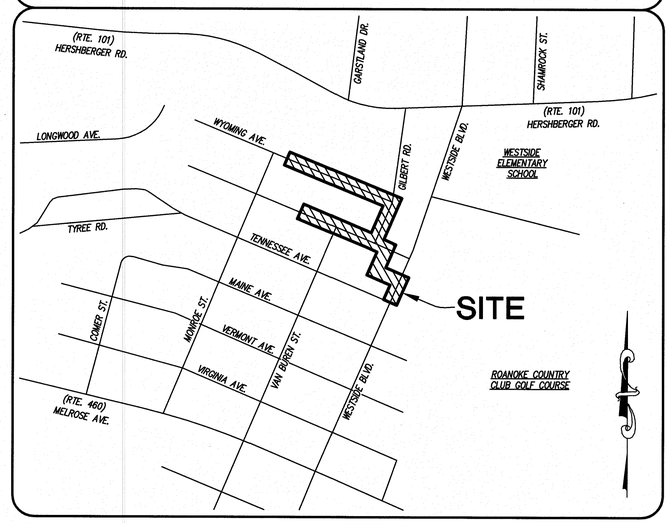
PROJECT LOCATION MAP



ROANOKE

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2. NOTES AND INDEX MAP
3. DETAILS
4. STORM DRAIN PLAN & PROFILE - (WYOMING AVENUE)
5. STORM DRAIN PLAN & PROFILE - (WYOMING AVENUE TO GILBERT ROAD)
6. STORM DRAIN PLAN & PROFILE - (WESTSIDE BLVD)
7. STORM DRAIN PLAN & PROFILE - (KENTUCKY AVENUE TO GILBERT ROAD)
8. EROSION AND SEDIMENT CONTROL PLAN - (WYOMING AVENUE)
9. EROSION AND SEDIMENT CONTROL PLAN - (WYOMING AVENUE TO GILBERT ROAD)
10. EROSION AND SEDIMENT CONTROL PLAN - (WESTSIDE BLVD)
11. EROSION AND SEDIMENT CONTROL PLAN - (KENTUCKY AVENUE TO GILBERT ROAD)
12. EROSION AND SEDIMENT CONTROL NOTES & DETAILS

APPROVED FOR CONSTRUCTION

Philip C. Schum ROANOKE CITY ENGINEER	10/16/2014 DATE
Robert K. Bengston DIRECTOR OF PUBLIC WORKS	10/17/14 DATE
Sherman M. Stovall ASSISTANT CITY MANAGER - OPERATIONS	10/16/14 DATE

CONSULTING ENGINEERS

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COMMISSION NUMBER: 2013-162

COMMONWEALTH OF VIRGINIA
ANDREW P. LUMSDEN
Lic. No. 052216
8/26/14
PROFESSIONAL ENGINEER

PROJECT NAME

STORMWATER DRAINAGE IMPROVEMENTS FOR PHASE 3 WYOMING AVENUE / WESTSIDE BOULEVARD TAX MAP No. 9999998

CITY ENGINEERING PLAN NUMBER: 6773

CITY PLANNING NUMBER: CP140026

REVISION BY	DESCRIPTION:	DATE

CITY OF ROANOKE CONSTRUCTION PROCEDURE REQUIREMENTS:

NOTICE: All Landowners, Developers and Contractors

FAILURE TO COMPLY WITH THE CITY OF ROANOKE CONSTRUCTION PROCEDURE REQUIREMENTS LISTED BELOW MAY RESULT IN THE COSTLY REMOVAL OF STRUCTURES, TIME DELAYS, OR THE ISSUANCE OF A STOP WORK ORDER.

CONSTRUCTION PROCEDURE REQUIREMENTS

1. 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.

2. 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.

3. 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.

4. Location of Utilities – The contractor shall verify the location of all existing utilities prior to the commencement of any construction.

5. 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.

6. Streets to Remain Clean – It shall be the responsibility of the contractor to insure 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.

7. 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.

8. Sewer and Pavement Replacement – Construction of sanitary 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

9. 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 agent prior to said changes or variation in construction being made.

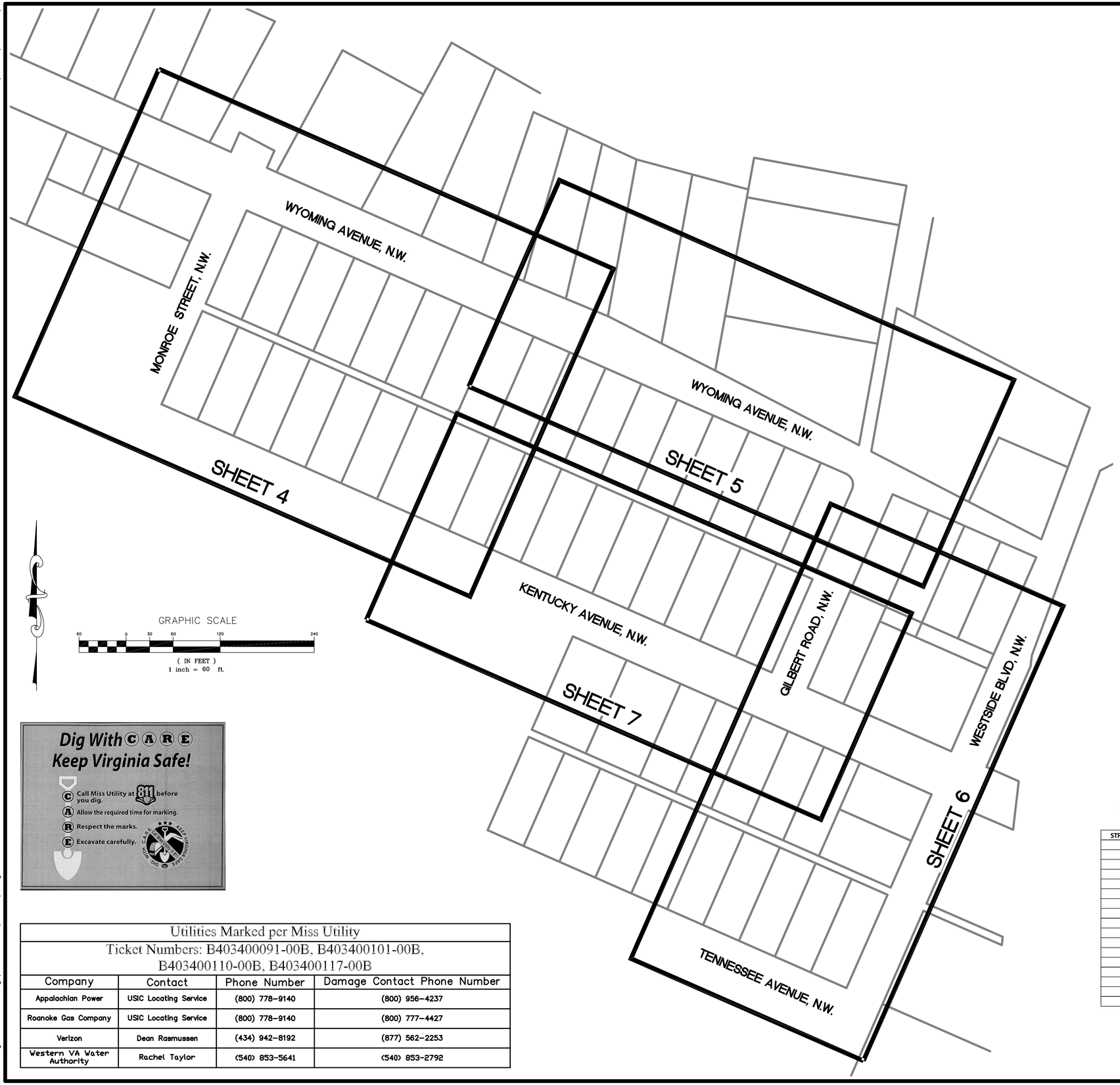
10. Final Acceptance/City – The owner or developer shall furnish the City of Roanoke's Planning Building and Development Department with a field surveyed final correct set of as-built plans of the newly constructed storm rain and/or stormwater management facilities prior to final acceptance and issuance of a certificate of occupancy by the City. As-built plans shall be provided in the State Plane Virginia South Coordinate System, NAD 1983, FIPS 4502 Feet, US Survey Feet, Datum NA 83, in the form of 1 paper copy and 1 digital AUTOCAD file.

CITY APPROVAL STAMP

SHEET NUMBER: 1 OF 12

PHASE 3 - WYOMING AVENUE / WESTSIDE BOULEVARD

13162-ph3-comp1-02-ov01.plt



GENERAL NOTES

1. THE BOUNDARY IS THE DIRECT RESULT OF A FIELD SURVEY BY LUMSDEN ASSOCIATES, P.C.
2. TOPOGRAPHY DATA BASED ON A FIELD SURVEY BY LUMSDEN ASSOCIATES, P.C.
3. A TITLE REPORT WAS NOT FURNISHED FOR THIS PROJECT.
4. NO CONSTRUCTION/FIELD REVISIONS ARE ALLOWED WITHOUT THE APPROVAL OF THE CONSULTING ENGINEER, THE CITY OF ROANOKE, AND/OR THE WESTERN VIRGINIA WATER AUTHORITY.
5. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER TO CLEAN OUT THE EXISTING STORM SEWER SYSTEM WITHIN EXISTING DEVELOPMENTS SHOULD THESE SYSTEMS BECOME SILTED OR BLOCKED IN ANY WAY DUE TO THE CONSTRUCTION OF THIS PROPOSED DEVELOPMENT.
6. THIS PROPERTY IS NOT LOCATED WITHIN THE LIMITS OF A 100 YEAR FLOOD BOUNDARY AS DESIGNATED BY FEMA. THIS OPINION IS BASED ON AN INSPECTION OF THE FLOOD INSURANCE RATE MAP AND HAS NOT BEEN VERIFIED IN THE FIELD. SEE COMMUNITY PANEL NUMBERS. 510130 0161 G & 510130 0142 G, MAP NUMBERS 51161C0161 G & 51161C0142 G, DATED 9-28-07.
7. SEE CONTRACT DOCUMENTS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

CONSTRUCTION NOTES

1. GRADES AND LOCATIONS OF EXISTING SANITARY SEWER LATERALS ARE UNKNOWN. GRADES AND LOCATIONS SHOWN ARE ASSUMED. THE CONTRACTOR SHALL VERIFY THE DEPTH AND LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
2. THE DEPTH OF WATER LINES, GAS LINES, AND TELEPHONE DUCTS ARE UNKNOWN. THEIR DEPTH HAS BEEN ASSUMED WHERE SHOWN IN PROFILE. THE CONTRACTOR SHALL VERIFY THE DEPTH AND LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
3. ALL EXISTING UTILITIES MAY NOT BE SHOWN OR MAY NOT BE SHOWN IN THEIR EXACT LOCATION. THE CONTRACTOR SHALL CONTACT PUBLIC UTILITIES COMPANIES THROUGH MISS UTILITY (1-800-552-7001) TO HAVE EXISTING UTILITIES LOCATED. THE CONTRACTOR SHALL VERIFY THE DEPTH AND LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
4. FOR THE RELOCATION OR REPLACEMENT OF ANY EXISTING WATER OR SANITARY SEWER FACILITIES, CONTACT CHRIS CAREY AT THE WESTERN VIRGINIA WATER AUTHORITY (853-5637) A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION.
5. ALL STREETS TO BE MAINTAINED FOR ONE WAY TRAFFIC AND OPENED TO TWO WAY TRAFFIC DURING PEAK TRAFFIC HOURS. FOR ANY CLOSINGS REQUIRED, CONTACT ROANOKE CITY TRAFFIC ENGINEERING (853-2673) A MINIMUM OF TWO WEEKS PRIOR TO CLOSING.
6. ACCESS TO ADJOINING PROPERTIES SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. COORDINATE ACCESS WITH EACH PROPERTY OWNER.
7. THE CONTRACTOR SHALL VISIT AND VERIFY EXISTING CONDITIONS PRIOR TO STARTING CONSTRUCTION. CONTACT OWNER AND ENGINEER WITH ANY VARIATIONS.
8. ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT CITY OF ROANOKE STANDARDS AND SPECIFICATIONS AND THE CURRENT EDITION OF VDOT'S ROAD AND BRIDGE STANDARDS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE OWNER AND THE ENGINEER OF ANY CHANGES OR CONDITIONS ATTACHED TO PERMITS OBTAINED FROM ANY AUTHORITY ISSUING PERMITS.
10. ALL WATER CONNECTIONS TO EXISTING LINES SHALL BE COORDINATED WITH AND PERFORMED BY THE WESTERN VIRGINIA WATER AUTHORITY.
11. ALL SANITARY SEWER CONNECTIONS TO EXISTING LINES SHALL BE PERFORMED BY THE CONTRACTOR WITH A WESTERN VIRGINIA WATER AUTHORITY INSPECTOR ONSITE.
12. SEE VDOT ROAD AND BRIDGE STANDARDS FOR CONCRETE CURB AND STORM DRAINAGE DETAILS.
13. THE CONTRACTOR AND OR OWNER SHALL PROVIDE A STORAGE CONTAINER FOR TEMPORARY STORAGE AND DISPOSAL OF LAND CLEARANCE DEBRIS AND BUILDING MATERIALS. ON-SITE BURIAL OF MATERIAL SHALL NOT BE PERMITTED.

GRADING NOTES

1. AREAS TO BE GRADED SHALL BE CLEARED OF ALL VEGETATION, STRUCTURES, AND OTHER PHYSICAL FEATURES IN PREPARATION OF GRADING.
2. TOPSOIL SHALL BE REMOVED FROM THE CLEARED AREA AND STOCKPILED FOR FUTURE USE. A SEPARATE E & S PLAN MAY BE REQUIRED FOR OFFSITE STOCKPILES.
3. FILL MATERIAL SHALL BE FREE FROM ORGANIC MATTER AND ROCKS LARGER THAN 6 INCHES IN DIAMETER.
4. FILL MATERIAL SHALL BE PLACED AND COMPACTED IN EIGHT (8) INCH LOOSE LIFTS AND COMPACTED TO AT LEAST NINETY-FIVE (95) PERCENT OF THE MATERIAL'S MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698, STANDARD PROCTOR. MAINTAIN MOISTURE CONTENT OF FILL MATERIAL WITHIN THREE (3) PERCENT OF OPTIMUM TO ATTAIN REQUIRED COMPACTION DENSITY.
5. A QUALIFIED GEOTECHNICAL ENGINEER LICENSED IN THE STATE OF VIRGINIA, SHOULD BE CONSULTED CONCERNING SOIL STABILITY, SLOPE STABILIZATION, SOIL COMPACTION, TESTING, AND OTHER SOIL CHARACTERISTICS. LUMSDEN ASSOCIATES ASSUMES NO RESPONSIBILITY OR LIABILITY RELATING TO FAILURES RESULTING FROM SAME.

STORM DRAIN CONSTRUCTION NOTES

1. ALL WATER AND SANITARY SEWER LINES SHALL HAVE A MINIMUM OF 3.0 FEET OF COVER.
2. MAINTAIN A MINIMUM OF 18" CLEARANCE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE AT ALL STORM DRAIN CROSSINGS. WHERE THIS CLEARANCE CAN NOT BE ACHIEVED, CONCRETE PIERS SHALL BE UTILIZED IN ACCORDANCE WITH THE WESTERN VIRGINIA WATER AUTHORITY'S WATER AND SANITARY SEWER STANDARDS.
3. ALL NEW DROP INLETS AND STORM DRAIN MANHOLES SHALL HAVE VDOT STD. IS-1, INLET SHAPING.
4. ALL DRAINAGE STRUCTURES DEEPER THAN 4.0 FEET SHALL HAVE STEPS (VDOT STD. ST-1) INSTALLED.
5. SAFETY SLABS (VDOT STD. SL-1) ARE REQUIRED IN ALL DRAINAGE STRUCTURES WITH A DEPTH OF 12.0 FEET OR GREATER. THE SPACING OF THE SLABS SHOULD BE 8 TO 12 FEET WITH NO SAFETY SLAB LOCATED WITHIN 6 FEET FROM THE TOP OR BOTTOM OF THE STRUCTURE.

Utilities Marked per Miss Utility			
Ticket Numbers: B403400091-00B, B403400101-00B, B403400110-00B, B403400117-00B			
Company	Contact	Phone Number	Damage Contact Phone Number
Appalachian Power	USIC Locating Service	(800) 778-9140	(800) 956-4237
Roanoke Gas Company	USIC Locating Service	(800) 778-9140	(800) 777-4427
Verizon	Dean Rasmussen	(434) 942-8192	(877) 562-2253
Western VA Water Authority	Rachel Taylor	(540) 853-5641	(540) 853-2792

STORM DRAIN STRUCTURE COORDINATE CHART

STRUCTURE	NORTHING	EASTING
A	3636276.8858	11047258.6176
B	3636311.7265	11047202.7716
B1	3636323.9264	11047206.1862
C	3636404.5759	11046998.9826
D	3636493.3720	11046804.0901
D1	3636505.0347	11046809.4037
E	3635626.7044	11047235.5760
F	3635714.6191	11047273.9462
G	3635747.1862	11047258.6743
G1	3635741.6805	11047246.3548
H	3635786.5674	11047169.1458
I	3635898.0366	11047218.1781
I1	3635951.9977	11047199.7928
J	3635983.2176	11047129.9369
J1	3635975.6582	11047126.5584
K	3636043.3504	11047129.3857
EX-7	3636087.3135	11047144.2783

LEGEND

ITEM	EXISTING	PROPOSED
Pavement		
Curb and Gutter		
Curb		
Storm Drain Line	EX. 24" RCP	24" RCP
Sanitary Sewer Manhole	S	
Sanitary Sewer Line	EXIST. 8" SS	
Waterline	EXIST. 8" W	
Hydrant		
Overhead Utility Line	OHU	
Underground Comm. Line	COMM	
Underground Gas Line	UG	
Underground Telephone Line	UT	
Utility Pole		
Fence	x x	
Water Meter		
Gas Valve		
Water Valve		
Contours	1216	1216
Pavement		
Gravel		
Concrete		

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COMMONWEALTH OF VIRGINIA
ANDREW P. LUMSDEN
Lic. No. 052216
11/20/14
PROFESSIONAL ENGINEER

NOTES & INDEX MAP

STORMWATER DRAINAGE IMPROVEMENTS
FOR
PHASE 3
WYOMING AVENUE / WESTSIDE BOULEVARD
PREPARED FOR
THE CITY OF ROANOKE, VIRGINIA

REVISIONS

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		

DATE: November 20, 2014
SCALE: 1" = 60'
COMMISSION NO: 13-162

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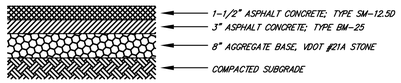

PAVEMENT SECTION TYPE I DETAIL

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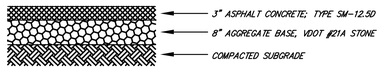
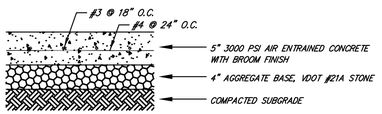


* NOTE: THE SIZE 21A AGGREGATE SHALL BE PRIMED WITH APPROXIMATELY 0.35 GAL/S.Y. OF CRS-2 ASPHALT AND COVERED WITH 16 TO 18 LBS/S.Y. OF SIZE 8-P AGGREGATE BEFORE PLACING OF THE SM-12.5D.

PAVEMENT SECTION TYPE II DETAIL

NO SCALE



PAVEMENT SECTION TYPE III DETAIL

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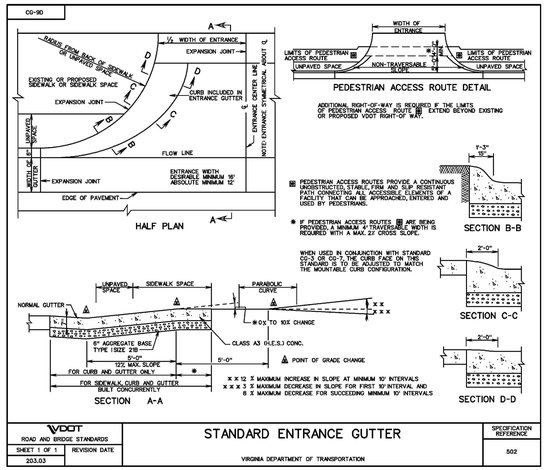
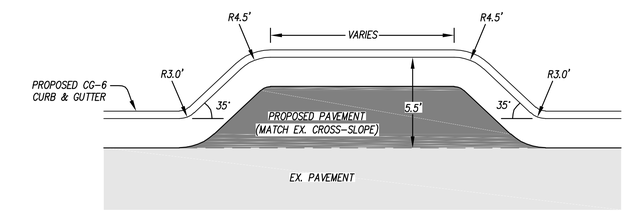


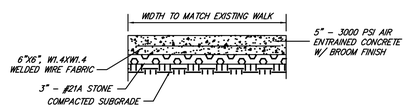
Existing Sanitary Sewer Table							
#	STRUCTURE	WVWA#	RIM	INV.OUT	INV.IN(1)	INV.IN(2)	INV.IN(3)
S-1	SSMH	07A-3157.0	1127.85	1121.50' (8" PVC)	1121.71' (8" PVC)	1123.50' (6" PVC)	
S-2	SSMH	07A-3168.0	1127.32'	1121.77' (8" TCP)	1121.88' (6" PVC)		
S-3	SSMH	07A-3167.0	1116.28'	1110.87' (8" TCP)	1111.00' (8" TCP)		
S-4	SSMH	07A-3143.0	1096.30'	1088.46' (8" TCP)	1088.50' (N) (8" TCP)	1092.05' (W)(8" TCP)	
S-5	SSMH	07A-3144.0	1096.59'	1089.16' (8" TCP)	1089.23' (8" TCP)		
S-6	SSMH	07A-3142.0	1093.79' +/-	Paved Over	Paved Over		
S-7	SSMH	07A-3141.0	1092.77'	1085.05' (8" TCP)	1085.08' (8" TCP)		
S-8	SSMH	07A-3140.0	1094.98'	1082.01' (8" TCP)	1082.04' (N)(8" TCP)	1084.12' (E)(8" TCP)	1082.12' (W)(8" TCP)
S-9	SSMH	07A-3153.0	1094.98'	1095.13' (8" TCP)	1095.79' (4" PVC)		
S-10	SSMH	07A-3139.0	1095.13'	1080.24' (8" TCP)	1080.33' (8" TCP)		
S-11	SSMH	07A-3134.0	1087.51'	1077.33' (8" TCP)	1077.37' (N)(8" TCP)	1077.40' (W)(8" TCP)	
S-12	SSMH	07A-3135.0	1103.12'	1094.92' (8" TCP)	1094.97' (8" TCP)		
S-13	SSMH	07A-3128.0	1076.03'	1066.57' (8" TCP)	1066.58' (N)(8" TCP)	1066.97' (E)(8" TCP)	1066.63' (W)(8" TCP)

Existing Storm Drainage Table									
#	STRUCTURE	GRATE	TOP	RIM	INV.OUT	INV.IN	INV.IN(2)	INV.IN(3)	THROAT
1	DI	1098.18'			1095.51' (18" CMP)	1095.71' (18" RCP)			
2	CI			1095.22'	1091.22' (21" CMP)	1091.12' (18" CMP)			5'
3	CI		1091.89'		1088.69' (24" CMP)	1088.99' (21" CMP)			5'
4	DMH			1093.23' +/-	Paved Over	Paved Over			
5	DMH			1093.86'	1085.66' (36" RCP)	1086.66' (NE)(24" RCP)	1086.61' (NW)(24" RCP)		
6	DMH			1093.74' +/-	Paved Over	Paved Over			
7	CI		1092.16'		1088.80' (24" RCP)				5'
8	36" RCP				1084.45' (36" RCP)	1085.66' (36" RCP)			
9	Headwall		1091.51'		1084.45' (36" RCP)				
10	CI		1094.28'		1090.68' (12" RCP)				5'
11	12" RCP				1089.50' (12" RCP)	1090.68' (12" RCP)			
12	24" RCP				1073.83' (24" RCP)	1075.42' (24" RCP)			
13	CI			1078.28'	1071.69' (18" RCP)	1073.83' (24" RCP)			9'
14	DMH			1077.95'	1070.03' (30" RCP)	1070.41' (N)(30" RCP)	1073.93' (NE)(15" RCP)	1071.20' (W)(18" RCP)	
15	CI			1078.67'	1074.12' (15" RCP)				9'
16	DI	1066.38'			1056.96' (30" RCP)				



ON-STREET PARKING BAY DETAIL

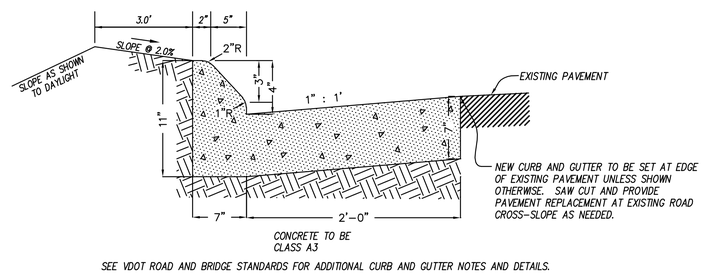
NO SCALE



NOTES:
1. CONTRACTION JOINTS @ 5' O.C., EXPANSION JOINTS MAX 30' APART.
2. SECTIONS OF EXISTING SIDEWALK SHALL BE REMOVED WHERE NECESSARY DUE TO CONSTRUCTION.

SIDEWALK DETAIL

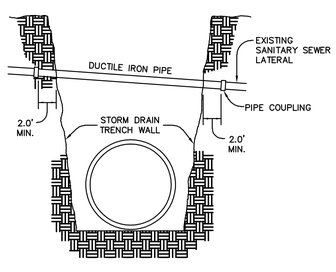
NO SCALE



SEE VDOT ROAD AND BRIDGE STANDARDS FOR ADDITIONAL CURB AND GUTTER NOTES AND DETAILS.

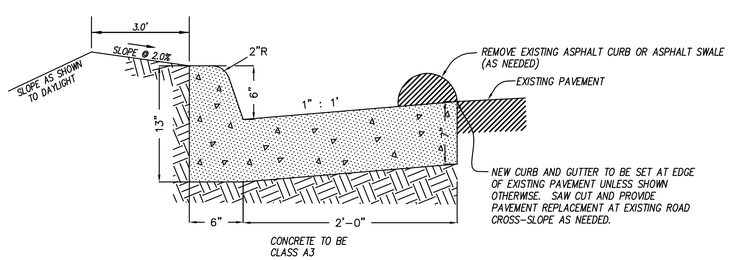
CONCRETE CURB & GUTTER (CG-7)

NO SCALE



SANITARY SEWER LATERAL REPLACEMENT DETAIL

NO SCALE

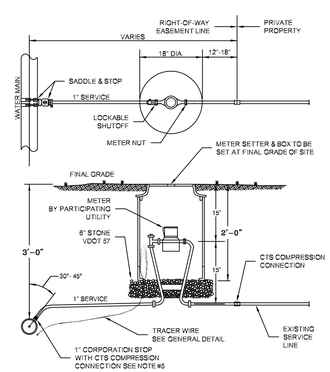


SEE VDOT ROAD AND BRIDGE STANDARDS FOR ADDITIONAL CURB AND GUTTER NOTES AND DETAILS.

CONCRETE CURB & GUTTER (CG-6)

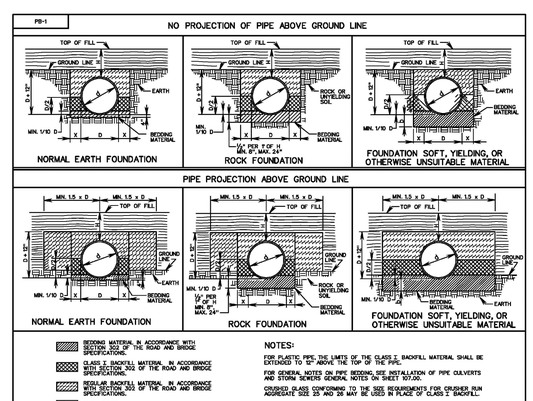
NO SCALE

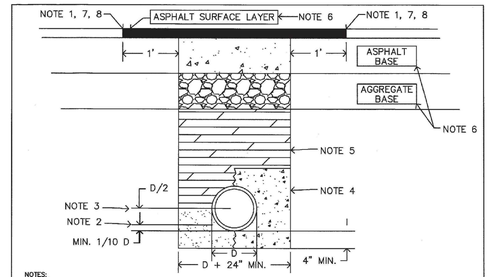
1. SETTER TO BE A Y. McDONALD 20-215WXDD33, FORD VB72-15W-11-33 OR APPROVED EQUAL.
2. SADDLES MUST BE USED WITH ALL PLASTIC & DUCTILE IRON PIPE. SERVICE SADDLES SHALL BE USED IN ACCORDANCE WITH WATER DISTRIBUTION PIPING SPECIFICATION. SERVICE SADDLES FOR PLASTIC PIPE SHALL BE POWERSEAL 3417, OR 3412AB, ROMAC 202S, OR 306, OR FORD METER F202 OR FS303. FOR DUCTILE IRON PIPE USE THE ABOVE OR POWERSEAL 3413, ROMAC 202 OR FORD METER F202.
3. METER BOX SHALL BE CARSON/MID-STATES PLASTICS, INC. PLASTIC BOX WITH FORD A32-7 (ELECTRONIC READ LID), ADS CORRUGATED HDPE BOX WITH FORD A32-7 (ELECTRONIC READ LID), OR A Y. McDONALD MODEL 74M32AT CAST IRON BASE & COVER OR APPROVED EQUAL. METER BOX SHALL NOT BE PLACED IN AREAS SUBJECT TO VEHICULAR TRAFFIC. IF TRAFFIC BEARING BOX IS REQUIRED, DESIGN ENGINEER SHALL CONSULT WITH PARTICIPATING UTILITY TO DETERMINE SITE SPECIFIC REQUIREMENTS.
4. CORPORATION STOP SHALL BE FORD F1000-4-Q OR APPROVED EQUAL.
5. SERVICE SHALL BE "K" TYPE COPPER, OR COPPER TUBE SIZE POLYETHYLENE (PE) 4710, SDDR-9 (200 psi).
6. WHENEVER SIDEWALK EXISTS OR IS PROPOSED, MODIFY METER LOCATION AS DIRECTED.



WESTERN VIRGINIA REGIONAL – CONSTRUCTION DETAIL

SINGLE RESIDENTIAL WATER SERVICE (REPLACEMENT OF EXISTING SERVICE) — W-2 — 01/01/14





NOTES:

1. ALL PAVEMENTS SHALL BE SAW CUT WITH NEAT, UNIFORM LINES PRIOR TO EXCAVATION.
2. PIPE BEDDING MATERIAL SHALL BE CRUSHER RUN (VDOT NO. 25 OR 26) OR OPEN GRADED AGGREGATE (VDOT NO. 57, 68, 7, OR 8). ALTERNATE MATERIAL MUST BE APPROVED BY THE TRANSPORTATION DIVISION INSPECTOR.
3. MAXIMUM DEPTH OF PIPE BEDDING MATERIAL IF USING OPEN GRADED AGGREGATE FOR BEDDING.
4. OPTIONAL CONCRETE ENCASEMENT FOR POWER OR COMMUNICATION CONDUIT. PROVIDE A MINIMUM OF 4" CONCRETE COVER FROM ALL SIDES OF CONDUIT.
5. BACKFILL MATERIAL SHALL BE VDOT NO. 21A AGGREGATE OR FLOWABLE FILL.
   A. AGGREGATE SHALL BE PLACED IN LOOSE LIFTS NOT EXCEEDING 6", AND COMPACTED TO AT LEAST 95% MAXIMUM DRY DENSITY WITHIN 2 PERCENTAGE POINTS OF OPTIMUM MOISTURE (VTM-1) WITH THE USE OF MECHANICAL TAMPERS OR VIBRATORY ROLLERS. WATER COMPACTION IS NOT PERMITTED. LOCAL MATERIAL CLASSIFIED AS TYPE I SELECT MATERIAL MAY BE USED AS BACKFILL UPON PRIOR APPROVAL BY THE TRANSPORTATION DIVISION. SEE STANDARDS FOR ADDITIONAL INFORMATION ON DENSITY AND TESTING REQUIREMENTS.
   B. FLOWABLE FILL, IF USED, SHALL MEET THE REQUIREMENTS OF VDOT'S SPECIAL PROVISION FOR FLOWABLE BACKFILL. THE MATERIAL SHALL BE PLANT-CERTIFIED TO PROVIDE A 28-DAY COMPRESSIVE STRENGTH BETWEEN 30 AND 200 PSI. SEE STANDARDS FOR ADDITIONAL INFORMATION ON DENSITY AND TESTING REQUIREMENTS
6. RESTORATION OF ASPHALT PAVEMENT SHALL CONFORM TO SECTION 5.1 OF THE STANDARDS.
7. THE REPAIR SHALL BE RECTANGULAR AND SAW CUT IN STRAIGHT, UNIFORM LINES THAT ARE ALIGNED WITH THE STREET CENTERLINE. WHEN EDGES OF PAVEMENT HAVE BEEN UNDERMINED, PAVEMENT SHALL BE REMOVED TO A NEAT LINE 12" BEYOND THE UNDERMINED AREA. ANY INITIAL PAVEMENT REPAIR WITH AN AREA GREATER THAN 40 SQUARE FEET MAY BE NON-RECTANGULAR, HOWEVER, THE REPAIR SHALL BE SAW CUT IN STRAIGHT, UNIFORM LINES. ANY OTHER DEVIATION ON PATCH SHAPE MUST BE APPROVED BY THE INSPECTOR PRIOR TO THE REPAIR BEING MADE. THE FINISHED PATCH SURFACE SHALL BE WITHIN 1/4 INCH AT ANY POINT ACROSS THE PATCH AS IT RELATES TO THE SURROUNDING STREET SURFACE.
8. A FULL COVERAGE TACK COAT IS REQUIRED ON ALL SURFACES THAT WILL CONTACT THE NEW SURFACE LAYER.

DATE: July 1, 2013 | UTILITY TRENCH REPAIR | UTR-1

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ANDREW P. LUMSDEN
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DETAILS

STORMWATER DRAINAGE IMPROVEMENTS FOR PHASE 3
WYOMING AVENUE / WESTSIDE BOULEVARD
PREPARED FOR
THE CITY OF ROANOKE, VIRGINIA

REVISIONS		
NO.	DATE	DESCRIPTION
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DATE: November 20, 2014
SCALE: AS SHOWN
COMMISSION NO: 13-162
SHEET 3 OF 12

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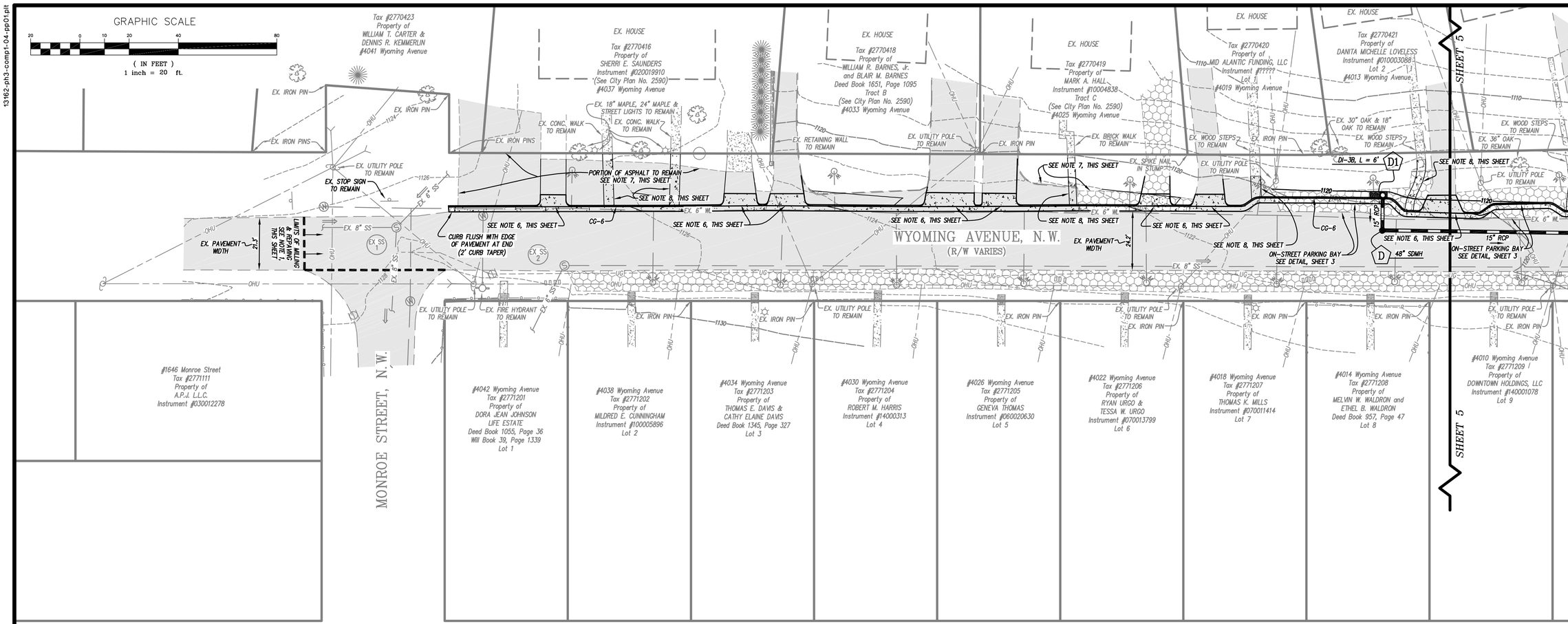
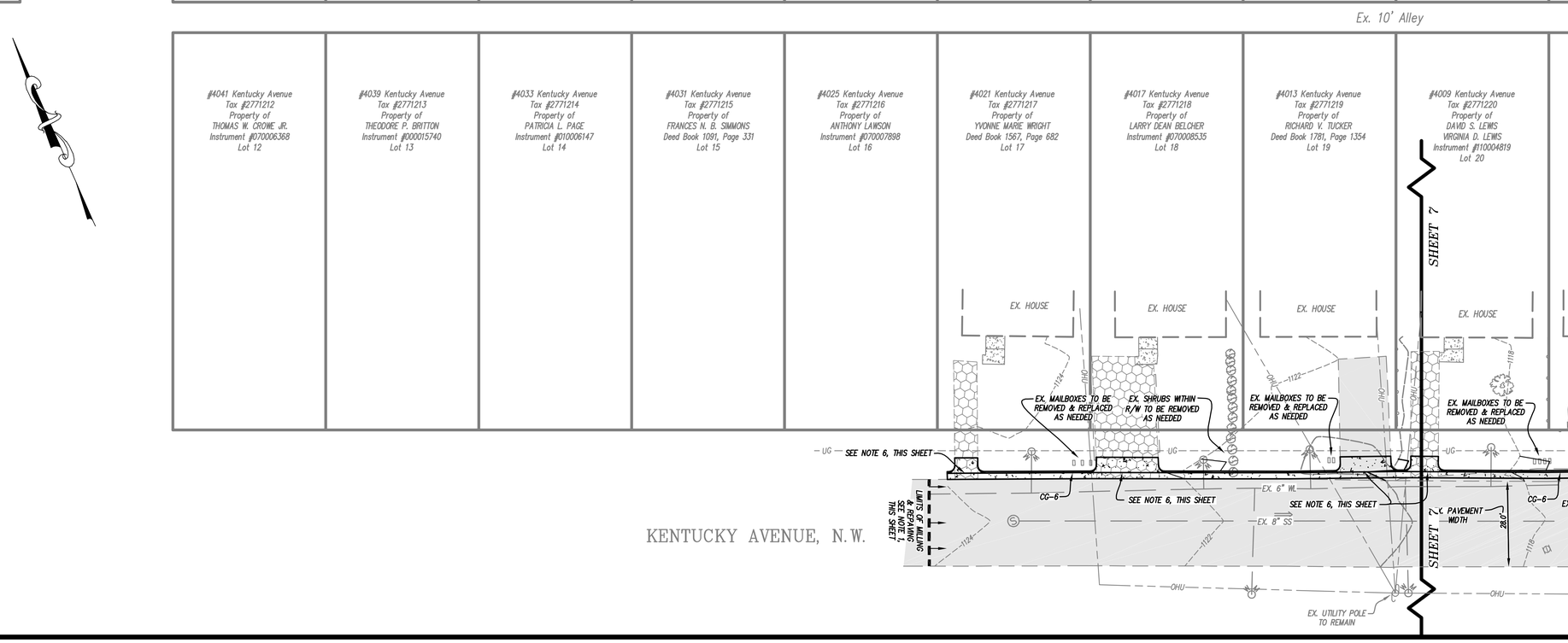


NOTES:

1. MILLING DEPTH SHALL BE A MINIMUM OF ONE AND ONE-HALF INCHES (1 1/2"). REPAVING SHALL EXACTLY MATCH MILLING DEPTH. POSITIVE DRAINAGE AND EXISTING FLOW LINES MUST BE MAINTAINED.
2. SEE SHEET 2 FOR LEGEND, STORM DRAIN COORDINATES, AND EXISTING STORM DRAIN / SANITARY SEWER STRUCTURE DETAILS.
3. WORK IN THE RIGHT-OF-WAY IS TO BE PERFORMED PER THE CITY OF ROANOKE RIGHT-OF-WAY EXCAVATION AND RESTORATION STANDARDS.
4. EXISTING WATER METERS ALONG WYOMING AVENUE & KENTUCKY AVENUE IN DISTURBED AREA SHALL BE RELOCATED OR EXISTING BOX TOP SHALL BE ADJUSTED TO MATCH FINISH GRADE. CONTRACTOR TO COORDINATE WITH WVWA BEFORE ANY METERS ARE RELOCATED. RELOCATION OF METERS TO BE PERFORMED BY THE CONTRACTOR WITH WVWA INSPECTION. SEE SHEET 3 FOR WATER METER REPLACEMENT DETAIL.
5. SEE SHEET 3 FOR TYPICAL SECTION DETAILS FOR CONSTRUCTION ALONG WYOMING AVENUE.
6. EXISTING ASPHALT DRIVEWAYS AND GRAVEL DRIVEWAYS SHALL BE RECONSTRUCTED USING TYPE II PAVEMENT AND EXISTING CONCRETE DRIVEWAYS SHALL BE RECONSTRUCTED USING TYPE III PAVEMENT. SEE SHEET 3 FOR PAVEMENT REPLACEMENT DETAILS. DRIVEWAY REPLACEMENT WIDTH SHALL MATCH EXISTING DRIVEWAY WIDTH AND NOT BE INCREASED. CONTRACTOR SHALL USE CG-9D CONCRETE ENTRANCE FOR RESIDENTIAL ENTRANCE REPLACEMENT. SEE SHEET 3 FOR DETAIL.
7. CONTRACTOR TO REMOVE ANY EXISTING GRAVEL AND EXISTING ASPHALT PAVEMENT BEHIND PROPOSED CURB WITHIN PUBLIC RIGHT-OF-WAY WHICH IS NOT PART OF EXISTING RESIDENTIAL DRIVEWAYS, EXCEPT IN NOTED AREAS. CONTRACTOR TO RESTORE THESE AREAS AND SEED APPROPRIATELY.
8. CONTRACTOR TO CONSTRUCT CONCRETE SIDEWALKS FROM EXISTING SIDEWALKS TO PROPOSED CURB & GUTTER. SEE SHEET 3 FOR DETAIL.
9. EXISTING GAS LINE PARALLEL TO KENTUCKY AVENUE IS APPROXIMATE LOCATION AND CONTRACTOR TO COORDINATE WITH ROANOKE GAS COMPANY IF ANY GAS LINE SHUT OFF OR GAS LINE RELOCATION IS REQUIRED.



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STORM DRAIN PLAN & PROFILE - WYOMING AVENUE

STORMWATER DRAINAGE IMPROVEMENTS
FOR
PHASE 3
WYOMING AVENUE / WESTSIDE BOULEVARD
PREPARED FOR
THE CITY OF ROANOKE, VIRGINIA

REVISIONS

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COMMISSION NO: 13-162

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13162-ph3-comp1-05-pp02.plt

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

NOTES:

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5. SEE SHEET 3 FOR TYPICAL SECTION DETAILS FOR CONSTRUCTION WYOMING AVENUE.
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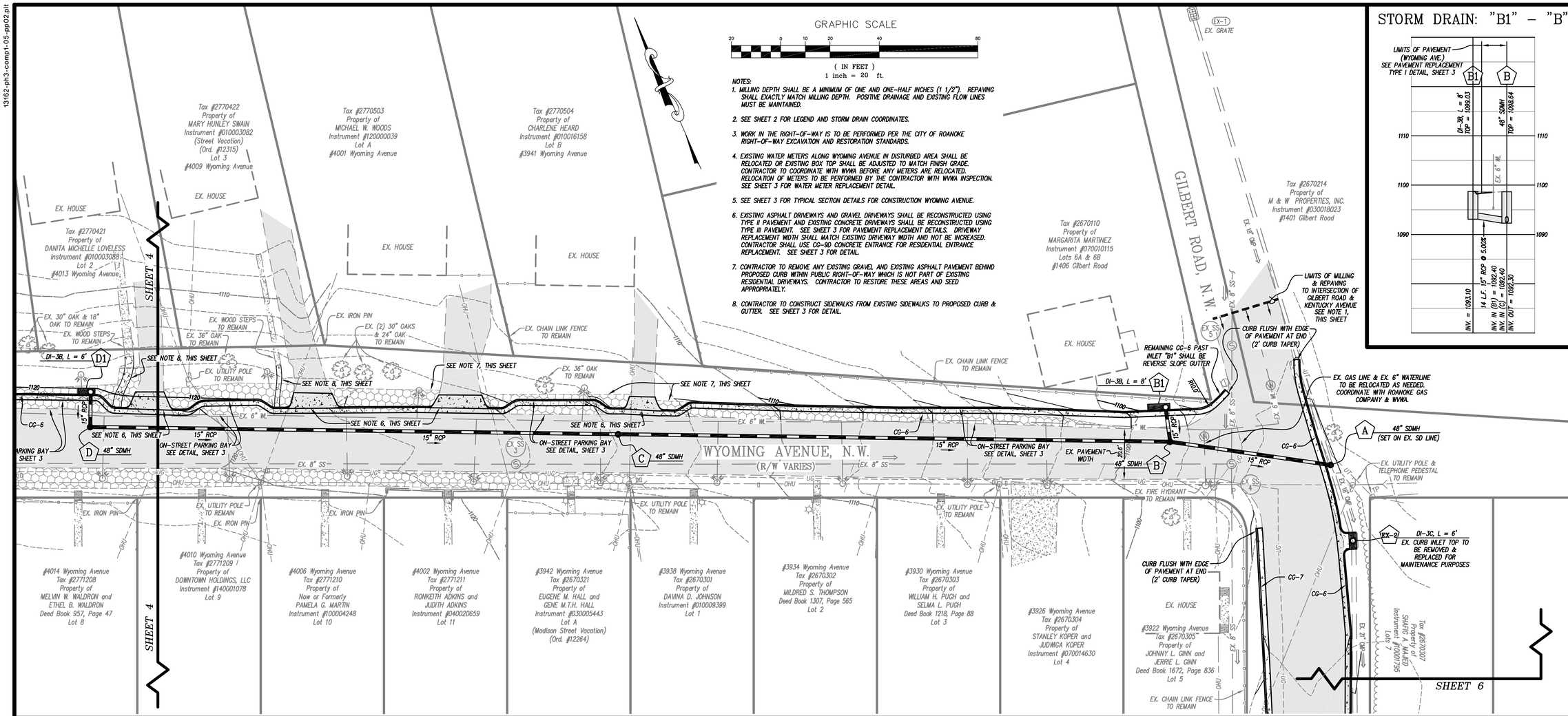
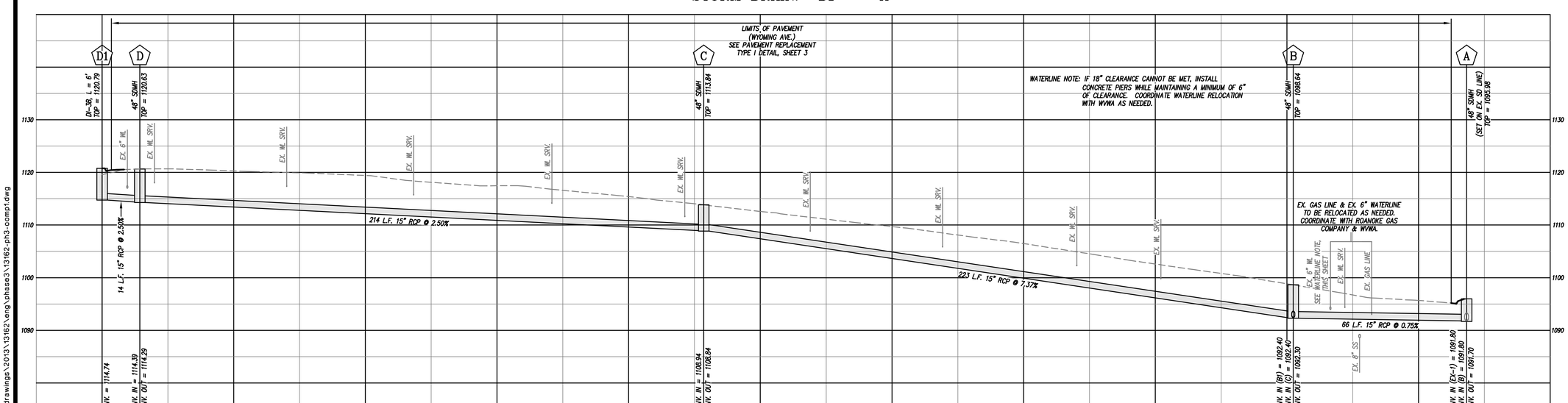


STORM DRAIN: "B1" – "B"

STORM DRAIN: "D1" – "A"



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STORM DRAIN PLAN & PROFILE - WYOMING AVENUE TO GILBERT ROAD

STORMWATER DRAINAGE IMPROVEMENTS
FOR
PHASE 3
WYOMING AVENUE / WESTSIDE BOULEVARD
PREPARED FOR
THE CITY OF ROANOKE, VIRGINIA

REVISIONS

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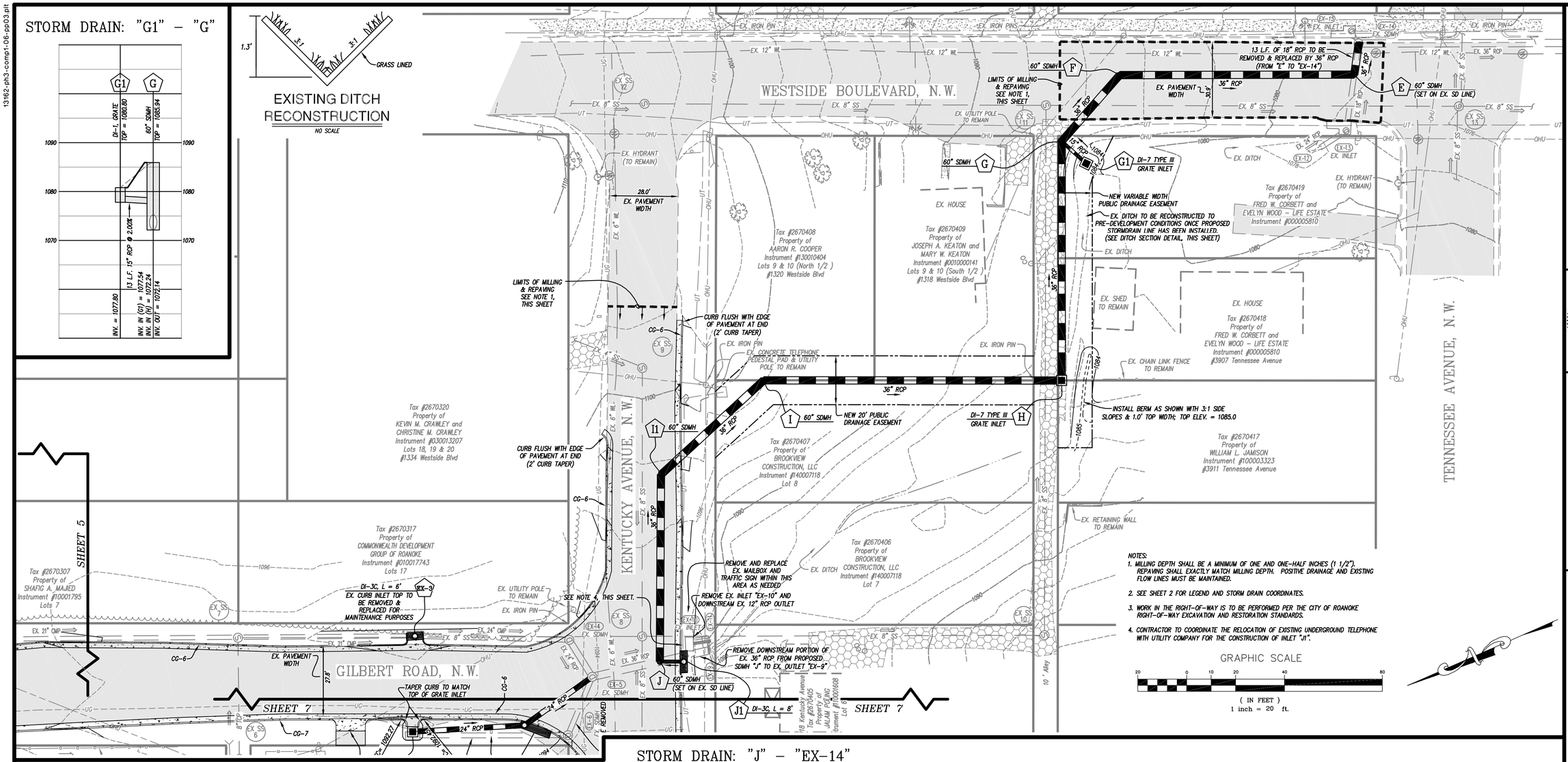
STORM DRAIN: "G1" – "G"

EXISTING DITCH RECONSTRUCTION

NO SCALE



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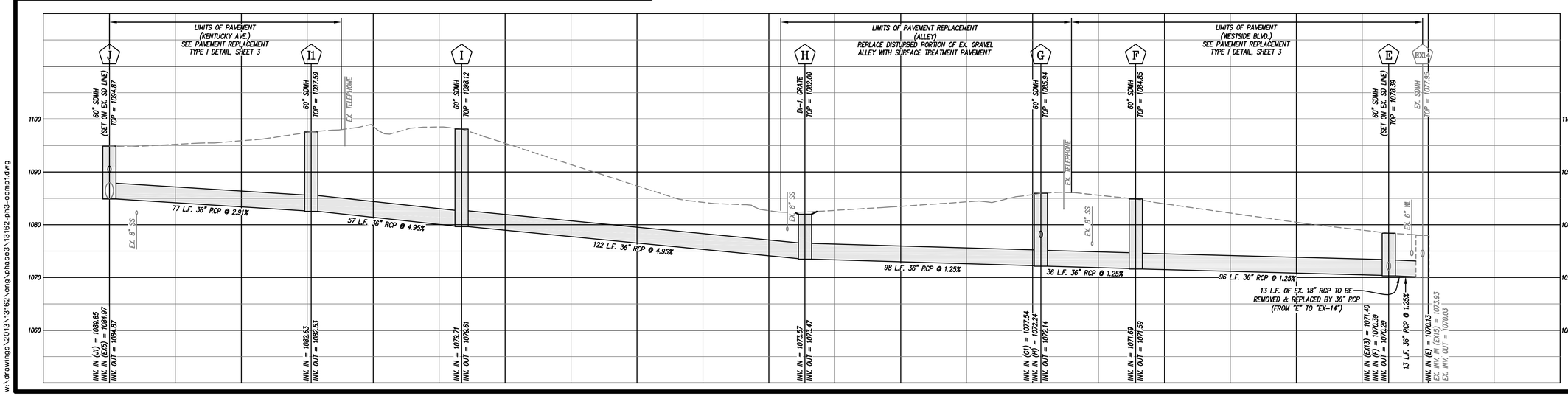
3. WORK IN THE RIGHT-OF-WAY IS TO BE PERFORMED PER THE CITY OF ROANOKE RIGHT-OF-WAY EXCAVATION AND RESTORATION STANDARDS.
4. CONTRACTOR TO COORDINATE THE RELOCATION OF EXISTING UNDERGROUND TELEPHONE WITH UTILITY COMPANY FOR THE CONSTRUCTION OF INLET "J1".

STORM DRAIN: "J" – "EX-14"



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STORM DRAIN PLAN & PROFILE - WESTSIDE BLVD

STORMWATER DRAINAGE IMPROVEMENTS
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SHEET 6 OF 12

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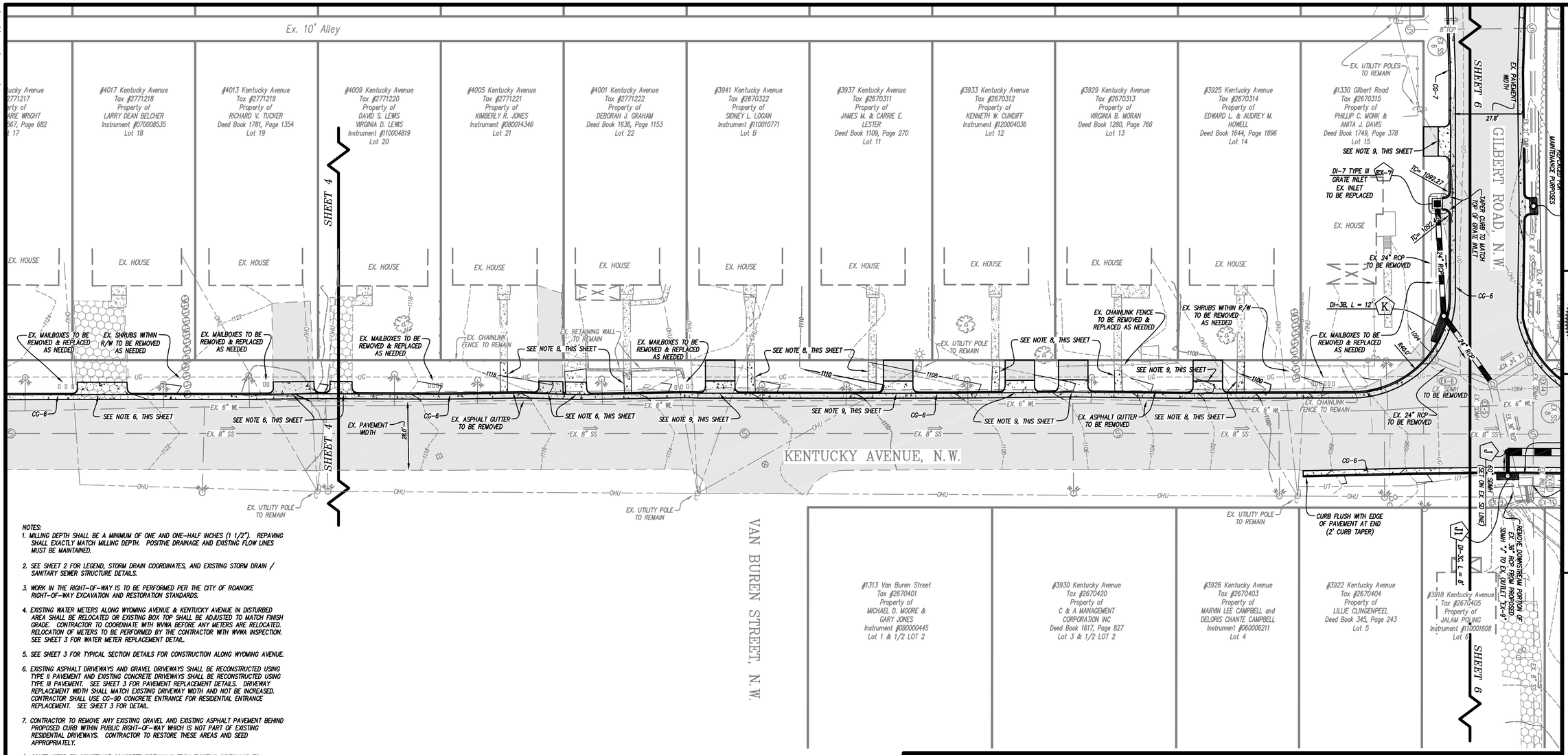

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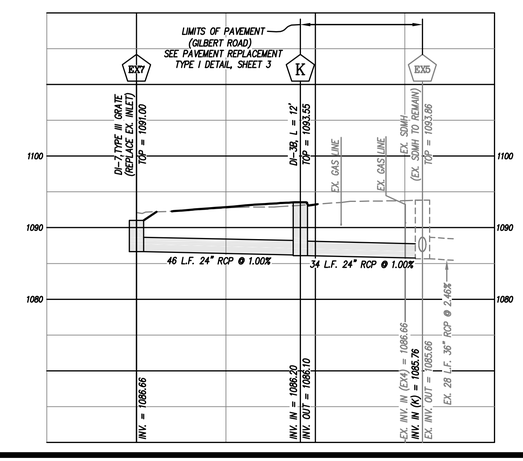
8. CONTRACTOR TO CONSTRUCT CONCRETE SIDEWALKS FROM EXISTING SIDEWALKS TO PROPOSED CURB & GUTTER. SEE SHEET 3 FOR DETAIL.
9. CONTRACTOR TO PROVIDE 12' WIDE RESIDENTIAL ENTRANCE AND TYPE II ASPHALT PAVEMENT TO THE R/W, SEE DETAILS SHEET 3.
10. EXISTING GAS LINE PARALLEL TO KENTUCKY AVENUE IS APPROXIMATE LOCATION AND CONTRACTOR TO COORDINATE WITH ROANOKE GAS COMPANY IF ANY GAS LINE SHUT OFF OR GAS LINE RELOCATION IS REQUIRED.

GRAPHIC SCALE

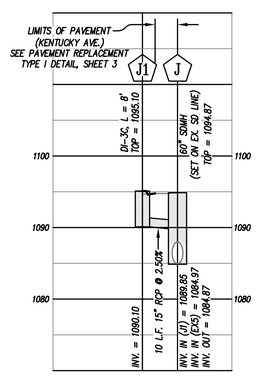
20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

STORM DRAIN: "EX-7" – "EX-5"



STORM DRAIN: "J1" – "J"



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STORM DRAIN PLAN & PROFILE - KENTUCKY AVENUE TO GILBERT ROAD

STORMWATER DRAINAGE IMPROVEMENTS
FOR
PHASE 3
WYOMING AVENUE / WESTSIDE BOULEVARD
PREPARED FOR
THE CITY OF ROANOKE, VIRGINIA

REVISIONS

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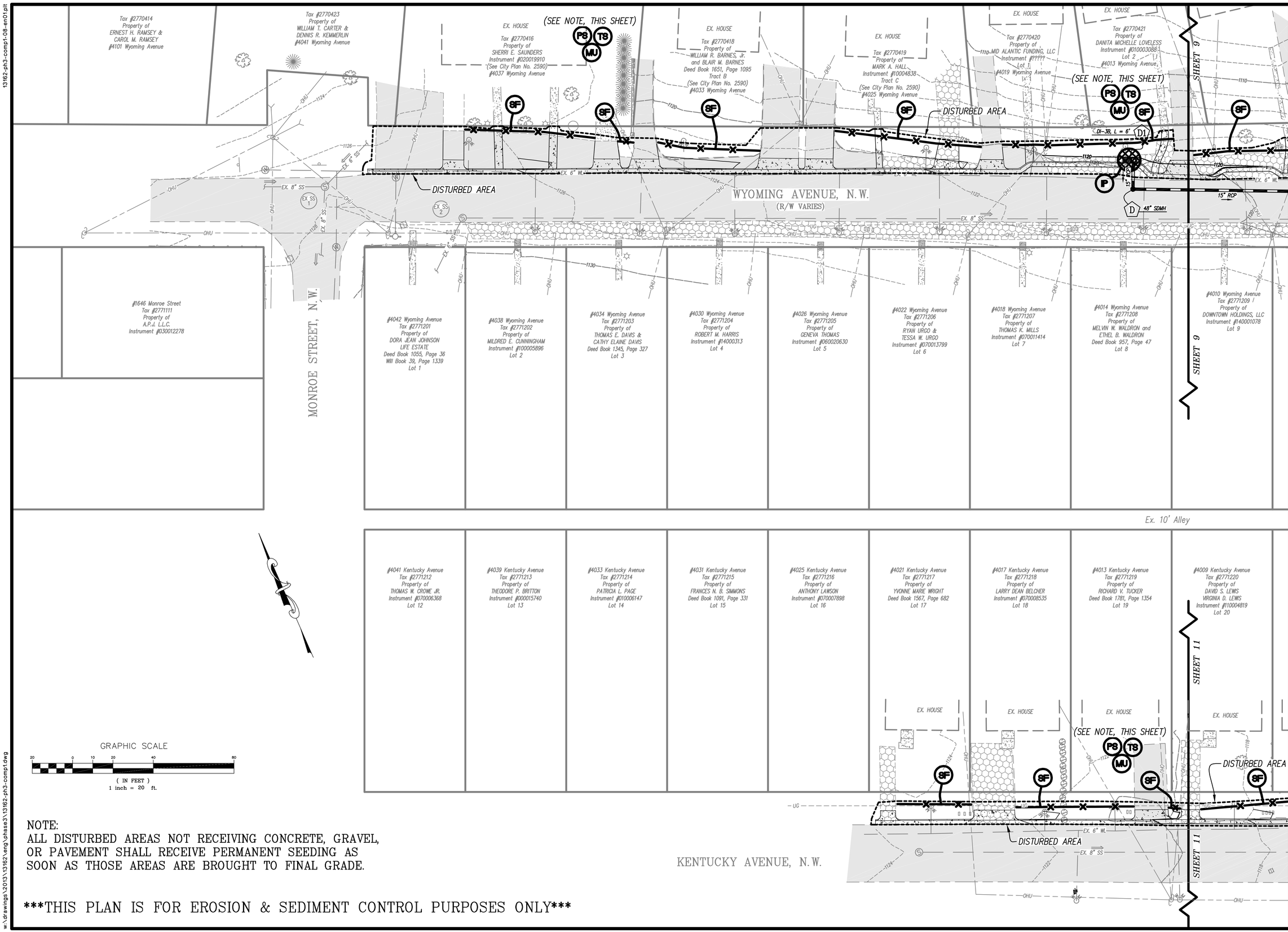

NOTE:
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THIS PLAN IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY

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EROSION & SEDIMENT CONTROL PLAN - WYOMING AVENUE

STORMWATER DRAINAGE IMPROVEMENTS
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SHEET 8 OF 12

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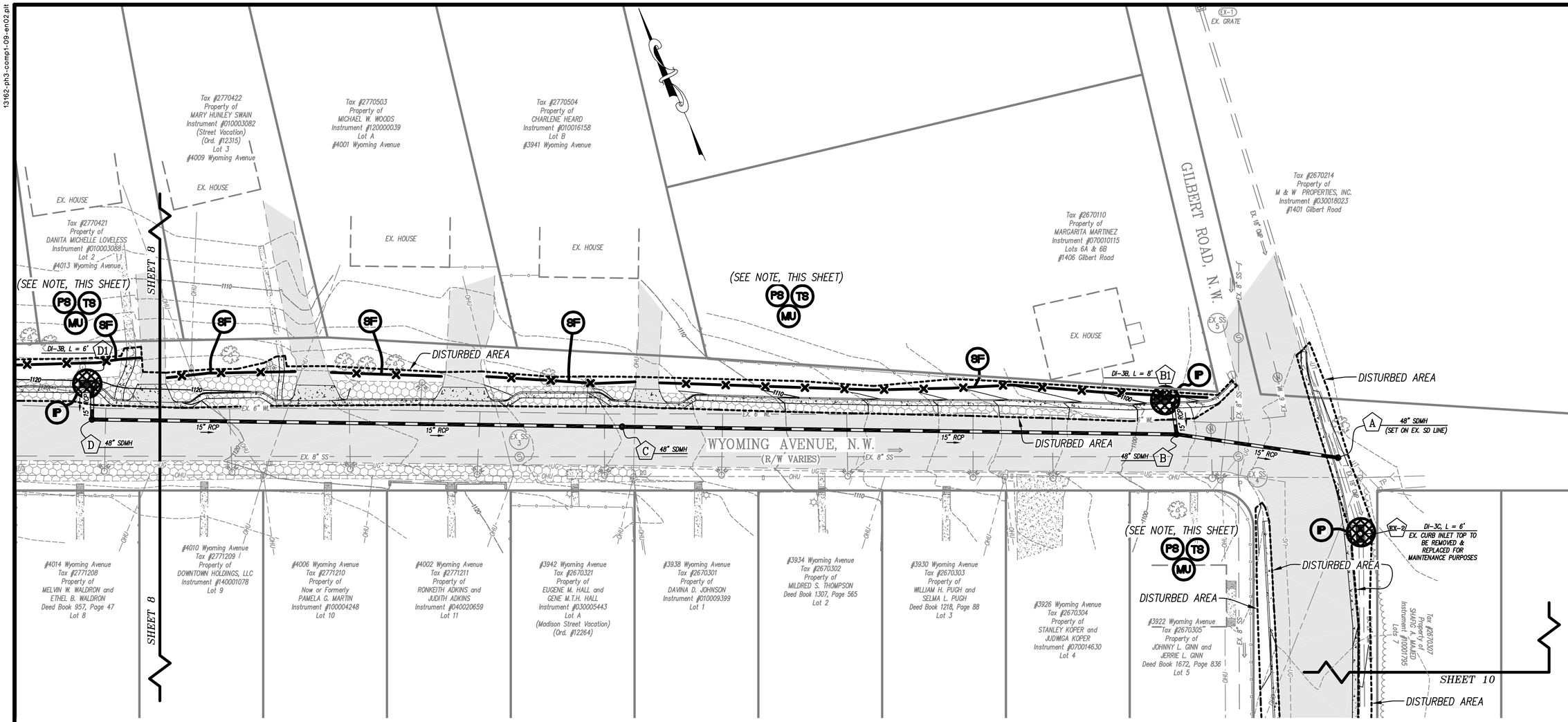

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

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EROSION & SEDIMENT CONTROL PLAN - WYOMING AVENUE TO GILBERT ROAD

STORMWATER DRAINAGE IMPROVEMENTS
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SHEET 9 OF 12

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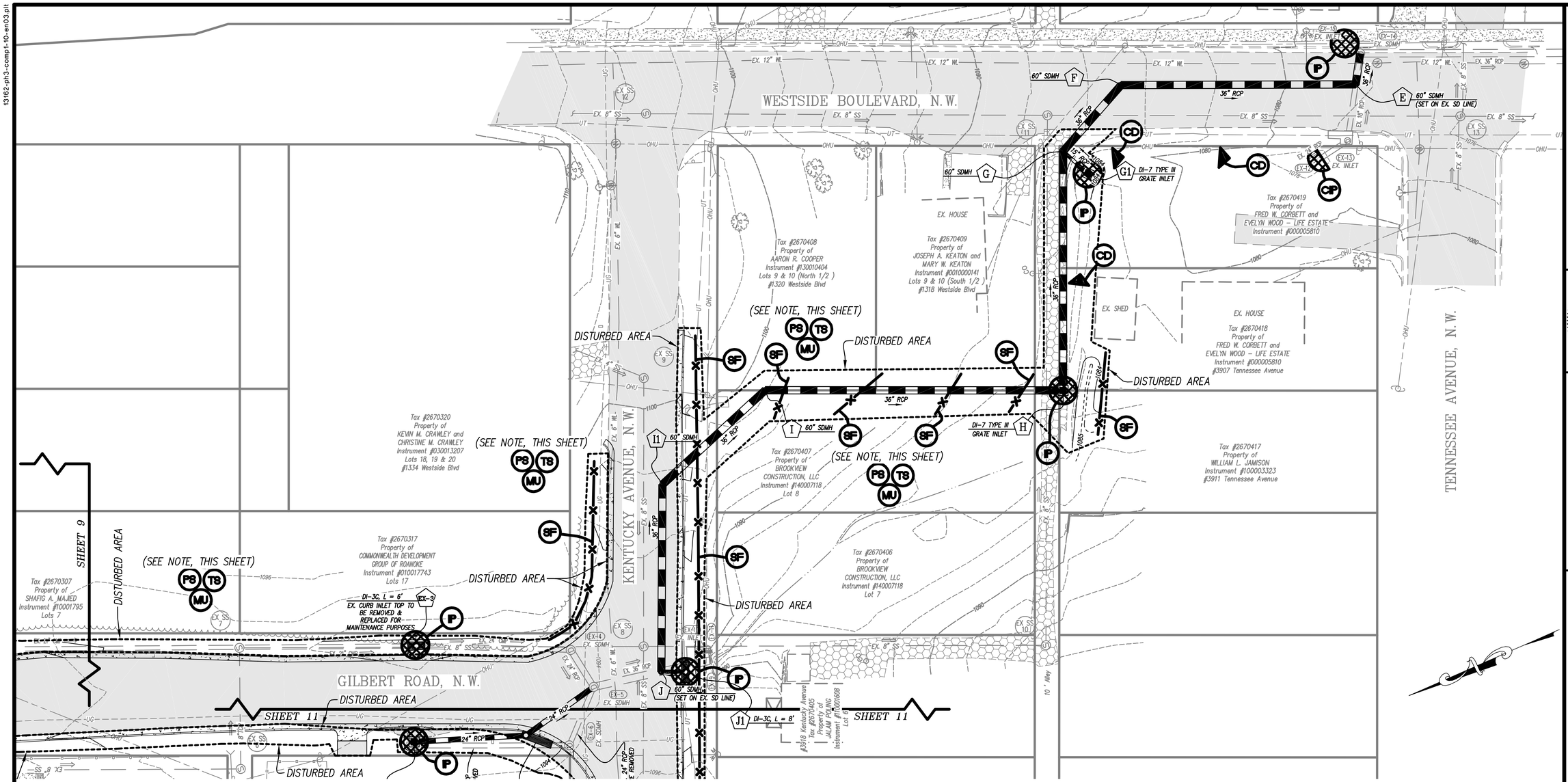

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EROSION & SEDIMENT CONTROL PLAN - WESTSIDE BLVD

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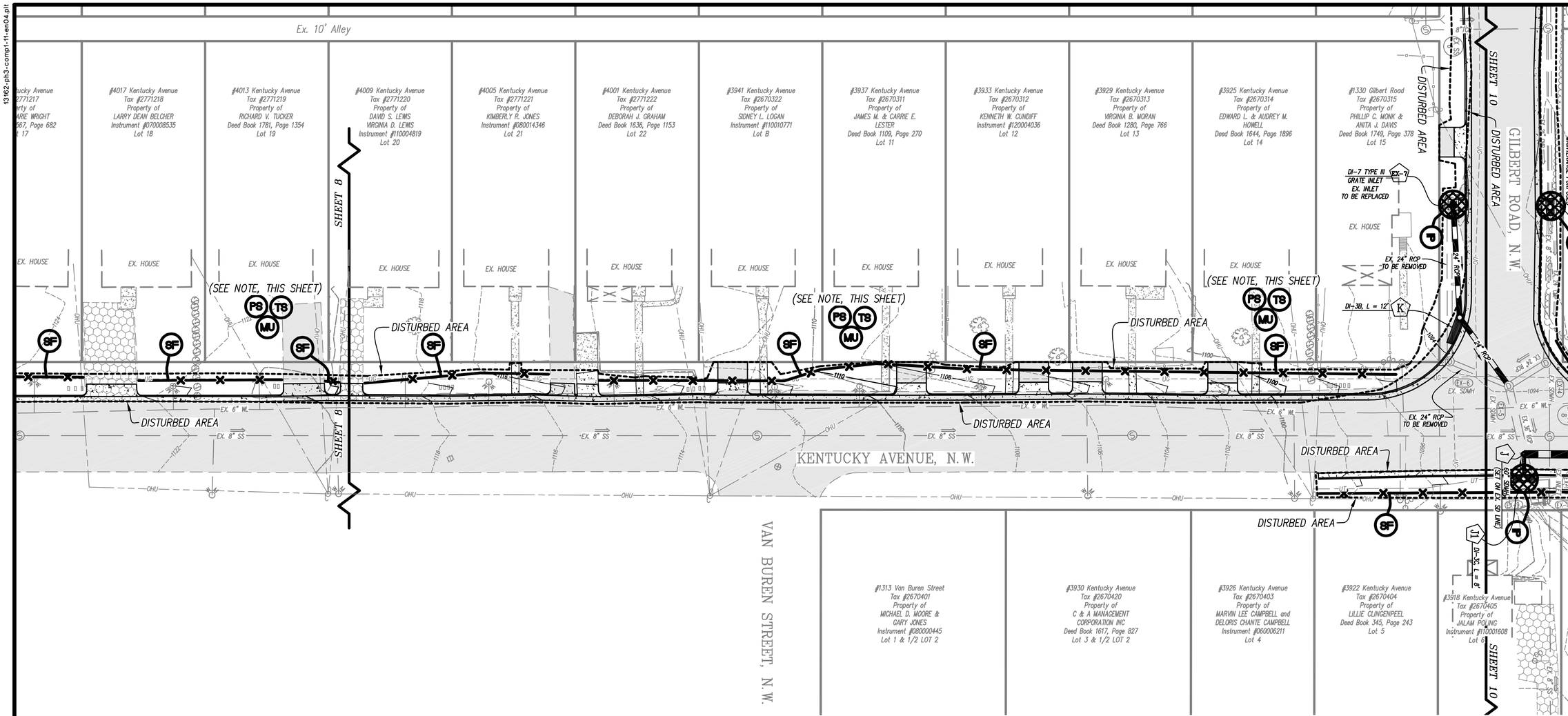

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

THIS PLAN IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY

NOTE:
ALL DISTURBED AREAS NOT RECEIVING CONCRETE, GRAVEL, OR PAVEMENT SHALL RECEIVE PERMANENT SEEDING AS SOON AS THOSE AREAS ARE BROUGHT TO FINAL GRADE.

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STORM DRAIN PLAN & PROFILE - KENTUCKY AVENUE TO GILBERT ROAD

STORMWATER DRAINAGE IMPROVEMENTS
FOR
PHASE 3
WYOMING AVENUE / WESTSIDE BOULEVARD
PREPARED FOR
THE CITY OF ROANOKE, VIRGINIA

REVISIONS

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		

DATE: November 20, 2014
SCALE: 1"= 20' (H); 1"= 10' (V)
COMMISSION NO: 13-162

13162-ph3-comp1-12-en05.plt

EROSION CONTROL NARRATIVE

PROJECT DESCRIPTION
THIS LINEAR DEVELOPMENT PROJECT IS LOCATED WITHIN THE CITY OF ROANOKE AND CONSISTS OF INSTALLING NEW STORM DRAIN TO HELP IMPROVE THE DRAINAGE ISSUES IN THIS AREA. THIS PROPOSED PROJECT SHALL DISTURB A TOTAL AREA OF APPROXIMATELY 0.8 ACRES OUTSIDE THE EXISTING PAVEMENT LIMITS AND THEREFORE HAS LESS THAN 1.0 ACRE OF DISTURBANCE TO EACH INLET.

EXISTING SITE CONDITIONS
THE SITE IS LOCATED ALONG WYOMING AVENUE, GILBERT ROAD, KENTUCKY AVENUE, AND WESTSIDE BOULEVARD. THE MAJORITY OF THE PROJECT AREA LAYS ALONG THE PREVIOUSLY MENTIONED RIGHT-OF-WAYS AND HAS DRAINAGE GENERALLY FROM NORTHWEST TO SOUTHEAST ALONG WYOMING THEN FROM NORTH TO SOUTH TOWARD WESTSIDE BOULEVARD.

ADJACENT AREAS
THE MAJORITY OF THIS PROJECT IS LOCATED IN RESIDENTIAL SINGLE-FAMILY ZONING (R-7 & R-5) WITH A SMALL PORTION OF THE PROJECT BEING IN RESIDENTIAL MULTIFAMILY ZONING (RMF).

OFFSITE AREAS
NO OFFSITE FILL OR BORROW AREAS ARE COVERED BY THIS PLAN. ANY SUCH AREA WILL REQUIRE SEPARATE EROSION CONTROL PLAN.

SOILS:
SOILS INFORMATION IS BASED ON AN INSPECTION OF THE USDA SOIL SURVEY OF ROANOKE COUNTY AND HAS NOT BEEN FIELD VERIFIED. A SOILS MAP IS ATTACHED WHICH SHOWS THE LOCATION OF VARIOUS SOILS WITHIN THE CONSTRUCTION AREA. THE FOLLOWING SYMBOLS CORRESPOND WITH SOIL TYPES ON THE MAP.

SYMBOL	SOIL TYPE
5C	CHISWELL-LITZ COMPLEX, 7 – 15% SLOPES
6C	CHISWELL-LITZ-URBAN LAND COMPLEX, 2 – 15% SLOPES
6D	CHISWELL-LITZ-URBAN LAND COMPLEX, 15 – 35% SLOPES

CHISWELL SOIL PROPERTIES:
COMPOSITION: 0 TO 2 INCHES, CHANNERY SILT LOAM; 2 TO 12 INCHES, VERY CHANNERY SILT LOAM; 12 TO 22 INCHES, BEDROCK.
PERMEABILITY: WELL DRAINED
AVAILABLE WATER CAPACITY: VERY LOW
DEPTH TO BEDROCK: 10 TO 20 INCHES
DEPTH TO WATER TABLE: MORE THAN 80 INCHES

LITZ SOIL PROPERTIES:
COMPOSITION: 0 TO 5 INCHES, CHANNERY SILT LOAM; 5 TO 24 INCHES, VERY CHANNERY SILT LOAM; 24 TO 34 INCHES, BEDROCK.
PERMEABILITY: WELL DRAINED
AVAILABLE WATER CAPACITY: LOW
DEPTH TO BEDROCK: 20 TO 40 INCHES
DEPTH TO WATER TABLE: MORE THAN 80 INCHES

CRITICAL AREAS
THE CONTRACTOR SHALL TAKE SPECIAL CARE TO INSURE THAT SEDIMENT IS NOT ALLOWED TO FLOW INTO EITHER THE NEW STORM DRAIN OR THE EXISTING DOWNSTREAM RECEIVING CHANNELS. ENSURE THAT ALL ESC MEASURES ARE STABILIZED AND FUNCTIONING TO MINIMIZE THE POTENTIAL FOR ANY SEDIMENT LEAVING THE SITE.

MINIMUM STANDARDS
REFER TO DEQ MINIMUM STANDARDS.

EROSION AND SEDIMENT CONTROL MEASURES
SILT FENCE (3.05) – SILT FENCE WILL BE INSTALLED AT THE LOWER ENDS OF THE PROJECT SITE TO INTERCEPT SEDIMENT LADEN RUN-OFF PRIOR TO EXITING THE SITE.

INLET PROTECTION (3.07) – INLET PROTECTION WILL BE INSTALLED AT EACH STORM DRAIN INLET TO MINIMIZE THE AMOUNT OF SEDIMENT LADEN RUNOFF FROM ENTERING THE STORM DRAIN SYSTEM.

CULVERT INLET PROTECTION (3.08) – A SEDIMENT FILTER SHALL BE PROVIDED AT THE INLET TO STORM SEWER CULVERTS TO PREVENT SEDIMENT FROM ENTERING, ACCUMULATING AND BEING TRANSFERRED BY A CULVERT.

ROCK CHECK DAM (3.20) – ROCK CHECK DAM PROVIDES A STONE DAM TO REDUCE VELOCITY WITHIN A DRAINAGE DITCH.

TEMPORARY SEEDING (3.31) – TEMPORARY SEEDING SHALL BE APPLIED TO TEMPORARY DIVERSION DIKES, TOPSOIL STOCKPILES, AND ALL AREAS TO BE ROUGH GRADED, BUT NOT FINISHED GRADED DURING THE INITIAL PHASE OF CONSTRUCTION. TEMPORARY SEEDING SHALL BE FAST GERMINATING, TEMPORARY VEGETATION AND INSTALLED IMMEDIATELY FOLLOWING GRADING, OR INSTALLATION IF A TEMPORARY MEASURE. SEE ALSO MINIMUM STANDARDS.

PERMANENT SEEDING (3.32) – PERMANENT SEEDING SHALL BE INSTALLED ON ALL DISTURBED AREAS OF THE SITE NOT OTHERWISE STABILIZED.

MULCHING (3.35) – ALL DISTURBED AREAS SHALL BE MULCHED AFTER SEEDING. STRAW MULCH SHALL BE APPLIED AT A RATE OF TWO TONS PER ACRE AND ANCHORED WITH 750 LBS PER ACRE OF FIBER MULCH OVER THE SEEDED AREA.

PERMANENT STABILIZATION:
ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING WITHIN 7 DAYS OF REACHING FINAL GRADES. SEEDING SHALL BE DONE IN ACCORDANCE WITH DCR SPECIFICATION 3.32 (PERMANENT SEEDING), OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION AND WITH THE DETAILS SHOWN ON THIS PLAN. MULCH (STRAW OR FIBER) SHALL BE USED ON ALL SEEDED AREAS. IN ALL SEEDING OPERATIONS, SEED, FERTILIZER, AND LIME SHALL BE APPLIED PRIOR TO MULCHING.

MAINTENANCE:
ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED BI-WEEKLY AND AFTER EVERY RUNOFF PRODUCING RAINFALL. A LOG OF DATES AND INSPECTIONS SHALL BE KEPT. ANY DEFICIENCIES THAT ARE FOUND SHALL BE CORRECTED IMMEDIATELY. ACCUMULATED SEDIMENT AT TRAPPING MEASURES SHALL BE ROUTINELY REMOVED.

EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL AFTER ALL DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED AND THEN TEMPORARY MEASURES PROPERLY REMOVED. REMOVAL OF ESC MEASURES MUST BE APPROVED BY CITY OF ROANOKE BEFORE REMOVED.

STORMWATER MANAGEMENT CONSIDERATION:
THIS LINEAR DEVELOPMENT PROJECT IS EXEMPT FROM THE CITY'S STORMWATER MANAGEMENT ORDINANCE SINCE THE AMOUNT OF DISTURBANCE TO EACH INLET IS LESS THAN 1.0 ACRE, THERE SHALL BE NO SIGNIFICANT INCREASE IN PEAK DISCHARGE FROM PRE TO POST-DEVELOPMENT, AND NO DOWNSTREAM FLOODING OR EROSION IS ANTICIPATED AND AT THIS TIME WE ARE UNAWARE OF ANY EXISTING DOWNSTREAM PROBLEMS CONCERNING FLOODING OR EROSION.

CONTRACTOR SHALL PAY PARTICULAR ATTENTION TO THE FOLLOWING MINIMUM STANDARDS:

1. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 14 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year. ***APPLY SEEDING MIXTURES IN ACCORDANCE WITH SPECIFICATIONS 3.31 AND 3.32 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH) TO ALL AREAS THAT DO NOT HAVE A NON-ERODABLE SURFACE AS SHOWN ON THE PLAN.***
2. During construction of the project, soil stock piles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site. ***ANY ONSITE SOIL STOCKPILE SHALL HAVE SILT FENCE ALONG THE DOWNHILL PERIMETER. ALSO, A TEMPORARY SEED MIX IS TO BE APPLIED OVER THE SOIL STOCKPILE IF TO REMAIN AS-IS FOR LONGER THAN 30 DAYS. NO ONSITE STOCKPILE IS CURRENTLY PLANNED FOR THIS PROJECT.***
3. A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion. ***SEE MINIMUM STANDARD 1.***
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. ***INSTALL EROSION CONTROL MEASURES AS OUTLINED IN THE CONSTRUCTION SEQUENCE.***
5. Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation. ***ONE BERM IS PROPOSED NEAR STRUCTURE "F" AND SHALL BE CONSTRUCTED ACCORDING TO NOTE ON SHEET 6.***
6. Sediment traps and sediment basins shall be designed and constructed based on the total drainage area to be served by the trap or basin.
   a. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres.
   b. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a 25-year storm of 24-hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.

   NO SEDIMENT TRAPS OR BASINS ARE PROPOSED WITH THIS PLAN.
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. ***REVISED ANY AREAS THAT DO NOT HAVE AN ESTABLISHEMNT OF A GOOD STAND OF GRASS AFTER INITIAL APPLICATION OF PERMANENT SEEDING. ADDITIONAL SLOPE STABILIZATION MEASURES ARE TO BE CONSIDERED AS CONDITIONS DICTATE.***
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. ***NO CONCENTRATED RUNOFF SHALL FLOW DOWN CUT OR FILL SLOPES AND SHALL BE DIVERTED AS NECESSARY.***
9. Whenever water seeps from a slope face, adequate drainage or other protection shall be provided. ***THE CONTRACTOR SHALL CONTACT THE ENGINEER IMMEDIATELY UPPON THE DISCOVERY OF ANY WATER SEEPS.***
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 SHALL BE INSTALLED AS STORM DRAIN SYSTEM IS INSTALLED.***
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. ***NEW STORM DRAIN LINES SHALL DISCHARGE TO EXISTING STORM DRAIN LINE.***
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. NO LIVE WATERCOURSES EXIST WITHIN THIS PROJECT.***
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. NO LIVE WATERCOURSES EXIST WITHIN THIS PROJECT.***
14. All applicable federal, state and local regulations pertaining to working in or crossing live watercourses shall be met. ***NOT APPLICABLE. NO LIVE WATERCOURSES EXIST WITHIN THIS PROJECT.***
15. The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed. ***NOT APPLICABLE. NO LIVE WATERCOURSES EXIST WITHIN THIS PROJECT.***
16. Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:
   a. No more than 500 linear feet of trench may be opened at one time.
   b. Excavated material shall be placed on the uphill side of trenches.
   c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.
   d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
   e. Restabilization shall be accomplished in accordance with these regulations.
   f. Applicable safety regulations shall be complied with.

   UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARDS ABOVE.
17. Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities. ***ADEQUATE MEARS SHALL BE PROVIDED FOR THE CLEANING OF MUD AND SEDIMENT FROM CONSTRUCTION VEHICLES PRIOR TO ENTERING PUBLIC STREETS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY MUD AND SEDIMENT TRANSPORTED FROM THIS SITE ONTO THE PUBLIC STREETS.***
18. All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the 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. ***EROSION & SEDIMENT CONTROL MEASURES SHALL NOT BE REMOVED WITHOUT ROANOKE CITY PERMISSION AND SHALL BE IN ACCORDANCE WITH ABOVE REQUIREMENTS.***

MINIMUM STANDARDS CONTINUED:

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:
   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; and
      (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.
   c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:
      (1) Improve the channel to a condition where a ten-year storm will not overtop the banks and a two-year storm will not cause erosion to the 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; or
      (3) Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a ten-year storm to increase when runoff outfalls into a man-made channel; or
      (4) Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the VESCP authority to prevent downstream erosion.
   d. The applicant shall provide evidence of permission to make the improvements.
   e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development of the subject project.
   f. If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the VESCP of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.
   g. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipater 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 runoff 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 and man-made channels if the practices are designed to
      (i) detain the water quality volumes and release it over 48 hours;
      (ii) detain and release over 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 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 (VSMP) Permit Regulations.
   n. Compliance with the water quantity minimum standards set out in 4VAC50-60-66 of the Virginia Stormwater Management Program (VSMP) Permit Regulations shall be deemed to satisfy the requirements of Minimum Standard 19.

N/A

GENERAL EROSION AND SEDIMENT CONTROL NOTES,
ROANOKE CITY, VIRGINIA

ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS VR 625-02-00 EROSION AND SEDIMENT CONTROL REGULATIONS.

ES-2: THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE ONSITE PRECONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

ES-3: ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.

ES-4: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN AND NARRATIVE, AS WELL AS A COPY OF THE LAND DISTURBING PERMIT, SHALL BE MAINTAINED ON THE SITE AT ALL TIMES. THE EROSION AND SEDIMENT CONTROL ADMINISTRATOR WILL DELIVER THESE MATERIALS AT THE ONSITE PRECONSTRUCTION CONFERENCE.

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 THE LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-8: 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.

CONSTRUCTION SEQUENCE

1. CONTRACTOR'S CERTIFIED RESPONSIBLE LAND DISTURBER SHALL BE NAMED AND A COPY OF HIS RLD CERTIFICATE PROVIDED TO THE CITY OF ROANOKE AT LEAST TWO DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING. RLD SHALL ALSO ATTEND PRE-CON MEETING.
2. THE CONSTRUCTION PROCESS SHOULD BE SEQUENCED AS MUCH AS POSSIBLE SO THAT EACH AREA IS SEEDED AND STABILIZED PRIOR TO BEGINNING GRADING OPERATIONS IN ANOTHER AREA.
3. PERIMETER SILT FENCE SHALL BE INSTALLED PRIOR TO BEGINNING ANY LAND DISTURBANCE.
4. BEGIN STORM DRAIN CONSTRUCTION STARTING DOWNSTREAM AT THE EXISTING STORM DRAIN SYSTEM AT EXISTING SDMH "EX-14" AND WORK UPSTREAM.
5. ONCE 36" STORM DRAIN CONSTRUCTION HAS BEEN COMPLETED, BEGIN CONSTRUCTION OF UPSTREAM 15" STORM DRAIN ALONG WYOMING AVENUE AND 24" STORM DRAIN ALONG GILBERT ROAD.
6. INSTALL PROPOSED CURB AND GUTTER ALONG WITH PROPOSED RESIDENTIAL ENTRANCES ON WYOMING AVENUE, GILBERT ROAD, AND KENTUCKY AVENUE.
7. PROVIDE INLET PROTECTION FOR EACH INLET AS THEY ARE INSTALLED.
8. APPLY SOIL CONDITIONING, PERMANENT SEEDING MIXTURE, AND MULCH AS NEEDED SO THAT SITE IS STABILIZED WITH ESTABLISHED PERMANENT VEGETATION OR NON-ERODABLE IMPROVEMENTS.
9. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES MAY BE REMOVED AFTER THOSE AFFECTED AREAS HAVE BEEN BROUGHT TO FINAL GRADE AND PERMANENTLY STABILIZED. REMOVAL OF ESC MEASURES MUST BE APPROVED BY CITY OF ROANOKE STAFF.

(TS) TEMPORARY SEEDING MIXTURE

PLANTING DATES	SPECIES
SEPT. 1 - FEB. 15	50/50 MIX OF ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM) & CEREAL (WINTER) RYE (SECALE CEREALE)
FEB. 16 - APR. 30	ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM)
MAY. 1 - AUG. 31	GERMAN MILLET (SETARIA ITALICA)

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 30 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.

(PS) PERMANENT SEEDING MIXTURE

TYPE A	TYPE B (SLOPES 3:1 OR STEEPER)
15 OCTOBER TO 1 FEBRUARY K-31 FESCUE @ 5 LB / 1000 SF BORZY WINTER RYE @ 1/2 LB / 1000 SF	15 MARCH TO 1 MAY CROWN VETCH @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF RED TOP @ 1/8 LB / 1000 SF
1 FEBRUARY TO 1 JUNE K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF	15 AUGUST TO 1 OCTOBER CROWN VETCH @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF RED TOP @ 1/8 LB / 1000 SF
1 JUNE TO 1 SEPTEMBER K-31 FESCUE @ 5 LB / 1000 SF GERMAN MILLET @ 1/2 LB / 1000 SF	
1 SEPTEMBER TO 15 OCTOBER K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF	

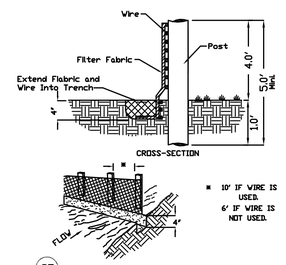
LIME: 140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE

FERTILIZER: 5-20-10 @ 25 LB / 1000 SF
38-0-0 @ 7 LB / 1000 SF

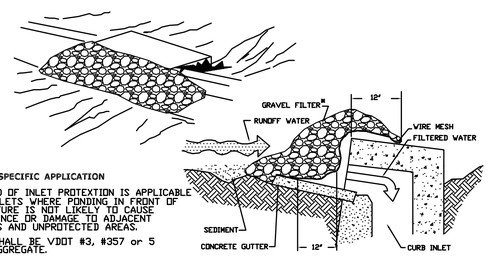
MULCH: IF REQUIRED, SHALL BE USED OVER ALL SEEDED AREAS AND SHALL BE APPLIED IN ACCORDANCE WITH SECTION 1.75 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.

SOIL CONDITIONING: INCORPORATION OF LIME AND FERTILIZER, SELECTION OF CERTIFIED SEED, MULCHING, MAINTENANCE OF NEW SEEDLINGS, AND RESEEDING SHALL BE IN ACCORDANCE WITH SPECIFICATIONS CONTAINED WITHIN THE VIRGINIA SOIL EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. ADDITIONAL SEEDING TO BE PERFORMED AS REQUIRED BY THE INSPECTOR.

SEED APPLICATION: APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER ON A FIRM, FRIABLE, SEEDBED. MAXIMUM SEEDING DEPTH SHALL BE 1/4 INCH.

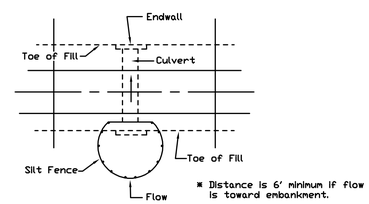


(SF) CONSTRUCTION OF A SILT FENCE

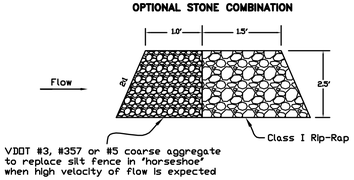


SPECIFIC APPLICATION
THIS METHOD OF INLET PROTEXTION IS APPLICABLE AT CURB INLETS WHERE PONDING IN FRONT OF THE STRUCTURE IS NOT LIKELY TO CAUSE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.
* GRAVEL SHALL BE VDOT #3, #357 or 5 COURSE AGGREGATE.

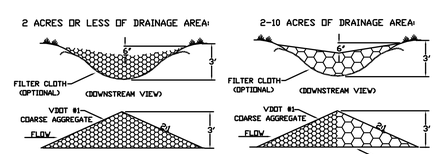
(IP) GRAVEL CURB INLET SEDIMENT FILTER



OPTIONAL STONE COMBINATION



(CIP) SILT FENCE CULVERT INLET PROTECTION



(CD) ROCK CHECK DAM

NO.	TITLE	KEY	SYMBOL
3.05	SILT FENCE	SF	
3.07	STORM DRAIN INLET PROTECTION	IP	
3.08	CULVERT INLET PROTECTION	CIP	
3.20	ROCK CHECK DAMS	CD	
3.31	TEMPORARY SEEDING	TS	
3.32	PERMANENT SEEDING	PS	
3.35	MULCHING	MU	

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EROSION & SEDIMENT CONTROL NOTES & DETAILS

STORMWATER DRAINAGE IMPROVEMENTS
FOR
PHASE 3
WYOMING AVENUE / WESTSIDE BOULEVARD
PREPARED FOR
THE CITY OF ROANOKE, VIRGINIA

REVISIONS

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		

DATE: November 20, 2014
SCALE: NONE
COMMISSION NO: 13-162

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