STORMWATER MAINTENANCE PLAN

FOR

verizon NEW JERSEY INC.
PENNS NECK CENTRAL OFFICE
PROPOSED EMERGENCY GENERATOR
BLOCK 6 TAX LOT 72
TOWNSHIP OF WEST WINDSOR
MERCER COUNTY, NEW JERSEY

Prepared for:
VERIZON NEW JERSEY, INC.
1 VERIZON WAY
BASKING RIDGE, NEW JERSEY 07920

MARCH 2022
REV. APRIL 2022

Prepared By:

The Reynolds Group Inc.
575 ROUTE 28, SUITE 110
RARITAN, NEW JERSEY 08869

Adonis Crispo, P.E.
N.J.P.E. Lic. No. 44152

TRG No.20-010

TABLE of CONTENTS

I. INTRODUCTION

The onsite constructed drywell system includes inlet and outlet pipes for conveyance and overflow grates for release of excess runoff from large storm events. The drywell system was designed to mitigate the increase in stormwater runoff to adjoining property resulting from installation of an emergency generator.

This document and any future revisions to this document shall be recorded upon the deed of record. The entity responsible for maintenance of the stormwater management elements designed for the project and outlined in detail below are as follows:

VERIZON NEW JERSEY, INC.
1 VERIZON WAY
BASKING RIDGE, NEW JERSEY 07920

ATT: CHARLIE MESSING
Mobile: (917) 992 1356
Fax: (732) 360 1865
E-mail: Charles.Messing@Verizon.com
175 Main St.
Freehold, NJ 07728

The responsible party shall maintain a detailed log of the preventative and corrective maintenance for the stormwater management elements, including a record of all inspections and copies of all maintenance related work-orders (See Appendix A for Inspection and Maintenance Reports). The effectiveness of the maintenance plan shall be evaluated by the responsible party at least once a year and the plan shall be adjusted as needed. Written maintenance and repair records for all stormwater management elements shall be maintained by Verizon. The responsible party shall retain and make available, upon request by a public entity, the maintenance plan and documentation required.

II. STORMWATER CONVEYANCE SYSTEM

This element is comprised of pipes, a lawn inlet, a sump manhole (oil separation) and cleanouts designed to collect and convey runoff to the proposed drywell and overflow pipe to Washington Road.

Normal maintenance of the storm sewer system requires lawn inlet, manhole and cleanouts to be inspected semi-annually on or about April 1st and December 1st of each year. Any sediment or debris in the collection system shall be removed at that time.

Refer to the following Table for Schedule of Maintenance and Maintenance Requirements.

STORMWATER CONVEYANCE SYSTEM MAINTENANCE SCHEDULE

Maintenance Item	Schedule	Inspection Requirement	Maintenance Requirement
Visual Inspection	Semi-Annually - April 1 +/- December 1 +/-	Inspect lawn inlet and manhole for buildup of leaves, twigs, litter, sediment, and other debris. Inspect cleanouts. Monitor trapped oil in the manhole.	Remove leaves, twigs, litter, sediment, and other debris from lawn inlet. Replace damage cleanout as required. Remove oil separately and sediments in the manhole and dispose of in accordance with all applicable regulations.

III. DRYWELL

This element is comprised of two (2) six-foot diameter by seven feet deep concrete seepage tanks set in a stone trench for the purpose of managing the increase in runoff from the new generator pad.

A. General Maintenance

All accessible components associated with the drywell must be inspected for clogging, excessive debris, and sediment accumulation twice annually, at a minimum, as well as after every storm that exceeds one (1) inch of rainfall. Debris, trash, sediment, and other waste materials removed from the basins shall be disposed of at a suitable disposal site and in accordance with all applicable local, state, and federal waste regulations.

B. Structural Components

All structural components of the facility should be inspected for cracking, subsidence, spalling, erosion, and general deterioration at least once annually.

C. Other Maintenance Criteria

The estimated drain time to empty the drywell is 52.9 hours. If drain time exceeds 72 hours or if any significant decrease in normal drain/drawdown time is observed, the system shall be evaluated by a qualified civil or geotechnical engineer.

The drywell system includes an 8" overflow pipe, a 12" riser pipe with a dome type grate. The overflow riser/dome grate shall be kept clear of debris.

Sump pump discharge connection(s) to the drywell system is <u>not</u> permitted.

<u>DRYWELL DESIGN DATA</u>:

Available Storage: 632 CF; Drain Time: 52.9 hours

Storm Event	Primary[1] (CFS)	Secondary[2] (CFS)	Exfiltration (CFS)
2-yr	0.39	0.32	0.01
10-yr	0.79	0.33	0.01
100-yr	1.98	0.34	0.01

[1]Drywell overflow to Lot 28.01; [2]3" Bypass pipe to Washington Road

Refer to the following Table for Schedule of Maintenance and Maintenance Requirements.

DRYWELL MAINTENANCE SCHEDULE

Maintenance Item	Schedule	Inspection Requirement	Maintenance Requirement
General Maintenance – Visual Inspection	Two (2) Times Annually or After Every Rainfall Exceeding One Inch	Inspect all visual components of the system for clogging, debris (leaves, grass clippings, twigs & litter), and sediment accumulation.	Remediate Clogging. Removal all trash, debris, sediment and dispose of in accordance with all applicable regulations.
Structural Components – Visual Inspection	Once Annually	Inspect all structural components for cracking, subsidence, spalling, erosion, and general deterioration.	Repair structural components as required.
System Function	After Every Rainfall Exceeding One Inch	Evaluate drawdown time of drywell compared to design criteria; Design drain time: 52.9 hours	Analysis to be reviewed by qualified Civil or Geotechnical Engineer – Recommendations will be made at this time.

IV. MAINTENANCE RECORDS AND REPORTING

All inspections (as required above), regular maintenance, and required repairs shall be documented. Written maintenance and repair records for all stormwater management elements shall be maintained for at least five years by the responsible party and shall be provided to the Township of West Windsor upon request. See Appendix A for inspection and maintenance report forms.

V. EQUIPMENT AND MATERIALS

The following is a list of maintenance equipment and materials that would be required for the general maintenance of the Stormwater Management Facilities. It will be at the discretion of the owner to decide whether to perform the work or to hire a maintenance service to maintain the above facilities. Should the Owner decide to hire a service to maintain the Stormwater Facilities, the responsibility of inspecting the facilities per the above report will still be the job of the Owner. The following equipment list has been separated into the various Stormwater Components. The equipment may be rented for a particular task or stored on-site as part of the maintenance program. Confined space entry requirements shall be followed at all times.

1. Grass Seed (including basin seed mix)
2. Concrete Repair Material
3. Riding Mower
4. Power Trimmer
5. Seed Spreader
6. De-thatching Equipment
7. Grass Clipping Equipment
8. Shovels & Rakes
9. Wheelbarrow
10. Loader/Backhoe
11. Dewatering pump
12. Combination vacuum truck and sewer jet as require

APPENDIX A

INSPECTION AND MAINTENANCE REPORTS

Inspection Checklist
for
Stormwater Management Facilities

Name of Facility: Drywell System

Location: Verizon Penn's Neck Central Office; Block 6, Lot 72
138 Washington Road, West Windsor Twp. **Date:** _____

Weather: _____

Facility Item	O.K.[1]	Routine[2]	Urgent[3]	Comments[4]
1. Inlet & Overflow Grates				
A. Trash and Debris				
B. Sediment				
C. Seepage				
D. Standing Water				
E. Concrete Condition				
F. Aesthetics				
G. Other:				
2. Bottom - Drywell System & Overflow Riser Pipe				
A. Trash and Debris				
B. Sediment				
C. Standing Water				
D. Seepage				
E. Concrete Condition				
F. Aesthetics				
G. Other:				
3. Miscellaneous				
A. Effectiveness of Exist. Maint. Program				
B. Potential Mosquito Habitats				
C. Mosquitoes				
D. Overflow Structure - Dome Grate				
E. Existing 8" roof drain connection to Washington Rd drainage system & 3" secondary Overflow from Drywell				
F. Oil Monitoring @ Sump Manhole				
G. Drawdown Time; Design 52.9 hrs				

[1] The item checked is in good condition, and the maintenance program is adequate.

[2] The item checked requires attention, but does not present an immediate threat to the facility function or other facility components.

[3] The item checked requires immediate attention to keep the facility operational or to prevent damage to other facility components.

[4] Provide explanation and details if columns 2 or 3 are checked.

Remarks (Refer to Item No., If Applicable):

Inspector: _____

Maintenance Log
for
Stormwater Management Facilities

Name of Facility: Drywell System

Location: Verizon Penn's Neck Central Office; Block 6, Lot 72
138 Washington Road, West Windsor Twp. **Date:**

A. Preventative Maintenance

Work Item	Date:									
	(X) Completed									
1. Trash and Debris Removal										
A. Overflow Grate - Dome Type										
B. Drywell & Overflow Structure										
C. Other:										
2. Sediment Removal:										
A. Overflow Grate - Dome Type										
B. Drywell & Overflow Structure										
C. Other:										
3. Elimination of Potential Mosquito Breeding Habitats										
4. Other Preventative Maintenance										
A.										
B.										
C.										

B. Corrective Maintenance

Work Item										
1. Removal of Debris & Sediment										
2. Structural Repairs										
3. Dewatering										
4. Removal of Oil - Sump Manhole										
5. Control of Mosquitoes										
6. Other:										

Remarks (Refer to Item No., If Applicable):

Maintenance Work Order and Checklist
for
Stormwater Management Facilities

Name of Facility: Drywell System

Location: Verizon Penn's Neck Central Office; Block 6, Lot 72
138 Washington Road, West Windsor Twp. **Date:**

Crew: _____ **Work Started:** Date _____ Time _____

Equipment: _____ **Work Completed:** Date _____ Time _____

Weather: _____ **Total Manhours of Work:** _____

A. Preventative Maintenance

Work Item	Items Required (X)	Items Done (X)	Comments and Special Instructions
1. Trash and Debris Removal			
A. Overflow Grate - Dome Type			
B. Drywell & Overflow Structure			
C. Other:			
2. Sediment Removal:			
A. Overflow Grate - Dome Type			
B. Drywell & Overflow Structure			
C. Other:			
3. Elimination of Potential Mosquito Breeding Habitats			
4. Other Preventative Maintenance			
A.			
B.			
C.			

B. Corrective Maintenance

Work Item	Items Required (X)	Items Done (X)	Location, Comments and Special Instructions
1. Removal of Debris & Sediment			
2. Structural Repairs			
3. Dewatering			
4. Removal of Oil - Sump Manhole			
5. Control of Mosquitoes			
6. Other:			

Remarks (Refer to Item No., If Applicable):

Work Order Prepared By: _____

Work Completed By: _____

APPENDIX B

STORMWATER MANAGEMENT PLAN & DETAILS

MP-1, MP-2 & MP-3

SOILS: BHSGB – BIRDSBORO GRAVELLY SOLUM VARIANT SOILS
GadB – GALESTOWN LOAMY SAND

TEST PITS LOCATION

ARROWS MAP TO ROW

BLOCK 6.03 LOT 4

BLOCK 6.03 LOT 3

BLOCK 6.03 LOT 2

BLOCK 6.03 LOT 1

BLOCK 6.03 LOT 15

BLOCK 6 LOT 28.01

N45°11'44"E 400.00'

6' WOOD FENCE

SHRUBS

YOUNG WALNUT STAND.

MULCH TO FENCE

EX. 11 ARBORVITAE HEDGE (TO REMAIN)

15.4' SIDE YARD SETBACK

ARBORVITAE TREELINE

(4) 3" CYPRESS

DEBRIS PILE

EX. ARBORVITAE (TO REMAIN)

CAPPED IRON PIN ON LINE

GARDEN WITH 4' WIRE FENCE

SHED

MIXED HARDWOODS

PROPOSED 23.50' COUNTY EASEMENT
4,715± SQ. FT. / 0.108± ACRES

CONC. MON FND 7.58'

WOOD WALL

CONC. SIDEWALK

UG TELECOMMUNICATION

UP (NEW) #2484
UP (OLD) #2484
2 RISERS
12" RCP

"B" INLET
GRATE = 71.08
A INV IN =66.51
B INV IN = 65.50
C INV IN = 64.81
D INV OUT = 64.71

TW= 74.17
BC= 72.02

TW= 71.67
BC=71.20

50.0' FRONT YARD SETBACK

EDGE OF PAVEMENT

5' WIDE CONSTRUCTION EASEMENT per DBK: 2607 Pg. 58

5' WIDE SIDEWALK EASEMENT per DBK: 2607 Pg. 58

"PRIVATE"

TELE. MH RIM=70.64

40"OAK

14"PINE

CONC. SIDEWALK

TW= 74.78
BW= 73.14

SAN MH (PAVED) RIM=72.46

30.0' REAR YARD SETBACK

CAPPED IRON PIN 0.15

153.1'

203.14'

N44°48'16"W

153.0'

TX12

B-1

B-2

BHSGB

GadB

MIXED HARDWOODS AND PINES (MOSTLY OAKS)

ELEC MH RIM = 71.59 W/ MW = 70.59

MONITORING WELL RIM = 72.16 FILLED W/ WATER

STEEL LANDING AND STEPS

FF=73.86

EX. WALL MOUNTED FLOOD LIGHT

FF=73.77

#138 WASHINGTON ROAD
BLOCK 6 LOT 72
n/f New Jersey Bell Telephone Company,
a New Jersey Corporation
DBK: 1650, pg. 397
1.854±ACRES
80,744±Sq.Ft

ONE STORY BLOCK BUILDING
VERIZON PENNS NECK
CENTRAL OFFICE

STORM MH #1
RIM=71.00
INV IN 8"=68.22
INV OUT 8"=68.22
WITH HOOD/SUMP
(SEE SHEET SP-4)

DRYWELL #1
RIM=70.50
INV IN 8"=67.98
INV OUT 8"=68.33

8" PVC @ 0.00%

DRYWELL #2
RIM=70.50
INV IN 8"=68.33
INV OUT 3"=68.33
INV OUT 8"=68.33

8" PVC @ 2.00%, TYP.

LAWN INL #1
GR=70.58
INV OUT 8"=68.50

RIPRAP 12" THICK
6' X 6'; D50=6"
W/ FILTER FABRIC

CO-1
INV IN 3"=68.09
INV OUT 8"=68.09±
(PERFORM TEST PIT, VIDEO INSPECT DRAIN LINE PRIOR TO CONNECTION)
(SEE NOTE)

3" PVC @ 1.00% (SECONDARY OUTLET)

16 L.F. 8" PERF. HDPE (ADS N-12, LEVEL, PRIMARY OUTLET)

OVERFLOW STRUCTURE
TOP=70.20, DOME TYPE GRATE
INV IN 8"=68.33
ISTALL 3'X3' RIPRAP, 12"THK,
D50=6" WITH FILTER FABRIC
(SEE SHEET SP-4)

EXISTING 8" DRAIN LINE

8" DRAIN LINE

SIAMPOST "H20 SHUT-OFF"

TRANS

GAS LINE

UG ELEC. LINE

GROUND LIGHT

ASPHALT DRIVE

ASPHALT

BRICK

MIXED HARDWOODS AND PINES

18"PINE

28"PINE

10"PINE

TC= 71.27
BC= 70.79

TC= 71.10
BC= 70.64

TC= 70.30
BC= 69.77

TC= 71.49
BC= 71.06

TC= 70.20
BC= 69.93

TC= 70.11
BC= 69.75

THE FOLLOWING PERSON IS RESPONSIBLE FOR THE PREVENTIVE AND MAINTENANCE OF ALL STORMWATER MANAGEMENT MEASURES.

verizon

VERIZON NEW JERSEY, INC.
1 VERIZON WAY
BASKING RIDGE, NEW JERSEY 07920

ATT: CHARLIE MESSING
MOBILE: (917) 992 1356
FAX: (732) 360 1865
E-MAIL: CHARLES.MESSING@VERIZON.COM
175 MAIN ST.
FREEHOLD NJ 07728

0 30 60
SCALE IN FEET

WASHINGTON ROAD
(Width Varies)

SAN MH RIM=70.32

SAN MH RIM=72.64

(200.00' DEED) 200.58' S44°48'16"E

UP #63540
4 RISER

STORM MH
RIM=69.11
A INV IN = 66.51
B INV IN = 65.50
C INV IN = 64.81
D INV OUT = 64.71

"NO PARKING ANYTIME"

45.0'

36.8'

22.5' ½ WIDTH

P.O.B.
N: 543,246.02
E: 456,032.66

CONC. MON FND 0.20'

UP 3 RISER

UP #63470

Rev: 04/15/22

The Reynolds Group, Inc.

State of New Jersey
Certificate of Authorization
Number 24GA27969200
21NH00004300

Engineers
Landscape Architects
Land Surveyors
Planners

575 Route 28, Suite 110
Raritan, N.J. 08869
Tele 908-722-1500
Fax 908-722-7035

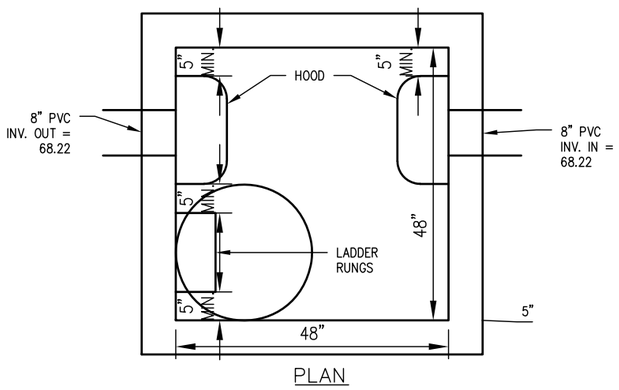
F. Mitchel Ardman, P.E., P.P.
Jeffrey D. Reynolds, P.L.A.

SCALE: 1"=30' | TRG Job No.: 20-010 | Date: 03/08/22

Project: PENNS NECK VERIZON
STORMWATER MAINTENANCE PLANS
138 WASHINGTON ROAD
BLOCK 6, LOT 72
TOWNSHIP OF WEST WINDSOR
MERCER COUNTY, NEW JERSEY

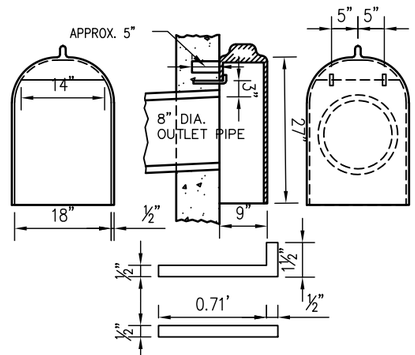
Sheet No.: MP-1

J:\ENGINEERING PROJECTS\2020\20-010 - PENNS NECK VERIZON (WEST WINDSOR)_CAD\DESIGN\20-010 DRAINAGE (RO).DWG-(4/20/22)



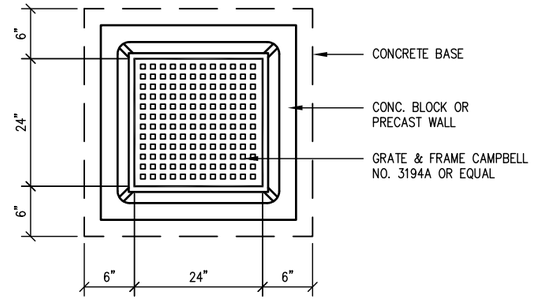
PLAN

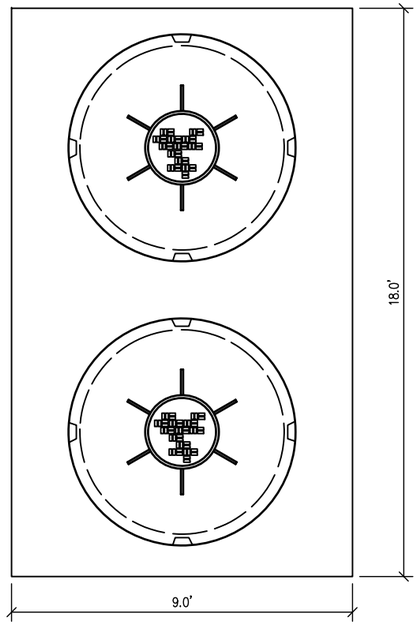
USE CAMPELL FOUNDRY PATTERN #1202B, OR APPROVED EQUAL, MANHOLE FRAME AND COVER

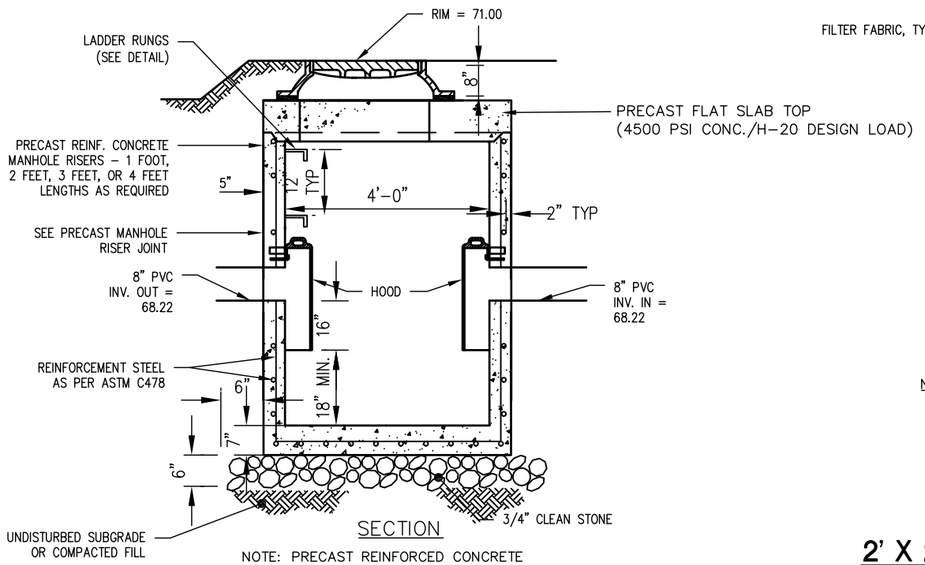


PATTERN NUMBER 2564
AS MANUFACTURED BY CAMPBELL OR APPROVED EQUAL

STANDARD CAST IRON HOOD WITH STAINLESS STEEL HOOKS FOR CATCH BASIN







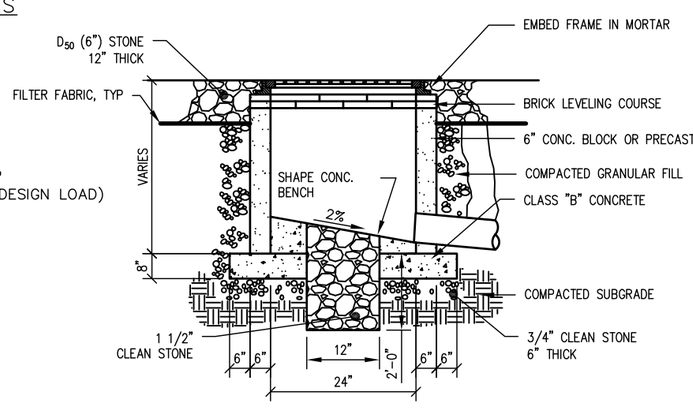
SECTION

NOTE: PRECAST REINFORCED CONCRETE MANHOLE SECTIONS SHALL CONFORM TO ASTM C478

NOTES:
1. ALL MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH CURRENT NJDOT SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AND ITS AMENDMENTS.
2. CASTINGS OF PRECAST MANHOLES SHALL BE ADJUSTED TO GRADE WITH COURSES OF BRICK, CONCRETE BLOCK, OR CONCRETE GRADING RINGS AS REQUIRED, 12 INCHES MAXIMUM.
3. COPOLYMER POLYPROPYLENE PLASTIC LADDER RUNGS SHALL BE INSTALLED AT 12" O.C.

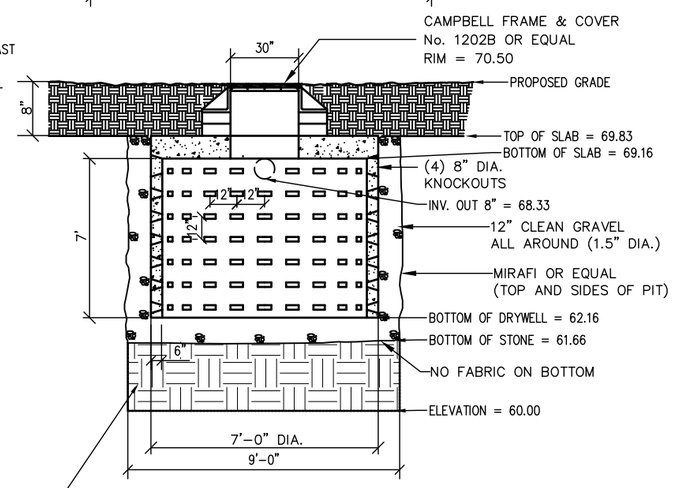
PRECAST CONCRETE STORM MANHOLE WITH HOOD

(48"X48" BOX)



NOTES:
1) ALL INLETS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CURRENT NJDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND ITS AMENDMENTS.
2) IF BLOCK INLETS PROVIDED, SHALL BE MULTIPLEX BLOCK, WITH STAGGERED, MORTARED JOINTS. INTERIOR AND EXTERIOR WALLS SHALL ALSO BE PLASTERED WITH 1/2" MORTAR.
3) PROVIDE POLYPROPYLENE STEPS AT 12" O.C.

2' X 2' LAWN INLET W/ OPEN BOTTOM



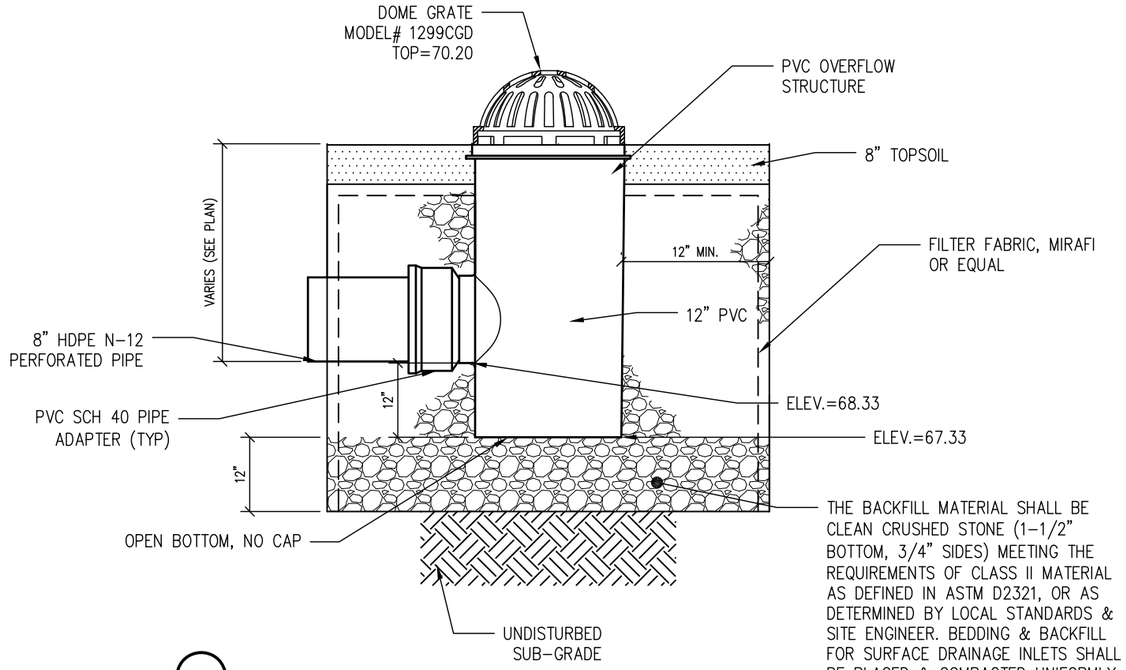
- CONC. DRYWELL TANK AS MANUFACTURED BY PEERLESS CONCRETE PRODUCTS CO., OR APP'D EQUAL
- HS -20 LOAD RATED
- CONC. MIN. STRENGTH: 4,500 PSI @28 DAYS
- REINFORCING: TO BE PROVIDED IN THE SUBMITTALS

PRECAST SEEPAGE PIT

Rev: 04/15/22

The Reynolds Group, Inc.
Engineers
Landscape Architects
Land Surveyors
Planners
575 Route 28, Suite 110
Raritan, N.J. 08869
Tele 908-722-1500
Fax 908-722-7035
F. Mitchel Ardman, P.E., P.P.
Jeffrey D. Reynolds, P.L.A.
State of New Jersey
Certificate of Authorization
Number 24GA27969200
21MH00004300

SCALE: AS SHOWN	TRG Job No.: 20-010	Date: 03/08/22
Project: PENNS NECK VERIZON STORMWATER MAINTENANCE DETAILS 138 WASHINGTON ROAD BLOCK 6, LOT 72 TOWNSHIP OF WEST WINDSOR MERCER COUNTY, NEW JERSEY		Sheet No.: MP-2



Nyloplast

MATERIAL SPECIFICATIONS:

THE OVERFLOW STRUCTURE SHALL BE MANUFACTURED FROM PVC PIPE STOCK, UTILIZING A THERMO-MOLDING PROCESS TO REFORM THE PIPE STOCK TO THE SPECIFIED CONFIGURATION. THE DRAINAGE PIPE CONNECTION STUBS SHALL BE MANUFACTURED FROM PVC PIPE STOCK AND FORMED TO PROVIDE A WATERTIGHT CONNECTION WITH THE SPECIFIED PIPE SYSTEM. THIS JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR JOINTS FOR DRAIN AND SEWER PLASTIC PIPE USING FLEXIBLE ELASTOMERIC SEALS. THE FLEXIBLE ELASTOMERIC SEALS SHALL CONFORM TO ASTM F477. THE PIPE BELL SPIGOT SHALL BE JOINED TO THE MAIN BODY OF THE DRAIN BASIN OR CATCH BASIN. THE RAW MATERIAL USED TO MANUFACTURE THE PIPE STOCK THAT IS USED TO MANUFACTURE THE MAIN BODY AND PIPE STUBS OF THE SURFACE DRAINAGE INLETS SHALL CONFORM TO ASTM D1784 CELL CLASS 12454.

A DOME GRATE FURNISHED FOR THE OVERFLOW STRUCTURE SHALL BE DUCTILE IRON AS SHOWN AND SHALL BE MADE SPECIFICALLY FOR STRUCTURE SO AS TO PROVIDE A ROUND BOTTOM FLANGE THAT CLOSELY MATCHES THE DIAMETER OF THE PIPE. METAL USED IN THE MANUFACTURE OF THE CASTINGS SHALL CONFORM TO ASTM A536 GRADE 70-50-05 FOR DUCTILE IRON. CASTING SHALL BE PAINTED BLACK AND WITH LOCKING DEVICE.

ROOF DRAIN CLEANOUT WITH SUMP

(AS MANUF. BY NYLOPLAST)

Rev: 04/15/22

The Reynolds Group, Inc.
Engineers
Landscape Architects
Land Surveyors
Planners
State of New Jersey
Certificate of Authorization
Number 24GA27969200
21MH00004300
575 Route 28, Suite 110
Raritan, N.J. 08869
Tele 908-722-1500
Fax 908-722-7035
F. Mitchel Ardman, P.E., P.P.
Jeffrey D. Reynolds, P.L.A.

SCALE: AS SHOWN | TRG Job No.: 20-010 | Date: 03/08/22

Project: PENNS NECK VERIZON
STORMWATER MAINTENANCE DETAILS
138 WASHINGTON ROAD
BLOCK 6, LOT 72
TOWNSHIP OF WEST WINDSOR
MERCER COUNTY, NEW JERSEY

Sheet No.: MP-3

J:\ENGINEERING PROJECTS\2020\20-010 - PENNS NECK VERIZON (WEST WINDSOR)_CAD\DESIGN\20-010 DRAINAGE (R0).DWG-(4/18/22)