RESPONSES TO BETA PRELIMINARY PLAN PEER REVIEW COMMENTS DATED JANUARY 24, 2025

GENERAL COMMENTS

- **COMMENT**: The proposed design increases the impervious area of the site by 2.07 acres. The design team is providing treatment for 11.90 acres of the proposed 12.47 acre of impervious area, 0.57 acres of impervious area will not be treated. The design team has met the recharge volume requirements and has reduced the site runoff volume and peak discharge during the 10-year storm per the Town's regulations.

  RESPONSE: The project exceeds the State requirements and the Town of Bristol's regulations for the Silver Creek East Branch design point and Silver Creek West Branch design point.

- **COMMENT**: Have all utility crossings been verified?

  RESPONSE: Based on the utility layouts provided on plan sheets C7.1-C7.9, utility crossings have been designed with no conflicts apparent at this time based on design information to date.

- **COMMENT**: In Appendix C of the stormwater report it appears that the drawdown times for the bioretention areas and sand filters are less than 48 hours. However, the equation provided within the drawdown section with the coefficients given does not yield the stated drawdown time. Please review.

  RESPONSE: The drawdown equation within the Bioretention Area calculation sheets and Sand Filter Area calculation sheet has been revised to reflect the draw down calculation used. Please see the revised calculation sheets. The provided hydrologic calculations for the proposed condition also demonstrate that the BMPs drain within 48 hours per the State requirements.

- **COMMENT**: Has construction phasing been considered?

  RESPONSE: Construction phasing information is provided on plan sheets C2.1-C2.9. Additional information on phasing is provided within the Soil Erosion and Sediment Control Plan Report.

CULVERTS WITHIN PROJECT AREA

- **COMMENT**: Original school was built in 1965. What is the age and condition of the current culverts? Are they structurally sound? Have they been inspected by a structural engineer? Has the design team considered replacing these culverts as part of the project?

  RESPONSE: Culverts are depicted on the enclosed Mt. Hope High School record plans dated 1964 and 1993. The project's structural engineer has not reviewed the culverts. Replacement of the culverts is anticipated to require a Significant Alteration Permit from RIDEM and require enhanced study of Silver Creek.

  The Contract Documents require the Contractor to engage a structural engineer to inspect culverts and provide a report. For the existing culverts located beneath the new access drive, the Contractor's structural engineer shall design improvements to support the crossing without damaging culverts. Contractor's structural engineer shall provide stamped design drawings and calculations depicting the proposed roadway crossing for the Owner's review prior to installation.

- **COMMENT**: Please verify that survey is correct. It shows the culverts each having a negative slope. The first set of culverts are depicted as 40-inch on the upstream side and then 48-inch on the downstream side.

  The surveyor confirmed existing pipes are 48" diameter. Surveyor will provide updated existing conditions plan.

  It appears that at DP 1.1, the proposed design is intended to replicate the FEMA base flood elevation and allow Silver Creek to behave as it does under existing conditions. The assumption would be that the school breezeway above the culvert does not hold back flow, because the base flood elevation is approximately 59.7 ft at this point and the proposed overflow elevation above the 48-inch pipes is set to that same 59.7 elevation. If the design assumes the FEMA base flood water surface elevation at DP 1.1 (under existing and proposed conditions) and there is no increase in flow to this point from the project, then why propose the installation of two 48-inch pipes at this location with inverts below the base flood elevation? The design is providing twice the hydraulic opening at the uppermost restriction. The design also indicates that there is no increase in flow to Silver Creek at DP 1.3, yet an additional two 48-inch pipes are proposed at this location. This may be necessary for the proposed design, but there are no calculations or basis to support this.

  The design does not indicate that there is any increase in flow to Silver Creek as a result of the project. The design is also based on the FEMA base flood elevations (at point DP 1.1) which would mean that Silver Creek does not overflow its banks within the project area for a 100-year storm. Yet, the design proposes four 48-inch pipes which appear to be for overflow. Is the design inadvertently increasing flow to DP 1.4 by installing the 48-inch pipes.

It appears that the 48-inch pipes would protect the site from flooding by bypassing the site and discharging flow just upstream of Chestnut Street. The concern would be that the proposed design would shift the location of the flooding/impoundment from the site to the low point on Chestnut Street adjacent to the cemetery.

RESPONSE: The existing conditions plan indicates that the building over the upstream culvert is set at elevation 60.3 and grades west of the existing Gym Building are 59.4. Based upon this information, Silver Creek may flow around the west side of the Gym Building, through the parking area, and into the Pond during large storm events. Silver Creek will no longer be able to use this route in the proposed condition due to the elevation of the existing building and parking area.

The reinforced concrete culvert pipes are proposed upstream of the second and third culverts along Silver Creek to allow water to pass through Silver Creek and reduce the potential for flooding over the new access drive and the walk proposed over the existing culverts. The walk is also over the existing 15" sewer main and new utilities serving the building. The culverts are intended to replicate the flow of water west of the gym in the existing condition and reduce frequency of overtopping the second and third culverts. The culvert pipes discharge to the pond downstream as the overland flow route west of the gym does in the existing condition.

Finish grade above the upstream culvert is set at elevation 59.7 to reduce impacts both upstream and downstream. The existing culverts and finish grade over the culverts are anticipated to limit the runoff discharged into Silver Creek from the northeast wetland as the existing building and existing grade west of the Gym Building limit runoff in the existing condition.

The inlet invert of these pipes is set four feet above the invert of the existing 48" culverts (same elevation as the crown of existing 48" culverts). The proposed pipes are not designed to alter or impact flow through Silver Creek under normal conditions. During large storm events, where flow within Silver Creek may exceed the capacity of the existing culverts, the proposed piping will provide a route for water to reach the Pond and reduce potential for on-site flooding.

The hydrologic calculations are based upon the watershed areas depicted on XBT-2 and indicate a decrease in flow to DP 1.4 from the project site. The hydrologic calculations do not include the off-site contributing watershed to Silver Creek.

Detailed calculations modeling Silver Creek have not been prepared. The pipes are not proposed to increase or decrease flow through Silver Creek to DP 1.4.

The time of travel from the landscape area west of the gym and the time of travel in the proposed pipes is anticipated to be negligible during a large storm event and result in minimal impact to flow directed to DP 1.4.

STORMWATER COMMENTS

Sheet 6.1/8.9 – Underground Infiltration System (Us)

- **COMMENT**: The finished grade at the UGIS appears to be grass, however the detail shows finished grade being pavement, please review.

  RESPONSE: The UGIS-01 detail has been updated to reflect the proposed surface cover, please refer to plan sheet C8.9 for revisions.

- **COMMENT**: The top of the chamber system is shown to be at 49.00' and the chamber system to have a height of 26.52". The bottom elevation of the chamber system with the listed dimensions should be 46.79', please review.

  RESPONSE: The UGIS-01 detail has been updated to reflect the proposed elevations, please refer to plan sheet C8.9 for revisions.

- **COMMENT**: Please confirm the elevation of the seasonal high groundwater (SHGW). The mounding analysis provided is for the ten-year storm and the estimated SHGW on the detail does not match the elevation from TP-20-03.

  RESPONSE: The estimated seasonal high groundwater table (ESHGWT) is approximately 43.30, please see the detail on plan sheet C8.9. The ESHGWT was determined using information collected at TP-20-03 then interpolated based on the existing grade within the vicinity of the UGIS. The mounding analysis calculation sheets do not state the ESHGWT. The initial thickness of the saturated zone value (hi(0)) was calculated using the ESHGWT and the estimated bedrock depth per boring B24-20 per the USGS Scientific Investigations Report 2010-5102.

Sheet 6.2/Stormwater Report

- **COMMENT**: Riprap apron sizing is not provided for the discharge point of the four (4) 48" bypass pipes.

  RESPONSE: Riprap apron sizing for the 48" bypass pipes will be reviewed by RIDEM. Once the bypass culverts are coordinated, reviewed and approved by RIDEM, revised

information will be provided to the Town of Bristol for review prior to Final Plan approval.

Sheet 6.4

- **COMMENT**: The 48" RCP bypass pipes are shown 4' on center, please review.

  RESPONSE: The two 48" RCP bypass pipes have been updated to provide 5 feet separation between the 48" bypass pipes, please refer to plan sheet C6.4 for revisions.

- **COMMENT**: DMH -204 and DMH-205 are 6' diameter structures and shown to be located 5' from each other please review. According to RIDOT Standard Detail 5.2.0, a 6'diameter manhole is not sufficient for 48" pipes. Please review.

  RESPONSE: The two DMH have been updated to be 8' diameter structures that are offset from one another for installation, please refer to plan sheet C6.4 for revisions.

Sheet 6.5/8.2/Stormwater Report

- **COMMENT**: Bioretention Area 4 is shown having an underdrain, the underdrain is not included as an outlet in the HydroCAD model, please review.

  RESPONSE: Bioretention Area 4 has been revised to provide 10 feet of perforated PVC with a valve for maintenance purposes. The valve shall remain closed to allow for exfiltration. Please refer to plan sheet C6.5 for revisions.

- **COMMENT**: On page 13 of the stormwater report, it is stated that for bioretention area with exfiltration (Bioretention Area 1 and 4) stormwater is piped to the sediment forebay for pretreatment. There is no sediment forebay at Bioretention Area 4.

  RESPONSE: The stormwater report has been corrected to state that Bioretention Area 4 does not have a sediment forebay. Please see revised stormwater report narrative page 13 for stormwater report language revisions.

Sheet 6.5/8.12 Stormwater Report

- **COMMENT**: Please confirm the elevation of the seasonal high groundwater (SHGW) at the infiltration basin. The mounding analysis provided is for the ten-year storm and the estimated SHGW on the detail does not match the elevation from TP-20-05.

  RESPONSE: The estimated seasonal high groundwater (ESHGWT) is approximately 50.72. Please see the detail on plan sheet C8.12. The ESHGWT was determined using

information collected at TP-20-05 then interpolated based on the existing grade within the vicinity of the Infiltration Basin-01. The mounding analysis calculation sheets does not state the ESHGWT. The initial thickness of the saturated zone value (hi(0)) was calculated using the ESHGWT and the estimated bedrock depth per boring B24-11 per the USGS Scientific Investigations Report 2010-5102.

SEWER SERVICE REVIEW

Sheet P-20: New Pump Station

1) **COMMENT**: Document pumping capacity of the existing high school pumping station
   - Pump nameplate, model and design point
   - Pump drawdown test

   RESPONSE: BWRSD is working with the Plumbing Engineer to provide this information.

2) **COMMENT**: Document location of existing pumping station force main discharge.

   RESPONSE: Records plans depicting the pump station are enclosed.

3) **COMMENT**: New pump station shall be designed such that proposed pumping capacity does not exceed the capacity of the existing pumping station.

   RESPONSE: Plumbing Engineer is working with BWPC.

4) **COMMENT**: Document plan for Back-up Power Supply.

   RESPONSE: Backup Power Supply is being reviewed by Plumbing and Electrical Engineer.

5) **COMMENT**: Show Bypass connection (connection to header or force main) for bypass of station

   RESPONSE: Plumbing Engineer is working with BWPC and will update detail.

6) **COMMENT**: Provide exterior electrical controls panel to allow outside vendor to service if required.

   RESPONSE: Plumbing and Electrical Engineer are working with BWPC and will update detail

Sheet C-7.2: Force Main

7) **COMMENT**: Ideally new force main discharges in the same location as the existing force main discharge. Identify existing location and review.

RESPONSE: Pare requested meeting with BWPC to coordinate force main layout and discharge location. Comment conflicts with Comment 13.

8) **COMMENT**: Provide profile for proposed force main discharge and proposed gravity sewer and manholes to connection to existing sewer.

RESPONSE: Pare requested meeting with BWPC to coordinate force main and gravity sewer layout and discharge location. Invert elevations are depicted on plans.

9) **COMMENT**: Provide construction detail for proposed force main discharge. Detail location, elevation, method of connection, relation of new proposed sewer pipes to existing pipes and structures.

RESPONSE: Pare requested meeting with BWPC to coordinate force main and gravity sewer layout and discharge location.

10) **COMMENT**: Minimum size of gravity sewer pipe is 8-inch (Review SMH-09 to SMH-10 to Exis).

RESPONSE: Sewer services have been updated to be 8" SDR-35 PVC pipe, please refer to C7.2 and C7.3.

11) **COMMENT**: Provide rim elevation of existing sewer manhole on pedestrian bridge (Note this is a current low point and a current sanitary sewer overflow location) and compare to other rim elevations.

RESPONSE: Please refer to Survey Sheets 1-4 for existing rim elevation information. Pedestrian bridge existing rim elevation is 57.97. Pare requests additional information regarding SSO and guidance from Peer Reviewer and BWPC.

12) **COMMENT**: Provide plan for abandonment of existing force main and connection.

RESPONSE: Please refer to C3.3 for demolition notes to remove and dispose the existing sewer force main and sewer force main connection.

13) **COMMENT**: Consider extending FM to Gravity Sewer at intersection with Sherry Ave.

RESPONSE: Pare requested meeting with BWPC to coordinate force main layout and discharge location. Comment conflicts with Comment 7.

Sheet C-7.3: Baseball Bathroom

14) **COMMENT**: Compare elevation to SSO location near bridge.

RESPONSE: Pare requests additional information regarding SSO and guidance from Peer Reviewer and BWPC.

15) **COMMENT**: Provide Backflow Preventer.

RESPONSE: Pare requests additional information regarding SSO and guidance from Peer Reviewer and BWPC.

ACB/dp

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See attachments enclosed.

Bristol Warren Regional School District

MT. HOPE HIGH SCHOOL

Attachment 1

Revised BMP Calculations

PARE CORPORATION

PROJECT NAME: Mt. Hope High School PROJECT NUMBER: 23099.01

SUBJECT: Bioretention Area Calculations

COMPUTATIONS BY: ACB DATE: 1/8/2025

REVISED DATE: 02/10/2025

Bioretention Area Calculations

Refer to the RI Stormwater & Installation Standards Manual

Bioretention Area (BIO-1)

Total Area to BIO-1 =	42,514	SF
Total Impervious Area =	24,896	SF

Cell Volume shall be larger of Recharge Volume and Water Quality Volume

Recharge Volume (Re_V)

Hydrologic Soil Group (HSG) =	C	
Impervious Area within HSG =	24,896	SF
Recharge Factor (From Table 3-4) =	0.25	Inches
Required Re_V Volume =	**519**	**CF**

Water Quality Volume (WQ_V)

WQ_V = Impervious Area x 1.0 inches =	2,075	CF
75% WQ_V (including pretreatment) =	1,556	CF
Required WQ_V Volume =	**1,556**	**CF**
Volume provided in Bioretention Media =	480	CF in filter media with a 0.33 Void Ratio
Volume provided in Bioretention (above filter media) =	581	CF from HydroCAD Model
Volume provided in Sediment Forebay =	520	CF
Total WQ_V Volume Provided =	**1,571**	**CF**

Area

$Af=WQ_V (d_f)/[(k)(h_f+d_f)(t_f)]$	*(From 5.5.4)*	SF, Surface area of filter bed
d_f =	2.00	ft, Filter bed depth
k =	1.00	ft/day, Coefficient of permeability of filter media
h_f =	0.23	ft, Average height of water above surface of practice
t_f =	2	days, Design filter bed drain time
Area Required =	706	SF, Surface Area of filter bed
Area Provided =	**725**	**SF**

Pretreatment (Sediment Forebay)

Required Pretreatment Volume = 25% WQV =	519	CF
Volume Provided =	**520**	**CF**

Drawdown within 48 hours

Drawdown Time = (Provided Volume) / (K x Bottom Area)

Provided Volume (above filter media) =	1,101	CF
K = saturated hydraulic conductivity =	1.00	ft/day, Coefficient of permeability of filter media
Bottom Area (Average) =	725	SF
Drawdown Time =	**36**	**HRS** **< 48 hrs**

PARE CORPORATION

PROJECT NAME: Mt. Hope High School PROJECT NUMBER: 23099.01
SUBJECT: Bioretention Area Calculations
COMPUTATIONS BY: acb DATE: 1/8/2025
REVISED DATE: 02/11/2025

Bioretention Area Calculations

Refer to the RI Stormwater & Installation Standards Manual
Bioretention Area (BIO-2)

Total Area to BIO-2 =	26,810	SF
Total Impervious Area =	17,464	SF

Cell Volume shall be larger of Recharge Volume and Water Quality Volume

Recharge Volume (Re_V)

Hydrologic Soil Group (HSG) =	C	
Impervious Area within HSG =	17,464	SF
Recharge Factor (From Table 3-4) =	0.25	Inches
Required Re_V Volume =	**364**	**CF**

Water Quality Volume (WQ_V)

WQ_V = Impervious Area x 1.0 inches =	1,455	CF
75% WQ_V (including pretreatment) =	1,092	CF
Required WQ_V Volume =	**1,092**	**CF**
Volume provided in Bioretention Media =	1,131	CF in filter media with a 0.33 Void Ratio
Volume provided in Bioretention (above filter media) =	440	CF from HydroCAD Model
Volume provided in Sediment Forebay =	460	CF
Total WQ_V Volume Provided =	**2,031**	**CF**

Area

$Af=WQ_V (d_f)/[(k)(h_f+d_f)(t_f)]$	*(From 5.5.4)*	SF, Surface area of filter bed
d_f =	3.00	ft, Filter bed depth
k =	1.00	ft/day, Coefficient of permeability of filter media
h_f =	0.25	ft, Average height of water above surface of practice
t_f =	2	days, Design filter bed drain time
Area Required =	937	SF, Surface Area of filter bed
Area Provided =	**1,128**	**SF**

Pretreatment (Sediment Forebay)

Required Pretreatment Volume = 25% WQV =	364	CF
Volume Provided =	**460**	**CF**

Drawdown within 48 hours

Drawdown Time = (Provided Volume) / (K x Bottom Area)

Provided Volume (above filter media) =	900	CF
K = saturated hydraulic conductivity =	1.00	ft/day, Coefficient of permeability of filter
Bottom Area (Average) =	1,128	SF
Drawdown Time =	**19**	**HRS** **< 48 hrs**

PARE CORPORATION

PROJECT NAME: Mt. Hope High School PROJECT NUMBER: 23099.01

SUBJECT: Bioretention Area Calculations

COMPUTATIONS BY: ACB DATE: 1/8/2025

REVISED DATE: 02/11/2025

Bioretention Area Calculations

Refer to the RI Stormwater & Installation Standards Manual
Bioretention Area (BIO-3)

Total Area to BIO-3 =	16,632	SF
Total Impervious Area =	12,574	SF

Cell Volume shall be larger of Recharge Volume and Water Quality Volume

Recharge Volume (Re_V)

Hydrologic Soil Group (HSG) =	C	
Impervious Area within HSG =	12,574	SF
Recharge Factor (From Table 3-4) =	0.25	Inches
Required Re_V Volume =	**262**	**CF**

Water Quality Volume (WQ_V)

WQ_V = Impervious Area x 1.0 inches =	1,048	CF
Required WQ_V Volume =	**1,048**	**CF**
Volume provided in Bioretention Media =	556	CF in filter media with a 0.33 Void Ratio
Volume provided in Bioretention (above filter media) =	552	CF from HydroCAD Model
Total WQ_V Volume Provided =	**1,108**	**CF**

Area

$Af=WQ_V (d_f)/[(k)(h_f+d_f)(t_f)]$	*(From 5.5.4)*	SF, Surface area of filter bed
d_f =	2.75	ft, Filter bed depth
k =	1.00	ft/day, Coefficient of permeability of filter media
h_f =	0.38	ft, Average height of water above surface of practice
t_f =	2	days, Design filter bed drain time
Area Required =	488	SF, Surface Area of filter bed
Area Provided =	**606**	**SF**

Drawdown within 48 hours

Drawdown Time = (Provided Volume) / (K x Bottom Area)

Provided Volume (above filter media) =	552	CF
K = saturated hydraulic conductivity =	1.00	ft/day, Coefficient of permeability of filter
Bottom Area (Average) =	606	SF
Drawdown Time =	**22**	**HRS** **< 48 hrs**

PARE CORPORATION

PROJECT NAME:	Mt. Hope High School	PROJECT NUMBER:	23099.01
SUBJECT:	Bioretention Area Calculations		
COMPUTATIONS BY:	ACB	DATE:	1/8/2025
CHECK BY:		DATE:	REVISED 02/11/2025

Bioretention Area Calculations

Refer to the RI Stormwater & Installation Standards Manual
Bioretention Area (BIO-4)

Total Area to BIO-4 =	16,850	SF
Total Impervious Area =	7,023	SF

Cell Volume shall be larger of Recharge Volume and Water Quality Volume

Recharge Volume (Re_V)

Hydrologic Soil Group (HSG) =	C	
Impervious Area within HSG =	7,023	SF
Recharge Factor (From Table 3-4) =	0.25	Inches
Required Re_V Volume =	**146**	**CF**

Water Quality Volume (WQ_V)

WQ_V = Impervious Area x 1.0 inches =	585	CF
Required WQ_V Volume =	**585**	**CF**
Volume provided in Bioretention Media =	724	CF in filter media with a 0.33 Void Ratio
Volume provided in Bioretention (above filter media) =	420	CF from HydroCAD Model
Total WQ_V Volume Provided =	**1,144**	**CF**

Area

$Af=WQ_V (d_f)/[(k)(h_f+d_f)(t_f)]$	*(From 5.5.4)*	SF, Surface area of filter bed
d_f =	3.00	ft, Filter bed depth
k =	1.00	ft/day, Coefficient of permeability of filter media
h_f =	0.25	ft, Average height of water above surface of practice
t_f =	2	days, Design filter bed drain time
Area Required =	528	SF, Surface Area of filter bed
Area Provided =	**601**	**SF**

Drawdown within 48 hours

Drawdown Time = (Provided Volume) / (K x Bottom Area)

Provided Volume (above filter media) =	420	CF
K = saturated hydraulic conductivity =	1.00	ft/day, Coefficient of permeability of filter
Bottom Area (Average) =	601	SF
Drawdown Time =	**17**	**HRS** **< 48 hrs**

PARE CORPORATION

PROJECT NAME: Mt. Hope High School PROJECT NUMBER: 23099.01
SUBJECT: Sand Filter Area Calculations
COMPUTATIONS BY: ACB DATE: 1/8/2025
REVISED DATE: 02/11/2025

Sand Filter Calculations

Refer to the RI Stormwater & Installation Standards Manual
Sand Filter (SF-1)

Total Area to SF-1 =	339,731	SF
Total Impervious Area =	110,484	SF
Pavement areas	76,199	SF

Cell Volume shall be larger of Recharge Volume and Water Quality Volume

Recharge Volume (Re_V)

Hydrologic Soil Group (HSG) =	C	
Impervious Area within HSG =	110,484	SF
Recharge Factor (From Table 3-4) =	0.25	Inches
Required Re_V Volume =	**2,302**	**CF**

Water Quality Volume (WQ_V)

WQ_V = Impervious Area x 1.0 inches =	9,207	CF
75% WQ_V (including pretreatment) =	6,905	CF
Required WQ_V Volume =	**6,905**	**CF**
Volume provided in Sand Filter Media =	4,158	CF in filter media with a 0.33 Void Ratio
Volume provided in Sand Filter (above filter media) =	3,625	CF from HydroCAD Model
Volume provided in Sediment Forebay =	1,650	CF
Total WQ_V Volume Provided =	**9,433**	**CF**

Area

$Af=WQ_V (d_f)/[(k)(h_f+d_f)(t_f)]$	*(From 5.5.4)*	SF, Surface area of filter bed
d_f =	3.00	ft, Filter bed depth
k =	3.50	ft/day, Coefficient of permeability of filter media
h_f =	0.38	ft, Average height of water above surface of practice
t_f =	2	days, Design filter bed drain time
Area Required =	1,198	SF, Surface Area of filter bed
Area Provided =	**4,200**	**SF**

Pretreatment (Sediment Forebay)

Required Pretreatment Volume = 25% WQV =	1,587	CF*	*Pretreatment is for pavement areas only . Does not icluded pretreatment for roof runoff or athletic infield mix
Volume Provided =	**1,650**	**CF**	

Drawdown within 48 hours

Drawdown Time = (Provided Volume) / (K x Bottom Area)

Provided Volume (above filter media) =	5,275	CF
K = saturated hydraulic conductivity =	3.50	ft/day, Coefficient of permeability of filter media
Bottom Area (Average) =	4,200	SF
Drawdown Time =	**9**	**HRS** **< 48 hrs**

PARE CORPORATION

PROJECT NAME: Mt. Hope High School PROJECT NUMBER: 23099.01
SUBJECT: Sand Filter Area Calculations
COMPUTATIONS BY: ACB DATE: 1/8/2025
REVISED DATE: 02/11/2025

Sand Filter Calculations

Refer to the RI Stormwater & Installation Standards Manual
Sand Filter (SF-2)

Total Area to SF-2 =	89,751	SF
Total Impervious Area =	43,659	SF

Cell Volume shall be larger of Recharge Volume and Water Quality Volume

Recharge Volume (Re_V)

Hydrologic Soil Group (HSG) =	C	
Impervious Area within HSG =	43,659	SF
Recharge Factor (From Table 3-4) =	0.25	Inches
Required Re_V Volume =	**910**	**CF**

Water Quality Volume (WQ_V)

WQ_V = Impervious Area x 1.0 inches =	3,638	CF
75% WQ_V (including pretreatment) =	2,729	CF
Required WQ_V Volume =	**2,729**	**CF**
Volume provided in Sand Filter Media =	2,149	CF in filter media with a 0.33 Void Ratio
Volume provided in Sand Filter (above filter media) =	2,172	CF from HydroCAD Model
Volume provided in Sediment Forebay =	1,792	CF
Total WQ_V Volume Provided =	**6,113**	**CF**

Area

$Af=WQ_V (d_f)/[(k)(h_f+d_f)(t_f)]$	*(From 5.5.4)*	SF, Surface area of filter bed
d_f =	3.00	ft, Filter bed depth
k =	3.50	ft/day, Coefficient of permeability of filter media
h_f =	0.38	ft, Average height of water above surface of practice
t_f =	2	days, Design filter bed drain time
Area Required =	776	SF, Surface Area of filter bed
Area Provided =	**2,171**	**SF**

Pretreatment (Sediment Forebay)

Required Pretreatment Volume = 25% WQV =	910	CF
Volume Provided =	**1,792**	**CF**

Drawdown within 48 hours

Drawdown Time = (Provided Volume) / (K x Bottom Area)

Provided Volume (above filter media) =	3,964	CF
K = saturated hydraulic conductivity =	3.50	ft/day, Coefficient of permeability of filter
Bottom Area (Average) =	2,171	SF
Drawdown Time =	**13**	**HRS** **< 48 hrs**

PARE CORPORATION

PROJECT NAME: Mt. Hope High School PROJECT NUMBER: 23099.01
SUBJECT: Sand Filter Area Calculations
COMPUTATIONS BY: ACB DATE: 1/8/2025
REVISED DATE: 02/11/2025

Sand Filter Calculations

Refer to the RI Stormwater & Installation Standards Manual
Sand Filter (SF-3)

Total Area to SF-3 =	22,284	SF
Total Impervious Area =	13,903	SF

Cell Volume shall be larger of Recharge Volume and Water Quality Volume

Recharge Volume (Re_V)

Hydrologic Soil Group (HSG) =	C	
Impervious Area within HSG =	13,903	SF
Recharge Factor (From Table 3-4) =	0.25	Inches
Required Re_V Volume =	**290**	**CF**

Water Quality Volume (WQ_V)

WQ_V = Impervious Area x 1.0 inches =	1,159	CF
75% WQ_V (including pretreatment) =	869	CF
Required WQ_V Volume =	**869**	**CF**
Volume provided in Sand Filter Media =	1,979	CF in filter media with a 0.33 Void Ratio
Volume provided in Sand Filter (above filter media) =	1,999	CF from HydroCAD Model
Volume provided in Sediment Forebay =	338	CF
Total WQ_V Volume Provided =	**4,316**	**CF**

Area

$Af=WQ_V (d_f)/[(k)(h_f+d_f)(t_f)]$	*(From 5.5.4)*	SF, Surface area of filter bed
d_f =	3.00	ft, Filter bed depth
k =	3.50	ft/day, Coefficient of permeability of filter media
h_f =	0.38	ft, Average height of water above surface of practice
t_f =	2	days, Design filter bed drain time
Area Required =	547	SF, Surface Area of filter bed
Area Provided =	**2,011**	**SF**

Pretreatment (Sediment Forebay)

Required Pretreatment Volume = 25% WQV =	290	CF
Volume Provided =	**338**	**CF**

Drawdown within 48 hours

Drawdown Time = (Provided Volume) / (K x Bottom Area)

Provided Volume (above filter media) =	2,337	CF
K = saturated hydraulic conductivity =	3.50	ft/day, Coefficient of permeability of filter
Bottom Area (Average) =	2,011	SF
Drawdown Time =	**8**	**HRS** **< 48 hrs**

PARE CORPORATION

PROJECT NAME:	Mt. Hope High School	PROJECT NUMBER:	23099.01
SUBJECT:	Sand Filter Area Calculations		
COMPUTATIONS BY:	ACB	DATE:	1/8/2025
CHECK BY:		DATE:	REVISED 02/11/2025

Sand Filter Calculations

Refer to the RI Stormwater & Installation Standards Manual

Sand Filter (SF-4)

Total Area to SF-4 =	31,007	SF
Total Impervious Area =	7,428	SF

Cell Volume shall be larger of Recharge Volume and Water Quality Volume

Recharge Volume (Re_V)

Hydrologic Soil Group (HSG) =	C	
Impervious Area within HSG =	7,428	SF
Recharge Factor (From Table 3-4) =	0.25	Inches
Required Re_V Volume =	**155**	**CF**

Water Quality Volume (WQ_V)

WQ_V = Impervious Area x 1.0 inches =	619	CF
Required WQ_V Volume =	**619**	**CF**
Volume provided in Sand Filter Media =	1,166	CF in filter media with a 0.33 Void Ratio
Volume provided in Sand Filter (above filter media) =	1,013	CF from HydroCAD Model
Total WQ_V Volume Provided =	**2,179**	**CF**

Area

$Af=WQ_V (d_f)/[(k)(h_f+d_f)(t_f)]$	*(From 5.5.4)*	SF, Surface area of filter bed
d_f =	2.00	ft, Filter bed depth
k =	3.50	ft/day, Coefficient of permeability of filter media
h_f =	0.25	ft, Average height of water above surface of practice
t_f =	2	days, Design filter bed drain time
Area Required =	277	SF, Surface Area of filter bed
Area Provided =	**1,767**	**SF**

Drawdown within 48 hours

Drawdown Time = (Provided Volume) / (K x Bottom Area)

Provided Volume (above filter media) =	1,013	CF	
K = saturated hydraulic conductivity =	3.50	ft/day, Coefficient of permeability of filter	
Bottom Area (Average) =	1,767	SF	
Drawdown Time =	**4**	**HRS**	**< 48 hrs**

PARE CORPORATION

PROJECT NAME:	Mt. Hope High School	PROJECT NUMBER:	23099.01
SUBJECT:	Sand Filter Area Calculations		
COMPUTATIONS BY:	ACB	DATE:	1/8/2025
CHECK BY:		DATE:	REVISED 02/11/2025

Sand Filter Calculations

Refer to the RI Stormwater & Installation Standards Manual

Sand Filter (SF-5) Tennis court - West

Total Area to SF-5 =	23,611	SF
Total Impervious Area =	15,286	SF

Cell Volume shall be larger of Recharge Volume and Water Quality Volume

Recharge Volume (Re_V)

Hydrologic Soil Group (HSG) =	C	
Impervious Area within HSG =	15,286	SF
Recharge Factor (From Table 3-4) =	0.25	Inches
Required Re_V Volume =	**318**	**CF**

Water Quality Volume (WQ_V)

WQ_V = Impervious Area x 1.0 inches =	1,274	CF
Required WQ_V Volume =	**1,274**	**CF**
Volume provided in Sand Filter Media =	705	CF in filter media with a 0.33 Void Ratio
Volume provided in Sand Filter (above filter media) =	663	CF from HydroCAD Model
Total WQ_V Volume Provided =	**1,368**	**CF**

Area

$Af=WQ_V (d_f)/[(k)(h_f+d_f)(t_f)]$	*(From 5.5.4)*	SF, Surface area of filter bed
d_f =	3.00	ft, Filter bed depth
k =	3.50	ft/day, Coefficient of permeability of filter media
h_f =	0.38	ft, Average height of water above surface of practice
t_f =	2	days, Design filter bed drain time
Area Required =	174	SF, Surface Area of filter bed
Area Provided =	**705**	**SF**

Drawdown within 48 hours

Drawdown Time = (Provided Volume) / (K x Bottom Area)

Provided Volume (above filter media) =	663	CF	
K = saturated hydraulic conductivity =	3.50	ft/day, Coefficient of permeability of filter	
Bottom Area (Average) =	705	SF	
Drawdown Time =	**6**	**HRS**	**< 48 hrs**

Bristol Warren Regional School District

MT. HOPE HIGH SCHOOL

Attachment 2

1964 & 1993 Record Plans

BRISTOL JUNIOR SENIOR HIGH SCHOOL

BRISTOL
RHODE ISLAND

KENT
CRUISE
AND
ASSOCIATES

ARCHITECTS
ENGINEERS

PROVIDENCE
RHODE ISLAND

BOSTON
MASSACHUSETTS

ARCHITECT

ARCHITECT

ENGINEER

REV.	DATE	DESCRIPTION	BY

DRAWN

DRAWING

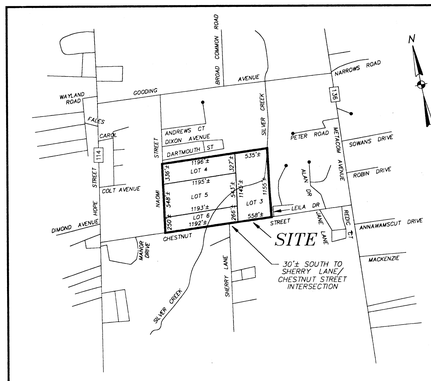
SITE UTILITY PLAN

SCALE 1:40-0

LEGEND

EXISTING*		NEW
—W—	WATER LINE	—W—
—F—	FIRE LINE	—F—
⊕	HYDRANT LOCATION	⊕
⊗	VALVE LOCATION	⊗
—G—	GAS LINE	
—SA—	SANITARY SEWER	—SA—
	FORCE MAIN	—FM—
○	MANHOLE	●
	STORM DRAIN	—ST—

* INCLUDES WORK TO BE DONE BY THE BRISTOL WATER COMPANY AND THE BRISTOL AND WARREN GAS COMPANY



LOCATION MAP

SCALE: 1" = 1000'

LEGEND

- MONUMENT FOUND
- UTILITY POLE
- MANHOLE
- CATCH BASIN
- HYDRANT
- GATE VALVE
- SIGN
- HANDICAP PARKING
- SHRUB
- TREE
- TREE
- SPOT ELEVATION
- PROPERTY LINE
- FENCE
- TREELINE
- WALL
- EDGE OF PAVEMENT
- SANITARY SEWER MAIN
- STORM SEWER LINE
- WATER MAIN
- GAS MAIN
- EDGE OF STREAM
- EDGE OF WETLAND
- WETLAND BUFFER LINE
- RIVERBANK WETLAND BUFFER LINE
- 100 YEAR FLOODPLAIN BOUNDARY

TWIN 48" RCP
INV. (NE) = 50.63 (IN)
INV. (SE) = 50.49 (IN)
INV. (NW) = 50.49 (OUT)
INV. (SW) = 50.36 (OUT)

INV. 12" CMP = 52.74 (OUT)

100 YEAR FLOODPLAIN LIMITS BY ELEVATION AS PER FLOOD INSURANCE RATE MAP– COMMUNITY PANEL NUMBER 445393 0001C & 445393 0002C, REVISED JUNE 1, 1983.

100 YEAR FLOODPLAIN ELEVATION = 43.5 AS PER FLOOD INSURANCE STUDY– COMMUNITY PANEL NUMBER 445393 REVISED DECEMBER 1, 1982.

100 YEAR FLOODPLAIN ELEVATION = 61.1 AS PER FLOOD INSURANCE STUDY– COMMUNITY PANEL NUMBER 445393 REVISED DECEMBER 1, 1982.

100 YEAR FLOODPLAIN ELEVATION = 61.65 AS PER FLOOD INSURANCE STUDY– COMMUNITY PANEL NUMBER 445393 REVISED DECEMBER 1, 1982.

100 YEAR FLOODPLAIN ELEVATION = 55.3 AS PER FLOOD INSURANCE STUDY– COMMUNITY PANEL NUMBER 445393 REVISED DECEMBER 1, 1982.

BENCH MARK BONNET BOLT ON HYDRANT ELEV. = 66.56

BENCH MARK BONNET BOLT ON HYDRANT ELEV. = 69.18

BENCH MARK MARK W. HUTCHINS NO. 4158 REGISTERED PROFESSIONAL ENGINEER

BENCH MARK MARK V. HUTCHINS NO. 1761 REGISTERED PROFESSIONAL SURVEYOR

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

NOTE:
ELEVATIONS BASED UPON NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD).

NOTE:

REFER TO SHEET SP-1.3 FOR CONTRACT LIMIT LINES FOR SITE BID PACKAGE #1 AND GENERAL CONTRACTOR'S WORK

O.M.H. 1
RIM = 45.48
INV. 15" RCP = UNKNOWN (IN)
INV. (2) 48" RCP = 35.68 (IN)
INV. (2) 48" RCP = UNKNOWN (OUT)

O.G.C.B. 2
RIM = 47.72
INV. 15" RCP = 41.67 (IN)
INV. 15" RCP = 41.50 (OUT)

O.G.C.B. 3
RIM = 47.75
INV. 12" RCP = 42.66 (IN)
INV. 15" RCP = 42.61 (OUT)

D.G.C.B. 4
RIM = 58.28
INV. 15" PVC = 52.88 (IN)
INV. 15" PVC = 52.83 (IN)
INV. 12" RCP = 52.70 (OUT)

D.G.C.B. 5
RIM = 58.28
INV. 12" RCP = 52.79 (IN)
INV. 12" RCP = 52.70 (OUT)

O.G.C.B. 6
RIM = 61.79
INV. 8" CMP = 56.95 (IN)
INV. 15" RCP = 54.86 (IN)
INV. 15" PVC = 54.03 (OUT)
INV. 15" PVC = 54.02 (OUT)

DROP INLET CB 7
MH RIM = 65.77
INV. 12" RCP = 60.75 (IN)
INV. 12" RCP = 59.68 (IN)
INV. 15" RCP = 59.67 (OUT)

DROP INLET CB 8
MH RIM = 65.74
INV. 12" RCP = 61.06 (OUT)

DROP INLET CB 9
MH RIM = 67.19
INV. 8" CMP = 64.87 (IN)
INV. 12" RCP = 62.19 (IN)
INV. 12" RCP = 61.49 (OUT)

DROP INLET CB 10
MH RIM = 67.19
INV. 12" RCP = 62.04 (OUT)

O.G.C.B. 11
RIM = 60.19
INV. 12" RCP = 57.88 (OUT)

O.G.C.B. 12
RIM = 60.05
INV. 12" RCP = 57.23 (IN)
INV. 12" RCP = 57.15 (OUT)

O.G.C.B. 13
RIM = 58.96
INV. 12" RCP = 54.92 (IN)
INV. 12" CMP = 54.85 (OUT)

SMH 1
RIM = 61.28
UNABLE TO OPEN BOLTED COVER

SMH 2
RIM = 61.68
INV. 10" PVC = 57.30

SMH 3
RIM = 61.28
INV. 10" PVC = 56.60 (IN)
INV. 15" PVC (E) = 56.33 (IN)
INV. 15" PVC (N) = 55.23 (IN)
INV. 18" PVC = 54.98 (OUT)

SMH 4
RIM = 65.98
INV. 15" PVC = 58.63

SMH 5
RIM = 66.20
INV. 10" CI = 58.67

SMH 6
RIM = 67.19
INV. 10" CI = 59.02

SMH 7
RIM = 67.14
INV. 15" PVC = 58.97

SMH 8
RIM = 68.43
INV. 10" CI = 59.64

SMH 9
RIM = 59.14
INV. 15" PVC = 55.71

SMH 10
RIM = 59.80
INV. 15" PVC = 55.77

SMH 11
RIM = 63.56
INV. 4" PVC (N) = 61.23 (IN)
INV. 6" CI (N) = 59.98 (IN)
INV. 6" VC (E,W) = 59.98 (IN)
INV. 8" VC (S) = 59.98 (OUT)

SMH 12
RIM = 60.45
INV. 6" CI (W) = 56.93 (IN)
INV. 8" CLAY (E) = 56.95 (IN)
INV. 8" CLAY (S) = 56.88 (OUT)

SMH 13
RIM = 60.74
INV. 4" VC (S) = 59.14 (IN)
INV. 8" CLAY (W) = 58.99 (OUT)

PUMP HOUSE
TOP OF CASING = 62.09
INV. 8" CLAY (N) = UNKNOWN
INV. 4" PVC (S) = 59.04 (OUT)
INV. 6" CI (S) = 59.04 (OUT)
CONCRETE BOTTOM = 57.09

MH ENGINEERS SURVEYORS PLANNERS
MARK W. HUTCHINS & ASSOCIATES, INC.
200 METRO CENTER BLVD
WARWICK, RHODE ISLAND
(401) 736-5200

THE NEWPORT COLLABORATIVE
144 BELLEVUE AVENUE, NEWPORT, RI
QUINN ASSOCIATES, INC.
114 WEST MAIN STREET, NEW BRITAIN, CT

NO.	DATE	REVISIONS

BRISTOL WARREN HIGH SCHOOL
BRISTOL, RHODE ISLAND

DATE ISSUED: 3/5/93

EXISTING CONDITIONS

SCALE: 1"=40'

ESP-1.1

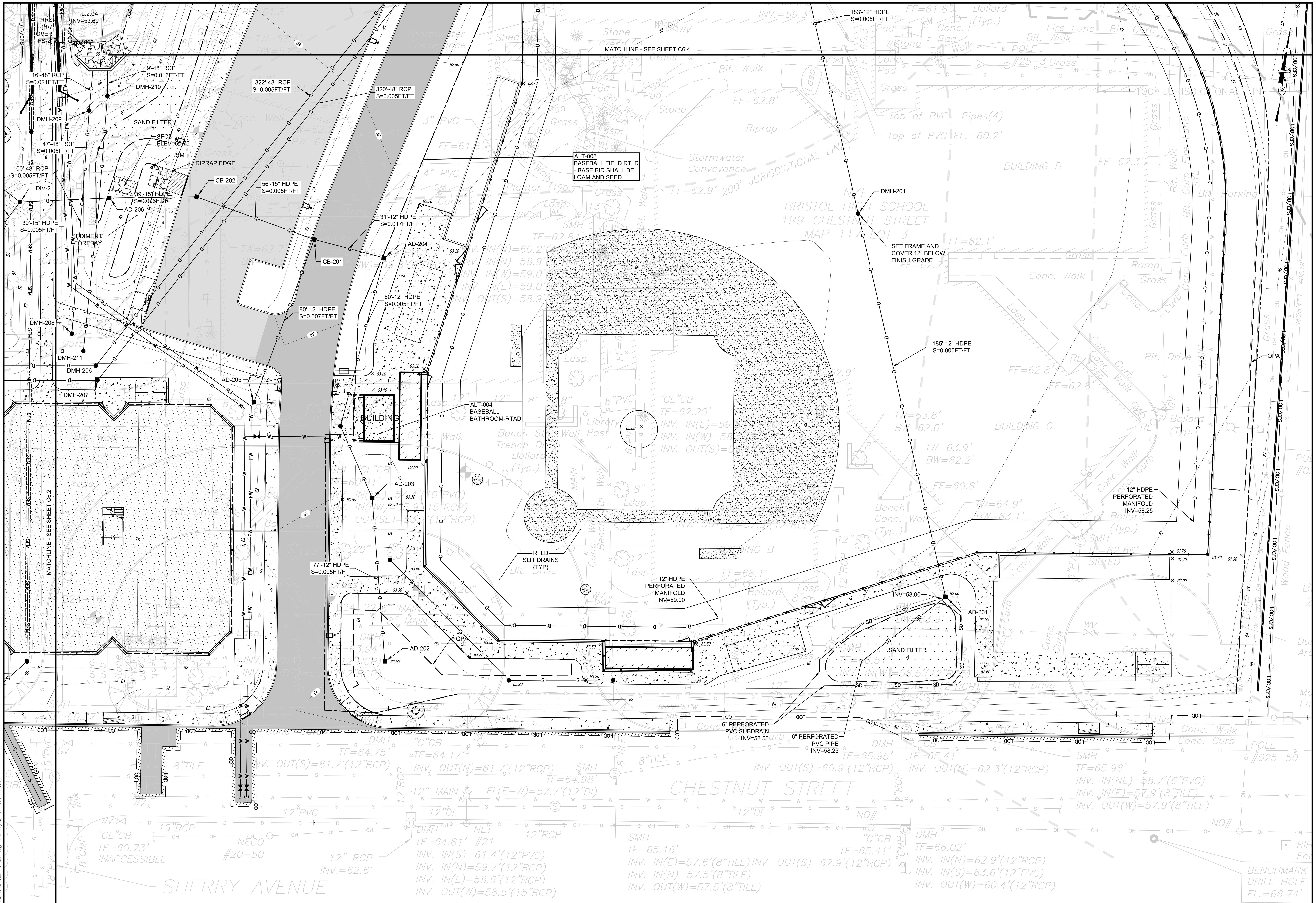
SHEET OF

Bristol Warren Regional School District

MT. HOPE HIGH SCHOOL

Attachment 3

Updated Planset Drawings



DRAINAGE NOTES:

1. REFER TO SHEET C6.1 DRAINAGE PLAN 1 FOR DRAINAGE NOTES.

Scale: 1"=20'

0 10' 20' 40'

PARE

OWNER/APPLICANT:
BRISTOL WARREN REGIONAL SCHOOL DISTRICT
235 HIGH STREET
BRISTOL, RI 02809
401-253-4000

SCALE ADJUSTMENT GUIDE
0" 1"
BAR IS ONE INCH ON ORIGINAL DRAWING

MT. HOPE HIGH SCHOOL
199 Chestnut Street
ASSESSOR'S PLAT 117, LOTS 3, 4, 5, 6, & 7
Bristol, Rhode Island

DAVID L. POTTER
No. 8665
REGISTERED PROFESSIONAL ENGINEER (CIVIL)
02.07.25

REVISIONS:

02-11-2025	PRELIM PLAN RTC

PROJECT NO.:	23099.01
DATE:	JANUARY 10, 2025
SCALE:	1"=20'
DESIGNED BY:	ACB
CHECKED BY:	DLP
DRAWN BY:	AKL
APPROVED BY:	DLP

DRAWING TITLE:

DRAINAGE PLAN 3

DRAWING NO.:

C6.3

SHEET NO. 43 OF 152

DRAINAGE NOTES:

1. REFER TO SHEET C6.1 DRAINAGE PLAN 1 FOR DRAINAGE NOTES.

PARE

OWNER/APPLICANT:
BRISTOL WARREN REGIONAL SCHOOL DISTRICT
235 HIGH STREET
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REVISIONS:

02-11-2025	PRELIM PLAN RTC

PROJECT NO.:	23099.01
DATE:	JANUARY 10, 2025
SCALE:	1"=20'
DESIGNED BY:	ACB
CHECKED BY:	DLP
DRAWN BY:	AKL
APPROVED BY:	DLP

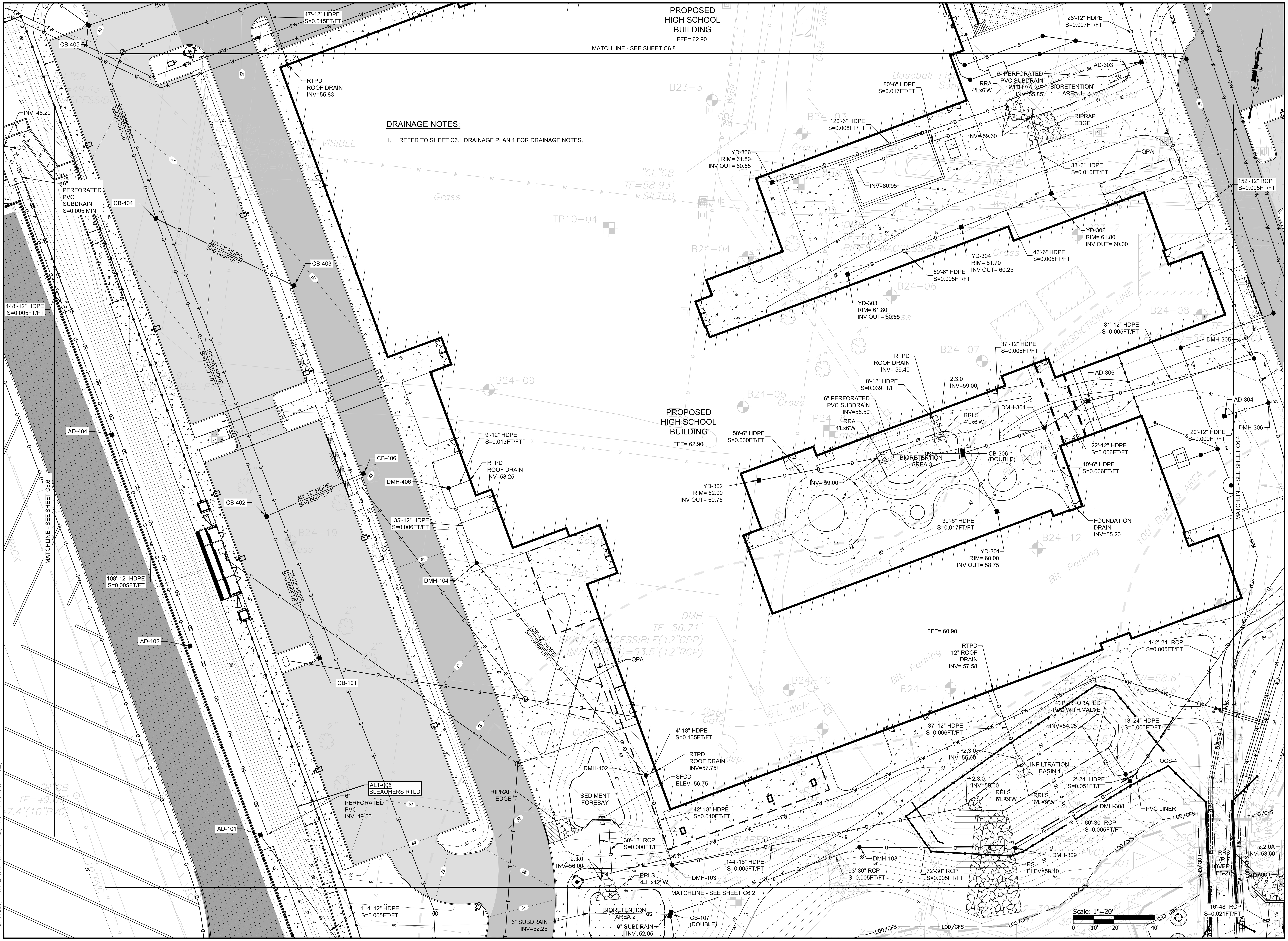
DRAWING TITLE:

DRAINAGE PLAN 4

DRAWING NO.:

C6.4

SHEET NO. 44 OF 152


PROPOSED
HIGH SCHOOL
BUILDING
FFE= 62.90
MATCHLINE - SEE SHEET C6.8
47'-12" HDPE
S=0.015FT/FT
CB-405
RTPD
ROOF DRAIN
INV=55.83
INV: 48.20
CO
6" PERFORATED
PVC
SUBDRAIN
S=0.005 MIN
CB-404
70'-12" HDPE
S=0.009FT/FT
CB-403
95'-15" HDPE
151'-15" HDPE
S=0.005FT/FT
148'-12" HDPE
S=0.005FT/FT
AD-404
MATCHLINE - SEE SHEET C6.6
108'-12" HDPE
S=0.005FT/FT
AD-102
CB-402
48'-12" HDPE
S=0.006FT/FT
CB-406
DMH-406
9'-12" HDPE
S=0.013FT/FT
RTPD
ROOF DRAIN
INV=58.25
35'-12" HDPE
S=0.006FT/FT
DMH-104
129'-12" HDPE
S=0.008FT/FT
CB-101
QPA
ALT-005
BLEACHERS RTLD
6"
PERFORATED
PVC
INV: 49.50
AD-101
RIPRAP
EDGE
DMH-102
SEDIMENT
FOREBAY
4'-18" HDPE
S=0.135FT/FT
RTPD
ROOF DRAIN
INV=57.75
SFCD
ELEV=56.75
42'-18" HDPE
S=0.010FT/FT
30'-12" RCP
S=0.000FT/FT
2.3.0
INV=56.00
RRLS
4' L x12' W
DMH-103
144'-18" HDPE
S=0.005FT/FT
DMH-108
93'-30" RCP
S=0.005FT/FT
72'-30" RCP
S=0.005FT/FT
MATCHLINE - SEE SHEET C6.2
114'-12" HDPE
S=0.005FT/FT
6" SUBDRAIN
INV=52.25
BIORETENTION
AREA 2
6" SUBDRAIN
INV=52.05
CB-107
(DOUBLE)
80'-6" HDPE
S=0.017FT/FT
120'-6" HDPE
S=0.008FT/FT
YD-306
RIM= 61.80
INV OUT= 60.55
INV=60.95
6" PERFORATED
PVC SUBDRAIN
WITH VALVE
INV=55.85
RRA
4'Lx6'W
BIORETENTION
AREA 4
RIPRAP
EDGE
INV= 59.60
AD-303
28'-12" HDPE
S=0.007FT/FT
QPA
38'-6" HDPE
S=0.010FT/FT
152'-12" RCP
S=0.005FT/FT
YD-305
RIM= 61.80
INV OUT= 60.00
YD-304
RIM= 61.70
INV OUT= 60.25
46'-6" HDPE
S=0.005FT/FT
59'-6" HDPE
S=0.005FT/FT
YD-303
RIM= 61.80
INV OUT= 60.55
81'-12" HDPE
S=0.005FT/FT
DMH-305
37'-12" HDPE
S=0.006FT/FT
RTPD
ROOF DRAIN
INV= 59.40
8'-12" HDPE
S=0.039FT/FT
2.3.0
INV=59.00
6" PERFORATED
PVC SUBDRAIN
INV=55.50
RRA
4'Lx6'W
RRLS
4'Lx6'W
AD-306
DMH-304
AD-304
DMH-306
20'-12" HDPE
S=0.009FT/FT
MATCHLINE - SEE SHEET C6.4
58'-6" HDPE
S=0.030FT/FT
BIORETENTION
AREA 3
CB-306
(DOUBLE)
22'-12" HDPE
S=0.006FT/FT
40'-6" HDPE
S=0.006FT/FT
YD-302
RIM= 62.00
INV OUT= 60.75
INV= 59.00
30'-6" HDPE
S=0.017FT/FT
FOUNDATION
DRAIN
INV=55.20
YD-301
RIM= 60.00
INV OUT= 58.75
FFE= 60.90
RTPD
12" ROOF
DRAIN
INV= 57.58
142'-24" RCP
S=0.005FT/FT
4" PERFORATED
PVC WITH VALVE
INV=54.25
37'-12" HDPE
S=0.066FT/FT
2.3.0
INV=55.00
INFILTRATION
BASIN 1
13'-24" HDPE
S=0.000FT/FT
OCS-4
2.3.0
INV=55.00
RRLS
6'LX9'W
RRLS
6'LX9'W
2'-24" HDPE
S=0.051FT/FT
DMH-308
PVC LINER
60'-30" RCP
S=0.005FT/FT
DMH-309
RS
ELEV=58.40
RRS
2.2.0A
INV=53.60
16'-48" RCP
S=0.021FT/FT
Scale: 1"=20'
0 10' 20' 40'

DRAINAGE NOTES:

1. REFER TO SHEET C6.1 DRAINAGE PLAN 1 FOR DRAINAGE NOTES.

PARE

OWNER/APPLICANT:
BRISTOL WARREN REGIONAL
SCHOOL DISTRICT
235 HIGH STREET
BRISTOL, RI 02809
401-253-4000

SCALE ADJUSTMENT GUIDE
0" 1"
BAR IS ONE INCH ON
ORIGINAL DRAWING

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DAVID L. POTTER
No. 8665
REGISTERED
PROFESSIONAL ENGINEER
(CIVIL)
02.07.25

REVISIONS:

02-11-2025	PRELIM PLAN RTC

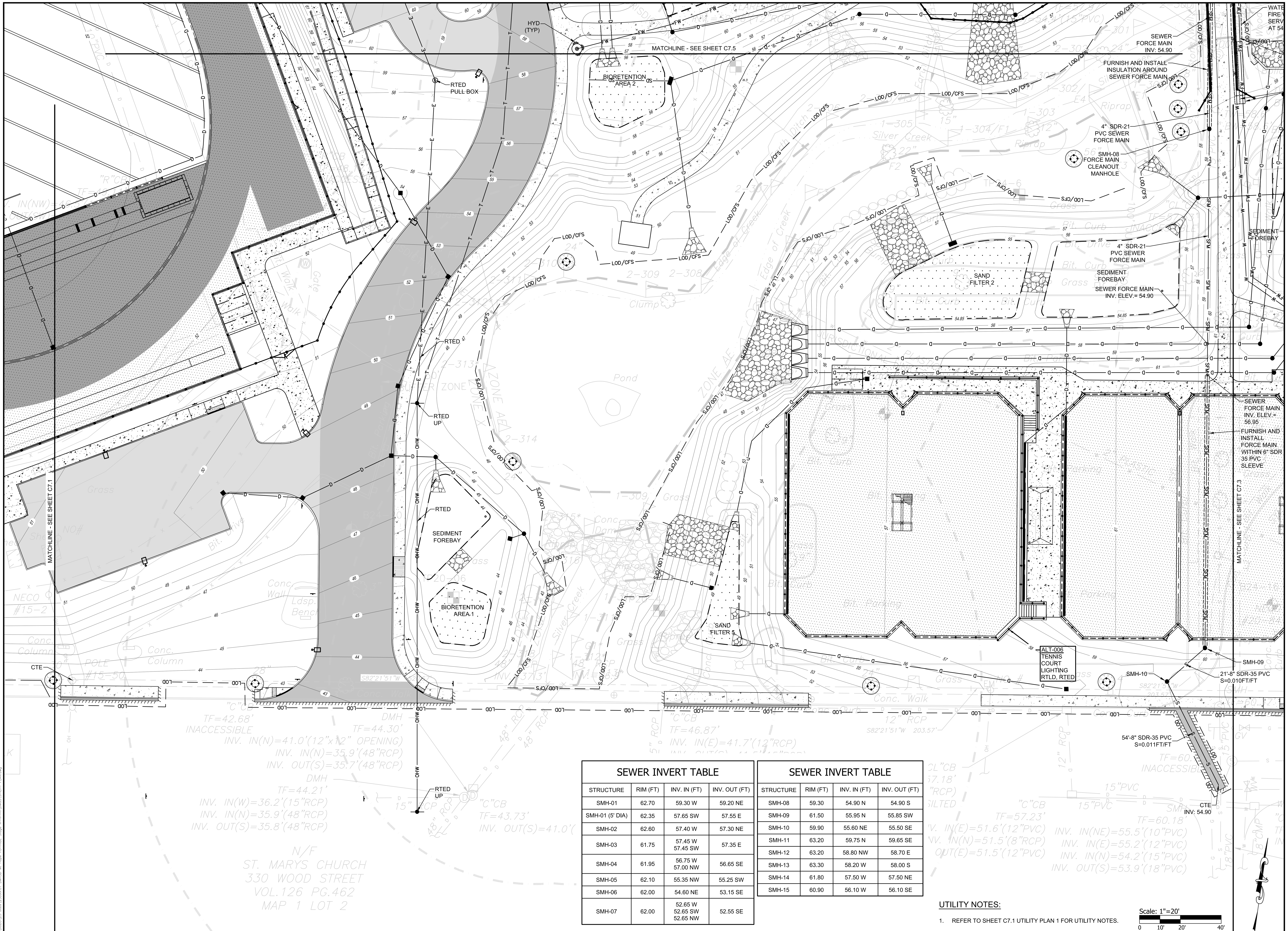
PROJECT NO.:	23099.01
DATE:	JANUARY 10, 2025
SCALE:	1"=20'
DESIGNED BY:	ACB
CHECKED BY:	DLP
DRAWN BY:	AKL
APPROVED BY:	DLP

DRAWING TITLE:

DRAINAGE PLAN 5

DRAWING NO.:

C6.5



SEWER INVERT TABLE			
STRUCTURE	RIM (FT)	INV. IN (FT)	INV. OUT (FT)
SMH-01	62.70	59.30 W	59.20 NE
SMH-01 (5' DIA)	62.35	57.65 SW	57.55 E
SMH-02	62.60	57.40 W	57.30 NE
SMH-03	61.75	57.45 W 57.45 SW	57.35 E
SMH-04	61.95	56.75 W 57.00 NW	56.65 SE
SMH-05	62.10	55.35 NW	55.25 SW
SMH-06	62.00	54.60 NE	53.15 SE
SMH-07	62.00	52.65 W 52.65 SW 52.65 NW	52.55 SE

SEWER INVERT TABLE			
STRUCTURE	RIM (FT)	INV. IN (FT)	INV. OUT (FT)
SMH-08	59.30	54.90 N	54.90 S
SMH-09	61.50	55.95 N	55.85 SW
SMH-10	59.90	55.60 NE	55.50 SE
SMH-11	63.20	59.75 N	59.65 SE
SMH-12	63.20	58.80 NW	58.70 E
SMH-13	63.30	58.20 W	58.00 S
SMH-14	61.80	57.50 W	57.50 NE
SMH-15	60.90	56.10 W	56.10 SE

UTILITY NOTES:

1. REFER TO SHEET C7.1 UTILITY PLAN 1 FOR UTILITY NOTES.

PARE

MT. HOPE HIGH SCHOOL

199 Chestnut Street

ASSESSOR'S PLAT 117, LOTS 3, 4, 5, 6, & 7
Bristol, Rhode Island

OWNER/APPLICANT:
BRISTOL WARREN REGIONAL SCHOOL DISTRICT
235 HIGH STREET
BRISTOL, RI 02809
401-253-4000

SCALE ADJUSTMENT GUIDE
0" 1"
BAR IS ONE INCH ON ORIGINAL DRAWING

DAVID L. POTTER
No. 8665
02.07.25
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

REVISIONS:

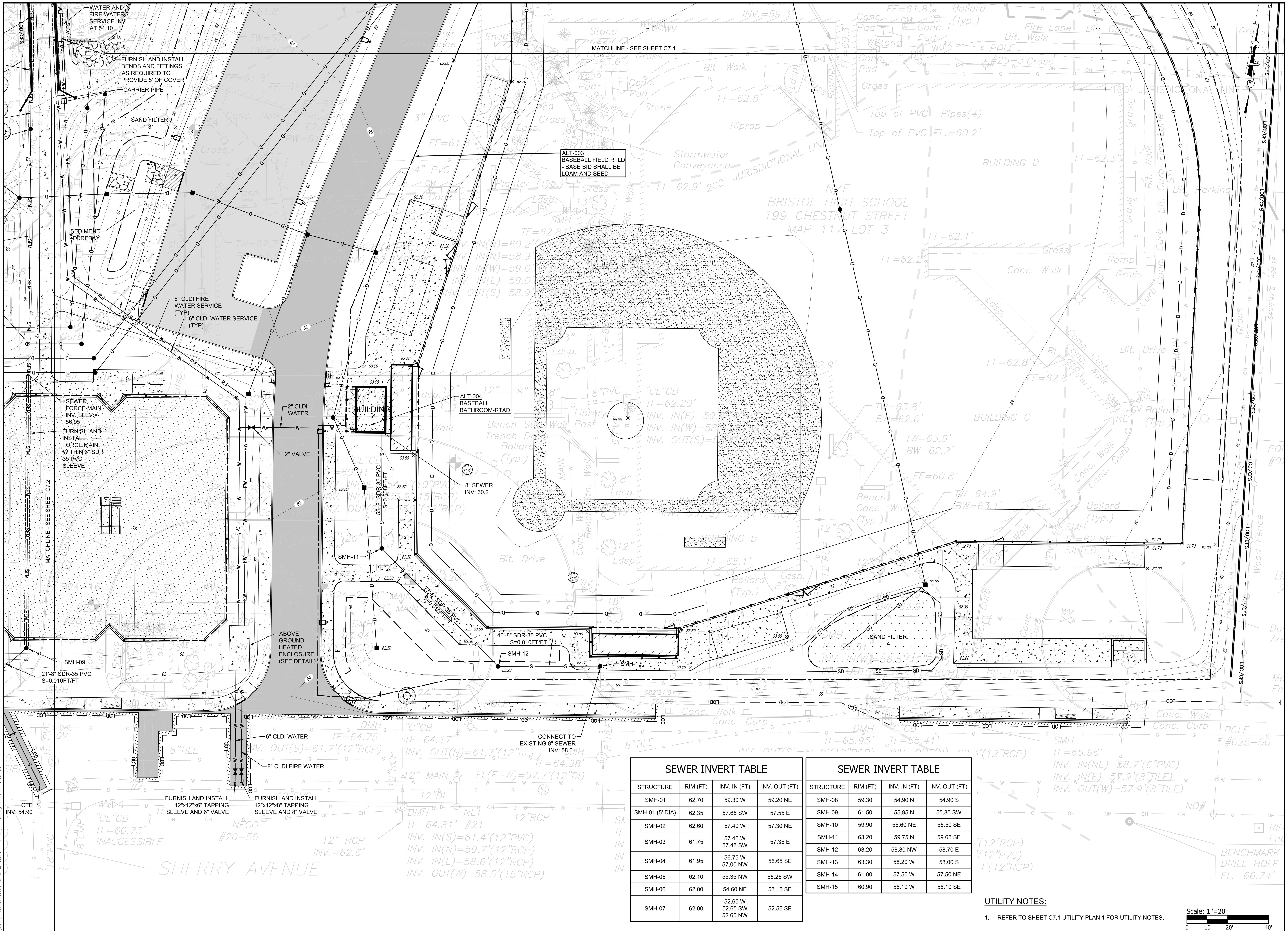
	02-11-2025	PRELIM PLAN RTC

PROJECT NO.:	23099.01
DATE:	JANUARY 10, 2025
SCALE:	1"=20'
DESIGNED BY:	ACB
CHECKED BY:	DLP
DRAWN BY:	AKL
APPROVED BY:	DLP

DRAWING TITLE:
UTILITY PLAN 2

DRAWING NO.:
C7.2

SHEET NO. 51 OF 152



SEWER INVERT TABLE

STRUCTURE	RIM (FT)	INV. IN (FT)	INV. OUT (FT)
SMH-01	62.70	59.30 W	59.20 NE
SMH-01 (5' DIA)	62.35	57.65 SW	57.55 E
SMH-02	62.60	57.40 W	57.30 NE
SMH-03	61.75	57.45 W 57.45 SW	57.35 E
SMH-04	61.95	56.75 W 57.00 NW	56.65 SE
SMH-05	62.10	55.35 NW	55.25 SW
SMH-06	62.00	54.60 NE	53.15 SE
SMH-07	62.00	52.65 W 52.65 SW 52.65 NW	52.55 SE

SEWER INVERT TABLE

STRUCTURE	RIM (FT)	INV. IN (FT)	INV. OUT (FT)
SMH-08	59.30	54.90 N	54.90 S
SMH-09	61.50	55.95 N	55.85 SW
SMH-10	59.90	55.60 NE	55.50 SE
SMH-11	63.20	59.75 N	59.65 SE
SMH-12	63.20	58.80 NW	58.70 E
SMH-13	63.30	58.20 W	58.00 S
SMH-14	61.80	57.50 W	57.50 NE
SMH-15	60.90	56.10 W	56.10 SE

UTILITY NOTES:

1. REFER TO SHEET C7.1 UTILITY PLAN 1 FOR UTILITY NOTES.

Scale: 1"=20'
0 10' 20' 40'

PARE

OWNER/APPLICANT:
BRISTOL WARREN REGIONAL SCHOOL DISTRICT
235 HIGH STREET
BRISTOL, RI 02809
401-253-4000

SCALE ADJUSTMENT GUIDE
0" 1"
BAR IS ONE INCH ON ORIGINAL DRAWING

MT. HOPE HIGH SCHOOL
199 Chestnut Street
ASSESSOR'S PLAT 117, LOTS 3, 4, 5, 6, & 7
Bristol, Rhode Island

DAVID L. POTTER
No. 8665
REGISTERED PROFESSIONAL ENGINEER (CIVIL)
02.07.25

REVISIONS:

02-11-2025	PRELIM PLAN RTC

PROJECT NO.:	23099.01
DATE:	JANUARY 10, 2025
SCALE:	1"=20'
DESIGNED BY:	ACB
CHECKED BY:	DLP
DRAWN BY:	AKL
APPROVED BY:	DLP

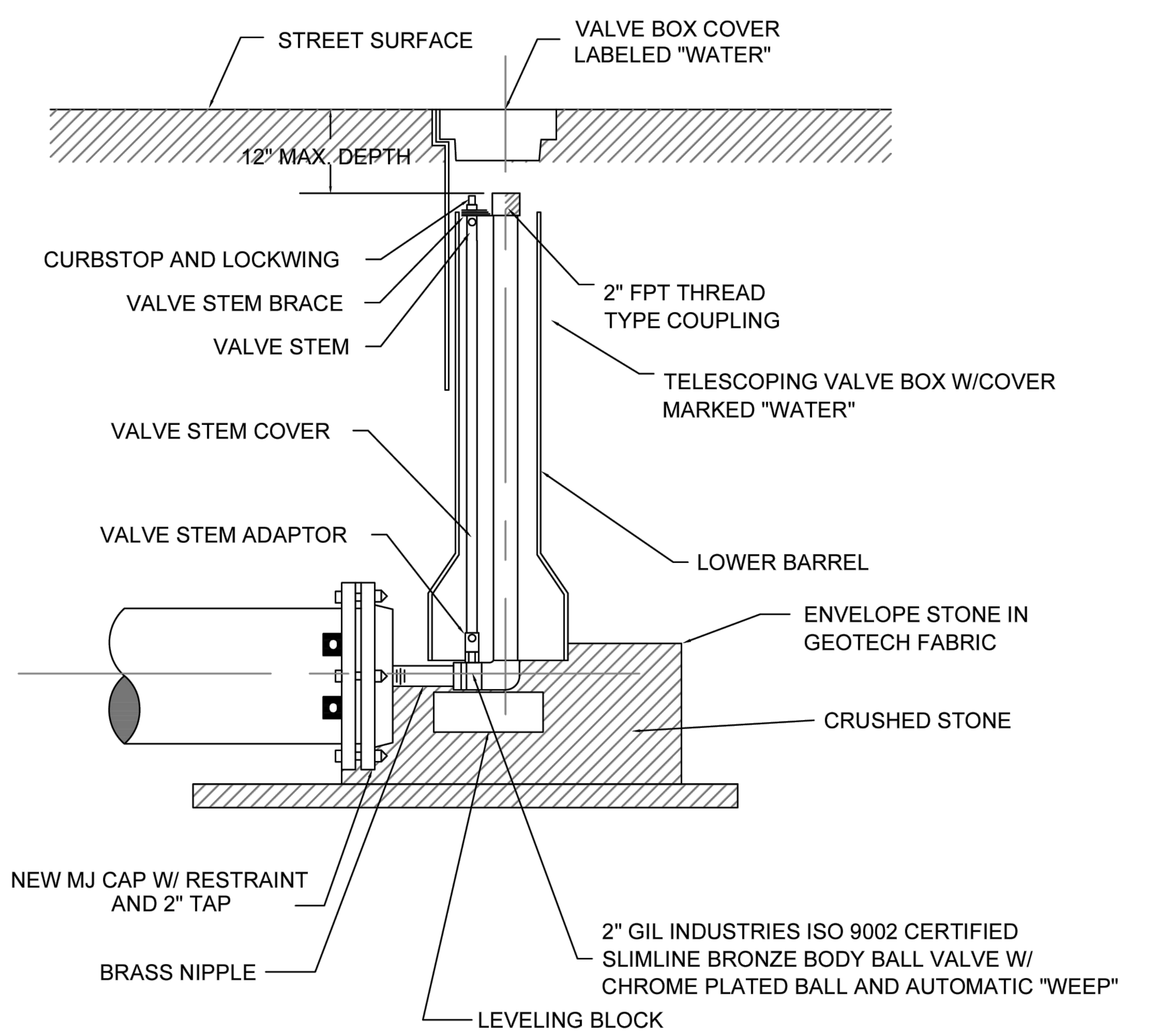
DRAWING TITLE:

UTILITY PLAN 3

DRAWING NO.:

C7.3

PARE



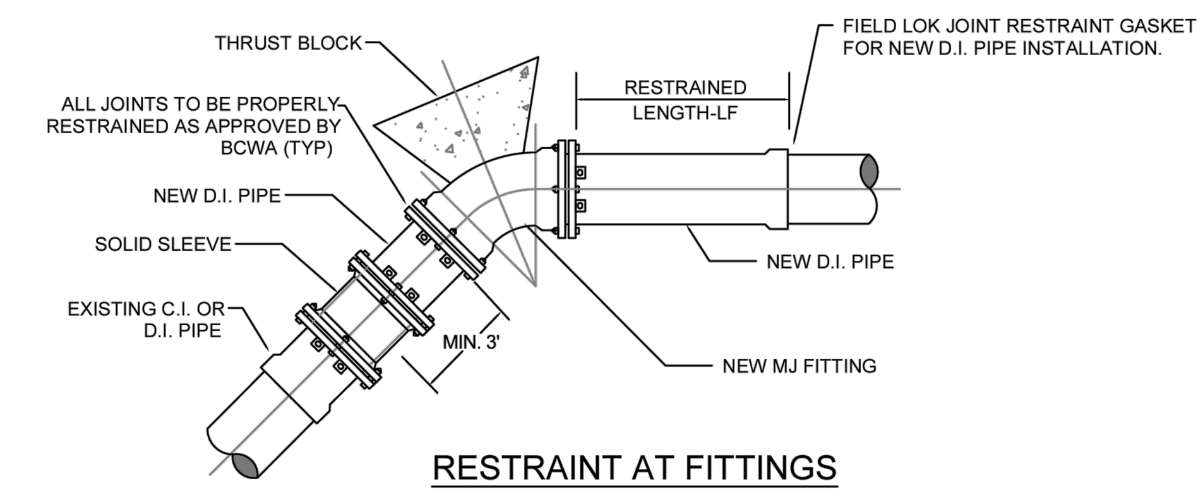
NOTE:

1.) ALL MATERIALS, BEDDING AND BACKFILL PER BCWA

2.) ALL WORK AND MATERIALS SHALL BE INSPECTED AND APPROVED BY THE BCWA PRIOR TO BEING BACKFILLED AND/OR ACTIVATED.

3.) WHENEVER THERE IS A DISCREPANCY BETWEEN THIS DETAIL AND THE WRITTEN SPECIFICATIONS, THE SPECIFICATIONS SHALL GOVERN.

BRISTOL COUNTY WATER AUTHORITY
450 CHILD STREET, WARREN, RHODE ISLAND
2-INCH BLOW OFF
NOT TO SCALE
BRISTOL COUNTY WATER AUTHORITY
SECTION WATER MAIN INSTALLATION | DECEMBER 2018
DETAIL No. WA-3
REVISIONS: 11/2018 - CONVERTED TO AUTOCAD



RESTRAINT AT FITTINGS

MINIMUM SURFACE AREA OF CONCRETE THRUST BLOCK AGAINST UNDISTURBED EARTH -- IN S.F. (SQUARE FEET)
MINIMUM RESTRAINED LENGTH OF PIPE ON EITHER SIDE OF FITTING -- IN L.F. (LINEAR FEET)

PIPE	PLUG		TEE		90° BEND		45° BEND		22 1/2° BEND		11 1/2° BEND	
SIZE	SF	LF	SF	LF	SF	LF	SF	LF	SF	LF	SF	LF
6"	2.8	46	2.8	40	4.0	22	2.1	9	1.1	5	1.0	3
8"	4.8	60	4.8	54	6.8	29	3.7	12	1.9	6	1.0	3
10"	7.3	72	7.3	66	10.3	34	5.6	15	2.8	7	1.4	4
12"	10.3	85	10.3	79	14.5	40	7.9	17	4.0	8	2.0	4
16"	17.8	109	17.8	109	25.2	51	13.6	22	7.0	11	3.5	6
20"	27.5	131	27.5	126	38.9	62	21.0	26	10.7	13	5.4	7
24"	39.2	154	39.2	148	55.4	72	30.0	30	15.3	15	7.7	8

1. ALL CONCRETE TO BE CLASS B (AE)

2. THE "SF" VALUES IN THE ABOVE TABLE ARE BASED ON 3000 p.s.f. SOIL BEARING CAPACITY, 150 p.s.i. TEST PRESSURE AND A 1.5 FACTOR OF SAFETY.

3. THE "LF" VALUES IN THE ABOVE TABLE ARE BASED ON A TYPE 3 LAYING CONDITION, A SAND SILT SOIL DESIGNATION, A 5 FOOT RUN LENGTH, 150 P.S.I. TEST PRESSURE AND A 1.5 FACTOR OF SAFETY AS USED IN THE "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE" COMPUTER PROGRAM BY THE DUCTILE IRON PIPE RESEARCH ASSOCIATION.

4. IF SOIL CONDITIONS OR EXCAVATION LIMITS ENCOUNTERED DURING CONSTRUCTION MAKE IT UNFEASIBLE TO PLACE THRUST BLOCKS AGAINST UNDISTURBED EARTH OF THE PROPER BEARING CAPACITY, THE CONTRACTOR SHALL DESIGN AND PLACE SPECIAL REACTION BLOCKS OF SUFFICIENT WEIGHT TO RESIST FULL THRUST UNDER ALL CONDITIONS. THE DESIGN SHALL BE SUBJECT TO BCWA APPROVAL.

5. MINIMUM SURFACE AREAS SHALL BE INCREASED BY 50% IF DEEMED NECESSARY BY THE ENGINEER.

6. A MECHANICAL JOINT RESTRAINT SYSTEM MUST BE USED FOR VERTICAL BENDS.

7. AT THE DISCRETION OF THE ENGINEER, A JOINT RESTRAINT SYSTEM MAY BE SUBSTITUTED FOR OR USED IN COMBINATION WITH PROPER THRUST BLOCKING.

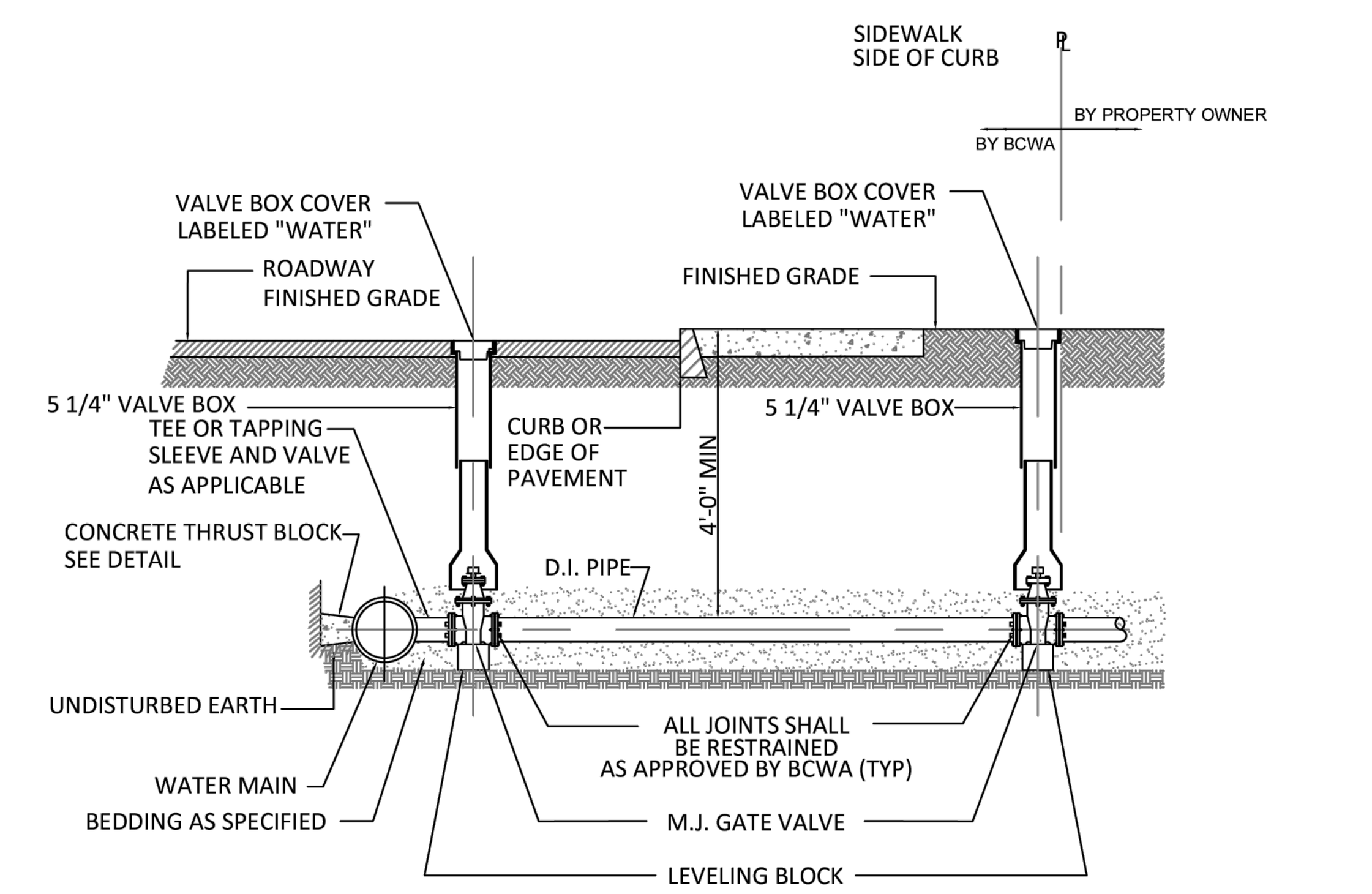
8. A 48 HR. CURING PERIOD MUST BE GIVEN BEFORE FULL LINE PRESSURE CAN BE APPLIED TO NEW CONCRETE THRUST BLOCKS.

9. THRUST BLOCK DESIGN FOR PIPE LARGER THAN 24" SHALL BE REVIEWED ON AN INDIVIDUAL BASIS BY THE BCWA.

10. THE RESTRAINED LENGTH IS BASED ON DUCTILE IRON PIPE WITH 4 FOOT COVER. IF THE DEPTH VARIES, OR THE DUCTILE IRON PIPE IS POLY WRAPPED THE RESTRAINED LENGTH MUST BE RE-CALCULATED.

11. WHENEVER THERE IS A DISCREPANCY BETWEEN THIS DETAIL AND THE WRITTEN SPECIFICATIONS, THE SPECIFICATIONS SHALL GOVERN.

BRISTOL COUNTY WATER AUTHORITY
450 CHILD STREET, WARREN, RHODE ISLAND
THRUST BLOCK
NOT TO SCALE
BRISTOL COUNTY WATER AUTHORITY
SECTION WATER MAIN INSTALLATION | DECEMBER 2018
DETAIL No. WA-4
REVISIONS: 11/2018 - CONVERTED TO AUTOCAD



NOTE:

1.) ALL SERVICE MATERIALS, BEDDING AND BACKFILL PER BCWA SPECIFICATIONS.

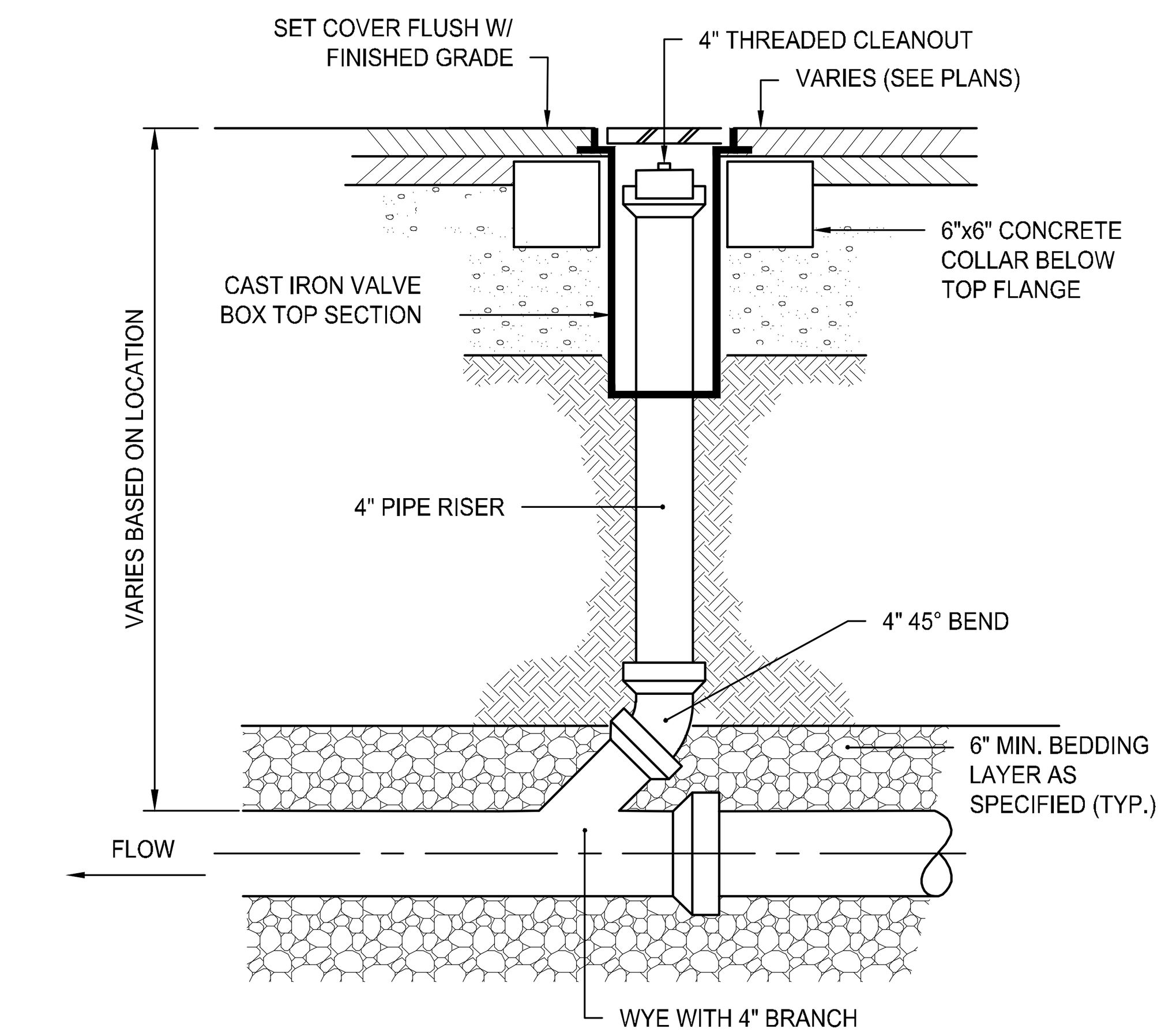
2.) SERVICE LINE FROM GATE BOX TO BUILDING SHALL BE INSPECTED AND APPROVED BY THE BCWA PRIOR TO BEING BACKFILLED AND/OR ACTIVATED.

3.) TAPPING SLEEVE TO BE PRESSURE TESTED PRIOR TO INSTALLATION.

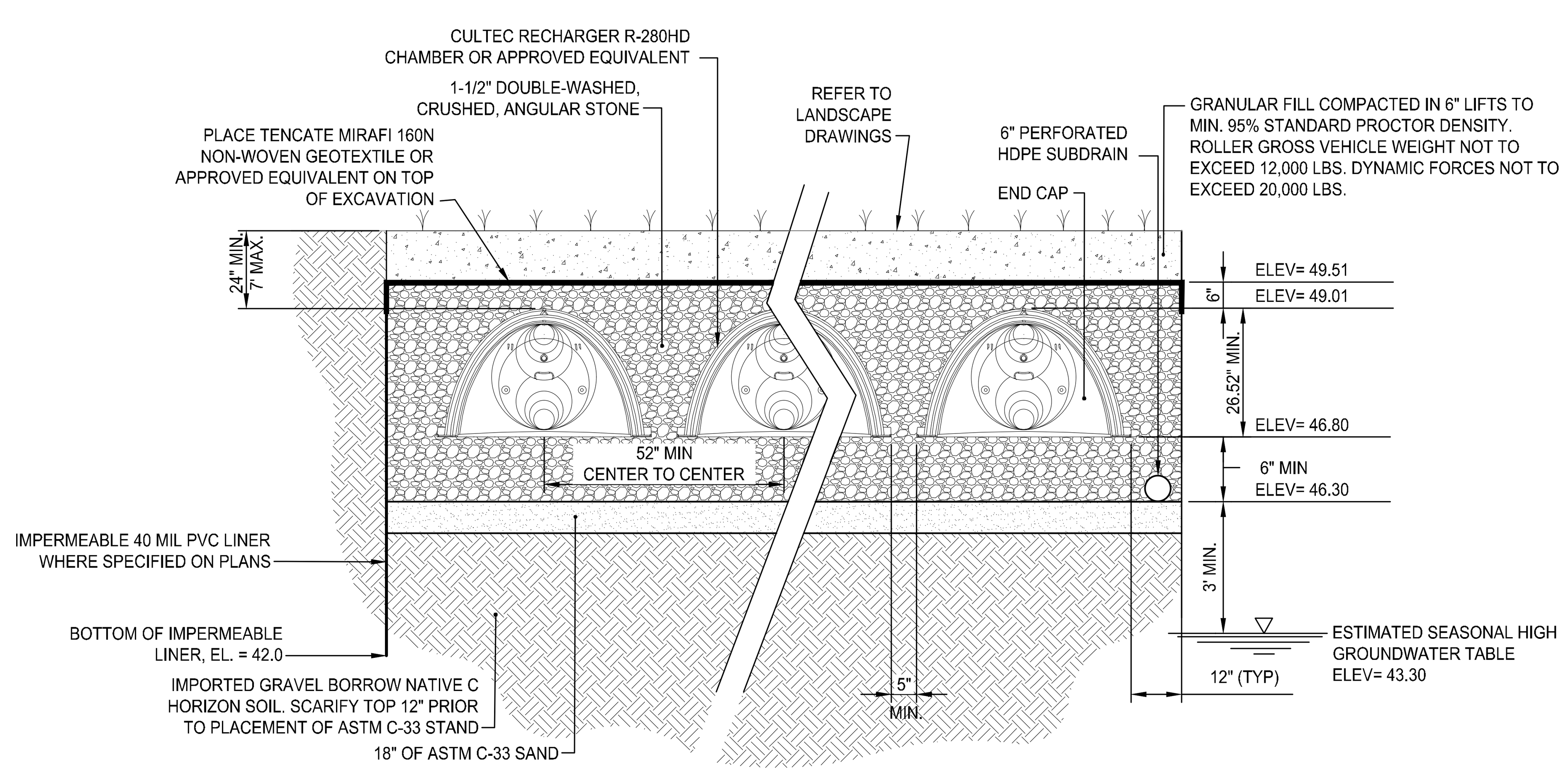
4.) STREET SIDE OF SERVICE TO BE INSTALLED FIRST, LOCATION TO BE DETERMINED BY BCWA.

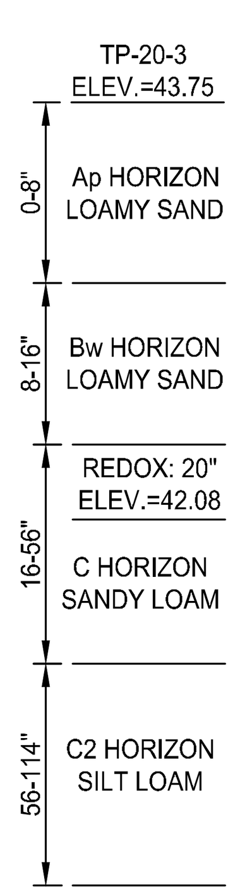
5.) WHENEVER THERE IS A DISCREPANCY BETWEEN THIS DETAIL AND THE WRITTEN SPECIFICATIONS, THE SPECIFICATIONS SHALL GOVERN.

BRISTOL COUNTY WATER AUTHORITY
450 CHILD STREET, WARREN, RHODE ISLAND
WATER SERVICE CONNECTION GREATER THAN 4-INCHES
NOT TO SCALE
BRISTOL COUNTY WATER AUTHORITY
SECTION WATER MAIN INSTALLATION | DECEMBER 2018
DETAIL No. WA-7
REVISIONS: 11/2018 - CONVERTED TO AUTOCAD



CLEANOUT DETAIL
NOT TO SCALE

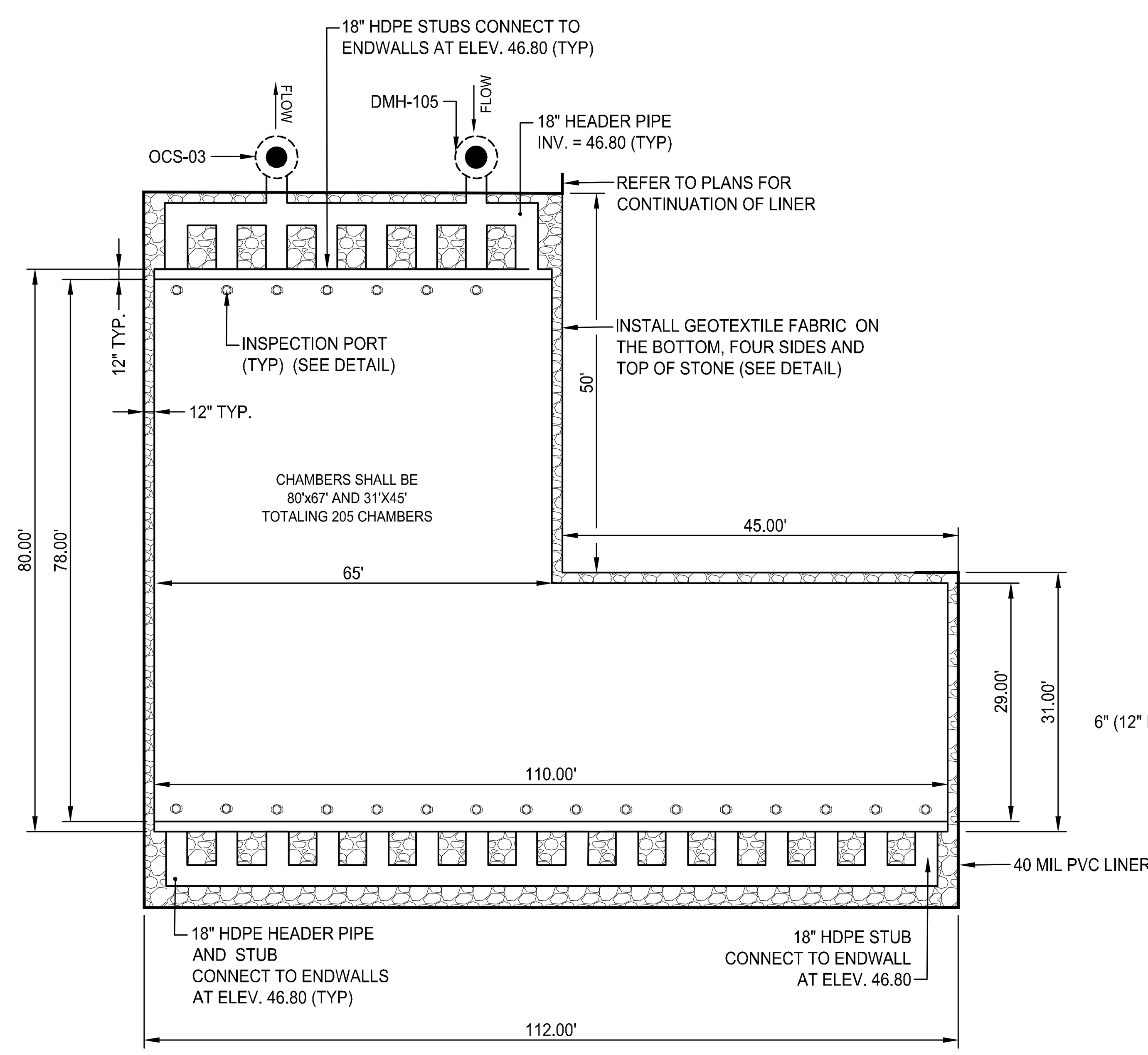




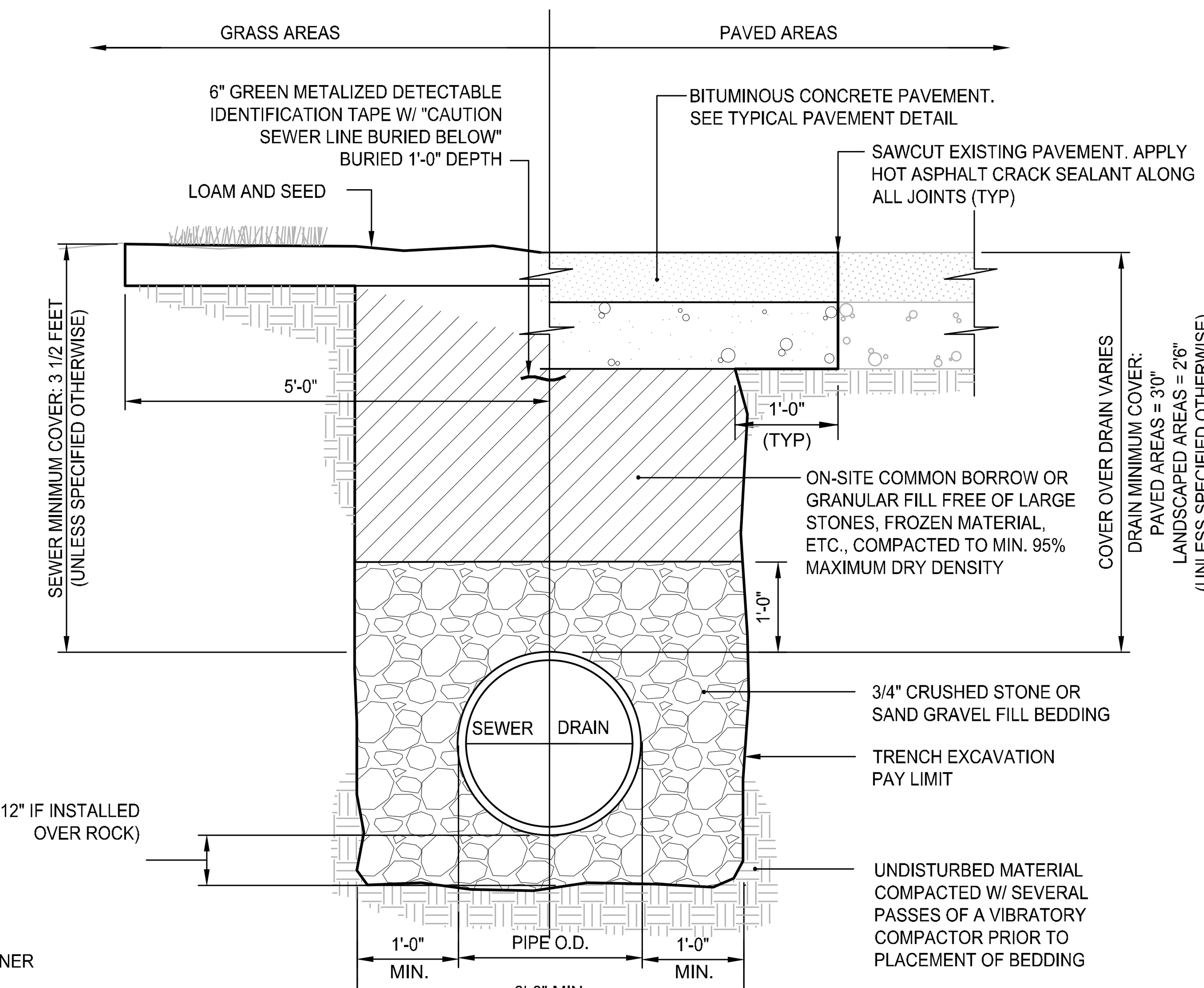
NOTES:

1. CONTRACTOR SHALL TAKE PRECAUTION NOT TO COMPACT SUBGRADE.
2. CONTRACTOR SHALL EXCAVATE TO C-HORIZON SOILS WITHIN LIMITS OF INFILTRATION. CONTRACTOR SHALL EXCAVATE TO B-HORIZON SOILS OUTSIDE OF LIMITS OF INFILTRATION.
3. GRAVEL BORROW MATERIAL UNDER UGIS SHALL CONFORM TO A USDA LOAMY SAND OR SANDY LOAM SOIL TEXTURE. CONTRACTOR SHALL SEND A SAMPLE TO THE ENGINEER TO CLASSIFY THE USDA SOIL TEXTURE AS PART OF THE SUBMITTAL.
4. CONTRACTOR SHALL NOT PLACE OR OPERATE HEAVY MACHINERY ON SUBGRADE OF INFILTRATING AREAS.
5. CONTRACTOR SHALL NOTIFY ENGINEER (48 HRS MIN) PRIOR TO EXPOSING SUBGRADE TO SCHEDULE INSPECTION.
6. ONCE CONTRACTOR HAS SUBGRADE EXPOSED, THE ENGINEER SHALL BE CONTACTED FOR INSPECTION.
7. CONSTRUCTION OF THE SYSTEM SHALL NOT COMMENCE UNTIL ENGINEER OBSERVES SUBGRADE AND CRUSHED STONE AND GRANTS PERMISSION TO PROCEED.
8. CONTRACTOR SHALL INSTALL UNDERGROUND INFILTRATION SYSTEM PER MANUFACTURERS RECOMMENDATIONS.

UNDERGROUND INFILTRATION SYSTEM DETAIL
NOT TO SCALE



UNDERGROUND INFILTRATION SYSTEM PLAN VIEW
NOT TO SCALE



NOTES:

1. WHERE THE DISTANCE BETWEEN THE SAWCUT AND EDGE OF PAVEMENT IS 3' OR LESS, THE CONTRACTOR SHALL REPLACE THE PAVEMENT FROM THE TRENCH EDGE TO THE EXISTING EDGE OF PAVEMENT.
2. 3/4" DIA. CRUSHED STONE SHALL BE USED AS BEDDING WHERE TRENCH IS BELOW THE GROUND WATER TABLE.

GRAVITY SEWER/DRAIN TRENCH DETAIL
NOT TO SCALE

OWNER/APPLICANT:
BRISTOL WARREN REGIONAL SCHOOL DISTRICT
235 HIGH STREET
BRISTOL, RI 02809
401-253-4000

SCALE ADJUSTMENT GUIDE
0" 1"
BAR IS ONE INCH ON ORIGINAL DRAWING

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199 Chestnut Street
ASSESSOR'S PLAT 117, LOTS 3, 4, 5, 6, & 7
Bristol, Rhode Island

DAVID L. POTTER
No. 8665
REGISTERED PROFESSIONAL ENGINEER (CIVIL)
02.07.25

REVISIONS:

02-11-2025	PRELIM PLAN RTC

PROJECT NO.:	23099.01
DATE:	JANUARY 10, 2025
SCALE:	NOT TO SCALE
DESIGNED BY:	ACB
CHECKED BY:	DLP
DRAWN BY:	AKL
APPROVED BY:	DLP

DRAWING TITLE:
DETAILS 9

DRAWING NO.:
C8.9

SHEET NO. 67 OF 152

Bristol Warren Regional School District

MT. HOPE HIGH SCHOOL

Attachment 4

Revised Stormwater Narrative

Bioretention Area with Underdrain

The bioretention areas have been designed in accordance with RIDEM Standards to promote water quality. The bioretention areas include filter media with a mulch upper layer, vegetated side slopes, a raised outlet, and spillway. Stormwater is piped to the sediment forebay, which provides pretreatment, prior to entering the bioretention area. An impermeable liner with a stone layer and perforated underdrain is placed under the filter media to discharge the treated water for Bioretention Area-02 and Bioretention Area-03. The liner is provided because the minimum separation to groundwater is not provided. The raised outlet is elevated to store the water quality volume for 24-hours while it slowly drains through the underdrain system following the storm event. Any excess stormwater that enters the bioretention area will overflow into the catch basin and discharge into the drainage network.

Bioretention Area with Exfiltration

The bioretention areas have been designed in accordance with RIDEM Standards to promote water quality. The bioretention areas include filter media with a mulch upper layer, vegetated side slopes, a raised catch basin, and spillway. Stormwater for Bioretention -01 is piped to the sediment forebay, which provides pretreatment, prior to entering the bioretention area. The outlet is elevated to exfiltrate the entire water quality volume through the surrounding soils for Bioretention Area-01. Stormwater for Bioretention -04 is piped to the bioretention area for treatment. Bioretention -04 provides water quality treatment for non-vehicular traveled sidewalks, therefore no pretreatment was provided. The outlet is elevated to exfiltrate the entire water quality volume through the surrounding soils for Bioretention -04. Excess stormwater that enters Bioretention-04 during larger storm events will overflow into the catch basin and discharge into the drainage network. Bioretention Area-01 is designed offline with diversion structures upstream for larger storm events to bypass the BMP.

Per the RISDISM, exfiltration through the soils observed on-site would be modeled with a Rawls Rate of 1.02 in/hr (C Soils) or 0.27 in/hr (D Soils). In an effort to be conservative, an infiltration rate of 0.27 in/hr was used to model exfiltration from all BMP's that exfiltrate to existing soils.

Sand Filters with Underdrain

The sand filters have been designed in accordance with RIDEM Standards to promote water quality, exfiltration, and recharge. The sand filter includes a vegetated bottom, 36" deep layer of