
STORMWATER MAINTENANCE PLAN

for

MONTCLAIR GOLF CLUB

HALFWAY HOUSE, GOLF BUILDING ADDITION,

AND PARKING LOT IMPROVEMENTS

Township of West Orange

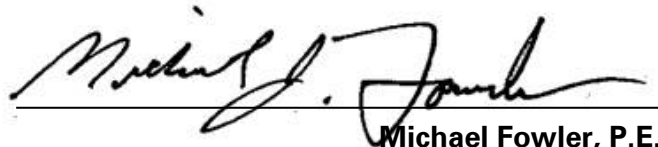
Essex County, New Jersey

Prepared For:

MONTCLAIR GOLF CLUB
25 Prospect Avenue
West Orange, New Jersey

Prepared By:

Langan Engineering and Environmental Services, Inc.
300 Kimball Drive
Parsippany, New Jersey 07054
NJ Certificate of Authorization No: 24GA27996400



Michael Fowler, P.E.
Professional Engineer License No. 24GE03239800

LANGAN

17 January 2024
001039211

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1.0 INTRODUCTION

Langan Engineering & Environmental Services has prepared this maintenance plan for the stormwater management measures for the exterior improvements at Montclair Golf Club. This plan is intended for the owner of the stormwater facilities and contains preventative and corrective maintenance tasks and procedures to ensure the effective and reliable performance of the stormwater management measures.

The New Jersey Administrative Code 7:8-5.8 entitled "Maintenance Requirements" includes guidelines for this maintenance program and refers to the New Jersey Best Management Practices (BMP) Manual dated March 2021. Chapter 8, "Maintenance and Retrofit of Stormwater Management Measures" of the BMP manual addresses the requirements for the maintenance of a major development. Major development is defined in the aforementioned Code as any development that disturbs one or more acres of land or increases the impervious surface by one quarter of an acre or more.

2.0 MAINTENANCE OBJECTIVE

Maintenance procedures are required to preserve the intended operation and safe condition of a stormwater management measure. Regular maintenance will reduce the occurrence of problems and malfunctions. To be effective, maintenance shall be performed on a regular basis and include such routine procedures as the training of staff, periodic inspections, debris removal, upkeep of moving parts, and insect (mosquito) control.

Repair procedures are required to correct a problem or malfunction of the stormwater management measure and to restore the measure's intended operation. Based on the severity of the problem, repairs shall be conducted and include such procedures as structural repairs, insect (mosquito) control, debris removal (which decreases storage capacity), erosion repair, and snow and ice removal.

3.0 STORMWATER MANAGEMENT MEASURES

As shown on drawings CG100, CG101 and CG102, the stormwater facilities for this project include:

- 1 small-scale subsurface infiltration basins; and
- 1 porous asphalt pavement basin.

The stormwater management measures have adequate access for inspection and maintenance. Construction details of the stormwater facilities are shown on drawings CS502 and CS503.

4.0 MAINTENANCE PLAN

4.1 Responsible Party

The owner shall be responsible for the maintenance of the stormwater best management practices (BMPs) and conveyance system indicated on CG101 included with this plan. Contact information is as follows:

Montclair Golf Club
25 Prospect Avenue
West Orange, NJ 07006
Phone Number: 973-239-1800

4.2 Stormwater Management BMPs

The following tables summarize the stormwater management BMPs managing stormwater runoff for this project:

Table 1 – List of Stormwater Management BMPs

Basin	Basin Type	Invert El.	Max. Basin El.	Peak Water Surface Elevation		
				2-year	10-year	100-year
1	Subsurface Infiltration Basin (StormTech)	540.5 *	544.0 *	541.56	542.27	543.90
2	Porous Pavement	558.0 *	560.58 *	558.71	559.14	560.10

* Invert and maximum elevation represent bottom and top of stone in the StormTech system and porous pavement.

Table 2 – Stormwater Management BMP Drain Times

Basin	Exfiltration Volume (CF)	Groundwater Mounding Height (ft)	Seasonal High Water Table Elevation (ft) *	Groundwater Mounding Elevation (ft)	Basin Invert (ft)	Duration of Infiltration (Max 72 hrs) (hrs)
1	265	1.38	538.33	539.71	540.5	2.4

* Supporting documentation for the seasonal high water table elevation located in Appendix E of the stormwater management report (submitted under separate cover) would suggest that the seasonal high water table is several feet below the bottom of the infiltration basins. However, for this project, it was assumed to be 2 feet below the basin invert.

4.3 Stormwater Management Facility Maintenance Tasks and Schedule

4.3.1 Subsurface Infiltration Basins

Short-Term Measures (Once every 3 Months or after storm exceeding 1 inch of rainfall)

1. Maintain contributing drainage area.
 - Remove trash and debris and dispose off-site, as required.
 - Stabilize and mow area as required. Remove clippings.
 - Ensure that activities in the drainage area minimize oil/grease and sediment entry to the system.
2. Inspect the inlet structures.
 - Remove debris manually and dispose off-site, as required.
 - Note any channels, soil exposure, or other evidence of erosion.
 - Note any damage to structures.
3. Inspect the outlet structure.
 - Remove debris manually and dispose off-site, as required.
 - Note any damage to structure.
4. Inspect infiltration portion of basin.
 - Remove debris if necessary by jet cleaning and dispose off-site, as required.
 - Note dewatering time. Facility should drain within the durations included in Table 2 of this report.

Medium-Term Measures (Once Every Six Months)

1. Inspect the inlet structure.
 - Repair/reinforce eroded areas, as required.
 - Repair any damage to structures.
2. Inspect the outlet structure.
 - Repair any damage to structure.
3. Inspect the infiltration basin.
 - Jet clean if there is sediment build up or signs of clogged stone. Remove debris and dispose off-site, as required.
 - Note dewatering time. Facility should drain within the durations included in Table 2 of this report.

Long-Term Measures (Once Every Year)

1. Inspect infiltration basin.
 - Jet clean if there is sediment build up or signs of clogged stone. Remove debris and dispose off-site, as required.
 - Note dewatering time. Facility should drain within the durations included in Table 2 of this report.

4.3.2 Porous Pavement

Short-Term Measures (Once every 3 Months or after storm exceeding 1 inch of rainfall)

1. Maintain contributing drainage area.
 - Remove trash and debris and dispose off-site, as required.
 - Stabilize and mow area as required. Remove clippings.
 - Ensure that activities in the drainage area minimize oil/grease and sediment entry to the system.
2. Inspect the outlet structure.
 - Remove debris manually and dispose off-site, as required.
 - Note any damage to structure.
3. Inspect porous pavement.
 - Remove debris and soil if necessary by hand and dispose off-site, as required.
 - Vacuum sweep porous pavement once every 3 months (4 times a year). Sweeping must be followed by high-pressure power washing. All dislodged material must be promptly removed.

Medium-Term Measures (Once Every Six Months)

1. Inspect the outlet structure.
 - Repair any damage to structure.
2. Inspect the porous pavement.
 - Remove debris and soil if necessary by hand and dispose off-site, as required.

Long-Term Measures (Once Every Year)

1. Inspect porous pavement
 - Inspect surface course for cracking, subsidence, spalling, erosion, deterioration and unwanted vegetation. Remedial actions to be taken immediately. Herbicides must not be applied.

Additional Measures

1. The first annual maintenance must be performed in the spring.
2. Maintenance must additionally be performed in the autumn, after the fallen leaves are collected and removed.
3. Each spring, after the last snow or ice event, the infiltration rate of the surface course must be tested in accordance with the methods of either ASTM C1701 or C1781, as corresponds to the post-construction test performed for the system. At least 3 locations must be tested. One of the locations must be in an area where sediment is most likely to be deposited, such as, but not limited to, a parking lot entrance. The other test locations must be evenly spaced across the system

surface. The locations and results obtained must be recorded in the maintenance plan for future reference and compared to the as-built testing results as a metric for determining if a system requires corrective action.

4. Storage Bed Drain Time

- a. The approximate drain time for the maximum design storm runoff volume below the top of the surface course must be indicated in the maintenance manual.
- b. If the actual drain time is significantly different from the design drain time, the components and groundwater levels must be evaluated and appropriate measures taken to return the pervious paving system to minimum and maximum drain time requirements.
- c. If the system fails to drain the maximum design storm volume within 72 hours, corrective action must be taken.

5. Cold Weather Maintenance

- a. Care must be taken when removing snow from the surface course; pervious paving surface courses may be damaged by snowplows or loader buckets set too low to the ground or not equipped with a rubber blade guard. Sand, grit or cinders may not be used on surface courses for snow/ice control.
- b. De-icing chemicals may not be used on pervious concrete less than one year old.
- c. De-icers containing magnesium chloride, calcium magnesium acetate or potassium acetate may never be used on pervious concrete.

Any disposal of debris, trash, sediment, and other waste material shall be done at suitable disposal/recycling sites and in compliance with all applicable local, county, state and federal waste management regulations.

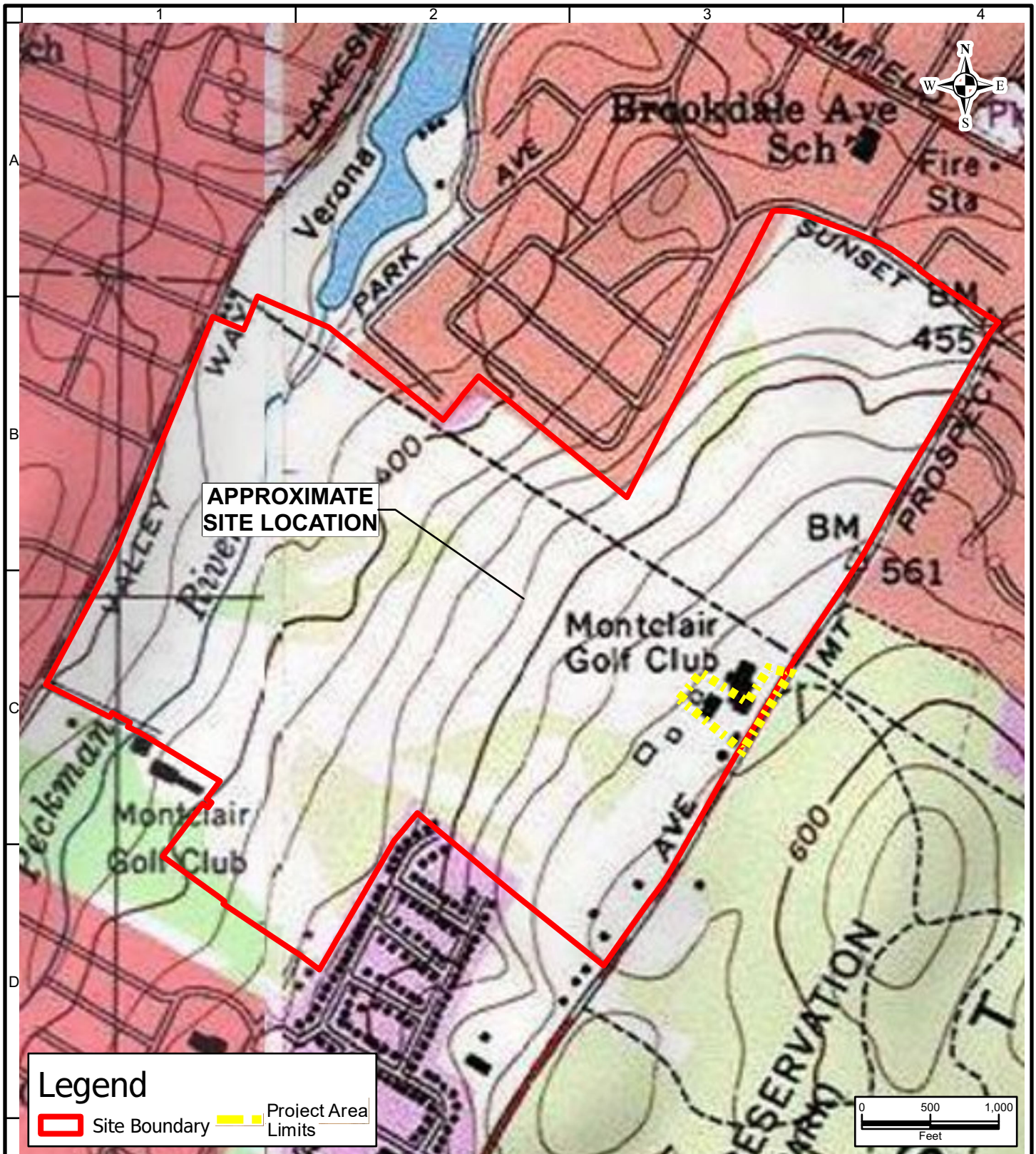
4.4 Maintenance Checklists and Logs

Maintenance checklists for each stormwater management measure are available in Appendix A. Maintenance logs (to be completed subsequent to each inspection) can be found in Appendix B.

5.0 AS-BUILT DRAWINGS

Once the stormwater facilities are constructed, copies of the as-built drawings/plans of the facilities shall be included in Appendix C of this plan.

FIGURES



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			Date 01/12/2024	
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			Drawn By Site Analyzer	
			Submission Date 01/12/2024	Sheet 1 of 16

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Spatial Reference: WGS 1984 Web Mercator Auxiliary Sphere



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LANGAN

300 Kimball Drive 4th Floor
Parsippany NJ 07054-2172
T: 973-560-4900 F: 973-560-4901 www.langan.com

Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying, Landscape
Architecture and Geology, D.P.C.

Langan International
Collectively known as Langan

Project
**MONTCLAIR GOLF CLUB
HALFWAY HOUSE, GOLF BUILDING
ADDITION, & PARKING LOT
IMPROVEMENTS**

BLOCK No. 151, LOT Nos. 1, 5, 7, 11,
14, 15.01, 23, 24, 37, 41, 45.01 & 49
WEST ORANGE
BLOCK No. 601, LOT Nos. 1
VERONA
ESSEX COUNTY NEW JERSEY

Drawing Title

AERIAL

Project No.

001039208

Date

01/12/2024

Scale

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Drawn By

Site Analyzer

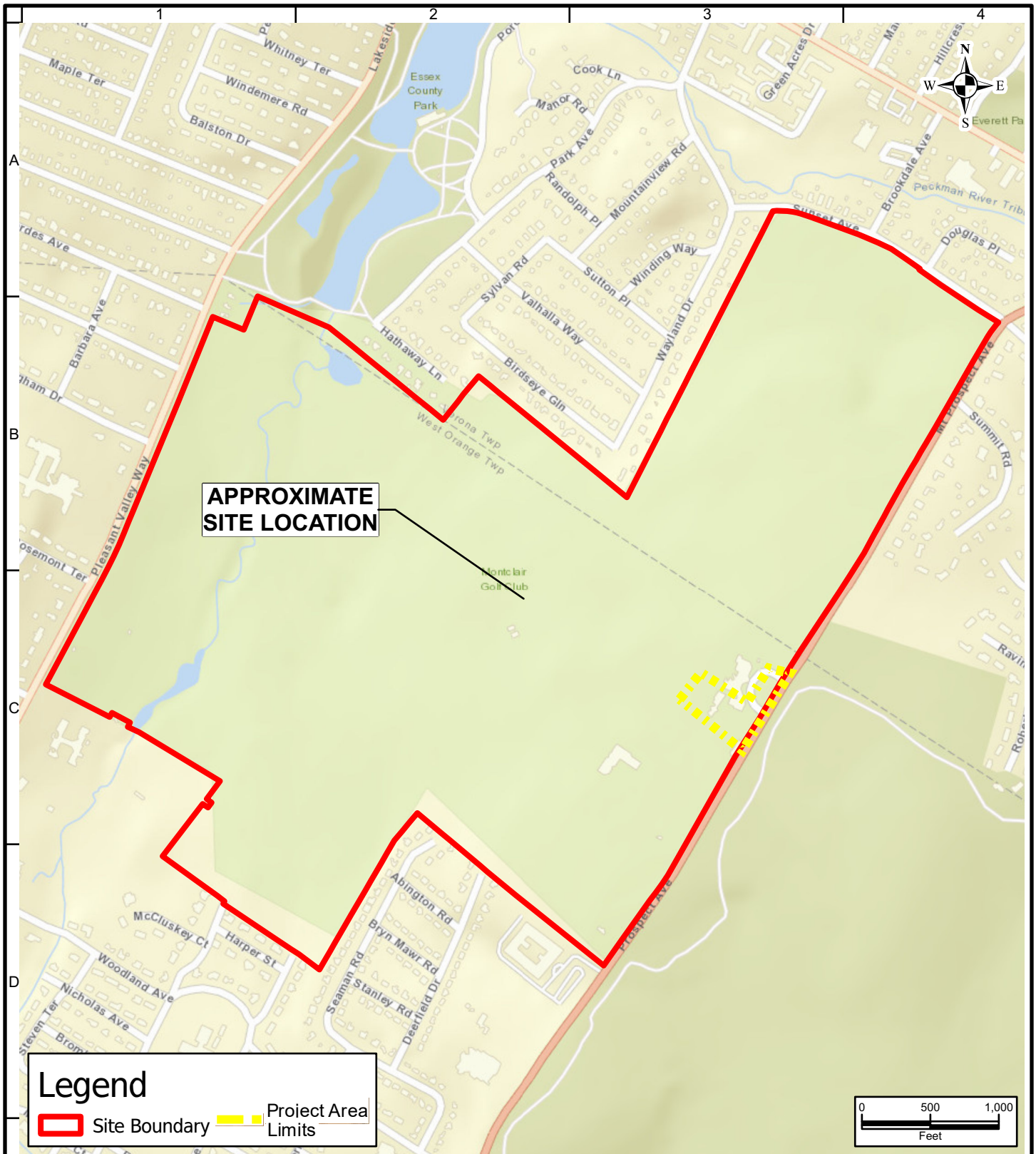
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01/12/2024

Figure

2

Sheet 2 of 16



City of New York, State of New Jersey, Esri, HERE, Garmin, INCREMENT P, NGA, USGS; Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

LANGAN

300 Kimball Drive 4th Floor
Parsippany NJ 07054-2172

T. 973-560-4900 F. 973-560-4901 www.langan.com

Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying, Landscape
Architecture and Geology, D.P.C.

Langan International
Collectively known as Langan

Project
**MONTCLAIR GOLF CLUB
HALFWAY HOUSE, GOLF BUILDING
ADDITION, & PARKING LOT
IMPROVEMENTS**

BLOCK No. 151, LOT Nos. 1, 5, 7, 11,
14, 15.01, 23, 24, 37, 41, 45.01 & 49
WEST ORANGE
BLOCK No. 601, LOT Nos. 1
VERONA
ESSEX COUNTY NEW JERSEY

Drawing Title
VICINITY MAP

Project No.
001039208

Date
01/12/2024

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Site Analyzer

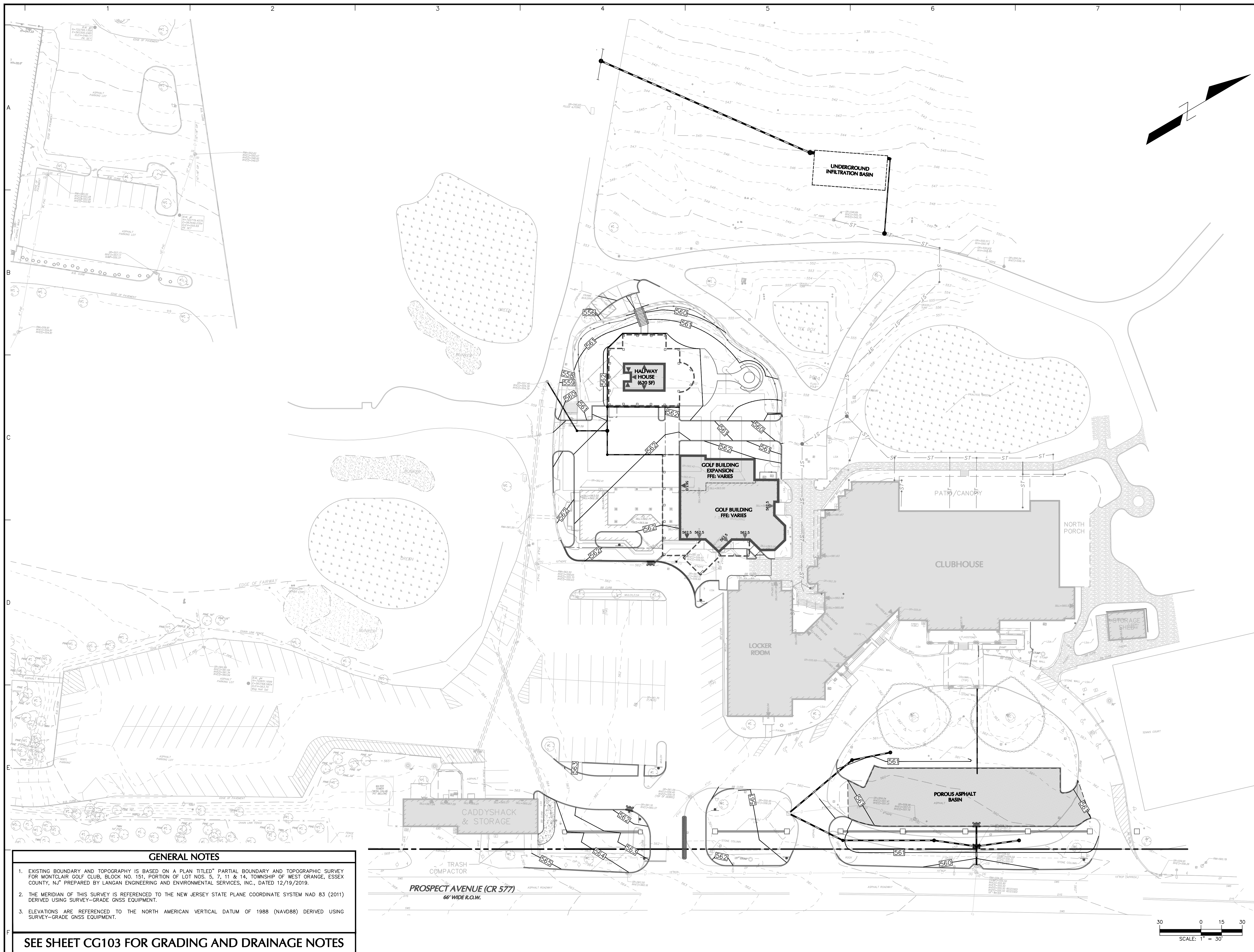
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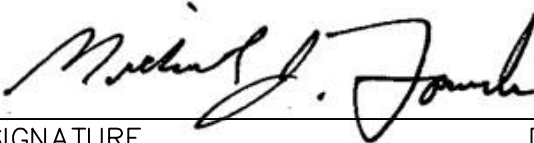
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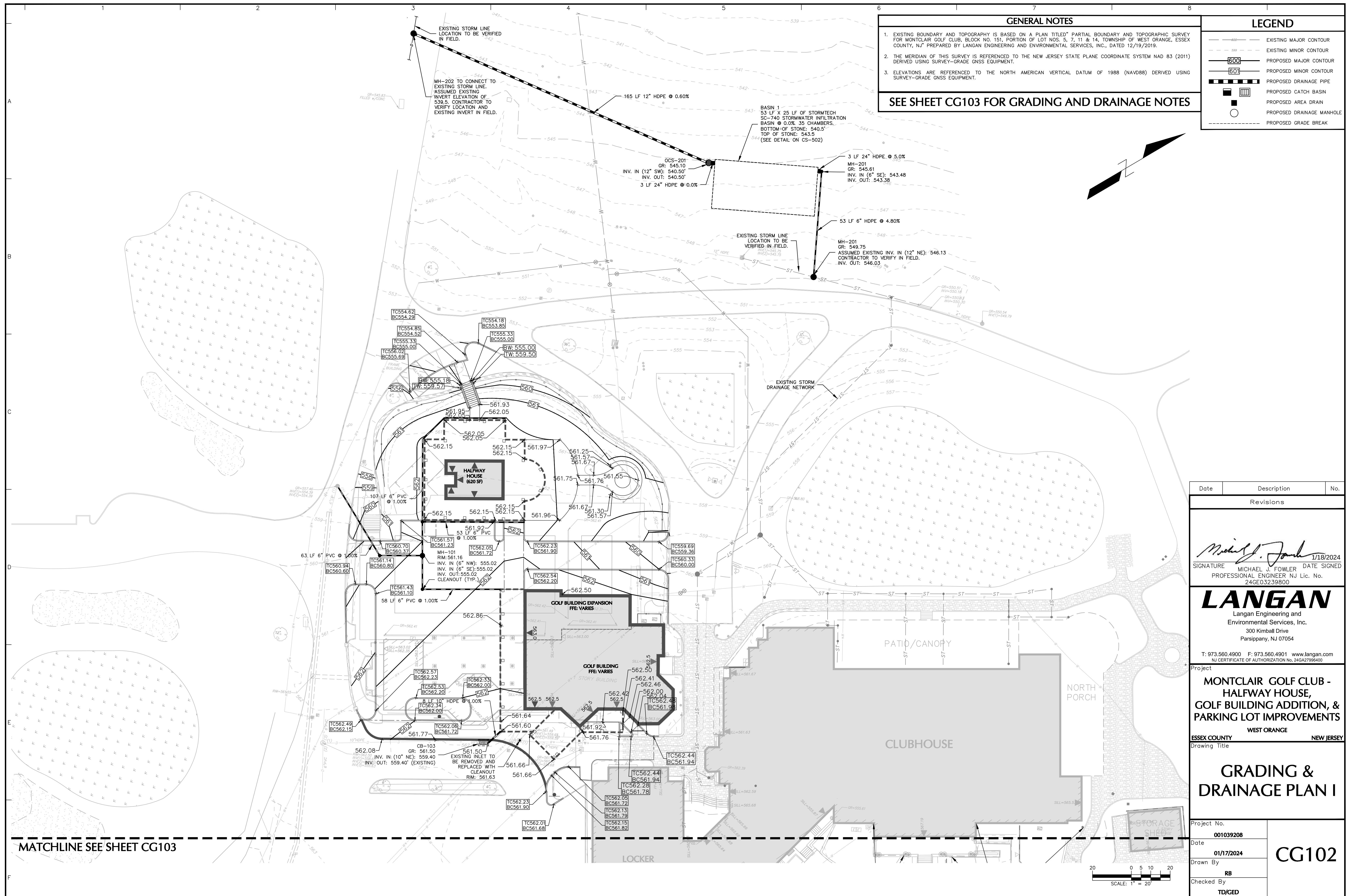
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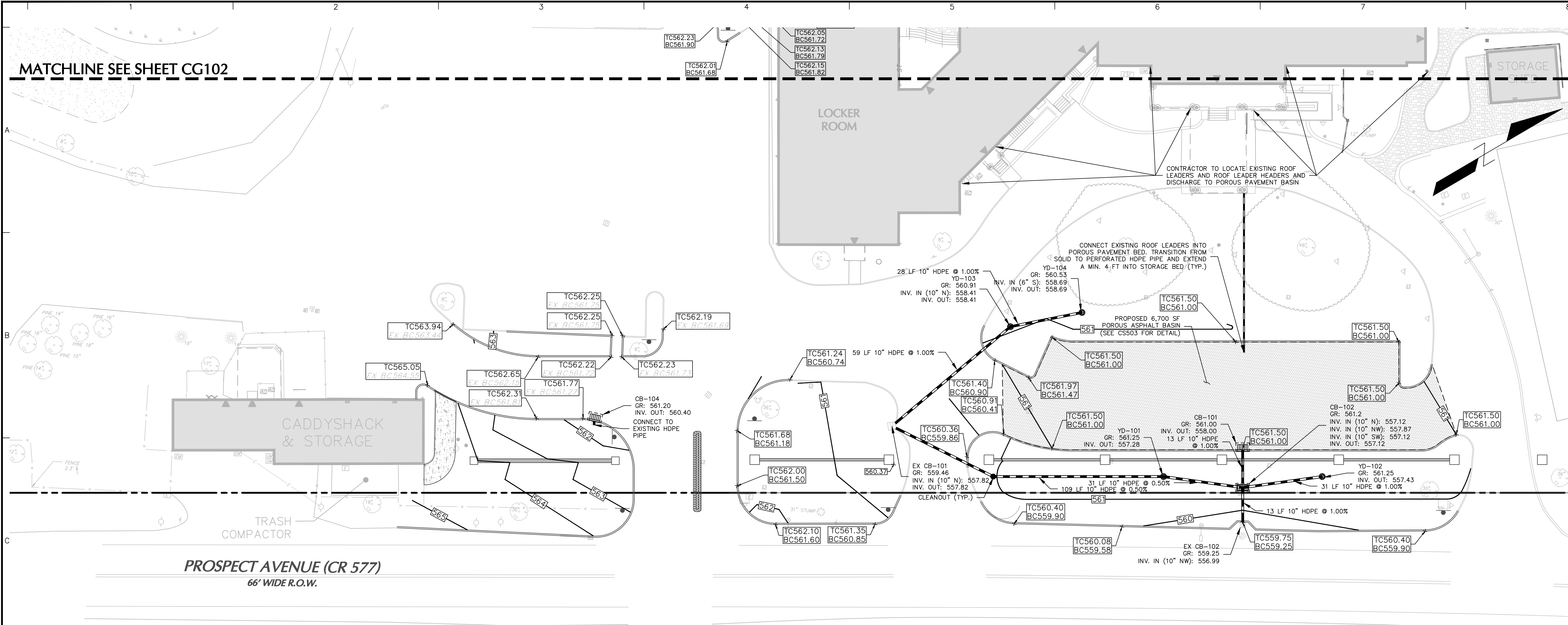
Sheet 3 of 16

DRAWINGS



Date	Description	No.
Revisions		
 SIGNATURE MICHAEL J. FOWLER DATE SIGNED 1/18/2024 PROFESSIONAL ENGINEER NJ Lic. No. 24GE03239800		
LANGAN Langan Engineering and Environmental Services, Inc. 300 Kimball Drive Parsippany, NJ 07054 T: 973.560.4900 F: 973.560.4901 www.langan.com NJ CERTIFICATE OF AUTHORIZATION No. 24GAZ7996400		
Project		
MONTCLAIR GOLF CLUB - HALFWAY HOUSE, GOLF BUILDING ADDITION, & PARKING LOT IMPROVEMENTS WEST ORANGE ESSEX COUNTY NEW JERSEY		
Drawing Title		
OVERALL Michael J. Fowler DRAINAGE PLAN		
Project No.		
001039208		
Date		
01/17/2024		
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RB		
Checked By		
TD/GED		
CG101		





STORMWATER MANAGEMENT FACILITY MAINTENANCE TASKS AND SCHEDULE

NOTE: SEE THE STORMWATER MAINTENANCE PLAN LAST REVISED 8 APRIL 2020 FOR ADDITIONAL MAINTENANCE SCHEDULING AND TASKS.

UNDERGROUND EXTENDED DETENTION BASIN (STORMTRAP)

SHORT-TERM MEASURES (AT LEAST ONCE EVERY 3 MONTHS OR AFTER EACH STORM EXCEEDING 1 INCH OF RAINFALL UNTIL BASIN IS STABILIZED)

1. MAINTAIN CONTRIBUTING DRAINAGE AREA
2. INSPECT THE INLET STRUCTURES
3. INSPECT THE OUTLET STRUCTURE:

MEDIUM-TERM MEASURES (AT LEAST ONCE EVERY SIX MONTHS)

1. INSPECT THE INLET STRUCTURES
2. INSPECT THE OUTLET STRUCTURE

LONG-TERM MEASURES (AT LEAST ONCE EVERY YEAR)

1. REMOVE SEDIMENT FROM BASIN USING METHODS OUTLINES IN THE MANUFACTURER'S (STORMTRAP) MAINTENANCE MANUAL.

UNDERGROUND DETENTION BASIN (PIPE SYSTEM)

SHORT-TERM MEASURES (AT LEAST ONCE EVERY 3 MONTHS OR AFTER EACH STORM EXCEEDING 1 INCH OF RAINFALL UNTIL BASIN IS STABILIZED)

1. MEASURE THE SEDIMENT BUILDUP AT EACH MANHOLE. CLEANING SHOULD BE PERFORMED IF SEDIMENT BUILDUP IS GREATER THAN 2.4 INCHES.
2. A THOROUGH CLEANING OF THE SYSTEM (HEADERS AND LATERALS) CAN BE PERFORMED BY EITHER MANUAL METHODS OR BY A VACUUM TRUCK.
3. INSPECT THE INLET AND THE OUTLET STRUCTURES:

LONG-TERM MEASURES (AT LEAST ONCE EVERY YEAR)

1. REMOVE SEDIMENT FROM BASIN USING LIGHT WEIGHT CONSTRUCTION EQUIPMENT

STORMWATER CONVEYANCE SYSTEM

SHORT-TERM MEASURES (ONCE A YEAR OR AFTER A STORM EXCEEDING 1-INCH OF RAINFALL)

1. ALL CONVEYANCE SYSTEMS INCLUDING INLETS, MANHOLES, CONCRETE CHAMBERS AND PIPES ARE EXPECTED TO ACCUMULATE DEBRIS AND SEDIMENT OVER TIME.
2. A THOROUGH CLEANING OF THE SYSTEM CAN BE PERFORMED BY EITHER MANUAL METHODS OR BY A VACUUM TRUCK.
3. ALL STRUCTURAL COMPONENTS MUST BE INSPECTED FOR CRACKING, SUBSISTENCE, BREACHING, WEARING, AND DETERIORATION. THE CONDITION OF SURROUNDING AND ABOVE LYING MATERIALS SHALL BE INSPECTED FOR EVIDENCE OF POTENTIAL FAILURES OR DETERIORATION.
4. INSPECT OUTLET PROTECTION AND REPLACE/REPLENISH RIP-RAP AS NECESSARY. IDENTIFY AREAS OF EROSION AT OUTLETS AND REMEDIATE WITH ADDITIONAL RIP-RAP PLACEMENT IN ACCORDANCE WITH APPROVED DRAWINGS FOR THIS PROJECT AND THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY.

RESPONSIBLE PARTY

MONTCLAIR GOLF CLUB
ATTN: MICHAEL CAMPBELL, DIRECTOR OF GOLF COURSE OPERATIONS
25 PROSPECT AVENUE
WEST ORANGE, NEW JERSEY 07052
PHONE NUMBER: (973) 239-1800

GRADING & DRAINAGE NOTES

1. EXISTING BOUNDARY AND TOPOGRAPHY IS BASED ON A PLAN TITLED "PARTIAL BOUNDARY AND TOPOGRAPHIC SURVEY FOR MONTCLAIR GOLF CLUB, BLOCK NO. 151, PORTION OF LOT NOS. 5, 7, 11 & 14, TOWNSHIP OF WEST ORANGE, ESSEX COUNTY, NJ" PREPARED BY LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES, INC., DATED 12/19/2019.
2. THE MERIDIAN OF THIS SURVEY IS REFERENCED TO THE NEW JERSEY STATE PLANE COORDINATE SYSTEM NAD 83 (2011) DERIVED USING SURVEY-GRADE GNSS EQUIPMENT.
3. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) DERIVED USING SURVEY-GRADE GNSS EQUIPMENT.
4. ONCE EXISTING UTILITIES TO REMAIN ARE LOCATED, ANY POTENTIAL CONFLICTS WITH OTHER UTILITIES, RELOCATED UTILITY POLES, ETC. SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
5. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL ALL THE APPROPRIATE UTILITY COMPANIES HAVING UNDERGROUND UTILITIES ON SITE OR IN RIGHT-OF-WAYS AT LEAST 72 HOURS BEFORE ANY EXCAVATION OR GRADING TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, UTILITY LOCATIONS, DEPTHS AND INVERTS PRIOR TO CONSTRUCTION. ANY CONDITIONS FOUND TO DIFFER FROM THOSE SHOWN BY THESE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF LANGAN ENGINEERING. CALL BEFORE YOU DIG- 1-800-272-1000.
6. ADJUST ALL EXISTING AND PROPOSED UTILITY FRAMES, GRATES, MANHOLE COVERS, VALVE BOXES, ETC. TO BE FLUSH WITH THE PROPOSED SURFACE ELEVATIONS WITHIN THE LIMITS OF CONSTRUCTION.
7. ALL PROPOSED ON-SITE UTILITIES TO BE INSTALLED UNDERGROUND. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.
8. ALL STORM DRAINAGE PIPES ARE TO BE AS SPECIFIED ON THE PLANS:
 - HIGH-DENSITY POLYETHYLENE PIPE (HDPE): AASHTO M294 TYPE S FOR PIPE AND FITTINGS. MATERIAL SHALL MEET ASTM D1298 TYPE III, CATEGORY 4, GRADE P33, CLASS C, OR ASTM D3350 CELL CLASSIFICATION 324420C. PIPE SHALL BE SURE-LOCK 10.8 PIPE MANUFACTURED BY ADS, INC. WITH WATER-TIGHT JOINTS ACCORDING TO THE REQUIREMENTS OF ASTM D3212 OR APPROVED EQUIVALENT. INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM D2321.
7. ALL DRAINAGE STRUCTURES SHALL BE PRE-CAST UNLESS OTHERWISE NOTED.
8. ALL DRAINAGE STRUCTURES AND STORM SEWER PIPES SHALL MEET HEAVY DUTY TRAFFIC (HS20) LOADING AND BE INSTALLED ACCORDINGLY.
9. ALL PROPOSED ROOF LEADERS SHALL BE CONNECTED TO THE BELOW GRADE DETENTION BASIN-2.
10. SITE FILL SHALL CONSIST OF MATERIAL FROM APPROVED ONSITE SOURCES OR APPROVED OFFSITE MATERIAL. THE GEOTECHNICAL ENGINEER WILL REVIEW AND APPROVE ALL MATERIALS.
11. PROOF ROLL ALL CUT AREAS. PLACE AND COMPACT APPROVED FILL MATERIALS IN 12-INCH MAXIMUM LOOSE LIFTS USING AT LEAST 6 PASSES WITH, AT MINIMUM, A 5 TON STATIC DRUM WEIGHT VIBRATORY ROLLER. COMPACT TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557.
12. PARKING LOT SUBGRADES SHALL BE FIRM AND NON-YIELDING. SOFT AREAS AND UNSUITABLE MATERIAL SHALL BE REMOVED AND REPLACED WITH APPROVED MATERIALS AND AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
13. PIPE BEDDING MATERIAL SHALL BE AASHTO NO. 67 PROCESSED SAND AND GRAVEL FREE FROM DEBRIS, CLAY LUMPS, ORGANIC, OR OTHER DELETERIOUS MATERIALS, AND COMPLYING WITH THE FOLLOWING GRADATION REQUIREMENTS:

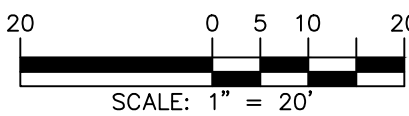
SIEVE SIZE PERCENT PASSING (BY WEIGHT)	
1" INCH	100
3/4" INCH	90-100
3/8" INCH	20-55
#4	0-10
#8	0-5

FILL SHALL BE CLEAN, WELL GRADED GRANULAR SOIL WHICH IS NON-EXPANSIVE AND NON-COLLAPSIBLE AND SHALL HAVE LESS THAN 20% BY WEIGHT PASSING THE #200 SIEVE. THE PORTION PASSING THE #200 SIEVE SHALL BE NON-PLASTIC.
14. THE SUBJECT PROJECT AREA IS LOCATED WITHIN ZONE X, OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN AREA AS PER EFFECTIVE FIRM FLOOD INSURANCE RATE MAP OF ESSEX COUNTY, NEW JERSEY, COMMUNITY MAP NUMBER 34013C0103F, PANEL 103 OF 200 - DATED JUNE 4, 2007.
15. ANY STORMWATER FACILITIES SHOWN TO REMAIN SHOULD BE INSPECTED, REPAIRED AND CLEANED AS NECESSARY.
16. STORMWATER MANAGEMENT FACILITIES SHALL BE MAINTAINED REGULARLY TO INSURE CONTINUAL FUNCTIONING OF THE SYSTEM AT DESIGN CAPACITY. SEE MAINTENANCE REPORT FOR MAINTENANCE SCHEDULE, INSTRUCTIONS AND PROCEDURES.
17. ABBREVIATIONS:

AD	= AREA DRAIN
BC	= BOTTOM OF CURB
BW	= BOTTOM OF WALL
CB	= CATCH BASIN
FPE	= FINISHED FLOOR ELEVATION
GR	= GRATE ELEVATION
HDPE	= HIGH DENSITY POLYETHYLENE PIPE
INV	= INVERT
LF	= LINEAR FEET
MH	= MANHOLE
OCS	= OUTLET CONTROL STRUCTURE
PVC	= POLYVINYL CHLORIDE PIPE
RM	= RIM ELEVATION
RL	= ROOF LEADER
TC	= TOP OF CURB
TW	= TOP OF WALL

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED DRAINAGE PIPE
- PROPOSED CATCH BASIN
- PROPOSED AREA DRAIN
- PROPOSED DRAINAGE MANHOLE
- PROPOSED GRADE BREAK



Date	Description	No.
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Revisions

Michael J. Fowler 1/18/2024
SIGNATURE MICHAEL J. FOWLER DATE SIGNED
PROFESSIONAL ENGINEER NJ Lic. No.
24GE03239800

LANGAN

Langan Engineering and
Environmental Services, Inc.
300 Kimball Drive
Parsippany, NJ 07054

T: 973.560.4900 F: 973.560.4901 www.langan.com
NJ CERTIFICATE OF AUTHORIZATION No. 24GA27896400

Project

**MONTCLAIR GOLF CLUB -
HALFWAY HOUSE,
GOLF BUILDING ADDITION, &
PARKING LOT IMPROVEMENTS**

WEST ORANGE

ESSEX COUNTY NEW JERSEY

Drawing Title

**GRADING &
DRAINAGE PLAN II**

Project No.

001039208

Date

01/17/2024

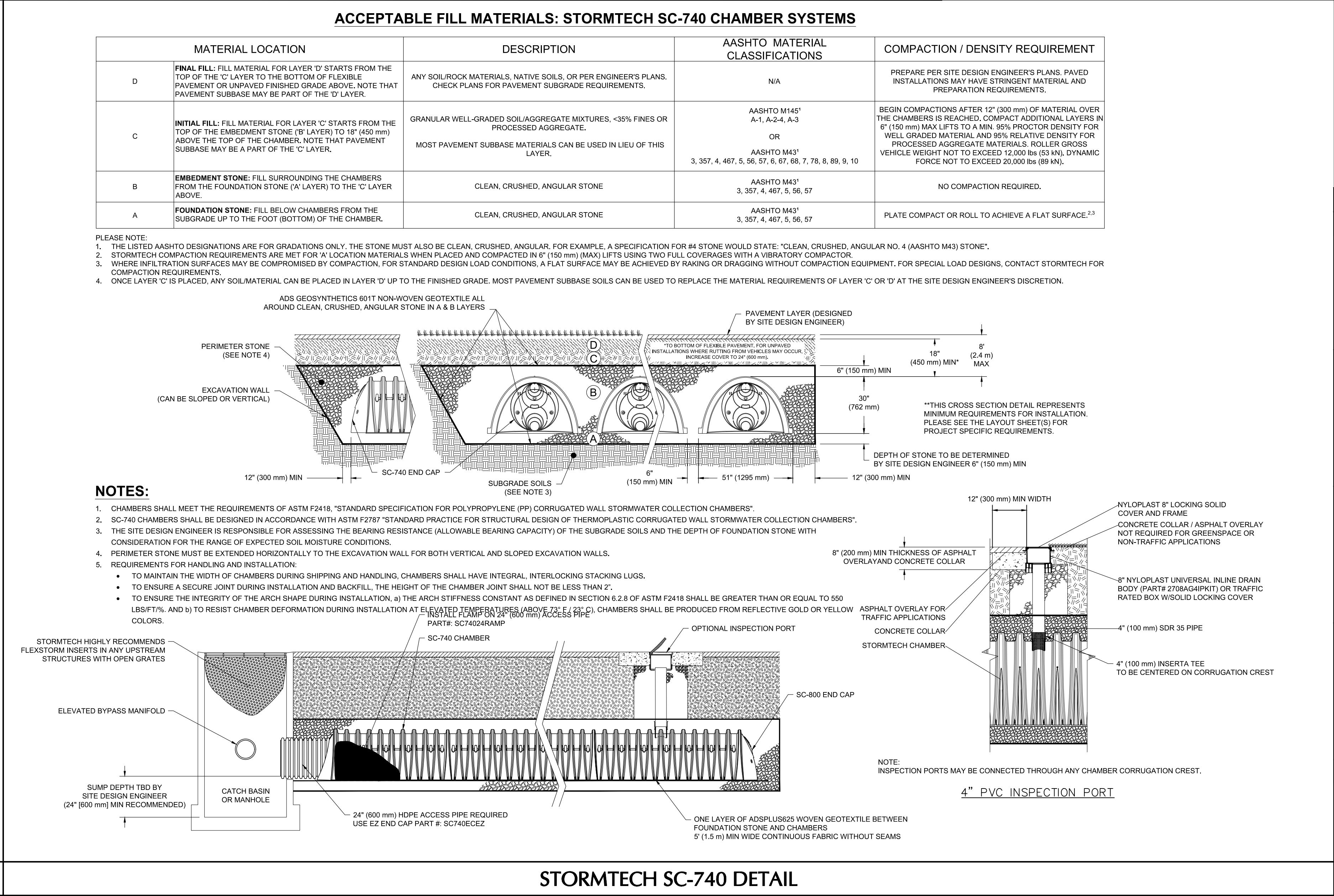
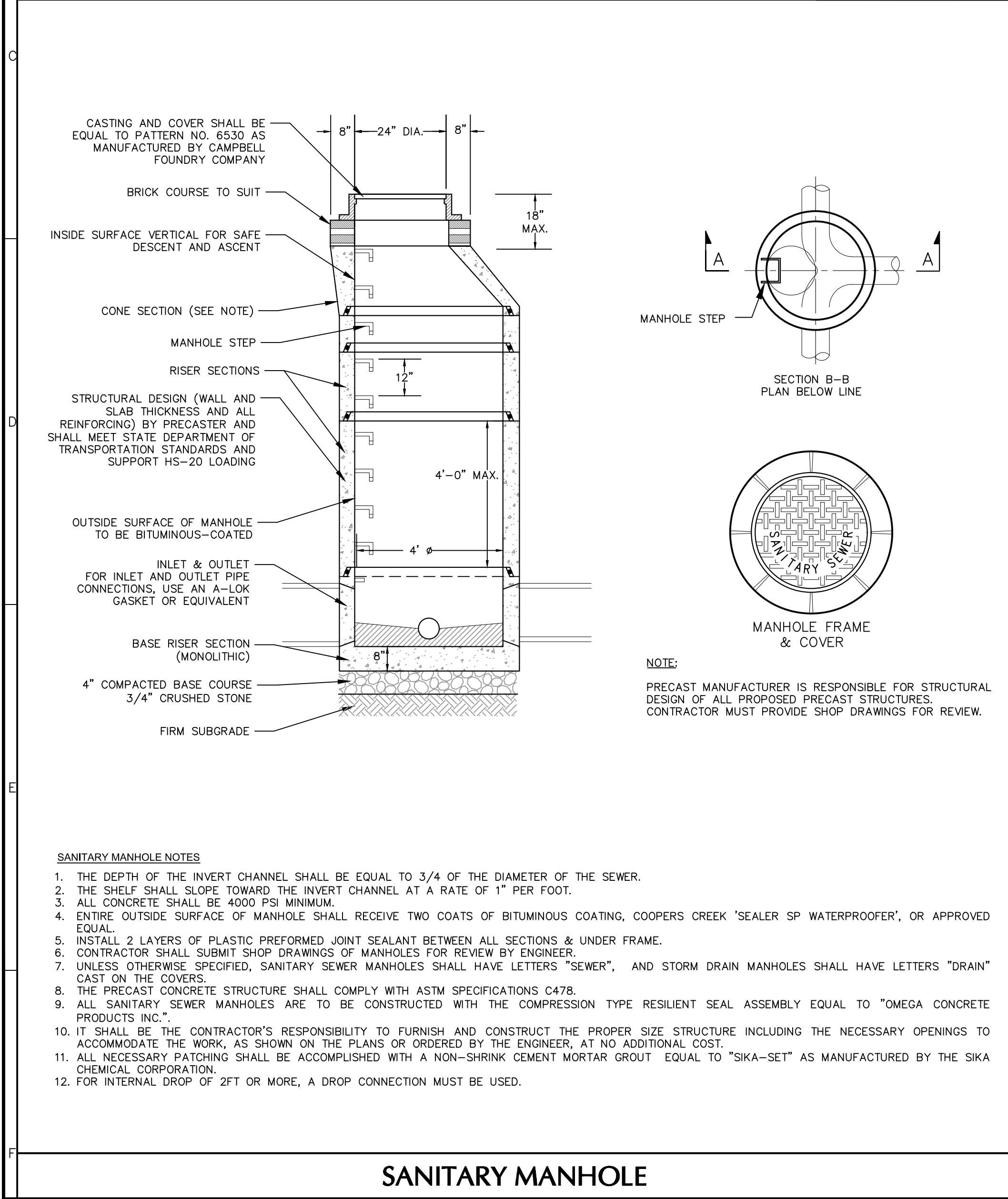
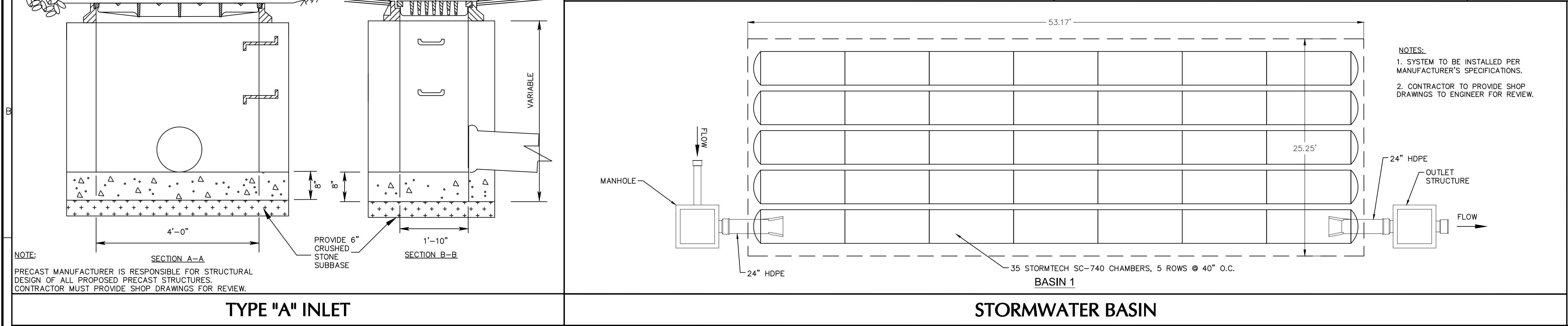
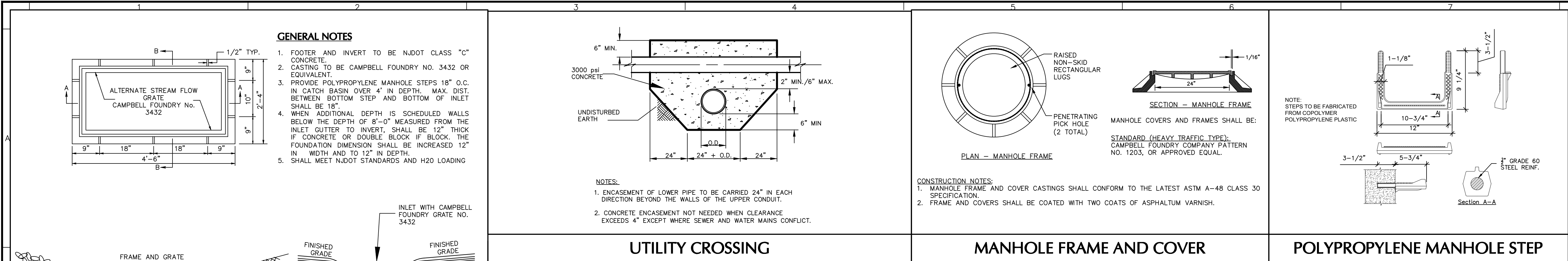
Drawn By

RB

Checked By

TD/GED

CG103



LANGAN

Langan Engineering and Environmental Services, Inc.
300 Kimball Drive
Parsippany, NJ 07054

T: 973.560.4900 F: 973.560.4901 www.langan.com
NJ CERTIFICATE OF AUTHORIZATION No. 24GE03239800

Project

**MONTCLAIR GOLF CLUB -
HALFWAY HOUSE,
GOLF BUILDING ADDITION, &
PARKING LOT IMPROVEMENTS**

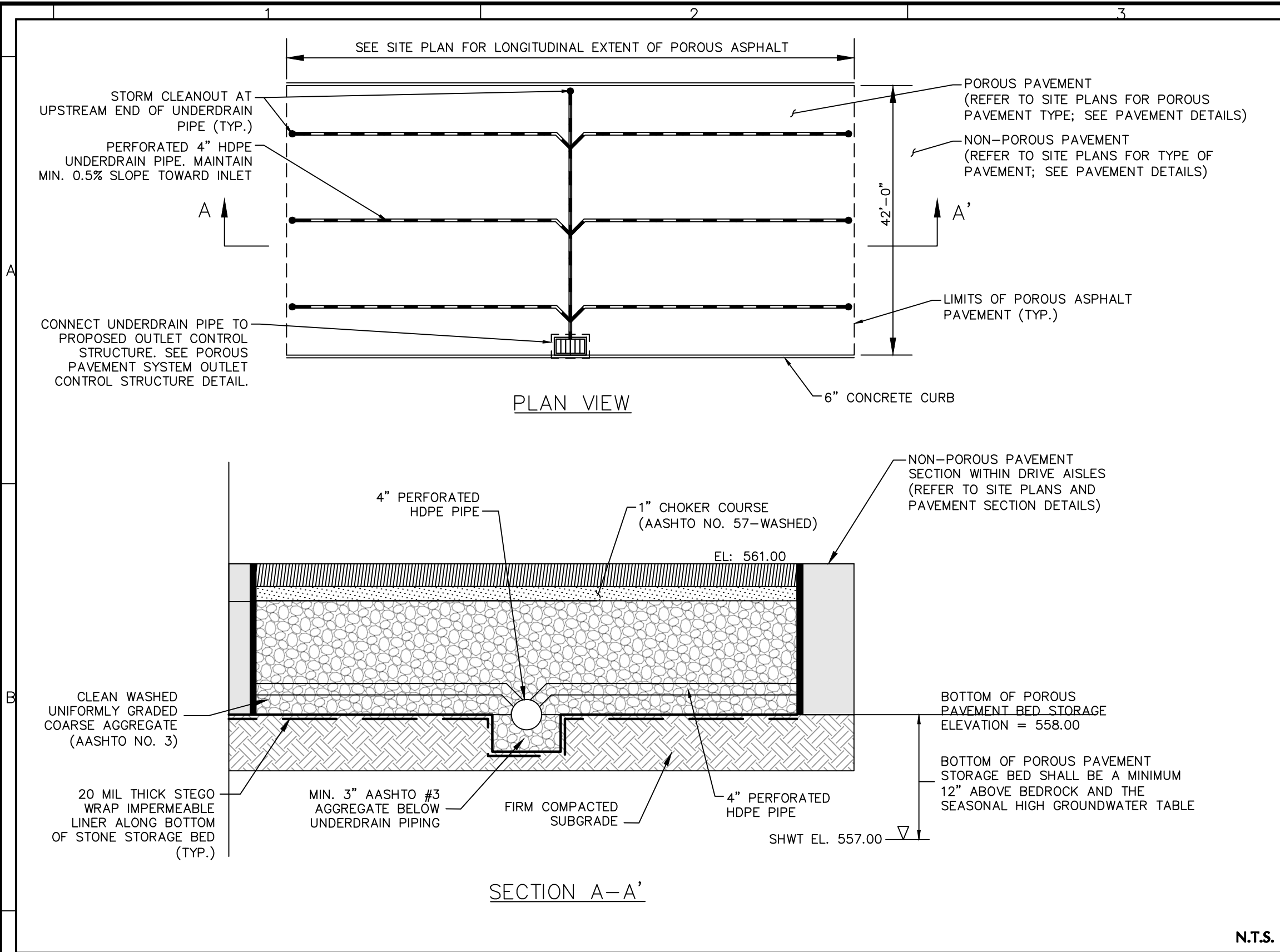
WEST ORANGE NEW JERSEY

ESSEX COUNTY

Drawing Title

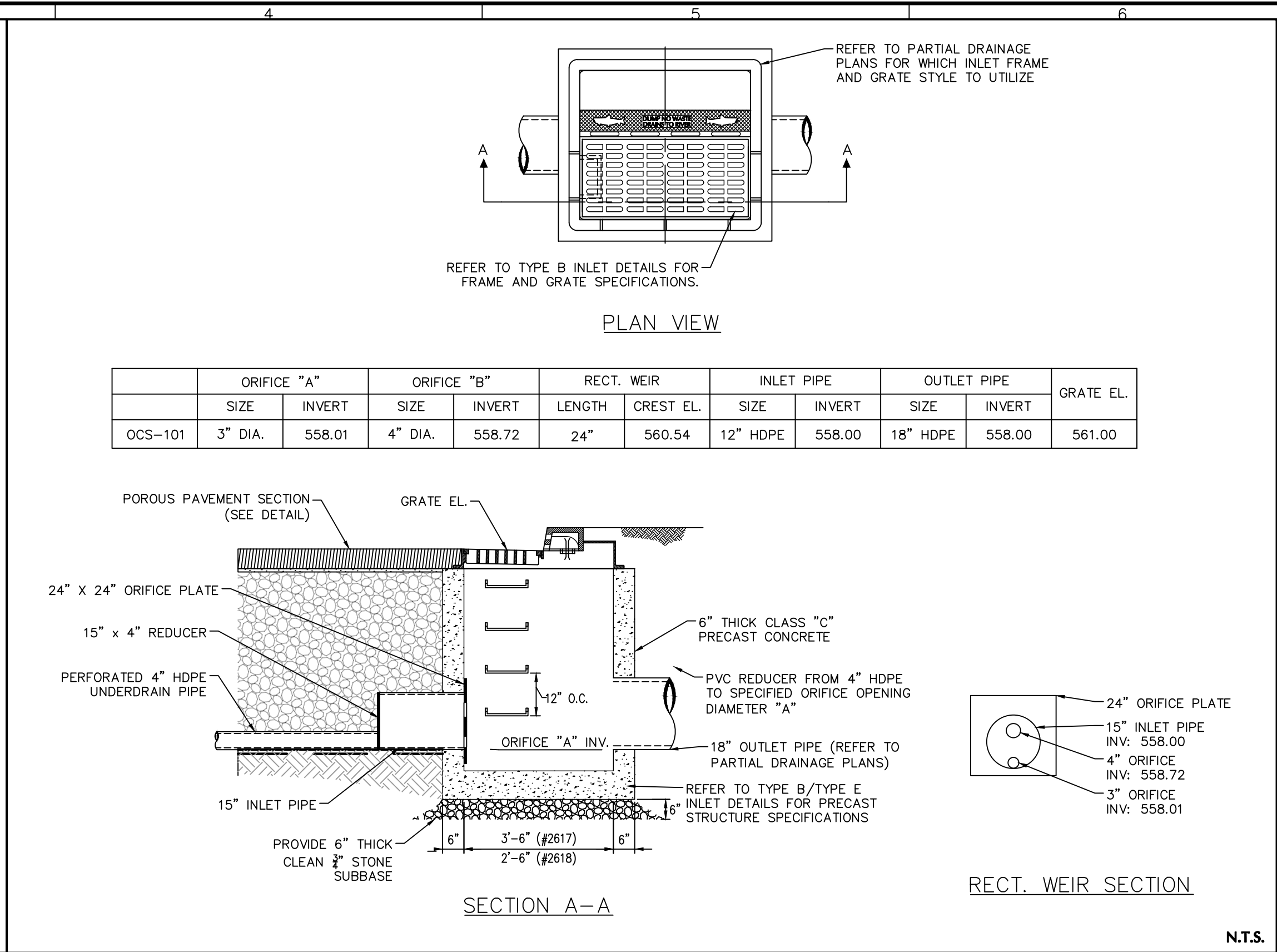
DETAILS II

Date	Description	No.
Revisions		
Project No. 001039208		
Date	01/17/2024	CS502
Drawn By	RB	
Checked By	TD/GED	



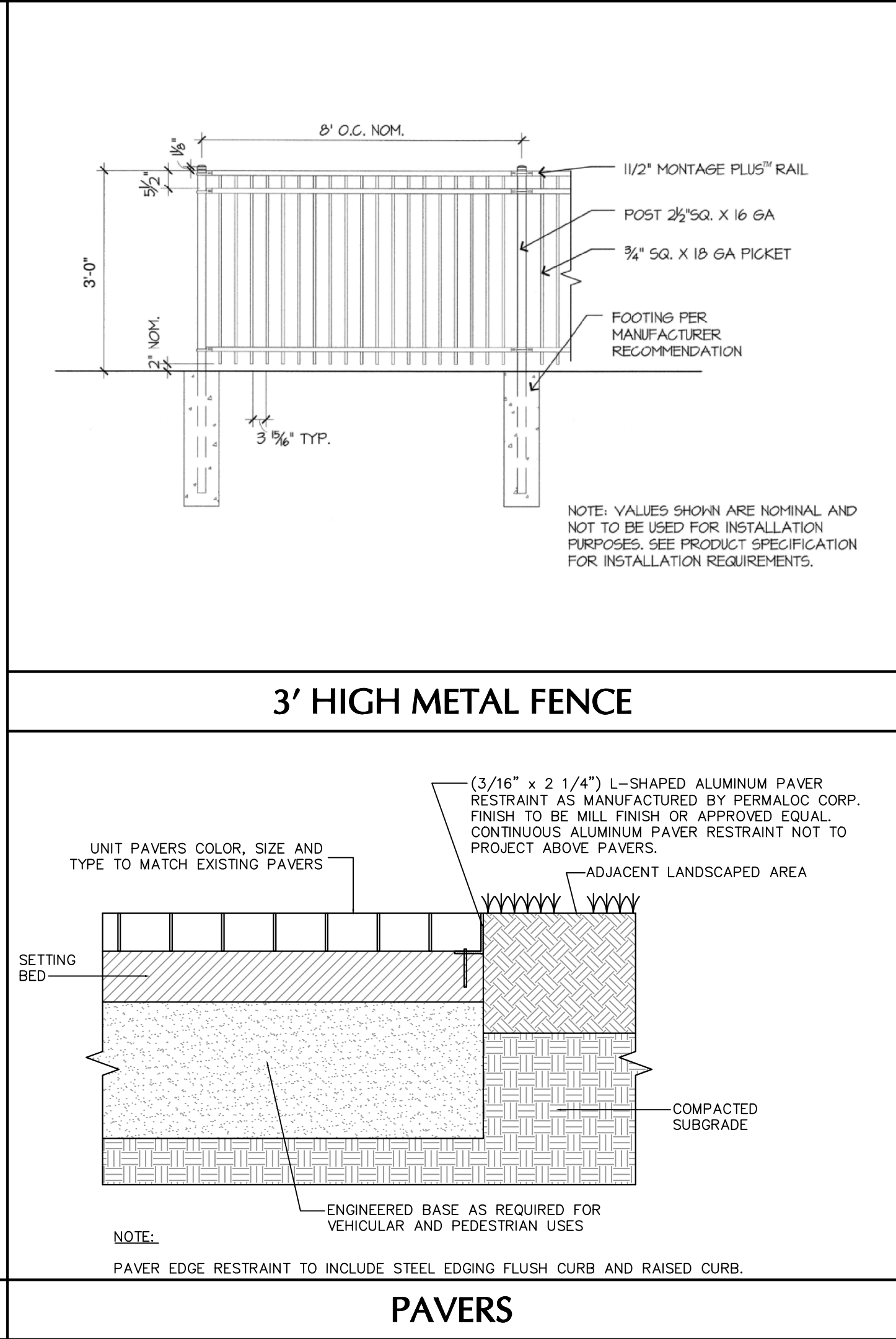
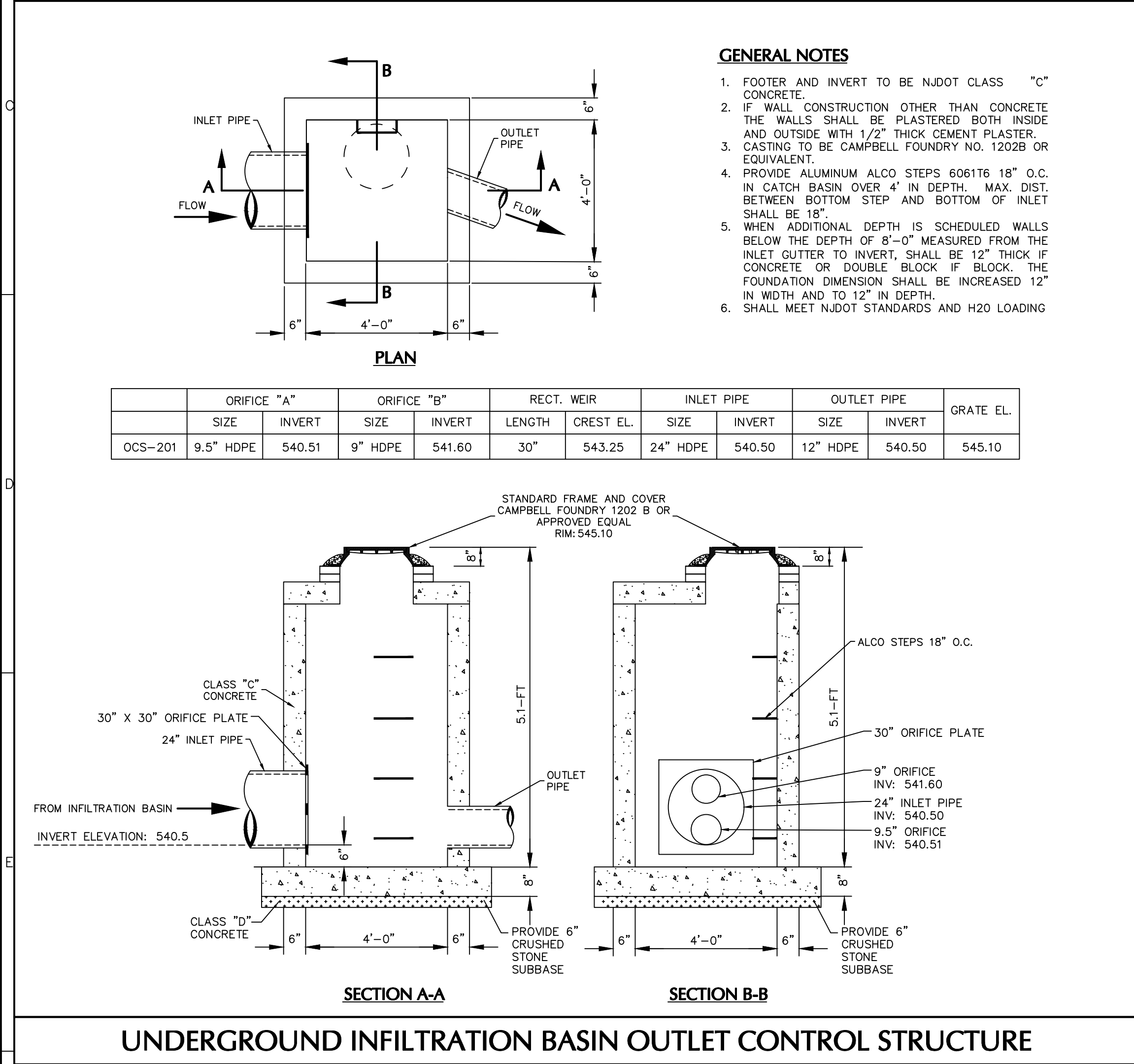
N.T.S.

TYPICAL POROUS PAVEMENT CROSS SECTION DETAIL



N.T.S.

POROUS PAVEMENT SYSTEM OUTLET CONTROL STRUCTURE



Date	Description	No.
Revisions		
 SIGNATURE MICHAEL J. FOWLER DATE SIGNED 1/18/2024 PROFESSIONAL ENGINEER NJ Lic. No. 24GE03239800		
LANGAN Langan Engineering and Environmental Services, Inc. 300 Kimball Drive Parsippany, NJ 07054 T: 973.560.4900 F: 973.560.4901 www.langan.com NJ CERTIFICATE OF AUTHORIZATION No. 24GA27896400		
Project MONTCLAIR GOLF CLUB - HALFWAY HOUSE, GOLF BUILDING ADDITION, & PARKING LOT IMPROVEMENTS WEST ORANGE NEW JERSEY		
Drawing Title DETAILS III		
Project No. 001039208		CS503
Date 01/17/2024		
Drawn By RB		
Checked By TD/GED		

APPENDIX A

MAINTENANCE CHECKLISTS

MAINTENANCE CHECKLIST FOR SUBSURFACE INFILTRATION BASIN 1

**Montclair Golf Club
Halfway House, Golf Building Addition,
& Parking Lot Improvements
Township of West Orange
Essex County, New Jersey**

**NOTE: INSPECTIONS TO BE EVALUATED DURING A PERIOD OF
DRY AND WARM WEATHER AT THE PROJECT SITE**

Yes	No	Maintenance Evaluation	Action(s) Required if Answer "Yes"
☐	☐	Is there a buildup of sediment (in excess of two inches), trash, debris or any other stormwater pollution in inlet/outlet structures or within the basin?	Remove sediment, trash, debris, etc. when the basin is dry and dispose of in accordance with local, state and federal requirements.
☐	☐	Are there visible signs of cracking (wider than half an inch), damage or deterioration on the outlet structure and/or inlet structures?	Repair any cracks/damage to structures or replace structure. Consult an engineer if necessary to assess the damage.
☐	☐	Has the drain time for volume of water contained in the recharge volume portion of basin changed?	Jet clean infiltration basin and dispose of soil in accordance with local, state and federal requirements.

MAINTENANCE CHECKLIST FOR POROUS ASPHALT

**Montclair Golf Club
Halfway House, Golf Building Addition,
& Parking Lot Improvements
Township of West Orange
Essex County, New Jersey**

**NOTE: INSPECTIONS TO BE EVALUATED DURING A PERIOD OF
DRY AND WARM WEATHER AT THE PROJECT SITE**

Yes	No	Maintenance Evaluation	Action(s) Required if Answer "Yes"
☐	☐	Is there a buildup of sediment (in excess of two inches), trash, debris or any other stormwater pollution in inlet/outlet structures or within the basin?	Remove sediment, trash, debris, etc. when the basin is dry and dispose of in accordance with local, state and federal requirements.
☐	☐	Are there visible signs of cracking (wider than half an inch), damage or deterioration on the outlet structure and/or inlet structures?	Repair any cracks/damage to structures or replace structure. Consult an engineer if necessary to assess the damage.
☐	☐	Has the drain time for volume of water contained in the recharge volume portion of basin changed?	Jet clean infiltration basin and dispose of soil in accordance with local, state and federal requirements.
☐	☐	Is there visible sediment or debris build up on or within the voids of the porous pavement?	Vacuum the porous pavement surface and dispose of soil in accordance with local, state and federal requirements.

APPENDIX B

MAINTENANCE LOGS

**MAINTENANCE LOG FOR SUBSURFACE
INFILTRATION BASIN 1**

**Montclair Golf Club
Halfway House, Golf Building Addition,
& Parking Lot Improvements
Township of West Orange
Essex County, New Jersey**

INSTRUCTIONS:

**THIS LOG SHALL BE UPDATED TO INCLUDE ALL MAINTENANCE
PERFORMED AT A SPECIFIC STORMWATER MANAGEMENT
MEASURE.**

DATE	PERSON CONDUCTING MAINTENANCE	AREA OF MAINTENANCE	PROBLEM(S) FOUND	ACTION(S) TAKEN

MAINTENANCE LOG FOR POROUS PAVEMENT

Montclair Golf Club
Halfway House, Golf Building Addition,
& Parking Lot Improvements
Township of West Orange
Essex County, New Jersey

INSTRUCTIONS:

THIS LOG SHALL BE UPDATED TO INCLUDE ALL MAINTENANCE
PERFORMED AT A SPECIFIC STORMWATER MANAGEMENT
MEASURE.

DATE	PERSON CONDUCTING MAINTENANCE	AREA OF MAINTENANCE	PROBLEM(S) FOUND	ACTION(S) TAKEN

APPENDIX C

**AS-BUILT DRAWINGS
(TO BE PROVIDED ONCE CONSTRUCTION IS
COMPLETED)**