

March 31, 2022

Scott M. Rybarczyk, PE  
Wendel  
Centerpointe Corporate Park  
375 Essjay Road, Suite 200  
Williamsville, NY 14221

**RE: REVIEW OF STAMP DISCHARGE TO OAK ORCHARD CREEK**

Dear Mr. Rybarczyk:

We are writing in response to your letter dated February 22, 2022. CPL responses are in ***bold/italics*** following the Wendel comments below.

Based on this effort, Wendel provides the following comments:

1. The hydraulic model of Oak Orchard Creek developed by JM Davidson, PC meets our expectations for a hydraulic model of a stream. It is our opinion that this modeling effort provides a reasonable estimate of real-world conditions in Oak Orchard Creek.  
***Response: Noted.***
2. The statistical analysis used to estimate flows meets our expectations for this type of work. Wendel was also able to independently confirm the flow values used for Oak Orchard Creek.  
***Response: Noted.***
3. Wendel agrees with JM Davidson, PC that the increased flow from the STAMP Discharge will not have a noticeable impact on the 100yr flood elevations downstream nor will it have an impact on the stream velocity or water levels.  
***Response: Noted.***
4. Wendel disagrees with JM Davidson, PC that the outfall discharge has been designed to minimize soil erosion. Our review of the Basis of Design Report from CPL shows no documentation or calculations of how the outfall was designed to avoid soil erosion.  
***Response: Noted – please see the responses below.***
5. It is our opinion that the outfall has not been adequately designed to avoid soil erosion. Specifically, the rip-rap section is too thin. On Page 3.28 of the NYS Standards and Specifications for Erosion and Sediment Control, it states that the minimum lining thickness shall be 1.5 times the maximum stone size. The maximum stone size for this project is heavy stone riprap with a diameter of 23” inches as per the NYS DOT Specification for Heavy Stone Riprap. This would lead to a minimum lining thickness of 34.5”. This is larger than the actual lining thickness of 24” or 32” shown on design drawings FM D-05R and FM S-61R (attached).  
***Response: According to the NYS Department of Transportation Specifications Section 733-22, riprap calls for rectangular shaped stone for grouted rip rap sections. According***



*to Table 733-21B for stone filling sizes, the largest dimension (d) for a heavy stone filling, rectangular shaped stone is 15-inches. Furthermore, the channel from the outlet structure to Oak Orchard Creek was designed based on the Standard Specifications for Rock Outlet Protection from the NYS Standards and Specifications for Erosion and Sediment Control. The specifications on page 3.40 states; “The minimum thickness for the riprap layer shall be 1.5 times the maximum rock diameter for  $d_{50}$  of 15 inches or less; and 1.2 times the maximum stone size.” According to the table on page 3.40 for a  $d_{50}$  of 15 inches, the  $d_{max}$  is 22 inches, multiplying 22-inch  $d_{max}$  by 1.5 gives a minimum gravel blanket thickness of 33”. However, the table below the abovementioned paragraph on page 3.40 specifies a minimum blanket thickness of 32”. Because this section will be grouted, which will further bind and hold the riprap in place, a 32-inch grouted blanket has been specified.*

*For the lower section, a 50/50 mix of heavy stone filling and medium stone filling has been specified. The maximum stone size according to Table 733-21B of the NYS DOT Standard Specifications is 17-inches for medium stone fill, the maximum size for heavy stone fill is 23-inches. According to page 3.40 of the NYS Standards and Specifications for Erosion and Sediment Control specifies a blanket thickness of “1.2 time the maximum stone size for rip rap larger than 15 inches.” Therefore, the thickness of the blanket should be 27-inches. The design plans have been modified to reflect this change.*

6. The lack of proper lining thickness can lead to loss of stone protection over time. Without stone protection, the outfall would likely erode discharging sediment to Oak Orchard Creek.

*Response: Based on the above, we feel that the gravel banket has been adequately sized to protect the channel from erosion and sediment loss to Oak Orchard Creek.*

7. The outlet structure detail shown on design drawing FM D-05R is incomplete. It is difficult to determine the outlet shape directly upstream of the outlet protection outside of the structure. This is important as it will determine the flow characteristics exiting the outlet.

*Response: Cross sections just above the outlet structure have been provided. According to these cross sections, the grade is very consistent and does not indicate a defined drainage channel. We feel it is not necessary to extend the gravel rip-rap protection further up the hill.*

8. There is an existing ditch at the site of the force main outfall which allows flow from a 24” stormwater culvert underneath South Gravel Road to drain to Oak Orchard Creek. Nowhere in the design drawings or design report is this flow accounted for. The design should show and/or explain how these existing stormwater flows are conveyed to Oak Orchard Creek after construction of the force main outlet structure.

*Response: The proposed outlet channel will enhance the existing drainage channel at this location. The existing ditch will be routed into the proposed channel to prevent any erosion from stormwater.*



The Town also asked Wendel to comment on potential increases to flow from the force main as the STAMP project progresses. Currently, the force main is being designed and permitted for a maximum flow of 6 MGD. With changes in the pump station design, the flow in the force main could be increased above 6 MGD. It is our recommendation that the Town of Shelby ask GCEDC and the NYS DEC to agree that any increases of flow above 6 MGD require further review from the Town and additional analysis from GCEDC before any permits are issued.

***Response: The force main and pump stations have been designed for a maximum of 6.0 MGD. Should there be any proposed increase in design flows, a permit modification would have to be submitted and processed by the NYSDEC.***

If you should have any other questions or comments, please contact me by phone (585) 402-7556 or by email at [zanderson@CPLteam.com](mailto:zanderson@CPLteam.com).

Very truly yours,

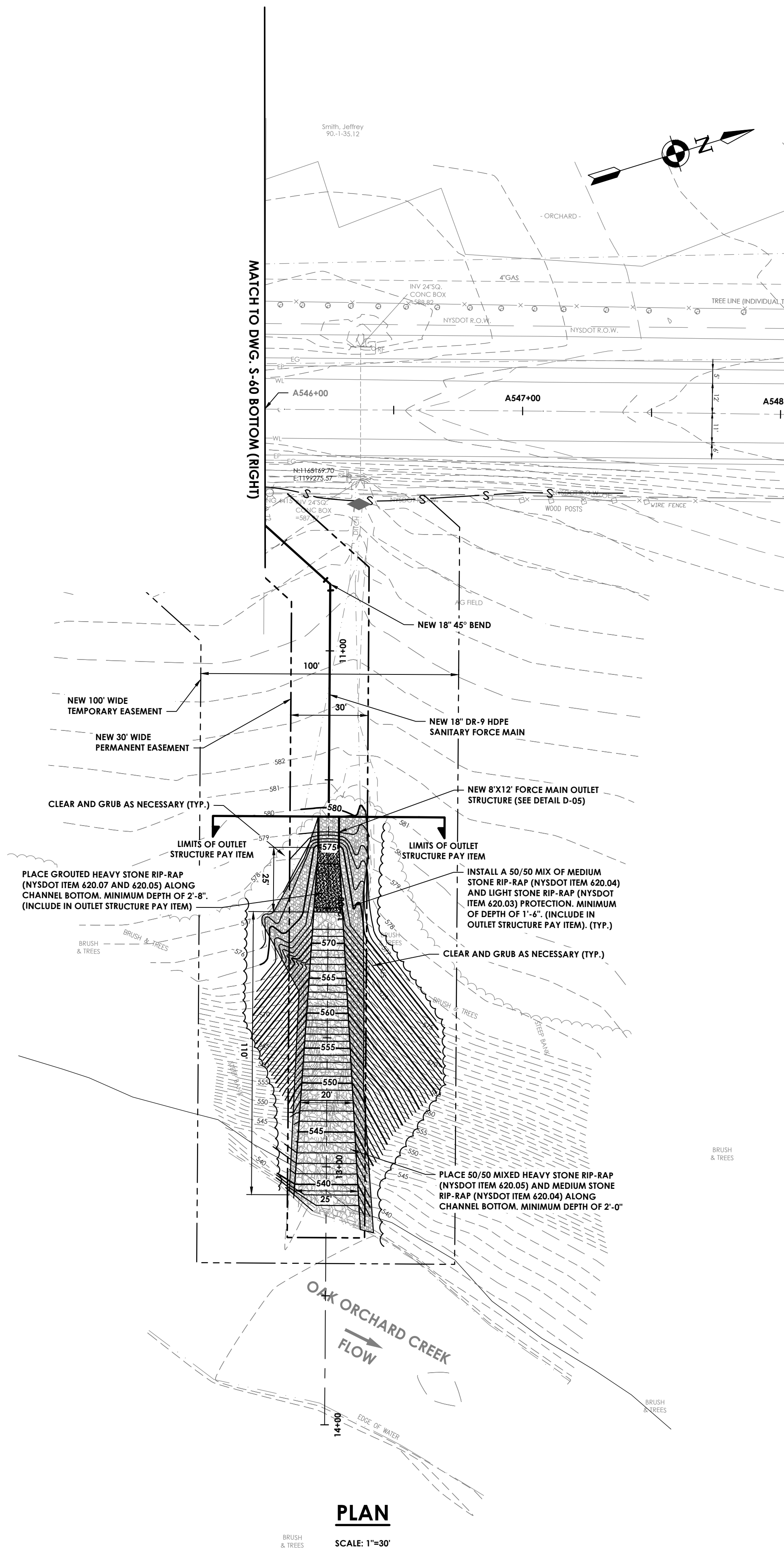
CPL

A handwritten signature in black ink, appearing to read 'A. Kosa'.

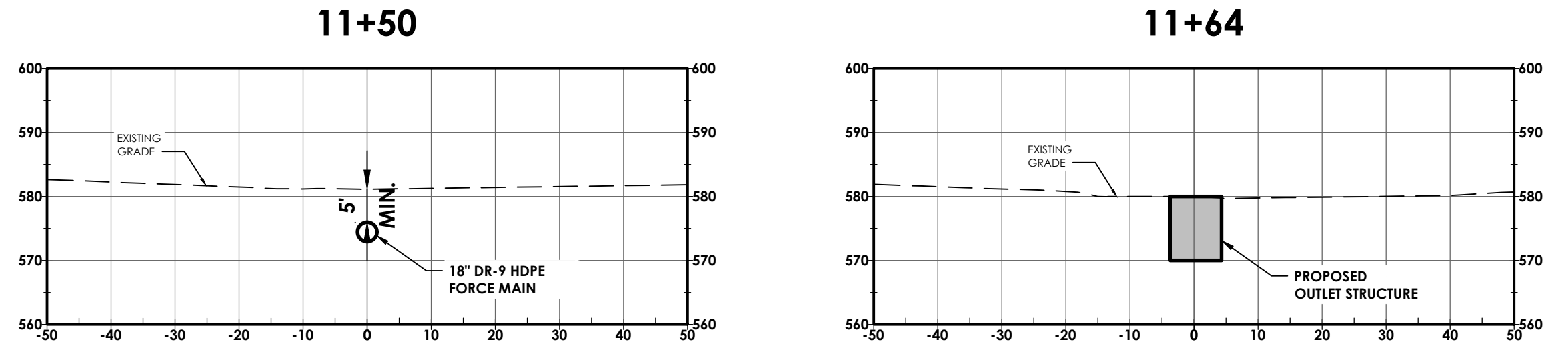
Andrew R. Kosa, P.E.  
Principal Associate

c: Jeffrey Smith, Town of Shelby, Town Supervisor  
Mark Masse, GCEDC, Senior VP of Operations

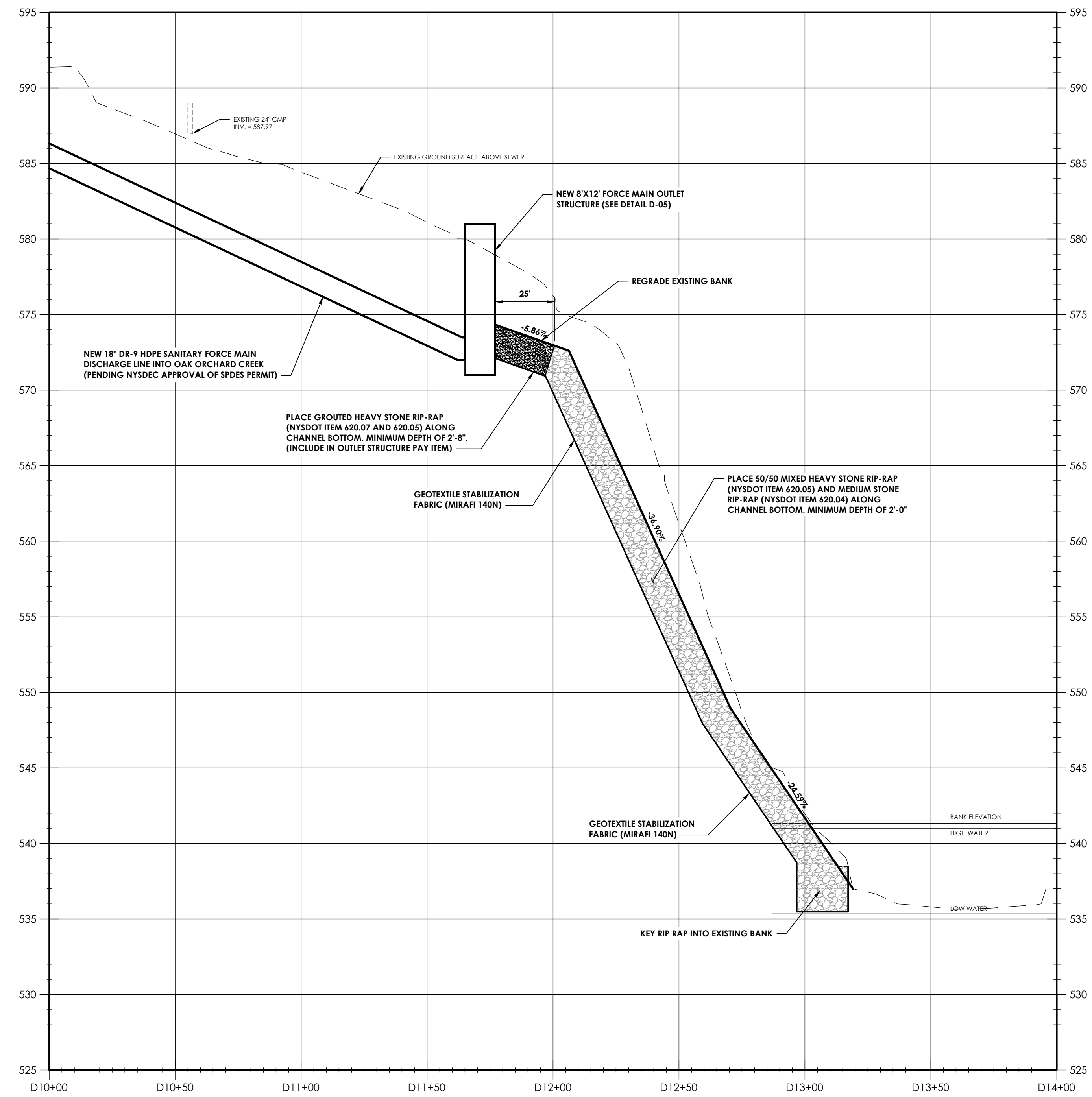
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 Date last accessed: 3/23/2022 9:44 AM  
 Date last plotted: 3/23/2022 9:47 AM  
 Plotted By: Zach Anderson



**PLAN**  
SCALE: 1"=30'



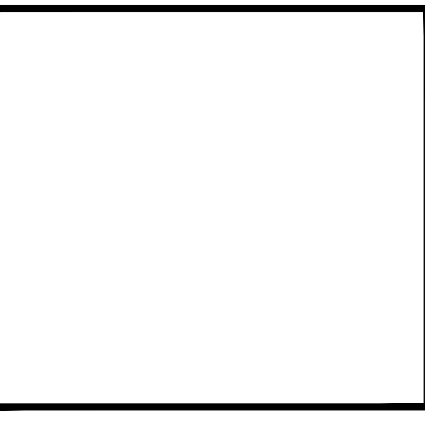
**CROSS SECTIONS**  
SCALE: HORIZONTAL 1" = 20'



**DISCHARGE**  
**STA. D10+00 TO STA. D14+00**

**CPLteam.com**  
 ARCHITECTURE • ENGINEERING • PLANNING  
 205 ST. PAUL STREET,  
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 ROCHESTER, NEW YORK 14604  
 TEL (800) 274-9000  
 FAX (585) 454-7618

REVISIONS NO.	DATE	BY	CHKD	DESCRIPTION
0	4/13/20	ZLA	ARK	AGENCY SUBMISSION
1	8/21/21	ZLA	ARK	NYS DEC REVIEW SET
2	3/23/22	ZLA	ARK	NON-REVISIONS DATE: 2/22/22



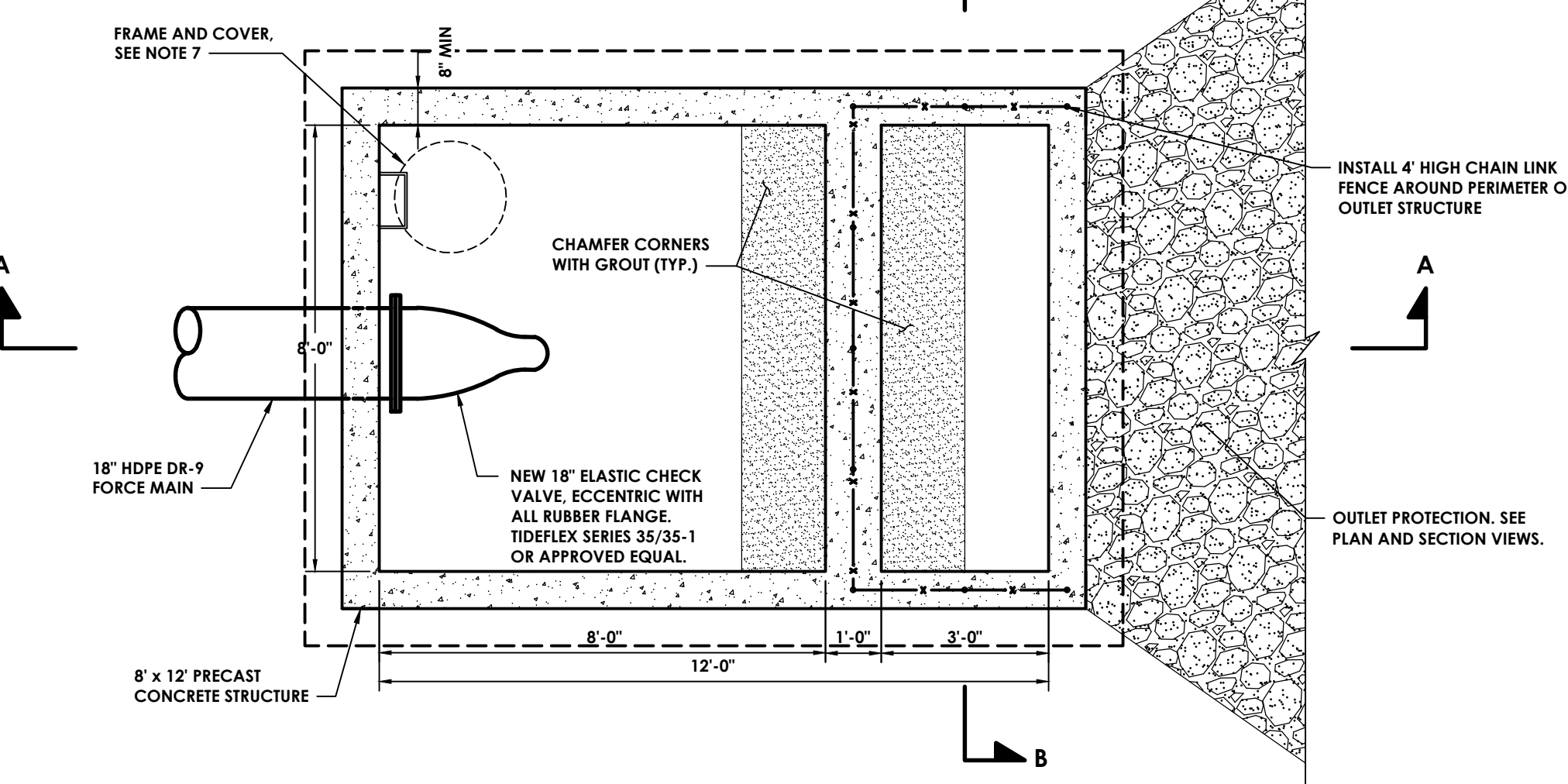
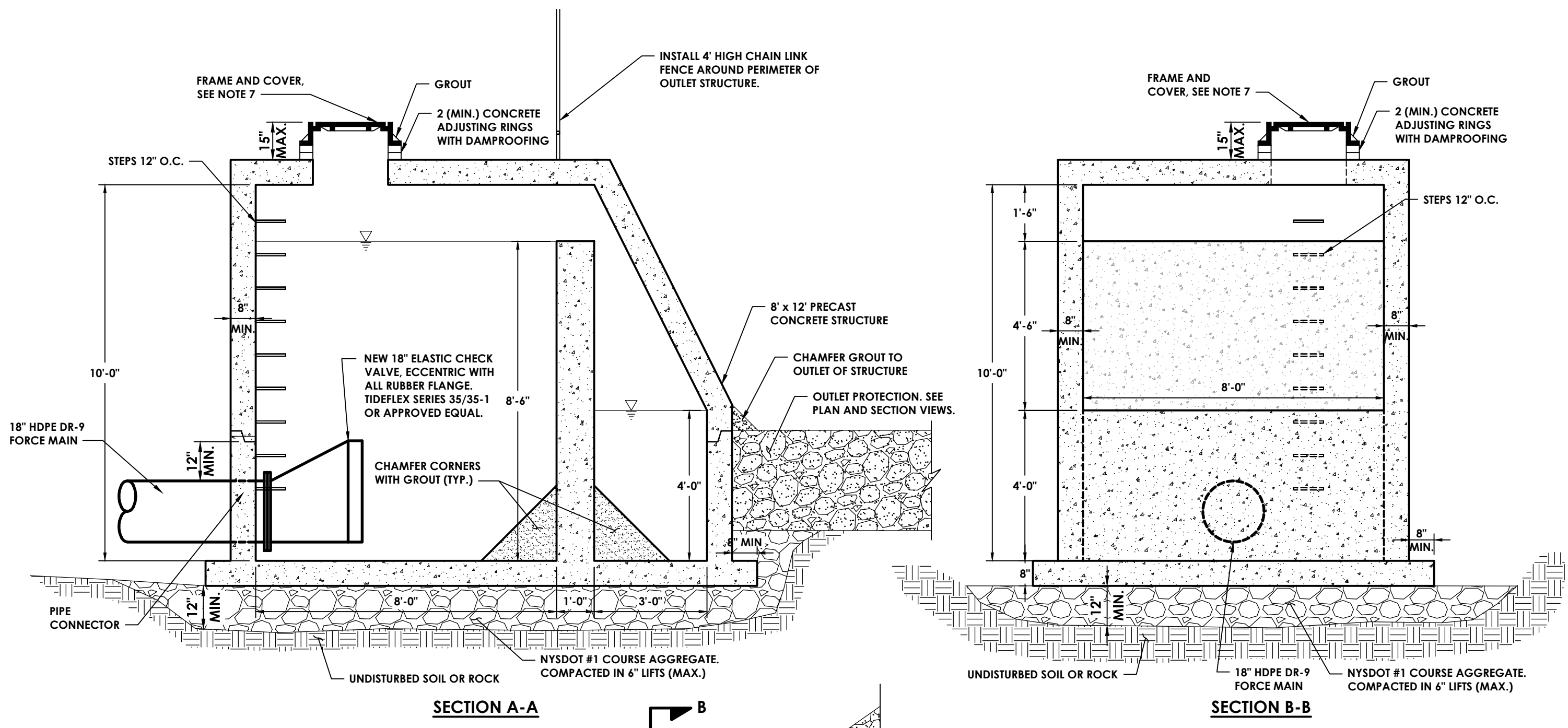
GENESEE COUNTY ECONOMIC  
 DEVELOPMENT CENTER  
 STAMP FORCE MAIN  
 CONTRACT A: CENTRAL AREA  
 CONTRACT B: NORTH AREA  
 TOWN OF ALABAMA & SHELBY  
 GENESEE & ORLEANS COUNTY  
 NEW YORK STATE

DATE	DRAWN	CHECKED
05/11/21	ZLA	ARK
SCALE 1"=30'		
SHEET TITLE		
OUTLET STRUCTURE		
DETAILS		

PROJECT NUMBER  
 15981.00  
**FM**  
**D-05R**  
 DRAWING NUMBER

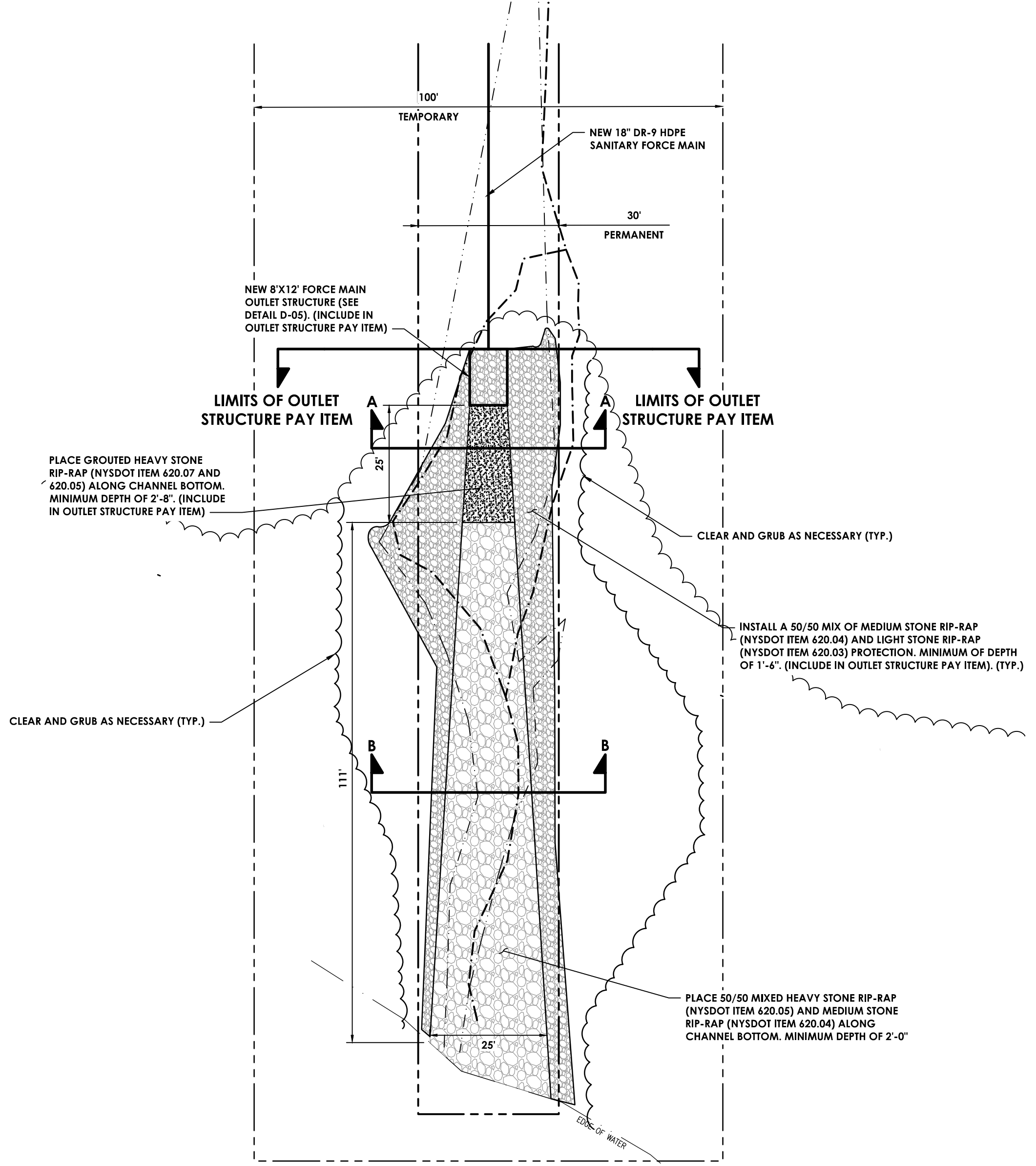
THE SEWERAGE AND SANITATION DISTRICT OF ROCHESTER, NEW YORK, IS THE OWNER OF THIS PROJECT. THE DESIGN AND CONSTRUCTION OF THIS PROJECT IS THE RESPONSIBILITY OF THE ARCHITECT, ENGINEER, AND SURVEYOR. THE ARCHITECT, ENGINEER, AND SURVEYOR SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THIS PROJECT. THE ARCHITECT, ENGINEER, AND SURVEYOR SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THIS PROJECT.

Drawing Name: J:\PROJECTS\GCEDC\STAMP Offsite Sewer\02 Details-REV.dwg Date last accessed: 3/23/2022 9:51 AM Date last plotted: 3/31/2022 11:04 AM Plotted By: Zach Anderson

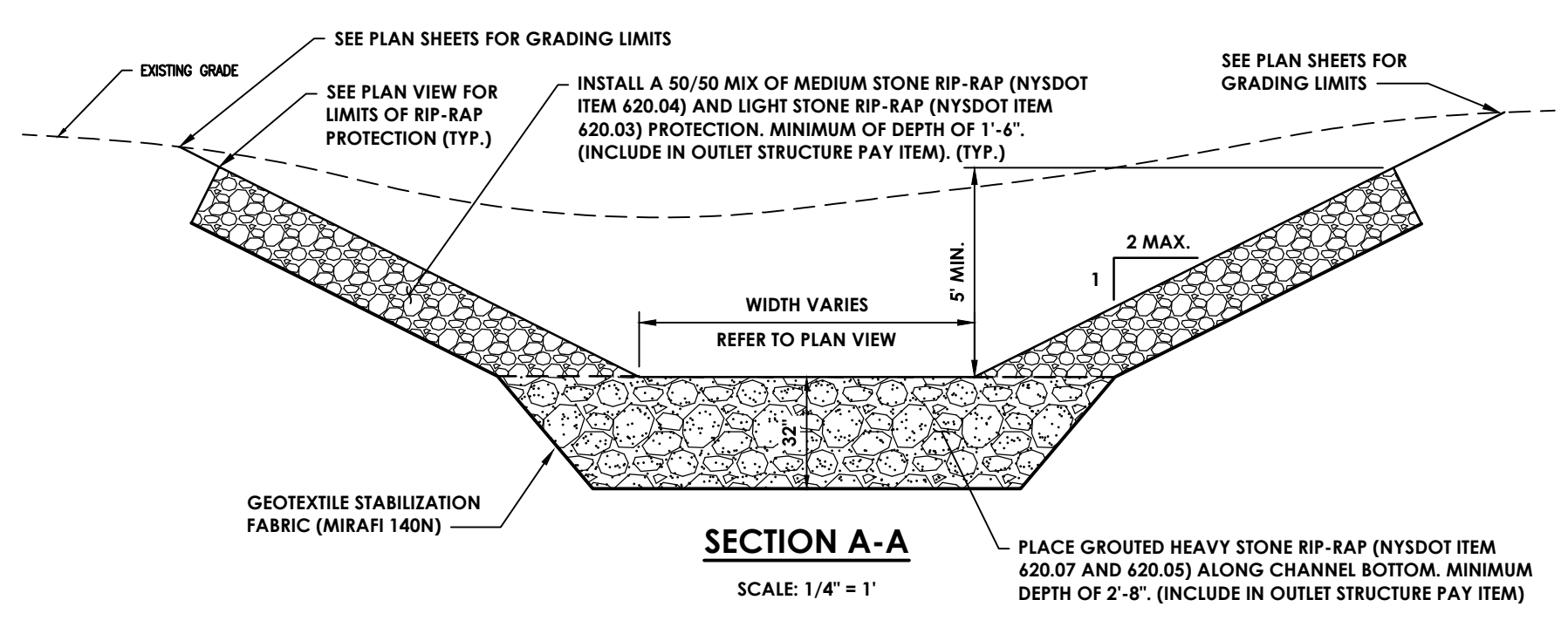


**FORCE MAIN OUTLET STRUCTURE**  
SCALE: 3/8" = 1'

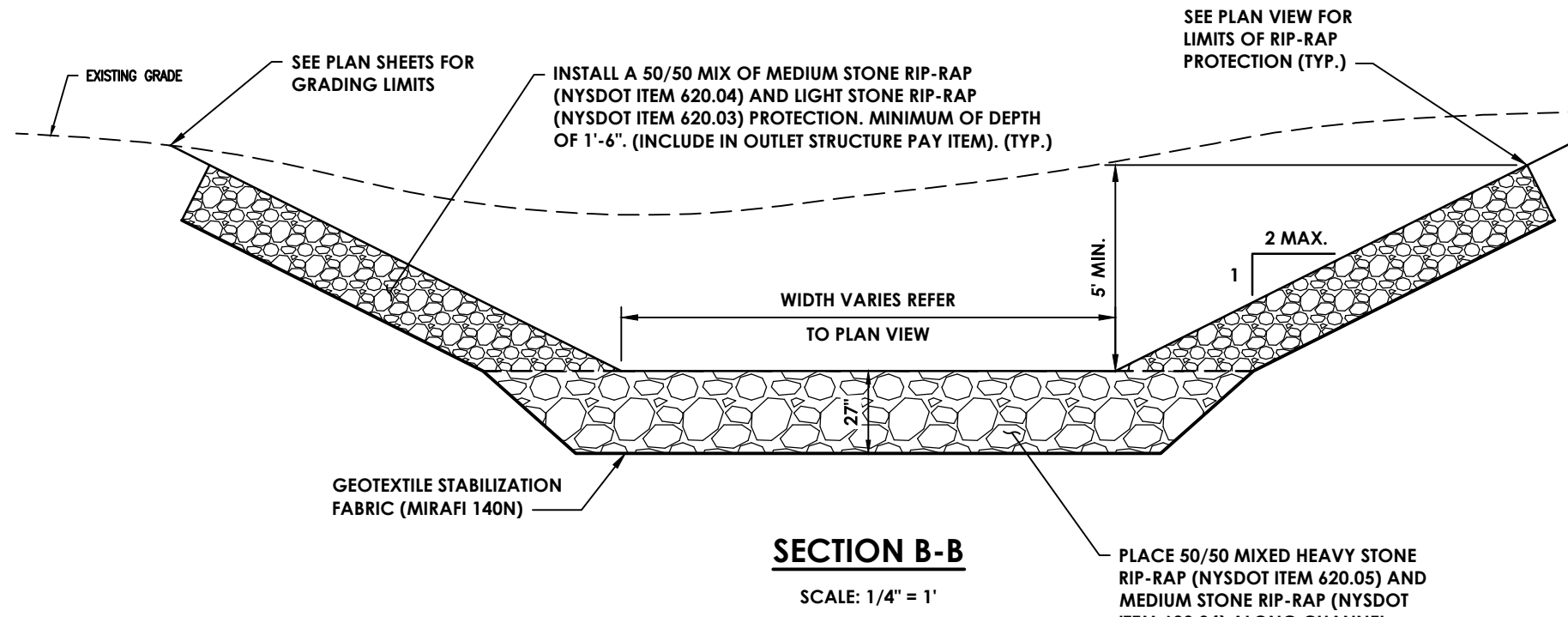
- NOTES:**
1. USE TWO COATS OF SIKAGUARD NO. 62 BY SIKA OR DURALCOTE BY DURAL OR APPROVED EQUIVALENT FOR INTERIOR COATING OF BASE TO TOP OF HIGHEST PIPE. USE TWO COATS OF KOPPERS SUPER SERVICE BLACK OR APPROVED EQUIVALENT ON OTHER INTERIOR AND ALL EXTERIOR SURFACES.
  2. ALL RISER JOINTS SHALL BE RUBBER RING GASKETS CONFORMING TO A.S.T.M. C443 WITH FLEXIBLE JOINT SEALER ON OUTSIDE OF JOINTS.
  3. FOR ALL PIPES USE LINKSEAL CONNECTOR. CONNECTION SHALL BE GROUTED AND ALL SURFACES COATED.
  4. PRECAST BASES, RISER SECTIONS AND TOP SLABS SHALL CONFORM WITH A.S.T.M. C478.
  5. CORED OPENINGS IN MANHOLE RISER SECTIONS SHALL NOT BE LESS THAN 4" FROM A RISER JOINT.
  6. STRUCTURE TOP SLABS, FRAMES AND COVERS SHALL BE DESIGNED FOR USE UNDER H-20 LOADING.
  7. REQUIRE 24" LD. FRAME AND COVER, NEENAH R-1713, OR APPROVED EQUAL.
  8. ALL WORK FOR OUTLET STRUCTURE SHALL BE PAID FOR UNDER OUTLET STRUCTURE PAY ITEMS. WORK INCLUDES EXCAVATION AND BACKFILL.



**OUTLET CHANNEL PLAN VIEW**  
SCALE: 1" = 20'



**SECTION A-A**  
SCALE: 1/4" = 1'



**SECTION B-B**  
SCALE: 1/4" = 1'

**OUTLET CHANNEL SECTION VIEWS**  
SCALE: 1/4" = 1'

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GENESSEE COUNTY ECONOMIC DEVELOPMENT CENTER  
STAMP FORCE MAIN  
CONTRACT A: CENTRAL AREA  
CONTRACT B: NORTH AREA  
TOWN OF ALABAMA & SHELBY  
GENESSEE & ORLEANS COUNTY  
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SCALE 1"=30'		
SHEET TITLE OUTFALL STRUCTURE DETAILS		

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**D-05R**  
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