- THIS PROJECT IS CLASSIFIED AS TYPE A.
- THE PROJECT LENGTH IS APPROXIMATELY 0.25 MILES CONSISTING PRIMARILY OF VIRGIN ROAD CONSTRUCTION. THE WIDTH OF EACH WORK ZONE VARIES BETWEEN 45' AND 75'.
- THE PURPOSE OF THIS PROJECT IS TO CONSTRUCT A SERIES OF ROADS TO PROVIDE ACCESS TO FUTURE DEVELOPMENT OF DOMINION ENERGY FACILITIES AT RICHMOND INTERNATIONAL AIRPORT (RIC).
- TRAFFIC ALONG THE ROADS ASSOCIATED WITH THIS PROJECT WILL CONSIST ALMOST ENTIRELY OF PRIVATE USERS ACCESSING PRIVATE HANGARS AND FUELING FACILITIES.
- THE EXISTING SPEED LIMIT ALONG EAST SIDE ACCESS ROAD ADJACENT TO THE WORK ZONE IS 35 M.P.H. THIS SPEED LIMIT AND THE SPEED LIMIT ALONG THUNDERBOLT STREET ARE TO BE MAINTAINED THROUGHOUT CONSTRUCTION.

### TEMPORARY TRAFFIC CONTROL (TTC) / MAINTENANCE OF TRAFFIC (MOT):

THE CONSTRUCTION WILL REQUIRE TWO MAJOR STAGES IN ORDER TO COMPLETE THE PROJECT

# PHASE I:

CONSTRUCTION CONSISTS OF DEMOLITION OF PAVEMENT, GRADING OPERATIONS, INSTALLATION OF STORM SEWER, CULVERTS, CURB AND GUTTER, AND PAVEMENT FOR THE DOMINION ENERGY ACCESS ROAD, TURNAROUND ROAD, AND FUEL FARM ROAD. THIS PHASE IS INTENDED TO COMPLETE AS MUCH CONSTRUCTION AS POSSIBLE. WHILE MAINTAINING EXISTING TRAFFIC PATTERNS WITH MINIMAL INTERRUPTIONS.

TRAFFIC SHALL BE MAINTAINED ON EAST SIDE ACCESS ROAD AND THUNDERBOLT STREET AT ALL TIMES ACCORDING TO TTC-5.1 (SHOULDER OPERATION WITH MINOR ENCROACHMENT), TTC-16.1 (OUTSIDE LANE CLOSURE OPERATION ON A FOUR-LANE ROADWAY), AND/OR TTC-23.1 (LANE CLOSURE ON A TWO-LANE ROADWAY USING FLAGGERS) AS PRESCRIBED IN THE GENERAL NOTES USING GROUP II CHANNELIZING DEVICES AND PROPER SIGNAGE. TRAFFIC IS TO BE MAINTAINED ACCORDING TO TTC-4.1 (STATIONARY OPERATION ON A SHOULDER) AS PRESCRIBED IN THE GENERAL NOTES USING GROUP II CHANNELIZING DEVICES AND PROPER SIGNAGE DURING NON-WORKING HOURS OR WHEN WORK IS NOT ACTIVELY TAKING PLACE NEAR TRAFFIC.

PHASE II: CONSTRUCTION CONSISTS OF THE PLACEMENT OF FINAL SURFACE PAVEMENT AND INSTALLATION OF PAVEMENT MARKINGS. THIS IS THE FINAL PHASE OF CONSTRUCTION AND ALL WORK ITEMS SHALL BE COMPLETED WITH MINIMAL TRAFFIC IMPACTS.

TRAFFIC IS TO BE MAINTAINED ACCORDING TO TTC-16.1 (OUTSIDE LANE CLOSURE OPERATION ON A FOUR-LANE ROADWAY), TTC-17.1 (INSIDE LANE CLOSURE OPERATION ON A FOUR-LANE ROADWAY), TTC-23.1 (LANE CLOSURE ON A TWO-LANE ROADWAY USING FLAGGERS), AND / OR TTC-15.1 (SHORT DURATION OPERATION ON A MULTI-LANE ROADWAY) AS PRESCRIBED IN THE GENERAL NOTES USING GROUP II CHANNELIZING DEVICES AND PROPER SIGNAGE. IF A PAVEMENT DROP-OFF OR BUMP IS LEFT ON ANY EXISTING ROAD AT THE END OF A WORK DAY DURING MILL AND OVERLAY OPERATIONS, THE CONTRACTOR SHALL COMPLY WITH TTC-57.1 (END OF DAY SIGNING FOR PARTIAL PAVING OPERATIONS ON A MULTI-LANE ROADWAY), TTC-58.1 (END OF DAY SIGNING FOR FULL PAVING OPERATIONS ON A MULTI-LANE ROADWAY) AND TTC-59.1 (END OF DAY SIGNING FOR PAVING OPERATIONS ON A TWO-LANE ROADWAY) AS APPLICABLE.

• LANE CLOSURES, SHOULDER CLOSURES, AND FLAGGING OPERATIONS ARE ANTICIPATED FOR THIS PROJECT AND WILL BE IN ACCORDANCE WITH THE VIRGINIA WORK AREA PROTECTION MANUAL, MAY 2011 (APRIL 2015 REV.) WHEREVER PUBLIC ROADS MAY BE AFFECTED.

### **GENERAL NOTES**

- 1. ANY REQUIRED LANE CLOSURES OF PUBLIC ROADS MUST BE APPROVED IN ADVANCE BY THE VDOT ASHLAND RESIDENCY OFFICE, (800-367-7623)
- 2. TRAFFIC SHALL NOT BE STOPPED ON EAST SIDE ACCESS ROAD OR THUNDERBOLT STREET FOR LONGER THAN FIVE MINUTES AT ANY TIME UNLESS OTHERWISE DIRECTED BY VDOT OR HENRICO COUNTY.
- 3. 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 UNLESS OTHERWISE SPECIFIED IN THESE PLANS. 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.
- 4. LANE CLOSURES OF ANY PUBLIC ROADS WILL NOT BE PERMITTED ON HOLIDAYS OR WEEKENDS UNLESS OTHERWISE APPROVED IN ADVANCE BY THE VDOT ASHLAND RESIDENCY OFFICE AND HENRICO COUNTY TRAFFIC ENGINEERING.
- 5. ANY CONTRACT ITEM(S) NOT SPECIFICALLY NOTED IN THE MAINTENANCE OF TRAFFIC MAY BE SCHEDULED FOR CONSTRUCTION AT THE CONTRACTOR'S OPTION, AS APPROVED BY THE ENGINEER AND VDOT.
- 6. THE FINAL SURFACE COURSE IS NOT TO BE PLACED UNTIL SUCH TIME THAT PERMANENT PAVEMENT MARKINGS CAN BE PLACED ALONG THE ENTIRE LENGTH OF THE ROADWAY.
- 7. ALL TRAFFIC CONTROL ON PUBLIC ROADS SHALL BE SET UP AND SPACED ACCORDING TO THE VIRGINIA WORK AREA PROTECTION MANUAL. MAY 2011 (APRIL 2015 REV.) UNLESS SPACING DOES NOT PERMIT. SEE RESPECTIVE STAGES AND NOTES FOR DETAILS ABOUT SPECIFIC TTC RECOMMENDED FOR CONSTRUCTION.
- 8. CONTRACTOR SHALL PROVIDE ADDITIONAL TRAFFIC CONTROL, AS DIRECTED BY THE VIRGINIA DEPARTMENT OF TRANSPORTATION AND HENRICO COUNTY TRAFFIC ENGINEERING. SHOULD FIELD CONDITIONS WARRANT.

- 9. CONTRACTOR MAY REDUCE LANE WIDTHS TO 11' DURING CONSTRUCTION UNLESS SPECIFICALLY STATED OTHERWISE IN THESE PLANS. ANY TEMPORARY PAVEMENT MARKINGS THAT ARE REQUIRED ARE THE RESPONSIBILITY OF THE CONTRACTOR.
- 10. CONTRACTOR IS RESPONSIBLE FOR PLACEMENT AND MAINTENANCE OF ALL TEMPORARY PAVEMENT MARKINGS THAT ARE REQUIRED OR IMPLIED IN THE CONSTRUCTION STAGING SHEETS THAT FOLLOW. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL TRAFFIC CONTROL DEVICES, SIGNAGE, EQUIPMENT, PERSONNEL, INCLUDING CERTIFIED TRAFFIC CONTROL PERSONNEL, ETC. TO CONTROL TRAFFIC DURING CONSTRUCTION WITHIN VDOT MAINTAINED RIGHT-OF-WAY. ALL TRAFFIC CONTROL SHALL BE IN STRICT ACCORDANCE WITH THE STANDARDS, GUIDELINES, POLICIES, AND OBJECTIVES OF THE LATEST EDITION OF THE VIRGINIA WORK AREA PROTECTION MANUAL, MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). AND ALL VDOT PERMITS. UNLESS SPECIFICALLY NOTED OTHERWISE IN THESE PLANS.
- 11. AT NO TIME SHALL CONSTRUCTION TAKE PLACE ON BOTH THE RIGHT AND LEFT SIDES OF VEHICLES UNLESS SPECIFIED BY VDOT AND THE ENGINEER.
- 12. THE CONTRACTOR SHALL NOT OVERLAY EXISTING PAVEMENT MARKINGS OR REDUCE LANE WIDTHS UNLESS PERMANENT PAVEMENT MARKINGS CAN BE APPLIED WITHIN 72 HOURS. IF PERMANENT PAVEMENT MARKINGS WILL NOT BE REPLACED WITHIN 72 HOURS, THE CONTRACTOR SHALL PLACE TEMPORARY CONSTRUCTION PAVEMENT MARKING, TYPE A CONSTRUCTION, UNTIL PERMANENT MARKINGS ARE IN PLACE (UNLESS OTHERWISE DIRECTED BY THE ENGINEER OF RECORD. THE COST OF TEMPORARY MARKINGS SHALL BE INCLUDED IN THE FINAL BID TABULATION.)
- 13. ACCESS SHALL BE MAINTAINED TO ALL PARKING LOTS AND HANGARS, INCLUDING THE METRO AVIATION HANGAR, AT ALL TIMES

KEVIN O'MEARA

Lic. No. 049232

6/30/2019 DRAWN BY **DESIGNED BY** KPO ORATE OFF SORATE OFF Suite 300 CHECKED BY SCALE

N.T.S.

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JOB NO. 40930.001

SHEET NO. 02F(01)

**Shoulder Operation with Minor Encroachment** (Figure TTC-5.1)

END ROAD WORK G20-2 (V) SHADOW VEHICLE REQUIRED TMA OPTIONAL SEE NOTE 9 ILLUMINATED FLASHING AMBER (CAUTION MODE) TYPE B OR C - SEE NOTE 8 SEE NOTE 7 **CHANNELIZING** DEVICES SPACING SEE NOTE 7 - SEE NOTE 2 W21-5bR -200, + SEE NOTE 2

April 2015

# Standard

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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)<sup>1</sup>), 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)<sup>1</sup> sign shall be added to that side.

**Typical Traffic Control** 

(Figure TTC-4.1)

**NOTES** 

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

- 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

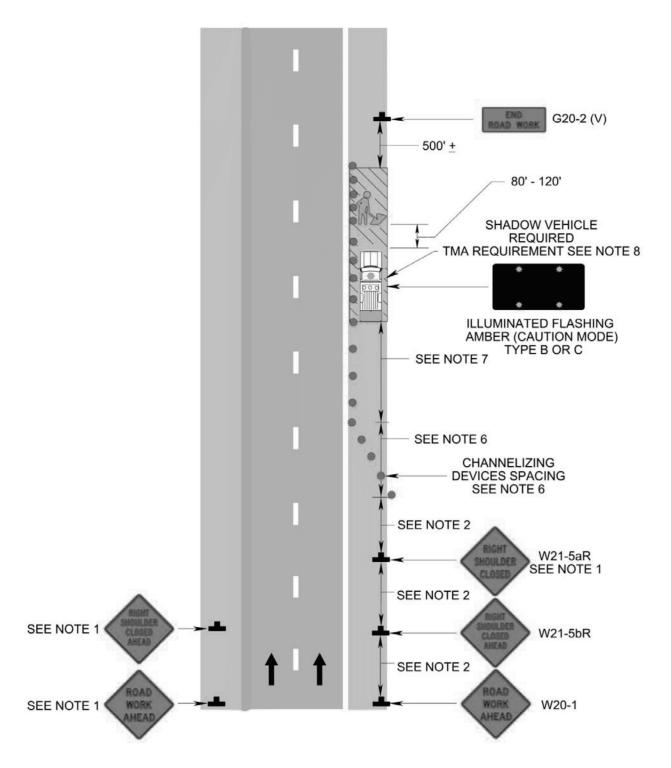
# Standard:

- 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:

Speed Limit (mph)	Taper Length (L)  Lane Width (Feet)				
	9	10	11	12	
25	95	105	115	125	
30	135	150	165	180	
35	185	205	225	245	
40	240	270	295	320	
45	405	450	495	540	
50	450	500	550	600	
55	495	550	605	660	
60	540	600	660	720	
65	585	650	715	780	
70	630	700	770	840	
Minimum ta high	aper lengt ways sha			ess	
Shoul	der Tape	r = ½ L M	inimum		

- **Channelizing Device Spacing** Speed Limit (mph) Location 0 - 35 36 + Fransition Spacing 20' Fravelway Spacing 40' 80' 80' Construction Access\* \* Spacing may be increased to this distance, but shall not exceed one access per 1/4 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
- 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.

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

- 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.
- 5. A shadow vehicle with either an arrow board operating in the caution mode, or at least one highintensity amber rotating, flashing, or oscillating light shall be parked 80' - 120' in advance of the
- 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 tape highwa	er length			ccess		
Shoulde	r Taper	= ½ L N	1inimum			

**Channelizing Device Spacing** Speed Limit (mph) Location 0 - 35 36 + 20' 40' Transition Spacing 40' 80' Travelway Spacing 80' Construction Access\* Spacing may be increased to this distance, but shall not exceed one access per 1/4 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

- 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