



PUGHSVILLE DRAINAGE IMPROVEMENTS, PHASE I

VDOT UPC #107263
SEPTEMBER 23, 2016

PREPARED FOR:
CITY OF SUFFOLK

442 W. WASHINGTON STREET
SUFFOLK, VA



VICINITY MAP
NOT TO SCALE
Provided by Google Maps



LOCATION MAP
NOT TO SCALE
Provided by Google Maps

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CITY OF SUFFOLK STANDARD PLAN NOTES

THE CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO ALL OWNERS AND RESIDENTS OF PROPERTY ADJACENT TO A DEVELOPMENT OR OFFSITE IMPROVEMENTS, 30 DAYS PRIOR TO COMMENCEMENT OF WORK UNLESS OTHERWISE DIRECTED BY THE CITY.

ALL WORK AREAS AND LANE CLOSURES SHALL BE IN ACCORDANCE WITH THE VIRGINIA WORK AREA PROTECTION MANUAL DATED AUGUST 2011 AND SHALL BE DIRECTED OR APPROVED BY CITY OF SUFFOLK PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION. NO LANE CLOSURE OPERATION SHALL BE CONDUCTED WITHOUT A RECEIVED WRITTEN REQUEST 48 TO 72 HOURS PRIOR TO THE OPERATION. ONCE THE REQUEST HAS BEEN APPROVED, WORK MAY COMMENCE. HOURS OF CLOSURE SHALL BE CONDUCTED BETWEEN 9:00 AM AND 4:00 PM MONDAY THROUGH FRIDAY. LANE CLOSURES WILL NOT BE PERMITTED ON SATURDAYS, SUNDAYS, STATE RECOGNIZED HOLIDAYS AND OTHER DAYS DEEMED BY THE CITY OF SUFFOLK TO BE THE SAME AS HOLIDAYS. LANE CLOSURES WILL BE PROHIBITED FROM NOON PRIOR TO A THREE DAY WEEKEND TO NOON THE FOLLOWING WORK DAY. THE CONTRACTOR SHALL NOT CONDUCT OPERATIONS WHEN THE WEATHER CAUSES UNSAFE CONDITIONS FOR THE TRAVELING PUBLIC AS DETERMINED BY THE PUBLIC WORKS ENGINEERING DEPARTMENT PRIOR TO CONDUCTION SUCH OPERATION. ALL SIGNS, EQUIPMENT, AND MATERIAL WILL BE REMOVED FROM THE CITY OF SUFFOLK'S RIGHT-OF-WAY PRIOR TO THE END OF THE LANE CLOSURE TIME INDICATED. FOR WORK ON ROUTES 10/32, 13, 17, 58, 337, AND 460, THERE SHALL BE AT LEAST ONE LANE OPEN AT ALL TIMES.

ABBREVIATIONS

GENERAL		UTILITY	
ABAN	ABANDON	CB	CATCH BASIN
A/C	AIR CONDITIONER	CDI	CURB DROP INLET
ADJ	ADJUST	CMP	CORRUGATED METAL PIPE
APPROX	APPROXIMATE	CO	CLEAN OUT
BIT	BITUMINOUS	DMH	DRAINAGE MANHOLE
BL	BLOCK	DI	DRAINAGE INLET
BLDG	BUILDING	CIP	CAST IRON PIPE
BP	BUMPER POST	COND	CONDUIT
BV	BRICK VENEER	DIP	DUCTILE IRON PIPE
C&G	CURB & GUTTER	FL	FLOWLINE
C	CENTERLINE	FM	FORCE MAIN
CLF	CHAIN LINK FENCE	MAX	MAXIMUM
CONC	CONCRETE	SMH/SAN MH	SANITARY MANHOLE
COL	COLUMN	HDPE	HIGH DENSITY POLYETHYLENE PIPE
CONN	CONNECTION	HYD	HYDRANT
D.B	DEED BOOK	INV	INVERT ELEVATION
DR	DRAIN	PROP	PROPOSED
EL	ELEVATION	PVC	POLYVINYLCHLORIDE PIPE
ENC.	ENCROACHMENT	RCP	REINFORCED CONCRETE PIPE
EX	EXISTING	RIM	ELEVATION OF RIM
FFE	FINISHED FLOOR ELEVATION	TC	TOP OF CURB
FH	FIRE HYDRANT	TC	TERRACOTTA PIPE
FO	FIBER OPTIC	NIC	NOT IN CONTRACT
FL	FLOW LINE ELEVATION	NTS	NOT TO SCALE
(F)	FOUND	MIN	MINIMUM
FR	FRAME	GV	GATE VALVE
GM	GAS METER		
GV	GAS VALVE		
HC	HANDICAP		
HVAC	HEATING, VENTILATION & AIR CONDITIONING		
HW	HEADWALL		
INV	INVERT		
LT	LIGHT		
L/P	LIGHT POLE		
MH	MANHOLE		
M.B.	MAP BOOK		
MG	MATCH GRADE		
MTL	METAL		
MP	MARKER POST		
N/F	NOW OR FORMERLY		
"NP"	NO PARKING		
ORD.	ORDINANCE		
O.A.	OVERALL		
P.	PAGE		
PED	PEDESTAL		
P.B.	PLAT BOOK		
P/P	POST INDICATOR VALVE		
P/P	POWER POLE		
P	PROPERTY LINE		
R/W	RIGHT-OF-WAY		
RD	ROAD		
RD	ROOF DRAIN		
STORM MH	STORM MANHOLE		
STY	STORY		
TM	TEMPORARY BENCHMARK		
TEL	TELEPHONE		
TW	TOP OF WALL		
TYP/TYP.	TYPICAL		
U/P	UTILITY POLE		
WV	WATER VALVE		
WS	WHEEL STOP		
W	WITH		
WPB	WOOD PLANTER BOX		
WPF	WOOD PRIVACY FENCE		
WRF	WOOD RAIL FENCE		
YD	YARD DRAIN		

PREPARED BY:
PENNONI ASSOCIATES INC.



349 Southport Circle, Suite 100
Virginia Beach, VA 23452
T 757.497.7472
F 757.497.0250

City of Suffolk Site Plan Information		Approved for Data Entry:
		City Use Only Engineer initials and date
CITY FILE NUMBER	3516	
SITE PLAN TITLE	PUGHSVILLE DRAINAGE IMPROVEMENTS, PHASE I	
SITE ADDRESS	TOWNPOINT ROAD, SUFFOLK, VA	
TAX MAP - PARCEL NUMBER	XXXXXX	
SITE OWNER	CITY OF SUFFOLK	
OWNER ADDRESS	442 W. WASHINGTON ST. SUFFOLK, VA 23434	
OWNER CONTACT	CHUCK WEIL, EIT	
OWNER PHONE	757-514-7716	
OWNER FAX	757-514-7727	
OWNER EMAIL	CWEIL@SUFFOLKVA.US	
SITE DEVELOPER (SAME AS OWNER?)	<input checked="" type="checkbox"/> CITY OF SUFFOLK	
SITE STATISTICS		
	EXISTING	ADDED/ DELETED (+/-)
TOTAL DISTURBED AREA	AC 0.19	0
TOTAL SITE AREA	AC 0.19	0
IMPERVIOUS AREA	AC 0.11	0
SEMI-PERVIOUS AREA	AC 0	0
PERVIOUS AREA	AC 0.08	0
RIGHT-OF-WAY DISTURBANCE	SF 0.17	0
SITE IN CBPA? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If Yes: RMA <input type="checkbox"/> RPA <input type="checkbox"/> IDA <input type="checkbox"/>		

PROPERTY INFORMATION

OWNER / APPLICANT	PW FILE #
CITY FILE NUMBER -	3516
SITE PLAN TITLE -	PUGHSVILLE DRAINAGE IMPROVEMENTS, PHASE I
SITE ADDRESS -	TOWNPOINT ROAD SUFFOLK, VA
PARCEL NUMBER -	N/A
SITE OWNER -	CITY OF SUFFOLK
OWNER ADDRESS -	442 W. WASHINGTON STREET, SUFFOLK, VA 23434
OWNER CONTACT -	CHUCK WEIL, EIT
OWNER PHONE -	757-514-7716
OWNER FAX -	757-514-7727
OWNER EMAIL -	CWEIL@SUFFOLKVA.US

SITE STATISTICS	
TOTAL SITE AREA -	0.19 ACRES
TOTAL DISTURBED AREA -	0.19 ACRES
IMPERVIOUS AREA DISTURBED -	0.11 ACRES
PERVIOUS AREA DISTURBED -	0.08 ACRES

ZONING	
CURRENT ZONING -	RM
NEIGHBORHOOD -	PUGHSVILLE

INTENDED USE
STORM CULVERT UTILITY IMPROVEMENTS

FLOOD ZONE
THE SITE IS LOCATED IN FLOOD ZONE 'X' (UNSHADED) AS SHOWN ON THE FIRM FLOOD INSURANCE RATE MAPS, NUMBERS 5101560127E AND 5101560129E, DATED AUGUST 3, 2015. FLOOD ZONE 'X' (UNSHADED) IS DESCRIBED AS AN AREA OF MINIMAL FLOOD HAZARD OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, USUALLY DEPICTED ON FIRMS AS ABOVE THE 500 YEAR FLOOD LEVEL.



CALL BEFORE YOU DIG
ALWAYS CALL 811 BEFORE YOU DIG IN VIRGINIA
CALL 1-800-552-7001
SECTION 56-265.17 REQUIRES THREE WORKING DAYS
NOTICE TO UTILITIES BEFORE YOU EXCAVATE, DRILL OR
BLAST VIRGINIA UTILITY PROTECTION SERVICE, INC.



PENNONI ASSOCIATES INC.
349 Southport Circle, Suite 100
Virginia Beach, VA 23452
T 757.497.7472 F 757.497.0250



ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

PUGHSVILLE DRAINAGE IMPROVEMENTS, PHASE I
SUFFOLK, VA
COVER SHEET

CITY OF SUFFOLK
442 W. WASHINGTON STREET
SUFFOLK, VA 23434

NO.	DATE	REVISIONS	BY

ALL DOCUMENTS PREPARED BY PENNONI ASSOCIATES ARE INSTRUMENTS OF SERVICE IN RESPECT OF THE PROJECT. THEY ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY OWNER OR OTHERS ON THE EXTENSIONS OF THE PROJECT OR ON ANY OTHER PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY PENNONI ASSOCIATES FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT OWNERS SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO PENNONI ASSOCIATES. OWNER SHALL INDEMNIFY AND HOLD HARMLESS PENNONI ASSOCIATES FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.

PROJECT	COSF1602
DATE	2016-09-23
DRAWING SCALE	AS NOTED
DRAWN BY	WHT
APPROVED BY	LKD

G-001

PROJECT STATUS: — PLOTTED: 9/25/2016 3:24 PM, BY: L. Keith B. Darrow FLO/STYLE: Pennoni NCS.sbt N:\PROJECTS\COSF1602\Pughsville Drainage Phase I\DESIGN\CTS\SHEETS\01-G001-1602-Cover.dwg

GENERAL NOTES:

- ALL DESIGN, MATERIALS, AND CONSTRUCTION METHODS SHALL CONFORM TO THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO), A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS 2011; VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT), LOCATION AND DESIGN DIVISION, ROAD DESIGN MANUAL, VOLUME 1 AND 2, CURRENT EDITION; VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) ROAD AND BRIDGE SPECIFICATIONS, 2007; VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) ROAD AND BRIDGE STANDARDS, 2008, VOLUME 1 AND 2; VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT), DRAINAGE MANUAL; MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION (FHWA), (2009); VDOT'S VIRGINIA WORK AREA PROTECTION MANUAL, STANDARDS AND GUIDELINES FOR TEMPORARY TRAFFIC CONTROL, 2011 EDITION; VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION, VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, THIRD EDITION, 1992; VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION, VIRGINIA STORMWATER MANAGEMENT HANDBOOK, FIRST EDITION 1999, VOLUME 1 AND 2; CITY OF SUFFOLK, DEPARTMENT OF PUBLIC WORKS, PUBLIC FACILITIES MANUAL, 2014, VOLUME I, SECOND EDITION; CITY OF SUFFOLK, DEPARTMENT OF PUBLIC UTILITIES, PUBLIC FACILITIES MANUAL, VOLUME II, 2016 RELEASE 1; CITY OF SUFFOLK, UNIFIED DEVELOPMENT ORDINANCE, LATEST EDITION; FHWA, DEVELOPING AND IMPLEMENTING TRANSPORTATION MANAGEMENT PLANS FOR WORK ZONES, 2005 EDITION; AND ANY OTHER APPLICABLE CITY ORDINANCE OR CODE.
- THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL PUBLIC OR PRIVATE UTILITIES, WHICH LIE IN THE CONSTRUCTION AREA PRIOR TO ANY EXCAVATION OR CONSTRUCTION. ANY CHANGES TO THE PROPOSED UTILITY ALIGNMENTS SHALL BE APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR, AT HIS EXPENSE, OF ALL EXISTING UTILITIES DAMAGED DURING CONSTRUCTION
- THE CONTRACTOR SHALL USE ONLY APPROVED MATERIAL IN THE BACKFILL OF UTILITY TRENCHES.
- ALL UTILITY TRENCHES SHALL BE BACKFILLED AND COMPACTED TO WITHIN 4" OF FINAL SUBGRADE ELEVATION AND GRADED TO DRAIN. EXCESS MATERIAL SHALL BE REMOVED AT THE CONTRACTOR'S EXPENSE. ALL FINISHED SLOPES IN UTILITY EASEMENTS OR IN RIGHT-OF-WAY NOT SUBJECT TO PAVING SHALL BE TOPSOILED AND SEEDED IN ACCORDANCE WITH THE CURRENT CONSTRUCTION SPECIFICATIONS AND SHALL NOT EXCEED THE MAXIMUM AS FOLLOWS - CUT SLOPE 3:1, FILL SLOPE 3:1, UNLESS OTHERWISE APPROVED OR SHOWN ON PLANS.
- THE CONTRACTOR SHALL PROVIDE TEMPORARY DRAINAGE TO RELIEVE AREAS THAT MAY CAUSE DAMAGE TO THE ROADWAYS, AND EROSION PROTECTION DURING CONSTRUCTION AS DIRECTED BY THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
- ALL CONCRETE SHALL BE CLASS 'A3' AIR ENTRAINED (3,000 PSI) UNLESS NOTED OTHERWISE.
- ALL STORM SEWER PIPE SHALL BE AS SPECIFIED ON THE PLAN SHEETS AND SHALL CONFORM TO CURRENT CITY OF SUFFOLK STANDARDS. ALL PIPES SHALL BE REINFORCED CONCRETE TONGUE AND GROOVE.
- PRIOR TO CONSTRUCTION OR EXCAVATION, THE CONTRACTOR SHALL CALL "MISS UTILITY" AT 1-800-552-7001. IN ADDITION, THE CONTRACTOR SHALL CALL THE OFFICES OF ANY AND ALL PUBLIC OR PRIVATE UTILITIES AND REQUEST LOCATION OF UTILITIES THAT MAY EXIST AND CROSS THROUGH THE CONSTRUCTION AREA, WHETHER OR NOT SAID UTILITIES ARE SHOWN ON THESE PLANS. UTILITY COMPANIES SHALL BE NOTIFIED 48 HOURS IN ADVANCE OF ANY EXCAVATION IN THE PROXIMITY OF THEIR UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR THE REPAIR, AT HIS EXPENSE, FOR ANY DAMAGE CAUSED TO UTILITIES DURING CONSTRUCTION.
- ALL STORM SEWER PIPES, DROP INLETS AND CATCH BASINS SHALL BE CLEANED OF DEBRIS AND ERODING MATERIAL DURING THE LAST STAGE OF CONSTRUCTION.
- GUTTERBUDDY, OR APPROVED EQUAL, INLET FILTER SHALL BE PLACED AROUND ALL EXISTING AND PROPOSED DRAINAGE INLETS.
- ANY DEFECTIVE, FAULTY, CRACKED, OR BROKEN DRIVEWAYS, AS DETERMINED BY THE OWNER OR OWNER'S REPRESENTATIVE, SHALL BE REMOVED AND REPLACED TO THE NEAREST JOINT PRIOR TO FINAL ACCEPTANCE AT THE CONTRACTOR'S EXPENSE. PATCHING IS NOT ACCEPTABLE.
- ANY ITEMS THAT ARE NECESSARY OR INCIDENTAL TO THE COMPLETION OF A BID ITEM SHALL BE CONSIDERED AS A PART OF THE UNIT PRICE OF THE BID ITEM, UNLESS SUCH INCIDENTAL WORK IS EXPRESSLY INCLUDED IN OTHER BID ITEMS AS STATED IN THE VDOT ROAD AND BRIDGE SPECIFICATIONS.
- RELOCATION, REMOVAL AND/OR REPLACEMENT OF ALL SIGNS SHALL BE COORDINATED WITH THE DEPARTMENT OF TRAFFIC ENGINEERING.
- ALL CONFLICTING PRIVATE UTILITIES, LINES AND POLES WILL BE RELOCATED BY OTHERS.
- CONTRACTOR SHALL REMOVE AND RESET ALL MAILBOXES AS REQUIRED (NON PAY ITEM).
- ALL CONCRETE DRIVES SHALL BE 7" THICK MINIMUM FROM ROADWAY TO THE RIGHT-OF-WAY. CONCRETE DRIVES EXTENDING PAST THE RIGHT-OF-WAY SHALL BE 4" THICK MINIMUM.
- CONTRACTOR IS RESPONSIBLE FOR COORDINATING CLOSURE OF DRIVEWAYS WITH INDIVIDUAL PROPERTY OWNERS AND MUST PROVIDE ACCESS TO THE HOUSES.
- CONTRACTOR SHALL PROTECT ALL TREES AND SHRUBS AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
- REMOVAL OF EXISTING UTILITIES IN SAME TRENCH AS PROPOSED UTILITIES SHALL NOT BE AN ADDITIONAL PAY ITEM.
- ALL UTILITY AND STORM DRAIN LINES MUST BE INSPECTED BY THE ENGINEERING DEPARTMENT PRIOR TO BACKFILLING.
- DISPOSAL OF EXCESS MATERIAL SHALL REQUIRE PRIOR APPROVAL FROM THE OWNER.
- PRIOR TO CONSTRUCTION WITHIN ANY EXISTING PUBLIC RIGHT-OF-WAY THE CONTRACTOR SHALL OBTAIN A PERMIT FROM THE PUBLIC WORKS ENGINEERING DEPARTMENT. A COPY OF THE APPROVED TRAFFIC CONTROL PLAN IS TO BE SUBMITTED WITH THE RIGHT-OF-WAY PERMIT APPLICATION. THE CONTRACTOR SHALL SUBMIT THE TRAFFIC CONTROL PLAN TO THE PUBLIC WORKS ENGINEERING DEPARTMENT FOR REVIEW AND APPROVAL WHEN APPLYING FOR PERMITS. THE PLAN IS NOT CONSIDERED APPROVED UNTIL SUCH TIME.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING WITH MATCHING MATERIALS ANY PAVEMENT OR DRIVEWAYS THAT MUST BE CUT OR THAT ARE DAMAGED DURING CONSTRUCTION.
- WHEN MATERIALS WHICH ARE UNSUITABLE FOR FOUNDATIONS, SUBGRADES, OR OTHER ROADWAY PURPOSES OCCUR WITHIN THE LIMITS OF STREET CONSTRUCTION, THE CONTRACTOR SHALL BE REQUIRED TO EXCAVATE SUCH MATERIALS BELOW THE GRADE SHOWN ON PLANS AND THE AREAS SO EXCAVATED SHALL BE BACK FILLED WITH APPROVED SUITABLE MATERIALS. THE EXTENT OF UNDERCUTTING AND BACKFILLING TO BE DETERMINED BY THE OWNER OR OWNER'S REPRESENTATIVE.
- REPLACEMENT OF PAVEMENT SHALL BE IN ACCORDANCE WITH STANDARD PAVEMENT PATCHING DETAIL FOR FLEXIBLE PAVEMENT (SEE SHEET C-208) AND THE CITY OF SUFFOLK, DEPARTMENT OF PUBLIC WORKS, PUBLIC FACILITIES MANUAL, 2014, VOLUME I, SECOND EDITION, AND CITY OF SUFFOLK, DEPARTMENT OF PUBLIC UTILITIES, PUBLIC FACILITIES MANUAL, VOLUME II, 2016 RELEASE 1.

CONSTRUCTION NOTES:

- THE PLANS SHOW KNOWN SUBSURFACE STRUCTURES, ABOVE GROUND STRUCTURES AND/OR UTILITIES BELIEVED TO EXIST IN THE WORKING AREA. THE CONTRACTOR IS WARNED THAT THE EXACT OR EVEN APPROXIMATE LOCATION OF SUCH UTILITIES MAY BE DIFFERENT FROM THAT SHOWN OR MAY NOT BE SHOWN AT ALL. THE CONTRACTOR SHALL COORDINATE WITH ALL PUBLIC AND PRIVATE UTILITY OWNERS AND MISS UTILITY TO ENSURE THAT ALL KNOWN UTILITIES HAVE BEEN MARKED PRIOR TO BEGINNING WORK ON THE SITE.
- THE OWNER SHALL BE NOTIFIED IN WRITING OF ANY CONDITIONS THAT VARY FROM THOSE SHOWN ON THE PLANS. THE CONTRACTOR'S WORK SHALL NOT VARY FROM THE PLANS WITHOUT THE EXPRESSED APPROVAL OF THE OWNER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND INCURRING THE COST OF ALL REQUIRED MATERIALS TESTING AND PERMITS.
- THE CONTRACTOR SHALL COMPLY WITH ALL REQUIRED PERMITS.
- THE CONTRACTOR SHALL PROTECT EXISTING PROPERTY LINE MONUMENTATION. ANY MONUMENTATION DISTURBED OR DESTROYED, AS JUDGED BY THE ENGINEER OR OWNER, SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE BY A SURVEYOR LICENSED IN THE COMMONWEALTH OF VIRGINIA.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO CONDUCT EXPLORATORY TEST PITS AS REQUIRED TO DETERMINE UNDERGROUND CONDITIONS.
- ALL TRENCH EXCAVATION AND ANY REQUIRED SHEETING AND SHORING SHALL BE DONE IN ACCORDANCE WITH THE LATEST REVISIONS OF THE OSHA REGULATIONS FOR CONSTRUCTION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING AND THE MAINTENANCE OF SURFACE DRAINAGE DURING THE COURSE OF WORK.
- CONTRACTOR SHALL MAINTAIN FLOW FOR ALL EXISTING UTILITIES, CULVERTS, AND DITCHES.
- CONTRACTOR TO GRADE ALL AREAS ON THE SITE TO PROVIDE POSITIVE DRAINAGE, WHETHER TEMPORARY OR PERMANENT CONDITIONS.
- THE CONTRACTOR SHALL EXERCISE CAUTION WHEN OPERATING CONSTRUCTION EQUIPMENT OVER NEW UTILITY TRENCHES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING A MINIMUM OF TWO FEET OR MORE OF COVER, IF REQUIRED, OVER ANY UTILITY LINE SUBJECT TO CONSTRUCTION TRAFFIC.
- CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL WORK AND DISRUPTIONS WITH GOVERNING AGENCIES AND OWNERS.
- UPON COMPLETION OF THE WORK, ALL DISTURBED AREAS SHALL BE RESTORED TO A CONDITION EQUAL TO OR BETTER THAN THAT WHICH EXISTED PRIOR TO CONSTRUCTION.
- ALL EROSION CONTROL MEASURES SHALL BE PUT INTO PLACE PRIOR TO BEGINNING CONSTRUCTION.
- TRENCHES SHALL NOT BE LEFT OPEN OVERNIGHT. TEMPORARY PATCH SHALL BE PLACED AT THE END OF EACH WORKING DAY.
- THE CONTRACTOR SHALL MAINTAIN A NEAT AND ORDERLY SITE.
- CONTRACTOR IS RESPONSIBLE FOR FOLLOWING ALL CITY ORDINANCES AND CODES.
- STAGING AREA WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. A HOLD HARMLESS AGREEMENT WITH THE STAGING AREA PROPERTY MUST BE SIGNED BEFORE CONSTRUCTION BEGINS.

SEQUENCE OF CONSTRUCTION:

- ALL CONSTRUCTION FOR THIS PROJECT SHALL BE PERFORMED BETWEEN THE HOURS OF 9 AM TO 4 PM.
- SEQUENCE OF CONSTRUCTION IS AS FOLLOWS:
 - CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS BEFORE THE COMMENCEMENT OF CONSTRUCTION.
 - MOBILIZATION.
 - ALL EROSION CONTROL STRUCTURAL MEASURES, INCLUDING BUT NOT LIMITED TO TREE PROTECTION AND SILT FENCE SHALL BE IN PLACE PRIOR TO THE BEGINNING OF DISTURBANCE. ALL MEASURES SHALL BE INSPECTED AT LEAST EVERY 14 DAYS AND AFTER ANY RUNOFF PRODUCING RAIN EVENT.
 - SAWCUT AND DEMOLISH EXISTING ROADWAY WITHIN SPECIFIED LIMITS.
 - REMOVE EXISTING STORM CULVERTS.
 - PREPARE SOIL AND PIPE BEDDING FOR INSTALLATION OF NEW CULVERTS.
 - INSTALL NEW STORM CULVERTS AND PROPOSED HEADWALLS AND OUTLET PROTECTION AS INDICATED ON THE PLANS. CLEAR AND ADJUST GRADING OF CHANNELS.
 - DISTURBED AREA SHALL BE GRADED AND RESTORED TO EXISTING CONDITIONS.
 - VEGETATIVE EROSION CONTROL MEASURES SHALL BE INSTALLED ON ANY DENUDED AREA.
 - ALL STRUCTURAL EROSION CONTROL MEASURES SHALL BE REMOVED AT THE FINISH OF CONSTRUCTION.

LEGEND

<p>EXISTING</p>	<p>PROPOSED</p>
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PENNONI ASSOCIATES, INC.
 349 Southport Circle, Suite 100
 Virginia Beach, VA 23452
 T 757.497.7472 F 757.497.0250

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

PUGHVILLE DRAINAGE IMPROVEMENTS, PHASE I SUFFOLK, VA

GENERAL NOTES

CITY OF SUFFOLK
 442 W. WASHINGTON STREET
 SUFFOLK, VA 23434

NO.	DATE	REVISIONS	BY

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PROJECT	COSF1602
DATE	2016-09-23
DRAWING SCALE	NTS
DRAWN BY	WHT
APPROVED BY	LKD

PROJECT STATUS: ROUTED: 08/29/16 4:45 PM BY: L. Adair B. Carter ROUTED TO: Pennoni Associates PROJECT: PUGHVILLE DRAINAGE IMPROVEMENTS PHASE I SUFFOLK, VA SHEET: G-002 OF 180

NO.	DATE	REVISIONS	BY

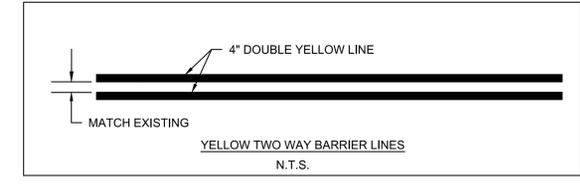
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PROJECT	COSF1602
DATE	2016-09-23
DRAWING SCALE	AS NOTED
DRAWN BY	WHT
APPROVED BY	LKD

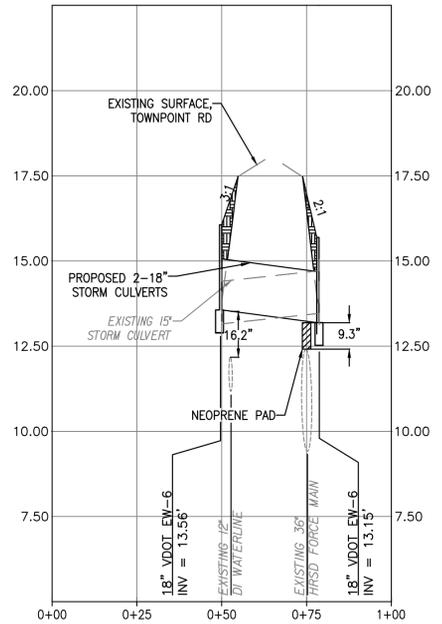
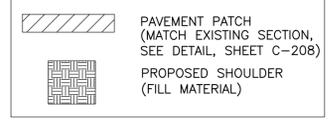
NOTE:
 CONTRACTOR RESPONSIBLE FOR LOCATING OF ALL EXISTING UTILITIES PRIOR TO EXCAVATION. LOCATIONS SHOWN PER RECORD DRAWINGS.

OUTLET PROTECTION SIZING:
 PER VDOT DETAIL EC-1, DETAIL 2
 LENGTH = 3H = 3(18") = 4.5'
 WIDTH = 18" + 50" + 18" = 7.2'
 THICKNESS = 24" (CLASS I RIP RAP)

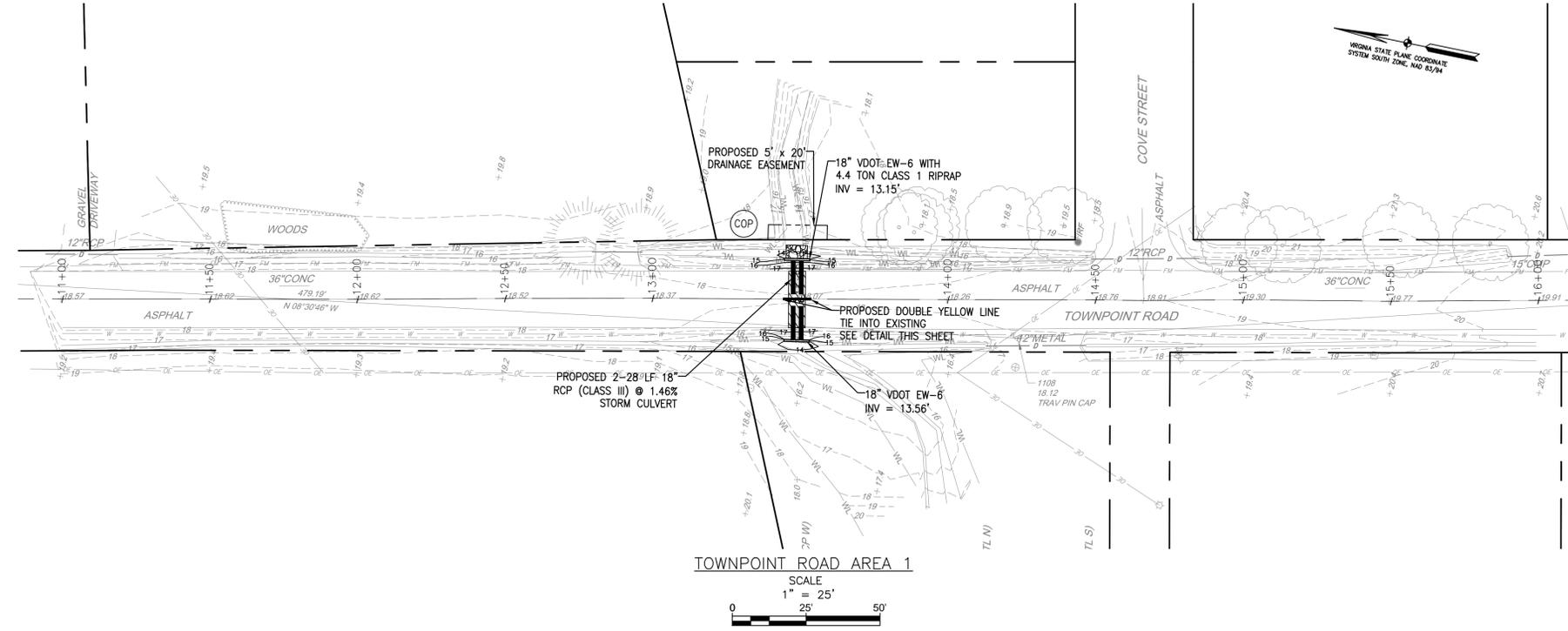
TYPICAL PAVEMENT MARKING DETAILS



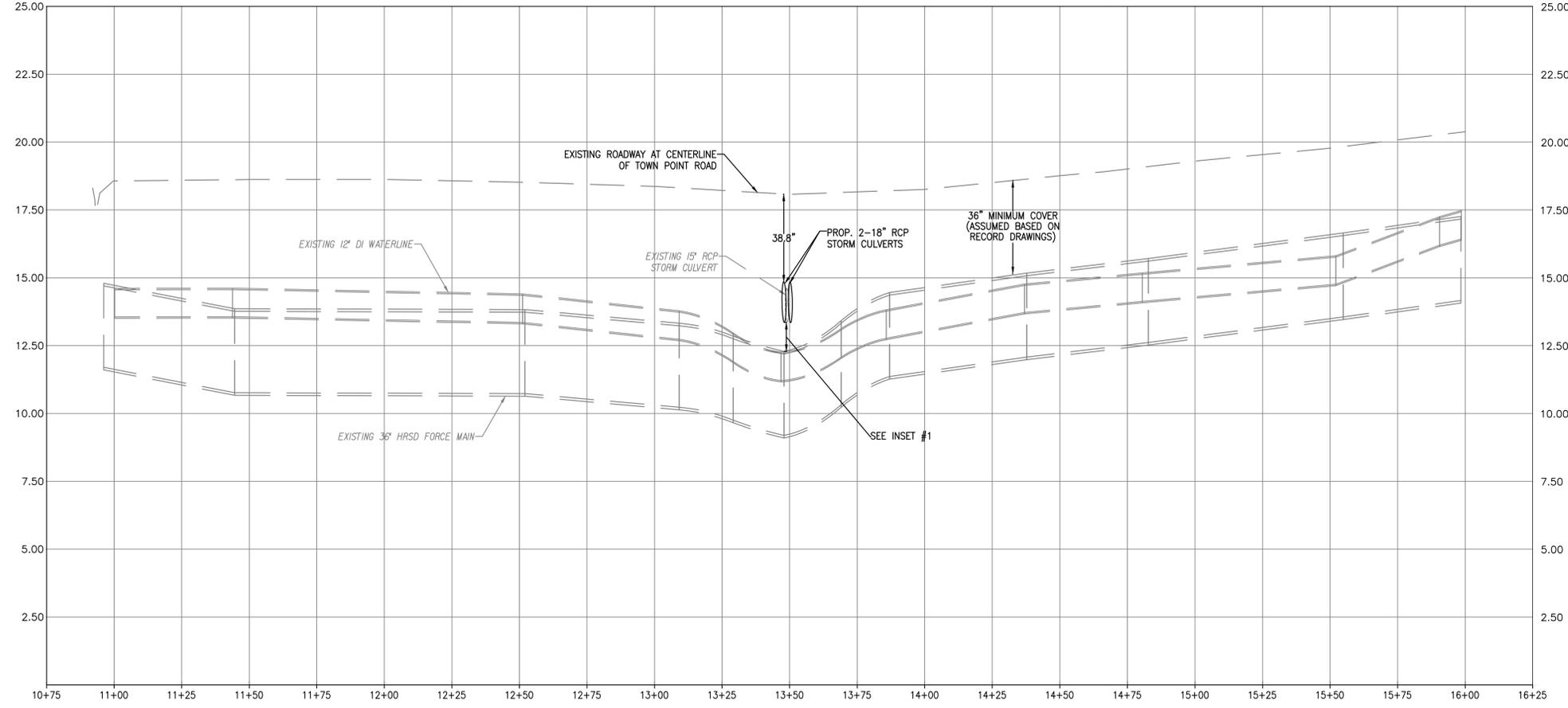
LEGEND



STORM CULVERT CROSSING
 INSET 1
 SCALE
 VERTICAL: 1"=2.5'
 HORIZONTAL: 1"=25'



TOWNPPOINT ROAD AREA 1
 SCALE
 1" = 25'
 0 25 50'



TOWNPPOINT ROAD AREA 1
 PROFILE
 SCALE
 VERTICAL: 1"=2.5'
 HORIZONTAL: 1"=25'

PLOTTED: 09/20/16 4:11 PM BY: L. Smith, Designer F:\PROJECTS\1602\1602-Pughville Drainage\1602-COSF1602-Plan and Profile.dwg PROJECT STATUS:

NO.	DATE	REVISIONS	BY

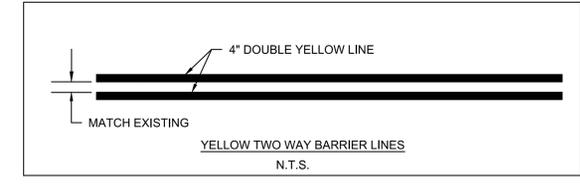
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PROJECT	COSF1602
DATE	2016-09-23
DRAWING SCALE	AS NOTED
DRAWN BY	WHT
APPROVED BY	LKD

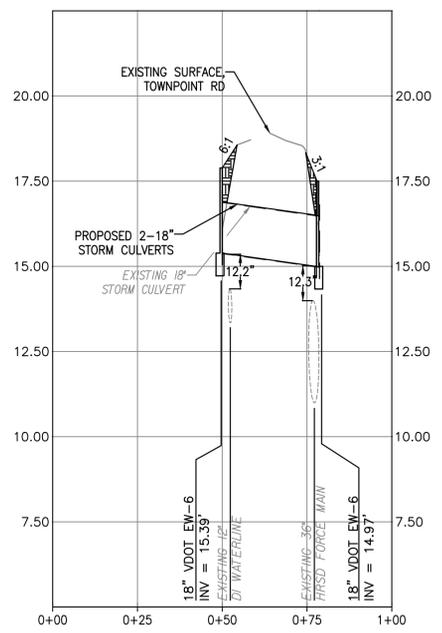
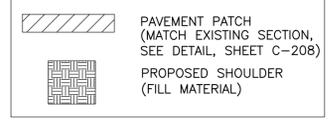
NOTE:
 CONTRACTOR RESPONSIBLE FOR LOCATING OF ALL EXISTING UTILITIES PRIOR TO EXCAVATION. LOCATIONS SHOWN PER RECORD DRAWINGS.

OUTLET PROTECTION SIZING:
 PER VDOT DETAIL EC-1, DETAIL 2
 LENGTH = 3H = 3(18") = 4.5'
 WIDTH = 18" + 50" + 18" = 7.2'
 THICKNESS = 24" (CLASS I RIP RAP)

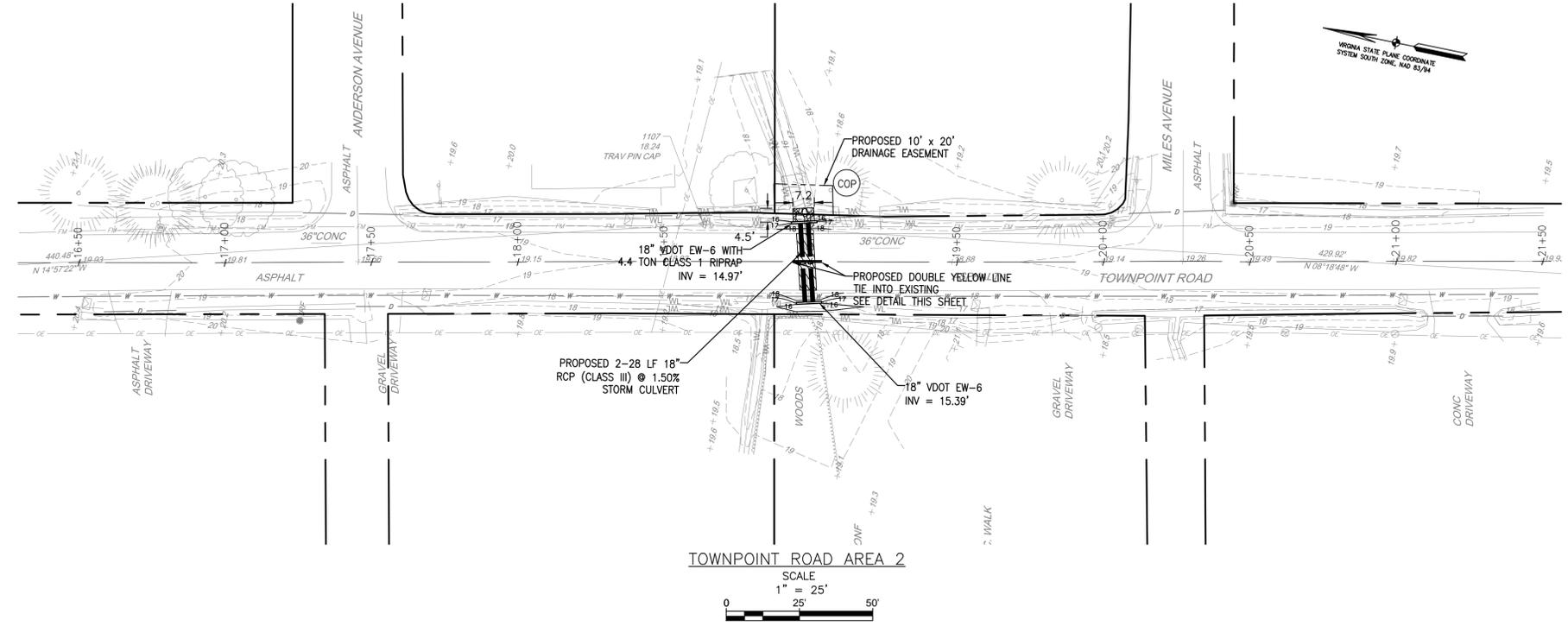
TYPICAL PAVEMENT MARKING DETAILS



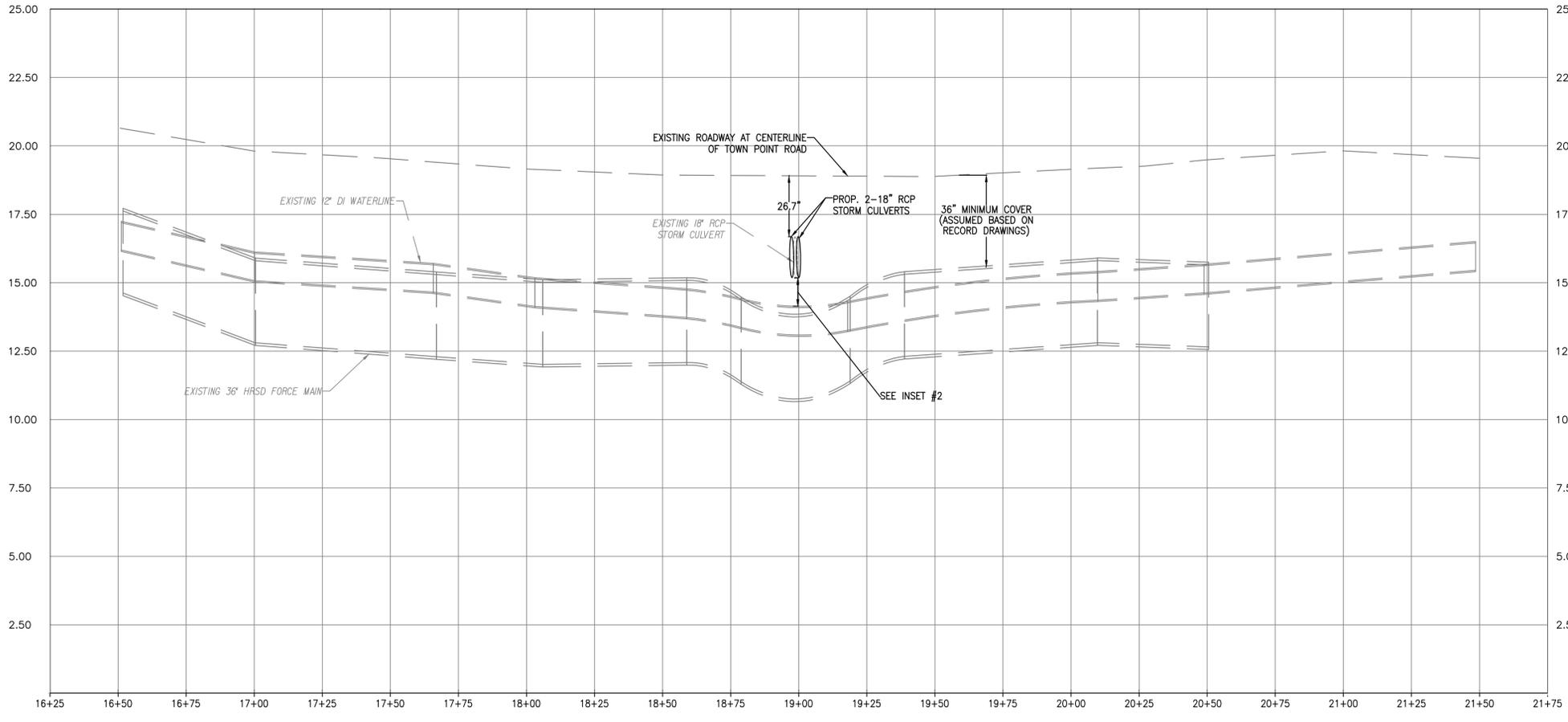
LEGEND



STORM CULVERT CROSSING
 INSET 2
 SCALE
 VERTICAL: 1"=2.5'
 HORIZONTAL: 1"=25'

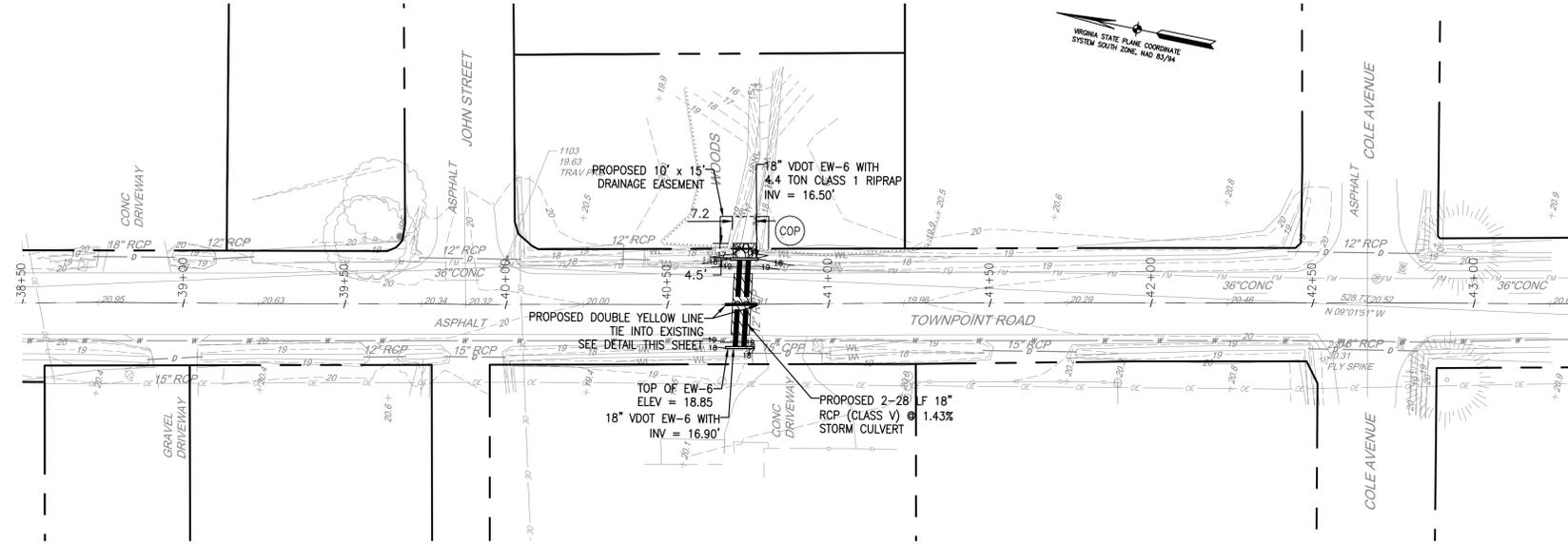


TOWNPOINT ROAD AREA 2
 SCALE
 1" = 25'
 0 25 50'



TOWNPOINT ROAD AREA 2
 PROFILE
 SCALE
 VERTICAL: 1"=2.5'
 HORIZONTAL: 1"=25'

N:\PROJECTS\COSF1602\Pughville Drainage Phase I\DESIGN\DRG\1602-COSF-040-000-000.dwg and P:\P\1602.dwg
 PLOTTED: 09/23/16 14:42:04 BY: L. Smith, E. Dwyer
 FOOTNOTES: Pennoni Associates
 PROJECT STATUS:

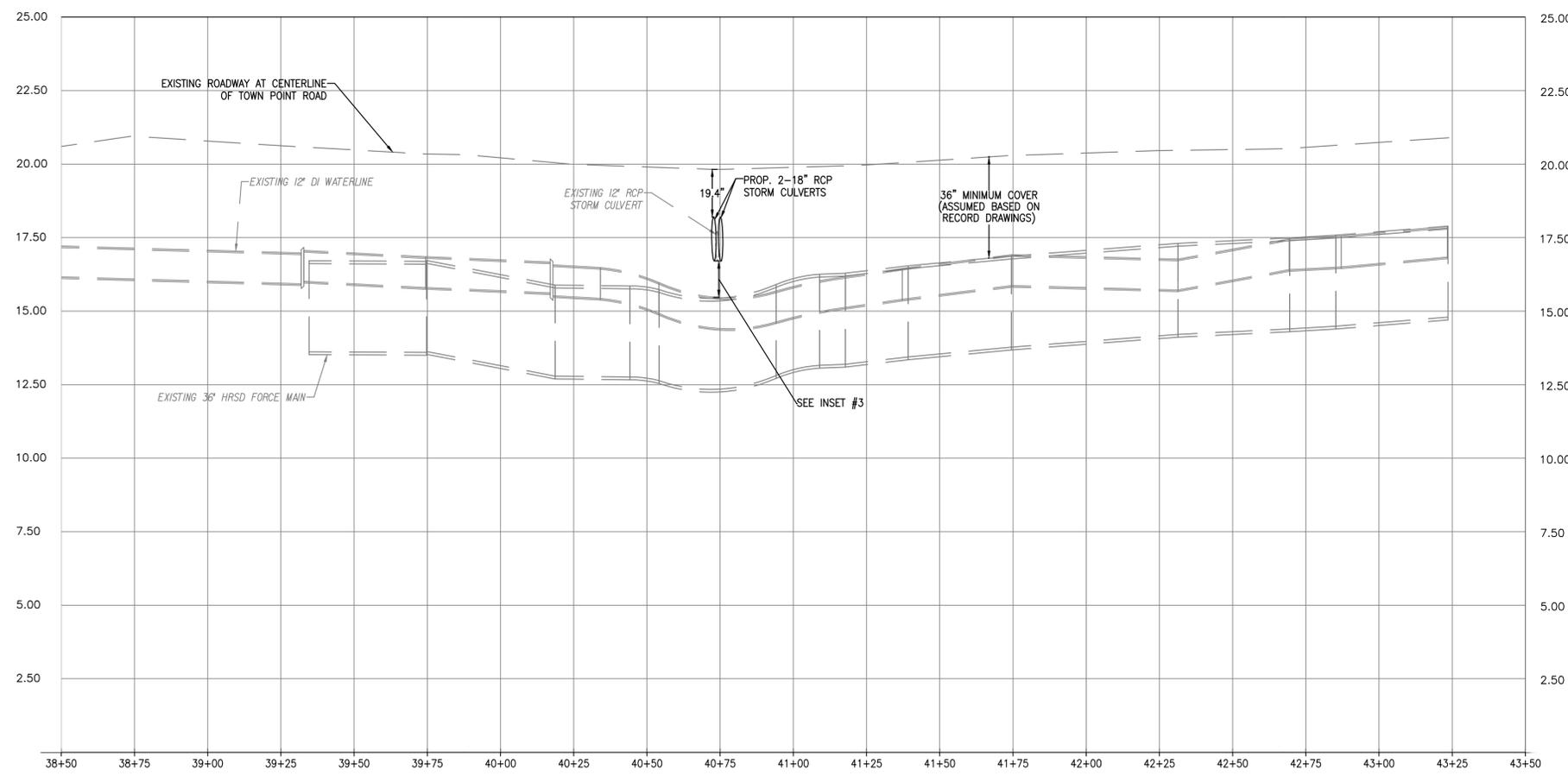
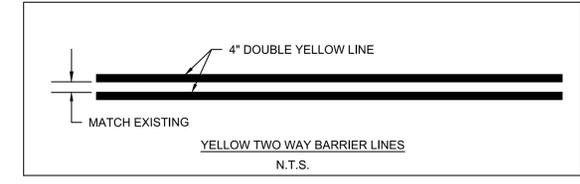


TOWNPPOINT ROAD AREA 3
SCALE
1" = 25'
0 25 50'

NOTE:
CONTRACTOR RESPONSIBLE FOR LOCATING OF ALL
EXISTING UTILITIES PRIOR TO EXCAVATION. LOCATIONS
SHOWN PER RECORD DRAWINGS.

OUTLET PROTECTION SIZING:
PER VDOT DETAIL EC-1, DETAIL 2
LENGTH = 3H = 3(18") = 4.5'
WIDTH = 18" + 50" + 18" = 7.2'
THICKNESS = 24" (CLASS I RIP RAP)

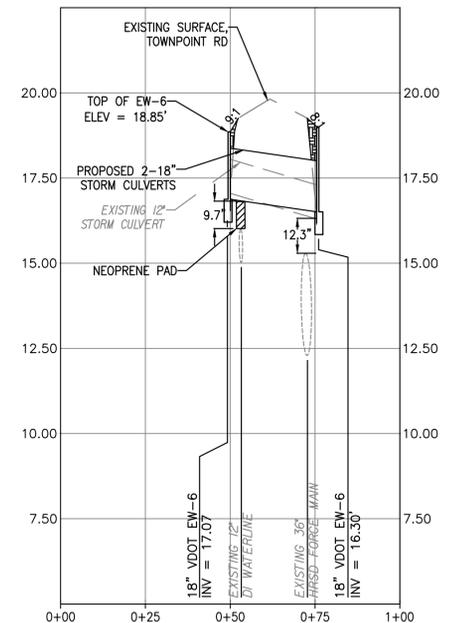
TYPICAL PAVEMENT MARKING DETAILS



TOWNPPOINT ROAD AREA 3
PROFILE
SCALE
VERTICAL: 1"=2.5'
HORIZONTAL: 1"=25'

LEGEND

- PAVEMENT PATCH (MATCH EXISTING SECTION, SEE DETAIL, SHEET C-208)
- PROPOSED SHOULDER (FILL MATERIAL)



STORM CULVERT CROSSING
INSET 3
SCALE
VERTICAL: 1"=2.5'
HORIZONTAL: 1"=25'

Pennoni
PENNONI ASSOCIATES, INC.
349 Southport Circle, Suite 100
Virginia Beach, VA 23452
T 757.497.7472 F 757.497.0250

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

HEATHER MARIE HAM
Lic. No. 034564
09/23/2016
PROFESSIONAL ENGINEER

PUGHVILLE DRAINAGE IMPROVEMENTS, PHASE I
SUFFOLK, VA
PLAN AND PROFILE
STA 38+50 TO STA 43+50
CITY OF SUFFOLK
442 W. WASHINGTON STREET
SUFFOLK, VA 23434

NO.	DATE	REVISIONS	BY

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PROJECT	COSF1602
DATE	2016-09-23
DRAWING SCALE	AS NOTED
DRAWN BY	WHT
APPROVED BY	LKD

PLOTTED: 09/23/16 10:41 AM BY: L. Smith, E. Curran
 PROJECT STATUS: —
 FOOTSTYLE: Pennon NCS.dwg
 N:\PROJECTS\COSF1602\Drawings\Phase I\DESIGN\DRG\C-105.dwg and P:\In\In.dwg

NO.	DATE	REVISIONS	BY

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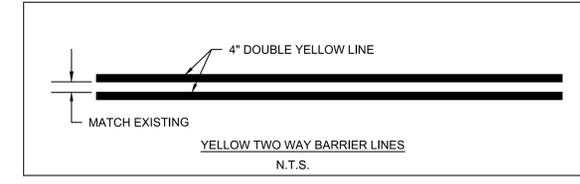
PROJECT	COSF1602
DATE	2016-09-23
DRAWING SCALE	AS NOTED
DRAWN BY	WHT
APPROVED BY	LKD



NOTE:
 CONTRACTOR RESPONSIBLE FOR LOCATING OF ALL EXISTING UTILITIES PRIOR TO EXCAVATION. LOCATIONS SHOWN PER RECORD DRAWINGS.

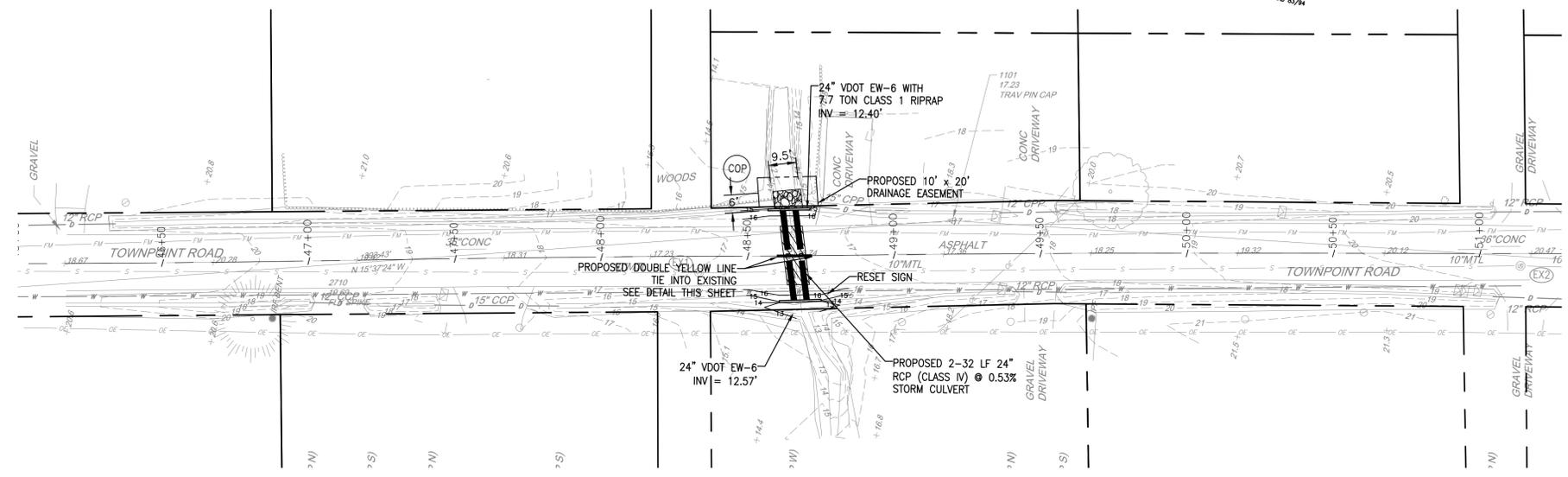
OUTLET PROTECTION SIZING:
 PER VDOT DETAIL EC-1, DETAIL 2
 LENGTH = 3H = 3(24") = 6.0'
 WIDTH = 24" + 66" + 24" = 9.5'
 THICKNESS = 24" (CLASS I RIP RAP)

TYPICAL PAVEMENT MARKING DETAILS

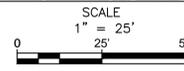


LEGEND

- PAVEMENT PATCH (MATCH EXISTING SECTION, SEE DETAIL, SHEET C-208)
- PROPOSED SHOULDER (FILL MATERIAL)

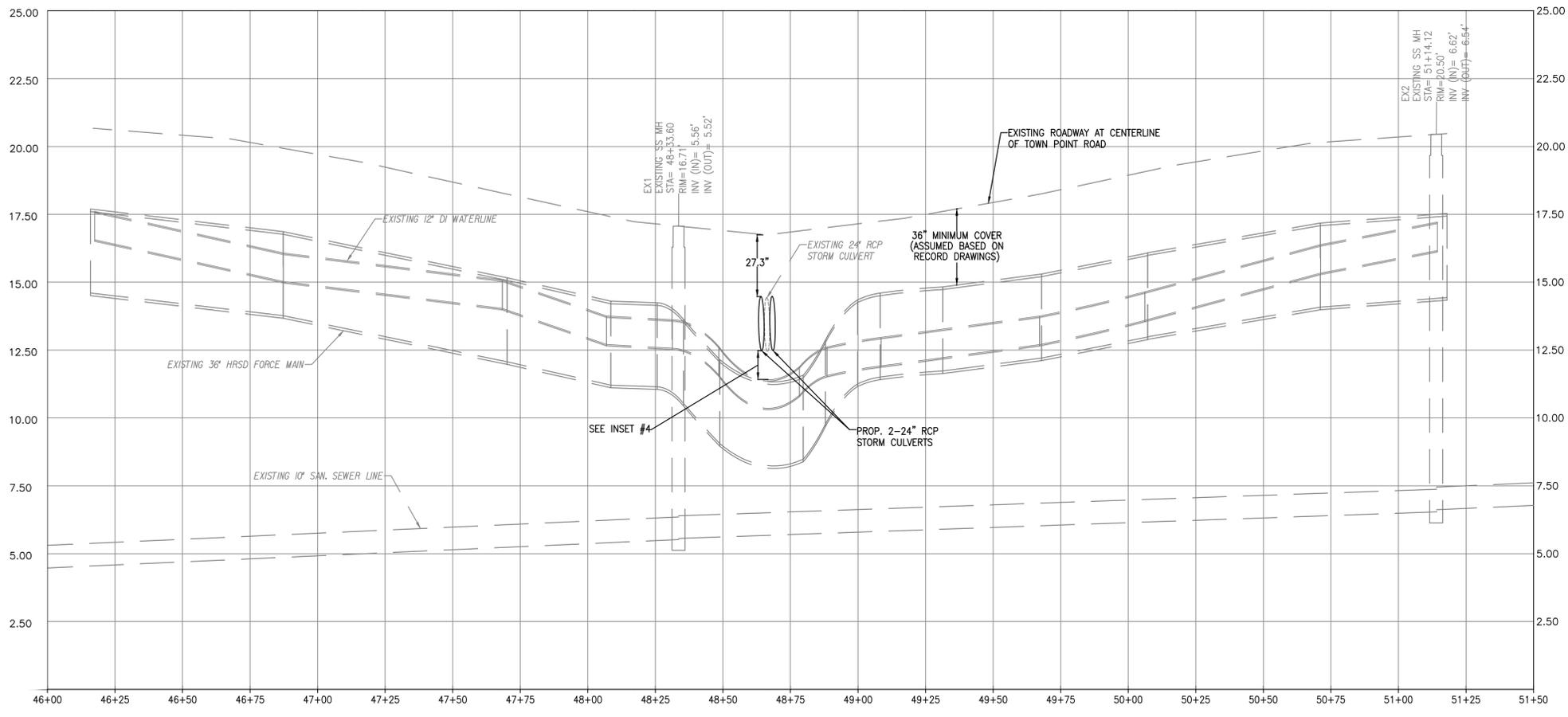


TOWNPOINT ROAD AREA 4



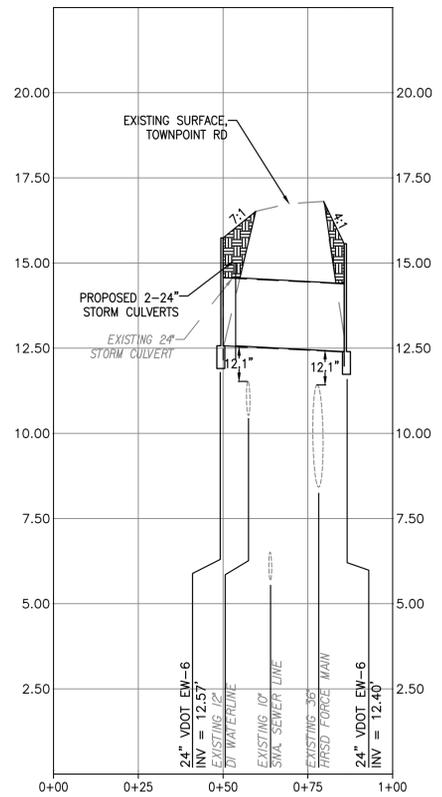
EX1 EXISTING SS MH RIM = 16.71' INV (IN) = 5.56' INV (OUT) = 5.52'

EX2 EXISTING SS MH RIM = 20.50' INV (IN) = 6.62' INV (OUT) = 6.54'



TOWNPOINT ROAD AREA 4 PROFILE

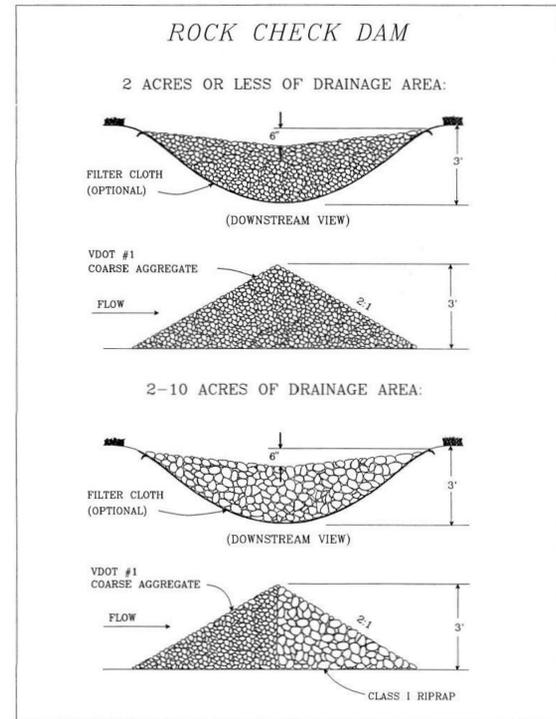
SCALE
 VERTICAL: 1"=2.5'
 HORIZONTAL: 1"=25'



STORM CULVERT CROSSING
 INSET 4

SCALE
 VERTICAL: 1"=2.5'
 HORIZONTAL: 1"=25'

PROJECT STATUS: PLOTTED: 09/20/16 10:00 AM BY: L. Smith, B. Curran
 F:\PROJECTS\COSF1602\Drawings\Phase I\RESOURCES\DRG\Sheet\C-106.dwg and P:\In\Drawings

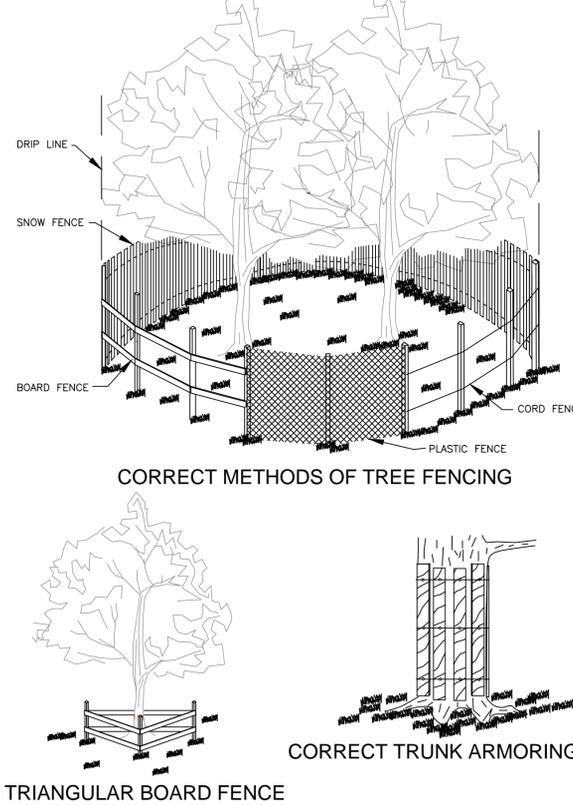


Source: Va. DSWC

Plate 3.20-1

ROCK CHECK DAM (CD)
NOT TO SCALE

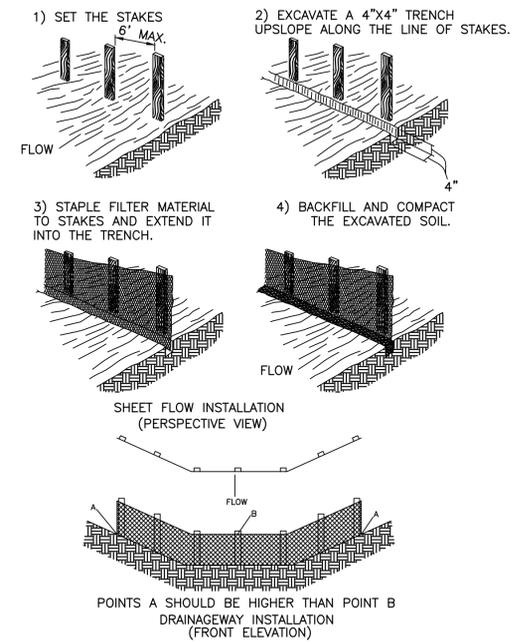
FENCING AND ARMORING



Source: Va. DSCW

Plate 3.38-2

TREE PROTECTION (TP)
NOT TO SCALE



Source: VAESCH Plate 3.02

SILT FENCE (WITHOUT WIRE SUPPORT) (SF)
NOT TO SCALE

TABLE 3.32-E (REVISED JUNE 2003)
PERMANENT SEEDING SPECIFICATIONS FOR COASTAL PLAIN AREA

LAND USE	SEED ¹	
	SPECIES	APPLICATION RATES
MINIMUM CARE LAWN (COMMERCIAL OR RESIDENTIAL)	BERMUDAGRASS - DROUGHT-TOLERANT HEAVY TRAFFIC VARIETIES	220 LBS./ACRE
1- WHEN SELECTING VARIETIES OF TURFGRASS, USE THE VIRGINIA CROP IMPROVEMENT ASSOCIATION (VICA) RECOMMENDED TURFGRASS VARIETY LIST. QUALITY SEED WILL BEAR A LABEL INDICATING THAT THEY ARE APPROVED BY VICA. A CURRENT TURFGRASS VARIETY LIST IS AVAILABLE AT THE LOCAL COUNTY EXTENSION OFFICE OR THROUGH VICA AT 804-746-4884 OR AT HTTP://WWW.SUDAN.CSES.VT.EDU/HDM/TURF/TURF/PUBLICATIONS/PUBLICATIONS2.HTML .		
FERTILIZER & LIME ● APPLY 10-20-10 FERTILIZER AT A RATE OF 1000 LBS./ACRE (OR 12 LBS./1,000 SQ. FT.) ● APPLY PULVERIZED AGRICULTURAL LIMESTONE AT A RATE OF 2 TONS/ACRE (OR 90 LBS./1,000 SQ. FT.)		
NOTE: 1. A SOIL TEST IS NECESSARY TO DETERMINE THE ACTUAL AMOUNT OF LIME REQUIRED TO ADJUST THE SOIL PH OF THE SITE. 2. INCORPORATE THE LIME AND FERTILIZER INTO THE TOP 4-6 INCHES OF THE SOIL BY DISKING OR BY OTHER MEANS. 3. WHEN APPLYING SLOWLY AVAILABLE NITROGEN, USE RATES AVAILABLE IN EROSION & SEDIMENT CONTROL TECHNICAL BULLETIN # 4 2003 NUTRIENT MANAGEMENT FOR DEVELOPMENT SITES AT HTTP://WWW.DCR.STATE.VA.US/SW/E&S.HTM#PUBS		

MULCHING
ALL PERMANENT SEEDING MUST BE MULCHED IMMEDIATELY UPON COMPLETION OF SEED APPLICATION ACCORDING TO MULCHING, STD. & SPEC. 3.35 OF THE VESC HANDBOOK.

MAINTENANCE OF NEW SEEDINGS
IN GENERAL, A STAND OF VEGETATION CANNOT BE DETERMINED TO BE FULLY ESTABLISHED UNTIL IT HAS BEEN MAINTAINED FOR ONE FULL YEAR AFTER PLANTING. NEW SEEDINGS SHOULD BE SUPPLIED WITH ADEQUATE MOISTURE, ESPECIALLY LATE IN THE SEASON, IN ABNORMALLY HOT OR DRY WEATHER, OR ON ADVERSE SITES. INSPECT SEEDING AREAS FOR FAILURE AND MAKE NECESSARY REPAIRS AND RESEEDINGS WITHIN THE SAME SEASON, IF POSSIBLE.

SEEDBED PREPARATION
SOIL SHOULD BE TESTED TO DETERMINE LIME AND FERTILIZER NEEDS. SOIL TESTS MAY BE PERFORMED BY THE COOPERATIVE EXTENSION SERVICE SOIL TESTING LABORATORY AT VPI&SU OR BY A REPUTABLE COMMERCIAL LABORATORY. SOIL CONDITIONERS AND AMENDMENTS SHALL BE ADDED TO THE SOIL AS REQUIRED IN PERMANENT SEEDING, STD. & SPEC. 3.32 OF THE VESC HANDBOOK, TO PROVIDE A GOOD GROWTH MEDIUM FOR THE PLANTS.

PERMANENT SEEDING SPECIFICATION (PS)
NOT TO SCALE

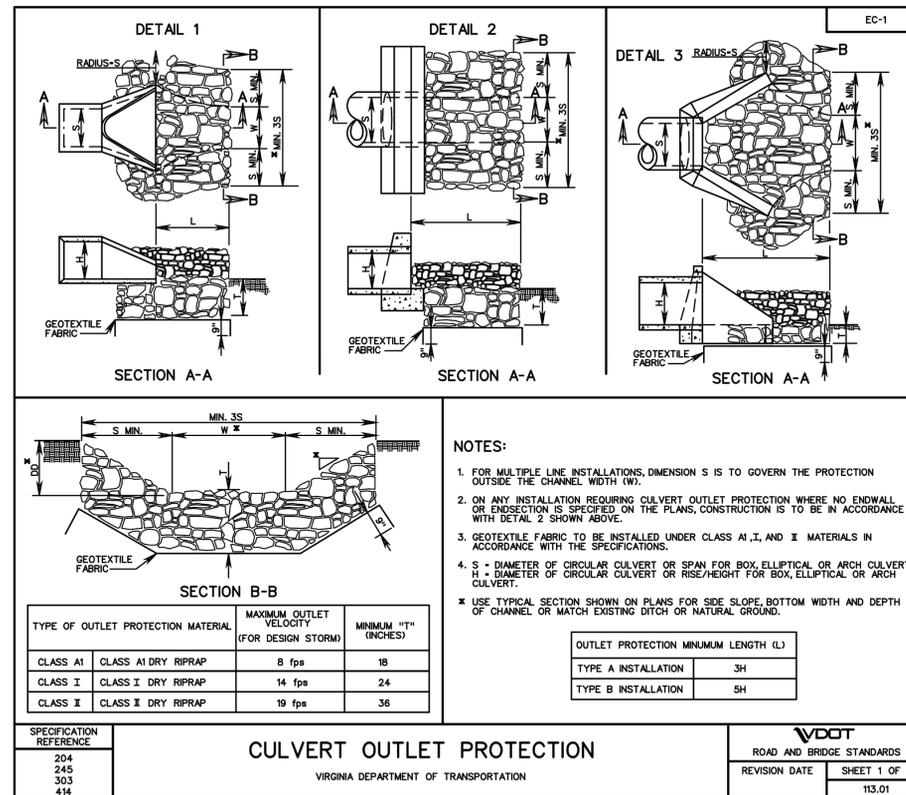
TABLE 3.31-B (Revised June 2003)
TEMPORARY SEEDING SPECIFICATIONS
QUICK REFERENCE FOR ALL REGIONS

APPLICATION DATES	SEED	
	SPECIES	APPLICATION RATES
Sept. 1 - Feb. 15	50/50 Mix of Annual Ryegrass (lolium multi-florum) & Cereal (Winter) Rye (Secale cereale)	50 - 100 (lbs/acre)
Feb. 16 - Apr. 30	Annual Ryegrass (lolium multi-florum)	60 - 100 (lbs/acre)
May 1 - Aug. 31	German Millet	50 (lbs/acre)

FERTILIZER & LIME
Apply 10-10-10 fertilizer at a rate of 450 lbs./acre (or 10 lbs./1,000 sq. ft.)
Apply Pulverized Agricultural Limestone at a rate of 2 tons/acre (or 90 lbs./1,000 sq. ft.)

NOTE:
1 - A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
2 - Incorporate the lime and fertilizer into the top 4 - 6 inches of the soil by disking or by other means.
3 - When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin # 4, 2003 Nutrient Management for Development Sites at <http://www.dcr.state.va.us/sw/e&s.htm#pubs>

TEMPORARY SEEDING SPECIFICATION (TS)
NOT TO SCALE



CULVERT OUTLET PROTECTION
VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT
ROAD AND BRIDGE STANDARDS
REVISION DATE SHEET 1 OF 1
113.01

CULVERT OUTLET PROTECTION (CP)
NOT TO SCALE

50th Pennoni
PENNONI ASSOCIATES, INC.
349 Southport Circle, Suite 100
Virginia Beach, VA 23452
T 757.497.7472 F 757.497.0250

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

COMMONWEALTH OF VIRGINIA
HEATHER MARIE HAM
Lic. No. 034564
09/23/2016
PROFESSIONAL ENGINEER

PUGHVILLE DRAINAGE IMPROVEMENTS, PHASE I
SUFFOLK, VA
EROSION CONTROL DETAILS
CITY OF SUFFOLK
442 W. WASHINGTON STREET
SUFFOLK, VA 23434

NO.	DATE	REVISIONS	BY

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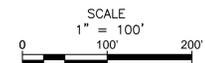
PROJECT COSF1602
DATE 2016-09-23
DRAWING SCALE AS NOTED
DRAWN BY WHT
APPROVED BY LKD
C-202
SHEET 12 OF 18

N:\PROJECTS\COSF1602-Pughsville Drainage Phase I\DESIGN\CS\SHETS\13-C203-1602-Drainage Area.dwg PLOTTED: 9/23/2016 1:54 PM BY: L. Keith B. Darrow PROJECT STATUS: ---



AREA 1
 A = 20.05 AC
 C = 0.37
 Tc = 42.2 min.

AREA 2
 A = 14.35 AC
 C = 0.50
 Tc = 39.3 min.



ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

PUGHVILLE DRAINAGE IMPROVEMENTS, PHASE I
 SUFFOLK, VA
 DRAINAGE AREA MAP

NO.	DATE	REVISIONS	BY

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PROJECT	COSF1602
DATE	2016-09-23
DRAWING SCALE	1" = 100'
DRAWN BY	WHT
APPROVED BY	LKD

PENNONI ASSOCIATES, INC.
 349 Southport Circle, Suite 100
 Virginia Beach, VA 23452
 T 757.497.7472 F 757.497.0250

HEATHER MARIE HAM
 Lic. No. 034564
 09/23/2016
 PROFESSIONAL ENGINEER

CITY OF SUFFOLK
 442 W. WASHINGTON STREET
 SUFFOLK, VA 23434

N:\PROJECTS\COSF1602-Pughsville Drainage Phase I\DESIGN\CS\SHEETS\14-C204-1602-Drainage Area.dwg PLOTTED: 9/23/2016 1:54 PM BY: L. Keith B. Darrow PROJECT STATUS: ---



SCALE
1" = 100'
0 100 200'

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

PUGHSVILLE DRAINAGE IMPROVEMENTS, PHASE I
SUFFOLK, VA
DRAINAGE AREA MAP

NO.	DATE	REVISIONS	BY

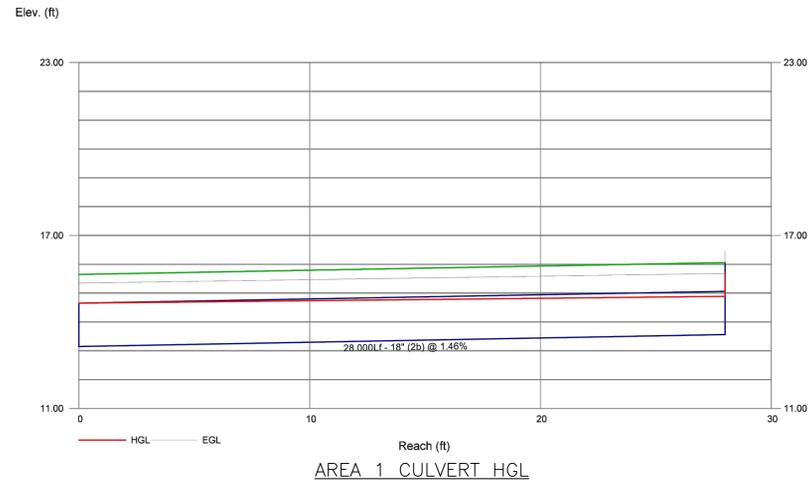
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PROJECT	COSF1602
DATE	2016-09-23
DRAWING SCALE	1" = 100'
DRAWN BY	WHT
APPROVED BY	LKD

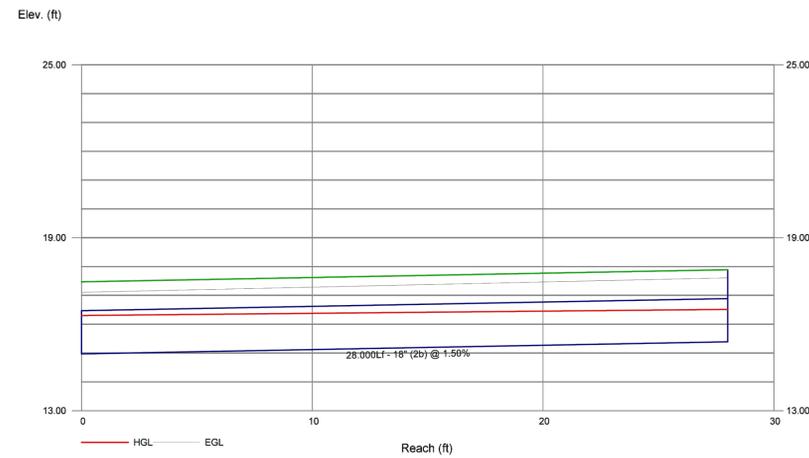
PENNONI ASSOCIATES, INC.
349 Southport Circle, Suite 100
Virginia Beach, VA 23452
T 757.497.7472 F 757.497.0250

HEATHER MARIE HAM
Lic. No. 034564
09/23/2016
PROFESSIONAL ENGINEER

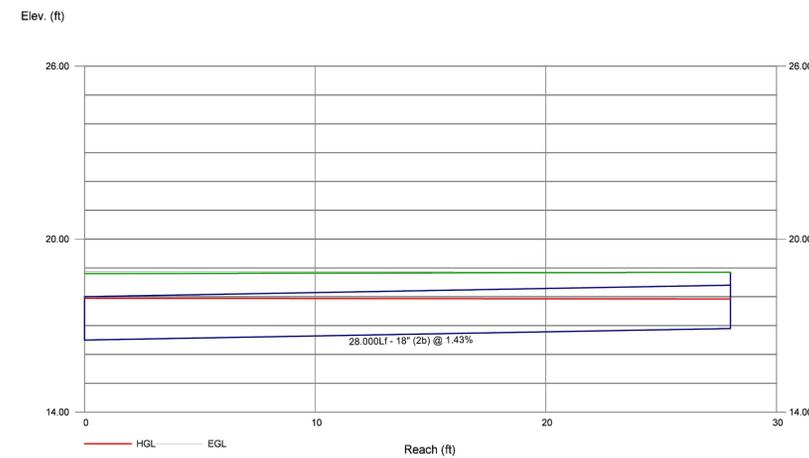
CITY OF SUFFOLK
442 W. WASHINGTON STREET
SUFFOLK, VA 23434



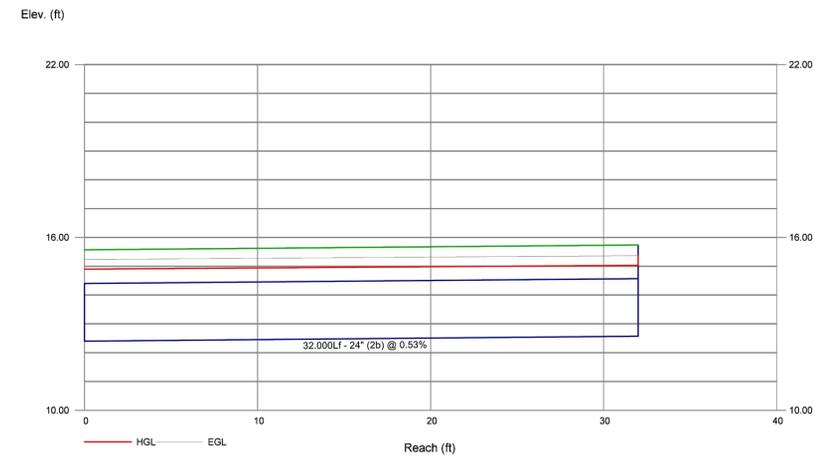
AREA 1 CULVERT HGL



AREA 2 CULVERT HGL



AREA 3 CULVERT HGL



AREA 4 CULVERT HGL

Storm Sewer Tabulation

Station	Line	To Line	Drng Area			Rnoff coeff	Area x C		Tc		Rain (l)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
			Len (ft)	Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End		28.000	20.05	20.05	0.37	7.42	7.42	42.2	42.2	3.2	23.64	25.41	6.91	18(2b)	1.46	13.15	13.56	14.85	14.89	15.65	16.06	Pipe - (71)
2	End		28.000	14.35	14.35	0.50	7.18	7.18	39.3	39.3	3.3	23.84	25.72	7.80	18(2b)	1.50	14.97	15.39	16.30	16.51	17.47	17.89	Pipe - (70)
3	End		28.000	11.37	11.37	0.51	5.80	5.80	37.4	37.4	3.4	19.83	25.10	6.69	18(2b)	1.43	16.50	16.90	17.95	17.92	18.80	18.85	Pipe - (69)
4	End		32.000	14.36	14.36	0.51	7.32	7.32	28.5	28.5	4.0	29.20	32.97	4.65	24(2b)	0.53	12.40	12.57	14.90	15.03	15.57	15.74	Pipe - (68)

Project File: Pughsville Crossing Culverts.stm

Number of lines: 4

Run Date: 9/22/2016

NOTES: Intensity = 54.21 / (Inlet time + 9.02) ^ 0.72 ; Return period = Yrs. 10 ; c = cir e = ellip b = box

Storm Sewers v10.40

10 YEAR STORM EVENT



PENNONI ASSOCIATES, INC.
349 Southport Circle, Suite 100
Virginia Beach, VA 23452
T 757.497.7472 F 757.497.0250

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PUGHSVILLE DRAINAGE IMPROVEMENTS, PHASE I
SUFFOLK, VA
DRAINAGE CALCULATIONS (10 YEAR)
CITY OF SUFFOLK
442 W. WASHINGTON STREET
SUFFOLK, VA 23434

NO.	DATE	REVISIONS	BY

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PROJECT: COSF1602
DATE: 2016-09-23
DRAWING SCALE: AS NOTED
DRAWN BY: WHT
APPROVED BY: LKD

C-205
SHEET 15 OF 18

N:\PROJECTS\COSF1602-Pughsville Drainage Phase I\DESIGN\CSHETS\15-C205-1602-Drainage Calculations.dwg PLOTTED: 9/22/2016 2:00 PM BY: L. Keith B. Darrow PROJECT STATUS: --- PLOT STYLE: Pennoni NCS.ctb

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-56 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 6F).

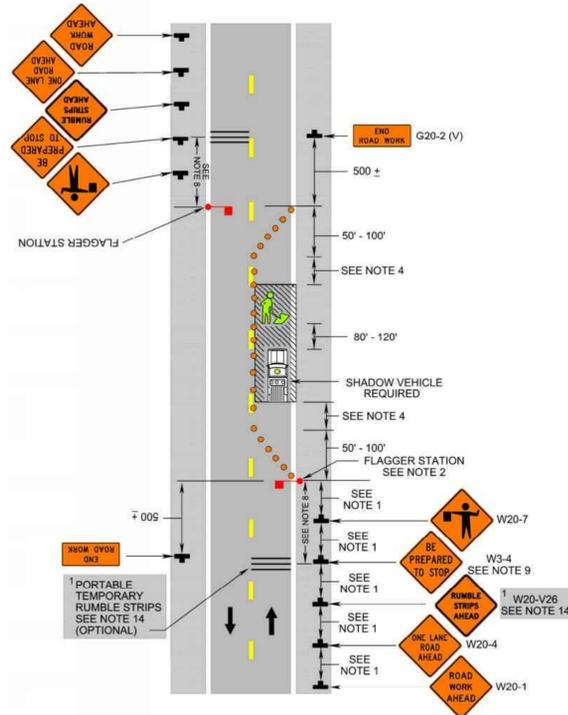
Standard:

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)



1: Revision 1 - 4/1/2015

TTC-23.1

Typical Traffic Control
Lane Closure Operation in an Intersection
(Figure TTC-28.1)

NOTES

Guidance:

1. The control of traffic through the intersection in order of preference should be:
 - a. Obtain the services of law enforcement personnel.
 - b. Detour the effective routes to other roads and streets as approved and directed by the Regional Traffic Engineer.
 - c. Place a state certified flagger on each leg of the intersection controlling a single lane of traffic.

Standard:

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

Standard:

3. Channelizing device spacing shall be on 20' centers or less.

Guidance:

4. If room permits, a shadow vehicle with at least one rotating amber light or high intensity amber flashing or oscillating light should be parked 80'-120' in advance of the first work crew.

Standard:

5. For emergency situations (any non-planned operation) of 30 minutes or less duration, two rotating amber lights or high intensity amber flashing or oscillating lights mounted on the vehicle and visible for 360° shall be required in addition to the channelizing devices shown around the vehicle. Also, vehicle hazard warning signals shall be used.

Guidance:

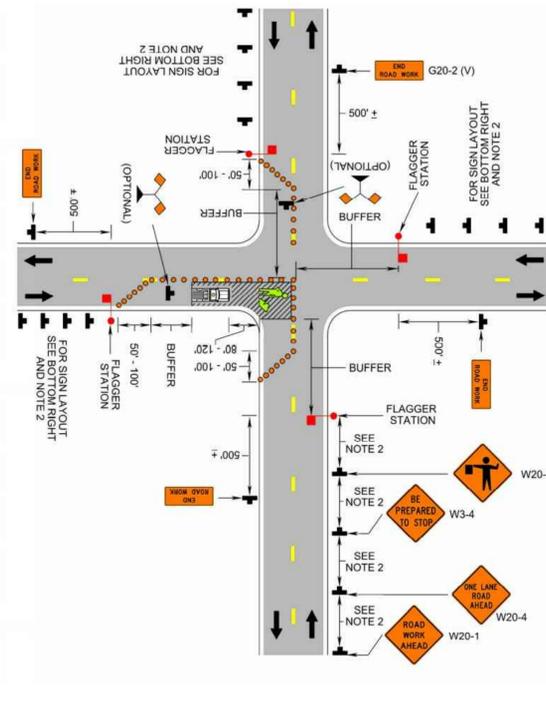
6. If the work space extends across a crosswalk, the crosswalk should be closed using the information and devices shown in Figure TTC-36.

Support:

7. Turns can be prohibited as required by vehicular traffic conditions. Unless the streets are wide, it might be physically impossible to make certain turns, especially for large vehicles.

1: Revision 1 - 4/1/2015

Lane Closure Operation in an Intersection
(Figure TTC-28.1)



TTC-28.1

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.

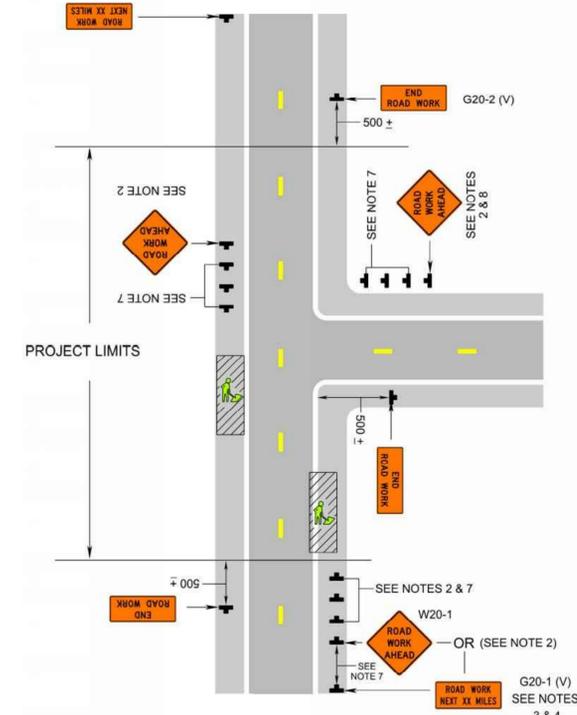
Standard:

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 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.
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)



TTC-53.0

N:\PROJECTS\COSF1602\Pughsville Drainage Phase I\DESIGN\CSHETS\17-C207-1602-MOT Details.dwg PLOTTED: 09/21/2016 4:24 PM, BY: L. Keith B. Darrow PROJECT STATUS: ---



TOWNPOINT ROAD
PUGHVILLE DRAINAGE IMPROVEMENTS, PHASE I
SUFFOLK, VA
MAINTENANCE OF TRAFFIC DETAILS
CITY OF SUFFOLK
442 W. WASHINGTON STREET
SUFFOLK, VA 23434

NO.	DATE	REVISIONS	BY

ALL DOCUMENTS PREPARED BY PENNONI ASSOCIATES ARE INSTRUMENTS OF SERVICE IN RESPECT OF THE PROJECT. THEY ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY OWNER OR OTHERS ON THE EXTENSIONS OF THE PROJECT OR ON ANY OTHER PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY PENNONI ASSOCIATES FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT OWNERS SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO PENNONI ASSOCIATES. OWNER SHALL INDEMNIFY AND HOLD HARMLESS PENNONI ASSOCIATES FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.

PROJECT	COSF1602
DATE	2016-09-23
DRAWING SCALE	AS NOTED
DRAWN BY	LKD
APPROVED BY	CLA

PB-1

GENERAL

- METHOD "A" PIPE BEDDING SHALL BE USED FOR ALL TYPES OF PIPE CULVERTS WITHIN THE APPLICABLE HEIGHT OF COVER RANGE NOTED IN THE STANDARD PG-1 TABLES UNLESS OTHERWISE NOTED ON THE PLANS.
- H = HEIGHT OF COVER MEASURED FROM TOP OF CULVERT TO FINISHED GRADE.
- b = EXCAVATION DEPTH AS SHOWN ON PLANS OR TO FIRM BEARING SOIL.

CIRCULAR PIPE

- D = OUTSIDE DIAMETER OF PIPE.
- d = INSIDE DIAMETER OF PIPE.
- X = WIDTH OF CLASS I BACKFILL MATERIAL BEYOND THE EXTREMITY OF THE PIPE.
X = 12" WHERE S₂ IS LESS THAN 30°
X = 18" WHERE S₂ IS 30° AND GREATER
- WHERE DIRECTED BY THE ENGINEER, BEDDING MATERIAL MAY BE ELIMINATED FOR NORMAL EARTH FOUNDATIONS UNDER ROUTINE ENTRANCE PIPE (EXCEPT PLASTIC PIPE) 30" AND LESS IN DIAMETER WITH HEIGHT OF COVER 15' OR LESS.
- REGULAR BACKFILL MATERIAL MAY BE USED IN LIEU OF CLASS I BACKFILL MATERIAL FOR ALL FOUNDATION TYPES FOR ROUTINE ENTRANCE PIPE (EXCEPT PLASTIC PIPE) 30" AND LESS IN DIAMETER WITH HEIGHT OF COVER 15' OR LESS.
- BEDDING MATERIAL AND CLASS I BACKFILL MATERIAL MAY BE ELIMINATED FOR SHOULDER SLOT INLET (0-13) OUTLET PIPES INSTALLATIONS.

ELLIPTICAL PIPE

- S₁ = OUTSIDE SPAN DIMENSION OF PIPE.
- S₂ = INSIDE SPAN DIMENSION OF PIPE.
- R = OUTSIDE RISE DIMENSION OF PIPE.
- X = WIDTH OF CLASS I BACKFILL MATERIAL BEYOND THE EXTREMITY OF THE PIPE.
X = 12" WHERE S₂ IS LESS THAN 30°
X = 18" WHERE S₂ IS 30° AND GREATER
- WHERE DIRECTED BY THE ENGINEER, BEDDING MATERIAL MAY BE ELIMINATED FOR NORMAL EARTH FOUNDATIONS UNDER ROUTINE ENTRANCE PIPE WHERE S₂ IS 30° OR LESS AND HEIGHT OF COVER 15' OR LESS.
- REGULAR BACKFILL MATERIAL MAY BE USED IN LIEU OF CLASS I BACKFILL MATERIAL FOR ALL FOUNDATION TYPES FOR ROUTINE ENTRANCE PIPE WHERE S₂ IS 30° OR LESS AND HEIGHT OF COVER 15' OR LESS.

PIPE ARCH

- S = SPAN DIMENSION OF PIPE.
- R = RISE DIMENSION OF PIPE.
- X = SEE PG-1 TABLE FOR APPLICABLE PIPE MATERIAL.
- X = WIDTH OF CLASS I BACKFILL MATERIAL BEYOND THE EXTREMITY OF THE PIPE.
X = 12" WHERE S₂ IS LESS THAN 30°
X = 18" WHERE S₂ IS 30° AND GREATER
- WHERE DIRECTED BY THE ENGINEER, BEDDING MATERIAL MAY BE ELIMINATED FOR NORMAL EARTH FOUNDATIONS UNDER ROUTINE ENTRANCE PIPE WHERE S₂ IS 35° OR LESS AND HEIGHT OF COVER 15' OR LESS.
- REGULAR BACKFILL MATERIAL MAY BE USED IN LIEU OF CLASS I BACKFILL MATERIAL FOR ALL FOUNDATION TYPES FOR ROUTINE ENTRANCE PIPE WHERE S₂ IS 35° OR LESS AND HEIGHT OF COVER 15' OR LESS.

**INSTALLATION OF PIPE CULVERTS AND STORM SEWERS
GENERAL NOTES**

NEW 1/04	SPECIFICATION REFERENCE	302
107.00		303

VIRGINIA DEPARTMENT OF TRANSPORTATION

PB-1

NO PROJECTION OF PIPE ABOVE GROUND LINE

PIPE PROJECTION ABOVE GROUND LINE

LEGEND:

- BEDDING MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.
- CLASS I BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.
- REGULAR BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.
- EMBANKMENT

NOTES:

FOR PLASTIC PIPE, THE LIMITS OF THE CLASS I BACKFILL MATERIAL SHALL BE EXTENDED TO 12" ABOVE THE TOP OF THE PIPE.

FOR GENERAL NOTES ON PIPE BEDDING, SEE INSTALLATION OF PIPE CULVERTS AND STORM SEWERS GENERAL NOTES ON SHEET 107.00.

CRUSHED GLASS CONFORMING TO THE SIZE REQUIREMENTS FOR CRUSHER RUN AGGREGATE SIZE 25 AND 26 MAY BE USED IN PLACE OF CLASS I BACKFILL.

**INSTALLATION OF PIPE CULVERTS AND STORM SEWERS
CIRCULAR PIPE BEDDING AND BACKFILL - METHOD "A"**

SPECIFICATION REFERENCE	302	303
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VIRGINIA DEPARTMENT OF TRANSPORTATION

REV. 8/07
107.01

SHEET 1 OF 4

DATE: April 25, 2007

CONTRACTOR TO VERIFY EXISTING ROADWAY SECTION AND INSTALL PAVEMENT PATCH TO MATCH EXISTING SECTION

NOTES:

- BACKFILL TO BE PLACED AND COMPACTED ACCORDING TO VDOT ROAD & BRIDGE SPECIFICATIONS SECT'S 302&303.
- BACKFILL MATERIAL PER VDOT SPECIFICATIONS.
- CERTIFICATION OF COMPACTION MUST BE SUBMITTED FROM A GEOTECHNICAL ENGINEERING FIRM.

**PAVEMENT PATCHING DETAIL
FOR FLEXIBLE PAVEMENT**

SCALE: NTS SHEET 1 OF 1

EW-6

NOTES:

- IN NO CASE SHALL TOP OF ENDWALL PROJECT ABOVE FILL SLOPE, DITCH SLOPE, OR SHOULDER.
- THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
- ALL CAST IN PLACE CONCRETE TO BE CLASS A3. FOR PRECAST SEE SHEET 101.12.
- THIS STANDARD TO BE USED WITH STRAIGHT CROSSINGS AND SKEW ANGLES TO 15°.
- HEADWALL TO BE BEVELED IN ALL AREAS EXCEPT WHERE A CONFLICT WITH INVERT OR WINGWALLS OCCUR.
- BEVEL EDGE IS REQUIRED ON THE HEADWALL AT THE INLET END OF THE CULVERT (WHERE THE FLOW ENTERS THE CULVERT).
- HEADWALL AT THE OUTLET END OF THE CULVERT MAY BE EITHER SQUARE EDGE OR BEVEL EDGE.
- ON SHALLOW FILLS, WHERE ENDWALLS ARE 1' OR LESS BELOW SHOULDER LINE, THE TOP OF THE ENDWALL SHALL BE CONSTRUCTED PARALLEL TO THE GRADE OF THE ROAD.
- 3/4" CHAMFER MAY BE PROVIDED ON ALL EDGES AT MANUFACTURER'S OPTION.
- QUANTITIES GIVEN ARE FOR ONE ENDWALL. PLEASE REFER TO STANDARD EW-1 SHEET 101.01 FOR ALL DIMENSIONS NOT GIVEN IN TABLES.

FOR CONCRETE PIPE							FOR CORRUGATED METAL PIPE								
D	S	G	L	CUBIC YARDS CONCRETE ONE DOUBLE ENDWALL	INCREASE FOR EACH ADDITIONAL PIPE	a	b	D	S	G	L	CUBIC YARDS CONCRETE ONE DOUBLE ENDWALL	INCREASE FOR EACH ADDITIONAL PIPE	a	b
12"	1'-10"	2'-0"	5'-10"	0.329	0.088	0'-11/4"	0'-1"	12"	1'-7"	2'-0"	5'-7"	0.344	0.087	0'-11/4"	0'-1"
15"	2'-3"	2'-6"	7'-3"	0.671	0.179	0'-11/4"	0'-11/4"	15"	1'-11/2"	2'-6"	6'-11/2"	0.696	0.175	0'-11/4"	0'-11/4"
18"	2'-8"	3'-0"	8'-8"	0.941	0.244	0'-2"	0'-11/2"	18"	2'-4"	3'-0"	8'-4"	0.980	0.241	0'-2"	0'-11/2"
21" OR 24"	3'-6"	4'-0"	11'-6"	1.763	0.444	0'-2 1/2"	0'-2"	24"	3'-1"	4'-0"	11'-1"	1.840	0.442	0'-2 1/2"	0'-2"
27" OR 30"	4'-4"	5'-0"	14'-4"	2.730	0.663	0'-3 1/4"	0'-2 1/2"	27" OR 30"	3'-10"	5'-0"	13'-10"	2.868	0.670	0'-3 1/4"	0'-2 1/2"
33" OR 36"	5'-2"	6'-0"	17'-2"	3.854	0.907	0'-3 3/4"	0'-3"	36"	4'-7"	6'-0"	16'-7"	4.076	0.931	0'-3 3/4"	0'-3"

**STANDARD ENDWALL FOR MULTIPLE PIPE CULVERTS
12" - 36" CIRCULAR PIPES**

VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT ROAD AND BRIDGE STANDARDS
REVISION DATE SHEET 1 OF 1
101.11

**SPECIAL PROTECTIVE BEDDING DETAIL
FOR WATER AND SEWER MAINS**

NOT TO SCALE

PROJECT STATUS: —
 PLOTTED: 9/25/2015 2:35 PM BY: L. Keith B. Darrow
 PLOT STYLE: Pennoni NCS.ctb
 N:\PROJECTS\COSF1602\Pughsville Drainage Phase I\DESIGN\NCS\SHEETS\18-C208-1602-Drainage Details.dwg

Pennoni

PENNONI ASSOCIATES, INC.
349 Southport Circle, Suite 100
Virginia Beach, VA 23452
T 757.497.7472 F 757.497.0250

HEATHER MARIE HAM
Lic. No. 034564
09/23/2016
PROFESSIONAL ENGINEER

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

**PUGHVILLE DRAINAGE IMPROVEMENTS, PHASE I
SUFFOLK, VA**

DRAINAGE DETAILS

CITY OF SUFFOLK
442 W. WASHINGTON STREET
SUFFOLK, VA 23434

NO.	DATE	REVISIONS	BY

PROJECT: COSF1602
DATE: 2016-09-23
DRAWING SCALE: AS NOTED
DRAWN BY: WHT
APPROVED BY: LKD

C-208
SHEET 18 OF 18