motor, 60:1 gear reducer, hoist drum assembly, and brakes. The hoist will be placed on new foundation housed within a 20 Ft by 40 Ft metal building. The tower is designed to support a 7 Ft sheave wheel to deflect the 1.5-inch wire rope down the 17-degree slope. The details of the foundations are included in Exhibit 28-Bond Calculations.

A discussion of the new access and new light use road that are associated with the Bates Portal follows. Typical cross sections are shown on Map 11 Sheet 1 East Portal Roads, Slope Track, and Cut Areas. The roads are shown on Map 12 West Portal Area Roads, Utilities, and Facilities.

A discussion of the haul road to the RDA associated with TR-66 and TR-77 follows. Typical sections are shown on Map 11 Sheet 1 East Portal Roads, Slope Track and Cut Areas. Sedimentation control is shown on Map 13 and Map 24. Map 24A shows the clean water ditch alignment profile and Map 24B shows the haul road alignment profile.

Haul Road and Access Road Location
Haul roads and Access roads will to the extent practicable; be located on ridges or on the most stable available slopes to minimize erosion.

Haul Road and Access Road Design and Construction
The Bates Portal access road runs from the Bates Portal on the east to an existing access road to the west, a distance of about 410 feet at a constant grade of 10 percent. Cut slopes are not steeper than 1.5h: 1v in unconsolidated materials or 0.25h: 1v in rock. Embankment slopes are not steeper than 1.5h: 1v. The north side of the access road is supported by retaining walls.

The existing RDA road was converted to a haul road by TR-66 and extended to the top of the next lift by TR-77 as per Plan and Profile Drawing Map 24A and 24B The road begins north of SH 12 and traverses a side slope up to the RDA. The road is approximately 1,652 feet long. The road meets the cut and fill requirements of Rule 4.03.1(3)(d & e). The cut slopes are no steeper than 1.5h:lv except in rock where the cut slopes may be 0.25h:lv. The fill slopes are no stepper than2h:1v except where there is 85% rock in the fill where the fill slopes may be steepened to 1.3SH:1v. The Haul Road has an overall grade of less than 12%. The maximum grade on the road is less than 15%. The road is out of compliance with Rule 4.03.1(3)(a) because there an 1,000 foot-long segment of the road that exceeds 10%. Steep grades on haul roads can have adverse effects on safety and the environment. NECC has adopted the following rules and operating procedures to mitigate safety and environmental concerns. The width of the haul road varies with a minimum width of 24 feet. The road is plated with gravel. NECC plans to utilize up to 30-ton capacity articulating haul trucks to haul coal mine waste to the RDA. These