COVER SHEET
LIBERTY MOUNTAIN DRIVE
ROAD AND WATER LINE EXTENSION (PHASE 2)
LYNCHBURG, VIRGINIA
CITY PROJECT# 15029-RW (PHASE 2)
CITY PROJECT# 14018-RW (PHASE 1)

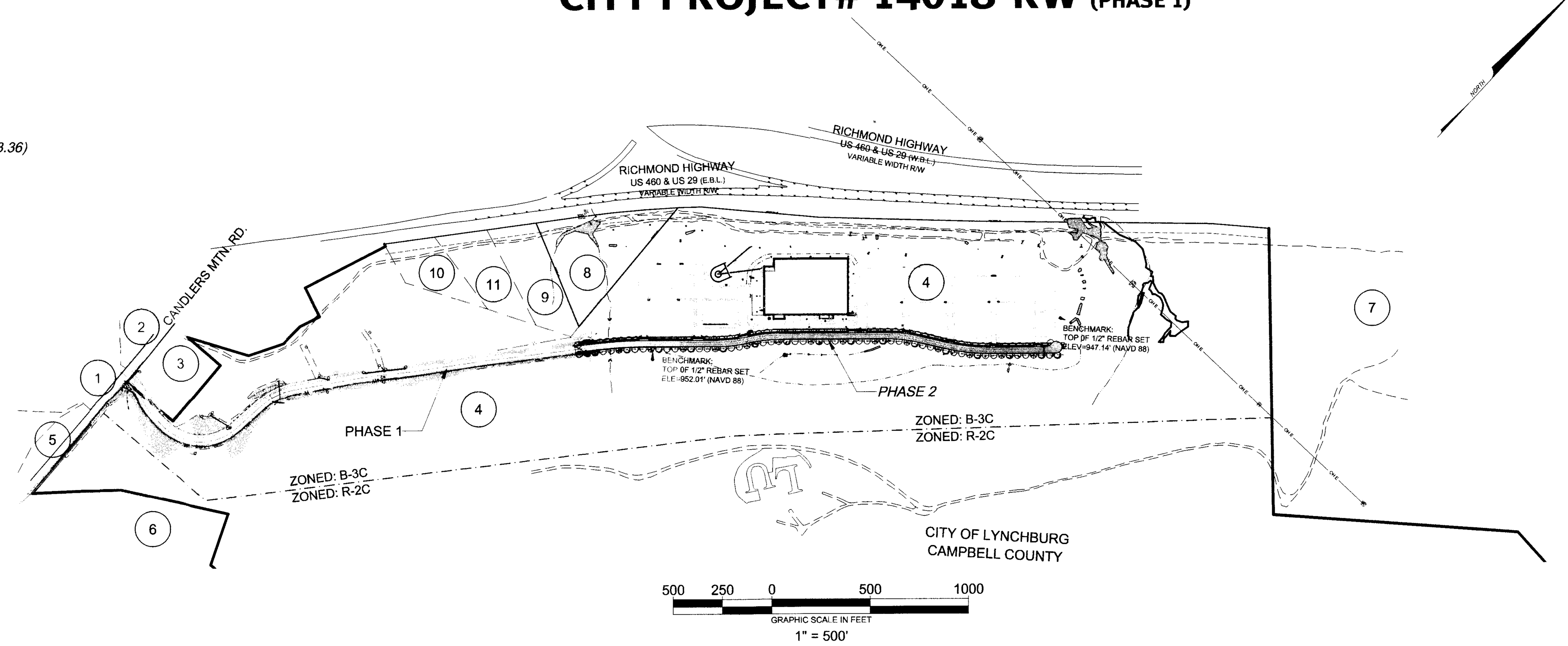
VIRGINIA UNIFORM CODING SYSTEM FOR EROSION AND SEDIMENT CONTROL PRACTICES

* CHART TAKEN FROM THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (JULY 1992)

- (CE) *TEMPORARY CONSTRUCTION ENTRANCE (3.02)*
- (SF) *SILT FENCE (3.05)*
- (IP) *STORM DRAIN INLET PROTECTION (3.07)*
- (CIP) *CULVERT INLET PROTECTION (3.08)*
- (DD) *TEMPORARY DIVERSION DIKE (3.09)*
- (OP) *OUTLET PROTECTION (3.18)*
- (TS) *TEMPORARY SEEDING (3.31)*
- (PS) *PERMANENT SEEDING (3.32)*
- (MU) *MULCHING (3.35)*
- (B/M) *SOIL STABILIZATION BLANKETS & MATTING (3.36)*

LEGEND:

- *LIMITS OF CONSTRUCTION*
- 800 *PROPOSED INDEX CONTOUR*
- 802 *PROPOSED CONTOUR*
- *STORM SEWER*
- *STORM INLET*
- 1 *STORM SEWER STRUCTURE LABEL*
- W *WATER LINE*
- HYD *FIRE HYDRANT*
- WV *GATE VALVE & BOX*
- *CONCRETE ANCHOR*
- *UTILITY PULL BOX*
- *STREET LIGHTING*
- *STREET SIGNAGE*
- *STREET ASPHALT PAVEMENT*
- *SIDEWALK*
- *CURB & GUTTER*
- *EC-3 DITCH LINING*
- *EC-2DITCH LINING*
- UG E / UG T *UTILITY DUCT BANK*



EXISTING LEGEND

- TELEPHONE PEDESTAL
- FO MARK FIBER OPTIC MARKER
- CO CLEANOUT
- (D) STORM MANHOLE
- (S) SANITARY MANHOLE
- FIRE HYDRANT
- (W) WATER MANHOLE
- WTR MARK WATER MARKER
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- BENCHMARK
- EDGE OF WOODS
- UG FO — UG FIBER OPTIC LINE
- UG G — UG GAS LINE
- — SS — UG SAN. SEWER LINE
- — W — UG WATER LINE
- RIP RAP
- FES FLARRED END SECTION

SHEET INDEX

C1.0 COVER SHEET
C2.0 TOPOGRAPHIC SURVEY
C2.1 TOPOGRAPHIC SURVEY
C3.0 STAGE 1 EROSION CONTROL PLAN
C4.0 ROAD GEOMETRIC AND STRIPING PLAN
C4.1 ROAD AND WATER PLAN AND PROFILE
C4.2 ROAD CROSS SECTIONS
C4.3 STORM LINE PROFILES
C4.4 STORM LINE PROFILES
C5.0 STAGE 2 EROSION CONTROL & GRADING PLAN
C6.0 EROSION CONTROL DETAILS
C6.1 STREET DETAILS
C6.2 STORM SEWER DETAILS
C6.3 WATER DETAILS
⚠1 C6.4 ~~WATER DETAILS~~ **MISCELLANEOUS DETAILS**
C7.0 STORM WATER MANAGEMENT DETAILS
C7.1 PRE-DEVELOPED DRAINAGE AREA MAP
C7.2 POST-DEVELOPED DRAINAGE AREA MAP
C7.3 STORM SEWER DRAINAGE AREA MAP
L1.0 LANDSCAPE PLAN (STREET)

⚠1 ***CONTACT THE LYNCHBURG FIRE DEPARTMENT AT 434.847.1485 OR 434.847.1602 WHEN ALTERING WATER (REDUCING OR THE AVAILABILITY) OR ALTERING ROUTES SO THAT PUBLIC SAFETY IS AWARE AND CAN PREPARE IN CASE OF EMERGENCIES.***

ENGINEER CONTACT
PATRICK C. PROFFITT, PE
HURT AND PROFFITT, INC
2524 LANGHORNE ROAD
LYNCHBURG, VIRGINIA 24501
(434) 847-7796 EXT 679
pcp@handp.com

⚠1
OWNER
CITY OF LYNCHBURG
900 CHURCH STREET.
LYNCHBURG, VA. 24504

OWNER CONTACT
LEE NEWLAND
CITY OF LYNCHBURG
900 CHURCH STREET.
LYNCHBURG, VA. 24504
EMAIL: lee.newland@lynchburgva.gov
PHONE: 434.455.3947

PROPERTY OWNER INFORMATION

1. OFFICE PARKS OF LYNCHBURG, LLC. TM#258-01-002, ZONED:B-3C, 3777 CANDLERS MOUNTAIN ROAD, LYNCHBURG, VA 24502
2. LIBERTY UNIVERSITY, INC. TM#258-01-003, ZONED:B-3C, 1600 LIBERTY MOUNTAIN DRIVE, LYNCHBURG, VA 24502
3. CITY OF LYNCHBURG TM#258-02-001, ZONED:R-C, 3770 CANDLERS MOUNTAIN ROAD, LYNCHBURG, VA 24502
4. LIBERTY UNIVERSITY, INC. TM#267-01-001, INST. #050006165, ZONED:B-3C, R-2C, 1501 LIBERTY MOUNTAIN DRIVE, LYNCHBURG, VA 24502
5. LIBERTY UNIVERSITY, INC. TM#267-01-005, ZONED:B-3C, 3797 CANDLERS MOUNTAIN ROAD, LYNCHBURG, VA 24502
6. LIBERTY UNIVERSITY, INC. TM#267-01-801, ZONED:R-2C, 4000 CANDLERS MOUNTAIN ROAD, LYNCHBURG, VA 24502
7. LIBERTY UNIVERSITY, INC. TM#268-01-001, ZONED:R-C, 800 TOP RIDGE DRIVE, LYNCHBURG, VA 24502
8. LIBERTY UNIVERSITY, INC. TM#285-01-001, INST. # 050006165, ZONED:B-3C, 3802 CANDLERS MOUNTAIN ROAD, LYNCHBURG, VA 24502
9. LIBERTY UNIVERSITY, INC. TM#285-01-002, ZONED:B-3C, 3794 CANDLERS MOUNTAIN ROAD, LYNCHBURG, VA 24502
10. LIBERTY UNIVERSITY, INC. TM#285-01-003, ZONED:B-3C, 3778 CANDLERS MOUNTAIN ROAD, LYNCHBURG, VA 24502
11. LIBERTY UNIVERSITY, INC. TM#285-01-004, ZONED:B-3C, 3786 CANDLERS MOUNTAIN ROAD, LYNCHBURG, VA 24502

THE ENGINEER AND/OR SURVEYOR TAKES NO RESPONSIBILITY FOR THE LOCATION OR ACCURACY OF THE UTILITIES AS SHOWN HEREON OR ANY UTILITIES WITHIN THE PROJECT THAT MAY NOT BE SHOWN HEREON. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE UTILITY COMPANIES TO SEE IF ANY UTILITIES EXIST WITHIN THE AREA OF THE PROJECT BEFORE ANY CONSTRUCTION BEGINS. ANY COST INCURRED BY DAMAGING ANY UTILITY WITHIN THE PROJECT SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

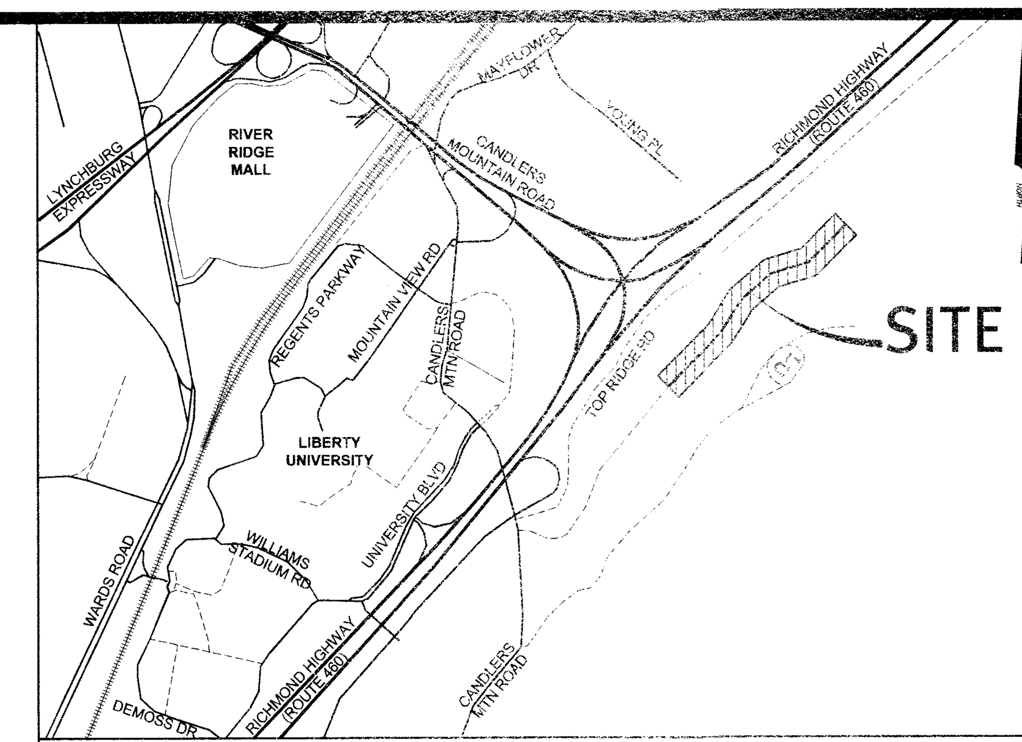
48 WORKING HOURS PRIOR TO STARTING THE WORK, THE CONTRACTOR SHALL CALL MISS UTILITY AT PHONE NUMBER 811 AND ADVISE THE NATURE AND LOCATION OF THE WORK.

GENERAL NOTES:

1. NO DEMOLITION, SITE WORK, OR GRADING IS PERMITTED PRIOR TO ISSUANCE OF A LAND DISTURBANCE PERMIT ISSUED BY THE CITY OF LYNCHBURG.
2. ALL EROSION/STORMWATER MANAGEMENT MEASURES MUST BE DE-WATERED PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY AND ALL TEMPORARY EROSION MUST BE REMOVED WITHIN 30 DAYS OF PERMANENT STABILIZATION OF THE SITE.
3. ALL CONSTRUCTION STAGING, LOADING, TEMPORARY PARKING, AND LAY DOWN AREAS SHALL BE COORDINATED WITH THE OWNER PRIOR TO ANY CONSTRUCTION OR DEMOLITION ACTIVITIES.
4. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE DUST CONTROL TO PREVENT DAMAGING AND/OR NUISANCE AIRBORNE DUST FROM LEAVING THE SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING WHATEVER MEASURES ARE NECESSARY TO CORRECT AND/OR COMPENSATE BORDERING PROPERTY OWNERS AND THE OWNER FOR ALL DAMAGES DUE TO DUST.
5. THIS PROJECT IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY OF LYNCHBURG'S MANUAL OF SPECIFICATIONS AND STANDARD DETAILS AND 2008 VDOT ROAD & BRIDGE STANDARDS AND 2007 VDOT ROAD AND BRIDGE SPECIFICATIONS.
6. CONTRACTOR RESPONSIBLE FOR OBTAINING ALL PERMITS AND BONDS AS DEEMED NECESSARY BY THE CITY OF LYNCHBURG.
7. CONTRACTOR SHALL CONTACT THE CITY OF LYNCHBURG PRIOR TO ANY DEMOLITION OR GRADING ACTIVITIES WITHIN THE RIGHT OF WAY TO OBTAIN THE APPROPRIATE PERMITS.
8. CONTRACTOR SHALL CONTACT THE OWNER IN WRITING NOT LESS THAN 30 DAYS MINIMUM PRIOR TO ANY DEMOLITION AND/OR CONSTRUCTION ACTIVITY TO VERIFY MARKING OF EXISTING UTILITY SERVICES.
9. SIGN AND SIGN LOCATIONS SHALL BE APPROVED UNDER A SEPARATE APPLICATION AND PERMIT.
10. CONTRACTOR SHALL BE REQUIRED TO PROVIDE PROOF TO THE CITY OF LYNCHBURG THAT A SOIL TEST HAS BEEN CONDUCTED IN ORDER TO DETERMINE FERTILIZER APPLICATION RATES FOR THE ESTABLISHMENT OF GRASS ON THE SITE.
11. THE CITY OF LYNCHBURG WILL REQUIRE A PRE-CONSTRUCTION MEETING WITH THE CERTIFIED RESPONSIBLE LAND DISTURBER, THE ENGINEER, AND THE CITY OF LYNCHBURG PRIOR TO THE ISSUANCE OF THE LAND DISTURBANCE PERMIT. CONTACT THE CITY AT 434-455-3900 TO SET UP MEETING. CONTRACTOR SHALL BE PREPARED TO PROVIDE THEIR CERTIFICATION NUMBER AT THIS MEETING.
12. CONTACT THE CITY ENVIRONMENTAL REVIEWER, THE CITY CONSTRUCTION COORDINATOR AND MISS UTILITY 48 HOURS IN ADVANCE OF ANY CONSTRUCTION ACTIVITY.
13. STRUCTURES, SIGNS OR PLANTINGS SHALL NOT EXCEED THREE (3) FEET IN HEIGHT, WHICH OBSTRUCT VISIBILITY AT AN INTERSECTION OR DRIVEWAY (TREE PLANTINGS MAY BE USED IF THE HEIGHT OF THE LOWEST LIMB IS AT LEAST (6) SIX FEET ABOVE THE GROUND). CITY CODE 35.1-25.1.4(a)

UTILITY CONTACTS

WATER & SEWER:	*CITY OF LYNCHBURG DEPARTMENT OF WATER RESOURCES ATTN: HARRY DOSS 525 TAYLOR STREET LYNCHBURG, VA 24501 (434) 455-4271*
TELEPHONE:	*VERIZON VIRGINIA INC. LESLIE SCHMITT ENGINEERING DEPARTMENT 553 LEESVILLE ROAD LYNCHBURG, VA 24502 (434) 237-9522 REPAIR: 1-888-663-0363*
ELECTRICITY:	*AMERICAN ELECTRIC POWER ATTN: TOM McCONAGHY 4001 MAYFLOWER DRIVE LYNCHBURG, VA 24501 (434) 522-4288*
GAS:	*COLUMBIA GAS OF VIRGINIA INC. CUSTOMER SERVICE RICHMOND, VA 23236 1-800-543-8911*
CABLE:	*COMCAST DIGITAL CABLE 2820 LINKHORNE DRIVE LYNCHBURG, VA 24501 (888) 266-2278*
FIRE: ⚠1	*CITY OF LYNCHBURG FIRE DEPARTMENT LYNCHBURG COMMUNICATIONS (911 DISPATCH) (WHEN ALTERING OR REDUCING WATER AVAILABILITY OR ROUTES) 434.847.1485 OR 434.847.1602*



VICINITY MAP

PROJECT DESCRIPTION: (CITY REVIEWER NOTES)

1. THIS PROJECT CONSISTS OF THE CONSTRUCTION OF A ROAD AND WATER LINE EXTENSION FOR LIBERTY UNIVERSITY LOCATED IN LYNCHBURG, VIRGINIA. THIS SECTION OF THE ROAD EXTENSION WILL BEGIN AT THE END OF THE PREVIOUSLY APPROVED PLANS PREPARED BY PERKINS & ORRISON TITLED *"LIBERTY MOUNTAIN DRIVE ROAD EXTENSION AT THE NORTHERN INTRAMURAL FIELDS"* DATED 05/12/2015. ADDITIONAL IMPROVEMENTS SHALL INCLUDE STORM WATER CONVEYANCE, POWER AND TELECOMMUNICATIONS UTILITIES. NO NEW SANITARY SEWER SERVICE IS PROPOSED AS PART OF THIS PROJECT. A SEPARATE PLAN FOR THE ATHLETIC CENTER SITE PLAN HAS BEEN SUBMITTED TO THE CITY FOR REVIEW. BUILDING AND PARKING FOR THE ATHLETIC FACILITY SITE PLAN ARE SHOWN FOR REFERENCE ONLY.
2. TOTAL DISTURBED AREA: 6.10 ACRES; A VIRGINIA STORM WATER MANAGEMENT PERMIT WILL BE REQUIRED.
3. PRE- DEVELOPED DRAINAGE AREA = 79.4 ACRES (3,458,664 SF)
POST DEVELOPED DRAINAGE AREA = 79.4 ACRES (3,458,664 SF)
4. PRE-DEVELOPED IMPERVIOUS AREA = 0 ACRES (0 SF)
POST-DEVELOPED IMPERVIOUS AREA = 2.72 ACRES (118,450 SF)
5. ULTIMATE CONDITIONS OF THE SITE WILL BE STABILIZED UPON COMPLETION OF THE PROJECT.
6. PROPOSED GRADING FOR THE PROJECT WILL RANGE FROM 1% - 2% IN PAVED AREAS. ROAD DESIGNED TO MEET OR EXCEED AASHTO URBAN COLLECTOR - 30MPH DESIGN SPEED. PROPOSED GRADING IN NON-PAVED AREAS WILL RANGE FROM 1% TO 67%.
7. THE STREAMS AND WETLANDS AT THE BOUNDARIES OF THE PROJECT AREA ARE CRITICAL AREAS AND SHOULD BE AVOIDED AS MUCH AS POSSIBLE DURING CONSTRUCTION. THE 1.5:1 CUT SLOPE ON THE EAST PORTION OF THE PROJECT AREA HAS ALSO BEEN IDENTIFIED AS A CRITICAL AREA FOR THIS PROJECTS.
8. THERE IS AN EXISTING STREAM THAT WILL BE IMPACTED DURING CONSTRUCTION. CONTRACTOR TO TAKE PRECAUTION TO MINIMIZE IMPACTS FOR THE PROPOSED STREAM CROSSING.
9. PERIMETER EROSION CONTROLS SUCH AS A TEMPORARY SEDIMENT TRAP, DIVERSIONS AND SILT FENCE ARE PROPOSED ON THE PLANS TO PROTECT OFFSITE AREAS FROM SEDIMENT RUNOFF FROM LEAVING THE SITE.

EXISTING SITE CONDITIONS: (CITY REVIEWER NOTES)

THE EXISTING SITE IS LOCATED TO THE SOUTH EAST OF ROUTE 460 (EAST BOUND LANE) AT THE CANDLERS MOUNTAIN ROAD AND ROUTE 460 INTERCHANGE. THIS SITE HAS BEEN PREVIOUSLY BULK GRADED AS A PAD SITE. THERE ARE EXISTING STOCKPILES ON THE SITE, AND EROSION AND SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED AS PART OF THE BULK GRADING PLAN. THERE ARE THREE SEDIMENT BASINS THAT HAVE BEEN INSTALLED TO CONTROL CONSTRUCTION RUNOFF. EXISTING GRADES RANGE FROM 1% TO 50% AND SLOPE FROM EAST TO WEST. STORM WATER RUNOFF FROM THE SITE ULTIMATELY DISCHARGES TO THE WEST INTO EXISTING CULVERTS UNDER ROUTE 460. THERE IS AN EXISTING WETLAND TO THE SOUTH WEST OF THE PROJECT AREA THAT WILL BE AVOIDED DURING SANITARY SEWER CONSTRUCTION. THERE IS AN EXISTING STREAM TO THE WEST OF THE PAD THAT WILL BE IMPACTED WITH A CULVERT CROSSING TO ACCESS THE SITE.

CONSTRUCTION SEQUENCE

1. INSTALL CONSTRUCTION ENTRANCE.
2. INSTALL PERIMETER CONTROLS AND ALL APPURTENANCES AS SHOWN ON PLANS.
3. ~~BEGIN SITE BULK GRADING.~~
4. INSTALL FILL DIVERSIONS AS FILL MATERIAL IS PLACED.
5. GRADE ROADWAY AND PARKING AREAS.
6. ~~GRADE BUILDING PAD.~~
7. INSTALL UTILITIES; INSTALL INLET AND OUTLET PROTECTION AS EACH STORMWATER STRUCTURE IS PLACED.
8. INSTALL BASE STONE FOR PAVED AREAS.
9. CONSTRUCT ~~BUILDING~~, SIDEWALKS, CURB, AND PARKING.
10. COMPLETE FINISH GRADING.
11. SPREAD TOPSOIL; TEMPORARY AND PERMANENT SEEDING AND MULCHING TO BE PLACED ON ALL DISTURBED AREAS.
12. INSTALL LANDSCAPING.
13. ~~CONVERT SEDIMENT BASINS TO PERMANENT PONDS UPON STABILIZATION OF UPSTREAM DRAINAGE AREAS.~~
14. CONTRACTOR TO RESTORE ALL AREAS BACK TO EITHER PROPOSED GRADES OR EXISTING CONDITIONS AFTER COMPLETION OF THE PROJECT. ALL DISTURBED AREAS, HAUL ROADS, CONSTRUCTION ROADS, LAY DOWN AREAS, ETC. SHALL BE RESTORED.

VIRGINIA CERTIFIED RESPONSIBLE LAND DISTURBER

NAME - PRINTED *SIGNATURE* *DATE*

PHONE # *COMPANY*

ADDRESS

"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."

Signature:__________
Printed Name and Title:__________
Date:______ Registration Number:______

"I/ We 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:______

APPROVED:
CITY ENGINEER: [signature] Date: 1/19/16
UTILITIES ENGINEER: [signature] Date: 1/12/16
⚠1 ESC PLAN APPROVAL: [signature] Date: 1/12/16

CONTRACTOR SHALL PROVIDE AN APPROVED PLAN ADDENDUM PRIOR TO ISSUANCE OF ANY LAND DISTURBANCE PERMIT, IDENTIFYING THE LOCATION, ADEQUATE STABILIZATION MEASURES AND AN APPROVED PERMIT FOR ANY OFFSITE BORROW/FILL/WASTE AREAS THAT WILL BE USED IN CONJUNCTION WITH THIS PROJECT. APPROXIMATELY 23,500 CY OF MATERIAL WILL BE GRADED ONSITE TO CONSTRUCT THE PROPOSED FINISH ELEVATIONS. APPROXIMATELY 20,000 CY OF MATERIAL WILL BE OBTAINED FROM WITHIN THE SITE DEVELOPMENT TO ACHIEVE THE PROPOSED ELEVATIONS. THE ULTIMATE DESTINATION OF ALL DEBRIS FROM DEMOLITION MUST BE IDENTIFIED AT THE PRE-CONSTRUCTION CONFERENCE. THE EARTHWORK VOLUME IS BASED ON A COMPARISON OF THE EXISTING SURFACE AND THE PROPOSED FINISH SURFACE AND DOES NOT INCLUDE OR EXCLUDE VOLUMES FOR ADDITIONAL SUB-BASE FILL OR EXCAVATION. THE CONTRACTOR SHALL PERFORM AN INDEPENDENT EARTHWORK ANALYSIS TO DETERMINE THE VOLUME OF MATERIAL THAT WILL BE MOVED TO CONSTRUCT THE PROPOSED IMPROVEMENTS TO THE DESIGN ELEVATIONS.

PROPERTY NOTES:

1. SITE & OWNERS: LIBERTY UNIVERSITY
2. DEVELOPER: LIBERTY UNIVERSITY
CONTACT: TRACEY MORVELLE
ADDRESS: 1971 UNIVERSITY BLVD. LYNCHBURG, VA. 24515
EMAIL TNORVELLE@LIBERTY.EDU
PHONE 434.582.3542
3. SITE PROPOSED USE: ROAD AND WATER LINE EXTENSION
4. SITE ZONED: B-3C & R-2C
5. **THE AREA SHOWN HEREON IS LOCATED IN FLOOD ZONE 'X' AND IS NOT LOCATED WITHIN FLOOD HAZARD ZONE 'A' FOR A 100 YEAR FLOOD AS DETERMINED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY AS SHOWN ON COMMUNITY-PANEL MAP #5100930101D DATED JUNE 3, 2008.**

1	11/19/15	PER CITY COMMENTS RECV'D 9/25/15

HURT & PROFFITT
2524 LANGHORNE ROAD
LYNCHBURG VA 24501
800.242.4906 TOLL FREE
434.847.7796 MAIN
434.847.0047 FAX
ENGINEERING • SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL
GEOTECHNICAL • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

COVER SHEET
LIBERTY MOUNTAIN DRIVE (PHASE 2)
ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA (CITY PROJECT# 15029-RW)

PROJECT NO.	*20151033*
LATITUDE:	*N37°21'42"*
LONGITUDE:	*W79°09'42"*
DATE:	*08/24/2015*
DRAWN BY:	*RKW*
CHECKED BY:	*PCP*

COMMONWEALTH OF VIRGINIA
PATRICK C. PROFFITT
Lic. No. 034330
11/19/2015
PROFESSIONAL ENGINEER

CITY PROJECT #	*15029-RW*
H&P CROSS REF#	*20150502*

SHEET NO.
C1.0

Dec 18, 2015 - 8:16am \\DATA01\Projects\2015\20150502\CAD\RWS - COVER.dwg

RICHMOND HIGHWAY
US 460 & US 29 (E.B.L.)
VARIABLE WIDTH R/W

RIGHT OF WAY LINE

VIRGINIA STATE PLANE, NAD 83, SOUTH ZONE (NAD 83)

MANHOLE
TOP 869.34'
INV IN 857.9'
INV OUT 856.9'

8" DIP
APPROX. LOCATION

PROPERTY LINE

LIBERTY UNIVERSITY, INC.
TM#285-01-001
INST. #050006165
ZONED:B-3C

INV OUT
=881.19'

24" CPP

8" PVC

48" CONC. RISER
TOP OF TRASH
RACK=889.31'
TOP=887.13'
INV IN=886.8'
INV OUT=881.8'

CONTOURS AND CREEK LOCATION WITHIN BORDER TAKEN FROM CITY OF LYNCHBURG GIS. NOT FIELD LOCATED PER THIS SURVEY.

INV OUT
=883.80'

(PIPE IS LAYING ON TOP OF GROUND)

INV OUT
=884.45'

(PIPE IS LAYING ON TOP OF GROUND)

12" CPP

INV. IN
W/FES
=935.61'

INV IN
W/FES
=939.16'

INV OUT
=916.84'

(PIPE IS LAYING ON TOP OF GROUND)

12" CPP

INV IN
W/FES
=936.63'

(PIPE IS LAYING ON TOP OF GROUND)

12" C

INV IN
W/FES
=937.72'

LIBERTY UNIVERSITY, INC.
TM#267-01-001
INST. #050006165
ZONED:B-3C, R-2C

STOCK PILE AREA

STOCK PILE AREA

MATCH LINE

SHEET 1
SHEET 2

LIBERTY UNIVERSITY, INC.
TM#285-01-002
ZONED:B-3C

SOIL ROAD

PIPE GOES UNDERGROUND HERE

12" CPP

INV IN
=978.70'

CREEK

LIBERTY UNIVERSITY, INC.
TM#267-01-001
ZONED:B-3C, R-2C

BENCHMARK:
TOP 0F 1/2" REBAR SET
ELEVATION=952.01' (NAVD 88)

LEGEND

- TELEPHONE PEDESTAL
- FIBER OPTIC MARKER
- CLEANOUT
- STORM MANHOLE
- SANITARY MANHOLE
- FIRE HYDRANT
- WATER MANHOLE
- WATER MARKER
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- BENCHMARK
- EDGE OF WOODS
- UG FO — UG FIBER OPTIC LINE
- UG G — UG GAS LINE
- SS — UG SAN. SEWER LINE
- W — UG WATER LINE
- RIP RAP
- FES — FLARRED END SECTION

NOTES:

1. THIS TOPOGRAPHIC SURVEY WAS COMPLETED UNDER THE DIRECT RESPONSIBLE CHARGE OF, DOYLE B. ALLEN FROM AN ACTUAL GROUND SURVEY MADE UNDER MY SUPERVISION. THE DATA WAS OBTAINED FROM JUNE 11, 2015 THROUGH JUNE 16, 2015; AND THIS MAP MEETS MINIMUM ACCURACY STANDARDS UNLESS OTHERWISE NOTED.
2. THIS PLAT HAS BEEN PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND DOES NOT, THEREFORE, NECESSARILY INDICATE ALL ENCUMBRANCES ON THE PROPERTY.
3. THE AREA SHOWN HEREON IS LOCATED IN FLOOD HAZARD ZONE 'X' AND IS NOT LOCATED WITHIN FLOOD HAZARD ZONE 'AE' FOR A 100 YEAR FLOOD AS DETERMINED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY AS SHOWN ON COMMUNITY-PANEL MAP #5100930106D DATED REVISED JUNE 3, 2008.
4. VERTICAL CONTROL FOR THIS PROJECT IS BASED ON NAVD 88.
5. THE UTILITIES SHOWN HEREON ARE PLOTTED PER VISIBLE EVIDENCE IN THE FIELD. UNDERGROUND UTILITIES HAVE NOT BEEN MARKED IN THE FIELD AT THIS TIME.
6. THE SURVEYOR TAKES NO RESPONSIBILITY FOR THE LOCATION OR ACCURACY OF THE UTILITIES SHOWN HEREON OR ANY UTILITIES WITHIN THE PROJECT AREA THAT MAY NOT BE SHOWN HEREON. THE OWNER/CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE MISS UTILITY 1-800-522-7001 REQUEST A 48 HOUR EXCAVATION TICKET BEFORE STARTING OF EXCAVATION/GROUND DISTURBANCE OF ANY KIND.
7. THIS SURVEY WAS PREPARED AT THE REQUEST OF LIBERTY UNIVERSITY.
8. NO BOUNDARY SURVEY HAS BEEN PERFORMED AT THIS TIME.

50 25 0 50 100
GRAPHIC SCALE IN FEET

1	11/19/15	PER CITY COMMENTS RECVD 9/25/15

Dec 17, 2015 - 4:20pm \\DATA01\Projects\20151033\15033CADD\TOPO_Eng.dwg

HURT & PROFFITT
2524 LANGHORNE ROAD
LYNCHBURG VA 24501
800.242.4996 TOLL FREE
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434.847.0047 FAX
ENGINEERING • SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL
GEOTECHNICAL • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

TOPOGRAPHIC SURVEY
LIBERTY MOUNTAIN DRIVE (PHASE 2)
ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA *(CITY PROJECT# 15029-RW)*

PROJECT NO.	20151033
LATITUDE:	N37°21'42"
LONGITUDE:	W79°09'42"
DATE:	06/11/2015
DRAWN BY:	RKW
CHECKED BY:	PCP

COMMONWEALTH OF VIRGINIA
DOYLE B. ALLEN
Lic. No. 1402B
06/11/2015
LAND SURVEYOR
PRELIMINARY

CITY PROJECT #	15029-RW
H&P CROSS REF#	20150502

SHEET NO.
C2.0

RICHMOND HIGHWAY
US 460 & US 29 (E.B.L.)
VARIABLE WIDTH R/W

NORTH
VIRGINIA STATE PLANE GRID SOUTH ZONE (NAD 83)

SHEET 1
SHEET 2

AEP TRANSMISSION LINE
AEP TRANSMISSION LINE EASEMENT
RIGHT OF WAY LINE

OH E
UG G
UG FO
W
W/R
FO MARK

INV OUT =900.62'
48" CONC. RISER
TOP OF TRASH RACK=909.35'
TOP=907.08'
INV IN=906.8'
INV OUT=902.0'
30" CMP
(PIPE IS LAYING ON TOP OF GROUND)
12" CPP
INV OUT =905.17'
INV IN W/FES =937.72'
INV OUT =903.29'
24" CPP
INV IN =930.99'

48" CONC. RISER
TOP OF TRASH RACK=907.25'
TOP=904.94'
INV IN=904.85'
INV OUT=899.7'
INV OUT =894.79'
24" CPP
INV OUT =902.48'
24" CPP
INV IN =919.51'
INV OUT =901.20'
24" CPP
INV IN =919.66'

LIBERTY UNIVERSITY, INC.
TM#267-01-001
INST. #050006165
ZONED:B-3C, R-2C

BENCHMARK:
TOP OF 1/2" REBAR SET
ELEV=947.14'
(NAVD 88)

INV OUT W/FES =933.57'

STOCK PILE AREA

INV OUT =945.96'
24" HDPE
INV IN =946.26'

SOIL ROAD

MH
TOP=950.68'
INV IN=942.3'
INV OUT=942.4'
24" HDPE
GRATED DI
TOP=974.85'
INV OUT=959.0'

24" HDPE

MH
TOP=950.17'
INV IN(1)=943.2'
INV IN(2)=939.9'
INV OUT=939.9'
24" HDPE

GRATED DI
TOP=967.55'
INV OUT=964.2'

CREEK BRANCH

36" HDPE

TOWER

MATCH LINE

SHEET 1
SHEET 2

50 25 0 50 100
GRAPHIC SCALE IN FEET

LEGEND

- TELEPHONE PEDESTAL
- FIBER OPTIC MARKER
- CLEANOUT
- STORM MANHOLE
- SANITARY MANHOLE
- FIRE HYDRANT
- WATER MANHOLE
- WATER MARKER
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- BENCHMARK
- EDGE OF WOODS
- UG FO — UG FIBER OPTIC LINE
- UG G — UG GAS LINE
- SS — UG SAN. SEWER LINE
- W — UG WATER LINE
- RIP RAP
- FES FLARRED END SECTION

1	11/19/15	PER CITY COMMENTS RECV'D 9/25/15

HURT & PROFFITT
2524 LANGHORNE ROAD
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TOPOGRAPHIC SURVEY
LIBERTY MOUNTAIN DRIVE (PHASE 2)
ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA (CITY PROJECT# 15029-RW)

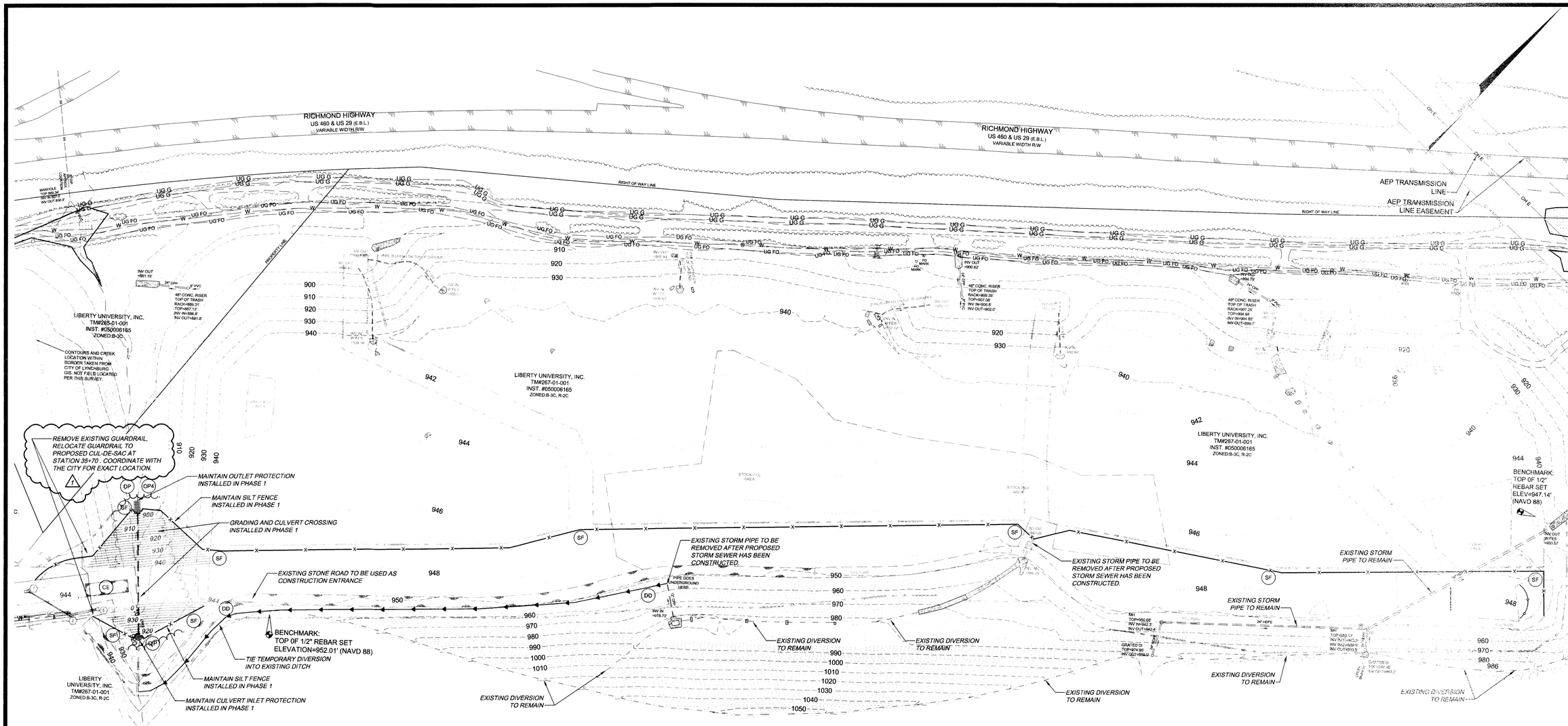
PROJECT NO.	20151033
LATITUDE:	N37°21'42"
LONGITUDE:	W79°09'42"
DATE:	06/11/2015
DRAWN BY:	RKW
CHECKED BY:	PCP

COMMONWEALTH OF VIRGINIA
DOYLE R. ALLEN
Lic. No. 1402B
06/11/2015
LAND SURVEYOR
PRELIMINARY

CITY PROJECT #	15029-RW
H&P CROSS REF#	20150502

SHEET NO.
C2.1

Dec 17, 2015 - 4:20pm \\DATA01\Projects\2015\20150502\CAD\TOPO_Eng.dwg



E&S MAINTENANCE SECTIONS

SECTION 3.02- TEMPORARY STONE CONSTRUCTION ENTRANCE
MAINTENANCE

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR THE WASHING AND REWORKING OF EXISTING STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY STRUCTURES USED TO TRAP SEDIMENT. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY. THE USE OF WATER TRUCKS TO REMOVE MATERIALS DROPPED, WASHED, OR TRACKED ONTO ROADWAYS WILL NOT BE PERMITTED UNDER ANY CIRCUMSTANCES.

SECTION 3.05- SILT FENCE
MAINTENANCE

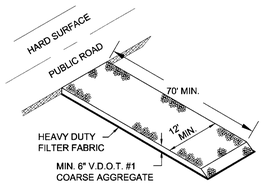
1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
2. CLOSE ATTENTION SHALL BE PAID TO THE REPAIR OF DAMAGED SILT FENCE RESULTING FROM END RUNS AND UNDERCUTTING.
3. SHOULD THE FABRIC ON A SILT FENCE DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
4. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
5. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED AND SEEDED.

SECTION 3.08- CULVERT INLET PROTECTION
MAINTENANCE

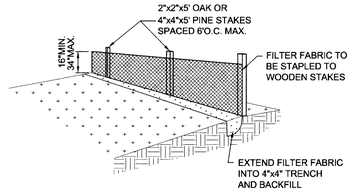
1. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
2. AGGREGATE SHALL BE REPLACED OR CLEANED WHEN INSPECTION REVEALS THAT CLOGGED VOIDS ARE CAUSING PONDING PROBLEMS WHICH INTERFERE WITH ON-SITE CONSTRUCTION.
3. SEDIMENT SHALL BE REMOVED AND THE IMPOUNDMENT RESTORED TO ITS ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO ONE-HALF THE DESIGN DEPTH. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA IN SUCH A MANNER THAT IT WILL NOT ERODE AND CAUSE SEDIMENTATION PROBLEMS.
4. TEMPORARY STRUCTURES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.

SECTION 3.09- TEMPORARY DIVERSION DIKE
MAINTENANCE

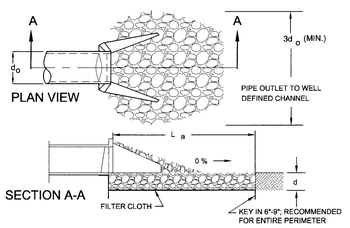
1. THE MEASURE SHALL BE INSPECTED AFTER EVERY STORM AND REPAIRS MADE TO THE DIKE, FLOW CHANNEL, OUTLET OR SEDIMENT TRAPPING FACILITY, AS NECESSARY. ONCE EVERY TWO WEEKS, WHETHER A STORM EVENT HAS OCCURRED OR NOT, THE MEASURE SHALL BE INSPECTED AND REPAIRS MADE IF NEEDED. DAMAGES CAUSED BY CONSTRUCTION TRAFFIC OR OTHER ACTIVITY MUST BE REPAIRED BEFORE THE END OF EACH WORKING DAY.



TEMPORARY CONSTRUCTION ENTRANCE (CE)
VESHC STD. 3.02
N.T.S.



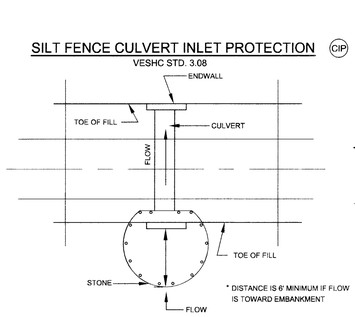
SILT FENCE (SF)
(WITHOUT WIRE SUPPORT)
VESHC STD. 3.05
N.T.S.



NOTES:
1. APRON LINING MAY BE RIPRAP, GROUTED RIPRAP, GABION BASKET, OR CONCRETE.
2. La IS THE LENGTH OF THE RIPRAP APRON AS CALCULATED USING PLATES 3.18-3 AND 3.18-4.
3. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER, BUT NOT LESS THAN 6 INCHES.

PIPE OUTLET PROTECTION (OP)
VESHC STD. 3.18
N.T.S.

Outlet Protection (10-YR Design Storm)						
ID		OP1	OP2	OP3	OP4	OP5
Drainage Area	AC	10.3	7.0	4.8	23.9	0.44
C-Value		0.77	0.76	0.81	0.30	0.90
Time of Concentration	MIN	10	8	8	16	5
Intensity	IN/HR	4.6	4.9	5.0	3.7	5.6
Design Flow	CFS	36.6	26.4	19.1	26.7	2.2
Tailwater Depth	FT	2.0	1.8	1.5	1.7	0.3
Discharge Velocity	FPS	8.6	8.9	10.9	7.4	7.6
Rip Rap Gradation	FT	1.0	1.0	1.0	1.0	1.0
Apron Length	FT	16	16	16	16	100
Apron Width	FT	8	8	8	8	8
Side Slopes		2:1	2:1	2:1	2:1	2:1
Apron Depth	IN	24	24	24	24	24



VIRGINIA UNIFORM CODING SYSTEM FOR EROSION AND SEDIMENT CONTROL PRACTICES
* CHART TAKEN FROM THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (JULY 1992)

	CE	TEMPORARY CONSTRUCTION ENTRANCE (3.02)
x	SF	SILT FENCE (3.05)
	CIP	CULVERT INLET PROTECTION (3.08)
	DD	TEMPORARY DIVERSION DIKE (3.09)
	SB	TEMPORARY SEDIMENT BASIN (3.14)
	OP	OUTLET PROTECTION (3.18)

PHASE I EROSION & SEDIMENT CONTROL APPROVAL

TRC:_____ DATE:_____

E&S:_____ DATE:_____

1	11/19/15	PER CITY COMMENTS RECVD 9/25/15

STAGE 1 EROSION CONTROL PLAN
LIBERTY MOUNTAIN DRIVE (PHASE 2)
ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA (CITY PROJECT# 15029-RW)

HURT & PROFFITT
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PROJECT NO.	20151033
LATITUDE:	N37°21'42"
LONGITUDE:	W79°09'42"
DATE:	08/24/2015
DRAWN BY:	RKW
CHECKED BY:	PCP

COMMONWEALTH OF VIRGINIA
PATRICK C. PROFFITT
Lic. No. 034330
11/19/2015
PROFESSIONAL ENGINEER

CITY PROJECT #	15029-RW
H&P CROSS REF#	20150502

SHEET NO.
C3.0

80 40 0 80 160
GRAPHIC SCALE IN FEET
1" = 80'

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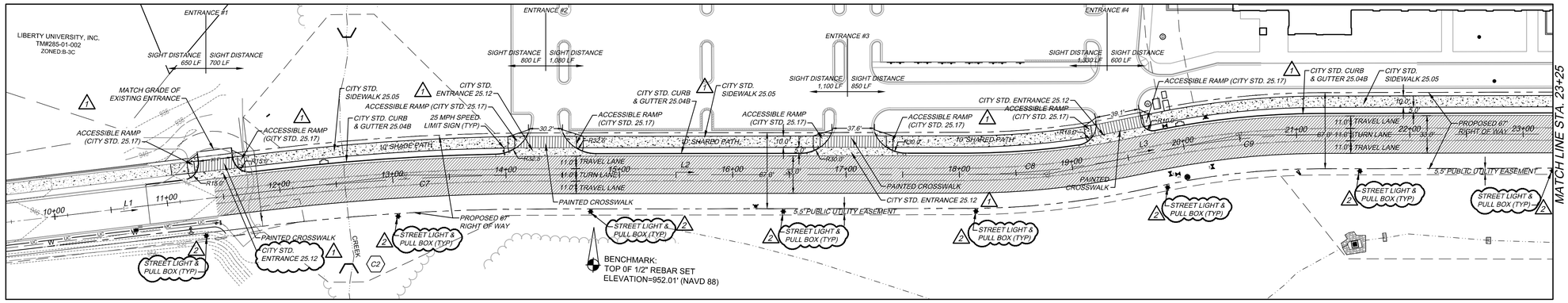
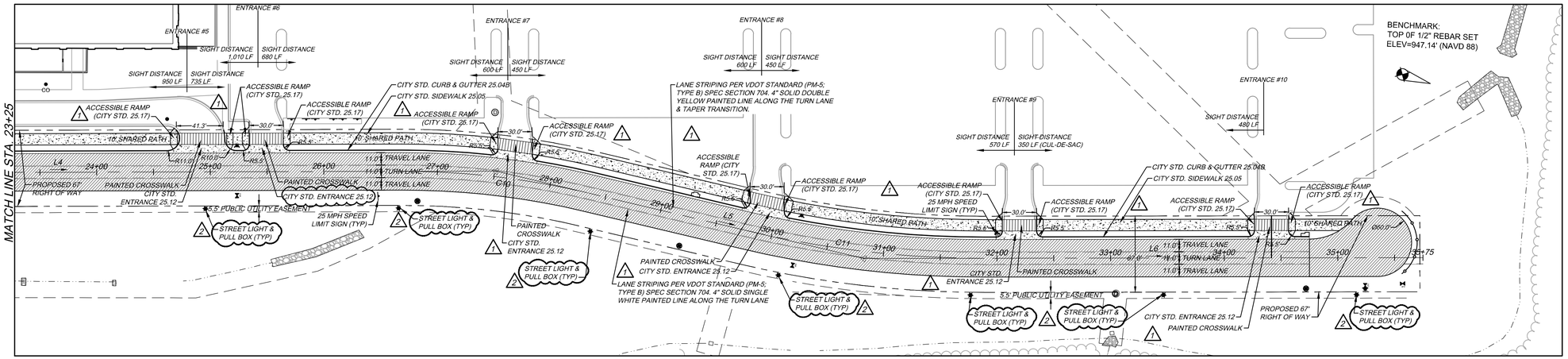
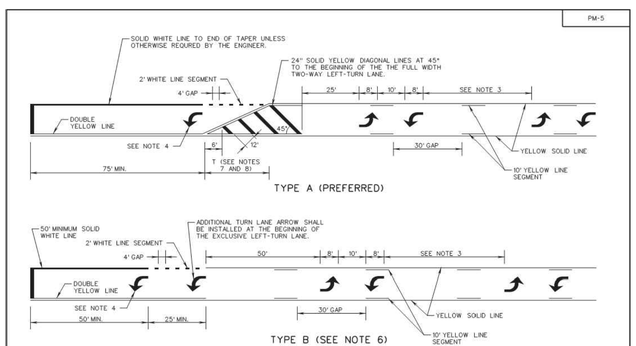


LIBERTY MOUNTAIN DRIVE (PUBLIC)
AASHTO COLLECTOR - 30 MPH DESIGN SPEED



LIBERTY MOUNTAIN DRIVE (PUBLIC)
AASHTO COLLECTOR - 30 MPH DESIGN SPEED



ROAD ALIGNMENT TABLE

LINE #	DISTANCE	BEARING	BOL, PI, OR PT	PC, PI, OR EOL
L1	194.05	N40° 11' 56"E	N:3654864.60, E:11289926.92	N:3655012.82, E:11290052.17
L2	379.93	N46° 52' 48"E	N:3655181.78, E:11290212.73	N:3655441.48, E:11290490.05
L3	32.37	N35° 22' 51"E	N:3655547.12, E:11290582.31	N:3655573.51, E:11290601.05
L4	549.08	N46° 48' 15"E	N:3655678.51, E:11290692.63	N:3656054.35, E:11291092.92
L5	144.17	N60° 17' 57"E	N:3656152.08, E:11291225.23	N:3656223.51, E:11291350.46
L6	386.47	N46° 52' 48"E	N:3656348.34, E:11291519.72	N:3656612.51, E:11291801.81

ROAD ALIGNMENT CURVE TABLE

CURVE #	DELTA	RADIUS	LENGTH	CHORD LENGTH	CHORD BEARING	PC, PCC OR POC	POC, PCC OR PT
C7	Δ = 6°40'52"	2000.00'	233.21'	233.08'	N43°32'22"E	N:3655012.82, E:11290052.17	N:3655181.78, E:11290212.73
C8	Δ = 11°29'57"	700.00'	140.49'	140.25'	N41°07'49"E	N:3655441.48, E:11290490.05	N:3655547.12, E:11290582.31
C9	Δ = 11°25'24"	700.00'	139.56'	139.33'	N41°05'33"E	N:3655573.51, E:11290601.05	N:3655678.51, E:11290692.63
C10	Δ = 13°29'42"	700.00'	164.87'	164.49'	N53°33'06"E	N:3656054.35, E:11291092.92	N:3656152.08, E:11291225.23
C11	Δ = 13°25'10"	900.00'	210.79'	210.31'	N53°35'23"E	N:3656223.51, E:11291350.46	N:3656348.34, E:11291519.72

⚠1

COMMERCIAL DRIVEWAY ENTRANCES - CITY STD. DETAIL 25.12

ENTRANCE ID	STATION	SIDE	WIDTH AT R/W*	CURB RETURN RADIUS LEFT*	CURB RETURN RADIUS RIGHT*	SIGHT DISTANCE RIGHT	SIGHT DISTANCE LEFT
1	11+46.64	LEFT	30.0 FEET	15.0 FEET	15.0 FEET	700 FEET	650 FEET
2	13+42.49	LEFT	30.2 FEET	32.5 FEET	32.5 FEET	1,080 FEET	800 FEET
3	17+08.67	LEFT	37.6 FEET	30.0 FEET	30.0 FEET	850 FEET	1,100 FEET
4	19+45.97	LEFT	39.1 FEET	18.0 FEET	10.0 FEET	600 FEET	1,330 FEET
5	24+90.86	LEFT	41.3 FEET	5.5 FEET	5.5 FEET	735 FEET	950 FEET
6	25+49.82	LEFT	30.0 FEET	5.5 FEET	5.5 FEET	680 FEET	1,010 FEET
7	27+61.87	LEFT	30.0 FEET	5.5 FEET	5.5 FEET	450 FEET	600 FEET
8	29+88.90	LEFT	30.0 FEET	5.5 FEET	5.5 FEET	450 FEET	600 FEET
9	32+22.05	LEFT	30.0 FEET	5.5 FEET	5.5 FEET	350 FEET	570 FEET
10	34+44.05	LEFT	30.0 FEET	5.5 FEET	5.5 FEET	N/A	480 FEET

* DIMENSION SHOWN TO THE FACE OF CURB

APPROVED:
CITY ENGINEER:_____ Date: _____
UTILITIES ENGINEER:_____ Date: _____

50 25 0 50 100
GRAPHIC SCALE IN FEET
1" = 50'

2	2/18/16	PER CITY COMMENTS RECV'D 2/17/16
1	11/19/15	PER CITY COMMENTS RECV'D 9/25/15

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ROAD GEOMETRIC AND STRIPING PLAN
LIBERTY MOUNTAIN DRIVE (PHASE 2)
ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA (CITY PROJECT# 15029-RW)

PROJECT NO.	20151033
LATITUDE:	N37°21'42"
LONGITUDE:	W79°09'42"
DATE:	08/24/2015
DRAWN BY:	RKW
CHECKED BY:	PCP

COMMONWEALTH OF VIRGINIA
PATRICK C. PROFFITT
Lic. No. 034330
02/18/2016
PROFESSIONAL ENGINEER

CITY PROJECT #	15029-RW
H&P CROSS REF#	20150502

SHEET NO.
C4.0

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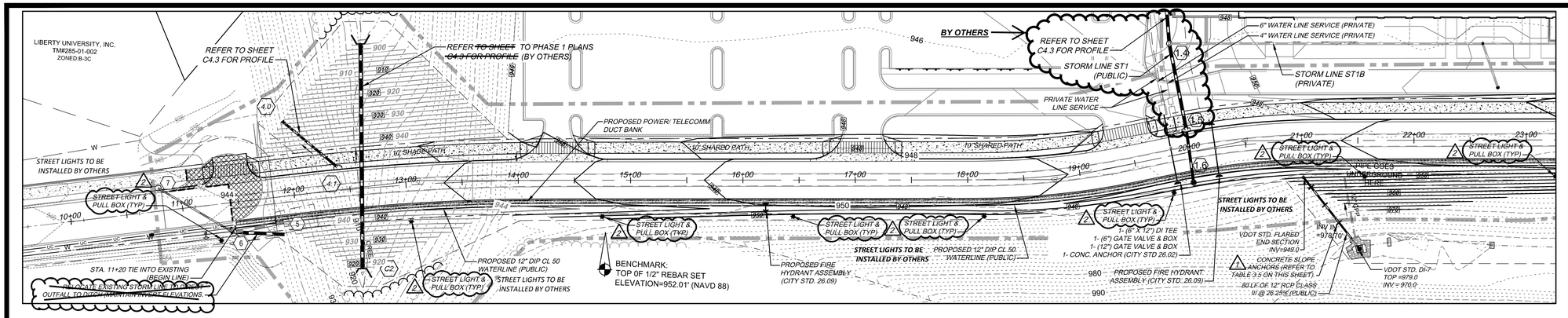
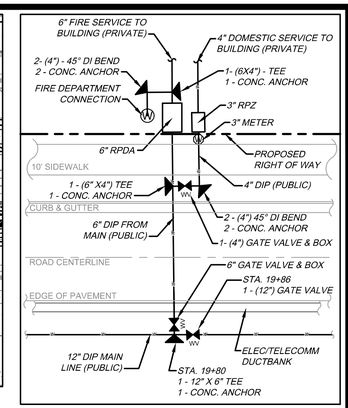
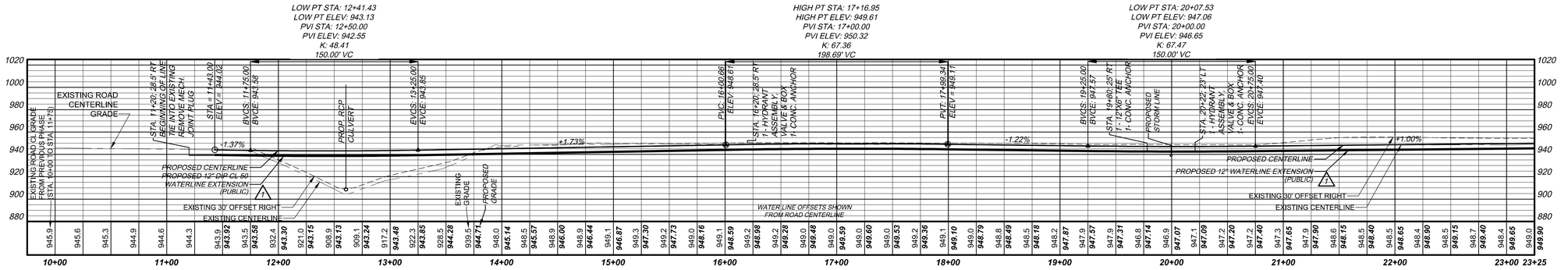
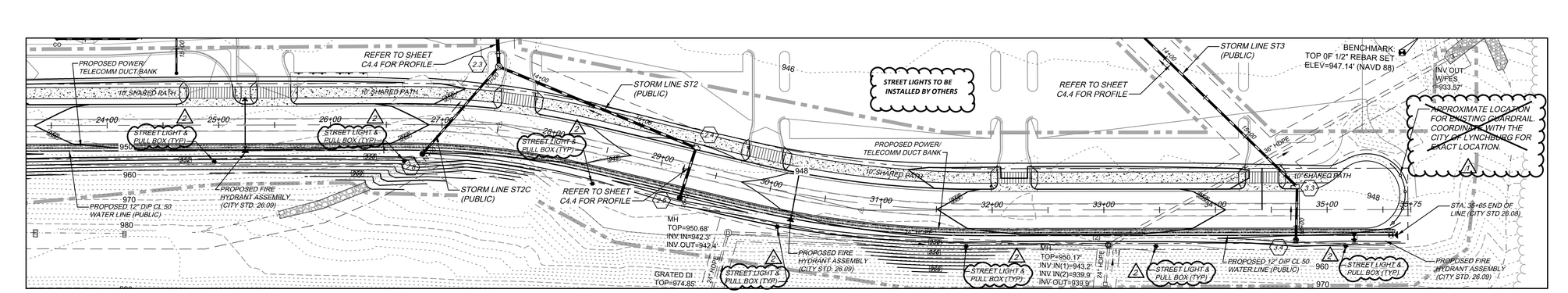


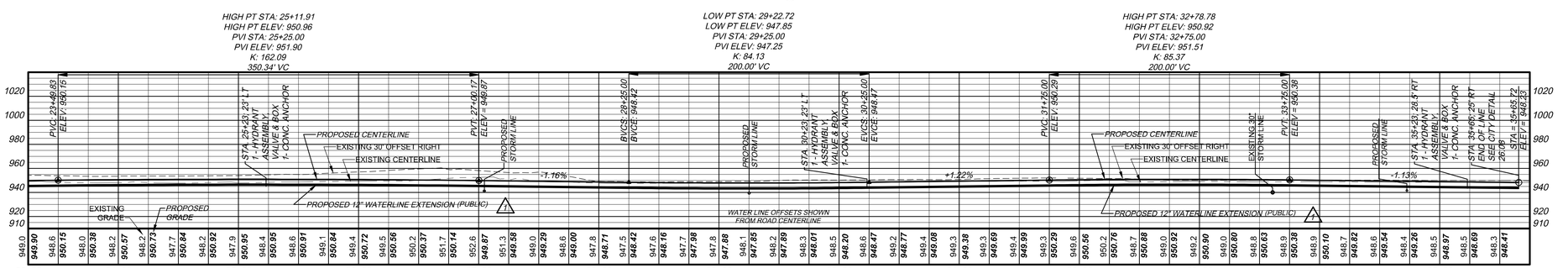


SERVICE LATERAL DETAIL ⚠1
NTS



ROAD EXTENSION STA. 10+00 TO STA. 23+25





ROAD EXTENSION STA. 23+25 TO END OF LINE

STRUCTURAL FILL MATERIAL UNDER AND WITHIN 15 FEET OF THE ROAD AND THE UPPER 12 INCHES OF ROADS AND SIDEWALKS SHOULD BE PLACED IN HORIZONTAL LIFTS, WITH AN 8 INCH TO 9 INCH LOOSE THICKNESS, AND COMPACTED TO AT LEAST 98% OF THE MATERIAL'S MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698 (STANDARD PROCTOR).

APPROVED:

CITY ENGINEER:_____ Date: _____

UTILITIES ENGINEER:_____ Date: _____

SLOPE ANCHOR NOTE:
PIPE SLOPE ANCHORS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF LYNCHBURG MANUAL OF SPECIFICATIONS AND STANDARD DETAILS APPENDIX A OF THE WATER AND SEWER DESIGN SECTION 1.1 GENERAL, 1.3.3 COLLECTION SYSTEM DESIGN, H. SLOPE 6. STEEP SLOPE PIPE ANCHORAGE. TABLE 3.5

⚠1

GRADE RANGE (% SLOPE)		ANCHOR SPACING
FROM	TO	CENTER TO CENTER IN FEET
20	<35	36
35	<50	24
50	OR GREATER	16

HORIZ. SCALE 1" = 50'
50 25 0 50 100
VERT. SCALE 1" = 50'

2	2/18/16	PER CITY COMMENTS RECVD 2/17/16
1	11/19/15	PER CITY COMMENTS RECVD 9/25/15

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ROAD AND WATER LINE PLAN AND PROFILE
LIBERTY MOUNTAIN DRIVE (PHASE 2)
ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA (CITY PROJECT# 15029-RW)

PROJECT NO.	20151033
LATITUDE:	N37°21'42"
LONGITUDE:	W79°09'42"
DATE:	08/24/2015
DRAWN BY:	RKW
CHECKED BY:	PCP

COMMONWEALTH OF VIRGINIA
PATRICK C. PROFFITT
Lic. No. 034330
02/18/2016
PROFESSIONAL ENGINEER

CITY PROJECT # 15029-RW
H&P CROSS REF# 20150502

SHEET NO.
C4.1

Feb 29, 2016 - 11:48am I:\DATA\01\Projects\2015\20150502\CAD\DWGS - P_P.dwg

SECTION STA: 12+00

SECTION STA: 13+00

SECTION STA: 14+00

SECTION STA: 15+00

SECTION STA: 16+00

SECTION STA: 17+00

SECTION STA: 18+00

SECTION STA: 19+00

SECTION STA: 20+00

SECTION STA: 21+00

SECTION STA: 22+00

SECTION STA: 23+00

SECTION STA: 24+00

SECTION STA: 25+00

SECTION STA: 26+00

SECTION STA: 27+00

SECTION STA: 28+00

SECTION STA: 29+00

SECTION STA: 30+00

SECTION STA: 31+00

SECTION STA: 32+00

SECTION STA: 33+00

SECTION STA: 34+00

SECTION STA: 35+00

APPROVED:
CITY ENGINEER _____ Date: _____

1	11/19/15	PER CITY COMMENTS RECVD 9/25/15

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ROAD CROSS SECTIONS
LIBERTY MOUNTAIN DRIVE (PHASE 2)
ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA (CITY PROJECT# 15029-RW)

PROJECT NO.	20151033
LATITUDE:	N37°21'42"
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DATE:	08/24/2015
DRAWN BY:	RKW
CHECKED BY:	PCP

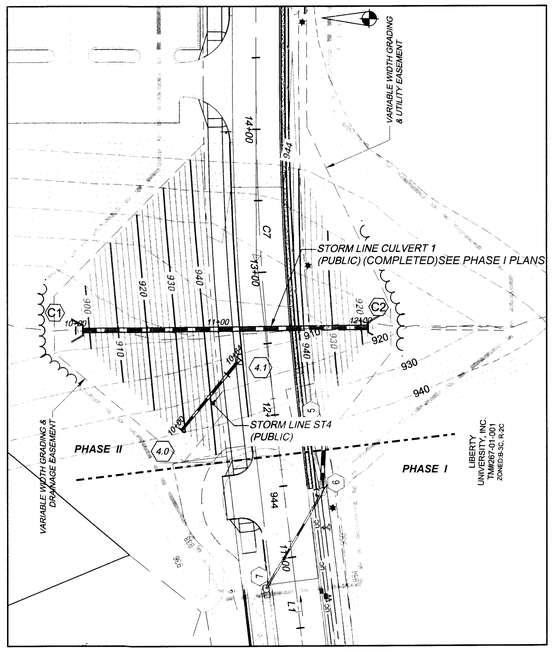
COMMONWEALTH OF VIRGINIA
PATRICK C. PROFFITT
Lic. No. 034330
11/19/2015
PROFESSIONAL ENGINEER

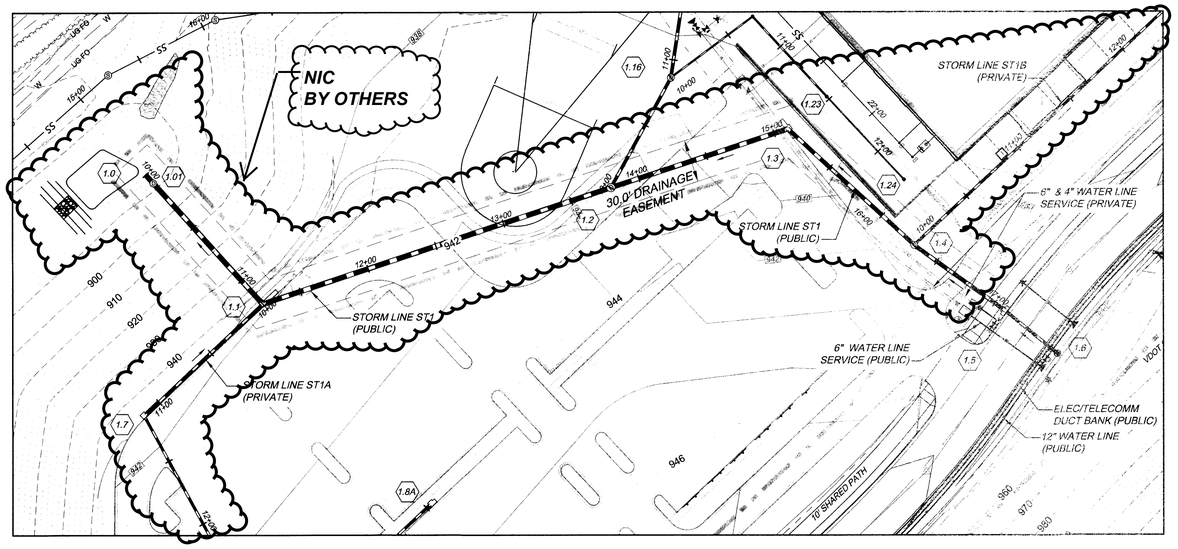
CITY PROJECT #	15029-RW
H&P CROSS REF#	20150502

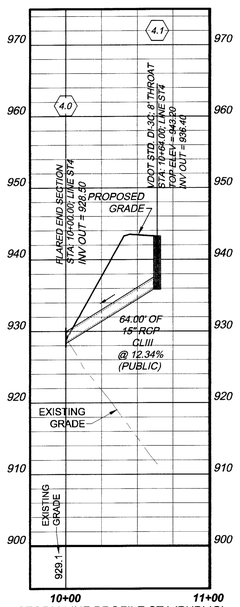
SHEET NO.
C4.2

Dec 17, 2015 - 4:21pm I:\DATA\1\Projects\20150502\CAD\Sections.dwg

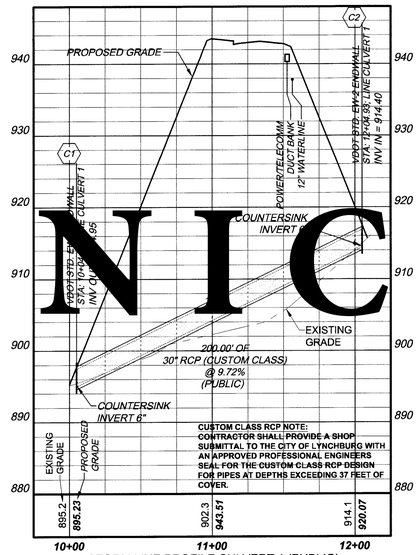
BENCHMARK:
TOP 0F 1/2" REBAR SET
ELEVATION=952.01' (NAVD 88)



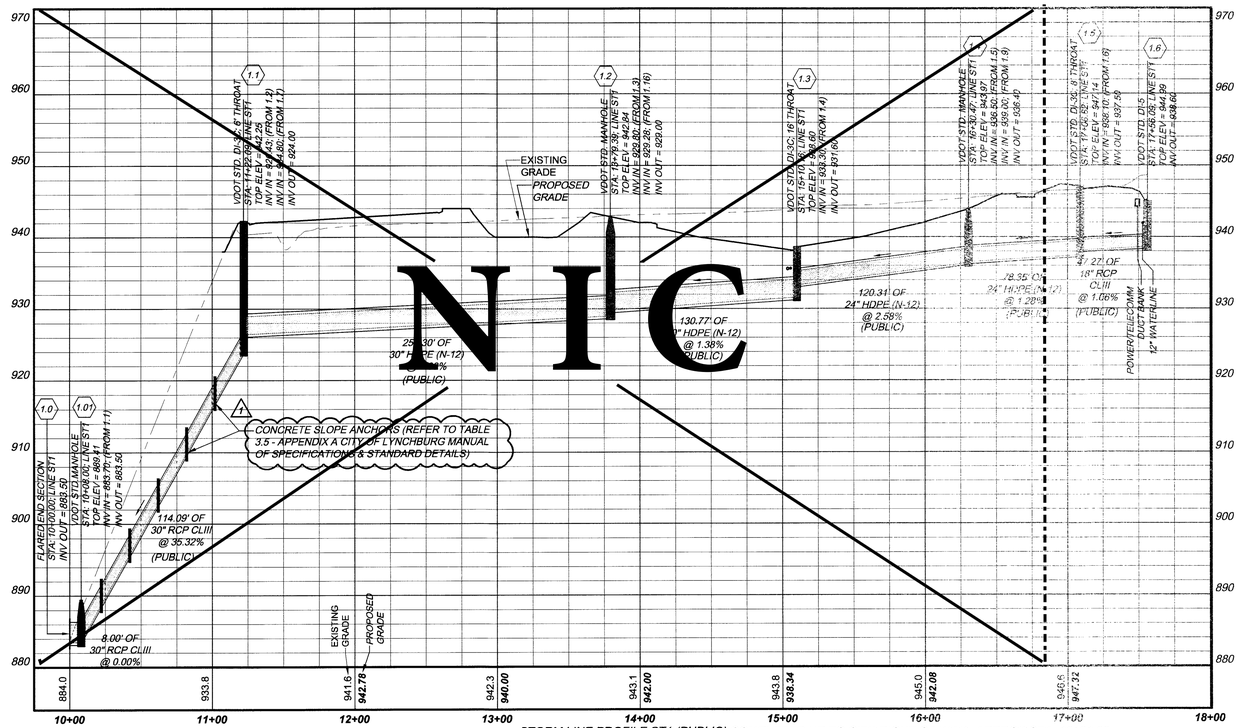




STORM LINE ST4 (PUBLIC)



STORM LINE PROFILE CULVERT 1 (PUBLIC)
(COMPLETED) SEE PHASE I PLANS



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STORM LINE PROFILE ST1 (PUBLIC) **COMPLETED UP TO CITY RIGHT OF WAY, APPROX STA. 16+91.09**

STORM LINE ST4 STRUCTURE SCHEDULE

FLARED END SECTION
4.0 N: 3,655,058.15
E: 11,290,003.86
INV IN=928.50

VDOT STD. DI-3C; 8' THROAT
4.1 N: 3,655,061.92
E: 11,290,067.55
TOP=943.20
INV OUT=936.40

STORM LINE CULVERT 1 STRUCTURE SCHEDULE

VDOT STD. EW-2 ENDWALL
C1 N: 3,655,156.10
E: 11,290,007.27
INV OUT=894.95

VDOT STD. EW-2 ENDWALL
C2 N: 3,655,011.13
E: 11,290,145.05
INV IN=914.40

SLOPE ANCHOR NOTE: (1)
PIPE SLOPE ANCHORS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF LYNCHBURG MANUAL OF SPECIFICATIONS AND STANDARD DETAILS APPENDIX A OF THE WATER AND SEWER DESIGN SECTION 1.1 GENERAL, 1.3.3 COLLECTION SYSTEM DESIGN, H. SLOPE 6. STEEP SLOPE PIPE ANCHORAGE.

TABLE 3.5

GRADE RANGE (% SLOPE)		ANCHOR SPACING
FROM	TO	CENTER TO CENTER IN FEET
20	<35	36
35	<50	24
50	OR GREATER	16

STORM LINE ST1 STRUCTURE SCHEDULE

FLARED END SECTION
1.0 N: 3,655,697.65
E: 11,289,994.11
INV IN=883.50

VDOT STD.MANHOLE
1.01 N: 3,655,691.74
E: 11,289,999.49
TOP=889.11
INV IN=883.70
INV OUT=883.50

VDOT STD. DI-3C; 6' THROAT
1.1 N: 3,655,807.32
E: 11,290,076.23
TOP=942.25
INV IN=926.43
INV IN=934.80
INV OUT=924.00

VDOT STD. MANHOLE
1.2 N: 3,655,688.14
E: 11,290,320.51
TOP=942.84
INV IN=929.80
INV IN=929.28
INV OUT=929.00

VDOT STD. DI-3C; 16' THROAT
1.3 N: 3,655,729.22
E: 11,290,444.66
TOP=938.60
INV IN=933.30
INV OUT=931.60

VDOT STD. MANHOLE
1.4 N: 3,655,647.71
E: 11,290,533.15
TOP=943.97
INV IN=936.50
INV IN=939.00
INV OUT=936.40

VDOT STD. DI-3C; 8' THROAT
1.5 N: 3,655,602.02
E: 11,290,596.80
TOP=947.14
INV IN=938.10
INV OUT=937.50

VDOT STD. DI-5
1.6 N: 3,655,572.16
E: 11,290,633.44
TOP=944.99
INV OUT=938.60

HORIZ. SCALE 1" = 50'
50 25 0 50 100
VERT. SCALE 1" = 10'
10 05 0 10 20

APPROVED:
CITY ENGINEER:_____ Date: _____
UTILITIES ENGINEER:_____ Date: _____

1	11/19/15	PER CITY COMMENTS RECV'D 9/25/15

HURT & PROFFITT
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GEOTECHNICAL • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

STORM PROFILES
LIBERTY MOUNTAIN ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA (CITY PROJECT# 15029-RW)

PROJECT NO.	20151033
LATITUDE:	N37°21'42"
LONGITUDE:	W79°09'42"
DATE:	08/24/2015
DRAWN BY:	RKW
CHECKED BY:	PCP

COMMONWEALTH OF VIRGINIA
PATRICK C. PROFFITT
Lic. No. 034330
11/19/2015
PROFESSIONAL ENGINEER

CITY PROJECT # 15029-RW
H&P CROSS REF# 20150502

SHEET NO.
C4.3

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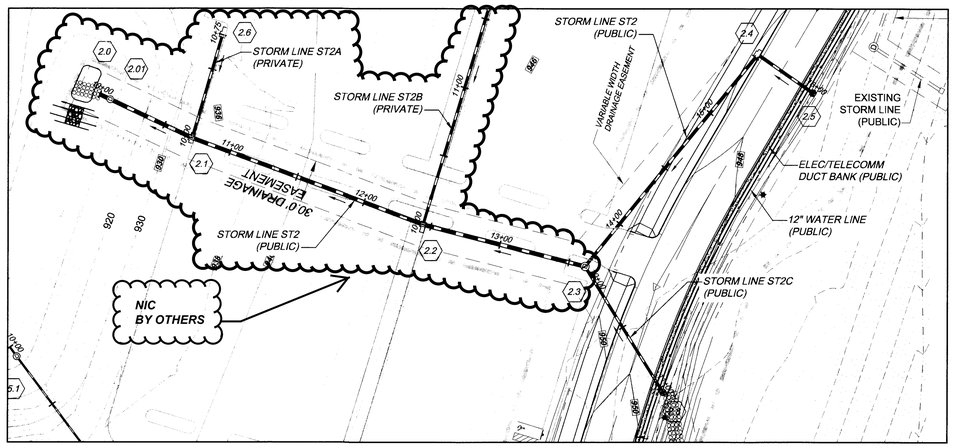
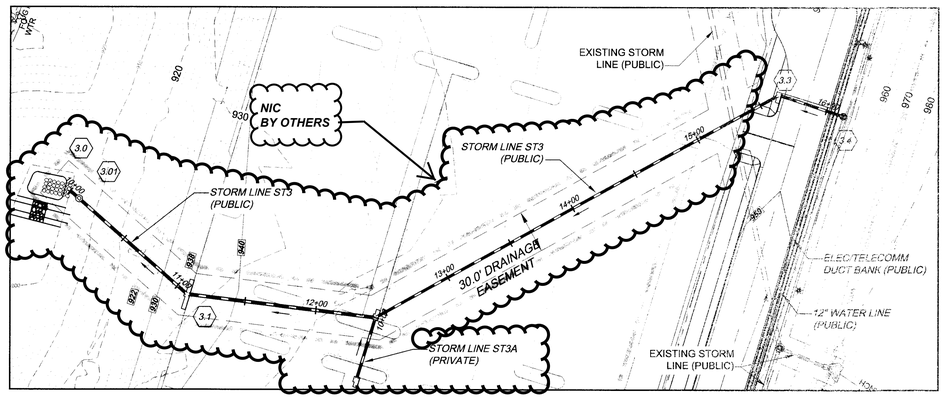
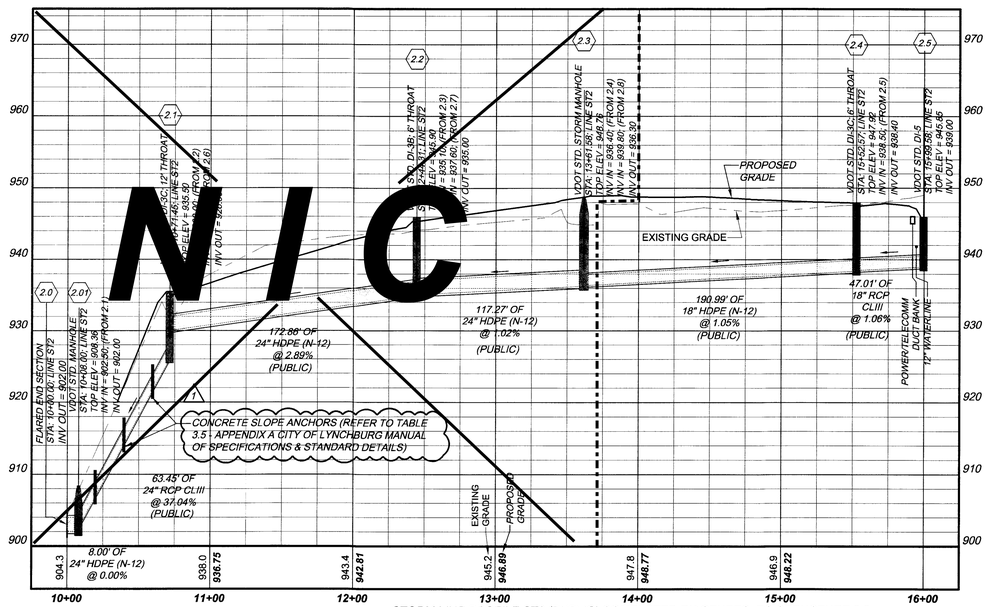
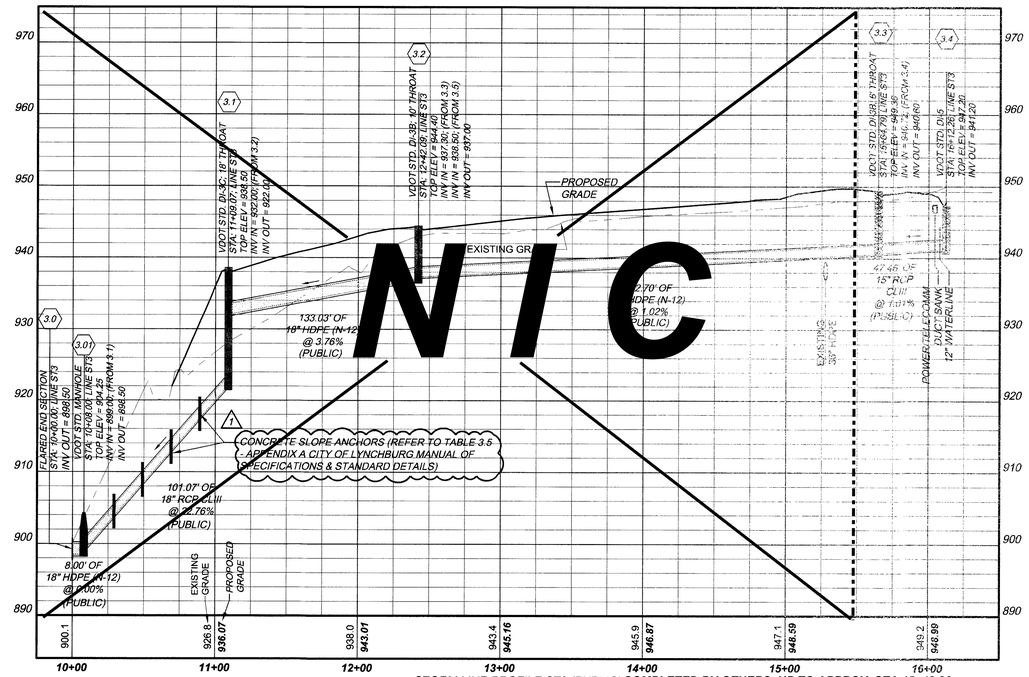






STORM LINE PROFILE ST2 (PUBLIC) **COMPLETED BY OTHERS, TO STRUCTURE 2.3**



STORM LINE PROFILE ST3 (PUBLIC) **COMPLETED BY OTHERS, UP TO APPROX. STA 15+48.26**

STORM LINE ST2 STRUCTURE SCHEDULE

2.0 FLARED END SECTION
N: 3,656,422.64
E: 11,290,883.25
INV IN=902.00

2.01 VDOT STD. MANHOLE
N: 3,656,416.05
E: 11,290,887.80
TOP=908.36
INV IN=902.50
INV OUT=902.00

2.1 VDOT STD. DI-3C; 12" THROAT
N: 3,656,363.83
E: 11,290,923.84
TOP=935.00
INV IN=930.00
INV IN=929.00
INV OUT=926.00

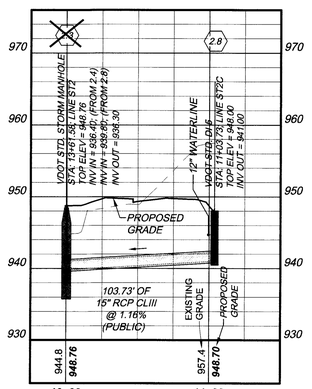
2.2 VDOT STD. DI-3B; 6" THROAT
N: 3,656,229.84
E: 11,291,034.00
TOP=945.90
INV IN=935.10
INV IN=937.60
INV OUT=935.00

2.3 VDOT STD. STORM MANHOLE
N: 3,656,148.28
E: 11,291,177.47
TOP=948.76
INV IN=938.40
INV IN=939.80
INV OUT=936.30

2.4 VDOT STD. DI-3C; 6" THROAT
N: 3,656,215.77
E: 11,291,296.13
TOP=947.92
INV IN=938.50
INV OUT=938.40

2.5 VDOT STD. DI-5
N: 3,656,173.22
E: 11,291,316.13
TOP=945.85
INV OUT=939.00

2.8 VDOT STD. DI-5
N: 3,656,044.61
E: 11,291,120.87
TOP=948.00
INV OUT=941.00



STORM LINE PROFILE ST2C (PUBLIC)

STORM LINE ST3 STRUCTURE SCHEDULE

3.0 FLARED END SECTION
N: 3,656,748.07
E: 11,291,249.71
INV IN=898.50

3.01 VDOT STD. MANHOLE
N: 3,656,740.49
E: 11,291,252.29
TOP=904.25
INV IN=899.00
INV OUT=898.50

3.1 VDOT STD. DI-3C; 18" THROAT
N: 3,656,644.71
E: 11,291,284.52
TOP=938.23
INV IN=932.00
INV OUT=922.00

3.2 VDOT STD. DI-3B; 10" THROAT
N: 3,656,564.68
E: 11,291,390.76
TOP=944.40
INV IN=937.30
INV IN=938.50
INV OUT=937.00

3.3 VDOT STD. DI-3B; 6" THROAT
N: 3,656,557.81
E: 11,291,713.41
TOP=949.36
INV IN=940.72
INV OUT=940.60

3.4 VDOT STD. DI-5
N: 3,656,522.44
E: 11,291,745.05
TOP=947.20
INV OUT=941.20

SLOPE ANCHOR NOTE: ⚠1
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TABLE 3.5

GRADE RANGE (% SLOPE)		ANCHOR SPACING
FROM	TO	CENTER TO CENTER IN FEET
20	<35	36
35	<50	24
50	OR GREATER	16

HORIZ. SCALE 1" = 50'
50 25 0 50 100
VERT. SCALE 1" = 10'
10 05 0 10 20

APPROVED:
CITY ENGINEER:_____ Date: _____
UTILITIES ENGINEER:_____ Date: _____

1	11/19/15	PER CITY COMMENTS RECV'D 9/25/15

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STORM PROFILES
LIBERTY MOUNTAIN DRIVE (PHASE 2)
ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA *(CITY PROJECT# 15029-RW)*

PROJECT NO.	20151033
LATITUDE:	N37°21'42"
LONGITUDE:	W79°09'42"
DATE:	08/24/2015
DRAWN BY:	RKW
CHECKED BY:	PCP

COMMONWEALTH OF VIRGINIA
PATRICK C. PROFFITT
Lic. No. 034330
11/19/2015
PROFESSIONAL ENGINEER

CITY PROJECT #	15029-RW
H&P CROSS REF#	20150502

SHEET NO.
C4.4

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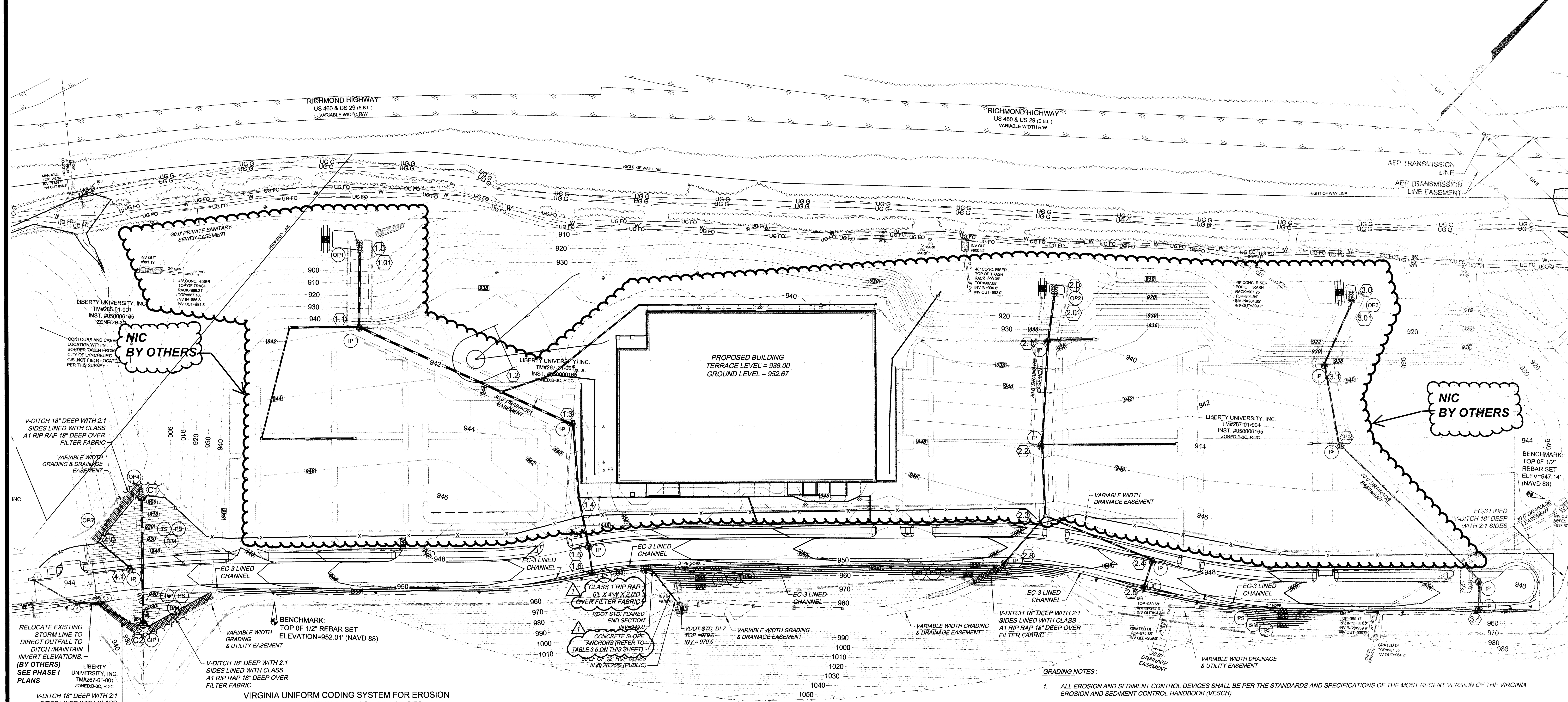

VIRGINIA UNIFORM CODING SYSTEM FOR EROSION AND SEDIMENT CONTROL PRACTICES

* CHART TAKEN FROM THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (JULY 1992)

- (SF) SILT FENCE (3.05)
- (IP) STORM DRAIN INLET PROTECTION (3.07)
- (CIP) CULVERT INLET PROTECTION (3.08)
- (OP) OUTLET PROTECTION (3.18)
- (TS) TEMPORARY SEEDING (3.31)
- (PS) PERMANENT SEEDING (3.32)
- (MU) MULCHING (3.35)
- (B/M) SOIL STABILIZATION BLANKETS & MATTING (3.36)

INSTALLED AS PART OF A SEPARATE PROJECT (LMD PHASE 1 PLANS) [OP4]

Outlet Protection (10-YR Design Storm)

ID		OP1	OP2	OP3	OP4	OP5
Drainage Area	AC	10.3	7.0	4.8	23.9	0.44
C-Value		0.77	0.76	0.81	0.30	0.90
Time of Concentration	MIN	10	8	8	16	5
Intensity	IN/HR	4.6	4.9	5.0	3.7	5.6
Design Flow	CFS	36.6	26.4	19.1	26.7	2.2
Tailwater Depth	FT	2.0	1.8	1.5	1.7	0.3
Discharge Velocity	FPS	8.6	8.9	10.9	7.4	7.6
Rip Rap Gradation	FT	1.0	1.0	1.0	1.0	1.0
Apron Length	FT	16	16	16	16	100
Apron Width	FT	8	8	8	8	8
Side Slopes		2:1	2:1	2:1	2:1	2:1
Apron Depth	IN	24	24	24	24	24

E&S MAINTENANCE SECTIONS

SECTION 3.07- STORM DRAIN INLET PROTECTION
MAINTENANCE
1. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
2. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE HALF THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
3. STRUCTURES SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

SECTION 3.18- OUTLET PROTECTION
MAINTENANCE
1. OUTLET PROTECTION SHOULD BE CHECKED FOR SEDIMENT ACCUMULATION AFTER EACH RUNOFF-PRODUCING STORM EVENT. IT SHOULD BE INSPECTED PERIODICALLY TO DETERMINE IF HIGH FLOWS HAVE CAUSED SCOUR BENEATH THE RIPRAP OR FILTER FABRIC OR DISLODGED ANY OF THE STONE. CARE MUST BE TAKEN TO PROPERTY CONTROL SEDIMENT-LADEN CONSTRUCTION RUNOFF WHICH MAY DRAIN TO THE POINT OF THE NEW INSTALLATION. IF REPAIRS ARE NEEDED, THEY SHOULD BE ACCOMPLISHED IMMEDIATELY.

SECTION 3.20- ROCK CHECK DAMS
MAINTENANCE
1. CHECK DAMS SHOULD BE CHECKED FOR SEDIMENT ACCUMULATION AFTER EACH RUNOFF-PRODUCING STORM EVENT. SEDIMENT SHOULD BE REMOVED WHEN IT REACHES ONE HALF OF THE ORIGINAL HEIGHT OF THE MEASURE.
2. REGULAR INSPECTIONS SHOULD BE MADE TO INSURE THAT THE CENTER OF THE DAM IS LOWER THAN THE EDGES. EROSION CAUSED BY HIGH FLOWS AROUND THE EDGES OF THE DAM SHOULD BE CORRECTED IMMEDIATELY.

SECTION 3.32- PERMANENT SEEDING
MAINTENANCE
1. EVEN WITH CAREFUL, WELL-PLANNED SEEDING OPERATIONS, FAILURES CAN OCCUR. WHEN IT IS CLEAR THAT PLANTS HAVE NOT GERMINATED ON AN AREA OR HAVE DIED THESE AREAS MUST BE RESEEDED IMMEDIATELY TO PREVENT EROSION DAMAGE. HOWEVER, IT IS EXTREMELY IMPORTANT TO DETERMINE FOR WHAT REASON GERMINATION DID NOT TAKE PLACE AND MAKE ANY CORRECTIVE ACTION NECESSARY PRIOR TO RESEEDING THE AREA. HEALTHY VEGETATION IS THE MOST EFFECTIVE EROSION CONTROL AVAILABLE.

SECTION 3.35- MULCHING
MAINTENANCE
1. ALL MULCHES AND SOIL COVERINGS SHOULD BE INSPECTED PERIODICALLY (PARTICULARLY AFTER RAINSTORMS) TO CHECK FOR EROSION. WHERE EROSION IS OBSERVED IN MULCHED AREAS, ADDITIONAL MULCH SHOULD BE APPLIED. NETS AND MATS SHOULD BE INSPECTED AFTER RAINSTORMS FOR DISLOCATION OR FAILURE. IF WASHOUTS OR BREAKAGE OCCUR, RE-INSTALL NETTING OR MATTING AS NECESSARY AFTER REPAIRING DAMAGE TO THE SLOPE OR DITCH. INSPECTIONS SHOULD TAKE PLACE UP UNTIL GRASSES ARE FIRMLY ESTABLISHED. WHERE MULCH IS USED IN CONJUNCTION WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE; REPAIR AS NEEDED.

SECTION 3.36- SOIL STABILIZATION BLANKETS & MATTING
MAINTENANCE
1. ALL SOIL STABILIZATION BLANKETS AND MATTING SHOULD BE INSPECTED PERIODICALLY FOLLOWING INSTALLATION, PARTICULARLY AFTER RAINSTORMS TO CHECK FOR EROSION AND UNDERMINING. ANY DISLOCATION OR FAILURE SHOULD BE REPAIRED IMMEDIATELY. IF WASHOUTS OR BREAKAGE OCCURS, RE-INSTALL THE MATERIAL AFTER REPAIRING DAMAGE TO THE SLOPE OR DITCH. CONTINUE TO MONITOR THESE AREAS UNTIL WHICH TIME THEY BECOME PERMANENTLY STABILIZED; AT THAT TIME AN ANNUAL INSPECTION SHOULD BE ADEQUATE.

GRADING NOTES:

1. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE PER THE STANDARDS AND SPECIFICATIONS OF THE MOST RECENT VERSION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH).
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL EROSION CONTROL DEVICES FOR THE DURATION OF THE PROJECT. ALL EROSION CONTROL DEVICES SHALL BE CHECKED DAILY TO ENSURE THAT ALL ARE PROPERLY IN PLACE AND FUNCTIONING AS PLANNED. ALL EROSION CONTROL DEVICES WILL BE REPAIRED (CLEANED) AS NECESSARY, AND AFTER EACH RAINFALL PRODUCING RUNOFF AS A MINIMUM.
3. ALL DISTURBED AREAS TO RECEIVE TEMPORARY SEEDING, PERMANENT SEEDING AND MULCH. ALL SLOPES OF 2:1 OR GREATER MUST RECEIVE BLANKET AND MATTING IN ADDITION TO SEEDING AND MULCHING PRACTICES AS STATED IN THE MOST RECENT VERSION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
4. STRUCTURAL FILL MATERIAL UNDER AND WITHIN 15 FEET OF THE ROAD AND THE UPPER 12 INCHES OF ROADS AND SIDEWALKS SHOULD BE PLACED IN HORIZONTAL LIFTS, WITH AN 8 INCH TO 9 INCH LOOSE THICKNESS, AND COMPACTED TO AT LEAST 98% OF THE MATERIAL'S MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698 (STANDARD PROCTOR).

   STRUCTURAL FILL MATERIAL PLACED IN SLOPES, AND THE LOWER PORTIONS OF ROADS AND PARKING LOTS SHOULD BE PLACED IN HORIZONTAL LIFTS, WITH AN 8 INCH TO 9 INCH LOOSE THICKNESS, AND COMPACTED TO AT LEAST 95% OF THE MATERIAL'S MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698 (STANDARD PROCTOR).
5. CONTRACTOR IS TO FURNISH THE NAME OF THEIR VIRGINIA CERTIFIED RESPONSIBLE LAND DISTURBER TO THE LOCAL AUTHORITY PRIOR TO ANY LAND DISTURBANCE.
6. CONTRACTOR TO TEMPORARY SEED & MULCH DIVERSIONS IMMEDIATELY FOLLOWING CONSTRUCTION.
7. CONTRACTOR TO BE RESPONSIBLE FOR REROUTING ALL TEMPORARY DIVERSIONS AND SILT FENCE AS NECESSARY DURING CONSTRUCTION TO MAINTAIN PROPER DRAINAGE OF DISTURBED AREAS.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL ADDITIONAL E&S MEASURES OR MAINTENANCE REQUESTS OR REROUTING, OR RELOCATING, E&S MEASURES AS DEEMED NECESSARY BY THE LOCAL AUTHORITY OR LATEST EDITION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
9. ALL FILL AREAS TO BE STRIPPED OF UNSUITABLE MATERIAL BEFORE PLACING AND COMPACTING FILL MATERIAL.
10. CONTRACTOR SHALL BACKFILL TO THE EDGE OF PAVEMENT AND COMPACT. CONTRACTOR SHALL SEED, FERTILIZE AND MULCH IMMEDIATELY UPON COMPLETION OF GRADING OPERATIONS.
11. CONTRACTOR SHALL CONTACT ENGINEER IF ADDITIONAL CONSTRUCTION ENTRANCE MEASURES ARE NEEDED TO PREVENT THE TRACKING OF MUD, DIRT, OR DEBRIS ONTO ANY PAVED SURFACES INSIDE OR OUTSIDE OF THE PROPOSED CONSTRUCTION LIMITS.
12. UPON COMMENCEMENT OF DEMOLITION ACTIVITIES THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND SUPPLYING THE NECESSARY SAMPLES AND RESULTS TO DETERMINE FERTILIZER AND NUTRIENT APPLICATION FOR THE ESTABLISHMENT OF GRASS IN THE SITE.

SLOPE ANCHOR NOTE:
PIPE SLOPE ANCHORS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF LYNCHBURG MANUAL OF SPECIFICATIONS AND STANDARD DETAILS APPENDIX A OF THE WATER AND SEWER DESIGN SECTION 1.1 GENERAL, 1.3.3 COLLECTION SYSTEM DESIGN, H. SLOPE 6. STEEP SLOPE PIPE ANCHORAGE.

TABLE 3.5

GRADE RANGE (% SLOPE)		ANCHOR SPACING CENTER TO CENTER IN FEET
FROM	TO	
20	<35	36
35	<50	24
50	OR GREATER	16

80 40 0 80 160
GRAPHIC SCALE IN FEET
1" = 80'

1	11/19/15	PER CITY COMMENTS RECV'D 9/25/15

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GRADING AND STAGE 2 EROSION CONTROL PLAN
LIBERTY MOUNTAIN DRIVE (PHASE 2) ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA (CITY PROJECT# 15029-RW)

PROJECT NO.	20151033
LATITUDE:	N37°21'42"
LONGITUDE:	W79°09'42"
DATE:	08/24/2015
DRAWN BY:	RKW
CHECKED BY:	PCP

COMMONWEALTH OF VIRGINIA
PATRICK C. PROFFITT
Lic. No. 034330
11/19/2015
PROFESSIONAL ENGINEER

CITY PROJECT #	15029-RW
H&P CROSS REF#	20150502

SHEET NO.
C5.0

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EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION
THIS PROJECT CONSISTS OF THE CONSTRUCTION OF AN INDOOR TRACK FACILITY, AND ASSOCIATED PARKING, DRIVES, UTILITIES, LANDSCAPING, AND DRAINAGE IMPROVEMENTS ON THE CAMPUS OF LIBERTY UNIVERSITY, LOCATED IN LYNCHBURG, VIRGINIA. A TOTAL OF 23.67 ACRES WILL BE DISTURBED AS A RESULT OF CONSTRUCTION ACTIVITIES. IT IS ANTICIPATED THAT CONSTRUCTION WILL LAST LESS THAN ONE YEAR.

EXISTING SITE CONDITIONS
THIS SITE HAS BEEN PREVIOUSLY BULK GRADED AS A PAD SITE. THERE ARE EXISTING SOIL STOCKPILES ON THE SITE, AND EROSION AND SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED AS PART OF THE BULK GRADING PLAN. THERE ARE THREE SEDIMENT BASINS THAT HAVE BEEN INSTALLED TO CONTROL CONSTRUCTION RUNOFF.

ADJACENT PROPERTY
THE PROJECT IS ADJACENT TO ROUTE 460/29 TO THE NORTH AND WEST, AND LIBERTY UNIVERSITY PROPERTY TO THE SOUTH AND EAST.

CRITICAL AREAS
THE STREAMS AND WETLANDS AT THE BOUNDARIES OF THE PROJECT AREA ARE CRITICAL AREAS AND SHOULD BE AVOIDED AS MUCH AS POSSIBLE DURING CONSTRUCTION. THE 1.5:1 CUT SLOPE ON THE EAST PORTION OF THE PROJECT AREA HAS ALSO BEEN IDENTIFIED AS A CRITICAL AREA FOR THIS PROJECT.

OFFSITE AREAS
ALL GRADING SHALL OCCUR ON SITE. ANY ADDITIONAL BORROW OR WASTED SOIL FROM THE SITE WILL BE EITHER STOCKPILED ON SITE, OR REMOVED TO A LOCATION CHOSEN BY THE CONTRACTOR AT A LATER DATE. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT A SITE PLAN IS SUBMITTED FOR APPROVAL, FOR ANY BORROW OR FILL AREAS OFF SITE, OR AN AMENDED PLAN IS FILED FOR ANY STOCKPILE AREAS ON SITE.

SOILS
THE SOIL SURVEY MAP FOR LYNCHBURG, VIRGINIA, VERSION 11, DATED DECEMBER 11, 2013, INDICATES THAT THIS SITE CONSISTS OF THE FOLLOWING SOIL TYPES: GEORGEVILLE LOAM (B, K=0.32); MANTEO CHANNERY LOAM (D, K=0.20); NASON LOAM (B, K=0.28); TATUM LOAM (B, K=0.37); TATUM CLAY LOAM (C, K=0.20); AND TURBEVILLE FINE SANDY LOAM (C, K=0.32)

STORMWATER
RUNOFF FROM LARGE DISTURBED AREAS WILL BE MANAGED BY SEDIMENT BASINS DURING CONSTRUCTION. UPON STABILIZATION OF THE SITE, THESE BASINS WILL BE CONVERTED TO PERMANENT EXTENDED-DETENTION BASINS TO PROVIDE WATER QUALITY TREATMENT AND DETENTION. THE BASINS WILL PROVIDE DETENTION FOR THE INCREASES IN POST-DEVELOPED IMPERVIOUS AREAS RESULTING FROM THE DEVELOPMENT, AND WILL PROVIDE WATER QUALITY TREATMENT IN ACCORDANCE WITH THE TECHNOLOGY-BASED METHOD (SEE PROJECT CALCULATIONS AND DRAINAGE AREA MAPS FOR DETAILED CALCULATIONS). ALL THREE BASINS OUTLET TO EXISTING RECEIVING CHANNELS BETWEEN THE SITE AND ROUTE 460. THESE CHANNELS DISCHARGE TO ROADSIDE DITCHES ALONG ROUTE 460, WHICH DRAIN TO CULVERTS THAT DISCHARGE TO THE NORTH OF ROUTE 460. THERE IS AN UNNAMED TRIBUTARY TO FISHING CREEK ON THE NORTH SIDE OF ROUTE 460.

ADEQUATE CHANNEL
ALL ONSITE PROPOSED CHANNELS AND EXISTING RECEIVING CHANNELS ARE ADEQUATE. (SEE ATTACHED CALCULATIONS.)

EROSION AND SEDIMENT CONTROL
3.02 CONSTRUCTION ENTRANCE (CE) - ONE CONSTRUCTION ENTRANCE IS PROPOSED AT THE ENTRANCE TO THE SITE, AS SHOWN ON PLANS. WHERE THE ENTRANCE IS PROPOSED IN PAVED AREAS CONTRACTOR SHALL REMOVE ALL MUD, DIRT, AND DEBRIS PRIOR TO ENTERING THE PUBLIC RIGHT OF WAY. CONTRACTOR SHALL INSTALL ADDITIONAL STONE STABILIZATION AS NECESSARY TO PREVENT TRACKING ONTO THE EXISTING ROADWAY WITHIN THE LIMITS OF CONSTRUCTION.

3.05 SILT FENCE (SF) - A TEMPORARY SEDIMENT BARRIER CONSTRUCTED OF POSTS PLACED ACROSS OR AT THE TOE OF A SLOPE OR IN A MINOR DRAINAGE WAY TO INTERCEPT AND DETAIN SEDIMENT AND DECREASE FLOW VELOCITIES FROM DRAINAGE AREAS OF LIMITED SIZE.

3.07 INLET PROTECTION (IP) - STORM DRAIN INLET PROTECTION SHALL BE PLACED AT THE INLET OF ALL CURB AND DROP INLETS TO FILTER SEDIMENT-LADEN RUNOFF.

3.08 CULVERT INLET PROTECTION (CIP) - CULVERT INLET PROTECTION SHALL BE PLACED AT THE INLET OF ALL STORM CULVERTS TO FILTER SEDIMENT-LADEN RUNOFF.

3.09 TEMPORARY DIVERSION DIKE (DD) - A RIDGE OF COMPACTED SOIL WILL BE USED TO DIVERT SEDIMENT-LADEN RUNOFF TO THE SEDIMENT BASIN DURING INITIAL GRADING OPERATIONS.

3.10 TEMPORARY FILL DIVERSION (FD) - A CHANNEL WITH A SUPPORTING RIDGE CONSTRUCTED ALONG THE TOP OF AN ACTIVE EARTH FILL, IN ORDER TO DIVERT RUNOFF FROM THE UNPROTECTED SLOPE AND INTO A STABILIZED OUTLET OR SEDIMENT TRAPPING MEASURE. APPLICABLE WHERE CONTINUOUS FILL OPERATIONS MAKE THE USE OF A DIVERSION (3.12) UNFEASIBLE. THIS STRUCTURE SHOULD REMAIN IN PLACE FOR LESS THAN ONE WEEK.

3.12 DIVERSION (DV) - A PERMANENT CHANNEL WITH A RIDGE CONSTRUCTED ALONG THE LOW SIDE TO DIVERT RUNOFF TO A STABILIZED OUTLET.

3.14 TEMPORARY SEDIMENT BASIN (SB) - A TEMPORARY BARRIER OR DAM WITH A CONTROLLED STORMWATER RELEASE STRUCTURE FORMED BY CONSTRUCTING AN EARTHEN EMBANKMENT ACROSS A DRAINAGE SWALE, TO DETAIN SEDIMENT LADEN RUNOFF FROM DISTURBED AREAS FOR ENOUGH TIME TO ALLOW MOST OF THE SUSPENDED SOLIDS TO SETTLE OUT.

3.15 TEMPORARY SLOPE DRAIN (TSD) - A FLEXIBLE TUBING OR CONDUIT USED BEFORE PERMANENT DRAINAGE STRUCTURES ARE IN PLACE TO CONVEY RUNOFF DOWN A DISTURBED SLOPE TO A STABILIZED OUTLET OR SEDIMENT TRAPPING MEASURE.

3.18 OUTLET PROTECTION (OP) - THE APPLICATION OF RIPRAP CHANNEL SECTIONS AND/OR STILLING BASINS BELOW STORM DRAIN OUTLETS TO REDUCE EROSION AND UNDER-CUTTING FROM SCOURING AT OUTLETS AND TO REDUCE FLOW VELOCITIES BEFORE STORMWATER ENTERS RECEIVING CHANNELS BELOW THESE OUTLETS.

3.31 TEMPORARY SEEDING (TS) - THE CONTRACTOR IS TO IMPLEMENT TEMPORARY SEEDING IF DISTURBED LAND IS LEFT EXPOSED FOR OVER 30 DAYS AND CONSTRUCTION IS NOT COMPLETE IN THIS AREA.

3.32 PERMANENT SEEDING (PS) - ESTABLISHMENT OF PERENNIAL VEGETATIVE COVER BY PLANTING SEED ON ROUGH-GRADED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR A YEAR OR MORE OR WHERE PERMANENT, LONG-LIVED VEGETATIVE COVER IS NEEDED ON FINE-GRADED AREAS.

3.35 MULCHING (MU) - APPLICATION OF PLANT RESIDUES OR OTHER SUITABLE MATERIALS TO DISTURBED SURFACES TO PREVENT EROSION AND REDUCE OVERLAND FLOW VELOCITIES. FOSTERS PLANT GROWTH BY INCREASING AVAILABLE MOISTURE AND PROVIDING INSULATION AGAINST EXTREME HEAT OR COLD.

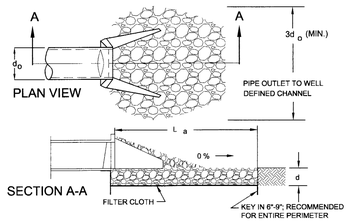
3.36 SOIL STABILIZATION BLANKETS & MATTING (B/M) - SOIL STABILIZATION BLANKETS OR MATTING SHOULD BE APPLIED TO ALL SLOPES STEEPER THAN 3:1.

VEGETATIVE MEASURES
TEMPORARY SEEDING/PERMANENT STABILIZATION: SEEDING MEASURES SHALL BE TAKEN ON DISTURBED SOIL AT CUT/FILL SLOPES, SIDES OF SEDIMENT BASINS, DITCH LINES, OR AREAS OUTSIDE OF ON-GOING CONSTRUCTION PRACTICES WITHIN SEVEN (7) DAYS OF COMPLETED GRADING. ALL AREAS DISTURBED BY CONSTRUCTION WILL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINAL GRADING. UNLESS OTHERWISE INDICATED, ALL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE LATEST EDITION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.

MANAGEMENT STRATEGIES
- EROSION AND SEDIMENT CONTROL SHOULD BE DISCUSSED BETWEEN THE GRADING CONTRACTOR AND THE OWNER PRIOR TO ANY EXCAVATION SO THAT LIMITS OF CONSTRUCTION AND EROSION CONTROL METHODS ARE CLEARLY UNDERSTOOD BY BOTH PARTIES.
- CONSTRUCTION WILL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
- THERE IS TO BE NO TRACKING OF MUD OR DIRT BY CONSTRUCTION EQUIPMENT ONTO ANY PAVED DRIVES OR ROADS.
- SEDIMENT TRAPPING MEASURES WILL BE INSTALLED AS A FIRST STEP IN GRADING AND WILL BE SEEDED AND MULCHED IMMEDIATELY FOLLOWING INSTALLATION.
- SEEDING OR OTHER STABILIZATION WILL FOLLOW IMMEDIATELY AFTER GRADING.
- AREAS WHICH ARE NOT TO BE DISTURBED WILL BE CLEARLY MARKED BY FLAGS, SIGNS, ETC.
- AFTER ACHIEVING ADEQUATE STABILIZATION, THE TEMPORARY E&S CONTROLS WILL BE CLEANED UP AND REMOVED.

PERMANENT STABILIZATION
ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING. MULCH (STRAW OR FIBER) WILL BE USED ON RELATIVELY FLAT AREAS. IN ALL SEEDING OPERATIONS, SEED, FERTILIZER AND LIME WILL BE APPLIED PRIOR TO MULCHING.

CONSTRUCTION SEQUENCE
1. INSTALL CONSTRUCTION ENTRANCE.
2. INSTALL PERIMETER CONTROLS AND ALL APPURTENANCES AS SHOWN ON PLANS.
3. ~~BEGIN SITE BULK GRADING.~~
4. INSTALL FILL DIVERSIONS AS FILL MATERIAL IS PLACED.
5. GRADE ROADWAY AND PARKING AREAS.
6. ~~GRADE BUILDING PAD.~~
7. INSTALL UTILITIES; INSTALL INLET AND OUTLET PROTECTION AS EACH STORMWATER STRUCTURE IS PLACED.
8. INSTALL BASE STONE FOR PAVED AREAS.
9. CONSTRUCT ~~BUILDING~~, SIDEWALKS, CURB, AND PARKING.
10. COMPLETE FINISH GRADING.
11. SPREAD TOPSOIL; TEMPORARY AND PERMANENT SEEDING AND MULCHING TO BE PLACED ON ALL DISTURBED AREAS.
12. INSTALL LANDSCAPING.
13. ~~CONVERT SEDIMENT BASINS TO PERMANENT PONDS UPON STABILIZATION OF UPSTREAM DRAINAGE AREAS.~~
14. CONTRACTOR TO RESTORE ALL AREAS BACK TO EITHER PROPOSED GRADES OR EXISTING CONDITIONS AFTER COMPLETION OF THE PROJECT. ALL DISTURBED AREAS, HAUL ROADS, CONSTRUCTION ROADS, LAY DOWN AREAS, ETC. SHALL BE RESTORED.



NOTES:
1. APRON LINING MAY BE RIPRAP, GROUTED RIPRAP, GABION BASKET, OR CONCRETE.
2. La IS THE LENGTH OF THE RIPRAP APRON AS CALCULATED USING PLATES 3.18-3 AND 3.18-4.
3. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER, BUT NOT LESS THAN 6 INCHES.

PIPE OUTLET PROTECTION (OP)

VESHC STD. 3.18
N.T.S.

INSTALLED AS PART OF A SEPARATE PROJECT (SEE LMD PHASE I PLANS)

Outlet Protection (10-YR Design Storm)						
ID		OP1	OP2	OP3	OP4	OP5
Drainage Area	AC	10.3	7.0	4.8	23.9	0.44
C-Value		0.77	0.76	0.81	0.30	0.90
Time of Concentration	MIN	10	8	8	16	5
Intensity	IN/HR	4.6	4.9	5.0	3.7	5.8
Design Flow	CFS	36.6	26.4	19.1	26.7	2.2
Tailwater Depth	FT	2.0	1.8	1.5	1.7	0.3
Discharge Velocity	FPS	8.6	8.9	10.9	7.4	7.6
Rip Rap Gradation	FT	1.0	1.0	1.0	1.0	1.0
Apron Length	FT	16	16	16	16	100
Apron Width	FT	8	8	8	8	8
Side Slopes		2:1	2:1	2:1	2:1	2:1
Apron Depth	IN	24	24	24	24	24

PLAN REVIEW MINIMUM STANDARD CHECKLIST

YES MS-1 Have temporary and permanent stabilization been addressed in the narrative? **YES**
Are practices shown on the plan? **YES**
Seed specifications? **YES** Mulching? **YES** Gravel? **N/A**

YES MS-2 Has stabilization of soil stockpiles been addressed in the narrative? **YES**
Are sediment trapping measures provided? **YES**

YES MS-3 Has maintenance of permanent stabilization been addressed?

YES MS-4 Are sediment trapping facilities to be constructed as a first step in LDA?

YES MS-5 Has stabilization of earthen structures been addressed?

YES MS-6 Are sediment basins provided where needed?

YES MS-7 Has stabilization of cut and fill slopes been adequately addressed?
YES MS-8 (i.e. Surface Roughening, Outlet Protection)

YES MS-9 Are paved flumes, channels, or slope drains provided where necessary?

YES MS-10 Is adequate inlet protection provided on all operational storm sewer inlets?

YES MS-11 Has maintenance of permanent stabilization been addressed?

N/A MS-12 Are in stream construction measures required so that channel damaged is minimized?

N/A MS-13 Are temporary stream crossings of non-erodible material provided where applicable?

N/A MS-14 (NOTE: This regulation requires that all applicable federal, state, and local regulations pertaining to working in or crossing live watercourses be followed.)

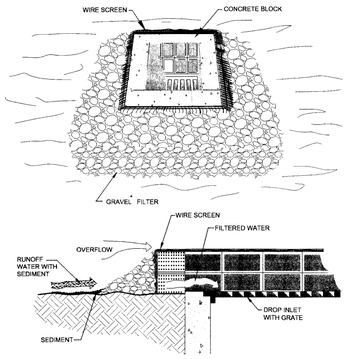
N/A MS-15 Has restabilization of areas subject to in-stream construction been adequately addressed?

YES MS-16 Is stabilization of utility trenches addressed?

YES MS-17 Is the transport of soil and mud onto public roadways properly controlled? (i.e. Construction Entrances, Wash Racks, daily cleaning of road ways, transport of sediment to a trapping facility)

YES MS -18 Has the removal of temporary practices been addressed?
YES Has maintenance of practices been addressed? (i.e. repair of structures and removal of accumulated sediment)

YES MS-19 Are properties and waterways downstream from development adequately protected from erosion and sediment deposition due to increases in peak stormwater runoff?



SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY FLOWS ARE EXPECTED AND WHERE AN OVERFLOW CAPACITY IS NECESSARY TO PREVENT EXCESSIVE PONDING AROUND THE STRUCTURE.

PLATE. 3.07-3
SOURCE: VA. DSWC

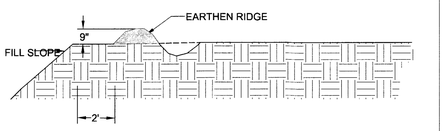
* GRAVEL SHALL BE VDOT #3, #357 OR #5 COARSE AGGREGATE.

BLOCK AND GRAVEL DROP INLET SEDIMENT FILTER (IP)

VESHC STD. 3.07
N.T.S.

TEMPORARY FILL DIVERSION (FD)

VESHC STD. 3.10



SOURCE: VA. DSWC PLATE 3.10-1

MS-16 NOTE:
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 REGULATIONS.
F. APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.

GENERAL EROSION AND SEDIMENT CONTROL NOTES
TABLE 6-1

ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS VR25-02-00 EROSION AND SEDIMENT CONTROL REGULATIONS.

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.

ES-4: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

ES-5: PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

ES-6: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.

ES-7: ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-8: DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

TABLE 3.32-D
(Revised June 2003)
PERMANENT SEEDING SPECIFICATIONS FOR PIEDMONT AREA

LAND USE	SEED[1] SPECIES	APPLICATION PER ACRE
Minimum Care Lawn (Commercial or Residential)	Tall Fescue[2] Perennial Ryegrass Kentucky Bluegrass[3]	95-100% 0-5% 0-5% TOTAL: 175-200 lbs
High-Maintenance Lawn	Tall Fescue[2]	TOTAL: 200-250 lbs
General Slope (3:1 or less)	Tall Fescue[2] Red Top Grass or Creeping Red Fescue Seasonal Nurse Crop[4]	128 lbs 2 lbs 20 lbs TOTAL: 150 lbs
Low-Maintenance Slope (Steeper than 3:1)	Tall Fescue[2] Red Top Grass or Creeping Red Fescue Seasonal Nurse Crop[4] Crownvetch[5]	108 lbs 2 lbs 20 lbs 20 lbs TOTAL: 150 lbs

1 - When selecting varieties of turfgrass, use the Virginia Crop Improvement Association (VCIA) recommended turfgrass variety list. Quality seed will bear a label indicating that they are approved by VCIA. A current turfgrass variety list is available at the local County Extension office or through VCIA at 804-746-4884 or at http://sudan.cses.vt.edu/html/Turf/turf/publications/publication52.html

2 - Use seasonal nurse crop in accordance with seeding dates as stated below.

February 16th - April 30th	Annual Rye
May 1st - August 15th	Foxtail Millet
August 16th - October 31st	Annual Rye
November - February 15th	Winter Rye

3 - Substitute Sericea lespedeza for Crownvetch east of Farmville, VA (May through September use hulled seed, all other periods, use unhulled Sericea). If Flatpea is used, increase rate to 70 lbs./acre. If Weeping Lovegrass is used, include in any slope or low maintenance mixture during warmer seeding periods; increase to 30 -40

FERTILIZER & LIME

- Apply 10-20-10 **fertilizer** at a rate of **500** 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:
- A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site
- Incorporate the lime and fertilizer into the top 4 – 6 inches of the soil by disking or by other means.
- 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/pdfs/tb4.pdf#page

1992 3.31

Mulching

1. Seedings made in fall for winter cover and during hot and dry summer months shall be mulched according to MULCHING, Std. & Spec. 3.35, except that hydromulches (fiber mulch) will not be considered adequate. Straw mulch should be used during these periods.

2. Temporary seedings made under favorable soil and site conditions during optimum spring and fall seeding dates may not require mulch.

Re-seeding

Areas which fail to establish vegetative cover adequate to prevent rill erosion will be re-seeded as soon as such areas are identified.

TABLE 3.31-B

ACCEPTABLE TEMPORARY SEEDING PLANT MATERIALS

"QUICK REFERENCE FOR ALL REGIONS"

Planting Dates	Species	Rate (lbs./acre)
Sept. 1 - Feb. 15	50/50 Mix of Annual Ryegrass (Lolium multi-florum) & Cereal (Winter) Rye (Secale cereale)	50 - 100
Feb. 16 - Apr. 30	Annual Ryegrass (Lolium multi-florum)	60 - 100
May 1 - Aug 31	German Millet (Setaria italica)	50

Source: Va. DSWC

1	11/19/15	PER CITY COMMENTS RECV'D 9/25/15

HURT PROFFITT
2524 LANGHORNE ROAD
LYNCHBURG VA 24501
800.242.4906 TOLL FREE
434.847.7796 MAIN
434.847.0047 FAX
ENGINEERING • SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL
GEOTECHNICAL • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

EROSION CONTROL DETAILS
LIBERTY MOUNTAIN DRIVE (PHASE 2)
ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA (CITY PROJECT# 15029-RW)

PROJECT NO.	20151033
LATITUDE:	N37°21'42"
LONGITUDE:	W79°09'42"
DATE:	08/24/2015
DRAWN BY:	RKW
CHECKED BY:	PCP

COMMONWEALTH OF VIRGINIA
PATRICK C. PROFFITT
Lic. No. 034330
11/19/2015
PROFESSIONAL ENGINEER

CITY PROJECT #	15029-RW
H&P CROSS REF#	20150502

SHEET NO.
C6.0

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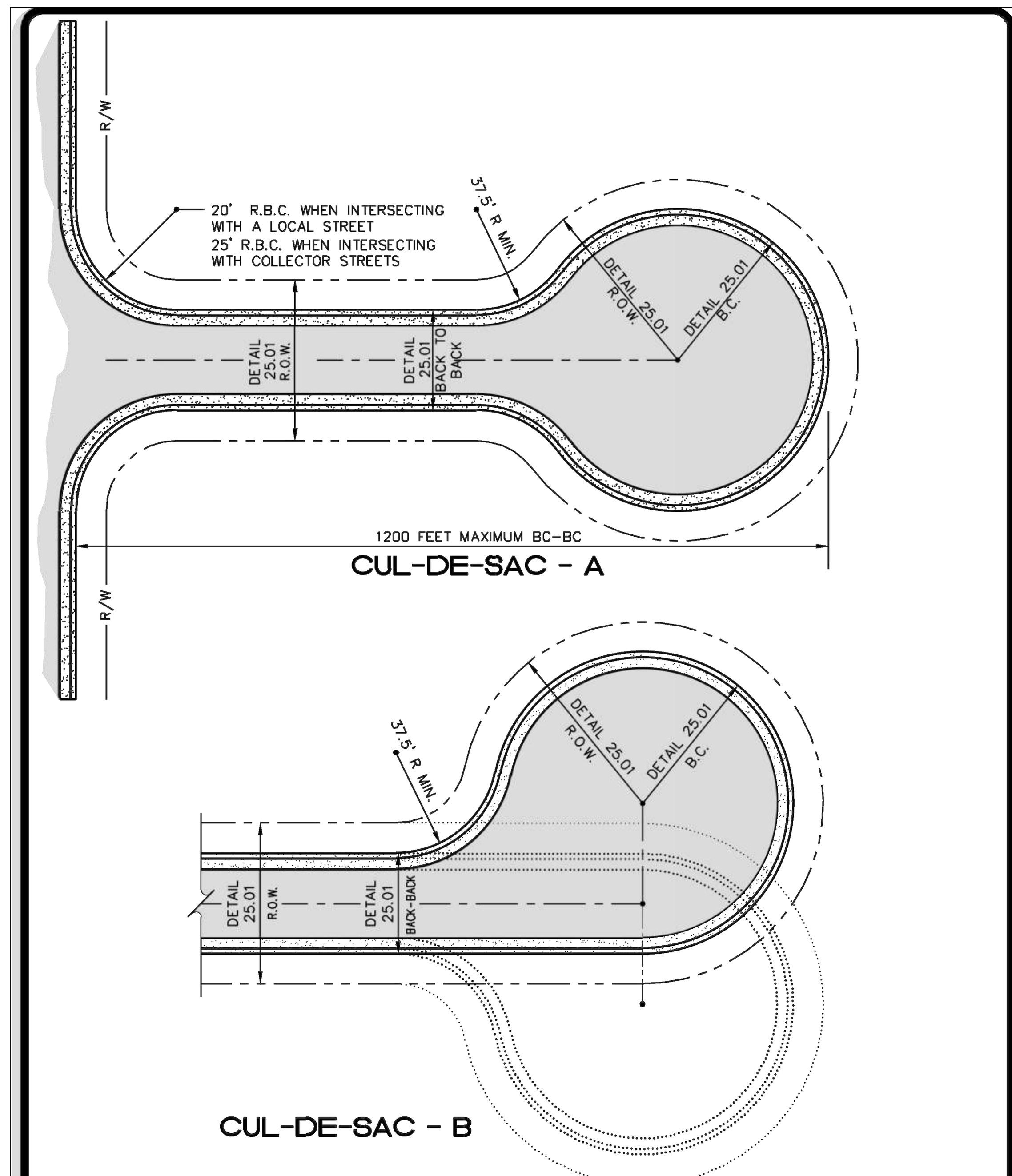
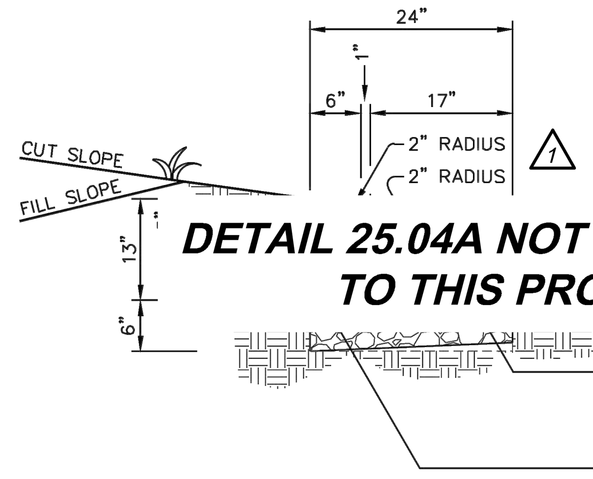


THE CITY OF LYNCHBURG

CUL-DE-SAC DIMENSIONS	SCALE: NOT TO SCALE	DETAIL # 25.02
USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY	REVISION DATE: 12-12-2014	SHEET #: 1 OF 2



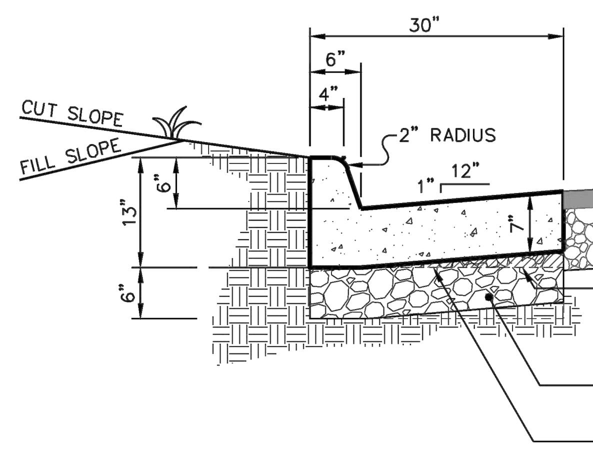
NOTES:
THIS CURB AND GUTTER DETAIL SHALL BE USED FOR THE REPLACEMENT OF EXISTING LIKE CURB AND GUTTER. EXTENSIONS OF THIS CURB AND GUTTER SHALL BE APPROVED BY THE CITY ENGINEER. △1

DETAIL 25.04A NOT APPLICABLE TO THIS PROJECT

THE BOTTOM OF THE CURB AND GUTTER MAY BE CONSTRUCTED PARALLEL TO THE SLOPE OF SUBBASE COURSES PROVIDED A MINIMUM DEPTH OF 7" IS MAINTAINED

6" THICK AGGREGATE BASE, VDOT No. 21A

25.04A – STANDARD CITY COMBINED 6" CURB & GUTTER



NOTES:
THIS CURB TO BE USED ON ALL ROADWAYS UNLESS DESIGN SPEED EXCEEDS 45 M.P.H. IF THESE DESIGN SPEEDS ARE EXCEEDED, VDOT STANDARD CG-7 IS REQUIRED. (SEE SHEET 2 of 2 FOR CG-7 MOUNTABLE CURB DETAIL.)

THE BOTTOM OF THE CURB AND GUTTER MAY BE CONSTRUCTED PARALLEL TO THE SLOPE OF SUBBASE COURSES PROVIDED A MINIMUM DEPTH OF 7" IS MAINTAINED

6" THICK AGGREGATE BASE, VDOT No. 21A

THIS AREA MAY BE CONCRETE AT THE OPTION OF THE CONTRACTOR

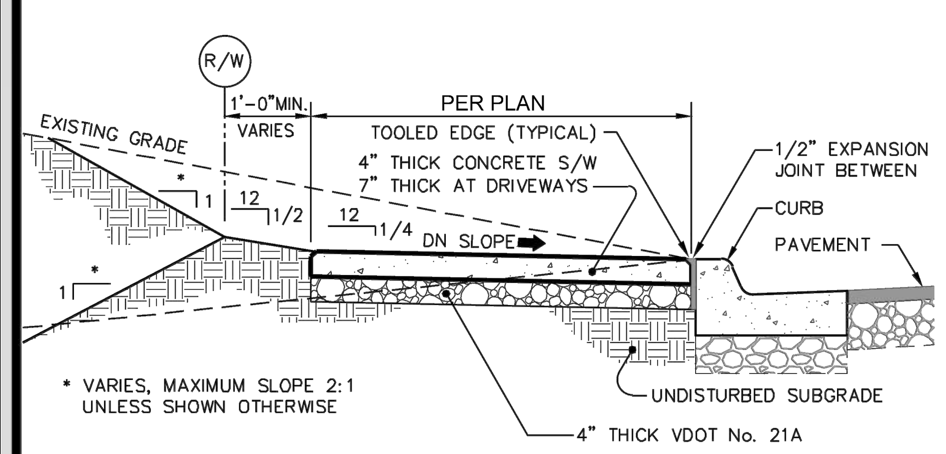
25.04B – STANDARD VDOT COMBINATION 6" CURB & GUTTER (CG-6)*

* PER 2001 VDOT ROAD AND BRIDGE STANDARDS OR LATEST REVISION

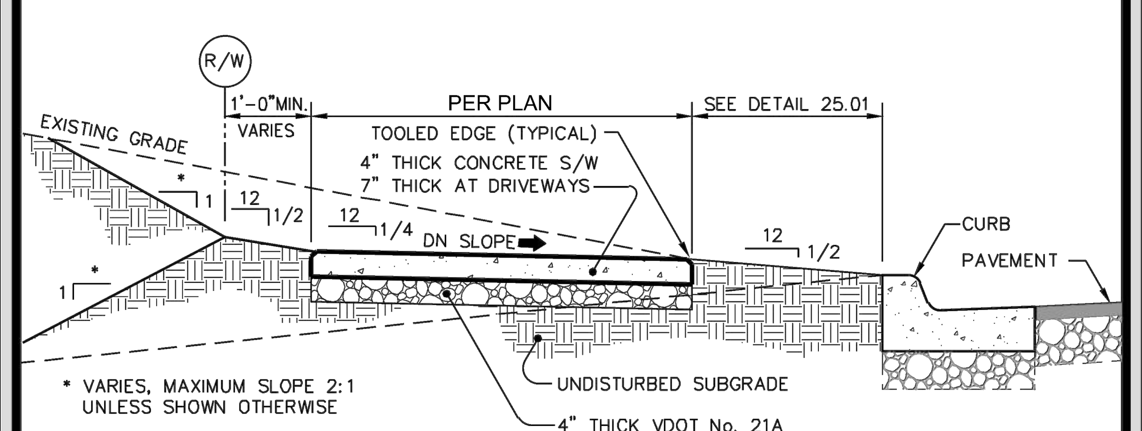
NOTES:
1. SCORE CURB / VALLEY GUTTER AT 10' O.C.
2. PROVIDE 1/2" EXPANSION JOINTS AT 90' O.C.
3. CONCRETE TO BE 3000 P.S.I. @ 28 DAYS, AIR ENTRAINED.
4. THESE NOTES APPLY TO SHEETS 1 THRU 3 OF THIS DETAIL.

THE CITY OF LYNCHBURG

CURB & GUTTER DETAILS	SCALE: NOT TO SCALE	DETAIL # 25.04
USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY	REVISION DATE: 12-12-2014	SHEET #: 1 OF 5



TYPICAL SIDEWALK without PARKWAY

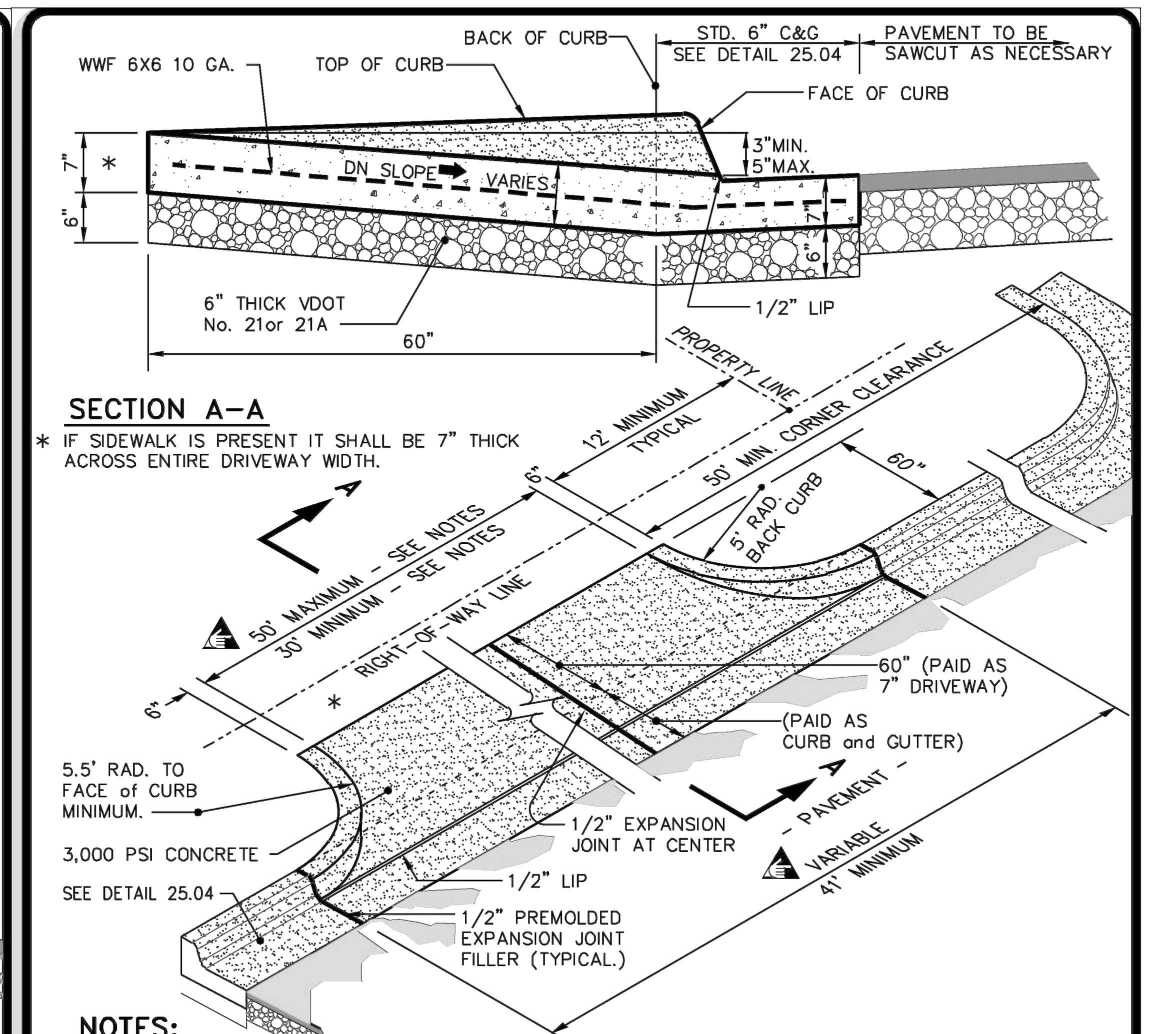


TYPICAL SIDEWALK with PARKWAY

NOTES:
1. PROVIDE 3/4" DEEP TOOLED SCORE AT 5'-0" O.C.
2. EXPANSION JOINTS TO BE PLACED 30'-0" O.C. LONGITUDINALLY, ADJACENT TO CURBS, AND WHEN BUTTING EXISTING STRUCTURES, CONCRETE, OR BUILDINGS.

THE CITY OF LYNCHBURG

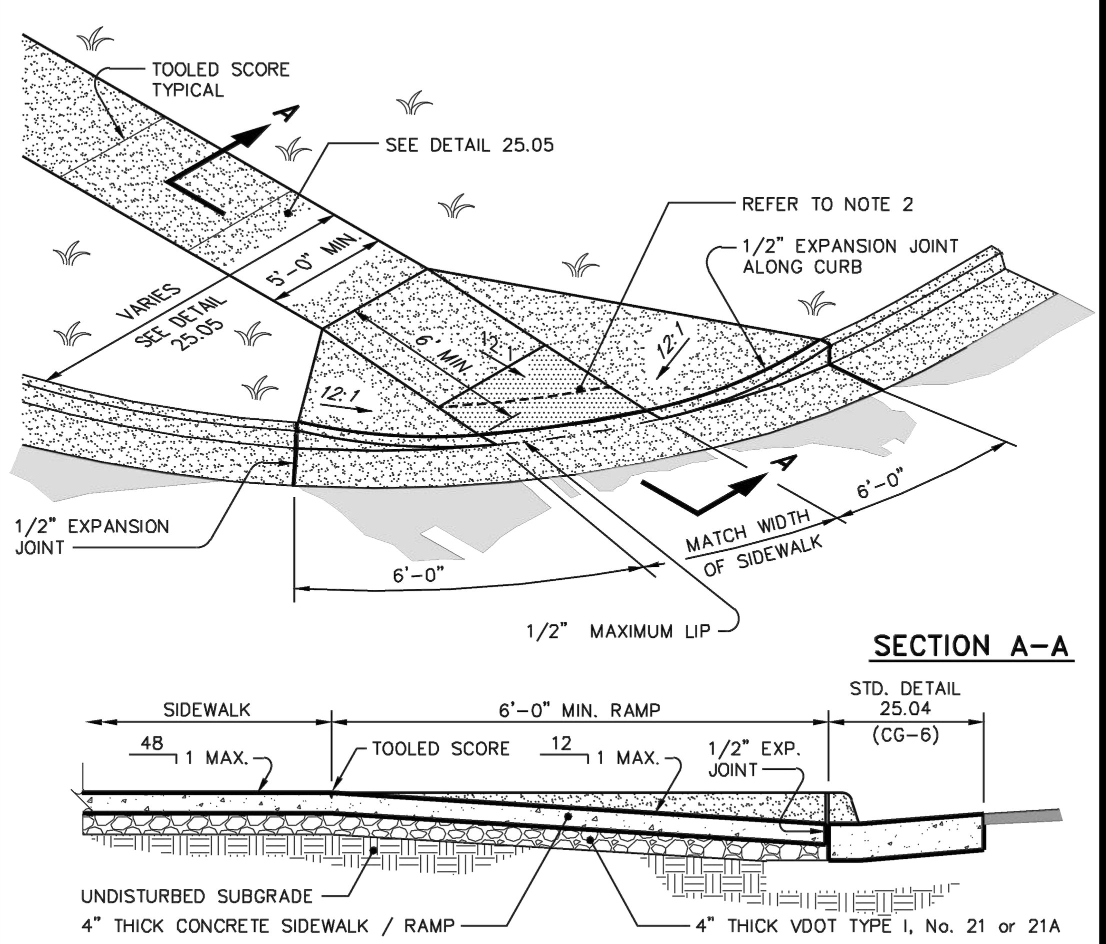
STANDARD SIDEWALK DETAIL	SCALE: NOT TO SCALE	DETAIL # 25.05
USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY	REVISION DATE: 12-12-2014	SHEET #: 1 OF 1



NOTES:
1. USE OF GUTTERPAN ACROSS ENTRANCE MAY BE WAVED BY APPROVAL OF CITY ENGINEER.
2. ENTRANCE WIDTH AND RADIUS SHALL BE SIZED TO ACCOMMODATE TURNING RADIUS OF PROPOSED TRUCKS TO/FROM SITE DEVELOPMENT.
3. VDOT STANDARDS MAY BE SUBSTITUTED IF APPROVED BY CITY ENGINEER.
4. GRAVEL DRIVEWAYS ON COLLECTOR AND ARTERIAL STREETS SHALL BE PAVED A MIN. OF 10 FEET FROM EDGE OF CURB OR TO THE RIGHT-OF-WAY LINE, WHICHEVER IS GREATER.
5. FOR ONE-WAY DRIVEWAY, THE WIDTH IS 15' MINIMUM and 24' MAXIMUM. ENTRANCE/EXIT SHALL BE MARKED ACCORDINGLY BY SIGN OR PAVEMENT ARROW.
6. ENTIRE ENTRANCE INCLUDING GUTTER AND APRON SHALL BE POURED MONOLITHICALLY.
7. WIDTH OF CURB & GUTTER SHALL MATCH WIDTH OF EXISTING CURB & GUTTER.
8. DRIVEWAY ENTRANCES TO BE APPROVED BY CITY ENGINEER PRIOR TO PLACEMENT OF CONC.

THE CITY OF LYNCHBURG

COMMERCIAL DRIVEWAY ENTRANCE △1	SCALE: NOT TO SCALE	DETAIL # 25.12
USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY	REVISION DATE: 12-12-2014	SHEET #: 1 OF 1



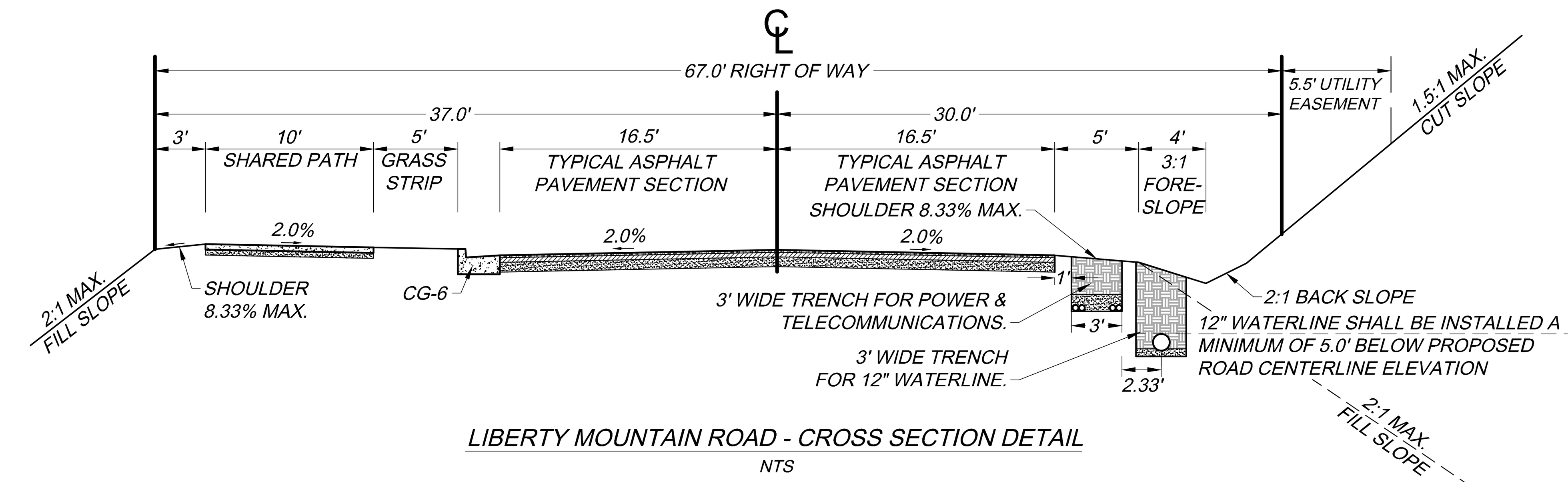
THE CITY OF LYNCHBURG

TYPE 4 – HANDICAP RAMP for INTERSECTION with GRASS STRIP	SCALE: NOT TO SCALE	DETAIL # 25.17
USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY	REVISION DATE: 12-12-2014	SHEET #: 1 OF 2

NOTES:
1. CROSS AND SIDE RAMPS SHALL NOT EXCEED A SLOPE OF 12:1.
2. CROSS RAMP SHALL HAVE A TRUNCATED DOME PATTERN MEETING THE CURRENT AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG). THE TRUNCATED DOME PATTERN SHALL EXTEND THE FULL WIDTH OF THE CROSS RAMP BY 2 FEET IN LENGTH IN THE DIRECTION OF PEDESTRIAN TRAVEL. THE TRUNCATED DOME SURFACE SHALL BE RED IN COLOR TO PRODUCE A 70% CONTRAST WITH SURROUNDING CONCRETE SURFACES. RECOMMENDED MANUFACTURERS INCLUDE 2004 ADA COMPLIANT DETECTABLE WARNING PAVER BY PAVESTONE COMPANY AND STEP-SAFE BY TRANSPO INDUSTRIES, INC. DETECTABLE WARNING SURFACE SHALL BE INSTALLED WITH THE ELONGATED SIDE PARALLEL TO THE RAMP OPENING. PAVERS/TILES SHALL BE RECESSED TO MOUNT FLUSH WITH THE SURROUNDING CONCRETE RAMP/SURFACE.
3. CURB RAMPS ARE TO BE LOCATED WHEREVER AN ACCESSIBLE ROUTE WITHIN THE RIGHT-OF-WAY OF A ROADWAY CROSSES AS SHOWN ON PLANS OR AS DIRECTED BY CITY ENGINEER AND SHOULD NOT BE LOCATED BEHIND VEHICLE STOP LINES, EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC.

THE CITY OF LYNCHBURG

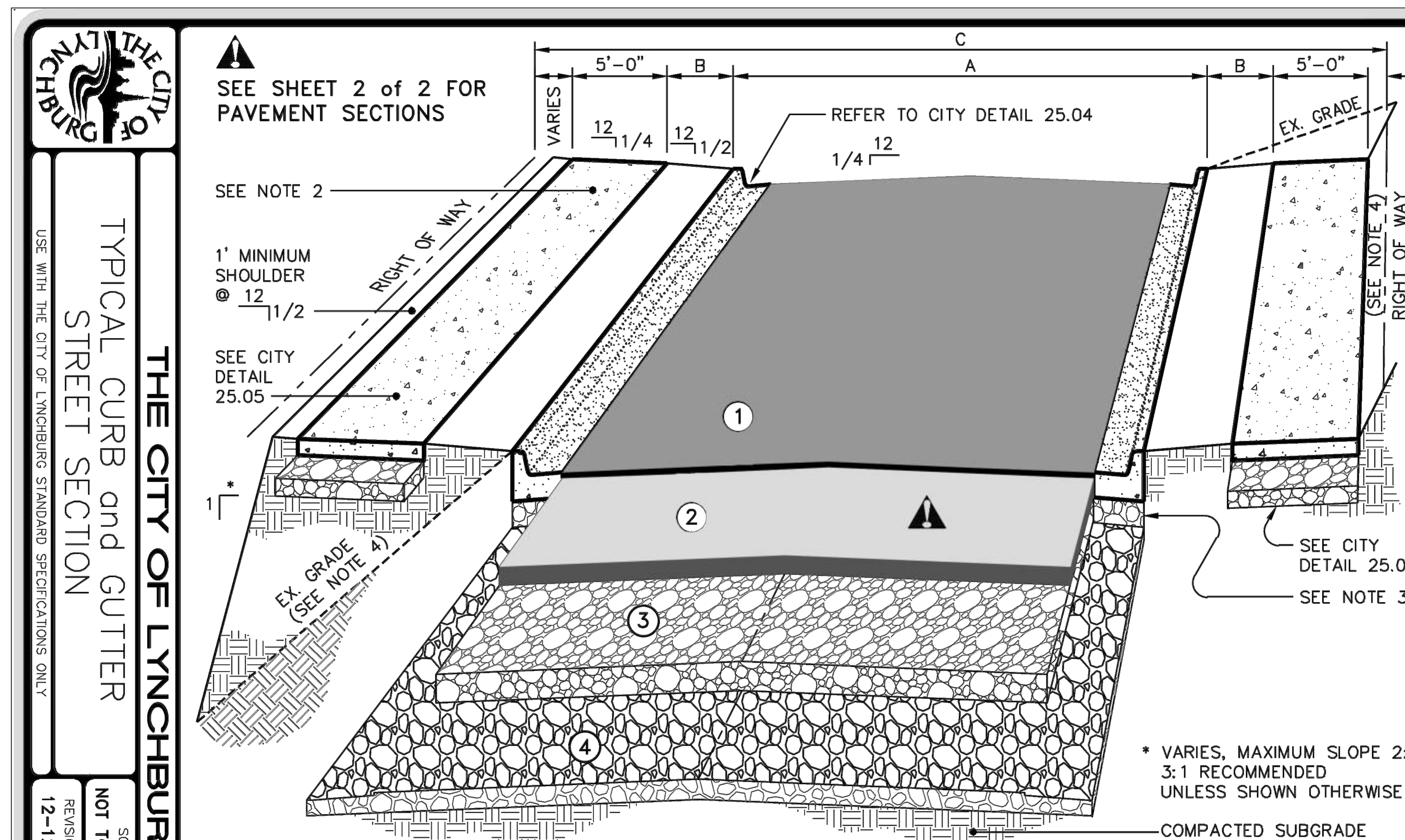
TYPE 4 – HANDICAP RAMP for INTERSECTION with GRASS STRIP	SCALE: NOT TO SCALE	DETAIL # 25.17
USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY	REVISION DATE: 12-12-2014	SHEET #: 2 OF 2



LIBERTY MOUNTAIN ROAD - CROSS SECTION DETAIL

NTS

SEE SHEET 2 of 2 FOR PAVEMENT SECTIONS



NOTES:
1. PAVEMENT WIDTH AND STREET RIGHT OF WAY SHALL BE AS SHOWN UNLESS OTHERWISE SPECIFIED.
2. FACEDOWN SIDEWALK (CITY STANDARD DETAIL 25.06) MAY BE SUBSTITUTED FOR STANDARD CURB AND GUTTER AND SIDEWALK IF APPROVED BY CITY ENGINEER.
3. PLACE 6" OF 21 or 21A COMPACTED AGGREGATE UNDER PAVEMENT AND STANDARD CURB AND GUTTER.
4. REFER TO PLAN CROSS-SECTIONS FOR SLOPE TIE-INS.

THE CITY OF LYNCHBURG

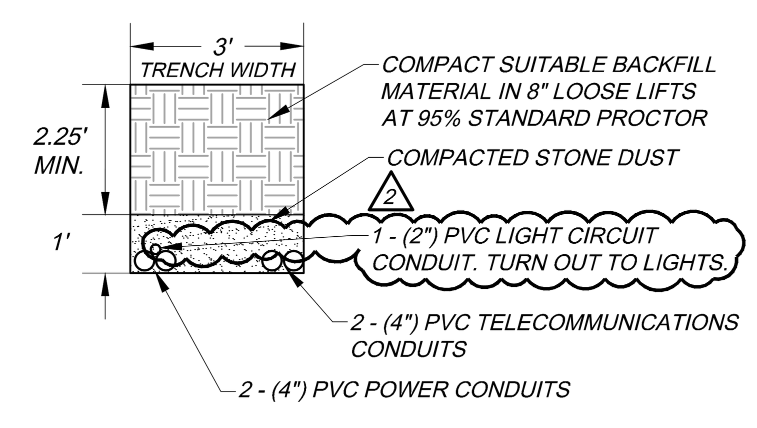
TYPICAL CURB and GUTTER STREET SECTION	SCALE: NOT TO SCALE	DETAIL # 25.01
USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY	REVISION DATE: 12-12-2014	SHEET #: 1 OF 2

THE CITY OF LYNCHBURG

TYPICAL CURB and GUTTER STREET SECTION	SCALE: NOT TO SCALE	DETAIL # 25.01
USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY	REVISION DATE: 12-12-2014	SHEET #: 2 OF 2

Classification	Pavement Section: Riding Surface ①	Base ②	Aggregate Base (see note 1) ③	Sub Base ④	Right-of-Way Widths (feet): (C) Total Width	(A) Back of Curb to Back of Curb (minimum)	(B) Back of Curb to Front of Sidewalk (minimum)	Sidewalk Width	Behind Sidewalk (max.)	Cul-De-Sacs (feet): ROW Radius	Back of Curb Radius
Residential ADT < 401	N/A	N/A	NOT APPLICABLE TO THIS PROJECT								
Residential ADT > 401	N/A	N/A									
Collector	2" 12.5D	4" BM 25.0	8" NO. 21 or 21A	N/A	SEE CROSS SECTION THIS SHEET					60	50
Industrial	N/A	N/A	NOT APPLICABLE TO THIS PROJECT								

NOTES:
1. FOR ALL STREET CLASSIFICATIONS:
AGGREGATE BASE SHALL BE SEALED WITH LIQUID BITUMINOUS MATERIAL CRS-2 AT THE RATE OF 0.3 GALLONS PER SQUARE YARD AND COVERED WITH No. 78 STONE AT THE RATE OF 15 POUNDS PER SQUARE YARD. THIS IS NOT REQUIRED IF BASE ASPHALT OF 4" OR GREATER IS INSTALLED.
2. THE DESIGN DEPTHS SHOWN ABOVE ARE MINIMUM REQUIREMENTS. ACTUAL DEPTHS SHALL BE DETERMINED THROUGH CBR TESTING AND ANALYSIS.



DUCT BANK DETAIL

NTS

APPROVED:
CITY ENGINEER:______________________ Date: __________

2	2/18/16	PER CITY COMMENTS RECV'D 2/17/16
1	11/19/15	PER CITY COMMENTS RECV'D 9/25/15

HURT & PROFFITT
2524 LANGHORNE ROAD
LYNCHBURG VA 24501
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434.847.0047 FAX
ENGINEERING • SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL
GEOTECHNICAL • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

STREET DETAILS
LIBERTY MOUNTAIN DRIVE (PHASE 2) ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA (CITY PROJECT# 15029-RW)

PROJECT NO.	20151033
LATITUDE:	N37°21'42"
LONGITUDE:	W79°09'42"
DATE:	08/24/2015
DRAWN BY:	RKW
CHECKED BY:	PCP

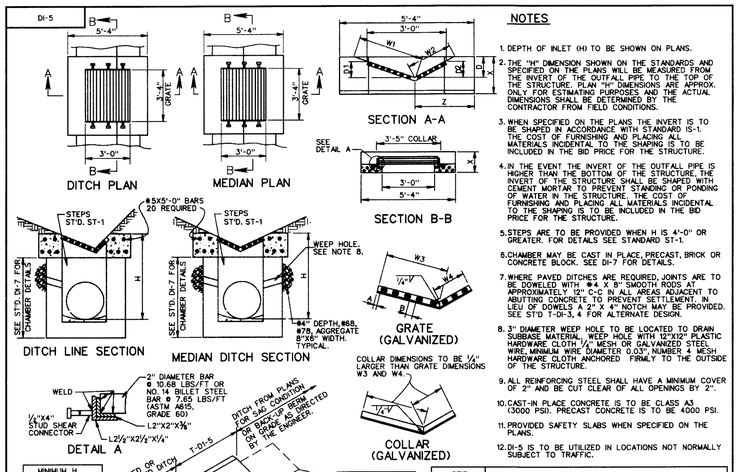
COMMONWEALTH OF VIRGINIA
PATRICK C. PROFFITT
Lic. No. 034330
02/18/2016
PROFESSIONAL ENGINEER

CITY PROJECT # 15029-RW
H&P CROSS REF# 20150502

SHEET NO.
C6.1

Mar 04, 2016 - 10:00am \\DATA01\Projects\2015\20150502\CAD\DETAILS.dwg

DI-5



MINIMUM H	
PIPE SIZE	H
12"	2'-9"
15"	3'-0"
18"	3'-4"
24"	3'-10"
30"	4'-5"
36"	5'-0"
42"	5'-8"

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

STD PG-2A TYPE	COVER DIMENSIONS AND QUANTITIES								
	W1	W2	W3	W4	※D	D1	D2	X	Z
A1,A2,A3	3'-0½"	2'-0¾"	2'-0⅝"	1'-0⅜"	6"	4"	3"	14"	2'-2"
B1,B2,B3,B4 C1,C2,C3	2'-9"	2'-3"	1'-6⅞"	1'-6⅜"	8"	4½"	4½"	16"	2'-8"
E	2'-3"	2'-3"	1'-8⅛"	1'-8⅛"	12"	9"	9"	19"	2'-8"

※ TOLERANCE ± ½"

NOTES

1. DEPTH OF INLET (H) TO BE SHOWN ON PLANS.
2. THE "H" DIMENSION SHOWN ON THE STANDARDS AND SPECIFIED ON THE PLANS WILL BE MEASURED FROM THE INVERT OF THE OUTFALL PIPE TO THE TOP OF THE STRUCTURE. PLAN "H" DIMENSIONS ARE APPROX. ONLY FOR ESTIMATING PURPOSES AND THE ACTUAL DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR FROM FIELD CONDITIONS.
3. WHEN SPECIFIED ON THE PLANS THE INVERT IS TO BE SHAPED IN ACCORDANCE WITH STANDARD IS-1. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.
4. IN THE EVENT THE INVERT OF THE OUTFALL PIPE IS HIGHER THAN THE BOTTOM OF THE STRUCTURE, THE INVERT OF THE STRUCTURE SHALL BE SHAPED WITH CEMENT MORTAR TO PREVENT STANDING OR PONDING OF WATER IN THE STRUCTURE. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.
5. STEPS ARE TO BE PROVIDED WHEN H IS 4'-0" OR GREATER. FOR DETAILS SEE STANDARD ST-1.
6. CHAMBER MAY BE CAST IN PLACE, PRECAST, BRICK OR CONCRETE BLOCK. SEE DI-7 FOR DETAILS.
7. WHERE PAVED DITCHES ARE REQUIRED, JOINTS ARE TO BE DOWELED WITH ※4 X 8" SMOOTH RODS AT APPROXIMATELY 12' C-C IN ALL AREAS ADJACENT TO ABUTTING CONCRETE TO PREVENT SETTLEMENT. IN LIEU OF DOWELS A 2" X 4" NOTCH MAY BE PROVIDED. SEE STD T-DI-3, 4 FOR ALTERNATE DESIGN.
8. 3" DIAMETER WEEP HOLE TO BE LOCATED TO DRAIN SUBBASE MATERIAL. WEEP HOLE WITH 12"X12" PLASTIC HARDWARE CLOTH ½" MESH OR GALVANIZED STEEL WIRE, MINIMUM WIRE DIAMETER 0.03", NUMBER 4 MESH HARDWARE CLOTH, ANCHORED FIRMLY TO THE OUTSIDE OF THE STRUCTURE.
9. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 2" AND BE CUT CLEAR OF ALL OPENINGS BY 2".
10. CAST-IN PLACE CONCRETE IS TO BE CLASS A3 (3000 PSI). PRECAST CONCRETE IS TO BE 4000 PSI.
11. PROVIDED SAFETY SLABS WHEN SPECIFIED ON THE PLANS.
12. DI-5 IS TO BE UTILIZED IN LOCATIONS NOT NORMALLY SUBJECT TO TRAFFIC.

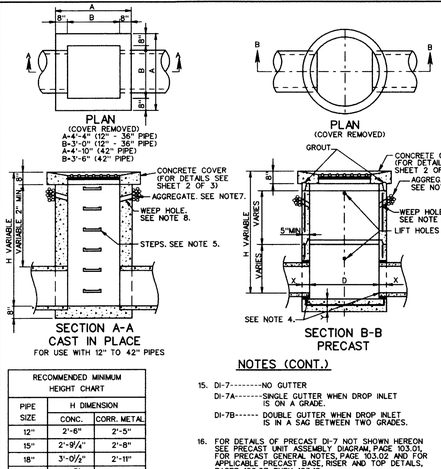
VDOT ROAD AND BRIDGE STANDARDS	
SHEET 1 OF 1	REVISION DATE
104.21	

STANDARD DITCH DROP INLET

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE
233 302

DI-7, 7A, 7B



RECOMMENDED MINIMUM HEIGHT CHART		
PIPE SIZE	H DIMENSION	
	CONC.	CORR. METAL
12"	2'-6"	2'-5"
15"	2'-9¼"	2'-8"
18"	3'-0½"	2'-11"
21"	3'-3¾"	3'-2"
24"	3'-7"	3'-5"
27"	3'-10¼"	3'-8"
30"	4'-1½"	3'-11"
33"	4'-4¾"	4'-2"
36"	4'-8"	4'-5"
42"	5'-2½"	4'-11"

NOTES

1. DEPTH OF INLET (H) TO BE SHOWN ON PLANS.
2. THE "H" DIMENSION SHOWN ON THE STANDARDS AND SPECIFIED ON THE PLANS WILL BE MEASURED FROM THE INVERT OF THE OUTFALL PIPE TO THE TOP OF THE STRUCTURE. PLAN "H" DIMENSIONS ARE APPROXIMATE ONLY FOR ESTIMATING PURPOSES AND THE ACTUAL DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR FROM FIELD CONDITIONS. MAXIMUM DEPTH (H) TO BE 12'-8.
3. WHEN SPECIFIED ON THE PLANS THE INVERT IS TO BE SHAPED IN ACCORDANCE WITH STANDARD IS-1. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICEN FOR THE STRUCTURE.
4. IN THE EVENT THE INVERT OF THE OUTFALL PIPE IS HIGHER THAN THE BOTTOM OF THE STRUCTURE, THE INVERT OF THE STRUCTURE SHALL BE SHAPED WITH CEMENT MORTAR TO PREVENT STANDING OR PONDING OF WATER IN THE STRUCTURE. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.
5. STEPS ARE TO BE PROVIDED WHEN H IS 4'-0" OR GREATER. FOR DETAILS SEE STANDARD ST-1.
6. REINFORCED CONCRETE FOOTING MAY BE PRECAST OR CAST-IN-PLACE. TWO LIFTING HOOKS OF FABRICATORS DESIGN TO BE PROVIDED IN PRECAST FOOTING.
7. 4" DEPTH AGGREGATE #68,#78, OR #8 X 6" WIDTH.
8. 3" DIAMETER WEEP HOLE WITH 12"X12" PLASTIC HARDWARE CLOTH ½" MESH OR GALVANIZED STEEL WIRE, MINIMUM WIRE DIAMETER 0.03". NUMBER 4 MESH HARDWARE CLOTH ANCHORED FIRMLY TO THE OUTSIDE OF THE STRUCTURE.
9. THE TYPE OF INLET (PRECAST OR CAST IN PLACE), DETAILED HEREON, TO BE CONSTRUCTED, WILL BE AT THE OPTION OF THE CONTRACTOR.
10. FOR DETAILS OF CONCRETE COVER, COLLAR AND GRATE AND THE METHOD OF PLACING APPROACH GUTTER SEE SHEET 2 OF 3.
11. CAST-IN PLACE CONCRETE IS TO BE CLASS A3 (3000 PSI). PRECAST CONCRETE IS TO BE 4000 PSI.
12. CONCRETE QUANTITIES SHOWN ARE FOR INDICATED DEPTH (H) WITHOUT PIPES. THE AMOUNT DISPLACED BY PIPES MUST BE DEDUCTED TO OBTAIN TRUE QUANTITIES. FOR INLETS OF DIFFERENT DEPTHS ADD OR SUBTRACT THE APPROPRIATE CUBIC YARDS OF CONCRETE FOR EACH FOOT OF DEPTH.
13. PAVED DITCHES ARE TO BE TRANSITIONED TO MEET INLET GUTTER AS SHOWN IN STANDARD PG-2A.
14. PROVIDE SAFETY SLABS WHEN SPECIFIED ON THE PLANS.

NOTES (CONT.)

15. DI-7--------NO GUTTER
    DI-7A------SINGLE GUTTER WHEN DROP INLET IS ON A GRADE.
    DI-7B------ DOUBLE GUTTER WHEN DROP INLET IS IN A SAG BETWEEN TWO GRADES.
16. FOR DETAILS OF PRECAST DI-7 NOT SHOWN HEREON SEE PRECAST UNIT ASSEMBLY DIAGRAM, PAGE 103.01, FOR PRECAST GENERAL NOTES, PAGE 103.02, AND FOR APPLICABLE PRECAST BASE, RISER AND TOP DETAILS. PAGES 103.07 THRU 103.12.
17. GRATE BARS TO BE PARALLEL TO DITCH FLOW.

PIPE SIZE	12"	15"	18"	24"	30"	36"	42"
MINIMUM DEPTH H	2'-0"	2'-3¼"	2'-6½"	3'-1"	3'-7½"	4'-2"	4'-8½"
CONCRETE CUBIC YARDS	.947	1.045	1.143	1.339	1.535	1.731	1.927

INCREMENT PER FOOT OF ADDITIONAL DEPTH (H) $\frac{1}{3}$ = 0.362 CU. YDS. (12" - 36" PIPE) $\frac{1}{3}$ = 0.410 CU. YDS. (42" PIPE)

SPECIFICATION REFERENCE
241 503

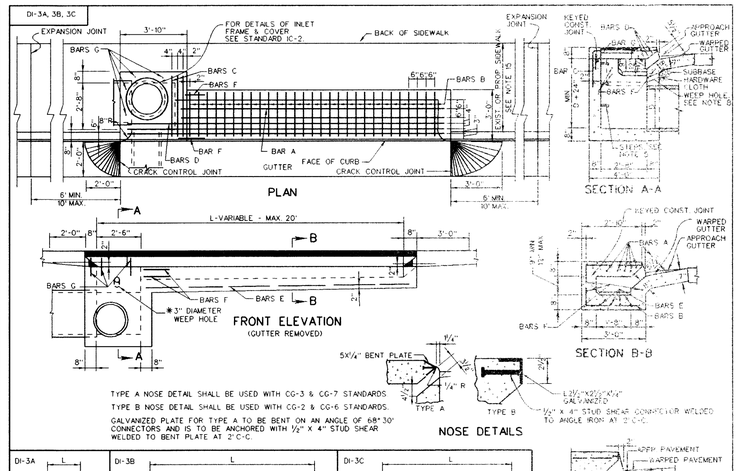
STANDARD MEDIAN DROP INLET

12" TO 42" PIPE

VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT ROAD AND BRIDGE STANDARDS	
REVISION DATE	SHEET 1 OF 3
	104.22

DI-3A, 3B, 3C



TYPE A NOSE DETAIL SHALL BE USED WITH CG-3 & CG-7 STANDARDS.

TYPE B NOSE DETAIL SHALL BE USED WITH CG-2 & CG-6 STANDARDS.

GALVANIZED PLATE FOR TYPE A TO BE BENT ON AN ANGLE OF 68° 30' CONNECTORS AND IS TO BE ANCHORED WITH ½" X 4" STUD SHEAR WELDED TO BENT PLATE AT 2'-0" C.

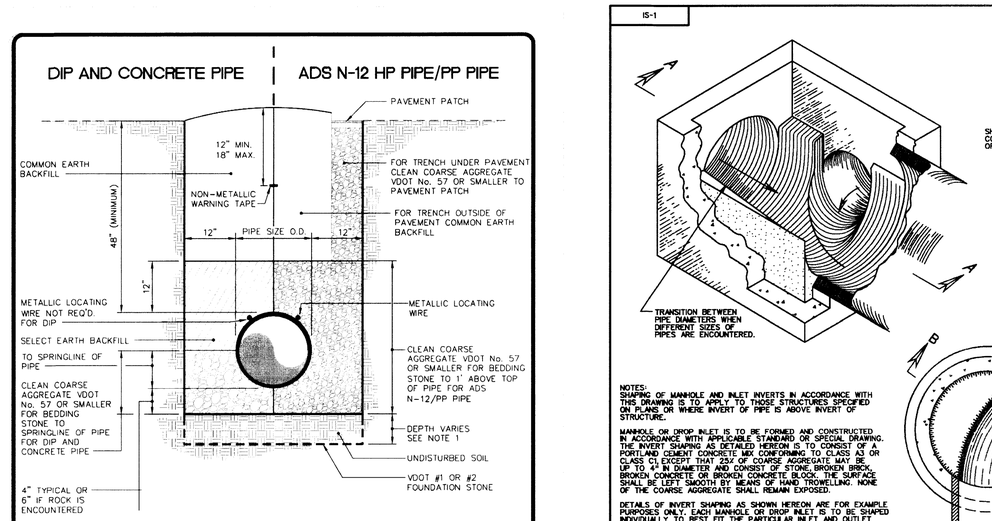
VDOT ROAD AND BRIDGE STANDARDS	
SHEET 1 OF 2	REVISION DATE
104.09	08/10

STANDARD CURB DROP INLET

12" - 30" PIPE: MAXIMUM DEPTH (H) = 8'

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE
234 302



NOTES:

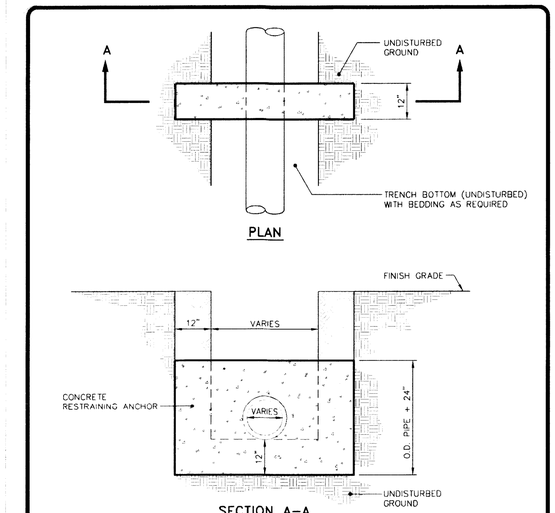
1. FOUNDATION STONE SHALL BE REQUIRED WHEN SOIL CONDITIONS ARE UNSUITABLE.
2. EXTRA DEPTH EXCAVATION SHALL BE PAID FOR AS ANYTHING BEYOND 4" OF COVER TO TOP OF PIPE.
3. AN ADDITIONAL 1 INCH DEPTH OF BEDDING MATERIAL WILL BE REQUIRED FOR EACH ADDITIONAL 2 FEET OF TRENCH DEPTH IN EXCESS OF 16 FEET UP TO 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

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

SCALE	DETAIL #
NOT TO SCALE	27.01A
REVISION DATE	SHEET #
12-12-2014	1 OF 1



NOTES:

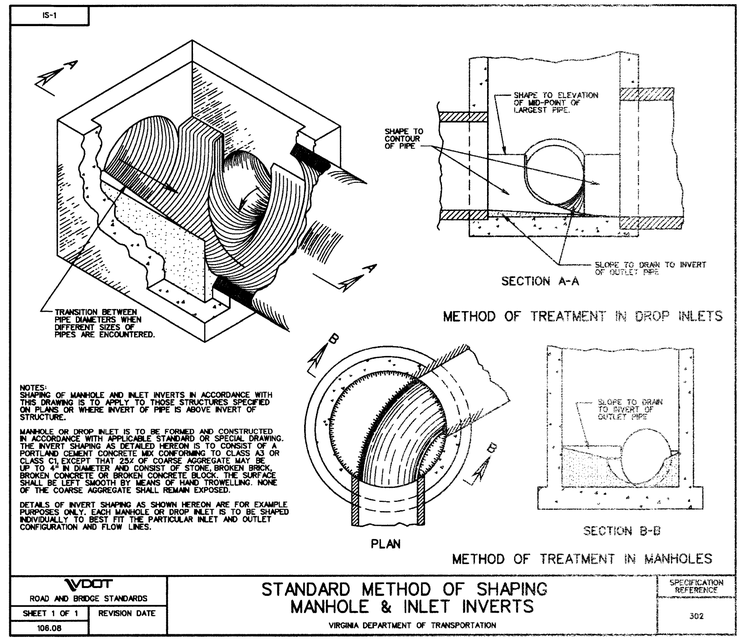
1. SPACING FOR CONCRETE RESTRAINING ANCHORS SHALL BE AS SHOWN ON THE PLANS.
2. THE PORTION OF THE ANCHOR IN UNDISTURBED GROUND SHALL BE POURED UNFORMED.
3. CONCRETE SHALL BE 3000 PSI.
4. CONCRETE ANCHOR TO BE POURED AROUND BELL OF PIPE WHERE APPLICABLE.
5. USE ON SLOPES EQUAL TO OR GREATER THAN 20%.
6. PIPE SHALL BE DUCTILE IRON PIPE.

THE CITY OF LYNCHBURG

CONCRETE RESTRAINING ANCHOR

SCALE	DETAIL #
NOT TO SCALE	27.21
REVISION DATE	SHEET #
12-12-2014	1 OF 1

IS-1



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

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

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

VDOT ROAD AND BRIDGE STANDARDS	
SHEET 1 OF 1	REVISION DATE
106.08	

STANDARD METHOD OF SHAPING MANHOLE & INLET INVERTS

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE
302

APPROVED

CITY ENGINEER _____ Date: _____

1	1/19/15	PER CITY COMMENTS RECVD 9/25/15

HURT PROFFITT

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LYNCHBURG VA 24501
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ENGINEERING · SURVEYING · LAND DEVELOPMENT · ENVIRONMENTAL
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STORM DETAILS
LIBERTY MOUNTAIN DRIVE (PHASE 2)
ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA (CITY PROJECT# 15029-RW)

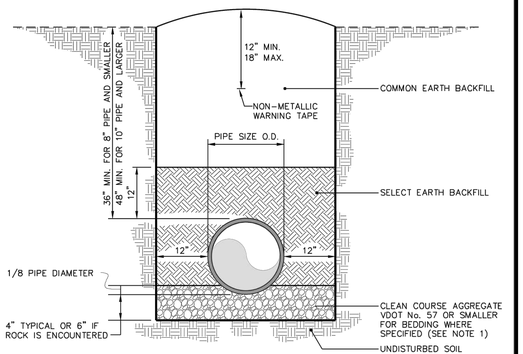
PROJECT NO.	20151033
LATITUDE:	N37°21'42"
LONGITUDE:	W79°09'42"
DATE:	08/24/2015
DRAWN BY:	RKW
CHECKED BY:	PCP

COMMONWEALTH OF VIRGINIA
PATRICK C. PROFFITT
Lic. No. 034330
11/19/2015
PROFESSIONAL ENGINEER

CITY PROJECT #	15029-RW
H&P CROSS REF#	20150502

SHEET NO.
C6.2

Dec 17 2015 - 4:24pm I:\DATA\IT\Projects\2015\20150502\CAD\DETAILS.dwg



NOTES:

1. BEDDING SHALL BE REQUIRED FOR WATER LINES 16" IN DIAMETER AND LARGER OR IF ROCK IS ENCOUNTERED.
2. EXTRA DEPTH EXCAVATION SHALL BE PAID FOR AS ANYTHING BEYOND 4' OF COVER TO TOP OF PIPE.
3. ANY EXCAVATION BEYOND TRENCH LIMITS SHOWN ON DETAIL SHALL BE AT THE CONTRACTOR'S EXPENSE.

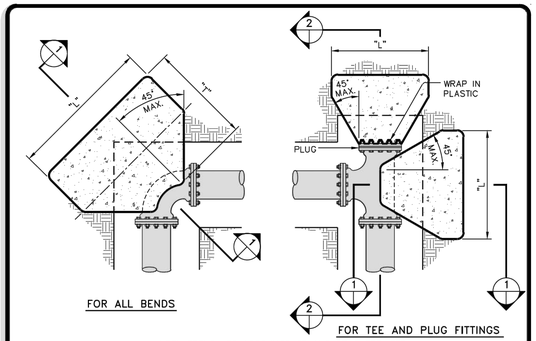
THE CITY OF LYNCHBURG

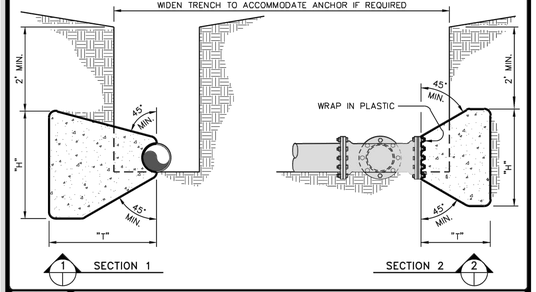
WATER LINE TRENCH DETAIL

SCALE: NOT TO SCALE | DETAIL # 26.01

REVISION DATE: 12-12-2014 | SHEET # 1 OF 1

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY





THE CITY OF LYNCHBURG

TYPE "F" HORIZONTAL ANCHOR BLOCKING

SCALE: NOT TO SCALE | DETAIL # 26.02

REVISION DATE: 12-12-2014 | SHEET # 1 OF 3

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

TYPE "F" HORIZONTAL ANCHOR BLOCK DATUM

TYPE FITTING	PIPE SIZE INCHES	DIMENSIONS (Ft.) "L"	"H"	"T"	VOL. CONC. CU. YARDS
TEST PRESSURE = 150 P.S.I. & BELOW					
11 1/4°	6	1.5	2	2.5	0.19
22 1/2°	6	1.5	2	2.52	0.19
45°	6	2	2.25	2.6	0.26
90°	6	2.5	2.5	3.01	0.40
TEE	6	2	2.25	2.5	0.25
PLUG	6	2	2.25	2.5	0.25
11 1/4°	8	1.66	2.16	2.67	0.23
22 1/2°	8	1.66	2.16	2.69	0.23
45°	8	2.66	2.66	2.77	0.41
90°	8	3.66	3.16	3.21	0.75
TEE	8	3.16	2.91	2.66	0.50
PLUG	8	3.16	2.91	2.66	0.50
11 1/4°	12	2	2.5	3	0.33
22 1/2°	12	2.5	2.75	3.02	0.44
45°	12	4	3.5	3.12	0.87
90°	12	5.5	4.25	3.62	1.63
TEE	12	4.5	3.75	3	0.99
PLUG	12	4.5	3.75	3	0.99
TEST PRESSURE = 151 P.S.I. to 200 P.S.I.					
11 1/4°	6	1.5	2	2.5	0.19
22 1/2°	6	1.5	2	2.52	0.19
45°	6	2	2.55	2.6	0.29
90°	6	3	2.75	3.01	0.52
TEE	6	2.5	2.5	2.5	0.34
PLUG	6	2.5	2.5	2.5	0.34
11 1/4°	8	1.66	2.16	2.67	0.23
22 1/2°	8	2.16	2.41	2.69	0.31
45°	8	3.16	2.91	2.77	0.52
90°	8	4.16	3.41	3.21	0.90
TEE	8	3.66	3.16	2.66	0.62
PLUG	8	3.66	3.16	2.66	0.62
11 1/4°	12	2	2.5	3	0.33
22 1/2°	12	3	3	3.02	0.56
45°	12	4.5	3.75	3.12	1.03
90°	12	6.5	4.75	3.62	2.14
TEE	12	5.5	4.25	3	1.35
PLUG	12	5.5	4.25	3	1.35
TEST PRESSURE = 201 P.S.I. to 250 P.S.I.					
11 1/4°	6	1.5	2	2.5	0.19
22 1/2°	6	1.5	2	2.52	0.19
45°	6	2.5	2.5	2.6	0.35
90°	6	3.5	3	3.01	0.64
TEE	6	3	2.75	2.5	0.43
PLUG	6	3	2.75	2.5	0.43
11 1/4°	8	1.66	2.16	2.67	0.23
22 1/2°	8	2.16	2.41	2.69	0.31
45°	8	3.66	3.16	2.77	0.64
90°	8	4.66	3.66	3.21	1.07
TEE	8	4.16	3.41	2.66	0.75
PLUG	8	4.16	3.41	2.66	0.75
11 1/4°	12	2.5	2.75	3	0.44
22 1/2°	12	3.5	3.25	3.02	0.69
45°	12	5.5	4.25	3.12	1.41
90°	12	7.5	5.25	3.62	2.71
TEE	12	6	4.5	3	1.56
PLUG	12	6	4.5	3	1.56

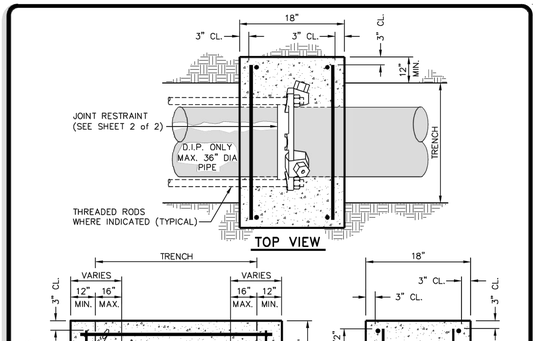
THE CITY OF LYNCHBURG

TYPE "F" HORIZONTAL ANCHOR BLOCKING

SCALE: NOT TO SCALE | DETAIL # 26.02

REVISION DATE: 12-12-2014 | SHEET # 2 OF 3

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY



NOTES:

1. CONCRETE SHALL BE 3000 P.S.I.
2. REINFORCING BARS SHALL BE DEFORMED, AND TIED TOGETHER.
3. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK(S) INSTALLATION SHALL BE THE MINIMUM WIDTH.
4. BACKFILL AND COMPACT IN 6" LAYERS.
5. PLACE THRUST COLLAR ON ONE FULL JOINT OF PIPE.
6. LAST JOINT OF PIPE WITH THRUST COLLAR TO BE MECHANICAL JOINT PIPE.
7. PLACE RESTRAINED JOINT THRUST RING 4' FROM PLUG END OF PIPE.

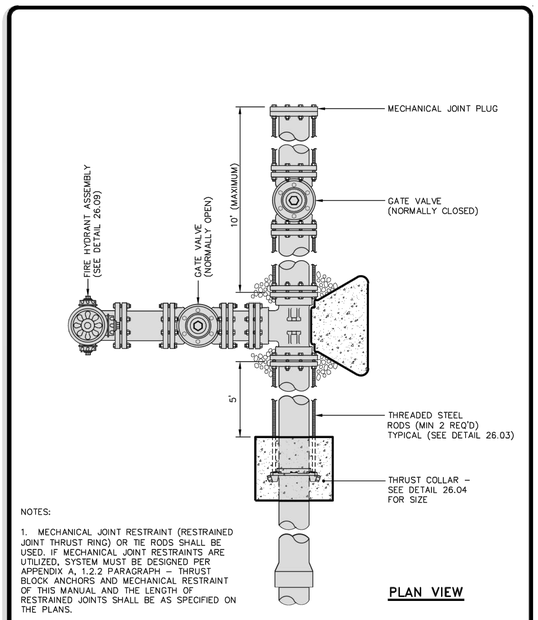
THE CITY OF LYNCHBURG

THRUST COLLAR & BLOCKING DETAIL

SCALE: NOT TO SCALE | DETAIL # 26.04

REVISION DATE: 12-12-2014 | SHEET # 1 OF 2

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY



NOTES:

1. MECHANICAL JOINT RESTRAINT (RESTRAINED JOINT THRUST RING) OR TIE RODS SHALL BE USED. IF MECHANICAL JOINT RESTRAINTS ARE UTILIZED, SYSTEM MUST BE DESIGNED PER APPENDIX A, 1.2.2 PARAGRAPH – THRUST BLOCK ANCHORS AND MECHANICAL RESTRAINT OF THIS MANUAL AND THE LENGTH OF RESTRAINED JOINTS SHALL BE AS SPECIFIED ON THE PLANS.

PLAN VIEW

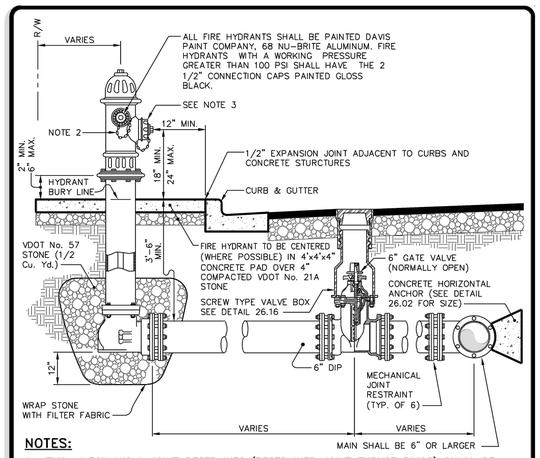
THE CITY OF LYNCHBURG

END of LINE for FUTURE EXPANSION

SCALE: NOT TO SCALE | DETAIL # 26.08

REVISION DATE: 12-12-2014 | SHEET # 1 OF 1

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY



NOTES:

1. TWO MECHANICAL JOINT RESTRAINTS (RESTRAINED JOINT THRUST RINGS) SHALL BE INSTALLED ON THE MAIN LINE ON EACH SIDE OF THE TEE.
2. CHAINS ON FIRE HYDRANTS TO BE REMOVED.
3. HYDRANTS TO BE PLACED WITH PUMPER NOZZLE FACING THE STREET OR AS OTHERWISE DIRECTED.
4. WHEN VALVE BOX IS PLACED OUTSIDE OF PAVEMENT,PROVIDE PRECAST SHOULDER SLAB. (DETAIL 26.18)
5. WHEN FIRE HYDRANTS ARE INSTALLED WHERE ROADWAY HAS A DRAINAGE DITCH AND NO CURB & GUTTER, MINIMUM COVER SHALL BE 24" FROM THE BOTTOM OF DITCH.
6. WHERE HYDRANT IS SET BEHIND GUARDRAIL, CENTERLINE OF PUMPER NOZZLE TO BE A MINIMUM OF 12" AND A MAXIMUM OF 18" ABOVE TOP OF GUARDRAIL.
7. ALL JOINTS BETWEEN THE VALVE AND THE 90 DEGREE BEND TO THE FIRE HYDRANT SHALL BE RESTRAINED.
8. IN THE AREAS OF HIGH GROUND WATER, THE WEEP HOLES SHALL BE PLUGGED AS DIRECTED BY THE ENGINEER.

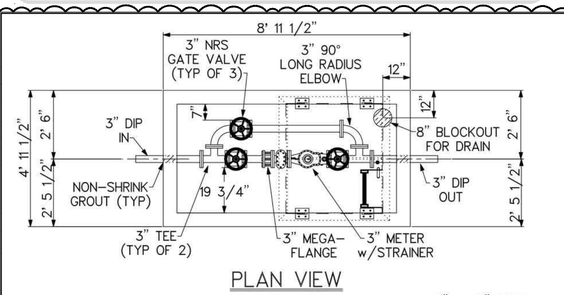
THE CITY OF LYNCHBURG

TYPICAL FIRE HYDRANT CONNECTION DETAIL

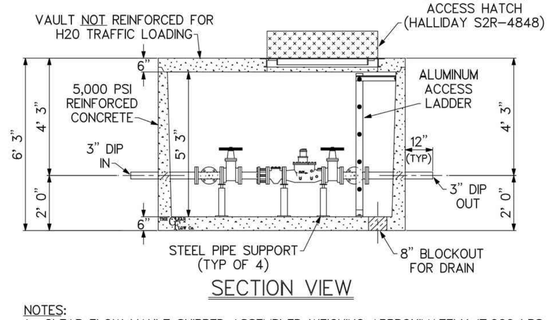
SCALE: NOT TO SCALE | DETAIL # 26.09

REVISION DATE: 12-12-2014 | SHEET # 1 OF 1

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY



PLAN VIEW



SECTION VIEW

NOTES:

1. CLEAR FLOW VAULT SHIPPED ASSEMBLED WEIGHING APPROXIMATELY 17,000 LBS.
2. 3" METER w/STRAINER (GALLONS)

CLEAR FLOW BY C P & P
CONCRETE PIPE & PRECAST, LLC
(800) 648 – 2678

SCALE: NONE | DATE: 11/06/07 | DWG: MTR3-1000

3" WATER METER VAULT (TJ-1000 STRUCTURE)

DOMESTIC METER VAULT DETAIL ⚠2

APPROVED:

CITY ENGINEER:_____ Date: _____

2	2/18/16	PER CITY COMMENTS RECV'D 2/17/16
1	11/19/15	PER CITY COMMENTS RECV'D 9/25/15

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WATER DETAILS
LIBERTY MOUNTAIN DRIVE (PHASE 2)
ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA (CITY PROJECT# 15029-RW)

PROJECT NO.	20151033
LATITUDE:	N37°21'42"
LONGITUDE:	W79°09'42"
DATE:	08/24/2015
DRAWN BY:	RKW
CHECKED BY:	PCP

COMMONWEALTH OF VIRGINIA
PATRICK C. PROFFITT
Lic. No. 034330
02/18/2016
PROFESSIONAL ENGINEER

CITY PROJECT # 15029-RW
H&P CROSS REF# 20150502

SHEET NO.
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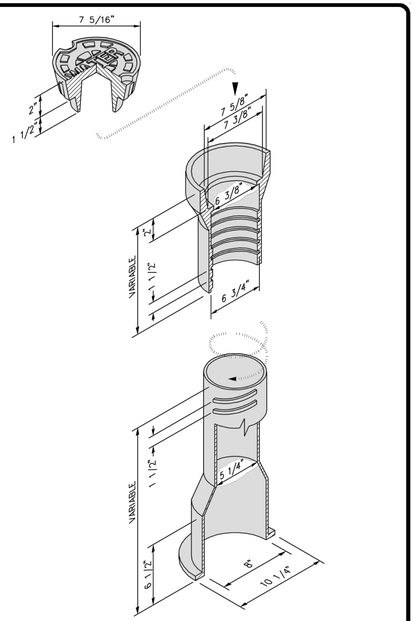
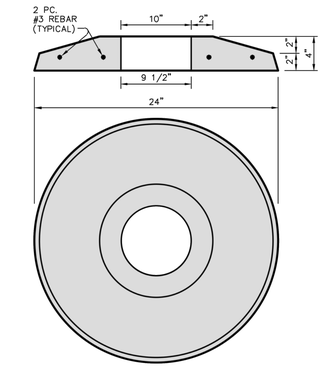


THE CITY OF LYNCHBURG

2 – PIECE ADJUSTABLE SCREW VALVE BOX DETAIL

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

SCALE: NOT TO SCALE | DETAIL # 26.16 | REVISION DATE: 12-12-2014 | SHEET # 1 OF 1



NOTES:

1. VALVE BOX PAD IS TO BE MADE OF CLASS A-3 CONCRETE (3000 PSI @ 28 DAYS).
2. TO BE USED IN UNPAVED AREAS.

THE CITY OF LYNCHBURG

VALVE BOX PRECAST SHOULDER SLAB DETAIL

USE WITH THE CITY OF LYNCHBURG STANDARD SPECIFICATIONS ONLY

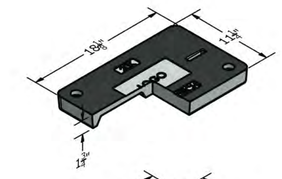
SCALE: NOT TO SCALE | DETAIL # 26.18 | REVISION DATE: 12-12-2014 | SHEET # 1 OF 1

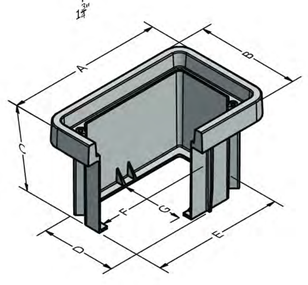
Oldcastle® Enclosure Solutions | Electric & Communications | SYNERTECH Composite

PULL BOX DETAIL

NTS 2

1118





	A	B	C	D	E	F	G
1118-12	20-1/2	13-5/8	12	11-1/2	17-1/4	14-7/8	8
1118-18	20-1/2	13-5/8	18	11-1/2	17-1/8	14-7/8	8

COVER:

Style:	Flush Solid
Material:	DuoMold Composite
Model:	11" x 18"
Weight:	26 lbs
Std. Fasteners:	1/2-13 Stainless Steel Hex Head Bolt, Self-Locating Insert
Options:	Logos and Special Markings
Surface:	Slip Resistant & Marked*
Coefficient of Friction:	>0.6 ASTM 1028
Performance:	ANSI/SCTE-77 Tier 15, WUC 3.6 ASTM C857 A-12

BODY:

Material:	DuoMold Composite
Model:	11" x 18"
Weight:	12" Depth: 24 lbs 18" Depth: 27 lbs
Wall Type:	Straight
Performance:	ANSI/SCTE-77 Tier 15, WUC 3.6 ASTM C857 A-12

Bodies are stackable** to Depths of: 24", 30", 36"

Medium Duty: Non-deliberate Traffic

For use in non-vehicular traffic situations only.

Actual load rating is determined by the box and cover combination. Weights and dimensions may vary slightly. **Stacked body units are currently not rated.

* Cover comes standard with permanent markings for manufacturer, load rating, model size and manufacturing location.

Contact your Oldcastle Enclosure Solutions Distribution Center for specific information and additional options.

oldcastleprecast.com/enclosuresolutions 800-735-5566

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Oldcastle® Enclosure Solutions | Electric & Communications | SYNERTECH Composite

PULL BOX DETAIL

NTS 2

1118

Options:

Available DuoMold Composite Covers:
Flush Solid (Standard)

Fastener Options for DuoMold Composite Covers:
Hex Head Bolt (Standard)
Penta Head Bolt
Oldcastle Enclosures Vandal Resistant Bolt

Add on Options:
Larger Lift Hook Pocket
EMS Marker (E)
Mouseholes/Knockouts
Rack Mount (A)
Cable Racks/Cable Arms (B)
Unistrut (C)
Pulling Eye – 1,000 lb and 3,000 lb (D)
Ground Buss (F)
Dividers
Racking Provision
Lid Gaskets*
Solid Bottom
Bodies are Stackable (with tallest body on bottom)

*Lid Gaskets inhibit water flow into the box, they do not make Enclosure fully waterproof.

Composite Cover

Raw Material Specifications:

Standard Test Method	Properties of Raw Material	ASTM Designation	Typical Value
Compressive Strength of Polymer Concretes	Compressive Strength	C 469	> 17,000 psi
Flexural Properties of Plastic Materials	Flexural Strength	D 790	> 14,000 psi
Resistance of Plastics to Chemical Reagents	Chemical Resistance		Retain > 75% of original strength
Impact Resistance by Means of a Falling Weight	Impact Resistance	D 2444	> 70 ft·lb
Static Coefficient of Friction	Friction Coefficient	C 1028	> 0.6

ASTM Specifications shall be the current revision
Test Reports available on request

The Rural Utility Service (RUS) is a department of the US Department of Agriculture organized to facilitate rural developments. We, will find Oldcastle Enclosure Solutions brand enclosures listed by the RUS. All Oldcastle Enclosure Solutions brand enclosures conform to the RUS "Bumper Resistant" fastener design for buried pedestals.

Product Load Rating: Medium Duty : Non-deliberate Traffic
For use in non-vehicular traffic situations only.

Note: Actual load rating is determined by the box and cover combination. Weights and dimensions may vary slightly

All information contained on this sheet is current at the time of printing.
Oldcastle Precast, Inc. reserves the right to discontinue or update product information without notice.

oldcastleprecast.com/enclosuresolutions 800-735-5566

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APPROVED:
CITY ENGINEER: _____ Date: _____

2	2/18/16	PER CITY COMMENTS RECV'D 2/17/16
1	11/19/15	PER CITY COMMENTS RECV'D 9/25/15

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MISCELLANEOUS DETAILS
LIBERTY MOUNTAIN DRIVE (PHASE 2)
ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA *(CITY PROJECT# 15029-RW)*

PROJECT NO.	20151033
LATITUDE:	N37°21'42"
LONGITUDE:	W79°09'42"
DATE:	08/24/2015
DRAWN BY:	RKW
CHECKED BY:	PCP

COMMONWEALTH OF VIRGINIA
PATRICK C. PROFFITT
Lic. No. 034330
02/18/2016
PROFESSIONAL ENGINEER

CITY PROJECT # 15029-RW
H&P CROSS REF# 20150502

SHEET NO.
C6.4

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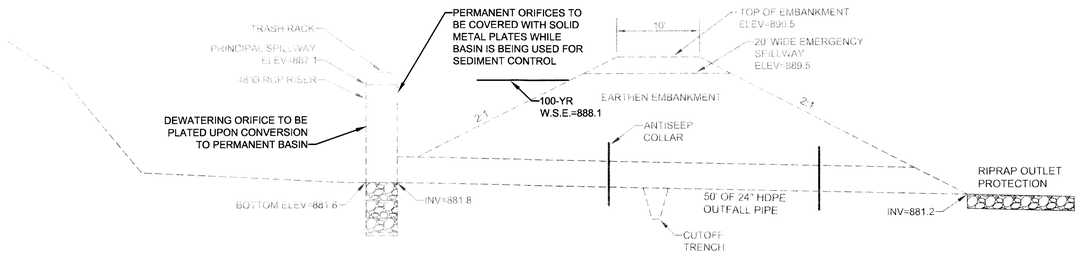
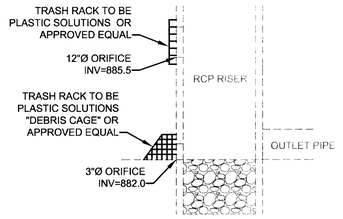
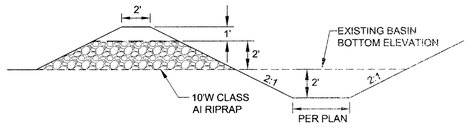


BASIN SECTION
N.T.S.



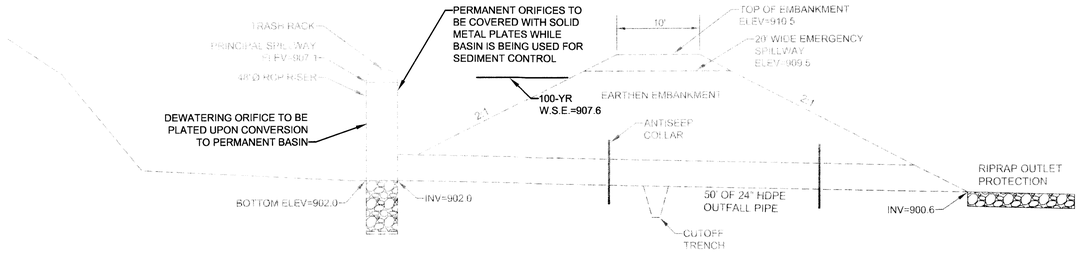
PERMANENT DETENTION ORIFICES
N.T.S

Sediment Forebay Calculations				
Basin ID		1	2	3
Impervious Area	AC	8.5	4.0	4.0
Volume Req'd for 0.20"/Imp. Ac	CF	6,171	2,904	2,904
Volume Provided	CF	7,000	3,000	3,000
Bottom Elevation	FT	882.0	902.0	896.0
Top Elevation	FT	886.0	906.0	902.0
Berm Elevation	FT	887.0	907.0	903.0
Berm Width	FT	2	2	2
Side Slopes		2:1	2:1	2:1



SEDIMENT FOREBAY DETAIL
N.T.S.

EXTENDED-DETENTION BASIN #1 DETAILS
(EXISTING SEDIMENT BASIN TO BE CONVERTED TO PERMANENT BASIN)



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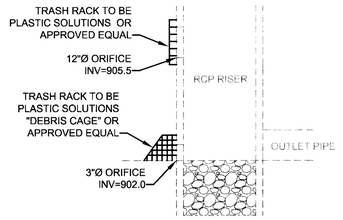


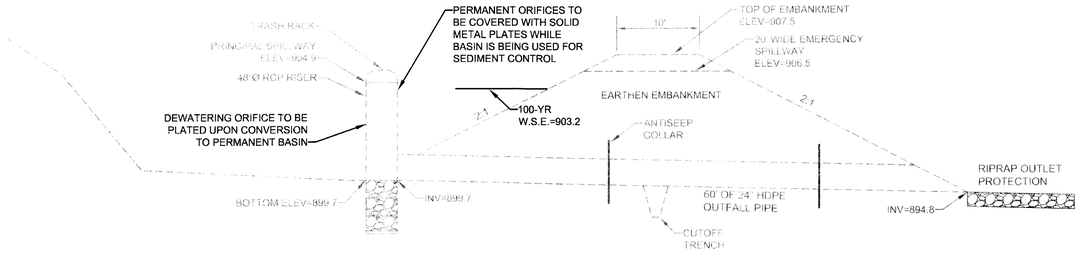
PERMANENT DETENTION ORIFICES
N.T.S

Sediment Basin Summary Table				
ID		SB1	SB2	SB3
Drainage Area	AC	16.0	8.1	5.7
Dry Storage Volume Required	CY	1072	543	382
Dry Storage Volume Provided	CY	1110	605	540
Wet Storage Volume Required	CY	1072	543	382
Wet Storage Volume Provided	CY	1265	625	585
Length-To-Width Ratio	X:1	2	2	2
Bottom Elevation	FT	881.8	902.0	899.0
Principal Spillway Elevation	FT	887.1	907.1	904.0
Emergency Spillway Elevation	FT	889.5	909.5	906.5
Embankment Elevation	FT	890.5	910.5	907.5
Riser Pipe Diameter	IN	48	48	48
Dewatering Tube Diameter	IN	6	6	6
Embankment Top Width	FT	10	10	10
Embankment Side Slopes	Z:1	2:1	2:1	2:1
Riser Base Depth	FT	3	3	3
Riser Base Diameter	IN	48	48	48
Number Of Anti-Seep Collars		2	2	2

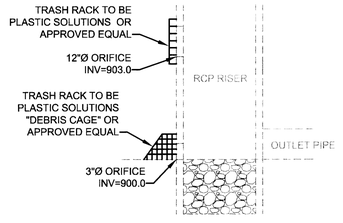
Water Quality Volume Calculations				
Basin ID		1	2	3
Impervious Area	AC	8.5	4.0	4.0
2 x WQV Required	CF	30,855	14,520	14,520
Volume Provided	CF	31,000	14,600	15,900
Bottom Elevation	FT	881.8	902.0	899.7
Top Elevation	FT	885.5	905.5	903.0

Water Quality Orifice Sizing Calculations				
Basin ID		1	2	3
2 x WQV Provided	CF	31,000	14,600	15,900
Drawdown Time	HR	30	30	30
H_{max}	FT	3.7	3.5	3.3
Q_{ave}	CFS	0.29	0.14	0.15
Q_{max}	CFS	0.58	0.28	0.30
Orifice Area	SF	0.063	0.031	0.034
Calculated Orifice Diameter	IN	3.4	2.4	2.5
Water Quality Orifice Size	IN	3	3	3

EXTENDED-DETENTION BASIN #2 DETAILS
(EXISTING SEDIMENT BASIN TO BE CONVERTED TO PERMANENT BASIN)



BASIN SECTION
N.T.S.



PERMANENT DETENTION ORIFICES
N.T.S

BASIN CONVERSION NOTES:
1. THIS SITE WAS PREVIOUSLY BULK GRADED FOR FUTURE DEVELOPMENT. DURING THE BULK GRADING PHASE, SEDIMENT BASINS WERE INSTALLED TO CAPTURE SEDIMENT-LADEN RUNOFF DURING CONSTRUCTION. THESE BASINS WILL BE CONVERTED TO PERMANENT EXTENDED-DETENTION BASINS UPON STABILIZATION OF ALL UPSTREAM DRAINAGE AREAS.
2. ANTI-SEEP COLLARS, CUTOFF TRENCH, AND RIPRAP-FILLED RISER SUMP ARE SHOWN PER ORIGINAL BULK GRADING DESIGN PLANS.
3. PERMANENT ORIFICES TO BE COVERED WITH SOLID METAL PLATES WHILE BASIN IS BEING USED FOR SEDIMENT CONTROL.
4. ORIFICE USED FOR SEDIMENT BASIN RISER TO BE PLUGGED UPON CONVERSION TO PERMANENT DETENTION BASIN.
5. CONTRACTOR SHALL DEWATER SEDIMENT BASIN PRIOR TO CONVERSION TO A PERMANENT BASIN. DEWATER BASIN USING A "DIRTBAG" MANUFACTURED BY ACF ENVIRONMENTAL OR APPROVED EQUAL.

EXTENDED-DETENTION BASIN #3 DETAILS
(EXISTING SEDIMENT BASIN TO BE CONVERTED TO PERMANENT BASIN)

1	11/19/15	PER CITY COMMENTS RECVD 9/25/15

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STORM WATER MANAGEMENT DETAILS
LIBERTY MOUNTAIN DRIVE (PHASE 2)
ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA (CITY PROJECT# 15029-RW)

PROJECT NO.	20151033
LATITUDE:	N37°21'42"
LONGITUDE:	W79°09'42"
DATE:	08/24/2015
DRAWN BY:	RKW
CHECKED BY:	PCP

COMMONWEALTH OF VIRGINIA
PATRICK C. PROFFITT
Lic. No. 034330
11/19/2015
PROFESSIONAL ENGINEER

CITY PROJECT # 15029-RW
H&P CROSS REF# 20150502

SHEET NO.
C7.0

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NOTE: NO ANALYSIS WAS PERFORMED ON THIS CHANNEL, AS NO CONCENTRATED FLOW IS DISCHARGED TO THIS LOCATION IN THE POST-DEVELOPED CONDITION

AREA USED FOR OVERALL PRE/POST DEVELOPMENT RUNOFF COMPARISON

NOTE: NO ANALYSIS WAS PERFORMED ON THIS CHANNEL, AS NO CONCENTRATED FLOW IS DISCHARGED TO THIS LOCATION IN THE POST-DEVELOPED CONDITION

POA 1

POA 2

POA 3

POA 4

DA1

DA2

DA3

DA4

Tc FLOW PATH (TYP)

NORTH

100 50 0 100 200
GRAPHIC SCALE IN FEET
1" = 100'

Pre-developed Drainage Area Calculations

Description		DA1	DA2	DA3	DA4	Overall*
Total Area	AC	22.4	6.5	15.0	2.7	79.4
Impervious Area	AC	0.0	0.0	0.0	0.0	0.0
Pervious Area	AC	22.4	6.5	15.0	2.7	79.4
C-Value		0.30	0.30	0.30	0.30	0.30
Time of Concentration	MIN	16	14	14	15	16
Design Flow (2-YR)	CFS	18.2	5.6	13.0	2.3	64.7
Design Flow (10-YR)	CFS	25.1	7.7	17.8	3.1	89.0

*Note: "Overall" drainage area includes post-developed drainage area boundaries, for the purposes of computing pre-development vs. post-development runoff totals.

1	11/19/15	PER CITY COMMENTS RECVD 9/25/15

PRE-DEVELOPED DRAINAGE AREA MAP
LIBERTY MOUNTAIN DRIVE (PHASE 2)
ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA (CITY PROJECT# 15029-RW)

HURT & PROFFITT
2524 LANGHORNE ROAD
LYNCHBURG VA 24501
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SHEET NO.
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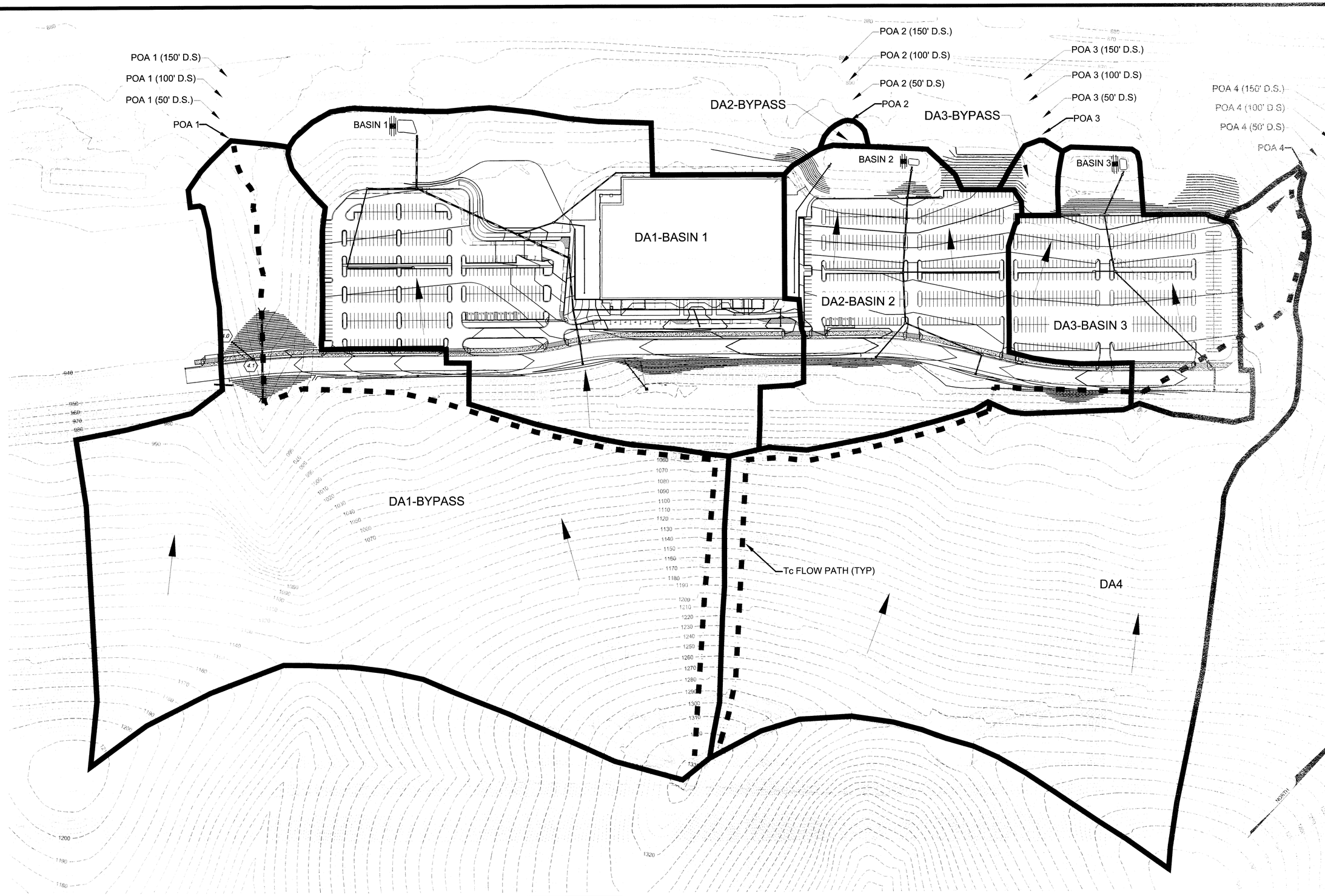

Post-Developed Drainage Area Calculations										
Description		DA1-Basin1	DA1-Bypass	DA2-Basin 2	DA2-Bypass	DA3-Basin 3	DA3-Bypass	DA4		Overall
Total Area	AC	16.0	27.0	8.1	0.1	5.7	0.4	22.1		79.4
Impervious Area	AC	8.5	0.6	4.0	0.0	4.0	0.0	0.0		17.1
Pervious Area	AC	7.5	26.4	4.1	0.1	1.7	0.4	22.1		62.3
C-Value		0.62	0.31	0.60	0.30	0.72	0.30	0.30		0.43
Time of Concentration	MIN	5	18	5	5	5	5	17		18
Design Flow (2-YR)	CFS	**41.0**	**21.4**	**20.1**	**0.1**	**16.9**	**0.5**	**17.5**		**87.4**
Design Flow (10-YR)	CFS	**55.7**	**29.6**	**27.3**	**0.2**	**23.0**	**0.7**	**24.1**		**120.7**
Combined Routed Flow (2-YR)	CFS	**21.8**		**1.1**		**0.6**		**N/A**		**38.9**
Combined Routed Flow (10-YR)	CFS	**30.0**		**3.5**		**0.8**		**N/A**		**53.4**

Overall Drainage Area Calculations Summary (Entire Site)			
Description		Pre-Developed	Post-Developed
Total Area	AC	79.4	79.4
Impervious Area	AC	0.0	17.1
Pervious Area	AC	79.4	62.3
C-Value		0.30	0.43
Time of Concentration	MIN	16	18
Total Outflow (2-YR)	CFS	**64.7**	**38.9**
Total Outflow (10-YR)	CFS	**89.0**	**53.4**

ADEQUATE CHANNEL NOTE:

SEE PROJECT CALCULATIONS FOR ADEQUATE CHANNEL CALCULATIONS AND CROSS SECTIONS CORRESPONDING TO THE POINTS OF ANALYSIS SHOWN ON THIS SHEET.

100 50 0 100 200
GRAPHIC SCALE IN FEET
1" = 100'

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POST-DEVELOPED DRAINAGE AREA MAP
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H&P CROSS REF# 20150502

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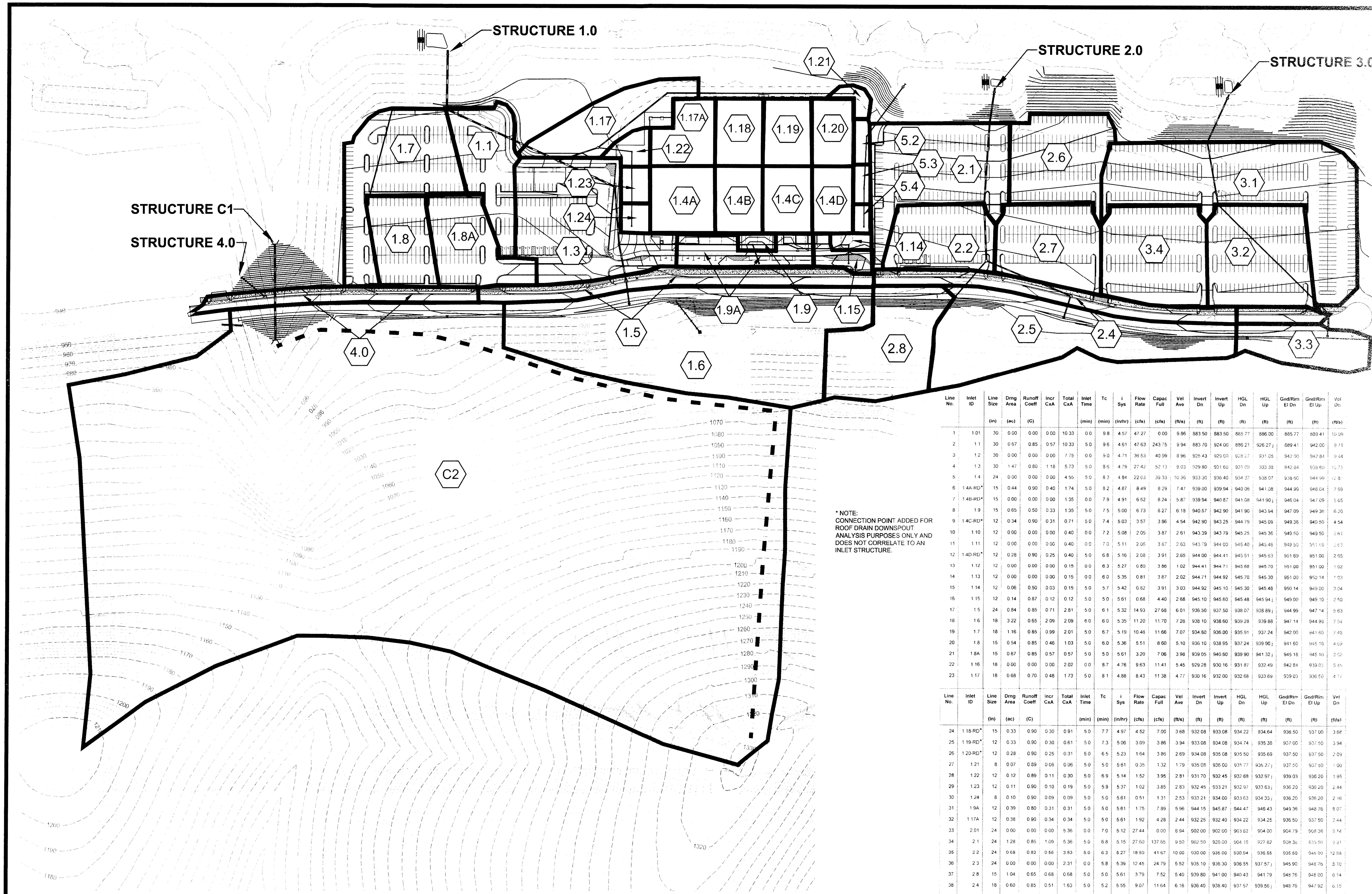

100 50 0 100 200
GRAPHIC SCALE IN FEET
1" = 100'

* NOTE:
CONNECTION POINT ADDED FOR ROOF DRAIN DOWNSPOUT ANALYSIS PURPOSES ONLY AND DOES NOT CORRELATE TO AN INLET STRUCTURE.

Line No.	Inlet ID	Line Size (in)	Drng Area (ac)	Runoff Coeff (C)	Incr CxA	Total CxA	Inlet Time (min)	Tc (min)	i Sys (in/hr)	Flow Rate (cfs)	Capac Full (cfs)	Vel Ave (ft/s)	Invert Dn (ft)	Invert Up (ft)	HGL Dn (ft)	HGL Up (ft)	Gnd/Rim El Dn (ft)	Gnd/Rim El Up (ft)	Vel Dn (ft/s)
1	1.01	30	0.00	0.00	0.00	10.33	0.0	9.8	4.57	47.27	0.00	9.86	883.50	883.50	885.77	886.00	885.77	889.41	10.09
2	1.1	30	0.67	0.85	0.57	10.33	5.0	9.6	4.61	47.63	243.75	9.94	883.70	924.00	886.21	926.27 j	889.41	942.00	9.71
3	1.2	30	0.00	0.00	0.00	7.75	0.0	9.0	4.71	36.53	40.99	8.96	926.43	929.00	928.27	931.05	942.00	942.84	9.44
4	1.3	30	1.47	0.80	1.18	5.73	5.0	8.6	4.79	27.42	52.13	9.03	929.80	931.60	931.09	933.38	942.84	938.60	10.75
5	1.4	24	0.00	0.00	0.00	4.55	5.0	8.3	4.84	22.03	39.33	10.36	933.30	936.40	934.37	938.07	938.60	944.99	12.81
6	1.4A-RD*	15	0.44	0.90	0.40	1.74	5.0	8.2	4.87	8.49	8.29	7.47	939.00	939.94	940.06	941.08	944.99	946.04	7.69
7	1.4B-RD*	15	0.00	0.00	0.00	1.35	0.0	7.9	4.91	6.62	8.24	5.87	939.94	940.87	941.08	941.90 j	946.04	947.09	5.65
8	1.9	15	0.65	0.50	0.33	1.35	5.0	7.5	5.00	6.73	8.27	6.18	940.87	942.90	941.90	943.94	947.09	949.36	6.20
9	1.4C-RD*	12	0.34	0.90	0.31	0.71	5.0	7.4	5.03	3.57	3.86	4.54	942.90	943.25	944.79	945.09	949.36	949.50	4.54
10	1.10	12	0.00	0.00	0.00	0.40	0.0	7.2	5.08	2.05	3.87	2.61	943.39	943.79	945.25	945.36	949.50	949.50	2.61
11	1.11	12	0.00	0.00	0.00	0.40	0.0	7.0	5.11	2.05	3.87	2.63	943.79	944.00	945.40	945.46	949.50	951.69	2.63
12	1.4D-RD*	12	0.28	0.90	0.25	0.40	5.0	6.8	5.16	2.08	3.91	2.65	944.00	944.41	945.51	945.63	951.69	951.00	2.65
13	1.12	12	0.00	0.00	0.00	0.15	0.0	6.3	5.27	0.80	3.86	1.02	944.41	944.71	945.68	945.70	951.00	951.00	1.02
14	1.13	12	0.00	0.00	0.00	0.15	0.0	6.0	5.35	0.81	3.87	2.02	944.71	944.92	945.70	945.30	951.00	950.14	1.03
15	1.14	12	0.06	0.50	0.03	0.15	5.0	5.7	5.42	0.82	3.91	3.03	944.92	945.10	945.30	945.48	950.14	949.00	3.04
16	1.15	12	0.14	0.87	0.12	0.12	5.0	5.0	5.61	0.68	4.40	2.68	945.10	945.60	945.48	945.94 j	949.00	949.10	2.50
17	1.5	24	0.84	0.85	0.71	2.81	5.0	6.1	5.32	14.93	27.68	6.01	936.50	937.50	938.07	938.89 j	944.99	947.14	5.63
18	1.6	18	3.22	0.65	2.09	2.09	6.0	6.0	5.35	11.20	11.70	7.26	938.10	938.60	939.28	939.88	947.14	944.99	7.54
19	1.7	18	1.16	0.85	0.99	2.01	5.0	6.7	5.19	10.46	11.66	7.07	934.80	936.00	935.91	937.24	942.00	941.60	7.46
20	1.8	15	0.54	0.85	0.46	1.03	5.0	6.0	5.36	5.51	8.60	5.10	936.10	938.95	937.24	939.90 j	941.60	945.18	4.69
21	1.8A	15	0.67	0.85	0.57	0.57	5.0	5.0	5.61	3.20	7.06	3.98	939.05	940.60	939.90	941.32 j	945.18	945.10	3.50
22	1.16	18	0.00	0.00	0.00	2.02	0.0	8.7	4.76	9.63	11.41	5.45	929.28	930.16	931.87	932.49	942.84	939.03	5.45
23	1.17	18	0.68	0.70	0.48	1.73	5.0	8.1	4.88	8.43	11.38	4.77	930.16	932.00	932.68	933.69	939.03	936.50	4.77
24	1.18-RD*	15	0.33	0.90	0.30	0.91	5.0	7.7	4.97	4.52	7.00	3.68	932.08	933.08	934.22	934.64	936.50	937.00	3.68
25	1.19-RD*	12	0.33	0.90	0.30	0.61	5.0	7.3	5.06	3.09	3.86	3.94	933.08	934.08	934.74	935.38	937.00	937.50	3.94
26	1.20-RD*	12	0.28	0.90	0.25	0.31	5.0	6.5	5.23	1.64	3.86	2.69	934.08	935.08	935.50	935.69	937.50	937.50	2.09
27	1.21	8	0.07	0.89	0.06	0.06	5.0	5.0	5.61	0.35	1.32	1.79	935.08	936.00	935.77	936.27 j	937.50	937.50	1.00
28	1.22	12	0.12	0.89	0.11	0.30	5.0	6.9	5.14	1.52	3.95	2.81	931.70	932.45	932.68	932.97 j	939.03	936.20	1.95
29	1.23	12	0.11	0.90	0.10	0.19	5.0	5.9	5.37	1.02	3.85	2.83	932.45	933.21	932.97	933.63 j	936.20	936.20	2.44
30	1.24	8	0.10	0.90	0.09	0.09	5.0	5.0	5.61	0.51	1.31	2.53	933.21	934.00	933.63	934.33 j	936.20	936.20	2.16
31	1.9A	12	0.39	0.80	0.31	0.31	5.0	5.0	5.61	1.75	7.89	5.96	944.15	945.87	944.47	946.43	949.36	948.76	8.07
32	1.17A	12	0.38	0.90	0.34	0.34	5.0	5.0	5.61	1.92	4.28	2.44	932.25	932.40	934.22	934.25	936.50	937.50	2.44
33	2.01	24	0.00	0.00	0.00	5.36	0.0	7.0	5.12	27.44	0.00	8.94	902.00	902.00	903.82	904.00	904.79	908.36	9.14
34	2.1	24	1.28	0.85	1.09	5.36	5.0	6.8	5.15	27.60	137.65	9.50	902.50	926.00	904.18	927.82	908.36	935.50	9.81
35	2.2	24	0.68	0.83	0.56	3.53	5.0	6.3	5.27	18.59	41.67	10.00	930.00	936.00	930.94	936.55	935.50	945.90	12.88
36	2.3	24	0.00	0.00	0.00	2.31	0.0	5.8	5.39	12.45	24.79	5.52	935.10	936.30	936.55	937.57 j	945.90	948.76	5.10
37	2.8	15	1.04	0.65	0.68	0.68	5.0	5.0	5.61	3.79	7.52	5.40	939.80	941.00	940.43	941.79	948.76	948.00	6.14
38	2.4	18	0.60	0.85	0.51	1.63	5.0	5.2	5.55	9.07	11.64	6.16	936.40	938.40	937.57	939.56 j	948.76	947.92	6.15
39	2.5	18	1.73	0.65	1.12	1.12	5.0	5.0	5.61	6.31	11.73	4.96	938.50	939.00	939.56	939.97 j	947.92	945.85	4.71
40	2.7	15	0.82	0.80	0.66	0.66	5.0	5.0	5.61	3.68	7.27	5.27	937.60	940.00	938.23	940.77	945.90	944.40	5.94
41	2.6	15	0.87	0.85	0.74	0.74	5.0	5.0	5.61	4.15	9.89	6.27	929.00	930.50	929.57	931.32	935.50	937.05	7.70
42	3.01	18	0.00	0.00	0.00	3.84	0.0	9.7	4.59	17.63	0.00	10.03	898.50	898.50	899.95	900.16	900.75	904.25	10.08
43	3.1	18	2.07	0.85	1.76	3.84	5.0	9.6	4.61	17.72	55.65	19.05	900.41	922.00	900.99	923.45	904.25	938.23	27.96
44	3.2	18	1.18	0.80	0.94	2.09	5.0	9.2	4.68	9.75	22.06	9.25	932.00	937.00	932.70	938.20	938.23	944.40	12.09
45	3.3	15	0.00	0.00	0.00	0.33	0.0	5.5	5.47	1.78	7.07	2.73	937.30	940.60	938.20	941.13 j	944.40	949.36	1.67
46	3.4	15	0.50	0.65	0.33	0.33	5.0	5.0	5.61	1.82	6.49	4.08	940.72	941.20	941.17	941.74	949.36	947.20	4.54
47	3.5	15	1.02	0.80	0.82	0.82	5.0	5.0	5.61	4.58	8.98	6.20	938.50	939.25	939.13	940.12	944.40	944.40	7.35
48	C2	30	23.90	0.30	7.17	7.17	16.1	16.1	3.72	26.71	128.13	13.83	895.10	914.62	895.88	916.38	899.60	919.12	20.42
49	4.1	15	0.44	0.90	0.40	0.40	5.0	5.0	5.61	2.22	22.69	7.80	928.50	936.40	928.76	936.99	930.20	943.20	11.73
50	5.1	12	0.00	0.00	0.00	0.17	0.0	11.1	4.36	0.75	0.00	2.57	903.80	903.80	904.16	904.25	905.00	908.00	2.93
51	5.2	12	0.07	0.90	0.06	0.17	5.0	9.2	4.67	0.80	17.45	3.08	903.90	930.00	904.26	930.37	908.00	936.80	3.17
52	5.3	12	0.07	0.90	0.06	0.11	5.0	6.8	5.16	0.56	3.86	3.09	933.10	934.20	933.36	934.51	936.80	936.80	3.49
53	5.4	8	0.05	0.90	0.05	0.05	5.0	5.0	5.61	0.25	1.32	1.97	934.20	935.00	934.51	935.23 j	936.80	936.80	1.59

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STORM SEWER DRAINAGE AREA MAP
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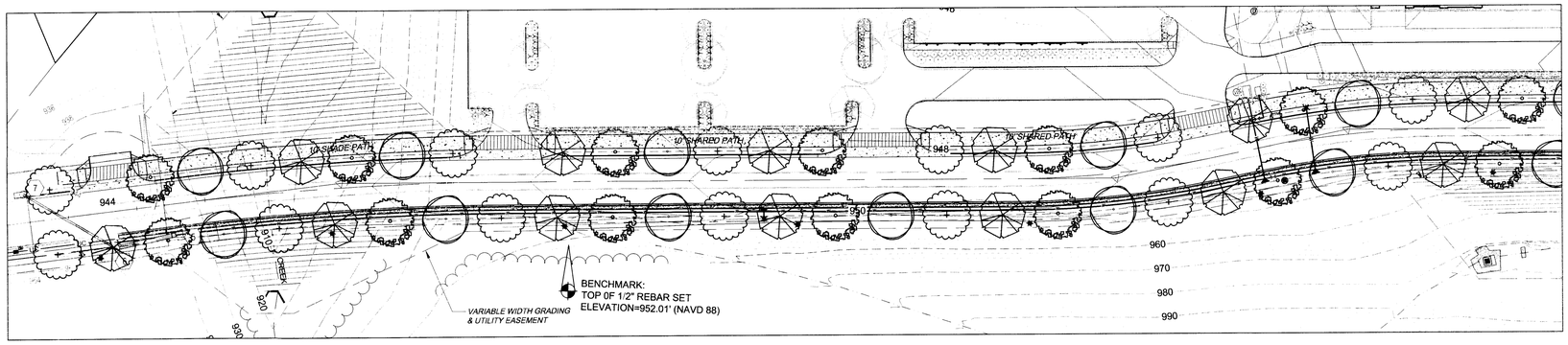
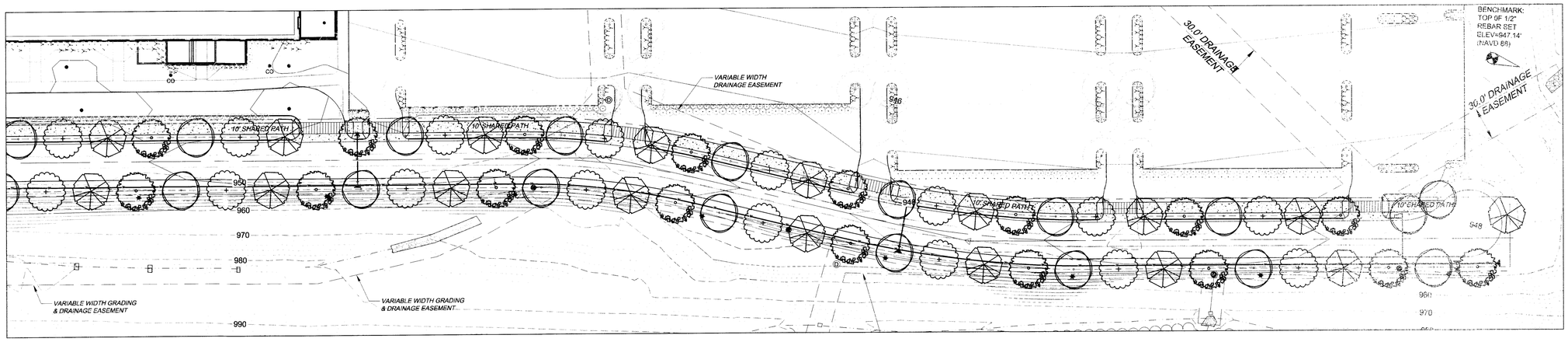
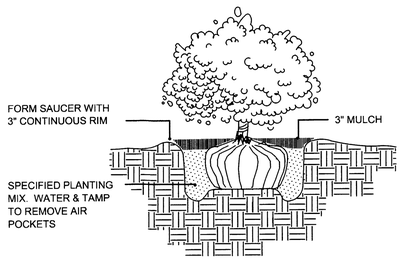




SHRUB PLANTING DETAIL

NO SCALE



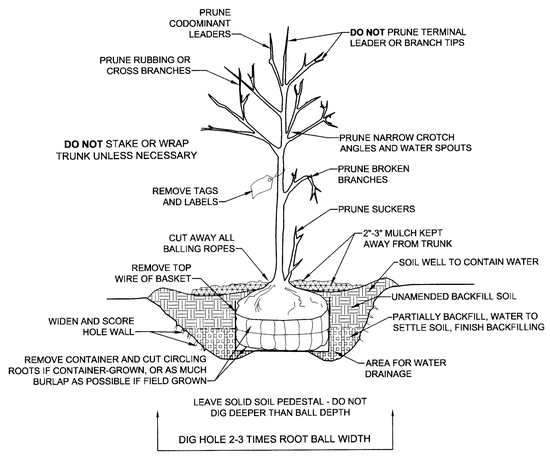
PLANTING, FERTILIZING, AND WATERING SCHEDULE FOR PERIOD OF ONE YEAR AFTER INSTALLATION.

PLANT TREES, SHRUBS AND GROUNDCOVERS AS PER THE PLANTING DETAIL. PLANT EVERGREEN MATERIALS BETWEEN SEPTEMBER 1 AND DECEMBER 1 OR IN SPRING BEFORE NEW GROWTH BEGINS. PLANT DECIDUOUS MATERIALS IN A DORMANT CONDITION. IF OWNER REQUIRES PLANTING AT OTHER TIMES, PLANTS SHALL BE SPRAYED WITH ANTI-DESICCANT PRIOR TO DIGGING.

WATER PLANTINGS HEAVILY ONCE A WEEK DURING PERIODS OF INADEQUATE RAINFALL. WATER SLOWLY AND ALLOW WATER TO REACH TOP OF PLANT SAUCER. CHECK SOIL MOISTURE WITH AN APPROPRIATE INSTRUMENT PRIOR TO WATERING TO PREVENT OVER WATERING.

INCORPORATE SLOW RELEASE FERTILIZER, PREFERABLY COMPOSED OF 25-50% WATER INSOLUBLE NITROGEN (WIN) INTO THE SOIL BACKFILL AT PLANTING TIME. IF, DURING THE GROWING SEASON, GROWTH SEEMS SLOW OR COLOR IS PALER THAN NORMAL HAVE SOIL TESTED AND FERTILIZE AS PER RESULTING RECOMMENDATIONS.

SOIL AMENDMENTS.
WHEN EXISTING SOIL ON SITE IS NOT ADEQUATE TO SUPPORT VIGOROUS GROWTH, PROVIDE PLANTING MIXTURE CONSISTING OF 5 PARTS EXISTING SOIL TO 1 PART PEAT MOSS AND 1 LB. OF PLANT FERTILIZER FOR EACH CUBIC YARD OF MIXTURE OR EQUIVALENT.



TREE & SHRUB PLANTING DETAIL

N.T.S.

LANDSCAPE SCHEDULE - SEC.35.1-25.1.5

NAME:	QUANTITY	SIZE/CALIPER
WILLOW OAK	30	2" CAL.
SHUMARD OAK	30	2" CAL.
WHITE ASH	30	2" CAL.
HONEY LOCUST	30	2" CAL.

LANDSCAPE CALCULATIONS:

SEC. 35.1-25.1.B. STREET TREES (2,400 FEET):
1 SHADE TREE/40 OF STREET FRONTAGE.
120 TREES REQUIRED.
120 TREES PROPOSED.

NOTE:
LANDSCAPE PLANTINGS ARE SHOWN FOR INFORMATION PURPOSES ONLY. ACTUAL PLANTING SPECIES MAY VARY BASED ON AVAILABILITY AND APPROVAL FROM THE CITY OF LYNCHBURG.

80 40 0 80 160
GRAPHIC SCALE IN FEET
1" = 80'

1	11/19/15	PER CITY COMMENTS RECVD 9/25/15

HURT & PROFFITT
2524 LANGHORNE ROAD
LYNCHBURG VA 24501
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LANDSCAPE PLAN
LIBERTY MOUNTAIN DRIVE (PHASE 2)
ROAD AND WATER LINE EXTENSION
LYNCHBURG, VIRGINIA (CITY PROJECT# 15029-RW)

PROJECT NO.	20151033
LATITUDE:	N37°21'42"
LONGITUDE:	W79°09'42"
DATE:	08/24/2015
DRAWN BY:	RKW
CHECKED BY:	PCP

COMMONWEALTH OF VIRGINIA
PATRICK C. PROFFITT
Lic. No. 034330
11/19/2015
PROFESSIONAL ENGINEER

CITY PROJECT #	15029-RW
H&P CROSS REF#	20150502

SHEET NO.
L1.0

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