

PLAN OF DEVELOPMENT FOR
BROAD ROCK BOULEVARD RETAIL CENTER
2100 BROAD ROCK BOULEVARD
RICHMOND GATEWAY 9TH DISTRICT
CITY OF RICHMOND, VIRGINIA

SITE DATA

1.

OWNER / DEVELOPER:
ERIC INVESTMENT COMPANY, LLC
4354 STATELY OAK ROAD
NORTH CHESTERFIELD, VA 23234
CONTACT: RAUL RAMOS
2.

PLANS PREPARED BY:
THE SITE DESIGN COMPANY
268 HIGH STREET
PETERSBURG, VIRGINIA 23803
TELE: 804.720.9040
EMAIL: thompson@sitedesignco.com
CONTACT: CHRIS THOMPSON
3.

PARCEL ADDRESS: 2100 BROAD ROCK BOULEVARD
4.

PARCEL ACREAGE: 1.01 ACRES
5.

DISTURBED AREA: 1.18 ACRES (INCLUDING RIGHT-OF-WAY)
6.

IMPERVIOUS COVER:
PRE-DEVELOPED = 0.66 ACRES
POST-DEVELOPED = 0.92 ACRES
7.

UTILITIES: PUBLIC WATER AND SEWER
8.

BOUNDARY & TOPOGRAPHIC SURVEY:
PERFORMED BY HALDER SURVEYS -
CONTACT: RON LANG
PHONE: 804.720.1995
EMAIL: ron.lang@halder-surveys.com
9.

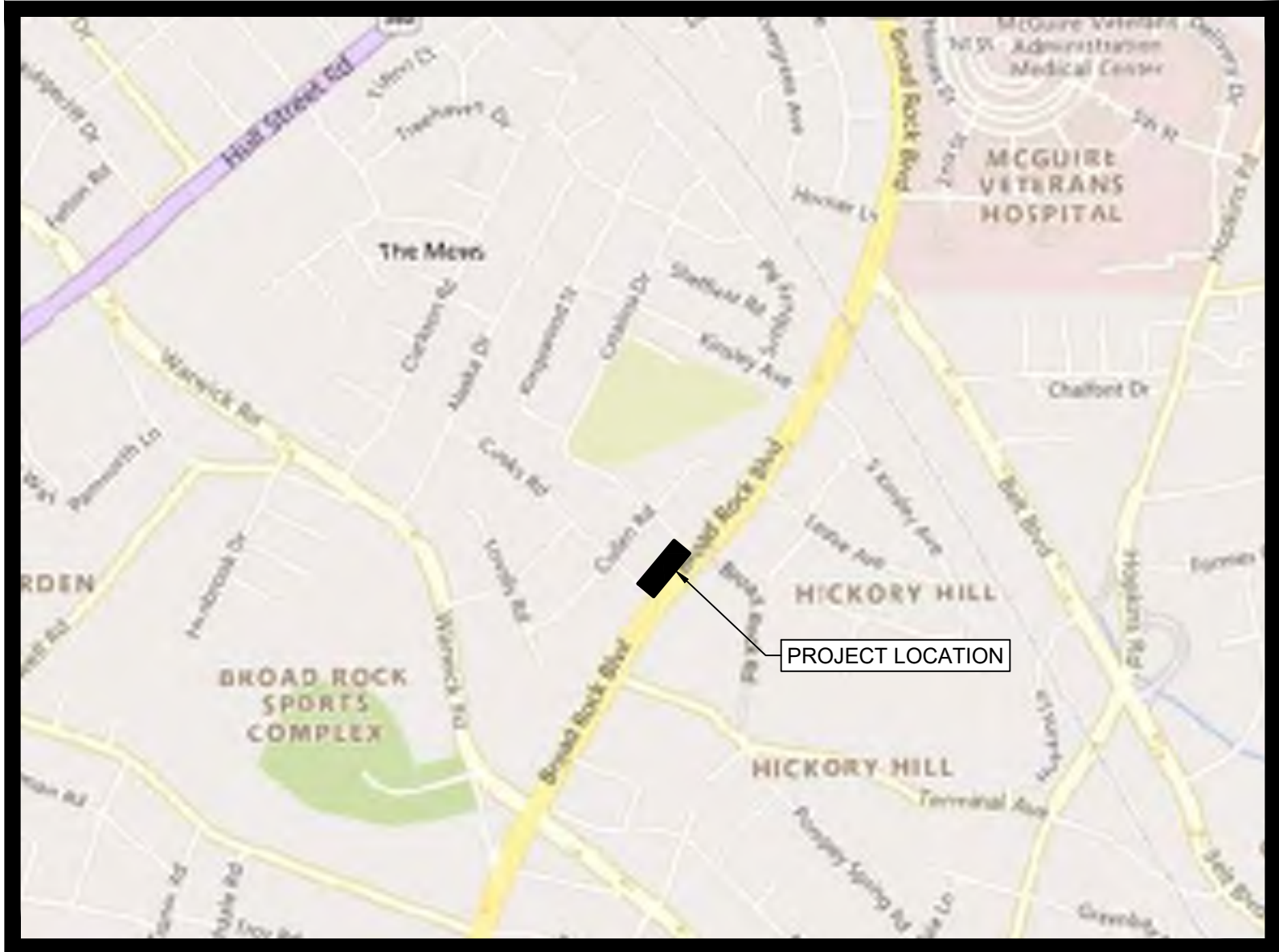
DATUM REFERENCE:
HORIZONTAL: NAD83 VIRGINIA STATE PLANE SOUTH ZONE
VERTICAL: NAVD88
10.

FLOOD ZONE: THE REFERENCED PROPERTY LIES WITHIN "ZONE X" (AREAS DETERMINED OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP NUMBER 5101290076D, EFFECTIVE DATE APRIL 2, 2009.
11.

WETLANDS DO NOT EXIST ON THE PROPERTY AND THERE ARE NO WETLAND IMPACTS ASSOCIATED WITH LAND DISTURBANCE FOR THIS DEVELOPMENT.
12.

RMA/RPA: THE ENTIRE SITE LIES OUTSIDE OF THE CITY DESIGNATED RMA AND THE CITY DESIGNATED RPA PER THE CITY'S CHESAPEAKE BAY PRESERVATION AREAS MAP.
13.

COORDINATES: LAT: N 37.487472, LONG: W 77.475428



VICINITY MAP

SCALE: 1"=1000'

CITY OF RICHMOND PROJECT NOTES

ZONING: B-2 (COMMERCIAL) & R-4 (RESIDENTIAL)
PARCEL ID #: C0060542008, C0060542010, C0060542012, C0060542014, C0060542016
PROJECT SUMMARY: 13,520 SF COMMERCIAL RETAIL CENTER
EXISTING USE: COMMERCIAL AND RESIDENTIAL
PROPOSED USE: COMMERCIAL
ACREAGE: 1.01
BUILDINGS:

- EXISTING: COMMERCIAL AND RESIDENTIAL (TO BE REMOVED)
- PROPOSED: 13,520 SQUARE FOOT
1 - STORY

PARKING SUMMARY:

- REQUIRED: 1 SPACE PER 300 SF
- REQUIRED: 13,520 SF / 300 SF = 45 SPACES
- PROVIDED: 45 SPACES

C.B.P.A. COMPLIANCE NOTE

STORMWATER COMPLIANCE HAS BEEN SATISFIED THROUGH THE PURCHASE OF 0.77 LBS OF NUTRIENT CREDITS FROM A DEQ APPROVED NUTRIENT CREDIT BANK.

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C6.0	PROFILES
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L2.2	SITE LIGHTING NOTES AND DETAILS
L2.3	SITE LIGHTING NOTES AND DETAILS

REQUIRED PERMITS

SPECIAL USE PERMIT
BUILDING PERMIT
MECHANICAL PERMIT
ELECTRICAL PERMIT
PLUMBING PERMIT
LAND DISTURBANCE PERMIT
WORK IN STREET PERMIT

CITY APPROVALS



The Site Design Company



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EMAIL: thompson@sitedesignco.com

PHONE: 804-720-9040

PROJECT MANAGER : CHRIS THOMPSON

PROJECT #: 20038

DATE : FEBRUARY 5, 2021

REVISION BLOCK

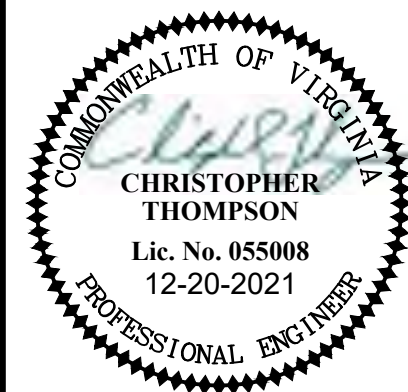
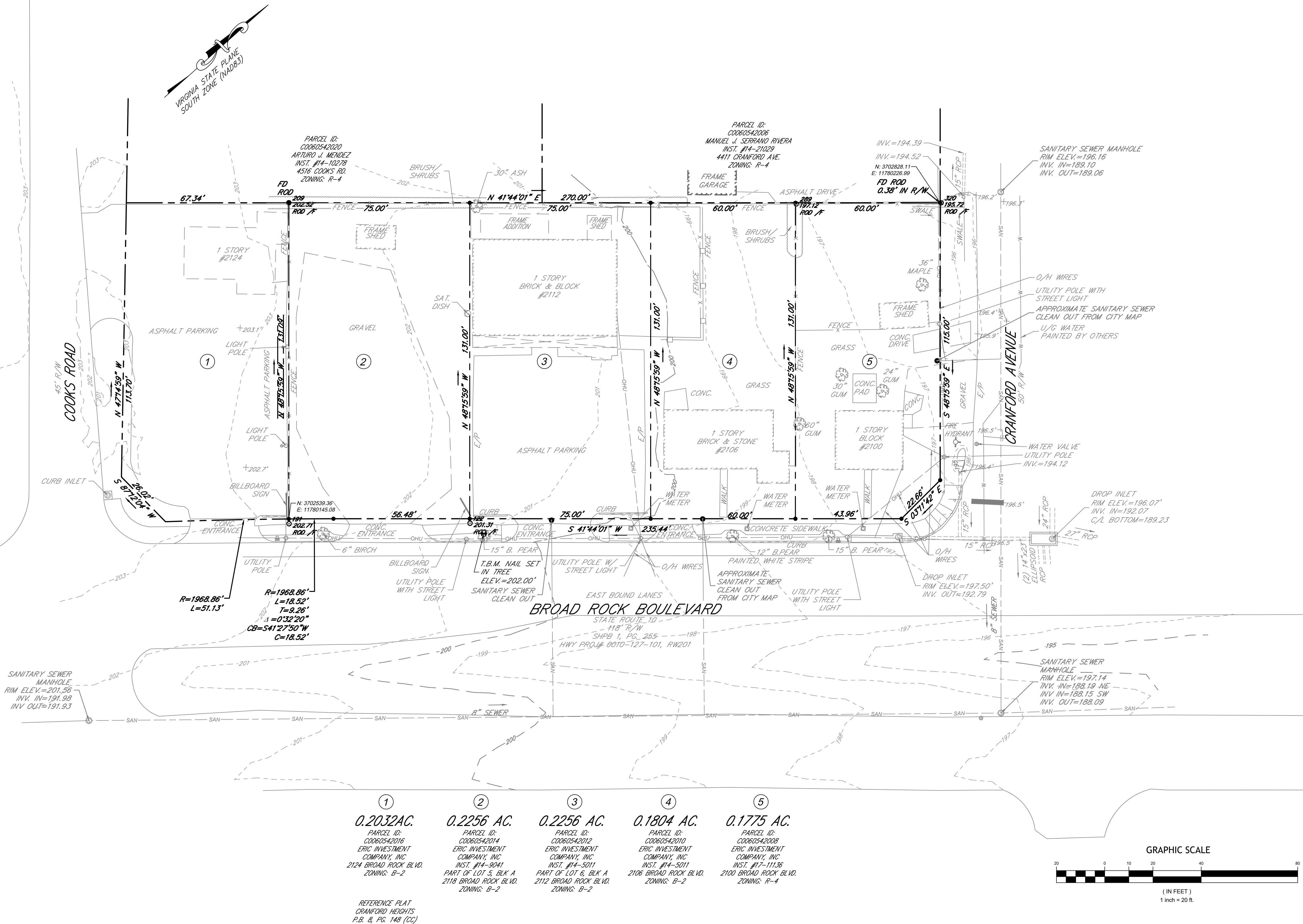
10-07-21	CITY COMMENTS
12-20-21	CITY COMMENTS

BROAD ROCK BOULEVARD
RETAIL CENTER
CITY OF RICHMOND, VA

COVER SHEET

SHEET NO.
C1.0

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**BROAD ROCK BOULEVARD
RETAIL CENTER**
CITY OF RICHMOND, VA

EXISTING CONDITIONS PLAN

SHEET NO.
C2.0

PROJECT # : 20038

PROJECT MANAGER : CHRIS THOMPSON

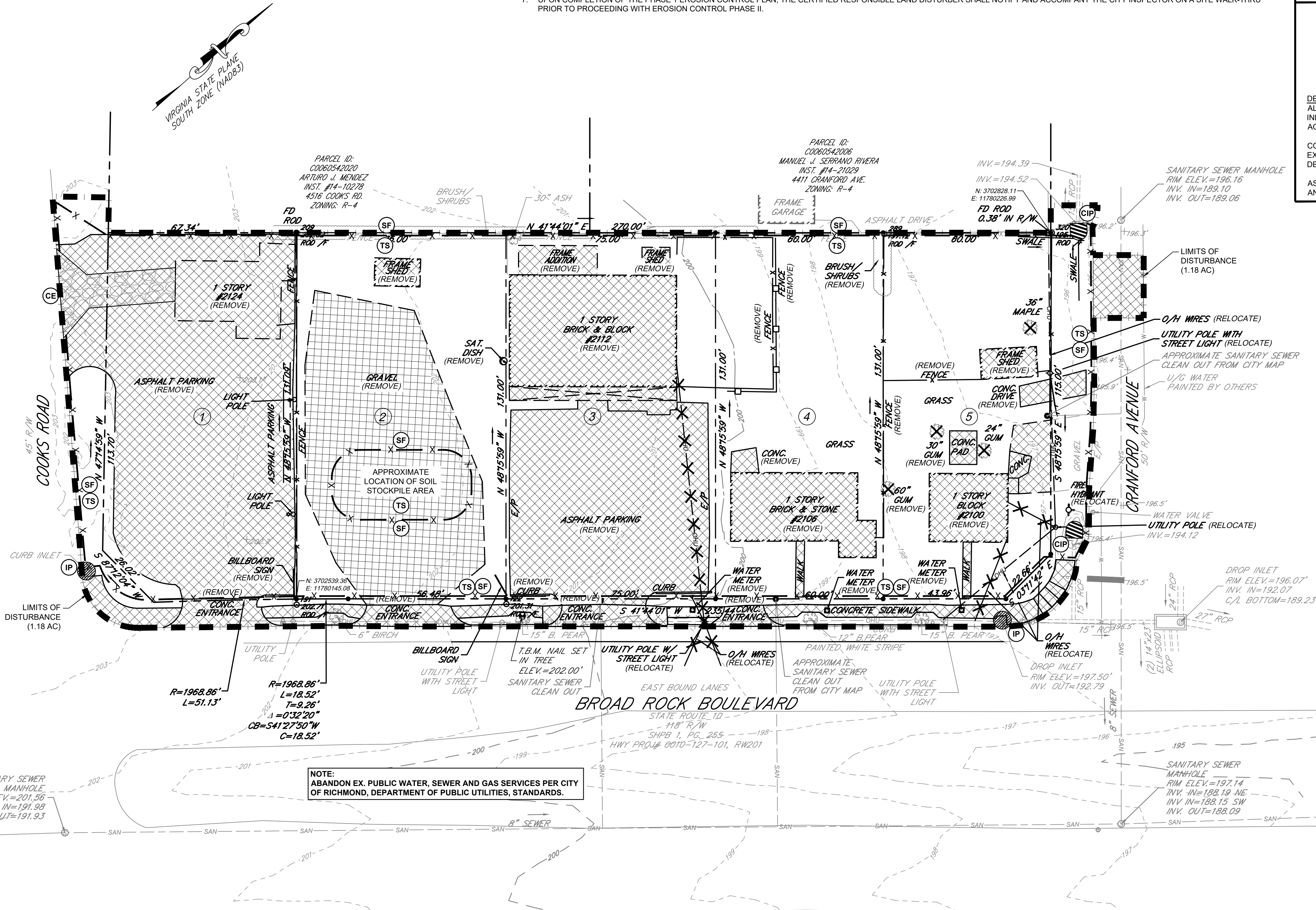
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MISS UTILITY OF VIRGINIA

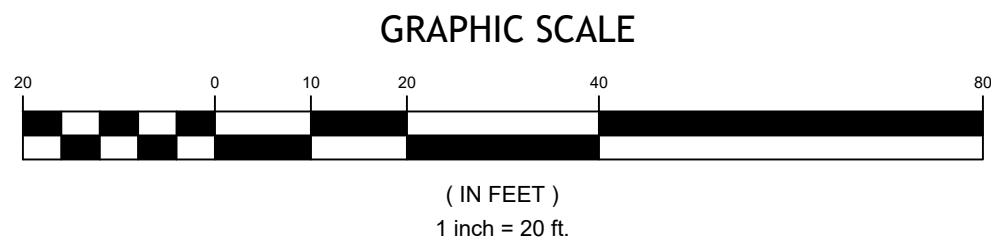
CONTRACTOR SHALL CALL "MISS UTILITY" 48 HOURS PRIOR TO THE START OF EXCAVATION. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES SHOWN ON PLANS IN AREAS OF CONSTRUCTION PRIOR TO STARTING WORK. CONTACT THE ENGINEER IMMEDIATELY IF THE LOCATION OR ELEVATION IS DIFFERENT FROM THAT SHOWN ON THE PLAN. IF THERE APPEARS TO BE A CONFLICT, AND/OR UPON DISCOVERY OF ANY UTILITY NOT SHOWN ON PLAN, CONTACT MISS UTILITY OF VIRGINIA: 1-800-552-7001 (TOLL FREE)



NOTE:
ABANDON EX. PUBLIC WATER, SEWER AND GAS SERVICES PER CITY OF RICHMOND, DEPARTMENT OF PUBLIC UTILITIES, STANDARDS.

- ①
0.2032 AC.
PARCEL ID: C0060542016
ERIC INVESTMENT COMPANY, INC
2124 BROAD ROCK BLVD.
ZONING: B-2

REFERENCE PLAT
CRANFORD HEIGHTS
P.B. 8, PG. 148 (CC)
- ②
0.2256 AC.
PARCEL ID: C0060542014
ERIC INVESTMENT COMPANY, INC
INST. #14-9041
PART OF LOT 5, BLK A
2118 BROAD ROCK BLVD.
ZONING: B-2
- ③
0.2256 AC.
PARCEL ID: C0060542012
ERIC INVESTMENT COMPANY, INC
INST. #14-5011
PART OF LOT 6, BLK A
2112 BROAD ROCK BLVD.
ZONING: B-2
- ④
0.1804 AC.
PARCEL ID: C0060542010
ERIC INVESTMENT COMPANY, INC
INST. #14-5011
2106 BROAD ROCK BLVD.
ZONING: B-2
- ⑤
0.1775 AC.
PARCEL ID: C0060542008
ERIC INVESTMENT COMPANY, INC
INST. #17-11136
2100 BROAD ROCK BLVD.
ZONING: R-4



PHASE 1 SEQUENCE OF CONSTRUCTION

1. APPLY FOR A RICHMOND STORMWATER MANAGEMENT PERMIT (RSM) WITH THE CITY OF RICHMOND DEPARTMENT OF PUBLIC UTILITIES - WATER RESOURCES DIVISION. THE SITE MUST BE REGISTERED PRIOR TO THE START OF CONSTRUCTION ACTIVITIES. A PRE-CONSTRUCTION CONFERENCE IS MANDATORY BEFORE ANY WORK IS DONE AT THE SITE. ARRANGE MEETING WITH THE OWNER, RSM CONSTRUCTION ACTIVITY OPERATOR, CERTIFIED RESPONSIBLE LAND DISTURBER (CRLD) AND THE CITY INSPECTOR. THE OWNER MUST GIVE THE CITY INSPECTOR 48 HOURS NOTIFICATION TO SCHEDULE AN ON-SITE PRE-CONSTRUCTION MEETING.
2. AT THE TIME OF THE PRE-CONSTRUCTION MEETING, TWO STANDARD SIGNS MUST BE INSTALLED ON EACH SIDE OF THE CONSTRUCTION ACCESS. THESE SIGNS SHOULD STATE EITHER "CONSTRUCTION ENTRANCE AHEAD" OR "TRUCKS ENTERING HIGHWAY".
3. DEMOLITION AND STRIPPING OPERATIONS SHOULD NOT BEGIN UNTIL AFTER THE ISSUANCE OF A LAND DISTURBANCE PERMIT AND THE INSTALLATION OF THE APPROVED EROSION CONTROL DEVICES.
4. INSTALL CONSTRUCTION ENTRANCE, CONCRETE WASHOUT, SILT FENCE, INLET PROTECTION, AND CULVERT INLET PROTECTION WHERE INDICATED ON PLAN.
5. DISTURB ONLY THE PORTION OF THE SITE NEEDED TO INSTALL THE PERIMETER EROSION CONTROL DEVICES. DISTURBANCE OUTSIDE OF THE PRELIMINARY LIMITS OF DISTURBANCE IS NOT ALLOWED UNTIL ALL PERIMETER MEASURES ARE INSTALLED AND INSPECTED BY THE CITY.
6. STRIP SITE AS REQUIRED AND PERFORM ALL DEMOLITION OPERATIONS TO FINAL LIMITS OF CLEARING. TEMPORARILY STOCKPILE SOIL ON SITE. STOCKPILES SHALL REMAIN IN PLACE NO LONGER THAN 1 YEAR FROM THE PLAN APPROVAL DATE. STABILIZE ALL STOCKPILES WITH TEMPORARY SEEDING AND A PERIMETER OF SILT FENCE.
7. UPON COMPLETION OF THE PHASE 1 EROSION CONTROL PLAN, THE CERTIFIED RESPONSIBLE LAND DISTURBER SHALL NOTIFY AND ACCOMPANY THE CITY INSPECTOR ON A SITE WALK-THRU PRIOR TO PROCEEDING WITH EROSION CONTROL PHASE II.

EROSION CONTROL LEGEND

CE		CONSTRUCTION ENTRANCE	3.02
SF		SILT FENCE	3.05
IP		INLET PROTECTION	3.07
CIP		CULVERT INLET PROTECTION	3.08
TS		TEMPORARY SEEDING	3.31

* VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK SPECIFICATION NUMBER

DEMOLITION LEGEND AND NOTES

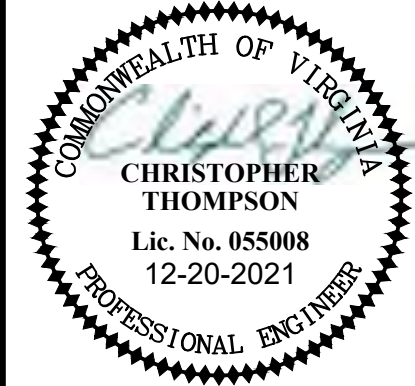
	DENOTES EXISTING ITEM TO BE REMOVED
	DENOTES AREA OF EXISTING PAVEMENT / CONCRETE TO BE REMOVED

DEMOLITION NOTES:

ALL ITEMS IN BOLD PRINT TO BE DEMOLISHED OR REMOVED AS INDICATED ON THIS PLAN SHEET AND SHALL BE EXCAVATED ACCORDING TO THE GRADING PLAN AND PAVEMENT DETAILS.

CONTRACTOR WILL TAKE MEASURES NECESSARY TO PROTECT EXISTING UTILITIES AND OTHER REMAINING STRUCTURES DURING DEMOLITION AND CONSTRUCTION PHASES.

ASPHALT, CONCRETE, AND OTHER DEBRIS SHALL BE DISPOSED OF AT AN APPROVED LANDFILL LOCATION.



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**BROAD ROCK BOULEVARD
RETAIL CENTER**

CITY OF RICHMOND, VA

DEMOLITION AND PHASE 1 E&S PLAN

SHEET NO.
C2.1

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EROSION CONTROL NARRATIVE

PROJECT DESCRIPTION
THE PROJECT IS LOCATED OFF OF BROAD ROCK BOULEVARD BETWEEN COOKS ROAD AND CRANFORD AVENUE. THE PURPOSE OF THIS PROJECT IS TO CREATE A COMMERCIAL RETAIL CENTER. THE LIMITS OF DISTURBANCE ASSOCIATED WITH CONSTRUCTION OF THE ACCESS ROADS IS APPROXIMATELY 1.18 +/- ACRES.

EXISTING SITE CONDITIONS
THE EXISTING SITE HAS TWO OUTFALLS, ONE TO THE NORTHEAST THAT OUTFALLS TO AN EXISTING 15" CULVERT ALONG CRANFORD AVENUE AND THE OTHER TO THE SOUTHEAST THAT OUTFALLS TO AN EXISTING PIPE SYSTEM AT THE INTERSECTION OF BROAD ROCK BOULEVARD AND CRANFORD AVENUE.

ADJACENT AREAS
THE SITE IS BORDERED BY BROAD ROCK BOULEVARD TO THE SOUTH, COOKS ROAD TO THE WEST, RESIDENTIAL PROPERTIES TO THE NORTH AND CRANFORD AVENUE TO THE EAST.

OFF-SITE AREAS
NO OFFSITE AREAS ARE ANTICIPATED TO BE IMPACTED WITH THE CONSTRUCTION PROJECT.

SOILS
REFER TO SOIL MAP ON THIS SHEET.

CRITICAL EROSION AREAS
THERE ARE NO CRITICAL EROSION AREAS WITHIN THE LIMITS OF DISTURBANCE FOR THE SITE.

OTHER POTENTIAL POLLUTION SOURCES
OTHER POTENTIAL POLLUTION SOURCES INCLUDE THE STORAGE OF FERTILIZER ON-SITE USED IN ESTABLISHING TEMPORARY AND PERMANENT SEEDING.

DISCHARGE FROM INDUSTRIAL ACTIVITY
NO DISCHARGES FROM INDUSTRIAL ACTIVITIES ARE ANTICIPATED ON THIS PROJECT OTHER THAN NORMAL CONSTRUCTION PRACTICES.

EROSION AND SEDIMENT CONTROL MEASURES
THE PHASE 1 EROSION AND SEDIMENT CONTROL MEASURES WILL BE DESIGNED TO RETAIN SEDIMENT ON-SITE TO THE MAXIMUM EXTENT PRACTICABLE. ALL PERIMETER EROSION CONTROL MEASURES MUST BE PROPERLY SELECTED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURERS' SPECIFICATIONS AND GOOD ENGINEERING PRACTICES. IF PERIODIC INSPECTIONS OR OTHER INFORMATION INDICATES A CONTROL HAS BEEN USED INAPPROPRIATELY OR INCORRECTLY, THE CONTRACTOR MUST REPLACE OR MODIFY THE CONTROL FOR SITE SPECIFIC SITUATIONS IF SEDIMENT ESCAPES THE CONSTRUCTION SITE. OFF-SITE ACCUMULATIONS OF SEDIMENT MUST BE REMOVED AT A FREQUENCY SUFFICIENT TO MINIMIZE OFF-SITE IMPACTS (E.G. CONSTRUCTION RELATED SEDIMENT COULD BE WASHED ONTO THE ADJOINING ROADWAY DURING THE NEXT RAIN AND POSE A SAFETY HAZARD). LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BECOMING A POLLUTANT SOURCE FOR STORMWATER DISCHARGES BY SCREENING OUTFALLS AND PICKING UP LITTER DAILY.

STRUCTURAL PRACTICES
THE FOLLOWING MEASURES MAY BE USED AS SPECIFIED IN THESE PLANS TO CONTROL EROSION AND SEDIMENT-LADEN RUNOFF ON THIS PROJECT. SEE THE EROSION & SEDIMENT CONTROL PLAN FOR LOCATIONS OF SPECIFIC EROSION CONTROL MEASURES.

PERMANENT STABILIZATION
AFTER CONSTRUCTION IS COMPLETED, OR IN ROUGH-GRADED AREAS WHICH WILL NOT BE BROUGHT TO FINAL GRADE FOR A YEAR OF MORE, PERMANENT SEEDING WILL BE USED TO STABILIZE DISTURBED AREAS. PERMANENT SEEDING INCLUDES LIME FERTILIZER, SEEDING, AND MULCH. SEE SEEDING SPECIFICATIONS FOR PERMANENT SEEDING. PROVIDE SOIL TEST TO DETERMINE THE SOIL AMENDMENTS REQUIRED FOR THIS PROJECT. SEE STANDARD AND SPECIFICATION 3.32 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK FOR ADDITIONAL INFORMATION AND REQUIREMENTS. ALSO REFER TO ESC TECHNICAL BULLETIN #4 - NUTRIENT MANAGEMENT FOR DEVELOPMENT SITES FOR UPDATED SEEDING SPECIFICATIONS. ALL AREAS THAT ARE NOT ASPHALT OR GRAVEL WILL BE SEEDDED AS DESCRIBED ABOVE.

MAINTENANCE
EROSION CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT BY THE CONTRACTOR. THEY WILL BE REPAIRED/REINSTALLED AS NECESSARY TO PREVENT ANY SILT OR MUD FROM LEAVING THE CONSTRUCTION AREA FOR THE DURATION OF CONSTRUCTION. INSPECTIONS OF THE EROSION AND SEDIMENT CONTROL MEASURES WILL BE PERFORMED BY THE CONTRACTOR ONCE EVERY FOUR (4) BUSINESS DAYS, OR ONCE EVERY (5) BUSINESS DAYS AND WITHIN 24 HOURS FOLLOWING A RAINFALL EVENT IN EXCESS OF 0.25 INCHES.

3.02 CONSTRUCTION ENTRANCE

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

3.05 SILT FENCE

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

3.07 STORM DRAIN INLET PROTECTION

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

3.08 CULVERT INLET PROTECTION

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

3.32 PERMANENT SEEDING

NEW SEEDINGS SHALL BE SUPPLIED WITH ADEQUATE MOISTURE. OVER-SEEDING AND FERTILIZING IF COVER IS INADEQUATE TO PREVENT EROSION. TEST THE SOIL AND REEVALUATE PLAT MATERIALS AND QUANTITIES OF LIME AND FERTILIZER IF STAND HAS LESS THAN 40% COVER. RE-SEED AREAS THAT FAIL TO ESTABLISH ADEQUATE VEGETATIVE COVER.

MULCHING

SHOULD BE INSPECTED AFTER RAINSTORMS, AND ADDITIONAL MULCH SHOULD BE APPLIED WHEN EROSION IS OBSERVED. NETS AND MATS SHOULD BE INSPECTED FOR DISLOCATION AFTER RAINSTORMS AND SHOULD BE RE-INSTALLED AS NECESSARY. INSPECTIONS SHOULD TABLE UNTIL GRASSES AREA ESTABLISHED.

MANAGEMENT STRATEGIES

IF SEDIMENT TRACKING ONTO STAGE ROAD BECOMES A PROBLEM THROUGHOUT CONSTRUCTION, CONTRACTOR SHALL INSTALL A WASH RACK IN THE CONSTRUCTION ENTRANCES WITH AN ADJACENT SETTLING AREA.

CALCULATIONS

THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK WAS USED TO DETERMINE THE SIZE AND STORAGE REQUIREMENTS FOR THE EROSION CONTROL MEASURES.

STORMWATER MANAGEMENT CONSIDERATIONS

REFER TO SHEETS C7.1 AND C7.3 FOR STORMWATER QUANTITY AND QUALITY NARRATIVES.

GENERAL EROSION CONTROL NOTES

MATERIALS, GARBAGE, AND DEBRIS

NO SOLID MATERIAL (WHICH INCLUDES BUILDING MATERIALS, GARBAGE, AND OTHER MISCELLANEOUS DEBRIS) SHALL BE DISCHARGED TO SURFACE WATERS OF THE STATE. DEMOLITION MATERIALS THAT MAY BE CARRIED OFF-SITE BY STORMWATER SHALL BE PICKED UP DAILY AND REMOVED FROM THE SITE. ALL WASTE MATERIALS WILL BE COLLECTED IN A SECURELY SEALED DUMPSTER. THE DUMPSTER SHALL MEET ALL SOLID WASTE MANAGEMENT REQUIREMENTS, AND ALL TRASH AND DEMOLITION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN THE DUMPSTER. THE DUMPSTER SHOULD BE EMPTIED A MINIMUM OF ONCE PER WEEK OR MORE OFTEN IF NECESSARY, AND TRASH WILL BE HAULED AS REQUIRED BY LOCAL REGULATIONS. NO DEMOLITION WASTE WILL BE BURIED ON-SITE. ALL PERSONNEL WILL BE INSTRUCTED ON PROPER PROCEDURES FOR WASTE DISPOSAL.

EXPECTED DEMOLITION AND WASTE MATERIALS MATERIALS COULD POTENTIALLY BE TEMPORARILY STORED ON-SITE: TOPSOIL, FILL DIRT, EXCAVATED MATERIAL, LUMBER, FORMS FOR CONCRETE WORK, SEED, FERTILIZER, HERBICIDES, STONE, CONCRETE PRODUCTS, ASPHALT, PETROLEUM BASED FUELS AND LUBRICANTS FOR EQUIPMENT, AND PVC AND DUCTILE IRON PIPE.

ANY STOCKPILES OF TOPSOIL, EXCAVATED MATERIAL OR FILL DIRT THAT ARE NEEDED SHALL BE SURROUNDED ON THE DOWNSLOPE SIDE BY SILT FENCE. FERTILIZER AND HERBICIDES MUST BE KEPT IN WATERTIGHT CONTAINERS, PREFERABLY IN PORTABLE STORAGE UNITS AND OUT FROM EXPOSURE TO THE WEATHER DURING STORAGE ON-SITE. CARE MUST BE TAKEN TO MINIMIZE SPILLAGE OF FERTILIZER IF MIXING OPERATIONS ARE REQUIRED TO PREPARE THE FERTILIZER FOR APPLICATION. THESE PRODUCTS WILL BE APPLIED AT RATES THAT DO NOT EXCEED THE MANUFACTURER'S SPECIFICATIONS.

COMPLIANCE WITH STATE & LOCAL WASTE, SANITARY, AND/OR SEPTIC REGULATIONS

A MINIMUM OF ONE PORTABLE SANITARY UNIT SHOULD BE PROVIDED FOR EVERY TEN (10) WORKERS ON THE SITE. ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONE TIME PER WEEK BY A LICENSED PORTABLE FACILITY PROVIDER IN COMPLIANCE WITH LOCAL AND STATE REGULATIONS. ALL SANITARY WASTE UNITS WILL BE LOCATED IN AN AREA WHERE THE CHANCES OF THE UNIT CONTRIBUTING TO STORMWATER DISCHARGE IS NEGLIGIBLE. THE LOCATION OF THE SANITARY WASTE UNITS SHALL BE IDENTIFIED ON THE SWPPP PREPARED BY THE CONTRACTOR ONCE THE LOCATIONS HAVE BEEN DETERMINED.

HOUSEKEEPING AND HANDLING OF PRODUCTS

PRACTICES SUCH AS GOOD HOUSEKEEPING, PROPER HANDLING OF HAZARDOUS PRODUCTS, AND PROPER SPILL CONTROL PRACTICES SHALL BE FOLLOWED TO REDUCE THE RISK OF SPILLS AND DISCHARGING INTO THE STORMWATER RUNOFF. TO MINIMIZE THE AFFECT OF ANY POTENTIAL SPILLS, MAINTAIN ALL ON-SITE FUELING OPERATIONS AS FAR AWAY FROM SURROUNDING SURFACE WATERS AND DRAINAGE FACILITIES AS IS PRACTICAL. QUANTITIES OF PRODUCTS STORED ON-SITE WILL BE LIMITED TO THE AMOUNT NEEDED FOR THE JOB. PRODUCTS AND MATERIALS WILL BE STORED IN A NEAT AND ORDERLY MANNER, AND IN APPROPRIATE CONTAINERS WILL BE ACCORDING TO THE MANUFACTURE'S RECOMMENDATIONS. THE DISPOSAL OF PRODUCT CONTAINERS SHALL ALSO BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

IF OVERNIGHT STORAGE OF FUEL IS REQUIRED, THE FUEL STORAGE CONTAINER MUST BE EQUIPPED WITH A FUELING MECHANISM DISABLE DEVICE. DAILY INSPECTIONS OF THE FUEL STORAGE CONTAINER MUST BE IMPLEMENTED TO DETECT THE PRESENCE OF LEAKS. THE FUELING OPERATOR SHALL HAVE A SAFE FILL, SHUT-DOWN, AND TRANSFER PROCEDURE IN PLACE TO MINIMIZE SPILLAGE DURING FUELING ACTIVITIES. THE OPERATOR MUST MAINTAIN A FULLY EQUIPPED SPILL KIT ON SITE AT ALL TIMES WITH THE STORED FUEL. THE KIT MUST AT LEAST INCLUDE ABSORBENT MATS OR MATERIAL TO CLEANUP ANY SPILLED FUEL. FOR ANY FUEL SPILL ON SITE EQUAL TO OR EXCEEDING 25 GALLONS, IMMEDIATELY CREATE AN APPROPRIATELY SIZED BERM AROUND THE AREA OF SPILLAGE TO MINIMIZE SURFACE MOVEMENT OF THE FUEL. CONTACT THE LOCAL HAZMAT AUTHORITIES, THE ENGINEER, AND OTHER AUTHORITIES HAVING JURISDICTION AS QUICKLY AS POSSIBLE TO REPORT THE SPILL AND TO SEEK FURTHER ASSISTANCE WITH SPILL CLEANUP.

CONTAINERS FOR PETROLEUM BASED PRODUCTS SUCH AS FUELS, LUBRICANTS AND TARS WILL BE INSPECTED DAILY FOR LEAKS AND SPILLS. THIS INCLUDES ON-SITE VEHICLE AND MACHINERY DAILY INSPECTIONS AND REGULAR PREVENTIVE MAINTENANCE OF SUCH EQUIPMENT. EQUIPMENT MAINTENANCE AREAS WILL BE LOCATED AWAY FROM STATE WATERS, NATURAL DRAINAGE AND STORMWATER DRAINAGE INLETS. IN ADDITION, TEMPORARY FUELING TANKS SHALL HAVE A SECONDARY CONTAINMENT LINER TO PREVENT OR MINIMIZE SITE CONTAINMENT. DISCHARGE OF OILS, FUELS, AND LUBRICANTS IS PROHIBITED. PROPER DISPOSAL METHODS WILL BE COLLECTION IN A SUITABLE CONTAINER AND DISPOSAL AS REQUIRED BY LOCAL AND STATE REGULATIONS.

ALL PAINTS, FINISHES AND SOLVENTS PRODUCTS WILL BE STORED IN TIGHTLY SEALED ORIGINAL CONTAINERS WHEN NOT IN USE. EXCESS PRODUCT WILL NOT BE DISCHARGED TO THE STORMWATER COLLECTION SYSTEM. EXCESS PRODUCT, MATERIALS USED WITH THESE PRODUCTS, AND PRODUCT CONTAINERS WILL BE DISPOSED OF ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

NO CONCRETE TRUCK WILL BE PERMITTED TO BE WASHED OUT, OR BE ALLOWED TO DISCHARGE SURPLUS CONCRETE OR DRUM WASH-WATER ON-SITE WITHOUT PROPER CONTAINMENT MEASURES AND PROTECTION TO ADJACENT UNDISTURBED AREAS.

PS	TABLE 3.32-D	
	SITE SPECIFIC SEEDING MEASURES FOR PIEDMONT AREA	Total Lbs. Per Acre
Minimum Care Lawn		
- Commercial or Residential		175-200 lbs.
- Kentucky 31 or Turf-Type Tall Fescue		95-100%
- Improved Perennial Ryegrass		0-5%
- Kentucky Bluegrass		0-5%
High Maintenance Lawn		
- Kentucky 31 or Turf-Type Tall Fescue		100%
General Slope (3:1 or Less)		
- Kentucky 31 Fescue		128 lbs.
- Red Top Grass		2 lbs.
- Seasonal Nurse Crop *		+20 lbs.
		150 lbs.
Low-Maintenance Slope (Steeper than 3:1)		
- Kentucky 31 Tall Fescue		108 lbs.
- Red Top Grass		2 lbs.
- Seasonal Nurse Crop *		20 lbs.
- Crownvetch **		+20 lbs.
		150 lbs.
* Use seasonal nurse crop in accordance with seeding dates as stated below:		
February 16th thru April,		Annual Rye
May 1st through August 15th,		Annual Rye
August 16th thru October,		Annual Rye
November thru February 15th,		Winter Rye
** Substitute Sericea Lespedeza for Crownvetch east of Farmville, VA. (May thru September use hulled Sericea, all other periods, use unhulled Sericea). If Flatpea is used in lieu of Crownvetch, increase rate to 30 lbs./acre. All legume seed must be properly inoculated. Weeping Lovegrass may be added to any slope or low-maintenance mix during warmer seeding periods; add 10-20lbs/acre in mixes.		

TABLE 3.31-B		
ACCEPTABLE TEMPORARY SEEDING PLANT MATERIALS		
QUICK REFERENCE FOR ALL REGIONS		
PLANTING DATES	SPECIES	RATE (lb./ac)
Sept. 1-Feb. 15	50/50 Mix of Annual Ryegrass (Lolium multi-florum) & Cereal (Winter) Rye (Secale cereale)	50-100
Feb. 16-Apr. 30	Annual Ryegrass (Lolium multi-florum)	60-100
May 1-Aug. 31	German Millet (Setaria Italica)	50

SEEDING NOTES

NO SCALE



Map unit symbol	Map unit name	Rating
7B	Bourne-Urban land complex, 2 to 6 percent slopes	C
27B	Norfolk-Urban land complex, 0 to 6 percent slopes	B
31A	Poanoke silt loam, 0 to 2 percent slopes	B/D
34B	Tetotum-Urban land complex, clayey substratum, 2 to 6 percent slopes	C

SOILS MAP

NO SCALE

EROSION CONTROL (ONLY) SEEDING & FERTILIZING

1. SEEDING SHALL BE DONE IN CONFORMANCE WITH SECTION 603.01 THROUGH 603.04 OF V.D.O.T. SPECIFICATIONS.
2. THE AREA TO BE SEEDDED SHALL FIRST BE FERTILIZED WITH COMMERCIAL 10-10-10 FERTILIZER AT THE RATE OF 30 LBS. PER THOUSAND SQUARE FEET AND TREATED WITH AGRICULTURAL LIME AT THE RATE OF 100 LBS. PER THOUSAND SQUARE FEET. THESE SHALL BE UNIFORMLY WORKED INTO SURFACE TO A MINIMUM DEPTH OF ONE INCH.
3. SEEDING SHALL BE DONE ONLY BETWEEN THE DATES OF FEB. 15 AND APRIL 15 OR BETWEEN SEPT. 15 AND NOV. 15, EXCEPT AS MAY BE OTHERWISE DIRECTED BY THE ENGINEER.
4. SURFACE SHALL BE RAKED AND SMOOTHED TO ELIMINATE RIDGES AND DEPRESSIONS.
5. AFTER PRELIMINARY RAKING, THE SEED SHALL BE SOWN AT THE RATE OF FOUR LBS. PER THOUSAND SQUARE FEET AS FOLLOWS:
20% PERENNIAL RYE
35% KENTUCKY 31 FESCUE
30% CREEPING RED FESCUE
15% REDTOP (ALL PERCENTAGES ARE BY WEIGHT)
6. SURFACE SHALL THEN BE LIGHTLY RAKED IN ORDER TO COVER SEED NO DEEPER THAN 1/4 INCH AND THEN SPRINKLE WITH WATER. THE SEEDDED SURFACE SHALL BE COVERED WITH STRAW OR HAY TO PREVENT EROSION AND TO PROTECT SEEDING. THE ENTIRE SEEDDED SURFACE SHALL BE ROLLED WITH A CORRUGATED ROLLER AFTER SEEDING AND BEFORE COVERING WITH STRAW. CONTRACTOR SHALL PROTECT SEEDDED SURFACES UNTIL A GOOD STAND OF GRASS IS OBTAINED.
7. THE "HYDRO-SEEDING" METHOD OF SEED APPLICATION MAY BE USED, PROVIDED THE SEED RATE PER SQUARE FOOT IS THE SAME AS HEREIN BEFORE SPECIFIED. THE MULCH RATE SHALL BE SUCH AS TO PROVIDE PROPER SEED PROTECTION AND PREVENT EROSION. IF, IN THE OPINION OF THE INSPECTOR OR ENGINEER, THE MULCH RATE USED (AS EVIDENCED BY SLOPES AFTER SPRAYING) IS NOT SUFFICIENT, THE CONTRACTOR SHALL BE REQUIRED TO INCREASE THE AMOUNT OF MULCH IN THE MIX. NO EXTRA WILL BE ALLOWED FOR ANY REQUESTED INCREASE.



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DATE : FEBRUARY 5, 2021

REVISION BLOCK	
10-07-21	CITY COMMENTS
12-20-21	CITY COMMENTS

**BROAD ROCK BOULEVARD
RETAIL CENTER**
CITY OF RICHMOND, VA

EROSION CONTROL NOTES AND DETAILS

SHEET NO.

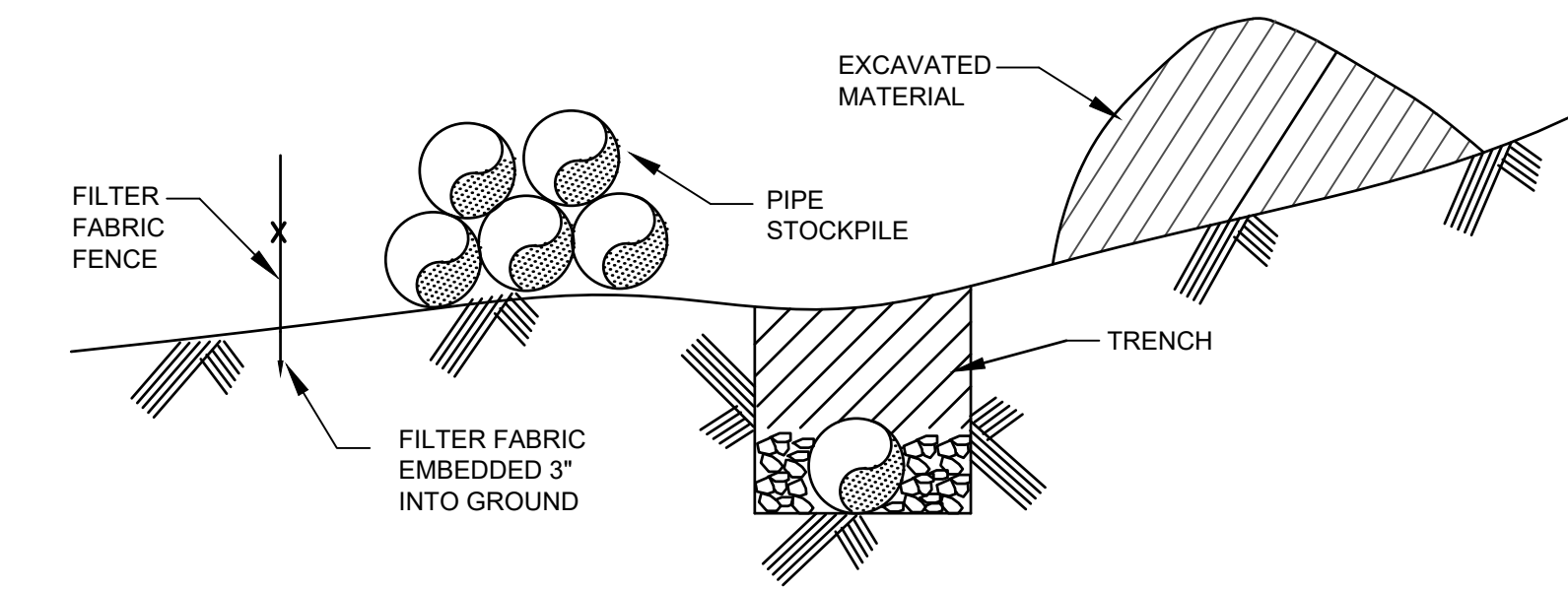
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9VAC25-840-40. 19 MINIMUM STANDARDS COMPLIANCE

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.
- 1.1. ADDRESSED BY CONTRACTOR PROVIDING TEMPORARY AND PERMANENT SEEDING PER 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.
- 2.1. ADDRESSED BY CONTRACTOR PROVIDING A STOCKPILE AREA IF NECESSARY THAT IS WRAPPED IN SILT FENCE. ALL SOIL REMOVED FROM THE SITE MUST BE DISPOSED OF IN A PERMITTED LOCATION BY THE CONTRACTOR.
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.
- 3.1. ADDRESSED BY CONTRACTOR PROVIDING PERMANENT SEEDING INCLUDING MULCHING, FERTILIZING, AND ESTABLISHING GROWTH PER THE PLAN AND RE-SEEDING AS NECESSARY TO ESTABLISH GROUND COVER.
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.
- 4.1. ADDRESSED BY CONTRACTOR FOLLOWING SEQUENCE OF CONSTRUCTION THAT REQUIRES APPROPRIATE EROSION MEASURES BE INSTALLED AS A FIRST STEP IN CONSTRUCTION.
5. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
- 5.1. NOT APPLICABLE AS NO DAMS, DIKES AND DIVERSIONS ARE PROPOSED FOR THIS PROJECT.
6. SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN.
- a. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT TRAP SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA AND THE TRAP SHALL ONLY CONTROL DRAINAGE AREAS LESS 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.
- 6.1 NOT APPLICABLE AS NO SEDIMENT TRAPS OF BASINS ARE PROPOSED DUE TO THE MINOR NATURE OF THE CONSTRUCTION ACTIVITY.
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.
- 7.1. ADDRESSED BY CONTRACTOR PROVIDING TEMPORARY AND PERMANENT SEEDING AS THE CONSTRUCTION WILL BE AT EXISTING GRADE SO NO SIGNIFICANT CUT OR FILL SLOPES ARE PROPOSED.
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.
- 8.1. ADDRESSED BY THE PROJECT LIMITING THE CUT AND FILL SLOPES BY BUILDING ALONG EXISTING GRADE AND MAINTAINING SHEET FLOW ACROSS THE PROPERTY.
9. WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.
- 9.1. NOT APPLICABLE AS THE PROJECT LACKS STEEP SLOPES AND THERE IS NO INDICATION OF HIGH GROUND WATER TABLE.
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.
- 10.1. ADDRESSED WITH THE USE OF INLET PROTECTION.
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.
- 11.1. ALL PROPOSED PIPE SYSTEMS AND STORMWATER CONVEYANCE CHANNELS OUTFALL TO EXISTING STORM SEWER PIPES.
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.
- 12.1. NOT APPLICABLE AS NO WORK IS BEING PERFORMED IN A LIVE WATERCOURSE
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.
- 13.1. NOT APPLICABLE AS NO WORK IS BEING PERFORMED IN A LIVE WATERCOURSE
14. ALL APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.
- 14.1. NOT APPLICABLE AS NO WORK IN A LIVE WATERCOURSE IS PROPOSED.
15. THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.
- 15.1. NOT APPLICABLE AS NO WORK IN A LIVE WATERCOURSE IS PROPOSED.
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 THIS CHAPTER.
- f. APPLICABLE SAFETY REQUIREMENTS SHALL BE COMPLIED WITH.
- 16.1 ADDRESSED BY CONTRACTOR FOLLOWING LOCAL DPU STANDARDS AND SPECIFICATIONS ON THESE DRAWINGS
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.
- 17.1. ADDRESSED BY CONTRACTOR INSTALLING A CONSTRUCTION ENTRANCE AND GENERAL NOTES STATING THAT IF SEDIMENT ON ROADWAYS BECOMES AN ISSUE A WASHRACK WILL NEED TO BE INSTALLED.
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 VESOP 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.
- 18.1. ADDRESSED IN THE REQUIREMENTS OF THE CONTRACTOR IN THE CONSTRUCTION SEQUENCE.
19. PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CRITERIA. STREAM RESTORATION AND RELOCATION PROJECTS THAT INCORPORATE NATURAL CHANNEL DESIGN CONCEPTS ARE NOT MAN-MADE CHANNELS AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS:
- a. CONCENTRATED STORMWATER RUNOFF LEAVING A DEVELOPMENT SITE SHALL BE DISCHARGED DIRECTLY INTO AN ADEQUATE NATURAL OR MAN-MADE RECEIVING CHANNEL, PIPE OR STORM SEWER SYSTEM. FOR THOSE SITES WHERE RUNOFF IS DISCHARGED INTO A PIPE OR PIPE SYSTEM, DOWNSTREAM STABILITY ANALYSES AT THE OUTFALL OF THE PIPE OR PIPE SYSTEM SHALL BE PERFORMED.
- a.a. STORMWATER DISCHARGES THE SITE TO ADEQUATE MAN-MADE STORM SEWER CONVEYANCE SYSTEMS.
- b. ADEQUACY OF ALL CHANNELS AND PIPES SHALL BE VERIFIED IN THE FOLLOWING MANNER:
- (1) THE APPLICANT MUST DEMONSTRATE THAT THE TOTAL DRAINAGE AREA TO THE POINT OF ANALYSIS WITHIN THE CHANNEL IS 100 TIMES GREATER THAN THE CONTRIBUTING DRAINAGE AREA OF THE PROJECT IN QUESTION;
- (2) AND
- (a) NATURAL CHANNELS SHALL BE ANALYZED BY THE USE OF A TWO-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP CHANNEL BANKS NOR CAUSE EROSION OF CHANNEL BED OR BANKS.
- (b) ALL PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS SHALL BE ANALYZED BY THE USE OF A 10-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 10-YEAR STORM TO VERIFY THAT STORMWATER WILL BE CONTAINED WITHIN THE PIPE OR SYSTEM.
- b.a. REFER TO STORM SEWER ROUTINGS ON THE PLAN FOR ANALYSIS.
- c. IF EXISTING NATURAL RECEIVING CHANNELS OR PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS OR PIPES ARE NOT ADEQUATE, THE APPLICANT SHALL:
- (1) IMPROVE THE CHANNELS TO A CONDITION WHERE A 10-YEAR STORM WILL NOT OVERTOP THE BANKS AND A TWO-YEAR STORM WILL NOT CAUSE EROSION TO THE CHANNEL, THE BED, OR THE BANKS;
- (2) IMPROVE THE PIPE OR PIPE SYSTEM TO A CONDITION WHERE THE 10-YEAR STORM IS CONTAINED WITHIN THE APPURTENANCES;
- (3) DEVELOP A SITE DESIGN THAT WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TWO-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A NATURAL CHANNEL OR WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A 10-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 VESOP AUTHORITY TO PREVENT DOWNSTREAM EROSION.
- c.a. STORMWATER DETENTION AND A REDUCTION IN IMPERVIOUS AREA HAS BEEN UTILIZED TO PREVENT DOWNSTREAM EROSION.
- d. THE APPLICANT SHALL PROVIDE EVIDENCE OF PERMISSION TO MAKE THE IMPROVEMENTS.

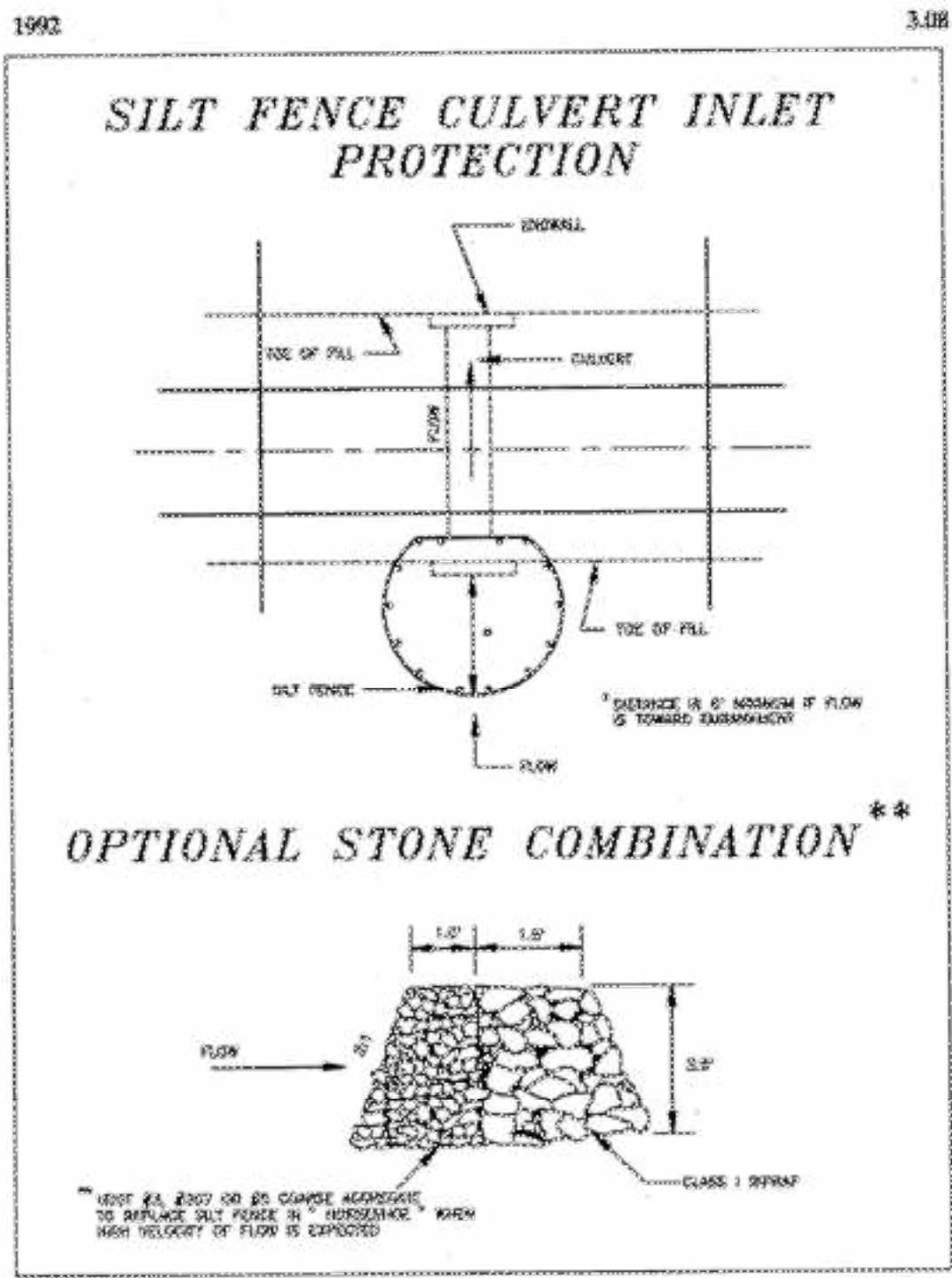
- d.a. ADDRESSED BY THE APPLICANT BEING THE OWNER OF THE PROPERTY
- e. ALL HYDROLOGIC ANALYSES SHALL BE BASED ON THE EXISTING WATERSHED CHARACTERISTICS AND THE ULTIMATE DEVELOPMENT CONDITION OF THE SUBJECT PROJECT.
- e.a. UNDERSTOOD
- f. IF THE APPLICANT CHOOSES AN OPTION THAT INCLUDES STORMWATER DETENTION, HE SHALL OBTAIN APPROVAL FROM THE VESOP 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.
- f.a. ACKNOWLEDGED. REFER TO THIS PLAN FOR MAINTENANCE REQUIREMENTS.
- 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.
- g.a. DETENTION FACILITY OUTFALLS TO AN EXISTING PIPE SYSTEM.
- h. ALL ON-SITE CHANNELS MUST BE VERIFIED TO BE ADEQUATE.
- h.a. REFER TO STORM SEWER ROUTINGS ON THIS PLAN FOR ADEQUACY.
- 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.
- i.a. REFER TO DETENTION ROUTINGS ON THIS PLAN FOR ADEQUACY.
- j. IN APPLYING THESE STORMWATER MANAGEMENT CRITERIA, INDIVIDUAL LOTS OR PARCELS IN A RESIDENTIAL, COMMERCIAL OR INDUSTRIAL DEVELOPMENT SHALL NOT BE CONSIDERED TO BE SEPARATE DEVELOPMENT PROJECTS. INSTEAD, THE DEVELOPMENT, AS A WHOLE, SHALL BE CONSIDERED TO BE A SINGLE DEVELOPMENT PROJECT. HYDROLOGIC PARAMETERS THAT REFLECT THE ULTIMATE DEVELOPMENT CONDITION SHALL BE USED IN ALL ENGINEERING CALCULATIONS.
- j.a. ACKNOWLEDGED.
- 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.
- k.a. ADDRESSED BY AN EROSION CONTROL PLAN THAT MEETS VIRGINIA REGULATIONS.
- l. ANY PLAN APPROVED PRIOR TO JULY 1, 2014, THAT PROVIDES FOR STORMWATER MANAGEMENT THAT ADDRESSES ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS SHALL SATISFY THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS IF THE PRACTICES ARE DESIGNED TO (I) DETAIN THE WATER QUALITY VOLUME AND TO RELEASE IT OVER 48 HOURS; (II) DETAIN AND RELEASE OVER A 24-HOUR PERIOD THE EXPECTED RAINFALL RESULTING FROM THE ONE YEAR, 24-HOUR STORM; AND (III) REDUCE THE ALLOWABLE PEAK FLOW RATE RESULTING FROM THE 1.5, 2, AND 10-YEAR, 24-HOUR STORMS TO A LEVEL THAT IS LESS THAN OR EQUAL TO THE PEAK FLOW RATE FROM THE SITE ASSUMING IT WAS IN A GOOD FORESTED CONDITION, ACHIEVED THROUGH MULTIPLICATION OF THE FORESTED PEAK FLOW RATE BY A REDUCTION FACTOR THAT IS EQUAL TO THE RUNOFF VOLUME FROM THE SITE WHEN IT WAS IN A GOOD FORESTED CONDITION DIVIDED BY THE RUNOFF VOLUME FROM THE SITE IN ITS PROPOSED CONDITION, AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS AS DEFINED IN ANY REGULATIONS PROMULGATED PURSUANT TO § 62.1-44.15:54 OR 62.1-44.15:65 OF THE ACT.
- l.a. NOT APPLICABLE AS SITE SITE IS BEING APPROVED FOLLOWING JULY 1, 2014
- m. FOR PLANS APPROVED ON AND AFTER JULY 1, 2014, THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF § 62.1-44.15:52 A OF THE ACT AND THIS SUBSECTION SHALL BE SATISFIED BY COMPLIANCE WITH WATER QUANTITY REQUIREMENTS IN THE STORMWATER MANAGEMENT ACT (§ 62.1-44.15:24 ET SEQ. OF THE CODE OF VIRGINIA) AND ATTENDANT REGULATIONS, UNLESS SUCH LAND-DISTURBING ACTIVITIES (I) ARE IN ACCORDANCE WITH PROVISIONS FOR TIME LIMITS ON APPLICABILITY OF APPROVED DESIGN CRITERIA IN 9VAC25-870-47 OR GRANDFATHERING IN 9VAC25-870-48 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSPM) REGULATION, IN WHICH CASE THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF § 62.1-44.15:52 A OF THE ACT SHALL APPLY, OR (II) ARE EXEMPT PURSUANT TO § 62.1-44.15:34 C OF THE ACT.
- m.a. ACKNOWLEDGED.
- n. COMPLIANCE WITH THE WATER QUANTITY MINIMUM STANDARDS SET OUT IN 9VAC25-870-66 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSPM) REGULATION SHALL BE DEEMED TO SATISFY THE REQUIREMENTS OF THIS SUBDIVISION 19.
- n.a. ACKNOWLEDGED.



NOTE: AN ACCEPTABLE ALTERNATE TO FILTER FABRIC FENCE IS A LINE OF STAKED STRAW BALES

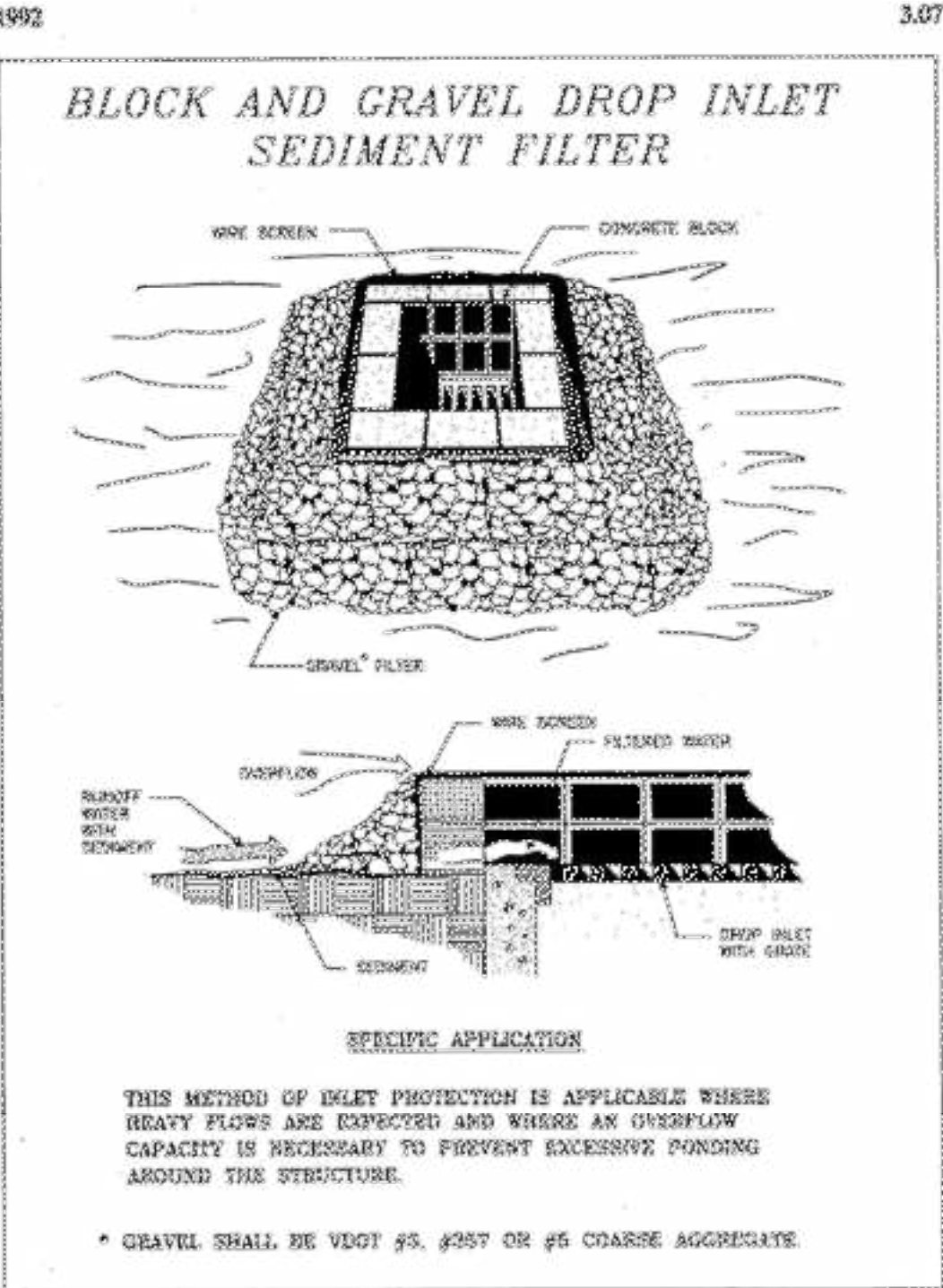
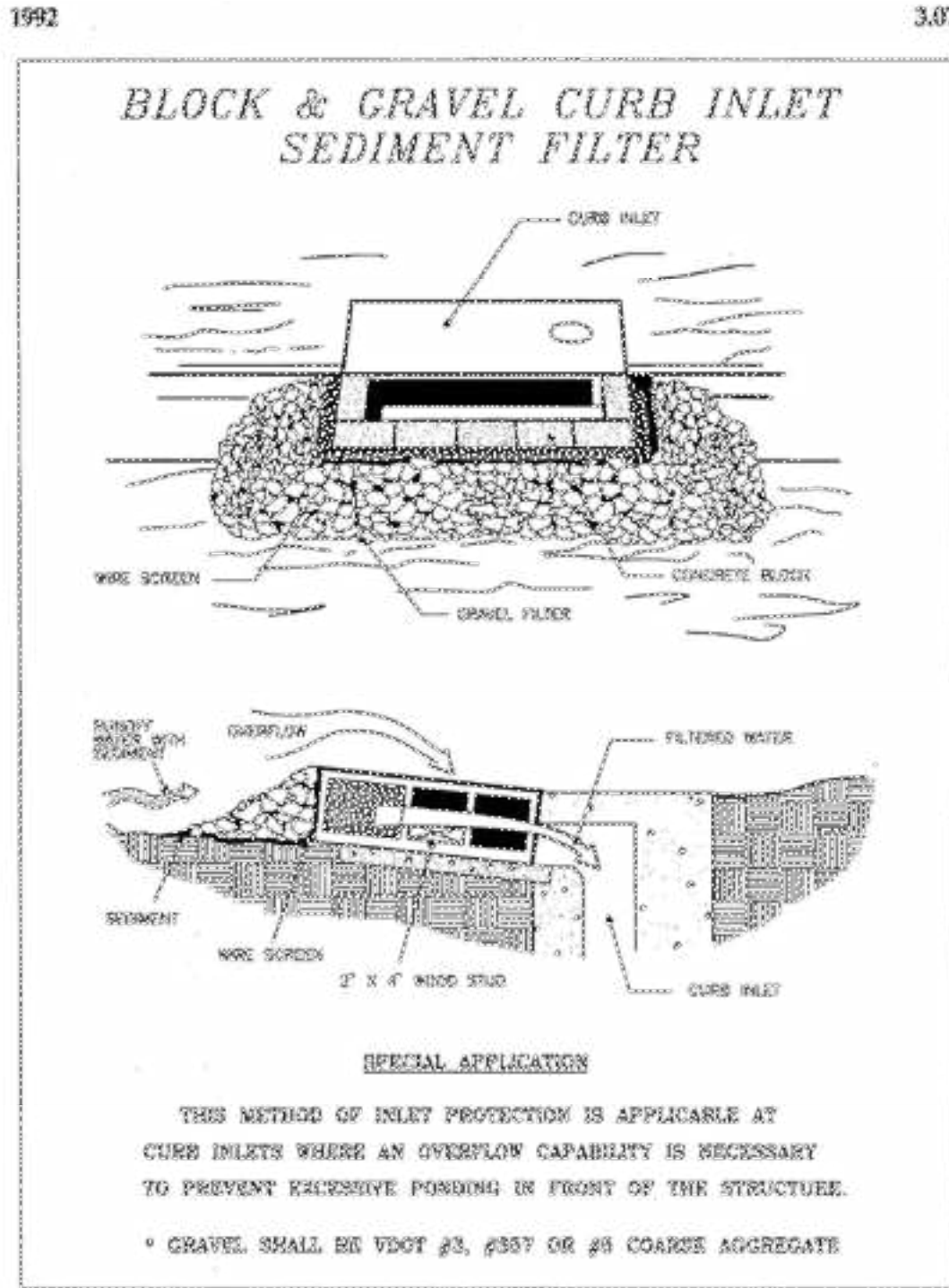
EROSION CONTROL PROTECTION FOR PIPE TRENCHING TYPICAL DETAIL

NO SCALE



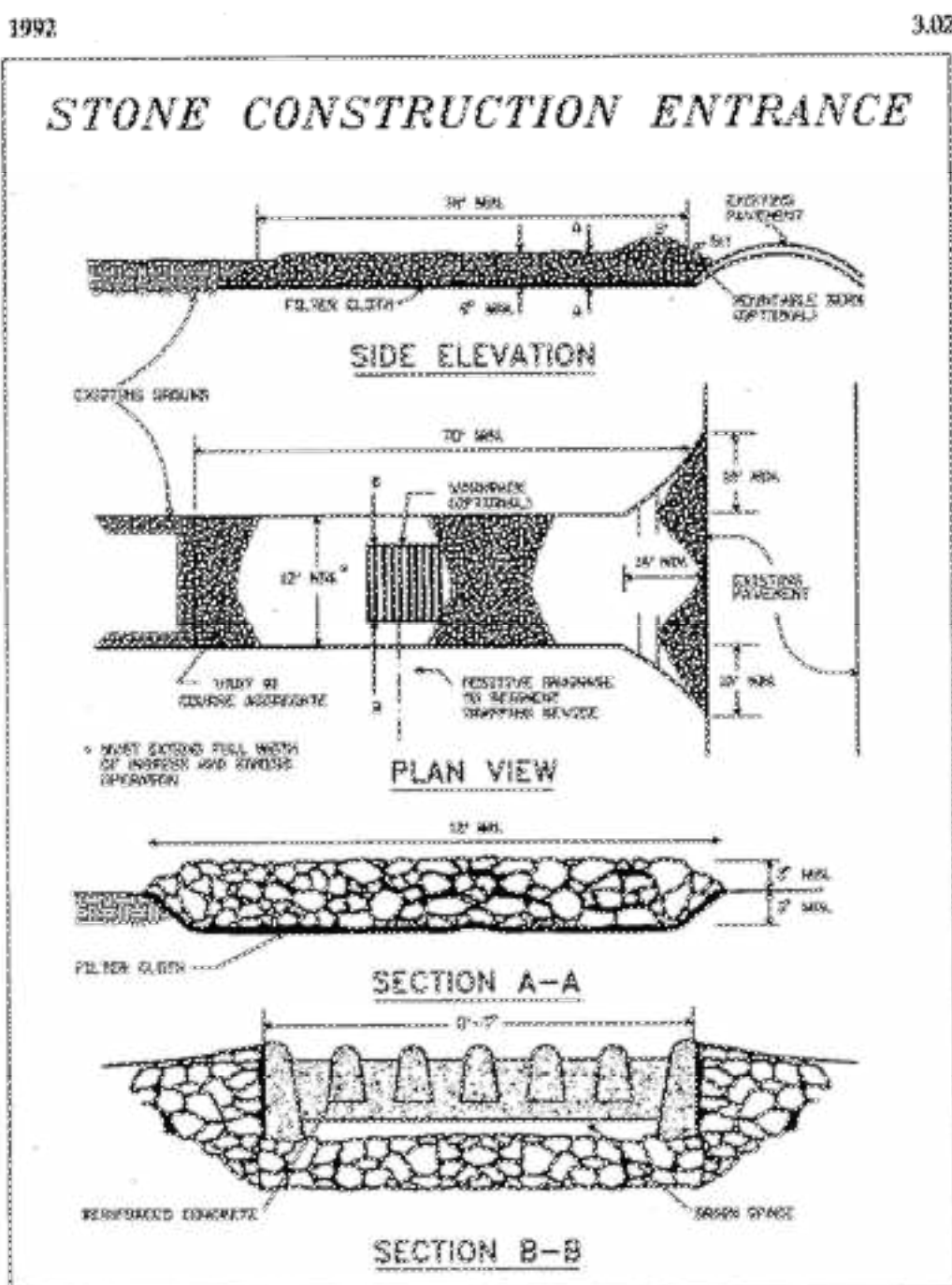
CULVERT INLET PROTECTION DETAIL

NO SCALE



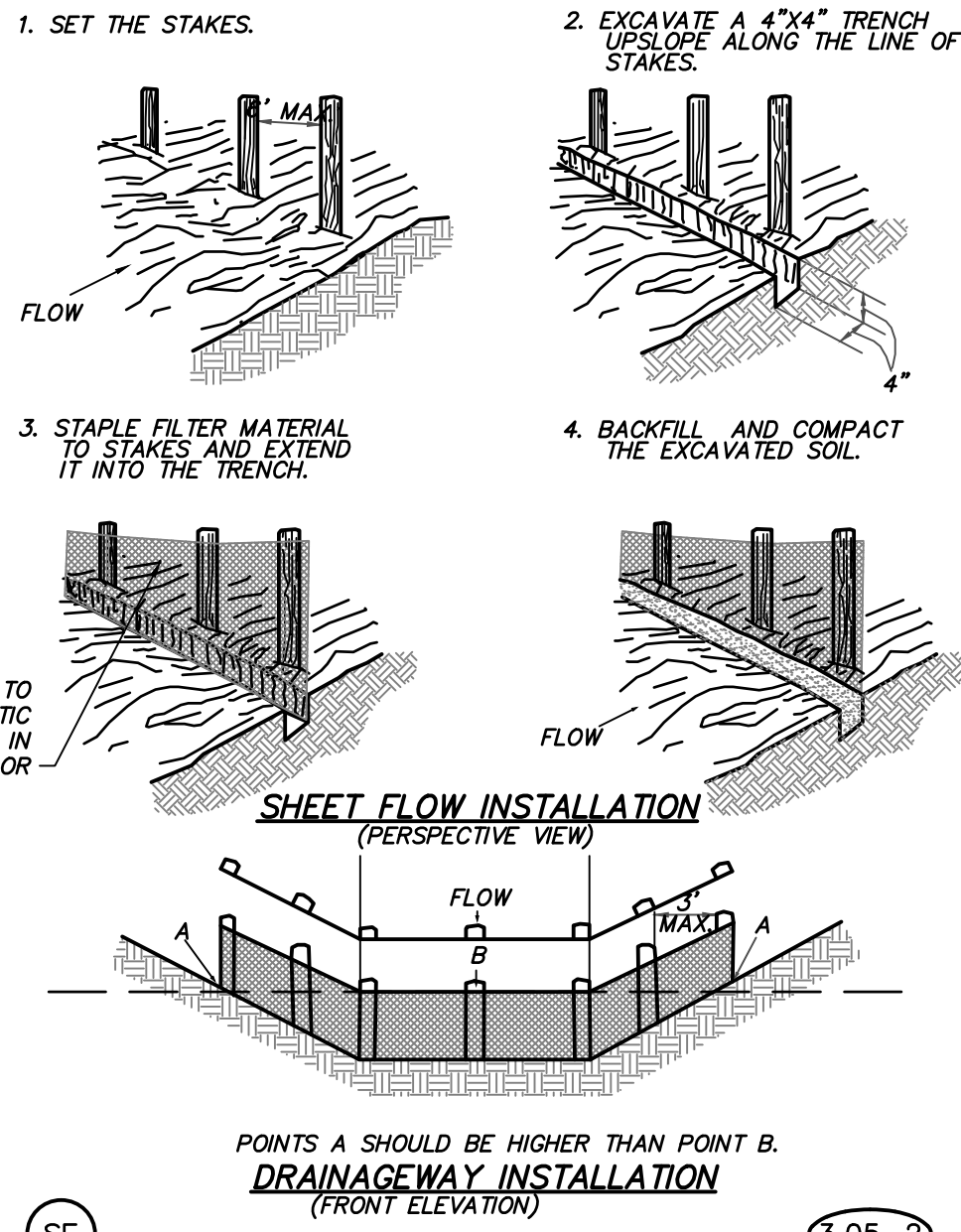
INLET PROTECTION DETAILS

NO SCALE



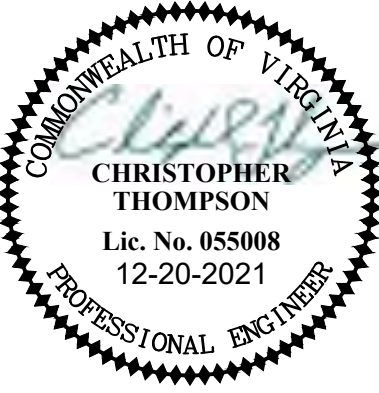
CONSTRUCTION ENTRANCE DETAIL

NO SCALE



SILT FENCE DETAIL

NO SCALE



The Site Design Company

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PROJECT # : 20038
PROJECT MANAGER : CHRIS THOMPSON
PHONE : 804-720-9040
EMAIL : thompson@sitesdesignco.com

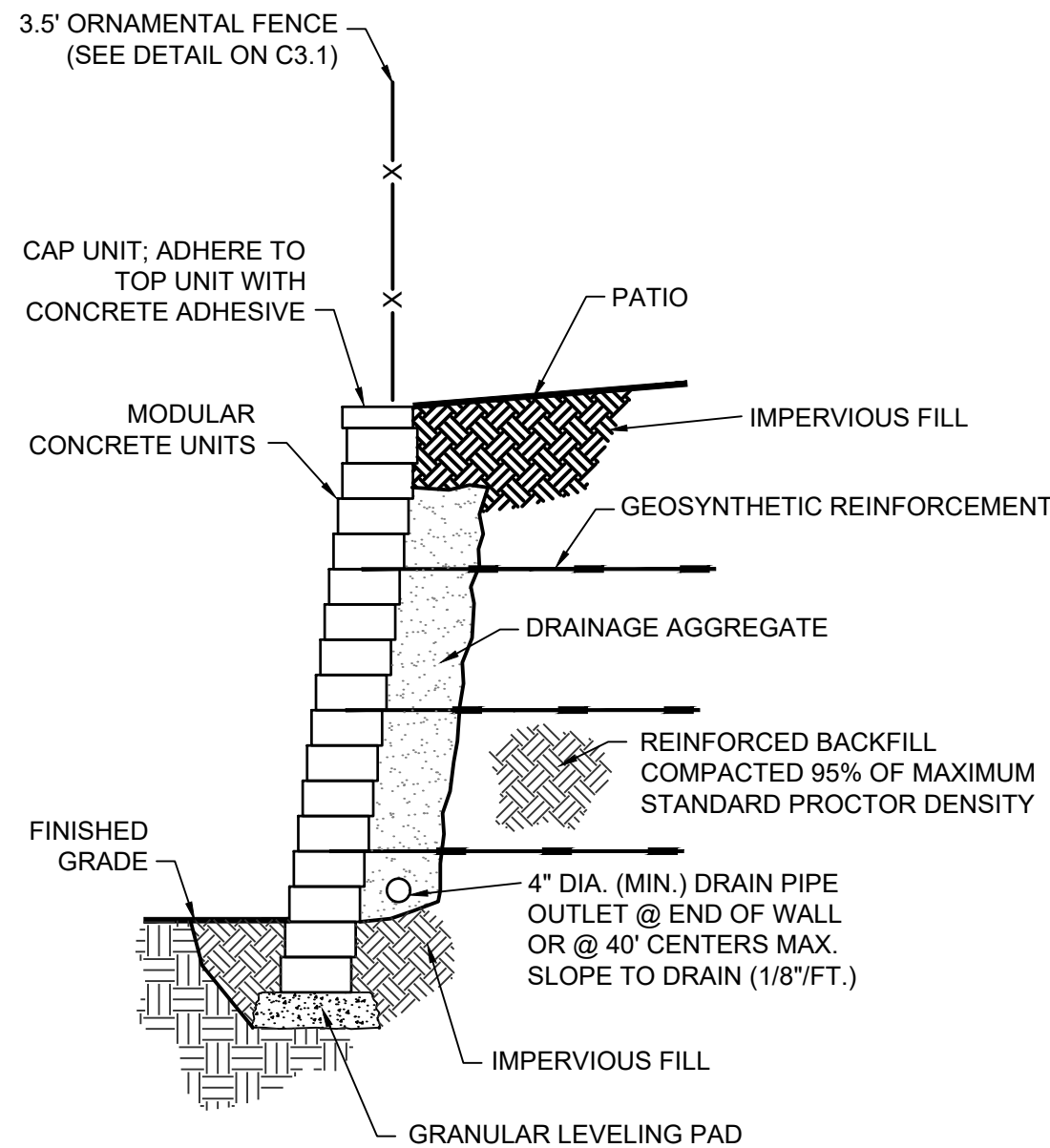
DATE : FEBRUARY 5, 2021	
REVISION BLOCK	
10-07-21	CITY COMMENTS
12-20-21	CITY COMMENTS

BROAD ROCK BOULEVARD
RETAIL CENTER
CITY OF RICHMOND, VA

EROSION CONTROL NOTES AND DETAILS

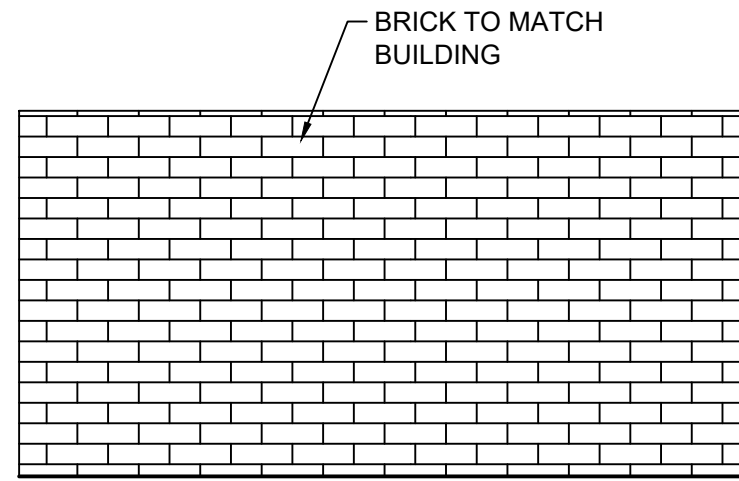
SHEET NO.
C2.3

NOTE: FINAL RETAINING WALL DESIGN SHALL BE COMPATIBLE IN APPEARANCE WITH THE PRINCIPAL STRUCTURE AND/OR THE VIEW SHED IN WHICH THEY ARE LOCATED. COMPATIBILITY SHALL BE ACCOMPLISHED THROUGH THE USE OF INTEGRATED COLOR BLOCK OR OTHER MATERIAL THAT IS SIMILAR IN APPEARANCE TO THE PRIMARY STRUCTURES OR IS AN EARTH TONE ACCEPTABLE TO THE DIRECTOR OF PLANNING.

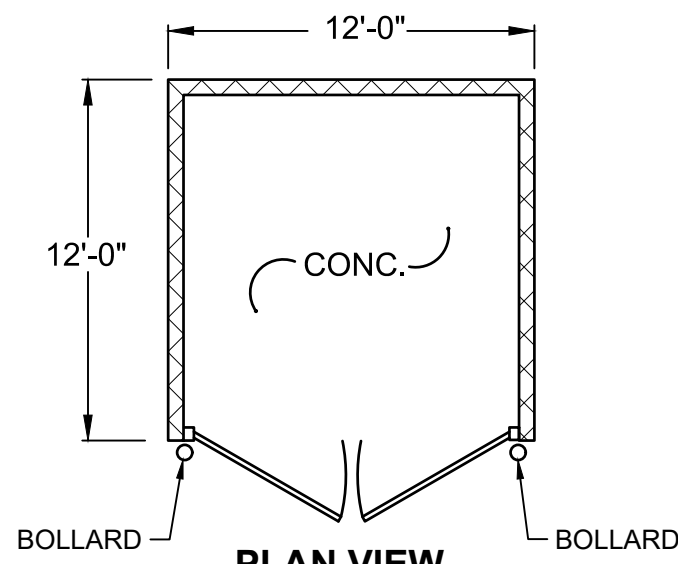


NOTE: DETAIL SHOWN FOR REFERENCE ONLY. FINAL DESIGN SHALL BE PERFORMED BY STRUCTURAL ENGINEER BASED UPON A GEOTECHNICAL ENGINEERS RECOMMENDATIONS.

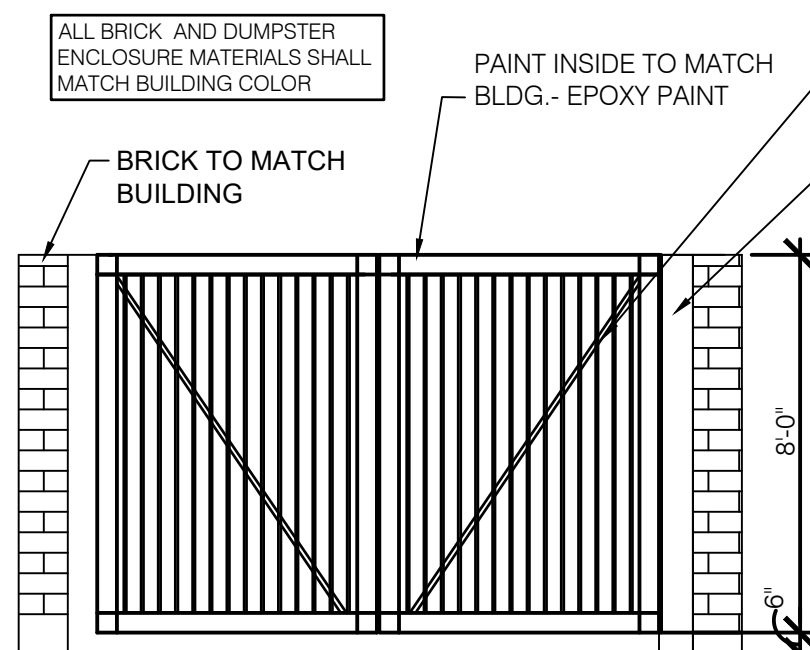
TYPICAL SEGMENTAL RETAINING WALL DETAIL
NO SCALE



BACK AND SIDE ELEVATION

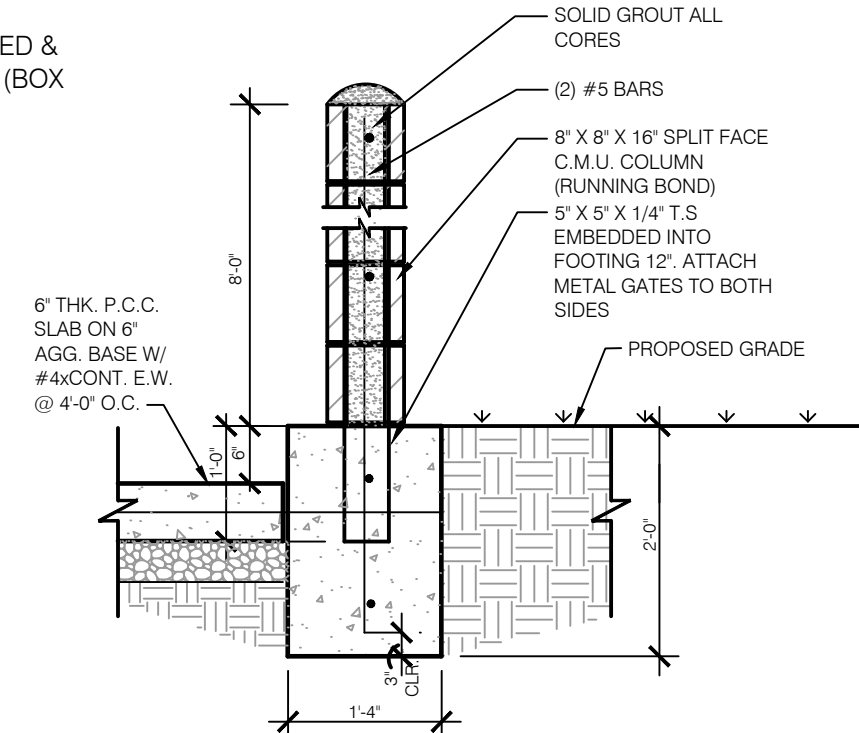


PLAN VIEW



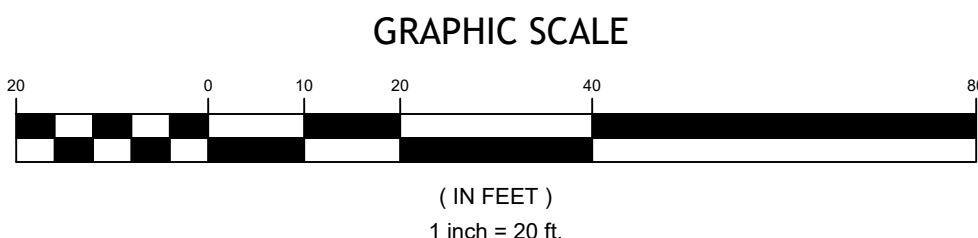
FRONT ELEVATION

DUMPSTER ENCLOSURE DETAIL
NO SCALE



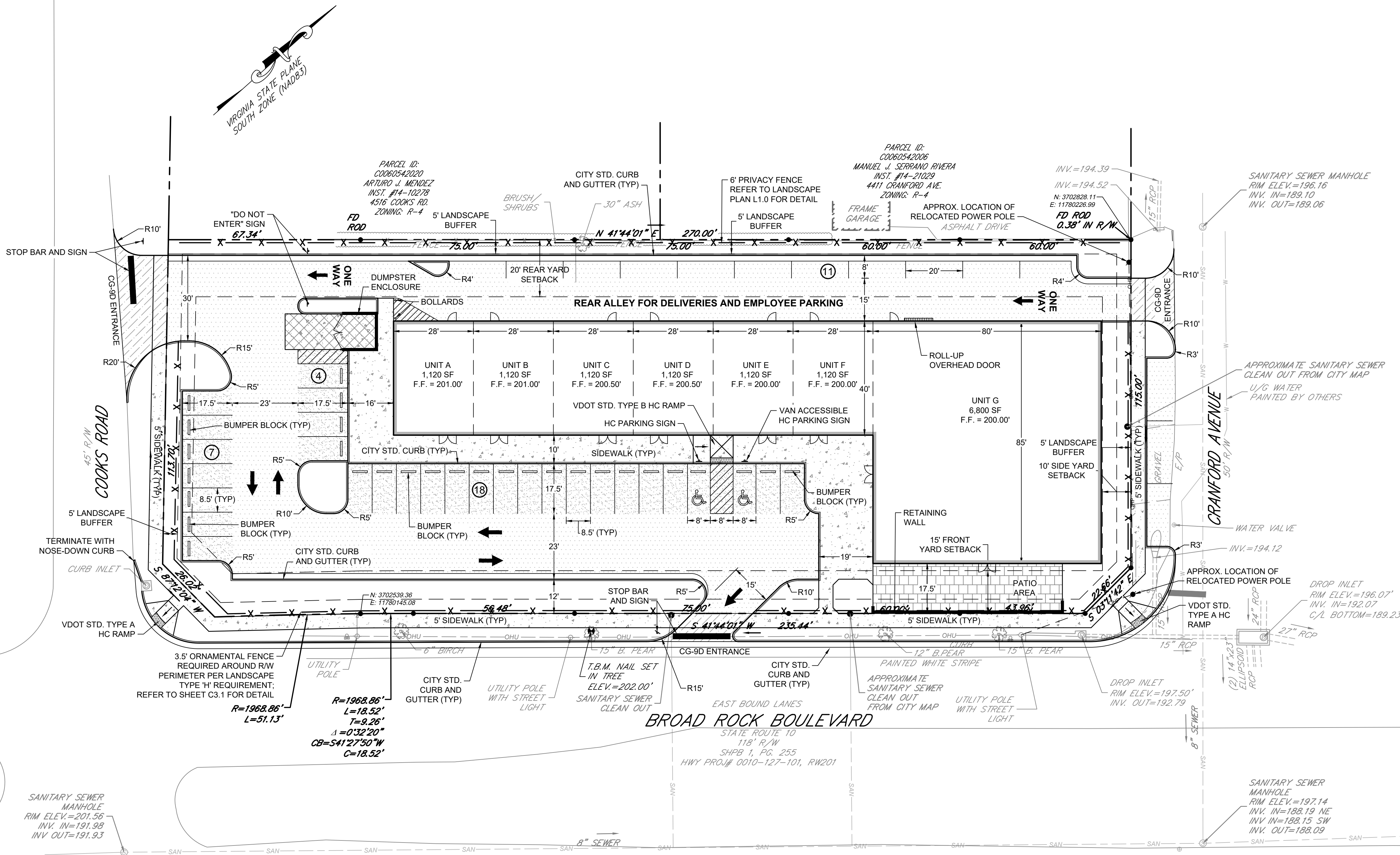
WALL SECTION

- NOTES:
1. ALL CURB RADII ARE 5' UNLESS NOTED OTHERWISE.
 2. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS NOTED OTHERWISE.



GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.



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DATE: FEBRUARY 5, 2021

REVISION BLOCK

10-07-21	CITY COMMENTS
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**BROAD ROCK BOULEVARD
RETAIL CENTER**
CITY OF RICHMOND, VA

LAYOUT PLAN

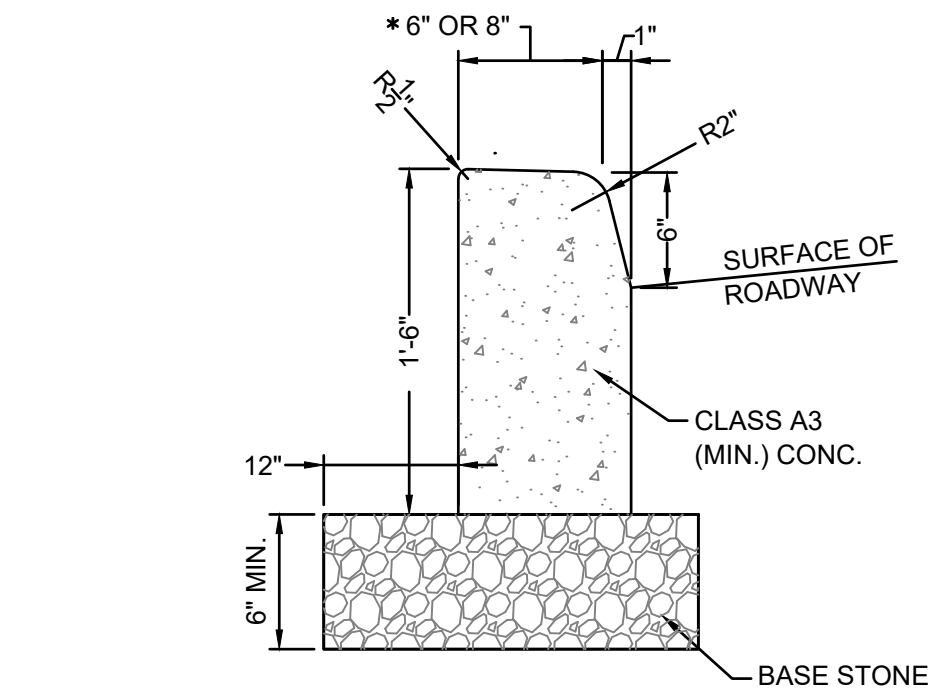
SHEET NO.
C3.0

THESE DRAWINGS ARE THE EXCLUSIVE PROPERTY OF The Site Design Company AND SHALL NOT BE REPRODUCED OR UTILIZED FOR ANY PURPOSE WITHOUT THE EXPRESS WRITTEN CONSENT OF The Site Design Company.

- ALL CONSTRUCTION MATERIALS AND WORKMANSHIP MUST CONFORM TO THE FOLLOWING STANDARDS AND SPECIFICATIONS:
 - VIRGINIA DEPARTMENT OF TRANSPORTATION
 - VIRGINIA DEPARTMENT OF HEALTH
 - RICHMOND DEPARTMENT OF UTILITIES
 - RICHMOND DEPARTMENT OF COMMUNITY DEVELOPMENT
- ALL STORM SEWER SHALL BE ASTM, C-76, CLASS III, EXCEPT AS NOTED.
- ALL DRAINAGE STRUCTURES SHALL BE EITHER PRECAST OR CAST-IN-PLACE CONCRETE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC UTILITIES PRIOR TO MAKING ANY ADJUSTMENTS TO THE WATER OR SEWERAGE SYSTEMS.
- THE CONTRACTOR SHALL NOTIFY RICHMOND PUBLIC WORKS AT LEAST 24 HOURS PRIOR TO STARTING WORK ON THE PROJECT.
- A DI ON GRADE SHALL BE POURED WITH THE THROAT ON THE SAME GRADE AS THE ADJOINING CURB AND GUTTER.
- THE PAVEMENT DESIGN IS SUBJECT TO CHANGE DUE TO SOIL CONDITION AT THE TIME OF CONSTRUCTION, AS DETERMINED BY GEOTECHNICAL ENGINEER.
- ALL DIMENSIONS ARE TO FACE OF CURB OR BUILDING.
- ANY DIMENSION THAT DOES NOT SCALE AS NOTED MUST BE CONFIRMED WITH THE DESIGN ENGINEER.
- ALL CURB RADII ARE 5.0' UNLESS NOTED OTHERWISE.
- TRAFFIC PAINT SHALL BE WHITE (ON ASPHALT) OR 'ADA' BLUE (ON HANDICAPPED SPACES). PARKING STRIPES SHALL BE 4" WIDE. STOP BARS SHALL BE 24" WIDE AND BE PLACED 10' FROM RIGHT OF WAY.
- STOP SIGNS AND HANDICAP PARKING SIGNS SHALL CONFORM TO THE "MANUAL OF UNIFORM TRAFFIC CODE DEVICES" AND THE VIRGINIA SUPPLEMENT.
- CONTRACTOR SHALL ACQUIRE ANY AND ALL NECESSARY CONSTRUCTION PERMITS.
- ELECTRIC POWER, TELEPHONE POWER, AND GAS SUPPLY TRENCHES ARE TO BE COMPACTED, MULCHED AND SEEDED WITHIN 14 DAYS AFTER BACKFILL.
- VIRGINIA LAW REQUIRES THE CONTRACTOR NOTIFY MISS UTILITY AT 1-800-552-7001 AT LEAST 48 HRS. PRIOR TO ANY LAND DISTURBANCE.
- THIS PLAN DOES NOT GUARANTEE THE EXISTENCE OF LOCATION OF UNDERGROUND UTILITIES. THE UNDERGROUND UTILITIES SHOWN HEREON WERE ESTABLISHED USING ABOVE GROUND STRUCTURES (VALVES, METERS, MANHOLES, ETC.) AND AVAILABLE UTILITY MAPS. PRIOR TO ANY EXCAVATION OR CONSTRUCTION, THE CONTRACTOR SHALL UNCOVER ALL UTILITIES WHICH ARE SHOWN ON THE PLANS OR WHICH HAVE BEEN MARKED BY MISS UTILITY AS BEING IN THE AREA OF EXCAVATION OR CONSTRUCTION. THE CONTRACTOR SHALL TAKE VERTICAL AND HORIZONTAL MEASUREMENTS ADEQUATE TO DETERMINE IF ANY CONFLICT WILL OCCUR. IF ANY POTENTIAL CONFLICT IS FOUND, THE CONTRACTOR SHALL NOTIFY THE SITE ENGINEER PRIOR TO BEGINNING ANY EXCAVATION OR CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REINSTALLING AT HIS EXPENSE ANY UTILITY WHICH MUST BE RELOCATED BECAUSE OF A CONFLICT WHICH WAS NOT REPORTED TO THE SITE ENGINEER PRIOR TO THE BEGINNING OF ANY EXCAVATION OR CONSTRUCTION.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. ANY WORK OR MATERIAL NOT IN CONFORMANCE WITH THESE DOCUMENTS IS SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.
- ANY QUANTITIES PROVIDED ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE QUANTITIES AND SUBMITTING HIS BID ACCORDINGLY.
- ALL EXISTING UTILITIES, SERVICE POLES, AND CONNECTIONS SHALL BE PROTECTED AT THE CONTRACTOR'S EXPENSE. IF DAMAGE IS CAUSED BY CONSTRUCTION TO ANY EXISTING UTILITY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR RESTORATION OF SAME.
- CONTRACTOR SHALL PRESERVE ALL CONERSTONES, IRON PINS, CONCRETE MONUMENTS, OR ANY OTHER TYPE OF MONUMENTATION. THE CONTRACTOR SHALL ALSO PROVIDE A REGISTERED SURVEYOR TO RESTORE ANY/ALL MONUMENTATION SHOULD THAT MONUMENTATION BECOME DAMAGED OR DESTROYED.
- ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER SYSTEM ARE PROHIBITED, EXCEPT IN THE INSTANCE OF EXISTING COMBINED SEWER.
- ALL EQUIPMENT AND MATERIALS DESIGNATED FOR REMOVAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS NOTED ON PLANS.
- NO LANDSCAPING OF ANY TYPE SHALL BE PLACED WITHIN A THREE FOOT RADIUS OF ANY FIRE HYDRANT, FIRE PUMP TEST HEADER, FIRE DEPARTMENT SPRINKLER SYSTEM CONNECTION, FIRE DEPARTMENT STANDPIPE CONNECTION OR FIRE SUPPRESSION CONTROL VALVE. LANDSCAPING IN THE AREA OF FIRE HYDRANTS, FIRE PUMP TEST HEADERS, FIRE DEPARTMENT SPRINKLER SYSTEM CONNECTIONS OR FIRE DEPARTMENT STANDPIPE CONNECTIONS SHALL BE OF THE TYPE THAT WILL NOT ENCROUGH ON THE REQUIRED THREE FOOT CLEAR RADIUS ON MATURITY OF THE LANDSCAPING.
- CLEARING AND GRUBBING:
 - ALL GROWTH OF TREES, OTHER VEGETATION AND OBJECTIONABLE DEBRIS SHALL BE CLEARED AND GRUBBED FROM THE PROPOSED PAVED AND BUILDING AREAS AS WELL AS AREAS INDICATED TO BE GRADED ON THE PLANS.
 - ALL CLEARING AND GRUBBING WITHIN THE UTILITY EASEMENTS AND SPECIAL FILL AREAS SHALL BE TO THE LENGTH AND WIDTH NECESSARY TO CONSTRUCT THE IMPROVEMENTS SHOWN ON PLANS.
 - ALL TREES, BRANCHES, VEGETATION AND DEBRIS SHALL BE DISPOSED OF IN A LEGAL MANNER ACCEPTABLE TO THE OWNER, ENGINEER AND THE CITY OF RICHMOND.
- CONTRACTOR SHALL REMOVE TOPSOIL TO ITS ENTIRE DEPTH FROM ALL AREAS TO BE GRADED AND/OR FILLED. STOCKPILE OR REMOVE THE TOPSOIL FROM THE SITE SUCH THAT TOPSOIL FOR FINAL GRADING SHALL BE PROVIDED AND EXCESS PROPERLY DISPOSED OF.
- GRADING:
 - IF UNSUITABLE MATERIAL IS ENCOUNTERED WITHIN THE BUILDING AREA, PAVED AREA OR ANY SPECIAL FILL AREA, IT SHALL BE REMOVED FROM THE ENTIRE PROPOSED PAVED AREA OR FILL AREA EFFECTED AND REPLACED WITH SELECT BACKFILL TO PROVIDE ADEQUATE STABLE SUBGRADE.
 - FILL AND BACKFILL MATERIAL SHALL BE COMPACTED TO 95% STD. PROCTOR DENSITY AT OPTIMUM MOISTURE $\pm 2\%$ UNLESS SPECIFIED OTHERWISE ON THE PLAN.
 - ALL GRADING OPERATION SHALL BE DONE IN SUCH A MANNER SO AS TO PROVIDE POSITIVE DRAINAGE AT ALL TIMES.
 - AT ALL ROAD INTERSECTIONS IN A CUT SECTION, THE BACK SLOPES AND VEGETATION SHALL BE CUT BACK WITH AT LEAST 3:1 BACK SLOPES SO AS TO PROVIDE THE BEST POSSIBLE SIGHT DISTANCE.

GENERAL NOTES

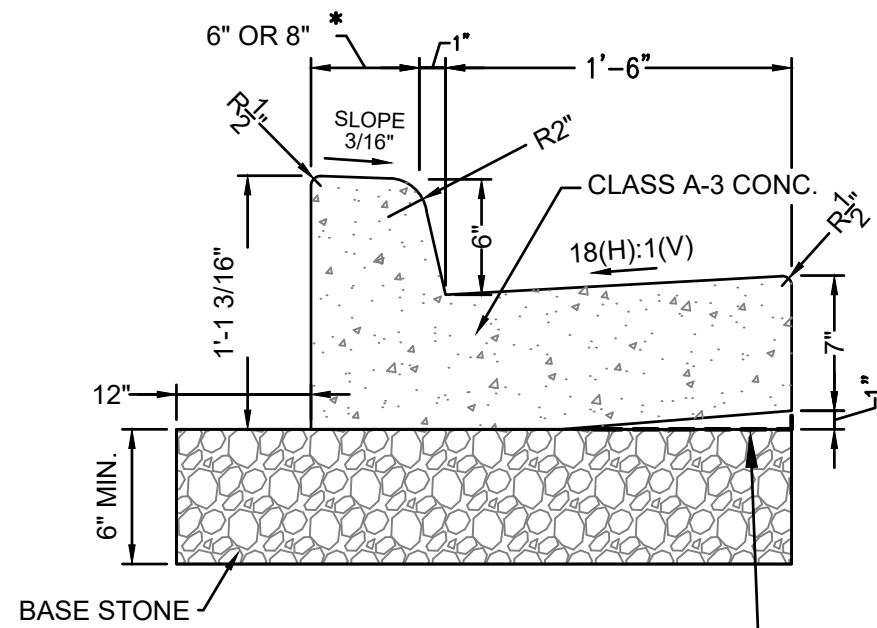
NO SCALE



- NOTES:
- USE 6" CURB REQ'D. FOR SINGLE FAMILY RESIDENTIAL AREAS.
 - USE 8" CURB REQUIRED FOR COMMERCIAL, CENTRAL BUSINESS DISTRICT, FAN, HIGH DENSITY AND MULTI-FAMILY AREAS.
 - BASE STONE SHALL BE 6" MIN. COMPACTED THICKNESS 21A OR 21B.

CONCRETE CURB DETAIL

NO SCALE

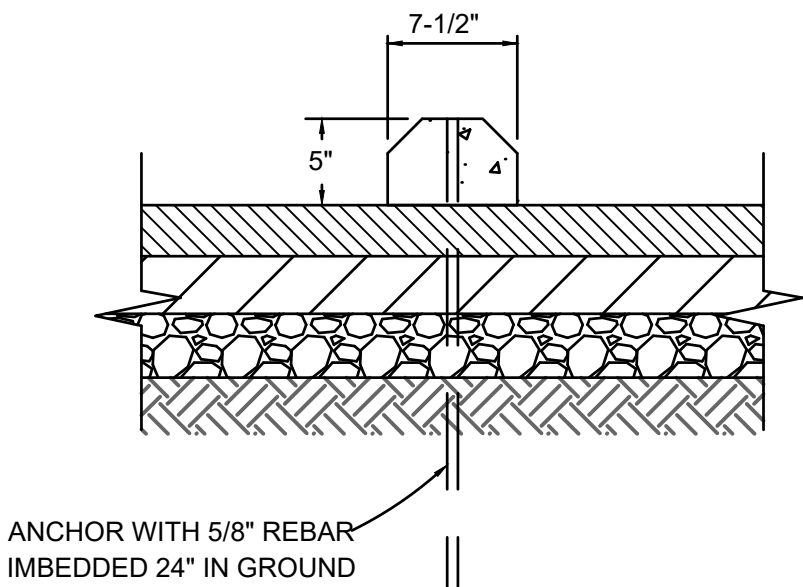


THE BOTTOM OF THE CURB AND GUTTER MAY BE CONSTRUCTED PARALLEL TO THE SLOPE OF SUBBASE COURSES PROVIDED A MINIMUM DEPTH OF 7" IS MAINTAINED.

- NOTES:
- USE 6" CURB REQ'D. FOR SINGLE FAMILY RESIDENTIAL AREAS.
 - USE 8" CURB REQUIRED FOR COMMERCIAL, CENTRAL BUSINESS DISTRICT, FAN, HIGH DENSITY AND MULTI-FAMILY AREAS.
 - BASE STONE SHALL BE 6" MIN. COMPACTED THICKNESS 21A OR 21B.

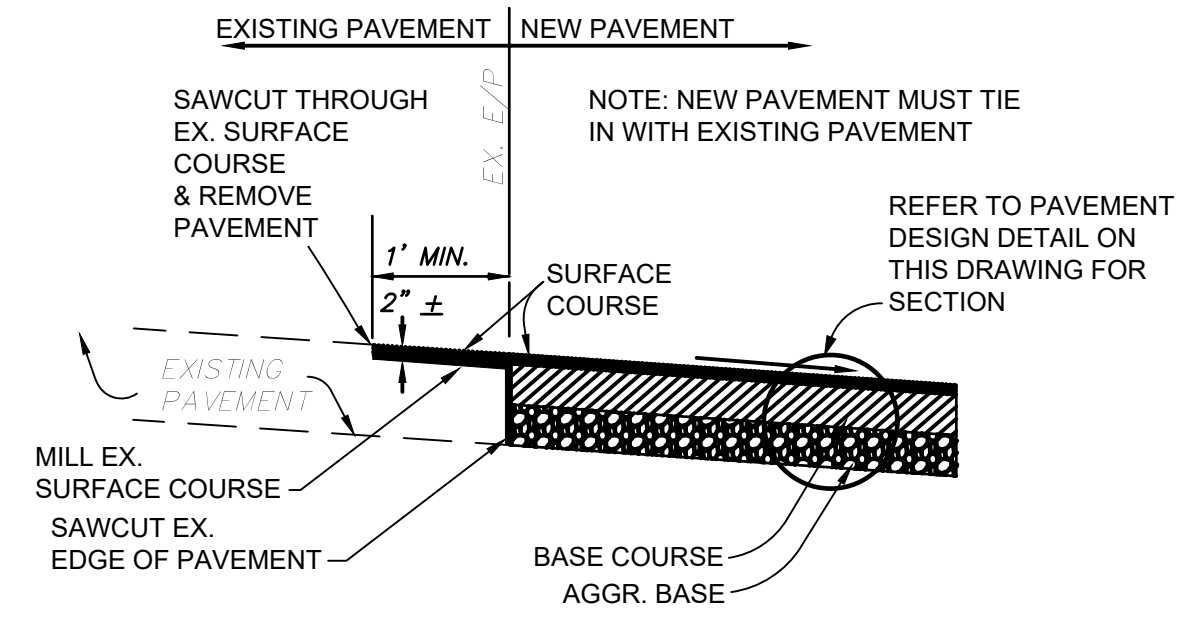
MONOLITHIC CURB AND GUTTER DETAIL

NO SCALE



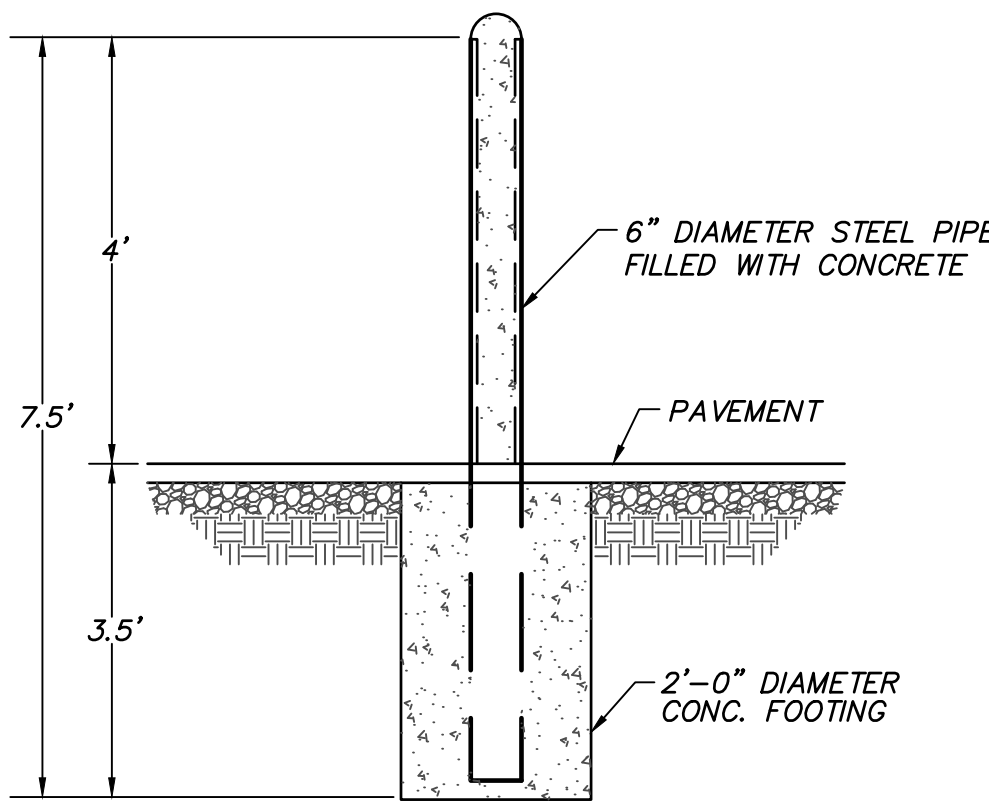
PRECAST BUMPER BLOCK DETAIL

NO SCALE



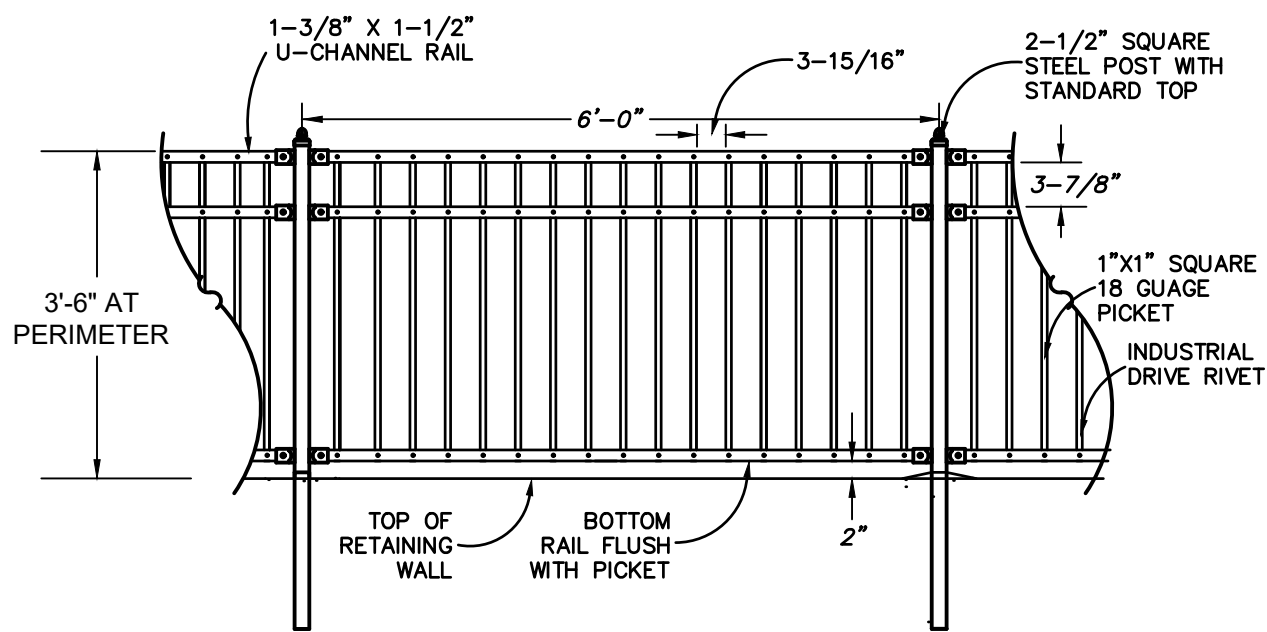
LAP JOINT DETAIL

NO SCALE



PIPE BOLLARD DETAIL

NO SCALE



ORNAMENTAL FENCE DETAIL

(ALONG CRANFORD AVE., COOKS RD. AND BROAD ROCK BLVD.)

NO SCALE

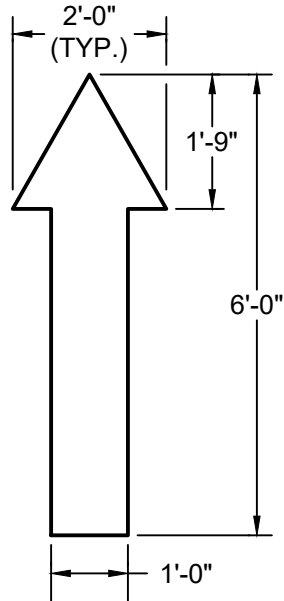
- ASPHALT SURFACE COURSE SHALL BE LAID WITH THE DIRECTION OF TRAFFIC IN ALL DRIVE LANES WITHIN PARKING FIELDS.
- ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- ALL PAVEMENT MARKINGS SHALL BE FOUR (4") WIDE SOLID WHITE UNLESS OTHERWISE INDICATED.
- A MINIMUM CLEARANCE OF TWO FEET SHALL BE MAINTAINED BETWEEN THE FACE OF CURB AND ANY PART OF A TRAFFIC SIGN OR LIGHT POLE.
- CONTRACTOR SHALL FURNISH AND INSTALL ALL PAVEMENT MARKINGS AS SHOWN.
- CONTRACTOR SHALL COORDINATE INSTALLATION OF ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES WITH OTHER CONTRACTORS ON SIGNS OR LIGHT POLES.
- CONTRACTOR SHALL SAW-CUT TO PROVIDE SMOOTH TRANSITIONS AT TIE-INS TO EXISTING EDGES OF PAVEMENT AND AT COLD JOINTS OF RECENTLY PAVED ASPHALT.
- JOINTS OR SCORE MARKS ARE TO BE SHARP AND CLEAN WITHOUT SHOWING EDGES OF JOINTING TOOL.
- ALL WORK SHALL COMPLY WITH ALL APPLICABLE CODES, REGULATIONS, AND/OR LOCAL STANDARDS IMPOSED BY LOCAL COUNTY AND STATE.
- PAVING CONTRACTOR SHALL INSTALL PAPER BREAKAWAY EDGES AT COLD JOINTS OR SAWCUT AS REQUIRED TO INSURE A STRAIGHT, FULL-DEPTH JOINT FACE IMMEDIATELY PRIOR TO INSTALLING ABUTTING HOT ASPHALT.
- ALL CONCRETE SHALL BE CLASS A 4000 P.S.I. UNLESS OTHERWISE NOTED. DO NOT POUR ANY CONCRETE BEFORE FORMS ARE INSPECTED AND APPROVED BY THE INSPECTOR.
- ALL RAMPS CONSTRUCTED ARE NOT TO EXCEED A SLOPE OF 1:12.
- CONTRACTOR SHALL BE RESPONSIBLE FOR COST OF PAVEMENT REPLACEMENT WHERE UTILITY LINES ARE EXTENDED ACROSS EXISTING ASPHALT.
- CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SUFFICIENT LIGHTS, SIGNS AND OTHER TRAFFIC CONTROL METHODS AS MAY BE NECESSARY FOR THE PROTECTION AND SAFETY OF THE PUBLIC THROUGHOUT THE CONSTRUCTION OF CONNECTIONS TO EXISTING ROADWAYS. CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLAN TO CITY AND STATE FOR APPROVAL AS NECESSARY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING, WITH MATCHING MATERIALS, ANY EXISTING PAVEMENT, DRIVEWAYS, WALKS, CURBS, ETC., THAT MUST BE CUT OR THAT ARE DAMAGED DURING CONSTRUCTION.

PARKING AND PAVING NOTES

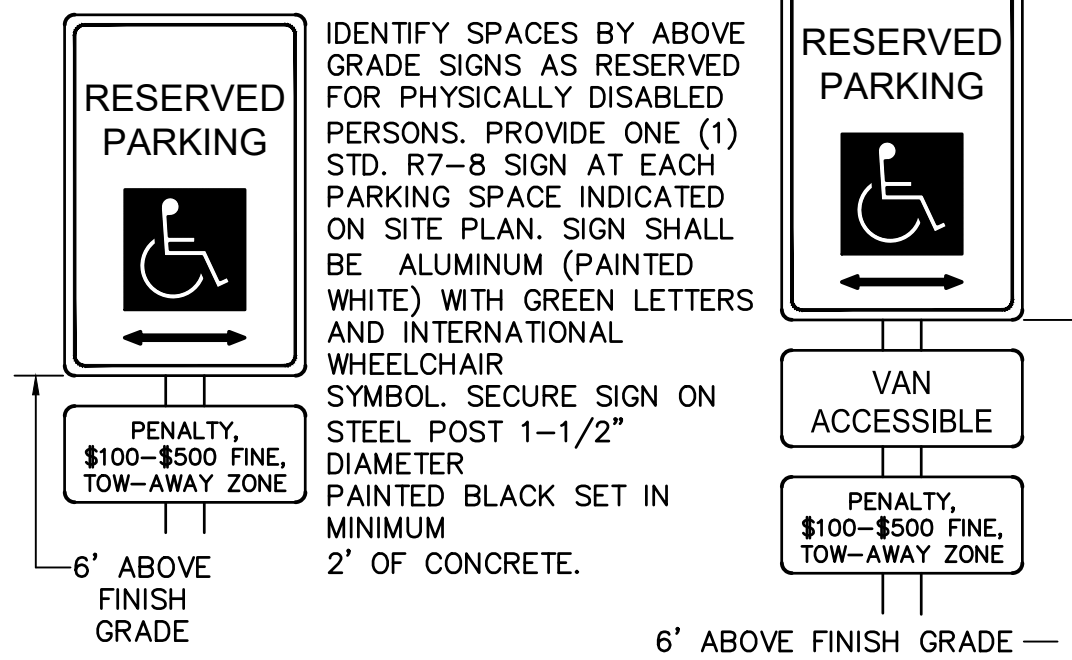
NO SCALE

PAINTED DIRECTIONAL ARROW DETAIL

NO SCALE

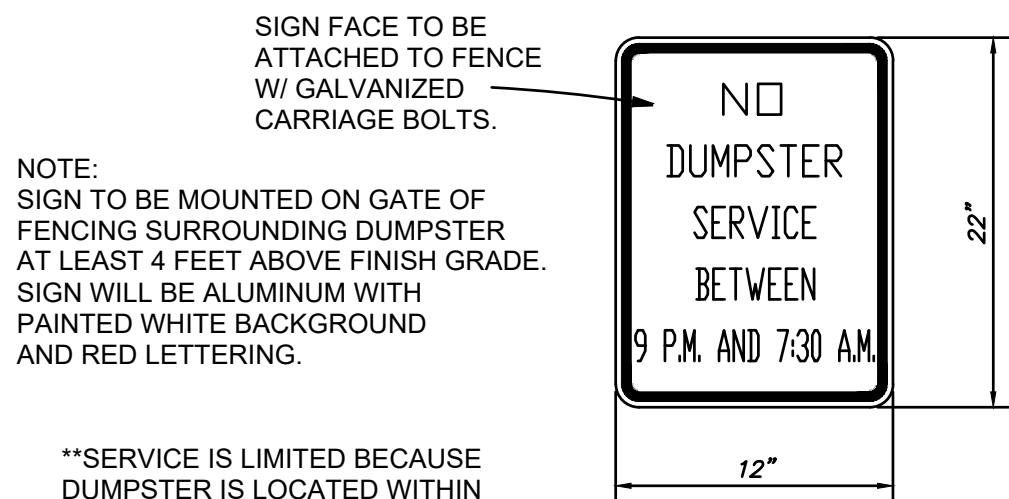


NOTE: DIRECTIONAL ARROWS ARE FOR INFORMATIONAL PURPOSES AND SHALL ONLY BE STENCILED ON PAVEMENT IF INDICATED BY THE OWNER.



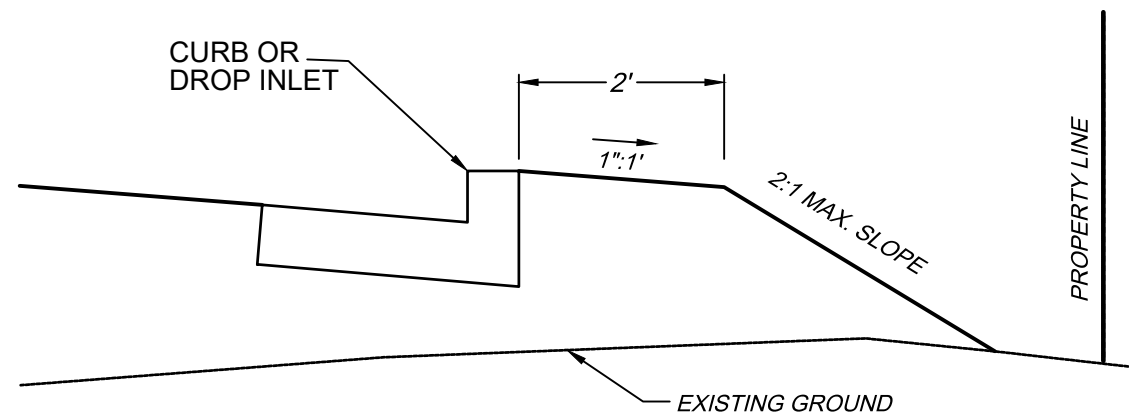
PARKING SIGNS FOR THE DISABLED

NO SCALE



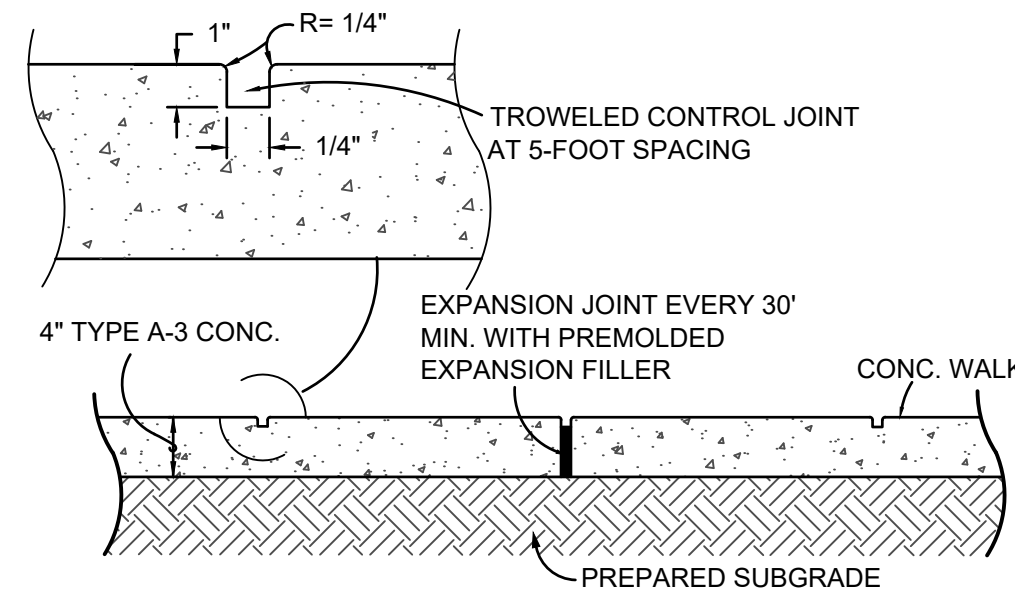
DUMPSTER SERVICE SIGN DETAIL

NO SCALE



CURB & DROP INLET BACKFILL DETAIL

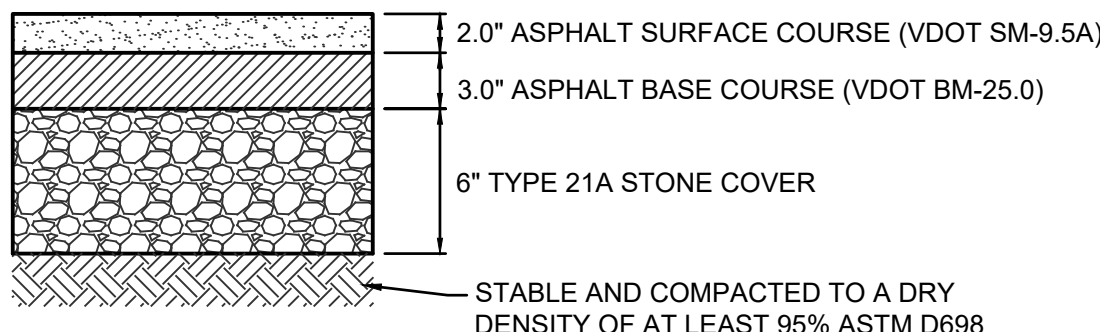
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NOTE: 1/2" PREFORMED EXPANSION JOINT FILLER WHERE ADJACENT TO BUILDING

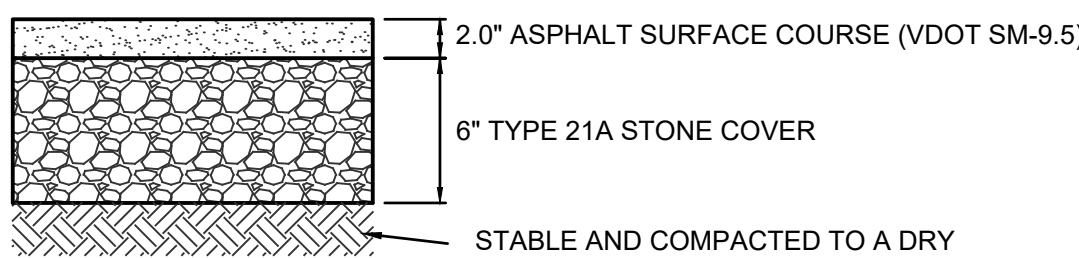
SIDEWALK CONTROL JOINT DETAIL

NO SCALE

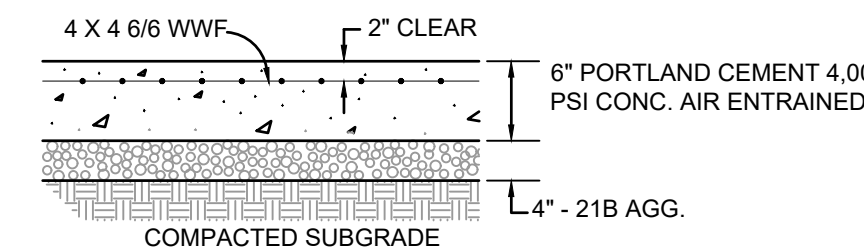


NOTE: PAVEMENT DESIGN IS BASED ON AN ASSUMED CBR VALUE OF 10. IF CBR OF 10 IS NOT ACHIEVED DURING PREPARATION OF SUBGRADE, NOTIFY ENGINEER IMMEDIATELY FOR A REVISED PAVEMENT SECTION.

HEAVY DUTY ASPHALT PAVEMENT SECTION



LIGHT DUTY ASPHALT PAVEMENT SECTION



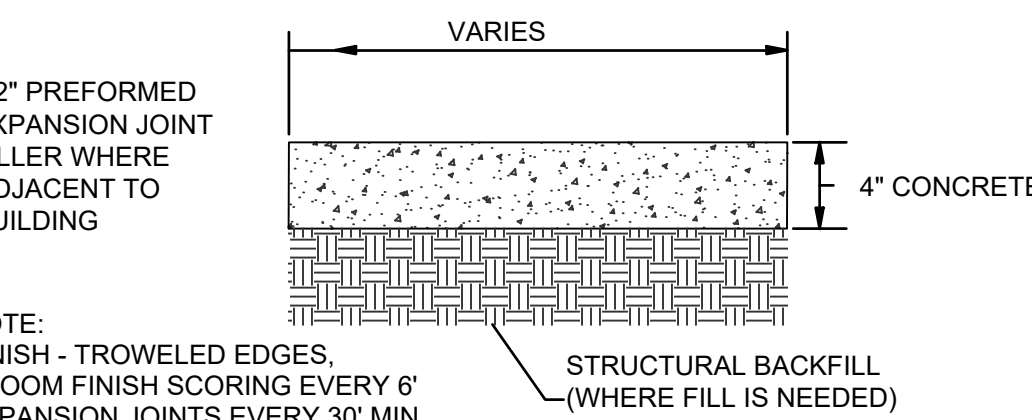
NOTE: PAVEMENT DESIGN IS BASED ON AN ASSUMED CBR VALUE OF 10. IF CBR OF 10 IS NOT ACHIEVED DURING PREPARATION OF SUBGRADE, NOTIFY ENGINEER IMMEDIATELY FOR A REVISED PAVEMENT SECTION.

HEAVY DUTY CONCRETE PAVEMENT SECTION

NOTES:

- FINISH - TROWELED EDGES, BROOM FINISH SCORING EVERY 6' EXPANSION JOINTS EVERY 30' MIN.

CG-9D ENTRANCE PAVEMENT



CONCRETE SIDEWALK DETAIL

NOTES:

- FINISH - TROWELED EDGES, BROOM FINISH SCORING EVERY 6' EXPANSION JOINTS EVERY 30' MIN.

DECORATIVE CONCRETE DETAIL

PAVEMENT SECTION DETAILS

NO SCALE



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DATE : FEBRUARY 5, 2021

REVISION BLOCK

10-07-21	CITY COMMENTS
12-20-21	CITY COMMENTS

**BROAD ROCK BOULEVARD
RETAIL CENTER**
CITY OF RICHMOND, VA

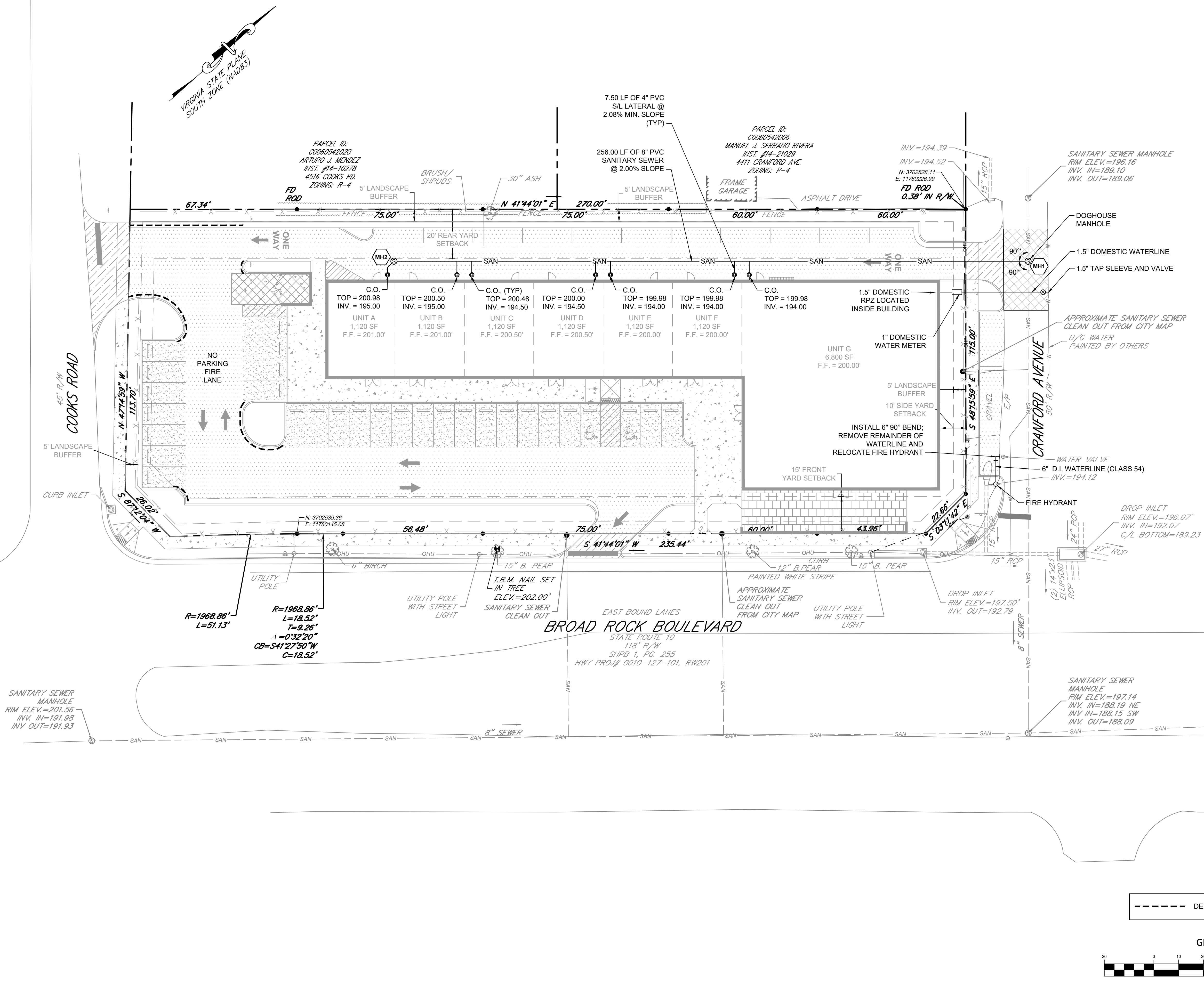
SITE NOTES AND DETAILS

SHEET NO.
C3.1



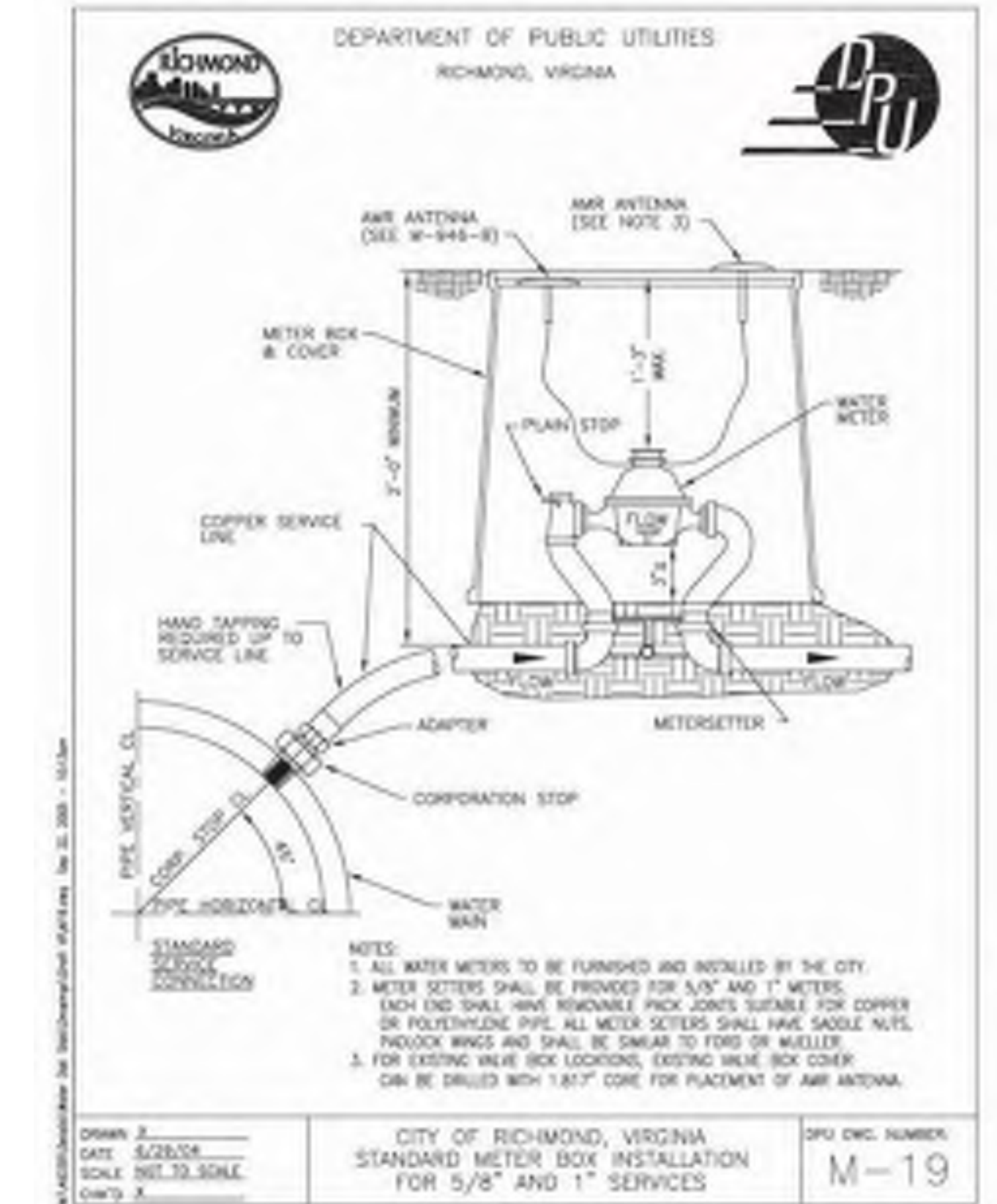
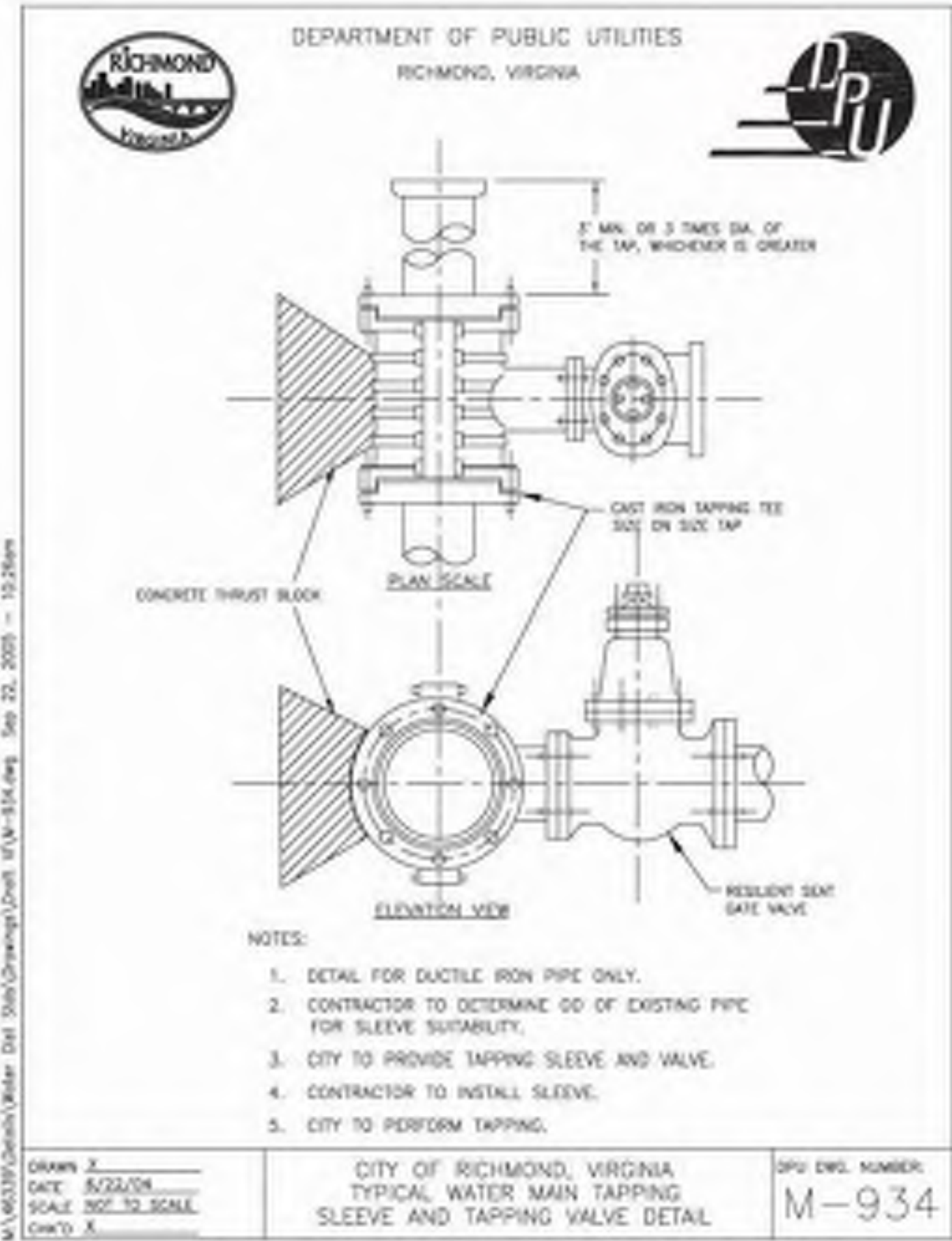
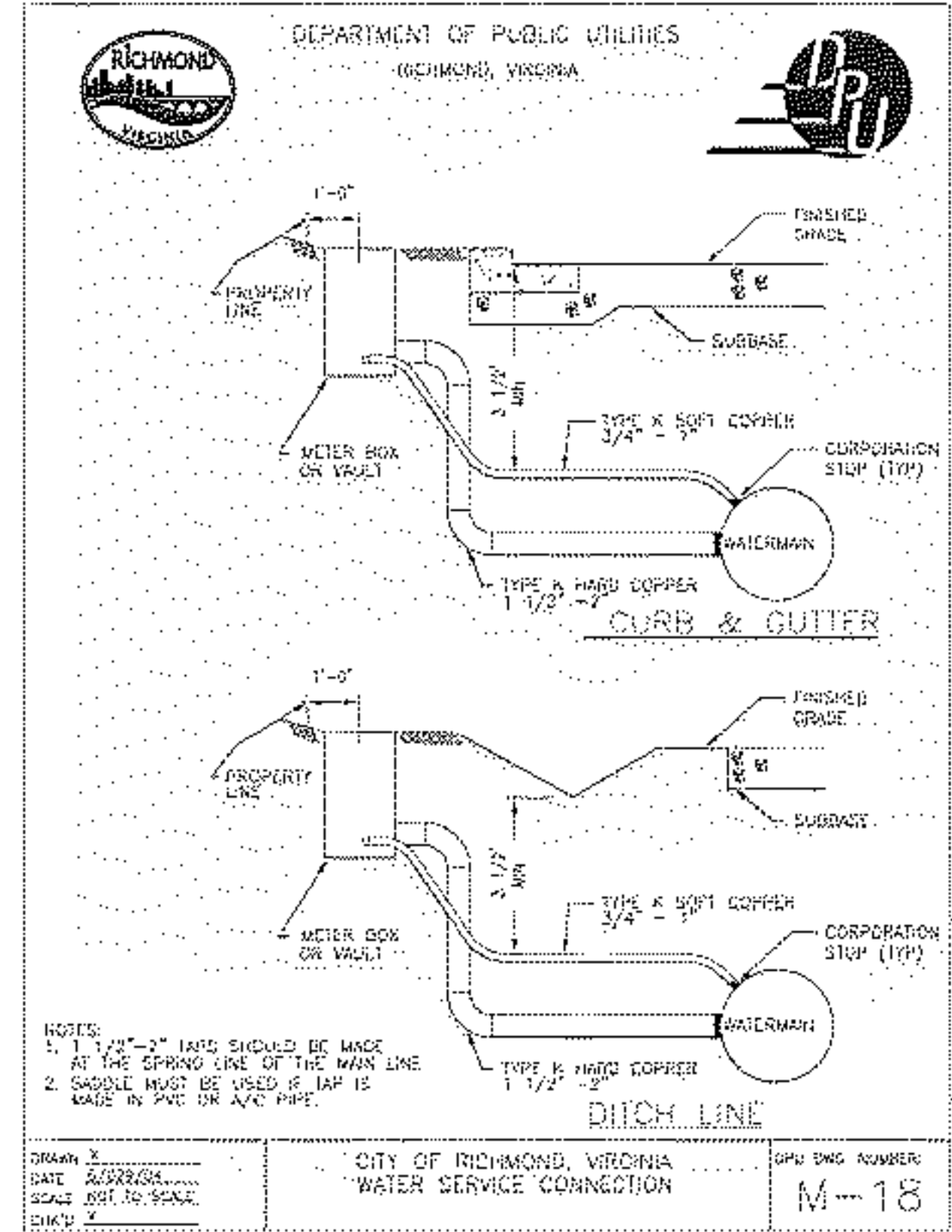
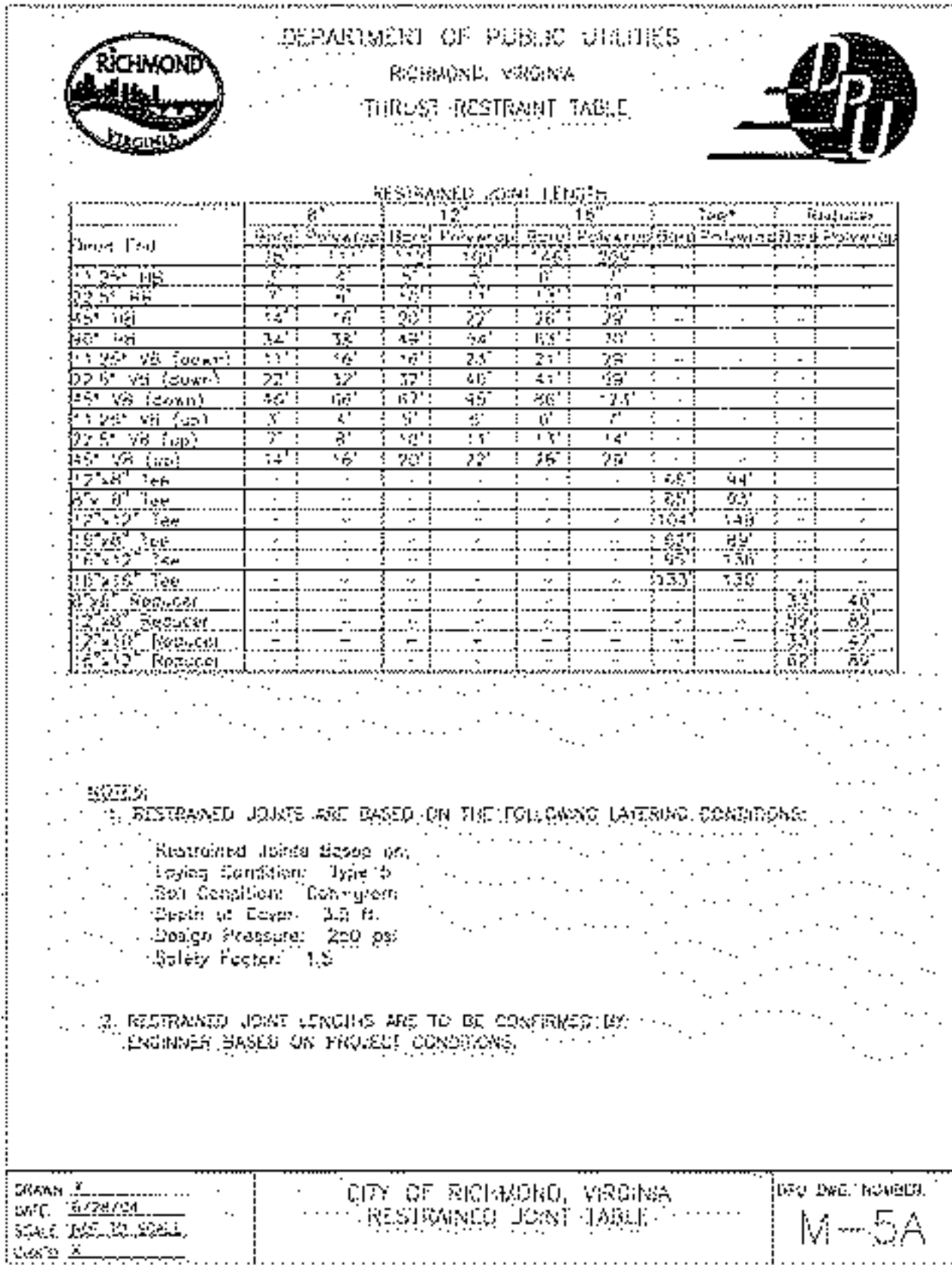
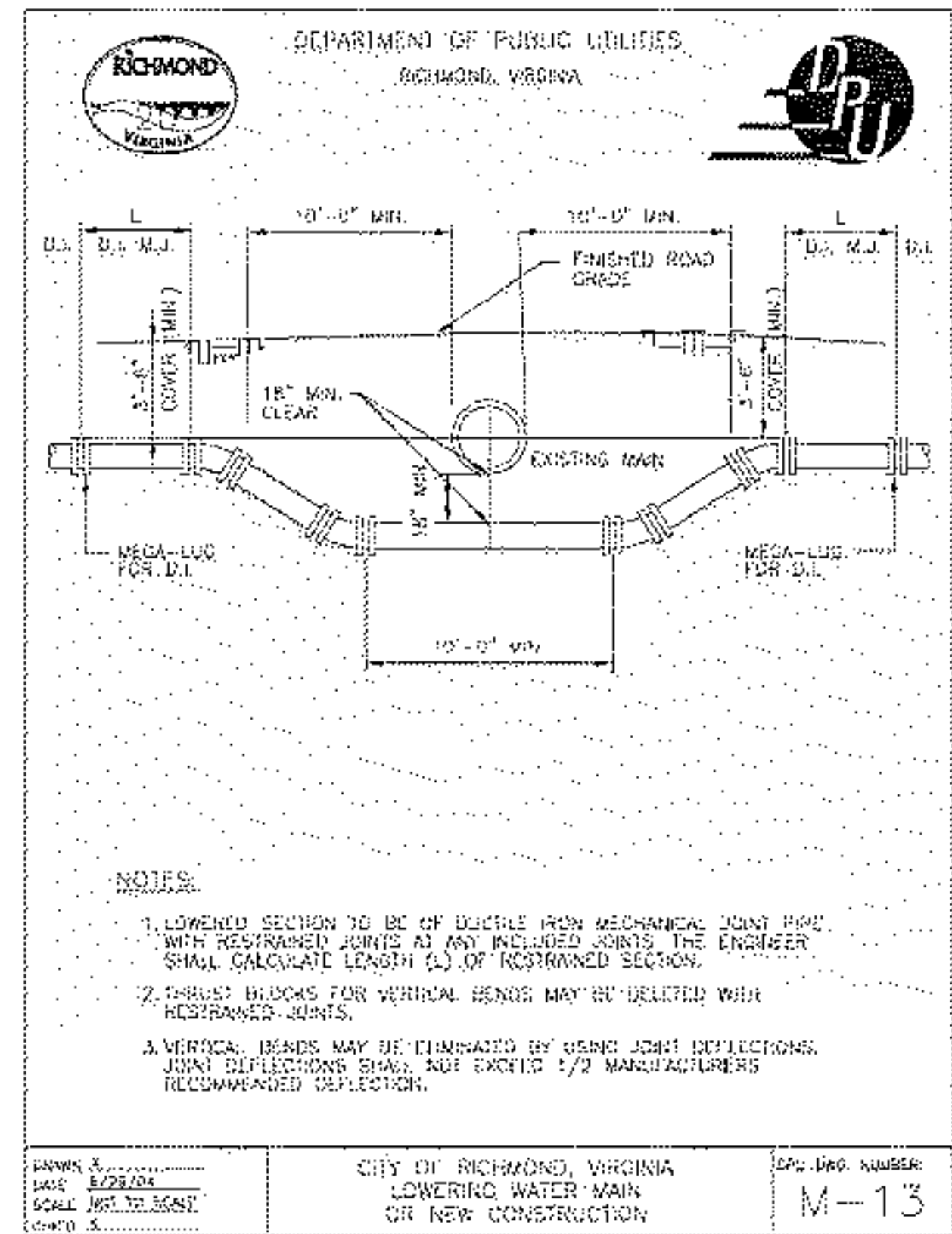
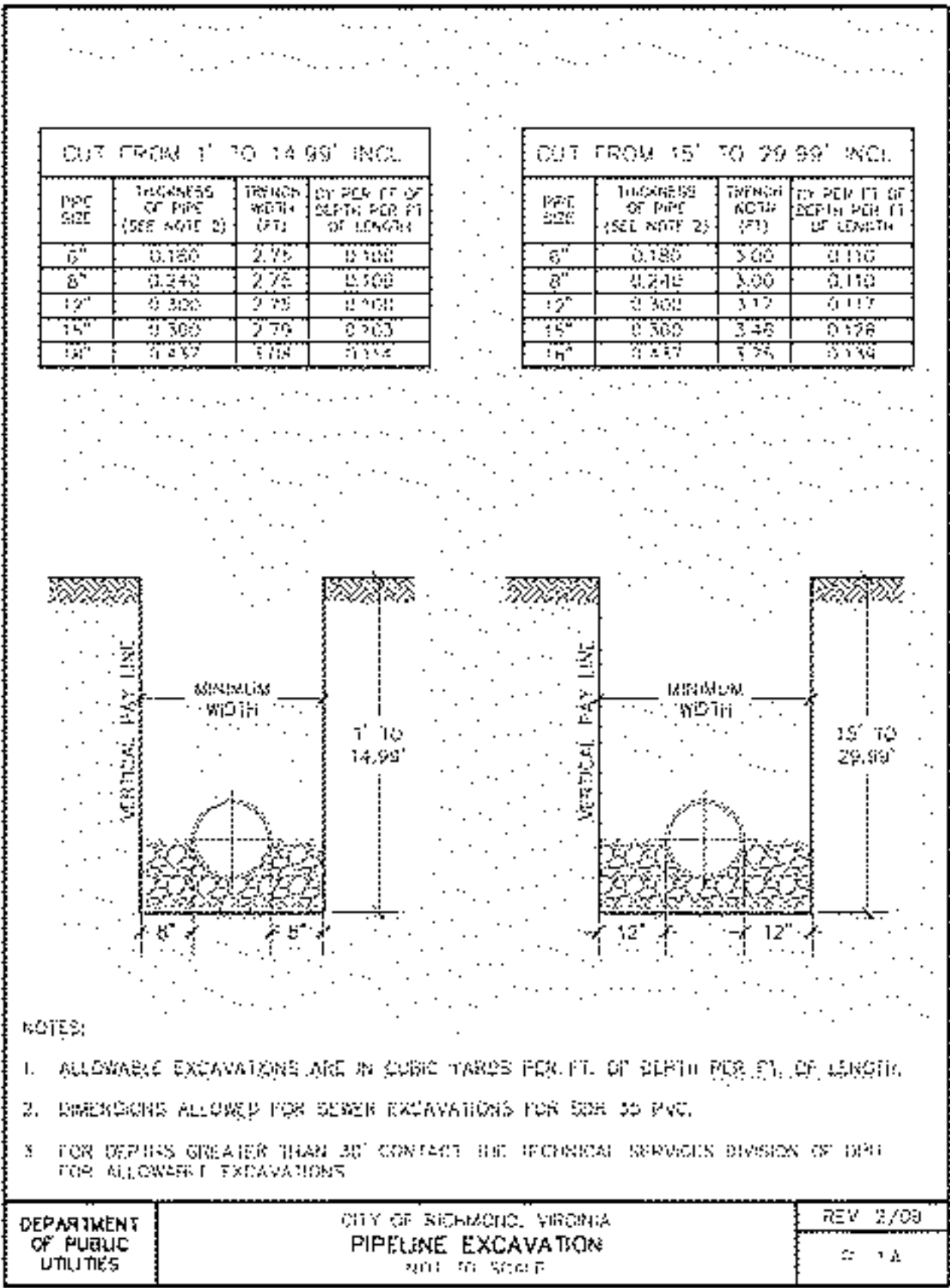
REVISION BLOCK	
07-21	CITY COMMENTS
20-21	CITY COMMENTS

SHEET NO.
C4.0

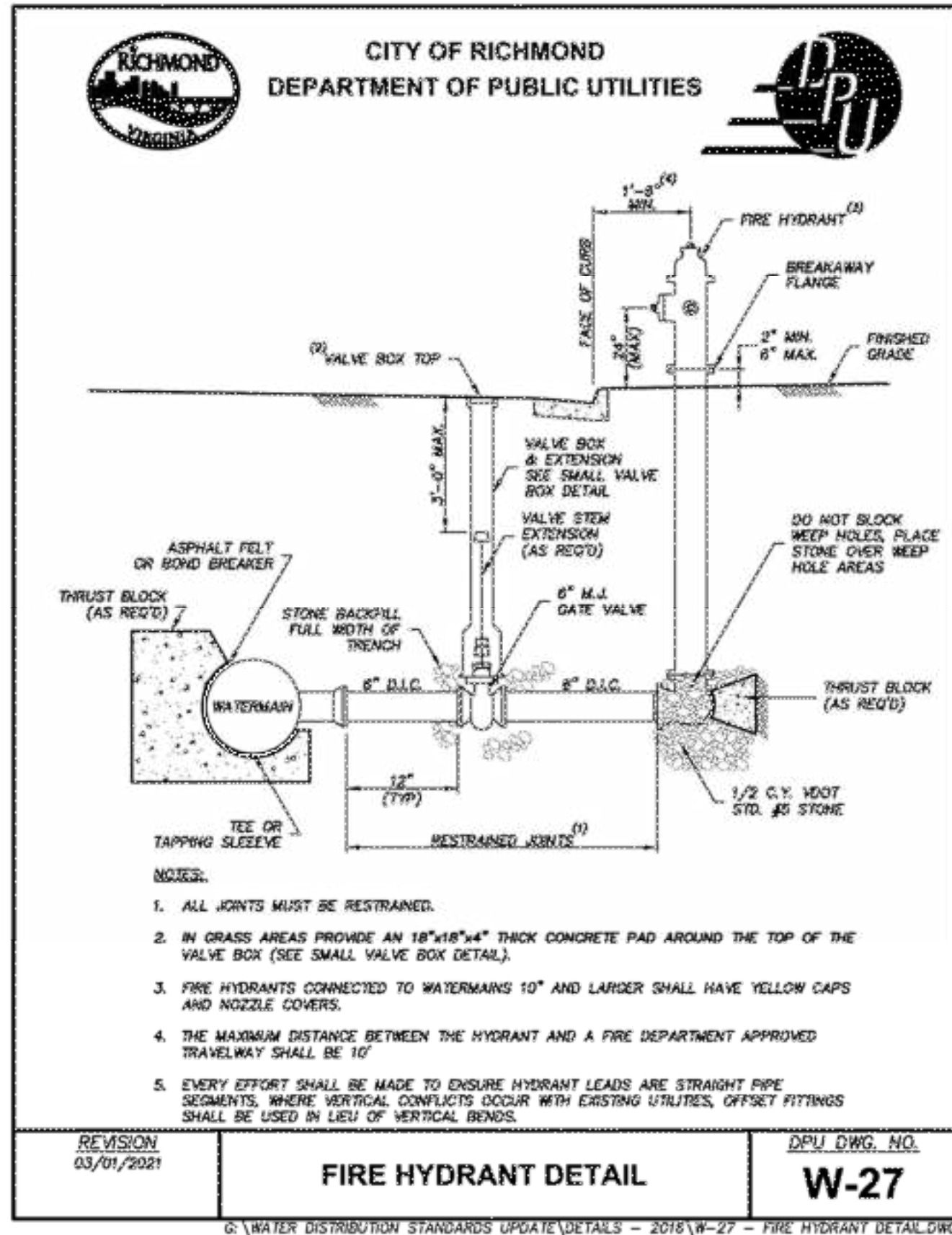
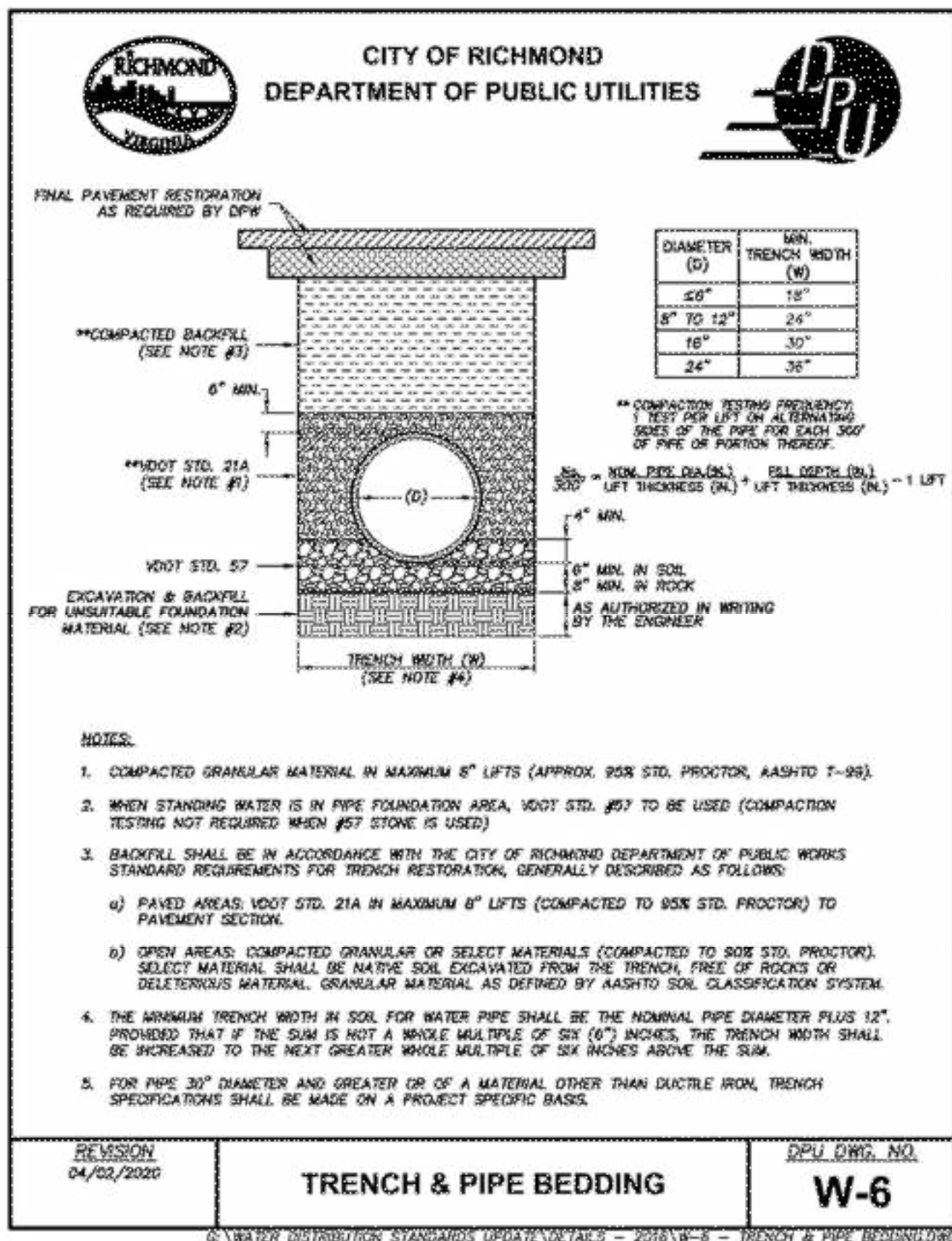
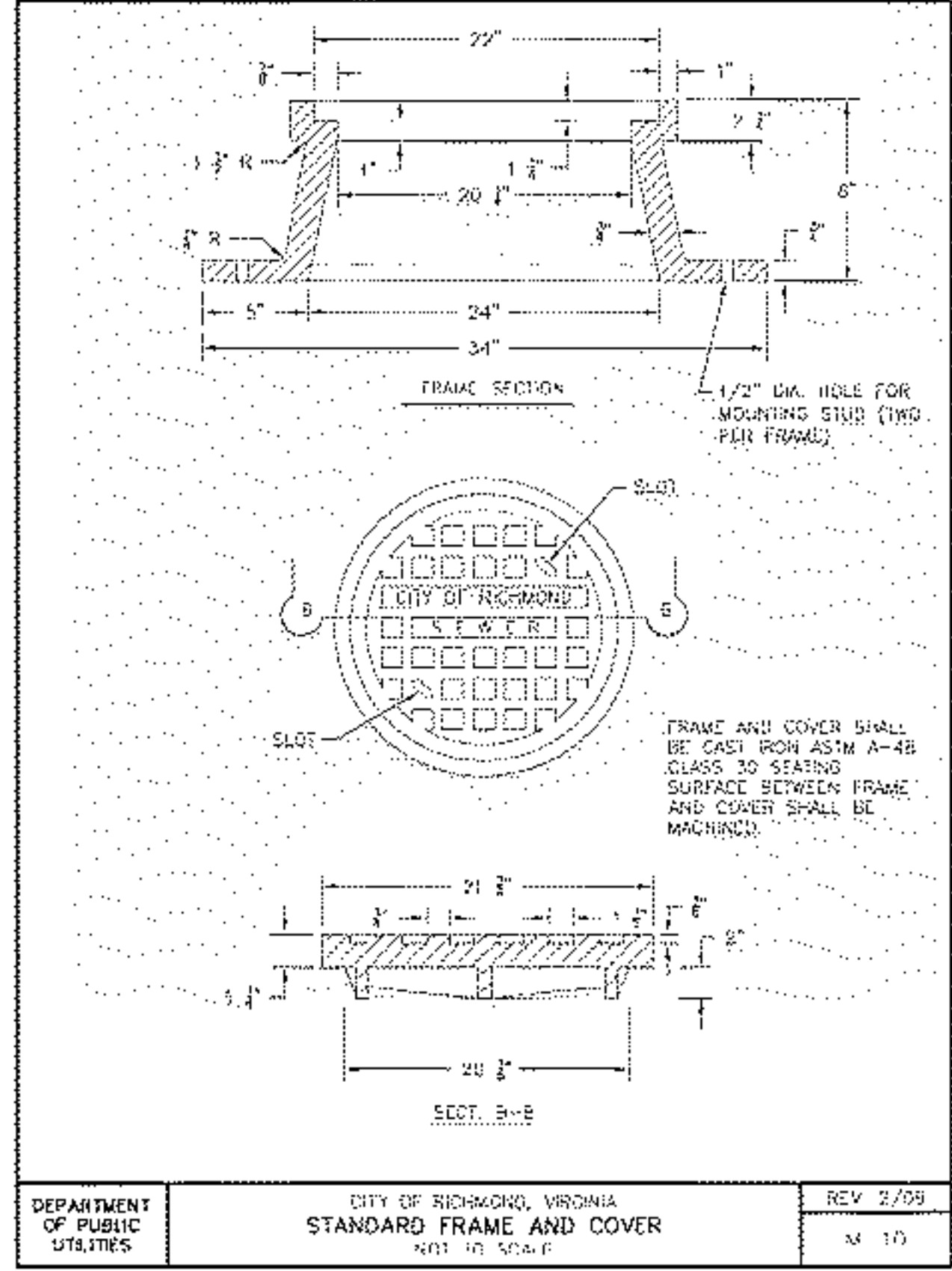
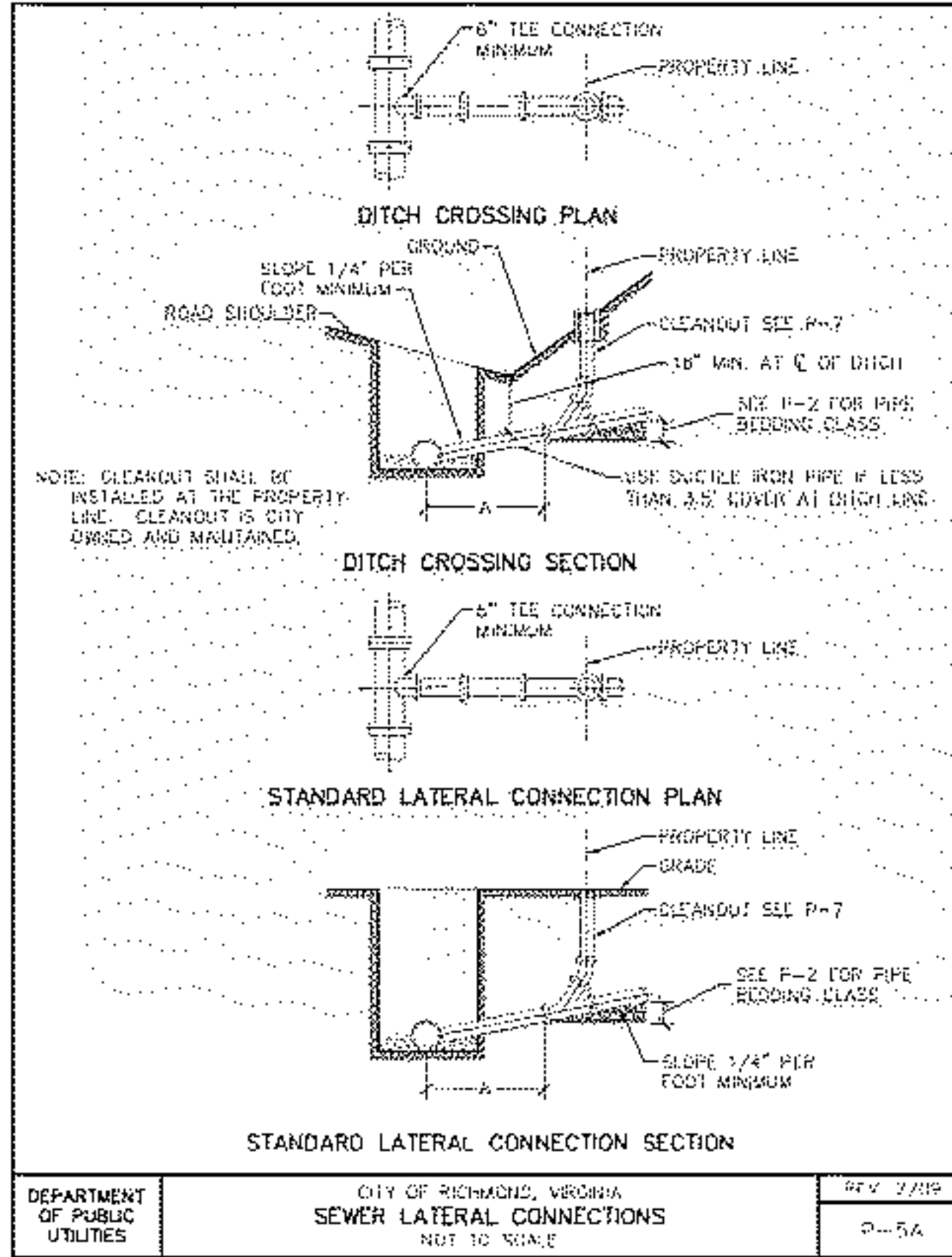
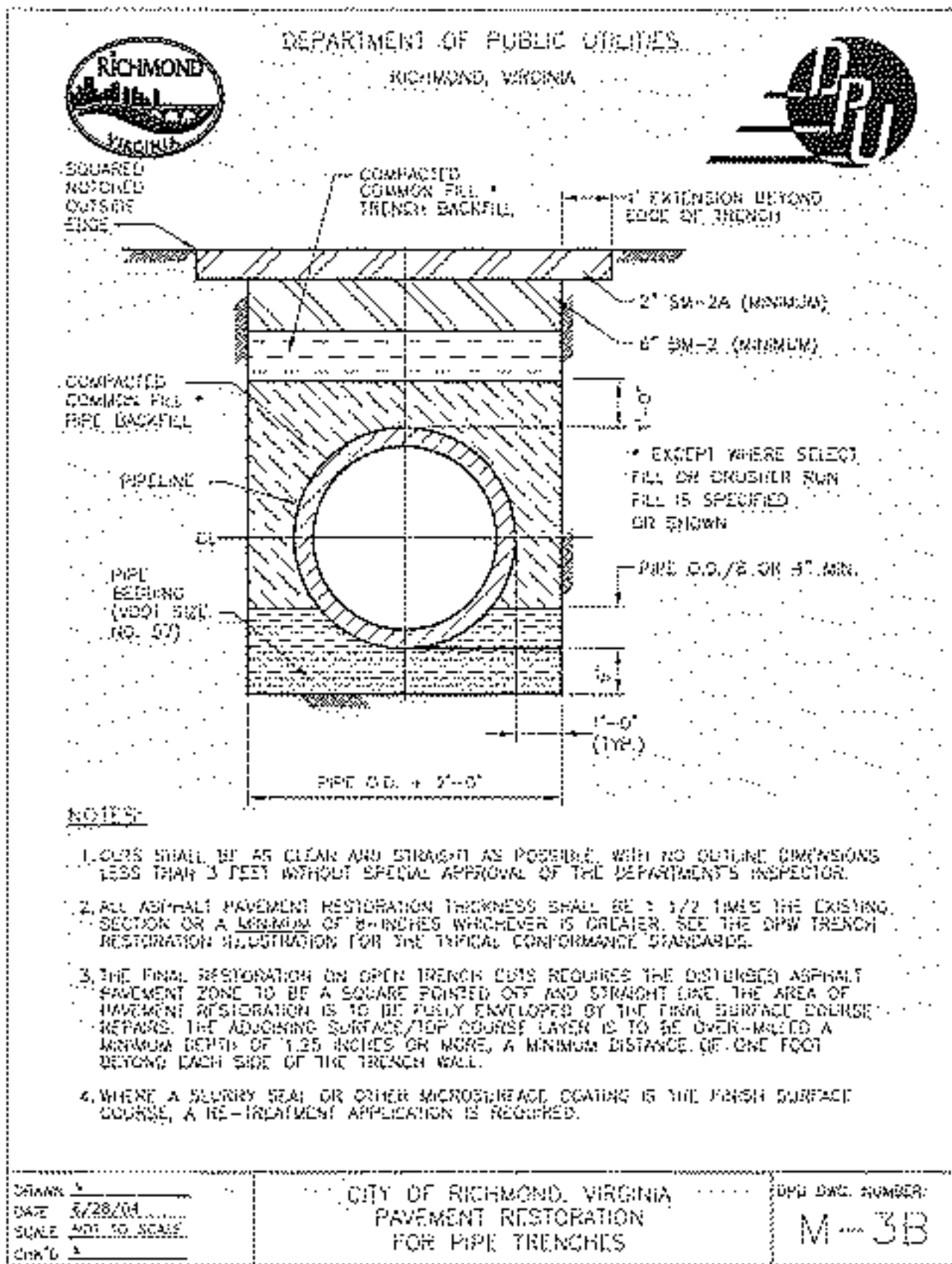
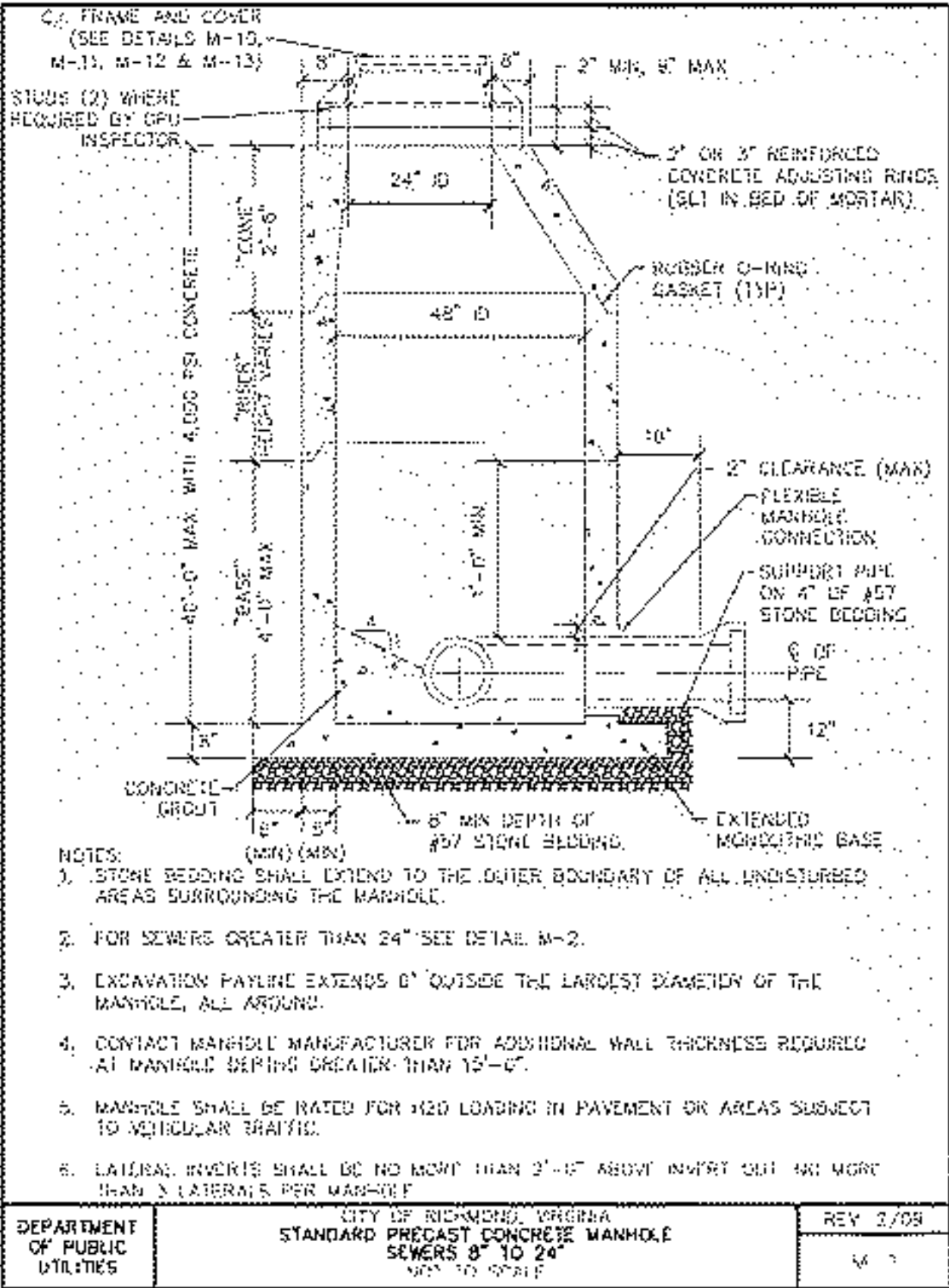


- GENERAL WATER NOTES**
NO SCALE

- UTILITY NOTES**
NO SCALE



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CITY OF RICHMOND
DEPARTMENT OF PUBLIC UTILITIES
DEVELOPMENT SERVICES

Application for WATER, SANITARY, & STORM SEWER
Tel: 804-646-8544 Fax: 804-646-3438

Applicant's Signature _____ Date _____
DPU Engineer or APSA Signature _____ Date _____
DPU Project Manager Signature _____ Date _____

City of Richmond DPU Fixture Values Meter Sizing

Fixture	Fixture Value @ 35 psi	No. of Fixtures (not to exceed if none)	Fixture Value	COMMENTS
Bathtub	8	x	= 0	
Whirlpool	8	x	= 0	
Shower Head (shower only)	4	x	= 0	
Toilet-Flush Valve	35	x	= 0	
Toilet-Tank Type	3	x	= 0	
Wash Sink (ea. set of faucets)	4	x	= 0	
Kitchen Sink- 1/2" Connection	3	x	= 0	
Kitchen Sink- 3/4" Connection	7	x	= 0	
Dishwasher- 1/2" Connection	5	x	= 0	
Dishwasher- 3/4" Connection	10	x	= 0	
Washing Machine- 1/2" Conn	5	x	= 0	
Washing Machine- 3/4" Conn	12	x	= 0	
Washing Machine- 1" Conn	25	x	= 0	
Hose Bib- 1/2" Conn	6	x	= 0	
Hose Bib- 5/8" Conn	9	x	= 0	
Hose Bib- 3/4" Conn	12	x	= 0	
Lawn Sprinkler (per head)	1	x	= 0	
Bedpan Washers	10	x	= 0	
Combination Sink & Tray	3	x	= 0	
Lavatory- 3/8" Connection	2	x	= 0	
Lavatory- 1/2" Connection	4	x	= 0	
Laundry Tray- 1/2" Connection	3	x	= 0	
Laundry Tray- 3/4" Connection	7	x	= 0	
Service Sink- 1/2" Connection	3	x	= 0	
Service Sink 3/4" Connection	7	x	= 0	
Urinal - Pedestal Flush Valve	35	x	= 0	
Urinal- Wall Flush Valve	12	x	= 0	
Trough (2ft unit)	2	x	= 0	
Fixture Value Total			40	
Meter Size based on Fixture Value Total			1"	NOTE: Other factors, such as distance/length of service or elevation, may make it necessary to utilize a larger meter than that which is indicated by this calculation

FOR THE CITY OF RICHMOND, VIRGINIA, THE CITY ENGINEER HAS REVIEWED THIS APPLICATION AND APPROVES IT FOR THE CITY OF RICHMOND, VIRGINIA.



The Site Design Company
CIVIL ENGINEERING AND LAND DEVELOPMENT CONSULTING
288 HIGH STREET - PETERSBURG, VIRGINIA 23803
www.sitedesignco.com

PROJECT # : 20038
PROJECT MANAGER : CHRIS THOMPSON
PHONE : 804-720-9040
EMAIL : thompson@stedesignco.com

DATE : FEBRUARY 5, 2021

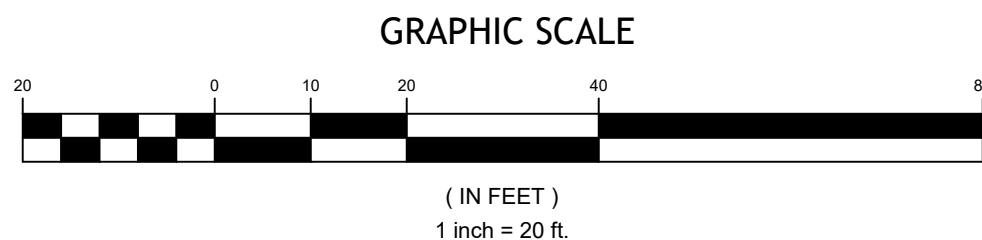
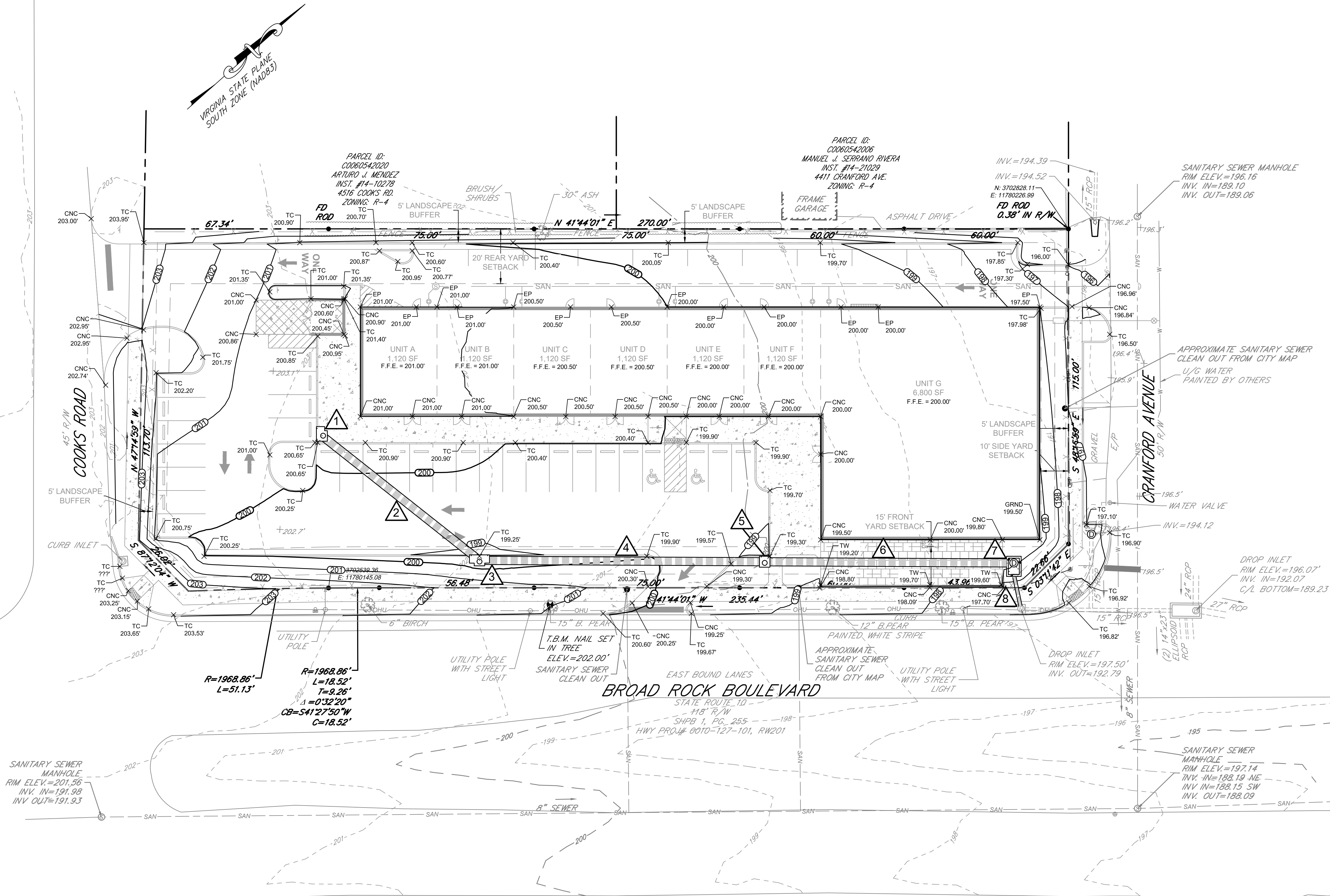
REVISION BLOCK	
10-07-21	CITY COMMENTS
12-20-21	CITY COMMENTS

**BROAD ROCK BOULEVARD
RETAIL CENTER**
CITY OF RICHMOND, VA

UTILITY NOTES AND DETAILS

SHEET NO.
C4.2

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CIVIL ENGINEERING AND LAND DEVELOPMENT CONSULTING
268 HIGH STREET - PETERSBURG, VIRGINIA 23803
www.sitedesignco.com



DATE: FEBRUARY 5, 2021

REVISION BLOCK	
10-07-21	CITY COMMENTS
12-20-21	CITY COMMENTS

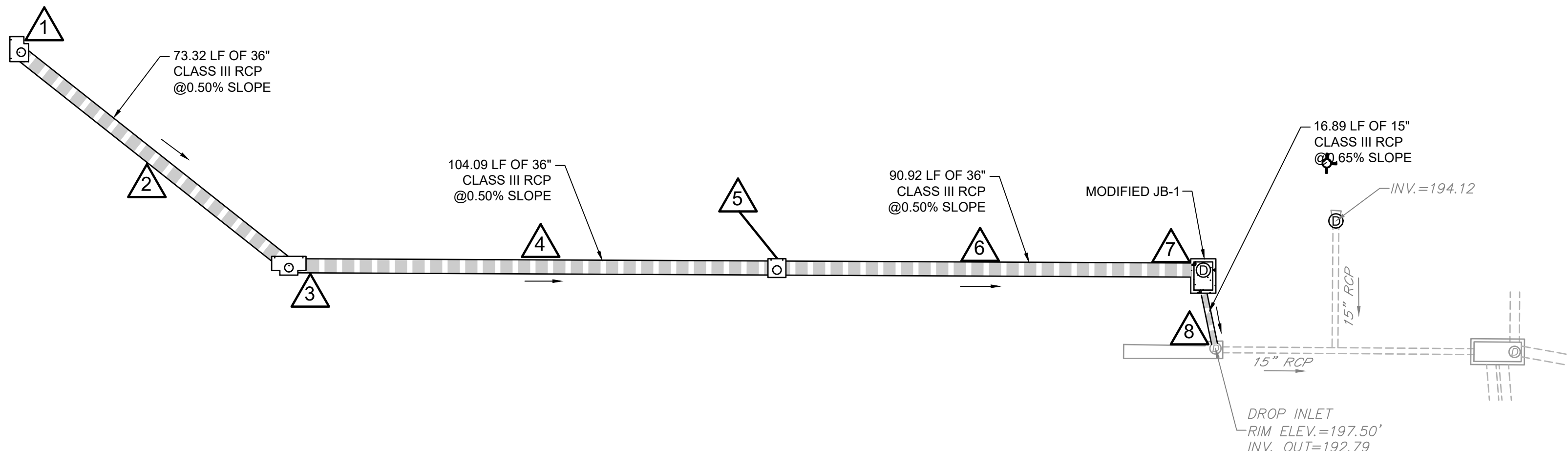
**BROAD ROCK BOULEVARD
RETAIL CENTER**
CITY OF RICHMOND, VA

GRADING AND DRAINAGE PLAN

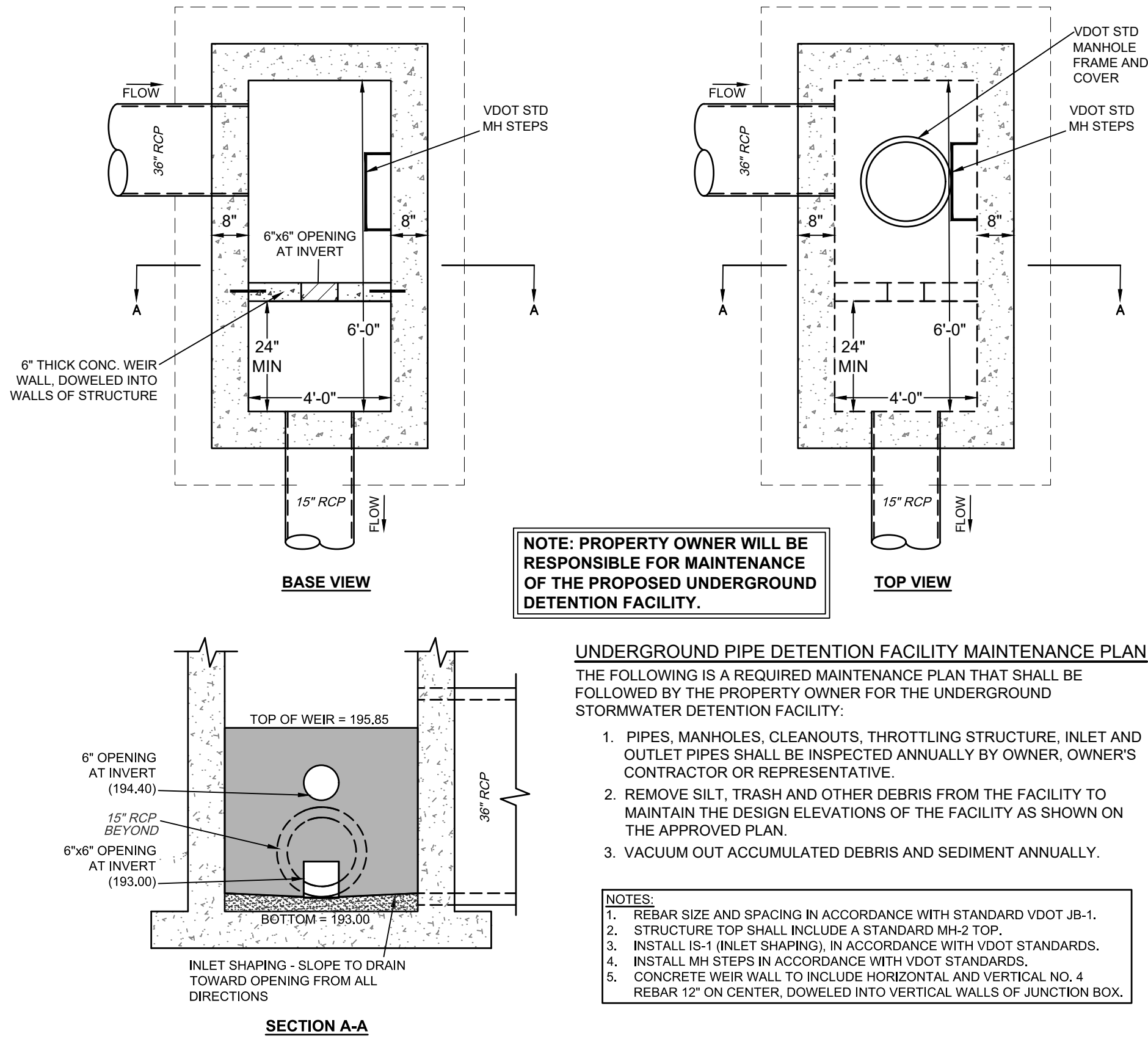
SHEET NO.
C5.0

PROJECT #: 20038
PROJECT MANAGER: CHRIS THOMPSON
PHONE: 804-720-9040
EMAIL: thompson@sitesignco.com

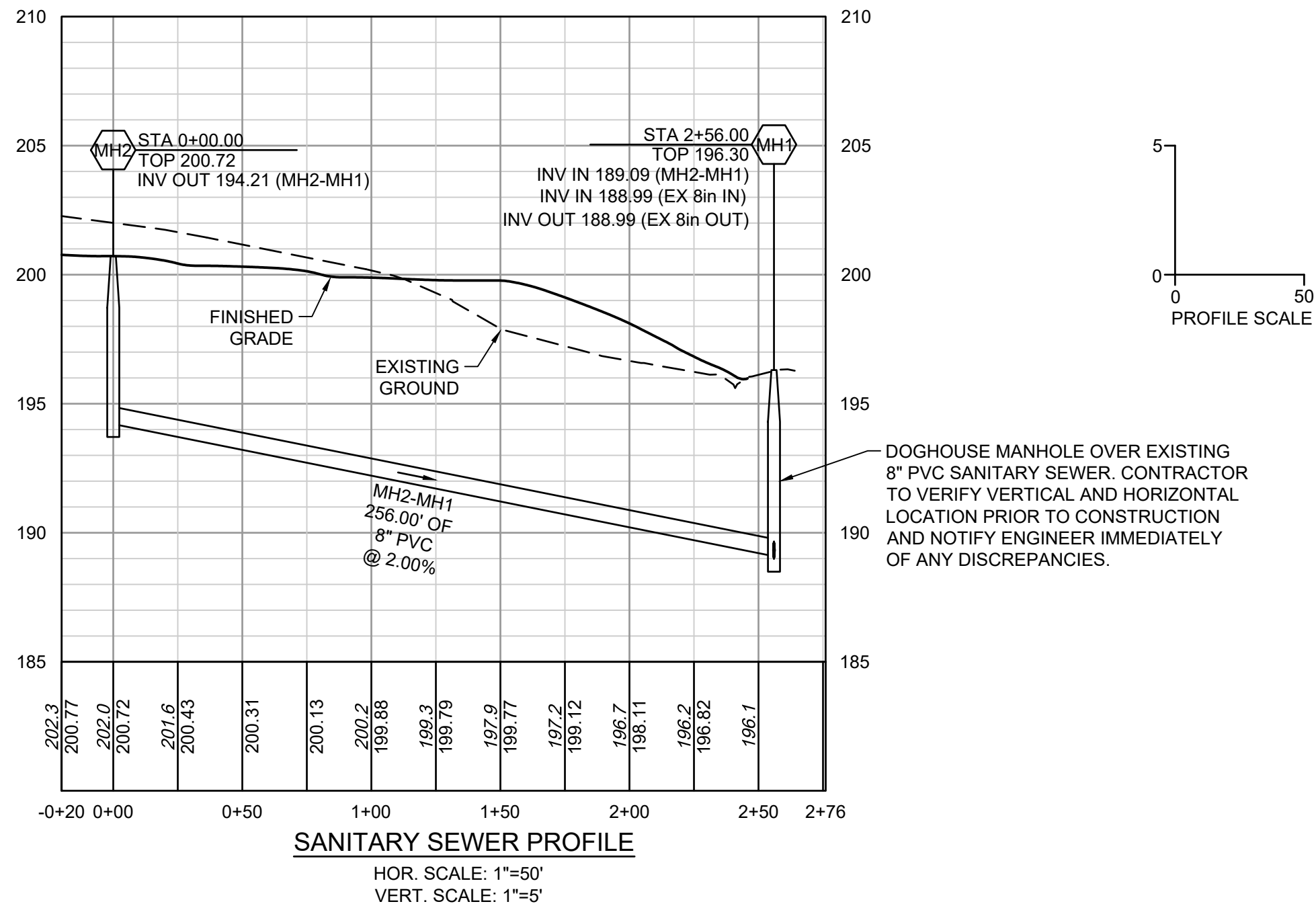
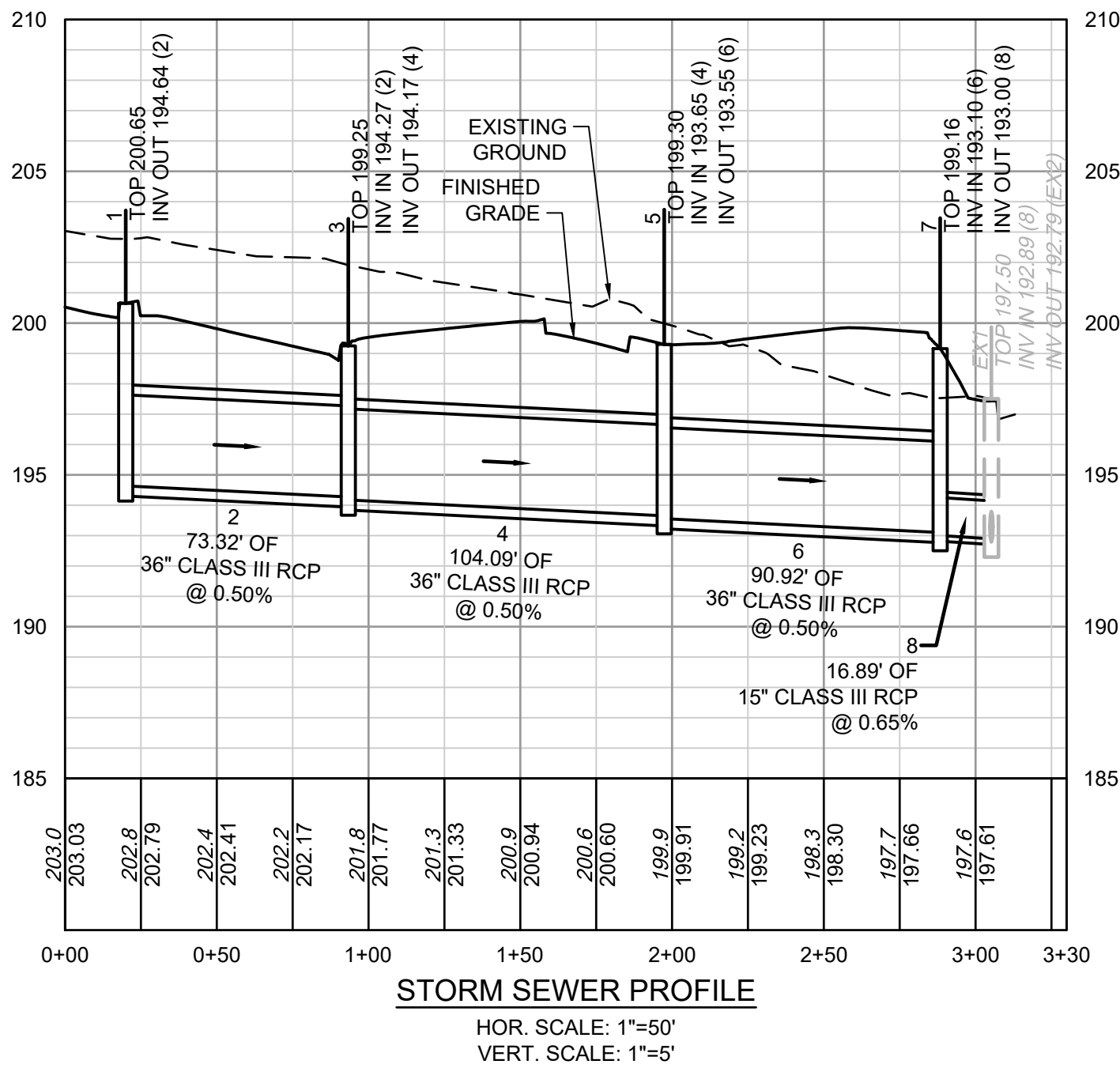
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DETENTION FACILITY DETAIL
SCALE: 1" = 20'



MODIFIED JB-1 DETAIL
SCALE: NONE



The Site Design Company
CIVIL ENGINEERING AND LAND DEVELOPMENT CONSULTING
288 HIGH STREET - PETERSBURG, VIRGINIA 23803
www.sitedesignco.com



PROJECT #: 20038 PROJECT MANAGER : CHRIS THOMPSON PHONE : 804-720-9040 EMAIL : thompson@sitedesignco.com

DATE : FEBRUARY 5, 2021

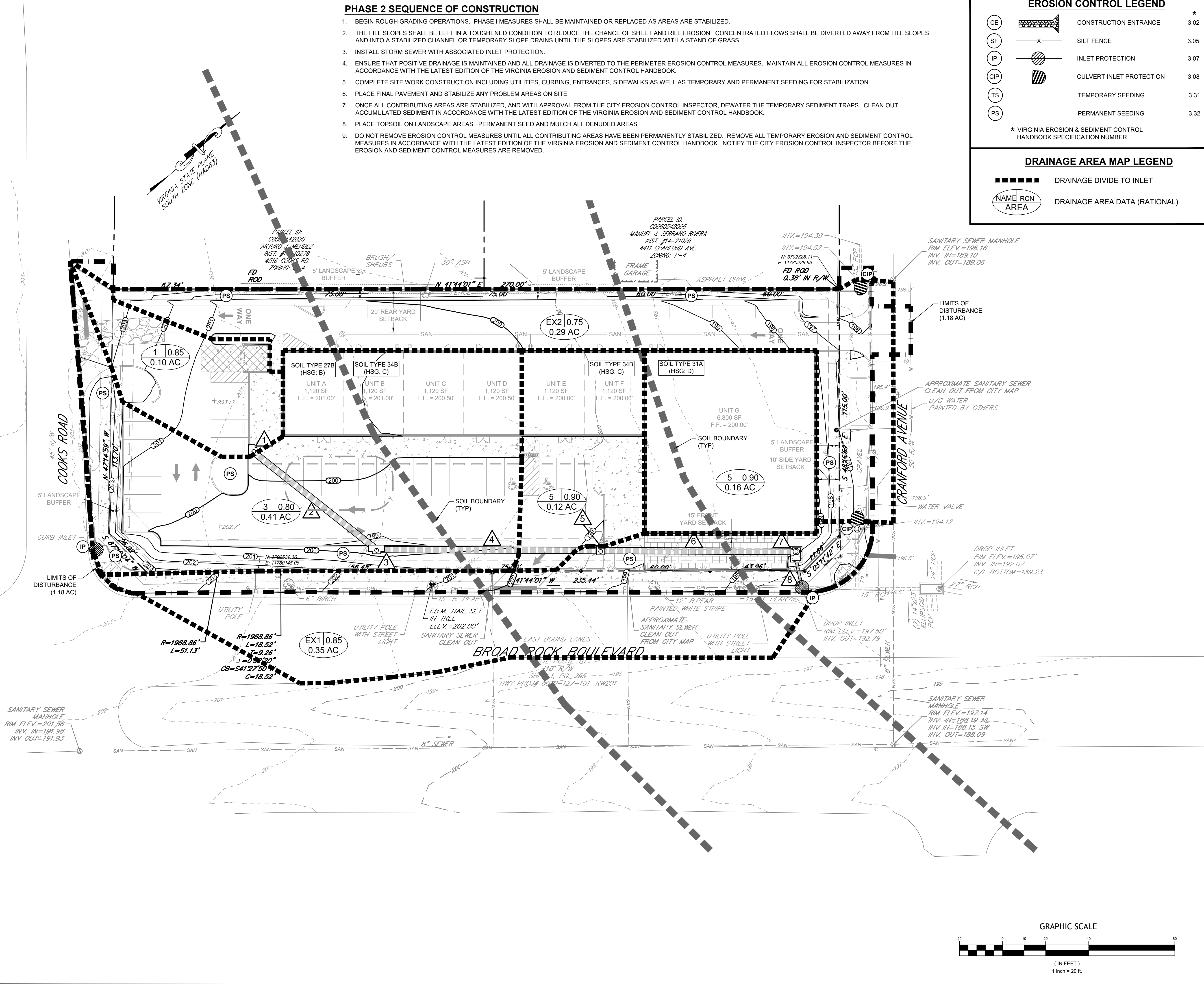
REVISION BLOCK	
10-07-21	CITY COMMENTS
12-20-21	CITY COMMENTS

**BROAD ROCK BOULEVARD
RETAIL CENTER**
CITY OF RICHMOND, VA

PROFILES

SHEET NO.
C6.0

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The Site Design Company

CIVIL ENGINEERING AND LAND DEVELOPMENT CONSULTING
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PROJECT # : 20038

PHONE : 804-720-9040
EMAIL : thompson@siteesignco.com

PROJECT MANAGER : CHRIS THOMPSON

DATE : FEBRUARY 5, 2021

REVISION BLOCK	
10-07-21	CITY COMMENTS
12-20-21	CITY COMMENTS

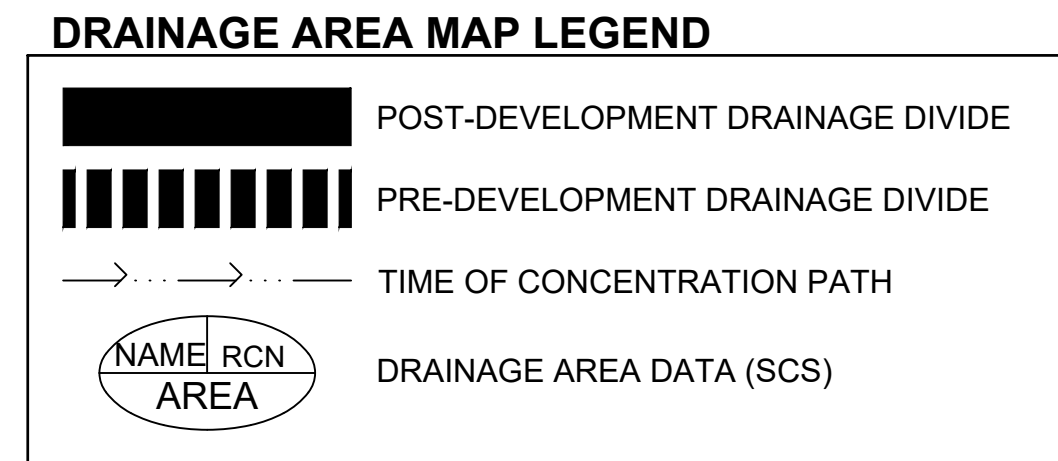
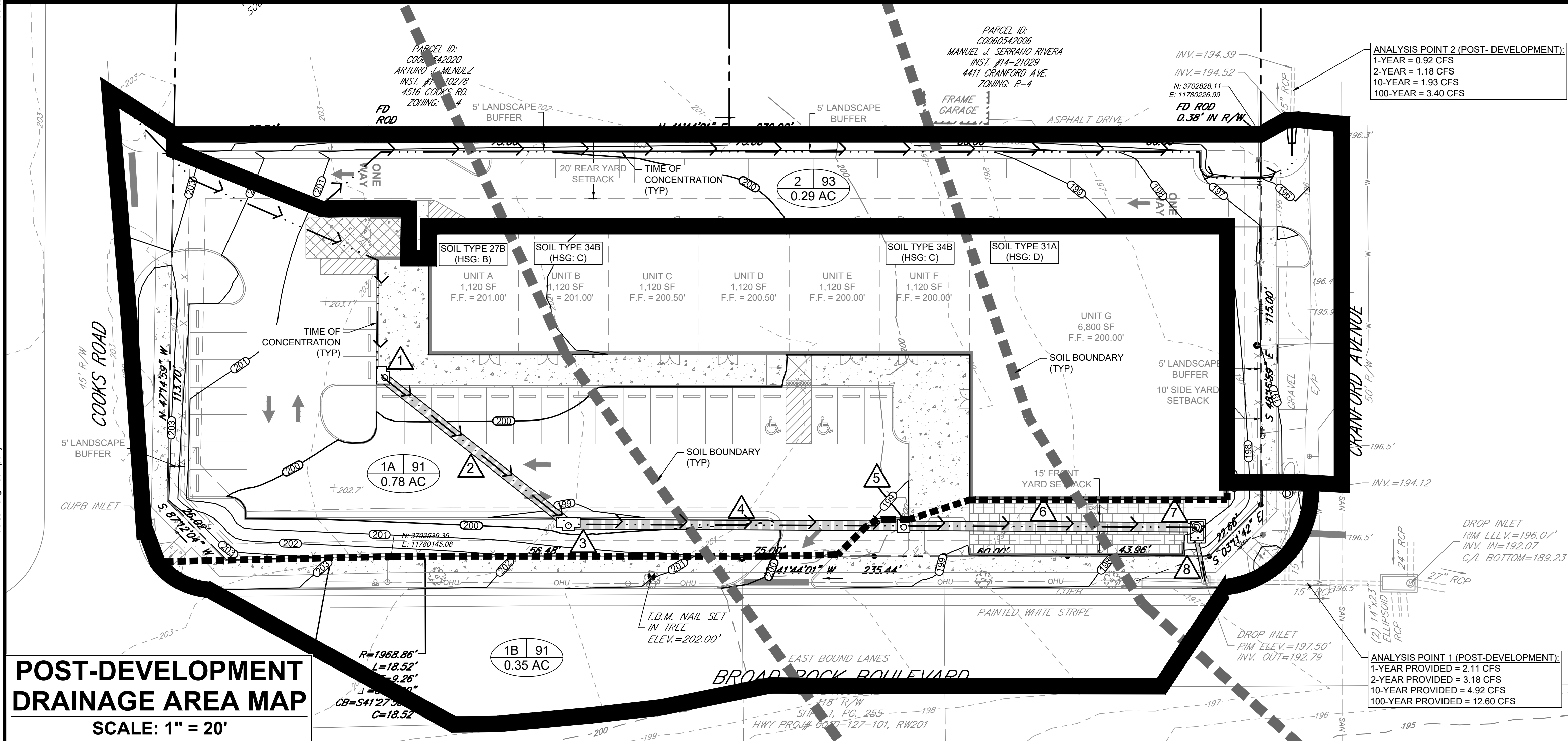
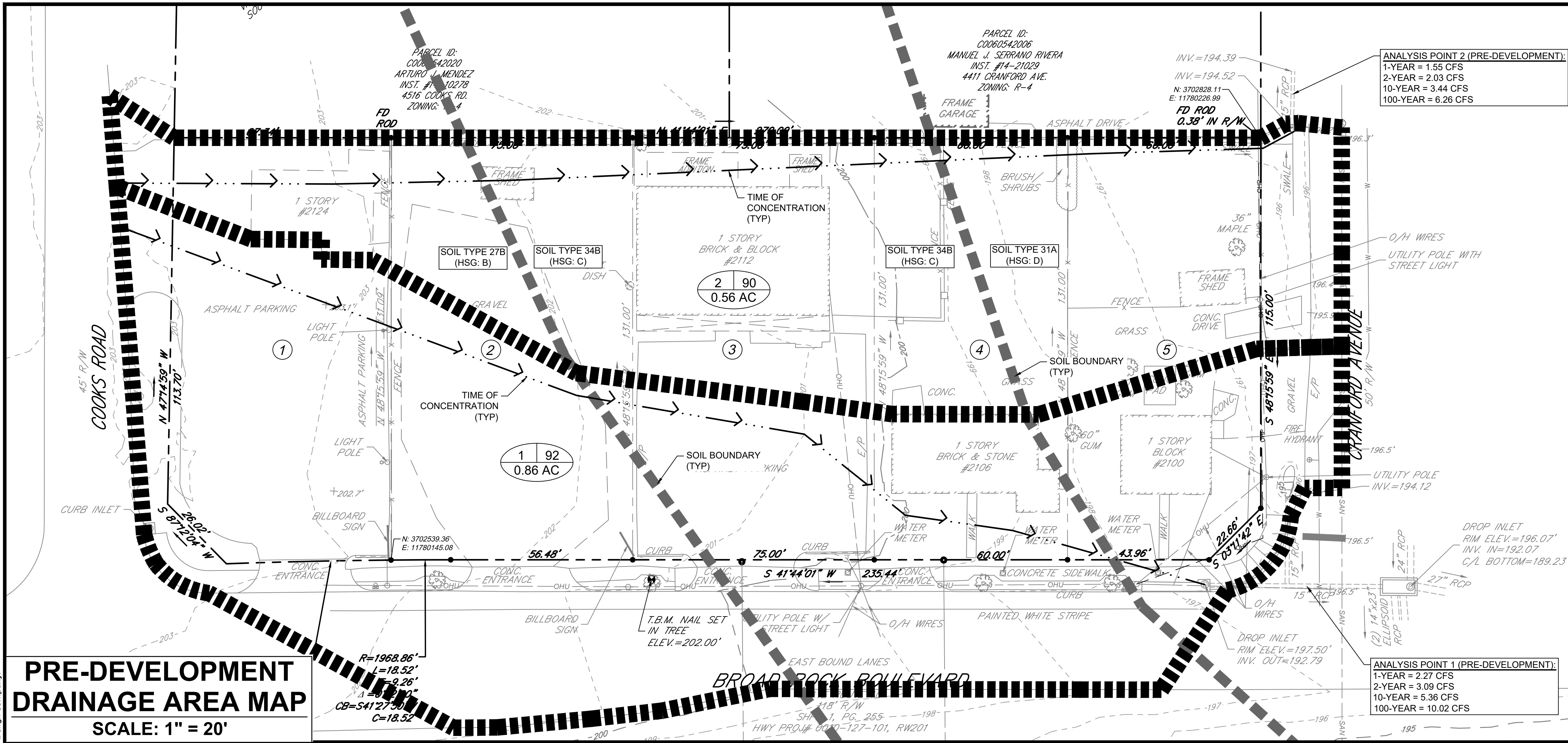
BROAD ROCK BOULEVARD RETAIL CENTER

CITY OF RICHMOND, VA

HYDROLOGY AND PHASE 2 E&S PLAN

SHEET NO.
C7.0

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STORMWATER QUANTITY ANALYSIS SUMMARY (ANALYSIS POINT 1):
9VAC25-870-66
THIS OUTFALL WAS ANALYZED FOR COMPLIANCE WITH STORMWATER QUANTITY REQUIREMENT 9VAC25-870-66, CHANNEL AND FLOOD PROTECTION. THE FOLLOWING IS A SUMMARY OF COMPLIANCE WITH CHANNEL AND FLOOD PROTECTION REQUIREMENTS.

CHANNEL PROTECTION:
CHANNEL PROTECTION HAS BEEN ANALYZED FOR COMPLIANCE WITH STORMWATER QUANTITY REQUIREMENT 9VAC25-870-66, PART 1A, FOR DEVELOPMENTS WHERE THE SITE'S CONTRIBUTING DRAINAGE AREA DISCHARGES INTO A MANMADE STORMWATER CONVEYANCE SYSTEM. CHANNEL PROTECTION COMPLIANCE IS ACHIEVED BY CONVEYING THE POST-DEVELOPMENT PEAK FLOW RATE FROM THE 2-YEAR 24-HOUR STORM EVENT WITHOUT CAUSING EROSION OF THE SYSTEM. THE STORMWATER IS BEING RELEASED INTO A CONCRETE PIPE SYSTEM AND THE PRE-DEVELOPMENT 2-YEAR PEAK FLOW RATE IS 3.09 CFS AND THE POST-DEVELOPMENT 2-YEAR PEAK FLOW RATE IS 3.18 CFS; THE FLOW IS THEREFORE NON EROSION AND CHANNEL PROTECTION REQUIREMENTS HAVE BEEN MET.

FLOOD PROTECTION:
FLOOD PROTECTION HAS BEEN ANALYZED FOR COMPLIANCE WITH STORMWATER QUANTITY REQUIREMENT 9VAC25-870-66, PART 1, FOR DEVELOPMENTS WHERE THE STORMWATER CONVEYANCE SYSTEM DOES NOT EXPERIENCE LOCALIZED FLOODING DURING THE 10-YEAR 24-HOUR STORM EVENT. FLOOD PROTECTION IS ACHIEVED BY CONFINING THE POST DEVELOPED PEAK FLOW RATE FROM THE 10-YEAR 24-HOUR STORM EVENT WITHIN THE STORMWATER CONVEYANCE SYSTEM AND RELEASING IT AT A LESSER RATE THAN IN PRE-DEVELOPMENT CONDITIONS. THE PRE-DEVELOPMENT 10-YEAR PEAK FLOW RATE IS 5.36 CFS AND THE POST-DEVELOPMENT 10-YEAR PEAK FLOW RATE IS 4.92 CFS.

THE POINT OF DISCHARGE RELEASES STORMWATER INTO A STORMWATER CONVEYANCE SYSTEM THAT, FOLLOWING THE LAND-DISTURBING ACTIVITY, CONFINES THE POSTDEVELOPMENT PEAK FLOW RATE FROM THE 10-YEAR 24-HOUR STORM EVENT WITHIN THE STORMWATER CONVEYANCE SYSTEM AND RELEASES IT AT A LESSER RATE THAN IN PRE-DEVELOPMENT CONDITIONS; THEREFORE, FLOOD PROTECTION REQUIREMENTS HAVE BEEN MET.

REFER TO SHEET C8.2-C8.4 FOR STORMWATER QUANTITY AND ROUTING CALCULATIONS.

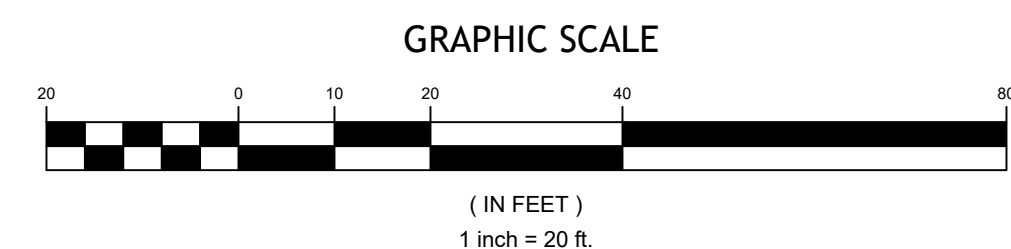
STORMWATER QUANTITY ANALYSIS SUMMARY (ANALYSIS POINT 2):
9VAC25-870-66
THIS OUTFALL WAS ANALYZED FOR COMPLIANCE WITH STORMWATER QUANTITY REQUIREMENT 9VAC25-870-66, CHANNEL AND FLOOD PROTECTION. THE FOLLOWING IS A SUMMARY OF COMPLIANCE WITH CHANNEL AND FLOOD PROTECTION REQUIREMENTS.

CHANNEL PROTECTION:
CHANNEL PROTECTION HAS BEEN ANALYZED FOR COMPLIANCE WITH STORMWATER QUANTITY REQUIREMENT 9VAC25-870-66, PART 1A, FOR DEVELOPMENTS WHERE THE SITE'S CONTRIBUTING DRAINAGE AREA DISCHARGES INTO A MANMADE STORMWATER CONVEYANCE SYSTEM. CHANNEL PROTECTION COMPLIANCE IS ACHIEVED BY CONVEYING THE POST-DEVELOPMENT PEAK FLOW RATE FROM THE 2-YEAR 24-HOUR STORM EVENT WITHOUT CAUSING EROSION OF THE SYSTEM. THE PRE-DEVELOPMENT 2-YEAR PEAK FLOW RATE IS 2.03 CFS AND THE POST-DEVELOPMENT 2-YEAR PEAK FLOW RATE IS 1.18 CFS; THE FLOW IS THEREFORE NON EROSION AND CHANNEL PROTECTION REQUIREMENTS HAVE BEEN MET.

FLOOD PROTECTION:
FLOOD PROTECTION HAS BEEN ANALYZED FOR COMPLIANCE WITH STORMWATER QUANTITY REQUIREMENT 9VAC25-870-66, PART 1, FOR DEVELOPMENTS WHERE THE STORMWATER CONVEYANCE SYSTEM DOES NOT EXPERIENCE LOCALIZED FLOODING DURING THE 10-YEAR 24-HOUR STORM EVENT. FLOOD PROTECTION IS ACHIEVED BY CONFINING THE POST DEVELOPED PEAK FLOW RATE FROM THE 10-YEAR 24-HOUR STORM EVENT WITHIN THE STORMWATER CONVEYANCE SYSTEM AND RELEASING IT AT A LESSER RATE THAN IN PRE-DEVELOPMENT CONDITIONS. THE PRE-DEVELOPMENT 10-YEAR PEAK FLOW RATE IS 3.44 CFS AND THE POST-DEVELOPMENT 10-YEAR PEAK FLOW RATE IS 1.93 CFS.

THE POINT OF DISCHARGE RELEASES STORMWATER INTO A STORMWATER CONVEYANCE SYSTEM THAT, FOLLOWING THE LAND-DISTURBING ACTIVITY, CONFINES THE POSTDEVELOPMENT PEAK FLOW RATE FROM THE 10-YEAR 24-HOUR STORM EVENT WITHIN THE STORMWATER CONVEYANCE SYSTEM AND RELEASES IT AT A LESSER RATE THAN IN PRE-DEVELOPMENT CONDITIONS; THEREFORE, FLOOD PROTECTION REQUIREMENTS HAVE BEEN MET.

REFER TO SHEET C8.2-C8.4 FOR STORMWATER QUANTITY AND ROUTING CALCULATIONS.



COMMONWEALTH OF VIRGINIA

CHRISTOPHER THOMPSON

Lic. No. 055008

12-20-2021

PROFESSIONAL ENGINEER

The Site Design Company

CIVIL ENGINEERING AND LAND DEVELOPMENT CONSULTING

268 HIGH STREET - PETERSBURG, VIRGINIA 23803

www.sitedesignco.com

PROJECT # : 20038

PROJECT MANAGER : CHRIS THOMPSON

PHONE : 804-720-9040

EMAIL : thompson@sitesdesignco.com

BROAD ROCK BOULEVARD

RETAIL CENTER

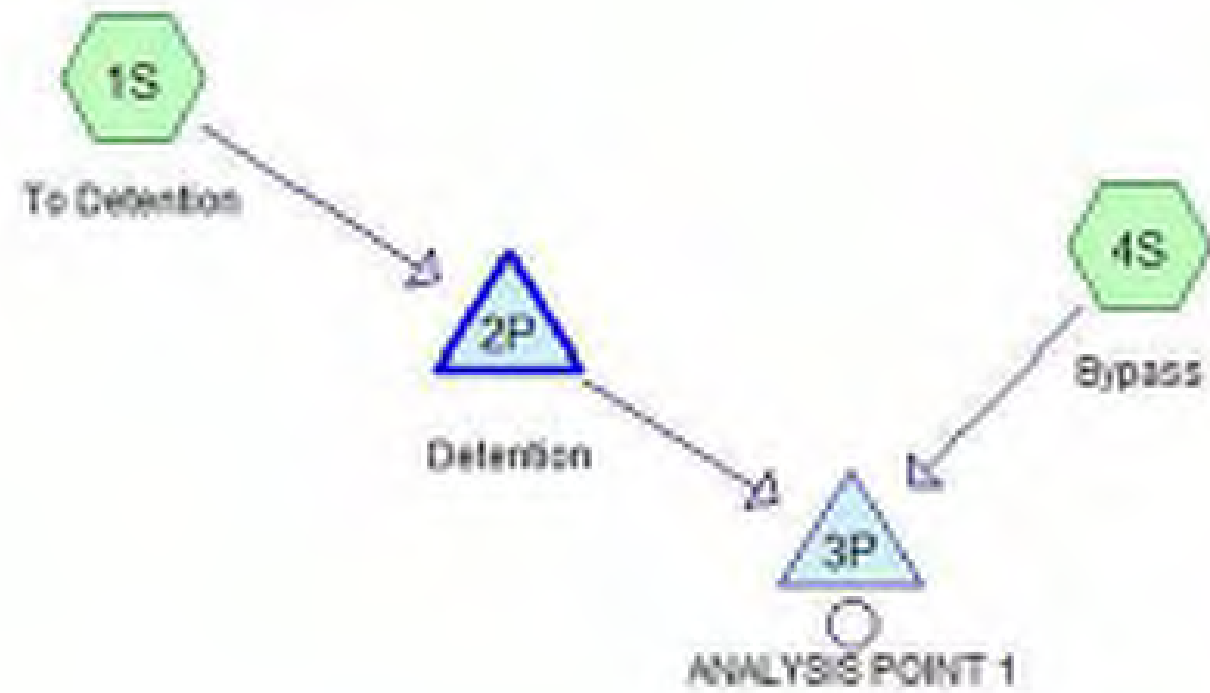
CITY OF RICHMOND, VA

STORMWATER QUANTITY ANALYSIS

SHEET NO.

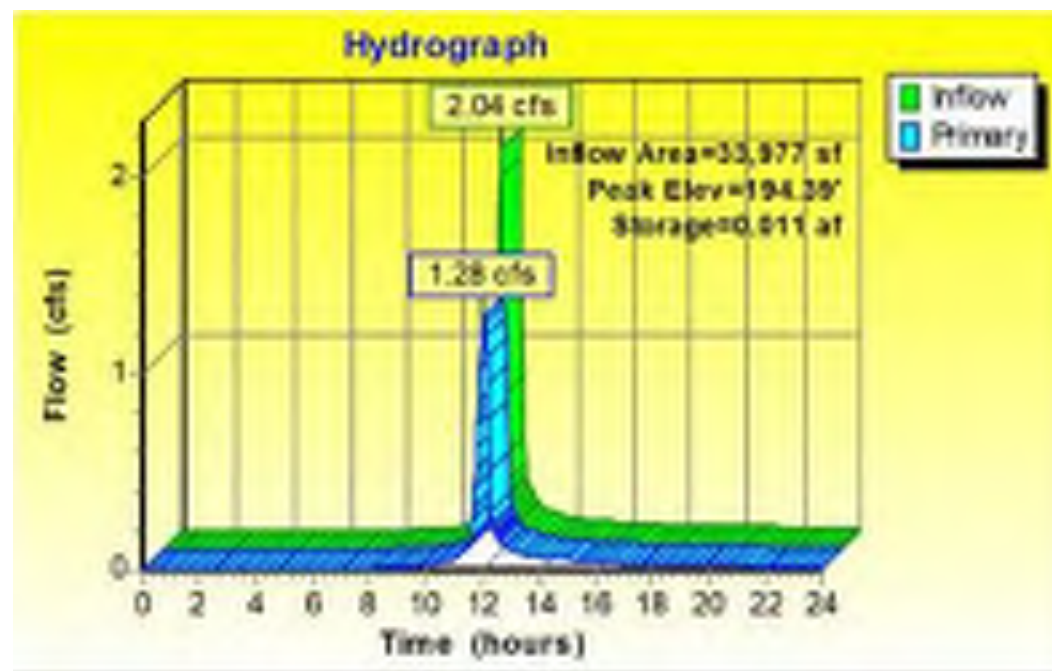
C8.1

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ROUTING DIAGRAM
NO SCALE

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Summary for Pond 2P: Detention

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 33,977 sf, 0.00% Impervious, Inflow Depth = 1.53" for 1 Year event
Inflow = 2.04 cfs @ 12.05 hrs, Volume= 4,295 cf
Outflow = 1.28 cfs @ 12.05 hrs, Volume= 4,297 cf, Attenu 37%, Lags 4.6 min
Primary = 1.28 cfs @ 12.05 hrs, Volume= 4,297 cf

Routing by Step-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs / 9
Peak Elev= 194.39' @ 12.05 hrs, Surf Area= 0.011 ac, Storage= 0.011 af

Plug-Flow detention time= 1.8 min calculated for 4,295 cf (100% of inflow)
Center-of-Mass det. time= 1.8 min (80.1% - 808.9)

Volume	Invert	Avail Storage	Storage Description
#1	193.10'	0.000 af	36.0" Round Pipe Storage x 2 L= 91.0' S= 0.00507
#2	193.65'	0.017 af	36.0" Round Pipe Storage L= 104.0' S= 0.00507
#3	194.27'	0.012 af	36.0" Round Pipe Storage L= 73.0' S= 0.00507
		0.028 af	Total Available Storage

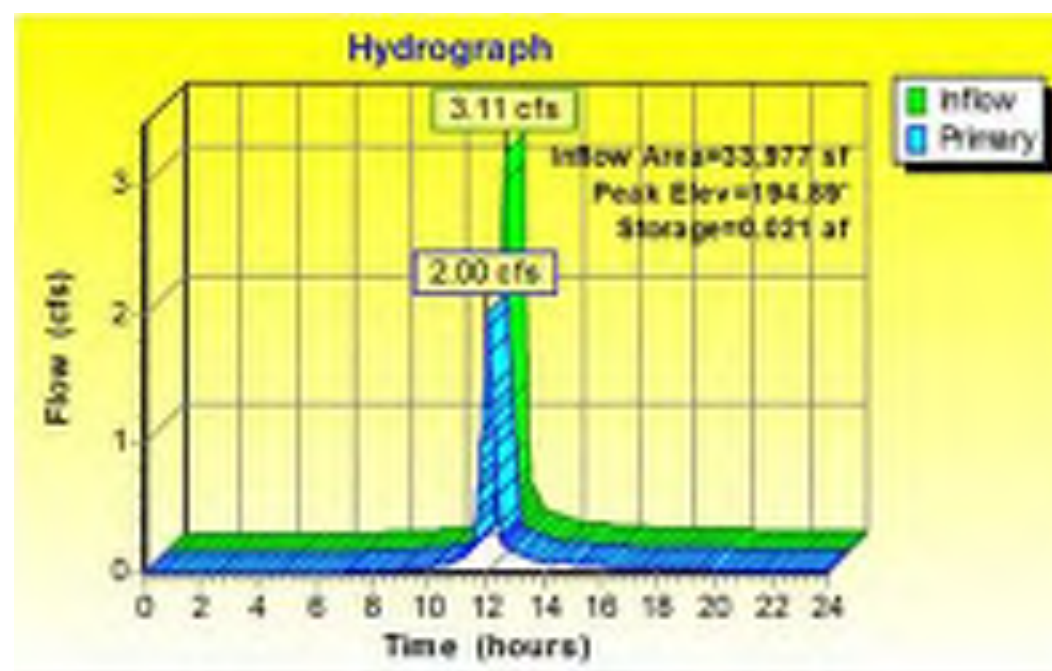
Device	Routing	Invert	Outlet Devices
#1	Primary	193.00'	18.0" Round Culvert, L= 16.0', K= 0.500 Inlet/Outlet Inverts= 193.00' / 192.89' S= 0.00657 C= 0.900 n= 0.015, Flow Area= 1.23 sf
#2	Device 1	193.00'	6.0" W x 6.0" H Vert. OrificeGate, C= 0.600 Limited to weir flow at low heads
#3	Device 1	194.40'	4.0" long x 6.0" H Weir, OrificeGate, C= 0.600 Limited to weir flow at low heads
#4	Device 1	195.85'	4.0" long x 6.0" H Weir, OrificeGate, C= 0.600 Limited to weir flow at low heads Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary Outflow: Weir/2.00 cfs @ 12.05 hrs HW= 194.39' (Free Discharge)
1-Weir/2.00 cfs @ 12.05 hrs HW= 194.39' (Free Discharge)
2-OrificeGate (Orifice Controls 1.28 cfs @ 12.05 hrs)
3-OrificeGate (Orifice Controls 0.45 cfs @ 12.05 hrs)
4-Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Hydrograph for Pond 2P: Detention

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	193.10	0.00
0.80	0.00	0.000	193.10	0.00
1.60	0.00	0.000	193.10	0.00
2.40	0.00	0.000	193.10	0.00
3.20	0.00	0.000	193.10	0.00
4.00	0.00	0.000	193.10	0.00
4.80	0.00	0.000	193.10	0.00
5.60	0.00	0.000	193.10	0.00
6.40	0.00	0.000	193.10	0.00
7.20	0.00	0.000	193.10	0.00
8.00	0.01	0.000	193.10	0.01
8.80	0.01	0.000	193.11	0.01
9.60	0.02	0.000	193.11	0.02
10.40	0.03	0.000	193.12	0.03
11.20	0.08	0.000	193.14	0.08
12.00	1.90	0.010	194.32	1.24
12.80	0.12	0.000	193.18	0.12
13.60	0.08	0.000	193.15	0.08
14.40	0.06	0.000	193.13	0.06
15.20	0.05	0.000	193.13	0.05
16.00	0.04	0.000	193.12	0.04
16.80	0.04	0.000	193.12	0.04
17.60	0.03	0.000	193.12	0.03
18.40	0.03	0.000	193.12	0.03
19.20	0.03	0.000	193.12	0.03
20.00	0.02	0.000	193.11	0.02
20.80	0.02	0.000	193.11	0.02
21.60	0.02	0.000	193.11	0.02
22.40	0.02	0.000	193.11	0.02
23.20	0.02	0.000	193.11	0.02
24.00	0.02	0.000	193.11	0.02

1-YEAR



Summary for Pond 2P: Detention

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 33,977 sf, 0.00% Impervious, Inflow Depth = 2.37" for 2 Year event
Inflow = 3.11 cfs @ 12.05 hrs, Volume= 8,708 cf
Outflow = 2.00 cfs @ 12.05 hrs, Volume= 8,707 cf, Attenu 35%, Lags 5.1 min
Primary = 2.00 cfs @ 12.05 hrs, Volume= 8,707 cf

Routing by Step-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs / 9
Peak Elev= 194.89' @ 12.04 hrs, Surf Area= 0.021 ac, Storage= 0.021 af

Plug-Flow detention time= (not calculated; outflow precedes inflow)
Center-of-Mass det. time= 2.7 min (766.7 - 767.3)

Volume	Invert	Avail Storage	Storage Description
#1	193.10'	0.000 af	36.0" Round Pipe Storage x 2 L= 91.0' S= 0.00507
#2	193.65'	0.017 af	36.0" Round Pipe Storage L= 104.0' S= 0.00507
#3	194.27'	0.012 af	36.0" Round Pipe Storage L= 73.0' S= 0.00507
		0.028 af	Total Available Storage

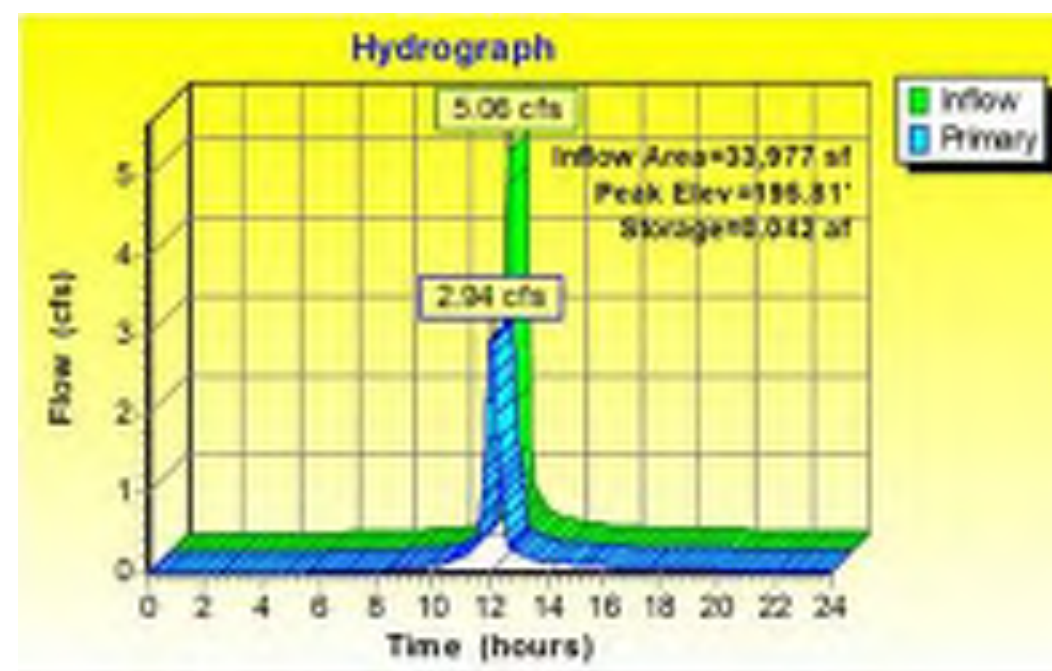
Device	Routing	Invert	Outlet Devices
#1	Primary	193.00'	18.0" Round Culvert, L= 16.0', K= 0.500 Inlet/Outlet Inverts= 193.00' / 192.89' S= 0.00657 C= 0.900 n= 0.015, Flow Area= 1.23 sf
#2	Device 1	193.00'	6.0" W x 6.0" H Vert. OrificeGate, C= 0.600 Limited to weir flow at low heads
#3	Device 1	194.40'	4.0" long x 6.0" H Weir, OrificeGate, C= 0.600 Limited to weir flow at low heads
#4	Device 1	195.85'	4.0" long x 6.0" H Weir, OrificeGate, C= 0.600 Limited to weir flow at low heads Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary Outflow: Weir/2.00 cfs @ 12.04 hrs HW= 194.89' (Free Discharge)
1-Weir/2.00 cfs @ 12.04 hrs HW= 194.89' (Free Discharge)
2-OrificeGate (Orifice Controls 1.94 cfs @ 12.04 hrs)
3-OrificeGate (Orifice Controls 0.45 cfs @ 12.04 hrs)
4-Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Hydrograph for Pond 2P: Detention

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	193.10	0.00
0.80	0.00	0.000	193.10	0.00
1.60	0.00	0.000	193.10	0.00
2.40	0.00	0.000	193.10	0.00
3.20	0.00	0.000	193.10	0.00
4.00	0.00	0.000	193.10	0.00
4.80	0.00	0.000	193.10	0.00
5.60	0.00	0.000	193.10	0.00
6.40	0.01	0.000	193.10	0.01
7.20	0.01	0.000	193.11	0.01
8.00	0.02	0.000	193.11	0.02
8.80	0.03	0.000	193.12	0.03
9.60	0.04	0.000	193.12	0.04
10.40	0.07	0.000	193.14	0.07
11.20	0.13	0.000	193.19	0.13
12.00	2.88	0.020	194.82	1.89
12.80	0.18	0.000	193.23	0.18
13.60	0.11	0.000	193.18	0.11
14.40	0.08	0.000	193.15	0.08
15.20	0.07	0.000	193.14	0.07
16.00	0.06	0.000	193.13	0.06
16.80	0.05	0.000	193.13	0.05
17.60	0.05	0.000	193.13	0.05
18.40	0.04	0.000	193.12	0.04
19.20	0.04	0.000	193.12	0.04
20.00	0.03	0.000	193.12	0.03
20.80	0.03	0.000	193.12	0.03
21.60	0.03	0.000	193.12	0.03
22.40	0.03	0.000	193.12	0.03
23.20	0.03	0.000	193.12	0.03
24.00	0.03	0.000	193.12	0.03

2-YEAR



Summary for Pond 2P: Detention

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 33,977 sf, 0.00% Impervious, Inflow Depth = 3.96" for 10 Year event
Inflow = 5.06 cfs @ 12.05 hrs, Volume= 11,261 cf
Outflow = 2.94 cfs @ 12.05 hrs, Volume= 11,260 cf, Attenu 42%, Lags 5.1 min
Primary = 2.94 cfs @ 12.05 hrs, Volume= 11,260 cf

Routing by Step-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs / 9
Peak Elev= 196.81' @ 12.05 hrs, Surf Area= 0.021 ac, Storage= 0.042 af

Plug-Flow detention time= (not calculated; outflow precedes inflow)
Center-of-Mass det. time= 3.3 min (766.7 - 767.3)

Volume	Invert	Avail Storage	Storage Description
#1	193.10'	0.000 af	36.0" Round Pipe Storage x 2 L= 91.0' S= 0.00507
#2	193.65'	0.017 af	36.0" Round Pipe Storage L= 104.0' S= 0.00507
#3	194.27'	0.012 af	36.0" Round Pipe Storage L= 73.0' S= 0.00507
		0.028 af	Total Available Storage

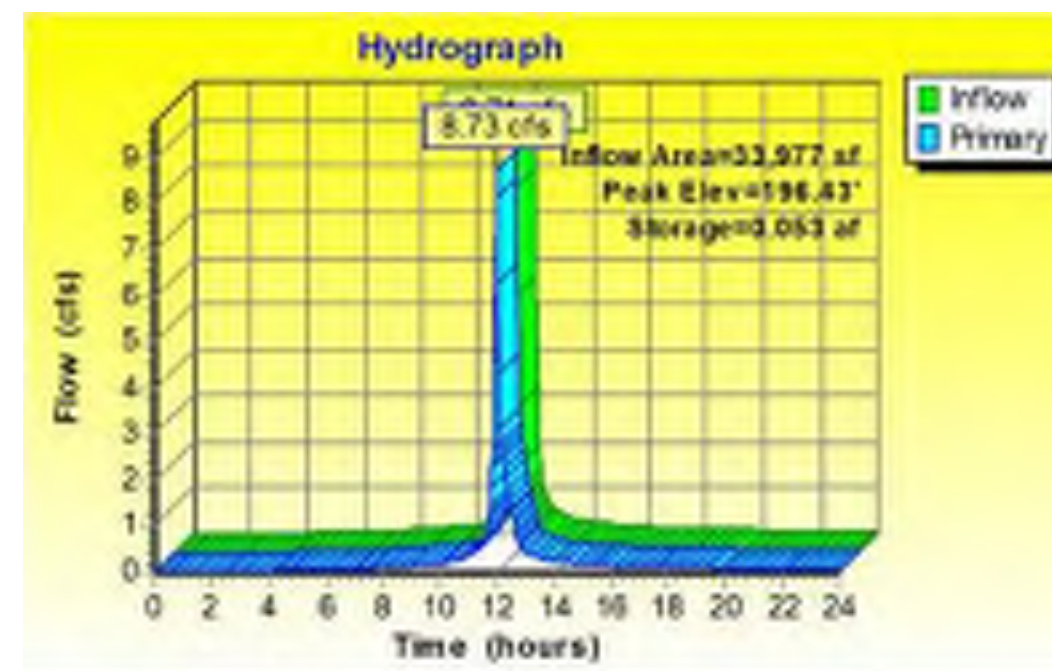
Device	Routing	Invert	Outlet Devices
#1	Primary	193.00'	18.0" Round Culvert, L= 16.0', K= 0.500 Inlet/Outlet Inverts= 193.00' / 192.89' S= 0.00657 C= 0.900 n= 0.015, Flow Area= 1.23 sf
#2	Device 1	193.00'	6.0" W x 6.0" H Vert. OrificeGate, C= 0.600 Limited to weir flow at low heads
#3	Device 1	194.40'	4.0" long x 6.0" H Weir, OrificeGate, C= 0.600 Limited to weir flow at low heads
#4	Device 1	195.85'	4.0" long x 6.0" H Weir, OrificeGate, C= 0.600 Limited to weir flow at low heads Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary Outflow: Weir/2.94 cfs @ 12.05 hrs HW= 196.81' (Free Discharge)
1-Weir/2.94 cfs @ 12.05 hrs HW= 196.81' (Free Discharge)
2-OrificeGate (Orifice Controls 1.92 cfs @ 12.05 hrs)
3-OrificeGate (Orifice Controls 0.45 cfs @ 12.05 hrs)
4-Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Hydrograph for Pond 2P: Detention

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	193.10	0.00
0.80	0.00	0.000	193.10	0.00
1.60	0.00	0.000	193.10	0.00
2.40	0.00	0.000	193.10	0.00
3.20	0.00	0.000	193.10	0.00
4.00	0.00	0.000	193.10	0.00
4.80	0.01	0.000	193.11	0.01
5.60	0.02	0.000	193.11	0.02
6.40	0.03	0.000	193.11	0.03
7.20	0.03	0.000	193.12	0.03
8.00	0.04	0.000	193.12	0.04
8.80	0.06	0.000	193.14	0.06
9.60	0.08	0.000	193.15	0.08
10.40	0.13	0.000	193.19	0.13
11.20	0.25	0.000	193.28	0.24
12.00	4.66	0.039	195.64	2.80
12.80	0.29	0.000	193.32	0.29
13.60	0.18	0.000	193.23	0.18
14.40	0.13	0.000	193.19	0.13
15.20	0.11	0.000	193.17	0.11
16.00	0.09	0.000	193.16	0.09
16.80	0.08	0.000	193.15	0.08
17.60	0.07	0.000	193.14	0.07
18.40	0.07	0.000	193.14	0.07
19.20	0.06	0.000	193.13	0.06
20.00	0.05	0.000	193.13	0.05
20.80	0.05	0.000	193.13	0.05
21.60	0.05	0.000	193.13	0.05
22.40	0.05	0.000	193.13	0.05
23.20	0.04	0.000	193.13	0.04
24.00	0.04	0.000	193.13	0.04

10-YEAR



Summary for Pond 2P: Detention

[44] Hint: Outlet device #2 is below defined storage
[68] Warning: Gaus-Or may require smaller than Final Routing

Inflow Area = 33,977 sf, 0.00% Impervious, Inflow Depth = 7.13" for 100 Year event
Inflow = 8.71 cfs @ 11.98 hrs, Volume= 20,175 cf
Outflow = 8.73 cfs @ 11.98 hrs, Volume= 20,183 cf, Attenu 0%, Lags 0.5 min
Primary = 8.73 cfs @ 11.98 hrs, Volume= 20,183 cf

Routing by Step-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs / 9
Peak Elev= 196.43' @ 11.98 hrs, Surf Area= 0.011 ac, Storage= 0.053 af

Plug-Flow detention time= (not calculated; outflow precedes inflow)
Center-of-Mass det. time= 3.6 min (771.3 - 767.3)

Volume	Invert	Avail Storage	Storage Description
#1	193.10'	0.000 af	36.0" Round Pipe Storage x 2 L= 91.0' S= 0.00507
#2	193.65'	0.017 af	36.0" Round Pipe Storage L= 104.0' S= 0.00507
#3	194.27'	0.012 af	36.0" Round Pipe Storage L= 73.0' S= 0.00507
		0.028 af	Total Available Storage

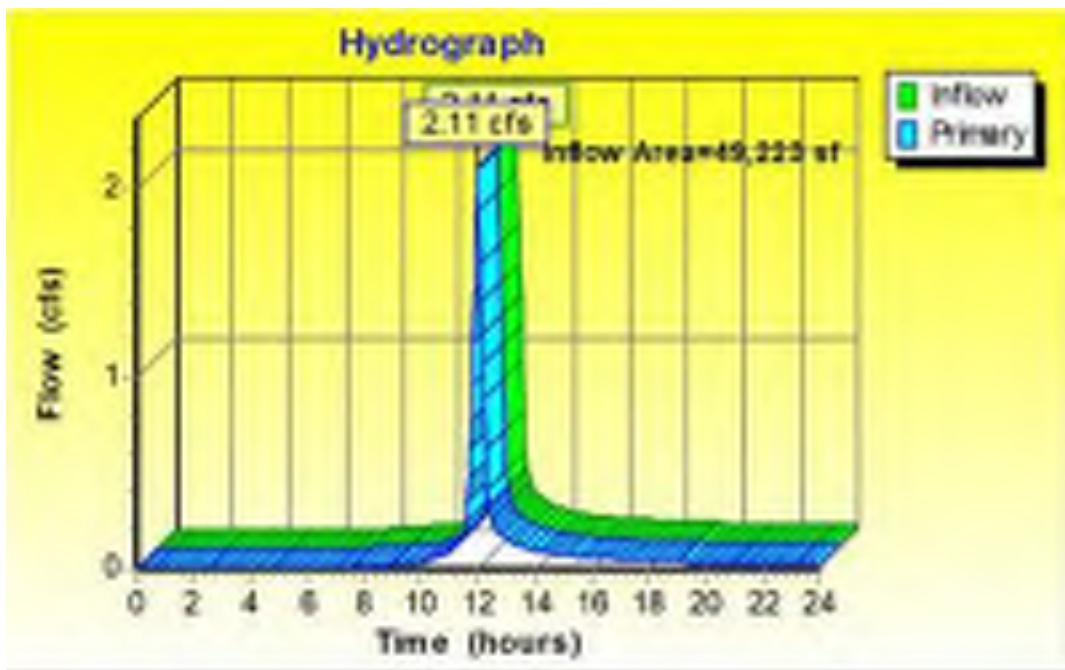
Device	Routing	Invert	Outlet Devices
#1	Primary	193.00'	18.0" Round Culvert, L= 16.0', K= 0.500 Inlet/Outlet Inverts= 193.00' / 192.89' S= 0.00657 C= 0.900 n= 0.015, Flow Area= 1.23 sf
#2	Device 1	193.00'	6.0" W x 6.0" H Vert. OrificeGate, C= 0.600 Limited to weir flow at low heads
#3	Device 1	194.40'	4.0" long x 6.0" H Weir, OrificeGate, C= 0.600 Limited to weir flow at low heads
#4	Device 1	195.85'	4.0" long x 6.0" H Weir, OrificeGate, C= 0.600 Limited to weir flow at low heads Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary Outflow: Weir/8.73 cfs @ 11.98 hrs HW= 196.39' (Free Discharge)
1-Weir/8.73 cfs @ 11.98 hrs HW= 196.39' (Free Discharge)
2-OrificeGate (Orifice Controls 2.13 cfs @ 11.98 hrs)
3-OrificeGate (Orifice Controls 1.25 cfs @ 11.98 hrs)
4-Broad-Crested Rectangular Weir (Weir Controls 4.86 cfs @ 11.98 hrs)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	193.10	0.00
0.80	0.00	0.000	193.10	0.00
1.60	0.00	0.000	193.10	0.00
2.40	0.00	0.000	193.10	0.00
3.20	0.01	0.000	193.11	0.01
4.00	0.03	0.000	193.12	0.03
4.80	0.04	0.000	193.12	0.04
5.60	0.05	0.000	193.13	0.05
6.40	0.07	0.000	193.14	0.07
7.20	0.08	0.000	193.15	0.08
8.00	0.10	0.000	193.16	0.10
8.80	0.14	0.000	193.20	0.14
9.60	0.16	0.000	193.22	0.16
10.40	0.25	0.000	193.29	0.25
11.20	0.46	0.001	193.43	0.46
12.00	7.98	0.052	196.39	8.14
12.80	0.48	0.001	193.51	0.58
13.60	0.30	0.000	193.33	0.30
14.40	0.22	0.000	193.27	0.22
15.20	0.19	0.000	193.24	0.19
16.00	0.15	0.000	193.21	0.15
16.80	0.14	0.000	193.19	0.14
17.60	0.12	0.000	193.18	0.12
18.40	0.11	0.000	193.17	0.11
19.20	0.10	0.000	193.16	0.10
20.00	0.08	0.000	193.15	0.08
20.80	0.08	0.000	193.15	0.08
21.60	0.08	0.000	193.15	0.08
22.40	0.08	0.000	193.14	0.08
23.20	0.07	0.000	193.14	0.07

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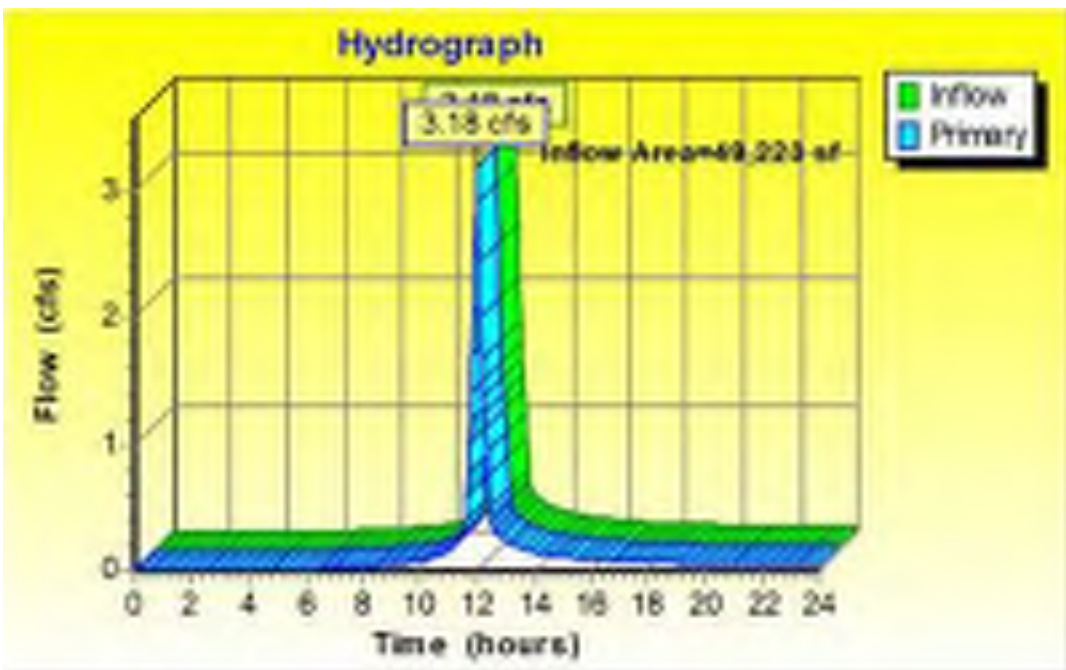
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Hydrograph for Pond 3P: ANALYSIS POINT 1

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00		0.00
0.80	0.00		0.00
1.60	0.00		0.00
2.40	0.00		0.00
3.20	0.00		0.00
4.00	0.00		0.00
4.80	0.00		0.00
5.60	0.00		0.00
6.40	0.00		0.00
7.20	0.00		0.00
8.00	0.01		0.01
8.80	0.02		0.02
9.60	0.03		0.03
10.40	0.05		0.05
11.20	0.11		0.11
12.00	2.09		2.09
12.80	0.18		0.18
13.60	0.11		0.11
14.40	0.08		0.08
15.20	0.07		0.07
16.00	0.06		0.06
16.80	0.05		0.05
17.60	0.05		0.05
18.40	0.04		0.04
19.20	0.04		0.04
20.00	0.03		0.03
20.80	0.03		0.03
21.60	0.03		0.03
22.40	0.03		0.03
23.20	0.03		0.03
24.00	0.03		0.03

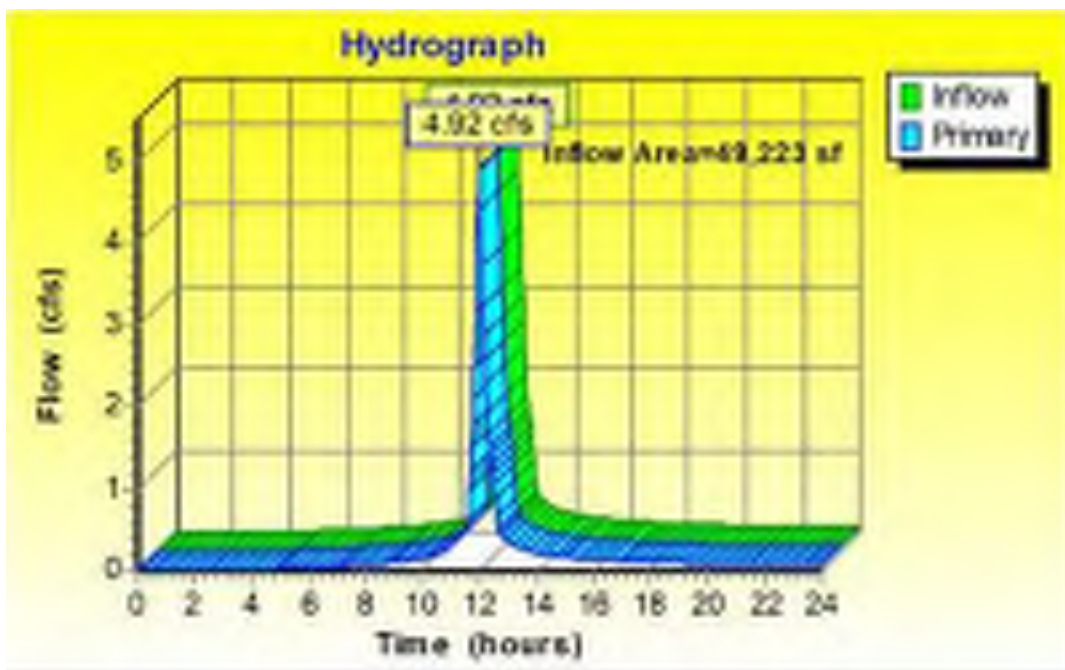
1-YEAR



Hydrograph for Pond 3P: ANALYSIS POINT 1

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00		0.00
0.80	0.00		0.00
1.60	0.00		0.00
2.40	0.00		0.00
3.20	0.00		0.00
4.00	0.00		0.00
4.80	0.00		0.00
5.60	0.00		0.00
6.40	0.01		0.01
7.20	0.02		0.02
8.00	0.02		0.02
8.80	0.04		0.04
9.60	0.06		0.06
10.40	0.09		0.09
11.20	0.19		0.19
12.00	3.18		3.18
12.80	0.26		0.26
13.60	0.16		0.16
14.40	0.12		0.12
15.20	0.10		0.10
16.00	0.08		0.08
16.80	0.07		0.07
17.60	0.07		0.07
18.40	0.06		0.06
19.20	0.05		0.05
20.00	0.05		0.05
20.80	0.04		0.04
21.60	0.04		0.04
22.40	0.04		0.04
23.20	0.04		0.04
24.00	0.04		0.04

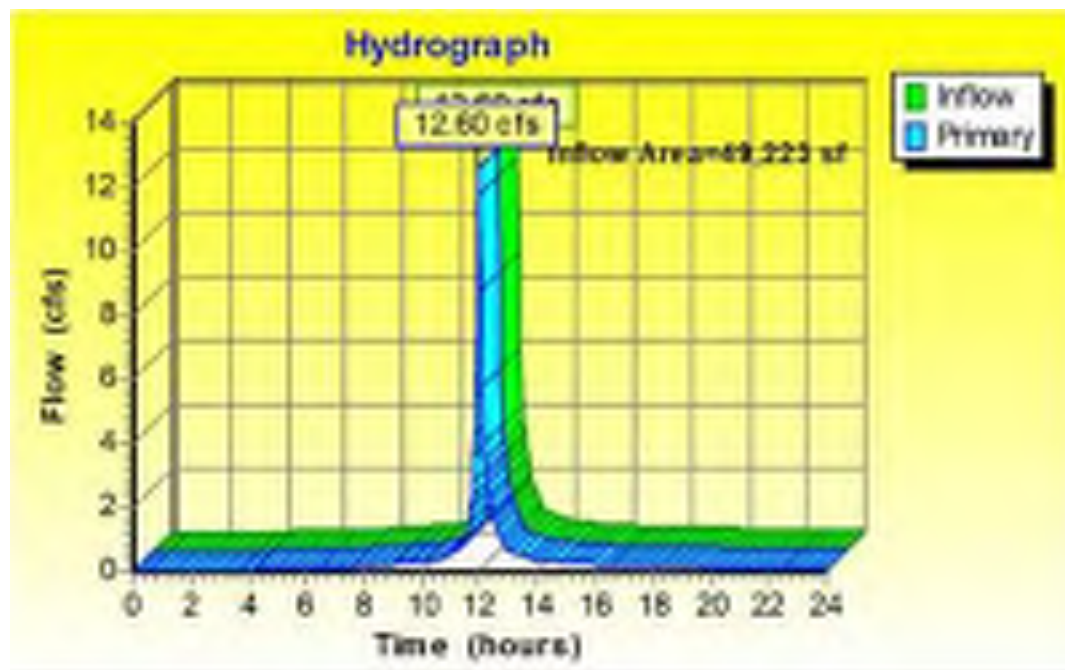
2-YEAR



Hydrograph for Pond 3P: ANALYSIS POINT 1

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00		0.00
0.80	0.00		0.00
1.60	0.00		0.00
2.40	0.00		0.00
3.20	0.00		0.00
4.00	0.01		0.01
4.80	0.01		0.01
5.60	0.03		0.03
6.40	0.04		0.04
7.20	0.05		0.05
8.00	0.06		0.06
8.80	0.09		0.09
9.60	0.11		0.11
10.40	0.19		0.19
11.20	0.35		0.35
12.00	4.89		4.89
12.80	0.42		0.42
13.60	0.26		0.26
14.40	0.19		0.19
15.20	0.16		0.16
16.00	0.13		0.13
16.80	0.12		0.12
17.60	0.11		0.11
18.40	0.10		0.10
19.20	0.08		0.08
20.00	0.07		0.07
20.80	0.07		0.07
21.60	0.07		0.07
22.40	0.07		0.07
23.20	0.06		0.06
24.00	0.06		0.06

10-YEAR



Hydrograph for Pond 3P: ANALYSIS POINT 1

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00		0.00
0.80	0.00		0.00
1.60	0.00		0.00
2.40	0.00		0.00
3.20	0.02		0.02
4.00	0.04		0.04
4.80	0.06		0.06
5.60	0.08		0.08
6.40	0.10		0.10
7.20	0.12		0.12
8.00	0.14		0.14
8.80	0.20		0.20
9.60	0.24		0.24
10.40	0.36		0.36
11.20	0.66		0.66
12.00	11.72		11.72
12.80	0.80		0.80
13.60	0.43		0.43
14.40	0.32		0.32
15.20	0.27		0.27
16.00	0.22		0.22
16.80	0.20		0.20
17.60	0.18		0.18
18.40	0.16		0.16
19.20	0.14		0.14
20.00	0.12		0.12
20.80	0.12		0.12
21.60	0.11		0.11
22.40	0.11		0.11
23.20	0.11		0.11
24.00	0.10		0.10

100-YEAR



The Site Design Company

CIVIL ENGINEERING AND LAND DEVELOPMENT CONSULTING

288 HIGH STREET - PETERSBURG, VIRGINIA 23803

www.sitedesignco.com

PROJECT # : 20038

PROJECT MANAGER : CHRIS THOMPSON

PHONE : 804-720-9040

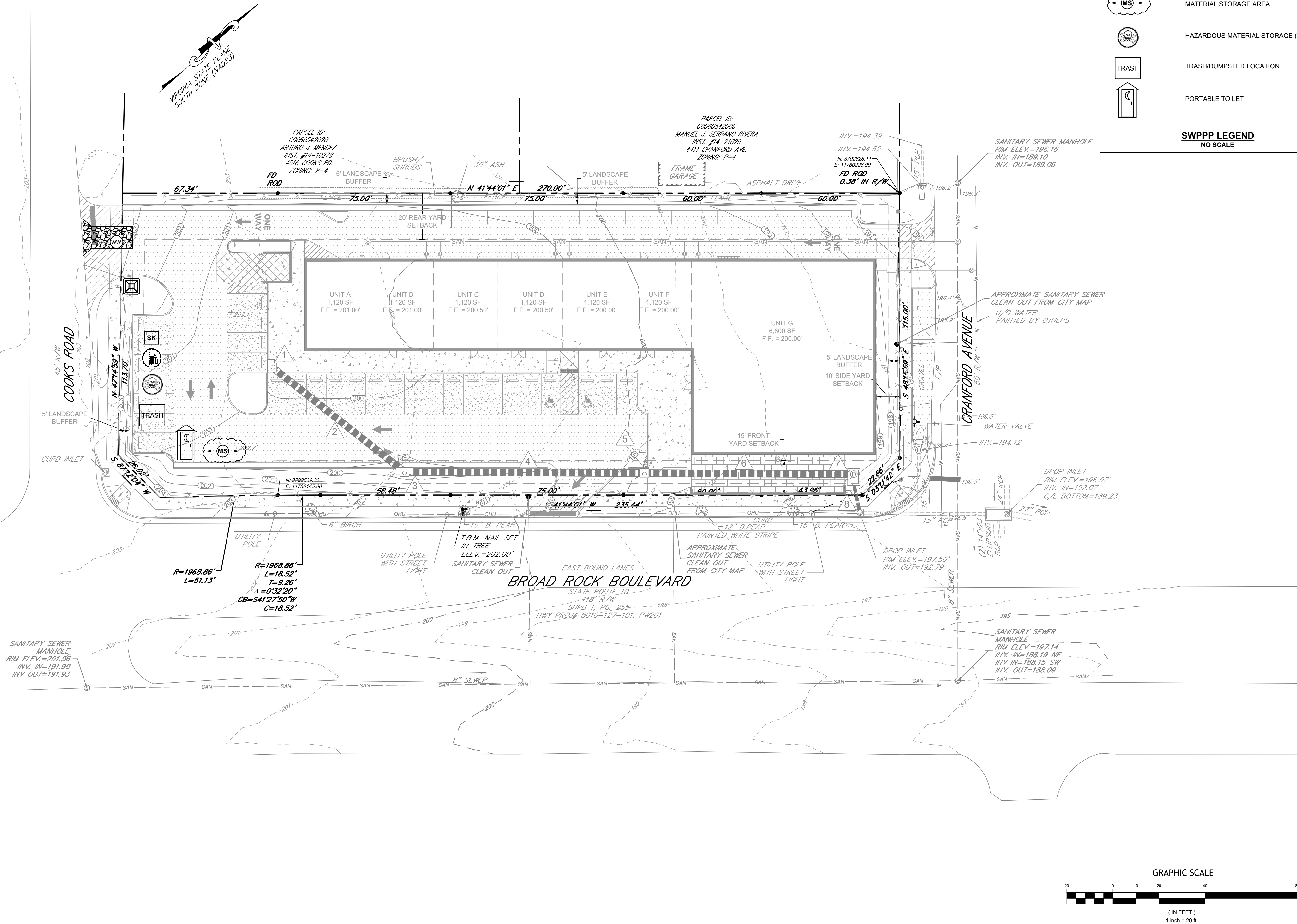
EMAIL : thompson@sitedesignco.com

DATE : FEBRUARY 5, 2021	
REVISION BLOCK	
10-07-21	CITY COMMENTS
12-20-21	CITY COMMENTS

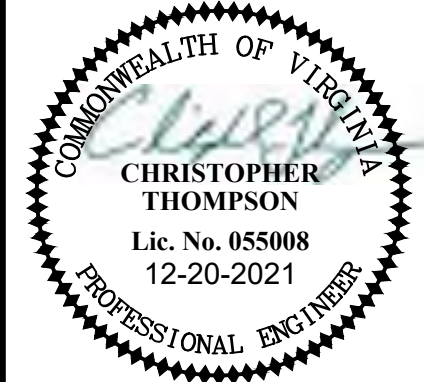
BROAD ROCK BOULEVARD
RETAIL CENTER
CITY OF RICHMOND, VA

STORMWATER MANAGEMENT NOTES AND DETAILS

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- SK SPILL CONTAINMENT KIT
- WW STONE WHEEL WASH AREA
- CONCRETE WASH-OUT
- VEHICLE FUELING AREA
- MS MATERIAL STORAGE AREA
- HAZARDOUS MATERIAL STORAGE (IF ANY)
- TRASH TRASH/DUMPSTER LOCATION
- PORTABLE TOILET



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PHONE : 804-720-9040
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DATE : FEBRUARY 5, 2021	
REVISION BLOCK	
10-07-21	CITY COMMENTS
12-20-21	CITY COMMENTS

**BROAD ROCK BOULEVARD
RETAIL CENTER**
CITY OF RICHMOND, VA

STORMWATER POLLUTION PREVENTION PLAN

SHEET NO.
C9.0

PURPOSE

SVAC25-870-54 of the Virginia Stormwater Management Program (VSMP) Permit Regulations requires that Stormwater Pollution Prevention Plan (SWPPP) be developed for all regulated land disturbing activities. The SWPPP must include, but not be limited to, an approved erosion and sediment control plan, an approved stormwater management plan, and this Pollution Prevention Plan (PPP) for regulated land disturbing activities, and a description of any additional control measure necessary to address a TUDL as applicable.

The plan for implementing pollution prevention measures during construction activities developed on this sheet must be implemented and updated as necessary. Any TUDL requirements not included on this sheet must be incorporated in the SWPPP required by SVAC25-870-54 that must be developed before land disturbance commences. This PPP identifies potential sources of pollutants that may reasonably be expected to affect the quality stormwater discharges from the construction site (both on- and off-site activities) and describe control measures that will be used to minimize pollutants in stormwater discharges from the construction site.

OTHER REFERENCED PLANS

SWPPP requirements may be fulfilled by incorporating, by reference, other plans. All parts incorporated by reference become enforceable under the VSMP Permit Regulations and General Permit WAC25-870-54 for Discharges of Stormwater from Construction Activities. If a plan incorporated by reference does not contain all of the required elements of the PPP, the operator must develop the missing elements and include them in the SWPPP.

Independent Plans Incorporated by Reference	Date Approved
Stormwater Management Plan (Regional or Master)	IN THESE PLANS
SP Prevention, Control, and Countermeasure Plans	IN SWPPP
OT Site Bookplate	N/A
OTR in Review Areas	N/A

POTENTIAL POLLUTANT SOURCES

The following sources of potential pollutants must be addressed in the Pollution Prevention Plan. Various controls and/or measures designed to prevent and/or minimize pollutants in stormwater discharges from the project, and must be applied to the sources found on the site. Additional information concerning the following sources and/or measures may be found in the SWPPP. Deviations from the location criteria may be approved by the City of Richmond Site Inspector.

LEAKS, SPILLS, AND OTHER RELEASES

- The operator(s) shall ensure procedures are in place to prevent and respond to leaks, spills and other releases of pollutants.
- The operator(s) shall ensure all risks, spills, and other releases of pollutant are contained and cleaned immediately upon discovery. Any contaminated materials are to be disposed in accordance with federal, state, and/or local requirements.
- The operator(s) shall ensure spill containment kits containing absorbent materials (e.g., absorbent pads and pads, booms, pads, spill kits) are available at appropriate locations, including, but not limited to, designated areas for vehicle and equipment maintenance, vehicle and equipment fueling, storage and disposal of construction materials, products, and wastes; any storage and disposal of hazardous and toxic materials; and sanitary waste facilities.
- The operator(s) shall ensure spill containment kits are identified as described below.

Date	Shown on Plan Sheet #	Location	
Approved Plan	SWPPP PLAN	ALONG WESTERN PROPERTY LINE	
REVISIONS TO LOCATIONS			
Date	Shown on Plan Sheet #	Location	Operator's Initials

- The operator(s) shall notify the Department of Environmental Quality (DEQ) of leaks, spills, and other releases that discharge to or have the potential to discharge to surface waters immediately upon discovery of the discharge but in no case later than 24 hours after discovery. Written notice of the discharge must be sent to DEQ and the City of Richmond Department of Public Utilities within five (5) days of the discovery.
- The operator(s) shall notify the Department of Environmental Quality (DEQ) of leaks, spills, and other releases that discharge to or have the potential to discharge to surface waters immediately upon discovery of the discharge but in no case later than 24 hours after discovery. Written notice of the discharge must be sent to DEQ and the City of Richmond Department of Public Utilities within five (5) days of the discovery.

Virginia Department of Environmental Quality Element Regional Office 1819-A Cox Road Glenn A. VA 22080 (804) 697-0000 (phone) (804) 697-0000 (fax) or by email	City of Richmond Department of Public Utilities Water Resources 730 East Broad Street, 5th Floor Richmond, VA 23219 (804) 646-6666 (phone) (804) 646-6666 (fax)
--	---

EQUIPMENT / VEHICLE WASHING

- Washing must be conducted in a dedicated area that is located to maximize the distance from storm drain inlets, ditches, waterbodies or wetlands but no less than 50 feet from these features.
- All wash water used in vehicle wheel washing must be directed to a sediment control trap.
- All vehicle washing activities other than wheel washing must have secondary containment.
- Each facility must have appropriate signage to inform users where the dedicated area(s) are located.

Activity	Location of Dedicated Area(s)	Shown on Plan Sheet #	Water Source Location	
Wheel Wash	CONSTRUCTION ENTRANCE	SWPPP PLAN	TANKER TRUCK	
Other Wash Areas	NONE	N/A	N/A	
REVISIONS TO LOCATIONS				
Activity	Location of Dedicated Area(s)	Shown on Plan Sheet #	Water Source Location	Operator's Initials

VEHICLE FUELING AND MAINTENANCE

- Conduct fueling and maintenance in a dedicated area that is located to maximize the distance from storm drain inlets, ditches, waterbodies or wetlands but no less than 50 feet from these features.
- Fueling is conducted in a dedicated area, the location must be located to maximize the distance from storm drain inlets, ditches, waterbodies or wetlands but no less than 50 feet from these features.
- The dedicated areas must be designed to eliminate the discharge of spilled and leaked fuels and chemicals from vehicle fueling and maintenance activities by providing secondary containment (i.e., berms, dikes, spill containment dikes providing cover where appropriate, and having spill kits readily available).
- Each facility must have appropriate signage to inform users where the dedicated area(s) are located.

Date	Shown on Plan Sheet #	Location of Dedicated Area(s)	
Approved Plan	SWPPP PLAN	ALONG WESTERN PROPERTY LINE	
REVISIONS TO LOCATIONS			
Date	Shown on Plan Sheet #	Location of Dedicated Area(s)	Operator's Initials

- If mobile fueling will be used, the fueling must be done in an area that is located to maximize the distance from storm drain inlets, ditches, waterbodies or wetlands but no less than 50 feet from these features.
- Spill kits must be readily available at all mobile fueling locations.
- On-site storage tanks must have a means of secondary containment (spill berms, dikes, or containment pallets, etc.) and must be covered where appropriate.
- All vehicles on site must be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage.

DISCHARGE FROM STORAGE, HANDLING, AND DISPOSAL OF CONSTRUCTION PRODUCTS, MATERIALS, AND WASTE

- Storage of construction products, materials, and waste is to be conducted in dedicated areas.
- The dedicated area must be located to maximize the distance from storm drain inlets, ditches, waterbodies or wetlands but no less than 50 feet from these features. Deviations of less than 50 feet may be approved by the Environmental Inspector.
- The dedicated areas must be designed to minimize the discharge of pollutants from storage, handling, and disposal of construction products, materials and waste including: (i) building products such as asphalt sealants, cements, roofing, roofing materials, adhesives, concrete admixtures; (ii) pesticides, herbicides, insecticides, fertilizers, and landscape materials; and (iii) construction and domestic wastes such as packaging materials, scrap construction materials, masonry products, interior and exterior electrical cuttings, plastic, Styrofoam, concrete and other trash or building products.
- Each facility must have appropriate signage to inform users where the dedicated area(s) are located.

Date	Shown on Plan Sheet #	Location(s) of <i>Dedicated Area(s)</i> for storage of construction products and materials	
Approved Plan	SWPPP PLAN	ALONG WESTERN PROPERTY LINE	
REVISIONS TO LOCATIONS			
Date	Shown on Plan Sheet #	Location(s) of <i>Dedicated Area(s)</i> for storage of construction products and materials	Operator's Initials

Date	Shown on Plan Sheet # #(s)	Location(s) of <i>Dedicated Area(s)</i> for waste from construction products and materials	
Approved Plan	SWPPP PLAN	ALONG WESTERN PROPERTY LINE	
REVISIONS TO LOCATIONS			
Date	Shown on Plan Sheet # #(s)	Location(s) of <i>Dedicated Area(s)</i> for waste from construction products and materials	Operator's Initials

- Follow all federal, state, and local requirements that apply to the use, handling and disposal of pesticides, herbicides, and fertilizers.
- Keep chemicals on-site in small quantities and in closed, well marked containers.
- Close up solid waste, including building materials, garbage, and debris on a daily basis and place into covered dumpsters that are periodically emptied.
- Schedule waste collection to prevent exceeding the capacity of waste containers. Additional containers may be necessary depending on the phase of construction (e.g., demolition, etc.).
- Dispose of all solid waste at an authorized disposal site.
- Ensure that containers have lids or are otherwise protected from exposure to precipitation.

DISCHARGES FROM OTHER POTENTIAL POLLUTANT SOURCES

- Discharges from other pollutant sources (e.g., water line flushing, storm sewer flushing, snow/ice storage tanks, etc.) are prohibited unless otherwise approved by the City of Richmond.

Other Potential Pollutant Sources	Location(s) of Potential Pollutant Sources

- Above ground oil storage tanks with a storage capacity exceeding 132G gallons and have a reasonable expectation of a discharge into or upon waters of the District States are required to have a Spill Prevention Control and Countermeasure (SPCC) Plan.
- The discharge of contaminated flush water and material removed during flushing operations must be collected and disposed of in accordance with applicable local, state, and federal requirements.

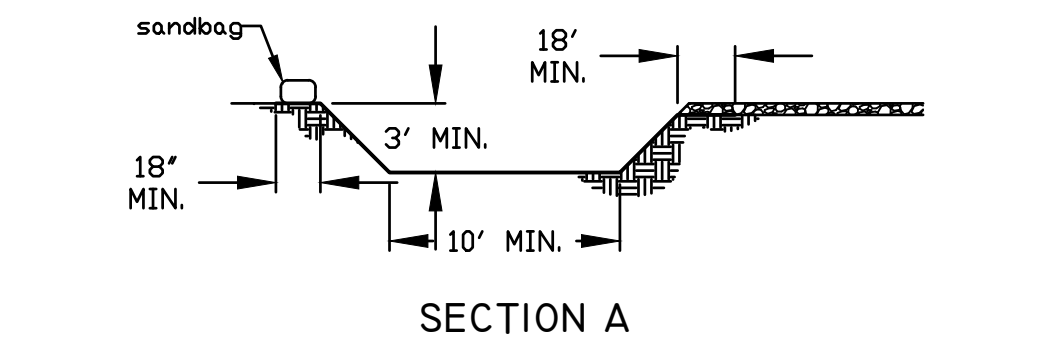
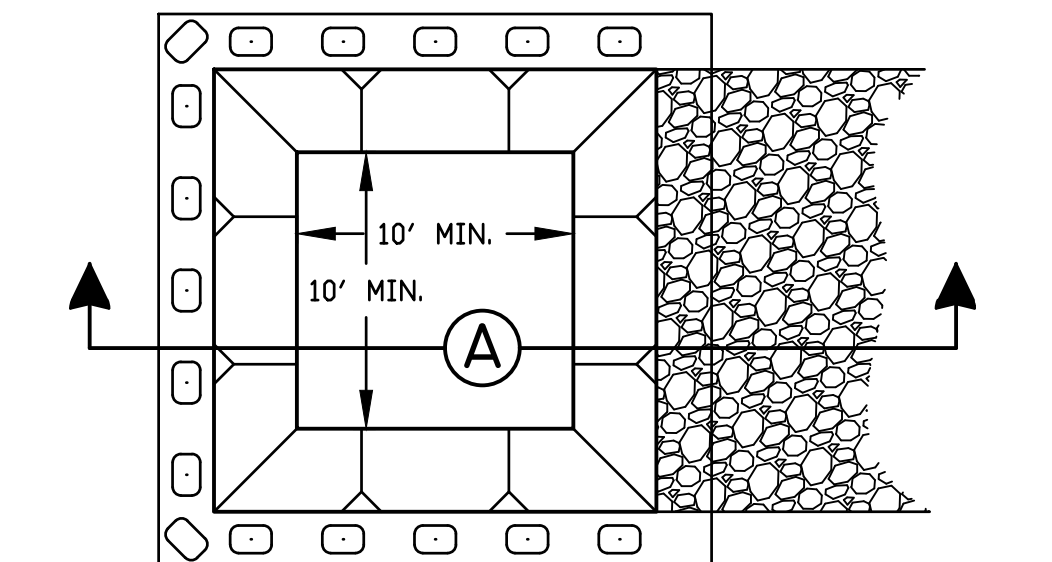
DISCHARGES FROM CONCRETE RELATED WASH ACTIVITIES

- Concrete trucks are not allowed to wash out or discharge surplus concrete or dump wash water or slush except in a dedicated area(s) that is located to prevent discharge to storm drain inlets, ditches, waterbodies or wetlands but no less than 50 feet from these features.
- Each facility must have a stabilized access to prevent mud tracking into the street.
- Each facility must have appropriate signage to inform users where the dedicated area(s) are located.

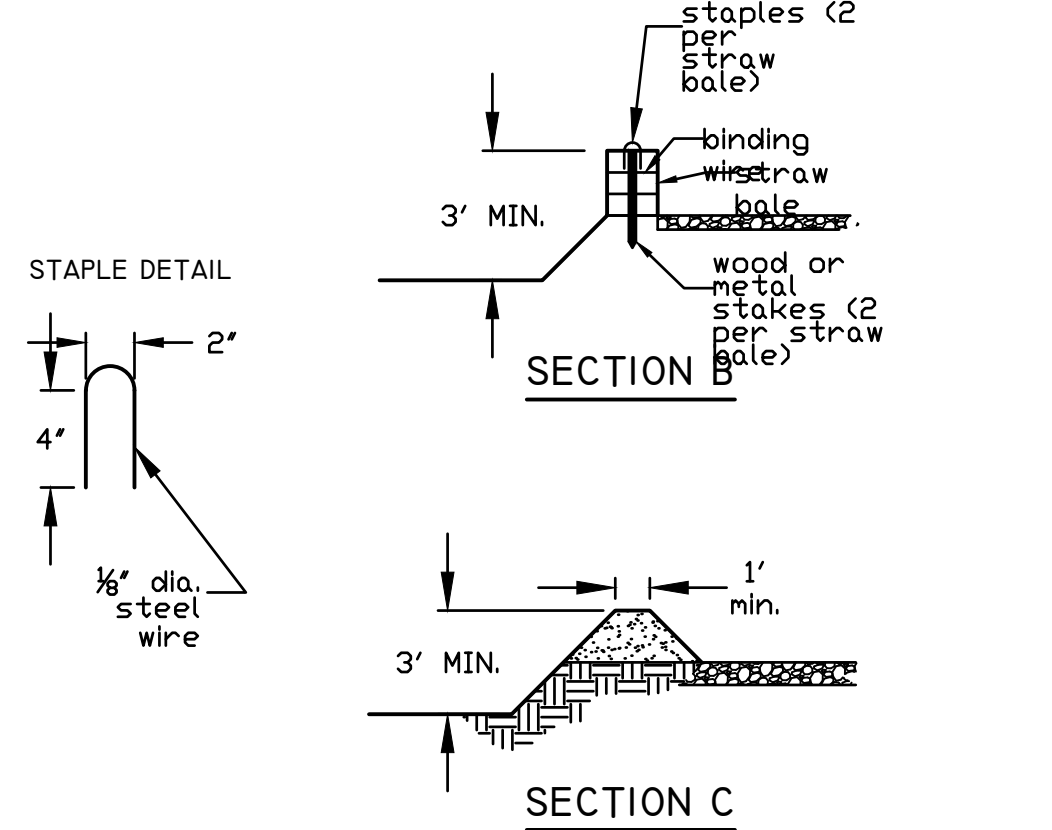
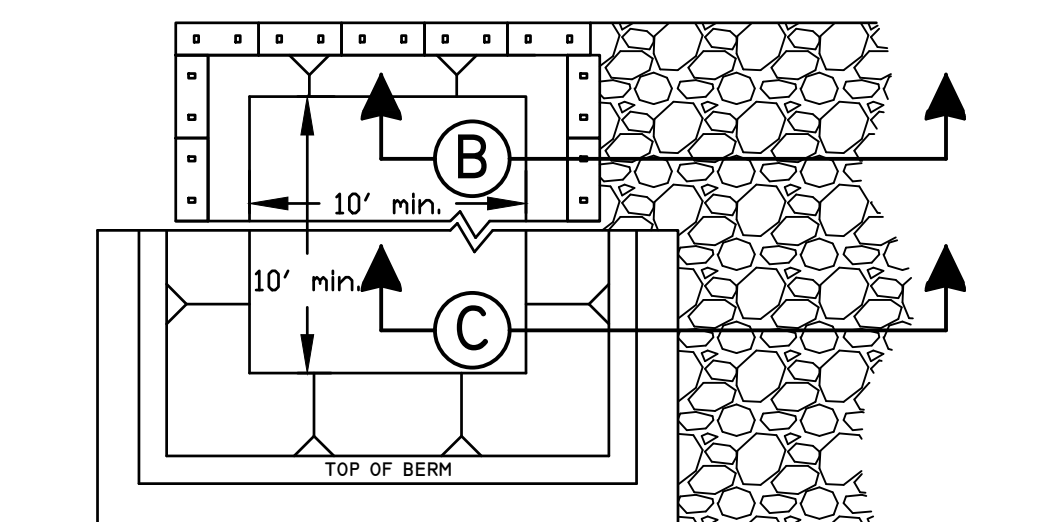
Date	Shown on Plan Sheet # (a)	Location of <i>Dedicated Area(s)</i>	
Approved Plan	SWPPP PLAN	ADJACENT TO CONSTRUCTION ENTRANCE	
REVISIONS TO LOCATIONS			
Date	Shown on Plan Sheet # (a)	Location of <i>Dedicated Area(s)</i>	Operator's Initials

- Facilities must be cleaned or new facilities constructed, once the washout area is two (2) inches (2") deep.

BELOW GRADE CONCRETE WASHOUT AREA



ABOVE GRADE CONCRETE WASHOUT AREA



CONCRETE WASHOUT AREA NOTES

- The facility must be lined with 10 mil. plastic lining that is free from holes, tears, or other defects that might compromise the material's impermeability.
- The lining must be anchored with staples (2" long) or edge caps.
- Side slopes must be 1:1 (horizontal to vertical) or flatter.
- Stone access must be provided between the street and the concrete washout area.
- A Concrete Washout Sign must be installed within 50 feet of the washout facility. The sign must be no smaller than 2' tall by 4' wide.

DISCHARGES OF SOAPS, DETERGENTS, SOLVENTS, AND WASH WATER FROM CONSTRUCTION ACTIVITIES SUCH AS CLEANUP OF STUCCO, PAINT, FORM RELEASE OILS, AND CURING COMPOUNDS

- Washing activities associated with construction activities other than vehicle and equipment washing, such as cleanup of stucco, paint, form release oils, and curing compounds are to be conducted in a dedicated area.
- The dedicated area must be located to maximize the distance from storm drain inlets, ditches, waterbodies or wetlands but no less than 50 feet from these features. Deviations of less than 50 feet may be approved by the Environmental Inspector.
- The dedicated areas must be designed to prevent the discharge of soaps, detergents, solvents, and wash water.

Date	Shown on Plan Sheet #	Location(s) of Dedicated Area(s)	
Approved Plan	N/A	NONE ANTICIPATED. MAY USE CONCRETE WASH-OUT AREA IF NEEDED REVISIONS TO LOCATIONS	
Date	Shown on Plan Sheet #	Location(s) of Dedicated Area(s)	Operator's Initials

- The dedicated area must be covered (e.g., plastic sheeting, temporary roof, etc.) to prevent contact with stormwater.
- The contaminated wastewater from the dedicated area must be collected for disposal by a waste hauler or discharged to the sanitary sewer.
- In situations where these pollutants are or could be generated at locations other than the designated area (e.g., concrete pour, building washing, etc.), cover (e.g., plastic sheeting, temporary roof, etc.) must be provided to prevent contact with stormwater and the contaminated wastewater from the activity must be collected for disposal by a waste hauler or discharged to the sanitary sewer.

DISCHARGES OF HAZARDOUS, TOXIC, AND SANITARY WASTE

- Storage and disposal of hazardous, toxic, and sanitary wastes are to be conducted in dedicated areas.
- The dedicated areas must be located to maximize the distance from storm drain inlets, ditches, waterbodies or wetlands but no less than 50 feet from these features. Deviations of less than 50 feet may be approved by the Environmental Inspector.
- The dedicated areas must be designed to prevent the discharge of hazardous, toxic, and sanitary wastes by avoiding contact with precipitation.
- Each facility must have appropriate signage to inform users where the dedicated area(s) are located.

Date	Shown on Plan Sheet #	Location(s) of <i>Dedicated Area(s)</i> for storage and disposal of hazardous and toxic wastes	
Approved Plan	SWPPP PLAN	ALONG WESTERN PROPERTY LINE	
REVISIONS TO LOCATIONS			
Date	Shown on Plan Sheet #	Location(s) of <i>Dedicated Area(s)</i> for storage and disposal of hazardous and toxic wastes	Operator's Initials

Date	Shown on Plan Sheet #	Location(s) of Dedicated Area(s) for portable toilets	
Approved Plan	SWPPP PLAN	ALONG WESTERN PROPERTY LINE	
		REVISIONS TO LOCATIONS	
Date	Shown on Plan Sheet #	Location(s) of Dedicated Area(s) for portable toilets	Operator's Initials

- Consult with local waste management authorities or private firms about the requirements for disposing of hazardous materials and/or soils that may be contaminated with hazardous materials.
- Never remove the original product label from the container. Follow the manufacturer's recommended method of disposal.
- Schedule regular curbing of portable toilets and dispose of waste.
- Dispose of all solid waste at an authorized disposal site.

SWPPP MODIFICATIONS AND REVISIONS

The operator(s) shall ensure the SWPPP is modified and/or revised to reflect:

- Changes in qualified personnel, designated authorities or other personnel required as a condition of the General Construction Permit.
- Changes in site conditions;
- Changes in the design, construction, operation, or maintenance of the construction site that affect the potential for discharge of pollutants that are not addressed in the normal implementation of the plan; and
- As needed, corrective measures, including curbing inspections or investigations conducted by the operator's qualified personnel or local, state or federal officials.

Modifications/revisions to the SWPPP shall include additional or modified control measures to address the identified changes.

If the necessary modifications require approval by the Administrator or DCS, the modifications/revisions must be implemented no later than seven (7) calendar days following approval.

If the necessary modifications/revisions do not require approval by the Administrator, the modifications/revisions must be implemented prior to the next anticipated storm event or as soon as practicable.

SWPPP UPDATES

The operator(s) shall update the SWPPP to include:

- A record of storms when 1) major grading activities occur, 2) construction activities temporarily or permanently cease on a portion of the site, and 3) stabilization measures are initiated;
- Documentation of modifications and revisions to the SWPPP;
- Areas that have received final stabilization where no further SWPPP or inspection requirements apply;
- A properties that are no longer under the legal control of the operator and the dates on which the operator no longer had legal control over each property; and
- The date, volume and construction activities actions implemented for any prohibited discharge.

The operator(s) shall update the SWPPP no later than seven (7) days following any of the situations identified above.

OPERATOR INSPECTIONS

The operator(s) identified below shall provide for inspections of the permitted land disturbing activities by the qualified personnel identified below. The inspections will be conducted before and after the following events:

- At least once every four (4) business days, or
- At least once every two (2) business days and no later than 48 hours following any measurable storm event.

Where areas are in a stabilized condition or runoff is unlikely due to winter conditions, the inspection frequency may be reduced to once every 30 days while these conditions exist. Otherwise, the operator(s) shall resume the regular inspection frequency outlined above.

The operator(s) shall provide for inspections of the permitted land-disturbing activity to ensure proper operation and continued maintenance of all requirements of the Stormwater Pollution Prevention Plan (reasons are Sediment Control Plan, Stormwater Management Plan, Pollution Prevention Plan, etc.).

Records of the required inspections must be maintained and included in the SWPPP binder. The qualified personnel are encouraged to use the Operator Inspection form provided in the SWPPP binder as a document the required inspections. If inspections are conducted once every five (5) business days and no later than 48 hours following any measurable storm event, the location of the rain gauge used to determine the amount of rain must be included in the SWPPP and documented in the inspection report.

ACKNOWLEDGEMENTS

I certify under penalty of law that I:

- have been designated by the Operator to conduct inspections of the permitted site;
- am knowledgeable in the principles and practices of erosion and sediment control and stormwater management;
- possess the skills to assess conditions at the permitted site for the Operator(s) that could impact stormwater quality and quantity;
- will assess the effectiveness of any erosion and sediment control measures or stormwater management facilities selected to control the stormwater discharges from the permitted site; and
- will conduct inspections in accordance with the frequency noted above in the OPERATOR INSPECTIONS section of this sheet.

QUALIFIED PERSONNEL	
Name (print)	
Phone	
Additional information is located in Tab 6 of the SWPPP Binder.	

As the Operator(s), we understand that prior to testing and disturbance the sole pollutant sources, appropriate control measures, and all responsible parties (operator, qualified inspection personnel, contractors, etc.) required as a condition of the General Construction Permit (GCP) and the Stormwater Pollution Prevention Plan (SWPPP) must be certified. I also understand this information must be updated as necessary throughout all phases of construction until the GCP is terminated.

Furthermore:

I/we certify under penalty of law that I/we have read and understand all requirements of the SWPPP (erosion and sediment control plan, stormwater management plan, pollution prevention plan, MDL provisions, sediment requirements, etc.) and GCP and that the information herein is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines or imprisonment, or both.

I/we understand that we are ultimately responsible for compliance with all conditions and requirements of the SWPPP and GCP and for ensuring a contractor's and subcontractors on the permitted site are aware of the conditions and requirements of the SWPPP and GCP.

I/we shall comply with all conditions and requirements of the SWPPP and shall at all times properly operate and maintain all measures and control (and tested equipment) which are installed or used to achieve compliance with the conditions of the GCP. Proper operation and maintenance also includes accurate funding and adequate staffing.

I/we shall take all reasonable steps to minimize or prevent any discharge or violation of the SWPPP and/or GCP.

I/we understand that it is determined by the Department of Environmental Quality (DEQ) in consultation with the State Water Control Board at any time that stormwater discharges are causing, have reasonable potential to cause, or contribute to and exceed on above any applicable water quality standard, the DEQ may, in consultation with the Administrator, take appropriate enforcement action and require:

- Modification of control measures to adequately address water quality concerns;
- Submission of valid and verifiable data and information that are necessary to assess the effectiveness of the measures and indicate that the existing water is attaining water quality standards; or
- Cessation of discharges of pollutants from construction activity and/or land and water permit application according to SVAC25-870-54.

OPERATOR(S) / DELEGATED AUTHORITY		
Name (print)	Signature	Date

Additional contact information can be found in the SWPPP Binder.



The Site Design Company
CIVIL ENGINEERING AND LAND DEVELOPMENT CONSULTING
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PROJECT # : 20038
PROJECT MANAGER : CHRIS THOMPSON
PHONE : 804-720-9040
EMAIL : thompson@sitedesignco.com

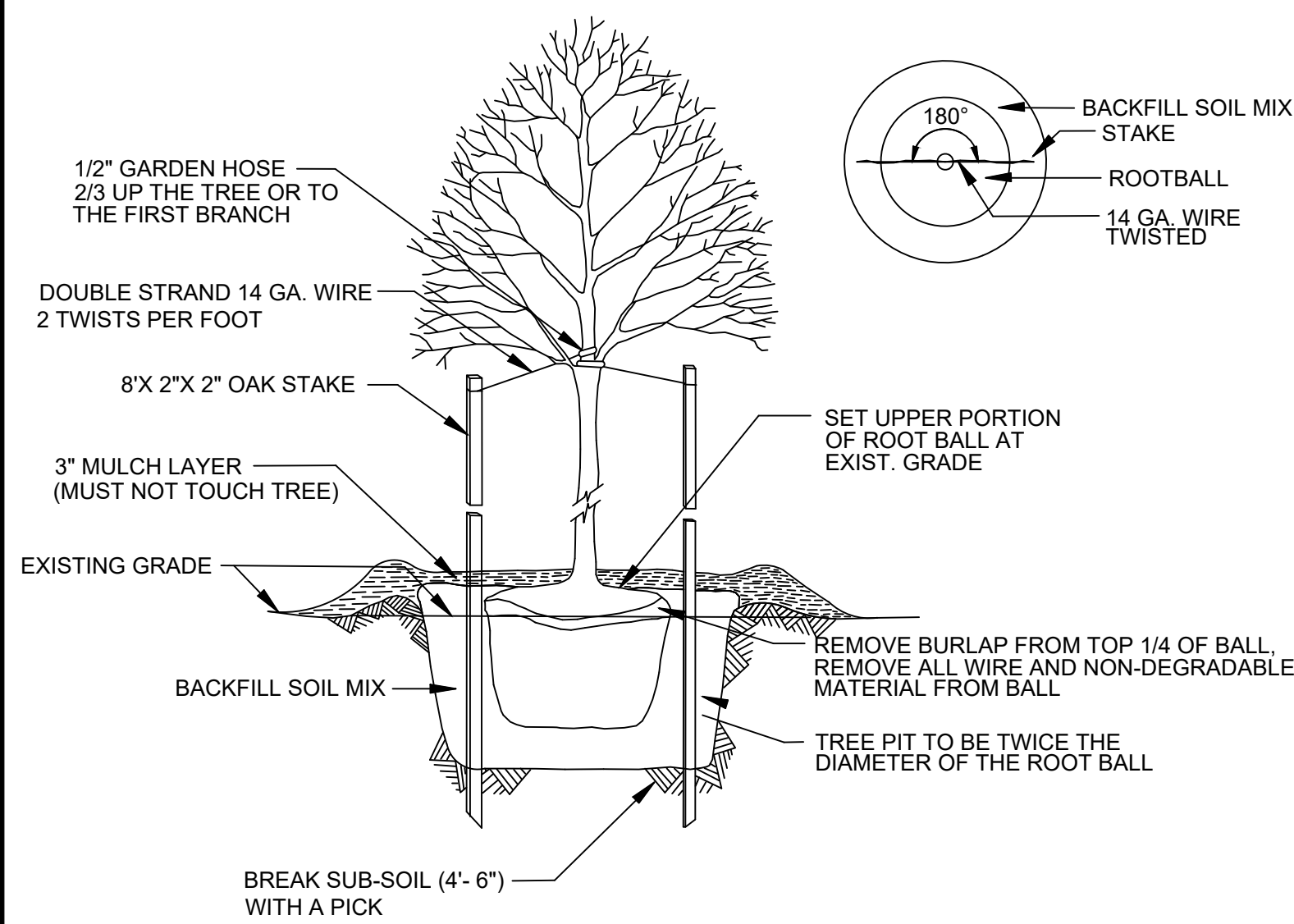


DATE : FEBRUARY 5, 2021

REVISION BLOCK	
10-07-21	CITY COMMENTS
12-20-21	CITY COMMENTS

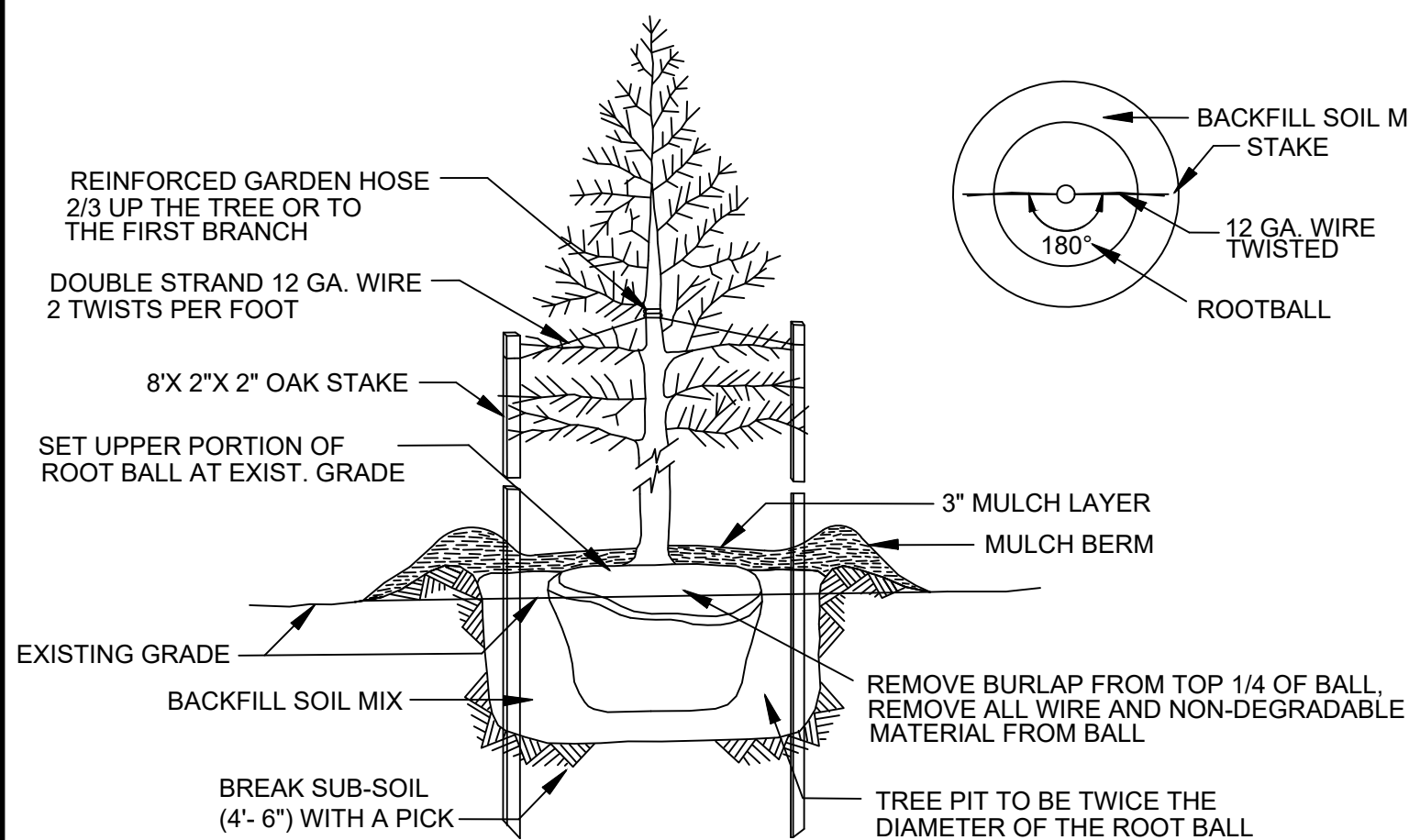
**BROAD ROCK BOULEVARD
RETAIL CENTER**
CITY OF RICHMOND, VA
STORMWATER POLLUTION PREVENTION NOTES AND DETAILS

THESE DRAWINGS ARE THE EXCLUSIVE PROPERTY OF The Site Design Company AND SHALL NOT BE REPRODUCED OR UTILIZED FOR ANY PURPOSE WITHOUT THE EXPRESS WRITTEN CONSENT OF The Site Design Company.



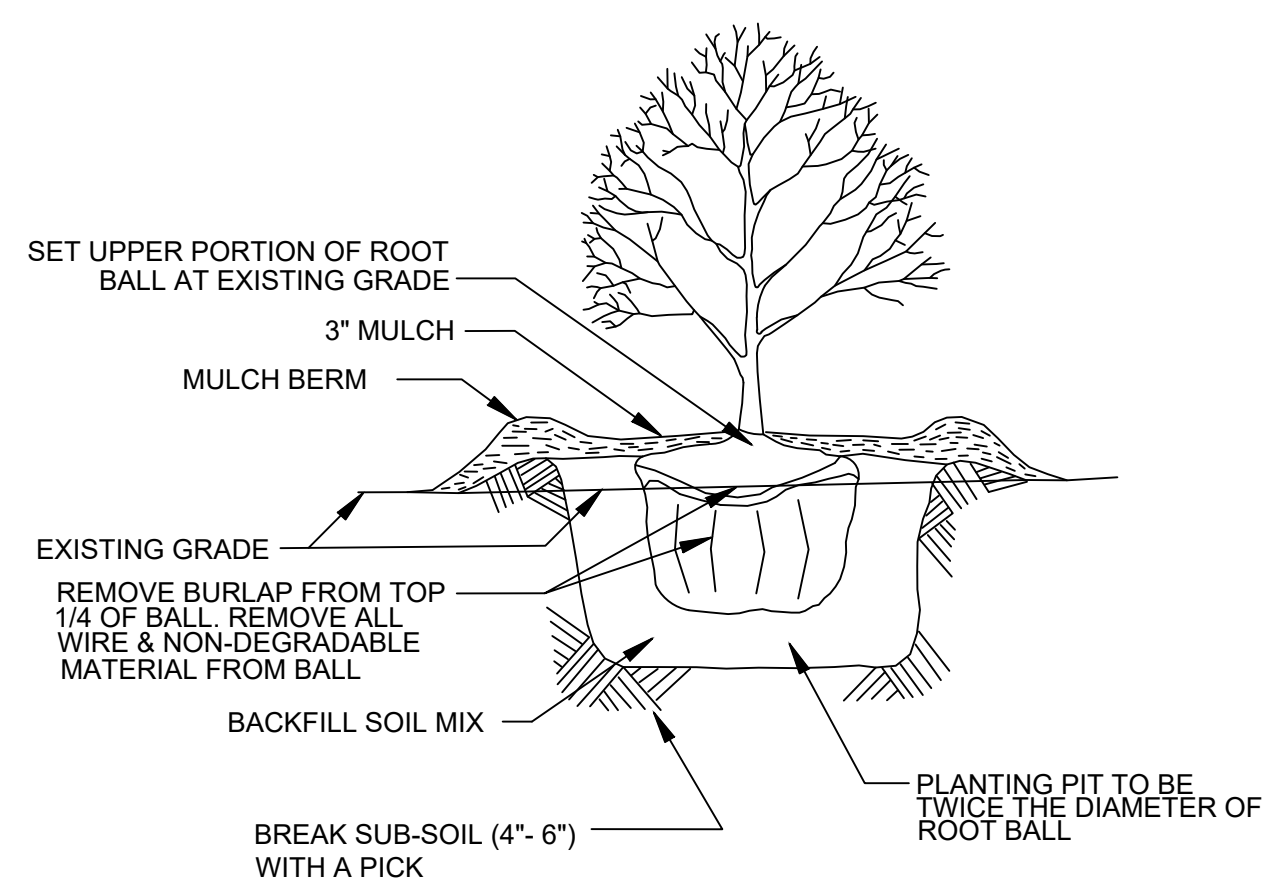
DECIDUOUS TREE PLANTING AND STAKING DETAIL

No Scale



EVERGREN TREE PLANTING AND STAKING DETAIL

No Scale



SHRUB PLANTING DETAIL

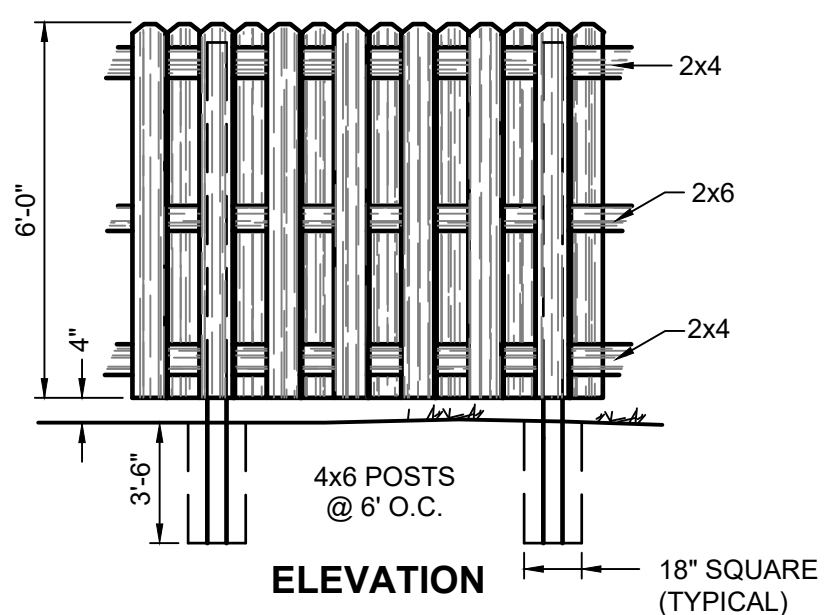
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- PLANT NOTES:
1. ALL PLANTING SHALL BE IN ACCORDANCE WITH THE AMERICAN ASSOCIATION OF NURSERYMEN UNLESS SPECIFIED OTHERWISE ON PLANS OR SPECIFICATIONS.
 2. ALL PLANT MATERIAL SHALL CONFIRM TO THE SIZE GIVEN IN THE PLANT LIST AND SHALL BE GROWN IN ACCORDANCE WITH THE 'AMERICAN STANDARD FOR NURSERY STOCK'.
 3. ALL PLANT BEDS AND TREE PIT'S SHALL HAVE GRANULATED PRE- EMERGENT WEED CONTROL APPLIED PER MANUFACTURERS RECOMMENDATIONS PRIOR TO MULCHING. WEED CONTROL WILL BE INCIDENTAL TO PLANTING ITEM.
 4. AMENDED SOIL FOR PLANTING PIT'S SHALL BE 60% EXISTING SOIL AND 30% TOPSOIL AND 10% ORGANIC MATTER.
 5. TREES PLANTED DURING SUMMER MONTHS (JUNE15-AUGUST 30) SHALL HAVE A 28 GALLON TREE GATOR WATERING BAG OR APPROVED EQUAL WITH EACH TREE. GATOR BAGS WILL BE INCIDENTAL TO TREE.
 6. SEED OR SOD ALL AREAS DISTURBED BY CONSTRUCTION.

LANDSCAPE NOTES

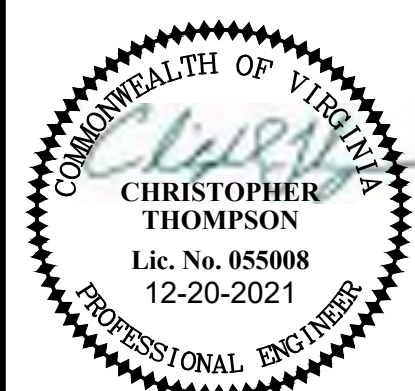
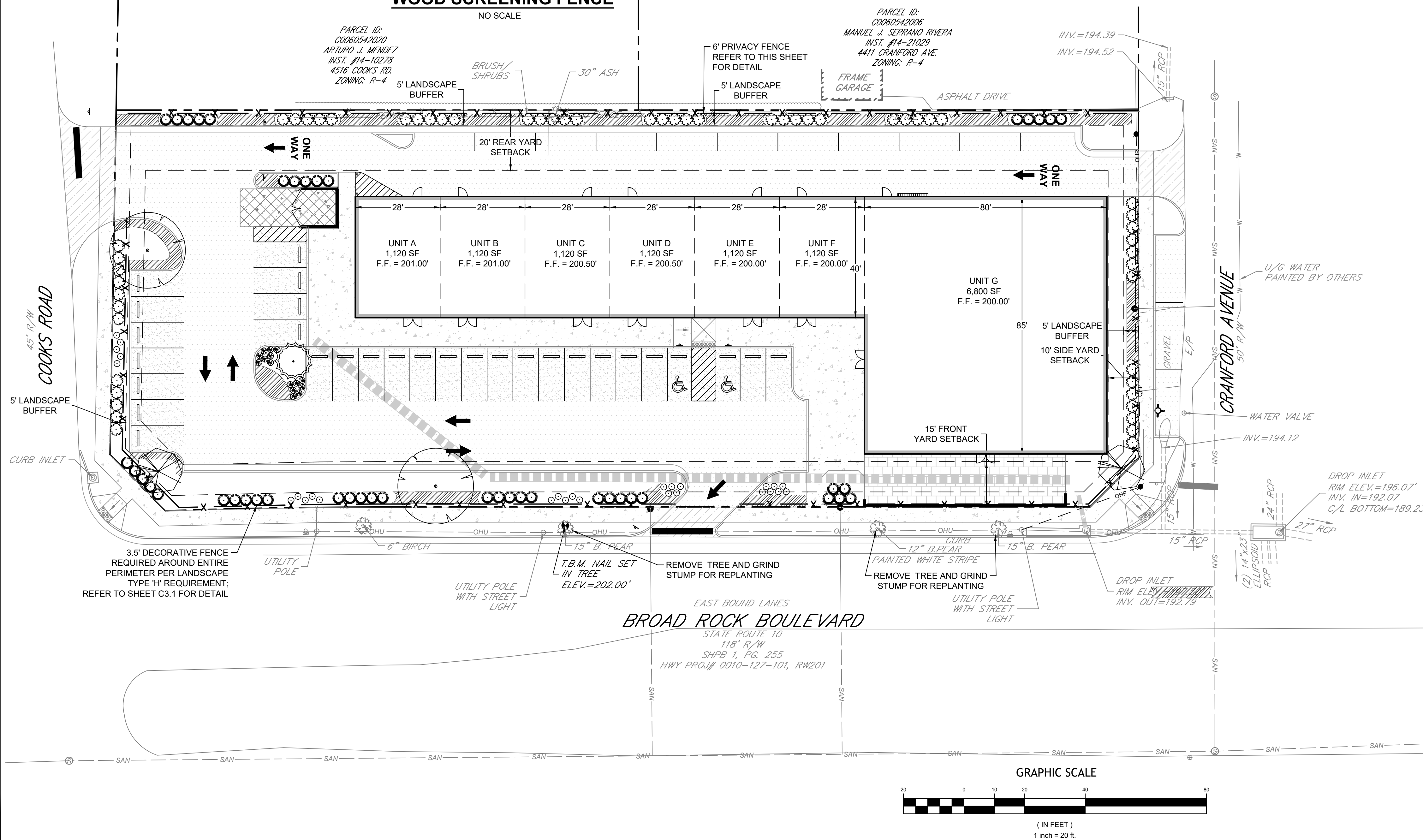
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LANDSCAPE CALCULATIONS	
PERIMETER LANDSCAPE BUFFER (ALONG STREET)	
REQUIRED (PER ORDINANCE)	DECORATIVE FENCE OR WALL NOT LESS THAN 3.5' IN HEIGHT AND 4 SHRUBS PER 50 LINEAR FOOT
BROAD ROCK BOULEVARD (305' OF FRONTAGE)	REQUIRED: (305 L.F. / 50) * 4 = 25 SHRUBS PROVIDED: 35 SHRUBS
COOKS ROAD (131' OF FRONTAGE)	REQUIRED: (131 L.F. / 50) * 4 = 11 SHRUBS PROVIDED: 12 SHRUBS
CRANFORD AVENUE (131' OF FRONTAGE)	REQUIRED: (131 L.F. / 50) * 4 = 11 SHRUBS PROVIDED: 14 SHRUBS



WOOD SCREENING FENCE

No Scale



The Site Design Company



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EMAIL: thompson@sitedesignco.com

PHONE: 804-720-9040

PROJECT MANAGER: CHRIS THOMPSON

PROJECT # : 20038

DATE : FEBRUARY 5, 2021

REVISION BLOCK

10-07-21	CITY COMMENTS
12-20-21	CITY COMMENTS

**BROAD ROCK BOULEVARD
RETAIL CENTER**

CITY OF RICHMOND, VA

LANDSCAPE PLAN

SHEET NO.
L1.0

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02930-SPECIFICATIONS - EXTERIOR PLANTS
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The provisions of the Contract Documents apply to the work of this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Trees
2. Shrubs
3. Groundcovers
4. Other Plant Materials
5. Stakes & Guyes

1.3 SUBMITTALS

- A. Installers Qualifications: Provide a list, with references, of the past three projects of similar scope.
- B. Product Data: For each type of product indicated.
- C. Plant Material Certifications:

1. Certificates of inspection as required by governmental authorities.
2. Label data substantiating that plant materials comply with specified requirements.

D. Planting Schedule:

1. Typewritten planting schedule.
2. Once accepted, revise dates only as approved in writing and submitted to Architect.
- E. Maintenance Schedules: Typewritten instructions recommending procedures for maintenance of landscape work for one full year. Submit prior to completion of project.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer, who has successfully completed planting projects similar in size and complexity to this project. The installer's primary business (defined as a minimum of 60% of total billings) shall be exterior plant installation.
- B. Installer's Field Supervision: Installer to maintain an experienced full-time supervisor on the project site when exterior planting is in progress.
- C. Exterior Plant Materials:

1. Provide plant materials of quantity, size, genus, species, and variety indicated on the drawings.
2. All plant materials and work shall comply with recommendations and requirements of ANSI Z60.1 "American Standard for Nursery Stock."
3. Do not make substitutions. If specified landscape material is not obtainable, submit proof of nonavailability to Architect, together with proposal for use of equivalent material.
4. The Architect may inspect plant materials either at place of growth or on site before planting, for compliance with requirements for genus, species, variety, size, and quality. Architect retains right to further inspect trees for size and condition of balls and root systems, insects, injuries and latent defects, and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees immediately from project site.
- D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.5 DELIVERY, STORAGE AND HANDLING

A. Packaged Materials:

1. Deliver packaged materials in containers showing weight, analysis, and name of manufacturer or grower.
2. Protect materials from deterioration during delivery, and while stored at site.
- B. Exterior Plant Materials

1. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of exterior plants during delivery. Do not drop exterior plants during delivery.
2. Deliver exterior plant materials after preparations for planting have been completed and plant immediately. If planting is delayed more than 6 hours after delivery, set plant materials in shade, protect from weather and mechanical damage, and keep roots moist and free from frost.
3. Do not remove container-grown stock from containers until planting time.
4. Balled and burlapped material shall be freshly dug.
5. Handle planting stock by root ball.

1.6 PROJECT CONDITIONS

- A. Examine the subgrade, verify the elevations, and observe the conditions under which work is to be performed.
- B. Determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand excavate as required.
- C. When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify Architect before planting.
- D. Provide all necessary safeguards for the protection of all planted areas until provisional inspection/acceptance is accomplished.
- E. Planting Restrictions: Plant during one of the following periods.
 1. Spring Planting: Unfrozen soil conditions March 1-June 1st.
 2. Fall Planting: September 1-November 1st or until frozen soil conditions prevent work.
 3. Summer Planting: June 1 - September 1 with approved irrigation system.

F. Coordination with Lawns: Install plant materials after finish grades are established and before planting lawns, unless otherwise acceptable to the Architect.

1. When planting exterior plants after lawns, protect lawn areas and promptly repair damage caused by planting operations.

1.7 WARRANTY

A. Warranty exterior plant materials for a period of one year after date of Final Completion against defects including death and unsatisfactory growth, except for defects resulting from neglect by Owner, abuse or damage by others, or unusual phenomena or incidents which are beyond Contractor's control.

1. The Contractor shall provide written notice to the Architect of any practice which will affect the warranty if not remedied promptly. The Architect will render an opinion of the conflict if necessary.
2. Make replacements of all dead plants or plants in impaired condition (more than 25% dead or dying) condition in early spring/fall following installation. Replacements of dead or rejected plants should again be made prior to the expiration of the warranty period.

1.8 MAINTENANCE

- A. The Owner is responsible for maintaining all exterior plant material throughout the warranty period according to the submitted Maintenance Schedule.
- B. Remove all stakes and guy wires at the end of the 12 month guarantee period.

PART 2 - PRODUCTS

2.1 EXTERIOR PLANT MATERIALS

- A. General: Provide nursery-grown plant materials complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
- B. Label at least one tree and one shrub of each variety and caliper with a securely attached, waterproof tag bearing legible designation of botanical and common name.

2.2 PLANTS

- A. Annuals: Provide healthy, disease-free plants of species and variety indicated. Provide only plants that are acclimated to outdoor conditions before delivery and that are in bud but not yet in bloom.
- B. Perennials: Provide healthy, field-grown plants from a commercial nursery of species and variety shown or listed.
- C. Vines: Provide plants with heavy, well-branched tops, with not less than three runners and a vigorous welldeveloped root system.

2.3 FERTILIZER

A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast and slowrelease nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium. Revise fertilizer mix to remedy deficiencies found in soil.

1. Composition: 1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium. Revise fertilizer mix to remedy deficiencies found in soil.

1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified oil-testing agency.

2.4 MULCHES

A. Organic Mulch: Six (6) month old well rotted double shredded native hardwood bark mulch not larger than 4" in length and 1/2" in width, free of woodchips and sawdust.

2.5 WATER

A. Free of substances harmful to plant growth.

2.6 TOPSOIL

A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 4 percent organic material content. Topsoil shall be friable, friable, natural topsoil of loamy character, without admixture of subsoil material, obtained from a welldrained arable site, reasonably free from clay, lumps, coarse sands, stones, plants, roots, sticks and other foreign materials.

B. Topsoil Source:

1. Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
 - a) Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from agricultural land, bogs or marshes.
2. Import topsoil or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally welldrained sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from agricultural land.
3. Amend existing in-place surface soil to produce topsoil. Verify suitability of surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
 - a) Surface soil may be supplemented with imported or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from agricultural land, bogs or marshes.

2.7 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:

1. Class: Class T, with a minimum 99 percent passing through No. 8 (2.36-mm) sieve and a minimum 75 percent passing through No. 60 (0.25-mm) sieve.
2. Class: Class O, with a minimum 95 percent passing through No. 8 (2.36-mm) sieve and a minimum 55 percent passing through No. 60 (0.25-mm) sieve.
3. Provide lime in form of dolomitic limestone.

B. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, with a minimum 99 percent passing through No. 6 (3.35-mm) sieve and a maximum 10 percent passing through No. 40 (0.425-mm) sieve.

C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.

D. Aluminum Sulfate: Commercial grade, unadulterated.

E. Perlite: Horticultural perlite, soil amendment grade.

F. Agricultural Gypsum: Finely ground, containing a minimum of 90 percent calcium sulfate.

G. Sand: Clean, washed, natural or manufactured, free of toxic materials.

H. Diatomaceous Earth: Calcined, diatomaceous earth, 90 percent silica, with approximately 140 percent absorption water capacity by weight.

I. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

2.8 ORGANIC SOIL AMENDMENTS

A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 3/4-inch (19-mm) sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

1. Organic Matter Content: 50 to 60 percent of dry weight.
2. Feedstock: Agricultural, food, or industrial residuals; bio-solids; yard trimmings; or source-separated or compostable mixed solid waste.

B. Sphagnum peat moss: Sphagnum peat moss shall be partially decomposed, finely divided or granular texture, with a pH range of 3.4 to 4.8.

C. Peat: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.

D. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.

1. In lieu of decomposed wood derivatives, mix partially decomposed wood derivatives with at least 0.15 lb (2.4 kg) of ammonium nitrate or 0.25 lb (4 kg) of ammonium sulfate per cubic foot (cubic meter) of loose sawdust or ground bark.

E. Manure: Well-rotted, unleached, poultry, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

2.9 MISCELLANEOUS PRODUCTS

A. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive exterior plants for compliance with requirements and conditions affecting installation and performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Tree save areas as indicated shall be tagged and approved by the Architect prior to any clearing and/or thinning.

B. Protect structures, utilities, sidewalks, pavements, and other facilities, and lawns and existing exterior plants from damage caused by planting operations.

C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

D. Lay out individual tree and shrub locations and areas for multiple exterior plantings. Stake locations, outline areas, adjust locations when requested, and obtain Landscape Architect's acceptance of layout before planting. Make minor adjustments as required.

E. Lay out exterior plants at locations indicated. Stake locations of individual trees and shrubs and outline areas for multiple plantings.

F. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks, branches, stems, twigs, and foliage to protect during digging, handling, and transportation.

1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

3.3 PLANTING BED ESTABLISHMENT

A. Loosen subgrade of planting beds to a minimum depth of 4 inches (100 mm). Remove stones larger than 1 inch (25 mm) in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off of Owner's property.

1. Apply fertilizer directly to subgrade before loosening.
2. Spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.
 - a) Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
 - b) Mix lime with dry soil before mixing fertilizer.

B. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

C. Restore planting beds if eroded or otherwise disturbed after finish grading and before planting.

3.4 TREE AND SHRUB PLANTING

A. Set all plant materials plumb and in center of pit or trench as per detail.

1. Remove burlap and wire baskets from tops of root balls and partially from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
2. Carefully remove root ball from container without damaging root ball or plant.

3. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

4. Spread roots without tangling or turning toward surface, and carefully work backfill around roots by hand. Puddle with water until backfill layers are completely saturated. Plumb before backfilling and maintain plumb while working backfill around roots and placing layers above roots. Tamp final layer of backfill. Remove injured roots by cutting cleanly, do not break.

5. Dish top of backfill to allow for mulching.
- B. Organic Mulching: Apply 3 -inch (75-mm.) average thickness of organic mulch extending 12 inches (300 mm) beyond edge of planting pit or trench. Do not place mulch within 3 inches (75 mm) of trunks or stems.

3.5 TREE AND SHRUB PRUNING

A. Prune, thin, and shape trees and shrubs as indicated.

3.6 GROUND COVER AND PLANT PLANTING

- A. Set out and space ground cover and plants as indicated in details.
- B. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

3.7 CLEANUP AND PROTECTION

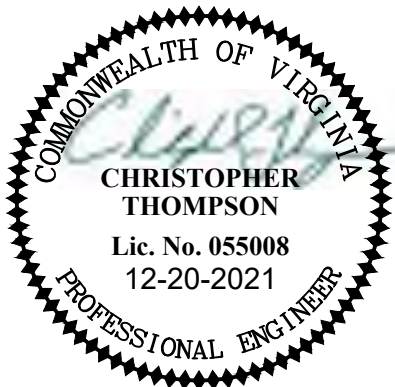
A. During exterior planting, keep adjacent pavings and construction clean and work area in an orderly condition.

B. Protect exterior plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged exterior planting.

3.8 DISPOSAL

A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 02930



The Site Design Company

CIVIL ENGINEERING AND LAND DEVELOPMENT CONSULTING
2688 HIGH STREET - PETERSBURG, VIRGINIA 23803
www.sitedesignco.com



DATE : FEBRUARY 5, 2021

REVISION BLOCK	
10-07-21	CITY COMMENTS
12-20-21	CITY COMMENTS

BROAD ROCK BOULEVARD
RETAIL CENTER
CITY OF RICHMOND, VA

LANDSCAPE SPECIFICATIONS

SHEET NO.
L1.2

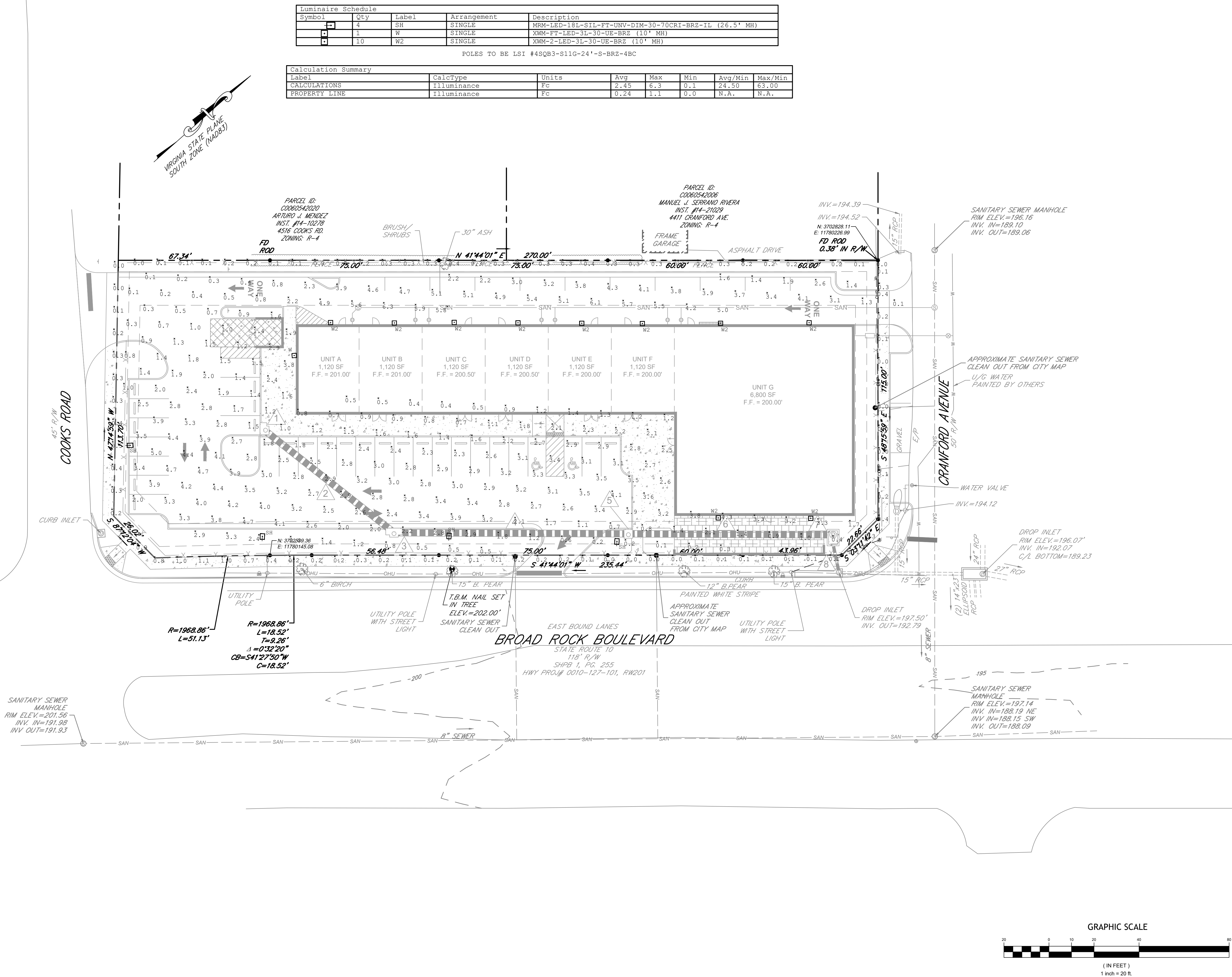
EMAIL: thompson@sitdesignco.com

PHONE: 804-720-9040

PROJECT MANAGER : CHRIS THOMPSON

PROJECT #: 20038

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Luminaire Schedule				
Symbol	Qty	Label	Arrangement	Description
SH	4	SH	SINGLE	MRM-LED-18L-SIL-FT-UNV-DIM-30-70CRI-BRZ-IL (26.5' MH)
W	1	W	SINGLE	XWM-FT-LED-3L-30-UE-BRZ (10' MH)
W2	10	W2	SINGLE	XWM-2-LED-3L-30-UE-BRZ (10' MH)

POLES TO BE LSI #48QB3-S11G-24'-S-BRZ-4BC

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
CALCULATIONS	Illuminance	Fc	2.45	6.3	0.1	24.50	63.00
PROPERTY LINE	Illuminance	Fc	0.24	1.1	0.0	N.A.	N.A.



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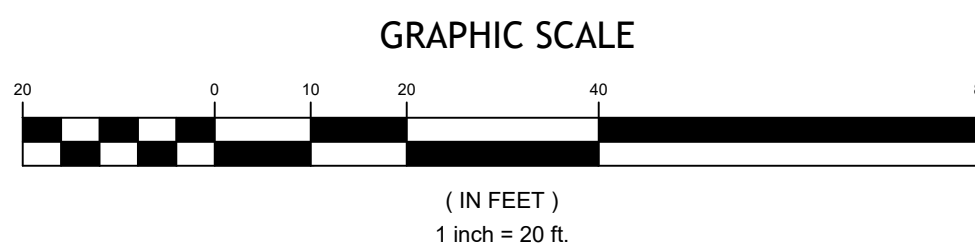
DATE : FEBRUARY 5, 2021

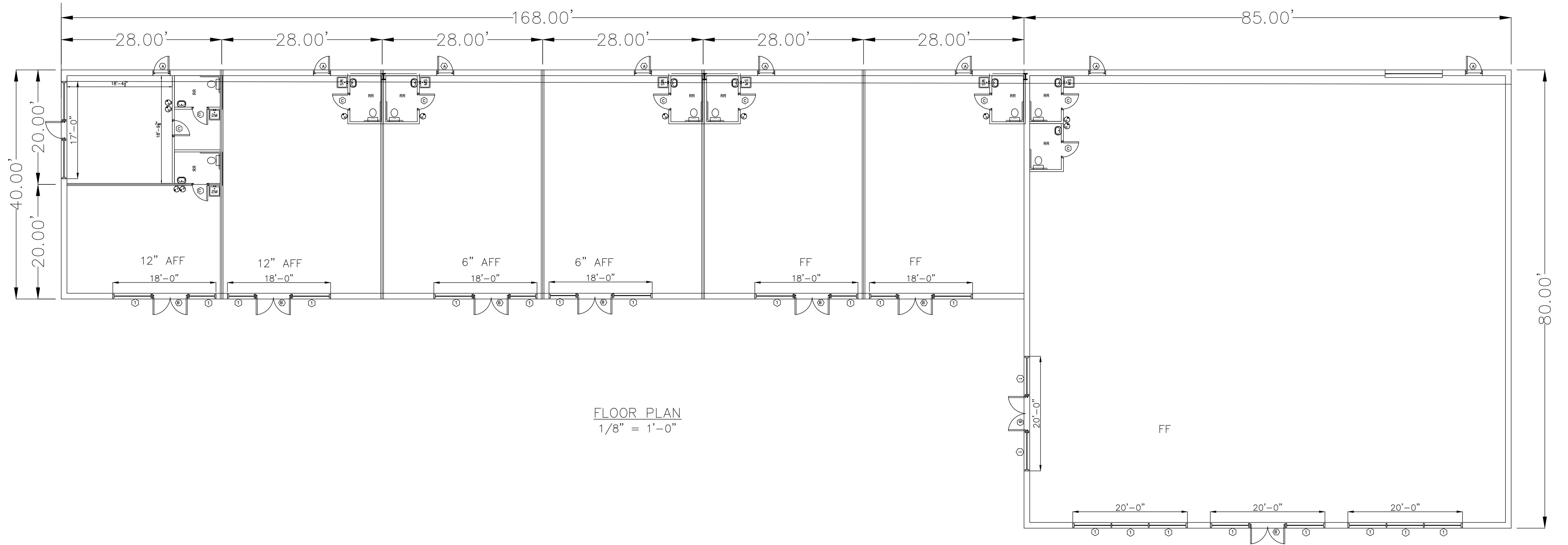
REVISION BLOCK	
10-07-21	CITY COMMENTS
12-20-21	CITY COMMENTS

**BROAD ROCK BOULEVARD
RETAIL CENTER**
CITY OF RICHMOND, VA

SITE LIGHTING PLAN

SHEET NO.
L2.0





FLOOR PLAN
1/8" = 1'-0"

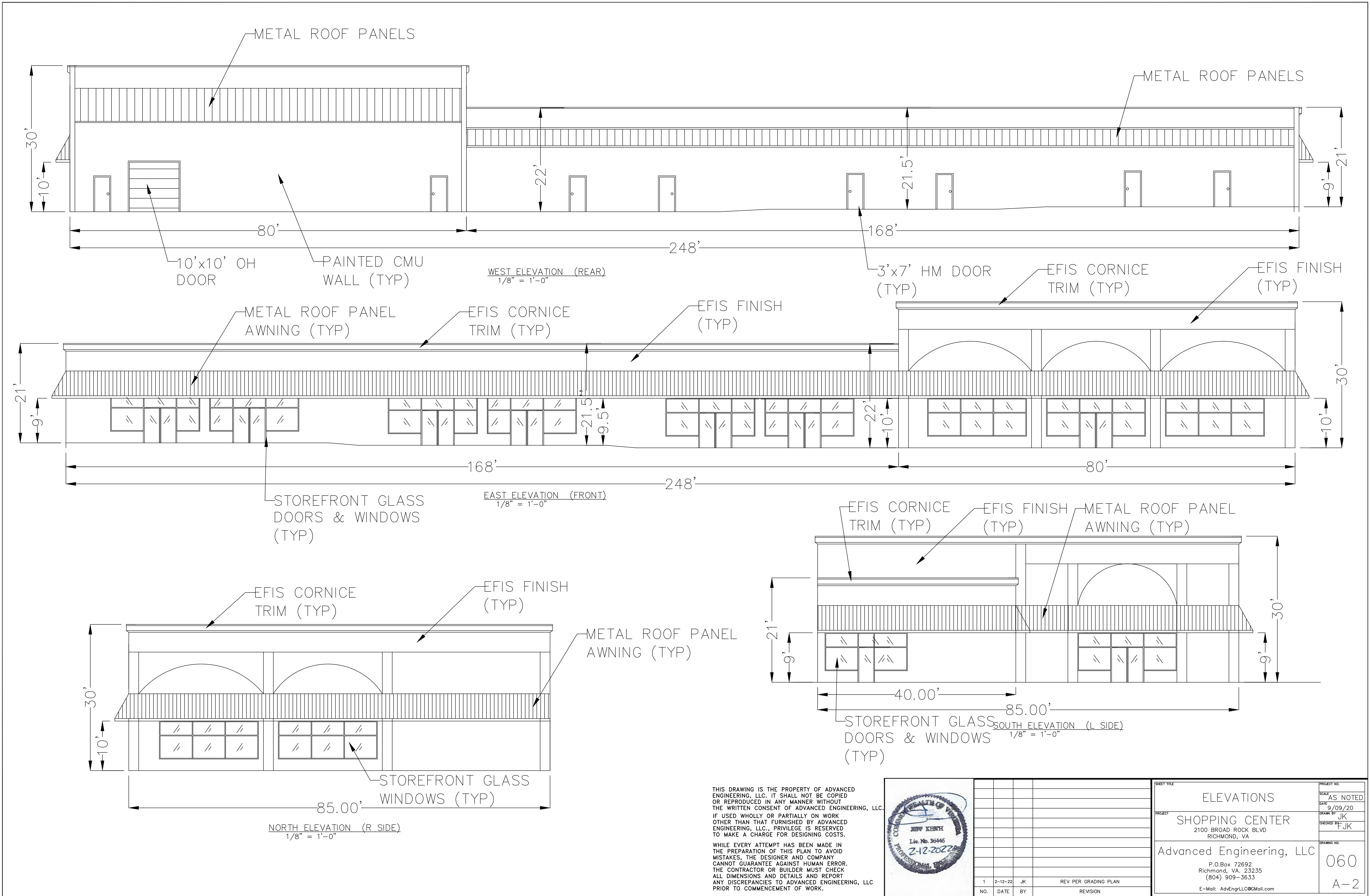
THE PURPOSE OF THIS PROJECT IS FOR THE CONSTRUCTION
OF A SINGLE STORY 13,520 SF SHELL ONLY METAL BUILDING

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TO MAKE A CHARGE FOR DESIGNING COSTS.
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THE PREPARATION OF THIS PLAN TO AVOID
MISTAKES, THE DESIGNER AND COMPANY
CANNOT GUARANTEE AGAINST HUMAN ERROR.
THE CONTRACTOR OR BUILDER MUST CHECK
ALL DIMENSIONS AND DETAILS AND REPORT
ANY DISCREPANCIES TO ADVANCED ENGINEERING, LLC
PRIOR TO COMMENCEMENT OF WORK.



1	2-12-22	JK	REV PER GRADING PLAN		
NO.	DATE	BY	REVISION		

SHEET TITLE		PROJECT NO.
FLOOR PLAN		SCALE AS NOTED
PROJECT		DATE 9/09/20
SHOPPING CENTER		DRAWN BY JK
2100 BROAD ROCK BLVD		CHECKED BY FJK
RICHMOND, VA		DRAWING NO.
Advanced Engineering, LLC		060
P.O.Box 72692		A-1
Richmond, VA. 23235		
(804) 909-3633		
E-Mail: AdvEngrLLC@GMail.com		



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