	REVIEWED BY	FIELD NOTES FB-XX, pp XX-XX	SCALE HORZ. N/A VERT. -	DATE 11/06/15	SHEET 1C(1)	DRAWING NO. 0-28661

COMMONWEALTH OF VIRGINIA
CHRISTOPHER M. KIEFER
Lic. No. 23346
11/06/15
PROFESSIONAL ENGINEER

BELMONT ROAD ROUNDABOUT TYPICAL SECTION

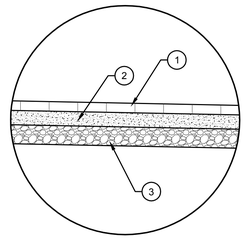


INSET 'A'



1. 2" ASPHALT CONCRETE SURFACE COURSE (VDOT SM-12.5D)
2. 2" ASPHALT CONCRETE INTERMEDIATE COURSE (VDOT IM-19.0A)
3. 3" ASPHALT CONCRETE BASE COURSE (VDOT BM-25.0A)
4. 8" AGGREGATE BASE MATERIAL (VDOT TYPE 1 NO. 21B)

INSET 'B'

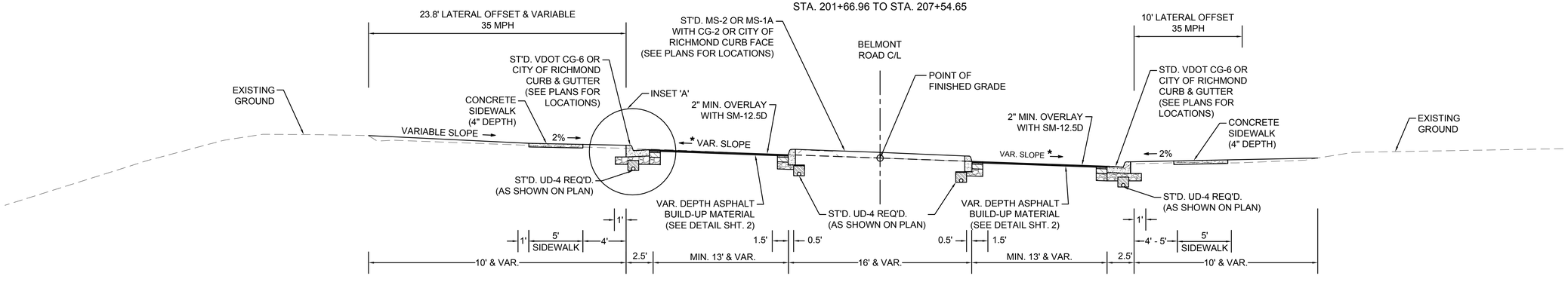


1. 4" STAMPED CONCRETE (PATTERN TO BE APPROVED BY THE CITY OF RICHMOND)
2. 6" A3 CONCRETE
3. 8" AGGREGATE BASE COURSE, TYPE 1, SIZE 21B

* SEE GRADING PLAN AND CROSS SECTIONS FOR CROSS SLOPE GRADES

BELMONT ROAD TYPICAL SECTION

STA. 201+66.96 TO STA. 207+54.65



* CROSS SLOPES TO MATCH EXISTING ROAD
CROSS SLOPES TO MAINTAIN 1.5" MIN. OVERLAY

SURVEYED BY: TIMMONS GROUP
SUPERVISED BY: C. KIEFER
DESIGNED BY: M. FLEMING

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- Sanitary Sewer (Force Main) — FM
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- Electric Line — UGP
- Telephone/Telegraph — UGT
- TV Cable — UCATV
- Water Line — W
- Tree / Exist. Tree To Be Removed
- Property Line — P

--LEGEND:--

Existing Curb Cut Ramp
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- Alley Crossing/Driveway
- Fire Hydrant
- Edge of Pavement
- Fence
- Cornerstone
- Property Pin
- Utility Pole

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- Manhole
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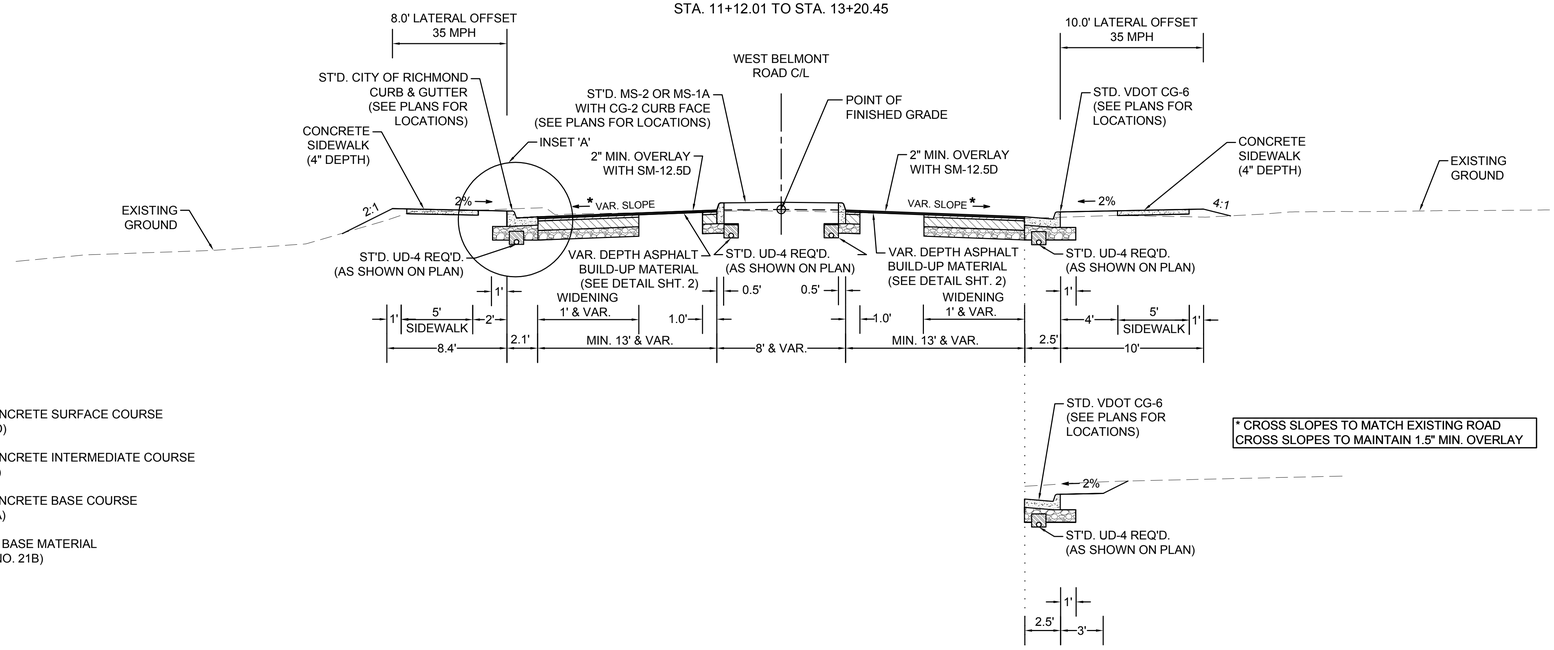
DEPARTMENT OF PUBLIC WORKS
RICHMOND, VIRGINIA

BELMONT ROAD ROUNDABOUT
TYPICAL SECTIONS

DESIGN BY: M. FLEMING DRAWN BY: M. FLEMING CHECKED BY: C. KIEFER	REVIEWED BY	FIELD NOTES FB-XX, pp XX-XX	SCALE HORZ. 1" = 25' VERT. -	DATE 11/06/15	SHEET 2A	DRAWING NO. 0-28661

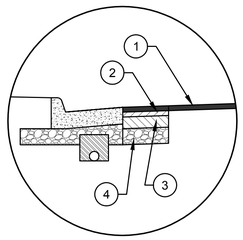
WEST BELMONT ROAD TYPICAL SECTION

STA. 11+12.01 TO STA. 13+20.45



* CROSS SLOPES TO MATCH EXISTING ROAD
CROSS SLOPES TO MAINTAIN 1.5" MIN. OVERLAY

INSET 'A'



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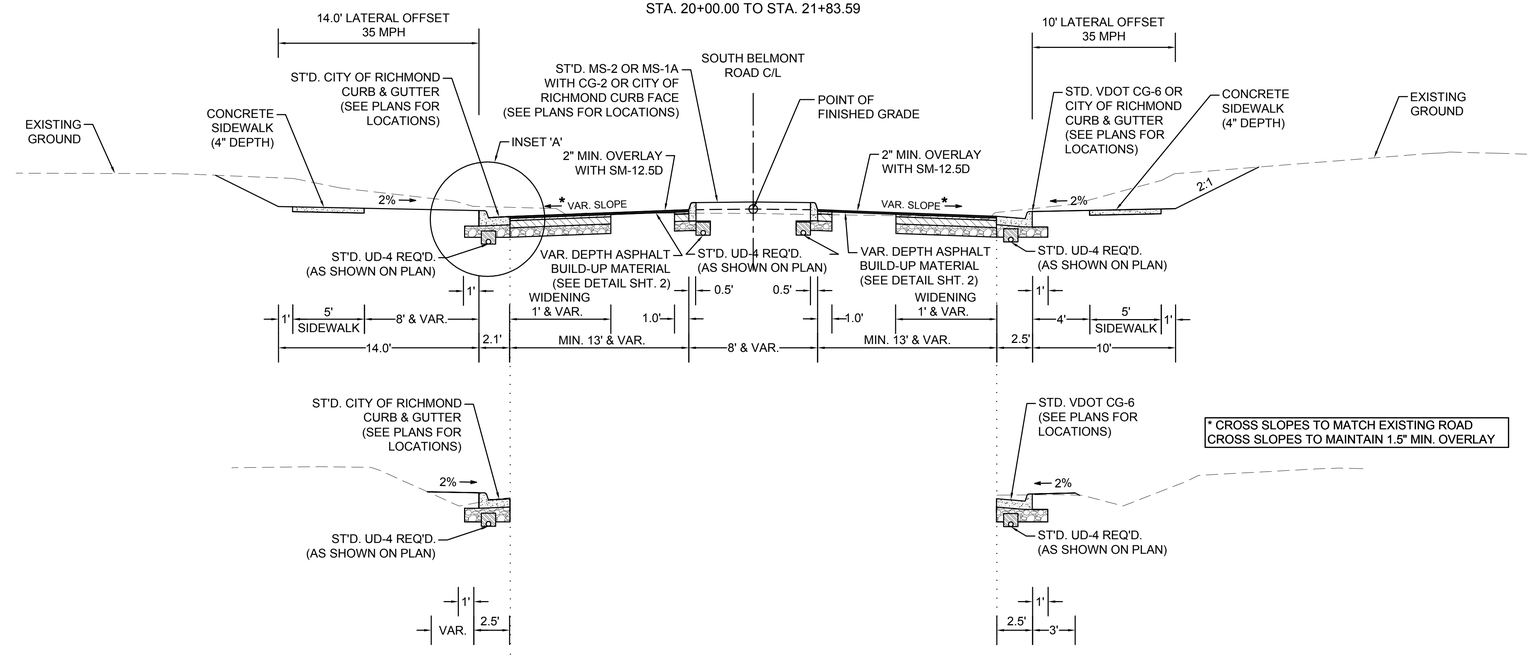
4. 8" AGGREGATE BASE MATERIAL (VDOT TYPE 1 NO. 21B)

SOUTH BELMONT ROAD TYPICAL SECTION

STA. 20+00.00 TO STA. 21+83.59



* CROSS SLOPES TO MATCH EXISTING ROAD
CROSS SLOPES TO MAINTAIN 1.5" MIN. OVERLAY

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- Sewer Manhole
- Sanitary Sewer (Gravity)
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RICHMOND VIRGINIA

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DEPARTMENT OF PUBLIC WORKS
RICHMOND, VIRGINIA

BELMONT ROAD ROUNDABOUT

TYPICAL SECTIONS

DESIGN BY: M. FLEMING DRAWN BY: M. FLEMING CHECKED BY: C. KIEFER	REVIEWED BY	FIELD NOTES FB-XX, pp XX-XX	SCALE HORZ. 1" = 25' VERT. -	DATE 11/06/15	SHEET 2B	DRAWING NO. 0-28661

COMMONWEALTH OF VIRGINIA
CHRISTOPHER M. KIEFER
Lic. No. 23346
11/06/15
PROFESSIONAL ENGINEER

SURVEYED BY: TIMMONS GROUP
SUPERVISED BY: C. KIEFER
DESIGNED BY: M. FLEMING

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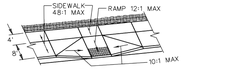
CG-12

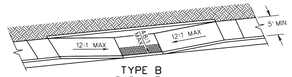
GENERAL NOTES:

1. THE DETECTABLE WARNING SHALL BE PROVIDED BY TRUNCATED DOMES.
2. DETECTABLE WARNING SHALL BE FROM THE MATERIALS APPROVED LIST FOR DETECTABLE WARNING SURFACES. PRODUCTS NOT LISTED SHALL MEET THE REQUIREMENTS OF THE SPECIAL PROVISION FOR CG-12 DETECTABLE WARNING SURFACE AND SHALL BE SUBMITTED TO THE STANDARDS AND SPECIAL DESIGN SECTION FOR APPROVAL.
3. SLOPING SIDES OF CURB RAMP MAY BE POURED MONOLITHICALLY WITH RAMP FLOOR OR BY USING PERMISSIBLE CONSTRUCTION JOINT WITH REQUIRED BARS.
4. IF RAMP FLOOR IS PRECAST, HOLES MUST BE PROVIDED FOR DOWEL BARS SO THAT ADJOINING FLARED SIDES CAN BE CAST IN PLACE AFTER PLACEMENT OF PRECAST RAMP FLOOR. PRECAST CONCRETE SHALL BE CLASS A-4.
5. REQUIRED BARS ARE TO BE NO. 5 X 8'-0" PLACED 1' CENTER TO CENTER ALONG BOTH SIDES OF THE RAMP FLOOR, MID-DEPTH OF RAMP FLOOR. MINIMUM CONCRETE COVER 1½".
6. CURB / CURB AND GUTTER SLOPE TRANSITIONS ADJACENT TO CURB RAMPS ARE INCLUDED IN PAYMENT FOR CURB / CURB AND GUTTER.
7. CURB RAMPS ARE TO BE LOCATED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. THEY ARE TO BE PROVIDED AT INTERSECTIONS WHEREVER AN ACCESSIBLE ROUTE WITHIN THE RIGHT OF WAY OF A HIGHWAY FACILITY CROSSES A CURB REGARDLESS OF WHETHER SIDEWALK IS EXISTING, PROPOSED, OR NONEXISTENT. THEY MUST BE LOCATED WITHIN PEDESTRIAN CROSSWALKS AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER, AND SHOULD NOT BE LOCATED BEHIND VEHICLE STOP LINES. EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. ACCESSIBLE ROUTES PROVIDE A CONTINUOUS UNOBSTRUCTED, STABLE, FIRM AND SLIP RESISTANT PATH CONNECTING ALL ACCESSIBLE ELEMENTS OF A FACILITY THAT CAN BE APPROACHED, ENTERED AND USED BY PEDESTRIANS.
8. RAMPS MAY BE PLACED ON RADIAL OR TANGENTIAL SECTIONS PROVIDED THAT THE CURB OPENING IS PLACED WITHIN THE LIMITS OF THE CROSSWALK AND THAT THE SLOPE AT THE CONNECTION OF THE CURB OPENING IS PERPENDICULAR TO THE CURB.
9. TYPICAL CONCRETE SIDEWALK IS 4" THICK. WHEN THE ENTRANCE RADII CANNOT ACCOMMODATE THE TURNING REQUIREMENTS OF ANTICIPATED HEAVY TRUCK TRAFFIC, REFER TO STANDARD CG-13, COMMERCIAL ENTRANCE (HEAVY TRUCK TRAFFIC) FOR CONCRETE DEPTH.
10. WHEN CURB RAMPS ARE USED IN CONJUNCTION WITH A SHARED USE PATH, THE MINIMUM WIDTH SHALL BE THE WIDTH OF THE SHARED USE PATH.
11. WHEN ONLY ONE CURB RAMP IS PROVIDED FOR TWO CROSSINGS (DIAGONAL), A 4'x 4' LANDING AREA SHALL BE PROVIDED TO MANEUVER A WHEELCHAIR INTO THE CROSSWALK WITHOUT GOING INTO THE TRAVELWAY. THIS 4'x 4' LANDING AREA MAY INCLUDE THE GUTTER PAN.
12. ALL CASES WHERE CURB RAMPS INTERSECT A RADIAL SECTION OF CURB AT ENTRANCES OR STREET CONNECTIONS THE DETECTABLE WARNING SURFACE SHALL HAVE A FACTORY RADIUS OR BE FIELD MODIFIED AS RECOMMENDED BY THE MANUFACTURER TO MATCH THE BACK OF CURB.

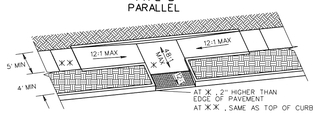
NOTE: COMPONENTS OF CURB RAMPS CONSIST OF THE FOLLOWING: HYDRAULIC CEMENT SIDEWALK (DEPTH IN INCHES, AREA IN SQUARE YARDS) CURB WHEN REQUIRED (CG-2 OR CG-3 IN LINEAR FEET). DETECTABLE WARNING SURFACE (AREA IN SQUARE YARDS). EACH OF THE ABOVE ITEMS IS A SEPARATE PAY ITEM AND SHOULD BE SUMMARIZED FOR EACH CURB CUT RAMP.



TYPE A
PERPENDICULAR

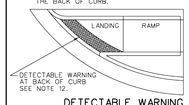


TYPE B
PARALLEL

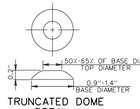


AT X , 2" HIGHER THAN EDGE OF PAVEMENT
AT XX , SAME AS TOP OF CURB

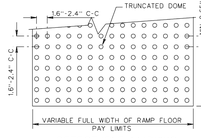
TYPE C
PARALLEL & PERPENDICULAR



DETECTABLE WARNING
INSTALLED ON A RADIUS



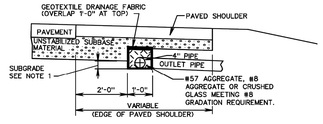
TRUNCATED DOME
DETAIL



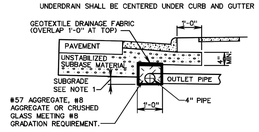
DETECTABLE WARNING
DETAIL

VDOT ROAD AND BRIDGE STANDARDS	CG-12 DETECTABLE WARNING SURFACE (GENERAL NOTES) VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE
SHEET 1 OF 5	REVISION DATE 07/15	105 502
203.05		

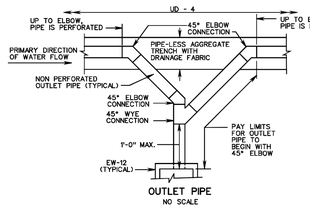
UD-4



PAVED SHOULDER SECTION



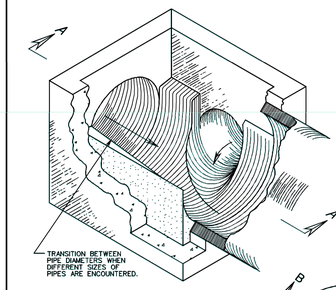
CURB AND GUTTER SECTION

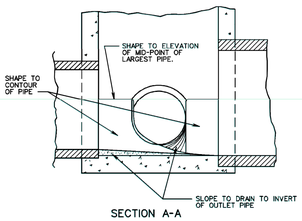


OUTLET PIPE
NO SCALE

VDOT ROAD AND BRIDGE STANDARDS	STANDARD PAVEMENT EDGEDRAIN VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE
SHEET 1 OF 2	REVISION DATE	240 258 501 701
108.06		

IS-1





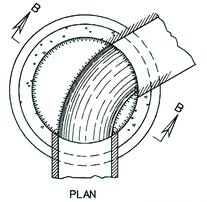
SECTION A-A

METHOD OF TREATMENT IN DROP INLETS

NOTES:
SHAPING OF MANHOLE AND INLET INVERTS IN ACCORDANCE WITH THIS DRAWING IS TO APPLY TO THOSE STRUCTURES SPECIFIED ON PLANS OR WHERE INVERT OF PIPE IS ABOVE INVERT OF STRUCTURE.

MANHOLE OR DROP INLET IS TO BE FORMED AND CONSTRUCTED IN ACCORDANCE WITH APPLICABLE STANDARD OR SPECIAL DRAWING. THE INVERT SHAPING AS DETAILED HEREON IS TO CONSIST OF A PORTLAND CEMENT CONCRETE MIX CONFORMING TO CLASS A3 OR CLASS C1, EXCEPT THAT 25% OF COARSE AGGREGATE MAY BE, UP TO 4" IN DIAMETER AND CONSIST OF STONE, BROKEN BRICK, BROKEN CONCRETE OR BROKEN CONCRETE BLOCK. THE SURFACE SHALL BE LEFT SMOOTH BY MEANS OF HAND TROWELLING. NONE OF THE COARSE AGGREGATE SHALL REMAIN EXPOSED.

DETAILS OF INVERT SHAPING AS SHOWN HEREON ARE FOR EXAMPLE PURPOSES ONLY. EACH MANHOLE OR DROP INLET IS TO BE SHAPED INDIVIDUALLY TO BEST FIT THE PARTICULAR INLET AND OUTLET CONFIGURATION AND FLOW LINES.



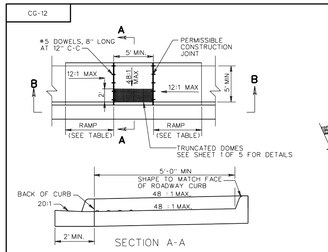
PLAN

SECTION B-B

METHOD OF TREATMENT IN MANHOLES

VDOT ROAD AND BRIDGE STANDARDS	STANDARD METHOD OF SHAPING MANHOLE & INLET INVERTS VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE
SHEET 1 OF 1	REVISION DATE	302
106.08		

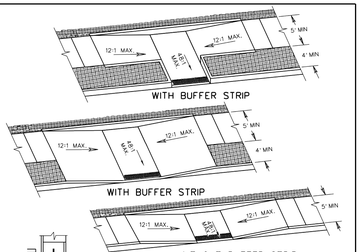
CG-12



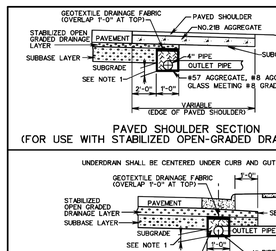
NOTES: FOR GENERAL NOTES ON THE DETECTABLE WARNING SURFACE, SEE SHEET 1 OF 5.

THE REQUIRED LENGTH OF A PARALLEL RAMP IS LIMITED TO 15 FEET, REGARDLESS OF THE SLOPE.

TYPE B PARALLEL APPLICATION		
ROADWAY GRADE IN PERCENT	MINIMUM RAMP LENGTH IN FEET	
	4" CURB	6" CURB
0	4	6
1	5	7
2	5	8
3	6	9
4	8	12
5	10	15
6	14	15



VDOT ROAD AND BRIDGE STANDARDS	CG-12 DETECTABLE WARNING SURFACE TYPE B (PARALLEL) APPLICATION VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE
SHEET 3 OF 5	REVISION DATE 07/15	105 502
203.07		



PAVED SHOULDER SECTION
(FOR USE WITH STABILIZED OPEN-GRADED DRAINAGE LAYER)

UD-4

LONGITUDINAL PERFORATED PIPE

TYPE OF PIPE	CRUSHING STRENGTH	
	✕W.T.	4" NOM. DIAMETER
SMOOTH WALL PVC	.103	
CORRUGATED PE		AASHTO M-252

NON-PERFORATED OUTLET PIPE FOR USE UNDER COMMERCIAL ENTRANCES AND FOR OUTLETS

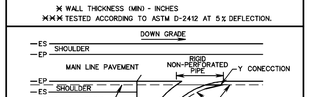
TYPE OF PIPE	CRUSHING STRENGTH	
	✕W.T.	4" NOM. DIAMETER
SMOOTH WALL PVC	.103	
SMOOTH WALL PE		70 PSI ✕✕✕

✕ WALL THICKNESS (MIN) - INCHES
✕✕✕ TESTED ACCORDING TO ASTM D-2412 AT 5% DEFLECTION.

UNDERDRAIN SHALL BE CENTERED UNDER CURB AND GUTTER.

CURB AND GUTTER SECTION
(FOR USE WITH STABILIZED OPEN-GRADED DRAINAGE LAYER)

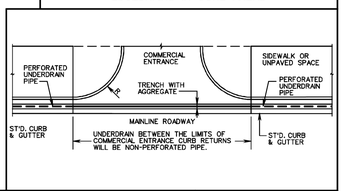
DOWN GRADE



EDGEDRAINS IN GORE AREAS

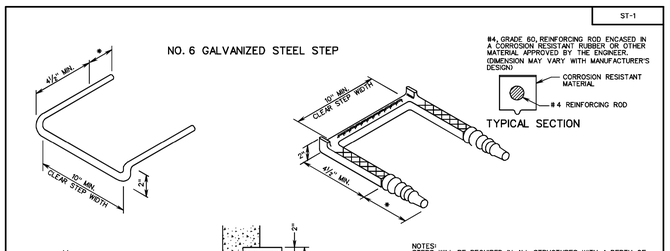
NOTES:

1. 4" MINIMUM, PROVIDED ATTAINING MINIMUM 4" OF AGGREGATE ON TOP OF PIPE.
2. WHEN THE LONGITUDINAL PIPE CONNECTS DIRECTLY INTO A DRAINAGE STRUCTURE (DROP INLET, MANHOLE, E.T.C.), NON-PERFORATED OUTLET PIPES ARE NOT REQUIRED.
3. INVERT ELEVATION AT OUTLET END OF OUTLET PIPE TO BE A MINIMUM OF 1'-0" ABOVE INVERT ELEVATION OF RECEIVING DRAINAGE DITCH OR STRUCTURE.
4. ALL CONNECTIONS (ELBOWS, WYES, ETC.) WITHIN PAY LIMITS FOR OUTLET PIPE ARE TO BE OF THE SAME CRUSHING STRENGTH AS THE OUTLET PIPE.
5. OUTLET PIPES ARE TO BE INSTALLED ON 2% MIN. (3% DESIRABLE) GRADE AND LOCATED EVERY 350' MAXIMUM OR AS NOTED ON PLANS.
6. OUTLET PIPE TO BE SECURELY CONNECTED TO EW-12 OR OTHER DRAINAGE STRUCTURE.
7. WITHIN THE LIMITS OF A COMMERCIAL ENTRANCE, NON-PERFORATED PIPE SHALL BE UTILIZED IN LIEU OF PERFORATED PIPE.
8. THE LENGTH OF PIPE BETWEEN THE WYE CONNECTION AND THE EW-12 SHALL BE LIMITED TO NO MORE THAN 1'-0" TO PERMIT CAMERA INSPECTION OF THE MAIN LINE IN EITHER DIRECTION.
9. IN SITUATIONS WHEN FULL DEPTH OF STABILIZED OPEN-GRADED MATERIAL CANNOT BE MAINTAINED UNDER CURB AND GUTTER, NO. 21B AGGREGATE SHALL BE USED UNDER CURB AND GUTTER. NO. 21B AGGREGATE MAY ALSO BE USED FROM TOP OF STABILIZED OPEN-GRADED MATERIAL LAYER AND CURB AND GUTTER.



SPECIFICATION REFERENCE	STANDARD PAVEMENT EDGEDRAIN VIRGINIA DEPARTMENT OF TRANSPORTATION	VDOT ROAD AND BRIDGE STANDARDS
240 258 501 701		REVISION DATE — SHEET 2 OF 2
		108.07

ST-1



NOTES:
STEPS WILL BE REQUIRED IN ALL STRUCTURES WITH A DEPTH OF 4'-0" OR GREATER UNLESS OTHERWISE NOTED ON THE PLANS.

ALL STEPS SHALL PROTRUDE 4½" FROM INSIDE FACE OF STRUCTURE WALL.

MAXIMUM STEP SPACING TO BE 16" C-C.

STEPS SHALL WITHSTAND A MINIMUM FORCE OF 300 POUNDS WHEN EXTENDED 4½" FROM THE FACE OF THE SUPPORT.

STEPS ARE TO BE VERTICALLY ALIGNED AND UNIFORMALY SPACED FOR THE ENTIRE DEPTH OF ANY STRUCTURE.

IN PRECAST UNITS STEPS MAY BE CAST IN PLACE, MORTARED INTO HOLES PROVIDED BY THE FABRICATOR, OR DRIVEN.

STEPS DIFFERING IN DIMENSIONS, CONFIGURATION, OR MATERIALS FROM THOSE SHOWN MAY ALSO BE USED PROVIDED THEY MEET THE MINIMUM REQUIREMENTS SHOWN HEREON AND THE CONTRACTOR HAS FURNISHED THE ENGINEER WITH DETAILS AND CERTIFIED TEST REPORTS OF THE PROPOSED SUBSTITUTE AND HAS RECEIVED WRITTEN APPROVAL FROM THE ENGINEER FOR THE USE OF SUCH STEPS.

ALL STEPS INSTALLED SHALL BE PROVIDED WITH SLIP-RESISTANT SURFACES SUCH AS BUT NOT LIMITED TO, CORRUGATED KNURLED, OR DIMPLED SURFACES.

ALUMINUM STEPS SHALL BE FABRICATED IN ACCORDANCE WITH ASTM B221, ALLOY 6005-T5. THAT PORTION OF THE STEP ENCASED IN MASONRY SHALL BE UNIFORMLY COATED WITH A BITUMINOUS, SOLVENT TYPE, ASBESTOS FILLED ALUMINUM PIGMENTED COATING CONFORMING TO FEDERAL SPECIFICATION TT-C-00498A.

SPECIFICATION REFERENCE	STANDARD STEP VIRGINIA DEPARTMENT OF TRANSPORTATION	VDOT ROAD AND BRIDGE STANDARDS
		REVISION DATE — SHEET 1 OF 1
		106.09

SURVEYED BY: .....
SUPERVISED BY: .....
DESIGNED BY: .....
DRAWN BY: C.C.KIEFER
CHECKED BY: M.M.FLEMING

L:\2003\39348-Richmond\021-203-Belmont\Rd_Roundabout\DWG\Sheet\CD\39348_021-203C-02C.dwg | Plotted on 11/6/2015 11:00 AM | by Melvin Fleming

NOTES

1. Lot dimensions in parentheses are from deed.
2. Property owners correct as of March, 2015
3. Ordinance Number N/A
4. Adopted N/A
5. Accepted N/A

REFERENCES	REVISIONS

Existing Curb
- Curb & Gutter
- Sidewalk
- Swales
- Storm Sewer
- Sewer Manhole
- Sanitary Sewer (Gravity) — SAN
- Sanitary Sewer (Force Main) — FM
- Gas Line — G
- Electric Line — UGP
- Telephone/Telegraph — UGT
- TV Cable — UCATV
- Water Line — W
- Tree / Exist. Tree To Be Removed
- Property Line

--LEGEND--

Existing Curb Cut Ramp
- Coping
- Alley Crossing/Driveway
- Fire Hydrant
- Edge of Pavement
- Fence
- Cornerstone
- Property Pin
- Utility Pole

Proposed Sewer
- Manhole
- Basin
- Curb & Gutter
- Asphalt

Proposed Conc. Sidewalk
- Truck Apron

Castings: Water Valve
- Water Meter
- Gas Drip
- Gas Valve
- Telephone Manhole
- Electric Manhole

Proposed Curb Cut Ramp
- Decorative Light
- Conduit
- Conduit (Conc. Encased)
- Retaining Wall

RICHMOND VIRGINIA

Technical		Administrative	
Marvin Anderson	Surveys Superintendent		
Chris Kiefer (Timmons Group) Maritza Feliz-Reyes (DPW)	Project Engineer	Lamont L. Benjamin	Capital Project Administrator
Kenneth D. Horak	Maintenance Engineer	Bobby Vincent Jr.	Deputy Director for Transportation / Public Works
Michael B. Sawyer	City Traffic Engineer	Emmanuel O. Adediran	Director of Public Works

DEPARTMENT OF PUBLIC WORKS
RICHMOND, VIRGINIA

BELMONT ROAD ROUNDABOUT
CONSTRUCTION DETAILS

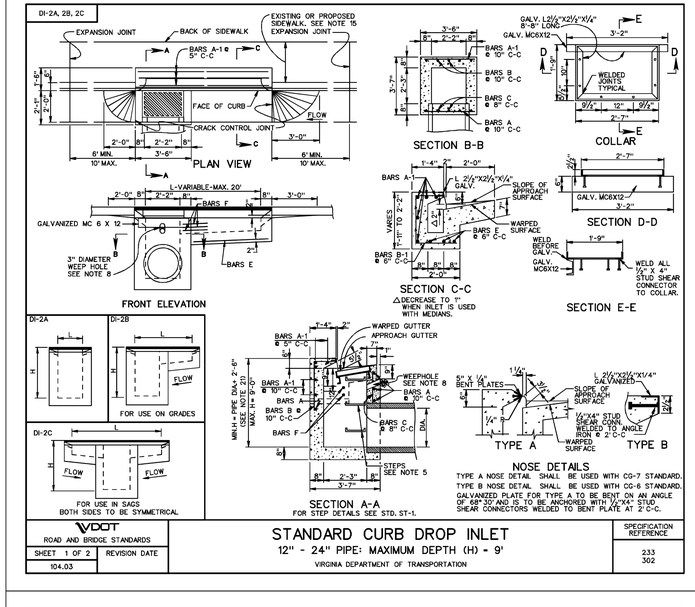
DESIGN BY: M. FLEMING DRAWN BY: M. FLEMING CHECKED BY: C. KIEFER	REVIEWED BY	FIELD NOTES FB-XX, pp XX-XX	SCALE HORIZ. N.T.S. VERT. -	DATE 11/06/15	SHEET 2C(1)	DRAWING NO. 0-28661

COMMONWEALTH OF VIRGINIA
CHRISTOPHER M. KIEFER
Lic. No. 23346
11/06/15
PROFESSIONAL ENGINEER

SURVEYED BY: TIMMONS GROUP
SUPERVISED BY: C. KIEFER
DESIGNED BY: M. FLEMING
DRAWN BY: M. FLEMING
CHECKED BY: C. KIEFER

COMMONWEALTH OF VIRGINIA
CHRISTOPHER M. KIEFER
Lic. No. 23346
11/06/15
PROFESSIONAL ENGINEER

DI-2A, 2B, 2C

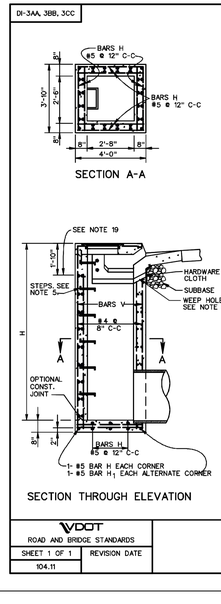


VDOT ROAD AND BRIDGE STANDARDS
SHEET 1 OF 2 | REVISION DATE: 104.03

STANDARD CURB DROP INLET
12" - 24" PIPE: MAXIMUM DEPTH (H) = 9'
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE: 233, 302

DI-3AA, 3BB, 3CC



NOTES

1. DEPTH OF INLET (H) TO BE SHOWN ON PLANS. MINIMUM DEPTH (H) TO BE 8'-0". MAXIMUM DEPTH TO BE 20'-0". FOR INLETS LESS THAN 8' USE STANDARD DI-3A, 3B, 3C.
2. THE "H" DIMENSION SHOWN ON THE STANDARDS AS SPECIFIED ON THE PLANS WILL BE MEASURED FROM THE INVERT OF THE OUTFALL PIPE TO THE TOP OF THE STRUCTURE. PLAN "H" DIMENSIONS ARE APPROXIMATE ONLY FOR ESTIMATING PURPOSES AND THE ACTUAL DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR FROM FIELD CONDITIONS.
3. WHEN SPECIFIED ON THE PLANS THE INVERT IS TO BE SHAPED IN ACCORDANCE WITH STANDARD IS-1. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.
4. IN THE EVENT THE INVERT OF THE OUTFALL PIPE IS HIGHER THAN THE BOTTOM OF THE STRUCTURE, THE INVERT OF THE STRUCTURE SHALL BE SHAPED WITH CEMENT MORTAR TO PREVENT STANDING OR PONDING OF WATER IN THE STRUCTURE. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.
5. STEPS ARE REQUIRED. FOR DETAILS SEE STANDARD ST-1.
6. THIS ITEM MAY BE PRECAST OR CAST-IN-PLACE.
7. #4 X 8" SMOOTH DOWELS AT APPROXIMATELY 12" C-C TO BE PLACED IN ALL AREAS ADJACENT TO ABUTTING CONCRETE TO PREVENT SETTLEMENT. IN LIEU OF DOWELS A 2" X 4" NOTCH MAY BE PROVIDED. SEE STANDARD T-DI-3, 4 FOR ALTERNATE DESIGN.
8. 3" DIAMETER WEEP HOLE TO BE LOCATED TO DRAIN SUBBASE MATERIAL. WEEP HOLE WITH 12"X12" PLASTIC HARDWARE CLOTH ¼" MESH OR GALVANIZED STEEL WIRE, MINIMUM WIRE DIAMETER 0.03", NUMBER 4 MESH HARDWARE CLOTH ANCHORED FIRMLY TO THE OUTSIDE OF THE STRUCTURE.
9. ALL REINFORCING STEEL SHALL HAVE A MIN. COVER OF 2".
10. ALL REINFORCING STEEL TO BE CUT CLEAR OF ALL OPENINGS BY 2".
11. CAST-IN PLACE CONCRETE IS TO BE CLASS A3 (3000 PSI). PRECAST CONCRETE IS TO BE 4000 PSI.
12. LENGTH OF SLOT (L) WILL, IN EVERY CASE, BE SHOWN ON PLANS.
13. WHEN INLET IS USED IN 4' MEDIAN BACK OF INLET IS TO BE SHAPED TO CONFORM WITH PROPOSED CURB.
14. IF OPTIONAL CONSTRUCTION JOINT IS USED IT IS TO BE KEYED. ALL SPLICES IN BARS V TO BE A MINIMUM OF 40 DIAMETERS (20").
15. FOR PLAN VIEW OF INLET SEE STANDARD DI-3A, 3B, 3C.
16. QUANTITIES SHOWN ARE FOR MINIMUM INLETS OF EACH TYPE. FOR INLETS OF GREATER DEPTH (H) OR LONGER SLOT (L) INCREMENTS SHOWN PER FOOT MUST BE ADDED. THE AMOUNT OF CONCRETE AND STEEL DISPLACED BY PIPE(S) MUST BE DEDUCTED TO OBTAIN TRUE QUANTITIES.
17. FOR NUMBER OF BARS A-G REQUIRED AND LENGTHS SEE SHEET 104.10.
18. FOR DESCRIPTION AND LOCATION OF DIMENSION L SEE SHEET 104.09.
19. FOR ALL DETAILS, DIMENSIONS, AND REINFORCING STEEL ABOVE THIS LINE SEE STANDARD DI-3A, 3B, 3C.

SCHEDULE OF REINFORCING STEEL

BARS H		BARS H_1		BARS V	
NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH
4x(H-1)	3'-6"	4x(H-1)	3'-8"	36	H-1'-4"

APPROXIMATE QUANTITIES FOR MINIMUM 8' DEPTH INLET

TYPE	DIMENSION L SEE NOTE 18	REINFORCING STEEL	CONCRETE
DI-	Ln, Ft.	Lbs.	Cu. Yds.
3AA	2'-8"	452	3.14
3BB	4'-0"	494	3.47
3CC	6'-0"	541	3.89

INCREMENTS TO BE ADDED FOR EACH ADDITIONAL FOOT OF DEPTH (H) AND/OR SLOT LENGTH (L)

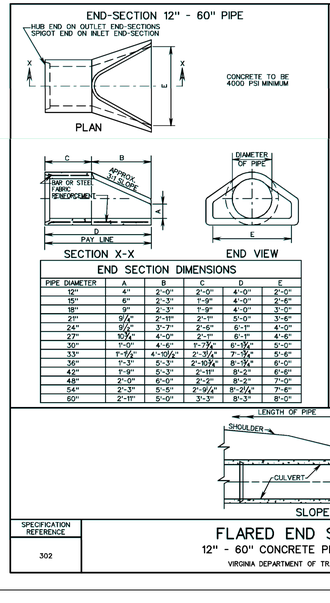
CONCRETE	STEEL	CONCRETE	STEEL
Cu. Yds.	Lbs.	Cu. Yds.	Lbs.
0.317	54	-	-
0.317	54	0.22	23.5
0.317	54	0.22	23.5

VDOT ROAD AND BRIDGE STANDARDS
SHEET 1 OF 1 | REVISION DATE: 104.11

STANDARD CURB DROP INLET
12" - 30" PIPE: DEPTH (H) 8' TO 20'
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE: 233, 302

END-SECTION 12" - 60" PIPE

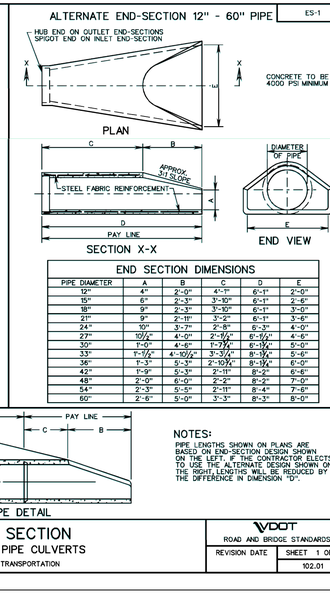


END SECTION DIMENSIONS

PIPE DIAMETER	A	B	C	D	E
12"	4"	2'-0"	2'-0"	4'-0"	2'-0"
15"	6"	2'-3"	1'-9"	4'-0"	2'-6"
18"	9"	2'-3"	1'-9"	4'-0"	3'-0"
21"	9¼"	2'-11"	2'-1"	5'-0"	3'-6"
24"	9½"	3'-2"	2'-0"	6'-1"	4'-0"
27"	10¾"	4'-0"	2'-1"	6'-1"	4'-6"
30"	1'-0"	4'-6"	1'-7⅞"	6'-1⅝"	5'-0"
33"	1'-1½"	4'-10½"	2'-3¼"	7'-3⅛"	5'-6"
36"	1'-3"	5'-3"	2'-10¾"	8'-1⅝"	6'-0"
42"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"
48"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"
54"	2'-3"	5'-5"	2'-9¼"	8'-2¼"	7'-6"
60"	2'-11"	5'-0"	3'-3"	8'-3"	8'-0"

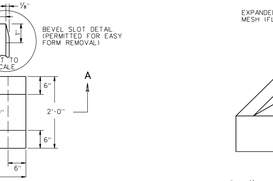
ALTERNATE END-SECTION 12" - 60" PIPE

ES-1



END SECTION DIMENSIONS

PIPE DIAMETER	A	B	C	D	E
12"	4"	2'-0"	4'-7"	6'-1"	2'-0"
15"	6"	2'-3"	3'-10"	6'-1"	2'-6"
18"	9"	2'-3"	3'-10"	6'-1"	3'-0"
21"	9"	2'-11"	3'-2"	6'-1"	3'-6"
24"	10"	3'-2"	2'-8"	6'-3"	4'-0"
27"	10½"	4'-0"	2'-9½"	6'-1½"	4'-6"
30"	1'-0"	4'-6"	1'-7⅞"	6'-1⅝"	5'-0"
33"	1'-1½"	4'-10½"	3'-3¼"	8'-1⅜"	5'-6"
36"	1'-3"	5'-3"	2'-10¾"	8'-1⅝"	6'-0"
42"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"
48"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"
54"	2'-3"	5'-5"	2'-11"	8'-4"	7'-6"
60"	2'-6"	5'-0"	3'-3"	8'-3"	8'-0"



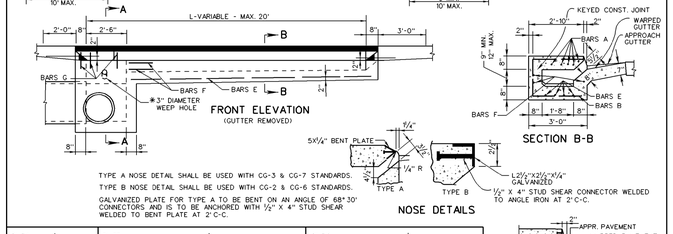
NOTES:
PIPE LENGTHS SHOWN ON PLANS ARE BASED ON END-SECTION DESIGN SHOWN ON THE LEFT. IF THE CONTRACTOR ELECTS TO USE THE ALTERNATE DESIGN SHOWN ON THE RIGHT, LENGTHS WILL BE REDUCED BY THE DIFFERENCE IN DIMENSION "D".

SPECIFICATION REFERENCE: 302

FLARED END SECTION
12" - 60" CONCRETE END PIPE CULVERTS
VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT ROAD AND BRIDGE STANDARDS
REVISION DATE | SHEET 1 OF 1: 102.01

DI-3A, 3B, 3C



TYPE A NOSE DETAIL SHALL BE USED WITH CG-3 & CG-7 STANDARDS.
TYPE B NOSE DETAIL SHALL BE USED WITH CG-2 & CG-6 STANDARDS.
GALVANIZED PLATE FOR TYPE A TO BE BENT ON AN ANGLE OF 68°30' CONNECTORS AND IS TO BE ANCHORED WITH ½" X 4" STUD SHEAR WELDED TO BENT PLATE AT 2'-0" C-C.

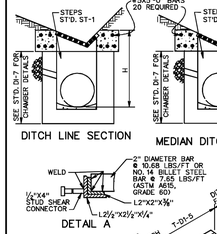
DI-3A
DI-3B
FOR USE ON GRADES
DI-3C
FLOW
FOR USE IN SAGS BOTH SIDES TO BE SYMMETRICAL

VDOT ROAD AND BRIDGE STANDARDS
SHEET 1 OF 2 | REVISION DATE: 104.09 | 08/10

STANDARD CURB DROP INLET
12" - 30" PIPE: MAXIMUM DEPTH (H) = 8'
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE: 233, 302

DI-5



NOTES

1. DEPTH OF INLET (H) TO BE SHOWN ON PLANS.
2. THE "H" DIMENSION SHOWN ON THE STANDARDS AND SPECIFIED ON THE PLANS WILL BE MEASURED FROM THE INVERT OF THE OUTFALL PIPE TO THE TOP OF THE STRUCTURE. PLAN "H" DIMENSIONS ARE APPROX. ONLY FOR ESTIMATING PURPOSES AND THE ACTUAL DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR FROM FIELD CONDITIONS.
3. WHEN SPECIFIED ON THE PLANS THE INVERT IS TO BE SHAPED IN ACCORDANCE WITH STANDARD IS-1. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.
4. IN THE EVENT THE INVERT OF THE OUTFALL PIPE IS HIGHER THAN THE BOTTOM OF THE STRUCTURE, THE INVERT OF THE STRUCTURE SHALL BE SHAPED WITH CEMENT MORTAR TO PREVENT STANDING OR PONDING OF WATER IN THE STRUCTURE. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.
5. STEPS ARE TO BE PROVIDED WHEN H IS 4'-0" OR GREATER. FOR DETAILS SEE STANDARD ST-1.
6. CHAMBER MAY BE CAST IN PLACE, PRECAST, BRICK OR CONCRETE BLOCK. SEE DI-7 FOR DETAILS.
7. WHERE PAVED DITCHES ARE REQUIRED, JOINTS ARE TO BE DOWELLED WITH #4 X 8" SMOOTH RODS AT APPROXIMATELY 12" C-C IN ALL AREAS ADJACENT TO ABUTTING CONCRETE TO PREVENT SETTLEMENT. IN LIEU OF DOWELS A 2" X 4" NOTCH MAY BE PROVIDED. SEE STD T-DI-3, 4 FOR ALTERNATE DESIGN.
8. 3" DIAMETER WEEP HOLE TO BE LOCATED TO DRAIN SUBBASE MATERIAL. WEEP HOLE WITH 12"X12" PLASTIC HARDWARE CLOTH ¼" MESH OR GALVANIZED STEEL WIRE, MINIMUM WIRE DIAMETER 0.03", NUMBER 4 MESH HARDWARE CLOTH ANCHORED FIRMLY TO THE OUTSIDE OF THE STRUCTURE.
9. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 2" AND BE CUT CLEAR OF ALL OPENINGS BY 2".
10. CAST-IN PLACE CONCRETE IS TO BE CLASS A3 (3000 PSI). PRECAST CONCRETE IS TO BE 4000 PSI.
11. PROVIDED SAFETY SLABS WHEN SPECIFIED ON THE PLANS.
12. DI-5 IS TO BE UTILIZED IN LOCATIONS NOT NORMALLY SUBJECT TO TRAFFIC.

MINIMUM H	
PIPE SIZE	H
12"	2'-9"
15"	3'-0"
18"	3'-4"
24"	3'-10"
30"	4'-5"
36"	5'-0"
42"	5'-6"

GRATE BAR SPACING CHART

GRATE TYPE	MAXIMUM DIMENSION A	B
A I	1⅞"	3"
A II	1"	1"

'ST'D PG-2A TYPE

	COVER DIMENSIONS AND QUANTITIES								
	W1	W2	W3	W4	*D	D1	D2	X	Z
A1,A2,A3	3'-0½"	2'-0¾"	2'-0⅞"	1'-0⅞"	6"	4"	3"	14"	2'-2"
B1,B2,B3,B4 C1,C2,C3	2'-9"	2'-9"	1'-6⅞"	1'-6⅞"	8"	4½"	4½"	16"	2'-8"
E	2'-3"	2'-3"	1'-8⅛"	1'-8⅛"	12"	9"	9"	19"	2'-8"

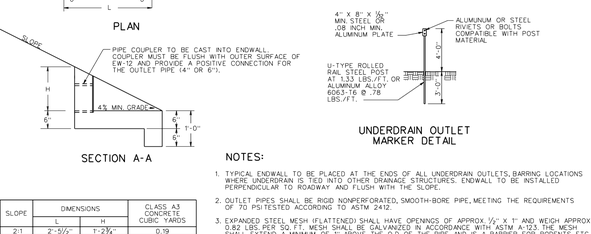
* TOLERANCE ± ½"

VDOT ROAD AND BRIDGE STANDARDS
SHEET 1 OF 1 | REVISION DATE: 104.21

STANDARD DITCH DROP INLET
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE: 233, 302

EW-12



PIPE I.D.	SLOPE	DIMENSIONS L	DIMENSIONS H	CLASS A3 CONCRETE CUBIC YARDS
4"	2:1	2'-5½"	1'-2⅜"	0.19
4"	3:1	3'-5½"	1'-1⅞"	0.25
4"	4:1	4'-5"	1'-1½"	0.30
6"	2:1	2'-10½"	1'-5¼"	0.20
6"	3:1	4'-3½"	1'-4¼"	0.30
6"	4:1	5'-3"	1'-3¾"	0.38

NOTES:

1. TYPICAL ENDWALL TO BE PLACED AT THE ENDS OF ALL UNDERDRAIN OUTLETS, BARRING LOCATIONS WHERE UNDERDRAIN IS TIED INTO OTHER DRAINAGE STRUCTURES. ENDWALL TO BE INSTALLED PERPENDICULAR TO ROADWAY AND FLUSH WITH THE SLOPE.
2. OUTLET PIPES SHALL BE RIGID NONPERFORATED, SMOOTH-BORE PIPE, MEETING THE REQUIREMENTS OF 70 PSI TESTED ACCORDING TO ASTM 2412.
3. EXPANDED STEEL MESH (FLATTENED) SHALL HAVE OPENINGS OF APPROX. ½" X 1" AND WEIGH APPROX. 0.82 LBS. PER SQ. FT. MESH SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-123. THE MESH SHALL EXTEND A MINIMUM OF 1" ABOVE THE O.D. OF THE PIPE, AND IS A BARRIER FOR RODENTS, ETC. THE SLOT FOR THE STEEL MESH IS TO BE CONSTRUCTED SO THAT THE MESH CAN BE REMOVED FOR CLEANOUT PURPOSES.
4. THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
5. STEEL POSTS AND PLATES TO BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE ROAD AND BRIDGE SPECIFICATIONS. IF PAINTED THE FINAL COAT SHALL BE NO. 13 ALUMINUM PAINT OR NO. 11 WHITE PAINT.
6. MARKER TO BE PLACED AT ALL EW-12 UNDERDRAIN INSTALLATIONS.
7. MARKER WILL BE PAID FOR IN ACCORDANCE WITH SECTION 501 OF THE ROAD AND BRIDGE SPECIFICATIONS.

VDOT ROAD AND BRIDGE STANDARDS
SHEET 1 OF 1 | REVISION DATE: 01/15 | 101.32

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

STANDARD ENDWALL FOR PIPE UNDERDRAIN
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE: 105, 233, 302, 501

NOTES

1. Lot dimensions in parentheses are from deed.
2. Property owners correct as of March, 2015
3. Ordinance Number N/A
4. Adopted N/A
5. Accepted N/A

REFERENCES | REVISIONS

Existing Curb
- Curb & Gutter
- Sidewalk
- Basin
- Storm Sewer
- Sewer Manhole
- Sanitary Sewer (Gravity)
- Sanitary Sewer (Force Main)
- Gas Line
- Electric Line
- Telephone/Telegraph
- TV Cable
- Water Line
- Tree / Exist. Tree To Be Removed
- Property Line

--LEGEND:--

Existing Curb Cut Ramp
- Coping
- Alley Crossing/Driveway
- Fire Hydrant
- Edge of Pavement
- Fence
- Cornerstone
- Property Pin
- Utility Pole

Proposed Sewer
- Manhole
- Basin
- Curb & Gutter
- Asphalt

Proposed Conc. Sidewalk
- Truck Apron

Castings: Water Valve
- Water Meter
- Gas Drip
- Gas Valve
- Telephone Manhole
- Electric Manhole

Proposed Curb Cut Ramp
- Decorative Light
- Conduit
- Conduit (Conc. Encased)
- Retaining Wall

RICHMOND VIRGINIA

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Michael B. Sawyer	City Traffic Engineer	Emmanuel O. Adediran	Director of Public Works

DEPARTMENT OF PUBLIC WORKS
RICHMOND, VIRGINIA

BELMONT ROAD ROUNDABOUT
CONSTRUCTION DETAILS

DESIGN BY: M. FLEMING DRAWN BY: M. FLEMING CHECKED BY: C. KIEFER	REVIEWED BY	FIELD NOTES FB-XX, pp XX-XX	SCALE HORZ. N/A VERT. -	DATE 11/06/15	SHEET 2C(2)	DRAWING NO. 0-28661

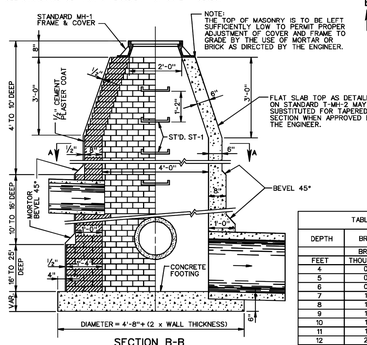
L:\2013\3948-Richmond\021-203-Belmont\R4_Roundabout\DWG\Sheet\CD\3948.021-203C-02C.dwg | Plotted on 11/6/2015 11:03 AM | by Melvin Fleming

COMMONWEALTH OF VIRGINIA
CHRISTOPHER M. KIEFER
Lic. No. 23346
11/06/15
PROFESSIONAL ENGINEER

SURVEYED BY: TIMMONS GROUP
SUPERVISED BY: C.C. KIEFER
DESIGNED BY: M.M. FLEMING

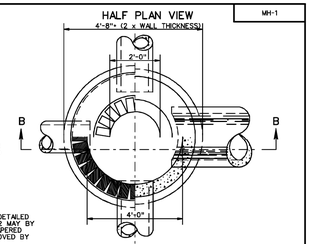
MH-1

SEE STANDARAD SL-1 FOR APPLICABILITY OF SAFETY SLABS.



SECTION B-B

BRICK CONCRETE OR CONCRETE BLOCK



HALF SECTION A-A
(WITH FRAME AND COVER REMOVED)

BRICK CONCRETE

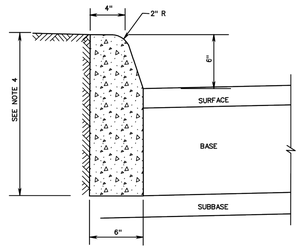
TABLE OF QUANTITIES			
DEPTH	BRICK MANHOLE		CONCRETE MANHOLE
FEET	BRICK THOUSANDS	CONCRETE CU. YARDS	CONCRETE CU. YARDS
4	0.5	0.785	1.437
5	0.7	0.785	1.699
6	0.9	0.785	1.961
7	1.0	0.785	2.223
8	1.2	0.785	2.485
9	1.4	0.785	2.747
10	1.6	0.785	3.009
11	1.9	0.970	3.455
12	2.2	0.970	3.817
13	2.5	0.970	4.179
14	2.8	0.970	4.541
15	3.1	0.970	4.903
16	3.4	0.970	5.265
17	4.0	1.173	6.032
INCREMENT	0.45	-	0.582

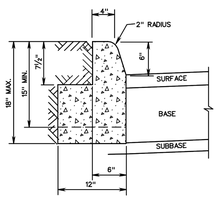
NOTES:
1. QUANTITIES SHOWN ARE FOR MANHOLE WITHOUT PIPES. THE AMOUNT DISPLACED BY PIPES MUST BE DEDUCTED TO OBTAIN TRUE QUANTITIES.
2. A BASE THICKNESS OF 9" WAS USED IN COMPUTING CONCRETE QUANTITIES.
3. INCREMENTS TO BE ADDED FOR EACH ADDITIONAL FOOT OF DEPTH.
4. MATERIALS MAY BE BRICK, CONCRETE OR APPROVED CONCRETE MANHOLE BLOCK.
5. IF BLOCKS ARE USED THE MINIMUM THICKNESS OF SAME IS TO BE 5". OTHER THICKNESSES ARE TO CONFORM TO WALL THICKNESS SHOWN FOR CONCRETE.
6. ALL CONCRETE TO BE CLASS A3.
7. WHEN SPECIFIED ON PLANS THE INVERT IS TO BE SHAPED IN ACCORDANCE WITH STANDARD IS-1 THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.

SPECIFICATION REFERENCE	MANHOLE FOR 12" - 48" PIPE CULVERTS	VDOT ROAD AND BRIDGE STANDARDS
302	VIRGINIA DEPARTMENT OF TRANSPORTATION	REVISION DATE: SHEET 1 OF 5
		106.01

CG-2

NOTES:
1. THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
2. CONCRETE TO BE CLASS A3 IF CAST IN PLACE, 4000 PSI IF PRECAST.
3. CURB HAVING A RADIUS OF 300 FEET OR LESS (ALONG FACE OF CURB) WILL BE PAID FOR AS RADIAL CURB.
4. THE DEPTH OF CURB MAY BE REDUCED AS MUCH AS 3" (5" DEPTH) OR INCREASED AS MUCH AS 3" (2" DEPTH IN ORDER THAT THE BOTTOM OF CURB WILL COINCIDE WITH THE TOP OF A COURSE OF THE PAVEMENT SUBSTRUCTURE. OTHERWISE, THE DEPTH IS TO BE 18" AS SHOWN. NO ADJUSTMENT IN THE PRICE BID IS TO BE MADE FOR A DECREASE OR AN INCREASE IN DEPTH.
5. CG-2 IS TO BE USED ON ROADWAYS MEETING THE REQUIREMENTS FOR CG-6 AS SHOWN IN APPENDIX A OF THE VDOT ROAD DESIGN MANUAL, IN THE SECTION ON GS URBAN STANDARDS.



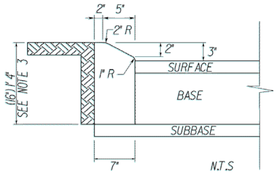


ACCEPTABLE ALTERNATIVE IF CURB IS EXTRUDED

SPECIFICATION REFERENCE	STANDARD 6" CURB	VDOT ROAD AND BRIDGE STANDARDS
105 502	VIRGINIA DEPARTMENT OF TRANSPORTATION	REVISION DATE: SHEET 1 OF 1 201.01

CG-3 MODIFIED

FOR USE ON ROUNDABOUT TRUCK APRONS ONLY

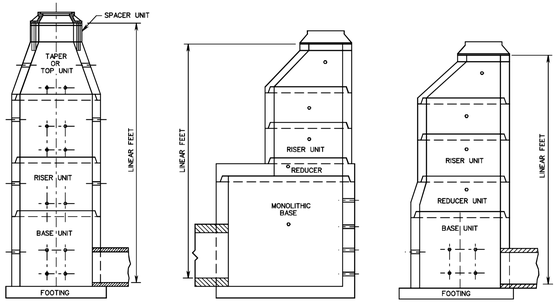


N.T.S

NOTES:
1. THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
2. CONCRETE TO BE CLASS A3 IF CAST IN PLACE, 4000 PSI IF PRECAST.
3. THE DEPTH OF CURB MAY BE REDUCED AS MUCH AS 3" (13" DEPTH) OR INCREASED AS MUCH AS 3" (19" DEPTH) IN ORDER THAT THE BOTTOM OF THE CURB WILL COINCIDE WITH THE TOP OF A COURSE OF THE PAVEMENTS SUBSTRUCTURE. OTHERWISE, THE DEPTH IS TO BE 16" AS SHOWN. NO ADJUSTMENT IN THE PRICE BID IS TO BE MADE FOR A DECREASE OR AN INCREASE IN DEPTH.
4. THE MODIFICATION TO THE STANDARD CG-3 IS TO REDUCE THE EXPOSED HEIGHT OF THE CURB AS SHOWN. MODIFIED CURB SHALL BE PAID FOR AS STANDARD CG-3.

MH-2

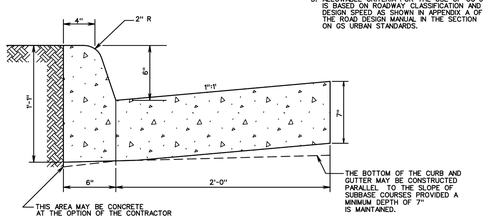
FOR DETAILS OF ALL COMPONENT PARTS AND "GENERAL NOTES- PRECAST" SEE SHEETS 103.01-103.11



SPECIFICATION REFERENCE	PRECAST MANHOLE	VDOT ROAD AND BRIDGE STANDARDS
105 302	VIRGINIA DEPARTMENT OF TRANSPORTATION	REVISION DATE: SHEET 1 OF 1 106.07

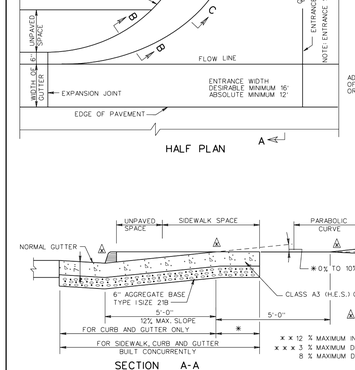
CG-6

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

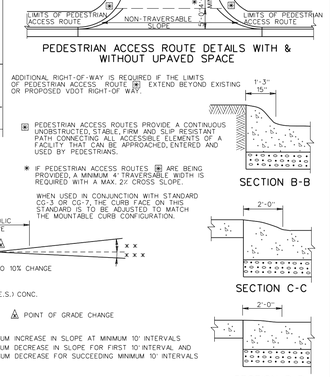


SPECIFICATION REFERENCE	COMBINATION 6" CURB AND GUTTER	VDOT ROAD AND BRIDGE STANDARDS
105 502	VIRGINIA DEPARTMENT OF TRANSPORTATION	REVISION DATE: SHEET 1 OF 1 201.03

CG-9D



HALF PLAN



PEDESTRIAN ACCESS ROUTE DETAILS WITH & WITHOUT UPAVED SPACE

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

⊕ PEDESTRIAN ACCESS ROUTES PROVIDE A CONTINUOUS UNOBSTRUCTED, STABLE, FIRM AND SLIP RESISTANT PATH CONNECTING ALL ACCESSIBLE ELEMENTS OF A FACILITY THAT CAN BE APPROACHED, ENTERED AND USED BY PEDESTRIANS.

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

WHEN USED IN CONJUNCTION WITH STANDARD CG-3 OR CG-7, THE CURB FACE ON THIS STANDARD IS TO BE ADJUSTED TO MATCH THE MOUNTABLE CURB CONFIGURATION.

SECTION A-A

x x 12 % MAXIMUM INCREASE IN SLOPE AT MINIMUM 10' INTERVALS
x x x 3 % MAXIMUM DECREASE IN SLOPE FOR FIRST 10' INTERVAL AND 8 % MAXIMUM DECREASE FOR SUCCEEDING MINIMUM 10' INTERVALS

VDOT ROAD AND BRIDGE STANDARDS	STANDARD ENTRANCE GUTTER	SPECIFICATION REFERENCE
SHEET 1 OF 1 203.03	REVISION DATE 07/15	VIRGINIA DEPARTMENT OF TRANSPORTATION	502

NOTES
1. Lot dimensions in parentheses are from deed.
2. Property owners correct as of March, 2015
3. Ordinance Number N/A
4. Adopted N/A
5. Accepted N/A

REFERENCES	REVISIONS

Existing Curb
- Curb & Gutter
- Sidewalk
- Basin
- Storm Sewer
- Sewer Manhole
- Sanitary Sewer (Gravity)
- Sanitary Sewer (Force Main)
- Gas Line
- Electric Line
- Telephone/Telegraph
- TV Cable
- Water Line
- Tree / Exist. Tree To Be Removed
- Property Line

-LEGEND:-

Existing Curb Cut Ramp
- Coping
- Alley Crossing/Driveway
- Fire Hydrant
- Edge of Pavement
- Fence
- Cornerstone
- Property Pin
- Utility Pole

Proposed Sewer
- Manhole
- Basin
- Curb & Gutter
- Asphalt

Proposed Conc. Sidewalk
- Truck Apron

Castings: Water Valve
- Water Meter
- Gas Drip
- Gas Valve
- Telephone Manhole
- Electric Manhole

Proposed Curb Cut Ramp
- Decorative Light
- Conduit
- Conduit (Conc. Encased)
- Retaining Wall

RICHMOND VIRGINIA

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DEPARTMENT OF PUBLIC WORKS
RICHMOND, VIRGINIA

BELMONT ROAD ROUNDABOUT
CONSTRUCTION DETAILS

DESIGN BY: M. FLEMING DRAWN BY: M. FLEMING CHECKED BY: C. KIEFER	REVIEWED BY	FIELD NOTES FB-XX, pp XX-XX	SCALE HORIZ. N/A VERT. -	DATE 11/06/15	SHEET 2C(3)	DRAWING NO. 0-28661

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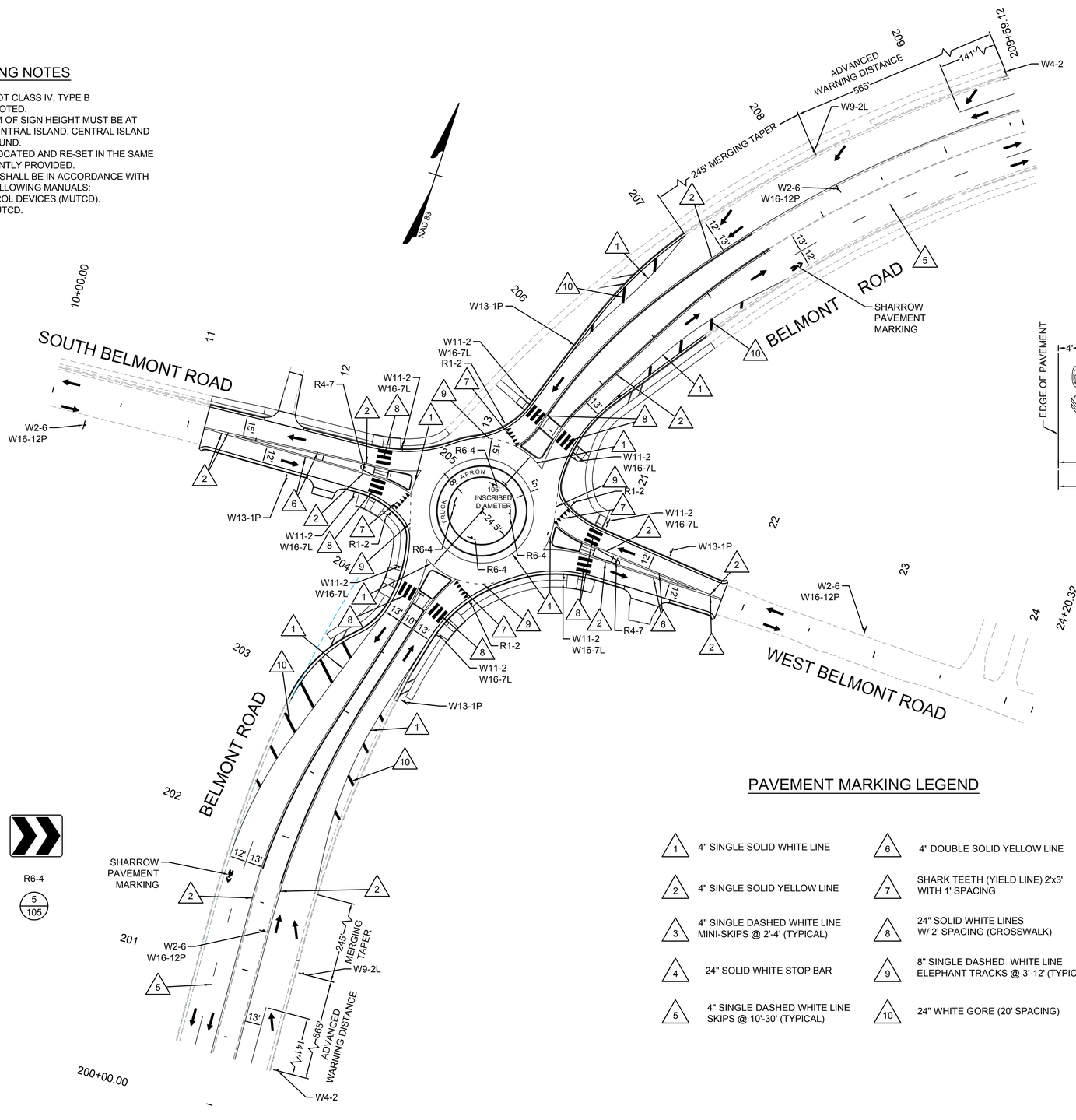
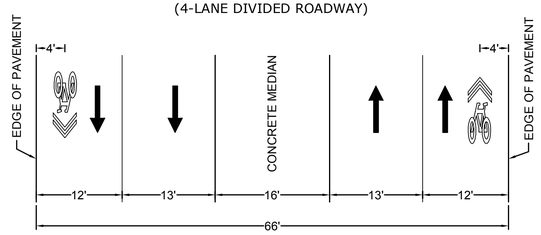
PAVEMENT MARKING NOTES

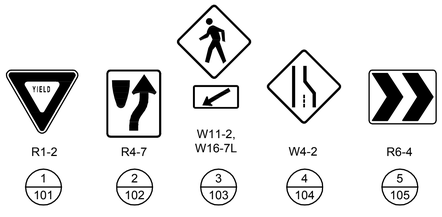
1. ALL PAVEMENT MARKINGS SHALL BE VDOT CLASS IV, TYPE B THERMOPLASTIC, UNLESS OTHERWISE NOTED.
2. FOR ALL PROPOSED SIGNS, THE BOTTOM OF SIGN HEIGHT MUST BE AT LEAST 7' ABOVE GROUND EXCEPT ON CENTRAL ISLAND. CENTRAL ISLAND SIGNS MUST BE AT LEAST 4' ABOVE GROUND.
3. ALL EXISTING SIGNAGE SHOULD BE RELOCATED AND RE-SET IN THE SAME LOCATION AND SAME OFFSET AS CURRENTLY PROVIDED.
4. ALL PROPOSED PAVMEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MOST CURRENT EDITION OF THE FOLLOWING MANUALS:
   A. MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
   B. THE VIRGINIA SUPPLEMENT TO THE MUTCD.
   C. VDOT ROAD AND BRIDGE STANDARDS



SHARROW TYPICAL PLACEMENT DETAIL
(4-LANE DIVIDED ROADWAY)



SIGN LEGEND



8/108 *SIGN NO. / *TEXT NO.

*SEE SHEET 2K(2) FOR SIGN SCHEDULE

PAVEMENT MARKING LEGEND

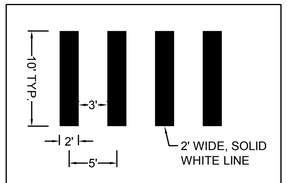
1. 4" SINGLE SOLID WHITE LINE
2. 4" SINGLE SOLID YELLOW LINE
3. 4" SINGLE DASHED WHITE LINE MINI-SKIPS @ 2'-4' (TYPICAL)
4. 24" SOLID WHITE STOP BAR
5. 4" SINGLE DASHED WHITE LINE SKIPS @ 10'-30' (TYPICAL)
6. 4" DOUBLE SOLID YELLOW LINE
7. SHARK TEETH (YIELD LINE) 2'x3' WITH 1' SPACING
8. 24" SOLID WHITE LINES W/ 2' SPACING (CROSSWALK)
9. 8" SINGLE DASHED WHITE LINE ELEPHANT TRACKS @ 3'-12' (TYPICAL)
10. 24" WHITE GORE (20' SPACING)

MERGE ARROW (TO BE STRIPED)

THROUGH/DIRECTIONAL ARROW (DO NOT STRIPE - FOR INFORMATIONAL PURPOSES ONLY)

PROPOSED SHARROW PAVEMENT MARKING TO BE PLACED WHERE INDICATED ON PLANS

CROSSWALK DETAIL



SCALE 1"=40'
0 40' 80'

TIMMONS GROUP

SURVEYED BY: .....
SUPERVISED BY: C. KIEFER
DESIGNED BY: M. FLEMING

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NOTES
1. Lot dimensions in parentheses are from deed.
2. Property owners correct as of March, 2015
3. Ordinance Number N/A
4. Adopted N/A
5. Accepted N/A

REFERENCES | REVISIONS

Existing Curb
- Curb & Gutter
- Sidewalk
- Basin
- Storm Sewer
- Sewer Manhole
- Sanitary Sewer (Gravity)
- Sanitary Sewer (Force Main)
- Gas Line
- Electric Line
- Telephone/Telegraph
- TV Cable
- Water Line
- Tree / Exist. Tree To Be Removed
- Property Line

--LEGEND:--

Existing Curb Cut Ramp
- Coping
- Alley Crossing/Driveway
- Fire Hydrant
- Edge of Pavement
- Fence
- Cornerstone
- Property Pin
- Utility Pole

Proposed Sewer
- Manhole
- Basin
- Curb & Gutter
- Asphalt

Proposed Conc. Sidewalk
- Truck Apron

Castings: Water Valve
- Water Meter
- Gas Drip
- Gas Valve
- Telephone Manhole
- Electric Manhole

Proposed Curb Cut Ramp
- Decorative Light
- Conduit
- Conduit (Conc. Encased)
- Retaining Wall

RICHMOND VIRGINIA

Technical		Administrative	
Marvin Anderson	Surveys Superintendent		
Chris Kiefer (Timmons Group) Maritza Feliz-Reyes (DPW)	Project Engineer	Lamont L. Benjamin	Capital Project Administrator
Kenneth D. Horak	Maintenance Engineer	Bobby Vincent Jr.	Deputy Director for Transportation / Public Works
Michael B. Sawyer	City Traffic Engineer	Emmanuel O. Adediran	Director of Public Works

DEPARTMENT OF PUBLIC WORKS
RICHMOND, VIRGINIA

BELMONT ROAD ROUNDABOUT

PAVEMENT MARKING & SIGNING

DESIGN BY: M. FLEMING DRAWN BY: M. FLEMING CHECKED BY: C. KIEFER	REVIEWED BY	FIELD NOTES FB-XX, pp XX-XX	SCALE HORIZ. 1" =30' VERT. -	DATE 11/06/15	SHEET 2K(1)	DRAWING NO. 0-28661

COMMONWEALTH OF VIRGINIA
CHRISTOPHER M. KIEFER
Lic. No. 23346
11/06/15
PROFESSIONAL ENGINEER

SIGN SCHEDULE

TEXT NO.	SIGN ASSEMBLY NO(s).	TEXT	SIGN ASSEMBLY COMPONENTS: MUTCD ST'D.	PANEL SIZE: W	PANEL SIZE: H	QTY.	SIGN PANEL AREA (s.f.): per ASSEMBLY	SIGN PANEL AREA (s.f.): ALL ASSEM-BLIES	PROP. SIGN STRUCTURE ST'D.	REMARKS
1	101		R1-2	36"	36"	4	9	36	STP-1	
2	102		R4-7	36"	48"	2	12	24	STP-1	
3	103		W11-2 W16-7P	30" 24"	30" 12"	8 8	6.3 2	31.5 10	STP-1	
4	104		W4-2	36"	36"	2	9	18	STP-1	
5	105		R6-4	30"	24"	4	5	20	STP-1	
6	106		W2-6 W16-12P	30" 24"	30" 18"	4 4	6.3 3	25.2 12	STP-1	
7	107		W9-2L	36"	36"	2	9	18	STP-1	
8	108		W13-1P	18"	18"	4	2.3	9.2	STP-1	

NOTES:

1) ALL SIGNS SHALL BE ORIENTATED AS SHOWN ON THE PLANS.
2) SIGN COLOR COMBINATIONS SHALL BE IN ACCORDANCE WITH THE FHWA SHS BOOK AND THE 2011 VIRGINIA SHS BOOK OR AS NOTED IN THE PLANS.
3) ALL BLACK SHEETING SHALL BE NON-REFLECTIVE.
4) SIGN STRUCTURES SHALL BE INSTALLED PER THE NOTED SIGN ST'D.
5) ALL ST'D. STP-1 STRUCTURES TO BE SINGLE POST UNLESS OTHERWISE NOTED.

COMMONWEALTH OF VIRGINIA
CHRISTOPHER M. KIEFER
Lic. No. 23346
11/06/15
PROFESSIONAL ENGINEER

SURVEYED BY: ..... TIMMONS GROUP
SUPERVISED BY: ..... C. KIEFER
DESIGNED BY: ..... M. FLEMING

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NOTES
1. Lot dimensions in parentheses are from deed.
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4. Adopted N/A
5. Accepted N/A

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- Sidewalk
- Basin
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- Sewer Manhole
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- Sanitary Sewer (Force Main)
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- Electric Line
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- TV Cable
- Water Line
- Tree / Exist. Tree To Be Removed
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--LEGEND:--
Existing Curb Cut Ramp
- Coping
- Alley Crossing/Driveway
- Fire Hydrant
- Edge of Pavement
- Fence
- Cornerstone
- Property Pin
- Utility Pole

Proposed Sewer
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- Curb & Gutter
- Asphalt

- Proposed Conc. Sidewalk
- Truck Apron

Castings: Water Valve
- Water Meter
- Gas Drip
- Gas Valve
- Telephone Manhole
- Electric Manhole

Proposed Curb Cut Ramp
- Decorative Light
- Conduit
- Conduit (Conc. Encased)
- Retaining Wall

RICHMOND VIRGINIA

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Michael B. Sawyer	City Traffic Engineer	Emmanuel O. Adediran	Director of Public Works

DEPARTMENT OF PUBLIC WORKS
RICHMOND, VIRGINIA

TIMMONS GROUP

BELMONT ROAD ROUNDABOUT
SIGN SCHEDULE

DESIGN BY: N. BEASLEY DRAWN BY: V. BUCKLEY CHECKED BY: N. BEASLEY	REVIEWED BY	FIELD NOTES FB-XX, pp XX-XX	SCALE HORIZ N/A VERT. -	DATE 11/06/15	SHEET 2K(2)	DRAWING NO. 0-28661

SURVEYED BY: TIMMONS GROUP
SUPERVISED BY: C. KIEFER
DESIGNED BY: M. FLEMING

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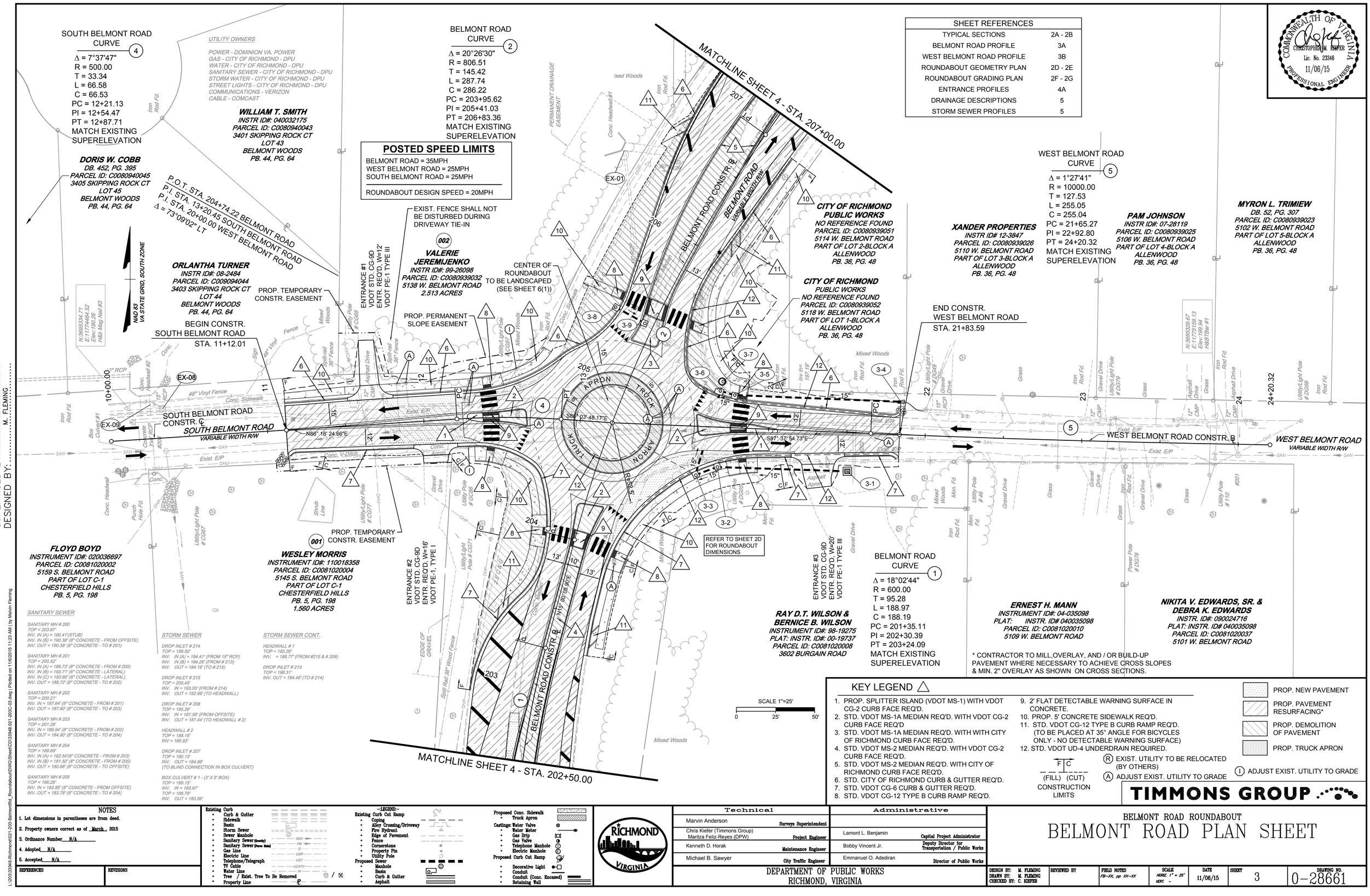

SHEET REFERENCES	
TYPICAL SECTIONS	2A - 2B
BELMONT ROAD PROFILE	3A
WEST BELMONT ROAD PROFILE	3B
ROUNDABOUT GEOMETRY PLAN	2D - 2E
ROUNDABOUT GRADING PLAN	2F - 2G
ENTRANCE PROFILES	4A
DRAINAGE DESCRIPTIONS	5
STORM SEWER PROFILES	5

COMMONWEALTH OF VIRGINIA
CHRISTOPHER M. KIEFER
Lic. No. 23346
11/06/15
PROFESSIONAL ENGINEER

KEY LEGEND △

1. PROP. SPLITTER ISLAND (VDOT MS-1) WITH VDOT CG-2 CURB FACE REQ'D.
2. STD. VDOT MS-1A MEDIAN REQ'D. WITH VDOT CG-2 CURB FACE REQ'D
3. STD. VDOT MS-1A MEDIAN REQ'D. WITH WITH CITY OF RICHMOND CURB FACE REQ'D.
4. STD. VDOT MS-2 MEDIAN REQ'D. WITH VDOT CG-2 CURB FACE REQ'D.
5. STD. VDOT MS-2 MEDIAN REQ'D. WITH CITY OF RICHMOND CURB FACE REQ'D.
6. STD. CITY OF RICHMOND CURB & GUTTER REQ'D.
7. STD. VDOT CG-6 CURB & GUTTER REQ'D.
8. STD. VDOT CG-12 TYPE B CURB RAMP REQ'D.
9. 2' FLAT DETECTABLE WARNING SURFACE IN CONCRETE.
10. PROP. 5' CONCRETE SIDEWALK REQ'D.
11. STD. VDOT CG-12 TYPE B CURB RAMP REQ'D. (TO BE PLACED AT 35° ANGLE FOR BICYCLES ONLY - NO DETECTABLE WARNING SURFACE)
12. STD. VDOT UD-4 UNDERDRAIN REQUIRED.

F | C
(FILL) (CUT) CONSTRUCTION LIMITS

(R) EXIST. UTILITY TO BE RELOCATED (BY OTHERS)
(A) ADJUST EXIST. UTILITY TO GRADE
(I) ADJUST EXIST. UTILITY TO GRADE

PROP. NEW PAVEMENT
PROP. PAVEMENT RESURFACING*
PROP. DEMOLITION OF PAVEMENT
PROP. TRUCK APRON

TIMMONS GROUP

NOTES

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4. Adopted N/A
5. Accepted N/A

REFERENCES	REVISIONS

-LEGEND:-

Existing Curb
Curb & Gutter
Sidewalk
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Property Line

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Alley Crossing/Driveway
Fire Hydrant
Edge of Pavement
Fence
Cornerstone
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Utility Pole
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Telephone Manhole
Electric Manhole
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Conduit
Conduit (Conc. Encased)
Retaining Wall

RICHMOND VIRGINIA

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DEPARTMENT OF PUBLIC WORKS
RICHMOND, VIRGINIA

BELMONT ROAD ROUNDABOUT

BELMONT ROAD PLAN SHEET

DESIGN BY: M. FLEMING DRAWN BY: M. FLEMING CHECKED BY: C. KIEFER	REVIEWED BY	FIELD NOTES FB-XX, pp XX-XX	SCALE HORZ. 1" = 25' VERT. -	DATE 11/06/15	SHEET 3	DRAWING NO. 0-28661

SURVEYED BY: ..... TIMMONS GROUP
SUPERVISED BY: ..... T. BUCKLEY
DESIGNED BY: ..... T. BUCKLEY

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COMMONWEALTH OF VIRGINIA
NEAL P. BEASLEY
Lic. No. 1628
11/06/15
LANDSCAPE ARCHITECT

SEE SHEET 6(2) FOR
DETAIL LANDSCAPE PLAN

WILLIAM T. SMITH
INSTR ID#: 040032175
PARCEL ID: C0080940043
3401 SKIPPING ROCK CT
LOT 43
BELMONT WOODS
PB. 44, PG. 64

DORIS W. COBB
DB. 452, PG. 395
PARCEL ID: C0080940045
3405 SKIPPING ROCK CT
LOT 45
BELMONT WOODS
PB. 44, PG. 64

ORLANTHA TURNER
INSTR ID#: 08-2484
PARCEL ID: C0090940044
3403 SKIPPING ROCK CT
LOT 44
BELMONT WOODS
PB. 44, PG. 64

002
VALERIE JEREMIJENKO
INSTR ID#: 99-26098
PARCEL ID: C0080939032
5138 W. BELMONT ROAD
2.513 ACRES

CITY OF RICHMOND PUBLIC WORKS
NO REFERENCE FOUND
PARCEL ID: C0080939051
5114 W. BELMONT ROAD
PART OF LOT 2-BLOCK A
ALLENWOOD
PB. 36, PG. 48

CITY OF RICHMOND
PUBLIC WORKS
NO REFERENCE FOUND
PARCEL ID: C0080939052
5118 W. BELMONT ROAD
PART OF LOT 1-BLOCK A
ALLENWOOD
PB. 36, PG. 48

XANDER PROPERTIES
INSTR ID# 12-3847
PARCEL ID: C0080939026
5110 W. BELMONT ROAD
PART OF LOT 3-BLOCK A
ALLENWOOD
PB. 36, PG. 48

PAM JOHNSON
INSTR ID#: 07-28119
PARCEL ID: C0080939025
5106 W. BELMONT ROAD
PART OF LOT 4-BLOCK A
ALLENWOOD
PB. 36, PG. 48

MYRON L. TRIMIEW
DB. 52, PG. 307
PARCEL ID: C0080939023
5102 W. BELMONT ROAD
PART OF LOT 5-BLOCK A
ALLENWOOD
PB. 36, PG. 48

FLOYD BOYD
INSTRUMENT ID#: 020036697
PARCEL ID: C0081020002
5159 S. BELMONT ROAD
PART OF LOT C-1
CHESTERFIELD HILLS
PB. 5, PG. 198

001
WESLEY MORRIS
INSTRUMENT ID#: 110018358
PARCEL ID: C0081020004
5145 S. BELMONT ROAD
PART OF LOT C-1
CHESTERFIELD HILLS
PB. 5, PG. 198
1.560 ACRES

RAY D.T. WILSON & BERNICE B. WILSON
INSTRUMENT ID#: 98-19275
PLAT: INSTR. ID#: 00-19737
PARCEL ID: C0081020008
3602 BURGAIN ROAD

ERNEST H. MANN
INSTRUMENT ID#: 04-035098
PLAT: INSTR. ID# 040035098
PARCEL ID: C0081020010
5109 W. BELMONT ROAD

NIKITA V. EDWARDS, SR. & DEBRA K. EDWARDS
INSTR. ID#: 090024716
PLAT: INSTR. ID# 040035098
PARCEL ID: C0081020037
5101 W. BELMONT ROAD

SOUTH BELMONT ROAD
VARIABLE WIDTH R/W

BELMONT ROAD
VARIABLE WIDTH R/W

WEST BELMONT ROAD
VARIABLE WIDTH R/W

PERMANENT DRAINAGE EASEMENT

PERMANENT EASEMENT

NAD 83
VA STATE GRID, SOUTH ZONE

SCALE 1"=25'
0 25' 50'

TIMMONS GROUP

NOTES

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4. Adopted N/A
5. Accepted N/A

REFERENCES	REVISIONS

Existing Curb
- Curb & Gutter
- Sidewalk
- Basin
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- Sewer Manhole
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--LEGEND:--

Existing Curb Cut Ramp
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DEPARTMENT OF PUBLIC WORKS
RICHMOND, VIRGINIA

BELMONT ROAD ROUNDABOUT

OVERALL LANDSCAPE PLAN

DESIGN BY: N. BEASLEY DRAWN BY: V. BUCKLEY CHECKED BY: N. BEASLEY	REVIEWED BY	FIELD NOTES FB-XX, pp XX-XX	SCALE HORZ. 1"=25' VERT. -	DATE 11/06/15	SHEET 6(1)	DRAWING NO. 0-28661

COMMONWEALTH OF VIRGINIA
NEAL P. BEASLEY
Lic. No. 1628
11/06/15
LANDSCAPE ARCHITECT

SURVEYED BY: TIMMONS GROUP
SUPERVISED BY: T. BUCKLEY
DESIGNED BY: T. BUCKLEY

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BELMONT RD.

(4) ILE CAR
(40) JUN BLU

NOTE: PLANT CENTERS NO CLOSER THAN 24" FROM BACK OF CURB; MULCH BORDER.

NOTE: PLANT CENTERS NO CLOSER THAN 24" FROM BACK OF CURB; MULCH BORDER.

(2) ILE CAR
(19) JUN BLU

(203) JUN BLU
(443) NAR CAR
(265) HEM FIR
(265) HEM BUT
(13) ILE BUR
(1) ILE MAR
MULCH LINE

(2) ILE CAR
(33) JUN BLU

NOTE: PLANT CENTERS NO CLOSER THAN 24" FROM BACK OF CURB; MULCH BORDER.

S. BELMONT RD.

W. BELMONT RD.

(42) JUN BLU
(4) ILE CAR

NOTE: PLANT CENTERS NO CLOSER THAN 24" FROM BACK OF CURB; MULCH BORDER.

BEL-MONT RD.

NAD 83
VA STATE GRID, SOUTH ZONE

SCALE 1"=10'
0 10' 20'

TIMMONS GROUP

NOTES

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DEPARTMENT OF PUBLIC WORKS
RICHMOND, VIRGINIA

BELMONT ROAD ROUNDABOUT

DETAIL LANDSCAPE PLAN

DESIGN BY: N. BRASLEY DRAWN BY: T. BUCKLEY CHECKED BY: N. BRASLEY	REVIEWED BY	FIELD NOTES FB-XX, pp XX-XX	SCALE HORZ. 1"=25' VERT. -	DATE 11/06/15	SHEET 6(2)	DRAWING NO. 0-28661

GENERAL NOTES

PRE-CONSTRUCTION

- CONTRACTOR IS RESPONSIBLE FOR CONTACTING "MISS UTILITY" AT 1.800.552.7001 FOR LOCATION OF ALL UTILITY LINES.TREES SHALL BE LOCATED A MINIMUM OF 5 FEET FROM SEWER/WATER CONNECTIONS. NOTIFY LANDSCAPE ARCHITECT OF CONFLICTS.
- VERIFY ALL PLANT MATERIAL QUANTITIES ON THE PLAN PRIOR TO BIDDING, PLANT LIST TOTALS ARE FOR CONVENIENCE ONLY AND SHALL BE VERIFIED PRIOR TO BIDDING.
- PROVIDE PLANT MATERIALS OF QUANTITY, SIZE, GENUS, SPECIES, AND VARIETY INDICATED ON PLANS. ALL PLANT MATERIALS AND INSTALLATION SHALL COMPLY WITH RECOMMENDATIONS AND REQUIREMENTS OF ANSI Z60.1 "AMERICAN STANDARD FOR NURSERY STOCK". IF SPECIFIED PLANT MATERIAL IS NOT OBTAINABLE, SUBMIT PROOF OF NON AVAILABILITY TO THE ARCHITECTS, TOGETHER WITH PROPOSAL FOR USE OF EQUIVALENT MATERIAL.
- PROVIDE AND INSTALL ALL PLANTS AS IN ACCORDANCE WITH DETAILS AND CONTRACT SPECIFICATIONS

CONSTRUCTION/INSTALLATION

- LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT ANY PLANTS AND MATERIALS THAT ARE IN AN UNHEALTHY OR UNSIGHTLY CONDITION, AS WELL AS PLANTS AND MATERIALS THAT DO NOT CONFORM TO ANSI Z60.1 "AMERICAN STANDARD FOR NURSERY STOCK"
- LABEL AT LEAST ONE TREE AND ONE SHRUB OF EACH VARIETY AND CALIPER WITH A SECURELY ATTACHED, WATERPROOF TAG BEARING THE DESIGNATION OF BOTANICAL AND COMMON NAME.
- INSTALL LANDSCAPE PLANTINGS AT ENTRANCES/EXITS AND PARKING AREAS ACCORDING TO PLANS SO THAT MATERIALS WILL NOT INTERFERE WITH SIGHT DISTANCES.
- CONTRACTOR IS RESPONSIBLE FOR WATERING ALL PLANT MATERIAL DURING INSTALLATION AND UNTIL FINAL INSPECTION AND ACCEPTANCE BY OWNER. CONTRACTOR SHALL NOTIFY OWNER OF CONDITIONS WHICH AFFECTS THE GUARANTEE.

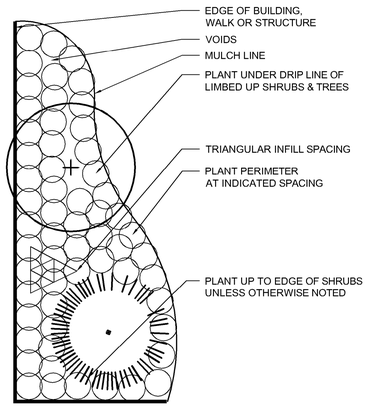
INSPECTIONS/GUARANTEE

- UPON COMPLETION OF LANDSCAPE INSTALLATION, THE LANDSCAPE CONTRACTOR SHALL NOTIFY THE GENERAL CONTRACTOR WHO WILL VERIFY COMPLETENESS, INCLUDING THE REPLACEMENT OF ALL DEAD PLANT MATERIAL. CONTRACTOR IS RESPONSIBLE FOR SCHEDULING A FINAL INSPECTION BY THE LANDSCAPE ARCHITECT.
- ALL EXTERIOR PLANT MATERIALS SHALL BE GUARANTEED FOR ONE FULL YEAR AFTER DATE OF FINAL INSPECTION AGAINST DEFECTS INCLUDING DEATH AND UNSATISFACTORY GROWTH. DEFECTS RESULTING FROM NEGLECT BY THE OWNER, ABUSE OR DAMAGE BY OTHERS, OR UNUSUAL PHENOMENA OR INCIDENTS WHICH ARE BEYOND THE CONTRACTORS CONTROL ARE NOT THE RESPONSIBILITY OF THE CONTRACTOR
- PLANT MATERIAL QUANTITIES AND SIZES WILL BE INSPECTED FOR COMPLIANCE WITH APPROVED PLANS BY A SITE PLAN REVIEW AGENT OF THE PLANNING DEPARTMENT PRIOR TO THE RELEASE OF THE CERTIFICATE OF OCCUPANCY.
- REMOVE ALL GUY WIRES AND STAKES 12 MONTHS AFTER INSTALLATION.

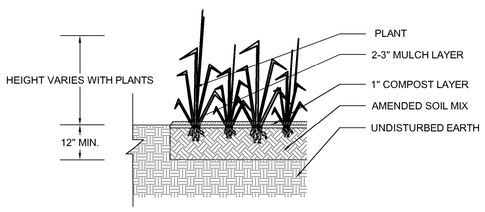
PLANT SCHEDULE

TREES	QTY	BOTANICAL NAME	COMMON NAME	MINIMUM INSTALLED SIZE	ROOT	REMARKS
ILE MAR	1	Ilex x `Mary Nell`	Mary Nell Holly	10` Ht	B&B	SPECIMEN
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	MINIMUM INSTALLED SIZE	ROOT	SPACING
ILE CAR	12	Ilex cornuta `Carissa`	Carissa Holly	18" Sprd	Container	3` O.C.
ILE BUR	13	Ilex cornuta `Dwarf Burford`	Dwarf Burford Holly	24" Ht.	Container	5` O.C.
JUN BLU	339	Juniperus conferta `Blue Pacific`	Blue Pacific Juniper	1 Gal.	Container	2` O.C.
BULBS	QTY	BOTANICAL NAME	COMMON NAME	MINIMUM INSTALLED SIZE	ROOT	SPACING
NAR CAR	443	Narcissus x `Carlton`	Daffodil	BULB	Bulb	2 @ 1 SQ. FT.
PERENNIALS	QTY	BOTANICAL NAME	COMMON NAME	MINIMUM INSTALLED SIZE	ROOT	SPACING
HEM BUT	265	Hemerocallis x `Buttered Popcorn`	Daylily	2-1/4" Container	Container	24" O.C.
HEM FIR	265	Hemerocallis x `Fire King`	Daylily	2-1/4" Container	Container	24" O.C.

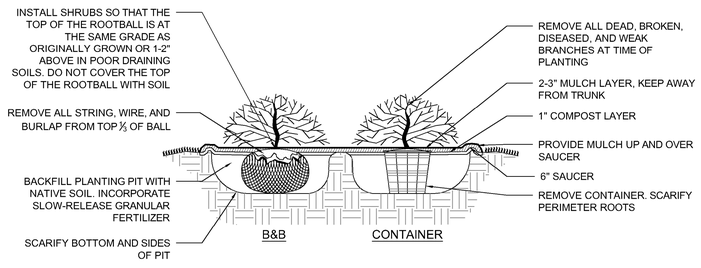
COMMONWEALTH OF VIRGINIA
NEAL P. BEASLEY
Lic. No. 1628
11/06/15
LANDSCAPE ARCHITECT



PLAN VIEW:

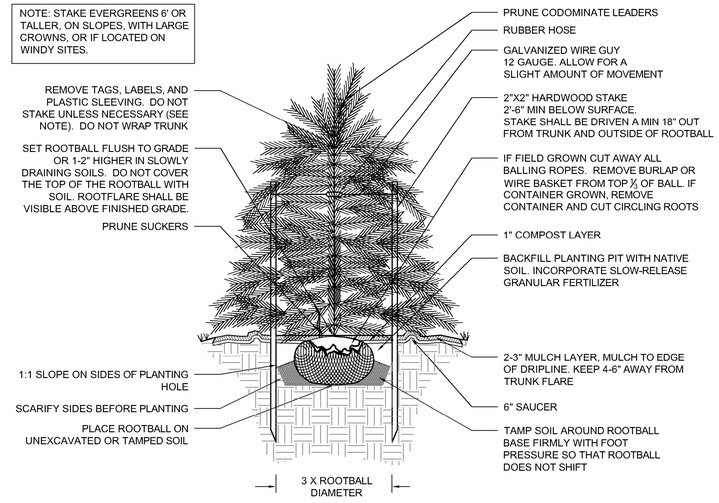


3 GROUNDCOVER/ PERENNIAL PLANTING
NOT TO SCALE



2 SHRUB PLANTING
NOT TO SCALE

NOTE: STAKE EVERGREENS 6' OR TALLER, ON SLOPES, WITH LARGE CROWNS, OR IF LOCATED ON WINDY SITES.



1 CONIFEROUS TREE - STAKING SPECIFIED
NOT TO SCALE

TIMMONS GROUP
SURVEYED BY: ..... T. BUCKLEY
SUPERVISED BY: ..... T. BUCKLEY
DESIGNED BY: ..... T. BUCKLEY

L:\2013\3948-Richmond\021-2013-BelmontRd_Roundabout\DWG\Sheet\CD\3948_021-2013_06.dwg | Plotted on 11/6/2015 11:10 AM | by Melvin Fleming

NOTES
1. Lot dimensions in parentheses are from deed.
2. Property owners correct as of March , 2015
3. Ordinance Number N/A
4. Adopted N/A
5. Accepted N/A

REFERENCES | REVISIONS

Existing Curb
- Curb & Gutter
- Sidewalk
- Basin
- Storm Sewer
- Sewer Manhole
- Sanitary Sewer (Gravity)
- Sanitary Sewer (Force Main)
- Gas Line
- Electric Line
- Telephone/Telegraph
- TV Cable
- Water Line
- Tree / Exist. Tree To Be Removed
- Property Line

--LEGEND:--

Existing Curb Cut Ramp
- Coping
- Alley Crossing/Driveway
- Fire Hydrant
- Edge of Pavement
- Fence
- Cornerstone
- Property Pin
- Utility Pole

Proposed Sewer
- Manhole
- Basin
- Curb & Gutter
- Asphalt

Proposed Conc. Sidewalk
- Truck Apron

Castings: Water Valve
- Water Meter
- Gas Drip
- Gas Valve
- Telephone Manhole
- Electric Manhole

Proposed Curb Cut Ramp
- Decorative Light
- Conduit
- Conduit (Conc. Encased)
- Retaining Wall

RICHMOND VIRGINIA

Technical		Administrative	
Marvin Anderson	Surveys Superintendent		
Chris Kiefer (Timmons Group) Maritza Feliz-Reyes (DPW)	Project Engineer	Lamont L. Benjamin	Capital Project Administrator
Kenneth D. Horak	Maintenance Engineer	Bobby Vincent Jr.	Deputy Director for Transportation / Public Works
Michael B. Sawyer	City Traffic Engineer	Emmanuel O. Adediran	Director of Public Works

DEPARTMENT OF PUBLIC WORKS
RICHMOND, VIRGINIA

TIMMONS GROUP

BELMONT ROAD ROUNDABOUT
LANDSCAPE NOTES AND DETAILS

DESIGN BY: N. BEASLEY DRAWN BY: T. BUCKLEY CHECKED BY: N. BEASLEY	REVIEWED BY	FIELD NOTES FB-XX, pp XX-XX	SCALE HORZ: 1"=25' VERT. -	DATE 11/06/15	SHEET 6(3)	DRAWING NO. 0-28661

SURVEYED BY: TIMMONS GROUP
SUPERVISED BY: C. KIEFER
DESIGNED BY: M. FLEMING

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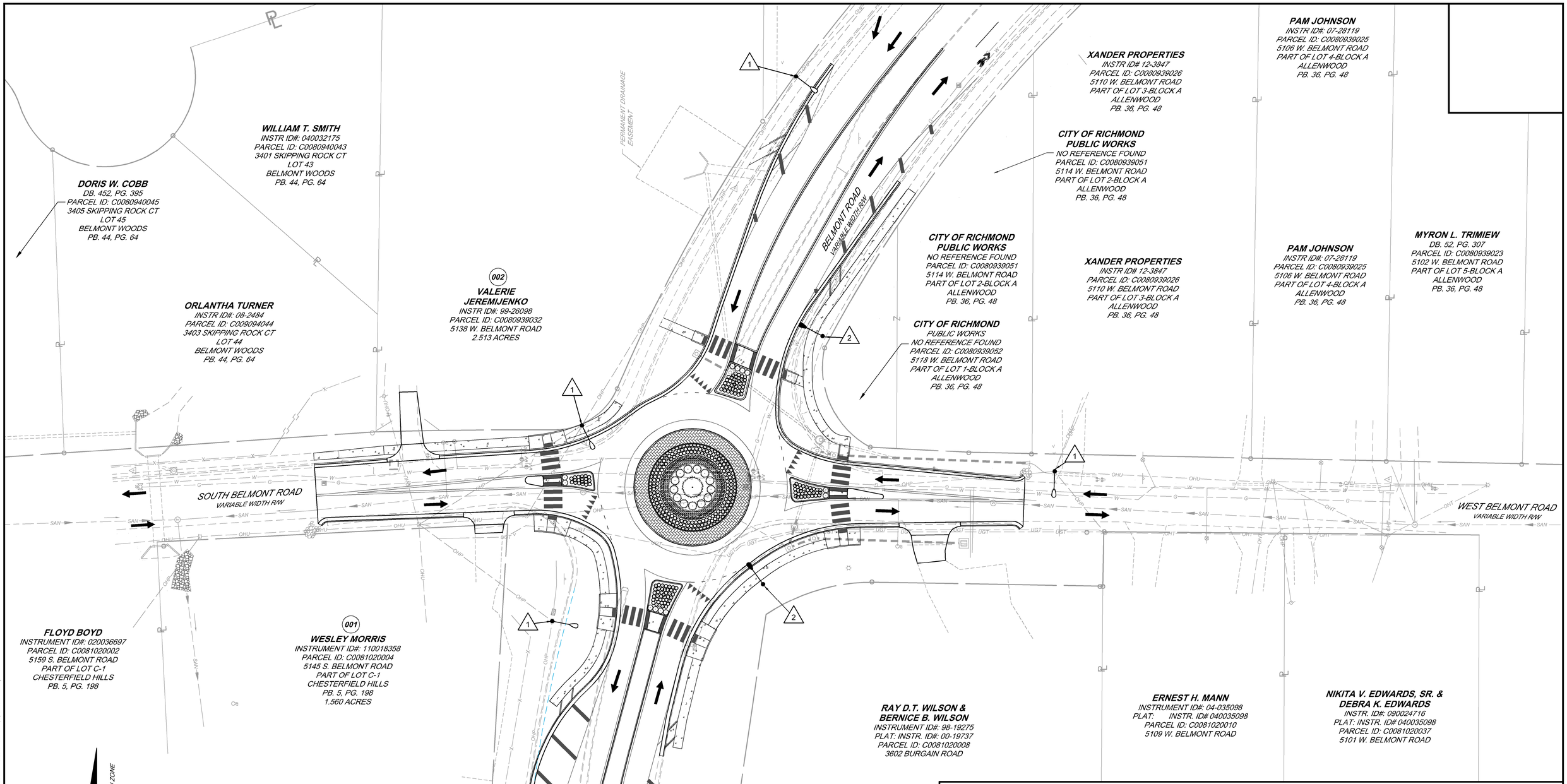

1 — EXISTING DPU STREET LIGHT

2 — PROPOSED DPU STREET LIGHT

DETAILS: POLE SPACING AS SHOWN, OFFSET TO BE 5' - 7' TYPICAL UNLESS OTHERWISE NOTED ON PLAN. LUMINAIRE SHALL BE AMERICAN ELECTRIC LIGHTING ROADWAY SERIES 115, 250 WATT HPS ON WOODEN POLES (25'). SERVICE SHALL BE EITHER MT2-MULTI-TAP WIRED 240V OR DUAL TAP 120/240 WIRED 240V. WIRING SHALL BE DUPLEX OR TRIPLEX 115/230V.

NOTES: WHEN PLACING POLES WITHIN 10' OF OVERHEAD TRANSMISSION LINES A CITY INSPECTOR MUST BE PRESENT.

DPU SHALL INSTALL WIRING AND LUMINAIRES

DOMINION VIRGINIA POWER TO PROVIDE ELECTRIC SERVICE CONNECTION FOR LIGHTS.

SCALE 1"=25'
0 25' 50'

TIMMONS GROUP

NOTES

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5. Accepted N/A

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DEPARTMENT OF PUBLIC WORKS
RICHMOND, VIRGINIA

BELMONT ROAD ROUNDABOUT
LIGHTING PLAN

DESIGN BY: N. BRASLEY DRAWN BY: V. BUCKLEY CHECKED BY: N. BRASLEY	REVIEWED BY	FIELD NOTES FB-XX, pp XX-XX	SCALE HORIZ 1" = 25' VERT. -	DATE 11/06/15	SHEET 7	DRAWING NO. 0-28661