

Horse Creek Improvements Project Facts



View 1 - Looking north up 98th Ave NE

- Existing HC flows in underground pipe. Headwaters are from Lake Pleasant. The Project is to create an open channel from NE 188th Street to Sammamish River. The flow scheduled to be diverted from underground pipe to open channel in July 2016.
- Proposed channel bottom 5-ft to 8-ft below existing ground.
- Flood flow rate: 44 cfs for two-year return period.
- Flood flow rate: 82 cfs for 100-year return period.
- Creek to consist of 4-ft to 6-ft wide low flow channel and 13-ft to 20-ft wide bankfull channel. The 20-ft wide bankfull channel is for 100-year flow.
- Retaining walls up to 8-ft tall in areas of existing sidewalk and other permanent infrastructure.
- Plaza near the Library uses lower walls, approx. 5-ft tall.
- Channel flows under ten 4-sided concrete box culverts. Three of these accommodate pedestrian crossings (10-ft length), the rest have roadway or driveway (55-ft at south gate of stadium; 128-ft at future outbound bus stop). Creek also flows under SR522 in 160-ft box culvert installed by previous Project (Crossroads).
 - Culvert wall thickness about 1-ft.
 - Inside heights of 4.5-ft to 5.5-ft. with approx. 1.5-ft of streambed material over the invert.
- Between SR522 and half acre open space, the channel has two types of liners, HDPE Liner and Geosynthetic Clay Liner. Based on hazardous materials investigation and Water budget study (evaluation of interaction between surface water and groundwater in and around the proposed HC channel). The purpose is to keep the channel from losing water to groundwater in dry season and to prevent changes to groundwater flow.
 - SR522 to 182nd HDPE liner: due to solvent contamination at former laundromat.
 - 182 to 183rd Geosynthetic Clay liner (bentonite or clay blankets, hydraulic barrier to water to slow seepage): to prevent stream from draining into lower groundwater and drying up.
 - 183rd to ½ acre open space Geosynthetic Clay liner: due to petroleum contamination from former bus barn/NSD site.

- The channel has several types of walls, depending on the design parameters such as type of native soils, liner requirement and surrounding conditions:
 - Gravity Block wall up to 8-ft exposed height with 8-ft wide ballast trench: south of SR522. To accommodate a 3H:1V slope south of the roadway, steeper than previous slope. Design objective is to counter liquefaction in the event of seismic event.
 - Permanent Soldier Pile Walls: SR522 to NE 182 St.
 - 182 to Half Acre open space: two types, either Cast-in-place walls or Structural Earth Walls (MSE mechanically stabilized earth walls). Depends on design parameters such as space for tie-backs.
 - NSD/McMenamins: Rockery Walls.

- Environmental Permit needs as Horse Creek is a fish bearing stream. Construction in water restricted to July 1 through September 30:
 - Army Corps of Engineers Permit – Crossroads (HC Mitigation Plan)
 - Army Corps of Engineers Permit – Horse Creek
 - Hydraulic Project Approval (WDFW)
 - Puget Sound Chinook and steelhead and coastal/Puget sound bull trout.
 - Crossroads Mitigation plan fill in culvert/pipe north of 180th in Park at Bothell Landing east of Multiway Boulevard.
 - Professional Archaeologist on site. Stillaguamish Indian Tribe.
 - Stream bypass installed during construction in the “dry”
 - Before July 1 2016 diverting water, streambed materials, bank protection to prevent erosion in place.
 - Log jams or large woody debris (LWD) for fish habitat.



Looking east at the daylit Horse Creek