Victor Carstarphen
Mayor

Department of Planning & Development
City of Camden
New Jersey

Director of Planning & Development
Dr. Edward C. Williams, PP, AICP, CSI, AHP
Division of Planning & Zoning
TEL: (856) 757-7214

September 26, 2023

Mr. Jeff Lucas
20 New Freedom Road
Medford, NJ 0805

Re: Conceptual Development Presentation: Midrise Storage Facility: Admiral Wilson Blvd: 9/20/23 BGDT Meeting

Dear Mr. Lucas:

I want to take this opportunity to thank you and your team for attending the meeting with the Mayor's Business Growth and Development Team ("BGDT") on September 20, 2023 relative to your team's conceptual presentation of a proposed midrise storage facility on a site located on Admiral Wilson Blvd. Please review and consider the following comments.

1. It is the opinion of the BGDT that the proposed storage facility does not represent the "highest and best use" for the proposed site.
2. There is no support for the approval of an amendment to the Admiral Wilson Redevelopment Plan for this proposed project.
3. There is no support for the consideration of a PILOT as part of the financing for this development proposal.

Please be advised that this decision does not preclude your team from pursuing land use and development approvals from the city's review boards for this project.

If you have any questions, please do not hesitate contact me at 856-757-7214.

Sincerely,

Dr. Edward C. Williams, PP, AICP, CSI, AHP, CZO, CPZBS
Director and Zoning Officer
Chair, Mayor's Business Growth and Development Team

cc. BGDT Members
Yessica Sanchez
file

PRELIMINARY AND FINAL SITE PLAN

FOR

ASSET REALTY & CONSTRUCTION GROUP INC.
PROPOSED FIVE-STORY MIXED USE BUILDING

BLOCK 1220, LOT 57; TAX MAP SHEET #19.10 - LATEST REV. DATED 01-16-2019
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN
CAMDEN COUNTY, NEW JERSEY

200' PROPERTY OWNERS LIST

PROPERTY OWNER	BLOCK	LOT
CAMDEN CITY PO BOX 95120 CAMDEN, NJ 08101	1214	4
1901 ADMIRAL WILSON BLVD, LLC 1901 ADMIRAL WILSON BLVD CAMDEN, NJ 08109	1219	2
CAMDEN CITY PO BOX 95120 CAMDEN, NJ 08101	1219	3,25
ALFRED R. PIERCE, TRUSTEE O/J\.R.P JR ONE TRINITY LN,2ND FLR-B MOUNT HOLLY, NJ 08060	1220	57
KIM, KYONG H 2007 ADMIRAL WILSON BLVD CAMDEN, NJ 08109	1221	12
NJ DEPT OF TRANSPORTATION PO BOX 600 TRENTON, NJ 08625	1221	17
WATSON ST MGMT & DEVELOPMENT CORP 2021 WATSON ST, 2ND FL CAMDEN, NJ 08105	1223.01	1
WATSON ST MGMT & DEVELOPMENT CORP 2021 WATSON ST, 2ND FL CAMDEN, NJ 08105	1224.01	1
WATSON ST MGMT & DEVELOPMENT CORP 2021 WATSON ST, 2ND FL CAMDEN, NJ 08105	1224.09	9
ORTIZ-ROMAN, WILSON 351 RARITAN STREET CAMDEN, NJ 08105	1230	59
MAGNOLIA RANDOLPH, LLC PO BOX 670 HILLSIDE, NJ 07205	1230	110

ALSO TO BE NOTIFIED:

CAMDEN COUNTY M.U.A.
1645 FERRY AVENUE
CAMDEN, NJ 08104

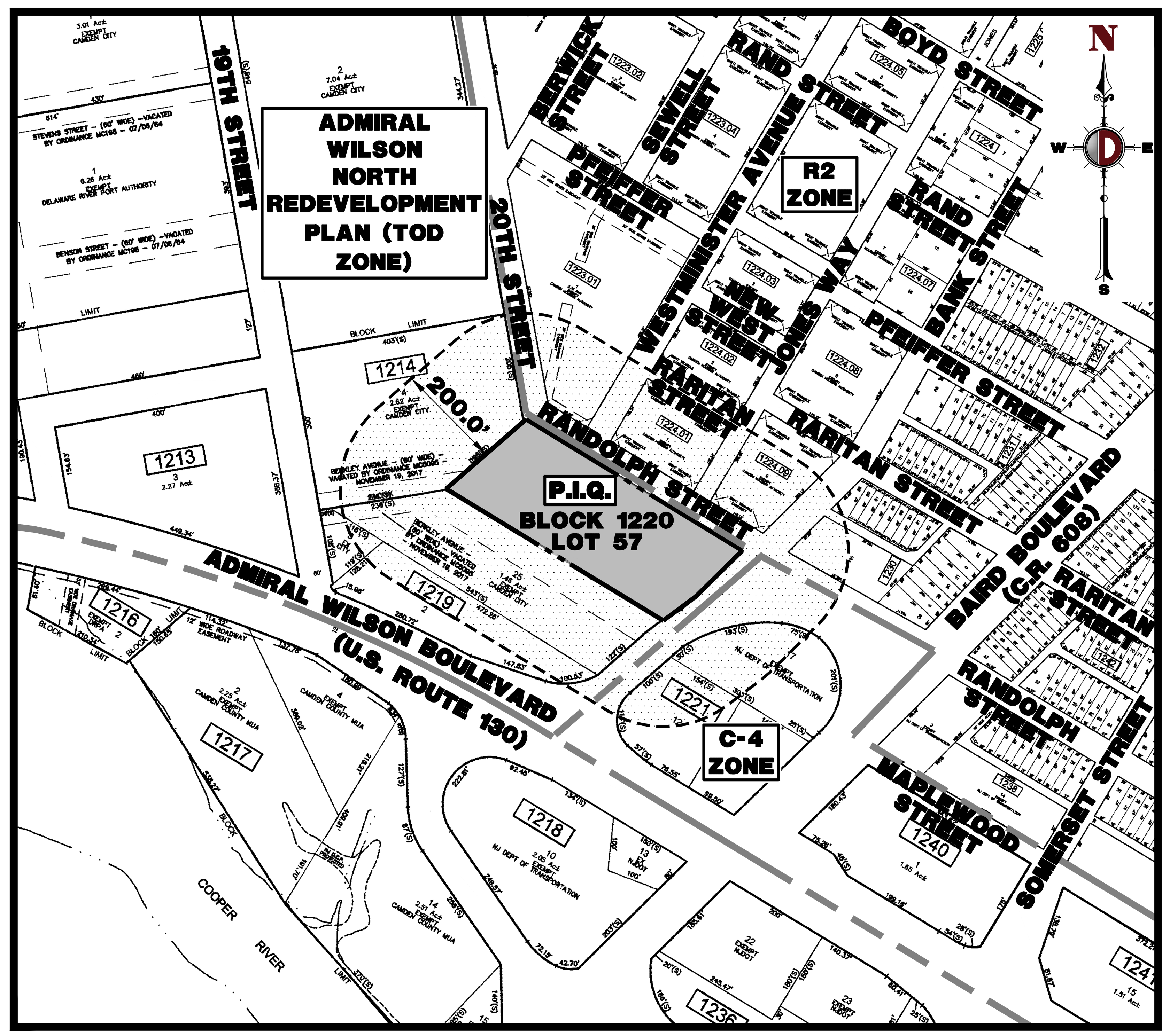
AMERICAN WATER
PO BOX 52747
PHOENIX, AZ 85072

PUBLIC SERVICE ELECTRIC & GAS
PO BOX 790
CRANFORD, NJ 07016-0790

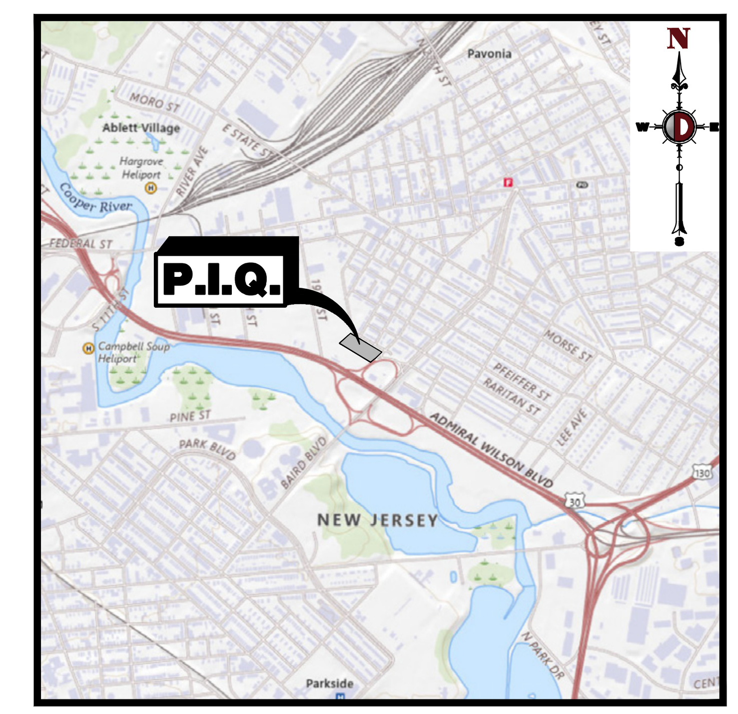
VERIZON
540 BROAD STREET
NEWARK, NJ 07101

NEW JERSEY AMERICAN WATER
PO BOX578
ALTON, IL 62002
(SERVICING EAST CAMDEN & CRAMER HILL)

COMCAST CABLEVISION
1250 HADDONFIELD-BERLIN ROAD
CHERRY HILL, NJ 08034-0404



AREA MAP
1" = 200'



KEY MAP
1" = 2000'

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PLANNING BOARD APPROVAL

APPROVED BY THE PLANNING BOARD OF CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

CHAIRMAN DATE

SECRETARY DATE

BOARD ENGINEER DATE

PREPARED BY
DYNAMIC ENGINEERING CONSULTANTS, P.C.
1904 MAIN STREET
LAKE COMO, NJ 07719
WWW.DYNAMICEC.COM

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TITLE: COVER SHEET

PROJECT: ASSET REALTY & CONSTRUCTION GROUP INC.
PROPOSED FIVE-STORY MIXED USE BUILDING
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

JOB No: 2334-23-03513
DATE: 04/30/2025
DRAWN BY: UV
SCALE: (H) AS (V) SHOWN
DESIGNED BY: AG/SM
CHECKED BY: DT
CHECKED BY: -
SHEET No: 1 OF 17
Rev. # 0

DANIEL A. TARABOKIJA
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 56963

JOSHUA M. SEWALD
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 52908

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Plotted: 05/07/25 - 1:06 PM, By: kheege, - Product Ver: 25.0
File: \\decpc.local\decfolders\Data\DECPC PROJECTS\2334 Arco Murray\23-03513 Camden\Dwg\Site Plans\D2334230351 3SK0.dwg, ---> 01 COVER SHEET

GRAPHIC SCALE

-100 0 50 100 200 400

(IN FEET)
1 INCH =100 FT.

THE AERIAL IMAGE DEPICTED ON THIS PLAN IS BASED ON IMAGERY PREPARED BY DIGITAL GLOBE, GEO EYE AND USDA FARM SERVICE AGENCY. THIS IMAGERY WAS PROVIDED BY GOOGLE MAPS ON 12/17/2024. THE CONDITIONS OF THE SITE AND SURROUNDING AREAS MAY HAVE CHANGED SINCE THE DATE OF AERIAL PHOTOGRAPHY AND THEREFORE THIS PLAN MAY NOT ACCURATELY REFLECT ALL CURRENT EXISTING CONDITIONS.

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TITLE:
AERIAL MAP

PROJECT: **ASSET REALTY & CONSTRUCTION GROUP INC.**
PROPOSED FIVE-STORY MIXED USE BUILDING
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

JOB No: 2334-23-03513
DATE: 04/30/2025
DRAWN BY: UV
SCALE: (H) 1"=100' (V) .
DESIGNED BY: AG/SM
CHECKED BY: DT
CHECKED BY: –
SHEET No: 2 OF 17
Rev. # 0

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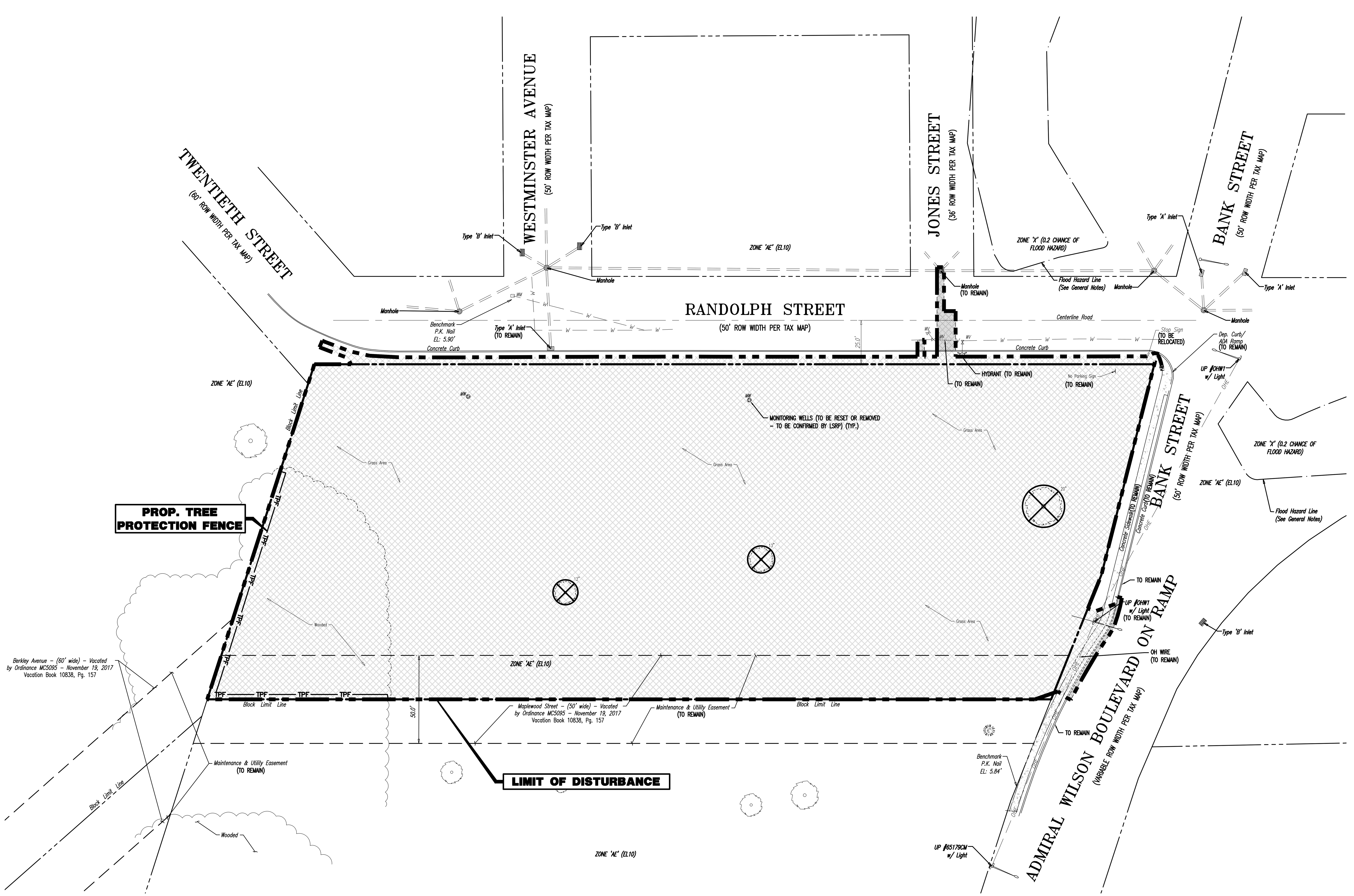
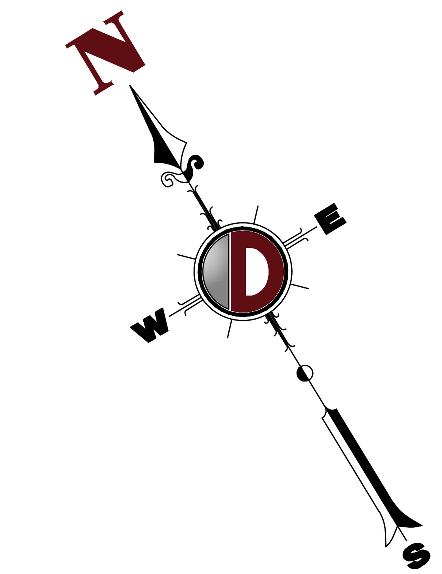
Plotted: 05/07/25 – 1:06 PM, By: kheege, – Product Ver: 25.0
File: \\decpc.local\decfolders\Data\DECPC PROJECTS\2334 Arco Murray\23-03513 Camden\Dwg\Site Plans\D2334230351 3SA0.dwg, ---> 02 AERIAL MAP





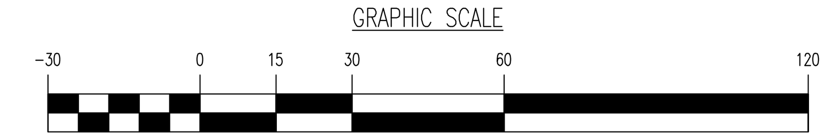
DEMOLITION NOTES

1. ALL DEMOLITION ACTIVITIES ARE TO BE PERFORMED IN STRICT ADHERENCE TO ALL FEDERAL, STATE AND LOCAL REGULATIONS.
2. PROCEED WITH DEMOLITION IN A SYSTEMATIC MANNER, FROM THE TOP OF THE STRUCTURE(S) TO THE GROUND.
3. COMPLETE DEMOLITION WORK ABOVE EACH FLOOR OR TIER BEFORE DISTURBING ANY OF THE SUPPORTING MEMBERS OF THE LOWER LEVELS.
4. DEMOLISH CONCRETE AND MASONRY IN SMALL SECTIONS.
5. REMOVE STRUCTURAL FRAMING MEMBERS AND LOWER THEM TO THE GROUND.
6. BREAK UP CONCRETE SLABS–ON–GRADE, UNLESS OTHERWISE DIRECTED BY OWNER.
7. LOCATE DEMOLITION EQUIPMENT THROUGHOUT THE STRUCTURE AND REMOVE MATERIALS SO AS TO NOT IMPOSE EXCESSIVE LOADS ON SUPPORTING WALLS, FLOORS, OR FRAMING.
8. PROVIDE INTERIOR AND EXTERIOR SHORING, BRACING AND SUPPORTS TO PREVENT MOVEMENT, SETTLEMENT OR COLLAPSE OF STRUCTURES TO BE DEMOLISHED (AND ADJACENT FACILITIES, IF APPLICABLE).
9. DEMOLISH AND REMOVE ALL FOUNDATION WALLS, FOOTINGS AND OTHER MATERIALS WITHIN THE AREA OF THE DESIGNATED FUTURE BUILDING. ALL OTHER FOUNDATION SYSTEMS, INCLUDING BASEMENTS, SHALL BE DEMOLISHED TO A DEPTH OF NOT LESS THAN ONE FOOT BELOW PROPOSED PAVEMENT OR, BREAK BASEMENT FLOOR SLABS. SEAL ALL OPEN UTILITY LINES WITH CONCRETE. CONTRACTOR TO REVIEW STRUCTURE PRIOR TO DEMOLITION TO DETERMINE IF BASEMENT, CRAWL SPACE OR ANY SUB–STRUCTURE EXISTS. ANY SUB–STRUCTURE, INCLUDING BASEMENTS SHALL BE REMOVED IN ITS ENTIRETY OR AS DIRECTED BY OWNER.
10. ERECT AND MAINTAIN COVERED PASSAGEWAYS IN ORDER TO PROVIDE SAFE PASSAGE FOR PERSONS AROUND THE AREA OF DEMOLITION. CONDUCT ALL DEMOLITION OPERATIONS IN A MANNER THAT WILL PREVENT DAMAGE AND PERSONAL INJURY TO STRUCTURES, ADJACENT BUILDINGS AND ALL PERSONS. PLACE THE SAFETY AND PROTECTION OF THE SURROUNDING COMMUNITY AND PROPERTY AT THE HIGHEST PRIORITY.
11. REFRAIN FROM USING ANY EXPLOSIVES WITHOUT PRIOR WRITTEN CONSENT OF OWNER AND APPLICABLE GOVERNMENTAL AUTHORITIES.
12. CONDUCT DEMOLITION SERVICES IN SUCH A MANNER TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS AND OTHER ADJACENT FACILITIES. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS, OR OTHER OCCUPIED FACILITIES WITHOUT PRIOR WRITTEN PERMISSION OF OWNER AND ANY APPLICABLE GOVERNMENTAL AUTHORITIES. PROVIDE ALTERNATE ROUTES AROUND CLOSED OR OBSTRUCTED TRAFFIC WAYS, IF REQUIRED BY APPLICABLE GOVERNMENTAL REGULATIONS.
13. USE WATERING, TEMPORARY ENCLOSURES AND OTHER SUITABLE METHODS, AS NECESSARY TO LIMIT THE AMOUNT OF DUST AND DIRT RISING AND SCATTERING IN THE AIR. CLEAN ADJACENT STRUCTURES AND IMPROVEMENTS OF ALL DUST AND DEBRIS CAUSED BY THE DEMOLITION OPERATIONS. RETURN ALL ADJACENT AREAS TO THE CONDITIONS EXISTING PRIOR TO THE START OF WORK.
14. ACCOMPLISH AND PERFORM THE DEMOLITION IN SUCH A MANNER AS TO PREVENT THE UNAUTHORIZED ENTRY OF PERSONS AT ANY TIME.
15. COMPLETELY FILL BELOW GRADE AREAS AND VOIDS RESULTING FROM THE DEMOLITION OF STRUCTURES AND FOUNDATIONS WITH SOIL MATERIALS IN ACCORDANCE WITH THE GEOTECHNICAL REPORT, CONSISTING OF STONE, GRAVEL AND SAND, FREE FROM DEBRIS, TRASH, FROZEN MATERIALS, ROOTS AND OTHER ORGANIC MATTER. STONES USED WILL NOT BE LARGER THAN 6 INCHES IN DIMENSION. MATERIAL FROM DEMOLITION MAY NOT BE USED AS FILL. PRIOR TO PLACEMENT OF FILL MATERIALS, UNDERTAKE ALL NECESSARY ACTION IN ORDER TO ENSURE THAT AREAS TO BE FILLED ARE FREE OF STANDING WATER, FROST, FROZEN MATERIAL, TRASH, DEBRIS. PLACE FILL MATERIALS IN HORIZONTAL LAYERS NOT EXCEEDING 6 INCHES IN LOOSE DEPTH AND COMPACT EACH LAYER AT PLACEMENT TO 95% OPTIMUM DENSITY. GRADE THE SURFACE TO MEET ADJACENT CONTOURS AND TO PROVIDE SURFACE DRAINAGE.
16. REMOVE FROM THE DESIGNATED SITE, AT THE EARLIEST POSSIBLE TIME, ALL DEBRIS, RUBBISH, SALVAGEABLE ITEMS, HAZARDOUS AND COMBUSTIBLE SERVICES. REMOVED MATERIALS MAY NOT BE STORED, SOLD OR BURNED ON THE SITE. REMOVAL OF HAZARDOUS AND COMBUSTIBLE MATERIALS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE PROCEDURES AS AUTHORIZED BY THE FIRE DEPARTMENT OR OTHER APPROPRIATE REGULATORY AGENCIES AND AUTHORITIES.
17. DISCONNECT, SHUT OFF AND SEAL IN CONCRETE ALL UTILITIES SERVING THE STRUCTURE(S) TO BE DEMOLISHED BEFORE THE COMMENCEMENT OF THE DESIGNATED DEMOLITION. MARK FOR POSITION ALL UTILITY DRAINAGE AND SANITARY LINES AND PROTECT ALL ACTIVE LINES. CLEARLY IDENTIFY BEFORE THE COMMENCEMENT OF DEMOLITION SERVICES THE REQUIRED INTERRUPTION OF ACTIVE SYSTEMS THAT MAY AFFECT OTHER PARTIES, AND NOTIFY ALL APPLICABLE UTILITY COMPANIES TO ENSURE THE CONTINUATION OF SERVICE.
18. THIS DEMOLITION PLAN IS INTENDED TO IDENTIFY THOSE EXISTING CONDITIONS WHICH ARE TO BE REMOVED. IT IS NOT INTENDED TO PROVIDE DIRECTION OTHER THAN THAT ALL PROCEDURES ARE TO BE IN ACCORDANCE WITH STATE, FEDERAL, LOCAL, AND JURISDICTIONAL REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS NECESSARY.
19. VERIFY THAT ALL ENVIRONMENTAL CONCERNS INCLUDING BUT NOT LIMITED TO ASBESTOS, LEAD BASED PAINT, HAZMAT MATERIALS, UNDERGROUND STORAGE TANKS, AND TRANSFORMERS HAVE BEEN REMOVED PRIOR TO COMMENCEMENT OF DEMOLITION ACTIVITIES. THESE ARE NOT SHOWN ON THE PLANS. REFER TO ENVIRONMENTAL REPORTS AND DOCUMENTS FOR LOCATIONS AND DISPOSAL PROCEDURES.

NOTES

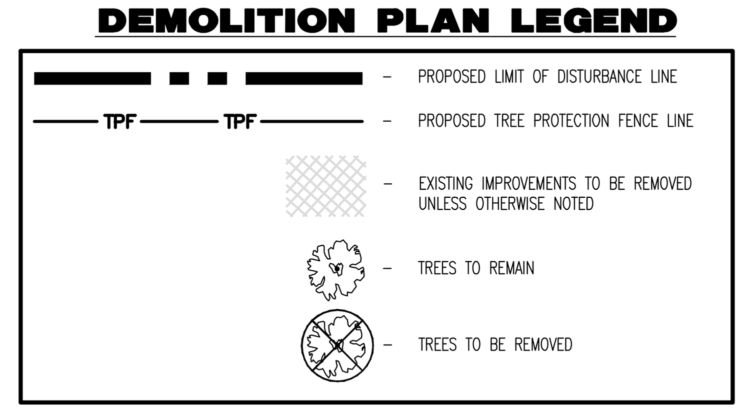
1. IN ACCORDANCE WITH STATE LAW, THE CONTRACTOR SHALL BE REQUIRED TO CALL THE BOARD OF PUBLIC UTILITIES ONE CALL DAMAGE PROTECTION SYSTEM OR UTILITY MARK OUT IN ADVANCE OF ANY EXCAVATION.
2. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING SITE IMPROVEMENTS AND UTILITIES. ALL DISCREPANCIES SHALL BE IDENTIFIED TO THE ENGINEER IN WRITING.
3. ALL EXISTING UTILITIES TO BE ABANDONED SHALL BE DISCONNECTED AND CAPPED AT THE MAIN FOR WATER, AT THE CLEAN–OUT FOR SEWER AND THE SHUT–OFF VALVE OR MAIN FOR GAS IN ACCORDANCE WITH MUNICIPAL AND LOCAL UTILITY REQUIREMENTS.
4. ALL EXISTING DEBRIS SHALL BE REMOVED BY CONTRACTOR IN ACCORDANCE WITH MUNICIPAL AND LOCAL UTILITY COMPANY REQUIREMENTS.

GRAPHIC SCALE



(IN FEET)
1 INCH = 30 FT.

DEMOLITION PLAN LEGEND



NOTE: ALL UTILITIES WITHIN RIGHT-OF-WAY TO REMAIN UNLESS NOTED OTHERWISE.

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TITLE: DEMOLITION PLAN

PROJECT: ASSET REALTY & CONSTRUCTION GROUP INC.
PROPOSED FIVE–STORY MIXED USE BUILDING
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

JOB No: 2334–23–03513
DATE: 04/30/2025
DRAWN BY: UV
SCALE: (H) 1"=30' (V) .
DESIGNED BY: AG/SM
CHECKED BY: DT
CHECKED BY: –

DANIEL A. TARABOKIJA
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 56963

JOSHUA M. SEWALD
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SHEET No: 3 OF 17

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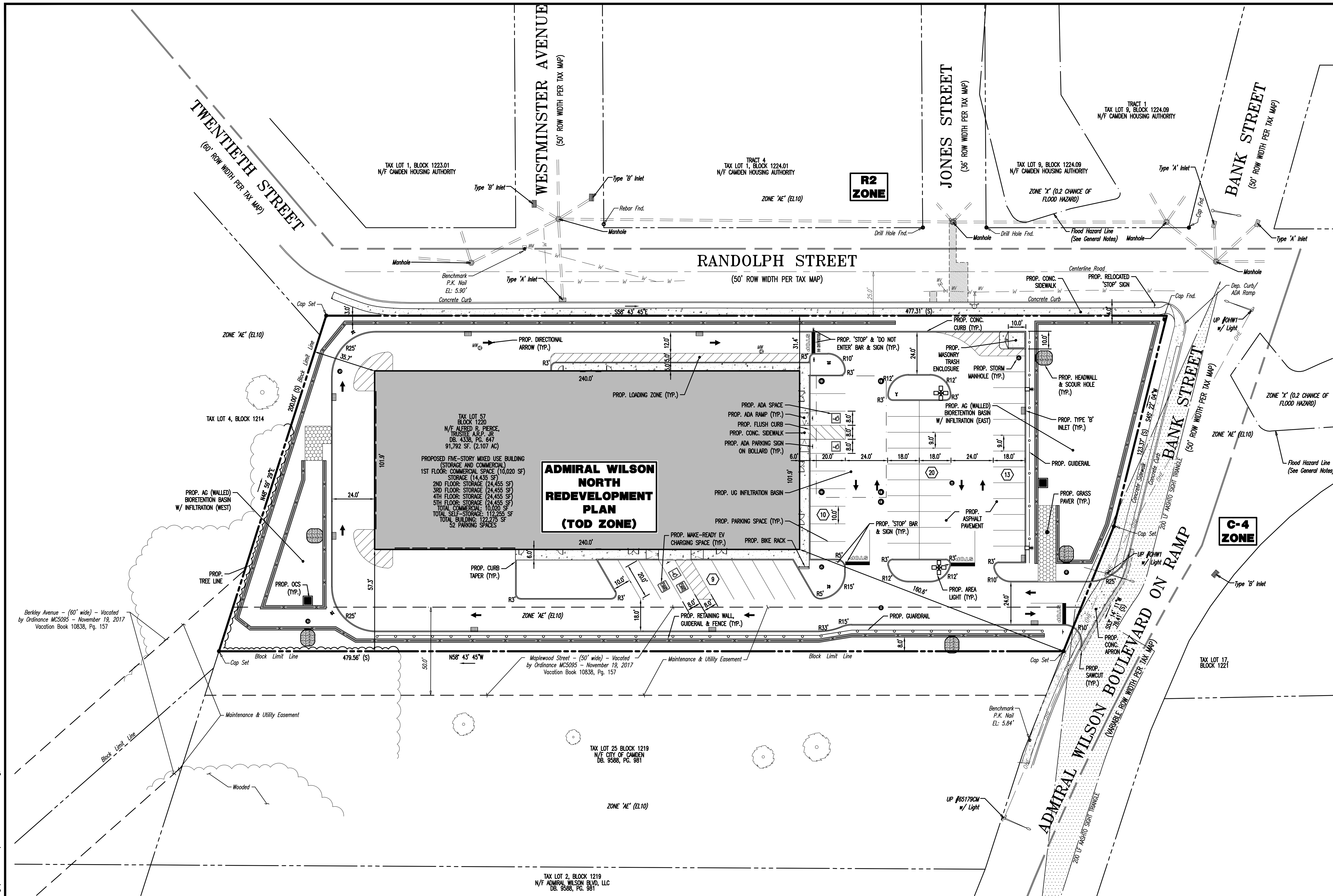
File: \\decpc.local\decfolders\Data\DECPC PROJECTS\2334 Arco Murray\23-03513 Camden\Dwg\Site Plans\02334230351 3SR0.dwg, ---> 03 DEMOLITION PLAN



GENERAL NOTES

1. THIS PLAN HAS BEEN PREPARED BASED ON REFERENCES INCLUDING:

   ALTA/NSPS LAND TITLE SURVEY
   DYNAMIC SURVEY, LLC
   1904 MAIN STREET
   LAKE COMO, NJ 07719
   SURVEYOR FILE NO: 2334-23-03452
   DATED: 12/08/23

2. APPLICANT: ASSEST REALTY & CONSTRUCTION GROUP, INC.
   1509 TROY AVENUE
   BROOKLYN, NY 11234

3. OWNER: ALFRED R. PIERCE, TRUSTEE, C/O A.R.P JR.
   1901 ADMIRAL WILSON BOULEVARD
   CAMDEN, NJ 08109

4. PARCEL DATA: 1901 ADMIRAL WILSON BOULEVARD
   BLOCK 1220, LOT 57
   CITY OF CAMDEN
   CAMDEN COUNTY, NEW JERSEY

5. ZONE: ADMIRAL WILSON NORTH REDEVELOPMENT AREA (TRANSIT ORIENTED DEVELOPMENT – TOD ZONE)

6. EXISTING USE: UNDEVELOPED

7. PROPOSED USE: RETAIL **(PERMITTED USE)** (§ ADMIRAL WILSON NORTH REDEVELOPMENT PLAN)
   SELF-STORAGE **(PERMITTED USE)** (§ ADMIRAL WILSON NORTH REDEVELOPMENT PLAN)

8. SCHEDULE OF ZONING REQUIREMENTS (§ ADMIRAL WILSON NORTH REDEVELOPMENT PLAN)

ZONE REQUIREMENT	ADMIRAL WILSON NORTH REDEVELOPMENT AREA (TOD ZONE)	EXISTING	PROPOSED
MINIMUM LOT AREA	0.46 Ac (20,000 SF)	91,792 SF (2.107 Ac)	91,792 SF (2.107 Ac)
MINIMUM LOT WIDTH	N/A	199.78 FT	199.78 FT
MINIMUM LOT DEPTH	N/A	190.0 FT	190.0 FT
MINIMUM FRONT YARD SETBACK	N/A	N/A	39.3 FT
MINIMUM REAR YARD SETBACK	N/A	N/A	39.3 FT
MINIMUM AGGREGATE SIDE YARD SETBACK	N/A	N/A	38.1 FT
MAXIMUM BUILDING HEIGHT	10 STORIES (145 FT)	N/A	5 STORIES
MAXIMUM BUILDING COVERAGE	80%	0.0% (0 SF)	26.6% (24,455 SF)
MAXIMUM IMPERVIOUS COVERAGE	90%	0.0% (0 SF)	74.7% (68,535 SF)
N/S: NO STANDARD N/A: NOT APPLICABLE (E): EXISTING NON-CONFORMANCE (V): VARIANCE			

9. PARKING REQUIREMENTS
   A. PARKING STALLS SHALL HAVE THE MINIMUM DIMENSIONS OF NINE (9) FEET IN WIDTH AND EIGHTEEN (18) FEET IN DEPTH. (§ 870-231.B(1)(A))
   B. A MINIMUM AISLE WIDTH OF TWENTY-FOUR (24) FEET SHALL BE REQUIRED FOR BOTH ONE-WAY AND TWO-WAY TRAFFIC. (§ 870-231.B(1)(A)) **(VARIANCE)**
   C. HANDICAPPED SPACES SHALL BE EIGHT (8) FEET IN WIDTH, WITH A MINIMUM FIVE (5) FOOT WIDE ACCESS AISLE BY TWENTY (20) FEET IN LENGTH. (§ 870-231.B(1)(C))
   D. A SPACE WHICH ABUTS A FIXED OBJECT SUCH AS A WALL OR COLUMN WHETHER A STRUCTURE OR NOT, SHALL HAVE A MINIMUM WIDTH OF TEN (10) FEET AND MINIMUM DEPTH OF TWENTY (20) FEET. (§ 870-231.B(2))
   E. SIDEWALKS SHALL BE A MINIMUM OF FIVE (5) FEET WIDE, OR SIX (6) FEET WIDE WHERE PARKED CARS MAY OVERHANG. (§ ADMIRAL WILSON NORTH REDEVELOPMENT PLAN)
   F. SIDEWALKS SHALL BE PROVIDED ALONG THE SIDE OF ANY PUBLIC STREET ADJACENT TO THE PROPOSED DEVELOPMENT. SIDEWALKS SHALL BE PERMITTED TO BE LOCATED OUTSIDE OF THE ROW, OR MEANDER INTO AND OUTSIDE OF THE ROW, AS NECESSARY TO PROVIDE SAFE AND EFFICIENT PEDESTRIAN CIRCULATION, AND TO AVOID DUPLICATION WHEN PARALLEL SIDEWALKS ARE PROVIDED WITHIN THE DEVELOPMENT. (§ ADMIRAL WILSON NORTH REDEVELOPMENT PLAN)
   G. PARKING SPACES FOR STORAGE AREAS SHALL BE PROVIDED AT 1 PARKING SPACE PER FIVE-THOUSAND (5,000) SQUARE FEET OF GROSS FLOOR AREA. (§870-230.F)
   H. PARKING SPACES FOR RETAIL SERVICES SHALL BE PROVIDED AT 5 PARKING SPACES PER ONE-THOUSAND (1,000) SQUARE FEET OF GROSS FLOOR AREA. (§870-230.F)
   I. PARKING CALCULATION:

   SELF-STORAGE:
   (112,255 SF)*(1 PARKING SPACE/5,000 SF) = 23 SPACES REQUIRED

   RETAIL SERVICES:
   (10,020 SF)*(5 PARKING SPACES/1,000 SF) = 51 SPACES REQUIRED

   TOTAL REQUIRED = 74 SPACES

   MINIMUM ELECTRIC VEHICLE CHARGING STATION (EVSE) REQUIREMENTS BY USE PER P.L. 2021, C. 171 (BILL S3223):

   NON-RESIDENTIAL (50 – 75 PROPOSED SPACES) = 2 EVSE SPACE REQUIRED

   TOTAL MINIMUM EVSE SPACES REQUIRED = 2 EVSE SPACES REQUIRED
   = 2 EVSE SPACES PROPOSED

   EVSE PARKING CREDIT* = LESSER OF EVSE SPACES OR MAX CREDIT (74 ORD. REQ. SPACES X 10% = 8 SPACES)
   = 2 SPACE

   PROPOSED PARKING SUMMARY:

   NET REQUIRED PARKING INCLUDING EVSE CREDIT*= 72 SPACES

   PROPOSED SPACES = 52 SPACES **(VARIANCE)**
   (INCLUDES 3 ADA SPACES)
   (INCLUDES 2 EVSE SPACE)

10. LOADING REQUIREMENTS
   A. EACH LOADING BERTH SHALL BE A MINIMUM OF TWELVE (12) FEET WIDE, FIFTY (50) FEET LONG AND PROVIDE FOURTEEN (14) FEET OF OVERHEAD CLEARANCE. EACH REQUIRED LOADING SPACE SHALL BE PROVIDED WITH UNOBSTRUCTED ACCESS TO AND FROM A STREET OR ALLEY, HAVING A WIDTH OF NOT LESS THAN TEN (10) FEET. NO OFF-STREET LOADING AREA SHALL BE LOCATED BETWEEN THE FRONT BUILDING LINE AND THE STREET LINE UNLESS OTHERWISE SPECIFIED IN THIS CHAPTER. NO OFF-STREET PARKING OR LOADING AREA SHALL BE LOCATED WITHIN FIVE FEET OF THE STREET RIGHT-OF-WAY LINE, AND NO LOADING AREA SHALL BE PERMITTED IN A SIDE YARD. (§ 870-231.C(2)) **(VARIANCE)**
   B. A MANUFACTURING, REPAIR, WHOLESALE OR WAREHOUSE USE SHALL PROVIDE AT LEAST ONE (1) LOADING BERTH IF IT HAS BETWEEN TEN-THOUSAND (10,000) AND TWENTY-THOUSAND (20,000) SQUARE FEET OF FLOOR AREA, AND ONE (1) ADDITIONAL SPACE FOR EACH ADDITIONAL FORTY-THOUSAND (40,000) SQUARE FEET. (§ 870-231.C(1)(B))
   C. OTHER USES AND BUILDINGS HAVING OVER TEN-THOUSAND (10,000) SQUARE FEET OF FLOOR AREA SHALL PROVIDE ONE (1) LOADING SPACE. (§ 870-231.C(1)(C))
   D. LOADING CALCULATION:

   SELF-STORAGE:
   (109,760 SF – 20,000 SF) = 1 SPACE
   (89,760 SF)*(1 LOADING SPACES/40,000 SF) = 3 SPACES
   = 4 SPACES

   RETAIL SERVICES (10,080 SF) = 1 SPACE

   = 5 SPACES REQUIRED
   = 8 SPACES PROVIDED

11. BUFFER AND LANDSCAPE REQUIREMENTS
   A. A MINIMUM FIVE (5) FOOT WIDE LANDSCAPED BUFFER IS REQUIRED AROUND THE ENTIRE PERIMETER OF THE TRACT. (§ ADMIRAL WILSON NORTH REDEVELOPMENT PLAN)
   B. A MINIMUM TEN (10) FOOT WIDE LANDSCAPED BUFFER IS REQUIRED ADJACENT TO RESIDENTIALLY ZONED LAND. IF A PUBLIC RIGHT OF WAY SEPARATES THE PROPOSED DEVELOPMENT FROM THE RESIDENTIAL ZONE, THE BUFFER MAY BE REDUCED TO FIVE (5) FEET IN WIDTH. (§ ADMIRAL WILSON NORTH REDEVELOPMENT PLAN) **(VARIANCE)**
   C. THE BUFFERS SHALL CONSIST OF LAWN AREAS AND MASSED EVERGREEN AND DECIDUOUS TREES AND SHRUBS. (§ ADMIRAL WILSON NORTH REDEVELOPMENT PLAN)
   D. DECIDUOUS TREES SHALL BE AT LEAST ONE AND ONE-HALF (1 ½) INCHES CALIPER AT PLANTING AND SHALL BE BALLED AND BURLAPPED. SIZE OF EVERGREENS SHOULD BE SIX (6) FEET TALL AND SHRUBS TWO (2) FEET TALL AT PLANTING BUT MAY BE ALLOWED TO VARY, DEPENDING ON SETTING AND TYPE OF SHRUB. (§ ADMIRAL WILSON NORTH REDEVELOPMENT PLAN)
   E. A SINGLE ROW OF STREET TREES SHALL BE PLANTED ALONG LOCAL ROADS AT A DISTANCE OF FIFTY (50) FEET ON CENTER AND ARE REQUIRED TO BE A MINIMUM OF THIRTY (30) FEET IN HEIGHT WHEN FULLY GROWN. (§ ADMIRAL WILSON NORTH REDEVELOPMENT PLAN)
   F. FOR THE ADMIRAL WILSON BOULEVARD, STREET TREES SHALL BE PLANTED IN NATURALIZED GROUPINGS, AND MAY BE LOCATED WITHIN OR OUTSIDE THE PUBLIC RIGHT-OF-WAY. THE TOTAL NUMBER OF STREET TREES SHALL AVERAGE ONE (1) FOR EVERY FIFTY (50) FEET MEASURED AT THE EDGE OF THE CARTWAY. PLANTING DESIGN SHOULD ACCENTUATE THE VIEWS INTO THE CENTER AND INTEGRATE CONTRASTING LANDSCAPE ELEMENTS. (§ ADMIRAL WILSON NORTH REDEVELOPMENT PLAN)
   G. LANDSCAPED AREA EQUIVALENT TO A MINIMUM OF 5% OF THE INTERIOR AREA OF PARKING LOTS AND ONE (1) TREE FOR EVERY TEN (10) SPACES, SHALL BE PROVIDED ON THE TRACT. TO THE EXTENT POSSIBLE, THIS MINIMUM AREA & TREE REQUIREMENT SHOULD BE PROVIDED IN PARKING ISLANDS AND/OR AROUND THE PERIMETER OF PARKING LOTS. IF THIS MINIMUM PERCENTAGE & TREE REQUIREMENT IS NOT ACCOMMODATED IN PARKING ISLANDS OR PARKING LOT PERIMETERS, THE REMAINDER MAY BE LOCATED ELSEWHERE WITHIN THE REDEVELOPMENT AREA, AND APPLIED TO SUPPLEMENT THE TRACT PERIMETER BUFFERS, TO HIGHLIGHT SPECIAL AREAS WITHIN THE TRACT, AND TO PROVIDE SUPPLEMENTARY LANDSCAPING AS APPROPRIATE. (§ ADMIRAL WILSON NORTH REDEVELOPMENT PLAN)
   H. PARKING ISLANDS SHALL ONLY BE REQUIRED AT THE FAR ENDS OF PARKING BAYS, TYPICALLY ADJACENT TO CIRCULATION AISLES. (§ ADMIRAL WILSON NORTH REDEVELOPMENT PLAN)

GENERAL NOTES CONTINUED

12. THE APPLICANT REQUESTS ANY AND ALL SUBMISSION WAIVERS THAT ARE NOT SPECIFICALLY IDENTIFIED HEREIN. TESTIMONY WILL BE SUPPLIED AT THE PUBLIC HEARING TO SUPPORT SAID SUBMISSION WAIVERS.
13. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE TO MAKE SURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS BY ALL OF THE PERMITTING AUTHORITIES.
14. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE REQUIREMENTS AND STANDARDS OF THE LOCAL GOVERNING AUTHORITY.
15. THE SOILS REPORT AND RECOMMENDATIONS SET FORTH THEREIN ARE A PART OF THE REQUIRED CONSTRUCTION DOCUMENTS AND IN CASE OF CONFLICT SHALL TAKE PRECEDENCE UNLESS SPECIFICALLY NOTED OTHERWISE ON THE PLANS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER CONSTRUCTION MANAGER OF ANY DISCREPANCY BETWEEN SOILS REPORT & PLANS.
16. SITE CLEARING SHALL INCLUDE THE LOCATION AND REMOVAL OF ALL UNDERGROUND TANKS, PIPES, VALVES, ETC.
17. THE PROPERTY SURVEY SHALL BE CONSIDERED A PART OF THESE PLANS.
18. ALL DIMENSIONS SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR WORK HAVING TO BE REDONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
19. SOLID WASTE TO BE DISPOSED OF BY CONTRACTOR IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.
20. ALL EXCAVATED UNSUITABLE MATERIAL MUST BE TRANSPORTED TO AN APPROVED DISPOSAL LOCATION.
21. CONTRACTOR IS RESPONSIBLE FOR ALL SHORING REQUIRED DURING EXCAVATION AND SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS, AS WELL AS ADDITIONAL PROVISIONS TO ASSURE STABILITY OF CONTIGUOUS STRUCTURES, AS FIELD CONDITIONS DICTATE.
22. ALL CONTRACTORS MUST CARRY STATUTORY WORKERS COMPENSATION, EMPLOYERS LIABILITY INSURANCE AND APPROPRIATE LIMITS OF COMMERCIAL GENERAL LIABILITY INSURANCE (CGL). ALL CONTRACTORS MUST HAVE THEIR CGL POLICIES ENDORSED TO NAME DYNAMIC ENGINEERING CONSULTANTS, P.C. , ITS SUBCONSULTANTS AS ADDITIONAL INSURED AND TO PROVIDE CONTRACTUAL LIABILITY COVERAGE SUFFICIENT TO INSURE THE HOLD HARMLESS AND INDEMNITY OBLIGATIONS ASSUMED BY THE CONTRACTORS. ALL CONTRACTORS MUST FURNISH DYNAMIC ENGINEERING CONSULTANTS, P.C. WITH CERTIFICATES OF INSURANCE AS EVIDENCE OF THE REQUIRED INSURANCE PRIOR TO COMMENCING WORK AND UPON RENEWAL OF EACH POLICY DURING THE ENTIRE PERIOD OF CONSTRUCTION. IN ADDITION, ALL CONTRACTORS WILL, TO THE FULLEST EXTENT PERMITTED BY LAW, INDEMNIFY AND HOLD HARMLESS DYNAMIC ENGINEERING CONSULTANTS, P.C. AND ITS SUBCONSULTANTS FROM AND AGAINST ANY DAMAGES, LIABILITIES OR COSTS, INCLUDING REASONABLE ATTORNEYS' FEES AND DEFENSE COSTS, ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE PROJECT, INCLUDING ALL CLAIMS BY EMPLOYEES OF THE CONTRACTORS.
23. NEITHER THE PROFESSIONAL ACTIVITIES OF DYNAMIC ENGINEERING CONSULTANTS, P.C., NOR THE PRESENCE OF DYNAMIC ENGINEERING CONSULTANTS, P.C. OR ITS EMPLOYEES AND SUBCONSULTANTS AT A CONSTRUCTION/PROJECT SITE, SHALL RELIEVE THE GENERAL CONTRACTOR OF ITS OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING AND COORDINATING THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES. DYNAMIC ENGINEERING CONSULTANTS, P.C. AND ITS PERSONNEL HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER ANY CONSTRUCTION CONTRACTOR OR ITS EMPLOYEES IN CONNECTION WITH THEIR WORK OR ANY HEALTH OR SAFETY PROGRAMS OR PROCEDURES. THE GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR JOBSITE SAFETY. DYNAMIC ENGINEERING CONSULTANTS, P.C. SHALL BE INDEMNIFIED BY THE GENERAL CONTRACTOR AND SHALL BE MADE ADDITIONAL INSURED UNDER THE GENERAL CONTRACTOR'S POLICIES OF GENERAL LIABILITY INSURANCE.
24. DYNAMIC ENGINEERING CONSULTANTS, P.C. SHALL REVIEW AND APPROVE OR TAKE OTHER APPROPRIATE ACTION ON THE CONTRACTOR SUBMITTALS, SUCH AS SHOP DRAWINGS, PRODUCT DATA, SAMPLES AND OTHER DATA, WHICH THE CONTRACTOR IS REQUIRED TO SUBMIT, BUT ONLY FOR THE LIMITED PURPOSE OF CHECKING FOR CONFORMANCE WITH THE DESIGN CONCEPT AND THE INFORMATION SHOWN IN THE CONSTRUCTION MEANS OR METHODS, COORDINATION OF THE WORK WITH OTHER TRADES OR CONSTRUCTION SAFETY PRECAUTIONS, ALL OF WHICH ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. DYNAMIC ENGINEERING'S REVIEW SHALL BE CONDUCTED WITH REASONABLE PROMPTNESS WHILE ALLOWING SUFFICIENT TIME TO PERMIT ADEQUATE REVIEW. REVIEW OF A SPECIFIC ITEM SHALL NOT INDICATE THAT DYNAMIC ENGINEERING CONSULTANTS, P.C. HAS REVIEWED THE ENTIRE ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. DYNAMIC ENGINEERING CONSULTANTS, P.C. SHALL NOT BE RESPONSIBLE FOR ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS NOT BROUGHT TO THE ATTENTION OF DYNAMIC ENGINEERING CONSULTANTS, P.C. IN WRITING BY THE CONTRACTOR. DYNAMIC ENGINEERING CONSULTANTS, P.C. SHALL NOT BE REQUIRED TO REVIEW PARTIAL SUBMISSIONS OR THOSE FOR WHICH SUBMISSIONS OF CORRELATED ITEMS HAVE NOT BEEN RECEIVED.
25. IN AN EFFORT TO RESOLVE ANY CONFLICTS THAT ARISE DURING THE DESIGN AND CONSTRUCTION OF THE PROJECT OR FOLLOWING THE COMPLETION OF THE PROJECT, DYNAMIC ENGINEERING CONSULTANTS, P.C. AND THE CONTRACTOR MUST AGREE THAT ALL DISPUTES BETWEEN THEM ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE PROJECT SHALL BE SUBMITTED TO NONBINDING MEDIATION UNLESS THE PARTIES MUTUALLY AGREE OTHERWISE.
26. THE CONTRACTOR MUST INCLUDE A MEDIATION PROVISION IN ALL AGREEMENTS WITH INDEPENDENT SUBCONTRACTORS AND CONSULTANTS RETAINED FOR THE PROJECT AND TO REQUIRE ALL INDEPENDENT CONTRACTORS AND CONSULTANTS ALSO TO INCLUDE A SIMILAR MEDIATION PROVISION IN ALL AGREEMENTS WITH THEIR SUBCONTRACTORS, SUBCONSULTANTS, SUPPLIERS AND FABRICATORS, THEREBY PROVIDING FOR MEDIATION AS THE PRIMARY METHOD FOR DISPUTE RESOLUTION BETWEEN THE PARTIES TO ALL THOSE AGREEMENTS.
27. IF THE CONTRACTOR DEVIATES FROM THE PLANS AND SPECIFICATIONS, INCLUDING THE NOTES CONTAINED THEREON, WITHOUT FIRST OBTAINING PRIOR WRITTEN AUTHORIZATION FOR SUCH DEVIATIONS FROM THE OWNER AND ENGINEER, IT SHALL BE RESPONSIBLE FOR THE PAYMENT OF ALL COSTS TO CORRECT ANY WORK DONE, ALL FINES OR PENALTIES ASSESSED WITH RESPECT THERETO AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING THEREFROM AND IT SHALL INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ALL SUCH COSTS TO CONNECT ANY SUCH WORK AND FROM ALL SUCH FINES AND PENALTIES, COMPENSATION AND PUNITIVE DAMAGES AND COSTS OF ANY NATURE RESULTING THEREFROM.
28. ALL TRAFFIC SIGNS AND STRIPING SHALL FOLLOW THE REQUIREMENTS SPECIFIED IN THE MANUAL ON "UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.
29. THE BUILDING SETBACK DIMENSIONS ILLUSTRATED AND LISTED ON THE SITE PLAN DRAWINGS ARE MEASURED FROM THE OUTSIDE SURFACE OF BUILDING WALLS. THESE SETBACK DIMENSIONS DO NOT ACCOUNT FOR ROOF OVERHANGS, ORNAMENTAL ELEMENTS, SIGNAGE OR OTHER EXTERIOR EXTENSIONS UNLESS SPECIFICALLY NOTED.
30. CONTRACTOR ACKNOWLEDGES HE HAS READ AND UNDERSTOOD THE DESIGN PHASE SOIL PERMEABILITY AND GROUNDWATER TEST RESULTS IN THE STORMWATER MANAGEMENT REPORT AND THAT THE CONTRACTORS RESPONSIBILITIES INCLUDE NECESSARY PROVISIONS TO ACHIEVE THE DESIGN PERMEABILITY IN THE FIELD.
31. CONTRACTOR TO BE ADVISED THAT THE ENGINEER WAS NOT PROVIDED WITH FINAL FLOOR PLAN DRAWINGS FOR THE BUILDING AT THE TIME OF SITE PLAN DESIGN. AS A RESULT, ENTRANCE DOOR LOCATIONS AS DEPICTED HEREON MAY NOT BE FINAL AND MUST BE CONFIRMED WITH THE ARCHITECTURAL PLANS PRIOR TO CONSTRUCTION. THE HANDICAP ACCESSIBLE PARKING SPACES AND THE ASSOCIATED RAMPS AND ACCESSIBLE ROUTE MUST COMPLY WITH NJAC 5:23-7 AND THE HANDICAP PARKING SPACES MUST BE LOCATED AS THE NEAREST SPACES TO THE ENTRANCE. CONTRACTOR TO NOTIFY OWNER AND ENGINEER IMMEDIATELY OF ANY DISCREPANCY PRIOR TO CONSTRUCTION.

PAVEMENT LEGEND

PROPOSED STANDARD DUTY ASPHALT PAVEMENT

PROPOSED STANDARD DUTY CONCRETE PAVEMENT

SIGNAGE TABLE

SIGN	ADMIRAL WILSON REDEVELOPMENT PLAN	
MONUMENT SIGNS	NUMBER OF SIGNS:	ONE PER EACH POINT OF ACCESS FROM A PUBLIC ROW
	MAXIMUM SIGN AREA:	200 SF
	MAXIMUM SIGN HEIGHT:	16 FT
POLE SIGNS	NUMBER OF SIGNS:	ONE PER STREET FRONTAGE
	MAXIMUM SIGN AREA:	750 SF
	MAXIMUM SIGN HIEGHT:	60 FT
WALL SIGNS	MAXIMUM SIGN AREA:	SHALL NOT EXCEED 10% OF EACH WALL AREA
		SHALL NOT EXCEED 500 SF PER WALL
N/S: NO STANDARD N/A: NOT APPLICABLE (E): EXISTING NON-CONFORMANCE (V): VARIANCE		
* PROPOSED SIGNAGE TO COMPLY WITH ADMIRAL WILSON REDEVELOPMENT PLAN REQUIREMENTS.		

GRAPHIC SCALE

-30 0 15 30 60 120

(IN FEET)
1 INCH = 30 FT.

THIS PLAN SET IS FOR PERMITTING PURPOSES ONLY AND MAY NOT BE USED FOR CONSTRUCTION

Rev.	Date	Comments	By

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TITLE: SITE PLAN

PROJECT: ASSET REALTY & CONSTRUCTION GROUP INC.
PROPOSED FIVE-STORY MIXED USE BUILDING
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

JOB No: 2334-23-03513
DATE: 04/30/2025
DRAWN BY: UV
SCALE: (H) 1"=30' (V) .
DESIGNED BY: AG/SM
CHECKED BY: DT
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SHEET No: 4 OF 17
Rev. # 0

DANIEL A. TARABOKIJA
PROFESSIONAL ENGINEER
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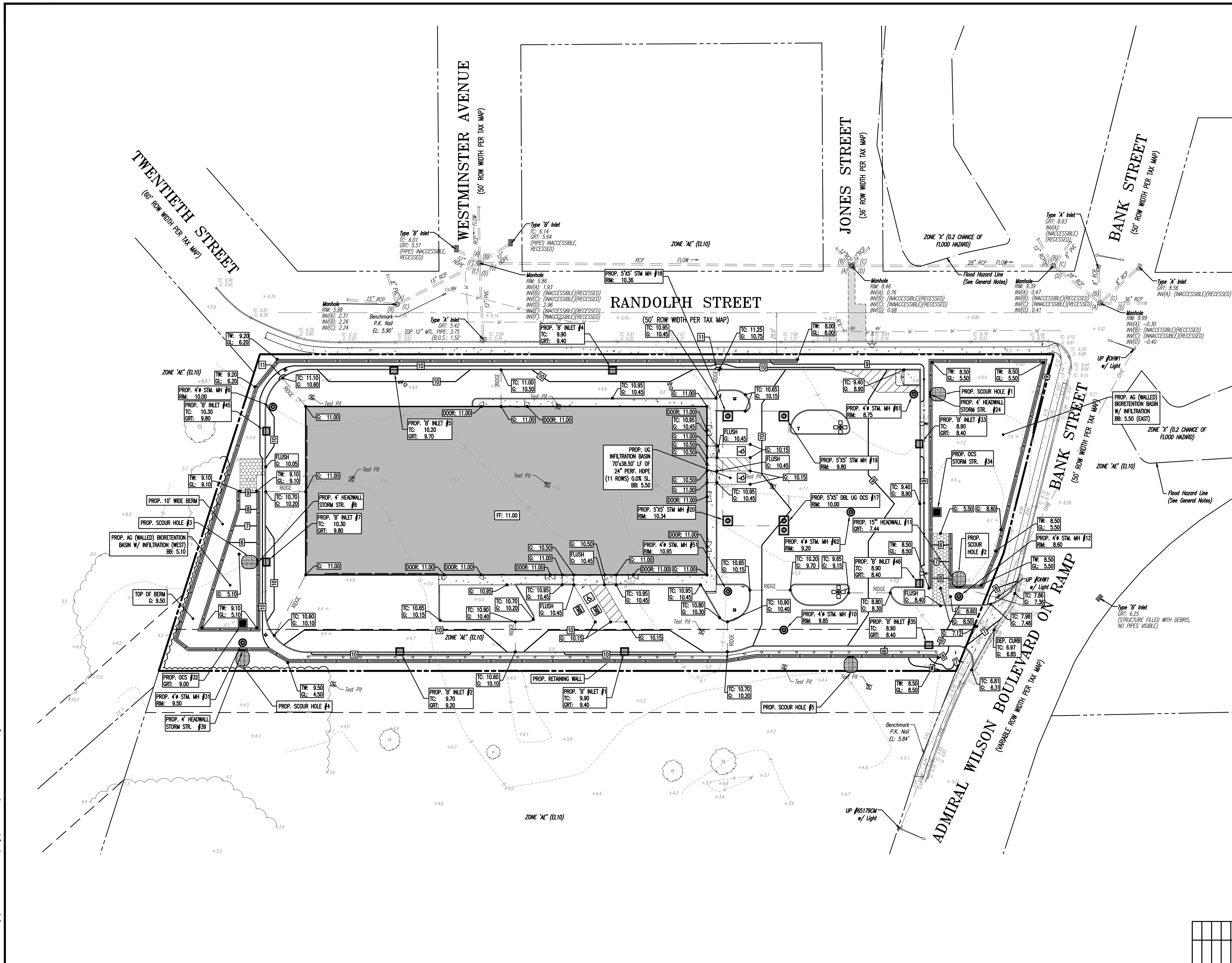

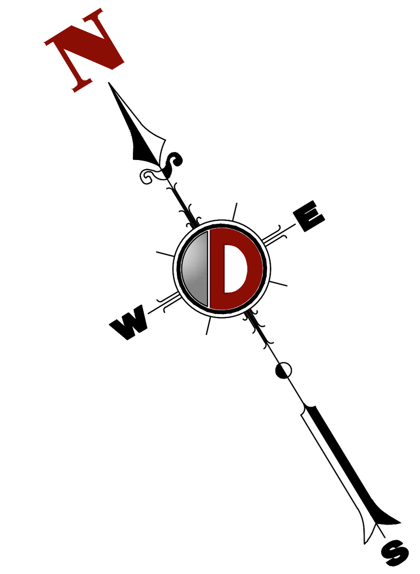

GRADING NOTES

1. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE SOILS REPORT REFERENCED IN THIS PLAN SET. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REPLACING ALL SOFT, YIELDING OR UNSUITABLE MATERIALS AND REPLACING WITH SUITABLE MATERIALS AS SPECIFIED IN THE SOILS REPORT. ALL EXCAVATED OR FILLED AREAS SHALL BE COMPACTED TO 95% OF MODIFIED PROCTOR MAXIMUM DENSITY PER A.S.T.M. TEST D-1557. MOISTURE CONTENT AT TIME OF PLACEMENT SHALL NOT EXCEED 2% ABOVE NOR 3% BELOW OPTIMUM. CONTRACTOR SHALL SUBMIT A COMPACTION REPORT PREPARED BY A QUALIFIED SOILS ENGINEER, REGISTERED WITHIN THE STATE WHERE THE WORK IS PERFORMED, VERIFYING THAT ALL FILLED AREAS AND SUBGRADE AREAS WITHIN THE BUILDING PAD AREA AND AREAS TO BE PAVED HAVE BEEN COMPACTED IN ACCORDANCE WITH THESE PLANS AND SPECS AND THE RECOMMENDATIONS SET FORTH IN THE SOILS REPORT.
2. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF EXISTING TOPOGRAPHIC INFORMATION AND UTILITY INVERT ELEVATIONS PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO ENSURE 0.75% MIN. SLOPE AGAINST ALL ISLAND GUTTERS/CURBS AND 1.0% ON ALL CONCRETE SURFACES, AND 1.5% MIN. ON ASPHALT UNLESS OTHERWISE NOTED. ANY DISCREPANCIES THAT MAY AFFECT THE PUBLIC SAFETY OR PROJECT COST, MUST BE IDENTIFIED TO THE ENGINEER IN WRITING IMMEDIATELY. PROCEEDING WITH CONSTRUCTION WITH DESIGN DISCREPANCIES IS DONE SO AT THE CONTRACTOR'S OWN RISK.
3. PROPOSED TOP OF CURB ELEVATIONS ARE GENERALLY 6" ABOVE EXISTING LOCAL ASPHALT GRADE UNLESS OTHERWISE NOTED. FIELD ADJUST TO CREATE A MIN. OF 0.75% GUTTER GRADE ALONG CURB FACE RECEIVING SURFACE RUNOFF. ENGINEER TO APPROVE FINAL CURBING CUT SHEETS PRIOR TO INSTALLATION.
4. SUBBASE MATERIAL FOR SIDEWALKS, CURB, OR ASPHALT SHALL BE FREE OF ORGANICS AND OTHER UNSUITABLE MATERIALS. SHOULD SUBBASE BE DEEMED UNSUITABLE, SUBBASE IS TO BE REMOVED AND FILLED WITH APPROVED FILL MATERIAL COMPACTED TO 95% OPTIMUM DENSITY (AS DETERMINED BY MODIFIED PROCTOR METHOD).
5. REFER TO SITE PLAN FOR ADDITIONAL NOTES.
6. IN CASE OF DISCREPANCIES BETWEEN PLANS, THE SITE PLAN WILL SUPERCEDE IN ALL CASES. CONTRACTOR MUST NOTIFY ENGINEER OF RECORD OF ANY CONFLICT IMMEDIATELY.
7. MAXIMUM CROSS SLOPE OF 1:48 (2.08%) ON ALL SIDEWALKS.
8. CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE OWNER'S GEOTECHNICAL ENGINEER PRIOR TO ONSET OF CONSTRUCTION TO SUBMIT AND CONFIRM THE CONTRACTOR'S PROPOSED MEANS AND MATERIALS AND TO SCHEDULE INSPECTIONS FOR BOTTOM OF BASIN, REMOVAL OF UNSUITABLE SOIL, FILL PLACEMENT, AND FINAL BASIN PERMEABILITY TESTING.
9. THE CONTRACTOR IS RESPONSIBLE FOR AS-BUILT PLANS AND GRADE CONTROL UNLESS DEFINED OTHERWISE ELSEWHERE IN THE CONTRACT DOCUMENTS.

ADA NOTES

1. ALL SLOPES INDICATED ARE ACTUAL. CONTRACTOR TO CONSTRUCT IMPROVEMENTS IN COMPLIANCE WITH THE LATEST ADA GUIDELINES AND BUILDING CODE REQUIREMENTS. AT THE TIME OF PLAN DESIGN, THESE REQUIREMENTS INCLUDE BUT ARE NOT LIMITED TO:

A. SIDEWALKS/ ACCESSIBLE ROUTES:
- WIDTH: 36" MIN. EXCLUSIVE OF THE WIDTH OF ANY CURB
- PASSING SPACE: MIN. 60"x 60" AT INTERVALS OF 200' MAX IF ACCESSIBLE ROUTE WIDTH IS LESS THAN 60"
- RUNNING SLOPE: 1:20 (5%) MAX.
- CROSS SLOPE: 1:48 (2.08%) MAX., 1.0% MIN.
- INTERSECTION SLOPE: 1:48 (2.08%) MAX. IN ALL DIRECTIONS
- CHANGE IN LEVELS: 1/4" MAX. HEIGHT OR 1/2" MAX. HEIGHT WITH BEVELED EDGE BEVELED EDGE SLOPE OF 1:2 (50%) MAX.
- GAPS: 1/2" MAX. WIDTH ELONGATED OPENINGS SHALL BE PLACED SO LONG DIMENSION IS PERPENDICULAR TO PATH OF TRAVEL

B. CURB RAMPS:
- SLOPE 1:12 (8.3%) MAX.
- SIDE FLARE SLOPE: 1:10 (10%) MAX OR 1:12 (8.3%) MAX IN ALTERATIONS WHERE TOP LANDING IS UNAVAILABLE (WHERE PEDS CROSS RAMP)
- BOTTOM LANDING: 48" MIN. LENGTH; WIDTH TO MATCH CURB RAMP; 1:48 MAX. (2.08%) IN ALL DIRECTIONS
- TOP LANDING: 36" MIN. LENGTH; WIDTH TO MATCH CURB RAMP; 1:48 MAX. (2.08%) CROSS SLOPE AND 1:20 (5%) RUNNING SLOPE WHEN ONLY CONNECTING ACCESSIBLE ROUTE RUNS PARALLEL TO THE RAMP RUN.
- COUNTER SLOPE: 1:20 (5%) MAX.

C. ACCESSIBILE PARKING STALLS:
- SPACE AND ACCESS AISLE SLOPE: 1:48 MAX. (2.08%) IN ALL DIRECTIONS ACROSS ACCESSIBLE PARKING STALLS AND STRIPED ACCESS AISLES

D. CROSSWALKS
- RUNNING SLOPE: 1:20 (5%) MAX.
- CROSS SLOPE: 1:48 (2.08%) MAX.
- CHANGE IN LEVELS: 1/4" MAX. HEIGHT OR 1/2" MAX. HEIGHT WITH BEVELED EDGE. BEVELED EDGE SLOPE OF 1:2 (50%) MAX.
- GAPS: 1/2" MAX. WIDTH ELONGATED OPENINGS SHALL BE PLACED SO LONG DIMENSION IS PERPENDICULAR TO PATH OF TRAVEL

E. RAMPS
- SLOPE: 1:12 (8.3%) MAX.
- MAX. RISE: 30"
- MIN. CLEAR WIDTH: 36"
- MIN. LANDING CLEAR LENGTH: 60"
- MAX. CROSS SLOPE: 1:48 (2.08%)

F. CONTRACTOR SHALL CLARIFY ANY QUESTIONS CONCERNING CONSTRUCTION AND/OR GRADING IN ADA AREAS WITH THE ENGINEER PRIOR TO THE START OF CONSTRUCTION.

GRAPHIC SCALE

-30 0 15 30 60 120

(IN FEET)
1 INCH = 30 FT.

GRADING/UTILITY GRAPHIC LEGEND

PROPERTY LINE (PARCEL IN QUESTION)
OFF-SITE PROPERTY LINES

EXIST. GUY WIRE
EXIST. LIGHT POLE
EXIST. BUILDING LIGHT
EXIST. SHOE BOX LIGHT
EXIST. COBRA LIGHT POLE
EXIST. TRAFFIC SIGNAL POLE
EXIST. MANHOLE
EXIST. "A" INLET
EXIST. "B" INLET
EXIST. "E" INLET
EXIST. YARD INLET
EXIST. FLARED END SECTION
EXIST. HEADWALL
EXIST. UTILITY POLE

EXIST. MONITORING WELL
APPROX. TEST PIT LOCATION
EXIST. FIRE HYDRANT
EXIST. WATER VALVE
EXIST. GAS VALVE
EXIST. GAS METER
EXIST. ELECTRIC METER
EXIST. ELECTRIC BOX
EXIST. CLEAN OUT
EXIST. WELL
EXIST. WATER SHUT OFF VALVE
EXIST. TELEPHONE BOX
EXIST. CABLE TV BOX
PROP. HEADWALL

PROP. WATER VALVE
PROP. GAS VALVE
PROP. STORM CLEANOUT
PROP. SANITARY CLEANOUT
PROP. AREA LIGHT
PROP. OUTLET CONTROL STRUCTURE
PROP. DRAINAGE MANHOLE
PROP. SANITARY SEWER MANHOLE
PROP. 'A' INLET
PROP. 'B' INLET
PROP. 'E' INLET
PROP. YARD INLET
PROP. FLARED END SECTION

EXIST. CABLE LINE
PROP. CABLE LINE
EXIST. ELECTRIC LINE
PROP. ELECTRIC LINE
EXIST. FIBER OPTIC LINE
PROP. FIBER OPTIC LINE
EXIST. GAS LINE
PROP. GAS LINE
EXIST. OVERHEAD WIRES
PROP. OVERHEAD WIRES
EXIST. TELEPHONE LINE
PROP. TELEPHONE LINE
EXIST. WATER LINE
PROP. WATER LINE
EXIST. FIRE SERVICE
PROP. FIRE SERVICE

EXIST. UNDERGROUND ELEC./TELE. SERVICE (NO. & SIZE OF CONDUITS NOT DEFINED)
PROP. UNDERGROUND ELEC./TELE. SERVICE (NO. & SIZE OF CONDUITS NOT DEFINED)
EXIST. SANITARY SEWER LINE
PROP. SANITARY SEWER LINE
EXIST. FORCE MAIN
PROP. FORCE MAIN
EXIST. STORM DRAIN LINE
PROP. STORM DRAIN LINE
UNDERGROUND UTILITY QUALITY LEVEL (A) (B) (C) (D)
EXIST. MINOR CONTOUR & ELEVATION
EXIST. MAJOR CONTOUR & ELEVATION
PROP. FINISH GRADE CONTOUR & ELEVATION
PROP. DIRECTION OF DRAINAGE FLOW ARROW

× 8.9 EXIST. SPOT ELEVATIONS
× G: 8.90 EXIST. GUTTER ELEV.
× TC: 8.90 EXIST. TOP OF CURB ELEV.
× FF: 8.90 EXIST. FINISH FLOOR ELEV.
× GF: 8.90 EXIST. GARAGE FLOOR ELEV.
G: 000.00 PROP. GRADE SPOT ELEV.
TC: 000.00 G: 000.00 PROP. TOP OF CURB & FINISHED GRADE ELEV.
FF: 000.00 PROP. FINISHED FLOOR ELEV.
TW: 000.00 GL: 000.00 PROP. TOP OF WALL & FINISHED GRADE @ LOW SIDE OF WALL (ACTUAL BOTTOM OF WALL FOOTING TO BE ESTABLISHED BY WALL DESIGNER)
TC: 000.00 GH: 000.00 GL: 000.00 PROP. TOP OF EXTENDED CURB, (GH) FINISHED GRADE @ HIGH SIDE OF EXTENDED CURB & (GL) FINISHED GRADE @ LOW SIDE OF EXTENDED CURB

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F: 732.974.3521
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TITLE:	GRADING PLAN
PROJECT:	ASSET REALTY & CONSTRUCTION GROUP INC. PROPOSED FIVE-STORY MIXED USE BUILDING BLOCK 1220, LOT 57 1901 ADMIRAL WILSON BOULEVARD CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY
JOB No:	2334-23-03513
DATE:	04/30/2025
DRAWN BY:	UV
DESIGNED BY:	AG/SM
CHECKED BY:	DT
CHECKED BY:	–
SCALE:	(H) 1"=30' (V) .
SHEET No:	5 OF 17
Rev. #	0

Rev.	Date	Comments	By

DANIEL A. TARABOKIJA
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 56963

JOSHUA M. SEWALD
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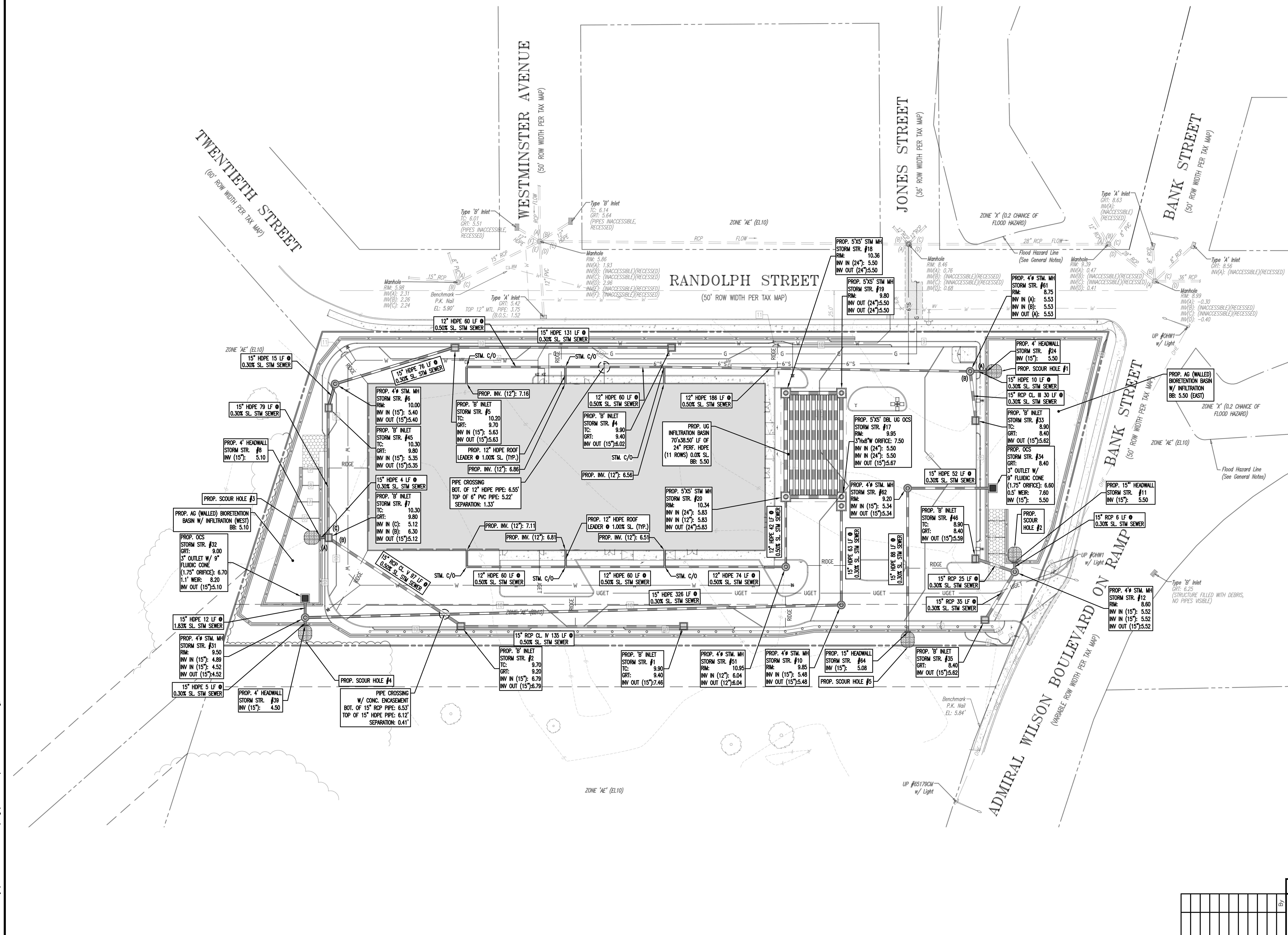
File: \\decpc.local\decfolders\Data\DECPC PROJECTS\2334 Arco Murray\23-03513 Camden\Dwg\Site Plans\0233423035135XG.dwg. ---> 05 GRADING PLAN



DRAINAGE NOTES

1. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY UTILITY "ONE-CALL" NUMBER 72 HOURS PRIOR TO ANY EXCAVATION ON THIS SITE. CONTRACTOR SHALL ALSO NOTIFY LOCAL WATER & SEWER DEPARTMENTS TO MARK-OUT THEIR UTILITIES.
2. ROOF LEADER COLLECTION PIPING ARE CONCEPTUAL IN NATURE AND ARE NOT FOR CONSTRUCTION. ACTUAL ROOF LEADER COLLECTION PIPING IS TO BE COORDINATED W/ ARCHITECTURAL PLANS FOR EACH INDIVIDUAL BUILDING. ALL ROOF LEADER COLLECTION PIPING SHALL BE SCHEDULE 40 PVC UNLESS OTHERWISE DESIGNATED.
3. MANUFACTURED REINFORCED CONCRETE STORM PIPE TO CONFORM TO ASTM C-76, CLASS III, UNLESS OTHERWISE DESIGNATED. MANUFACTURED REINFORCED CONCRETE ELLIPTICAL STORM PIPE TO CONFORM TO ASTM C-507, CLASS HE-III, UNLESS OTHERWISE DESIGNATED. REINFORCED CONCRETE STORMWATER PIPE TO BE INSTALLED IN ACCORDANCE WITH AMERICAN CONCRETE PIPE ASSOCIATION INSTALLATION GUIDELINES AND MORTAR OR PREFORMED FLEXIBLE JOINT SEALANTS IN ACCORDANCE WITH ASTM C 990 TO BE UTILIZED TO PROVIDE A SILT-TIGHT JOINT. WHERE SPECIFICALLY INDICATED, REINFORCED CONCRETE STORM PIPE JOINTS SHALL BE WATERTIGHT AND CONFORM TO ASTM C-443.
4. HDPE DRAINAGE PIPE SHALL HAVE A SMOOTH WALL INTERIOR WITH ANNULAR EXTERIOR CORRUGATIONS AND CONFORM TO ASTM F2306. SOLID PIPE SHALL HAVE GASKETED WATER-TIGHT JOINTS MEETING THE REQUIREMENTS OF ASTM F2306 AND ASTM D3212. PERFORATED PIPE SHALL HAVE GASKETED SILT-TIGHT JOINTS MEETING THE REQUIREMENTS OF ASTM F2306 AND ASTM F477. HDPE PIPE SHALL BE FROM A MANUFACTURER WHO IS AN EASTERN STATES CONSORTIUM (ESC) QUALIFIED MANUFACTURER OF HDPE PIPE AND INSTALLED IN ACCORDANCE WITH PIPE MANUFACTURE RECOMMENDATIONS.
5. HP DRAINAGE PIPE SHALL HAVE A SMOOTH WALL INTERIOR WITH ANNULAR EXTERIOR CORRUGATIONS AND CONFORM TO ASTM F2736 (12"-30" PIPE) AND ASTM F2881 (36"-60" PIPE). PIPE SHALL HAVE GASKETED WATER-TIGHT JOINTS MEETING THE REQUIREMENTS OF ASTM D3212 AND ASTM F477. FIELD WATERTIGHTNESS PERFORMANCE VERIFICATION MAY BE ACCOMPLISHED IN ACCORDANCE WITH ASTM F2487. HP PIPE SHALL BE FROM A MANUFACTURER WHO IS AN EASTERN STATES CONSORTIUM (ESC) QUALIFIED MANUFACTURER OF HP STORM PIPE AND INSTALLED IN ACCORDANCE WITH PIPE MANUFACTURER RECOMMENDATIONS.
6. PIPE LENGTHS ON THIS PLAN HAVE BEEN MEASURED AS THE DISTANCE BETWEEN THE CENTER POINT OF THE 2 CONNECTED STRUCTURES. ACTUAL PHYSICAL PIPE LENGTH FOR INSTALLATION IS EXPECTED TO BE LESS AND SHOULD BE ACCOUNTED FOR BY THE CONTRACTOR ACCORDINGLY.

GRAPHIC SCALE

-30 0 15 30 60 120

(IN FEET)
1 INCH = 30 FT.

GRADING/UTILITY GRAPHIC LEGEND

PROPERTY LINE (PARCEL IN QUESTION)
OFF-SITE PROPERTY LINES
EXIST. GUY WIRE
EXIST. LIGHT POLE
EXIST. BUILDING LIGHT
EXIST. SHOE BOX LIGHT
EXIST. COBRA LIGHT POLE
EXIST. TRAFFIC SIGNAL POLE
EXIST. MANHOLE
EXIST. "A" INLET
EXIST. "B" INLET
EXIST. "E" INLET
EXIST. YARD INLET
EXIST. FLARED END SECTION
EXIST. HEADWALL
EXIST. UTILITY POLE
EXIST. MONITORING WELL
APPROX. TEST PIT LOCATION
EXIST. FIRE HYDRANT
EXIST. WATER VALVE
EXIST. GAS VALVE
EXIST. GAS METER
EXIST. ELECTRIC METER
EXIST. ELECTRIC BOX
EXIST. CLEAN OUT
EXIST. WELL
EXIST. WATER SHUT OFF VALVE
EXIST. TELEPHONE BOX
EXIST. CABLE TV BOX
PROP. HEADWALL
PROP. WATER VALVE
PROP. GAS VALVE
PROP. STORM CLEANOUT
PROP. SANITARY CLEANOUT
PROP. AREA LIGHT
PROP. OUTLET CONTROL STRUCTURE
PROP. DRAINAGE MANHOLE
PROP. SANITARY SEWER MANHOLE
PROP. "A" INLET
PROP. "B" INLET
PROP. "E" INLET
PROP. YARD INLET
PROP. FLARED END SECTION
EXIST. CABLE LINE
PROP. CABLE LINE
EXIST. ELECTRIC LINE
PROP. ELECTRIC LINE
EXIST. FIBER OPTIC LINE
PROP. FIBER OPTIC LINE
EXIST. GAS LINE
PROP. GAS LINE
EXIST. OVERHEAD WIRES
PROP. OVERHEAD WIRES
EXIST. TELEPHONE LINE
PROP. TELEPHONE LINE
EXIST. WATER LINE
PROP. WATER LINE
EXIST. FIRE SERVICE
PROP. FIRE SERVICE
EXIST. UNDERGROUND ELEC./TELE. SERVICE (NO. & SIZE OF CONDUITS NOT DEFINED)
PROP. UNDERGROUND ELEC./TELE. SERVICE (NO. & SIZE OF CONDUITS NOT DEFINED)
EXIST. SANITARY SEWER LINE
PROP. SANITARY SEWER LINE
EXIST. FORCE MAIN
PROP. FORCE MAIN
EXIST. STORM DRAIN LINE
PROP. STORM DRAIN LINE
UNDERGROUND UTILITY QUALITY LEVEL
EXIST. MINOR CONTOUR & ELEVATION
EXIST. MAJOR CONTOUR & ELEVATION
PROP. FINISH GRADE CONTOUR & ELEVATION
PROP. DIRECTION OF DRAINAGE FLOW ARROW
EXIST. SPOT ELEVATIONS
EXIST. GUTTER ELEV.
EXIST. TOP OF CURB ELEV.
EXIST. FINISH FLOOR ELEV.
EXIST. GARAGE FLOOR ELEV.
PROP. GRADE SPOT ELEV.
PROP. TOP OF CURB & FINISHED GRADE ELEV.
PROP. FINISHED FLOOR ELEV.
PROP. TOP OF WALL & FINISHED GRADE @ LOW SIDE OF WALL (ACTUAL BOTTOM OF WALL FOOTING TO BE ESTABLISHED BY WALL DESIGNER)
PROP. TOP OF EXTENDED CURB, (GH) FINISHED GRADE @ HIGH SIDE OF EXTENDED CURB & (GL) FINISHED GRADE @ LOW SIDE OF EXTENDED CURB

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TITLE: DRAINAGE PLAN

PROJECT: **ASSET REALTY & CONSTRUCTION GROUP INC.**
PROPOSED FIVE-STORY MIXED USE BUILDING
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

JOB No: 2334-23-03513
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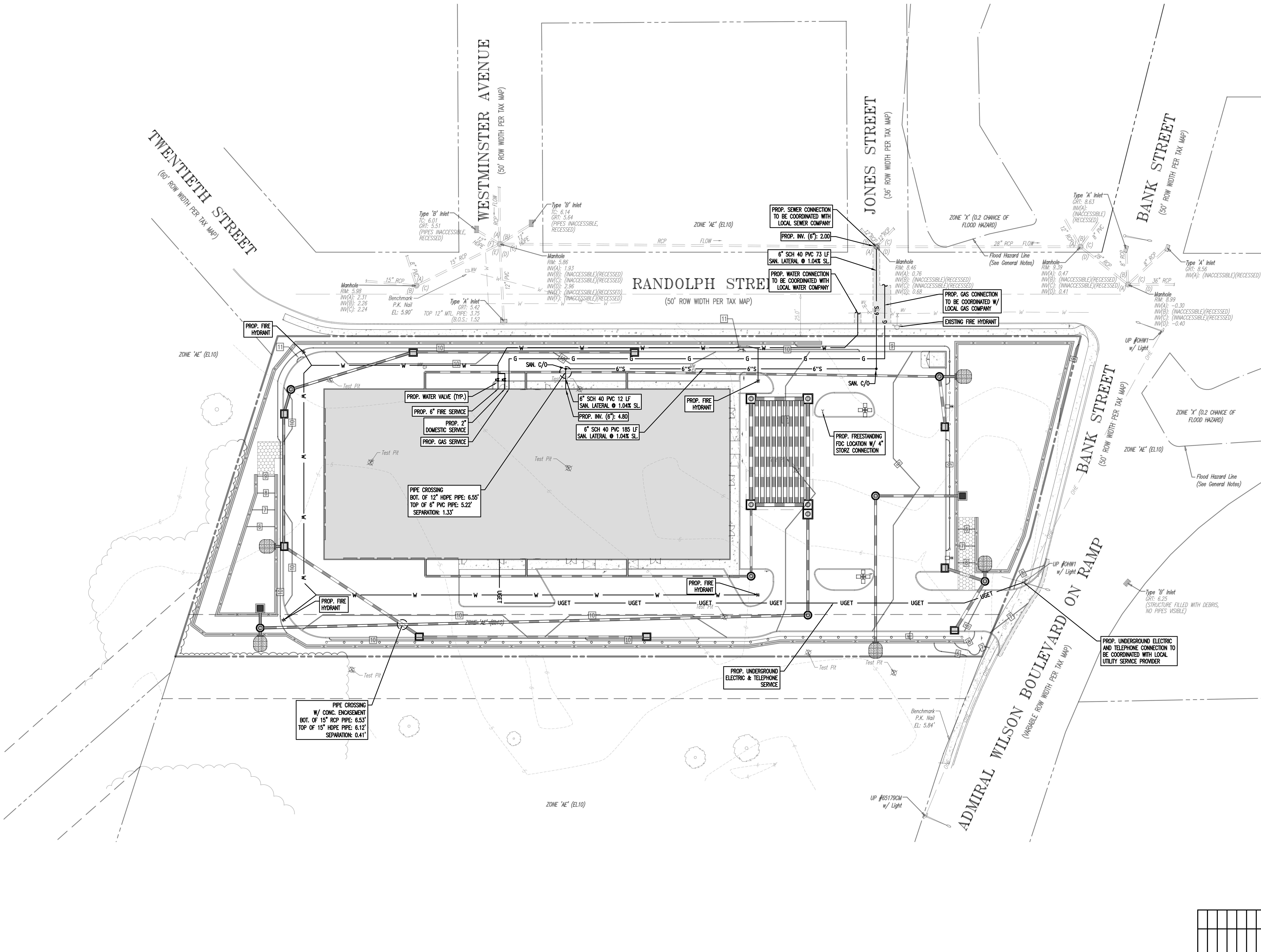

UTILITY NOTES

1. LOCATION OF ALL EXISTING AND PROPOSED SERVICES ARE APPROXIMATE AND MUST BE CONFIRMED INDEPENDENTLY WITH LOCAL UTILITY COMPANIES PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION OR EXCAVATION. SANITARY SEWER AND ALL OTHER UTILITY SERVICE CONNECTION POINTS SHALL BE CONFIRMED INDEPENDENTLY BY THE CONTRACTOR IN FIELD PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ALL DISCREPANCIES SHALL BE REPORTED IMMEDIATELY IN WRITING TO THE ENGINEER. CONSTRUCTION SHALL COMMENCE BEGINNING AT THE LOWEST INVERT (POINT OF CONNECTION) AND PROGRESS UP GRADIENT. INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND UTILITIES SHALL BE FIELD VERIFIED BY TEST PIT PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY UTILITY "ONE-CALL" NUMBER 72 HOURS PRIOR TO ANY EXCAVATION ON THIS SITE. CONTRACTOR SHALL ALSO NOTIFY LOCAL WATER & SEWER DEPARTMENTS TO MARK-OUT THEIR UTILITIES.
3. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT BUILDING UTILITY CONNECTION LOCATIONS. WHERE CONFLICTS EXIST WITH THESE SITE PLANS, ENGINEER IS TO BE NOTIFIED PRIOR TO CONSTRUCTION TO RESOLVE SAME. SERVICE SIZES TO BE DETERMINED BY ARCHITECT.
4. WATER SERVICE MATERIALS SHALL BE SPECIFIED BY THE LOCAL UTILITY COMPANY. CONTRACTORS PRICE FOR WATER SERVICE SHALL INCLUDE ALL FEES AND APPURTENANCES REQUIRED BY THE UTILITY TO PROVIDE A COMPLETE WORKING SERVICE.
5. ALL WATER MAIN SHALL BE CEMENT-LINED, CLASS 52 DUCTILE IRON PIPE, UNLESS OTHERWISE DESIGNATED.
6. THE MINIMUM DIAMETER FOR DOMESTIC WATER SERVICES SHALL BE 1 INCH.
7. ALL SANITARY SEWER MAINS SHALL BE SEPARATED FROM WATER MAINS BY A DISTANCE OF AT LEAST 10 FEET HORIZONTALLY. IF SUCH SEPARATION IS NOT POSSIBLE, THE PIPES SHALL BE IN SEPARATE TRENCHES WITH THE SEWER MAIN AT LEAST 18 INCHES BELOW THE WATER MAIN OR SUCH OTHER SEPARATION AS APPROVED BY THE APPROVING AUTHORITY. WHERE APPROPRIATE CROSSING SEPARATION FROM A WATER MAIN IS NOT POSSIBLE, THE SEWER SHALL BE ENCASED IN CONCRETE, OR CONSTRUCTED OF DUCTILE IRON PIPE USING MECHANICAL OR SLIP-ON JOINTS FOR A DISTANCE OF AT LEAST 10 FEET ON EITHER SIDE OF THE CROSSING. IN ADDITION, ONE FULL LENGTH OF SEWER PIPE SHOULD BE LOCATED SO BOTH JOINTS WILL BE AS FAR FROM THE WATER MAIN AS POSSIBLE. WHERE A WATER MAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT FOR THE SEWER SHALL BE PROVIDED. THE APPROVING AUTHORITY MAY REQUIRE ADDITIONAL STRUCTURAL SUPPORT FOR STORM SEWER CROSSING OVER SEWER LINES.
8. ALL SANITARY SEWER MAINS SHALL BE SDR-35 PVC PIPE MATERIAL UNLESS OTHERWISE DESIGNATED. SEWER PIPES INSTALLED WITH LESS THAN 3 FEET OF COVER, GREATER THAN 20 FEET OF COVER OR WITHIN 18 INCHES OF A WATER MAIN SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE. ALL DUCTILE IRON SEWER PIPE SHALL BE CEMENT-LINED, CLASS 52 PIPE, FURNISHED WITH SEWER COAT, OR APPROVED EQUAL.
9. WHERE SANITARY SEWER LATERALS ARE GREATER THAN 10' DEEP AT CONNECTION TO THE SEWER MAIN, CONCRETE DEEP LATERAL CONNECTIONS ARE TO BE UTILIZED.
10. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILIZATION OF THE EXISTING SEWER MAIN, STRUCTURES AND APPURTENANCES DURING CONNECTION.
11. LOCATION & LAYOUT OF GAS, ELECTRIC & TELECOMMUNICATION UTILITY LINES AND SERVICES SHOWN ON THESE PLANS ARE SCHEMATIC IN NATURE. ACTUAL LOCATION & LAYOUT OF THESE UTILITIES & SERVICES ARE TO BE PER THE APPROPRIATE UTILITY PROVIDER.
12. ALL SEWER AND WATER FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REGULATORY AUTHORITY'S RULES AND REGULATIONS.
13. ALL PROPOSED UTILITIES TO BE INSTALLED UNDERGROUND UNLESS OTHERWISE NOTED.

EXISTING UTILITY NOTES

EXISTING WATER SERVICE NOTE: CONTRACTOR TO LOCATE AND UTILIZE EXISTING WATER SERVICE CONNECTION IF FEASIBLE. OTHERWISE REMOVE EXISTING WATER SERVICE LINE AND CAP AT MAIN IN R.O.W. IN ACCORDANCE WITH THE LOCAL WATER COMPANY REQUIREMENTS. TERMINATION AT THE MAIN MUST BE APPROVED BY THE LOCAL WATER COMPANY PRIOR TO COMPLETION. IF THE EXISTING WATER SERVICE CAN NOT BE UTILIZED, THE NEW SERVICE IS TO BE COORDINATED AND VERIFIED FOR LOCATION WITH THE LOCAL WATER COMPANY. CONTRACTOR SHALL OBTAIN ALL REQUIRED STREET OPENING PERMITS FOR REMOVAL OF EXISTING SERVICE AND INSTALLATION OF NEW SERVICE.

EXISTING GAS SERVICE NOTE: CONTRACTOR TO LOCATE AND UTILIZE EXISTING GAS SERVICE CONNECTION IF FEASIBLE. OTHERWISE REMOVE EXISTING GAS SERVICE LINE AND CAP AT MAIN IN R.O.W. IN ACCORDANCE WITH THE LOCAL GAS COMPANY REQUIREMENTS. TERMINATION AT THE MAIN MUST BE APPROVED BY THE LOCAL GAS COMPANY PRIOR TO COMPLETION. ANY NEW SERVICE IS TO BE COORDINATED AND VERIFIED FOR LOCATION WITH THE LOCAL GAS COMPANY. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED STREET OPENING PERMITS FOR REMOVAL OF EXISTING SERVICE AND INSTALLATION OF NEW SERVICE.

SANITARY SEWER SERVICE NOTE: CONTRACTOR TO LOCATE AND UTILIZE EXISTING SEWER SERVICE CONNECTION IF OF ADEQUATE SIZE AND INTEGRITY AND ACCEPTABLE TO LOCAL SEWER AUTHORITY. OTHERWISE CONTRACTOR TO REMOVE EXISTING SEWER SERVICE LINE AND CAP AT MAIN IN R.O.W. IN ACCORDANCE WITH THE LOCAL SEWER AUTHORITY REQUIREMENTS. TERMINATION AT THE MAIN MUST BE APPROVED BY THE LOCAL SEWER AUTHORITY PRIOR TO COMPLETION. IF EXISTING SEWER SERVICE CAN NOT BE UTILIZED THEN THE NEW SERVICE IS TO BE COORDINATED AND VERIFIED FOR LOCATION WITH THE LOCAL SEWER AUTHORITY. CONTRACTOR SHALL OBTAIN ALL REQUIRED STREET OPENING PERMITS FOR REMOVAL OF EXISTING SERVICE AND INSTALLATION OF NEW SERVICE.

GRAPHIC SCALE

-30 0 15 30 60 120

(IN FEET)
1 INCH = 30 FT.

GRADING/UTILITY GRAPHIC LEGEND

PROPERTY LINE (PARCEL IN QUESTION)
OFF-SITE PROPERTY LINES

EXIST. GUY WIRE
EXIST. LIGHT POLE
EXIST. BUILDING LIGHT
EXIST. SHOE BOX LIGHT
EXIST. COBRA LIGHT POLE
EXIST. TRAFFIC SIGNAL POLE
EXIST. MANHOLE
EXIST. "A" INLET
EXIST. "B" INLET
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EXIST. TELEPHONE LINE
PROP. TELEPHONE LINE
EXIST. WATER LINE
PROP. WATER LINE
EXIST. FIRE SERVICE
PROP. FIRE SERVICE

EXIST. UNDERGROUND ELEC./TELE. SERVICE (NO. & SIZE OF CONDUITS NOT DEFINED)
PROP. UNDERGROUND ELEC./TELE. SERVICE (NO. & SIZE OF CONDUITS NOT DEFINED)
EXIST. SANITARY SEWER LINE
PROP. SANITARY SEWER LINE
EXIST. FORCE MAIN
PROP. FORCE MAIN
EXIST. STORM DRAIN LINE
PROP. STORM DRAIN LINE
(A) (B) (C) (D) UNDERGROUND UTILITY QUALITY LEVEL
EXIST. MINOR CONTOUR & ELEVATION
EXIST. MAJOR CONTOUR & ELEVATION
PROP. FINISH GRADE CONTOUR & ELEVATION
PROP. DIRECTION OF DRAINAGE FLOW ARROW

× 8.9 EXIST. SPOT ELEVATIONS
× G: 8.90 EXIST. GUTTER ELEV.
× TC: 8.90 EXIST. TOP OF CURB ELEV.
× FF: 8.90 EXIST. FINISH FLOOR ELEV.
× GF: 8.90 EXIST. GARAGE FLOOR ELEV.
G: 000.00 PROP. GRADE SPOT ELEV.
TC: 000.00 G: 000.00 PROP. TOP OF CURB & FINISHED GRADE ELEV.
FF: 000.00 PROP. FINISHED FLOOR ELEV.
TW: 000.00 GL: 000.00 PROP. TOP OF WALL & FINISHED GRADE @ LOW SIDE OF WALL (ACTUAL BOTTOM OF WALL FOOTING TO BE ESTABLISHED BY WALL DESIGNER)
TC: 000.00 GH: 000.00 GL: 000.00 PROP. TOP OF EXTENDED CURB, (GH) FINISHED GRADE @ HIGH SIDE OF EXTENDED CURB & (GL) FINISHED GRADE @ LOW SIDE OF EXTENDED CURB

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TITLE: UTILITY PLAN

PROJECT: ASSET REALTY & CONSTRUCTION GROUP INC.
PROPOSED FIVE-STORY MIXED USE BUILDING
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

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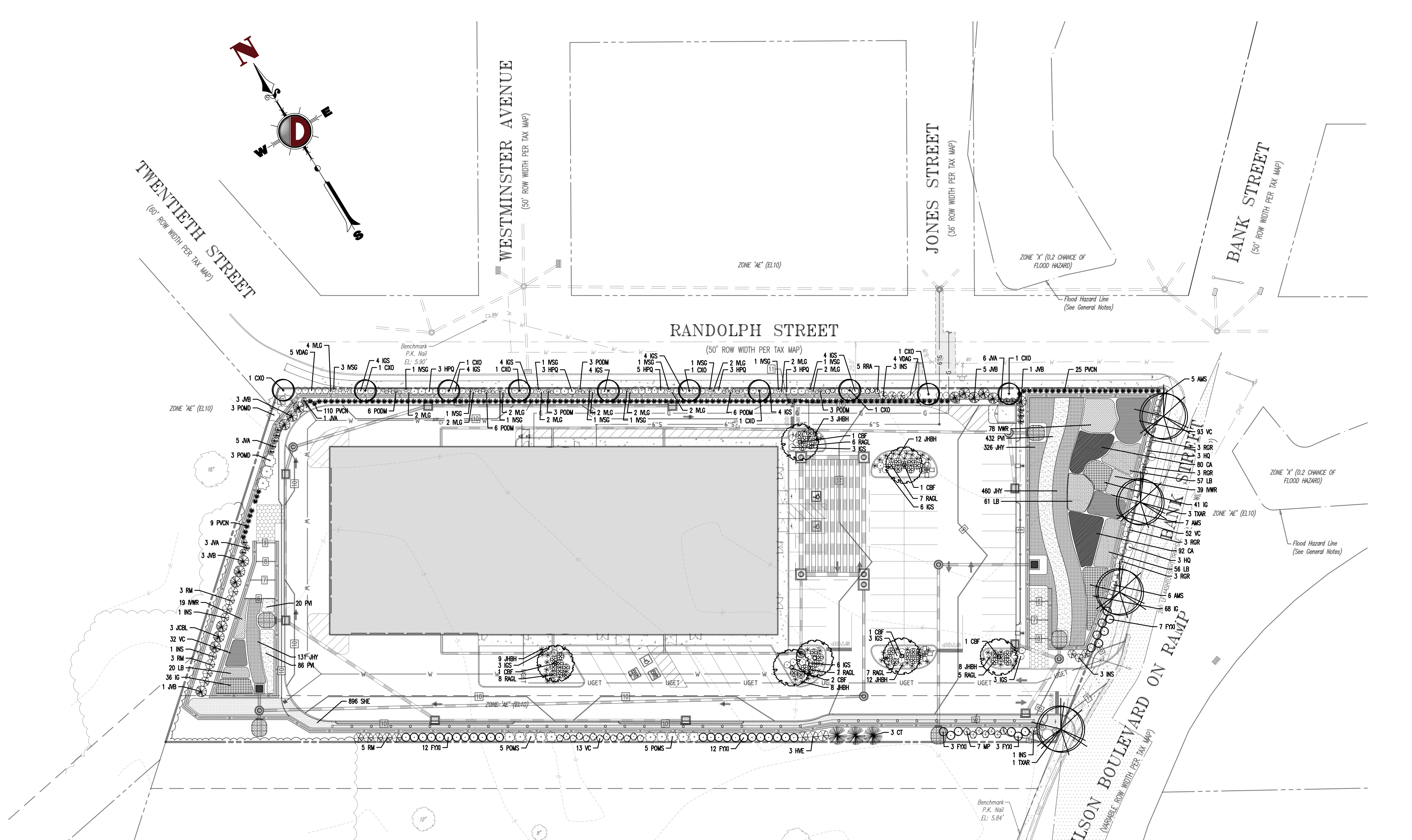

THIS PLAN TO BE UTILIZED FOR LANDSCAPE PURPOSES ONLY

PLANTING NOTES

1. PLANT MATERIAL SHALL BE FURNISHED AND INSTALLED AS INDICATED; INCLUDING ALL LABOR, MATERIALS, PLANTS, EQUIPMENT, INCIDENTALS, AND CLEAN-UP.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLANTING AT CORRECT GRADES AND ALIGNMENT. LAYOUT TO BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
3. PLANTS SHALL BE TYPICAL OF THEIR SPECIES AND VARIETY; HAVE NORMAL GROWTH HABITS; WELL DEVELOPED BRANCHES, DENSELY FOLIATED, VIGOROUS ROOT SYSTEMS AND BE FREE FROM DEFECTS AND INJURIES.
4. CONTRACTOR SHALL REPORT ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE GROWTH OF PLANT MATERIAL.
5. ALL PLANT MATERIAL SHALL BE GUARANTEED BY THE CONTRACTOR TO BE IN VIGOROUS GROWING CONDITION. PROVISION SHALL BE MADE FOR A GROWTH GUARANTEE OF AT LEAST ONE (1) YEAR FROM THE DATE OF ACCEPTANCE FOR TREES AND SHRUBS. REPLACEMENTS SHALL BE MADE AT THE BEGINNING OF THE FIRST SUCCEEDING PLANTING SEASON. ALL REPLACEMENTS SHALL HAVE A GUARANTEE EQUAL TO THAT STATED ABOVE.
6. INSOFAR AS IT IS PRACTICABLE, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THIS IS NOT POSSIBLE, THE CONTRACTOR SHALL PROTECT STOCK NOT PLANTED. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE DAY PERIOD AFTER DELIVERY. ANY PLANTS NOT INSTALLED DURING THIS PERIOD WILL BE REJECTED.
7. QUALITY AND SIZE OF PLANTS, SPREAD OF ROOTS, AND SIZE OF BALLS SHALL BE IN ACCORDANCE WITH ANSI Z60.1 (REV. 2001) "AMERICAN STANDARD FOR NURSERY STOCK" AS PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION.
8. ALL PLANTS SHALL BE PLANTED IN AMENDED TOPSOIL THAT IS THOROUGHLY WATERED AND TAMPED AS BACK FILLING PROGRESSES. PLANTING MIX TO BE AS SHOWN ON PLANTING DETAILS. LARGE PLANTING AREAS TO INCORPORATE FERTILIZER AND SOIL CONDITIONERS AS STATED IN PLANTING SPECIFICATIONS.
9. PLANTS SHALL NOT BE BOUND WITH WIRE OR ROPE AT ANY TIME SO AS TO DAMAGE THE BARK OR BREAK BRANCHES. PLANTS SHALL BE HANDLED FROM THE BOTTOM OF THE BALL ONLY.
10. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. PLANTS SHALL NOT BE INSTALLED IN TOPSOIL THAT IS IN A MUDDY OR FROZEN CONDITION. ALL PLANT MATERIAL SHALL BE SPRAYED WITH 'WILT-PRUF' OR EQUAL AS PER MANUFACTURER'S INSTRUCTIONS.
11. NO PLANT, EXCEPT GROUND COVERS, SHALL BE PLANTED LESS THAN TWO FEET FROM EXISTING STRUCTURES AND SIDEWALKS.
12. SET ALL PLANTS PLUMB AND STRAIGHT. SET AT SUCH LEVEL THAT, A NORMAL OR NATURAL RELATIONSHIP TO THE CROWN OF THE PLANT WITH THE GROUND SURFACE WILL BE ESTABLISHED. LOCATE PLANT IN THE CENTER OF THE PIT.
13. ALL INJURED ROOTS SHALL BE PRUNED TO MAKE CLEAN ENDS BEFORE PLANTING UTILIZING CLEAN, SHARP TOOLS. IT IS ADVISABLE TO PRUNE APPROXIMATELY 1/3 OF THE GROWTH OF LARGE TREES (2" CALIPER AND OVER) BY THE REMOVAL OF SUPERFLUOUS BRANCHES, THOSE WHICH CROSS, THOSE WHICH RUN PARALLEL, ETC. MAIN LEADER OF TREES WILL NOT BE CUT BACK. LONG SIDE BRANCHES, HOWEVER, MUST BE SHORTENED.
14. EACH TREE AND SHRUB SHALL BE PRUNED IN ACCORDANCE WITH STANDARD HORTICULTURAL PRACTICE TO PRESERVE NATURAL CHARACTER OF PLANT. PRUNING SHALL BE DONE WITH CLEAN, SHARP TOOLS.
15. ALL EXISTING TREES TO REMAIN SHALL BE PRUNED TO REMOVE ANY DAMAGED BRANCHES AS A RESULT OF CONSTRUCTION OPERATIONS. ALL EXISTING TREES SHALL BE FERTILIZED WITH A REGULAR GARDEN FERTILIZER (5-10-5) UPON COMPLETION OF WORK. THE ENTIRE LIMB OF ANY DAMAGED BRANCH SHALL BE CUT OFF AT THE TRUNK. CONTRACTOR TO ENSURE THAT CUTS ARE SMOOTH AND STRAIGHT. ANY EXPOSED ROOTS SHALL BE CUT BACK WITH SHARP TOOLS AND FILLED AROUND WITH TOPSOIL. COMPLETELY SATURATE THESE AREAS WITH WATER. ROOTS SHALL NOT BE LEFT EXPOSED FOR MORE THAN ONE (1) DAY. CONTRACTOR IS TO PROTECT ALL EXISTING TREES TO REMAIN BY ERECTING TREE PROTECTION FENCE AT THE DRIP LINE. THIS WILL ENSURE NO COMPACTION OF THE ROOT MASS.
16. ALL PLANTING BEDS SHALL BE MULCHED WITH 4" LAYER OF DOUBLE SHREDDED HARDWOOD BARK MULCH.
17. NEW PLANTING AREAS AND SOD SHALL BE ADEQUATELY IRRIGATED OR WATERED TO ESTABLISH THE PROPOSED PLANTS AND LAWN.
18. PRIOR TO THE ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY, THE PROPOSED LANDSCAPE AS SHOWN ON THE APPROVED LANDSCAPE PLAN MUST BE INSTALLED, INSPECTED AND APPROVED BY THE MUNICIPAL LANDSCAPE ARCHITECT. THE MUNICIPAL ENGINEER AND LANDSCAPE ARCHITECT SHALL TAKE INTO ACCOUNT SEASONAL CONSIDERATIONS IN THIS REGARD AS FOLLOWS. THE PLANTING OF TREES, SHRUBS, VINES OR GROUND COVER AS REQUIRED BY OR ASSOCIATED WITH A SUBDIVISION OR SITE PLAN APPROVAL BY THE PLANNING BOARD OR ZONING BOARD OF ADJUSTMENT SHALL BE INSTALLED DURING THE FOLLOWING PLANTING SEASONS:

TYPE	DATES
PLANTS	3/15 TO 12/15
LAWN	3/15 TO 6/15
	9/15 TO 12/1

FURTHERMORE, THE FOLLOWING TREE VARIETIES SHALL NOT BE PLANTED DURING THE FALL PLANTING SEASON DUE TO THE HAZARDS ASSOCIATED WITH DIGGING THESE TREES IN THIS SEASON.

ACER RUBRUM	POPULUS VARIETIES
BETULA VARIETIES	PRUNUS VARIETIES
CARPINUS VARIETIES	PYRUS VARIETIES
CRATAEGUS VARIETIES	QUERCUS VARIETIES
KOELREUTERIA	SALIX WEEPING VARIETIES
LIQUIDAMBAR STYRACIFLUA	TILIA TOMENTOSA
LIRIODENDRON TULIPIFERA	ZELKOVA VARIETIES
PLATANUS ACERFOLIA	

ANY PLANTINGS INSTALLED IN CONFLICT WITH THIS REQUIREMENT MUST RECEIVE THE WRITTEN APPROVAL BY THE MUNICIPAL ENGINEER OR LANDSCAPE ARCHITECT, PRIOR TO PLANTING. FAILURE TO COMPLY WITH THESE REQUIREMENTS WILL REQUIRE THE REMOVAL OF THE PLANTING IN QUESTION. THIS REQUIREMENT DOES NOT APPLY TO SEEDING OR SODDING OR PLANTINGS SPECIFICALLY FOR SOIL STABILIZATION PURPOSES. THE PLANTING ASSOCIATED WITH ANY LOT GIVEN A CERTIFICATE OF OCCUPANCY OUTSIDE THESE PERIODS SHALL BE PROVIDED DURING THE PREVIOUS OR NEXT APPROPRIATE SEASON.

19. ALL DISTURBED AREAS TO BE TREATED WITH TOPSOIL SEED SOD STABILIZATION METHOD.

PLANTING SPECIFICATIONS

1. SCOPE OF WORK
   A. THIS WORK SHALL CONSIST OF PERFORMING, CLEARING AND SOIL PREPARATION, FINISH GRADING, PLANTING AND DRAINAGE, INCLUDING ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, AND ANY OTHER APPURTENANCES NECESSARY FOR THE COMPLETION OF THIS PROJECT.
2. MATERIALS
   A. GENERAL – ALL MATERIALS SHALL MEET OR EXCEED SPECIFICATIONS AS OUTLINED IN THE STATE DEPARTMENT OF TRANSPORTATION (D.O.T.) MANUAL OF ROADWAY AND BRIDGE CONSTRUCTION (LATEST EDITION) OR APPROVED EQUAL.
   B. PLANTS – ALL PLANTS SHALL BE HEALTHY OR NORMAL GROWTH, WELL ROOTED, FREE FROM DISEASE AND INSECTS.
   C. TOPSOIL – LOAMY SILT, HAVING AN ORGANIC CONTENT NOT LESS THAN 5%, pH RANGE BETWEEN 4.5 – 7, BE FREE OF DEBRIS, ROCKS LARGER THAN TWO INCHES (2"), WOOD, ROOTS, VEGETABLE MATTER AND CLAY CLODS.
   D. MULCH – FOUR (4") INCHES DOUBLE SHREDDED HARDWOOD BARK MULCH.
3. FERTILIZER AND SOIL CONDITIONER – PLANTED AREAS
   A. ORGANIC FERTILIZER – SHALL BE PROCESSED SEWER SLUDGE WITH MINIMAL CONTENT OF 1% NITROGEN AND 2% PHOSPHORIC ACID, EQUAL TO 'NITROHUMIS'.
   B. ORGANIC FERTILIZER AND SOIL CONDITIONER – SHALL BE 'GRO- POWER' AND ORGANIC BASE MATERIALS COMPRISED OF DECOMPOSED ANIMAL AND VEGETABLE MATTER AND COMPOSTED TO SUPPORT BACTERIAL CULTURES, CONTAINING NO POULTRY OR HUMAN WASTE. GUARANTEED ANALYSIS (5-3-1): NITROGEN 5%. PHOSPHATE 3%, POTASH 1%. 50% HUMUS AND 15% HUMIC ACIDS.
4. GENERAL WORK PROCEDURES
   A. LANDSCAPE WORK SHALL COMMENCE AS SOON AS THOSE PORTIONS OF THE SITE ARE AVAILABLE. CONTRACTOR TO UTILIZE WORKMANLIKE STANDARDS IN PERFORMING ALL LANDSCAPE CONSTRUCTION. THE SITE IS TO BE LEFT IN A CLEAN STATE AT THE END OF EACH DAY'S WORK. ALL DEBRIS, MATERIALS, AND TOOLS SHALL BE PROPERLY STOCKPILED OR DISPOSED OF. ALL PAVED SURFACES SHALL BE SWEPT CLEAN AT THE END OF EACH DAYS WORK.
5. WEEDING
   A. BEFORE AND DURING PRELIMINARY GRADING AND FINISH GRADING, ALL WEEDS AND GRASSES SHALL BE DUG OUT BY THE ROOTS AND DISPOSED OF AT THE CONTRACTOR'S EXPENSE.
6. TOPSOILING
   A. CONTRACTOR TO PROVIDE A 4" THICK TOPSOIL LAYER IN ALL PLANTING AREAS. TOPSOIL SHOULD BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO PRODUCE A 4" UNSETTLED THICKNESS. TOPSOIL PRESENT AT THE SITE, IF ANY, MAY BE USED TO SUPPLEMENT TOTAL AMOUNT REQUIRED. CONTRACTOR TO FURNISH AN ANALYSIS OF ON-SITE TOPSOIL UTILIZED IN ALL PLANTING AREAS. ADJUST pH AND NUTRIENT LEVELS AS REQUIRED TO ENSURE AN ACCEPTABLE GROWING MEDIUM.
7. SOIL CONDITIONING:
   A. CULTIVATE ALL AREAS TO BE PLANTED TO A DEPTH OF 6". ALL DEBRIS EXPOSED FROM EXCAVATION AND CULTIVATION SHALL BE DISPOSED OF AT THE CONTRACTOR'S EXPENSE. SPREAD EVENLY IN ALL PLANTING AREAS AND TILL (2 DIRECTIONS) INTO TOP 4" WITH THE FOLLOWING PER 1,000 SQ. FT.:
      - 20 POUNDS 'GRO-POWER'
      - 100 POUNDS AGRICULTURAL GYPSUM
      - 20 POUNDS NITROFORM (COURSE) 38-0-0 BLUE CHIP

   SOIL MODIFICATIONS:
   A. THOROUGHLY TILL ORGANIC MATTER INTO THE TOP 6 TO 12 IN. OF MOST PLANTING SOILS TO IMPROVE THE SOIL'S ABILITY TO RETAIN WATER AND NUTRIENTS. USE COMPOSTED BARK, RECYCLED YARD WASTE OR PEAT MOSS. ALL PRODUCTS SHOULD BE COMPOSTED TO A DARK COLOR AND BE FREE OF PIECES WITH IDENTIFIABLE LEAF OR WOOD STRUCTURE. AVOID MATERIAL WITH A pH HIGHER THAN 7.5.
   B. MODIFY HEAVY CLAY OR SILT (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) AND/OR GYPSUM. COARSE SAND MAY BE USED IF ENOUGH IS ADDED TO BRING THE SAND CONTENT TO MORE THAN 60% OF THE TOTAL MIX. IMPROVE DRAINAGE IN HEAVY SOILS BY PLANTING ON RAISED MOUNDS OR BEDS AND INCLUDING SUBSURFACE DRAINAGE LINES.
   C. MODIFY EXTREMELY SANDY SOILS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.
8. PLANTING
   POSITION TREES AND SHRUBS AT THEIR INTENDED LOCATIONS AS PER THE PLANS AND SECURE THE APPROVAL OF THE LANDSCAPE ARCHITECT BEFORE EXCAVATING PITS, MAKING NECESSARY ADJUSTMENTS AS DIRECTED.
   A. PLANTING PITS SHALL BE DUG WITH LEVEL BOTTOMS, WITH THE WIDTH TWICE THE DIAMETER OF ROOT BALL. THE ROOT BALL SHALL REST ON UNDISTURBED GRADE. EACH PLANT PIT SHALL BE BACK FILLED WITH THE FOLLOWING PREPARED SOIL MIXED THOROUGHLY:
      - 1 PART PEAT MOSS BY VOLUME
      - 1 PART COW MANURE BY VOLUME
      - 3 PARTS TOPSOIL BY VOLUME
      - 21 GRAM 'AGRIFORM' PLANTING TABLETS AS FOLLOWS:
        - 2 TABLETS PER 1 GAL. PLANT
        - 3 TABLETS PER 5 GAL. PLANT
        - 4 TABLETS PER 15 GAL. PLANT
        - LARGER PLANTS (2) TWO TABLETS PER 1/2" DIAM. OF TRUNK CALIPER
   B. PREPARED SOIL SHALL BE TAMPED FIRMLY AT BOTTOM OF PIT. FILL PREPARED SOIL AROUND BALL OF PLANT 1/2 WAY, AND INSERT PLANT TABLETS. COMPLETE BACK FILL AND WATER THOROUGHLY.
   C. ALL PLANTS SHALL BE SET SO THAT, THEY BEAR THE SAME RELATION TO THE REQUIRED GRADE AS THEY BORE TO THE NATURAL GRADE BEFORE BEING TRANSPLANTED.
   D. PREPARE RAISED EARTH BASIN AS WIDE AS PLANTING HOLE OF EACH TREE.
   E. WATER IMMEDIATELY AFTER PLANTING. WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB BACK FILL AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING HOLE ARE THOROUGHLY SATURATED.
   F. PRUNE ALL PROPOSED TREES DIRECTLY ADJACENT TO WALKWAYS TO A MIN. OF 7' BRANCHING HEIGHT.
9. GROUND COVER
   A. ALL GROUND COVER AREAS SHALL RECEIVE A 1/4" LAYER OF HUMUS RAKED INTO THE TOP 1" OF PREPARED SOIL PRIOR TO PLANTING GROUND COVER.
   B. SPACING AND VARIETY OF GROUND COVER SHALL BE AS SHOWN ON DRAWINGS.
   C. IMMEDIATELY AFTER PLANTING GROUND COVER, CONTRACTOR SHALL THOROUGHLY WATER GROUND COVER.
   D. ALL GROUND COVER AREAS SHALL BE TREATED WITH A PRE-EMERGENT BEFORE FINAL LANDSCAPE INSPECTION. GROUND COVER AREAS SHALL BE WEEDED PRIOR TO APPLYING PRE-EMERGENT. PRE-EMERGENT TO BE APPLIED AS PER MANUFACTURER'S RECOMMENDATION.
10. FINISH GRADING
   A. ALL AREAS WILL BE RECEIVED BY THE CONTRACTOR AT SUBSTANTIALLY PLUS/MINUS .1 FOOT OF FINISH GRADE.
   B. ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE, UNLESS OTHERWISE DIRECTED BY LANDSCAPE ARCHITECT. SOIL AREAS ADJACENT TO THE BUILDINGS SHALL SLOPE AWAY.
   C. ALL PLANTING AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW FREE FLOW OF SURFACE WATER.
11. GUARANTEE
   A. CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A PERIOD OF ONE (1) YEAR FROM ACCEPTANCE OF JOB. OWNER TO SECURE A MAINTENANCE BOND FROM THE CONTRACTOR FOR TEN PERCENT (10%) OF THE VALUE OF THE LANDSCAPE INSTALLATION WHICH WILL BE RELEASED AT THE COMMENCEMENT OF THE GUARANTEE PERIOD AND PASSES A FINAL INSPECTION BY THE OWNER OR OWNERS REPRESENTATIVE.
12. CLEANUP
   A. UPON THE COMPLETION OF ALL PLANTING WORK AND BEFORE FINAL ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL MATERIAL, EQUIPMENT, AND DEBRIS RESULTING FROM HIS WORK. ALL PAVED AREAS SHALL BE BROOM CLEANED AND THE SITE LEFT IN A NEAT AND ACCEPTABLE CONDITION AS APPROVED BY THE OWNER'S AUTHORIZED REPRESENTATIVE.
   B. MAINTAIN TREES, SHRUBS AND OTHER PLANTS BY PRUNING, CULTIVATING AND WEEDING AS REQUIRED FOR HEALTHY GROWTH. RESTORE PLANTING SAUCERS. TIGHTEN AND REPAIR STAKE AND GUY SUPPORTS AND RESET TREES AND SHRUBS TO PROPER GRADES OR VERTICAL POSITION AS REQUIRED. RESTORE OR REPLACE DAMAGED WRAPPINGS. SPRAY WITH HERBICIDE AS REQUIRED TO KEEP TREES AND SHRUBS FREE OF INSECTS AND DISEASE.
   C. MAINTAIN LAWNS BY WATERING, FERTILIZING, WEEDING, MOWING, TRIMMING, AND OTHER OPERATIONS SUCH AS ROLLING, REGRADING AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH, ACCEPTABLE LAWN, FREE OF ERODED OR BARE AREAS.
13. MAINTENANCE (ALTERNATE BID) COST PER MONTH AFTER INITIAL 90-DAY MAINTENANCE PERIOD.

LANDSCAPE SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
SHADE TREE(S)					
CBF	7	CARPINUS BETULUS 'FASTIGIATA'	PYRAMIDAL EUROPEAN HORNBEAM	2 1/2-3" CAL.	B+B
CXO	10	CELTIS X 'JFS-KSU1'	PRAIRIE SENTINEL HACKBERRY	2 1/2-3" CAL.	B+B
TXAR	4	TILIA X AMERICANA 'REDMOND'	REDMOND LINDEN	2 1/2-3" CAL.	B+B
	21				
EVERGREEN TREE(S)					
CT	3	CHAMAECYPARIS THYOIDES	ATLANTIC WHITE CEDAR	6-8'	B+B
INS	9	ILEX X 'NELLIE R. STEVENS'	NELLIE STEVENS HOLLY	6-8'	B+B
JVA	15	JUNIPERUS VIRGINIANA 'FARROWJVBF'	AQUAVITA JUNIPER	6-8'	B+B
JVB	13	JUNIPERUS VIRGINIANA 'BURKII'	BURKII RED CEDAR	6-8'	B+B
	40				
EVERGREEN SHRUB(S)					
IGS	52	ILEX GLABRA 'SHAMROCK'	SHAMROCK INKBERRY HOLLY	24-30"	#3 CAN
JCBL	3	JUNIPERUS CHINENSIS 'BLUE POINT'	BLUE POINT JUNIPER	6-8'	B+B
RGR	12	RHODODENDRON X GIRARD 'GIRARD ROSE'	GIRARD ROSE AZALEA	18-24"	#3 CAN
RM	11	RHODODENDRON MAXIMUM 'ROSEBAY'	ROSEBAY RHODODENDRON	30-36"	#5 CAN
RRA	5	RHODODENDRON 'ROBLEG'	'ENCORE ANGEL' AZALEA	24-30"	#3 CAN
	83				
DECIDUOUS SHRUB(S)					
AMS	19	ABELIA MOSANENSIS 'SMNAMDS'	'SWEET EMOTION' HARDY ABELIA	24-30"	#3 CAN
FYXI	37	FORSYTHIA X INTERMEDIA	FORSYTHIA	30-36"	#5 CAN
HPQ	15	HYDRANGEA PANICULATA 'LITTLE QUICK FIRE'	'LITTLE QUICK FIRE' HYDRANGEA	24-30"	#3 CAN
HQ	6	HYDRANGEA QUERCIFOLIA	OAKLEAF HYDRANGEA	24-30"	#3 CAN
HVE	3	HAMEMELIS VERNALIS	VERNAL WITCH HAZEL	30-36"	#5 CAN
IVLG	24	ILEX VERTICILLATA 'BERRY POPPINS'	BERRY POPPINS WINTERBERRY HOLLY	30-36"	#5 CAN
IVSG	13	ILEX VERTICILLATA 'MR. POPPINS'	MR. POPPINS WINTERBERRY HOLLY	30-36"	#5 CAN
MP	7	MYRICA PENSYLVANICA	NORTHERN BAYBERRY	30-36"	#5 CAN
PODM	27	PHYSOCARPUS OPULIFOLIUS 'DONNA MAY'	LITTLE DEVIL NINE BARK	24-30"	#3 CAN
POMD	6	PHYSOCARPUS OPULIFOLIUS	NINE BARK 'DIABOLO'	30-36"	#5 CAN
POMS	10	PHYSOCARPUS 'SUMMER WINE'	SUMMER WINE NINE BARK	30-36"	#5 CAN
VC	13	VACCINIUM CORYMBOSUM	HIGHBUSH BLUEBERRY	30-36"	#5 CAN
VDAG	9	VIBURNUM DENTATUM VAR. DEAMII 'ALL THAT GLOWS'	ALL THAT GLOWS VIBURNUM	30-36"	#5 CAN
	189				
GROUND COVER					
JHBH	52	JUNIPERUS HORIZONTALIS 'BAR HARBOR'	BAR HARBOR CREEPING JUNIPER	2 GAL.	CONTAINER
RAGL	40	RHUS AROMATICA "GRO-LOW'	GRO-LOW SUMAC	2 GAL.	CONTAINER
	92				
ORNAMENTAL GRASS(ES)					
PVCN	144	PANICUM VIRGATUM 'CLOUD NINE'	CLOUD NINE SWITCH GRASS	3 GAL.	CONTAINER
SHE	896	SPOROBOLUS HETEROLEPIS	PRAIRIE DROPSEED	2 GAL.	CONTAINER
	1,040				

NOTE: IF ANY DISCREPANCIES OCCUR BETWEEN AMOUNTS SHOWN IN THE PLAN AND THE PLANT LIST, THE PLAN SHALL DICTATE.

BASIN LANDSCAPE SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
EVERGREEN SHRUB(S)					
IG	145	ILEX GLABRA	INKBERRY HOLLY	24-30"	#3 CAN
DECIDUOUS SHRUB(S)					
CA	172	CLETHRA ALNIFOLIA	SUMMERSWEET CLETHRA	24-30"	#3 CAN
IVWR	136	ILEX VERTICILLATA 'WINTER RED'	WINTER RED WINTERBERRY HOLLY	30-36"	#5 CAN
LB	194	LINDERA BENZOIN	SPICEBUSH	30-36"	#5 CAN
VC	177	VACCINIUM CORYMBOSUM	HIGHBUSH BLUEBERRY	30-36"	#5 CAN
	679				
ORNAMENTAL GRASS(ES)					
JHY	917	JUNCUS EFFUSUS	SOFT RUSH	2 GAL.	CONTAINER
PVI	538	PANICUM VIRGATUM	SWITCH GRASS	2 GAL.	CONTAINER
	1,455				

NOTE: IF ANY DISCREPANCIES OCCUR BETWEEN AMOUNTS SHOWN IN THE PLAN AND THE PLANT LIST, THE PLAN SHALL DICTATE.

LANDSCAPE COMPLIANCE	
§III.C.3.A.(i)	A MINIMUM FIVE (5) FOOT WIDE LANDSCAPED BUFFER IS REQUIRED AROUND THE ENTIRE PERIMETER OF THE TRACT. **(COMPLIES)**
§III.C.3.A.(ii)	A MINIMUM TEN (10) FOOT WIDE LANDSCAPED BUFFER IS REQUIRED ADJACENT TO RESIDENTIALLY ZONED LAND. IF A PUBLIC RIGHT OF WAY SEPARATES THE PROPOSED DEVELOPMENT FROM THE RESIDENTIAL ZONE, THE BUFFER MAY BE REDUCED TO FIVE (5) FEET IN WIDTH. **(COMPLIES)**
§III.C.3.D.(i)	A SINGLE ROW OF STREET TREES SHALL BE PLANTED ALONG LOCAL ROADS AT A DISTANCE OF FIFTY (50) FEET ON CENTER AND ARE REQUIRED TO BE A MINIMUM OF THIRTY (30) FEET IN HEIGHT WHEN FULLY GROWN. **(COMPLIES)**
§III.C.3.D.(ii)	FOR THE ADMIRAL WILSON BOULEVARD, STREET TREES SHALL BE PLANTED IN NATURALIZED GROUPINGS, AND MAY BE LOCATED WITHIN OR OUTSIDE THE PUBLIC RIGHT-OF-WAY. THE TOTAL NUMBER OF STREET TREES SHALL AVERAGE ONE (1) FOR EVERY FIFTY (50) FEET MEASURED AT THE EDGE OF THE CARTWAY. PLANTING DESIGN SHOULD ACCENTUATE THE VIEWS INTO THE CENTER AND INTEGRATE CONTRASTING LANDSCAPE ELEMENTS. **(COMPLIES)**
§III.C.3.E.(i)(1)	LANDSCAPED AREA EQUIVALENT TO A MINIMUM OF 5% OF THE INTERIOR AREA OF PARKING LOTS AND ONE (1) TREE FOR EVERY TEN (10) SPACES, SHALL BE PROVIDED ON THE TRACT. TO THE EXTENT POSSIBLE, THIS MINIMUM AREA & TREE REQUIREMENT SHOULD BE PROVIDED IN PARKING ISLANDS AND/OR AROUND THE PERIMETER OF PARKING LOTS. IF THIS MINIMUM PERCENTAGE & TREE REQUIREMENT IS NOT ACCOMMODATED IN PARKING ISLANDS OR PARKING LOT PERIMETERS, THE REMAINDER MAY BE LOCATED ELSEWHERE WITHIN THE REDEVELOPMENT AREA, AND APPLIED TO SUPPLEMENT THE TRACT PERIMETER BUFFERS, TO HIGHLIGHT SPECIAL AREAS WITHIN THE TRACT, AND TO PROVIDE SUPPLEMENTARY LANDSCAPING AS APPROPRIATE. 52 PARKING SPACES PROVIDED/ 10 = 6 PARKING LOT TREES REQUIRED 7 PARKING LOT TREES PROPOSED **(COMPLIES)** 17,948 SF INTERIOR PARKING LOT 3,386 SF OF INTERIOR LANDSCAPED PARKING LOT AREAS (19%) **(COMPLIES)**

GRAPHIC SCALE

-30 0 15 30 60 120

(IN FEET)
1 INCH = 30 FT.

SEE SHEET 13 OF 17 FOR LANDSCAPE PLAN DETAILS

THIS PLAN SET IS FOR PERMITTING PURPOSES ONLY AND MAY NOT BE USED FOR CONSTRUCTION

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TITLE: LANDSCAPE PLAN

PROJECT: ASSET REALTY & CONSTRUCTION GROUP INC.
PROPOSED FIVE-STORY MIXED USE BUILDING
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

JOB No:	2334-23-03513
DATE:	04/30/2025
DRAWN BY:	UV
SCALE:	(H) 1"=30' (V) .
DESIGNED BY:	AG/SM
CHECKED BY:	DT
CHECKED BY:	–
SHEET No:	8 OF 17
Rev. #	0

Rev.	Date	Comments	By

MARLA A. ROLLER
LICENSED LANDSCAPE ARCHITECT
NEW JERSEY LICENSE No. 21AS00053700

JOSHUA M. SEWALD
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 52908

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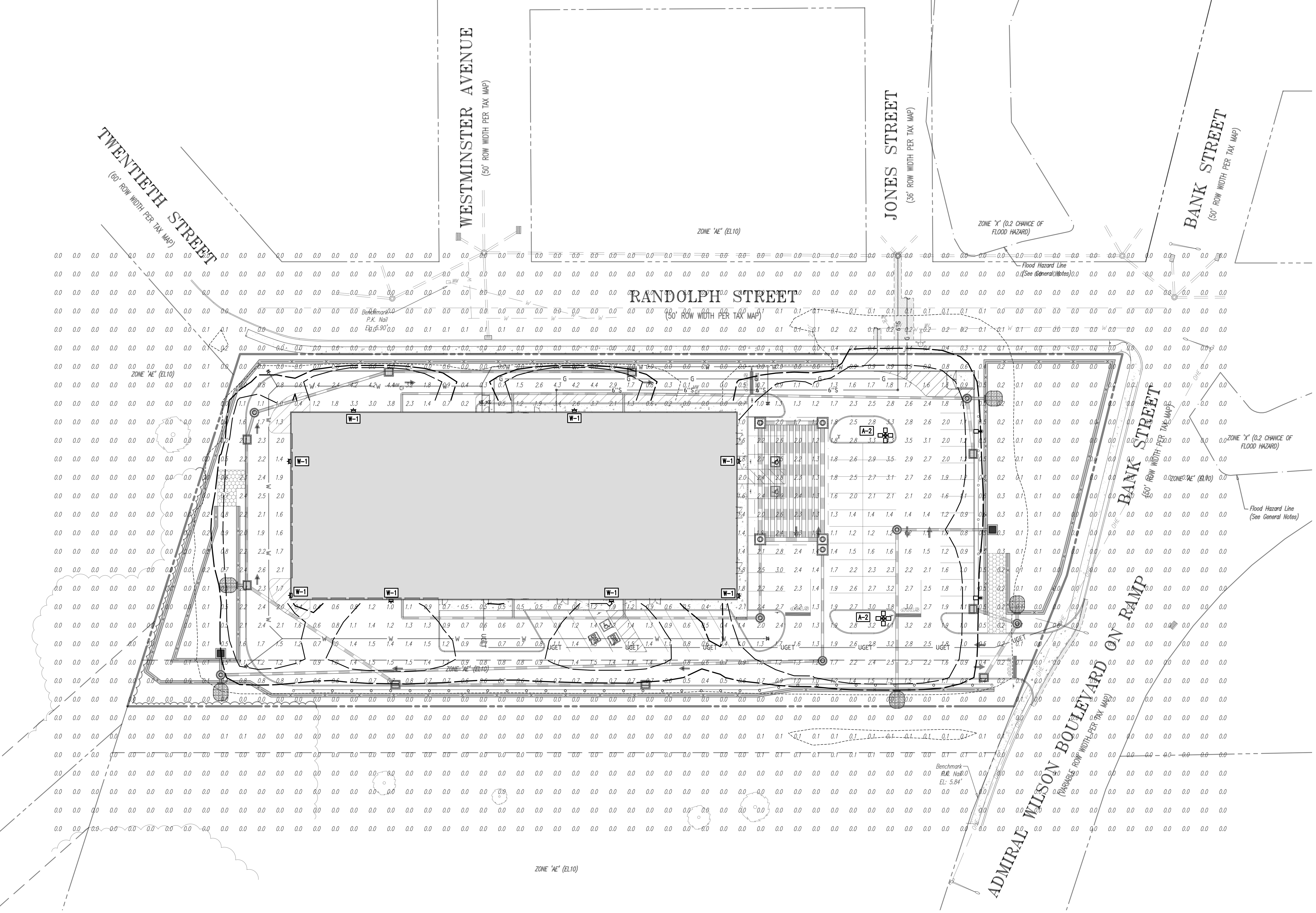
THIS PLAN TO BE UTILIZED FOR LIGHTING PURPOSES ONLY



LIGHTING NOTES

1. THIS LIGHTING PLAN ILLUSTRATES ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA (IESNA) APPROVED METHODS. ACTUAL SITE ILLUMINATION LEVELS AND PERFORMANCE OF LUMINARIES MAY VARY DUE TO VARIATIONS IN WEATHER, ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER RELATED VARIABLE FIELD CONDITIONS.
2. ALL EXISTING CONDITIONS LIGHTING LEVELS ARE REPRESENTATIVE OF AN APPROXIMATION UTILIZING LABORATORY DATA FOR SIMILAR FIXTURES AND/OR ACTUAL FIELD MEASUREMENTS TAKEN WITH A LIGHT METER. DUE TO FACTORS SUCH AS FIXTURE MAINTENANCE, EQUIPMENT TOLERANCES, WEATHER CONDITIONS, ETC., ACTUAL LIGHTING LEVELS MAY DIFFER AND THE LIGHTING LEVELS DEPICTED ON THIS PLAN SHOULD BE CONSIDERED AS APPROXIMATE.
3. CONDUITS SHALL BE INSTALLED A MINIMUM OF 2 FEET BEHIND GUIDERAIL POSTS.
4. ALL WIRING METHODS AND EQUIPMENT CONSTRUCTION SHALL CONFORM TO THE CURRENT NATIONAL ELECTRICAL CODE.
5. REFER TO ARCHITECTURAL PLANS FOR SITE WIRING DIAGRAM.
6. THIS PLAN IS PREPARED SPECIFICALLY TO ANALYZE THE LIGHTING LEVELS GENERATED BY THE PROPOSED ON-SITE LIGHTING ONLY. EXISTING LIGHT FIXTURES BEYOND THE EXTENTS OF THIS DEVELOPMENT/PROPERTY ARE NOT MODELED IN THIS DESIGN, AND MAY ALTER ACTUAL LIGHT LEVELS AT THE PROPERTY LINES.

ADMIRAL WILSON NORTH REDEVELOPMENT PLAN - LIGHTING NOTES

1. THE AVERAGE HORIZONTAL ILLUMINATION LEVEL OF LIGHTING IN THE PARKING LOT SHALL NOT BE GREATER THAN 2 FOOT-CANDLES. THE MAXIMUM LEVEL OF LIGHTING IN ANY PORTION OF THE PARKING LOT SHALL NOT BE GREATER THAN 3 FOOT-CANDLES, EXCEPT DIRECTLY UNDER LIGHT FIXTURES WHERE A MAXIMUM OF 5 FOOT-CANDLES IS PERMITTED. (§ ADMIRAL WILSON NORTH REDEVELOPMENT PLAN)
2. FOR SECURITY PURPOSES, PARKING LOT LIGHTING MAY REMAIN AT FULL LIGHTING LEVELS FOR 1 HOUR AFTER THE LAST STORE CLOSES, AND MAY THEREAFTER REMAIN AT AN AVERAGE ILLUMINATION LEVEL OF 1 FOOT-CANDLE. (§ ADMIRAL WILSON NORTH REDEVELOPMENT PLAN)
3. POLE MOUNTED PARKING LOT LIGHTING MAY BE INSTALLED UP TO A MAXIMUM HEIGHT OF FOURTY (40) FEET MEASURED FROM GROUND LEVEL. (§ ADMIRAL WILSON NORTH REDEVELOPMENT PLAN)
4. SHIELDING AND/OR CUTOFF OPTICS SHALL BE REQUIRED IN ALL INSTALLATIONS. (§870-243.(A)(4))
5. ALL OUTDOOR LIGHTING SYSTEMS SHALL BE DESIGNED AND OPERATED SO THAT THE AREA TEN (10) FEET BEYOND THE PROPERTY LINE OF THE PREMISES RECEIVES NO LESS THAN 0.25 FOOTCANDLE OF LIGHT FROM THE PREMISES' LIGHTING SYSTEM. (§870-243.(A)(10)) **(VARIANCE)**

SEE SHEET 13 OF 17 FOR LIGHTING PLAN DETAILS

GRAPHIC SCALE

-30 0 15 30 60 120

(IN FEET)
1 INCH = 30 FT.

LIGHTING LUMINAIRE SCHEDULE

SYMBOL	QUANTITY	LABEL	WATTAGE	MOUNTING HEIGHT	ARRANGEMENT	LIGHT LOSS FACTOR	MANUFACTURER	DESCRIPTION	IES FILE
	2	A-2	39	25 FT	4 @ 90 DEGREES	1.000	LSI LIGHTING	MRS-LED-06L-SIL-FT-30-70CRI-IH	MRS-LED-06L-SIL-FT-30-70CRI-IH.IES
	8	W-1	62	15 - 25 FT	SINGLE	1.000	LSI LIGHTING	XWM-3-LED-08L-30	XWM-3-LED-08L-30.IES

ISO CURVE LINES ARE MAINTAINED AND SHOWN AT 1.0, 0.5, AND 0.1 FC.

(FM) - FLUSH MOUNT FOUNDATION (PED) - PEDESTAL FOUNDATION

THE CALCULATIONS SHOWN WERE MADE UTILIZING ACCEPTED PROCEDURES OF THE ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA. VARIATIONS IN LAMP OUTPUT, BALLAST OUTPUT, LINE VOLTAGE, DIRT DEPRECIATION, AND OTHER FACTORS MAY AFFECT ACTUAL RESULTS. UNLESS OTHERWISE STATED, ALL RESULTS ARE MAINTAINED VALUES, UTILIZING ACCEPTED LIGHT LOSS FACTORS (LLF).

STATISTICAL AREA SUMMARY

LABEL	AVERAGE	MAXIMUM	MINIMUM	AVG./MIN.	MAX./MIN.	DESCRIPTION
PIQ	1.08	4.4	0.0	N.A.	N.A.	ILLUMINATION LEVELS ON SITE
PAVEMENT	1.60	4.4	0.0	N.A.	N.A.	ILLUMINATION LEVELS WITHIN PAVEMENT AREAS

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TITLE: **LIGHTING PLAN**

PROJECT: **ASSET REALTY & CONSTRUCTION GROUP INC.**
PROPOSED FIVE-STORY MIXED USE BUILDING
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

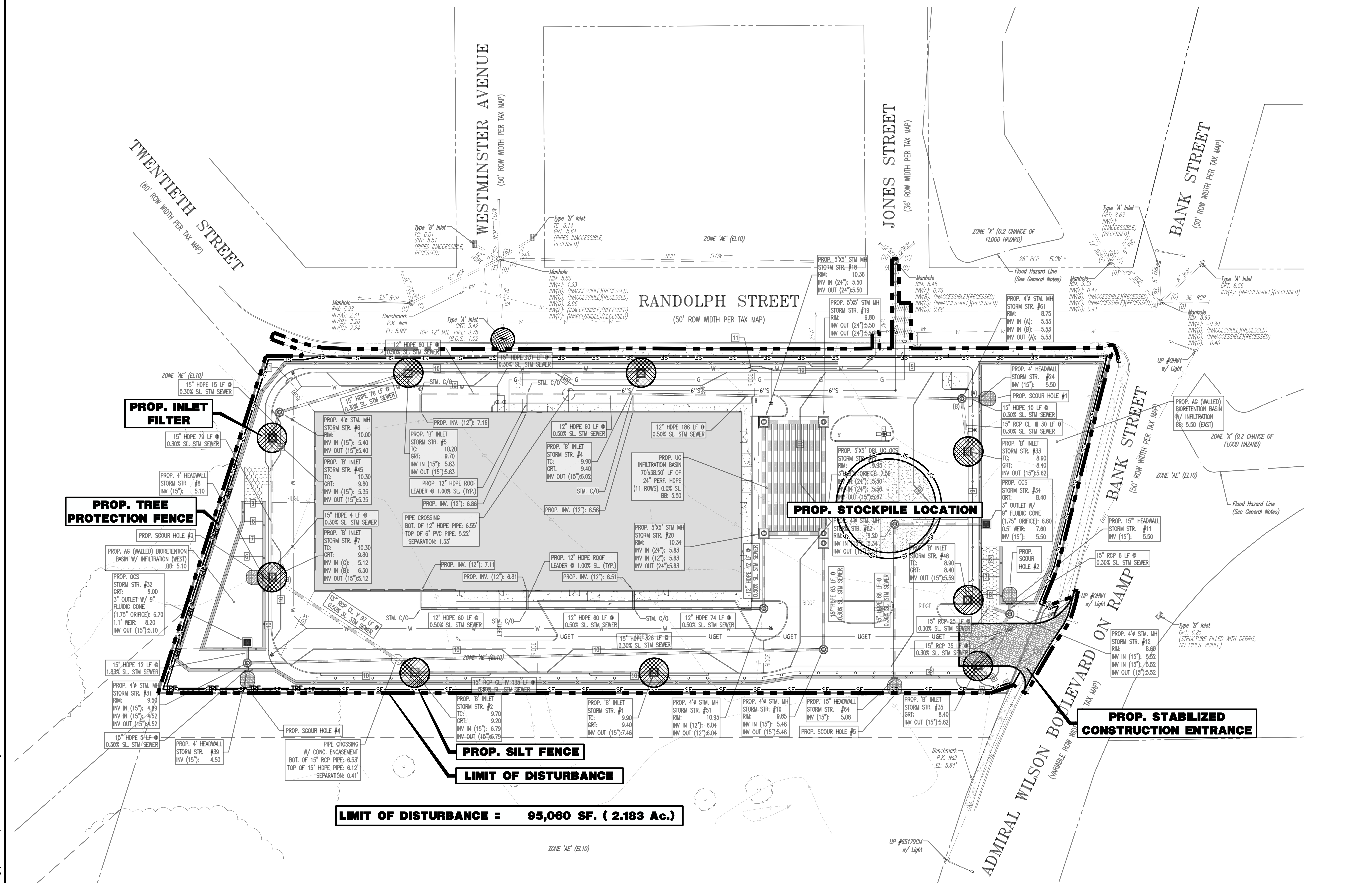
JOB No: 2334-23-03513
DATE: 04/30/2025
DRAWN BY: UV
DESIGNED BY: AG/SM
CHECKED BY: DT
CHECKED BY: _
SCALE: (H) 1"=30' (V) .
SHEET No: 9 OF 17
Rev. # 0

DANIEL A. TARABOKIJA
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 56963

JOSHUA M. SEWALD
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 52908

Plotted: 05/07/25 - 1:07 PM, By: kheege, — Product Ver: 25.0
File: \\decpc.local\decfolders\Data\DECPC PROJECTS\2334 Arco Murray\23-03513 Camden\Dwg\Site Plans\023342303513SP.dwg, ----> 09 LIGHTING PLAN

THIS PLAN TO BE UTILIZED FOR SOIL EROSION & SEDIMENT CONTROL PURPOSES ONLY



EROSION CONTROL LEGEND

— — —	PROP. LIMIT OF DISTURBANCE LINE
—SF—	PROP. SILT FENCE LINE
—TPF—	PROP. TREE PROTECTION FENCE LINE
●	PROP. INLET FILTER
▭	PROP. HAYBALE SEDIMENT BARRIER

SEE SHEET 12 OF 17 FOR SOIL EROSION NOTES AND DETAILS

GRAPHIC SCALE

-30 0 15 30 60 120

(IN FEET)
1 INCH = 30 FT.

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TITLE: SOIL EROSION AND SEDIMENT CONTROL PLAN

PROJECT: ASSET REALTY & CONSTRUCTION GROUP INC.
PROPOSED FIVE-STORY MIXED USE BUILDING
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

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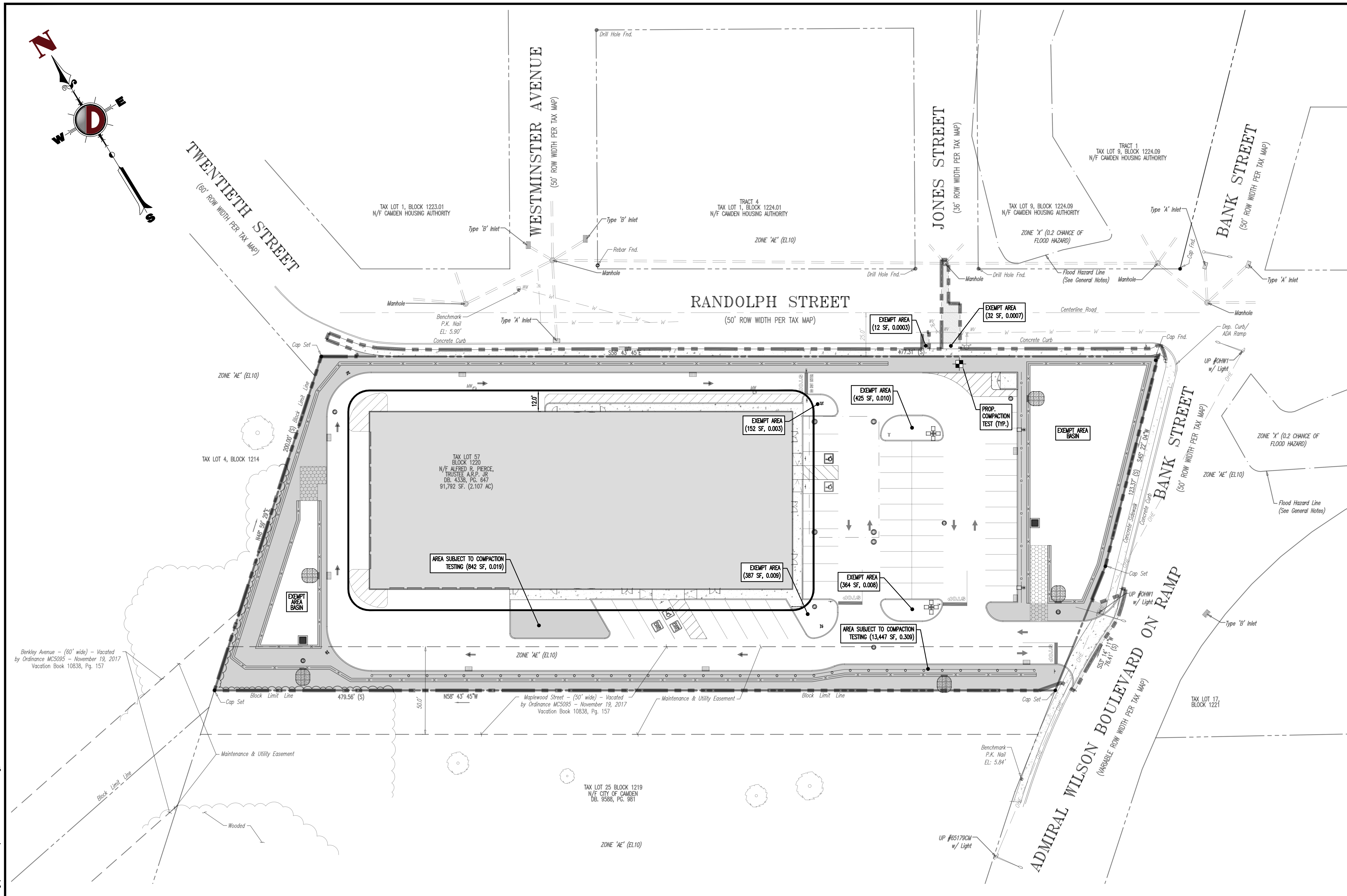


Soil De-compaction and Testing Requirements

Soil Compaction Testing Requirements

1. Subgrade soils **prior to the application of topsoil** (see permanent seeding and stabilization notes for topsoil requirements) shall be free of excessive compaction to a depth of 6.0 inches to enhance the establishment of permanent vegetative cover.

2. Areas of the site which are subject to compaction testing and/or mitigation are **graphically denoted** on the certified soil erosion control plan.

3. **Compaction testing locations** are denoted on the plan. A copy of the plan or portion of the plan shall be used to mark locations of tests, and attached to the compaction remediation form, available from the local soil conservation district. This form must be filled out and submitted prior to receiving a certificate of compliance from the district.

4. In the event that testing indicates compaction in excess of the maximum thresholds indicated for the simplified testing methods (see details below), the contractor/owner shall have the option to perform either (1) compaction mitigation over the entire mitigation area denoted on the plan (excluding exempt areas), or (2) perform additional, more detailed testing to establish the limits of excessive compaction whereupon only the excessively compacted areas would require compaction mitigation. Additional detailed testing shall be performed by a trained, licensed professional.

Compaction Testing Methods

A. Probing Wire Test (see detail)
B. Hand-held Penetrometer Test (see detail)
C .Tube Bulk Density Test (licensed professional engineer required
D. Nuclear Density Test (licensed professional engineer required)

Note: Additional testing methods which conform to ASTM standards and specifications, and which produce a dry weight, soil bulk density measurement may be allowed subject to District approval.

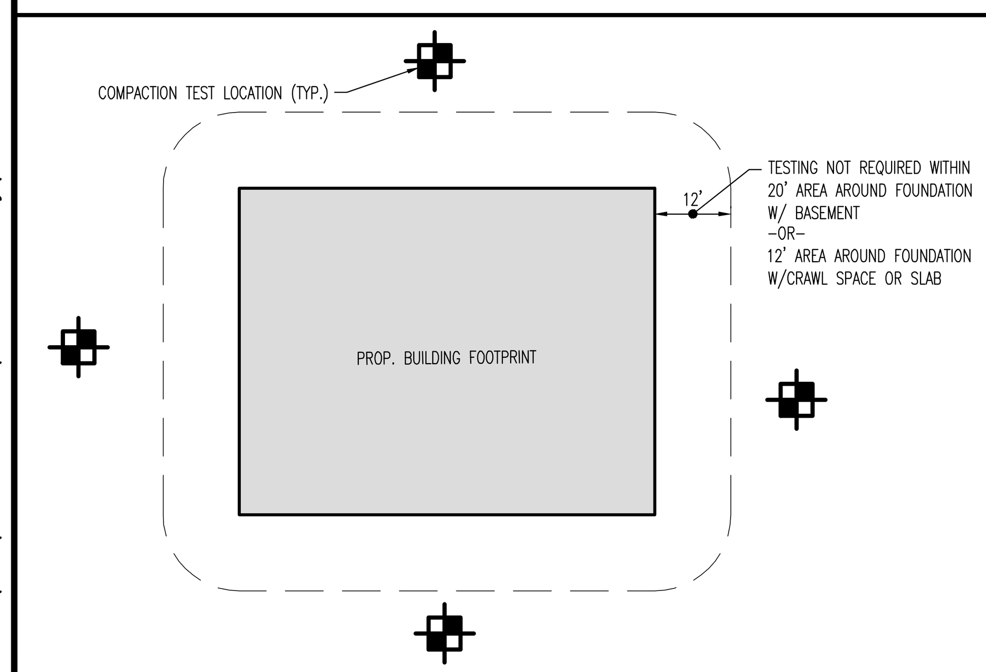
Soil compaction testing is not required if/when subsoil compaction remediation (scarification/tillage (6" minimum depth) or similar) is proposed as part of the sequence of construction.

Procedures for Soil Compaction Mitigation

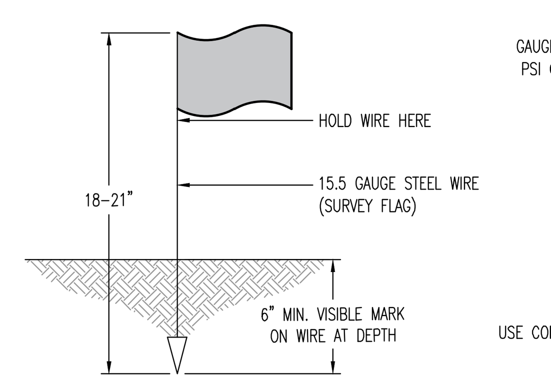
Procedures shall be used to mitigate excessive soil compaction **prior to placement of topsoil** and establishment of permanent vegetative cover.

Restoration of compacted soils shall be through deep scarification/tillage (6" minimum depth) where there is no danger to underground utilities (cables, irrigation systems, etc.). In the alternative, another method as specified by a New Jersey Licensed Professional Engineer maybe substituted subject to District Approval.

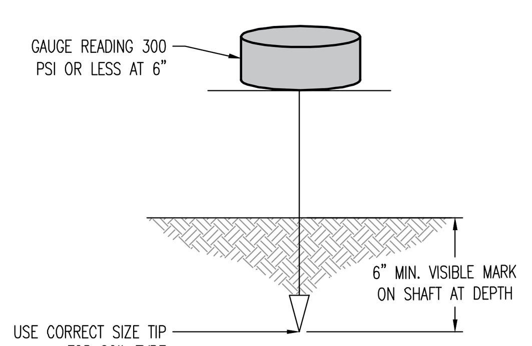
GRAPHIC SCALE
-30 0 15 30 60 120
(IN FEET)
1 INCH = 30 FT.



NOTE:
SOIL COMPACTION TESTING LOCATIONS IDENTIFIED ARE RECOMMENDED LOCATIONS FOR GRADING/DISTURBED AREAS WITHIN THE VICINITY OF BUILDINGS AND STRUCTURES OR ON INDIVIDUAL LOTS. FOR GRADED/DISTURBED AREAS WITHIN OPEN OR COMMON SPACES.



PROBING WIRE TEST



HANDHELD SOIL PENETROMETER TEST

NOTES:
1. SOIL COMPACTION TESTING IS NOT REQUIRED WITHIN 20 FEET OF BUILDING FOUNDATIONS WITH BASEMENTS OR 12 FEET FROM SLAB OR CRAWL SPACE CONSTRUCTION.
2. A MINIMUM OF TWO (2) TESTS SHALL BE PERFORMED FOR PROJECTS WITH AN OVERALL LIMIT OF DISTURBANCE OF UP TO ONE (1) ACRE AND AT A RATE OF TWO (2) TESTS PER ACRE OF THE OVERALL LIMIT OF DISTURBANCE FOR LARGER AREAS, WHICH SHALL BE EVENLY DISTRIBUTED OVER THE AREA OF DISTURBANCE SUBJECT TO TESTING.
3. SOIL SHOULD BE MOIST, BUT NOT SATURATED. DO NOT TEST WHEN SOIL IS EXCESSIVELY DRY OR SUBJECT TO FREEZING TEMPERATURES. SLOW, STEADY DOWNWARD PRESSURE USED TO ADVANCE THE WIRE/PENETROMETER.
4. WIRE/PENETROMETER MAY BE RE-INSERTED IF/WHEN AN OBSTRUCTION (ROCK, ROOT, DEBRIS) IS ENCOUNTERED. RECORD DEPTH OF PENETRATION LESS THAN 6" IF WIRE DEFORMS AND/OR PENETROMETER GAGE MEASURES 300 PSI.
5. SUCCESSFUL TEST (NON-COMPACTED SOIL) OCCURS WHEN EITHER WIRE PENETRATES WITHOUT BENDING OR DEFORMING AT LEAST 6" INTO THE GROUND BY HAND WITHOUT THE USE OF TOOLS OR PROBE PENETRATES AT LEAST 6" WITH LESS THAN 300 PSI READING ON GAGE.
6. IF THE WIRE IS DIFFICULT TO INSERT (WIRE BENDS OR DEFORMS PRIOR TO REACHING 6 INCHES IN DEPTH), THE SOIL MAY BE EXCESSIVELY COMPACTED AND COMPACTION MITIGATION OR FURTHER TESTING VIA TUBE BULK DENSITY OR NUCLEAR DENSITY TESTING METHODS AT THE DISCRETION OF THE OWNER/CONTRACTOR.

TYPICAL SOIL COMPACTION TESTING DETAIL
NOT TO SCALE

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TITLE: SOIL MANAGEMENT AND RESTORATION PLAN

PROJECT: ASSET REALTY & CONSTRUCTION GROUP INC.
PROPOSED FIVE-STORY MIXED USE BUILDING
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

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File: \\decpc.local\decfolders\Data\DECPC PROJECTS\2334 Arco Murray\23-03513 Camden\Dwg\Site Plans\D2334230351SSM0.dwg. ---> 11 SOIL MANAGEMENT AND RESTORATION PLAN

STANDARD FOR PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION

1. SITE PREPARATION
   A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARD FOR LAND GRADING.
   B. IMMEDIATELY PRIOR TO SEEDING AND TOPSOIL APPLICATION, THE SUBSOIL SHALL BE EVALUATED FOR COMPACTION IN ACCORDANCE WITH THE STANDARD FOR LAND GRADING.
   C. TOPSOIL SHOULD BE HANDLED ONLY WHEN IT IS DRY ENOUGH TO WORK WITHOUT DAMAGING THE SOIL STRUCTURE. A UNIFORM APPLICATION TO A DEPTH OF 5 INCHES (UNSETTLED) IS REQUIRED ON ALL SITES. TOPSOIL SHALL BE AMENDED WITH ORGANIC MATTER, AS NEEDED, IN ACCORDANCE WITH THE STANDARD FOR TOPSOILING.
   D. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE-STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS.

2. SEEDBED PREPARATION
   A. UNIFORMLY APPLY GROUND LIMESTONE AND FERTILIZER TO TOPSOIL WHICH HAS BEEN SPREAD AND FIRMED, ACCORDING TO SOIL TEST RECOMMENDATIONS SUCH AS OFFERED BY RUTGERS CO-OPERATIVE EXTENSION SOIL SAMPLE MAILERS ARE AVAILABLE FROM THE LOCAL RUTGERS COOPERATIVE EXTENSION OFFICES (HTTP://NJAES.RUTGERS.EDU/COUNTY/).
      - FERTILIZER SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11 POUNDS PER 1,000 SQUARE FEET OF 10-10-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN UNLESS A SOIL TEST INDICATES OTHERWISE AND INCORPORATED INTO THE SURFACE 4 INCHES. IF FERTILIZER IS NOT INCORPORATED, APPLY ONE-HALF THE RATE DESCRIBED ABOVE DURING SEEDBED PREPARATION AND REPEAT ANOTHER ONE-HALF RATE APPLICATION OF THE SAME FERTILIZER WITHIN 3 TO 5 WEEKS AFTER SEEDING.
   B. WORK LIME AND FERTILIZER INTO THE TOPSOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRING-TOOTH HARROW, OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISKING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLE UNIFORM SEEDBED IS PREPARED.
   C. HIGH ACID PRODUCING SOIL. SOILS HAVING A PH OF 4 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM OF 12 INCHES OF SOIL HAVING A PH OF 5 OR MORE BEFORE INITIATING SEEDBED REPARATION. SEE STANDARD FOR MANAGEMENT OF HIGH ACID-PRODUCING SOILS FOR SPECIFIC REQUIREMENTS.

3. SEEDING
   A. PERMANENT VEGETATIVE MIXTURES & PLANTING RATES

GENERAL LAWN AREAS (SCD MIX 13 FROM TABLE 4)

(1)	HARD FESCUE AND/OR CHEWING FESCUE AND/OR STRONG CREEPING RED FESCUE -	175 LBS/ACRE	4 LBS/1000 SQ.FT.
(2)	PERENNIAL RYEGRASS -	45 LBS/ACRE	1 LBS/1000 SQ.FT.
(3)	KENTUCKY BLUEGRASS (BLEND) -	45 LBS/ACRE	1 LBS/1000 SQ.FT.

BASIN AREAS (SCD MIX 9 FROM TABLE 4)

(1)	DEER TONGUE -	20 LBS/ACRE	0.45 LBS/1000 SQ.FT.
(2)	REDTOP -	2 LBS/ACRE	0.05 LBS/1000 SQ.FT.
(3)	WILD RYE (ELYMUS) -	15 LBS/ACRE	0.35 LBS/1000 SQ.FT.
(4)	SWITCHGRASS -	25 LBS/ACRE	0.60 LBS/1000 SQ.FT.

   B. CONVENTIONAL SEEDING IS PERFORMED BY APPLYING SEED UNIFORMLY BY HAND, CYCLONE (CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL OR CULTIPACKER SEEDER. EXCEPT FOR DRILLED, HYDROSEEDED OR CULTIPACKED SEEDINGS, SEED SHALL BE INCORPORATED INTO THE SOIL WITHIN 24 HOURS OF SEEDBED PREPARATION TO A DEPTH OF 1/4 TO 1/2 INCH, BY RAKING OR DRAGGING. DEPTH OF SEED PLACEMENT MAY BE 1/4 INCH DEEPER ON COARSE-TEXTURED SOIL.
   C. AFTER SEEDING, FIRMING THE SOIL WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY, AND IMPROVE SEEDLING EMERGENCE. THIS IS THE PREFERRED METHOD. WHEN PERFORMED ON THE CONTOUR, SHEET EROSION WILL BE MINIMIZED AND WATER CONSERVATION ON SITE WILL BE MAXIMIZED.
   D. HYDROSEEDING IS A BROADCAST SEEDING METHOD USUALLY INVOLVING A TRUCK, OR TRAILER-MOUNTED TANK, WITH AN AGITATION SYSTEM AND HYDRAULIC PUMP FOR MIXING SEED, WATER AND FERTILIZER AND SPRAYING THE MIX ONTO THE PREPARED SEEDBED. MULCH SHALL NOT BE INCLUDED IN THE TANK WITH SEED. SHORTFIBERED MULCH MAY BE APPLIED WITH A HYDROSEEDER FOLLOWING SEEDING. (ALSO SEE SECTION 4-MULCHING BELOW). HYDROSEEDING IS NOT A PREFERRED SEEDING METHOD BECAUSE SEED AND FERTILIZER ARE APPLIED TO THE SURFACE AND NOT INCORPORATED INTO THE SOIL. WHEN POOR SEED TO SOIL CONTACT OCCURS, THERE IS A REDUCED SEED GERMINATION AND GROWTH.

4. MULCHING

   MULCHING IS REQUIRED ON ALL SEEDING. MULCH WILL PROTECT AGAINST EROSION BEFORE GRASS IS ESTABLISHED AND WILL PROMOTE FASTER AND EARLIER ESTABLISHMENT. THE EXISTENCE OF VEGETATION SUFFICIENT TO CONTROL SOIL EROSION SHALL BE DEEMED COMPLIANCE WITH THIS MULCHING REQUIREMENT.

   A. STRAW OR HAY. UNROTTED SMALL GRAIN STRAW, HAY FREE OF SEEDS, APPLIED AT THE RATE OF 1.5 TO 2 TONS PER ACRE (70 TO 90 POUNDS PER 1,000 SQUARE FEET), EXCEPT THAT WHERE A CRIMPER IS USED INSTEAD OF A LIQUID MULCH-BINDER (TACKIFYING OR ADHESIVE AGENT), THE RATE OF APPLICATION IS 3 TONS PER ACRE. MULCH CHOPPER-BLOWERS MUST NOT GRIND THE MULCH. HAY MULCH IS NOT RECOMMENDED FOR ESTABLISHING FINE TURF OR LAWNS DUE TO THE PRESENCE OF WEED SEED.

   APPLICATION. SPREAD MULCH UNIFORMLY BY HAND OR MECHANICALLY SO THAT APPROXIMATELY 85% OF THE SOIL SURFACE WILL BE COVERED. FOR UNIFORM DISTRIBUTION OF HAND-SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000 SQUARE FEET SECTIONS AND DISTRIBUTE 70 TO 90 POUNDS WITHIN EACH SECTION.

   ANCHORING SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS IN ACCORDANCE WITH THE STATE STANDARDS, DEPENDING UPON THE SIZE OF THE AREA, STEEPNESS OF SLOPES, AND COST.
   1. PEG AND TWINE
   2. MULCH NETTINGS
   3. CRIMPER MULCH ANCHORING COULTER TOOL
   4. LIQUID MULCH-BINDERS

   B. WOOD-FIBER OR PAPER-FIBER MULCH. SHALL BE MADE FROM WOOD, PLANT FIBERS OR PAPER CONTAINING NO GROWTH OR GERMINATION INHIBITING MATERIALS, USED AT THE RATE OF 1,500 POUNDS PER ACRE (OR AS RECOMMENDED BY THE PRODUCT MANUFACTURER) AND MAY BE APPLIED BY A HYDROSEEDER. THIS MULCH SHALL NOT BE MIXED IN THE TANK WITH SEED. USE IS LIMITED TO FLATTER SLOPES AND DURING OPTIMUM SEEDING PERIODS IN SPRING AND FALL.

   C. PELLETIZED MULCH - COMPRESSED AND EXTRUDED PAPER AND/OR WOOD FIBER PRODUCT, WHICH MAY CONTAIN CO-POLYMERS, TACKIFIERS, FERTILIZERS, AND COLORING AGENTS. THE DRY PELLETS, WHEN APPLIED TO A SEEDED AREA AND WATERED, FORM A MULCH MAT. PELLETIZED MULCH SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MULCH MAY BE APPLIED BY HAND OR MECHANICAL SPREADER AT THE RATE OF 60-75 LBS/1,000 SQUARE FEET AND ACTIVATED WITH 0.2 TO 0.4 INCHES OF WATER. THIS MATERIAL HAS BEEN FOUND TO BE BENEFICIAL FOR USE ON SMALL LAWN OR RENOVATION AREAS, SEEDED AREAS WHERE WEED-SEED FREE MULCH IS DESIRED, OR ON SITES WHERE STRAW MULCH AND TACKIFIER AGENT ARE NOT PRACTICAL OR DESIRABLE. APPLYING THE FULL 0.2 TO 0.4 INCHES OF WATER AFTER SPREADING PELLETIZED MULCH ON THE SEED BED IS EXTREMELY IMPORTANT FOR SUFFICIENT ACTIVATION AND EXPANSION OF THE MULCH TO PROVIDE SOIL COVERAGE.

STANDARD FOR PERMANENT STABILIZATION WITH SOD

METHODS AND MATERIALS
1. CULTIVATED SOD IS PREFERRED OVER NATIVE OR PASTURE SOD. SPECIFY "CERTIFIED SOD," OR OTHER HIGH QUALITY CULTIVATED SOD.
2. SOD SHOULD BE FREE OF WEEDS AND UNDESIRABLE COARSE WEEDY GRASSES.
3. SOD SHOULD BE OF UNIFORM THICKNESS, APPROXIMATELY 5/8 INCH, PLUS OR MINUS 1/4 INCH, AT TIME OF CUTTING. (EXCLUDES TOP GROWTH.)
4. SOD SHOULD BE VIGOROUS AND DENSE AND BE ABLE TO RETAIN ITS OWN SHAPE AND WEIGHT WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP FROM THE UPPER 10 PERCENT OF THE STRIP. BROKEN PADS OR TORN AND UNEVEN ENDS WILL NOT BE ACCEPTABLE.
5. FOR DROUGHTY SITES, A SOD OF KENTUCKY 31 TALL FESCUE AND BLUEGRASS IS PREFERRED OVER A STRAIGHT BLUEGRASS SOD.
6. ONLY MOIST, FRESH, UNHEATED SOD SHOULD BE USED. SOD SHOULD BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS.

I. SITE PREPARATION
   A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR LIMING, FERTILIZING, AND SOIL PREPARATION. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARD FOR LAND GRADING, PAGE 4.11.
   B. INSTALL NEEDED EROSION CONTROL PRACTICES AND FACILITIES, SUCH AS INTERCEPTOR DITCHES, DIKES AND TERRACES, EROSION STOPS, AND DE-SILTING BASINS. SEE STANDARDS 4.2 THROUGH 4.16.

II. SOIL PREPARATION
   A. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TESTS SUCH AS THOSE OFFERED BY RUTGERS UNIVERSITY SOIL TESTING LABORATORY. SOIL SAMPLE MAILERS ARE AVAILABLE FROM THE LOCAL COOPERATIVE EXTENSION SERVICE OFFICE. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11 POUNDS PER 1,000 SQUARE FEET OF 10-10-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN AND INCORPORATED INTO THE SURFACE 4". IN ADDITION, 300 POUNDS 38-0-0 PER ACRE OR EQUIVALENT OF SLOW RELEASE NITROGEN MAY BE USED IN LIEU OF TOP-DRESSING. APPLY LIMESTONE AS FOLLOWS:

SOIL TEXTURE	TONS/ACRE	LBS/1000 SQ. FT
CLAY, CLAY LOAM, AND HIGH ORGANIC SOIL	3	135
SANDY LOAM, LOAM, SILT LOAM	2	90
LOAMY SAND, SAND	1	45

   PULVERIZED DOLOMITE LIMESTONE IS PREFERRED FOR MOST SOILS SOUTH OF THE NEW BRUNSWICK-TRENTON LINE.
   B. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRING TOOTH HARROW, OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM, FINE SEEDBED IS PREPARED.
   C. REMOVE FROM THE SURFACE ALL OBJECTS THAT WOULD PREVENT GOOD SOD TO SOIL CONTACT AND REMOVE ALL OTHER DEBRIS, SUCH AS WIRE, CABLE, TREE ROOTS, PIECES OF CONCRETE, CLODS, LUMPS, OR OTHER UNSUITABLE MATERIAL.
   D. INSPECT SITE JUST BEFORE SODDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RE-TILLED AND FIRMED AS ABOVE.

III. SOD PLACEMENT
   A. SOD STRIPS SHOULD BE LAID ON THE CONTOUR, NEVER UP AND DOWN THE SLOPE, STARTING AT THE BOTTOM OF THE SLOPE AND WORKING UP. ON STEEP SLOPES, THE USE OF LADDERS WILL FACILITATE THE WORK AND PREVENT DAMAGE TO THE SOD. DURING PERIODS OF HIGH TEMPERATURE, LIGHTLY IRRIGATE THE SOIL IMMEDIATELY PRIOR TO LAYING THE SOD.
   B. PLACE SOD STRIPS WITH SNUG, EVEN JOINTS THAT ARE STAGGERED. OPEN SPACES INVITE EROSION.
   C. ROLL OR TAMP SOD IMMEDIATELY FOLLOWING PLACEMENT TO INSURE SOLID CONTACT OF ROOT MAT AND SOIL SURFACE. DO NOT OVERLAP SOD. ALL JOINTS SHOULD BE BUTTED TIGHTLY IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE DRYING OF THE ROOTS.
   D. ON SLOPES GREATER THAN 3 TO 1, SECURE SOD TO SURFACE SOIL WITH WOOD PEGS, WIRE STAPLES, OR SPLIT SHINGLES (8 TO 10 INCHES LONG BY 3/4 INCH WIDE).
   E. SURFACE WATER CANNOT ALWAYS BE DIVERTED FROM FLOWING OVER THE FACE OF THE SLOPE, BUT A CAPPING STRIP OF HEAVY JUTE OR PLASTIC NETTING, PROPERLY SECURED, ALONG THE CROWN OF THE SLOPE AND EDGES WILL PROVIDE EXTRA PROTECTION AGAINST LIFTING AND UNDERCUTTING OF SOD. THE SAME TECHNIQUE CAN BE USED TO ANCHOR SOD IN WATER CARRYING CHANNELS AND OTHER CRITICAL AREAS. WIRE STAPLES MUST BE USED TO ANCHOR NETTING IN CHANNEL WORK.
   F. IMMEDIATELY FOLLOWING INSTALLATION, SOD SHOULD BE WATERED UNTIL MOISTURE PENETRATES THE SOIL LAYER BENEATH SOD TO A DEPTH OF 4 INCHES. MAINTAIN OPTIMUM MOISTURE FOR AT LEAST TWO WEEKS.

IV. TOP-DRESSING
   IF SLOW RELEASE NITROGEN IS USED IN ADDITION TO SUGGESTED FERTILIZER, THEN A FOLLOW-UP OF TOP DRESSING IS NOT MANDATORY, EXCEPT WHERE GROSS NITROGEN DEFICIENCY EXISTS IN THE SOIL TO THE TURF FAILURE MAY DEVELOP.

   TOP-DRESS WITH 10-0-10 OR EQUIVALENT AT 400 POUNDS PER ACRE OR 7 POUNDS PER 1,000 SQUARE FEET EVERY 3 TO 5 WEEKS UNTIL THE GROSS NITROGEN DEFICIENCY IN THE TURF IS AMELIORATED.

STANDARD FOR TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION

1. SITE PREPARATION
   A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS FOR LAND GRADING, PG. 19-1.
   B. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS. SEE STANDARDS 11 THROUGH 42.
   C. IMMEDIATELY PRIOR TO SEEDING, THE SURFACE SHOULD BE SCARIFIED 6" TO 12" WHERE THERE HAS BEEN SOIL COMPACTION. THIS PRACTICE IS PERMISSIBLE ONLY WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.).

2. SEEDBED PREPARATION
   A. APPLY GROUND LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS SUCH AS OFFERED BY RUTGERS CO-OPERATIVE EXTENSION. SOIL SAMPLE MAILERS ARE AVAILABLE FROM THE LOCAL RUTGERS COOPERATIVE EXTENSION OFFICES.
      - FERTILIZER SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11 POUNDS PER 1,000 SQUARE FEET OF 10-20-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN UNLESS A SOIL TEST INDICATES OTHERWISE.
      - CALCIUM CARBONATE IS THE EQUIVALENT AND STANDARD FOR MEASURING THE ABILITY OF LIMING MATERIALS TO NEUTRALIZE SOIL ACIDITY AND SUPPLY CALCIUM AND MAGNESIUM TO GRASSES AND LEGUMES.
   B. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRINGTOOTH HARROW, OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISKING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLE UNIFORM SEEDBED IS PREPARED.
   C. INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RETILLED IN ACCORDANCE WITH THE ABOVE.
   D. SOILS HIGH IN SULFIDES OR HAVING A PH OF 4 OR LESS REFER TO STANDARD FOR MANAGEMENT OF HIGH ACID PRODUCING SOILS, PG. 1-1.

3. SEEDING
   A. TEMPORARY VEGETATIVE STABILIZATION GRASSES, SEEDING RATES, DATES AND DEPTHS

   -COOL SEASON GRASSES:
   (1) PERENNIAL RYEGRASS - 100 LBS / ACRE; PLANT BETWEEN MARCH 1 AND MAY 15 BETWEEN AUGUST 15 AND OCTOBER 1; AT A DEPTH OF 0.5 INCHES.
   (2) SPRING OATS - 86 LBS / ACRE; PLANT BETWEEN MARCH 1 AND MAY 15 BETWEEN AUGUST 15 AND OCTOBER 1; AT A DEPTH OF 1.0 INCHES.
   (3) WINTER BARLEY - 96 LBS / ACRE; PLANT BETWEEN AUGUST 15 AND OCTOBER 1; AT A DEPTH OF 1.0 INCHES.
   (4) ANNUAL RYEGRASS - 100 LBS / ACRE; PLANT BETWEEN MARCH 1 AND JUNE 15 BETWEEN AUGUST 1 AND SEPTEMBER 15; AT A DEPTH OF 0.5 INCHES.
   (5) WINTER CEREAL RYE - 112 LBS / ACRE; PLANT BETWEEN AUGUST 1 AND NOVEMBER 15; AT A DEPTH OF 1.0 INCHES.

   -WARM SEASON GRASSES:
   (1) PEARL MILLET - 20 LBS / ACRE; PLANT BETWEEN MAY 15 AND AUGUST 15; AT A DEPTH OF 1.0 INCHES.
   (2) MILLET (GERMAN OR HUNGARIAN) - 30 LBS / ACRE; PLANT BETWEEN MAY 15 AND AUGUST 15; AT A DEPTH OF 1.0 INCHES.
   B. CONVENTIONAL SEEDING. APPLY SEED UNIFORMLY BY HAND, CYCLONE (CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL OR CULTIPACKER SEEDER. EXCEPT FOR DRILLED, HYDROSEEDED OR CULTIPACKED SEEDINGS, SEED SHALL BE INCORPORATED INTO THE SOIL TO A DEPTH OF 1/4 TO 1/2 INCH, BY RAKING OR DRAGGING. DEPTH OF SEED PLACEMENT MAY BE 1/4 INCH DEEPER ON COARSE TEXTURED SOIL.
   C. HYDROSEEDING IS A BROADCAST SEEDING METHOD USUALLY INVOLVING A TRUCK OR TRAILER MOUNTED TANK, WITH AN AGITATION SYSTEM AND HYDRAULIC PUMP FOR MIXING SEED, WATER AND FERTILIZER AND SPRAYING THE MIX ONTO THE PREPARED SEEDBED. MULCH SHALL NOT BE INCLUDED IN THE TANK WITH SEED. SHORT FIBERED MULCH MAY BE APPLIED WITH A HYDROSEEDER FOLLOWING SEEDING. (ALSO SEE SECTION IV MULCHING) HYDROSEEDING IS NOT A PREFERRED SEEDING METHOD BECAUSE SEED AND FERTILIZER ARE APPLIED TO THE SURFACE AND NOT INCORPORATED INTO THE SOIL. POOR SEED TO SOIL CONTACT OCCURS REDUCING SEED GERMINATION AND GROWTH. HYDROSEEDING MAY BE USED FOR AREAS TOO STEEP FOR CONVENTIONAL EQUIPMENT TO TRAVERSE OR TOO OBSTRUCTED WITH ROCKS, STUMPS, ETC.
   D. AFTER SEEDING, FIRMING THE SOIL WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY, AND IMPROVE SEEDLING EMERGENCE. THIS IS THE PREFERRED METHOD. WHEN PERFORMED ON THE CONTOUR, SHEET EROSION WILL BE MINIMIZED AND WATER CONSERVATION ON SITE WILL BE MAXIMIZED.

4. MULCHING

   MULCHING IS REQUIRED ON ALL SEEDING. MULCH WILL INSURE AGAINST EROSION BEFORE GRASS IS ESTABLISHED AND WILL PROMOTE FASTER AND EARLIER ESTABLISHMENT. THE EXISTENCE OF VEGETATION SUFFICIENT TO CONTROL SOIL EROSION SHALL BE DEEMED COMPLIANCE WITH THIS MULCHING REQUIREMENT.

   A. STRAW OR HAY. UNROTTED SMALL GRAIN STRAW, HAY FREE OF SEEDS, APPLIED AT THE RATE OF 1-1/2 TO 2 TONS PER ACRE (70 TO 90 POUNDS PER 1,000 SQUARE FEET), EXCEPT THAT WHERE A CRIMPER IS USED INSTEAD OF A LIQUID MULCH-BINDER (TACKIFYING OR ADHESIVE AGENT), THE RATE OF APPLICATION IS 3 TONS PER ACRE. MULCH CHOPPER-BLOWERS MUST NOT GRIND THE MULCH. HAY MULCH IS NOT RECOMMENDED FOR ESTABLISHING FINE TURF OR LAWNS DUE TO THE PRESENCE OF WEED SEED.

   APPLICATION. SPREAD MULCH UNIFORMLY BY HAND OR MECHANICALLY SO THAT APPROXIMATELY 95% OF THE SOIL SURFACE WILL BE COVERED. FOR UNIFORM DISTRIBUTION OF HAND-SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000 SQUARE FEET SECTIONS AND DISTRIBUTE 70 TO 90 POUNDS WITHIN EACH SECTION.

   ANCHORING SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS IN ACCORDANCE WITH THE STATE STANDARDS, DEPENDING UPON THE SIZE OF THE AREA, STEEPNESS OF SLOPES, AND COST.
   1. PEG AND TWINE
   2. MULCH NETTINGS
   3. CRIMPER MULCH ANCHORING COULTER TOOL
   4. LIQUID MULCH-BINDERS

   B. WOOD-FIBER OR PAPER-FIBER MULCH. SHALL BE MADE FROM WOOD, PLANT FIBERS OR PAPER CONTAINING NO GROWTH OR GERMINATION INHIBITING MATERIALS, USED AT THE RATE OF 1,500 POUNDS PER ACRE (OR AS RECOMMENDED BY THE PROJECT MANUFACTURER) AND MAY BE APPLIED BY A HYDROSEEDER. THIS MULCH SHALL NOT BE MIXED IN THE TANK WITH SEED. USE IS LIMITED TO FLATTER SLOPES AND DURING OPTIMUM SEEDING PERIODS IN SPRING AND FALL.

   C. PELLETIZED MULCH. COMPRESSED AND EXTRUDED PAPER AND/OR WOOD FIBER PRODUCT, WHICH MAY CONTAIN CO-POLYMERS, TACKIFIERS, FERTILIZERS AND COLORING AGENTS. THE DRY PELLETS, WHEN APPLIED TO A SEEDED AREA AND WATERED, FORM A MULCH MAT. PELLETIZED MULCH SHALL BE APPLIES IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. MULCH MAY BE APPLIED BY HAND OR MECHANICAL SPREADER AT THE RATE OF 60-75 LBS./1,000 SQUARE FEET AND ACTIVATED WITH 0.2 TO 0.4 INCHES OF WATER. THIS MATERIAL HAS BEEN FOUND TO BE BENEFICIAL FOR USE ON SMALL LAWN OR RENOVATION AREAS, SEEDED AREAS WHERE WEED-SEED FREE MULCH IS DESIRED OR ON SITES WHERE STRAW MULCH AND TACKIFIER AGENT ARE NOT PRACTICAL OR DESIRABLE.

   APPLYING THE FULL 0.2 TO 0.4 INCHES OF WATER AFTER SPREADING PELLETIZED MULCH ON THE SEED BED IS EXTREMELY IMPORTANT FOR SUFFICIENT ACTIVATION AND EXPANSION OF THE MULCH TO PROVIDE SOIL COVERAGE.

STANDARD FOR STABILIZATION WITH MULCH ONLY

1. SITE PREPARATION
   A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS FOR LAND GRADING.
   B. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS. SEE STANDARDS 11 THROUGH 42.

2. PROTECTIVE MATERIALS
   A. UNROTTED SMALL-GRAIN STRAW, AT 2.0 TO 2.5 TONS PER ACRE, IS SPREAD UNIFORMLY AT 90 TO 115 POUNDS PER 1,000 SQUARE FEET AND ANCHORED WITH A MULCH ANCHORING TOOL, LIQUID MULCH BINDERS, OR NETTING TIE DOWN. OTHER SUITABLE MATERIALS MAY BE USED IF APPROVED BY THE SOIL CONSERVATION DISTRICT. THE APPROVED RATES ABOVE HAVE BEEN MET WHEN THE MULCH COVERS THE GROUND COMPLETELY UPON VISUAL INSPECTION, I.E. THE SOIL CANNOT BE SEEN BELOW THE MULCH.
   B. SYNTHETIC OR ORGANIC SOIL STABILIZERS MAY BE USED UNDER SUITABLE CONDITIONS AND IN QUANTITIES AS RECOMMENDED BY THE MANUFACTURER.
   C. WOOD-FIBER OR PAPER-FIBER MULCH AT THE RATE OF 1,500 POUNDS PER ACRE (OR ACCORDING TO THE MANUFACTURER'S REQUIREMENTS) MAY BE APPLIED BY A HYDROSEEDER.
   D. MULCH NETTING, SUCH AS PAPER JUTE, EXCELSIOR, COTTON, OR PLASTIC, MAY BE USED.
   E. WOODCHIPS APPLIED UNIFORMLY TO A MINIMUM DEPTH OF 2 INCHES MAY BE USED. WOODCHIPS WILL NOT BE USED ON AREAS WHERE FLOWING WATER COULD WASH THEM INTO AN INLET AND PLUG IT.
   F. GRAVEL, CRUSHED STONE, OR SLAG AT THE RATE OF 9 CUBIC YARDS PER 1,000 SQ. FT. APPLIED UNIFORMLY TO A MINIMUM DEPTH OF 3 INCHES MAY BE USED. SIZE 2 OR 3 (ASTM C-33) IS RECOMMENDED.

3. MULCH ANCHORING - SHOULD BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT OF HAY OR STRAW MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS IN ACCORDANCE WITH THE STATE STANDARDS, DEPENDING UPON THE SIZE OF THE AREA AND STEEPNESS OF SLOPES.
   A. PEG AND TWINE
   B. MULCH NETTINGS
   C. CRIMPER MULCH ANCHORING COULTER TOOL
   D. LIQUID MULCH-BINDERS

STANDARD FOR DUST CONTROL

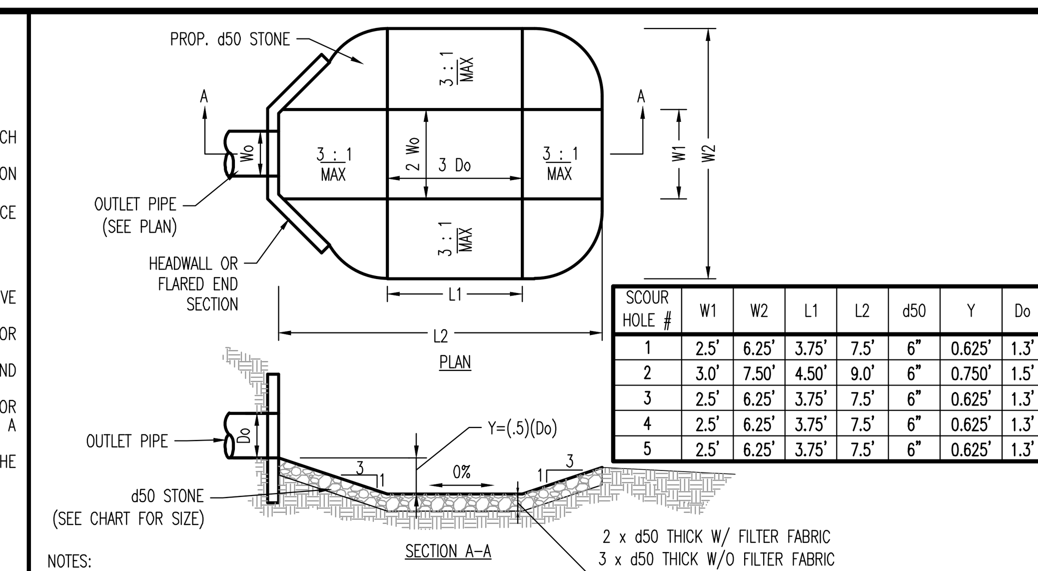
DEFINITION - THE CONTROL OF DUST ON CONSTRUCTION SITES AND ROADS.
PURPOSE - TO PREVENT BLOWING AND MOVEMENT OF DUST FROM EXPOSED SOIL SURFACES, REDUCE ON-AND OFF- SITE DAMAGE AND HEALTH HAZARDS, AND IMPROVE TRAFFIC SAFETY.
WHERE APPLICABLE - THE FOLLOWING METHODS SHOULD BE CONSIDERED FOR CONTROLLING DUST:
- MULCHES - SEE STANDARDS FOR STABILIZATION WITH MULCHES ONLY
- VEGETATIVE COVER - SEE STANDARDS FOR TEMPORARY VEGETATIVE COVER, PERMANENT VEGETATIVE COVER, AND PERMANENT STABILIZATION WITH SOD.
- SPRAY-ON ADHESIVES - ON MINERAL SOILS (NOT EFFECTIVE ON MOCK SOILS). KEEP TRAFFIC OFF THESE AREAS.

	WATER DILUTION	TYPE OF NOZZLE	APPLY GALLONS/ACRE
ANIONIC ASPHALT	7:1	COARSE SPRAY	1,200
EMULSION			
LATEX EMULSION	12.5:1	FINE SPRAY	235
RESIN IN WATER	4:1	FINE SPRAY	300

TILLAGE - TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS A TEMPORARY EMERGENCY MEASURE WHICH SHOULD BE USED BEFORE SOIL BLOWING STARTS. BEGIN PLOWING ON WINDWARD SIDE OF SITE. CHISEL-TYPE PLOWS SPACED ABOUT 12 INCHES APART, AND SPRING - TOOTHED HARROWS ARE EXAMPLES OF EQUIPMENT WHICH MAY PRODUCE THE DESIRED EFFECT.
SPRINKLING - SITE IS SPRINKLED UNTIL THE SURFACE IS WET.
BARRIERS - SOLID BOARD FENCES, SNOW FENCES, BURLAP FENCES, CRATE WALLS, BALES OF HAY, AND SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CURRENTS AND SOIL BLOWING.
CALCIUM CHLORIDE - SHALL BE IN THE FORM OF LOOSE, DRY GRANULES OR FLAKES FINE ENOUGH TO FEED THROUGH COMMONLY USED SPREADERS AT A RATE THAT WILL KEEP SURFACE MOIST BUT NOT CAUSE POLLUTION OR PLANT DAMAGE. IF USED ON STEEPER SLOPES, THEN USE OTHER PRACTICES TO PREVENT WASHING INTO STREAMS OR ACCUMULATION AROUND PLANTS.
STONE - COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL.

SEQUENCE OF CONSTRUCTION:

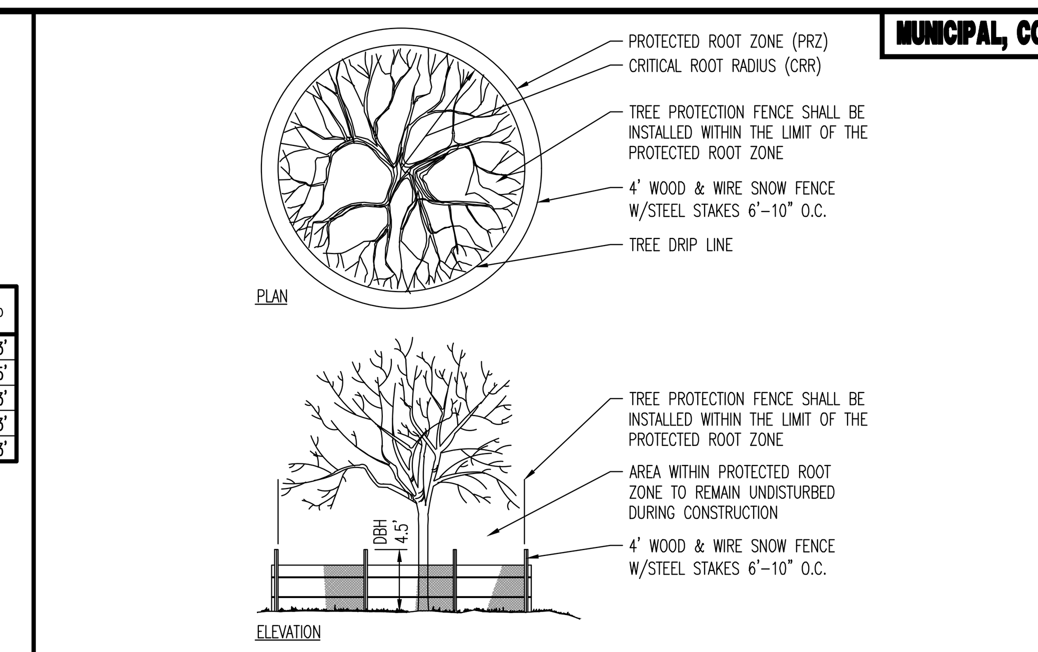
- PHASE 1: INSTALL STONE ANTI-TRACKING PAD AND OTHER SOIL EROSION AND SEDIMENT CONTROL MEASURES INCLUDING DOWN SLOPE PERIMETER HAYBALES, SILT FENCING AND TREE PROTECTION FENCING.
- PHASE 2: CLEAR AND ROUGH GRADE FOR NEW BUILDING SITE AND OTHER STRUCTURES REQUIRING EXCAVATION.
- PHASE 3: EXCAVATION, CONSTRUCTION, EXCAVATE AND INSTALL UNDERGROUND PIPING AND DRAINAGE STRUCTURES.
- PHASE 4: EXCAVATE FOR BUILDING FOUNDATION.
- PHASE 5: COMPLETE BUILDING CONSTRUCTION.
- PHASE 6: EXCAVATE AND INSTALL ON-SITE IMPROVEMENTS INCLUDING CURBING, UNDERGROUND PIPING, AND DRAINAGE STRUCTURES.
- PHASE 7: FINAL GRADING ON SITE.
- PHASE 8: INSTALL PAVING, CONCRETE, AND FINAL VEGETATION INCLUDING SEEDING AND LANDSCAPING.
- PHASE 9: REMOVE SOIL EROSION AND SEDIMENT CONTROL MEASURES INCLUDING DOWN SLOPE PERIMETER HAYBALES, SILT FENCING AND TREE PROTECTION FENCING.



SCOUR HOLE #	W1	W2	L1	L2	d50	Y	Do
1	2.5'	6.25'	3.75'	7.5'	6"	0.625'	1.3'
2	3.0'	7.50'	4.50'	9.0'	6"	0.750'	1.5'
3	2.5'	6.25'	3.75'	7.5'	6"	0.625'	1.3'
4	2.5'	6.25'	3.75'	7.5'	6"	0.625'	1.3'
5	2.5'	6.25'	3.75'	7.5'	6"	0.625'	1.3'

NOTES:
1. SIDE SLOPES SHALL BE 3:1 OR FLATTER.
2. THE BOTTOM GRADE SHALL BE 0.0% (LEVEL).
3. THERE SHALL BE NO OVERFALL AT THE END OF THE APRON OR AT THE END OF THE CULVERT.
4. NO BENDS OR CURVES AT THE INTERSECTION OF THE CONDUIT AND APRON OR SCOUR HOLE WILL BE PERMITTED.
5. THE USE OF SCOUR HOLES SHALL COMPLY WITH COUNTY OR LOCAL ORDINANCES WHICH COULD RESTRICT THE USE OF SUCH DEVICES DUE TO THE POSSIBLE PROBLEMS WITH MOSQUITO BREEDING.
6. FIFTY (50) PERCENT BY WEIGHT OF THE STONE MIXTURE SHALL BE SMALLER THAN THE MEDIAN SIZE STONE DESIGNATED AS D50. CONSTRUCTED ON A BEDDING OF FOUR (4) INCHES OF 3/4 INCH CLEAN STONE ON APPROVED FILTER FABRIC MATERIAL.
7. FILTER FABRIC SHALL MEET THE MINIMUM REQUIREMENTS SET FORTH IN THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NJ.

PREFORMED SCOUR HOLE DETAIL
NOT TO SCALE



ESTIMATE A TREE'S PROTECTED ROOT ZONE (PRZ) BY CALCULATING THE CRITICAL ROOT RADIUS (CRR)
1. MEASURE THE DBH (DIAMETER OF TREE AT BREAST HEIGHT, 4.5' ABOVE GROUND ON THE UPHILL SIDE OF TREE) IN INCHES.
2. MULTIPLY MEASURED DBH BY 1.5 OR 1.0. EXPRESS THE RESULT IN FEET

DBH x 1.5: CRITICAL ROOT RADIUS FOR OLDER, UNHEALTHY, OR SENSITIVE SPECIES.
DBH x 1.0: CRITICAL ROOT RADIUS FOR YOUNGER, HEALTHY OR TOLERANT SPECIES.

TREE PROTECTION DURING SITE CONSTRUCTION DETAIL
NOT TO SCALE

MUNICIPAL, COUNTY, STATE AND MUA DETAILS TO SUPERSEDE DYNAMIC ENGINEERING DETAILS WHERE APPLICABLE

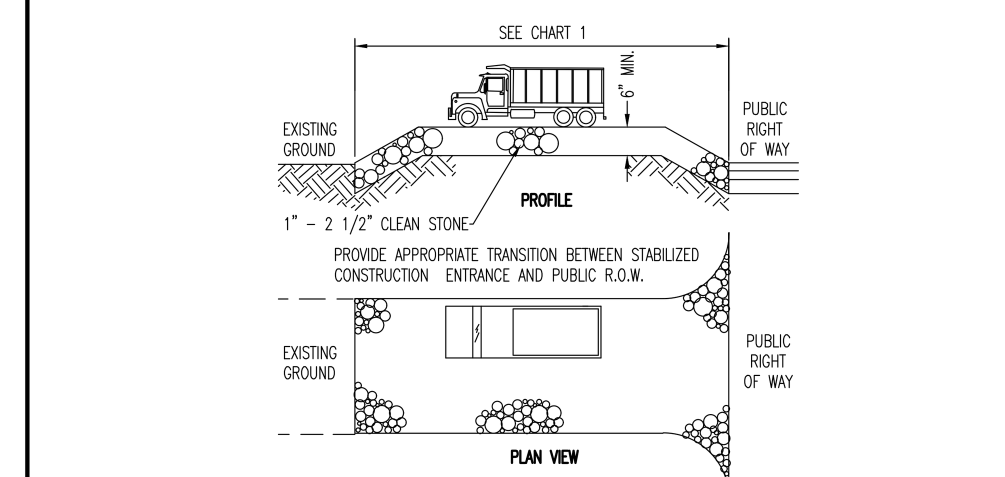


CHART 1

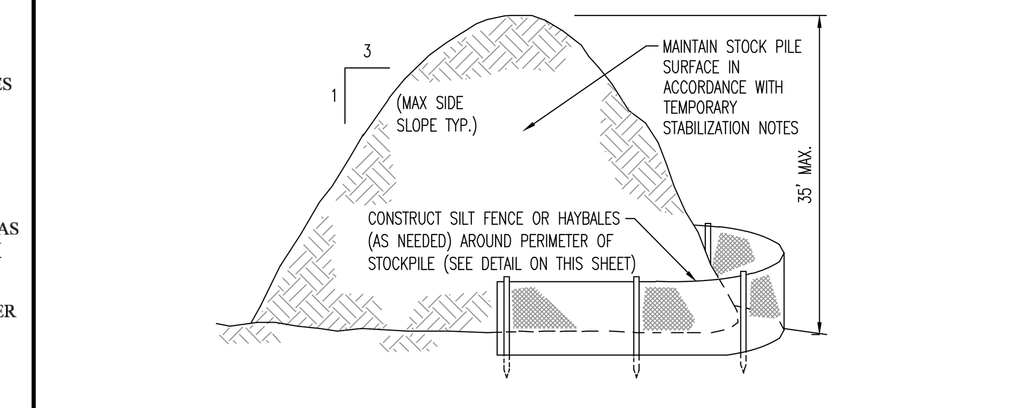
PERCENT SLOPE OF ROADWAY	LENGTH OF STONE REQUIRED COARSE GRAINED SOILS	FINE GRAINED SOILS
0 TO 2%	50 FT	100 FT
2% TO 5%	100 FT	200 FT
>5%	ENTIRE ENTRANCE STABILIZED WITH FABC BASE COURSE (1)	

(1) AS PRESCRIBED BY LOCAL ORDINANCE OR OTHER GOVERNING AUTHORITY.

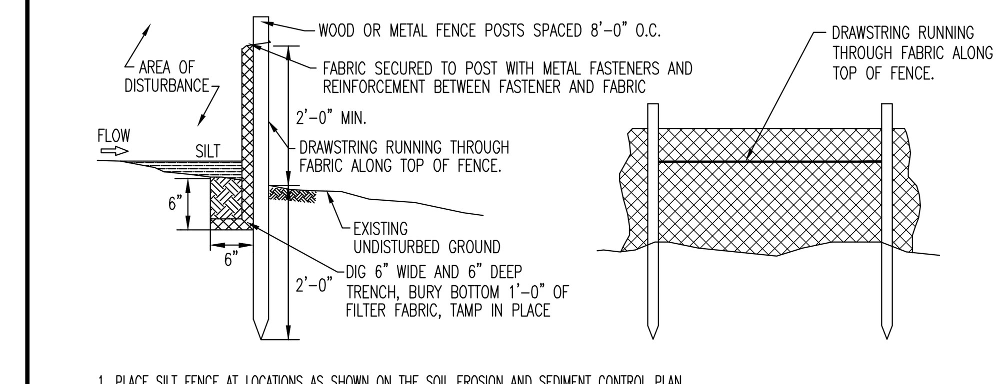
STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE

CAMDEN COUNTY SOIL EROSION AND SEDIMENT CONTROL NOTES

1. ALL APPLICABLE EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE IN PLACE PRIOR TO ANY GRADING OPERATION AND/OR INSTALLATION OF PROPOSED STRUCTURES OR UTILITIES.
2. SOIL EROSION AND SEDIMENT CONTROL PRACTICES ON THIS PLAN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY.
3. APPLICABLE EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE LEFT IN PLACE UNTIL CONSTRUCTION IS COMPLETED AND/OR THE AREA IS STABILIZED.
4. THE CONTRACTOR SHALL PERFORM ALL WORK, FURNISH ALL MATERIALS AND INSTALL ALL MEASURES REQUIRED TO REASONABLY CONTROL SOIL EROSION RESULTING FROM CONSTRUCTION OPERATIONS AND PREVENT EXCESSIVE FLOW OF SEDIMENT FROM THE CONSTRUCTION SITE.
5. ANY DISTURBED AREA THAT IS TO BE LEFT EXPOSED FOR MORE THAN THIRTY (30) DAYS AND NOT SUBJECT TO CONSTRUCTION TRAFFIC SHALL IMMEDIATELY RECEIVE A TEMPORARY SEEDING AND FERTILIZATION IN ACCORDANCE WITH THE NEW JERSEY STANDARDS AND THEIR RATES SHOULD BE INCLUDED IN THE NARRATIVE. IF THE SEASON PROHIBITS TEMPORARY SEEDING, THE DISTURBED AREAS WILL BE MULCHED WITH SALT HAY OR EQUIVALENT AND ANCHORED IN ACCORDANCE WITH THE NEW JERSEY STANDARDS (I.E. PEG AND TWINE, MULCH NETTING OR LIQUID MULCH BINDER).
6. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER TO PROVIDE CONFIRMATION OF LIME, FERTILIZER AND SEED APPLICATION AND RATES OF APPLICATION AT THE REQUEST OF THE CAMDEN COUNTY SOIL CONSERVATION DISTRICT.
7. ALL CRITICAL AREAS SUBJECT TO EROSION WILL RECEIVE A TEMPORARY SEEDING IN COMBINATION WITH STRAW MULCH AT A RATE OF 2 TONS PER ACRE, ACCORDING TO THE NEW JERSEY STANDARDS IMMEDIATELY FOLLOWING ROUGH GRADING.
8. THE SITE SHALL AT ALL TIMES BE GRADED AND MAINTAINED SUCH THAT ALL STORMWATER RUNOFF IS DIVERTED TO SOIL EROSION AND SEDIMENT CONTROL FACILITIES.
9. ALL SEDIMENTATION STRUCTURES WILL BE INSPECTED AND MAINTAINED ON A REGULAR BASIS AND AFTER EVERY STORM EVENT.
10. A CRUSHED STONE, TIRE CLEANING PAD WILL BE INSTALLED WHEREVER A CONSTRUCTION ACCESS EXISTS. THE STABILIZED PAD WILL BE INSTALLED ACCORDING TO THE STANDARD FOR STABILIZED CONSTRUCTION ACCESS
11. ALL DRIVEWAYS MUST BE STABILIZED WITH 2 ½" CRUSHED STONE OR SUBBASE PRIOR TO INDIVIDUAL LOT CONSTRUCTION.
12. PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES.
13. ALL CATCH BASIN INLETS WILL BE PROTECTED ACCORDING TO THE CERTIFIED PLAN.
14. ALL STORM DRAINAGE OUTLETS WILL BE STABILIZED, AS REQUIRED, BEFORE THE DISCHARGE POINTS BECOME OPERATIONAL.
15. ALL DEWATERING OPERATIONS MUST DISCHARGE DIRECTLY INTO A SEDIMENT FILTER AREA. THE SEDIMENT FILTER SHOULD BE COMPOSED OF A SUITABLE SEDIMENT FILTER FABRIC. (SEE DETAIL) THE BASIN MUST BE DEWATERED TO NORMAL POOL WITHIN 10 DAYS OF THE DESIGN STORM.
16. NJSA 4:24-39, ET SEQ. REQUIRES THAT NO CERTIFICATE OF OCCUPANCY BE ISSUED BEFORE ALL PROVISIONS OF THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN HAVE BEEN COMPLIED WITH FOR PERMANENT MEASURES. ALL SITE WORK FOR THE PROJECT MUST BE COMPLETED PRIOR TO THE DISTRICT ISSUING A REPORT OF COMPLIANCE AS A PREREQUISITE TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY BY THE MUNICIPALITY.
17. MULCHING IS REQUIRED ON ALL SEEDED AREAS TO INSURE AGAINST EROSION BEFORE GRASS IS ESTABLISHED TO PROMOTE EARLIER VEGETATION COVER.
18. OFFSITE SEDIMENT DISTURBANCE MAY REQUIRE ADDITIONAL CONTROL MEASURES TO BE DETERMINED BY THE EROSION CONTROL INSPECTOR.
19. A COPY OF THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN MUST BE MAINTAINED ON THE PROJECT SITE DURING CONSTRUCTION.
20. THE CAMDEN COUNTY SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED 72 HOURS PRIOR TO ANY LAND DISTURBANCE.
21. ANY CONVEYANCE OF THIS PROJECT PRIOR TO ITS COMPLETION WILL TRANSFER FULL RESPONSIBILITY FOR COMPLIANCE WITH THE CERTIFIED PLAN TO ANY SUBSEQUENT OWNERS.
22. IMMEDIATELY AFTER THE COMPLETION OF STRIPPING AND STOCKPILING OF TOPSOIL, THE STOCKPILE MUST BE STABILIZED ACCORDING TO THE STANDARD FOR TEMPORARY VEGETATIVE COVER. STABILIZE TOPSOIL PILE WITH STRAW MULCH FOR PROTECTION IF THE SEASON DOES NOT PERMIT THE APPLICATION AND ESTABLISHMENT OF TEMPORARY SEEDING. ALL SOIL STOCKPILES ARE NOT TO BE LOCATED WITHIN FIFTY (50) FEET OF A FLOODPLAIN, SLOPE, ROADWAY OR DRAINAGE FACILITY AND THE BASE MUST BE PROTECTED WITH A SEDIMENT BARRIER.
23. ANY CHANGES TO THE SITE PLAN WILL REQUIRE THE SUBMISSION OF A REVISED SOIL EROSION AND SEDIMENT CONTROL PLAN TO THE CAMDEN COUNTY SOIL CONSERVATION DISTRICT. THE REVISED PLAN MUST BE IN ACCORDANCE WITH THE CURRENT NEW JERSEY STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL.
24. METHODS FOR THE MANAGEMENT OF HIGH ACID PRODUCING SOILS SHALL BE IN ACCORDANCE WITH THE STANDARDS. HIGH ACID PRODUCING SOILS ARE THOSE FOUND TO CONTAIN IRON SULFIDES OR HAVE A pH OF 4 OR LESS.
25. TEMPORARY AND PERMANENT SEEDING MEASURES MUST BE APPLIED ACCORDING TO THE NEW JERSEY STANDARDS, AND MULCHED WITH SALT HAY OR EQUIVALENT AND ANCHORED IN ACCORDANCE WITH THE NEW JERSEY STANDARDS (I.E. PEG AND TWINE, MULCH NETTING OR LIQUID MULCH BINDER).
26. MAXIMUM SIDE SLOPES OF ALL EXPOSED SURFACES SHALL NOT BE CONSTRUCTED STEEPER THAN 3:1 UNLESS OTHERWISE APPROVED BY THE DISTRICT.
27. DUST IS TO BE CONTROLLED BY AN APPROVED METHOD ACCORDING TO THE NEW JERSEY STANDARDS AND MAY INCLUDE WATERING WITH A SOLUTION OF CALCIUM CHLORIDE AND WATER.
28. ADJOINING PROPERTIES SHALL BE PROTECTED FROM EXCAVATION AND FILLING OPERATIONS ON THE PROPOSED SITE.
29. USE STAGED CONSTRUCTION METHODS TO MINIMIZE EXPOSED SURFACES, WHERE APPLICABLE.
30. ALL VEGETATIVE MATERIAL SHALL BE SELECTED IN ACCORDANCE WITH AMERICAN STANDARDS FOR NURSERY STOCK OF THE AMERICAN ASSOCIATION OF THE NURSERYMEN AND IN ACCORDANCE WITH THE NEW JERSEY STANDARDS.
31. NATURAL VEGETATION AND SPECIES SHALL BE RETAINED WHERE SPECIFIED ON THE LANDSCAPE PLAN.
32. THE SOIL EROSION INSPECTOR MAY REQUIRE ADDITIONAL SOIL EROSION MEASURES TO BE INSTALLED, AS DIRECTED BY THE DISTRICT INSPECTOR.

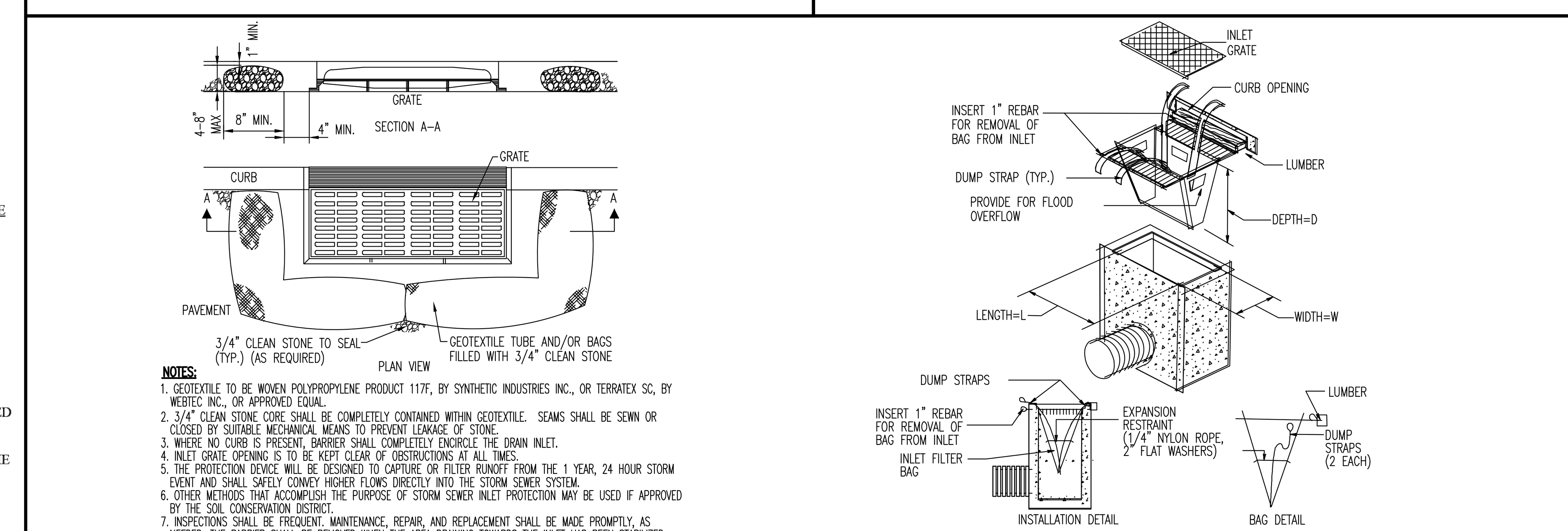


TEMPORARY STOCKPILE DETAIL
NOT TO SCALE



1. PLACE SILT FENCE AT LOCATIONS AS SHOWN ON THE SOIL EROSION AND SEDIMENT CONTROL PLAN.
2. THE SLOPE OF THE LAND FOR AT LEAST 30 FEET ADJACENT TO ANY SILT FENCE SHALL NOT EXCEED 5 PERCENT.
3. SILT FENCE SHALL BE INSTALLED SO WATER CANNOT BYPASS THE FENCE AROUND THE SIDES.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE AS PROMPTLY AS POSSIBLE.
5. SILT FENCE SHALL REMAIN IN PLACE FOR THE DURATION OF THE PROJECT UNLESS OTHERWISE INSTRUCTED BY THE TOWNSHIP ENGINEER OR SOIL CONSERVATION DISTRICT.
6. THE BARRIER SHALL BE REMOVED WHEN THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. FENCE POSTS SHALL BE SPACED 8 FEET CENTER-TO-CENTER OR CLOSER. THEY SHALL EXTEND AT LEAST 2 FEET INTO THE GROUND AND EXTEND AT LEAST 2 FEET ABOVE GROUND. POSTS SHALL BE CONSTRUCTED OF HARDWOOD A MIN. DIAMETER THICKNESS OF 1 1/2 INCHES.
8. A METAL FENCE WITH 6 INCH OR SMALLER OPENINGS AND AT LEAST 2 FEET HIGH MAY BE UTILIZED, FASTENED TO THE FENCE POSTS, TO PROVIDE REINFORCEMENT AND SUPPORT TO THE GEOTEXTILE FABRIC WHERE SPACE FOR OTHER PRACTICES IS LIMITED AND HEAVY SEDIMENT LOADING IS EXPECTED.
9. A GEOTEXTILE FABRIC, RECOMMENDED FOR SUCH USE BY THE MANUFACTURER, SHALL BE BURIED AT LEAST 6 INCHES DEEP IN THE GROUND. THE FABRIC SHALL EXTEND AT LEAST 2 FEET ABOVE GROUND. FABRIC MUST BE SECURELY FASTENED TO THE POSTS USING A SYSTEM CONSISTING OF METAL FASTENERS (NAILS OR STAPLES) AND HIGH STRENGTH REINFORCEMENT MATERIAL (NYLON WEBBING, GROMMETS, WASHERS ETC.) PLACED BETWEEN THE FASTENER AND THE GEOTEXTILE FABRIC. THE FASTENING SYSTEM SHALL RESIST TEARING AWAY FROM THE POST. THE FABRIC SHALL INCORPORATE A DRAWSTRING IN THE TOP PORTION OF THE FENCE FOR ADDED STRENGTH.

SILT FENCE DETAIL
NOT TO SCALE



NOTES:
1. GEOTEXTILE TO BE WOVEN POLYPROPYLENE PRODUCT 117F, BY SYNTHETIC INDUSTRIES INC., OR TERRATEX SC, BY WEBTEC INC., OR APPROVED EQUAL.
2. 3/4" CLEAN STONE SHALL BE COMPLETELY CONTAINED WITHIN GEOTEXTILE. SEAMS SHALL BE SEWN OR CLOSED BY SUITABLE MECHANICAL MEANS TO PREVENT LEAKAGE OF STONE.
3. WHERE NO CURB IS PRESENT, BARRIER SHALL COMPLETELY ENCIRCLE THE DRAIN INLET.
4. INLET GRATE OPENING IS TO BE KEPT CLEAR OF OBSTRUCTIONS AT ALL TIMES.
5. THE PROTECTION DEVICE WILL BE DESIGNED TO CAPTURE OR FILTER RUNOFF FROM THE 1 YEAR, 24 HOUR STORM EVENT AND SHALL SAFELY CONVEY HIGHER FLOWS DIRECTLY INTO THE STORM SEWER SYSTEM.
6. OTHER METHODS THAT ACCOMPLISH THE PURPOSE OF STORM SEWER INLET PROTECTION MAY BE USED IF APPROVED BY THE SOIL CONSERVATION DISTRICT.
7. INSPECTIONS SHALL BE FREQUENT, MAINTENANCE, REPAIR, AND REPLACEMENT SHALL BE MADE PROMPTLY, AS NEEDED. THE BARRIER SHALL BE REMOVED WHEN THE INLET AREA DRAINING TOWARDS THE INLET HAS BEEN STABILIZED.

INLET FILTER, TYPE 1
NOT FOR USE WITHIN NJDOT RIGHT-OF-WAY

INLET FILTER, TYPE 2
ACCEPTABLE FOR USE WITHIN NJDOT RIGHT-OF-WAY

INLET FILTER COMBINED DETAIL
NOT TO SCALE

THIS PLAN SET IS FOR PERMITTING PURPOSES ONLY AND MAY NOT BE USED FOR CONSTRUCTION

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TITLE: SOIL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

PROJECT: ASSET REALTY & CONSTRUCTION GROUP INC.
PROPOSED FIVE-STORY MIXED USE BUILDING
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

JOB No:	2334-23-03513
DATE:	04/30/2025
DRAWN BY:	UV
SCALE:	(H) NOT TO (V) SCALE
DESIGNED BY:	AG/SM
CHECKED BY:	DT
CHECKED BY:	-
SHEET No:	12 OF 17
Rev. #	0

Rev.	Date	Comments	By

DANIEL A. TARABOKIJA
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JOSHUA M. SEWALD
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 52908

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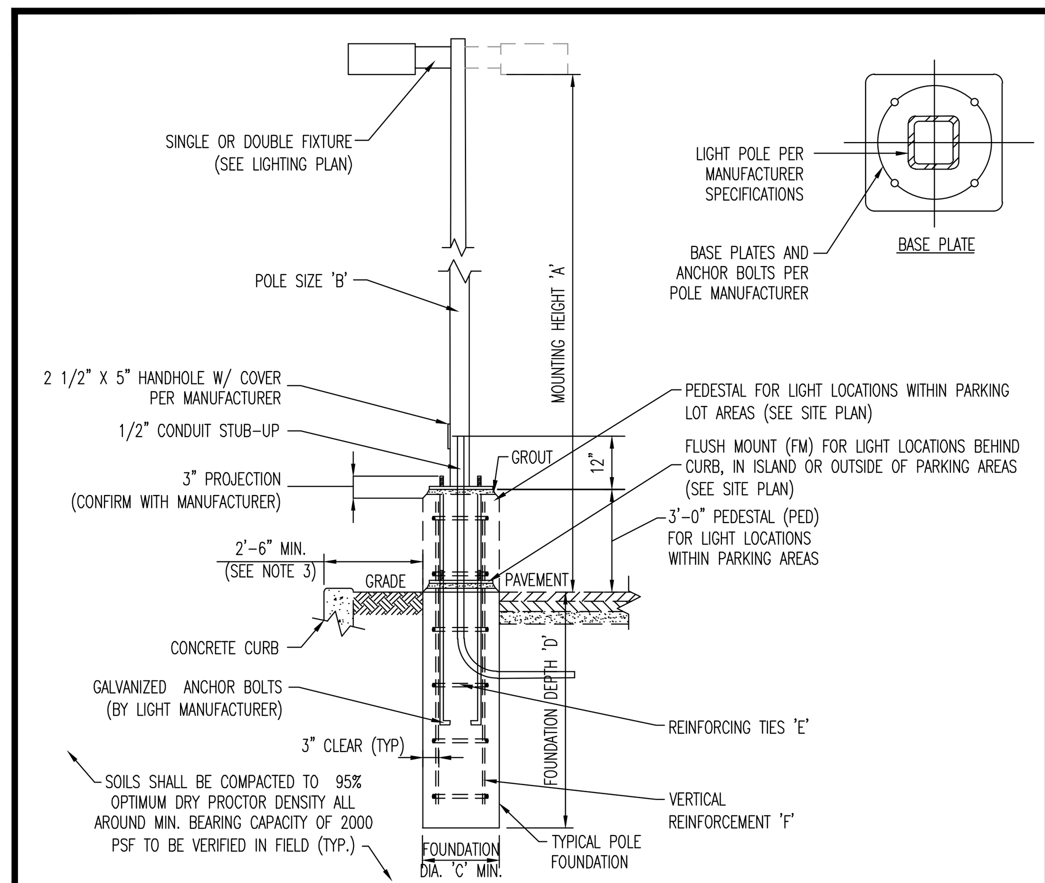
File: \\decpc.local\decfolders\Data\DECPC PROJECTS\2334 Arco Murray\23-03513 Camden\Dwg\Site Plans\02334230351SD0.dwg. ---> 12 SOIL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS



NOTE:
1. CONTRACTOR TO CONFIRM ALL LIGHT POLE & FIXTURE DIMENSIONS PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO PROVIDE ADJUSTED POLE HEIGHT RESULTING IN MOUNTING HEIGHT 'A', TAKING INTO CONSIDERATION PEDESTAL (PED) OR FLUSH MOUNT (FM) FOUNDATION DESIGNATION AT EACH POLE LOCATION.
3. PROPOSED CONCRETE FOUNDATION AND POLE TO BE CONSTRUCTED WITHIN SUBJECT PROPERTY UNLESS OTHERWISE NOTED. SETBACK FROM CURB IS PREFERRED BUT TO BE ADJUSTED AS NEEDED TO PREVENT ENCROACHMENT OVER PROPERTY LINE.
4. BASE PLATE & ANCHOR BOLTS PER POLE MANUFACTURER. LARGER FOOTING DIAMETER AND/OR ALTERNATE ARRANGEMENT OF REINFORCING STEEL MAY BE REQUIRED TO ACCOMMODATE ANCHOR BOLT CONFIGURATION. CONTRACTOR RESPONSIBLE TO COORDINATE DIMENSIONAL REQUIREMENTS FOR BASE PLATE, ANCHOR BOLTS & REINFORCING STEEL PRIOR TO CONSTRUCTION.

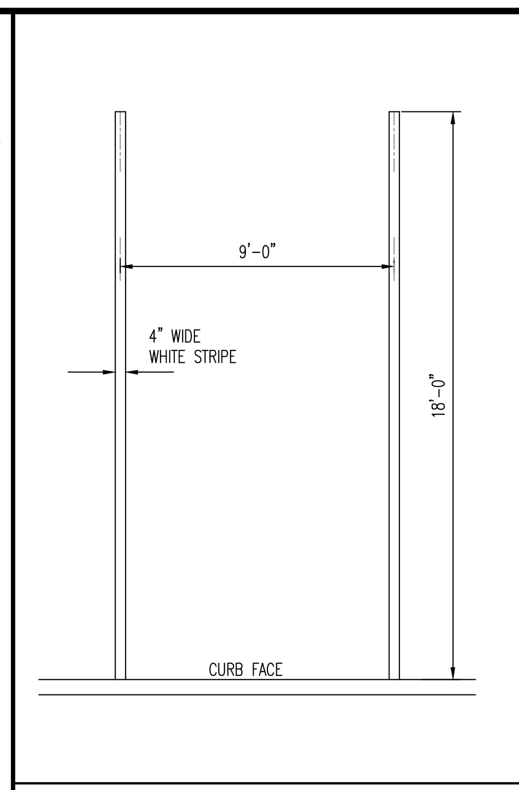
LIGHT POLE FOUNDATION SCHEDULE	
MOUNTING HEIGHT ABOVE GRADE 'A'	20'
POLE DIA. 'B'	UP TO 6" SQUARE/ROUND (OR PER MANUFACTURER)
# OF FIXTURES	SINGLE OR DOUBLE
FOUNDATION DIAMETER 'C'	18" DIA. ROUND
FOUNDATION DEPTH 'D'	5.5'
REINFORCING TIES 'E'	#4 @ 12" O.C.
VERTICAL REINFORCEMENT 'F'	(6) #6 BARS EQUALLY SPACED

SOIL NOTES
1. FOOTING DESIGN BASED ON ASSUMED MAXIMUM ALLOWABLE SOILS BEARING CAPACITY OF 2,000 PSF. CONTRACTOR RESPONSIBLE TO VERIFY ADEQUACY OF ASSUMED BEARING CAPACITY PRIOR TO CONSTRUCTION. ENGINEER TO BE NOTIFIED IF INCONSISTENCIES EXIST.
2. SUBGRADE TO BE FREE OF ORGANICS AND BE SUITABLE, COMPACTED MATERIAL.

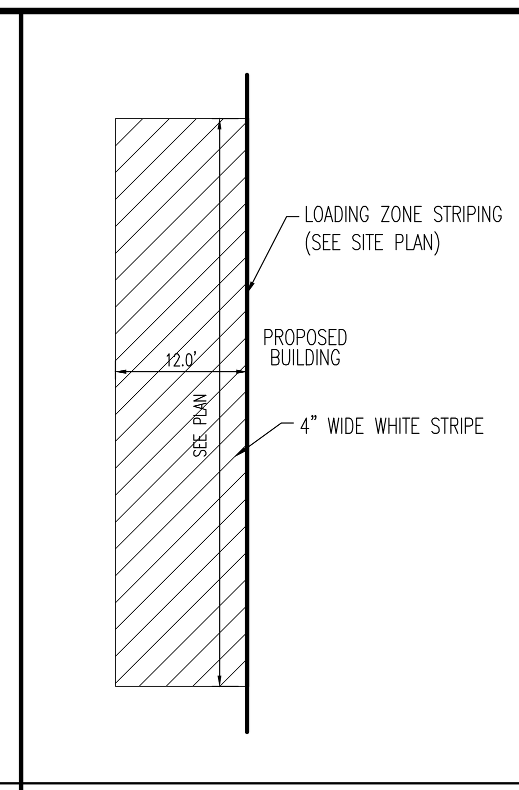
CONCRETE NOTES
1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS WITH A MINIMUM CEMENT CONTENT OF 600 POUNDS PER CUBIC YARD FOR ALL FOOTINGS.
2. ALL CONCRETE SHALL HAVE A SLUMP OF NO GREATER THAN 4" TO WITHIN A TOLERANCE OF 1".
3. ALL EXPOSED CONCRETE SHALL BE AIR-ENTRAINED (WITHIN 1% TOLERANCE), CONFORMING TO ASTM C260.
4. REINFORCING FRAMEWORK AND PLACEMENT OF CONCRETE SHALL COMPLY WITH GOOD CONSTRUCTION PRACTICES AND BE IN ACCORDANCE WITH ALL LOCAL GOVERNING CODES AND REGULATIONS AS WELL AS THE ACI AND UNIFORM BUILDING CODE.

12/2023 – JGJ/CWRS

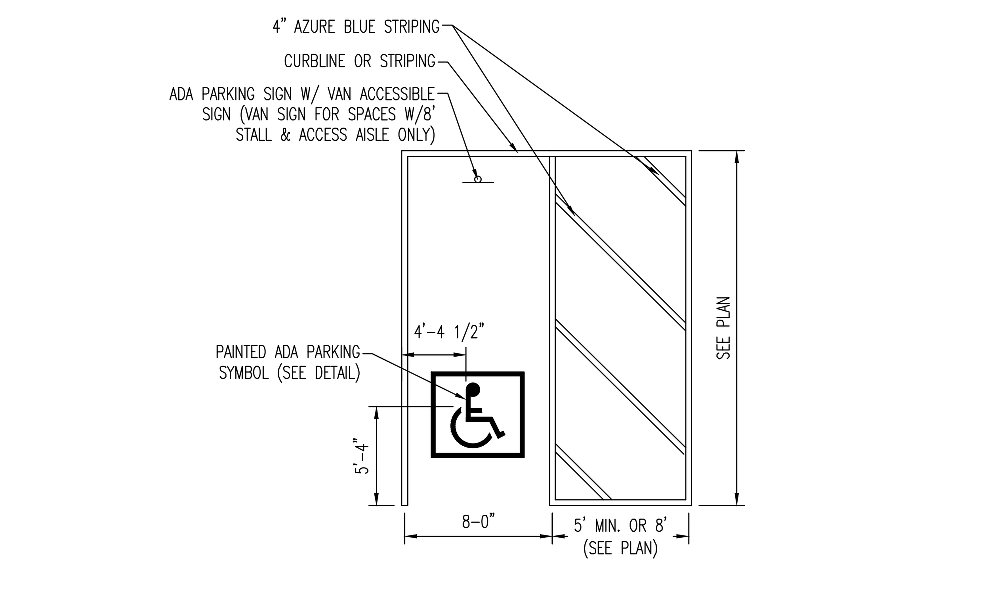
AREA LIGHT FOUNDATION DETAIL
NOT TO SCALE



PARKING STALL STRIPING DETAIL
NOT TO SCALE



LOADING ZONE DETAIL
NOT TO SCALE

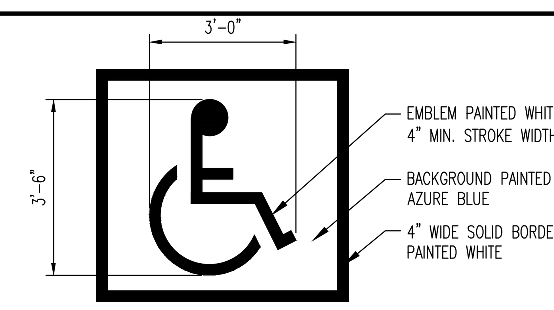


NOTES:
1. PAVEMENT STRIPING FOR ALL ADA PARKING SPACES SHALL BE PAINTED AZURE BLUE.
2. WHERE AN ADA PARKING STALL MEETS A STANDARD PARKING STALL, AN AZURE BLUE AND WHITE PAVEMENT STRIPE SHALL BE PAINTED.
3. ALL PAVEMENT STRIPING, MARKINGS AND SIGNAGE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST ADA ACCESSIBILITY GUIDELINES.

ADA STALL MARKINGS DETAIL
NOT TO SCALE

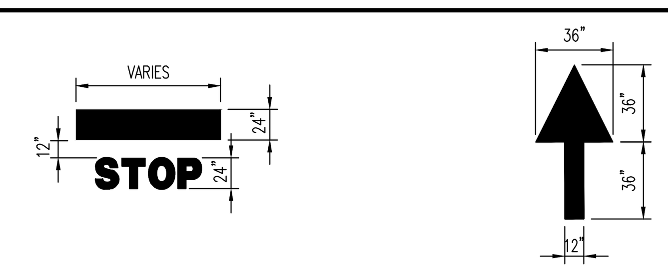
NOTE:
1. TOTAL HEIGHT OF THE ELECTRIC VEHICLE CHARGING SPOT SIGN SHALL BE NO MORE THAN 7 FEET FROM GRADE.

ELECTRIC VEHICLE (EV) CHARGING STATION SIGN DETAIL
NOT TO SCALE



NOTE: ALL PAVEMENT STRIPING, MARKINGS & APPLICABLE SIGNAGE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST A.D.A. ACCESSIBILITY GUIDELINES.

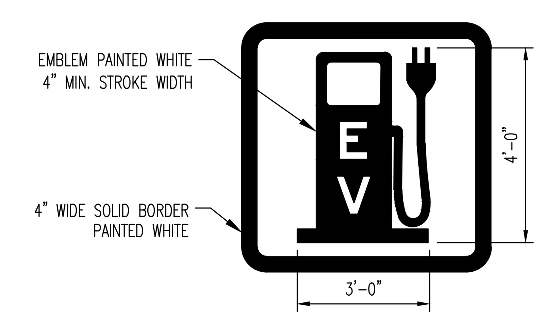
PAINTED A.D.A. PARKING SYMBOL DETAIL
NOT TO SCALE



NOTE: ARROWS AND WORDS CAN BE ARRANGED IN OTHER COMBINATIONS THAN THOSE ILLUSTRATED HERE TO ACHIEVE DESIRED RESULT. ALL PAINT TO BE THERMOPLASTIC.

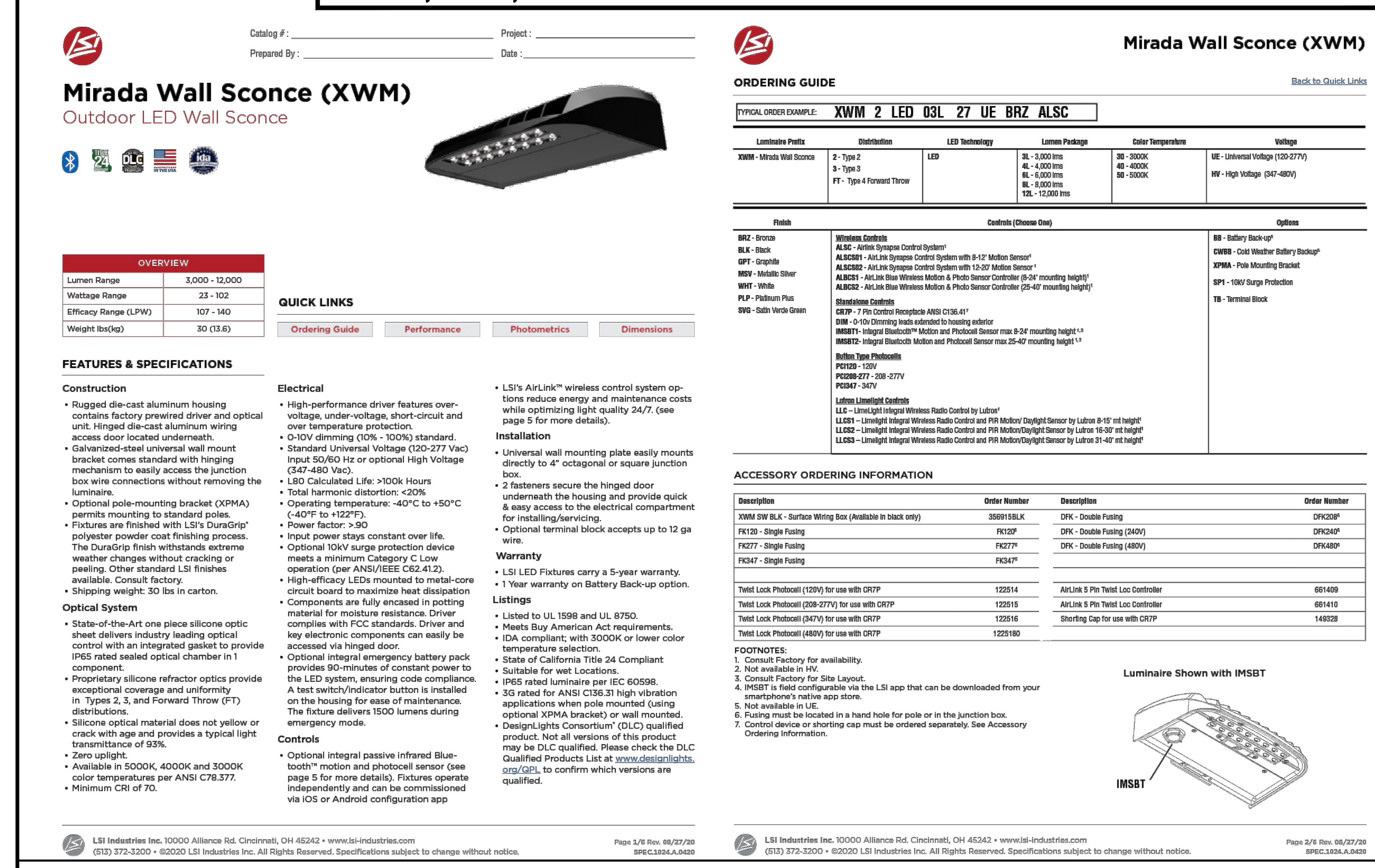
PAINTED MARKING DETAILS
NOT TO SCALE

ELECTRIC CHARGING STATION
NOT TO SCALE

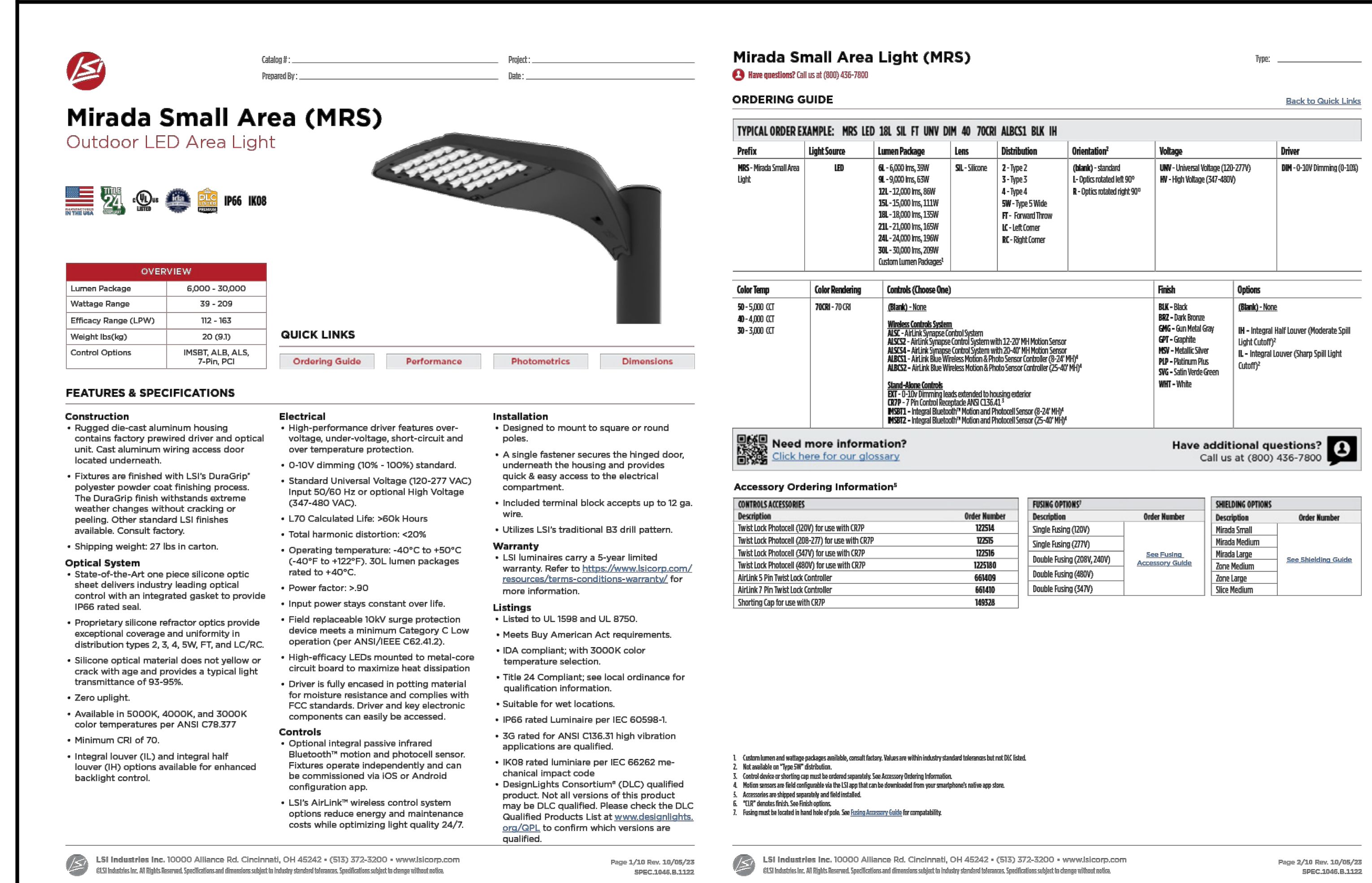


12/21 LDW/CMC

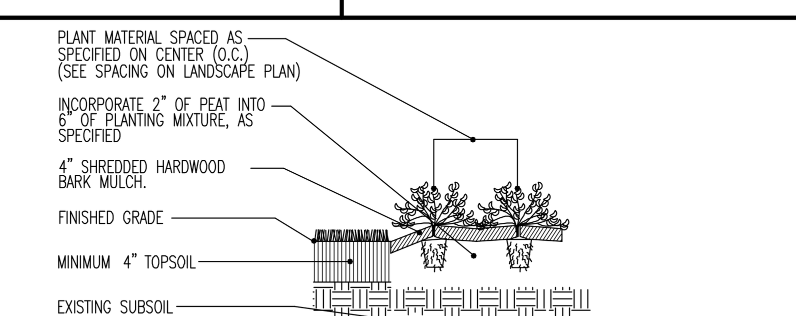
PAINTED ELECTRIC VEHICLE (EV) CHARGE STATION PARKING SYMBOL DETAIL
NOT TO SCALE



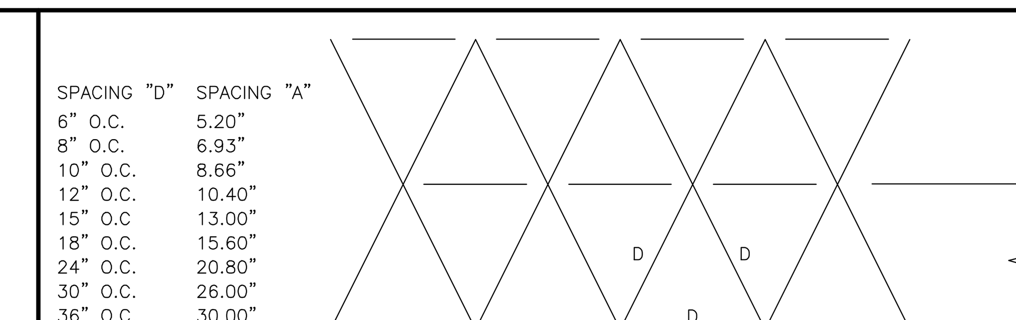
WALL LIGHTING DETAILS
NOT TO SCALE



AREA LIGHTING DETAILS
NOT TO SCALE



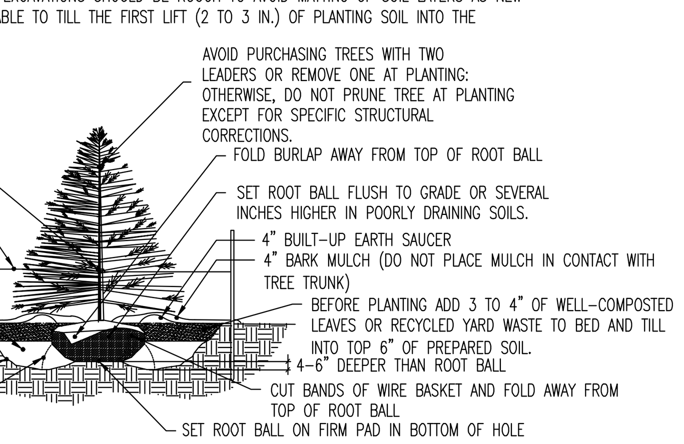
PERENNIAL/GROUND COVER PLANTING DETAIL
NOT TO SCALE



SPACING "D"	SPACING "A"
6" O.C.	5.20"
8" O.C.	6.93"
10" O.C.	8.66"
12" O.C.	10.40"
15" O.C.	13.00"
18" O.C.	15.60"
24" O.C.	20.80"
30" O.C.	26.00"
36" O.C.	30.00"

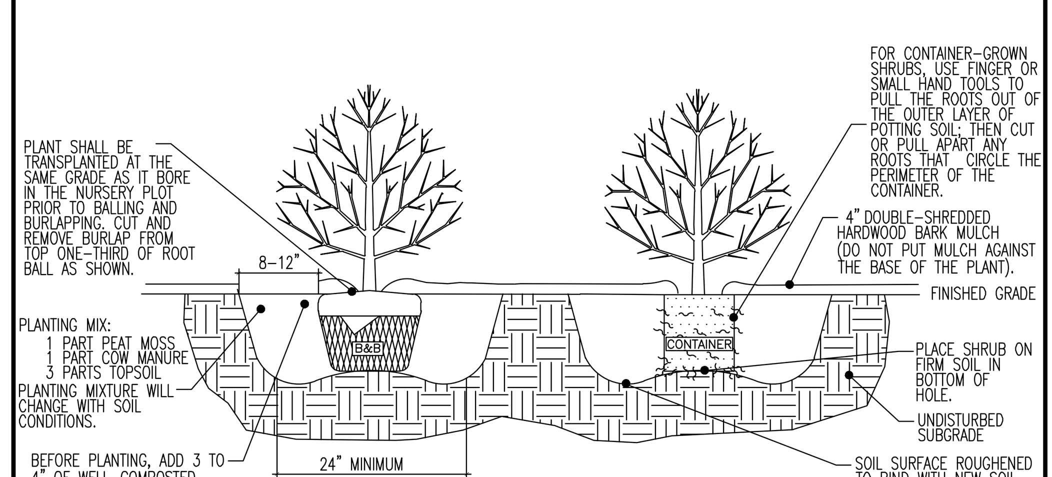
PERENNIAL GROUNDCOVER/SPACING DETAIL
NOT TO SCALE

NOTES:
1. NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
2. REMOVE ALL ROPE FROM TRUNK & TOP OF ROOT BALL FOLD BURLAP BACK ⅓ FROM TOP ROOT BALL
3. PLANTING DEPTH SHALL BE THE SAME AS GROWN IN NURSERY.
4. THOROUGHLY SOAK THE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
5. THE BOTTOM OF PLANTING PIT EXCAVATIONS SHOULD BE ROUGH TO AVOID MATTING OF SOIL LAYERS AS NEW SOIL IS ADDED. IT IS PREFERABLE TO TILL THE FIRST LIFT (2 TO 3 IN.) OF PLANTING SOIL INTO THE SUBSOIL.



REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

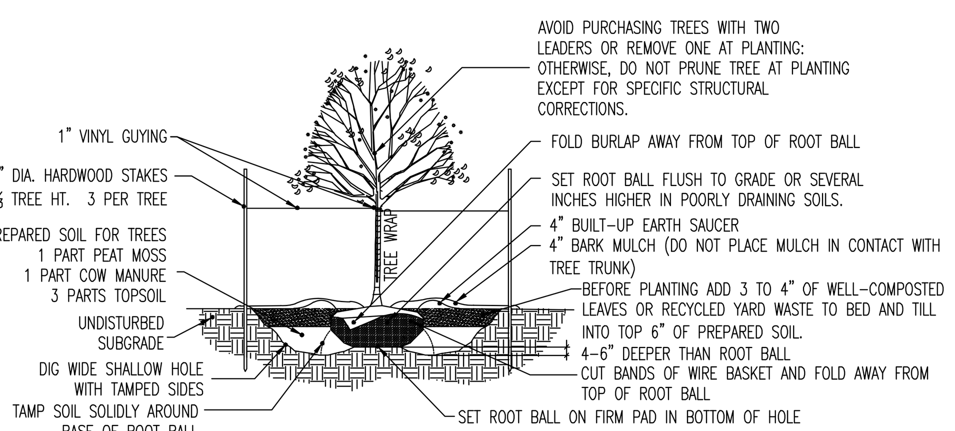
EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE



REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

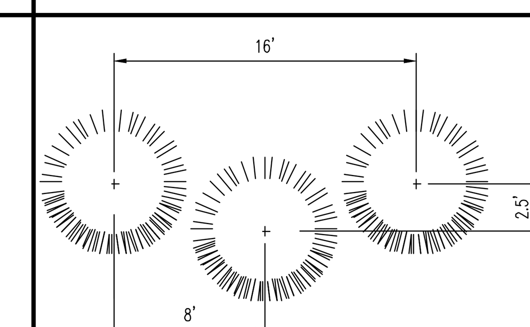
DECIDUOUS AND EVERGREEN SHRUB PLANTING DETAIL
NOT TO SCALE

NOTES:
1. NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
2. REMOVE ALL ROPE FROM TRUNK & TOP OF ROOT BALL FOLD BURLAP BACK ⅓ FROM TOP ROOT BALL
3. PLANTING DEPTH SHALL BE THE SAME AS GROWN IN NURSERY.
4. THOROUGHLY SOAK THE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
5. THE BOTTOM OF PLANTING PIT EXCAVATIONS SHOULD BE ROUGH TO AVOID MATTING OF SOIL LAYERS AS NEW SOIL IS ADDED. IT IS PREFERABLE TO TILL THE FIRST LIFT (2 TO 3 IN.) OF PLANTING SOIL INTO THE SUBSOIL.



REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

DECIDUOUS TREE PLANTING DETAIL
NOT TO SCALE



EVERGREEN SCREENING SPACING DETAIL
NOT TO SCALE

Rev.	Date	Comments	By

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TITLE: CONSTRUCTION DETAILS

PROJECT: ASSET REALTY & CONSTRUCTION GROUP INC.
PROPOSED FIVE-STORY MIXED USE BUILDING
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

JOB No:	2334-23-03513
DATE:	04/30/2025
DRAWN BY:	UV
SCALE:	(H) NOT TO (V) SCALE
DESIGNED BY:	AG/SM
CHECKED BY:	DT
CHECKED BY:	–
SHEET No:	13 OF 17
Rev. #	0

DANIEL A. TARABOKIJA
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 56963

JOSHUA M. SEWALD
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 52908

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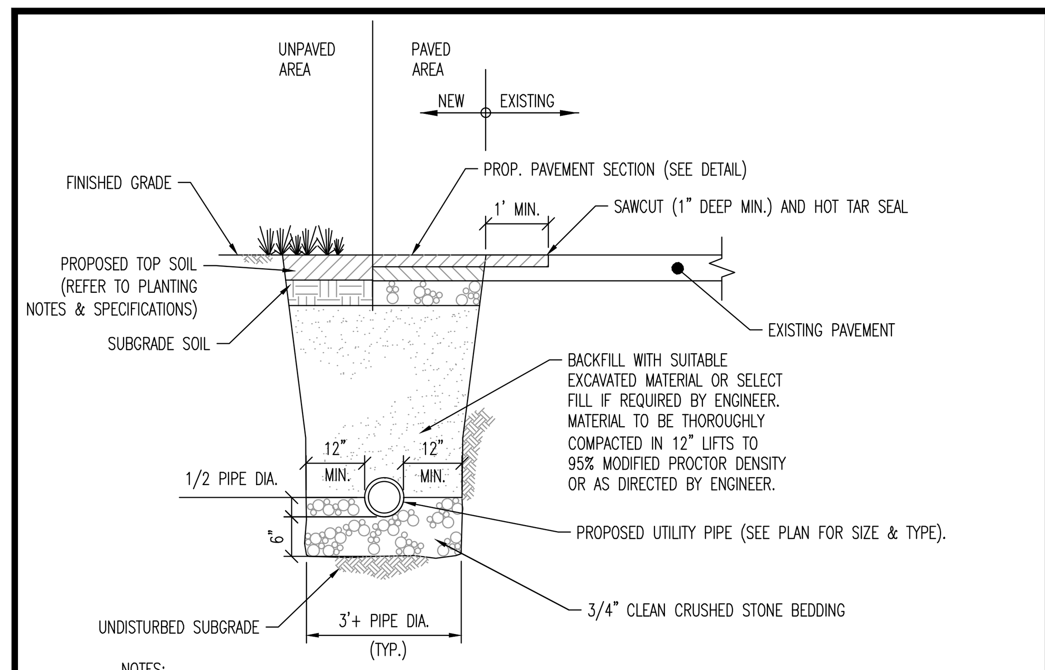
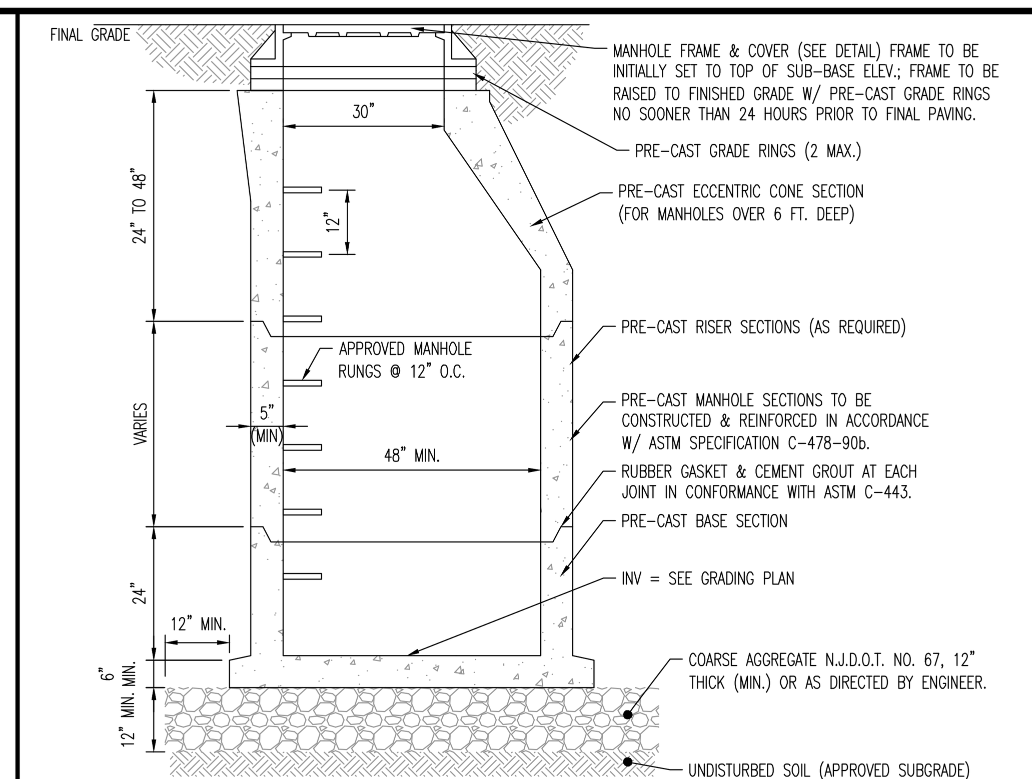
File: \\decpc.local\decfolders\Data\DECPC PROJECTS\2334 Arco Murray\23-03513 Camden\Dwg\Site Plans\0233423035135D0.dwg, ---> 13 CONSTRUCTION DETAILS

MUNICIPAL, COUNTY, STATE AND MUA DETAILS TO SUPERSEDE DYNAMIC ENGINEERING DETAILS WHERE APPLICABLE

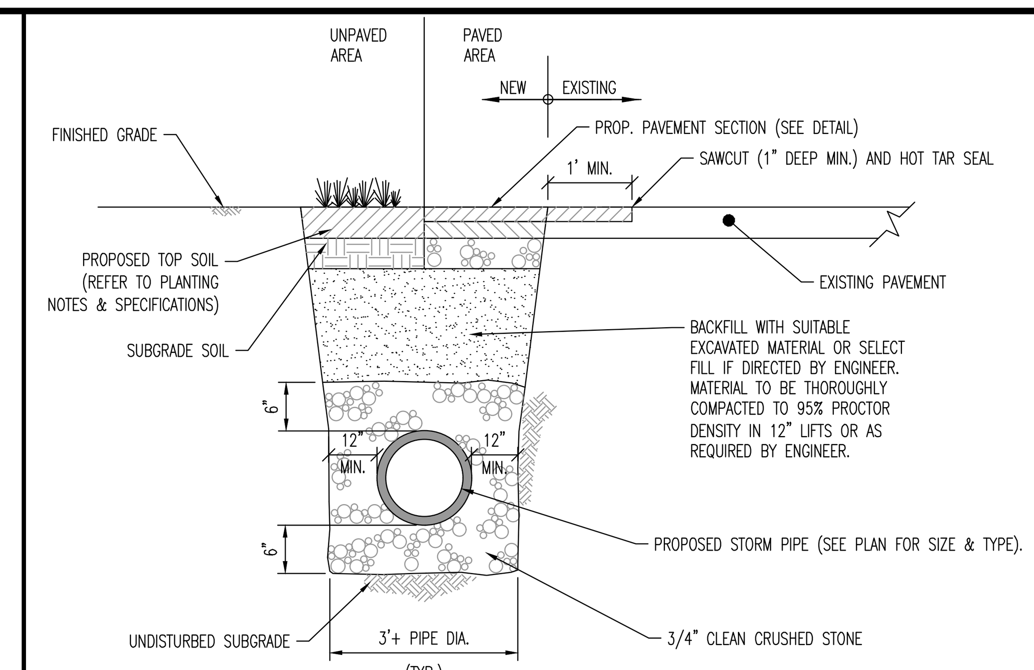


NOTES:
1. PAVEMENT SECTION SHALL BE PER PAVEMENT DETAIL, OR TO MATCH ADJOINING EXISTING PAVEMENT SECTION.
2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST OSHA STANDARDS.
3. PRIVATE FIRE WATER MAINS SHALL BE BURIED IN ACCORDANCE WITH LATEST NFPA REGULATIONS.
4. ALL TRENCHES IN EXISTING PAVEMENT SHALL BE SAWCUT.
5. ALL DISTURBED TRAFFIC STRIPING AND PAVEMENT MARKING SHALL BE REPLACED WITHIN KIND MATERIALS.

UTILITY SERVICE TRENCH DETAIL
NOT TO SCALE

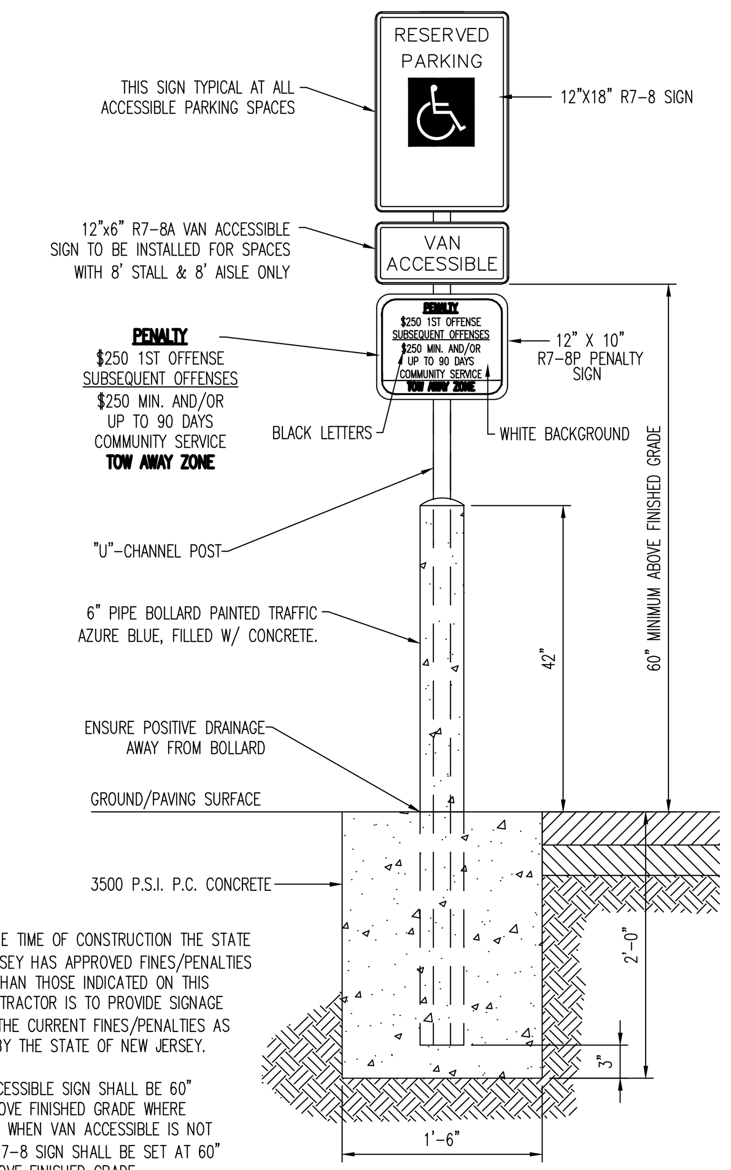


TYPICAL PRECAST STORM MANHOLE



NOTES:
1. PAVEMENT SECTION SHALL BE PER PAVEMENT DETAIL OR TO MATCH ADJOINING EXISTING PAVEMENT SECTION.
2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST OSHA STANDARDS.
3. ALL TRENCHES IN EXISTING PAVEMENT SHALL BE SAWCUT.
4. ALL DISTURBED TRAFFIC STRIPING AND PAVEMENT MARKING SHALL BE REPLACED WITH KIND MATERIAL.

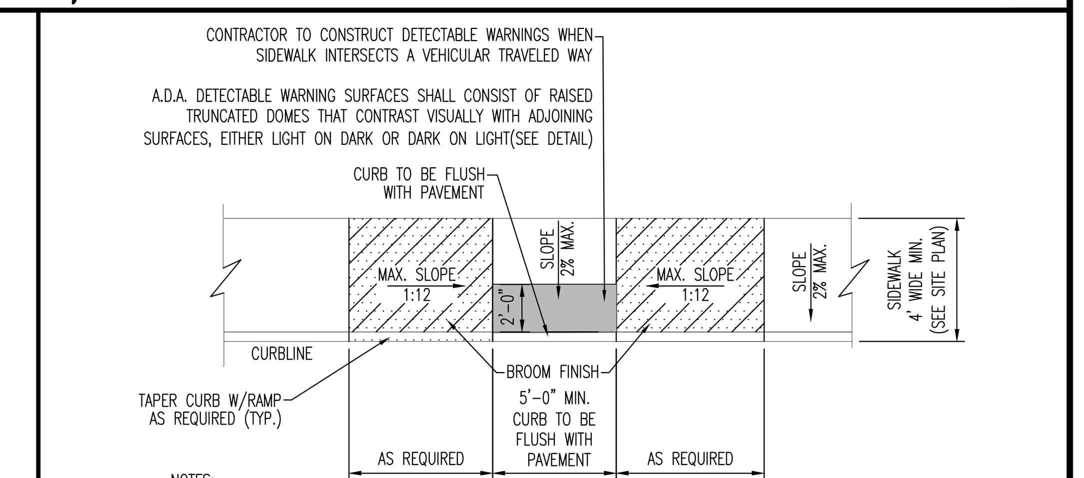
STORM SEWER TRENCH DETAIL
NOT TO SCALE



NOTES:
1.) IF AT THE TIME OF CONSTRUCTION THE STATE OF NEW JERSEY HAS APPROVED FINES/PENALTIES DIFFERENT THAN THOSE INDICATED ON THIS DETAIL, CONTRACTOR IS TO PROVIDE SIGNAGE INDICATING THE CURRENT FINES/PENALTIES AS APPROVED BY THE STATE OF NEW JERSEY.

2.) VAN ACCESSIBLE SIGN SHALL BE 60" MINIMUM ABOVE FINISHED GRADE WHERE APPLICABLE. WHEN VAN ACCESSIBLE IS NOT REQUIRED, R7-8 SIGN SHALL BE SET AT 60" MINIMUM ABOVE FINISHED GRADE.

A.D.A. PARKING SIGN ON BOLLARD DETAIL
NOT TO SCALE



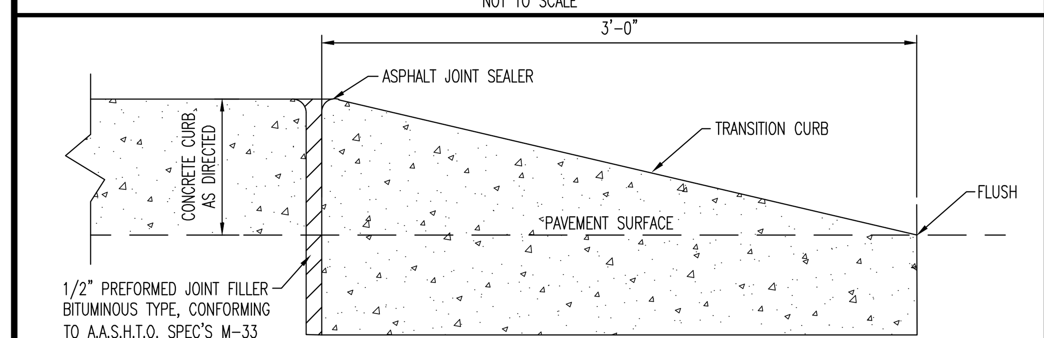
NOTES:
1.) CURB RAMPS MAY NOT EXTEND INTO ANY PORTION OF THE PARKING SPACE OR ASSOCIATED STRIPED ISLAND.

2.) COUNTER SLOPES OF ADJOINING GUTTERS AND PAVEMENT SHALL NOT BE STEEPER THAN 1:20 WITH A MAX. CROSS SLOPE OF 2%.

3. A LEVEL LANDING AREA(MAX. SLOPE 2% IN ANY DIRECTION) SHALL BE PROVIDED AT THE TOP OF THE RAMP. THE LANDING CLEAR LENGTH SHALL BE 36" MIN AND THE CLEAR WIDTH SHALL BE AS WIDE AS THE RAMP.

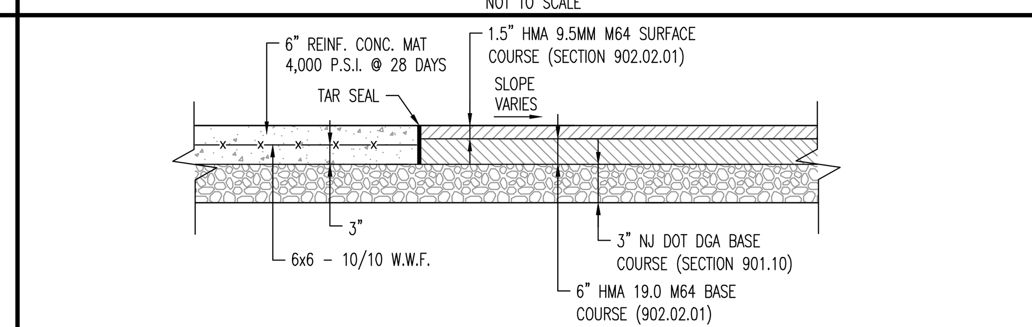
4.) CURB RAMPS, PAVEMENT MARKINGS & APPLICABLE SIGNAGE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST A.D.A. ACCESSIBILITY GUIDELINES.

A.D.A. PARALLEL CURB RAMP DETAIL
NOT TO SCALE

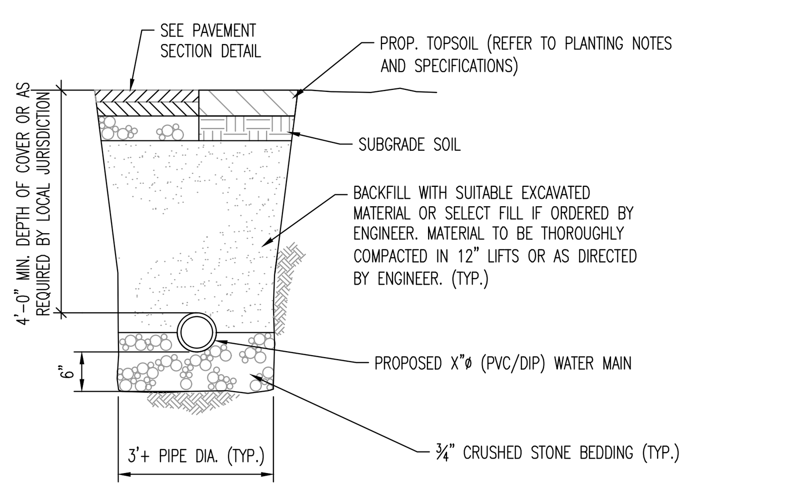


NOTE: SEE CURB DETAIL FOR MATERIAL SPECIFICATIONS, BEDDING REQUIREMENTS, ETC.

VERTICAL CURB TAPER DETAIL
NOT TO SCALE

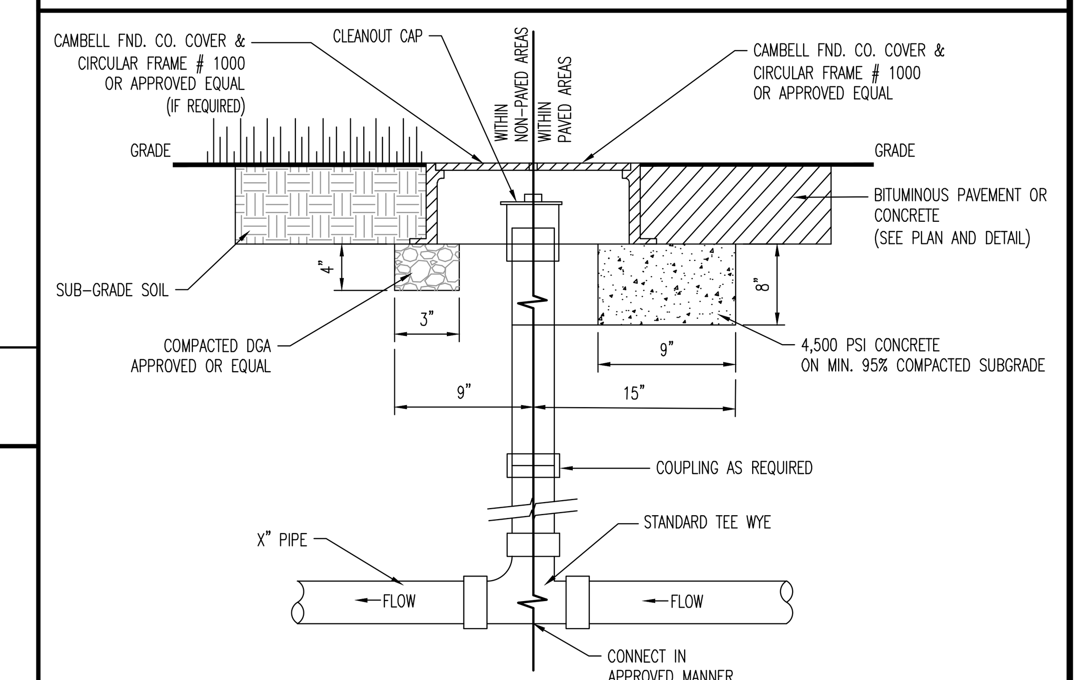


CONCRETE & PAVING DETAIL
NOT TO SCALE



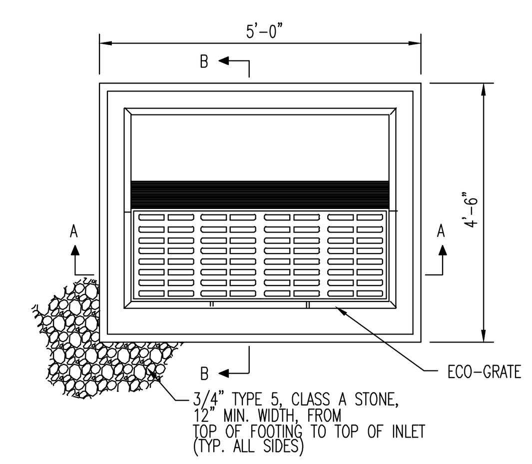
NOTE:
1. PAVEMENT SECTION AS PER ASPHALT PAVING DETAIL OR TO MATCH ADJOINING EXISTING PAVEMENT SECTION.
2. X" - SEE PLAN FOR PIPE DIAMETER.
3. PRIVATE FIRE WATER MAINS SHALL BE BURIED IN ACCORDANCE WITH LATEST NFPA REGULATIONS.

WATER MAIN TRENCH DETAIL
NOT TO SCALE

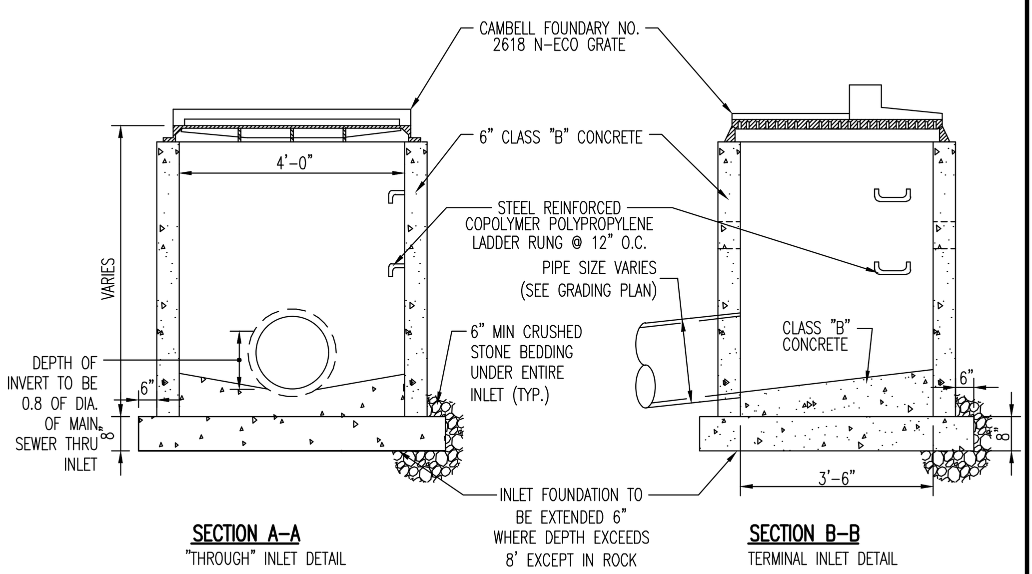


1. ALL SANITARY SEWER PIPE IS BE SDR-35 PVC UNLESS OTHERWISE NOTED.
2. ALL STORM SEWER PIPE IS TO BE SCH-40 PVC UNLESS OTHERWISE NOTED.
3. ALL CLEANOUT CAPS ARE TO BE BRASS FOR SANITARY AND PVC FOR STORM SEWER.
4. X" - SEE PLAN FOR PIPE DIAMETER

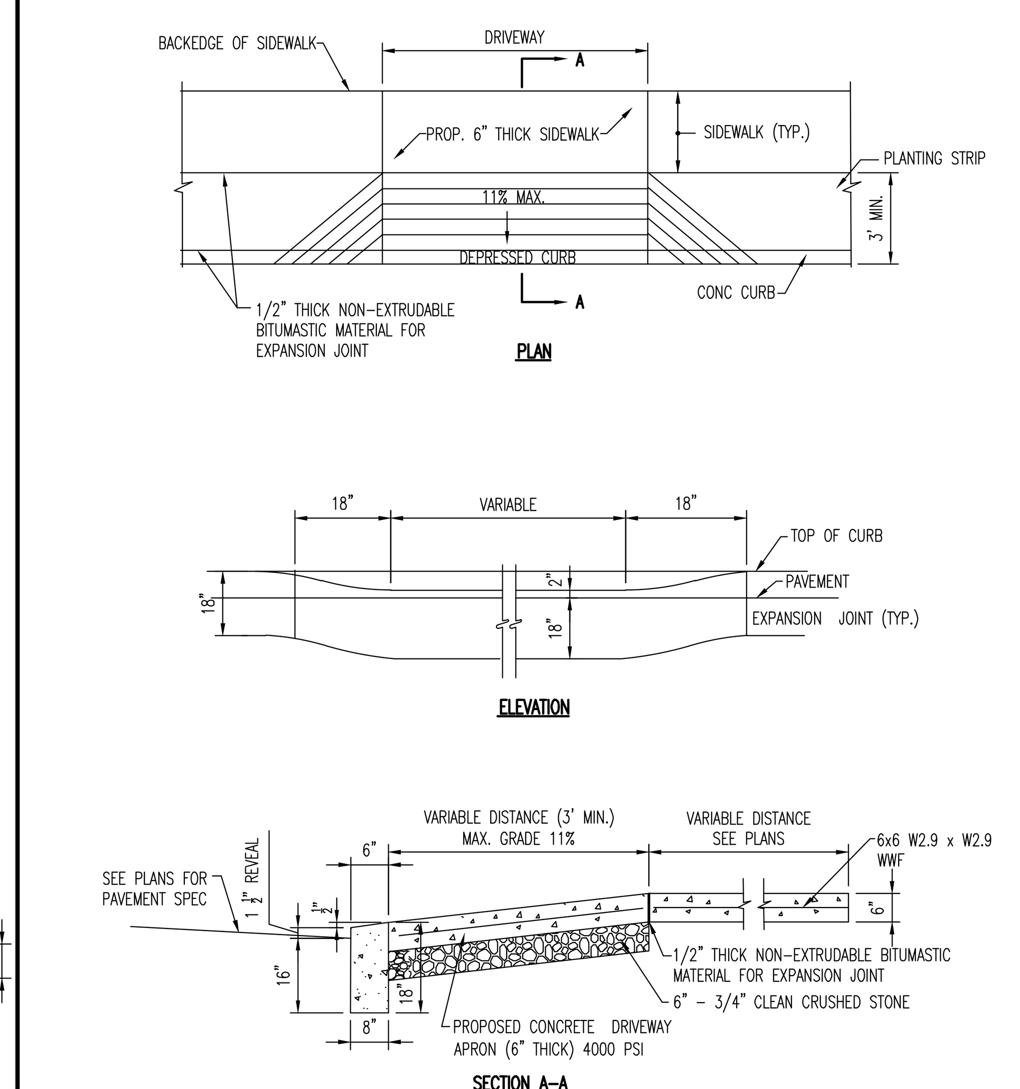
CLEANOUT DETAIL
NOT TO SCALE



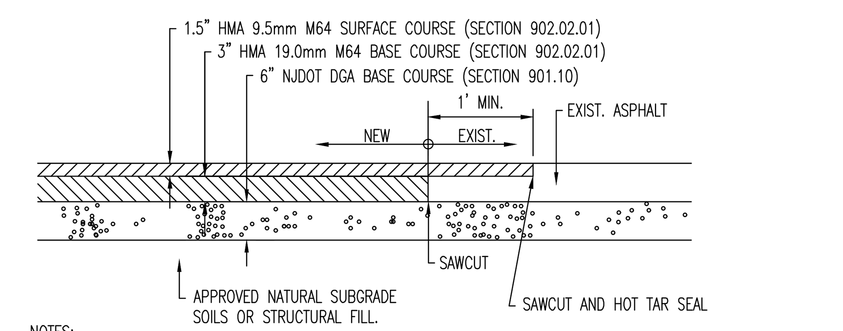
NOTES
1. CONSTRUCTION PER ASTM C-913, LATEST REVISION & HS-20 LOADING.
2. ALL CONCRETE TO BE N.J.D.O.T. CLASS "B" CONCRETE.
3. WALLS SHALL BE PRECAST CONCRETE ONLY.
4. FRAME AND GRATE TO BE CAMPBELL FOUNDRY CO., NO. 2618 BICYCLE SAFE N-ECO GRATE SET IN CONC.
5. STEEL REINFORCED COPOLYMER POLYPROPYLENE LADDER RUNG @ 12" O.C.
6. WHEN ADDITIONAL DEPTH IS SCHEDULED, WALLS BELOW 8'-0" MEASURED FROM GRATE TO INVERT SHALL BE 12" THICK AND EXTEND 12" BEYOND OUTSIDE OF WALL.



TYPE 'B' INLET
NOT TO SCALE

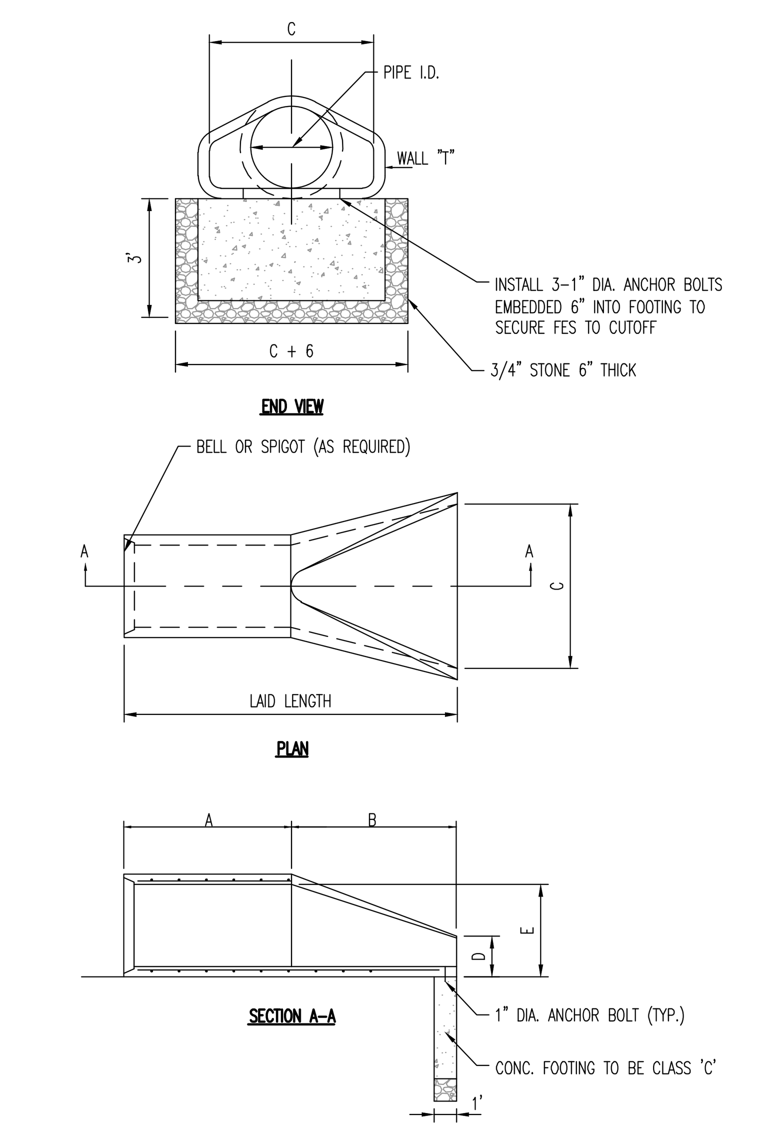


DEPRESSED CURB & CONCRETE APRON AT DRIVEWAY DETAIL
NOT TO SCALE



NOTES:
1. ALL PAVEMENT SECTION MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH NEW JERSEY DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION 2019.
2. OWNER SHALL CONTACT AND ENGAGE DYNAMIC EARTH, LLC. TO INSPECT AND TEST SUBGRADE SOILS. CONTRACTOR SHALL CONTACT DYNAMIC EARTH, LLC. AT (908) 879-7095 (WWW.DYNAMIC-EARTH.COM) AT ONSET OF CONSTRUCTION TO CONFIRM REQUIREMENTS AND COORDINATE INSPECTIONS.
3. SUBGRADE SOILS SHALL BE APPROVED BY DYNAMIC EARTH, LLC. APPROVED NATURAL SOILS SHALL BE COMPACTED AND PROOFROLLED WITH A LOADED TANDEM AXLE TRUCK TO A FIRM AND UNYIELDING CONDITION. UNSUITABLE MATERIALS SHALL BE REMOVED AND REPLACED WITH STRUCTURAL FILL OR STABILIZED AS DIRECTED BY DYNAMIC EARTH, LLC. ANY STRUCTURAL FILL AT OR BELOW PAVEMENT SUBGRADE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY WITHIN 2% OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM-D1557.
4. CONTRACTOR TO REFER TO GEOTECHNICAL REPORT FOR FINAL PAVEMENT SECTION DESCRIPTION.

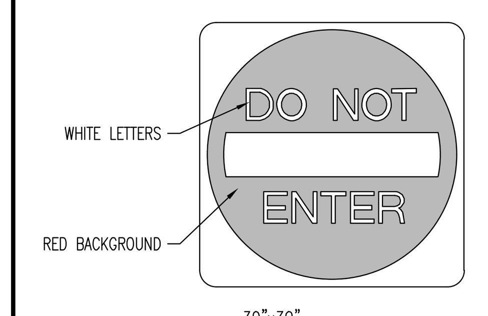
STANDARD DUTY ASPHALT PAVEMENT DETAIL
NOT TO SCALE



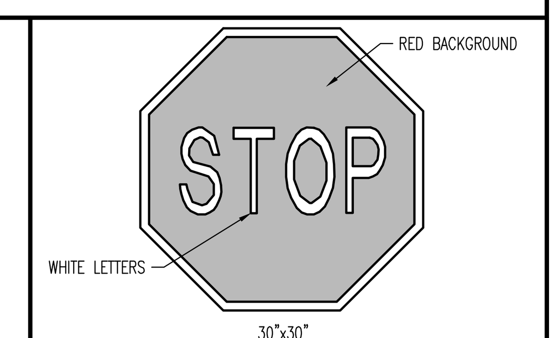
INSIDE DIA. IN.	A IN.	B IN.	C IN.	D IN.	E IN.	LAID LENGTH FT.	WEIGHT	WALL 'T' IN.
12	49	24	24	4	13	6.00	530	2
15	46	27	30	6	16	6.08	740	2 1/4
18	46	27	36	9	19	6.08	990	2 1/2
21	38	35	42	9	22	6.08	1280	2 3/4
24	30	44	48	9 1/2	25	6.17	1520	3
27	26	48	54	10 1/2	28	6.17	1930	3 1/4
30	20	54	60	12	31	6.17	2190	3 1/2
36	35	63	72	15	37	8.17	4100	4
42	35	63	72	21	43	8.17	5380	4 1/2
48	26	72	84	24	49	8.17	6550	5
54	35	65	90	27	55	8.33	8040	5 1/2
60	39	60	96	30	61	8.25	8750	6

6/30/23 MFD

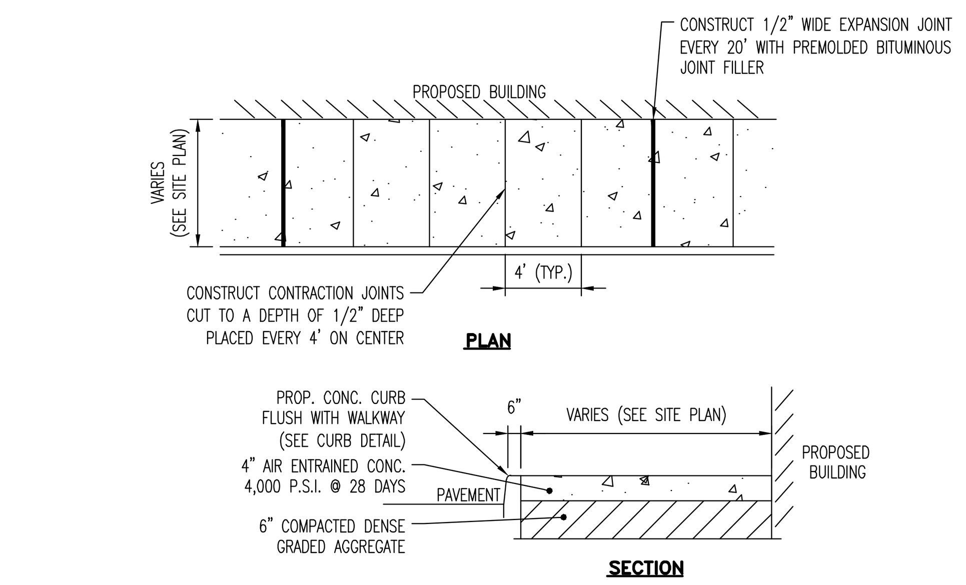
CONCRETE FLARED END SECTIONS
NOT TO SCALE



R5-1 SIGN DETAIL
NOT TO SCALE

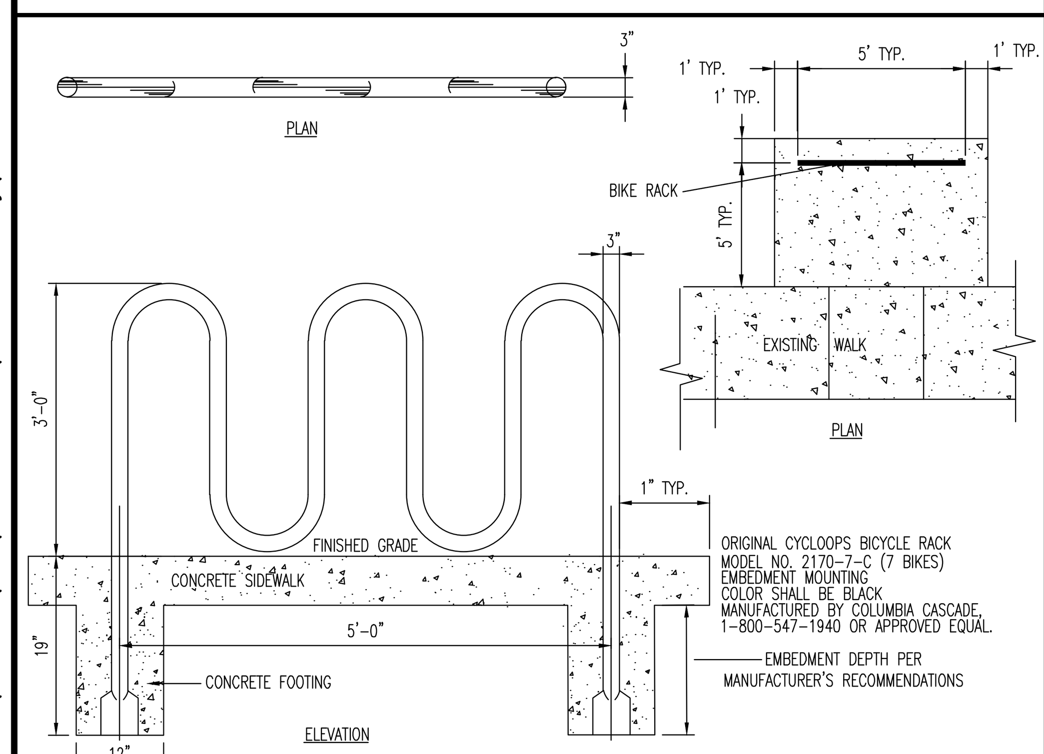


R1-1 SIGN DETAIL
NOT TO SCALE

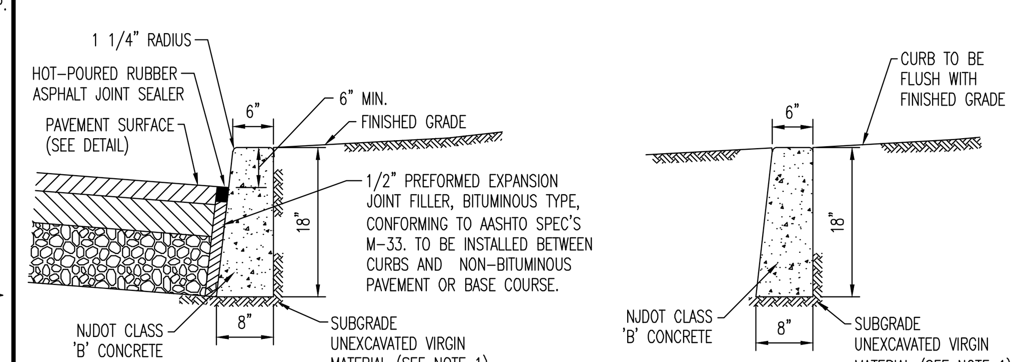


NOTE:
1. MAX. CROSS SLOPE 1/4" PER FOOT PITCHED AWAY FROM BUILDING.
2. PROVIDE 1/2" WIDE PREMOLDED BITUMINOUS EXPANSION JOINT AT 20' INTERVALS.
3. REFER TO SITE PLAN FOR SIDEWALK WIDTH.
4. PROVIDE A BROOM FINISH TO PROVIDE A SLIP RESISTANT WEARING SURFACE IN ACCORDANCE WITH A.D.A. REGULATIONS. FINISH THE EDGES OF THE GROOVES USING AN EDGING TOOL WITH A 1/4" RADIUS.

CURB AND WALK DETAIL AT BUILDING
NOT TO SCALE

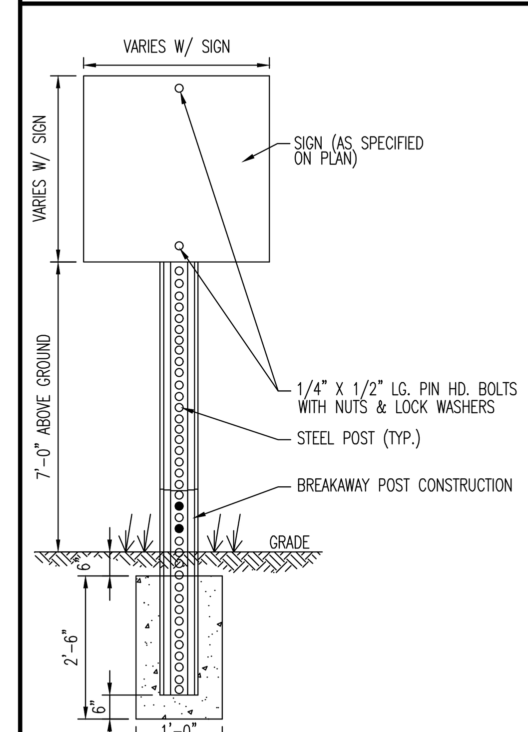


'U' BICYCLE RACK DETAIL
NOT TO SCALE



NOTES:
1. ANY EXCAVATION BELOW DESIRED GRADE DUE TO OVER EXCAVATION OR WET SOIL CONDITIONS SHALL BE BACKFILLED WITH 3/4" CLEAN CRUSHED STONE. ALL SUBGRADES SHALL BE APPROVED BY THE TOWNSHIP ENGINEER PRIOR TO POURING.
2. TRANSVERSE JOINTS 1/2" WIDE SHALL BE INSTALLED IN THE CURB 20'-0" APART AND SHALL BE FILLED WITH PREFORMED, BITUMINOUS-IMPREGNATED FIBER JOINT FILLER, COMPLYING WITH THE REQUIREMENTS OF AASHTOM-213, RECESSED 1/4" FROM THE FRONT FACE AND TOP OF THE CURB.
3. DUMMY JOINTS (FORMED) SHALL BE INSTALLED MIDWAY BETWEEN EXPANSION JOINTS.
4. WIDTH OF JOINT FILLER STRIP EQUAL TO THE THICKNESS OF THE PAVEMENT LESS 1/2".
5. THESE SPECIFICATIONS ALSO MEET RSIS DESIGN STANDARDS.

CONCRETE CURB DETAIL
NOT TO SCALE



SIGN POST & FOOTING DETAIL
NOT TO SCALE

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TITLE:
CONSTRUCTION DETAILS

PROJECT: ASSET REALTY & CONSTRUCTION GROUP INC.
PROPOSED FIVE-STORY MIXED USE BUILDING
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

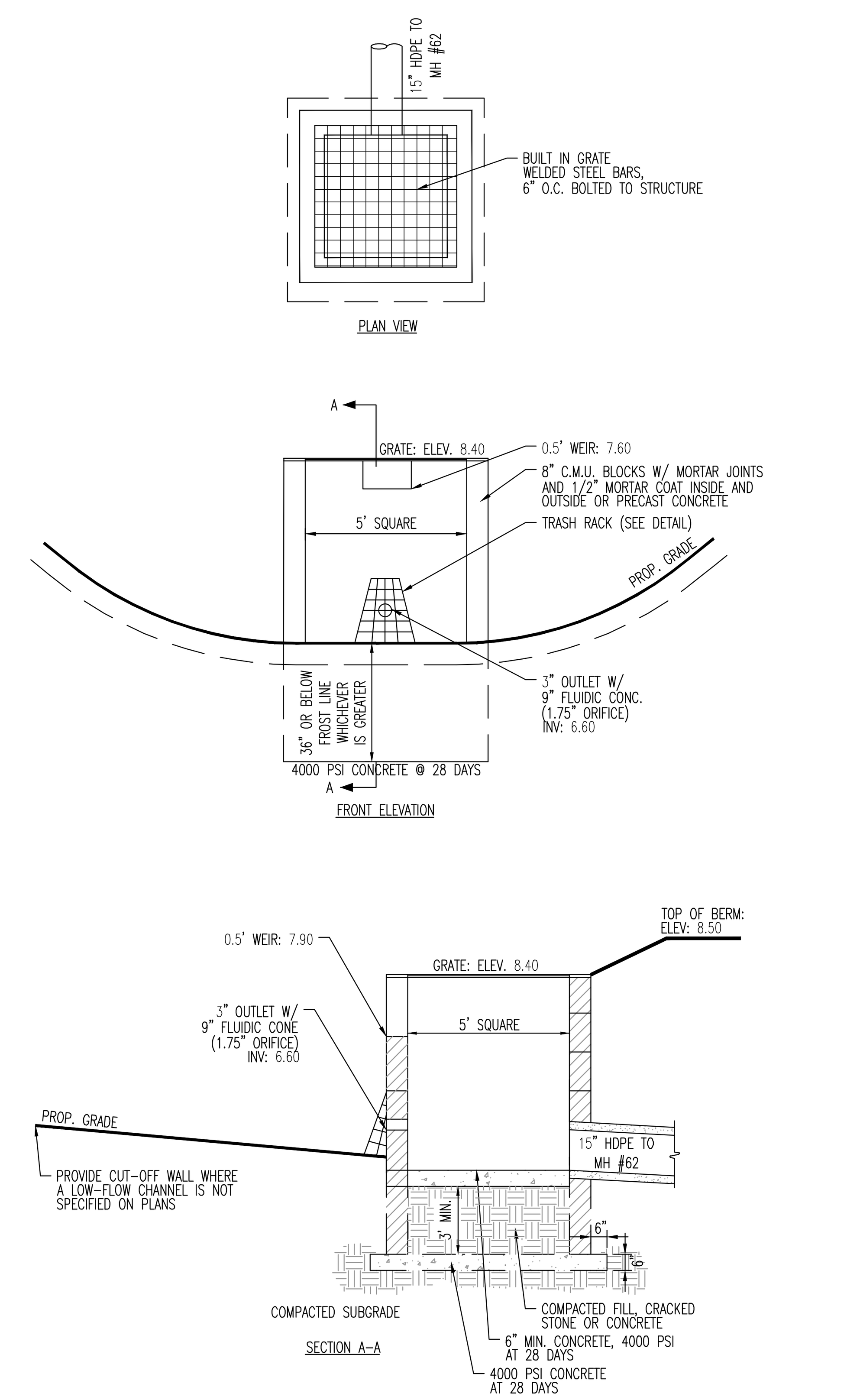
JOB No: 2334-23-03513
DATE: 04/30/2025
DRAWN BY: UV
SCALE:(H) NOT TO (V) SCALE
DESIGNED BY: AG/SM
CHECKED BY: DT
CHECKED BY: -
SHEET No: 14 OF 17
Rev. # 0

DANIEL A. TARABOKIJA
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 56963

JOSHUA M. SEWALD
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 52908

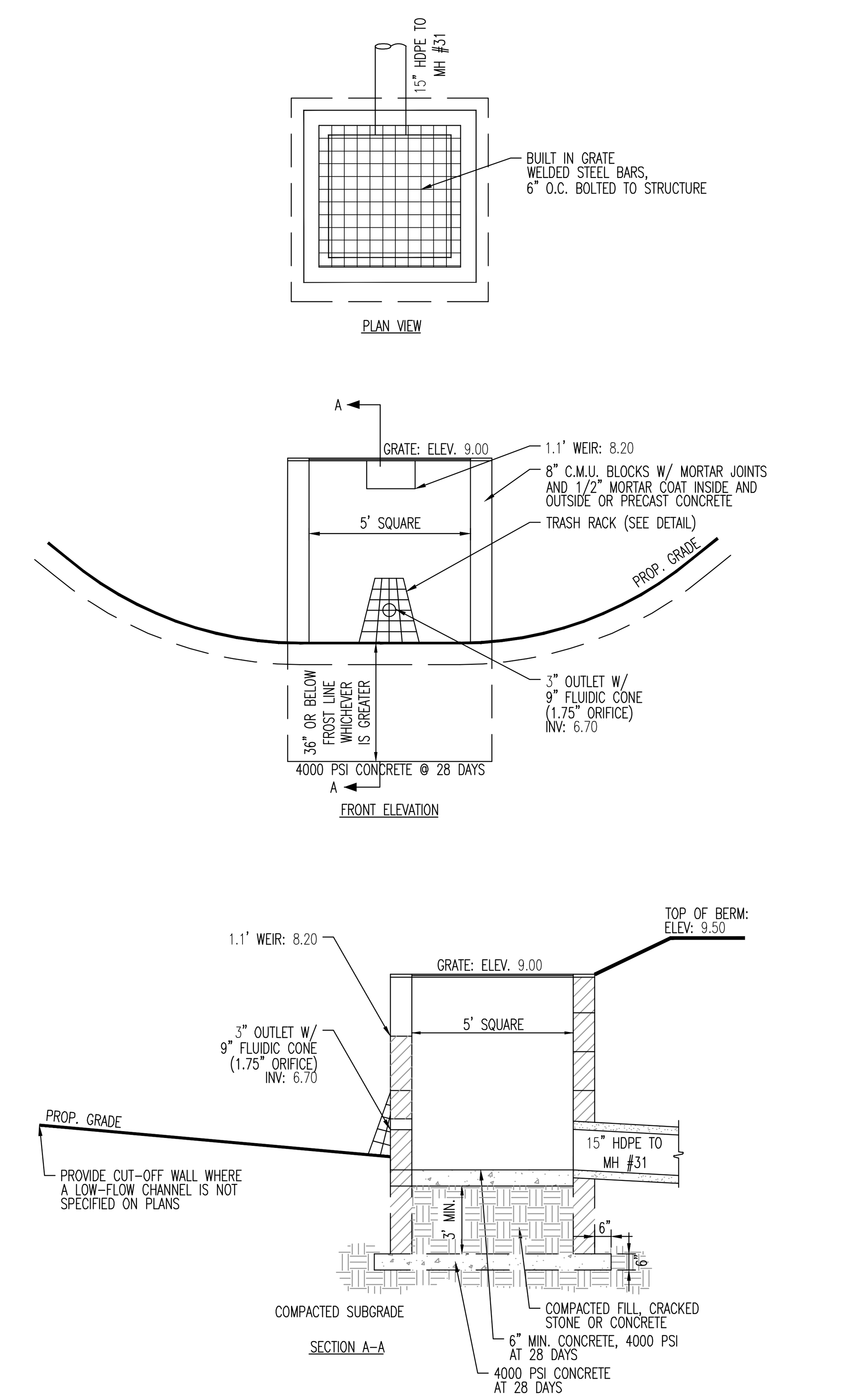
811 PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE
Know what's below. Call before you dig.
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

Plotted: 05/07/25 - 1:06 PM, By: kheege, — Product Ver: 25.0
File: \\decpc.local\decfolders\Data\DECPC PROJECTS\2334 Arco Murray\23-03513 Camden\Dwg\Site Plans\02334230351 3SD00.dwg. ---> 14 CONSTRUCTION DETAILS



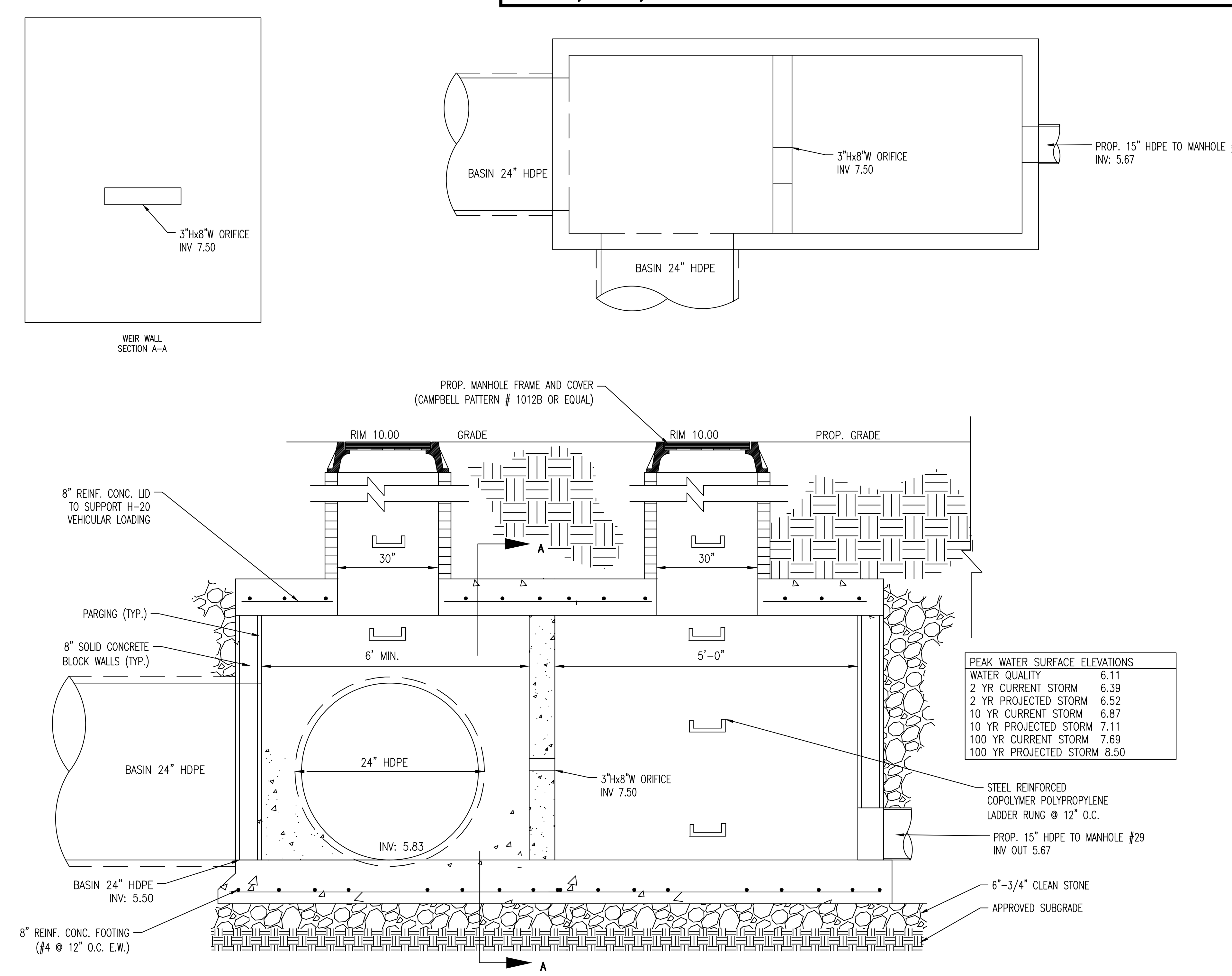
ABOVE GROUND INFILTRATION BASIN (EAST) OUTLET CONTROL STRUCTURE (OCS) DETAIL STORM STR. #34

NOT TO SCALE



ABOVE GROUND INFILTRATION BASIN (WEST) OUTLET CONTROL STRUCTURE (OCS) DETAIL STORM STR. #32

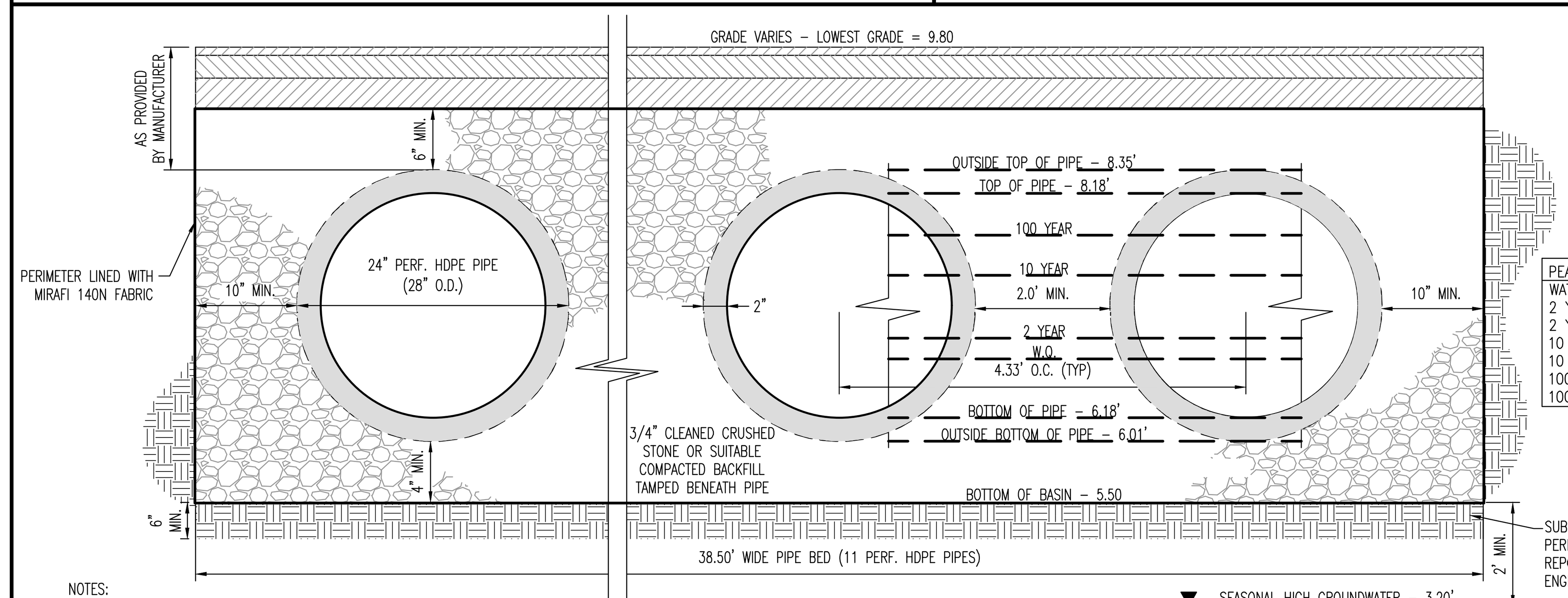
NOT TO SCALE



PEAK WATER SURFACE ELEVATIONS	
WATER QUALITY	6.11
2 YR CURRENT STORM	6.39
2 YR PROJECTED STORM	6.52
10 YR CURRENT STORM	6.87
10 YR PROJECTED STORM	7.11
100 YR CURRENT STORM	7.69
100 YR PROJECTED STORM	8.50

UNDERGROUND INFILTRATION BASIN OUTLET STRUCTURE DETAIL (OCS) STORM STRUCTURE #17

NOT TO SCALE

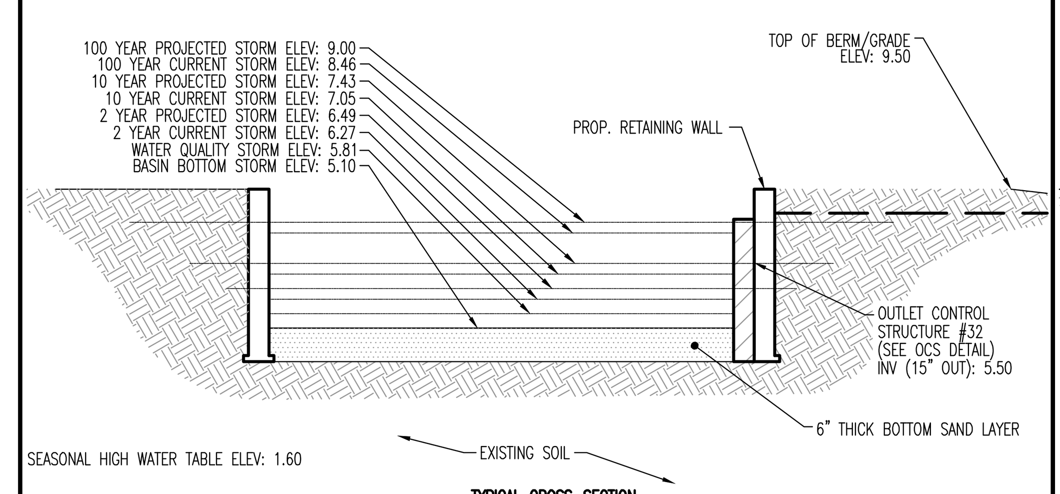


PEAK WATER SURFACE ELEVATIONS	
WATER QUALITY	6.11
2 YR CURRENT STORM	6.39
2 YR PROJECTED STORM	6.52
10 YR CURRENT STORM	6.87
10 YR PROJECTED STORM	7.11
100 YR CURRENT STORM	7.69
100 YR PROJECTED STORM	8.50

NOTES:
1. BASIN CONSTRUCTION MUST NOT OVER COMPACT OR SMEAR SOILS BELOW BASIN BOTTOM.
2. OWNER SHALL CONTACT AND ENGAGE DYNAMIC EARTH, LLC. TO TEST SOIL PERMEABILITY AND PROVIDE CONSTRUCTION PHASE INSPECTIONS OF THE BASIN BOTTOM SOILS AND FILL MATERIALS WITHIN ANY PROPOSED INFILTRATION OR RETENTION BASIN TO COMPARE RESULTS TO DESIGN CRITERIA. CONTRACTOR SHALL CONTACT DYNAMIC EARTH AT (908) 879-7095 (WWW.DYNAMIC-EARTH.COM) AT ONSET OF PROJECT TO CONFIRM REQUIREMENTS AND COORDINATE INSPECTIONS.
3. TOPSOIL AND UNSUITABLE MATERIALS (INCLUDING ANY SOILS WITH INSUFFICIENT PERMEABILITY) ARE TO BE STRIPPED FROM BASIN BOTTOM AREA AND REPLACED WITH SUITABLE MATERIAL PROVIDING PERMEABILITY RATES MEETING THE DESIGN CRITERIA. CONTRACTOR SHALL SUBMIT PROPOSED REPLACEMENT MATERIAL USED AND ITS CORRESPONDING PERMEABILITY RATE FOR APPROVAL BY DYNAMIC EARTH. REFER TO THE TEST PIT AND/OR SOIL BORING RECORDS AND STORMWATER MANAGEMENT REPORT TO CONFIRM THE DEPTH OF THE ZONE OF INFILTRATION.

24" HDPE SCHEMATIC UNDERGROUND BASIN DETAIL

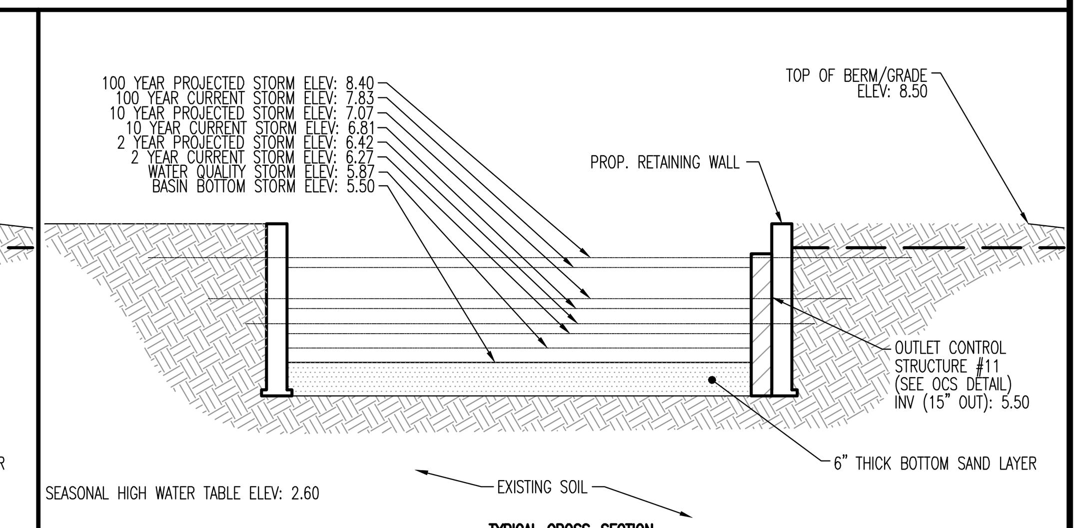
NOT TO SCALE



NOTES:
1. CONTRACTOR OR OWNER TO ENGAGE QUALIFIED GEOTECHNICAL ENGINEER TO TEST SOIL PERMEABILITY AND PROVIDE CONSTRUCTION PHASE INSPECTIONS OF THE BASIN BOTTOM SOILS AND FILL MATERIALS WITHIN ANY PROPOSED INFILTRATION OR RETENTION BASIN TO COMPARE RESULTS TO DESIGN CRITERIA.
2. TOPSOIL AND UNSUITABLE MATERIALS ARE TO BE STRIPPED FROM BASIN BOTTOM AREA AND REPLACED WITH SUITABLE MATERIAL PROVIDING PERMEABILITY RATES CONSISTENT WITH THAT OF THE SUBSURFACE SOILS ZONE OF INFILTRATION. CONTRACTOR SHALL PROVIDE A RECORD OF THE REPLACEMENT MATERIAL USED AND ITS CORRESPONDING PERMEABILITY RATE. REFER TO THE TEST PIT AND/OR SOIL BORING RECORDS AND STORMWATER MANAGEMENT REPORT TO CONFIRM THE DEPTH OF THE ZONE OF INFILTRATION.
3. BOTTOM SAND LAYER MUST CONSIST OF K5 SAND WITH A MAXIMUM OF 15% FINES AND A MINIMUM PERMEABILITY RATE OF 20 INCHES PER HOUR. SOIL TO BE CERTIFIED BY A NEW JERSEY LICENSED PROFESSIONAL ENGINEER.
4. BASIN CONSTRUCTION MUST NOT COMPACT SOILS BELOW BASIN BOTTOM.

INFILTRATION WALLED BASIN (SAND) DETAIL (WEST)

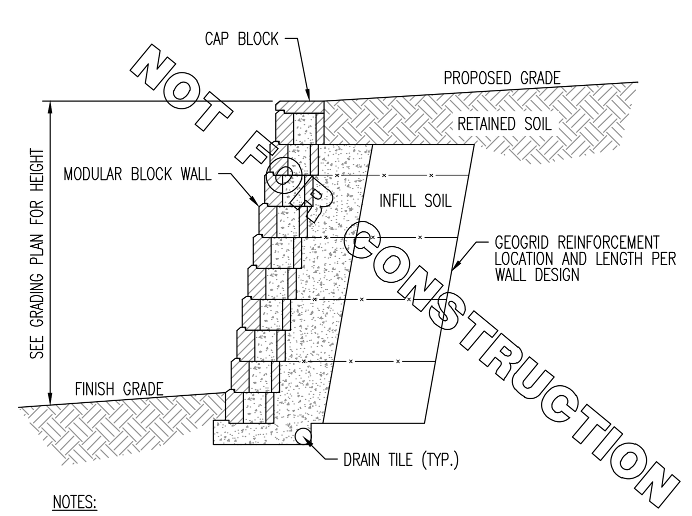
NOT TO SCALE



NOTES:
1. CONTRACTOR OR OWNER TO ENGAGE QUALIFIED GEOTECHNICAL ENGINEER TO TEST SOIL PERMEABILITY AND PROVIDE CONSTRUCTION PHASE INSPECTIONS OF THE BASIN BOTTOM SOILS AND FILL MATERIALS WITHIN ANY PROPOSED INFILTRATION OR RETENTION BASIN TO COMPARE RESULTS TO DESIGN CRITERIA.
2. TOPSOIL AND UNSUITABLE MATERIALS ARE TO BE STRIPPED FROM BASIN BOTTOM AREA AND REPLACED WITH SUITABLE MATERIAL PROVIDING PERMEABILITY RATES CONSISTENT WITH THAT OF THE SUBSURFACE SOILS ZONE OF INFILTRATION. CONTRACTOR SHALL PROVIDE A RECORD OF THE REPLACEMENT MATERIAL USED AND ITS CORRESPONDING PERMEABILITY RATE. REFER TO THE TEST PIT AND/OR SOIL BORING RECORDS AND STORMWATER MANAGEMENT REPORT TO CONFIRM THE DEPTH OF THE ZONE OF INFILTRATION.
3. BOTTOM SAND LAYER MUST CONSIST OF K5 SAND WITH A MAXIMUM OF 15% FINES AND A MINIMUM PERMEABILITY RATE OF 20 INCHES PER HOUR. SOIL TO BE CERTIFIED BY A NEW JERSEY LICENSED PROFESSIONAL ENGINEER.
4. BASIN CONSTRUCTION MUST NOT COMPACT SOILS BELOW BASIN BOTTOM.

INFILTRATION WALLED BASIN (SAND) DETAIL (EAST)

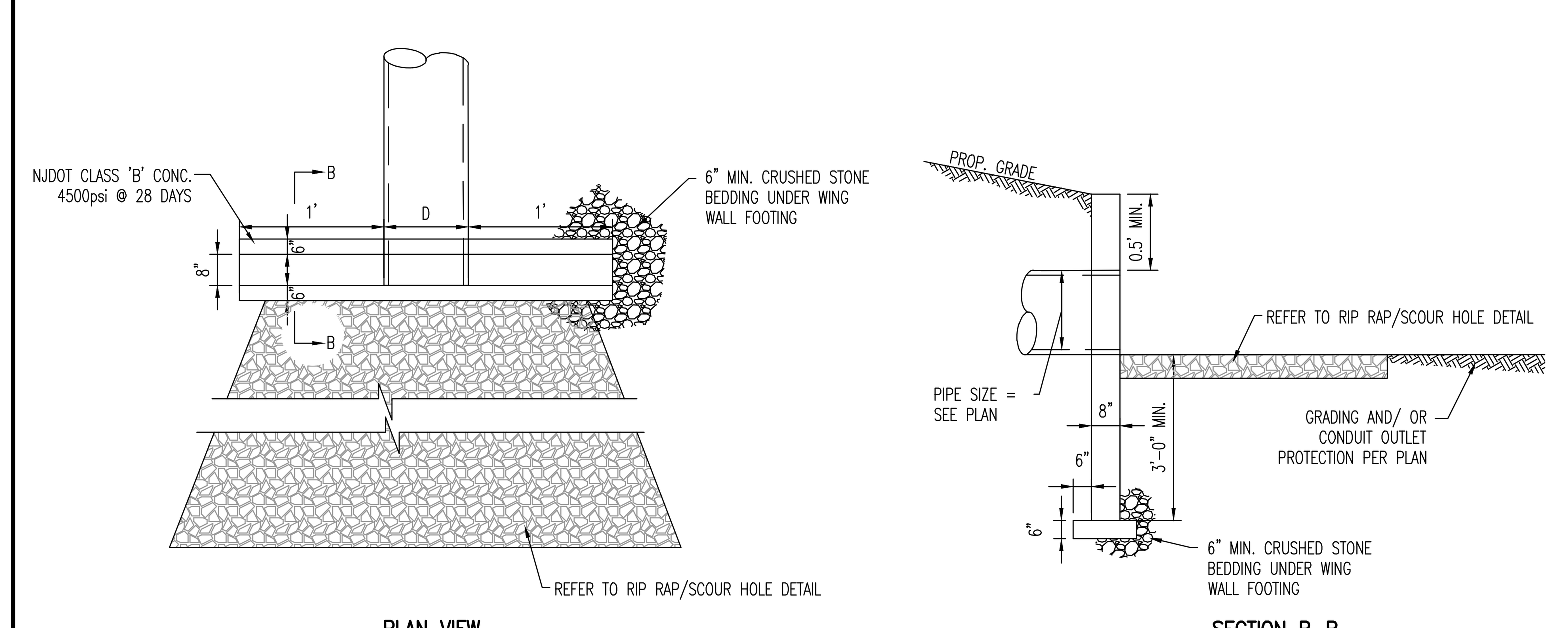
NOT TO SCALE



NOTES:
1. DETAIL IS FOR SITE PLAN REVIEW ONLY AND SHALL NOTE BE USED FOR BIDDING OR CONSTRUCTION.
2. A DESIGN SIGNED AND SEALED BY A PROFESSIONAL ENGINEER FOR ALL RETAINING WALLS SHALL BE SUBMITTED TO THE MUNICIPAL ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.
3. WALL SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.

SCHEMATIC MODULAR BLOCK RETAINING WALL DETAIL

NOT TO SCALE



PRECAST CONCRETE HEADWALL DETAIL

NOT TO SCALE

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TITLE: CONSTRUCTION DETAILS

PROJECT: **ASSET REALTY & CONSTRUCTION GROUP INC.**
PROPOSED FIVE-STORY MIXED USE BUILDING
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

JOB No:	2334-23-03513
DATE:	04/30/2025
DRAWN BY:	KJH
SCALE:	(H) NOT TO (V) SCALE
DESIGNED BY:	AG/SM
CHECKED BY:	DT
CHECKED BY:	–
SHEET No:	15 OF 17
Rev. #	0

DANIEL A. TARABOKIJA
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 56963

JOSHUA M. SEWALD
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 52908

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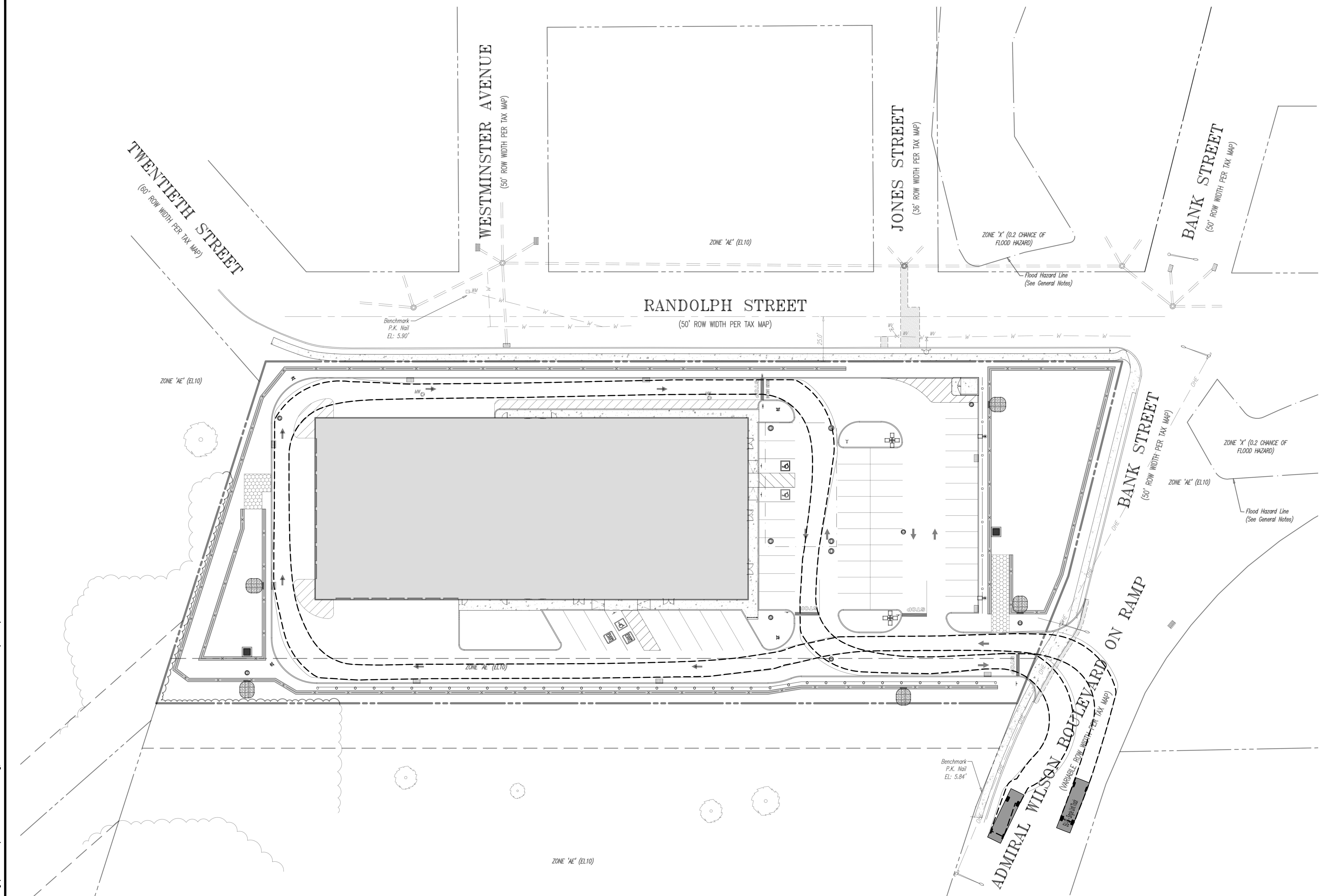
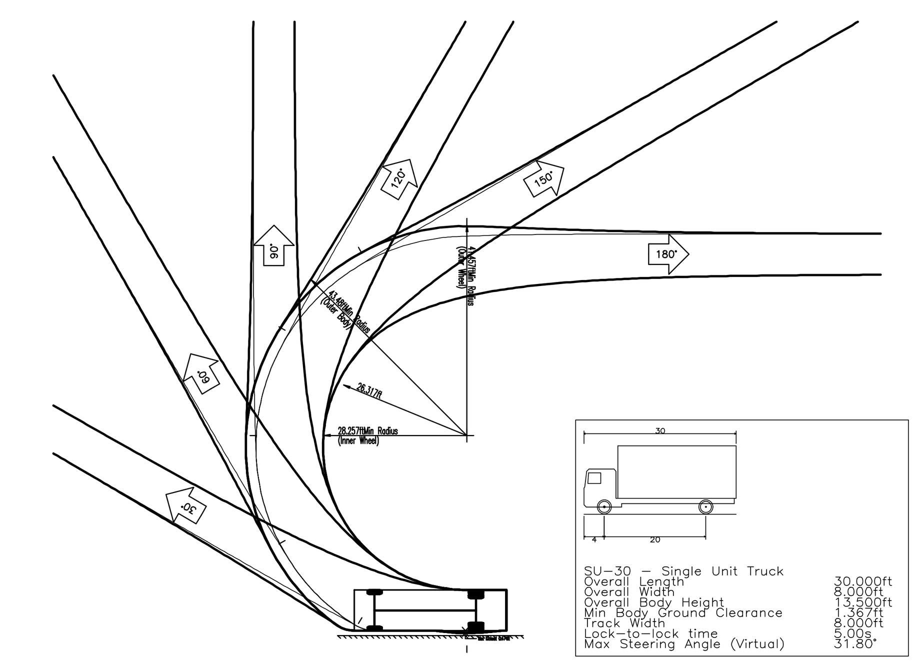
File: \\decpc.local\decfolders\Data\DECPC PROJECTS\2334 Arco Murray\23-03513 Camden\Dwg\Site Plans\D2334230351305D00.dwg, ---> 15 CONSTRUCTION DETAILS

THIS PLAN TO BE UTILIZED FOR VEHICLE CIRCULATION PURPOSES ONLY





SU-30 - Single Unit Truck	
Overall Length	30.000ft
Overall Width	8.000ft
Overall Body Height	13.500ft
Min Body Ground Clearance	1.367ft
Track Width	8.000ft
Lock-to-lock time	5.00s
Max Steering Angle (Virtual)	31.80°

GRAPHIC SCALE

-30 0 15 30 60 120

(IN FEET)
1 INCH = 30 FT.

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F: 732.974.3521
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TITLE: **VEHICLE CIRCULATION (SU-30)**

PROJECT: **ASSET REALTY & CONSTRUCTION GROUP INC.**
PROPOSED FIVE-STORY MIXED USE BUILDING
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

JOB No:	2334-23-03513
DATE:	04/30/2025
DRAWN BY:	UV
DESIGNED BY:	AG/SM
CHECKED BY:	DT
CHECKED BY:	-
SCALE:	(H) 1"=30' (V) .
SHEET No:	16 OF 17
Rev. #	0

DANIEL A. TARABOKIJA
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NEW JERSEY LICENSE No. 56963

JOSHUA M. SEWALD
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 52908

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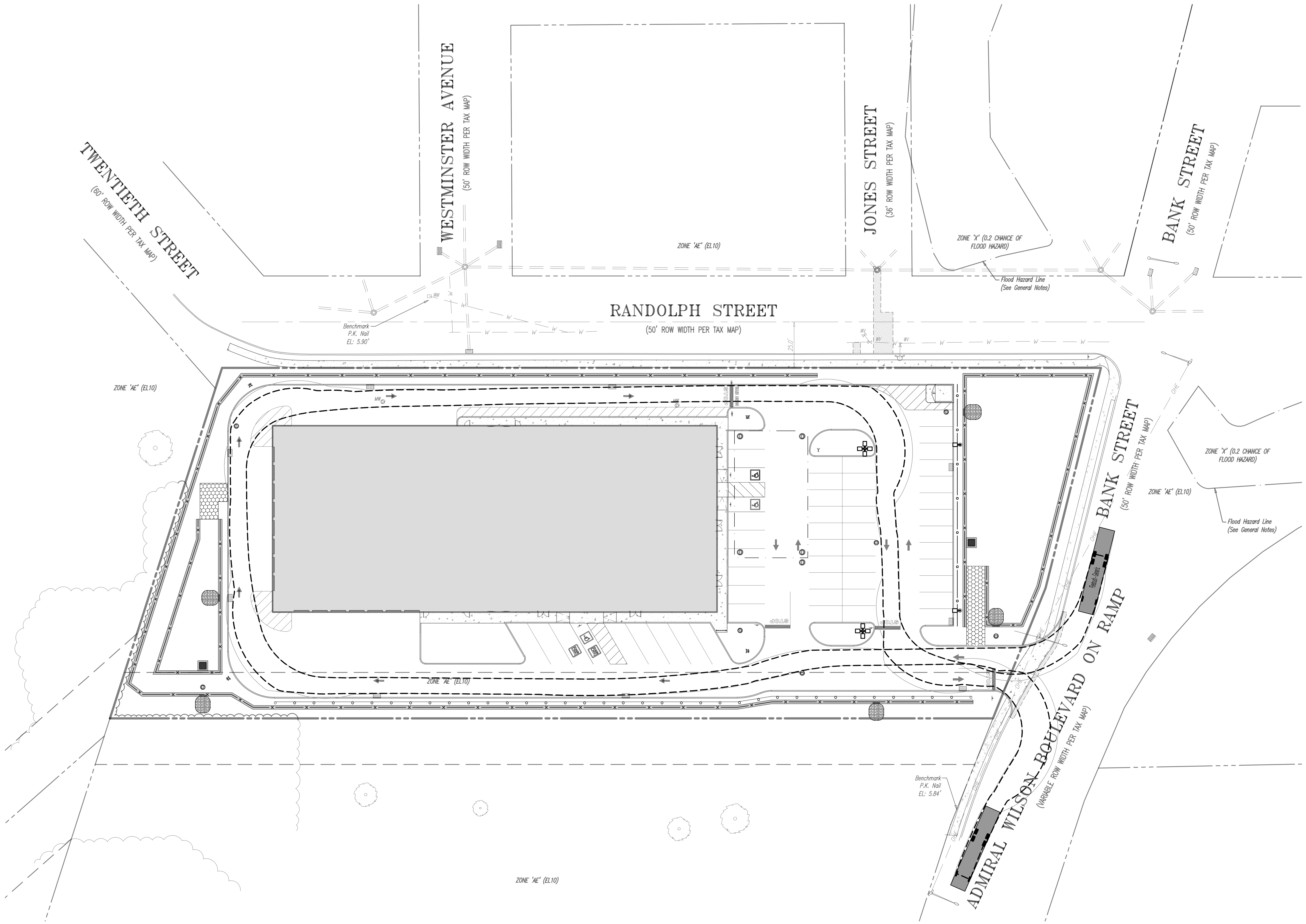
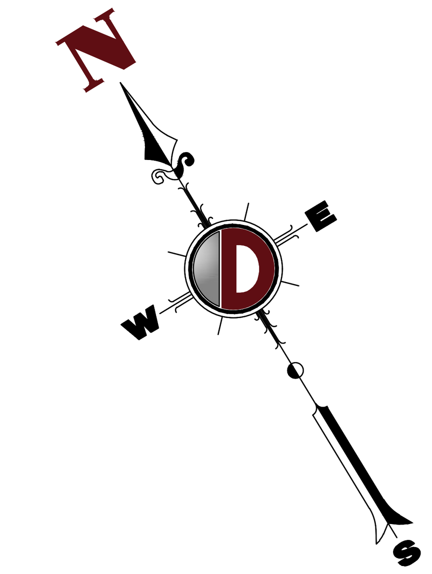
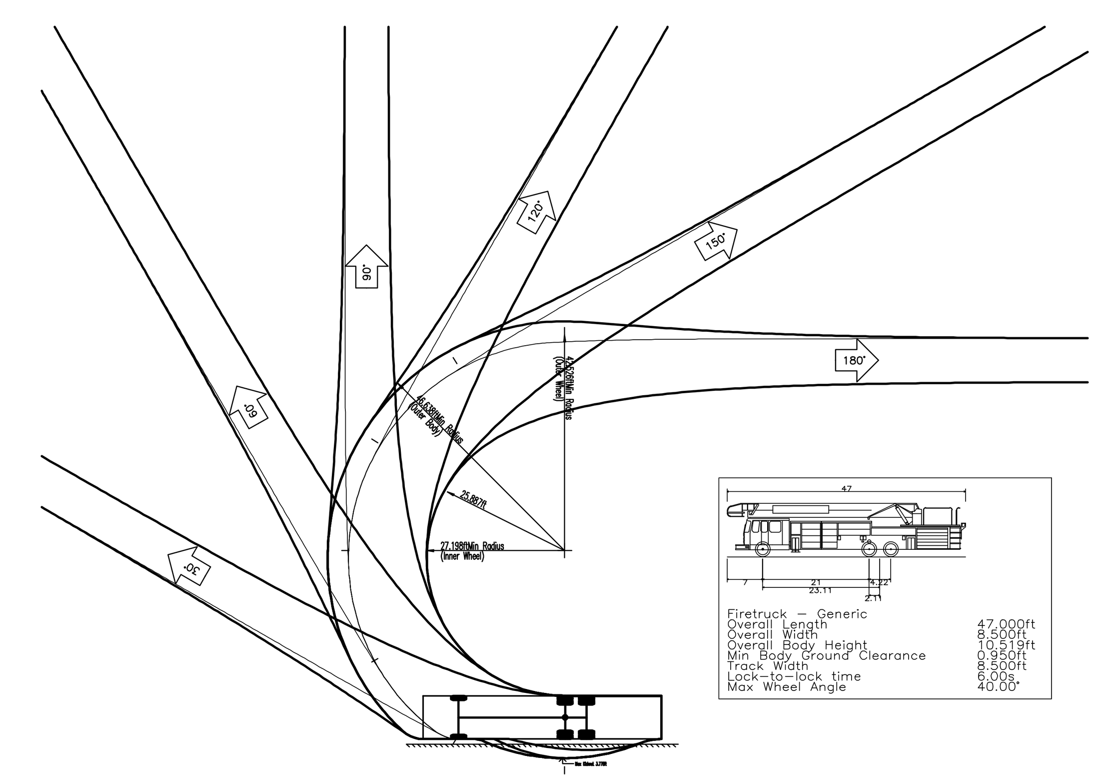
File: \\decpc.local\decfolders\Data\DECPC PROJECTS\2334 Arco Murray\23-03513 Camden\Dwg\Site Plans\023342303513SVO.dwg. ---> 16 VEHICLE CIRCULATION (SU-30)

THIS PLAN TO BE UTILIZED FOR VEHICLE CIRCULATION PURPOSES ONLY







GRAPHIC SCALE

-30 0 15 30 60 120

(IN FEET)
1 INCH = 30 FT.

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TITLE: VEHICLE CIRCULATION (FIRE)

PROJECT: **ASSET REALTY & CONSTRUCTION GROUP INC.**
PROPOSED FIVE-STORY MIXED USE BUILDING
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

JOB No:	2334-23-03513
DATE:	04/30/2025
DRAWN BY:	UV
DESIGNED BY:	AG/SM
CHECKED BY:	DT
CHECKED BY:	–
SCALE:	(H) 1"=30' (V)
SHEET No:	17 OF 17
Rev. #	0

DANIEL A. TARABOKIJA
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NEW JERSEY LICENSE No. 56963

JOSHUA M. SEWALD
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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

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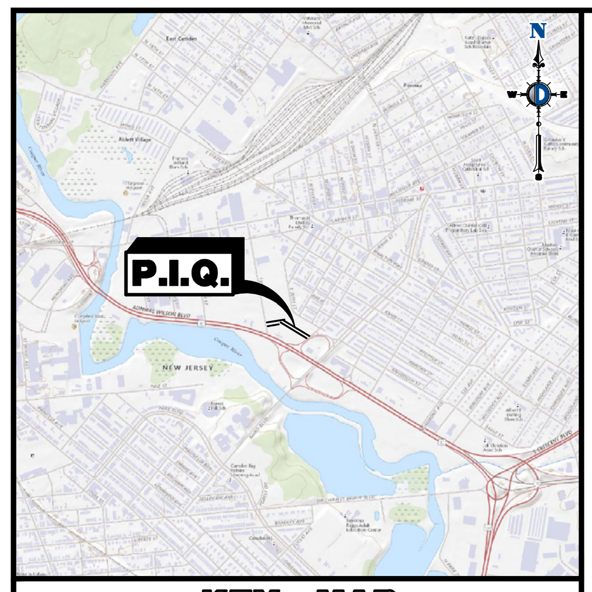
File: \\decpc.local\decfolders\Data\DECPC PROJECTS\2334 Arco Murray\23-03513 Camden\Dwg\Site Plans\0233423035135V0.dwg, ---> 17 VEHICLE CIRCULATION (FIRE)



KEY MAP

1" = 2000'

TITLE COMMITMENT LEGAL DESCRIPTION

ALL THAT CERTAIN LOT, PIECE OR PARCEL OF LAND, WITH THE BUILDINGS AND IMPROVEMENTS THEREON ERECTED, SITUATE, LYING AND BEING IN THE CITY OF CAMDEN, IN THE COUNTY OF CAMDEN, STATE OF NJ:

TRACT 2:

INCLUDING SPECIFICALLY ALL THE LAND AND PREMISES OWNED OR CONTROLLED BY THE GRANTOR BOUNDED ON THE SOUTHWEST BY THE NORTHEASTERLY LINE OF MAPLEWOOD STREET (50 FEET WIDE); ON THE NORTHEAST BY THE SOUTHWESTERLY LINE OF RANDOLPH STREET (50 FEET WIDE); ON THE SOUTHEAST BY THE NORTHWESTERLY LINE OF BANK STREET (50 FEET WIDE) AND THE NORTHWESTERLY RIGHT OF WAY LINE OF ADMIRAL WILSON BOULEVARD ENTRANCE RAMP; AND ON THE NORTHWEST BY THE OLD HUGH HATCH FARM LINE.

SURVEY LEGAL DESCRIPTION

ALL THAT CERTAIN TRACT OR PARCEL OF LAND SITUATE IN THE CITY OF CAMDEN, CAMDEN COUNTY, STATE OF NEW JERSEY BEING MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT IN THE NORTHEASTERLY LINE OF RANDOLPH STREET (50' R.O.W. WIDTH PER TAX MAP, 25' FROM THE CENTERLINE THEREOF) WHERE THE SAME IS INTERSECTED WITH THE NORTHWESTERLY LINE OF BANK STREET (50' R.O.W. WIDTH PER TAX MAP), AND RUNNING THENCE;

1. SOUTH 45 DEGREES 22 MINUTES 04 SECONDS WEST, A DISTANCE OF 123.37 FEET ALONG SAID NORTHWESTERLY LINE OF BANK STREET AND THE NORTHWESTERLY RIGHT OF WAY LINE OF ADMIRAL WILSON BOULEVARD ENTRANCE RAMP, TO AN ANGLE POINT IN THE SAME, THENCE;
2. SOUTH 53 DEGREES 14 MINUTES 11 SECONDS WEST, A DISTANCE OF 76.41 FEET ALONG SAID NORTHWESTERLY LINE OF BANK STREET AND THE NORTHWESTERLY RIGHT OF WAY LINE OF ADMIRAL WILSON BOULEVARD ENTRANCE RAMP, TO A POINT IN THE COMMON LINE BETWEEN THE NORTHEASTERLY LINE OF BLOCK 1219, LOT 25, AND THE SOUTHWESTERLY LINE OF BLOCK 1220, LOT 57, ALSO ALONG THE SOUTHWESTERLY LINE OF SAID RANDOLPH STREET, TO AN ANGLE POINT IN THE SAME, THENCE;
3. NORTH 58 DEGREES 43 MINUTES 45 SECONDS WEST, A DISTANCE OF 479.56 FEET ALONG THE SAID COMMON LINE BETWEEN BLOCK 1220, LOT 57 AND BLOCK 1219, LOT 25, TO A POINT IN THE SOUTHEASTERLY LINE OF BLOCK 1214, LOT 4, SAID LINE BEING THE COMMON LINE BETWEEN BLOCK 1220, LOT 57, AND BLOCK 1214, LOT 4, SAID LINE ALSO BEING THE BLOCK LIMIT LINE, THENCE;
4. NORTH 48 DEGREES 59 MINUTES 29 SECONDS EAST, A DISTANCE OF 200.00 FEET ALONG SAID COMMON LINE BETWEEN BLOCK 1220, LOT 57, AND BLOCK 1214, LOT 4, SAID LINE ALSO RUNNING ALONG THE SOUTHWESTERLY LINE OF SAID RANDOLPH STREET, TO A POINT, THENCE;
5. SOUTH 58 DEGREES 43 MINUTES 45 SECONDS EAST, A DISTANCE OF 477.31 ALONG SAID SOUTHWESTERLY LINE OF SAID RANDOLPH STREET (50' R.O.W. WIDTH PER TAX MAP, 25' FROM THE CENTERLINE THEREOF) TO THE POINT AND PLACE OF BEGINNING.

CONTAINING A CALCULATED AREA OF 91,791.57 SF OR 2.107 ACRES

FOR INFORMATIONAL PURPOSE ONLY: BEING KNOWN AS BLOCK 1220 LOT 57 ACCORDING TO THE TAX MAP OF THE CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY.

SCHEDULE B - SECTION 2 EXCEPTIONS

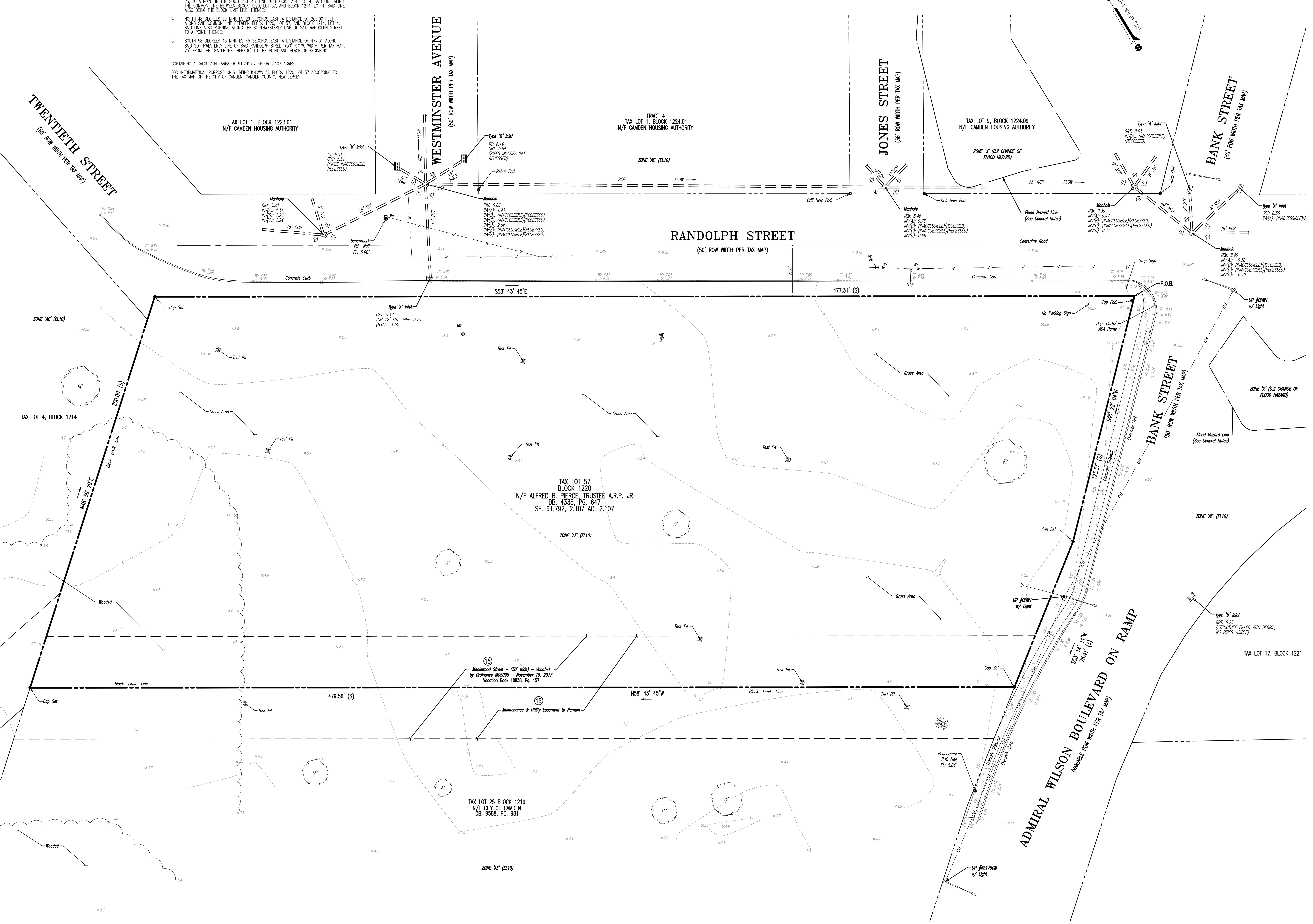
10. COVENANTS, CONDITIONS, RESTRICTIONS AND EASEMENTS WHICH MAY EXIST ON THE LAND.
11. RESTRICTIONS CONTAINED IN DEED BOOK 4338 PAGE 647. (RESTRICTIONS SITUATED ON BAIRD BLVD., AND ON EUTAW AVENUE, BETWEEN BENSON STREET & BERKELEY STREET) (DOES NOT AFFECT)
12. RESTRICTIONS AS SET FORTH IN DEED TO CHARLOTTE V. COONEY IN BOOK 181 PAGE 420. (SITUATED ON STEVENS STREET) (DOES NOT AFFECT)
13. RESTRICTIONS AS SET FORTH IN DEED TO HOWARD B. FRENCH ETAL EXERS. IN BOOK 341 PAGE 201. (SITUATED AT SEVENTEENTH AND STEVENS STREET) (DOES NOT AFFECT).
14. RESTRICTIONS AS SET FORTH IN DEED TO JAMES P. ROTHWELL IN BOOK 500 PAGE 33. (SITUATED AT MARLTON PIKE & BAIRD BLVD) (DOES NOT AFFECT).
15. PRIVATE RIGHTS, INCLUDING, WITHOUT LIMITATION, THE RIGHTS OF UTILITY COMPANIES, IN AND TO SO MUCH OF THE LAND AS LIES WITHIN THE FORMER BEDS OF MAPLEWOOD STREET AND BERKLEY ROAD, AS VACATED BY ORDINANCE MC-5095 IN BOOK 10838 PAGE 157 AND AS AFFECTED BY ORDINANCE MC-5340 IN BOOK 12318 PAGE 149. (SHOWN)

GENERAL NOTES

1. THE LOT AND BLOCK NUMBERS SHOWN ARE BASED ON THE TAX MAP OF THE CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY, SHEET NO. 19.10.
2. HORIZONTAL DATUM – NAD 83 (2011), BASED ON GPS FIELD OBSERVATION PERFORMED BY DYNAMIC SURVEY ON NOVEMBER 14, 2023, UTILIZING THE LEICA RTK CORS NETWORK.
3. VERTICAL DATUM – NAVD 88 (GEOID 12A), BASED ON GPS FIELD OBSERVATIONS PERFORMED BY DYNAMIC SURVEY ON NOVEMBER 14, 2023, UTILIZING THE LEICA RTK CORS NETWORK.
4. FIELD WORK PERFORMED BY DYNAMIC SURVEY ON NOVEMBER 14, 2023.
5. SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS PART OF THIS SURVEY. NO STATEMENT IS MADE CONCERNING THE EXISTENCE OF UNDERGROUND OR OVERHEAD CONDITIONS THAT MAY AFFECT THE USE OR DEVELOPMENT OF THIS TRACT. PROPERTY IS SUBJECT TO SUB-SURFACE CONDITIONS AND/OR ENCROACHMENTS NOT DISCLOSED BY PUBLIC RECORD, IF ANY.
6. DYNAMIC SURVEY MAKES NO GUARANTEES THAT ALL UTILITIES ARE SHOWN AND ANY LOCATIONS SHOWN ARE APPROXIMATE BASED ON MARKOUT UNLESS NOTED OTHERWISE. ALL UTILITY LOCATIONS MUST BE VERIFIED WITH THE PROPER UTILITY COMPANIES PRIOR TO ADDITIONAL DESIGN, EXCAVATION OR CONSTRUCTION. CONTACT UTILITIES TOLL FREE 1-800-272-1000.
7. NOT ALL LOT LINES OUTSIDE THE BOUNDARY OF THE SUBJECT PROPERTY SHOWN HEREON HAVE BEEN FIELD SURVEYED AND ARE SHOWN AS A GRAPHICAL REPRESENTATION OF EXISTING LOT LINES BASED ON DEED, FILED MAPS AND TAX MAP INFORMATION.
8. THIS SURVEY WAS PERFORMED BASED ON A TITLE COMMITMENT ISSUED BY RIDGE TITLE AGENCY, TITLE NUMBER: RT-4989, EFFECTIVE COMMITMENT DATE: OCTOBER 20, 2023.
9. THIS PLAN RELIES UPON THE NOTED TITLE POLICY TO IDENTIFY ALL DOCUMENTS OF RECORD FOR REVIEW IN CONNECTION TO THIS SURVEY.
9. BY GRAPHICAL PLOTTING THE PREMISES IS LOCATED IN ZONE 'X' (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), A PORTION OF ZONE 'X' (0.2% CHANCE OF FLOOD HAZARD) AND A PORTION OF ZONE 'AE' (EL. 10) PER FLOOD INSURANCE RATE MAP NUMBER: 34007C0028F, COMMUNITY NAME: CAMDEN COUNTY, NEW JERSEY. EFFECTIVE DATE: 8/17/2016.
10. NO WETLANDS DELINEATION MARKERS WERE OBSERVED IN THE PROCESS OF CONDUCTING THE FIELDWORK. THE EXISTENCE OR NONEXISTENCE OF WETLANDS OR OPEN WATERS THAT MAY BE REGULATED BY THE STATE OF NEW JERSEY AND/OR THE GOVERNMENT OF THE UNITED STATES IS NOT A PART OF THIS SURVEY.
11. NO ATTEMPT WAS MADE OR LIABILITY IS ASSUMED TO DETERMINE IF ANY PORTION OF THIS PROPERTY IS CLAIMED BY THE STATE OF NEW JERSEY AS TIDELANDS.
12. THE OFFSETS SHOWN ON THIS PLAN SHALL NOT BE USED AS THE BASIS FOR THE CONSTRUCTION OF FENCES OR ANY OTHER PERMANENT STRUCTURES.
13. N.J.S.H. ROUTE 30 PLANS HAVE BEEN ORDERED FROM NJDOT HAVE NOT BEEN RECEIVED TO DATE. THE RIGHT OF WAY LINE MAY BE SUBJECT TO CHANGE AND WILL BE UPDATED IF NECESSARY UPON RECEIPT OF SAID PLANS.
14. VESTING DEED DESCRIPTION DOES NOT MATHEMATICALLY CLOSE BY 0.004'±.
15. PARKING SPACE COUNT: 0 REGULAR SPACES, 0 HANDICAP SPACES, 0 TOTAL SPACES.
16. SUBJECT PROPERTY HAS NO DIRECT ACCESS TO A PUBLIC RIGHT OF WAY.
17. NO EVIDENCE OF RECENT EARTH WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS WERE OBSERVED IN THE PROCESS OF CONDUCTION THE FIELDWORK.
18. NO PROPOSED CHANGES IN STREET RIGHT OF WAY LINES HAVE BEEN MADE AVAILABLE TO THE SURVEYOR BY THE CONTROLLING DISTRICT OR EVIDENCE OF RECENT STREET OR SIDEWALK CONSTRUCTION OR REPAIRS WERE OBSERVED IN THE PROCESS OF CONDUCTING THE FIELD WORK.
19. ONLY COPIES OF THE ORIGINAL SURVEY WITH AN ORIGINAL LAND SURVEYOR'S EMBOSSED SEAL SHALL BE CONSIDERED TO BE VALID COPIES. SIGNATURE AND EMBOSSED SEAL SIGNIFY THAT THIS CERTIFICATION WAS PREPARED IN ACCORDANCE WITH THE EXISTING CODE OF PRACTICE ADOPTED BY THE NJ STATE BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS. CERTIFICATIONS INDICATED HEREON SHALL RUN ONLY TO THE PERSON FOR WHOM THE CERTIFICATION IS PREPARED, AND ON HIS BEHALF TO THE TITLE COMPANY, GOVERNMENTAL AGENCY AND LENDING INSTITUTION LISTED HEREON. CERTIFICATIONS ARE NOT TRANSFERABLE TO ADDITIONAL INSTITUTIONS OR SUBSEQUENT OWNERS. UNAUTHORIZED ALTERATION OR ADDITION TO A CERTIFICATION BEARING A LICENSED LAND SURVEYOR'S SEAL IS ILLEGAL AND PUNISHABLE BY LAW. PROPERTY SUBJECT TO DOCUMENTS OF RECORD.

DEED REFERENCES

1. DEED BOOK 4338, PAGE 647 – LOT 57
2. DEED BOOK 9588, PAGE 985 – LOT 2
3. DEED BOOK 4699, PAGE 154 – LOT 12
4. DEED BOOK 11265, PAGE 1777 – LOT 1
5. DEED BOOK 11265, PAGE 1777 – LOT 2
6. DEED BOOK 11265, PAGE 1777 – LOT 3
7. DEED BOOK 11265, PAGE 1777 – LOT 8
8. DEED BOOK 11265, PAGE 1777 – LOT 9



CERTIFICATION

TO:
ASSET REALTY AND CONSTRUCTION GROUP, INC.
OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 3, 4, 5, 8, 9, 13, 16, 17 & 18 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON NOVEMBER 14, 2023.
DATE OF PLAT OR MAP: DECEMBER 8, 2023.

JAMES A. CONWAY JR.
PROFESSIONAL LAND SURVEYOR
N.J. LICENSE NO. 24GS04323500

GRAPHIC SCALE
(IN FEET)
1 INCH = 20 FT.

DYNAMIC SURVEY, LLC
BOUNDARY & TOPOGRAPHIC SURVEY • FINAL SURVEYS
HYDROGRAPHIC SURVEY • CONSTRUCTION STAKEOUT
ALTA/NSPS LAND TITLE • FOUNDATION LOCATION
1904 Main Street, Lake Como, NJ 07719
T: 732.974.0198 | F: 732.974.3521
New Jersey Certificate of Authorization No. 24GA28228800
www.dynamicec.com

PROJECT:
ARCO MURRAY
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

JAMES A. CONWAY JR
PROFESSIONAL LAND SURVEYOR
NEW JERSEY LICENSE No. 43235

CRAIG BLACK
PROFESSIONAL ENGINEER & LAND SURVEYOR
NEW JERSEY LICENSE No. 24GB04257400

TITLE:
ALTA/NSPS LAND TITLE SURVEY

PROJECT No:	SCALE:	DATE:
2334-23-03452	1"=20'	12/08/2023
DRAWN BY: DJM	FIELD BY: MK	CHECKED BY: JAC

SHEET No: 1 OF 1 Rev. #: 0

STORMWATER MANAGEMENT, WATER QUALITY AND GROUNDWATER RECHARGE ANALYSIS

For

Asset Realty & Construction Group Inc.

Proposed Five-Story Mixed Use Building

1901 Admiral Wilson Boulevard
Block 1220, Lot 57
City of Camden
Camden County, NJ

Prepared by:

DYNAMIC ENGINEERING

1904 Main Street
Lake Como, NJ 07719
(732) 974-0198

Joshua M. Sewald, PE, PP
NJ Professional Engineer License #52908

May 2025
DEC# 2334-23-03513

TABLE OF CONTENTS

APPENDIX

1. Site Description & Project Overview

The subject site is located with frontage on Admiral Wilson Boulevard in the City of Camden, Camden County, New Jersey. The site is identified as Block 1220, Lot 57 on the City of Camden Tax Map Sheet #19.10. The subject site is currently undeveloped, consisting of open space. The property is bounded to the north by residential uses, to the east by residential and commercial uses, to the south by commercial uses, and to the west by woods.

The proposed project consists of the development of a Five-Story Mixed Use Building. The building will have a footprint of 24,455 SF (total of 122,275 SF), with 0.86 acres of motor vehicle surface, 1.57 acres of impervious surface, and 2.183 acres of land disturbance. The proposed project will also include all associated site improvements including parking areas, landscaping, lighting, stormwater management facilities, and utilities.

2. Design Methodology

This report has been prepared to define and analyze the stormwater drainage conditions that would occur as a result of the development of the subject site. Based upon the fact that the proposed development will result in more than one (1) acre of land disturbance, increase impervious coverage by more than ¼ acre, and increase motor vehicle surfaces by more than ¼ acre, this project is classified as a "major development" as defined in NJAC 7:8. Therefore, the proposed development has been designed to meet the stormwater runoff quantity, quality, and groundwater recharge standards, as set forth by the City of Camden Land Use Ordinance and NJAC 7:8.

The following documents and data were used in the support of the design of the project:

- ATLAS/NSPS Land Title Survey, prepared by Dynamic Survey, dated 12/08/2023;
- Preliminary and Final Site Plan, prepared by Dynamic Engineering, dated 12/17/2024;
- Report of Geotechnical Investigation, prepared by Dynamic Earth, dated 12/22/2023;
- NRCS Soil Survey
- NJDEP Stormwater Management Best Management Practices Manual

The hydrology for the site was calculated using the NRCS Runoff Equation and Dimensionless Unit Hydrograph as noted in Part 630, Hydrology National Engineering Handbook. The following particular references were used:

- Curve Numbers were established via Chapter 9 – Hydrologic Soil-Cover Complexes
- Time of Concentrations were calculated in accordance with Chapter 15
- Rainfall Distributions are based on NOAA Type C rainfall distribution
- The DelMarVa Unit Hydrograph was utilized
- The rainfall depths are based on Camden County NOAA Atlas 14 Data and adjusted per NJAC 7:8-5.7 Tables 5-5 and 5-6 as noted below:

Return Period	Current Adjusted Rainfall Depth (inches)	Projected Adjusted Rainfall Depth (inches)
2 Year Storm	3.41	3.91
10 Year Storm	5.26	6.17
100 Year Storm	8.95	11.84

Based upon the Camden County Soil Survey, the soil types native to the site include:

Soil Type	Soil Type Name	Hydrologic Soil Group
BhhA	Bigapple sandy loam. 0 to 2 percent slopes	A

Based on the methodology and data noted above a hydrologic evaluation of the NJDEP Water Quality, 2, 10, and 100-year storm events was prepared.

This report will address compliance with the following standards:

- Groundwater Recharge Standards (NJAC 7:8-5.4)
- Stormwater Runoff Quality Standards (NJAC 7:8-5.5)
- Stormwater Runoff Quantity Standards (NJAC 7:8-5.6)
- Calculation of Stormwater Runoff (NJAC 7:8-5.7)
- Green Infrastructure Standards (NJAC 7:8-5.3)

3. Existing Drainage Conditions

The area to be analyzed consists of approximately 2.107 acres and is comprised of open space. Currently, stormwater runoff generated by the existing site drains to the southwest via overland flow. A small portion of the site drains to the north via overland flow. The subject site has been evaluated with the following drainage sub-watershed areas as depicted on the Existing Drainage Area Map included in the Appendix of this report.

Point of Analysis #1 South

Study Area South: This area consists of 2.02 acres which includes open space areas. Under existing conditions, stormwater runoff generated by this area flows via overland flow to the southwest.

Existing Conditions Input Summary Table

Drainage Area Name	Drainage Area (acres)	Time of Concentration (minutes)	Curve Number (CN)
DA South-Pervious	2.02	8.8	38

Existing Conditions Flow Summary Table

Drainage Area Name	Current Adjusted Rainfall Conditions			Projected Adjusted Rainfall Conditions		
	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)
DA South	0.00	0.08	1.76	0.01	0.27	4.58

Point of Analysis #2 North

Study Area North: This area consists of 0.08 acres which includes open space areas. Under existing conditions, stormwater runoff generated by this area flows via overland flow to the north.

Existing Conditions Input Summary Table

Drainage Area Name	Drainage Area (acres)	Time of Concentration (minutes)	Curve Number (CN)
DA South-Pervious	0.08	2.3	39

Existing Conditions Flow Summary Table

Drainage Area Name	Current Adjusted Rainfall Conditions			Projected Adjusted Rainfall Conditions		
	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)
DA South	0.00	0.01	0.14	0.00	0.02	0.33

4. <u>Proposed Drainage Conditions</u>

The proposed development will incorporate two (2) Aboveground Bioretention Basins with Infiltration and one (1) Underground Infiltration Basin into the layout of the facility for stormwater management. The basins are designed detain, treat, and infiltrate stormwater runoff generated by the development in order to meet the stormwater management requirements. The proposed site conditions have been evaluated using the following drainage sub-watershed areas as depicted on the Proposed Drainage Area Map included in the Appendix of this report.

<u>Point of Analysis #1 South</u>

<u>Study Area South Undetained:</u> This area consists of 0.12 acres in the southwestern portion of the property which includes open space areas. Under proposed conditions, stormwater runoff generated by this area flows via overland flow to the south.

Proposed Conditions Input Summary Table

Drainage Area Name	Drainage Area (acres)	Time of Concentration (minutes)	Curve Number (CN)
DA- South Undetained	0.12	3.0	39
South Undetained	*0.12*	--	--

Proposed Conditions Flow Summary Table

Drainage Area Name	Current Adjusted Rainfall Conditions			Projected Adjusted Rainfall Conditions		
	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)
South Undetained	0.00	0.01	0.19	0.00	0.03	0.46

<u>Study Area Underground Infiltration Basin:</u> This area consists of 0.28 acres in the center of the property which includes roof areas. Under proposed conditions, stormwater runoff generated by this area flows via the proposed roof leaders to the underground infiltration basin, where runoff is detained and either infiltrated into the subsoil or discharged to the south via overland flow.

Proposed Conditions Input Summary Table

Drainage Area Name	Drainage Area (acres)	Time of Concentration (minutes)	Curve Number (CN)
DA-UG Basin	0.28	2.1	98
UG Basin	*0.28*	--	--

Proposed Conditions Flow Summary Table

Drainage Area Name	Current Adjusted Rainfall Conditions			Projected Adjusted Rainfall Conditions		
	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)
UG Basin	1.04	1.62	2.76	1.20	1.91	3.67

<u>Study Area Basin East:</u> This area consists of 1.00 acres within the eastern portion of the property which includes roof area, pavement, and open space areas. Under proposed conditions, stormwater runoff generated by this area flows via the proposed roof leaders and conveyance system into the aboveground bioretention basin, where runoff is detained and either infiltrated into the subsoil or discharged to the south via overland flow.

Proposed Conditions Input Summary Table

Drainage Area Name	Drainage Area (acres)	Time of Concentration (minutes)	Curve Number (CN)
DA-Basin East -Impervious	0.72	1.5	98
DA-Basin East-Pervious	0.28	3.0	39
Basin East	*1.00*	--	--

Proposed Conditions Flow Summary Table

Drainage Area Name	Current Adjusted Rainfall Conditions			Projected Adjusted Rainfall Conditions		
	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)
Basin East - Impervious	2.79	4.33	7.38	3.22	5.11	9.82
Basin East - Pervious	0.00	0.02	0.44	0.00	0.06	1.03

<u>Study Area Basin West:</u> This area consists of 0.64 acres in the southwestern portion of the property which includes pavement and open space areas. Under proposed conditions, stormwater runoff generated by this area flows via the proposed conveyance system into the aboveground bioretention basin, where runoff is detained and either infiltrated into the subsoil or discharged to the south via overland flow.

Proposed Conditions Input Summary Table

Drainage Area Name	Drainage Area (acres)	Time of Concentration (minutes)	Curve Number (CN)
DA-Basin West-Impervious	0.44	1.2	98
DA-Basin West-Pervious	0.20	3.5	39
Basin West	*0.64*	--	--

Proposed Conditions Flow Summary Table

Drainage Area Name	Current Adjusted Rainfall Conditions			Projected Adjusted Rainfall Conditions		
	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)
Basin West - Impervious	1.74	2.69	4.60	2.00	3.16	6.09
Basin West - Pervious	0.00	0.01	0.29	0.00	0.04	0.69

Point of Analysis #2 North

Study Area North Undetained: This area consists of 0.05 acres in the northern portion of the property which includes open space areas. Under proposed conditions, stormwater runoff generated by this area flows via overland flow to the north.

Proposed Conditions Input Summary Table

Drainage Area Name	Drainage Area (acres)	Time of Concentration (minutes)	Curve Number (CN)
DA- North Undetained	0.05	1.6	39
North Undetained	*0.05*	--	--

Proposed Conditions Flow Summary Table

Drainage Area Name	Current Adjusted Rainfall Conditions			Projected Adjusted Rainfall Conditions		
	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)
North Undetained	0.00	0.00	0.10	0.00	0.01	0.23

5. Stormwater Management System Design

A summary of each basin's water surface elevation (WSEL) and outflow rates for the Water Quality, 2-, 10-, and 100-year storm event for both current and projected conditions are provided below. These WSELs and outflows assume normal operating conditions for each basin

AG Bioretention Basin East Summary Table

Storm Event (years)	Water Surface Elevation (ft)	Outflow (CFS)
Water Quality	5.87	0.00
Current – 2	6.27	0.00
Current – 10	6.81	0.03
Current – 100	7.83	0.25
Projected – 2	6.42	0.00
Projected – 10	7.07	0.05
Projected – 100	8.40	0.90

AG Bioretention Basin West Summary Table

Storm Event (years)	Water Surface Elevation (ft)	Outflow (CFS)
Water Quality	5.81	0.00
Current – 2	6.27	0.00
Current – 10	7.05	0.02
Current – 100	8.46	0.57
Projected – 2	6.49	0.00
Projected – 10	7.43	0.05
Projected – 100	9.00	2.49

UG Infiltration Basin Summary Table

Storm Event (years)	Water Surface Elevation (ft)	Outflow (CFS)
Water Quality	6.11	0.00
Current – 2	6.39	0.00
Current – 10	6.87	0.00
Current – 100	7.69	0.25
Projected – 2	6.52	0.00
Projected – 10	7.11	0.00
Projected – 100	8.50	0.58

6. Green Infrastructure Compliance

The basins noted above have been designed to comply with the stormwater runoff quantity, quality, and groundwater recharge requirements for the proposed development as applicable. Each basin has been designed in accordance with NJAC 7:8 and the New Jersey Stormwater Best Management Practices. The tables below summarize the design considerations for each basin, see the Site Plan details for additional information.

Small-Scale Bioretention Basin with Infiltration East (Table 5-1 – Quantity, Quality & Recharge)

Design Criteria	Required	Provided
Total Drainage Area	--	1.00 acres
Min. Storage Volume below 1st Orifice	2,716 CF	7,131 CF
Depth of Soil Bed	18 in. Terrestrial Forested Community 24 in. Site-Tolerant Grasses 24 in. Terrestrial Forested Community	18 in. Terrestrial Forested Community
Max. Contributory DA	2.5 acres	0.87 acres
Max. Drain Time	72 hours	53.52 hours
Separation from SHWT	2 feet (Infiltration)	2.90 feet (SPP-1)
Design Permeability Rate	Min. = 0.5 in/hr Max. = 10 in/hr	2.6 in/hr (SPP-1)
Max. Depth of WQ Storm	2 feet Basin	1.10 Feet
Pretreatment	80% TSS Removal BMP	Forebay

Small-Scale Bioretention Basin with Infiltration West (Table 5-1 – Quantity, Quality & Recharge)

Design Criteria	Required	Provided
Total Drainage Area	--	0.64 acres
Min. Storage Volume below 1st Orifice	1,666 CF	2,519 CF
Depth of Soil Bed	18 in. Terrestrial Forested Community 24 in. Site-Tolerant Grasses 24 in. Terrestrial Forested Community	18 in. Terrestrial Forested Community
Max. Contributory DA	2.5 acres	0.61 acres
Max. Drain Time	72 hours	34.30 hours
Separation from SHWT	2 feet (Infiltration)	3.50 feet (SPP-7)
Design Permeability Rate	Min. = 0.5 in/hr	10.0 in/hr (SPP-7 & 8)

	Max. = 10 in/hr	
Max. Depth of WQ Storm	2 feet Basin	1.60 Feet
Pretreatment	80% TSS Removal BMP	Forebay

Underground Infiltration Basin (Table 5-1 – Quantity, Quality, & Recharge)

Design Criteria	Required	Provided
Total Drainage Area	--	0.28 acres
Min. Storage Volume below 1st Orifice	1,054 CF	2,993 CF
Max. Contributory DA	2.5 acres	0.22 acres
Max. Drain Time	72 hours	29.24 hours
Separation from SHWT	2 feet	2.30 feet (SPP-4 & 6)
Design Permeability Rate	Min. = 0.5 in/hr Max. = 10 in/hr	10.0 in/hr (SPP-4 & 6)
Max. Depth of WQ Storm	2 feet	1.90 Feet

7. Water Quantity Control Compliance

The site has been designed to meet the flow reduction requirements as noted in NJAC7:8-5.6(b)3. The point of analysis has been identified on the Drainage Area Maps as previously described. Below is a summary table demonstrating compliance with the flow reduction requirements.

Point of Analysis #1 - South

Storm Event	Existing Peak Flow Rate (cfs)	Allowable Percentage of Flow	Allowable Peak Flow Rate (cfs)	Proposed Peak Flow Rate (cfs)
Current 2-year	0.00	50%	0.00	0.00
Current 10-year	0.08	75%	0.06	0.06
Current 100-year	1.76	80%	1.40	0.94
Projected 2-year	0.01	50%	0.00	0.00
Projected 10-year	0.27	75%	0.20	0.11
Projected 100-year	4.58	80%	3.66	3.65

Point of Analysis #2 - North

Storm Event	Existing Peak Flow Rate (cfs)	Allowable Percentage of Flow	Allowable Peak Flow Rate (cfs)	Proposed Peak Flow Rate (cfs)
Current 2-year	0.00	50%	0.00	0.00
Current 10-year	0.01	75%	0.00	0.00
Current 100-year	0.14	80%	0.11	0.10
Projected 2-year	0.00	50%	0.00	0.00
Projected 10-year	0.02	75%	0.01	0.01
Projected 100-year	0.33	80%	0.26	0.23

8. Water Quality Compliance

In accordance with NJAC 7:8-5.5, stormwater quality standards are applicable when a major development results in an increase of one-quarter acre or more of regulated motor vehicle surface. The proposed development utilizes the following green infrastructure BMPs in order to meet the required 80% TSS removal rate as annual average:

Green Infrastructure BMP	TSS Removal Rate per BMP Manual
Aboveground Bioretention Basin with Infiltration West	80%
Aboveground Bioretention Basin with Infiltration East	80%
Underground Infiltration Basin	80%

Supporting calculations are included in the Appendix of this report.

9. Groundwater Recharge Compliance

The project has been designed to satisfy the groundwater recharge requirements set forth in NJAC 7:8-5.4 by infiltrating 100% of the annual post-development groundwater recharge volume deficit of 80,506 cubic feet. The New Jersey Groundwater Recharge Spreadsheet (NJGRS) – Based on GSR-32 has been utilized to verify satisfaction of the recharge requirement. The NJ Groundwater Recharge Spreadsheet is included within the appendix of the report.

Groundwater Recharge Summary	
Pre-Development Total Annual Recharge Volume	*107,888 CF*
Post-Development Total Annual Recharge Volume	*27,382 CF*
Post-Development Annual Recharge Deficit	*80,506 CF*
Aboveground Bioretention Basin East	88,383 CF
Aboveground Bioretention Basin West	19,334 CF
Underground Infiltration Basin	37,397 CF
Total Annual Recharge Volume Provided	**145,114 CF**

For each of the infiltration basins noted above, groundwater mounding calculations were performed in accordance with Chapter 13 of the NJDEP BMP Manual. The mounding calculations are included in the appendix of this report.

10. Storm Sewer Design

The proposed stormwater management collection system has designed to have hydraulic capacity for the 25-year storm event. The Rational Method was used to determine inflow rates to each structure and Manning's Equation was used to establish pipe capacity. In accordance with the NJDEP BMP Manual Chapter 5, weighted runoff coefficients were computed for each drainage area based on land cover and hydrologic soil group. A minimum time of concentration of ten minutes was assumed for each area. Rainfall intensity was based upon the Trenton Rainfall intensity curve. Supporting calculations and the Inlet Drainage Area Map can be found in the appendix.

11. Soil Erosion and Sediment Control Compliance

The project has been designed to comply with the Standards for Soil Erosion and Sediment Control in New Jersey. Soil erosion control measures such as a stabilized construction entrance, inlet protection and silt fence are shown on the plans. In addition, conduit outlet protection is proposed at the outflow points of the storm sewer system with supporting calculations included in the Appendix of this report. Finally, this project has been designed to satisfy the off-site stability standards set forth in the Standards for Soil Erosion and Sediment Control in New Jersey.

As noted previously, the proposed peak flows meet the reductions, thereby achieving off-site stability.

Special consideration shall be given to the use of infiltration for peak flow modifications as follows:

Point Of Discharge Stability Analysis
When infiltration practices are proposed, an alternate analysis (failure analysis) must be provided which ignores infiltration (no dead storage volume available, no static or dynamic infiltration loss rates in the routing calculations, etc.) and demonstrates that no erosion will occur at the point of discharge if infiltration fails to function. Flow rates based solely upon basin inlet and outlet hydraulics must be used in comparison to Table 21-1 (below) to document a stable outlet.

A failure analysis has been provided below which ignores infiltration and demonstrates that no erosion will occur at the point of discharge if infiltration fails to function.

Downstream (Off-Site) Stability Analysis
Infiltration may be used to meet peak flow reduction requirements (outlined below) for the purposes of documenting stability of the downstream receiving channel, provided that the complete loss of infiltration function does not result in an increase in peak flow values above the predevelopment levels.

Analysis below the points of discharge to the downstream receiving channel have been provided below.

Downstream of the Point of Discharge (Off-Site Stability Analysis)
In addition to ensuring erosion does not occur at the point of discharge, areas downstream and beyond the immediate area of site development may be damaged due to erosive forces resulting from extended duration of hydrograph peak flows. An unintended consequence of the practice of detaining and slowly releasing stormwater is the ability for peak flows to be sustained for longer periods of time, offering an opportunity for upstream discharges to coincide with project site discharges. The resulting combined discharge may be equal to or even exceed that of the pre-development condition.

To limit the potential for such an occurrence the designer may choose either of two approaches for downstream stability protection:

1. *Examine hydraulic characteristics of the receiving stream channel considering upstream discharge in combination with site discharge to assess channel stability. The scope and scale of the analysis shall be appropriate to the scale of the project and the post development peak discharge rate and volume. Of particular concern are hydraulic control points, (culverts, bridges, etc.), bends in streams and sudden changes in channel cross sections downstream of the discharge point. The following may be utilized to assess stability:*

   The proposed design utilizes approach 2 as described below.

2. *In lieu of performing a comprehensive watershed analysis, design a detention facility that reduces peak flows to the following levels. Infiltration may be used to meet these criteria:*

   2-year storm – 50% of the predevelopment peak
   10-year storm – 75% of the predevelopment peak

Reductions in peak flows are to be compared to pre-developed drainage area points of discharge in the event that drainage is re-directed in the post developed condition. Reductions are only required of the developed or modified portions of the project site.

As documented in the subsections above, the proposed peak flows meet the above reductions, thereby achieving off-site stability.

12. Conclusion

The proposed development has been designed with provisions for the safe and efficient control of stormwater runoff in a manner that will not adversely impact the existing drainage patterns, adjacent roadways, or adjacent parcels. In addition, the proposed development satisfies the runoff quantity, quality and groundwater recharge requirements set forth by the City of Camden Land Use Ordinance and NJAC 7:8 through the use of the proposed stormwater management system. With this stated, it is evident that the proposed development will not have a negative impact on the existing drainage conditions, water quality or groundwater recharge on-site or within the vicinity of the subject site.

APPENDIX

NRCS WEB SOIL SURVEY

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Camden County, New Jersey

January 6, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:868 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 10, 20, 40, 60

Feet: 0, 40, 80, 160, 240

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Camden County, New Jersey
Survey Area Data: Version 18, Sep 3, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 5, 2022—Jul 4, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BhhA	Bigapple sandy loam, 0 to 2 percent slopes	2.0	100.0%
Totals for Area of Interest		**2.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Camden County, New Jersey

BhhA—Bigapple sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2ztxk
Elevation: 0 to 20 feet
Mean annual precipitation: 45 to 48 inches
Mean annual air temperature: 52 to 56 degrees F
Frost-free period: 190 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Bigapple and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bigapple

Setting

Landform: Tidal marshes
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy human-transported material over dredge influenced sandy human-transported material

Typical profile

^A - 0 to 4 inches: sandy loam
^Bw - 4 to 20 inches: loamy sand
^C - 20 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 19.98 in/hr)
Depth to water table: About 59 to 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F149AY130NJ - Moist Loamy Upland
Hydric soil rating: No

Minor Components

Urban land

Percent of map unit: 10 percent

Landform: Fluviomarine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Sauken

Percent of map unit: 10 percent
Landform: Drainageways
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: F149AY130NJ - Moist Loamy Upland
Hydric soil rating: No

Northmont

Percent of map unit: 10 percent
Landform: Fluviomarine terraces, depressions
Landform position (two-dimensional): Backslope, footslope, toeslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear, convex
Ecological site: F149AY130NJ - Moist Loamy Upland
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

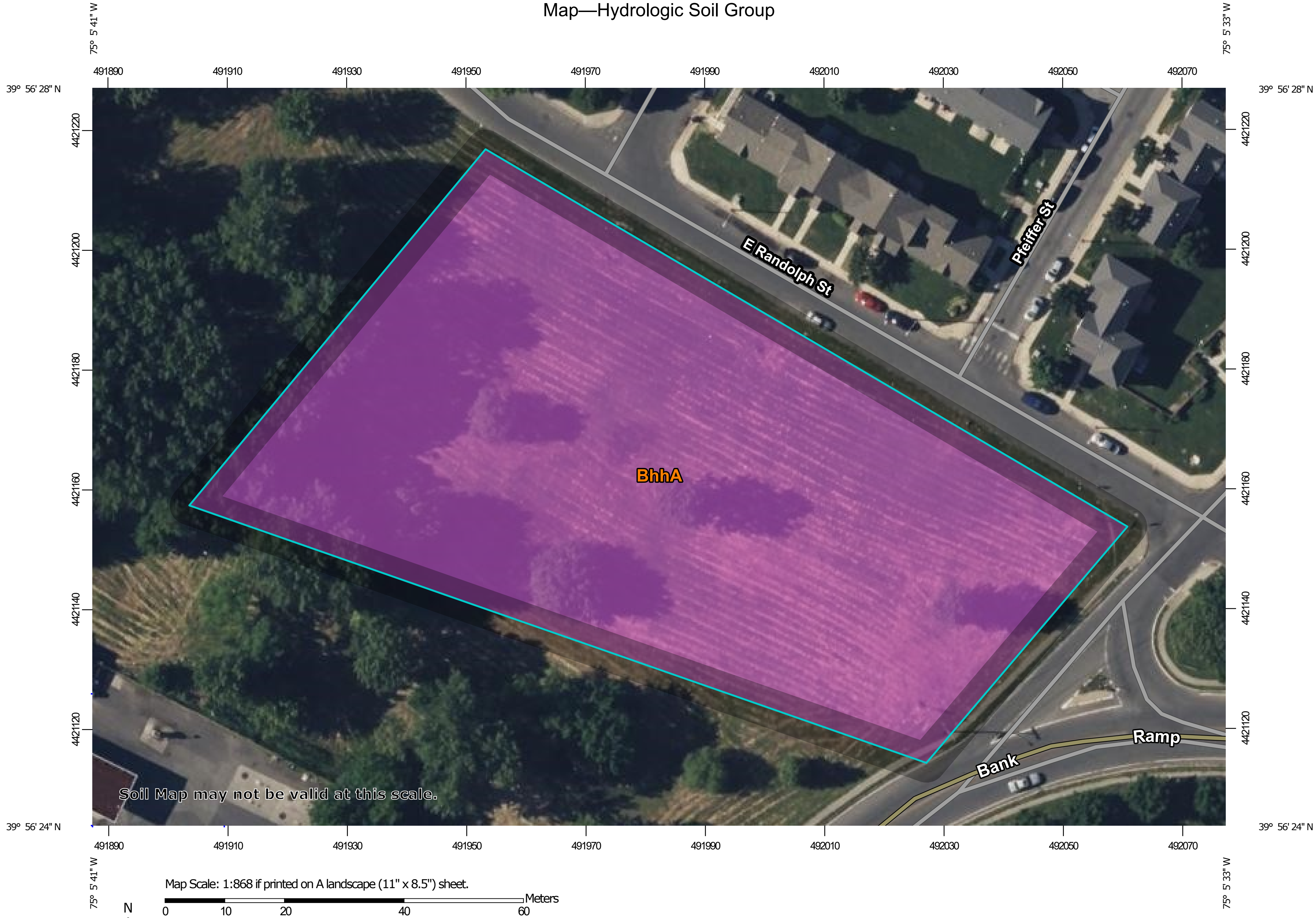
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

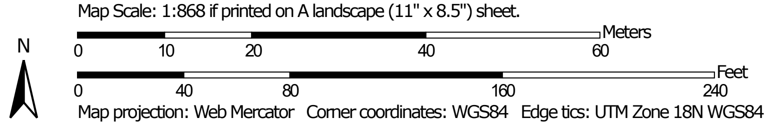
Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Map—Hydrologic Soil Group



Map Scale: 1:868 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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Soil Survey Area: Camden County, New Jersey
Survey Area Data: Version 18, Sep 3, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 5, 2022—Jul 4, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BhhA	Bigapple sandy loam, 0 to 2 percent slopes	A	2.0	100.0%
Totals for Area of Interest			**2.0**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

References

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EXISTING AND PROPOSED CONDITIONS HYDROLOGY – CURRENT & PROJECTED 2, 10 & 100-YR.

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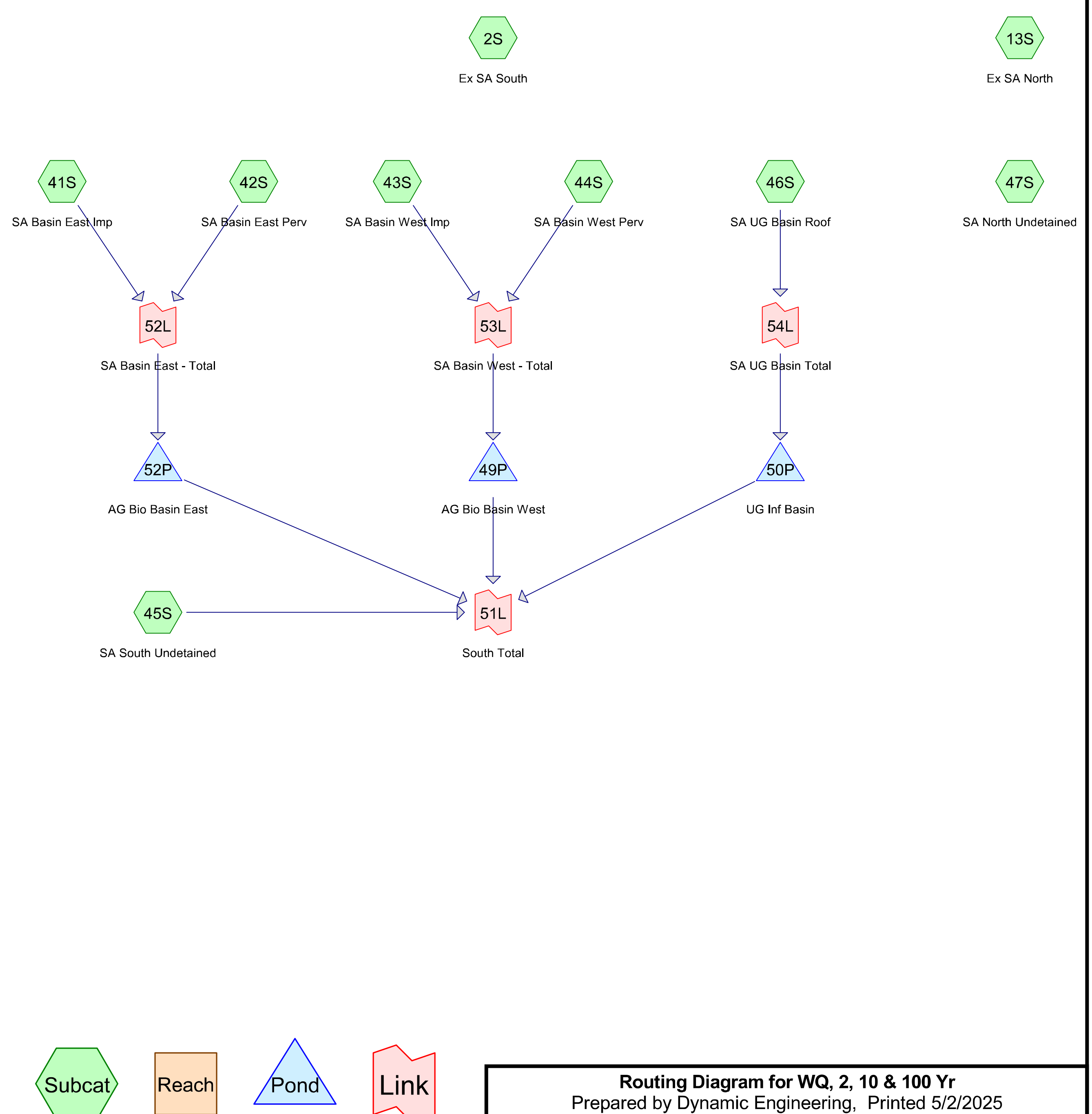
10-Year-Current Event

10-Year-Projected Event

25-Year Event



Routing Diagram for WQ, 2, 10 & 100 Yr
Prepared by Dynamic Engineering, Printed 5/2/2025
HydroCAD® 10.20-6a s/n 08640 © 2024 HydroCAD Software Solutions LLC

Project Notes

Rainfall events imported from "NJ-Rain.txt" for 6603 NJ Camden-C
Rainfall events imported from "NJ-Rain.txt" for 6603 NJ Camden-C

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC	P2 (inches)
1	2-Year-Current	NOAA 24-hr	C	Default	24.00	1	3.41	2	3.41
2	2-Year-Projected	NOAA 24-hr	C	Default	24.00	1	3.91	2	3.91
3	10-Year-Current	NOAA 24-hr	C	Default	24.00	1	5.26	2	3.41
4	10-Year-Projected	NOAA 24-hr	C	Default	24.00	1	6.17	2	3.91
5	25-Year	NOAA 24-hr	C	Default	24.00	1	6.28	2	3.91
6	100-Year-Current	NOAA 24-hr	C	Default	24.00	1	8.95	2	3.41
7	100-Year-Projected	NOAA 24-hr	C	Default	24.00	1	11.84	2	3.91

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
110,849	39	>75% Grass cover, Good, HSG A (2S, 13S, 42S, 44S, 45S, 47S)
38,606	98	Paved parking, HSG A (41S, 43S)
24,455	98	Roofs, HSG A (41S, 46S)
9,674	30	Woods, Good, HSG A (2S)
183,584	**59**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
183,584	HSG A	2S, 13S, 41S, 42S, 43S, 44S, 45S, 46S, 47S
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
183,584		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Su Nu
110,849	0	0	0	0	110,849	>75% Grass cover, Good	
38,606	0	0	0	0	38,606	Paved parking	
24,455	0	0	0	0	24,455	Roofs	
9,674	0	0	0	0	9,674	Woods, Good	
183,584	**0**	**0**	**0**	**0**	**183,584**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	41S	0.00	0.00	40.0	0.0030	0.013	0.0	15.0	0.0	
2	43S	0.00	0.00	97.0	0.0050	0.013	0.0	15.0	0.0	
3	43S	0.00	0.00	4.0	0.0030	0.010	0.0	15.0	0.0	
4	46S	0.00	0.00	236.0	0.0050	0.010	0.0	12.0	0.0	

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Ex SA South Runoff Area=88,097 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=209' Tc=9.4 min CN=38 Runoff=0.00 cfs 10 cf

Subcatchment 13S: Ex SA North Runoff Area=3,695 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=17' Slope=0.0170 '/' Tc=2.5 min CN=39 Runoff=0.00 cfs 2 cf

Subcatchment 41S: SA Basin East Imp Runoff Area=31,508 sf 100.00% Impervious Runoff Depth=3.18"
Flow Length=168' Tc=1.6 min CN=98 Runoff=2.79 cfs 8,341 cf

Subcatchment 42S: SA Basin East Perv Runoff Area=12,257 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=20' Slope=0.0120 '/' Tc=3.2 min CN=39 Runoff=0.00 cfs 5 cf

Subcatchment 43S: SA Basin West Imp Runoff Area=19,325 sf 100.00% Impervious Runoff Depth=3.18"
Flow Length=174' Tc=1.2 min CN=98 Runoff=1.74 cfs 5,116 cf

Subcatchment 44S: SA Basin West Perv Runoff Area=8,640 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=60' Slope=0.0750 '/' Tc=3.7 min CN=39 Runoff=0.00 cfs 4 cf

Subcatchment 45S: SA South Undetained Runoff Area=5,434 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=18' Slope=0.0100 '/' Tc=3.2 min CN=39 Runoff=0.00 cfs 2 cf

Subcatchment 46S: SA UG Basin Roof Runoff Area=12,228 sf 100.00% Impervious Runoff Depth=3.18"
Flow Length=314' Tc=2.2 min CN=98 Runoff=1.04 cfs 3,237 cf

Subcatchment 47S: SA North Undetained Runoff Area=2,400 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=8' Slope=0.0100 '/' Tc=1.7 min CN=39 Runoff=0.00 cfs 1 cf

Pond 49P: AG Bio Basin West Peak Elev=6.27' Storage=1,786 cf Inflow=1.74 cfs 5,119 cf
Discarded=0.18 cfs 5,119 cf Primary=0.00 cfs 0 cf Outflow=0.18 cfs 5,119 cf

Pond 50P: UG Inf Basin Peak Elev=6.39' Storage=1,075 cf Inflow=1.04 cfs 3,237 cf
Discarded=0.12 cfs 3,237 cf Primary=0.00 cfs 0 cf Outflow=0.12 cfs 3,237 cf

Pond 52P: AG Bio Basin East Peak Elev=6.27' Storage=4,993 cf Inflow=2.79 cfs 8,346 cf
Discarded=0.07 cfs 7,138 cf Primary=0.00 cfs 0 cf Outflow=0.07 cfs 7,138 cf

Link 51L: South Total Inflow=0.00 cfs 2 cf
Primary=0.00 cfs 2 cf

Link 52L: SA Basin East - Total Inflow=2.79 cfs 8,346 cf
Primary=2.79 cfs 8,346 cf

Link 53L: SA Basin West - Total Inflow=1.74 cfs 5,119 cf
Primary=1.74 cfs 5,119 cf

Link 54L: SA UG Basin Total Inflow=1.04 cfs 3,237 cf
Primary=1.04 cfs 3,237 cf

Total Runoff Area = 183,584 sf Runoff Volume = 16,717 cf Average Runoff Depth = 1.09"
65.65% Pervious = 120,523 sf 34.35% Impervious = 63,061 sf

Summary for Subcatchment 2S: Ex SA South

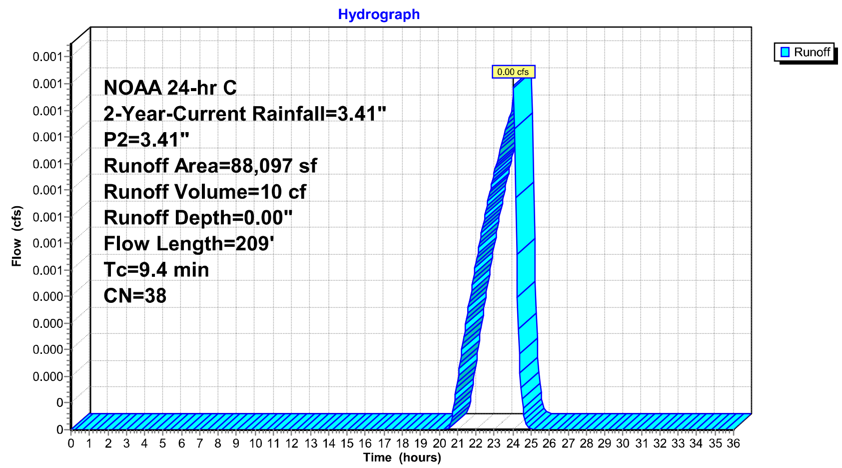
Runoff = 0.00 cfs @ 24.03 hrs, Volume= 10 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Current Rainfall=3.41", P2=3.41"

Area (sf)	CN	Description
9,674	30	Woods, Good, HSG A
78,423	39	>75% Grass cover, Good, HSG A
88,097	38	Weighted Average
88,097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0290	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.41"
1.2	109	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
9.4	209	Total			

Subcatchment 2S: Ex SA South



Summary for Subcatchment 13S: Ex SA North

[49] Hint: Tc<2dt may require smaller dt

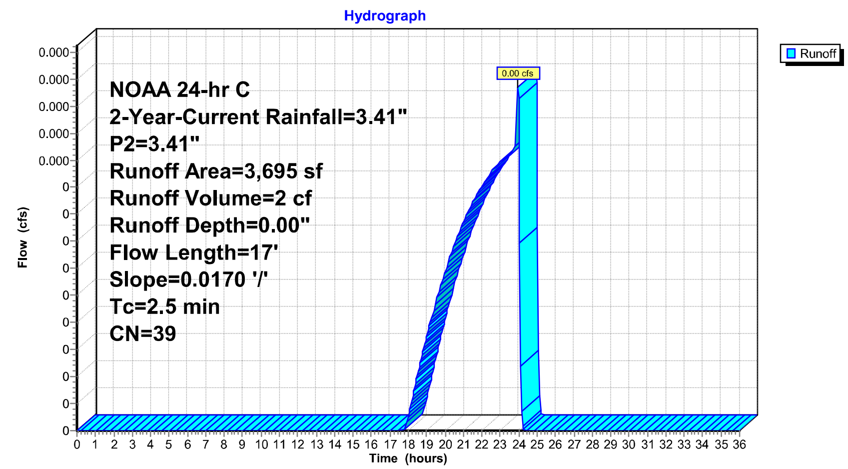
Runoff = 0.00 cfs @ 23.98 hrs, Volume= 2 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Current Rainfall=3.41", P2=3.41"

Area (sf)	CN	Description
3,695	39	>75% Grass cover, Good, HSG A
3,695		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	17	0.0170	0.12		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.41"

Subcatchment 13S: Ex SA North



Summary for Subcatchment 41S: SA Basin East Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.018
n = 0.011

L = [100 * sqrt(0.018)]/.011
L = 1,219 FT

L > 100 FT

Therefore, use 100 FT

[49] Hint: Tc<2dt may require smaller dt

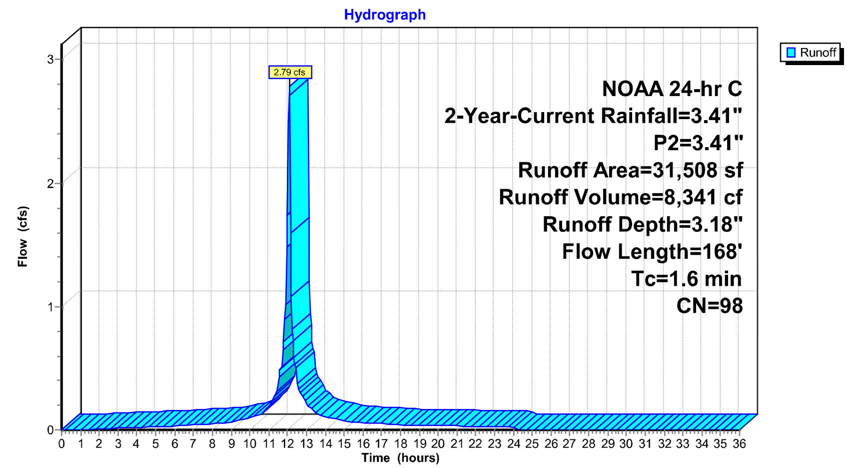
Runoff = 2.79 cfs @ 12.08 hrs, Volume= 8,341 cf, Depth= 3.18"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Current Rainfall=3.41", P2=3.41"

Area (sf)	CN	Description
19,281	98	Paved parking, HSG A
12,227	98	Roofs, HSG A
31,508	98	Weighted Average
31,508		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0180	1.36		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.41"
0.2	28	0.0180	2.72		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
0.2	40	0.0030	2.88	3.54	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
1.6	168	Total			

Subcatchment 41S: SA Basin East Imp



Summary for Subcatchment 42S: SA Basin East Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.012
n = 0.150

L = [100 * sqrt(0.012)]/.150
L = 73 FT

L < 100 FT; However, use 20 FT

---

[49] Hint: Tc<2dt may require smaller dt

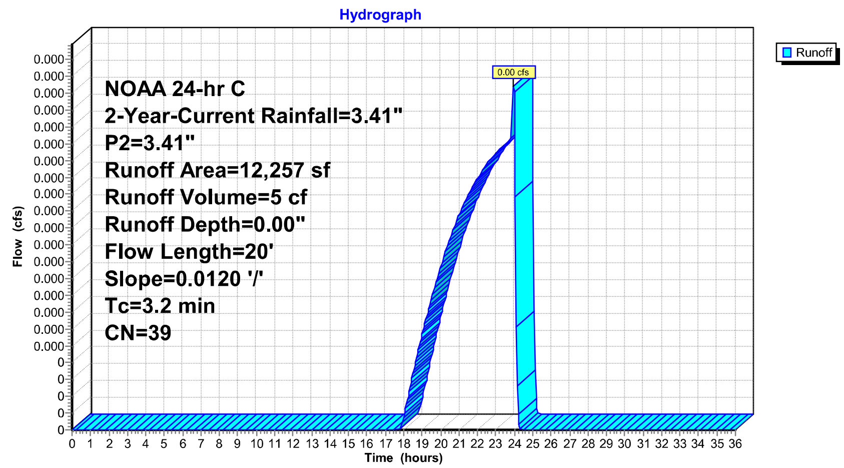
Runoff = 0.00 cfs @ 23.98 hrs, Volume= 5 cf, Depth= 0.00"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Current Rainfall=3.41", P2=3.41"

Area (sf)	CN	Description
12,257	39	>75% Grass cover, Good, HSG A
12,257		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	20	0.0120	0.10		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.41"

Subcatchment 42S: SA Basin East Perv



Summary for Subcatchment 43S: SA Basin West Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.025
n = 0.011

L = [100 * sqrt(0.025)]/.011
L = 1,437 FT

L > 100 FT

Therefore, use 73 FT

[49] Hint: Tc<2dt may require smaller dt

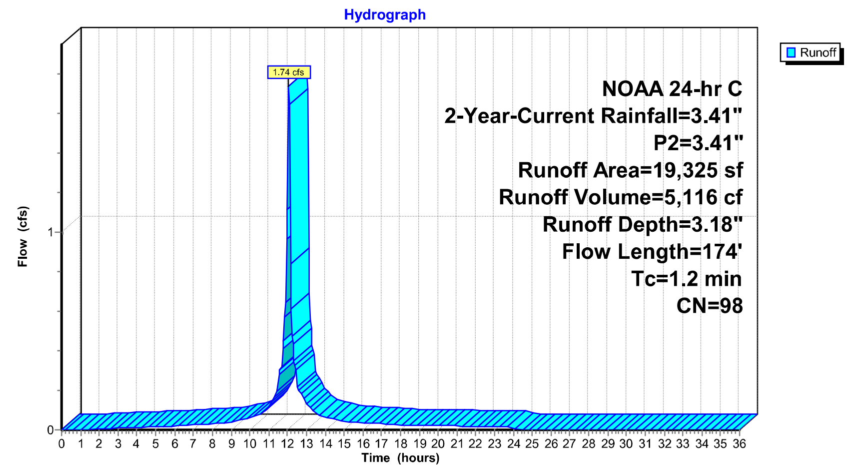
Runoff = 1.74 cfs @ 12.08 hrs, Volume= 5,116 cf, Depth= 3.18"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Current Rainfall=3.41", P2=3.41"

Area (sf)	CN	Description
19,325	98	Paved parking, HSG A
19,325		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	73	0.0250	1.46		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.41"
0.4	97	0.0050	3.72	4.57	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
0.0	4	0.0030	3.75	4.60	**Pipe Channel, 15" HDPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010
1.2	174	Total			

Subcatchment 43S: SA Basin West Imp



Summary for Subcatchment 44S: SA Basin West Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.075
n = 0.150

L = [100 * sqrt(0.075)]/.150
L = 182 FT

L > 100 FT

Therefore, use 60 FT

[49] Hint: Tc<2dt may require smaller dt

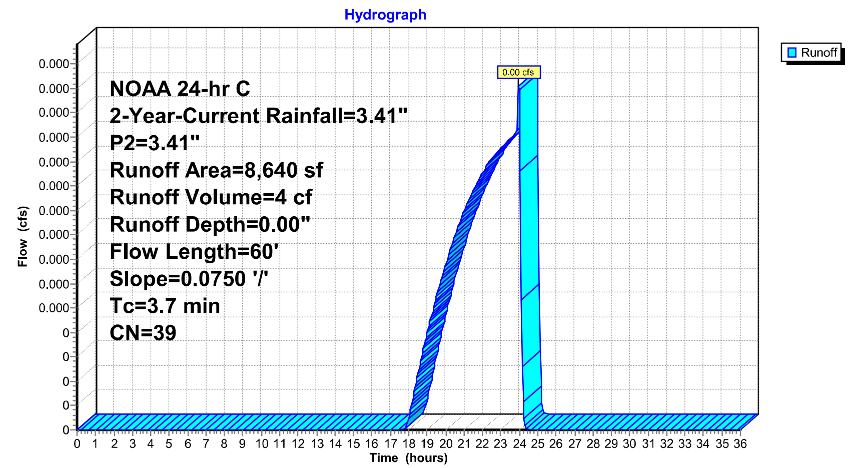
Runoff = 0.00 cfs @ 23.99 hrs, Volume= 4 cf, Depth= 0.00"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Current Rainfall=3.41", P2=3.41"

Area (sf)	CN	Description
8,640	39	>75% Grass cover, Good, HSG A
8,640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	60	0.0750	0.27		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.41"

Subcatchment 44S: SA Basin West Perv



Summary for Subcatchment 45S: SA South Undetained

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.150

L = [100 * sqrt(0.010)]/.150
L = 67 FT

L < 100 FT; However, use 18 FT

[49] Hint: Tc<2dt may require smaller dt

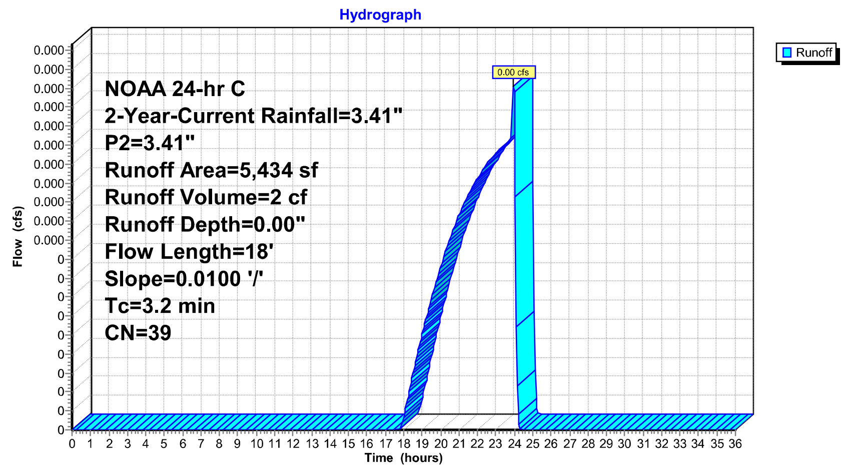
Runoff = 0.00 cfs @ 23.98 hrs, Volume= 2 cf, Depth= 0.00"
Routed to Link 51L : South Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Current Rainfall=3.41", P2=3.41"

Area (sf)	CN	Description
5,434	39	>75% Grass cover, Good, HSG A
5,434		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	18	0.0100	0.09		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.41"

Subcatchment 45S: SA South Undetained



Summary for Subcatchment 46S: SA UG Basin Roof

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.011

L = [100 * sqrt(0.010)]/.011
L = 909 FT

L > 100 FT

Therefore, use 78 FT

[49] Hint: Tc<2dt may require smaller dt

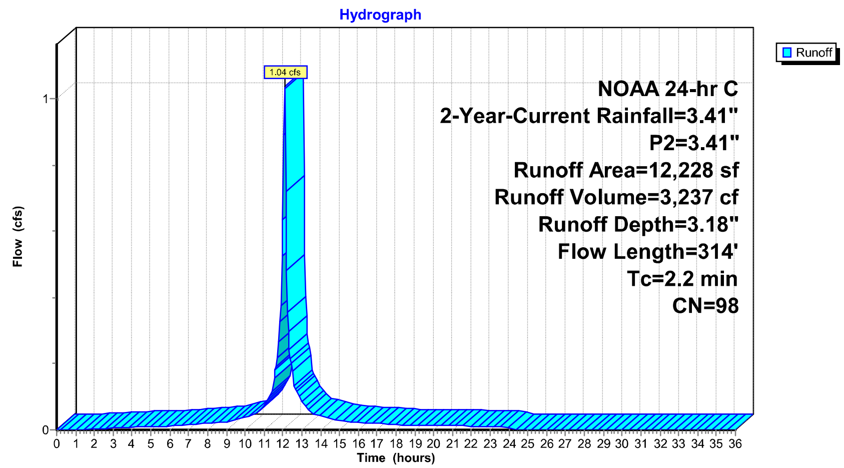
Runoff = 1.04 cfs @ 12.09 hrs, Volume= 3,237 cf, Depth= 3.18"
Routed to Link 54L : SA UG Basin Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Current Rainfall=3.41", P2=3.41"

Area (sf)	CN	Description
12,228	98	Roofs, HSG A
12,228		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	78	0.0100	1.02		**Sheet Flow, Roof** Smooth surfaces n= 0.011 P2= 3.41"
0.9	236	0.0050	4.17	3.28	**Pipe Channel, 12" HDPE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010
2.2	314	Total			

Subcatchment 46S: SA UG Basin Roof



Summary for Subcatchment 47S: SA North Undetained

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.150

L = [100 * sqrt(0.010)]/.150
L = 66 FT

L > 100 FT; However, use 8 FT

---

[49] Hint: Tc<2dt may require smaller dt

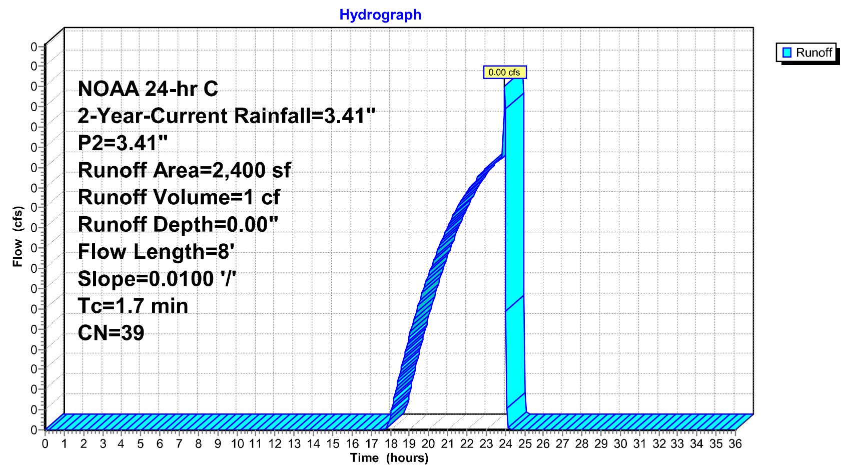
Runoff = 0.00 cfs @ 23.98 hrs, Volume= 1 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Current Rainfall=3.41", P2=3.41"

Area (sf)	CN	Description
2,400	39	>75% Grass cover, Good, HSG A
2,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	8	0.0100	0.08		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.41"

Subcatchment 47S: SA North Undetained



Summary for Pond 49P: AG Bio Basin West

Inflow Area =	27,965 sf, 69.10% Impervious,	Inflow Depth = 2.20"	for 2-Year-Current event
Inflow =	1.74 cfs @ 12.08 hrs,	Volume=	5,119 cf
Outflow =	0.18 cfs @ 12.68 hrs,	Volume=	5,119 cf, Atten= 89%, Lag= 36.4 min
Discarded =	0.18 cfs @ 12.68 hrs,	Volume=	5,119 cf
Primary =	0.00 cfs @ 0.00 hrs,	Volume=	0 cf

Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 6.27' @ 12.68 hrs Surf.Area= 1,654 sf Storage= 1,786 cf

Plug-Flow detention time= 73.5 min calculated for 5,112 cf (100% of inflow)
Center-of-Mass det. time= 73.4 min (826.2 - 752.9)

Volume	Invert	Avail.Storage	Storage Description
#1	5.10'	7,152 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

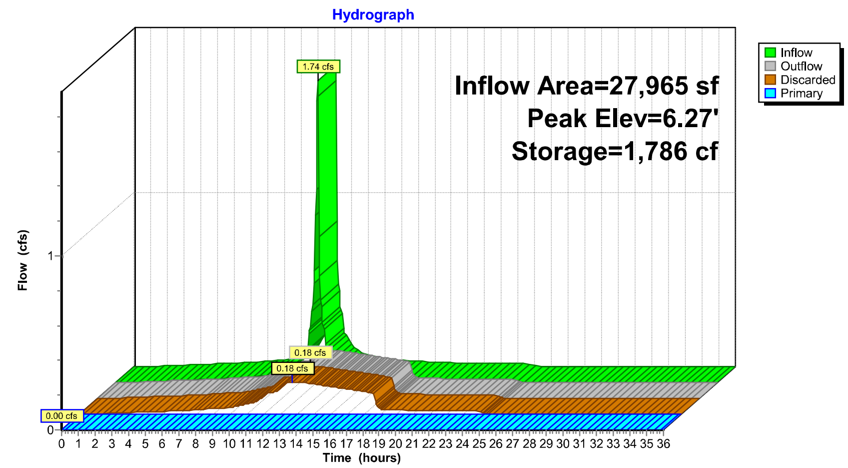
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.10	1,400	0	0
6.00	1,600	1,350	1,350
7.00	1,800	1,700	3,050
8.00	1,950	1,875	4,925
9.10	2,100	2,227	7,152

Device	Routing	Invert	Outlet Devices
#1	Primary	6.70'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	8.20'	**1.1' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	9.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	5.10'	**3.700 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.60'

Discarded OutFlow Max=0.18 cfs @ 12.68 hrs HW=6.27' (Free Discharge)
└**4=Exfiltration** (Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=5.10' (Free Discharge)
├**1=Orifice/Grate** (Controls 0.00 cfs)
├**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 49P: AG Bio Basin West



Summary for Pond 50P: UG Inf Basin

Inflow Area = 12,228 sf,100.00% Impervious, Inflow Depth = 3.18" for 2-Year-Current event
Inflow = 1.04 cfs @ 12.09 hrs, Volume= 3,237 cf
Outflow = 0.12 cfs @ 12.67 hrs, Volume= 3,237 cf, Atten= 88%, Lag= 34.7 min
Discarded = 0.12 cfs @ 12.67 hrs, Volume= 3,237 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 6.39' @ 12.67 hrs Surf.Area= 2,708 sf Storage= 1,075 cf

Plug-Flow detention time= 62.6 min calculated for 3,237 cf (100% of inflow)
Center-of-Mass det. time= 62.5 min (816.5 - 754.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	5.50'	2,030 cf	**38.50'W x 70.33'L x 3.00'H Field A**
			8,124 cf Overall - 3,049 cf Embedded = 5,074 cf x 40.0% Voids
#2A	5.83'	2,411 cf	**ADS N-12 24"** x 11 Inside #1
			Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf
			Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf
			Row Length Adjustment= +44.00' x 3.10 sf x 11 rows
			36.83' Header x 3.10 sf x 2 = 228.4 cf Inside
		4,440 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.40'	**7.0" W x 2.5" H Vert. Orifice/Grate** C= 0.600
			Limited to weir flow at low heads
#2	Discarded	5.50'	**1.400 in/hr Exfiltration over Surface area**
			Conductivity to Groundwater Elevation = 3.20'

Discarded OutFlow Max=0.12 cfs @ 12.67 hrs HW=6.39' (Free Discharge)
└─**2=Exfiltration** (Controls 0.12 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=5.50' (Free Discharge)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 50P: UG Inf Basin - Chamber Wizard Field A

Chamber Model = ADS N-12 24" (ADS N-12® Pipe)
Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf
Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf
Row Length Adjustment= +44.00' x 3.10 sf x 11 rows

28.0" Wide + 13.4" Spacing = 41.4" C-C Row Spacing

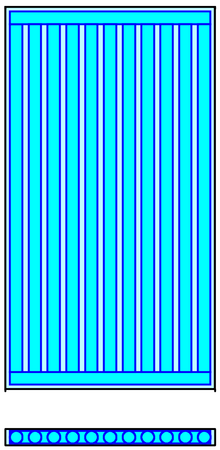
1 Chambers/Row x 20.00' Long +44.00' Row Adjustment +2.33' Header x 2 = 68.67' Row Length +10.0" End Stone x 2 = 70.33' Base Length
11 Rows x 28.0" Wide + 13.4" Spacing x 10 + 10.0" Side Stone x 2 = 38.50' Base Width
4.0" Stone Base + 28.0" Chamber Height + 4.0" Stone Cover = 3.00' Field Height

11 Chambers x 62.0 cf +44.00' Row Adjustment x 3.10 sf x 11 Rows + 36.83' Header x 3.10 sf x 2 = 2,410.8 cf Chamber Storage
11 Chambers x 78.4 cf +44.00' Row Adjustment x 3.92 sf x 11 Rows + 36.83' Header x 3.92 sf x 2 = 3,048.2 cf Displacement

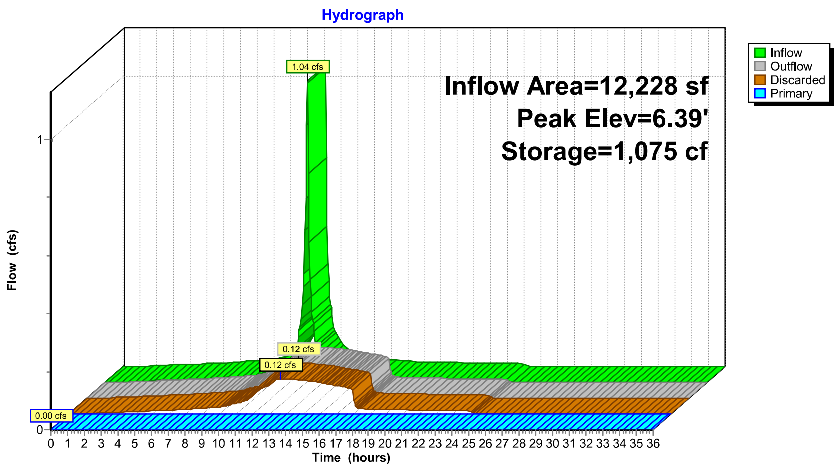
8,123.8 cf Field - 3,048.2 cf Chambers = 5,075.6 cf of Stone x 40.0% Voids = 2,030.2 cf Stone Storage

Chamber Storage + Stone Storage = 4,441.0 cf = 0.102 af
Overall Storage Efficiency = 54.7%
Overall System Size = 70.33' x 38.50' x 3.00'

11 Chambers
300.9 cy Field
188.0 cy Stone



Pond 50P: UG Inf Basin



Summary for Pond 52P: AG Bio Basin East

```
Inflow Area =        43,765 sf,  71.99% Impervious,  Inflow Depth =   2.29"   for  2-Year-Current event
Inflow      =      2.79 cfs @  12.08 hrs,  Volume=            8,346 cf
Outflow     =      0.07 cfs @  15.01 hrs,  Volume=            7,138 cf,  Atten= 97%,  Lag= 175.6 min
Discarded   =      0.07 cfs @  15.01 hrs,  Volume=            7,138 cf
Primary     =      0.00 cfs @   0.00 hrs,  Volume=                0 cf
   Routed to Link 51L : South Total
```

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 6.27' @ 15.01 hrs Surf.Area= 6,516 sf Storage= 4,993 cf

Plug-Flow detention time= 570.8 min calculated for 7,138 cf (86% of inflow)
Center-of-Mass det. time= 504.2 min (1,257.6 - 753.4)

Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	19,875 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

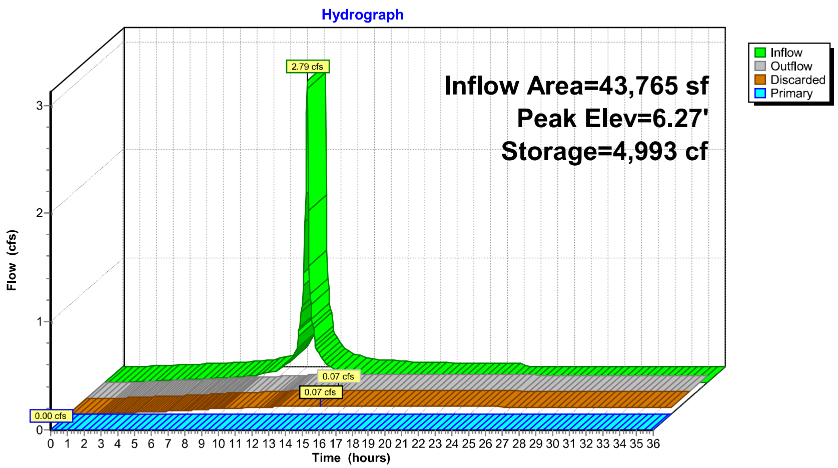
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.50	6,400	0	0
6.50	6,550	6,475	6,475
7.50	6,700	6,625	13,100
8.50	6,850	6,775	19,875

Device	Routing	Invert	Outlet Devices
#1	Primary	6.60'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	7.60'	**0.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	8.40'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	5.50'	**0.380 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 2.60'

Discarded OutFlow Max=0.07 cfs @ 15.01 hrs HW=6.27' (Free Discharge)
└─**4=Exfiltration** (Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=5.50' (Free Discharge)
├─**1=Orifice/Grate** (Controls 0.00 cfs)
├─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 52P: AG Bio Basin East

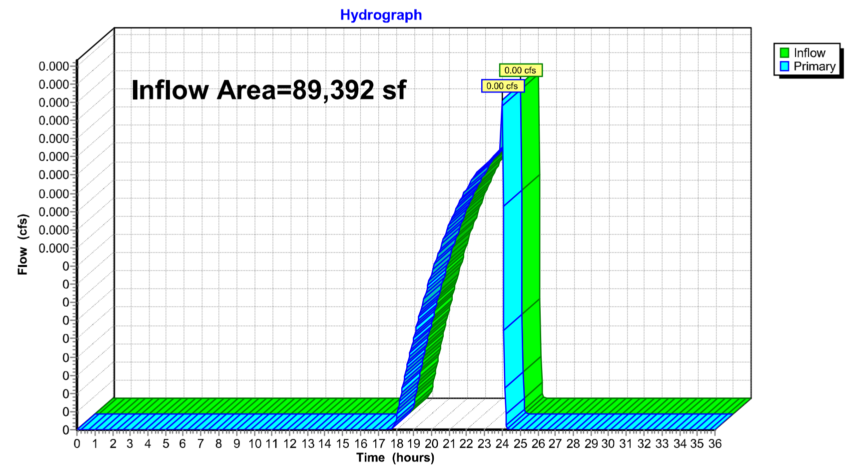


Summary for Link 51L: South Total

Inflow Area = 89,392 sf, 70.54% Impervious, Inflow Depth = 0.00" for 2-Year-Current event
Inflow = 0.00 cfs @ 23.98 hrs, Volume= 2 cf
Primary = 0.00 cfs @ 23.98 hrs, Volume= 2 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 51L: South Total

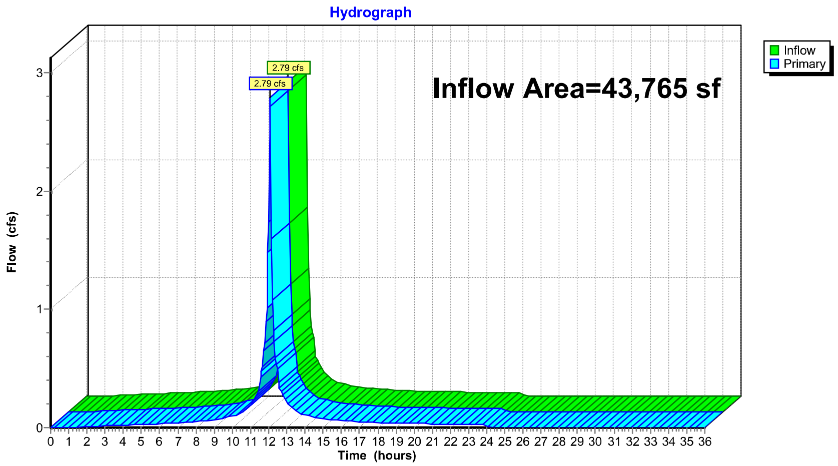


Summary for Link 52L: SA Basin East - Total

Inflow Area = 43,765 sf, 71.99% Impervious, Inflow Depth = 2.29" for 2-Year-Current event
Inflow = 2.79 cfs @ 12.08 hrs, Volume= 8,346 cf
Primary = 2.79 cfs @ 12.08 hrs, Volume= 8,346 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 52P : AG Bio Basin East

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 52L: SA Basin East - Total

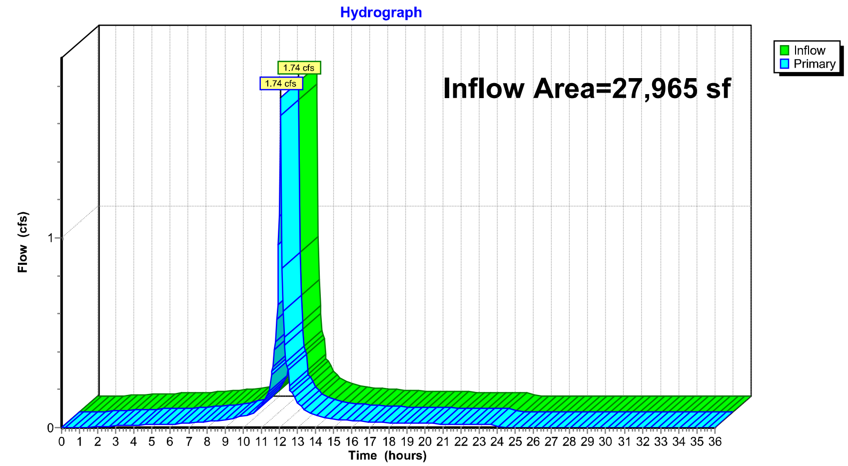


Summary for Link 53L: SA Basin West - Total

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 2.20" for 2-Year-Current event
Inflow = 1.74 cfs @ 12.08 hrs, Volume= 5,119 cf
Primary = 1.74 cfs @ 12.08 hrs, Volume= 5,119 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 49P : AG Bio Basin West

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 53L: SA Basin West - Total

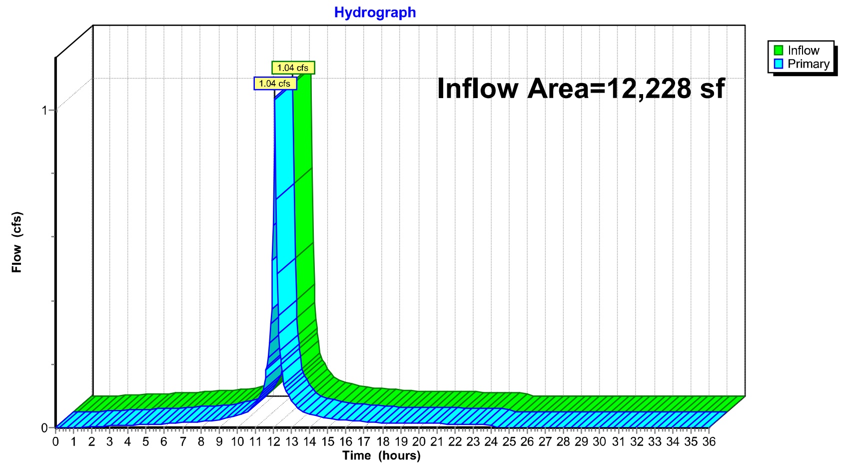


Summary for Link 54L: SA UG Basin Total

Inflow Area = 12,228 sf,100.00% Impervious, Inflow Depth = 3.18" for 2-Year-Current event
Inflow = 1.04 cfs @ 12.09 hrs, Volume= 3,237 cf
Primary = 1.04 cfs @ 12.09 hrs, Volume= 3,237 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 50P : UG Inf Basin

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 54L: SA UG Basin Total



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Ex SA South Runoff Area=88,097 sf 0.00% Impervious Runoff Depth=0.02"
Flow Length=209' Tc=8.8 min CN=38 Runoff=0.01 cfs 181 cf

Subcatchment 13S: Ex SA North Runoff Area=3,695 sf 0.00% Impervious Runoff Depth=0.04"
Flow Length=17' Slope=0.0170 '/' Tc=2.3 min CN=39 Runoff=0.00 cfs 11 cf

Subcatchment 41S: SA Basin East Imp Runoff Area=31,508 sf 100.00% Impervious Runoff Depth=3.68"
Flow Length=168' Tc=1.5 min CN=98 Runoff=3.22 cfs 9,650 cf

Subcatchment 42S: SA Basin East Perv Runoff Area=12,257 sf 0.00% Impervious Runoff Depth=0.04"
Flow Length=20' Slope=0.0120 '/' Tc=3.0 min CN=39 Runoff=0.00 cfs 38 cf

Subcatchment 43S: SA Basin West Imp Runoff Area=19,325 sf 100.00% Impervious Runoff Depth=3.68"
Flow Length=174' Tc=1.2 min CN=98 Runoff=2.00 cfs 5,919 cf

Subcatchment 44S: SA Basin West Perv Runoff Area=8,640 sf 0.00% Impervious Runoff Depth=0.04"
Flow Length=60' Slope=0.0750 '/' Tc=3.5 min CN=39 Runoff=0.00 cfs 27 cf

Subcatchment 45S: SA South Undetained Runoff Area=5,434 sf 0.00% Impervious Runoff Depth=0.04"
Flow Length=18' Slope=0.0100 '/' Tc=3.0 min CN=39 Runoff=0.00 cfs 17 cf

Subcatchment 46S: SA UG Basin Roof Runoff Area=12,228 sf 100.00% Impervious Runoff Depth=3.68"
Flow Length=314' Tc=2.1 min CN=98 Runoff=1.20 cfs 3,745 cf

Subcatchment 47S: SA North Undetained Runoff Area=2,400 sf 0.00% Impervious Runoff Depth=0.04"
Flow Length=8' Slope=0.0100 '/' Tc=1.6 min CN=39 Runoff=0.00 cfs 7 cf

Pond 49P: AG Bio Basin West Peak Elev=6.49' Storage=2,153 cf Inflow=2.00 cfs 5,946 cf
Discarded=0.20 cfs 5,946 cf Primary=0.00 cfs 0 cf Outflow=0.20 cfs 5,946 cf

Pond 50P: UG Inf Basin Peak Elev=6.52' Storage=1,308 cf Inflow=1.20 cfs 3,745 cf
Discarded=0.13 cfs 3,745 cf Primary=0.00 cfs 0 cf Outflow=0.13 cfs 3,745 cf

Pond 52P: AG Bio Basin East Peak Elev=6.42' Storage=5,943 cf Inflow=3.22 cfs 9,688 cf
Discarded=0.08 cfs 7,558 cf Primary=0.00 cfs 0 cf Outflow=0.08 cfs 7,558 cf

Link 51L: South Total Inflow=0.00 cfs 17 cf
Primary=0.00 cfs 17 cf

Link 52L: SA Basin East - Total Inflow=3.22 cfs 9,688 cf
Primary=3.22 cfs 9,688 cf

Link 53L: SA Basin West - Total Inflow=2.00 cfs 5,946 cf
Primary=2.00 cfs 5,946 cf

Link 54L: SA UG Basin Total Inflow=1.20 cfs 3,745 cf
Primary=1.20 cfs 3,745 cf

Total Runoff Area = 183,584 sf Runoff Volume = 19,596 cf Average Runoff Depth = 1.28"
65.65% Pervious = 120,523 sf 34.35% Impervious = 63,061 sf

Summary for Subcatchment 2S: Ex SA South

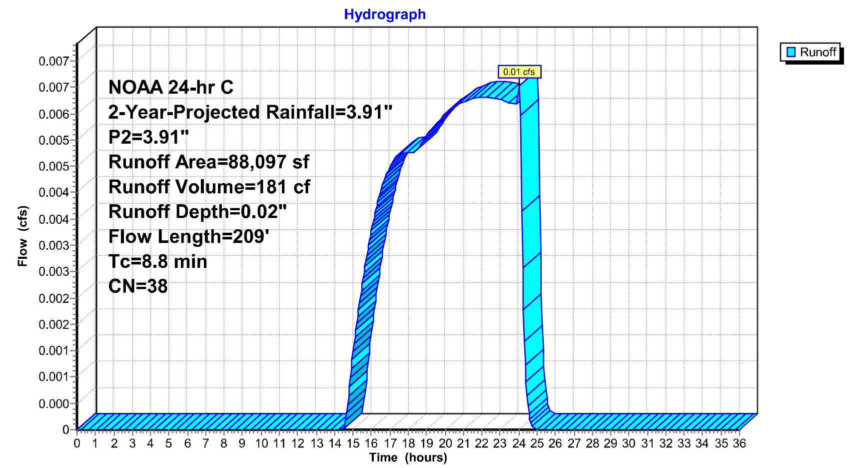
Runoff = 0.01 cfs @ 24.03 hrs, Volume= 181 cf, Depth= 0.02"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Projected Rainfall=3.91", P2=3.91"

Area (sf)	CN	Description
9,674	30	Woods, Good, HSG A
78,423	39	>75% Grass cover, Good, HSG A
88,097	38	Weighted Average
88,097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.0290	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.91"
1.2	109	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
8.8	209	Total			

Subcatchment 2S: Ex SA South



Summary for Subcatchment 13S: Ex SA North

[49] Hint: Tc<2dt may require smaller dt

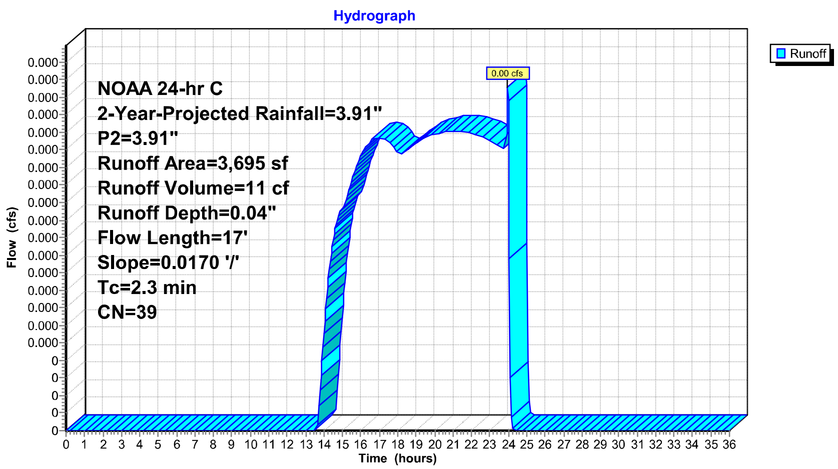
Runoff = 0.00 cfs @ 23.98 hrs, Volume= 11 cf, Depth= 0.04"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Projected Rainfall=3.91", P2=3.91"

Area (sf)	CN	Description
3,695	39	>75% Grass cover, Good, HSG A
3,695		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	17	0.0170	0.12		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 13S: Ex SA North



Summary for Subcatchment 41S: SA Basin East Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.018
n = 0.011

L = [100 * sqrt(0.018)]/.011
L = 1,219 FT

L > 100 FT

Therefore, use 100 FT

[49] Hint: Tc<2dt may require smaller dt

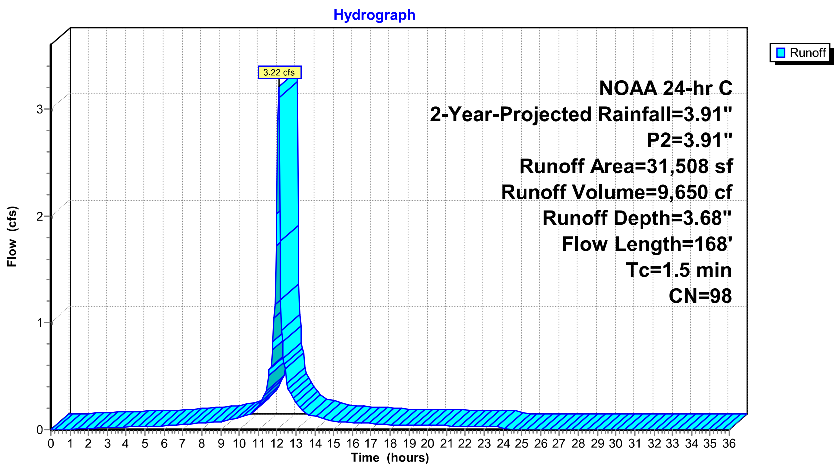
Runoff = 3.22 cfs @ 12.08 hrs, Volume= 9,650 cf, Depth= 3.68"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Projected Rainfall=3.91", P2=3.91"

Area (sf)	CN	Description
19,281	98	Paved parking, HSG A
12,227	98	Roofs, HSG A
31,508	98	Weighted Average
31,508		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0180	1.46		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.91"
0.2	28	0.0180	2.72		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
0.2	40	0.0030	2.88	3.54	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
1.5	168	Total			

Subcatchment 41S: SA Basin East Imp



Summary for Subcatchment 42S: SA Basin East Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.012
n = 0.150

L = [100 * sqrt(0.012)]/.150
L = 73 FT

L < 100 FT; However, use 20 FT

---

[49] Hint: Tc<2dt may require smaller dt

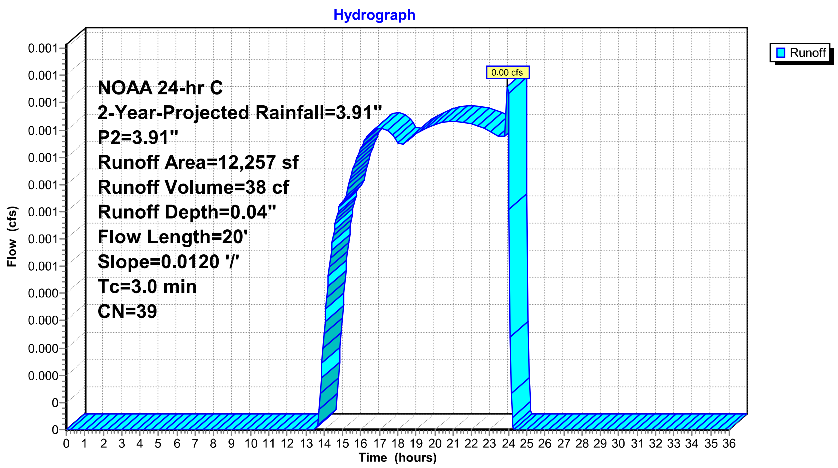
Runoff = 0.00 cfs @ 23.98 hrs, Volume= 38 cf, Depth= 0.04"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Projected Rainfall=3.91", P2=3.91"

Area (sf)	CN	Description
12,257	39	>75% Grass cover, Good, HSG A
12,257		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	20	0.0120	0.11		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 42S: SA Basin East Perv



Summary for Subcatchment 43S: SA Basin West Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.025
n = 0.011

L = [100 * sqrt(0.025)]/.011
L = 1,437 FT

L > 100 FT

Therefore, use 73 FT

---

[49] Hint: Tc<2dt may require smaller dt

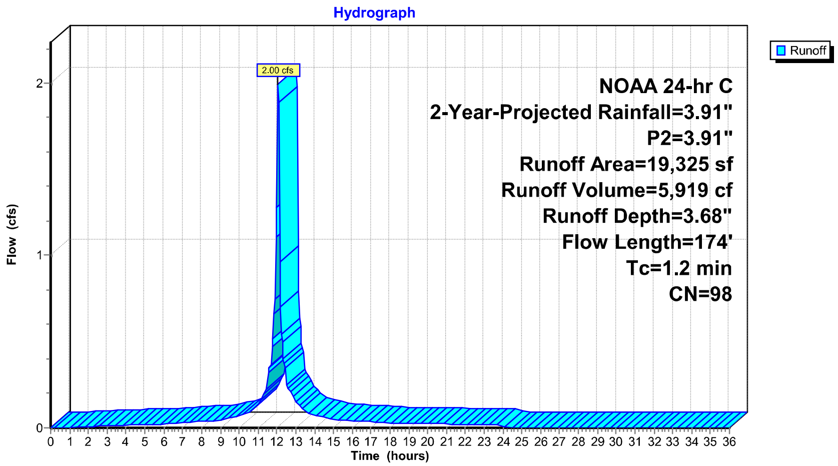
Runoff = 2.00 cfs @ 12.08 hrs, Volume= 5,919 cf, Depth= 3.68"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Projected Rainfall=3.91", P2=3.91"

Area (sf)	CN	Description
19,325	98	Paved parking, HSG A
19,325		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	73	0.0250	1.56		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.91"
0.4	97	0.0050	3.72	4.57	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
0.0	4	0.0030	3.75	4.60	**Pipe Channel, 15" HDPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010
1.2	174	Total			

Subcatchment 43S: SA Basin West Imp



Summary for Subcatchment 44S: SA Basin West Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.075
n = 0.150

L = [100 * sqrt(0.075)]/.150
L = 182 FT

L > 100 FT

Therefore, use 60 FT

---

[49] Hint: Tc<2dt may require smaller dt

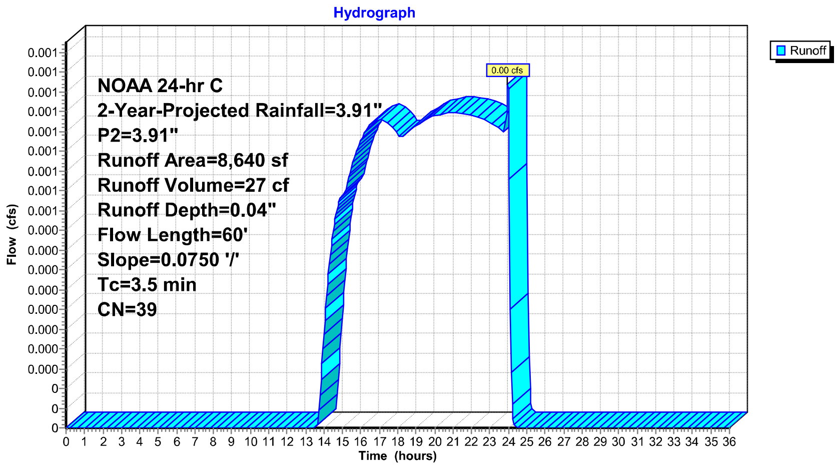
Runoff = 0.00 cfs @ 23.99 hrs, Volume= 27 cf, Depth= 0.04"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Projected Rainfall=3.91", P2=3.91"

Area (sf)	CN	Description
8,640	39	>75% Grass cover, Good, HSG A
8,640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	60	0.0750	0.29		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 44S: SA Basin West Perv



Summary for Subcatchment 45S: SA South Undetained

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.150

L = [100 * sqrt(0.010)]/.150
L = 67 FT

L < 100 FT; However, use 18 FT

---

[49] Hint: Tc<2dt may require smaller dt

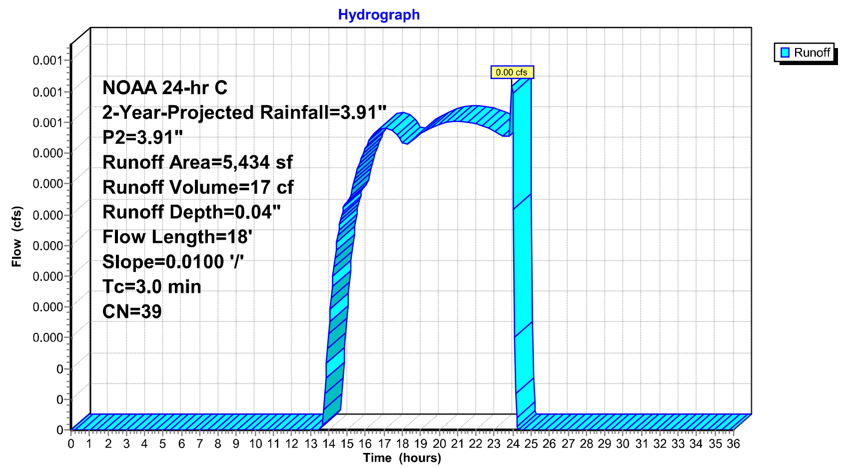
Runoff = 0.00 cfs @ 23.98 hrs, Volume= 17 cf, Depth= 0.04"
Routed to Link 51L : South Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Projected Rainfall=3.91", P2=3.91"

Area (sf)	CN	Description
5,434	39	>75% Grass cover, Good, HSG A
5,434		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	18	0.0100	0.10		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 45S: SA South Undetained



Summary for Subcatchment 46S: SA UG Basin Roof

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.011

L = [100 * sqrt(0.010)]/.011
L = 909 FT

L > 100 FT

Therefore, use 78 FT

[49] Hint: Tc<2dt may require smaller dt

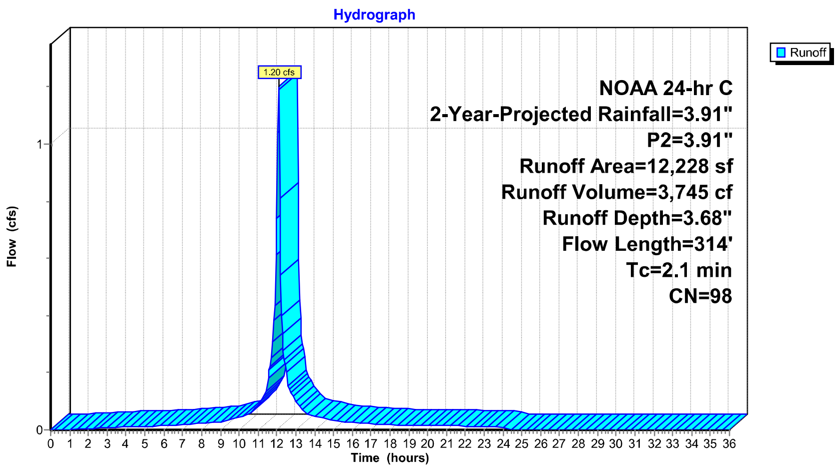
Runoff = 1.20 cfs @ 12.09 hrs, Volume= 3,745 cf, Depth= 3.68"
Routed to Link 54L : SA UG Basin Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Projected Rainfall=3.91", P2=3.91"

Area (sf)	CN	Description
12,228	98	Roofs, HSG A
12,228		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	78	0.0100	1.10		**Sheet Flow, Roof** Smooth surfaces n= 0.011 P2= 3.91"
0.9	236	0.0050	4.17	3.28	**Pipe Channel, 12" HDPE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010
2.1	314	Total			

Subcatchment 46S: SA UG Basin Roof



Summary for Subcatchment 47S: SA North Undetained

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.150

L = [100 * sqrt(0.010)]/.150
L = 66 FT

L > 100 FT; However, use 8 FT

---

[49] Hint: Tc<2dt may require smaller dt

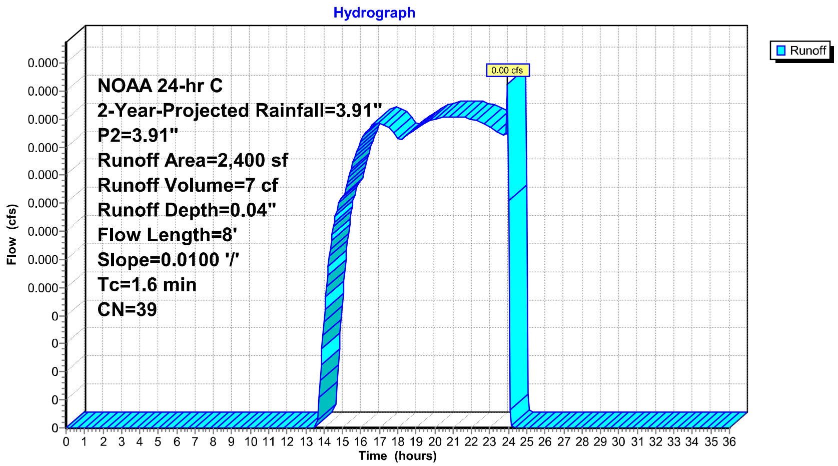
Runoff = 0.00 cfs @ 23.97 hrs, Volume= 7 cf, Depth= 0.04"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year-Projected Rainfall=3.91", P2=3.91"

Area (sf)	CN	Description
2,400	39	>75% Grass cover, Good, HSG A
2,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	8	0.0100	0.09		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 47S: SA North Undetained



Summary for Pond 49P: AG Bio Basin West

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 2.55" for 2-Year-Projected event
Inflow = 2.00 cfs @ 12.08 hrs, Volume= 5,946 cf
Outflow = 0.20 cfs @ 12.76 hrs, Volume= 5,946 cf, Atten= 90%, Lag= 41.2 min
Discarded = 0.20 cfs @ 12.76 hrs, Volume= 5,946 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 6.49' @ 12.76 hrs Surf.Area= 1,697 sf Storage= 2,153 cf

Plug-Flow detention time= 85.6 min calculated for 5,937 cf (100% of inflow)
Center-of-Mass det. time= 85.5 min (837.0 - 751.5)

Volume	Invert	Avail.Storage	Storage Description
#1	5.10'	7,152 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

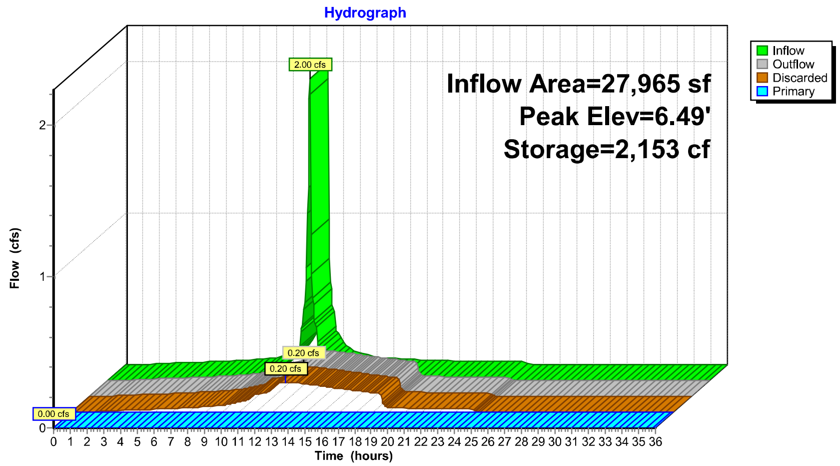
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.10	1,400	0	0
6.00	1,600	1,350	1,350
7.00	1,800	1,700	3,050
8.00	1,950	1,875	4,925
9.10	2,100	2,227	7,152

Device	Routing	Invert	Outlet Devices
#1	Primary	6.70'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	8.20'	**1.1' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	9.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	5.10'	**3.700 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.60'

Discarded OutFlow Max=0.20 cfs @ 12.76 hrs HW=6.49' (Free Discharge)
└─**4=Exfiltration** (Controls 0.20 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=5.10' (Free Discharge)
├─**1=Orifice/Grate** (Controls 0.00 cfs)
├─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 49P: AG Bio Basin West



Summary for Pond 50P: UG Inf Basin

Inflow Area = 12,228 sf,100.00% Impervious, Inflow Depth = 3.68" for 2-Year-Projected event
Inflow = 1.20 cfs @ 12.09 hrs, Volume= 3,745 cf
Outflow = 0.13 cfs @ 12.77 hrs, Volume= 3,745 cf, Atten= 89%, Lag= 40.8 min
Discarded = 0.13 cfs @ 12.77 hrs, Volume= 3,745 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 6.52' @ 12.77 hrs Surf.Area= 2,708 sf Storage= 1,308 cf

Plug-Flow detention time= 75.3 min calculated for 3,740 cf (100% of inflow)
Center-of-Mass det. time= 75.2 min (826.3 - 751.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	5.50'	2,030 cf	**38.50'W x 70.33'L x 3.00'H Field A** 8,124 cf Overall - 3,049 cf Embedded = 5,074 cf x 40.0% Voids
#2A	5.83'	2,411 cf	**ADS N-12 24"** x 11 Inside #1 Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf Row Length Adjustment= +44.00' x 3.10 sf x 11 rows 36.83' Header x 3.10 sf x 2 = 228.4 cf Inside
		4,440 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.40'	**7.0" W x 2.5" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	5.50'	**1.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 3.20'

Discarded OutFlow Max=0.13 cfs @ 12.77 hrs HW=6.52' (Free Discharge)
└─**2=Exfiltration** (Controls 0.13 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=5.50' (Free Discharge)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 50P: UG Inf Basin - Chamber Wizard Field A

Chamber Model = ADS N-12 24" (ADS N-12® Pipe)
Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf
Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf
Row Length Adjustment= +44.00' x 3.10 sf x 11 rows

28.0" Wide + 13.4" Spacing = 41.4" C-C Row Spacing

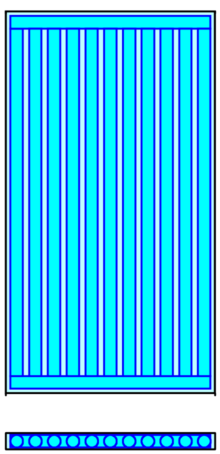
1 Chambers/Row x 20.00' Long +44.00' Row Adjustment +2.33' Header x 2 = 68.67' Row Length +10.0" End Stone x 2 = 70.33' Base Length
11 Rows x 28.0" Wide + 13.4" Spacing x 10 + 10.0" Side Stone x 2 = 38.50' Base Width
4.0" Stone Base + 28.0" Chamber Height + 4.0" Stone Cover = 3.00' Field Height

11 Chambers x 62.0 cf +44.00' Row Adjustment x 3.10 sf x 11 Rows + 36.83' Header x 3.10 sf x 2 = 2,410.8 cf Chamber Storage
11 Chambers x 78.4 cf +44.00' Row Adjustment x 3.92 sf x 11 Rows + 36.83' Header x 3.92 sf x 2 = 3,048.2 cf Displacement

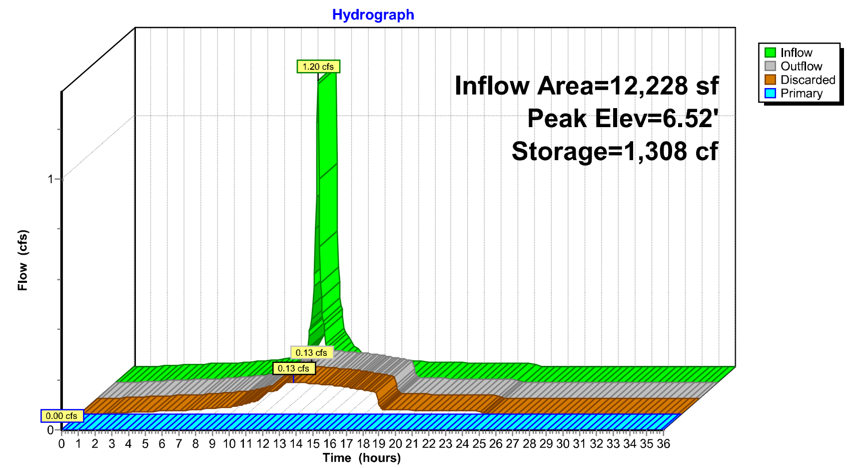
8,123.8 cf Field - 3,048.2 cf Chambers = 5,075.6 cf of Stone x 40.0% Voids = 2,030.2 cf Stone Storage

Chamber Storage + Stone Storage = 4,441.0 cf = 0.102 af
Overall Storage Efficiency = 54.7%
Overall System Size = 70.33' x 38.50' x 3.00'

11 Chambers
300.9 cy Field
188.0 cy Stone



Pond 50P: UG Inf Basin



Summary for Pond 52P: AG Bio Basin East

Inflow Area = 43,765 sf, 71.99% Impervious, Inflow Depth = 2.66" for 2-Year-Projected event
Inflow = 3.22 cfs @ 12.08 hrs, Volume= 9,688 cf
Outflow = 0.08 cfs @ 15.54 hrs, Volume= 7,558 cf, Atten= 98%, Lag= 207.8 min
Discarded = 0.08 cfs @ 15.54 hrs, Volume= 7,558 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 6.42' @ 15.54 hrs Surf.Area= 6,538 sf Storage= 5,943 cf

Plug-Flow detention time= 579.4 min calculated for 7,547 cf (78% of inflow)
Center-of-Mass det. time= 495.9 min (1,247.6 - 751.7)

Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	19,875 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

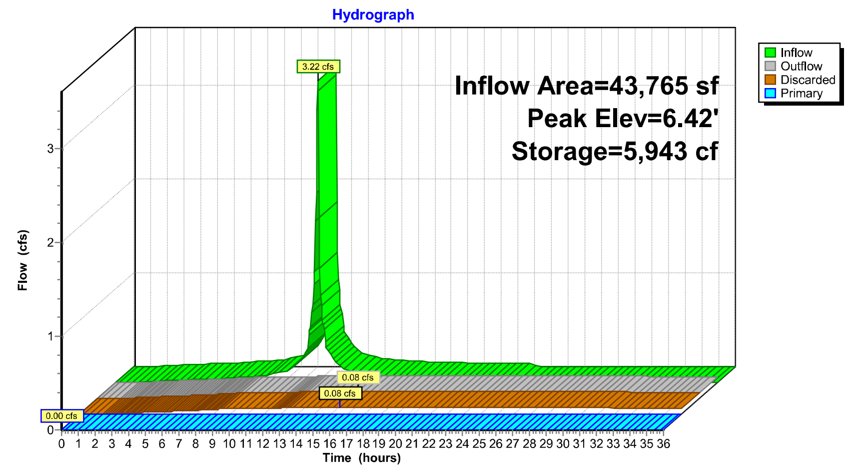
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.50	6,400	0	0
6.50	6,550	6,475	6,475
7.50	6,700	6,625	13,100
8.50	6,850	6,775	19,875

Device	Routing	Invert	Outlet Devices
#1	Primary	6.60'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	7.60'	**0.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	8.40'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	5.50'	**0.380 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 2.60'

Discarded OutFlow Max=0.08 cfs @ 15.54 hrs HW=6.42' (Free Discharge)
└─**4=Exfiltration** (Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=5.50' (Free Discharge)
├─**1=Orifice/Grate** (Controls 0.00 cfs)
├─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 52P: AG Bio Basin East

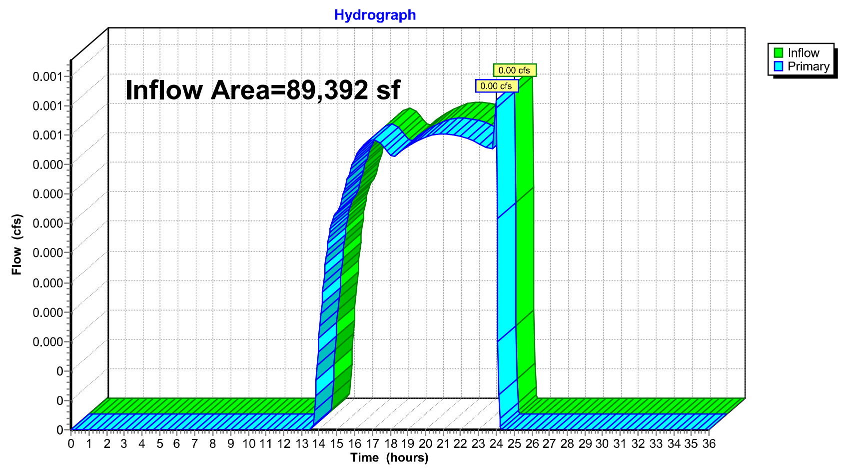


Summary for Link 51L: South Total

Inflow Area = 89,392 sf, 70.54% Impervious, Inflow Depth = 0.00" for 2-Year-Projected event
Inflow = 0.00 cfs @ 23.98 hrs, Volume= 17 cf
Primary = 0.00 cfs @ 23.98 hrs, Volume= 17 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 51L: South Total

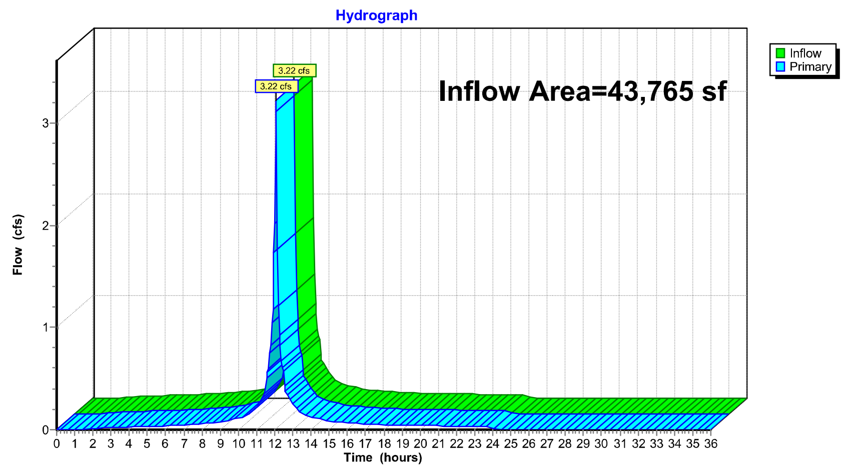


Summary for Link 52L: SA Basin East - Total

Inflow Area = 43,765 sf, 71.99% Impervious, Inflow Depth = 2.66" for 2-Year-Projected event
Inflow = 3.22 cfs @ 12.08 hrs, Volume= 9,688 cf
Primary = 3.22 cfs @ 12.08 hrs, Volume= 9,688 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 52P : AG Bio Basin East

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 52L: SA Basin East - Total

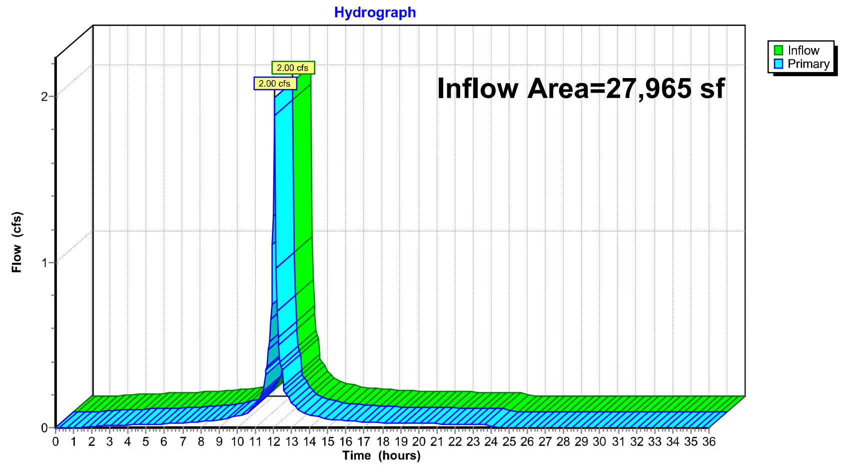


Summary for Link 53L: SA Basin West - Total

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 2.55" for 2-Year-Projected event
Inflow = 2.00 cfs @ 12.08 hrs, Volume= 5,946 cf
Primary = 2.00 cfs @ 12.08 hrs, Volume= 5,946 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 49P : AG Bio Basin West

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 53L: SA Basin West - Total

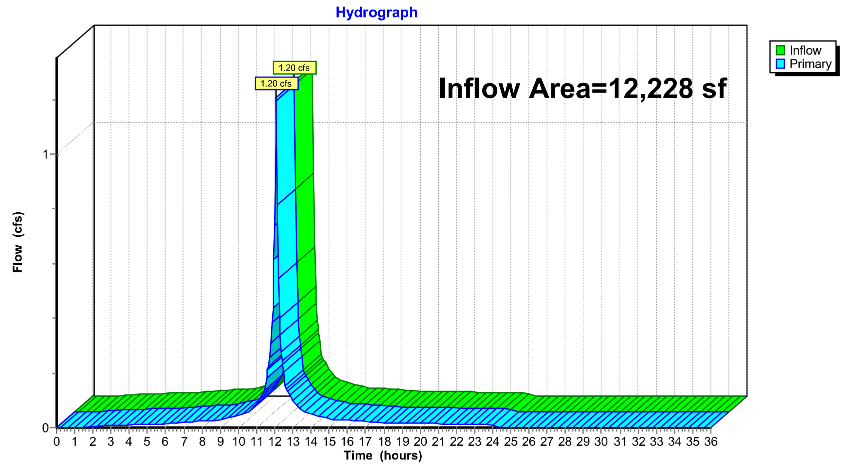


Summary for Link 54L: SA UG Basin Total

Inflow Area = 12,228 sf,100.00% Impervious, Inflow Depth = 3.68" for 2-Year-Projected event
Inflow = 1.20 cfs @ 12.09 hrs, Volume= 3,745 cf
Primary = 1.20 cfs @ 12.09 hrs, Volume= 3,745 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 50P : UG Inf Basin

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 54L: SA UG Basin Total



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Ex SA South Runoff Area=88,097 sf 0.00% Impervious Runoff Depth=0.22"
Flow Length=209' Tc=9.4 min CN=38 Runoff=0.08 cfs 1,599 cf

Subcatchment 13S: Ex SA North Runoff Area=3,695 sf 0.00% Impervious Runoff Depth=0.26"
Flow Length=17' Slope=0.0170 '/' Tc=2.5 min CN=39 Runoff=0.01 cfs 79 cf

Subcatchment 41S: SA Basin East Imp Runoff Area=31,508 sf 100.00% Impervious Runoff Depth=5.02"
Flow Length=168' Tc=1.6 min CN=98 Runoff=4.33 cfs 13,188 cf

Subcatchment 42S: SA Basin East Perv Runoff Area=12,257 sf 0.00% Impervious Runoff Depth=0.26"
Flow Length=20' Slope=0.0120 '/' Tc=3.2 min CN=39 Runoff=0.02 cfs 261 cf

Subcatchment 43S: SA Basin West Imp Runoff Area=19,325 sf 100.00% Impervious Runoff Depth=5.02"
Flow Length=174' Tc=1.2 min CN=98 Runoff=2.69 cfs 8,089 cf

Subcatchment 44S: SA Basin West Perv Runoff Area=8,640 sf 0.00% Impervious Runoff Depth=0.26"
Flow Length=60' Slope=0.0750 '/' Tc=3.7 min CN=39 Runoff=0.01 cfs 184 cf

Subcatchment 45S: SA South Undetained Runoff Area=5,434 sf 0.00% Impervious Runoff Depth=0.26"
Flow Length=18' Slope=0.0100 '/' Tc=3.2 min CN=39 Runoff=0.01 cfs 116 cf

Subcatchment 46S: SA UG Basin Roof Runoff Area=12,228 sf 100.00% Impervious Runoff Depth=5.02"
Flow Length=314' Tc=2.2 min CN=98 Runoff=1.62 cfs 5,118 cf

Subcatchment 47S: SA North Undetained Runoff Area=2,400 sf 0.00% Impervious Runoff Depth=0.26"
Flow Length=8' Slope=0.0100 '/' Tc=1.7 min CN=39 Runoff=0.00 cfs 51 cf

Pond 49P: AG Bio Basin West Peak Elev=7.05' Storage=3,133 cf Inflow=2.69 cfs 8,273 cf
Discarded=0.23 cfs 8,049 cf Primary=0.04 cfs 224 cf Outflow=0.27 cfs 8,273 cf

Pond 50P: UG Inf Basin Peak Elev=6.87' Storage=1,975 cf Inflow=1.62 cfs 5,118 cf
Discarded=0.14 cfs 5,118 cf Primary=0.00 cfs 0 cf Outflow=0.14 cfs 5,118 cf

Pond 52P: AG Bio Basin East Peak Elev=6.81' Storage=8,482 cf Inflow=4.33 cfs 13,449 cf
Discarded=0.08 cfs 8,505 cf Primary=0.03 cfs 781 cf Outflow=0.11 cfs 9,286 cf

Link 51L: South Total Inflow=0.06 cfs 1,121 cf
Primary=0.06 cfs 1,121 cf

Link 52L: SA Basin East - Total Inflow=4.33 cfs 13,449 cf
Primary=4.33 cfs 13,449 cf

Link 53L: SA Basin West - Total Inflow=2.69 cfs 8,273 cf
Primary=2.69 cfs 8,273 cf

Link 54L: SA UG Basin Total Inflow=1.62 cfs 5,118 cf
Primary=1.62 cfs 5,118 cf

Total Runoff Area = 183,584 sf Runoff Volume = 28,685 cf Average Runoff Depth = 1.87"
65.65% Pervious = 120,523 sf 34.35% Impervious = 63,061 sf

Summary for Subcatchment 2S: Ex SA South

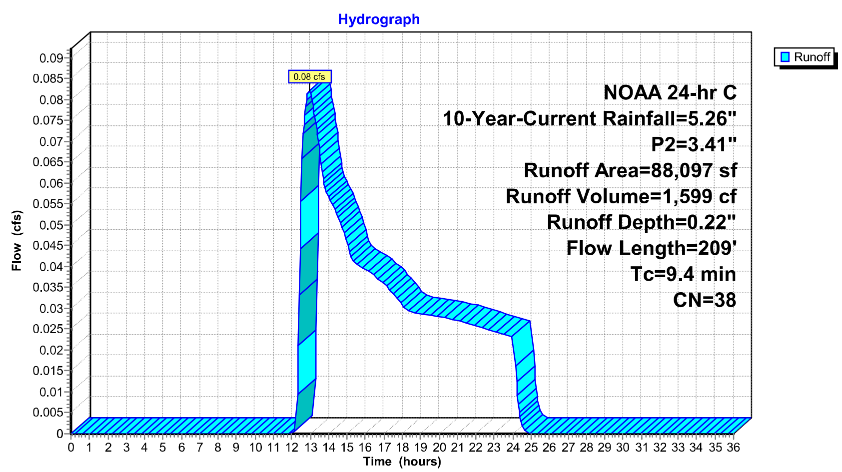
Runoff = 0.08 cfs @ 12.95 hrs, Volume= 1,599 cf, Depth= 0.22"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Current Rainfall=5.26", P2=3.41"

Area (sf)	CN	Description
9,674	30	Woods, Good, HSG A
78,423	39	>75% Grass cover, Good, HSG A
88,097	38	Weighted Average
88,097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0290	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.41"
1.2	109	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
9.4	209	Total			

Subcatchment 2S: Ex SA South



Summary for Subcatchment 13S: Ex SA North

[49] Hint: Tc<2dt may require smaller dt

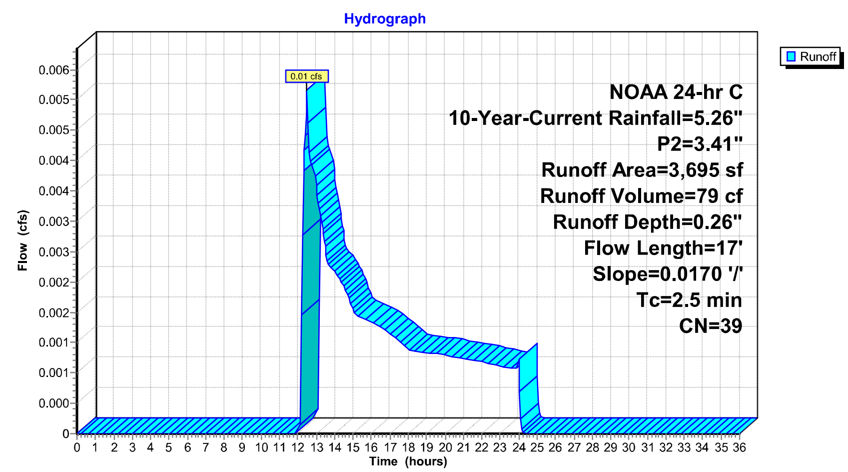
Runoff = 0.01 cfs @ 12.50 hrs, Volume= 79 cf, Depth= 0.26"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Current Rainfall=5.26", P2=3.41"

Area (sf)	CN	Description
3,695	39	>75% Grass cover, Good, HSG A
3,695		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	17	0.0170	0.12		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.41"

Subcatchment 13S: Ex SA North



Summary for Subcatchment 41S: SA Basin East Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.018
n = 0.011

L = [100 * sqrt(0.018)]/.011
L = 1,219 FT

L > 100 FT

Therefore, use 100 FT

---

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 122% of capacity of segment #3

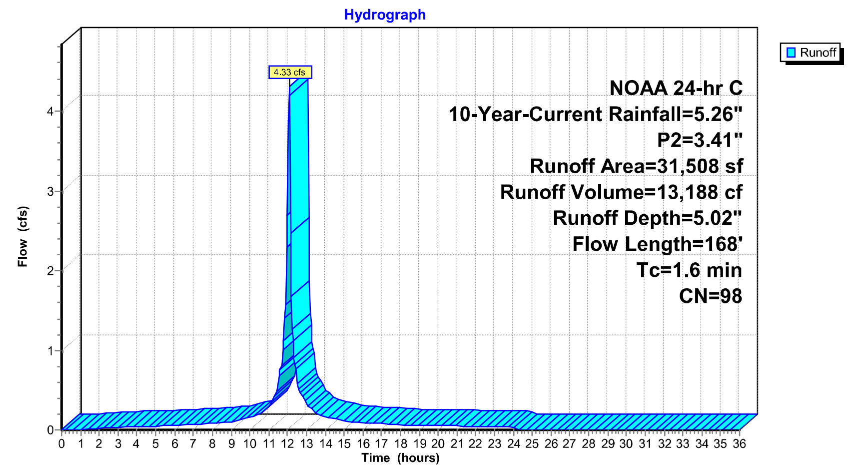
Runoff = 4.33 cfs @ 12.08 hrs, Volume= 13,188 cf, Depth= 5.02"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Current Rainfall=5.26", P2=3.41"

Area (sf)	CN	Description
19,281	98	Paved parking, HSG A
12,227	98	Roofs, HSG A
31,508	98	Weighted Average
31,508		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0180	1.36		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.41"
0.2	28	0.0180	2.72		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
0.2	40	0.0030	2.88	3.54	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
1.6	168	Total			

Subcatchment 41S: SA Basin East Imp



Summary for Subcatchment 42S: SA Basin East Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.012
n = 0.150

L = [100 * sqrt(0.012)]/.150
L = 73 FT

L < 100 FT; However, use 20 FT

---

[49] Hint: Tc<2dt may require smaller dt

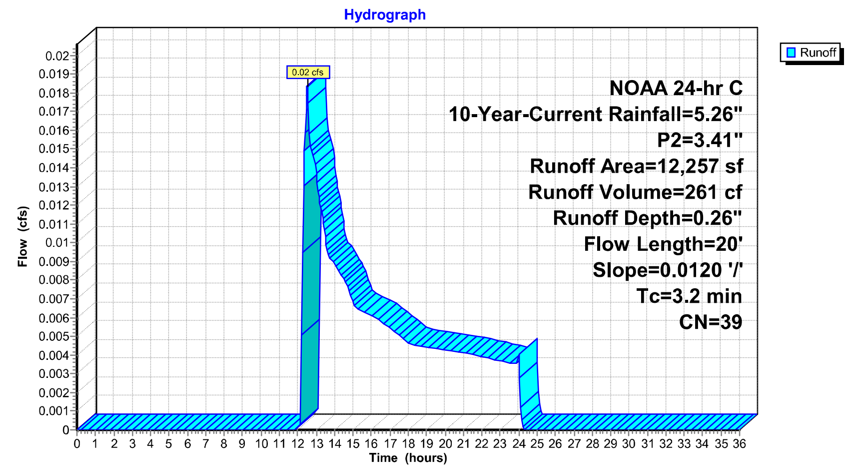
Runoff = 0.02 cfs @ 12.50 hrs, Volume= 261 cf, Depth= 0.26"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Current Rainfall=5.26", P2=3.41"

Area (sf)	CN	Description
12,257	39	>75% Grass cover, Good, HSG A
12,257		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	20	0.0120	0.10		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.41"

Subcatchment 42S: SA Basin East Perv



Summary for Subcatchment 43S: SA Basin West Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.025
n = 0.011

L = [100 * sqrt(0.025)]/.011
L = 1,437 FT

L > 100 FT

Therefore, use 73 FT

[49] Hint: Tc<2dt may require smaller dt

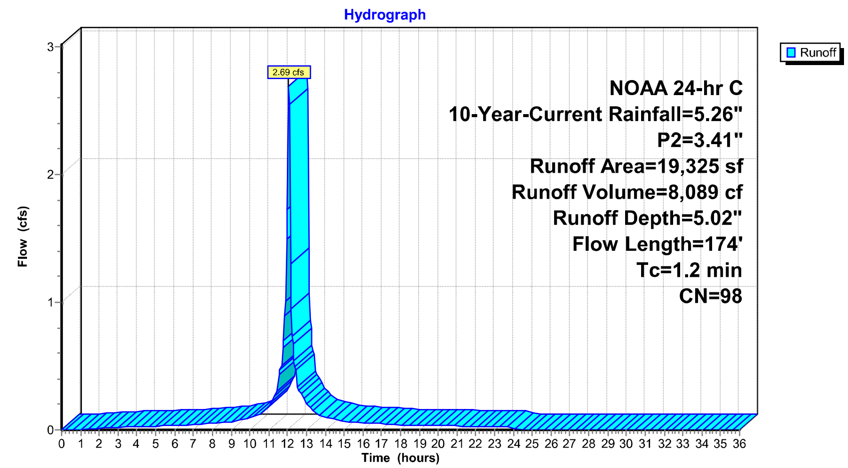
Runoff = 2.69 cfs @ 12.08 hrs, Volume= 8,089 cf, Depth= 5.02"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Current Rainfall=5.26", P2=3.41"

Area (sf)	CN	Description
19,325	98	Paved parking, HSG A
19,325		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	73	0.0250	1.46		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.41"
0.4	97	0.0050	3.72	4.57	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
0.0	4	0.0030	3.75	4.60	**Pipe Channel, 15" HDPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010
1.2	174	Total			

Subcatchment 43S: SA Basin West Imp



Summary for Subcatchment 44S: SA Basin West Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.075
n = 0.150

L = [100 * sqrt(0.075)]/.150
L = 182 FT

L > 100 FT

Therefore, use 60 FT

[49] Hint: Tc<2dt may require smaller dt

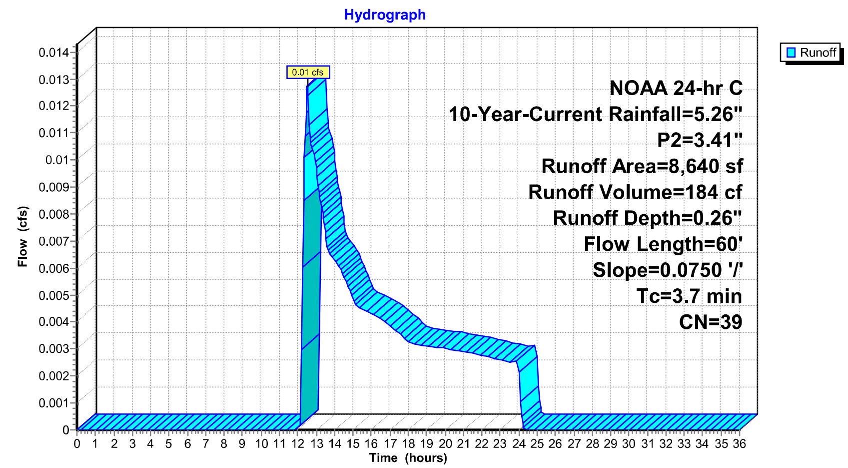
Runoff = 0.01 cfs @ 12.51 hrs, Volume= 184 cf, Depth= 0.26"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Current Rainfall=5.26", P2=3.41"

Area (sf)	CN	Description
8,640	39	>75% Grass cover, Good, HSG A
8,640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	60	0.0750	0.27		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.41"

Subcatchment 44S: SA Basin West Perv



Summary for Subcatchment 45S: SA South Undetained

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.150

L = [100 * sqrt(0.010)]/.150
L = 67 FT

L < 100 FT; However, use 18 FT

[49] Hint: Tc<2dt may require smaller dt

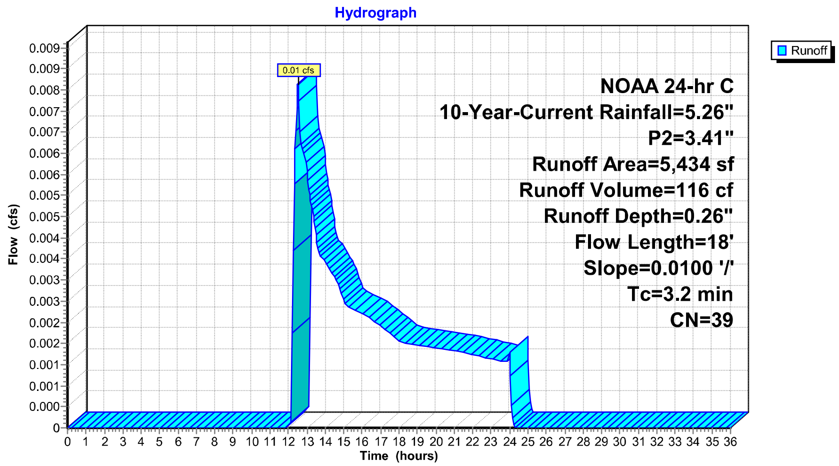
Runoff = 0.01 cfs @ 12.50 hrs, Volume= 116 cf, Depth= 0.26"
Routed to Link 51L : South Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Current Rainfall=5.26", P2=3.41"

Area (sf)	CN	Description
5,434	39	>75% Grass cover, Good, HSG A
5,434		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	18	0.0100	0.09		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.41"

Subcatchment 45S: SA South Undetained



Summary for Subcatchment 46S: SA UG Basin Roof

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.011

L = [100 * sqrt(0.010)]/.011
L = 909 FT

L > 100 FT

Therefore, use 78 FT

---

[49] Hint: Tc<2dt may require smaller dt

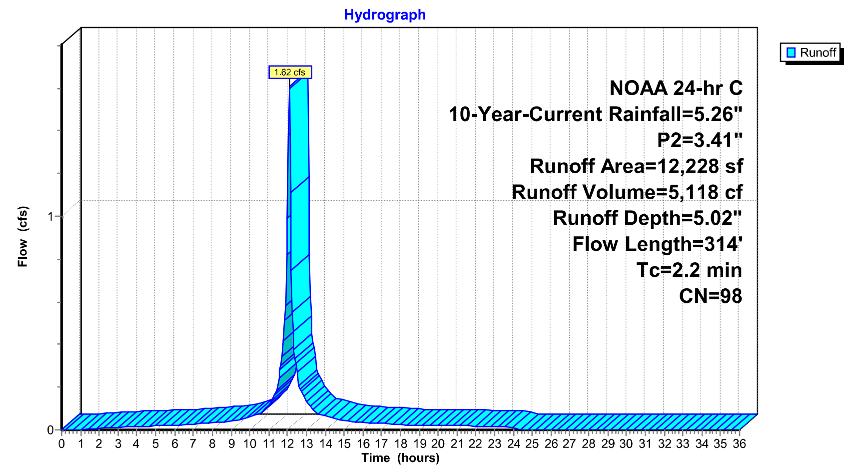
Runoff = 1.62 cfs @ 12.09 hrs, Volume= 5,118 cf, Depth= 5.02"
Routed to Link 54L : SA UG Basin Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Current Rainfall=5.26", P2=3.41"

Area (sf)	CN	Description
12,228	98	Roofs, HSG A
12,228		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	78	0.0100	1.02		**Sheet Flow, Roof** Smooth surfaces n= 0.011 P2= 3.41"
0.9	236	0.0050	4.17	3.28	**Pipe Channel, 12" HDPE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010
2.2	314	Total			

Subcatchment 46S: SA UG Basin Roof



Summary for Subcatchment 47S: SA North Undetained

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.150

L = [100 * sqrt(0.010)]/.150
L = 66 FT

L > 100 FT; However, use 8 FT

[49] Hint: Tc<2dt may require smaller dt

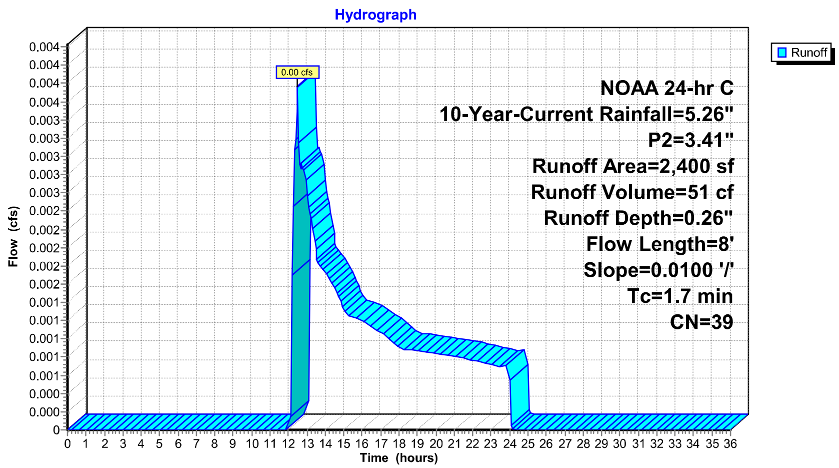
Runoff = 0.00 cfs @ 12.49 hrs, Volume= 51 cf, Depth= 0.26"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Current Rainfall=5.26", P2=3.41"

Area (sf)	CN	Description
2,400	39	>75% Grass cover, Good, HSG A
2,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	8	0.0100	0.08		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.41"

Subcatchment 47S: SA North Undetained



Summary for Pond 49P: AG Bio Basin West

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 3.55" for 10-Year-Current event
Inflow = 2.69 cfs @ 12.08 hrs, Volume= 8,273 cf
Outflow = 0.27 cfs @ 12.79 hrs, Volume= 8,273 cf, Atten= 90%, Lag= 42.9 min
Discarded = 0.23 cfs @ 12.79 hrs, Volume= 8,049 cf
Primary = 0.04 cfs @ 12.79 hrs, Volume= 224 cf
Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 7.05' @ 12.79 hrs Surf.Area= 1,807 sf Storage= 3,133 cf

Plug-Flow detention time= 109.9 min calculated for 8,261 cf (100% of inflow)
Center-of-Mass det. time= 109.8 min (859.8 - 750.0)

Volume	Invert	Avail.Storage	Storage Description
#1	5.10'	7,152 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

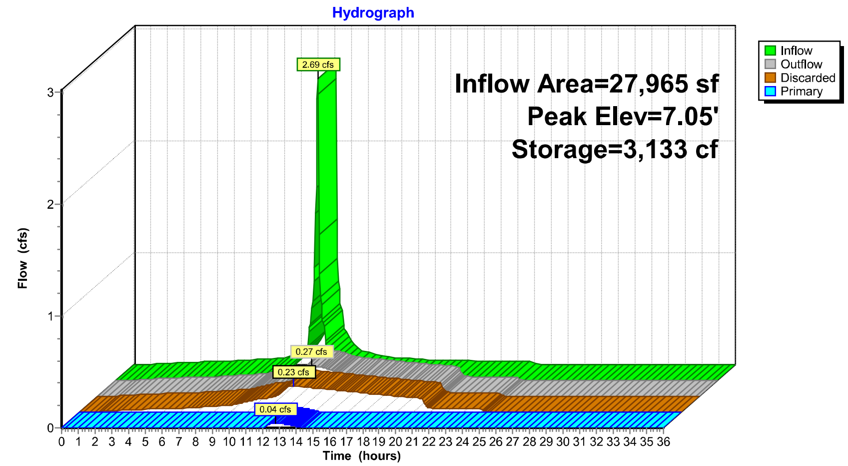
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.10	1,400	0	0
6.00	1,600	1,350	1,350
7.00	1,800	1,700	3,050
8.00	1,950	1,875	4,925
9.10	2,100	2,227	7,152

Device	Routing	Invert	Outlet Devices
#1	Primary	6.70'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	8.20'	**1.1' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	9.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	5.10'	**3.700 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.60'

Discarded OutFlow Max=0.23 cfs @ 12.79 hrs HW=7.05' (Free Discharge)
└─**4=Exfiltration** (Controls 0.23 cfs)

Primary OutFlow Max=0.04 cfs @ 12.79 hrs HW=7.05' (Free Discharge)
├─**1=Orifice/Grate** (Orifice Controls 0.04 cfs @ 2.53 fps)
├─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 49P: AG Bio Basin West



Summary for Pond 50P: UG Inf Basin

Inflow Area = 12,228 sf,100.00% Impervious, Inflow Depth = 5.02" for 10-Year-Current event
Inflow = 1.62 cfs @ 12.09 hrs, Volume= 5,118 cf
Outflow = 0.14 cfs @ 12.97 hrs, Volume= 5,118 cf, Atten= 91%, Lag= 52.5 min
Discarded = 0.14 cfs @ 12.97 hrs, Volume= 5,118 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 6.87' @ 12.97 hrs Surf.Area= 2,708 sf Storage= 1,975 cf

Plug-Flow detention time= 110.0 min calculated for 5,111 cf (100% of inflow)
Center-of-Mass det. time= 109.8 min (855.6 - 745.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	5.50'	2,030 cf	**38.50'W x 70.33'L x 3.00'H Field A** 8,124 cf Overall - 3,049 cf Embedded = 5,074 cf x 40.0% Voids
#2A	5.83'	2,411 cf	**ADS N-12 24"** x 11 Inside #1 Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf Row Length Adjustment= +44.00' x 3.10 sf x 11 rows 36.83' Header x 3.10 sf x 2 = 228.4 cf Inside
		4,440 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.40'	**7.0" W x 2.5" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	5.50'	**1.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 3.20'

Discarded OutFlow Max=0.14 cfs @ 12.97 hrs HW=6.87' (Free Discharge)
└─**2=Exfiltration** (Controls 0.14 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=5.50' (Free Discharge)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 50P: UG Inf Basin - Chamber Wizard Field A

Chamber Model = ADS N-12 24" (ADS N-12® Pipe)
Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf
Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf
Row Length Adjustment= +44.00' x 3.10 sf x 11 rows

28.0" Wide + 13.4" Spacing = 41.4" C-C Row Spacing

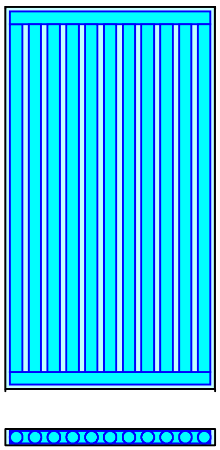
1 Chambers/Row x 20.00' Long +44.00' Row Adjustment +2.33' Header x 2 = 68.67' Row Length +10.0" End Stone x 2 = 70.33' Base Length
11 Rows x 28.0" Wide + 13.4" Spacing x 10 + 10.0" Side Stone x 2 = 38.50' Base Width
4.0" Stone Base + 28.0" Chamber Height + 4.0" Stone Cover = 3.00' Field Height

11 Chambers x 62.0 cf +44.00' Row Adjustment x 3.10 sf x 11 Rows + 36.83' Header x 3.10 sf x 2 = 2,410.8 cf Chamber Storage
11 Chambers x 78.4 cf +44.00' Row Adjustment x 3.92 sf x 11 Rows + 36.83' Header x 3.92 sf x 2 = 3,048.2 cf Displacement

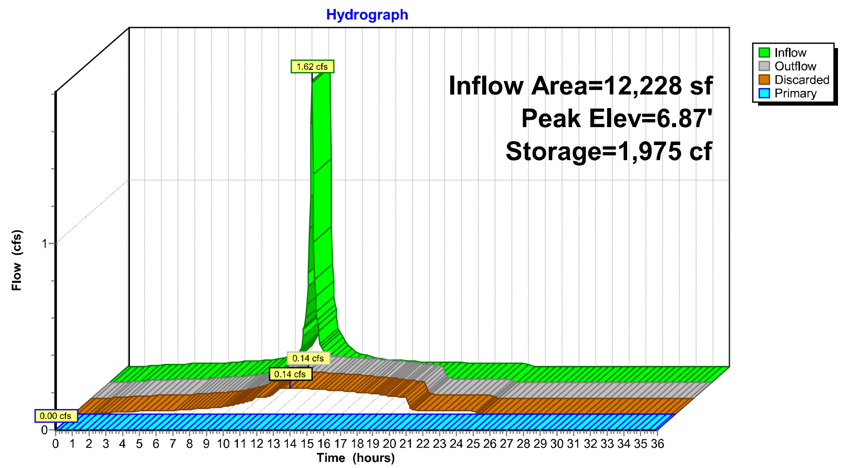
8,123.8 cf Field - 3,048.2 cf Chambers = 5,075.6 cf of Stone x 40.0% Voids = 2,030.2 cf Stone Storage

Chamber Storage + Stone Storage = 4,441.0 cf = 0.102 af
Overall Storage Efficiency = 54.7%
Overall System Size = 70.33' x 38.50' x 3.00'

11 Chambers
300.9 cy Field
188.0 cy Stone



Pond 50P: UG Inf Basin



Summary for Pond 52P: AG Bio Basin East

Inflow Area = 43,765 sf, 71.99% Impervious, Inflow Depth = 3.69" for 10-Year-Current event
Inflow = 4.33 cfs @ 12.08 hrs, Volume= 13,449 cf
Outflow = 0.11 cfs @ 15.23 hrs, Volume= 9,286 cf, Atten= 97%, Lag= 189.0 min
Discarded = 0.08 cfs @ 15.23 hrs, Volume= 8,505 cf
Primary = 0.03 cfs @ 15.23 hrs, Volume= 781 cf
Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 6.81' @ 15.23 hrs Surf.Area= 6,596 sf Storage= 8,482 cf

Plug-Flow detention time= 562.4 min calculated for 9,273 cf (69% of inflow)
Center-of-Mass det. time= 461.6 min (1,211.5 - 749.9)

Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	19,875 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

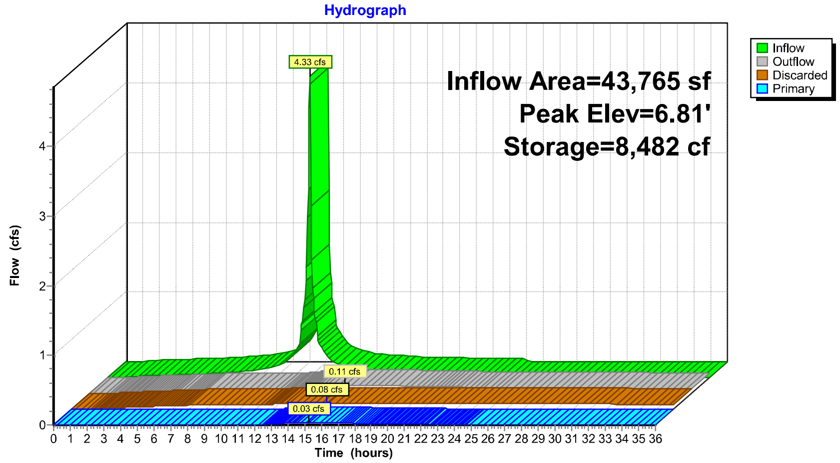
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.50	6,400	0	0
6.50	6,550	6,475	6,475
7.50	6,700	6,625	13,100
8.50	6,850	6,775	19,875

Device	Routing	Invert	Outlet Devices
#1	Primary	6.60'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	7.60'	**0.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	8.40'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	5.50'	**0.380 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 2.60'

Discarded OutFlow Max=0.08 cfs @ 15.23 hrs HW=6.81' (Free Discharge)
└─**4=Exfiltration** (Controls 0.08 cfs)

Primary OutFlow Max=0.03 cfs @ 15.23 hrs HW=6.81' (Free Discharge)
├─**1=Orifice/Grate** (Orifice Controls 0.03 cfs @ 1.77 fps)
├─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 52P: AG Bio Basin East

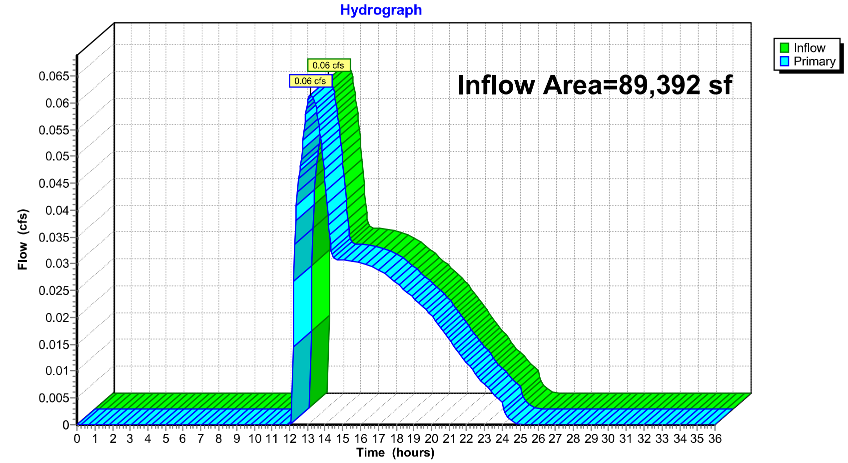


Summary for Link 51L: South Total

Inflow Area =	89,392 sf,	70.54% Impervious,	Inflow Depth = 0.15"	for 10-Year-Current event
Inflow =	0.06 cfs @	13.18 hrs, Volume=	1,121 cf	
Primary =	0.06 cfs @	13.18 hrs, Volume=	1,121 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 51L: South Total

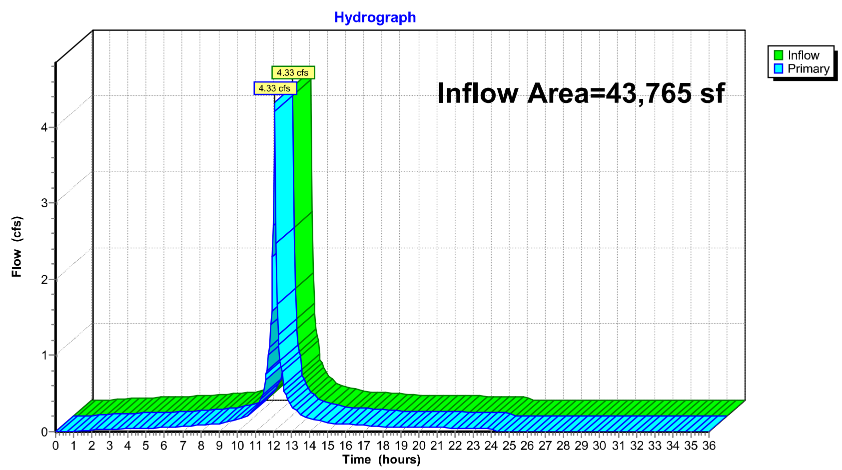


Summary for Link 52L: SA Basin East - Total

Inflow Area = 43,765 sf, 71.99% Impervious, Inflow Depth = 3.69" for 10-Year-Current event
Inflow = 4.33 cfs @ 12.08 hrs, Volume= 13,449 cf
Primary = 4.33 cfs @ 12.08 hrs, Volume= 13,449 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 52P : AG Bio Basin East

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 52L: SA Basin East - Total

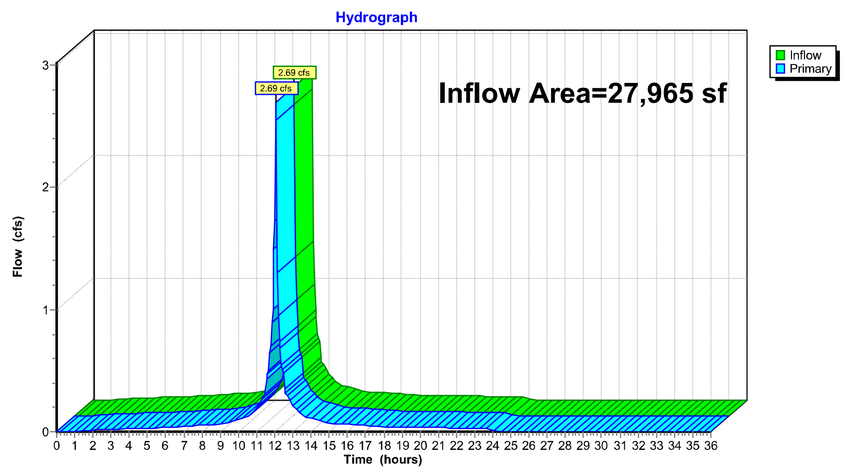


Summary for Link 53L: SA Basin West - Total

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 3.55" for 10-Year-Current event
Inflow = 2.69 cfs @ 12.08 hrs, Volume= 8,273 cf
Primary = 2.69 cfs @ 12.08 hrs, Volume= 8,273 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 49P : AG Bio Basin West

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 53L: SA Basin West - Total

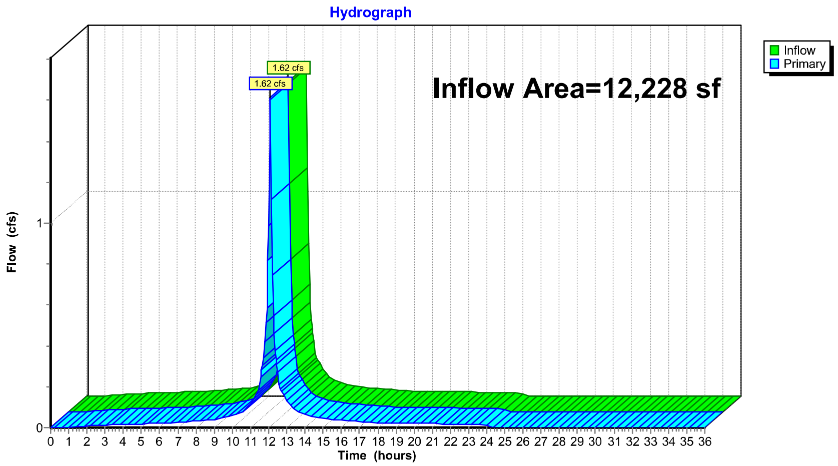


Summary for Link 54L: SA UG Basin Total

Inflow Area = 12,228 sf,100.00% Impervious, Inflow Depth = 5.02" for 10-Year-Current event
Inflow = 1.62 cfs @ 12.09 hrs, Volume= 5,118 cf
Primary = 1.62 cfs @ 12.09 hrs, Volume= 5,118 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 50P : UG Inf Basin

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 54L: SA UG Basin Total



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Ex SA South Runoff Area=88,097 sf 0.00% Impervious Runoff Depth=0.44"
Flow Length=209' Tc=8.8 min CN=38 Runoff=0.27 cfs 3,227 cf

Subcatchment 13S: Ex SA North Runoff Area=3,695 sf 0.00% Impervious Runoff Depth=0.50"
Flow Length=17' Slope=0.0170 '/' Tc=2.3 min CN=39 Runoff=0.02 cfs 152 cf

Subcatchment 41S: SA Basin East Imp Runoff Area=31,508 sf 100.00% Impervious Runoff Depth=5.93"
Flow Length=168' Tc=1.5 min CN=98 Runoff=5.11 cfs 15,575 cf

Subcatchment 42S: SA Basin East Perv Runoff Area=12,257 sf 0.00% Impervious Runoff Depth=0.50"
Flow Length=20' Slope=0.0120 '/' Tc=3.0 min CN=39 Runoff=0.06 cfs 506 cf

Subcatchment 43S: SA Basin West Imp Runoff Area=19,325 sf 100.00% Impervious Runoff Depth=5.93"
Flow Length=174' Tc=1.2 min CN=98 Runoff=3.16 cfs 9,552 cf

Subcatchment 44S: SA Basin West Perv Runoff Area=8,640 sf 0.00% Impervious Runoff Depth=0.50"
Flow Length=60' Slope=0.0750 '/' Tc=3.5 min CN=39 Runoff=0.04 cfs 357 cf

Subcatchment 45S: SA South Undetained Runoff Area=5,434 sf 0.00% Impervious Runoff Depth=0.50"
Flow Length=18' Slope=0.0100 '/' Tc=3.0 min CN=39 Runoff=0.03 cfs 224 cf

Subcatchment 46S: SA UG Basin Roof Runoff Area=12,228 sf 100.00% Impervious Runoff Depth=5.93"
Flow Length=314' Tc=2.1 min CN=98 Runoff=1.91 cfs 6,044 cf

Subcatchment 47S: SA North Undetained Runoff Area=2,400 sf 0.00% Impervious Runoff Depth=0.50"
Flow Length=8' Slope=0.0100 '/' Tc=1.6 min CN=39 Runoff=0.01 cfs 99 cf

Pond 49P: AG Bio Basin West Peak Elev=7.43' Storage=3,847 cf Inflow=3.17 cfs 9,909 cf
Discarded=0.25 cfs 9,364 cf Primary=0.06 cfs 545 cf Outflow=0.31 cfs 9,909 cf

Pond 50P: UG Inf Basin Peak Elev=7.11' Storage=2,445 cf Inflow=1.91 cfs 6,044 cf
Discarded=0.15 cfs 6,044 cf Primary=0.00 cfs 0 cf Outflow=0.15 cfs 6,044 cf

Pond 52P: AG Bio Basin East Peak Elev=7.07' Storage=10,216 cf Inflow=5.13 cfs 16,080 cf
Discarded=0.09 cfs 9,026 cf Primary=0.05 cfs 1,985 cf Outflow=0.14 cfs 11,012 cf

Link 51L: South Total Inflow=0.11 cfs 2,754 cf
Primary=0.11 cfs 2,754 cf

Link 52L: SA Basin East - Total Inflow=5.13 cfs 16,080 cf
Primary=5.13 cfs 16,080 cf

Link 53L: SA Basin West - Total Inflow=3.17 cfs 9,909 cf
Primary=3.17 cfs 9,909 cf

Link 54L: SA UG Basin Total Inflow=1.91 cfs 6,044 cf
Primary=1.91 cfs 6,044 cf

Total Runoff Area = 183,584 sf Runoff Volume = 35,737 cf Average Runoff Depth = 2.34"
65.65% Pervious = 120,523 sf 34.35% Impervious = 63,061 sf

Summary for Subcatchment 2S: Ex SA South

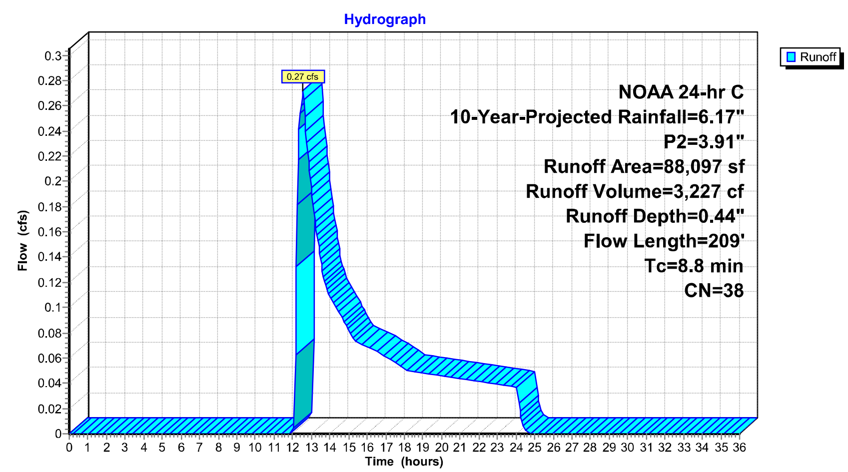
Runoff = 0.27 cfs @ 12.54 hrs, Volume= 3,227 cf, Depth= 0.44"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Projected Rainfall=6.17", P2=3.91"

Area (sf)	CN	Description
9,674	30	Woods, Good, HSG A
78,423	39	>75% Grass cover, Good, HSG A
88,097	38	Weighted Average
88,097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.0290	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.91"
1.2	109	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
8.8	209	Total			

Subcatchment 2S: Ex SA South



Summary for Subcatchment 13S: Ex SA North

[49] Hint: Tc<2dt may require smaller dt

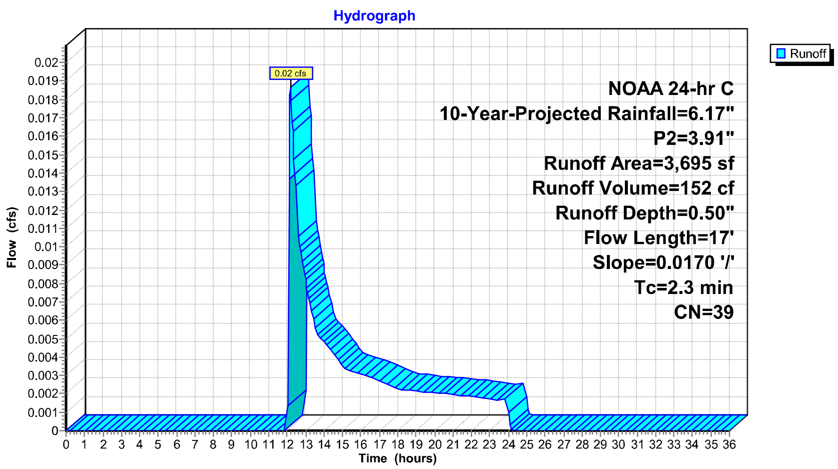
Runoff = 0.02 cfs @ 12.17 hrs, Volume= 152 cf, Depth= 0.50"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Projected Rainfall=6.17", P2=3.91"

Area (sf)	CN	Description
3,695	39	>75% Grass cover, Good, HSG A
3,695		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	17	0.0170	0.12		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 13S: Ex SA North



Summary for Subcatchment 41S: SA Basin East Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.018
n = 0.011

L = [100 * sqrt(0.018)]/.011
L = 1,219 FT

L > 100 FT

Therefore, use 100 FT

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 144% of capacity of segment #3

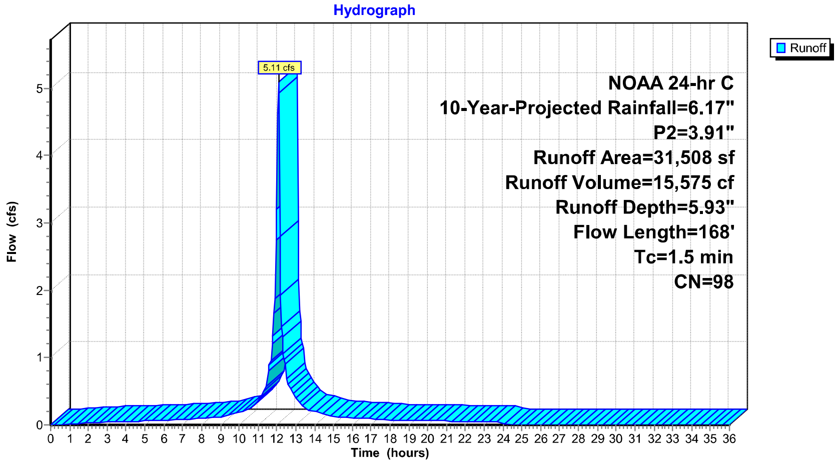
Runoff = 5.11 cfs @ 12.08 hrs, Volume= 15,575 cf, Depth= 5.93"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Projected Rainfall=6.17", P2=3.91"

Area (sf)	CN	Description
19,281	98	Paved parking, HSG A
12,227	98	Roofs, HSG A
31,508	98	Weighted Average
31,508		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0180	1.46		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.91"
0.2	28	0.0180	2.72		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
0.2	40	0.0030	2.88	3.54	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
1.5	168	Total			

Subcatchment 41S: SA Basin East Imp



Summary for Subcatchment 42S: SA Basin East Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.012
n = 0.150

L = [100 * sqrt(0.012)]/.150
L = 73 FT

L < 100 FT; However, use 20 FT

[49] Hint: Tc<2dt may require smaller dt

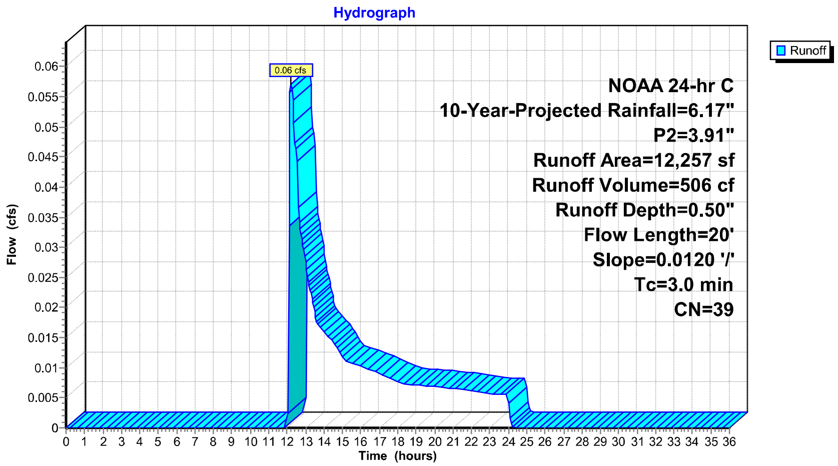
Runoff = 0.06 cfs @ 12.21 hrs, Volume= 506 cf, Depth= 0.50"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Projected Rainfall=6.17", P2=3.91"

Area (sf)	CN	Description
12,257	39	>75% Grass cover, Good, HSG A
12,257		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	20	0.0120	0.11		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 42S: SA Basin East Perv



Summary for Subcatchment 43S: SA Basin West Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.025
n = 0.011

L = [100 * sqrt(0.025)]/.011
L = 1,437 FT

L > 100 FT

Therefore, use 73 FT

---

[49] Hint: Tc<2dt may require smaller dt

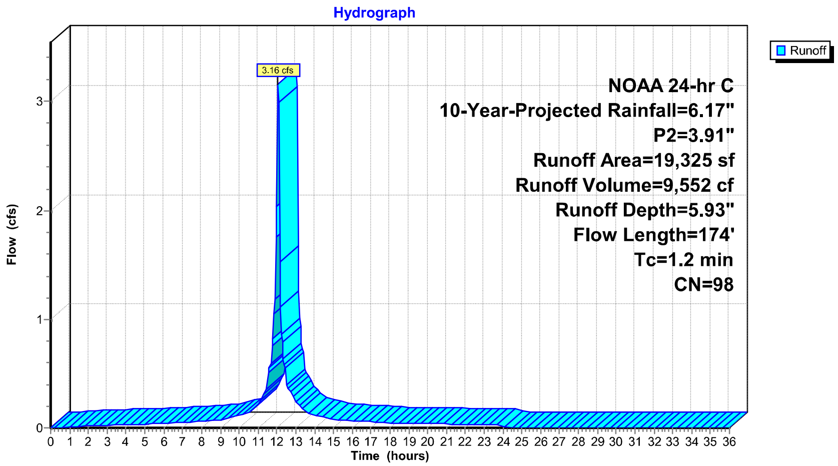
Runoff = 3.16 cfs @ 12.08 hrs, Volume= 9,552 cf, Depth= 5.93"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Projected Rainfall=6.17", P2=3.91"

Area (sf)	CN	Description
19,325	98	Paved parking, HSG A
19,325		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	73	0.0250	1.56		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.91"
0.4	97	0.0050	3.72	4.57	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
0.0	4	0.0030	3.75	4.60	**Pipe Channel, 15" HDPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010
1.2	174	Total			

Subcatchment 43S: SA Basin West Imp



Summary for Subcatchment 44S: SA Basin West Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.075
n = 0.150

L = [100 * sqrt(0.075)]/.150
L = 182 FT

L > 100 FT

Therefore, use 60 FT

[49] Hint: Tc<2dt may require smaller dt

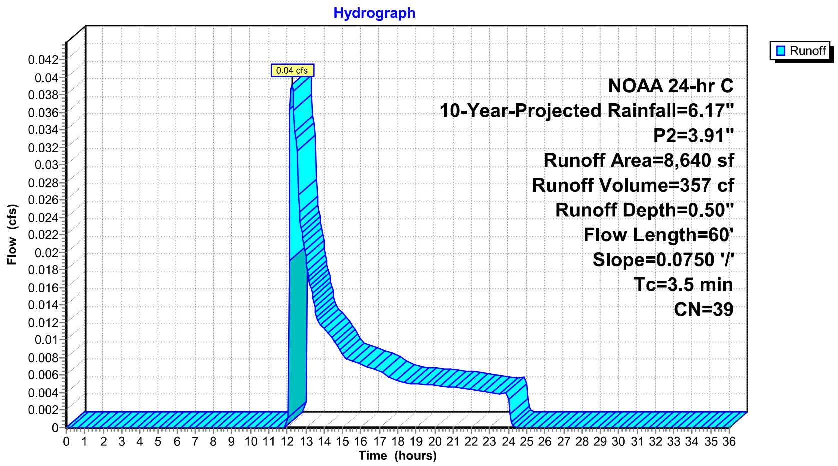
Runoff = 0.04 cfs @ 12.25 hrs, Volume= 357 cf, Depth= 0.50"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Projected Rainfall=6.17", P2=3.91"

Area (sf)	CN	Description
8,640	39	>75% Grass cover, Good, HSG A
8,640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	60	0.0750	0.29		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 44S: SA Basin West Perv



Summary for Subcatchment 45S: SA South Undetained

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.150

L = [100 * sqrt(0.010)]/.150
L = 67 FT

L < 100 FT; However, use 18 FT

---

[49] Hint: Tc<2dt may require smaller dt

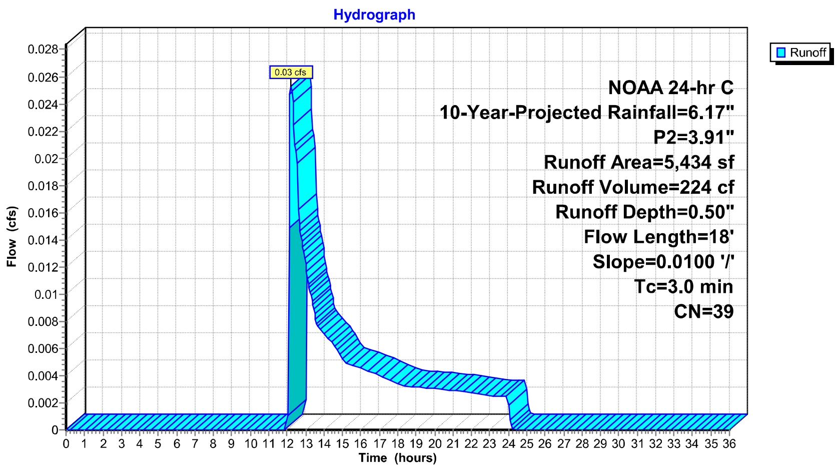
Runoff = 0.03 cfs @ 12.21 hrs, Volume= 224 cf, Depth= 0.50"
Routed to Link 51L : South Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Projected Rainfall=6.17", P2=3.91"

Area (sf)	CN	Description
5,434	39	>75% Grass cover, Good, HSG A
5,434		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	18	0.0100	0.10		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 45S: SA South Undetained



Summary for Subcatchment 46S: SA UG Basin Roof

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.011

L = [100 * sqrt(0.010)]/.011
L = 909 FT

L > 100 FT

Therefore, use 78 FT

---

[49] Hint: Tc<2dt may require smaller dt

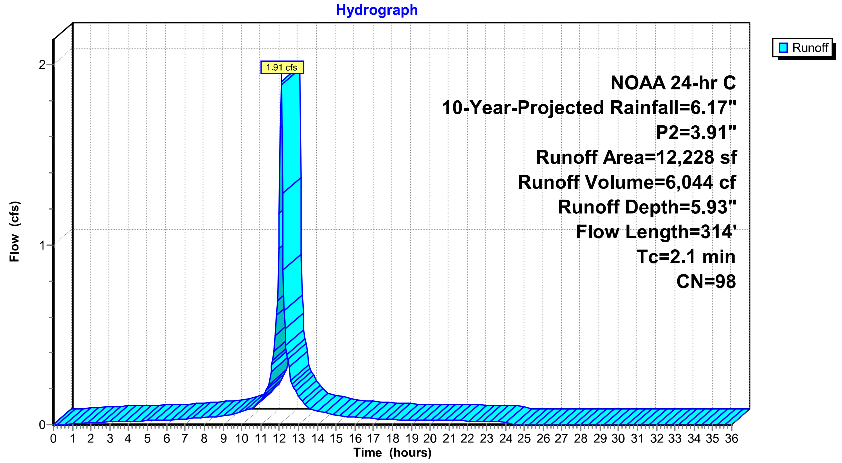
Runoff = 1.91 cfs @ 12.09 hrs, Volume= 6,044 cf, Depth= 5.93"
Routed to Link 54L : SA UG Basin Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Projected Rainfall=6.17", P2=3.91"

Area (sf)	CN	Description
12,228	98	Roofs, HSG A
12,228		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	78	0.0100	1.10		**Sheet Flow, Roof** Smooth surfaces n= 0.011 P2= 3.91"
0.9	236	0.0050	4.17	3.28	**Pipe Channel, 12" HDPE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010
2.1	314	Total			

Subcatchment 46S: SA UG Basin Roof



Summary for Subcatchment 47S: SA North Undetained

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.150

L = [100 * sqrt(0.010)]/.150
L = 66 FT

L > 100 FT; However, use 8 FT

---

[49] Hint: Tc<2dt may require smaller dt

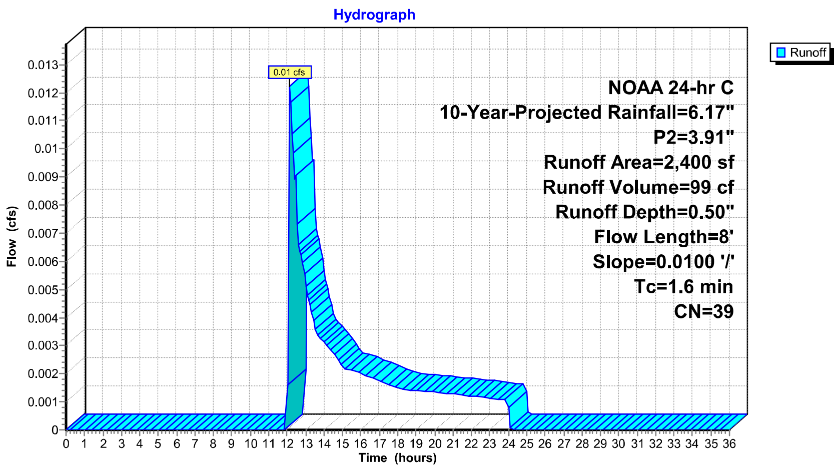
Runoff = 0.01 cfs @ 12.14 hrs, Volume= 99 cf, Depth= 0.50"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Projected Rainfall=6.17", P2=3.91"

Area (sf)	CN	Description
2,400	39	>75% Grass cover, Good, HSG A
2,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	8	0.0100	0.09		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 47S: SA North Undetained



Summary for Pond 49P: AG Bio Basin West

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 4.25" for 10-Year-Projected event
Inflow = 3.17 cfs @ 12.08 hrs, Volume= 9,909 cf
Outflow = 0.31 cfs @ 12.83 hrs, Volume= 9,909 cf, Atten= 90%, Lag= 45.5 min
Discarded = 0.25 cfs @ 12.83 hrs, Volume= 9,364 cf
Primary = 0.06 cfs @ 12.83 hrs, Volume= 545 cf
Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 7.43' @ 12.83 hrs Surf.Area= 1,865 sf Storage= 3,847 cf

Plug-Flow detention time= 121.9 min calculated for 9,909 cf (100% of inflow)
Center-of-Mass det. time= 121.8 min (871.3 - 749.6)

Volume	Invert	Avail.Storage	Storage Description
#1	5.10'	7,152 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

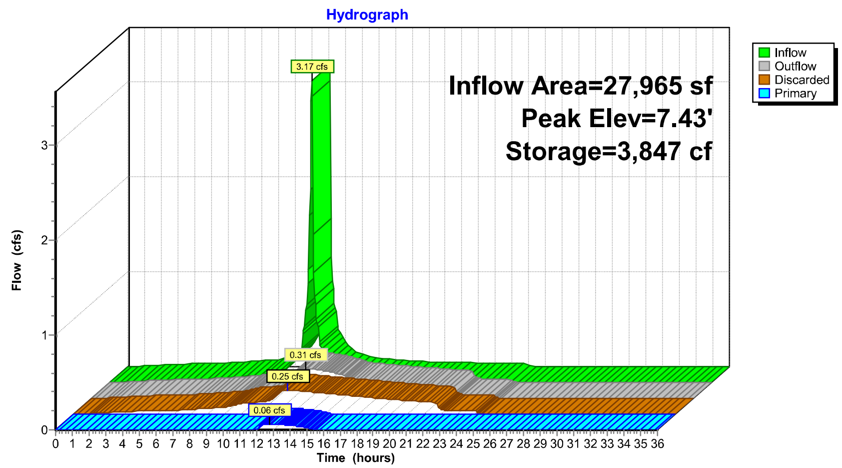
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.10	1,400	0	0
6.00	1,600	1,350	1,350
7.00	1,800	1,700	3,050
8.00	1,950	1,875	4,925
9.10	2,100	2,227	7,152

Device	Routing	Invert	Outlet Devices
#1	Primary	6.70'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	8.20'	**1.1' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	9.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	5.10'	**3.700 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.60'

Discarded OutFlow Max=0.25 cfs @ 12.83 hrs HW=7.43' (Free Discharge)
└─**4=Exfiltration** (Controls 0.25 cfs)

Primary OutFlow Max=0.06 cfs @ 12.83 hrs HW=7.43' (Free Discharge)
├─**1=Orifice/Grate** (Orifice Controls 0.06 cfs @ 3.92 fps)
├─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 49P: AG Bio Basin West



Summary for Pond 50P: UG Inf Basin

Inflow Area = 12,228 sf,100.00% Impervious, Inflow Depth = 5.93" for 10-Year-Projected event
Inflow = 1.91 cfs @ 12.09 hrs, Volume= 6,044 cf
Outflow = 0.15 cfs @ 13.04 hrs, Volume= 6,044 cf, Atten= 92%, Lag= 57.3 min
Discarded = 0.15 cfs @ 13.04 hrs, Volume= 6,044 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 7.11' @ 13.04 hrs Surf.Area= 2,708 sf Storage= 2,445 cf

Plug-Flow detention time= 133.0 min calculated for 6,036 cf (100% of inflow)
Center-of-Mass det. time= 132.9 min (876.0 - 743.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	5.50'	2,030 cf	**38.50'W x 70.33'L x 3.00'H Field A** 8,124 cf Overall - 3,049 cf Embedded = 5,074 cf x 40.0% Voids
#2A	5.83'	2,411 cf	**ADS N-12 24"** x 11 Inside #1 Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf Row Length Adjustment= +44.00' x 3.10 sf x 11 rows 36.83' Header x 3.10 sf x 2 = 228.4 cf Inside
		4,440 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.40'	**7.0" W x 2.5" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	5.50'	**1.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 3.20'

Discarded OutFlow Max=0.15 cfs @ 13.04 hrs HW=7.11' (Free Discharge)
└─**2=Exfiltration** (Controls 0.15 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=5.50' (Free Discharge)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 50P: UG Inf Basin - Chamber Wizard Field A

Chamber Model = ADS N-12 24" (ADS N-12® Pipe)
Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf
Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf
Row Length Adjustment= +44.00' x 3.10 sf x 11 rows

28.0" Wide + 13.4" Spacing = 41.4" C-C Row Spacing

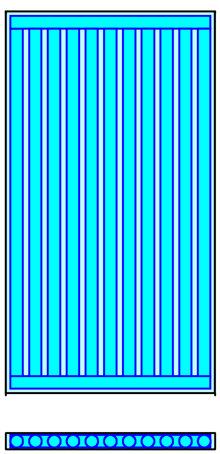
1 Chambers/Row x 20.00' Long +44.00' Row Adjustment +2.33' Header x 2 = 68.67' Row Length +10.0" End Stone x 2 = 70.33' Base Length
11 Rows x 28.0" Wide + 13.4" Spacing x 10 + 10.0" Side Stone x 2 = 38.50' Base Width
4.0" Stone Base + 28.0" Chamber Height + 4.0" Stone Cover = 3.00' Field Height

11 Chambers x 62.0 cf +44.00' Row Adjustment x 3.10 sf x 11 Rows + 36.83' Header x 3.10 sf x 2 = 2,410.8 cf Chamber Storage
11 Chambers x 78.4 cf +44.00' Row Adjustment x 3.92 sf x 11 Rows + 36.83' Header x 3.92 sf x 2 = 3,048.2 cf Displacement

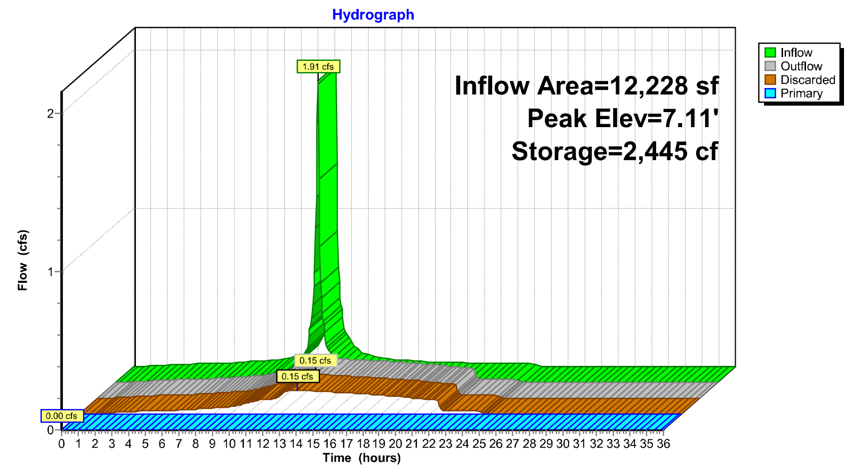
8,123.8 cf Field - 3,048.2 cf Chambers = 5,075.6 cf Stone x 40.0% Voids = 2,030.2 cf Stone Storage

Chamber Storage + Stone Storage = 4,441.0 cf = 0.102 af
Overall Storage Efficiency = 54.7%
Overall System Size = 70.33' x 38.50' x 3.00'

11 Chambers
300.9 cy Field
188.0 cy Stone



Pond 50P: UG Inf Basin



Summary for Pond 52P: AG Bio Basin East

Inflow Area = 43,765 sf, 71.99% Impervious, Inflow Depth = 4.41" for 10-Year-Projected event
Inflow = 5.13 cfs @ 12.08 hrs, Volume= 16,080 cf
Outflow = 0.14 cfs @ 15.12 hrs, Volume= 11,012 cf, Atten= 97%, Lag= 182.1 min
Discarded = 0.09 cfs @ 15.12 hrs, Volume= 9,026 cf
Primary = 0.05 cfs @ 15.12 hrs, Volume= 1,985 cf
Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 7.07' @ 15.12 hrs Surf.Area= 6,635 sf Storage= 10,216 cf

Plug-Flow detention time= 552.3 min calculated for 10,997 cf (68% of inflow)
Center-of-Mass det. time= 449.5 min (1,198.6 - 749.0)

Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	19,875 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

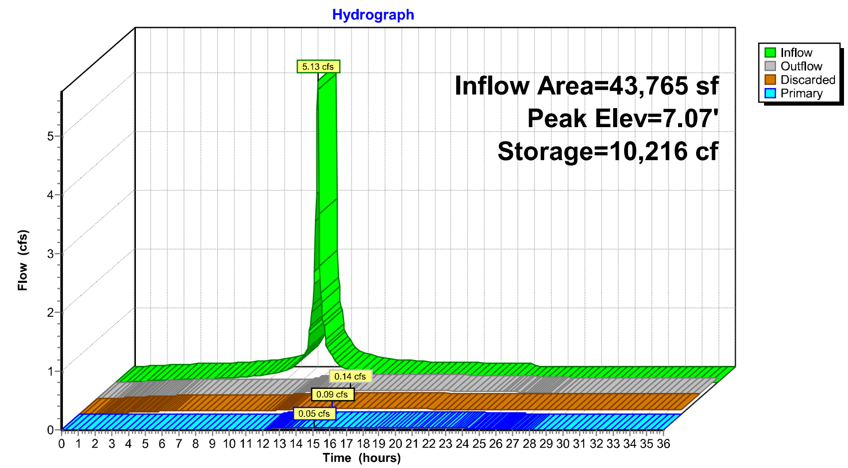
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.50	6,400	0	0
6.50	6,550	6,475	6,475
7.50	6,700	6,625	13,100
8.50	6,850	6,775	19,875

Device	Routing	Invert	Outlet Devices
#1	Primary	6.60'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	7.60'	**0.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	8.40'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	5.50'	**0.380 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 2.60'

Discarded OutFlow Max=0.09 cfs @ 15.12 hrs HW=7.07' (Free Discharge)
└─**4=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.05 cfs @ 15.12 hrs HW=7.07' (Free Discharge)
├─**1=Orifice/Grate** (Orifice Controls 0.05 cfs @ 3.03 fps)
├─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 52P: AG Bio Basin East

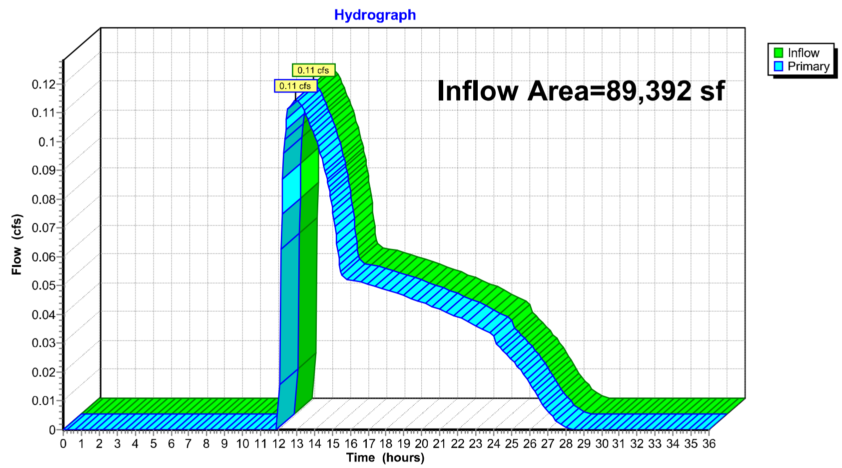


Summary for Link 51L: South Total

Inflow Area = 89,392 sf, 70.54% Impervious, Inflow Depth = 0.37" for 10-Year-Projected event
Inflow = 0.11 cfs @ 12.95 hrs, Volume= 2,754 cf
Primary = 0.11 cfs @ 12.95 hrs, Volume= 2,754 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 51L: South Total

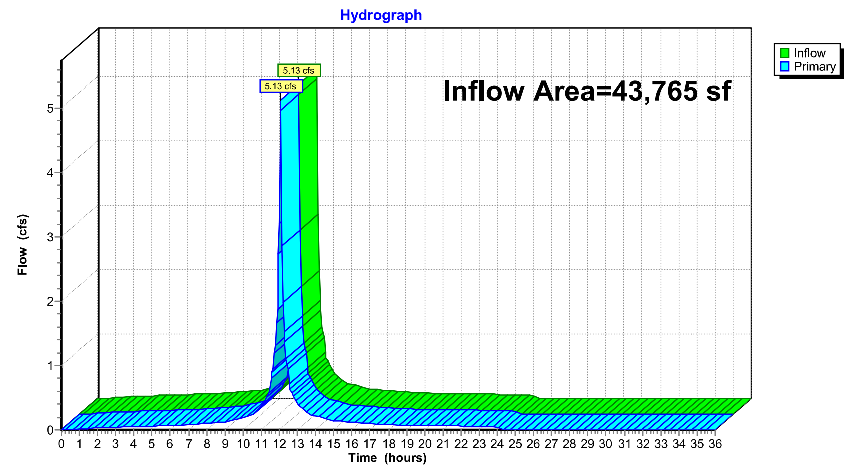


Summary for Link 52L: SA Basin East - Total

Inflow Area = 43,765 sf, 71.99% Impervious, Inflow Depth = 4.41" for 10-Year-Projected event
Inflow = 5.13 cfs @ 12.08 hrs, Volume= 16,080 cf
Primary = 5.13 cfs @ 12.08 hrs, Volume= 16,080 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 52P : AG Bio Basin East

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 52L: SA Basin East - Total

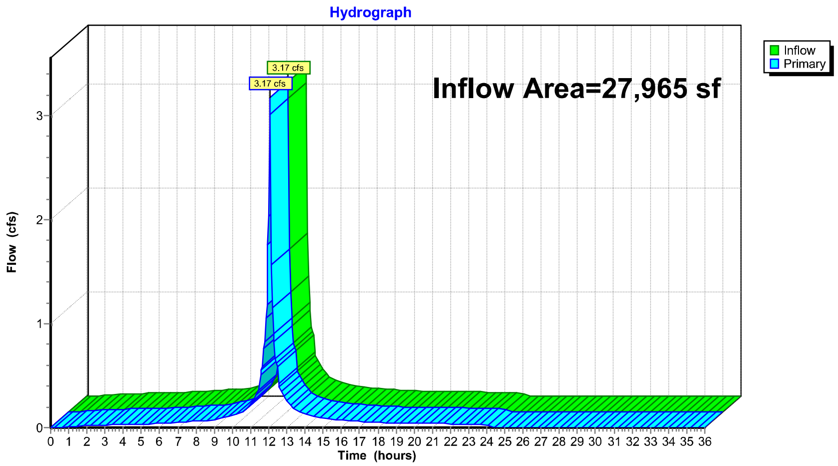


Summary for Link 53L: SA Basin West - Total

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 4.25" for 10-Year-Projected event
Inflow = 3.17 cfs @ 12.08 hrs, Volume= 9,909 cf
Primary = 3.17 cfs @ 12.08 hrs, Volume= 9,909 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 49P : AG Bio Basin West

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 53L: SA Basin West - Total

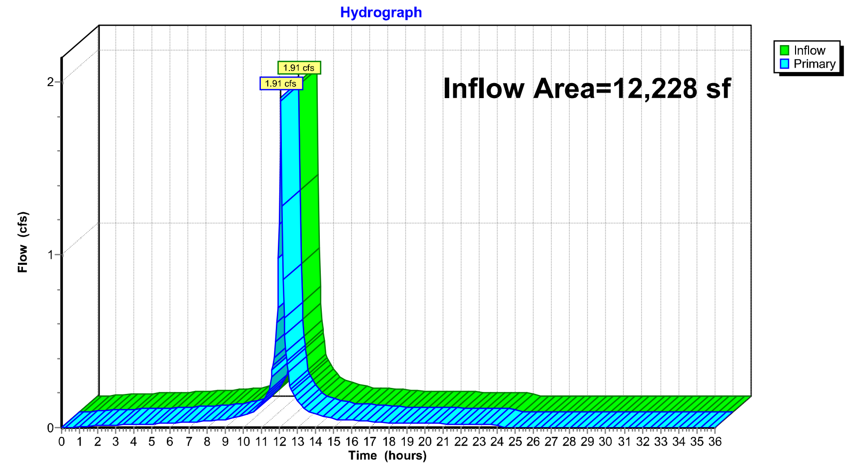


Summary for Link 54L: SA UG Basin Total

Inflow Area = 12,228 sf,100.00% Impervious, Inflow Depth = 5.93" for 10-Year-Projected event
Inflow = 1.91 cfs @ 12.09 hrs, Volume= 6,044 cf
Primary = 1.91 cfs @ 12.09 hrs, Volume= 6,044 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 50P : UG Inf Basin

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 54L: SA UG Basin Total



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Ex SA South Runoff Area=88,097 sf 0.00% Impervious Runoff Depth=0.47"
Flow Length=209' Tc=8.8 min CN=38 Runoff=0.30 cfs 3,456 cf

Subcatchment 13S: Ex SA North Runoff Area=3,695 sf 0.00% Impervious Runoff Depth=0.53"
Flow Length=17' Slope=0.0170 '/' Tc=2.3 min CN=39 Runoff=0.02 cfs 163 cf

Subcatchment 41S: SA Basin East Imp Runoff Area=31,508 sf 100.00% Impervious Runoff Depth=6.04"
Flow Length=168' Tc=1.5 min CN=98 Runoff=5.20 cfs 15,863 cf

Subcatchment 42S: SA Basin East Perv Runoff Area=12,257 sf 0.00% Impervious Runoff Depth=0.53"
Flow Length=20' Slope=0.0120 '/' Tc=3.0 min CN=39 Runoff=0.07 cfs 540 cf

Subcatchment 43S: SA Basin West Imp Runoff Area=19,325 sf 100.00% Impervious Runoff Depth=6.04"
Flow Length=174' Tc=1.2 min CN=98 Runoff=3.22 cfs 9,729 cf

Subcatchment 44S: SA Basin West Perv Runoff Area=8,640 sf 0.00% Impervious Runoff Depth=0.53"
Flow Length=60' Slope=0.0750 '/' Tc=3.5 min CN=39 Runoff=0.04 cfs 381 cf

Subcatchment 45S: SA South Undetained Runoff Area=5,434 sf 0.00% Impervious Runoff Depth=0.53"
Flow Length=18' Slope=0.0100 '/' Tc=3.0 min CN=39 Runoff=0.03 cfs 239 cf

Subcatchment 46S: SA UG Basin Roof Runoff Area=12,228 sf 100.00% Impervious Runoff Depth=6.04"
Flow Length=314' Tc=2.1 min CN=98 Runoff=1.94 cfs 6,156 cf

Subcatchment 47S: SA North Undetained Runoff Area=2,400 sf 0.00% Impervious Runoff Depth=0.53"
Flow Length=8' Slope=0.0100 '/' Tc=1.6 min CN=39 Runoff=0.02 cfs 106 cf

Pond 49P: AG Bio Basin West Peak Elev=7.48' Storage=3,938 cf Inflow=3.24 cfs 10,110 cf
Discarded=0.25 cfs 9,524 cf Primary=0.06 cfs 586 cf Outflow=0.32 cfs 10,110 cf

Pond 50P: UG Inf Basin Peak Elev=7.14' Storage=2,503 cf Inflow=1.94 cfs 6,156 cf
Discarded=0.15 cfs 6,156 cf Primary=0.00 cfs 0 cf Outflow=0.15 cfs 6,156 cf

Pond 52P: AG Bio Basin East Peak Elev=7.10' Storage=10,437 cf Inflow=5.23 cfs 16,403 cf
Discarded=0.09 cfs 9,091 cf Primary=0.05 cfs 2,128 cf Outflow=0.14 cfs 11,219 cf

Link 51L: South Total Inflow=0.12 cfs 2,954 cf
Primary=0.12 cfs 2,954 cf

Link 52L: SA Basin East - Total Inflow=5.23 cfs 16,403 cf
Primary=5.23 cfs 16,403 cf

Link 53L: SA Basin West - Total Inflow=3.24 cfs 10,110 cf
Primary=3.24 cfs 10,110 cf

Link 54L: SA UG Basin Total Inflow=1.94 cfs 6,156 cf
Primary=1.94 cfs 6,156 cf

Total Runoff Area = 183,584 sf Runoff Volume = 36,633 cf Average Runoff Depth = 2.39"
65.65% Pervious = 120,523 sf 34.35% Impervious = 63,061 sf

Summary for Subcatchment 2S: Ex SA South

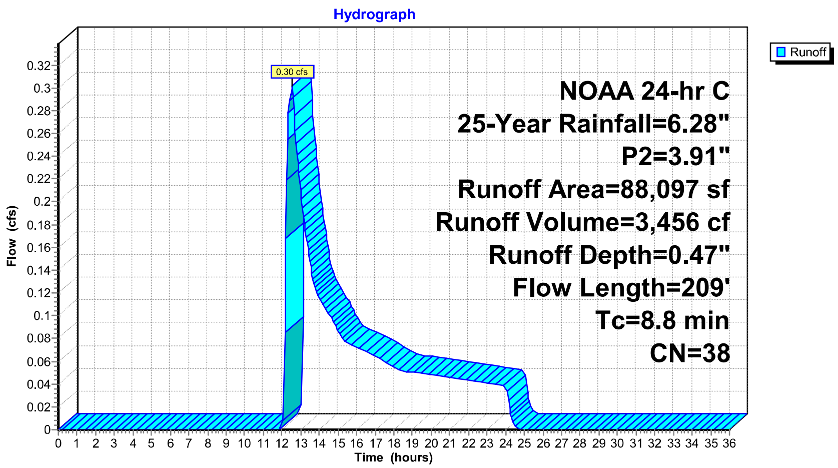
Runoff = 0.30 cfs @ 12.54 hrs, Volume= 3,456 cf, Depth= 0.47"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 25-Year Rainfall=6.28", P2=3.91"

Area (sf)	CN	Description
9,674	30	Woods, Good, HSG A
78,423	39	>75% Grass cover, Good, HSG A
88,097	38	Weighted Average
88,097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.0290	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.91"
1.2	109	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
8.8	209	Total			

Subcatchment 2S: Ex SA South



Summary for Subcatchment 13S: Ex SA North

[49] Hint: Tc<2dt may require smaller dt

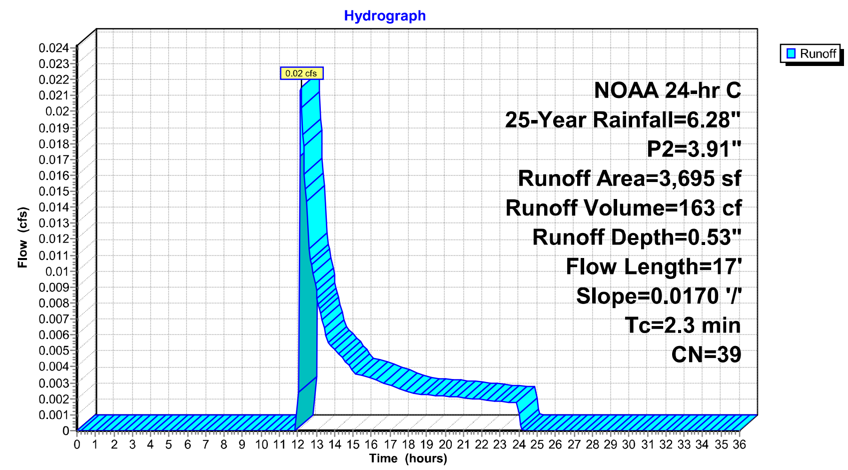
Runoff = 0.02 cfs @ 12.16 hrs, Volume= 163 cf, Depth= 0.53"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 25-Year Rainfall=6.28", P2=3.91"

Area (sf)	CN	Description
3,695	39	>75% Grass cover, Good, HSG A
3,695		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	17	0.0170	0.12		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 13S: Ex SA North



Summary for Subcatchment 41S: SA Basin East Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.018
n = 0.011

L = [100 * sqrt(0.018)]/.011
L = 1,219 FT

L > 100 FT

Therefore, use 100 FT

---

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 147% of capacity of segment #3

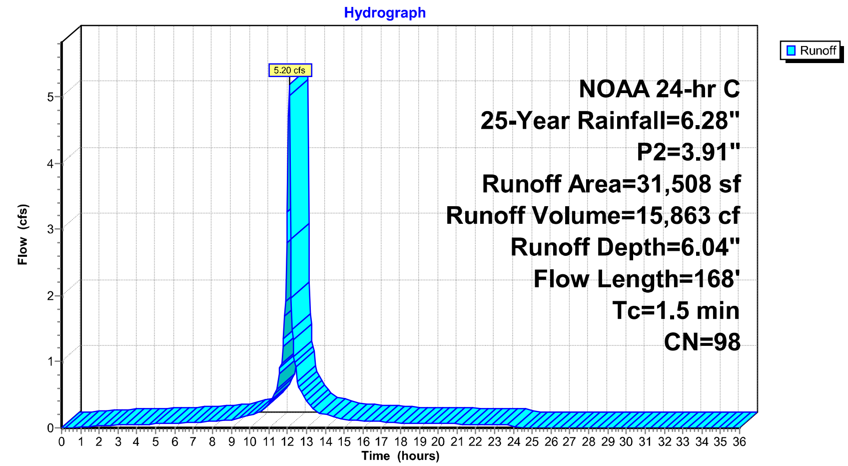
Runoff = 5.20 cfs @ 12.08 hrs, Volume= 15,863 cf, Depth= 6.04"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 25-Year Rainfall=6.28", P2=3.91"

Area (sf)	CN	Description
19,281	98	Paved parking, HSG A
12,227	98	Roofs, HSG A
31,508	98	Weighted Average
31,508		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0180	1.46		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.91"
0.2	28	0.0180	2.72		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
0.2	40	0.0030	2.88	3.54	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
1.5	168	Total			

Subcatchment 41S: SA Basin East Imp



Summary for Subcatchment 42S: SA Basin East Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.012
n = 0.150

L = [100 * sqrt(0.012)]/.150
L = 73 FT

L < 100 FT; However, use 20 FT

[49] Hint: Tc<2dt may require smaller dt

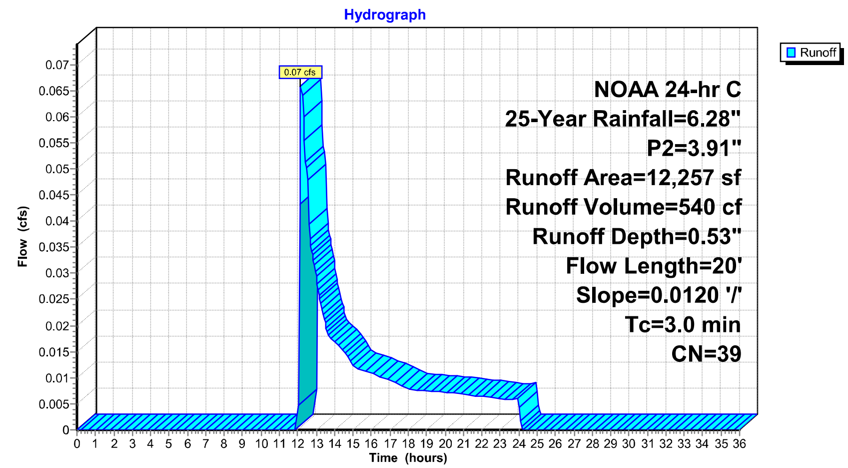
Runoff = 0.07 cfs @ 12.15 hrs, Volume= 540 cf, Depth= 0.53"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 25-Year Rainfall=6.28", P2=3.91"

Area (sf)	CN	Description
12,257	39	>75% Grass cover, Good, HSG A
12,257		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	20	0.0120	0.11		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 42S: SA Basin East Perv



Summary for Subcatchment 43S: SA Basin West Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.025
n = 0.011

L = [100 * sqrt(0.025)]/.011
L = 1,437 FT

L > 100 FT

Therefore, use 73 FT

---

[49] Hint: Tc<2dt may require smaller dt

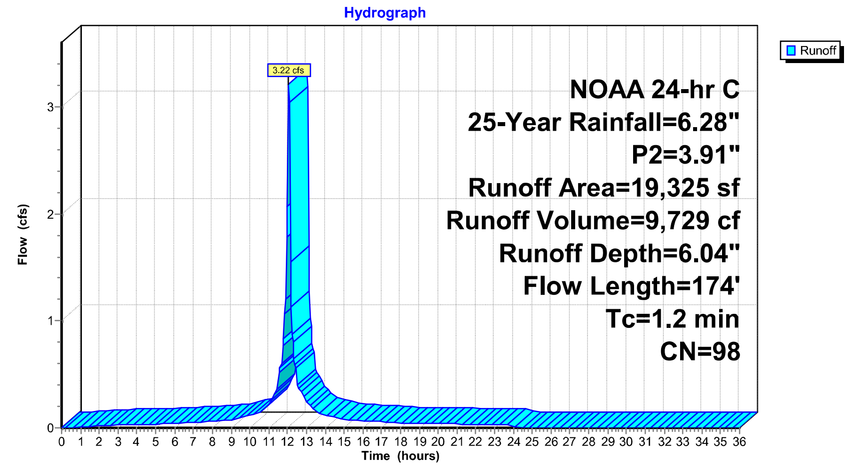
Runoff = 3.22 cfs @ 12.08 hrs, Volume= 9,729 cf, Depth= 6.04"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 25-Year Rainfall=6.28", P2=3.91"

Area (sf)	CN	Description
19,325	98	Paved parking, HSG A
19,325		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	73	0.0250	1.56		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.91"
0.4	97	0.0050	3.72	4.57	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
0.0	4	0.0030	3.75	4.60	**Pipe Channel, 15" HDPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010
1.2	174	Total			

Subcatchment 43S: SA Basin West Imp



Summary for Subcatchment 44S: SA Basin West Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.075
n = 0.150

L = [100 * sqrt(0.075)]/.150
L = 182 FT

L > 100 FT

Therefore, use 60 FT

[49] Hint: Tc<2dt may require smaller dt

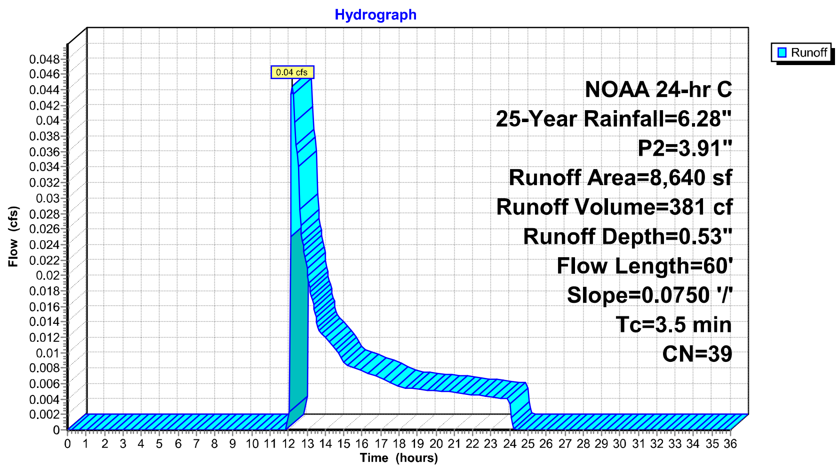
Runoff = 0.04 cfs @ 12.21 hrs, Volume= 381 cf, Depth= 0.53"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 25-Year Rainfall=6.28", P2=3.91"

Area (sf)	CN	Description
8,640	39	>75% Grass cover, Good, HSG A
8,640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	60	0.0750	0.29		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 44S: SA Basin West Perv



Summary for Subcatchment 45S: SA South Undetained

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.150

L = [100 * sqrt(0.010)]/.150
L = 67 FT

L < 100 FT; However, use 18 FT

[49] Hint: Tc<2dt may require smaller dt

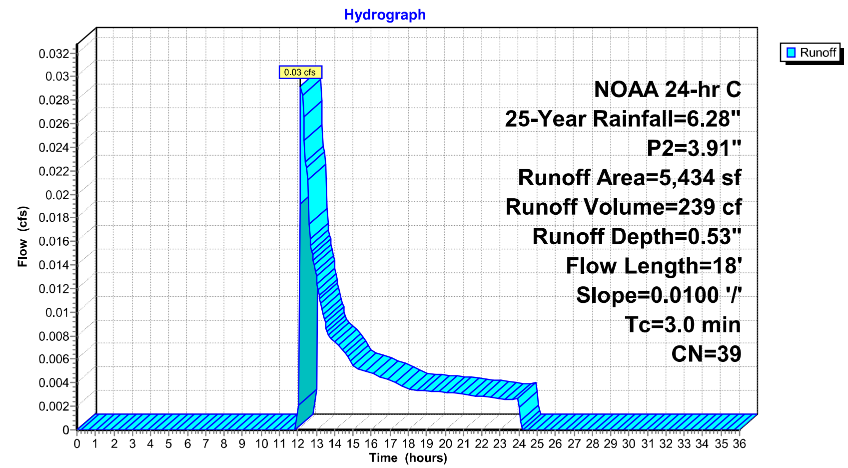
Runoff = 0.03 cfs @ 12.15 hrs, Volume= 239 cf, Depth= 0.53"
Routed to Link 51L : South Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 25-Year Rainfall=6.28", P2=3.91"

Area (sf)	CN	Description
5,434	39	>75% Grass cover, Good, HSG A
5,434		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	18	0.0100	0.10		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 45S: SA South Undetained



Summary for Subcatchment 46S: SA UG Basin Roof

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.011

L = [100 * sqrt(0.010)]/.011
L = 909 FT

L > 100 FT

Therefore, use 78 FT

---

[49] Hint: Tc<2dt may require smaller dt

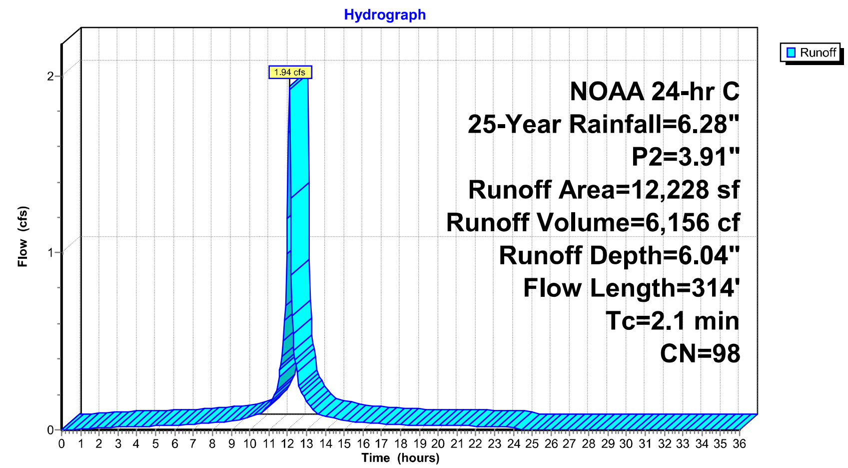
Runoff = 1.94 cfs @ 12.09 hrs, Volume= 6,156 cf, Depth= 6.04"
Routed to Link 54L : SA UG Basin Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 25-Year Rainfall=6.28", P2=3.91"

Area (sf)	CN	Description
12,228	98	Roofs, HSG A
12,228		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	78	0.0100	1.10		**Sheet Flow, Roof** Smooth surfaces n= 0.011 P2= 3.91"
0.9	236	0.0050	4.17	3.28	**Pipe Channel, 12" HDPE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010
2.1	314	Total			

Subcatchment 46S: SA UG Basin Roof



Summary for Subcatchment 47S: SA North Undetained

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.150

L = [100 * sqrt(0.010)]/.150
L = 66 FT

L > 100 FT; However, use 8 FT

---

[49] Hint: Tc<2dt may require smaller dt

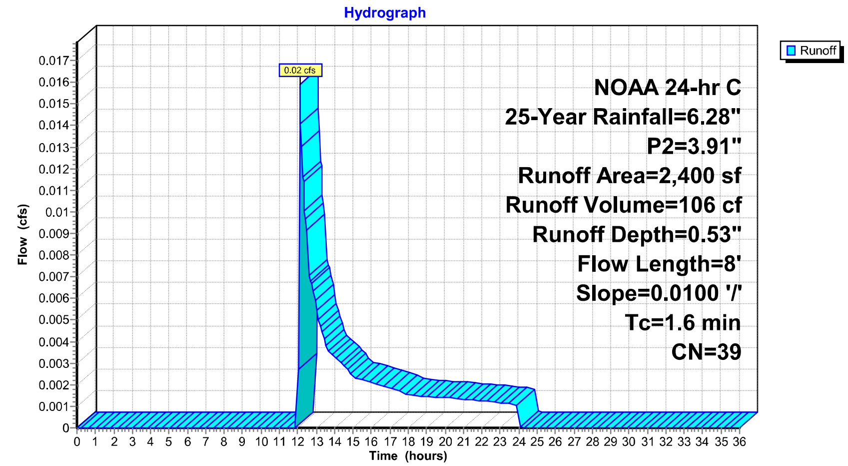
Runoff = 0.02 cfs @ 12.12 hrs, Volume= 106 cf, Depth= 0.53"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 25-Year Rainfall=6.28", P2=3.91"

Area (sf)	CN	Description
2,400	39	>75% Grass cover, Good, HSG A
2,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	8	0.0100	0.09		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 47S: SA North Undetained



Summary for Pond 49P: AG Bio Basin West

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 4.34" for 25-Year event
Inflow = 3.24 cfs @ 12.08 hrs, Volume= 10,110 cf
Outflow = 0.32 cfs @ 12.84 hrs, Volume= 10,110 cf, Atten= 90%, Lag= 45.8 min
Discarded = 0.25 cfs @ 12.84 hrs, Volume= 9,524 cf
Primary = 0.06 cfs @ 12.84 hrs, Volume= 586 cf
Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 7.48' @ 12.84 hrs Surf.Area= 1,873 sf Storage= 3,938 cf

Plug-Flow detention time= 123.4 min calculated for 10,096 cf (100% of inflow)
Center-of-Mass det. time= 123.3 min (872.8 - 749.5)

Volume	Invert	Avail.Storage	Storage Description
#1	5.10'	7,152 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

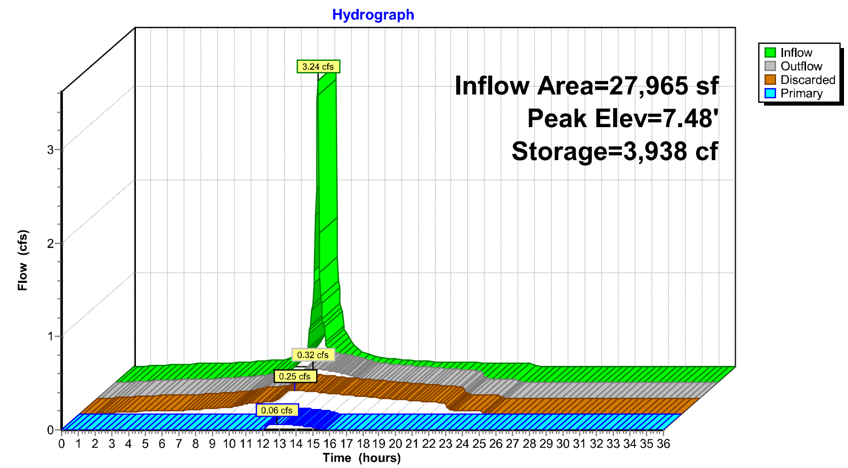
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.10	1,400	0	0
6.00	1,600	1,350	1,350
7.00	1,800	1,700	3,050
8.00	1,950	1,875	4,925
9.10	2,100	2,227	7,152

Device	Routing	Invert	Outlet Devices
#1	Primary	6.70'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	8.20'	**1.1' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	9.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	5.10'	**3.700 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.60'

Discarded OutFlow Max=0.25 cfs @ 12.84 hrs HW=7.48' (Free Discharge)
└─**4=Exfiltration** (Controls 0.25 cfs)

Primary OutFlow Max=0.06 cfs @ 12.84 hrs HW=7.48' (Free Discharge)
├─**1=Orifice/Grate** (Orifice Controls 0.06 cfs @ 4.06 fps)
├─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 49P: AG Bio Basin West



Summary for Pond 50P: UG Inf Basin

Inflow Area = 12,228 sf,100.00% Impervious, Inflow Depth = 6.04" for 25-Year event
Inflow = 1.94 cfs @ 12.09 hrs, Volume= 6,156 cf
Outflow = 0.15 cfs @ 13.05 hrs, Volume= 6,156 cf, Atten= 92%, Lag= 57.8 min
Discarded = 0.15 cfs @ 13.05 hrs, Volume= 6,156 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 7.14' @ 13.05 hrs Surf.Area= 2,708 sf Storage= 2,503 cf

Plug-Flow detention time= 135.8 min calculated for 6,148 cf (100% of inflow)
Center-of-Mass det. time= 135.6 min (878.5 - 742.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	5.50'	2,030 cf	**38.50'W x 70.33'L x 3.00'H Field A** 8,124 cf Overall - 3,049 cf Embedded = 5,074 cf x 40.0% Voids
#2A	5.83'	2,411 cf	**ADS N-12 24"** x 11 Inside #1 Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf Row Length Adjustment= +44.00' x 3.10 sf x 11 rows 36.83' Header x 3.10 sf x 2 = 228.4 cf Inside
		4,440 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.40'	**7.0" W x 2.5" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	5.50'	**1.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 3.20'

Discarded OutFlow Max=0.15 cfs @ 13.05 hrs HW=7.14' (Free Discharge)
└—**2=Exfiltration** (Controls 0.15 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=5.50' (Free Discharge)
└—**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 50P: UG Inf Basin - Chamber Wizard Field A

Chamber Model = ADS N-12 24" (ADS N-12® Pipe)
Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf
Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf
Row Length Adjustment= +44.00' x 3.10 sf x 11 rows

28.0" Wide + 13.4" Spacing = 41.4" C-C Row Spacing

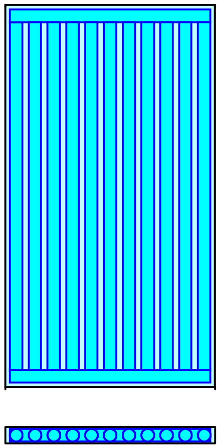
1 Chambers/Row x 20.00' Long +44.00' Row Adjustment +2.33' Header x 2 = 68.67' Row Length +10.0" End Stone x 2 = 70.33' Base Length
11 Rows x 28.0" Wide + 13.4" Spacing x 10 + 10.0" Side Stone x 2 = 38.50' Base Width
4.0" Stone Base + 28.0" Chamber Height + 4.0" Stone Cover = 3.00' Field Height

11 Chambers x 62.0 cf +44.00' Row Adjustment x 3.10 sf x 11 Rows + 36.83' Header x 3.10 sf x 2 = 2,410.8 cf Chamber Storage
11 Chambers x 78.4 cf +44.00' Row Adjustment x 3.92 sf x 11 Rows + 36.83' Header x 3.92 sf x 2 = 3,048.2 cf Displacement

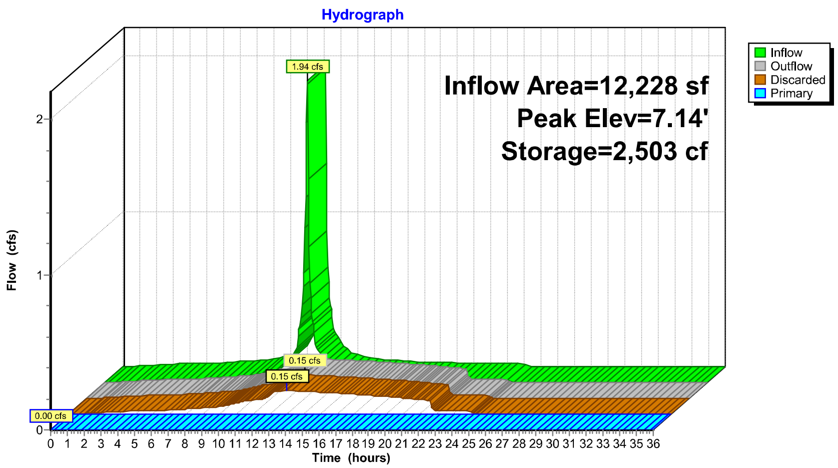
8,123.8 cf Field - 3,048.2 cf Chambers = 5,075.6 cf of Stone x 40.0% Voids = 2,030.2 cf Stone Storage

Chamber Storage + Stone Storage = 4,441.0 cf = 0.102 af
Overall Storage Efficiency = 54.7%
Overall System Size = 70.33' x 38.50' x 3.00'

11 Chambers
300.9 cy Field
188.0 cy Stone



Pond 50P: UG Inf Basin



Summary for Pond 52P: AG Bio Basin East

```
Inflow Area =      43,765 sf,  71.99% Impervious,  Inflow Depth =  4.50"   for 25-Year event
Inflow      =      5.23 cfs @  12.08 hrs,  Volume=        16,403 cf
Outflow     =      0.14 cfs @  15.12 hrs,  Volume=        11,219 cf,  Atten= 97%,  Lag= 182.4 min
Discarded   =      0.09 cfs @  15.12 hrs,  Volume=         9,091 cf
Primary     =      0.05 cfs @  15.12 hrs,  Volume=         2,128 cf
   Routed to Link 51L : South Total
```

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 7.10' @ 15.12 hrs Surf.Area= 6,640 sf Storage= 10,437 cf

Plug-Flow detention time= 553.8 min calculated for 11,219 cf (68% of inflow)
Center-of-Mass det. time= 449.6 min (1,198.6 - 748.9)

Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	19,875 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

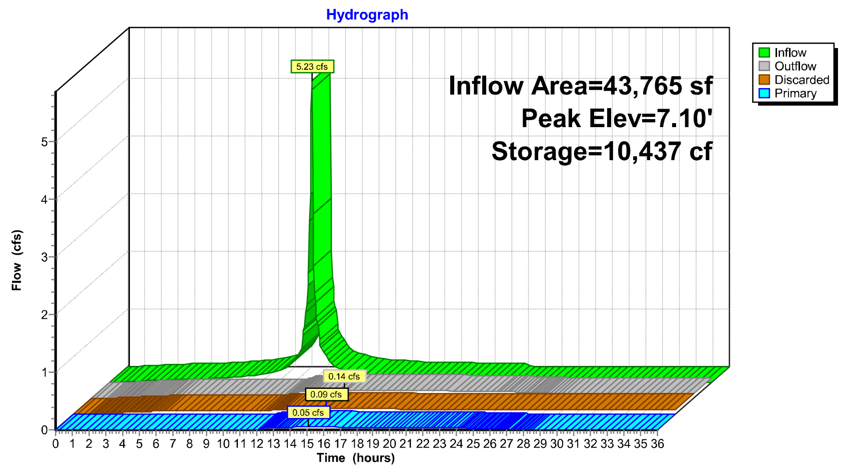
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.50	6,400	0	0
6.50	6,550	6,475	6,475
7.50	6,700	6,625	13,100
8.50	6,850	6,775	19,875

Device	Routing	Invert	Outlet Devices
#1	Primary	6.60'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	7.60'	**0.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	8.40'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	5.50'	**0.380 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 2.60'

Discarded OutFlow Max=0.09 cfs @ 15.12 hrs HW=7.10' (Free Discharge)
└─**4=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.05 cfs @ 15.12 hrs HW=7.10' (Free Discharge)
├─**1=Orifice/Grate** (Orifice Controls 0.05 cfs @ 3.16 fps)
├─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 52P: AG Bio Basin East

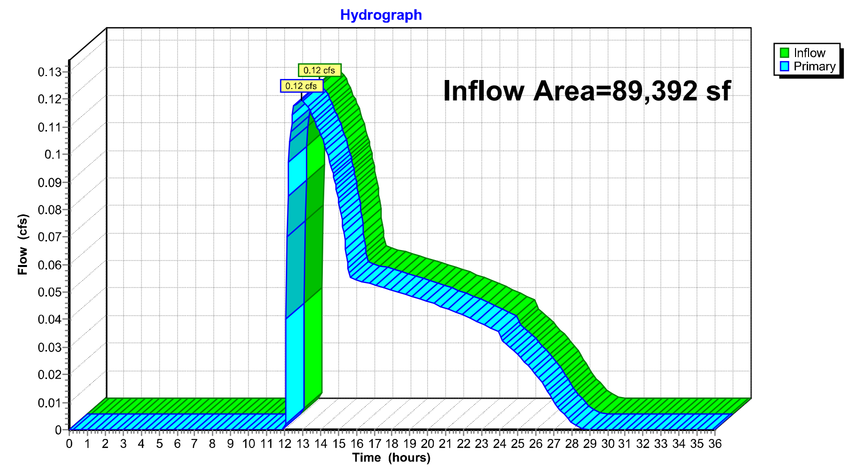


Summary for Link 51L: South Total

Inflow Area = 89,392 sf, 70.54% Impervious, Inflow Depth = 0.40" for 25-Year event
Inflow = 0.12 cfs @ 12.92 hrs, Volume= 2,954 cf
Primary = 0.12 cfs @ 12.92 hrs, Volume= 2,954 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 51L: South Total

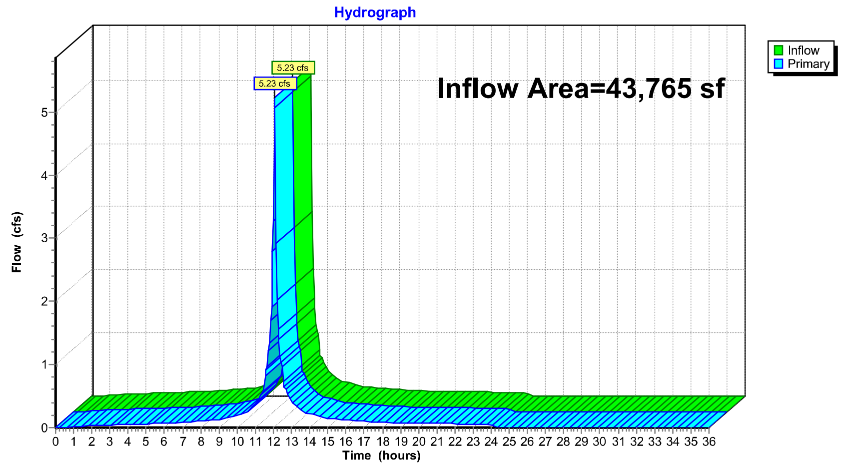


Summary for Link 52L: SA Basin East - Total

Inflow Area = 43,765 sf, 71.99% Impervious, Inflow Depth = 4.50" for 25-Year event
Inflow = 5.23 cfs @ 12.08 hrs, Volume= 16,403 cf
Primary = 5.23 cfs @ 12.08 hrs, Volume= 16,403 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 52P : AG Bio Basin East

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 52L: SA Basin East - Total

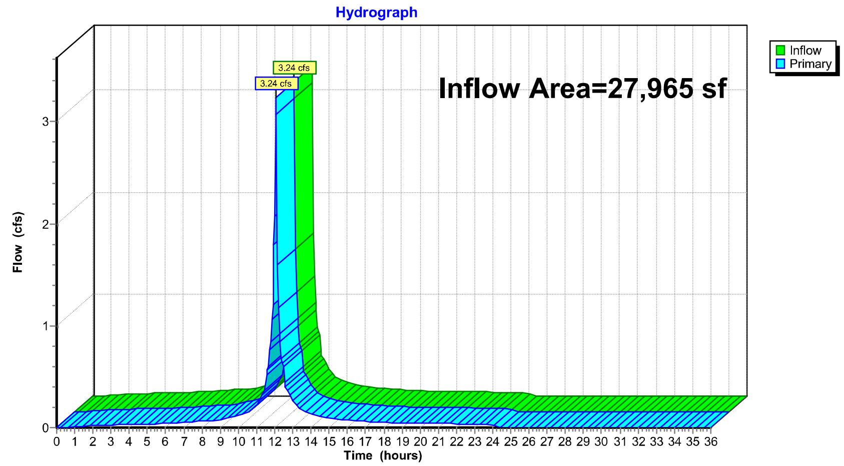


Summary for Link 53L: SA Basin West - Total

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 4.34" for 25-Year event
Inflow = 3.24 cfs @ 12.08 hrs, Volume= 10,110 cf
Primary = 3.24 cfs @ 12.08 hrs, Volume= 10,110 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 49P : AG Bio Basin West

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 53L: SA Basin West - Total

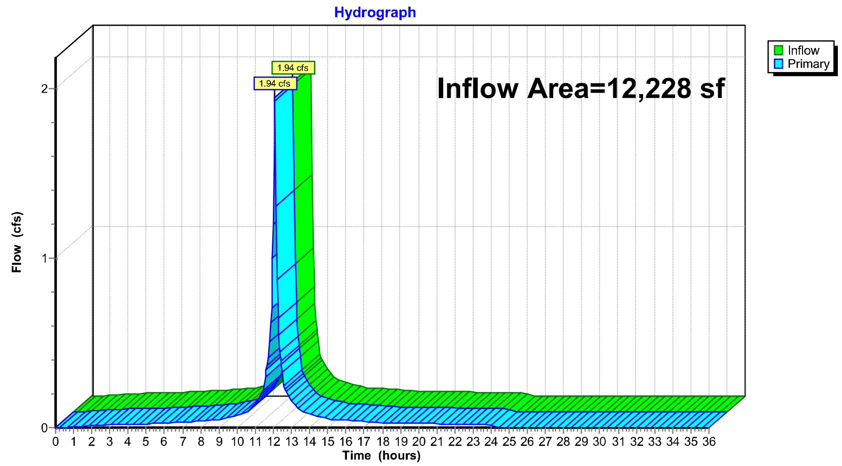


Summary for Link 54L: SA UG Basin Total

Inflow Area = 12,228 sf,100.00% Impervious, Inflow Depth = 6.04" for 25-Year event
Inflow = 1.94 cfs @ 12.09 hrs, Volume= 6,156 cf
Primary = 1.94 cfs @ 12.09 hrs, Volume= 6,156 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 50P : UG Inf Basin

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 54L: SA UG Basin Total



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Ex SA South Runoff Area=88,097 sf 0.00% Impervious Runoff Depth=1.47"
Flow Length=209' Tc=9.4 min CN=38 Runoff=1.76 cfs 10,791 cf

Subcatchment 13S: Ex SA North Runoff Area=3,695 sf 0.00% Impervious Runoff Depth=1.58"
Flow Length=17' Slope=0.0170 '/' Tc=2.5 min CN=39 Runoff=0.14 cfs 486 cf

Subcatchment 41S: SA Basin East Imp Runoff Area=31,508 sf 100.00% Impervious Runoff Depth=8.71"
Flow Length=168' Tc=1.6 min CN=98 Runoff=7.38 cfs 22,869 cf

Subcatchment 42S: SA Basin East Perv Runoff Area=12,257 sf 0.00% Impervious Runoff Depth=1.58"
Flow Length=20' Slope=0.0120 '/' Tc=3.2 min CN=39 Runoff=0.44 cfs 1,613 cf

Subcatchment 43S: SA Basin West Imp Runoff Area=19,325 sf 100.00% Impervious Runoff Depth=8.71"
Flow Length=174' Tc=1.2 min CN=98 Runoff=4.60 cfs 14,026 cf

Subcatchment 44S: SA Basin West Perv Runoff Area=8,640 sf 0.00% Impervious Runoff Depth=1.58"
Flow Length=60' Slope=0.0750 '/' Tc=3.7 min CN=39 Runoff=0.29 cfs 1,137 cf

Subcatchment 45S: SA South Undetained Runoff Area=5,434 sf 0.00% Impervious Runoff Depth=1.58"
Flow Length=18' Slope=0.0100 '/' Tc=3.2 min CN=39 Runoff=0.19 cfs 715 cf

Subcatchment 46S: SA UG Basin Roof Runoff Area=12,228 sf 100.00% Impervious Runoff Depth=8.71"
Flow Length=314' Tc=2.2 min CN=98 Runoff=2.76 cfs 8,875 cf

Subcatchment 47S: SA North Undetained Runoff Area=2,400 sf 0.00% Impervious Runoff Depth=1.58"
Flow Length=8' Slope=0.0100 '/' Tc=1.7 min CN=39 Runoff=0.10 cfs 316 cf

Pond 49P: AG Bio Basin West Peak Elev=8.46' Storage=5,835 cf Inflow=4.83 cfs 15,163 cf
Discarded=0.31 cfs 12,763 cf Primary=0.55 cfs 2,401 cf Outflow=0.86 cfs 15,163 cf

Pond 50P: UG Inf Basin Peak Elev=7.69' Storage=3,512 cf Inflow=2.76 cfs 8,875 cf
Discarded=0.17 cfs 8,014 cf Primary=0.25 cfs 862 cf Outflow=0.42 cfs 8,875 cf

Pond 52P: AG Bio Basin East Peak Elev=7.83' Storage=15,329 cf Inflow=7.77 cfs 24,482 cf
Discarded=0.11 cfs 10,354 cf Primary=0.25 cfs 6,896 cf Outflow=0.35 cfs 17,250 cf

Link 51L: South Total Inflow=0.94 cfs 10,874 cf
Primary=0.94 cfs 10,874 cf

Link 52L: SA Basin East - Total Inflow=7.77 cfs 24,482 cf
Primary=7.77 cfs 24,482 cf

Link 53L: SA Basin West - Total Inflow=4.83 cfs 15,163 cf
Primary=4.83 cfs 15,163 cf

Link 54L: SA UG Basin Total Inflow=2.76 cfs 8,875 cf
Primary=2.76 cfs 8,875 cf

Total Runoff Area = 183,584 sf Runoff Volume = 60,828 cf Average Runoff Depth = 3.98"
65.65% Pervious = 120,523 sf 34.35% Impervious = 63,061 sf

Summary for Subcatchment 2S: Ex SA South

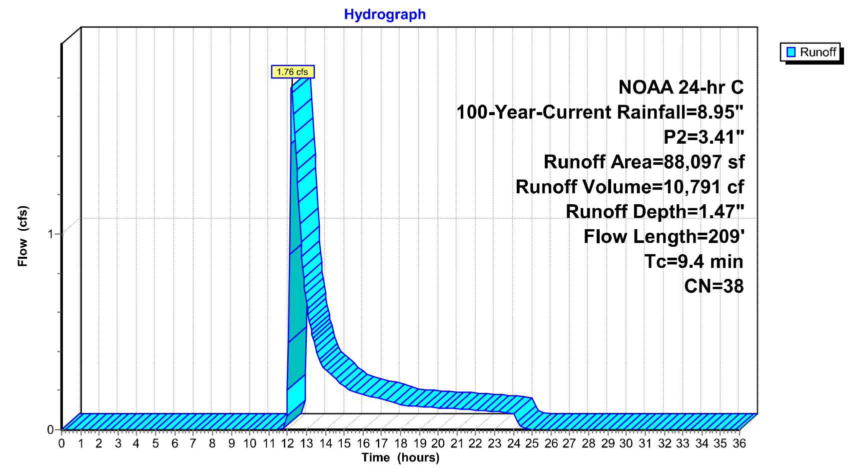
Runoff = 1.76 cfs @ 12.23 hrs, Volume= 10,791 cf, Depth= 1.47"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Current Rainfall=8.95", P2=3.41"

Area (sf)	CN	Description
9,674	30	Woods, Good, HSG A
78,423	39	>75% Grass cover, Good, HSG A
88,097	38	Weighted Average
88,097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0290	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.41"
1.2	109	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
9.4	209	Total			

Subcatchment 2S: Ex SA South



Summary for Subcatchment 13S: Ex SA North

[49] Hint: Tc<2dt may require smaller dt

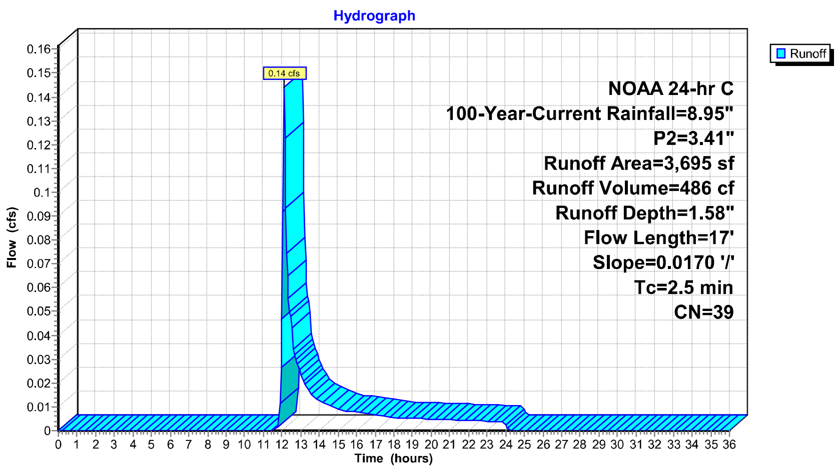
Runoff = 0.14 cfs @ 12.11 hrs, Volume= 486 cf, Depth= 1.58"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Current Rainfall=8.95", P2=3.41"

Area (sf)	CN	Description
3,695	39	>75% Grass cover, Good, HSG A
3,695		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	17	0.0170	0.12		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.41"

Subcatchment 13S: Ex SA North



Summary for Subcatchment 41S: SA Basin East Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.018
n = 0.011

L = [100 * sqrt(0.018)]/.011
L = 1,219 FT

L > 100 FT

Therefore, use 100 FT

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 209% of capacity of segment #3

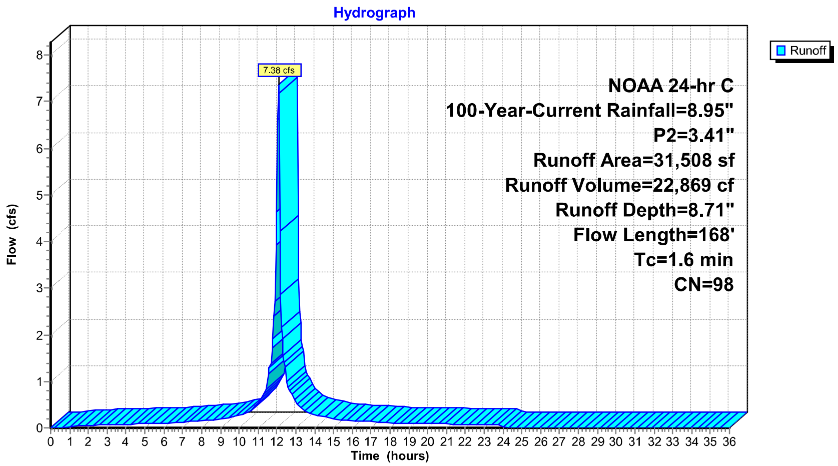
Runoff = 7.38 cfs @ 12.08 hrs, Volume= 22,869 cf, Depth= 8.71"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Current Rainfall=8.95", P2=3.41"

Area (sf)	CN	Description
19,281	98	Paved parking, HSG A
12,227	98	Roofs, HSG A
31,508	98	Weighted Average
31,508		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0180	1.36		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.41"
0.2	28	0.0180	2.72		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
0.2	40	0.0030	2.88	3.54	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
1.6	168	Total			

Subcatchment 41S: SA Basin East Imp



Summary for Subcatchment 42S: SA Basin East Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.012
n = 0.150

L = [100 * sqrt(0.012)]/.150
L = 73 FT

L < 100 FT; However, use 20 FT

---

[49] Hint: Tc<2dt may require smaller dt

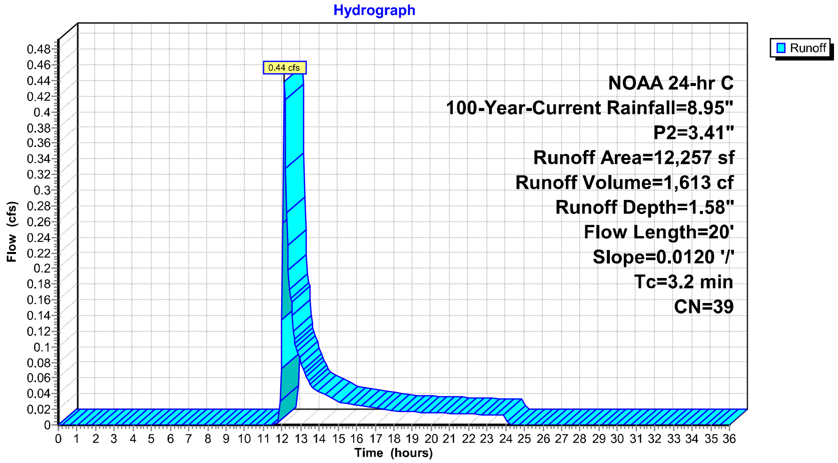
Runoff = 0.44 cfs @ 12.12 hrs, Volume= 1,613 cf, Depth= 1.58"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Current Rainfall=8.95", P2=3.41"

Area (sf)	CN	Description
12,257	39	>75% Grass cover, Good, HSG A
12,257		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	20	0.0120	0.10		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.41"

Subcatchment 42S: SA Basin East Perv



Summary for Subcatchment 43S: SA Basin West Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.025
n = 0.011

L = [100 * sqrt(0.025)]/.011
L = 1,437 FT

L > 100 FT

Therefore, use 73 FT

---

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 101% of capacity of segment #2

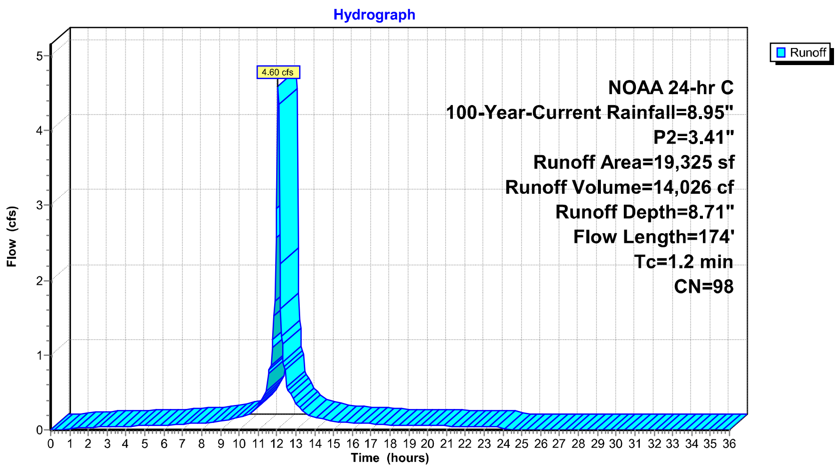
Runoff = 4.60 cfs @ 12.08 hrs, Volume= 14,026 cf, Depth= 8.71"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Current Rainfall=8.95", P2=3.41"

Area (sf)	CN	Description
19,325	98	Paved parking, HSG A
19,325		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	73	0.0250	1.46		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.41"
0.4	97	0.0050	3.72	4.57	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
0.0	4	0.0030	3.75	4.60	**Pipe Channel, 15" HDPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010
1.2	174	Total			

Subcatchment 43S: SA Basin West Imp



Summary for Subcatchment 44S: SA Basin West Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.075
n = 0.150

L = [100 * sqrt(0.075)]/.150
L = 182 FT

L > 100 FT

Therefore, use 60 FT

---

[49] Hint: Tc<2dt may require smaller dt

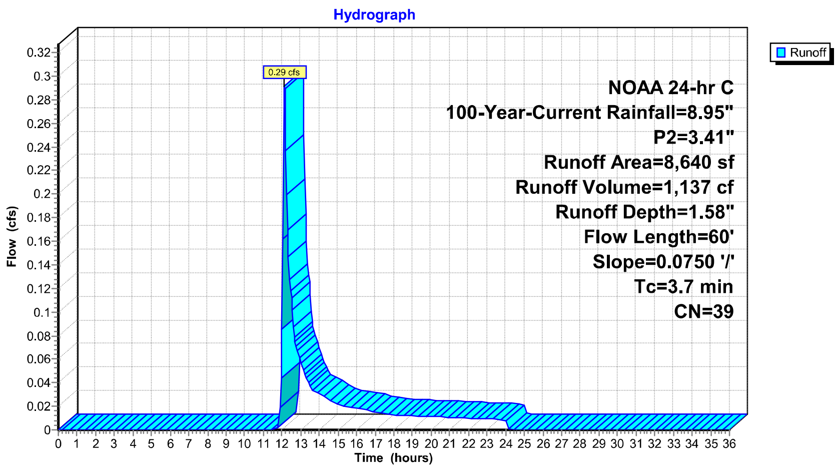
Runoff = 0.29 cfs @ 12.14 hrs, Volume= 1,137 cf, Depth= 1.58"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Current Rainfall=8.95", P2=3.41"

Area (sf)	CN	Description
8,640	39	>75% Grass cover, Good, HSG A
8,640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	60	0.0750	0.27		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.41"

Subcatchment 44S: SA Basin West Perv



Summary for Subcatchment 45S: SA South Undetained

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.150

L = [100 * sqrt(0.010)]/.150
L = 67 FT

L < 100 FT; However, use 18 FT

---

[49] Hint: Tc<2dt may require smaller dt

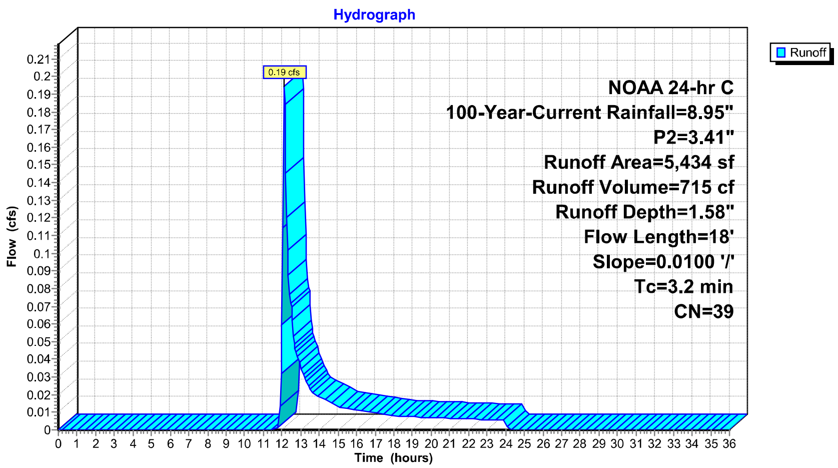
Runoff = 0.19 cfs @ 12.12 hrs, Volume= 715 cf, Depth= 1.58"
Routed to Link 51L : South Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Current Rainfall=8.95", P2=3.41"

Area (sf)	CN	Description
5,434	39	>75% Grass cover, Good, HSG A
5,434		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	18	0.0100	0.09		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.41"

Subcatchment 45S: SA South Undetained



Summary for Subcatchment 46S: SA UG Basin Roof

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.011

L = [100 * sqrt(0.010)]/.011
L = 909 FT

L > 100 FT

Therefore, use 78 FT

---

[49] Hint: Tc<2dt may require smaller dt

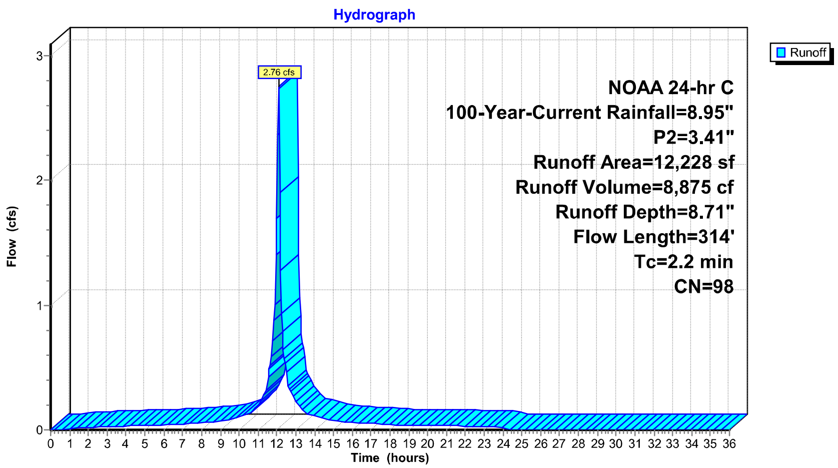
Runoff = 2.76 cfs @ 12.09 hrs, Volume= 8,875 cf, Depth= 8.71"
Routed to Link 54L : SA UG Basin Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Current Rainfall=8.95", P2=3.41"

Area (sf)	CN	Description
12,228	98	Roofs, HSG A
12,228		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	78	0.0100	1.02		**Sheet Flow, Roof** Smooth surfaces n= 0.011 P2= 3.41"
0.9	236	0.0050	4.17	3.28	**Pipe Channel, 12" HDPE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010
2.2	314	Total			

Subcatchment 46S: SA UG Basin Roof



Summary for Subcatchment 47S: SA North Undetained

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.150

L = [100 * sqrt(0.010)]/.150
L = 66 FT

L > 100 FT; However, use 8 FT

---

[49] Hint: Tc<2dt may require smaller dt

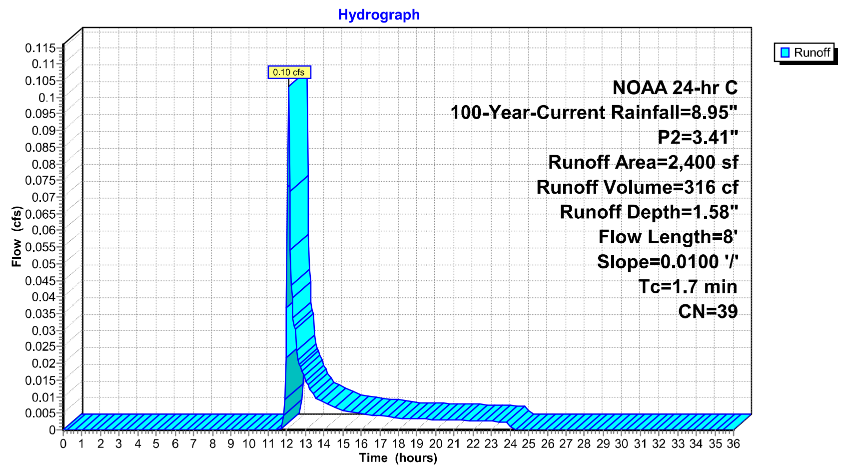
Runoff = 0.10 cfs @ 12.10 hrs, Volume= 316 cf, Depth= 1.58"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Current Rainfall=8.95", P2=3.41"

Area (sf)	CN	Description
2,400	39	>75% Grass cover, Good, HSG A
2,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	8	0.0100	0.08		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.41"

Subcatchment 47S: SA North Undetained



Summary for Pond 49P: AG Bio Basin West

```
Inflow Area =      27,965 sf, 69.10% Impervious,  Inflow Depth =  6.51"   for  100-Year-Current event
Inflow      =      4.83 cfs @  12.08 hrs,  Volume=         15,163 cf
Outflow     =      0.86 cfs @  12.50 hrs,  Volume=         15,163 cf,  Atten= 82%,  Lag= 25.2 min
Discarded   =      0.31 cfs @  12.50 hrs,  Volume=         12,763 cf
Primary     =      0.55 cfs @  12.50 hrs,  Volume=          2,401 cf
   Routed to Link 51L : South Total
```

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 8.46' @ 12.50 hrs Surf.Area= 2,013 sf Storage= 5,835 cf

Plug-Flow detention time= 139.4 min calculated for 15,142 cf (100% of inflow)
Center-of-Mass det. time= 139.3 min (888.5 - 749.2)

Volume	Invert	Avail.Storage	Storage Description
#1	5.10'	7,152 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

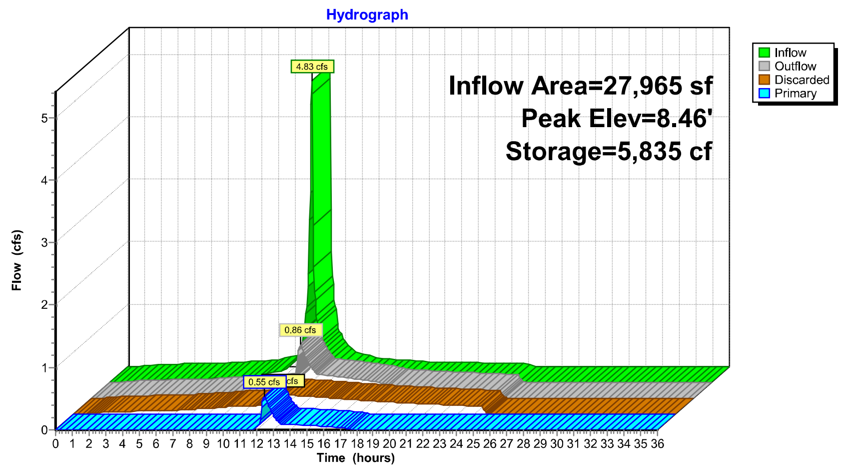
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.10	1,400	0	0
6.00	1,600	1,350	1,350
7.00	1,800	1,700	3,050
8.00	1,950	1,875	4,925
9.10	2,100	2,227	7,152

Device	Routing	Invert	Outlet Devices
#1	Primary	6.70'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	8.20'	**1.1' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	9.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	5.10'	**3.700 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.60'

Discarded OutFlow Max=0.31 cfs @ 12.50 hrs HW=8.46' (Free Discharge)
└─**4=Exfiltration** (Controls 0.31 cfs)

Primary OutFlow Max=0.55 cfs @ 12.50 hrs HW=8.46' (Free Discharge)
├─**1=Orifice/Grate** (Orifice Controls 0.10 cfs @ 6.26 fps)
├─**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.45 cfs @ 1.66 fps)
└─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 49P: AG Bio Basin West



Summary for Pond 50P: UG Inf Basin

Inflow Area = 12,228 sf,100.00% Impervious, Inflow Depth = 8.71" for 100-Year-Current event
Inflow = 2.76 cfs @ 12.09 hrs, Volume= 8,875 cf
Outflow = 0.42 cfs @ 12.55 hrs, Volume= 8,875 cf, Atten= 85%, Lag= 27.8 min
Discarded = 0.17 cfs @ 12.55 hrs, Volume= 8,014 cf
Primary = 0.25 cfs @ 12.55 hrs, Volume= 862 cf
Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 7.69' @ 12.55 hrs Surf.Area= 2,708 sf Storage= 3,512 cf

Plug-Flow detention time= 153.3 min calculated for 8,863 cf (100% of inflow)
Center-of-Mass det. time= 153.1 min (891.3 - 738.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	5.50'	2,030 cf	**38.50'W x 70.33'L x 3.00'H Field A** 8,124 cf Overall - 3,049 cf Embedded = 5,074 cf x 40.0% Voids
#2A	5.83'	2,411 cf	**ADS N-12 24"** x 11 Inside #1 Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf Row Length Adjustment= +44.00' x 3.10 sf x 11 rows 36.83' Header x 3.10 sf x 2 = 228.4 cf Inside
		4,440 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.40'	**7.0" W x 2.5" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	5.50'	**1.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 3.20'

Discarded OutFlow Max=0.17 cfs @ 12.55 hrs HW=7.69' (Free Discharge)
└─**2=Exfiltration** (Controls 0.17 cfs)

Primary OutFlow Max=0.25 cfs @ 12.55 hrs HW=7.69' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.25 cfs @ 2.05 fps)

Pond 50P: UG Inf Basin - Chamber Wizard Field A

Chamber Model = ADS N-12 24" (ADS N-12® Pipe)
Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf
Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf
Row Length Adjustment= +44.00' x 3.10 sf x 11 rows

28.0" Wide + 13.4" Spacing = 41.4" C-C Row Spacing

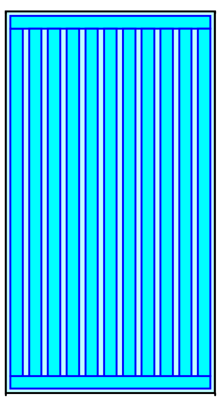
1 Chambers/Row x 20.00' Long +44.00' Row Adjustment +2.33' Header x 2 = 68.67' Row Length +10.0" End Stone x 2 = 70.33' Base Length
11 Rows x 28.0" Wide + 13.4" Spacing x 10 + 10.0" Side Stone x 2 = 38.50' Base Width
4.0" Stone Base + 28.0" Chamber Height + 4.0" Stone Cover = 3.00' Field Height

11 Chambers x 62.0 cf +44.00' Row Adjustment x 3.10 sf x 11 Rows + 36.83' Header x 3.10 sf x 2 = 2,410.8 cf Chamber Storage
11 Chambers x 78.4 cf +44.00' Row Adjustment x 3.92 sf x 11 Rows + 36.83' Header x 3.92 sf x 2 = 3,048.2 cf Displacement

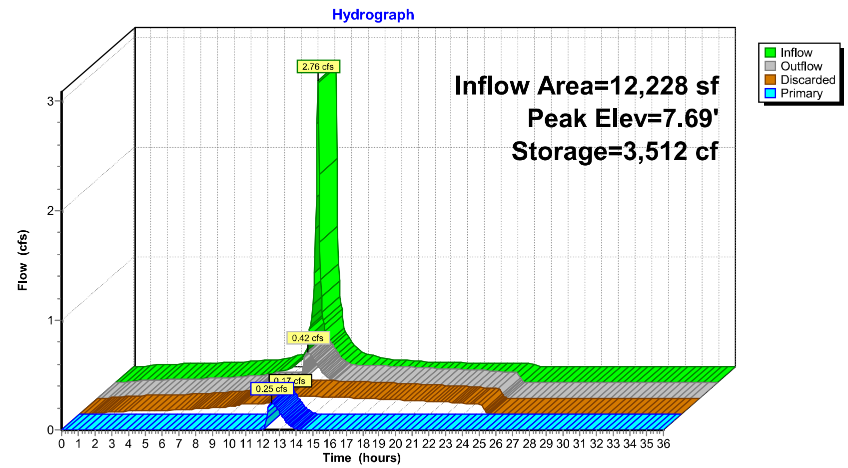
8,123.8 cf Field - 3,048.2 cf Chambers = 5,075.6 cf of Stone x 40.0% Voids = 2,030.2 cf Stone Storage

Chamber Storage + Stone Storage = 4,441.0 cf = 0.102 af
Overall Storage Efficiency = 54.7%
Overall System Size = 70.33' x 38.50' x 3.00'

11 Chambers
300.9 cy Field
188.0 cy Stone



Pond 50P: UG Inf Basin



Summary for Pond 52P: AG Bio Basin East

Inflow Area = 43,765 sf, 71.99% Impervious, Inflow Depth = 6.71" for 100-Year-Current event
Inflow = 7.77 cfs @ 12.08 hrs, Volume= 24,482 cf
Outflow = 0.35 cfs @ 13.81 hrs, Volume= 17,250 cf, Atten= 95%, Lag= 103.8 min
Discarded = 0.11 cfs @ 13.81 hrs, Volume= 10,354 cf
Primary = 0.25 cfs @ 13.81 hrs, Volume= 6,896 cf
Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 7.83' @ 13.81 hrs Surf.Area= 6,750 sf Storage= 15,329 cf

Plug-Flow detention time= 540.5 min calculated for 17,250 cf (70% of inflow)
Center-of-Mass det. time= 438.3 min (1,186.5 - 748.2)

Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	19,875 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

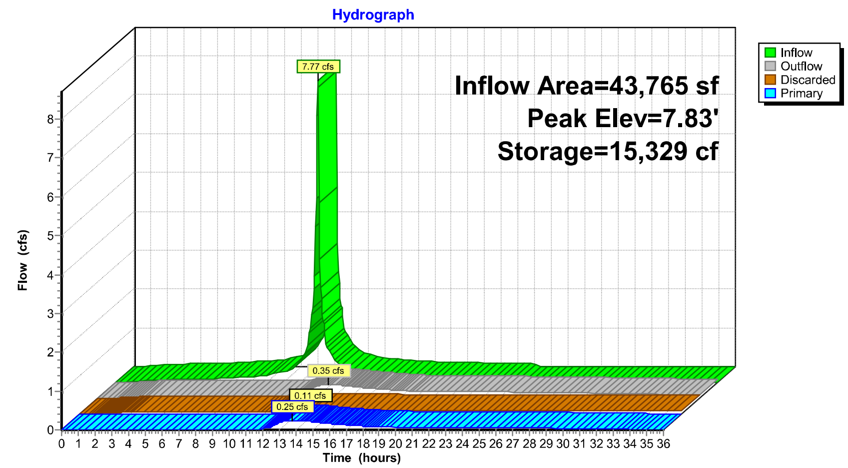
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.50	6,400	0	0
6.50	6,550	6,475	6,475
7.50	6,700	6,625	13,100
8.50	6,850	6,775	19,875

Device	Routing	Invert	Outlet Devices
#1	Primary	6.60'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	7.60'	**0.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	8.40'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	5.50'	**0.380 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 2.60'

Discarded OutFlow Max=0.11 cfs @ 13.81 hrs HW=7.83' (Free Discharge)
└─**4=Exfiltration** (Controls 0.11 cfs)

Primary OutFlow Max=0.25 cfs @ 13.81 hrs HW=7.83' (Free Discharge)
├─**1=Orifice/Grate** (Orifice Controls 0.08 cfs @ 5.19 fps)
├─**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.17 cfs @ 1.57 fps)
└─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 52P: AG Bio Basin East

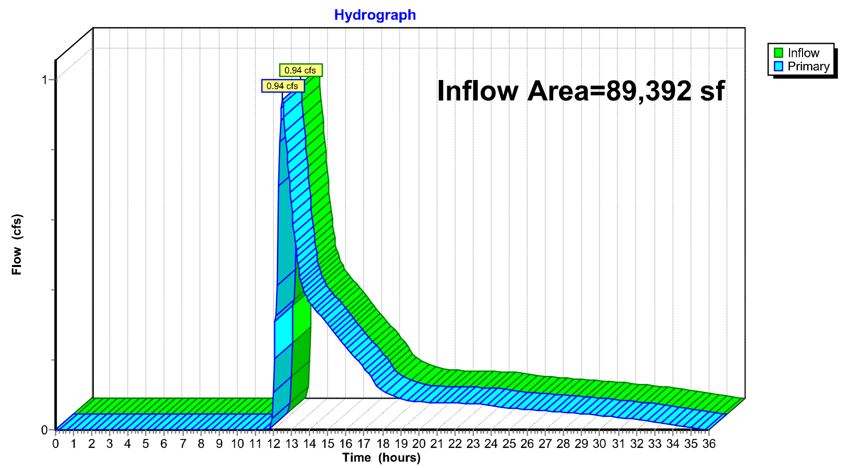


Summary for Link 51L: South Total

Inflow Area = 89,392 sf, 70.54% Impervious, Inflow Depth > 1.46" for 100-Year-Current event
Inflow = 0.94 cfs @ 12.51 hrs, Volume= 10,874 cf
Primary = 0.94 cfs @ 12.51 hrs, Volume= 10,874 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 51L: South Total

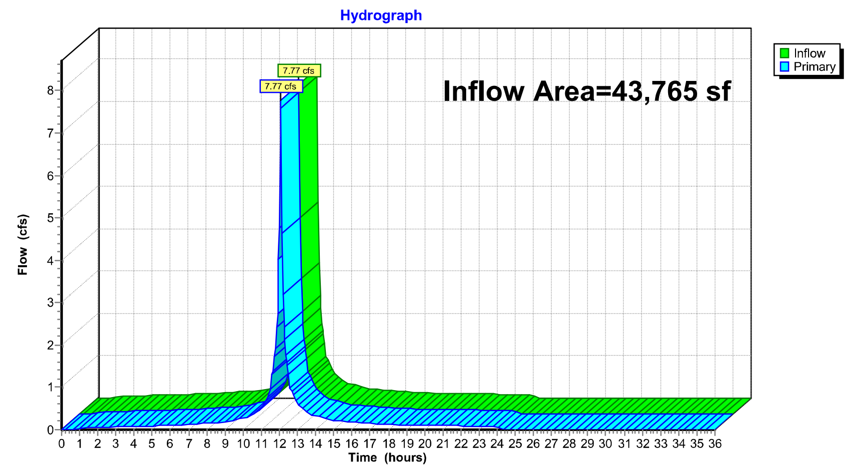


Summary for Link 52L: SA Basin East - Total

Inflow Area = 43,765 sf, 71.99% Impervious, Inflow Depth = 6.71" for 100-Year-Current event
Inflow = 7.77 cfs @ 12.08 hrs, Volume= 24,482 cf
Primary = 7.77 cfs @ 12.08 hrs, Volume= 24,482 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 52P : AG Bio Basin East

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 52L: SA Basin East - Total

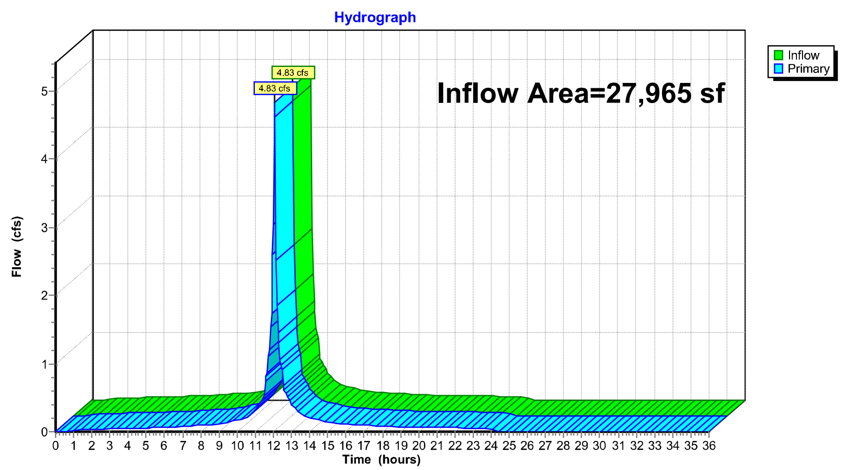


Summary for Link 53L: SA Basin West - Total

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 6.51" for 100-Year-Current event
Inflow = 4.83 cfs @ 12.08 hrs, Volume= 15,163 cf
Primary = 4.83 cfs @ 12.08 hrs, Volume= 15,163 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 49P : AG Bio Basin West

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 53L: SA Basin West - Total

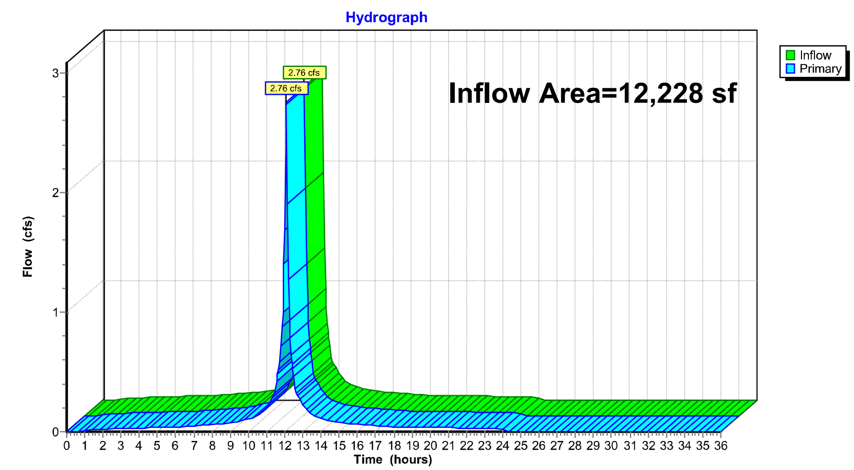


Summary for Link 54L: SA UG Basin Total

Inflow Area = 12,228 sf,100.00% Impervious, Inflow Depth = 8.71" for 100-Year-Current event
Inflow = 2.76 cfs @ 12.09 hrs, Volume= 8,875 cf
Primary = 2.76 cfs @ 12.09 hrs, Volume= 8,875 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 50P : UG Inf Basin

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 54L: SA UG Basin Total



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Ex SA South Runoff Area=88,097 sf 0.00% Impervious Runoff Depth=2.96"
Flow Length=209' Tc=8.8 min CN=38 Runoff=4.58 cfs 21,695 cf

Subcatchment 13S: Ex SA North Runoff Area=3,695 sf 0.00% Impervious Runoff Depth=3.12"
Flow Length=17' Slope=0.0170 '/' Tc=2.3 min CN=39 Runoff=0.33 cfs 960 cf

Subcatchment 41S: SA Basin East Imp Runoff Area=31,508 sf 100.00% Impervious Runoff Depth=11.60"
Flow Length=168' Tc=1.5 min CN=98 Runoff=9.82 cfs 30,454 cf

Subcatchment 42S: SA Basin East Perv Runoff Area=12,257 sf 0.00% Impervious Runoff Depth=3.12"
Flow Length=20' Slope=0.0120 '/' Tc=3.0 min CN=39 Runoff=1.03 cfs 3,183 cf

Subcatchment 43S: SA Basin West Imp Runoff Area=19,325 sf 100.00% Impervious Runoff Depth=11.60"
Flow Length=174' Tc=1.2 min CN=98 Runoff=6.09 cfs 18,679 cf

Subcatchment 44S: SA Basin West Perv Runoff Area=8,640 sf 0.00% Impervious Runoff Depth=3.12"
Flow Length=60' Slope=0.0750 '/' Tc=3.5 min CN=39 Runoff=0.69 cfs 2,244 cf

Subcatchment 45S: SA South Undetained Runoff Area=5,434 sf 0.00% Impervious Runoff Depth=3.12"
Flow Length=18' Slope=0.0100 '/' Tc=3.0 min CN=39 Runoff=0.46 cfs 1,411 cf

Subcatchment 46S: SA UG Basin Roof Runoff Area=12,228 sf 100.00% Impervious Runoff Depth=11.60"
Flow Length=314' Tc=2.1 min CN=98 Runoff=3.67 cfs 11,819 cf

Subcatchment 47S: SA North Undetained Runoff Area=2,400 sf 0.00% Impervious Runoff Depth=3.12"
Flow Length=8' Slope=0.0100 '/' Tc=1.6 min CN=39 Runoff=0.23 cfs 623 cf

Pond 49P: AG Bio Basin West Peak Elev=9.00' Storage=6,944 cf Inflow=6.69 cfs 20,922 cf
Discarded=0.34 cfs 14,807 cf Primary=2.31 cfs 6,115 cf Outflow=2.65 cfs 20,922 cf

Pond 50P: UG Inf Basin Peak Elev=8.50' Storage=4,436 cf Inflow=3.67 cfs 11,819 cf
Discarded=0.20 cfs 9,237 cf Primary=0.58 cfs 2,582 cf Outflow=0.78 cfs 11,819 cf

Pond 52P: AG Bio Basin East Peak Elev=8.40' Storage=19,197 cf Inflow=10.78 cfs 33,637 cf
Discarded=0.12 cfs 10,847 cf Primary=0.90 cfs 15,120 cf Outflow=1.02 cfs 25,967 cf

Link 51L: South Total Inflow=3.65 cfs 25,229 cf
Primary=3.65 cfs 25,229 cf

Link 52L: SA Basin East - Total Inflow=10.78 cfs 33,637 cf
Primary=10.78 cfs 33,637 cf

Link 53L: SA Basin West - Total Inflow=6.69 cfs 20,922 cf
Primary=6.69 cfs 20,922 cf

Link 54L: SA UG Basin Total Inflow=3.67 cfs 11,819 cf
Primary=3.67 cfs 11,819 cf

Total Runoff Area = 183,584 sf Runoff Volume = 91,068 cf Average Runoff Depth = 5.95"
65.65% Pervious = 120,523 sf 34.35% Impervious = 63,061 sf

Summary for Subcatchment 2S: Ex SA South

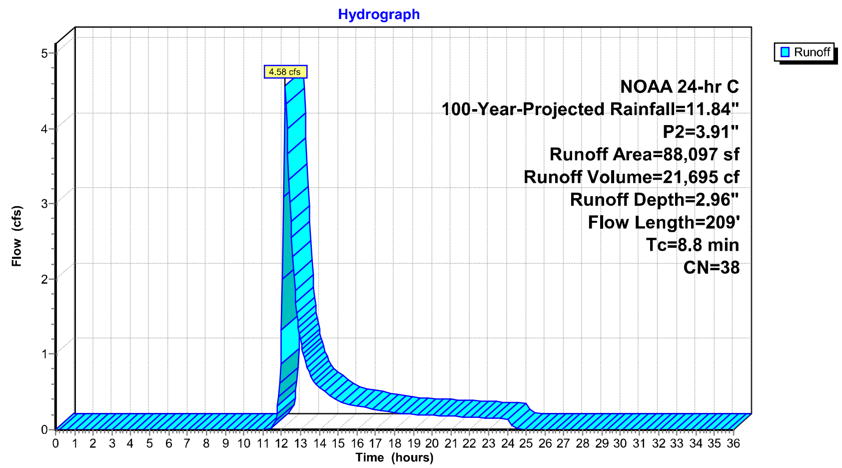
Runoff = 4.58 cfs @ 12.20 hrs, Volume= 21,695 cf, Depth= 2.96"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Projected Rainfall=11.84", P2=3.91"

Area (sf)	CN	Description
9,674	30	Woods, Good, HSG A
78,423	39	>75% Grass cover, Good, HSG A
88,097	38	Weighted Average
88,097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.0290	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.91"
1.2	109	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
8.8	209	Total			

Subcatchment 2S: Ex SA South



Summary for Subcatchment 13S: Ex SA North

[49] Hint: Tc<2dt may require smaller dt

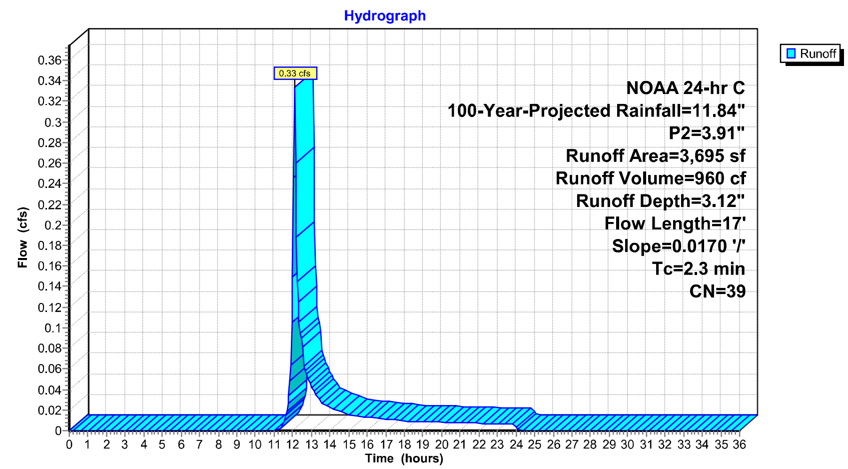
Runoff = 0.33 cfs @ 12.10 hrs, Volume= 960 cf, Depth= 3.12"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Projected Rainfall=11.84", P2=3.91"

Area (sf)	CN	Description
3,695	39	>75% Grass cover, Good, HSG A
3,695		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	17	0.0170	0.12		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 13S: Ex SA North



Summary for Subcatchment 41S: SA Basin East Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.018
n = 0.011

L = [100 * sqrt(0.018)]/.011
L = 1,219 FT

L > 100 FT

Therefore, use 100 FT

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 278% of capacity of segment #3

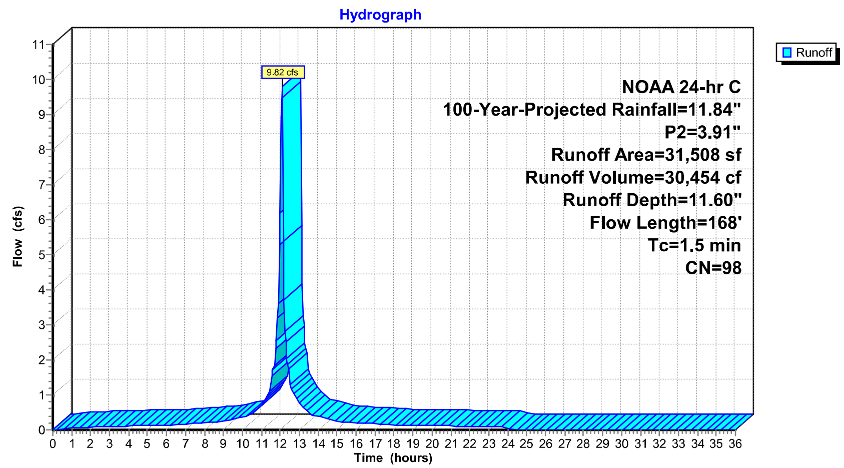
Runoff = 9.82 cfs @ 12.08 hrs, Volume= 30,454 cf, Depth=11.60"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Projected Rainfall=11.84", P2=3.91"

Area (sf)	CN	Description
19,281	98	Paved parking, HSG A
12,227	98	Roofs, HSG A
31,508	98	Weighted Average
31,508		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0180	1.46		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.91"
0.2	28	0.0180	2.72		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
0.2	40	0.0030	2.88	3.54	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
1.5	168	Total			

Subcatchment 41S: SA Basin East Imp



Summary for Subcatchment 42S: SA Basin East Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.012
n = 0.150

L = [100 * sqrt(0.012)]/.150
L = 73 FT

L < 100 FT; However, use 20 FT

---

[49] Hint: Tc<2dt may require smaller dt

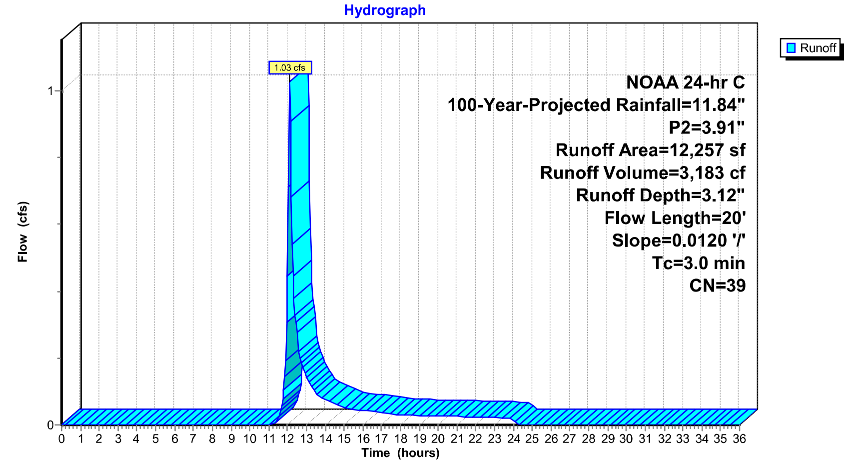
Runoff = 1.03 cfs @ 12.11 hrs, Volume= 3,183 cf, Depth= 3.12"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Projected Rainfall=11.84", P2=3.91"

Area (sf)	CN	Description
12,257	39	>75% Grass cover, Good, HSG A
12,257		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	20	0.0120	0.11		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 42S: SA Basin East Perv



Summary for Subcatchment 43S: SA Basin West Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.025
n = 0.011

L = [100 * sqrt(0.025)]/.011
L = 1,437 FT

L > 100 FT

Therefore, use 73 FT

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 133% of capacity of segment #2
[47] Hint: Peak is 132% of capacity of segment #3

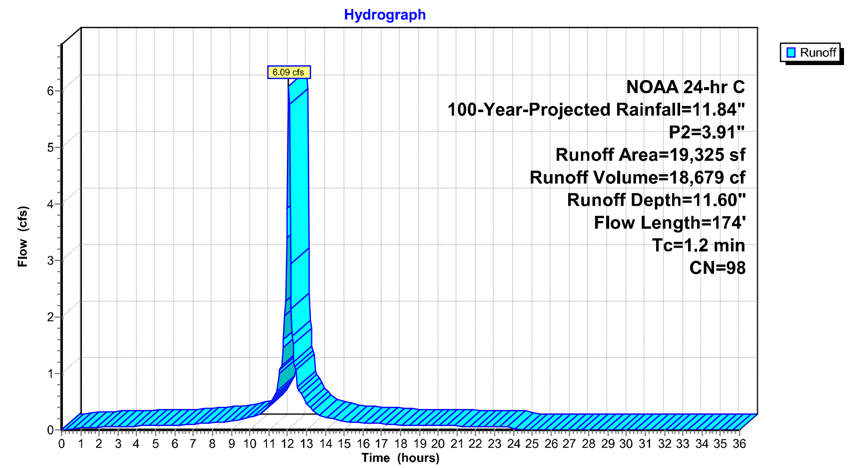
Runoff = 6.09 cfs @ 12.08 hrs, Volume= 18,679 cf, Depth=11.60"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Projected Rainfall=11.84", P2=3.91"

Area (sf)	CN	Description
19,325	98	Paved parking, HSG A
19,325		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	73	0.0250	1.56		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.91"
0.4	97	0.0050	3.72	4.57	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
0.0	4	0.0030	3.75	4.60	**Pipe Channel, 15" HDPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010
1.2	174	Total			

Subcatchment 43S: SA Basin West Imp



Summary for Subcatchment 44S: SA Basin West Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.075
n = 0.150

L = [100 * sqrt(0.075)]/.150
L = 182 FT

L > 100 FT

Therefore, use 60 FT

[49] Hint: Tc<2dt may require smaller dt

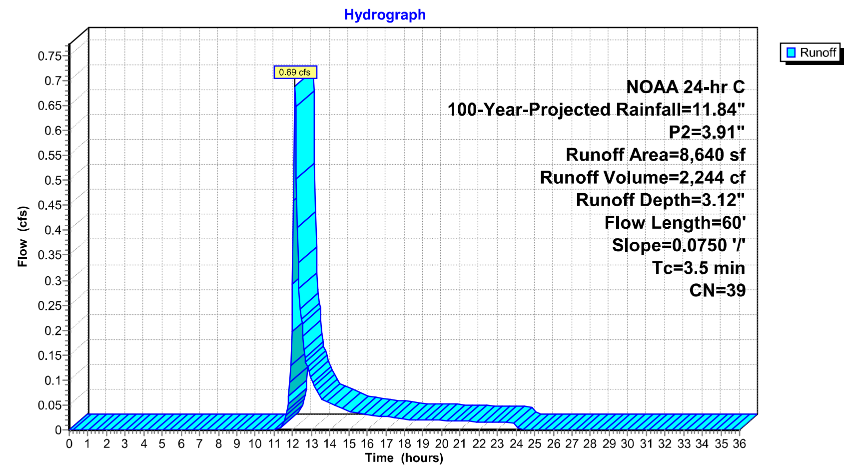
Runoff = 0.69 cfs @ 12.12 hrs, Volume= 2,244 cf, Depth= 3.12"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Projected Rainfall=11.84", P2=3.91"

Area (sf)	CN	Description
8,640	39	>75% Grass cover, Good, HSG A
8,640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	60	0.0750	0.29		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 44S: SA Basin West Perv



Summary for Subcatchment 45S: SA South Undetained

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.150

L = [100 * sqrt(0.010)]/.150
L = 67 FT

L < 100 FT; However, use 18 FT

[49] Hint: Tc<2dt may require smaller dt

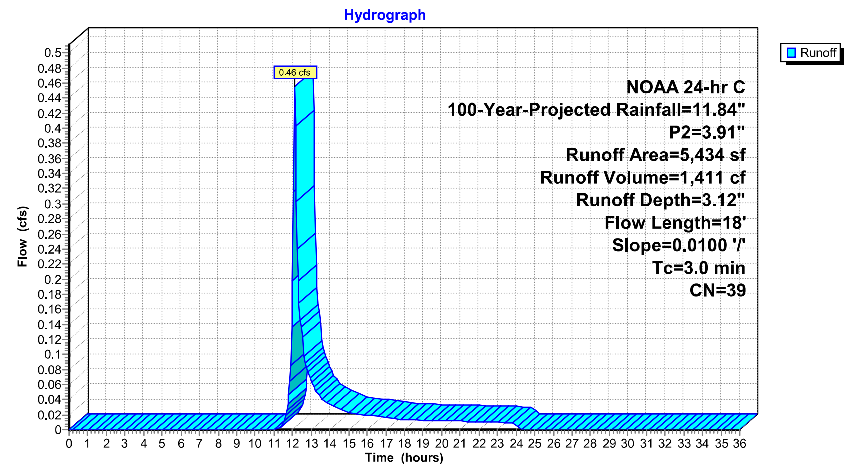
Runoff = 0.46 cfs @ 12.11 hrs, Volume= 1,411 cf, Depth= 3.12"
Routed to Link 51L : South Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Projected Rainfall=11.84", P2=3.91"

Area (sf)	CN	Description
5,434	39	>75% Grass cover, Good, HSG A
5,434		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	18	0.0100	0.10		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 45S: SA South Undetained



Summary for Subcatchment 46S: SA UG Basin Roof

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.011

L = [100 * sqrt(0.010)]/.011
L = 909 FT

L > 100 FT

Therefore, use 78 FT

---

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 112% of capacity of segment #2

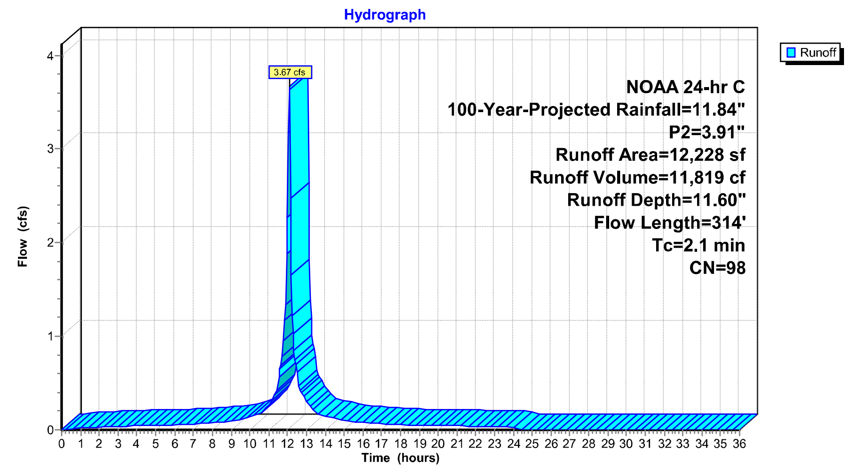
Runoff = 3.67 cfs @ 12.09 hrs, Volume= 11,819 cf, Depth=11.60"
Routed to Link 54L : SA UG Basin Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Projected Rainfall=11.84", P2=3.91"

Area (sf)	CN	Description
12,228	98	Roofs, HSG A
12,228		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	78	0.0100	1.10		**Sheet Flow, Roof** Smooth surfaces n= 0.011 P2= 3.91"
0.9	236	0.0050	4.17	3.28	**Pipe Channel, 12" HDPE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010
2.1	314	Total			

Subcatchment 46S: SA UG Basin Roof



Summary for Subcatchment 47S: SA North Undetained

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.150

L = [100 * sqrt(0.010)]/.150
L = 66 FT

L > 100 FT; However, use 8 FT

[49] Hint: Tc<2dt may require smaller dt

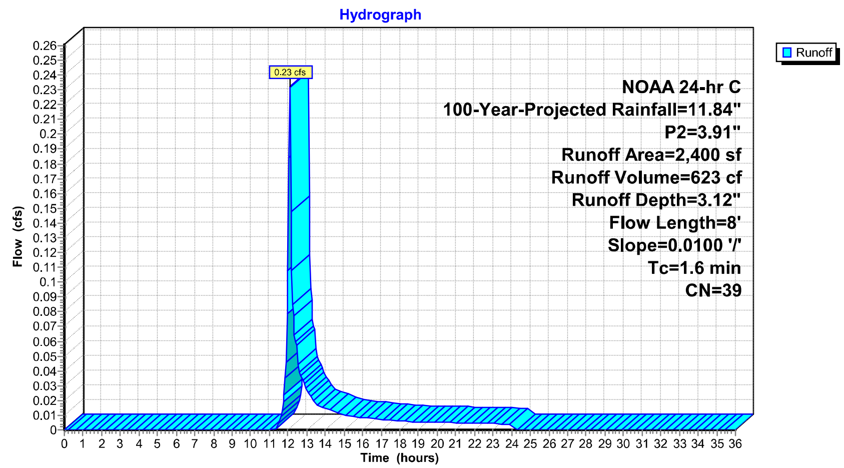
Runoff = 0.23 cfs @ 12.09 hrs, Volume= 623 cf, Depth= 3.12"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year-Projected Rainfall=11.84", P2=3.91"

Area (sf)	CN	Description
2,400	39	>75% Grass cover, Good, HSG A
2,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	8	0.0100	0.09		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 47S: SA North Undetained



Summary for Pond 49P: AG Bio Basin West

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 8.98" for 100-Year-Projected event
Inflow = 6.69 cfs @ 12.08 hrs, Volume= 20,922 cf
Outflow = 2.65 cfs @ 12.21 hrs, Volume= 20,922 cf, Atten= 60%, Lag= 7.8 min
Discarded = 0.34 cfs @ 12.21 hrs, Volume= 14,807 cf
Primary = 2.31 cfs @ 12.21 hrs, Volume= 6,115 cf
Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 9.00' @ 12.21 hrs Surf.Area= 2,086 sf Storage= 6,944 cf

Plug-Flow detention time= 123.8 min calculated for 20,893 cf (100% of inflow)
Center-of-Mass det. time= 123.8 min (873.0 - 749.2)

Volume	Invert	Avail.Storage	Storage Description
#1	5.10'	7,152 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

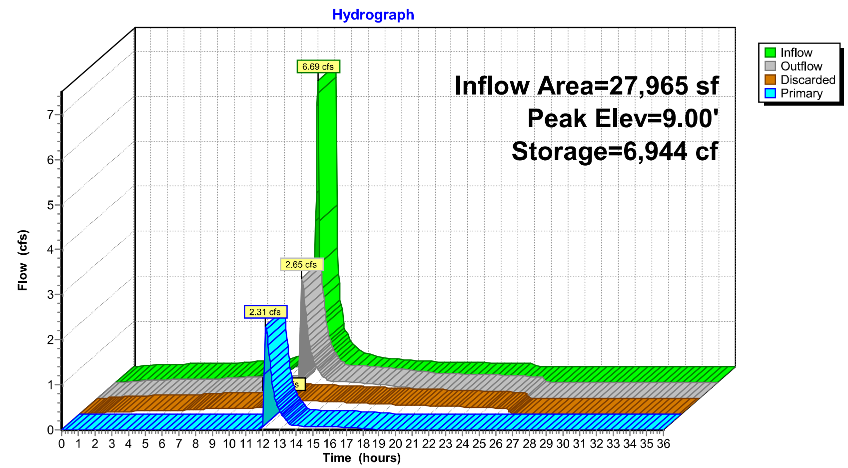
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.10	1,400	0	0
6.00	1,600	1,350	1,350
7.00	1,800	1,700	3,050
8.00	1,950	1,875	4,925
9.10	2,100	2,227	7,152

Device	Routing	Invert	Outlet Devices
#1	Primary	6.70'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	8.20'	**1.1' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	9.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	5.10'	**3.700 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.60'

Discarded OutFlow Max=0.34 cfs @ 12.21 hrs HW=9.00' (Free Discharge)
└─**4=Exfiltration** (Controls 0.34 cfs)

Primary OutFlow Max=2.30 cfs @ 12.21 hrs HW=9.00' (Free Discharge)
├─**1=Orifice/Grate** (Orifice Controls 0.11 cfs @ 7.18 fps)
├─**2=Sharp-Crested Rectangular Weir** (Weir Controls 2.18 cfs @ 2.92 fps)
└─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 49P: AG Bio Basin West



Summary for Pond 50P: UG Inf Basin

Inflow Area =	12,228 sf,100.00% Impervious,	Inflow Depth = 11.60"	for 100-Year-Projected event
Inflow =	3.67 cfs @ 12.09 hrs,	Volume=	11,819 cf
Outflow =	0.78 cfs @ 12.38 hrs,	Volume=	11,819 cf, Atten= 79%, Lag= 17.6 min
Discarded =	0.20 cfs @ 12.38 hrs,	Volume=	9,237 cf
Primary =	0.58 cfs @ 12.38 hrs,	Volume=	2,582 cf

Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 8.50' @ 12.38 hrs Surf.Area= 2,708 sf Storage= 4,436 cf

Plug-Flow detention time= 140.7 min calculated for 11,803 cf (100% of inflow)
Center-of-Mass det. time= 140.6 min (875.7 - 735.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	5.50'	2,030 cf	**38.50'W x 70.33'L x 3.00'H Field A** 8,124 cf Overall - 3,049 cf Embedded = 5,074 cf x 40.0% Voids
#2A	5.83'	2,411 cf	**ADS N-12 24"** x 11 Inside #1 Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf Row Length Adjustment= +44.00' x 3.10 sf x 11 rows 36.83' Header x 3.10 sf x 2 = 228.4 cf Inside
		4,440 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.40'	**7.0" W x 2.5" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	5.50'	**1.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 3.20'

Discarded OutFlow Max=0.20 cfs @ 12.38 hrs HW=8.49' (Free Discharge)
└─**2=Exfiltration** (Controls 0.20 cfs)

Primary OutFlow Max=0.58 cfs @ 12.38 hrs HW=8.49' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.58 cfs @ 4.79 fps)

Pond 50P: UG Inf Basin - Chamber Wizard Field A

Chamber Model = ADS N-12 24" (ADS N-12® Pipe)
Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf
Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf
Row Length Adjustment= +44.00' x 3.10 sf x 11 rows

28.0" Wide + 13.4" Spacing = 41.4" C-C Row Spacing

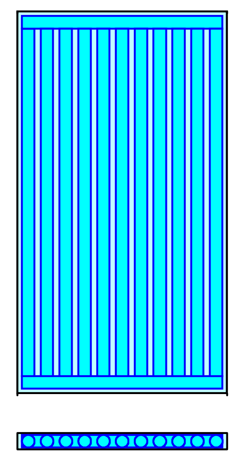
1 Chambers/Row x 20.00' Long +44.00' Row Adjustment +2.33' Header x 2 = 68.67' Row Length +10.0" End Stone x 2 = 70.33' Base Length
11 Rows x 28.0" Wide + 13.4" Spacing x 10 + 10.0" Side Stone x 2 = 38.50' Base Width
4.0" Stone Base + 28.0" Chamber Height + 4.0" Stone Cover = 3.00' Field Height

11 Chambers x 62.0 cf +44.00' Row Adjustment x 3.10 sf x 11 Rows + 36.83' Header x 3.10 sf x 2 = 2,410.8 cf Chamber Storage
11 Chambers x 78.4 cf +44.00' Row Adjustment x 3.92 sf x 11 Rows + 36.83' Header x 3.92 sf x 2 = 3,048.2 cf Displacement

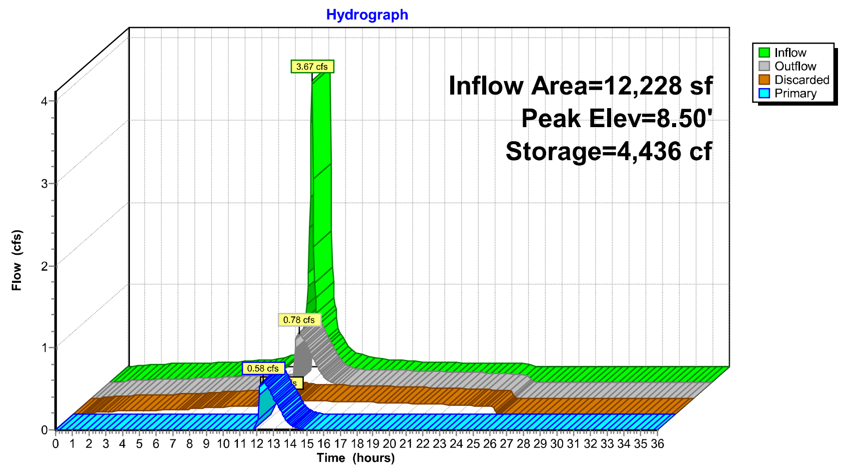
8,123.8 cf Field - 3,048.2 cf Chambers = 5,075.6 cf of Stone x 40.0% Voids = 2,030.2 cf Stone Storage

Chamber Storage + Stone Storage = 4,441.0 cf = 0.102 af
Overall Storage Efficiency = 54.7%
Overall System Size = 70.33' x 38.50' x 3.00'

11 Chambers
300.9 cy Field
188.0 cy Stone



Pond 50P: UG Inf Basin



Summary for Pond 52P: AG Bio Basin East

Inflow Area = 43,765 sf, 71.99% Impervious, Inflow Depth = 9.22" for 100-Year-Projected event
Inflow = 10.78 cfs @ 12.08 hrs, Volume= 33,637 cf
Outflow = 1.02 cfs @ 12.90 hrs, Volume= 25,967 cf, Atten= 91%, Lag= 49.1 min
Discarded = 0.12 cfs @ 12.90 hrs, Volume= 10,847 cf
Primary = 0.90 cfs @ 12.90 hrs, Volume= 15,120 cf
Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 8.40' @ 12.90 hrs Surf.Area= 6,835 sf Storage= 19,197 cf

Plug-Flow detention time= 434.1 min calculated for 25,967 cf (77% of inflow)
Center-of-Mass det. time= 344.0 min (1,091.8 - 747.7)

Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	19,875 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

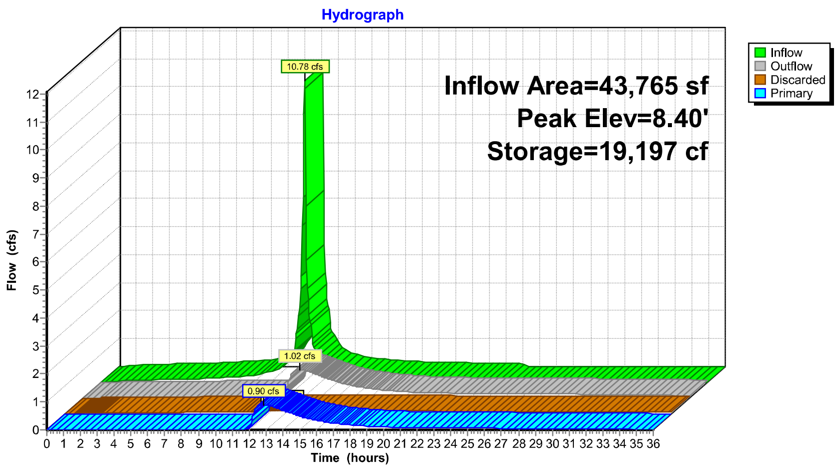
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.50	6,400	0	0
6.50	6,550	6,475	6,475
7.50	6,700	6,625	13,100
8.50	6,850	6,775	19,875

Device	Routing	Invert	Outlet Devices
#1	Primary	6.60'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	7.60'	**0.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	8.40'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	5.50'	**0.380 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 2.60'

Discarded OutFlow Max=0.12 cfs @ 12.90 hrs HW=8.40' (Free Discharge)
└─**4=Exfiltration** (Controls 0.12 cfs)

Primary OutFlow Max=0.90 cfs @ 12.90 hrs HW=8.40' (Free Discharge)
├─**1=Orifice/Grate** (Orifice Controls 0.10 cfs @ 6.33 fps)
├─**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.80 cfs @ 2.93 fps)
└─**3=Sharp-Crested Rectangular Weir** (Weir Controls 0.00 cfs @ 0.09 fps)

Pond 52P: AG Bio Basin East

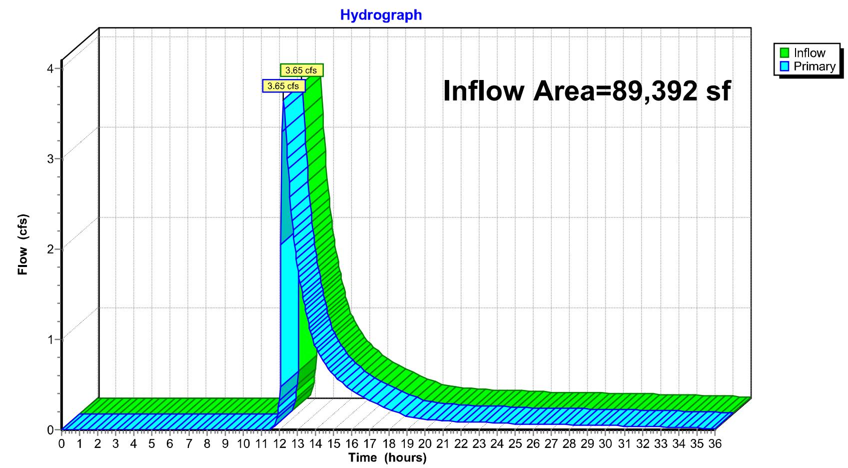


Summary for Link 51L: South Total

Inflow Area = 89,392 sf, 70.54% Impervious, Inflow Depth > 3.39" for 100-Year-Projected event
Inflow = 3.65 cfs @ 12.22 hrs, Volume= 25,229 cf
Primary = 3.65 cfs @ 12.22 hrs, Volume= 25,229 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 51L: South Total

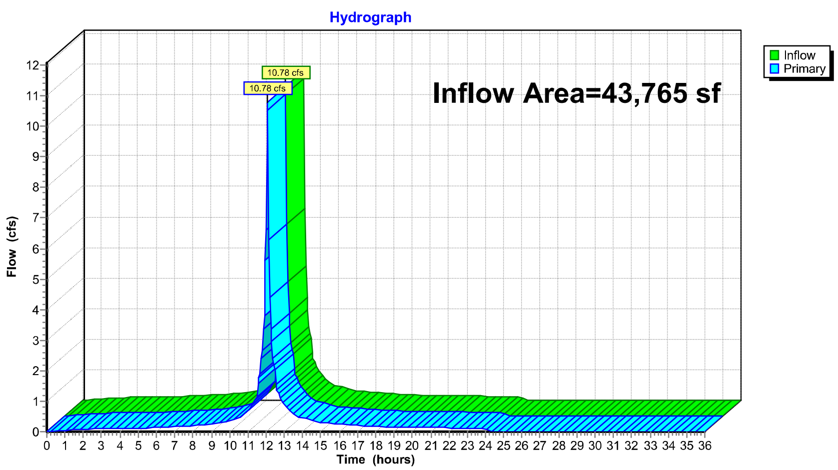


Summary for Link 52L: SA Basin East - Total

Inflow Area = 43,765 sf, 71.99% Impervious, Inflow Depth = 9.22" for 100-Year-Projected event
Inflow = 10.78 cfs @ 12.08 hrs, Volume= 33,637 cf
Primary = 10.78 cfs @ 12.08 hrs, Volume= 33,637 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 52P : AG Bio Basin East

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 52L: SA Basin East - Total

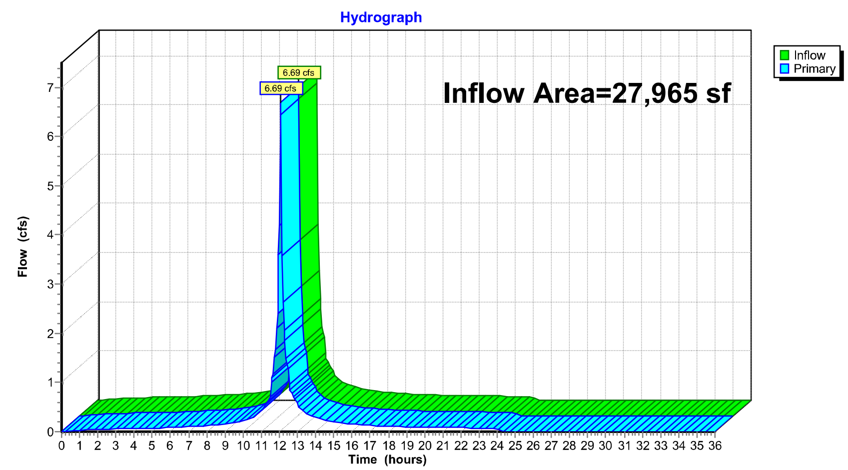


Summary for Link 53L: SA Basin West - Total

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 8.98" for 100-Year-Projected event
Inflow = 6.69 cfs @ 12.08 hrs, Volume= 20,922 cf
Primary = 6.69 cfs @ 12.08 hrs, Volume= 20,922 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 49P : AG Bio Basin West

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 53L: SA Basin West - Total

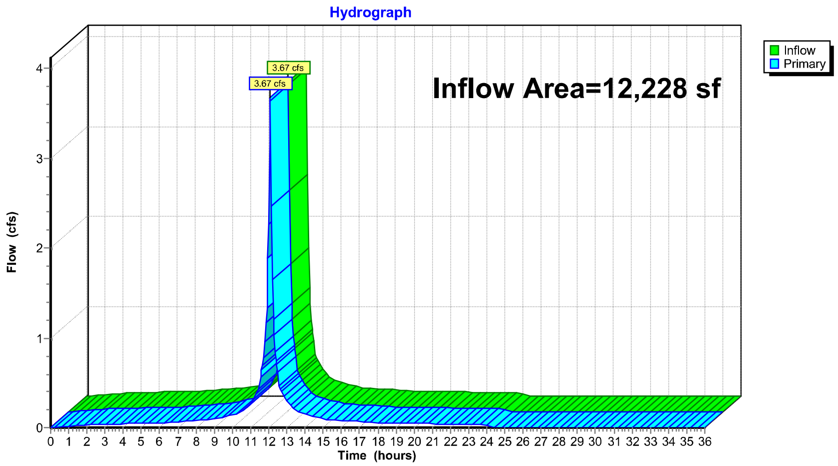


Summary for Link 54L: SA UG Basin Total

Inflow Area = 12,228 sf,100.00% Impervious, Inflow Depth = 11.60" for 100-Year-Projected event
Inflow = 3.67 cfs @ 12.09 hrs, Volume= 11,819 cf
Primary = 3.67 cfs @ 12.09 hrs, Volume= 11,819 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 50P : UG Inf Basin

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 54L: SA UG Basin Total



WATER QUALITY CALCULATIONS

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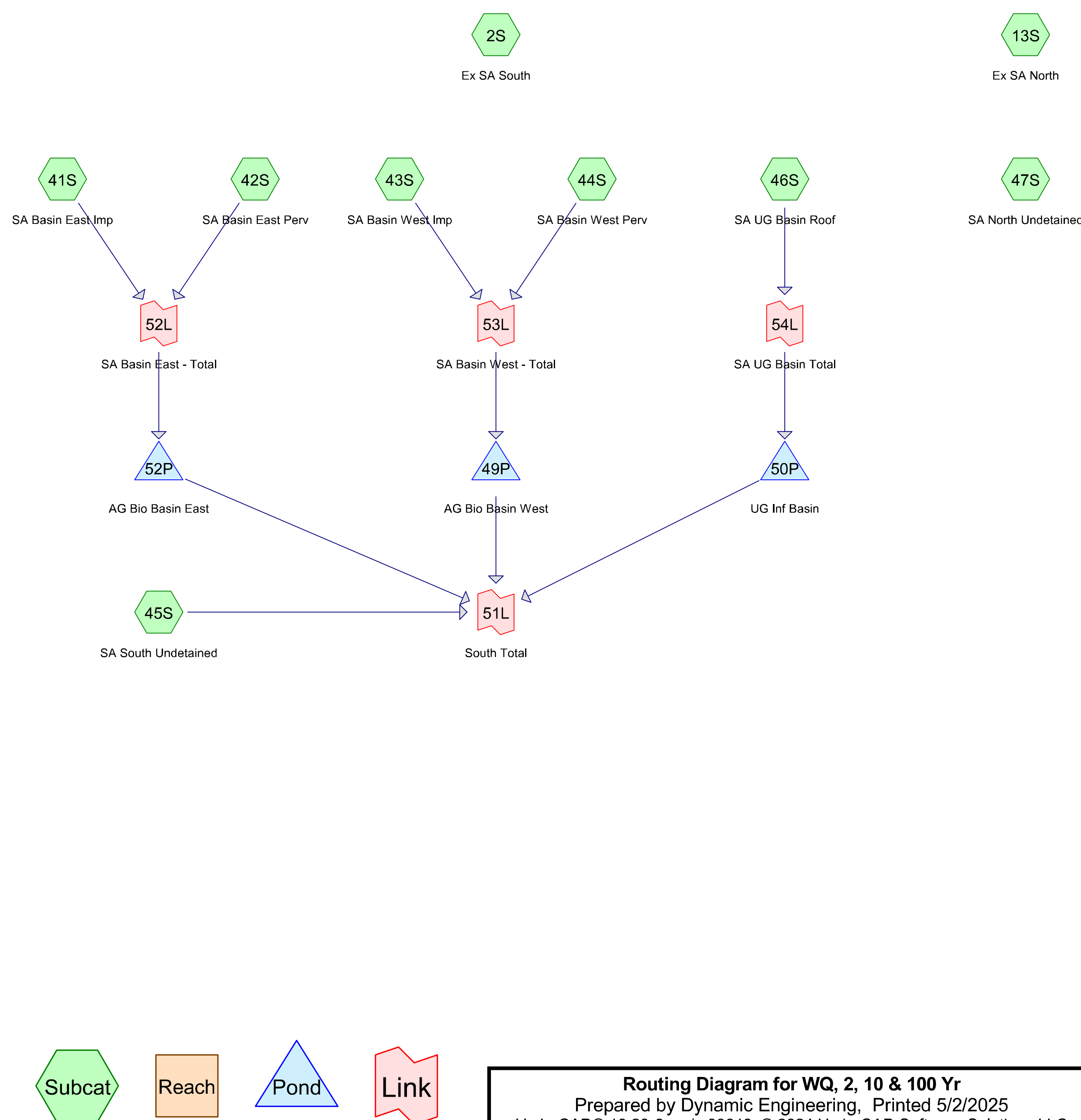

Routing Diagram for WQ, 2, 10 & 100 Yr
Prepared by Dynamic Engineering, Printed 5/2/2025
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Project Notes

Rainfall events imported from "NJ-Rain.txt" for 6603 NJ Camden-C
Rainfall events imported from "NJ-Rain.txt" for 6603 NJ Camden-C

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC	P2 (inches)
1	WQDS	NJ DEP 2-hr		Default	2.00	1	1.25	2	3.91

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
110,849	39	>75% Grass cover, Good, HSG A (2S, 13S, 42S, 44S, 45S, 47S)
38,606	98	Paved parking, HSG A (41S, 43S)
24,455	98	Roofs, HSG A (41S, 46S)
9,674	30	Woods, Good, HSG A (2S)
183,584	**59**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
183,584	HSG A	2S, 13S, 41S, 42S, 43S, 44S, 45S, 46S, 47S
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
183,584		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Su Nu
110,849	0	0	0	0	110,849	>75% Grass cover, Good	
38,606	0	0	0	0	38,606	Paved parking	
24,455	0	0	0	0	24,455	Roofs	
9,674	0	0	0	0	9,674	Woods, Good	
183,584	**0**	**0**	**0**	**0**	**183,584**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	41S	0.00	0.00	40.0	0.0030	0.013	0.0	15.0	0.0	
2	43S	0.00	0.00	97.0	0.0050	0.013	0.0	15.0	0.0	
3	43S	0.00	0.00	4.0	0.0030	0.010	0.0	15.0	0.0	
4	46S	0.00	0.00	236.0	0.0050	0.010	0.0	12.0	0.0	

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Ex SA South Runoff Area=88,097 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=209' Tc=8.8 min CN=38 Runoff=0.00 cfs 0 cf

Subcatchment 13S: Ex SA North Runoff Area=3,695 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=17' Slope=0.0170 '/' Tc=2.3 min CN=39 Runoff=0.00 cfs 0 cf

Subcatchment 41S: SA Basin East Imp Runoff Area=31,508 sf 100.00% Impervious Runoff Depth=1.03"
Flow Length=168' Tc=1.5 min CN=98 Runoff=2.18 cfs 2,716 cf

Subcatchment 42S: SA Basin East Perv Runoff Area=12,257 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=20' Slope=0.0120 '/' Tc=3.0 min CN=39 Runoff=0.00 cfs 0 cf

Subcatchment 43S: SA Basin West Imp Runoff Area=19,325 sf 100.00% Impervious Runoff Depth=1.03"
Flow Length=174' Tc=1.2 min CN=98 Runoff=1.36 cfs 1,666 cf

Subcatchment 44S: SA Basin West Perv Runoff Area=8,640 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=60' Slope=0.0750 '/' Tc=3.5 min CN=39 Runoff=0.00 cfs 0 cf

Subcatchment 45S: SA South Undetained Runoff Area=5,434 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=18' Slope=0.0100 '/' Tc=3.0 min CN=39 Runoff=0.00 cfs 0 cf

Subcatchment 46S: SA UG Basin Roof Runoff Area=12,228 sf 100.00% Impervious Runoff Depth=1.03"
Flow Length=314' Tc=2.1 min CN=98 Runoff=0.82 cfs 1,054 cf

Subcatchment 47S: SA North Undetained Runoff Area=2,400 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=8' Slope=0.0100 '/' Tc=1.6 min CN=39 Runoff=0.00 cfs 0 cf

Pond 49P: AG Bio Basin West Peak Elev=5.81' Storage=1,045 cf Inflow=1.36 cfs 1,666 cf
Discarded=0.16 cfs 1,666 cf Primary=0.00 cfs 0 cf Outflow=0.16 cfs 1,666 cf

Pond 50P: UG Inf Basin Peak Elev=6.11' Storage=629 cf Inflow=0.82 cfs 1,054 cf
Discarded=0.11 cfs 1,054 cf Primary=0.00 cfs 0 cf Outflow=0.11 cfs 1,054 cf

Pond 52P: AG Bio Basin East Peak Elev=5.87' Storage=2,409 cf Inflow=2.18 cfs 2,716 cf
Discarded=0.06 cfs 2,716 cf Primary=0.00 cfs 0 cf Outflow=0.06 cfs 2,716 cf

Link 51L: South Total Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link 52L: SA Basin East - Total Inflow=2.18 cfs 2,716 cf
Primary=2.18 cfs 2,716 cf

Link 53L: SA Basin West - Total Inflow=1.36 cfs 1,666 cf
Primary=1.36 cfs 1,666 cf

Link 54L: SA UG Basin Total Inflow=0.82 cfs 1,054 cf
Primary=0.82 cfs 1,054 cf

Total Runoff Area = 183,584 sf Runoff Volume = 5,437 cf Average Runoff Depth = 0.36"
65.65% Pervious = 120,523 sf 34.35% Impervious = 63,061 sf

Summary for Subcatchment 2S: Ex SA South

[45] Hint: Runoff=Zero

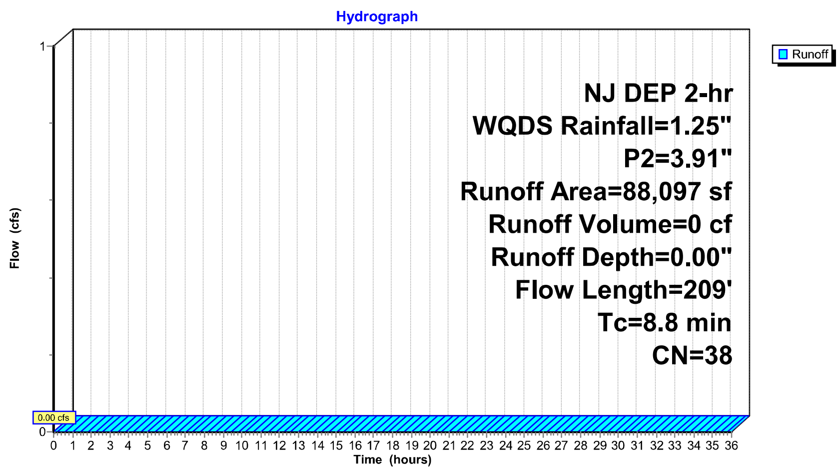
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQDS Rainfall=1.25", P2=3.91"

Area (sf)	CN	Description
9,674	30	Woods, Good, HSG A
78,423	39	>75% Grass cover, Good, HSG A
88,097	38	Weighted Average
88,097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.0290	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.91"
1.2	109	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
8.8	209	Total			

Subcatchment 2S: Ex SA South



Summary for Subcatchment 13S: Ex SA North

[49] Hint: Tc<2dt may require smaller dt
[45] Hint: Runoff=Zero

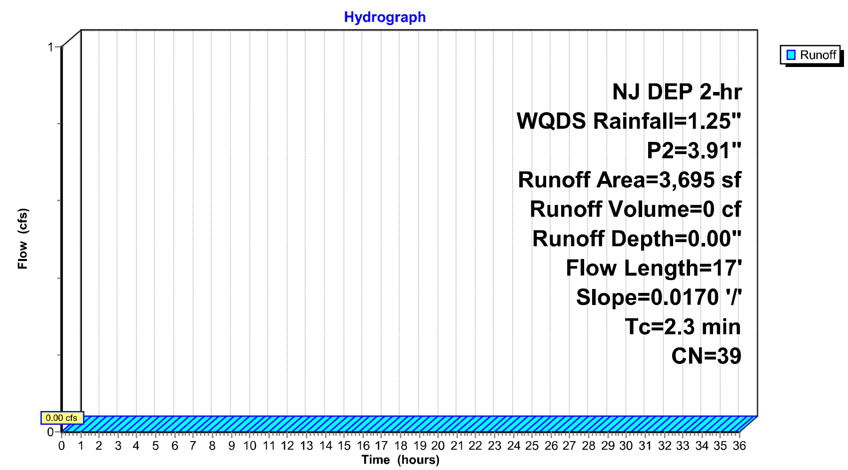
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQDS Rainfall=1.25", P2=3.91"

Area (sf)	CN	Description
3,695	39	>75% Grass cover, Good, HSG A
3,695		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	17	0.0170	0.12		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 13S: Ex SA North



Summary for Subcatchment 41S: SA Basin East Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.018
n = 0.011

L = [100 * sqrt(0.018)]/.011
L = 1,219 FT

L > 100 FT

Therefore, use 100 FT

---

[49] Hint: Tc<2dt may require smaller dt

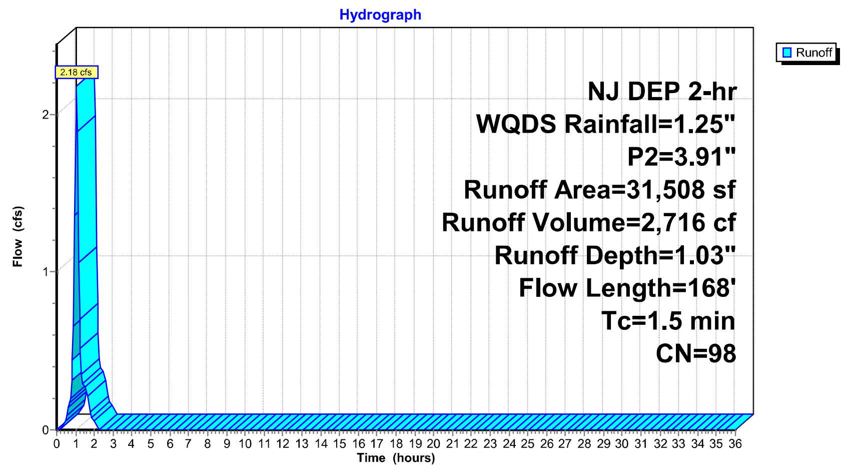
Runoff = 2.18 cfs @ 1.04 hrs, Volume= 2,716 cf, Depth= 1.03"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQDS Rainfall=1.25", P2=3.91"

Area (sf)	CN	Description
19,281	98	Paved parking, HSG A
12,227	98	Roofs, HSG A
31,508	98	Weighted Average
31,508		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0180	1.46		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.91"
0.2	28	0.0180	2.72		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
0.2	40	0.0030	2.88	3.54	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
1.5	168	Total			

Subcatchment 41S: SA Basin East Imp



Summary for Subcatchment 42S: SA Basin East Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.012
n = 0.150

L = [100 * sqrt(0.012)]/.150
L = 73 FT

L < 100 FT; However, use 20 FT

[49] Hint: Tc<2dt may require smaller dt
[45] Hint: Runoff=Zero

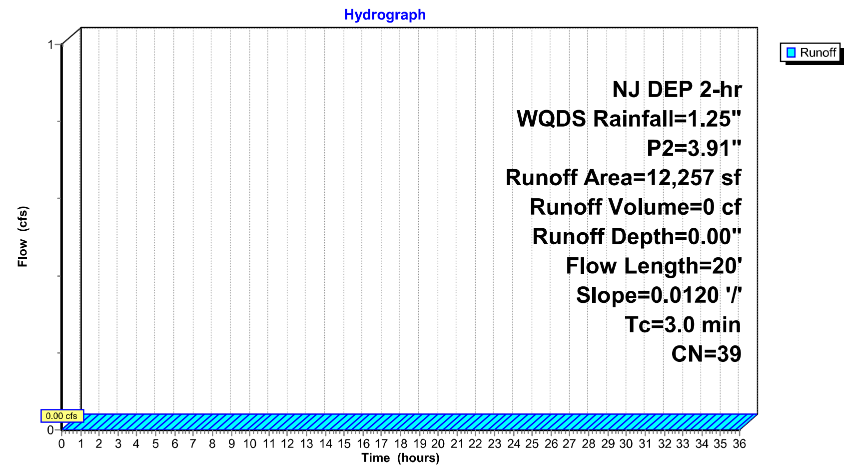
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQDS Rainfall=1.25", P2=3.91"

Area (sf)	CN	Description
12,257	39	>75% Grass cover, Good, HSG A
12,257		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	20	0.0120	0.11		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 42S: SA Basin East Perv



Summary for Subcatchment 43S: SA Basin West Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.025
n = 0.011

L = [100 * sqrt(0.025)]/.011
L = 1,437 FT

L > 100 FT

Therefore, use 73 FT

[49] Hint: Tc<2dt may require smaller dt

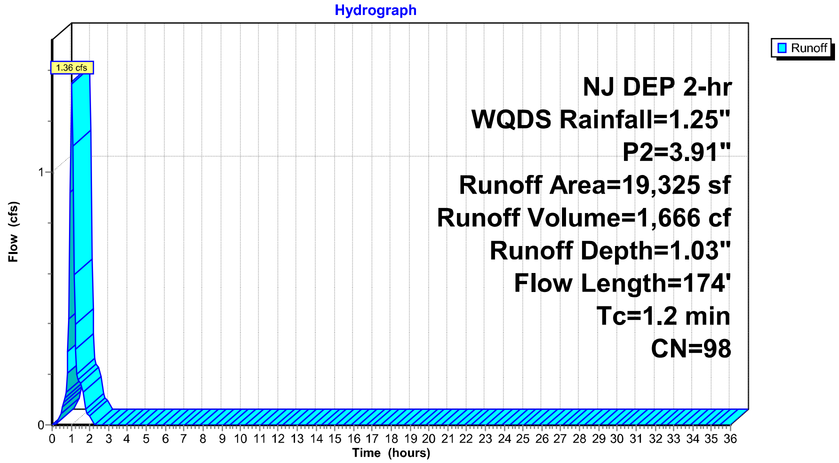
Runoff = 1.36 cfs @ 1.04 hrs, Volume= 1,666 cf, Depth= 1.03"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQDS Rainfall=1.25", P2=3.91"

Area (sf)	CN	Description
19,325	98	Paved parking, HSG A
19,325		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	73	0.0250	1.56		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.91"
0.4	97	0.0050	3.72	4.57	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
0.0	4	0.0030	3.75	4.60	**Pipe Channel, 15" HDPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010
1.2	174	Total			

Subcatchment 43S: SA Basin West Imp



Summary for Subcatchment 44S: SA Basin West Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.075
n = 0.150

L = [100 * sqrt(0.075)]/.150
L = 182 FT

L > 100 FT

Therefore, use 60 FT

---

[49] Hint: Tc<2dt may require smaller dt
[45] Hint: Runoff=Zero

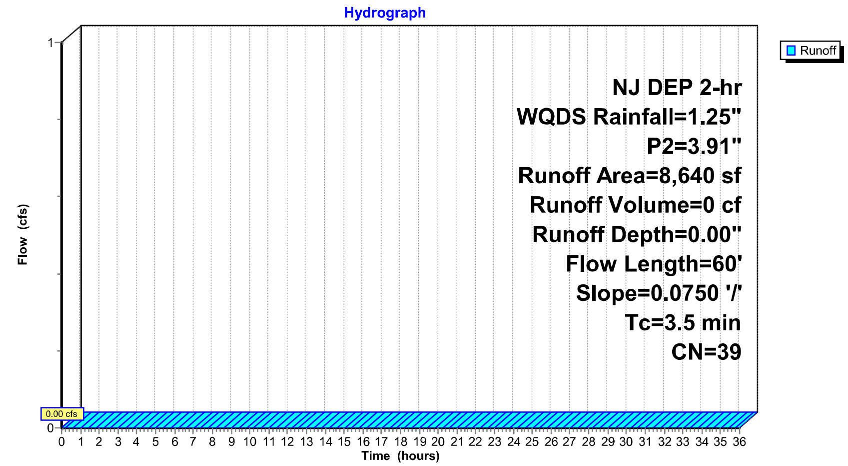
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQDS Rainfall=1.25", P2=3.91"

Area (sf)	CN	Description
8,640	39	>75% Grass cover, Good, HSG A
8,640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	60	0.0750	0.29		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 44S: SA Basin West Perv



Summary for Subcatchment 45S: SA South Undetained

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.150

L = [100 * sqrt(0.010)]/.150
L = 67 FT

L < 100 FT; However, use 18 FT

[49] Hint: Tc<2dt may require smaller dt
[45] Hint: Runoff=Zero

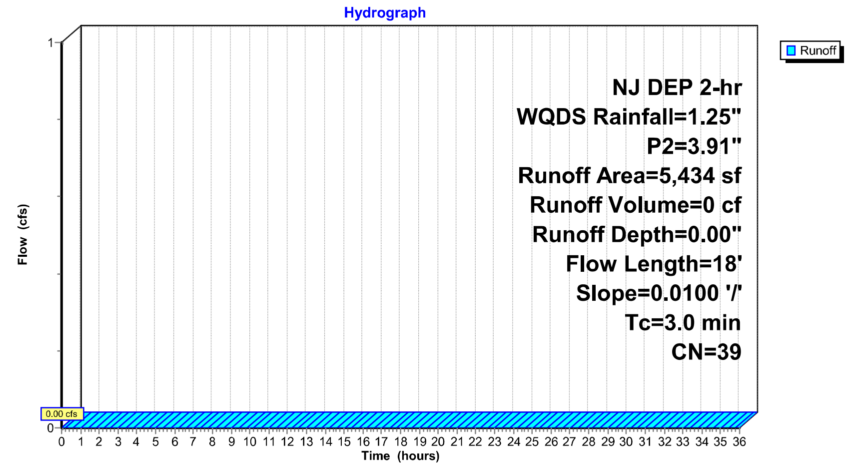
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link 51L : South Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQDS Rainfall=1.25", P2=3.91"

Area (sf)	CN	Description
5,434	39	>75% Grass cover, Good, HSG A
5,434		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	18	0.0100	0.10		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 45S: SA South Undetained



Summary for Subcatchment 46S: SA UG Basin Roof

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.011

L = [100 * sqrt(0.010)]/.011
L = 909 FT

L > 100 FT

Therefore, use 78 FT

[49] Hint: Tc<2dt may require smaller dt

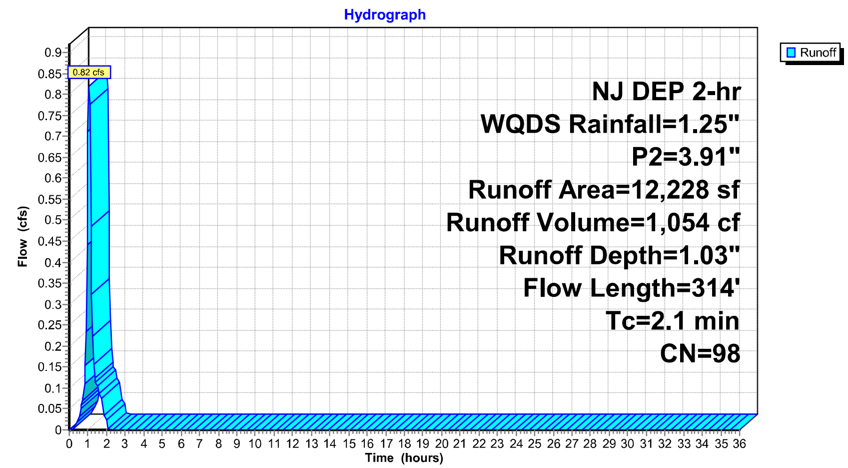
Runoff = 0.82 cfs @ 1.06 hrs, Volume= 1,054 cf, Depth= 1.03"
Routed to Link 54L : SA UG Basin Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQDS Rainfall=1.25", P2=3.91"

Area (sf)	CN	Description
12,228	98	Roofs, HSG A
12,228		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	78	0.0100	1.10		**Sheet Flow, Roof** Smooth surfaces n= 0.011 P2= 3.91"
0.9	236	0.0050	4.17	3.28	**Pipe Channel, 12" HDPE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010
2.1	314	Total			

Subcatchment 46S: SA UG Basin Roof



Summary for Subcatchment 47S: SA North Undetained

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.010
n = 0.150

L = [100 * sqrt(0.010)]/.150
L = 66 FT

L > 100 FT; However, use 8 FT

[49] Hint: Tc<2dt may require smaller dt
[45] Hint: Runoff=Zero

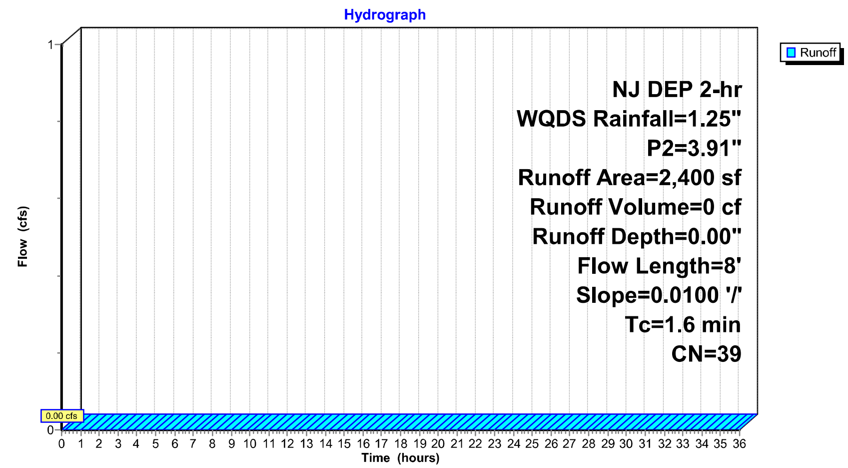
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQDS Rainfall=1.25", P2=3.91"

Area (sf)	CN	Description
2,400	39	>75% Grass cover, Good, HSG A
2,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	8	0.0100	0.09		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 47S: SA North Undetained



Summary for Pond 49P: AG Bio Basin West

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 0.71" for WQDS event
Inflow = 1.36 cfs @ 1.04 hrs, Volume= 1,666 cf
Outflow = 0.16 cfs @ 1.51 hrs, Volume= 1,666 cf, Atten= 88%, Lag= 28.5 min
Discarded = 0.16 cfs @ 1.51 hrs, Volume= 1,666 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 5.81' @ 1.51 hrs Surf.Area= 1,557 sf Storage= 1,045 cf

Plug-Flow detention time= 67.1 min calculated for 1,664 cf (100% of inflow)
Center-of-Mass det. time= 67.2 min (133.8 - 66.6)

Volume	Invert	Avail.Storage	Storage Description
#1	5.10'	7,152 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

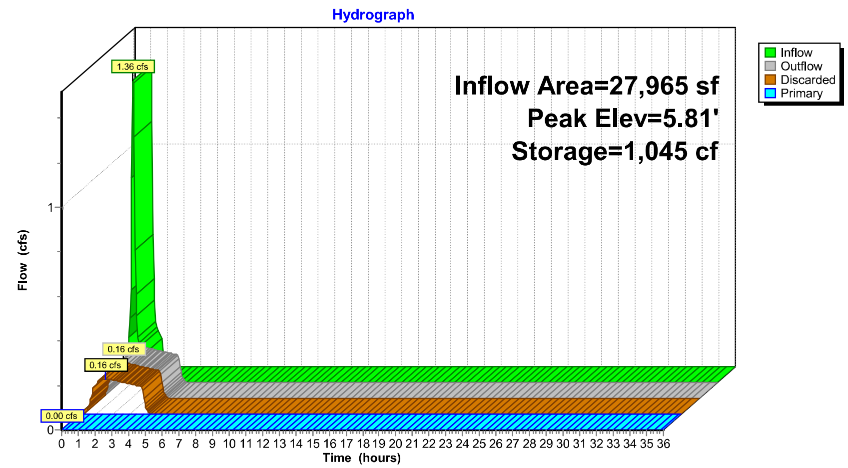
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.10	1,400	0	0
6.00	1,600	1,350	1,350
7.00	1,800	1,700	3,050
8.00	1,950	1,875	4,925
9.10	2,100	2,227	7,152

Device	Routing	Invert	Outlet Devices
#1	Primary	6.70'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	8.20'	**1.1' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	9.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	5.10'	**3.700 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.60'

Discarded OutFlow Max=0.16 cfs @ 1.51 hrs HW=5.81' (Free Discharge)
└─**4=Exfiltration** (Controls 0.16 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=5.10' (Free Discharge)
├─**1=Orifice/Grate** (Controls 0.00 cfs)
├─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 49P: AG Bio Basin West



Summary for Pond 50P: UG Inf Basin

Inflow Area =	12,228 sf,100.00% Impervious,	Inflow Depth = 1.03"	for WQDS event	
Inflow =	0.82 cfs @	1.06 hrs, Volume=	1,054 cf	
Outflow =	0.11 cfs @	1.42 hrs, Volume=	1,054 cf,	Atten= 86%, Lag= 21.8 min
Discarded =	0.11 cfs @	1.42 hrs, Volume=	1,054 cf	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf	

Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 6.11' @ 1.42 hrs Surf.Area= 2,708 sf Storage= 629 cf

Plug-Flow detention time= 57.3 min calculated for 1,053 cf (100% of inflow)
Center-of-Mass det. time= 57.4 min (125.3 - 67.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	5.50'	2,030 cf	**38.50'W x 70.33'L x 3.00'H Field A** 8,124 cf Overall - 3,049 cf Embedded = 5,074 cf x 40.0% Voids
#2A	5.83'	2,411 cf	**ADS N-12 24"** x 11 Inside #1 Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf Row Length Adjustment= +44.00' x 3.10 sf x 11 rows 36.83' Header x 3.10 sf x 2 = 228.4 cf Inside
		4,440 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.40'	**7.0" W x 2.5" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	5.50'	**1.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 3.20'

Discarded OutFlow Max=0.11 cfs @ 1.42 hrs HW=6.11' (Free Discharge)
└─**2=Exfiltration** (Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=5.50' (Free Discharge)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 50P: UG Inf Basin - Chamber Wizard Field A

Chamber Model = ADS N-12 24" (ADS N-12® Pipe)
Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf
Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf
Row Length Adjustment= +44.00' x 3.10 sf x 11 rows

28.0" Wide + 13.4" Spacing = 41.4" C-C Row Spacing

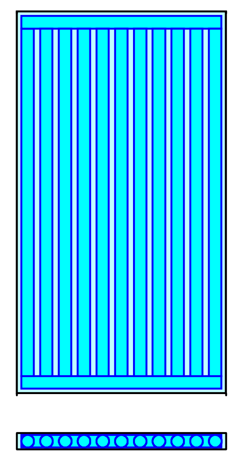
1 Chambers/Row x 20.00' Long +44.00' Row Adjustment +2.33' Header x 2 = 68.67' Row Length +10.0" End Stone x 2 = 70.33' Base Length
11 Rows x 28.0" Wide + 13.4" Spacing x 10 + 10.0" Side Stone x 2 = 38.50' Base Width
4.0" Stone Base + 28.0" Chamber Height + 4.0" Stone Cover = 3.00' Field Height

11 Chambers x 62.0 cf +44.00' Row Adjustment x 3.10 sf x 11 Rows + 36.83' Header x 3.10 sf x 2 = 2,410.8 cf Chamber Storage
11 Chambers x 78.4 cf +44.00' Row Adjustment x 3.92 sf x 11 Rows + 36.83' Header x 3.92 sf x 2 = 3,048.2 cf Displacement

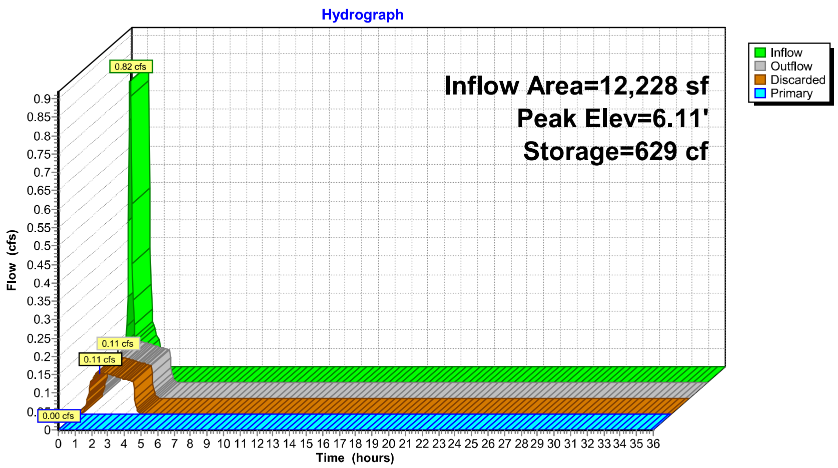
8,123.8 cf Field - 3,048.2 cf of Chambers = 5,075.6 cf of Stone x 40.0% Voids = 2,030.2 cf Stone Storage

Chamber Storage + Stone Storage = 4,441.0 cf = 0.102 af
Overall Storage Efficiency = 54.7%
Overall System Size = 70.33' x 38.50' x 3.00'

11 Chambers
300.9 cy Field
188.0 cy Stone



Pond 50P: UG Inf Basin



Summary for Pond 52P: AG Bio Basin East

Inflow Area =	43,765 sf, 71.99% Impervious,	Inflow Depth = 0.74" for WQDS event	
Inflow =	2.18 cfs @ 1.04 hrs,	Volume=	2,716 cf
Outflow =	0.06 cfs @ 1.98 hrs,	Volume=	2,716 cf, Atten= 97%, Lag= 56.4 min
Discarded =	0.06 cfs @ 1.98 hrs,	Volume=	2,716 cf
Primary =	0.00 cfs @ 0.00 hrs,	Volume=	0 cf

Routed to Link 51L : South Total

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 5.87' @ 1.98 hrs Surf.Area= 6,456 sf Storage= 2,409 cf

Plug-Flow detention time= 343.4 min calculated for 2,716 cf (100% of inflow)
Center-of-Mass det. time= 342.7 min (409.7 - 67.0)

Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	19,875 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

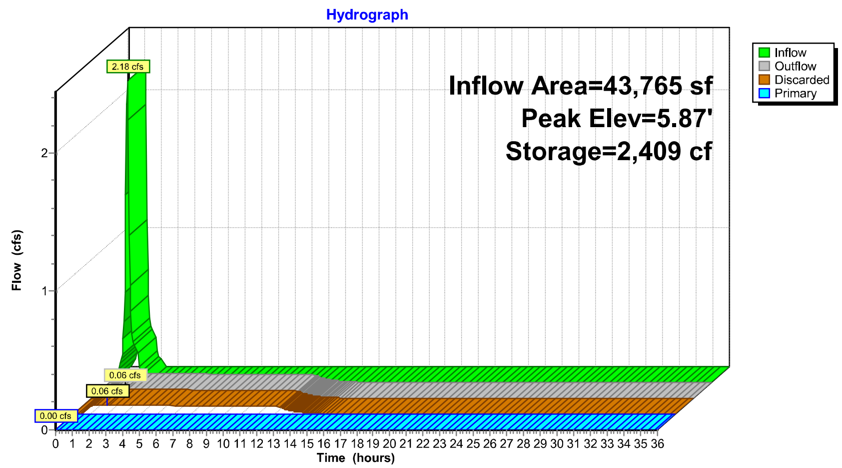
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.50	6,400	0	0
6.50	6,550	6,475	6,475
7.50	6,700	6,625	13,100
8.50	6,850	6,775	19,875

Device	Routing	Invert	Outlet Devices
#1	Primary	6.60'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	7.60'	**0.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	8.40'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	5.50'	**0.380 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 2.60'

Discarded OutFlow Max=0.06 cfs @ 1.98 hrs HW=5.87' (Free Discharge)
└─**4=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=5.50' (Free Discharge)
├─**1=Orifice/Grate** (Controls 0.00 cfs)
├─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 52P: AG Bio Basin East

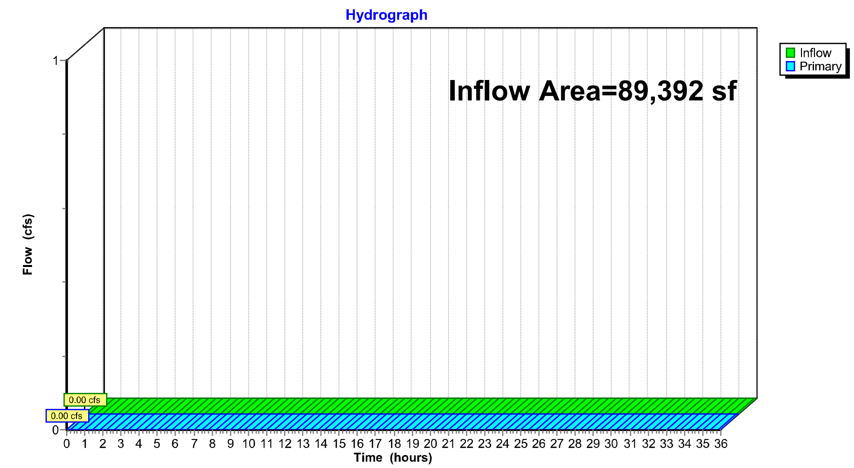


Summary for Link 51L: South Total

Inflow Area = 89,392 sf, 70.54% Impervious, Inflow Depth = 0.00" for WQDS event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 51L: South Total

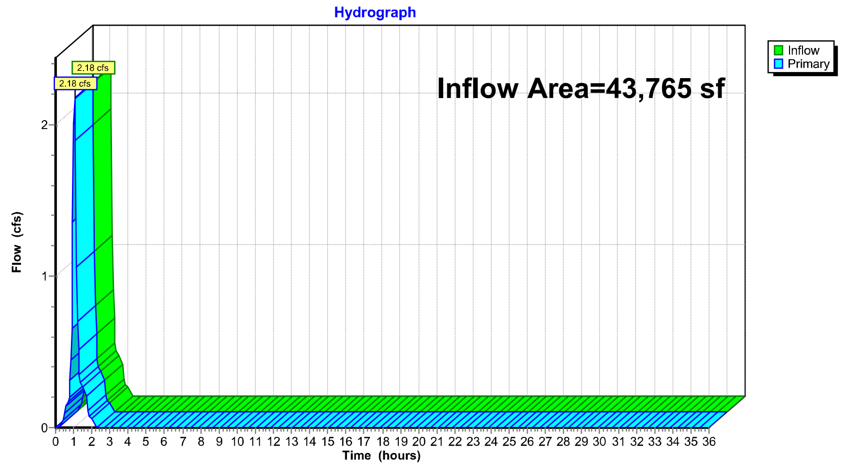


Summary for Link 52L: SA Basin East - Total

Inflow Area = 43,765 sf, 71.99% Impervious, Inflow Depth = 0.74" for WQDS event
Inflow = 2.18 cfs @ 1.04 hrs, Volume= 2,716 cf
Primary = 2.18 cfs @ 1.04 hrs, Volume= 2,716 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 52P : AG Bio Basin East

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 52L: SA Basin East - Total

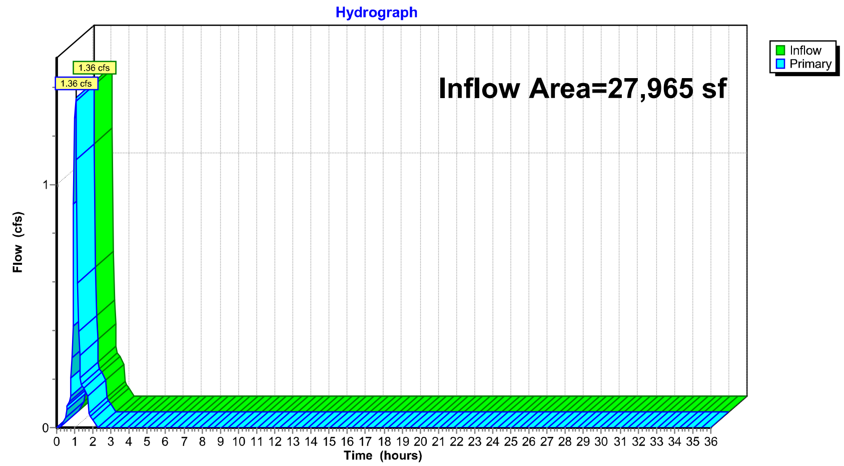


Summary for Link 53L: SA Basin West - Total

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 0.71" for WQDS event
Inflow = 1.36 cfs @ 1.04 hrs, Volume= 1,666 cf
Primary = 1.36 cfs @ 1.04 hrs, Volume= 1,666 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 49P : AG Bio Basin West

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 53L: SA Basin West - Total

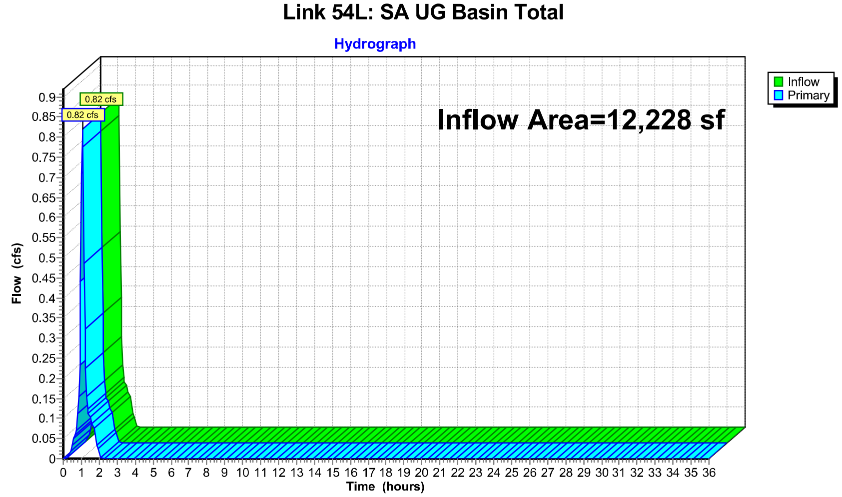


Summary for Link 54L: SA UG Basin Total

Inflow Area =	12,228 sf,100.00% Impervious,	Inflow Depth = 1.03" for WQDS event		
Inflow =	0.82 cfs @	1.06 hrs,	Volume=	1,054 cf
Primary =	0.82 cfs @	1.06 hrs,	Volume=	1,054 cf, Atten= 0%, Lag= 0.0 min

Routed to Pond 50P : UG Inf Basin

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs



GROUNDWATER RECHARGE CALCULATIONS

New Jersey Groundwater Recharge Spreadsheet Version 2.0 November 2003

Annual Groundwater Recharge Analysis (based on GSR-32)

Select Township ↓	Average Annual P (in)	Climatic Factor
CAMDEN CO., CAMDEN CITY	45.0	1.36

Project Name:	Asset Realty
Description:	Proposed Mixed Use Building
Analysis Date:	04/28/25

Pre-Developed Conditions

Land Segment	Area (acres)	TR-55 Land Cover	Soil	Annual Recharge (in)	Annual Recharge (cu.ft)
1	1.88	Open space	Hooksan	14.2	97,128
2	0.22	Woods	Hooksan	13.5	10,760
3	0				
4	0				
5	0				
6	0				
7	0				
8	0				
9	0				
10	0				
11	0				
12	0				
13	0				
14	0				
15	0				
Total =	2.1			Total Annual Recharge (in)	Total Annual Recharge (cu-ft)
				14.2	107,888

Post-Developed Conditions

Land Segment	Area (acres)	TR-55 Land Cover	Soil	Annual Recharge (in)	Annual Recharge (cu.ft)
1	1.57	Impervious areas	Hooksan	0.0	-
2	0.53	Open space	Hooksan	14.2	27,382
3					
4	0				
5	0				
6	0				
7	0				
8	0				
9	0				
10	0				
11	0				
12	0				
13	0				
14	0				
15	0				
Total =	2.1			Total Annual Recharge (in)	Total Annual Recharge (cu.ft)
				3.6	27,382
				Total Impervious Area (sq.ft)	68,389

Annual Recharge Requirements Calculation ↓

% of Pre-Developed Annual Recharge to Preserve =	100%	
Post-Development Annual Recharge Deficit=	***80,506***	(cubic feet)

Recharge Efficiency Parameters Calculations (area averages)

RWC=	0.58	(in)	DRWC=	0.13	(in)
ERWC =	0.19	(in)	EDRWC=	0.04	(in)

Procedure to fill the Pre-Development and Post-Development Conditions Tables

For each land segment, first enter the area, then select TR-55 Land Cover, then select Soil. Start from the top of the table and proceed downward. Don't leave blank rows (with A=0) in between your segment entries. Rows with A=0 will not be displayed or used in calculations. For impervious areas outside of standard lots select "Impervious Areas" as the Land Cover. Soil type for impervious areas are only required if an infiltration facility will be built within these areas.

Project Name	Description	Analysis Date	BMP or LID Type
Asset Realty	Proposed Mixed Use Building	04/28/25	AG Bioretention Basin East

Recharge BMP Input Parameters

Parameter	Symbol	Value	Unit
BMP Area	ABMP	6400.0	sq.ft
BMP Effective Depth, this is the design variable	dBMP	13.2	in
Upper level of the BMP surface (negative if above ground)	dBMPu	-21.6	in
Depth of lower surface of BMP, must be>=dBMPu	dEXC	34.8	in
Post-development Land Segment Location of BMP , Input Zero if Location is distributed or undetermined	SegBMP	2	unitless

Root Zone Water capacity Calculated Parameters

Parameter	Symbol	Value	Unit
Empty Portion of RWC under Post-D Natural Recharge	ERWC	0.23	in
ERWC Modified to consider dEXC	EDRWC	0.10	in
Empty Portion of RWC under Infilt. BMP	RERWC	0.08	in

Recharge Design Parameters

Parameter	Symbol	Value	Unit
Inches of Runoff to capture	Qdesign	2.78	in
Inches of Rainfall to capture	Pdesign	3.01	in
Recharge Provided Avg. over Imp. Area		33.7	in
Runoff Captured Avg. over imp. Area		34.9	in

BMP Calculated Size Parameters

ABMP/Aimp	Aratio	0.20	unitless
BMP Volume	VBMP	7,040	cu.ft

CALCULATION CHECK MESSAGES

Volume Balance-> **Solve Problem to satisfy Annual Recharge**
dBMP Check---> **OK**
dEXC Check---> **OK**
BMP Location---> **OK**

Parameters from Annual Recharge Worksheet

Parameter	Symbol	Value	Unit
Post-D Deficit Recharge (or desired recharge volume)	Vdef	80,506	cu.ft
Post-D Impervious Area (or target Impervious Area)	Aimp	31,508	sq.ft
Root Zone Water Capacity	RWC	0.73	in
RWC Modified to consider dEXC	DRWC	0.31	in
Climatic Factor	C-factor	1.36	no units
Average Annual P	Pavg	45.0	in
Recharge Requirement over Imp. Area	dr	14.1	in

System Performance Calculated Parameters

Parameter	Symbol	Value	Unit
Annual BMP Recharge Volume		88,383	cu.ft
Avg BMP Recharge Efficiency		96.5%	Represents % Infiltration Recharged
%Rainfall became Runoff		77.8%	%
%Runoff Infiltrated		99.7%	%
%Runoff Recharged		44.3%	%
%Rainfall Recharged		34.5%	%

OTHER NOTES

Pdesign is accurate only after BMP dimensions are updated to make rech volume= deficit volume. The portion of BMP infiltration prior to filling and the area occupied by BMP are ignored in these calculations. Results are sensetive to dBMP, make sure dBMP selected is small enough for BMP to empty in less than 3 days. For land Segment Location of BMP if you select "impervious areas" RWC will be minimal but not zero as determined by the soil type and a shallow root zone for this Land Cover allowing consideration of lateral flow and other losses.

How to solve for different recharge volumes: By default the spreadsheet assigns the values of total deficit recharge volume "Vdef" and total proposed impervious area "Aimp" from the "Annual Recharge" sheet to "Vdef" and "Aimp" on this page. This allows solution for a single BMP to handle the entire recharge requirement assuming the runoff from entire impervious area is available to the BMP.
To solve for a smaller BMP or a LID-IMP to recharge only part of the recharge requirement, set Vdef to your target value and Aimp to impervious area directly connected to your infiltration facility and then solve for ABMP or dBMP. To go back to the default configuration clik the "Default Vdef & Aimp" button.

Project Name	Description	Analysis Date	BMP or LID Type
Asset Realty	Proposed Mixed Use Building	04/28/25	AG Bioretention Basin West

Recharge BMP Input Parameters

Parameter	Symbol	Value	Unit
BMP Area	ABMP	1400.0	sq.ft
BMP Effective Depth, this is the design variable	dBMP	19.2	in
Upper level of the BMP surface (negative if above ground)	dBMPu	-27.6	in
Depth of lower surface of BMP, must be>=dBMPu	dEXC	46.8	in
Post-development Land Segment Location of BMP , Input Zero if Location is distributed or undetermined	SegBMP	2	unitless

Root Zone Water capacity Calculated Parameters

Parameter	Symbol	Value	Unit
Empty Portion of RWC under Post-D Natural Recharge	ERWC	0.23	in
ERWC Modified to consider dEXC	EDRWC	0.10	in
Empty Portion of RWC under Infilt. BMP	RERWC	0.08	in

Recharge Design Parameters

Parameter	Symbol	Value	Unit
Inches of Runoff to capture	Qdesign	2.78	in
Inches of Rainfall to capture	Pdesign	3.01	in
Recharge Provided Avg. over Imp. Area		33.7	in
Runoff Captured Avg. over imp. Area		34.9	in

BMP Calculated Size Parameters

ABMP/Aimp	Aratio	0.07	unitless
BMP Volume	VBMP	2,240	cu.ft

CALCULATION CHECK MESSAGES

Volume Balance-> Solve Problem to satisfy Annual Recharge
dBMP Check---> OK
dEXC Check---> OK
BMP Location---> OK

Parameters from Annual Recharge Worksheet

Post-D Deficit Recharge (or desired recharge volume)	Vdef	80,506	cu.ft
Post-D Impervious Area (or target Impervious Area)	Aimp	19,325	sq.ft
Root Zone Water Capacity	RWC	0.73	in
RWC Modified to consider dEXC	DRWC	0.31	in
Climatic Factor	C-factor	1.36	no units
Average Annual P	Pavg	45.0	in
Recharge Requirement over Imp. Area	dr	14.1	in

System Performance Calculated Parameters

Annual BMP Recharge Volume		19,334	cu.ft
Avg BMP Recharge Efficiency		96.5%	Represents % Infiltration Recharged
%Rainfall became Runoff		77.8%	%
%Runoff Infiltrated		35.6%	%
%Runoff Recharged		9.7%	%
%Rainfall Recharged		7.5%	%

OTHER NOTES

Pdesign is accurate only after BMP dimensions are updated to make rech volume= deficit volume. The portion of BMP infiltration prior to filling and the area occupied by BMP are ignored in these calculations. Results are sensetive to dBMP, make sure dBMP selected is small enough for BMP to empty in less than 3 days. For land Segment Location of BMP if you select "impervious areas" RWC will be minimal but not zero as determined by the soil type and a shallow root zone for this Land Cover allowing consideration of lateral flow and other losses.

How to solve for different recharge volumes: By default the spreadsheet assigns the values of total deficit recharge volume "Vdef" and total proposed impervious area "Aimp" from the "Annual Recharge" sheet to "Vdef" and "Aimp" on this page. This allows solution for a single BMP to handle the entire recharge requirement assuming the runoff from entire impervious area is available to the BMP.
To solve for a smaller BMP or a LID-IMP to recharge only part of the recharge requirement, set Vdef to your target value and Aimp to impervious area directly connected to your infiltration facility and then solve for ABMP or dBMP. To go back to the default configuration clik the "Default Vdef & Aimp" button.

Project Name	Description	Analysis Date	BMP or LID Type
Asset Realty	Proposed Mixed Use Building	04/28/25	UG Infiltration Basin

Recharge BMP Input Parameters

Parameter	Symbol	Value	Unit
BMP Area	ABMP	2708.0	sq.ft
BMP Effective Depth, this is the design variable	dBMP	22.8	in
Upper level of the BMP surface (negative if above ground)	dBMPu	6.0	in
Depth of lower surface of BMP, must be>=dBMPu	dEXC	36.0	in
Post-development Land Segment Location of BMP , Input Zero if Location is distributed or undetermined	SegBMP	1	unitless

Root Zone Water capacity Calculated Parameters

Parameter	Symbol	Value	Unit
Empty Portion of RWC under Post-D Natural Recharge	ERWC	0.17	in
ERWC Modified to consider dEXC	EDRWC	0.02	in
Empty Portion of RWC under Infilt. BMP	RERWC	0.02	in

Recharge Design Parameters

Parameter	Symbol	Value	Unit
Inches of Runoff to capture	Qdesign	2.78	in
Inches of Rainfall to capture	Pdesign	3.01	in
Recharge Provided Avg. over Imp. Area		33.7	in
Runoff Captured Avg. over imp. Area		34.9	in

BMP Calculated Size Parameters

ABMP/Aimp	Aratio	0.22	unitless
BMP Volume	VBMP	5,145	cu.ft

CALCULATION CHECK MESSAGES

Volume Balance-> **Solve Problem to satisfy Annual Recharge**
dBMP Check---> **OK**
dEXC Check---> **OK**
BMP Location---> **OK**

Parameters from Annual Recharge Worksheet

Post-D Deficit Recharge (or desired recharge volume)	Vdef	80,506	cu.ft
Post-D Impervious Area (or target Impervious Area)	Aimp	12,228	sq.ft
Root Zone Water Capacity	RWC	0.53	in
RWC Modified to consider dEXC	DRWC	0.07	in
Climatic Factor	C-factor	1.36	no units
Average Annual P	Pavg	45.0	in
Recharge Requirement over Imp. Area	dr	14.1	in

System Performance Calculated Parameters

Annual BMP Recharge Volume		37,397	cu.ft
Avg BMP Recharge Efficiency		96.5%	Represents % Infiltration Recharged
%Rainfall became Runoff		77.8%	%
%Runoff Infiltrated		108.7%	%
%Runoff Recharged		18.8%	%
%Rainfall Recharged		14.6%	%

OTHER NOTES

Pdesign is accurate only after BMP dimensions are updated to make rech volume= deficit volume. The portion of BMP infiltration prior to filling and the area occupied by BMP are ignored in these calculations. Results are sensetive to dBMP, make sure dBMP selected is small enough for BMP to empty in less than 3 days. For land Segment Location of BMP if you select "impervious areas" RWC will be minimal but not zero as determined by the soil type and a shallow root zone for this Land Cover allowing consideration of lateral flow and other losses.

How to solve for different recharge volumes: By default the spreadsheet assigns the values of total deficit recharge volume "Vdef" and total proposed impervious area "Aimp" from the "Annual Recharge" sheet to "Vdef" and "Aimp" on this page. This allows solution for a single BMP to handle the entire recharge requirement assuming the runoff from entire impervious area is available to the BMP.
To solve for a smaller BMP or a LID-IMP to recharge only part of the recharge requirement, set Vdef to your target value and Aimp to impervious area directly connected to your infiltration facility and then solve for ABMP or dBMP. To go back to the default configuration clik the "Default Vdef & Aimp" button.

DRAIN TIME CALCULATIONS

<u>Basin Drain Time Calculation Summary:</u>

Pursuant to the NJDEP BMP Manual, the following equation is utilized to calculate the drain time of the proposed infiltration basin system:

$$Drain\ Time = \frac{Volume\ to\ be\ Discarded\ (Via\ Exfiltration)}{(Infiltration\ Area\ x\ Design\ Permeability\ Rate)}$$

AG Bioretention Basin East:

Discarded Volume Via Exfiltration = **10,847 cubic feet**

Basin Bottom Area = **6,400 square feet**

Minimum Tested Permeability Rate = **5.20 inches/hour**

Design Permeability Rate = 5.20 inches/hour / 2 = **2.60 inches/hour**

Adjusted Recharge Rate (Based on Groundwater Mounding) = **0.38 inches/hour**

$$Drain\ Time = \frac{10{,}847\ cf\ x\ 12\ in/ft}{(6{,}400\ SF\ x\ 0.38\ in/hr)} = 53.52\ hours$$

Since the proposed bioretention basin will drain in less time than the allowable maximum drain time of 72 hours, the system complies with the NJDEP basin drain time requirements.

AG Bioretention Basin West:

Discarded Volume Via Exfiltration = **14,807 cubic feet**

Basin Bottom Area = **1,400 square feet**

Minimum Tested Permeability Rate = **20.0 inches/hour**

Design Permeability Rate = 20.0 inches/hour / 2 = **10.0 inches/hour**

Adjusted Recharge Rate (Based on Groundwater Mounding) = **3.70 inches/hour**

$$Drain\ Time = \frac{14{,}807\ cf\ x\ 12\ in/ft}{(1{,}400\ SF\ x\ 3.70\ in/hr)} = 34.30\ hours$$

Since the proposed bioretention basin will drain in less time than the allowable maximum drain time of 72 hours, the system complies with the NJDEP basin drain time requirements.

UG Infiltration Basin Roof:

Discarded Volume Via Exfiltration = **9,237 cubic feet**

Basin Bottom Area = **2,708 square feet**

Minimum Tested Permeability Rate = **20.0 inches/hour**

Design Permeability Rate = 20.0 inches/hour / 2 = **10.0 inches/hour**

Adjusted Recharge Rate (Based on Groundwater Mounding) = **1.40 inches/hour**

$$Drain\ Time = \frac{9{,}237\ cf\ x\ 12\ in/ft}{(2{,}708\ SF\ x\ 1.40\ in/hr)} = 29.24\ hours$$

Since the proposed infiltration basin will drain in less time than the allowable maximum drain time of 72 hours, the system complies with the NJDEP basin drain time requirements.

GROUNDWATER MOUNDING CALCULATIONS

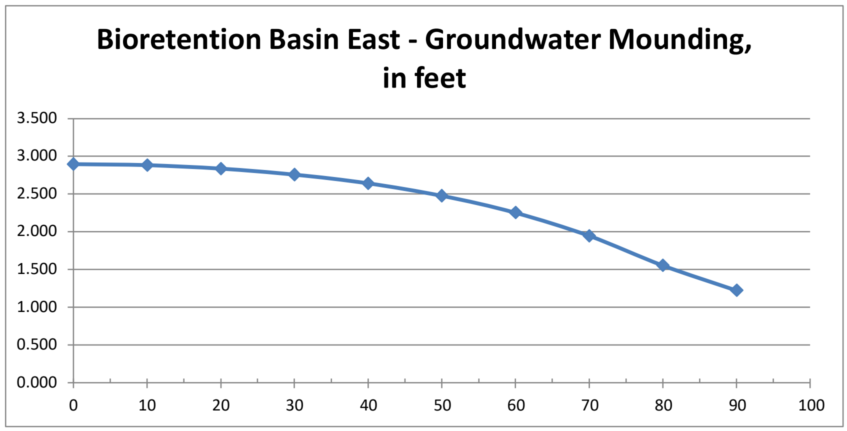
Input Values

0.38	***R***	**Recharge rate (permeability rate) (in/hr)**
0.150	**Sy**	**Specific yield, Sy (dimensionless)** **default value is 0.15; max value is 0.2 provided that a lab test data is submitted**
13.00	**Kh**	**Horizontal hydraulic conductivity (in/hr)** **Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan**
75.000	**x**	**1/2 length of basin (x direction, in feet)**
21.330	**y**	**1/2 width of basin (y direction, in feet)**
53.52	**t**	**Duration of infiltration period (hours)**
10.00	**hi(0)**	**Initial thickness of saturated zone (feet)**

12.901	**h(max)**	**Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)**
2.897	**Δh(max)**	**Maximum groundwater mounding (beneath center of basin at end of infiltration period)**

Ground-water Mounding, in feet	**Distance from center of basin in x direction, in feet**
2.897	**0**
2.882	**10**
2.836	**20**
2.757	**30**
2.640	**40**
2.476	**50**
2.252	**60**
1.945	**70**
1.552	**80**
1.222	**90**

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

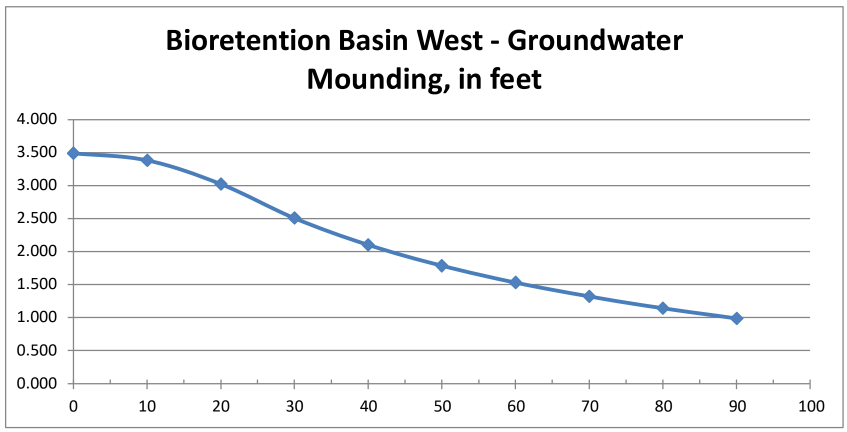
Input Values

3.70	*R*	Recharge rate (permeability rate) (in/hr)
0.150	Sy	Specific yield, Sy (dimensionless) default value is 0.15; max value is 0.2 provided that a lab test data is submitted
50.00	Kh	Horizontal hydraulic conductivity (in/hr) Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
22.500	x	1/2 length of basin (x direction, in feet)
15.560	y	1/2 width of basin (y direction, in feet)
34.30	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

13.490	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
3.490	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
3.490	0
3.381	10
3.023	20
2.507	30
2.100	40
1.786	50
1.531	60
1.320	70
1.141	80
0.987	90

Re-Calculate Now



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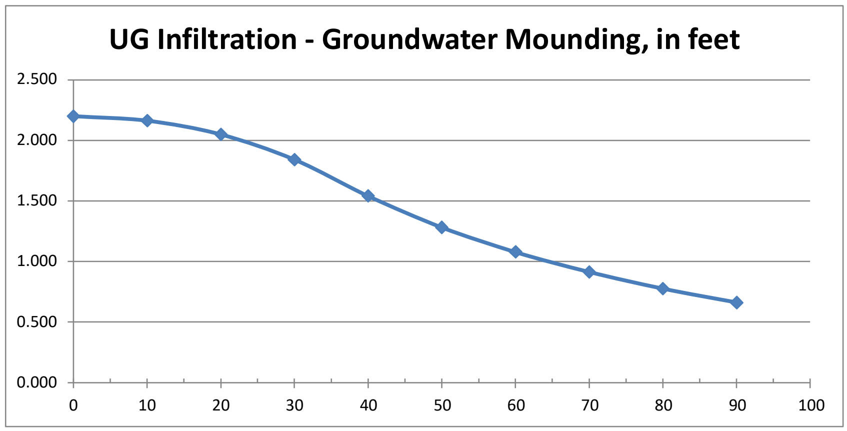
Input Values

1.40	*R*	**Recharge rate (permeability rate) (in/hr)**
0.150	Sy	**Specific yield, Sy (dimensionless)** **default value is 0.15; max value is 0.2 provided that a lab test data is submitted**
50.00	**Kh**	**Horizontal hydraulic conductivity (in/hr)** **Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan**
35.165	**x**	**1/2 length of basin (x direction, in feet)**
19.250	**y**	**1/2 width of basin (y direction, in feet)**
29.24	**t**	**Duration of infiltration period (hours)**
10.00	**hi(0)**	**Initial thickness of saturated zone (feet)**

12.203	**h(max)**	**Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)**
2.199	**Δh(max)**	**Maximum groundwater mounding (beneath center of basin at end of infiltration period)**

Ground-water Mounding, in feet	**Distance from center of basin in x direction, in feet**
2.199	**0**
2.163	**10**
2.049	**20**
1.840	**30**
1.541	**40**
1.282	**50**
1.079	**60**
0.913	**70**
0.776	**80**
0.661	**90**

Re-Calculate Now



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Groundwater Mounding Analysis

As recommended by the New Jersey Stormwater Best Managements Practices Manual, infiltration basins are not recommended where their installation would create a significant risk of adverse hydraulic impacts. These impacts may include exacerbating a naturally or seasonally high-water table so as to cause surficial ponding, therefore, hydraulic impacts on the groundwater table must be assessed.

A description of the methods, findings and conclusions of the groundwater mounding analysis are presented below.

The proposed stormwater management system includes two (2) aboveground bioretention basins, designed with infiltration and one (1) underground infiltration basin. The stormwater management infiltration basins are summarized in the table below:

TABLE 1: STORMWATER MANAGEMENT FACILITY PROPERTIES				
Stormwater Facility ID	**Approximate Seasonal High Groundwater Elevation (mse)***	**Approximate Elevation of Bottom of Basin (mse)**	**Approximate Bottom Area of Infiltration Facility (SF)**	**Approximate Equivalent Rectangle Dimensions (Length*width) (FT)**
AG Bio Basin East	2.60 (SPP-1)	5.50	6,400	150 x 42.66
AG Bio Basin West	1.60 (SPP-7)	5.10	1,400	45 x 31.12
UG Inf Basin	3.20 (SPP4 & 6)	5.50	2,708	70.33 x 38.50

In order to illustrate the hydraulic impact of the basin recharge to the groundwater table, a groundwater mounding analysis has been prepared to assess the temporary rise in the groundwater level (a “mounding” condition) that results from additional water entering an aquifer from a concentrated source, such as the proposed infiltration basins. Specifically, this analysis included evaluation to determine if a potential mounded condition breaches the bottom of the infiltration basins.

Groundwater Mounding Methodology

The groundwater mounding analysis evaluated the effects of the volume of runoff infiltrated during the water quality storm event under proposed conditions. The effects of the recharge were evaluated by solving mounding equations using the Hantush method provided by the US Geologic Survey Scientific Investigation Report of 2010-5102 for groundwater mounding. The models use the subsurface soil and aquifer data to evaluate the potential temporary rise in groundwater below the basin due to recharge from the proposed systems.

Aquifer Bedrock Geology

The subject property is mapped within the Kirkwood-Cohansey. The mounding models have been provided to utilize the minimum initial saturated thickness of 10 feet.

Groundwater Mounding Analysis

Since the recharge rate based on the tested permeability rate will result in groundwater mounding that exceeds the elevation of the bottom of BMP storage, the recharge rate utilized in this analysis was adjusted in order to demonstrate that each BMP will drain within three (3) days without groundwater mounding impacting the bottom of BMP storage.

In order to establish an effective recharge rate, the following equation was used:

$$Recharge\ Rate = \frac{Recharge\ Volume\ x\ 12in/ft}{Drain\ Time\ x\ System\ Bottom\ Area}$$

Where the units of measurement are as follows:

Recharge Rate: Inch per Hour
Recharge Volume: Cubic Feet
Drain Time: Hours
System Bottom Area: Square Feet

A summary of the effective recharge rate has been provided in the following table:

TABLE 2: EFFECTIVE RECHARGE RATE SUMMARY				
Stormwater Facility ID	**Recharge Volume (CF)**	**Approximate Bottom Area of Infiltration Facility (SF)**	**Drain Time (Hours)**	**Effective Recharge Rate (In/Hr)**
AG Bio Basin East	10,847	6,400	53.52	0.38
AG Bio Basin West	14,807	1,400	34.30	3.70
UG Inf Basin	9,237	2,708	29.24	1.40

The data presented above were then inputted into the mounding analyses equations and solved with methodology for mounding analyses of stormwater recharge mentioned previously. Detailed results of our analysis are included herein and are summarized below:

TABLE 3: MOUNDING ANALYSIS SUMMARY				
Stormwater Facility ID	**Approximate Seasonal High Groundwater Elevation***	**Approximate Elevation of Bottom of BMP Storage**	**Separation of Seasonal High Groundwater and Bottom of BMP Storage (FT)**	**Estimated Mound Height at Center of Basin (FT)**
AG Bio Basin East	2.60 (SPP-1)	5.50	2.90	2.897
AG Bio Basin West	1.60 (SPP-7)	5.10	3.50	3.490
UG Inf Basin	3.20 (SPP4 & 6)	5.50	2.30	2.199

As expected, the peak of the mound occurs at the end of the recharge period, with the highest point of the temporary mound at the center of the basin (identified as distance 0). The groundwater mound tapers down rapidly beyond the center and edges of the basin.

Conclusion
Based on the results of this analysis, a potential mounded condition will not breach the bottom of the proposed infiltration systems.

SOIL EROSION HYDROLOGY CALCULATIONS
(FAILURE CONDITION)

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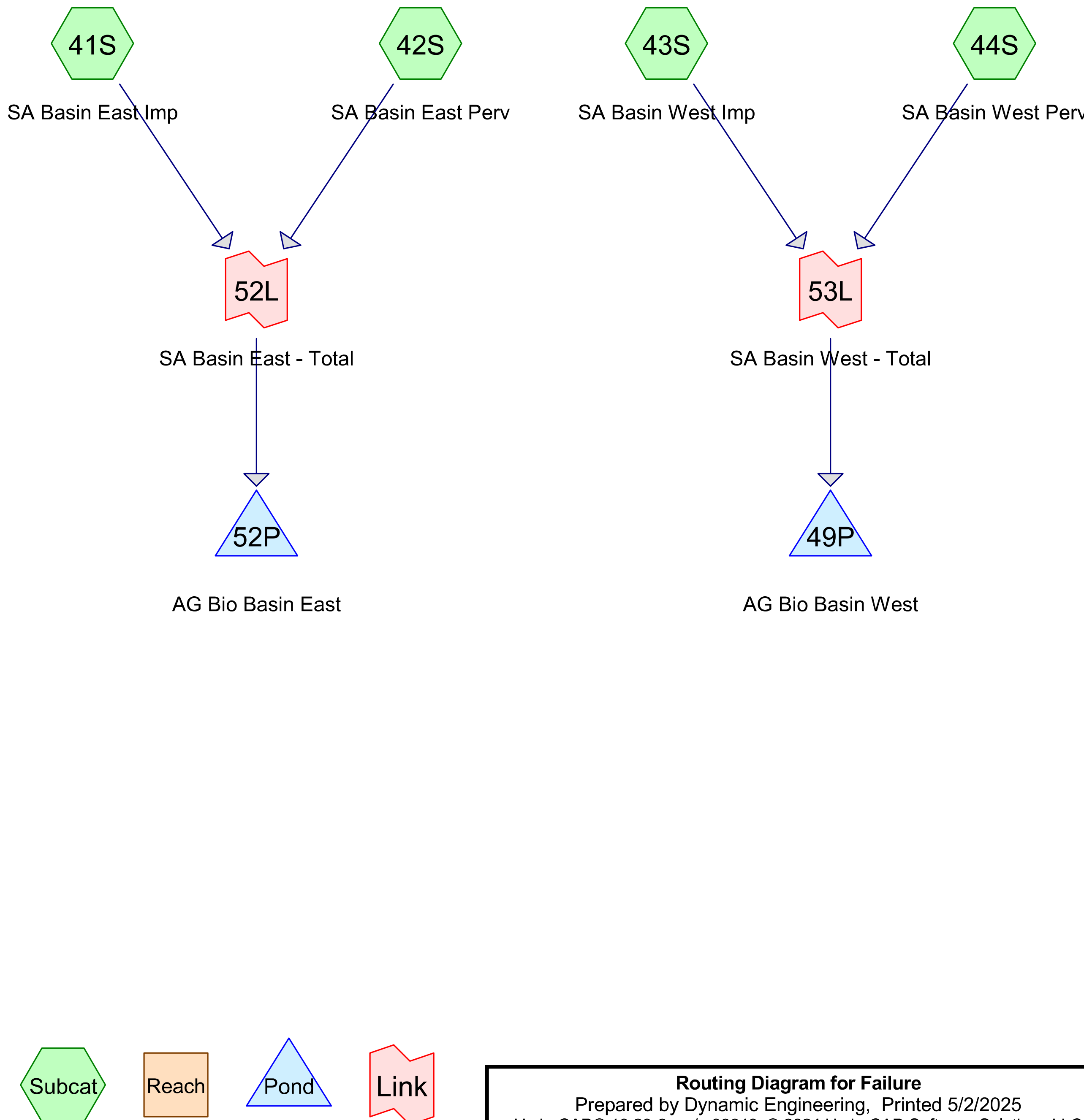


Routing Diagram for Failure
Prepared by Dynamic Engineering, Printed 5/2/2025
HydroCAD® 10.20-6a s/n 08640 © 2024 HydroCAD Software Solutions LLC

Project Notes

Rainfall events imported from "NJ-Rain.txt" for 6603 NJ Camden-C
Rainfall events imported from "NJ-Rain.txt" for 6603 NJ Camden-C

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC	P2 (inches)
1	10-Year-Projected	NOAA 24-hr	C	Default	24.00	1	6.17	2	3.91
2	25-Year	NOAA 24-hr	C	Default	24.00	1	6.28	2	3.91

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
20,897	39	>75% Grass cover, Good, HSG A (42S, 44S)
38,606	98	Paved parking, HSG A (41S, 43S)
12,227	98	Roofs, HSG A (41S)
71,730	**81**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
71,730	HSG A	41S, 42S, 43S, 44S
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
71,730		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Su Nu
20,897	0	0	0	0	20,897	>75% Grass cover, Good	
38,606	0	0	0	0	38,606	Paved parking	
12,227	0	0	0	0	12,227	Roofs	
71,730	**0**	**0**	**0**	**0**	**71,730**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	41S	0.00	0.00	40.0	0.0030	0.013	0.0	15.0	0.0	
2	43S	0.00	0.00	97.0	0.0050	0.013	0.0	15.0	0.0	
3	43S	0.00	0.00	4.0	0.0030	0.010	0.0	15.0	0.0	

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 41S: SA Basin East Imp Runoff Area=31,508 sf 100.00% Impervious Runoff Depth=5.93"
Flow Length=168' Tc=1.5 min CN=98 Runoff=5.11 cfs 15,575 cf

Subcatchment 42S: SA Basin East Perv Runoff Area=12,257 sf 0.00% Impervious Runoff Depth=0.50"
Flow Length=20' Slope=0.0120 '/' Tc=3.0 min CN=39 Runoff=0.06 cfs 506 cf

Subcatchment 43S: SA Basin West Imp Runoff Area=19,325 sf 100.00% Impervious Runoff Depth=5.93"
Flow Length=174' Tc=1.2 min CN=98 Runoff=3.16 cfs 9,552 cf

Subcatchment 44S: SA Basin West Perv Runoff Area=8,640 sf 0.00% Impervious Runoff Depth=0.50"
Flow Length=60' Slope=0.0750 '/' Tc=3.5 min CN=39 Runoff=0.04 cfs 357 cf

Pond 49P: AG Bio Basin West Peak Elev=8.77' Storage=6,475 cf Inflow=3.17 cfs 9,909 cf
Outflow=1.51 cfs 9,791 cf

Pond 52P: AG Bio Basin East Peak Elev=8.04' Storage=16,748 cf Inflow=5.13 cfs 16,080 cf
Outflow=0.48 cfs 12,137 cf

Link 52L: SA Basin East - Total Inflow=5.13 cfs 16,080 cf
Primary=5.13 cfs 16,080 cf

Link 53L: SA Basin West - Total Inflow=3.17 cfs 9,909 cf
Primary=3.17 cfs 9,909 cf

Total Runoff Area = 71,730 sf Runoff Volume = 25,990 cf Average Runoff Depth = 4.35"
29.13% Pervious = 20,897 sf 70.87% Impervious = 50,833 sf

Summary for Subcatchment 41S: SA Basin East Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.018
n = 0.011

L = [100 * sqrt(0.018)]/.011
L = 1,219 FT

L > 100 FT

Therefore, use 100 FT

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 144% of capacity of segment #3

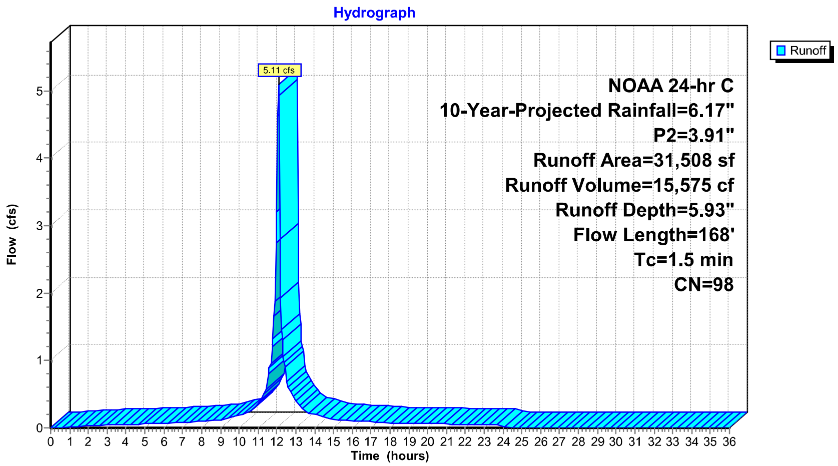
Runoff = 5.11 cfs @ 12.08 hrs, Volume= 15,575 cf, Depth= 5.93"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Projected Rainfall=6.17", P2=3.91"

Area (sf)	CN	Description
19,281	98	Paved parking, HSG A
12,227	98	Roofs, HSG A
31,508	98	Weighted Average
31,508		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0180	1.46		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.91"
0.2	28	0.0180	2.72		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
0.2	40	0.0030	2.88	3.54	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
1.5	168	Total			

Subcatchment 41S: SA Basin East Imp



Summary for Subcatchment 42S: SA Basin East Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.012
n = 0.150

L = [100 * sqrt(0.012)]/.150
L = 73 FT

L < 100 FT; However, use 20 FT

---

[49] Hint: Tc<2dt may require smaller dt

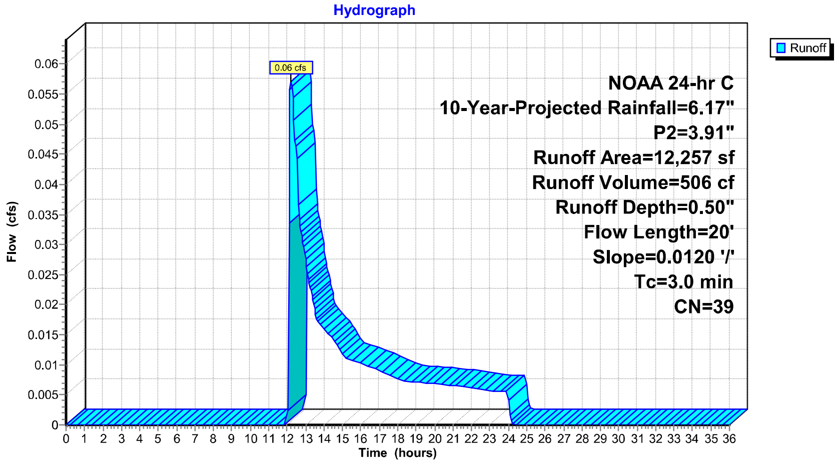
Runoff = 0.06 cfs @ 12.21 hrs, Volume= 506 cf, Depth= 0.50"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Projected Rainfall=6.17", P2=3.91"

Area (sf)	CN	Description
12,257	39	>75% Grass cover, Good, HSG A
12,257		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	20	0.0120	0.11		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 42S: SA Basin East Perv



Summary for Subcatchment 43S: SA Basin West Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.025
n = 0.011

L = [100 * sqrt(0.025)]/.011
L = 1,437 FT

L > 100 FT

Therefore, use 73 FT

---

[49] Hint: Tc<2dt may require smaller dt

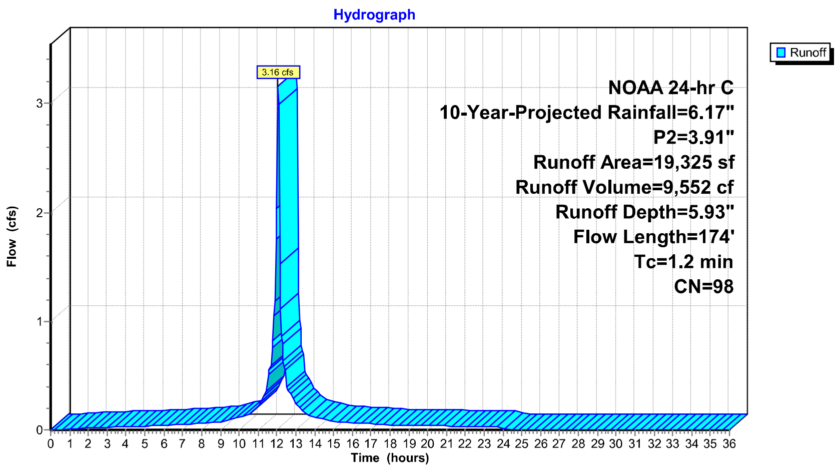
Runoff = 3.16 cfs @ 12.08 hrs, Volume= 9,552 cf, Depth= 5.93"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Projected Rainfall=6.17", P2=3.91"

Area (sf)	CN	Description
19,325	98	Paved parking, HSG A
19,325		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	73	0.0250	1.56		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.91"
0.4	97	0.0050	3.72	4.57	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
0.0	4	0.0030	3.75	4.60	**Pipe Channel, 15" HDPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010
1.2	174	Total			

Subcatchment 43S: SA Basin West Imp



Summary for Subcatchment 44S: SA Basin West Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.075
n = 0.150

L = [100 * sqrt(0.075)]/.150
L = 182 FT

L > 100 FT

Therefore, use 60 FT

---

[49] Hint: Tc<2dt may require smaller dt

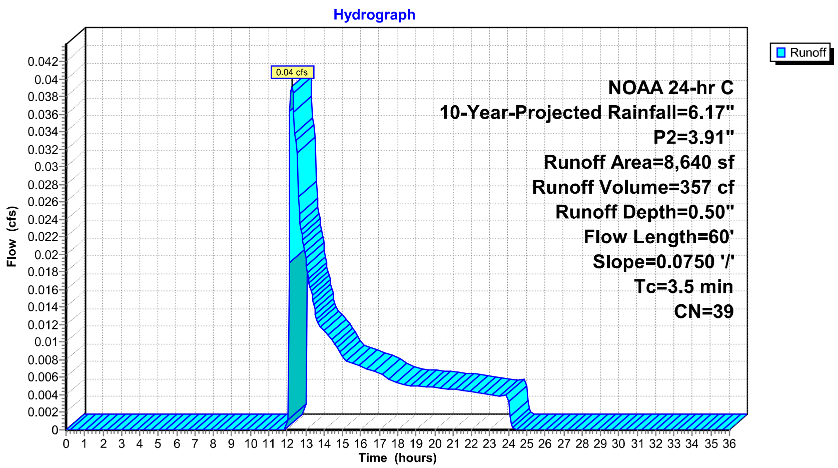
Runoff = 0.04 cfs @ 12.25 hrs, Volume= 357 cf, Depth= 0.50"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year-Projected Rainfall=6.17", P2=3.91"

Area (sf)	CN	Description
8,640	39	>75% Grass cover, Good, HSG A
8,640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	60	0.0750	0.29		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 44S: SA Basin West Perv



Summary for Pond 49P: AG Bio Basin West

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 4.25" for 10-Year-Projected event
Inflow = 3.17 cfs @ 12.08 hrs, Volume= 9,909 cf
Outflow = 1.51 cfs @ 12.17 hrs, Volume= 9,791 cf, Atten= 52%, Lag= 5.6 min
Primary = 1.51 cfs @ 12.17 hrs, Volume= 9,791 cf
Routed to nonexistent node 51L

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Starting Elev= 6.70' Surf.Area= 1,740 sf Storage= 2,519 cf
Peak Elev= 8.77' @ 12.17 hrs Surf.Area= 2,056 sf Storage= 6,475 cf (3,956 cf above start)

Plug-Flow detention time= 478.6 min calculated for 7,272 cf (73% of inflow)
Center-of-Mass det. time= 255.6 min (1,005.2 - 749.6)

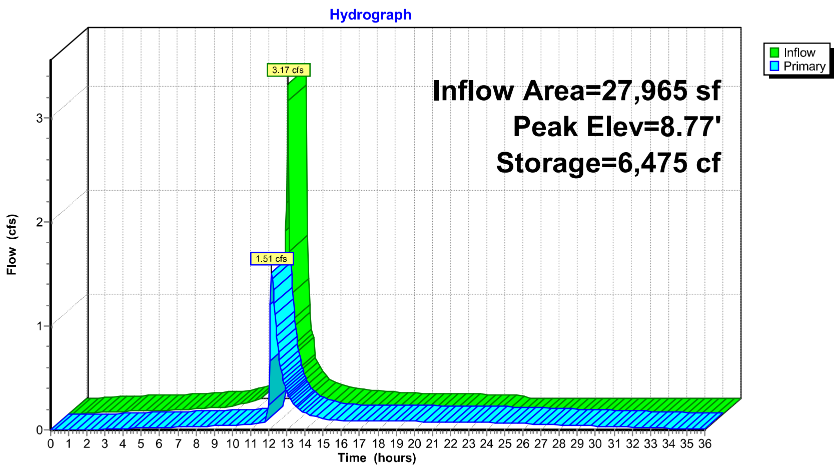
Volume	Invert	Avail.Storage	Storage Description
#1	5.10'	7,152 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.10	1,400	0	0
6.00	1,600	1,350	1,350
7.00	1,800	1,700	3,050
8.00	1,950	1,875	4,925
9.10	2,100	2,227	7,152

Device	Routing	Invert	Outlet Devices
#1	Primary	6.70'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	8.20'	**1.1' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	9.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=1.47 cfs @ 12.17 hrs HW=8.76' (Free Discharge)
—**1=Orifice/Grate** (Orifice Controls 0.11 cfs @ 6.80 fps)
—**2=Sharp-Crested Rectangular Weir** (Weir Controls 1.36 cfs @ 2.45 fps)
—**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 49P: AG Bio Basin West



Summary for Pond 52P: AG Bio Basin East

Inflow Area = 43,765 sf, 71.99% Impervious, Inflow Depth = 4.41" for 10-Year-Projected event
Inflow = 5.13 cfs @ 12.08 hrs, Volume= 16,080 cf
Outflow = 0.48 cfs @ 12.89 hrs, Volume= 12,137 cf, Atten= 91%, Lag= 48.3 min
Primary = 0.48 cfs @ 12.89 hrs, Volume= 12,137 cf
Routed to nonexistent node 51L

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Starting Elev= 6.60' Surf.Area= 6,565 sf Storage= 7,131 cf
Peak Elev= 8.04' @ 12.89 hrs Surf.Area= 6,781 sf Storage= 16,748 cf (9,617 cf above start)

Plug-Flow detention time= 993.9 min calculated for 4,999 cf (31% of inflow)
Center-of-Mass det. time= 375.3 min (1,124.3 - 749.0)

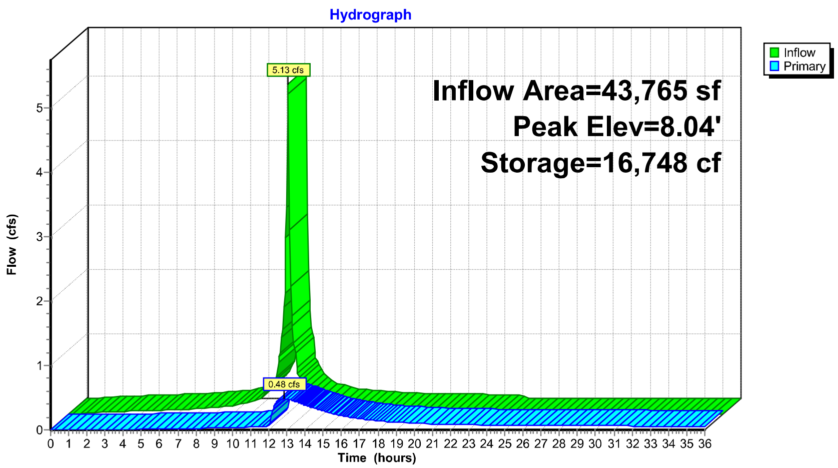
Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	19,875 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.50	6,400	0	0
6.50	6,550	6,475	6,475
7.50	6,700	6,625	13,100
8.50	6,850	6,775	19,875

Device	Routing	Invert	Outlet Devices
#1	Primary	6.60'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	7.60'	**0.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	8.40'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.48 cfs @ 12.89 hrs HW=8.04' (Free Discharge)
—**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 5.64 fps)
—**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.39 cfs @ 2.17 fps)
—**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 52P: AG Bio Basin East

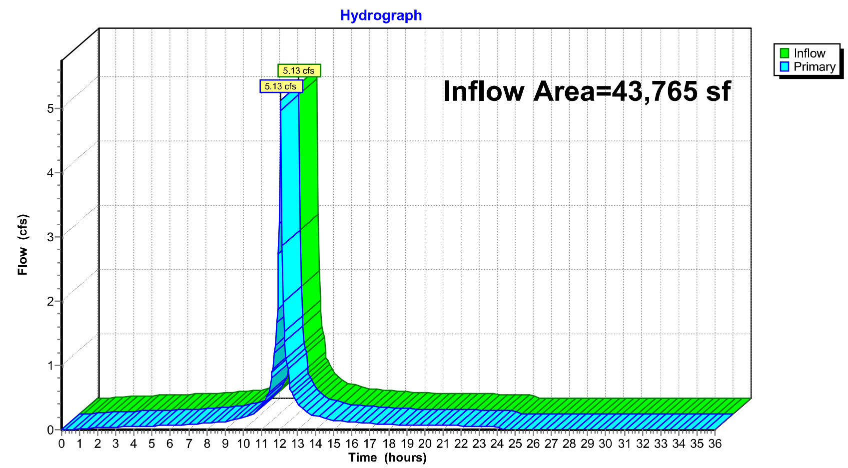


Summary for Link 52L: SA Basin East - Total

Inflow Area = 43,765 sf, 71.99% Impervious, Inflow Depth = 4.41" for 10-Year-Projected event
Inflow = 5.13 cfs @ 12.08 hrs, Volume= 16,080 cf
Primary = 5.13 cfs @ 12.08 hrs, Volume= 16,080 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 52P : AG Bio Basin East

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 52L: SA Basin East - Total

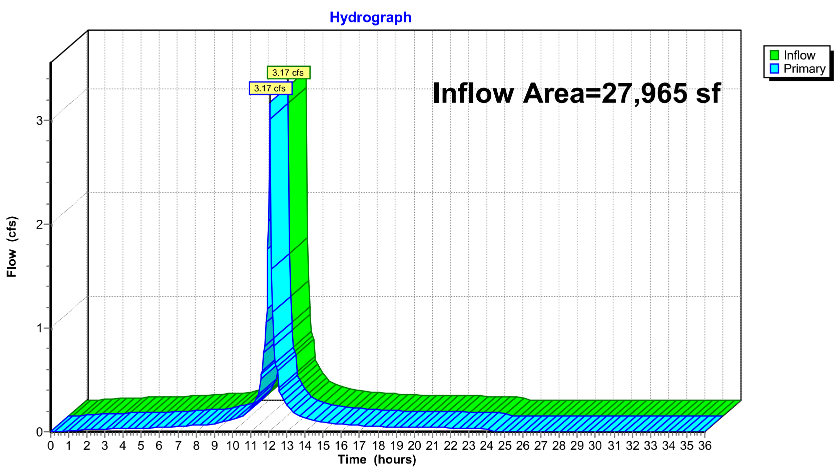


Summary for Link 53L: SA Basin West - Total

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 4.25" for 10-Year-Projected event
Inflow = 3.17 cfs @ 12.08 hrs, Volume= 9,909 cf
Primary = 3.17 cfs @ 12.08 hrs, Volume= 9,909 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 49P : AG Bio Basin West

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 53L: SA Basin West - Total



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 41S: SA Basin East Imp Runoff Area=31,508 sf 100.00% Impervious Runoff Depth=6.04"
Flow Length=168' Tc=1.5 min CN=98 Runoff=5.20 cfs 15,863 cf

Subcatchment 42S: SA Basin East Perv Runoff Area=12,257 sf 0.00% Impervious Runoff Depth=0.53"
Flow Length=20' Slope=0.0120 '/' Tc=3.0 min CN=39 Runoff=0.07 cfs 540 cf

Subcatchment 43S: SA Basin West Imp Runoff Area=19,325 sf 100.00% Impervious Runoff Depth=6.04"
Flow Length=174' Tc=1.2 min CN=98 Runoff=3.22 cfs 9,729 cf

Subcatchment 44S: SA Basin West Perv Runoff Area=8,640 sf 0.00% Impervious Runoff Depth=0.53"
Flow Length=60' Slope=0.0750 '/' Tc=3.5 min CN=39 Runoff=0.04 cfs 381 cf

Pond 49P: AG Bio Basin West Peak Elev=8.79' Storage=6,518 cf Inflow=3.24 cfs 10,110 cf
Outflow=1.58 cfs 9,989 cf

Pond 52P: AG Bio Basin East Peak Elev=8.06' Storage=16,887 cf Inflow=5.23 cfs 16,403 cf
Outflow=0.51 cfs 12,446 cf

Link 52L: SA Basin East - Total Inflow=5.23 cfs 16,403 cf
Primary=5.23 cfs 16,403 cf

Link 53L: SA Basin West - Total Inflow=3.24 cfs 10,110 cf
Primary=3.24 cfs 10,110 cf

Total Runoff Area = 71,730 sf Runoff Volume = 26,513 cf Average Runoff Depth = 4.44"
29.13% Pervious = 20,897 sf 70.87% Impervious = 50,833 sf

Summary for Subcatchment 41S: SA Basin East Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.018
n = 0.011

L = [100 * sqrt(0.018)]/.011
L = 1,219 FT

L > 100 FT

Therefore, use 100 FT

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[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 147% of capacity of segment #3

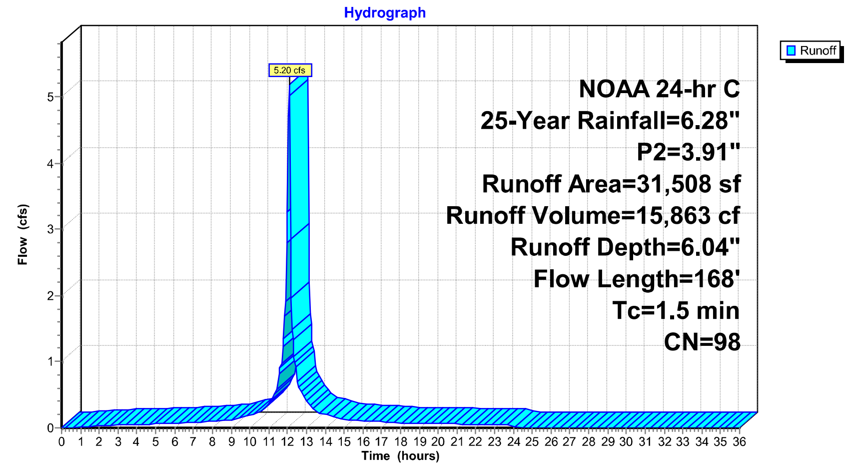
Runoff = 5.20 cfs @ 12.08 hrs, Volume= 15,863 cf, Depth= 6.04"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 25-Year Rainfall=6.28", P2=3.91"

Area (sf)	CN	Description
19,281	98	Paved parking, HSG A
12,227	98	Roofs, HSG A
31,508	98	Weighted Average
31,508		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0180	1.46		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.91"
0.2	28	0.0180	2.72		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
0.2	40	0.0030	2.88	3.54	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
1.5	168	Total			

Subcatchment 41S: SA Basin East Imp



Summary for Subcatchment 42S: SA Basin East Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.012
n = 0.150

L = [100 * sqrt(0.012)]/.150
L = 73 FT

L < 100 FT; However, use 20 FT

[49] Hint: Tc<2dt may require smaller dt

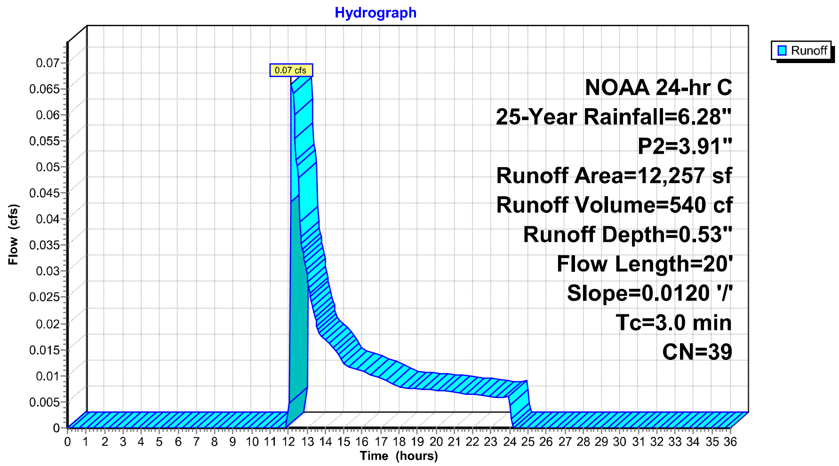
Runoff = 0.07 cfs @ 12.15 hrs, Volume= 540 cf, Depth= 0.53"
Routed to Link 52L : SA Basin East - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 25-Year Rainfall=6.28", P2=3.91"

Area (sf)	CN	Description
12,257	39	>75% Grass cover, Good, HSG A
12,257		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	20	0.0120	0.11		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 42S: SA Basin East Perv



Summary for Subcatchment 43S: SA Basin West Imp

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.025
n = 0.011

L = [100 * sqrt(0.025)]/.011
L = 1,437 FT

L > 100 FT

Therefore, use 73 FT

[49] Hint: Tc<2dt may require smaller dt

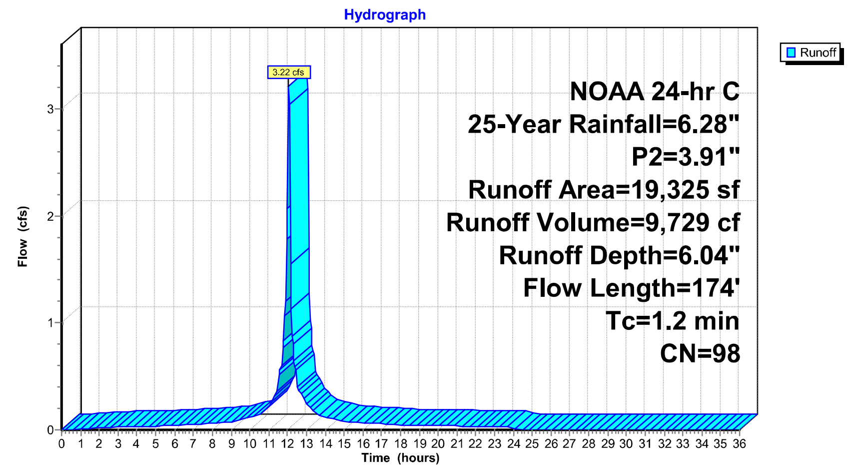
Runoff = 3.22 cfs @ 12.08 hrs, Volume= 9,729 cf, Depth= 6.04"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 25-Year Rainfall=6.28", P2=3.91"

Area (sf)	CN	Description
19,325	98	Paved parking, HSG A
19,325		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	73	0.0250	1.56		**Sheet Flow, Paved** Smooth surfaces n= 0.011 P2= 3.91"
0.4	97	0.0050	3.72	4.57	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
0.0	4	0.0030	3.75	4.60	**Pipe Channel, 15" HDPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010
1.2	174	Total			

Subcatchment 43S: SA Basin West Imp



Summary for Subcatchment 44S: SA Basin West Perv

Sheet Flow Length Calculation

L = [100 * sqrt(s)]/n
s = 0.075
n = 0.150

L = [100 * sqrt(0.075)]/.150
L = 182 FT

L > 100 FT

Therefore, use 60 FT

---

[49] Hint: Tc<2dt may require smaller dt

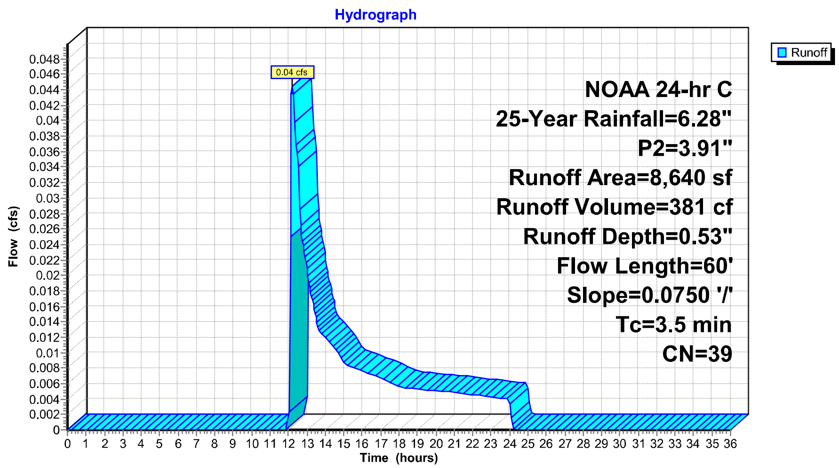
Runoff = 0.04 cfs @ 12.21 hrs, Volume= 381 cf, Depth= 0.53"
Routed to Link 53L : SA Basin West - Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 25-Year Rainfall=6.28", P2=3.91"

Area (sf)	CN	Description
8,640	39	>75% Grass cover, Good, HSG A
8,640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	60	0.0750	0.29		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 3.91"

Subcatchment 44S: SA Basin West Perv



Summary for Pond 49P: AG Bio Basin West

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 4.34" for 25-Year event
Inflow = 3.24 cfs @ 12.08 hrs, Volume= 10,110 cf
Outflow = 1.58 cfs @ 12.17 hrs, Volume= 9,989 cf, Atten= 51%, Lag= 5.5 min
Primary = 1.58 cfs @ 12.17 hrs, Volume= 9,989 cf
Routed to nonexistent node 51L

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Starting Elev= 6.70' Surf.Area= 1,740 sf Storage= 2,519 cf
Peak Elev= 8.79' @ 12.17 hrs Surf.Area= 2,058 sf Storage= 6,518 cf (3,999 cf above start)

Plug-Flow detention time= 471.6 min calculated for 7,470 cf (74% of inflow)
Center-of-Mass det. time= 252.9 min (1,002.4 - 749.5)

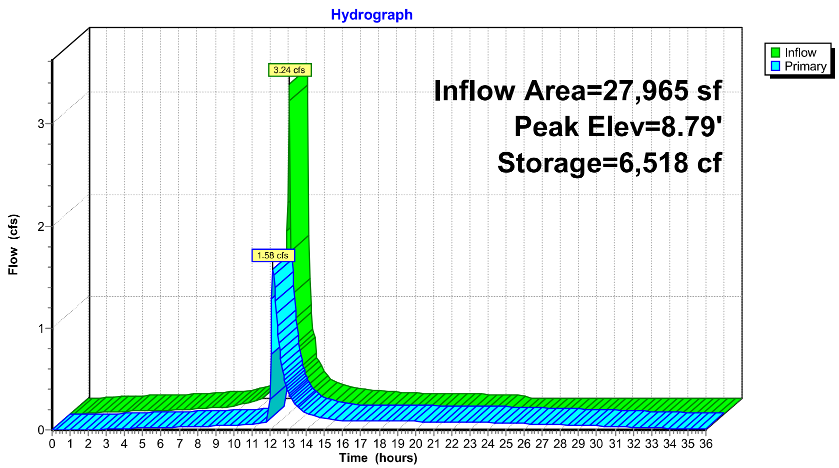
Volume	Invert	Avail.Storage	Storage Description
#1	5.10'	7,152 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.10	1,400	0	0
6.00	1,600	1,350	1,350
7.00	1,800	1,700	3,050
8.00	1,950	1,875	4,925
9.10	2,100	2,227	7,152

Device	Routing	Invert	Outlet Devices
#1	Primary	6.70'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	8.20'	**1.1' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	9.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=1.54 cfs @ 12.17 hrs HW=8.78' (Free Discharge)
├─**1=Orifice/Grate** (Orifice Controls 0.11 cfs @ 6.83 fps)
├─**2=Sharp-Crested Rectangular Weir** (Weir Controls 1.44 cfs @ 2.50 fps)
└─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 49P: AG Bio Basin West



Summary for Pond 52P: AG Bio Basin East

Inflow Area =	43,765 sf, 71.99% Impervious,	Inflow Depth = 4.50" for 25-Year event		
Inflow =	5.23 cfs @	12.08 hrs, Volume=	16,403 cf	
Outflow =	0.51 cfs @	12.86 hrs, Volume=	12,446 cf,	Atten= 90%, Lag= 46.6 min
Primary =	0.51 cfs @	12.86 hrs, Volume=	12,446 cf	

Routed to nonexistent node 51L

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Starting Elev= 6.60' Surf.Area= 6,565 sf Storage= 7,131 cf
Peak Elev= 8.06' @ 12.86 hrs Surf.Area= 6,784 sf Storage= 16,887 cf (9,757 cf above start)

Plug-Flow detention time= 961.7 min calculated for 5,308 cf (32% of inflow)
Center-of-Mass det. time= 369.3 min (1,118.2 - 748.9)

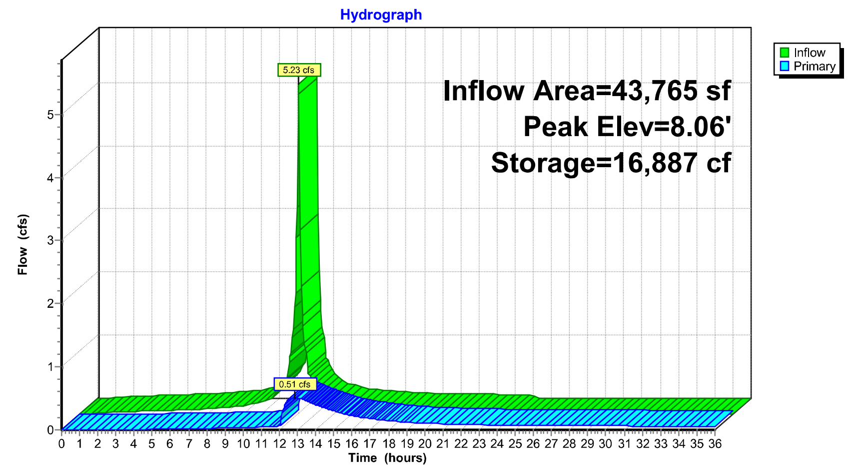
Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	19,875 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.50	6,400	0	0
6.50	6,550	6,475	6,475
7.50	6,700	6,625	13,100
8.50	6,850	6,775	19,875

Device	Routing	Invert	Outlet Devices
#1	Primary	6.60'	**1.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	7.60'	**0.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	8.40'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.51 cfs @ 12.86 hrs HW=8.06' (Free Discharge)
—**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 5.68 fps)
—**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.42 cfs @ 2.22 fps)
—**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 52P: AG Bio Basin East

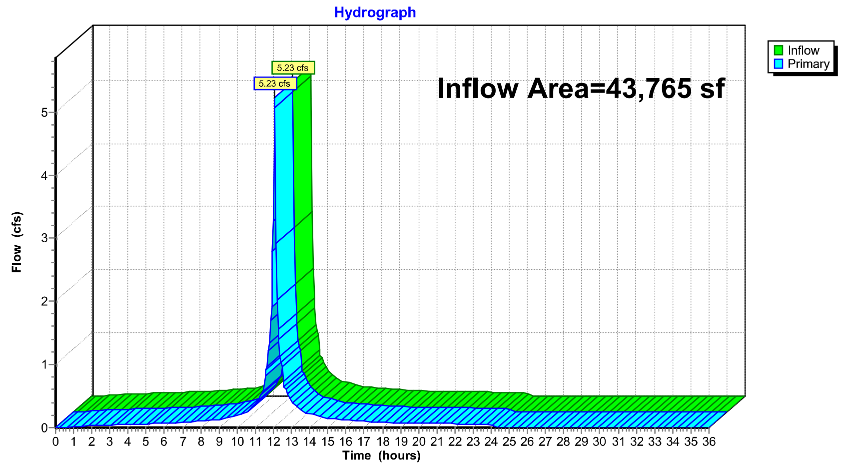


Summary for Link 52L: SA Basin East - Total

Inflow Area = 43,765 sf, 71.99% Impervious, Inflow Depth = 4.50" for 25-Year event
Inflow = 5.23 cfs @ 12.08 hrs, Volume= 16,403 cf
Primary = 5.23 cfs @ 12.08 hrs, Volume= 16,403 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 52P : AG Bio Basin East

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 52L: SA Basin East - Total

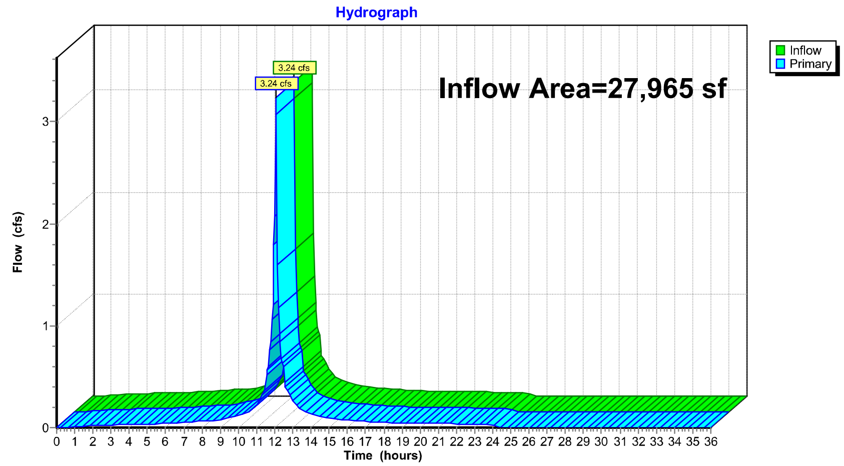


Summary for Link 53L: SA Basin West - Total

Inflow Area = 27,965 sf, 69.10% Impervious, Inflow Depth = 4.34" for 25-Year event
Inflow = 3.24 cfs @ 12.08 hrs, Volume= 10,110 cf
Primary = 3.24 cfs @ 12.08 hrs, Volume= 10,110 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 49P : AG Bio Basin West

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 53L: SA Basin West - Total



CONDUIT OUTLET PROTECTION CALCULATIONS

DYNAMIC ENGINEERING

Preformed Scour Hole Design

Project:	Proposed Five-Story Mixed Use Building
Job #:	2334-23-03513
Location:	Camden, NJ
Design Storm:	25-Year
Computed By:	SM
Checked By:	AG
Date:	5/1/2025

Discharge in Basin, Therefore Tailwater is greater than 0.5 x Do

2-Year Peak Water Surface Elevation = 7.10 Outfall Invert: 5.50 therefore Tailwater (TW) = 1.60 feet

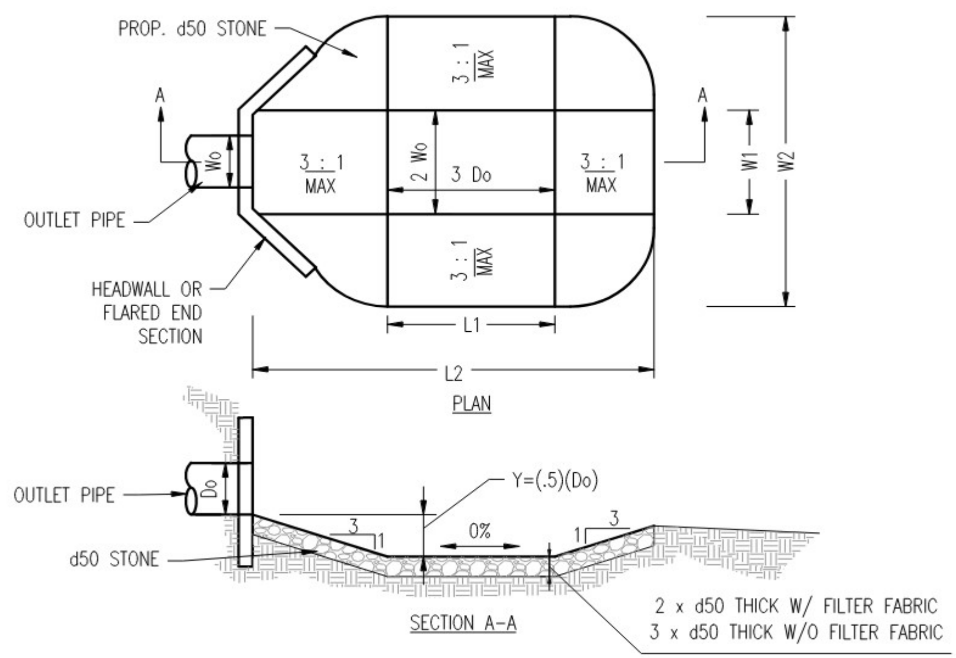
Discharge Point ID	Scour Hole #1 (HW #24)
Q (25-yr storm cfs)	**3.27**
Inside Height of Outlet Culvert, D_o (in)	**15**
Inside Height of Outlet Culvert, D_o (ft)	1.3
Tailwater (ft), TW	**1.600**
Bottom Length of Scour Hole, $L1=3D_o$ (ft)	**3.75**
Width of Culvert, W_o (in)	**15**
Width of Culvert, W_o (ft)	**1.3**
Bottom Width of Scour Hole, $W1=2W_o$ (ft)	**2.50**

When using $Y=(.5)(D_o)$:

Where Y = .5 D_o, Y(ft)	**0.625**	
Median Stone Diameter*, D_{50} (ft)	**0.03**	***Use D50 equal to 6 inches**
Overall Length of Scour Hole, L2 (ft)	**7.50**	
Overall Width of Scour Hole, W2 (ft)	**6.25**	

When using $Y=(D_o)$:

Where Y = D_o, Y(ft)	**1.250**	
Median Stone Diameter*, D_{50} (ft)	**0.02**	***Use D50 equal to 6 inches**
Overall Length of Scour Hole, L2 (ft)	**11.25**	
Overall Width of Scour Hole, W2 (ft)	**10.00**	



Equations used:
Where Y=1/2 Do
D50=(0.0125/Tw)*(q^1.33)
Where Y=Do
D50=(0.0082/Tw)*(q^1.33)

Notes:
1. The use of scour holes shall comply with county or local ordinances which would restrict the use of such devices due to the possible problems with mosquito breeding.
2. No bends or curves at the intersection of the conduit and apron or scour hole will be permitted.
3. There shall be no over fall from the end of the apron to the receiving material.
4. The thickness of the riprap lining, filter, and quality shall meet the requirements in the Riprap Standard Section of the Standards for Soil Erosion Control in New Jersey.
5. Use a D_{50} of 6 inches minimum.

DYNAMIC ENGINEERING

Preformed Scour Hole Design

Project:	Proposed Five-Story Mixed Use Building
Job #:	2334-23-03513
Location:	Camden, NJ
Design Storm:	25-Year
Computed By:	SM
Checked By:	AG
Date:	5/1/2025

Discharge in Basin, Therefore Tailwater is greater than 0.5 x Do

2-Year Peak Water Surface Elevation = 7.10 Outfall Invert: 5.50 therefore Tailwater (TW) = 1.60 feet

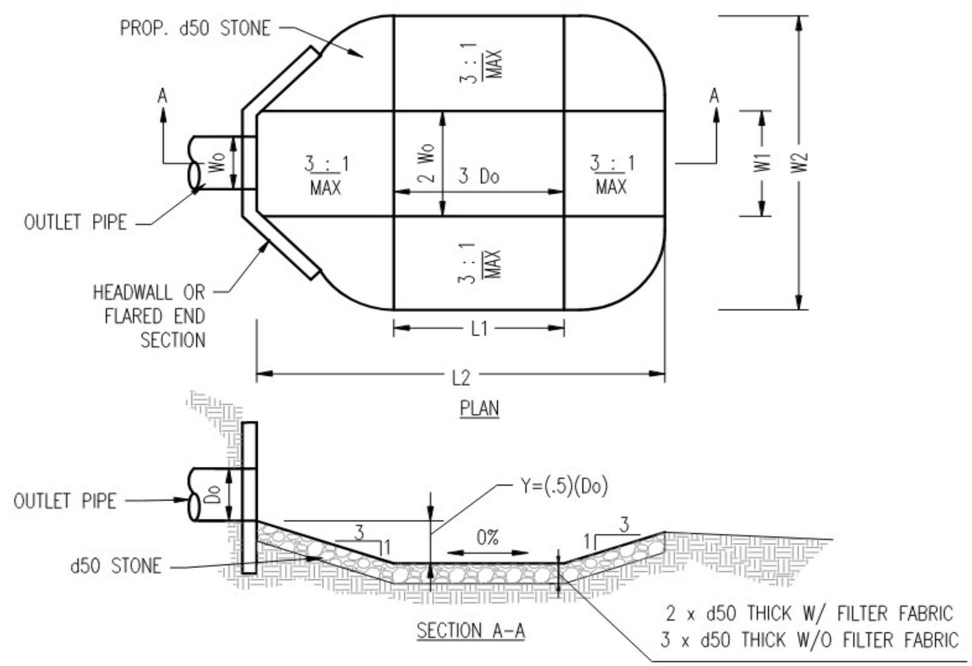
Discharge Point ID	Scour Hole #2 (HW #11)
Q (25-yr storm cfs)	**1.43**
Inside Height of Outlet Culvert, D_o (in)	**15**
Inside Height of Outlet Culvert, D_o (ft)	1.3
Tailwater (ft), TW	**1.600**
Bottom Length of Scour Hole, L1=3D_o (ft)	**3.75**
Width of Culvert, W_o (in)	**15**
Width of Culvert, W_o (ft)	**1.3**
Bottom Width of Scour Hole, W1=2W_o (ft)	**2.50**

When using Y=(.5)(D_o):

Where Y = .5 D_o, Y(ft)	**0.625**	
Median Stone Diameter*, D_{50} (ft)	**0.01**	***Use D50 equal to 6 inches**
Overall Length of Scour Hole, L2 (ft)	**7.50**	
Overall Width of Scour Hole, W2 (ft)	**6.25**	

When using Y=(D_o):

Where Y = D_o, Y(ft)	**1.250**	
Median Stone Diameter*, D_{50} (ft)	**0.01**	***Use D50 equal to 6 inches**
Overall Length of Scour Hole, L2 (ft)	**11.25**	
Overall Width of Scour Hole, W2 (ft)	**10.00**	



Equations used:
Where Y=1/2 Do
D50=(0.0125/Tw)*(q^1.33)
Where Y=Do
D50=(0.0082/Tw)*(q^1.33)

Notes:
1. The use of scour holes shall comply with county or local ordinances which would restrict the use of such devices due to the possible problems with mosquito breeding.
2. No bends or curves at the intersection of the conduit and apron or scour hole will be permitted.
3. There shall be no over fall from the end of the apron to the receiving material.
4. The thickness of the riprap lining, filter, and quality shall meet the requirements in the Riprap Standard Section of the Standards for Soil Erosion Control in New Jersey.
5. Use a D_{50} of 6 inches minimum.

DYNAMIC ENGINEERING

Preformed Scour Hole Design

Project:	Proposed Five-Story Mixed Use Building
Job #:	2334-23-03513
Location:	Camden, NJ
Design Storm:	25-Year
Computed By:	SM
Checked By:	AG
Date:	5/1/2025

Discharge in Basin, Therefore Tailwater is greater than 0.5 x Do

2-Year Peak Water Surface Elevation = 7.48 Outfall Invert: 5.10 therefore Tailwater (TW) = 2.38 feet

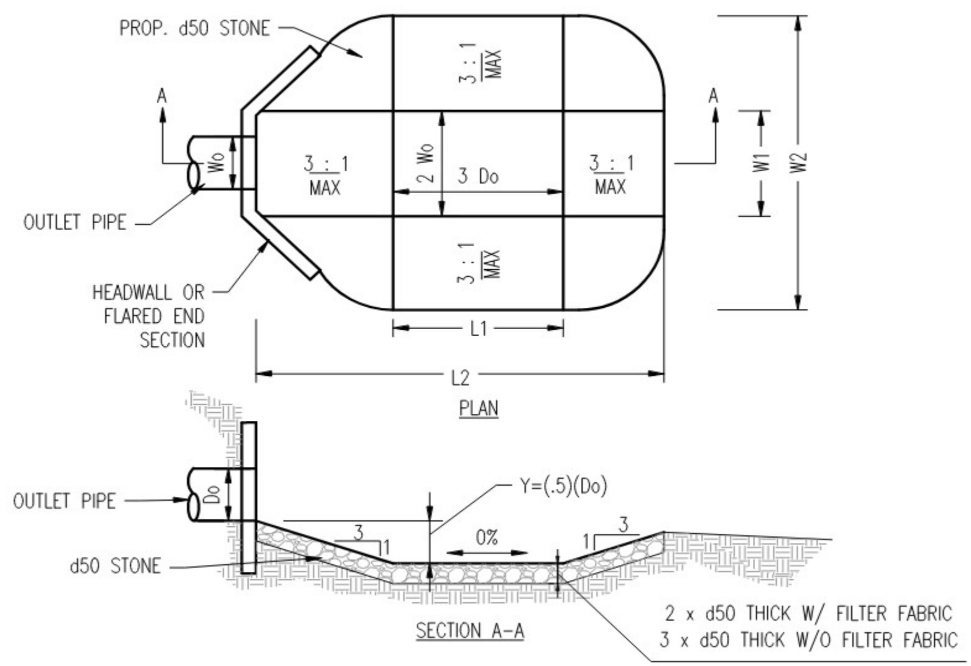
Discharge Point ID	Scour Hole #3 (HW #8)
Q (25-yr storm cfs)	**2.82**
Inside Height of Outlet Culvert, D_o (in)	**15**
Inside Height of Outlet Culvert, D_o (ft)	1.3
Tailwater (ft), TW	**2.380**
Bottom Length of Scour Hole, L1=3D_o (ft)	**3.75**
Width of Culvert, W_o (in)	**15**
Width of Culvert, W_o (ft)	**1.3**
Bottom Width of Scour Hole, W1=2W_o (ft)	**2.50**

When using Y=(.5)(D_o):

Where Y = .5 D_o, Y(ft)	**0.625**	
Median Stone Diameter*, D_{50} (ft)	**0.02**	***Use D50 equal to 6 inches**
Overall Length of Scour Hole, L2 (ft)	**7.50**	
Overall Width of Scour Hole, W2 (ft)	**6.25**	

When using Y=(D_o):

Where Y = D_o, Y(ft)	**1.250**	
Median Stone Diameter*, D_{50} (ft)	**0.01**	***Use D50 equal to 6 inches**
Overall Length of Scour Hole, L2 (ft)	**11.25**	
Overall Width of Scour Hole, W2 (ft)	**10.00**	



Equations used:

Where Y=1/2 Do

D50=(0.0125/Tw)*(q^1.33)

Where Y=Do

D50=(0.0082/Tw)*(q^1.33)

Notes:

1. The use of scour holes shall comply with county or local ordinances which would restrict the use of such devices due to the possible problems with mosquito breeding.
2. No bends or curves at the intersection of the conduit and apron or scour hole will be permitted.
3. There shall be no over fall from the end of the apron to the receiving material.
4. The thickness of the riprap lining, filter, and quality shall meet the requirements in the Riprap Standard Section of the Standards for Soil Erosion Control in New Jersey.
5. Use a D_{50} of 6 inches minimum.

DYNAMIC ENGINEERING

Preformed Scour Hole Design

Project:	Proposed Five-Story Mixed Use Building
Job #:	2334-23-03513
Location:	Camden, NJ
Design Storm:	25-Year
Computed By:	SM
Checked By:	AG
Date:	5/1/2025

Discharge not in Basin, Therefore Tailwater is less than 0.5 x Do

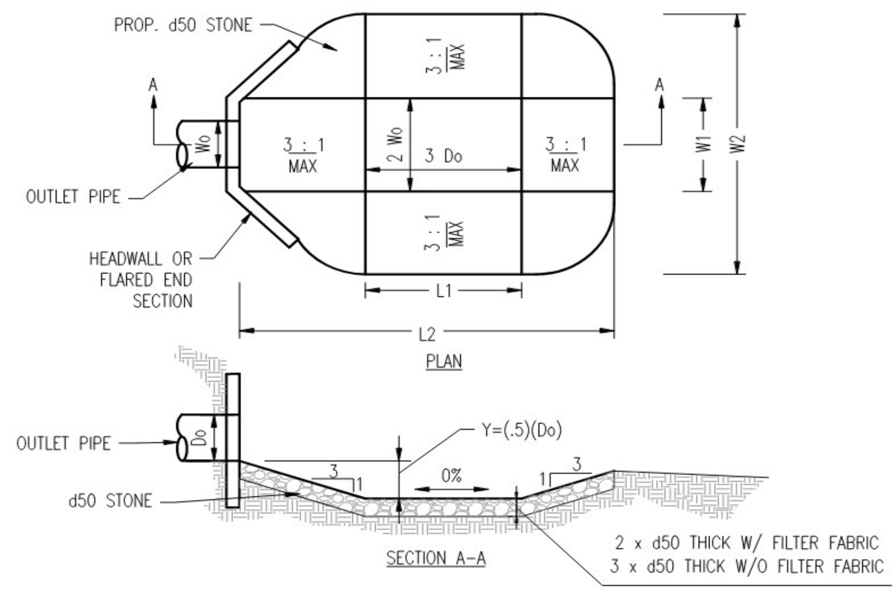
Discharge Point ID	Scour Hole #4 (HW #39)
Q (25-yr storm cfs)	**0.06**
Inside Height of Outlet Culvert, D_o (in)	**15**
Inside Height of Outlet Culvert, D_o (ft)	1.3
Tailwater (ft), TW	0.25
Bottom Length of Scour Hole, L1=3D_o (ft)	**3.75**
Width of Culvert, W_o (in)	**15**
Width of Culvert, W_o (ft)	**1.3**
Bottom Width of Scour Hole, W1=2W_o (ft)	**2.50**

When using Y=(.5)(D_o):

Where Y = .5 D_o, Y(ft)	**0.625**	
Median Stone Diameter*, D_{50} (ft)	**0.00**	***Use D50 equal to 6 inches**
Overall Length of Scour Hole, L2 (ft)	**7.50**	
Overall Width of Scour Hole, W2 (ft)	**6.25**	

When using Y=(D_o):

Where Y = D_o, Y(ft)	**1.250**	
Median Stone Diameter*, D_{50} (ft)	**0.00**	***Use D50 equal to 6 inches**
Overall Length of Scour Hole, L2 (ft)	**11.25**	
Overall Width of Scour Hole, W2 (ft)	**10.00**	



Equations used:
Tw=0.2*Do (If Tw cannot be computed)
Where Y=1/2 Do
D50=(0.0125/Tw)*(q^1.33)
Where Y=Do
D50=(0.0082/Tw)*(q^1.33)

Notes:
1. The use of scour holes shall comply with county or local ordinances which would restrict the use of such devices due to the possible problems with mosquito breeding.
2. No bends or curves at the intersection of the conduit and apron or scour hole will be permitted.
3. There shall be no over fall from the end of the apron to the receiving material.
4. The thickness of the riprap lining, filter, and quality shall meet the requirements in the Riprap Standard Section of the Standards for Soil Erosion Control in New Jersey.
5. Use a D_{50} of 6 inches minimum.

DYNAMIC ENGINEERING

Preformed Scour Hole Design

Project:	Proposed Five-Story Mixed Use Building
Job #:	2334-23-03513
Location:	Camden, NJ
Design Storm:	25-Year
Computed By:	SM
Checked By:	AG
Date:	5/1/2025

Discharge not in Basin, Therefore Tailwater is less than 0.5 x Do

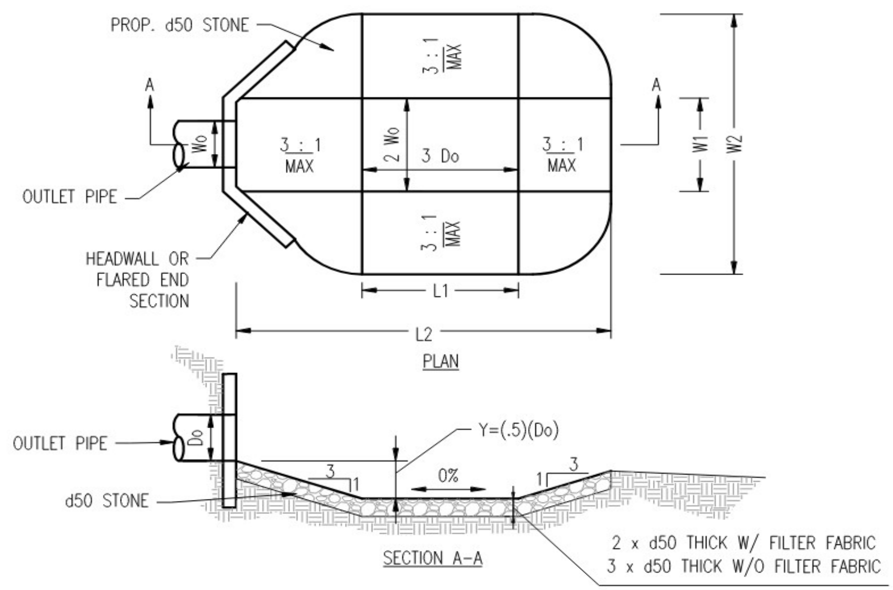
Discharge Point ID	Scour Hole #5 (HW #64)
Q (25-yr storm cfs)	**0.05**
Inside Height of Outlet Culvert, D_o (in)	**15**
Inside Height of Outlet Culvert, D_o (ft)	1.3
Tailwater (ft), TW	0.25
Bottom Length of Scour Hole, L1=3D_o (ft)	**3.75**
Width of Culvert, W_o (in)	**15**
Width of Culvert, W_o (ft)	**1.3**
Bottom Width of Scour Hole, W1=2W_o (ft)	**2.50**

When using Y=(.5)(D_o):

Where Y = .5 D_o, Y(ft)	**0.625**	
Median Stone Diameter*, D_{50} (ft)	**0.00**	***Use D50 equal to 6 inches**
Overall Length of Scour Hole, L2 (ft)	**7.50**	
Overall Width of Scour Hole, W2 (ft)	**6.25**	

When using Y=(D_o):

Where Y = D_o, Y(ft)	**1.250**	
Median Stone Diameter*, D_{50} (ft)	**0.00**	***Use D50 equal to 6 inches**
Overall Length of Scour Hole, L2 (ft)	**11.25**	
Overall Width of Scour Hole, W2 (ft)	**10.00**	



Equations used:
Tw=0.2*Do (If Tw cannot be computed)
Where Y=1/2 Do
D50=(0.0125/Tw)*(q^1.33)
Where Y=Do
D50=(0.0082/Tw)*(q^1.33)

Notes:

1. The use of scour holes shall comply with county or local ordinances which would restrict the use of such devices due to the possible problems with mosquito breeding.
2. No bends or curves at the intersection of the conduit and apron or scour hole will be permitted.
3. There shall be no over fall from the end of the apron to the receiving material.
4. The thickness of the riprap lining, filter, and quality shall meet the requirements in the Riprap Standard Section of the Standards for Soil Erosion Control in New Jersey.
5. Use a D_{50} of 6 inches minimum.

STORMWATER COLLECTION SYSTEM CALCULATIONS (PIPE SIZING)

DYNAMIC ENGINEERING

Inlet Area Summary and Average Coefficient (C) Calculations

Project: Proposed Five-Story Mixed Use Building
Job #: 2334-23-03513
Location: Camden, NJ

Computed By: SM
Checked By: AG
Date: 5/1/2025

Drainage Area	Impervious Area (sf)	Coefficient (C) Used	Open Space (SF)	Coefficient (C) Used	Average Coefficient (C) Used	Total Area (SF)	Total Area (acres)
INLET A	5066	0.95	283	0.35	0.92	5349	0.12
INLET B	3400	0.95	600	0.35	0.86	4000	0.09
INLET D	6070	0.95	0	0.35	0.95	6070	0.14
INLET E	9830	0.95	640	0.35	0.91	10470	0.24
INLET G	2870	0.95	0	0.35	0.95	2870	0.07
INLET H	2840	0.95	0	0.35	0.95	2840	0.07
INLET I	1476	0.95	0	0.35	0.95	1476	0.03
INLET J	1619	0.95	0	0.35	0.95	1619	0.04
INLET K	4916	0.95	800	0.35	0.87	5716	0.13
ROOF A	12228	0.95	0	0.35	0.95	12228	0.28
ROOF B	12228	0.95	0	0.35	0.95	12228	0.28

DYNAMIC ENGINEERING

Stormwater Collection System Calculations

Project: Proposed Five-Story Mixed Use Building
Job #: 2334-23-03513
Location: Camden, NJ
Design Storm: 25-Yr

Computed By: SM
Checked By: AG
Date: 5/1/2025

NOTES:
1) Design method used is Rational Method, unless otherwise noted.
2) Refer to Weighted Runoff Coefficient table
for calculation of incremental areas and C values

PIPE SECTION		SUBCATCHMENT AREA	INCREMENTAL		CUMULATIVE	TIME OF CONCENTRATION			I	PEAK RUNOFF		PIPING INPUT			PIPING DATA		
FROM	TO	Area (Acres)	"C"	A x C Ac	A x C (acres)	Tc to Inlet (min)	Tc in Pipe (min.)	Final Tc (min)	(In/Hr)	Q to Inlet (CFS)	Q cum. for Pipe (CFS)	Dia. (In)	Length (Ft)	Man. "n"	Slope (ft/ft)	Pipe Capacity (cfs)	Pipe Velocity (fps)
ROOF A	MH 51	0.28	0.95	0.27	0.27	10.00	0.34	10.00	6.80	1.84	1.84	12	84.0	0.010	0.0050	3.27	4.17
MH 51	UG Basin	0.00	0.95	0.00	0.27	10.00	0.17	10.34	6.80	0.00	1.84	12	42.0	0.010	0.0050	3.27	4.17
ROOF B	MH 61	0.28	0.95	0.27	0.27	10.00	0.74	10.00	6.80	1.84	1.84	12	186.0	0.010	0.0050	3.27	4.17
IA E	MH 61	0.24	0.91	0.22	0.22	10.00	0.17	10.00	6.80	1.50	1.50	15	30.0	0.013	0.0030	3.54	2.89
MH 61	HW 24	0.00	0.95	0.00	0.49	10.00	0.04	10.74	6.68	0.00	3.27	15	10.0	0.010	0.0030	4.60	3.75
IA D	MH 12	0.14	0.95	0.13	0.13	10.00	0.14	10.00	6.80	0.88	0.88	15	25.0	0.013	0.0030	3.54	2.89
IA B	MH 12	0.09	0.86	0.08	0.08	10.00	0.20	10.00	6.80	0.54	0.54	15	35.0	0.013	0.0030	3.54	2.89
MH 12	HW 11	0.00	0.95	0.00	0.21	10.00	0.03	10.20	6.80	0.00	1.43	15	6.0	0.013	0.0030	3.54	2.89
IA A	IA K	0.12	0.92	0.11	0.11	10.00	0.60	10.00	6.80	0.75	0.75	15	135.0	0.013	0.0050	4.57	3.73
IA K	IA J	0.13	0.87	0.11	0.22	10.00	0.43	10.60	6.68	0.73	1.47	15	97.0	0.013	0.0050	4.57	3.73
IA G	IA H	0.07	0.95	0.07	0.07	10.00	0.58	10.00	6.80	0.48	0.48	15	131.0	0.010	0.0030	4.60	3.75
IA H	MH 6	0.07	0.95	0.07	0.14	10.00	0.34	10.58	6.68	0.47	0.94	15	76.0	0.010	0.0030	4.60	3.75
MH 6	IA I	0.00	0.95	0.00	0.14	10.00	0.07	10.92	6.68	0.00	0.94	15	15.0	0.010	0.0030	4.60	3.75
IA I	IA J	0.03	0.95	0.03	0.17	10.00	0.35	10.99	6.68	0.20	1.14	15	79.0	0.010	0.0030	4.60	3.75
IA J	HW 8	0.04	0.95	0.04	0.43	10.00	0.02	11.34	6.56	0.26	2.82	15	4.0	0.010	0.0030	4.60	3.75

STORMWATER BASIN AREA INVESTIGATION REPORT, PREPARED BY DYNAMIC EARTH, LLC

STORMWATER BASIN AREA INVESTIGATION REPORT

PROPOSED FIVE-STORY MIXED USE BUILDING
1901 Admiral Wilson Boulevard
Block 1220, Lot 57
City and County of Camden, New Jersey

Prepared for:

ASSET REALTY & CONSTRUCTION GROUP, LLC
1590 Troy Avenue
Brooklyn, New York, 11234

Prepared by:

DYNAMIC EARTH

245 Main Street, Suite 110
Chester, New Jersey 07930

Scot Hume, P.E.
Principal
NJ PE License No. 24GE05950200

Patrick J. Granitzki, P.E.
Senior Principal
NJ PE License No. 24GE05355900

Project #4102-23-03482
April 24, 2025

STORMWATER BASIN AREA INVESTIGATION REPORT
PROPOSED FIVE-STORY MIXED USE BUILDING
1901 Admiral Wilson Boulevard
Block 1220, Lot 57
City and County of Camden, New Jersey

TABLE OF CONTENTS

APPENDICES

1.0 PROJECT DESCRIPTION

Dynamic Earth, LLC (Dynamic Earth) has completed an exploration and evaluation in support of proposed stormwater management facilities to be located at 1901 Admiral Wilson Boulevard in the City and County of Camden, New Jersey. The site is further identified as Block 1220, Lot 57 and is shown on the *Test Pit Location Plan* included within the appendix of this report.

At the time of Dynamic Earth's investigation, the subject site was comprised of undeveloped grass-covered and partially wooded parcel. Based on an April 11, 2025 *Grading Plan* prepared by Dynamic Engineering Consultants, PC (Dynamic), the proposed site development will include the construction of a five-story mixed use building with associated pavements, utilities, retaining walls, and landscaped areas. Stormwater management facilities are proposed throughout the site and are identified as follows:

- Aboveground (Walled) Bioretention Basin with Infiltration (East) is proposed within the eastern portion of the site, occupying a footprint area of approximately 5,586 square feet with a basin bottom elevation of 5.5 feet
- Aboveground (Walled) Bioretention Basin with Infiltration (West) is proposed within the western portion of the site, occupying a footprint area of approximately 1,836 square feet with a basin bottom elevation of 5.1 feet.
- Underground Infiltration Basin is proposed within the central portion of the site, occupying a footprint area of approximately 2,072 square feet with a basin bottom elevation of 5.5 feet.

Topographic information was provided on a December 8, 2023 *ALTA/NSPS Land Title Survey* prepared by Dynamic Survey, LLC. Existing overall site grades generally slope from approximately nine feet within the eastern portion of the site to approximately four feet within the western portion of the site. The elevations referenced in the survey are given in 1988 North American Vertical Datum (NAVD 88). All elevations given in this report are referenced in NAVD 88, unless otherwise noted.

Dynamic Earth previously completed a subsurface investigation at the site and the results were issued in a December 22, 2023 *Report of Geotechnical Investigation.* Subsequent to our previous report, testing was requested for the proposed stormwater management facilities. The results of our previous investigation are included herein, as applicable.

2.0 SCOPE OF SERVICES

Dynamic Earth's scope of services pertaining to this investigation included evaluating the subsurface conditions at soil profile pit locations to estimate the apparent seasonal high groundwater level. A total of eight soil profile pits (identified as SPP-1 through SPP-8) were excavated utilizing a track-mounted excavator. Test locations were backfilled to the surface with excavated soils at completion. Ground penetrating radar (GPR) was utilized at test locations as an attempt to locate anomalies consistent with buried utilities. The test locations are shown on the accompanying *Test Pit Location Plan* included in the appendix of this report.

The soils encountered were classified in general conformance with the United States Department of Agriculture (USDA) Classification System. Observations were made for groundwater and/or redoximorphic features indicative of zones of saturation or seasonal high groundwater. Soil logs are included in the Appendix of this report.

Undisturbed tube permeability samples collected in general accordance with New Jersey Department of Environmental Protection (N.J.D.E.P.) *Stormwater Best Practices Manual – Chapter 12: Soil Testing Criteria* test methods and obtained from anticipated stormwater management facility infiltration depths.

3.0 UNITED STATES DEPARTMENT OF AGRICULTURE (USDA) SOIL SURVEY

Based on a review of the United States Department of Agriculture – Natural Resources Conservation Services (USDA-NRCS) soil survey, the following soil resources are mapped within the area of the proposed site improvements:

Urban Land (UR): This soil series is mapped throughout the subject site. The parent material is reported as surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material. The typical soil profile and depth to the groundwater table are not detailed in the survey.

4.0 SUMMARY OF FINDINGS & RESULTS

Detailed descriptions of the subsurface conditions encountered at each location are provided on the *Records of Subsurface Exploration* included herein. A summary of the subsurface conditions encountered is included below.

4.1 Subsurface Soil Profile

The soil profile pits were performed within existing grass covered and partially wooded areas and encountered between 11 inches to 15 inches of topsoil at the surface. Beneath the surface cover, existing fill material was encountered that generally consisted of sand, loamy sand, and sandy loam with variable amounts of debris. The debris encountered included glass, ceramic, wood, plastic, brick, concrete, asphalt, metal, fabric, and roots. The existing fill material was encountered to refusal depths ranging between approximately 6.8 feet and 9.6 feet below the ground surface; corresponding to elevations ranging between -0.9 feet and -4.8 feet. Soil profile pits SPP-1 and SPP-2 encountered refusal on apparent concrete at depths of approximately 7.9 feet and

7.7 feet, respectively. The refusal encountered in the remainder of the soil profile pits was due to continuous wet cave-in of the excavation sidewalls.

4.2 Seasonal High Groundwater and Permeability Results

Indicators of seasonal high groundwater (based on redoximorphic soil mottling) were encountered at depths ranging between approximately one foot and 5.5 feet below the ground surface; corresponding to elevations ranging between 4.9 feet and 1.2 feet. During our previous geotechnical investigation, groundwater was encountered within the borings at depths ranging between approximately two feet and four feet below the ground surface; corresponding to elevations ranging between 3.5 feet and 1.8 feet. Groundwater levels are expected to fluctuate seasonally, tidally, and following periods of significant precipitation.

Laboratory permeability testing was performed on samples requested by the project's design engineer. Permeability rates of the samples tested ranged between 5.2 inches per hour (iph) and greater than 20 iph. A summary of the seasonal high groundwater and permeability test results is presented in the following table:

SEASONAL HIGH GROUNDWATER AND PERMEABILITY TEST SUMMARY						
Location	Surface Elevation (ft)	Seasonal High Groundwater		Permeability Test Results		
		Depth (ft)	Elevation (ft)	Depth (in)	Permeability (in/hr)	
					A	B
SPP-1	6.6	4.0	2.6	30[1]	5.2	8.2
SPP-2	6.7	5.5	1.2	40[1]	>20.0	>20.0
SPP-3	5.9	2.5	3.4	24[1]	>20.0	>20.0
SPP-4	5.7	2.5	3.2	25[1]	>20.0	>20.0
SPP-5	5.9	1.0	4.9	24[1,2]	>20.0	>20.0
SPP-6	5.9	2.7	3.2	26[1]	>20.0	>20.0
SPP-7	4.5	2.9	1.6	25[1]	>20.0	>20.0
SPP-8	4.4	3.0	1.4	32[1]	>20.0	>20.0

[1] Denotes sample was collected within existing fill stratum. Permeability rates within existing fill materials can be highly variable due to the heterogenous nature of these materials.

[2] Denotes sample was collected within the seasonal high groundwater elevations.

5.0 GENERAL COMMENTS AND LIMITATIONS

Supplemental recommendations will be required upon finalization of site plans or if significant changes are made in the characteristics or location of the proposed stormwater management facilities. Dynamic Earth should be included as a consultant to the design team and final plans for review should be provided to confirm these criteria apply or to modify recommendations as necessary.

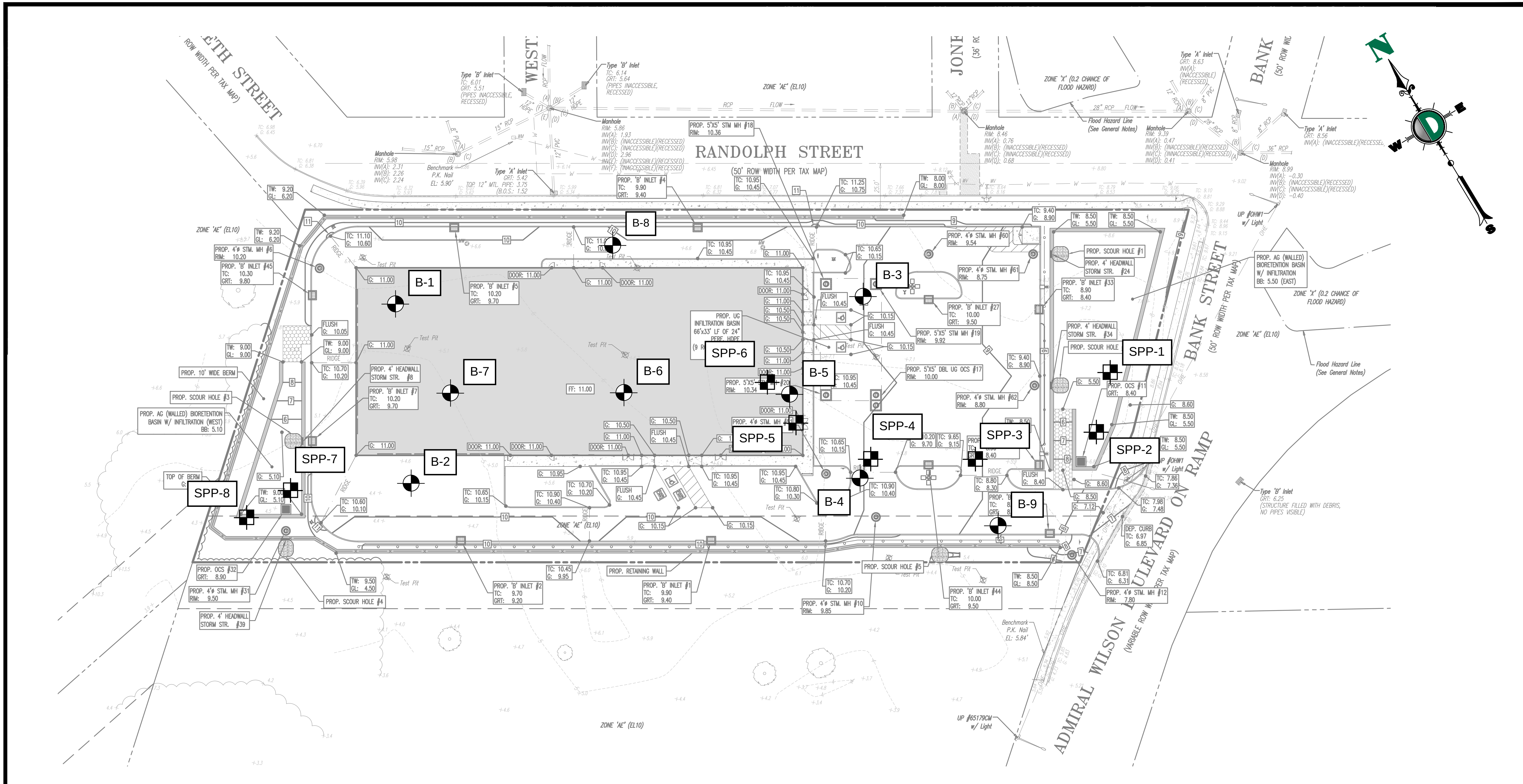
The results presented herein should be utilized by a qualified engineer in preparing preliminary design concepts and site grading. The engineer should consider these results as minimum physical standards that may be superseded by local and regional building codes and structural considerations. These results are prepared for the use of the client for the specific project detailed and should not be used by any third party. These recommendations are relevant to the preliminary design phase and should not be substituted for construction specifications.

The possibility exists that conditions between test locations may differ from those at specific soil profile pit locations, and conditions may not be as anticipated by the designers or contractors. In addition, the construction process may itself alter soil conditions. Therefore, Dynamic Earth Geotechnical Engineers or their representatives should observe and document the final construction procedures used and the conditions encountered, as well as conduct testing and inspection to ensure the design criteria are met or recommendations to address deviations are implemented.

Dynamic Earth assumes that a qualified contractor will be employed to perform the construction work, and that the contractor will be required to exercise care to ensure all excavations are performed in accordance with applicable regulations and good practice. Particular attention should be paid to avoiding damaging or undermining adjacent properties and maintaining slope stability. Deviations from the noted subsurface conditions encountered during construction should be brought to the attention of the geotechnical engineer.

The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been promulgated after being prepared in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics, and engineering geology. No other warranties are implied or expressed.

Test Location Plan



SCALE: N.T.S.	JOB No: 23-03482
SHEET No: 1 OF 1	DRAWN BY: GS
	DESIGNED BY: --
	CHECKED BY: SH
	DATE: 04/18/2025

TITLE:

TEST LOCATION PLAN

PROJECT: **ASSET REALITY & CONSTRUCTION GROUP, INC.**
PROPOSED FIVE-STORY MIXED-USE BUILDING
1901 ADMIRAL WILSON BLVD
BLOCK 1220, LOT 57
CITY AND COUNTY OF CAMDEN, NEW JERSEY

Rev. # 0 | DEC Client Code: 4102

LEGEND:

B-X APPROXIMATE LOCATION OF BORINGS

SPP-X APPROXIMATE LOCATION OF SOIL PROFILE PIT

NOTES:

1. THIS PLAN IS NOT FOR CONSTRUCTION AND WAS PREPARED TO ILLUSTRATE TEST LOCATIONS ONLY AND MAY NOT REFLECT THE MOST CURRENT REVISION OF THE BASE PLAN.
2. BASE PLAN OBTAINED FROM AN APRIL 11, 2025 *GRADING PLAN* PREPARED BY DYNAMIC ENGINEERING CONSULTANTS, PC.

DYNAMIC EARTH, LLC
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Records of Subsurface Exploration

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-1

Project: Proposed Five-Story Mixed-Use Building | **Project No.:** 4102-23-03482

Location: 1901 Admiral Wilson Boulevard, City and County of Camden, New Jersey | **Client:** Asset Realty & Construction Group, LLC

Surface Elevation (ft):	6.6	**Date Started:**	1/10/25
Termination Depth (ft):	7.9	**Date Completed:**	1/10/25
Proposed Location:	SWM	**Logged by:**	A. Park
Excavation / Test Method:	Visual Observation	**Contractor:**	Neighbors Property Management
		Rig Type:	Bobcat E60

Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Seepage	NE	-	Very dark gray (10YR 3/1) mottling encountered from 48 inches to 95 inches
Groundwater	NE	-	
Seasonal High Groundwater	4.0	2.6	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
0-11	TOPSOIL Very Dark Brown (10YR 2/2)	SANDY LOAM	0	0	0	0	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	CMN (20% MAX)	FINE	NONE						
11-48	FILL Dark Brown (10YR 3/3)	SANDY LOAM	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	NONE		NONE			BAG TUBE	30 30	S-1 T-1	A = 5.2 iph B= 8.2 iph
48-95	FILL Very Dark Gray (10YR 3/1)	SANDY LOAM	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT				

Additional Remarks: Existing fill material encountered to approximately 95 inches below the ground surface. The debris encountered included glass, ceramics, wood, plastic, bricks, concrete, and asphalt. Soil profile pit SPP-1 encountered refusal on apparent concrete at approximately 7.9 feet below the ground surface.

SOIL PROFILE PIT LOG

DYNAMIC EARTH

Soil Profile Pit: SPP-2

Project:	**Proposed Five-Story Mixed-Use Building**	**Project No.:**	**4102-23-03482**
Location:	**1901 Admiral Wilson Boulevard, City and County of Camden, New Jersey**	**Client:**	**Asset Realty & Construction Group, LLC**

Surface Elevation (ft):	6.7	**Date Started:**	1/10/25
Termination Depth (ft):	7.7	**Date Completed:**	1/10/25
Proposed Location:	SWM	**Logged by:**	A. Park
Excavation / Test Method:	Visual Observation	**Contractor:**	Neighbors Property Management
		Rig Type:	Bobcat E60

Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Seepage	NE	-	Very dark gray (10YR 3/1) mottling encountered from 66 inches to 92 inches
Groundwater	NE	-	
Seasonal High Groundwater	5.5	1.2	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
0-14	TOPSOIL Very Dark Brown (10YR 2/2)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	CMN (20% MAX)	FINE	NONE						
14-66	FILL Dark Yellowish Brown (10YR 3/6)	SAND	0	0	0	0	SINGLE GRAIN	STRUCTURELESS		MOIST	LOOSE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	NONE		NONE			BAG TUBE	40 40	S-1 T-1	A > 20.0 iph B >20.0 iph
66-92	FILL Very Dark Gray (10YR 3/1)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT				

Additional Remarks: Existing fill material encountered to approximately 92 inches below the ground surface. The debris encountered included glass, bricks, asphalt, ceramics, concrete, metal, and fabric. Soil profile pit SPP-2 encountered refusal on apparent concrete at approximately 7.7 feet below the ground surface.

DYNAMIC EARTH

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-3

Project: Proposed Five-Story Mixed-Use Building | **Project No.:** 4102-23-03482

Location: 1901 Admiral Wilson Boulevard, City and County of Camden, New Jersey | **Client:** Asset Realty & Construction Group, LLC

Surface Elevation (ft):	5.9	**Date Started:**	1/10/25	
Termination Depth (ft):	8.3	**Date Completed:**	1/10/25	
Proposed Location:	SWM	**Logged by:**	A. Park	
Excavation / Test Method:	Visual Observation	**Contractor:**	Neighbors Property Management	
		Rig Type:	Bobcat E60	

Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Seepage	NE	-	Very dark gray (10YR 3/1) mottling encountered from 30 inches to 71 inches
Groundwater	5.9	0.0	
Seasonal High Groundwater	2.5	3.4	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
0-11	TOPSOIL Very Dark Brown (10YR 2/2)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	CMN (20% MAX)	FINE	NONE						
11-30	FILL Dark Yellowish Brown (10YR 3/6)	SAND	0	0	0	0	SINGLE GRAIN	STRUCTURELESS		MOIST	LOOSE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	NONE		NONE			BAG TUBE	30 24	S-1 T-1	A > 20.0 iph B >20.0 iph
30-71	FILL Very Dark Gray (10YR 3/1)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	WET	FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	NONE		CMN (20% MAX)	MEDIUM 5MM-15MM	DISTINCT	BAG	60	S-2	
71-100	FILL Very Dark Grayish Brown (10YR 3/2)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	WET	FRIABLE	NONSTICKY	NONPLASTIC			NONE		NONE						

Additional Remarks: Existing fill material encountered to approximately 100 inches below the ground surface. The debris encountered included brick, glass, fabric, plastic, asphalt, ceramics, metal, and wood. Soil profile pit SPP-3 encountered refusal at approximately 8.3 feet below the ground surface due to continuous wet cave-in of the excavation side-walls.

Dynamic Earth

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-4

Project:	**Proposed Five-Story Mixed-Use Building**	**Project No.:**	**4102-23-03482**
Location:	**1901 Admiral Wilson Boulevard, City and County of Camden, New Jersey**	**Client:**	**Asset Realty & Construction Group, LLC**

Surface Elevation (ft):	5.7	**Date Started:**	1/10/25		
Termination Depth (ft):	9.6	**Date Completed:**	1/10/25		
Proposed Location:	SWM	**Logged by:**	A. Park		
Excavation / Test Method:	Visual Observation	**Contractor:**	Neighbors Property Management		
		Rig Type:	Bobcat E60		

Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Seepage	NE	-	Very dark gray (10YR 3/1) mottling encountered from 30 inches to 74 inches
Groundwater	6.2	-0.5	
Seasonal High Groundwater	2.5	3.2	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
0-13	TOPSOIL Very Dark Brown (10YR 2/2)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	MNY (>20% MAX)	FINE	NONE						
13-30	FILL Dark Yellowish Brown (10YR 3/6)	SAND	0	0	0	0	SINGLE GRAIN	STRUCTURELESS		MOIST	LOOSE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	NONE		NONE			BAG TUBE	35 25	S-1 T-1	A > 20.0 iph B >20.0 iph
30-74	FILL Very Dark Gray (10YR 3/1)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	NONE		CMN (20% MAX)	MEDIUM 5MM-15MM	DISTINCT				
74-115	FILL Dark Yellowish Brown (10YR 3/6)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	WET	FRIABLE	NONSTICKY	NONPLASTIC			NONE		NONE			BAG	85	S-2	

Additional Remarks: Existing fill material encountered to approximately 115 inches below the ground surface. The debris encountered included ceramics, bricks, wood, metal, plastic, glass, and asphalt. Soil profile pit SPP-4 encountered refusal at approximately 9.6 feet below the ground surface due to continuous wet cave-in of the excavation side-walls..

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-5

Project:	Proposed Five-Story Mixed-Use Building	Project No.:	4102-23-03482
Location:	1901 Admiral Wilson Boulevard, City and County of Camden, New Jersey	Client:	Asset Realty & Construction Group, LLC

Surface Elevation (ft):	5.9	Date Started:	1/10/25
Termination Depth (ft):	7.8	Date Completed:	1/10/25
Proposed Location:	SWM	Logged by:	A. Park
Excavation / Test Method:	Visual Observation	Contractor:	Neighbors Property Management
		Rig Type:	Bobcat E60

Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Seepage	NNE	-	Very dark gray (10YR 3/1) mottling encountered from 12 inches to 69 inches
Groundwater	5.8	0.1	
Seasonal High Groundwater	**1.0**	4.9	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
0-12	TOPSOIL Very Dark Brown (10YR 2/2)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	MNY (>20% MAX)	FINE	NONE						
12-69	FILL Very Dark Grayish Brown (10YR 3/2)	SAND	0	0	0	0	SINGLE GRAIN	STRUCTURELESS		MOIST	LOOSE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG TUBE	45 24	S-1 T-1	A > 20.0 iph B >20.0 iph
69-94	FILL Very Dark Grayish Brown (10YR 3/2)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	WET	FRIABLE	NONSTICKY	NONPLASTIC			NONE		NONE			BAG	80	S-2	

Additional Remarks: Existing fill material encountered to approximately 94 inches below the ground surface. The debris encountered included brick, roots, wood, glass, metal, fabric, ceramics, plastic and concrete. Soil profile pit SPP-5 encountered refusal at approximately 7.8 feet below the ground surface due to continuous wet cave-in of the excavation side-walls.

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-6

Project: Proposed Five-Story Mixed-Use Building
Project No.: 4102-23-03482
Location: 1901 Admiral Wilson Boulevard, City and County of Camden, New Jersey
Client: Asset Realty & Construction Group, LLC

Surface Elevation (ft): 5.9
Termination Depth (ft): 6.8
Proposed Location: SWM
Excavation / Test Method: Visual Observation
Date Started: 1/10/25
Date Completed: 1/10/25
Logged by: A. Park
Contractor: Neighbors Property Management
Rig Type: Bobcat E60

Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Seepage	NE	-	Very dark gray (10YR 3/1) mottling encountered from 32 inches to 63 inches
Groundwater	5.3	0.6	
Seasonal High Groundwater	**2.7**	3.2	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
0-15	TOPSOIL Very Dark Brown (10YR 2/2)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	MNY (>20% MAX)	FINE	NONE						
15-32	FILL Dark Yellowish Brown (10YR 3/6)	SAND	0	0	0	0	SINGLE GRAIN	STRUCTURELESS		MOIST	LOOSE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	NONE		NONE			BAG TUBE	30 26	S-1 T-1	A > 20.0 iph B >20.0 iph
32-63	FILL Very Dark Gray (10YR 3/1)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	NONE		CMN (20% MAX)	MEDIUM 5MM-15MM	DISTINCT				
63-82	FILL Very Dark Grayish Brown (10YR 3/2)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	WET	FRIABLE	NONSTICKY	NONPLASTIC			NONE		NONE			BAG	75	S-2	

Additional Remarks: Existing fill material encountered to approximately 82 inches below the ground surface. The debris encountered included brick, glass, plastic, wood, ceramics, concrete, and metal. Soil profile pit SPP-6 encountered refusal at approximately 6.8 feet below the ground surface due to continuous wet cave-in of the excavation side-walls..

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-7

Project: Proposed Five-Story Mixed-Use Building | **Project No.:** 4102-23-03482

Location: 1901 Admiral Wilson Boulevard, City and County of Camden, New Jersey | **Client:** Asset Realty & Construction Group, LLC

Surface Elevation (ft):	4.5	Date Started:	1/10/25
Termination Depth (ft):	7.8	Date Completed:	1/10/25
Proposed Location:	SWM	Logged by:	A. Park
Excavation / Test Method:	Visual Observation	Contractor:	Neighbors Property Management
		Rig Type:	Bobcat E60

Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Seepage	NE	-	Dark gray (10YR 4/1) mottling encountered from 35 inches to 47 inches
Groundwater	3.9	0.6	
Seasonal High Groundwater	2.9	1.6	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
0-13	TOPSOIL Very Dark Brown (10YR 2/2)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	MNY (>20% MAX)	FINE	NONE						
13-35	FILL Dark Yellowish Brown (10YR 3/6)	SAND	0	0	0	0	STRUCTURELESS SINGLE GRAIN			MOIST	LOOSE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	NONE		NONE			BAG TUBE	25 25	S-1 T-1	A > 20.0 iph B >20.0 iph
35-47	FILL Dark Gray (10YR 4/1)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	NONE		CMN (20% MAX)	MEDIUM 5MM-15MM	DISTINCT				
47-94	FILL Very Dark Grayish Brown (10YR 3/2)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	WET	FRIABLE	NONSTICKY	NONPLASTIC			NONE		NONE			BAG	60	S-2	

Additional Remarks: Existing fill material encountered to approximately 94 inches below the ground surface. The debris encountered included wood, glass, plastic, and brick. Soil profile pit SPP-7 encountered refusal at approximately 7.8 feet below the ground surface due to continuous wet cave-in of the excavation side-walls.

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-8

Project:	Proposed Five-Story Mixed-Use Building	Project No.:	4102-23-03482
Location:	1901 Admiral Wilson Boulevard, City and County of Camden, New Jersey	Client:	Asset Realty & Construction Group, LLC

Surface Elevation (ft):	4.4	Date Started:	1/10/25	Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Termination Depth (ft):	9.2	Date Completed:	1/10/25				
Proposed Location:	SWM	Logged by:	A. Park	Seepage	NE	-	Gray (10YR 3/1) mottling encountered from 36 inches to 53 inches
Excavation / Test Method:	Visual Observation	Contractor:	Neighbors Property Management	Groundwater	4.4	0.0	
		Rig Type:	Bobcat E60	Seasonal High Groundwater	**3.0**	1.4	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
0-12	TOPSOIL Very Dark Brown (10YR 2/2)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	MNY (>20% MAX)	FINE	NONE						
12-36	FILL Dark Yellowish Brown (10YR 3/6)	SAND	0	0	0	0	SINGLE GRAIN	STRUCTURELESS		MOIST	LOOSE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	NONE		NONE			BAG TUBE	33 32	S-1 T-1	A > 20.0 iph B >20.0 iph
36-53	FILL Gray (10YR 5/1)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	NONE		CMN (20% MAX)	MEDIUM 5MM-15MM	DISTINCT				
53-110	FILL Very Dark Grayish Brown (10YR 3/2)	LOAMY SAND	0	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	WET	FRIABLE	NONSTICKY	NONPLASTIC			NONE		NONE			BAG	70	S-2	

Additional Remarks: Existing fill material encountered to approximately 110 inches below the ground surface. The debris encountered included glass, plastic, wood, metal, and fabric. Soil profile pit SPP-8 encountered refusal at approximately 9.2 feet below the ground surface due to continuous wet cave-in of the excavation side-walls..

Laboratory Test Results

Tube Permeameter Test Data

Job Number: 4102 23-03482
Project: Proposed Five-Story Mixed-Use Building
Client: Asset Realty & Construction Group, Inc.
Lab Tech: S. Oberle

Sample ID: **Boring/Test Pit No.:** SPP-1 **Sample No.:** T-1 **Depth:** 30"

MUNICIPALITY City of Camden BLOCK 1220 LOT 57

1. Test Number T-1 Replicate (letter) A Date Collected 1/10/2025

2. Material Tested: x Fill _________ Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed _________ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 2.00

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 231.5492

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. N/A > 1.2

9. Standpipe Used: x No _________ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 4.00
    At the End of Each Test Interval, H2 3.00

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		6.6
		6.5
		6.7

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 6.7

    K = 5.2 **Classification:** **K3**

13. Defects in the Sample (Check appropriate items):

    x NONE

    ________ Soil/Tube Contact ________ Large Gravel ________ Large Roots

    ________ Dry Soil ________ Smearing ________ Compaction

    ________ Other - Specify ________________________

Tube Permeameter Test Data

Job Number: 4102 23-03482
Project: Proposed Five-Story Mixed-Use Building
Client: Asset Realty & Construction Group, Inc.
Lab Tech: S. Oberle

Sample ID: **Boring/Test Pit No.:** SPP-1 **Sample No.:** T-1 **Depth:** 30"

MUNICIPALITY City of Camden BLOCK 1220 LOT 57

1. Test Number T-1 Replicate (letter) B Date Collected 1/10/2025

2. Material Tested: x Fill ________ Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed ________ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 3.00

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 347.3238

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. N/A > 1.2

9. Standpipe Used: x No ________ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 4.00
    At the End of Each Test Interval, H2 3.00

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		6.3
		6.3
		6.3

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 6.3

    K = 8.2 **Classification:** **K4**

13. Defects in the Sample (Check appropriate items):

    x NONE

    ________ Soil/Tube Contact ________Large Gravel ________ Large Roots

    ________ Dry Soil ________Smearing ________ Compaction

    ________ Other - Specify ________________________________

Tube Permeameter Test Data

Job Number: 4102 23-03482
Project: Proposed Five-Story Mixed-Use Building
Client: Asset Realty & Construction Group, Inc.
Lab Tech: S. Oberle

Sample ID: **Boring/Test Pit No.:** SPP-2 **Sample No.:** T-1 **Depth:** 40"

MUNICIPALITY City of Camden BLOCK 1220 LOT 57

1. Test Number T-1 Replicate (letter) A Date Collected 1/10/2025

2. Material Tested: x Fill ____ Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed ____ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 2.00

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 231.5492

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. N/A > 1.2

9. Standpipe Used: x No ____ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 4.00
    At the End of Each Test Interval, H2 3.00

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		0.5
		0.5
		0.5

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 0.5

    K = >20.0 **Classification:** **K5**

13. Defects in the Sample (Check appropriate items):

    x NONE

    ____ Soil/Tube Contact ____ Large Gravel ____ Large Roots

    ____ Dry Soil ____ Smearing ____ Compaction

    ____ Other - Specify ____

Tube Permeameter Test Data

Job Number: 4102 23-03482
Project: Proposed Five-Story Mixed-Use Building
Client: Asset Realty & Construction Group, Inc.
Lab Tech: S. Oberle

Sample ID: **Boring/Test Pit No.:** SPP-2 **Sample No.:** T-1 **Depth:** 40"

MUNICIPALITY City of Camden BLOCK 1220 LOT 57

1. Test Number T-1 Replicate (letter) B Date Collected 1/10/2025

2. Material Tested: x Fill ____ Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed ____ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 2.00

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 231.5492

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. N/A > 1.2

9. Standpipe Used: x No ____ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 4.00
    At the End of Each Test Interval, H2 3.00

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		0.5
		0.5
		0.5

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 0.5

    K = >20.0 **Classification:** **K5**

13. Defects in the Sample (Check appropriate items):

    x NONE

    ____ Soil/Tube Contact ____ Large Gravel ____ Large Roots

    ____ Dry Soil ____ Smearing ____ Compaction

    ____ Other - Specify ____

Tube Permeameter Test Data

Job Number: 4102 23-03482
Project: Proposed Five-Story Mixed-Use Building
Client: Asset Realty & Construction Group, Inc.
Lab Tech: S. Oberle

Sample ID: **Boring/Test Pit No.:** SPP-3 **Sample No.:** T-1 **Depth:** 24"

MUNICIPALITY City of Camden BLOCK 1220 LOT 57

1. Test Number T-1 Replicate (letter) A Date Collected 1/10/2025

2. Material Tested: x Fill ______ Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed ______ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 3.00

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 347.3238

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. N/A > 1.2

9. Standpipe Used: x No ______ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

   At the Beginning of Each Test Interval, H1 4.00
   At the End of Each Test Interval, H2 3.00

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		0.1
		0.1
		0.1

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 0.1

   K = >20.0 **Classification:** **K5**

13. Defects in the Sample (Check appropriate items):

   x NONE

   ________ Soil/Tube Contact ________Large Gravel ________ Large Roots

   ________ Dry Soil ________Smearing ________ Compaction

   ________ Other - Specify ________________________________

Tube Permeameter Test Data

Job Number: 4102 23-03482
Project: Proposed Five-Story Mixed-Use Building
Client: Asset Realty & Construction Group, Inc.
Lab Tech: S. Oberle

Sample ID: **Boring/Test Pit No.:** SPP-3 **Sample No.:** T-1 **Depth:** 24"'

MUNICIPALITY City of Camden BLOCK 1220 LOT 57

1. Test Number T-1 Replicate (letter) B Date Collected 1/10/2025

2. Material Tested: x Fill ____ Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed ____ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 3.00

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 347.3238

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. N/A > 1.2

9. Standpipe Used: x No ____ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 4.00
    At the End of Each Test Interval, H2 3.00

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		0.3
		0.3
		0.3

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 0.3

    K = >20.0 **Classification:** **K5**

13. Defects in the Sample (Check appropriate items):

    x NONE

    ____ Soil/Tube Contact ____ Large Gravel ____ Large Roots

    ____ Dry Soil ____ Smearing ____ Compaction

    ____ Other - Specify ____

Tube Permeameter Test Data

Job Number: 4102 23-03482
Project: Proposed Five-Story Mixed-Use Building
Client: Asset Realty & Construction Group, Inc.
Lab Tech: S. Oberle

Sample ID: **Boring/Test Pit No.:** SPP-4 **Sample No.:** T-1 **Depth:** 25"

MUNICIPALITY City of Camden BLOCK 1220 LOT 57

1. Test Number T-1 Replicate (letter) A Date Collected 1/10/2025

2. Material Tested: x Fill ____ Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed ____ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 3.50

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 405.2111

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. N/A > 1.2

9. Standpipe Used: x No ____ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 4.00
    At the End of Each Test Interval, H2 3.00

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		2.1
		2.0
		2.0

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 2.0

    K = >20.0 **Classification:** **K5**

13. Defects in the Sample (Check appropriate items):

    x NONE

    ____ Soil/Tube Contact ____ Large Gravel ____ Large Roots

    ____ Dry Soil ____ Smearing ____ Compaction

    ____ Other - Specify ____

Tube Permeameter Test Data

Job Number: 4102 23-03482
Project: Proposed Five-Story Mixed-Use Building
Client: Asset Realty & Construction Group, Inc.
Lab Tech: S. Oberle

Sample ID: **Boring/Test Pit No.:** SPP-4 **Sample No.:** T-1 **Depth:** 25"

MUNICIPALITY City of Camden BLOCK 1220 LOT 57

1. Test Number T-1 Replicate (letter) B Date Collected 1/10/2025

2. Material Tested: x Fill ____ Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed ____ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
Length of Sample, L, in inches 3.50

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 405.2111

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. N/A > 1.2

9. Standpipe Used: x No ____ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

At the Beginning of Each Test Interval, H1 4.00
At the End of Each Test Interval, H2 3.00

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		1.2
		1.2
		1.3

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 1.3

K = >20.0 **Classification:** **K5**

13. Defects in the Sample (Check appropriate items):

x NONE

________ Soil/Tube Contact ________Large Gravel _____________ Large Roots

________ Dry Soil ___________Smearing ____________ Compaction

________ Other - Specify ____

Tube Permeameter Test Data

Job Number: 4102 23-03482
Project: Proposed Five-Story Mixed-Use Building
Client: Asset Realty & Construction Group, Inc.
Lab Tech: S. Oberle

Sample ID: **Boring/Test Pit No.:** SPP-5 **Sample No.:** T-1 **Depth:** 24"

MUNICIPALITY City of Camden BLOCK 1220 LOT 57

1. Test Number T-1 Replicate (letter) A Date Collected 1/10/2025

2. Material Tested: x Fill ________ Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed ________ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 2.00

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 231.5492

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. N/A > 1.2

9. Standpipe Used: x No ________ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 4.00
    At the End of Each Test Interval, H2 3.00

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		0.5
		0.5
		0.5

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 0.5

    K = >20.0 **Classification:** **K5**

13. Defects in the Sample (Check appropriate items):

    x NONE

    ________ Soil/Tube Contact ________Large Gravel ____________ Large Roots

    ________ Dry Soil ___________Smearing ____________ Compaction

    ________ Other - Specify ______________________________

Tube Permeameter Test Data

Job Number: 4102 23-03482
Project: Proposed Five-Story Mixed-Use Building
Client: Asset Realty & Construction Group, Inc.
Lab Tech: S. Oberle

Sample ID: **Boring/Test Pit No.:** SPP-5 **Sample No.:** T-1 **Depth:** 24"

MUNICIPALITY City of Camden BLOCK 1220 LOT 57

1. Test Number T-1 Replicate (letter) B Date Collected 1/10/2025

2. Material Tested: x Fill ____ Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed ____ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 2.00

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 231.5492

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. N/A > 1.2

9. Standpipe Used: x No ____ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

At the Beginning of Each Test Interval, H1 4.00
At the End of Each Test Interval, H2 3.00

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		0.2
		0.2
		0.2

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 0.2

K = >20.0 **Classification:** **K5**

13. Defects in the Sample (Check appropriate items):

x NONE

____ Soil/Tube Contact ____ Large Gravel ____ Large Roots

____ Dry Soil ____ Smearing ____ Compaction

____ Other - Specify ____

Tube Permeameter Test Data

Job Number: 4102 23-03482
Project: Proposed Five-Story Mixed-Use Building
Client: Asset Realty & Construction Group, Inc.
Lab Tech: S. Oberle

Sample ID: **Boring/Test Pit No.:** SPP-6 **Sample No.:** T-1 **Depth:** 26"

MUNICIPALITY City of Camden BLOCK 1220 LOT 57

1. Test Number T-1 Replicate (letter) A Date Collected 1/10/2025

2. Material Tested: x Fill ________ Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed ________ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 2.00

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 231.5492

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. N/A > 1.2

9. Standpipe Used: x No ________ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 4.00
    At the End of Each Test Interval, H2 3.00

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		0.5
		0.5
		0.5

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 0.5

    K = >20.0 **Classification:** **K5**

13. Defects in the Sample (Check appropriate items):

    x NONE

    ________ Soil/Tube Contact ________Large Gravel ____________ Large Roots

    ________ Dry Soil ___________Smearing ____________ Compaction

    ________ Other - Specify ____

Tube Permeameter Test Data

Job Number: 4102 23-03482
Project: Proposed Five-Story Mixed-Use Building
Client: Asset Realty & Construction Group, Inc.
Lab Tech: S. Oberle

Sample ID: **Boring/Test Pit No.:** SPP-6 **Sample No.:** T-1 **Depth:** 26"

MUNICIPALITY City of Camden BLOCK 1220 LOT 57

1. Test Number T-1 Replicate (letter) B Date Collected 1/10/2025

2. Material Tested: x Fill ________ Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed ________ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 2.00

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 231.5492

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. N/A > 1.2

9. Standpipe Used: x No ________ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 4.00
    At the End of Each Test Interval, H2 3.00

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		0.6
		0.6
		0.6

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 0.6

    K = >20.0 **Classification:** **K5**

13. Defects in the Sample (Check appropriate items):

    x NONE

    ________ Soil/Tube Contact ________Large Gravel ________ Large Roots

    ________ Dry Soil ________Smearing ________ Compaction

    ________ Other - Specify ________________________________

Tube Permeameter Test Data

Job Number: 4102 23-03482
Project: Proposed Five-Story Mixed-Use Building
Client: Asset Realty & Construction Group, Inc.
Lab Tech: S. Oberle

Sample ID: **Boring/Test Pit No.:** SPP-7 **Sample No.:** T-1 **Depth:** 25"

MUNICIPALITY City of Camden BLOCK 1220 LOT 57

1. Test Number T-1 Replicate (letter) A Date Collected 1/10/2025

2. Material Tested: x Fill ______ Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed ______ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 2.00

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 231.5492

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. N/A > 1.2

9. Standpipe Used: x No ______ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 4.50
    At the End of Each Test Interval, H2 3.50

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		0.2
		0.2
		0.2

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 0.2

    K = >20.0 **Classification:** **K5**

13. Defects in the Sample (Check appropriate items):

    x NONE

    ________ Soil/Tube Contact ________Large Gravel _____________ Large Roots

    ________ Dry Soil ___________Smearing ____________ Compaction

    ________ Other - Specify ____

Tube Permeameter Test Data

Job Number: 4102 23-03482
Project: Proposed Five-Story Mixed-Use Building
Client: Asset Realty & Construction Group, Inc.
Lab Tech: S. Oberle

Sample ID: **Boring/Test Pit No.:** SPP-7 **Sample No.:** T-1 **Depth:** 25"

MUNICIPALITY City of Camden BLOCK 1220 LOT 57

1. Test Number T-1 Replicate (letter) B Date Collected 1/10/2025

2. Material Tested: x Fill ________ Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed ________ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 2.00

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 231.5492

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. N/A > 1.2

9. Standpipe Used: x No ________ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 4.50
    At the End of Each Test Interval, H2 3.50

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		0.1
		0.1
		0.1

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 0.1

    K = >20.0 **Classification:** **K5**

13. Defects in the Sample (Check appropriate items):

    x NONE

    ________ Soil/Tube Contact ________Large Gravel ________ Large Roots

    ________ Dry Soil ________Smearing ________ Compaction

    ________ Other - Specify ________________________________

Tube Permeameter Test Data

Job Number: 4102 23-03482
Project: Proposed Five-Story Mixed-Use Building
Client: Asset Realty & Construction Group, Inc.
Lab Tech: S. Oberle

Sample ID: **Boring/Test Pit No.:** SPP-8 **Sample No.:** T-1 **Depth:** 32"

MUNICIPALITY City of Camden BLOCK 1220 LOT 57

1. Test Number T-1 Replicate (letter) A Date Collected 1/10/2025

2. Material Tested: x Fill ______ Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed ______ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 2.00

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 231.5492

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. N/A > 1.2

9. Standpipe Used: x No ______ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 4.50
    At the End of Each Test Interval, H2 3.50

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		0.4
		0.4
		0.4

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 0.4

    K = >20.0 **Classification:** **K5**

13. Defects in the Sample (Check appropriate items):

    x NONE

    ______ Soil/Tube Contact ______Large Gravel ______ Large Roots

    ______ Dry Soil ______Smearing ______ Compaction

    ______ Other - Specify ______

Tube Permeameter Test Data

Job Number: 4102 23-03482
Project: Proposed Five-Story Mixed-Use Building
Client: Asset Realty & Construction Group, Inc.
Lab Tech: S. Oberle

Sample ID: **Boring/Test Pit No.:** SPP-8 **Sample No.:** T-1 **Depth:** 32"

MUNICIPALITY City of Camden BLOCK 1220 LOT 57

1. Test Number T-1 Replicate (letter) B Date Collected 1/10/2025

2. Material Tested: x Fill ______ Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed ______ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 2.50

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 289.4365

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. N/A > 1.2

9. Standpipe Used: x No ______ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 4.50
    At the End of Each Test Interval, H2 3.50

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		0.6
		0.6
		0.6

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 0.6

    K = >20.0 **Classification:** **K5**

13. Defects in the Sample (Check appropriate items):

    x NONE

    ________ Soil/Tube Contact ________Large Gravel ______________ Large Roots

    ________ Dry Soil ___________Smearing _____________ Compaction

    ________ Other - Specify ____

NRCS-USDA Custom Soil Survey of Camden County, New Jersey

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Camden County, New Jersey

November 13, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map


75° 5' 46" W
75° 5' 32" W
39° 56' 29" N
39° 56' 22" N
491770
491800
491830
491860
491890
491920
491950
491980
492010
492040
492070
492100
4421280
4421250
4421220
4421190
4421160
4421130
4421100
4421070
UR
Raritan St
E Randolph St
Bank St
Bank
Ramp
30
Soil Map may not be valid at this scale.
N
Map Scale: 1:1,560 if printed on A landscape (11" x 8.5") sheet.
Meters
0 20 40 80 120
Feet
0 50 100 200 300
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Camden County, New Jersey
Survey Area Data: Version 17, Aug 28, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 5, 2022—Jul 4, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
UR	Urban land	5.4	100.0%
Totals for Area of Interest		**5.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Camden County, New Jersey

UR—Urban land

Map Unit Setting

National map unit symbol: rvrf
Elevation: 0 to 170 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Minor Components

Udorthents

Percent of map unit: 5 percent
Landform: Low hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

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DRAINAGE AREA & INLET AREA MAPS

GRAPHIC SCALE

-30 0 15 30 60 120

(IN FEET)
1 INCH = 30 FT.

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TITLE:

EXISTING DRAINAGE AREA MAP

PROJECT: **ASSET REALTY & CONSTRUCTION GROUP INC.**
PROPOSED FIVE-STORY MIXED USE BUILDING
BLOCK 1220, LOT 57
1901 ADMIRAL WILSON BOULEVARD
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

JOB No: 2334-23-03513
DATE: 04/30/2025
DRAWN BY: UV
DESIGNED BY: SM
CHECKED BY: DT
CHECKED BY: –
SCALE: (H) 1"=30' (V) .
SHEET No: 1 OF 17
Rev. # 0

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NEW JERSEY LICENSE No. 56963

JOSHUA M. SEWALD
PROFESSIONAL ENGINEER
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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

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File: \\decpc.local\decfolders\Data\DECPC PROJECTS\2334 Arco Murray\23-03513 Camden\Dwg\DA Maps\D233423035135EDAM0.dwg, ----> 01 EXISTING DRAINAGE AREA MAP

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TITLE:

INLET AREA MAP

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CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

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DRAWN BY: UV	SCALE: (H) 1"=30' (V) .
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File: \\decpc.local\decfolders\Data\DECPC PROJECTS\2334 Arco Murray\23-03513 Camden\Dwg\DA Maps\D2334230351301AM0.dwg, ---> 03 INLET AREA MAP

Stormwater Management Measures
Maintenance Plan & Field Manuals

Development Name: Proposed Five-Story Mixed Use Building

Address: 1901 Admiral Wilson Boulevard

Block 1220, Lot 57

City of Camden, Camden County, NJ

Party Responsible for Maintenance:

Asset Realty & Construction Group Inc.

Address: 1590 Troy Avenue
Brooklyn, NY 11234

Contact Person(s): Dino Tomassetti Jr.
Phone: 718-252-0126

Prepared by: Joshua M. Sewald, PE, PP
Date: May 2025

This plan is recorded in

Deed Book # ________ Page # ____ with _____________ County Clerk on Date ________

Last Revised on _____/_____/_____________

Table of Contents

Part I- Maintenance

Part II- Field Manuals and Maintenance Records

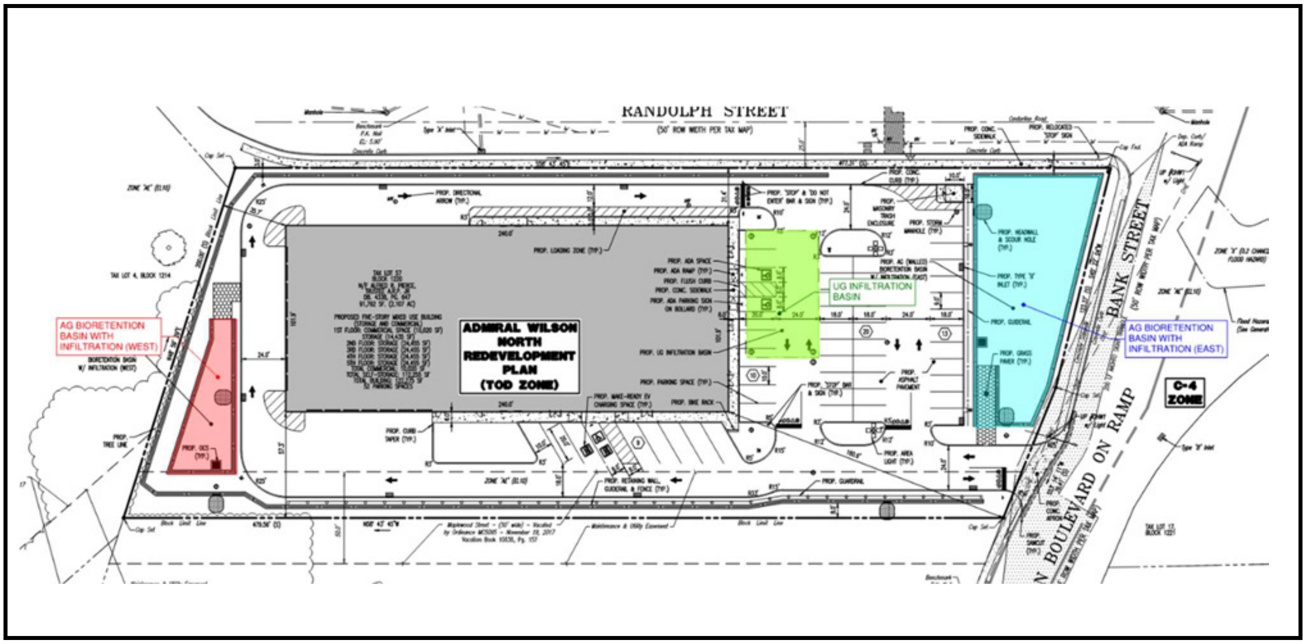
Part I- Maintenance Plan

List of Stormwater Management Measures

The stormwater management measures incorporated into this development are listed below. The corresponding Field Manuals for the stormwater management measures are located in Part II of the Maintenance Plan.

Type of Stormwater Management Measure	Location Description	State Plane Coordinates
Aboveground Bioretention Basin w/ Infiltration East	Located between the easterly property line and Bank Street	N: 403,743 E: 325,766
Aboveground Bioretention Basin w/ Infiltration West	Located along the westerly property line	N: 403,898 E: 325,381
Underground Infiltration Basin	Located to the east of the proposed building, within the proposed parking area	N: 403,800 E: 325,659

Location Map



Type of Stormwater Management Measure
Aboveground Bioretention Basin w/ Infiltration West
Aboveground Bioretention Basin w/ Infiltration East
Underground Infiltration Basin

Description of Stormwater Management Measures

Aboveground Bioretention Basin w/ Infiltration East
Design storm: WQDS, 2-year, 10-year, 25-year & 100-year (Current & Proposed)

- Design Purposes:
  - Water Quality, Water Quantity, & Groundwater Recharge
  - 1.25 inches in 2 hours
  - 2-year storm current 3.41 inches;
  - 2-year storm projected 4.91 inches;
  - 10-year storm current 5.26 inches;
  - 10-year storm projected 6.17 inches;
  - 25-year storm 6.28 inches;
  - 100-year storm current 8.95 inches;
  - 100-year storm projected 11.84 inches
- Dimensions: ±150 FT x ±42.66 FT x 3 FT

Aboveground Bioretention Basin w/ Infiltration West
Design storm: WQDS, 2-year, 10-year, 25-year & 100-year (Current & Proposed)

- Design Purposes:
  - Water Quality, Water Quantity, & Groundwater Recharge
  - 1.25 inches in 2 hours
  - 2-year storm current 3.41 inches;
  - 2-year storm projected 4.91 inches;
  - 10-year storm current 5.26 inches;
  - 10-year storm projected 6.17 inches;
  - 25-year storm 6.28 inches;
  - 100-year storm current 8.95 inches;
  - 100-year storm projected 11.84 inches
- Dimensions: ±45 FT x ±31.12 FT x 4 FT

Underground Infiltration Basin
Design storm: WQDS, 2-year, 10-year, 25-year & 100-year (Current & Proposed)

- Design Purposes:
  - Water Quality, Water Quantity, Groundwater Recharge
  - 1.25 inches in 2 hours
  - 2-year storm current 3.41 inches;
  - 2-year storm projected 4.91 inches;
  - 10-year storm current 5.26 inches;
  - 10-year storm projected 6.17 inches;
  - 25-year storm 6.28 inches;
  - 100-year storm current 8.95 inches;
  - 100-year storm projected 11.84 inches
- Dimensions: 38.50 FT x 70.33 FT x 3 FT

Preventative and Corrective Maintenance Action Plan

As per N.J.A.C. 7:8-5.8(b) & (e), preventative and corrective maintenance shall be performed to maintain the function of the stormwater management measure, including, but not limited to, repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; restoration of vegetation; and repair or replacement of non-vegetated linings.

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), maintenance plans should include specific preventative and corrective maintenance tasks such as removal of sediment, trash, and debris; mowing, pruning, and restoration of vegetation; restoration of eroded areas; elimination of mosquito breeding habitats; control of aquatic vegetation; and repair or replacement of damaged or deteriorated components.

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), the maintenance plan should address the maintenance of access points to the stormwater management measures in accordance with the following:

- all components of the stormwater management measures must be readily accessible for inspection and maintenance;
- trees, shrubs, and underbrush must be pruned or trimmed as necessary to maintain access to the stormwater management measure via roadways, paths, and ramps, including paths through perimeter vegetation to permanent pools, aquatic benches, and safety ledges to allow for the inspection and control of mosquito breeding; and
- the exact limits of inspection and maintenance easements and rights-of-way should be specified on stormwater management measure plans and included in the maintenance plan.

Preventative Maintenance Actions

The frequency of the preventative maintenance actions listed here is adopted from Chapter 9, BMP Manual of Structural Stormwater Management Measures. Design engineer and responsible party should adjust the frequency of preventative maintenance actions according to the situations of the stormwater management measures in the development.

Frequency	Preventative Maintenance Actions
Monthly	• Vegetation mowing and removal in growing season • Removal and disposal of trash and debris
Quarterly	• Quarterly inspection • Elimination of potential mosquito breeding habitats
Semiannual	• Sediment removal, depending on the type of measure
Annual	• Basin Structural Inspection • Infiltration testing in accordance with the methods of either ASTM C1701 or C1781
Special Event Inspection	• Quick inspection after every 1″ rain

Corrective Maintenance Actions

Depending on many factors, such as the performance of preventative maintenance actions, weather, or unexpected incidents, corrective maintenance requirements may not be precisely anticipated; however, a list of potential corrective maintenance actions may assist the responsible party in planning and estimating costs in advance.

Potential Corrective Maintenance Actions
Repair/replacement of eroded or damaged outlet protection
Parking lot maintenance
Elimination of potential mosquito breeding grounds

Inspection and Logs of All Preventative and Corrective Maintenance

As per N.J.A.C. 7:8-5.8(f), the person responsible for maintenance shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.

As per NJDEP BMP Manual Ch. 8 (Feb, 2004), a maintenance plan shall include a schedule of regular inspections and tasks, and detailed logs of all preventative and corrective maintenance performed on the stormwater management measure, including all maintenance-related work orders. The person with maintenance responsibility must retain and, upon request, make available the maintenance plan and associated logs and other records for review by a public entity with administrative, health, environmental, or safety authority over the site.

The logs of all inspections, and both preventative and corrective maintenance performed should be attached in the "Maintenance Logs and Inspection Records" section. See Part II of the Maintenance Plan

Maintenance Personnel, Equipment, Tools, and Supplies

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), maintenance plans should include equipment, tools, and supplies necessary to perform the various preventative and corrective maintenance tasks specified in the plan. Sources of specialized, proprietary, and nonstandard equipment, tools, and supplies should also be provided.

This section applies to both maintenance tasks that are performed by in-house personnel or are outsourced. The design engineer has to list the required amount of maintenance personnel, equipment, tools, and supplies necessary to perform the various preventative and corrective maintenance tasks specified in the plan. In addition, the sources of specialized, proprietary, and nonstandard equipment, tools and supplies for specific measures, such as manufactured treatment devices should also be listed.

Maintenance Personnel/Equipment/Tools/Supplies

Personnel/Equipment/Tools Name
General Maintenance Crew
Geotechnical Engineer
Lawn Mowers, Trimmers & Edgers
Seed and Fertilizer Spreaders
Hedge Trimmers
Portable Pump for Dewatering
Shovels

Disposal Plan

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), the maintenance plan should include approved disposal and recycling sites and procedures for sediment, trash, debris and other material removed from stormwater management measures during maintenance operations.

Disposal/Recycling Procedures

Any sediment, trash, debris and other material removed from stormwater management measures during maintenance operations shall be removed from the site by the maintenance crew and disposed of in accordance with all local, state and federal laws.

Cost Estimate

As per N.J.A.C.7:8-5.8(b), cost estimates of maintenance tasks, including, but not limited to, sediment, trash and debris removal must be included in the maintenance plan. Below is an illustration of a cost breakdown and estimation for maintenance of stormwater management measures. The design engineer should estimate the cost based on the expected maintenance required for each stormwater management measure. The actual costs may vary with factors such as local requirements, equipment, personnel, weather, and maintenance methods.

Cost Overview

Cost Type	Cost
Cost of sediment, trash, and debris removal	$1,000.00
General cost for routine maintenance	$4,500.00
General cost – unscheduled maintenance	$500.00
Infiltration Testing	$4,500.00
Total Cost	**$10,500.00**

Safety Measures and Procedures

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), maintenance plans should include procedures and equipment required to protect the safety of inspection and maintenance personnel.

Safety Regulations and Requirements

Safety Tools and Equipment	Responsible Person
Gloves	Maintenance Crew Supervisor
Safety Glasses	Maintenance Crew Supervisor
Hearing Protection	Maintenance Crew Supervisor

Safety Training

Maintenance providers shall be responsible for ensuring applicable safety training has been completed in accordance with applicable OSHA guidelines.

Safety Procedures

Maintenance providers shall be responsible for performing all work in accordance with applicable OSHA guidelines.

City of Camden Emergency Services

Police Department: (302) 698-9232
Fire Prevention: (856) 757-7514

Training Plan and Records

As per NJDEP BMP Manual Ch. 8 (February 2004), maintenance training begins with a basic description of the purpose and function of the overall stormwater management measure and its major components. Such understanding will enable maintenance personnel to provide more effective component maintenance and more readily detect maintenance-related problems. Depending on the size, character, location, and components of each stormwater management measure, maintenance personnel may also require training in specialized inspection and maintenance tasks and/or the operation and care of specialized maintenance equipment. Training should also be provided in the need for and use of all required safety equipment and procedures.

I. Training Plan

Types of Training

- Mandatory Stormwater Management Basic Training and Field Manual Usage Training for new maintenance crews
- Occupational Safety Training
- Subcontractor training, if applicable

Content of Training

- **Stormwater Management Basic Training**
    - Purposes and Functions of BMPs
    - NJDEP Stormwater BMP Manual. More training information is available at NJ Stormwater.org (http://www.nj.gov/dep/stormwater/training.htm)
    - Field Manual Usage Training
        - Field Manuals attached to this Maintenance Plan
    - Equipment and Tools Operation Training
        - Equipment or tool manufacturer's Operation & Maintenance Manual
    - Occupational Safety Training
        - OSHA Training
        - Equipment or tool manufacturer's Operation & Maintenance Manual

II. Training Records

Training attendance sheets should be attached by the responsible party after each training

Attach training attendance sheets from each training

Annual Evaluation of the Effectiveness of the Plan

As per N.J.A.C. 7:8-5.8(g), the person responsible for maintenance shall evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed.

The responsible party should evaluate the effectiveness of the maintenance plan by comparing the maintenance plan with the actual performance of the maintenance. The items to evaluate may include, but not limited to,

- Whether the inspections have been performed as scheduled;
- Whether the preventive maintenance has been performed as scheduled;
- Whether the frequency of preventative maintenance needs to increase or decrease;
- Whether the planned resources were enough to perform the maintenance;
- Whether the repairs were completed on time;
- Whether the actual cost was consistent with the estimated cost;
- Whether the inspection, maintenance, and repair records have been kept.

If actual performance of those items has been deviated from the maintenance plan, the responsible party should find the causes and implement solutions in a revised maintenance plan.

Annual Evaluation Records

Evaluator(s)	Date of Evaluation	Decision
		__Maintain current version OR __Revise current version Revision date _________ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)
		__Maintain current version OR __Revise current version Revision date _________ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)
		__Maintain current version OR __Revise current version Revision date _________ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)

Part II- Field Manuals

Attachment of Field Manuals for Stormwater Management Measures on this Site

As per N.J.A.C. 7:8-5.8(b)&(e), preventative and corrective maintenance shall be performed to maintain the function of stormwater management measures, including repair or replacement of the structure; removal of sediment, debris or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; repair or replacement of non-vegetated linings, and removal of rodent/wildlife and repair/restoration to damaged affected areas caused by them.

Each Field Manual attached to this Maintenance Plan is a separate document pertaining to one specific stormwater management measure, and should be used by inspections and maintenance crews in order to carry out the maintenance work required by N.J.A.C. 7:8-5.8(e).

Field Manual for Aboveground Bioretention Basin w/ Infiltration West
Field Manual for Aboveground Bioretention Basin w/ Infiltration East
Field Manual for Underground Infiltration Basin

Maintenance Logs and Inspection Records

As per N.J.A.C. 7:8-5.8(e), preventative and corrective maintenance shall be performed to maintain the function of the stormwater management measure(s), including repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal, and restoration of vegetation.

As per N.J.A.C. 7:8-5.8(f), the person responsible for maintenance shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.

The responsible party shall maintain a record of all maintenance actions performed, including:

- Inspection checklists from each performed inspection
- Preventative maintenance logs
- Corrective maintenance logs, including work orders
- Other maintenance records

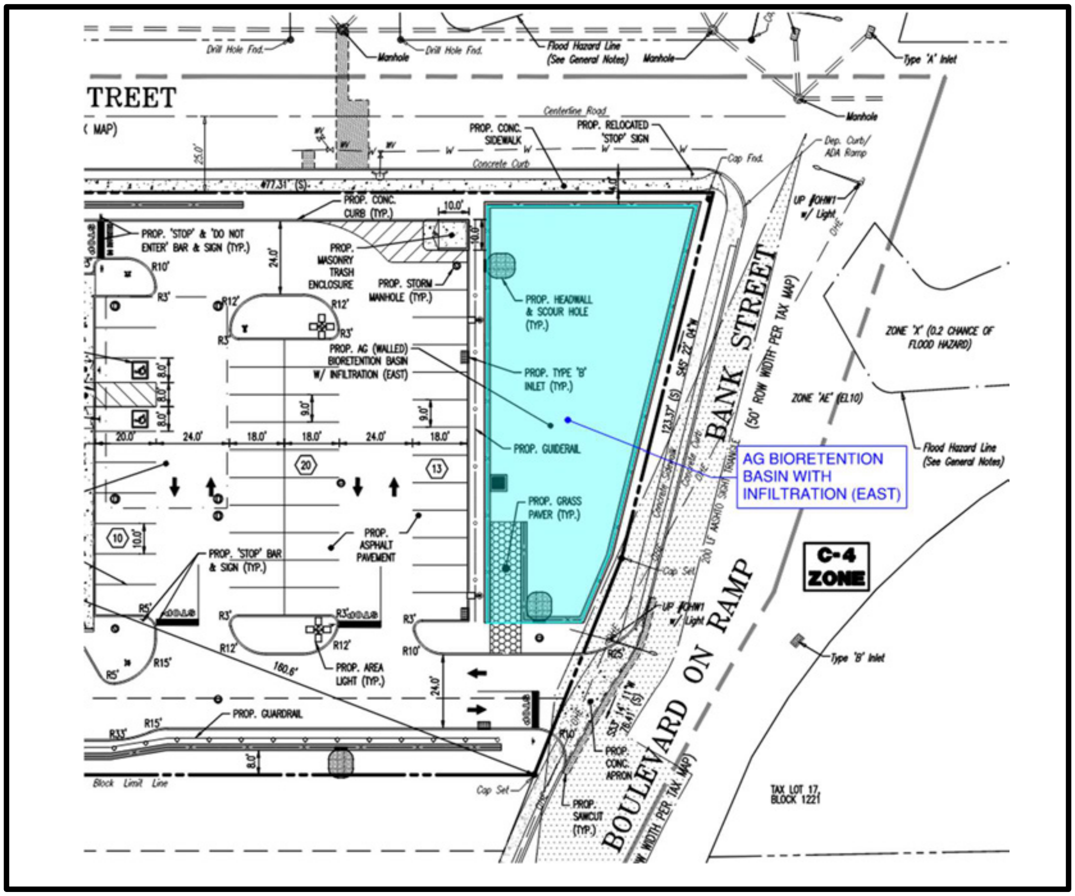
Aboveground Bioretention Basin w/ Infiltration East

Development Name: Proposed Five-Story Mixed Use Building

City, County: Camden, Camden County

Location of Basin: N: 403,743; E: 325,766

Location Map



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Bioretention System Overview

Functionality

Bioretention systems are used to remove a wide range of pollutants, such as suspended solids, nutrients, metals, hydrocarbons, and bacteria from stormwater runoff. They can also be used to reduce peak runoff rates and increase stormwater infiltration when designed as a multi-stage, multi-function facility.

A bioretention system can be configured as either a bioretention basin or a longer, narrower bioretention swale. In general, a bioretention basin has a flat bottom while a bioretention swale may have sloping bottom. Runoff storage depths above the soil bed surface are typically shallow. The TSS removal rate for bioretention systems is 80 or 90 percent, depending upon the thickness of the soil planting bed and the type of vegetation grown in the bed.

Proper care and attention in the long-term maintenance of the stormwater management measure is critically important to the safety and health of the public.

Type of BMP – Dry Basin

A bioretention system is a type of dry basin. The design drain time shall be closely monitored to ensure that potential failure is recognized early.

An infiltration basin is a type of *dry* basin. Dry basins must fully drain within 72 hours of the most recent rainfall. Standing water in excess of 72 hours is a sign of basin failure. It may also contribute to mosquito breeding and other health and safety issues. The design drain time shall be closely monitored to ensure that potential failure is recognized early.

Aboveground Bioretention Basin w/ Infiltration East
Basic Design Information

Hydrology Design Targets

1. This basin is designed with a subsoil permeability rate of 2.60 inches/hour.
2. The design drain time is 53.52 hours.
3. The elevation of the seasonal high-water table of this basin was encountered at a depth of 4.0 FT (EL. 2.6) and is 2.90 FT below the basin bottom.

Type	Size	Elevation
Orifice	3″ Outlet w/ 9″ Fluidic Cone (1.75″ Orifice)	6.60
Weir	0.5′	7.60
Weir (TOB)	20′	8.40

Hydraulic Design Targets

1. This basin is designed to infiltrate the runoff from the Water Quality Design Storm, which generates 2,716 cubic feet of runoff.
2. The water surface elevation during the water quality design storm is at EL. 5.87 feet.

Storm	WS Elevation	Discharge (cfs)	Rainfall Depth
W.Q.	5.87	0.00	1.25″
2-Year (Current)	6.27	0.00	3.41″
2-Year (Projected)	6.42	0.00	4.91″
10-Year (Current)	6.81	0.03	5.26″
10-Year (Projected)	7.07	0.05	6.17″
25-Year	7.10	0.05	6.28″
100-Year (Current)	7.83	0.25	8.95″
100-Year (Projected)	8.40	0.90	11.84″

Basin Configuration Targets

1. This basin bottom is covered by a soil layer.
   - The depth of soil layer shall be 18 inches, which requires a volume of 9,600 cubic feet of soil.
   - The bottom elevation of the soil layer is EL. 4.00 feet.
2. Vegetation
   - The vegetation type to be used in this bioretention system is (site-tolerant grasses, terrestrial forested community). Please reference the Landscape Plan included with this submission.

Critical Maintenance Features

1. No heavy equipment on the basin surface.
2. Remove vegetation strictly in accordance with the landscaping plan.
3. Grass clippings shall be collected from the basin and properly disposed.

4. Should the actual drain time be longer than the design drain time, the components must be evaluated and appropriate measures taken to return the infiltration basin to the original tested as-built condition.

Inspection Checklist / Maintenance Actions
Aboveground Bioretention Basin w/ Infiltration East
(Checklist should be photocopied for use)

Checklist (circle one): Monthly / Quarterly / Semiannual / Annual / Special Event Inspection

Checklist No. ______________ **Inspection Date:** _______________

Date of most recent rain event: __________

Rain Condition (circle one):
Drizzle / Shower / Downpour / Other _____________

Ground Condition (circle one):
Dry / Moist / Ponding / Submerged / Snow accumulation

The completed checklist must be sent to the Township at least annually, but if an item or items is/are identified as "urgent", the checklist must be shared with the Township immediately.

Frequency	Preventative Maintenance Actions
Monthly	• Vegetation mowing and removal in growing season • Removal and disposal of trash and debris
Quarterly	• Quarterly inspection • Elimination of potential mosquito breeding habitats
Semiannual	• Sediment removal, depending on the type of measure
Annual	• Basin Structural Inspection • Infiltration testing in accordance with the methods of either ASTM C1701 or C1781
Special Event Inspection	• Quick inspection after every 1" rain

Potential Corrective Maintenance Actions
Repair/replacement of eroded or damaged outlet protection
Elimination of potential mosquito breeding grounds

<table>
<tr><th></th><th colspan="3">For Inspector</th><th>For Maintenance Crew</th></tr>
<tr><th>Component No.
Component
Name</th><th colspan="2">Inspection Item and Inspection Item No.</th><th>Result</th><th>Preventative / Corrective Maintenance Actions</th></tr>
<tr><td rowspan="5">A
Basin Bed</td><td>1</td><td>Standing water is present after 72 hours

The observed drain time is approximately _________ hours.</td><td>Y__

N__</td><td>If standing water is present longer than 5 days, report to mosquito commission.

Remove any sediment buildup

Check the soil permeability

Till the soil bed with rotary tiller or disc harrow

Replace the planting soil, if necessary

Work Order # ______________</td></tr>
<tr><td>2</td><td>Excessive sediment, silt, or trash accumulation on basin bed</td><td>Y__

N__</td><td>Clean pretreatment system

Remove silt, sediment, and trash</td></tr>
<tr><td>3</td><td>Erosion or channelization is present</td><td>Y__

N__</td><td>Check whether the flow bypass or diversion device is clogged

Re-grade the infiltration bed

Work Order # ______________</td></tr>
<tr><td>4</td><td>Animal burrows/rodents are present</td><td>Y__

N__</td><td>Pest control

Work Order # __________</td></tr>
<tr><td>5</td><td>Uneven bed</td><td>Y__

N__</td><td>Use light equipment to resurface the bed

Work Order # _________</td></tr>
</table>

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
	6	Evidence of sinkholes or subsidence	Y__ N__	Monitor for sinkhole development
	7	Evidence of mosquito breeding habitats	Y__ N__	Elimination of potential mosquito breeding grounds

Note:

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
B Vegetation	1	Large spot(s) showing bare soil	Y__ N__	Vegetative cover must be maintained at 85%. Revegetate the entire basin if 50% or more vegetation has been lost. Check Landscaping plan for guidance (if available) Work Order # ___________
	2	Invasive plants are present	Y__ N__	Remove the invasive plants and restore the vegetation in accordance with the landscaping plan Work Order # ___________
	3	The vegetation in the basin has been mowed or removed	Y__ N__	Revegetate the system in accordance with the vegetation plan Work Order # ___________ Note: The vegetation in a bioretention system should **not** be mowed or removed
	4	Overgrown perimeter vegetation	Y__ N__	Mow the vegetation on the perimeter of the embankment Work Order # ___________ Note: Mowing of vegetation should only take place in the area **outside** the basin. Dense vegetation must be maintained in the basin.
	5	Excessive or overgrown vegetation blocking access to the basin	Y__ N__	Clear, trim, or prune the vegetation to allow access for inspection and maintenance Work Order #_________

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
Note:				
C Bioretention System Embankment and Side Slopes	1	Signs of erosion, soil slide or bulges, seeps and wet spots, loss of vegetation, or erosion on the basin slope	Y__ N__	Check for excessive overland runoff flow through the embankment. Check for any sink hole development Restabilize the bank Work Order # ___________
D Outlet	1	Trash or debris accumulation more than 20%	Y__ N__	Clean and remove Determine source of trash and address to reduce future maintenance costs or basin failure
	2	Trash rack is damaged or rusted greater than 50% Trash rack is bent, loose, or missing parts	Y__ N__	Repair or replace trash rack Work Order #___________
	3	Outlet components (e.g., orifice plates or weir plate) skewed, misaligned, or missing	Y__ N__	Repair or replace component Work Order #___________

<table>
<tr><td></td><td colspan="3">For Inspector</td><td>For Maintenance Crew</td></tr>
<tr><td>Component No.
Component
Name</td><td colspan="2">Inspection Item and Inspection Item No.</td><td>Result</td><td>Preventative / Corrective Maintenance Actions</td></tr>
<tr><td colspan="5">Note:</td></tr>
<tr><td rowspan="4">E
Stormwater
Conveyance
System</td><td>1</td><td>Scouring or erosion is present at inlet structure and/or scour hole</td><td>Y__
N__</td><td>Check for any sink hole development
Restabilize the structures
Work Order # ___________</td></tr>
<tr><td>2</td><td>Clogged pipes or excessive sediment in the forebay</td><td>Y__
N__</td><td>Remove sediment or debris</td></tr>
<tr><td>3</td><td>Damaged outlet structure (e.g., cracking, subsidence, spalling, erosion, or deterioration)</td><td>Y__
N__</td><td>Repair or replace the outlet structure
Work Order # ___________</td></tr>
<tr><td>4</td><td>Discharge pipe apron is eroded or scoured</td><td>Y__
N__</td><td>Restabilize the discharge riprap apron
Work Order #___________</td></tr>
<tr><td colspan="5">Note:</td></tr>
</table>

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
F Potential Basin Failure	1	Standing water is present after 72 hours The observed drain time is approximately _________ hours.	Y__ N__	If standing water is present longer than 5 days, report to mosquito commission. Check the soil permeability Till the soil bed with rotary tiller or disc harrow Replace the planting soil, if necessary Work Order # _______________
	2	Signs of erosion, soil slide or bulges, seeps and wet spots, loss of vegetation, or erosion on the basin slope	Y__ N__	Check for excessive overland runoff flow through the embankment. Check for any sink hole development Restabilize the bank Work Order # ___________
	3	Clogged pipes or excessive sediment in the forebay	Y__ N__	Remove sediment or debris
	4	Outlet components (e.g., orifice plates or weir plate) skewed, misaligned, or missing	Y__ N__	Repair or replace component Work Order #___________
	5	Discharge pipe apron is eroded or scoured	Y__ N__	Restabilize the discharge riprap apron Work Order #___________
Note:				

G Special Event Inspection	1	Quick inspection after every 1″ rain	Y__ N__	Work Order #__________
Note:				

See above list of Potential Basin Failures. Should the preventative/corrective maintenance actions fail, the undersigned engineer should be contacted immediately.

Follow Up Items (Component No. / Inspection Item No.):
____

Associated Work Orders: # ______, # ______, # ______, # ____ __, # _____

________________________ ______________________ ________________
Inspector Name Signature Date

Report issues to the local authority and mosquito commission as required by local ordinances and regulatory authorities.

File this checklist in the Maintenance Log after performing maintenance.

Preventative Maintenance Record

Corresponding Checklist No. ________
Component No._______, Inspection Item No.________

Work Logs

Activities	Components	Date Completed
Sediment/debris removal **Sediment removal should be taken place when the basin is thoroughly dry.**	A – Basin Bed	
	B – Infiltration Bed	
	C – Bioretention System Embankment and Side Slopes	
	D – Outlet	
Vegetation removal	A – Basin Bed	
	B - Vegetation	
	C – Basin Embankment and Side Slopes	
	D – Outlet	

Vegetation is removed by _____________ (type of equipment) with minimum disruption to the remaining vegetation.

All use of fertilizers, pesticides, mechanical treatments, and other means to ensure optimum vegetation health must not compromise the intended purpose of the stormwater management measure. The fertilizer applied is ____________ (type), and _________ (quantity per usage) is applied _____________ (frequency of use).

Debris, sediment, and trash are handled (onsite / by ____________ (contractor name) to disposal site _________________). (See Part I: Maintenance Plan – Disposal Plan Section)

Crew member:___________________/_________________ **Date:** _____________
(name/ signature)

Supervisor:_____________________/__________________ **Date:** _____________
(name/ signature)

File this Preventative Maintenance Record in the Maintenance Log after performing maintenance.

Corrective Maintenance Record

1. Work Order # ______________________ Date Issued _____________

2. Issue to be resolved :

3. The issue was from Corresponding Checklist ________, Component No. ________, Inspection Item No. ____________.

4. Required Actions

Actions	Planned Date	Date Completed
Install new bolts to fix the orifice plate		
Repair/replace the trash rack		
Restabilize side slope (indicate location)		
Revegetate		
(If there are additional tasks, list them here.)		

5. Responsible person(s): ____

6. Special requirements
   - Time of the season or weather condition :__________________________
   - Tools/equipment:____
   - Subcontractor (name or specific type):______________________________

Approved by ___________________/_______________ Date _____________
(name/signature)

Verification of completion by ____________/________ Date _____________
(name/signature)

File this Corrective Maintenance Record in the Maintenance Log after performing maintenance.

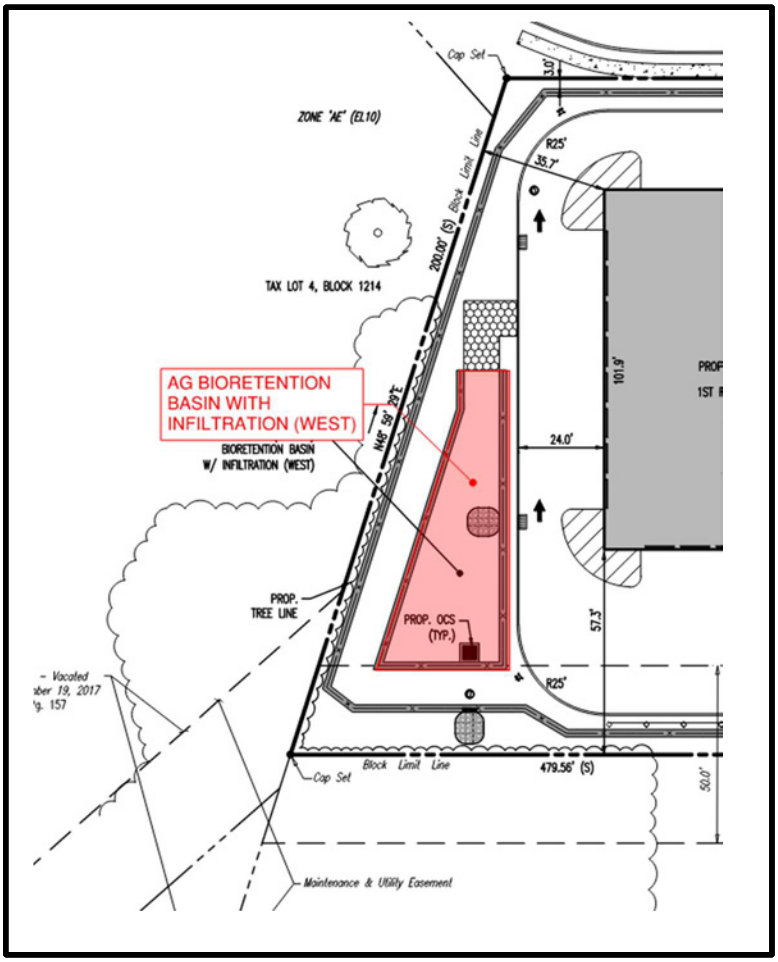
Aboveground Bioretention Basin w/ Infiltration West

Development Name: Proposed Five-Story Mixed Use Building

City, County: Camden, Camden County

Location of Basin: N: 403,898; E: 325,381

Location Map



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Bioretention System Overview

Functionality

Bioretention systems are used to remove a wide range of pollutants, such as suspended solids, nutrients, metals, hydrocarbons, and bacteria from stormwater runoff. They can also be used to reduce peak runoff rates and increase stormwater infiltration when designed as a multi-stage, multi-function facility.

A bioretention system can be configured as either a bioretention basin or a longer, narrower bioretention swale. In general, a bioretention basin has a flat bottom while a bioretention swale may have sloping bottom. Runoff storage depths above the soil bed surface are typically shallow. The TSS removal rate for bioretention systems is 80 or 90 percent, depending upon the thickness of the soil planting bed and the type of vegetation grown in the bed.

Proper care and attention in the long-term maintenance of the stormwater management measure is critically important to the safety and health of the public.

Type of BMP – Dry Basin

A bioretention system is a type of **dry** basin. The design drain time shall be closely monitored to ensure that potential failure is recognized early.

An infiltration basin is a type of *dry* basin. Dry basins must fully drain within 72 hours of the most recent rainfall. Standing water in excess of 72 hours is a sign of basin failure. It may also contribute to mosquito breeding and other health and safety issues. The design drain time shall be closely monitored to ensure that potential failure is recognized early.

Aboveground Bioretention Basin w/ Infiltration East
Basic Design Information

Hydrology Design Targets

1. This basin is designed with a subsoil permeability rate of 10.0 inches/hour.
2. The design drain time is 34.30 hours.
3. The elevation of the seasonal high-water table of this basin was encountered at a depth of 2.9 FT (EL. 1.6) and is 3.5 FT below the basin bottom.

Type	Size	Elevation
Orifice	2.5″	6.90
Weir	0.6′	8.20
Weir (TOB)	20′	8.90

Hydraulic Design Targets

1. This basin is designed to infiltrate the runoff from the Water Quality Design Storm, which generates 1,666 cubic feet of runoff.
2. The water surface elevation during the water quality design storm is at EL. 5.81 feet.

Storm	WS Elevation	Discharge (cfs)	Rainfall Depth
W.Q.	5.81	0.00	1.25″
2-Year (Current)	6.27	0.00	3.41″
2-Year (Projected)	6.49	0.00	4.91″
10-Year (Current)	7.05	0.04	5.26″
10-Year (Projected)	7.43	0.06	6.17″
25-Year	7.48	0.06	6.28″
100-Year (Current)	8.46	0.55	8.95″
100-Year (Projected)	9.00	2.31	11.84″

Basin Configuration Targets

1. This basin bottom is covered by a soil layer.
   - The depth of soil layer shall be 18 inches, which requires a volume of 2,100 cubic feet of soil.
   - The bottom elevation of the soil layer is EL. 3.60 feet.
2. Vegetation
   - The vegetation type to be used in this bioretention system is (site-tolerant grasses, terrestrial forested community). Please reference the Landscape Plan included with this submission.

Critical Maintenance Features

1. No heavy equipment on the basin surface.
2. Remove vegetation strictly in accordance with the landscaping plan.
3. Grass clippings shall be collected from the basin and properly disposed.

4. Should the actual drain time be longer than the design drain time, the components must be evaluated and appropriate measures taken to return the infiltration basin to the original tested as-built condition.

Inspection Checklist / Maintenance Actions
Aboveground Bioretention Basin w/ Infiltration East
(Checklist should be photocopied for use)

Checklist (circle one): Monthly / Quarterly / Semiannual / Annual / Special Event Inspection

Checklist No. ______________ **Inspection Date:** _______________

Date of most recent rain event: __________

Rain Condition (circle one):
Drizzle / Shower / Downpour / Other _____________

Ground Condition (circle one):
Dry / Moist / Ponding / Submerged / Snow accumulation

The completed checklist must be sent to the Township at least annually, but if an item or items is/are identified as "urgent", the checklist must be shared with the Township immediately.

Frequency	Preventative Maintenance Actions
Monthly	• Vegetation mowing and removal in growing season • Removal and disposal of trash and debris
Quarterly	• Quarterly inspection • Elimination of potential mosquito breeding habitats
Semiannual	• Sediment removal, depending on the type of measure
Annual	• Basin Structural Inspection • Infiltration testing in accordance with the methods of either ASTM C1701 or C1781
Special Event Inspection	• Quick inspection after every 1" rain

Potential Corrective Maintenance Actions
Repair/replacement of eroded or damaged outlet protection
Elimination of potential mosquito breeding grounds

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
A Basin Bed	1	Standing water is present after 72 hours The observed drain time is approximately _________ hours.	Y__ N__	If standing water is present longer than 5 days, report to mosquito commission. Remove any sediment buildup Check the soil permeability Till the soil bed with rotary tiller or disc harrow Replace the planting soil, if necessary Work Order # _______________
	2	Excessive sediment, silt, or trash accumulation on basin bed	Y__ N__	Clean pretreatment system Remove silt, sediment, and trash
	3	Erosion or channelization is present	Y__ N__	Check whether the flow bypass or diversion device is clogged Re-grade the infiltration bed Work Order # _______________
	4	Animal burrows/rodents are present	Y__ N__	Pest control Work Order # ___________
	5	Uneven bed	Y__ N__	Use light equipment to resurface the bed Work Order # __________

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
	6	Evidence of sinkholes or subsidence	Y__ N__	Monitor for sinkhole development
	7	Evidence of mosquito breeding habitats	Y__ N__	Elimination of potential mosquito breeding grounds

Note:

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
B Vegetation	1	Large spot(s) showing bare soil	Y__ N__	Vegetative cover must be maintained at 85%. Revegetate the entire basin if 50% or more vegetation has been lost. Check Landscaping plan for guidance (if available) Work Order # ___________
	2	Invasive plants are present	Y__ N__	Remove the invasive plants and restore the vegetation in accordance with the landscaping plan Work Order # ___________
	3	The vegetation in the basin has been mowed or removed	Y__ N__	Revegetate the system in accordance with the vegetation plan Work Order # ___________ Note: The vegetation in a bioretention system should **not** be mowed or removed
	4	Overgrown perimeter vegetation	Y__ N__	Mow the vegetation on the perimeter of the embankment Work Order # ___________ Note: Mowing of vegetation should only take place in the area **outside** the basin. Dense vegetation must be maintained in the basin.
	5	Excessive or overgrown vegetation blocking access to the basin	Y__ N__	Clear, trim, or prune the vegetation to allow access for inspection and maintenance Work Order #_________

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
Note:				
C Bioretention System Embankment and Side Slopes	1	Signs of erosion, soil slide or bulges, seeps and wet spots, loss of vegetation, or erosion on the basin slope	Y__ N__	Check for excessive overland runoff flow through the embankment. Check for any sink hole development Restabilize the bank Work Order # ___________
D Outlet	1	Trash or debris accumulation more than 20%	Y__ N__	Clean and remove Determine source of trash and address to reduce future maintenance costs or basin failure
	2	Trash rack is damaged or rusted greater than 50% Trash rack is bent, loose, or missing parts	Y__ N__	Repair or replace trash rack Work Order #___________
	3	Outlet components (e.g., orifice plates or weir plate) skewed, misaligned, or missing	Y__ N__	Repair or replace component Work Order #___________

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
Note:				
E Stormwater Conveyance System	1	Scouring or erosion is present at inlet structure and/or scour hole	Y__ N__	Check for any sink hole development Restabilize the structures Work Order # ___________
	2	Clogged pipes or excessive sediment in the forebay	Y__ N__	Remove sediment or debris
	3	Damaged outlet structure (e.g., cracking, subsidence, spalling, erosion, or deterioration)	Y__ N__	Repair or replace the outlet structure Work Order # ___________
	4	Discharge pipe apron is eroded or scoured	Y__ N__	Restabilize the discharge riprap apron Work Order #___________
Note:				

<table>
<tr><th></th><th colspan="3">For Inspector</th><th>For Maintenance Crew</th></tr>
<tr><th>Component No.
Component
Name</th><th colspan="2">Inspection Item and Inspection Item No.</th><th>Result</th><th>Preventative / Corrective Maintenance Actions</th></tr>
<tr><td rowspan="5">F
Potential Basin Failure</td><td>1</td><td>Standing water is present after 72 hours

The observed drain time is approximately __________ hours.</td><td>Y__

N__</td><td>If standing water is present longer than 5 days, report to mosquito commission.

Check the soil permeability

Till the soil bed with rotary tiller or disc harrow

Replace the planting soil, if necessary

Work Order # ________________</td></tr>
<tr><td>2</td><td>Signs of erosion, soil slide or bulges, seeps and wet spots, loss of vegetation, or erosion on the basin slope</td><td>Y__

N__</td><td>Check for excessive overland runoff flow through the embankment.

Check for any sink hole development

Restabilize the bank

Work Order # ___________</td></tr>
<tr><td>3</td><td>Clogged pipes or excessive sediment in the forebay</td><td>Y__

N__</td><td>Remove sediment or debris</td></tr>
<tr><td>4</td><td>Outlet components (e.g., orifice plates or weir plate) skewed, misaligned, or missing</td><td>Y__

N__</td><td>Repair or replace component

Work Order #___________</td></tr>
<tr><td>5</td><td>Discharge pipe apron is eroded or scoured</td><td>Y__

N__</td><td>Restabilize the discharge riprap apron

Work Order #___________</td></tr>
<tr><td colspan="5">Note:</td></tr>
</table>

G Special Event Inspection	1	Quick inspection after every 1″ rain	Y__ N__	Work Order #__________
Note:				

See above list of Potential Basin Failures. Should the preventative/corrective maintenance actions fail, the undersigned engineer should be contacted immediately.

Follow Up Items (Component No. / Inspection Item No.):
____

Associated Work Orders: # ______, # ______, # ______, # ____ __, # _____

_______________________ _______________________ _______________

Inspector Name Signature Date

Report issues to the local authority and mosquito commission as required by local ordinances and regulatory authorities.

File this checklist in the Maintenance Log after performing maintenance.

Preventative Maintenance Record

Corresponding Checklist No. ________
Component No.________, Inspection Item No.________

Work Logs

Activities	Components	Date Completed
Sediment/debris removal **Sediment removal should be taken place when the basin is thoroughly dry.**	A – Basin Bed	
	B – Infiltration Bed	
	C – Bioretention System Embankment and Side Slopes	
	D – Outlet	
Vegetation removal	A – Basin Bed	
	B - Vegetation	
	C – Basin Embankment and Side Slopes	
	D – Outlet	

Vegetation is removed by ______________ (type of equipment) with minimum disruption to the remaining vegetation.

All use of fertilizers, pesticides, mechanical treatments, and other means to ensure optimum vegetation health must not compromise the intended purpose of the stormwater management measure. The fertilizer applied is _____________ (type), and _________ (quantity per usage) is applied ______________ (frequency of use).

Debris, sediment, and trash are handled (onsite / by _____________ (contractor name) to disposal site __________________). (See Part I: Maintenance Plan – Disposal Plan Section)

Crew member:____________________/__________________ Date: ______________
(name/ signature)

Supervisor:______________________/__________________ Date: ______________
(name/ signature)

File this Preventative Maintenance Record in the Maintenance Log after performing maintenance.

Corrective Maintenance Record

1. Work Order # ______________________ Date Issued _____________

2. Issue to be resolved :

3. The issue was from Corresponding Checklist ________, Component No. ________, Inspection Item No. ____________.

4. Required Actions

Actions	Planned Date	Date Completed
Install new bolts to fix the orifice plate		
Repair/replace the trash rack		
Restabilize side slope (indicate location)		
Revegetate		
(If there are additional tasks, list them here.)		

5. Responsible person(s): ____

6. Special requirements
   - Time of the season or weather condition :__________________________
   - Tools/equipment:____
   - Subcontractor (name or specific type):____________________________

Approved by ____________________/_______________ Date _____________
(name/signature)

Verification of completion by ____________/________ Date _____________
(name/signature)

File this Corrective Maintenance Record in the Maintenance Log after performing maintenance.

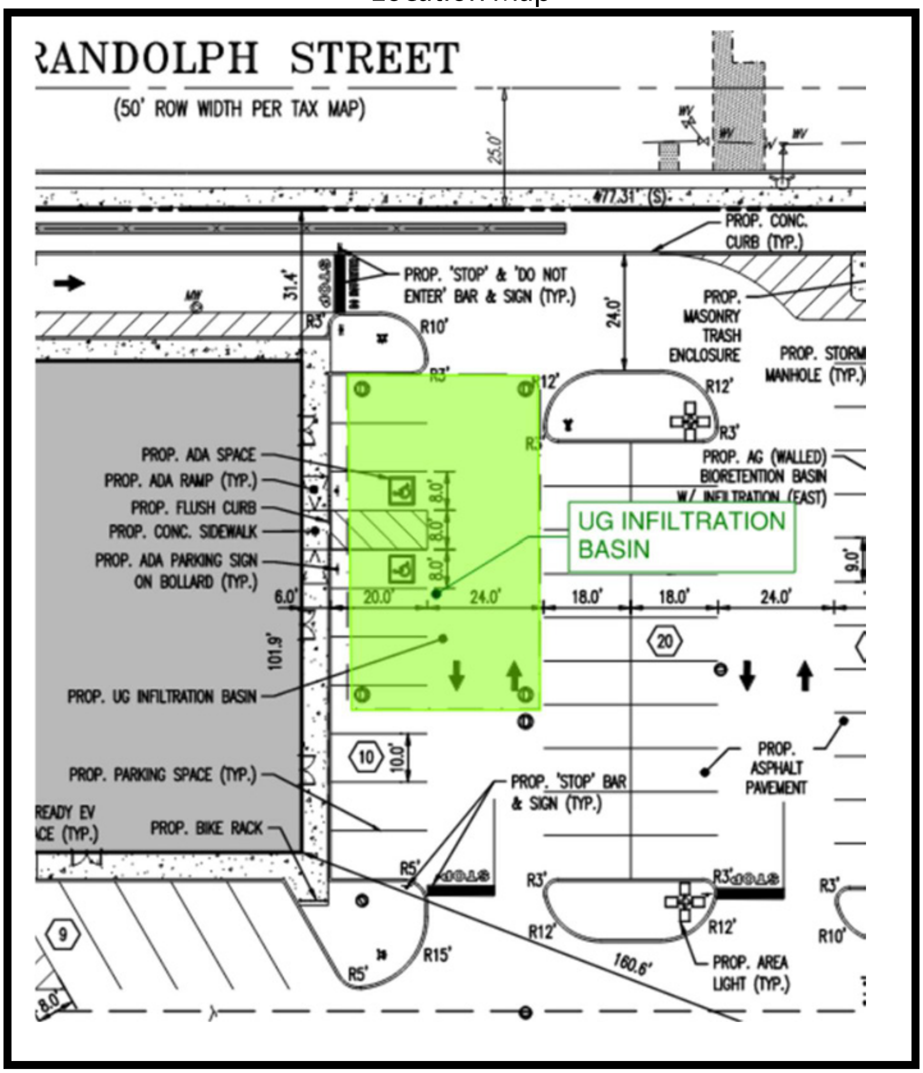
Underground Infiltration Basin

Development Name: Proposed Five-Story Mixed Use Building

City, County: Camden, Camden County

Location of Basin: N: 403,800; E: 325,659

Location Map



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Underground Infiltration Basin Overview

Functionality

An infiltration basin is a stormwater management facility constructed of highly permeable soils, which provides temporary storage of stormwater runoff. Infiltration basins are used to remove pollutants and to infiltrate stormwater. In addition to pollutant removal and groundwater recharge, infiltration may help to reduce increases in both the peak rate and total runoff volume caused by land development. Pollutant removal is achieved through filtration of the runoff through the soil, as well as biological and chemical activity within the soil. The total suspended solids (TSS) removal rate attributed to infiltration basins is 80%.

Proper care and attention in the long-term maintenance of the stormwater management measure is critically important to the safety and health of the public.

Type of BMP – Infiltration Basin

An infiltration basin is a type of *dry* basin. Dry basins must fully drain within 72 hours of the most recent rainfall. Standing water in excess of 72 hours is a sign of basin failure. It may also contribute to mosquito breeding and other health and safety issues. The design drain time shall be closely monitored to ensure that potential failure is recognized early.

Basic Design Information

Hydrology Design Targets

1. This basin is designed with a subsoil permeability rate of 10.00 inches/hour (pre-construction).
2. The design drain time is 29.24 hours.
3. The elevation of the seasonal high-water table of this basin was encountered at a depth of 2.5 FT (EL. 3.2) and is 2.3 FT below the basin bottom.

Hydraulic Design Targets

1. This basin is designed to infiltrate the runoff from the Water Quality Design Storm, which generates 1,054 cubic feet of runoff.
2. The water surface elevation during the water quality design storm is at EL. 6.11 feet.

Storm	WS Elevation	Discharge (cfs)	Rainfall Depth
W.Q.	6.11	0.00	1.25″
2-Year (Current)	6.39	0.00	3.41″
2-Year (Projected)	6.52	0.00	4.91″
10-Year (Current)	6.87	0.00	5.26″
10-Year (Projected)	7.11	0.00	6.17″
25-Year	7.14	0.00	6.28″
100-Year (Current)	7.69	0.25	8.95″
100-Year (Projected)	8.50	0.58	11.84″

Basin Configuration Targets

1. The basin bottom contains a stone layer.
   - The depth of stone layer shall be 4 inches.
   - The bottom elevation of the stone layer is EL. 5.50.
2. Vegetation
   - The bottom of basin is designed to have no vegetation.

Inspection Checklist / Maintenance Actions
Underground Infiltration Basin

Checklist (circle one): Quarterly / Annual / Monthly / Special Event Inspection

Checklist No. _______________ **Inspection Date:** ________________

Date of most recent rain event: ___________

Rain Condition (circle one):
Drizzle / Shower / Downpour / Other ______________

Ground Condition (circle one):
Dry / Moist / Ponding / Submerged / Snow accumulation

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
A Pretreatment (Forebay)	1	Clogged pipes or excessive sediment in the forebay	Y__ N__	Remove sediment or debris
Note:				

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
B Infiltration Bed	1	Standing water is present after the design drain time The observed drain time is approximately _________ hours.	Y__ N__	Recheck to determine if there is standing water after 72 hours If standing water is present longer than 5 days, report to mosquito commission. Remove any sediment buildup Replace the sand layer. Work Order # ______________
Note:				

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
B Infiltration Bed	3	Erosion or channelization is present	Y__ N__	Check whether the flow bypass or diversion device is clogged Re-grade the infiltration bed Work Order # _______________
	4	Animal burrows/rodents are present	Y__ N__	Pest control Work Order # ___________
	5	Uneven bed	Y__ N__	Use light equipment to resurface the bed Work Order # __________
	6	Evidence of sinkholes or subsidence	Y__ N__	Monitor for sinkhole development
Note:				

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
C Outlet	1	Trash or debris accumulation more than 20%	Y__ N__	Clean and remove Determine source of trash and address to reduce future maintenance costs or basin failure
	2	Outlet components (e.g., orifice plates or weir plate) skewed, misaligned, or missing	Y__ N__	Repair or replace component Work Order #___________
	3	Discharge pipe apron is eroded or scoured	Y__ N__	Restabilize the discharge riprap apron Work Order #___________
	4	Standing water is present in the outlet structure longer than 72 hours	Y__ N__	Pump out the standing water Work Order # ___________
Note:				

Follow Up Items (Component No. / Inspection Item No.):

____

Associated Work Orders: # ______, # ______, # ______, # ______, # _____

________________________ ______________________ ________________
Inspector Name Signature Date

Report issues to the local authority and mosquito commission as required by local ordinances and regulatory authorities, if standing water is present longer than 5 days.

File this checklist in the Maintenance Log after performing maintenance.

Preventative Maintenance Record

Corresponding Checklist No. ________
Component No._______, Inspection Item No.________

Work Logs

Activities	Components	Date Completed
Sediment/debris removal Sediment removal should take place when the basin is thoroughly dry	A – Pretreatment	
	B – Infiltration Bed	
	C – Outlet	
Vegetation removal	A – Pretreatment	
	B – Infiltration Bed	
	C – Outlet	

Vegetation is removed by _____________ (type of equipment) with minimum disruption to the remaining vegetation.

All use of fertilizers, pesticides, mechanical treatments, and other means to ensure optimum vegetation health must not compromise the intended purpose of the stormwater management measure. The fertilizer applied is ____________ (type), and _________ (quantity per usage) is applied _____________ (frequency of use).

Debris, sediment, and trash are handled (onsite / by ____________ (contractor name) to disposal site _________________).

Crew member:___________________/___________________ **Date**: _____________
(name/ signature)

Supervisor: _____________________/____________________ **Date**: _____________
(name/ signature)

File this Preventative Maintenance Record in the Maintenance Log after performing maintenance.

Corrective Maintenance Record

1. Work Order # ________________________ Date Issued ______________

2. Issue to be resolved :

3. The issue was from Corresponding Checklist No. ________, Component No. ___., Inspection Item No. ______.

4. Required Actions

Actions	Planned Date	Date Completed

5. Responsible person(s):
____

6. Special requirements
   - Time of the season or weather condition:___________________________
   - Tools/equipment:____
   - Subcontractor (name or specific type):______________________________

Approved by ____________________/________________ Date ______________
(name/signature)

Verification of completion by ____________/________ Date ______________
(name/signature)

File this Corrective Maintenance Record in the Maintenance Log after performing maintenance.

Stormwater Management Measures
Maintenance Plan

Maintenance Logs and Inspection Records

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Inspection Checklist Log

1. The responsible party shall report issues to the local authority and mosquito commission as required by local ordinances and regulatory authorities.
2. The maintenance crew should fill out the checklist in the field manual when performing each inspection/maintenance task.
3. After the maintenance task is performed, the checklist should be filed in the Maintenance Plan and recorded in the log below.

Cycle of Inspection	Stormwater Management Measure No.	Checklist No.	Date(s) of Inspection

Cycle of Inspection	Stormwater Management Measure No.	Checklist No.	Date(s) of Inspection

Preventative Maintenance Log

Maintenance Schedule	Stormwater Management Measure No.	Preventative Maintenance Record No.	Date(s) of Maintenance

Corrective Maintenance Log

Maintenance Schedule	Stormwater Management Measure No.	Corrective Maintenance Record No.	Date(s) of Maintenance

ENVIRONMENTAL IMPACT STATEMENT

For

Asset Realty & Construction Group Inc.

Proposed Five-Story Mixed Use Building

1901 Admiral Wilson Boulevard
Block 1220, Lot 57
City of Camden,
Camden County, NJ

Prepared by:

DYNAMIC ENGINEERING

1904 Main Street
Lake Como, NJ 07719
(732) 974-0198

Joshua M. Sewald, PE, PP
NJ Professional Engineer License #52908

May 2025
DEC# 2334-23-03513

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- NJDEP Geoweb Bedrock Geology Map
- NJDEP Geoweb Historic Properties Map
- Tax Map
- Zoning Map
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- Traffic Impact Study, prepared by Dynamic Traffic, LLC (Attached Separately)
- Qualifications of Joshua M. Sewald, PE, PP

I. INTRODUCTION

This report has been prepared in conjunction with the Preliminary and Final Site Plan Application to the City of Camden Planning Board. This report serves to introduce the site development objectives and to characterize and describe the impact the proposed improvements may have on the existing site and the immediate surroundings.

II. PROJECT DESCRIPTION

The property in question is known as Block 1220, Lot 57 in the City of Camden, Camden County, New Jersey. The property is located at 1901 Admiral Wilson Boulevard and consists of 2.107 acres of undeveloped open space with minimal vegetation throughout the site. The existing conditions of the tract have been verified by the Boundary and Topographic Survey, prepared by Dynamic Survey, LLC. The proposed development includes a Five-Story (122,255 SF Total) mixed-use storage & commercial building along with driveways, parking areas, utilities, lighting, and associated site improvements as shown on the Preliminary and Final Site Plan drawings, prepared by Dynamic Engineering Consultants, PC.

According to the City of Camden Harbor Zoning Map the subject property is located within the TOD (Transit Oriented Development) Zone and the Admiral Wilson North Redevelopment Area and is designated as Metropolitan Planning Area (PA-1) per review of NJDEP Geoweb Mapping. The parcel is bordered to the north by Randolph Street and residential uses, to the east by Admiral Wilson Boulevard/Bank Street, and to the south and west by existing open space.

III. ENVIRONMENTAL IMPACT

A. TOPOGRAPHY

The existing topographic conditions consist of generally flat terrain with slopes ranging from less than 1% to 5%. A majority of the site generally slopes to the westerly corner of the property.

It is not anticipated that the topography and slopes throughout the site will have any adverse impacts to the surrounding area. Soil erosion and sediment control measures shall be put into place in accordance with the New Jersey Standards for Soil Erosion and Sediment Control in order to stabilize steeper slopes.

B. SOIL EROSION & SEDIMENTATION FROM RUNOFF

Under existing conditions, stormwater runoff from the site travels via overland flow to the adjacent undeveloped properties. Runoff is ultimately tributary to the nearby Cooper River towards the west.

A Grading Plan has been developed for the proposed site improvements with consideration to the existing drainage patterns. The plan has been designed to ensure runoff from the proposed development will be directed to the proposed stormwater management facilities in order to address the applicable sections of N.J.A.C. 7:8. Soil erosion & sediment control practices, including silt fences and inlet filters, will be utilized to prevent any existing onsite soil from exiting the site.

C. FLOODING & FLOODPLAIN DISTRUBITION

Per FEMA Flood Mapping, the property is located within Flood Zone AE with a base flood elevation of 10. The proposed building elevation is 11 feet, which is raised one foot above the flood hazard area to comply with NJDEP Flood Hazard Area Regulations. A NJDEP FHA Verification & Individual Permit will be obtained for the proposed development.

D. SURFACE WATER QUALITY

Per NJDEP Geoweb Mapping, the closest waterbody to the site is Cooper River, which is located approximately 800 feet from the southwesterly property boundary. The stream is classified as freshwater – non-trout production (FW2/NT). The development is not anticipated to impact the stream or the surface water quality due to its distance from the site.

E. GROUNDWATER POLLUTION

The depth to water table onsite is classified by soil type below:

Map Unit Symbol	Map Unit Name	Rating	Depth to Water Table
BhhA	Bigapple sandy loam, 0 to 2 percent slopes	A	59-80 in.

Most of the site is located within a well head protection area, designated as community – tier 3.

The operations of the facility will not introduce any pollutants which may have an adverse effect on the quality of the ground water. It is therefore concluded that the proposed project will not increase the risk of groundwater pollution on-site.

F. SEWAGE DISPOSAL

Per correspondence with the City of Camden Capital Improvements & Project Management Department, there is an existing sanitary sewer main located within Randolph Street. The existing infrastructure utilizes a combined stormwater & sanitary sewer system. The proposed development proposes a connection to the existing main within Randolph Street. Refer to Water and Sewer Report as submitted as part of this application.

G. SOLID WASTE DISPOSAL

All solid waste generated on site during and after construction will be disposed of in accordance with all local and state regulations.

H. VEGETATION DESTRUCTION

The site mainly consists of grass and open space area with minimal trees. Proposed development will provide a robust landscaping plan prepared by a licensed Landscape Architect. Refer to the Landscape Plan (Sheet 8).

I. SCENIC & HISTORIC FEATURES

Many of the surrounding uses within the TOD Zone are primarily commercial or industrial in nature. The nature of the site layout and architectural design will not impact the aesthetic appearance of the site. With respect to aesthetic character, the proposed improvements will be consistent with the adjacent uses within the area. The site does not contain any unique scenic features that will be impacted by the proposed development. The proposed development also promotes the aesthetic goals of the Admiral Wilson Boulevard Redevelopment Plan.

The site is not classified as an existing or potential historic site. The closest historic area is the Baird Boulevard/Cooper River Overpass per NJDEP Geoweb. The area is located approximately 900 feet from the site and is not expected to be impacted by the proposed development.

J. AIR QUALITY

Existing air quality surrounding the site is typical of a commercial zone in a southern New Jersey suburban setting. There are existing hazardous air pollutants (HAP's) which come from cars, heavy duty trucks, buses and other vehicles. These vehicles produce diesel particulate matter, diesel exhaust and/or carbon monoxide. There are known health standards associated with these pollutants.

K. NOISE

Existing noise levels on-site can be characterized as typical of an open space lot within a central New Jersey Commercial Zone. Most noise emanates from passenger vehicular and delivery traffic along adjacent roadways at peak times. This should be considered normal for the use and temporary in nature. Sound levels are subject to daytime and nighttime limits.

Governmental regulations limit the A-weighted sound levels produced when measured at a residential property line to the following levels:

Daytime (7:00 AM – 10:00 PM) – 65DB (A)
Nighttime (10:00 PM – 7:00 AM) – 50DB (A)

The term A-weighted is a standardized frequency weighting which attempts to duplicate the human ear frequency and sensitivity; and, therefore, provides an overall sound level measurement with how people actually perceive noise.

As the proposed development is surrounded by existing commercial developments and vacant lots, it is not anticipated that the noise of ongoing operations nor construction operations would have any impact on the surrounding uses. Consideration will be given to nearby residential developments located to the north of the site along Randolph Street.

L. PUBLIC SAFETY

The existing and proposed conditions of development do not appear to pose a environmental health or safety risk to the surrounding residents or residents within the City of Camden. A public sidewalk along the proposed roadway frontages will be provided for pedestrian safety as part of the proposed development.

M. DUST

There may be some temporary airborne dust particulates associated with the construction process but these conditions will be localized and will dissipate with the stoppage of each workday. Dust will be controlled through daily watering of the construction entrances/exits and circulation aisles and cleaning of the streets in close proximity to same, as necessary.

N. WATER SUPPLY & CONSERVATION

Per correspondence with New Jersey American Water, there is an existing water main located within Randolph Street. The proposed development proposes a connection to the existing main. Refer to Water and Sewer Report as submitted as part of this application.

O. ENERGY CONSERVATION

The proposed development will be a Class A Commercial facility and provide energy efficient LED lighting where new wall mounted fixtures are proposed along the expanded portion of the building. The tenant will take part in recycling all materials accepted in the City of Camden.

P. SCREENING & LANDSCAPING

The site mainly consists of grass and open space area with minimal trees. Proposed development will provide a robust landscaping plan prepared by a licensed Landscape Architect. Refer to the Landscape Plan (Sheet 8).

IV. ADVERSE ENVIRONMENTAL IMPACTS

Minor impacts on air quality, noise and natural resources are anticipated as a result of the construction and operation of the proposed project. It is anticipated that the long-term economic benefits will out-weigh the short-term effects of the construction process.

V. PROJECT ALTERNATIVE

A. 'NO ACTION' ALTERNATIVE

The "No Action" or "No Project" alternative would leave the subject property with the existing open space, as is.

B. ALTERNATIVE LAYOUTS

The proposed layout provides a practical project which has been designed consistent with most of the TOD bulk zoning standards while promoting the objectives of the Admiral Wilson North Redevelopment Plan. The development protects most of the natural surroundings that currently exist on and around the subject site. Any alternatives that could be proposed on-site are anticipated to be similar in nature to the proposed use.

VI. OTHER APPROVALS

Beyond the City of Camden Preliminary & Final Site Plan Approval, the following represents a listing of other required approvals:

- City of Camden Planning Board
- Camden County Planning Board
- Camden County Soil Conservation District
- Camden County Municipal Utilities Authority
- NJDEP – Flood Hazard Vertification & Individual Permit

VII. CONCLUSION

The proposed site has been designed to have minimal adverse effect on the surrounding areas. Based on our analysis of the subject site with respect to the various aforementioned environmental factors, the proposed development at the subject location does not appear to result in adverse environmental impacts to the subject site or the surrounding neighbors.

APPENDIX

LOCATION MAP

DYNAMIC
ENGINEERING EARTH SURVEY TRAFFIC

LOCATION MAP

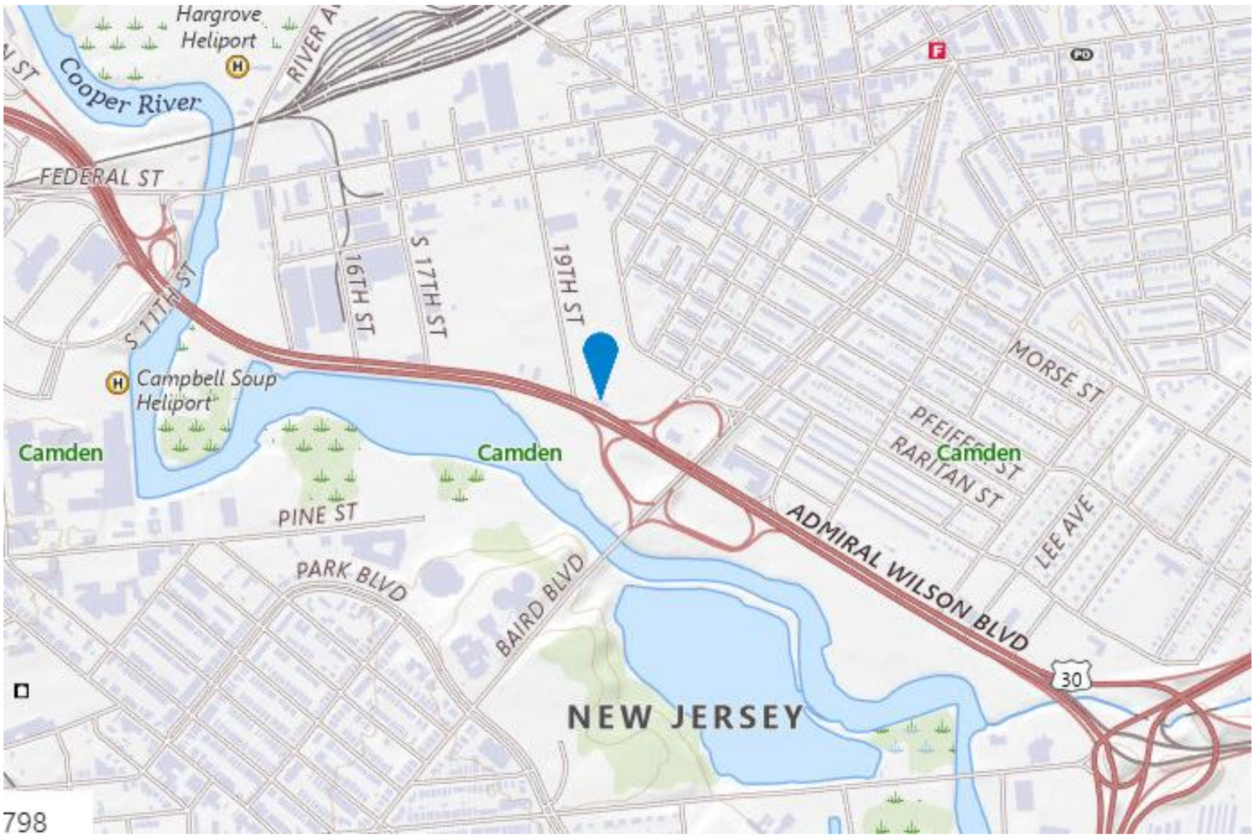
1904 Main Street, Lake Como, NJ 07719 T. 732-974-0198

245 Main Street, Suite 110, Chester, NJ 07930 T. 908-879-9229
8 Robbins Street, Suite 102, Toms River, NJ 08753 T. 732-974-0198
826 Newtown Yardley Rd., Suite 201, Newtown, PA 18940 T. 267-685-0276

100 NE 5th Avenue, Suite B2, Delray Beach, FL 33483 T. 561-291-8570
14521 Old Katy Road, Suite 270, Houston, TX 77079 T. 281-789-6400
714 S. Greenville Avenue, Suite 100, Allen, TX 75002 T. 972-534-2100

USGS MAP

USGS MAP



Hargrove Heliport
Cooper River
FEDERAL ST
16TH ST
S 17TH ST
19TH ST
S 11TH ST
Campbell Soup Heliport
Camden
Camden
Camden
MORSE ST
PFEIFFER ST
RARITAN ST
LEE AVE
PINE ST
PARK BLVD
BAIRD BLVD
ADMIRAL WILSON BLVD
30
NEW JERSEY
798

NRCS SOIL SURVEY

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Camden County, New Jersey

January 6, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map

Map Scale: 1:868 if printed on A landscape (11" x 8.5") sheet.

Meters: 0, 10, 20, 40, 60

Feet: 0, 40, 80, 160, 240

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Camden County, New Jersey
Survey Area Data: Version 18, Sep 3, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 5, 2022—Jul 4, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BhhA	Bigapple sandy loam, 0 to 2 percent slopes	2.0	100.0%
Totals for Area of Interest		**2.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Camden County, New Jersey

BhhA—Bigapple sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2ztxk
Elevation: 0 to 20 feet
Mean annual precipitation: 45 to 48 inches
Mean annual air temperature: 52 to 56 degrees F
Frost-free period: 190 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Bigapple and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bigapple

Setting

Landform: Tidal marshes
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy human-transported material over dredge influenced sandy human-transported material

Typical profile

^A - 0 to 4 inches: sandy loam
^Bw - 4 to 20 inches: loamy sand
^C - 20 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 19.98 in/hr)
Depth to water table: About 59 to 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F149AY130NJ - Moist Loamy Upland
Hydric soil rating: No

Minor Components

Urban land

Percent of map unit: 10 percent

Landform: Fluviomarine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Sauken

Percent of map unit: 10 percent
Landform: Drainageways
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: F149AY130NJ - Moist Loamy Upland
Hydric soil rating: No

Northmont

Percent of map unit: 10 percent
Landform: Fluviomarine terraces, depressions
Landform position (two-dimensional): Backslope, footslope, toeslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear, convex
Ecological site: F149AY130NJ - Moist Loamy Upland
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

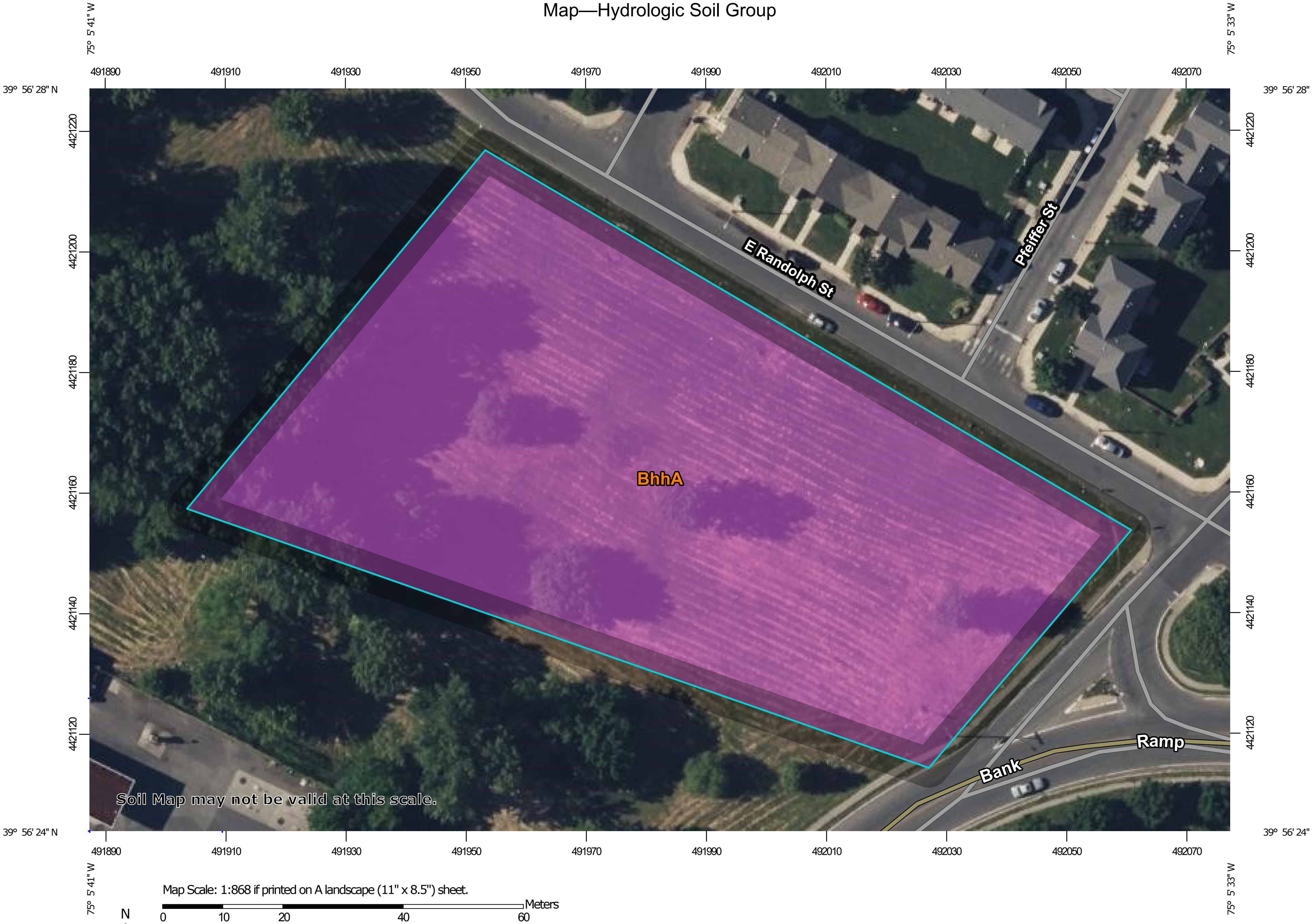
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

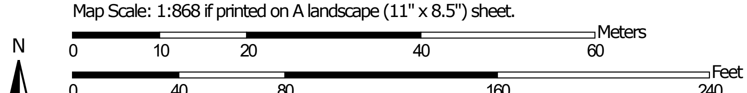
Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Map—Hydrologic Soil Group



Map Scale: 1:868 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

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Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BhhA	Bigapple sandy loam, 0 to 2 percent slopes	A	2.0	100.0%
Totals for Area of Interest			**2.0**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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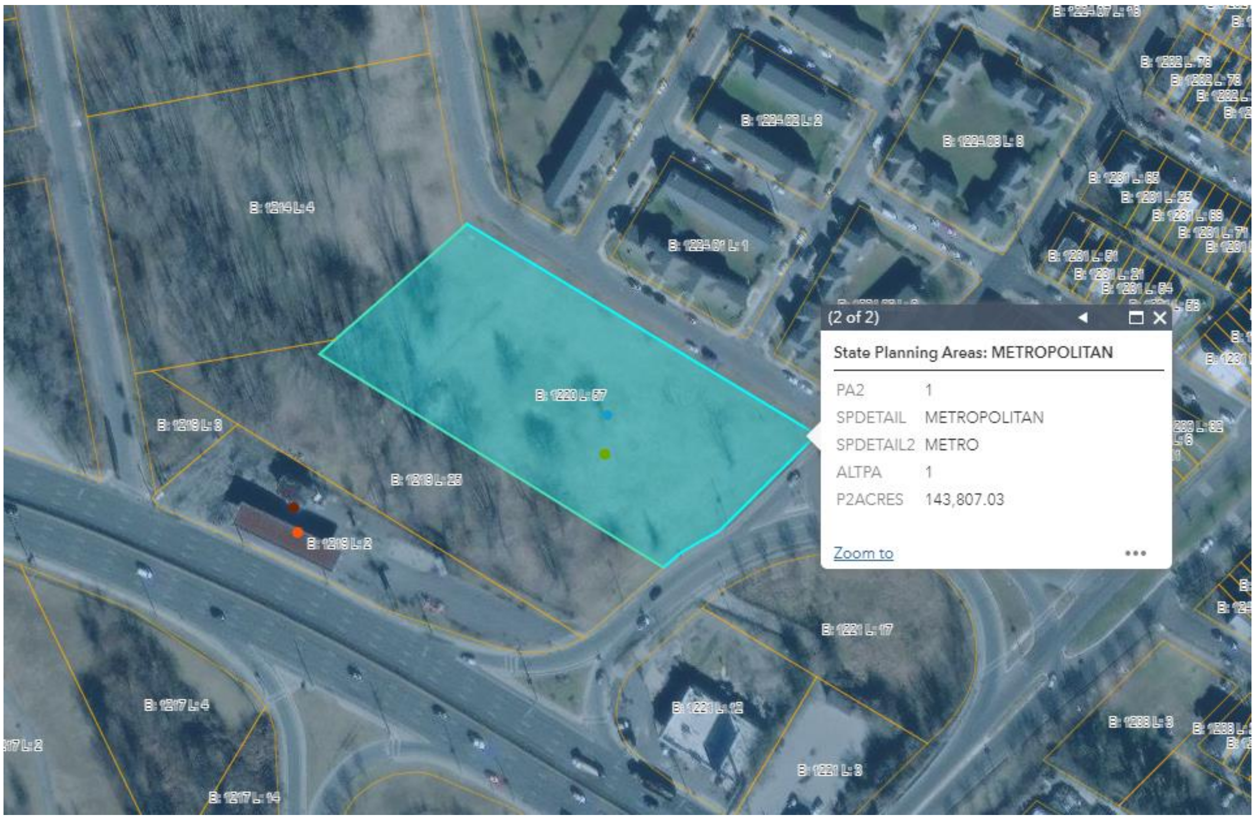
NJDEP GEOWEB STATE PLANNING AREA MAP

STATE PLANNING AREA

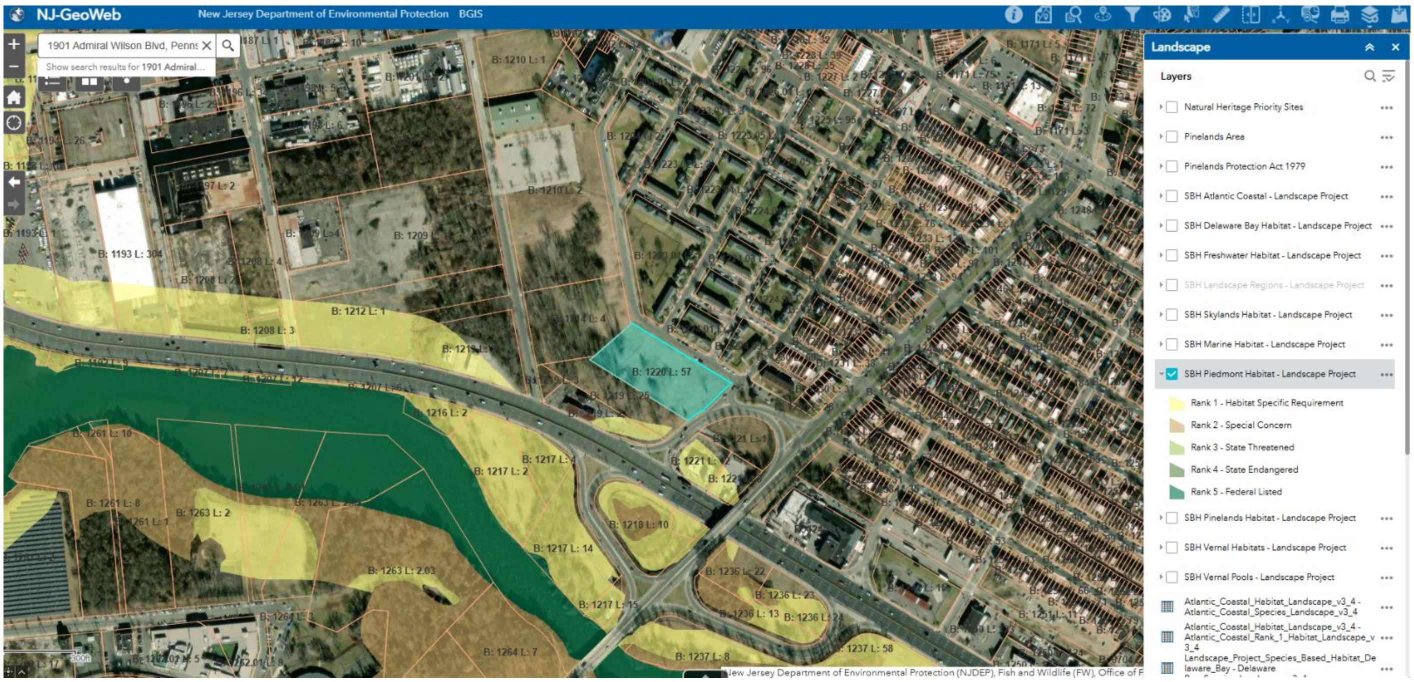


NJDEP GEOWEB WETLANDS MAP

WETLANDS

NJDEP GEOWEB LANDSCAPE MAP

LANDSCAPE



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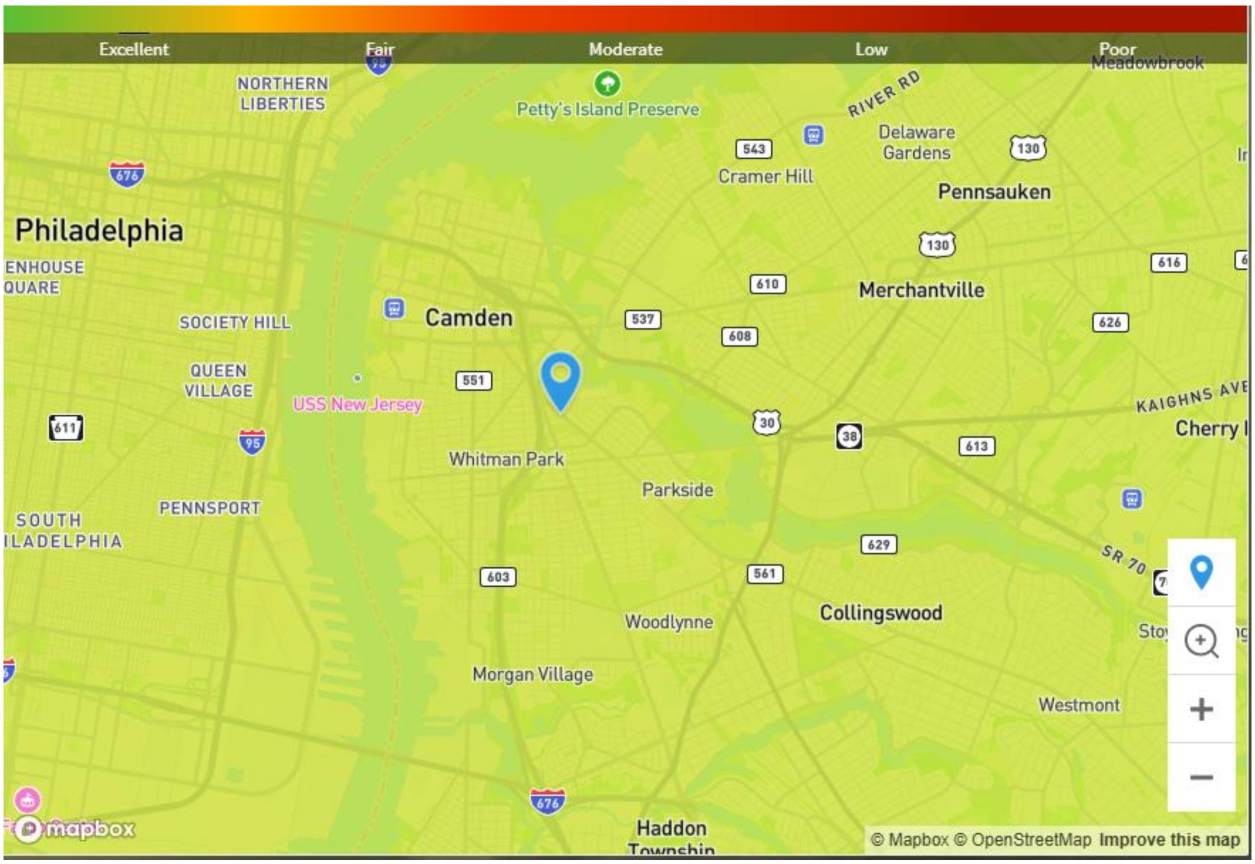
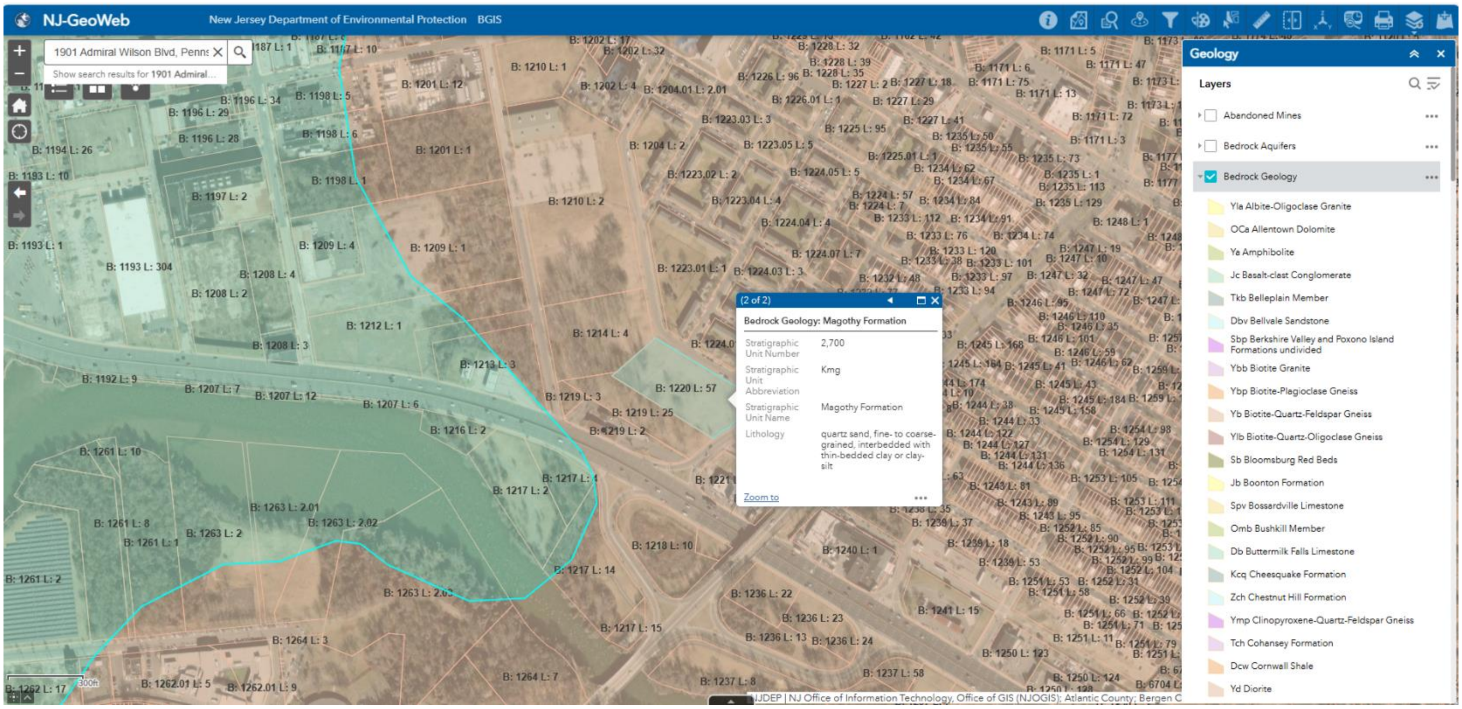
AIR QUALITY MONITORING REPORT

AIR QUALITY INDEX



NJDEP GEOWEB BEDROCK GEOLOGY MAP

BEDROCK GEOLOGY



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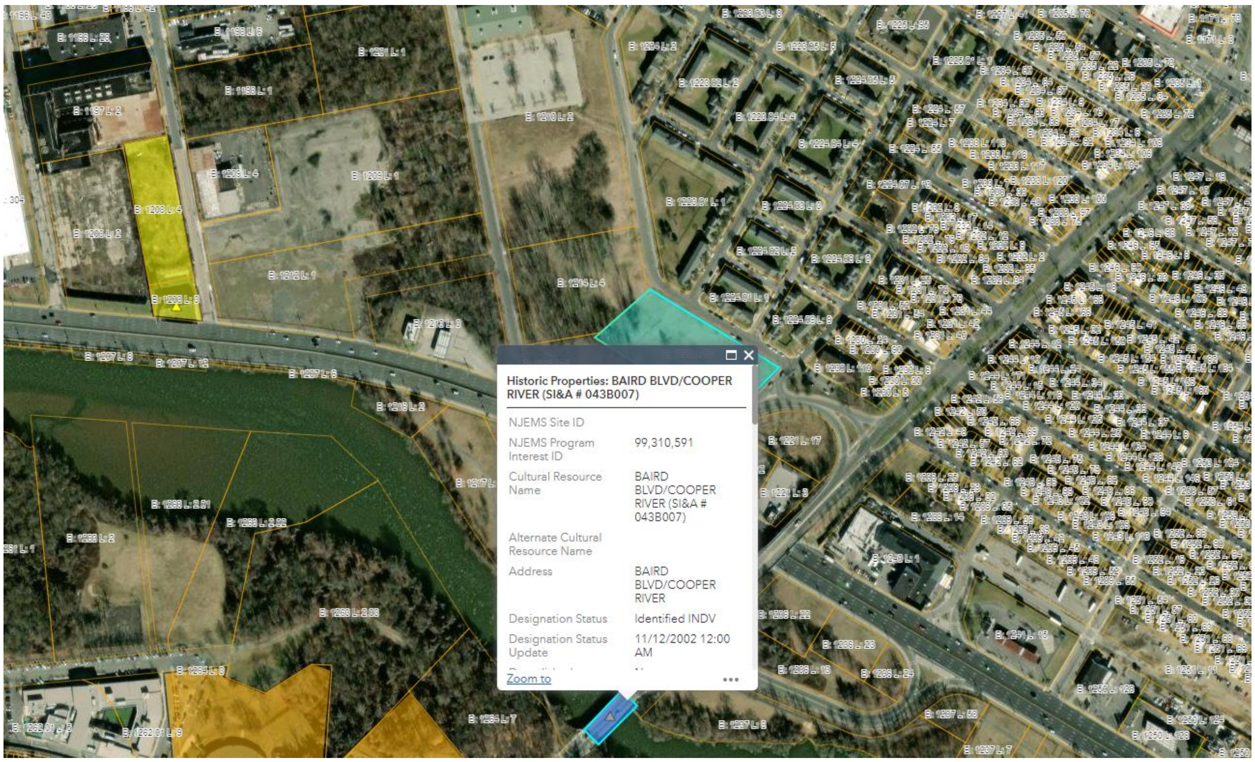
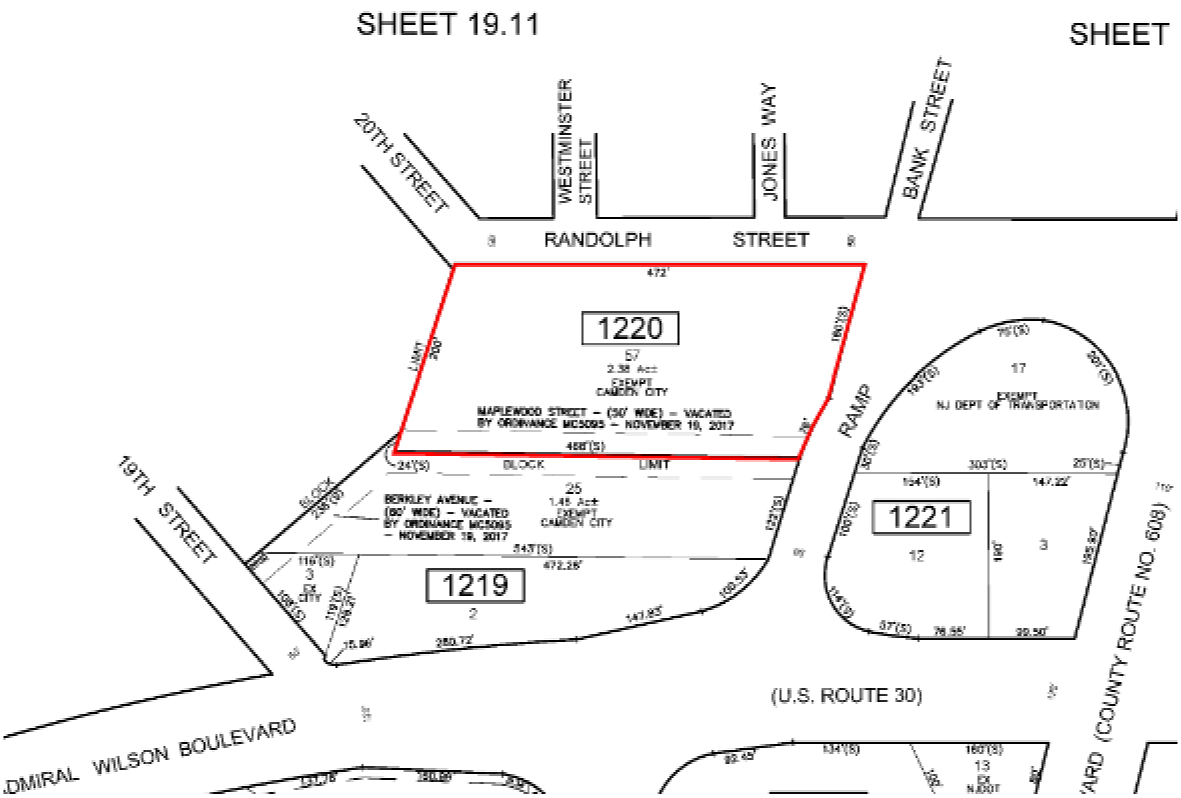
NJDEP GEOWEB HISTORIC PROPERTIES MAP

HISTORIC PROPERTIES



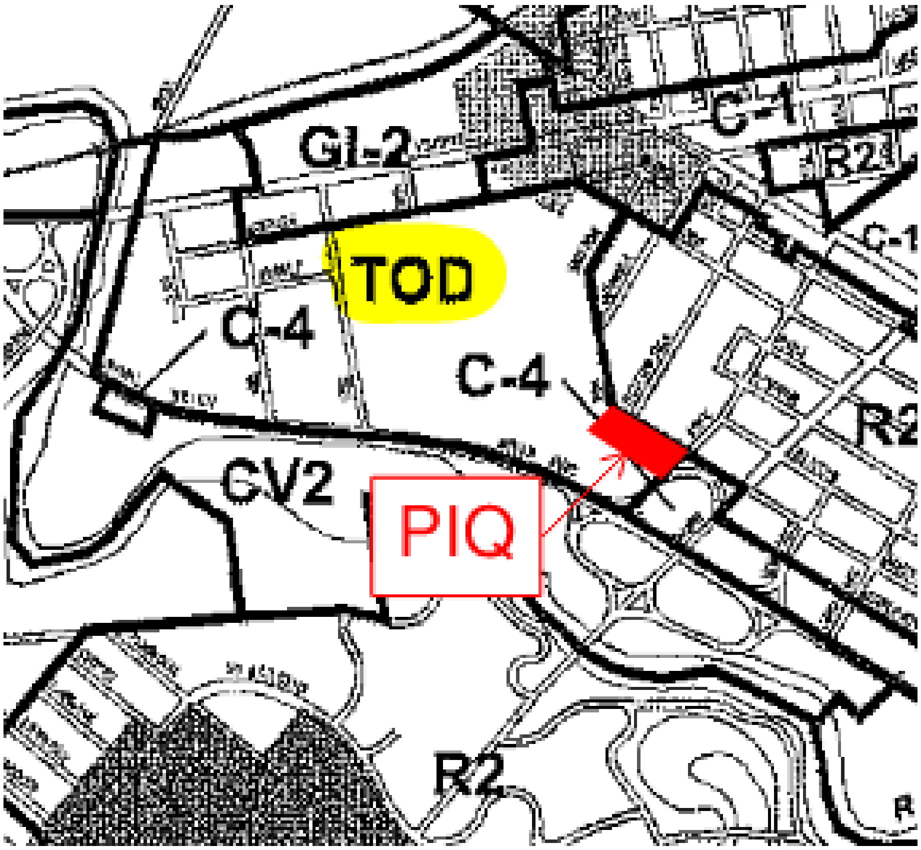
TAX MAP

TAX MAP


SHEET 19.11
SHEET
20TH STREET
WESTMINSTER STREET
JONES WAY
BANK STREET
RANDOLPH STREET
1220
57
2.38 Ac±
EXEMPT
CAMDEN CITY
MAPLEWOOD STREET – (50' WIDE) – VACATED BY ORDINANCE MC5095 – NOVEMBER 19, 2017
BLOCK LIMIT
RAMP
17
NJ DEPT OF TRANSPORTATION
1221
12
3
19TH STREET
BERKLEY AVENUE – (50' WIDE) – VACATED BY ORDINANCE MC5095 – NOVEMBER 19, 2017
25
1.45 Ac±
EXEMPT
CAMDEN CITY
1219
2
(U.S. ROUTE 30)
ADMIRAL WILSON BOULEVARD
(COUNTY ROUTE NO. 608)

ZONING MAP

ZONING MAP



REPORT OF GEOTECHNICAL INVESTIGATION, PREPARED BY DYNAMIC EARTH, LLC (ATTACHED SEPERATELY)

TRAFFIC IMPACT STUDY, PREPARED BY DYNAMIC TRAFFIC, LLC (ATTACHED SEPERATELY)

QUALIFICATIONS OF JOSHUA M. SEWALD, PE, PP

DYNAMIC ENGINEERING

Joshua M. Sewald, PE, PP

Principal

Joshua Sewald is Principal of Dynamic Engineering Consultants, PC. Mr. Sewald joined the firm as a Junior Design Engineer and has successfully developed himself into a Partner at the firm. He provides practical experience with commercial, residential, and industrial land development projects. His primary experience extends throughout the State of New Jersey, Pennsylvania, Delaware, Maryland and New York. Included within his areas of expertise are site grading and earthwork, stormwater management, water quality design, project management, and NJDEP permitting inclusive of Coastal Areas, Treatment Works Approvals, Freshwater Wetlands, and Flood Hazard Areas.

Mr. Sewald is dedicated to insuring that clients are satisfied with the management of their projects by maintaining open communication and ensuring timeliness of project milestones. He approaches each project to tailor to his client's needs and goals. Mr. Sewald believes that it is important clients are informed about the land development process so that they make knowledgeable decisions. He also makes certain that his clients are aware of the regulatory process and risks associated with each step of the development project.

During his career, Mr. Sewald has provided consulting services for numerous corporate and developer driven projects including ALDI, Prologis, Raymour & Flanigan, Mavis Discount Tire, Wawa, 7-Eleven, The Learning Experience, Dunkin Donuts, Popeye's, Burger King, and many more.

Licenses:

- New Jersey Professional Engineer License
- New York Professional Engineer License
- Pennsylvania Professional Engineer License
- Delaware Professional Engineer License
- Maryland Professional Engineer License
- New Jersey Professional Planner License

Education:

- Rutgers University, Masters of Science in Civil Engineering
- Temple University, Bachelor of Science in Civil Engineering

Agency Experience:

- NJDEP, Flood Hazard Areas
- NJDEP, Freshwater Wetlands
- NJDEP, Treatment Works Approval
- NJDEP, Waterfront Development
- NJDEP, Coastal Area Facilities Review (CAFRA)
- New Jersey Pinelands Commission
- New Jersey Soil Conservation Districts
- Delaware & Raritan Canal Commission
- PA Municipal Land Use Boards (ZHB, PC, BOS)
- PADEP NPDES Permit & Conservation Districts
- PennDOT HOP Permits
- Pennsylvania Conservation Districts
- Maryland Department of the Environment
- Maryland Department of Transportation
- Delaware DNREC & DelDOT
- NY State DEC and DOT

Expert Testimony:

Mr. Sewald has been accepted and testified as a Professional Engineer before various Planning Boards, Zoning Boards, Board of Supervisors in multiple states.

Employment History:

- 2011: Dynamic Engineering – Intern/Co-op
- 2012-2015: Dynamic Engineering – Design Engineer/Project Manager
- 2016-Current: Dynamic Engineering – Principal

Professional Affiliations:

- International Council of Shopping Centers (ICSC)
- ICSC – Next Gen Planning Committee – NJ/PA/DE
- National Association of Industrial and Office Properties (NAIOP) – Developing Leader
- American Society of Civil Engineers (ASCE)
- National Association for Industrial and Office Parks (NAIOP)

WATER AND SANITARY SEWER ENGINEER'S REPORT

For

Asset Realty & Construction Group Inc.

Proposed Five-Story Mixed Use Building

Block 1220, Lot 57
1901 Admiral Wilson Boulevard
City of Camden
Camden County, New Jersey

Prepared by:

DYNAMIC ENGINEERING

1904 Main Street
Lake Como, NJ 07719
(732) 974-0198

Joshua M. Sewald, PE, PP
NJ Professional Engineer License #52908

May 2025
DEC# 2334-23-03513

TABLE OF CONTENTS

I. INTRODUCTION

The project area is comprised of Block 1220, Lot 57 in the City of Camden, Camden County, New Jersey. The overall site is presently undeveloped. The proposed project consists of a Five-Story Mixed Use Building (122,275 SF Total) composing of commercial and self-storage, with additional improvements including lighting, landscaping, grading, walkways, driveways, utilities, parking and associated items.

II. PROPOSED DOMESTIC WATER SYSTEM

A proposed water connection will be made for the proposed Mixed-Use Building via a 6” fire service line which will tie into to the existing water main located within Randolph Street. Water service will be connected to the building through the proposed 6” fire service line and 2” domestic service line.

a) PROPOSED WATER DEMANDS

In comparison with N.J.A.C. 7:10-12.6(2) 2 – Table 1, the NJDEP Standard for Domestic Water Demand is:

Stores, Office Building – 0.125 gallons/day (GPD) per building square footage

Commercial use:		
10,020 SF x 0.125 GPD/SF	=	1,252.50 GPD
Self-Storage (Office Space):		
900 SF x 0.125 GPD/SF	=	112.5 GPD
Total	=	1,365.00 GPD

According to NJDEP regulations, the applicant would be required to obtain a Bureau of Water System Engineering (BWSE) Permit for an increase in average daily water demand flow of 12,000 GPD. Therefore, since the development’s proposed demand is 1,327.50 GPD a BWSE Permit is not required.

III. PROPOSED SANITARY SEWER SYSTEM

A proposed sanitary sewer connection will be made for the proposed Mixed-Use Building via a 6" sanitary sewer lateral that will tie into the existing sanitary sewer main within Randolph Street.

a) PROPOSED SANITARY SEWER DEMANDS

In Comparison with N.J.A.C. 7:14A-23.3(a), the sanitary sewer demands for the proposed use is estimated as follows:

Store, Office Building – 0.100 GPD/SF

Commercial use:		
10,020 SF x 0.100 GPD/SF	=	1,002.00 GPD
Self Storage (Office Space):		
900 SF x 0.100 GPD/SF	=	90.0 GPD
Total	=	1,092.00 GPD

According to NJDEP regulations, the applicant would be required to obtain a Treatment Works Approval (TWA) Permit for a proposed average sanitary sewer demand flow of 8,000 GPD. Therefore, since the proposed development's demand is 1,092 GPD a TWA Permit is not required.

b) PROPOSED SANITARY SEWER DESIGN

Per NJDEP regulations, the criteria for establishing the size of sanitary sewer gravity pipes is to convey two times the average flow with the pipe flowing half full. Utilizing Manning's equation with a roughness coefficient of 0.010 for a PVC pipe, the following is the minimum capacity of the proposed sewer.

Use	Pipe Size	Slope	Roughness (n)	Capacity at ½ Full	2 X ADF
Mixed-Use Building	6"	1.04%	0.010	241,040 GPD	2,184 GPD

The proposed sanitary sewer design, including the 6" PVC lateral at 1.04%, can efficiently convey two times the proposed average daily flow while flowing half full while only using 0.906% of the line's total capacity.

IV. CONCLUSION

In summary, this report has been prepared to further expand on the water and sanitary sewer designs for the proposed Five-Story Mixed Use Building as seen within the Preliminary and Final Major Site Plan set. The water and sewer demands generated from this final build out will not exceed the approved demands and allocated flows based on the actual usages. It is not anticipated the proposed development will have a negative impact on the existing infrastructure.

APPENDIX

CAPACITY OF CIRCULAR PIPE FLOWING ½ FULL

Capacity of Circular Pipe Flowing 1/2 Full

Project: Proposed Five-Story Mixed Use Building
Job #: 2334-23-03513
Location: City of Camden

Computed By: SM
Checked By: AG
Date: 4/14/2025

PIPE DESCRIPTION	SLOPE (%)	SIZE (IN)	MANNING'S COEFFICIENT (n)	VELOCITY (FT/S)	CAPACITY (CFS)	CAPACITY (GPD)	CAPACITY (MGD)
Prop. 6" SCH-40 PVC	1.040%	6	0.010	3.80	0.37	241,040	0.24

Variables Defined
Q=Capacity of Pipe (CFS)
V=Velocity in Pipe Section (FT/S)
R=Hydraulic Radius of Pipe Section
S=Slope of Pipe Section (FT/FT)
D=Diameter of Pipe (FT)
d=Depth of Flow in Pipe (FT)
n=Manning's Coefficient
Wp=Wetted Perimeter (FT)

Typical Values for Manning's Coefficient (n)

n(RCP)=	0.013	
n(HDPE-Smooth Interior)=	0.012	*Varies with Manufacturer
n(DIP)=	0.013	
n(PVC)=	0.010	
n(CMP)=	0.024	

Equations used:
Q=VA
V=(1.49/n)*R^(2/3)*S^(1/2)
Q=(1.49/n)*R^(2/3)*S^(1/2)*A

Utilizing Appendix 16.A from the Civil Engineering Reference Manual-Seventh Edition, by Micheal Lindeburg, Copyright 1999
The following equations were utilized to calculate the Hydraulic Radius and Area of a Circular Pipe Section flowing 1/2 full
A=(π*D^2/4)*0.5=0.3927*D^2
R=A/Wp=0.3927*D^2/((2*π*D/2)*0.5)=0.25*D

Therefore:
Q=(1.49/n)*(0.25*D)^(2/3)*S^(1/2)*(0.3927*D^2)
V=(1.49/n)*(0.25*D)^(2/3)*S^(1/2)

Unit Conversion Equations
1 Cubic Foot=7.4805 Gallons
1 Day = 86,400 Seconds
Therefore:

$$\frac{\text{Cubic Foot}}{\text{Second}} \times \frac{\text{86,400 Seconds}}{\text{1 Day}} \times \frac{\text{7.4805 Gallons}}{\text{1 Cubic Foot}} = \frac{\text{Gallon}}{\text{Day}}$$

$$\frac{\text{Gallon}}{\text{Day}} \times \frac{\text{1 Million Gallons}}{\text{1,000,000 Gallons}} = \frac{\text{Million Gallons}}{\text{Day}}$$

Dynamic Traffic, LLC
245 Main Street, Suite 110
Chester, NJ 07930
T: 732.681.0760

May 9, 2025

City of Camden Planning Board
City Hall - 520 Market Street, Room 224
Camden, NJ 08102

Attn: Angela Miller – Planning Board Secretary

Re: Traffic Impact and Parking Assessment
Proposed Mixed-Use Building
Block 1220, Lot 57
1901 Admiral Wilson Boulevard
City of Camden
Camden County, NJ
DT # 2334 23-03514

Dear Planning Board Members:

Dynamic Traffic has prepared the following assessment to determine the traffic impact and adequacy of access, circulation, and parking associated with development of a site located on the southwest corner of the Bank Street intersection with Randolph Street in the City of Camden, Camden County, New Jersey (see Site Location Map). The site is designated as Block 1220 – Lot 57 on the City Tax Maps and is currently undeveloped. It is proposed to develop the parcel into a 122,275 SF mixed-use building containing 112,255 SF of self-storage space and 10,020 SF of commercial space (The Project). Access to the site is proposed via a new full movement driveway along Bank Street.

This assessment documents the methodology, analyses, findings and conclusions of our study and includes:

- A detailed field inspection was conducted to obtain an inventory of existing roadway geometry, traffic control, and location and geometry of existing driveways and intersections.

- Projections of traffic to be generated by The Project were prepared utilizing trip generation data as published by the Institute of Transportation Engineers.

- The proposed site driveway was inspected for adequacy of geometric design, spacing and/or alignment to streets and driveways on the opposite side of the street, relationship to other driveways adjacent to the development, and conformance with accepted design standards.

- The parking layout and supply was assessed based on accepted design standards and demand experienced at similar developments.

Existing Conditions

Bank Street is a local roadway under NJDOT jurisdiction along the site frontage as it serves as the on/off ramp from Admiral Wilson Boulevard (US Route 30) westbound to Baird Boulevard (CR 608). Bank Street has a general north/south orientation and provides one travel lane in each direction. On-street parking is not permitted on either side of the roadway. Curb and sidewalk are provided along both sides of the roadway. Bank Street provides a curved horizontal alignment along the site frontage and a relatively flat vertical alignment. The land uses along Bank Street in the vicinity of The Project are a mix of commercial (south) and residential (north).

Site Generated Traffic

Trip generation projections for The Project were made utilizing trip generation research data as published under Land Use Code (LUC) 151 – Mini-Warehouse for the self-storage space and LUC 822 – Strip Retail Plaza for the commercial space in the Institute of Transportation Engineers' (ITE) publication, *Trip Generation, 11th Edition.* This publication sets forth trip generation rates based on empirical traffic count data conducted at numerous research sites. The following table shows the anticipated trip generation for The Project during the weekday morning, weekday evening, and Saturday midday peak street hours (PSH).

Table 1
Trip Generation

Use	AM PSH			PM PSH			Sat PSH		
	In	Out	Total	In	Out	Total	In	Out	Total
Proposed 112,255 SF Self-Storage Facility	6	4	10	8	9	17	12	7	19
Proposed 10,020 SF Commercial Space	14	10	24	33	33	66	34	32	66
Total	**20**	**14**	**34**	**41**	**42**	**83**	**46**	**39**	**85**

It should be noted that the number of new trips falls below the NJDOT accepted threshold of a significant increase in traffic of 100 or more peak hour trips. As such, it is not anticipated that the proposed development will have any perceptible impact on the traffic operation of the adjacent roadway network.

Site Access, Parking and Circulation

The site was reviewed with respect to the site access and on-site circulation design. As previously noted, access to the site will be provided via a proposed full movement driveway along Bank Street.

The site will be served by aisles of 24 feet wide for two-way movements and a minimum of 12 feet wide for one-way movements, which allows for full site circulation for the anticipated vehicle mix on site and meets generally accepted design standards.

It is proposed to provide 52 parking spaces (including 3 handicap spaces and 2 electric vehicle charging station) in support of The Project. The Admiral Wilson North Redevelopment Plan sets forth a requirement of 1 parking space per 5,000 SF for self-storage uses and 5 parking spaces per 1,000 SF for commercial uses. With 112,255 SF of self-storage space and 10,020 SF of commercial space, this equates to a parking requirement of 74 parking spaces for the proposed mixed-use building and as such a variance is required.

The ITE identifies an average peak parking demand of 0.10 spaces per 1,000 SF for a mini-warehouse (LUC 151) and an average peak parking demand of 3.13 spaces per 1,000 SF for a strip retail plaza (LUC 822) in the 6th Edition of the *Parking Generation Manual*. This equates to a total demand for the site of 43 spaces, which is exceeded as designed, and is therefore anticipated to be sufficient. The proposed parking stalls are a minimum of 9'x18' and 9'x20', which meets the requirement of 9'x18' for the use proposed.

Findings

Based upon the detailed analyses as documented herein, the following findings are noted:

- The proposed 122,275 SF mixed-use building will generate 20 entering trips and 14 exiting trips during the morning peak hour, 41 entering trips and 42 exiting trips during the evening peak hour and 46 entering trips and 39 exiting trips during the Saturday peak hour which will not create a significant increase in traffic based on NJDOT standards.

- Access to the site will be provided via a proposed full movement driveway along Bank Street.

- As proposed, The Project's site driveway and internal circulation have been designed to provide for safe and efficient movement of automobiles.

- The proposed parking supply and design is sufficient to support the projected demand based on data published by the ITE.

Conclusion

Based upon our Traffic Assessment as detailed in the body of this report, it is the professional opinion of Dynamic Traffic that the adjacent street system of the City of Camden and NJDOT will not experience any significant degradation in operating conditions with the development of the site. The site driveway is located to provide safe and efficient access to the adjacent roadway system. The site plan as proposed provides for good circulation throughout the site and provides adequate parking to accommodate The Project's needs.

If you have any questions on the above, please do not hesitate to contact me.

Sincerely,

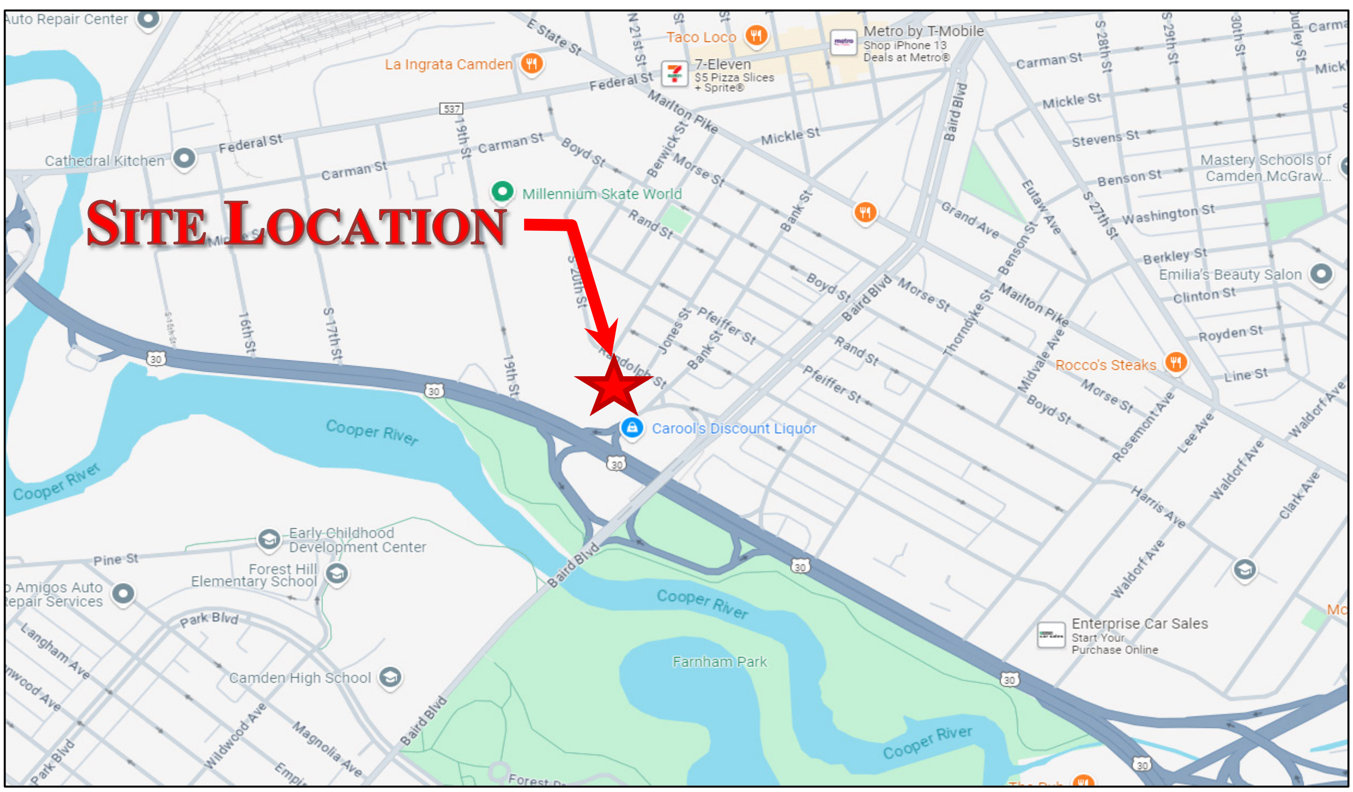
Dynamic Traffic, LLC

Corey Chase, PE
Senior Principal
NJ PE License 47470

Kevin Savage
Kevin Savage, PE, PTOE
Principal
NJ PE License 55728

Enclosures

c: Dan Tarabokija (via email w/encl.)



Proposed Mixed-Use Building
Traffic Impact and Parking Assessment
2334 23-03514

Site Location Map

1 FIRST FLOOR PLAN
A 1.0
SCALE: 1/8" = 1'-0"

PROJECT NORTH

CLIMATE CONTROLLED UNITS

NON-CLIMATE CONTROLLED UNITS

COMMERCIAL / RETAIL SPACE

ARCHITECT

GMA ARCHITECTS
GMA ARCHITECTS OF NEW JERSEY, INC.
7930 CLAYTON ROAD
ST. LOUIS, MISSOURI 63117
(P) 314-822-5191 (F) 314-963-7714
WWW.GMA-ARCHITECTS.COM

DESIGN / BUILDER

ARCO MURRAY | DESIGN BUILD
4849 GREENVILLE AVE, STE. 1460
DALLAS, TX 75206
(P) (214) 377-6681
WWW.ARCONATIONAL.COM

CONSULTING ENGINEERS

CIVIL:

STRUCTURAL:

MECHANICAL:

ELECTRICAL:

PLUMBING:

SELF STORAGE PROJECT for:
1901 Admiral Wilson Boulevard, LLC

1901 Admiral Wilson Boulevard
Block 1220, Lot 57
City of Camden
Camden County, New Jersey 08109

JOB NO : GAP 1639
PA : FCW
DATE : 05.05.2025

REVISIONS △

SHEET NUMBER
A 1.0
FIRST FLOOR PLAN

CLIMATE CONTROLLED UNITS

1 A 2.0 SECOND FLOOR PLAN
SCALE: 1/8" = 1'-0"

PROJECT NORTH

ARCHITECT
GMA ARCHITECTS
GMA ARCHITECTS OF NEW JERSEY, INC.
7930 CLAYTON ROAD
ST. LOUIS, MISSOURI 63117
(P) 314-822-5191 (F) 314-963-7714
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CONSULTING ENGINEERS
CIVIL:
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PLUMBING:

SELF STORAGE PROJECT for:
1901 Admiral Wilson Boulevard, LLC

1901 Admiral Wilson Boulevard
Block 1220, Lot 57
City of Camden
Camden County, New Jersey 08109

JOB NO : GAP 1639
PA : FCW
DATE : 05.05.2025

REVISIONS △

SHEET NUMBER
A 2.0
SECOND FLOOR PLAN

CLIMATE CONTROLLED UNITS

1
A 3.0
THIRD FLOOR PLAN
SCALE: 1/8" = 1'-0"

PROJECT NORTH

MECHANICAL:
ELECTRICAL:
PLUMBING:
CONSULTING ENGINEERS
CIVIL:
STRUCTURAL:
DESIGN / BUILDER
ARCO MURRAY
ARCHITECT
GMA ARCHITECTS

SELF STORAGE PROJECT for:
1901 Admiral Wilson Boulevard, LLC
1901 Admiral Wilson Boulevard
Block 1220, Lot 57
City of Camden
Camden County, New Jersey 08109

JOB NO : GAP 1639
PA : FCW
DATE : 05.06.2025

REVISIONS

SHEET NUMBER
A 3.0
THIRD FLOOR PLAN

CLIMATE CONTROLLED UNITS

1
A 4.0
4th & 5th Floor Plan
SCALE: 1/8" = 1'-0"

PROJECT NORTH

MECHANICAL:
ELECTRICAL:
PLUMBING:
CONSULTING ENGINEERS
CIVIL:
STRUCTURAL:

DESIGN / BUILDER
ARCO MURRAY
DESIGN BUILD

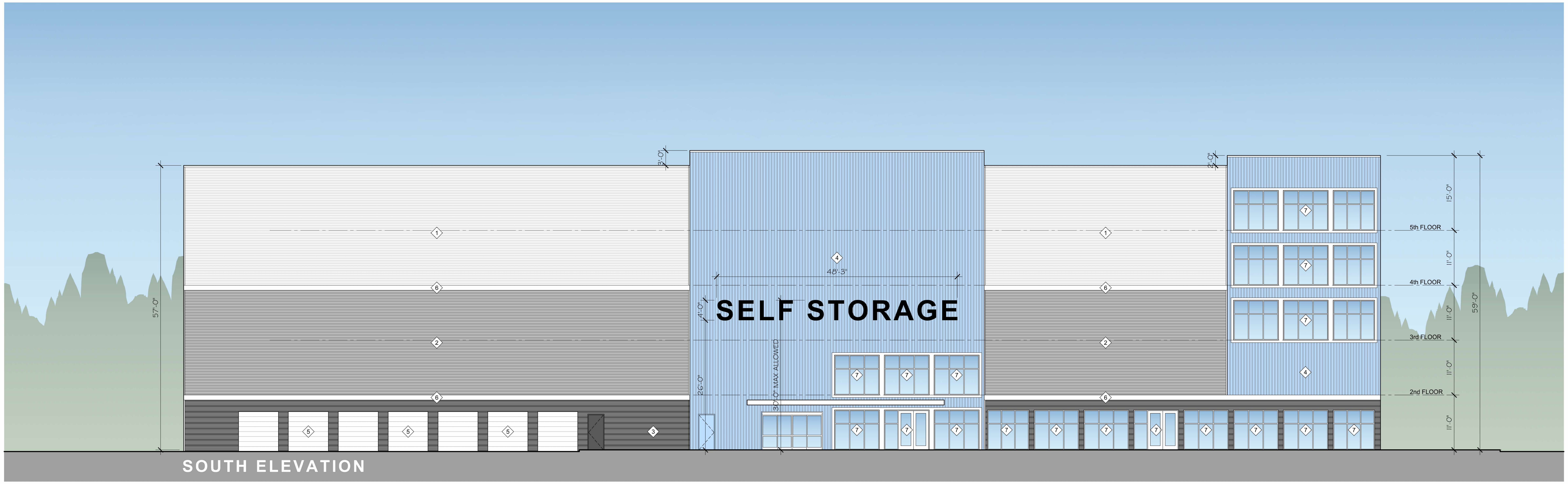
ARCHITECT
GMA ARCHITECTS

SELF STORAGE PROJECT for:
1901 Admiral Wilson Boulevard, LLC
1901 Admiral Wilson Boulevard
Block 1220, Lot 57
City of Camden
Camden County, New Jersey 08109

JOB NO : GAP 1639
PA : FCW
DATE : 05.06.2025

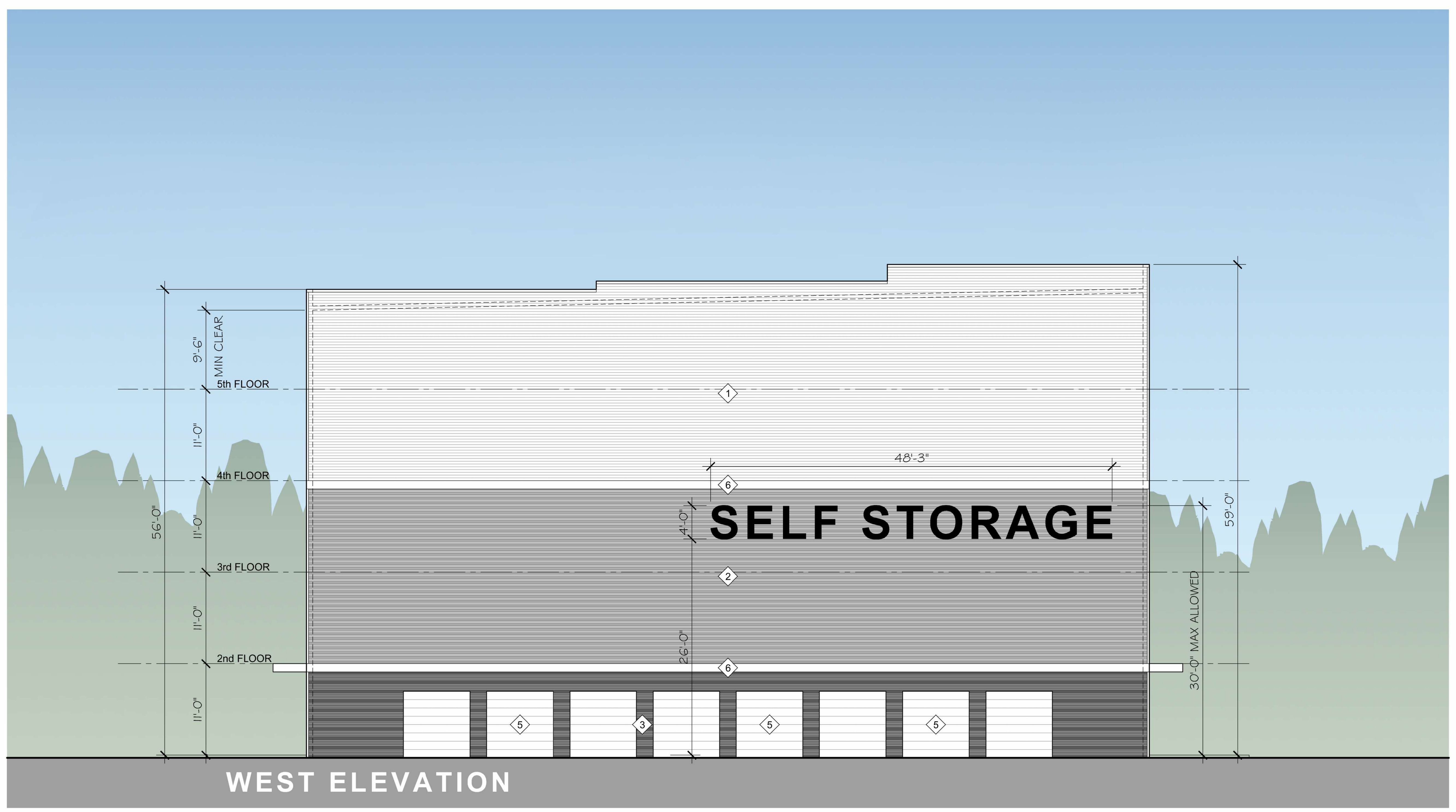
REVISIONS

SHEET NUMBER
A 4.0
UPPER FLOOR PLANS



SIGN AREA = 193 SF
(500 SF ALLOWED)

1 SOUTH ELEVATION
A 4.1
SCALE: 1" = 10'-0"



SIGN AREA = 193 SF
(500 SF ALLOWED)

2 WEST ELEVATION
A 4.1
SCALE: 1" = 10'-0"

MATERIAL LEGEND	
1	HORIZONTAL PBC PANEL COLOR - POLAR WHITE
2	HORIZONTAL 7.2 PANEL COLOR - ASH GRAY
3	HORIZONTAL PBR PANEL COLOR - CHARCOAL
4	VERTICAL 7.2 PANEL COLOR - ACCENT TBD
5	OVERHEAD DOOR - ACCENT COLOR
6	BREAK METAL TRIM - COLOR - POLAR WHITE
7	VISION GLASS IN BLUE STOREFRONT

MECHANICAL:
ELECTRICAL:
PLUMBING:

CONSULTING ENGINEERS
CIVIL:
STRUCTURAL:

DESIGN / BUILDER
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SELF STORAGE PROJECT for:
1901 Admiral Wilson Boulevard, LLC

1901 Admiral Wilson Boulevard
Block 1220, Lot 57
City of Camden
Camden County, New Jersey 08109

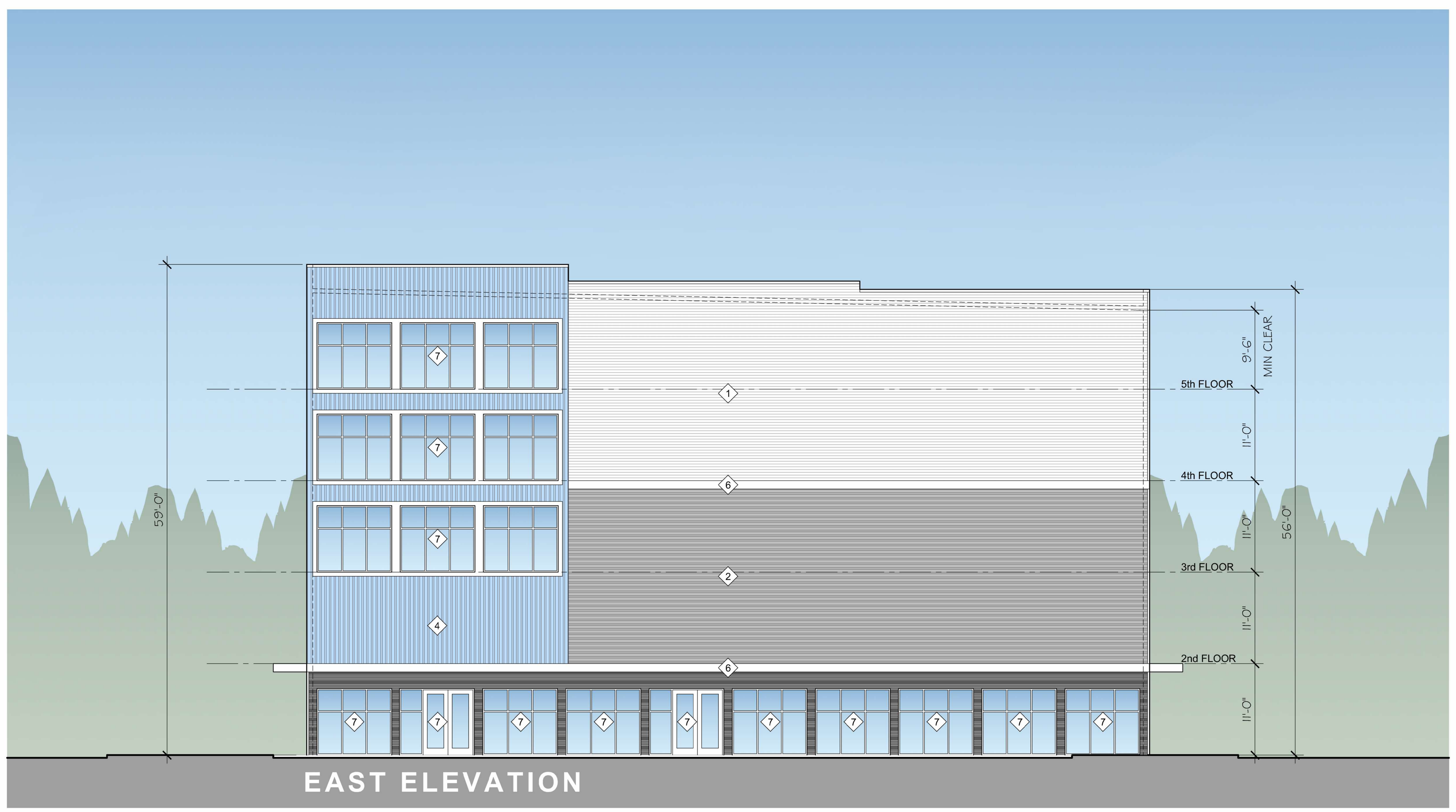
JOB NO : GAP 1639
PA : FCW
DATE : 05.02.2025

REVISIONS △

SHEET NUMBER
A 7.0
ELEVATIONS

1 A 4.0 NORTH ELEVATION (FACING RESIDENTIAL)

SCALE: 1" = 10'-0"



2 A 4.0 EAST ELEVATION

SCALE: 1" = 10'-0"

MATERIAL LEGEND

1	HORIZONTAL PBC PANEL COLOR - POLAR WHITE
2	HORIZONTAL 7.2 PANEL COLOR - ASH GRAY
3	HORIZONTAL PBR PANEL COLOR - CHARCOAL
4	VERTICAL 7.2 PANEL COLOR - ACCENT TBD
5	OVERHEAD DOOR - ACCENT COLOR
6	BREAK METAL TRIM - COLOR - POLAR WHITE
7	VISION GLASS IN BLUE STOREFRONT

ARCHITECT

GMA ARCHITECTS

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CONSULTING ENGINEERS

CIVIL:

STRUCTURAL:

MECHANICAL:

ELECTRICAL:

PLUMBING:

SELF STORAGE PROJECT for:
1901 Admiral Wilson Boulevard, LLC

1901 Admiral Wilson Boulevard
Block 1220, Lot 57
City of Camden
Camden County, New Jersey 08109

JOB NO : GAP 1639
PA : FCW
DATE : 05.02.2025

REVISIONS

SHEET NUMBER
A 7.1
ELEVATIONS

CITY OF CAMDEN
DEPARTMENT OF PLANNING & DEVELOPMENT

DIVISION OF PLANNING
&
ZONING

SITE PLAN APPLICATION AND
SUBMISSION ITEMS PACKAGE

Any question please contact:
Angela Miller, Planning Board Secretary
(856) 757-7214

TABLE OF CONTENTS

REVISED 8/27/2020

SITE PLAN APPLICATION
CHECKLIST

CHECK IF COMPLETED **FOR OFFICE USE ONLY**

X **1. Zoning Application** ____

X **2. Site Plan Applications & Site Plans (15 copies of both)** ____

X **3. Proof of ownership (i.e. Deed, Tax Bill and/or Lease)** ____

X **4. Signed Escrow Fee Agreement** ____

PRIOR TO SUBMISSION OF ANY SITE PLAN APPLICATIONS EVERY APPLICANT MUST CALL FOR A PRE-APPLICATION CONFERENCE.

IT IS STRONGLY ADVISED THAT THE APPROPRIATE PROFESSIONALS BE PRESENT AT SAID MEETING.

PRE-APPLICATION CONFERENCE FEE: $500.00

(ACCORDING TO SECTION 577-270 OF THE CITY'S ZONING CODE)

***NOTE:**

A. **Incomplete applications will not be processed.**

B. **Submission hours are 8:30am to 4:30pm, Monday through Friday. All applications must be stamped "received" by the Division of Planning. No outside drop-offs will be processed.**

C. **All plans must be folded with *Title Block* facing upward.**

D. **Whenever public notice is required, the Division of Planning shall prepare procedures for said notification and advise applicant of its readiness.**

Revised 8/27/2020

The following checklist pertains to PLOT PLANS:

Check if Completed **For Office Use Only**

X 1. Name and Address of owner and applicant ____

X 2. Name, signature, licenses #, seal and address of engineer, land surveyor, architect, professional planner, and/or landscape architect (as applicable). ____

X 3. Title block denoting type of application, tax map sheet, county municipality, block and lot, and street address. ____

X 4. Key map not less the 1" – 1000" showing location of tract to surrounding street, municipal boundaries, etc. within 500'. ____

X 5. Schedule for required and proposed zone requirements for Lot area, frontage, setbacks, imperious coverage, parking, etc. ____

X 6. North arrow to top of sheet, scale and graphic scale. ____

X 7. Signature block for board chair, secretary, zoning officer/ administrative officer and engineer. ____

X 8. Date of property survey ____

X 9. Acreage of tract to nearest tenth ____

X 10. Date or original and all revisions ____

X 11. Size and location of existing or proposed structures and their dimension of setbacks ____

X 12. Location and dimensions of any existing or proposed streets ____

X 13. All proposed lot lines and area of lots in square feet ____

X 14. Copy of and plan delineation of any existing or proposed deed restriction ____

X 15. Any existing or proposed easement or land reserved or dedicated for public use ____

X 16. Existing streets, other right-of-way or easements; water courses, wetlands, soils floodplains, or other environmentally Sensitive area within 200' of tract ____

X 17. Topographical features of subject property from USGS 7.5 minute maps ____

CHECK IF COMPLETED **FOR OFFICE USE ONLY**

X 18. Boundary, limits, nature and extent of wooded areas, Specimen trees and other significant physical features ____

X 19. Drainage calculations ____

X 20. Proposed utilities: sanitary sewer, water, storm water management, telephone, cable TV and electric ____

X 21. Soil erosion and sediment control plan if more than 5000 sq. ft. ____

X 22. Spot and finished elevations at all property corners, corners of Structures, existing or proposed first floor elevations ____

X 23. Construction details road and paving cross-sections and profiles if no profiles needed ____

X 24. Lighting plan and details ____

X 25. Landscape plan and details ____

X 26. Site identification signs, traffic control signs, and directional signs ____

X 27. Sight triangles ____

X 28. Vehicular and pedestrian circulation patterns ____

X 29. Parking plan indicating spaces, size and type aisle width internal Collectors, curb cuts, drives and driveways and all ingress and Egress areas with dimensions ____

X 30. Preliminary architectural plan and elevations ____

X 31. Environmental impact report, parcels 2 acres or larger ____

X 32. Plan paper size should be 24 by 36 ____

PURSUANT TO THE CODE OF THE CITY OF CAMDEN
(ARTICLE I, SECTION 233-4)

SITE PLAN APPLICATION

(Please Answer ALL Questions)

APPLICANT Asset Realty & Construction Group Inc.

ADDRESS 1590 Troy Avenue, Brooklyn, NY 11234

TELEPHONE# 718-252-0126 **FAX#**

OWNER OF PROPERTY Alfred R. Pierce, Trustee c/o A.R.P Jr.
(if other than applicant)

ADDRESS One Trinity Ln, 2nd Flr-B, Mount Holly, NJ 08060

TELEPHONE

IF APPLICANT IS INCORPORATE OR A PARTNERSHIP, LEGAL REPRESENTATION IS REQUIRED. PLEASE PROVIDE THE FOLLOWING:

ATTORNEY'S NAME Duncan M. Prime, Esquire for Prime Tuvel & Miceli

ADDRESS 14000 Horizon Way, Suite 325, Mount Laurel, NJ 08054

TELEPHONE# 856-273-8300 **FAX#** 856-273-8383

EMAIL ADDRESS duncan@primelaw.com

PLEASE PROVIDE THE FOLLOWING INFORMATION BELOW:

ENGINEER AND/OR ARCHITECT NAME Joshua Sewald, PE, PP for Dynamic Engineering

ADDRESS 1904 Main Street, Lake Como, NJ 07719

TELEPHONE# 732-974-0198 **FAX#**

ADDRESS OF DEVELOPMENT 1901 Admiral Wilson Boulevard

BLOCK NO.(S) 1220 LOT NO.(S) 57 ZONE Admiral Wilson North Redevelopment Area (Transit Oriented Development -TOD Zone)

PRESENT USE(S) Undeveloped

DESCRIBE PROPOSED USES (S):
(attach separate sheet if needed) Applicant proposes to construct a five-story mixed use building (self-storage facility and retail). The first floor will contain a commercial space and self-storage and the second, third, fourth, and fifth floors will contain the self-storage space.

SQUARE FOOTAGE OF PROPOSED USE 24,455 SF

LOT AREA (Measured in Square Footage) 91,792 SF

BUILDING AREA OF GROUND FLOOR 24,455 SF

BUILDING AREA (Total Sq. Ft. – all floors) 122,275 SF

NO. OF PROPOSED PARKING SPACES 52 parking spaces, including 3 ADA and 2 electric vehicle charging station spaces

NO. OF EXISTING PARKING SPACES 0

AREA IN ACRES OF ANY ADDITION ADJOINING LAND OWNED BY APPLICANT

N/A

DOES THIS APPLICANT CONSTITUTE:
(Please check appropriate box)

☑ New Application

☐ Preliminary ☑ Preliminary and Final

____ Revision or Resubmission of a prior application

*IS THIS APPLICATION FOR A VARIANCE TO CONSTRUCT A MULTI-DWELLING OF 25 OR MORE FAMILY DWELLING UNITS? (Please check) YES _____ NO ☑

*IS THIS APPLICATION INTENDED FOR COMMERCIAL PURPOSE(S)?
(Please check) YES ☑ NO _____

IF THE ANSWER TO (A) OR (B) IS "YES", AND/OR IF APPLICANT IS A CORPORATION OR PARTNERSHIP, PLEASE PROVIDE THE FOLLOWING:

1. Name and address of all stockholders or individual partners owning at least 10% of its stock, of any class, or at least 10% of the interest in the partnership, as the case may be. (Additional sheet may be attached if needed).

NAME	ADDRESS
Dino Tomassotti Jr.	1590 Troy Ave, Brooklyn, NY 11234

DOES THIS APPLICATION INCLUDE:

1. AN ADDITION OF 1,000 SQ. FT. OR MORE TO AN EXISTING STRUCTURE?
   (Please circle) YES NO

2. AN ADDITION OF 1,000 SQ. FT. OR MORE OF PAVING AREA FOR OFF-STREET PARKING?
   (Please circle) YES NO

THIS APPLICANT CERTIFIES THAT THE ABOVE INFORMATION HAS BEEN COMPLETED TO THE BEST OF HIS/HER KNOWLEDGE.

5/7/2025
DATE

Asset Realty & Construction Group Inc.
APPLICANT'S NAME (PLEASE PRINT)

APPLICANT'S SIGNATURE

PLEASE READ

ASSESSMENT CERTIFICATION

Section A: Applicant shall complete

SECTION A **OWNER**

Name of OWNER of Property Alfred R. Pierce, Trustee c/o A.P.R Jr.

Address: One Trinity Ln, 2nd Flr-B, Mount Holly, NJ 08060

SEARCH Address: 1901 Admiral Wilson Boulevard

Block: 1220 Lot: 57 Account: 25243

Section B: Applicant shall take this form to the City of Camden Tax Office, Room 117 (1st floor) for completion to indicate whether taxes are paid up to date. Applicant must also go to the PNC Bank (Broadway & Market St) for water and sewer to make sure water/sewer is paid up to date.
Upon completion, this form shall be submitted with original application. **NO APPLICATIONS WILL BE ACCEPTED –If any money is owed for Taxes or Water/Sewer, no permit can be issued until accounts are paid in full-proof of payment must be brought back before turning application in.**

Section C: **TAX OFFICE & PNC BANK**
An application for Zoning/Sign permit has been submitted to the Division of Planning. Please check your records to be certain that the account is current

I HEREBY CERTIFY THAT THE PROPERTY ASSESSMENT ARE:

Account Type	Qtr.	Due date	Amount Owed	Other
(Taxes/W&S/Other		Past Due	10,099.74	DJ 3/3/25
(Taxes/W&S/Other		City Of Camden Water Camden Office	zero	SA 3/3/2025
(Taxes/W&S/Other		Date 3-3-2025 Rep SA		
(Taxes/W&S/Other	2nd	5/1/2025	-0-	DJ 5/30/2025

COMMENTS:

DATED: PREPARED BY:

ESCROW DEPOSIT AGREEMENT BETWEEN THE CITY OF CAMDEN AND

DEPOSITOR Asset Realty & Construction Group Inc.

Address 1590 Troy Avenue, Brooklyn, NY 11234

Telephone No. 718-252-0126 Check No. 2183, 2184, and 2185

Depositor herewith deposits the sum of * See amounts listed below dollars ($ See below) with the City of Camden in accordance with an subject to the provisions of the City of Camden Ordinance No. MC-2304, being incorporated by reference and made a part hereof, and agrees to the following:

1. Depositor's payment of said deposit is made in connection with an application for: Preliminary and Final Site Plan Approval for Asset Realty & Construction Group Inc. for site located at 1901 Admiral Wilson Blvd, Camden, NJ, Block 1220, Lot 57

   At (provide address with block and lot number): 1901 Admiral Wilson Blvd, Camden, NJ Block 1220, Lot 57

2. The Treasure of the City of Camden shall be authorized to disburse to the City Engineer from the funds deposited, those fees required to be paid for the technical and professional review by the Zoning Board of Adjustment and/or Planning Board pursuant to the terms of Ordinance MC-2304.

3. All fees shall be disbursed upon reconciliation of the Engineer & Insurance Escrow Accounts by Ordinance MC-2304.

4. If there are insufficient funds in the depositor's escrow account to pay all pending bill attribute to the aforementioned project, depositor shall be notified by the appropriate agency and requested to make an additional deposit into the escrow account.

5. Depositor understands that if he/she fails to make any additional deposit required, depositor's application shall be denied.

6. Any additional deposits shall be made to the Treasure, City of Camden, by way of the Division of Planning, in accordance with the terms set forth herein unless otherwise agreed to by the depositor and the approving agency.

7. The City of Camden shall not be required to pay interest on any sums held pursuant to this agreement.

IN WITNESS WHEREOF the undersigned hereby accepts the terms and conditions of this agreement.

5/7/2025

DATE:

Applicant or Authorized Signature

Asset Realty & Construction Group Inc.

* $500.00 Pre-Application Meeting Fee
* $1,137.58 Application Fee
* $3,613.23 Escrow Fee

CONSENT TO APPLICATION FORM

1. ALFRED R. PIERCE, TRUSTEE c/o A.R.P JR., is the owner of property known as 1901 Admiral Wilson Blvd, City of Camden, Camden County, New Jersey, also known as Block 1220, Lot 57, on the City of Camden Tax Map (the "Property").

2. This will confirm the Owners' consent to the filing of the land use applications as detailed below for the Property by Asset Realty & Construction Group Inc, pursuant to written Agreement between the Owner and Asset Realty & Construction Group Inc.

3. This Consent shall be deemed to include any and all land use applications for the Property to City of Camden, Camden County, the State of New Jersey, Department of Transportation and Department of Environmental Protection, and all other agencies having jurisdiction over the site. This Consent shall remain in full force and effect unless revoked by the undersigned, in writing.

ALFRED R. PIERCE, TRUSTEE
c/o A.R.P JR.

[signature]

By: Alfred R. Pierce Jr.

Title: Trustee

Date: 5/19/2025

Sworn and subscribed to before me on

May 19, 2025

Eileen Maloney

Notary Public

EILEEN MALONEY
Commission # 2048729
Notary Public, State of New Jersey
My Commission Expires
August 10, 2028

Dynamic Engineering Consultants, PC
40 Main Street, 3rd Floor
Toms River, NJ 08753
T. 732-678-0000

Summary of Variances & Waiver Requests

Asset Realty & Construction Group Inc.
Proposed Five-Story Mixed Use Building
1901 Admiral Wilson Boulevard
Block 1220, Lot 57
City of Camden, Camden County, NJ

"C" Variance Summary:

1. §870-231.B(1)(A) – A minimum aisle width of twenty-four (24) feet shall be required for both one-way and two-way traffic.
   ***Whereas, the proposed development has a drive aisle width of 12 feet and 18 feet for one way traffic.* – Variance Required**

2. §870-230.F – The total required number of parking spaces is seventy-four (74).
   ***Whereas, the proposed development proposes 52 total parking spaces.* – Variance Required**

3. §870-231.C(2) – Each loading berth shall be a minimum of twelve (12) feet wide, fifty (50) feet long and provide fourteen (14) feet of overhead clearance. Each required loading space shall be provided with unobstructed access to and from a street or alley, having a width of not less than ten (10) feet. No off-street loading area shall be located between the front building line and the street line unless otherwise specified in this chapter. No off-street parking or loading area shall be located within five feet of the street right-of-way line, and no loading area shall be permitted in a side yard.
   ***Whereas, the proposed development proposes a loading space less then 12 feet wide.* – Variance Required**

4. Admiral Wilson Redevelopment Plan – A minimum ten (10) foot wide landscaped buffer is required adjacent to residentially zoned land. If a public right of way separates the proposed development from the residential zone, the buffer may be reduced to five (5) feet in width.
   ***Whereas, the proposed development proposes a buffer less than ten (10) feet wide from the residential zone.* – Variance Required**

5. §870-243.(A)(10) – All outdoor lighting systems shall be designed and operated so that the area ten (10) feet beyond the property line of the premises receives no less than 0.25 footcandle of light from the premises' lighting system.
   Whereas, the proposed development proposes a foot candle less than 0.25, 10 feet beyond the property line.

Form **W-9** (Rev. March 2024) Department of the Treasury Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Go to *www.irs.gov/FormW9* for instructions and the latest information.

Give form to the requester. Do not send to the IRS.

Before you begin. For guidance related to the purpose of Form W-9, see *Purpose of Form*, below.

Print or type. See *Specific Instructions* on page 3.

1 Name of entity/individual. An entry is required. (For a sole proprietor or disregarded entity, enter the owner's name on line 1, and enter the business/disregarded entity's name on line 2.)

Asset Realty & Construction Group Inc.

2 Business name/disregarded entity name, if different from above.

3a Check the appropriate box for federal tax classification of the entity/individual whose name is entered on line 1. Check only one of the following seven boxes.

☐ Individual/sole proprietor ☐ C corporation ☐ S corporation ☐ Partnership ☐ Trust/estate

☒ LLC. Enter the tax classification (C = C corporation, S = S corporation, P = Partnership) . . . . . S

Note: Check the "LLC" box above and, in the entry space, enter the appropriate code (C, S, or P) for the tax classification of the LLC, unless it is a disregarded entity. A disregarded entity should instead check the appropriate box for the tax classification of its owner.

☐ Other (see instructions)

3b If on line 3a you checked "Partnership" or "Trust/estate," or checked "LLC" and entered "P" as its tax classification, and you are providing this form to a partnership, trust, or estate in which you have an ownership interest, check this box if you have any foreign partners, owners, or beneficiaries. See instructions . . . . ☐

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any)

Exemption from Foreign Account Tax Compliance Act (FATCA) reporting code (if any)

(Applies to accounts maintained outside the United States.)

5 Address (number, street, and apt. or suite no.). See instructions.

1590 Troy Avenue

6 City, state, and ZIP code

Brooklyn, NY 11234

Requester's name and address (optional)

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. See also *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number: [ ][ ][ ] – [ ][ ] – [ ][ ][ ][ ]

or

Employer identification number: 84 – 4627933

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and, generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here Signature of U.S. person [signature] Date 5/7/25

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9*.

What's New

Line 3a has been modified to clarify how a disregarded entity completes this line. An LLC that is a disregarded entity should check the appropriate box for the tax classification of its owner. Otherwise, it should check the "LLC" box and enter its appropriate tax classification.

New line 3b has been added to this form. A flow-through entity is required to complete this line to indicate that it has direct or indirect foreign partners, owners, or beneficiaries when it provides the Form W-9 to another flow-through entity in which it has an ownership interest. This change is intended to provide a flow-through entity with information regarding the status of its indirect foreign partners, owners, or beneficiaries, so that it can satisfy any applicable reporting requirements. For example, a partnership that has any indirect foreign partners may be required to complete Schedules K-2 and K-3. See the Partnership Instructions for Schedules K-2 and K-3 (Form 1065).

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS is giving you this form because they

CITY OF CAMDEN
DIVISION OF PLANNING
CITY HALL – ROOM 224
PO BOX 95120
CAMDEN, NEW JERSEY 08101-5120
(856) 757-7214

INSTRUCTIONS FOR ZONING/SIGN PERMIT APPLICATION

ALL APPLICANTS WHO NEED A ZONING/SIGN PERMIT MUST SUBMIT THE FOLLOWING:

1. Completed Zoning AND/OR Sign Application

2. Proof of ownership (deed, tax bill, or lease) (Leases must be notarized) (Contract of Sale)

3. A detail floor plan of proposed use, conversion of single family dwelling shall have measurement of all habitable space. Accurate drawing of a proposed sign including dimensions and illustration signed by sign supplier. **Any addition or accessory uses or fences must have a Plot Plan and/or Survey. Additions/Fences must be presented on a Plot Plan/Survey with rear and side set back. You can obtain a Plot Plan from the Engineering Dept. located in City Hall, Room 325.** *(copy of all/any plans must accompany application.

4. Completed attached Tax Certification (**City of Camden Tax Office Room 117 1st floor and Water/Sewer is located in the Room 117, 1st floor)**

5. Application fee:
(non-refundable)

Single Family Dwelling	$ 69.56
Two-Family Dwelling	$ 139.13
Three-Family Dwelling Or More	$ 215.51
Rooming House	$ 259.16
Boarding House	$ 259.16
Commercial Use	$ 87.30
Industrial Warehousing & Manufacturing Use	$ 139.87
Institutional Use	$ 69.56
Advertising Billboards	$ 395.56
Sign Application	$ 79.11
Rezoning Application	$ 345.09

Money Order or Check payable to the City of Camden

PLEASE RETURN COMPLETED APPLICATIONS TO THE ABOVE ADDRESS. **INCOMPLETE APPLICATIONS SHALL NOT BE PROCESS.** ANY APPLICATION WHICH REMAINS INCOMPLETE FOR MORE THAN 10 BUSINESS DAYS WILL BE DISCARDED. FALSIFICATION IN ANY FORM SHALL SUBJECT APPLICANT TO A FINE OR MUNICIPAL COURT.

No construction, erection, alteration, repair, remodeling, conversion, renovation or demolition of any building or structure shall begin prior to Zoning approval. Other municipal agency approvals maybe required.

DO NOT REMOVE OR DISCARD ANY PART OF THIS APPLICATION

I. GENERAL

Today's Date: 5/7/2025

Applicant: Asset Realty & Construction Group Inc. **Telephone:** 718-252-0126

Applicant's Address: 1590 Troy Avenue, Brooklyn, NY 11234

Applicant Interest: (please check one) ( ) owner ( ) tenant ( ) agent/owner * Contract Purchaser

SUBMITTING FOR: ✔ **Zoning Permit** ✔ **Sign Permit**

---

1. Name and Address of property OWNER if different from that of applicant:

   Alfred R. Pierce, Trustee c/o A.R.P Jr.

   One Trinity Ln, 2nd Flr-B, Mount Holly, NJ 08060

2. **Address and Block and Lot number** for which zoning/sign permit is desired:

   1901 Admiral Wilson Boulevard **Block:** 1220 **Lot:** 57

3. **Zone District: (please circle)** R1 R2 R3 C1 C2 C3 C4 LI1 LI2 GI1 GI2 US PR1 OL1 TOD MW1 MW2 MS CV2 CC

   * Admiral Wilson North Redevelopment Area (Transit Oriented Development -TOD Zone)

4. Historic District: No

5. What is the property/land **PRESENTLY** being used *entirely as:*

   Undeveloped

6. Is the structure presently vacant? N/A-- undeveloped land If so how long? N/A-- undeveloped land

7. How many stories/floors does the building have? N/A Is there a basement/cellar? N/A

* Land is currently undeveloped. A five (5) story mixed-use building is proposed.

DO NOT REMOVE OR DISCARD ANY PART OF THIS APPLICATION

II. ZONING

1. What is being proposed?

   New Construction ☑ Addition_____ Fence______ (ht____) Installation_____

   New Business ☑ Conversion_____ Other (explain: ________________________)

2. Describe in detail the use & activities **PROPOSED** (attached separate sheet if necessary):

   Applicant proposes to construct a five-story mixed use building (self-storage facility and retail). The first floor will contain a commercial space and self-storage and the second, third, fourth, and fifth floors will contain the self-storage space.

3. Are there other activities existing within the same property? No (please describe)

4. Dimensions of Principal Building and/or structure 101.9' x 240' (24,445 SF Footprint) (122,275 SF Total)

5. Dimensions of All Accessory Building and/or structure N/A

6. Are any of the activities conducted in the principal building existing as a nonconforming use?

   No ☑ Yes ☐ (please explain) ______________________

7. To the applicant's knowledge, has there been any prior applications made to the Zoning Board of Adjustment or the Planning Board?

   No ☑ Yes ☐ (please explain) Applicant does not have knowledge of prior applications

THIS APPLICANT CERTIFIES THAT THE ABOVE INFORMATION HAS BEEN COMPLETED TO THE BEST OF HIS/HER KNOWLEDGE.

5/7/2025
(Date)

[signature]
(Signature of Applicant)

Asset Realty & Construction Group Inc.
(Name of Corporation or Association)

DO NOT REMOVE OR DISCARD ANY PART OF THIS APPLICATION

III. SIGN

1. Type Sign: Awning / Billboard / Freestanding / Hanging / Mounted / Off Site / Window
   (please circle)
   Other (describe): Wall Alteration of an existing sign N/A
   (attach photo & describe) ______________

2. Are there any existing signs? No (if yes, please attach photos)

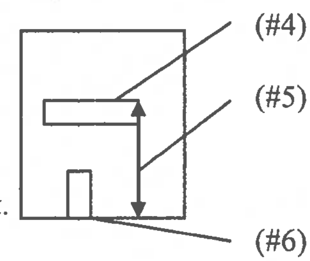
3. How many signs are proposed? Two (2)

4. Will signs(s) be illuminated? Yes______ No X

5. Dimension: 4'-0" X 48'-3" = 194 sq ft.

6. Distance between ground and the lowest part of sign 22'-0" ft.

7. Distance between ground and highest part of the sign 26'-0" ft.



8. Material of Sign: TBD

9. Color(s) on sign(s): TBD

10. Illustration/Wording: TBD

____

THIS APPLICANT CERTIFIES THAT THE ABOVE INFORMATION HAS BEEN COMPLETED TO THE BEST OF HIS/HER KNOWLEDGE AND FURTHER UNDERSTANDS THAT <u>IF THE SIGN EXCEEDS THE MAXIMUM REQUIREMENT</u> A VARIANCE THROUGH THE PLANNING BOARD OF THE CITY OF CAMDEN MUST BE REQUESTED.

5/7/2025
(Date)

(Signature of Applicant)

Asset Realty & Construction Group Inc.
(Name of Corporation or Association)

DO NOT REMOVE OR DISCARD ANY PART OF THIS APPLICATION

PLEASE READ

ASSESSMENT CERTIFICATION

Section A: Applicant shall complete

SECTION A **OWNER**

Name of OWNER of Property Alfred R. Pierce, Trustee c/o A.P.R Jr.

Address: One Trinity Ln, 2nd Flr-B, Mount Holly, NJ 08060

SEARCH Address: 1901 Admiral Wilson Boulevard

Block: 1220 Lot: 57 Account: 25243

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Upon completion, this form shall be submitted with original application. **NO APPLICATIONS WILL BE ACCEPTED –if any money is owed for Taxes or Water/Sewer, no permit can be issued until accounts are paid in full-proof of payment must be brought back before turning application in.**

Section C: **TAX OFFICE & PNC BANK**
An application for Zoning/Sign permit has been submitted to the Division of Planning. Please check your records to be certain that the account is current

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(Taxes/W&S/Other		City Of Camden Water Camden Office	zero	SH 3/3/2025
(Taxes/W&S/Other		Date 3-3-2025 Rep ZA		
(Taxes/W&S/Other	2nd	5/1/2025	-0-	DJ 5/30/2025

COMMENTS:

DATED: PREPARED BY:

CITY OF CAMDEN
FIRE DEPARTMENT
FIRE MARSHAL'S OFFICE
4 North 3rd Street Camden, New Jersey 08102
Phone (856) 757-7510 Fax (856) 757-7243
EMAIL: Jotull@ci.camden.nj.us

Joseph B. Tull
Chief Fire Marshal

Date: April 11, 2025

To:

Daniel Tarabokija, PE
Principal
40 Main Street
3rd Floor
Toms River, NJ 08753

RE:

Concept Plan
1901 Admiral Wilson Blvd.
Block 1220, Lot 57
Vehicle Circulation and Site Plan

I have reviewed and approved this site plan. Please feel free to contact me if you have any questions or additional concerns.

Respectfully submitted,

Joseph Tull
Chief Fire Marshal

609.330.2405

M 910—Bargain and sale deed, covenant as to grantor's acts, statutory deed language, ind. or corp., 6-83

© 1983 by Arthur R. Horn, a New Jersey attorney
Julius Blumberg, Inc., Publisher, NYC 10013

Consult your Lawyer before signing this deed — it has important legal consequences.

Deed

Date This Deed is made on July 1st 1988 between

Parties

Grantor *Full name(s) and post office address* CORNELL & COMPANY, INC., a corporation of the State of New J ersey, City of Woodbury, County of Gloucester, State of New Jersey.

Consideration $ 1.00 Exempt code E
County .00 State .00 N.P.N.R.F. .00 Total .00
PS 12/05/1988

Grantor, and

Grantee *Full name(s) and post office address* ALFRED R. PIERCE, TRUSTEE

Grantee.

(The words "Grantor" and "Grantee" include all Grantors and all Grantees under this Deed.)

Consideration In return for the payment to the Grantor by the Grantee of

Conveyance -------ONE DOLLAR---------- Dollars ($ 1.00------), the Grantor grants and conveys to the Grantee all of the land located in the City of Camden County of Camden and State of New Jersey, specifically described as follows:

Description of Land

As described in Schedule attached hereto and made a part hereof.

DB4338-0647

This Deed was prepared by Alfred R. Pierce [signature]
Print or type name. *Signature*

SCHEDULE

Land and premises situate in the City of Camden, in the County of Camden and the State of New Jersey:

Tract 1: BEGINNING at the Southeasterly corner of Carman Street (60 feet wide) and Seventeenth Street (60 feet wide); thence (1) Eastwardly extending along the Southerly line of Carman Street, 1223.44 feet, more or less, to a point in the dividing line between lands of the City of Camden and now or late Martin Burnfsky; thence (2) Southwardly at right angles to Carman Street, 57.21 feet, more or less, to a point in said dividing line; thence (3) Eastwardly along said dividing line parallel with Carman Street a distance of 33.87 feet, more or less, to a point in the old French Farm Line; thence (4) along said French Farm Line in a Southeasterly direction 20 feet, more or less, to a point in the dividing line between lands of the City of Camden and the Housing Authority of the City of Camden, said point being 271.21 feet from the Northwesterly line of Watson Street measured at right angles thereto; thence (5) along said dividing line in a Southwesterly direction to a point 300 feet Southwestwardly from the Southwesterly line of Boyd Street measured at right angles thereto; thence (6) still along said dividing line between the City of Camden and the Housing Authority of the City of Camden in a Southeasterly direction and parallel with Boyd Street a distance of 271.21 feet, more or less, to the Northwesterly line of Watson Street (40 feet wide) as extended; thence (7) along the Northwesterly line of Watson Street as extended in a Southwesterly direction to its intersection with the Westerly line of Twentieth Street (60 feet wide)as extended; thence (8) along the Westerly side of Twentieth Street and its extensions in a Southerly direction 820 feet, more or less, to the old Hugh Hatch Farm Line; thence (9) in a Southwesterly direction along said old Hugh Hatch Farm Line, being the dividing line between lands of the City of Camden and the Hatch Tract, 140 feet, more or less, to a point in the Northerly line of Berkley Street (60 feet wide); thence (10) Westwardly along the Northerly line of Berkley Street, 280 feet, more or less, to the Easterly

- over -

App. 231672
JK (cont.)

line of Nineteenth Street (60 feet wide); thence (11) Northwardly along the Easterly line of Nineteenth Street 275 feet to the Northerly side of Washington Street (60 feet wide); thence (12) Westwardly along the Northerly side of Washington Street 460 feet to the Easterly side of Eighteenth Street (60 feet wide); thence (13) Northwardly along the Easterly side of Eighteenth Street, 275 feet to the Northerly side of Benson Street (60 feet wide); thence (14) Westwardly along the Northerly side of Benson Street 460 feet to the Easterly side of Seventeenth Street (60 feet wide); thence (15) Northwardly along the Easterly side of Seventeenth Street 765 feet to a point in the Southerly line of Corman Street and place of beginning.

CONTAINING 29.78 acres, more or less.

Tract 2: INCLUDING specifically all the land and premises owned or controlled by the Grantor bounded on the Southwest by the Northeasterly line of Maplewood Street (50 feet wide); on the Northeast by the Southwesterly line of Randolph Street (50 feet wide); on the Southeast by the Northwesterly line of Bank Street (50 feet wide) and the Northwesterly right of way line of Admiral Wilson Boulevard entrance ramp; and on the Northwest by the old Hugh Hatch Farm Line.

CONTAINING about 2.1 acres.

Tract 3: INCLUDING specifically all the land and premises owned by or controlled by the Grantor bounded on the Northeast by the Southwesterly line of Maplewood Street (50 feet wide); on the Southwest by a line 95 feet from Maplewood Street measured at right angles thereto; on the Southeast by the Northwesterly right of way line of Admiral Wilson Boulevard entrance ramp; on the Northwest by the Southerly line of Berkley Street, 60 feet wide.

CONTAINING 1.1 acres.

EXCEPTING thereout and therefrom premises as conveyed by Deed from Planet, Inc. (corp. N. J.) to Edmund Management Company (corp. N. J.), dated September 15, 1964, recorded September 15, 1964, in Book 2745, page 191, and more particularly described as follows:

BEGINNING at the intersection of the Easterly line of Seventeenth Street (60 feet wide) with the Northerly line of Benson Street (60 feet

- Over -

App. 231672
JK (cont.)

wide); thence (1) North 5 degrees 44 minutes West along the Easterly line of Seventeenth Street, and same extended, 245 feet to a point in the center line of Stevens Street (60 feet wide), now vacated; thence (2) North 84 degrees 16 minutes East along the center line of Stevens Street, now vacated, 460 feet to a point in the extended Westerly line of Nineteenth Street (60 feet wide); thence (3) South 5 degrees 44 minutes East along the Westerly line of Nineteenth Street, and its extensions, 520 feet to the intersection of the Westerly line of Nineteenth Street with the Northerly line of Washington Street (60 feet wide); thence (4) South 84 degrees 16 minutes West along the Northerly line of Washington Street, 400 feet to the intersection of the Northerly line of Washington Street with the Easterly line of Eighteenth Street (60 feet wide); thence (5) North 5 degrees 44 minutes West along the Easterly line of Eighteenth Street, and same extended, 275 feet to the intersection of the extended Easterly line of Eighteenth Street with the extended Northerly line of Benson Street; thence (6) South 84 degrees 16 minutes West along the extended Northerly line of Benson Street and along the Northerly line of Benson Street, 460 feet to the place of beginning.

CONTAINING 7.362 acres.

AND ALSO EXCEPTING thereout and therefrom the following described premises:

BEGINNING at the Southeasterly corner of Carman Street (60 feet wide) and Seventeenth Street (60 feet wide); thence Eastwardly along the Southerly line of Carman Street 400 feet to the Westerly line of Eighteenth Street (60 feet wide); thence Southwardly along the Westerly line of Eighteenth Street a distance of 150 feet to a point; thence Westwardly parallel with Carman Street a distance of 400 feet to the Easterly line of Seventeenth Street; thence Northwardly along the Easterly line of Seventeenth Street the distance of 150 feet to the Southerly line of Carman Street and place of beginning.

AND ALSO:

EXCEPTING therefrom and thereout the following lands and premises previously conveyed by Cornell & Company, Inc. to Flowen Oils Delaware Valley, Inc., a corporation of the State of New Jersey, described as follows:

ALL that land and premises located in the City

DB4338-0650

of Camden, State of New Jersey, described as follows:

BEGINNING at the intersection of the Easterly line of 18th Street with the Southerly line of Carman Street and extending; thence

(1) along the Southerly line of Carman Street, North 84°-16' East, 400.00 feet to the Westerly line of 19th Street; thence

(2) along the Westerly line of 19th Street, south 5°-44' East, 215.00 feet to the Northerly line of Mickle Street (not physically open); thence

(3) along the Northerly line of Mickle Street, South 84°-16' West, 400 feet to the Easterly line of 19th Street; thence

(4) along the Easterly line of 19th Street, North 5°-44' West, 215.00 feet to the place of beginning.

CONTAINING: 1.974 acres.

CEC

500/33
City of Camden

Restrictions and conditions as contained in Deed from Hatch Land Improvement Company to James P. [illegible], Jr., dated January 10, 1922, recorded in Book 500, page 33.

Under and subject, nevertheless to the payment of any assessment for benefits to be derived from the trunk sewer constructed along Federal Street, East of Cooper River, about the year [illegible]. Also subject as to the tract of land to the Southeast of Baird Boulevard between the Southwest side of Marlton Avenue and the Northeast side of Woolwich Street as shown on Plan of W. H. MacNamara, October, 1921 filed in the Register of Deeds Office, Camden, New Jersey, in File 1 No. 4 to the following restrictions only. No improvements other than private dwellings costing not less than $2,500.00 each with the privilege of private garages shall be erected on any lots shown on said Plan, except lots fronting on Baird Boulevard and Lots Nos. 1 to 58 inclusive fronting on Marlton Avenue upon which stores or dwellings of a like cost may be erected. No stores or dwellings shall be erected nearer 10 feet from the front property line of Baird Boulevard and that the building line of any garage shall not be nearer than 75 feet from the front property line of any of said lots. As to the remainder of said ground to the following restrictions only. That no building shall be erected within 8 feet of the street line of Baird Boulevard and that no house shall be erected on any lot to cost not less than $2,000.00 and as to the lots fronting on the East side of Eutaw Avenue between Benson Street and Berkley Street to the further restrictions as follows: That the building line shall be 12 feet back from the front line and that no buildings shall be erected on said lots except dwellings, garages or other outbuildings as more particularly set out in Deeds dated September 18, 1919, to Eber Grant Huchinson and William Howison and recorded in Book 450 of Deeds, page 602, and Book 450 of Deeds, page 464.

Restrictions and conditions as contained in Deed from Samuel H. French, to Charlotte V. Cooney, dated August 5, 1892, recorded in Book 131, page [illegible]0.

This conveyance is made however upon condition that the said Charlotte V. Cooney, her heirs and assigns shall not at any time cart or allow to be carted away any direct or ground from said lot below the grade of the street except for the purpose of drainage, cellar, well or cistern; nor erect any dwelling house thereon of less value than $1500.00 nor conduct nor allow to be conducted thereon any business that will in anyway be prejudicial or an annoyance to the neighbors or neighborhood.

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DB[illegible]

Municipal Lot and Block or Account Number

The land is now designated as Lot in Block on the municipal tax map (or as Account No.).

Check box if applicable ☐ No property tax identification number for the land is available at the time of this conveyance.

Covenant as to Grantor's Acts

The Grantor covenants that the Grantor has done no act to encumber the land.

Receipt of Consideration

The Grantor has received the full payment from the Grantee.

Signature of Grantor

The Grantor signs this Deed on the first date above. If the Grantor is a corporation this Deed is signed by its corporate officers and its corporate seal is affixed.

Signed, sealed and delivered in the presence of or attested by:

CORNELL AND COMPANY, INC.

Belle L Gunderson

Edward T. Dickinson, Treasurer (SEAL)

.... (SEAL)

.... (SEAL)

CERTIFICATE OF ACKNOWLEDGMENT BY INDIVIDUAL

State of New Jersey, County of

I am a

an officer authorized to take acknowledgments and proofs in this State. I sign this acknowledgment below to certify that it was made before me.

On.................................., 19......, ...

appeared before me in person. *(If more than one person appears, the words "this person" shall include all persons named who appeared before the officer and made this acknowledgment).* I am satisfied that this person is the person named in and who signed this Deed. This person acknowledged signing, sealing and delivering this Deed as this person's act and deed for the uses and purposes expressed in this Deed.

This person also acknowledged that the full and actual consideration paid or to be paid for the transfer of title to realty evidenced by this Deed, as such consideration is defined in P.L. 1968, c. 49, §1(c), is $..............................

....
Officer's signature. Print, stamp or type name and title directly beneath.

CORPORATE PROOF BY THE SUBSCRIBING WITNESS

State of New Jersey, County of CAMDEN

I am a

an officer authorized to take acknowledgments and proofs in this State.

On [illegible], 19[illegible], Jack C. Sheppard

(from now on called the "Witness") appeared before me in person. The Witness was duly sworn by me according to law under oath and stated and proved to my satisfaction that:

1. The Witness is the Assistant Secretary of the Corporation which is the Grantor in this Deed.

2. Edward T. Dickinson the officer who signed this Deed, is the Treasurer ~~President~~ of the Corporation (from now on called the "Corporate Officer").

3. The making, signing, sealing, and delivery of this Deed have been duly authorized by a proper resolution of the Board of Directors of the Corporation.

4. The Witness knows the corporate seal of the Corporation. The seal affixed to this Deed is the corporate seal of the Corporation. The seal was affixed to this Deed by the Corporate Officer. The Corporate Officer signed and delivered this Deed as and for the voluntary act and deed of the Corporation. All this was done in the presence of the Witness who signed this Deed as attesting witness. The Witness signs this proof to attest to the truth of these facts.

The Witness also acknowledged that the full and actual consideration paid or to be paid for the transfer of title to realty evidenced by this Deed, as such consideration is defined in P.L. 1968, c. 49, §1(c), is $1.00

Sworn to and signed before me on the date written above.

x Jack C. Sheppard
Jack C. Sheppard

[illegible]
Officer's signature. Print, stamp or type name and title directly beneath.
Notary Public N.J.
(Comm. Exp. [illegible])

DB4338-0654

RC 1645—AFFIDAVIT OF CONSIDERATION
RTF-1 (Rev. 1/1/86)

ALL-STATE LEGAL SUPPLY CO.
One Commerce Drive, Cranford, N.J. 07016
ADGRVS1-1

STATE OF NEW JERSEY
AFFIDAVIT OF CONSIDERATION OR EXEMPTION
(c. 49, P.L. 1968)
or
PARTIAL EXEMPTION
(c. 176, P. L. 1975)

To Be Recorded With Deed Pursuant to c. 49, P.L. 1968, as amended by c. 225, P.L. 1985 (N.J.S A. 46:15-5 et seq.)

STATE OF NEW JERSEY } ss.
COUNTY OF Camden }

Consideration $ 1.00 Exempt code E
County .00 State .00 H.P.N.R.F. .00 Total .00
FS 12/05/1988
... exclusively for county use.

(1) PARTY OR LEGAL REPRESENTATIVE (See Instructions #3, 4 and 5 on reverse side)

Deponent, Alfred R. Pierce (Name), being duly sworn according to law upon his/her oath deposes and says that he/she is the Beneficiary under trust - Grantee (State whether Grantor, Grantee, Legal Representative, Corporate Officer, Officer of Title Co., Lending Institution, etc.) in a deed dated 7-1-88, transferring real property identified as Block No. 1431 Lot 0001; 1662 0025; 1656 0057

Lot No. ________ located at Camden, N.J. (Street Address, Municipality, County) and annexed hereto.

(2) CONSIDERATION (See Instruction #6)

Deponent states that, with respect to deed hereto annexed, the actual amount of money and the monetary value of any other thing of value constituting the entire compensation paid or to be paid for the transfer of title to the lands, tenements or other realty, including the remaining amount of any prior mortgage to which the transfer is subject or which is to be assumed and agreed to be paid by the grantee and any other lien or encumbrance thereon not paid, satisfied or removed in connection with the transfer of title is $ 1.00

(3) FULL EXEMPTION FROM FEE Deponent claims that this deed transaction is fully exempt from the Realty Transfer Fee imposed by c.49, P.L. 1968, for the following reason(s): Explain in detail. (See Instruction #7.) Mere reference to exemption symbol is not sufficient.

Title in Cornell & Company was as a trustee only. Title is being transferred to Alfred R. Pierce, Beneficiary under the trust, as a substitute trustee. No consideration involved.

(4) PARTIAL EXEMPTION FROM FEE *NOTE: All boxes below apply to grantor(s) only. ALL BOXES IN APPROPRIATE CATEGORY MUST BE CHECKED. Failure to do so will void claim for partial exemption. (See Instructions #8 and #9)*

Deponent claims that this deed transaction is exempt from the increased portion of the Realty Transfer Fee imposed by c.176, P.L. 1975 for the following reason(s):

a) SENIOR CITIZEN (See Instruction #8)
- ☐ Grantor(s) 62 yrs. of age or over.*
- ☐ One or two-family residential premises
- ☐ Owned and occupied by grantor(s) at time of sale.
- ☐ No joint owners other than spouse or other qualified exempt owners.

b) BLIND (See Instruction #8)
- ☐ Grantor(s) legally blind.*
- ☐ One or two-family residential premises.
- ☐ Owned and occupied by grantor(s) at time of sale.
- ☐ No joint owners other than spouse or other qualified exempt owners.

DISABLED (See Instruction #8)
- ☐ Grantor(s) permanently and totally disabled.*
- ☐ One or two-family residential premises.
- ☐ Receiving disability payments.
- ☐ Owned and occupied by grantor(s) at time of sale.
- ☐ Not gainfully employed.
- ☐ No joint owners other than spouse or other qualified exempt owners.

*IN THE CASE OF HUSBAND AND WIFE, ONLY ONE GRANTOR NEED QUALIFY.

c) LOW AND MODERATE INCOME HOUSING (See Instruction #8)
- ☐ Affordable According to H.U.D. Standards.
- ☐ Meets Income Requirements of Region.
- ☐ Reserved for Occupancy.
- ☐ Subject to Resale Controls.

d) NEW CONSTRUCTION (See Instruction #9)
- ☐ Entirely new improvement.
- ☐ Not previously used for any purpose.
- ☐ Not previously occupied.

Deponent makes this Affidavit to induce the County Clerk or Register of Deeds to record the deed and accept the fee submitted herewith in accordance with the provisions of c. 49, P.L. 1968.

Subscribed and Sworn to before me this 8th day of November, 1988

Alfred R. Pierce
Alfred R. Pierce, Trustee (Name of Deponent (sign above line))
1800 Davis Street, Camden, N.J. 08104 (Address of Deponent)

Cornell & Company, Inc. (Name of Grantor (type above line))
P.O.Box 407, Woodbury, N.J. 08096 (Address of Grantor at Time of Sale)

Helen D. Haskell
Notary Public N.J.
Comm. Exp. 8-25-?

FOR OFFICIAL USE ONLY This space for use of County Clerk or Register of Deeds.	
Instrument Number ________	County ________
Deed Number ________ Book ________	Page ________
Deed Dated ________	Date Recorded ________

IMPORTANT - BEFORE COMPLETING THIS AFFIDAVIT, PLEASE READ THE INSTRUCTIONS ON THE REVERSE SIDE HEREOF.
This form is prescribed by the Director, Division of Taxation in the Department of the Treasury, as required by law, and may not be altered or amended without the approval of the Director.
ORIGINAL — White copy to be retained by County.
DUPLICATE — Yellow copy to be forwarded by County to Division of Taxation on partial exemption from fee (N.J.A.C. 18:16—8.12).
TRIPLICATE — Pink copy is your file copy.

DB4338-0655

WHITE AND YELLOW COPIES MUST BE SUBMITTED WITH DEED TO COUNTY RECORDING OFFICER

DB4338-0656

Deed

CORNELL & COMPANY, INC., a corporation of N.J.

to

ALFRED R. PIERCE, TRUSTEE
1800 Davis St., East,
Camden, N.J. 08104

Block 1662, Lot 0025
Block 1431, Lot 0001
Block 1656, Lot 0057

Record and return to:

Alfred R. Pierce, Esq.,
1800 Davis Street,
Camden, N.J. 08104

33.00
3.00
36.00

185

327837

88 DEC -3 PM

DB4338-0656

PRIME & TUVEL

ATTORNEYS AT LAW

June 2, 2025

VIA COURIER
Dr. Edward C. Williams, PP, AICP, CSI, AHP
Director and Zoning Officer
Department of Planning & Development
520 Market Street
City Hall, Room 224
Camden, NJ 08102

RE: Asset Realty & Construction Group Inc.
1901 Admiral Wilson Boulevard, City of Camden, Camden County, NJ
Block 1220, Lot 57
Application for Preliminary and Final Major Site Plan Approval with Bulk Variances Approval

Dear Dr. Williams:

This office represents Asset Realty & Construction Group Inc. ("Applicant") with reference to the above-listed project. The Applicant is proposing a five-story mixed use building (self-storage facility and retail). The first floor will contain a commercial space and self-storage and the second, third, fourth, and fifth floors will contain the self-storage space. The Applicant is therefore submitting an application to the City of Camden Planning Board for Preliminary and Final Major Site Plan Approval.

In reference to this project, please find the following enclosed with this letter:

1. One (1) original and fifteen (15) copies of the completed and signed City of Camden Planning Board Application, including certification of taxes paid, owner consent form, variance and waiver list, and W-9 form.

2. One (1) original and one (1) copy of the completed and signed City of Camden Zoning/Sign Permit Application.

14000 Horizon Way, Suite 325
Mount Laurel, NJ 08054
P 856 273 8300 | F 856 273 8383
W primelaw.com

ADDITIONAL OFFICES
Hackensack, NJ | Hoboken, NJ | Fort Washington, PA | New York, NY

3. Four (4) checks made payable to "*City of Camden*", one (1) in the amount of $1,137.58 to cover the application fee for this project, one (1) in the amount of $3,613.23 for the escrow fee for this project, one (1) in the amount of $500.00 for the pre-application meeting fee for this project, and one (1) in the amount of $227.17 for the zoning application fee for this project.

4. Sixteen (16) copies of the full-size Site Plan prepared by Dynamic Engineering with the date of April 30, 2025.

5. Sixteen (16) copies of the full-size ALTA/NSPS Land Title Survey prepared by Dynamic Survey, LLC with the date of December 8, 2023.

6. Sixteen (16) copies of the Stormwater Management, Water Quality and Groundwater Recharge Analysis prepared by Dynamic Engineering with the date of May 2025.

7. Sixteen (16) copies of the Stormwater Management Measure Maintenance Plan & Field Manuals prepared by Dynamic Engineering with the date of May 2025.

8. Sixteen (16) copies of the Environmental Impact Statement prepared by Dynamic Engineering with the date of May 2025.

9. Sixteen (16) copies of the Traffic Impact and Parking Assessment prepared by Dynamic Traffic, LLC with the date of May 9, 2025.

10. Sixteen (16) copies of the Water and Sanitary Sewer Engineer's Report prepared by Dynamic Engineering with the date of May 2025.

11. Sixteen (16) copies of the Architectural Plans prepared by GMA Architects with the date of May 5, 2025.

12. Sixteen (16) copies of a letter from the City of Camden Department of Planning & Development regarding a Conceptual Development Presentation for this property, dated September 13, 2023.

13. Sixteen (16) copies of a letter from the City of Camden Department of Planning & Development regarding a Conceptual Development Presentation for this property, dated September 26, 2023.

14. Sixteen (16) copies of a letter from the City of Camden Fire Department approval letter, dated April 11, 2025.

15. Sixteen (16) copies of a property deed for this site, dated July 1, 1988.

Please note that fifteen (15) copies of all documents are provided to fulfill the submission requirements for the Planning Board Application and one (1) additional copy of all documents is included to fulfill the requirements for the Zoning Application. A total of sixteen (16) collated packages are included with this submission to fulfill all of the requirements for both applications.

If there is anything further that the Board deems necessary as part of this application, please give me a call directly and I will work with my client to submit a copy of same as soon as possible. The Applicant looks forward to this application for Preliminary and Final Major Site Plan being deemed complete and scheduled for the City's next available Planning Board Hearing. Thank you for your consideration and assistance with this application.

Very truly yours,

DPrime

DUNCAN M. PRIME

DMP/mcb
Enclosures

Victor Carstarphen
Mayor

Department of Planning & Development
City of Camden
New Jersey

Director of Planning & Development
Dr. Edward C. Williams, PP, AICP, CSI, AHP
Division of Planning & Zoning
TEL: (856) 757-7214

September 13, 2024

Mr. Charles S. Saka
Paramount Realty
Director of Land Acquisitions
1195 Rt. 70, Suite 2000
Lakewood, NJ 08701

RE: Conceptual Development Presentation: 1401 Admiral Wilson Boulevard

Dear Mr. Saka:

Thank you for attending the meeting with the Mayor's Business Growth and Development Team ("BGDT") on August 20, 2024 relative to your team's (revised) presentation of your development concept proposal for a midrise, mixed-use site located at 1401 Admiral Wilson Boulevard (Block: 1220, Lot: 57- NW -Randolph and Bank St). Please note that 1901 Admiral Wilson Boulevard is noted on the conceptual plan.

Please be advised that the BDGT does not have any objections relative to the proposed development concept proposal provided that there is a development mix consisting of at least 10,000 sq.ft of commercial space along with the public storage use. It is important to note this decision must not be misconstrued to constitute a development approval as there will be a need for a formal zoning review and other development approvals.

If you have any questions, please do not hesitate to contact me at 856-757-7214.

Sincerely,

Dr. Edward C. Williams, PP, AICP, CSI, AHP, CZO, CPZBS
Director

cc. BDGT Members
Yessica Sanchez
file