BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

VIRGINIA DEPARTMENT OF TRANSPORTATION
RICHMOND DISTRICT LAND USE
SUBDIVISION AND SITE CONSTRUCTION PLAN GENERAL NOTES
EFFECTIVE DATE: JUNE 2025

1. ALL MATERIALS AND CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION'S ROAD AND BRIDGE SPECIFICATIONS, ROAD AND BRIDGE STANDARDS AND VIRGINIA WORK AREA PROTECTION MANUAL.
2. LAND USE PERMITS (LUP) SHALL BE OBTAINED FROM THE VIRGINIA DEPARTMENT OF TRANSPORTATION PRIOR TO BEGINNING ANY CONSTRUCTION WITHIN THE EXISTING STATE-MAINTAINED RIGHT-OF-WAY (INCLUDING ACCESS).
3. VDOT REQUIRES NOTIFICATION 48 HOURS PRIOR TO COMMENCING WITH INITIAL CONSTRUCTION ACTIVITIES. PLEASE CONTACT THE APPROPRIATE PERMIT OFFICE IN WHICH YOUR PROPOSED ACTIVITIES ARE TO OCCUR.
4. APPROVAL OF A DETAILED CONSTRUCTION SEQUENCING AND MAINTENANCE OF TRAFFIC PLAN FOR THE WORK ZONE IS A PREREQUISITE FOR ISSUANCE OF A LAND USE PERMIT. THE PLAN SHALL ACCOMMODATE ACCESS TO AND CONSTRUCTION WITHIN VDOT MAINTAINED RIGHT-OF-WAY.
5. WORK ZONES - REQUESTS FOR THE IMPLEMENTATION OF TEMPORARY LANE AND SHOULDER CLOSURES ON INTERSTATE, LIMITED ACCESS PRIMARY ROUTES, AND ROUTES 58 AND 460 MUST BE ENTERED INTO THE VDOT LANE CLOSURE ADVISORY MANAGEMENT SYSTEM (LCAMS) BY 12:00 PM ON THURSDAY THE WEEK BEFORE THE WORK IS TO TAKE PLACE FOR APPROVAL. CONTACT THE WORK ZONE COORDINATOR AT 804-609-5338 FOR QUESTIONS AND ASSISTANCE. ALL LANE/SHOULDER CLOSURES REQUIRING LCAMS APPROVAL SHALL BE ENTERED INTO VA TRAFFIC. LANE/SHOULDER CLOSURES ON PRIMARY AND MAJOR SECONDARY ROUTES MUST ALSO BE ENTERED IN VA TRAFFIC. MAJOR SECONDARY ROUTES ARE DEFINED AS THOSE LISTED IN THE RICHMOND DISTRICT RECOMMENDED WORK HOURS DOCUMENT. JUST PRIOR TO THE FIRST CONE GOING DOWN, USERS MUST CONTACT THE TOC AT 804-796-4520 TO ACTIVATE THE WORK ZONE AND WHEN THE LAST CONE HAS BEEN PICKED UP TO DEACTIVATE THE WORK ZONE.
6. PERMITTEE MUST NOTIFY VIRGINIA DEPARTMENT OF TRANSPORTATION TOC WHEN THERE IS A CRASH IN A WORK ZONE AT 804-796-4520.
7. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL CONSULT THE DEVELOPER'S ENGINEERING CONSULTANT AND VERIFY THE APPROVAL OF THE PLANS BY ALL APPLICABLE FEDERAL, STATE AND LOCAL AGENCIES.
8. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES SHOWN ON PLANS IN AREAS OF CONSTRUCTION PRIOR TO STARTING WORK. CONTACT THE DEVELOPER'S ENGINEERING CONSULTANT IMMEDIATELY IF LOCATION OR ELEVATION IS DIFFERENT FROM THAT SHOWN ON PLAN. IF THERE APPEARS TO BE A CONFLICT, OR UPON DISCOVERY OF ANY UTILITY NOT SHOWN ON THIS PLAN, CALL "MISS UTILITY" AT 811. THE DEVELOPER SHALL BE RESPONSIBLE FOR THE RELOCATION OF ANY UTILITY WITHIN EXISTING AND PROPOSED RIGHT OF WAY REQUIRED BY THE DEVELOPMENT.
9. THE PERMITTEE OR THEIR AGENT MUST CONTACT THE VDOT CUSTOMER SERVICE CENTER AT 1-800-367-7623 A MINIMUM OF 48 HOURS PRIOR TO INITIATING ANY PLANNED EXCAVATION WITHIN 1,000 FEET OF A SIGNALIZED INTERSECTION AND/OR NEAR VDOT ITS INFRASTRUCTURE. EXCAVATION MAY PROCEED ONLY AFTER THE VDOT REGIONAL UTILITY LOCATION AGENT HAS NOTIFIED THE PERMITTEE THAT THE UTILITY MARKING HAS BEEN COMPLETED. ADDITIONAL INFORMATION CAN BE FOUND AT: HTTP://WWW.VIRGINIADOT.ORG/BUSINESS/RESOURCES/IIMTE-383_REQUEST_FOR_MARKING_VDOT_UTILITY_LOCATION.PDF "MISS UTILITY" DOES NOT LOCATE VDOT UTILITIES.
10. THE CONTRACTOR SHALL VERIFY THE ELEVATIONS OF ALL POINTS OF CONNECTION OF PROPOSED WORK TO EXISTING CURBS, SANITARY LINES, WATER LINES, ETC., PRIOR TO CONSTRUCTION.
11. DESIGN CHANGES, SPECIFIED MATERIALS CHANGES AND FIELD CHANGES FROM THE APPROVED PLANS SHALL BE RE-SUBMITTED TO VDOT FOR APPROVAL PRIOR TO PROCEEDING WITH THE WORK. A LETTER OF EXPLANATION SHALL ACCOMPANY THE PROPOSED REVISION ALONG WITH DRAINAGE CALCULATIONS WHEN APPROPRIATE.
12. VDOT APPROVAL OF CONSTRUCTION PLANS DOES NOT PRECLUDE THE RIGHT TO REQUIRE ADDITIONAL FACILITIES AS DEEMED NECESSARY FOR ACCEPTANCE OF THE ROADS INTO THE VDOT SECONDARY ROAD SYSTEM BASED ON FIELD CONDITIONS OR UNAPPROVED PLAN CHANGES.
13. THE ENGINEER OF RECORD, WHOSE PROFESSIONAL SEAL IS AFFIXED TO THIS PLAN, IS RESPONSIBLE FOR COMPLIANCE WITH ALL VDOT MINIMUM STANDARDS. VDOT REVIEW AND ACCEPTANCE OF THESE PLANS IS NOT A GUARANTEE BY VDOT THAT THE PLAN IS WITHOUT ERRORS OR OMISSIONS COMMITTED BY THE ENGINEER OF RECORD.
14. VDOT APPROVAL OF THESE PLANS WILL EXPIRE FIVE (5) YEARS FROM THE DATE OF APPROVAL FOR SITE PLANS AND SUBDIVISION PLANS IF CONSTRUCTION HAS NOT STARTED.
15. PRELIMINARY DESIGN OF THE PAVEMENT STRUCTURE FOR ALL SUBDIVISION STREETS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE PAVEMENT DESIGN GUIDE FOR SUBDIVISION AND SECONDARY ROADS IN VIRGINIA. THE COMPLETED DESIGN WORKSHEET APPENDIX IV SHALL BE INCLUDED WITH THE INITIAL PLAN SUBMITTAL FOR EACH PROPOSED PAVEMENT SECTION UTILIZING THE PREDICTED SOIL SUPPORT VALUE SHOWN IN APPENDIX I OF THE PAVEMENT DESIGN GUIDE OR AS REPORTED IN A GEOTECHNICAL ANALYSIS OF THE ON-SITE SOILS.
16. A COPY OF THE COMPLETE GEOTECHNICAL REPORT SHALL BE SUBMITTED TO VDOT IN CONJUNCTION WITH FINAL PAVEMENT DESIGNS. ALL PAVEMENT DESIGN RECOMMENDATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT EDITION OF PAVEMENT DESIGN GUIDE FOR SUBDIVISION AND SECONDARY ROADS IN VIRGINIA.
17. ALL VEGETATION AND ORGANIC MATERIAL SHALL BE REMOVED FROM THE RIGHT OF WAY LIMITS PRIOR TO CONDITIONING OF THE SUBGRADE.
18. UPON DISCOVERY OF SOILS THAT ARE UNSUITABLE FOR FOUNDATIONS, SUBGRADES, OR OTHER ROADWAY CONSTRUCTION PURPOSES, THE DEVELOPER OR HIS DESIGNEE, WHICH MAY BE THE CONTRACTOR, SHALL IMMEDIATELY ENGAGE A GEOTECHNICAL ENGINEER AND NOTIFY VDOT. THESE AREAS SHALL BE EXCAVATED BELOW PLAN GRADE AS DIRECTED BY THE GEOTECHNICAL ENGINEER, BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED IN ACCORDANCE WITH CURRENT VDOT SPECIFICATIONS.
19. THE NECESSITY AND LOCATIONS FOR ADDITIONAL VDOT STANDARD UNDERDRAINS SHALL BE DETERMINED AT TIME OF SUBGRADE INSPECTION. VIDEO INSPECTION OF ACCESSIBLE OUTLET LOCATIONS, MAINLINE LONGITUDINAL CONNECTIONS, AND LONGITUDINAL PIPE FOR ALL PAVEMENT UNDERDRAINS, CROSS DRAINS, EDGEDRAINS AND PREFABRICATED GEOCOMPOSITE PANEL DRAINS SHALL BE CONDUCTED IN ACCORDANCE WITH SECTION 501 OF THE ROAD AND BRIDGE SPECIFICATIONS AND VIRGINIA TEST METHOD 108 - POST INSTALLATION INSPECTION OF UNDERDRAINS. CROSSDRAINS, AND EDGEDRAINS.
20. VDOT SHALL HAVE PERFORMED THE REQUIRED FIELD INSPECTION (PROOF ROLL) PRIOR TO PLACEMENT OF THE AGGREGATE BASE COURSE(S). CONTACT VDOT FOR SUBGRADE INSPECTION 48 HOURS PRIOR TO SCHEDULING PLACEMENT OF AGGREGATE BASE COURSE(S).
21. THE SCHEDULING OF AGGREGATE BASE INSTALLATION AND SUBSEQUENT PAVING ACTIVITIES SHALL ACCOMMODATE FORECASTED WEATHER CONDITIONS PER SECTION 315 OF THE ROAD AND BRIDGE SPECIFICATIONS.
22. VDOT SHALL HAVE APPROVED THE AGGREGATE BASE COURSE(S) FOR DEPTH, TEMPLATE AND PERFORMED THE REQUIRED FIELD INSPECTION (PROOF ROLL) PRIOR TO PLACEMENT OF ANY ASPHALT CONCRETE SURFACE COURSE(S). CONTACT VDOT FOR INSPECTION OF THE AGGREGATE BASE COURSE(S) 48 HOURS PRIOR TO APPLICATION OF THE SURFACE COURSE(S).
23. A LICENSED GEOTECHNICAL ENGINEER OR HIS DESIGNEE SHALL ASCERTAIN CAUSE AND CERTIFY RECOMMENDED METHOD OF REPAIR FOR ALL PAVEMENT STRUCTURAL FAILURES PRIOR TO STATE ACCEPTANCE.
24. VDOT SHALL BE PROVIDED DOCUMENTATION BY A LICENSED GEOTECHNICAL ENGINEER, CERTIFYING THAT ALL IN-PLACE PAVEMENTS MEET OR EXCEED THE APPROVED PAVEMENT DESIGN THICKNESS PRIOR TO STATE ACCEPTANCE OF THE STREET. CORES ARE TO BE OBTAINED VERIFYING PAVEMENT THICKNESS UNLESS OTHERWISE DIRECTED BY VDOT. THE PERMIT INSPECTOR SHALL BE CONTACTED 24 HOURS PRIOR TO THE CORE SAMPLES BEING TAKEN.
25. ALL STORM SEWER DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH LATEST VDOT DRAINAGE MANUAL, ROAD AND BRIDGE STANDARDS, AND IIMS.
26. ALL PRE-CAST UNITS SHALL BE VDOT APPROVED. CERTIFICATION AND VDOT STAMP ARE REQUIRED ON ALL UNITS.
27. ALL CONCRETE SHALL BE CLASS A3-AE (AIR ENTRAINED 3,000 PSI) UNLESS OTHERWISE SPECIFIED.
28. ALL ROADSIDE DITCHES SHOWN AS PAVED ON PLANS ARE TO BE PAVED IN ACCORDANCE WITH THE STANDARD TYPICAL SECTION AS SHOWN ON THE PLANS. ANY ADDITIONAL PAVING OF THE DITCHES, OTHER THAN THOSE SHOWN ON THE ROAD PLANS WILL BE DETERMINED PRIOR TO ACCEPTANCE OF THE ROADS INTO THE VDOT SECONDARY ROAD SYSTEM.
29. ROAD & BRIDGE SPECIFICATIONS SECTION 302, DRAINAGE STRUCTURES ADDRESSES POST INSTALLATION VISUAL/VIDEO CAMERA INSPECTION OF STORM SEWER PIPES AND PIPE CULVERTS. INSPECTION FREQUENCY SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND/OR AS NECESSITATED BY THE ENGINEER. VIDEO INSPECTION SHALL BE CONDUCTED IN ACCORDANCE WITH VIRGINIA TEST METHOD (VTM) 123, POST INSTALLATION INSPECTION OF BURIED STORM SEWER PIPE AND PIPE CULVERTS.
30. A CONSTRUCTION ENTRANCE SHALL BE INSTALLED ON EACH INDIVIDUAL LOT PRIOR TO ANY LOT GRADING OR HOME CONSTRUCTION ACTIVITIES AND SHALL BE ADEQUATELY MAINTAINED UNTIL ALL CONSTRUCTION TRAFFIC AREAS WITHIN THE LOT HAVE BEEN STABILIZED.
31. ALL ENTRANCES SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH CURRENT VDOT STANDARDS. RESIDENTIAL LOT ACCESS SHALL BE PROVIDED PER THE FOLLOWING CRITERIA:
    - ALL DRIVEWAY ENTRANCES AND ENTRANCE CULVERTS SHALL CONFORM TO PE-1 PRIVATE ENTRANCE STANDARDS UNLESS OTHERWISE APPROVED BY VDOT. NO ENTRANCE CULVERTS ARE TO BE INSTALLED WITHIN FIVE (5) FEET OF A PROPERTY CORNER.
    - VDOT STANDARD CG-9D ENTRANCES SHALL BE USED WHEN AN ENTRANCE IS REQUIRED IN CURB AND GUTTER NEIGHBORHOODS UNLESS OTHERWISE APPROVED BY VDOT.
32. DRY GUTTER IS NOT ALLOWED IN VDOT RIGHT OF WAY EXCEPT AS SHOWN ON VDOT'S ENTRANCE STANDARD DETAILS.
33. THE DEVELOPER SHALL FURNISH AND INSTALL STOP SIGNS AND STOP BARS AT STREET INTERSECTIONS AND ALL REGULATORY SIGNAGE PER THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. ALL SIGNS MUST BE INSTALLED ON VDOT STANDARD STR-1 SIGN POSTS.
34. INSTALLATION, MAINTENANCE AND OPERATION OF STREET LIGHTING SHALL BE PROVIDED BY AND AT THE SOLE EXPENSE OF OTHERS. VDOT WILL ALLOW LIGHTING WITHIN THE RIGHT OF WAY BY LAND USE PERMIT (LUP) ONLY. LIGHTING ON CURB SECTIONS SHALL BE PLACED BEHIND THE CURB AND PREFERABLY BEHIND THE SIDEWALK. FOR SHOULDER SECTIONS, THE POLE SHALL BE PLACED A MINIMUM OF 10' FROM THE EDGE OF PAVEMENT AND BEHIND THE DITCH LINE. ALL LIGHTING PROPOSED WITHIN THE RIGHT OF WAY MUST BE DESIGNED IN ACCORDANCE WITH THE AASHTO GUIDE FOR ROADWAY LIGHTING AND SHALL MEET THE CURRENT ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICAN (IESNA) STANDARDS.
35. TRAFFIC SIGNALS REQUIRE AN INDIVIDUAL LAND USE PERMIT. THE APPLICANT SHALL BE RESPONSIBLE FOR THE DESIGN COSTS OF ANY TRAFFIC SIGNAL INSTALLATION OR MODIFICATION OF EXISTING SIGNALS. DESIGN PLANS MUST BE PREPARED AND SUBMITTED TO VDOT BY A LICENSED PROFESSIONAL ENGINEER FOR REVIEW AND APPROVAL. THIS INCLUDES THE FOUNDATION DESIGN AND ANY EQUIPMENT ASSOCIATED WITH THE COMPLETED TRAFFIC SIGNAL. ALL EQUIPMENT MUST BE APPROVED BY VDOT. SHOP DRAWINGS MUST BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO FABRICATING ANY SIGNAL STRUCTURAL COMPONENTS.
36. SOIL STABILIZATION IS REQUIRED WITHIN 7 DAYS FOR ALL AREAS WHERE CLEARING, GRADING, EXCAVATION OR OTHER LAND DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED OR WHERE LAND DISTURBANCE ACTIVITIES HAVE BEEN TEMPORARILY SUSPENDED FOR AN ANTICIPATED DURATION OF GREATER THAN 7 DAYS, OR UPON COMPLETION OF GRADING OPERATIONS FOR A SPECIFIED AREA. SOIL STABILIZATION SHALL BEGIN AS SOON AS PRACTICABLE, BUT NOT LATER THAN THE SEVEN DAYS FOLLOWING THE DAY WHEN LAND DISTURBING ACTIVITIES TEMPORARILY OR PERMANENTLY CEASED.
37. NO STRUCTURE SHALL BE CONSTRUCTED ON STATE MAINTAINED RIGHT OF WAYS, OR ON RIGHT OF WAYS INTENDED TO BE MAINTAINED BY VDOT UNLESS SAID STRUCTURES ARE SHOWN ON CONSTRUCTION PLANS APPROVED BY VDOT OR SUCH STRUCTURES ARE COVERED BY A VDOT LUP (OR BY A LETTER OF INTENT FROM THE RESIDENT ADMINISTRATOR/RESIDENT ENGINEER TO ISSUE SAID PERMIT AT THE TIME OF STATE ACCEPTANCE).
38. WHEN EXISTING PAVEMENT MARKINGS WITHIN STATE-MAINTAINED RIGHT-OF-WAY ARE TO BE ERADICATED, ALL ERADICATIONS SCARS SHALL BE OVERLAID WITH SURFACE MIX OR SLURRY SEAL #4, ALL NEW STRIPING REQUIRES THE USE OF THERMOPLASTIC PAVEMENT MARKINGS. CONTACT THE LAND USE PERMIT INSPECTOR TEN DAYS PRIOR TO PROCEEDING TO COORDINATE THE STRIPING LAYOUT.

DEPARTMENT OF PUBLIC WORKS
STANDARD EROSION AND SEDIMENT CONTROL & POLLUTION PREVENTION PLAN NOTES

1. *PRIOR TO COMMENCEMENT OF ANY LAND DISTURBANCE ACTIVITIES, A LAND DISTURBANCE PERMIT MUST BE ISSUED BY THE DEPARTMENT OF PUBLIC WORKS. AN APPROVED EROSION AND SEDIMENT CONTROL PLAN AND BONDING OF THE EROSION AND SEDIMENT CONTROL MEASURES IS REQUIRED FOR PERMIT ISSUANCE.*
2. *A SEPARATE LAND DISTURBANCE PERMIT OR AN ESC PLAN AMENDMENT TO THIS PLAN MUST BE SUBMITTED TO, AND APPROVED BY HANOVER COUNTY DPW PRIOR TO ANY OFF–SITE LAND DISTURBANCE (BORROW / FILLING / DISPOSAL ACTIVITIES) ASSOCIATED WITH THIS PROJECT. IF THE OFF–SITE PORTION OF THE PROJECT IS LOCATED WITHIN HANOVER COUNTY, ADDITIONAL E&S INSPECTION FEES WILL BE REQUIRED.*
3. *CONTACT THE DEPARTMENT OF PUBLIC WORKS' ENVIRONMENTAL COMPLIANCE MANAGER, 365–6181, A MINIMUM OF 48 HOURS PRIOR TO COMMENCEMENT OF LAND DISTURBANCE ACTIVITIES. A PRE–CONSTRUCTION MEETING IS REQUIRED UNLESS IT IS WAIVED BY THE ENVIRONMENTAL COMPLIANCE MANAGER.*
4. *NO WORK MAY OCCUR OUTSIDE THE LIMITS OF DISTURBANCE ON THE APPROVED PLANS. WORKING OUTSIDE OF THE LIMITS OF DISTURBANCE SHOWN ON THE APPROVED PLANS WILL RESULT IN A STOP WORK ORDER BEING ISSUED WITH THE POTENTIAL FOR FINES BEING LEVIED.*
5. *PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN (7) DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE.*
6. *TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN (7) DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN THIRTY (30) DAYS.*
7. *DURING CONSTRUCTION OF THE PROJECT, SOIL STOCK PILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT*
8. *STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES, AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.*
9. *EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND INSTALLED AS A FIRST STEP IN ANY LAND–DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE. INITIAL CLEARING MUST BE THE MINIMUM REQUIRED TO INSTALL EROSION AND SEDIMENT CONTROL MEASURES AND DEVICES. SHOULD EITHER THE EROSION AND SEDIMENT CONTROL NARRATIVE OR SEQUENCE OF CONSTRUCTION CONFLICT WITH THIS REQUIREMENT, THE CONFLICTING PORTIONS OF EITHER WILL BE, DETERMINED TO BE INVALID.*
10. *A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT, IN THE OPINION OF THE COUNTY ENGINEER OR HIS DESIGNATED AGENT, IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.*
11. *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 TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF–SITE PROPERTY.*
    - *D. RESTABILIZATION SHALL BE IN ACCORDANCE WITH THE ABOVE NOTES.*
12. *ALL APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.*
13. *WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PUBLIC ROAD SURFACE, THE ROAD SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A DISPOSAL AREA.*
14. *IT SHALL BE THE OWNER'S RESPONSIBILITY TO INSPECT EROSION CONTROL DEVICES PERIODICALLY AND AFTER EVERY ERODIBLE RAINFALL. ANY NECESSARY REPAIRS OR CLEAN UP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.*
15. *ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES AND DEVICES MAY BE REQUIRED BY THE DIRECTOR OF PUBLIC WORKS OR HIS DESIGNATED AGENT IF DEEMED NECESSARY.*
16. *THE OWNER SHALL INSTALL ADDITIONAL EROSION AND SEDIMENT CONTROL DEVICES AND MEASURES IF THE REGISTERED LAND DISTURBER DETERMINES THAT SUCH ADDITIONAL DEVICES AND MEASURES ARE NECESSARY.*
17. *ALL EROSION CONTROL DEVICES SHALL BE IN PLACE AND FUNCTIONAL AT ALL TIMES AND IF REMOVED FOR CONSTRUCTION PROGRESS, SHALL BE REPLACED BY THE CLOSE OF EACH WORKDAY.*
18. *FINAL REMOVAL OF EROSION CONTROL DEVICES SHALL NOT OCCUR UNTIL THE DIRECTOR OF PUBLIC WORKS OR HIS DESIGNATED AGENT DEEMS THE SITE STABILIZED.*
19. *PERMANENT SEEDING IS TO BE IN ACCORDANCE WITH THE ACCOMPANYING SEEDING SCHEDULE.*
20. *CONSTRUCTION SITE OPERATORS ARE REQUIRED TO CONTROL WASTE SUCH AS DISCARDED BUILDING MATERIALS, CONCRETE TRUCK WASHOUT, CHEMICALS, LITTER, AND SANITARY WASTE AT THE CONSTRUCTION SITE THAT MAY CAUSE ADVERSE IMPACTS TO WATER QUALITY.*
21. *CONSTRUCTION SITE OPERATORS ARE REQUIRED TO CONTROL THE TRANSPORT OF DUST AND OTHER WIND BORN CONTAMINANTS AS A RESULT OF LAND–DISTURBING, DEMOLITION AND CONSTRUCTION ACTIVITIES. THE OPERATOR SHALL PREVENT THE SURFACE AND AIR MOVEMENT OF AIRBORNE SUBSTANCES IN ACCORDANCE WITH STD AND SPEC 3.39 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK OR AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR HIS DESIGNATED AGENT.*

UTILITY NOTES:
1. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS PRIOR TO CONSTRUCTION INCLUDING UNDERGROUND UTILITY CONNECTION POINTS, RECEIVING PIPE SIZES, INVERTS, AND PIPE MATERIALS FOR UNDERGROUND STRUCTURES. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY UPON FINDING A DIFFERENCE IN FIELD CONDITIONS AND WHAT IS DEPICTED ON THE PLANS.
2. CONTRACTOR SHALL ENGAGE MISS UTILITY OR A PRIVATE UTILITY LOCATION SERVICE TO MARK ALL UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE ALL UTILITY CONNECTIONS, RELOCATIONS, NEW SERVICES, AND TEMPORARY SERVICES WITH THE UTILITY OWNER PRIOR TO BEGINNING WORK.
4. A STATEMENT AND GEOTECHNICAL REPORT SHALL BE SUBMITTED TO THE FIRE MARSHALL, SIGNED BY AN ENGINEER, CERTIFYING THAT STREET PAVEMENT DESIGN AND CONSTRUCTION IS IN ACCORDANCE WITH THE HANOVER COUNTY FIRE PREVENTION CODE.

ADA NOTE:
ALL SIDEWALKS AND HANDICAP ACCESS RAMPS SHALL MEET ADA REQUIREMENTS. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN DESIGN INFORMATION AND ADA REQUIREMENTS PRIOR TO CONSTRUCTION.

STORM DRAIN NOTES:
1. ALL PIPES ARE MEASURED FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
2. VDOT STANDARD ST-1 STEPS REQUIRED ON ALL CONCRETE STRUCTURES 4' TALL OR HIGHER.
3. RCP PIPE TO BE CLASS III UNLESS OTHERWISE SPECIFIED.
4. ALL ROOF DRAIN PIPE FROM BUILDING TO RCP STORM SEWER SHALL BE HDPE OR EQUAL.
5. ALL STORM SEWER WITH INVERTS BELOW THE NORMAL POOL OF THE SWM BASIN TO BE O-RING PIPE.
6. BOOT CONNECTORS REQUIRED FOR ALL PLASTIC PIPE CONNECTIONS INTO STORM STRUCTURES.

MS-4 NOTES:
A - NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME
B - EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES
C - EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY
D - MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION
E - RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS

E & S
PER VDOT ROAD AND BRIDGE SPECIFICATIONS 63.10(a): SPECIAL PROVISION 63D, WHICH HAS BEEN REINSTATED EFFECTIVE FEBRUARY 2, 2103. A CERTIFIED EROSION AND SEDIMENT CONTROL CONTRACTOR MUST BE IN RESPONSIBLE CHARGE OF ALL REGULATED LAND DISTURBING ACTIVITIES WITHIN VDOT RIGHT OF WAY.

GEOTECHNICAL NOTE:
THE CONSTRUCTION OF TRANSPORTATION IMPROVEMENTS ON ROADWAYS WHICH ARE DEFINED AS ARTERIALS OR COLLECTORS IN HANOVER COUNTY'S "THOROUGHFARE PLAN", AND ALL INTERNAL ROADS REQUIRE THE IMPLEMENTATION OF A COMPREHENSIVE INSPECTION PROGRAM TO ENSURE COMPLIANCE WITH VDOT STANDARDS AND SPECIFICATIONS. INSPECTION SERVICES SHALL BE PROVIDED UTILIZING THE SERVICES OF A LICENSED GEOTECHNICAL ENGINEER TO PERFORM THE REQUIRED INSPECTION AND TESTING.

ANYONE SUBMITTING A MAINTENANCE OF TRAFFIC PLAN WHICH IS PART OF A TRAFFIC MAINTENANCE PLAN SHALL ALSO SUBMIT THE ACCREDITATION NUMBER FOR TAKING THE VDOT ADVANCED TRAFFIC CONTROL PLANNING.

CBRS-INSITU NOTE:
FINAL PAVEMENT SECTIONS SHALL BE EQUAL TO OR EXCEEDING THE PRELIMINARY PAVEMENT SECTIONS SHOWN ON THE PLANS AND SHALL BE BASED, AT A MINIMUM, ON ACTUAL CBR VALUES FOUND AND THE APPROPRIATE PAVEMENT SECTIONS DERIVED THEREFROM. CURBS ARE NOT TO BE SET UNTIL THE FINAL PAVEMENT SECTION IS VERIFIED BASED ON "IN SITU" CBR DETERMINATIONS.

GENERAL EROSION AND SEDIMENT CONTROL NOTES

ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS 9VAC 25-840-40 EROSION AND SEDIMENT CONTROL REGULATIONS

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

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

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

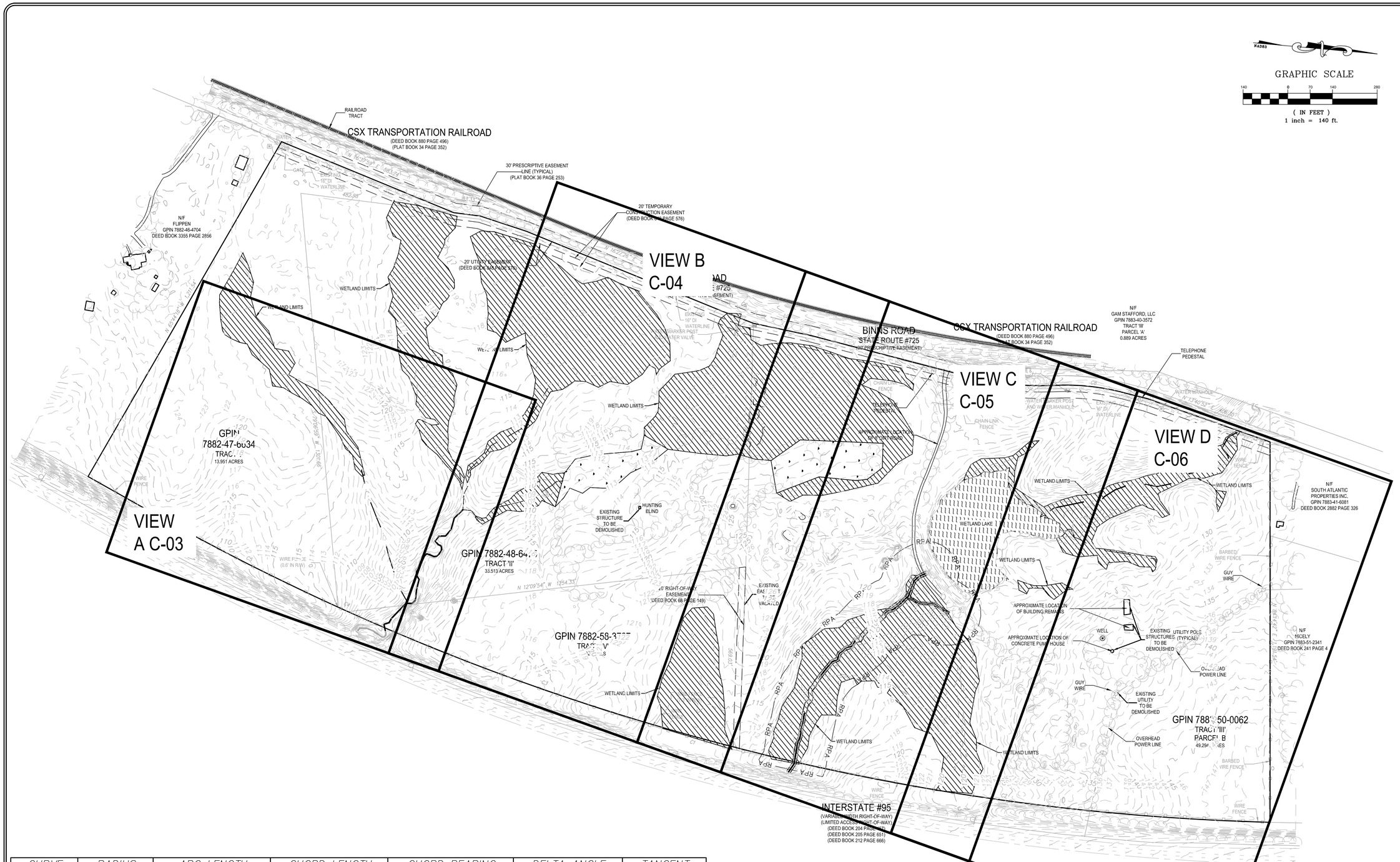
ES-5: PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

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

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

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

ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT, ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY. STATE AGENCIES SHALL MAKE A CONTINUING REVIEW AND EVALUATION OF THE METHOD USED AND THE OVERALL EFFECTIVENESS OF THE EROSION CONTROL PLAN. THE APPROVED EROSION AND SEDIMENT CONTROL PLAN MAY BE AMENDED BY THE PLAN APPROVING AUTHORITY IF ON-SITE INSPECTION INDICATES THAT THE APPROVED CONTROL MEASURES ARE NOT EFFECTIVE IN CONTROLLING EROSION AND SEDIMENTATION OR BECAUSE OF CHANGED CIRCUMSTANCES THE PLAN CAN NOT BE CARRIED OUT. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR. PRIOR TO BEGINNING CONSTRUCTION THE OWNER IS REQUIRED TO ARRANGE A PRE-CONSTRU



CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE	TANGENT
C1	7533.44'	3660.89'	3624.98'	S 09°41'30" W	27°50'35"	1867.34'
C2	7533.44'	1682.16'	1678.66'	S 02°10'02" W	12°47'37"	844.59'
C3	7533.44'	1300.73'	1299.12'	S 13°30'37" W	9°53'34"	651.99'
C4	7533.44'	34.20'	34.20'	S 18°35'12" W	0°15'36"	17.10'
C5	7533.44'	643.81'	643.61'	S 21°09'54" W	4°53'47"	322.10'
C6	2934.93'	108.40'	108.39'	N 15°23'57" E	2°06'58"	54.20'
C7	899.75'	252.57'	251.74'	N 00°49'24" E	16°05'01"	127.12'
C8	714.75'	197.65'	197.02'	N 00°42'13" E	15°50'38"	99.46'

LINE	BEARING	DISTANCE
L1	N 12°30'26" E	152.61'
L2	N 06°17'58" E	185.55'
L3	N 07°13'06" W	40.00'
L4	N 08°37'32" E	82.61'

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COMMONWEALTH OF VIRGINIA
ZACKARY A. WILKINS
Lic. No. 050952
06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EXISTING CONDITION & DEMOLITION PLAN

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 140'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-02

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MATCHLINE C-04
MATCHLINE C-03

EXISTING PROPERTY LINE

WIRE FENCE
(0.6' IN R/W)

WETLAND LIMITS

WETLAND LIMITS

S 79°06'59" W 1301.66'

WETLAND LIMITS

GPIN
7882-47-66^1
RACT 'I'
51 ACRES

INTERSTATE #95
(VARIABLE WIDTH RIGHT-OF-WAY)
(LIMITED ACCESS RIGHT-OF-WAY)
(DEED BOOK 204 PAGE 457)
(DEED BOOK 205 PAGE 651)
(DEED BOOK 212 PAGE 666)

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

N

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06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EXISTING CONDITION & DEMOLITION PLAN - A

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-03

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MATCHLINE C-05
MATCHLINE C-04

BINNS ROAD
STATE ROUTE #725
(30' PRESCRIPTIVE EASEMENT)

EXISTING EASEMENT TO BE VACATED

N 86°09'25" E
1,332.59' (TOTAL)

589.03'

20' RIGHT-OF-WAY EASEMENT
(DEED BOOK 68 PAGE 149)

WETLAND LIMITS

WIRE FENCE

WETLAND LIMITS

WATER MANHOLE
(NO WATER VALVE)

EXISTING PROPERTY LINE

GPIN 7882-58-3767
TRACT 'IV'
8.662 ACRES

HUNTING BLIND

EXISTING STRUCTURE TO BE DEMOLISHED

WETLAND LIMITS

WETLAND LIMITS

WETLAND LIMITS

EXISTING 16" DI WATERLINE

BINNS ROAD
STATE ROUTE #725
(30' PRESCRIPTIVE EASEMENT)

N 18°27'26" E 659.44'

N 72°04'44" W 124.43'

20' TEMPORARY CONSTRUCTION EASEMENT
(DEED BOOK 848 PAGE 576)

WETLAND LIMITS

WETLAND LIMITS

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

MATCHLINE C-04
MATCHLINE C-03

UTILITY EASEMENT
(DEED BOOK 848 PAGE 576)

GPIN 7882-48-4475
TRACT 'II'
33.513 ACRES

EXISTING PROPERTY LINE

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PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EXISTING CONDITION & DEMOLITION PLAN - B

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-04

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MATCHLINE C-06
MATCHLINE C-05

BINNS ROAD
STATE ROUTE #725
(30' PRESCRIPTIVE EASEMENT)

EXISTING 16" DI WATERLINE

WATER VALVE & FIRE HYDRANT

WATER MARKER/POST AND WATER MANHOLE

CHAIN LINK FENCE

APPROXIMATE LOCATION OF 8' DIRT ROAD

TELEPHONE PEDESTAL

CHAIN LINK FENCE

N 08°01'54" E 303.99'

WETLAND LIMITS

WETLAND LAKE

WETLAND LIMITS

WETLAND LIMITS

WETLAND LIMITS

WETLAND LIMITS

WETLAND LIMITS

RPA

INTERSTATE #95
(VARIABLE WIDTH RIGHT-OF-WAY)
(LIMITED ACCESS RIGHT-OF-WAY)
(DEED BOOK 204 PAGE 457)
(DEED BOOK 205 PAGE 651)
(DEED BOOK 212 PAGE 666)

EXISTING PROPERTY LINE

WIRE FENCE

W... FENCE (VA IN R/W)

WIRE FENCE

EXISTING EASEMENT TO BE VACATED

N 86°09'25" E 1,332.59' (TOTAL)

569.03'

20' RIGHT-OF-WAY EASEMENT
(DEED BOOK 68 PAGE 149)

MATCHLINE C-05
MATCHLINE C-04

BINNS ROAD
STATE ROUTE #725
(30' PRESCRIPTIVE EASEMENT)

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

Townes
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06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS SITE PLAN

DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EXISTING CONDITION & DEMOLITION PLAN - C

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-05

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BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

VIRGINIA DEPARTMENT OF TRANSPORTATION
RICHMOND DISTRICT LAND USE
SUBDIVISION AND SITE CONSTRUCTION PLAN GENERAL NOTES
EFFECTIVE DATE: JUNE 2025

1. ALL MATERIALS AND CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION'S ROAD AND BRIDGE SPECIFICATIONS, ROAD AND BRIDGE STANDARDS AND VIRGINIA WORK AREA PROTECTION MANUAL.
2. LAND USE PERMITS (LUP) SHALL BE OBTAINED FROM THE VIRGINIA DEPARTMENT OF TRANSPORTATION PRIOR TO BEGINNING ANY CONSTRUCTION WITHIN THE EXISTING STATE-MAINTAINED RIGHT-OF-WAY (INCLUDING ACCESS).
3. VDOT REQUIRES NOTIFICATION 48 HOURS PRIOR TO COMMENCING WITH INITIAL CONSTRUCTION ACTIVITIES. PLEASE CONTACT THE APPROPRIATE PERMIT OFFICE IN WHICH YOUR PROPOSED ACTIVITIES ARE TO OCCUR.
4. APPROVAL OF A DETAILED CONSTRUCTION SEQUENCING AND MAINTENANCE OF TRAFFIC PLAN FOR THE WORK ZONE IS A PREREQUISITE FOR ISSUANCE OF A LAND USE PERMIT. THE PLAN SHALL ACCOMMODATE ACCESS TO AND CONSTRUCTION WITHIN VDOT MAINTAINED RIGHT-OF-WAY.
5. WORK ZONES - REQUESTS FOR THE IMPLEMENTATION OF TEMPORARY LANE AND SHOULDER CLOSURES ON INTERSTATE, LIMITED ACCESS PRIMARY ROUTES, AND ROUTES 58 AND 460 MUST BE ENTERED INTO THE VDOT LANE CLOSURE ADVISORY MANAGEMENT SYSTEM (LCAMS) BY 12:00 PM ON THURSDAY THE WEEK BEFORE THE WORK IS TO TAKE PLACE FOR APPROVAL. CONTACT THE WORK ZONE COORDINATOR AT 804-609-5338 FOR QUESTIONS AND ASSISTANCE. ALL LANE/SHOULDER CLOSURES REQUIRING LCAMS APPROVAL SHALL BE ENTERED INTO VA TRAFFIC. LANE/SHOULDER CLOSURES ON PRIMARY AND MAJOR SECONDARY ROUTES MUST ALSO BE ENTERED IN VA TRAFFIC. MAJOR SECONDARY ROUTES ARE DEFINED AS THOSE LISTED IN THE RICHMOND DISTRICT RECOMMENDED WORK HOURS DOCUMENT. JUST PRIOR TO THE FIRST CONE GOING DOWN, USERS MUST CONTACT THE TOC AT 804-796-4520 TO ACTIVATE THE WORK ZONE AND WHEN THE LAST CONE HAS BEEN PICKED UP TO DEACTIVATE THE WORK ZONE.
6. PERMITTEE MUST NOTIFY VIRGINIA DEPARTMENT OF TRANSPORTATION TOC WHEN THERE IS A CRASH IN A WORK ZONE AT 804-796-4520.
7. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL CONSULT THE DEVELOPER'S ENGINEERING CONSULTANT AND VERIFY THE APPROVAL OF THE PLANS BY ALL APPLICABLE FEDERAL, STATE AND LOCAL AGENCIES.
8. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES SHOWN ON PLANS IN AREAS OF CONSTRUCTION PRIOR TO STARTING WORK. CONTACT THE DEVELOPER'S ENGINEERING CONSULTANT IMMEDIATELY IF LOCATION OR ELEVATION IS DIFFERENT FROM THAT SHOWN ON PLAN. IF THERE APPEARS TO BE A CONFLICT, OR UPON DISCOVERY OF ANY UTILITY NOT SHOWN ON THIS PLAN, CALL "MISS UTILITY" AT 811. THE DEVELOPER SHALL BE RESPONSIBLE FOR THE RELOCATION OF ANY UTILITY WITHIN EXISTING AND PROPOSED RIGHT OF WAY REQUIRED BY THE DEVELOPMENT.
9. THE PERMITTEE OR THEIR AGENT MUST CONTACT THE VDOT CUSTOMER SERVICE CENTER AT 1-800-367-7623 A MINIMUM OF 48 HOURS PRIOR TO INITIATING ANY PLANNED EXCAVATION WITHIN 1,000 FEET OF A SIGNALIZED INTERSECTION AND/OR NEAR VDOT ITS INFRASTRUCTURE. EXCAVATION MAY PROCEED ONLY AFTER THE VDOT REGIONAL UTILITY LOCATION AGENT HAS NOTIFIED THE PERMITTEE THAT THE UTILITY MARKING HAS BEEN COMPLETED. ADDITIONAL INFORMATION CAN BE FOUND AT: HTTP://WWW.VIRGINIADOT.ORG/BUSINESS/RESOURCES/IIMTE-383_REQUEST_FOR_MARKING_VDOT_UTILITY_LOCATION.PDF "MISS UTILITY" DOES NOT LOCATE VDOT UTILITIES.
10. THE CONTRACTOR SHALL VERIFY THE ELEVATIONS OF ALL POINTS OF CONNECTION OF PROPOSED WORK TO EXISTING CURBS, SANITARY LINES, WATER LINES, ETC., PRIOR TO CONSTRUCTION.
11. DESIGN CHANGES, SPECIFIED MATERIALS CHANGES AND FIELD CHANGES FROM THE APPROVED PLANS SHALL BE RE-SUBMITTED TO VDOT FOR APPROVAL PRIOR TO PROCEEDING WITH THE WORK. A LETTER OF EXPLANATION SHALL ACCOMPANY THE PROPOSED REVISION ALONG WITH DRAINAGE CALCULATIONS WHEN APPROPRIATE.
12. VDOT APPROVAL OF CONSTRUCTION PLANS DOES NOT PRECLUDE THE RIGHT TO REQUIRE ADDITIONAL FACILITIES AS DEEMED NECESSARY FOR ACCEPTANCE OF THE ROADS INTO THE VDOT SECONDARY ROAD SYSTEM BASED ON FIELD CONDITIONS OR UNAPPROVED PLAN CHANGES.
13. THE ENGINEER OF RECORD, WHOSE PROFESSIONAL SEAL IS AFFIXED TO THIS PLAN, IS RESPONSIBLE FOR COMPLIANCE WITH ALL VDOT MINIMUM STANDARDS. VDOT REVIEW AND ACCEPTANCE OF THESE PLANS IS NOT A GUARANTEE BY VDOT THAT THE PLAN IS WITHOUT ERRORS OR OMISSIONS COMMITTED BY THE ENGINEER OF RECORD.
14. VDOT APPROVAL OF THESE PLANS WILL EXPIRE FIVE (5) YEARS FROM THE DATE OF APPROVAL FOR SITE PLANS AND SUBDIVISION PLANS IF CONSTRUCTION HAS NOT STARTED.
15. PRELIMINARY DESIGN OF THE PAVEMENT STRUCTURE FOR ALL SUBDIVISION STREETS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE PAVEMENT DESIGN GUIDE FOR SUBDIVISION AND SECONDARY ROADS IN VIRGINIA. THE COMPLETED DESIGN WORKSHEET APPENDIX IV SHALL BE INCLUDED WITH THE INITIAL PLAN SUBMITTAL FOR EACH PROPOSED PAVEMENT SECTION UTILIZING THE PREDICTED SOIL SUPPORT VALUE SHOWN IN APPENDIX I OF THE PAVEMENT DESIGN GUIDE OR AS REPORTED IN A GEOTECHNICAL ANALYSIS OF THE ON-SITE SOILS.
16. A COPY OF THE COMPLETE GEOTECHNICAL REPORT SHALL BE SUBMITTED TO VDOT IN CONJUNCTION WITH FINAL PAVEMENT DESIGNS. ALL PAVEMENT DESIGN RECOMMENDATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT EDITION OF PAVEMENT DESIGN GUIDE FOR SUBDIVISION AND SECONDARY ROADS IN VIRGINIA.
17. ALL VEGETATION AND ORGANIC MATERIAL SHALL BE REMOVED FROM THE RIGHT OF WAY LIMITS PRIOR TO CONDITIONING OF THE SUBGRADE.
18. UPON DISCOVERY OF SOILS THAT ARE UNSUITABLE FOR FOUNDATIONS, SUBGRADES, OR OTHER ROADWAY CONSTRUCTION PURPOSES, THE DEVELOPER OR HIS DESIGNEE, WHICH MAY BE THE CONTRACTOR, SHALL IMMEDIATELY ENGAGE A GEOTECHNICAL ENGINEER AND NOTIFY VDOT. THESE AREAS SHALL BE EXCAVATED BELOW PLAN GRADE AS DIRECTED BY THE GEOTECHNICAL ENGINEER, BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED IN ACCORDANCE WITH CURRENT VDOT SPECIFICATIONS.
19. THE NECESSITY AND LOCATIONS FOR ADDITIONAL VDOT STANDARD UNDERDRAINS SHALL BE DETERMINED AT TIME OF SUBGRADE INSPECTION. VIDEO INSPECTION OF ACCESSIBLE OUTLET LOCATIONS, MAINLINE LONGITUDINAL CONNECTIONS, AND LONGITUDINAL PIPE FOR ALL PAVEMENT UNDERDRAINS, CROSS DRAINS, EDGEDRAINS AND PREFABRICATED GEOCOMPOSITE PANEL DRAINS SHALL BE CONDUCTED IN ACCORDANCE WITH SECTION 501 OF THE ROAD AND BRIDGE SPECIFICATIONS AND VIRGINIA TEST METHOD 108 - POST INSTALLATION INSPECTION OF UNDERDRAINS, CROSSDRAINS, AND EDGEDRAINS.
20. VDOT SHALL HAVE PERFORMED THE REQUIRED FIELD INSPECTION (PROOF ROLL) PRIOR TO PLACEMENT OF THE AGGREGATE BASE COURSE(S). CONTACT VDOT FOR SUBGRADE INSPECTION 48 HOURS PRIOR TO SCHEDULING PLACEMENT OF AGGREGATE BASE COURSE(S).
21. THE SCHEDULING OF AGGREGATE BASE INSTALLATION AND SUBSEQUENT PAVING ACTIVITIES SHALL ACCOMMODATE FORECASTED WEATHER CONDITIONS PER SECTION 315 OF THE ROAD AND BRIDGE SPECIFICATIONS.
22. VDOT SHALL HAVE APPROVED THE AGGREGATE BASE COURSE(S) FOR DEPTH, TEMPLATE AND PERFORMED THE REQUIRED FIELD INSPECTION (PROOF ROLL) PRIOR TO PLACEMENT OF ANY ASPHALT CONCRETE SURFACE COURSE(S). CONTACT VDOT FOR INSPECTION OF THE AGGREGATE BASE COURSE(S) 48 HOURS PRIOR TO APPLICATION OF THE SURFACE COURSE(S).
23. A LICENSED GEOTECHNICAL ENGINEER OR HIS DESIGNEE SHALL ASCERTAIN CAUSE AND CERTIFY RECOMMENDED METHOD OF REPAIR FOR ALL PAVEMENT STRUCTURAL FAILURES PRIOR TO STATE ACCEPTANCE.
24. VDOT SHALL BE PROVIDED DOCUMENTATION BY A LICENSED GEOTECHNICAL ENGINEER, CERTIFYING THAT ALL IN-PLACE PAVEMENTS MEET OR EXCEED THE APPROVED PAVEMENT DESIGN THICKNESS PRIOR TO STATE ACCEPTANCE OF THE STREET. CORES ARE TO BE OBTAINED VERIFYING PAVEMENT THICKNESS UNLESS OTHERWISE DIRECTED BY VDOT. THE PERMIT INSPECTOR SHALL BE CONTACTED 24 HOURS PRIOR TO THE CORE SAMPLES BEING TAKEN.
25. ALL STORM SEWER DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH LATEST VDOT DRAINAGE MANUAL, ROAD AND BRIDGE STANDARDS, AND IIMS.
26. ALL PRE-CAST UNITS SHALL BE VDOT APPROVED. CERTIFICATION AND VDOT STAMP ARE REQUIRED ON ALL UNITS.
27. ALL CONCRETE SHALL BE CLASS A3-AE (AIR ENTRAINED 3,000 PSI) UNLESS OTHERWISE SPECIFIED.
28. ALL ROADSIDE DITCHES SHOWN AS PAVED ON PLANS ARE TO BE PAVED IN ACCORDANCE WITH THE STANDARD TYPICAL SECTION AS SHOWN ON THE PLANS. ANY ADDITIONAL PAVING OF THE DITCHES, OTHER THAN THOSE SHOWN ON THE ROAD PLANS WILL BE DETERMINED PRIOR TO ACCEPTANCE OF THE ROADS INTO THE VDOT SECONDARY ROAD SYSTEM.
29. ROAD & BRIDGE SPECIFICATIONS SECTION 302, DRAINAGE STRUCTURES ADDRESSES POST INSTALLATION VISUAL/VIDEO CAMERA INSPECTION OF STORM SEWER PIPES AND PIPE CULVERTS. INSPECTION FREQUENCY SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND/OR AS NECESSITATED BY THE ENGINEER. VIDEO INSPECTION SHALL BE CONDUCTED IN ACCORDANCE WITH VIRGINIA TEST METHOD (VTM) 123, POST INSTALLATION INSPECTION OF BURIED STORM SEWER PIPE AND PIPE CULVERTS.
30. A CONSTRUCTION ENTRANCE SHALL BE INSTALLED ON EACH INDIVIDUAL LOT PRIOR TO ANY LOT GRADING OR HOME CONSTRUCTION ACTIVITIES AND SHALL BE ADEQUATELY MAINTAINED UNTIL ALL CONSTRUCTION TRAFFIC AREAS WITHIN THE LOT HAVE BEEN STABILIZED.
31. ALL ENTRANCES SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH CURRENT VDOT STANDARDS. RESIDENTIAL LOT ACCESS SHALL BE PROVIDED PER THE FOLLOWING CRITERIA:
    - ALL DRIVEWAY ENTRANCES AND ENTRANCE CULVERTS SHALL CONFORM TO PE-1 PRIVATE ENTRANCE STANDARDS UNLESS OTHERWISE APPROVED BY VDOT. NO ENTRANCE CULVERTS ARE TO BE INSTALLED WITHIN FIVE (5) FEET OF A PROPERTY CORNER.
    - VDOT STANDARD CG-9D ENTRANCES SHALL BE USED WHEN AN ENTRANCE IS REQUIRED IN CURB AND GUTTER NEIGHBORHOODS UNLESS OTHERWISE APPROVED BY VDOT.
32. DRY GUTTER IS NOT ALLOWED IN VDOT RIGHT OF WAY EXCEPT AS SHOWN ON VDOT'S ENTRANCE STANDARD DETAILS.
33. THE DEVELOPER SHALL FURNISH AND INSTALL STOP SIGNS AND STOP BARS AT STREET INTERSECTIONS AND ALL REGULATORY SIGNAGE PER THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. ALL SIGNS MUST BE INSTALLED ON VDOT STANDARD STP-1 SIGN POSTS.
34. INSTALLATION, MAINTENANCE AND OPERATION OF STREET LIGHTING SHALL BE PROVIDED BY AND AT THE SOLE EXPENSE OF OTHERS. VDOT WILL ALLOW LIGHTING WITHIN THE RIGHT OF WAY BY LAND USE PERMIT (LUP) ONLY. LIGHTING IN CURB SECTIONS SHALL BE PLACED BEHIND THE CURB AND PREFERABLY BEHIND THE SIDEWALK. FOR SHOULDER SECTIONS, THE POLE SHALL BE PLACED A MINIMUM OF 10' FROM EDGE OF PAVEMENT AND BEHIND THE DITCH LINE. ALL LIGHTING PROPOSED WITHIN THE RIGHT OF WAY MUST BE DESIGNED IN ACCORDANCE WITH THE AASHTO GUIDE FOR ROADWAY LIGHTING AND SHALL MEET THE CURRENT ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA (IESNA) STANDARDS.
35. TRAFFIC SIGNALS REQUIRE AN INDIVIDUAL LAND USE PERMIT. THE APPLICANT SHALL BE RESPONSIBLE FOR THE DESIGN COSTS OF ANY TRAFFIC SIGNAL INSTALLATION OR MODIFICATION OF EXISTING SIGNALS. DESIGN PLANS MUST BE PREPARED AND SUBMITTED TO VDOT BY A LICENSED PROFESSIONAL ENGINEER FOR REVIEW AND APPROVAL. THIS INCLUDES THE FOUNDATION DESIGN AND ANY EQUIPMENT ASSOCIATED WITH THE COMPLETED TRAFFIC SIGNAL. ALL EQUIPMENT MUST BE APPROVED BY VDOT. SHOP DRAWINGS MUST BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO FABRICATING ANY SIGNAL STRUCTURAL COMPONENTS.
36. SOIL STABILIZATION IS REQUIRED WITHIN 7 DAYS FOR ALL AREAS WHERE CLEARING, GRADING, EXCAVATION OR OTHER LAND DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED OR WHERE LAND DISTURBANCE ACTIVITIES HAVE BEEN TEMPORARILY SUSPENDED FOR AN ANTICIPATED DURATION OF GREATER THAN 7 DAYS, OR UPON COMPLETION OF GRADING OPERATIONS FOR A SPECIFIED AREA. SOIL STABILIZATION SHALL BEGIN AS SOON AS PRACTICABLE, BUT NOT LATER THAN THE SEVEN DAYS FOLLOWING THE DAY WHEN LAND DISTURBING ACTIVITIES TEMPORARILY OR PERMANENTLY CEASED.
37. NO STRUCTURE SHALL BE CONSTRUCTED ON STATE MAINTAINED RIGHT OF WAYS, OR ON RIGHT OF WAYS INTENDED TO BE MAINTAINED BY VDOT UNLESS SAID STRUCTURES ARE SHOWN ON CONSTRUCTION PLANS APPROVED BY VDOT OR SUCH STRUCTURES ARE COVERED BY A VDOT LUP (OR BY A LETTER OF INTENT FROM THE RESIDENT ADMINISTRATOR/RESIDENT ENGINEER TO ISSUE SAID PERMIT AT THE TIME OF STATE ACCEPTANCE).
38. WHEN EXISTING PAVEMENT MARKINGS WITHIN STATE-MAINTAINED RIGHT-OF-WAY ARE TO BE ERADICATED, ALL ERADICATIONS SCARS SHALL BE OVERLAID WITH SURFACE MIX OR SLURRY SEAL #4. ALL NEW STRIPING REQUIRES THE USE OF THERMOPLASTIC PAVEMENT MARKINGS. CONTACT THE LAND USE PERMIT INSPECTOR TEN DAYS PRIOR TO PROCEEDING TO COORDINATE THE STRIPING LAYOUT.

DEPARTMENT OF PUBLIC WORKS
STANDARD EROSION AND SEDIMENT CONTROL & POLLUTION PREVENTION PLAN NOTES

1. *PRIOR TO COMMENCEMENT OF ANY LAND DISTURBANCE ACTIVITIES, A LAND DISTURBANCE PERMIT MUST BE ISSUED BY THE DEPARTMENT OF PUBLIC WORKS. AN APPROVED EROSION AND SEDIMENT CONTROL PLAN AND BONDING OF THE EROSION AND SEDIMENT CONTROL MEASURES IS REQUIRED FOR PERMIT ISSUANCE.*
2. *A SEPARATE LAND DISTURBANCE PERMIT OR AN ESC PLAN AMENDMENT TO THIS PLAN MUST BE SUBMITTED TO, AND APPROVED BY HANOVER COUNTY DPW PRIOR TO ANY OFF-SITE LAND DISTURBANCE (BORROW / FILLING / DISPOSAL ACTIVITIES) ASSOCIATED WITH THIS PROJECT. IF THE OFF-SITE PORTION OF THE PROJECT IS LOCATED WITHIN HANOVER COUNTY, ADDITIONAL E&S INSPECTION FEES WILL BE REQUIRED.*
3. *CONTACT THE DEPARTMENT OF PUBLIC WORKS' ENVIRONMENTAL COMPLIANCE MANAGER, 365-6181, A MINIMUM OF 48 HOURS PRIOR TO COMMENCEMENT OF LAND DISTURBANCE ACTIVITIES. A PRE-CONSTRUCTION MEETING IS REQUIRED UNLESS IT IS WAIVED BY THE ENVIRONMENTAL COMPLIANCE MANAGER.*
4. *NO WORK MAY OCCUR OUTSIDE THE LIMITS OF DISTURBANCE SHOWN ON THE APPROVED PLANS. WORKING OUTSIDE OF THE LIMITS OF DISTURBANCE SHOWN ON THE APPROVED PLANS WILL RESULT IN A STOP WORK ORDER BEING ISSUED WITH THE POTENTIAL FOR FINES BEING LEVIED.*
5. *PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN (7) DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE.*
6. *TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN (7) DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN THIRTY (30) DAYS.*
7. *DURING CONSTRUCTION OF THE PROJECT, SOIL STOCK PILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT*
8. *STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES, AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.*
9. *EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND INSTALLED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE. INITIAL CLEARING MUST BE THE MINIMUM REQUIRED TO INSTALL EROSION AND SEDIMENT CONTROL MEASURES AND DEVICES. SHOULD EITHER THE EROSION AND SEDIMENT CONTROL NARRATIVE OR SEQUENCE OF CONSTRUCTION CONFLICT WITH THIS REQUIREMENT, THE CONFLICTING PORTIONS OF EITHER WILL BE DETERMINED TO BE INVALID.*
10. *A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT, IN THE OPINION OF THE COUNTY ENGINEER OR HIS DESIGNATED AGENT, IS UNIFORM MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.*
11. *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 TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.*
    - *D. RESTABILIZATION SHALL BE IN ACCORDANCE WITH THE ABOVE NOTES.*
12. *ALL APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.*
13. *WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PUBLIC ROAD SURFACE, THE ROAD SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A DISPOSAL AREA.*
14. *IT SHALL BE THE OWNER'S RESPONSIBILITY TO INSPECT EROSION CONTROL DEVICES PERIODICALLY AND AFTER EVERY ERODIBLE RAINFALL. ANY NECESSARY REPAIRS OR CLEAN UP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.*
15. *ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES AND DEVICES MAY BE REQUIRED BY THE DIRECTOR OF PUBLIC WORKS OR HIS DESIGNATED AGENT IF DEEMED NECESSARY.*
16. *THE OWNER SHALL INSTALL ADDITIONAL EROSION AND SEDIMENT CONTROL DEVICES AND MEASURES IF THE REGISTERED LAND DISTURBER DETERMINES THAT SUCH ADDITIONAL DEVICES AND MEASURES ARE NECESSARY.*
17. *ALL EROSION CONTROL DEVICES SHALL BE IN PLACE AND FUNCTIONAL AT ALL TIMES AND IF REMOVED FOR CONSTRUCTION PROGRESS, SHALL BE REPLACED BY THE CLOSE OF EACH WORKDAY.*
18. *FINAL REMOVAL OF EROSION CONTROL DEVICES SHALL NOT OCCUR UNTIL THE DIRECTOR OF PUBLIC WORKS OR HIS DESIGNATED AGENT DEEMS THE SITE STABILIZED.*
19. *PERMANENT SEEDING IS TO BE IN ACCORDANCE WITH THE ACCOMPANYING SEEDING SCHEDULE.*
20. *CONSTRUCTION SITE OPERATORS ARE REQUIRED TO CONTROL WASTE SUCH AS DISCARDED BUILDING MATERIALS, CONCRETE TRUCK WASHOUT, CHEMICALS, LITTER, AND SANITARY WASTE AT THE CONSTRUCTION SITE THAT MAY CAUSE ADVERSE IMPACTS TO WATER QUALITY.*
21. *CONSTRUCTION SITE OPERATORS ARE REQUIRED TO CONTROL THE TRANSPORT OF DUST AND OTHER WIND BORN CONTAMINANTS AS A RESULT OF LAND-DISTURBING, DEMOLITION AND CONSTRUCTION ACTIVITIES. THE OPERATOR SHALL PREVENT THE SURFACE AND AIR MOVEMENT OF AIRBORNE SUBSTANCES IN ACCORDANCE WITH STD AND SPEC 3.39 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK OR AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR HIS DESIGNATED AGENT.*

UTILITY NOTES:
1. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS PRIOR TO CONSTRUCTION INCLUDING UNDERGROUND UTILITY CONNECTION POINTS, RECEIVING PIPE SIZES, INVERTS, AND PIPE MATERIALS FOR UNDERGROUND STRUCTURES. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY UPON FINDING A DIFFERENCE IN FIELD CONDITIONS AND WHAT IS DEPICTED ON THE PLANS.
2. CONTRACTOR SHALL ENGAGE MISS UTILITY OR A PRIVATE UTILITY LOCATION SERVICE TO MARK ALL UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE ALL UTILITY CONNECTIONS, RELOCATIONS, NEW SERVICES, AND TEMPORARY SERVICES WITH THE UTILITY OWNER PRIOR TO BEGINNING WORK.
4. A STATEMENT AND GEOTECHNICAL REPORT SHALL BE SUBMITTED TO THE FIRE MARSHALL, SIGNED BY AN ENGINEER, CERTIFYING THAT STREET PAVEMENT DESIGN AND CONSTRUCTION IS IN ACCORDANCE WITH THE HANOVER COUNTY FIRE PREVENTION CODE.

ADA NOTE:
ALL SIDEWALKS AND HANDICAP ACCESS RAMPS SHALL MEET ADA REQUIREMENTS. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN DESIGN INFORMATION AND ADA REQUIREMENTS PRIOR TO CONSTRUCTION.

STORM DRAIN NOTES:
1. ALL PIPES ARE MEASURED FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
2. VDOT STANDARD ST-1 STEPS REQUIRED ON ALL CONCRETE STRUCTURES 4' TALL OR HIGHER.
3. RCP PIPE TO BE CLASS III UNLESS OTHERWISE SPECIFIED.
4. ALL ROOF DRAIN PIPE FROM BUILDING TO RCP STORM SEWER SHALL BE HDPE OR EQUAL.
5. ALL STORM SEWER WITH INVERTS BELOW THE NORMAL POOL OF THE SWM BASIN TO BE O-RING PIPE.
6. BOOT CONNECTORS REQUIRED FOR ALL PLASTIC PIPE CONNECTIONS INTO STORM STRUCTURES.

MS-4 NOTES:
A - NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME
B - EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES
C - EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY
D - MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION
E - RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS

E.& S
PER VDOT ROAD AND BRIDGE SPECIFICATIONS 63.10(a): SPECIAL PROVISION 63D, WHICH HAS BEEN REINSTATED EFFECTIVE FEBRUARY 2, 2103. A CERTIFIED EROSION AND SEDIMENT CONTROL CONTRACTOR MUST BE IN RESPONSIBLE CHARGE OF ALL REGULATED LAND DISTURBING ACTIVITIES WITHIN VDOT RIGHT OF WAY.

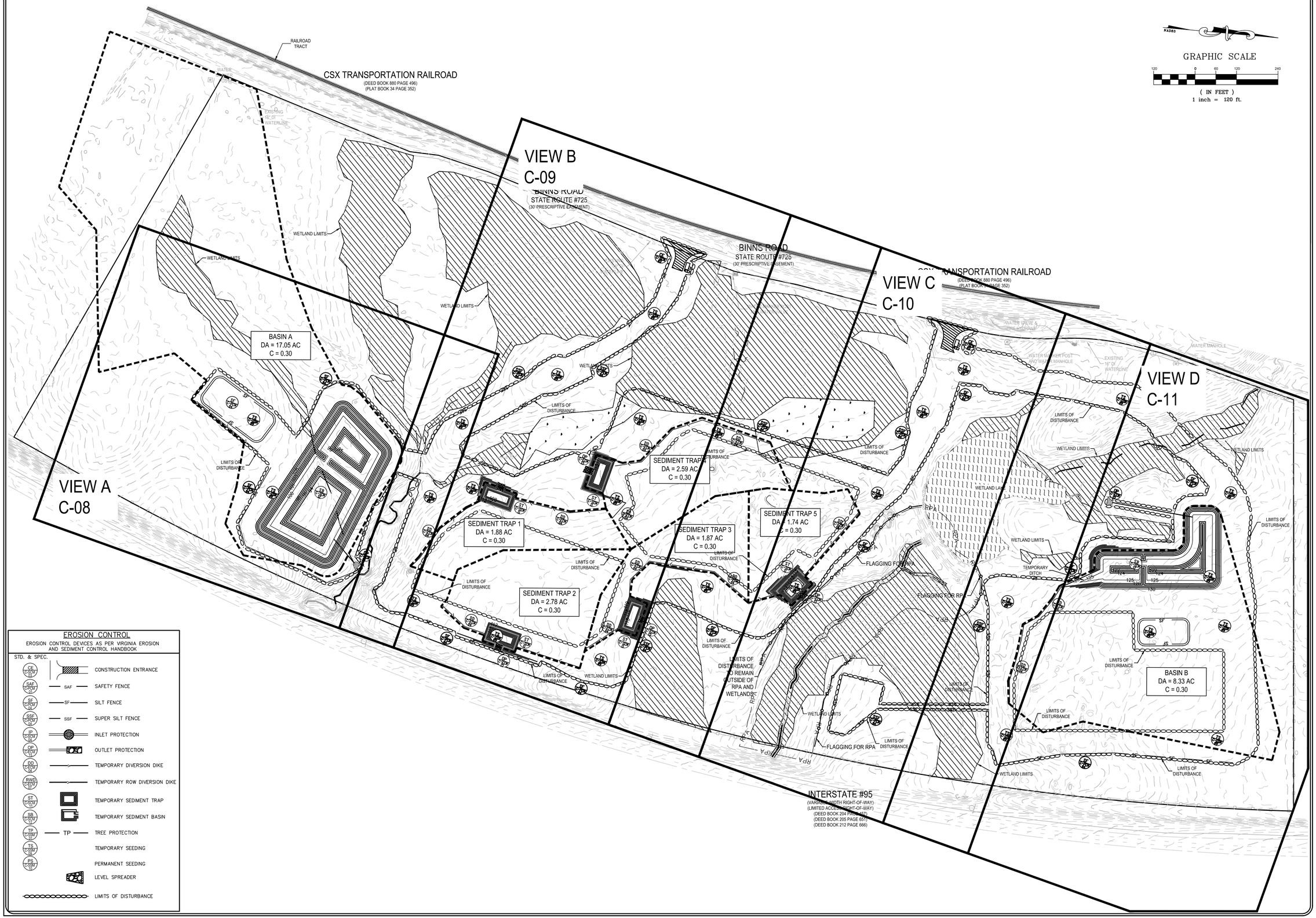
GEOTECHNICAL NOTE:
THE CONSTRUCTION OF TRANSPORTATION IMPROVEMENTS ON ROADWAYS WHICH ARE DEFINED AS ARTERIALS OR COLLECTORS IN HANOVER COUNTY'S "THOROUGHFARE PLAN", AND ALL INTERNAL ROADS REQUIRE THE IMPLEMENTATION OF A COMPREHENSIVE INSPECTION PROGRAM TO ENSURE COMPLIANCE WITH VDOT STANDARDS AND SPECIFICATIONS. INSPECTION SERVICES SHALL BE PROVIDED UTILIZING THE SERVICES OF A LICENSED GEOTECHNICAL ENGINEER TO PERFORM THE REQUIRED INSPECTION AND TESTING.

ANYONE SUBMITTING A MAINTENANCE OF TRAFFIC PLAN WHICH IS PART OF A TRAFFIC MAINTENANCE PLAN SHALL ALSO SUBMIT THE ACCREDITATION NUMBER FOR TAKING THE VDOT ADVANCED TRAFFIC CONTROL PLANNING.

CBRS-INSITU NOTE:
FINAL PAVEMENT SECTIONS SHALL BE EQUAL TO OR EXCEEDING THE PRELIMINARY PAVEMENT SECTIONS SHOWN ON THE PLANS AND SHALL BE BASED, AT A MINIMUM, ON ACTUAL CBR VALUES FOUND AND THE APPROPRIATE PAVEMENT SECTIONS DERIVED THEREFROM. CURBS ARE NOT TO BE SET UNTIL THE FINAL PAVEMENT SECTION IS VERIFIED BASED ON "IN SITU" CBR DETERMINATIONS.

SITE SUMMARY & NOTES

1. EXISTING USE: N/A
2. PROPOSED USE: DATA CENTERS
3. CURRENT PROPERTY ADDRESS: BINNS ROAD
4. ZONING: M-3, A-1
5. GPIN: 7882-47-6634, 7882-48-6475, 7882-58-3767, 7883-50-0062
6. SITE AREA: 105.42 ACRES
7. AREA OF DISTURBANCE: 38.00 ACRES
8. ON-SITE IMPERVIOUS COVER: 24.49 ACRES
9. TOTAL BUILDING AREA: 9.09 ACRES
10. WATER: PUBLIC
11. SEWER: PRIVATE
12. PARKING SPACES REQUIRED PER ZONING:
    1.5 SPACE PER EMPLOYEE OR 15 PARKING SPACES, WHICHEVER IS GREATER
13. PARKING SPACES PROVIDED: 124 STANDARD SPACES & 8 ADA STANDARD HANDICAP SPACES = 132 TOTAL SPACES
14. LATITUDE/LONGITUDE: 37.836312N, -77.453537W
15. NAME OF RECEIVING CHANNEL/WATERS: LITTLE RIVER
16. HUC12 VAHU6: LOWER LITTLE RIVER
17. FEMA MAP: 5105C0180C, EFFECTIVE 6/20/2024
18. PARKING SPACES SHALL BE DELINEATED BY 4" WIDE WHITE PAINTED STRIPES UNLESS OTHERWISE NOTED.
19. ANY SIGN IN EXCESS OF EIGHT (8) SQUARE FEET REQUIRES A PERMIT. PERMIT SHALL BE OBTAINED THROUGH THE BUILDING INSPECTIONS DEPARTMENT. SIGNAGE IS CONTINGENT UPON APPROVAL THROUGH THE SIGN PERMIT REVIEW PROCESS.
20. LANDSCAPING AND SITE IMPROVEMENTS SHALL BE INSTALLED AND MAINTAINED SO AS NOT TO INTERFERE WITH SIGHT DISTANCE NEEDS OF DRIVERS WITHIN THE PARKING AREA AT INTERSECTIONS AND EGRESS/EXIT LOCATIONS.
21. MECHANICAL EQUIPMENT, WHETHER GROUND LEVEL OR ROOF TOP, SHALL BE SHIELDED AND SCREENED FROM PUBLIC VIEW AND DESIGNED TO BE PERCEIVED AS AN INTEGRAL PART OF THE BUILDING. PARAPETS AND/OR SCREENS MUST BE EQUAL IN HEIGHT OR HIGHER THAN ANY ROOFTOP UNITS.
22. ALL EXISTING IMPROVEMENTS, UNLESS OTHERWISE NOTES, SHALL BE REMOVED FROM THE SITE.
23. ANY IMPORTED AND EXPORTED MATERIAL MUST BE TO A PERMITTED SITE AND THE ENVIRONMENTAL ENGINEERING INSPECTOR MUST BE NOTIFIED PRIOR TO HAULING.
24. THIS SITE IS NOT LOCATED WITHIN A 100 YEAR FLOOD PLAIN.
25. ALL PROPOSED UTLITIES ARE TO BE INSTALLED UNDERGROUND INCLUDING ELECTRIC, TELEPHONE AND CABLE TV.
26. ALL PROPOSED TRANSFORMERS, JUNCTION BOXES AND UTILITY FIXTURES SHALL EITHER BE SCREENED ON AT LEAST THREE (3) SIDES WITH LANDSCAPING OR PAINTED TO MATCH THE BUILDING.
27. IT IS THE RESPONSIBILITY OF THE PLUMBER TO INSTALL THE WATER SERVICE BEYOND THE WATER METER.
28. 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 OR FIRE DEPARTMENT STANDPIPE CONNECTION. 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 ENCROACH ON THE REQUIRED THREE FOOT CLEAR RADIUS ON MAT



NAD83

GRAPHIC SCALE

120 0 60 120 240

(IN FEET)
1 inch = 120 ft.

EROSION CONTROL

EROSION CONTROL DEVICES AS PER VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK

STD. & SPEC.		
CE (3.01)		CONSTRUCTION ENTRANCE
SAF (3.05)	SAF	SAFETY FENCE
SF (3.05)	SF	SILT FENCE
SSF (3.05)	SSF	SUPER SILT FENCE
IP (3.07)		INLET PROTECTION
OP (3.07)		OUTLET PROTECTION
DD (3.04)		TEMPORARY DIVERSION DIKE
RWD (3.04)		TEMPORARY ROW DIVERSION DIKE
ST (3.05)		TEMPORARY SEDIMENT TRAP
SB (3.05)		TEMPORARY SEDIMENT BASIN
TP (3.01)	TP	TREE PROTECTION
TS (3.31)		TEMPORARY SEEDING
PS (3.32)		PERMANENT SEEDING
		LEVEL SPREADER
		LIMITS OF DISTURBANCE

Townes
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COMMONWEALTH OF VIRGINIA
ZACKARY A. WILKINS
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06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS SITE PLAN

DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EROSION & SEDIMENT CONTROL - PHASE 1

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 120'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-07

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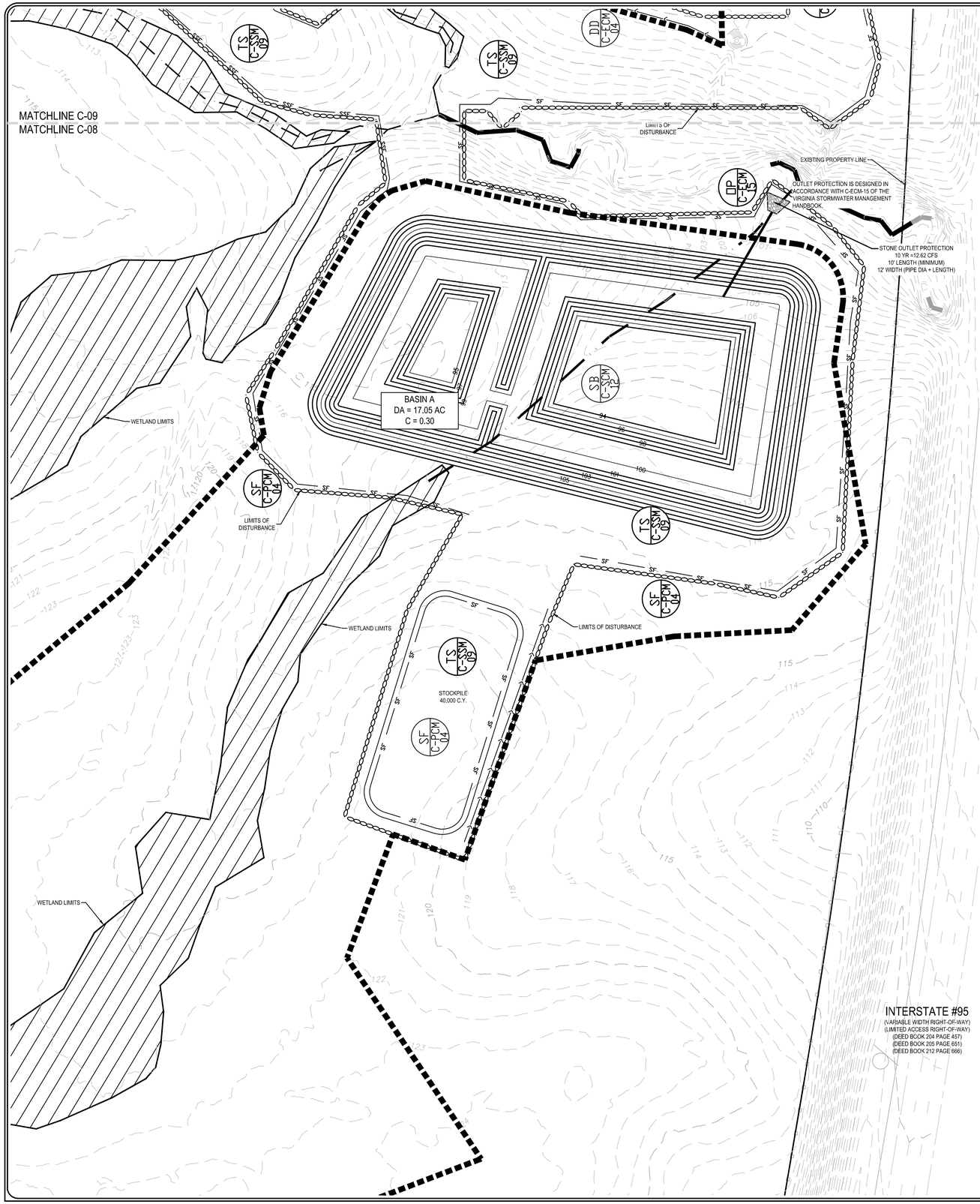

Temporary Sediment Basin Design Data Sheet				
Project	Binns Road Data Centers			
Basin No.	A			
Location:	37.832434, -77.453480			
Total Area Draining to Basin:	34.37	acres		

Basin Volume Design				
Wet Storage:				
Minimum Required Volume:			2,303	cy
Available Basin Volume at Elevation:	5,790 cy	at Elevation:	100.00	ft
Excavation Volume to Obtain Required Volume:			5,790	cy
Available Volume Before Cleanout Required:			1,134	cy
Cleanout Level Elevation:			96.00	ft
Distance From Invert of the Dewatering Orifice to Cleanout Level:			4.00	ft
Dry Storage:				
Minimum Required Volume:			2,303	cy
Available Basin Volume:	7,622 cy	at Crest of Riser Elevation:	103.00	ft
Diameter of Dewatering Orifice:			4	in
Diameter of Flexible Tubing:			6	in
Preliminary Design Elevations:				
Crest of Riser:			103.00	ft
Crest of Emergency Spillway :			N/A	ft
Top of Dam:			108.00	ft
Design High Water:			103.62	ft
Upstream Toe of Dam:			98.00	ft
Basin Shape:				
Inflow #1 L:We > 2, baffle(s) are not required				
Length of Flow to Effective Width Ratio:			2.36	L:We
Length of Flow:			360	ft
Effective Width (We):			152.66	ft
Inflow #2 L:We > 2, baffle(s) are not required				
Length of Flow to Effective Width Ratio:			2.49	L:We
Length of Flow:			370	ft
Effective Width (We):			148.53	ft
Runoff				
2-year peak rate of runoff, Q2:			0.66	cfs
25-year peak rate of runoff, Q25:			20.8	cfs

Temporary Sediment Basin Design Data Sheet			
Principal Spillway Design			
With Emergency Spillway, Required Spillway Capacity Qp = Q2:		N/A	cfs
Without Emergency Spillway, Required Spillway Capacity Qp = Q25:		20.80	cfs
With Emergency Spillway, Assumed Available Head (h) :		N/A	ft
Without Emergency Spillway, Assumed Available Head (h):		0.62	ft
Riser Diameter (Dr):		48	in
Actual Head (using Q25):	Q25 = 20.80 cfs	0.66	ft
Barrel Length (L):		91.0	ft
Head (H) on Barrel Through Embankment:		4.63	ft
Barrel Diameter:		24	in
Trash Rack and Anti-Vortex Device Diameter:		SEE NOTE BELOW	
Trash Rack and Anti-Vortex Device Height:		SEE NOTE BELOW	
	Note: Contractor to install trash rack per VDOT SWM-DR or approved equivalent. See plans for detail.		
Emergency Spillway Design			
Required Spillway Capacity Qe = Q25 - Qp:		N/A	
Bottom Width (b):		N/A	
Slope of the Exit Channel (s):		N/A	
Minimum Length of the Exit Channel (x):		N/A	
Anti-Seep Collar Design			
Depth of Water at Prinicipal Spillway Crest (Y):		N/A	
Slope of Upstream Face of Embankment (Z):		N/A	
Slope of Principal Spillway Barrel (Sb):		N/A	
Length of Barrel in Satured Zone (Ls):		N/A	
Number of Collars Required:		N/A	
Collar Dimensions:		N/A	
	Note: Concrete cradle provided. See plans for detail.		
Final Design Elevations			
Top of Dam:		108.00	ft
Design High Water (25-year Storm):		103.62	ft
Emergency Spillway Crest:		N/A	ft
Principal Spillway Crest:		103.00	ft
Dewatering Orifice Invert:		100.00	ft
Cleanout Elevation:		96.00	ft
Upstream Toe of Dam		98.00	ft
Excavated Bottom of "Wet Storage Area" (if excavation was performed):		94.00	ft

EROSION CONTROL

EROSION CONTROL DEVICES AS PER VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK

STD. & SPEC.		
CE C-SCM 02		CONSTRUCTION ENTRANCE
SAF C-SCM 07	SAF	SAFETY FENCE
SF C-SCM 07	SF	SILT FENCE
SSF C-SCM 54	SSF	SUPER SILT FENCE
IP C-SCM 04		INLET PROTECTION
OP C-ECM 14		OUTLET PROTECTION
DD C-ECM 04		TEMPORARY DIVERSION DIKE
RWD C-ECM 51		TEMPORARY ROW DIVERSION DIKE
ST C-SCM 11		TEMPORARY SEDIMENT TRAP
SB C-SCM 12		TEMPORARY SEDIMENT BASIN
TP C-SSM 08	TP	TREE PROTECTION
TS C-SSM 08		TEMPORARY SEEDING
PS C-SSM 10		PERMANENT SEEDING
		LEVEL SPREADER
		LIMITS OF DISTURBANCE

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)

1 inch = 50 ft.

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BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EROSION & SEDIMENT CONTROL - PHASE 1 - A

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-08

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MATCHLINE C-010
MATCHLINE C-09

BINNS ROAD
STATE ROUTE #725
(30' PRESCRIPTIVE EASEMENT)

EXISTING PROPERTY LINE

WATER MANIFOLD POST
AND WATER LINE

WA: 10'x10' CONCRETE WASH AREA
WC: WASH CLEANUP AREA
VW: VEHICLE WASH AREA
PW: STORAGE OF CONSTRUCTION PRODUCTS & WASTE
SC: SPILL CONTAINMENT KIT
HW: PORTABLE TOILET & HAZARDOUS WASTE DISPOSAL
VF: VEHICLE FUELING AND MAINTENANCE
WATER TO BE SUPPLIED VIA ON-SITE TRUCK

SEDIMENT TRAP 5
DA = 1.74 AC
C = 0.30

SEDIMENT TRAP 4
DA = 2.59 AC
C = 0.30

SEDIMENT TRAP 3
DA = 1.87 AC
C = 0.30

SEDIMENT TRAP 2
DA = 2.78 AC
C = 0.30

SEDIMENT TRAP 1
DA = 1.88 AC
C = 0.30

LIMITS OF DISTURBANCE

WETLAND LIMITS

EXISTING 16" DI WATERLINE

OUTLET PROTECTION IS DESIGNED IN

MATCHLINE C-09
MATCHLINE C-08

EROSION CONTROL

EROSION CONTROL DEVICES AS PER VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK

STD. & SPEC.		
CE C-ECM 03		CONSTRUCTION ENTRANCE
SAF C-ECM 01	SAF	SAFETY FENCE
SF C-ECM 04	SF	SILT FENCE
SSF C-ECM 04	SSF	SUPER SILT FENCE
IP C-ECM 15		INLET PROTECTION
OP C-ECM 14		OUTLET PROTECTION
DD C-ECM 04		TEMPORARY DIVERSION DIKE
RWD C-ECM 07		TEMPORARY ROW DIVERSION DIKE
ST C-SSM 11		TEMPORARY SEDIMENT TRAP
SB C-SSM 12		TEMPORARY SEDIMENT BASIN
TP C-SSF 01	TP	TREE PROTECTION
TS C-SSM 09		TEMPORARY SEEDING
PS C-SSM 10		PERMANENT SEEDING
		LEVEL SPREADER
		LIMITS OF DISTURBANCE

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

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SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EROSION & SEDIMENT CONTROL - PHASE 1 - B

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
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DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-09

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STONE OUTLET PROTECTION
10 YR = 7.21 CFS
10' LENGTH (MINIMUM)
11.5' WIDTH (PIPE DIA + LENGTH)

WETLAND LIMITS

LIMITS OF DISTURBANCE

EXISTING 16" DI WATERLINE

MATCHLINE C-11
MATCHLINE C-10

WATER VALVE & FIRE HYDRANT

BINNS ROAD
STATE ROUTE #725
(30' PRESCRIPTIVE EASEMENT)

WATER MARKER POST AND WATER MANHOLE

WETLAND LAKE

WETLAND LIMITS

WA: 10'x10' CONCRETE WASH AREA
WC: WASH CLEANUP AREA
VW: VEHICLE WASH AREA
PW: STORAGE OF CONSTRUCTION PRODUCTS & WASTE
SC: SPILL CONTAINMENT KIT
HW: PORTABLE TOILET & HAZARDOUS WASTE DISPOSAL
VF: VEHICLE FUELING AND MAINTENANCE
WATER TO BE SUPPLIED VIA ON-SITE TRUCK

RPA

FLAGGING FOR RPA

LIMITS OF DISTURBANCE TO REMAIN OUTSIDE OF RPA AND WETLANDS

SEDIMENT TRAP 5
DA = 1.74 AC
C = 0.30

EXISTING EASEMENT TO BE VACATED

INTERSTATE #95
(VARIABLE WIDTH RIGHT-OF-WAY)
(LIMITED ACCESS RIGHT-OF-WAY)
(DEED BOOK 204 PAGE 457)
(DEED BOOK 205 PAGE 651)
(DEED BOOK 212 PAGE 666)

EXISTING PROPERTY LINE

MATCHLINE C-10
MATCHLINE C-09

EROSION CONTROL

EROSION CONTROL DEVICES AS PER VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK

STD. & SPEC.		
CE (3.00/1)		CONSTRUCTION ENTRANCE
SAF (3.05/1)	SAF	SAFETY FENCE
SF (3.05/1)	SF	SILT FENCE
SSF (3.05/1)	SSF	SUPER SILT FENCE
IP (3.07/1)		INLET PROTECTION
OP (3.07/1)		OUTLET PROTECTION
DD (3.10/1)		TEMPORARY DIVERSION DIKE
RWD (3.01/1)		TEMPORARY ROW DIVERSION DIKE
ST (3.04/1)		TEMPORARY SEDIMENT TRAP
SB (3.04/1)		TEMPORARY SEDIMENT BASIN
TP (3.08/1)	TP	TREE PROTECTION
TS (3.31/1)		TEMPORARY SEEDING
PS (3.32/1)		PERMANENT SEEDING
		LEVEL SPREADER
		LIMITS OF DISTURBANCE

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

Townes
SITE ENGINEERING

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Midlothian, Virginia 23114
Phone:(804) 748-9011
Fax:(804) 748-2590
www.cctownes.com

COMMONWEALTH OF VIRGINIA
ZACKARY A. WILKINS
Lic. No. 050952
06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN

DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EROSION & SEDIMENT CONTROL - PHASE 1 - C

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-10

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EROSION CONTROL

EROSION CONTROL DEVICES AS PER VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK

STD. & SPEC.

- CE (C-SCM-01) — CONSTRUCTION ENTRANCE
- SAF (C-SCM-11) — SAF — SAFETY FENCE
- SF (C-SCM-03) — SF — SILT FENCE
- SSF (C-SCM-03) — SSF — SUPER SILT FENCE
- IP (C-SCM-10) — INLET PROTECTION
- OP (C-SCM-14) — OUTLET PROTECTION
- DD (C-SCM-04) — TEMPORARY DIVERSION DIKE
- RWD (C-SCM-07) — TEMPORARY ROW DIVERSION DIKE
- ST (C-SCM-13) — TEMPORARY SEDIMENT TRAP
- SB (C-SCM-12) — TEMPORARY SEDIMENT BASIN
- TP (C-SSM-02) — TP — TREE PROTECTION
- TS (C-SSM-09) — TEMPORARY SEEDING
- PS (C-SSM-01) — PERMANENT SEEDING
- LEVEL SPREADER
- LIMITS OF DISTURBANCE

EXISTING PROPERTY LINE

LIMITS OF DISTURBANCE

TS C-SSM-09

SF C-PCM-04

BASIN B
DA = 8.33 AC
C = 0.30

STOCKPILE
30,000 C.Y.

SB C-SCM-12

WETLAND LIMITS

DP C-ECM-15

OUTLET PROTECTION IS DESIGNED IN ACCORDANCE WITH C-ECM-15 OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK

STONE OUTLET PROTECTION
10 YR = 7.21 CFS
10' LENGTH (MINIMUM)
11.5' WIDTH (PIPE DIA + LENGTH)

TEMPORARY DITCH

DD C-ECM-04

SSF C-PCM-04

RPA

FLAGGING FOR RPA

EXISTING 16" DI WATERLINE

; ROAD
OUTE #725
TIVE EASEMENT)

INTERSTATE #95
(VARIABLE WIDTH RIGHT-OF-WAY)
(LIMITED ACCESS RIGHT-OF-WAY)
(DEED BOOK 204 PAGE 457)
(DEED BOOK 205 PAGE 651)
(DEED BOOK 212 PAGE 666)

MATCHLINE C-11
MATCHLINE C-10

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

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BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EROSION & SEDIMENT CONTROL - PHASE 1 - D

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-11

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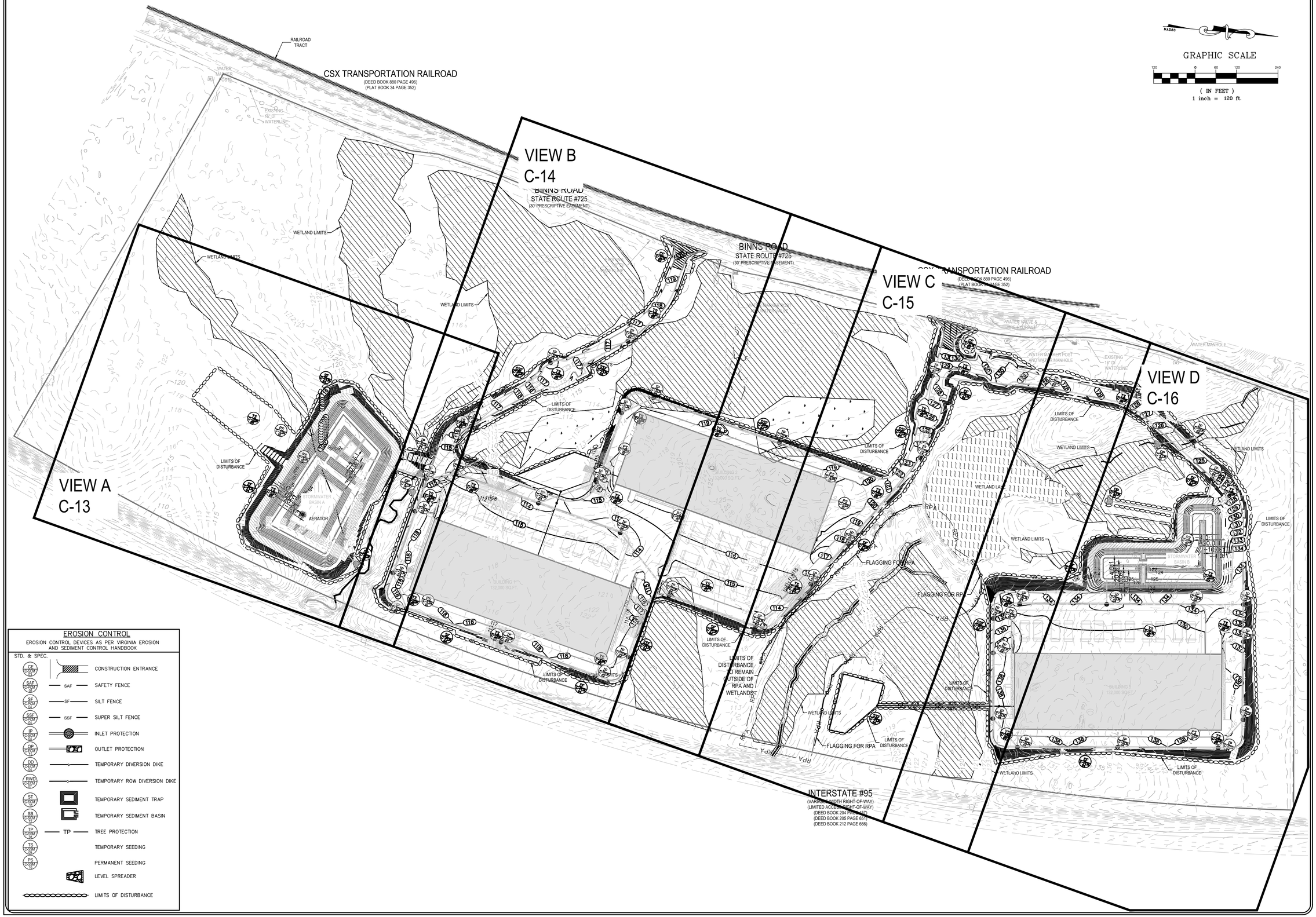

NAD83

GRAPHIC SCALE

120 0 60 120 240

(IN FEET)
1 inch = 120 ft.

EROSION CONTROL

EROSION CONTROL DEVICES AS PER VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK

STD. & SPEC.		
CE (3.01)		CONSTRUCTION ENTRANCE
SAF (3.02)	SAF	SAFETY FENCE
SF (3.05)	SF	SILT FENCE
SSF (3.05)	SSF	SUPER SILT FENCE
IP (3.07)		INLET PROTECTION
OP (3.07)		OUTLET PROTECTION
DT (3.08)		TEMPORARY DIVERSION DIKE
RWD (3.08)		TEMPORARY ROW DIVERSION DIKE
ST (3.04)		TEMPORARY SEDIMENT TRAP
SB (3.04)		TEMPORARY SEDIMENT BASIN
TP (3.39)	TP	TREE PROTECTION
TS (3.35)		TEMPORARY SEEDING
PS (3.32)		PERMANENT SEEDING
		LEVEL SPREADER
		LIMITS OF DISTURBANCE

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DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EROSION & SEDIMENT CONTROL - PHASE 2

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 120'

DRAWN BY
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DESIGNED BY
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PROJ.#
20240084

SHEET #
C-12

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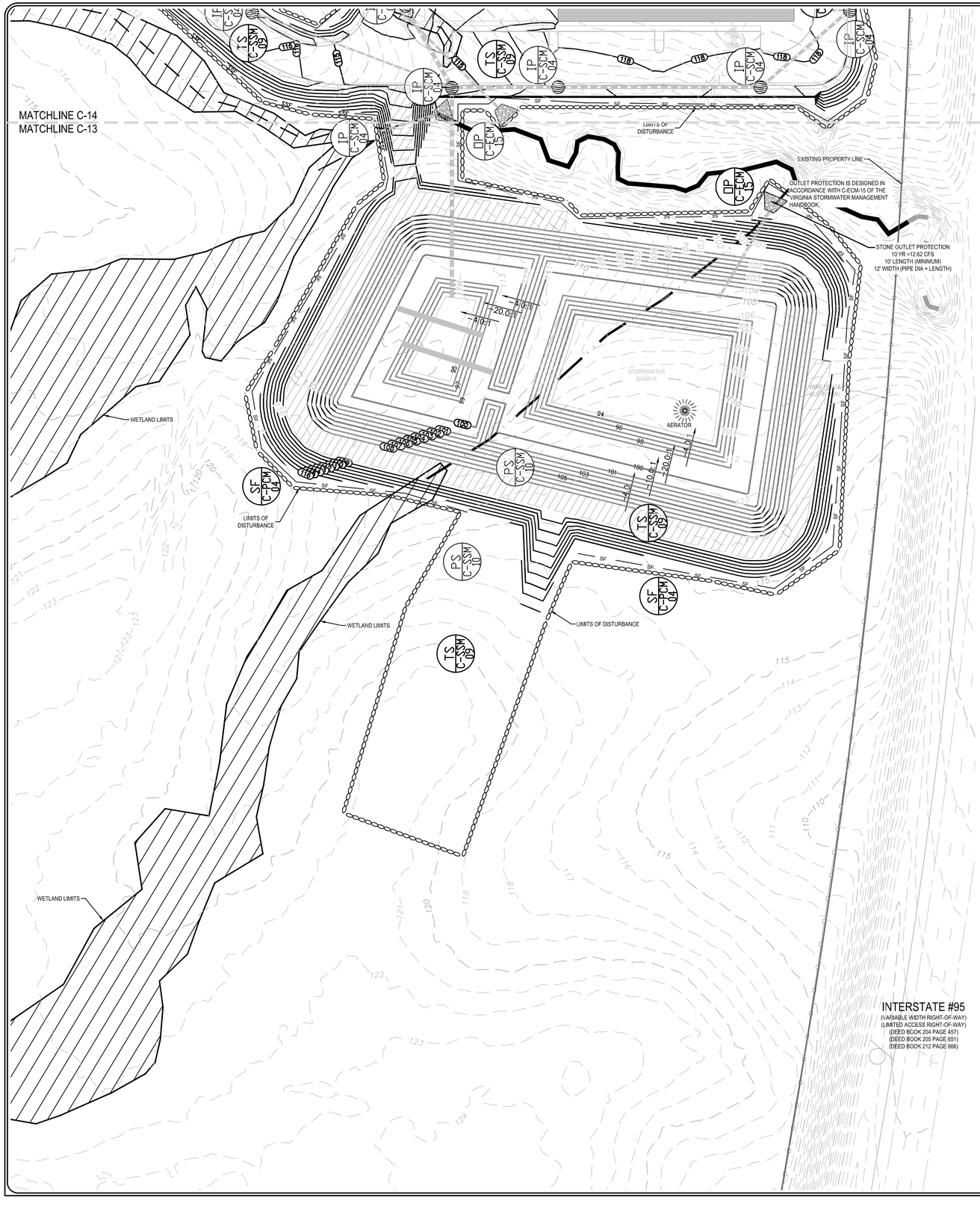

EROSION CONTROL

EROSION CONTROL DEVICES AS PER VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK

STD. & SPEC.		
CE C-SCM 02		CONSTRUCTION ENTRANCE
SAF C-SCM 07	SAF	SAFETY FENCE
SF C-SCM 04	SF	SILT FENCE
SSF C-SCM 04	SSF	SUPER SILT FENCE
IP C-SCM 04		INLET PROTECTION
OP C-ECM 14		OUTLET PROTECTION
DD C-ECM 04		TEMPORARY DIVERSION DIKE
RWD C-ECM 07		TEMPORARY ROW DIVERSION DIKE
ST C-SCM 15		TEMPORARY SEDIMENT TRAP
SB C-SCM 12		TEMPORARY SEDIMENT BASIN
TP C-SSM 01	TP	TREE PROTECTION
TS C-SSM 08		TEMPORARY SEEDING
PS C-SSM 10		PERMANENT SEEDING
		LEVEL SPREADER
		LIMITS OF DISTURBANCE

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

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DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EROSION & SEDIMENT CONTROL - PHASE 2 - A

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
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20240084

SHEET #
C-13

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MATCHLINE C-14
MATCHLINE C-13

BINNS ROAD
STATE ROUTE #725
(30' PRESCRIPTIVE EASEMENT)

WATER MARKER POST AND WATER VALVE

EXISTING PROPERTY LINE

WA: 10'x10' CONCRETE WASH AREA
WC: WASH CLEANUP AREA
VW: VEHICLE WASH AREA
PW: STORAGE OF CONSTRUCTION PRODUCTS & WASTE
SC: SPILL CONTAINMENT KIT
HW: PORTABLE TOILET & HAZARDOUS WASTE DISPOSAL
VF: VEHICLE FUELING AND MAINTENANCE
WATER TO BE SUPPLIED VIA ON-SITE TRUCK

LIMITS OF DISTURBANCE
WETLAND LIMITS

BUILDING 2
192,000 SQ.FT.

BUILDING 1
132,000 SQ.FT.

PRIVATE 6" PVC SAN. LATERAL

LIMITS OF DISTURBANCE
DRAINFIELD 1
~14,575 SQ.FT.

WIRE FENCE

EXISTING 16" DI WATERLINE

OUTLET PROTECTION IS DESIGNED IN

EROSION CONTROL

EROSION CONTROL DEVICES AS PER VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK

STD. & SPEC.		
CE C-SCM 03		CONSTRUCTION ENTRANCE
SAF C-PCM 15	SAF	SAFETY FENCE
SF C-PCM 04	SF	SILT FENCE
SSF C-PCM 04	SSF	SUPER SILT FENCE
IP C-SCM 04		INLET PROTECTION
OP C-PCM 15		OUTLET PROTECTION
DD C-SCM 12		TEMPORARY DIVERSION DIKE
RWD C-SCM 12		TEMPORARY ROW DIVERSION DIKE
ST C-SCM 13		TEMPORARY SEDIMENT TRAP
SB C-SCM 12		TEMPORARY SEDIMENT BASIN
TP C-SSF 01	TP	TREE PROTECTION
TS C-SSM 09		TEMPORARY SEEDING
PS C-SSM 10		PERMANENT SEEDING
		LEVEL SPREADER
		LIMITS OF DISTURBANCE

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

MATCHLINE C-14
MATCHLINE C-13

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BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EROSION & SEDIMENT CONTROL - PHASE 2 - B

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-14

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MATCHLINE C-16
MATCHLINE C-15

BINNS ROAD
STATE ROUTE #725
(30' PRESCRIPTIVE EASEMENT)

INTERSTATE #95
(VARIABLE WIDTH RIGHT-OF-WAY)
(LIMITED ACCESS RIGHT-OF-WAY)
(DEED BOOK 204 PAGE 457)
(DEED BOOK 205 PAGE 651)
(DEED BOOK 212 PAGE 666)

STONE OUTLET PROTECTION
10 YR = 7.21 CFS
10' LENGTH (MINIMUM)
11.5' WIDTH (PIPE DIA + LENGTH)

WA: 10'x10' CONCRETE WASH AREA
WC: WASH CLEANUP AREA
VW: VEHICLE WASH AREA
PW: STORAGE OF CONSTRUCTION PRODUCTS & WASTE
SC: SPILL CONTAINMENT KIT
HW: PORTABLE TOILET & HAZARDOUS WASTE DISPOSAL
VF: VEHICLE FUELING AND MAINTENANCE
WATER TO BE SUPPLIED VIA ON-SITE TRUCK

APPROXIMATE LOCATION OF 8' DIRT ROAD

FLAGGING FOR RPA

LIMITS OF DISTURBANCE TO REMAIN OUTSIDE OF RPA AND WETLANDS

DRAINFIELD 2
~15,900 SQ.FT.

BUILDING 2
132,000 SQ.FT.

WETLAND LIMITS
WETLAND LAKE
LIMITS OF DISTURBANCE
EXISTING PROPERTY LINE
CHAIN LINK FENCE
WIRE FENCE
WATER VALVE & FIRE HYDRANT
EXISTING 16" DI WATERLINE
SIDEWALK

EROSION CONTROL

EROSION CONTROL DEVICES AS PER VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK

STD. & SPEC.		
CE (3.01)		CONSTRUCTION ENTRANCE
SAF (3.02)	SAF	SAFETY FENCE
SF (3.05)	SF	SILT FENCE
SSF (3.05)	SSF	SUPER SILT FENCE
IP (3.07)		INLET PROTECTION
OP (3.07)		OUTLET PROTECTION
DD (3.04)		TEMPORARY DIVERSION DIKE
RWD (3.04)		TEMPORARY ROW DIVERSION DIKE
ST (3.07)		TEMPORARY SEDIMENT TRAP
SB (3.13)		TEMPORARY SEDIMENT BASIN
TP (3.08)	TP	TREE PROTECTION
TS (3.32)		TEMPORARY SEEDING
PS (3.32)		PERMANENT SEEDING
		LEVEL SPREADER
		LIMITS OF DISTURBANCE

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 ft.

MATCHLINE C-15
MATCHLINE C-14

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BINNS ROAD DATA CENTERS
SITE PLAN

DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EROSION & SEDIMENT CONTROL - PHASE 2 - C

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
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DESIGNED BY
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CHECKED BY
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PROJ.#
20240084

SHEET #
C-15

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EROSION CONTROL

EROSION CONTROL DEVICES AS PER VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK

STD. & SPEC.

- CE (DCSM 03) — CONSTRUCTION ENTRANCE
- SAF (DCSM 12) — SAFETY FENCE
- SF (DCSM 12) — SILT FENCE
- SSF (DCSM 12) — SUPER SILT FENCE
- IP (DCSM 04) — INLET PROTECTION
- OP (DCSM 14) — OUTLET PROTECTION
- DD (DCSM 14) — TEMPORARY DIVERSION DIKE
- RWD (DCSM 07) — TEMPORARY ROW DIVERSION DIKE
- ST (DCSM 15) — TEMPORARY SEDIMENT TRAP
- SB (DCSM 15) — TEMPORARY SEDIMENT BASIN
- TP (DCSM 02) — TREE PROTECTION
- TS (DCSM 09) — TEMPORARY SEEDING
- PS (DCSM 10) — PERMANENT SEEDING
- LEVEL SPREADER
- LIMITS OF DISTURBANCE

EXISTING PROPERTY LINE

WIRE FENCE

BARBED WIRE FENCE

LIMITS OF DISTURBANCE

INTERSTATE #95
(VARIABLE WIDTH RIGHT-OF-WAY)
(LIMITED ACCESS RIGHT-OF-WAY)
(DEED BOOK 204 PAGE 457)
(DEED BOOK 205 PAGE 651)
(DEED BOOK 212 PAGE 666)

; ROAD
OUTE #725
TIVE EASEMENT)

WETLAND LIMITS

0.14 AC WETLAND TO BE IMPACTED

EXISTING 16" DI WATERLINE

AERATOR

STORMWATER BASIN B

OUTLET PROTECTION IS DESIGNED IN ACCORDANCE WITH C-ECM-15 OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK.

STONE OUTLET PROTECTION
10 YR = 7.21 CFS
10' LENGTH (MINIMUM)
11.5' WIDTH (PIPE DIA + LENGTH)

MATCHLINE C-16
MATCHLINE C-15

FLAGGING FOR RPA

RPA

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

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BINNS ROAD DATA CENTERS
SITE PLAN

DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EROSION & SEDIMENT CONTROL - PHASE 2 - D

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-16

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PROJECT DESCRIPTION
THIS PROJECT CONSISTS OF THREE 132,000 SQUARE FEET DATA CENTER BUILDINGS IN THE DOSWELL DISTRICT OF HANOVER COUNTY. THE TOTAL AREA OF DISTURBANCE ASSOCIATED WITH THIS PROJECT IS 39.00 AC.

EXISTING SITE CONDITIONS
THE EXITING SITE US CURRENTLY UNDEVELOPED WITH SPORADIC WETLANDS. THERE IS AN RPA ALONG THE EASTERN SIDE OF THE SITE. MULTIPLE STREAMS EXISTS ON SITE PRIMARILY DRAINING INTO THE EXISTING POND ON SITE AND EAST.

ADJACENT AREAS
THE SITE IS BORDERED TO THE WEST BY CXS TRANSPORTATION RAILROAD, THE EAST BY INTERSTATE #95, AND TO THE NORTH AND SOUTH BY EXISTING SINGLE FAMILY HOMES.

OFFSITE AREAS
TOP SOIL SPOILS WILL BE SENT OFFSITE. ANY OFFSITE AREA WILL NEED TO HAVE ITS OWN VSMP COVERAGE PRIOR TO ACCEPTING ANY SPOILS.

SOILS
THE SITE IS CHARACTERIZED BY A MAJORITY OF SANDY LOAM SOILS WITH DIFFERENT VARIETIES THROUGHOUT THE SITE AS FOUND ON THE WEB SOIL WEBSITE AT HTTP://WEBSOILSURVEY.NRCS.USDA.GOV/APP/WEBSOILSURVEY.ASPX.

CRITICAL AREAS
THERE ARE SEVERAL AREAS OF WETLANDS AND AN RPA ONSITE. LESS THAN ONE ACRE OF WETLANDS OUTSIDE OF THE RPA ARE PROPOSED TO BE IMPACTED. THE RPA WILL REMAIN UNDISTURBED. THE CONTRACTOR WILL ENSURE THE EROSION CONTROL DEVICES ARE MAINTAINED AND IN PROPER WORKING CONDITION AT ALL TIMES.

CONSTRUCTION SEQUENCE NARRATIVE - PHASE I

THE CONTRACTOR SHALL PROVIDE THE COUNTY INSPECTOR 48 HOUR NOTIFICATION TO SCHEDULE AN ON-SITE PRE-CONSTRUCTION MEETING FOR THE ISSUANCE OF A LAND DISTURBANCE PERMIT. IF CONSTRUCTION DOES NOT COMMENCE FOR 180 DAYS FOLLOWING THE PRE-CONSTRUCTION MEETING, OR IF THE PROJECT IS DORMANT FOR 180 DAYS DURING THE CONSTRUCTION PHASE, A NEW PRE-CONSTRUCTION MEETING IS REQUIRED BEFORE CONSTRUCTION CAN RE-START. ORANGE SAFETY FENCE OR YELLOW & BLACK BARRICADE TAPE MUST BE INSTALLED AROUND LIMITS OF WETLANDS TO REMAIN PRIOR TO THE PRE-CONSTRUCTION MEETING. LAND DISTURBANCE OUTSIDE THE PRELIMINARY LIMITS OF DISTURBANCE MAY NOT OCCUR UNTIL THE INSTALLATION OF THE INITIAL EROSION AND SEDIMENT CONTROL MEASURES HAVE BEEN APPROVED BY THE ENVIRONMENTAL INSPECTOR. ALL EROSION CONTROL MEASURES MUST BE PLACED AS THE FIRST STEP IN THE CONSTRUCTION PROCESS. NO EROSION AND SEDIMENT CONTROL MEASURES CAN BE REMOVED WITHOUT THE APPROVAL OF THE COUNTY ENVIRONMENTAL INSPECTOR.

EROSION CONTROL PHASE I:
1. SWPPP MAILBOX AND TREE PROTECTION SHALL BE INSTALLED PRIOR TO SCHEDULING A PRE-CONSTRUCTION MEETING.
2. PRE-CONSTRUCTION MEETING TO BE SCHEDULED PRIOR TO ANY LAND DISTURBANCE.
3. TREE PROTECTION, ORANGE VINYL SNOW FENCING, SHALL BE PROVIDED ALONG LOD PRIOR TO PRECONSTRUCTION MEETING.
4. INSTALL THE CONSTRUCTION ENTRANCE AS SHOWN ON THE PLANS. A WASH RACK MAY BE REQUIRED AT THE CONSTRUCTION ENTRANCE AS SHOWN ON THE PLANS. NECESSITY OF A WASH RACK WILL BE DETERMINED BY THE COUNTY INSPECTOR. A WASH RACK MUST DRAIN TO A SEDIMENT BASIN DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MINIMIZE THE AMOUNT OF MUD AND CONSTRUCTION DEBRIS FROM ENTERING ALL ROADS.
5. INSTALL ALL SILT FENCE AND DIVERSION DIKES. DIVERSION DIKES SHALL BE UTILIZED TO DIVERT FLOW INTO THE SEDIMENT BASIN DURING ALL PHASES OF CONSTRUCTION.
6. DITCHES AND INLETS WILL BE INSTALLED TO DETER RUNOFF.
7. CONTRACTOR SHALL CLEAR ONLY THOSE AREAS AS SPECIFIED ON THE EROSION CONTROL PHASE ONE PLANS AS NECESSARY TO INSTALL THE SEDIMENT BASINS, SILT FENCE, DIVERSION DIKES, AND STONE OUTLETS.
8. CONTRACTOR SHALL START FROM THE SEDIMENT BASIN AND INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLAN.
9. CONTRACTOR SHALL INSTALL RISER STRUCTURE FOR SEDIMENT BASIN OUTFALL.
10. BASIN SHALL DISCHARGE TO OUTLET PROTECTION BEFORE OUTFALLING.
11. INSTALL TEMPORARY SEEDING FOR ALL DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR A PERIOD OF MORE THAN 14 DAYS. INSTALL PERMANENT SEEDING WITHIN 7 DAYS OF REACHING FINAL GRADE. ALL DIVERSIONS, SEDIMENT BASINS, AND STOCKPILES MUST BE SEEDED AND MULCHED IMMEDIATELY UPON CONSTRUCTION.
12. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DIVERSION DIKES, IMMEDIATELY AFTER INSTALLATION.
13. ONCE THE SEDIMENT BASIN HAS BEEN INSTALLED, THE CONTRACTOR SHALL COORDINATE WITH THE COUNTY ENVIRONMENTAL INSPECTOR PRIOR TO PROCEEDING TO CLEARING AND GRUBBING.
14. CONTRACTOR SHALL FILL EXISTING SEDIMENT BASIN.

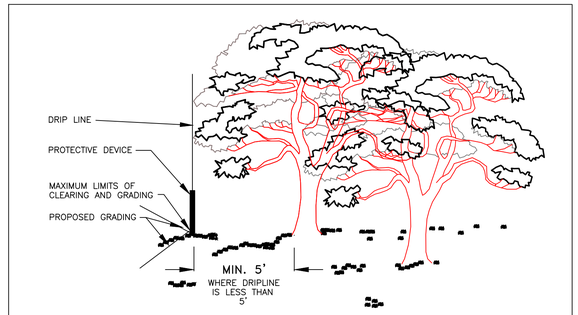
EROSION CONTROL MEASURE NOTES:
1. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF PRODUCING RAINFALL EVENT AND IMMEDIATELY PROVIDE ANY NECESSARY REPAIRS AND/OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES.
2. ALL DISTURBED AREAS ARE TO DRAIN TO AN APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
3. TEMPORARY SEEDING SHALL BE APPLIED TO ALL DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR A PERIOD OF MORE THAN 14 DAYS.
4. NO DISTURBED AREAS WILL BE DENUDED FOR MORE THAN 60 CALENDAR DAYS.
5. ALL TEMPORARY EARTH BERMS, DIVERSIONS, SEDIMENT BASINS, AND STOCKPILES ARE TO BE MULCHED AND SEEDED FOR VEGETATIVE COVER IMMEDIATELY UPON CONSTRUCTION. STRAW OR HAY MULCH IS REQUIRED.
6. ANY DISTURBED AREA NOT HAVING ESTABLISHED VEGETATION BY NOVEMBER 1ST, IS TO BE SEEDED ON THAT DATE WITH OATS, ABRUZZI, RYE, OR EQUIVALENT AND MULCHED WITH HAY OR STRAW MULCH. THE CONTRACTOR SHALL MODIFY THIS REQUIREMENT AS APPLICABLE DEPENDING ON THE PROPOSED CONSTRUCTION SCHEDULE.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION SEDIMENTATION AS DETERMINED BY THE ENVIRONMENTAL INSPECTOR.
8. ALL EROSION & SEDIMENT CONTROL DEVICES MUST BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE CURRENT EDITION OF THE EROSION AND SEDIMENT CONTROL HANDBOOK FOR HANOVER COUNTY.
9. NO EROSION AND SEDIMENT CONTROL MEASURES MAY BE REMOVED WITHOUT APPROVAL OF THE ENVIRONMENTAL INSPECTOR FOR THE PROJECT.

CONSTRUCTION SEQUENCE NARRATIVE - PHASE II

LAND DISTURBANCE OUTSIDE THE PRELIMINARY LIMITS OF DISTURBANCE MAY NOT OCCUR UNTIL THE INSTALLATION OF ALL EROSION AND SEDIMENT CONTROL MEASURES WITHIN THE ASSOCIATED DRAINAGE AREA AS APPROVED BY THE COUNTY ENVIRONMENTAL INSPECTOR.
NO EROSION AND SEDIMENT CONTROL MEASURES CAN BE REMOVED WITHOUT THE APPROVAL OF THE ENVIRONMENTAL INSPECTOR.
A GEOTECHNICAL CERTIFICATION MUST BE PROVIDED PRIOR TO THE ECB RELEASE STATING THAT CONSTRUCTION COMPACTION REQUIREMENTS HAVE BEEN ACHIEVED BECAUSE THE DAM HEIGHT IS GREATER THAN 3 FEET.

EROSION AND SEDIMENT CONTROL PHASE II:
1. UPON APPROVAL OF THE ENVIRONMENTAL INSPECTOR OF THE INITIAL EROSION CONTROL DEVICES THE CONTRACTOR MAY PERFORM LAND DISTURBANCE OUTSIDE OF THE PRELIMINARY LIMITS OF DISTURBANCE.
2. THE CONTRACTOR MAY BEGIN TIMBERING, CLEARING, GRUBBING, INITIAL GRADING, AND STOCKPILING TO THE LIMITS OF DISTURBANCE.
3. THE CONTRACTOR SHALL BEGIN MASS GRADING OPERATIONS AND ADJUSTING STOCK PILES AS NECESSARY.
4. BEGIN LAYDOWN AREA GRADING. ALL PROPOSED ESC MEASURES SHALL BE INSTALLED AT THIS TIME.
5. BEGIN SANITARY SEWER INSTALLATION.
6. BEGIN STORM SEWER INSTALLATION.
7. BEGIN ONSITE WATERLINE INSTALLATION.
8. BEGIN ROAD CONSTRUCTION. EXCAVATE/FILL AS NECESSARY TO BRING ROADS TO SUB-GRADE.
9. BRING SITE TO FINAL GRADE AND PREPARE SUBGRADE PER GEOTECHNICAL ENGINEER OF RECORD.
10. INSTALL STONE BASE, CURB, GUTTER AND ASPHALT.
11. PLACE TOPSOIL AND SEED TO PROVIDE STABILIZATION AS SOON AS POSSIBLE FOR ALL AREAS CLEARED AND GRADED TO THE ELEVATIONS SHOWN ON THE PHASE TWO EROSION CONTROL PLANS.
12. ONCE SITE STABILIZATION HAS BEEN ACHIEVED FOR EACH AREA (AND ITS ASSOCIATED DRAINAGE AREAS), THE CONTRACTOR SHALL CONTACT THE ENVIRONMENTAL INSPECTOR TO GET APPROVAL TO REMOVE THE SILT FENCE, INLET PROTECTION, AND TEMPORARY SEDIMENT TRAPS.
13. BASINS SHALL BE CONVERTED TO PERMANENT BMP PONDS BY CONVERTING THE OUTLET STRUCTURES ACCORDINGLY.
14. BASIN CONVERSION SHALL NOT OCCUR WITHOUT INSPECTOR APPROVAL. INSPECTOR SHALL INSPECT THE CONSTRUCTION AND CONVERSION.
15. CONTRACTOR SHALL COORDINATE WITH ENGINEER AND INSPECTOR ON INSTALLATION OF PLANTINGS AND AERATOR.
16. A 6" LAYER OF TOPSOIL IS REQUIRED AND MUST BE PROVIDED FOR ALL AREAS OF THE BASIN THAT WILL BE STABILIZED WITH A PERMANENT STAND OF VEGETATION.
17. IF DETERMINED NECESSARY, THE BASIN SHALL BE CLEANED OUT PRIOR TO BOND RELEASE.
18. A GEOTECHNICAL CERTIFICATION MUST BE PROVIDED STATING THAT COMPACTION REQUIREMENTS HAVE BEEN ACHIEVED BECAUSE THE DAM HEIGHT IS GREATER THAN THREE (3) FEET PRIOR TO RELEASE OF THE EROSION CONTROL BOND.
19. A CONSTRUCTION RECORD DRAWING AND CERTIFICATION THAT THE SWM FACILITY, INCLUDING POND GRADING, FOREBAY, EMBANKMENT, PRINCIPAL OUTLET STRUCTURE AND ORIFICES, PLANTING AND AERATOR, HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLAN MUST BE SUBMITTED TO THE COUNTY AND APPROVED PRIOR TO THE RELEASE OF THE EROSION CONTROL BOND.

EROSION CONTROL MEASURE NOTES:
1. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF PRODUCING RAINFALL EVENT AND IMMEDIATELY PROVIDE ANY NECESSARY REPAIRS AND/OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES.
2. ALL DISTURBED AREAS ARE TO DRAIN TO AN APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
3. INSTALL PERMANENT SEEDING WITHIN 7 DAYS OF REACHING FINAL GRADE
4. NO DISTURBED AREAS WILL BE DENUDED FOR MORE THAN 60 CALENDAR DAYS.
5. ALL TEMPORARY EARTH BERMS, DIVERSIONS, SEDIMENT BASINS, AND STOCKPILES ARE TO BE MULCHED AND SEEDED FOR VEGETATIVE COVER IMMEDIATELY UPON CONSTRUCTION. STRAW OR HAY MUCH IS REQUIRED.
6. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.
7. ANY DISTURBED AREA NOT HAVING ESTABLISHED VEGETATION BY NOVEMBER 1ST, IS TO BE SEEDED ON THAT DATE WITH OATS, ABRUZZI, RYE, OR EQUIVALENT AND MULCHED WITH HAY OR STRAW MULCH. THE CONTRACTOR SHALL MODIFY THIS REQUIREMENT AS APPLICABLE DEPENDING ON THE PROPOSED CONSTRUCTION SCHEDULE.
8. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENT CONTROL AS DETERMINED BY THE ENVIRONMENTAL INSPECTOR.
9. ALL EROSION & SEDIMENT CONTROL DEVICES MUST BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE CURRENT EDITION OF THE EROSION AND SEDIMENT CONTROL HANDBOOK FOR HANOVER COUNTY.
10. ADJUST SOIL STOCKPILE AS NECESSARY TO PERFORM GRADING.
11. CONTRACTOR SHALL INVOLVE HANOVER COUNTY STAFF IN INSPECTIONS OF SWM FACILITIES, INCLUDING INITIAL SITE PREPARATION, EXCAVATION/GRADING AND INSTALLATION OF WEIR.
12. NO EROSION AND SEDIMENT CONTROL MEASURES MAY BE REMOVED WITHOUT APPROVAL OF THE ENVIRONMENTAL INSPECTOR FOR THE PROJECT.



CONSTRUCTION OPERATIONS RELATIVE TO THE LOCATION OF PROTECTED TREES

Source: Public Facilities Manual, Vol. III, Fairfax Co., Va., 1976 Plate 3.38-1

SEDIMENT BASINS

Basin #	Drainage Area (acres)	Wet Storage		Dry Storage		Bottom Elevation	Riser Crest Elevation	Riser Diameter	Dewatering Device Elevation	Dewatering Device Diameter	25- Yr. Storm Elevation	Emergency Spillway Elevation	Anti-Vortex Device Diameter	Top of Dam Elevation	Top of Dam Width	BAFFLE			BARREL			
		Volume Required (Cu. ft.)	Volume Provided (Cu. Ft.)	Volume Required (Cu. ft.)	Volume Provided (Cu. ft.)											Flowlength to Width Ratio	Baffle Length	Top of Baffle	Pipe Length	Pipe Diameter	Invert In	Invert Out
A	34.37	62,181	156,341	62,181	205,794	94	103	48	96	3x3	103.62	N/A	54	108	12	2.36	N/A	N/A	91	24	99	98
B	11.55	20,898	31,459	20,898	101,939	120	127	24	122	3x3	127.4	N/A	54	130	12	2.15	N/A	N/A	236	24	125	124

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06/30/2026
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BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EROSION & SEDIMENT CONTROL - NARRITIVE

REVISIONS
DATE ITEM

DATE
06 / 30 / 2026
SCALE
NO SCALE
DRAWN BY
ARON ZHOU, E.I.T
DESIGNED BY
ARON ZHOU, E.I.T
CHECKED BY
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Temporary Sediment Basin Design Data Sheet

Project	Binns Road Data Centers	
Basin No.	B	
Location:	37.838378, -77.453404	
Total Area Draining to Basin:	11.55	acres

Basin Volume Design

Wet Storage:

Minimum Required Volume:			774	cy
Available Basin Volume at Elevation:	1,165 cy	at Elevation:	125.00	ft
Excavation Volume to Obtain Required Volume:			1,165	cy
Available Volume Before Cleanout Required:			381	cy
Cleanout Level Elevation:			122.00	ft
Distance From Invert of the Dewatering Orifice to Cleanout Level:			3.00	ft

Dry Storage:

Minimum Required Volume:			774	cy
Available Basin Volume:	2,610 cy	at Crest of Riser Elevation:	127.00	ft
Diameter of Dewatering Orifice:			4	in
Diameter of Flexible Tubing:			6	in

Preliminary Design Elevations:

Crest of Riser:	127.00	ft
Crest of Emergency Spillway :	N/A	ft
Top of Dam:	130.00	ft
Design High Water:	127.40	ft
Upstream Toe of Dam:	125.00	ft

Basin Shape:

Inflow #1 L:We > 2, baffle(s) are not required

Length of Flow to Effective Width Ratio:	6.58	L:We
Length of Flow:	416	ft
Effective Width (We):	63.19	ft

Inflow #2 L:We > 2, baffle(s) are not required

Length of Flow to Effective Width Ratio:	2.15	L:We
Length of Flow:	238	ft
Effective Width (We):	110.45	ft

Runoff

2-year peak rate of runoff, Q2:	0.54	cfs
25-year peak rate of runoff, Q25:	11.11	cfs

Temporary Sediment Basin Design Data Sheet

Principal Spillway Design

With Emergency Spillway, Required Spillway Capacity Qp = Q2:			N/A	cfs
Without Emergency Spillway, Required Spillway Capacity Qp = Q25:			11.11	cfs
With Emergency Spillway, Assumed Available Head (h) :			N/A	ft
Without Emergency Spillway, Assumed Available Head (h):			0.40	ft
Riser Diameter (Dr):			48	in
Actual Head (using Q25):	Q25 = 11.11 cfs		0.43	ft
Barrel Length (L):			236.0	ft
Head (H) on Barrel Through Embankment:			2.65	ft
Barrel Diameter:			18	in
Trash Rack and Anti-Vortex Device Diameter:			SEE NOTE BELOW	
Trash Rack and Anti-Vortex Device Height:			SEE NOTE BELOW	

Note: Contractor to install trash rack per VDOT SWM-DR or approved equivalent. See plans for detail.

Emergency Spillway Design

Required Spillway Capacity Qe = Q25 - Qp:	N/A
Bottom Width (b):	N/A
Slope of the Exit Channel (s):	N/A
Minimum Length of the Exit Channel (x):	N/A

Anti-Seep Collar Design

Depth of Water at Principal Spillway Crest (Y):	N/A
Slope of Upstream Face of Embankment (Z):	N/A
Slope of Principal Spillway Barrel (Sb):	N/A
Length of Barrel in Satured Zone (Ls):	N/A
Number of Collars Required:	N/A
Collar Dimensions:	N/A

Note: Concrete cradle provided. See plans for detail.

Final Design Elevations

Top of Dam:	130.00	ft
Design High Water (25-year Storm):	127.40	ft
Emergency Spillway Crest:	N/A	ft
Principal Spillway Crest:	127.00	ft
Dewatering Orifice Invert:	125.00	ft
Cleanout Elevation:	122.00	ft
Upstream Toe of Dam	125.00	ft
Excavated Bottom of "Wet Storage Area" (if excavation was performed):	120.00	ft

Sediment Trap 1

Area=	1.88	acres
Wet Volume Req'd	3401	cf
Dry Volume Req'd	3401	cf
Bottom L =	64	ft
Bottom W =	20	ft
Wet Depth =	3	ft
Dry Depth =	2	ft
Wet Volume Actual	5568	cf
Dry Volume Actual	5792	cf
Stone Outlet L =	12	ft
Side Slopes =	3	:1
Top Width=	50	ft
Top Length=	94	ft
Top Elevation=	113	
Bottom Elevation=	108	

Sediment Trap 2

Area=	2.78	acres
Wet Volume Req'd	5029	cf
Dry Volume Req'd	5029	cf
Bottom L =	64	ft
Bottom W =	20	ft
Wet Depth =	3	ft
Dry Depth =	2	ft
Wet Volume Actual	5568	cf
Dry Volume Actual	5792	cf
Stone Outlet L =	17	ft
Side Slopes =	3	:1
Top Width=	50	ft
Top Length=	94	ft
Top Elevation=	116	
Bottom Elevation=	111	

Sediment Trap 3

Area=	1.87	acres
Wet Volume Req'd	3383	cf
Dry Volume Req'd	3383	cf
Bottom L =	64	ft
Bottom W =	20	ft
Wet Depth =	3	ft
Dry Depth =	2	ft
Wet Volume Actual	5568	cf
Dry Volume Actual	5792	cf
Stone Outlet L =	12	ft
Side Slopes =	3	:1
Top Width=	50	ft
Top Length=	94	ft
Top Elevation=	118	
Bottom Elevation=	113	

Sediment Trap 4

Area=	2.59	acres
Wet Volume Req'd	4685	cf
Dry Volume Req'd	4685	cf
Bottom L =	64	ft
Bottom W =	20	ft
Wet Depth =	3	ft
Dry Depth =	2	ft
Wet Volume Actual	5568	cf
Dry Volume Actual	5792	cf
Stone Outlet L =	16	ft
Side Slopes =	3	:1
Top Width=	50	ft
Top Length=	94	ft
Top Elevation=	116	
Bottom Elevation=	111	

Sediment Trap 5

Area=	2.59	acres
Wet Volume Req'd	4685	cf
Dry Volume Req'd	4685	cf
Bottom L =	52	ft
Bottom W =	25	ft
Wet Depth =	3	ft
Dry Depth =	2	ft
Wet Volume Actual	5502	cf
Dry Volume Actual	5608	cf
Stone Outlet L =	16	ft
Side Slopes =	3	:1
Top Width=	55	ft
Top Length=	82	ft
Top Elevation=	114	
Bottom Elevation=	109	

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DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EROSION & SEDIMENT CONTROL - CALCULATIONS

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
NO SCALE

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-18

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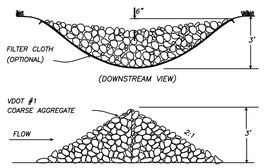
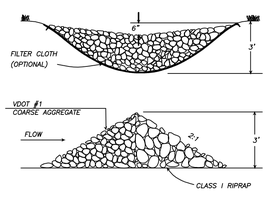
ROCK CHECK DAM

2 ACRES OR LESS OF DRAINAGE AREA:



2–10 ACRES OF DRAINAGE AREA:



SOURCE: VA. DSWC PLATE. 3.20–1

ORGANIC MULCH MATERIALS AND APPLICATION RATES

MULCHES	RATES Per Acre	Per 1000 sq. ft	NOTES
Straw or Hay	1 ½ - 2 tons (Minimum 2 tons for over winter cover)	70-90 lbs.	Free from weeds and coarse matter. Must be anchored. Spread with mulch blower or by hand.
Fiber Mulch	Minimum 1500 lbs	35 lbs.	Do not use as mulch for winter cover or during hot, dry periods.* Apply as slurry
Corn Stalks	4-6- tons	185-275 lbs	Cut or shredded in 4-6" lengths. Air- dried. Do not use in fine turf areas. Apply with mulch blower or by hand.
Wood Chips	4-6 tons	185- 275 lbs.	Free of coarse matter. Air-dried. Treat with 12 lbs nitrogen per ton. Do not use in fine turf areas. Apply with mulch blower, chip handler, or by hand.
Bark Chips Or Shredded Bark	50-70 cu. Yds.	1-2 cu. Yds.	Free of coarse matter. Air-dried. Do not use in fine turf areas. Apply with mulch blower, chip handler, or by hand.

* When fiber mulch is the only available mulch during periods when straw should be used, apply at a minimum rate of 2000 lbs./ac. Or 45 lbs./1000 sq ft.

LIMING REQUIREMENTS FOR TEMPORARY SITES

pH Test	Recommended Application of Agricultural Limestone
Below 4.2	3 tons per acre
4.2 to 5.2	2 tons per acre
5.2 to 6	1 ton per acre

Source: VA DSWC

SEEDING MIXTURES, RATES, AND DATES: SOUTHERN PIEDMONT AND COASTAL PLAIN

SITE CONDITIONS	SEEDING MIXTURES	RATES PER ACRE	RATES PER 1000 ft^2	DATES 3/1 to 4/15	DATES 4/15 to 8/1	DATES 8/1 to 10/15
High Maintenance Lawns	1. Tall fescue - 90% Kentucky bluegrass -10%	250 lbs	6 lbs	X	no	X
Low Maintenance General Use	2. Tall fescue - 50% Ladino clover - 10% Red clover - 10% Korean lespedeza - 15% Annual ryegrass - 15%	80 lbs	2 lbs	X	(a,b) X	X
	3. Tall fescue - 50% Sericea lespedeza - 30% Annual ryegrass - 20%	70 lbs	1 ½ lbs	X	(a) X	X
Droughty Areas, Sandy Soils	4. Tall fescue - 50% Sericea lespedeza - 20% Korean lespedeza - 15% Annual ryegrass - 15%	80 lbs	2 lbs	X	(a,b) X	X
Poorly Drained Areas	5. Tall fescue - 65% Korean lespedeza - 20% Annual ryegrass - 10% Redtop - 5%	80 lbs	2 lbs	X	(a,b) X	X

a) After May 1, use 10 lb/A german millet or 2 lb/A weeping lovegrass in place of annual ryegrass.
b) After May 1, Korean lespedeza will not reseed itself. You may increase the amount of other legumes accordingly

Source: VA SWCC

TABLE 3.32–D
(Revised June 2003)
SITE SPECIFIC SEEDING MIXTURES FOR PIEDMONT AREA

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

1 – When selecting varities of turfgrass, use the Virginia Crop Improvement Association (VCIA) recommended turfgrass variety list. Quality seed will bear a lable indicating that they are approved by VCIA. A current turgfgrass variety list is available at the local County Extenstion office or through VCIA at 804–746–4884 or at http://pubs.ext.vt.edu/html/Turf/turf/publications2.html

2 – Use seasonal nurse crop in accordance with seeding dates as stated below:
February 16th through April ..... Annual Rye
May 1st through August 15th ..... Foxtail Millet
August 16th through October ..... Annual Rye
November through February 15th ..... Winter Rye

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

SOURCE: VA DSWC

TABLE 3.31–B
ACCEPTABLE TEMPORARY SEEDING PLANT MATERIALS
"QUICK REFERENCE FOR ALL REGIONS"

APPLICATION DATES	SPECIES	APPLICATION RATES
SEPT 1 – FEB 15	50/50 MIX OF ANNUAL RYEGRASS (LOLIUM MULTI–FLORUM) & CEREAL (WINTER) RYE (SECALE CEREALE)	50 – 100 (lbs/acre)
FEB 16 – APR 30	ANNUAL RYEGRASS (LOLIUM MULTI–FLORUM)	60 – 100 (lbs/acre)
MAY 1 – AUG 31	GERMAN MILLET (SETARIA ITALICA)	50 (lbs/acre)

SOURCE: VA DSWC

ACCEPTABLE TEMPORARY SEEDING PLANT MATERIALS "QUICK REFERENCE FOR ALL REGIONS"

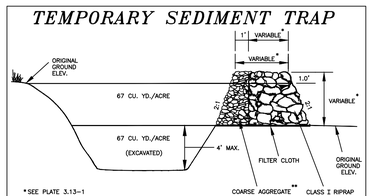
Planting Dates	Species	Rate (lbs./acre)
Sept. 1 – Feb. 15	50/50 Mix of Annual Ryegrass (Lolium multi-florum) & Cereal (Winter) Rye (Secale cereale)	50 - 100
Feb. 16 – Apr. 30	Annual Ryegrass (Lolium multi-florum)	60 – 100
May 1 – Aug. 31	German Millet (Setaria italica)	50

Source: VA DSWC

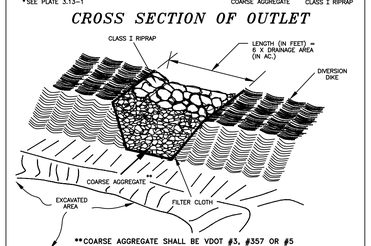
SEDIMENT TRAPS

Trap #	Drainage Area (acres)	Wet Storage Volume Required (Cu. ft.)	Wet Storage Volume Provided (Cu. ft.)	Wet Storage Elevation	Dry Storage Volume Required (Cu. ft.)	Dry Storage Volume Provided (Cu. ft.)	Dry Storage Elevation	Outlet Length (Feet)	Bottom Elevation	Top of Berm Elevation	Top of Berm Width	Bottom Dimensions (L x W)
1	1.88	3401	5568	111	3401	5792	113	18	108	114	8	94'x50'
2	2.78	5029	5568	114	5029	5792	116	18	111	117	8	94'x50'
3	1.87	3383	5568	115	3383	5792	117	18	113	118	8	94'x50'
4	2.59	4685	5568	114	4685	5792	116	18	108	117	8	94'x50'
5	2.59	4685	5502	112	4685	5608	114	18	109	115	8	82'x55'

TEMPORARY SEDIMENT TRAP



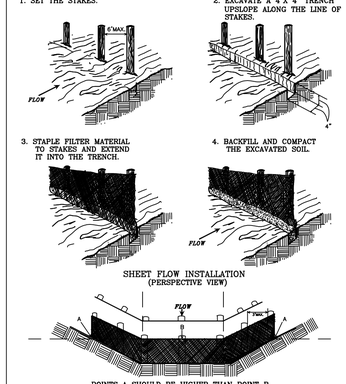
CROSS SECTION OF OUTLET



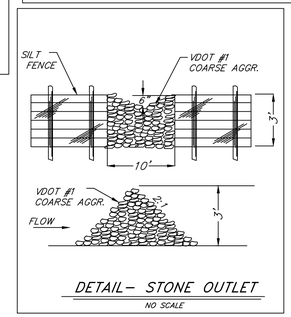
OUTLET (PERSPECTIVE VIEW)

SOURCE: VA. DSWC PLATE. 3.13–2

CONSTRUCTION OF A SILT FENCE (WITHOUT WIRE SUPPORT)

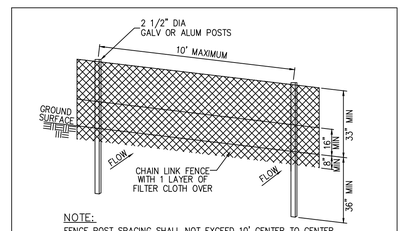


SOURCE: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control,VA. DSWC Sherwood and Wynat. PLATE. 3.05–2



DETAIL– STONE OUTLET

NO SCALE



CONSTRUCTION SPECIFICATIONS

FENCING SHALL BE 42 INCHES IN HEIGHT AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST V.D.O.T. DETAILS FOR CHAIN LINK FENCHING. THE SPECIFICATIONS FOR A 6 FOOT FENCE SHALL BE USED. SUBSTITUTING 42 INCH FABRIC AND 6 FOOT LENGTH POST.

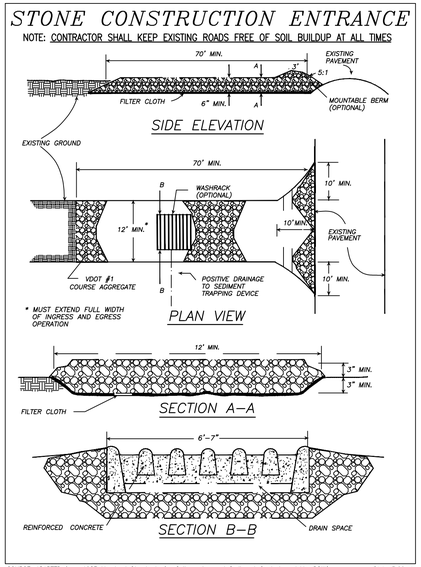
1. THE POLES DO NOT NEED TO SET IN CONCRETE.
2. CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE FENCE POST WITH WIRE TIES OR STAPLES
3. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24" AT THE TOP AND MID SECTION.
4. FILTER CLOTH SHALL BE EMBEDDED A MINIMUM OF 6" INTO THE GROUND.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SAHLL BE OVERLAPPED BY 6" AND FOLDED
6. MAINTENANCE SHALL BE PREFORMED AS NEEDED AND SPLIT BUILDUPS REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE
7. STONE REINFORCEMENT SHALL BE USED TO SUPPLEMENT SSF IN AREAS OF CONCENTRATED FLOWS.

(SSF) SUPER SILT FENCE DETAIL

NOT TO SCALE

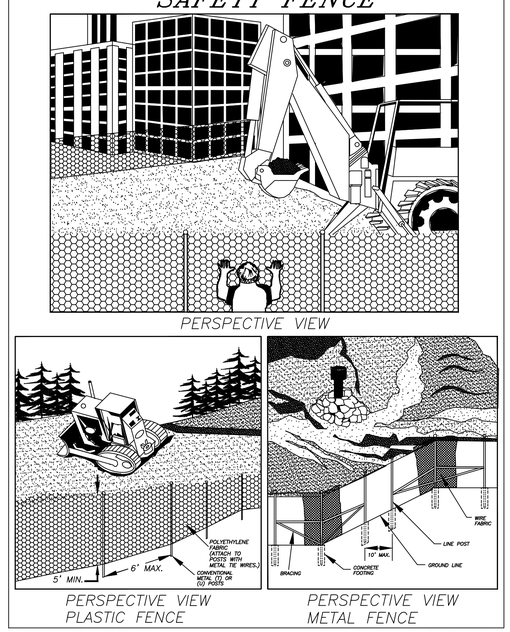
STONE CONSTRUCTION ENTRANCE

NOTE: CONTRACTOR SHALL KEEP EXISTING ROADS FREE OF SOIL BUILDUP AT ALL TIMES



SOURCE: ADAPTED from 1983 Maryland Standards for Soil erosion and Sediment Control, and Va. DSWC Plate 3.02–1

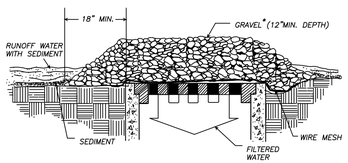
SAFETY FENCE



SOURCE: CONWED PLASTICS
VDOT ROAD AND BRIDGE STANDARDS
VA. DSWC

PLATE. 3.1–1

GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER



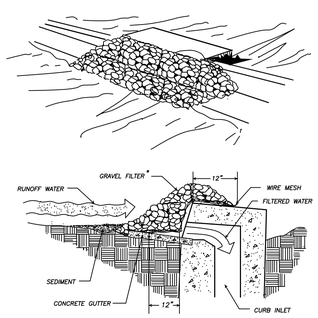
SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY CONCENTRATED FLOWS ARE EXPECTED, BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.

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

SOURCE: VA. DSWC PLATE. 3.07–2

GRAVEL CURB INLET SEDIMENT FILTER



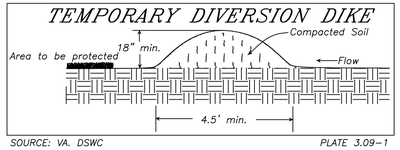
SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE AT CURB INLETS WHERE PONDING IN FRONT OF THE STRUCTURE IS NOT LIKELY TO CAUSE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.

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

SOURCE: VA. DSWC PLATE 3.07–6

TEMPORARY DIVERSION DIKE



SOURCE: VA. DSWC PLATE 3.09–1

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COMMONWEALTH OF VIRGINIA
ZACKARY A. WILKINS
Lic. No. 050952
06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EROSION & SEDIMENT CONTROL - DETAILS

REVISIONS

DATE	ITEM

DATE 06 / 30 / 2026
SCALE NO SCALE
DRAWN BY ARON ZHOU, E.I.T
DESIGNED BY ARON ZHOU, E.I.T
CHECKED BY ZACKARY A. WILKINS, P.E.
PROJ.# 20240084
SHEET # C-19

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PURPOSE

9VAC25-870-54 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 measures necessary to address a TMDL as applicable.

The plan for implementing pollution prevention measures during construction activities developed on this sheet must be implemented and updated as necessary. Any PPP requirements not included on this sheet must be incorporated into the SWPPP required by **9VAC25-870-54** that must be developed before land disturbance commences. This PPP identifies potential sources of pollutants that may reasonable be expected to affect the quality stormwater discharges from the construction site (both on- and off-site activities) and describes 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 plans incorporated by reference become enforceable under the VSMP Permit Regulations and General Permit VAR10 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 Plans (Regional or Master)	
Spill Prevention, Control, and Countermeasure Plans	
Off-Site Stockpile	
Off-Site Borrow Area	

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 site must be applied to the sources found on the site. Additional information concerning the following controls and/or measures may be found in the SWPPP. Deviations from the location criteria may be approved by the County Environmental Inspector.

LEAKS, SPILLS, AND OTHER RELEASES

- ✓ The operator(s) shall ensure procedures are in place to prevent and respond to all leaks, spills and other releases of pollutants.
- ✓ The operator(s) shall ensure all leaks, 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 appropriate materials (e.g., absorbent material and pads, brooms, gloves, sand, etc.) 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 waste; and storage and disposal of hazardous and toxic materials; and sanitary waste facilities.
- ✓ The locations of the spill containment kits are identified as described below.

Date	Shown on Plan Sheet #(s)	Location
Approved Plan		
REVISIONS TO LOCATIONS		
Date	Shown on Plan Sheet #(s)	Location	Operator(s) Initials

- ✓ The operator(s) shall notify the Department of Environmental Quality 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 after 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 after the discovery. Written notice of the discharge must be sent to DEQ and County within five (5) days of the discovery.

Virginia Department of Environmental Quality NEED ADDRESS (804) 786-3998 (phone) (804) 786-1798 (fax) (800) 468-8892 (outside normal working hours)	**Chesterfield County** **Dept. of Environmental Engineering** **9800 Government Center Parkway** **P.O. Box 40** **Chesterfield, Virginia 23832-0040** **(804) 796-7106** **(804) 661-0717**

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 those features.
- ✓ All wash water used in vehicle wheel washing must be directed to a sediment basin/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 #(s)	Water Source Location
Wheel Wash			
Other Wash Areas			
REVISIONS TO LOCATIONS			
Activity	Location of ***Dedicated Area(s)***	Shown on Plan Sheet #(s)	Water Source Location	Operator's Initials

VEHICLE FUELING AND MAINTENANCE

- ✓ Conduct regular 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 those features.
- ✓ If fueling is conducted at 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 those 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 (spill berms, decks, spill containment pallets, 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 #(s)	Location of ***Dedicated Area(s)***
Approved Plan		
REVISIONS TO LOCATIONS		
Date	Shown on Plan Sheet #(s)	Location of ***Dedicated Area(s)***	Operator's Initials

- ✓ If mobile fueling will be used, the fueling must be done in an area that located to maximize the distance from storm drain inlets, ditches, waterbodies or wetlands but no less than 50 feet from those 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, decks, spill 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 those features. Separations 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 wastes including (i) building products such as asphalt sealants, copper flashing, 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, timber, pipe and electrical cuttings, plastics, 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 #(s)	Location(s) of ***Dedicated Area(s)*** for storage of construction products and materials
Approved Plan		
REVISIONS TO LOCATIONS		
Date	Shown on Plan Sheet #(s)	Location(s) of ***Dedicated Area(s)*** for storage of construction products and materials	Operator(s) Initials

Date	Shown on Plan Sheet #(s)	Location(s) of ***Dedicated Area(s)*** for waste from construction products and materials
Approved Plan		
REVISIONS TO LOCATIONS		
Date	Shown on Plan Sheet #(s)	Location(s) of ***Dedicated Area(s)*** 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.
- ✓ Clean up solid waste, including building materials, garbage, and debris on a daily basis and deposit into covered dumpsters that are periodically emptied.
- ✓ Schedule waste collection to prevent exceeding the capacity of onsite 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, above ground storage tanks, etc.) not mentioned elsewhere must be addressed.

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

- ✓ Above ground oil storage tanks with a storage capacity exceeding 1,320 gallons and have a reasonable expectation of a discharge into or upon Waters of the United 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 appropriate federal, state, and local requirements.

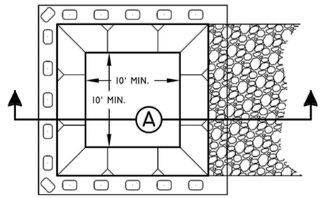
DISCHARGES FROM CONCRETE RELATED WASH ACTIVITIES

- ✓ Concrete trucks are not allowed to wash out or discharge surplus concrete or drum wash water on site 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 those 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 #(s)	Location of ***Dedicated Area(s)***
Approved Plan		
REVISIONS TO LOCATIONS		
Date	Shown on Plan Sheet #(s)	Location of ***Dedicated Area(s)***	Operator's Initials

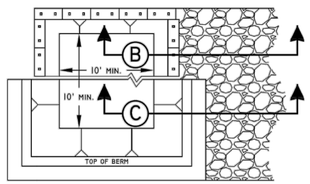
- ✓ Facilities must be cleaned, or new facilities constructed, once the washout area is two-thirds (2/3) full.

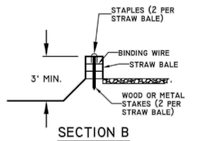
BELOW GRADE CONCRETE WASHOUT AREA



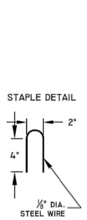
SECTION A

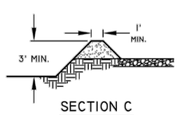
ABOVE GRADE CONCRETE WASHOUT AREA





SECTION B





SECTION C

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' spacing) or sandbags.
- ✓ Side slopes must be 1:1 (horizontal:vertical) or flatter.
- ✓ Stone access must be provided between the street and the concrete washout area.
- ✓ A "Concrete Washout" sign must be installed within 30 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 clean up 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 those features. Separations 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 #(s)	Location(s) of ***Dedicated Area(s)***
Approved Plan		
REVISIONS TO LOCATIONS		
Date	Shown on Plan Sheet #(s)	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 at the ***designated area*** (e.g., concrete pours, 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 those features. Separations 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 waste 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 #(s)	Location(s) of ***Dedicated Area(s)*** for storage and disposal of hazardous and toxic wastes
Approved Plan		
REVISIONS TO LOCATIONS		
Date	Shown on Plan Sheet #(s)	Location(s) of ***Dedicated Area(s)*** for storage and disposal of hazardous and toxic wastes	Operator(s) Initials

Date	Shown on Plan Sheet #(s)	Location(s) of ***Dedicated Area(s)*** for portable toilets
Approved Plan		
REVISIONS TO LOCATIONS		
Date	Shown on Plan Sheet #(s)	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 periodic pumping 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; delegated 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 discharges of pollutants that are not addressed in the normal implementation of the plan; and
- ✓ Ineffective control measures identified during 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 deficiencies.

If the necessary modifications/revisions require approval by the Administrator or DEQ, 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.

Blocks colored blue indicate information must be provided by the Operator or Delegated Authority

Blocks colored yellow indicate information must be provided by the Consultant prior to plan approval

SWPPP UPDATES

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

- ✓ A record of dates 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 reached final stabilization where no further SWPPP or inspection requirements apply;
- ✓ All 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 corrective/preventative 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 (select one the following options):

- ☐ at least once every four (4) business days; or
- ☐ at least once every five (5) 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 identified above.

The operator(s) shall provide for inspections of the permitted land-disturbing activity to ensure implementation and continued maintenance of all requirements of the Stormwater Pollution Prevention Plan (Erosion and Sediment Control Plan, Stormwater Management Plan, Pollution Prevention Plan, TMDL requirements, 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 to document the required inspections. If inspections are conducted once every five (5) business days *and* no later than 48 hours following any measureable 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 the qualified personnel identified below:

a. has been designated by the Operator to conduct inspections of the permitted site;
b. is knowledgeable in the principles and practices of erosion and sediment control and stormwater management;
c. possesses the skills to assess conditions at the permitted site for the Operator(s) that could impact stormwater quality and quantity;
d. 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
e. 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) or Delegated Authority, I/we understand that prior to initiating land disturbance, the potential 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 identified. 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, TMDL provisions, administrative 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 fine or imprisonment for knowing violations.

I/we understand that I/we are ultimately responsible for compliance with all conditions and requirements of the SWPPP and GCP and for ensuring all contractors 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 related appurtenances) which are installed or used to achieve compliance with the conditions of the GCP. Proper operation and maintenance also includes adequate funding and adequate staffing.

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

I/we understand that if it 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 excursion above any applicable water quality standard, the DEQ may, in consultation with the Administrator, take appropriate enforcement action and require:

a. Modification of control measures to adequately address water quality concerns;
b. Submission of valid and verifiable data and information that are representative of ambient conditions and indicate that the receiving water is attaining water quality standards; or
c. Cessation of discharges of pollutants from construction activity and submit an individual permit application according to **9VAC25-870-410.**

OPERATOR(S) / DELEGATED AUTHORITY		
Name (print)	Signature	Date
Additional contact information can be found in the SWPPP Binder.		

HANOVER COUNTY
ENGINEERING DEPARTMENT

POLLUTION PREVENTION PLAN

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

POLLUTION PREVENTION PLAN

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
NO SCALE

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
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COMMONWEALTH OF VIRGINIA
ZACKARY A. WILKINS
Lic. No. 050952
06/30/2026
PROFESSIONAL ENGINEER

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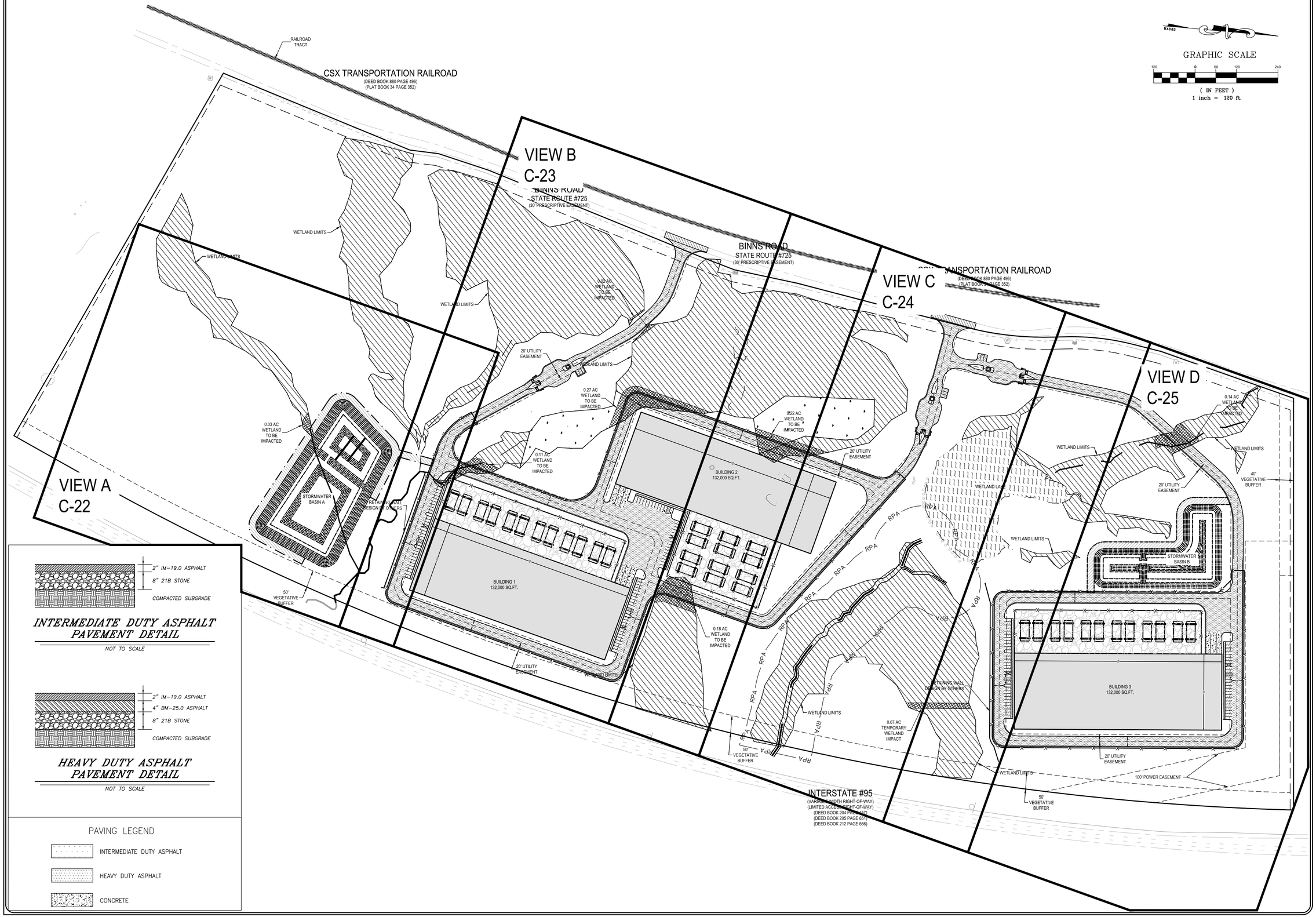
Chesterfield County Pollution Prevention Plan



INTERMEDIATE DUTY ASPHALT PAVEMENT DETAIL

NOT TO SCALE

HEAVY DUTY ASPHALT PAVEMENT DETAIL

NOT TO SCALE

PAVING LEGEND

- INTERMEDIATE DUTY ASPHALT
- HEAVY DUTY ASPHALT
- CONCRETE

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COMMONWEALTH OF VIRGINIA
ZACKARY A. WILKINS
Lic. No. 050952
06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS SITE PLAN

DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

SITE LAYOUT

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 120'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-21

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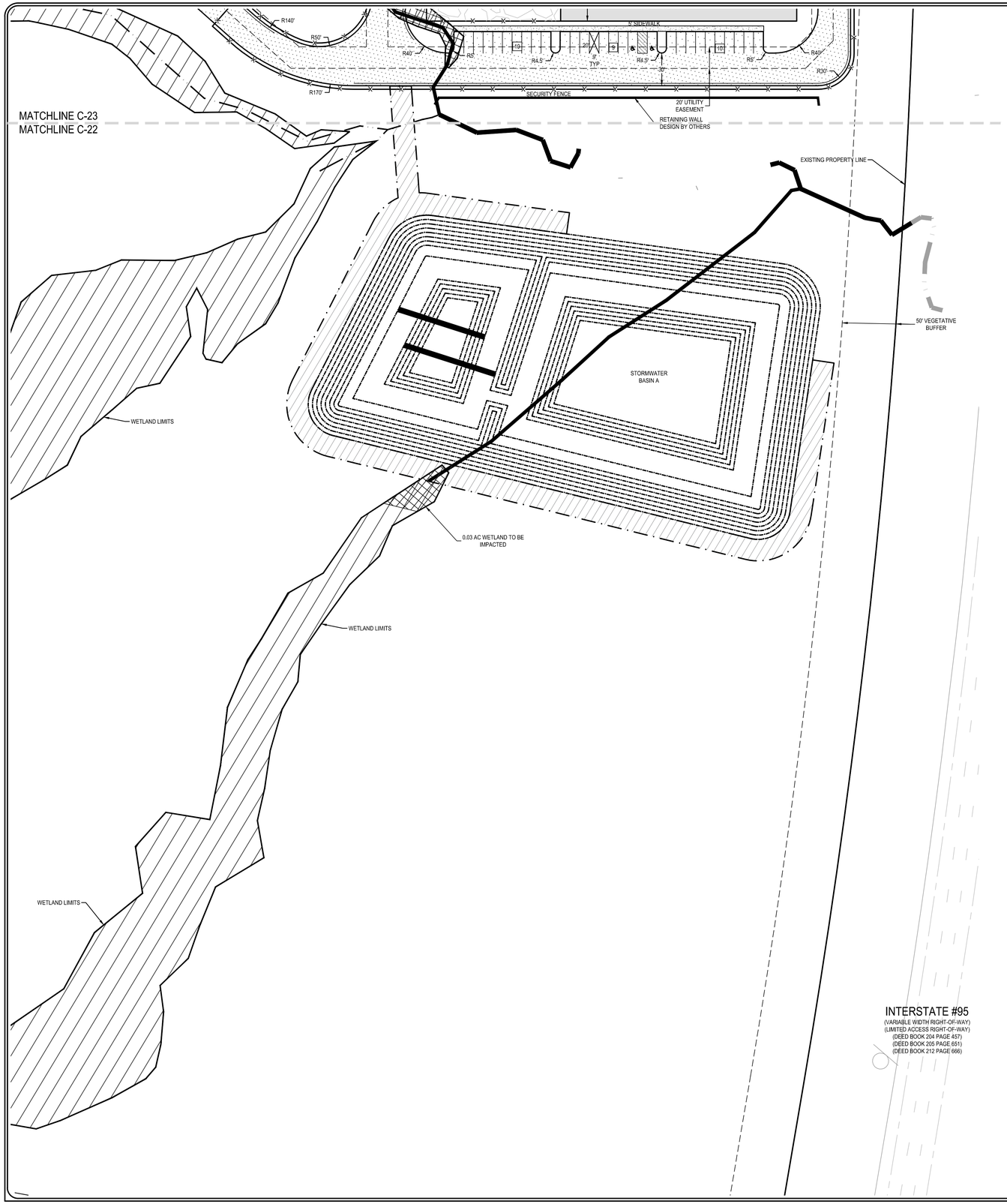
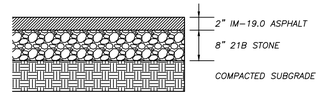
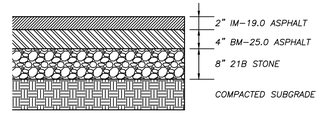




INTERMEDIATE DUTY ASPHALT PAVEMENT DETAIL

NOT TO SCALE



HEAVY DUTY ASPHALT PAVEMENT DETAIL

NOT TO SCALE

PAVING LEGEND

- INTERMEDIATE DUTY ASPHALT
- HEAVY DUTY ASPHALT
- CONCRETE

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

Townes
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COMMONWEALTH OF VIRGINIA
ZACKARY A. WILKINS
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06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

SITE LAYOUT - A

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-22

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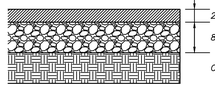
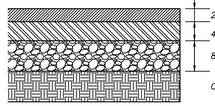


INTERMEDIATE DUTY ASPHALT PAVEMENT DETAIL

NOT TO SCALE



HEAVY DUTY ASPHALT PAVEMENT DETAIL

NOT TO SCALE

PAVING LEGEND

- INTERMEDIATE DUTY ASPHALT
- HEAVY DUTY ASPHALT
- CONCRETE

MATCHLINE C-24
MATCHLINE C-23

0.22 AC WETLAND TO BE IMPACTED

BUILDING 2
132,000 SQ.FT.

600'

0.18 AC WETLAND TO BE IMPACTED

WETLAND LIMITS

5' SIDEWALK

SECURITY FENCE

LOADING DOCK

20' UTILITY EASEMENT

PROPERTY LINE

MILL & OVERLAY FULL LENGTH OF EXISTING LAND ADJACENT TO PROPOSED ENTRANCE

50' SETBACK

BINNS ROAD
STATE ROUTE #725
(30' PRESCRIPTIVE EASEMENT)

0.27 AC WETLAND TO BE IMPACTED

0.07 AC WETLAND TO BE IMPACTED

0.11 AC WETLAND TO BE IMPACTED

BUILDING 1
132,000 SQ.FT.

220'

EXISTING PROPERTY LINE

RETAINING WALL DESIGN BY OTHERS

MATCHLINE C-23
MATCHLINE C-22

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

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DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

SITE LAYOUT - B

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-23

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MATCHLINE C-25
MATCHLINE C-24

BINNS ROAD
STATE ROUTE #725
(30' PRESCRIPTIVE EASEMENT)

WETLAND LIMITS
WETLAND LIMITS
WETLAND LAKE
WETLAND LIMITS

20' UTILITY EASEMENT

5' SIDEWALK
R40'
R20'
R5'
R4.5
22'
6" TYP
30'
10'
RETAINING WALL DESIGN BY OTHERS
WETLAND LIMITS
R30'
SECURITY FENCE

0.07 AC TEMPORA
WETLAND IMPAC

RPA

R20' R40' R4' R1' R50'

MILL & OVERLAY FULL LENGTH OF EXISTING LAND ADJACENT TO PROPOSED ENTRANCE

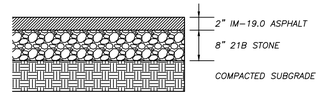
WETLAND LIMITS
20' UTILITY EASEMENT
SECURITY FENCE
R50'
32'
220'
600'
BUILDING 2
132,000 SQ.FT.
5' SIDEWALK
20' UTILITY EASEMENT
R30'
50' VEGETATIVE BUFFER
0.18 AC WETLAND TO BE IMPACTED
WETLAND LIMITS
WETLAND LIMITS

MATCHLINE C-24
MATCHLINE C-23

BINNS ROAD
STATE ROUTE #725
(30' PRESCRIPTIVE EASEMENT)

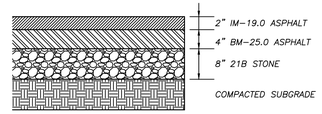
0.22 AC WETLAND TO BE IMPACTED

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 ft.



INTERMEDIATE DUTY ASPHALT PAVEMENT DETAIL

NOT TO SCALE



HEAVY DUTY ASPHALT PAVEMENT DETAIL

NOT TO SCALE

PAVING LEGEND

- INTERMEDIATE DUTY ASPHALT
- HEAVY DUTY ASPHALT
- CONCRETE

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BINNS ROAD DATA CENTERS SITE PLAN

DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

SITE LAYOUT - C

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-24

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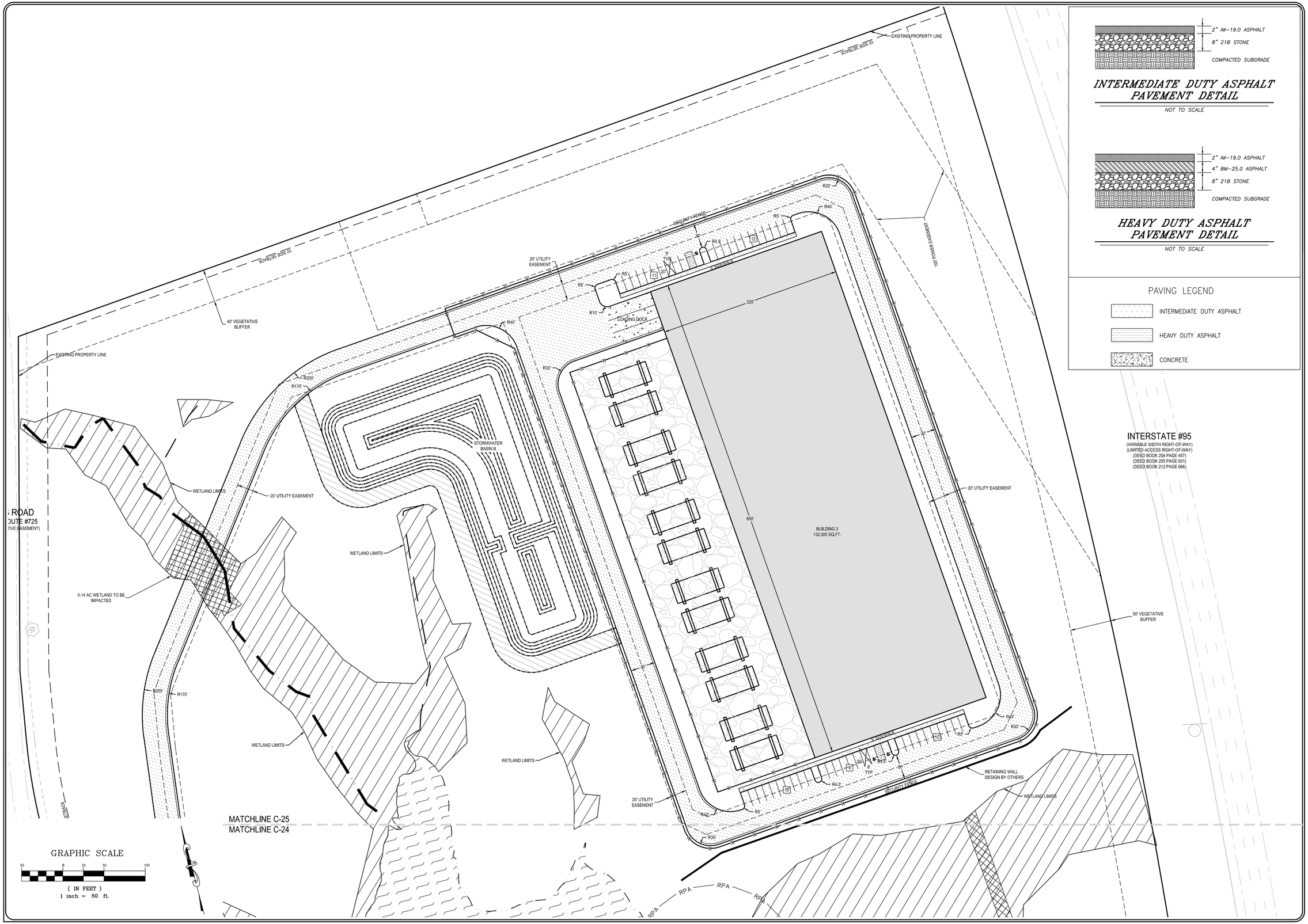

INTERMEDIATE DUTY ASPHALT PAVEMENT DETAIL

NOT TO SCALE

HEAVY DUTY ASPHALT PAVEMENT DETAIL

NOT TO SCALE

PAVING LEGEND

- INTERMEDIATE DUTY ASPHALT
- HEAVY DUTY ASPHALT
- CONCRETE

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DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

SITE LAYOUT - D

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-25

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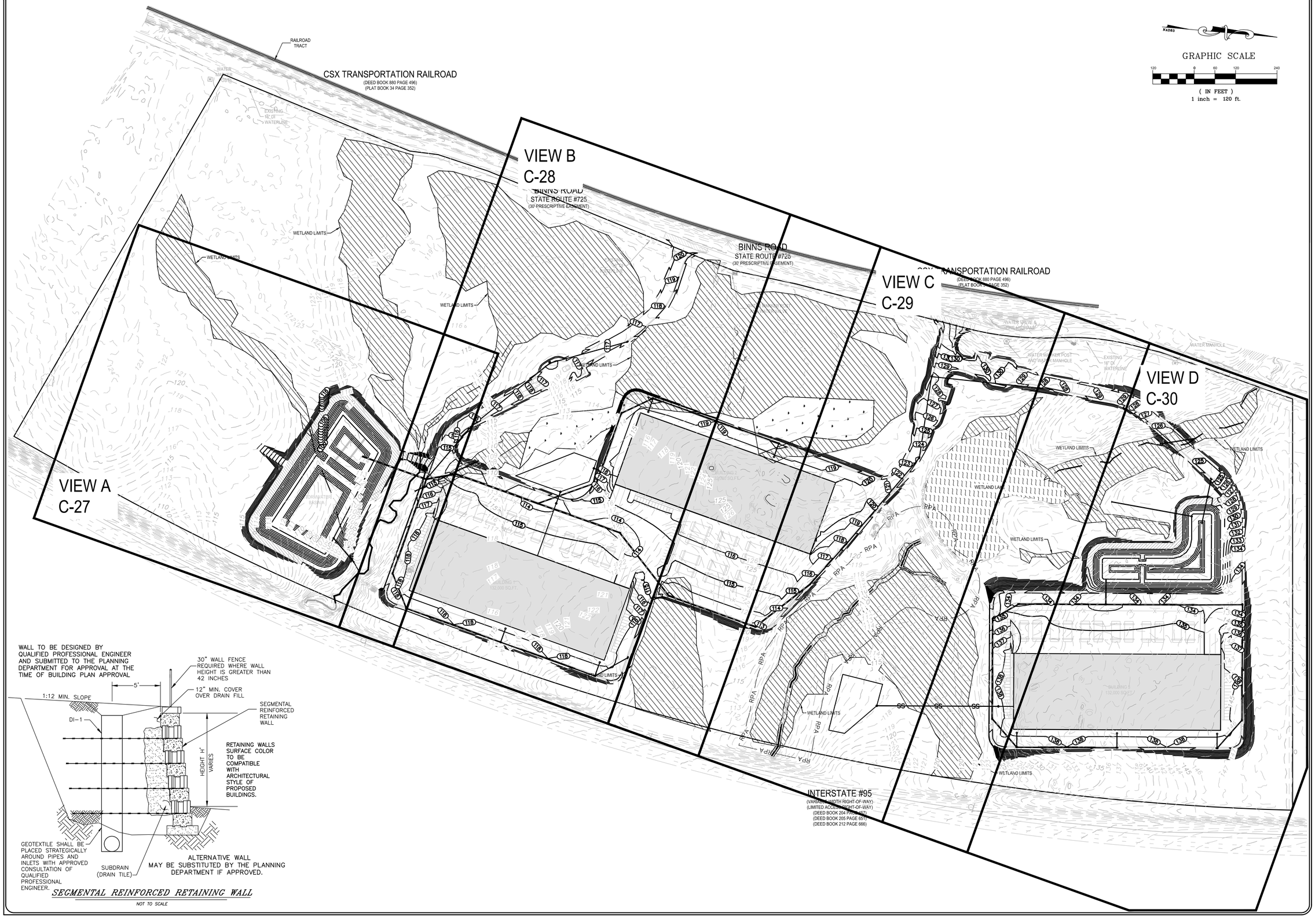

SEGMENTAL REINFORCED RETAINING WALL

NOT TO SCALE

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SITE PLAN

DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

GRADING & DRAINAGE PLAN

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 120'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-26

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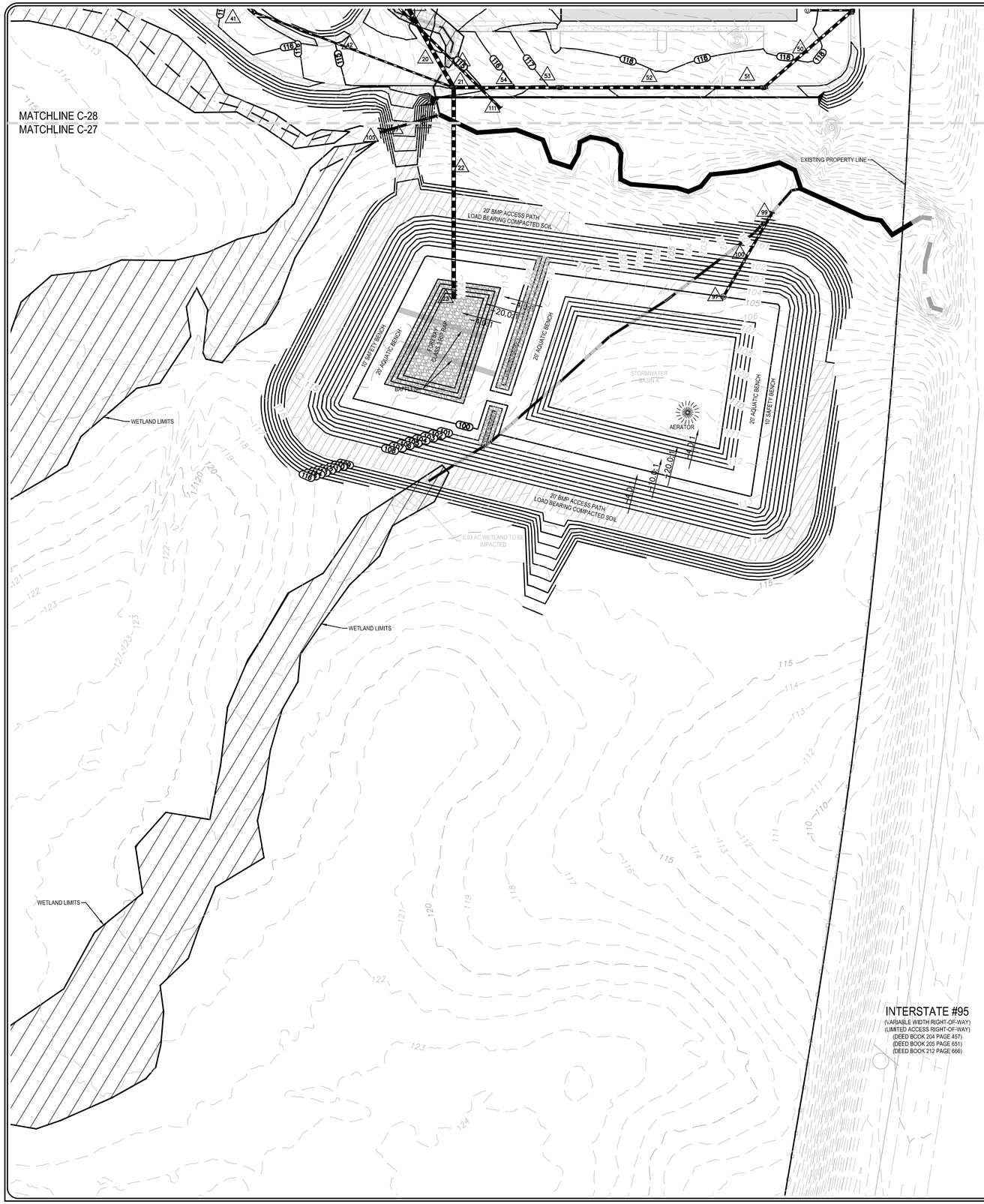

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

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DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

GRADING & DRAINAGE PLAN - A

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-27

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MATCHLINE C-29
MATCHLINE C-28

BINNS ROAD
STATE ROUTE #725
(30' PRESCRIPTIVE EASEMENT)

EXISTING PROPERTY LINE

WETLAND LIMITS

0.22 AC WETLAND TO BE IMPACTED

BUILDING 1
FFE: 120

0.18 AC WETLAND TO BE IMPACTED

WETLAND LIMITS

WETLAND LIMITS

PRIVATE 6" PVC SAN. LATERAL

DRAINFIELD 1
=14,575 SQ.FT.

PRIVATE 6" PVC SAN. LATERAL

BUILDING 1
FFE: 119

EXISTING PROPERTY LINE

BINNS ROAD
STATE ROUTE #725
(30' PRESCRIPTIVE EASEMENT)

CSX TRANSPORTATION RAILROAD
(DEED BOOK 380 PAGE 496)
(PLAT BOOK 94 PAGE 352)

WETLAND LIMITS

0.27 AC WETLAND TO BE IMPACTED

WETLAND LIMITS

WETLAND LIMITS

0.14 AC WETLAND TO BE IMPACTED

WETLAND LIMITS

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

MATCHLINE C-28
MATCHLINE C-27

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SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

GRADING & DRAINAGE PLAN - B

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-28

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MATCHLINE C-30
MATCHLINE C-29

ILROAD

BINNS ROAD
STATE ROUTE #725
(30' PRESCRIPTIVE EASEMENT)

WETLAND LIMITS

WETLAND LAKE

TELEPHONE PEDESTAL

FRANKLIN FARMS CROSSING

0.07 AC TEMPORARY WETLAND IMPACT

INTERSTATE #95
(VARIABLE WIDTH RIGHT-OF-WAY)
(LIMITED ACCESS RIGHT-OF-WAY)
(DEED BOOK 204 PAGE 457)
(DEED BOOK 205 PAGE 651)
(DEED BOOK 212 PAGE 666)

EXISTING PROPERTY LINE

DRAINFIELD 2
~15,900 SQ.FT.

0.22 AC WETLAND TO BE IMPACTED

0.18 AC WETLAND TO BE IMPACTED

BUILDING 1
FFE: 120

RPA

MATCHLINE C-29
MATCHLINE C-28

BINNS ROAD
STATE ROUTE #725
(30' PRESCRIPTIVE EASEMENT)

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

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SITE PLAN

DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

GRADING & DRAINAGE PLAN - C

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

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ARON ZHOU, E.I.T

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PROJ.#
20240084

SHEET #
C-29

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EXISTING PROPERTY LINE

EXISTING PROPERTY LINE

WETLAND LIMITS

WETLAND LIMITS

WETLAND LIMITS

WETLAND LIMITS

WETLAND LIMITS

; ROAD
OUTE #725
TIVE EASEMENT)

044 AC WETLAND TO BE IMPACTED

BUILDING 1
FFE: 136

INTERSTATE #95
(VARIABLE WIDTH RIGHT-OF-WAY)
(LIMITED ACCESS RIGHT-OF-WAY)
(DEED BOOK 204 PAGE 457)
(DEED BOOK 205 PAGE 651)
(DEED BOOK 212 PAGE 666)

20' AQUATIC BENCH

20' AQUATIC BENCH

20' MARSH BENCH

LOAD BEARING CONCRETE BAY

GARDEN BASKET

PROPOSED 8" PVC SANITARY SEWER LATERAL

RPA

MATCHLINE C-30
MATCHLINE C-29

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

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SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

GRADING & DRAINAGE PLAN - D

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-30

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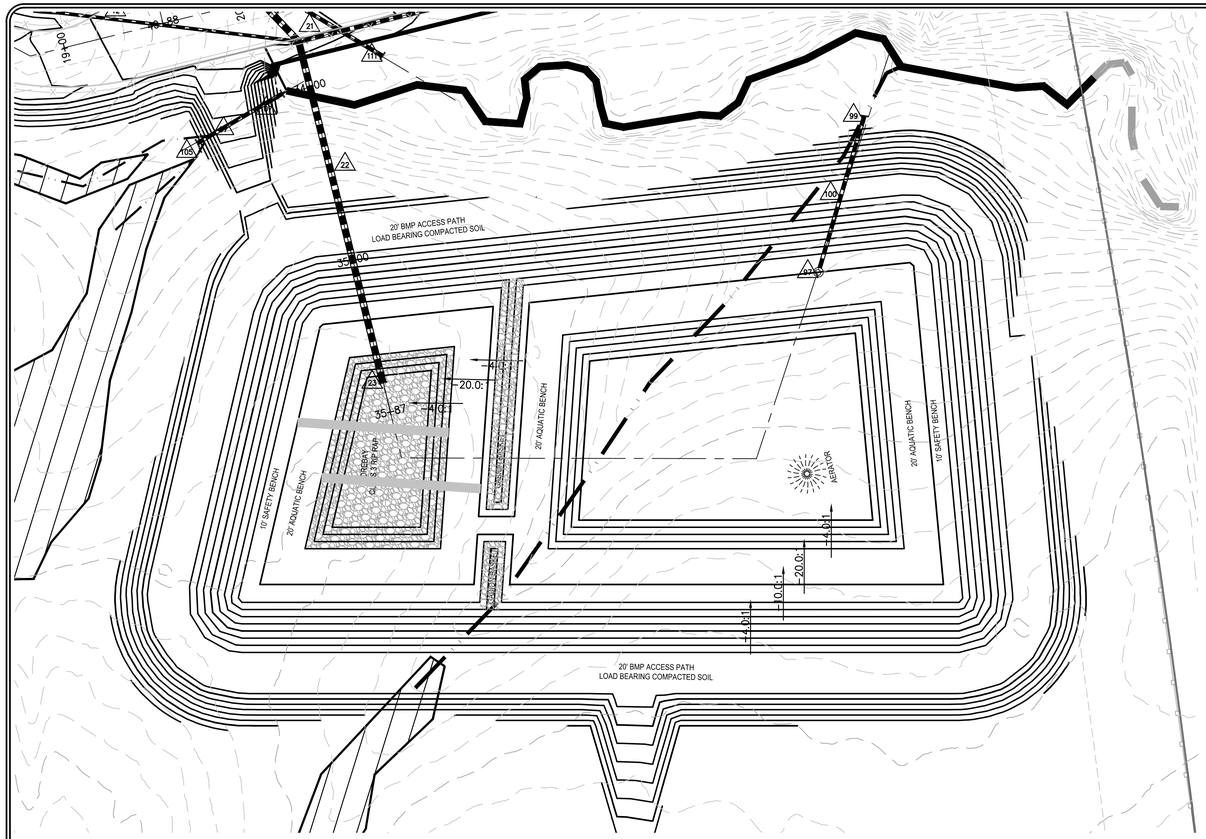


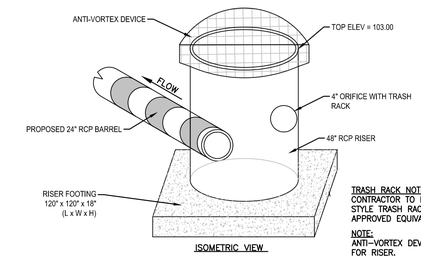
GRAPHIC SCALE

40 0 20 40 80

(IN FEET)
1 inch = 40 ft.

NOTES:

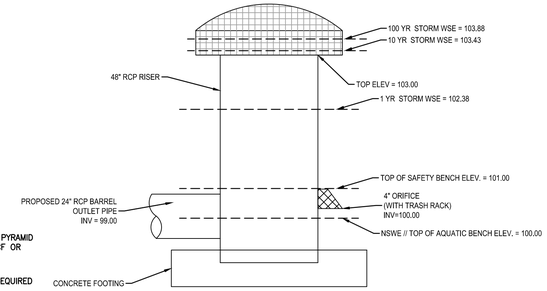
1. THE SWM FACILITY HAS BEEN DESIGNED IN ACCORDANCE WITH STANDARD AND SPECIFICATION P-BAS-02 (WET POND) AND P-FIL-07 (SHEET FLOW TO VEGETATED FILTER STRIP/CONSERVED OPEN SPACE) FROM CHAPTER 8.3 OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.1, 2024.
2. CONSTRUCTION, MAINTENANCE, AND INSPECTION OF THE SWM FACILITY TO BE PERFORMED IN ACCORDANCE WITH STANDARD AND SPECIFICATION P-BAS-02 (WET POND).
3. CONTRACTOR TO PROVIDE ADEQUATE ANCHORING AND SUPPORTS TO PREVENT RISER AND/OR OUTFALL PIPE FROM FLOATING OR BUCKLING.
4. OUTFALL TO BE O-RING PIPE, BEDDED THROUGH DAM SECTION WITH FLOWABLE FILL UP TO THE HIGH-WATER LEVEL AND 4" MINIMUM DEPTH BELOW BOTTOM OF PIPE, IN TRENCH 60" WIDE (PIPE WIDTH PLUS 24"). ALTERNATIVE IMPERMEABLE MATERIAL MAY BE USED IN LIEU OF FLOWABLE FILL WITH APPROVAL OF GEOTECHNICAL ENGINEER AND COUNTY INSPECTOR.
5. SOIL BORINGS SHOULD BE CONDUCTED WITHIN THE FOOTPRINT OF THE PROPOSED EMBANKMENT, NEAR THE PROPOSED OUTLET STRUCTURE, AND IN AT LEAST TWO LOCATIONS WITHIN THE PROPOSED WET POND TREATMENT AREA. SOIL BORING DATA IS NEEDED TO (1) DETERMINE THE PHYSICAL CHARACTERISTICS OF THE EXCAVATED MATERIAL TO DETERMINE ITS ADEQUACY AS STRUCTURAL FILL OR OTHER USE, (2) DETERMINE THE NEED AND APPROPRIATE DESIGN DEPTH OF THE EMBANKMENT CUT-OFF TRENCH; (3) PROVIDE DATA FOR STRUCTURAL DESIGNS OF THE OUTLET WORKS (E.G., BEARING CAPACITY AND BUOYANCY), (4) DETERMINE THE DEPTH TO GROUNDWATER AND BEDROCK AND (5) EVALUATE POTENTIAL INFILTRATION LOSSES (AND THE POTENTIAL NEED FOR A LINER).
6. ONSITE CLAY MATERIAL SHOULD BE UTILIZED AS BASE AND LINER WITH APPROVAL FROM A GEOTECHNICAL ENGINEER. IF ONSITE MATERIAL DOES NOT MEET THE REQUIRED SPECIFICATIONS, A LINE SHALL BE PROVIDED.
7. AFTER THE ORIGINAL SITE CONSTRUCTION IS COMPLETE AND THE SEDIMENT BASIN IS BEING CONVERTED TO A WET POND, THE FACILITY SHALL BE DE-WATERED, DREDGED AND RE-GRADED TO THE DESIGN DIMENSIONS IF NECESSARY TO OBTAIN REQUIRED WET STORAGE VOLUME.
8. GEOTECHNICAL CERTIFICATION MUST BE SUBMITTED STATING THAT CONSTRUCTION COMPACTION REQUIREMENTS HAVE BEEN ACHIEVED FOR THE DAM EMBANKMENT. THIS MUST BE SUBMITTED AS PART OF THE BMP AS-BUILT CERTIFICATION PRIOR TO THE ESC BOND RELEASE.
9. THE RISER IS TO BE INSTALLED WITH THE SEDIMENT BASIN.



ISOMETRIC VIEW

TRASH RACK NOTE:
CONTRACTOR TO PROVIDE PYRAMID STYLE TRASH RACK BY ACF OR APPROVED EQUIVALENT.

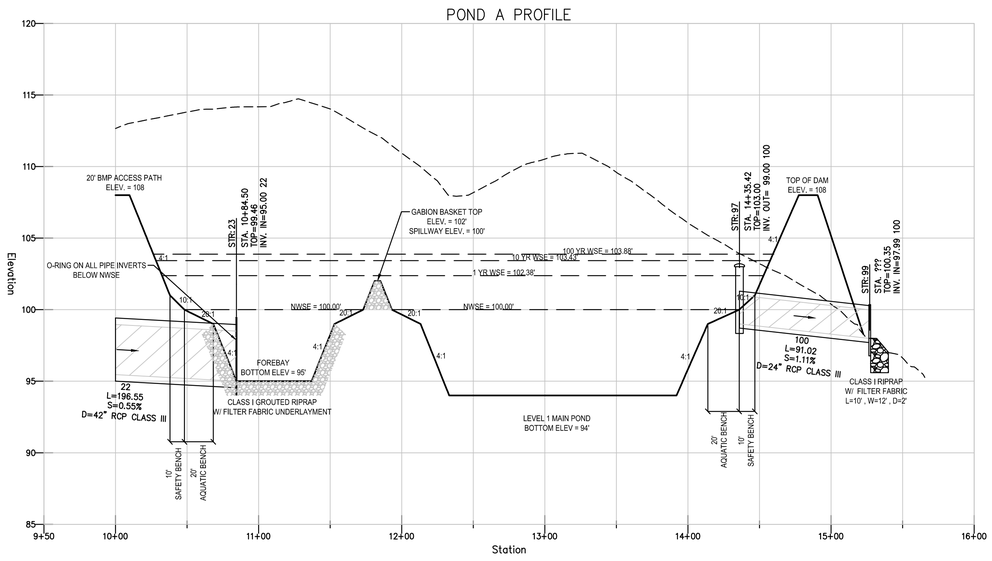
NOTE:
ANTI-VORTEX DEVICE IS REQUIRED FOR RISER.



SIDE VIEW

WET POND A SWM/BMP RISER DETAIL

NOT TO SCALE



NOTES:

1. FINISH GRADE ELEVATIONS FOR BOTTOM OF POND REPRESENT TOP OF TOPSOIL
2. A 6" LAYER OF TOPSOIL IS REQUIRED FOR ALL AREAS OF BASIN THAT WILL BE STABILIZED WITH A PERMANENT STAND OF VEGETATION
3. THE PRINCIPAL SPILLWAY MUST BE CONSTRUCTED WITH WATERTIGHT JOINTS TO PREVENT INFILTRATION OF EMBANKMENT SOILS INTO THE CONDUIT. ALL JOINTS MUST ALSO BE CONSTRUCTED AS SPECIFIED BY PIPE MANUFACTURER.
4. SELF-CLEANING TRASH RACKS ARE REQUIRED FOR ALL OUTLET STRUCTURES, INCLUDING DEWATERING DEVICES
5. 10 FEET OF CLEARING AND GRADING IS REQUIRED DOWNSTREAM OF THE SPREADER WEIR SECTION TO INSURE FREE OVERFLOW OF STORMWATER OVER THE WEIR. 75 FEET PROVIDED. THE DISTURBED AREA SHALL BE PLANTED WITH SOD IN ACCORDANCE WITH THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK STANDARD AND SPECIFICATION C-SSM-06 (SODDING).
6. AN 18" CLAY LINER HAS BEEN PROVIDED ALONG THE BOTTOM OF THE POND TO ACCOUNT FOR THE POTENTIAL OF A HIGH SEASONAL WATER TABLE. DESIGN TO BE REVISED AS APPLICABLE FOLLOWING SOIL BORINGS.

LEGEND

FINISHED GRADE AT C/L

EXIST. GROUND AT C/L

SCALE:
HORIZONTAL:1"=50'
VERTICAL:1"=5'

Wet Pond Level 1 BMP	
Total Drainage Area(Acres)	29.71
Treatment Volume	
A (Acres)	29.71
TV Required (1.0* TV from VRRM)	59,376
TV Provided (Cu. Ft. at NWSE=99.00)	113,049
Forebay Calculation (Per P-SUP-06-3)	
Forebay Volume Required (Cu. Ft.)	5,938 - 8,906
= 10% - 15% of total permanent pool volume	-
Volume Provided (Cu. Ft. at NWSE=99.00)	40,471
Forebay NSWE Surface Area (Sq. Ft.)	31,628
Length of Flow (L)	188.00
Effective Width (We) = Area/L	168.23
L/We (If greater than 2, no baffles required)	1.12
Baffle Calculation	
Length of Flow (L)	275
Effective Width (We) = Area/L	115.01
L/We (If greater than 2, no baffles required)	2.39

Stormwater Outfall Table

Site Area (Acres)	38.00		
	DA A		
Drainage Area (Acres)	29.71		
Runoff Reduction (cf)	0 CF		
Receiving Channel Type (Natural, Restored, or Manmade)	Natural		
Channel Protection Compliance Method	ENERGY BALANCE		
Flood Protection Compliance Method	10 YR POST < 10 YR PRE		
	1-year	2-year	10-year
RV Existing (AC-FT)	0.530	0.622	0.885
Q Existing (CFS)	7.55	8.85	12.61
RV Developed (AC-FT)	1.121	1.301	1.723
Q Developed (CFS)	0.63	0.66	12.58
Improvement Factor	0.8	N/A	N/A
Q Allowed (CFS)	2.86	8.85	12.61

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ZACKARY A. WILKINS
Lic. No. 050952
06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

WET POND A - DESIGN

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 40'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-31

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1 YR STORM EVENT

10 YR STORM EVENT

100 YR STORM EVENT

PRE-DEVELOPMENT

BINNS RD DC *VA-Hanover 1-Year Duration=51 min, Inten=1.48 in/hr*
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Summary for Subcatchment 5S: PRE DEV DA A

[48] Hint: Peak<CiA due to short duration

Runoff = 7.55 cfs @ 0.85 hrs, Volume= 0.530 af, Depth= 0.37"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
VA-Hanover 1-Year Duration=51 min, Inten=1.48 in/hr

Area (ac)	C	Description
17.140	0.30	
17.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	22	0.0080	0.04		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.33"
42.8	1,723	0.0180	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
51.8	1,745	Total			

BINNS RD DC *VA-Hanover 10-Year Duration=52 min, Inten=2.44 in/hr*
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Summary for Subcatchment 5S: PRE DEV DA A

Runoff = 12.61 cfs @ 0.86 hrs, Volume= 0.905 af, Depth= 0.63"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
VA-Hanover 10-Year Duration=52 min, Inten=2.44 in/hr

Area (ac)	C	Description
17.140	0.30	
17.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	22	0.0080	0.04		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.33"
42.8	1,723	0.0180	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
51.8	1,745	Total			

BINNS RD DC *VA-Hanover 100-Year Duration=52 min, Inten=3.39 in/hr*
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Summary for Subcatchment 5S: PRE DEV DA A

Runoff = 17.52 cfs @ 0.86 hrs, Volume= 1.258 af, Depth= 0.88"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
VA-Hanover 100-Year Duration=52 min, Inten=3.39 in/hr

Area (ac)	C	Description
17.140	0.30	
17.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	22	0.0080	0.04		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.33"
42.8	1,723	0.0180	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
51.8	1,745	Total			

POND INFLOW

BINNS RD DC *VA-Hanover 1-Year Duration=12 min, Inten=3.40 in/hr*
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Summary for Subcatchment 1S: POST DEV DA A

[48] Hint: Peak<CiA due to short duration

Runoff = 67.83 cfs @ 0.20 hrs, Volume= 1.121 af, Depth= 0.39"
Routed to Pond 2P : POND A

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
VA-Hanover 1-Year Duration=12 min, Inten=3.40 in/hr

Area (ac)	C	Description
15.190	0.90	Post - Dev On-site
2.420	0.30	Post - Dev On-site
15.500	0.30	Off-site To Pond
1.260	0.90	Pond Surface
34.370	0.59	Weighted Average
34.370		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3					**Direct Entry,**

BINNS RD DC *VA-Hanover 10-Year Duration=12 min, Inten=5.22 in/hr*
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Summary for Subcatchment 1S: POST DEV DA A

[48] Hint: Peak<CiA due to short duration

Runoff = 104.22 cfs @ 0.20 hrs, Volume= 1.723 af, Depth= 0.60"
Routed to Pond 2P : POND A

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
VA-Hanover 10-Year Duration=12 min, Inten=5.22 in/hr

Area (ac)	C	Description
15.190	0.90	Post - Dev On-site
2.420	0.30	Post - Dev On-site
15.500	0.30	Off-site To Pond
1.260	0.90	Pond Surface
34.370	0.59	Weighted Average
34.370		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3					**Direct Entry,**

BINNS RD DC *VA-Hanover 100-Year Duration=12 min, Inten=6.63 in/hr*
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Summary for Subcatchment 1S: POST DEV DA A

[48] Hint: Peak<CiA due to short duration

Runoff = 132.31 cfs @ 0.20 hrs, Volume= 2.187 af, Depth= 0.76"
Routed to Pond 2P : POND A

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
VA-Hanover 100-Year Duration=12 min, Inten=6.63 in/hr

Area (ac)	C	Description
15.190	0.90	Post - Dev On-site
2.420	0.30	Post - Dev On-site
15.500	0.30	Off-site To Pond
1.260	0.90	Pond Surface
34.370	0.59	Weighted Average
34.370		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3					**Direct Entry,**

POND OUTFLOW

BINNS RD DC *VA-Hanover 1-Year Duration=720 min, Inten=0.20 in/hr*
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Summary for Pond 2P: POND A

Inflow Area = 34.370 ac, 0.00% Impervious, Inflow Depth = 1.42" for 1-Year event
Inflow = 4.09 cfs @ 0.21 hrs, Volume= 4.056 af
Outflow = 0.63 cfs @ 12.17 hrs, Volume= 0.999 af, Atten= 85%, Lag= 717.8 min
Primary = 0.63 cfs @ 12.17 hrs, Volume= 0.999 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 100.00' Surf.Area= 54,956 sf Storage= 156,341 cf
Peak Elev= 102.38' @ 12.17 hrs Surf.Area= 74,601 sf Storage= 315,009 cf (158,669 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 453.7 min (819.8 - 366.2)

Volume	Invert	Avail.Storage	Storage Description
#1	94.00'	811,863 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
94.00	13,173	0	0
95.00	17,801	15,487	15,487
96.00	20,869	19,335	34,822
97.00	24,195	22,532	57,354
98.00	27,783	25,989	83,343
99.00	31,628	29,706	113,049
100.00	54,956	43,292	156,341
101.00	66,801	60,879	217,219
102.00	72,598	69,700	286,919
103.00	77,845	75,222	362,140
104.00	82,564	80,205	442,345
105.00	87,384	84,974	527,319
106.00	92,304	89,844	617,163
107.00	97,325	94,815	711,977
108.00	102,446	99,886	811,863

Device	Routing	Invert	Outlet Devices
#1	Primary	99.00'	**24.0" Round Culvert** L= 91.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 99.00' / 97.99' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	100.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	103.00'	**48.0" Horiz. Riser** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.63 cfs @ 12.17 hrs HW=102.38' (Free Discharge)
└─**1=Culvert** (Passes 0.63 cfs of 25.52 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.63 cfs @ 7.17 fps)
  └─**3=Riser** (Controls 0.00 cfs)

BINNS RD DC *VA-Hanover 10-Year Duration=321 min, Inten=0.72 in/hr*
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Summary for Pond 2P: POND A

Inflow Area = 34.370 ac, 0.00% Impervious, Inflow Depth = 2.29" for 10-Year event
Inflow = 14.82 cfs @ 0.21 hrs, Volume= 6.552 af
Outflow = 12.58 cfs @ 5.38 hrs, Volume= 2.689 af, Atten= 15%, Lag= 310.3 min
Primary = 12.58 cfs @ 5.38 hrs, Volume= 2.689 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 100.00' Surf.Area= 54,956 sf Storage= 156,341 cf
Peak Elev= 103.43' @ 5.38 hrs Surf.Area= 79,889 sf Storage= 396,309 cf (239,968 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 362.1 min (528.8 - 166.7)

Volume	Invert	Avail.Storage	Storage Description
#1	94.00'	811,863 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
94.00	13,173	0	0
95.00	17,801	15,487	15,487
96.00	20,869	19,335	34,822
97.00	24,195	22,532	57,354
98.00	27,783	25,989	83,343
99.00	31,628	29,706	113,049
100.00	54,956	43,292	156,341
101.00	66,801	60,879	217,219
102.00	72,598	69,700	286,919
103.00	77,845	75,222	362,140
104.00	82,564	80,205	442,345
105.00	87,384	84,974	527,319
106.00	92,304	89,844	617,163
107.00	97,325	94,815	711,977
108.00	102,446	99,886	811,863

Device	Routing	Invert	Outlet Devices
#1	Primary	99.00'	**24.0" Round Culvert** L= 91.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 99.00' / 97.99' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	100.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	103.00'	**48.0" Horiz. Riser** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=12.48 cfs @ 5.38 hrs HW=103.43' (Free Discharge)
└─**1=Culvert** (Passes 12.48 cfs of 30.62 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.76 cfs @ 8.70 fps)
  └─**3=Riser** (Weir Controls 11.72 cfs @ 2.15 fps)

BINNS RD DC *VA-Hanover 100-Year Duration=165 min, Inten=1.84 in/hr*
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Summary for Pond 2P: POND A

Inflow Area = 34.370 ac, 0.00% Impervious, Inflow Depth = 2.99" for 100-Year event
Inflow = 37.63 cfs @ 0.21 hrs, Volume= 8.552 af
Outflow = 31.68 cfs @ 2.78 hrs, Volume= 4.800 af, Atten= 16%, Lag= 154.3 min
Primary = 31.68 cfs @ 2.78 hrs, Volume= 4.800 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 100.00' Surf.Area= 54,956 sf Storage= 156,341 cf
Peak Elev= 103.88' @ 2.78 hrs Surf.Area= 81,996 sf Storage= 432,437 cf (276,096 cf above start)

Plug-Flow detention time= 770.3 min calculated for 1.211 af (14% of inflow)
Center-of-Mass det. time= 233.5 min (322.2 - 88.7)

Volume	Invert	Avail.Storage	Storage Description
#1	94.00'	811,863 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
94.00	13,173	0	0
95.00	17,801	15,487	15,487
96.00	20,869	19,335	34,822
97.00	24,195	22,532	57,354
98.00	27,783	25,989	83,343
99.00	31,628	29,706	113,049
100.00	54,956	43,292	156,341
101.00	66,801	60,879	217,219
102.00	72,598	69,700	286,919
103.00	77,845	75,222	362,140
104.00	82,564	80,205	442,345
105.00	87,384	84,974	527,319
106.00	92,304	89,844	617,163
107.00	97,325	94,815	711,977
108.00	102,446	99,886	811,863

Device	Routing	Invert	Outlet Devices
#1	Primary	99.00'	**24.0" Round Culvert** L= 91.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 99.00' / 97.99' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	100.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	103.00'	**48.0" Horiz. Riser** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=32.54 cfs @ 2.78 hrs HW=103.88' (Free Discharge)
└─**1=Culvert** (Barrel Controls 32.54 cfs @ 10.36 fps)
  ├─**2=Orifice/Grate** (Passes < 0.81 cfs potential flow)
  └─**3=Riser** (Passes < 33.89 cfs potential flow)

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SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

WET POND A - CALCULATIONS

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
NO SCALE

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

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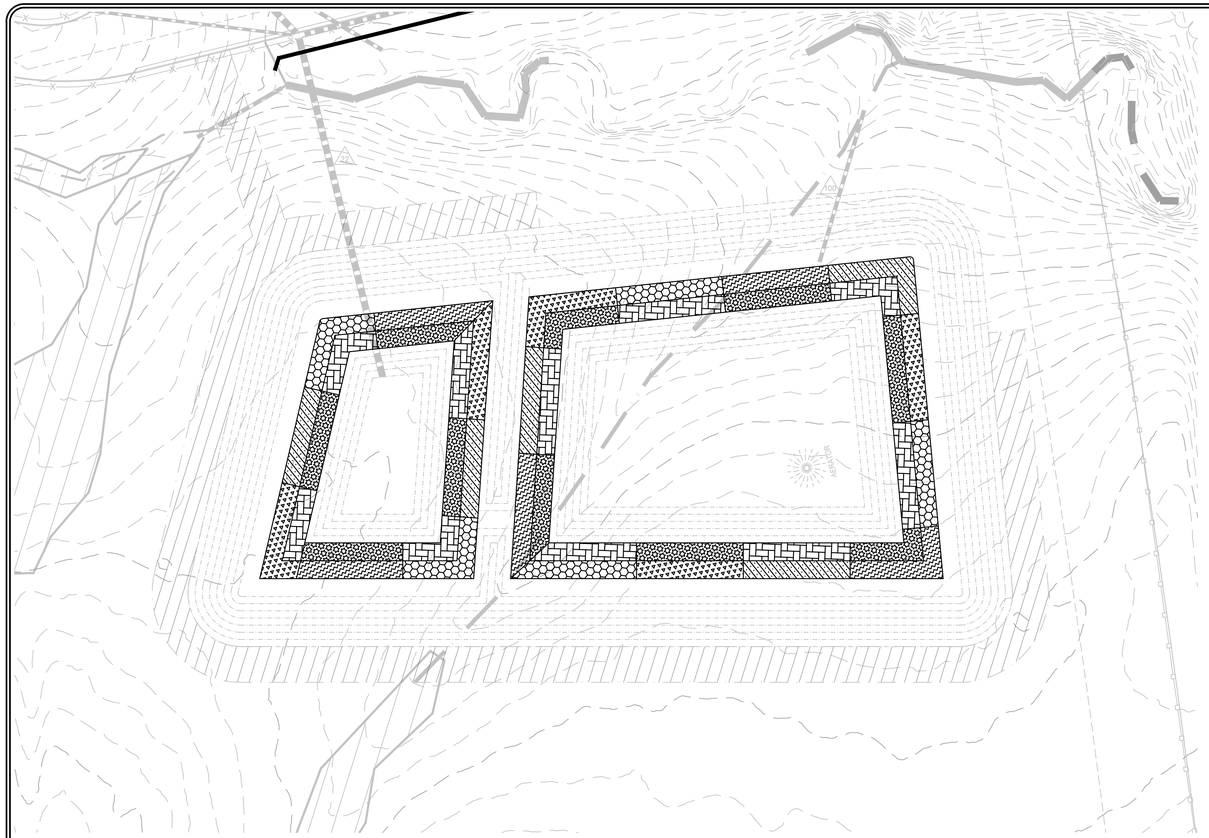


STORMWATER MANAGEMENT BASIN PLANTING NOTES:

1. QUALITY ASSURANCE
   A. NOMENCLATURE: PLANT NAMES SHALL CONFORM TO THE LATEST EDITION OF "STANDARDIZED PLANT NAMES" AS ADOPTED BY THE AMERICAN JOINT COMMITTEE ON HORTICULTURAL NOMENCLATURE.

   B. SIZE AND GRADING: PLANT SIZES AND GRADING SHALL CONFORM TO THE LATEST EDITION OF "AMERICAN STANDARD FOR NURSERY STOCK" AS SPONSORED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC. (AAN), UNLESS OTHERWISE SPECIFIED.

   C. NURSERY SOURCE: OBTAIN FRESHLY DUG, HEALTHY, VIGOROUS, PLANTS NURSERY GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCALITY OF THE PROJECT. PLANTS SHALL HAVE BEEN LINED OUT IN ROWS, ANNUALLY CULTIVATED, SPRAYED, PRUNED, AND FERTILIZED IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICE. HEELED IN PLANTS AND PLANTS FROM COLD STORAGE ARE NOT ACCEPTABLE.

   D. SUBSTITUTIONS: DO NOT MAKE SUBSTITUTIONS OF PLANT MATERIALS. IF REQUIRED LANDSCAPE MATERIAL IS NOT OBTAINABLE, SUBMIT PROOF OF NON-AVAILABILITY AND PROPOSAL FOR USE OF EQUIVALENT MATERIAL. WHEN AUTHORIZED, ADJUSTMENTS OF CONTRACT AMOUNT (IF ANY) WILL BE MADE BY CHANGE ORDER.

2. SEEDING & PLANTING SEASONS AND TIMING CONDITIONS:
   A. UNLESS OTHERWISE DIRECTED IN WRITING, SEED STORMWATER MANAGEMENT BASIN AREA FROM APRIL 15 TO JUNE 15, AND FROM AUGUST 15 TO OCTOBER 15.

   B. UNLESS OTHERWISE DIRECTED IN WRITING THE PLANTING OF PLUGS SHALL BE FROM APRIL 15 TO OCTOBER 30.

   C. PROCEED WITH AND COMPLETE SEEDING AND PLANTING AS RAPIDLY AS PORTIONS OF THE SITE BECOME AVAILABLE, WORKING WITHIN THE SEASONAL LIMITATIONS FOR EACH KIND OF LANDSCAPE WORK REQUIRED.

   D. PROVIDE TEMPORARY ANNUAL RYEGRASS COVER FOR SEEDING OUTSIDE PERMITTED SEEDING PERIODS. SEED AT THE RATE OF 3 TO 4 LBS PER 1,000 SF.

3. PRODUCTS:
   A. IMPORTED TOPSOIL: PROVIDE TOPSOIL CONFORMING TO THE FOLLOWING:

      1. ORIGINAL LOAM TOPSOIL, WELL DRAINED HOMOGENOUS TEXTURE AND OF UNIFORM GRADE, WITHOUT THE ADMIXTURE OF SUBSOIL MATERIAL AND FREE OF INVASIVE WETLAND SPECIES SEEDS OR ROOTS, DENSE MATERIAL, HARDPAN, CLAY, STONES, SOD OR OTHER OBJECTIONABLE FOREIGN MATERIAL.

      2. CONTAINING NOT LESS THAN 5% NOR MORE THAN 20% ORGANIC MATTER IN THAT PORTION OF A SAMPLE PASSING A 1/4" SIEVE WHEN DETERMINED BY THE WET COMBUSTION METHOD ON A SAMPLE DRIED AT 105° C.

      3. CONTAINING A PH VALUE WITHIN THE RANGE OF 6.5 TO 7.5 ON THAT PORTION OF THE SAMPLE WHICH PASSES A 1/4" SIEVE.

      4. CONTAINING THE FOLLOWING WASHED GRADATIONS:

SIEVE DESIGNATION	% PASSING
1"	100
¼"	97 – 100
NO. 200	20 – 65 (OF THE 1/4" SIEVE)

   B. SEED: PROVIDE FRESH, CLEAN, NEW-CROP SEED MIXED IN THE PROPORTIONS SPECIFIED FOR SPECIES AND VARIETY, AND CONFORMING TO FEDERAL AND STATE STANDARDS. PROVIDE THE FOLLOWING MIXTURES:

      1. WITHIN STORMWATER BASIN: NEW ENGLAND EROSION CONTROL/RESTORATION MIX AS SUPPLIED BY NEW ENGLAND WETLAND PLANTS, INC., 820 WEST ST., AMHERST, MA 01002, OR APPROVED EQUIVALENT. APPLY AT A RATE OF 1 LBS/1,245 S.F.

      2. OUTSIDE STORMWATER BASIN: USE LAWN SEED AT THE RATE OF 5 TO 8 LBS PER 1,000 SF.

AMOUNT BY: WEIGHT	SPECIES OR VARIETY	PURITY	MINIMUM % GERMINATION
25%	KENTUCKY BLUE GRASS	95%	60%
35%	PERENNIAL RYE	98%	90%
40%	RED FESCUE	97%	85%
100%			

   C. FERTILIZER (TO BE USED ON SEEDED LAWN AREAS OUTSIDE THE BASIN ONLY):
      1. FOR SPRING SEEDING: COMMERCIAL STARTER FERTILIZER, GRANULAR,NONBURNING PRODUCT CONTAINING 10% NITROGEN, 6% AVAILABLE PHOSPHORUS, AND 4% WATER SOLUBLE POTASH (10-6-4).
      2. FOR FALL SEEDING: COMMERCIAL STARTER FERTILIZER, GRANULAR, NONBURNING PRODUCT, CONTAINING 5% NITROGEN, 10% AVAILABLE PHOSPHORUS, AND 5% WATER SOLUBLE POTASH (5-10-5).
      3. FOR FINAL FERTILIZING: IF APPLIED IN SPRING SEASON, SHALL BE A SLOW RELEASE COMMERCIAL FERTILIZER, GRANULAR, WITH HIGH NITROGEN, 38%, URAMITE OR APPROVED EQUAL. IF APPLIED IN FALL SEASON, SHALL BE AS SPECIFIED IN (3.C.2) ABOVE.

   D. MULCH
      1. LAWN AREAS OUTSIDE STORMWATER BASIN: HYDROSEED OR USE OAT OR WHEAT STRAW FREE OF WEEDS
      2. EROSION CONTROL/RESTORATION MIX AREA WITHIN BASIN: HYDROSEED ONLY. DO NOT USE OTHER MULCH WITHIN THE BASIN.

4. EXECUTION
   A. PLANTING WORK SHALL BE UNDERTAKEN AS SOON AS SITE AREAS ARE AVAILABLE.

   B. THE BASIN MUST BE DRAINED AND FINE GRADED TO FINISHED ELEVATION PRIOR TO PLANTING. PLANTING AREAS SHALL BE GRADED TO A SMOOTH EVEN SURFACE, FREE OF DEPRESSIONS OR RIDGES WITH A UNIFORM LOOSE, FINE TEXTURE.

   C. CONTRACTOR SHALL EMPLOY APPROPRIATE SEDIMENT CONTROL MEASURES TO ASSURE WATER DRAINED FROM THE BASIN SHALL BE FREE FROM SEDIMENT PRIOR TO DISCHARGE TO RECEIVING CONVEYANCE SYSTEMS.

   D. TOPSOIL SHALL BE SPREAD NO LESS THAN 4" THICK EXCEPT 6" THICK OVER THE AQUATIC BENCH.

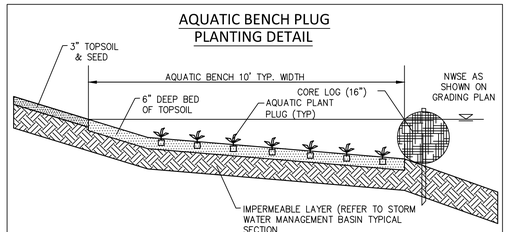
   E. THE TOPSOIL SHALL BE TESTED FOR PH AND LIME ADDED IF NECESSARY TO AMOUNT RECOMMENDED FOR EACH PLANT SPECIES. ALL AMENDMENTS SHALL BE CHECKED AND APPROVED BY LANDSCAPE ARCHITECT BEFORE AMENDMENTS ARE MADE.

   F. ALL NEWLY SEEDED AREAS SHALL BE KEPT MOIST BY WATERING UNTIL VEGETATIVE COVERS ARE WELL ESTABLISHED. CONTRACTOR SHALL KEEP PLUG ROOTS MOIST UNTIL SUCH TIME THAT THE PERMANENT WATER SURFACE IS REACHED WITHIN THE BASIN.

   G. THE WATER IN THE BASIN SHALL BE ALLOWED TO RISE TO ITS PERMANENT POOL LEVEL WHEN THE AQUATIC BENCH HAS BEEN PLANTED AND ONLY AT A RATE THAT WILL NOT DISTURB THE NEWLY PLANTED PLUGS.

   H. VEGETATIVE AREAS ARE TO BE WARRANTIED UNTIL THEY HAVE BECOME ESTABLISHED, AND NOT LESS THAN 60 DAYS AFTER COMPLETION OF ALL WORK AND FINAL ACCEPTANCE.

AQUATIC BENCH PLUG PLANTING DETAIL



NOTES:
1. HERBACEOUS PLANTS SHOULD BE PEAT POT GROWN OR HEAVILY ROOTED PLUGS, PLANTS SHOULD BE PLANTED WITH ROOT SYSTEMS FULLY INTACT
2. REMOVE ALL UNDESIRABLE PLANTS OR WEEDY VEGETATION FROM THE PLANTING PLUG
3. HERBICIDES SHALL NOT BE USED WITHIN THE BASIN TO REMOVE EXISTING WEED GROWTH
4. FERTILIZERS SHALL NOT BE USED WITHIN THE PERMANENT POOL
5. PLANTING SHALL TAKE PLACE IMMEDIATELY AFTER SOIL PREPARATION.

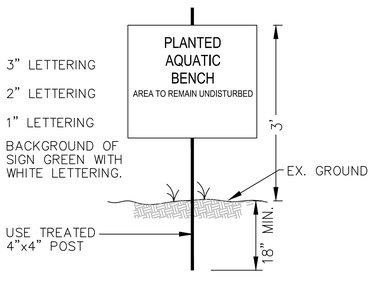
AQUATIC BENCH AND WETLAND SHELF PLANT SCHEDULE (BMP)

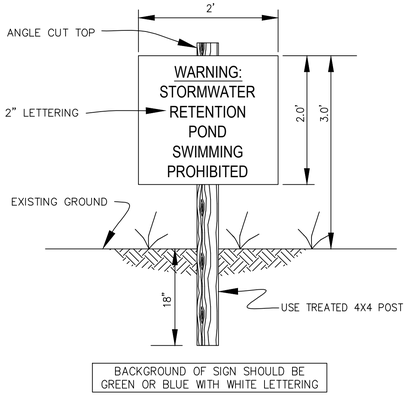
SYMBOL	ZONE	ABBR.	APPROX. QUAN.	BOTANICAL NAME	COMMON NAME	INUNDATION TOLERANCE	SPACING	SIZE	REMARKS	WILDLIFE VALUE
	2	SW	1,459	PERSICARIA VIRGINIANA	JUMP SEED/SMART WEED	UP TO 13"	18"O.C.	2" PLUG	AGGRESIVE COLONIZER	HIGH WATERFOWL, SONG BIRDS, SEEDS & COVER
	2,3	PW	1,450	Pontederia cordata	PICKERELWEED	UP TO 12"	18"O.C.	2" PLUG	AGGRESIVE COLONIZER	DUCKS, NECTAR FOR BUTTERFLIES
	2,3	BA	1,395	Sagittaria Lancifolia	BULLTONGUE ARROWHEAD	UP TO 24"	18"O.C.	2" PLUG	FULL SUN TO PARTIAL SHADE, AGGRESIVE COLONIZER	WATERFOWL & SMALL MAMMALS
	2,3	SV	1,468	Scipus Validus	SOFTSTEM BULLRUSH	UP TO 24"	18"O.C.	2" PLUG	FULL SUN, AGGRESIVE COLONIZER, HIGH POLLUTAMT REMOVAL	MODERATE GOOD FOOD & COVER
	1	PO	2,558	Potamogeton Pectinatus	POND WEED	YES	18"O.C.	2" PLUG	REMOVES HEAVY METALS FROM WATER	EXTREMELY HIGH, WATERFOWL MARSH & SHORE BIRDS
	1	WC	2,457	Valisneria Americana	WILD CELERY	YES	18"O.C.	2" PLUG	TOLERANT OF MURKEY WATER AND HIGH NUTRIENT LOADS	HIGH, FOOD FOR WATERFOWL HABITAT FOR FISH AND INVERTREBRATES

GRAPHIC SCALE

40 0 20 40 80

(IN FEET)
1 inch = 40 ft.





SWIMMING PROHIBITED SIGN DETAIL
N.T.S.

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COMMONWEALTH OF VIRGINIA
ZACKARY A. WILKINS
Lic. No. 050952
06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

WET POND A - LANDSCAPING

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 40'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-33

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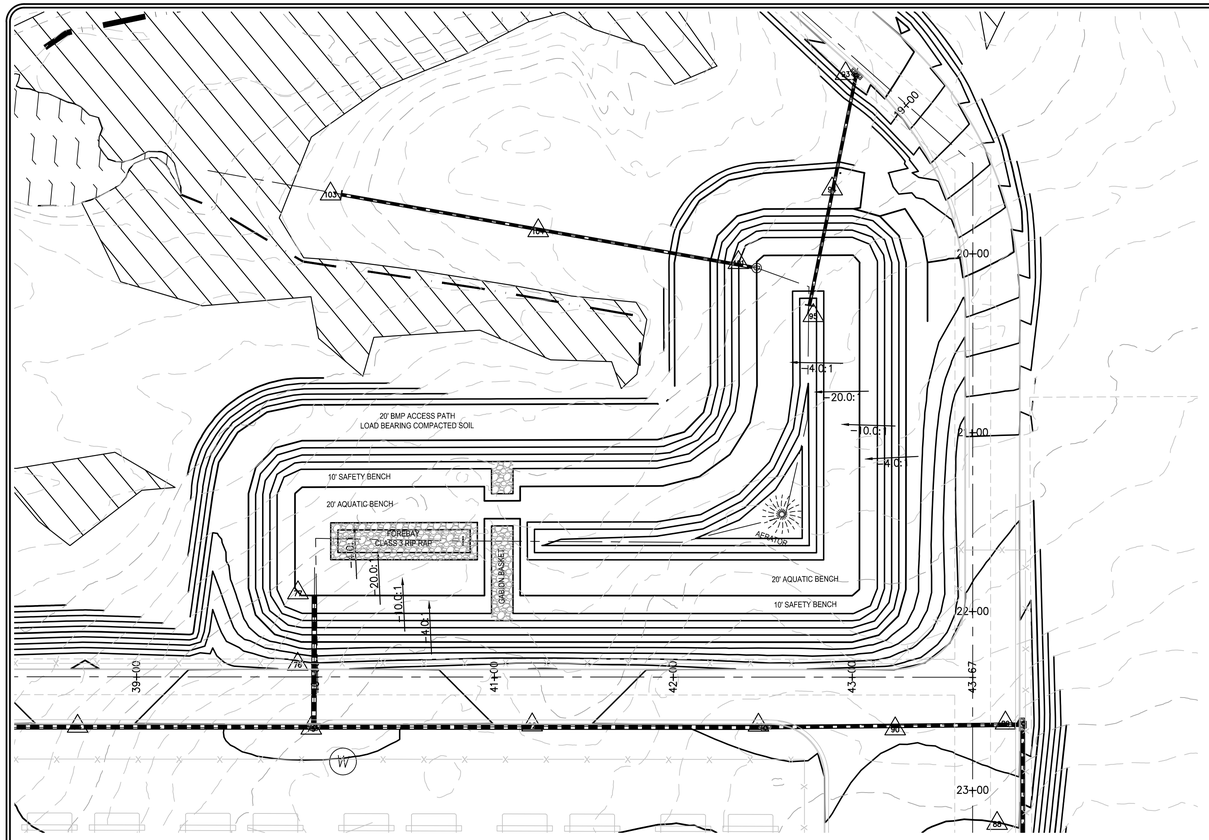


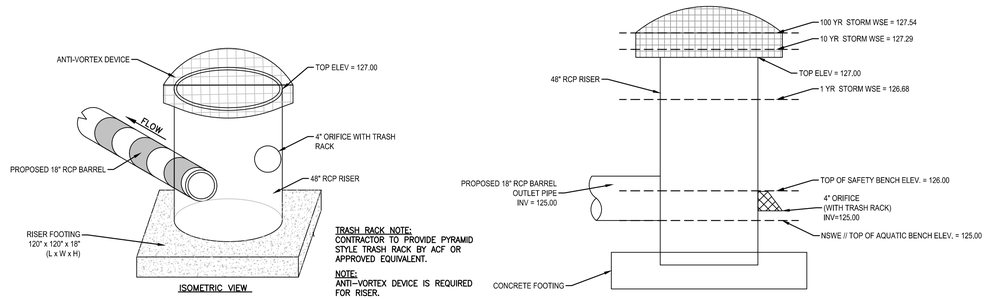
GRAPHIC SCALE

40 0 20 40 80

(IN FEET)
1 inch = 40 ft.

NOTES:

1. THE SWM FACILITY HAS BEEN DESIGNED IN ACCORDANCE WITH STANDARD AND SPECIFICATION P-BAS-02 (WET POND) AND P-FIL-07 (SHEET FLOW TO VEGETATED FILTER STRIP/CONSERVED OPEN SPACE) FROM CHAPTER 8.3 OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.1, 2024.
2. CONSTRUCTION, MAINTENANCE, AND INSPECTION OF THE SWM FACILITY TO BE PERFORMED IN ACCORDANCE WITH STANDARD AND SPECIFICATION P-BAS-02 (WET POND).
3. CONTRACTOR TO PROVIDE ADEQUATE ANCHORING AND SUPPORTS TO PREVENT RISER AND/OR OUTFALL PIPE FROM FLOATING OR BUCKLING.
4. OUTFALL TO BE O-RING PIPE, BEDDED THROUGH DAM SECTION WITH FLOWABLE FILL UP TO THE HIGH-WATER LEVEL AND 4" MINIMUM DEPTH BELOW BOTTOM OF PIPE, IN TRENCH 60" WIDE (PIPE WIDTH PLUS 24"). ALTERNATIVE IMPERMEABLE MATERIAL MAY BE USED IN LIEU OF FLOWABLE FILL WITH APPROVAL OF GEOTECHNICAL ENGINEER AND COUNTY INSPECTOR.
5. SOIL BORINGS SHOULD BE CONDUCTED WITHIN THE FOOTPRINT OF THE PROPOSED EMBANKMENT, NEAR THE PROPOSED OUTLET STRUCTURE, AND IN AT LEAST TWO LOCATIONS WITHIN THE PROPOSED WET POND TREATMENT AREA. SOIL BORING DATA IS NEEDED TO (1) DETERMINE THE PHYSICAL CHARACTERISTICS OF THE EXCAVATED MATERIAL TO DETERMINE ITS ADEQUACY AS STRUCTURAL FILL OR OTHER USE, (2) DETERMINE THE NEED AND APPROPRIATE DESIGN DEPTH OF THE EMBANKMENT CUT-OFF TRENCH; (3) PROVIDE DATA FOR STRUCTURAL DESIGNS OF THE OUTLET WORKS (E.G., BEARING CAPACITY AND BUOYANCY), (4) DETERMINE THE DEPTH TO GROUNDWATER AND BEDROCK AND (5) EVALUATE POTENTIAL INFILTRATION LOSSES (AND THE POTENTIAL NEED FOR A LINER).
6. ONSITE CLAY MATERIAL SHOULD BE UTILIZED AS BASE AND LINER WITH APPROVAL FROM A GEOTECHNICAL ENGINEER. IF ONSITE MATERIAL DOES NOT MEET THE REQUIRED SPECIFICATIONS, A LINE SHALL BE PROVIDED.
7. AFTER THE ORIGINAL SITE CONSTRUCTION IS COMPLETE AND THE SEDIMENT BASIN IS BEING CONVERTED TO A WET POND, THE FACILITY SHALL BE DE-WATERED, DREDGED AND RE-GRADED TO THE DESIGN DIMENSIONS IF NECESSARY TO OBTAIN REQUIRED WET STORAGE VOLUME.
8. GEOTECHNICAL CERTIFICATION MUST BE SUBMITTED STATING THAT CONSTRUCTION COMPACTION REQUIREMENTS HAVE BEEN ACHIEVED FOR THE DAM EMBANKMENT. THIS MUST BE SUBMITTED AS PART OF THE BMP AS-BUILT CERTIFICATION PRIOR TO THE ESC BOND RELEASE.
9. THE RISER IS TO BE INSTALLED WITH THE SEDIMENT BASIN.

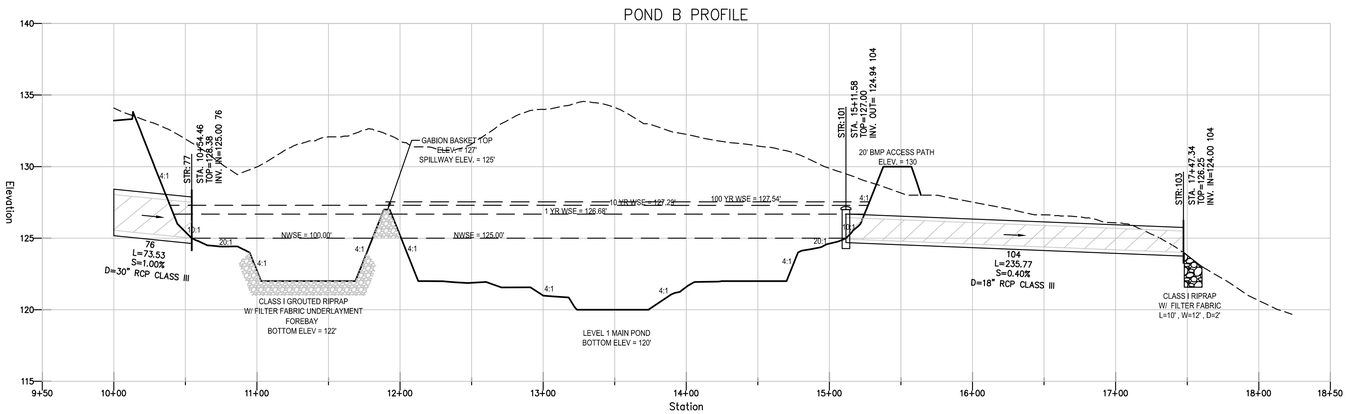


TRASH RACK NOTE:
CONTRACTOR TO PROVIDE PYRAMID STYLE TRASH RACK BY ACF OR APPROVED EQUIVALENT.

NOTE:
ANTI-VORTEX DEVICE IS REQUIRED FOR RISER.

WET POND B SWM/BMP RISER DETAIL

NOT TO SCALE



NOTES:

1. FINISH GRADE ELEVATIONS FOR BOTTOM OF POND REPRESENT TOP OF TOPSOIL
2. A 6" LAYER OF TOPSOIL IS REQUIRED FOR ALL AREAS OF BASIN THAT WILL BE STABILIZED WITH A PERMANENT STAND OF VEGETATION
3. THE PRINCIPAL SPILLWAY MUST BE CONSTRUCTED WITH WATERTIGHT JOINTS TO PREVENT INFILTRATION OF EMBANKMENT SOILS INTO THE CONDUIT. ALL JOINTS MUST ALSO BE CONSTRUCTED AS SPECIFIED BY PIPE MANUFACTURER.
4. SELF-CLEANING TRASH RACKS ARE REQUIRED FOR ALL OUTLET STRUCTURES, INCLUDING DEWATERING DEVICES
5. 10 FEET OF CLEARING AND GRADING IS REQUIRED DOWNSTREAM OF THE SPREADER WEIR SECTION TO INSURE FREE OVERFLOW OF STORMWATER OVER THE WEIR. 75 FEET PROVIDED. THE DISTURBED AREA SHALL BE PLANTED WITH SOD IN ACCORDANCE WITH THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK STANDARD AND SPECIFICATION C-SSM-06 (SODDING).
6. AN 18" CLAY LINER HAS BEEN PROVIDED ALONG THE BOTTOM OF THE POND TO ACCOUNT FOR THE POTENTIAL OF A HIGH SEASONAL WATER TABLE. DESIGN TO BE REVISED AS APPLICABLE FOLLOWING SOIL BORINGS.

Wet Pond Level 1 BMP	
Total Drainage Area(Acres)	11.54
Treatment Volume	
A (Acres)	11.54
TV Required (1.0* TV from VRRM)	31,127
TV Provided (Cu. Ft. at NWSE=125.00)	31,459
Forebay Calculation (Per P-SUP-06-3)	
Forebay Volume Required (Cu. Ft.)	3,113 - 4,669
= 10% - 15% of total permanent pool volume	-
Volume Provided (Cu. Ft. at NWSE=125.00)	9,372
Forebay NSWE Surface Area (Sq. Ft.)	6,421
Length of Flow (L)	125.00
Effective Width (We) = Area/L	51.37
L/We (If greater than 2, no baffles required)	2.43

LEGEND

FINISHED GRADE AT C/L
EXIST. GROUND AT C/L

SCALE:
HORIZONTAL:1"=50'
VERTICAL:1"=5'

Stormwater Outfall Table

Site Area (Acres)	38.00		
	DA A		
Drainage Area (Acres)	29.71		
Runoff Reduction (cf)	0 CF		
Receiving Channel Type (Natural, Restored, or Manmade)	Natural		
Channel Protection Compliance Method	ENERGY BALANCE		
Flood Protection Compliance Method	10 YR POST < 10 YR PRE		
	1-year	2-year	10-year
RV Existing (AC-FT)	0.530	0.622	0.885
Q Existing (CFS)	7.55	8.85	12.61
RV Developed (AC-FT)	1.121	1.301	1.723
Q Developed (CFS)	0.63	0.66	12.58
Improvement Factor	0.8	N/A	N/A
Q Allowed (CFS)	2.86	8.85	12.61

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06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

WET POND B - DESIGN

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 40'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-34

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PRE-DEVELOPMENT

POND INFLOW

POND OUTFLOW

1 YR STORM EVENT

BINNS RD DC *VA-Hanover 10-Year Duration=24 min, Inten=3.79 in/hr*
Prepared by Townes Site Engineering Printed 6/23/2026
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Summary for Subcatchment 6S: PRE DEV DA B

[48] Hint: Peak<CiA due to short duration

Runoff = 7.66 cfs @ 0.40 hrs, Volume= 0.253 af, Depth= 0.45"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
VA-Hanover 10-Year Duration=24 min, Inten=3.79 in/hr

Area (ac)	C	Description
6.750	0.30	
6.750		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	39	0.0250	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.33"
15.1	772	0.0290	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
24.2	811	Total			

BINNS RD DC *VA-Hanover 1-Year Duration=24 min, Inten=2.35 in/hr*
Prepared by Townes Site Engineering Printed 6/23/2026
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Summary for Subcatchment 6S: PRE DEV DA B

[48] Hint: Peak<CiA due to short duration

Runoff = 4.76 cfs @ 0.40 hrs, Volume= 0.157 af, Depth= 0.28"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
VA-Hanover 1-Year Duration=24 min, Inten=2.35 in/hr

Area (ac)	C	Description
6.750	0.30	
6.750		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	39	0.0250	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.33"
15.1	772	0.0290	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
24.2	811	Total			

BINNS RD DC *VA-Hanover 1-Year Duration=720 min, Inten=0.20 in/hr*
Prepared by Townes Site Engineering Printed 6/10/2026
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Summary for Pond 4P: POND B

Inflow Area = 11.550 ac, 0.00% Impervious, Inflow Depth = 1.73" for 1-Year event
Inflow = 1.68 cfs @ 0.14 hrs, Volume= 1.663 af
Outflow = 0.52 cfs @ 12.10 hrs, Volume= 0.804 af, Atten= 69%, Lag= 717.4 min
Primary = 0.52 cfs @ 12.10 hrs, Volume= 0.804 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 125.00' Surf.Area= 26,288 sf Storage= 31,459 cf
Peak Elev= 126.68' @ 12.10 hrs Surf.Area= 39,854 sf Storage= 88,896 cf (57,437 cf above start)

Plug-Flow detention time= 1,348.1 min calculated for 0.082 af (5% of inflow)
Center-of-Mass det. time= 439.0 min (803.2 - 364.2)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	246,353 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	442	0	0
121.00	1,039	741	741
122.00	2,774	1,907	2,647
123.00	5,597	4,186	6,833
124.00	8,684	7,141	13,973
125.00	26,288	17,486	31,459
126.00	36,651	31,470	62,929
127.00	41,370	39,011	101,939
128.00	45,938	43,654	145,593
129.00	50,355	48,147	193,740
130.00	54,872	52,614	246,353

Device	Routing	Invert	Outlet Devices
#1	Primary	125.00'	**18.0" Round Culvert** L= 230.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 125.00' / 124.00' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	125.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	127.00'	**48.0" Horiz. Riser** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.52 cfs @ 12.10 hrs HW=126.68' (Free Discharge)
└**1=Culvert** (Passes 0.52 cfs of 7.18 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.52 cfs @ 5.92 fps)
└**3=Riser** (Controls 0.00 cfs)

10 YR STORM EVENT

BINNS RD DC *VA-Hanover 100-Year Duration=24 min, Inten=4.93 in/hr*
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Summary for Subcatchment 6S: PRE DEV DA B

[48] Hint: Peak<CiA due to short duration

Runoff = 9.99 cfs @ 0.40 hrs, Volume= 0.330 af, Depth= 0.59"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
VA-Hanover 100-Year Duration=24 min, Inten=4.93 in/hr

Area (ac)	C	Description
6.750	0.30	
6.750		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	39	0.0250	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.33"
15.1	772	0.0290	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
24.2	811	Total			

BINNS RD DC *VA-Hanover 10-Year Duration=9 min, Inten=5.83 in/hr*
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Summary for Subcatchment 3S: POST DEV DA B

Runoff = 49.32 cfs @ 0.15 hrs, Volume= 0.606 af, Depth= 0.63"
Routed to Pond 4P : POND B

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
VA-Hanover 10-Year Duration=9 min, Inten=5.83 in/hr

Area (ac)	C	Description
7.520	0.90	Post - Dev On-site
1.630	0.30	Post - Dev On-site
0.600	0.90	Pond Surface
1.800	0.30	Off-site To Pond
11.550	0.72	Weighted Average
11.550		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4					**Direct Entry,**

BINNS RD DC *VA-Hanover 10-Year Duration=195 min, Inten=1.02 in/hr*
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Summary for Pond 4P: POND B

Inflow Area = 11.550 ac, 0.00% Impervious, Inflow Depth = 2.40" for 10-Year event
Inflow = 8.59 cfs @ 0.14 hrs, Volume= 2.307 af
Outflow = 7.21 cfs @ 3.27 hrs, Volume= 1.464 af, Atten= 16%, Lag= 188.0 min
Primary = 7.21 cfs @ 3.27 hrs, Volume= 1.464 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 125.00' Surf.Area= 26,288 sf Storage= 31,459 cf
Peak Elev= 127.29' @ 3.27 hrs Surf.Area= 42,717 sf Storage= 114,341 cf (82,882 cf above start)

Plug-Flow detention time= 827.7 min calculated for 0.742 af (32% of inflow)
Center-of-Mass det. time= 433.1 min (534.8 - 101.7)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	246,353 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	442	0	0
121.00	1,039	741	741
122.00	2,774	1,907	2,647
123.00	5,597	4,186	6,833
124.00	8,684	7,141	13,973
125.00	26,288	17,486	31,459
126.00	36,651	31,470	62,929
127.00	41,370	39,011	101,939
128.00	45,938	43,654	145,593
129.00	50,355	48,147	193,740
130.00	54,872	52,614	246,353

Device	Routing	Invert	Outlet Devices
#1	Primary	125.00'	**18.0" Round Culvert** L= 230.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 125.00' / 124.00' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	125.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	127.00'	**48.0" Horiz. Riser** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.19 cfs @ 3.27 hrs HW=127.29' (Free Discharge)
└**1=Culvert** (Passes 0.61 cfs of 8.17 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.61 cfs @ 7.02 fps)
└**3=Riser** (Weir Controls 6.58 cfs @ 1.78 fps)

100 YR STORM EVENT

BINNS RD DC *VA-Hanover 1-Year Duration=9 min, Inten=3.80 in/hr*
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Summary for Subcatchment 3S: POST DEV DA B

Runoff = 32.15 cfs @ 0.15 hrs, Volume= 0.395 af, Depth= 0.41"
Routed to Pond 4P : POND B

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
VA-Hanover 1-Year Duration=9 min, Inten=3.80 in/hr

Area (ac)	C	Description
7.520	0.90	Post - Dev On-site
1.630	0.30	Post - Dev On-site
0.600	0.90	Pond Surface
1.800	0.30	Off-site To Pond
11.550	0.72	Weighted Average
11.550		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4					**Direct Entry,**

BINNS RD DC *VA-Hanover 100-Year Duration=9 min, Inten=7.38 in/hr*
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Summary for Subcatchment 3S: POST DEV DA B

Runoff = 62.45 cfs @ 0.15 hrs, Volume= 0.767 af, Depth= 0.80"
Routed to Pond 4P : POND B

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
VA-Hanover 100-Year Duration=9 min, Inten=7.38 in/hr

Area (ac)	C	Description
7.520	0.90	Post - Dev On-site
1.630	0.30	Post - Dev On-site
0.600	0.90	Pond Surface
1.800	0.30	Off-site To Pond
11.550	0.72	Weighted Average
11.550		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4					**Direct Entry,**

BINNS RD DC *VA-Hanover 100-Year Duration=108 min, Inten=2.31 in/hr*
Prepared by Townes Site Engineering Printed 6/10/2026
HydroCAD® 10.20-7a s/n 13392 © 2025 HydroCAD Software Solutions LLC

Summary for Pond 4P: POND B

Inflow Area = 11.550 ac, 0.00% Impervious, Inflow Depth = 3.00" for 100-Year event
Inflow = 19.39 cfs @ 0.14 hrs, Volume= 2.884 af
Outflow = 17.15 cfs @ 1.82 hrs, Volume= 2.082 af, Atten= 12%, Lag= 100.6 min
Primary = 17.15 cfs @ 1.82 hrs, Volume= 2.082 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 125.00' Surf.Area= 26,288 sf Storage= 31,459 cf
Peak Elev= 127.54' @ 1.82 hrs Surf.Area= 43,851 sf Storage= 125,083 cf (93,624 cf above start)

Plug-Flow detention time= 506.0 min calculated for 1.359 af (47% of inflow)
Center-of-Mass det. time= 324.1 min (382.3 - 58.2)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	246,353 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	442	0	0
121.00	1,039	741	741
122.00	2,774	1,907	2,647
123.00	5,597	4,186	6,833
124.00	8,684	7,141	13,973
125.00	26,288	17,486	31,459
126.00	36,651	31,470	62,929
127.00	41,370	39,011	101,939
128.00	45,938	43,654	145,593
129.00	50,355	48,147	193,740
130.00	54,872	52,614	246,353

Device	Routing	Invert	Outlet Devices
#1	Primary	125.00'	**18.0" Round Culvert** L= 230.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 125.00' / 124.00' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	125.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	127.00'	**48.0" Horiz. Riser** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=17.09 cfs @ 1.82 hrs HW=127.54' (Free Discharge)
└**1=Culvert** (Passes 0.65 cfs of 8.72 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.65 cfs @ 7.42 fps)
└**3=Riser** (Weir Controls 16.44 cfs @ 2.41 fps)

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06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

WET POND B - CALCULATIONS

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
NO SCALE

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-35

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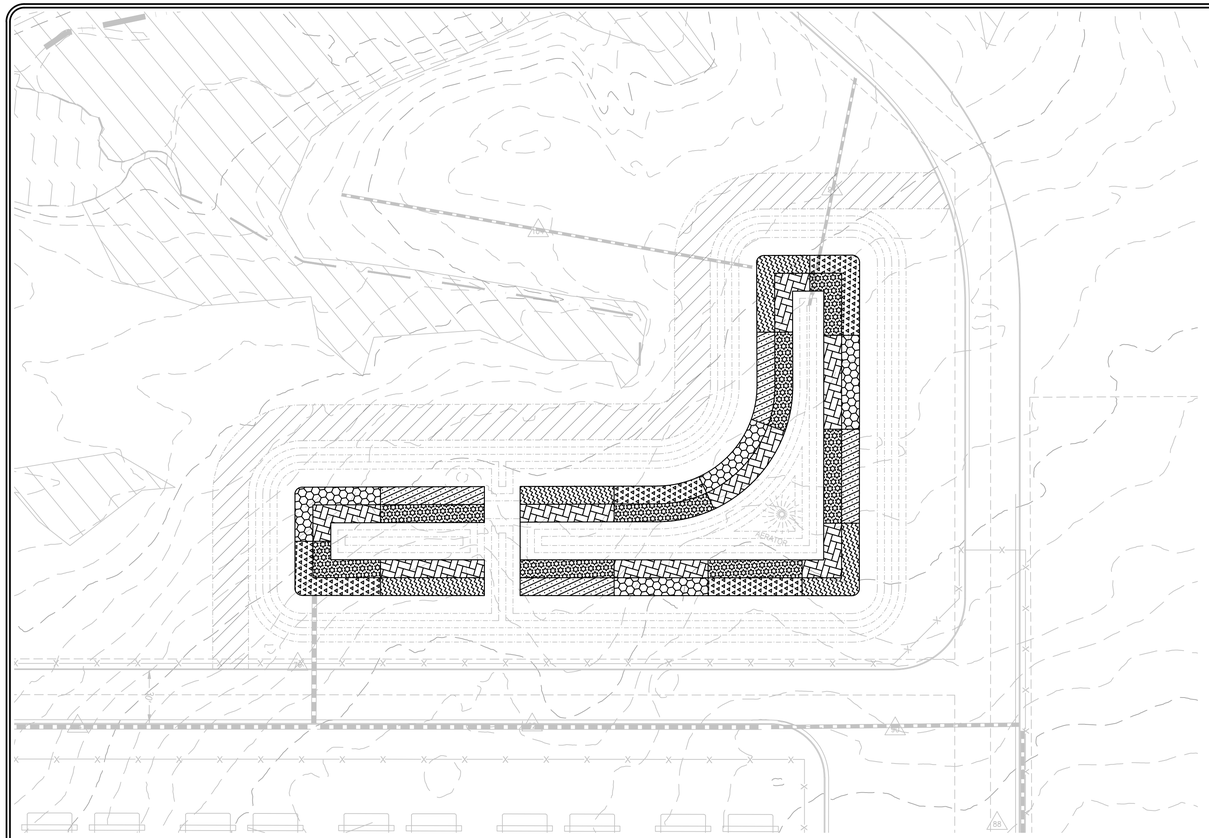
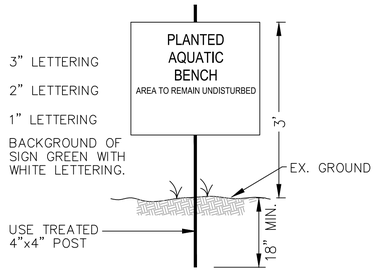


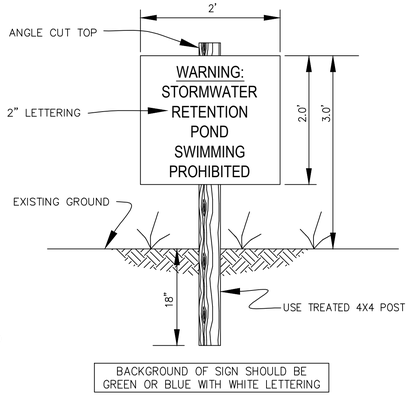


GRAPHIC SCALE



(IN FEET)
1 inch = 40 ft.





SWIMMING PROHIBITED SIGN DETAIL
N.T.S.

STORMWATER MANAGEMENT BASIN PLANTING NOTES:

1. QUALITY ASSURANCE
   A. NOMENCLATURE: PLANT NAMES SHALL CONFORM TO THE LATEST EDITION OF "STANDARDIZED PLANT NAMES" AS ADOPTED BY THE AMERICAN JOINT COMMITTEE ON HORTICULTURAL NOMENCLATURE.

   B. SIZE AND GRADING: PLANT SIZES AND GRADING SHALL CONFORM TO THE LATEST EDITION OF "AMERICAN STANDARD FOR NURSERY STOCK" AS SPONSORED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC. (AAN), UNLESS OTHERWISE SPECIFIED.

   C. NURSERY SOURCE: OBTAIN FRESHLY DUG, HEALTHY, VIGOROUS, PLANTS NURSERY GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCALITY OF THE PROJECT. PLANTS SHALL HAVE BEEN LINED OUT IN ROWS, ANNUALLY CULTIVATED, SPRAYED, PRUNED, AND FERTILIZED IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICE. HEELED IN PLANTS AND PLANTS FROM COLD STORAGE ARE NOT ACCEPTABLE.

   D. SUBSTITUTIONS: DO NOT MAKE SUBSTITUTIONS OF PLANT MATERIALS. IF REQUIRED LANDSCAPE MATERIAL IS NOT OBTAINABLE, SUBMIT PROOF OF NON-AVAILABILITY AND PROPOSAL FOR USE OF EQUIVALENT MATERIAL. WHEN AUTHORIZED, ADJUSTMENTS OF CONTRACT AMOUNT (IF ANY) WILL BE MADE BY CHANGE ORDER.

2. SEEDING & PLANTING SEASONS AND TIMING CONDITIONS:
   A. UNLESS OTHERWISE DIRECTED IN WRITING, SEED STORMWATER MANAGEMENT BASIN AREA FROM APRIL 15 TO JUNE 15, AND FROM AUGUST 15 TO OCTOBER 15.

   B. UNLESS OTHERWISE DIRECTED IN WRITING THE PLANTING OF PLUGS SHALL BE FROM APRIL 15 TO OCTOBER 30.

   C. PROCEED WITH AND COMPLETE SEEDING AND PLANTING AS RAPIDLY AS PORTIONS OF THE SITE BECOME AVAILABLE, WORKING WITHIN THE SEASONAL LIMITATIONS FOR EACH KIND OF LANDSCAPE WORK REQUIRED.

   D. PROVIDE TEMPORARY ANNUAL RYEGRASS COVER FOR SEEDING OUTSIDE PERMITTED SEEDING PERIODS. SEED AT THE RATE OF 3 TO 4 LBS PER 1,000 SF.

3. PRODUCTS:
   A. IMPORTED TOPSOIL: PROVIDE TOPSOIL CONFORMING TO THE FOLLOWING:

      1. ORIGINAL LOAM TOPSOIL, WELL DRAINED HOMOGENOUS TEXTURE AND OF UNIFORM GRADE, WITHOUT THE ADMIXTURE OF SUBSOIL MATERIAL AND FREE OF INVASIVE WETLAND SPECIES SEEDS OR ROOTS, DENSE MATERIAL, HARDPAN, CLAY, STONES, SOD OR OTHER OBJECTIONABLE FOREIGN MATERIAL.

      2. CONTAINING NOT LESS THAN 5% NOR MORE THAN 20% ORGANIC MATTER IN THAT PORTION OF A SAMPLE PASSING A 1/4" SIEVE WHEN DETERMINED BY THE WET COMBUSTION METHOD ON A SAMPLE DRIED AT 105° C.

      3. CONTAINING A PH VALUE WITHIN THE RANGE OF 6.5 TO 7.5 ON THAT PORTION OF THE SAMPLE WHICH PASSES A 1/4" SIEVE.

      4. CONTAINING THE FOLLOWING WASHED GRADATIONS:

SIEVE DESIGNATION	% PASSING
1"	100
¼"	97 – 100
NO. 200	20 – 65 (OF THE 1/4" SIEVE)

   B. SEED: PROVIDE FRESH, CLEAN, NEW-CROP SEED MIXED IN THE PROPORTIONS SPECIFIED FOR SPECIES AND VARIETY, AND CONFORMING TO FEDERAL AND STATE STANDARDS. PROVIDE THE FOLLOWING MIXTURES:

      1. WITHIN STORMWATER BASIN: NEW ENGLAND EROSION CONTROL/RESTORATION MIX AS SUPPLIED BY NEW ENGLAND WETLAND PLANTS, INC., 820 WEST ST., AMHERST, MA 01002, OR APPROVED EQUIVALENT. APPLY AT A RATE OF 1 LBS/1,245 S.F.

      2. OUTSIDE STORMWATER BASIN: USE LAWN SEED AT THE RATE OF 5 TO 8 LBS PER 1,000 SF.

AMOUNT BY: WEIGHT	SPECIES OR VARIETY	PURITY	MINIMUM % GERMINATION
25%	KENTUCKY BLUE GRASS	95%	60%
35%	PERENNIAL RYE	98%	90%
40%	RED FESCUE	97%	85%
100%			

   C. FERTILIZER (TO BE USED ON SEEDED LAWN AREAS OUTSIDE THE BASIN ONLY):
      1. FOR SPRING SEEDING: COMMERCIAL STARTER FERTILIZER, GRANULAR,NONBURNING PRODUCT CONTAINING 10% NITROGEN, 6% AVAILABLE PHOSPHORUS, AND 4% WATER SOLUBLE POTASH (10-6-4).

      2. FOR FALL SEEDING: COMMERCIAL STARTER FERTILIZER, GRANULAR, NONBURNING PRODUCT, CONTAINING 5% NITROGEN, 10% AVAILABLE PHOSPHORUS, AND 5% WATER SOLUBLE POTASH (5-10-5).

      3. FOR FINAL FERTILIZING: IF APPLIED IN SPRING SEASON, SHALL BE A SLOW RELEASE COMMERCIAL FERTILIZER, GRANULAR, WITH HIGH NITROGEN, 38% URAMITE OR APPROVED EQUAL. IF APPLIED IN FALL SEASON, SHALL BE AS SPECIFIED IN (3.C.2) ABOVE.

   D. MULCH
      1. LAWN AREAS OUTSIDE STORMWATER BASIN: HYDROSEED OR USE OAT OR WHEAT STRAW FREE OF WEEDS

      2. EROSION CONTROL/RESTORATION MIX AREA WITHIN BASIN: HYDROSEED ONLY. DO NOT USE OTHER MULCH WITHIN THE BASIN.

4. EXECUTION
   A. PLANTING WORK SHALL BE UNDERTAKEN AS SOON AS SITE AREAS ARE AVAILABLE.

   B. THE BASIN MUST BE DRAINED AND FINE GRADED TO FINISHED ELEVATION PRIOR TO PLANTING. PLANTING AREAS SHALL BE GRADED TO A SMOOTH EVEN SURFACE, FREE OF DEPRESSIONS OR RIDGES WITH A UNIFORM LOOSE, FINE TEXTURE.

   C. CONTRACTOR SHALL EMPLOY APPROPRIATE SEDIMENT CONTROL MEASURES TO ASSURE WATER DRAINED FROM THE BASIN SHALL BE FREE FROM SEDIMENT PRIOR TO DISCHARGE TO RECEIVING CONVEYANCE SYSTEMS.

   D. TOPSOIL SHALL BE SPREAD NO LESS THAN 4" THICK EXCEPT 6" THICK OVER THE AQUATIC BENCH.

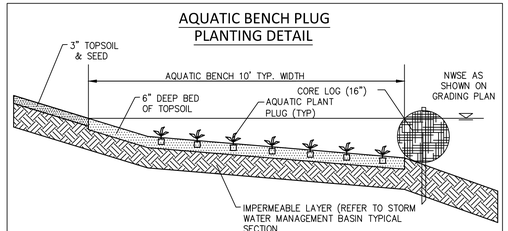
   E. THE TOPSOIL SHALL BE TESTED FOR PH AND LIME ADDED IF NECESSARY TO AMOUNT RECOMMENDED FOR EACH PLANT SPECIES. ALL AMENDMENTS SHALL BE CHECKED AND APPROVED BY LANDSCAPE ARCHITECT BEFORE AMENDMENTS ARE MADE.

   F. ALL NEWLY SEEDED AREAS SHALL BE KEPT MOIST BY WATERING UNTIL VEGETATIVE COVERS ARE WELL ESTABLISHED. CONTRACTOR SHALL KEEP PLUG ROOTS MOIST UNTIL SUCH TIME THAT THE PERMANENT WATER SURFACE IS REACHED WITHIN THE BASIN.

   G. THE WATER IN THE BASIN SHALL BE ALLOWED TO RISE TO ITS PERMANENT POOL LEVEL WHEN THE AQUATIC BENCH HAS BEEN PLANTED AND ONLY AT A RATE THAT WILL NOT DISTURB THE NEWLY PLANTED PLUGS.

   H. VEGETATIVE AREAS ARE TO BE WARRANTIED UNTIL THEY HAVE BECOME ESTABLISHED, AND NOT LESS THAN 60 DAYS AFTER COMPLETION OF ALL WORK AND FINAL ACCEPTANCE.

AQUATIC BENCH PLUG PLANTING DETAIL



NOTES:
1. HERBACEOUS PLANTS SHOULD BE PEAT POT GROWN OR HEAVILY ROOTED PLUGS, PLANTS SHOULD BE PLANTED WITH ROOT SYSTEMS FULLY INTACT
2. REMOVE ALL UNDESIRABLE PLANTS OR WEEDY VEGETATION FROM THE PLANTING PLUG
3. HERBICIDES SHALL NOT BE USED WITHIN THE BASIN TO REMOVE EXISTING WEED GROWTH
4. FERTILIZERS SHALL NOT BE USED WITHIN THE PERMANENT POOL
5. PLANTING SHALL TAKE PLACE IMMEDIATELY AFTER SOIL PREPARATION.

AQUATIC BENCH AND WETLAND SHELF PLANT SCHEDULE (BMP)

SYMBOL	ZONE	ABBR.	APPROX. QUAN.	BOTANICAL NAME	COMMON NAME	INUNDATION TOLERANCE	SPACING	SIZE	REMARKS	WILDLIFE VALUE
	2	SW	1,086	PERSICARIA VIRGINIANA	JUMP SEED/SMART WEED	UP TO 13"	18"O.C.	2" PLUG	AGGRESIVE COLONIZER	HIGH WATERFOWL, SONG BIRDS, SEEDS & COVER
	2,3	PW	1,033	Pontederia cordata	PICKERELWEED	UP TO 12"	18"O.C.	2" PLUG	AGGRESIVE COLONIZER	DUCKS, NECTAR FOR BUTTERFLIES
	2,3	BA	999	Sagittaria Lancifolia	BULLTONGUE ARROWHEAD	UP TO 24"	18"O.C.	2" PLUG	FULL SUN TO PARTIAL SHADE, AGGRESIVE COLONIZER	WATERFOWL & SMALL MAMMALS
	2,3	SV	1,097	Scipus Validus	SOFTSTEM BULLRUSH	UP TO 24"	18"O.C.	2" PLUG	FULL SUN, AGGRESIVE COLONIZER, HIGH POLLUTAMT REMOVAL	MODERATE GOOD FOOD & COVER
	1	PO	1,939	Potamogeton Pectinatus	POND WEED	YES	18"O.C.	2" PLUG	REMOVES HEAVY METALS FROM WATER	EXTREMELY HIGH, WATERFOWL MARSH & SHORE BIRDS
	1	WC	1,891	Valisneria Americana	WILD CELERY	YES	18"O.C.	2" PLUG	TOLERANT OF MURKEY WATER AND HIGH NUTRIENT LOADS	HIGH, FOOD FOR WATERFOWL HABITAT FOR FISH AND INVERTREBRATES

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06/30/2026
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BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

WET POND B - LANDSCAPING

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 40'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

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C-36

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VA DEQ STORMWATER DESIGN SPECIFICATION
APPENDIX A: EARTHEN EMBANKMENT

Embankment Construction

A geotechnical or construction inspector should be on site during embankment construction. Inspectors should be required to do more than just test fill compaction, i.e., observe foundation preparation, pipe installation, riser construction, filter installation, etc. (Refer to inspection checklist for impoundment structures, **Appendix F**).

A vertical trench through the embankment material should not be allowed under any circumstances in order to place the spillway pipe. Trench side slopes should be laid back in steps at a 2:1 slope, minimum.

Maintenance and Safety

Embankment slopes should be no steeper than 3H:1V if possible, with a maximum combined upstream and downstream slope of 5:1 (3:1 downstream face and 2:1 upstream face). For embankments exceeding 15 feet in height, a 6 to 10 foot wide bench should be provided at intervals of 10 to 15 feet of height, particularly if slopes are steeper than 3H:1V.

The following design considerations are provided to help reduce the long-term maintenance burden on the owner(s):

1. *Internal drainage systems in embankments (e.g., drainage blankets, toe drains)* should be designed such that the collection conduits discharge downstream of the embankment at a location where access for observation is possible by maintenance personnel.

2. *Adequate erosion protection* is recommended along the contact point between the face of the embankment and the abutments. Runoff from rainfall concentrates in these areas and may reach erosive velocities depending on the gutter slope and embankment height. Although a sod gutter will be satisfactory for most small embankments, an evaluation should be made to decide if another type of gutter protection is required. For most embankments, a riprap gutter is preferred to a paved concrete gutter.

3. *Trees, shrubs, or any other woody plants should not be planted on the embankment* or adjacent areas extending at least 25 feet beyond the embankment toe and abutment contacts.

4. *Access should be provided to all areas of an impoundment that require observation or regular maintenance*. These areas include the embankment, emergency spillway, basin shoreline, principal spillway outlet, stilling basin, toe drains, riser structure, extended-drawdown device, and likely sediment accumulation areas.

SECTION A-11: CONSTRUCTION SEQUENCE AND INSPECTION

The construction specifications for earthen embankments outlined below should be considered as minimum guidelines, with the understanding that more stringent specifications may be required depending upon individual site conditions, as evaluated by the geotechnical engineer. Final construction specifications should be included on the construction plans. In general, widely accepted construction standards and specifications for embankments, such as those developed by the USDA Soil Conservation Service or the U. S. Army Corps of Engineers, should be followed.

Further guidance can be found in the USDA-NRCS *Engineering Field Manual* and *National Engineering Handbook*. Specifications for the embankment work should conform to the methods and procedures indicated for installing earthwork, concrete, reinforcing steel, pipe, water gates, metal work, woodwork and masonry, as they apply to the site and the purpose of the structure. The specifications should also satisfy all requirements of the local government.

Site Preparation

Areas designated for borrow sites, embankment construction, and structural work should be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectional material should be removed.

All cleared and grubbed material should be disposed of outside and below the limits of the embankment and reservoir, as directed by the owner or his representative. When specified, a sufficient quantity of topsoil should be stockpiled in a suitable location for use on the embankment and other designated areas.

Earth Fill

1. **Material** - Fill material should be taken from an approved, designated borrow area. It should be free of roots, stumps, wood, rubbish, stones greater than 6 inches, and frozen or other objectionable materials. Fill material for the center of the embankment and the cutoff trench should conform to Unified Soil Classification GC, SC, or CL. Consideration may be given to the use of other materials in the embankment based on the recommendations of a geotechnical engineer supervises the design and construction.

2. **Placement** - Areas on which fill is to be placed should be scarified before its placement. Fill material should be placed in layers a maximum of 8 inches thick (before compaction), which should be continuous over the entire length of the fill. The most permeable borrow material should be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with fill placement and **not excavated** into the embankment.

3. **Compaction** - Fill material should be compacted with appropriate compaction equipment such as a sheepsfoot, rubber-tired or vibratory roller. The number of required passes by the compaction equipment over the fill material may vary with soil conditions. Fill material should contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used.

   The minimum required density is 95% of maximum dry density with a moisture content within ∀ 2% of the optimum, unless otherwise specified by the engineer. Each layer of the fill should be compacted as necessary to obtain minimum density and the engineer should certify, at the time of construction, that each fill layer meets the minimum density requirement. All compaction is to be determined by either Standard Proctor Test (ASTM D698) or the Modified Proctor Test (ASTM D1557) as directed by the geotechnical engineer based on site and soil conditions and the size and type of structure being built.

4. **Cutoff Trench** - The cutoff trench should be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The equipment used for excavation should govern the bottom width of the trench, with the minimum width being 4 feet. The depth should be at least 4 feet below existing grade or as shown on the plans. The side slopes of the trench should be 1H:1V or flatter. The backfill should be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

5. **Top Soil** - The surface layer of compacted fill should be scarified prior to placement of at least 6 inches of topsoil. The topsoil shall be stabilized with in accordance with the Virginia Erosion and Sediment Control Handbook, latest edition.



Figure A-4. Stabilization of a Newly Constructed Earthen Embankment

Structure and Conduit Backfill

Backfill that is beside pipes or structures should be of the same type and quality as specified for the adjoining fill material. The fill should be placed in horizontal layers not to exceed 4 inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material should completely fill all spaces under and beside the pipe. During the backfilling operation, equipment should not be driven closer than 4 feet, as measured horizontally, to any part of a structure. Also, equipment should **NEVER** be driven over any part of a structure or pipe, unless compacted fill has been placed to a depth specified by the structural live load capacity of the structure or pipe in order to adequately distribute the load.

Filters and Drainage Layers

In order to achieve maximum density of clean sands, filter layers should be flooded with clean water and vibrated just after the water drops below the sand surface. The filter material should be placed in lifts of no more than 12 inches.

Up to four feet of embankment material may be placed over a filter material layer before excavating back down to expose the previous layer. After removing any unsuitable materials, the trench may be filled with additional 12 inch lifts of filter material, flooded, and vibrated as described above, until the top of adjacent fill is reached.

Filter fabrics should not be used in lieu of sands and gravel layers within the embankment.

SECTION A-12: OPERATION AND MAINTENANCE

A thick, healthy grass cover, free of trees and brush, should be maintained on the embankment. Such a cover will help stabilize the surfaces of the embankment and will simplify inspections.

The maintenance and inspection guidelines presented below are **NOT** all-inclusive. Specific facilities may require other measures not discussed here. It is the designer's responsibility to decide if additional measures are necessary.

1. The embankment should be mowed periodically during the growing season, ensuring that the last cutting occurs at the end of the season. The grass should not be cut less than 6 to 8 inches in height.

2. If necessary, the embankment should be limed, fertilized and seeded in the fall, after the growing season. Lime and fertilizer application rates should be based on soil test results. The type of seed should be consistent with that originally specified on the construction plans.

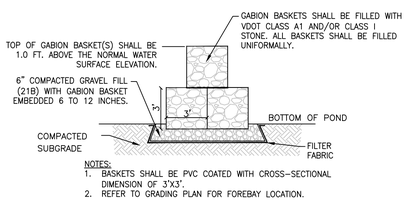
3. All erosion gullies noted during the growing season should be backfilled with topsoil, reseeded and protected (mulched) until vegetation is established.

4. All bare areas and pathways on the embankment should be properly seeded and protected (mulched) or otherwise stabilized to eliminate the potential for erosion.

5. All animal burrows should be backfilled and compacted and burrowing animals should be removed from the area.

6. All trees, woody vegetation and other deep-rooted growth, including stumps and associated root systems, should be removed from the embankment and adjacent areas extending to at least 25 feet beyond the embankment toe and abutment contacts. The root systems should be extracted and the excavated volume replaced and compacted with material similar to the surrounding area. All seedlings should be removed at the first opportunity. Similarly, any vine cover and brush should be removed from the embankment to allow for inspections.

7. Any repairs made to the principal spillway (riser or barrel) should be reviewed by a professional engineer. Vertical trenching to expose the barrel should not be allowed under any circumstances. The trench side slopes should be stepped back at a 2:1 slope, minimum.



GABION BASKET FOREBAY DETAIL

NOT TO SCALE

VA DEQ STORMWATER DESIGN SPECIFICATION
APPENDIX B: PRINCIPLE SPILLWAY

Maintenance and Safety

As mentioned previously, trash racks and debris control structures should be sized to prevent entry by children. Fencing or other barriers should be considered around spillway structures having open or accessible drops more than 3 feet. A locking manhole cover on the riser may also be prudent to prevent unauthorized access.

SECTION B-11: CONSTRUCTION SEQUENCE AND INSPECTION

The construction specifications for principal spillways outlined below should be considered as minimum guidelines. More stringent requirements may be needed depending upon individual site conditions. Overall, widely accepted construction standards and specifications, such as those developed by the USDA Natural Resource Conservation Service or the U.S. Army Corps of Engineers, should be followed.

Further guidance can be found in the USDA-NRCS *Engineering Field Manual*. Specifications for the work should conform to the methods and procedures specified for installing earthwork, concrete, reinforcing steel, pipe water gates, metal work, woodwork, and masonry, as they apply to the site and the purpose of the structure. The specifications should also satisfy all requirements of the local government. Final construction specifications should be included on the construction plans.

SECTION B-12: OPERATION AND MAINTENANCE

This section presents general operation, maintenance and inspection guidelines for principal spillways and components. However, these guidelines are not intended to be all-inclusive. Specific structures may require special measures not discussed here. The engineer is responsible for determining what, if any, additional items are necessary.

1. Spillway structures should be cleared of debris periodically and after any significant rainfall event where inspection reveals a significant blockage.

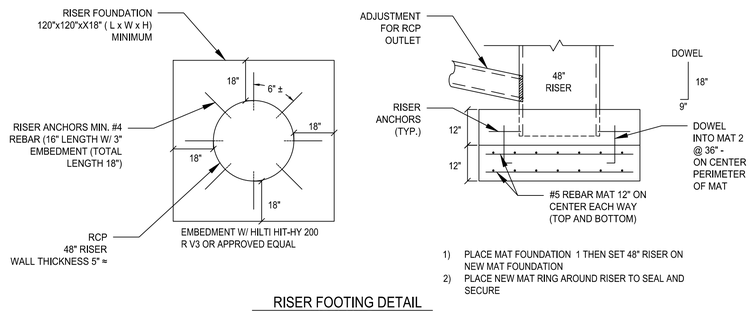
2. During low water conditions, concrete spillway structures should be inspected to decide if water is passing through any joints or other structure contacts and to identify any cracks, spalling, broken or loose sections. Any cracked, spalled, broken or loose sections should be cleaned and refilled with an appropriate concrete patching material. A professional engineer should be consulted to repair extensive leakage, spalls or fractures.

3. Outlet protection (stilling basins) and discharge channels should be cleared of brush at least once per year.

4. Trash racks and locking mechanisms should be inspected and tested periodically to make sure they are intact and operative.

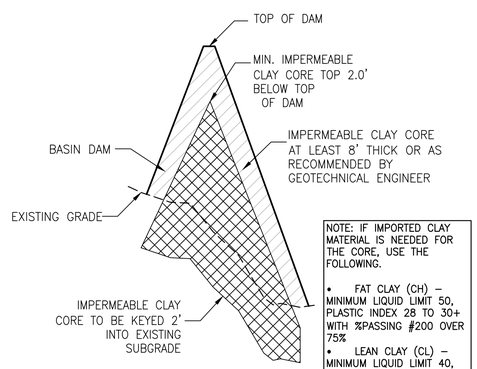
5. All sluice gates (or other types of gates or valves used to drain an impoundment) should be operated periodically to insure proper function. The gate and stem should be periodically lubricated and all exposed metal should be painted to protect it from corrosion.

6. Any repairs made to the principal spillway (riser or barrel) should be reviewed by a professional engineer. Vertical trenching to expose the barrel should not be allowed under any circumstances. The trench side slopes should be stepped back at a 2:1 slope, minimum.



RISER FOOTING DETAIL

NOT TO SCALE



BASIN CLAY CORE DETAIL

N.T.S.

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COMMONWEALTH OF VIRGINIA
ZACKARY A. WILKINS
Lic. No. 050952
06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

WET POND DETAILS

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
NO SCALE

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-37

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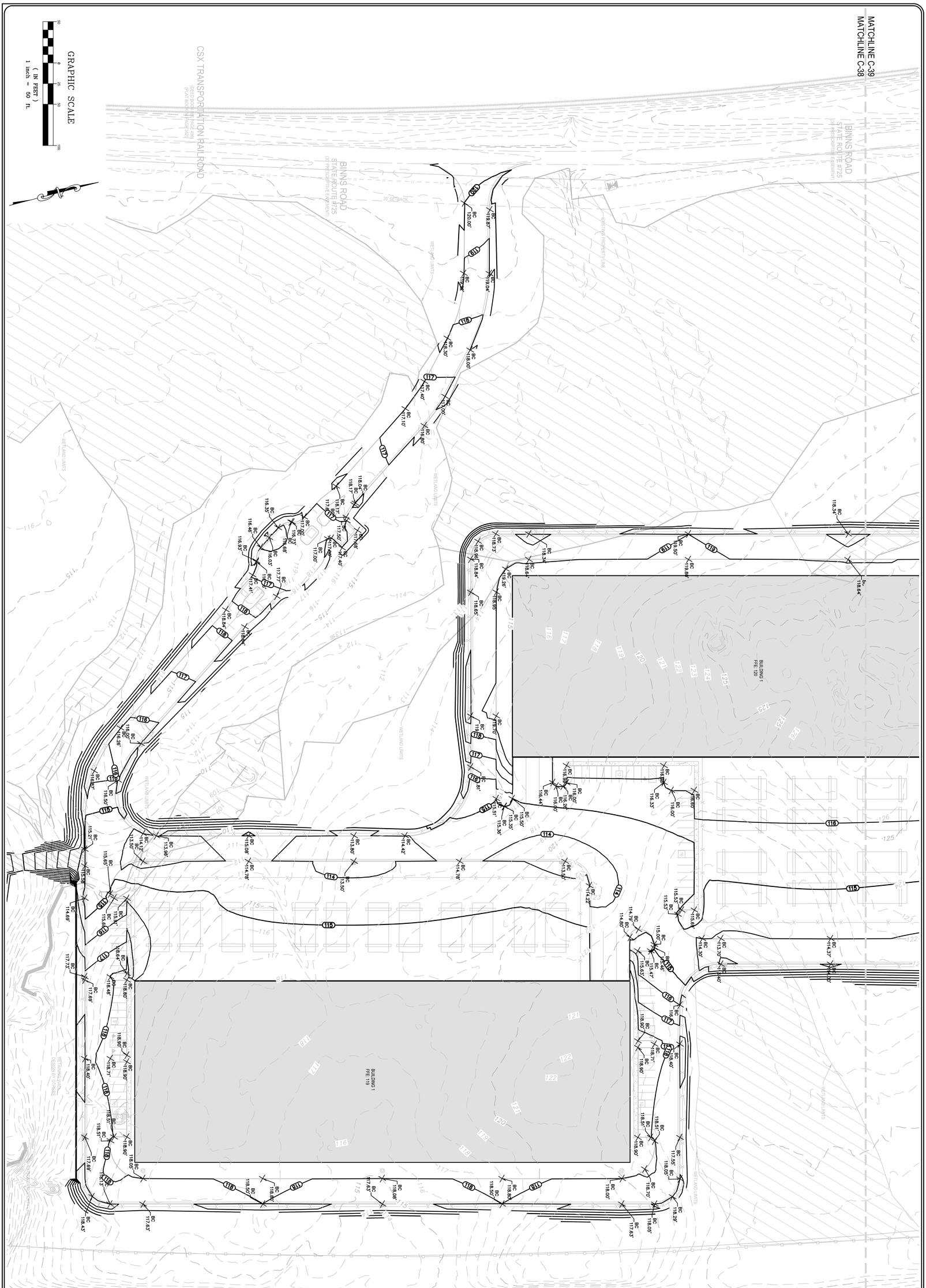

BINNS ROAD DATA CENTERS
SITE PLAN

DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

SPOTS GRADING PLAN - B

COMMONWEALTH OF VIRGINIA
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Townes
SITE ENGINEERING

ITEM	DATE
REVISIONS	

DATE: 06/30/2026
SCALE: 1" = 50'
DRAWN BY: ARON ZHOU, E.I.T
DESIGNED BY: ARON ZHOU, E.I.T
CHECKED BY: ZACKARY K. WILKINS, P.E.
PROJ.# 20240934
SHEET # C-38

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MATCHLINE C-40
MATCHLINE C-39

MATCHLINE C-39
MATCHLINE C-38

BINNS ROAD
STATE ROUTE #725
(VARIABLE WIDTH PRESCRIPTIVE EASEMENT)

INTERSTATE #95
(VARIABLE WIDTH RIGHT-OF-WAY)
(LIMITED ACCESS RIGHT-OF-WAY)
(DEED BOOK 204 PAGE 457)
(DEED BOOK 205 PAGE 651)
(DEED BOOK 212 PAGE 666)

EXISTING PROPERTY LINE

WETLAND LIMITS

WETLAND LAKE

RPA

APPROXIMATE SOUTH LIMIT OF 8' DIRT ROAD

MILL & OVERLAY FULL LENGTH OF EXISTING LANE ADJACENT TO PROPOSED ENTRANCE

TELEPHONE PEDESTAL

RETAINING WALL DESIGN BY OTHERS

REMOVE EXISTING ENTRANCE

BUILDING 1
FFE: 120

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

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BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

SPOTS GRADING PLAN - C

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-39

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BINNS ROAD DATA CENTERS
SITE PLAN

DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

SPOTS GRADING PLAN - D

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-40

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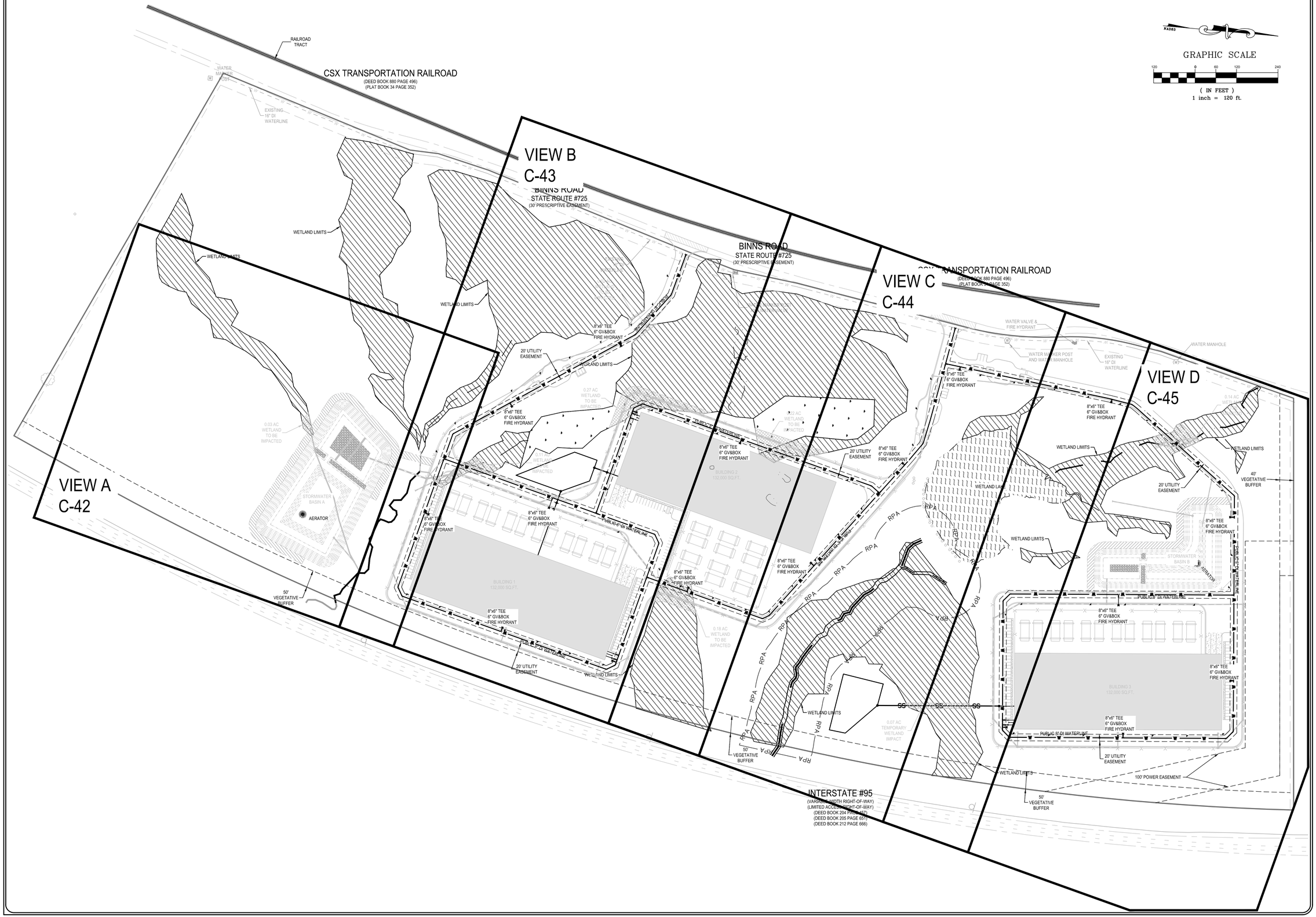

NAD83

GRAPHIC SCALE

120 0 60 120 240

(IN FEET)

1 inch = 120 ft.

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BINNS ROAD DATA CENTERS SITE PLAN

DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

UTILITY PLAN

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 120'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-41

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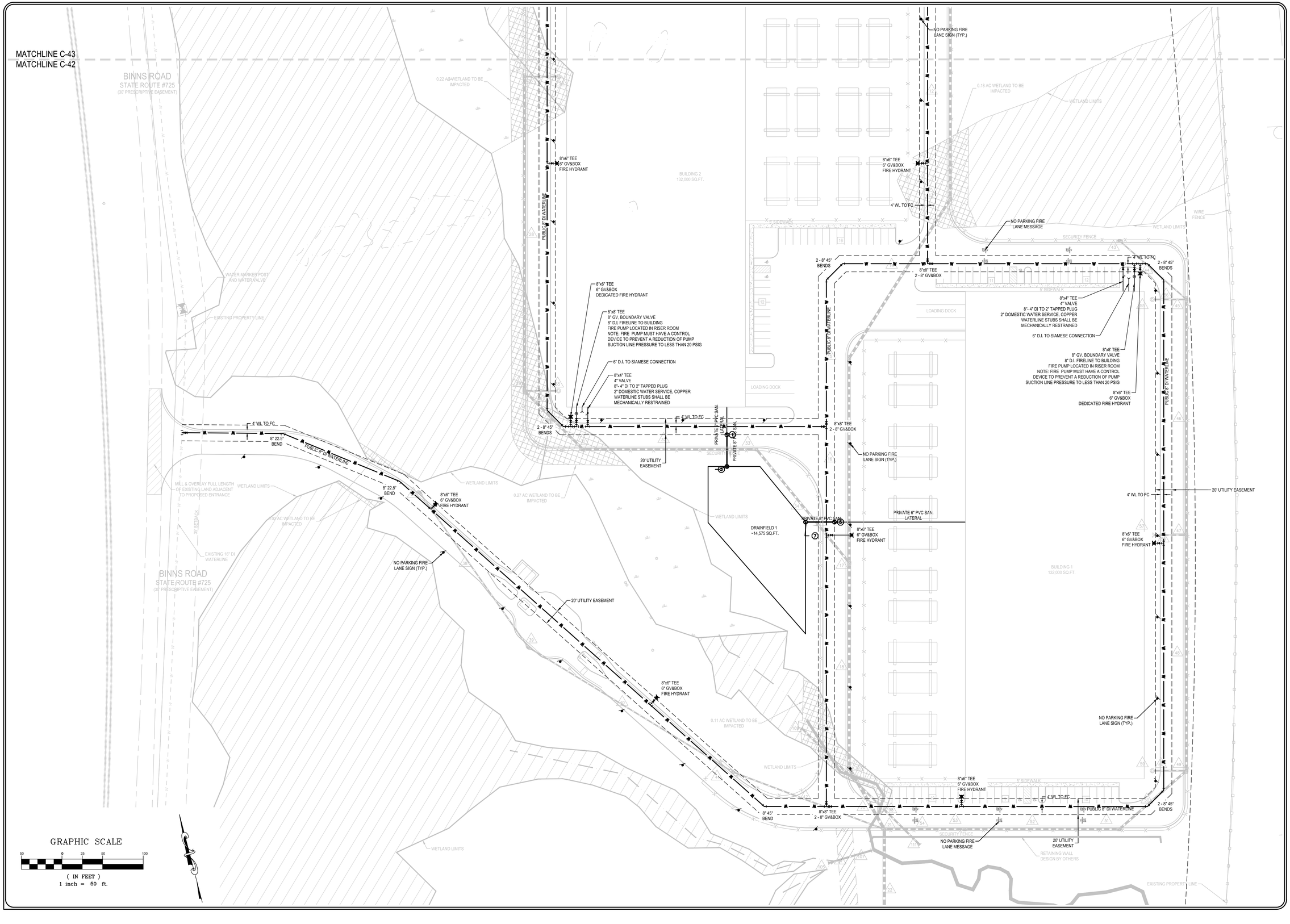

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BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

UTILITY PLAN - B

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-42

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MATCHLINE C-44
MATCHLINE C-43

MATCHLINE C-43
MATCHLINE C-42

8"x6" TEE
6" GV&BOX
FIRE HYDRANT

4" WL TO FC

PUBLIC 8" DI WATERLINE

EXISTING 16" DI WATERLINE

WATER VALVE & FIRE HYDRANT

BINNS ROAD
STATE ROUTE #725
(30' PRESCRIPTIVE EASEMENT)

WATER MARKER POST AND WATER MANHOLE

NO PARKING FIRE LANE SIGN (TYP.)

8"x6" TEE
6" GV&BOX
FIRE HYDRANT

8"x6" TEE
2 - 8" GV&BOX

16"x8" TAPPING SLEEVE AND VALVE

8" 22.5° BEND

8"x6" TEE
6" GV&BOX
FIRE HYDRANT

8"x6" TEE
2 - 8" GV&BOX

8" 22.5° BEND

PUBLIC 8" DI WATERLINE

20' UTILITY EASEMENT

4" WL TO FC

8"x6" TEE
6" GV&BOX
FIRE HYDRANT

20' UTILITY EASEMENT

8" 22.5° BEND

8" 45° BEND

NO PARKING FIRE LANE SIGN (TYP.)

8"x6" TEE
6" GV&BOX
FIRE HYDRANT

4" WL TO FC

8" DI WATERLINE

NO PARKING FIRE LANE MESSAGE

WATERLINE STUBS SHALL BE MECHANICALLY RESTRAINED

2 - 8" 45° BENDS

PROPOSED 8" DI WATERLINE

20' UTILITY EASEMENT

2 - 8" 45° BENDS

NO PARKING FIRE LANE MESSAGE

RETAINING WALL DESIGN BY OTHERS

PROPOSED 8" DI WATERLINE

0.07 AC TEMPORARY WETLAND IMPACT

DRAINFIELD 2
~15,900 SQ.FT.

WIRE FENCE

EXISTING PROPERTY LINE

INTERSTATE #95
(VARIABLE WIDTH RIGHT-OF-WAY)
(LIMITED ACCESS RIGHT-OF-WAY)
(DEED BOOK 304 PAGE 457)
(DEED BOOK 205 PAGE 651)
(DEED BOOK 212 PAGE 666)

WETLAND LIMITS

WETLAND LAKE

RPA

0.22 AC WETLAND TO BE IMPACTED

0.18 AC WETLAND TO BE IMPACTED

BUILDING 2
132,000 SQ.FT.

6' SIDEWALK

SECURITY FENCE

WIRE FENCE (7.3' IN R/W)

50' VEGETATIVE BUFFER

TELEPHONE PEDESTAL

CHAIN LINK FENCE

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 ft.

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06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

UTILITY PLAN - C

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-43

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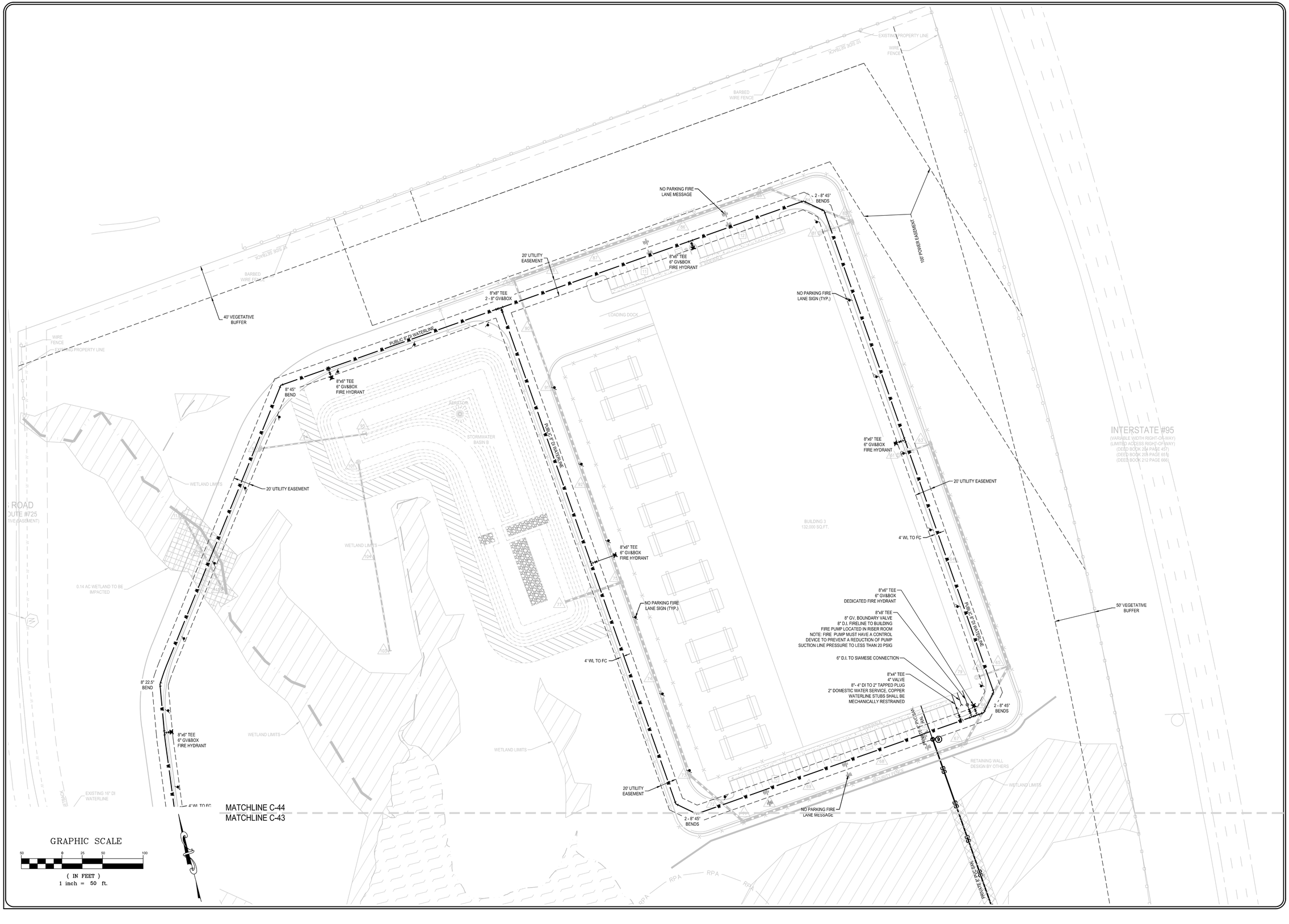

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06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

UTILITY PLAN - D

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 50'

DRAWN BY
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DESIGNED BY
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CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
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SHEET #
C-44

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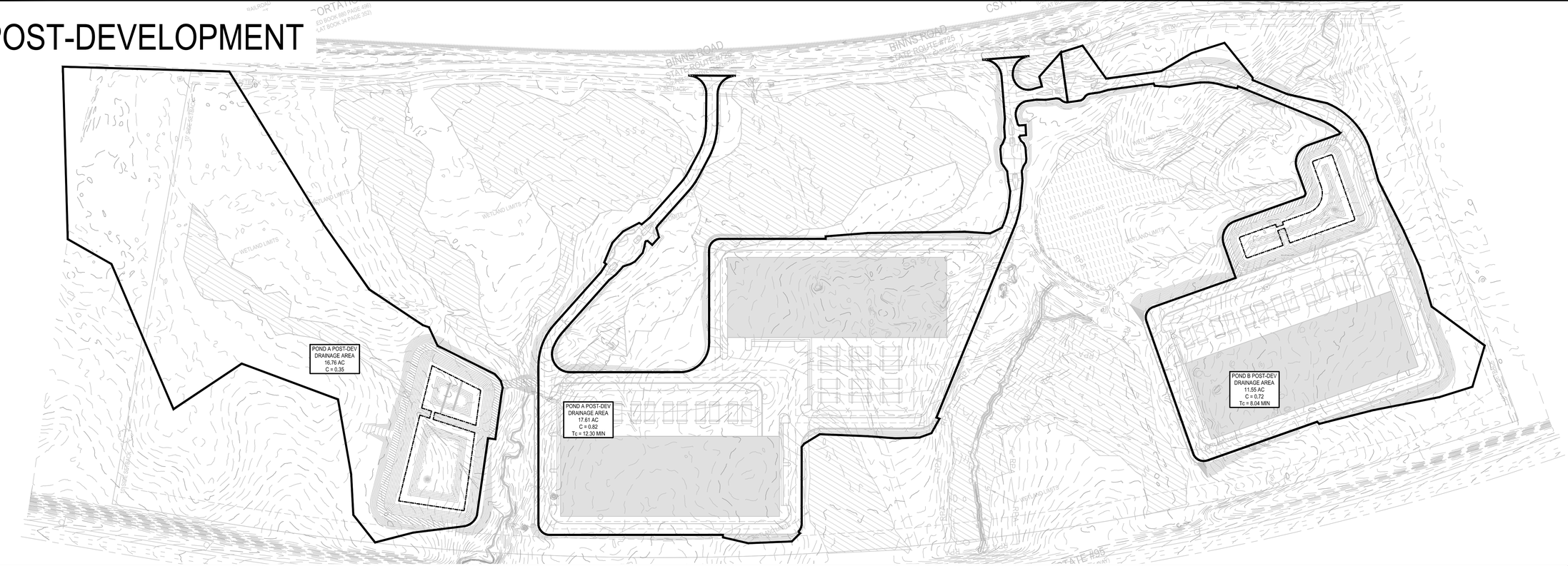
PRE-DEVELOPMENT



POST-DEVELOPMENT



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06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

DRAINAGE AREAS

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 120'

DRAWN BY
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DESIGNED BY
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CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
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SHEET #
C-45

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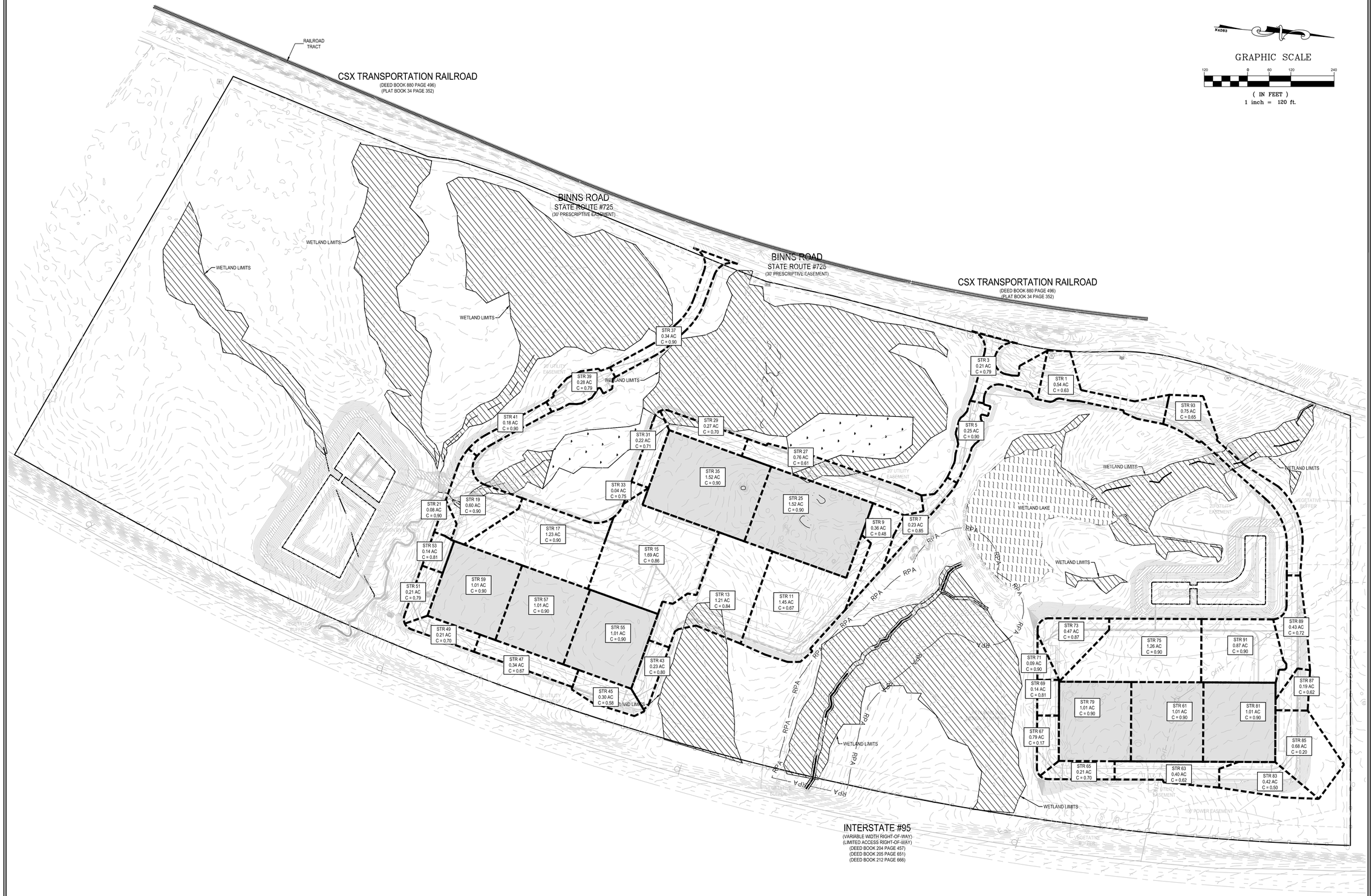

NAD83

GRAPHIC SCALE

120 0 60 120 240

(IN FEET)
1 inch = 120 ft.

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BINNS ROAD DATA CENTERS SITE PLAN

DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

HYDRAULIC ANALYSIS

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 120'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-46

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STORM PIPE TABLE							
STORM PIPE	FROM STRUCTURE	TO STRUCTURE	UPPER INVERT	LOWER INVERT	PIPE LENGTH	Slope	PIPE SIZE
2	1	3	117.42	115.67	348.73'	0.50%	15 IN. CL. III RCP
4	3	5	115.57	113.19	238.03'	1.00%	15 IN. CL. III RCP
6	5	7	112.94	109.67	327.00'	1.00%	18 IN. CL. III RCP
8	7	9	109.57	108.00	157.40'	1.00%	18 IN. CL. III RCP
10	9	11	102.24	101.44	201.10'	0.40%	36 IN. CL. III RCP
12	11	13	101.34	100.27	265.39'	0.40%	36 IN. CL. III RCP
14	13	15	100.17	99.25	232.05'	0.40%	36 IN. CL. III RCP
16	15	17	99.15	98.14	252.08'	0.40%	36 IN. CL. III RCP
18	17	19	97.64	96.63	252.08'	0.40%	42 IN. CL. III RCP
20	19	21	96.53	96.18	87.15'	0.40%	42 IN. CL. III RCP
22	21	23	96.08	95.00	196.55'	0.55%	42 IN. CL. III RCP
26	25	27	110.44	110.02	42.00'	1.00%	18 IN. CL. III RCP
28	27	29	109.52	107.98	386.67'	0.40%	24 IN. CL. III RCP
30	29	31	107.48	107.07	101.82'	0.40%	30 IN. CL. III RCP
32	31	33	106.97	106.13	213.58'	0.40%	30 IN. CL. III RCP
34	33	17	102.03	101.31	180.50'	0.40%	30 IN. CL. III RCP
36	35	29	108.90	108.48	42.00'	1.00%	18 IN. CL. III RCP
38	37	39	109.43	108.51	232.22'	0.40%	15 IN. CL. III RCP
40	39	41	108.41	107.23	294.99'	0.40%	15 IN. CL. III RCP
42	41	21	106.98	106.18	198.89'	0.40%	18 IN. CL. III RCP

STORM PIPE TABLE							
STORM PIPE	FROM STRUCTURE	TO STRUCTURE	UPPER INVERT	LOWER INVERT	PIPE LENGTH	Slope	PIPE SIZE
44	43	45	110.08	109.64	109.29'	0.40%	15 IN. CL. III RCP
46	45	47	108.89	107.73	290.00'	0.40%	24 IN. CL. III RCP
48	47	49	107.23	106.07	290.00'	0.40%	30 IN. CL. III RCP
50	49	51	105.98	105.54	109.71'	0.40%	30 IN. CL. III RCP
52	51	53	105.44	104.68	190.00'	0.40%	30 IN. CL. III RCP
54	53	21	97.77	97.38	99.00'	0.40%	30 IN. CL. III RCP
56	55	45	109.56	109.39	42.00'	0.40%	18 IN. CL. III RCP
58	57	47	108.40	108.23	42.00'	0.40%	18 IN. CL. III RCP
60	59	49	107.14	106.97	42.00'	0.40%	18 IN. CL. III RCP
62	61	63	131.52	131.35	42.00'	0.40%	18 IN. CL. III RCP
64	63	65	130.85	129.69	290.00'	0.40%	24 IN. CL. III RCP
66	65	67	129.19	128.75	109.71'	0.40%	30 IN. CL. III RCP
68	67	69	128.65	127.89	190.00'	0.40%	30 IN. CL. III RCP
70	69	71	127.79	127.39	99.00'	0.40%	30 IN. CL. III RCP
72	71	73	127.29	126.94	87.14'	0.40%	30 IN. CL. III RCP
74	73	75	126.84	125.84	252.08'	0.40%	30 IN. CL. III RCP
76	75	77	125.74	125.00	73.53'	1.00%	30 IN. CL. III RCP
80	79	65	130.36	130.19	42.00'	0.40%	18 IN. CL. III RCP
82	81	83	130.66	130.49	42.00'	0.40%	18 IN. CL. III RCP
84	83	85	129.99	129.56	109.29'	0.40%	24 IN. CL. III RCP

STORM PIPE TABLE							
STORM PIPE	FROM STRUCTURE	TO STRUCTURE	UPPER INVERT	LOWER INVERT	PIPE LENGTH	Slope	PIPE SIZE
86	85	87	129.46	128.55	226.00'	0.40%	24 IN. CL. III RCP
88	87	89	128.45	128.02	108.28'	0.40%	24 IN. CL. III RCP
90	89	91	127.92	127.34	144.17'	0.40%	24 IN. CL. III RCP
92	91	75	126.84	125.84	252.08'	0.40%	30 IN. CL. III RCP
94	93	95	122.53	122.00	131.92'	0.40%	18 IN. CL. III RCP
97	105	107	106.10	103.00	54.96'	5.64%	24 IN. CL. III RCP
98	109	111	108.00	104.10	204.06'	1.91%	24 IN. CL. III RCP
100	97	99	99.00	97.99	91.02'	1.11%	24 IN. CL. III RCP
102	113	115	122.00	121.00	103.67'	0.96%	24 IN. CL. III RCP
104	101	103	124.94	124.00	235.77'	0.40%	18 IN. CL. III RCP

STRUCTURE TABLE		
STRUCTURE NAME	STRUCTURE DETAILS	STRUCTURE DESCRIPTION
1	RIM = 128.00 2 INV OUT = 117.42	VDOT DROP INLET 3A, 3B, 3C
3	RIM = 128.09 2 INV IN = 115.67 4 INV OUT = 115.57	VDOT DROP INLET 3A, 3B, 3C
5	RIM = 123.42 4 INV IN = 113.19 6 INV OUT = 112.94	VDOT DROP INLET 3A, 3B, 3C
7	RIM = 118.53 6 INV IN = 109.67 8 INV OUT = 109.57	VDOT DROP INLET 3A, 3B, 3C
9	RIM = 116.01 8 INV IN = 108.00 10 INV OUT = 102.24	VDOT DROP INLET 3A, 3B, 3C
11	RIM = 113.36 10 INV IN = 101.44 12 INV OUT = 101.34	VDOT DROP INLET 3A, 3B, 3C
13	RIM = 113.40 12 INV IN = 100.27 14 INV OUT = 100.17	VDOT DROP INLET 3A, 3B, 3C
15	RIM = 113.58 14 INV IN = 99.25 16 INV OUT = 99.15	VDOT DROP INLET 3A, 3B, 3C
17	RIM = 113.55 16 INV IN = 98.14 34 INV IN = 101.31 18 INV OUT = 97.64	VDOT DROP INLET 3A, 3B, 3C
19	RIM = 113.62 18 INV IN = 96.63 20 INV OUT = 96.53	VDOT DROP INLET 3A, 3B, 3C
21	RIM = 114.92 20 INV IN = 96.18 54 INV IN = 97.38 42 INV IN = 106.18 22 INV OUT = 96.08	VDOT DROP INLET 3A, 3B, 3C
23	RIM = 99.46 22 INV IN = 95.00	Concrete Rectangular Headwall Variable Height
25	RIM = 119.45 26 INV OUT = 110.44	Concentric Cylindrical Structure
27	RIM = 118.31 26 INV IN = 110.02 28 INV OUT = 109.52	VDOT DROP INLET 3A, 3B, 3C
29	RIM = 118.31 28 INV IN = 107.98 36 INV IN = 108.48 30 INV OUT = 107.48	VDOT DROP INLET 3A, 3B, 3C
31	RIM = 118.62 30 INV IN = 107.07 32 INV OUT = 106.97	VDOT DROP INLET 3A, 3B, 3C
33	RIM = 116.70 32 INV IN = 106.13 34 INV OUT = 102.03	VDOT DROP INLET 3A, 3B, 3C
35	RIM = 119.35 36 INV OUT = 108.90	Concentric Cylindrical Structure
37	RIM = 116.77 38 INV OUT = 109.43	VDOT DROP INLET 3A, 3B, 3C
39	RIM = 116.01 38 INV IN = 108.51 40 INV OUT = 108.41	VDOT DROP INLET 3A, 3B, 3C

STRUCTURE TABLE		
STRUCTURE NAME	STRUCTURE DETAILS	STRUCTURE DESCRIPTION
41	RIM = 115.96 40 INV IN = 107.23 42 INV OUT = 106.98	VDOT DROP INLET 3A, 3B, 3C
43	RIM = 117.53 44 INV OUT = 110.08	VDOT DROP INLET 3A, 3B, 3C
45	RIM = 117.60 44 INV IN = 109.64 56 INV IN = 109.39 46 INV OUT = 108.89	VDOT DROP INLET 3A, 3B, 3C
47	RIM = 117.60 46 INV IN = 107.73 58 INV IN = 108.23 48 INV OUT = 107.23	VDOT DROP INLET 3A, 3B, 3C
49	RIM = 117.60 48 INV IN = 106.07 60 INV IN = 106.97 50 INV OUT = 105.98	VDOT DROP INLET 3A, 3B, 3C
51	RIM = 117.67 50 INV IN = 105.54 52 INV OUT = 105.44	VDOT DROP INLET 3A, 3B, 3C
53	RIM = 117.67 52 INV IN = 104.68 54 INV OUT = 97.77	VDOT DROP INLET 3A, 3B, 3C
55	RIM = 118.55 56 INV OUT = 109.56	Concentric Cylindrical Structure
57	RIM = 118.59 58 INV OUT = 108.40	Concentric Cylindrical Structure
59	RIM = 118.56 60 INV OUT = 107.14	Concentric Cylindrical Structure
61	RIM = 138.59 62 INV OUT = 131.52	Concentric Cylindrical Structure
63	RIM = 137.60 62 INV IN = 131.35 64 INV OUT = 130.85	VDOT DROP INLET 3A, 3B, 3C
65	RIM = 137.60 64 INV IN = 129.69 80 INV IN = 130.19 66 INV OUT = 129.19	VDOT DROP INLET 3A, 3B, 3C
67	RIM = 137.67 66 INV IN = 128.75 68 INV OUT = 128.65	VDOT DROP INLET 3A, 3B, 3C
69	RIM = 137.68 68 INV IN = 127.89 70 INV OUT = 127.79	VDOT DROP INLET 3A, 3B, 3C
71	RIM = 135.20 70 INV IN = 127.39 72 INV OUT = 127.29	VDOT DROP INLET 3A, 3B, 3C
73	RIM = 133.65 72 INV IN = 126.94 74 INV OUT = 126.84	VDOT DROP INLET 3A, 3B, 3C
75	RIM = 133.55 74 INV IN = 125.84 92 INV IN = 125.84 76 INV OUT = 125.74	VDOT DROP INLET 3A, 3B, 3C
77	RIM = 128.38 76 INV IN = 125.00	Concrete Rectangular Headwall Variable Height
79	RIM = 138.55 80 INV OUT = 130.36	Concentric Cylindrical Structure

STRUCTURE TABLE		
STRUCTURE NAME	STRUCTURE DETAILS	STRUCTURE DESCRIPTION
81	RIM = 138.56 82 INV OUT = 130.66	Concentric Cylindrical Structure
83	RIM = 137.61 82 INV IN = 130.49 84 INV OUT = 129.99	VDOT DROP INLET 3A, 3B, 3C
85	RIM = 137.54 84 INV IN = 129.56 86 INV OUT = 129.46	VDOT DROP INLET 3A, 3B, 3C
87	RIM = 137.23 86 INV IN = 128.55 88 INV OUT = 128.45	VDOT DROP INLET 3A, 3B, 3C
89	RIM = 133.45 88 INV IN = 128.02 90 INV OUT = 127.92	VDOT DROP INLET 3A, 3B, 3C
91	RIM = 133.55 90 INV IN = 127.34 92 INV OUT = 126.84	VDOT DROP INLET 3A, 3B, 3C
93	RIM = 124.73 94 INV OUT = 122.53	VDOT DROP INLET 2A, 2B, 2C
95	RIM = 124.25 94 INV IN = 122.00	Concrete Rectangular Headwall Variable Height
97	RIM = 103.00 100 INV OUT = 99.00	Concentric Cylindrical Structure
99	RIM = 100.35 100 INV IN = 97.99	Concrete Rectangular Headwall Variable Height
101	RIM = 127.00 104 INV OUT = 124.94	Concentric Cylindrical Structure
103	RIM = 126.25 104 INV IN = 124.00	Concrete Rectangular Headwall Variable Height
105	RIM = 108.89 97 INV OUT = 106.10	Concrete Rectangular Headwall Variable Height
107	RIM = 105.79 97 INV IN = 103.00	Concrete Rectangular Headwall Variable Height
109	RIM = 110.79 98 INV OUT = 108.00	Concrete Rectangular Headwall Variable Height
111	RIM = 106.79 98 INV IN = 104.10	Concrete Rectangular Headwall Variable Height
113	RIM = 124.79 102 INV OUT = 122.00	Concrete Rectangular Headwall Variable Height
115	RIM = 123.79 102 INV IN = 121.00	Concrete Rectangular Headwall Variable Height

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06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

HYDRAULIC TABLES

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
NO SCALE

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-47

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STORM SEWER DESIGN COMPUTATIONS

PIPE SIZING

Design Storm = 10 Year

County: Hanover

MATCH CROWNS TEMPLATE

REVISED: 06/15/2026

FROM	TO	IDA	IMPERVIOUS	RUNOFF	"CA"		Overall Tc	I10	Q10	I100	Q100	INV ELEV.		L	S	D	Qcap	V10	Time	Status	Upper Structure Top
UPSTREAM STR	DOWNSTREAM STR	ACRES	ACRES	"C"	INC.	ACC.	MIN.	IN/HR	CFS	IN/HR	CFS	UPPER	LOWER	FT	FT/FT	IN	CFS	FPS	MIN.		Elevation
1	3	0.54	0.30	0.63	0.34	0.34	5.00	**6.97**	**2.38**	**8.88**	**3.80**	117.42	115.67	348.74	0.0050	**15**	4.57	3.8	1.54	OK	128.00
3	5	0.38	0.31	0.79	0.30	0.64	6.54	**6.47**	**4.15**	**8.21**	**6.59**	115.57	113.19	238.03	0.0100	**15**	6.46	5.5	0.72	OK	128.09
5	7	0.25	0.25	0.90	0.23	0.87	7.25	**6.27**	**5.43**	**7.94**	**8.61**	112.94	109.67	327.00	0.0100	**18**	10.50	6.0	0.90	OK	123.42
7	9	0.23	0.21	0.85	0.20	1.06	8.16	**6.03**	**6.41**	**7.64**	**10.14**	109.57	108.00	157.40	0.0100	**18**	10.50	6.2	0.42	OK	118.53
9	11	0.36	0.11	0.48	0.17	1.24	8.58	**5.93**	**7.33**	**7.51**	**11.60**	102.24	101.44	201.10	0.0040	**36**	42.18	4.4	0.75	OK	116.01
11	13	1.45	0.90	0.67	0.98	2.21	9.34	**5.75**	**12.72**	**7.29**	**20.14**	101.34	100.27	265.39	0.0040	**36**	42.18	5.3	0.84	OK	113.36
13	15	1.21	1.08	0.84	1.01	3.22	10.18	**5.57**	**17.96**	**7.06**	**28.44**	100.17	99.25	232.05	0.0040	**36**	42.18	5.8	0.66	OK	113.40
15	17	1.69	1.58	0.86	1.46	4.68	10.84	**5.44**	**25.44**	**6.90**	**40.31**	99.15	98.14	252.08	0.0040	**36**	42.18	6.2	0.68	OK	113.58
25	**27**	1.52	1.52	0.90	1.37	1.37	5.00	**6.97**	**9.53**	**8.88**	**15.18**	110.44	110.02	42.00	0.0100	**18**	10.50	6.7	0.10	OK	119.45
27	**29**	0.76	0.39	0.61	0.46	1.83	5.10	**6.93**	**12.68**	**8.83**	**20.19**	109.52	107.97	386.67	0.0040	**24**	14.30	5.1	1.26	OK	118.31
35	**29**	1.52	1.52	0.90	1.37	1.37	5.00	**6.97**	**9.53**	**8.88**	**15.18**	108.89	108.47	42.00	0.0100	**18**	10.50	6.7	0.10	OK	119.35
29	**31**	0.27	0.18	0.70	0.19	3.39	6.36	**6.52**	**22.09**	**8.28**	**35.05**	107.47	107.06	101.82	0.0040	**30**	25.94	5.9	0.29	OK	118.31
31	**33**	0.22	0.15	0.71	0.16	3.54	6.65	**6.44**	**22.81**	**8.16**	**36.16**	106.96	106.13	208.48	0.0040	**30**	25.94	5.9	0.59	OK	118.62
33	**17**	0.04	0.03	0.75	0.03	3.57	7.24	**6.27**	**22.41**	**7.95**	**35.50**	102.03	101.31	180.50	0.0040	**30**	25.94	5.9	0.51	OK	116.70
17	**19**	1.23	1.23	0.90	1.11	9.36	11.52	**5.31**	**49.70**	**6.74**	**78.82**	97.64	96.63	252.08	0.0040	**42**	63.63	7.2	0.58	OK	113.55
19	**21**	0.60	0.60	0.90	0.54	9.90	12.10	**5.21**	**51.53**	**6.61**	**81.79**	96.53	96.18	87.15	0.0040	**42**	63.63	7.3	0.20	OK	113.62
37	**39**	0.34	0.34	0.90	0.31	0.31	5.00	**6.97**	**2.13**	**8.88**	**3.40**	109.43	108.51	232.22	0.0040	**15**	4.08	3.4	1.14	OK	116.77
39	**41**	0.28	0.23	0.79	0.22	0.53	6.14	**6.59**	**3.48**	**8.37**	**5.52**	108.41	107.23	294.99	0.0040	**15**	4.08	3.7	1.33	OK	116.00
41	**21**	0.18	0.18	0.90	0.16	0.69	7.47	**6.21**	**4.28**	**7.87**	**6.78**	106.98	106.18	198.89	0.0040	**18**	6.64	4.0	0.84	OK	115.96
43	**45**	0.23	0.19	0.80	0.18	0.18	5.00	**6.97**	**1.27**	**8.88**	**2.03**	110.09	109.65	109.29	0.0040	**15**	4.08	3.0	0.62	OK	117.53

HYDRAULIC GRADE LINE COMPUTATION

10 yr Event

County: Hanover

BMP #1 Receiving Water surface elevation (10 Yr Storm) = 103.43

MATCH CROWNS TEMPLATE

REVISED: 06/12/2026

JUNCTION LOSS

INLET/STATION Upstream Outflow	OUTLET WATER SURFACE ELEV.	Do	Qo	Lo	Sfo %	Hf	Vo	Ho	Qi	Vi	QiVi	Vi^2/2g	Hi	Angle	K	delta H	Ht	1.3 Ht	Apply IS-1? Yes or No	0.5 Ht	Final H	Inlet Water Surface Elev.	Rim Elev.	WSE check	Hydraulic Grade Line above Crown of Pipe	Override Open Channel Flow Velocity with Velocity flowing full (X)
						Friction Loss		Exit Loss				Entrance Loss				Bend Loss	Total Junction Loss	Plunging Loss	IS-1		Total Headloss					
21	101.43	42	74.47	196.55	0.55	1.08	7.8	0.23	51.53	7.3	375.36	0.82	0.29	40	0.43	0.35	0.88	-	No	-	1.96	105.39	114.92	9.53	Yes	
19	105.39	42	51.33	87.15	0.49	0.42	7.3	0.21	49.70	7.2	359.19	0.81	0.28	30	0.35	0.28	0.77		No	-	1.20	106.58	113.62	7.04	Yes	
17	106.58	42	49.70	252.08	0.48	1.20	7.2	0.20	25.44	4.2	157.89	0.60	0.21	0	0.00	-	0.41	0.54	No	-	1.74	108.32	113.55	5.23	Yes	
15	108.32	36	25.44	252.08	0.43	1.09	6.2	0.15	17.96	3.8	104.60	0.53	0.18	40	0.43	0.23	0.56	0.73	No	-	1.82	110.14	113.58	3.44	Yes	
13	110.14	36	17.96	232.05	0.38	0.88	5.8	0.13	12.72	3.3	66.82	0.43	0.15	40	0.43	0.18	0.47	0.61	No	-	1.49	111.63	113.40	1.77	Yes	
11	111.63	36	12.72	265.39	0.31	0.82	5.3	0.11	7.33	4.4	32.60	0.31	0.11	30	0.35	0.11	0.32	0.42	No	-	1.24	112.87	113.36	0.49	Yes	
9	112.87	36	7.33	201.10	0.22	0.45	4.4	0.08	6.41	6.2	39.66	0.60	0.21	15	0.19	0.11	0.40	0.52	No	-	0.97	113.84	116.01	2.17	Yes	
7	113.84	18	6.41	157.40	1.09	1.71	6.2	0.15	5.43	6.0	32.76	0.56	0.20	0	0.00		0.35	-	No	-	2.05	115.89	118.53	2.64	Yes	
5	115.89	18	5.43	327.00	1.03	3.36	6.0	0.14	4.15	5.5	22.99	0.48	0.17	20	0.23	0.12	0.43	0.55	No	-	3.92	119.81	123.42	3.61	Yes	
3	119.81	15	4.15	238.03	1.11	2.63	5.5	0.12	2.38	3.8	9.01	0.22	0.08	90	0.70	0.16	0.33	0.46	No	-	3.09	122.90	128.09	5.19	Yes	
1	122.90	15	2.38	348.74	0.52	1.80	3.8	0.07	0.00	0.0	0.00	0.00	0.00	0	0.00	-	0.07	0.09	No	-	1.88	124.79	128.00	3.21	Yes	
																			No							
33	108.32	30	22.41	180.50	0.50	0.90	5.9	0.14	22.81	5.9	135.22	0.55	0.19	50	0.50	0.27	0.60	-	No	-	1.50	109.82	116.70	6.88	Yes	
31	109.82	30	22.81	208.48	0.50	1.05	5.9	0.14	22.09	5.9	130.02	0.54	0.19	50	0.50	0.27	0.59	-	No	-	1.64	111.47	118.62	7.15	Yes	
29	111.47	30	22.09	101.82	0.50	0.51	5.9	0.13	12.68	5.1	64.91	0.41	0.14	50	0.50	0.20	0.48	-	No	-	0.99	112.45	118.31	5.86	Yes	
27	112.45	24	12.68	386.67	0.51	1.95	5.1	0.10	9.53	4.7	64.01	0.70	0.25	90	0.70	0.49	0.84	1.09	No	-	3.04	115.49	118.31	2.82	Yes	
25	115.49	18	9.53	42.00	1.28	0.54	6.7	0.21	0.00	0.0	0.00	0.00	0.00	0	0.00	-	0.21	0.27	No	-	0.81	116.30	119.45	3.15	Yes	
																			No							
35	112.45	18	9.53	42.00	1.28	0.54	6.7	0.21	0.00	0.0	0.00	0.00	0.00	0	0.00	-	0.21	0.27	No	-	0.81	113.26	119.35	6.09	Yes	

STORM SEWER DESIGN COMPUTATIONS

PIPE SIZING

Design Storm = 10 Year

County: Hanover

MATCH CROWNS TEMPLATE

REVISED: 06/12/2026

FROM	TO	IDA	IMPERVIOUS	RUNOFF	"CA"		Overall Tc	I10	Q10	I100	Q100	INV ELEV.		L	S	D	Qcap	V10	Time	Status	Upper Structure Top
UPSTREAM STR	DOWNSTREAM STR	ACRES	ACRES	"C"	INC.	ACC.	MIN.	IN/HR	CFS	IN/HR	CFS	UPPER	LOWER	FT	FT/FT	IN	CFS	FPS	MIN.		Elevation
61	**63**	1.01	1.01	0.90	0.91	0.91	5.00	**6.97**	**6.33**	**8.88**	**10.09**	131.52	131.35	42.00	0.0040	**18**	6.64	4.3	0.16	OK	138.59
63	**65**	0.40	0.21	0.62	0.25	1.16	5.16	**6.91**	**7.98**	**8.80**	**12.70**	130.85	129.69	290.00	0.0040	**24**	14.30	4.7	1.03	OK	137.60
79	**65**	1.01	1.01	0.90	0.91	0.91	5.00	**6.97**	**6.33**	**8.88**	**10.09**	130.36	130.19	42.00	0.0040	**18**	6.64	4.3	0.16	OK	138.55
65	**67**	0.21	0.14	0.70	0.15	2.21	6.20	**6.57**	**14.53**	**8.34**	**23.06**	129.19	128.75	109.71	0.0040	**30**	25.94	5.4	0.34	OK	137.60
67	**69**	0.21	0.17	0.79	0.17	2.38	6.53	**6.47**	**15.38**	**8.21**	**24.38**	128.65	127.89	190.00	0.0040	**30**	25.94	5.5	0.58	OK	137.67
69	**71**	0.14	0.12	0.81	0.11	2.49	7.11	**6.31**	**15.70**	**7.99**	**24.88**	127.79	127.39	99.00	0.0040	**30**	25.94	5.5	0.30	OK	137.68
71	**73**	0.09	0.09	0.90	0.08	2.57	7.41	**6.22**	**16.00**	**7.89**	**25.35**	127.29	126.94	87.14	0.0040	**30**	25.94	5.5	0.26	OK	135.20
73	**75**	0.47	0.45	0.87	0.41	2.98	7.67	**6.15**	**18.35**	**7.80**	**29.06**	126.84	125.84	252.08	0.0040	**30**	25.94	5.7	0.74	OK	133.65
81	**83**	1.01	1.01	0.90	0.91	0.91	5.00	**6.97**	**6.33**	**8.88**	**10.09**	130.66	130.49	42.00	0.0040	**18**	6.64	4.3	0.16	OK	138.56
83	**85**	0.42	0.14	0.50	0.21	1.12	5.16	**6.91**	**7.73**	**8.80**	**12.31**	129.99	129.56	109.29	0.0040	**24**	14.30	4.7	0.39	OK	137.61
85	**87**	0.68	0.20	0.48	0.32	1.44	5.55	**6.78**	**9.78**	**8.62**	**15.55**	129.46	128.55	226.00	0.0040	**24**	14.30	4.8	0.78	OK	137.54
87	**89**	0.19	0.10	0.62	0.12	1.56	6.33	**6.53**	**10.19**	**8.29**	**16.17**	128.45	128.02	108.28	0.0040	**24**	14.30	4.9	0.37	OK	137.23
89	**91**	0.43	0.30	0.72	0.31	1.87	6.70	**6.42**	**12.00**	**8.15**	**19.03**	127.92	127.34	144.17	0.0040	**24**	14.30	5.1	0.48	OK	133.45
91	**75**	0.87	0.87	0.90	0.78	2.65	7.18	**6.29**	**16.68**	**7.97**	**26.42**	126.84	125.84	252.08	0.0040	**30**	25.94	5.6	0.76	OK	133.55
75	**77**	1.26	1.26	0.90	1.13	6.77	8.42	**5.97**	**40.39**	**7.56**	**63.92**	125.74	125.00	73.53	0.0100	**30**	41.01	8.4	0.15	OK	133.55

HYDRAULIC GRADE LINE COMPUTATION

10 yr Event

County: Hanover

BMP #1 Receiving Water surface elevation (10 Yr Storm) = 127.29

MATCH CROWNS TEMPLATE

REVISED: 06/12/2026

JUNCTION LOSS

INLET/STATION Upstream Outflow	OUTLET WATER SURFACE ELEV.	Do	Qo	Lo	Sfo %	Hf	Vo	Ho	Qi	Vi	QiVi	Vi^2/2g	Hi	Angle	K	delta H	Ht	1.3 Ht	Apply IS-1? Yes or No	0.5 Ht	Final H	Inlet Water Surface Elev.	Rim Elev.	WSE check	Hydraulic Grade Line above Crown of Pipe	Override Open Channel Flow Velocity with Velocity flowing full (X)
						Friction Loss		Exit Loss				Entrance Loss				Bend Loss	Total Junction Loss	Plunging Loss	IS-1		Total Headloss					
75	127.29	30	40.39	73.53	1.00	0.74	8.4	0.27	18.35	5.7	103.86	0.50	0.17	90	0.70	0.35	0.79	-	No	-	1.53	128.82	133.55	4.73	Yes	
73	128.82	30	18.35	252.08	0.46	1.16	5.7	0.12	16.00	5.5	88.29	0.47	0.17	30	0.35	0.17	0.46	-	No	-	1.61	130.43	133.65	3.22	Yes	
71	130.43	30	16.00	87.14	0.44	0.38	5.5	0.12	15.70	5.5	86.35	0.47	0.16	70	0.61	0.29	0.57	-	No	-	0.95	131.38	135.20	3.82	Yes	
69	131.38	30	15.70	99.00	0.43	0.43	5.5	0.12	15.38	5.5	84.26	0.47	0.16	0	0.00	-	0.28	-	No	-	0.71	132.09	137.68	5.59	Yes	
67	132.09	30	15.38	190.00	0.43	0.82	5.5	0.12	14.53	5.4	78.89	0.46	0.16	60	0.56	0.26	0.53	-	No	-	1.35	133.44	137.67	4.23	Yes	
65	133.44	30	14.53	109.71	0.42	0.46	5.4	0.11	7.98	4.7	37.30	0.34	0.12	60	0.56	0.19	0.42	-	No	-	0.89	134.32	137.60	3.28	Yes	
63	134.32	24	7.98	290.00	0.42	1.22	4.7	0.08	6.33	4.3	27.23	0.29	0.10	90	0.70	0.20	0.39	0.50	No	-	1.72	136.05	137.60	1.55	Yes	
61	136.05	18	6.33	42.00	0.52	0.22	4.3	0.09	0.00	0.0	0.00	0.00	0.00	0	0.00	-	0.09	0.11	No	-	0.33	136.38	138.59	2.21	Yes	
																			No							
79	134.32	18	6.33	42.00	0.52	0.22	4.3	0.09	0.00	0.0	0.00	0.00	0.00	0	0.00	-	0.09	0.11	No	-	0.33	134.66	138.55	3.89	Yes	
																			No							
91	128.82	30	16.68	252.08	0.44	1.12	5.6	0.12	12.00	5.1	60.68	0.40	0.14	0	0.00	-	0.26	0.34	No	-	1.45	130.27	133.55	3.28	Yes	
89	130.27	24	12.00	144.17	0.49	0.71	5.1	0.10	10.19	4.9	49.76	0.37	0.13	90	0.70	0.26	0.49	-	No	-	1.20	131.47	133.45	1.98	Yes	
87	131.47	24	10.19	108.28	0.46	0.50	4.9	0.09	9.78	4.8	47.38	0.36	0.13	0	0.00	-	0.22	-	No	-	0.72	132.19	137.23	5.04	Yes	
85	132.19	24	9.78	226.00	0.45	1.02	4.8	0.09	7.73	4.7	35.96	0.34	0.12	40	0.43	0.14	0.35	0.46	No	-	1.48	133.67	137.54	3.87	Yes	
83	133.67	24	7.73	109.29	0.42	0.46	4.7	0.08	6.33	4.3	27.23	0.29	0.10	40	0.43	0.12	0.31	-	No	-	0.76	134.43	137.61	3.18	Yes	
81	134.43	18	6.33	42.00	0.52	0.22	4.3	0.09	0.00	0.0	0.00	0.00	0.00	0	0.00	-	0.09	0.11	No	-	0.33	134.76	138.56	3.80	Yes	
																			No							

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DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

HYDRAULIC CALCULATIONS

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
NO SCALE

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-48

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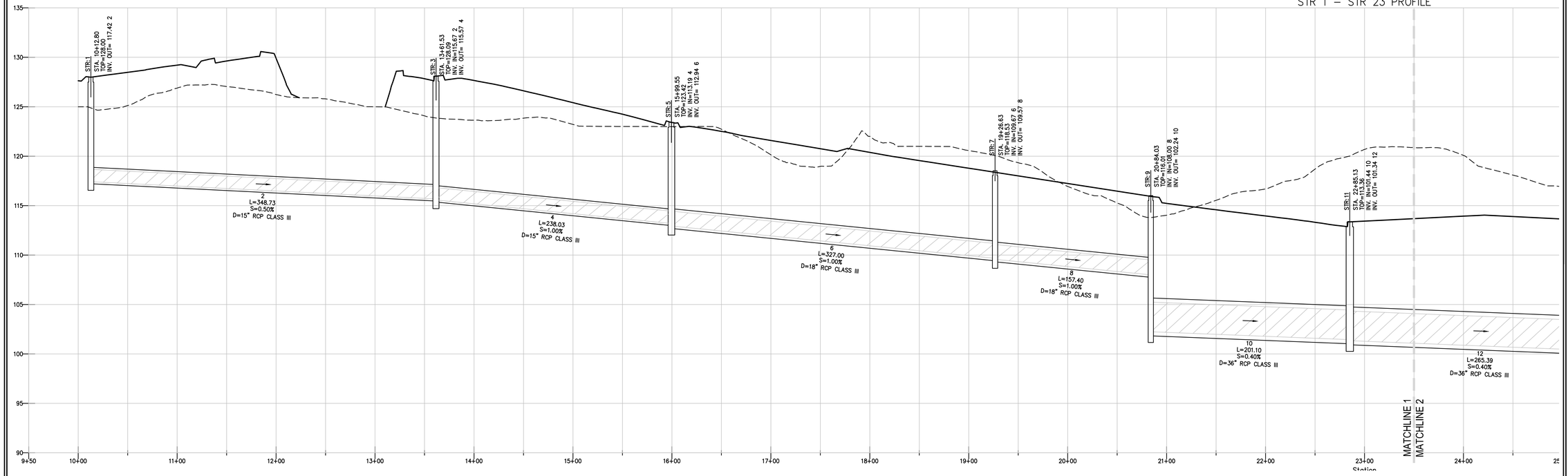
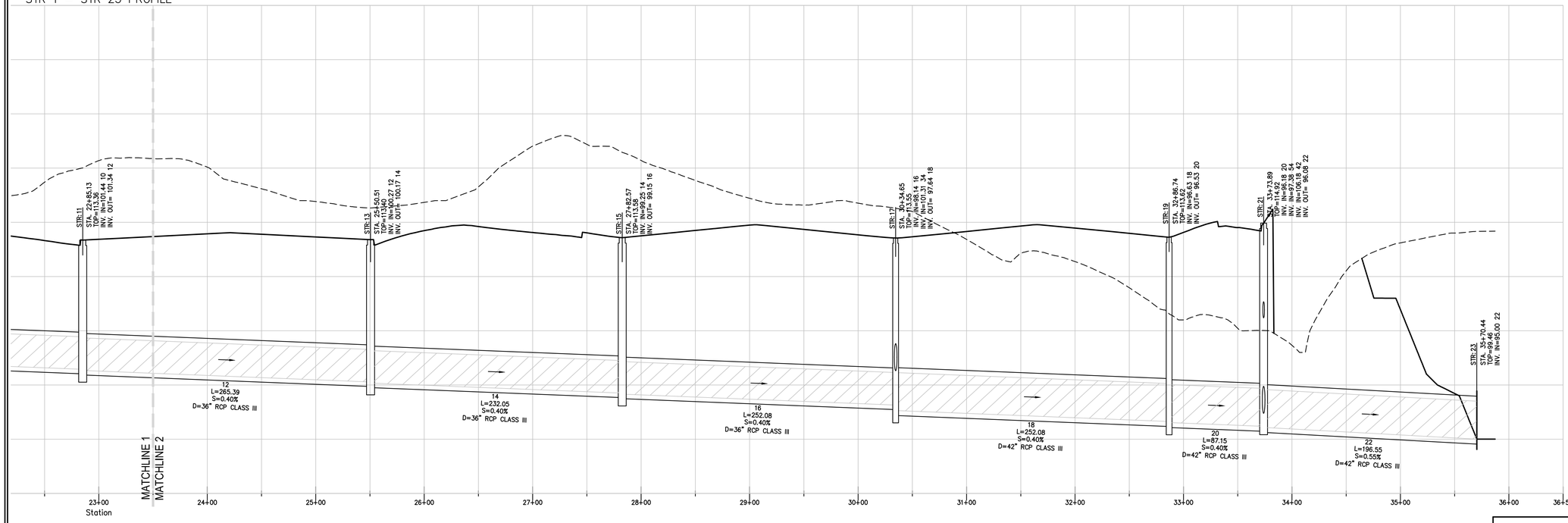
STR 1 – STR 23 PROFILE



STR 1 – STR 23 PROFILE



SCALE:
HORIZONTAL:1"=50'
VERTICAL:1"=5'

LEGEND
FINISHED GRADE AT C/L
EXIST. GROUND AT C/L

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REVISIONS

DATE	ITEM

DATE
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SCALE
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DESIGNED BY
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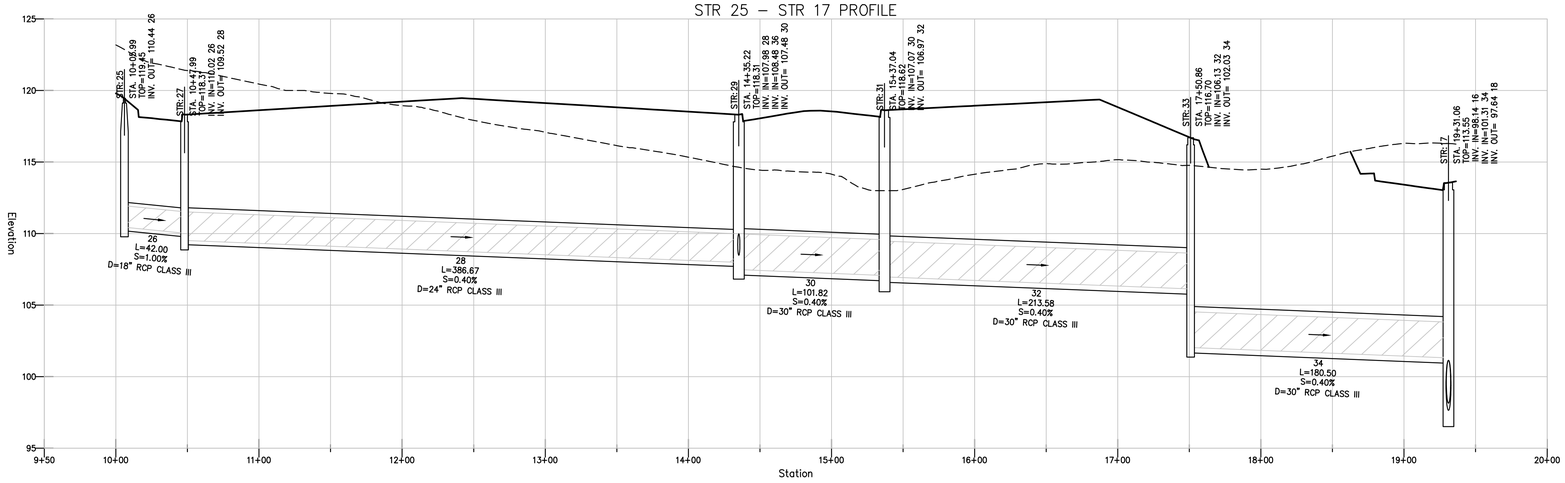
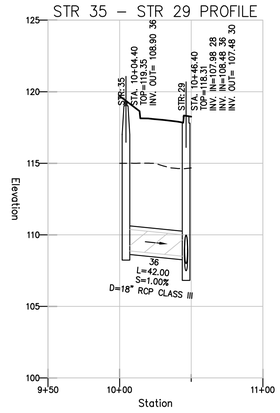
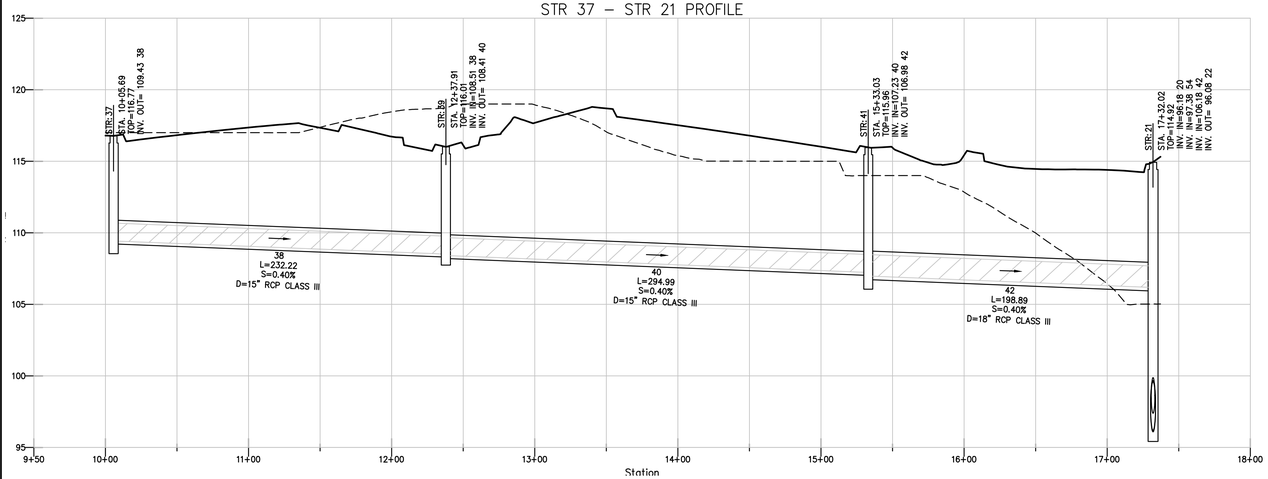
STR 25 – STR 17 PROFILE



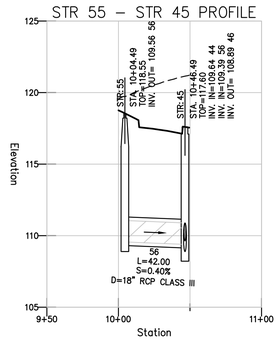
STR 35 – STR 29 PROFILE



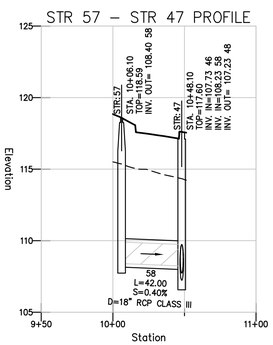
STR 37 – STR 21 PROFILE



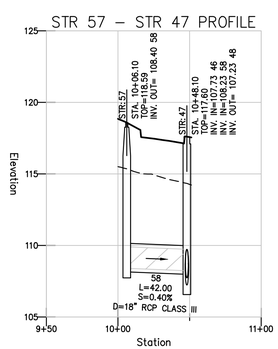
STR 55 – STR 45 PROFILE



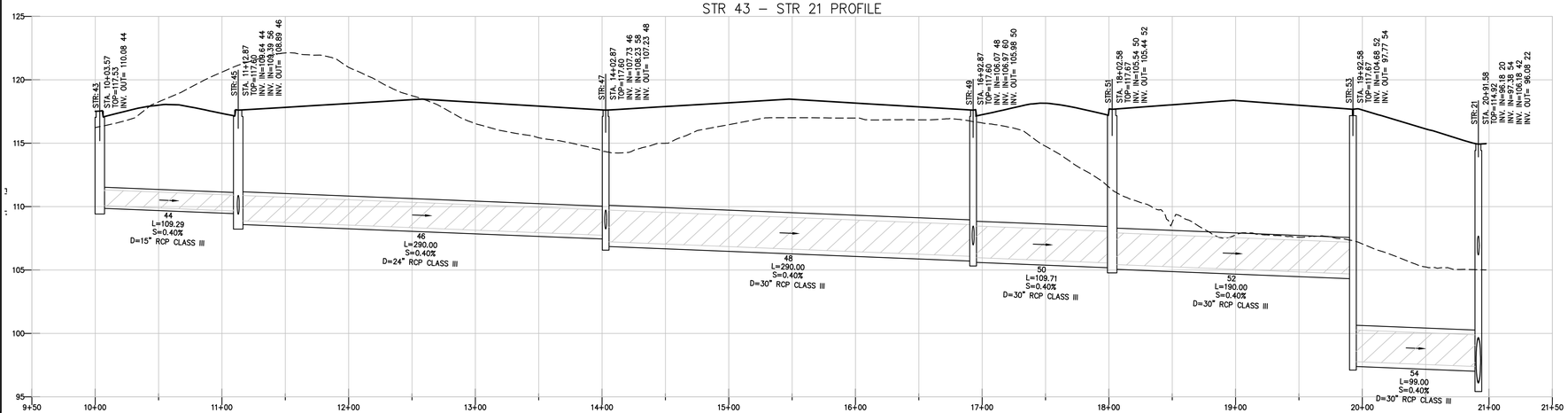
STR 57 – STR 47 PROFILE



STR 57 – STR 47 PROFILE



STR 43 – STR 21 PROFILE



SCALE:
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VERTICAL:1"=5'

LEGEND
FINISHED GRADE AT C/L
EXIST. GROUND AT C/L

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DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

PROFILES

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
AS SHOWN

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
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SHEET #
C-50

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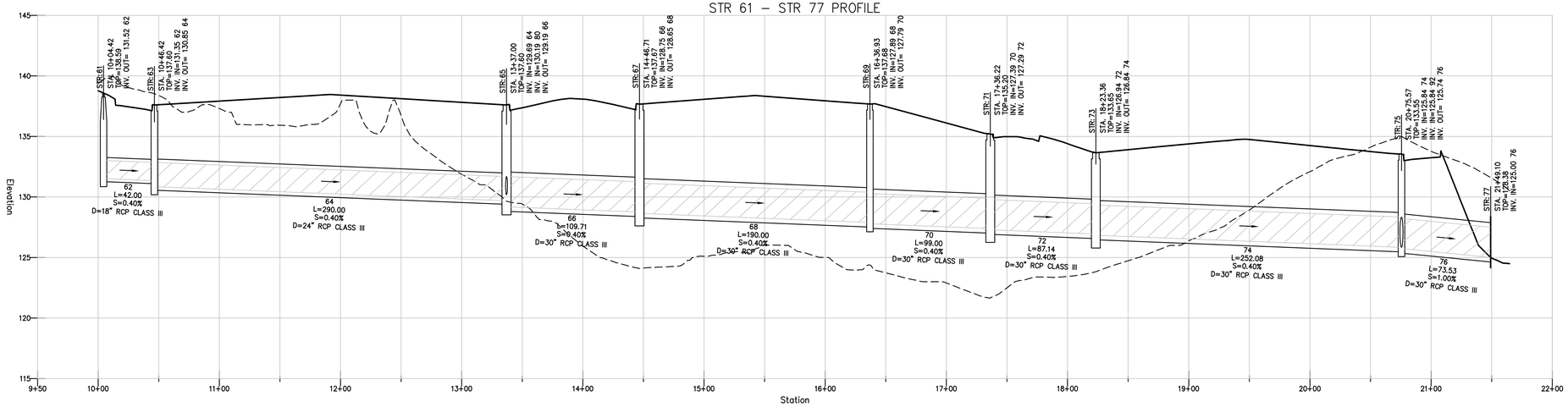
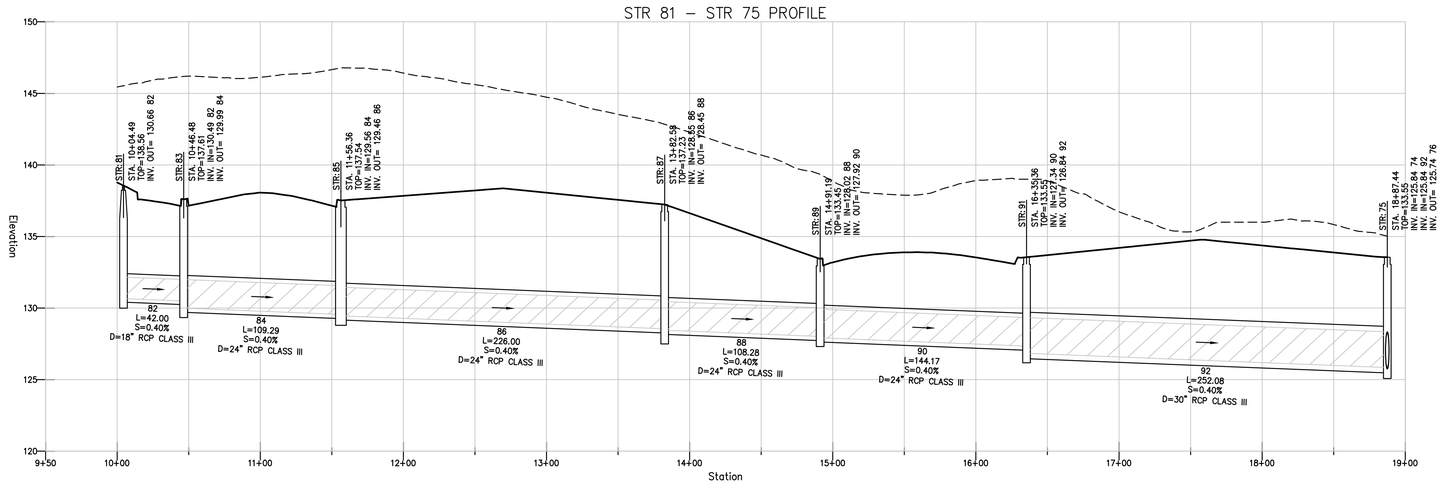
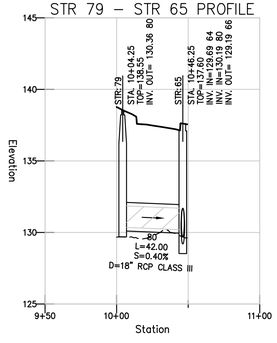
STR 61 – STR 77 PROFILE



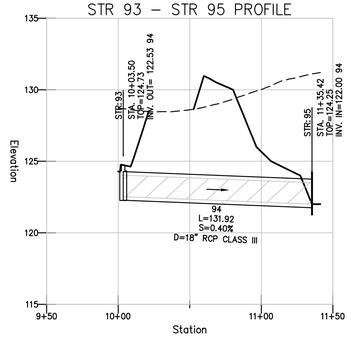
STR 81 – STR 75 PROFILE



STR 79 – STR 65 PROFILE



STR 93 – STR 95 PROFILE



SCALE:
HORIZONTAL:1"=50'
VERTICAL:1"=5'

LEGEND
FINISHED GRADE AT C/L
EXIST. GROUND AT C/L

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CHECKED BY
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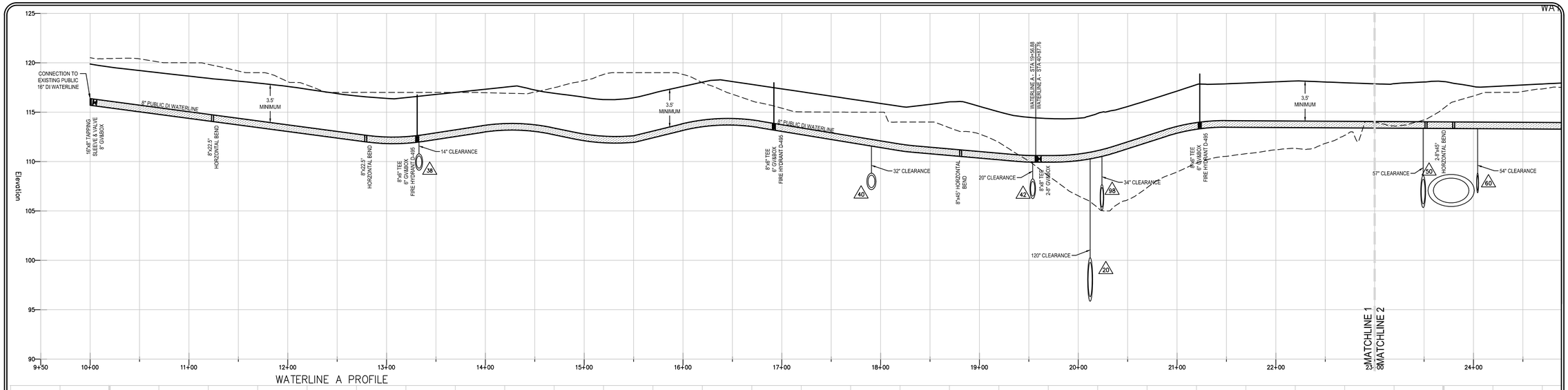
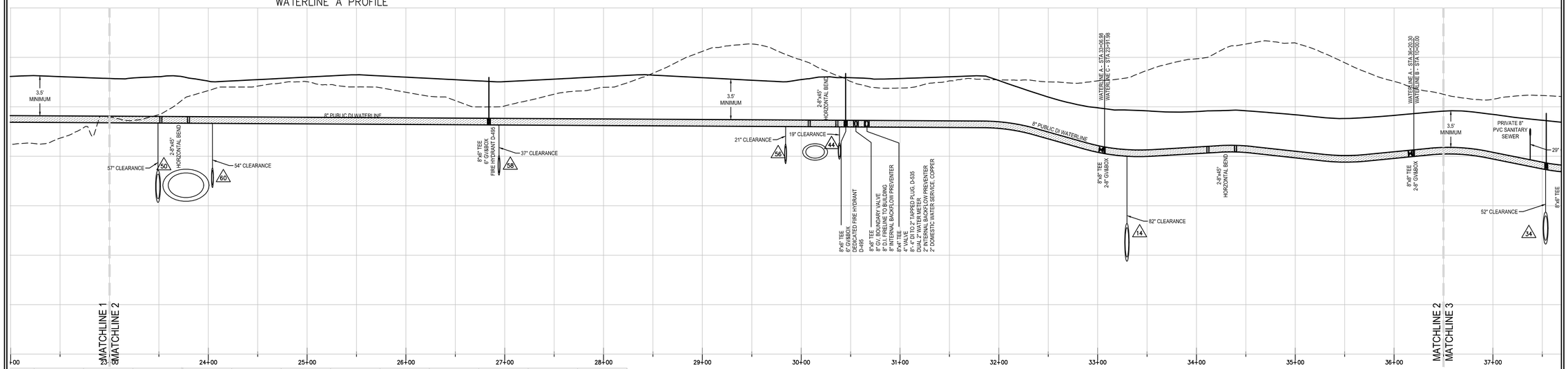
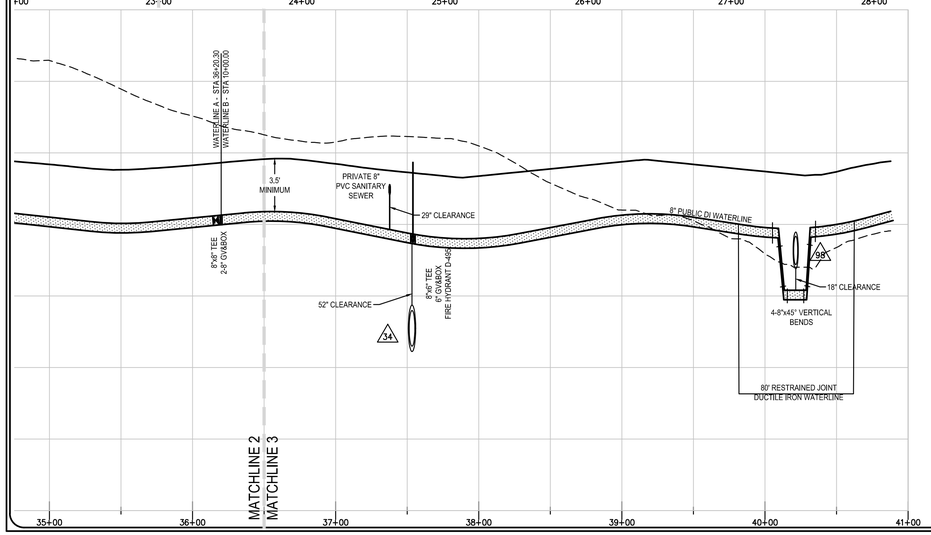


WATERLINE A PROFILE





SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

LEGEND
- *FINISHED GRADE AT C/L*
- *EXIST. GROUND AT C/L*

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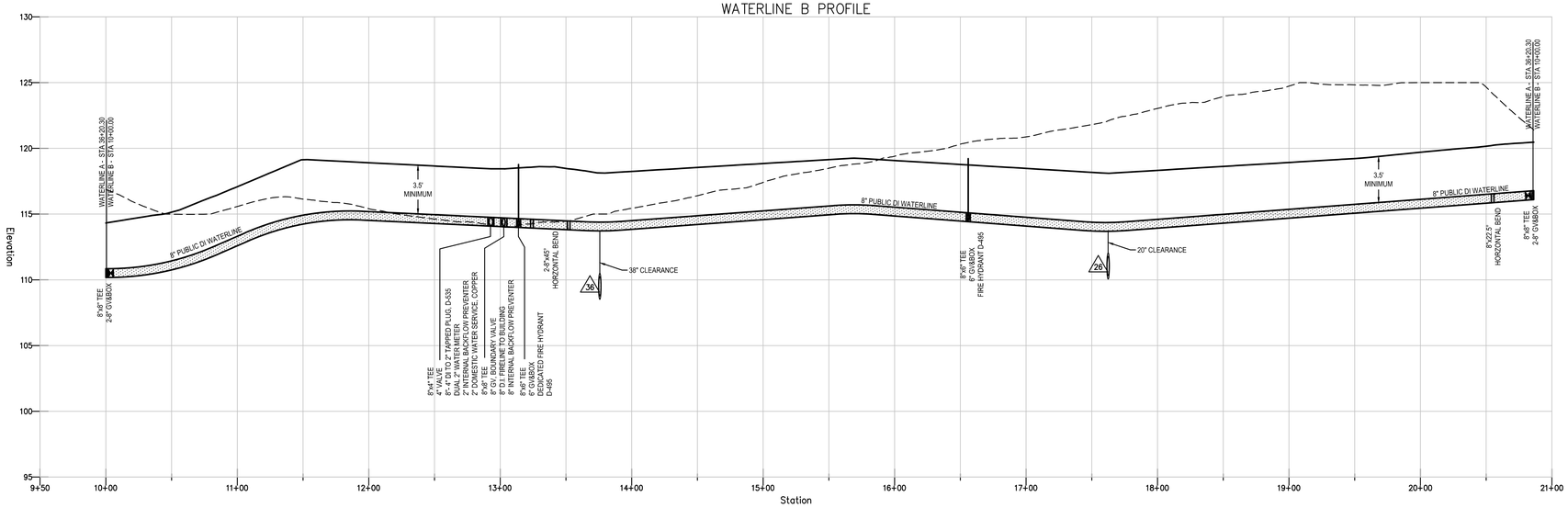
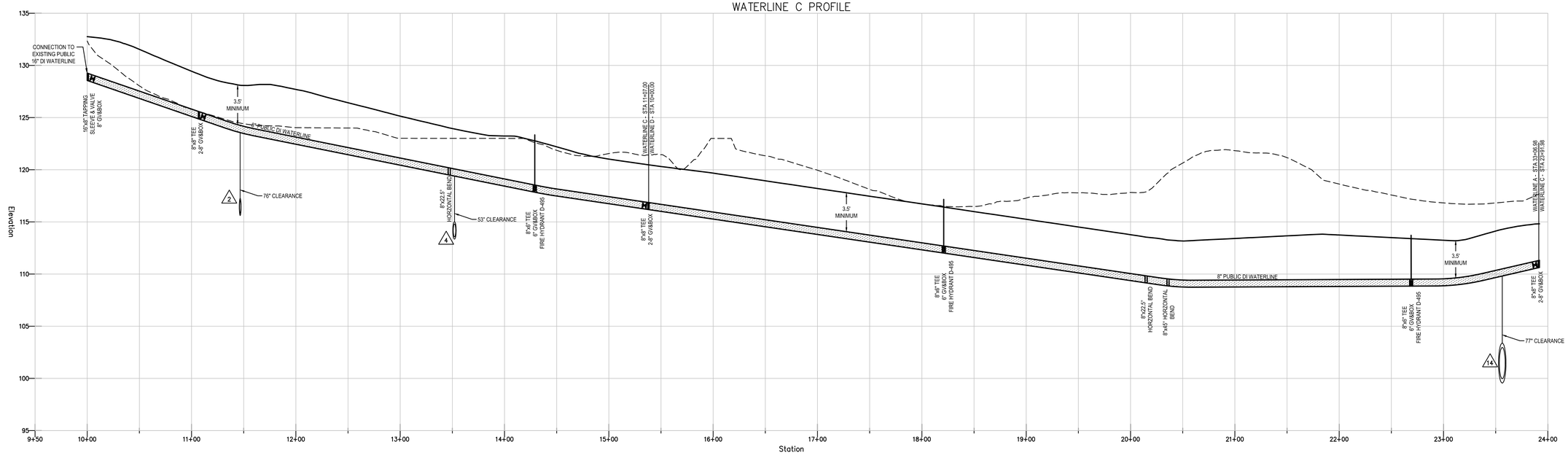
WATERLINE B PROFILE



WATERLINE C PROFILE



SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

LEGEND
FINISHED GRADE AT C/L
EXIST. GROUND AT C/L

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DESIGNED BY
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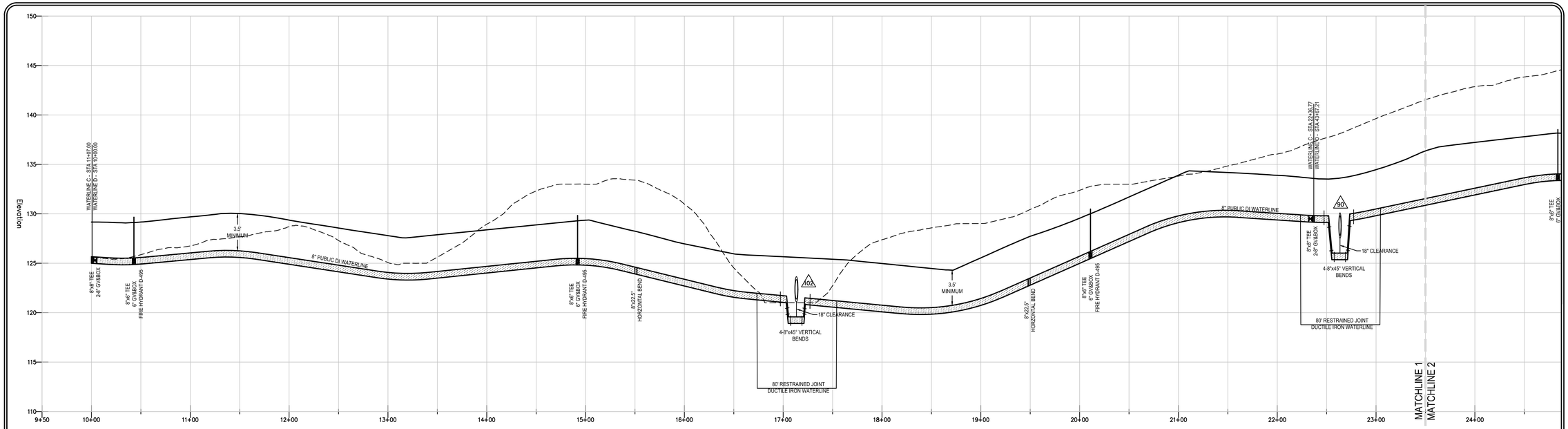
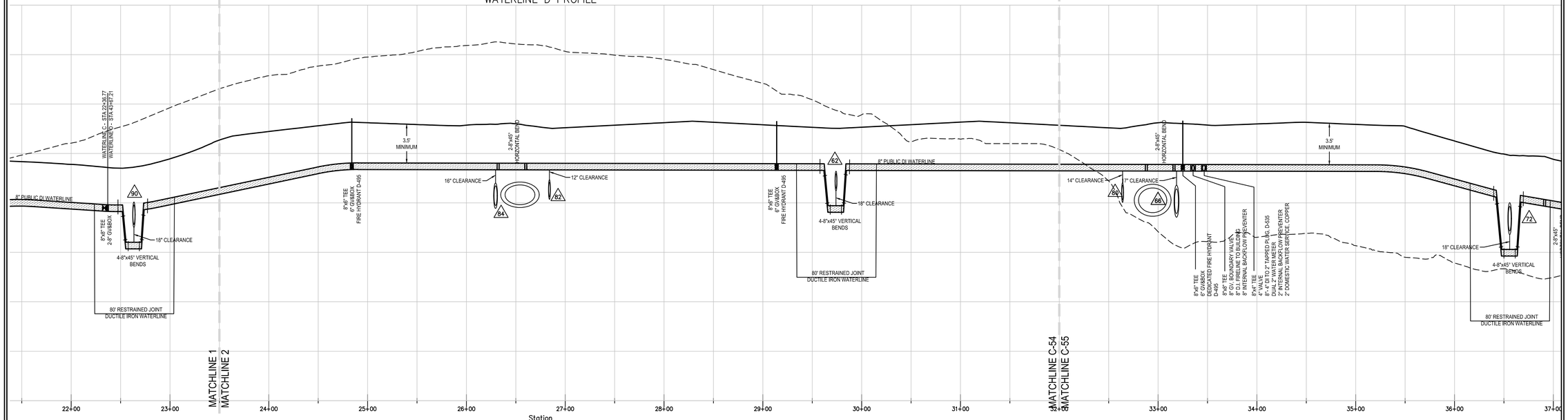


WATERLINE D PROFILE



SCALE:
HORIZONTAL:1"=50'
VERTICAL:1"=5'

LEGEND
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EXIST. GROUND AT C/L

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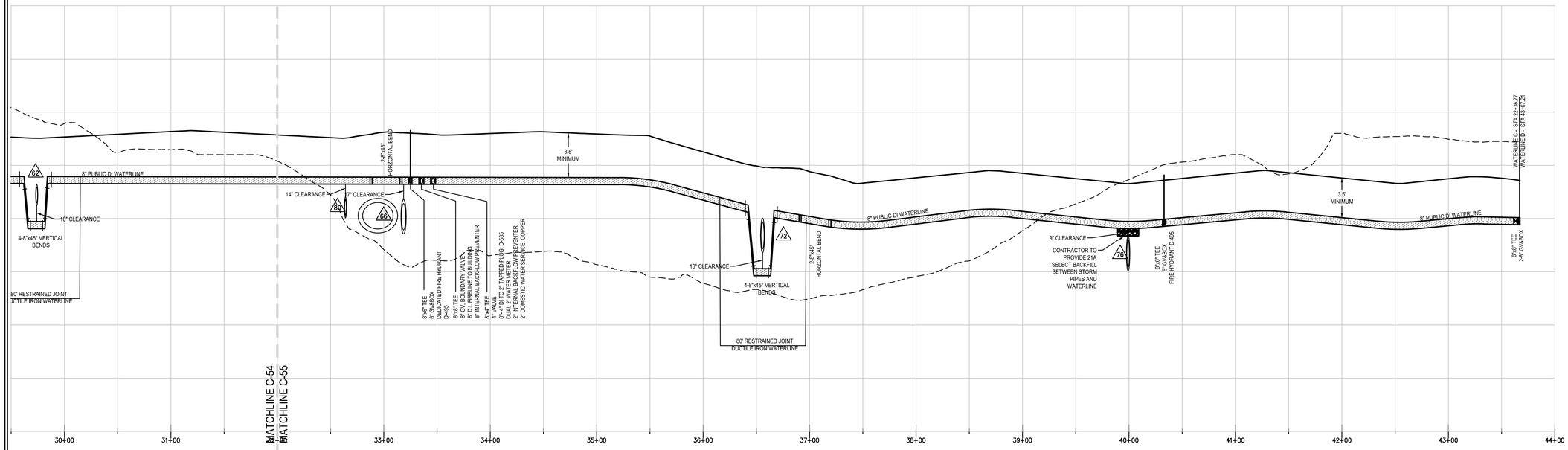

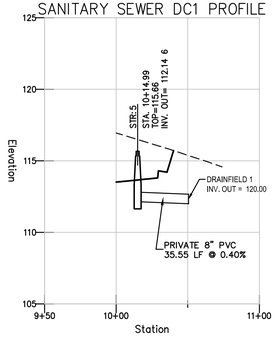

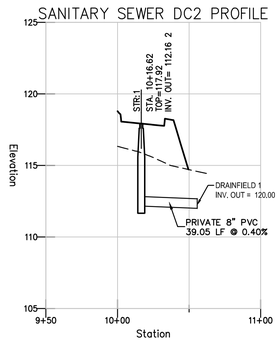

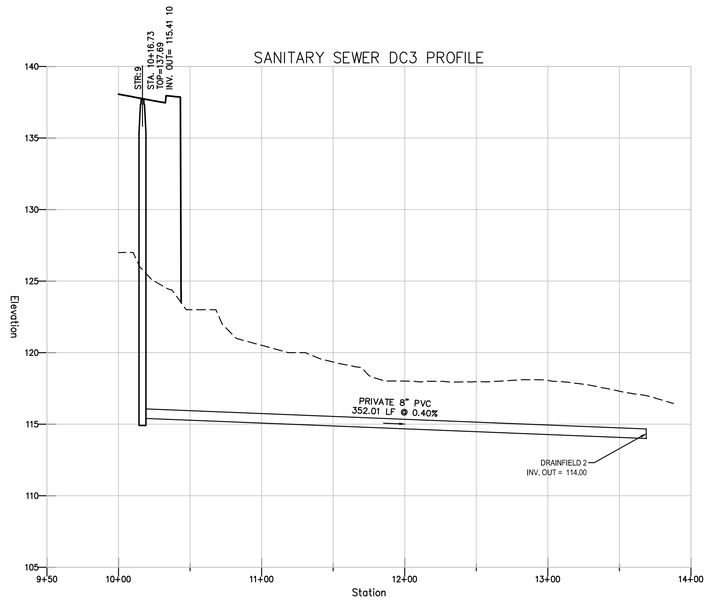

SCALE:
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VERTICAL:1"=5'

LEGEND
FINISHED GRADE AT C/L
EXIST. GROUND AT C/L

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CHECKED BY
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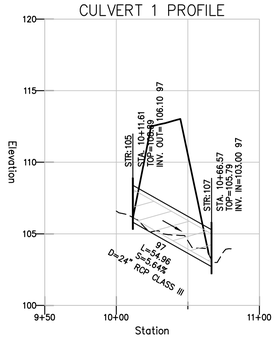
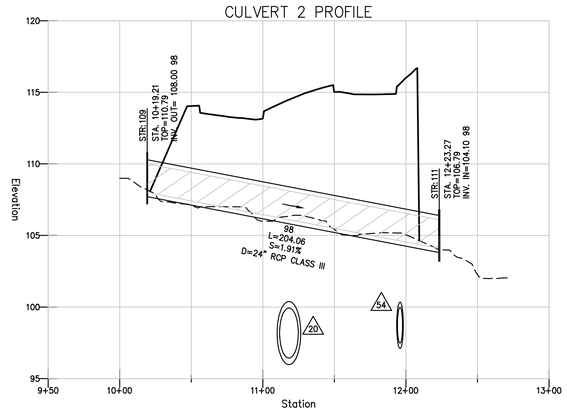
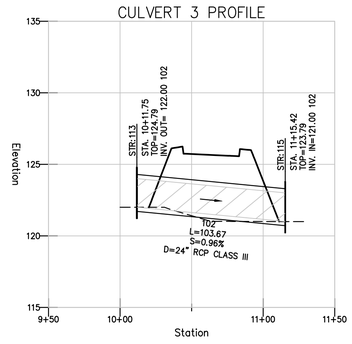




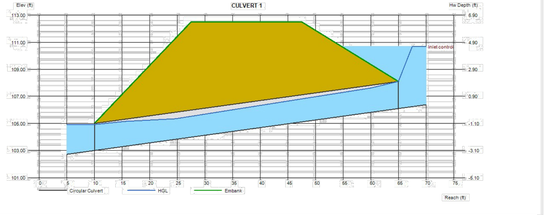


Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jun 16 2026

CULVERT 1

Invert Elev Dn (ft)	= 103.00	**Calculations**	
Pipe Length (ft)	= 54.96	Qmin (cfs)	= 28.60
Slope (%)	= 5.64	Qmax (cfs)	= 28.60
Invert Elev Up (ft)	= 106.10	Tailwater Elev (ft)	= (dc+D)/2
Rise (in)	= 24.0		
Shape	= Circular	**Highlighted**	
Span (in)	= 24.0	Qtotal (cfs)	= 28.60
No. Barrels	= 1	Qpipe (cfs)	= 28.60
n-Value	= 0.012	Qovertop (cfs)	= 0.00
Culvert Type	= Circular Concrete	Veloc Dn (ft/s)	= 9.23
Culvert Entrance	= Square edge w/headwall (C)	Veloc Up (ft/s)	= 9.46
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5	HGL Dn (ft)	= 104.92
		HGL Up (ft)	= 107.94
Embankment		Hw Elev (ft)	= 110.68
Top Elevation (ft)	= 112.50	Hw/D (ft)	= 2.29
Top Width (ft)	= 20.00	Flow Regime	= Inlet Control
Crest Width (ft)	= 53.00		

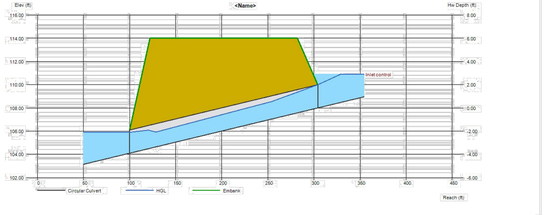


Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jun 16 2026

Circular Culvert

Invert Elev Dn (ft)	= 104.10	**Calculations**	
Pipe Length (ft)	= 204.06	Qmin (cfs)	= 19.84
Slope (%)	= 1.91	Qmax (cfs)	= 19.84
Invert Elev Up (ft)	= 108.00	Tailwater Elev (ft)	= (dc+D)/2
Rise (in)	= 24.0		
Shape	= Circular	**Highlighted**	
Span (in)	= 24.0	Qtotal (cfs)	= 19.84
No. Barrels	= 1	Qpipe (cfs)	= 19.84
n-Value	= 0.012	Qovertop (cfs)	= 0.00
Culvert Type	= Circular Concrete	Veloc Dn (ft/s)	= 6.66
Culvert Entrance	= Square edge w/headwall (C)	Veloc Up (ft/s)	= 7.37
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5	HGL Dn (ft)	= 105.90
		HGL Up (ft)	= 109.60
Embankment		Hw Elev (ft)	= 110.91
Top Elevation (ft)	= 114.00	Hw/D (ft)	= 1.45
Top Width (ft)	= 160.00	Flow Regime	= Inlet Control
Crest Width (ft)	= 190.00		

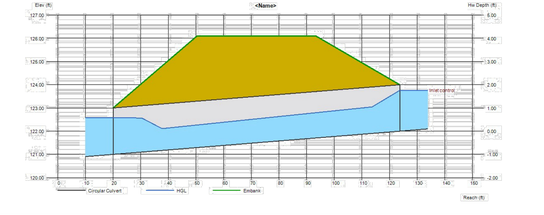


Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jun 16 2026

Circular Culvert

Invert Elev Dn (ft)	= 121.00	**Calculations**	
Pipe Length (ft)	= 103.67	Qmin (cfs)	= 10.67
Slope (%)	= 0.96	Qmax (cfs)	= 10.67
Invert Elev Up (ft)	= 122.00	Tailwater Elev (ft)	= (dc+D)/2
Rise (in)	= 24.0		
Shape	= Circular	**Highlighted**	
Span (in)	= 24.0	Qtotal (cfs)	= 10.67
No. Barrels	= 1	Qpipe (cfs)	= 10.67
n-Value	= 0.012	Qovertop (cfs)	= 0.00
Culvert Type	= Circular Concrete	Veloc Dn (ft/s)	= 4.00
Culvert Entrance	= Square edge w/headwall (C)	Veloc Up (ft/s)	= 5.59
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5	HGL Dn (ft)	= 122.58
		HGL Up (ft)	= 123.17
Embankment		Hw Elev (ft)	= 123.76
Top Elevation (ft)	= 126.10	Hw/D (ft)	= 0.88
Top Width (ft)	= 43.00	Flow Regime	= Inlet Control
Crest Width (ft)	= 68.00		



25 YR STORM ANALYSIS

SCALE:
HORIZONTAL:1"=50'
VERTICAL:1"=5'

LEGEND
FINISHED GRADE AT C/L
EXIST. GROUND AT C/L

Townes SITE ENGINEERING
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ZACKARY A. WILKINS
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06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

CULVERT CALCULATIONS

REVISIONS
DATE ITEM

DATE
06 / 30 / 2026
SCALE
AS SHOWN
DRAWN BY
ARON ZHOU, E.I.T
DESIGNED BY
ARON ZHOU, E.I.T
CHECKED BY
ZACKARY A. WILKINS, P.E.
PROJ.#
20240084
SHEET #
C-56

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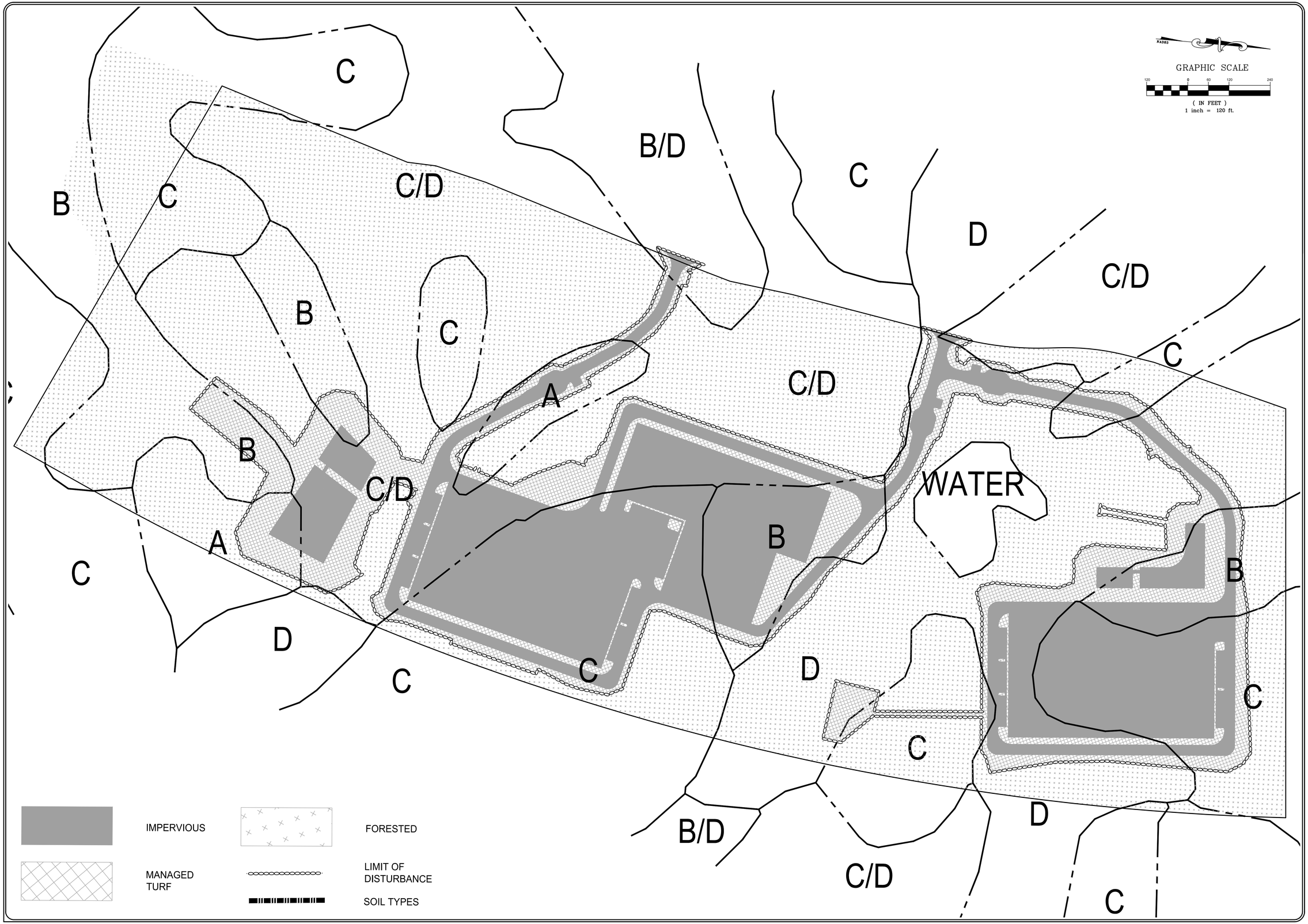

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SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

STORMWATER MANAGEMENT - VRRM

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 120'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
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DEQ Virginia Runoff Reduction Method New Development Compliance Spreadsheet - Version 3.0

☑ 2011 BMP Standards and Specifications ○ 2013 Draft BMP Standards and Specifications

Project Name: Binns Road Data Centers
Date:
BMP Design Specifications List: 2011 Stds & Specs

CLEAR ALL

data input cells | constant values | calculation cells | final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	2.94	8.10	16.42	41.74	69.20 *
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	1.06	3.35	5.55	3.55	13.51
Impervious Cover (acres)	0.69	4.17	16.31	3.32	24.49
					107.20

** Forest/Open Space areas must be protected in accordance with the Virginia Runoff Reduction Method*

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	22.76

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary	
Forest/Open Space Cover (acres)	69.20
Weighted Rv (forest)	0.04
% Forest	65%
Managed Turf Cover (acres)	13.51
Weighted Rv (turf)	0.22
% Managed Turf	13%
Impervious Cover (acres)	24.49
Rv (impervious)	0.95
% Impervious	23%
Site Area (acres)	**107.20**
Site Rv	**0.27**

Treatment Volume and Nutrient Loads	
Treatment Volume (acre-ft)	2.4374
Treatment Volume (cubic feet)	106,172
TP Load (lb/yr)	66.71
TN Load (lb/yr) (Informational Purposes Only)	477.22

Drainage Area A

Drainage Area A Land Cover (acres)

CLEAR BMP AREAS

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)	0.16	3.16	5.11	0.03	8.46	0.04
Managed Turf (acres)	0.66	1.73	2.67	0.08	5.14	0.20
Impervious Cover (acres)	0.69	2.82	11.82	0.78	16.11	0.95
				Total	29.71	

Total Phosphorus Available for Removal in D.A. A (lb/yr): 37.31
Post Development Treatment Volume in D.A. A (ft^3): 59,376

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
13.a. Wet Pond #1 (Spec #14)	0	5.14	16.11	0	0	59,376	59,376	50	0.00	37.26	18.63	18.63		30	0.00	266.58	79.97	186.60
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	0			0	0	0	0	45	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.c. Wet Pond #2 (Spec #14)	0			0	0	0	0	75	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	0			0	0	0	0	65	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00

Drainage Area B

Drainage Area A Land Cover (acres)

CLEAR BMP AREAS

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)	0.00	0.00	0.33	0.10	0.43	0.04
Managed Turf (acres)	0.00	0.87	0.84	1.02	2.73	0.22
Impervious Cover (acres)	0.00	1.34	4.50	2.54	8.38	0.95
				Total	11.54	

Total Phosphorus Available for Removal in D.A. B (lb/yr): 19.56
Post Development Treatment Volume in D.A. B (ft^3): 31,127

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
13. Wet Ponds (no RR)														**13. Wet Ponds (no RR)**				
13.a. Wet Pond #1 (Spec #14)	0	2.73	8.38	0	0	31,127	31,127	50	0.00	19.53	9.77	9.77		30	0.00	139.75	41.92	97.82
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	0			0	0	0	0	45	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.c. Wet Pond #2 (Spec #14)	0			0	0	0	0	75	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	0			0	0	0	0	65	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00

DEQ Virginia Runoff Reduction Method New Development Compliance Spreadsheet - Version 3.0

BMP Design Specifications List: **2011 Stds & Specs**

Site Summary

Project Title: Binns Road Data Centers
Date: NA

Total Rainfall = 43 inches

Site Land Cover Summary

	A soils	B Soils	C Soils	D Soils	Totals	% of Total
Forest/Open (acres)	2.94	8.10	16.42	41.74	69.20	65
Managed Turf (acres)	1.06	3.35	5.55	3.55	13.51	13
Impervious Cover (acres)	0.69	4.17	16.31	3.32	24.49	23
					107.20	100

Site Tv and Land Cover Nutrient Loads

Site Rv	0.27
Treatment Volume (ft^3)	106,172
TP Load (lb/yr)	66.71
TN Load (lb/yr)	477.22
Total TP Load Reduction Required (lb/yr)	22.76

Site Compliance Summary

Total Runoff Volume Reduction (ft^3)	0
Total TP Load Reduction Achieved (lb/yr)	28.40
Total TN Load Reduction Achieved (lb/yr)	121.90
Remaining Post Development TP Load (lb/yr)	38.31
Remaining TP Load Reduction (lb/yr) Required	0.00

** TARGET TP REDUCTION EXCEEDED BY 5.64 LB/YEAR **

Drainage Area Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
Forest/Open (acres)	8.46	0.43	0.00	0.00	0.00	8.89
Managed Turf (acres)	5.14	2.73	0.00	0.00	0.00	7.87
Impervious Cover (acres)	16.11	8.38	0.00	0.00	0.00	24.49
Total Area (acres)	**29.71**	**11.54**	**0.00**	**0.00**	**0.00**	**41.25**

Drainage Area Compliance Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
TP Load Reduced (lb/yr)	18.63	9.77	0.00	0.00	0.00	28.40
TN Load Reduced (lb/yr)	79.97	41.92	0.00	0.00	0.00	121.90

Drainage Area A Summary

Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest/Open (acres)	0.16	3.16	5.11	0.03	8.46	28
Managed Turf (acres)	0.66	1.73	2.67	0.08	5.14	17
Impervious Cover (acres)	0.69	2.82	11.82	0.78	16.11	54
					29.71	

BMP Selections

Practice	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	BMP Treatment Volume (ft^3)	TP Load from Upstream Practices (lbs)	Untreated TP Load to Practice (lbs)	TP Removed (lb/yr)	TP Remaining (lb/yr)	Downstream Treatment to be Employed
13.a. Wet Pond #1 (Spec #14)	**5.14**	**16.11**	**59,375.55**	**0.00**	**37.26**	**18.63**	**18.63**	

Total Impervious Cover Treated (acres)	16.11
Total Turf Area Treated (acres)	5.14
Total TP Load Reduction Achieved in D.A. (lb/yr)	18.63
Total TN Load Reduction Achieved in D.A. (lb/yr)	79.97

Drainage Area B Summary

Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest/Open (acres)	0.00	0.00	0.33	0.10	0.43	4
Managed Turf (acres)	0.00	0.87	0.84	1.02	2.73	24
Impervious Cover (acres)	0.00	1.34	4.50	2.54	8.38	73
					11.54	

BMP Selections

Practice	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	BMP Treatment Volume (ft^3)	TP Load from Upstream Practices (lbs)	Untreated TP Load to Practice (lbs)	TP Removed (lb/yr)	TP Remaining (lb/yr)	Downstream Treatment to be Employed
13.a. Wet Pond #1 (Spec #14)	**2.73**	**8.38**	**31,126.52**	**0.00**	**19.53**	**9.77**	**9.77**	

Total Impervious Cover Treated (acres)	8.38
Total Turf Area Treated (acres)	2.73
Total TP Load Reduction Achieved in D.A. (lb/yr)	9.77
Total TN Load Reduction Achieved in D.A. (lb/yr)	41.92

Runoff Volume and CN Calculations

	1-year storm	2-year storm	10-year storm
Target Rainfall Event (in)	0.00	0.00	0.00

Drainage Areas	RV & CN	Drainage Area A	Drainage Area B	Drainage Area C	Drainage Area D	Drainage Area E
CN		83	91	0	0	0
RR (ft^3)		0	0	0	0	0
1-year return period	**RV wo RR (ws-in)**	0.00	0.00	0.00	0.00	0.00
	RV w RR (ws-in)	0.00	0.00	0.00	0.00	0.00
	CN adjusted	100	100	0	0	0
2-year return period	**RV wo RR (ws-in)**	0.00	0.00	0.00	0.00	0.00
	RV w RR (ws-in)	0.00	0.00	0.00	0.00	0.00
	CN adjusted	100	100	0	0	0
10-year return period	**RV wo RR (ws-in)**	0.00	0.00	0.00	0.00	0.00
	RV w RR (ws-in)	0.00	0.00	0.00	0.00	0.00
	CN adjusted	100	100	0	0	0

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BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

STORMWATER MANAGEMENT - CALCULATIONS

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
NO SCALE

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-58

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NOTE:
HANDICAPPED SPACES SHALL BE IDENTIFIED BY ABOVE GRADE SIGNS AS RESERVED FOR PHYSICALLY HANDICAPPED PERSONS.

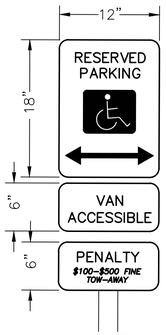
PROVIDE (1) 12" X18" SIGN AT EACH HANDICAPPED PARKING SPACE INDICATED ON THE SITE PLAN. SIGN WILL BE ALUMINUM (PAINTED WHITE) WITH GREEN LETTERS AND INTERNATIONAL WHEELCHAIR SYMBOL.

PROVIDE A 6" X 12" SIGN BELOW THE WHEELCHAIR SYMBOL SPECIFING PENALTIES FOR VIOLATION.

THE LOWER EDGE OF SIGNS SHALL BE AT LEAST FOUR (4) FEET ABOVE–GRADE, BUT NO HIGHER THAN SEVEN (7) FEET ABOVE–GRADE.

HANDICAPPED PARKING SIGN

NOT TO SCALE



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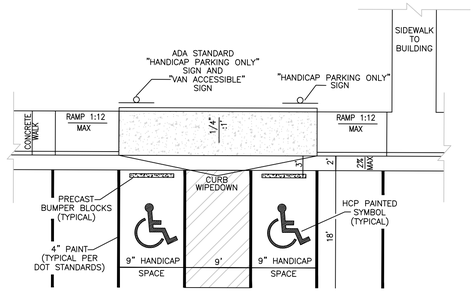
PROVIDE (1) 12" X18" SIGN AT EACH HANDICAPPED PARKING SPACE INDICATED ON THE SITE PLAN. SIGN WILL BE ALUMINUM (PAINTED BLUE) WITH WHITE LETTERS AND INTERNATIONAL WHEELCHAIR SYMBOL.

THE LOWER EDGE OF SIGNS SHALL BE AT LEAST FIVE (5) FEET ABOVE–GRADE, BUT NO HIGHER THAN SEVEN (7) FEET ABOVE–GRADE.

HANDICAPPED PARKING SIGN

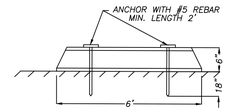
NOT TO SCALE



NOTE: CURB & GUTTER, WALK & CURB TO BE POURED SEPARATELY

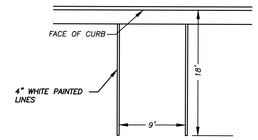
TYPICAL HANDICAP SPACE & RAMP DETAIL

(NOT TO SCALE)



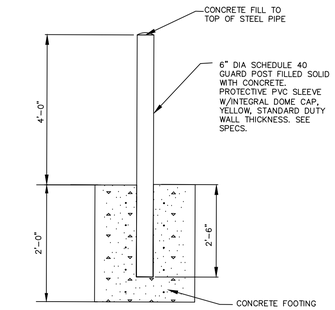
DETAIL–PROPER ANCHORING OF PRECAST BUMPER BLOCKS

NOT TO SCALE



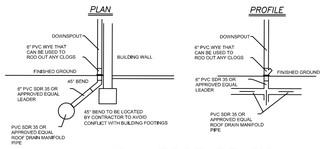
TYPICAL PARKING SPACE DETAIL

NOT TO SCALE



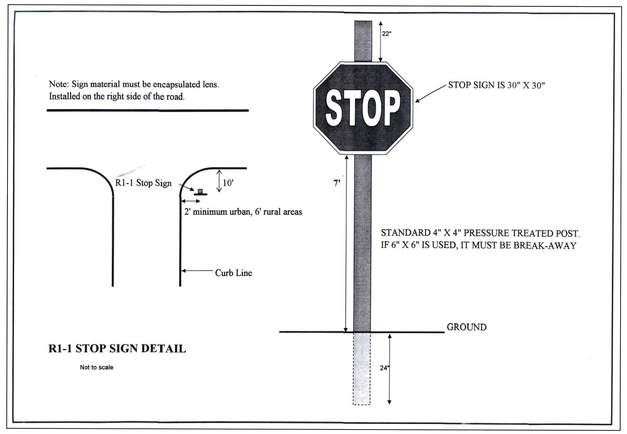
BOLLARD DETAIL

NOT TO SCALE



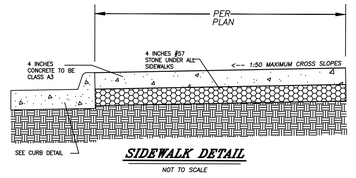
TYPICAL ROOF DRAIN TEE CONNECTION

NOT TO SCALE



R1-1 STOP SIGN DETAIL

Not to scale

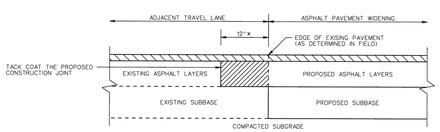


SIDEWALK DETAIL

NOT TO SCALE

2016 ROAD & BRIDGE STANDARDS

WP-2



CONSTRUCTION JOINT DETAIL

REMOVE EXISTING ASPHALT LAYERS TO EXISTING SUBBASE AND REPLACE WITH PROPOSED ASPHALT WIDENING LAYERS

PROPOSED MINIMUM 1½ INCH THICK ASPHALT SURFACE COURSE (SEE NOTE 5)

* MINIMUM 12 INCHES, OR GREATER AS NECESSARY TO ABUT THE FULL THICKNESS OF EXISTING ASPHALT LAYERS AS DETERMINED BY CORES (SEE NOTE 3)

NOTES:

1. ASPHALT PAVEMENT WIDENING SHALL HAVE A PAVEMENT DESIGN IN ACCORDANCE WITH CURRENT VDOT PROCEDURES AND BE APPROVED BY THE ENGINEER.
2. THE PAVEMENT DESIGN FOR ASPHALT PAVEMENT WIDENING SHALL MEET OR EXCEED THE DEPTHS AND TYPES OF THE LAYERS OF EXISTING PAVEMENT, SUBSURFACE DRAINAGE OF THE EXISTING AND PROPOSED PAVEMENT SHALL BE ADDRESSED IN THE PAVEMENT DESIGN.
3. A MINIMUM OF THREE CORES SHALL BE TAKEN ALONG THE CENTER OF THE ADJACENT TRAVEL LANE TO DETERMINE THE TYPE AND THICKNESS OF EXISTING PAVEMENT LAYERS. THESE CORES SHALL BE SPACED NO MORE THAN 500 FEET APART.
4. THE ADJACENT TRAVEL LANE SHALL BE MILLED A MINIMUM DEPTH OF 1½ INCHES AND REPLACED WITH AN ASPHALT SURFACE COURSE TO MATCH THE PROPOSED PAVEMENT WIDENING SURFACE COURSE, UNLESS WAIVED BY THE ENGINEER.
5. THE ENGINEER MAY REQUIRE THE MILLING DEPTH OF THE EXISTING PAVEMENT TO BE ADJUSTED TO ACHIEVE AN ACCEPTABLE PAVEMENT CROSS-SLOPE AND EFFECTIVE SURFACE DRAINAGE.
6. EXISTING PAVEMENT MARKINGS AND MARKERS WITHIN THE PROJECT LIMITS SHALL BE RESTORED SUBJECT TO THE APPROVAL OF THE ENGINEER.
7. FINAL TRANSVERSE PAVEMENT TIE-IN SHALL CONFORM TO THE REQUIREMENTS OF SECTION 315 OF THE SPECIFICATIONS EXCEPT THAT ALL JOINTS AT TIE-IN LOCATIONS SHALL BE TESTED USING A 10 FOOT STRAIGHTEDGE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 315 OF THE SPECIFICATIONS.

VDOT ROAD AND BRIDGE STANDARDS		ASPHALT PAVEMENT WIDENING FOR WIDENING SUBJECT TO TRAFFIC VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE
SHEET 1 OF 1	REVISION DATE		315
303.02			

2016 ROAD & BRIDGE STANDARDS

HANOVER COUNTY
Office of the Fire Marshal

Office (804) 365-6195
Fax (804) 537-5488

13326 Hanover Courthouse Road
P.O. Box 470 Hanover, VA 23069

fmo@hanovercounty.gov
Dispatch (804) 365-6140

"Storz" - Fire Department Connection Option

The connection is a 4-inch "Storz" fitting with locking lugs and is a free-standing style FDC.

- The top of the fitting shall be a minimum of 18 inches and a maximum of 48 inches above finished grade.
- Fitted with an exterior 30-degree elbow adapter turned down towards the ground along with an exterior/interior 90-degree elbow.
- The FDC shall be equipped with a locking Knox FDC Cap.
- Free-standing FDC's shall be located a minimum of 5 feet behind curb to protect from vehicle traffic.
  - Bollard protection may be required to be installed in a manner so as not to obstruct the clear space in front of the inlet.
- A working space of 36" around the circumference of the FDC and 78" in height.
- Paved areas 10 feet to either side of the FDC, and the area in front of the FDC shall be properly signed and striped in the same manner required for fire lanes.
- FDC's shall be designated by a sign having raised letters at least 1 inch in height, cast on plate as to what type of system.
- Each FDC shall be labeled with a sign that is 12 inches tall and 18 inches wide, indicating the address in which the FDC supplies.



Storz pedestal mount



KNOX Locking FDC Cap



FDC Sign Plate



FDC Address ID

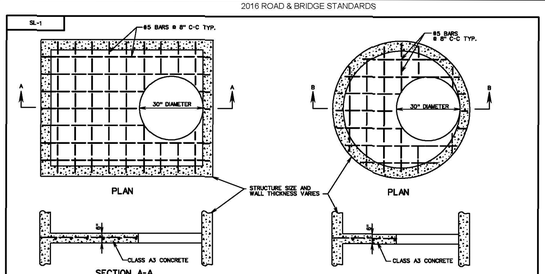
Fire Department Connections shall be installed in compliance with section 912 of the 2015 Virginia Construction Code & Statewide Fire Prevention Code, along with NFPA 14 & NFPA 1963 requirements.

The Fire Marshal or their duly authorized representative may amend requirements when deemed necessary.

Implementation Date January 26, 2022

2016 ROAD & BRIDGE STANDARDS

SL-1



NOTES:

1. THE STANDARD SAFETY SLAB (SL-1) IS TO BE USED ONLY WHEN SPECIFIED IN THE PLANS OR THE DRAINAGE SUMMARY SHEET AND/OR THE DRAINAGE DESCRIPTION FOR MANHOLES, JUNCTION BOXES, AND DROP INLETS WITH HEIGHTS GREATER THAN 10 FEET. THE SPACING OF OPPOSITE SAFETY SLABS SHALL BE 8'10" OR LESS. NO SAFETY SLAB LOCATED WITHIN 6 FEET OF THE CENTERLINE OF THE ROADWAY SHALL BE USED. SAFETY SLABS SHALL NOT BE LOCATED BELOW ANY INLET PIPE OF 30" DIAMETER OR GREATER.
2. THE COST OF THE SL-1 IS INCLUDED IN THE COST OF THE STRUCTURE.
3. ACCESS OPENINGS ARE TO BE STAGGERED FROM ONE SIDE OF STRUCTURE TO THE OTHER WHERE APPLICABLE. STEPS ARE TO BE STAGGERED ACCORDINGLY.
4. SAFETY SLAB MAY BE CAST-IN-PLACE OR PRECAST. CAST-IN-PLACE CONCRETE TO BE CLASS A3 (3000 PSI) AND PRECAST TO BE CLASS AA (4000 PSI). REINFORCING STEEL TO BE IN ACCORDANCE WITH AASHTO M31.
5. ACCESS OPENINGS MAY BE 30" DIAMETER OR 30" SQUARE. WHEN STRUCTURE WIDTH IS LESS THAN 30" THE ACCESS OPENING SHALL BE RECTANGULAR (STRUCTURE WIDTH BY 30" LONG).

SEE CAST IN PLACE DRAWINGS FOR FURTHER DETAILS



TYPICAL PRECAST UNIT

VDOT ROAD AND BRIDGE STANDARDS		TYPICAL CONCRETE SAFETY SLAB FOR DROP INLETS, MANHOLES AND JUNCTION BOXES VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE
SHEET 1 OF 1	REVISION DATE		302
106.14			

2016 ROAD & BRIDGE STANDARDS

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COMMONWEALTH OF VIRGINIA
ZACKARY A. WILKINS
Lic. No. 050952
06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

DETAILS

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
NO SCALE

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-59

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SECTION 8: CONSTRUCTION

8.1. Construction Sequence

The following is a typical construction sequence to properly install a wet pond. The steps may be modified to reflect different wet pond designs, site conditions, and the size, complexity and configuration of the proposed facility.

Step 1: Use of Wet Pond as an E&S Control. A wet pond may serve as a sediment basin during project construction. If this is done, the volume should be based on the more stringent sizing rule (erosion and sediment control requirement vs. water quality treatment requirement). Installation of the permanent riser should be initiated during the construction phase, and design elevations should be set with final cleanout of the sediment basin and conversion to the post-construction wet pond in mind. The bottom elevation of the wet pond should be lower than the bottom elevation of the temporary sediment basin. Appropriate procedures should be implemented to prevent discharge of turbid waters when the basin is being converted into a wet pond.

Step 2: Stabilize the Drainage Area. Wet ponds should only be constructed after the contributing drainage area to the pond is completely stabilized. If the proposed pond site will be used as a sediment trap or basin during the construction phase, the construction notes should clearly indicate that the facility will be de-watered, dredged and re-graded to design dimensions after the original site construction is complete.

Step 3: Assemble Construction Materials on-site, make sure they meet design specifications, and prepare any staging areas.

Step 4: Clear and Strip the project area to the desired sub-grade.

Step 5: Install E&S Controls prior to construction, including temporary de-watering devices and stormwater diversion practices. All areas surrounding the pond that are graded or denuded during construction must be planted with turf grass, native plantings, or other approved methods of soil stabilization.

Step 6: Excavate the Core Trench and Install the Spillway Pipe.

Step 7: Install the Riser or Outflow Structure, and ensure the top invert of the overflow weir is constructed level at the design elevation.

Step 8: Construct the Embankment and Any Internal Berms in 8- to 12-inch lifts, compact the lifts with appropriate equipment.

Step 9: Excavate/Grade until the appropriate elevation and desired contours are achieved for the bottom and side slopes of the pond.

Step 10: Construct the Emergency Spillway in cut or structurally stabilized soils.

Step 11: Install Outlet Pipes, including downstream rip-rap apron protection.

Step 12: Stabilize Exposed Soils with temporary seed mixtures appropriate for the pond buffer. All areas above the normal pool elevation should be permanently stabilized by hydroseeding or seeding over straw.

Step 13: Plant the Pond Buffer Area, following the pondscaping plan (see **Section 8.5** below).

8.2. Construction Inspection

Multiple inspections are critical to ensure that stormwater ponds are properly constructed. Inspections are recommended during the following stages of construction:

- Pre-construction meeting
- Initial site preparation (including installation of E&S controls)
- Excavation/Grading (interim and final elevations)
- Installation of the embankment, the riser/primary spillway, and the outlet structure
- Implementation of the pondscaping plan and vegetative stabilization
- Final inspection (develop a punchlist for facility acceptance)

A construction phase inspection checklist for Wet Ponds can be accessed in at the CWP website at:

http://www.cwp.org/Resource_Library/Controlling_Runoff_and_Discharges/sm.htm
(scroll to Tool6: Plan Review, BMP Construction, and Maintenance Checklists)

For larger wet ponds, use the expanded construction inspection form provided in Appendix B of CWP (2004).

To facilitate maintenance, contractors should measure the actual constructed pond depth at three areas within the permanent pool (forebay, mid-pond and at the riser), and they should mark and geo-reference them on an as-built drawing. This simple data set will enable maintenance inspectors to determine pond sediment deposition rates in order to schedule sediment cleanouts.

SECTION 9: MAINTENANCE

9.1. Maintenance Agreements

Section 4 VAC 50-60-124 of the regulations specifies the circumstances under which a maintenance agreement must be executed between the owner and the local program. This section sets forth inspection requirements, compliance procedures if maintenance is neglected, notification of the local program upon transfer of ownership, and right-of-entry for local program personnel. Access to wet ponds should be covered by a drainage easement to allow inspection and maintenance.

It is also recommended that the maintenance agreement include a list of qualified contractors that can perform inspection or maintenance services, as well as contact information for owners to get local or state assistance to solve common nuisance problems, such as mosquito control, geese, invasive plants, vegetative management, and beaver removal. The CWP *Pond and Wetland Maintenance Guidebook* (2004) provides some excellent templates of how to respond to these problems.

9.2. First Year Maintenance Operations

Successful establishment of wet ponds requires that the following tasks be undertaken during the first year following construction.

Initial inspections. For the first six months following construction, the site should be inspected at least twice after storm events that exceed a 1/2-inch of rainfall.

Planting of Aquatic Benches. The aquatic benches should be planted with emergent wetland species, following the planting recommendations contained in Stormwater Design Specification No. 13 (Constructed Wetlands).

Spot Reseeding. Inspectors should look for bare or eroding areas in the contributing drainage area or around the pond buffer, and make sure they are immediately stabilized with grass cover.

Watering. Trees planted in the pond buffer need to be watered during the first growing season. In general, consider watering every 3 days for first month, and then weekly during the remainder of the first growing season (April - October), depending on rainfall.

9.3. Inspections and Ongoing Maintenance Tasks

Maintenance of a wet pond is driven by annual inspections that evaluate the condition and performance of the pond, including the following:

- Measure sediment accumulation levels in the forebay.
- Monitor the growth of wetland plants, trees and shrubs planted. Record the species and their approximate coverage, and note the presence of any invasive plant species.

- Inspect the condition of stormwater inlets to the pond for material damage, erosion or undercutting.
- Inspect the banks of upstream and downstream channels for evidence of sloughing, animal burrows, boggy areas, woody growth, or gully erosion that may undermine embankment integrity.
- Inspect the pond outfall channel for erosion, undercutting, rip-rap displacement, woody growth, etc.
- Inspect the condition of the principal spillway and riser for evidence of spalling, joint failure, leakage, corrosion, etc.
- Inspect the condition of all trash racks, reverse-sloped pipes, or flashboard risers for evidence of clogging, leakage, debris accumulation, etc.
- Inspect maintenance access to ensure it is free of woody vegetation, and check to see whether valves, manholes and locks can be opened and operated.
- Inspect internal and external side slopes of the pond for evidence of sparse vegetative cover, erosion, or slumping, and make needed repairs immediately.

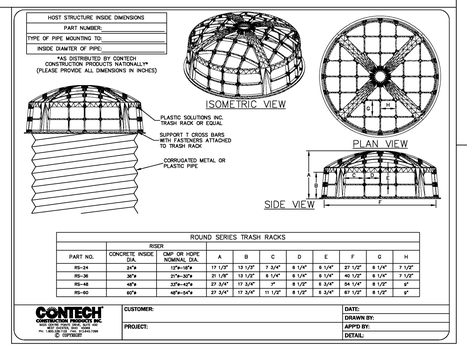
Based on inspection results, specific maintenance tasks will be triggered. Example maintenance inspection checklists for Wet Ponds can be accessed in Appendix C of Chapter 9 of the *Virginia Stormwater Management Handbook* (2010) or at the CWP website at:

http://www.cwp.org/Resource_Library/Controlling_Runoff_and_Discharges/sm.htm
(scroll to Tool6: Plan Review, BMP Construction, and Maintenance Checklists)

For a more detailed maintenance inspection checklist, see Appendix B in CWP *Stormwater Pond and Wetland Maintenance Guidebook* (2004).

Maintenance is needed so stormwater ponds continue to operate as designed on a long-term basis. Wet ponds normally have fewer routine maintenance requirements than other stormwater control measures. Stormwater pond maintenance activities vary regarding the level of effort and expertise required to perform them. Routine stormwater pond maintenance, such as mowing and removing debris and trash, is needed several times each year (See **Table 14.6**). More significant maintenance (e.g., removing accumulated sediment) is needed less frequently but requires more skilled labor and special equipment. Inspection and repair of critical structural features (e.g., embankments and risers) needs to be performed by a qualified professional (e.g., a structural engineer) who has experience in the construction, inspection, and repair of these features.

The maintenance plan should clearly outline how vegetation in the pond and its buffer will be managed or harvested in the future. Periodic mowing of the stormwater buffer is only required along maintenance rights-of-way and the embankment. The remaining buffer can be managed as a meadow (mowing every other year) or forest. The maintenance plan should schedule a shoreline cleanup at least once a year to remove trash and floatables.



ROUND SERIES TRASH RACKS

PART NO.	RISER: CONCRETE INSIDE DIA.	RISER: CMP OR HDPE NOMINAL DIA.	A	B	C	D	E	F	G	H
RS-24	24"ø	12"ø-18"ø	17 1/2"	13 1/2"	7 3/4"	8 1/4"	6 1/4"	27 1/2"	6 1/4"	7 1/2"
RS-36	36"ø	21"ø-30"ø	21 1/8"	13 1/2"	6 1/4"	8 1/4"	6 1/4"	40 1/2"	6 1/4"	7 1/2"
RS-48	48"ø	33"ø-42"ø	27 3/4"	17 3/4"	7"	8 1/2"	6 3/4"	54 1/4"	6 1/2"	6"
RS-60	60"ø	48"ø-54"ø	27 3/4"	17 3/4"	11 1/2"	8 1/2"	6 3/4"	67 1/2"	8 1/2"	6"

CONTECH CONSTRUCTION PRODUCTS INC. 1001 CENTRAL PARK BOULEVARD, SUITE 100 FAIRFIELD, OHIO 45014 PH.: 800.338.1122 FAX: 513.645.7993 WWW.CONTECH-CPI.COM © COPYRIGHT

CUSTOMER: PROJECT: DATE: DRAWN BY: APPD BY: DETAIL:

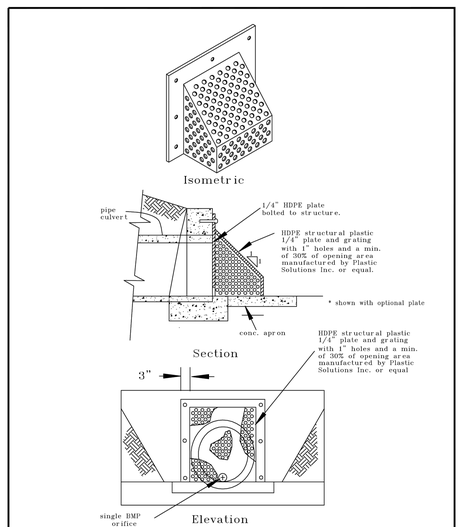
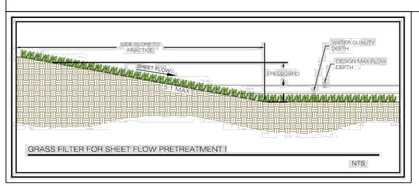


Table 14.6. Typical Wet Pond Maintenance Tasks and Frequency

Maintenance Items	Frequency
• Mowing – twice a year • Remove debris and blockages • Repair undercut, eroded, and bare soil areas	Quarterly or after major storms (>1 inch of rainfall)
• Mowing	Twice a year
• Shoreline cleanup to remove trash, debris and floatables • A full maintenance inspection • Open up the riser to access and test the valves • Repair broken mechanical components, if needed	Annually
• Pond buffer and aquatic bench reinforcement plantings	One time –during the second year following construction
• Forebay Sediment Removal	Every 5 to 7 years
• Repair pipes, the riser and spillway, as needed	From 5 to 25 years



AIR FLO 3 DIFFUSED AERATION SYSTEM SPECIFICATIONS

PURPOSE: The diffused air, aeration manufacturer shall provide an underwater aeration system designed to aerate, de-stratify, and circulate water without disturbing the natural surroundings of the lake environment.

SCOPE: The diffused air, aeration package shall be capable of being installed in lakes deeper than 3ft (1m).

PACKAGE: This aeration package shall include the following equipment:

a. Air compressor cabinet enclosure. To include compressor(s), circuit disconnect, and air flow balancing valve manifolds.

To be designed to operate on either:

i. 60Hz power, 115/208/230 volt, single phase
ii. 50Hz power, 220/240 volt, single phase

b. Air/Oxygen disc diffuser manifolds
c. Tubing


www.otterbine.com/airflo3

CABINET/ENCLOSURE:
○ 1 Compressor
○ 2 Compressor

SPECIFY: _____ Volts _____ Hz

DIFFUSER MANIFOLD(S): *[Single or Dual Disc]*

Quantity	Type
_____	Single Disc Manifold(s)
_____	Dual Disc Manifold(s)

TUBING: *[Available in 100ft (30m) increments]*
Total required tubing for system:

_____ feet (_____ m) Non-weighted polyvinyl chloride tubing
_____ feet (_____ m) Weighted polyethylene chloride tubing

Tubing lengths per diffuser manifold:

_____ _____ _____ _____ _____ _____
_____ _____ ○ feet (○ meters) Non-weighted tubing
_____ _____ _____ _____ _____ _____
_____ _____ ○ feet (○ meters) Weighted tubing

PISTON AIR COMPRESSOR: (for lakes 3ft (1m) deep or larger) The air compressor(s) shall be a 1/2HP rocking piston, dual frequency, permanent split capacitor (psc) electric motor with oilless lubrication, direct drive (no belts or pulleys), designed for field service capability, polyurethane rust protection, and to include the following motor protection: thermal overload protection, and intake air filter. The serviceable parts: piston cups, retainer screws, cylinder o-rings, head o-rings, valve and valve retainers; should last two years in continuous operation. These maintenance parts shall be replaceable with common tools. Please consult your local distributor if you require assistant in choosing sizes, accessories, or applications.

AIR COMPRESSOR CABINET ENCLOSURE:

a. Cabinet body and cover construction shall be 18 gauge (0.048in/0.122cm) 304 stainless steel, and include EPDM edge-grip seal
b. Cabinet cooling system to consist of two (2) axial exhaust fans and vented intake louvers on the bottom of the cabinet to provide an air exchange rate of 410-490 CFM
c. Compressor-intake air to be quick change cartridge type filters
d. Cabinet enclosure secured by stainless steel latch to accomodate locking mechanism

AIR/OXYGEN DIFFUSER MANIFOLDS: The air/oxygen disc diffusers shall include, but not be limited to, the following materials of construction:

a. Disc type 12in (350mm) membrane diffusers allow for maximum 12CFM and are resistant to Ozone and UV
b. Membrane material to be premium quality compression molded EPDM with an oil content of less than 12%
c. Diffuser membranes should have a minimum of 10,155 slit perforations and be at least 70% hydrophilic, with tensile strength at 2000 psi
d. Diffuser to consist of membrane with integral gasket, base, retaining ring, and air flow control orifice
e. Membrane shall collapse and seal when aeration system air is turned off
f. Sealing method of retaining device shall generate a minimum of 50 pounds per inch/58 Kg/cm of circumference of the sealing gasket to provide a long term positive seal and to prevent air escape
g. Diffuser base and retaining ring to be constructed of polypropylene with organic UV stabilizers and a tensile strength of 5000 psi
h. Diffuser to have one 3/4in (2.5cm) connection method to manifold
i. Each diffuser shall include a manifold that will connect up to two (2) air-discs to the air supply tubing
j. Manifold base shall be constructed of high-density polyethylene plastic and incorporate ballast channels for level sinking of pads during installation

WEIGHTED POLYVINYL CHLORIDE TUBING: Tubing shall be constructed of heavy, negative buoyancy, polyvinyl chloride (PVC) material. The PVC tubing shall be 1/2" (1 cm) with a minimum wall thickness of 1/4" (.64 cm). Pressure rating shall be 225 psi at 70o F (21o C). Coil lengths shall be 100' (30 m), with a weight per 100' (30 m) of 43lbs (20 kg). Tubing shall be self-sinking, lead free, and contain carbon black for UV protection. Please consult your local distributor for additional information.

NON-WEIGHTED POLYETHYLENE TUBING: The polyethylene tubing shall be 1/2in (1cm) with a minimum wall thickness of .06in (1.5mm). Pressure rating shall be 100 psi at 73 F (22 C). Coil lengths shall be 100' (30 m), with a weight per 100ft (30m) of 11 lbs (5 kg). Tubing shall contain 2% carbon black for long term UV protection. Please consult your local distributor for additional information.

INSERT FITTINGS: Insert fittings are used to repair, adapt, or connect with the polyethylene tubing. Fittings available shall include line size couplings, male adapters, and elbows.

TESTING: A. Safety - The aerator system shall be tested and approved as a unit. Separate component testing not allowed. Unit must be tested by ETL, ETL-C, CE, UL or other accredited testing facilities. B. Performance - Unit must have independent performance testing provided by GSEE.

MANUFACTURER: The diffused air, aeration system shall be Air Flo 3 System# _____ as manufactured by Otterbine Barebo, Inc.,3840 MAIN ROAD EAST, Emmaus, PA 18049, U.S.A. PH. (610) 965-6018, or approved equal. For approved equal status, supplier shall provide the following information to the project designer, within 10 days of the bid opening date, for written approval.

WARRANTY: The aeration system shall include a 3 year warranty on the air compressor(s), 5 years on air diffusers and cabinet, and 15 years on underwater tubing.

MODEL: AIR FLO 3 DIFFUSED AIR SYSTEM

SYSTEM	# of Compressor(s)	Diffuser Pad(s)	# Discs per Pad	# Disc per System	Volt/Amp/Hz
AF3-121	1	2	1	2	115/4.7/60 230/2.5/60 220/2.8/50
AF3-131		3		3	
AF3-141		4		4	
AF3-112		1	2	2	
AF3-122		2		4	
AF3-241	2	4	1	4	115/8.9/60 230/4.7/60 220/5.6/50
AF3-261		6		6	
AF3-281		8		8	
AF3-222		2	2	4	
AF3-232		3		6	
AF3-242		4		8	
AF3-262		6		12	

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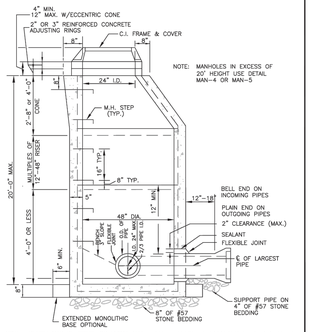
HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES



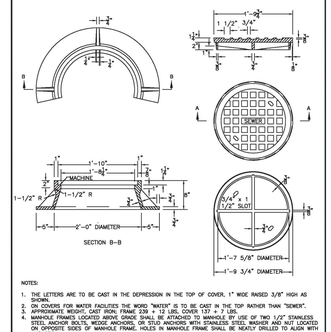
NOTE: MANHOLES IN EXCESS OF 20' HEIGHT USE DETAIL MAN-4 OR MAN-5

NOTE: BENCH MAY BE CONC. OR BRICK AND MORTAR. USE TYPE II SULFATE RESISTANT CEMENT FOR ALL MANHOLE BENCH CONSTRUCTION.

NOTE: STONE BEDDING SHALL EXTEND TO THE OUTER BOUNDARY OF ALL UNDISTURBED AREAS SURROUNDING THE MANHOLE.

DATE MAY 2004 REV JAN 2011	STANDARD PRECAST CONCRETE MANHOLE SEWERS 8" TO 24"	DETAIL MAN-2

HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES

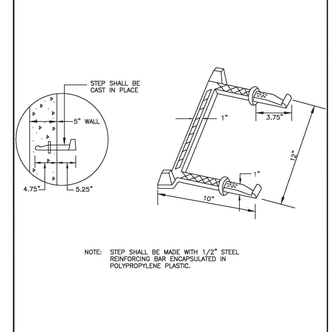


NOTES:

1. THE LETTERS ARE TO BE CAST IN THE DEPRESSION IN THE TOP OF COVER, 1" WIDE RAISED 3/8" HIGH AS SHOWN.
2. ON COVERS FOR WATER FACILITIES THE WORD "WATER" IS TO BE CAST IN THE TOP RATHER THAN "SEWER".
3. APPROXIMATE WEIGHT, CAST IRON: FRAME 239 + 12 LBS, COVER 137 + 7 LBS.
4. MANHOLE FRAMES LOCATED ABOVE GRADE SHALL BE ATTACHED TO MANHOLE BY USE OF TWO 1/2" STAINLESS STEEL ANCHOR BOLTS, WEDGE ANCHORS, OR STUD ANCHORS WITH STAINLESS STEEL WASHER AND NUT LOCATED ON OPPOSITE SIDES OF MANHOLE FRAME. HOLES IN MANHOLE FRAME SHALL BE NEATLY DRILLED TO ALIGN WITH ANCHORS.
5. SEALANT FOR MANHOLE FRAMES SHALL BE ONE-COMPONENT POLYURETHANE OR BITUMASTIC MATERIAL PER SECTION 3.3.2.5.

DATE MAY 2004 REV JAN 2011	STANDARD MANHOLE FRAME & COVER	DETAIL MAN-11

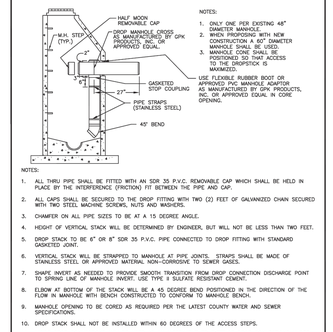
HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES



NOTE: STEP SHALL BE MADE WITH 1/2" STEEL REINFORCING BAR ENCAPSULATED IN POLYPROPYLENE PLASTIC.

DATE MAY 2004 REV JAN 2011	TYPICAL MANHOLE STEP	DETAIL MAN-14

HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES



NOTES:

1. ONLY ONE PER EXISTING 48" DIAMETER MANHOLE.
2. WHEN PROPOSING WITH NEW CONSTRUCTION A 60" DIAMETER MANHOLE SHALL BE USED.
3. MANHOLE CONE SHALL BE POSITIONED SO THAT ACCESS TO THE DROPSTICK IS MAXIMIZED.

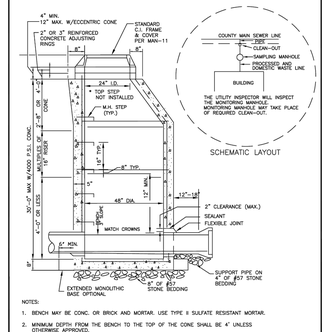
USE FLEXIBLE RUBBER BOOT OR APPROVED PVC MANHOLE ADAPTOR AS MANUFACTURED BY GPK PRODUCTS, INC. OR APPROVED EQUAL IN CORE OPENING.

NOTES:

1. ALL THRU PIPE SHALL BE FITTED WITH AN SDR 35 P.V.C. REMOVABLE CAP WHICH SHALL BE HELD IN PLACE BY THE INTERFERENCE (FRICTION) FIT BETWEEN THE PIPE AND CAP.
2. ALL CAPS SHALL BE SECURED TO THE DROP FITTING WITH TWO (2) FEET OF GALVANIZED CHAIN SECURED WITH TWO STEEL MACHINE SCREWS, NUTS AND WASHERS.
3. CHAMFER ON ALL PIPE SIZES TO BE AT A 15 DEGREE ANGLE.
4. HEIGHT OF VERTICAL STACK WILL BE DETERMINED BY ENGINEER, BUT WILL NOT BE LESS THAN TWO FEET.
5. DROP STACK TO BE 6" OR 8" SDR 35 P.V.C. PIPE CONNECTED TO DROP FITTING WITH STANDARD GASKETED JOINT.
6. VERTICAL STACK WILL BE STRAPPED TO MANHOLE AT PIPE JOINTS. STRAPS SHALL BE MADE OF STAINLESS STEEL OR APPROVED MATERIAL NON-CORROSIVE TO SEWER GASES.
7. SHAPE INVERT AS NEEDED TO PROVIDE SMOOTH TRANSITION FROM DROP CONNECTION DISCHARGE POINT TO SPRING LINE OF MANHOLE INVERT. USE TYPE II SULFATE RESISTANT CEMENT.
8. ELBOW AT BOTTOM OF THE STACK WILL BE A 45 DEGREE BEND POSITIONED IN THE DIRECTION OF THE FLOW IN MANHOLE WITH BENCH CONSTRUCTED TO CONFORM TO MANHOLE BENCH.
9. MANHOLE OPENING TO BE CORED AS REQUIRED PER THE LATEST COUNTY WATER AND SEWER SPECIFICATIONS.
10. DROP STACK SHALL NOT BE INSTALLED WITHIN 60 DEGREES OF THE ACCESS STEPS.
11. INSIDE DROP CONNECTIONS MAY BE USED AS AN ALTERNATIVE TO EXTERIOR DROP CONNECTIONS UNDER SPECIAL CIRCUMSTANCES, E.G. BAD SOILS, HIGH WATER TABLE, UTILITY CONFLICTS, AND EXCESSIVE DEPTHS.

DATE MAY 2004 REV JAN 2011	STANDARD INSIDE DROP CONNECTION	DETAIL MAN-16

HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES

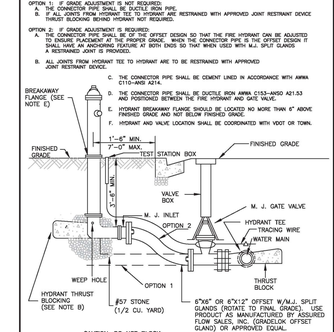


NOTES:

1. BENCH MAY BE CONC. OR BRICK AND MORTAR. USE TYPE II SULFATE RESISTANT MORTAR.
2. MINIMUM DEPTH FROM THE BENCH TO THE TOP OF THE CONE SHALL BE 4' UNLESS OTHERWISE APPROVED.
3. STONE BEDDING SHALL EXTEND TO THE OUTER BOUNDARY OF ALL UNDISTURBED AREAS SURROUNDING THE MANHOLE.

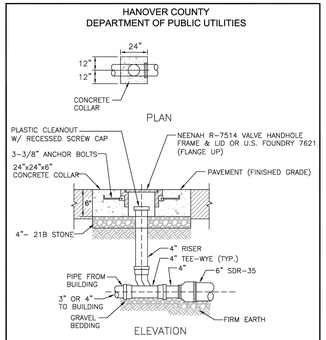
DATE MAY 2004 REV JAN 2011	MONITORING MANHOLE	DETAIL MAN-17A

HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES



DATE MAY 2004 REV JAN 2011	TYPICAL FIRE HYDRANT DETAIL	DETAIL FIR-1

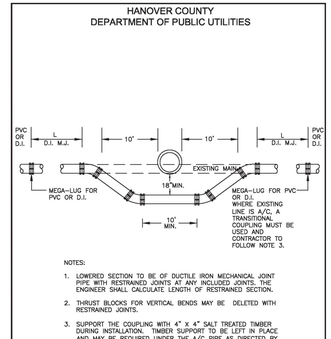
HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES



NOTE: 45° BEND AND WYE MAY BE ALLOWED FOR CLEANOUTS NOT LOCATED AT PROPERTY LINE OR EDGE OF EASEMENT, AS APPROVED BY BUILDING OFFICIAL.

DATE JAN 2011	SANITARY SEWER CLEANOUT (TRAFFIC RATED)	DETAIL SEW-12

HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES

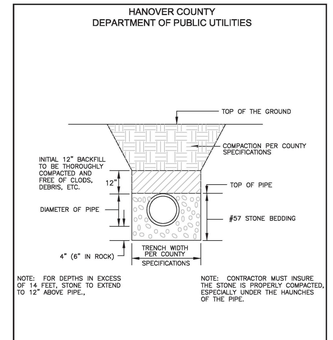


NOTES:

1. LOWERED SECTION TO BE OF DUCTILE IRON MECHANICAL JOINT PIPE WITH RESTRAINED JOINTS AT ANY INCLUDED JOINTS. THE ENGINEER SHALL CALCULATE LENGTH OF RESTRAINED SECTION.
2. THRUST BLOCKS FOR VERTICAL BENDS MAY BE DELETED WITH RESTRAINED JOINTS.
3. SUPPORT THE COUPLING WITH 4" X 4" SALT TREATED TIMBER DURING INSTALLATION. TIMBER SUPPORT TO BE LEFT IN PLACE AND MAY BE REQUIRED UNDER THE A/C PIPE AS DIRECTED BY THE DPU INSPECTOR.

DATE MAY 2004 REV JAN 2011	LOWERING WATER MAIN OR NEW INSTALLATION	DETAIL WAT-6

HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES

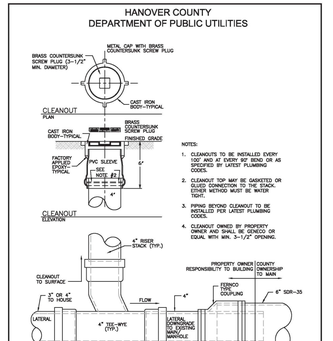


NOTE: FOR DEPTHS IN EXCESS OF 14 FEET, STONE TO EXTEND TO 12" ABOVE PIPE.,

NOTE: CONTRACTOR MUST INSURE THE STONE IS PROPERLY COMPACTED, ESPECIALLY UNDER THE HAUNCHES OF THE PIPE.

DATE MAY 2004	BEDDING AND BACKFILL DETAIL FOR PLASTIC SEWER PIPE	DETAIL SEW-2

HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES

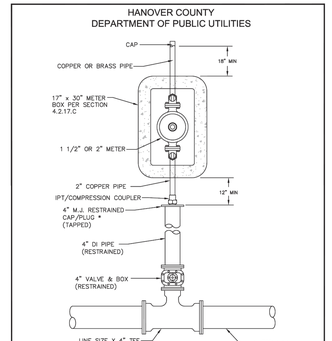


NOTES:

1. CLEANOUTS TO BE INSTALLED EVERY 100' AND AT EVERY 90° BEND OR AS SPECIFIED BY LATEST PLUMBING CODES.
2. CLEANOUT TOP MAY BE GASKETED OR SLUED CONNECTION TO THE STACK. EITHER METHOD MUST BE WATER TIGHT.
3. PIPING BEYOND CLEANOUT TO BE INSTALLED PER LATEST PLUMBING CODE.
4. CLEANOUT OWNED BY PROPERTY OWNER AND SHALL BE SEWDCO OR EQUAL WITH MIN. 3-1/2" OPENING.

DATE JAN 2011	PROPERTY / EASEMENT LINE CLEANOUT DETAIL	DETAIL SEW-11

HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES



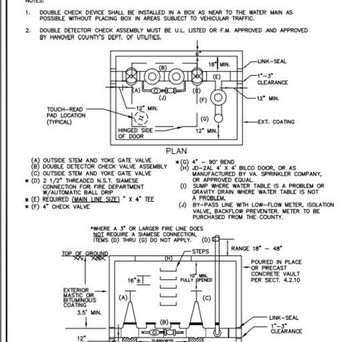
* CAP/PLUG TO BE LOCATED AT LEAST 12" PAST THE EDGE/BACK OF THE IMPROVED HARD SURFACE; I.E. PAVEMENT, CURBING, SIDEWALK, ETC.

DATE JAN 2011	WATER SERVICE INSTALLATION DETAIL FOR 1-1/2" AND 2" METERS	DETAIL MET-11B

HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES

NOTES:

1. DOUBLE CHECK DEVICE SHALL BE INSTALLED IN A BOX AS NEAR TO THE WATER MAIN AS POSSIBLE WITHOUT PLACING BOX IN AREAS SUBJECT TO VEHICULAR TRAFFIC.
2. DOUBLE DETECTOR CHECK ASSEMBLY MUST BE U.L. LISTED OR F.M. APPROVED AND APPROVED BY HANOVER COUNTY'S DEPT. OF UTILITIES.



(A) OUTSIDE STEM AND YOKE GATE VALVE
(B) DOUBLE DETECTOR CHECK VALVE ASSEMBLY
(C) OUTSIDE STEM AND YOKE GATE VALVE
* (D) 2 1/2" THREADED N.S.T. SIAMESE CONNECTION FOR FIRE DEPARTMENT W/AUTOMATIC BALL DRIP
* (E) REQUIRED (MAIN LINE SIZE) " X 4" TEE
* (F) 4" CHECK VALVE
(G) 4" – 90° BEND
(H) JD-2AL 4" X 4" BILCO DOOR, OR AS MANUFACTURED BY VA. SPRINKLER COMPANY, OR APPROVED EQUAL.
(I) SUMP WHERE WATER TABLE IS A PROBLEM OR GRAVITY DRAIN WHERE WATER TABLE IS NOT A PROBLEM.
(J) BY-PASS LINE WITH LOW-FLOW METER, ISOLATION VALVE, BACKFLOW PREVENTER. METER TO BE PURCHASED FROM THE COUNTY.

*WHERE A 3" OR LARGER FIRE LINE DOES NOT REQUIRE A SIAMESE CONNECTION, ITEMS (D) THRU (G) DO NOT APPLY.

NOTE: ISOLATION VALVES ON LOW-FLOW BYPASS SHALL BE 1/4 TURN BALL VALVES WITH SINGLE LEVER HANDLE. GATE VALVES WITH HANDWHEEL ACTUATOR ARE STRICTLY PROHIBITED.

DATE MAY 2004 REV JAN 2011	3" OR LARGER DOUBLE DETECTOR CHECK ASSEMBLY AND VAULT	DETAIL FIR-4

HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES

GENERAL UTILITY NOTES:

1. ALL WATER AND SEWER CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE STANDARDS AND REQUIREMENTS OF THE HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES. THE COUNTY'S WATER AND SANITARY SEWER STANDARDS ARE INCORPORATED BY REFERENCE.
2. THE CONTRACTOR SHALL CONTACT THE HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES INSPECTION DIVISION TO SCHEDULE A PRE-CONSTRUCTION CONFERENCE AT LEAST 48 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY ON WATER OR SEWER IMPROVEMENTS.
3. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS FOR THE WORK.
4. A PERMIT FROM THE VIRGINIA DEPARTMENT OF TRANSPORTATION IS REQUIRED FOR ALL WORK WITHIN A PUBLIC ROAD RIGHT-OF-WAY WITHIN THE LIMITS OF THE TOWN OF ASHLAND THE TOWN ISSUES THIS PERMIT FOR ALL ROADS EXCEPT I-95.
5. WATERLINES 12" AND SMALLER SHALL BE DUCTILE IRON PIPE MEETING THE REQUIREMENTS OF AWWA C151 THICKNESS CLASS 52 OR PVC PIPE MEETING THE REQUIREMENTS OF AWWA C900, CLASS 150.
6. METER BOX LIDS SHALL HAVE A 1-1/4" DIAMETER HOLE LOCATED IN ITS CENTER. THE HOLE SHALL EITHER BE CAST IN PLACE AT THE FOUNDRY OR AFTER CASTING BE RETROFITTED VIA A PLASMA ARC TORCH.
7. THE LOCATION OF EXISTING UTILITIES ACROSS OR ALONG THE ROUTE OF THE PROPOSED WORK IS NOT NECESSARILY SHOWN ON THE PLANS, AND SHOWN ONLY APPROXIMATELY (IF AT ALL). THE CONTRACTOR SHALL, ON HIS OWN INITIATIVE, LOCATE ALL EXISTING UNDERGROUND LINES, FACILITIES AND STRUCTURES AS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY UNDERGROUND LINES, FACILITIES AND STRUCTURES DAMAGED BY HIS ACTIVITIES.
8. CONTRACTOR SHALL CALL "MISS-UTILITY" AT (800)552-7001 PRIOR TO THE START OF CONSTRUCTION.
9. NO STRUCTURES OR TREES SHALL BE PERMITTED IN UTILITY EASEMENTS.
10. FINAL ACCEPTANCE OF WORK BY THE HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES SHALL NOT BE MADE UNTIL ALL WORK SHOWN ON THE APPROVED PLANS IS COMPLETED.
11. TWO SETS OF PRINTS AND ONE ELECTRONIC COPY OF THE AS-BUILT DRAWINGS MUST BE SUBMITTED TO THE DEPARTMENT OF PUBLIC UTILITIES PRIOR TO TENTATIVE ACCEPTANCE OF THE WORK BY THE COUNTY.
12. WATER CONNECTIONS SHALL NOT BE MADE PRIOR TO APPROVAL BY THE HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES.
13. ALL WATERLINES SHALL HAVE A MINIMUM OF 3.5 FEET OF COVER.
14. TESTING NOTES:
    PRESSURE:
    LEAKAGE SHALL NOT EXCEED THE MAXIMUM ALLOWABLE LEAKAGE SPECIFIED IN AWWA C600. MINIMUM TEST PRESSURE SHALL BE 150 PSI.
    BACTEROLOGICAL:
    TWO SAMPLES FOR BACTERIOLOGICAL SAMPLING SHALL BE COLLECTED AT LEAST 24 HOURS APART. IF CONTAMINATION IS INDICATED, THEN THE DISINFECTION PROCEDURE AND TESTING SHALL BE REPEATED UNTIL SATISFACTORY RESULTS ARE OBTAINED.
15. THE CHLORINE IN HEAVILY CHLORINATED WATER FLUSHED FROM MAINS NEEDS TO BE NEUTRALIZED BEFORE DISCHARGE. CONTRACTORS MUST PROVIDE EQUIPMENT FOR NEUTRALIZING HEAVILY CHLORINATED WATER FLUSHED FROM MAINS DURING CONSTRUCTION PRIOR TO DISCHARGING THE WATER.
16A. RESTRAINED JOINT PIPE AND FITTINGS SHALL BE UTILIZED AT ALL WATER LINE STUB-OUTS AND DEAD ENDS FOR A MINIMUM OF 90 FT OR BACK TO THE FAR SIDE OF THE NEAREST VALVE, TEE, OR CROSS, WHICHEVER IS SHORTER, UNLESS ANOTHER DISTANCE IS SPECIFICALLY CALLED OUT ON THE PLANS.
16B. IT SHOULD BE ASSUMED THAT EVERY FITTING WILL BE REQUIRED TO HAVE RESTRAINED JOINTS UNLESS OTHERWISE NOTED ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE BOLDING MAY BE USED IN LIEU OF RESTRICTED JOINTS OR MAY BE REQUIRED IN ADDITION TO THE RESTRAINT SYSTEM AS DECIDED BY THE DPU INSPECTOR.
17. MONITORING MANHOLES SHALL BE INSTALLED ON ALL SEWER LATERALS WHERE NON-DOMESTIC OR STRONG WASTE WILL POTENTIALLY BE DISCHARGED TO THE PUBLIC SEWER SYSTEM. IF MONITORING MANHOLES ARE NOT PROVIDED WITH THE INITIAL CONSTRUCTION, THE DEPARTMENT OF PUBLIC UTILITIES MAY REQUIRE THAT THE OWNER ADD A MONITORING MANHOLE, AT THE OWNERS COST, SHOULD THE USE OF THE FACILITY CHANGE, SHOULD THE CHARACTERISTICS OF THE WASTE DISCHARGED BE CHANGED, SHOULD REGULATIONS CHANGE, OR SHOULD THE DEPARTMENT DETERMINE FOR ANY REASON WHAT SO EVER, IN ITS SOLE JUDGEMENT, THAT A MONITORING MANHOLE IS NECESSARY TO PROTECT THE CENTRAL SEWER SYSTEM OR TREATMENT FACILITIES.
18. SEWER LATERALS SHALL BE NO MORE THAN 8 FEET DEEP AT THE EASEMENT OR PROPERTY LINE UNLESS OTHERWISE SPECIFICALLY SHOWN DEEPER THAN 8 FEET ON THE APPROVED PLANS.

DATE MAY 2004 REV JAN 2011	STANDARD SEWER AND WATER NOTES	DETAIL DES-2 SHT. 1 OF 2

HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES

GENERAL UTILITY NOTES:

19. WHENEVER CONNECTING A SEWER LATERAL TO AN EXISTING MANHOLE, CORE DRILLING AND A FLEXIBLE PIPE-TO-MANHOLE CONNECTOR SHALL BE USED. THE CONNECTOR SHALL BE KOR-N-SEAL ASSEMBLY OR APPROVED EQUAL. THE CONNECTOR SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.
20. WHENEVER CONNECTING A SEWER LATERAL TO AN EXISTING SEWER LINE, THE CONTRACTOR MUST USE A MECHANICAL HOLE CUTTER WHEN TAPPING THE EXISTING SEWER LINE AND AN APPROVED SADDLE OR INSERTA-TEE OR KOR-N-TEE SHALL BE USED.
21. THE CONTRACTOR SHALL SCHEDULE AND COORDINATE THE SHUT-OFF OF EXISTING WATER LINES AND ANY CORRESPONDING SERVICE INTERRUPTIONS WITH HANOVER COUNTY DPU AND ALL AFFECTED CUSTOMERS AT LEAST 48 HOURS PRIOR TO THE SCHEDULED ACTIVITY. THE CONTRACTOR IS TO NOTIFY ALL AFFECTED CUSTOMERS IN WRITING. THE CONTRACTOR SHALL MAKE PROVISIONS TO PROVIDE REASONABLE ACCOMMODATIONS TO AFFECTED CUSTOMERS AND SHALL TAKE ALL NECESSARY STEPS TO MINIMIZE THE LENGTH OF THE SERVICE INTERRUPTION. IN CASES WHERE SPECIAL OPERATIONAL ISSUES ARISE AS A RESULT OF THE PROPOSED WORK, DPU RESERVES THE RIGHT TO DELAY OR POSTPONE THE WORK SO NOT TO JEOPARDIZE THE INTEGRITY OF ITS UTILITY SYSTEM OR SERVICE TO CUSTOMERS.
22. ALL SANITARY SEWERS CONSTRUCTED IN FILL SHALL BE OF DUCTILE IRON SEWER PIPE (CLASS 52 MINIMUM) WITH MANHOLES FOUNDED ON ORIGINAL GROUND UNLESS A LICENSED GEOTECHNICAL ENGINEER FURNISHES A WRITTEN CERTIFICATION THAT THE FILL HAS BEEN SUFFICIENTLY COMPACTED SO THAT SETTLEMENT OF THE SANITARY SEWER MAIN AND/OR MANHOLE WILL NOT OCCUR.
23. ALL WATER MAINS CONSTRUCTED IN FILL SHALL BE DUCTILE IRON PIPE WITH RESTRAINED JOINTS UNLESS A LICENSED GEOTECHNICAL ENGINEER FURNISHES A WRITTEN CERTIFICATION THAT THE FILL HAS BEEN SUFFICIENTLY COMPACTED SO THAT SETTLEMENT OF THE WATER MAIN WILL NOT OCCUR.
24. ALL SEWER SERVICE CONNECTIONS SHALL BE TERMINATED AT THE PROPERTY LINE W/ AN APPROVED WATER TIGHT PLUG AND MARKED WITH A 2"X 4" BOARD, PAINTED GREEN, INSTALLED PLUMB FROM BOTTOM OF 6" PLUG TO 2 FEET ABOVE GROUND. CLEANOUT ASSEMBLY IS TO BE INSTALLED BY THE BUILDING PLUMBER PER SEW-11.
25. VALVE BOXES NOT LOCATED IN PAVEMENT OR CONCRETE SHALL HAVE A 2 FOOT SQUARE BY 4" THICK CONCRETE PAD POURED AROUND THEM PER DETAIL WAT-5 AND SECTION 2.4.3.1.C.2.
26. WATER METERS OR OTHER WATER UTILITY APPURTENANCES SHALL NOT BE LOCATED IN DRIVEWAYS, SIDEWALKS, OR OTHER PAVED AREAS IN SUBDIVISION OR TOWN-HOUSE DEVELOPMENTS WITHOUT THE PRIOR APPROVAL OF THE DEPARTMENT OF PUBLIC UTILITIES.

DATE MAY 2004 REV JAN 2011	STANDARD SEWER AND WATER NOTES	DETAIL DES-2 SHT. 2 OF 2

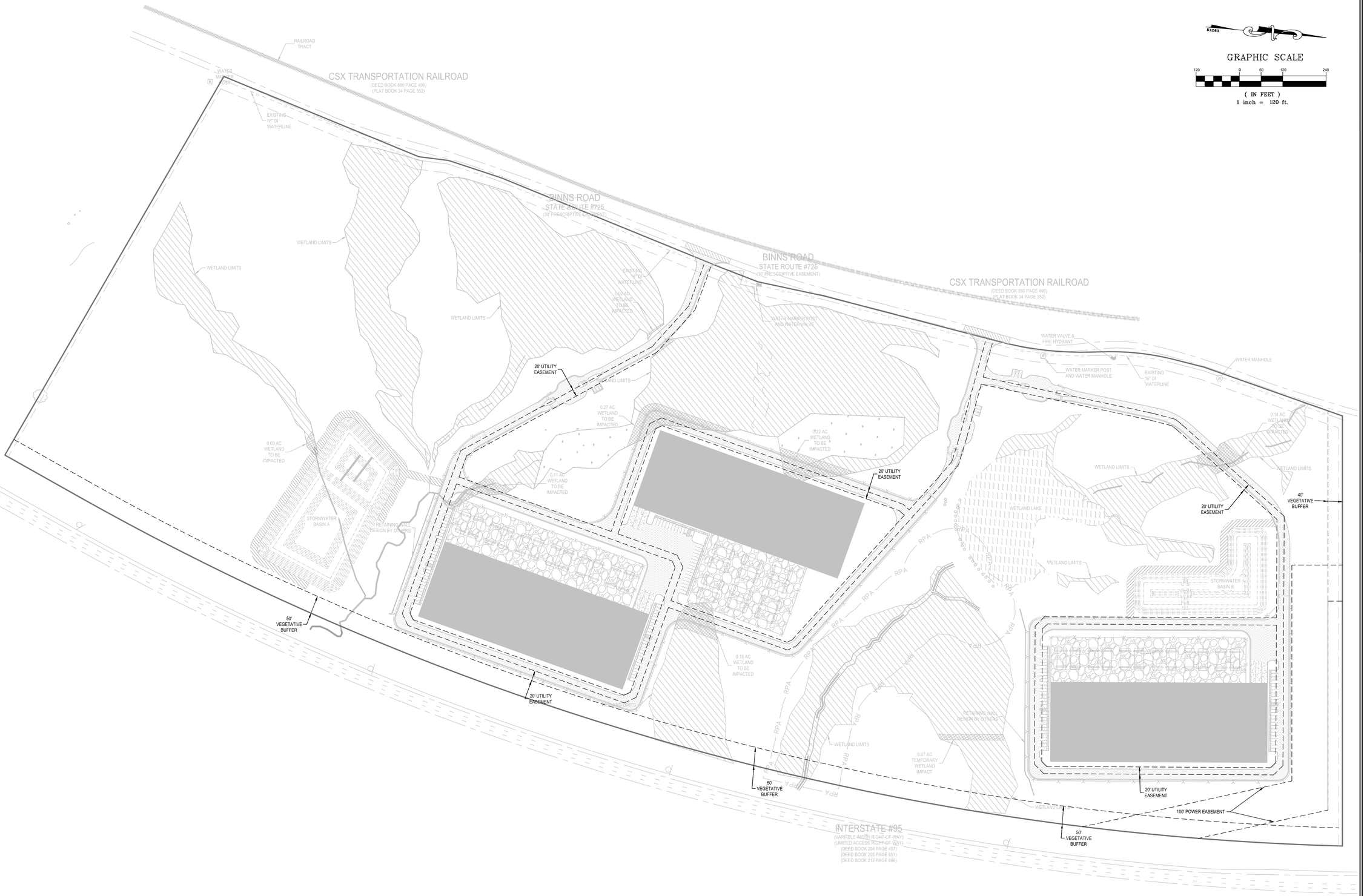
HANOVER COUNTY DEPARTMENT OF PUBLIC UTILITIES

SEQUENCE OF CONSTRUCTION, TESTING, AND FLUSHING OF NEW WATERLINE

1. LAY NEW WATERLINES AND APPURTENANCES – CONSTRUCTION SHOULD BEGIN IN THE PROXIMITY OF EXISTING WATERLINES TO FACILITATE FUTURE INSTALLATION OF THE DOUBLE CHECK WITH GATE VALVE AND TESTING CORPORATION STOP ASSEMBLY (I.E. JUMPER) AND TIE-IN. CONNECTION TO ANY EXISTING WATERLINE IS NOT ALLOWED UNTIL CONTRACTOR IS READY TO TEST NEW WATERLINES PRIOR TO PLACING THEM IN SERVICE. THE JUMPER SHALL BE INSTALLED WITH A DOUBLE CHECK WITH GATE VALVE AND "SNOW FLOW" ASSEMBLY (PER DETAIL WAT-13) WITH DPU INSPECTOR PRIOR TO COMMENCING WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL LABOR AND EQUIPMENT REQUIRED FOR FLUSHING, DECHLORINATION, EROSION PREVENTION, AND REPAIR OF ANY DAMAGE CAUSED BY ANY AND ALL WATERLINE FLUSHING PRIOR TO ISSUANCE OF TENTATIVE ACCEPTANCE BY HANOVER DPU.
2. INITIAL FLUSH – INITIAL FLUSHING OF NEW WATERLINE(S), INCLUDING ALL HYDRANTS AND DEAD-END WATERLINE(S), MAY COMMENCE AFTER JUMPER HAS BEEN INSTALLED AND CONNECTION TO THE EXISTING WATERLINE IS COMPLETE. A SAFE AND STABLE DISCHARGE THAT ALLOWS THE USE OF A PITOT GAUGE FOR FLOW MEASUREMENT MUST BE PROVIDED. DPU PERSONNEL WILL VERIFY THAT INITIAL FLUSHING IS PERFORMED AT VELOCITIES OF 2.5 FEET PER SECOND (FPS) OR GREATER. INITIAL FLUSH SHALL BE MAINTAINED AT ALL HYDRANTS SHALLOWED INITIALLY AND AT A MINIMUM RATE OF 2.5 FEET PER SECOND (FPS) AND FOR THE DURATION NECESSARY TO PROVIDE A MINIMUM OF 2 COMPLETE WATER TURN-OVERS WITHIN THE NEW WATERLINE(S). THE FOLLOWING TABLE IS PROVIDED AS A GUIDELINE FOR ACHIEVING THE REQUIRED 2.5 FPS VELOCITY AND WATER TURN-OVER RATES. INITIAL FLUSH REQUIREMENTS FOR PIPE DIAMETERS LARGER THAN 16" WILL BE DETERMINED ON A CASE-BY-CASE BASIS AS APPROVED BY DPU PERSONNEL.

MAIN SIZE	4"	6"	8"	12"	16"
FLOW (GPM)	98	220	400	900	1,500
GALLONS/FOOT	0.65	1.47	2.61	5.87	10.44

3. PRESSURE TEST – CONDUCT PRESSURE TEST CONSISTENT WITH HANOVER COUNTY DPU STANDARDS AND AS DIRECTED BY DPU INSPECTOR.
4. DISINFEC



NAD83

GRAPHIC SCALE

120 0 60 120 240

(IN FEET)

1 inch = 120 ft.

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COMMONWEALTH OF VIRGINIA
ZACKARY A. WILKINS
Lic. No. 050952
06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS SITE PLAN

DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

EASEMENT LAYOUTS

REVISIONS

DATE	ITEM

DATE
06 / 30 / 2026

SCALE
1" = 120'

DRAWN BY
ARON ZHOU, E.I.T

DESIGNED BY
ARON ZHOU, E.I.T

CHECKED BY
ZACKARY A. WILKINS, P.E.

PROJ.#
20240084

SHEET #
C-62

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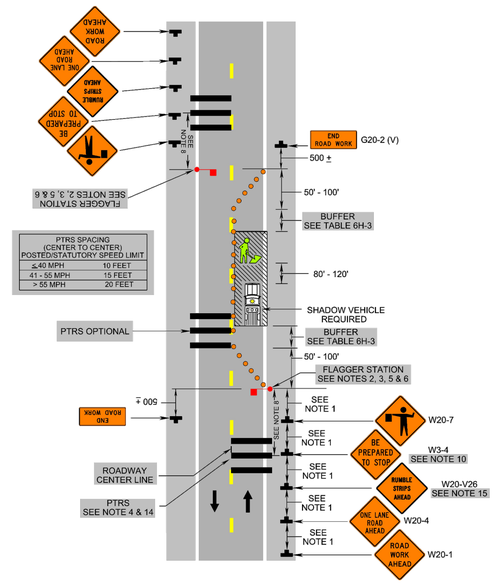
Lane Closure on a Two-Lane Roadway Using Flaggers
(Figure TTC-23.2)



1: Revision 1 – 4/1/2015
2: Revision 2 – 9/1/2019
3: Revision 2.1 – 11/1/2020

Typical Traffic Control
Lane Closure on a Two-Lane Roadway Using Flaggers
(Figure TTC-23.2)
NOTES

Guidance:

1. *Sign spacing distance should be 350'-500' where the posted speed limit is 45 mph or less, and 500'-800' where the posted speed limit is greater than 45 mph.*
2. *Care should be exercised when establishing the limits of the work zone to insure maximum possible sight distance in advance of the flagger station and transition, based on the posted speed limit and at least equal to or greater than the values in Table 6H-3. Generally speaking, motorists should have a clear line of sight from the graphic flagger symbol sign to the flagger.*
3. *To maintain efficient traffic flow in a flagging operation on a two-lane roadway, the maximum time motorists should be stopped at a flagger station is 8 minutes for high volume roadways (average daily traffic of 500 or more vehicles per day) to a maximum of 12 minutes for low volume roadways (less than 500 vehicles per day). For additional information see Section 6E.07.*[2]

Standard:

4. **Portable Temporary Rumble Strips (PTRS) shall be used as noted in Section 6F.99.**
5. **Flagging stations shall be located far enough in advance of the work space to permit approaching traffic to reduce speed and/or stop before passing the work space and allow sufficient distance for departing traffic in the left lane to return to the right lane before reaching opposing traffic (see Table 6H-3 on Page 6H-5).**
6. **All flaggers shall be state certified and have their certification card in their possession when performing flagging duties (see Section 6E.01, Qualifications for Flaggers).**
7. **Cone spacing shall be based on the posted speed and the values in Table 6H-4 on Page 6H-6.**[1]
8. **A shadow vehicle with at least one high intensity amber rotating, flashing, or**[1] **oscillating light shall be parked 80'-120' in advance of the first work crew.**

Option:

8. A SLOW (W21-V10) sign[2] may be required in this area to give advance warning of the operation ahead by slowing approaching traffic prior to reaching the flagger station or queued traffic.

Guidance:

9. *If the queue of traffic reaches the BE PREPARED TO STOP (W3-4) sign then the signs, and if used the* PTRS[1] *should be readjusted at greater distances.*
10. *When a highway-rail crossing exists within or upstream of the transition area and it is anticipated that queues resulting from the lane closure might extend through the highway-rail grade crossing, the temporary traffic control zone should be extended so that the transition area precedes the highway-rail crossing (see Figure TTC-56 for additional information on highway-rail crossings).*

Standard:

11. **At night, flagger stations shall be illuminated, except in emergencies (see Section 6E.08).**

Option:

12. Cones may be eliminated when using a pilot vehicle operation or when the total roadway width is 20 feet or less.
13. For low-volume situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger, positioned to be visible to road users approaching from both directions, may be used (see Chapter 6E).

Standard:[1]

14. **When used[3], three portable temporary rumble (PTRS) strips shall be installed across the entire travel lane adjacent to the BE PREPARED TO STOP (W3-4) sign. The portable temporary rumble strips shall be monitored and adjusted as necessary during the work shift to ensure proper placement on the roadway. When the PTRS are installed, the RUMBLE STRIPS AHEAD (W20-V26) sign shall also be utilized.**

1: Revision 1 – 4/1/2015
2: Revision 2 – 9/1/2019

MAINTENANCE OF TRAFFIC NOTES

THIS PLAN IS PROVIDED TO SERVE AS A GUIDE FOR CONSTRUCTION OF THE PROPOSED BACKTAP OF THE WATERLINE IN SADLER ROAD AND MAY BE MODIFIED AS SCHEDULE AND FIELD CONDITIONS WARRANT WITH APPROVAL FROM THE HENRICO COUNTY TRAFFIC DEPARTMENT. ALL TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE VIRGINIA WORK AREA PROTECTION MANUAL.

1. A PERMIT TO WORK IN THE RIGHT OF WAY MUST BE OBTAINED FROM THE HANOVER COUNTY DEPARTMENT OF PUBLIC WORKS.
2. PRIOR TO ANY ROAD CLOSURES, THE CONTRACTOR SHALL NOTIFY ALL AFFECTED RESIDENTS ALONG BINNS ROAD IN WRITING OF ANTICIPATED CLOSURE DATES.
3. THE MAINTENANCE OF TRAFFIC PLAN SHALL BE IN CONFORMANCE WITH THE VIRGINIA WORK AREA PROTECTION MANUAL (V.A.W.A.P.M.), LATEST EDITION
4. THE CONTRACTOR MUST CONTACT THE HANOVER COUNTY TRAFFIC ENGINEERING DEPARTMENT FOR THE REMOVAL AND\OR RELOCATION OF ANY HANOVER COUNTY OWNED SIGNS LOCATED WITHIN THE WORK AREA.
5. CONTRACTOR SHALL INSPECT BARRICADES AND DETOUR SIGNS DAILY AND REPAIR OR REPLACE DAMAGED OR MISSING SIGNS.
6. LANE CLOSURE SHALL BE FOR THE MINIMUM LENGTH OF TIME NECESSARY.
7. EXCEPT FOR EMERGENCIES, NO LANE CLOSURES OR OTHER TRAFFIC RESTRICTIONS SHALL BE ERECTED DURING PERIODS OF INCLEMENT WEATHER.
8. THE CONTRACTOR SHALL COORDINATE ALL LANE CLOSURES WITH HANOVER POLICE/FIRE AND PUPIL TRANSPORTATION/SCHOOLS
9. THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF ALL SIGNS AND POSTS IN THE WORK ZONE. THIS INCLUDES, BUT IS NOT LIMITED TO, STOP, YIELD, STREET NAME AND SPEED LIMIT SIGNS. ANY SIGN OR POST DAMAGED DURING CONSTRUCTION OR MISSING SHALL BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE.
10. THE TRAFFIC ENGINEER RESERVES THE RIGHT TO MODIFY THE TRAFFIC CONTROL AS NECESSARY IN THE INTERESTS OF PUBLIC SAFETY AND/OR CONVENIENCE.
11. UNLESS OTHERWISE APPROVED, NO EQUIPMENT OR MATERIALS ARE TO BE LEFT IN THE COUNTY RIGHT-OF-WAY AFTER WORK HOURS. SHOULD PERMISSION BE GIVEN TO ALLOW EQUIPMENT AND MATERIALS IN THE RIGHT-OF-WAY AFTER WORK HOURS, GROUP II CHANNELIZING DEVICES (PLASTIC BARRELS WITH PRISMATIC SHEETING) SHALL BE USED TO DELINEATE THE OBSTACLES. EQUIPMENT AND MATERIALS SHALL BE PLACED IN AREAS THAT WOULD HAVE NO ADVERSE IMPACT TO PROPERTY OWNERS AND SHALL NOT OBSTRUCT ANY SIGHT DISTANCES OR CREATE ANY OTHER SAFETY ISSUES.
12. ALL EMPLOYEES EXPOSED TO VEHICULAR TRAFFIC SHALL BE PROVIDED WITH AND INSTRUCTED TO WEAR WARNING VESTS MARKED WITH OR MADE OF REFLECTORIZED OR HIGH VISIBILITY MATERIALS MEETING CLASS III STANDARDS.

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COMMONWEALTH OF VIRGINIA
ZACKARY A. WILKINS
Lic. No. 050952
06/30/2026
PROFESSIONAL ENGINEER

BINNS ROAD DATA CENTERS
SITE PLAN
DOSWELL DISTRICT
HANOVER COUNTY, VIRGINIA

MAINTENCE OF TRAFFIC

REVISIONS
DATE ITEM

DATE
06 / 30 / 2026
SCALE
NO SCALE
DRAWN BY
ARON ZHOU, E.I.T
DESIGNED BY
ARON ZHOU, E.I.T
CHECKED BY
ZACKARY A. WILKINS, P.E.
PROJ.#
20240084
SHEET #
C-63

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