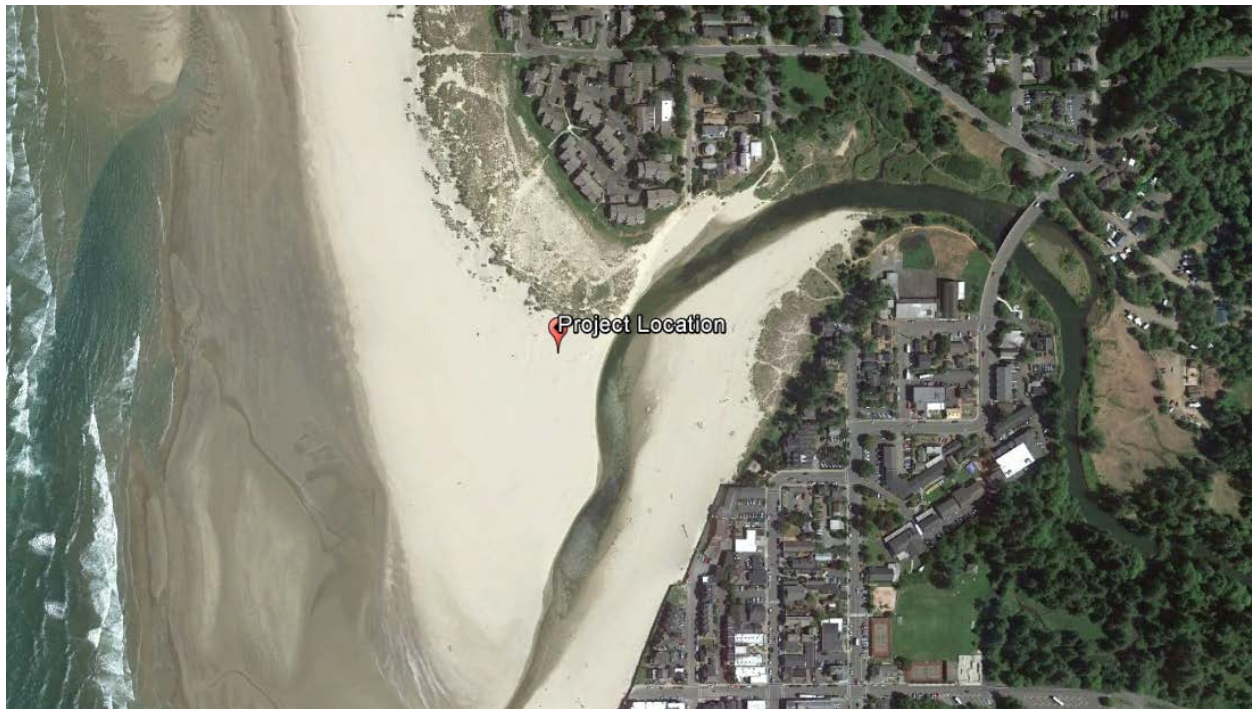
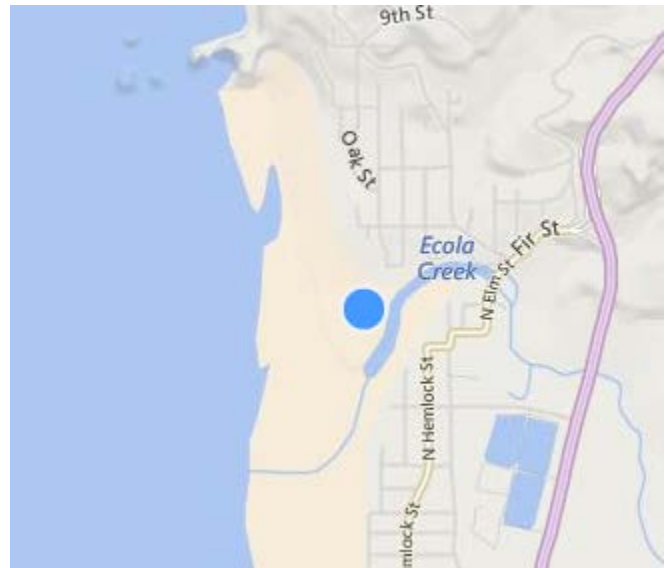


## Location Map

### **Breakers Point Dune Grading**

**NWP-2014-447**



**Within the Pacific Ocean, adjacent to Larch Street, Section 19,  
Township 5 North, Range 10 West, Cannon Beach, Clatsop County,  
Oregon (45.901150, -123.963581).**







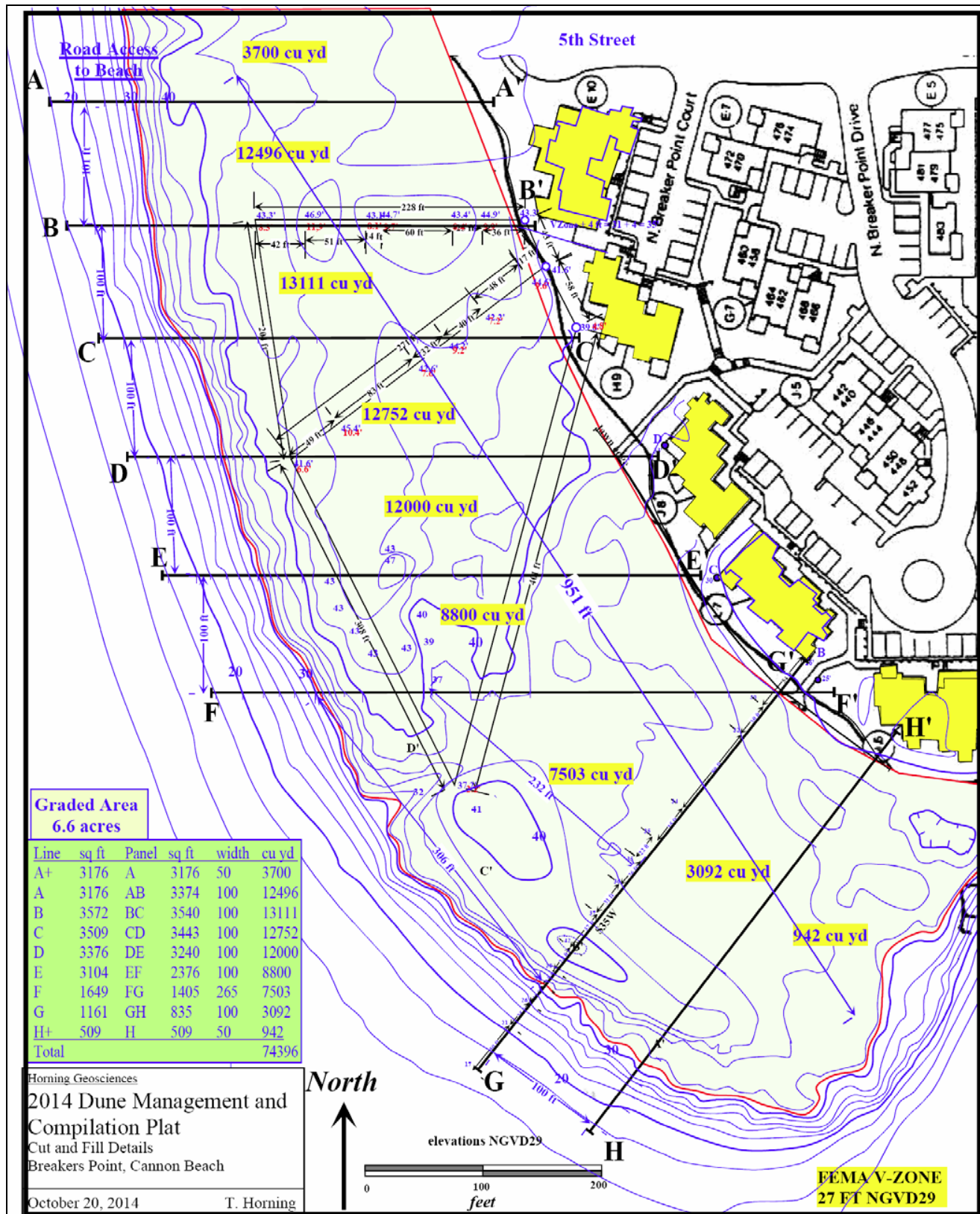


Figure 3: Summary plan for grading of dune sand at Breakers Point. Information is summarized in tables and has been generated from this plan and from profiles in Figure 4. Topographic survey profiles are by Castle Rock Surveying and Horning Geosciences. Additional data points and elevation contours from the City GIS LIDAR maps have been integrated to complete the elevation contours.

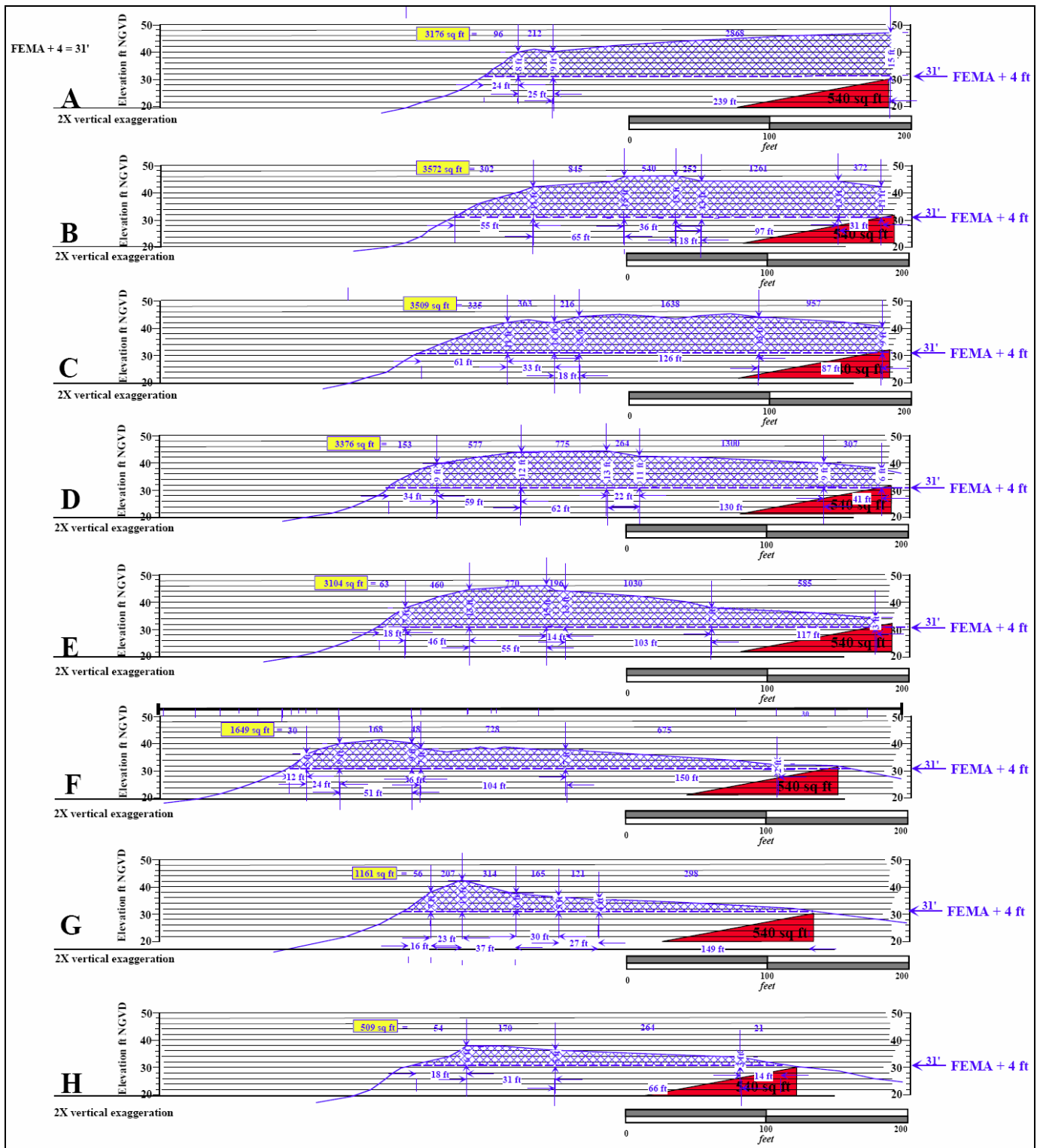
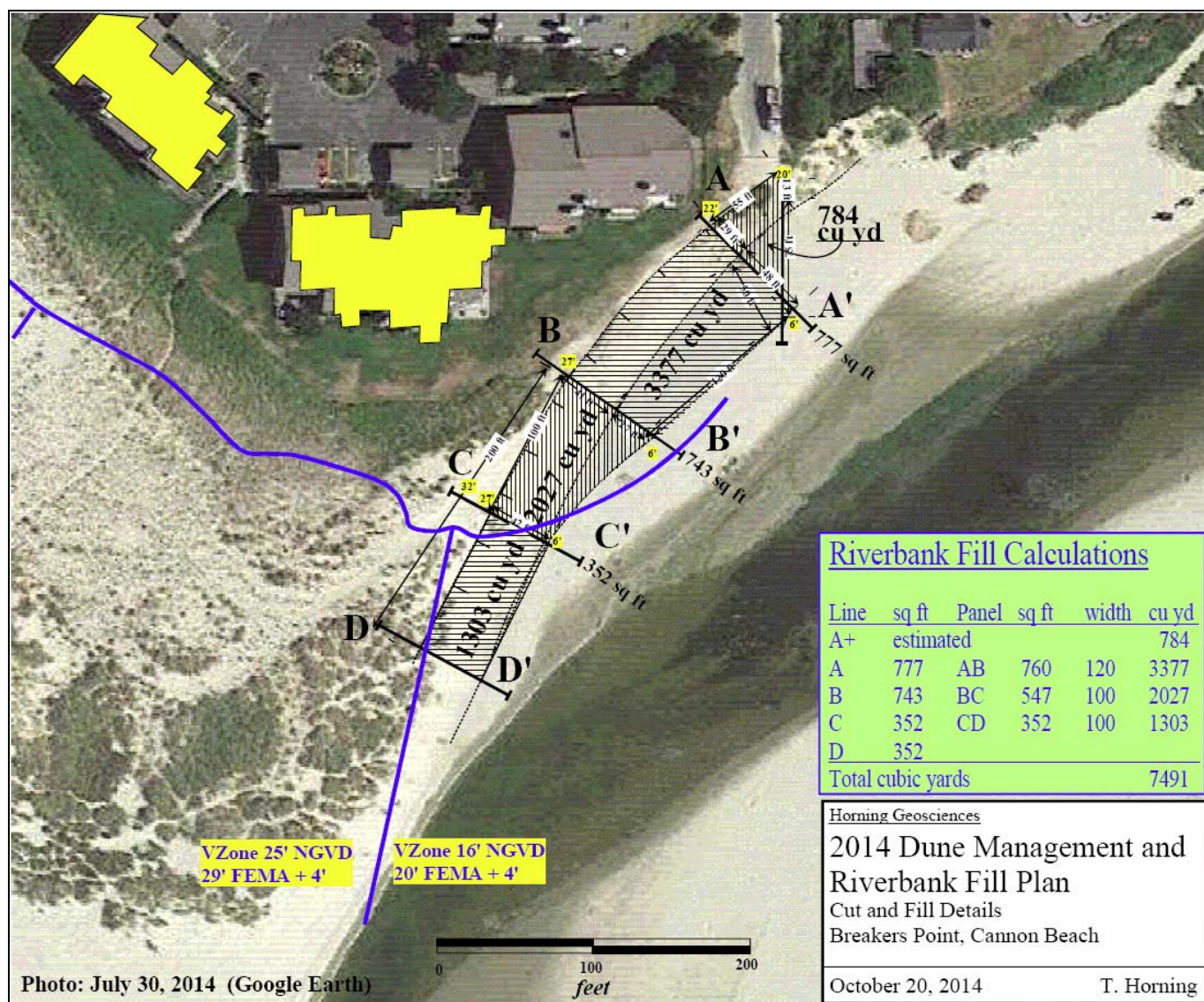
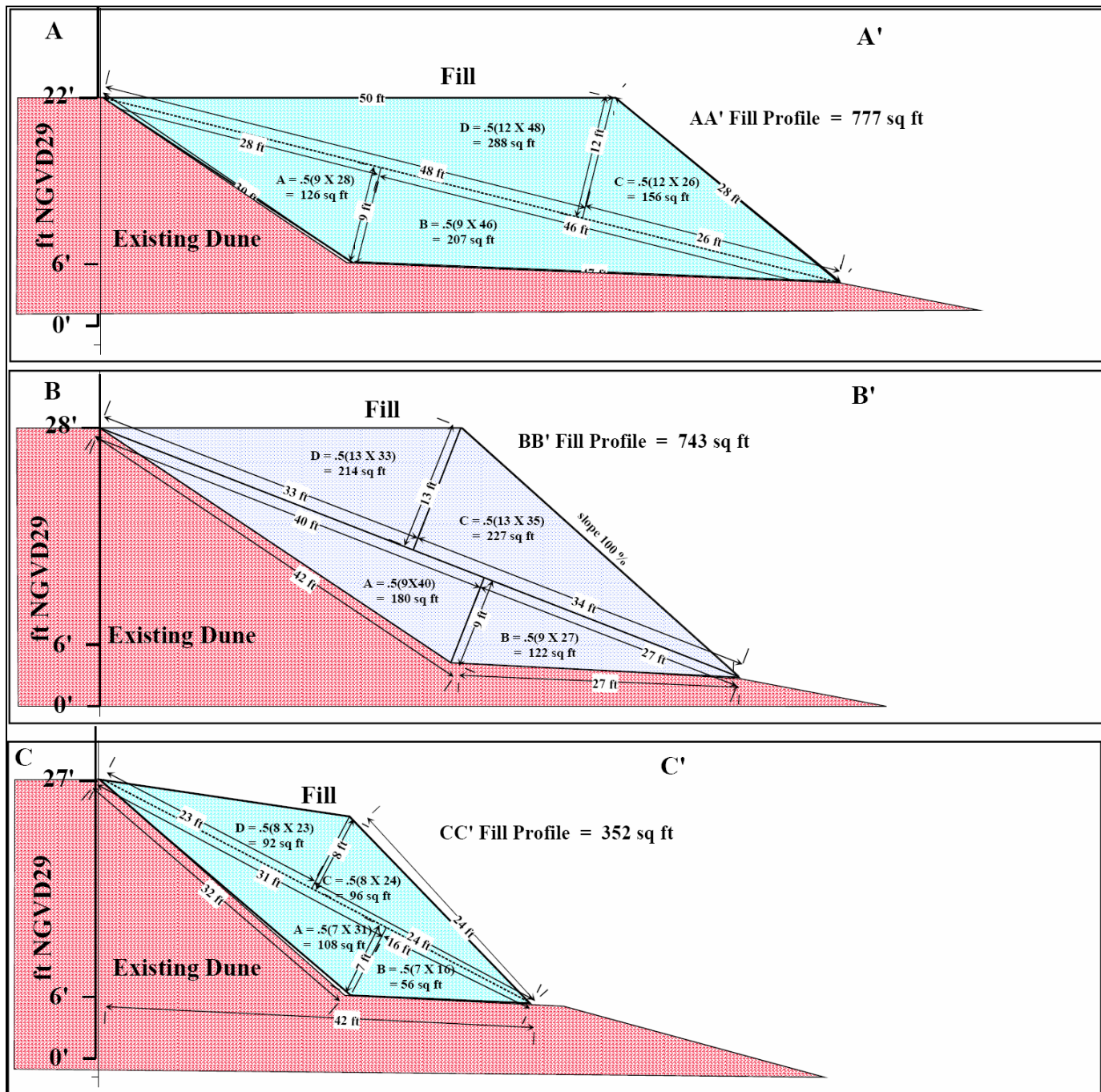


Figure 4: Dune cross sectional profiles from Figure 3, showing dimensions of sand lying above 31 ft NGVD. Red triangles denote the mandated 540 sq ft of reserved cross sectional sand in cross section. Note that the vertical dimension is exaggerated by 100 percent for clarity.





**Figure 5:** Ecola riverbank sand disposal plan (an extension of Figure 3) with panel areas shown in black hatching, the tabulated area and volume information compiled from profiles in Figure 6. The beach area along the north side of the creek has experienced intensive shoreline erosion over the past few years. The blue curved line delineates the former shoreline used by FEMA for flood hazard boundaries. V-Zone flood elevations are provided. The flood boundaries along the beach have shifted westward since 1978 due to dune growth, whereas the shoreline along the river has shifted northwestward due to bank erosion. Sand deposited in this area in 2010 has since been washed away and carried back into the surf by freshets and ebb tide currents.



**Figure 6:** Profiles for sand fill along the northwest side of Ecola Creek, fill sand shown in blue and existing dune sand in red. The fill slope will be approximately 100 percent, the angle of repose for wet sand. Profile DD' is identical to CC'.



