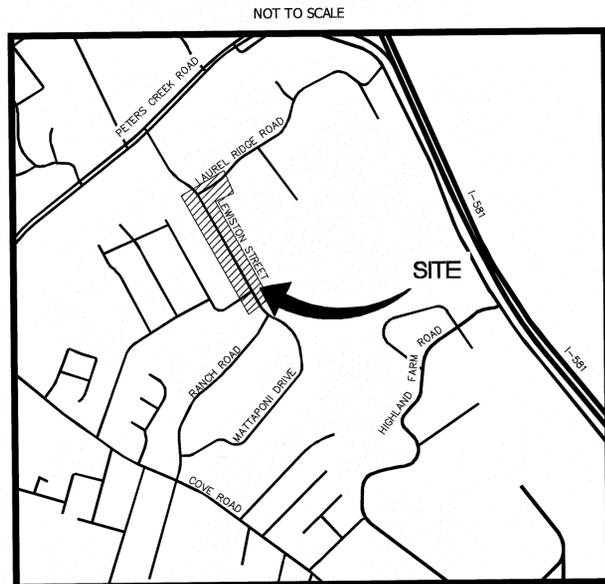


PROJECT LOCATION MAP



DEPARTMENT OF PUBLIC WORKS
 STORMWATER DIVISION
 1 802 COURTLAND ROAD, NE
 ROANOKE, VIRGINIA 24012
 PHONE: (540) 853-5900
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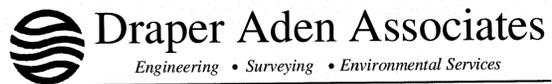
INDEX OF SHEETS

C001	COVER SHEET
C002	GENERAL NOTES & LEGEND
C003	EROSION & SEDIMENT CONTROL NOTES AND NARRATIVE
C101	EXISTING CONDITIONS
C102	EXISTING CONDITIONS
C103	EXISTING CONDITIONS
C104	EXISTING CONDITIONS
C200	KEY SHEET
C201	SITE & GRADING PLAN
C202	SITE & GRADING PLAN
C203	SITE & GRADING PLAN
C204	STORM SEWER PROFILES
C301	UTILITY & SITE DETAILS
C302	UTILITY & SITE DETAILS
C303	UTILITY & SITE DETAILS
C304	EROSION & SEDIMENT CONTROL DETAILS

SITE SUMMARY

TAX MAP NUMBER: #9999998 (RIGHT-OF-WAY)
 LOCATION: LAUREL RIDGE ROAD/LEWISTON STREET
 ROANOKE, VIRGINIA
 PRESENT ZONING: R-7, ROS
 PRESENT USE: RESIDENTIAL/RIGHT-OF-WAY
 DISTURBED AREA: WITHIN PAVED ROADWAY: 0.33 AC
 OUTSIDE PAVED ROADWAY: 0.37 AC

CONSULTING ENGINEERS



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 Charlottesville, VA
 Hampton Roads, VA
 Coats, NC

DAA PROJECT NO: B141208-01
 SUBMITTAL DATE: AUGUST 21, 2015

COMMISSION NUMBER: _____



PROJECT NAME

LAUREL RIDGE RD / LEWISTON ST
 DRAINAGE IMPROVEMENTS

CITY STORMWATER PLAN NUMBER: 5906

CITY PLANNING NUMBER: CP150030

REVISION BY	DESCRIPTION:	DATE

APPROVED FOR CONSTRUCTION

<i>Draper Aden</i> STORMWATER MANAGER	<u>11/12/2015</u> DATE
<i>Robert K. Benton</i> DIRECTOR OF PUBLIC WORKS	<u>11/16/15</u> DATE
<i>Sharon M. Knoll</i> ASSISTANT CITY MANAGER - OPERATIONS	<u>11/16/15</u> DATE

ADVERTISED DATE: _____

SET NUMBER: _____

SHEET NUMBER: 1 OF 16

LAUREL RIDGE RD / LEWISTON ST DRAINAGE IMPROVEMENTS

GENERAL SITE & ESC NOTES:

- GENERAL SITE INFORMATION:
 - TOPOGRAPHIC SURVEY PERFORMED BY DRAPER ADEN ASSOCIATES DURING THE WEEK OF OCTOBER 15, 2014. REFER TO SHEET C101 FOR ADDITIONAL SURVEY NOTES.
 - SITE CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING GENERAL REQUIREMENTS:
 - FIELD LAYOUT SHALL BE BASED ON THE DIMENSIONS SHOWN ON THE DRAWINGS. DIMENSIONS ARE FROM INSIDE BOTTOM FACE OF CURB, UNLESS NOTED OTHERWISE.
 - ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REQUIREMENTS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL NECESSARY PERMITS PRIOR TO THE START OF CONSTRUCTION, AND TO PAY ALL NECESSARY PERMIT AND UTILITY CONNECTION FEES.
 - NOTHING ON THESE CONTRACT DRAWINGS SHALL BE CONSTRUED AS A GUARANTEE THAT UTILITIES INDICATED AS EXISTING ARE IN THE LOCATION INDICATED OR THAT THEY ACTUALLY EXIST, OR THAT OTHER EXISTING UTILITIES ARE NOT WITHIN THE AREA OF OPERATIONS. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL MAKE ALL NECESSARY INVESTIGATIONS TO DETERMINE THE EXISTENCE, LOCATIONS, AND ELEVATIONS OF EXISTING UTILITIES IN THE WORK AREA. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE PROTECTION OF EXISTING UTILITIES AND STRUCTURES WITHIN THE CONSTRUCTION ZONE. DAMAGE TO STRUCTURES, UTILITIES, AND EQUIPMENT TO REMAIN SHALL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE, IN ACCORDANCE WITH THE STATE AND LOCAL REQUIREMENTS, THE OWNER'S REPRESENTATIVE, AND THE AUTHORITIES HAVING JURISDICTION. CONTRACTOR SHALL CONTACT MISS UTILITY AT 811, AT LEAST THREE WORKING DAYS PRIOR TO ANY EARTH MOVING OR DIGGING ACTIVITIES.
 - CONTRACTOR SHALL OBTAIN ADVANCE APPROVAL FROM THE CITY OF ROANOKE FOR ANY WORK PERFORMED IN ROADWAYS OR WALKWAYS ADJACENT TO SITE AND FOR ANY DETOURING OF TRAFFIC. PROVIDE ALL SAFETY MEASURES AND DEVICES REQUIRED BY APPLICABLE REGULATORY AGENCIES. TRAFFIC SHALL BE MAINTAINED AT ALL TIMES IN ACCORDANCE WITH THE 2011 VIRGINIA WORK AREA PROTECTION MANUAL. ONE-WAY TRAFFIC WILL BE PERMITTED FOR LIMITED DISTANCES ONLY AS APPROVED BY THE CITY OF ROANOKE.
 - CONTRACTOR SHALL BARRICADE OPEN EXCAVATIONS OCCURRING AS PART OF THIS WORK AND POST WITH WARNING LIGHTS. OPERATE WARNING LIGHTS AS RECOMMENDED BY AUTHORITIES HAVING JURISDICTION.
 - IT IS THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH SECTION 59.1-406, ET SEQ. OF THE CODE OF VIRGINIA (OVERHEAD HIGH VOLTAGE LINES SAFETY ACT).
 - ALL IMPROVEMENTS AND WORK SHALL BE SUBJECT TO INSPECTION BY THE CITY OF ROANOKE AND ITS REPRESENTATIVES.
 - CONTRACTOR SHALL MAINTAIN EMERGENCY, SERVICE, AND DELIVERY VEHICLE ACCESS TO THE SURROUNDING AREA; COORDINATE WITH THE CITY OF ROANOKE.
 - CONTRACTOR SHALL MINIMIZE DISRUPTION OF PEDESTRIAN ACCESS. CONTRACTOR SHALL PROVIDE TEMPORARY CONSTRUCTION FENCE APPROXIMATELY ALONG ACTIVE LIMITS OF CONSTRUCTION AS SHOWN. CONTRACTOR SHALL MAKE NECESSARY ADJUSTMENTS IN CONSTRUCTION FENCING AND/OR INSTALL ADDITIONAL CONSTRUCTION FENCING AS REQUIRED TO MAINTAIN ACCESS REQUIREMENTS AND TO SEPARATE PEDESTRIAN TRAFFIC FROM THE ACTIVE CONSTRUCTION ZONE. ESTABLISH NEW PEDESTRIAN ACCESS ROUTES PRIOR TO ERECTING FENCE. APPROPRIATE ONE-WAY SIGNAGE SHALL BE MAINTAINED.
 - ALL UTILITY INSTALLATION AND RELOCATION SHALL BE UNDERGROUND IN ACCORDANCE WITH SEC. 36.2-610 OF THE CITY OF ROANOKE ZONING ORDINANCE.
- TOTAL DISTURBED AREA: 0.70 AC
- MINIMUM MEASURES ARE INDICATED. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION AND MAINTENANCE OF THESE MINIMUM REQUIREMENTS AND ALL OTHER MEASURES NECESSARY TO CONTROL, FILTER, AND PREVENT SEDIMENT FROM LEAVING THE SITE. EROSION CONTROL MEASURES SHALL BE PLACED PRIOR TO COMMENCEMENT OF UPSLOPE EARTHWORK ACTIVITIES. IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN PROVIDED. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL UPSLOPE DISTURBED AREAS ARE STABILIZED.
- ALL WORK SHALL BE SUBJECT TO INSPECTION BY THE CITY OF ROANOKE AND THE COMMONWEALTH OF VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY. THESE AGENCIES HAVE THE RIGHT TO ADD OR DELETE E&S CONTROLS IN THE FIELD. ANY CHANGES REQUIRED BY THE INSPECTOR OR NOTED DEFICIENCIES SHALL BE CORRECTED BY THE CONTRACTOR.
- PERMANENT SEEDING SHALL BE APPLIED TO INDICATED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. PERMANENT SEEDING SHALL ALSO BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN 1 YEAR.
- IF PERMANENT SEEDING IS NOT APPLIED TO DENUDED AREAS WITHIN 7 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE, THE ASSOCIATED AREA SHALL BE TEMPORARILY SEEDED. TEMPORARY SEEDING SHALL BE APPLIED WITHIN 7 DAYS ON DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE, BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 14 DAYS.
- DUST SHALL BE CONTROLLED IN ACCORDANCE WITH VESCH, STD. 3.39.
- SILT FENCE AND ALL OTHER EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE INSTALLED BEFORE ANY UPSLOPE ACTIVITIES BEGIN.
- THE METHODS AND STRATEGIES TO CONTAIN EROSION AND SEDIMENT AS LISTED IN THE DOCUMENT ENTITLED "EROSION AND SEDIMENT CONTROL NARRATIVE - LAUREL RIDGE RD / LEWISTON ST DRAINAGE IMPROVEMENTS", SHALL BE FOLLOWED DURING CONSTRUCTION.
- 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.
- ADJUST WATER METER BOXES AS NECESSARY - CONTACT THE WESTERN VIRGINIA WATER AUTHORITY FOR CONSULTATION.
- NO ACCESSORY STRUCTURES ARE ANTICIPATED TO BE AFFECTED BY THIS PROJECT. ANY DRIVEWAYS AFFECTED BY THE PROJECT SHALL NOT RESULT IN AN INCREASE IN DRIVEWAY WIDTH AND MATERIAL SHALL BE MATCHED IN KIND.
- ALL TREES TO REMAIN SHALL BE PROTECTED DURING CONSTRUCTION. ANY TREES THAT ARE REQUIRED TO BE REMOVED FOR CONSTRUCTION SHALL BE REPLACED IN KIND OR A FIELD REVISION MUST BE SUBMITTED DOCUMENTING THAT THE TREES ARE NOT REQUIRED FOR COMPLIANCE WITH THE LANDSCAPING REQUIREMENTS SET FORTH IN THE CITY'S SUBDIVISION OR ZONING ORDINANCE.

EROSION & SEDIMENT CONTROL NOTES:

- THE FULL EROSION AND SEDIMENT CONTROL NARRATIVE AND STORMWATER MANAGEMENT REPORT, ALONG WITH THE SUPPORTING APPENDICES, SHALL BE KEPT ON-SITE AT ALL TIMES DURING CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN THE APPROVED VERSION OF THIS DOCUMENT FROM THE OWNER OR ENGINEER PRIOR TO BEGINNING CONSTRUCTION.
- RETAIN A COPY OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION, ON-SITE AND ADHERE TO THE STANDARDS LISTED AT ALL TIMES.
- PRIOR TO ANY LAND DISTURBING ACTIVITY, CONTRACTOR SHALL PROVIDE THE NAME, CERTIFICATION INFORMATION, AND CONTACT INFORMATION OF THE DESIGNATED RESPONSIBLE LAND DISTURBER (RLD) TO THE ROANOKE COUNTY VSPM PROGRAM ADMINISTRATOR.

CONSTRUCTION PROCEDURE REQUIREMENTS

NOTICE: ALL LANDOWNERS, DEVELOPERS, AND CONTRACTORS - FAILURE TO COMPLY WITH THE CONSTRUCTION PROCEDURE REQUIREMENTS LISTED BELOW MAY RESULT IN THE COSTLY REMOVAL OF STRUCTURES, TIME DELAYS, OR THE ISSUANCE OF A STOP WORK ORDER.

- RIGHT-OF-WAY EXCAVATION PERMIT - PRIOR TO THE COMMENCEMENT OF ANY DIGGING, ALTERATION OR CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY (STREETS, ALLEYS, PUBLIC EASEMENTS), A RIGHT-OF-WAY EXCAVATION PERMIT SHALL BE APPLIED FOR AND OBTAINED BY THE CONTRACTOR FROM THE CITY OF ROANOKE.
- LAND DISTURBANCE PERMIT - AN APPROVED EROSION AND SEDIMENT CONTROL PLAN FOR ANY BORROW/FILL SITES ASSOCIATED WITH THE PROJECT MUST BE SUBMITTED PRIOR TO THE ISSUANCE OF A LAND DISTURBANCE PERMIT.
- PLANS AND PERMITS - A COPY OF THE PLANS AS APPROVED BY THE CITY (SIGNED BY THE PROPER CITY OFFICIALS) AND ALL PERMITS ISSUED BY THE CITY SHALL BE AVAILABLE AT THE CONSTRUCTION SITE AT ALL TIMES OF ONGOING CONSTRUCTION.
- LOCATION OF UTILITIES - THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.
- CONSTRUCTION ENTRANCE - THE CONTRACTOR SHALL INSTALL AN ADEQUATE CONSTRUCTION ENTRANCE FOR ALL CONSTRUCTION RELATED EGRESS FROM THE SITE. SIZE AND COMPOSITION OF CONSTRUCTION ENTRANCE SHALL BE AS SHOWN ON THE PLANS.
- STREETS TO REMAIN CLEAN - IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT THE PUBLIC STREET ADJACENT TO THE CONSTRUCTION ENTRANCE REMAINS FREE OF MUD, DIRT, DUST, AND/OR ANY TYPE OF CONSTRUCTION MATERIALS OR LITTER AT ALL TIMES.
- BARRICADES/DITCHES - THE CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF ALL EXCAVATED DITCHES AND SHALL FURNISH AND ENSURE THAT ALL BARRICADES PROPER AND NECESSARY FOR THE SAFETY OF THE PUBLIC ARE IN PLACE.
- SEWER AND PAVEMENT REPLACEMENT - CONSTRUCTION OF STORM SEWERS AND THE REPLACEMENT OF PAVEMENT SHALL BE IN ACCORDANCE WITH APPROVED STANDARDS AND SPECIFICATIONS OF THE CITY OF ROANOKE AND THE WESTERN VIRGINIA WATER AUTHORITY.
- APPROVED PLANS/CONSTRUCTION CHANGES - ANY CHANGE OR VARIATION FROM CONSTRUCTION DESIGN AS SHOWN ON THE OFFICIALLY APPROVED PLANS SHALL BE APPROVED BY THE EROSION AND SEDIMENT CONTROL AGENCIES PRIOR TO SAID CHANGES OR VARIATION IN CONSTRUCTION BEING MADE.
- FINAL ACCEPTANCE/CITY - THE OWNER OR DEVELOPER SHALL FURNISH THE CITY OF ROANOKE'S PLANNING BUILDING AND DEVELOPMENT DEPARTMENT WITH A FIELD SURVEYED FINAL CORRECT SET OF AS-BUILT PLANS OF THE NEWLY CONSTRUCTED STORM DRAIN AND/OR STORMWATER MANAGEMENT FACILITIES PRIOR TO FINAL ACCEPTANCE AND ISSUANCE OF A CERTIFICATE OF OCCUPANCY BY THE CITY. AS-BUILT PLANS SHALL BE PROVIDED IN THE STATE PLACE VIRGINIA SOUTH COORDINATE SYSTEM, NAD 1983, FIPS 4502 FEET, US SURVEY FEET, DATUM N/A 83, IN THE FORM OF 1 PAPER COPY AND 1 DIGITAL AUTOCAD FILE.

GENERAL EROSION AND SEDIMENT CONTROL NOTES

- UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH) AND VIRGINIA REGULATIONS 9VAC25-840 EROSION AND SEDIMENT CONTROL REGULATIONS. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
- THE CITY OF ROANOKE 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.
- ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING, GRADING OR LAND-DISTURBING AND SEQUENCE OF CONSTRUCTION APPROVED.
- A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
- PRIOR TO LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS OR OFF-SITE FILL ACTIVITIES, THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND FOR APPROVAL BY THE CITY OF ROANOKE.
- THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE CITY OF ROANOKE.
- SITE GRADING IS TO DRAIN TO THE PERIMETER CONTROLS AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING CONSTRUCTION, UNTIL FINAL STABILIZATION IS ACHIEVED.
- DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
- THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY (AT LEAST DAILY) AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

EROSION & SEDIMENT CONTROL PHASING NOTES:

- THE CONTRACTOR WILL DESIGNATE AN EMPLOYEE CERTIFIED AS THE "RESPONSIBLE LAND DISTURBER" (RLD), BY THE COMMONWEALTH OF VIRGINIA, DEPARTMENT OF ENVIRONMENTAL QUALITY (VADEQ), WHO IS IN CHARGE OF AND IS RESPONSIBLE FOR CARRYING OUT THE LAND-DISTURBING ACTIVITIES ON THIS PROJECT. THIS EMPLOYEE SHALL ALSO INSPECT FOR DEFICIENCIES IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND AT LEAST WEEKLY WHEN NO RAINFALL OCCURS. CONTRACTORS SHALL PROVIDE WRITTEN DOCUMENTATION TO THE CITY OF ROANOKE THAT THEY MEET THIS REQUIREMENT PRIOR TO AWARDDING OF THE CONSTRUCTION CONTRACT, AND THE CITY OF ROANOKE SHALL PROVIDE THE NAME OF THE RLD TO VADEQ AND THE CITY OF ROANOKE PRIOR TO LAND DISTURBANCE. IN THE INTERIM UNTIL THE WORK STARTS, MATTHEW B. JAMES, P.E., DRAPER ADEN ASSOCIATES, IS THE RLD.
- AS FIRST STEP MEASURES, SILT FENCE SHALL BE INSTALLED AS INDICATED PRIOR TO UPSLOPE LAND DISTURBANCE.
- THROUGHOUT CONSTRUCTION ACTIVITIES, APPLY DUST CONTROL MEASURES ACCORDING TO VESCH STD. & SPEC. 3.39.
- PERMANENT SEEDING, TOPSOILING, AND MULCH WILL BE USED ON ALL DISTURBED AREAS THAT ARE NOT SCHEDULED TO RECEIVE LANDSCAPING (HARDWOOD MULCH, ETC.) ONCE BROUGHT TO FINAL GRADE.
- THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY (AT LEAST DAILY) AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY. IN ADDITION, THE RECEIVING STREAM IS A TMDL DESIGNATED STREAM. INSPECTIONS ARE TO OCCUR EVERY FOUR TO FIVE DAYS WITH AN ADDITIONAL INSPECTION WITHIN 24 HOURS OF A QUALIFYING RAIN EVENT (0.25" OF RAINFALL WITHIN 24 HOURS).
- ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL PROGRAM AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.

DRAPER ADEN ASSOCIATES REVIEW

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

NAME: ANDREW J. HEMMEN, E.I.T.		8/21/2015
STAFF ENGINEER	SIGNATURE	DATE
NAME: MATTHEW B. JAMES, P.E.		8/21/2015
PROJECT ENGINEER	SIGNATURE	DATE
NAME: LINDSAY B. LALLY, P.E.		8/21/2015
QUALITY REVIEWER	SIGNATURE	DATE

ABBREVIATIONS

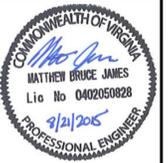
TW	TOP OF WALL
BW	BOTTOM OF WALL
TC	TOP OF CURB
BC	BOTTOM OF CURB
EP	EDGE OF PAVEMENT

LEGEND

EXISTING		PROPOSED
--- 1000 ---	CONTOURS	--- 1000 ---
x 1561.3	GROUND ELEVATION	1528.3 TC 1528.3
	SHRUB	N/A
	TREE	N/A
	TREE REMOVAL	X
	FENCE	N/A
	PROPERTY LINE/ROW	---
	LIMITS OF DISTURBANCE	---
	BUILDING	N/A
	ASPHALT	N/A
	CONCRETE	N/A
	GRAVEL	N/A
	SIGN	N/A
	BOLLARD	N/A
	STORM SEWER	---
	STORM CLEANOUT	N/A
	STORM MANHOLE	⊗
	STORM DRAINAGE INLET	■
	DRY SWALE	---
	SANITARY MANHOLE	N/A
	SANITARY SEWER	N/A
	UNDERGROUND ELECTRIC	N/A
	OVERHEAD POWER	N/A
	GUY WIRE	N/A
	LIGHT POLE	N/A
	ELECTRIC POLE	N/A
	ELECTRIC MANHOLE	N/A
	WATER	N/A
	WATER VALVE	N/A
	FIRE HYDRANT	N/A
	WATER MANHOLE	N/A
	STEAM MANHOLE	N/A
	CNS	N/A
	TELEPHONE LINE	N/A
	UNDERGROUND TELEPHONE	N/A
	TELEPHONE BOX	N/A
	TELEPHONE MANHOLE	N/A
	TELEPHONE PEDESTAL	N/A
	TELEPHONE POLE	N/A
	ROD FOUND	N/A
	MONUMENT FOUND	N/A
	BENCHMARK	N/A
	SURFACE DRAINAGE	N/A
	IRON PIN FOUND	N/A
	GUARDRAIL	---
	TEMP. CONST. EASEMENT	---
	DRAINAGE EASEMENT	---

EROSION & SEDIMENT CONTROL LEGEND

No.	TITLE	KEY	SYMBOL
3.07	STORM DRAIN INLET PROTECTION	IP	
3.08	CULVERT INLET PROTECTION	CIP	
3.19	RIPRAP	RR	
3.30	TOPSOILING	TO	
3.32	PERMANENT SEEDING	PS	
3.35	MULCHING	MU	
3.36	SOIL STABILIZATION BLANKETS & MATTING	B/M	
3.38	TREE PRESERVATION AND PROTECTION	TP	
3.39	DUST CONTROL	DC	



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GENERAL NOTES & LEGEND
LAUREL RIDGE RD / LEWISTON ST
DRAINAGE IMPROVEMENTS
 ROANOKE, VIRGINIA

REVISIONS
DESIGNED BY: MBJ
DRAWN BY: AJH
CHECKED BY: LBL
SCALE: NO SCALE
DATE: AUGUST 21, 2015
PROJECT NUMBER: B14120B-01
C002

EROSION AND SEDIMENT CONTROL NARRATIVE

A. INTRODUCTION
THE PROJECT AREA IS LOCATED ALONG LAUREL RIDGE ROAD AND LEWISTON STREET IN THE CITY OF ROANOKE, VIRGINIA. THE PURPOSE OF THIS PROJECT IS TO ALLEVIATE FLOODING, PARTICULARLY FOR PROPERTIES ALONG THE NORTH SIDE OF LEWISTON STREET. ADDITIONALLY, WATER QUALITY BMPs HAVE BEEN ADDED WHERE POSSIBLE THROUGHOUT THE PROJECT TO HELP WITH THE CITY'S WATER QUALITY INITIATIVES. THE TOTAL DISTURBED AREA IS 0.70 ACRES. OF THAT AREA, 0.33 ACRES IS LOCATED WITHIN THE EXISTING PAVEMENT OF LAUREL RIDGE ROAD AND LEWISTON STREET, AND THE REMAINING 0.37 ACRES IS ADJACENT TO THE ROADWAY.

B. EXISTING SITE CONDITIONS
THE PROJECT IS LOCATED WITHIN THE RIGHT-OF-WAY OF LAUREL RIDGE ROAD AND LEWISTON STREET. REFER TO FIGURE 1 FOR A DRAINAGE AREA MAP OF THE PROJECT AREA.

C. ADJACENT PROPERTY
THE PROJECT AREA IS SURROUNDED BY RESIDENTIAL DEVELOPMENT ZONED R-7 (SINGLE FAMILY RESIDENTIAL) AND ROS (RECREATIONAL AND OPEN SPACE). WITH PROPER SEDIMENT CONTROL IN PLACE TO CONTAIN SEDIMENT PRIOR TO ENTERING THE NEW AND EXISTING STORM DRAINAGE SYSTEM, NO ADVERSE EFFECT RESULTING FROM SEDIMENT DEPOSITION IS ANTICIPATED FOR THE ADJACENT PROPERTIES.

D. PLANNED EARTHWORK ACTIVITIES
TO MITIGATE EXISTING FLOODING AND IMPROVE WATER QUALITY OF THE DOWNSTREAM WATERSHED, WATER QUALITY SWALES (DRY SWALES) WILL BE BUILT ALONG THE SOUTHWESTERN SIDE OF LEWISTON STREET AND STORM SEWER WILL BE CONSTRUCTED UNDER LAUREL RIDGE ROAD AND LEWISTON STREET. ANY EXCESS OR UNSUITABLE MATERIAL WILL BE TRANSPORTED TO OFF-SITE DISPOSAL AREAS WITH SEPARATE EROSION AND SEDIMENT CONTROL PLANS APPROVED BY THE CITY OF ROANOKE. THE NAMES OF ANY OFFSITE AREAS MUST BE PROVIDED TO THE CITY OF ROANOKE BEFORE ANY SOIL IS TRANSPORTED OFFSITE. THE DEPTH OF TOPSOIL/SURFICIAL SOIL IN EXISTING VEGETATED AREAS IS APPROXIMATELY 2-3 INCHES. ANY IMPORTED MATERIAL REQUIRED FOR BACKFILLING, STONE BASES, ETC., IS PLANNED TO BE OBTAINED FROM COMMERCIAL REGIONAL QUARRIES. ALL OFF-SITE LAND DISTURBING AREAS FROM WHICH MATERIAL IS TO BE OBTAINED SHALL HAVE AN APPROVED EROSION AND SEDIMENT CONTROL PLAN.

E. SOILS
ACCORDING TO THE CUSTOM SOIL RESOURCE REPORT FOR ROANOKE COUNTY AND CITIES OF ROANOKE AND SALEM, VIRGINIA THE SOILS IN THE DRAINAGE AREA OF THE PROPOSED PROJECT ARE COMPRISED OF MAINLY FREDERICK URBAN LAND COMPLEX, WITH SMALL POCKETS OF COMBS LOAM AND FREDERICK SILT LOAM. SOILS WITHIN THE DISTURBED AREA OF THE PROJECT ARE PRIMARILY COMPOSED OF FREDERICK URBAN LAND COMPLEX. A SOIL MAP IS PROVIDED IN APPENDIX A. THE SITE AND SURROUNDING AREAS ARE PRIMARILY COMPOSED OF HYDROLOGIC SOIL GROUP 'B' SOILS.

F. CRITICAL EROSION AREAS
CRITICAL EROSION AREAS MAY BE ENCOUNTERED DURING GRADING OPERATIONS AS FOLLOWS:
• PROPOSED SLOPES NEAR 2:1 OR GREATER.
• DRAINAGE SWALES WHERE SURFACE RUNOFF WILL BE CONCENTRATED.
THE PROPOSED EROSION AND SEDIMENT CONTROL MEASURES ARE INTENDED TO MINIMIZE ANY POTENTIAL PROBLEMS AND PROMOTE STABILIZATION.

G. EROSION AND SEDIMENT CONTROL MEASURES
ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESC), LATEST EDITION, AS PROVIDED IN APPENDIX E AND IN CONFORMANCE WITH THE CONDITIONS OF APPLICABLE ENVIRONMENTAL PERMITS.

H. STRUCTURAL PRACTICES
1. STORM DRAIN INLET PROTECTION - STD. & SPEC. 3.07
STORM DRAIN INLET PROTECTION SHALL BE PLACED AT EXISTING AND PROPOSED GRATE INLETS TO PREVENT SEDIMENT FROM ENTERING THE STORM PIPING.
2. CULVERT INLET PROTECTION - STD. & SPEC. 3.08
CULVERT INLET PROTECTION SHALL BE INSTALLED AND CONSIST OF A SEDIMENT FILTER LOCATED AT THE INLET TO STORM SEWER CULVERTS, WHICH PREVENTS SEDIMENT FROM ENTERING, ACCUMULATING IN AND BEING TRANSPORTED BY THE CULVERT. IT PROVIDES EROSION CONTROL AT CULVERTS DURING THE PHASE OF THE PROJECT WHERE ELEVATIONS AND DRAINAGE PATTERNS ARE CHANGING, CAUSING ORIGINAL CONTROL MEASURES TO BE INEFFECTIVE.
3. RIPRAP - STD. & SPEC. 3.19
LARGE, LOOSE, ANGULAR STONE WITH FILTER FABRIC INSTALLED TO PROTECT SOIL FROM THE EROSIIVE FORCES OF CONCENTRATED RUNOFF OR STABILIZE SLOPES.

I. VEGETATIVE PRACTICES
GENERAL: A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED BY CONCRETE OR ASPHALT PAVEMENT. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE, AND WILL INHIBIT EROSION. NEW VEGETATION SHALL BE MAINTAINED FOR ONE FULL YEAR AFTER PLANTING. NEW SEEDING SHALL BE SUPPLIED WITH ADEQUATE MOISTURE, ESPECIALLY LATE IN THE SEASON, AND IN ABNORMALLY HOT OR DRY WEATHER. STABILIZATION PRACTICES SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE APPROPRIATE VESC STD. & SPEC. AS PROVIDED IN THE APPENDIX, AND THE EROSION AND SEDIMENT CONTROL PLAN. SELECTION OF THE APPROPRIATE SEED MIXTURE FOR TEMPORARY SEEDING WILL DEPEND UPON THE TIME OF YEAR IT IS APPLIED.
1. TOPSOILING - STD. & SPEC. 3.30
IN ORDER TO STABILIZE FINAL SITE GRADES, SUITABLE, ORGANIC GROWTH MEDIUM SHALL BE USED. THIS CAN BE ACCOMPLISHED THROUGH ON-SITE PRESERVATION OF EXISTING TOPSOIL OR IMPORTED TOPSOIL.
2. PERMANENT SEEDING - STD. & SPEC. 3.32
PERMANENT SEEDING SHALL ALSO BE USED ON ALL AREAS THAT ARE NOT AT FINAL GRADE AND THAT WILL BE LEFT DORMANT FOR A PERIOD OF MORE THAN 1 YEAR. UPON COMPLETION OF FINAL GRADING, PERMANENT SEEDING SHALL ALSO BE USED ON ALL AREAS NOT STABILIZED BY HARDSCAPE OR SODDING. IF CONFLICTS EXIST BETWEEN THE PROJECT SPECIFICATIONS AND THE VESC STD. & SPEC. 3.32, THE MORE STRINGENT REQUIREMENT SHALL APPLY AS DIRECTED BY THE ENGINEER. PERMANENT SEEDING MIXES AND RATES ARE FOUND ON SHEET C401.
3. MULCHING - STD. & SPEC. 3.35
APPLICATION OF PLANT RESIDUES OR OTHER SUITABLE MATERIAL SHALL BE INSTALLED TO PREVENT EROSION AND FOSTER GROWTH OF VEGETATION TO AREAS WHICH HAVE BEEN SEEDDED OR IN AREAS WHICH CANNOT BE SEEDDED BECAUSE OF SEASON TO PROVIDE SOME PROTECTION TO THE SOIL SURFACE.
4. SOIL STABILIZATION BLANKETS AND MATTING - STD. & SPEC. 3.36
BLANKETS AND MATTING SHALL BE USED TO AID IN CONTROLLING EROSION ON CRITICAL AREAS BY PROVIDING A MICROCLIMATE WHICH PROTECTS YOUNG VEGETATION AND PROMOTES ITS ESTABLISHMENT. IN ADDITION, SOME TYPES OF SOIL STABILIZATION MATS ARE ALSO USED TO REDUCE THE MAXIMUM PERMISSIBLE VELOCITY OF TURF GRASS STANDS IN CHANNELLED AREAS BY REINFORCING THE TURF TO RESIST THE FORCES OF EROSION DURING STORM EVENTS.
5. TREE PRESERVATION AND PROTECTION - STD. & SPEC. 3.38
DESIRABLE TREES SHALL BE PROTECTED FROM MECHANICAL AND OTHER INJURY DURING LAND DISTURBING ACTIVITY TO ENSURE THEIR SURVIVAL.
6. DUST CONTROL - STD. & SPEC. 3.39
DURING LAND DISTURBANCE, REDUCE SURFACE AND AIR MOVEMENT OF DUST IN AREAS SUBJECT TO DUST PROBLEMS IN ORDER TO PREVENT SOIL LOSS AND REDUCE THE PRESENCE OF POTENTIALLY HARMFUL AIRBORNE SUBSTANCES.

J. MANAGEMENT STRATEGIES
1. THE CONTRACTOR WILL DESIGNATE AN EMPLOYEE CERTIFIED AS THE "RESPONSIBLE LAND DISTURBER" (RLD), BY THE COMMONWEALTH OF VIRGINIA, DEPARTMENT OF ENVIRONMENTAL QUALITY (VADEQ), WHO IS IN CHARGE OF AND IS RESPONSIBLE FOR CARRYING OUT THE LAND-DISTURBING ACTIVITIES ON THIS PROJECT. THIS EMPLOYEE SHALL ALSO INSPECT FOR DEFICIENCIES IMMEDIATELY

AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND AT LEAST WEEKLY WHEN NO RAINFALL OCCURS. THE CONTRACTOR SHALL PROVIDE WRITTEN DOCUMENTATION TO THE CITY OF ROANOKE THAT THEY MEET THIS REQUIREMENT PRIOR TO CONSTRUCTION, AND THE CITY OF ROANOKE SHALL PROVIDE THE NAME OF THE RLD TO VADEQ PRIOR TO LAND DISTURBANCE. IN THE INTERIM UNTIL THE WORK STARTS, MATTHEW B. JAMES, P.E., DRAPER ADEN ASSOCIATES, IS THE RLD.
2. AS A FIRST STEP MEASURE, INLET PROTECTION AND TREE PROTECTION SHALL BE INSTALLED AS INDICATED PRIOR TO UPSLOPE LAND DISTURBANCE.
3. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
4. INLET PROTECTION AS INDICATED ON THE PLAN SHALL BE INSTALLED FOR NEW INLETS AS THEY BECOME OPERATIONAL.
5. ON-SITE STOCKPIILING OF SOIL IS NOT ANTICIPATED AT THIS TIME.
6. PERMANENT SEEDING WILL BE USED ON ALL DISTURBED AREAS THAT ARE NOT SCHEDULED TO RECEIVE HARDSCAPE, OR LANDSCAPING (HARDWOOD MULCH, ETC.).
7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL PROGRAM AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION. REMOVAL OF ALL TEMPORARY EROSION AND SEDIMENT CONTROLS SHALL BE COORDINATED AND AUTHORIZED BY THE CITY OF ROANOKE.

K. CONSTRUCTION SCHEDULE
1. INSTALLATION OF SEDIMENT CONTROLS; SILT FENCE AND INLET/CULVERT PROTECTION SHALL BE CONSTRUCTED AS FIRST STEPS IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.
2. CONSTRUCTION IS EXPECTED TO BEGIN IN THE SUMMER OF 2015 AND BE COMPLETED IN THE FALL OF 2015.
3. AFTER THE STABILIZATION OF THE SITE IS COMPLETE, EROSION AND SEDIMENT CONTROL DEVICES WILL BE REMOVED. EROSION AND SEDIMENT CONTROL MEASURES SHALL NOT BE REMOVED UNLESS AUTHORIZED BY THE CITY OF ROANOKE.

L. PERMANENT STABILIZATION
ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING, STABILIZATION MEASURES SHOWN ON THE PLANS, AND LANDSCAPING FOLLOWING THE FINAL GRADING.

M. MAINTENANCE
THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY (AT LEAST DAILY) AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY. IN ADDITION, THE RECEIVING STREAM IS A TMDL DESIGNATED STREAM. INSPECTIONS ARE TO OCCUR EVERY FOUR TO FIVE DAYS WITH AN ADDITIONAL INSPECTION WITHIN 24 HOURS OF A QUALIFYING RAIN EVENT (0.25" OF RAINFALL WITHIN 24 HOURS).
5. ALL DEVICES USED AT ENTRANCES TO THE STORM DRAIN SYSTEM SHALL BE CHECKED FOR THEIR PERFORMANCE. IF REPAIRS NEED TO BE MADE, THEY SHALL BE DONE IN A RESPONSIBLE MANNER.
6. SEDIMENT SHALL BE REMOVED FROM TRAPPING DEVICES WHEN THE SEDIMENT HAS ACCUMULATED TO ONE HALF THE DESIGN DEPTH OF THE BARRIER. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
7. ALL VEGETATED AREAS SHALL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND IS MAINTAINED. AREAS SHALL BE FERTILIZED AND REPAIRED BY RESEEDING AS NECESSARY.
8. ROANOKE CITY PERSONNEL WILL BE RESPONSIBLE FOR MAINTENANCE AFTER THE COMPLETION OF CONSTRUCTION, THE CONTRACTOR IS RELEASED FROM THE PROJECT, AND WARRANTIES FULFILLED.

STATE MINIMUM STANDARDS FOR EROSION CONTROL

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

- MS-1 PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR. STABILIZATION MEASURES ARE SHOWN ON THE SITE & GRADING PLAN SHEETS
MS-2 DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE. SOIL STOCKPILES IS NOT ANTICIPATED ON THIS PROJECT; HOWEVER, ANY SOIL STOCKPILES SHALL BE SURROUNDED BY SILT FENCE.
MS-3 A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT, IN THE OPINION OF THE DIVISION OF SOIL AND WATER CONSERVATION OF THE DEPARTMENT OF CONSERVATION AND RECREATION, IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION. PERMANENT VEGETATIVE COVER IS SPECIFIED IN UNPAVED AREAS.
MS-4 SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS, AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND DISTURBING ACTIVITY, AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE. SEDIMENT TRAPPING MEASURES ARE SHOWN ON THE SITE & GRADING PLAN SHEETS
MS-5 STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION. NOT APPLICABLE
MS-6 SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN. NOT APPLICABLE
A. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT TRAP SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA AND THE TRAP SHALL ONLY CONTROL DRAINAGE AREAS LESS THAN THREE ACRES.
B. THE SURFACE RUNOFF FROM DISTURBED AREAS THAT IS COMPRISED OF FLOW FROM DRAINAGE AREAS GREATER THAN OR EQUAL TO THREE ACRES SHALL BE CONTROLLED BY A SEDIMENT BASIN. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT BASIN SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA. THE OUTFALL SYSTEM SHALL, AT A MINIMUM, MAINTAIN THE STRUCTURAL INTEGRITY OF THE BASIN DURING A TWENTY-FIVE YEAR STORM OF 24-HOUR DURATION. RUNOFF COEFFICIENTS USED IN RUNOFF CALCULATIONS SHALL CORRESPOND TO A BARE EARTH CONDITION OR THOSE CONDITIONS EXPECTED TO EXIST WHILE THE SEDIMENT BASIN IS UTILIZED.
MS-7 CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM IS CORRECTED. SLOPE STABILIZATION MEASURES ARE SHOWN ON THE SITE & GRADING PLAN SHEETS, AS WELL AS THE DETAIL SHEETS.
MS-8 CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE. CONCENTRATED RUNOFF IS NOT EXPECTED ON CUT/FILL SLOPES OTHER THAN WITHIN THE PROPOSED OR MODIFIED CHANNELS.
MS-9 WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED. NOT ANTICIPATED. IF WATER IS OBSERVED SEEPING FROM A SLOPE FACE, THE CONTRACTOR SHOULD CONTACT THE OWNER BEFORE PROCEEDING.
MS-10 ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT. INLET PROTECTION IS SHOWN ON PROPOSED STORM SEWER INLETS.
MS-11 BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS OR PIPES ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL. SEE DETAIL SHEETS FOR LINING INFORMATION.
MS-12 WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE. DURING CONSTRUCTION, NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS. NOT APPLICABLE.
MS-13 WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX-MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL SHALL BE PROVIDED. NOT APPLICABLE.
MS-14 ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET. NOT APPLICABLE.
MS-15 THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED. NOT APPLICABLE.
MS-16 UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA: THE FOLLOWING CRITERIA MUST BE MET BY THE CONTRACTOR DURING CONSTRUCTION RELATED TO INSTALLATION OF STORM SEWER PIPE ALONG LEWISTON STREET AND LAUREL RIDGE ROAD.
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.
MS-17 WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PUBLIC ROAD SURFACE, THE ROAD SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL SUBDIVISION LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES. ALL WORK IS ANTICIPATED TO BE ACCESSED FROM THE RIGHT-OF-WAY, AND THEREFORE NO CONSTRUCTION ENTRANCE IS REQUIRED.
MS-18 ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION, OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED UNLESS OTHERWISE AUTHORIZED BY THE VESC ADMINISTRATOR. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION. ALL TEMPORARY MEASURES TO BE REMOVED PER THIS MINIMUM STANDARD.
MS-19 PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CRITERIA. STREAM RESTORATION AND RELOCATION PROJECTS THAT INCORPORATE NATURAL CHANNEL DESIGN CONCEPTS ARE NOT MAN-MADE CHANNELS AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS. THE PROJECT DISCHARGES INTO A MANMADE STORMWATER CONVEYANCE CHANNEL AT STRUCTURE 4A, WHICH HAS A TOTAL CONTRIBUTING DRAINAGE AREA OF 48.5 ACRES. THE PROJECT AREA (EXCLUDING UNDERGROUND PUBLIC UTILITY WORK IN THE ROADWAY) IS 0.37 ACRES, WHICH SATISFIES THE LIMITS OF ANALYSIS FOR CHANNEL PROTECTION AND FLOOD PROTECTION AND FLOOD PROTECTION. PEAK FLOWS FOR THE 10-YEAR STORM ARE SLIGHTLY LOWER IN THE POST-DEVELOPMENT CONDITION DUE TO THE RUNOFF REDUCTION ACHIEVED BY INSTALLATION OF DRY SWALES, WHICH SATISFIES THE FLOOD PROTECTION CRITERIA OF 9VAC25-870-66.

- A. CONCENTRATED STORMWATER RUNOFF LEAVING A DEVELOPMENT SITE SHALL BE DISCHARGED DIRECTLY INTO AN ADEQUATE NATURAL OR MAN-MADE RECEIVING CHANNEL, PIPE OR STORM SEWER SYSTEM. FOR THOSE SITES WHERE RUNOFF IS DISCHARGED INTO A PIPE OR PIPE SYSTEM, DOWNSTREAM STABILITY ANALYSES AT THE OUTFALL OF THE PIPE OR PIPE SYSTEM SHALL BE PERFORMED.
B. ADEQUACY OF ALL CHANNELS AND PIPES SHALL BE VERIFIED IN THE FOLLOWING MANNER:
(1) THE APPLICANT SHALL DEMONSTRATE THAT THE TOTAL DRAINAGE AREA TO THE POINT OF ANALYSIS WITHIN THE CHANNEL IS ONE HUNDRED TIMES GREATER THAN THE CONTRIBUTING DRAINAGE AREA OF THE PROJECT IN QUESTION; OR
(2)(A) NATURAL CHANNELS SHALL BE ANALYZED BY THE USE OF A TWO-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP CHANNEL BANKS NOR CAUSE EROSION OF CHANNEL BED OR BANKS.
(B) ALL PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS SHALL BE ANALYZED BY THE USE OF A TEN-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP ITS BANKS AND BY THE USE OF A TWO-YEAR STORM TO DEMONSTRATE THAT STORMWATER WILL NOT CAUSE EROSION OF CHANNEL BED OR BANKS; AND
(C) PIPES AND STORM SEWER SYSTEMS SHALL BE ANALYZED BY THE USE OF A TEN-YEAR STORM TO VERIFY THAT STORMWATER WILL BE CONTAINED WITHIN THE PIPE OR SYSTEM. IF EXISTING NATURAL RECEIVING CHANNELS OR PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS OR PIPES ARE NOT ADEQUATE, THE APPLICANT SHALL:
(1) IMPROVE THE CHANNELS TO A CONDITION WHERE A TEN-YEAR STORM WILL NOT OVERTOP THE BANKS AND A TWO-YEAR STORM WILL NOT CAUSE EROSION TO CHANNEL BED OR BANKS; OR
(2) IMPROVE THE PIPE OR PIPE SYSTEM TO A CONDITION WHERE THE TEN-YEAR STORM IS CONTAINED WITHIN THE APPURTENANCES;
(3) DEVELOP A SITE DESIGN THAT WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TWO-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A NATURAL CHANNEL OR WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TEN-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A MAN-MADE CHANNEL; OR
(4) PROVIDE A COMBINATION OF CHANNEL IMPROVEMENT, STORMWATER DETENTION OR OTHER MEASURES WHICH IS SATISFACTORY TO THE VESC AUTHORITY TO PREVENT DOWNSTREAM EROSION.
D. THE APPLICANT SHALL PROVIDE EVIDENCE OF PERMISSION TO MAKE THE IMPROVEMENTS.
E. ALL HYDROLOGIC ANALYSES SHALL BE BASED ON THE EXISTING WATERSHED CHARACTERISTICS AND THE ULTIMATE DEVELOPMENT CONDITION OF THE SUBJECT PROJECT.
F. IF THE APPLICANT CHOOSES AN OPTION THAT INCLUDES STORMWATER DETENTION, HE SHALL OBTAIN APPROVAL FROM THE VESC OF A PLAN FOR MAINTENANCE OF THE DETENTION FACILITIES. THE PLAN SHALL SET FORTH THE MAINTENANCE REQUIREMENTS OF THE FACILITY AND THE PERSON RESPONSIBLE FOR PERFORMING THE MAINTENANCE.
G. OUTFALL FROM A DETENTION FACILITY SHALL BE DISCHARGED TO A RECEIVING CHANNEL, AND ENERGY DISSIPATORS SHALL BE PLACED AT THE OUTFALL OF ALL DETENTION FACILITIES AS NECESSARY TO PROVIDE A STABILIZED TRANSITION FROM THE FACILITY TO THE RECEIVING CHANNEL.
H. ALL ON-SITE CHANNELS MUST BE VERIFIED TO BE ADEQUATE.
I. INCREASED VOLUMES OF SHEET FLOWS THAT MAY CAUSE EROSION OR SEDIMENTATION ON ADJACENT PROPERTY SHALL BE DIVERTED TO A STABLE OUTLET, ADEQUATE CHANNEL, PIPE OR PIPE SYSTEM, OR TO A DETENTION FACILITY.
J. IN APPLYING THESE STORMWATER MANAGEMENT CRITERIA, INDIVIDUAL LOTS OR PARCELS IN A RESIDENTIAL, COMMERCIAL OR INDUSTRIAL DEVELOPMENT SHALL NOT BE CONSIDERED TO BE SEPARATE DEVELOPMENT PROJECTS. INSTEAD, THE DEVELOPMENT, AS A WHOLE, SHALL BE CONSIDERED TO BE A SINGLE DEVELOPMENT PROJECT. HYDROLOGIC PARAMETERS THAT REFLECT THE ULTIMATE DEVELOPMENT CONDITION SHALL BE USED IN ALL ENGINEERING CALCULATIONS.
K. ALL MEASURES USED TO PROTECT PROPERTIES AND WATERWAYS SHALL BE EMPLOYED IN A MANNER WHICH MINIMIZES IMPACTS ON THE PHYSICAL, CHEMICAL AND BIOLOGICAL INTEGRITY OF RIVERS, STREAMS AND OTHER WATERS OF THE STATE.
L. ANY PLAN APPROVED PRIOR TO JULY 1, 2014, THAT PROVIDES FOR STORMWATER MANAGEMENT THAT ADDRESSES ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS SHALL SATISFY THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS IF THE PRACTICES ARE DESIGNED TO (I) DETAIN THE WATER QUALITY VOLUME AND TO RELEASE IT OVER 48 HOURS; (II) DETAIN AND RELEASE OVER A 24-HOUR PERIOD THE EXPECTED RAINFALL RESULTING FROM THE ONE YEAR, 24-HOUR STORM; AND (III) REDUCE THE ALLOWABLE PEAK FLOW RATE RESULTING FROM THE 1.5-, 2- AND 10-YEAR, 24-HOUR STORMS TO A LEVEL THAT IS LESS THAN OR EQUAL TO THE PEAK FLOW RATE FROM THE SITE ASSUMING IT WAS IN A GOOD FORESTED CONDITION, ACHIEVED THROUGH MULTIPLICATION OF THE FORESTED PEAK FLOW RATE BY A REDUCTION FACTOR THAT IS EQUAL TO THE RUNOFF VOLUME FROM THE SITE WHEN IT WAS IN A GOOD FORESTED CONDITION DIVIDED BY THE RUNOFF VOLUME FROM THE SITE IN ITS PROPOSED CONDITION, AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS AS DEFINED IN ANY REGULATIONS PROMULGATED PURSUANT TO § 10.1-562 OR 10.1-570 OF THE ACT.
M. FOR PLANS APPROVED ON AND AFTER JULY 1, 2014, THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF § 10.1-561 A OF THE ACT AND THIS SUBSECTION SHALL BE SATISFIED BY COMPLIANCE WITH WATER QUANTITY REQUIREMENTS IN THE STORMWATER MANAGEMENT ACT (§ 10.1-603.2 ET SEQ. OF THE CODE OF VIRGINIA) AND ATTENDANT REGULATIONS, UNLESS SUCH LAND-DISTURBING ACTIVITIES ARE IN ACCORDANCE WITH 4VAC50-60-48 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSM) PERMIT REGULATIONS.
N. COMPLIANCE WITH THE WATER QUANTITY MINIMUM STANDARDS SET OUT IN 4VAC50-60-66 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSM) PERMIT REGULATIONS SHALL BE DEEMED TO SATISFY THE REQUIREMENTS OF MINIMUM STANDARD 19.



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EROSION & SEDIMENT CONTROL NARRATIVE LAUREL RIDGE RD / LEWISTON ST DRAINAGE IMPROVEMENTS ROANOKE, VIRGINIA

Table with 2 columns: Field Name and Value. Fields include DESIGNED BY (MBJ), DRAWN BY (AJH), CHECKED BY (LBL), SCALE (NO SCALE), DATE (AUGUST 21, 2015), PROJECT NUMBER (B14120B-01), and a large revision number (C003).

This topographic survey of Lewiston Street, Drainage Project was completed under the direct and responsible charge of, Loren W. Knighting from an actual [X] Ground or [] Airborne survey made under my supervision; that the imagery and/or original data was obtained on October 15, 2014; and that this plot, map, or digital geospatial data including metadata meets minimum accuracy standards unless otherwise noted.

L. W. Knighting 4/22/2015

NOTES:

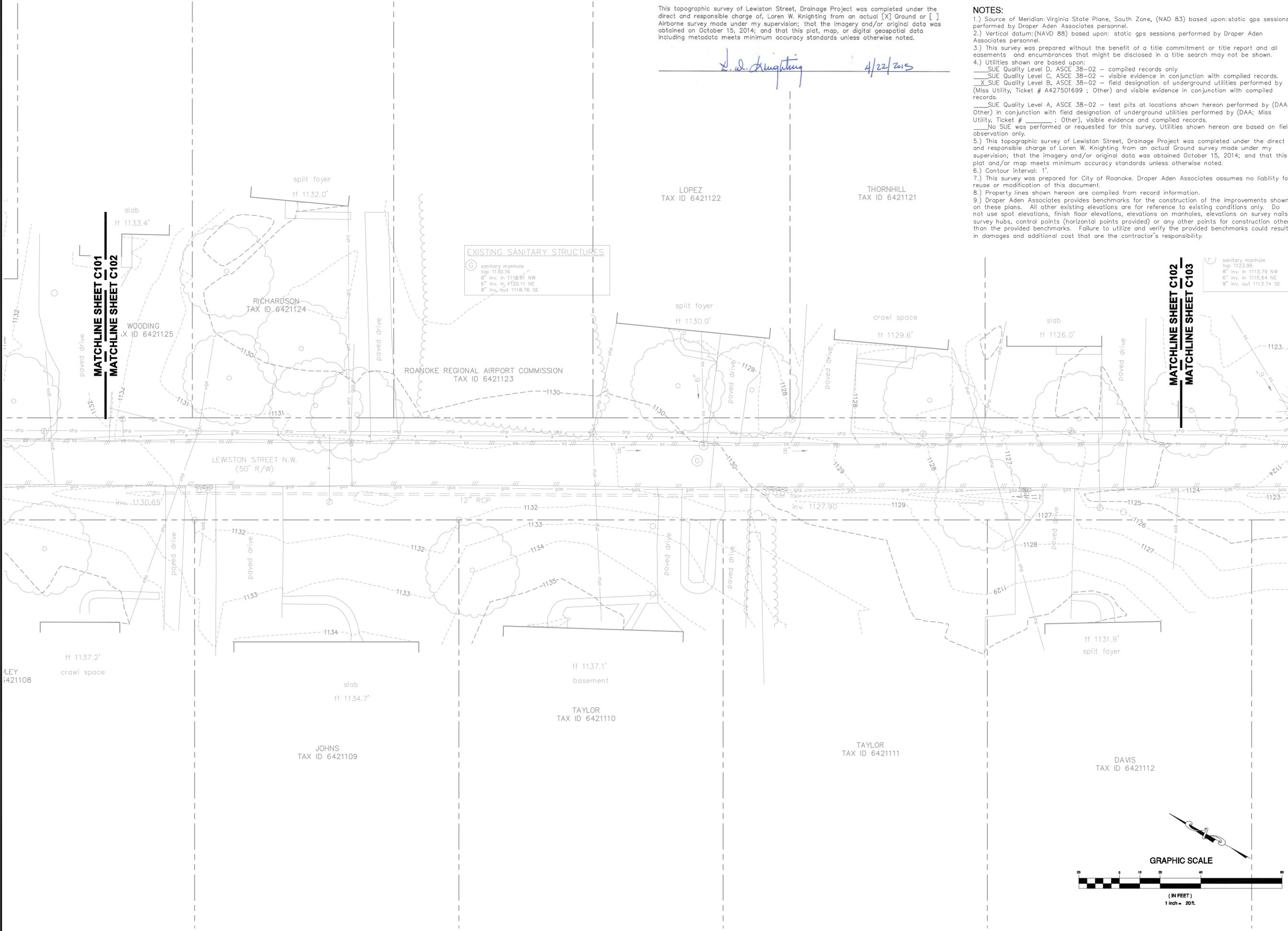
- 1.) Source of Meridian: Virginia State Plane, South Zone, (NAD 83) based upon: static gps sessions performed by Draper Aden Associates personnel.
- 2.) Vertical datum: (NAVD 88) based upon: static gps sessions performed by Draper Aden Associates personnel.
- 3.) This survey was prepared without the benefit of a title commitment or title report and all easements and encumbrances that might be disclosed in a title search may not be shown.
- 4.) Utilities shown are based upon:
 - SUE Quality Level D, ASCE 38-02 – compiled records only
 - SUE Quality Level C, ASCE 38-02 – visible evidence in conjunction with compiled records.
 - X SUE Quality Level B, ASCE 38-02 – field designation of underground utilities performed by (Miss Utility, Ticket # A427501699 ; Other) and visible evidence in conjunction with compiled records.
 - SUE Quality Level A, ASCE 38-02 – test pits at locations shown hereon performed by (DAA; Other) in conjunction with field designation of underground utilities performed by (DAA; Miss Utility, Ticket # _____ ; Other), visible evidence and compiled records.
- 5.) This topographic survey of Lewiston Street, Drainage Project was completed under the direct and responsible charge of Loren W. Knighting from an actual Ground survey made under my supervision; that the imagery and/or original data was obtained October 15, 2014; and that this plot and/or map meets minimum accuracy standards unless otherwise noted.
- 6.) Contour interval: 1'.
- 7.) This survey was prepared for City of Roanoke. Draper Aden Associates assumes no liability for reuse or modification of this document.
- 8.) Property lines shown hereon are compiled from record information.
- 9.) Draper Aden Associates provides benchmarks for the construction of the improvements shown on these plans. All other existing elevations are for reference to existing conditions only. Do not use spot elevations, finish floor elevations, elevations on manholes, elevations on survey nails, survey hubs, control points (horizontal points provided) or any other points for construction other than the provided benchmarks. Failure to utilize and verify the provided benchmarks could result in damages and additional cost that are the contractor's responsibility.



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EXISTING CONDITIONS
LAUREL RIDGE RD / LEWISTON ST
DRAINAGE IMPROVEMENTS
 ROANOKE, VIRGINIA

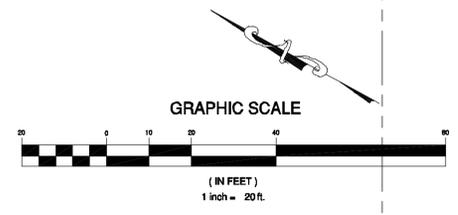
REVISIONS	
DESIGNED BY:	DAA
DRAWN BY:	JFF
CHECKED BY:	LWK
SCALE:	1" = 20'
DATE:	APRIL 22, 2015
PROJECT NUMBER:	B14120B-01
C102	



EXISTING SANITARY STRUCTURES

G sanitary manhole
 top 1130.16
 8" inv. in 1118.81 NW
 6" inv. in 1120.11 NE
 8" inv. out 1118.76 SE

F sanitary manhole
 top 1123.99
 8" inv. in 1113.79 NW
 6" inv. in 1115.64 NE
 8" inv. out 1113.74 SE



P:\14120B-01\14120B-01\CADD\14120B-01-C102.dwg August 21, 2015 3:54:37 PM

This topographic survey of Lewiston Street, Drainage Project was completed under the direct and responsible charge of, Loren W. Knighting from an actual [X] Ground or [] Airborne survey made under my supervision; that the imagery and/or original data was obtained on October 15, 2014; and that this plot, map, or digital geospatial data including metadata meets minimum accuracy standards unless otherwise noted.

L. W. Knighting 4/22/2015

NOTES:

- 1.) Source of Meridian: Virginia State Plane, South Zone, (NAD 83) based upon: static gps sessions performed by Draper Aden Associates personnel.
- 2.) Vertical datum: (NAVD 88) based upon: static gps sessions performed by Draper Aden Associates personnel.
- 3.) This survey was prepared without the benefit of a title commitment or title report and all easements and encumbrances that might be disclosed in a title search may not be shown.
- 4.) Utilities shown are based upon:
 - SUE Quality Level D, ASCE 38-02 – compiled records only
 - SUE Quality Level C, ASCE 38-02 – visible evidence in conjunction with compiled records.
 - X SUE Quality Level B, ASCE 38-02 – field designation of underground utilities performed by (Miss Utility, Ticket # A427501699 ; Other) and visible evidence in conjunction with compiled records.
 - SUE Quality Level A, ASCE 38-02 – test pits at locations shown hereon performed by (DAA; Other) in conjunction with field designation of underground utilities performed by (DAA; Miss Utility, Ticket # ; Other), visible evidence and compiled records.
- 5.) No SUE was performed or requested for this survey. Utilities shown hereon are based on field observation only.
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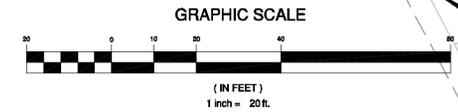
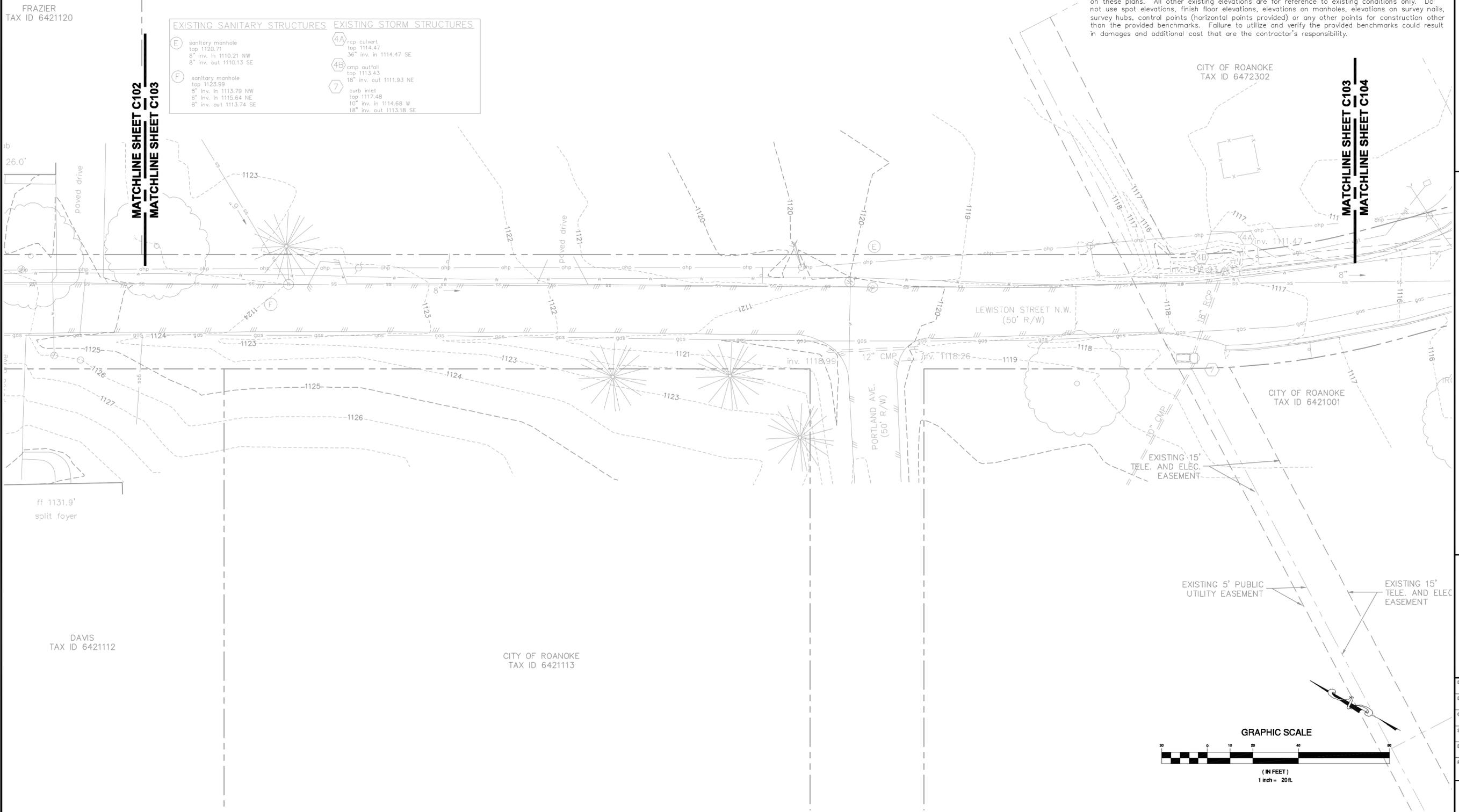
ROANOKE REGIONAL AIRPORT COMMISSION
TAX ID 6480101

FRAZIER
TAX ID 6421120

EXISTING SANITARY STRUCTURES		EXISTING STORM STRUCTURES	
(E)	sanitary manhole top 1120.71 8" inv. in 1110.21 NW 8" inv. out 1110.13 SE	(4A)	rcp culvert top 1114.47 36" inv. in 1114.47 SE
(F)	sanitary manhole top 1123.99 8" inv. in 1113.79 NW 6" inv. in 1115.64 NE 8" inv. out 1113.74 SE	(4B)	cmp outfall top 1113.43 18" inv. out 1111.93 NE
		(7)	curb inlet top 1117.48 10" inv. in 1114.68 W 18" inv. out 1113.18 SE

MATCHLINE SHEET C102
MATCHLINE SHEET C103

MATCHLINE SHEET C103
MATCHLINE SHEET C104



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2206 South Main Street
Blacksburg, VA 24060
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EXISTING CONDITIONS
LAUREL RIDGE RD / LEWISTON ST
DRAINAGE IMPROVEMENTS
ROANOKE, VIRGINIA

REVISIONS	
DESIGNED BY:	DAA
DRAWN BY:	JFF
CHECKED BY:	LWK
SCALE:	1" = 20'
DATE:	APRIL 22, 2015
PROJECT NUMBER:	B14120B-01
C103	

P:\14120B-01\14120B-01\14120B-01.dwg August 21, 2015 3:54:40 PM

This topographic survey of Lewiston Street, Drainage Project was completed under the direct and responsible charge of, Loren W. Knighting from an actual [X] Ground or [] Airborne survey made under my supervision; that the imagery and/or original data was obtained on October 15, 2014; and that this plot, map, or digital geospatial data including metadata meets minimum accuracy standards unless otherwise noted.

L. W. Knighting 4/22/2015

NOTES:

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 - X SUE Quality Level B, ASCE 38-02 – field designation of underground utilities performed by (Miss Utility, Ticket # A427501699 ; Other) and visible evidence in conjunction with compiled records.
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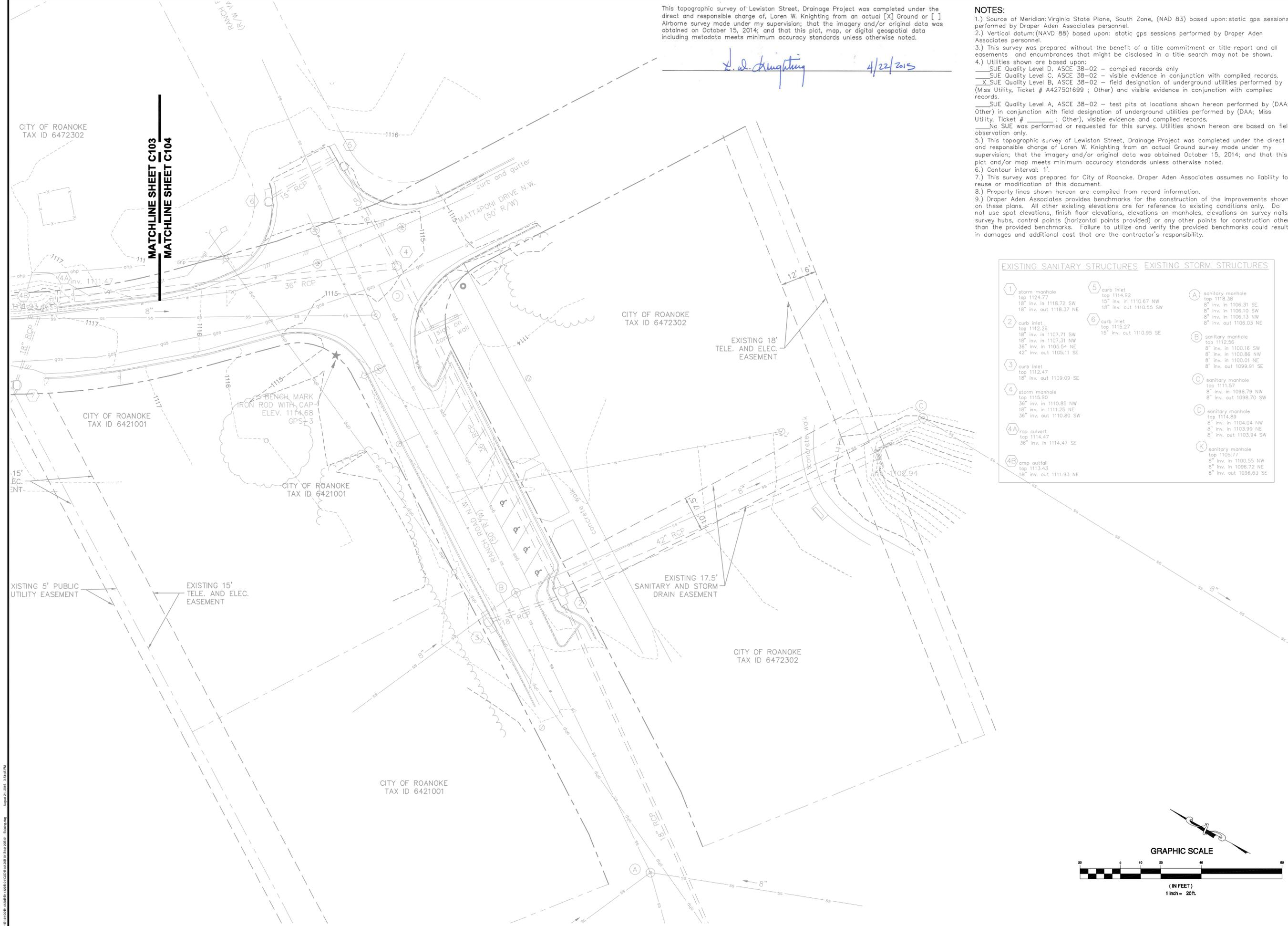


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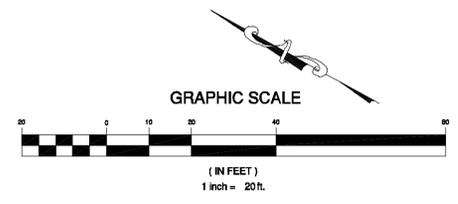
EXISTING CONDITIONS
LAUREL RIDGE RD / LEWISTON ST
DRAINAGE IMPROVEMENTS
 ROANOKE, VIRGINIA

REVISIONS

DESIGNED BY: DAA
 DRAWN BY: JFF
 CHECKED BY: LWK
 SCALE: 1" = 20'
 DATE: APRIL 22, 2015
 PROJECT NUMBER: B14120B-01
C104



EXISTING SANITARY STRUCTURES		EXISTING STORM STRUCTURES	
1 storm manhole top 1124.77 18" inv. in 1118.72 SW 18" inv. out 1118.37 NE	5 curb inlet top 1114.92 15" inv. in 1110.67 NW 18" inv. out 1110.55 SW	A sanitary manhole top 1118.38 8" inv. in 1106.31 SE 8" inv. in 1106.10 SW 8" inv. in 1106.13 NW 8" inv. out 1106.03 NE	
2 curb inlet top 1112.26 18" inv. in 1107.71 SW 18" inv. in 1107.31 NW 36" inv. in 1105.54 NE 42" inv. out 1105.11 SE	6 curb inlet top 1115.27 15" inv. out 1110.95 SE	B sanitary manhole top 1112.56 8" inv. in 1100.16 SW 8" inv. in 1100.86 NW 8" inv. in 1100.01 NE 8" inv. out 1099.91 SE	
3 curb inlet top 1112.47 18" inv. out 1109.09 SE		C sanitary manhole top 1111.57 8" inv. in 1098.79 NW 8" inv. out 1098.70 SW	
4 storm manhole top 1115.90 36" inv. in 1110.85 NW 18" inv. in 1111.25 NE 36" inv. out 1110.80 SW		D sanitary manhole top 1114.89 8" inv. in 1104.04 NW 8" inv. in 1103.99 NE 8" inv. out 1103.94 SW	
4A rcp culvert top 1114.47 36" inv. in 1114.47 SE		K sanitary manhole top 1105.77 8" inv. in 1100.55 NW 8" inv. in 1096.72 NE 8" inv. out 1096.63 SE	
4B cmp outfall top 1113.43 18" inv. out 1111.93 NE			



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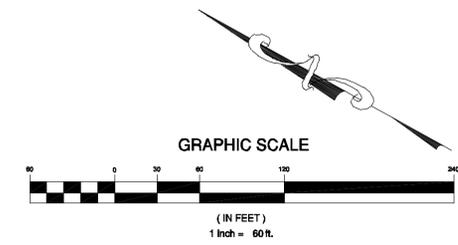
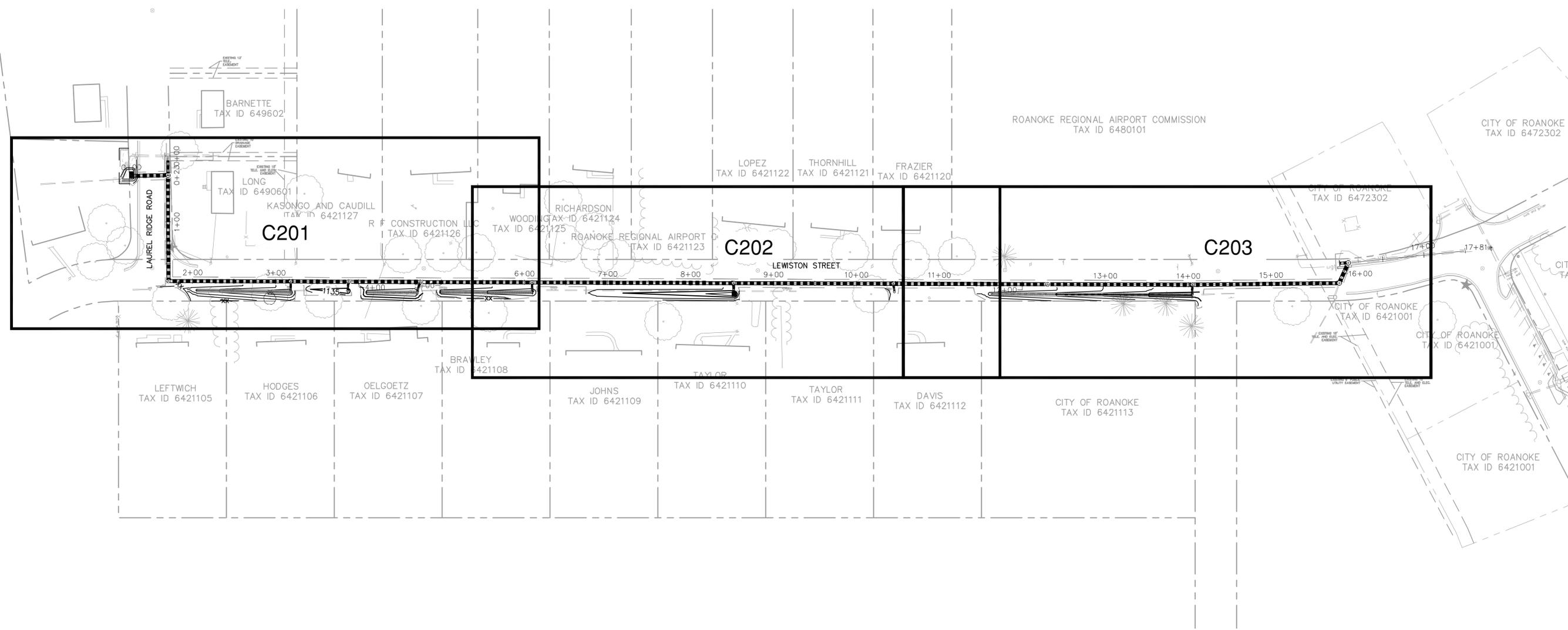
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 Blacksburg, VA 24060
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KEY SHEET
LAUREL RIDGE RD / LEWISTON ST
DRAINAGE IMPROVEMENTS
 ROANOKE, VIRGINIA

REVISIONS	

DESIGNED BY:	MBJ
DRAWN BY:	AJH
CHECKED BY:	LBL
SCALE:	1" = 60'
DATE:	AUGUST 21, 2015
PROJECT NUMBER:	B14120B-01
C200	

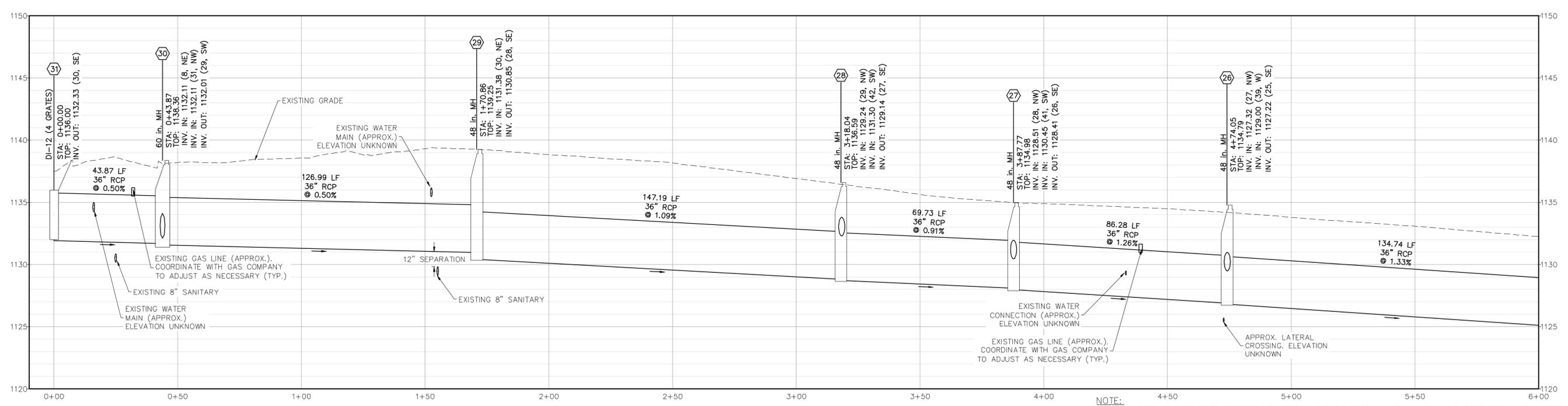
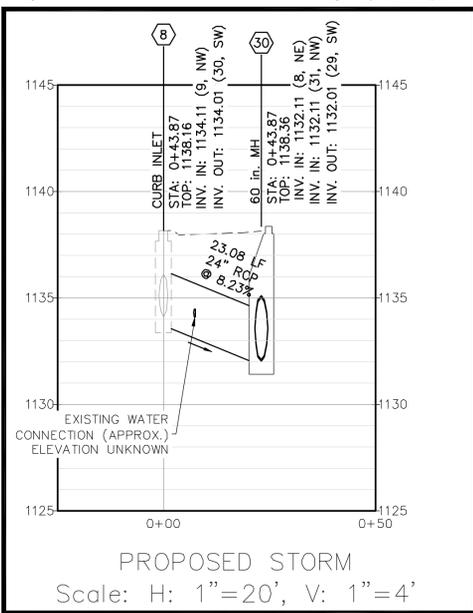
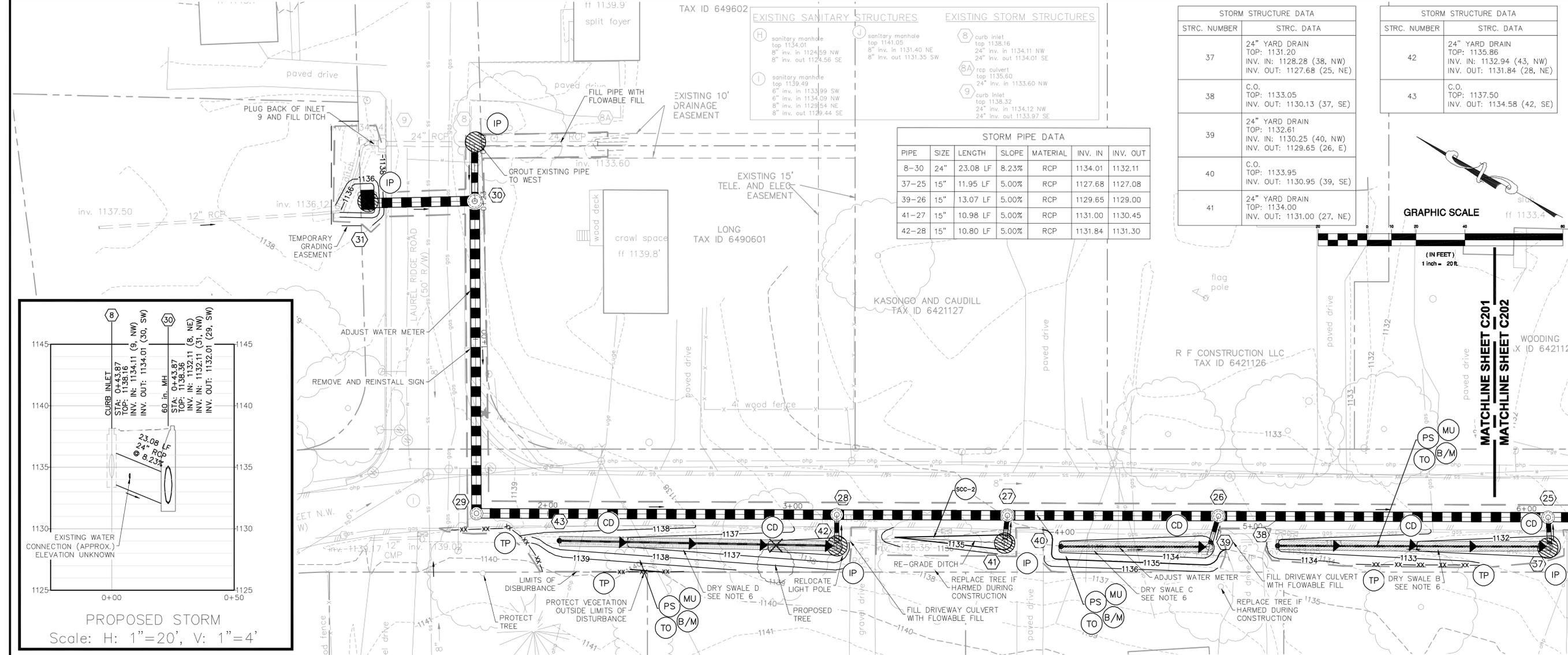




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SITE & GRADING PLAN
LAUREL RIDGE RD / LEWISTON ST
DRAINAGE IMPROVEMENTS
 ROANOKE, VIRGINIA

DESIGNED BY:	MBJ
DRAWN BY:	AJH
CHECKED BY:	LBL
SCALE:	1" = 20'
DATE:	AUGUST 21, 2015
PROJECT NUMBER:	B14120B-01
C201	



- NOTE:**
- WORK IS TO BE PERFORMED PER THE CITY OF ROANOKE RIGHT OF WAY EXCAVATION AND RESTORATION STANDARDS.
 - COORDINATE RELOCATION OF GAS LINE WITH GAS UTILITY COMPANY.
 - COORDINATE RELOCATION OF WATER AND SEWER LINES WITH THE WESTERN VIRGINIA WATER AUTHORITY.
 - WHERE WATER METER RELOCATION IS REQUIRED, THE EXISTING METER IS TO BE REUSED.
 - CHECK DAMS SHOWN ON THE PLANS ARE TO BE PERMANENT WATER QUALITY CHECK DAMS AND ARE TO FOLLOW MINIMUM STANDARD 3.13 OF THE VIRGINIA BMP CLEARINGHOUSE.
 - DRY SWALES ARE TO BE CONSTRUCTED AFTER ALL UPSLOPE AREAS HAVE BEEN FULLY STABILIZED.

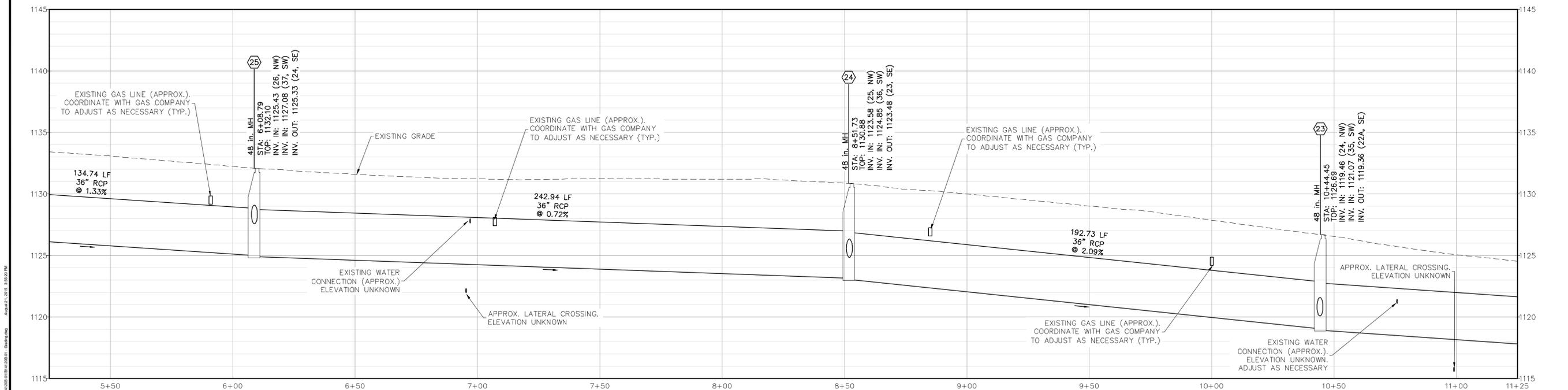
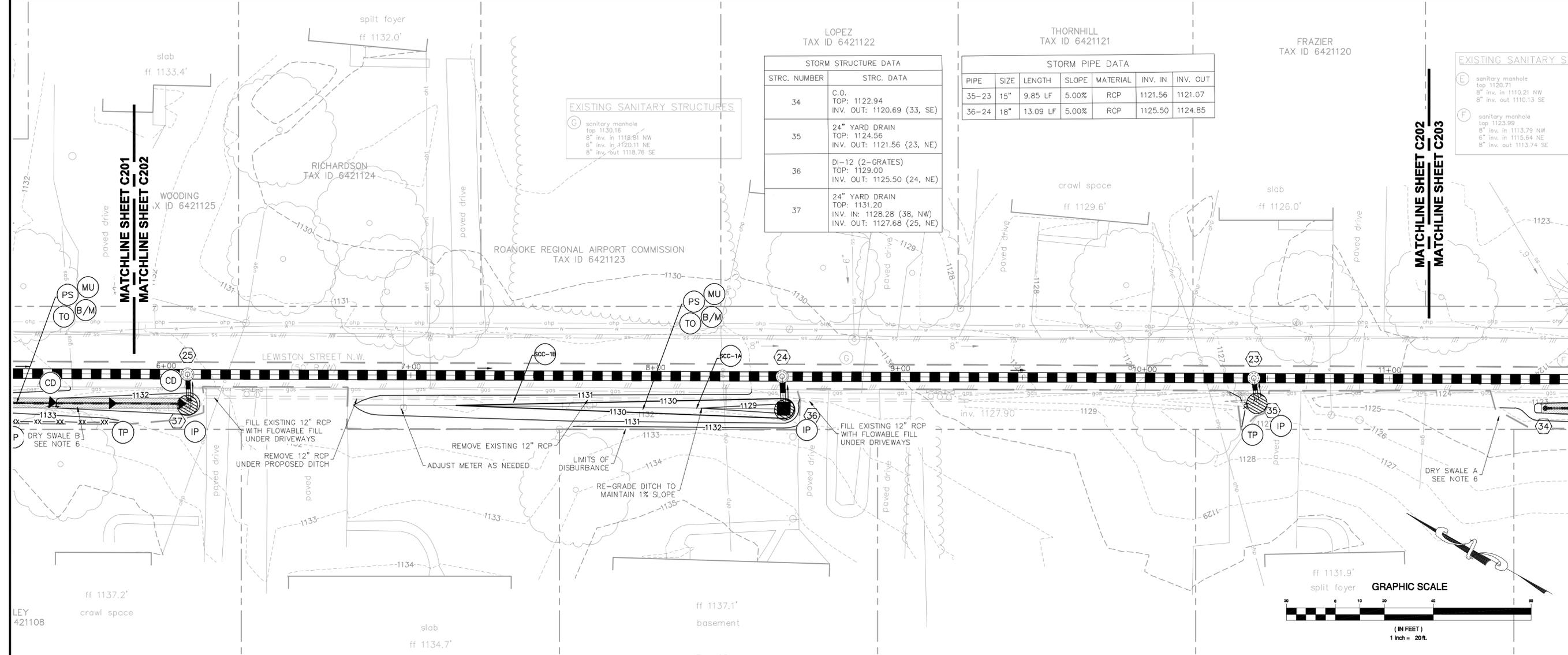
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 DRAPER ADEN ASSOCIATES



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 Blacksburg, VA 24060
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SITE & GRADING PLAN
LAUREL RIDGE RD / LEWISTON ST
DRAINAGE IMPROVEMENTS
 ROANOKE, VIRGINIA

DESIGNED BY:	MBJ
DRAWN BY:	AJH
CHECKED BY:	LBL
SCALE:	1" = 20'
DATE:	AUGUST 21, 2015
PROJECT NUMBER:	B14120B-01
C202	



- NOTE:**
1. WORK IS TO BE PERFORMED PER THE CITY OF ROANOKE RIGHT OF WAY EXCAVATION AND RESTORATION STANDARDS.
 2. COORDINATE RELOCATION OF GAS LINE WITH GAS UTILITY COMPANY.
 3. COORDINATE RELOCATION OF WATER AND SEWER LINES WITH THE WESTERN VIRGINIA WATER AUTHORITY.
 4. WHERE WATER METER RELOCATION IS REQUIRED, THE EXISTING METER IS TO BE REUSED.
 5. CHECK DAMS SHOWN ON THE PLANS ARE TO BE PERMANENT WATER QUALITY CHECK DAMS AND ARE TO FOLLOW MINIMUM STANDARD 3.13 OF THE VIRGINIA BMP CLEARINGHOUSE.
 6. DRY SWALES ARE TO BE CONSTRUCTED AFTER ALL UPSLOPE AREAS HAVE BEEN FULLY STABILIZED.

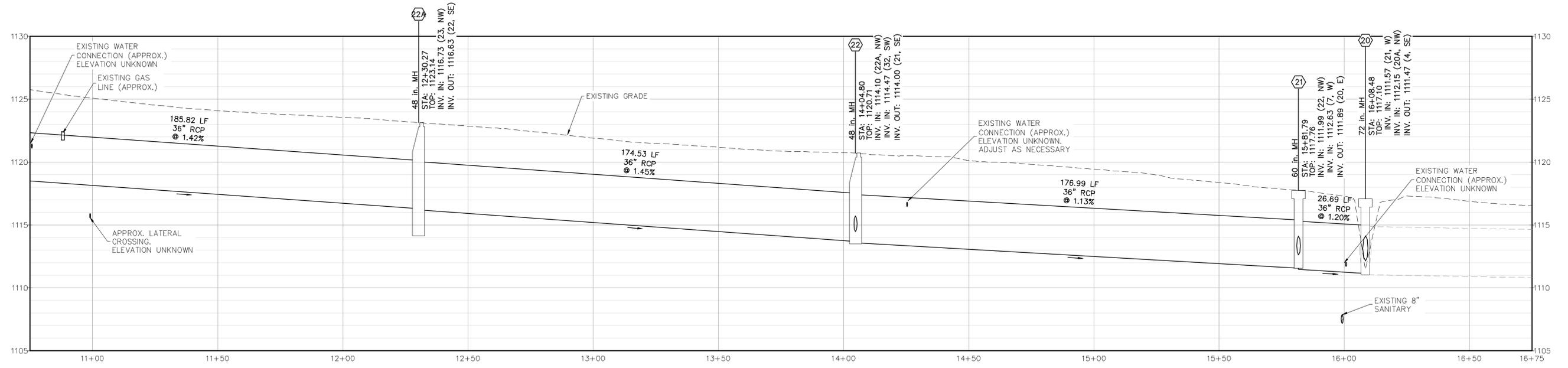
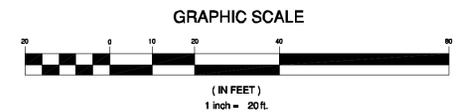
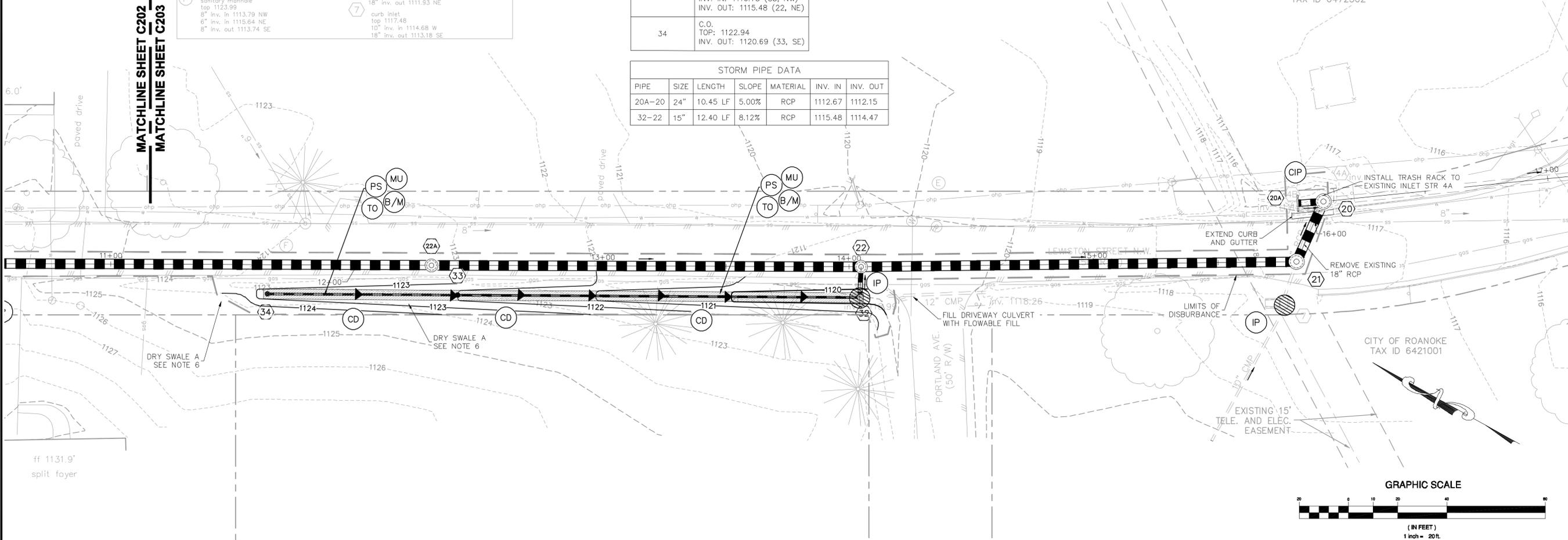
August 21, 2015 3:50:20 PM
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FRAZIER
AX ID 6421120

EXISTING SANITARY STRUCTURES		EXISTING STORM STRUCTURES	
(E)	sanitary manhole top 1120.71 8" inv. in 1110.21 NW 8" inv. out 1110.13 SE	(4A)	top culvert top 1114.47 36" inv. in 1114.47 SE
(F)	sanitary manhole top 1123.99 8" inv. in 1113.79 NW 8" inv. in 1115.64 NE 8" inv. out 1113.74 SE	(4B)	cmp outfall top 1113.43 18" inv. out 1111.93 NE
		(7)	curb inlet top 1117.48 10" inv. in 1114.68 W 18" inv. out 1113.18 SE

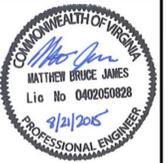
STORM STRUCTURE DATA	
STRC. NUMBER	STRC. DATA
20A	EW-1 TOP: 1115.46 INV. OUT: 1112.67 (20, SE)
32	24" YARD DRAIN TOP: 1119.00 INV. IN: 1116.75 (33, NW) INV. OUT: 1115.48 (22, NE)
34	C.O. TOP: 1122.94 INV. OUT: 1120.69 (33, SE)

STORM PIPE DATA						
PIPE	SIZE	LENGTH	SLOPE	MATERIAL	INV. IN	INV. OUT
20A-20	24"	10.45 LF	5.00%	RCP	1112.67	1112.15
32-22	15"	12.40 LF	8.12%	RCP	1115.48	1114.47



PROPOSED STORM (STA. 10+50 TO 15+50) - Scale: H: 1"=20', V: 1"=4'

- NOTE:**
1. WORK IS TO BE PERFORMED PER THE CITY OF ROANOKE RIGHT OF WAY EXCAVATION AND RESTORATION STANDARDS.
 2. COORDINATE RELOCATION OF GAS LINE WITH GAS UTILITY COMPANY.
 3. COORDINATE RELOCATION OF WATER AND SEWER LINES WITH THE WESTERN VIRGINIA WATER AUTHORITY.
 4. WHERE WATER METER RELOCATION IS REQUIRED, THE EXISTING METER IS TO BE REUSED.
 5. CHECK DAMS SHOWN ON THE PLANS ARE TO BE PERMANENT WATER QUALITY CHECK DAMS AND ARE TO FOLLOW MINIMUM STANDARD 3.13 OF THE VIRGINIA BMP CLEARINGHOUSE.
 6. DRY SWALES ARE TO BE CONSTRUCTED AFTER ALL UPSLOPE AREAS HAVE BEEN FULLY STABILIZED.



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SITE & GRADING PLAN
LAUREL RIDGE RD / LEWISTON ST
DRAINAGE IMPROVEMENTS
ROANOKE, VIRGINIA

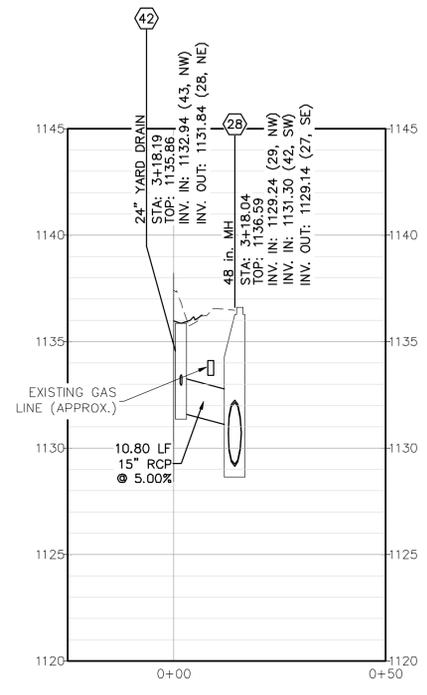
REVISIONS	
DESIGNED BY:	MBJ
DRAWN BY:	AJH
CHECKED BY:	LBL
SCALE:	1" = 20'
DATE:	AUGUST 21, 2015
PROJECT NUMBER:	B14120B-01
C203	



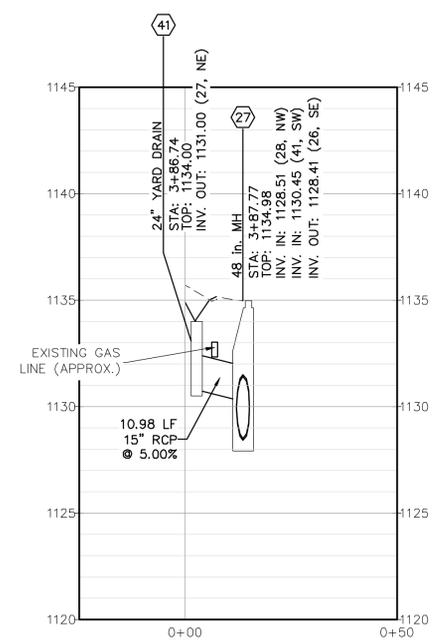
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 Blacksburg, VA
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 Blacksburg, VA 24060
 540-552-0444 Fax: 540-552-0291
 www.daa.com

STORM SEWER PROFILES
LAUREL RIDGE RD / LEWISTON ST
DRAINAGE IMPROVEMENTS
 ROANOKE, VIRGINIA

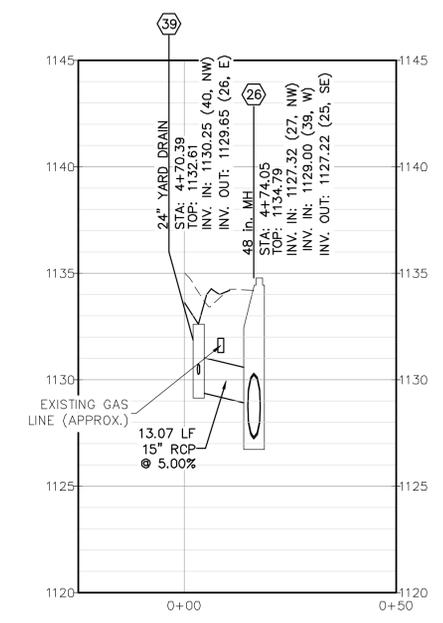
DESIGNED BY:	MBJ
DRAWN BY:	AJH
CHECKED BY:	LBL
SCALE:	1" = 20'
DATE:	AUGUST 21, 2015
PROJECT NUMBER:	B14120B-01
	C204



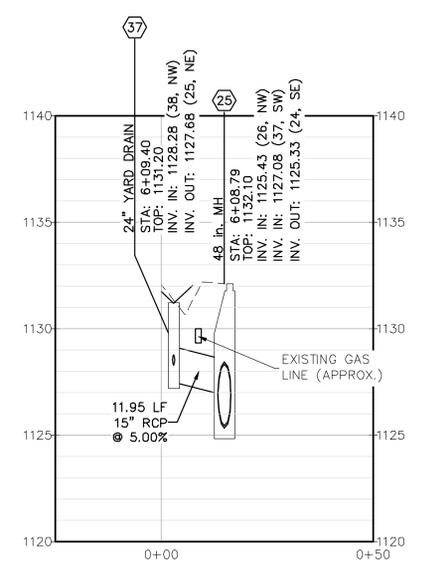
STORM STR 42-28
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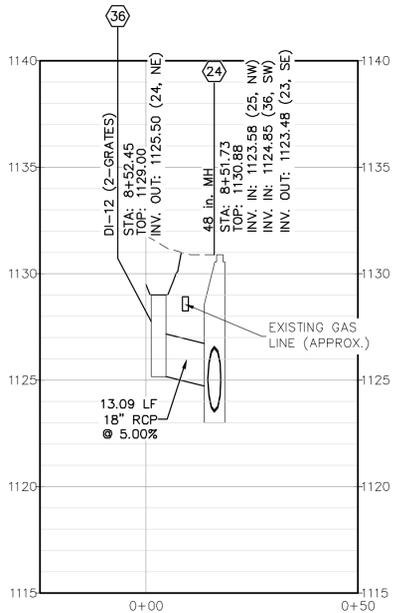
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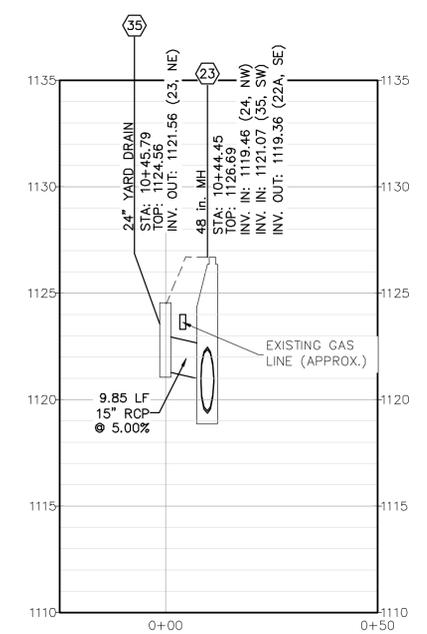
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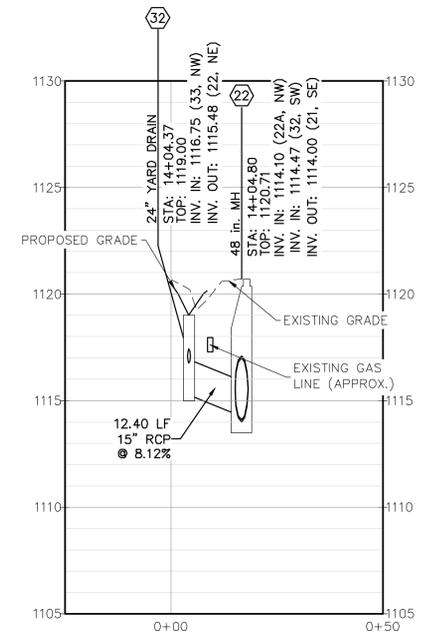
STORM STR 37-25
 Scale: H: 1"=20', V: 1"=4'



STORM STR 36-24
 Scale: H: 1"=20', V: 1"=4'



STORM STR 35-23
 Scale: H: 1"=20', V: 1"=4'



STORM STR 32-22
 Scale: H: 1"=20', V: 1"=4'

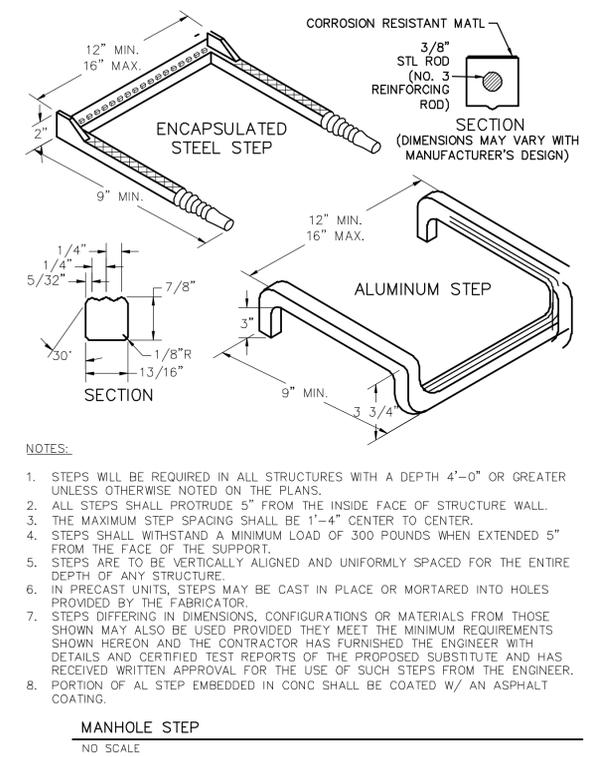
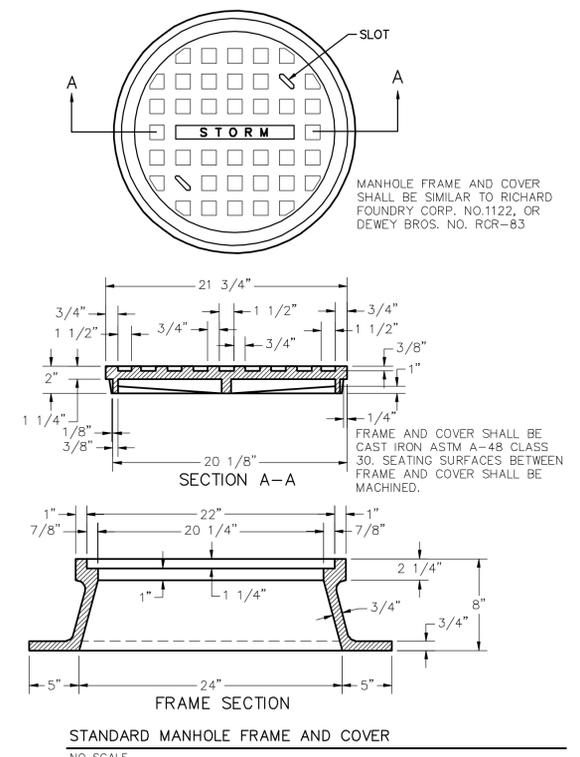
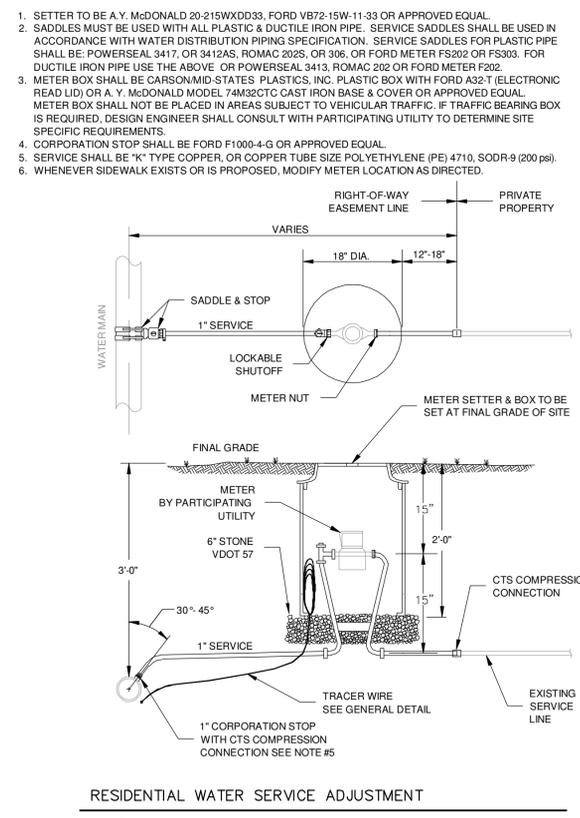
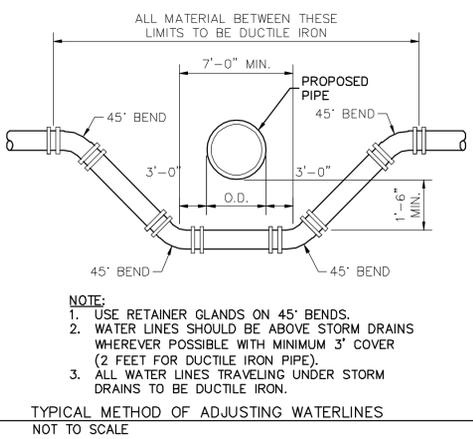
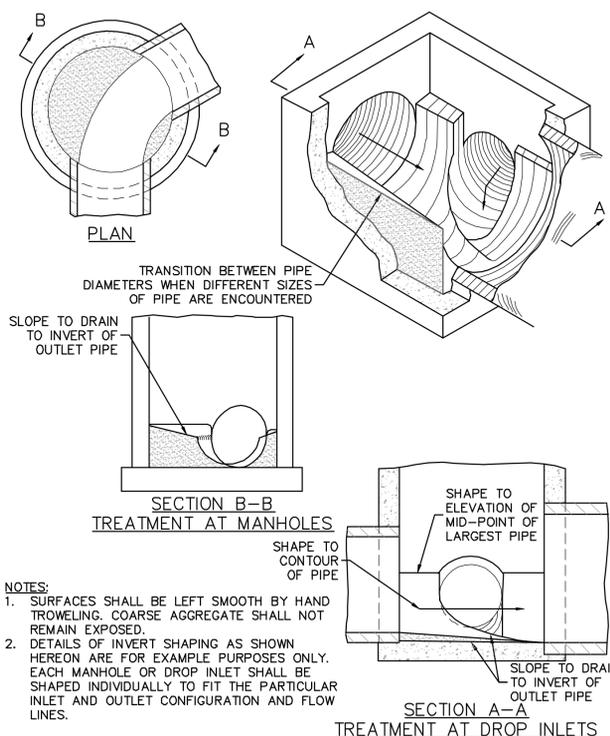
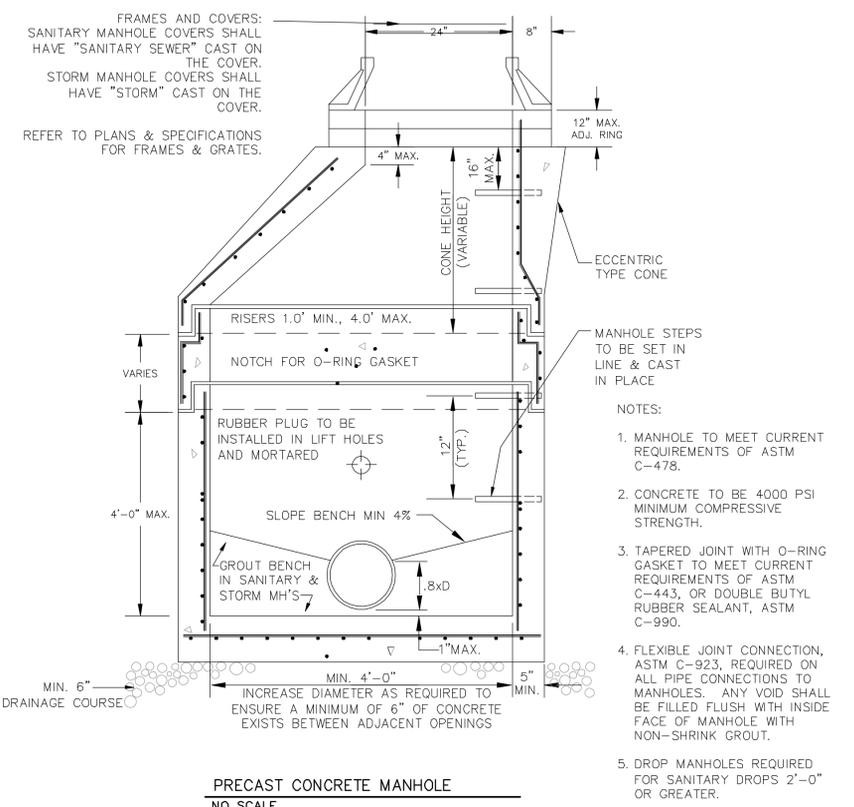
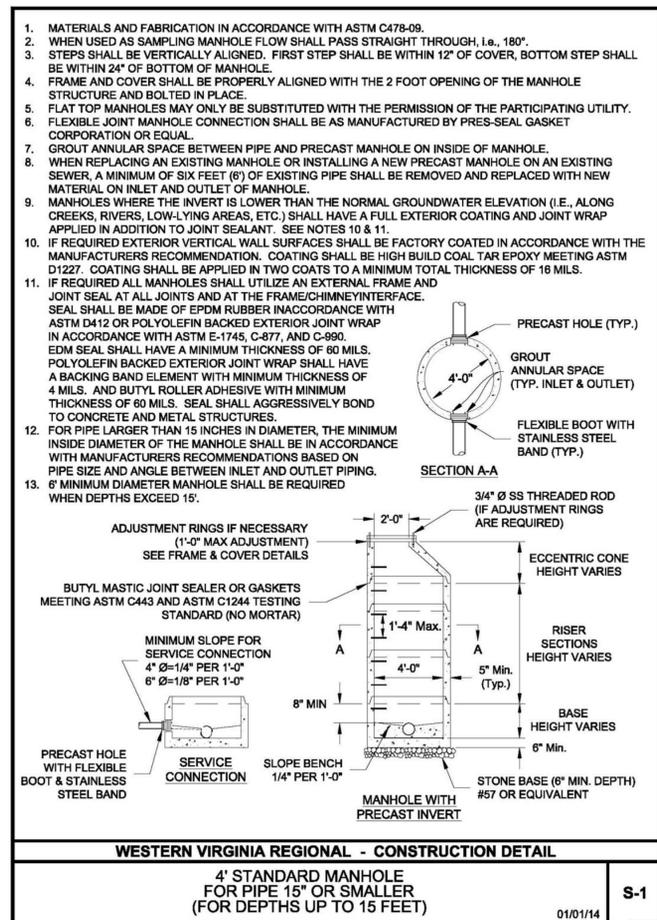
NOTE:
 1. WORK IS TO BE PERFORMED PER THE CITY OF ROANOKE RIGHT OF WAY EXCAVATION AND RESTORATION STANDARDS.
 2. COORDINATE RELOCATION OF GAS LINE WITH GAS UTILITY COMPANY.
 3. COORDINATE RELOCATION OF WATER AND SEWER LINES WITH THE WESTERN VIRGINIA WATER AUTHORITY.
 4. WHERE WATER METER RELOCATION IS REQUIRED, THE EXISTING METER IS TO BE REUSED.
 5. CHECK DAMS SHOWN ON THE PLANS ARE TO BE PERMANENT WATER QUALITY CHECK DAMS AND ARE TO FOLLOW BMP MINIMUM STANDARD 3.13.



Draper Aden Associates
 Engineering • Surveying • Environmental Services
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 Hampton Roads, VA
 Blacksburg, VA
 2206 South Main Street
 Blacksburg, VA 24060
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UTILITY & SITE DETAILS
**LAUREL RIDGE RD / LEWISTON ST
 DRAINAGE IMPROVEMENTS**
 ROANOKE, VIRGINIA

REVISIONS	
DESIGNED BY:	MBJ
DRAWN BY:	AJH
CHECKED BY:	LBL
SCALE:	NO SCALE
DATE:	AUGUST 21, 2015
PROJECT NUMBER:	B14120B-01
C302	

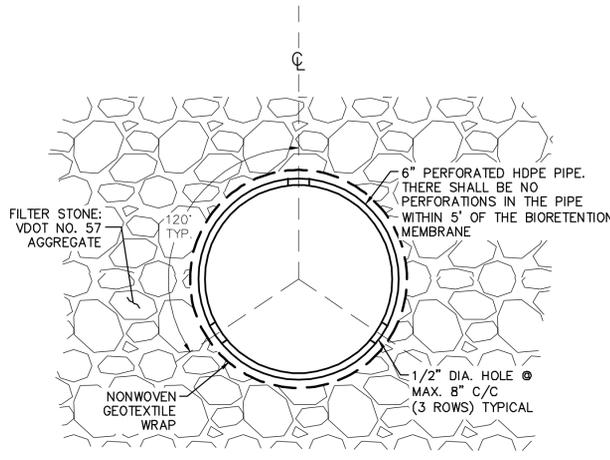




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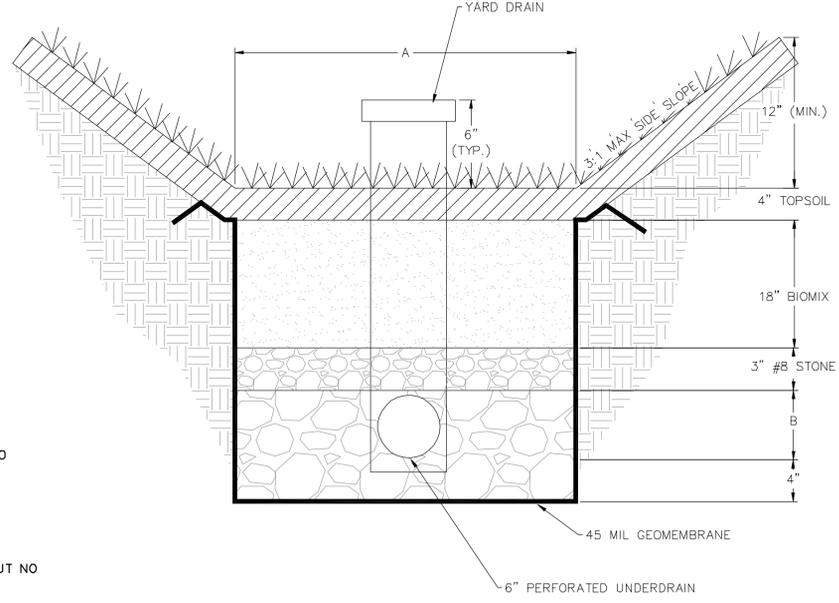
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SUBSURFACE PERFORATED PIPE
NO SCALE

- THE BIORETENTION SOIL MIXTURE SHALL BE TESTED AND MEET THE FOLLOWING CRITERIA:
 PHOSPHORUS: 5-15mg/Kg
 CATION EXCHANGE RATE: >5 meq/100g
 pH: 6-7
 COMPOSITION: 75%-85% COURSE SILICA SAND
 10-20% SOIL FINES AND CLAY
 0-5% CLAY
 3% - 5% ORGANIC MATTER IN THE FORM OF LEAF COMPOST
 SOIL MIX INFILTRATION RATE: 1-2 in/hr
 THE VOLUME OF FILTER MEDIA FOR CONSTRUCTION SHOULD BE BASED ON 110% OF PLAN VOLUME TO ACCOUNT FOR SETTLING
 - TESTING FREQUENCIES SHALL APPLY TO THE BIORETENTION SOIL MIXTURE:
 - PH, ORGANIC MATTER: 1 TEST PER 90 CUBIC YARDS, BUT NO MORE THAN 1 TEST PER BIORETENTION AREA
 - MAGNESIUM, PHOSPHORUS, POTASSIUM, SOLUBLE SALTS: 1 TEST PER 500 CUBIC YARDS, BUT NO LESS THAN 1 TEST PER BORROW SOURCE
 - ONE GRAIN SIZE ANALYSIS SHALL PER PERFORMED PER 90 CUBIC YARDS OF PLANTING SOIL, BUT NO LESS THAN 1 TEST PER BIORETENTION AREA.
- NOTE: SOIL TESTS MUST BE VERIFIED BY A QUALIFIED PROFESSIONAL.
- TOP SOIL SHOULD BE 4" OF LOAMY SAND OR SANDY LOAM TEXTURE, WITH LESS THAN 5% CLAY CONTENT, A CORRECTED pH OF 6 TO 7, AND AT LEAST 2% ORGANIC MATTER
- NOTE: BIORETENTION SOIL MIX TO BE IN ACCORDANCE WITH LATEST STANDARDS AND SPECIFICATIONS AS DETERMINED BY VIRGINIA DEQ.

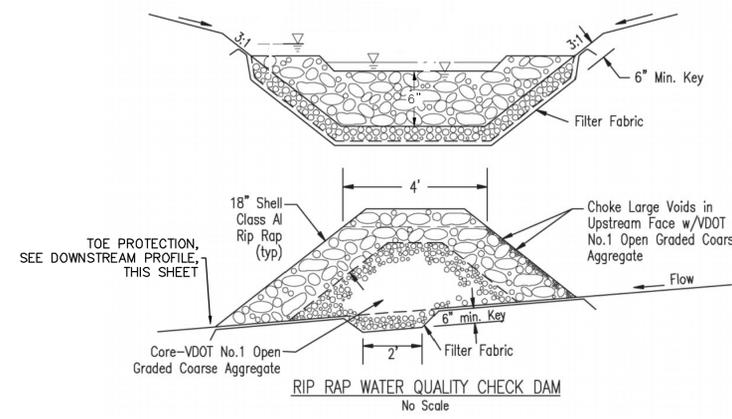
ENGINEERED SOIL MIX
NO SCALE



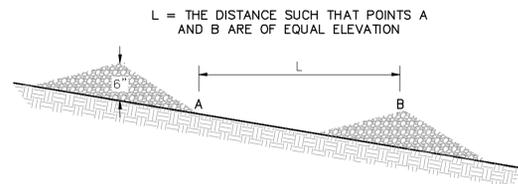
SWALE	A	B	PROPOSED LINING	SWALE LENGTH
A	4.00	6"	EC-2 MATTING	250'
B	4.00	11"	EC-2 MATTING	110'
C	4.00	12"	EC-2 MATTING	60'
D	4.00	11"	EC-2 MATTING	113'

NOTE: DIMENSION B IS TO BOTTOM OF UNDERDRAIN. AN ADDITION 4" OF STONE IS REQUIRED BELOW THAT.

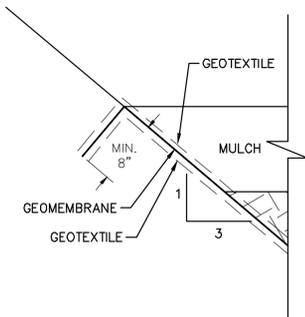
DRY SWALE SECTION DETAIL
NOT TO SCALE



RIP RAP WATER QUALITY CHECK DAM
No Scale

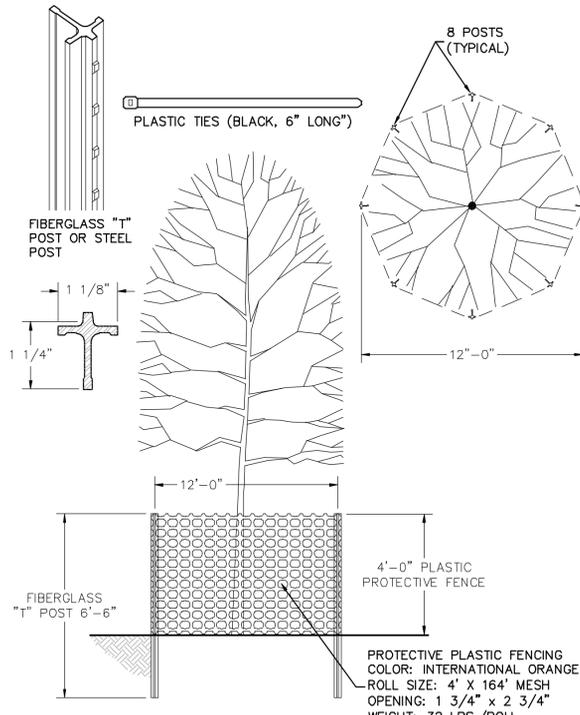


SPACING BETWEEN CHECK DAMS
NOT TO SCALE

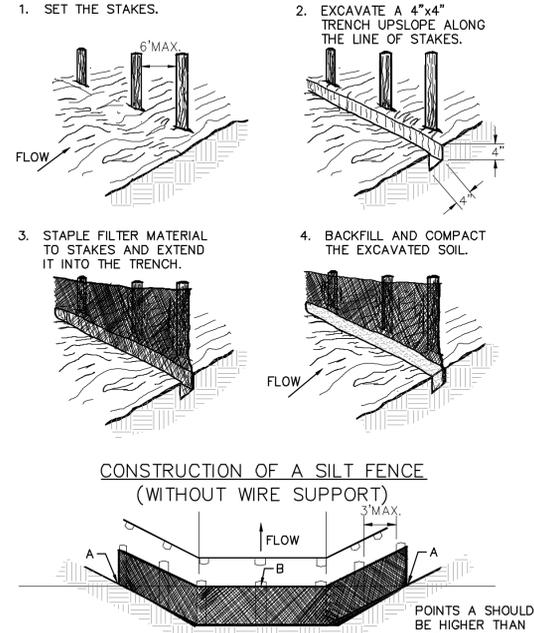


ANCHORING TRENCH DETAIL
NO SCALE

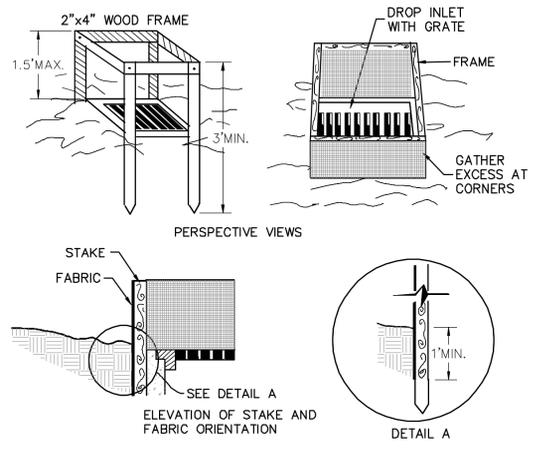
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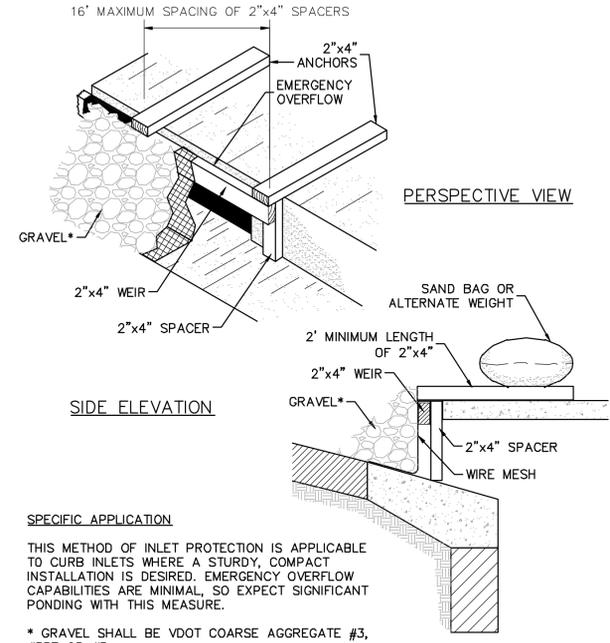
TREE PROTECTION DETAIL - PLASTIC FENCING
 NOT TO SCALE (TP)



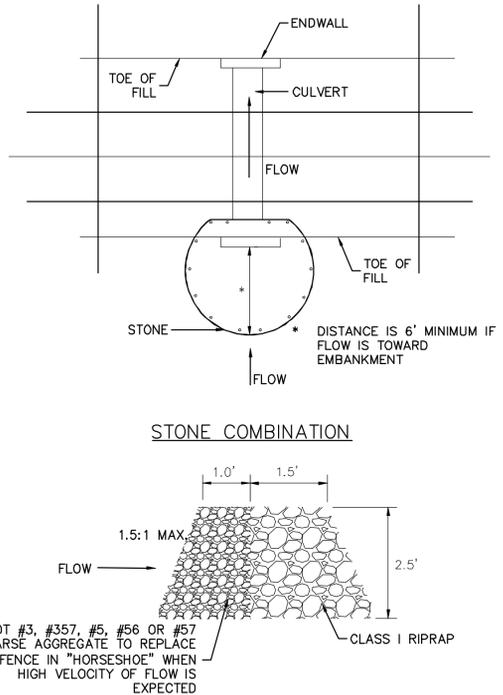
CONSTRUCTION OF A SILT FENCE (WITHOUT WIRE SUPPORT)
 DRAINAGEWAY INSTALLATION (FRONT ELEVATION)
 SILT FENCE INSTALLATION DETAILS WITH WIRE BACKING (SF)
 NOT TO SCALE



SILT FENCE DROP INLET PROTECTION DETAIL (IP)
 NOT TO SCALE



CURB INLET PROTECTION WITH 2x4 WOODEN WEIR (IP)
 NOT TO SCALE



SILT FENCE CULVERT INLET PROTECTION (CIP)
 NOT TO SCALE

TABLE 3.32-C SITE SPECIFIC SEEDING MIXTURES FOR APPALACHIAN/MOUNTAIN AREA

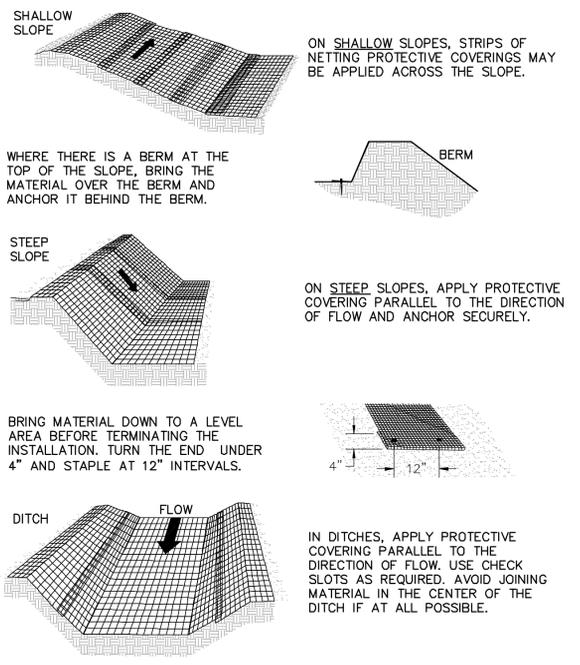
MIXTURE	TOTAL LBS. PER ACRE
MINIMUM CARE LAWN	200-250 LBS.
-COMMERCIAL OR RESIDENTIAL	
-KENTUCKY 31 OR TURF-TYPE TALL FESCUE	90-100%
-IMPROVED PERENNIAL RYEGRASS *	0-10%
-KENTUCKY BLUEGRASS	0-10%
HIGH-MAINTENANCE LAWN	125 LBS.
MINIMUM OF THREE (3) UP TO FIVE (5) VARIETIES OF BLUEGRASS FROM APPROVED LIST FOR USE IN VIRGINIA	
GENERAL SLOPE (3:1 OR LESS)	
-KENTUCKY 31 FESCUE	128 LBS.
-RED TOP GRASS	2 LBS.
-SEASONAL NURSE CROP **	20 LBS.
	150 LBS.
LOW-MAINTENANCE SLOPE (STEEPER THAN 3:1)	
-KENTUCKY 31 FESCUE	108 LBS.
-RED TOP GRASS	2 LBS.
-SEASONAL NURSE CROP	20 LBS.
-CROWN VETCH	20 LBS.
	150 LBS.

* PERENNIAL RYEGRASS WILL GERMINATE FASTER AND AT LOWER SOIL TEMPERATURES THAN FESCUE, THEREBY PROVIDING COVER AND EROSION RESISTANCE FOR SEEDBED.

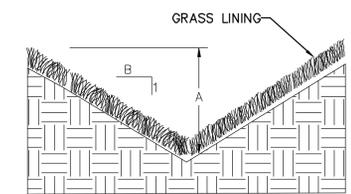
** USE SEASONAL NURSE CROP IN ACCORDANCE WITH SEEDING DATES AS STATED BELOW:
 MARCH, APRIL THROUGH MAY 15TH ANNUAL RYE
 MAY 16TH THROUGH AUGUST 15TH FOXTAIL MILLET
 AUGUST 16TH THROUGH SEPTEMBER, OCTOBER ANNUAL RYE
 NOVEMBER THROUGH FEBRUARY WINTER RYE

*** IF FLATPEA IS USED, INCREASE TO 30 LBS./ACRE. ALL LEGUME SEED MUST BE PROPERLY INOCULATED. WEEPING LOVEGRASS MAY ALSO BE INCLUDED IN ANY SLOPE OR LOW-MAINTENANCE MIXTURE DURING WARMER SEEDING PERIODS; ADD 10-20 LBS./ACRE IN MIXES.

PERMANENT SEEDING SPECIFICATIONS - APPALACHIA (PS)
 NOT TO SCALE



SOIL STABILIZATION BLANKET - TREATMENT 1 (B/M)
 NOT TO SCALE



SCC #	DEPTH (ft)	SIDE SLOPE (H:V)	PROPOSED LINING
1A	2.00	2:1	EC-2 MATTING
1B	1.00	4:1	EC-2 MATTING
2	1.00	2:1	EC-2 MATTING

STORMWATER CONVEYANCE CHANNEL (SCC)
 NOT TO SCALE