

Memorandum

Date: March 30, 2018
To: Robert Divelbess
From: Adam Wheeler, PE
Browne Wheeler Engineers, Inc.
Re: Stormwater Outfall at 5482 Fletcher Landing

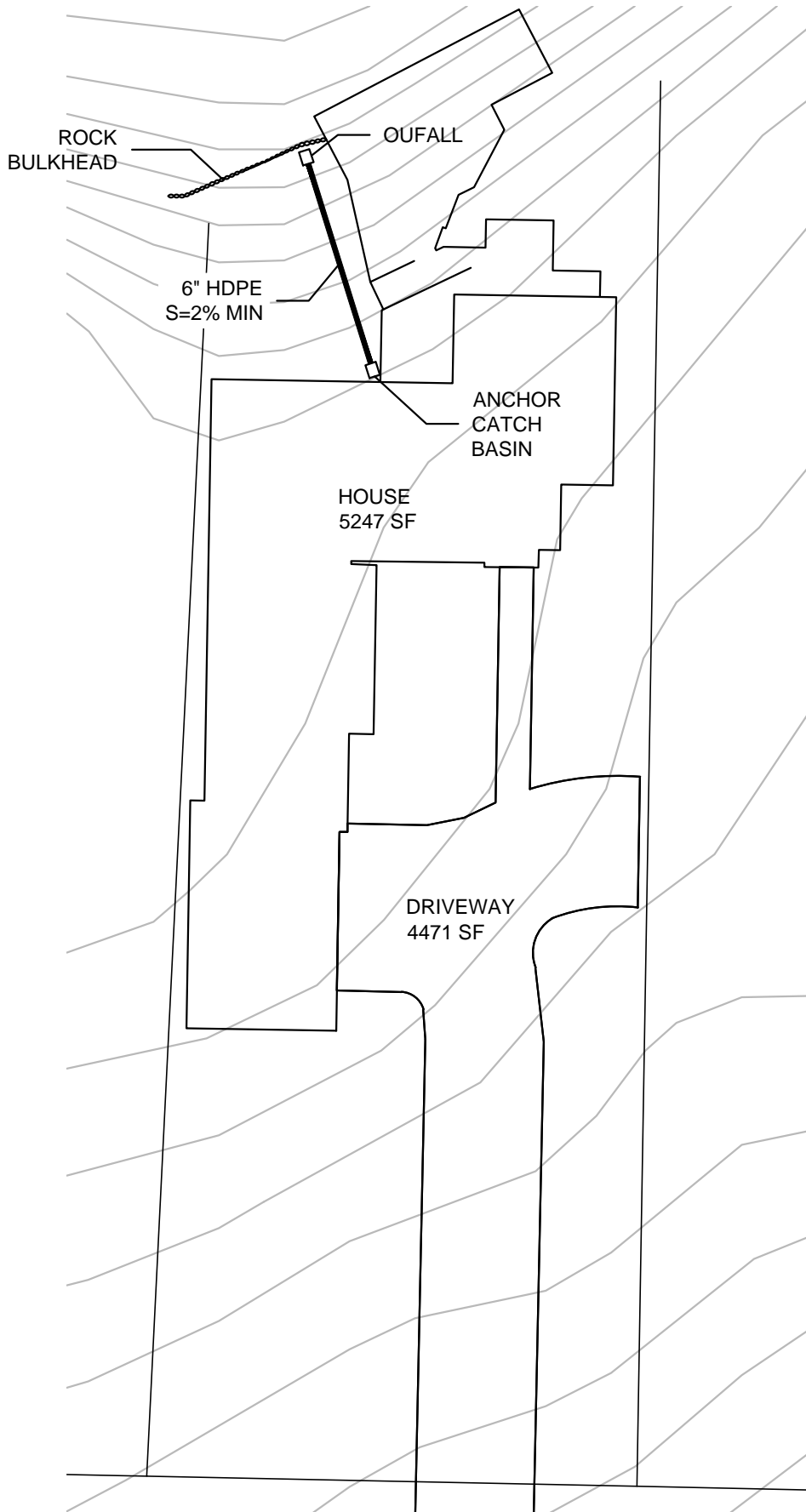


As requested, we have provided a design of a stormwater outfall capable of conveying the 100-year peak flow from the existing impervious area at 5482 Fletcher Landing on Bainbridge Island.

The outfall consists of an anchor catch basin that all of the uphill drainage system will tie into. From the anchor catch basin a 6 inch diameter HDPE pipe will convey the water to the base of the slope. At that point, the 6 inch pipe will slip into an 8-inch pipe that terminates into a catch basin. The catch basin will be surrounded by drain rock and will be perforated to allow the water to flow out of the basin and into the existing rock bulkhead. This will allow the water to disperse through the large rocks and onto the beach.

The 100-year peak flow was estimated at 0.76 cubic feet per second (see attached). To convey the 100-year flow approximately 0.9 feet of water will need to build up in the anchor catch basin (see attached).

If you have any questions or comments please let me know.

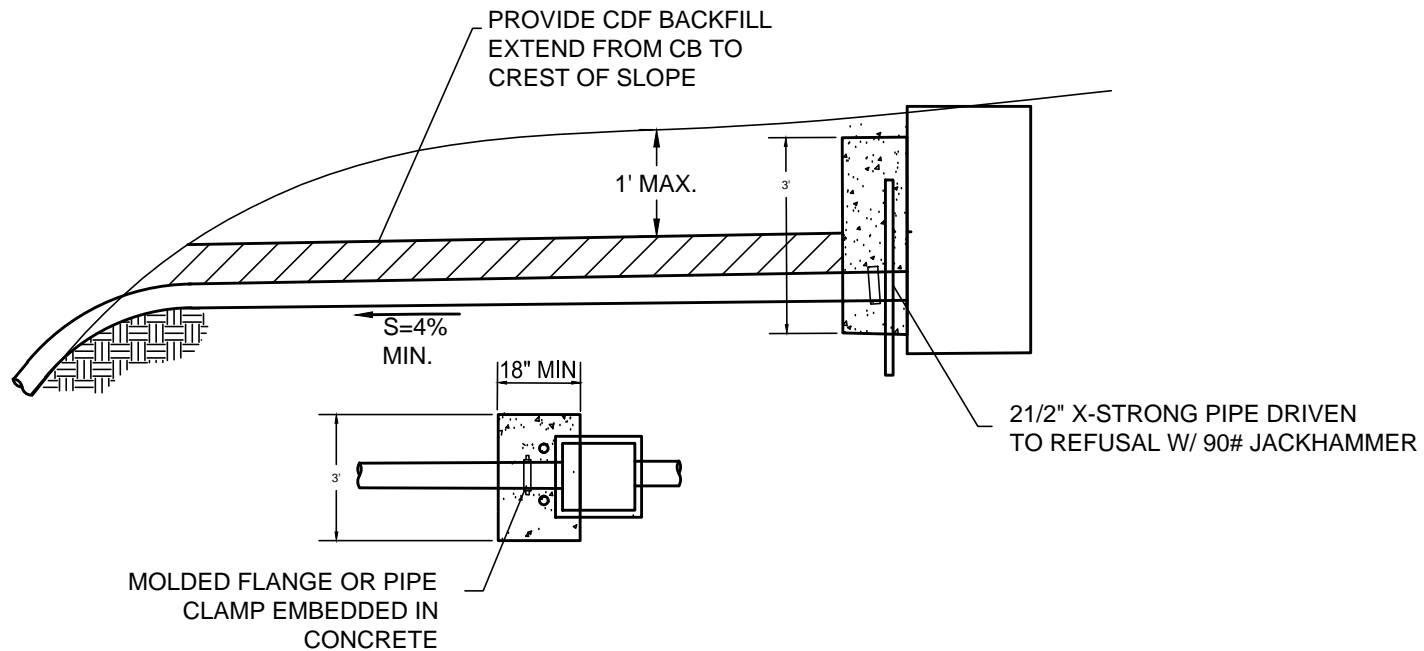


SITE PLAN

SCALE: 1" = 30'

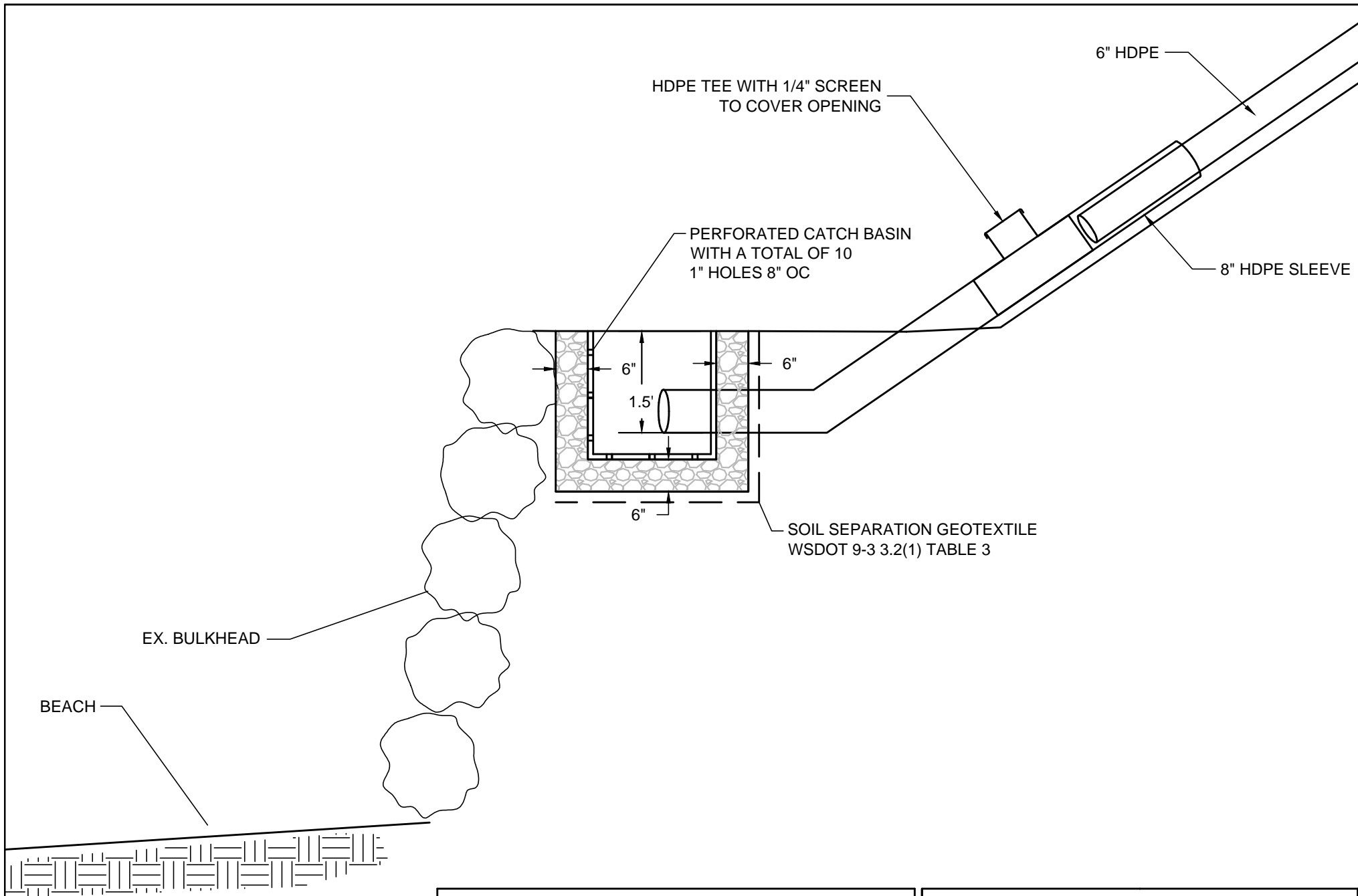
SITE PLAN **5482 FLETCHER LANDING**

BROWNE • WHEELER
ENGINEERS, INC
241 ERICKSEN AVENUE NE
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ANCHOR CATCH BASIN
5482 FLETCHER LANDING

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OUTFALL
5482 FLETCHER LANDING

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5482 Fletcher Landing
Outfall Pipe Size
3/30/2018

Area
Impervious 9718 sf 0.223095 ac

Q=CIA

Tc 5 min
m 8.74 see 2010 WSDOT Hydraulics Manual
n 0.523 see 2010 WSDOT Hydraulics Manual
I 3.766605 in/hr
C 0.9

Q= 0.76 cfs

Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc.

Friday, Mar 30 2018

Circular Culvert

Invert Elev Dn (ft) = 100.00
Pipe Length (ft) = 10.00
Slope (%) = 2.00
Invert Elev Up (ft) = 100.20
Rise (in) = 6.0
Shape = Circular
Span (in) = 6.0
No. Barrels = 1
n-Value = 0.012
Culvert Type = Circular Concrete
Culvert Entrance = Square edge w/headwall (C)
Coeff. K,M,c,Y,k = 0.0098, 2, 0.0398, 0.67, 0.5

Embankment

Top Elevation (ft) = 101.70
Top Width (ft) = 1.00
Crest Width (ft) = 1.00

Calculations

Qmin (cfs) = 0.76
Qmax (cfs) = 0.76
Tailwater Elev (ft) = Normal

Highlighted

Qtotal (cfs) = 0.76
Qpipe (cfs) = 0.76
Qovertop (cfs) = 0.00
Veloc Dn (ft/s) = 4.80
Veloc Up (ft/s) = 4.19
HGL Dn (ft) = 100.38
HGL Up (ft) = 100.64
Hw Elev (ft) = 101.13
Hw/D (ft) = 1.85
Flow Regime = Inlet Control

