

**Appendix G**  
**CSO 005 Reconfiguration Engineering**  
**Memorandum**

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# CSO 005 Sewer Reconfiguration

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The County is progressing a sewer reconfiguration in the CSO 005 sewershed to promote flows into the Harbor Brook Interceptor Sewer and reduce CSO overflows at 005. This technical memorandum outlines the design of the reconfiguration and presents the SWMM-predicted results of this system change on CSO volume and frequency along the HBIS sewershed.

## CSO 005 Sewer Reconfiguration

CSO 005 has a history of frequent overflows; the 2017 conditions SWMM indicates 1.5 MG discharged over 13 activations during the typical year. These occurrences are primarily caused by the existing 005 regulator set-up and the location where flow routes into the HBIS. In the current CSO 005 regulator set-up, sewer flows must travel through two 90-degree bends to enter the HBIS which creates head loss and promotes more overflow. In the CSO 005 tie in location, the HBIS also takes a 90-degree bend. This bend raises the hydraulic grade line in the HBIS and decreases the amount of flow that can be conveyed into the HBIS from the CSO 005 regulator. SWMM also indicates that the HBIS will flow backwards through the regulator underflow pipe and out the 005 overflow during the more intense storms in the typical year, further increasing overflow volume and activation frequency.

The presented design targets these issues to reduce the frequency and volume of overflows at 005. A new regulator structure will be constructed downstream of the 90-degree bends in the HBIS where the hydraulic grade line is lower to allow more 005 flows to enter the interceptor. The new regulator underflow pipe will have a backflow preventer as well to prevent potential high-flow backflow from the HBIS. The existing 005 regulator will remain as the secondary overflow and underflow for any laterals attached to the sewer. A backflow preventer will also be installed in the existing regulator underflow pipe to prevent the HBIS from relieving through the 005 overflow during high flow periods. The plan view of the design is shown below in Figure 1.

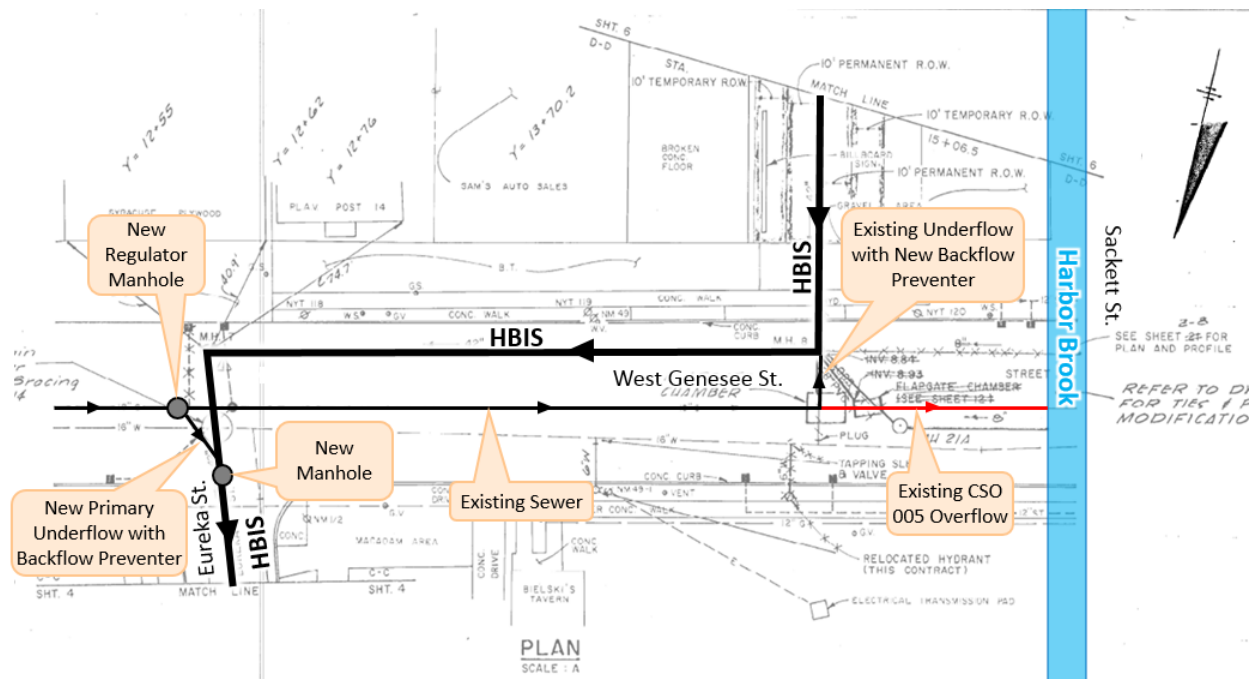


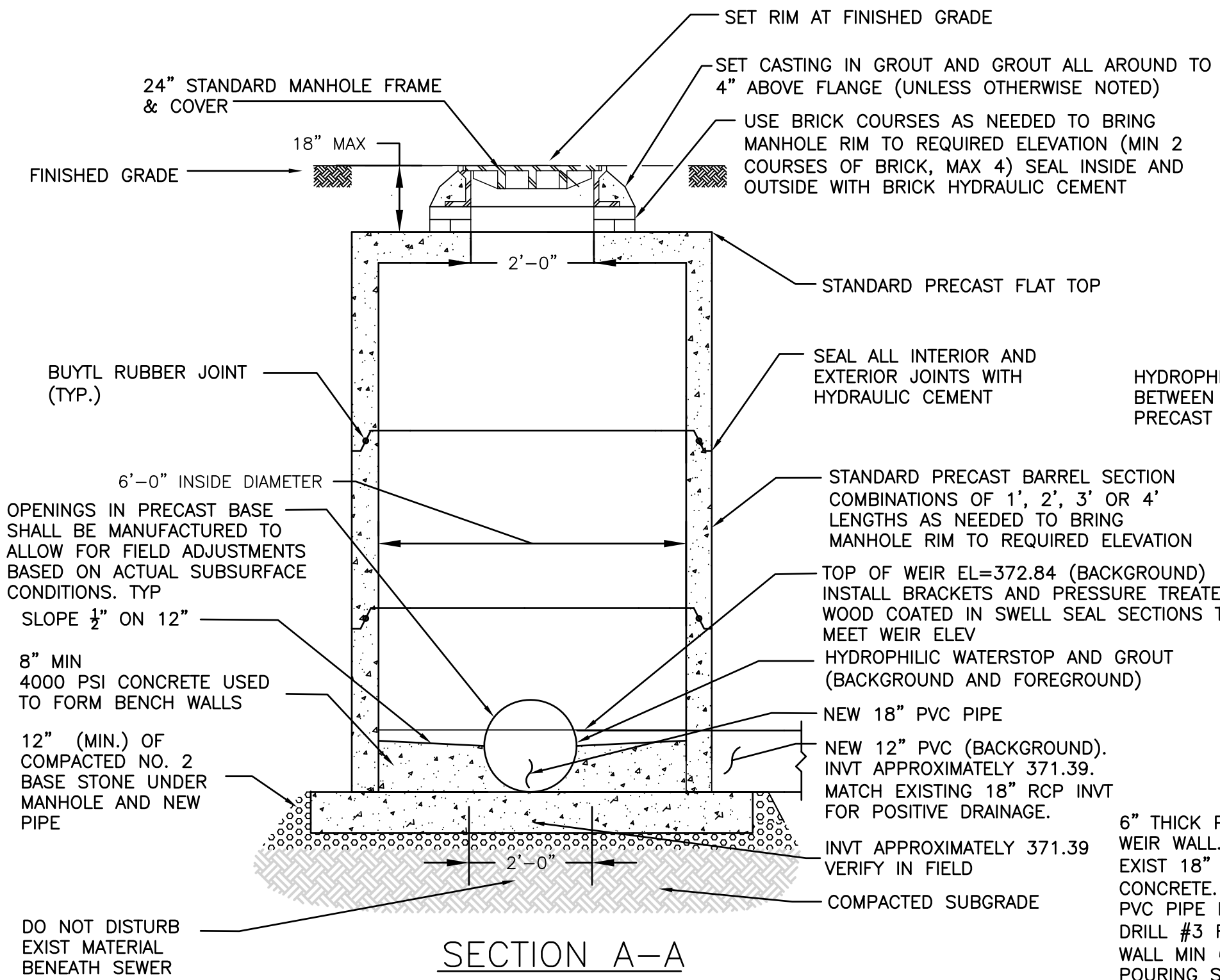
Figure 1. CSO 005 Sewer Reconfiguration (note, North is down)

The new regulator structure will feature a 12-inch underflow pipe with backflow preventer and an overflow weir with an offset of 2-feet and an approximate elevation of 372.84 feet (MSEL). The overflow from the new structure is conveyed to the existing 005 overflow structure and secondary underflow. The new regulator structure is provided in Attachment A.

### SWMM Results

The 2017 Conditions SWMM model was updated to reflect these changes. These results were compared with the 2017 base conditions. As a result of these proposed changes at CSO 005, during the typical year, the total CSO volume at CSO 005 decreases from 1.5 MG to 0.5 MG, and the activation frequency decreases from 13 events per typical year to 6.

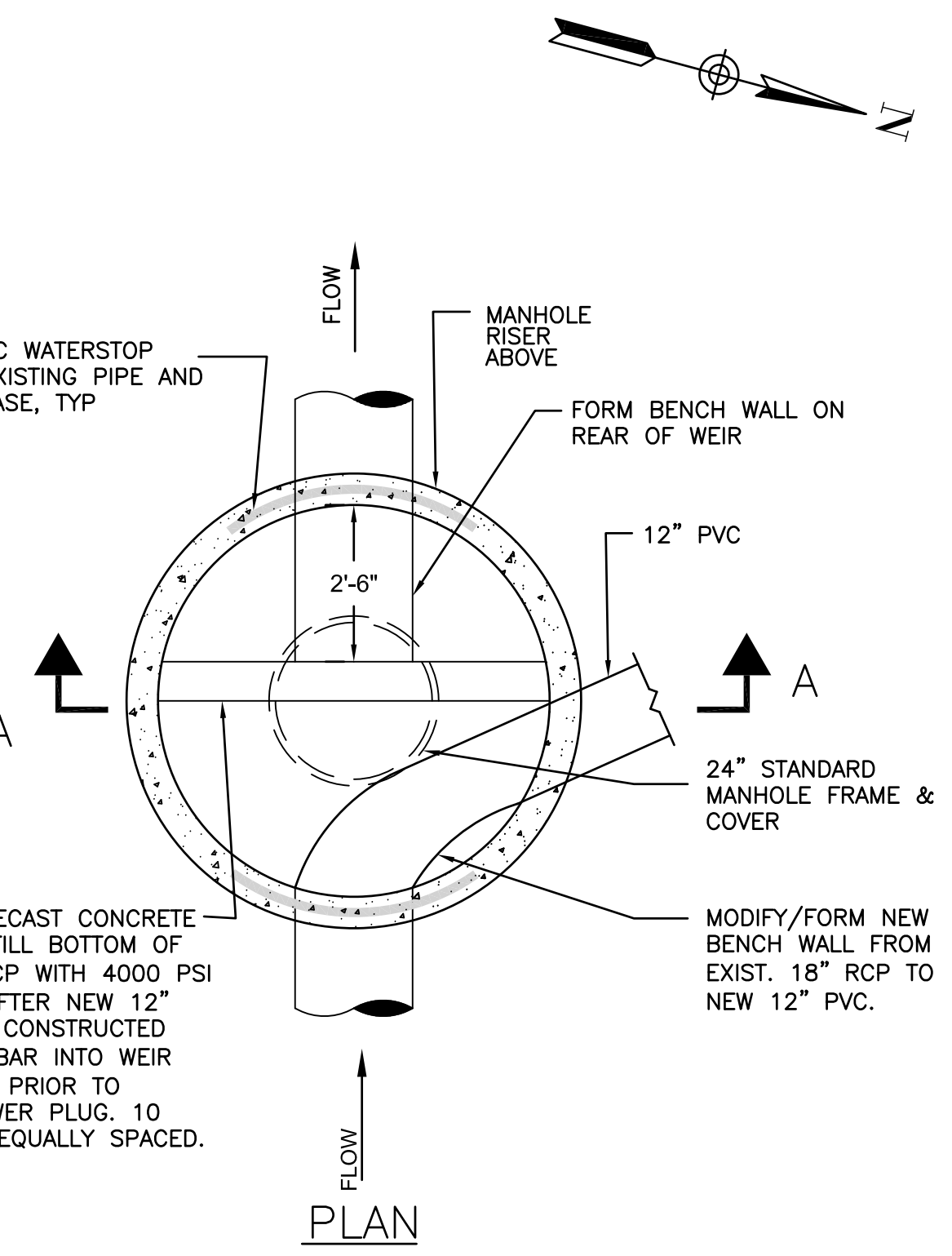
Attachment A – New CSO 005  
Regulator Structure Detail



SECTION A-A

HYDROPHILIC WATERSTOP BETWEEN EXISTING PIPE AND PRECAST BASE, TYP

6" THICK PRECAST CONCRETE WEIR WALL. FILL BOTTOM OF EXIST 18" RCP WITH 4000 PSI CONCRETE. AFTER NEW 12" PVC PIPE IS CONSTRUCTED DRILL #3 REBAR INTO WEIR WALL MIN 6" PRIOR TO POURING SEWER PLUG. 10 BARS TOTAL EQUALLY SPACED.



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