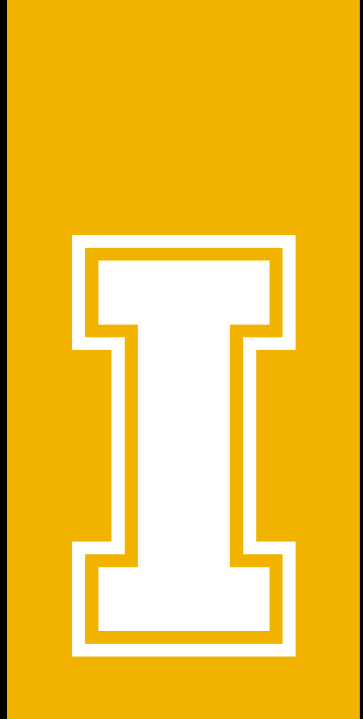
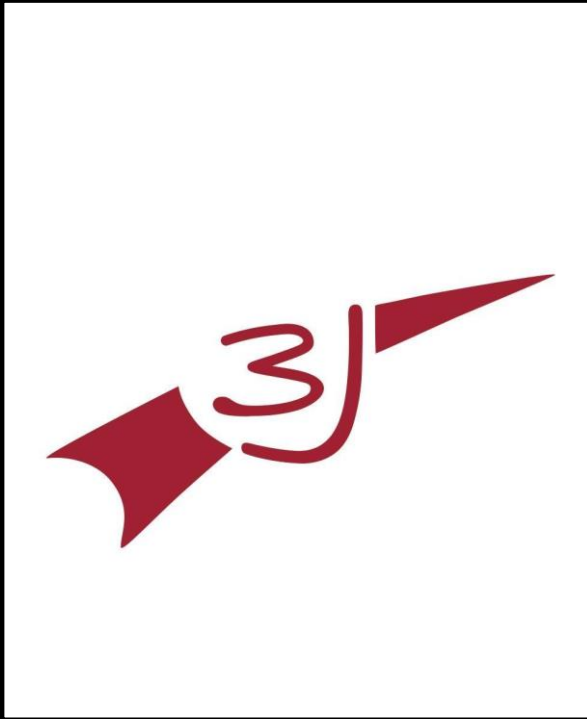
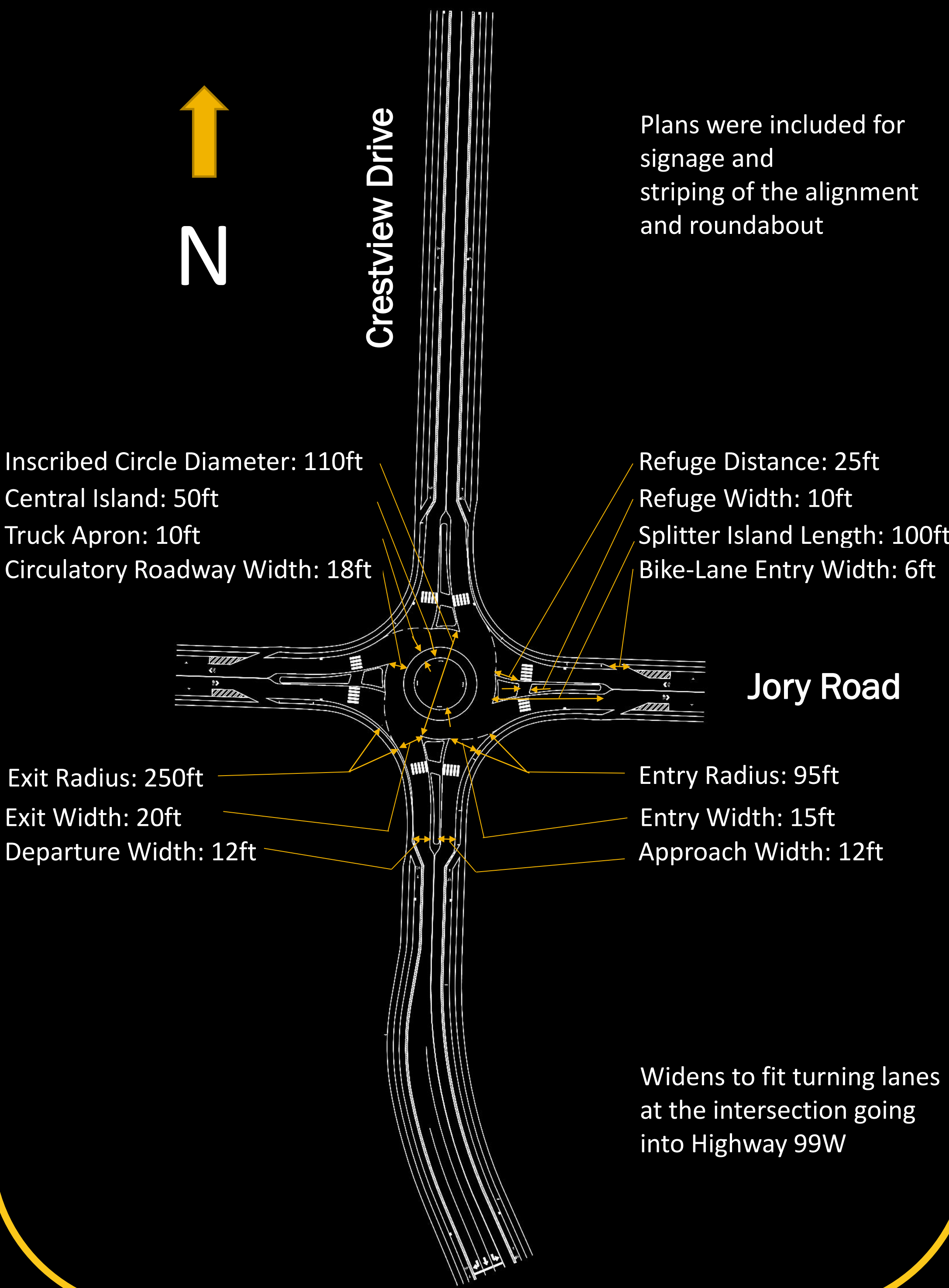




BACKGROUND

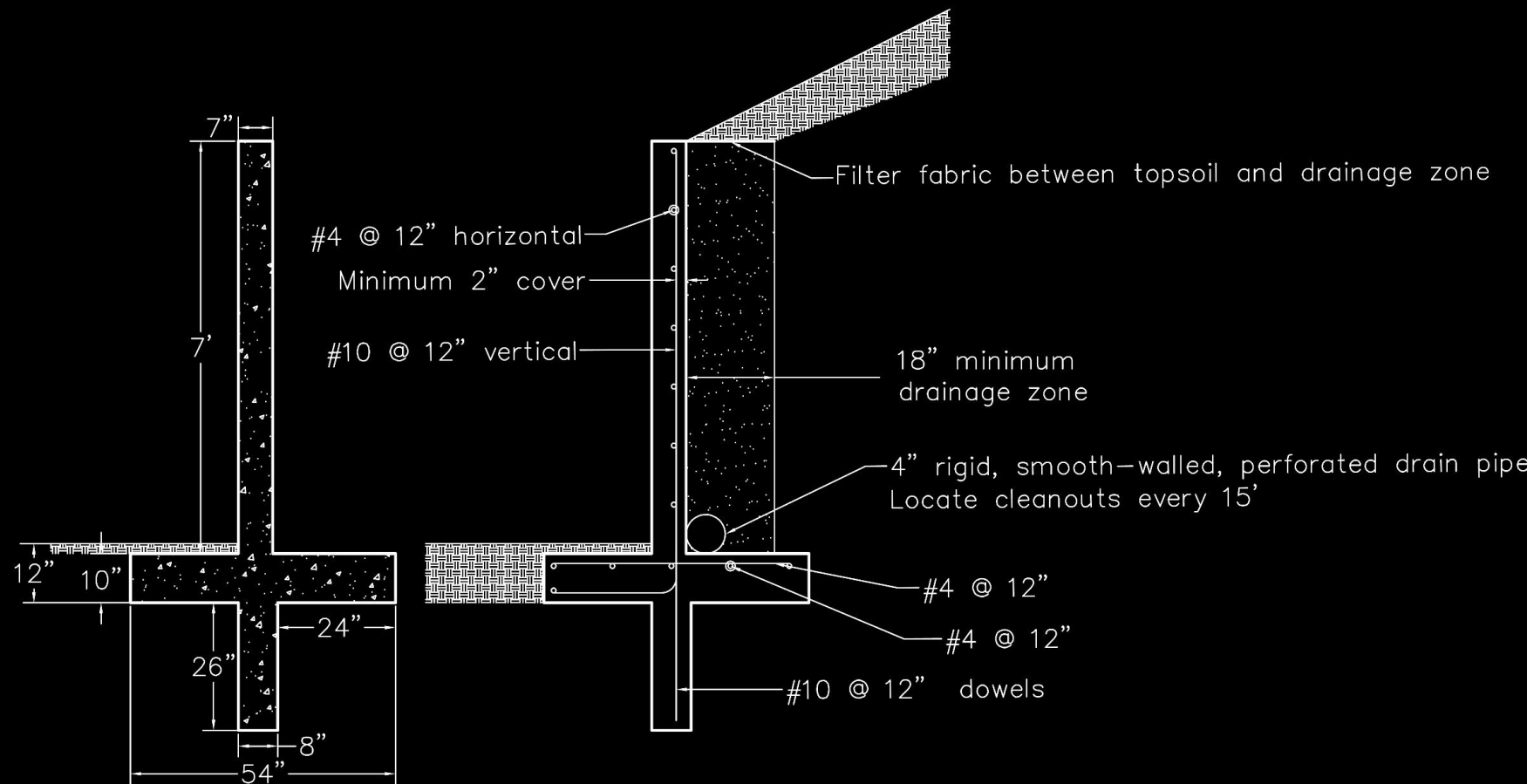
- Located in the City of Newberg, Oregon
- Crestview Crossing residential subdivision
- Design a North-South running street and roundabout
- Convey existing flows into regional wetland
- Design a Retaining wall

ROUNDAABOUT



RETAINING WALL

This cast-in-place, concrete, cantilever retaining wall is located along the west side of Crestview Dr.

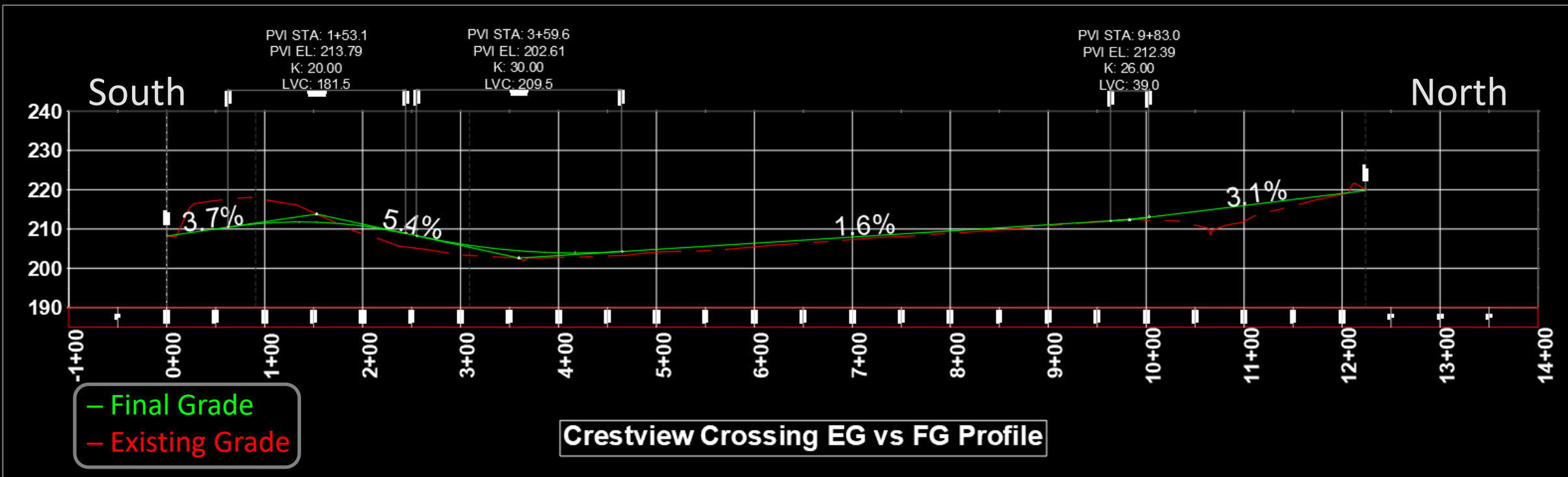


- Length: 585 ft
- Height: Ranges from 1 ft - 7 ft
- Thickness: 7"

ENGINEER'S ESTIMATE

Engineers Estimate					
Item	Description	Units	Quantity	Unit Cost	Total Cost
1	Mobilization	Lump Sum	1	\$ 126,753.50	\$ 126,753.50
2	Clearing and Grubbing	Acre	5	\$ 968.00	\$ 4,840.00
3	General Excavation/Scrapping	Cubic Yard	1800	\$ 50.00	\$ 90,000.00
4	Leveling Course - 3/4" Crushed Rock	Cubic Yard	543	\$ 75.00	\$ 40,731.00
5	Base Course - 1 1/2" Crushed Rock	Cubic Yard	1629	\$ 50.00	\$ 81,462.50
6	Class C HMA Asphalt Concrete	Cubic Yard	724	\$ 150.00	\$ 108,616.50
7	Concrete Curbs, Curb and Gutter	Square Foot	2500	\$ 50.00	\$ 125,000.00
8	Concrete Sidewalks	Square Foot	24500	\$ 10.00	\$ 245,000.00
9	Excavation Cut (Hydrology)	Cubic Yard	480	\$ 65.00	\$ 31,200.00
10	Silt Fence	Linear Foot	50	\$ 10.00	\$ 500.00
11	Sediment Geotextile	Square Foot	11	\$ 16.00	\$ 176.00
12	12" Thick Coconut Matting	Square Foot	4318	\$ 4.00	\$ 17,270.20
13	Wetland Plants	Each	25906	\$ 7.00	\$ 181,342.00
14	Inlet Protection Type 10	Each	1	\$ 215.00	\$ 215.00
15	100 Grade Rip Rap	Cubic Yard	43	\$ 95.00	\$ 4,085.00
16	Rip Rap Geotextile	Square Yard	42	\$ 10.00	\$ 422.22
17	PVC Elbows - 90 Degree	Each	2	\$ 31.00	\$ 62.00
18	PVC Elbows - 45 Degree	Each	2	\$ 30.00	\$ 60.00
19	8" PVC Pipe	Linear Foot	427	\$ 120.00	\$ 51,240.00
20	Concrete Retaining Wall	Linear Foot	585	\$ 400.00	\$ 234,000.00
21	Filter Fabric	Square Yard	98	\$ 4.00	\$ 392.00
22	Aggregate Backfill	Cubic Yard	174	\$ 50.00	\$ 8,700.00
23	4" Perforated Drain Pipe	Linear Foot	585	\$ 15.00	\$ 8,775.00
24	Clean-Outs	Each	39	\$ 50.00	\$ 1,950.00
25	Yellow Traffic Paint	Square Foot	1052	\$ 9.00	\$ 9,468.00
26	White Traffic Paint	Square Foot	1698	\$ 9.00	\$ 15,282.00
27	Crosswalk	Each	8	\$ 70.00	\$ 560.00
28	Arrows	Each	3	\$ 30.00	\$ 90.00
29	Stop Bars	Each	3	\$ 30.00	\$ 90.00
30	Shared Lane Markings	Each	4	\$ 35.00	\$ 140.00
31	Bicycle Lane Markings	Each	8	\$ 35.00	\$ 280.00
32	Newberg Standard Sign Posts	Each	24	\$ 92.00	\$ 2,208.00
33	Warning Signs	Each	12	\$ 122.00	\$ 1,464.00
34	Regulatory Signs	Each	10	\$ 169.00	\$ 1,690.00
35	Guide Signs	Each	2	\$ 112.00	\$ 224.00
				Cost:	\$ 1,394,288.92
				Contingency (15%):	\$ 209,143.34
				Total:	\$ 1,603,432.26

ROAD ALIGNMENT

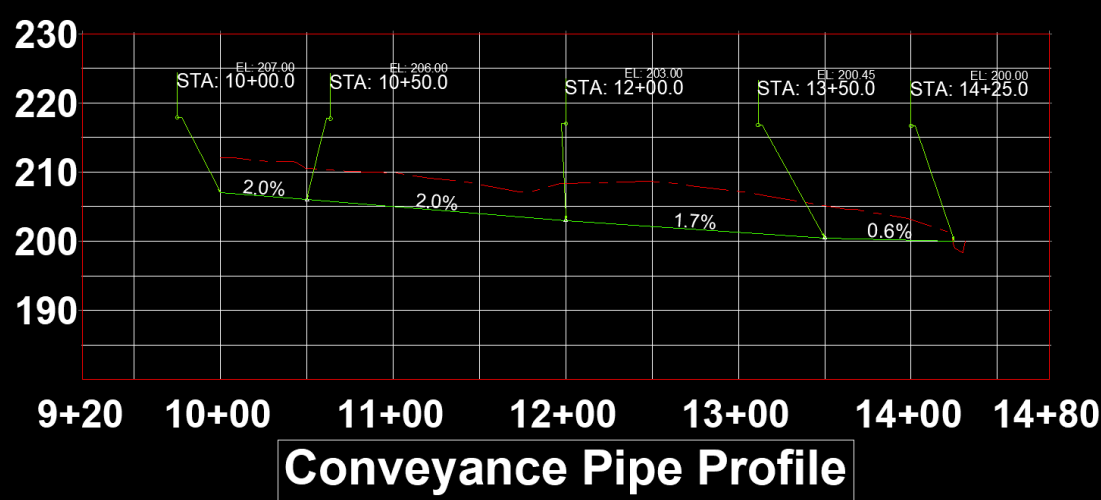


Designed with AASHTO Manual and Newberg Public Works Design and Construction Standards.

1569.49 yd³ of fill needed for new subgrade, which can be taken from swale excavation.

Pavement Design		Sidewalk Design	
Layer	Depth	Layer	Depth
Class C Asphalt	0'-4"	PCC (Concrete)	0'-4"
3" Crushed Rock	0'-3"	3" Compacted Crushed Rock	0'-2"
1-2" Crushed Rock Base Course	0'-9"	Compacted Subgrade	-
Compacted Subgrade	-	-	-

WATER CONVEYANCE



Pipe Conveyance

8" PVC
Length = 247 ft
Slope = 1.58%
Velocity = 2.69 $\frac{ft}{s}$
Outflow = 0.94 cfs

Swale Design

Vegetated Swale
Total Volume = 44,717 ft³
Residence Time = 9.6 Minutes
Slope = 0.60 %
Velocity = 0.40 $\frac{ft}{s}$

