

*BEDFORD COUNTY, VIRGINIA*  
**NOVEMBER 28, 2022**

## ABBREVIATIONS

VICINITY MAP  
NTS

C01	COVER SHEET
C02	GENERAL NOTES
C03	SURVEY EXISTING CONDITIONS
C03.1	SURVEY EXISTING CONDITIONS
C04	OVERALL VIEW
C05	WATERLINE PLAN AND PROFILE
C06	WATERLINE PLAN AND PROFILE
C07	WATERLINE PLAN AND PROFILE
C08	E&S NARRATIVE AND DETAILS



94 GREENFIELD STREET  
DALEVILLE, VIRGINIA 24083  
540.473.1253

[illegible]

**BELLTOWN WATERLINE EXTENSION PROJECT**

COVER SHEET



PROJECT:	21069
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1



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GENERAL SITE NOTES:

1. TOPOGRAPHIC INFORMATION SHOWN FROM FIELD SURVEY PREPARED BY ENGINEERING CONCEPTS, INC. CONTRACTOR SHALL VERIFY ALL CRITICAL DESIGN ELEVATIONS PRIOR TO PROCEEDING WITH ANY CONSTRUCTION AND MAKE NECESSARY ADJUSTMENTS OR CONTACT ENGINEER IF ELEVATIONS DIFFER.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS.

3. THE CONTRACTOR SHALL BEAR SOLE RESPONSIBILITY FOR THE CHARACTER AND ACTUAL LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES, STRUCTURES, OTHER FACILITIES, AND OBSTRUCTIONS WITHIN THE PROJECT AREA. THE CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, CONTACT THE OWNERS/OPERATORS OF ALL UTILITIES AND ARRANGE FOR THE VERIFICATION AND MARKING OF UTILITY LOCATIONS BY SAID OWNERS/OPERATORS. THE CONTRACTOR SHALL ASSIST THE UTILITY OWNERS/OPERATORS BY EVERY MEANS POSSIBLE TO DETERMINE THE LOCATION OF UTILITIES. THE CONTRACTOR SHALL BEAR SOLE RESPONSIBILITY FOR ALL DISTURBANCE OF ANY DAMAGE TO UTILITIES RESULTING FROM THE CONTRACTOR'S FAILURE TO ARRANGE FOR THE LOCATION OF UTILITIES BY THE OWNERS/ OPERATORS OF THE UTILITIES. CONTACT MISS UTILITY BY DIALING (800) 552-7001.

4. SITE CONDITIONS MAY NECESSITATE SLIGHT DEVIATIONS IN ALIGNMENT, GRADE, AND/OR LOCATION OF NEW FACILITIES FROM THE PLAN ALIGNMENT, GRADE, AND/OR LOCATION. THE CONTRACTOR SHALL CONSTRUCT THE NEW FACILITIES TO SUCH DEVIATIONS AS DIRECTED BY THE ENGINEER WITHOUT ADDITIONAL COST OR FINE TO THE OWNER. SHOULD PLAN DEVIATIONS BE REQUIRED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO UNDER TAKING ANY REVISION.

5. ALL CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE CURRENT STATE AND LOCAL BUILDING CODES AS WELL AS THE CONSTRUCTION STANDARDS AND SPECIFICATIONS OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION AND ALL APPLICABLE STATE AND FEDERAL OSHA REGULATIONS.

6. THE CONTRACTOR SHALL MAINTAIN THE CONSTRUCTION AREA IN A SAFE AND ACCEPTABLE MANNER AND SHALL BE RESPONSIBLE FOR REMEDIATING ANY DAMAGES RESULTING FROM HIS FAILURE TO DO SO.

7. THE CONTRACTOR SHALL MAINTAIN LIMITS OF CONSTRUCTION WITHIN THE PROPERTY BOUNDARIES OR EASEMENTS AS INDICATED.

8. AN APPROVED SET OF PLANS SHALL BE KEPT ON THE SITE AT ALL TIMES.

9. ALL CONSTRUCTION DEBRIS SHALL BE CONTAINERIZED IN CONFORMANCE WITH THE VIRGINIA LITTER CONTROL ACT AND DISPOSED OF IN A MANNER AND LOCATION ACCEPTABLE TO THE GOVERNING JURISDICTION. AT LEAST ONE TRASH RECEPTACLE SHALL BE ONSITE DURING CONSTRUCTION.

10. TEMPORARY TOILETS SHALL BE PROVIDED ONSITE AT A RATIO OF ONE TOILET PER 30 WORKERS DURING THE CONSTRUCTION PERIOD.

11. GRADE STAKES SHALL BE SET FOR CURB & GUTTER, WATER LINES, SANITARY SEWER AND STORM SEWER.

12. THE CONTRACTOR SHALL MAINTAIN A CLEAR FLOW PATH TO AND THROUGH ALL SURFACE WATER AND STORM WATER DRAINAGE FACILITIES AT ALL TIMES.

13. THE CONTRACTOR SHALL GRADE, SEED, AND/OR SOD, AND MULCH THE ENTIRE AREA(S) DISTURBED BY CONSTRUCTION ACTIVITIES AND NOT PROPOSED AS HARDSCAPED FEATURES.

14. CONSTRUCTION AND START-UP OF ALL WORK SHALL NOT INTERFERE WITH THE OPERATION OF WATER AND SEWERAGE FACILITIES. THE CONTRACTOR SHALL COORDINATE AND SCHEDULE ALL WORK WITH THE OWNERS AS REQUIRED.

15. MINIMUM COVER ON ALL PIPE SHALL BE 3.0 FEET, UNLESS OTHERWISE SPECIFICALLY INDICATED ON THESE DRAWINGS. ALL PIPE SHALL BE INSTALLED WITH COATED TRACER WIRE TO FACILITATE FUTURE LOCATION OF PIPE AFTER CONSTRUCTION IS COMPLETED.

16. WHERE IT IS NECESSARY TO DEFLECT PIPE EITHER HORIZONTALLY OR VERTICALLY, PIPE JOINT DEFLECTION OR BARREL BEND RADIUS SHALL NOT EXCEED 75% OF THE MANUFACTURER'S RECOMMENDED DEFLECTION ANGLE OR BEND RADIUS.

17. ALL PIPING SHALL BE PROPERLY SUPPORTED. ALL PIPING WHICH WILL BE PRESSURIZED DURING OPERATION SHALL BE PROPERLY RESTRAINED.

18. ALL HDPE PIPE SHALL CONFORM TO THE CURRENT VDOT SPECIFICATIONS AND BE BEDDED IN ACCORDANCE WITH THE CURRENT VDOT STANDARDS.

19. CONSTRUCTION TRAFFIC SHALL USE THE CONSTRUCTION ENTRANCE

20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SHOULDER AND DITCH LINE RESTORATION WITHIN THE PROJECT LIMITS. RESTORATION SHALL BE COMPLETED TO THE SATISFACTION OF THE VDOT BEDFORD RESIDENCY.

21. THE PLACEMENT OF EXCAVATED MATERIAL, AGGREGATE, SPOILS, ETC. ARE PROHIBITED ON PAVED SURFACES.

22. CONTRACTOR SHALL PAVE EACH DRIVEWAY TO THE R.O.W FOR EXISTING PAVED DRIVEWAYS AND EXISTING GRAVEL DRIVEWAYS.

WATERLINE NOTES:

1. ALL PIPE, FITTINGS, AND APPURTENANCES SHALL BE RESTRAINED AND ANCHORED IN ACCORDANCE WITH BRWA MASTER SPECIFICATIONS AND STANDARD DETAILS. THRUST RESTRAINTS ARE REQUIRED FOR ALL BENDS AND TEES. IF MECHANICAL JOINT RESTRAINT SYSTEMS ARE USED, INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS RELATED TO NUMBER OF JOINTS RESTRAINED.

2. WATERLINES SHALL BE TESTED AT A PRESSURE OF 200 PSI.

3. WATERLINES SHALL HAVE A MINIMUM COVER OF 36 INCHES.

4. WATERLINES SHALL BE LAID DEEPER WHERE SHOWN ON THE PROFILES TO PROVIDE GRADES TO AIR RELEASE AND BLOW OFF VALVES, AND AS REQUIRED TO ALLOW FOR 18 INCHES SEPARATION BETWEEN PROPOSED AND EXISTING UTILITIES.

5. GATE VALVES AND BOXES: PROVIDE AND EXTENDED VALVE STEM WHERE DEPTH TO TO OF VALVE EXCEEDS 5 FEET.

6. "FIRE HYDRANT ASSEMBLY" CONSISTS PF A 6" GATE VALVE & BOX, STONE SUPPORT, TIE RODS, FIRE HYDRANT, CONCRETE ANCHOR, PIPING, AND TEE. (REFER TO BRWA DETAIL FH-1)

7. THRUST BLOCKS SHALL BE REQUIRED ON ALL BENDS. SEE BRWA DETAIL CA-1 AND CA-2 FOR HORIZONTAL AND VERTICAL CONCRETE ANCHORS.

8. MAINTAIN 18 INCHES OF VERTICAL SEPARATION BETWEEN STORM SEWER LINES, WATERLINES AND SANITARY SEWER LINES.

9. PRV'S ARE NEEDED FOR SERVICE LINES THAT HAVE A STATIC PRESSURE OVER 80 PSI (SEE BRWA DETAIL RV-1).

10. NO WATERLINE APPURTENANCES ARE TO BE INSTALLED IN SIDEWALK OR PAVEMENT UNLESS NOTED OTHERWISE.

11. WATERLINES FEATURES (VALVES, TEES, ETC.) IN PROFILE VIEW RELATE TO THE SPECIFIC WATERLINE IN THE PROFILE. WATERLINE FEATURES( VALVES, TEES, ETC.) IN PLAN VIEW AND STRUCTURE SCHEDULE ARE REQUIRED AT INTERSECTION OF THE TOWN OR MORE WATERLINES.

12. PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST COPY OF THE AUTHORITY'S MASTER SPECIFICATIONS AND A COPY OF THE AUTHORITY'S MASTER SPECIFICATIONS SHALL BE ONSITE AT ALL TIMES.



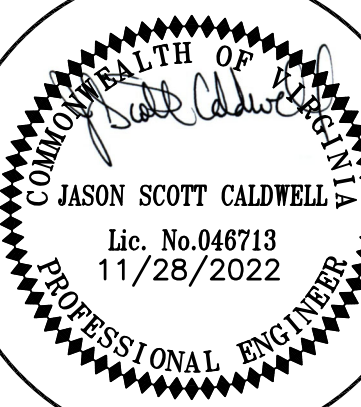
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CONCEPTS, INC.

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DALEVILLE, VIRGINIA 24083  
540.473.1253

No.	Description	Review Comments	Date
1	FIRST REVIEW		08/26/22

BELLTOWN WATERLINE EXT  
TOWN OF BEDFORD, VA

GENERAL NOTES AND  
E&S NOTES



0 30 60  
GRAPHIC SCALE

PROJECT: 21069

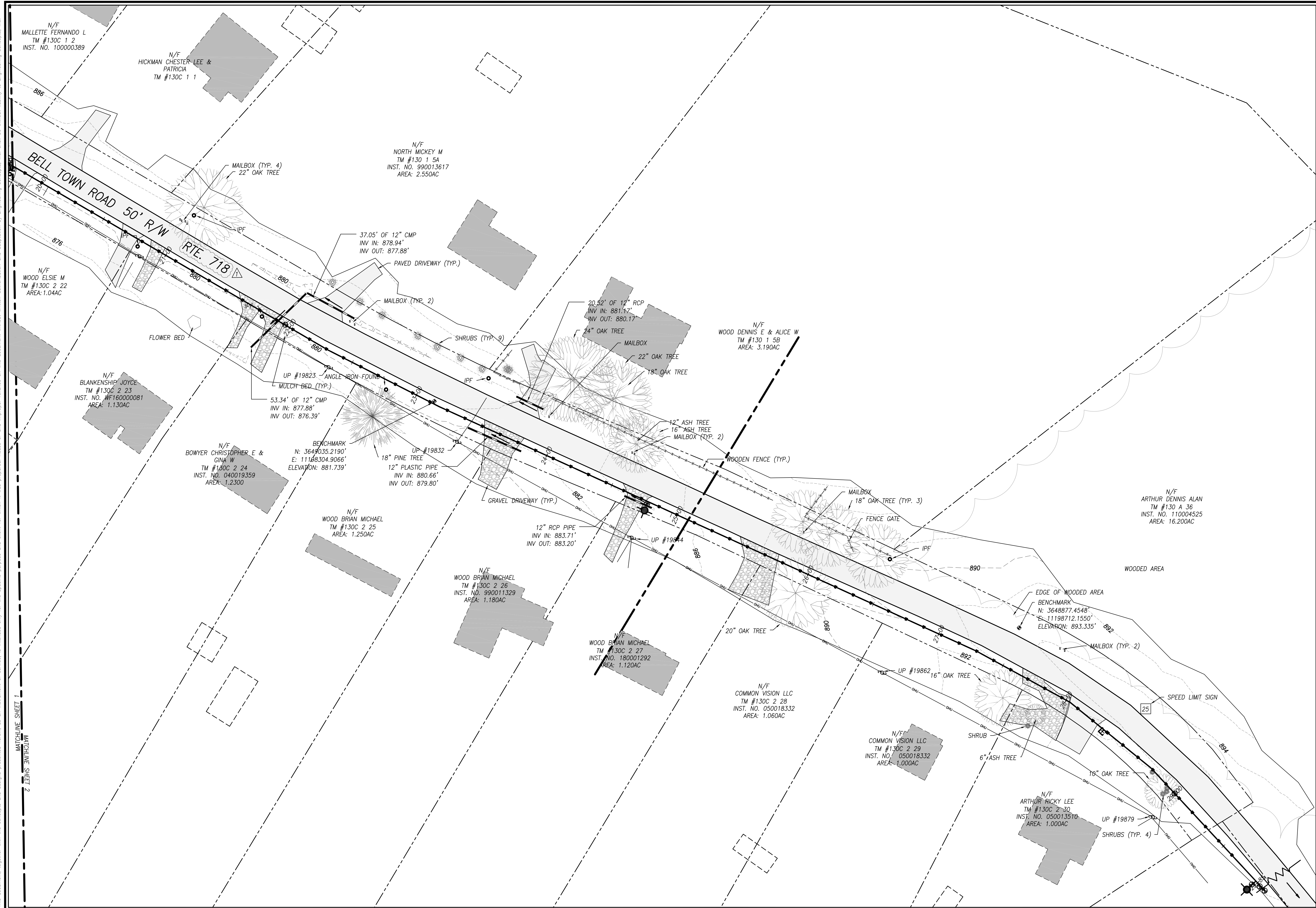


MLCMF#	03336	VUPSA	01/24/22	12:50:16	A136400736-00A	RESPONSE
TICKET : A136400736 REV: 00A TAKEN: 12/30/21 10:35 AM						
STATE: VA CNTY: BEDFORD PLACE:						
ADDRESS : BELL TOWN RD						
RESPONSES DUE BY: 01/25/22 07:00 AM UPDATE BY:						
EXPIRES:						
WHEN THE MEMBER MARKING CODE IS BLUE, CLICK FOR ADDITIONAL INFORMATION THAT MAY BE PROVIDED BY THE OPERATOR/LOCATOR.						
MARKING CODE	DESCRIPTION	RESPONSE				
BDF	TOWN OF BEDFORD-ELECTRIC (BDF240)	01/11/22 02:23 PM 10 MARKED				
	FIELD CONTACT: RICK DELLINGER (540)587-6071					
	IN THE EVENT OF DAMAGE TO A FACILITY CALL: (540)587-6071					
BRA	BEDFORD REGIONAL WATER (BRA176)	01/14/22 01:29 PM 12 MARKED UP TO PRIVATELY OWNED UTILITY; CONTACT PRIVATE UTILITY OWNER FOR LOCATE				
	FIELD CONTACT: HOWARD DEMARSH (540)871-6455					
	IN THE EVENT OF DAMAGE TO A FACILITY CALL: (540)586-7679					
BRA	BEDFORD REGIONAL SEWER (BRA177)	01/14/22 01:29 PM 30 NO CONFLICT; UTILITY IS OUTSIDE OF STATED WORK AREA.				
	FIELD CONTACT: HOWARD DEMARSH (540)871-6455					
	IN THE EVENT OF DAMAGE TO A FACILITY CALL: (540)586-7679					
VZN	VERIZON (VZN804)	01/24/22 12:50 PM 30 NO CONFLICT; UTILITY IS OUTSIDE OF STATED WORK AREA.				
	FIELD CONTACT: UTILQUEST (804)286-1721					
	IN THE EVENT OF DAMAGE TO A FACILITY CALL: (888)483-1233					





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# BELLTOWN WATERLINE EXT TOWN OF BEDFORD, VA

## SURVEY EXISTING CONDITIONS SHEET



0 30 60  
GRAPHIC SCALE

PROJECT: 21069

**3.1**

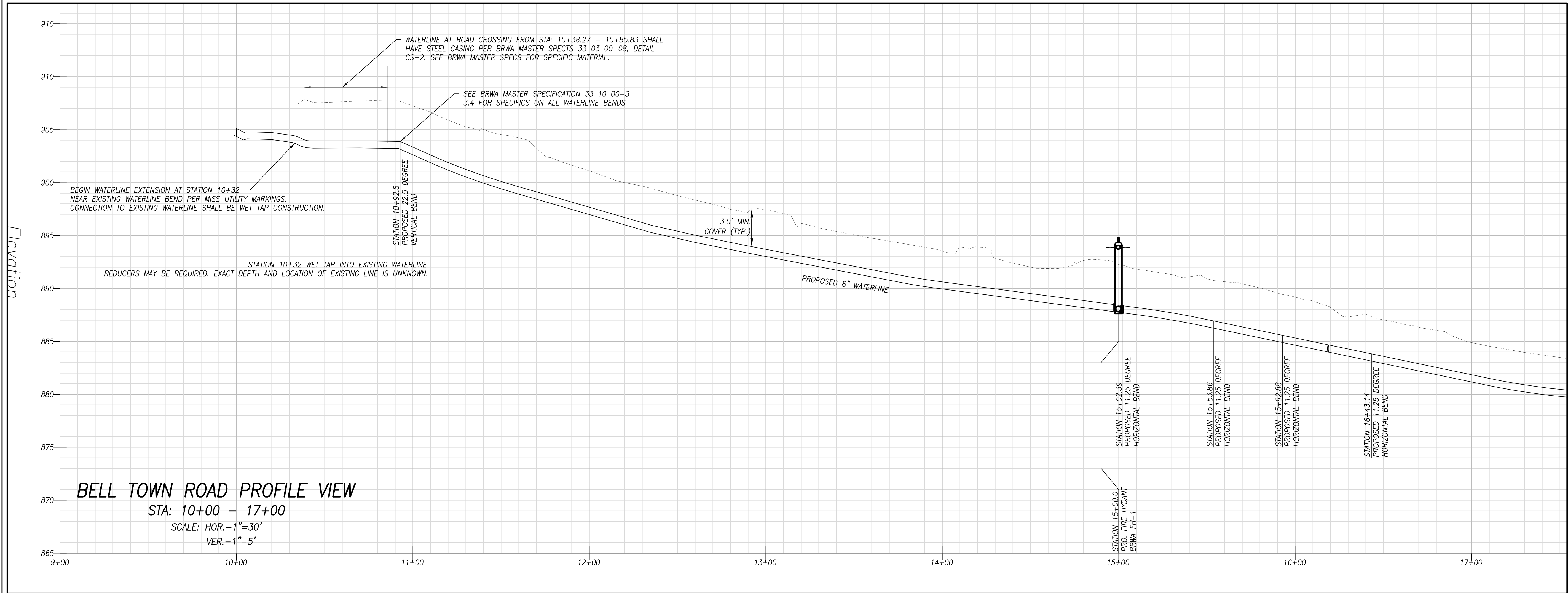
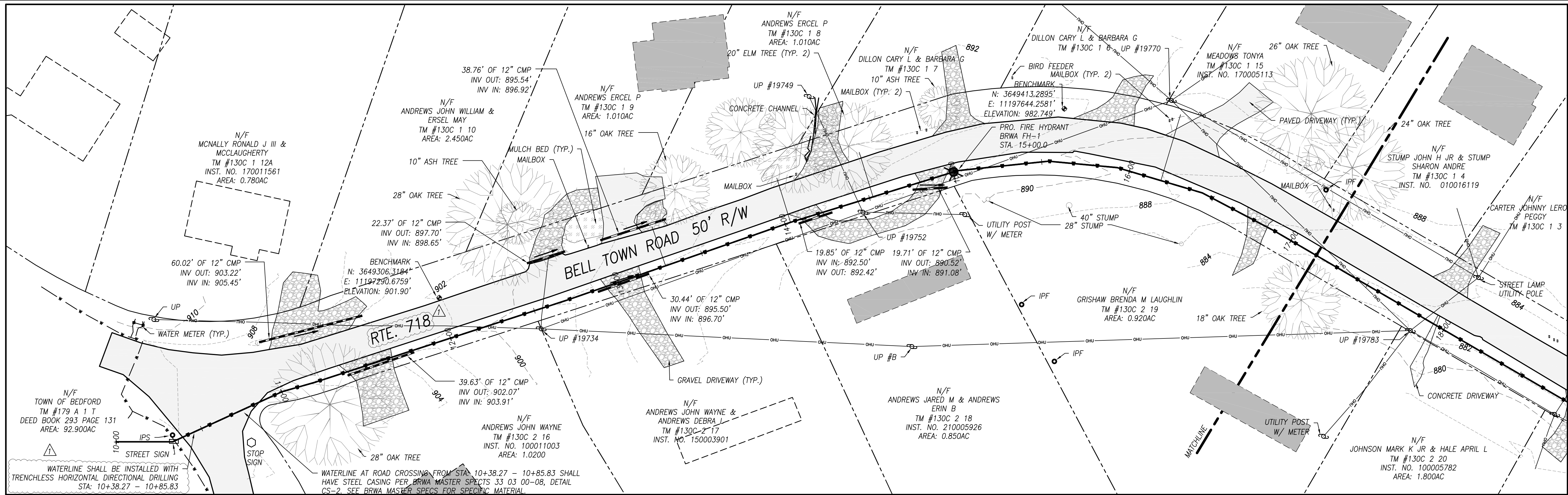


NOTE: THE PLACEMENT OF EXCAVATED MATERIAL, AGGREGATE, SPOILS, ETC. ARE PROHIBITED ON PAVED SURFACES.





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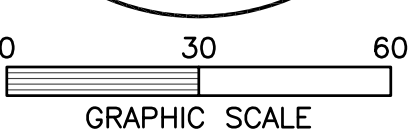
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No.	Description	First Review Comments	Date
1	FIRST REVIEW COMMENTS		08/26/22

## BELLTOWN WATERLINE EXT TOWN OF BEDFORD, VA

### PLAN AND PROFILE

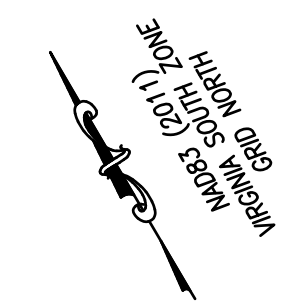


PROJECT: 21069



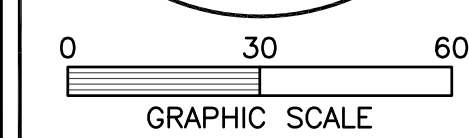


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# BELLTOWN WATERLINE EXTENSION OF BEDFORD, VA

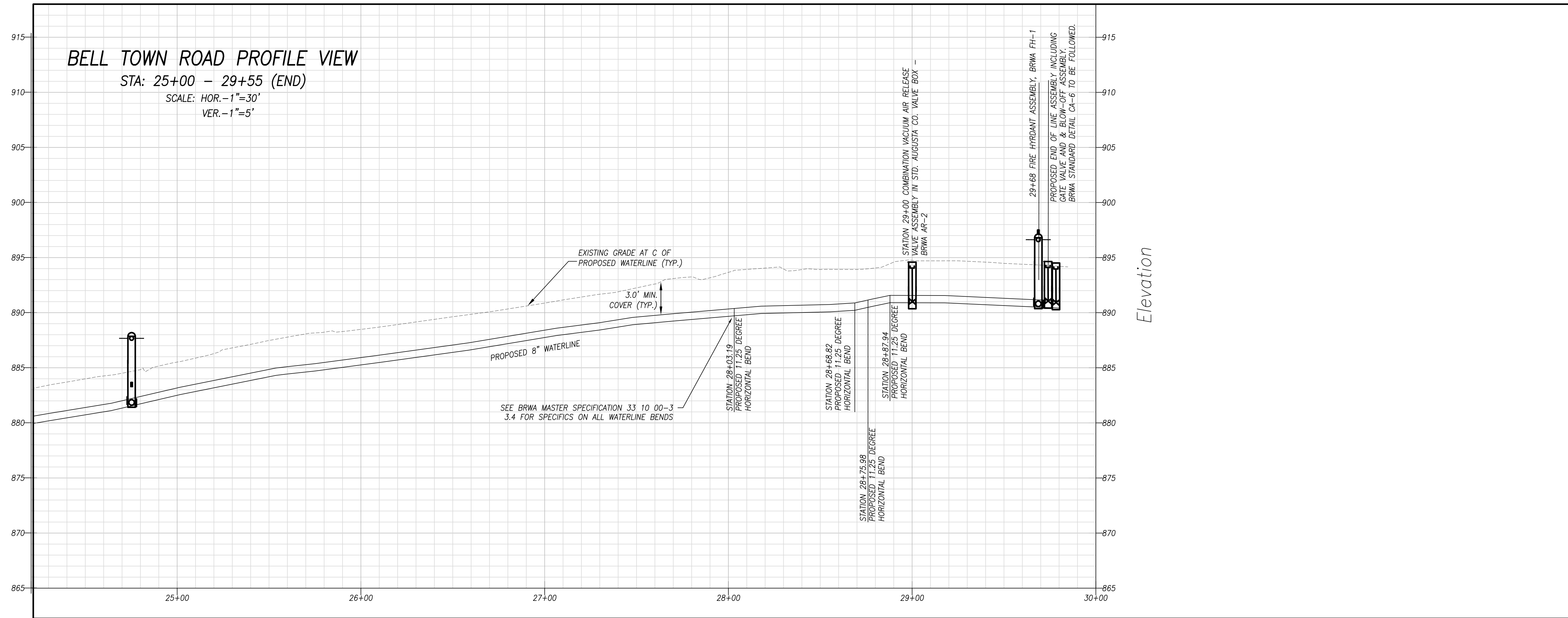
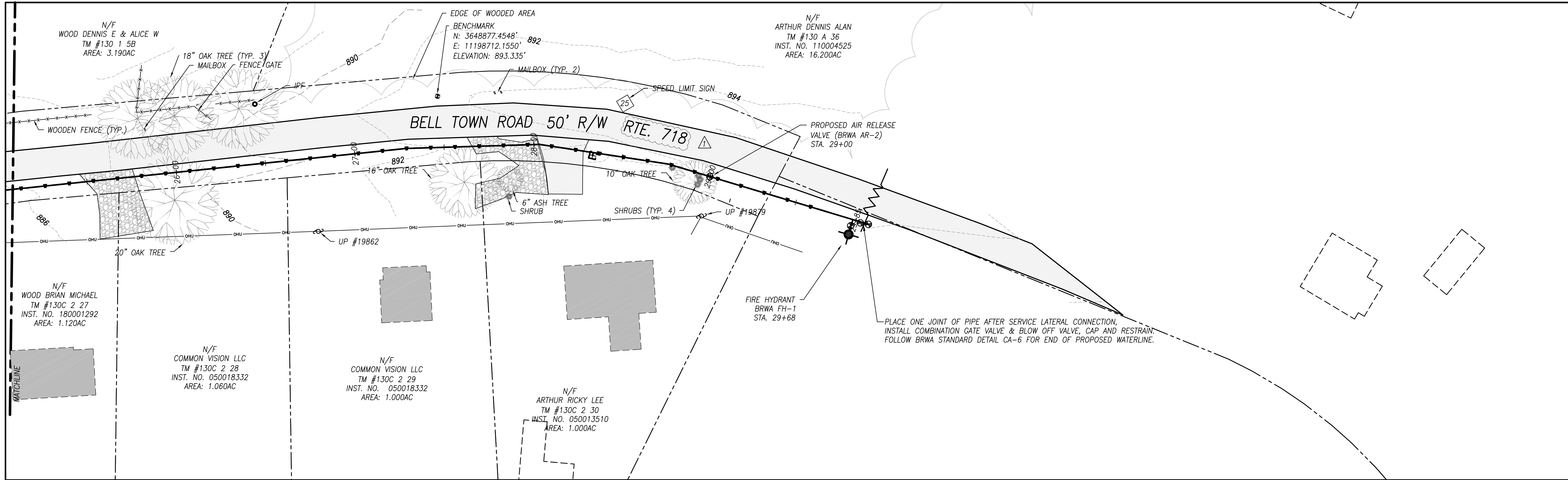
## PLAN AND PROFILE



PROJECT:	2106
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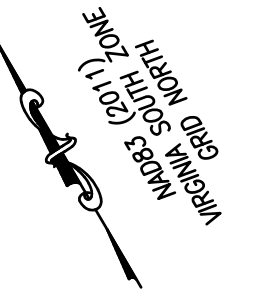


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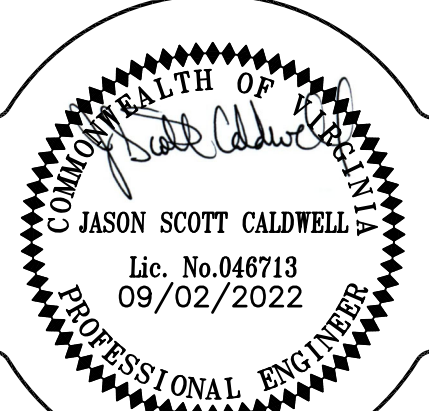
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No.	Description	Date
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BELLTOWN WATERLINE EXT  
TOWN OF BEDFORD, VA

PLAN AND PROFILE



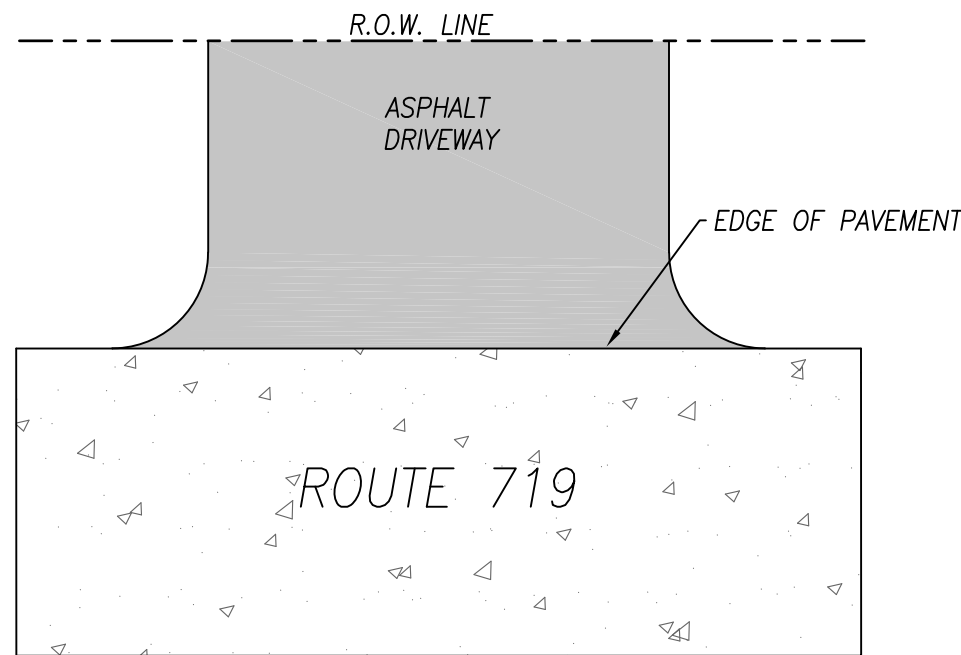
0 30 60  
GRAPHIC SCALE

PROJECT: 21069

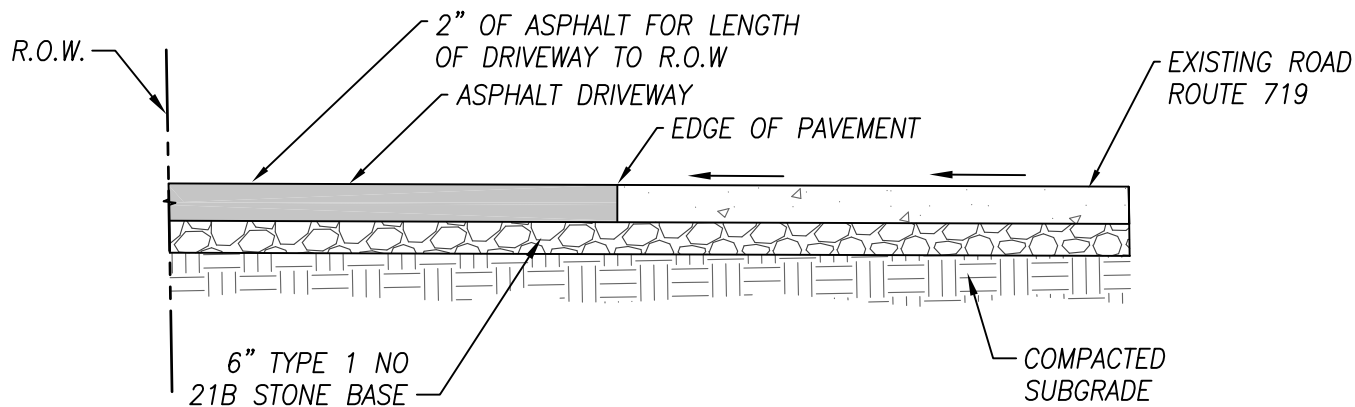


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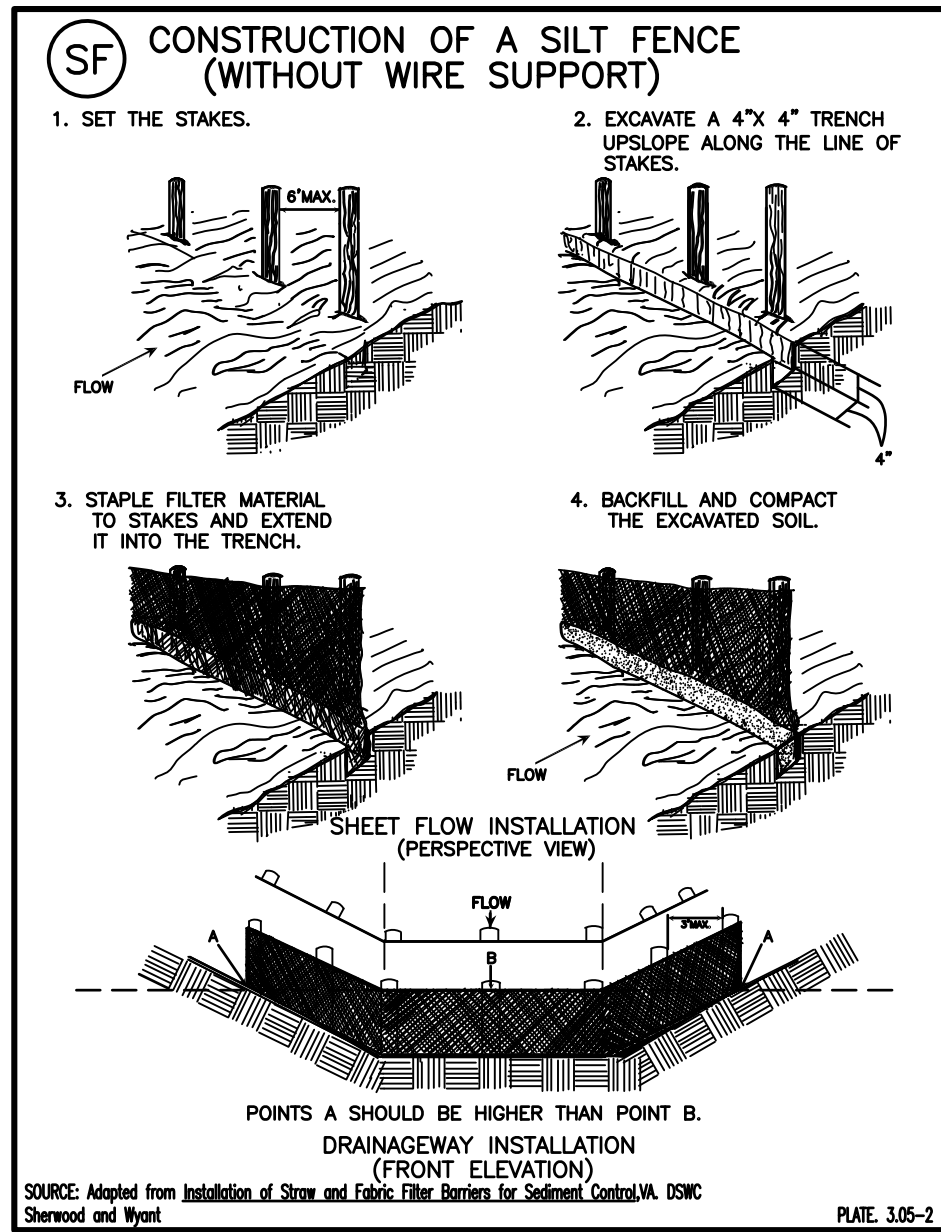
PRIVATE ENTRANCE DETAIL  
PLAN VIEW  
SCALE: NTS



PRIVATE ENTRANCE DETAIL  
SECTION VIEW  
SCALE: NTS

#### ALLOWABLE SPANS FOR STEEL CASING PIPE

CARRIER PIPE, DIP DIAMETER (IN.)	CASING PIPE, STEEL DIAMETER (IN.)	MINIMUM CASING PIPE WALL THICKNESS (IN.)	ALLOWABLE SPAN (FT.)
1	6	0.3750	16
6	16	0.3750	45



#### EROSION CONSTRUCTION NOTES

- ES-1 UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS VR 625-02-00 EROSION AND SEDIMENT CONTROL REGULATIONS.
- ES-2 THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRECONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.
- ES-3 ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING
- ES-4 A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
- ES-5 PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.
- ES-6 THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.
- ES-7 ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
- ES-8 DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
- ES-9 THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

#### 9VAC25-830. Minimum standards.

A VESCP must be consistent with the following criteria, techniques and methods:

1. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 14 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year. Topsoil may be used as permanent stabilization per the VESCH and must be compacted to a minimum depth of 2 to 4 inches. Contractor to adhere to these standards while developing this site.
2. During construction of the project, soil stock piles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site. Contractor to temporary seed stockpile if stockpile is not used within (14) FOURTEEN days
3. A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion. Contractor to adhere to this standard for developing this site.
4. Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place. Contractor to install temporary sediment traps for the initial E&S installation. After site has stabilized and development is nearly finished, Contractor to obtain approval from Botetourt County site inspector to fill and stabilize traps.
5. Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.
6. Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.
- a. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres.
- b. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a 25-year storm of 24-hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.
7. Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.

All cut and fill sites for this site will be at 3:1 min. or flatter

8. Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure. There will be no concentrated runoff flowing down cut or fill slope.
9. Whenever water seeps from a slope face, adequate drainage or other protection shall be provided. Contractor to adhere to this criteria for development of this site
10. All storm sewer inlets that are made operable during construction shall be protected so that sediment and debris cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment. There are no storm sewer inlets on site.
11. Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.

All inlets and outlets culverts shall have either inlet or outlet protection. Channels slopes are such that no protection is needed (i.e. jute mesh, geogrid, etc.)

12. When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials. Not Applicable for this site
13. When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of nonerodible material shall be provided. Not Applicable for this site
14. All applicable federal, state and local chapters pertaining to working in or crossing live watercourses shall be met. Not Applicable for this site
15. The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed. Not Applicable for this site
16. Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:
- a. No more than 500 linear feet of trench may be opened at one time.
- b. Excavated material shall be placed on the uphill side of trenches.
- c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.
- d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
- e. Restabilization shall be accomplished in accordance with this chapter.
- f. Applicable safety chapters shall be complied with. Contractor to adhere to this criteria for development of this site.

17. Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities. Contractor to adhere to this criteria for development of this site. A construction entrance will be implemented for this site. Any mud/dirt/debris from construction site onto Charter Avenue shall be immediately cleaned.
18. All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the VESCP authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation. Contractor to adhere to this criteria for development by permanent seeding.
19. Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria. Stream restoration and relocation projects that incorporate natural channel design concepts are not man-made channels and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels:

- a. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.
- b. Adequacy of all channels and pipes shall be verified in the following manner:
- (1) The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is one hundred times greater than the contributing drainage area of the project in question; or
- (2)(a) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks.
- (b) All previously constructed man-made channels shall be analyzed by the use of a ten-year storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks.
- (c) Pipes and storm sewer systems shall be analyzed by the use of a ten-year storm to verify that stormwater will be contained within the pipe or system.
- c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:

- (1) Improve the channels to a condition where a ten-year storm will not overtop the banks and a two-year storm will not cause erosion to channel the bed or banks; or
- (2) Improve the pipe or pipe system to a condition where the ten-year storm is contained within the appurtenances;
- (3) Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a ten-year storm to increase when runoff outfalls into a man-made channel; or
- (4) Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the VESCP authority to prevent downstream erosion.
- d. The applicant shall provide evidence of permission to make the improvements. (VDOT Approval)

- e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development condition of the subject project.
- f. If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the VESCP of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.
- g. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipators shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.
- h. All on-site channels must be verified to be adequate.

- i. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.
- j. In applying these stormwater management criteria, individual lots or parcels in a residential, commercial or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations. This site was designed to comply with the above criteria
- k. All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical and biological integrity of rivers, streams and other waters of the state. This site was designed to comply with the above criteria by calling for inlet/outlet protection, diversion berms, silt fence.
- l. Any plan approved prior to July 1, 2014, that provides for stormwater management that addresses any flow rate capacity and velocity requirements for natural or man-made channels shall satisfy the flow rate capacity and velocity requirements for natural or man-made channels if the practices are designed to (i) detain the water quality volume and to release it over 48 hours; (ii) detain and release over a 24-hour period the expected rainfall resulting from the one year, 24-hour storm; and (iii) reduce the allowable peak flow rate resulting from the 1.5, 2, and 10-year, 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming it was in a good forested condition, achieved through multiplication of the forested peak flow rate by a reduction factor that is equal to the runoff volume from the site when it was in a good forested condition divided by the runoff volume from the site in its proposed condition, and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels as defined in any regulations promulgated pursuant to § 10.1-562 or 10.1-570 of the Act. The project meets MS-19.
- m. For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of § 10.1-561 A of the Act and this subsection shall be satisfied by compliance with water quantity requirements in the Stormwater Management Act (§ 10.1-603.2 et seq. of the Code of Virginia) and attendant regulations, unless such land-disturbing activities are in accordance with 4VAC50-60-48 of the Virginia Stormwater Management Program (VSMP) Permit Regulations.

- n. Compliance with the water quantity minimum standards set out in 4VAC50-60-66 of the Virginia Stormwater Management Program (VSMP) Permit Regulations shall be deemed to satisfy the requirements of Minimum Standard 19. This project adheres and satisfies the minimum standards



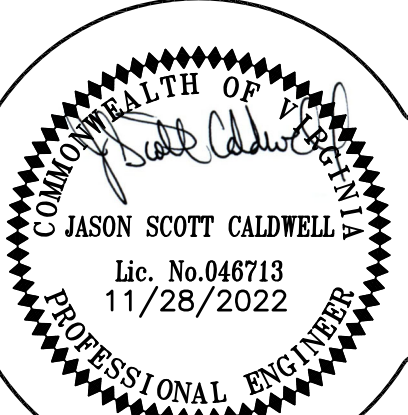
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No.	Description	First Review Comments	Date
1	08/26/22		

BELLTOWN WATERLINE EXT  
TOWN OF BEDFORD, VA

GENERAL NOTES AND  
E&S NOTES



0 0 0  
GRAPHIC SCALE

PROJECT: 21069



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Typical Traffic Control  
Lane Closure on a Two-Lane Roadway Using Flaggers  
(Figure TTC-23.1)

NOTES

Guidance:

1. 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.
2. Care should be exercised when establishing the limits of the work zone to insure maximum possible sight distance in advance of the flagger station and transition, based on the posted speed limit and at least equal to or greater than the values in Table 6H-3. Generally speaking, motorists should have a clear line of sight from the graphic flagger symbol sign to the flagger.

Option:

3. Where Right-of-Way or geometric conditions prevent the use of 48" x 48" signs, 36" x 36" signs may be used.

Standard:

4. Flagging stations shall be located far enough in advance of the work space to permit approaching traffic to reduce speed and/or stop before passing the work space and allow sufficient distance for departing traffic in the left lane to return to the right lane before reaching opposing traffic (see Table 6H-3 on Page 6H-5).
5. All flaggers shall be state certified and have their certification card in their possession when performing flagging duties (see Section 6E.01, Qualifications for Flaggers).
6. Cone spacing shall be based on the posted speed and the values in Table 6H-4 on Page 6H-6.
7. A shadow vehicle with at least one high intensity amber rotating, flashing, or oscillating light shall be parked 80'-120' in advance of the first work crew.

Option:

8. A supplemental flagger may be required in this area to give advance warning of the operation ahead by slowing approaching traffic prior to reaching the flagger station or queued traffic.

Guidance:

9. If the queue of traffic reaches the BE PREPARED TO STOP (W3-4) sign then the signs, and if used the portable temporary rumble strips (PTRS), should be readjusted at greater distances.
10. When a highway-rail crossing exists within or upstream of the transition area and it is anticipated that queues resulting from the lane closure might extend through the highway-rail grade crossing, the temporary traffic control zone should be extended so that the transition area precedes the highway-rail crossing (see Figure TTC-36 for additional information on highway-rail crossings).

Standard:

11. At night, flagger stations shall be illuminated, except in emergencies (see Section 6E.08).

Option:

12. Cones may be eliminated when using a pilot vehicle operation or when the total roadway width is 20 feet or less.
13. For low-volume situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger, positioned to be visible to road users approaching from both directions, may be used (see Chapter 6L).

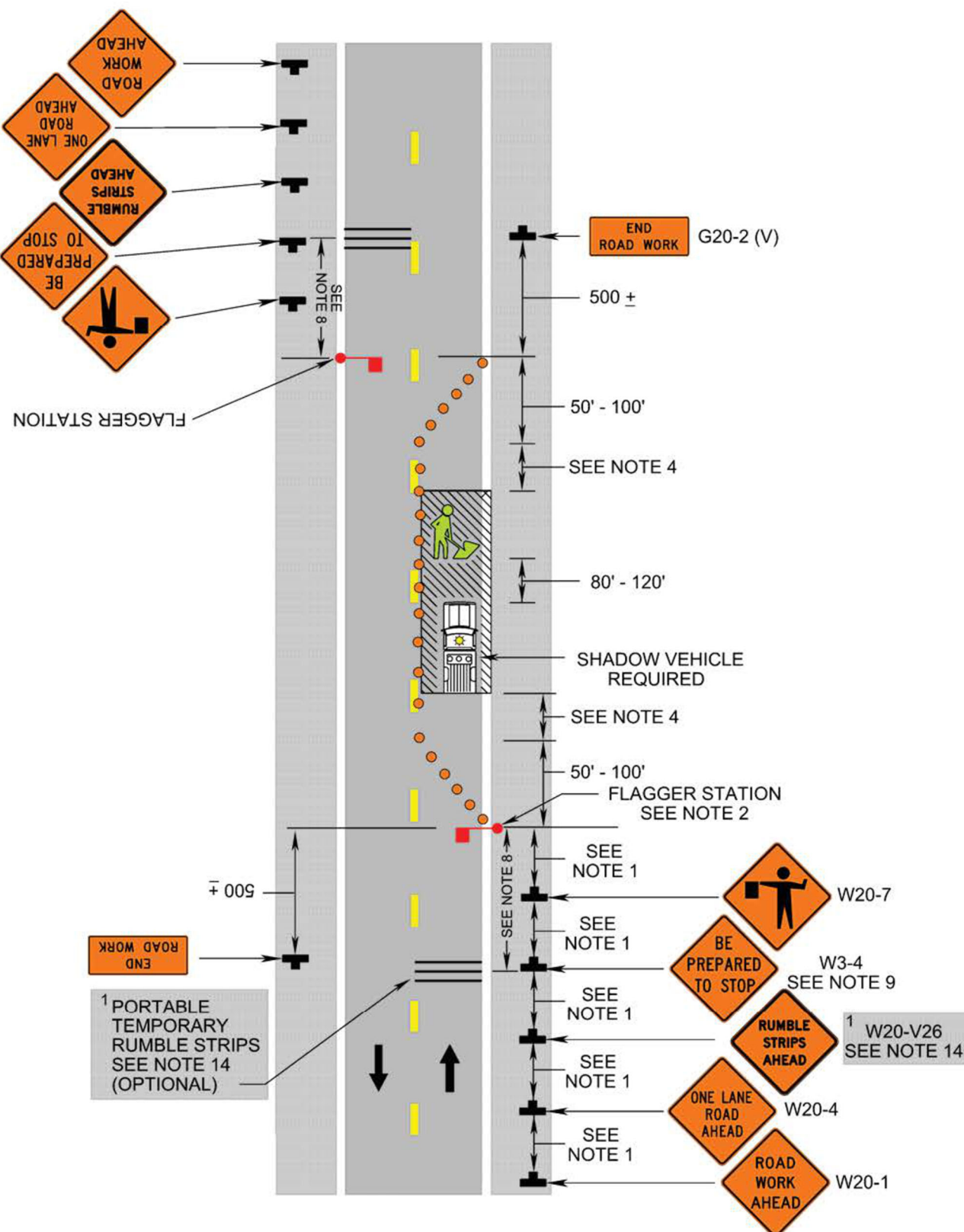
Standard:

14. When approved for use, three portable temporary rumble (PTRS) strips shall be installed across the entire travel lane adjacent to the BE PREPARED TO STOP (W3-4) sign. The portable temporary rumble strips shall be monitored and adjusted as necessary during the work shift to ensure proper placement on the roadway. When the PTRS are installed, the RUMBLE STRIPS AHEAD (W20-V26) sign shall also be utilized.

Posted Speed	0 - 35 mph	36 - 55 mph
PTRS Spacing (Center to Center)	5 Feet	8 Feet

1: Revision 1 - 4/1/2015

Lane Closure on a Two-Lane Roadway Using Flaggers  
(Figure TTC-23.1)



GENERAL NOTES

1. PROJECT CATEGORY (MINIMUM TEMPORARY REQUIREMENTS):

A. THIS WILL BE A CATEGORY 1 PROJECT

a. THIS WILL BE PERMITTED WORK

b. THIS PROJECT WILL INVOLVE TRAFFIC CONTROL DEVICES AND LANE CLOSURES TO ENSURE SAFE TRAVEL AROUND THE WORK ZONES.

2. TEMPORARY TRAFFIC CONTROL PLAN

A. THE MAJOR COMPONENTS WILL CONSIST OF GENERAL NOTES, TYPICAL SECTIONS, AND SPECIFIC DETAILS AS NECESSARY.

B. TRAFFIC CONTROL DEVICES SHALL BE USED AS SHOWN ON SUBMITTED TRAFFIC CONTROL PLAN.

C. ALL SIGNS, STRIPING AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH VIRGINIA'S WORK AREA PROTECTION MANUAL-REVISION 1 AND MUTCD STANDARDS.

3. PUBLIC COMMUNICATION PLAN:

A. SALEM TRAFFIC CONTROL CENTER (540) 378-5096. THE TRAFFIC CONTROL CENTER SHOULD BE NOTIFIED OF PROPOSED LANE CLOSURES AT THE BEGINNING AND END OF EACH WORK DAY.

TYPICAL TRAFFIC CONTROL

NOT TO SCALE

NOTES:

- 1) TRAFFIC IS TO BE MAINTAINED THROUGHOUT THE PROJECT. AUTHORIZED WORK DAYS AND HOURS ARE TO BE IN ACCORDANCE WITH THE VDOT LAND USE PERMIT. ALTERNATIVE TIMES ARE TO BE REQUESTED BY THE CONTRACTOR; TO BE APPROVED BY VDOT.
- 2) ACCESS TO RESIDENTIAL AND COMMERCIAL PROPERTIES SHALL BE MAINTAINED AT ALL TIMES WITHOUT UNDUE DELAYS.
- 3) ALL WORK SHALL BE DONE IN ACCORDANCE WITH REQUIREMENTS OF VDOT STANDARDS AND SPECIFICATIONS, AND THE VIRGINIA WORK AREA PROTECTION MANUAL-REVISION 1.
- 4) TRAFFIC BARRIER SERVICE SHALL BE INSTALLED AND REMOVED SO AS NOT TO PRESENT ANY BLUNT END OR HAZARD TO MOTORING PUBLIC. THE PLACEMENT AND REMOVAL OF TRAFFIC BARRIER SERVICE AND BARRICADES ARE TO BE COORDINATED WITH VDOT.
- 5) CONTRACTOR SHALL BEGIN CONSTRUCTION ACTIVITIES SO THAT WORK MAY BEGIN AND END AS QUICKLY AS POSSIBLE. ONCE CONSTRUCTION BEGINS, CONTRACTOR SHALL PROSECUTE WORK CONTINUOUSLY UNTIL NORMAL TRAFFIC PATTERNS MAY BE USED.
- 6) IDLE CONSTRUCTION EQUIPMENT SHALL NOT IMPACT SIGHT DISTANCES AT INTERSECTIONS OR ENTRANCES. DURING HOURS OF NO WORK, WHICH INCLUDES OVERNIGHT, THE CONTRACTOR'S EQUIPMENT SHALL BE STORED OUTSIDE OF THE ROAD DESIGN CLEAR ZONE AND DEFLECTION AREA.
- 7) PROVIDE TEMPORARY DITCHES OR PIPES AS NECESSARY TO ACCOMPLISH THE WORK.

MAINTENANCE OF TRAFFIC NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR THE FOLLOWING:

- A. CONTRACTOR WILL BE REQUIRED TO OBTAIN A VDOT LAND USE PERMIT PRIOR TO PERFORMING ANY WORK WITHIN VDOT RIGHTS-OF-WAY.
- C. CONTRACTOR SHALL CONTACT THE VDOT REPRESENTATIVE IN WRITING WITH A WORK SCHEDULE 2 WEEKS BEFORE STARTING WORK.
- D. CONTRACTOR SHALL COORDINATE THE SEQUENCE OF CONSTRUCTION WITH VDOT. SIGN SPACING ADJUSTED TO FIT FIELD CONDITIONS WITH VDOT APPROVAL.
- E. ALL PAVEMENT MARKINGS CONFLICTING WITH TRAFFIC PATTERNS SHALL BE ERADICATED AND RE-STRIPED AS NECESSARY.
- F. IT IS NOT THE INTENT OF THE TRAFFIC CONTROL PLAN TO ENUMERATE EVERY DETAIL WHICH MUST BE CONSIDERED IN THE CONSTRUCTION OF EACH WORK ZONE, BUT ONLY TO SHOW THE GENERAL FEATURES NECESSARY TO PROVIDE FOR PROPER HANDLING OF TRAFFIC. THE CONTRACTOR SHALL HAVE AN EMPLOYEE WHO IS VERIFIED BY VDOT IN INTERMEDIATE OR ADVANCED WORK ZONE TRAFFIC CONTROL TO PROVIDE DIRECTION TO SET UP TRAFFIC CONTROL TO MEET FIELD CONDITIONS. THE CONSTRUCTION TECHNIQUES ULTIMATELY EMPLOYED BY THE CONTRACTOR ARE THE RESPONSIBILITY OF THE CONTRACTOR. ALL TRAFFIC DEVICES AND SIGNS NECESSARY FOR MAINTENANCE OF TRAFFIC ARE TO BE PROVIDED, INSTALLED, MAINTAINED AND REMOVED BY THE CONTRACTOR. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE FOR SAFE TRAVEL AROUND THE WORK ZONES.

2. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH THE MUTCD (LATEST EDITION), THE VIRGINIA WORK AREA PROTECTION MANUAL (LATEST EDITION), AND AS DIRECTED BY VDOT AND SHALL COMPLY WITH ALL REGULATIONS PROVIDED IN THE ENTRANCE PERMIT.
3. SAFE ACCESS TO ALL EXISTING PUBLIC ROADWAYS SHALL BE MAINTAINED AT ALL TIMES.
4. CONSTRUCTION WORK AFTER DARK SHALL OCCUR WITH FLOODLIGHTS BEING UTILIZED WHERE EXISTING LIGHT IS NOT ADEQUATE. THE FLOODLIGHTS SHALL NOT CREATE A DISTRACTING GLARE TO ADJACENT DRIVERS. ALL WORK REQUIRING SHOULDER CLOSURE OR LANE CLOSURE SHALL BE PERFORMED BETWEEN THE HOURS OF 10 PM AND 6 AM. SEE VIRGINIA WORK AREA PROTECTION MANUAL, REVISION 1 - SECTION 6G.26
5. ALL FLAGGERS SHALL BE STATE CERTIFIED AND HAVE THEIR CERTIFICATION CARD IN THEIR POSSESSION WHEN PERFORMING FLAGGING DUTIES.
6. CHANNELIZING DEVICES SUCH AS CONES OR BARRELS SHALL BE UTILIZED WHERE REQUIRED AND FOLLOW THE VIRGINIA WORK AREA PROTECTION MANUAL (LATEST EDITION).
7. DESIGN FEATURES RELATING TO CONSTRUCTION OR REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY VDOT.
8. ALL PAVEMENT STRIPING AND ROADWAY SIGNAGE SHALL BE IN ACCORDANCE WITH THE LATEST VERSION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
9. ALL WORK PERFORMED UNDER THIS CONTRACT SHALL BE COORDINATED WITH ANY OTHER CONTRACT AND/OR STATE FORCES WORK BEING DONE IN THE SAME AREA.
10. NO EXCAVATION SHALL REMAIN OPEN DURING HOURS OF NO WORK UNLESS STEEL PLATES AND STEEL PLATE SIGNAGE ARE INSTALLED AS PER SECTION 6G.15 OF THE WORK AREA PROTECTION MANUAL, REVISION 1.
11. IF TRAFFIC BACKUPS OCCUR DURING WORKING HOURS, THE CONTRACTOR SHALL MAKE THE AREA SAFE FOR THE TRAVELING PUBLIC AND THE LANE AND/OR SHOULDER CLOSURE SHALL BE REMOVED.



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TOWN OF BEDFORD, VA

TRAFFIC CONTROL PLAN



0 30 60  
GRAPHIC SCALE

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