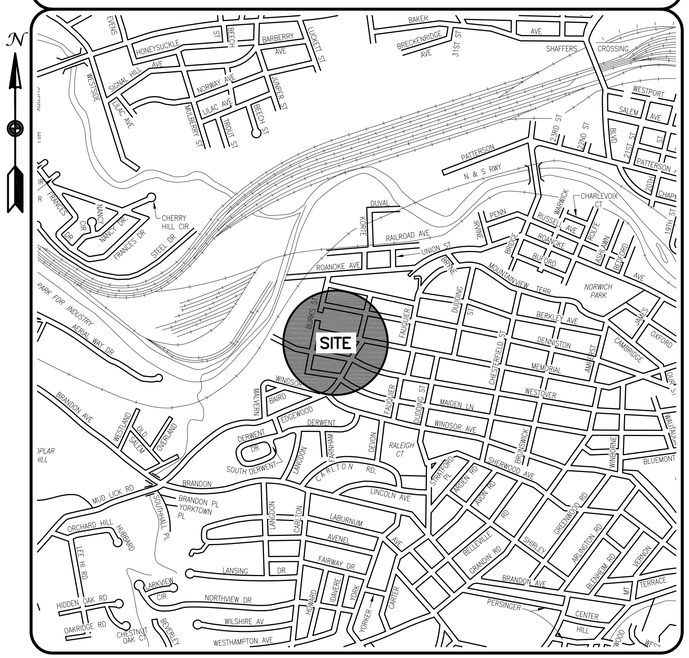
PROJECT LOCATION MAP



ROANOKE

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INDEX OF SHEETS

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6. [ES4] EROSION AND SEDIMENT CONTROL PLAN 3
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APPROVED FOR CONSTRUCTION

ROANOKE CITY ENGINEER	10.9.12 DATE
DIRECTOR OF PUBLIC WORKS	10/09/12 DATE
ASSISTANT CITY MANAGER FOR OPERATIONS	10/9/12 DATE

SHEET NUMBER: 1 OF 15

PROJECT NAME

WESTOVER AVENUE DRAINAGE IMPROVEMENT PROJECT

TAX MAP 9999998 (CITY ROW)

CITY ENGINEERING PLAN NUMBER: *6718*

CITY PLANNING NUMBER: *CP120032*

STATE PROJECT NUMBER: *U000-128-R82, UPC 107954*

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.

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 DISTURBING PERMIT.

3. PLANS AND PERMITS – A COPY OF THE PLANS APPROVED BY THE CITY (SIGNED BY 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 THE CONSTRUCTION ENTRANCE SHALL BE AS SHOWN ON THE PLANS.

6. STREETS TO REMAIN CLEAN – IT SHALL BE THE RESPONSIBLITY 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 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 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 CHANGE 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 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 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.

COMMONWEALTH OF VIRGINIA
JOSEPHUS M. JOHNSON-KOROMA
Lic. No. 46165
PROFESSIONAL ENGINEER

REVISION BY	DESCRIPTION:	DATE

WESTOVER AVENUE DRAINAGE IMPROVEMENT PROJECT

SYMBOLS

	EXISTING	PROPOSED
GROUND ELEVATION	X 900.00	
OLD IRON PIN	OLD IRON PIN	
SURVEYING NAIL	NAIL	
MONUMENT	MONU	
TREE		
SHRUB		
STORM CURB INLET		
STORM DROP INLET		
STORM MANHOLE	ST	ST
STORM HEADWALL / ENDWALL		
STORM CULVERT OPENING		
GAS VALVE	GV	
GAS METER	GAS	
WATER METER	WATER	
FIRE HYDRANT	FH	
WATER VALVE	WV	
WATER MANHOLE	WM	
SANITARY MANHOLE	SAN	
SANITARY CLEANOUT	CO	
UTILITY POLE		
LIGHT POLE	LP	
GUY WIRE		
MAILBOX / TRAFFIC SIGN	MAIL BOX / SIGN	
DRIVEWAY		
HOUSE/BUILDING		
RIPRAP STONE		

ABBREVIATIONS

CL = CENTERLINE
ELEV = ELEVATION
EL = ELEVATION
FG = FINISHED GRADE
EG = EXISTING GROUND
RCP = REINFORCED CONCRETE PIPE
CMP = CORRUGATED METAL PIPE
INV IN = INVERT IN
INV OUT = INVERT OUT
FF = FINISHED FLOOR
PUE = PUBLIC UTILITY EASEMENT
CONC = CONCRETE
MIN = MINIMUM
CB = CATCH BASIN
DI = DROP INLET
DIA = DIAMETER
W/ = WITH
RR = RAILROAD
ROW = RIGHT OF WAY
ø = DIAMETER
WVWA = WESTERN VIRGINIA WATER AUTHORITY
VDOT = VIRGINIA DEPARTMENT OF TRANSPORTATION
DCR = VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION
RBS = VDOT ROAD AND BRIDGE SPECIFICATION AND STANDARDS
HT = HEIGHT
RD = ROOF DRAIN
TK = THICK
L = LENGTH
NO. = NUMBER
R = RADIUS
PVC = POLYVINYL CHLORIDE
HDPE = HIGH DENSITY POLYETHYLENE
BLDG = BUILDING
CRNR = CORNER
PROP = PROPOSED
CO = CLEANOUT
WSE = WATER SURFACE ELEVATION
HP = HIGH POINT
TYP = TYPICAL
MH = MANHOLE
SD = STORM DRAIN
MAX = MAXIMUM
EXST = EXISTING
EXIST = EXISTING
PVMT = PAVEMENT
LF = LINEAR FEET
APPROX = APPROXIMATELY
SDMH = STORM DRAIN MANHOLE
LW = LIMIT OF WORK
MECH = MECHANICAL
N = NORTHING
E = EASTING
TOC = TOP OF CURB ELEVATION
BOC = BOTTOM OF CURB ELEVATION
FH = FIRE HYDRANT
PSI = POUNDS PER SQUARE INCH
PSF = POUNDS PER SQUARE FOOT
FT = FOOT, FEET
IN = INCH, INCHES
OC = ON CENTER
SAN = SANITARY SEWER

LINETYPES

	EXISTING	PROPOSED
EDGE OF ASPHALT PAVEMENT		
PROPERTY BOUNDARY		
CONTOUR	1042	1042
STORM DRAIN PIPE	SD SD	SD SD
36" STORM DRAIN PIPE	36"SD	
GAS LINE	GAS GAS	
WATER LINE	W W	
2" WATER LINE	2"W 2"W	
6" WATER LINE	6"W 6"W	
8" WATER LINE	8"W 8"W	
SANITARY SEWER LINE	SAN SAN	
8" SANITARY SEWER LINE	8"SAN	
OVERHEAD ELECTRIC		
UNDERGROUND TELEPHONE	UGT UGT	
OVERHEAD CABLE	OHC OHC	
GUARDRAIL		
RESIDENTIAL FENCE		
COMMERCIAL FENCE	[] []	[] []

UTILITY NOTES:

1. AEP CONTACT: BILL ROGERS (540-985-2971)

2. ROANOKE GAS CONTACT: PETE ORR (540-777-3817)

3. WESTERN VIRGINIA WATER AUTHORITY CONTACTS:
CARL SINK (540-853-5359) FOR SANITARY SEWER / LATERAL INSTALLATIONS.

DAVID BARNHART (540-853-3272) FOR WATER

4. VERIZON CONTACT: ROBERT TERRY (540-769-7702) (CAMCOM).

5. COX CABLE CONTACT: STEVE BOWER (540-293-2683)

6. FOR CLARITY, PROFILES DO NOT SHOW OVERHEAD ELECTRICAL, CABLE, OR TELEPHONE LINES.

SURVEY NOTES:

1. SURVEY WAS CONDUCTED IN FALL 2011/WINTER 2012 BY THE CITY OF ROANOKE ENGINEERING DEPARTMENT.

HORIZONTAL DATUM: VIRGINIA SOUTH NAD 83/93
VERTICAL DATUM: NAVD 88

2. CONTROL MONUMENTS FOR STORM DRAIN WORK IN RESIDENTIAL AREA, SEE SHEET U1 AND U2.

3. CONTROL MONUMENTS FOR DITCHLINE WORK ON AKZO NOBEL PROPERTY ARE OUTSIDE THE CONSTRUCTION LIMITS OF THE PROJECT. INFORMATION WILL BE PROVIDED WHEN REQUESTED.

STORM DRAIN UTILITY NOTES:

1. SEE PROJECT MANUAL FOR STORM DRAINAGE SPECS, SECTION 2636.

2. THE INSIDE DEPTH (IDP) OF THE MANHOLES, AS SHOWN/LABELED ON THE PROFILES, IS BASED ON THE RIM TOP ELEVATION TO THE LOWEST PIPE INVERT. IDP IS NOT THE TOTAL MANHOLE DEPTH. THE TOTAL MANHOLE DEPTH IS CALCULATED BY ADDING THE THICKNESS OF THE PIPE, GAP AROUND THE PIPE, AND THICKNESS OF THE BASE.

3. CONTRACTOR SHALL SLOPE ALL MANHOLES RIMS IN THE DIRECTION OF THE PAVEMENT. ALL MANHOLE RIMS SHALL BE FLUSH WITH THE PAVEMENT. CURB INLETS SHALL BE SLOPED IN DIRECTION OF PAVEMENT.

4. CONTRACTOR SHALL USE VDOT NO. 57 STONE AS PIPE BEDDING. BACKFILL, IN PAVEMENT, SHALL BE VDOT NO. 21A TO WITHIN 5" OF THE TOP OF PAVEMENT. CONTRACTOR SHALL USE 5" OF VDOT BM-25 TO BRING THE TRENCH FLUSH WITH EXISTING ASPHALT. THE VDOT BM-25 SHALL BE THE TEMPORARY RIDING SURFACE UNTIL THE ROADWAY IS MILLED AND THE OVERLAY INSTALLED. VDOT BM-25 SHALL BE INSTALLED IN ACCORDANCE WITH VDOT SPECIFICATIONS. NOTE THAT ROADWAY SHALL BE MILLED AND OVERLAID AS PART OF THE PROJECT CLOSE OUT. EXCAVATED TRENCH MATERIAL SHALL BE DISPOSED OF OFF-SITE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL. DO NOT BACKFILL TRENCH WITH EXISTING MATERIAL IN THE PAVEMENT.

5. ALL DI-12A GRATES SHALL BE TYPE II. (URBAN - PEDESTRIAN). CONTRACTOR SHALL NOTE THAT THE CONCRETE GUTTER AROUND THE INLET SHALL BE REQUIRED. SEE VDOT RBS DRAWINGS FOR MORE DETAIL. ALL DI-12A INLETS SHALL HAVE A 4" CURB BACKSTOP BUILT INTO THE GUTTER AND AROUND THE INLET.

6. DI-12A INLETS SHALL BE INSTALLED ALONG THE SLOPE OF DITCH / EXISTING GRADE.

7. ALL DRAINAGE STRUCTURES SHALL HAVE VDOT INLET SHAPING.

8. MANHOLES SHALL UTILIZE ECCENTRIC RISERS SO THAT ACCESS STEPS ALIGN.

RIGHT OF WAY (ROW) NOTES:

1. ALL WORK FOR THIS PROJECT OCCURRING WITHIN THE CITY RIGHT OF WAY IS TO BE PERFORMED PER THE CITY OF ROANOKE RIGHT OF WAY EXCAVATION AND RESTORATION STANDARDS.

DRAINAGE EASEMENT NOTES:

1. A PUBLIC DRAINAGE EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT SHALL BE OBTAINED FOR WORK TO BE PERFORMED ON AKZO NOBEL PROPERTY (TAX # 1520101).
2. A PUBLIC DRAINAGE EASEMENT SHALL BE OBTAINED FOR THE EXISTING DRAINAGE SYSTEM WHICH ALIGNS THROUGH THE APARTMENT COMPLEX AND PROPOSED INSTALLATION WORK FOR STRUCTURE 500 ON BURKS STREET (TAX # 1520126).
3. A TEMPORARY CONSTRUCTION EASEMENT SHALL BE OBTAINED FOR WORK TO BE PERFORMED FOR STRUCTURE 205 ON EDGEWOOD STREET (TAX # 1520709)

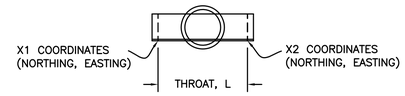
TRAFFIC CONTROL:

1. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO THE CITY TRAFFIC ENGINEER (TRANSPORTATION DIVISION: 540-853-2210) FOR APPROVAL BEFORE THE START OF CONSTRUCTION ACTIVITIES IN THE RESIDENTIAL AREA.

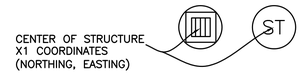
2. CONSTRUCTION WORK ON EDGEWOOD (RESIDENTIAL SECTION) WILL REQUIRE A DETOUR. COORDINATE WITH THE CITY TRAFFIC ENGINEER TO ESTABLISH A DETOUR ROUTE.

CONSTRUCTION STAKEOUT FOR DRAINAGE STRUCTURES

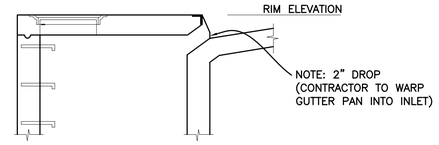
HORIZONTAL LOCATION - CURB INLET (GRADE/SAG)

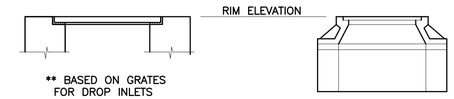


HORIZONTAL LOCATION - DROP INLET / MANHOLES

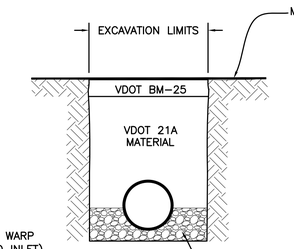


*** SEE PROFILE SHEETS FOR RIM (VERTICAL) ELEVATIONS

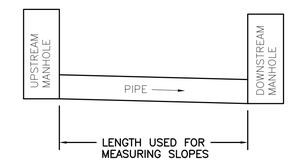




** BASED ON GRATES FOR DROP INLETS



BACKFILL DETAIL
(NTS)



PIPE SLOPES

Land Disturbing Activities (Residential Area)		
Structure	Disturbed Area (sf)	Comments
100	285.00	Curb/Storm Land Disturbance
101	315.00	Curb/Storm Land Disturbance
102	909.00	Curb/Storm Land Disturbance
200	0.00	In pavement
201	505.00	Curb/Storm Land Disturbance
202	399.00	Curb/Storm Land Disturbance
203	674.00	Curb/Storm Land Disturbance
100		
201		
201-A	117.00	Curb/Storm Land Disturbance
202		
202-A	599.00	Curb/Storm Land Disturbance
202		
202-B	80.00	Storm land Disturbance
300	0.00	In pavement
301	0.00	In pavement
302	0.00	In pavement
303	0.00	In pavement
304	0.00	In pavement
200		
200		
305	0.00	In pavement
305		
305-A	315.00	Curb/Storm Land Disturbance
304		
304-A	80.00	In grass
302		
302-A	994.00	Curb/Storm Land Disturbance
300		
300-A	967.00	Curb/Storm Land Disturbance
300		
300-B	80.00	In grass
400	0.00	In pavement
401	0.00	In pavement
300	0.00	In pavement
500	80.00	In grass
400		
400		
400-A	80.00	In grass
E1		
M1		
D1/500		
Total (sf) =	6479.00	
Total (Acres)	0.15	

NOTE:
SEE SHEET ES4 FOR DISTURBED AREA ON AKZO NOBEL PROPERTY (INDUSTRIAL AREA)

STRUCTURE COORDINATES

	Point Location		Point Location	
	X1		X2	
Label	N	E	N	E
100	3,624,442.75	11,049,500.80		
101	3,624,427.36	11,049,583.55	3,624,428.18	11,049,589.43
102	3,624,404.30	11,049,696.36	3,624,403.09	11,049,702.23
200	3,624,161.19	11,049,338.72		
201	3,624,235.04	11,049,376.90	3,624,243.02	11,049,381.06
202	3,624,263.54	11,049,391.85	3,624,268.72	11,049,394.89
203	3,624,333.80	11,049,437.02		
100	3,624,442.75	11,049,500.80		
201	3,624,235.04	11,049,376.90	3,624,243.02	11,049,381.06
201-A	3,624,252.37	11,049,352.53	3,624,257.62	11,049,355.45
202	3,624,263.54	11,049,391.85	3,624,268.72	11,049,394.89
202-A	3,624,277.75	11,049,366.66	3,624,282.99	11,049,359.58
202	3,624,263.54	11,049,391.85	3,624,268.72	11,049,394.89
202-B	3,624,262.07	11,049,402.81		
300	3,624,306.37	11,048,735.59		
301	3,624,261.74	11,048,939.27		
302	3,624,236.32	11,049,055.25		
303	3,624,210.68	11,049,176.30		
304	3,624,187.61	11,049,285.57		
200	3,624,161.19	11,049,338.72		
200	3,624,161.19	11,049,338.72		
305	3,624,121.42	11,049,413.16		
305	3,624,121.42	11,049,413.16		
305-A	3,624,106.43	11,049,410.69	3,624,110.54	11,049,402.68
304	3,624,187.61	11,049,285.57		
304-A	3,624,167.35	11,049,286.59		
302	3,624,236.32	11,049,055.25		
302-A	3,624,246.18	11,049,057.41	3,624,244.93	11,049,063.28
300	3,624,306.37	11,048,735.59		
300-A	3,624,313.59	11,048,743.01	3,624,312.24	11,048,748.86
300	3,624,306.37	11,048,735.59		
300-B	3,624,282.04	11,048,737.90		
400	3,624,473.41	11,048,752.13		
401	3,624,335.86	11,048,717.86		
300	3,624,306.37	11,048,735.59		
500	3,624,488.32	11,048,725.26		
400	3,624,473.41	11,048,752.13		
400	3,624,473.41	11,048,752.13		
400-A	3,624,470.27	11,048,761.75		
E1	3,624,702.21	11,048,646.53		
M1	3,624,537.30	11,048,638.76		
D1/500	3,624,488.32	11,048,725.26		

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DESIGNED: JJK
DRAWN: JJK
CHECKED: LEP

COMMONWEALTH OF VIRGINIA
JOSEPHUS M. JOHNSON-KOROMA
Lic. No. 46165
PROFESSIONAL ENGINEER

REV.	DATE:	DESCRIPTION

DATE: 08/10/12
SCALE: AS SHOWN
24"x36" SHEET

WESTOVER AVENUE DRAINAGE IMPROVEMENT
GENERAL NOTES
CITY OF ROANOKE, VIRGINIA

SHEET G1
PLAN NO. 6718

I. PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO CONSTRUCT A STORM DRAIN SYSTEM ON WESTOVER AVENUE, EDGEWOOD STREET, MEMORIAL AVENUE, AND BURKS STREET WITH A DISTURBED AREA, OUTSIDE OF PAVEMENT, OF APPROXIMATELY 0.15 ACRES (6,479 SF); AND A DEFINED DITCHLINE ON AKZO NOBEL PROPERTY (TAX MAP #–1520101) WITH A DISTURBED AREA OF APPROXIMATELY 0.44 ACRES (19,282 SF).

II. EXISTING SITE CONDITIONS

THE WESTOVER, EDGEWOOD, MEMORIAL, BURKS SITE IS LOCATED IN AN EXISTING RESIDENTIAL (SINGLE FAMILY HOMES) NEIGHBORHOOD. THIS RESIDENTIAL SECTION CONSIST OF A MIXTURE OF ASPHALT PAVEMENT, CURB, SIDEWALK, GRASS AND TREES. ITS DRAINAGE AREA IS APPROXIMATELY 28.75 ACRES. THE AKZO NOBEL SITE IS AN INDUSTRIAL PROPERTY CONSISTING OF A WOODED AREA WITH AN UNDEFINED ERODED DITCH, BUILDING, PARKING LOT, AND DETENTION POND. ITS DRAINAGE AREA IS APPROXIMATELY 9.98 ACRES.

III. ADJACENT PROPERTIES

THE NORTHERN PORTION OF THE PROJECT SITE IS BOUNDED BY NORFOLK SOUTHERN RAILROAD AND THE ROANOKE RIVER. THE SOUTHERN, EASTERN AND WESTERN PORTIONS OF THE PROJECT SITE ARE BOUNDED BY RESIDENTIAL PROPERTIES AND APARTMENT BUILDINGS.

IV. OFF–SITE AREAS

FILL MATERIAL SHALL BE OBTAINED FROM AN APPROVED SOURCE. UNSUITABLE MATERIAL SHALL BE HAULED FROM THE SITE AND DISPOSED OF IN AN APPROVED MANNER TO AN APPROVED DISPOSAL SITE. ANY BORROW/FILL SITES ASSOCIATED WITH THE PROJECT MUST HAVE A VALID LAND DISTURBANCE PERMIT AND THAT SITE MUST BE APPROVED BY THE PLANNING DEPARTMENT BEFORE ANY HAULING OCCURS.

V. SOILS

ACCORDING TO THE USDA SCS SOILS MAPPING, THE PROJECT SITE LIES ON:

5E – CHISWELL–LITZ COMPLEX, 25 TO 50 PERCENT SLOPES.
6C – CHISWELL–LITZ–URBAN LAND COMPLEX, 2 TO 15 PERCENT SLOPES.
6D – CHISWELL–LITZ–URBAN LAND COMPLEX, 15 TO 35 PERCENT SLOPES.

5E – CONSISTS OF STEEP AND VERY STEEP, WELL DRAINED SOILS ON SIDE SLOPES IN THE UPLANDS. THE CHISWELL SOIL IS SHALLOW, AND THE LITZ SOIL IS MODERATELY DEEP. THIS MAP UNIT IS ABOUT 45 PERCENT CHISWELL SOIL, 30 PERCENT LITZ SOIL, AND 25 PERCENT OTHER SOILS.

6C & 6D – CONSISTS OF GENTLY SLOPING AND STRONGLY SLOPING, WELL DRAINED SOILS ON UPLAND SIDE SLOPES AND SUMMITS AND AREAS OF URBAN LAND. THE CHISWELL SOIL IS SHALLOW, AND THE LITZ SOIL IS MODERATELY DEEP. THE SOILS AND AREAS OF URBAN LAND ARE SO INTERMINGLED THAT IT WAS NOT PRACTICAL TO MAP THEM SEPARATELY. THIS MAP UNIT IS ABOUT 35 PERCENT CHISWELL SOIL, 25 PERCENT LITZ SOIL, 22 PERCENT URBAN LAND, AND 18 PERCENT OTHER SOILS.

VI. CRITICAL AREAS

THE ENTIRE PROJECT IS CONSIDERED CRITICAL DUE TO THE CLOSE PROXIMITY OF THE SITE TO THE ROANOKE RIVER.

VII. EROSION AND SEDIMENT CONTROL MEASURES

ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED BY THE CONTRACTOR IN ACCORDANCE WITH THE LATEST EDITION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. SYMBOLS, DETAILS, AND DIMENSIONS ARE TAKEN FROM THE HANDBOOK, AS WELL AS THE VIRGINIA DEPARTMENT OF TRANSPORTATION'S ROAD AND BRIDGE STANDARDS, VOLUME 1, 2001.

A. STRUCTURAL PRACTICES

1. CONSTRUCTION ENTRANCE (CE), SPEC 3.02 SHALL BE PROVIDED TO THE AKZO NOBEL SITE TO REDUCE THE AMOUNT OF MUD TRANSPORTED ONTO PAVED PUBLIC ROADS BY MOTOR VEHICLES OR RUNOFF.

2. SILT FENCE (SF), SPEC 3.05 WILL BE PROVIDED AS A PERIMETER EROSION AND SEDIMENT CONTROL MEASURE.

3. INLET PROTECTION (IP), SPEC 3.07 SHALL BE PROVIDED TO PREVENT SEDIMENT FROM ENTERING STORM DRAIN PIPE SYSTEMS.

4. RIPRAP (RR), SPEC 3.19 SHALL BE PROVIDED AS A GROUND COVER FOR THE PIPE OUTFALL AND PORTION OF THE DITCH ON AKZO NOBEL SITE.

5. ROCK CHECK DAMS (CD), SPEC 3.20 SHALL BE PROVIDED TO REDUCE STORM WATER VELOCITY AND EROSION ON THE EC–3 DITCH.

6. SOIL STABILIZATION MATTING (B/M), SPEC 3.36 SHALL BE PROVIDED AS A NON–DEGRADABLE TREATMENT ON THE EC–3 DITCH ALONG AKZO NOBEL SITE.

B. VEGETATIVE PRACTICES

1. PERMANENT SEEDING (PS), SPEC 3.32 IS NOT PART OF THE CONSTRUCTION WORK FOR THIS PROJECT BUT WILL BE PROVIDED, IF NECESSARY, ON THE EDGES OF DISTURBED AREAS.

2. TEMPORARY SEEDING (TS), SPEC 3.31 IS NOT PART OF THE CONSTRUCTION WORK FOR THIS PROJECT BUT WILL BE PROVIDED, IF NECESSARY, ON THE EDGES OF DISTURBED AREAS.

3. MULCHING (MU), SPEC 3.35 WILL BE USED IN CONJUNCTION WITH PERMANENT SEEDING.

C. MANAGEMENT STRATEGIES

1. EROSION CONTROL PRACTICES SHALL BE INSTALLED AND FUNCTIONAL PRIOR TO PROCEEDING WITH CONSTRUCTION ACTIVITIES.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL PRACTICES.

3. ALL STORM SEWER INLETS SHALL BE PROTECTED SO THAT SEDIMENT LADEN WATER CAN NOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED.

4. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED ONLY AFTER AUTHORIZATION BY THE LOCAL PROGRAM AUTHORITY (CITY OF ROANOKE).

D. MAINTENANCE

ALL EROSION AND SEDIMENT CONTROL STRUCTURES AND SYSTEMS SHALL BE MAINTAINED, INSPECTED, AND REPAIRED AS NEEDED TO INSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED AFTER EACH RAINFALL EVENT.

1. DAMAGE TO EROSION CONTROL MEASURES CAUSED BY CONSTRUCTION TRAFFIC OR OTHER ACTIVITY SHALL BE REPAIRED BEFORE THE END OF EACH WORKING DAY.

2. PROVIDE EQUIPMENT WASHING AS NEEDED TO PREVENT THE TRANSPORT OF SOIL ONTO EXISTING PAVED ROADWAYS. ANY SEDIMENT ON THE PAVEMENT SHALL BE REMOVED IMMEDIATELY.

3. SILT FENCE BARRIERS WILL BE CHECKED DAILY FOR UNDERMINING OR DETERIORATION OF THE FABRICE. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL REACHES HALF WAY TO THE TOP OF THE BARRIER.

VIII. MINIMUM STANDARDS (MS):

ALL APPLICABLE VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS AND MINIMUM STANDARDS SHALL BE ADHERED TO DURING ALL PHASES OF CONSTRUCTION. THESE INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:

MS–1: STABLIZATION OF DENUDED AREAS:
PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO BARE AREAS WITHIN 7 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE UNLESS OTHERWISE SHOWN. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN 7 DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE, BUT REMAIN DORMANT OR UNDISTURBED FOR LONGER THATN 30 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANENT FOR MORE THAN ONE YEAR.

RESPONSE: DISTURBED AREAS WILL BE STABILIZED WITH SEEDING AS SHOWN ON PLAN DRAWINGS.

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

RESPONSE: NO STOCKPILING IS ALLOWED IN THE EXISTING RESIDENTIAL AREA FOR THIS PROJECT. HOWEVER, STOCKPILING IS ALLOWED ON INDUSTRIAL AKZO NOBEL SITE AS SHOWN ON PLAN DRAWINGS. THIS AREA WILL BE PROTECTED WITH SILT FENCE.

MS–3: PERMANENT VEGETATIVE COVER
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 OPTION OF THE LOCAL AUTHORITY (CITY OF ROANOKE), IS UNIFORM AND MATURE ENOUGH TO SURVIVE.

RESPONSE: DISTURBED AREAS WILL BE STABILIZED WITH SEEDING AS SHOWN ON PLAN DRAWINGS.

MS–4: TIMING AND STABILIZATION OF SILT TRAPPING MEASURES
SEDIMENT TRAPS, STORM DRAIN INLET PROTECTION, SILT FENCING AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND DISTURBING ACTIVITY. THE STRUCTURES SHALL BE MADE FUNCTIONAL BEFORE UP SLOPE LAND DISTURBANCE TAKES PLACE.

RESPONSE: INLET PROTECTION AND SILT FENCE SHALL BE INSTALLED AS SHOWN ON PLANS PRIOR TO ANY UP SLOPE LAND DISTURBANCE ACTIVITY.

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

RESPONSE: NOT APPLICABLE.

MS–6: SEDIMENT BASINS:
A SEDIMENT BASIN SHALL CONTROL SURFACE RUNOFF FROM DISTURBED AREAS THAT ARE COMPRISED OF FLOW FROM DRAINAGE AREAS GREATER THAN OR EQUAL TO 3 ACRES. THE SEDIMENT BASIN SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE THE ANTICIPATED SEDIMENT LOADING FOR THE LAND DISTURBING ACTIVITY. THE OUTFALL DEVICE OR SYSTEM DEVICE SHALL TAKE INTO ACCOUNT THE TOTAL DRAINAGE AREA FLOWING THROUGH THE DISTURBED AREA TO BE SERVED BY THE BASIN.

RESPONSE: NOT APPLICABLE.

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

RESPONSE: NOT APPLICABLE.

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

RESPONSE: NOT APPLICABLE.

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

RESPONSE: NOT APPLICABLE.

MS–10 STORM SEWER INLET PROTECTION:
ALL STORM SEWER INLETS SHALL BE PROTECTED SO THAT SEDIMENT–LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.

RESPONSE: STORM INLET PROTECTION WILL BE PROVIDED AS SHOWN ON PLAN AFTER THE INSTALLATION OF EACH STORM SEWER INLET.

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

RESPONSE: THE DITCH ON AKZO NOBEL SITE HAS BEEN DESIGNED TO CARRY THE FLOW AND VELOCITY FROM THE EXISTING 36" CONCRETE PIPE CONVEYANCE SYSTEM THROUGH AN APARTMENT COMPLEX. ROCK CHECK DAMS WILL BE INSTALLED AS A TEMPORARY MEASURE TO REDUCE FLOW VELOCITY AND ANY EROSION PROBLEMS BEFORE THE ENTIRE DITCH IS COMPLETELY STABILIZED.

MS–12 WORK IN LIVE WATERCOURSES:
PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT AND SEDIMENT TRANSPORT WHEN WORKING IN LIVE WATERCOURSES. THE WORK AREA SHALL BE STABILIZED TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.

RESPONSE: NOT APPLICABLE.

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

RESPONSE: NOT APPLICABLE.

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

RESPONSE: NOT APPLICABLE.

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

RESPONSE: NOT APPLICABLE.

MS–16 UNDERGROUND UTILITIES
UNDERGROUND UTILITIES 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 OPEN AT ONE TIME.
B: EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
C. EFFLUENT FOR DE–WATERING 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 OFFSITE PROPERTY.
D. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
E. RE–STABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS.
F. APPLICABLE SAFETY REGULATIONS SHALL BE COMPILED WITH AT ALL TIMES

RESPONSE: CONTRACTOR SHALL FOLLOW THIS UNDERGROUND UTILITY CRITERIA AT ALL TIMES.

MS–17 CONSTRUCTION ACCESS ROUTES:
WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ON TO PAVED SURFACES.

RESPONSE: WORK SHALL COMMENCE FROM PAVED AREAS FOR STORM DRAIN WORK IN THE RESIDENTIAL AREA. ANY DIRT TRACKED ONTO CITY STREETS SHALL BE REMOVED IMMEDIATELY. ALSO, A TEMPORARY CONSTRUCTION ENTRANCE SHALL BE CONSTRUCTED FOR THE DITCH WORK ON AKZO NOBEL PROPERTY AS SHOWN ON PLAN DRAWINGS TO MINIMIZE THE AMOUNT OF MUD TRANSPORTED ONTO CITY STREETS.

MS–18 TEMPORARY E&S CONTROL MEASURE REMOVAL:
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 AUTHORITY (CITY OF ROANOKE).

RESPONSE: CONTRACTOR SHALL INSTALL E&S MEASURES AS SHOWN ON PLANS, STABILIZE THE DISTURBED AREAS, AND REQUEST PERMISSION FROM THE PLANNING DEPARTMENT TO REMOVE THE E&S MEASURES.

MS–19 ADEQUACY OF RECEIVING CHANNELS
PROPERTIES AND WATERWAYS DOWNSTREAM FROM THE DEVELOPMENT SITE SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION, AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY, AND PEAK FLOW RATES OF STORM WATER RUNOFF FOR 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 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 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 PLAN–APPROVING 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 LOCALITY 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 CAUSED 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 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.

RESPONSE: THIS PROJECT IS CLASSIFIED AS A LINEAR DEVELOPMENT PROJECT SINCE ITS CONSTRUCTION WILL PREDOMINANTLY BE CARRIED OUT WITHIN THE CITY OF ROANOKE RIGHT–OF–WAY. THE LAND DISTURBING ACTIVITIES ARE LINEAR IN NATURE WITH THE INSTALLATION OF APPROXIMATELY 1,530 FEET OF REINFORCED CONCRETE PIPE AND 441 FEET OF DITCH LINE. AS EACH INLET STRUCTURE AND DITCH SYSTEM IS CONSIDERED TO BE AN OUTFALL, THE CONSTRUCTION OF THIS LINEAR DEVELOPMENT PROJECT WILL BE EXEMPTED FROM STORMWATER MANAGEMENT REQUIREMENTS FOR THE FOLLOWING REASONS:
1. LESS THAN ONE (1) ACRE OF LAND WILL BE DISTURBED PER OUTFALL. SEE SHEET G1 AND ES4 FOR ALL DISTURBED AREA MEASURE.
2. THERE IS INSIGNIFICANT INCREASE IN THE PEAK FLOW RATE COMPARING EXISTING AND PROPOSED CONDITION USING THE NORFOLK SOUTHERN RAILROAD AS THE POINT OF ANALYSIS. FOR THE EXISTING CONDITION, THE PEAK FLOW RATE FOR A 10–YEAR STORM IS 66.62 ft^3/s. THE PROPOSED CONDITION FOR A 10–YEAR STORM HAS A PEAK FLOW OF 73.23 ft^3/s. SEE STORMWATER CALCULATIONS. DESPITE THIS INCREASE, STORM WATER IS DIRECTED TO AN ADEQUATE EXISTING NORFOLK SOUTHERN RAILROAD CULVERT WHICH OUTFALLS AT THE ROANOKE RIVER.

IX. STORMWATER MANAGEMENT:

SEE MS–19 RESPONSE.

X. SOIL STOCKPILES AND BORROW AREAS:

FILL MATERIAL FOR PIPE WORK SHALL BE VDOT 21A AGGREGATE. SEE MS–2 RESPONSE.

XI. SEQUENCE OF CONSTRUCTION

1. CONSTRUCTION WORK SHALL COMMENCE ON BOTH THE INDUSTRIAL AKZO NOBEL PROPERTY AND RESIDENTIAL AREA WITH THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON PLAN DRAWINGS.
2. CONSTRUCT INDUSTRIAL CHAIN LINK SECURITY FENCE ON AKZO NOBEL PROPERTY.
3. CONSTRUCT DITCH ON AKZO NOBEL PROPERTY AND INSTALL STORM DRAIN SYSTEM ON RESIDENTIAL AREA AS SHOWN ON PLANS.
4. STABILIZE ALL DISTURBED AREAS ON AKZO NOBEL PROPERTY AND RESIDENTIAL AREAS.
5. REMOVE ALL EROSION AND SEDIMENT CONTROL MEASURE AFTER STABILIZATION AND CITY PLANNING DEPARTMENT APPROVAL.
6. CLOSE OUT PROJECT

XII. PROPERTY OWNER

RESIDENTIAL – RIGHT OF WAY
CITY OF ROANOKE
215 CHURCH AVENUE, SW
ROANOKE, VA 24011

INDUSTRIAL – 2852 ROANOKE AVENUE SW
AKZO NOBEL COATINGS INC.
1431 PROGRESS STREET
HIGH POINT, NC 27265
CONTACT NAME: MR. SAM WINKLER
ROANOKE OFFICE: 540–855–3302

EROSION AND SEDIMENT CONTROL NOTES (VA DCR HANDBOOK, VI–15, TABLE 6–1):

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

ES–2: THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE 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 MEASURE ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP AT ALL TIMES.

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

ES–5: PRIOR TO COMMENCING LAND DISTURBING ACTIVITES 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 AND CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

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

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

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

ES–9: THE CONTRACTOR SHALL INSPECT ALL EROSION AND SEDIMENT CONTOL 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.

PS TS MU PERMANENT SEEDING, TEMPORARY SEEDING, AND MULCHING

15 OCTOBER TO 1 FEBRUARY
K–31 FESCUE @ 5 LB / 1000 SF
BORZY WINTER RYE @ 1/2 LB / 1000 SF

1 FEBRUARY TO 1 JUNE
K–31 FESCUE @ 5 LB / 1000 SF
ANNUAL RYE @ 1/2 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.

ROANOKE
OFFICE OF THE
CITY ENGINEER
215 CHURCH AVENUE, S.W.
ROOM 350
PHONE: (540) 853-2731
FAX: (540) 853-1364
WWW.ROANOKEVA.GOV

DESIGNED: JJK
DRAWN: JJK
CHECKED: LEP

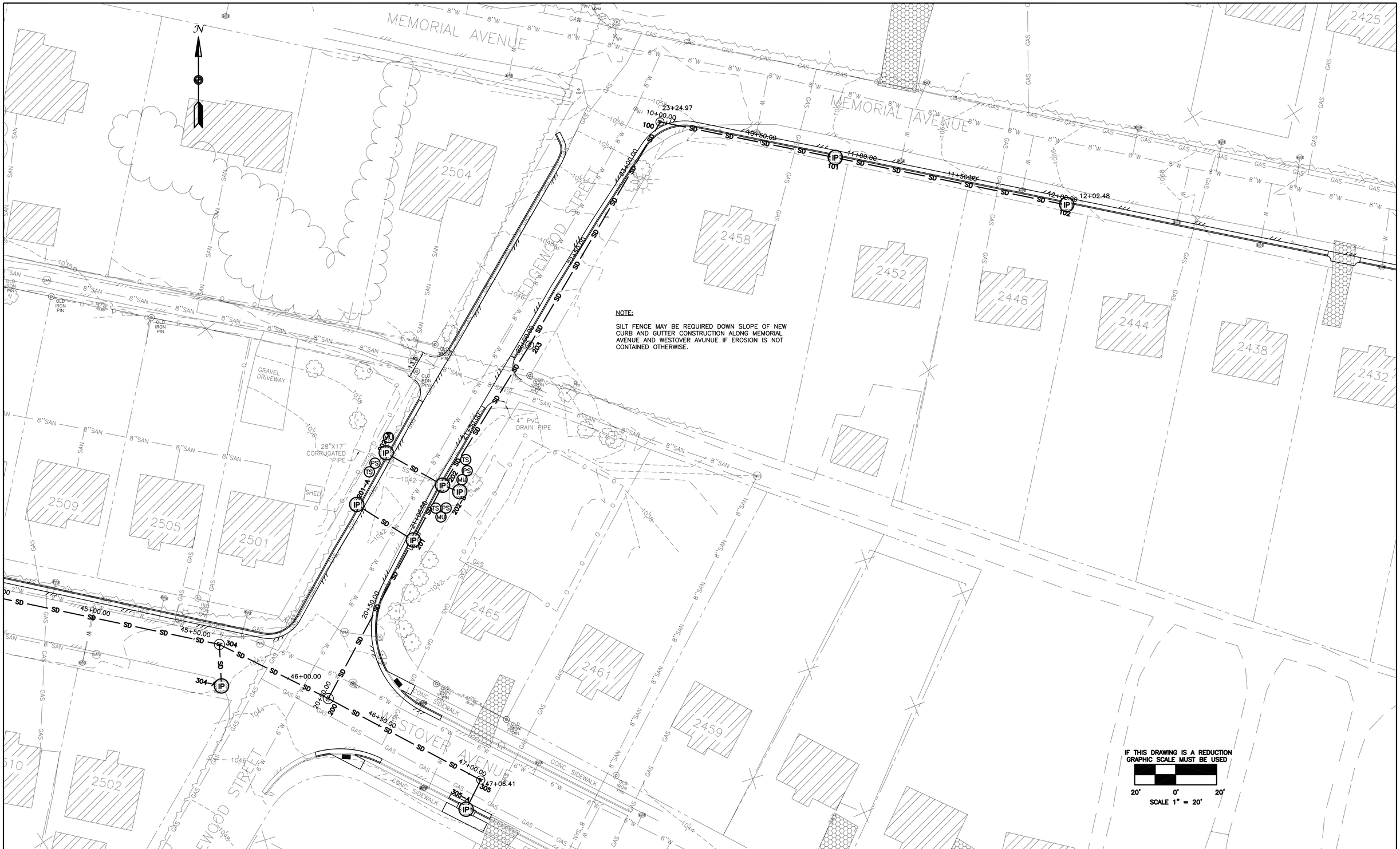
COMMONWEALTH OF VIRGINIA
JOSEPHUS M. JOHNSON-KOROMA
Lic. No. 46165
PROFESSIONAL ENGINEER

REV.	DATE:	DESCRIPTION

DATE: 08/10/12
SCALE: AS SHOWN 24"x36" SHEET

WESTOVER AVENUE DRAINAGE IMPROVEMENT
EROSION & SEDIMENT CONTROL NARRATIVE AND MS-19
CITY OF ROANOKE, VIRGINIA

SHEET ES1
PLAN NO. 6718



NOTE:

SILT FENCE MAY BE REQUIRED DOWN SLOPE OF NEW CURB AND GUTTER CONSTRUCTION ALONG MEMORIAL AVENUE AND WESTOVER AVUNUE IF EROSION IS NOT CONTAINED OTHERWISE.

ROANOKE

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PROFESSIONAL ENGINEER

REV.	DATE:	DESCRIPTION

DATE: 08/10/12

SCALE: AS SHOWN
24"x36" SHEET

WESTOVER AVENUE DRAINAGE IMPROVEMENT
EROSION & SEDIMENT CONTROL PLAN 1
CITY OF ROANOKE, VIRGINIA

SHEET ES2

PLAN NO. 6718

NOTE:

SILT FENCE MAY BE REQUIRED DOWN SLOPE OF NEW CURB AND GUTTER CONSTRUCTION ALONG WESTOVER AVENUE IF EROSION IS NOT CONTAINED OTHERWISE.

IF THIS DRAWING IS A REDUCTION GRAPHIC SCALE MUST BE USED

20' 0' 20'

SCALE 1" = 20'

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ROANOKE

DESIGNED: JJK

DRAWN: JJK

CHECKED: LEP

COMMONWEALTH OF VIRGINIA
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Lic. No. 46165
PROFESSIONAL ENGINEER

REV.	DATE:	DESCRIPTION

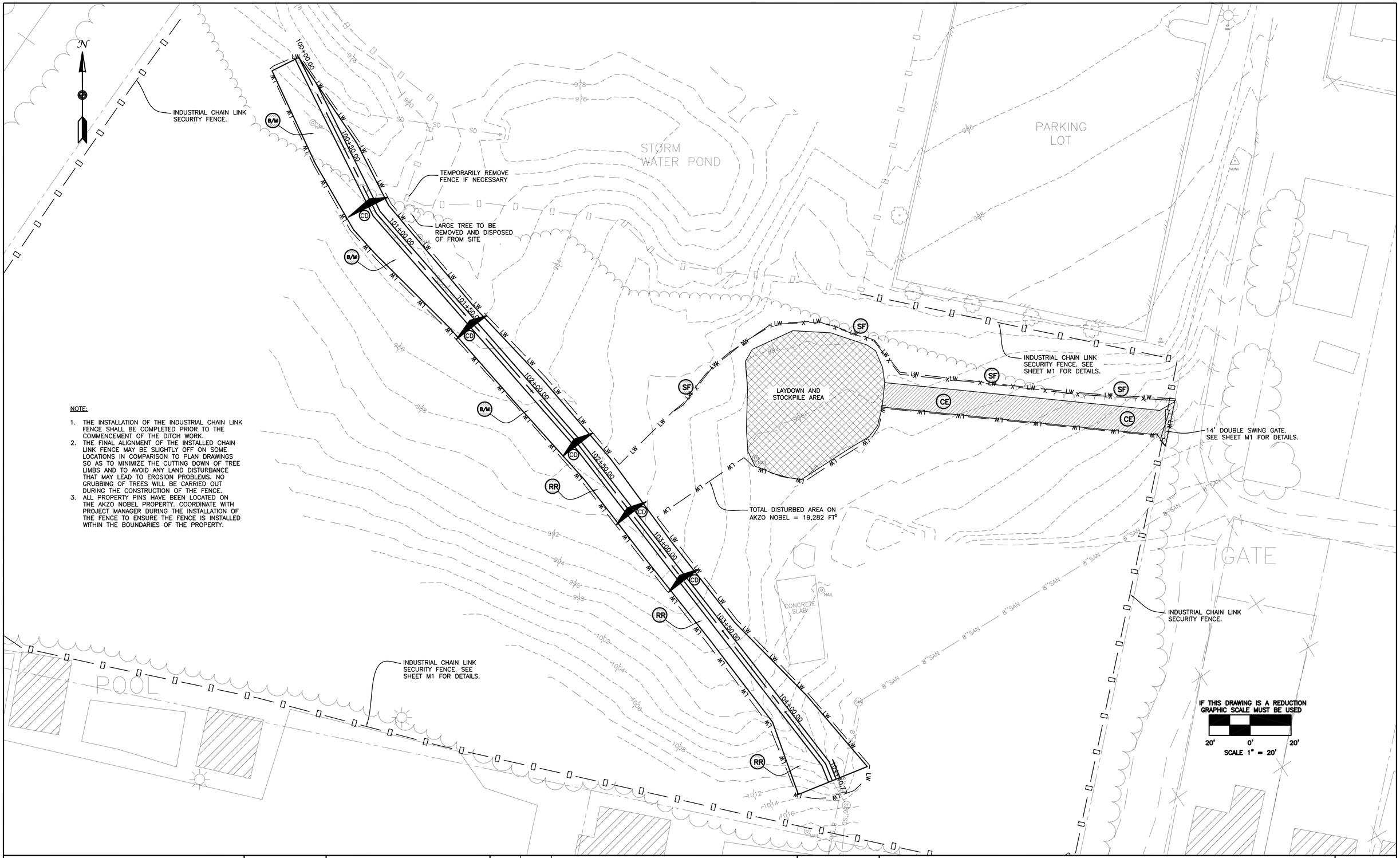
DATE: 08/10/12

SCALE: AS SHOWN
24"x36" SHEET

WESTOVER AVENUE DRAINAGE IMPROVEMENT
EROSION & SEDIMENT CONTROL PLAN 2
CITY OF ROANOKE, VIRGINIA

SHEET ES3

PLAN NO. 6718



NOTE:

1. THE INSTALLATION OF THE INDUSTRIAL CHAIN LINK FENCE SHALL BE COMPLETED PRIOR TO THE COMMENCEMENT OF THE DITCH WORK.
2. THE FINAL ALIGNMENT OF THE INSTALLED CHAIN LINK FENCE MAY BE SLIGHTLY OFF ON SOME LOCATIONS IN COMPARISON TO PLAN DRAWINGS SO AS TO MINIMIZE THE CUTTING DOWN OF TREE LIMBS AND TO AVOID ANY LAND DISTURBANCE THAT MAY LEAD TO EROSION PROBLEMS. NO GRUBBING OF TREES WILL BE CARRIED OUT DURING THE CONSTRUCTION OF THE FENCE.
3. ALL PROPERTY PINS HAVE BEEN LOCATED ON THE AKZO NOBEL PROPERTY. COORDINATE WITH PROJECT MANAGER DURING THE INSTALLATION OF THE FENCE TO ENSURE THE FENCE IS INSTALLED WITHIN THE BOUNDARIES OF THE PROPERTY.

ROANOKE

OFFICE OF THE
CITY ENGINEER
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ROOM 350
PHONE: (540) 853-2731
FAX: (540) 853-1364
WWW.ROANOKEVA.GOV

DESIGNED: JJK
DRAWN: JJK
CHECKED: LEP

COMMONWEALTH OF VIRGINIA
JOSEPHUS M. JOHNSON-KOROMA
Lic. No. 46165
PROFESSIONAL ENGINEER

REV.	DATE:	DESCRIPTION

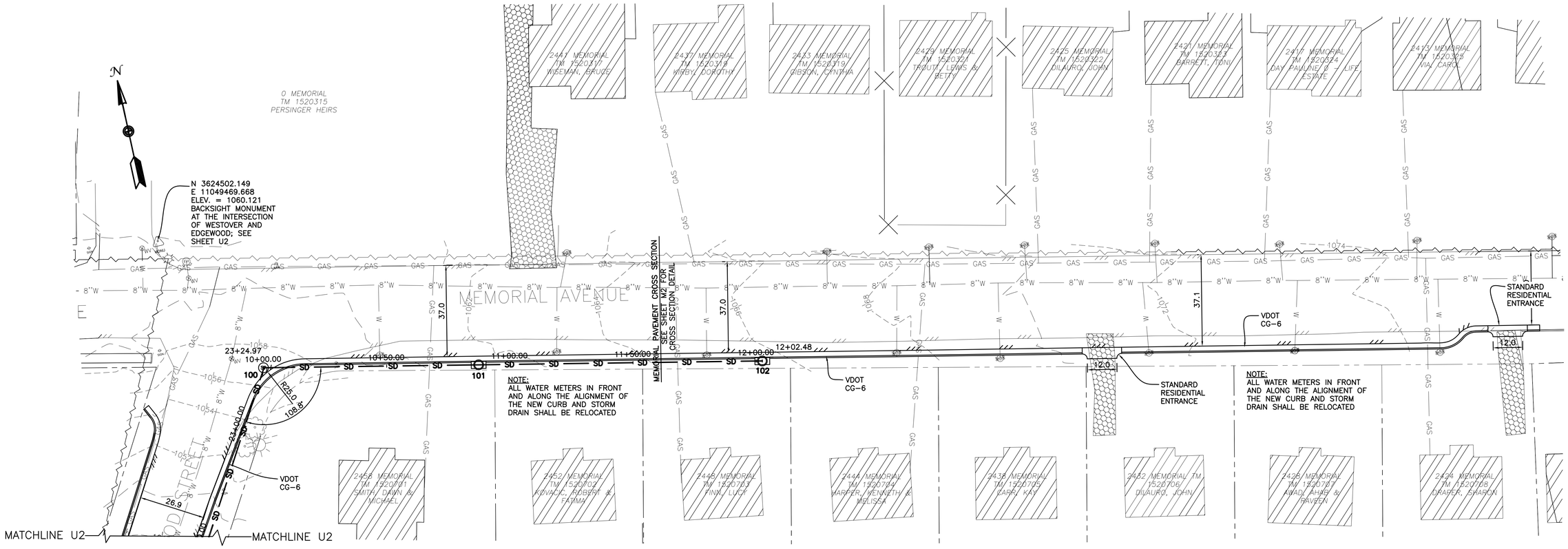
DATE: 08/10/12

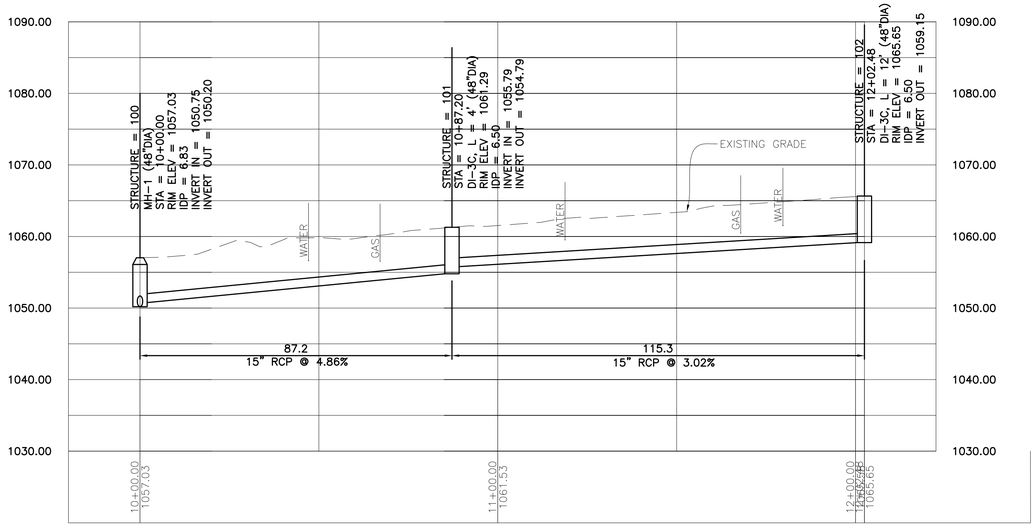
SCALE: AS SHOWN
24"x36" SHEET

WESTOVER AVENUE DRAINAGE IMPROVEMENT
EROSION & SEDIMENT CONTROL PLAN 3
CITY OF ROANOKE, VIRGINIA

SHEET ES4

PLAN NO. 6718





IF THIS DRAWING IS A REDUCTION
GRAPHIC SCALE MUST BE USED

SCALE 1" = 10'

VERT: 10' 0' 10'

HORZ: 20' 0' 20'

SCALE 1" = 20'

OFFICE OF THE
CITY ENGINEER
215 CHURCH AVENUE, S.W.
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WWW.ROANOKEVA.GOV
ROANOKE

DESIGNED: JJK
DRAWN: JJK
CHECKED: LEP

COMMONWEALTH OF VIRGINIA
JOSEPHUS M. JOHNSON-KOROMA
Lic. No. 46165
PROFESSIONAL ENGINEER

REV.	DATE:	DESCRIPTION

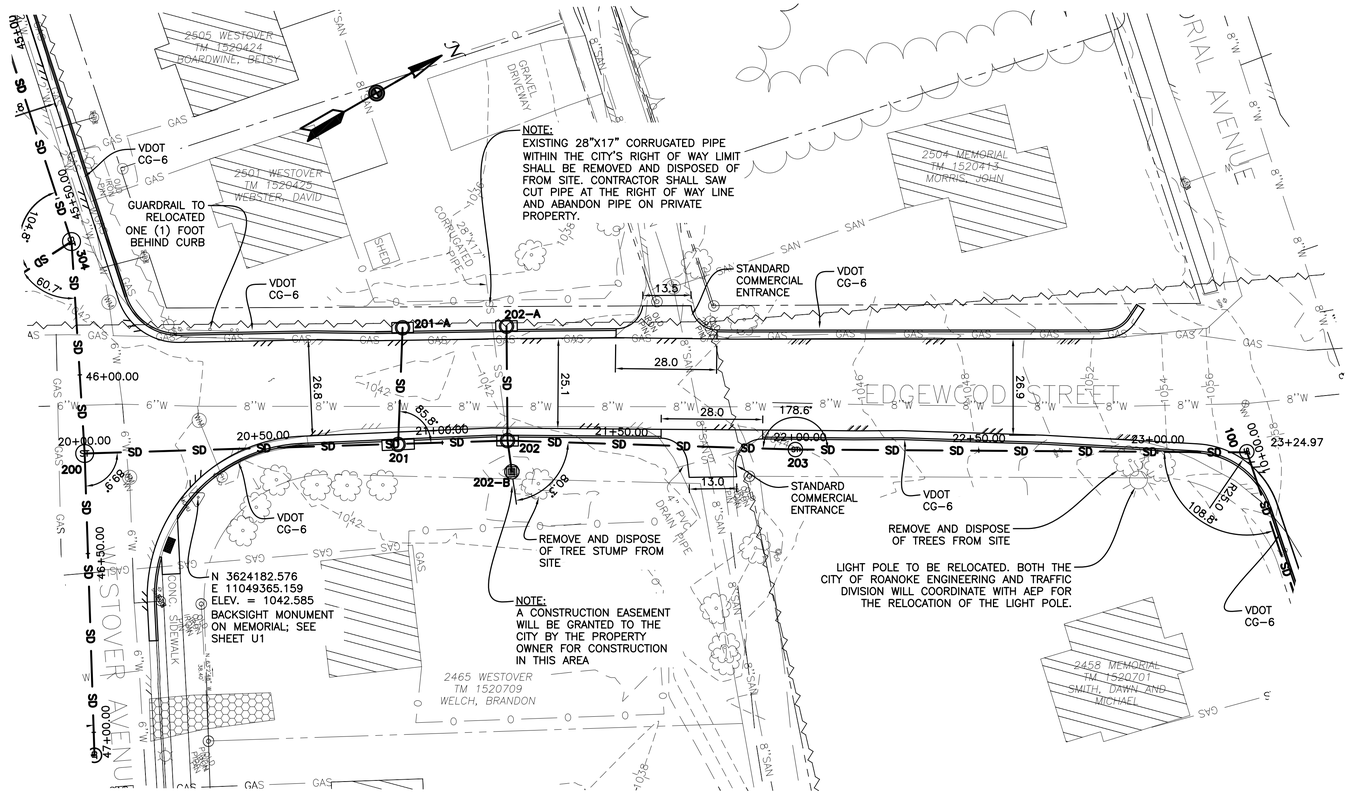
DATE: 08/10/12

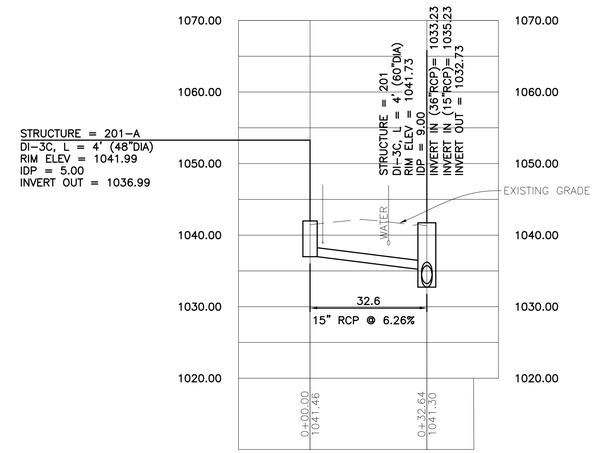
SCALE: AS SHOWN
24"x36" SHEET

WESTOVER AVENUE DRAINAGE IMPROVEMENT
MEMORIAL PLAN AND PROFILE
CITY OF ROANOKE, VIRGINIA

SHEET U1

PLAN NO. 6718





IF THIS DRAWING IS A REDUCTION GRAPHIC SCALE MUST BE USED

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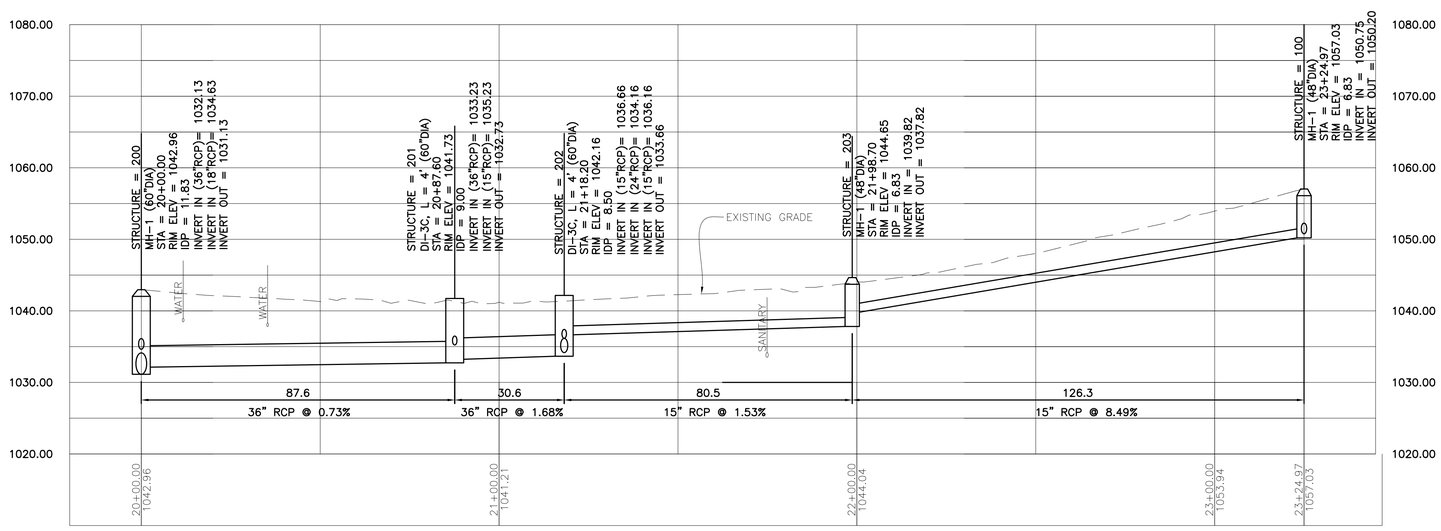
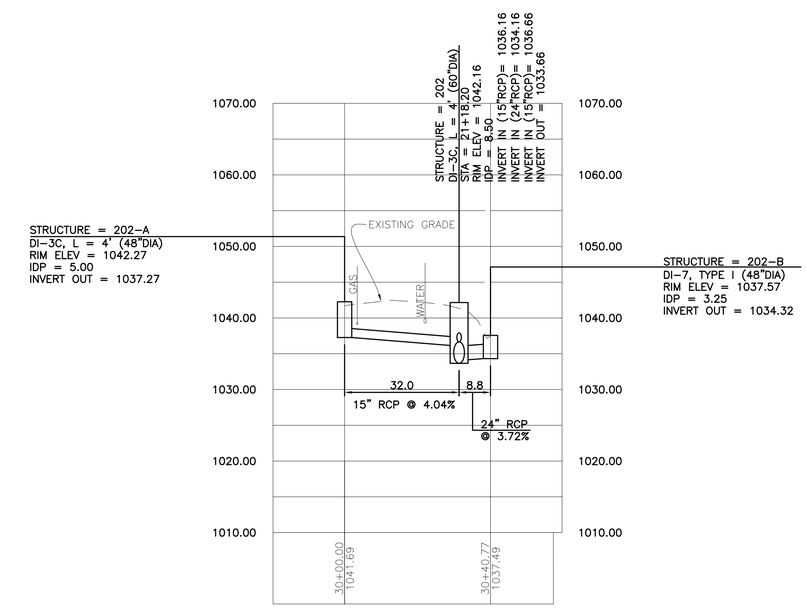
SCALE 1" = 20'





ROANOKE

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ROOM 350
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WWW.ROANOKEVA.GOV

DESIGNED: JJK

DRAWN: JJK

CHECKED: LEP

COMMONWEALTH OF VIRGINIA
JOSEPHUS M. JOHNSON-KOROMA
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REV.	DATE:	DESCRIPTION

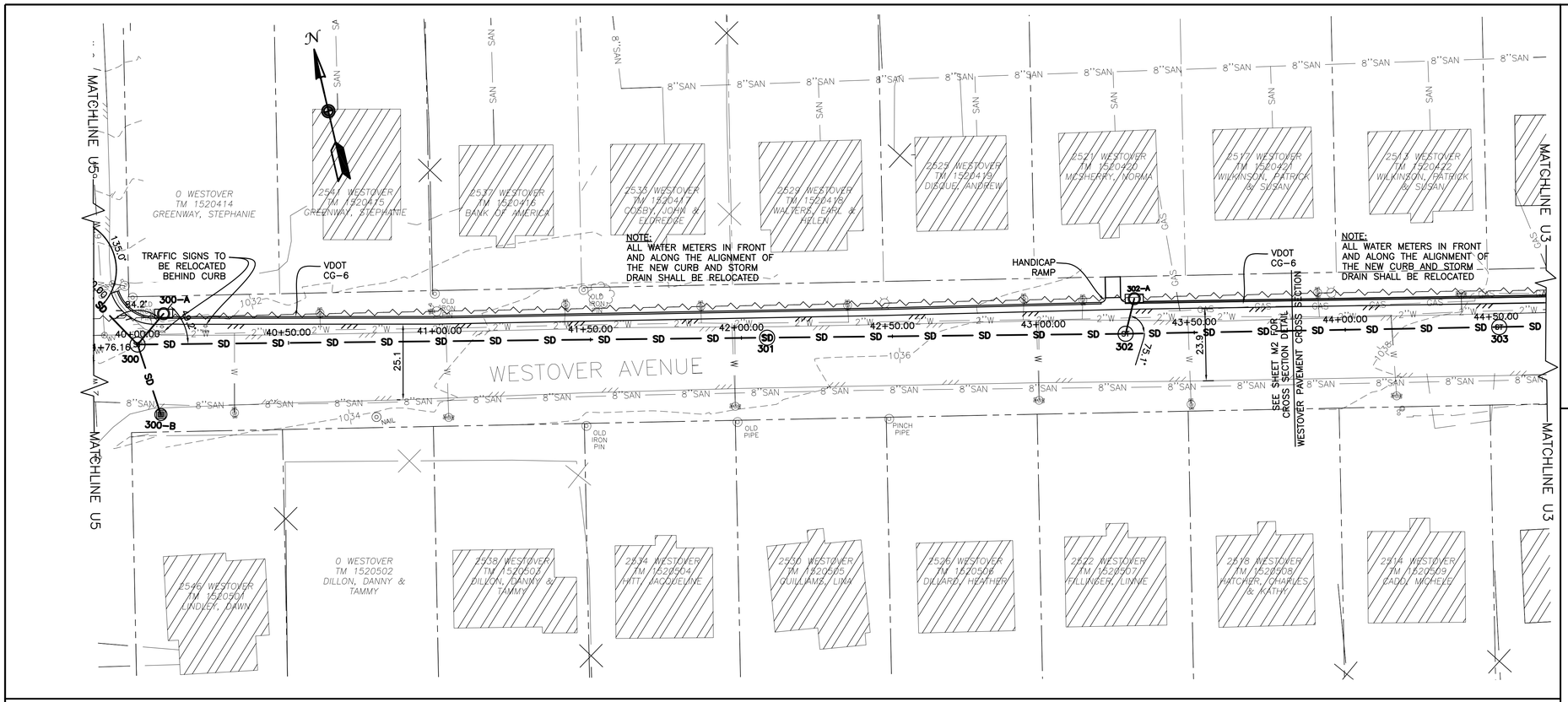
DATE: 08/10/12

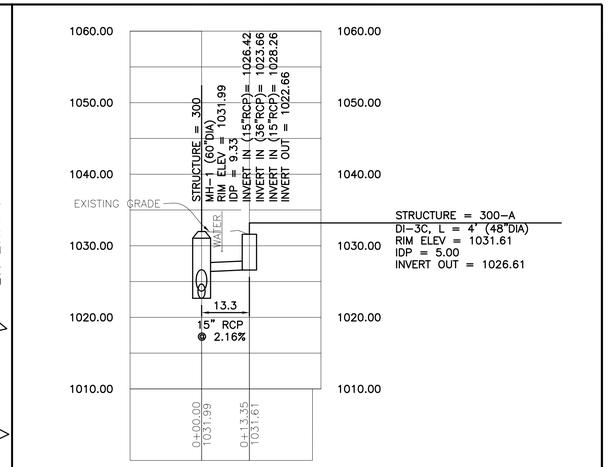
SCALE: AS SHOWN
24"x36" SHEET

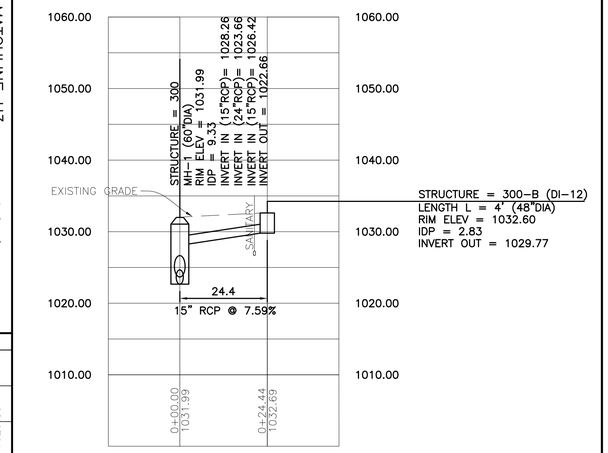
WESTOVER AVENUE DRAINAGE IMPROVEMENT
EDGEWOOD PLAN AND PROFILE
CITY OF ROANOKE, VIRGINIA

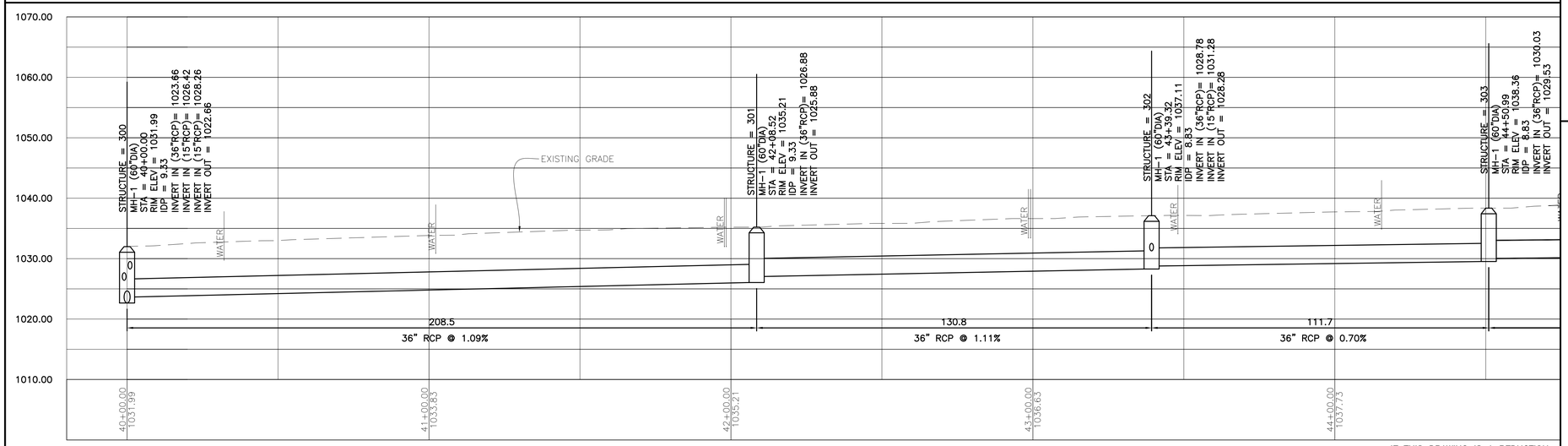
SHEET U2

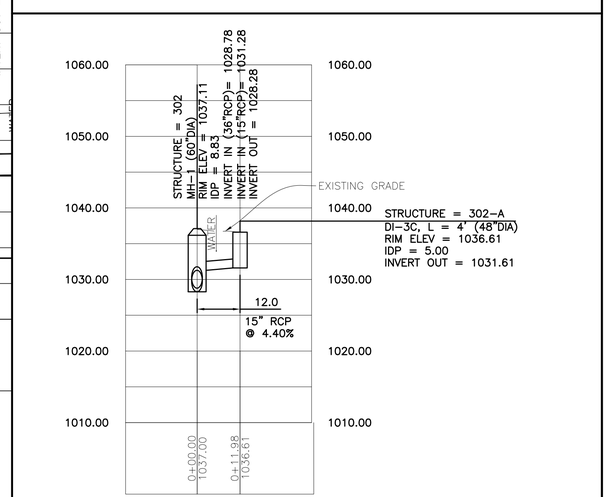
PLAN NO. 6718











IF THIS DRAWING IS A REDUCTION GRAPHIC SCALE MUST BE USED

SCALE 1" = 10'

VERT: 10' 0' 10'

HORZ: 20' 0' 20'

SCALE 1" = 20'

ROANOKE

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DESIGNED: JJK

DRAWN: JJK

CHECKED: LEP

COMMONWEALTH OF VIRGINIA
JOSEPHUS M. JOHNSON-KOROMA
Lic. No. 46165
PROFESSIONAL ENGINEER

REV.	DATE:	DESCRIPTION

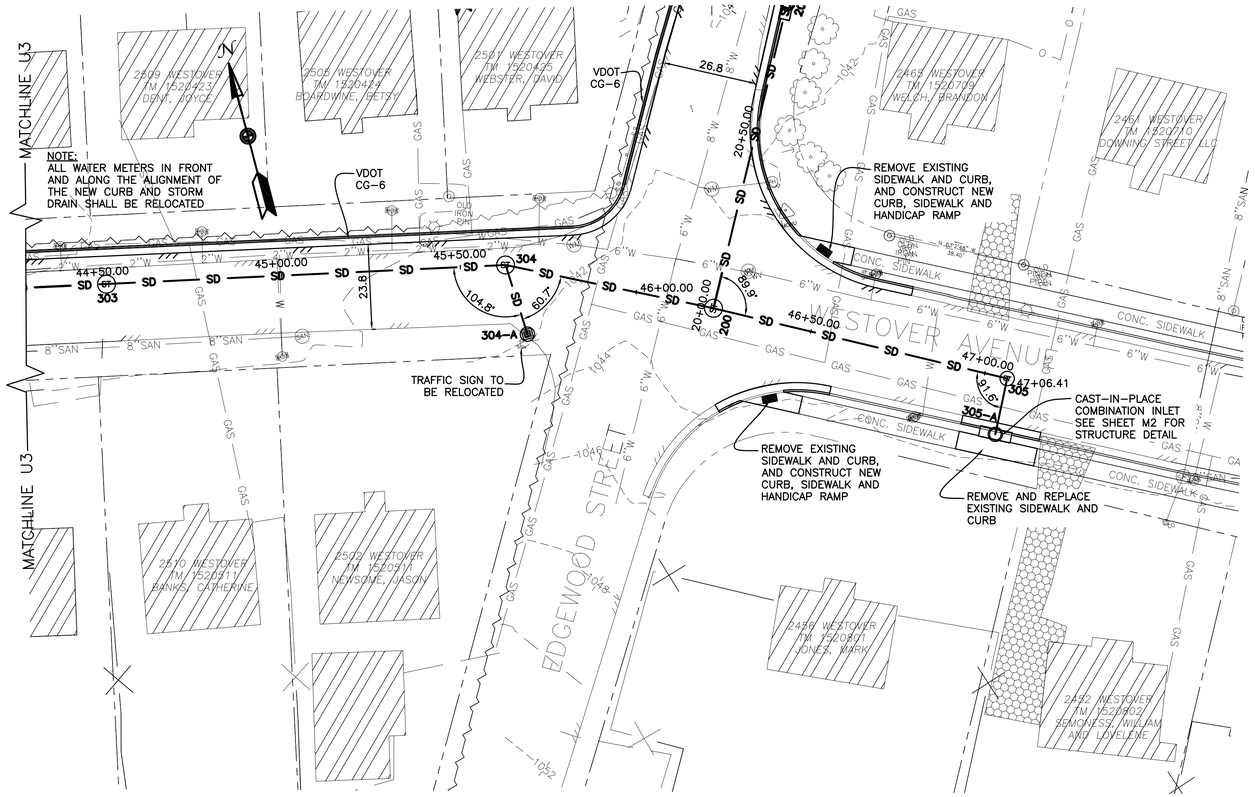
DATE: 08/10/12

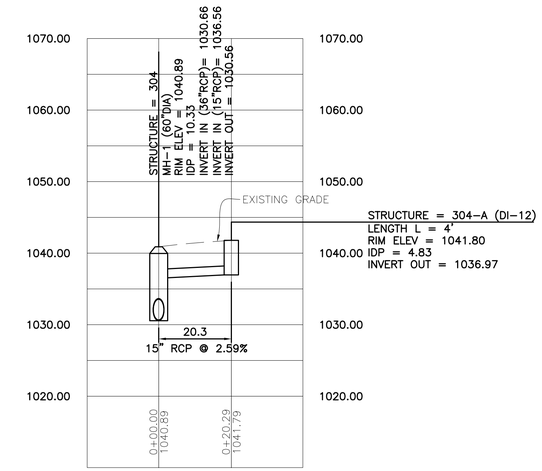
SCALE: AS SHOWN
24"x36" SHEET

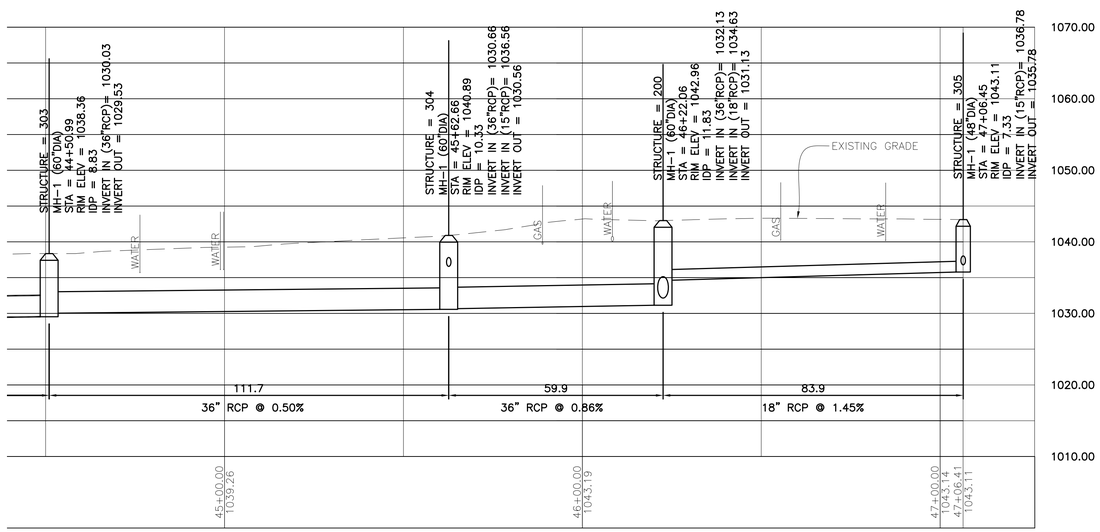
WESTOVER AVENUE DRAINAGE IMPROVEMENT
WESTOVER PLAN AND PROFILE 1
CITY OF ROANOKE, VIRGINIA

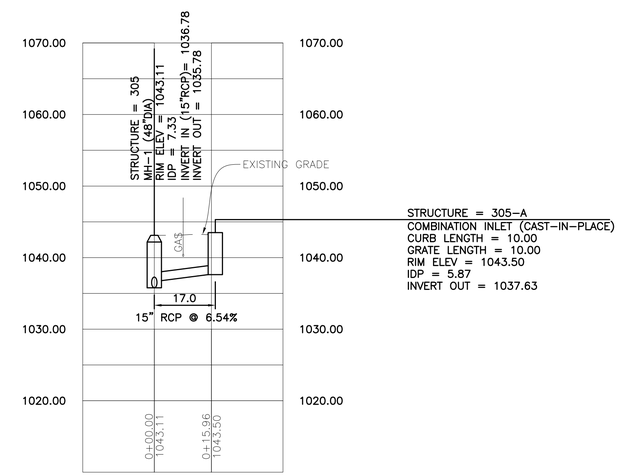
SHEET U3

PLAN NO. 6718









IF THIS DRAWING IS A REDUCTION GRAPHIC SCALE MUST BE USED

SCALE 1" = 10'

VERT: 10' 0' 10'

HORZ: 20' 0' 20'

SCALE 1" = 20'

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ROANOKE

DESIGNED: JJK
DRAWN: JJK
CHECKED: LEP

COMMONWEALTH OF VIRGINIA
JOSEPHUS M. JOHNSON-KOROMA
Lic. No. 46165
PROFESSIONAL ENGINEER

REV.	DATE:	DESCRIPTION

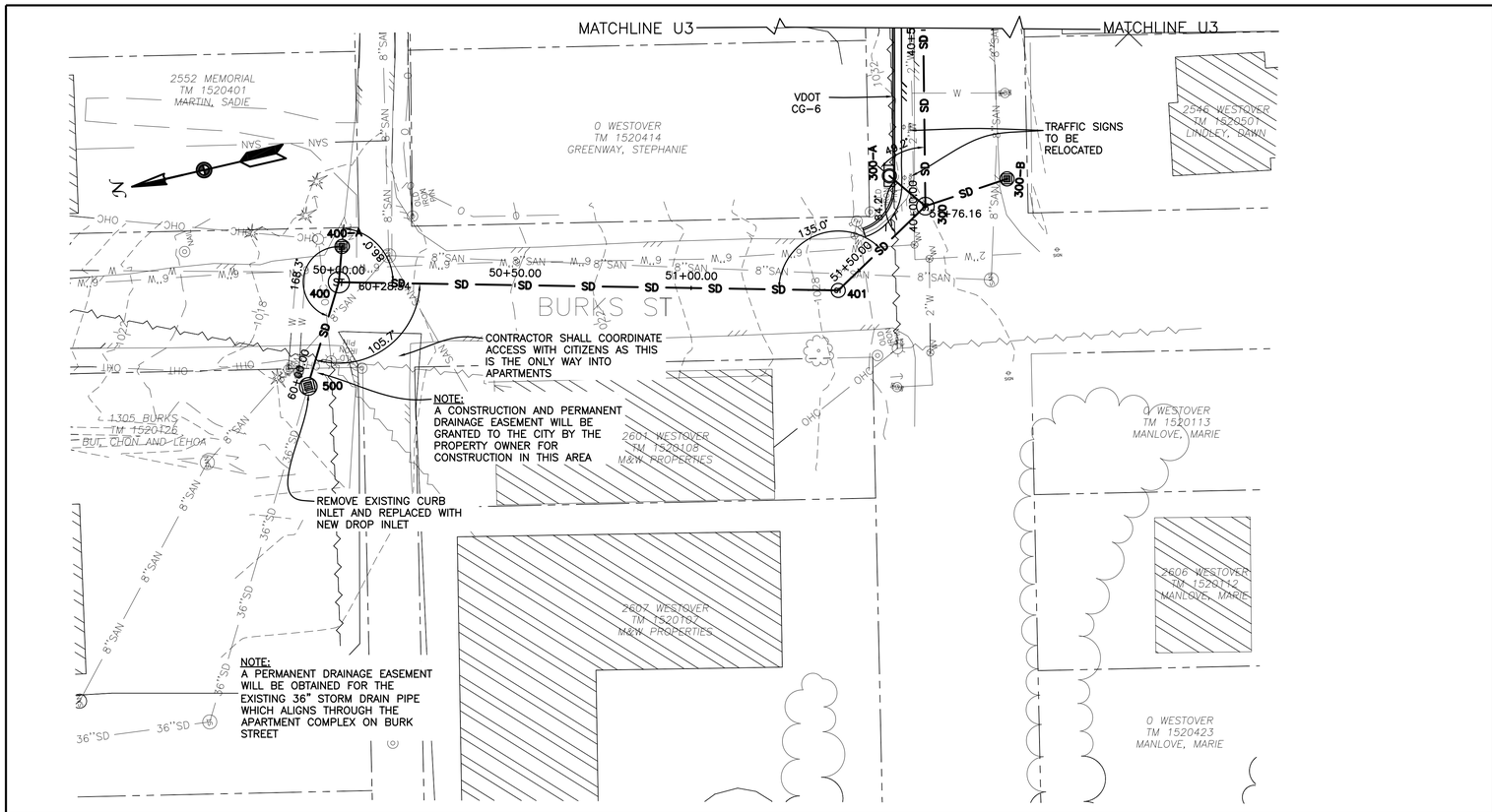
DATE: 08/10/12

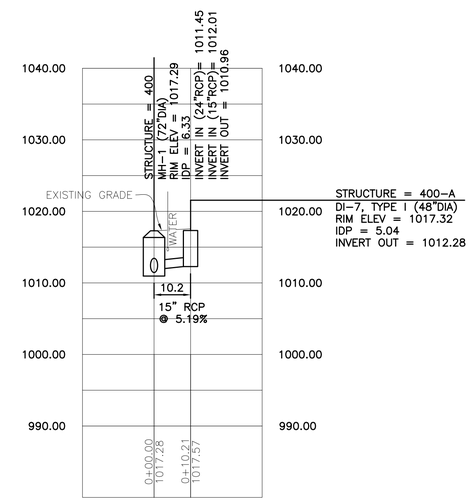
SCALE: AS SHOWN
24"x36" SHEET

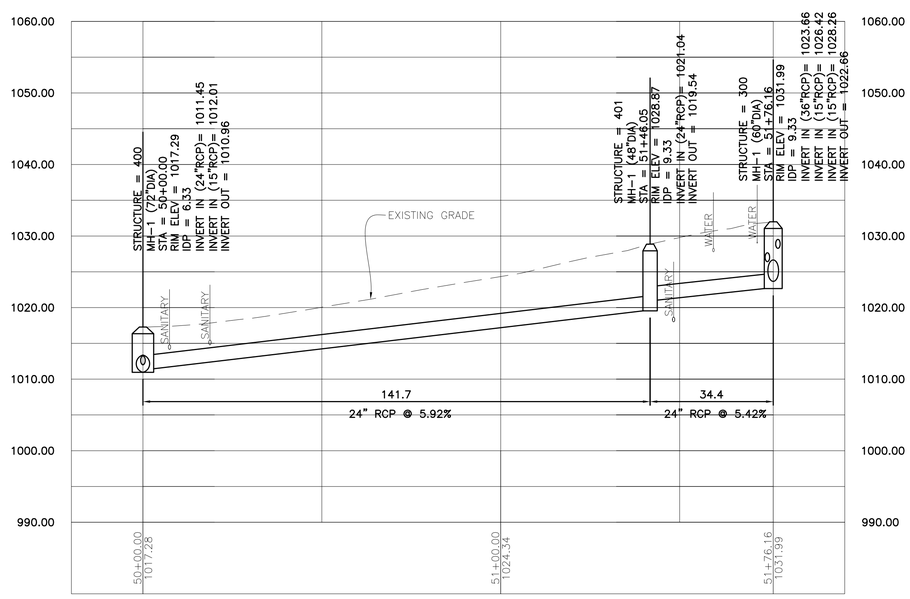
WESTOVER AVENUE DRAINAGE IMPROVEMENT
WESTOVER PLAN AND PROFILE 2
CITY OF ROANOKE, VIRGINIA

SHEET U4

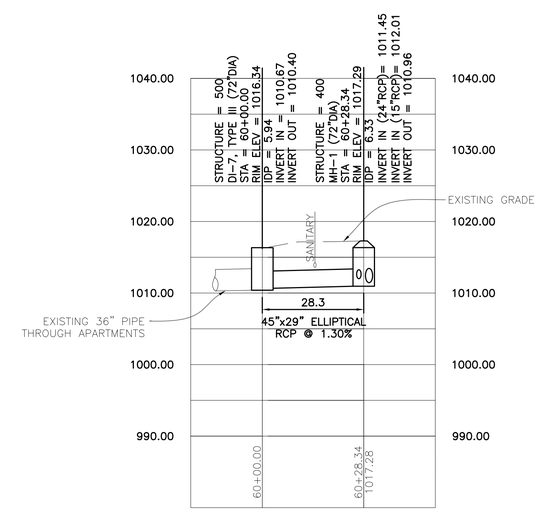
PLAN NO. 6718







IF THIS DRAWING IS A REDUCTION
GRAPHIC SCALE MUST BE USED
SCALE 1" = 10'
VERT: 10' 0' 10'
HORZ: 20' 0' 20'
SCALE 1" = 20'



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DESIGNED: JJK
DRAWN: JJK
CHECKED: LEP

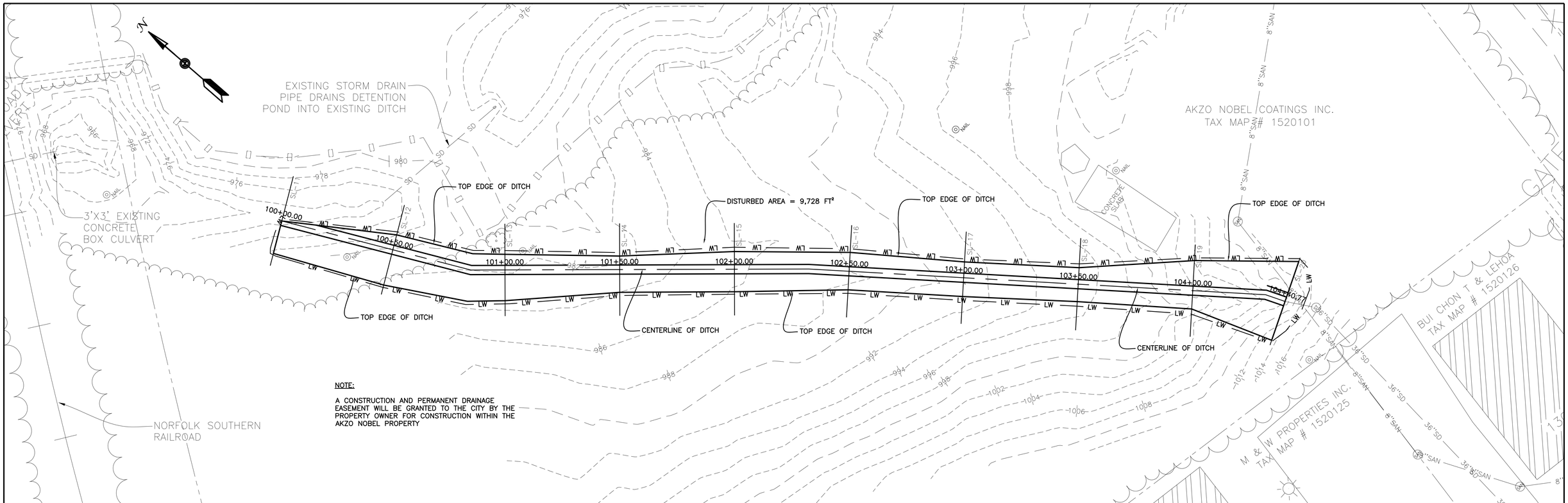
COMMONWEALTH OF VIRGINIA
JOSEPHUS M. JOHNSON-KOROMA
Lic. No. 46165
PROFESSIONAL ENGINEER

REV.	DATE:	DESCRIPTION

DATE: 08/10/12
SCALE: AS SHOWN
24"x36" SHEET

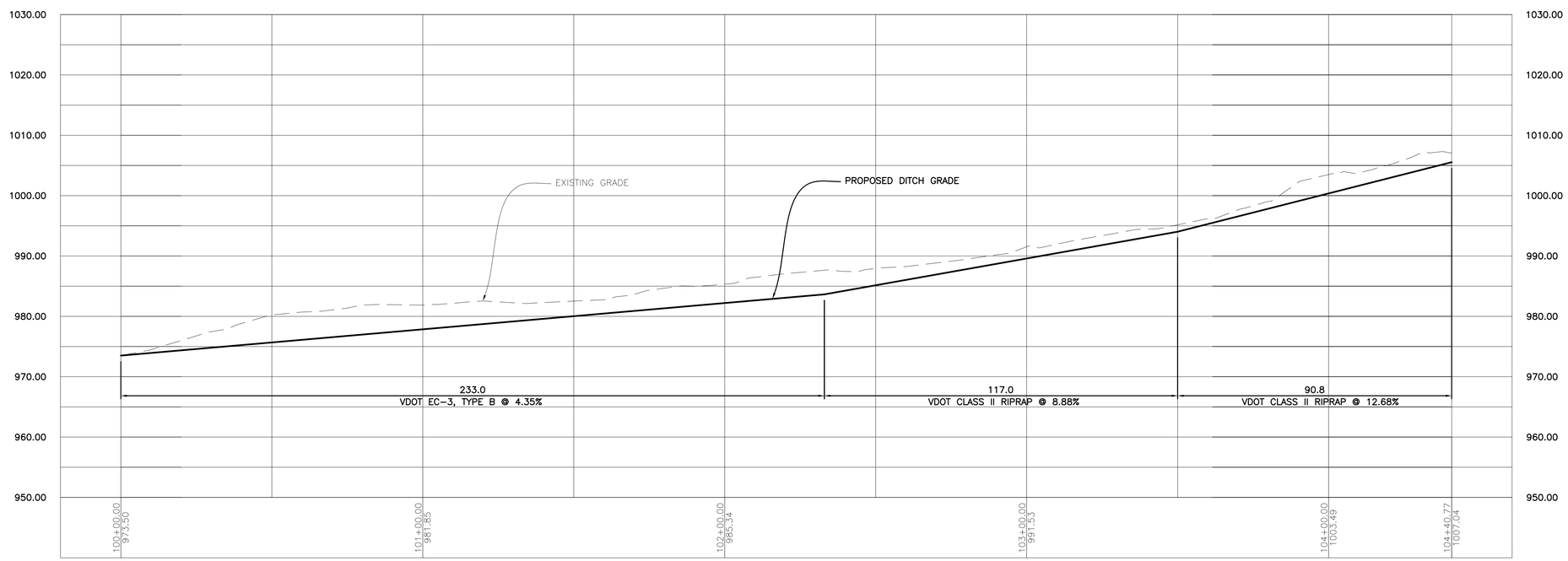
WESTOVER AVENUE DRAINAGE IMPROVEMENT
BURKS PLAN AND PROFILE
CITY OF ROANOKE, VIRGINIA

SHEET U5
PLAN NO. 6718



NOTE:

A CONSTRUCTION AND PERMANENT DRAINAGE EASEMENT WILL BE GRANTED TO THE CITY BY THE PROPERTY OWNER FOR CONSTRUCTION WITHIN THE AKZO NOBEL PROPERTY



IF THIS DRAWING IS A REDUCTION GRAPHIC SCALE MUST BE USED

SCALE 1" = 10'

VERT: 10' 0' 10'

HORZ: 20' 0' 20'

SCALE 1" = 20'

OFFICE OF THE
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ROANOKE

DESIGNED: JJK

DRAWN: JJK

CHECKED: LEP

COMMONWEALTH OF VIRGINIA
JOSEPHUS M. JOHNSON-KOROMA
Lic. No. 46165
PROFESSIONAL ENGINEER

REV.	DATE:	DESCRIPTION

DATE: 08/10/12

SCALE: AS SHOWN
24"x36" SHEET

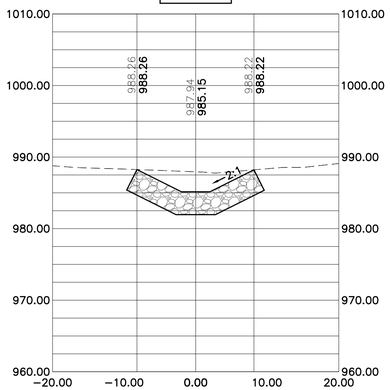
WESTOVER AVENUE DRAINAGE IMPROVEMENT
AKZO NOBEL DITCHLINE - PLAN AND PROFILE
CITY OF ROANOKE, VIRGINIA

SHEET U6

PLAN NO. 6718

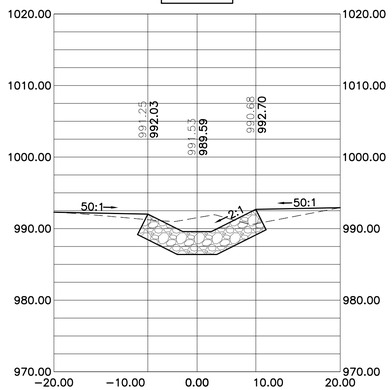
SL-16

102+50.00



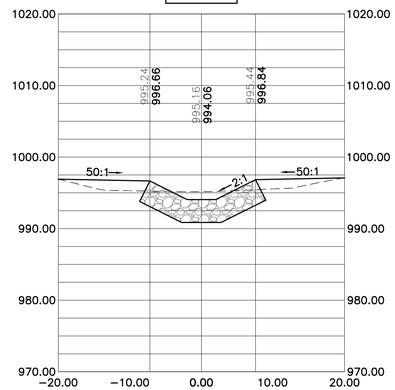
SL-17

103+00.00



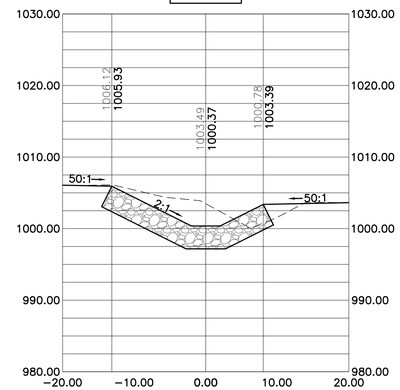
SL-18

103+50.00



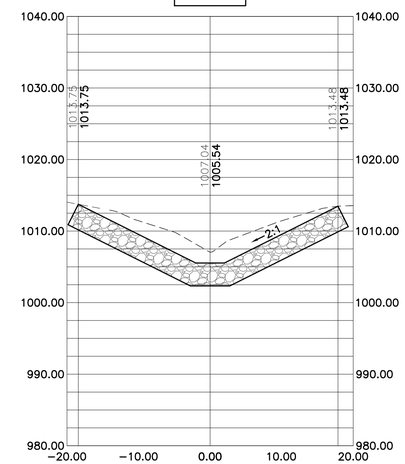
SL-19

104+00.00



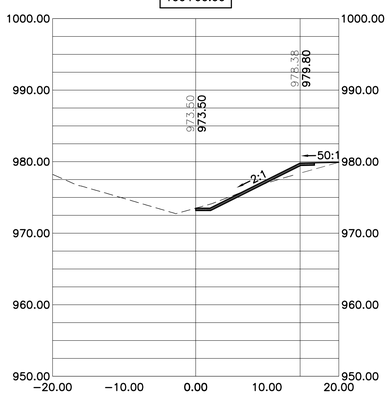
SL-20

104+40.77



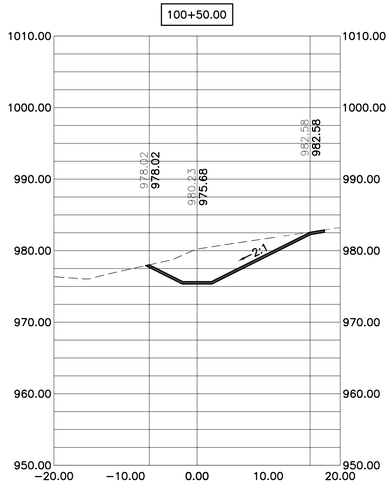
SL-11

100+00.00



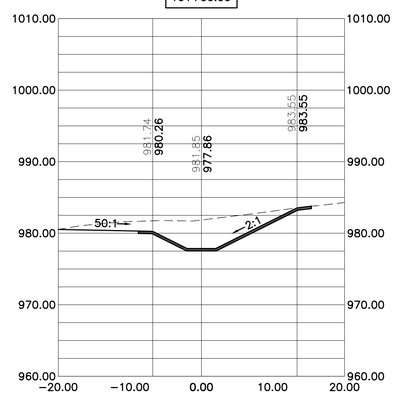
SL-12

100+50.00



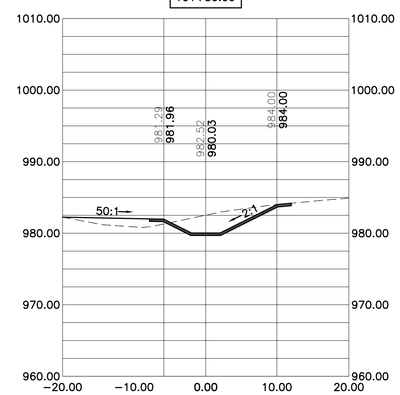
SL-13

101+00.00



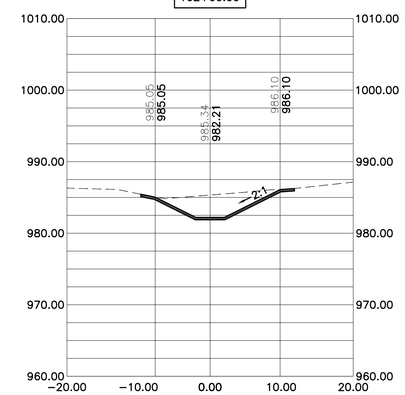
SL-14

101+50.00



SL-15

102+00.00



VDOT EC-3 DITCH

VDOT CLASS II RIPRAP DITCH

IF THIS DRAWING IS A REDUCTION
GRAPHIC SCALE MUST BE USED

10' 0' 10'

SCALE 1" = 10'

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WWW.ROANOKEVA.GOV
ROANOKE

DESIGNED: JJK

DRAWN: JJK

CHECKED: LEP

COMMONWEALTH OF VIRGINIA
JOSEPHUS M. JOHNSON-KOROMA
Lic. No. 46165
PROFESSIONAL ENGINEER

REV.	DATE:	DESCRIPTION

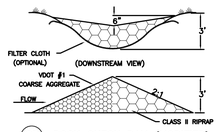
DATE: 08/10/12

SCALE: AS SHOWN
24"x36" SHEET

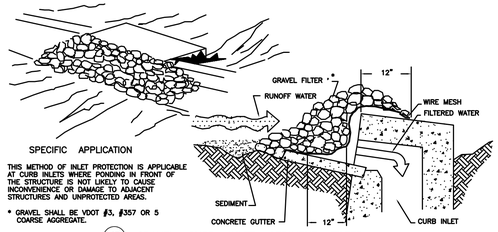
WESTOVER AVENUE DRAINAGE IMPROVEMENT
AKZO NOBEL DITCHLINE - CROSS SECTION
CITY OF ROANOKE, VIRGINIA

SHEET U7

PLAN NO. 6718



CD ROCK CHECK DAM (MODIFIED)

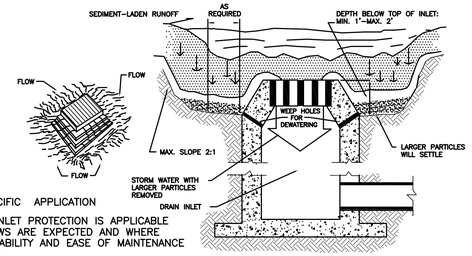


SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION 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 COARSE AGGREGATE.

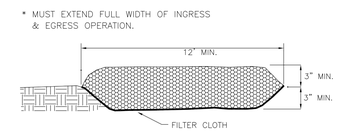
IP GRAVEL CURB INLET SEDIMENT FILTER

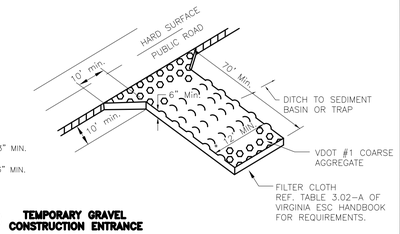


SPECIFIC APPLICATION

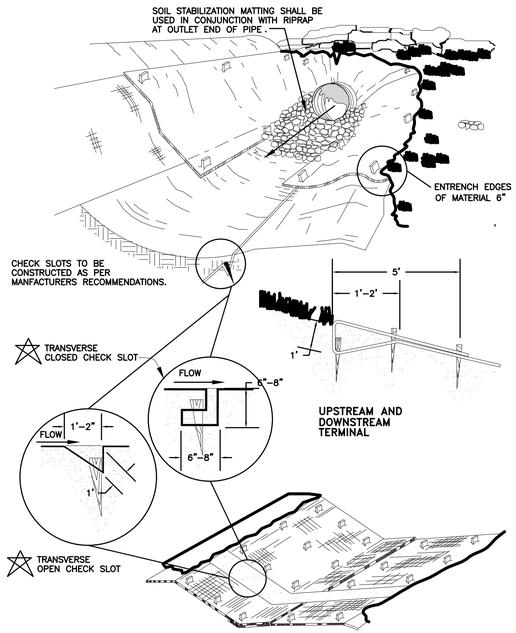
THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY FLOWS ARE EXPECTED AND WHERE AN OVERFLOW CAPABILITY AND EASE OF MAINTENANCE ARE DESIRABLE.

IP EXCAVATED DROP INLET SEDIMENT TRAP



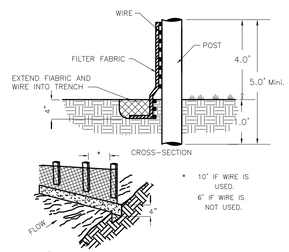


CE TEMPORARY GRAVEL CONSTRUCTION ENTRANCE



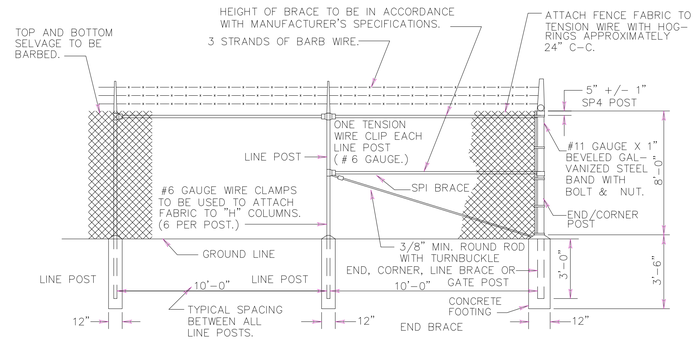
UPSTREAM AND DOWNSTREAM TERMINAL

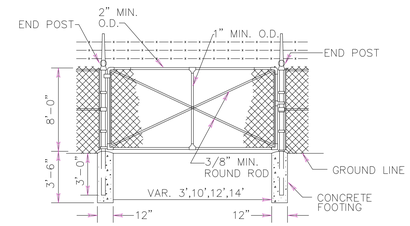
TYPICAL TREATMENT-2 SOIL STABILIZATION EC-3 MATTING INSTALLATION



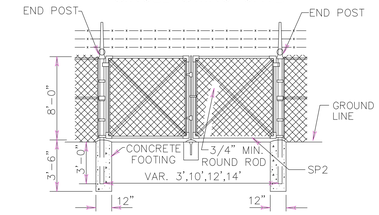
* 10' IF WIRE IS USED. 6' IF WIRE IS NOT USED.

SF CONSTRUCTION OF A SILT FENCE



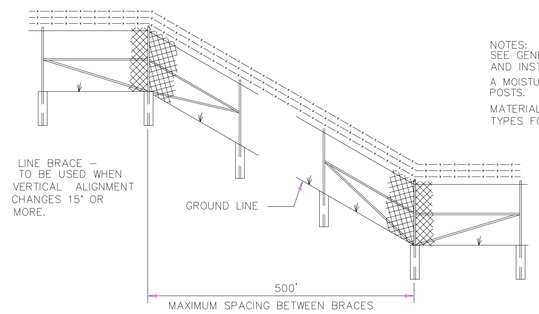


SINGLE SWING GATE



DOUBLE SWING GATE

(TO BE USED WHERE SWINGING CLEARANCE IS LIMITED)



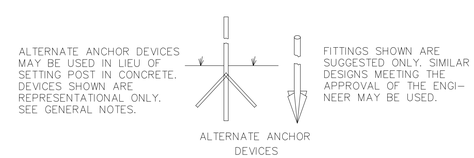
NOTES:
SEE GENERAL NOTES-FENCING FOR ADDITIONAL DETAILS AND INSTRUCTIONS

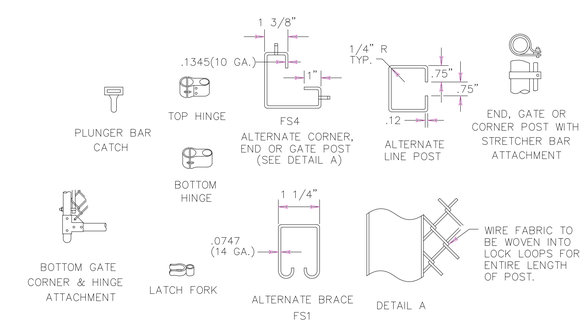
A MOISTURE-EXCLUDING CAP IS REQUIRED ON TUBULAR POSTS.

MATERIAL FOR CAP SHALL CONFORM TO THE ALLOWABLE TYPES FOR OTHER LISTED FILLINGS.

CORNER BRACE - TO BE USED WHEN HORIZONTAL ALIGNMENT CHANGES 15° OR MORE.

SEE END BRACE SHOWN ABOVE FOR BRACE DETAILS.





WIRE FABRIC

WIRE FABRIC SHALL HAVE A 2" MESH.

POST TYPE	SCHEDULE 40, NOMINAL PIPE SIZE
LINE POST	2.00"
END/CORNER POST	2.50"
GATE POST (SINGLE SWING)	3.50"
GATE POST (DOUBLE SWING)	2.50"
BRACE	1.25"
GATE FRAME	1.50"

MISCELLANEOUS

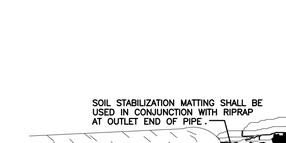
IN LIEU OF SETTING POSTS IN CONCRETE, MANUFACTURER'S ANCHORING DEVICES MEETING THE SPECIFICATION REQUIREMENTS MAY BE USED WHEN APPROVED BY THE ENGINEER.

FOR GATES EXCEEDING 6'-0" IN WIDTH ROLLED FORMED STEEL POST WILL NOT BE ALLOWED.

CHAIN LINK FENCE TO BE GROUNDED IN ACCORDANCE WITH DETAILS SHOWN ON STANDARD FE-6, WHERE REQUIRED.

INDUSTRIAL CHAIN LINK SECURITY FENCE

VDOT FE-CL (MODIFIED)



STAPLE PIN

1) 11 GAUGE STEEL - MINIMUM 1" WIDE BY 6" IN LENGTH STEEL STAPLE - 2"x6" STAPLE MAY BE REQUIRED IN CERTAIN SOIL CONDITIONS.

2) STEEL PINS - 3/16 DIAMETER STEEL PIN BY 18" IN LENGTH WITH A 2" DIAMETER WASHER ON TOP. (SEE ILLUSTRATION)

STAKES, STAPLES, & PINS FOR INSTALLATION OF TREATMENT - 2 SOIL STABILIZATION EC-3 MATTING

NO.	TITLE	KEY	SYMBOL
3.02	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE	CE	
3.05	SILT FENCE	SF	
3.07	STORM DRAIN INLET PROTECTION	IP	
3.19	RIPRAP	RR	
3.20	ROCK CHECK DAMS	CD	
3.31	TEMPORARY SEEDING	TS	
3.32	PERMANENT SEEDING	PS	
3.35	MULCHING	MU	
3.36	SOIL STABILIZATION BLANKETS AND MATTING	B/M	TYPE: 2

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215 CHURCH AVENUE, S.W.
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DESIGNED: JJK

DRAWN: JJK

CHECKED: LEP

COMMONWEALTH OF VIRGINIA
JOSEPHUS M. JOHNSON-KOROMA
Lic. No. 46165
PROFESSIONAL ENGINEER

REV.	DATE:	DESCRIPTION

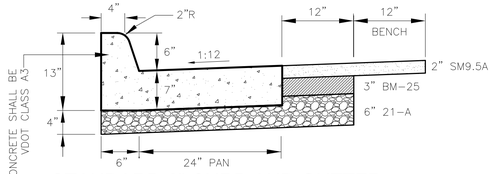
DATE: 08/10/12

SCALE: AS SHOWN
24"x36" SHEET

WESTOVER AVENUE DRAINAGE IMPROVEMENT
SECURITY FENCE AND E&S DETAILS
CITY OF ROANOKE, VIRGINIA

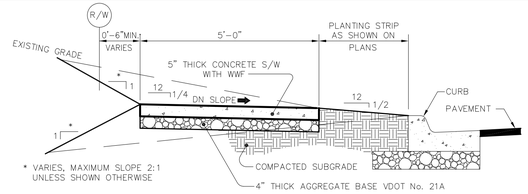
SHEET M1

PLAN NO. 6718



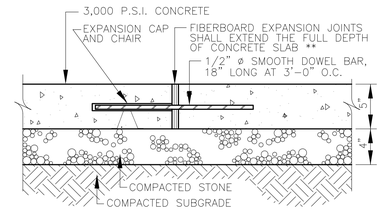
STANDARD 6" CURB AND GUTTER

WITH ASPHALT RESTORATION (CG-6) NTS



TYPICAL SIDEWALK with PLANTING STRIP

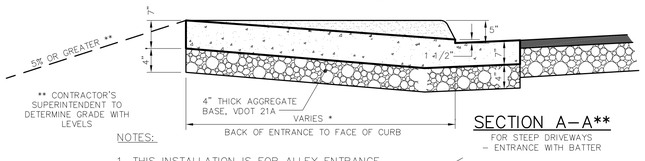
NOTE: EXPANSION MATERIAL SHALL BE PLACED AROUND ALL UTILITY POLES & NEW CONCRETE CONSTRUCTION.



** FIBERBOARD SHALL BE TRIMMED TO ALLOW FOR SEALANT. SEE PROJECT MANUAL SPECIFICATIONS FOR THE REQUIRED USE OF SEALANT.

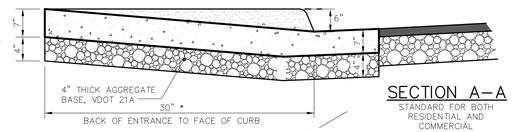
EXPANSION JOINT

NTS



SECTION A–A**

FOR STEEP DRIVEWAYS – ENTRANCE WITH BATTER

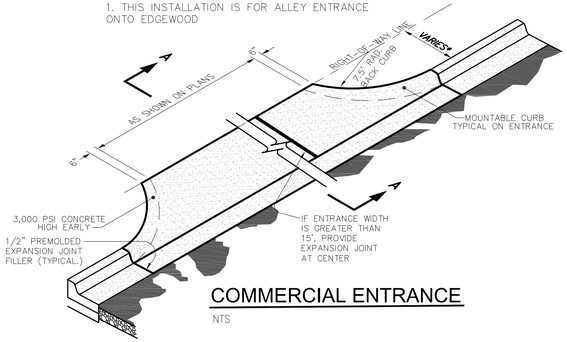


SECTION A–A

STANDARD FOR BOTH RESIDENTIAL AND COMMERCIAL ENTRANCES

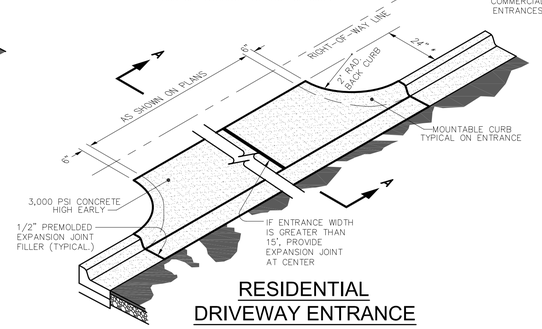
NOTES:

1. THIS INSTALLATION IS FOR ALLEY ENTRANCE ONTO EDGEWOOD



COMMERCIAL ENTRANCE

NTS



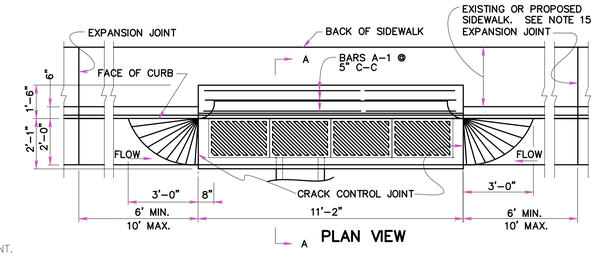
RESIDENTIAL DRIVEWAY ENTRANCE

* UNLESS PLAN SHOWS OR SPECIFIES OTHERWISE.

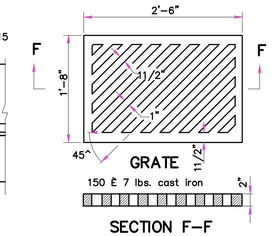
** FIBERBOARD SHALL BE TRIMMED TO ALLOW FOR SEALANT. SEE PROJECT MANUAL SPECIFICATIONS FOR THE REQUIRED USE OF SEALANT.

JOINT DETAILS

NTS

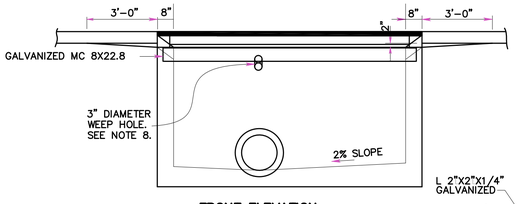


PLAN VIEW

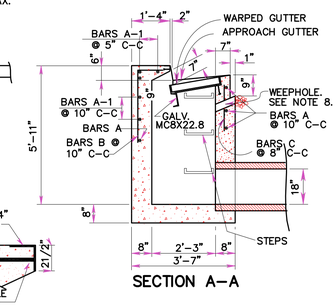


GRATE

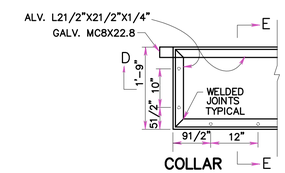
SECTION F–F



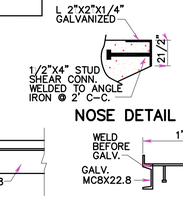
FRONT ELEVATION



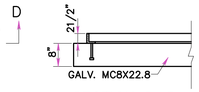
SECTION A–A



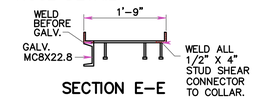
COLLAR



NOSE DETAIL



SECTION D–D



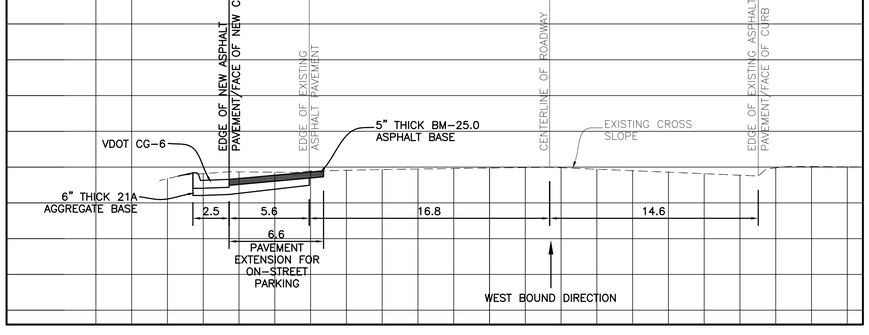
SECTION E–E

BARS A		BARS A-1		BARS B		BARS C	
No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.
5	11'-0"	5	11'-0"	14	4'-6"	18	3'-0"

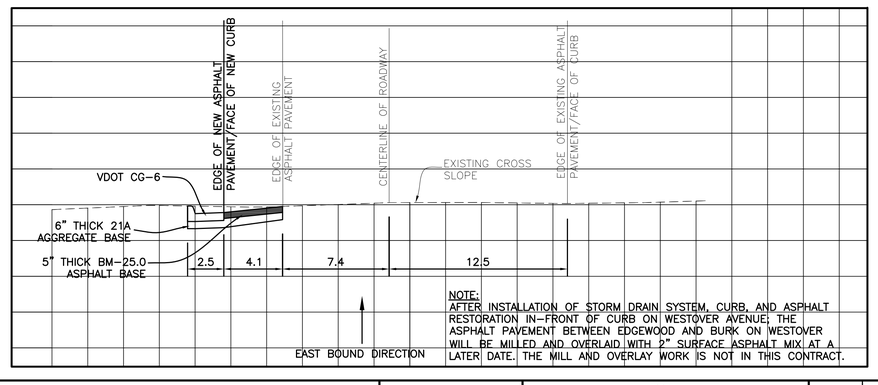
1. THE INVERT IS TO BE SHAPED IN ACCORDANCE WITH STANDARD IS-1. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.
2. THIS ITEM IS A CAST-IN-PLACE STRUCTURE.
3. #4 X 8" SMOOTH DOWELS AT APPROXIMATELY 12" C-C TO BE PLACED IN ALL AREAS ADJACENT TO ABUTTING CONCRETE TO PREVENT SETTLEMENT.
4. 3" DIAMETER WEEP HOLE TO BE LOCATED TO DRAIN SUBBASE MATERIAL. WEEP HOLE WITH 12"X12" PLASTIC HARDWARE CLOTH " MESH OR GALVANIZED STEEL WIRE, MINIMUM WIRE DIAMETER 0.03", NUMBER 4 MESH HARDWARE CLOTH ANCHORED FIRMLY TO THE OUTSIDE OF THE STRUCTURE.
5. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 2".
6. THIS AREA MAY BE EARTHEN, IN WHICH CASE THE EXPANSION JOINTS WILL APPLY ONLY TO CURB AND GUTTER.
7. ALL REINFORCING BARS TO BE #5.
8. GRATE TO BE INSTALLED SO SLOTS WILL DIRECT WATER TOWARD THE INLET THROAT.

CAST-IN-PLACE COMBINATION INLET DETAIL

(STRUCTURE 305-A)

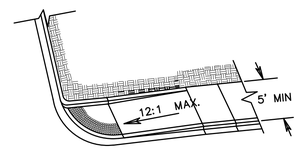


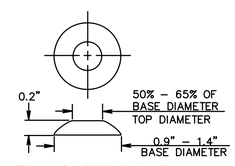
MEMORIAL ASPHALT PAVEMENT CROSS SECTION DETAIL



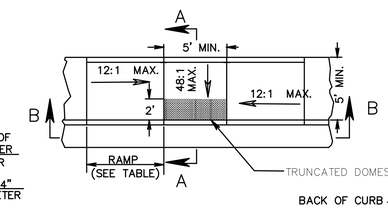
NOTE:
AFTER INSTALLATION OF STORM DRAIN SYSTEM, CURB, AND ASPHALT RESTORATION IN-FRONT OF CURB ON WESTOVER AVENUE; THE ASPHALT PAVEMENT BETWEEN EDGEWOOD AND BURK ON WESTOVER WILL BE MILLED AND OVERLAID WITH 2" SURFACE ASPHALT MIX AT A LATER DATE. THE MILL AND OVERLAY WORK IS NOT IN THIS CONTRACT.

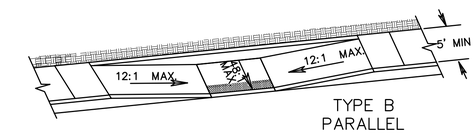
WESTOVER ASPHALT PAVEMENT CROSS SECTION DETAIL



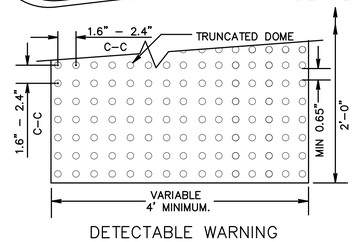


TRUNCATED DOME DETAIL





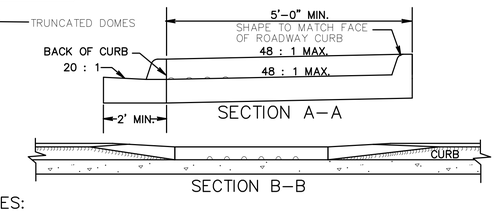
TYPE B PARALLEL



DETECTABLE WARNING DETAIL

TYPE B PARALLEL APPLICATION		
ROADWAY GRADE IN PERCENT	MINIMUM RAMP LENGTH IN FEET	
	4" CURB	6" CURB
0	4	6
1	5	7
2	5	8
3	6	9
4	8	12
5	10	15
6	14	15

NOTE:
THE REQUIRED LENGTH OF A PARALLEL RAMP IS LIMITED TO 15 FEET, REGARDLESS OF THE SLOPE.



SECTION A–A

SECTION B–B

NOTES:

1. THE DETECTABLE WARNING SHALL BE PROVIDED BY CAST IRON TRUNCATED DOMES PLATE, POWDER-COATED RED.
2. SLOPING SIDES OF CURB RAMP SHALL BE POURED MONOLITHICALLY WITH RAMP FLOOR.
3. CURB RAMPS ARE TO BE LOCATED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
4. RAMPS MAY BE PLACED ON RADIAL OR TANGENTIAL SECTIONS PROVIDED THAT THE CURB OPENING IS PLACED WITHIN THE LIMITS OF THE CROSSWALK AND THAT THE SLOPE AT THE CONNECTION OF THE CURB OPENING IS PERPENDICULAR TO THE CURB.
5. MINIMUM RAMP THICKNESS IS 7".

CITY STANDARD CURB RAMP DETAIL

ROANOKE

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CITY ENGINEER
215 CHURCH AVENUE, S.W.
ROOM 350
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FAX: (540) 853-1364
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DESIGNED: JJK
DRAWN: JJK
CHECKED: LEP

COMMONWEALTH OF VIRGINIA
JOSEPHUS M. JOHNSON-KOROMA
Lic. No. 46165
PROFESSIONAL ENGINEER

REV.	DATE:	DESCRIPTION

DATE: 08/10/12

SCALE: AS SHOWN
24"x36" SHEET

WESTOVER AVENUE DRAINAGE IMPROVEMENT
MISCELLANEOUS DETAILS
CITY OF ROANOKE, VIRGINIA

SHEET M2

PLAN NO. 6718