100% DESIGN DRAWINGS

* * *

JEFFERSON PARK DRAINAGE IMPROVEMENTS

* * *

CITY OF LYNCHBURG, VIRGINIA
CITY PROJECT NO. RWS1509-0003

DESIGNER CERTIFICATION STATEMENT

I HEREBY CERTIFY THAT, TO THE BEST OF MY ABILITY, THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE LATEST CITY OF LYNCHBURG MANUAL OF SPECIFICATIONS AND STANDARD DETAILS AND CITY CODE.

Carolyn A. Howard
SIGNATURE

CAROLYN A. HOWARD, P.E. / PROJECT MANAGER
PRINTED NAME & TITLE

DATE: 4/19/2016 REGISTRATION NUMBER: 42775

OWNER CERTIFICATION STATEMENT

I HEREBY CERTIFY THAT ALL SITE CONSTRUCTION, DRAINAGE AND GRADING WILL BE DONE PURSUANT TO THIS PLAN AND THAT THE APPLICABLE STORMWATER MANAGEMENT CONDITIONS AND REQUIREMENTS OF THE CITY OF LYNCHBURG, THE COMMONWEALTH OF VIRGINIA AND THE FEDERAL GOVERNMENT AND ITS AGENCIES ARE HEREBY MADE PART OF THIS PLAN.

SIGNATURE

PRINTED NAME & TITLE DATE

STORMWATER BMP SUMMARY

TYPE: GRASS CHANNEL – VA DEQ SPECIFICATION NO. 3

LOCATION: N 3676054.9165', E 11290003.9516' (SCC-4)

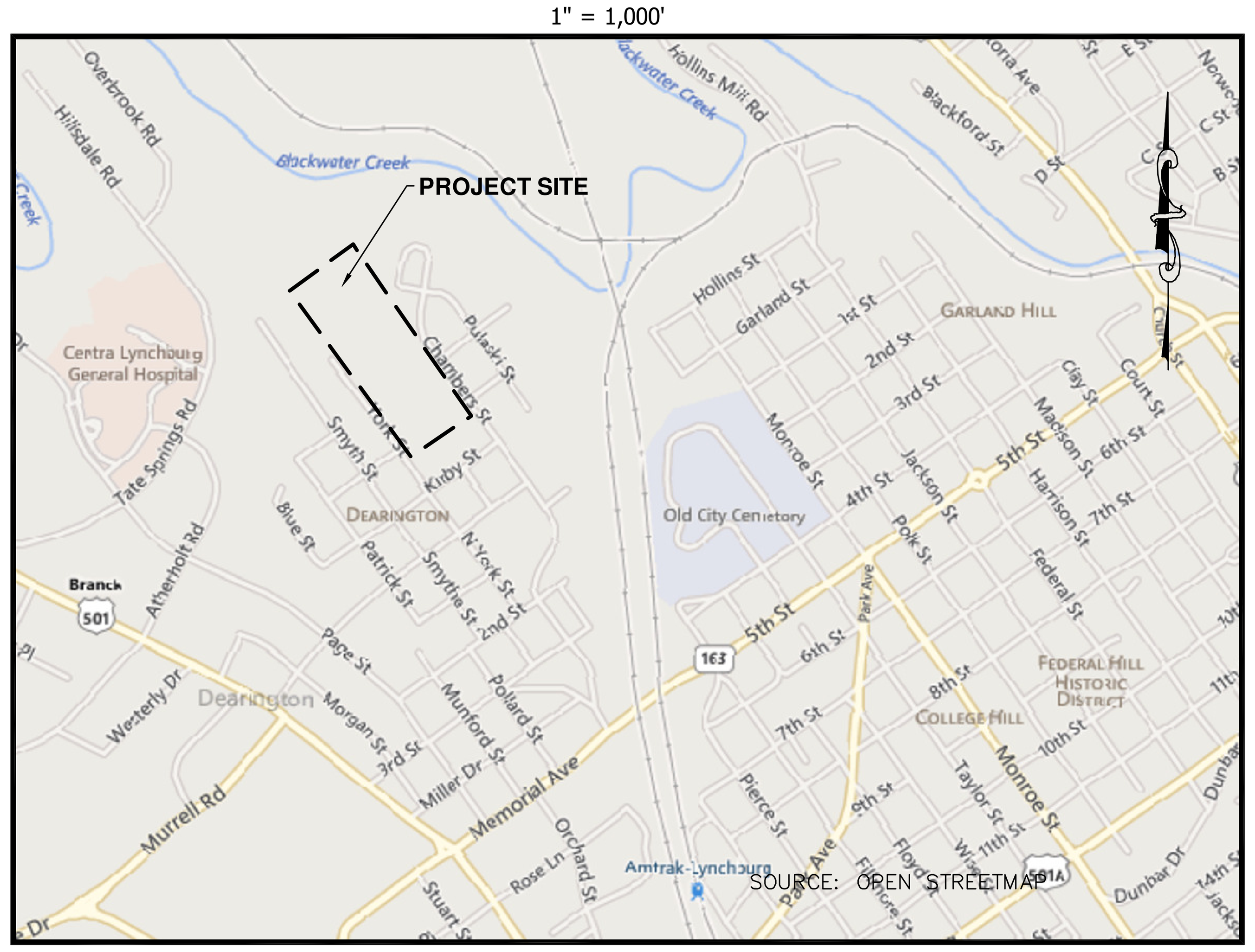
ACRES TREATED: 4.93 (2.62 IMPERVIOUS, 2.31 TURF)

VAHU6: JM10 (BLACKWATER CREEK)

ACTIVATION DATE: TO BE DETERMINED

VICINITY MAP

1" = 1,000'



PROJECT DESCRIPTION

THE OBJECTIVE OF THIS PROJECT IS TO MITIGATE EROSION AND EXPOSURE OF LANDFILL WASTE AS A RESULT OF CONCENTRATED STORMWATER RUNOFF. THE PROJECT INCLUDES THE CONSTRUCTION OF SWALES , FILLING OF THE EXISTING ERODED SLOPE AND INSTALLATION OF STORM SEWER TO MANAGE RUNOFF FROM THE SURROUNDING NEIGHBORHOODS.

DRAPER ADEN ASSOCIATES REVIEW

THESE PLANS HAVE BEEN SUBJECTED TO TECHNICAL AND QUALITY REVIEWS BY:

NAME		SIGNATURE	DATE
MATTHEW B. JAMES, P.E.	PROJECT DESIGNER	Matthew James	4/19/2016
CAROLYN A. HOWARD, P.E.	PROJECT MANAGER	Carolyn A. Howard	4/19/2016
LINDSAY B. LALLY, P.E.	QUALITY REVIEWER	Lindsay B. Lally	4/19/2016

APRIL 19, 2016

* * * *

B14111B-05

NOTE: CONTRACTOR TO CONTACT MISS UTILITY (811) AND CITY CONSTRUCTION COORDINATOR 48 HOURS IN ADVANCE OF ANY PLANNED CONSTRUCTION ACTIVITY. (www.missutilityofvirginia.com).

ALWAYS CALL "MISS UTILITY" BEFORE YOU DIG! KEEP VIRGINIA SAFE!

Sheet List Table

CITY APPROVALS

CITY ENGINEER DATE

TECHNICAL REVIEW COMMITTEE DATE

ESC PLAN APPROVAL DATE

SITE SUMMARY

OWNER: CITY OF LYNCHBURG
ADDRESS: 900 CHURCH STREET
LYNCHBURG, VA 24504

CONTACT: GAYNELLE HART, DIRECTOR OF PUBLIC WORKS
TELEPHONE NO: 434-455-4406
EMAIL: GAYNELLE.HART@LYNCHBURGVA.GOV

LOCATION: JEFFERSON PARK; N3676289, E11289659'

LIMITS OF DISTURBANCE: 3.6 ACRES

DESIGNER: DRAPER ADEN ASSOCIATES
ADDRESS: 2206 S. MAIN STREET
BLACKSBURG, VA 24060

CONTACT: CAROLYN A. HOWARD, P.E.
TELEPHONE NO: 540-552-0444
EMAIL: CHOWARD@DAA.COM

ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH CITY OF LYNCHBURG MANUAL OF SPECIFICATIONS AND STANDARD DETAILS

COMMONWEALTH OF VIRGINIA
CAROLYN A. HOWARD
Lic. No. 042775
04/19/16
PROFESSIONAL ENGINEER

Draper Aden Associates
Engineering • Surveying • Environmental Services
Blacksburg, VA
2206 South Main Street
Blacksburg, VA 24060
540-552-0444 Fax: 540-552-0291
www.daa.com
Richmond, VA
Charlottesville, VA
Hampton Roads, VA

COVER
JEFFERSON PARK DRAINAGE IMPROVEMENTS
LYNCHBURG, VIRGINIA
CITY PROJECT NO. ME 016

REVISIONS

DESIGNED BY: MBJ
DRAWN BY: CEP
CHECKED BY: CAH
SCALE: NO SCALE
DATE: 4/19/2016
PROJECT NUMBER: B14111B-05

C001

STATE MINIMUM STANDARDS FOR EROSION CONTROL

AN EROSION AND SEDIMENT CONTROL PROGRAM ADOPTED BY A DISTRICT OR LOCALITY MUST BE CONSISTENT WITH THE FOLLOWING CRITERIA, TECHNIQUES AND METHODS:

MS–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 (UNDISTURBED) FOR LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.

MS–2 DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.

MS–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, IN THE OPINION OF THE DIVISION OF SOIL AND WATER CONSERVATION OF THE DEPARTMENT OF CONSERVATION AND RECREATION, IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.

MS–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.

MS–5 STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.

MS–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 THAT THREE ACRES.

B. THE 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 TWENTY–FIVE YEAR STORM OF 24–HOUR DURATION. RUNOFF COEFFICIENTS USED IN RUNOFF CALCULATIONS SHALL CORRESPOND TO A BARE EARTH CONDITION OR THOSE CONDITIONS EXPECTED TO EXIST WHILE THE SEDIMENT BASIN IS UTILIZED.

MS–7 CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM IS CORRECTED.

MS–8 CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.

MS–9 WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.

MS–10 ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT–LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.

MS–11 BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS OR PIPES ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.

MS–12 WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.

MS–13 WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX–MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL SHALL BE PROVIDED.

MS–14 ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.

MS–15 THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED INNEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.

MS–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 THESE REQULATIONS.

F. APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.

MS–17 WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED 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 PUBLIC ROAD SURFACE, THE ROAD 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 SUBDIVISION LOTS AS WELL AS TO LARGER LAND–DISTURBING ACTIVITIES.

MS–18 ALL TEMPORARY EROSION 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 ADMINISTRATOR. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.

MS–19 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; AND

(C) PIPES AND STORM SEWER SYSTEMS SHALL BE ANALYZED BY THE USE OF A TEN–YEAR STORM TO VERIFY THAT STORMWATER WILL BE CONTAINED WITHIN THE PIPE OR SYSTEM.

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.

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.

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.

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.

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 9VAC25–870–66 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) PERMIT REGULATIONS.

N. COMPLIANCE WITH THE WATER QUANTITY MINIMUM STANDARDS SET OUT IN 9VAC50–60–66 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) PERMIT REGULATIONS SHALL BE DEEMED TO SATISFY THE REQUIREMENTS OF MINIMUM STANDARD 19.

GENERAL EROSION AND SEDIMENT CONTROL 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 (VESCH) AND VIRGINIA REGULATIONS 9VAC–25–840 EROSION AND SEDIMENT CONTROL REGULATIONS. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

ES–2 THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE–CONSTRUCTION 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, GRADING OR LAND–DISTURBING AND SEQUENCE OF CONSTRUCTION APPROVED.

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 LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS OR OFF–SITE FILL ACTIVITIES, THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND FOR 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 SITE GRADING IS TO DRAIN TO THE PERIMETER CONTROLS AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING CONSTRUCTION, 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 (AT LEAST DAILY) 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.

GENERAL SITE NOTES:

1. GENERAL SITE INFORMATION:

   A. TOPOGRAPHIC SURVEY PERFORMED BY DRAPER ADEN ASSOCIATES DURING THE WEEK OF APRIL 6, 2015. REFER TO EXISTING CONDITIONS SHEETS FOR ADDITIONAL SURVEY NOTES.

2. SITE CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING GENERAL REQUIREMENTS:

   A. FIELD LAYOUT SHALL BE BASED ON THE DIMENSIONS SHOWN ON THE DRAWINGS. DIMENSIONS ARE FROM INSIDE BOTTOM FACE OF CURB, UNLESS NOTED OTHERWISE.

   B. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REQUIREMENTS, COMMONWEALTH OF VIRGINIA CONSTRUCTION & PROFESSIONAL SERVICES MANUAL, LATEST VERSION, AND THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS, LATEST EDITION. IN PARTICULAR, THE CONTRACTOR SHALL COMPLY WITH ALL PERMITTING REQUIREMENTS ESTABLISHED BY THE CITY OF LYNCHBURG, VDEQ, AND THE USACOE.

   C. NOTHING ON THESE CONTRACT DRAWINGS SHALL BE CONSTRUED AS A GUARANTEE THAT UTILITIES INDICATED AS EXISTING ARE IN THE LOCATION INDICATED OR THAT THEY ACTUALLY EXIST, OR THAT OTHER EXISTING UTILITIES ARE NOT WITHIN THE AREA OF OPERATIONS. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL MAKE ALL NECESSARY INVESTIGATIONS TO DETERMINE THE EXISTENCE, LOCATIONS, AND ELEVATIONS OF EXISTING UTILITIES IN THE WORK AREA. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE PROTECTION OF EXISTING UTILITIES AND STRUCTURES WITHIN THE CONSTRUCTION ZONE. DAMAGE TO STRUCTURES, UTILITIES, AND EQUIPMENT TO REMAIN SHALL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE, IN ACCORDANCE WITH THE STATE AND LOCAL REQUIREMENTS, THE OWNER'S REPRESENTATIVE, AND THE AUTHORITIES HAVING JURISDICTION. CONTRACTOR SHALL CONTACT MISS UTILITY AT 811, AT LEAST THREE WORKING DAYS PRIOR TO ANY EARTH MOVING OR DIGGING ACTIVITIES.

   D. CONTRACTOR SHALL OBTAIN ADVANCE APPROVAL FROM THE CITY OF LYNCHBURG FOR ANY WORK PERFORMED IN ROADWAYS OR WALKWAYS ADJACENT TO SITE AND FOR ANY DETOURING OF TRAFFIC. PROVIDE ALL SAFETY MEASURES AND DEVICES REQUIRED BY APPLICABLE REGULATORY AGENCIES. TRAFFIC SHALL BE MAINTAINED AT ALL TIMES IN ACCORDANCE WITH THE 2011 VIRGINIA WORK AREA PROTECTION MANUAL. ONE–WAY TRAFFIC WILL BE PERMITTED FOR LIMITED DISTANCES ONLY AS APPROVED BY THE CITY OF LYNCHBURG.

   E. CONTRACTOR SHALL BARRICADE OPEN EXCAVATIONS OCCURRING AS PART OF THIS WORK AND POST WITH WARNING LIGHTS. OPERATE WARNING LIGHTS AS RECOMMENDED BY AUTHORITIES HAVING JURISDICTION.

   F. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH SECTION 59.1–406, ET SEQ. OF THE CODE OF VIRGINIA (OVERHEAD HIGH VOLTAGE LINES SAFETY ACT).

   G. ALL IMPROVEMENTS AND WORK SHALL BE SUBJECT TO INSPECTION BY THE CITY OF LYNCHBURG OFFICES.

   H. CONTRACTOR SHALL MAINTAIN EMERGENCY, SERVICE, AND DELIVERY VEHICLE ACCESS TO THE SURROUNDING AREA; COORDINATE WITH OWNER.

   I. CONTRACTOR SHALL MINIMIZE DISRUPTION OF PEDESTRIAN ACCESS. CONTRACTOR SHALL PROVIDE TEMPORARY CONSTRUCTION FENCE APPROXIMATELY ALONG ACTIVE LIMITS OF CONSTRUCTION AS SHOWN. CONTRACTOR SHALL MAKE NECESSARY ADJUSTMENTS IN CONSTRUCTION FENCING AND/OR INSTALL ADDITIONAL CONSTRUCTION FENCING AS REQUIRED TO MAINTAIN ACCESS REQUIREMENTS AND TO SEPARATE PEDESTRIAN TRAFFIC FROM THE ACTIVE CONSTRUCTION ZONE. ESTABLISH NEW PEDESTRIAN ACCESS ROUTES PRIOR TO ERECTING FENCE. APPROPRIATE DETOUR SIGNAGE SHALL BE MAINTAINED.

3. TOTAL DISTURBED AREA: 3.60 ACRES

4. ALL WORK IS TO BE IN ACCORDANCE WITH THE CITY OF LYNCHBURG MANUAL OF SPECIFICATIONS AND STANDARD DETAILS, LATEST EDITION.

EROSION & SEDIMENT CONTROL NOTES:

1. MINIMUM MEASURES ARE INDICATED. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION AND MAINTENANCE OF THESE MINIMUM REQUIREMENTS AND ALL OTHER MEASURES NECESSARY TO CONTROL, FILTER, AND PREVENT SEDIMENT FROM LEAVING THE SITE. EROSION CONTROL MEASURES SHALL BE PLACED PRIOR TO COMMENCEMENT OF UPSLOPE EARTHWORK ACTIVITIES. IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN PROVIDED. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL UPSLOPE DISTURBED AREAS ARE STABILIZED.

2. ALL WORK SHALL BE SUBJECT TO INSPECTION BY THE CITY OF LYNCHBURG, AND THE COMMONWEALTH OF VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY. THESE AGENCIES HAVE THE RIGHT TO ADD OR DELETE E&SC CONTROLS IN THE FIELD. ANY CHANGES REQUIRED BY THE INSPECTOR OR NOTED DEFICIENCIES SHALL BE CORRECTED BY THE CONTRACTOR.

3. PERMANENT SEEDING SHALL BE APPLIED TO INDICATED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. PERMANENT SEEDING SHALL ALSO BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN 1 YEAR.

4. IF PERMANENT SEEDING IS NOT APPLIED TO DENUDED AREAS WITHIN 7 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE, THE ASSOCIATED AREA SHALL BE TEMPORARILY SEEDED. TEMPORARY SEEDING SHALL BE APPLIED WITHIN 7 DAYS ON DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE, BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 14 DAYS.

5. ENTRANCE LOCATIONS THAT ARE INDICATED MAY BE SHIFTED TO FIT FIELD CONDITIONS. ANY ENTRANCE THAT BECOMES ACTIVE PRIOR TO PERMANENT SITE STABILIZATION SHALL BE CLASSIFIED AS A "TEMPORARY STONE CONSTRUCTION ENTRANCE" AND SHALL BE INSTALLED IN ACCORDANCE WITH VESCH STANDARD AND SPECIFICATION NO. 3.02. DURING CONSTRUCTION, THE CONTRACTOR SHALL PERIODICALLY TOP–DRESS THE CONSTRUCTION ENTRANCE WITH CLEAN STONE. VEHICLES' TIRES SHALL BE WASHED IF THE CONSTRUCTION ENTRANCE FAILS TO REMOVE SOIL FROM THE TIRES OF VEHICLES ENTERING THE PAVED STREET. WASH WATER SHALL BE CARRIED AWAY FROM THE ENTRANCE TO AN APPROVED SETTLING AREA TO REMOVE SEDIMENT. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY BY THE CONTRACTOR. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A TRAPPING DISPOSAL AREA. NO WASHING BEFORE SWEEPING AND SHOVELING. CONTRACTOR SHALL FLAG AND CONTROL TRAFFIC WHILE REMOVAL IS BEING PERFORMED.

6. DUST SHALL BE CONTROLLED IN ACCORDANCE WITH VESCH, STD. 3.39.

7. SILT FENCE AND ALL OTHER EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE INSTALLED BEFORE ANY UPSLOPE ACTIVITIES BEGIN.

8. THE METHODS AND STRATEGIES TO CONTAIN EROSION AND SEDIMENT AS LISTED IN THE DOCUMENT ENTITLED "EROSION AND SEDIMENT CONTROL NARRATIVE – JEFFERSON PARK DRAINAGE IMPROVEMENTS", SHALL BE FOLLOWED DURING CONSTRUCTION.

9. DURING DEWATERING OPERATIONS, WATER WILL BE TESTED.

10. ANY OFF–SITE LOCATION THAT IS USED AS A SOURCE OF BORROW SOIL MATERIALS OR RECEIVES WASTE SOIL MATERIALS FROM THE SITE MUST BE APPROVED BY THE EROSION & SEDIMENT CONTROL ADMINISTRATOR OF THE JURISDICTION IN WHICH THAT OFF–SITE AREA IS LOCATED. 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.

EROSION & SEDIMENT CONTROL PHASING NOTES:

1. THE CONTRACTOR WILL DESIGNATE AN EMPLOYEE CERTIFIED AS THE "RESPONSIBLE LAND DISTURBER" (RLD), BY THE COMMONWEALTH OF VIRGINIA, DEPARTMENT OF ENVIRONMENTAL QUALITY (VADEQ), WHO IS IN CHARGE OF AND IS RESPONSIBLE FOR CARRYING OUT THE LAND–DISTURBING ACTIVITIES ON THIS PROJECT. THIS EMPLOYEE SHALL ALSO INSPECT FOR DEFICIENCIES IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND AT LEAST WEEKLY WHEN NO RAINFALL OCCURS. CONTRACTORS SHALL PROVIDE WRITTEN DOCUMENTATION TO THE CITY OF LYNCHBURG THAT THEY MEET THIS REQUIREMENT PRIOR TO AWARDING OF THE CONSTRUCTION CONTRACT, AND THE CITY OF LYNCHBURG SHALL PROVIDE THE NAME OF THE RLD TO VADEQ PRIOR TO LAND DISTURBANCE. IN THE INTERIM UNTIL THE WORK STARTS, CAROLYN A. HOWARD, P.E., DRAPER ADEN ASSOCIATES, IS THE RLD.

2. AS FIRST STEP MEASURES, CONSTRUCTION ENTRANCES, SILT FENCE, AND INLET PROTECTION SHALL BE INSTALLED AS INDICATED PRIOR TO UPSLOPE LAND DISTURBANCE.

3. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DIVERSIONS IMMEDIATELY AFTER INSTALLATION, AS NEEDED.

4. THROUGHOUT CONSTRUCTION ACTIVITIES, APPLY DUST CONTROL MEASURES ACCORDING TO VESCH STD. & SPEC. 3.39.

5. NO AREAS OUTSIDE OF THE CONSTRUCTION/SAFETY FENCE SHALL BE DISTURBED.

6. PERMANENT SEEDING AND MULCH WILL BE USED ON ALL DISTURBED AREAS THAT ARE NOT SCHEDULED TO RECEIVE CONCRETE SURFACING OR LANDSCAPING (HARDWOOD MULCH, ETC.) ONCE BROUGHT TO FINAL GRADE.

7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL PROGRAM AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.

LEGEND

EXISTING		PROPOSED
1000	CONTOURS	1000
× 1561.3	GROUND ELEVATION	1528.3 TC 1528.3
	SHRUB	N/A
	TREE	
	TREELINE	
X X	FENCE	N/A
	PROPERTY LINE/ROW	
	BUILDING	N/A
	ASPHALT	
	CONCRETE	
	GRAVEL	
	SIGN	N/A
	BOLLARD	N/A
	STORM SEWER	
	STORM CLEANOUT	N/A
	STORM MANHOLE	●
	STORM DRAINAGE INLET	■
	SANITARY MANHOLE	N/A
ss	SANITARY SEWER	N/A
	UNDERGROUND ELECTRIC	
	OVERHEAD POWER	
	GUY WIRE	
	LIGHT POLE	N/A
	ELECTRIC POLE	
	ELECTRIC MANHOLE	N/A
w	WATER	N/A
	WATER VALVE	N/A
	FIRE HYDRANT	N/A
	WATER MANHOLE	N/A
	STEAM MANHOLE	N/A
cns	CNS	N/A
t	TELEPHONE LINE	N/A
	UNDERGROUND TELEPHONE	N/A
	TELEPHONE POLE	N/A
	ROD FOUND	N/A
	MONUMENT FOUND	N/A
★	BENCHMARK	N/A
⟹	SURFACE DRAINAGE	N/A
	CONCRETE SIDEWALK	
	CHIPSEAL SURFACE	
	LIMITS OF DISTURBANCE	
	MATCH EXISTING	M.E.
	BOTTOM OF CURB	B.C
	TOP OF CURB	T.C.
	TEMP. CONSTRUCTION EASEMENT	
	TURF REINFORCEMENT MATTING	
	GRAVEL SURFACE	
	GRASS CHANNEL BMP	

CITY ENGINEER DATE

COMMONWEALTH OF VIRGINIA
CAROLYN A. HOWARD
Lic. No. 042775
04/19/16
PROFESSIONAL ENGINEER

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GENERAL NOTES & LEGEND
JEFFERSON PARK DRAINAGE IMPROVEMENTS
LYNCHBURG, VIRGINIA
CITY PROJECT NO. ME 016

REVISIONS

DESIGNED BY: MBJ
DRAWN BY: CEP
CHECKED BY: CAH
SCALE: NO SCALE
DATE: 4/19/2016
PROJECT NUMBER: B14111B-05

C002

OUTLET PROTECTION SUMMARY TABLE	
DESIGN FLOW	133
RIP RAP GRADATION	CLASS 1
APRON LENGTH (FT)	15
APRON WIDTH	37
SIDE SLOPES (FT)	2:1
APRON DEPTH (FT)	3

FLOW SUMMARY TABLE

FEATURE ID	SCC-1	SCC-2	SCC-3	SCC-4	OP-1
DESIGN EVENT FREQUENCY	25-yr	25-yr	25-yr	1-inch	25-YR
DRAINAGE AREA ID	DA-6+7+8	DA-1+2+3+4	DA-2+3+4	DA 4	DA 1 to 9
TOTAL DA SIZE (AC)	15.3	10.7	9.3	4.9	35.3
DESIGN FLOW (CFS)	48	77	67	1.8	133
TIME OF CONCENTRATION (MIN)	29	5	5	5	34
COMPOSITE RUNOFF FACTOR	71	85	85	87	78

1.0 EROSION & SEDIMENT CONTROL NARRATIVE

A. INTRODUCTION

THE CITY OF LYNCHBURG DESIRES TO ALLEVIATE STORMWATER-RELATED ISSUES AT JEFFERSON PARK, LOCATED IN THE VICINITY OF YORK AND CHAMBERS STREETS. A LARGE PORTION OF THE PARK IS CONSTRUCTED ON A CLOSED LANDFILL; ONE OF THE PROJECT GOALS IS TO DECREASE THE AMOUNT OF RUNOFF STORMWATER R ONTO THE LANDFILL AREA. ANOTHER COMPONENT IS MITIGATION OF AN ERODED CHANNEL DOWN A STEEP BANK TO THE NORTHEAST. GRASS CHANNELS WILL BE CONSTRUCTED AROUND THE PERIMETER OF THE PARK, AND A STORM SEWER WILL BE INSTALLED TO SAFELY CONVEY FLOWS DOWN THE STEEP EMBANKMENT. THE TOTAL DISTURBED AREA FROM THE PROJECT IS APPROXIMATELY 3.6 ACRES.

B. EXISTING SITE CONDITIONS

THE PROJECT IS LOCATED ON CITY OF LYNCHBURG CURRENT AND FUTURE PROPERTIES AND RIGHTS-OF-WAY. THE SITE IS PREDOMINANTLY MADE UP OF OPEN SPACE AND WOODED AREAS, AS WELL AS RECREATIONAL FACILITIES. THE LARGE GRASSED AREA IN THE CENTER OF THE PARK IS A CLOSED LANDFILL, WITH WASTE AS SHALLOW AS TWO FEET IN SOME AREAS.

C. ADJACENT PROPERTY

THE SITE IS SURROUNDED BY SINGLE AND MULTI-FAMILY RESIDENCES ZONED R-3 AND R-4. HISTORICALLY, THE AREA TO THE NORTHEAST HAS GENERATED A HIGH VOLUME OF TRASH THAT HAS SOMETIMES CLOGGED STORM SEWERS IN THE AREA. PART OF THIS PROJECT INCLUDED RESEARCH OF AND RECOMMENDATIONS FOR METHODS TO PREVENT TRASH FROM ENTERING THE STORM SEWER SYSTEM, ESPECIALLY THE PROPOSED SWALES AND STORM SEWER ADJACENT TO THE LANDFILL AREA.

D. PLANNED EARTHWORK ACTIVITIES

EARTHWORK ACTIVITIES INCLUDE THE CONSTRUCTION OF NEW BERMS AND SWALES TO SAFELY CONVEY RUNOFF AROUND THE LANDFILL, ADJUSTMENT AND INSTALLATION OF A STORM SEWER, AND CONSTRUCTION OF AN ACCESS DRIVE. SEVERAL LOW AREAS WITHIN THE PARK THAT HAVE SUBSIDED OVER TIME ARE ALSO PROPOSED TO BE FILLED TO PREVENT FUTURE PONDING.

E. SOILS

ACCORDING TO THE CUSTOM SOIL RESOURCE REPORT FOR CAMPBELL COUNTY AND THE CITY OF LYNCHBURG, THERE ARE A VARIETY OF SOILS ON-SITE WITH HYDROLOGIC SOIL GROUPS RANGING FROM B TO D. A SUMMARY OF SOILS IN THE VICINITY OF THE PROJECT IS AS FOLLOWS:

ABBREVIATION	*DESCRIPTION*
CUB	CULLEN LOAM, 2- 6% SLOPES, SEVERELY ERODED
CXC3	CULLEN CLAY LOAM, 6-15% SLOPES, SEVERELY ERODED
CXE3	CULLEN CLAY LOAM, 15-25% SLOPES, SEVERELY ERODED
GEB2	GEORGEVILLE LOAM, 2-6% SLOPES, ERODEDG
EC2	GEORGEVILLE LOAM, 6-15% SLOPES, ERODED
MCF	MANTEO CHANNERY LOAM, 25-60% SLOPES
TIE2	TATUM LOAM, 15-25% SLOPES, ERODED
TME3	TATUM CLAY LOAM, 15-25% SLOPES, SEVERELY ERODED
UL	URBAN LANDWKFWILKES LOAM, 25-60%

PLEASE REFER TO APPENDIX A FOR THE NATURAL RESOURCES CONSERVATION SERVICE CUSTOM SOIL RESOURCE REPORT.

F. CRITICAL EROSION AREAS

CRITICAL EROSION AREAS MAY BE ENCOUNTERED DURING GRADING OPERATIONS AS FOLLOWS:

- PROPOSED SLOPES NEAR 2:1 OR GREATER, ESPECIALLY THE SLOPE TO THE NORTHEAST OF THE SITE ADJACENT TO THE PROPOSED STORM SEWER AND ACCESS ROAD.
- DRAINAGE SWALES WHERE SURFACE WATER WILL BE CONCENTRATED

THE PROPOSED DESIGN AND EROSION & SEDIMENT CONTROL MEASURES ARE INTENDED TO MINIMIZE ANY POTENTIAL PROBLEMS AND PROMOTE STABILIZATION.

G. EROSION & SEDIMENT CONTROL MEASURES

ALL VEGETATIVE AND STRUCTURAL EROSION & SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK (VESCH), LATEST EDITION, AND IN ACCORDANCE WITH THE CONDITIONS OF ANY APPLICABLE ENVIRONMENTAL PERMITS. REMOVAL OF EROSION & SEDIMENT CONTROL MEASURES IS ONLY TO BE CONDUCTED WITH THE APPROVAL OF THE CITY OF LYNCHBURG.

H. STRUCTURAL PRACTICES

1. SAFETY FENCE - STD. & SPEC. 3.01

   A PROTECTIVE BARRIER INSTALLED TO PREVENT ACCESS TO AN EROSION CONTROL MEASURE. SAFETY FENCE CAN ALSO DOUBLE AS CONSTRUCTION FENCE PROHIBITING PUBLIC ACCESS TO THE SITE.

   SEQUENCE OF INSTALLATION: PRIOR TO ANY LAND DISTURBANCE
   MAINTENANCE: REFER TO STD. & SPEC. 3.01
   REMOVAL EVENT: FOLLOWING PERMANENT STABILIZATION OF ENTIRE SITE

2. TEMPORARY STONE CONSTRUCTION ENTRANCE - STD. & SPEC. 3.02

   TEMPORARY STONE CONSTRUCTION ENTRANCE SHALL BE INSTALLED AS SHOWN ON THE PLANS TO REDUCE THE AMOUNT OF SOIL TRANSPORTED ONTO PUBLIC ROADS OR OTHER PAVED AREAS.

   SEQUENCE OF INSTALLATION: PRIOR TO ANY LAND DISTURBANCE
   MAINTENANCE: REFER TO STD. & SPEC. 3.02
   REMOVAL EVENT: IMMEDIATELY PRIOR TO PAVING

3. SILT FENCE - STD. & SPEC. 3.05

   DISTURBED AREAS AND SOIL STOCKPILE AREAS SHALL BE LINED WITH SILT FENCE AS SHOWN ON THE PLANS TO DETAIN SEDIMENT AND DECREASE STORM WATER RUNOFF VELOCITY.

   SEQUENCE OF INSTALLATION: PRIOR TO ANY LAND DISTURBANCE
   MAINTENANCE: REFER TO STD. & SPEC. 3.05
   REMOVAL EVENT: FOLLOWING PERMANENT STABILIZATION OF ENTIRE SITE

4. STORM DRAIN INLET PROTECTION - STD. & SPEC. 3.07

   STORM DRAIN INLET PROTECTION SHALL BE PLACED AT EXISTING AND PROPOSED GRATE INLETS TO PREVENT SEDIMENT FROM ENTERING THE STORM PIPING.

   SEQUENCE OF INSTALLATION: EXISTING STRUCTURES - PRIOR TO ANY LAND DISTURBANCE
   FUTURE STRUCTURES - IMMEDIATELY FOLLOWING INSTALLATION
   MAINTENANCE: REFER TO STD. & SPEC. 3.07
   REMOVAL EVENT: FOLLOWING PERMANENT STABILIZATION OF ALL UPLAND AREAS

5. CULVERT INLET PROTECTION - STD. & SPEC. 3.08

   CULVERT INLET PROTECTION SHALL BE PLACED AT THE UPSTREAM ENDS OF EXISTING AND PROPOSED CULVERTS TO PREVENT SEDIMENT FROM ENTERING THE STORM PIPING NETWORK.

   SEQUENCE OF INSTALLATION: EXISTING STRUCTURES - PRIOR TO ANY LAND DISTURBANCE
   FUTURE STRUCTURES - IMMEDIATELY FOLLOWING INSTALLATION
   MAINTENANCE: REFER TO STD. & SPEC. 3.08
   REMOVAL EVENT: FOLLOWING PERMANENT STABILIZATION OF ALL UPLAND AREAS

6. TEMPORARY DIVERSION DIKE - STD. & SPEC. 3.09

   TEMPORARY DIVERSION DIKES SHALL BE CONSTRUCTED TO DIVERT RUNOFF FROM A DISTURBED AREA TO A SEDIMENT-TRAPPING FACILITY.

   SEQUENCE OF INSTALLATION: CONCURRENT WITH THE CONSTRUCTION OF THE SEDIMENT TRAPS
   MAINTENANCE: REFER TO STD. & SPEC. 3.09
   REMOVAL EVENT: FOLLOWING PERMANENT STABILIZATION OF ALL UPLAND AREAS

7. TEMPORARY SLOPE DRAIN - STD. & SPEC. 3.15

   TEMPORARY SLOPE DRAINS SHALL BE CONSTRUCTED AS SHOWN ON THE PLANS TO TEMPORARILY CONDUCT CONCENTRATED STORMWATER RUNOFF SAFELY DOWN THE FACE OF A CUT OR FILL SLOPE WITHOUT CAUSING EROSION ON OR BELOW THE SLOPE.

   SEQUENCE OF INSTALLATION: AS PART OF GRADING ACTIVITIES
   MAINTENANCE: REFER TO STD. & SPEC. 3.15
   REMOVAL EVENT: FOLLOWING PERMANENT STABILIZATION OF UPLAND AND DOWN SLOPE AREAS.

8. STORMWATER CONVEYANCE CHANNEL (SCC) - STD. & SPEC. 3.17

   PERMANENT SCCS ARE PROPOSED TO PROVIDE ADEQUATE CHANNEL TO CONVEY RUNOFF, AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS, AND ENGINEERING DESIGN CALCULATIONS.

   SEQUENCE OF INSTALLATION: AS PART OF GRADING ACTIVITIES
   MAINTENANCE: REFER TO STD. & SPEC. 3.17
   REMOVAL EVENT: THIS IS PERMANENT AND SHALL NOT BE REMOVED.

9. OUTLET PROTECTION - STD. & SPEC. 3.18

   STRUCTURALLY LINED APRONS OR OTHER ACCEPTABLE ENERGY DISSIPATING DEVICES PLACED AT THE OUTLETS OF PIPES OR PAVED CHANNEL SECTIONS, USED TO PREVENT SCOUR AT STORMWATER OUTLETS, TO PROTECT THE OUTLET STRUCTURE AND TO MINIMIZE THE POTENTIAL FOR DOWNSTREAM EROSION BY REDUCING THE VELOCITY AND ENERGY OF CONCENTRATED STORMWATER FLOWS.

   SEQUENCE OF INSTALLATION: EXISTING STRUCTURES - PRIOR TO ANY LAND DISTURBANCE
   FUTURE STRUCTURES - IMMEDIATELY FOLLOWING INSTALLATION
   MAINTENANCE: REFER TO STD. & SPEC. 3.18
   REMOVAL EVENT: THIS IS PERMANENT AND SHALL NOT BE REMOVED.

10. RIPRAP - STD. & SPEC. 3.19

    LARGE, LOOSE, ANGULAR STONE WITH FILTER FABRIC INSTALLED TO PROTECT SOIL FROM THE EROSIVE FORCES OF CONCENTRATED RUNOFF OR STABILIZE SLOPES.

    SEQUENCE OF INSTALLATION: AS PART OF GRADING ACTIVITIES
    MAINTENANCE: REFER TO STD. & SPEC. 3.19
    REMOVAL EVENT: THIS IS PERMANENT AND SHALL NOT BE REMOVED.

I. VEGETATIVE PRACTICES

1. TOPSOILING - STD. & SPEC. 3.30

   IN ORDER TO STABILIZE FINAL SITE GRADES, SUITABLE, ORGANIC GROWTH MEDIUM SHALL BE USED. THIS CAN BE ACCOMPLISHED THROUGH ON-SITE PRESERVATION OF EXISTING TOPSOIL OR IMPORTED TOPSOIL.

   SEQUENCE OF INSTALLATION: FOLLOWING FINAL GRADING/SURFACE ROUGHENING WHERE APPLICABLE.
   MAINTENANCE: REFER TO STD. & SPEC. 3.30; AREAS WHICH FAIL TO ESTABLISH VEGETATIVE COVER ADEQUATE TO PREVENT RILL EROSION ARE TO BE RESEEDED.
   REMOVAL EVENT: THIS IS A PERMANENT PRACTICE AND SHALL NOT BE REMOVED.

2. PERMANENT SEEDING - STD. & SPEC. 3.32

   PERMANENT SEEDING SHALL ALSO BE USED ON ALL AREAS THAT ARE NOT AT FINAL GRADE AND THAT WILL BE LEFT DORMANT FOR A PERIOD OF MORE THAN 1 YEAR. IF CONFLICTS EXIST BETWEEN THE PROJECT SPECIFICATIONS AND THE VESCH STD. & SPEC. 3.32, THE MORE STRINGENT REQUIREMENT SHALL APPLY. PERMANENT SEEDING MIXES AND RATES ARE FOUND ON SHEET C401, EROSION AND SEDIMENT CONTROL DETAILS.

   SEQUENCE OF INSTALLATION: WITHIN 7 DAYS OF ACHIEVING FINAL GRADE OR AS NOTED ABOVE
   SOIL TESTING REQUIREMENTS: REFER TO STD. & SPEC. 3.32
   MAINTENANCE: REFER TO STD. & SPEC. 3.32; AREAS WHICH FAIL TO ESTABLISH VEGETATIVE COVER ADEQUATE TO PREVENT RILL EROSION ARE TO BE IMMEDIATELY RESEEDED, FOLLOWING IDENTIFICATION OF THE CAUSE OF POOR GERMINATION.

3. SODDING - STD. & SPEC. 3.33

   SOD SHALL BE INSTALLED WHERE INDICATED ON THE PLANS IN FINE-GRADED AREAS TO ESTABLISH AN IMMEDIATE PERMANENT TURF COVER.

   SEQUENCE OF INSTALLATION: FOLLOWING ESTABLISHMENT OF FINAL GRADE
   MAINTENANCE: REFER TO STD. & SPEC. 3.33
   REMOVAL EVENT: THIS IS A PERMANENT PRACTICE AND SHOULD NOT BE REMOVED.

4. SOIL STABILIZATION BLANKETS AND MATTING - STD. & SPEC. 3.36

   BLANKETS AND MATTING SHALL BE USED TO AID IN CONTROLLING EROSION ON CRITICAL AREAS BY PROVIDING A MICROCLIMATE WHICH PROTECTS YOUNG VEGETATION AND PROMOTES ITS ESTABLISHMENT. IN ADDITION, SOME TYPES OF SOIL STABILIZATION MATS ARE ALSO USED TO RAISE THE MAXIMUM PERMISSIBLE VELOCITY OF TURF GRASS STANDS IN CHANNELIZED AREAS BY "REINFORCING THE TURF" TO RESIST THE FORCES OF EROSION DURING STORM EVENTS.

   SEQUENCE OF INSTALLATION: FOLLOWING ESTABLISHMENT OF FINAL GRADE AND PLACEMENT OF LIME, FERTILIZE, AND SEED.
   MAINTENANCE: REFER TO STD. & SPEC. 3.36
   REMOVAL EVENT: THIS IS PERMANENT AND SHALL NOT BE REMOVED.

5. DUST CONTROL - STD. & SPEC. 3.39

   DURING LAND DISTURBANCE, REDUCE SURFACE AND AIR MOVEMENT OF DUST IN AREAS SUBJECT TO DUST PROBLEMS IN ORDER TO PREVENT SOIL LOSS AND REDUCE THE PRESENCE OF POTENTIALLY HARMFUL AIRBORNE SUBSTANCES.

   SEQUENCE OF INSTALLATION: IMMEDIATELY AS NEEDED TO REDUCE SURFACE AND AIR MOVEMENT OF DUST IN AREAS SUBJECT TO DUST PROBLEMS
   MAINTENANCE: REFER TO STD. & SPEC. 3.39
   REMOVAL EVENT: N/A

J. MANAGEMENT STRATEGIES

THE CONTRACTOR WILL DESIGNATE AN EMPLOYEE CERTIFIED AS THE "RESPONSIBLE LAND DISTURBER" (RLD), BY THE COMMONWEALTH OF VIRGINIA, DEPARTMENT OF ENVIRONMENTAL QUALITY (VADEQ), WHO IS IN CHARGE OF AND IS RESPONSIBLE FOR CARRYING OUT THE LAND-DISTURBING ACTIVITIES ON THIS PROJECT. THIS EMPLOYEE SHALL ALSO INSPECT FOR DEFICIENCIES IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND AT LEAST WEEKLY WHEN NO RAINFALL OCCURS. CONTRACTORS SHALL PROVIDE WRITTEN DOCUMENTATION TO THE CITY OF LYNCHBURG THAT THEY MEET THIS REQUIREMENT PRIOR TO THE CITY AWARDING THE CONSTRUCTION CONTRACT, AND THE CITY SHALL PROVIDE THE NAME OF THE RLD TO VADEQ PRIOR TO LAND DISTURBANCE. IN THE INTERIM UNTIL THE WORK STARTS, CAROLYN A. HOWARD, P.E. IS THE RLD.

1. AS FIRST STEP MEASURES, THE CONSTRUCTION ENTRANCE, SILT FENCE, DIVERSIONS, AND INLET/CULVERT PROTECTION SHALL BE INSTALLED AS INDICATED PRIOR TO UPSLOPE LAND DISTURBANCE.
2. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
3. INLET PROTECTION AS INDICATED ON THE PLAN SHALL BE INSTALLED FOR NEW INLETS AS THEY BECOME OPERATIONAL.
4. STOCKPILING OF SOIL IS NOT PLANNED.
5. PERMANENT SEEDING WILL BE USED ON ALL DISTURBED AREAS THAT ARE NOT SCHEDULED TO RECEIVE CONCRETE SURFACING, OR LANDSCAPING (HARDWOOD MULCH, ETC.).
6. AREAS THAT ARE NOT TO BE DISTURBED SHALL BE CLEARLY MARKED BY FLAGS, SIGNS, ETC.
7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL PROGRAM AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.

K. CONSTRUCTION SCHEDULE

CONSTRUCTION IS PROPOSED TO BEGIN IN SPRING 2016 AND BE COMPLETE BY FALL 2016.

L. PERMANENT STABILIZATION

ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING, LANDSCAPING, PAVEMENT, OR CONCRETE FOLLOWING FINAL GRADING.

M. MAINTENANCE

1. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES IMMEDIATELY AFTER EACH RUNOFF PRODUCING RAINFALL EVENT, AT LEAST DAILY DURING PROLONGED RAINFALL, AT LEAST WEEKLY WHEN NO RAINFALL OCCURS, AND IN ACCORDANCE WITH THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) PERMIT REGULATIONS. THE FOLLOWING AREAS WILL BE CHECKED IN PARTICULAR:

   a. ALL DEVICES USED AT ENTRANCES TO THE STORM DRAIN SYSTEM SHALL BE CHECKED FOR THEIR PERFORMANCE. IF REPAIRS NEED TO BE MADE, THEY SHALL BE COMPLETED IN A RESPONSIBLE MANNER.

   b. SEDIMENT SHALL BE REMOVED WHEN THE SEDIMENT HAS ACCUMULATED TO ONE HALF THE DESIGN DEPTH OF THE BARRIER. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.

   c. ALL VEGETATED AREAS SHALL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND IS MAINTAINED. AREAS SHALL BE FERTILIZED AND REPAIRED BY RESEEDING AS NECESSARY.

2. CITY OF LYNCHBURG PERSONNEL WILL BE RESPONSIBLE FOR MAINTENANCE FOLLOWING CONSTRUCTION.

CITY ENGINEER   DATE

COMMONWEALTH OF VIRGINIA
CAROLYN A. HOWARD
Lic. No. 042775
04/19/16
PROFESSIONAL ENGINEER

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EROSION & SEDIMENT CONTROL NARRATIVE

JEFFERSON PARK DRAINAGE IMPROVEMENTS

LYNCHBURG, VIRGINIA   CITY PROJECT NO. ME 016

REVISIONS

DESIGNED BY: MBJ
DRAWN BY: CEP
CHECKED BY: CAH
SCALE: NO SCALE
DATE: 4/19/2016
PROJECT NUMBER: B14111B-05

C003

STORMWATER ANALYSIS AND CALCULATIONS

A. INTRODUCTION

HYDROLOGIC AND HYDRAULIC CALCULATIONS WERE PERFORMED TO DO THE FOLLOWING:

1. CONFIRM THE ADEQUACY OF ON-SITE AND DOWNSTREAM STORM SYSTEM, AND TO SIZE NEW CONVEYANCE CHANNELS.
2. DETERMINE PRE- AND POST-DEVELOPMENT PEAK FLOW RATES AND STORMWATER QUALITY AND QUANTITY REQUIREMENTS.

B. CRITERIA & METHODOLOGY

STORM SEWER PIPES AND STRUCTURES AND DRAINAGE SWALES WERE SIZED USING THE HYDRAFLOW STORM SEWER EXTENSION FOR AUTOCAD. WATER QUALITY VOLUMES WERE DETERMINED USING THE VIRGINIA RUNOFF REDUCTION METHOD SPREADSHEETS (VERSION 2013). HYDRAFLOW STORM SEWERS EXTENSION FOR AUTOCAD CIVIL 3D, VERSION 10.4 WAS USED TO DESIGN AND ANALYZE NEW STORM PIPES; OPEN CHANNELS WERE ANALYZED USING HYDRAFLOW EXPRESS FOR BOTH CAPACITY AND VELOCITY.

DETAILED DESIGN CALCULATIONS AND OUTPUT ARE FOUND IN APPENDIX C - STORMWATER CALCULATIONS.

C. REFERENCES & APPLICABLE REGULATIONS

1. 9VAC25-840, VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS
2. 9VAC25-870, VIRGINIA STORMWATER MANAGEMENT PERMIT (VSMP) REGULATIONS

D. ANALYSIS

1. DOWNSTREAM CHANNEL ADEQUACY - MS-19 (9VAC-25-840-40)

DOWNSTREAM CHANNEL ADEQUACY IS MET ON THIS PROJECT BY MEETING THE WATER QUANTITY CONTROL CRITERIA AS OUTLINED IN 9VAC25-870-66, AS DESCRIBED BELOW.

2. CHANNEL PROTECTION (9VAC25-870-66B)

CONCENTRATED STORMWATER DISCHARGE WILL ENTER A NATURAL CHANNEL, JUST UPSTREAM OF BLACKWATER CREEK, TO THE NORTHWEST OF JEFFERSON PARK. THE DRAINAGE AREA IS GREATER THAN 1% OF THE TOTAL DRAINAGE AREA TO THIS POINT; THE ENERGY BALANCE EQUATION FOR THE ONE-YEAR 24-HOUR STORM HAS BEEN USED TO SATISFY SECTION 3 OF THE CHANNEL PROTECTION CRITERIA. THE USE OF GRASS CHANNELS DESIGNED TO MEET BMP CLEARINGHOUSE SPECIFICATION NO. 3 WILL SATISFY THIS REQUIREMENT.

THE GENERAL FORM OF THE ENERGY BALANCE EQUATION IS SHOWN BELOW, USING AN IMPROVEMENT FACTOR OF 0.8 BECAUSE THE PROJECT AREA IS GREATER THAN 1 ACRE.

$$Q_{DEVELOPED} \leq 0.8 * (Q_{PRE\text{-}DEVELOPED} * RV_{PRE\text{-}DEVELOPED}) / RV_{DEVELOPED}$$

TO DETERMINE THE REQUIRED AMOUNT OF DETENTION FOR THE PROJECT SITE AREA, THE EQUATION WAS TRANSPOSED AS FOLLOWS:

$$RV_{DEVELOPED} * Q_{DEVELOPED} \leq 0.8 * (Q_{PRE\text{-}DEVELOPED} * RV_{PRE\text{-}DEVELOPED})$$

SITE LIMITS:

A.	PRE-DEVELOPMENT QP,1-YEAR	=	5.06 CFS
B.	PRE-DEVELOPMENT RV1-YEAR	=	13,284 CF
C.	PRE-DEVELOPMENT RV*QP (A*B)	=	67,217 CF*CFS
D.	IMPROVEMENT FACTOR	=	0.8
E.	***REDUCTION REQUIRED*** (C - (C*D))	=	***13,443 CF*CFS***

DRAINAGE AREA 4 (AREA TREATED BY GRASS CHANNEL):

F.	PRE-DEVELOPMENT QP,1-YEAR	=	12.95 CFS
G.	PRE-DEVELOPMENT RV1-YEAR	=	26,269 CF
H.	PRE-DEVELOPMENT RV*QP (F*G)	=	340,184 CF*CFS
I.	POST-DEVELOPMENT QP, 1-YEAR	=	12.37 CFS
J.	POST-DEVELOPMENT RV1-YEAR	=	25,040 CF
K.	POST-DEVELOPMENT RV*QP (I*J)	=	309,745 CF*CFS
L.	***REDUCTION PROVIDED (K-I)***	=	***30,439 CF*CFS***

NOTE: POST-DEVELOPMENT PEAK FLOWS AND RUNOFF VOLUMES REFLECT ADJUSTED CURVE NUMBER CALCULATED BY THE RUNOFF REDUCTION SPREADSHEET.

WATER QUALITY CRITERIA IS MET SINCE THE VOLUME REDUCTION FROM THE TREATMENT OF DRAINAGE AREA 4 (L) EXCEEDS THE REDUCTION REQUIRED FOR THE SITE IMPROVEMENTS (E).

3. FLOODING PROTECTION (9VAC25-870-66C)

THE POST-DEVELOPMENT 10-YEAR PEAK FLOW RATE FROM THE PROJECT WILL BE LESS THAN THE PRE-DEVELOPMENT RATE, WHICH SATISFIES SECTION 2B OF THE FLOODING PROTECTION CRITERIA. PLEASE REFER TO APPENDIX C FOR CALCULATIONS.

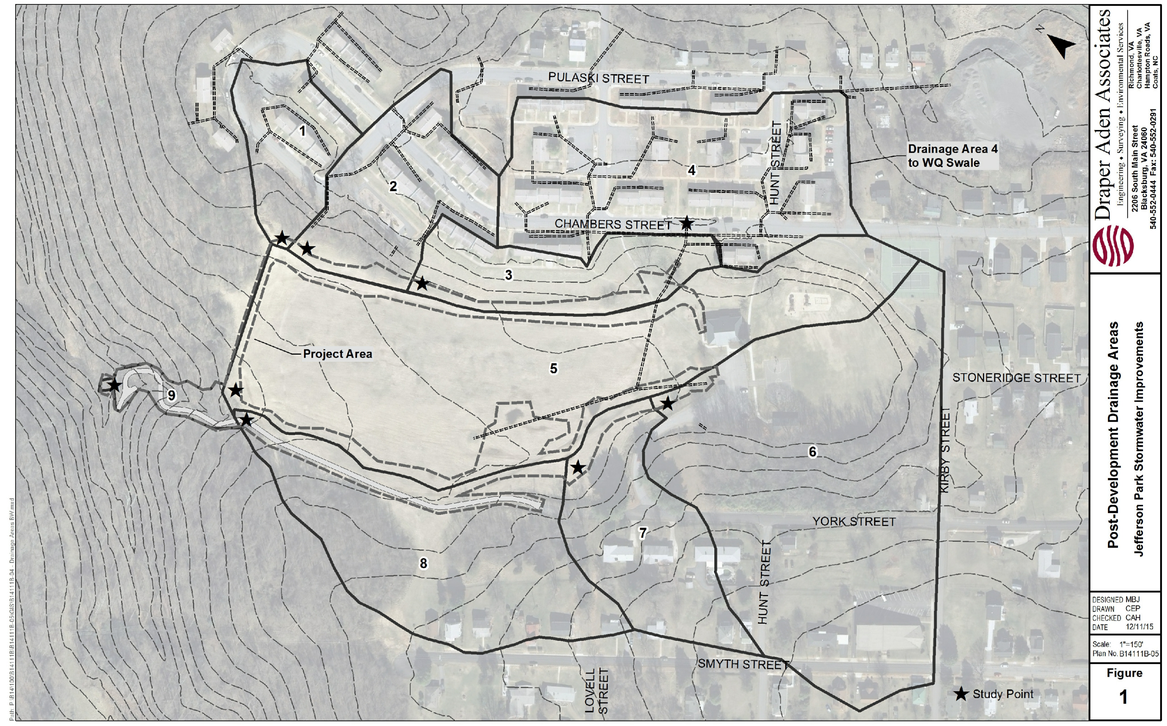
10-YEAR PRE: 97.61 CFS
10-YEAR POST: 97.05 CFS

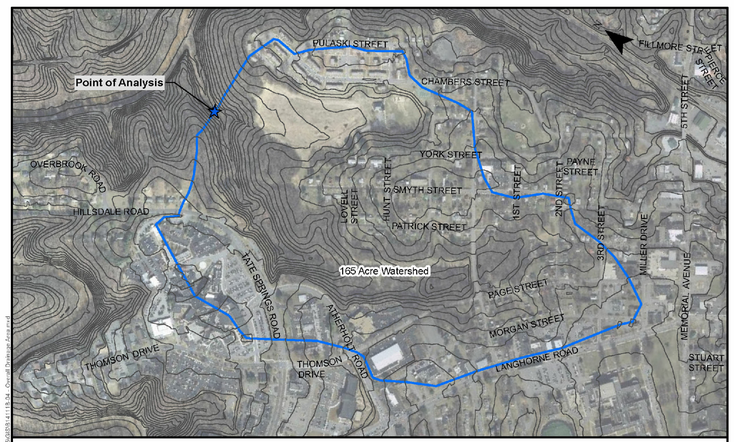
4. WATER QUALITY (9VAC25-870-65)

WATER QUALITY REQUIREMENTS WERE CALCULATED USING THE VIRGINIA RUNOFF REDUCTION METHOD (VRRM) SPREADSHEET, VERSION 2.8. FOR THE SITE AREA OF APPROXIMATELY 3.6 ACRES, APPROXIMATELY 1 POUND PER YEAR OF PHOSPHORUS REMOVAL IS REQUIRED; CONSTRUCTION OF A GRASS CHANNEL USING BMP CLEARINGHOUSE SPECIFICATION NO. 3 WILL PROVIDE THE REQUIRED POLLUTANT REMOVAL FOR THIS PROJECT. THE CHANNEL IS ALSO DESIGNED TO RECEIVE RUNOFF FROM DRAINAGE AREA 4, WHICH INCLUDES A PORTION OF THE HOUSING DEVELOPMENT TO THE NORTHEAST OF CHAMBERS STREET. PLEASE REFER TO APPENDIX C FOR WATER QUALITY AND SWALE CALCULATIONS.

5. CONVEYANCE DESIGN

BECAUSE OF THE SENSITIVE NATURE OF THE SURROUNDING AREA, ALL PROPOSED STORMWATER CONVEYANCES HAVE BEEN DESIGNED TO ACCOMMODATE THE 25-YEAR STORM FOR BOTH QUANTITY AND EROSIVE VELOCITIES.





Overall Watershed Map

Draper Aden Associates Engineering • Surveying • Environmental Services 2206 South Main Street, Blacksburg, VA 24060, 540-552-0444 Fax: 540-552-0291 Richmond, VA; Charlottesville, VA; Hampton Roads, VA	DESIGNED MBJ DRAWN MBJ CHECKED CAH DATE 8/31/15	SCALE 1"=600' PLAN NO. B14111B-05	FIGURE 2

CITY ENGINEER DATE

COMMONWEALTH OF VIRGINIA
CAROLYN A. HOWARD
Lic. No. 042775
PROFESSIONAL ENGINEER
04/19/16

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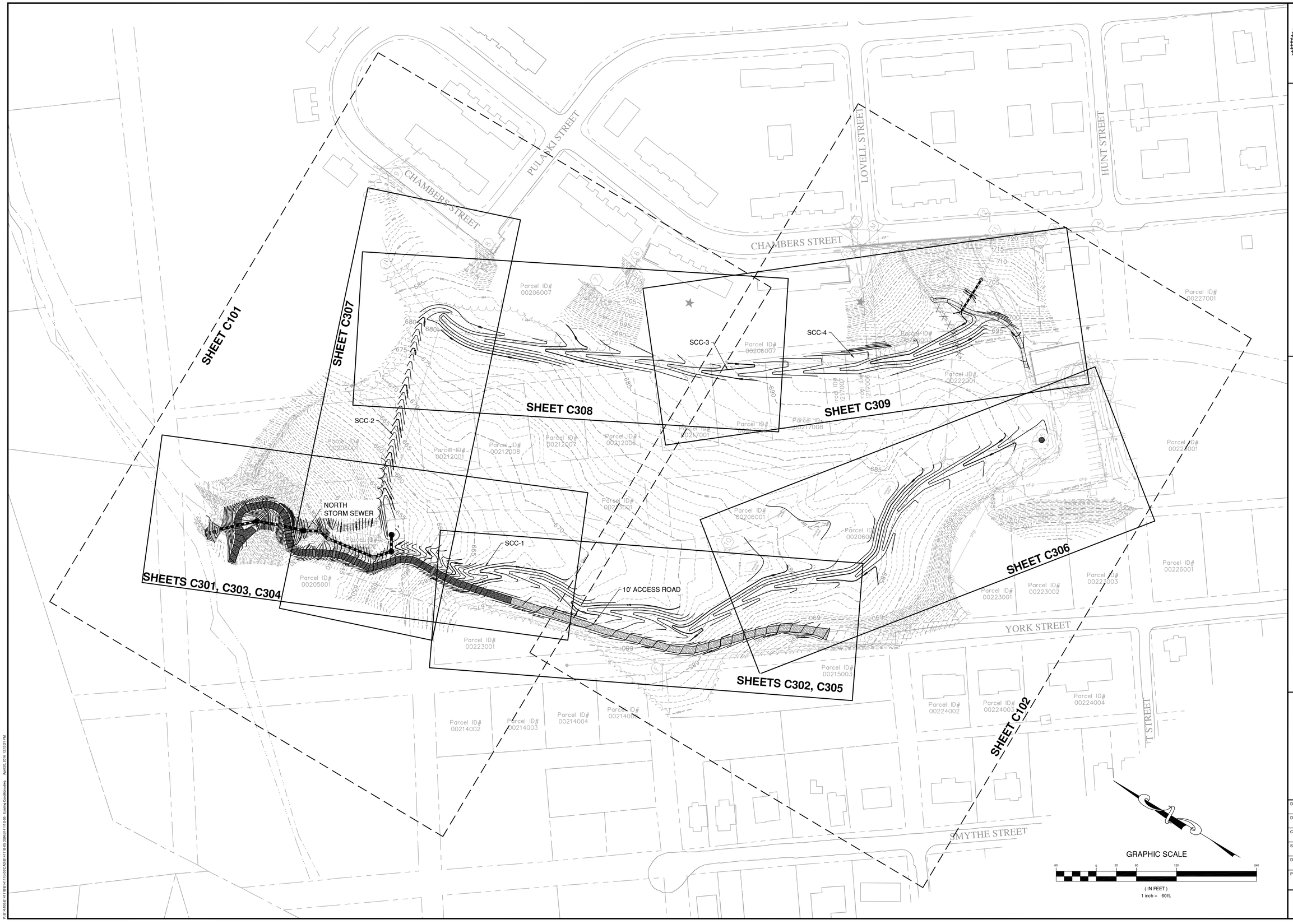
Blacksburg, VA; 2206 South Main Street; Blacksburg, VA 24060; 540-552-0444 Fax: 540-552-0291; www.daa.com
Richmond, VA; Charlottesville, VA; Hampton Roads, VA; Coats, NC

STORMWATER MANAGEMENT NARRATIVE
JEFFERSON PARK DRAINAGE IMPROVEMENTS
LYNCHBURG, VIRGINIA CITY PROJECT NO. ME 016

REVISIONS

DESIGNED BY: MBJ
DRAWN BY: CEP
CHECKED BY: CAH
SCALE: NO SCALE
DATE: 4/19/2016
PROJECT NUMBER: B14111B-05

C004



COMMONWEALTH OF VIRGINIA
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Hampton Roads, VA
Costa, NC

KEY SHEET
JEFFERSON PARK DRAINAGE IMPROVEMENTS
LYNCHBURG, VIRGINIA — CITY PROJECT NO. ME 016

REVISIONS

DESIGNED BY:	MBJ
DRAWN BY:	CEP
CHECKED BY:	CAH
SCALE:	1" = 60'
DATE:	4/19/2016
PROJECT NUMBER:	B14111B-05

C005

NOTES:

1.) Source of Meridian: Virginia State Plane, South Zone, (NAD 83) based upon: static gps session performed by Draper Aden Associates personnel.
2.) Vertical datum: (NAVD 88) based upon: static gps session performed by Draper Aden Associates personnel.
3.) This survey was prepared without the benefit of a title commitment or title report and all easements and encumbrances that might be disclosed in a title search may not be shown.
4.) Utilities shown are based upon:
____SUE Quality Level D, ASCE 38–02 – compiled records only
____SUE Quality Level C, ASCE 38–02 – visible evidence in conjunction with compiled records.
_X_SUE Quality Level B, ASCE 38–02 – field designation of underground utilities performed by DAA and visible evidence in conjunction with compiled records.
____SUE Quality Level A, ASCE 38–02 – test pits at locations shown hereon performed by (DAA; Other) in conjunction with field designation of underground utilities performed by (DAA; Miss Utility, Ticket # _____ ; Other), visible evidence and compiled records.
____No SUE was performed or requested for this survey. Utilities shown hereon are based on field observation only.
5.) This topographic survey of Jefferson Park was completed under the direct and responsible charge of Loren W. Knighting from an actual Ground survey made under my supervision; that the imagery and/or original data was obtained during the week of April 6, 2015; and that this plat and/or map meets minimum accuracy standards unless otherwise noted.
6.) Contour interval: 1'.
7.) This survey was prepared for the City of Lynchburg. Draper Aden Associates assumes no liability for reuse or modification of this document.
8.) No property lines shown.
9.) Draper Aden Associates provides benchmarks for the construction of the improvements shown on these plans. All other existing elevations are for reference to existing conditions only. Do not use spot elevations, finish floor elevations, elevations on manholes, elevations on survey nails, survey hubs, control points (horizontal points provided) or any other points for construction other than the provided benchmarks. Failure to utilize and verify the provided benchmarks could result in damages and additional cost that are the contractor's responsibility.

This topographic survey of Jefferson Park was completed under the direct and responsible charge of, Loren W. Knighting from an actual [X] Ground or [ ] Airborne survey made under my supervision; that the imagery and/or original data was obtained during the week of April 6, 2015; and that this plat, map, or digital geospatial data including metadata meets minimum accuracy standards unless otherwise noted.

L. W. Knighting 12/11/2015

COMMONWEALTH OF VIRGINIA
L. W. KNIGHTING
Lic. No. 1460
12/11/2015
LAND SURVEYOR

WATERS OF THE U.S. LIMITS

Parcel ID# 00205001
Parcel ID# 00213002
Parcel ID# 00206001
Parcel ID# 00212001
Parcel ID# 00212008
Parcel ID# 00212007
Parcel ID# 00212006
Parcel ID# 00213001
Parcel ID# 00223001
Parcel ID# 00206007
Parcel ID# 00217001

BENCH MARK
GPS 2
IRON ROD
ELEV. 719.02

VIRGINIA STATE PLANE, SOUTH ZONE

0 15 30 60
1 inch = 30 ft.

NOTE:
1. REFER TO SHEET C102 FOR STRUCTURE INFORMATION

MATCH LINE SHEET 2

LEGEND

Property Line		Rod Found		Electric Box	
Contour	1000	Monument Found		Guy Pole	
Gas Line	g	Telephone Pedestal		Electric Marker	
Overhead Power	ohp	Telephone Manhole		Electrical Manhole	
Sanitary Sewer and Manhole	ss	Telephone Box		Utility Pole	
Storm Line and Manhole		Fire Hydrant		Electric Transformer	
Storm Line and Inlet		Water Valve		Ground Light	
Underground Cable TV	catv	Water Meter		Light Pole	
Underground Electric	uge	Well		Fiber Optic Pedestal	
Underground Telephone	ugt	Benchmark		Fiber Optic Handhole	
Underground Fiber Optic	fo	Bollard		Gas Vent	
Unknown Utility	unk	Sign (1–post)		Gas Valve	
Waterline	w	Sign (2–post)		Gas Meter	
Asphalt	///	Spot Elevation	+1561.3	Sewer Clean Out	
Building		Deciduous Tree		Wood Post	
Fence (as noted)	X	Evergreen Tree		Metal Post	
Stream		Shrub		Gravel	
Treeline		Concrete			
Guy Wire					

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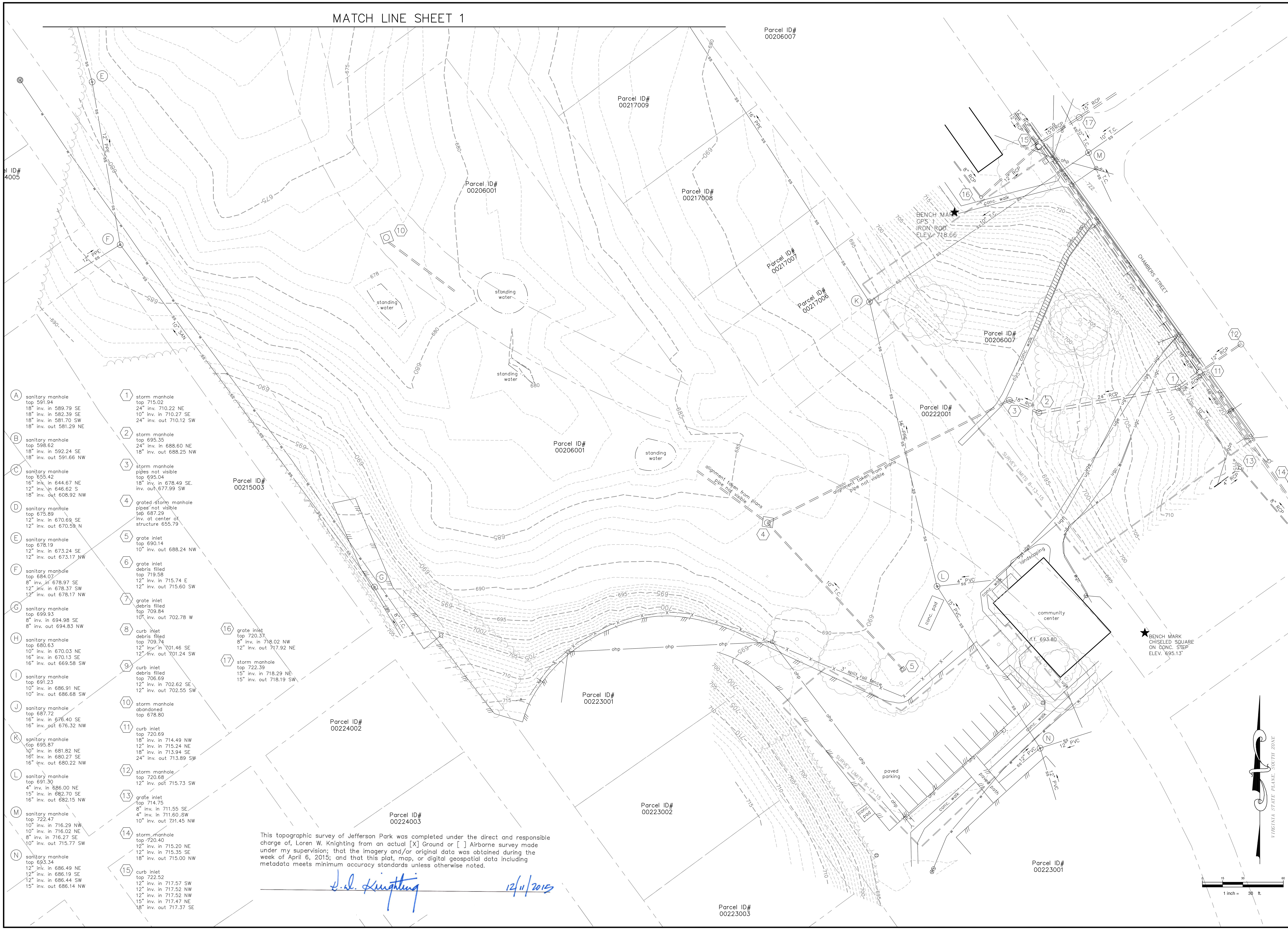
Costa, NC

EXISTING CONDITIONS
JEFFERSON PARK DRAINAGE IMPROVEMENTS
LYNCHBURG, VIRGINIA
CITY PROJECT NO. ME 016

REVISIONS

DESIGNED BY:	MBJ
DRAWN BY:	CEP
CHECKED BY:	CAH
SCALE:	1" = 30'
DATE:	12/11/2015
PROJECT NUMBER:	B14111B-05

C101



Ⓐ sanitary manhole
top 591.94
18" inv. in 589.79 SE
18" inv. in 582.39 SE
18" inv. in 581.70 SW
18" inv. out 581.29 NE

Ⓑ sanitary manhole
top 598.62
18" inv. in 592.24 SE
18" inv. out 591.66 NW

Ⓒ sanitary manhole
top 655.42
16" inv. in 644.67 NE
12" inv. in 646.62 S
18" inv. out 608.92 NW

Ⓓ sanitary manhole
top 675.89
12" inv. in 670.69 SE
12" inv. out 670.59 N

Ⓔ sanitary manhole
top 678.19
12" inv. in 673.24 SE
12" inv. out 673.17 NW

Ⓕ sanitary manhole
top 684.07
8" inv. in 678.97 SE
12" inv. in 678.37 SW
12" inv. out 678.17 NW

Ⓖ sanitary manhole
top 699.93
8" inv. in 694.98 SE
8" inv. out 694.83 NW

Ⓗ sanitary manhole
top 680.63
10" inv. in 670.03 NE
16" inv. in 670.13 SE
16" inv. out 669.58 SW

Ⓘ sanitary manhole
top 691.23
10" inv. in 686.91 NE
10" inv. out 686.68 SW

Ⓙ sanitary manhole
top 687.72
16" inv. in 676.40 SE
16" inv. out 676.32 NW

Ⓚ sanitary manhole
top 695.87
10" inv. in 681.82 NE
16" inv. in 680.27 SE
16" inv. out 680.22 NW

Ⓛ sanitary manhole
top 691.30
4" inv. in 686.00 NE
15" inv. in 682.70 SE
16" inv. out 682.15 NW

Ⓜ sanitary manhole
top 722.47
10" inv. in 716.29 NW
10" inv. in 716.02 NE
8" inv. in 716.27 SE
10" inv. out 715.77 SW

Ⓝ sanitary manhole
top 693.34
12" inv. in 686.49 NE
12" inv. in 686.19 SE
12" inv. in 686.44 SW
15" inv. out 686.14 NW

(1) storm manhole
top 715.02
24" inv. 710.22 NE
10" inv. in 710.27 SE
24" inv. out 710.12 SW

(2) storm manhole
top 695.35
24" inv. in 688.60 NE
18" inv. out 688.25 NW

(3) storm manhole
pipes not visible
top 695.04
18" inv. in 678.49 SE.
inv. out 677.99 SW

(4) grated storm manhole
pipes not visible
top 687.29
inv. at center of structure 655.79

(5) grate inlet
top 690.14
10" inv. out 688.24 NW

(6) grate inlet
debris filled
top 719.58
12" inv. in 715.74 E
12" inv. out 715.60 SW

(7) grate inlet
debris filled
top 709.84
10" inv. out 702.78 W

(8) curb inlet
debris filled
top 709.74
12" inv. in 701.46 SE
12" inv. out 701.24 SW

(9) curb inlet
debris filled
top 706.69
12" inv. in 702.62 SE
12" inv. out 702.55 SW

(10) storm manhole
abandoned
top 678.80

(11) curb inlet
top 720.69
18" inv. in 714.49 NW
12" inv. in 715.24 NE
18" inv. in 713.94 SE
24" inv. out 713.89 SW

(12) storm manhole
top 720.68
12" inv. out 715.73 SW

(13) grate inlet
top 714.75
8" inv. in 711.55 SE
4" inv. in 711.60 SW
10" inv. out 711.45 NW

(14) storm manhole
top 720.40
12" inv. in 715.20 NE
12" inv. in 715.35 SE
18" inv. out 715.00 NW

(15) curb inlet
top 722.52
12" inv. in 717.57 SW
12" inv. in 717.52 NW
12" inv. in 717.52 NW
15" inv. in 717.47 NE
18" inv. out 717.37 SE

(16) grate inlet
top 720.37
8" inv. in 718.02 NW
12" inv. out 717.92 NE

(17) storm manhole
top 722.39
15" inv. in 718.29 NE
15" inv. out 718.19 SW

This topographic survey of Jefferson Park was completed under the direct and responsible charge of, Loren W. Knighting from an actual [X] Ground or [ ] Airborne survey made under my supervision; that the imagery and/or original data was obtained during the week of April 6, 2015; and that this plat, map, or digital geospatial data including metadata meets minimum accuracy standards unless otherwise noted.

L.W. Knighting 12/11/2015

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L. W. KNIGHTING
Lic. No. 1460
12/11/2015
LAND SURVEYOR

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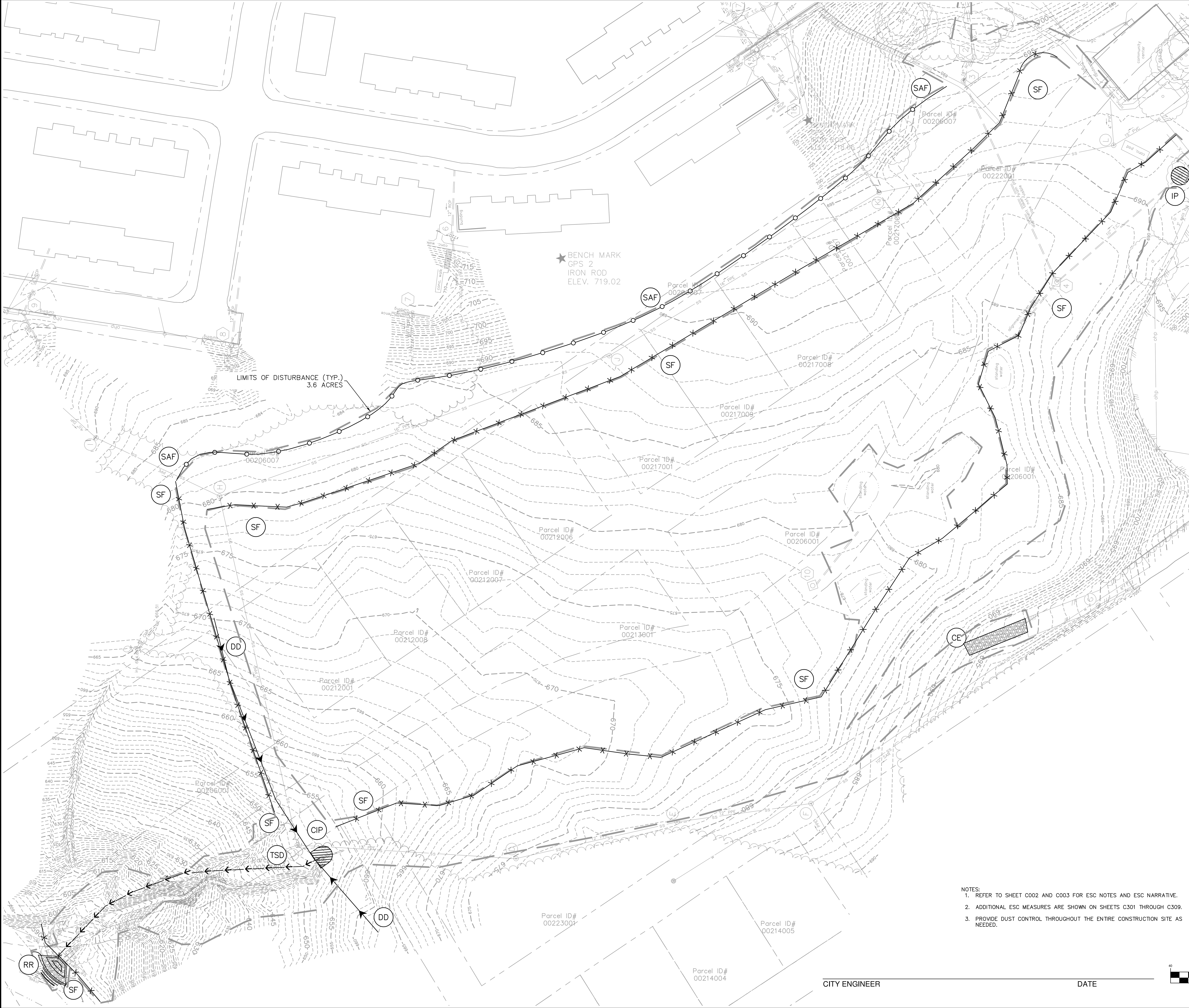
EXISTING CONDITIONS
JEFFERSON PARK DRAINAGE IMPROVEMENTS
LYNCHBURG, VIRGINIA CITY PROJECT NO. ME 016

REVISIONS

DESIGNED BY:	MBJ
DRAWN BY:	CEP
CHECKED BY:	CAH
SCALE:	1" = 30'
DATE:	12/11/2015
PROJECT NUMBER:	B14111B-05

C102



EROSION & SEDIMENT CONTROL LEGEND

No.	TITLE	KEY	SYMBOL
3.01	SAFETY FENCE	SAF	
3.02	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	
3.05	SILT FENCE	SF	
3.07	STORM DRAIN INLET PROTECTION	IP	
3.08	CULVERT INLET PROTECTION	CIP	
3.09	TEMPORARY DIVERSION DIKE	DD	
3.15	TEMPORARY SLOPE DRAIN	TSD	
3.17	STORMWATER CONVEYANCE CHANNEL	SCC	999 1000
3.18	OUTLET PROTECTION	OP	
3.19	RIPRAP	RR	
3.30	TOPSOILING	TO	TO
3.32	PERMANENT SEEDING	PS	PS
3.35	MULCHING	MU	MU
3.36	BLANKETS/MATTING	B/M	B/M
3.39	DUST CONTROL	DC	DC

NOTES:

1. REFER TO SHEET C002 AND C003 FOR ESC NOTES AND ESC NARRATIVE.
2. ADDITIONAL ESC MEASURES ARE SHOWN ON SHEETS C301 THROUGH C309.
3. PROVIDE DUST CONTROL THROUGHOUT THE ENTIRE CONSTRUCTION SITE AS NEEDED.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40ft.

CITY ENGINEER DATE

COMMONWEALTH OF VIRGINIA
CAROLYN A. HOWARD
Lic. No. 042775
04/19/16
PROFESSIONAL ENGINEER

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PHASE 1 EROSION & SEDIMENT CONTROL PLAN

JEFFERSON PARK DRAINAGE IMPROVEMENTS

LYNCHBURG, VIRGINIA CITY PROJECT NO. ME 016

REVISIONS

DESIGNED BY:	MBJ
DRAWN BY:	CEP
CHECKED BY:	CAH
SCALE:	1" = 40'
DATE:	4/19/2016
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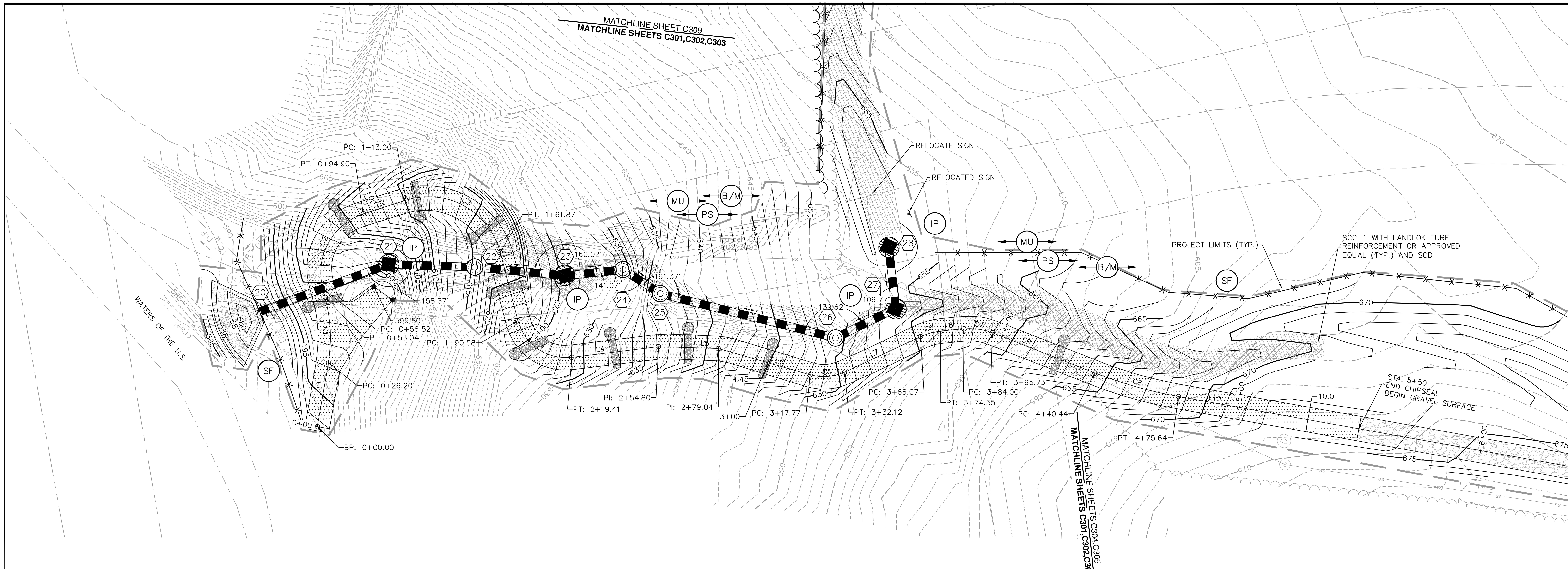
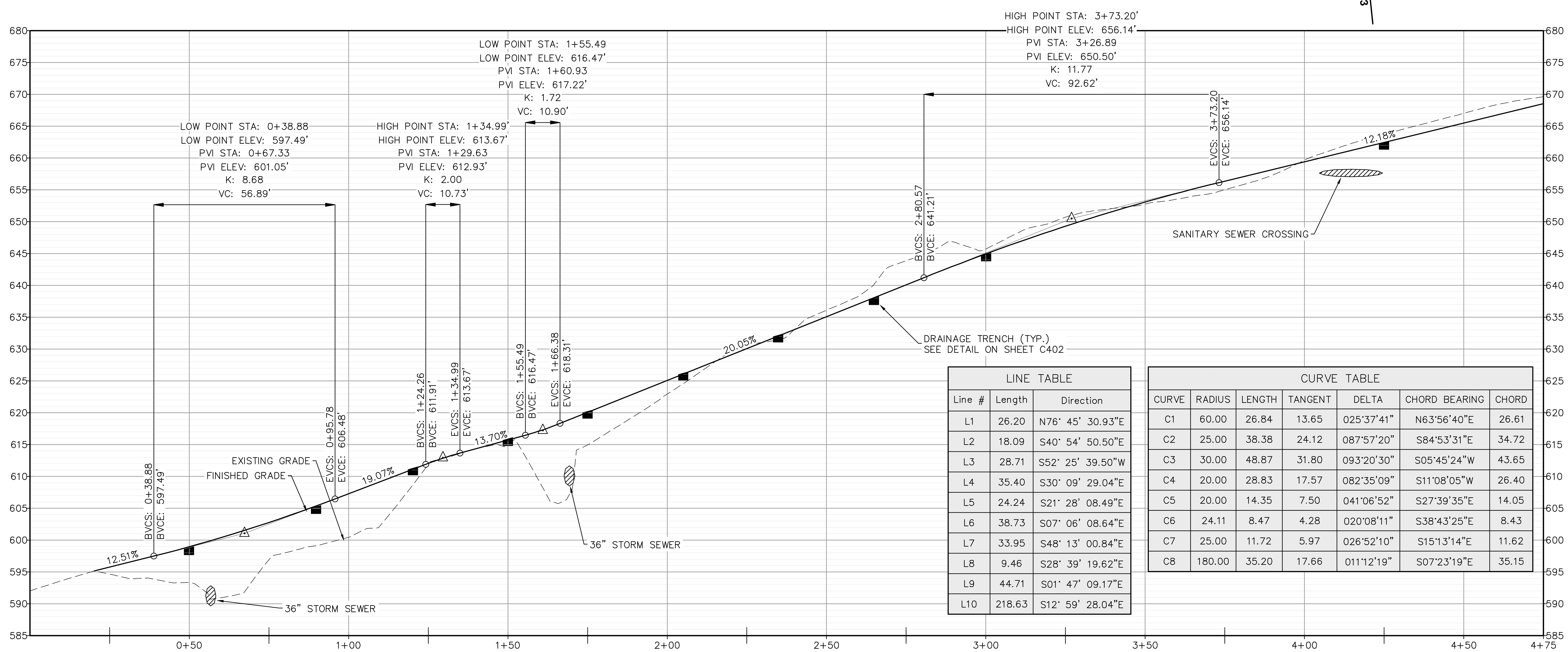
C201





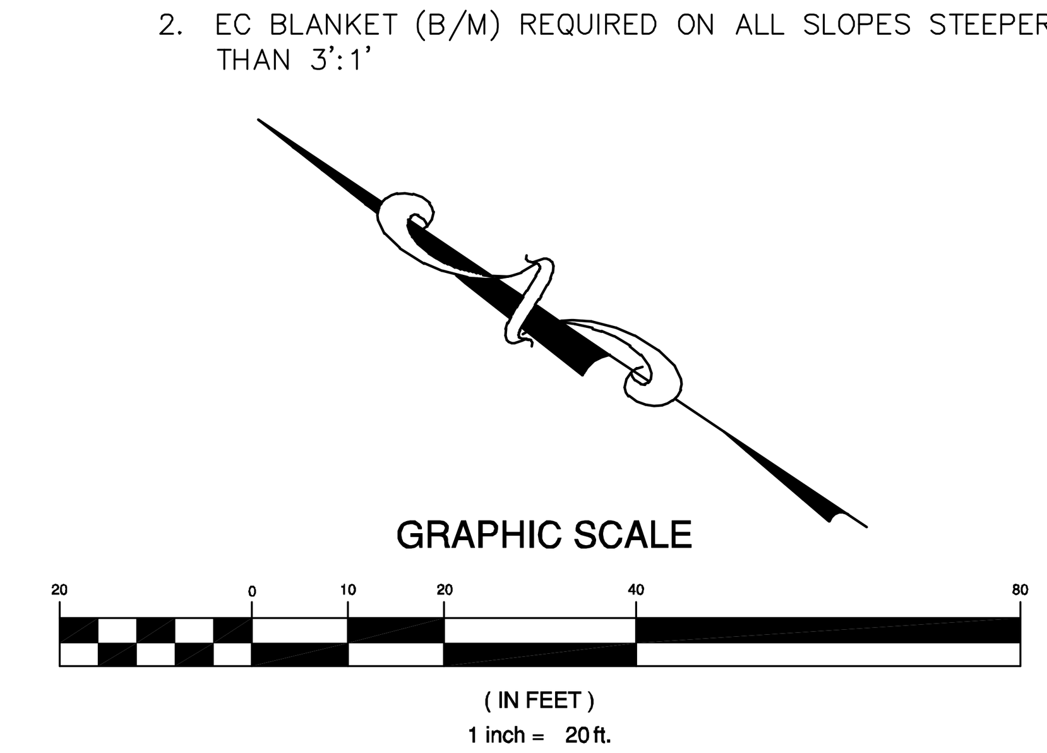
ACCESS ROAD PROFILE 0+00 TO 4+75 – Scale: H: 1"=20', V: 1"=10'

LINE TABLE		
Line #	Length	Direction
L1	26.20	N76° 45' 30.93"E
L2	18.09	S40° 54' 50.50"E
L3	28.71	S52° 25' 39.50"W
L4	35.40	S30° 09' 29.04"E
L5	24.24	S21° 28' 08.49"E
L6	38.73	S07° 06' 08.64"E
L7	33.95	S48° 13' 00.84"E
L8	9.46	S28° 39' 19.62"E
L9	44.71	S01° 47' 09.17"E
L10	218.63	S12° 59' 28.04"E

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	DELTA	CHORD BEARING	CHORD
C1	60.00	26.84	13.65	025°37'41"	N63°56'40"E	26.61
C2	25.00	38.38	24.12	087°57'20"	S84°53'31"E	34.72
C3	30.00	48.87	31.80	093°20'30"	S05°45'24"W	43.65
C4	20.00	28.83	17.57	082°35'09"	S11°08'05"W	26.40
C5	20.00	14.35	7.50	041°06'52"	S27°39'35"E	14.05
C6	24.11	8.47	4.28	020°08'11"	S38°43'25"E	8.43
C7	25.00	11.72	5.97	026°52'10"	S15°13'14"E	11.62
C8	180.00	35.20	17.66	011°12'19"	S07°23'19"E	35.15

TURF REINFORCEMENT
CHIPSEAL SURFACE
6" VDOT #1 COARSE AGGREGATE
DRAINAGE TRENCH

NOTES:
1. REFER TO SHEET C002 FOR GENERAL NOTES & LEGEND
2. EC BLANKET (B/M) REQUIRED ON ALL SLOPES STEEPER THAN 3':1'



CITY ENGINEER DATE

COMMONWEALTH OF VIRGINIA
CAROLYN A. HOWARD
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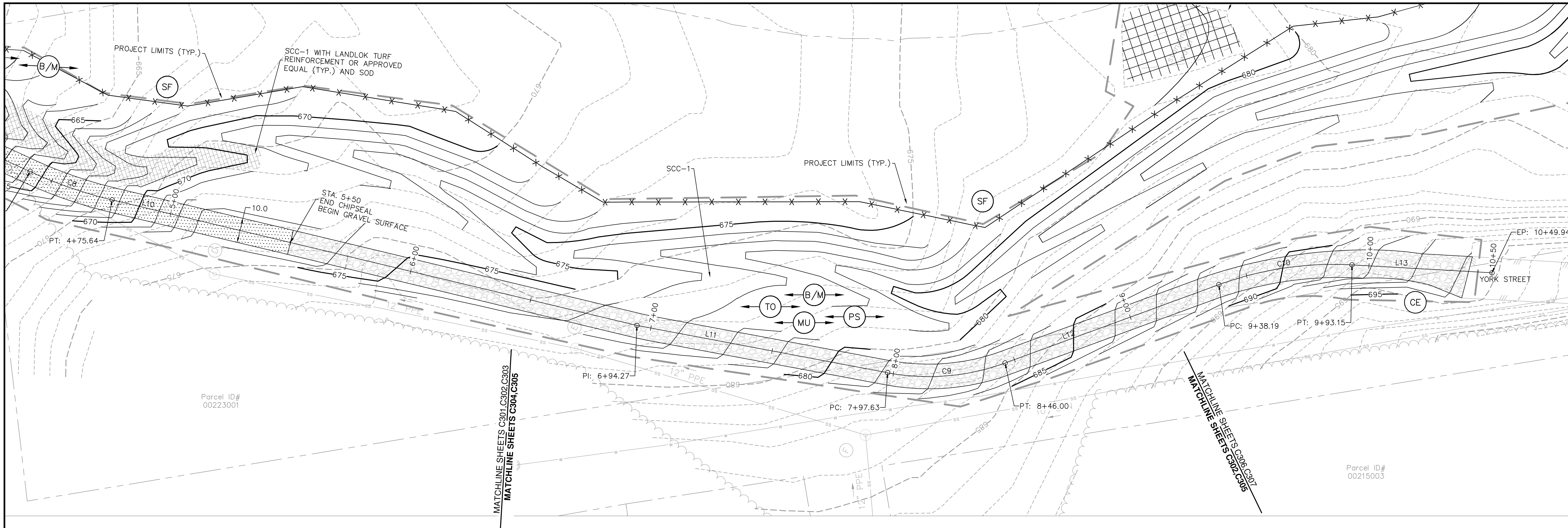
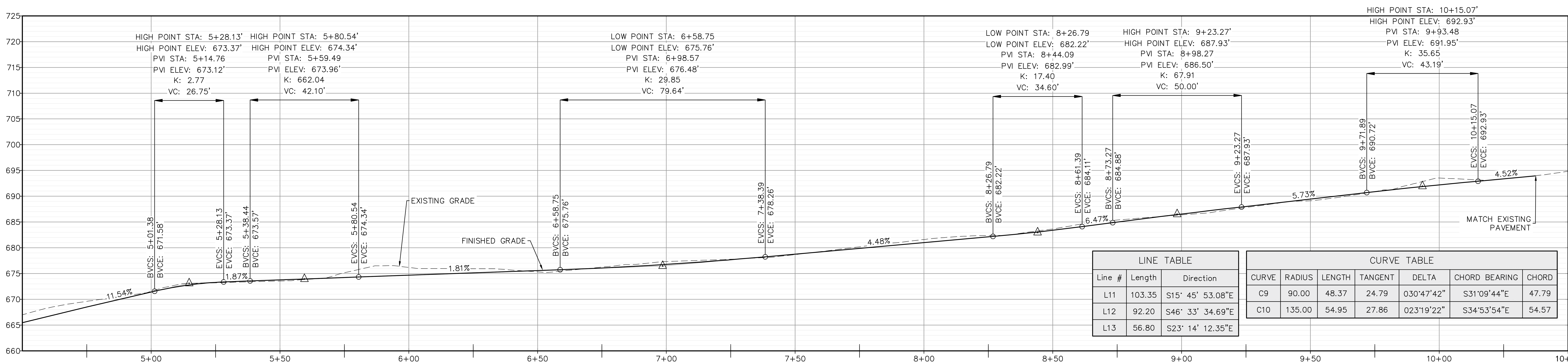
ACCESS ROAD PLAN & PROFILE
JEFFERSON PARK DRAINAGE IMPROVEMENTS
LYNCHBURG, VIRGINIA
CITY PROJECT NO. ME 016

REVISIONS

DESIGNED BY: MBJ
DRAWN BY: CEP
CHECKED BY: CAH
SCALE: 1" = 20'
DATE: 4/19/2016
PROJECT NUMBER: B14111B-05

C301





ACCESS ROAD PROFILE 4+00 TO 10+50 – Scale: H: 1"=20', V: 1"=10'

LINE TABLE		
Line #	Length	Direction
L11	103.35	S15° 45' 53.08"E
L12	92.20	S46° 33' 34.69"E
L13	56.80	S23° 14' 12.35"E

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	DELTA	CHORD BEARING	CHORD
C9	90.00	48.37	24.79	030°47'42"	S31°09'44"E	47.79
C10	135.00	54.95	27.86	023°19'22"	S34°53'54"E	54.57

NOTES:
1. REFER TO SHEET C002 FOR GENERAL NOTES & LEGEND
2. EC BLANKET (B/M) REQUIRED ON ALL SLOPES STEEPER THAN 6':1'

CHIPSEAL SURFACE
6" VDOT #1 COARSE AGGREGATE
LOW AREAS TO BE FILLED

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

CITY ENGINEER DATE

COMMONWEALTH OF VIRGINIA
CAROLYN A. HOWARD
Lic. No. 042775
04/19/16
PROFESSIONAL ENGINEER

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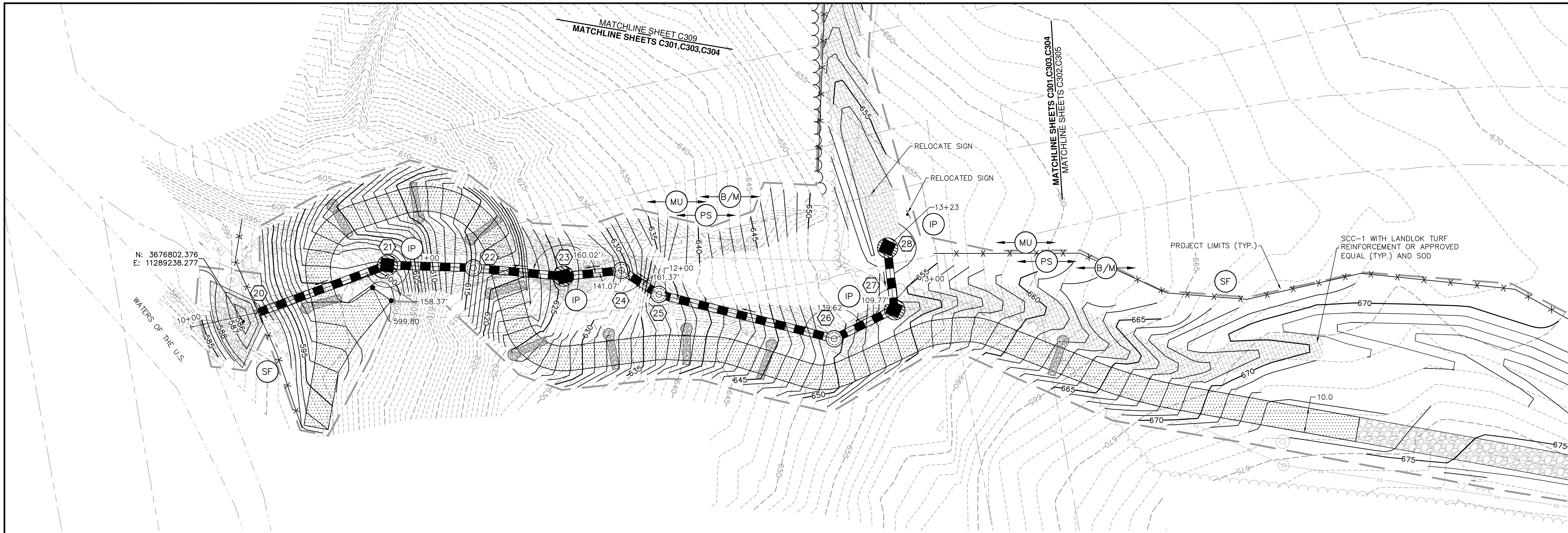
Coats, NC

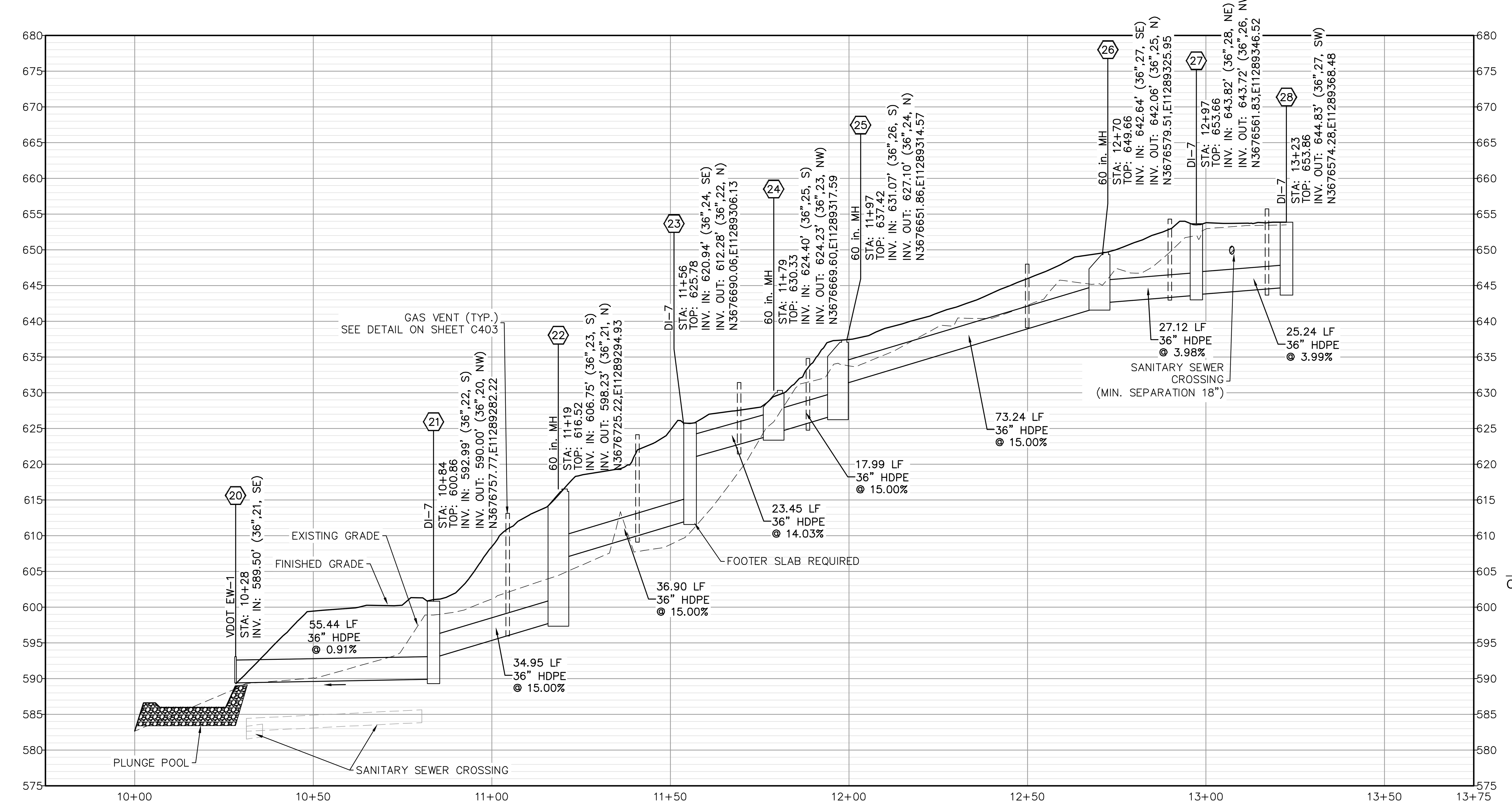
ACCESS ROAD PLAN & PROFILE
JEFFERSON PARK DRAINAGE IMPROVEMENTS
LYNCHBURG, VIRGINIA
CITY PROJECT NO. ME 016

REVISIONS

DESIGNED BY: MBJ
DRAWN BY: CEP
CHECKED BY: CAH
SCALE: 1" = 20'
DATE: 4/19/2016
PROJECT NUMBER: B14111B-05

C302





NORTH STORM SEWER PROFILE – Scale: H: 1"=20', V: 1"=10'

NOTES:
1. REFER TO SHEET C002 FOR GENERAL NOTES & LEGEND.
2. ALL PIPE SHALL BE INSTALLED AS SHOWN IN CITY DETAIL 27.01A (ADS N-12 HP PIPE/PP PIPE). SEE DETAIL ON SHEET C403.

CITY ENGINEER DATE

GRAPHIC SCALE

(IN FEET)
1 inch = 20ft.

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NORTH STORM SEWER PLAN & PROFILE
JEFFERSON PARK DRAINAGE IMPROVEMENTS

LYNCHBURG, VIRGINIA
CITY PROJECT NO. ME 016

REVISIONS

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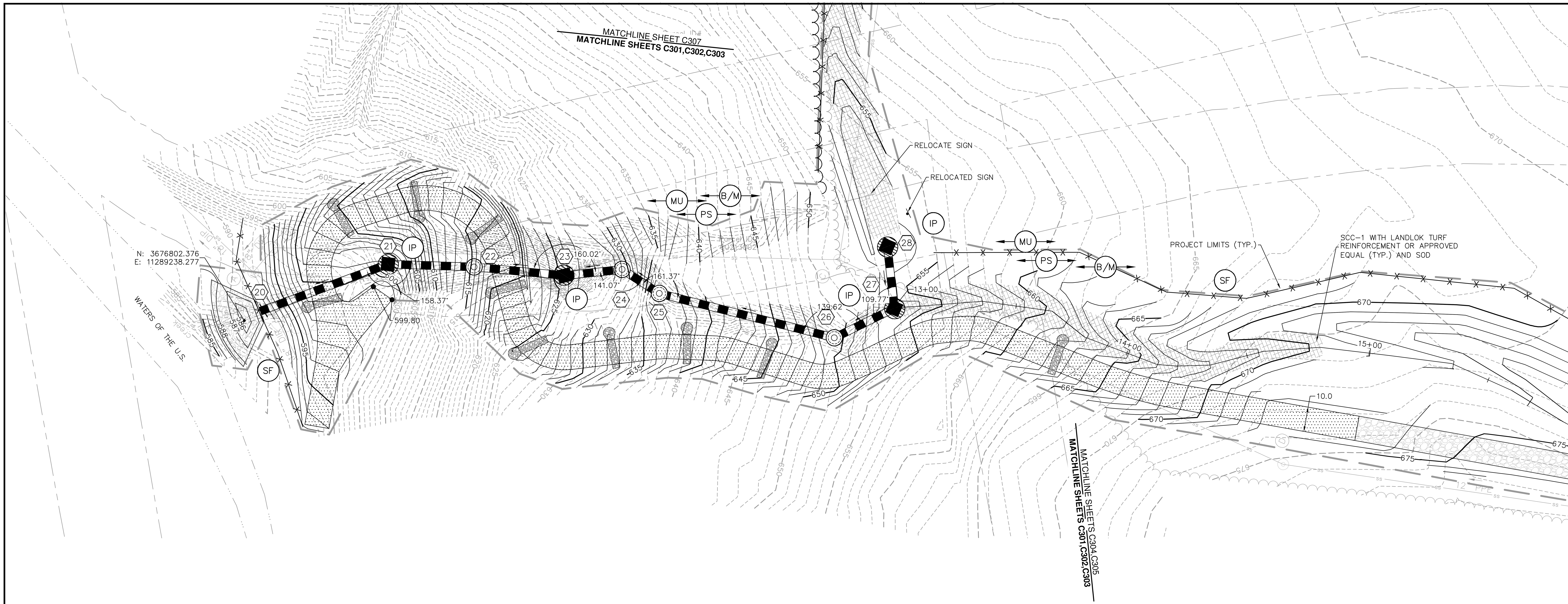
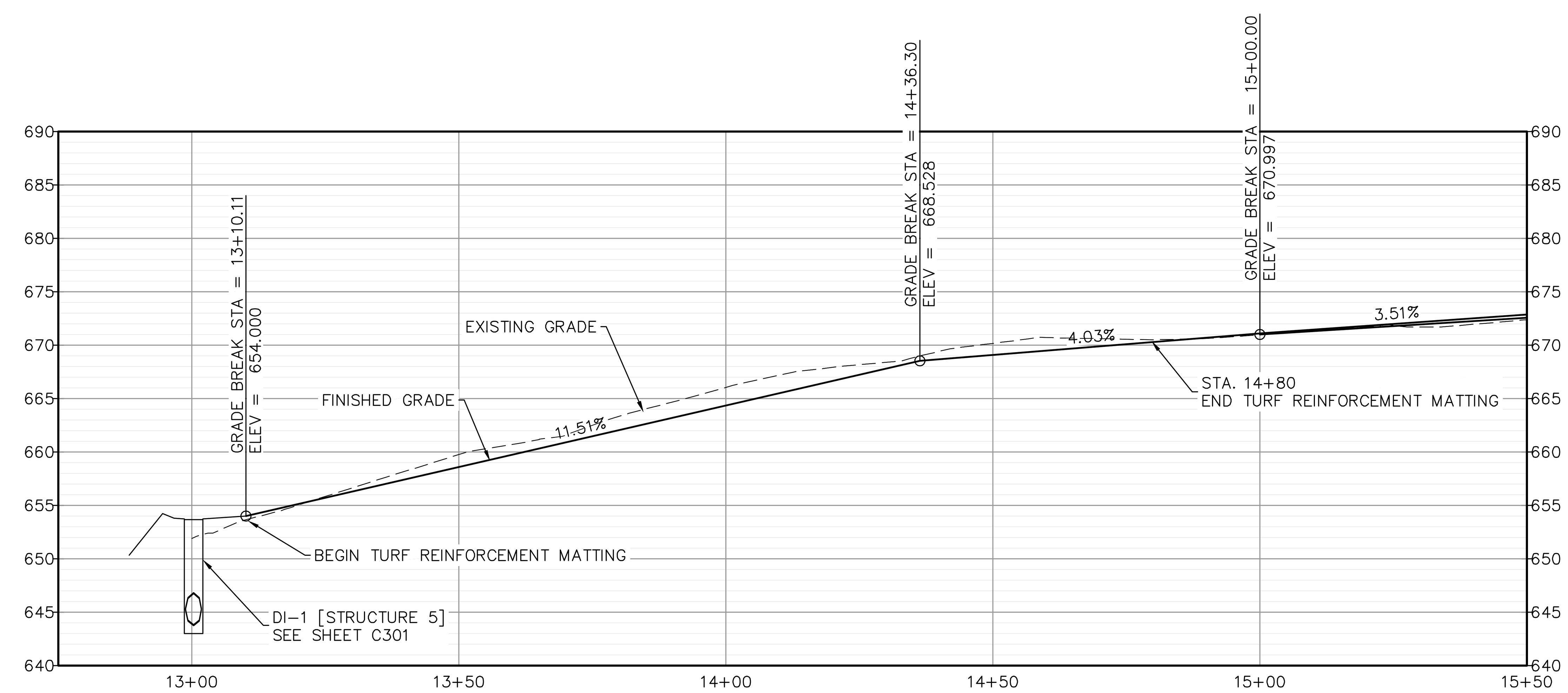
C303





SCC-1 PROFILE 12+75 TO 15+50 – Scale: H: 1"=20', V: 1"=10'

NOTES:
1. REFER TO SHEET C002 FOR GENERAL NOTES & LEGEND

CITY ENGINEER DATE

GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

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SCC-1 PLAN & PROFILE
JEFFERSON PARK DRAINAGE IMPROVEMENTS
LYNCHBURG, VIRGINIA CITY PROJECT NO. ME 016

REVISIONS

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DRAWN BY:	CEP
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SCALE:	1" = 20'
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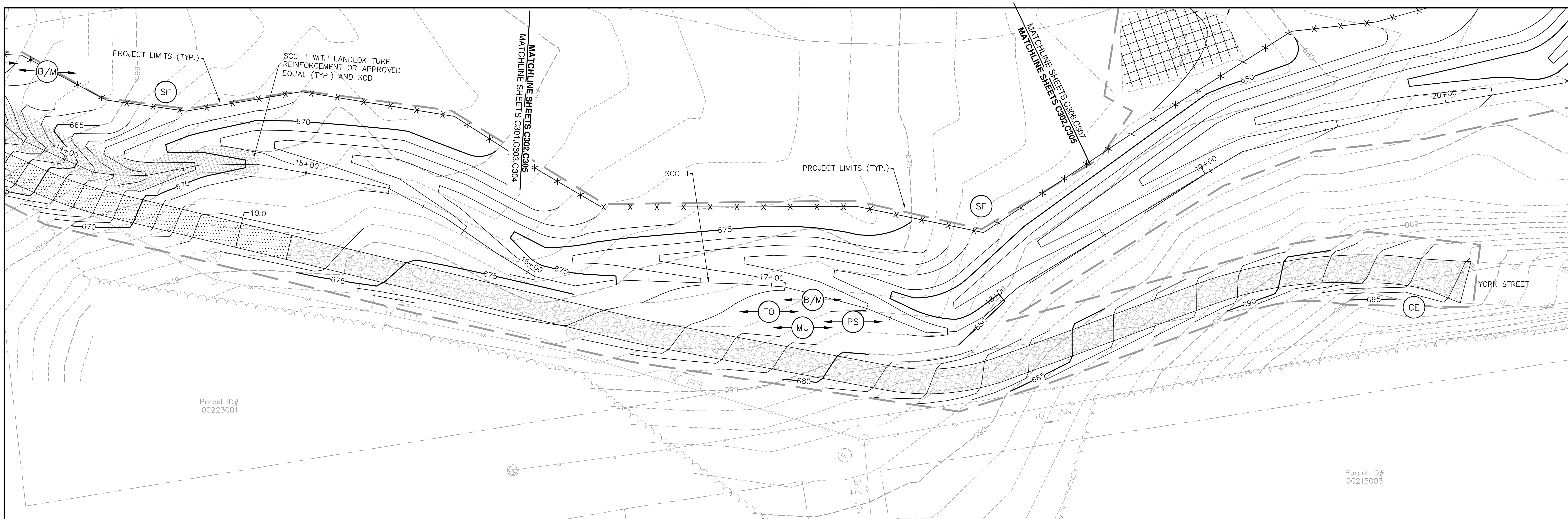
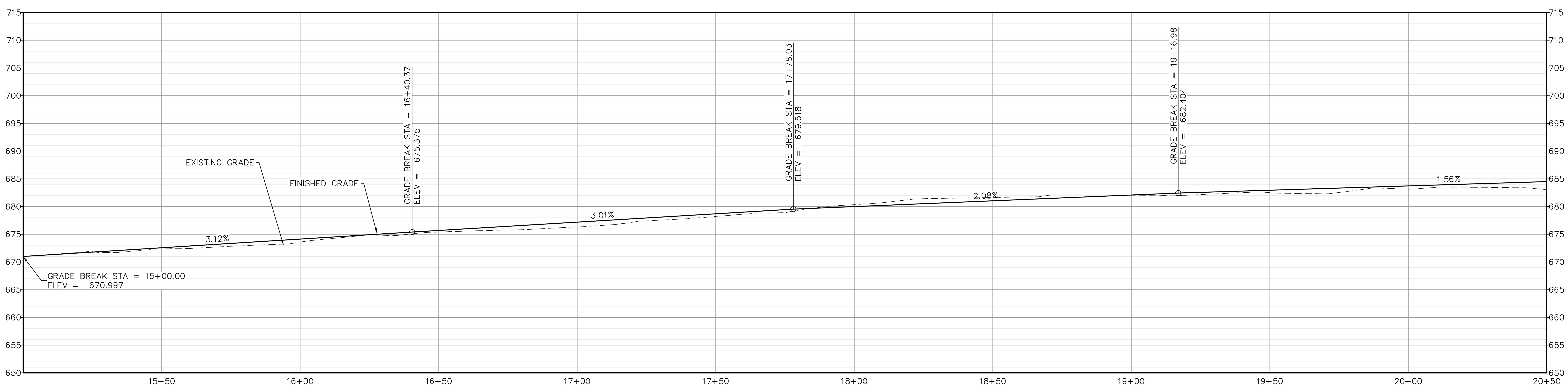
PROJECT NUMBER:	B14111B-05

C304





SCC–1 PROFILE 15+00 TO 20+50 – Scale: H: 1"=20', V: 1"=10'

NOTES:
1. REFER TO SHEET C002 FOR GENERAL NOTES & LEGEND

CITY ENGINEER

DATE

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

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SCC-1 PLAN & PROFILE

JEFFERSON PARK DRAINAGE IMPROVEMENTS

LYNCHBURG, VIRGINIA CITY PROJECT NO. ME 016

REVISIONS

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SCALE:	1" = 20'
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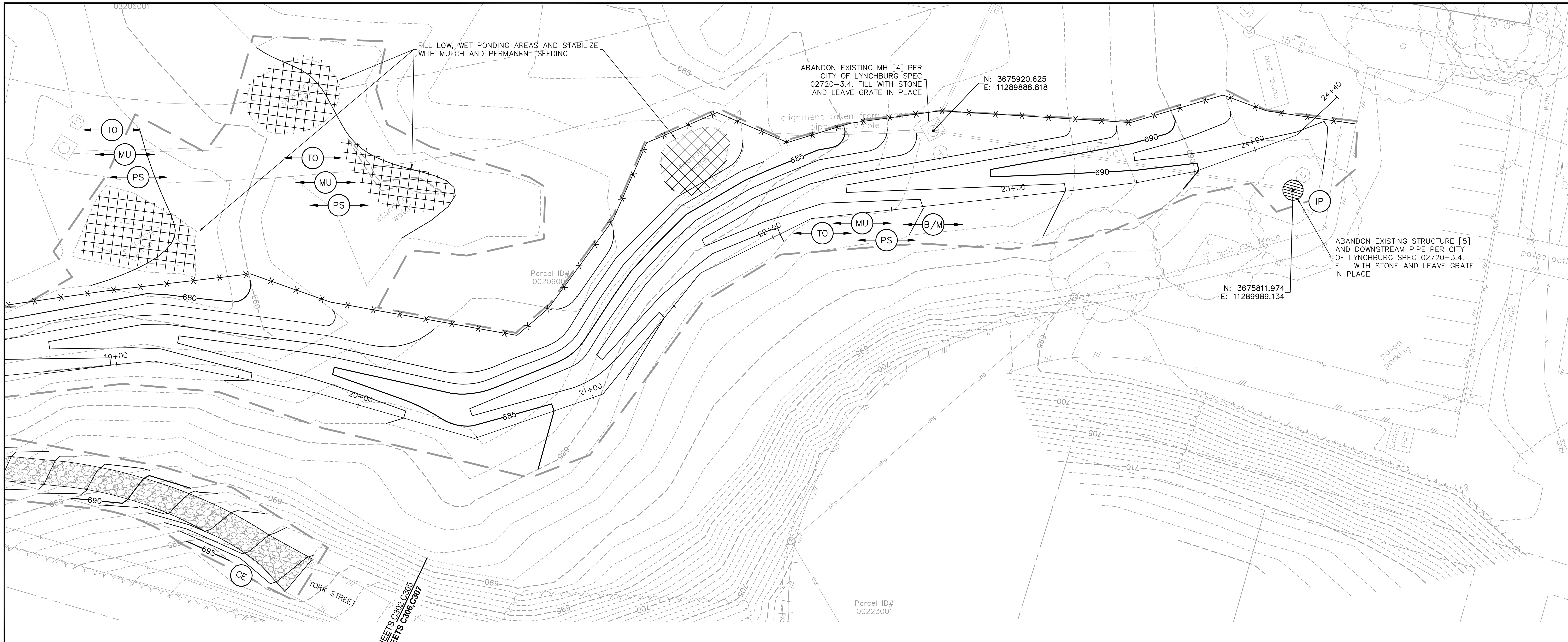
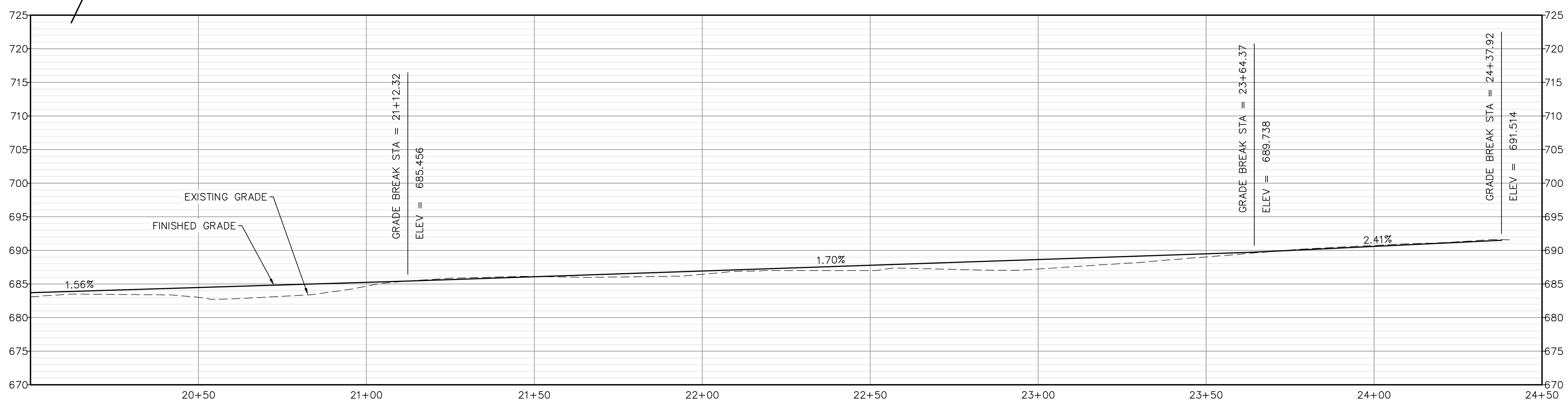
C305





SCC-1 PROFILE 20+00 TO 23+70 - Scale: H: 1"=20', V: 1"=10'

NOTES:
1. REFER TO SHEET C002 FOR GENERAL NOTES & LEGEND.
2. EROSION CONTROL BLANKET (B/M) REQUIRED ON ALL SLOPES STEEPER THAN 6':1'.

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

CITY ENGINEER DATE

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Hampton Roads, VA

SCC-1 PLAN & PROFILE
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REVISIONS

DESIGNED BY:	MBJ
DRAWN BY:	CEP
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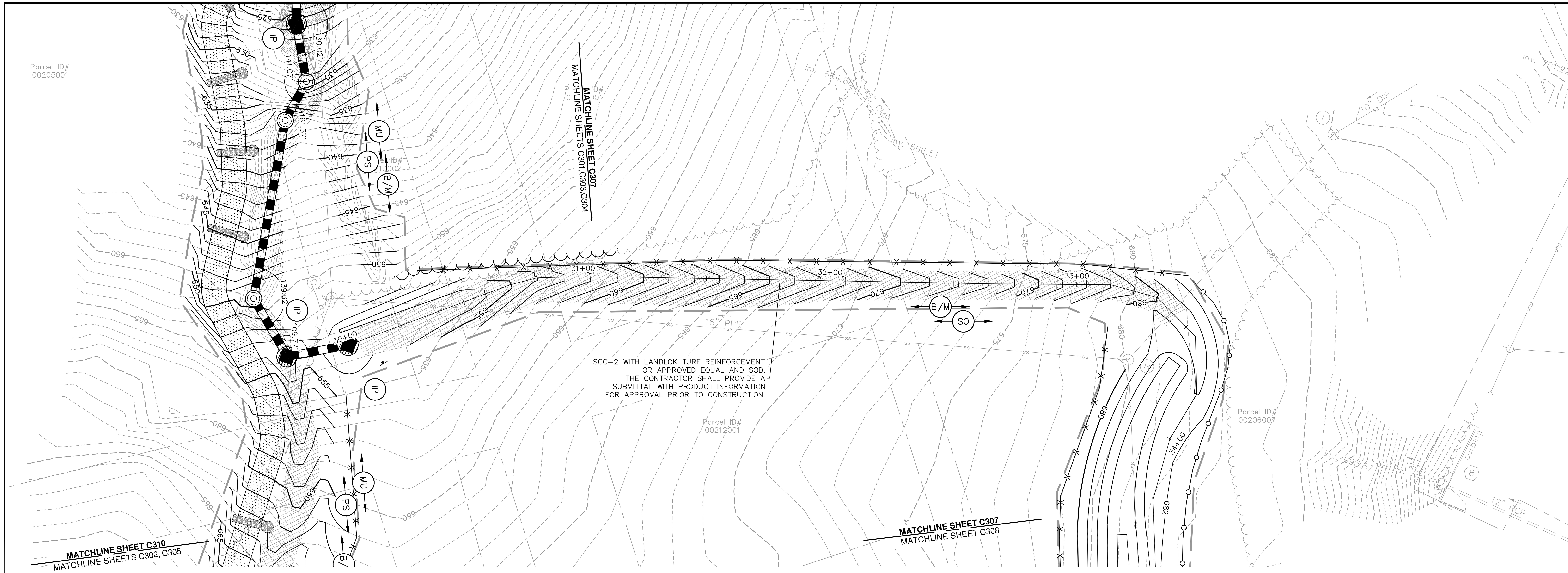
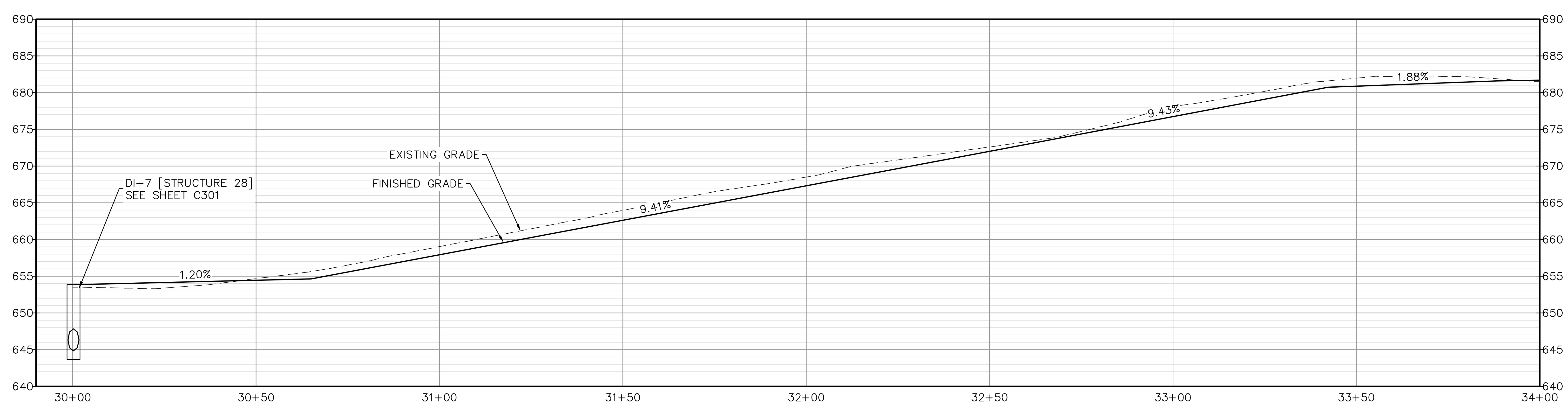
SCALE:	1" = 20'
DATE:	4/19/2016
PROJECT NUMBER:	B14111B-05

C306





SCC-2 PROFILE – Scale: H: 1"=20', V: 1"=10'

NOTES:
1. REFER TO SHEET C002 FOR GENERAL NOTES & LEGEND.

GRAPHIC SCALE

(IN FEET)
1 inch = 20ft.

CITY ENGINEER DATE

COMMONWEALTH OF VIRGINIA
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SCC-2 PLAN & PROFILE

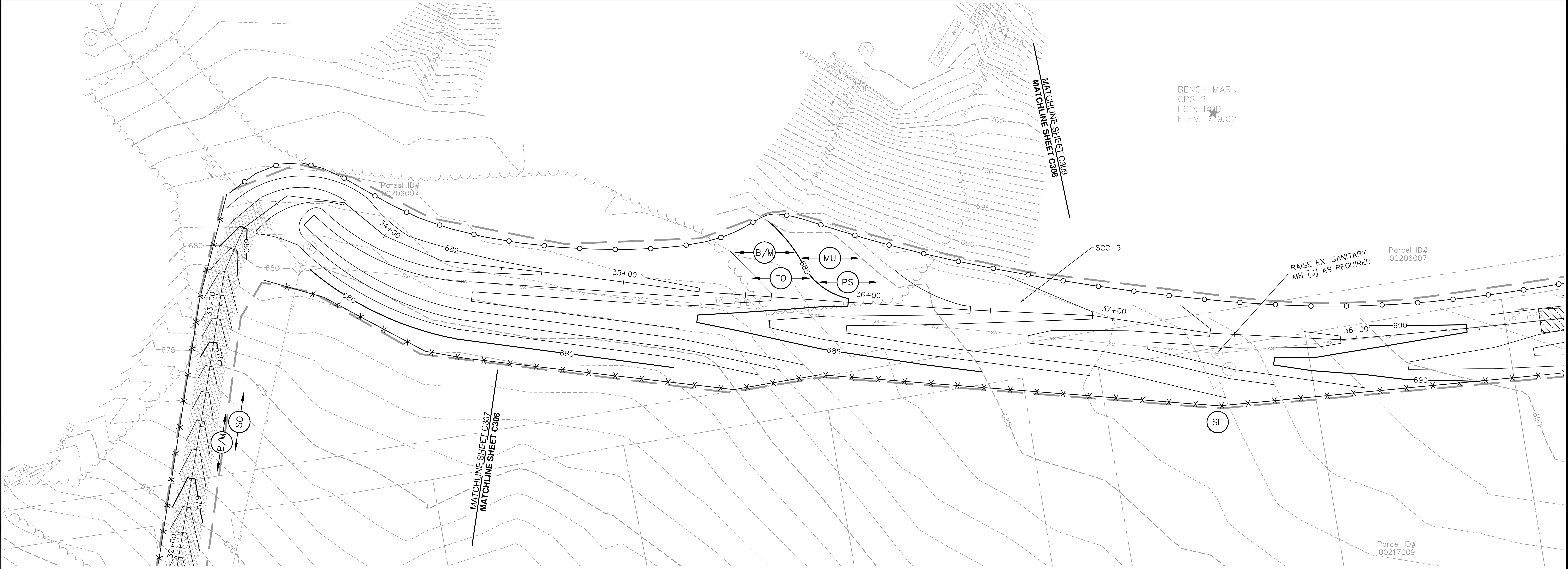
JEFFERSON PARK DRAINAGE IMPROVEMENTS

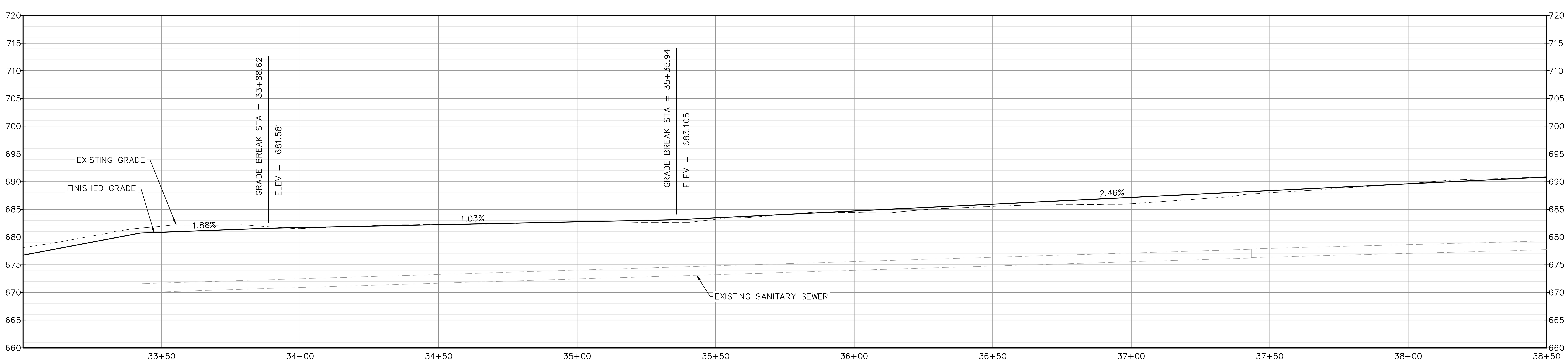
LYNCHBURG, VIRGINIA CITY PROJECT NO. ME 016

REVISIONS

DESIGNED BY:	MBJ
DRAWN BY:	CEP
CHECKED BY:	CAH
SCALE:	1" = 20'
DATE:	4/19/2016
PROJECT NUMBER:	B14111B-05

C307





SCC-3 PROFILE 33+00 TO 38+50 – Scale: H: 1"=20', V: 1"=10'

NOTES:
1. REFER TO SHEET C002 FOR GENERAL NOTES & LEGEND
2. EROSION CONTROL BLANKET (B/M) REQUIRED ON ALL SLOPES STEEPER THAN 6':1'

CITY ENGINEER DATE

GRAPHIC SCALE
(IN FEET)
1 inch = 20ft.

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SCC-3 PLAN & PROFILE
JEFFERSON PARK DRAINAGE IMPROVEMENTS
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CITY PROJECT NO. ME 016

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DRAWN BY:	CEP
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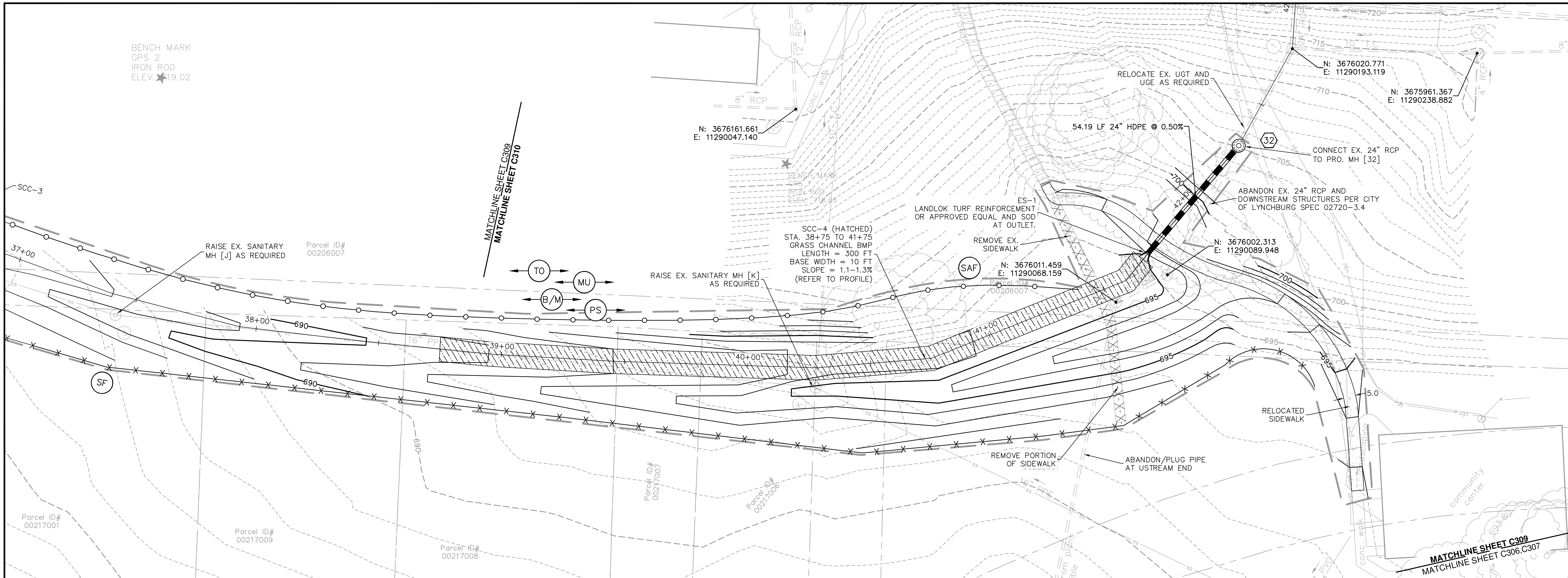
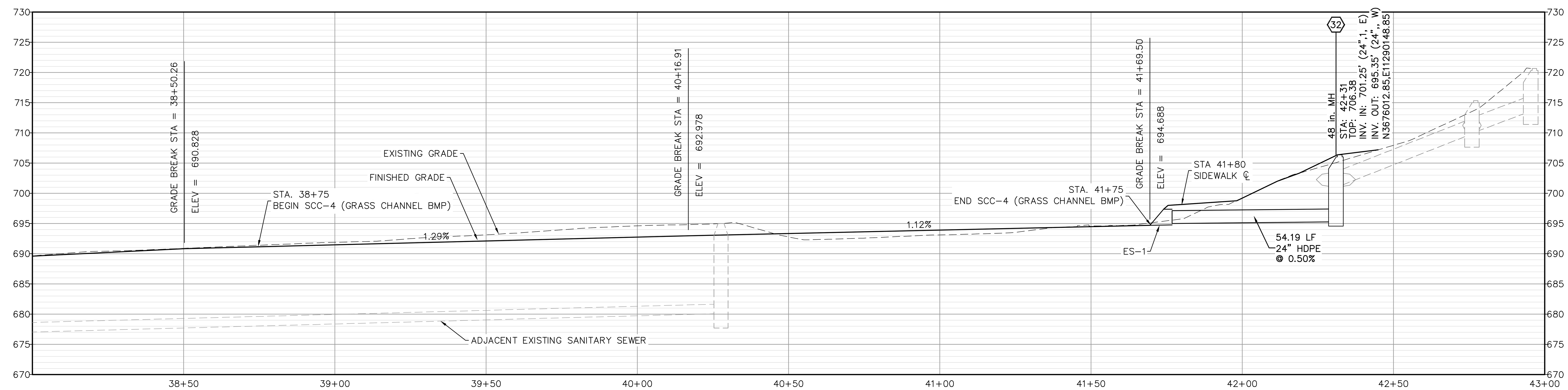
SCALE:	1" = 20'
DATE:	4/19/2016
PROJECT NUMBER:	B14111B-05

C308





SCC-3, SCC-4 PROFILE 38+00 TO 43+00 - Scale: H: 1"=20', V: 1"=10'

GRASS CHANNEL BMP

NOTES:
1. REFER TO SHEET C002 FOR GENERAL NOTES & LEGEND
2. EROSION CONTROL BLANKET (B/M) REQUIRED ON ALL SLOPES STEEPER THAN 6':1'

CITY ENGINEER DATE

GRAPHIC SCALE
(IN FEET)
1 inch = 20ft.

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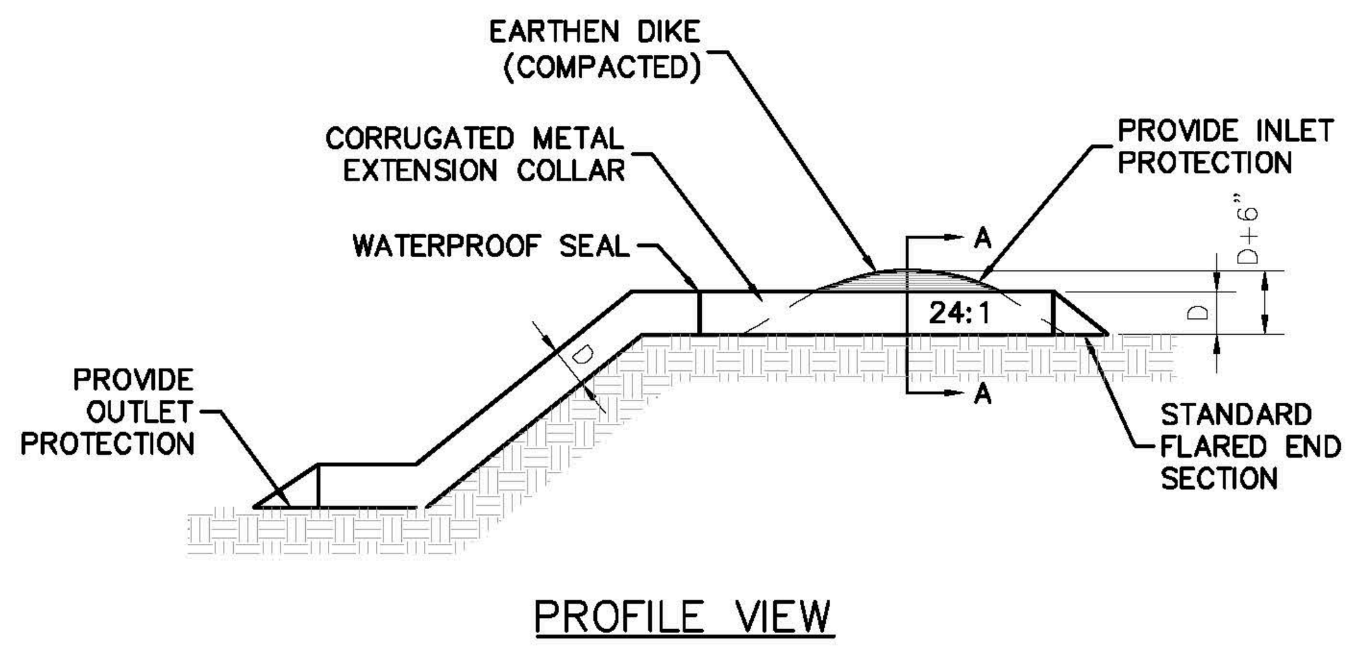
SCC-4 PLAN & PROFILE
JEFFERSON PARK DRAINAGE IMPROVEMENTS
LYNCHBURG, VIRGINIA CITY PROJECT NO. ME 016

REVISIONS

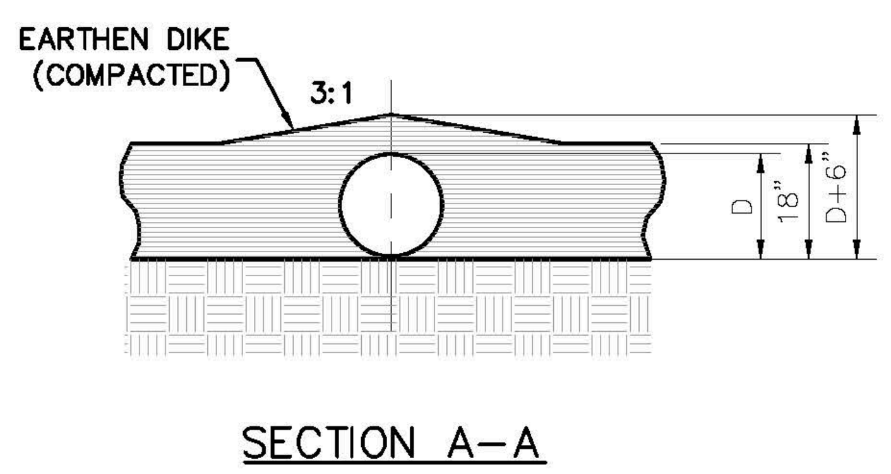
DESIGNED BY:	MBJ
DRAWN BY:	CEP
CHECKED BY:	CAH
SCALE:	1" = 20'
DATE:	4/19/2016
PROJECT NUMBER:	B14111B-05

C309



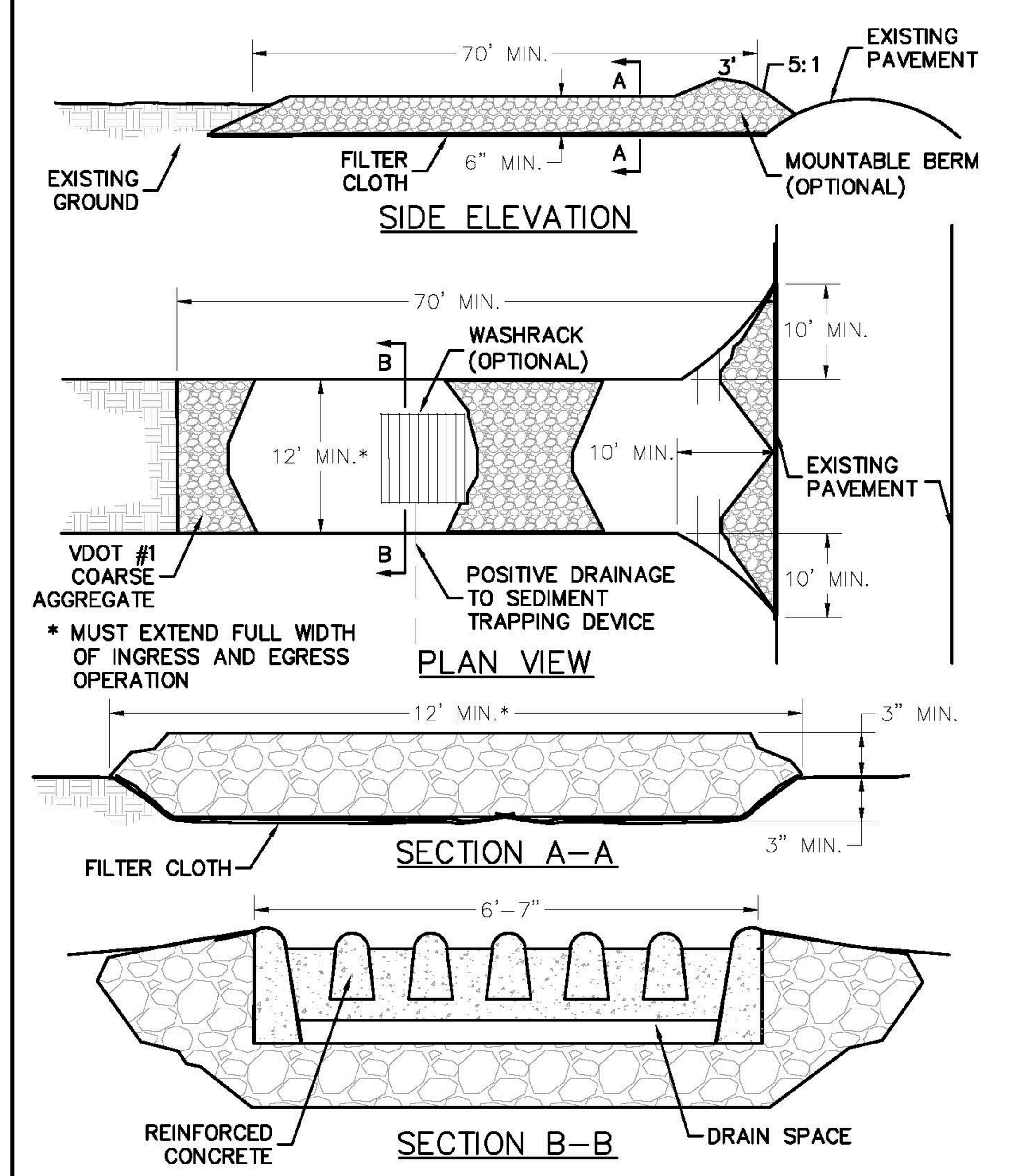
PROFILE VIEW

NOTE:
SEDIMENT MAY BE CONTROLLED AT OUTLET IF UPLAND PONDING WILL CREATE PROBLEMS.

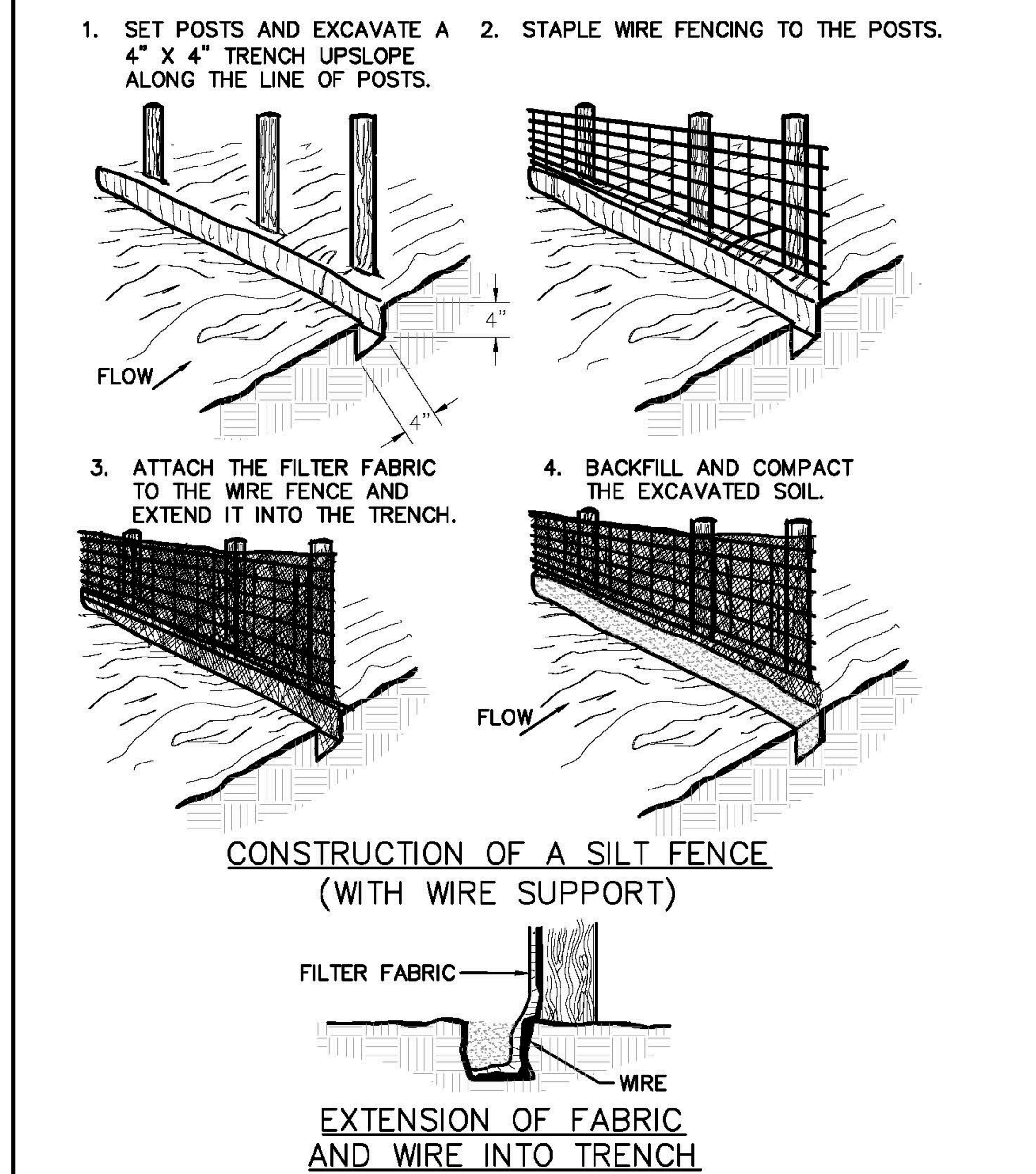


SECTION A–A

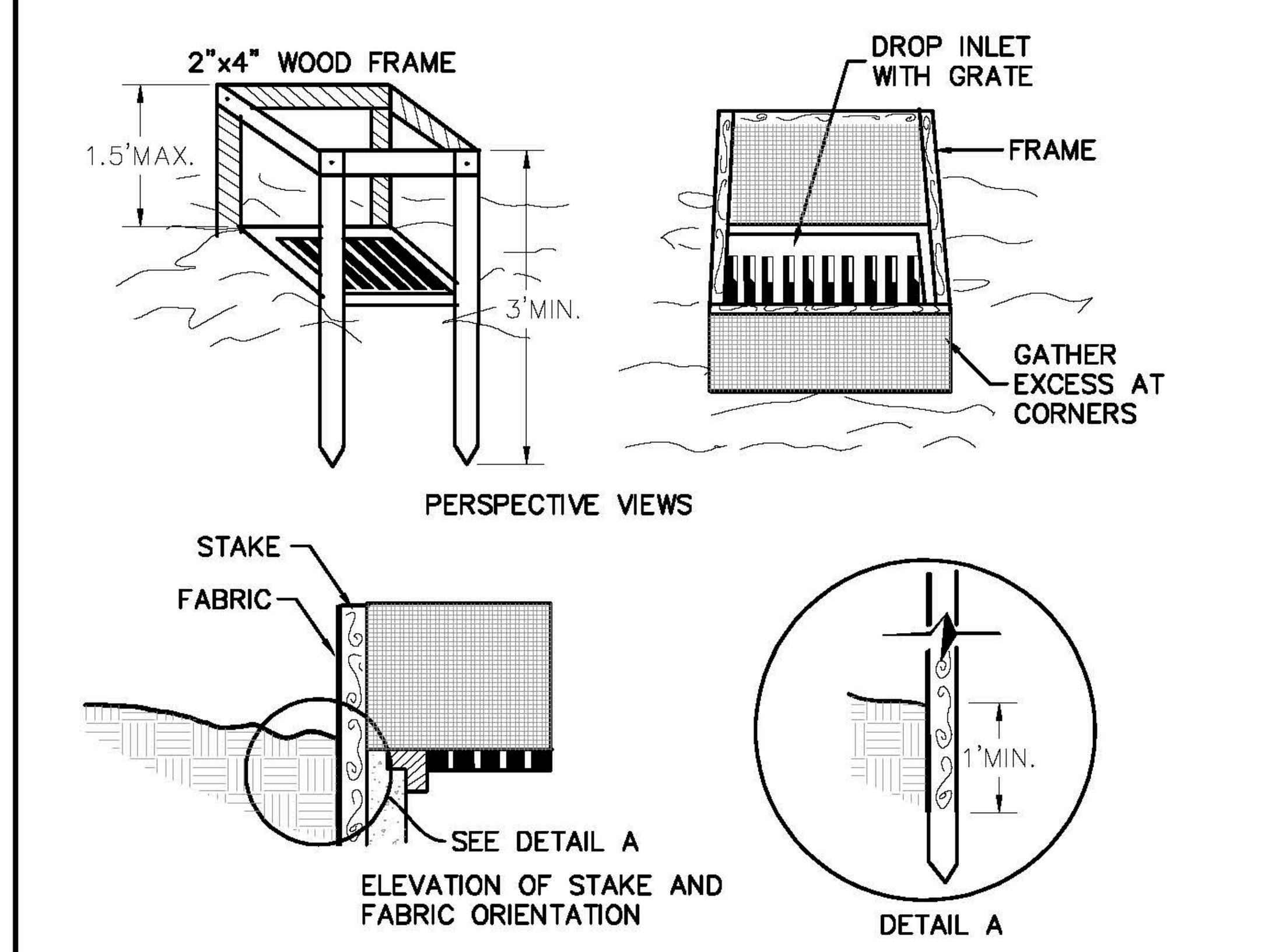
TEMPORARY SLOPE DRAIN DETAIL
NOT TO SCALE
TSD



CONSTRUCTION ENTRANCE WITH OPTIONAL WASHRACK
NOT TO SCALE
CE



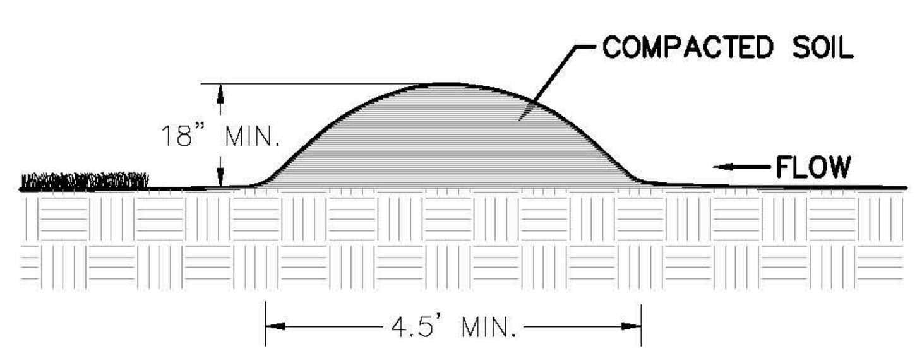
SILT FENCE INSTALLATION DETAILS WITH WIRE BACKING
NOT TO SCALE
SF



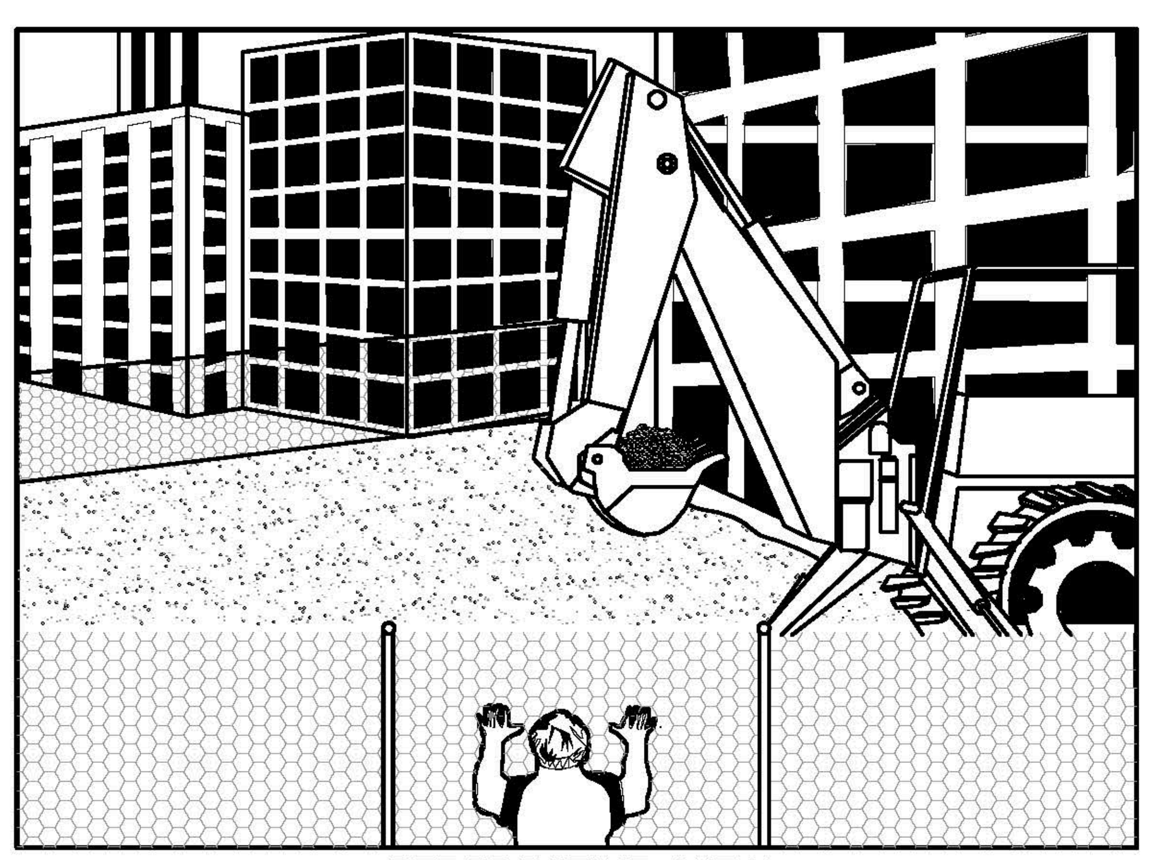
SPECIFIC APPLICATION

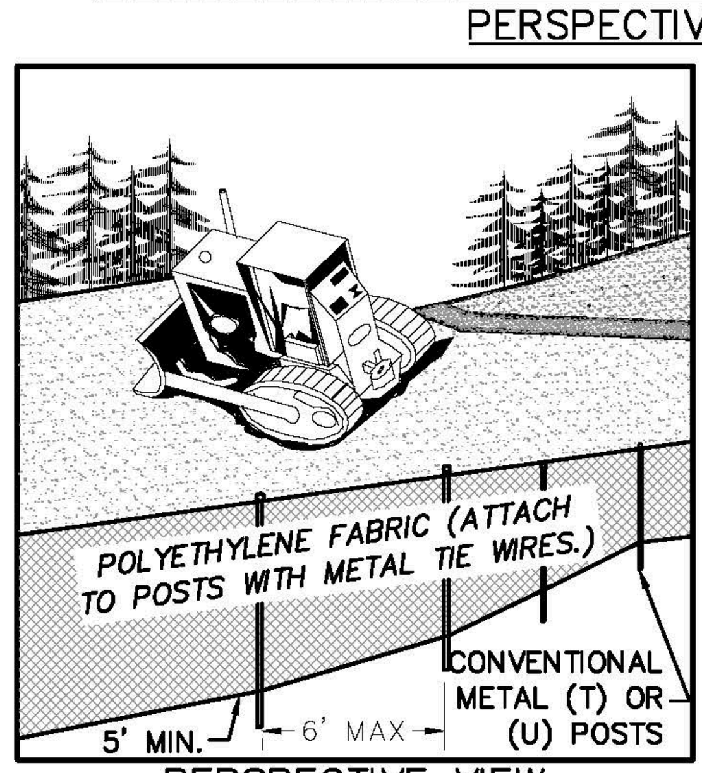
THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPE NO GREATER THAN 5%) WHERE THE INLET SHEET OR OVERLAND FLOWS (NOT EXCEEDING 1 C.F.S.) ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS, SUCH AS IN STREET OR HIGHWAY MEDIANS.

SILT FENCE DROP INLET PROTECTION DETAIL
NOT TO SCALE
IP

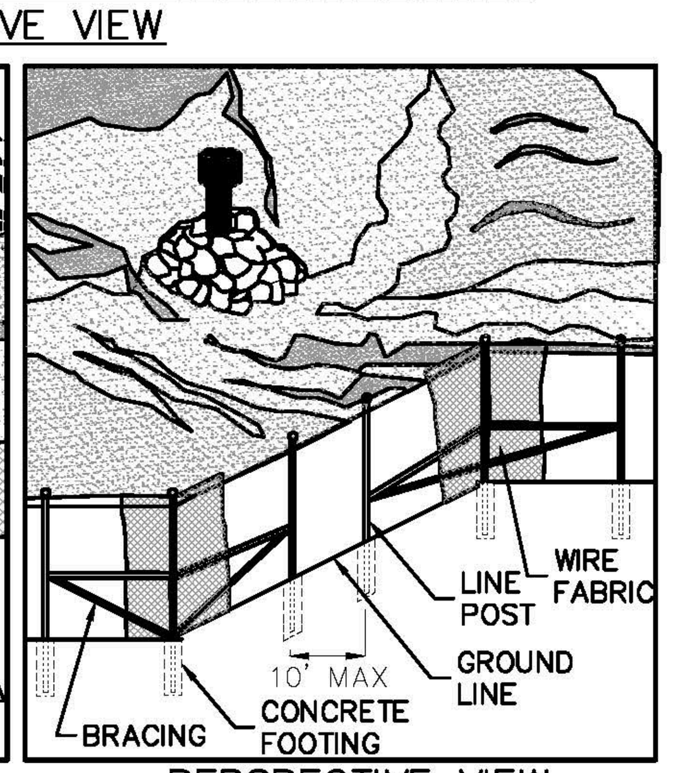


TEMPORARY DIVERSION DIKE
NOT TO SCALE
DD


PERSPECTIVE VIEW



PERSPECTIVE VIEW
PLASTIC FENCE



PERSPECTIVE VIEW
METAL FENCE

SAFETY FENCE DETAIL
NOT TO SCALE
SAF

TABLE 3.32-D SITE SPECIFIC SEEDING MIXTURES FOR PIEDMONT AREA

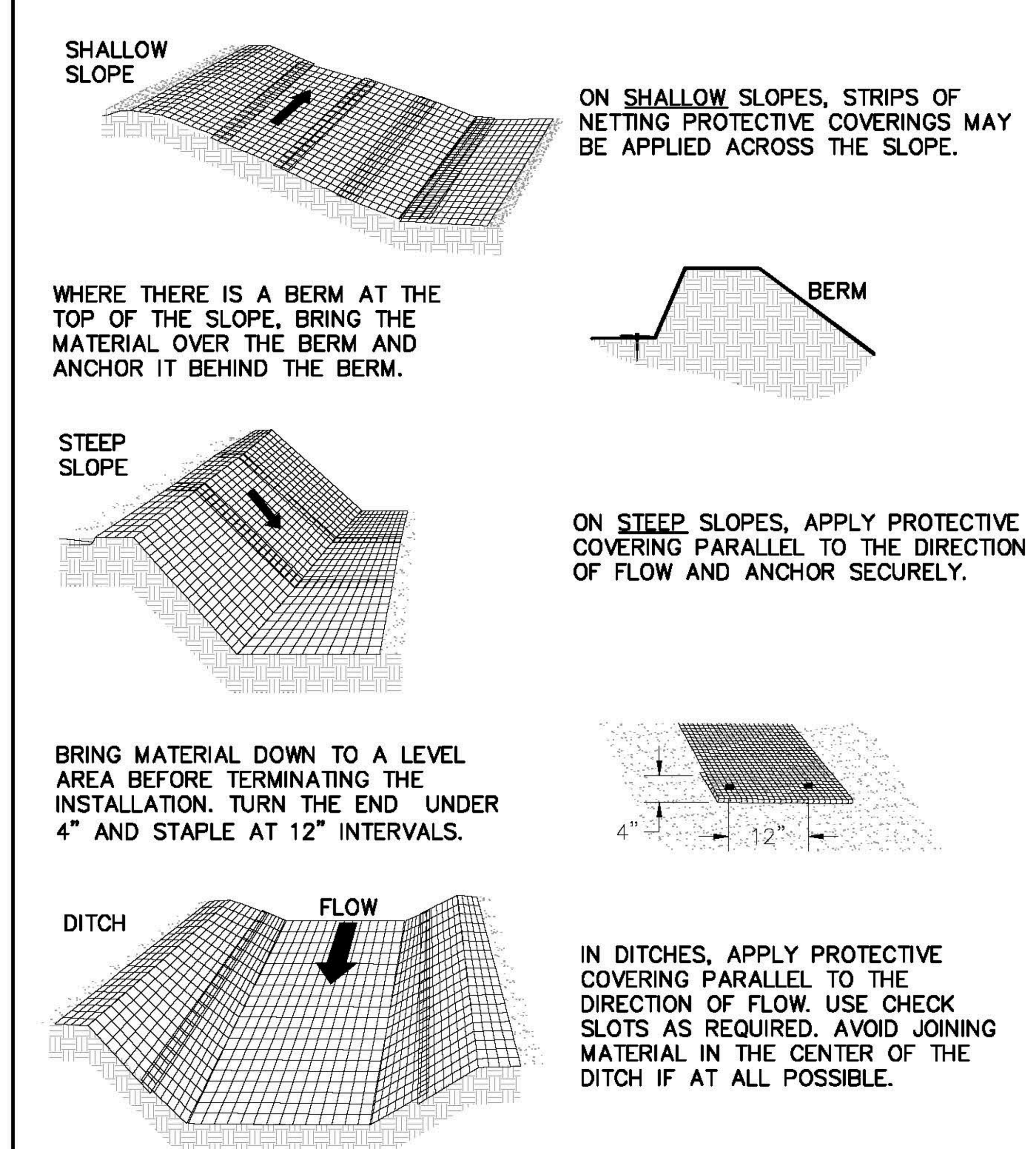
	TOTAL LBS. PER ACRE
MINIMUM CARE LAWN	
–COMMERCIAL OR RESIDENTIAL	175–200 LBS.
–KENTUCKY 31 OR TURF-TYPE TALL FESCUE	95–100 LBS.
–IMPROVED PERENNIAL RYEGRASS	0–5%
–KENTUCKY BLUEGRASS	0–5%
HIGH-MAINTENANCE LAWN	200–250 LBS.
–KENTUCKY 31 OR TURF-TYPE TALL FESCUE	100%
GENERAL SLOPE (3:1 OR LESS)	
–KENTUCKY 31 FESCUE	128 LBS.
–RED TOP GRASS	2 LBS.
–SEASONAL NURSE CROP	*20 LBS.
	150 LBS.
LOW-MAINTENANCE SLOPE (STEEPER THAN 3:1)	
–KENTUCKY 31 FESCUE	108 LBS.
–RED TOP GRASS	2 LBS.
–SEASONAL NURSE CROP	*20 LBS.
–CROWN VETCH	**20 LBS.
	150 LBS.

* USE SEASONAL NURSE CROP IN ACCORDANCE WITH SEEDING DATES AS STATED BELOW:

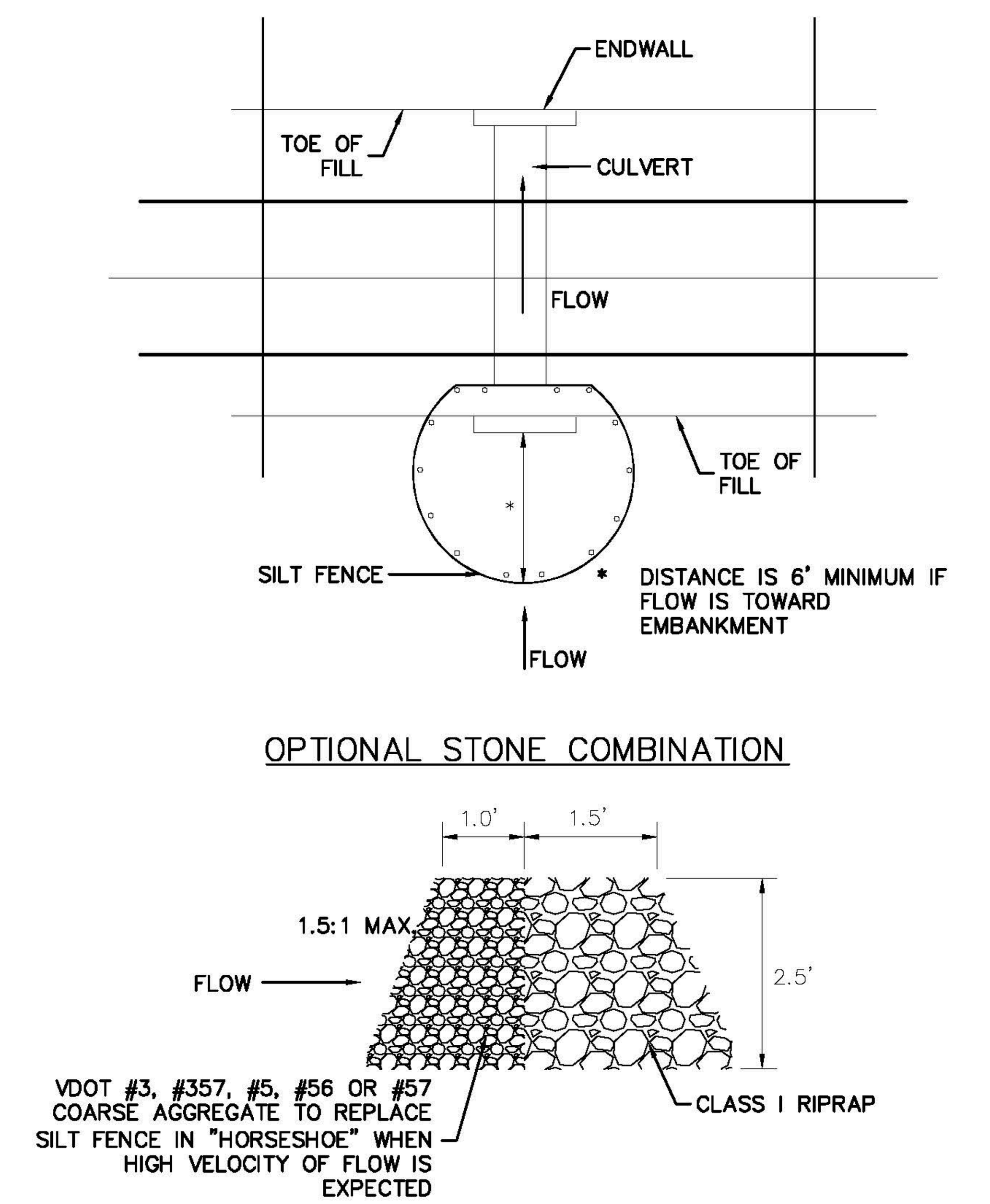
FEBRUARY 16TH THROUGH APRIL	ANNUAL RYE
MAY 1ST THROUGH AUGUST 15TH	FOXTAIL MILLET
AUGUST 16TH THROUGH OCTOBER	ANNUAL RYE
NOVEMBER THROUGH FEBRUARY 15TH	WINTER RYE

** SUBSTITUTE SERICEA LESPEDEZA FOR CROWN VETCH EAST OF FARMVILLE, VA. (MAY THROUGH SEPTEMBER USE HULLED SERICEA, ALL OTHER PERIODS USE UNHULLED SERICEA.) IF FLATPEA IS USED IN LIEU OF CROWN VETCH, INCREASE RATE TO 30 LBS./ACRE. ALL LEGUME SEED MUST BE PROPERLY INOCULATED. WEEPING LOVEGRASS MAY BE ADDED TO ANY SLOPE OR LOW-MAINTENANCE MIX DURING WARMER SEEDING PERIODS; ADD 10–20 LBS./ACRE IN MIXES.

PERMANENT SEEDING – PIEDMONT REGION
NOT TO SCALE
PS



SOIL STABILIZATION BLANKET – TREATMENT 1
NOT TO SCALE
B/M



SILT FENCE CULVERT INLET PROTECTION
NOT TO SCALE
CIP

CITY ENGINEER
DATE

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E&SC DETAILS
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LYNCHBURG, VIRGINIA
CITY PROJECT NO. ME 016

REVISIONS

DESIGNED BY:	MBJ
DRAWN BY:	CEP
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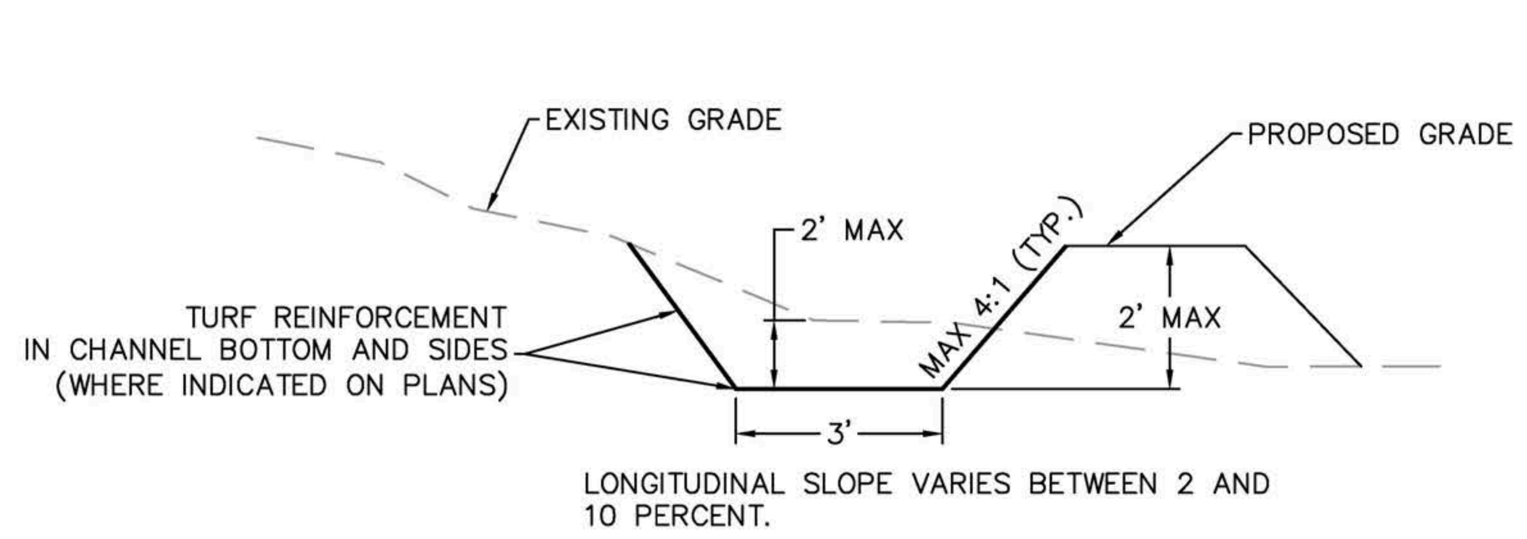
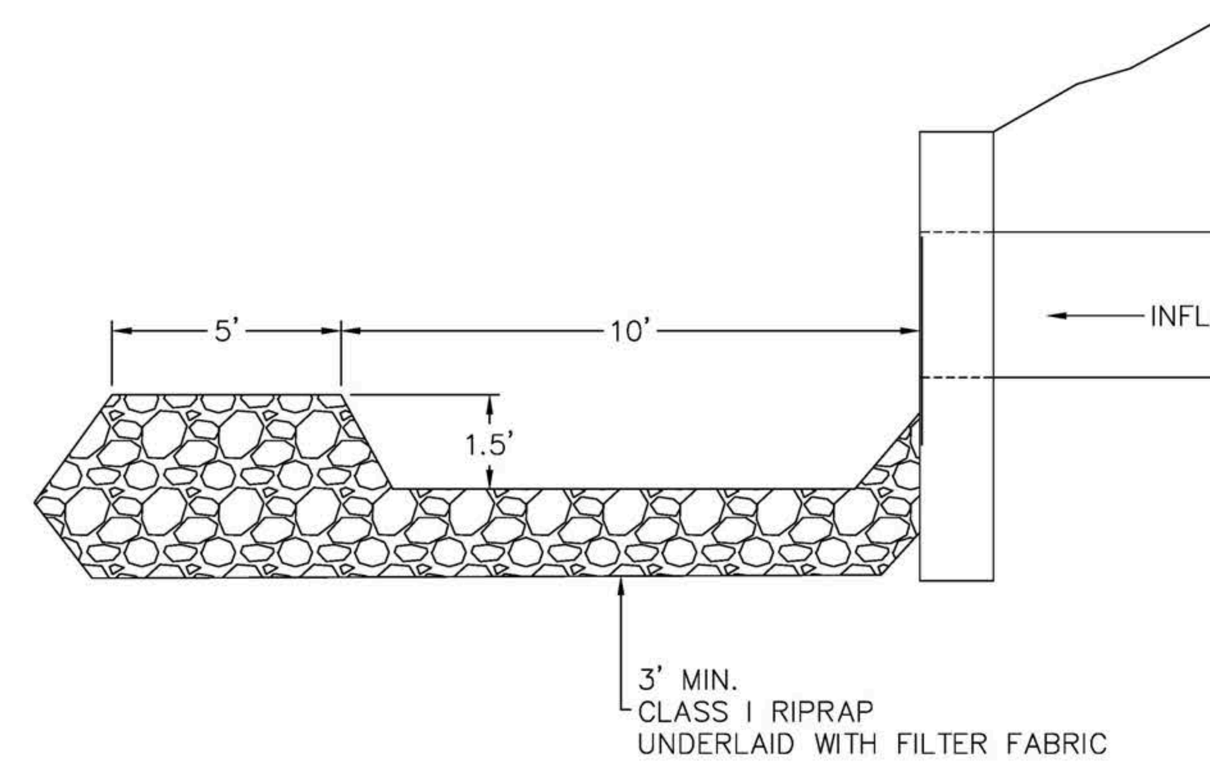
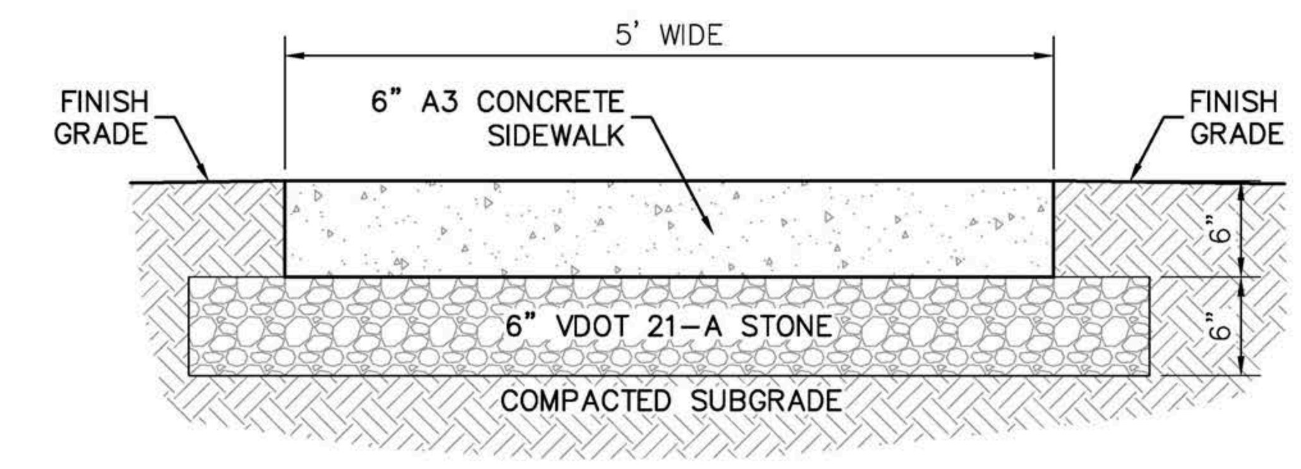
C401



PROPOSED SWALE/BERM TYPICAL SECTION
FOR STORMWATER CONVEYANCE CHANNELS
NOT TO SCALE

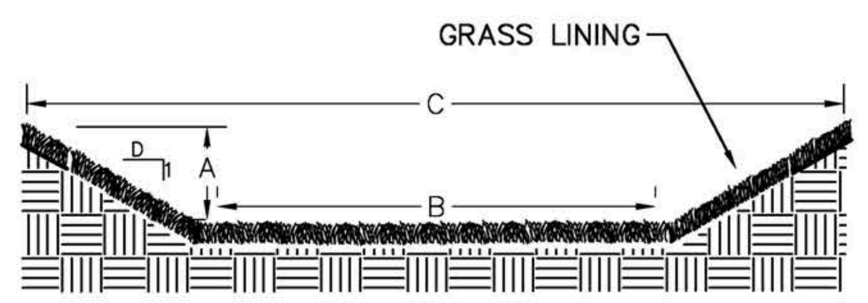


NORTH STORM SEWER PLUNGE POOL DETAIL
NOT TO SCALE



NOTES:
1. TRANSVERSE EXPANSION JOINTS SHALL BE PLACED AT 30'-0" o.c. (MAX.)
2. TRANSVERSE CONTROL JOINTS SHALL BE PLACED AT 5'-0" o.c. BETWEEN EXPANSION JOINTS, 3/4" DEEP

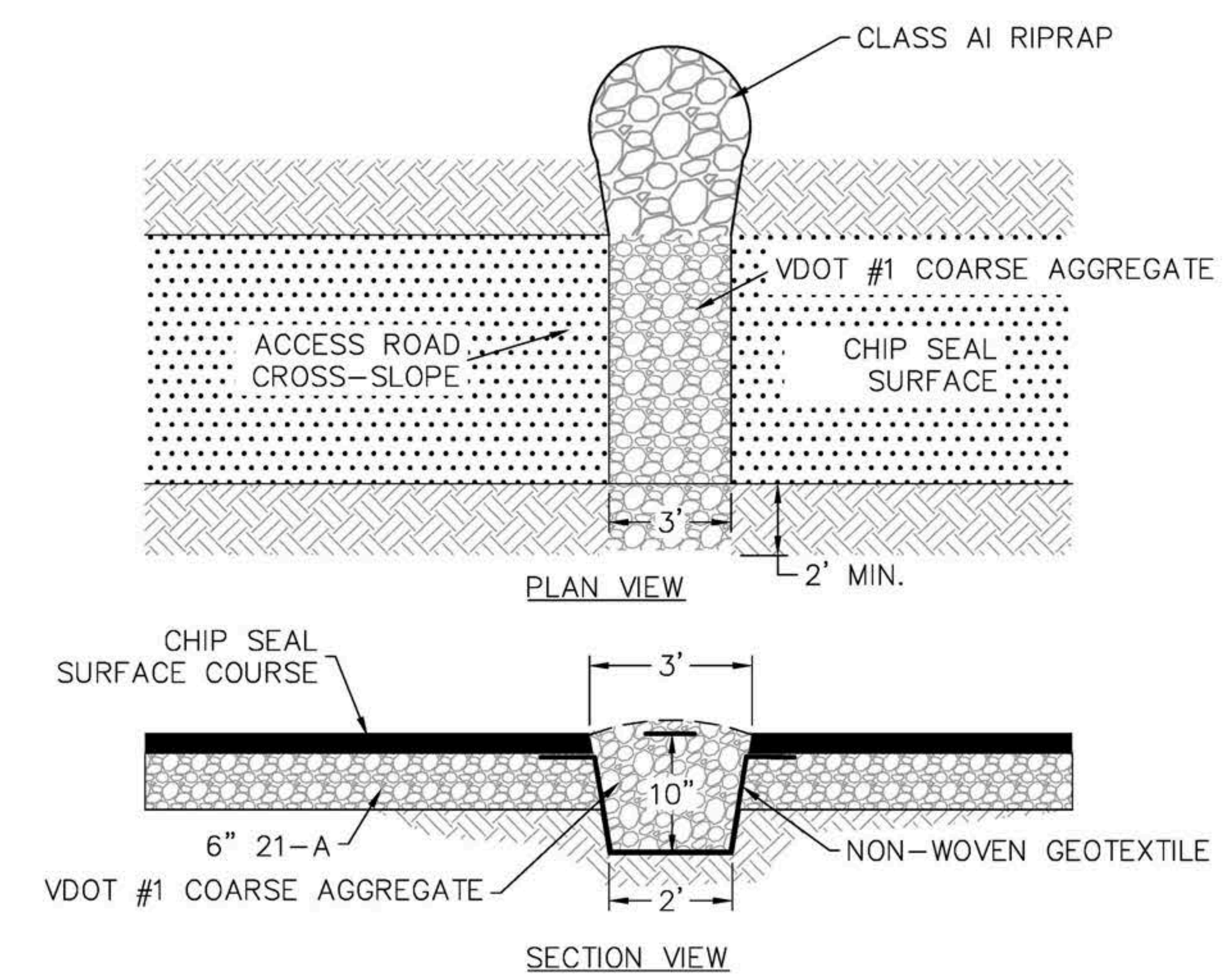
SIDEWALK DETAIL
NOT TO SCALE



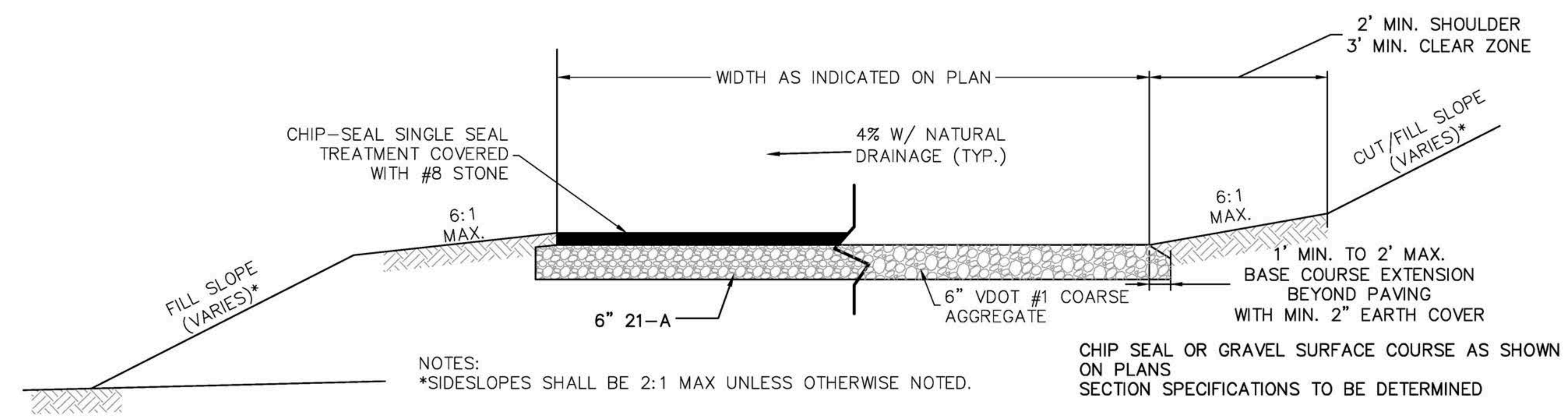
SCC #	A DEPTH (FT)	B BOTTOM WIDTH (FT)	C TOP WIDTH (FT)	D SIDE SLOPE (H:V)	LINING
1	1.5	3	9	4:1	Sod & LandLock TRM, EC-3
2	1.5	3	9	4:1	Sod & LandLok TRM
3	1.5	3	9	4:1	EC-3
4	1.5	10	22	4:1	EC-3, Grass

MAINTENANCE NOTES (SPRING, ANNUALLY):
1. ADD REINFORCEMENT PLANTING TO MAINTAIN 90% TURF COVER. RESEED ANY KILLED VEGETATION.
2. EXAMINE CHANNEL BOTTOM FOR EVIDENCE OF EROSION, BRAIDING, EXCESSIVE PONDING, OR DEAD GRASS.
3. CHECK INFLOW POINTS FOR CLOGGING AND REMOVE ANY SEDIMENT.
4. INSPECT SIDE SLOPES FOR EVIDENCE OF ANY RILL OR GULLY EROSION AND REPAIR.
5. LOOK FOR ANY BARE SOIL OR SEDIMENT SOURCES IN THE CONTRIBUTING DRAINAGE AREA AND STABILIZE IMMEDIATELY.

STORMWATER CONVEYANCE CHANNEL
NO SCALE



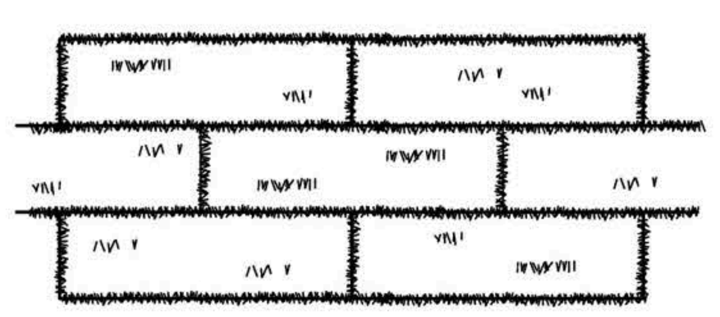
DRAINAGE TRENCH DETAIL
NOT TO SCALE



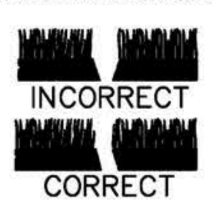
NOTES:
*SIDESLOPES SHALL BE 2:1 MAX UNLESS OTHERWISE NOTED.

CHIP SEAL OR GRAVEL SURFACE COURSE AS SHOWN ON PLANS
SECTION SPECIFICATIONS TO BE DETERMINED

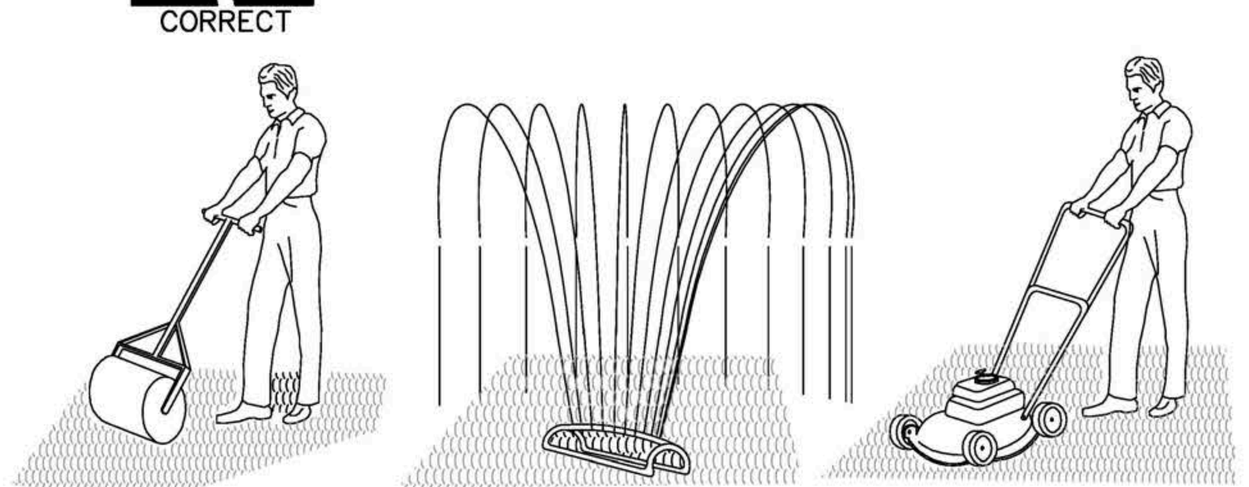
ACCESS ROAD SECTION DETAIL
NOT TO SCALE



LAY SOD IN A STAGGERED PATTERN. BUTT THE STRIPS TIGHTLY AGAINST EACH OTHER. DO NOT LEAVE SPACES AND DO NOT OVERLAP. A SHARPENED MASON'S TROWEL IS A HANDY TOOL FOR TUCKING DOWN THE ENDS AND TRIMMING PIECES.



BUTTING – ANGLED ENDS CAUSED BY THE AUTO- MATIC SOD CUTTER MUST BE MATCHED CORRECTLY.

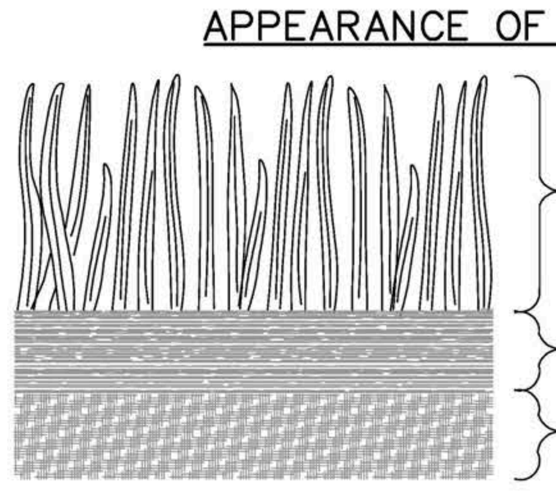


ROLL SOD IMMEDIATELY TO ACHIEVE FIRM CONTACT WITH THE SOIL.

WATER TO A DEPTH OF 4" AS NEEDED. WATER WELL AS SOON AS THE SOD IS LAID.

MOW WHEN THE SOD IS ESTABLISHED – IN 2-3 WEEKS. SET THE MOWER HIGH (2"-3").

APPEARANCE OF GOOD SOD



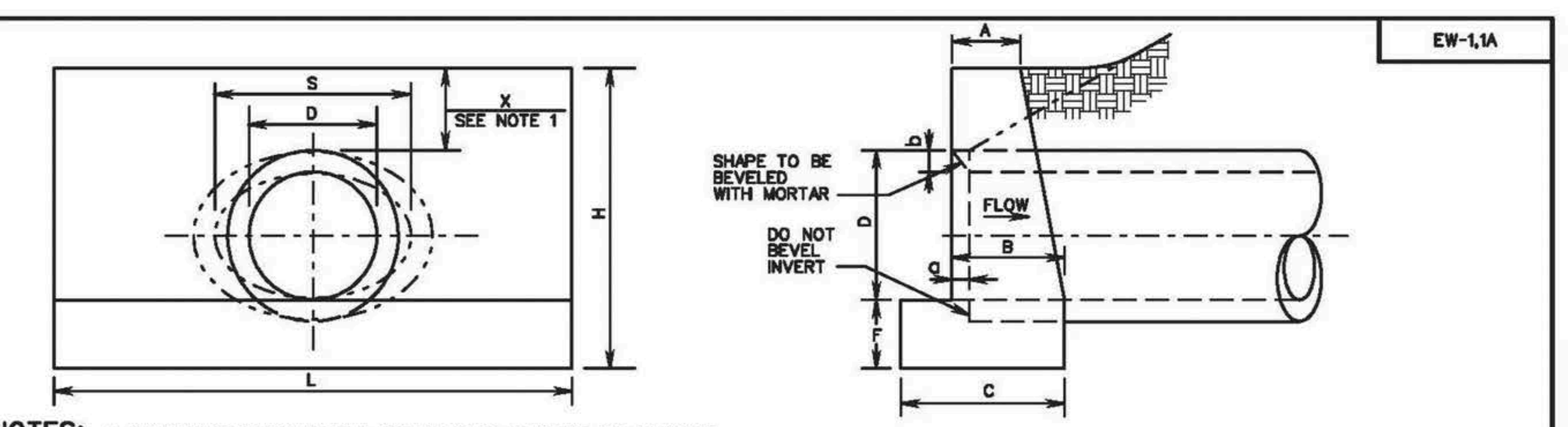
SHOOTS OR GRASS BLADES. GRASS SHOULD BE GREEN AND HEALTHY, MOWED AT A 2"-3" CUTTING HEIGHT.

THATCH – GRASS CLIPPINGS AND DEAD LEAVES, UP TO 1/2" THICK.

ROOT ZONE – SOIL AND ROOTS. SHOULD BE 1/2"-3/4" THICK, WITH DENSE ROOT MAT FOR STRENGTH.

SODDING DETAIL
NOT TO SCALE

EW-1,1A



NOTES:
1. "H" MAY BE REDUCED UNTIL "X" REACHES A MINIMUM OF 4" WHERE ENDWALL WOULD PROTRUDE ABOVE SHOULDER LINE. IN NO CASE SHALL TOP OF ENDWALL PROJECT ABOVE FILL SLOPE, DITCH SLOPE, OR SHOULDER.
2. THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
3. ALL CAST IN PLACE CONCRETE TO BE CLASS A3. FOR PRECAST SEE SHEET 101.02.
4. THIS STANDARD TO BE USED WITH STRAIGHT CROSSINGS AND ALL SKEWS(0° TO 45°).
5. HEADWALL TO BE BEVELED IN ALL AREAS EXCEPT WHERE A CONFLICT WITH INVERT OR WINGWALLS OCCUR
6. BEVEL EDGE IS REQUIRED ON THE HEADWALL AT THE INLET END OF THE CULVERT (WHERE THE FLOW ENTERS THE CULVERT).
7. HEADWALL AT THE OUTLET END OF THE CULVERT MAY BE EITHER SQUARE EDGE OR BEVEL EDGE.
8. 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.
9. 3/4" CHAMFER MAY BE PROVIDED ON ALL EDGES AT MANUFACTURER'S OPTION.

EW-1

ENDWALL FOR CIRCULAR PIPE

DIAMETER OF PIPE CULVERT	12"	15"	18"	21" OR 24"	27" OR 30"	33" OR 36"
A	0'-6"	0'-8"	0'-9"	0'-11"	1'-0"	1'-0"
B	0'-11"	1'-1"	1'-3"	1'-6"	1'-9"	2'-0"
C	1'-4"	1'-7"	1'-9"	2'-2"	2'-6"	2'-9"
D	1'-0"	1'-3"	1'-6"	2'-0"	2'-6"	3'-0"
F	0'-6"	0'-8"	0'-8"	0'-9"	0'-9"	0'-9"
H	2'-3"	2'-11"	3'-2"	3'-9"	4'-3"	4'-9"
L	4'-0"	5'-0"	6'-0"	8'-0"	10'-0"	12'-0"
a	0'-1¼"	0'-1¾"	0'-2"	0'-2½"	0'-3¼"	0'-3¾"
b	0'-1"	0'-1¼"	0'-1½"	0'-2"	0'-2½"	0'-3"
CUBIC YARDS OF CONCRETE						
CONC. PIPE	0.241	0.492	0.697	1.319	2.067	2.947
C.M. PIPE	0.257	0.521	0.739	1.398	2.198	3.145

EW-1A

ENDWALL FOR ELLIPTICAL PIPE

SIZE OF ELLIPTICAL PIPE CULVERT (SPAN x RISE)	23"x14"	30"x19"	34"x22"	38"x24"	42"x27"	45"x29"	49"x32"	53"x34"
A	0'-8"	0'-9"	0'-10"	0'-11"	0'-11"	1'-0"	1'-0"	1'-0"
B	1'-2"	1'-5"	1'-6"	1'-8"	1'-9"	1'-10"	1'-11"	1'-11"
C	1'-8"	1'-11"	2'-1"	2'-4"	2'-5"	2'-7"	2'-8"	2'-9"
D	1'-2"	1'-7"	1'-10"	2'-0"	2'-3"	2'-5"	2'-8"	2'-10"
F	0'-8"	0'-8"	0'-9"	0'-9"	0'-9"	0'-9"	0'-9"	0'-9"
H	2'-10"	3'-3"	3'-7"	3'-9"	4'-0"	4'-2"	4'-5"	4'-7"
L	5'-5"	7'-2"	8'-6"	9'-2"	10'-2"	10'-11"	12'-1"	12'-11"
S	1'-11"	2'-6"	2'-10"	3'-2"	3'-6"	3'-9"	4'-1"	4'-5"
a	0'-2½"	0'-3¼"	0'-3½"	0'-4"	0'-4½"	0'-4¾"	0'-5"	0'-5½"
b	0'-2"	0'-2½"	0'-2¾"	0'-3"	0'-3½"	0'-3¾"	0'-4"	0'-4½"
CUBIC YARDS OF CONCRETE								
CONC.PIPE	0.502	0.855	1.236	1.500	1.811	2.101	2.512	2.801

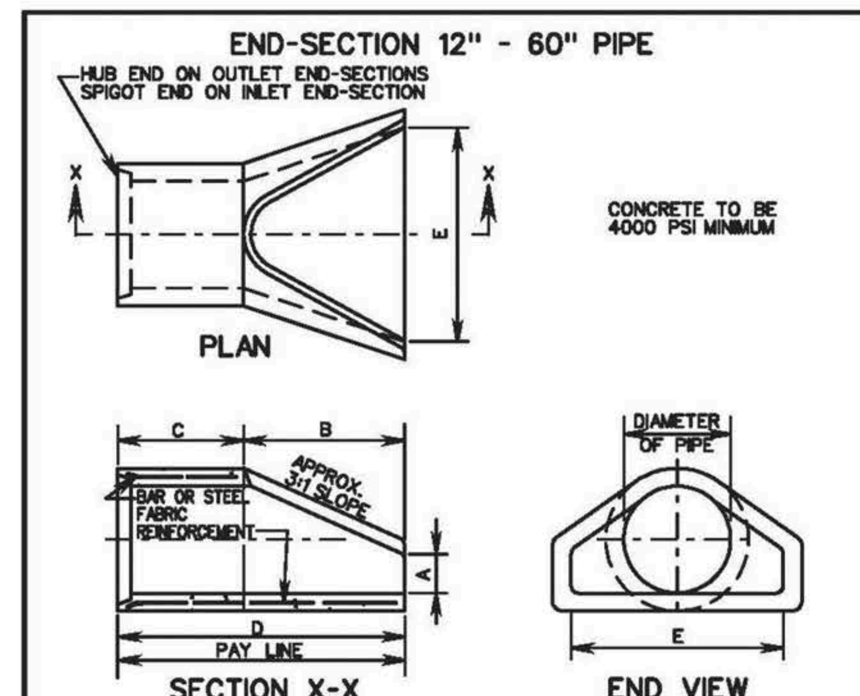
SPECIFICATION REFERENCE: 105, 302

STANDARD ENDWALL FOR PIPE CULVERTS
12" - 36" CIRCULAR AND 23" x 14" - 53" x 34" ELLIPTICAL PIPES
VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT ROAD AND BRIDGE STANDARDS
REVISION DATE | SHEET 1 OF 1 | 101.01

ES-1

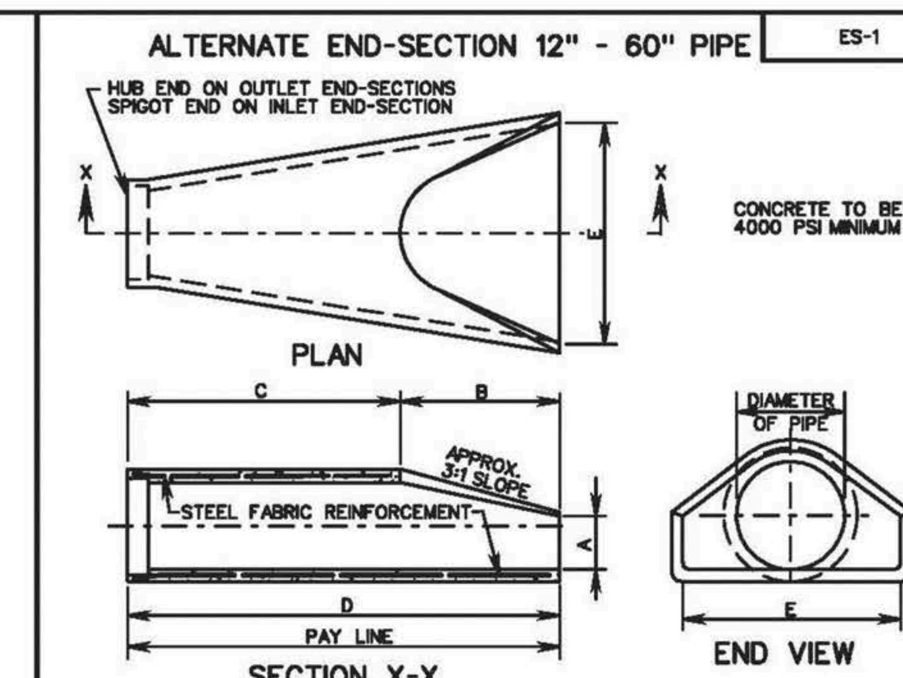
END-SECTION 12" - 60" PIPE



END SECTION DIMENSIONS

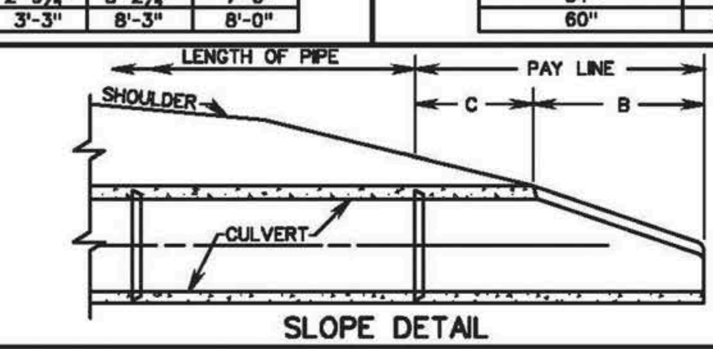
PIPE DIAMETER	A	B	C	D	E
12"	4"	2'-0"	2'-0"	4'-0"	2'-0"
15"	6"	2'-3"	1'-9"	4'-0"	2'-6"
18"	9"	2'-3"	1'-9"	4'-0"	3'-0"
21"	9¼"	2'-11"	2'-1"	5'-0"	3'-6"
24"	9½"	3'-7"	2'-6"	6'-1"	4'-0"
27"	10¾"	4'-0"	2'-1"	6'-1"	4'-6"
30"	1'-0"	4'-6"	1'-7¾"	6'-1¾"	5'-0"
33"	1'-1½"	4'-10½"	2'-3¼"	7'-1¾"	5'-6"
36"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	6'-0"
42"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"
48"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"
54"	2'-3"	5'-5"	2'-9¼"	8'-2¼"	7'-6"
60"	2'-11"	5'-0"	3'-3"	8'-3"	8'-0"

ALTERNATE END-SECTION 12" - 60" PIPE



END SECTION DIMENSIONS

PIPE DIAMETER	A	B	C	D	E
12"	4"	2'-0"	4'-1"	6'-1"	2'-0"
15"	6"	2'-3"	3'-10"	6'-1"	2'-6"
18"	9"	2'-3"	3'-10"	6'-1"	3'-0"
21"	9"	2'-11"	3'-2"	6'-1"	3'-6"
24"	10"	3'-7"	2'-8"	6'-3"	4'-0"
27"	10½"	4'-0"	2'-1½"	6'-1½"	4'-6"
30"	1'-0"	4'-6"	1'-7¾"	6'-1¾"	5'-0"
33"	1'-1½"	4'-10½"	3'-3¼"	8'-1¾"	5'-6"
36"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	6'-0"
42"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"
48"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"
54"	2'-3"	5'-5"	2'-11"	8'-4"	7'-6"
60"	2'-6"	5'-0"	3'-3"	8'-3"	8'-0"



SLOPE DETAIL

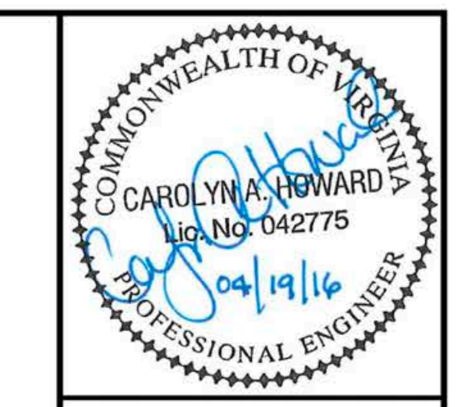
NOTES:
PIPE LENGTHS SHOWN ON PLANS ARE BASED ON END-SECTION DESIGN SHOWN ON THE LEFT. IF THE CONTRACTOR ELECTS TO USE THE ALTERNATE DESIGN SHOWN ON THE RIGHT, LENGTHS WILL BE REDUCED BY THE DIFFERENCE IN DIMENSION "D".

SPECIFICATION REFERENCE: 302

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

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

CITY ENGINEER DATE



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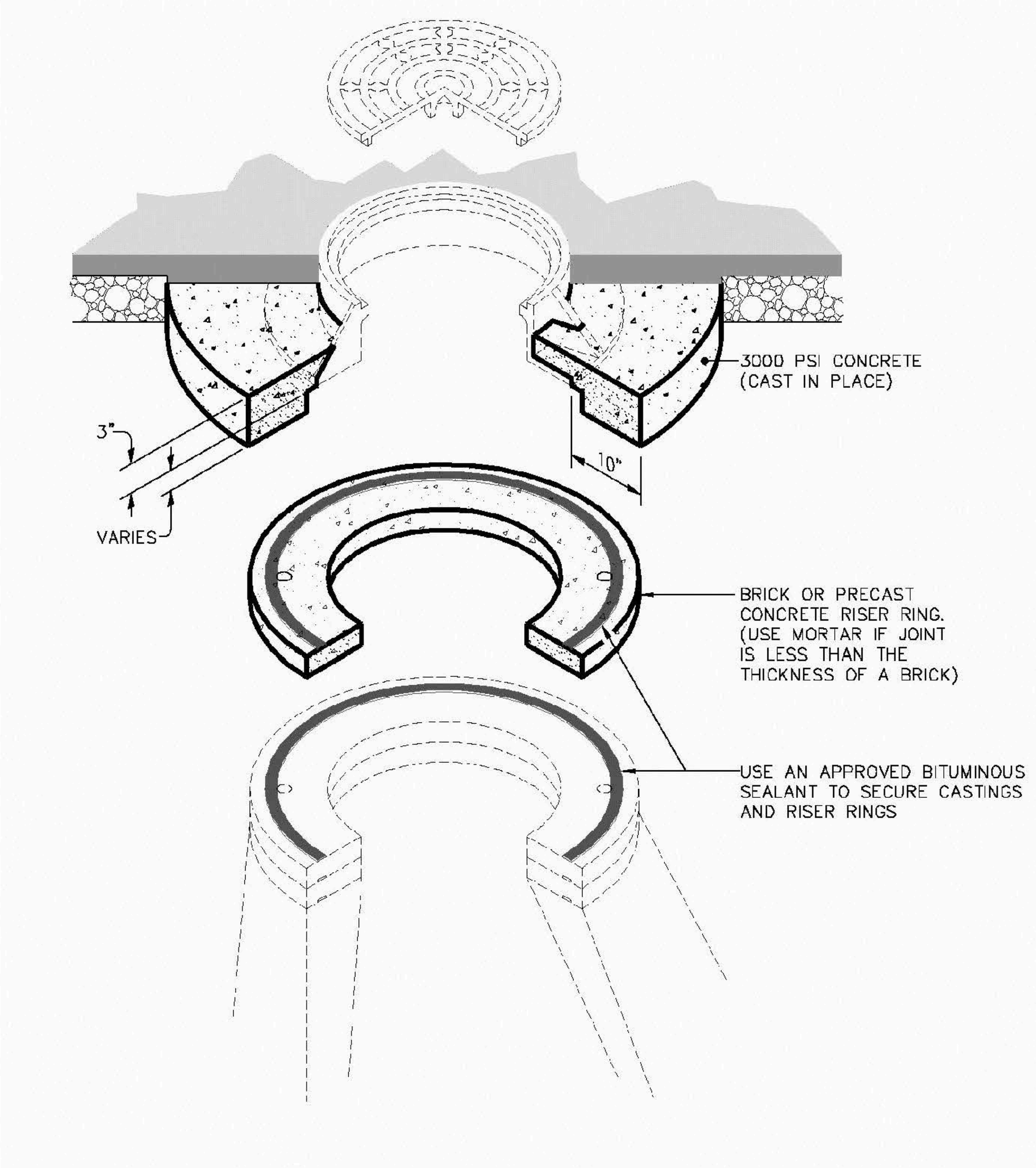
Coats, NC

SITE DETAILS
JEFFERSON PARK DRAINAGE IMPROVEMENTS
LYNCHBURG, VIRGINIA
CITY PROJECT NO. ME 016

REVISIONS

DESIGNED BY: MBJ
DRAWN BY: CEP
CHECKED BY: CAH
SCALE: NO SCALE
DATE: 4/19/2016
PROJECT NUMBER: B14111B-05

C402



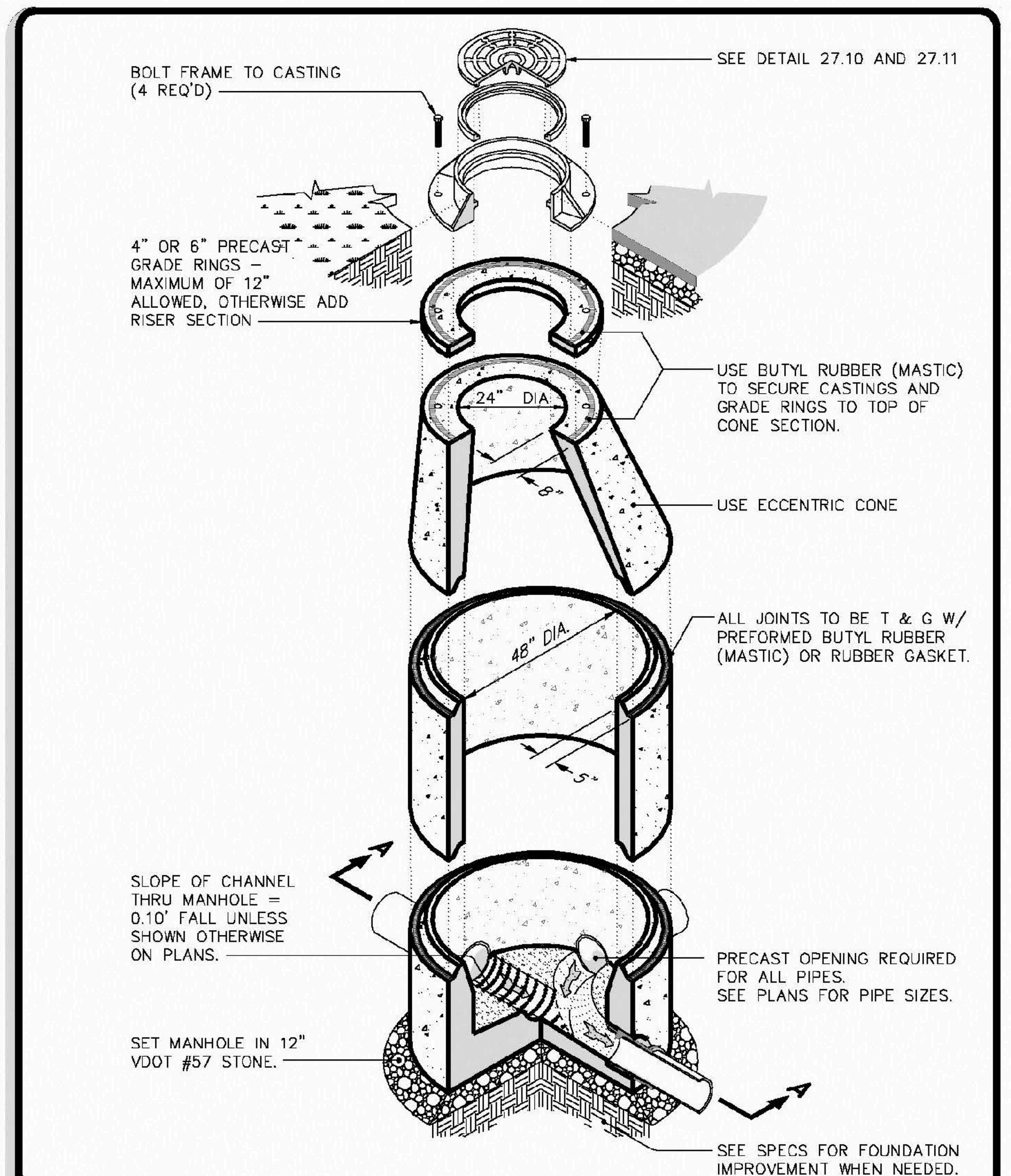
NOTES:

1. SIMILAR DETAIL TO BE USED FOR LAMPSTACKS.

THE CITY OF LYNCHBURG

RAISING MANHOLES and LAMPSTACKS	SCALE: NOT TO SCALE	DETAIL #: 25.08
	REVISION DATE: 12-12-2014	SHEET #: 1 OF 1

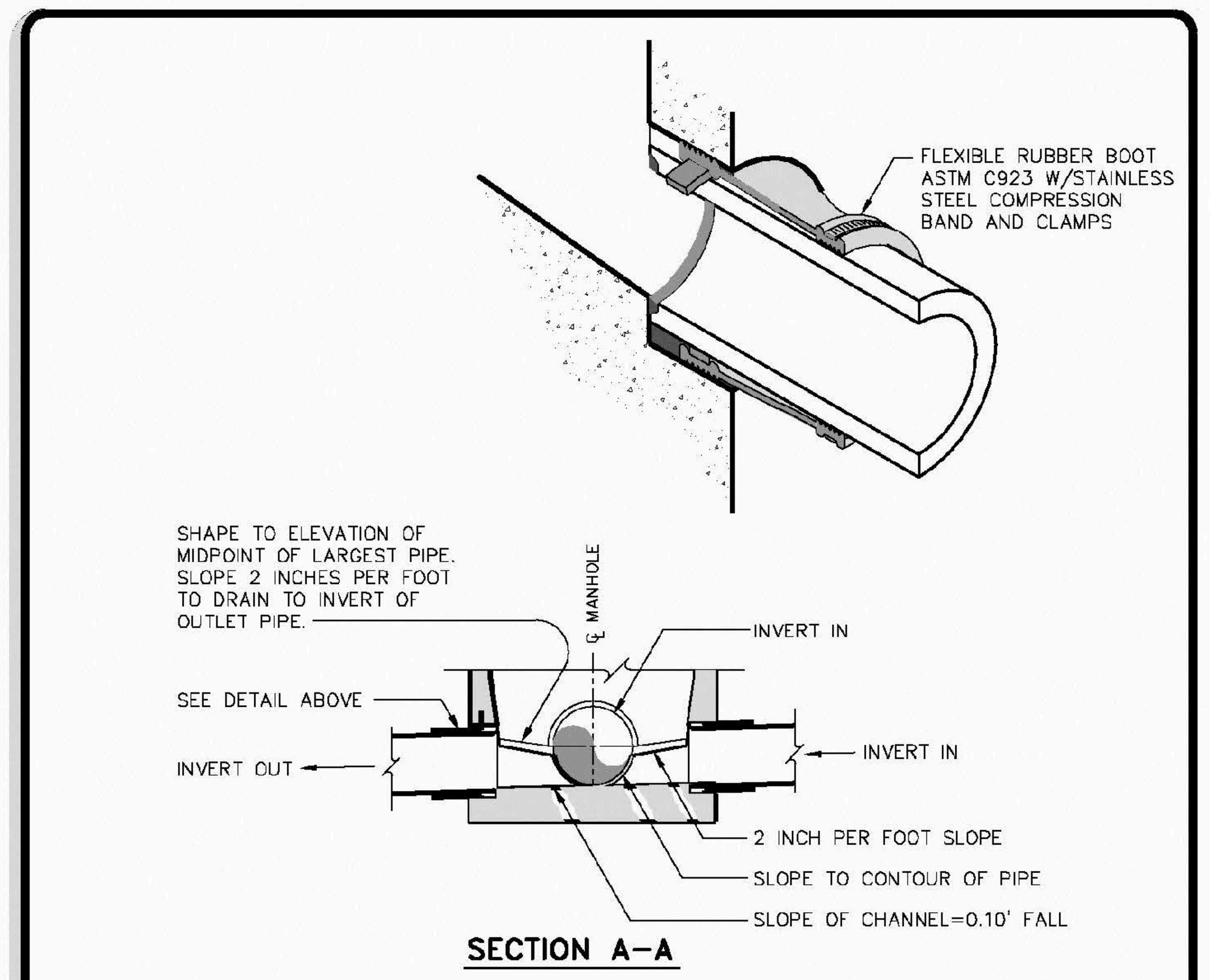
USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY



THE CITY OF LYNCHBURG

PRECAST CONCRETE 4' DIAMETER MANHOLE	SCALE: NOT TO SCALE	DETAIL #: 27.02
	REVISION DATE: 12-12-2014	SHEET #: 1 OF 2

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY



SECTION A–A

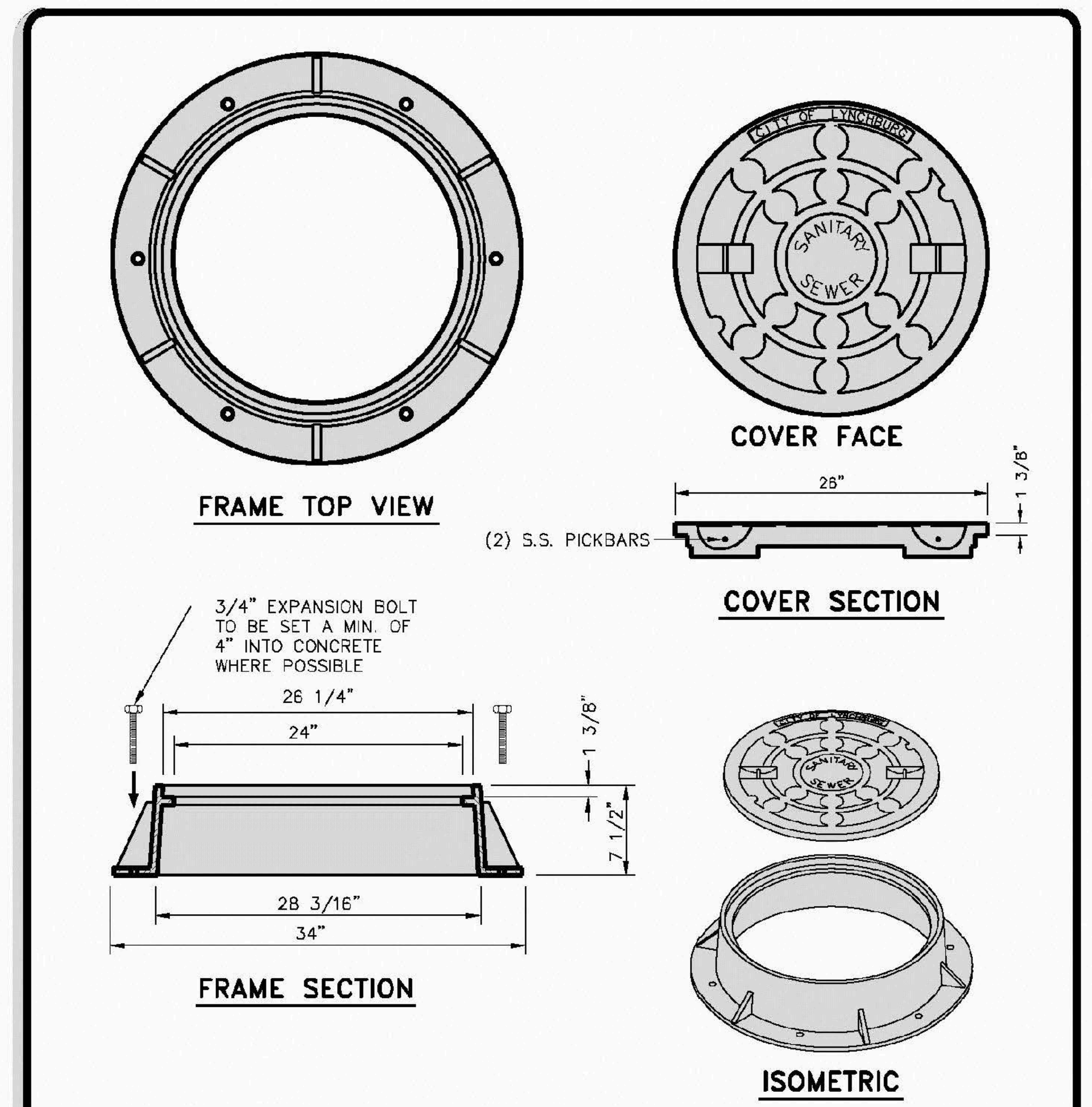
NOTES: ⚠

1. MAXIMUM DEPTH 4' DIAMETER MANHOLE = 20' (SEE SEWER DESIGN SECTION FOR OTHER REQUIREMENTS / LIMITATIONS).
2. THE INVERT SHAPING AS SHOWN SHALL CONSIST OF 3,000 PSI CONCRETE TROWELLED TO A SMOOTH SURFACE WITH NO AGGREGATE EXPOSED.
3. DETAILS OF INVERT SHAPING AS SHOWN HEREON ARE FOR EXAMPLE PURPOSES ONLY. EACH MANHOLE IS TO BE SHAPED INDIVIDUALLY TO BEST FIT THE PARTICULAR INLET AND OUTLET CONFIGURATION AND FLOW LINES.
4. WHEN DIFFERENT DIAMETER PIPES ARE USED FROM INVERT IN TO INVERT OUT, PROVIDE A SMOOTH TRANSITION THROUGH THE INVERT.

THE CITY OF LYNCHBURG

PRECAST CONCRETE 4' DIAMETER MANHOLE	SCALE: NOT TO SCALE	DETAIL #: 27.02
	REVISION DATE: 12-12-2014	SHEET #: 2 OF 2

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY



NOTES:

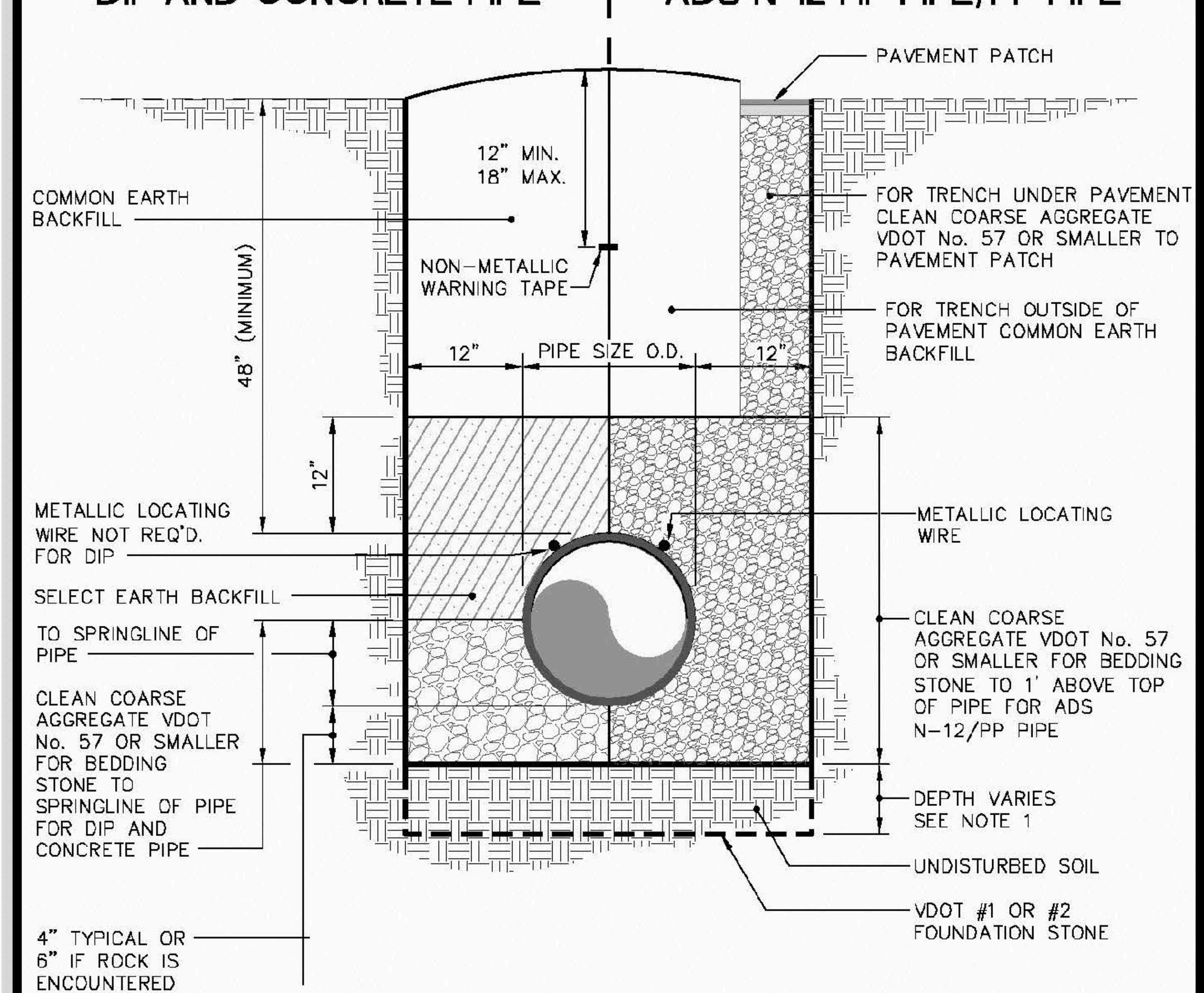
1. PARTS #'s: US FOUNDRY 710 RING AND DP COVER, EAST JORDAN IRON WORKS OR APPROVED EQUAL.
2. MANHOLE FRAMES AND COVERS SHALL BE ROADWAY TYPE WITH DEEP SOCKET COVERS. MACHINE FRAMES AND COVERS TO PREVENT RATTLING. CASTINGS SHALL BE GRAY IRON MEETING REQUIREMENTS OF ASTM A48, CLASS 30.

THE CITY OF LYNCHBURG

STANDARD MANHOLE FRAME and COVER	SCALE: NOT TO SCALE	DETAIL #: 27.10
	REVISION DATE: 12-12-2014	SHEET #: 1 OF 1

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

DIP AND CONCRETE PIPE | ADS N-12 HP PIPE/PP PIPE



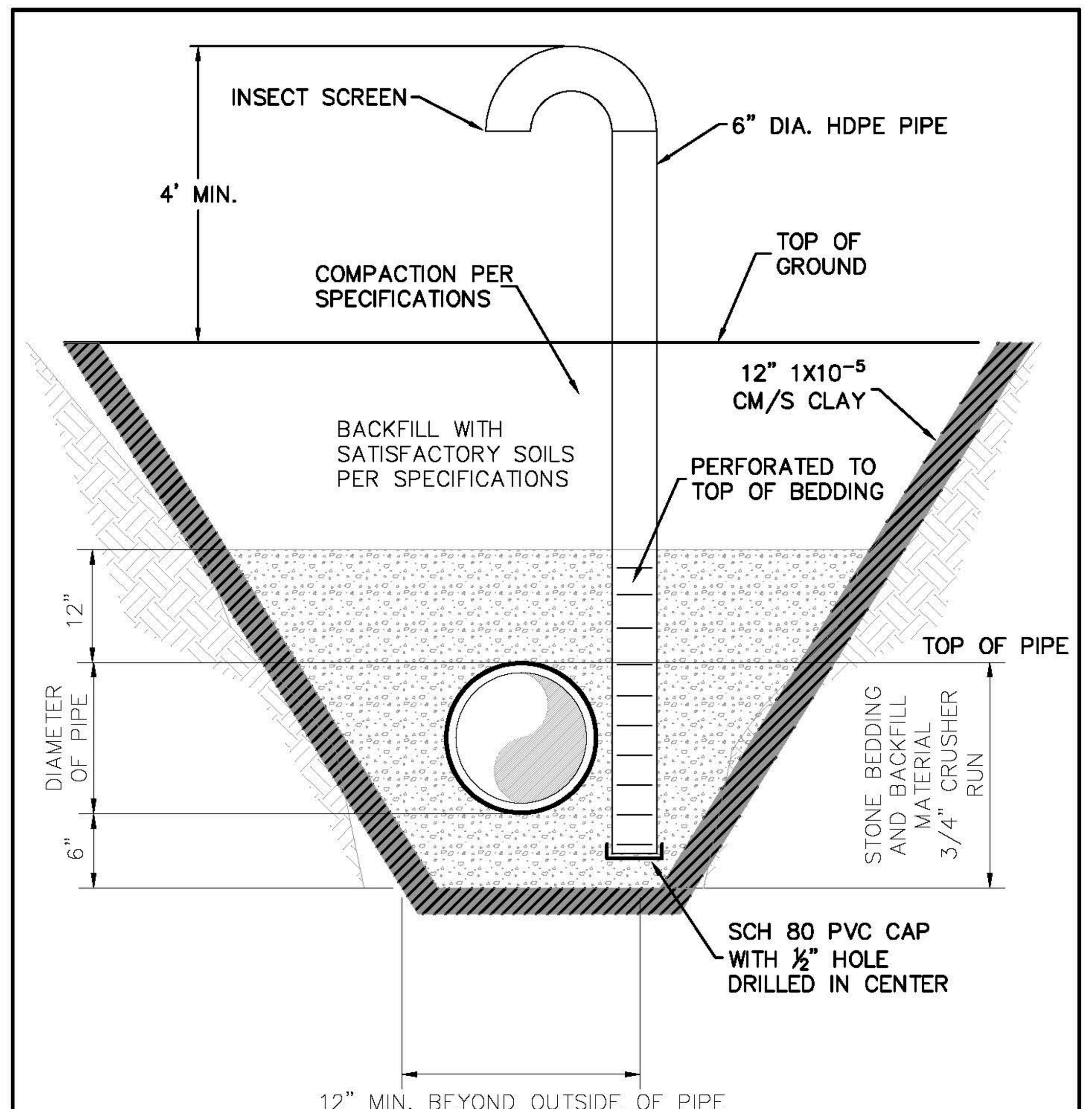
NOTES:

1. FOUNDATION STONE SHALL BE REQUIRED WHEN SOIL CONDITIONS ARE UNSUITABLE.
2. EXTRA DEPTH EXCAVATION SHALL BE PAID FOR AS ANYTHING BEYOND 4' OF COVER TO TOP OF PIPE.
3. AN ADDITIONAL 1 INCH DEPTH OF BEDDING MATERIAL WILL BE REQUIRED FOR EACH ADDITIONAL 2 FEET OF TRENCH DEPTH IN EXCESS OF 16 FEET UP TO A MAXIMUM OF 12 INCHES.
4. NON-METALLIC WARNING TAPE AND METALLIC LOCATING WIRE NOT REQUIRED FOR CULVERTS UNDER ROAD.

THE CITY OF LYNCHBURG

STORM SEWER LINE TRENCH DETAIL	SCALE: NOT TO SCALE	DETAIL #: 27.01A
	REVISION DATE: 12-12-2014	SHEET #: 1 OF 1

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY



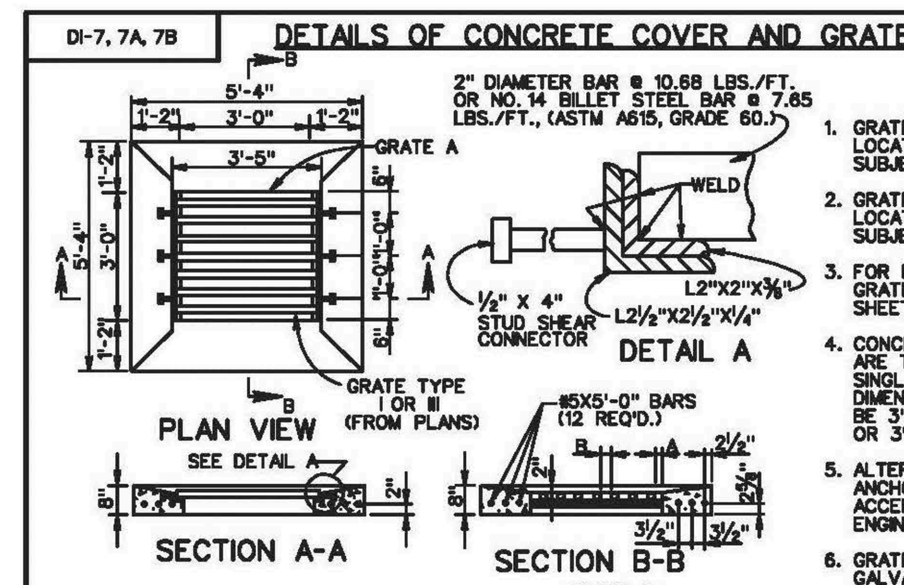
NOTES:

1. CONTRACTOR MUST INSURE THE STONE IS PROPERLY COMPACTED, ESPECIALLY UNDER THE HAUNCHES OF THE PIPE.
2. THOROUGHLY COMPACTED FILL AREA TO BE FREE OF CLODS, DEBRIS, ETC.
3. WARNING SIGNS TO BE PLACED ADJACENT GAS VENT

NORTH STORM SEWER BEDDING AND BACKFILL DETAIL
NOT TO SCALE

DI-7, 7A, 7B

DETAILS OF CONCRETE COVER AND GRATE



APPROXIMATE QUANTITIES	
CONCRETE CLASS A3	REINFORCING STEEL
0.423 C. Y.	63 LBS.

GRATE A:

BAR SPACING CHART		
GRATE TYPE	MAXIMUM DIMENSION	
	A	B
I	1½"	3"
III	1"	1"

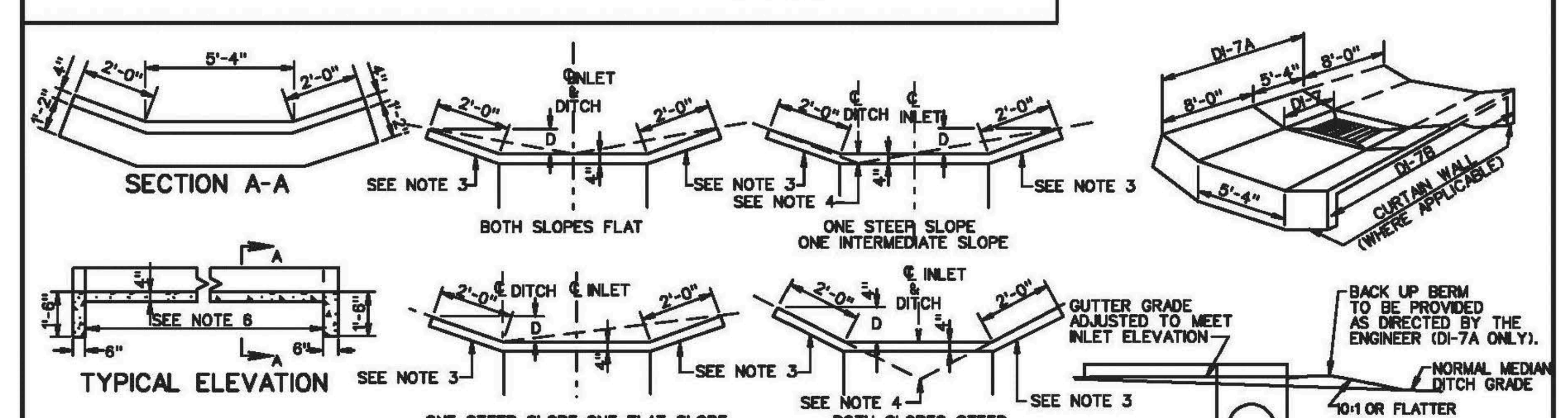
NOTES

1. GRATE A IS TO BE UTILIZED IN LOCATIONS NOT NORMALLY SUBJECT TO TRAFFIC.
2. GRATE B IS TO BE UTILIZED IN LOCATIONS NORMALLY SUBJECT TO TRAFFIC.
3. FOR DETAILS OF LOAD CARRYING GRATE (GRATE B), SEE T-DI-7, SHEET 103.08.
4. CONCRETE COVER AND GRATE ARE TO BE FURNISHED AS A SINGLE UNIT. OUTSIDE DIMENSIONS OF GRATE TO BE 3'-4" X 2'-11¾" (GRATE A) OR 3'-4" X 2'-11½" (GRATE B).
5. ALTERNATE METHODS OF ANCHORING ANGLE IRON WILL BE ACCEPTABLE IF APPROVED BY THE ENGINEER.
6. GRATE AND COLLAR ARE TO BE GALVANIZED.
7. CONCRETE COVER MAY BE PRECAST OR CAST IN PLACE.
8. CONCRETE TO BE CLASS A3 IF CAST IN PLACE. 4000 PSI IF PRECAST.
9. GRATE BARS TO BE PARALLEL TO DITCH FLOW.

DETAILS OF GUTTER AND METHOD OF PLACEMENT

NOTES

1. DI-7 NO GUTTERS.
   DI-7A NO GUTTER IN ONE DIRECTION.
   DI-7B GUTTER IN BOTH DIRECTIONS.
2. JOINTS BETWEEN GUTTERS AND CONCRETE COVER ARE TO BE DOWELED WITH #4 X 8" SMOOTH RODS @ APPROX. 12" C-C TO PREVENT SETTLEMENT. IN LIEU OF DOWELS A 2" X 4" NOTCH MAY BE PROVIDED.
   SEE STANDARD T-DI-3, 4 ALTERNATE DESIGN.
3. VARIABLE 2:1 OR FLATTER.
4. DITCH GRADE MUST BE ADJUSTED TO MEET DIFFERENCE IN ELEVATION. SEE LONGITUDINAL SECTION.
5. IF DEPTH (D) BECOMES LESS THEN 4", LENGTH OF WINGS ARE TO BE EXTENDED AS DIRECTED BY THE ENGINEER.
6. CURTAIN WALL TO BE LOCATED AT THE END OF THE PAVED DITCH SECTIONS OF THE DI-7A & DI-7B THAT ARE NOT ABUTTED BY OTHER DRAINAGE.
7. IF NORMAL DITCH GRADE IS TOO FLAT TO ALLOW FOR ADJUSTED GRADE TO INLET, A SPECIAL GUTTER DETAIL WILL BE REQUIRED ON PLANS.



APPROXIMATE QUANTITY FOR ONE CURTAIN WALL, MEASURED FROM BOTTOM OF GUTTER	
CONCRETE CLASS A3	0.241 CU. YDS.

APPROXIMATE QUANTITIES			
CONCRETE CLASS A3	DI-7	DI-7A	DI-7B
(CU. YDS.)	NONE	1.211	2.148

VDOT ROAD AND BRIDGE STANDARDS	STANDARD MEDIAN DROP INLET 12" TO 42" PIPE VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE 241 503
SHEET 2 OF 3 — REVISION DATE — 104.23		

CAROLYN A. HOWARD Lic. No. 042775 COMMONWEALTH OF VIRGINIA PROFESSIONAL ENGINEER 04/19/16

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STORM SEWER DETAILS
JEFFERSON PARK DRAINAGE IMPROVEMENTS
LYNCHBURG, VIRGINIA — CITY PROJECT NO. ME 016

REVISIONS

DESIGNED BY:	MBJ
DRAWN BY:	CEP
CHECKED BY:	CAH
SCALE:	NO SCALE
DATE:	4/19/2016
PROJECT NUMBER:	B14111B-05

CITY ENGINEER — DATE

C403

DEBRIS COLLECTION DEVICE NOTES:

1. TRASHGUARD INSERTS SHALL BE 28" SIZE WITH 6" WALL SPACERS INSTALLED, OR APPROVED EQUAL. ALTERNATIVE SYSTEMS SHOULD ACCOMMODATE 16 CFS MINIMUM WHILE PROVIDING EQUIVALENT TRASH REMOVAL CAPACITY.
2. TRITON CURB INLET INSERT TO BE CONTECH INSERT PRODUCT OR APPROVED EQUAL. ALTERNATIVE SYSTEMS CONSIDERED SHOULD BE CONFIGURED SUCH THAT THE INSERT ALLOWS FLOWS FROM UPSTREAM STRUCTURES TO BYPASS THE STRUCTURE, WHILE INFLOW FROM THE INLET IS TREATED.
3. EACH SYSTEM SHALL BE INSTALLED PER MANUFACTURER'S REQUIREMENTS.

CITY ENGINEER DATE

DEBRIS COLLECTION DEVICE LOCATIONS
JEFFERSON PARK DRAINAGE IMPROVEMENTS
LYNCHBURG, VIRGINIA CITY PROJECT NO. ME 016

REVISIONS

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Crozet, NC

DESIGNED BY:	MBJ
DRAWN BY:	CEP
CHECKED BY:	CAH
SCALE:	NO SCALE
DATE:	4/19/2016
PROJECT NUMBER:	B14111B-05

C404