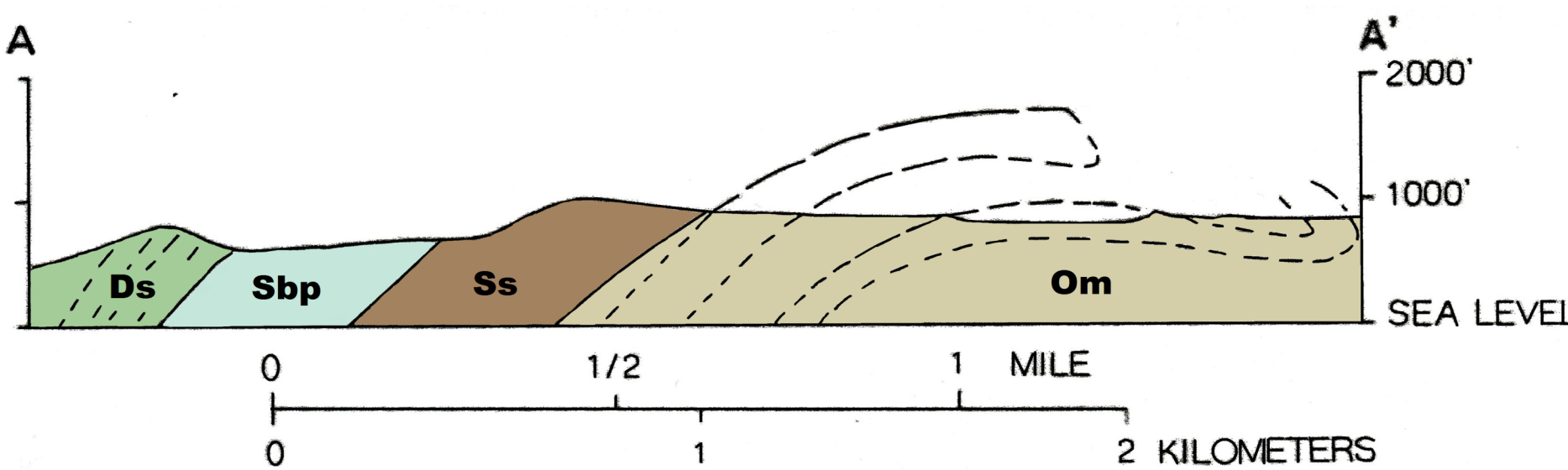
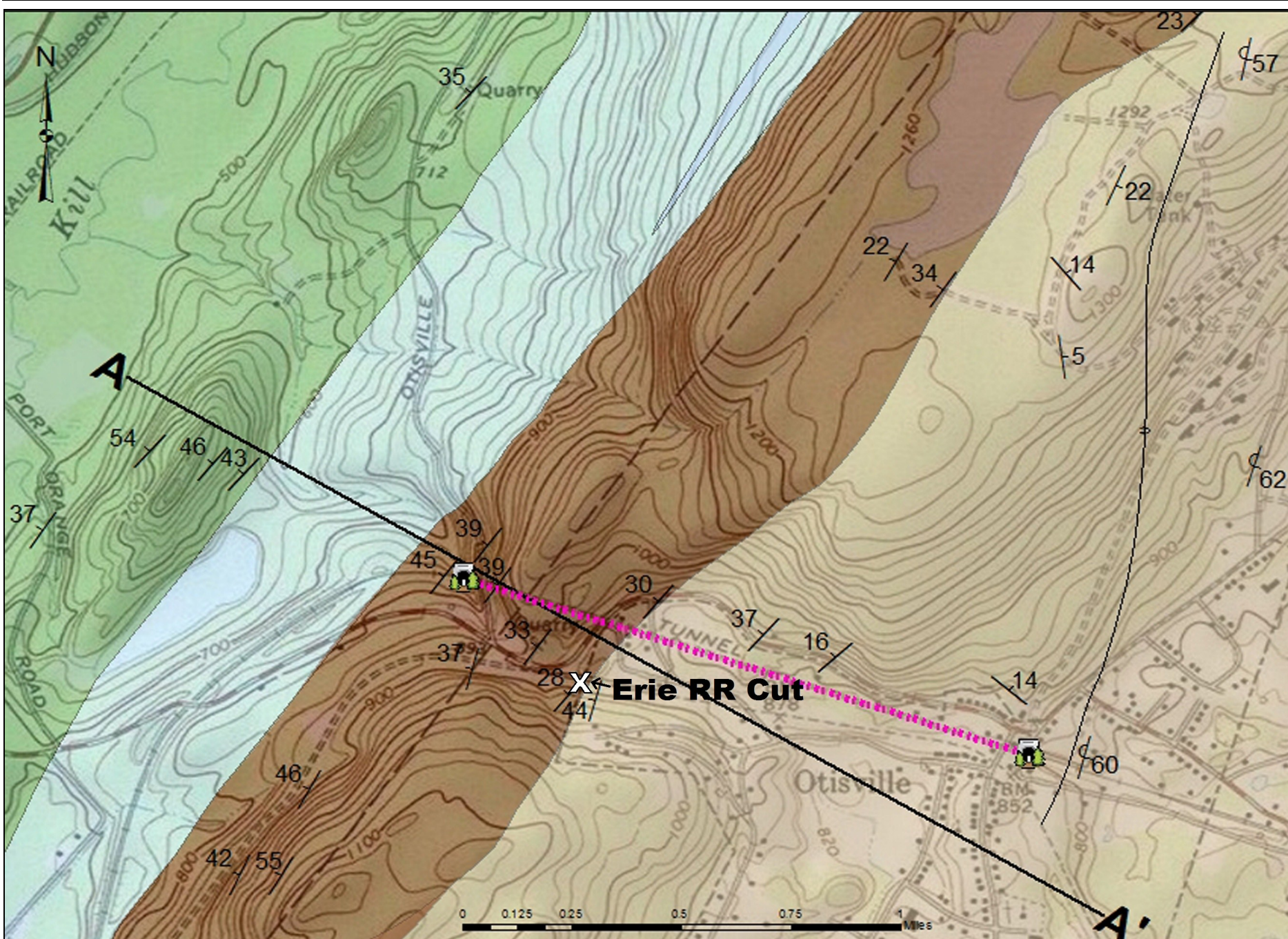


ERIE RAILROAD CUT (1847)

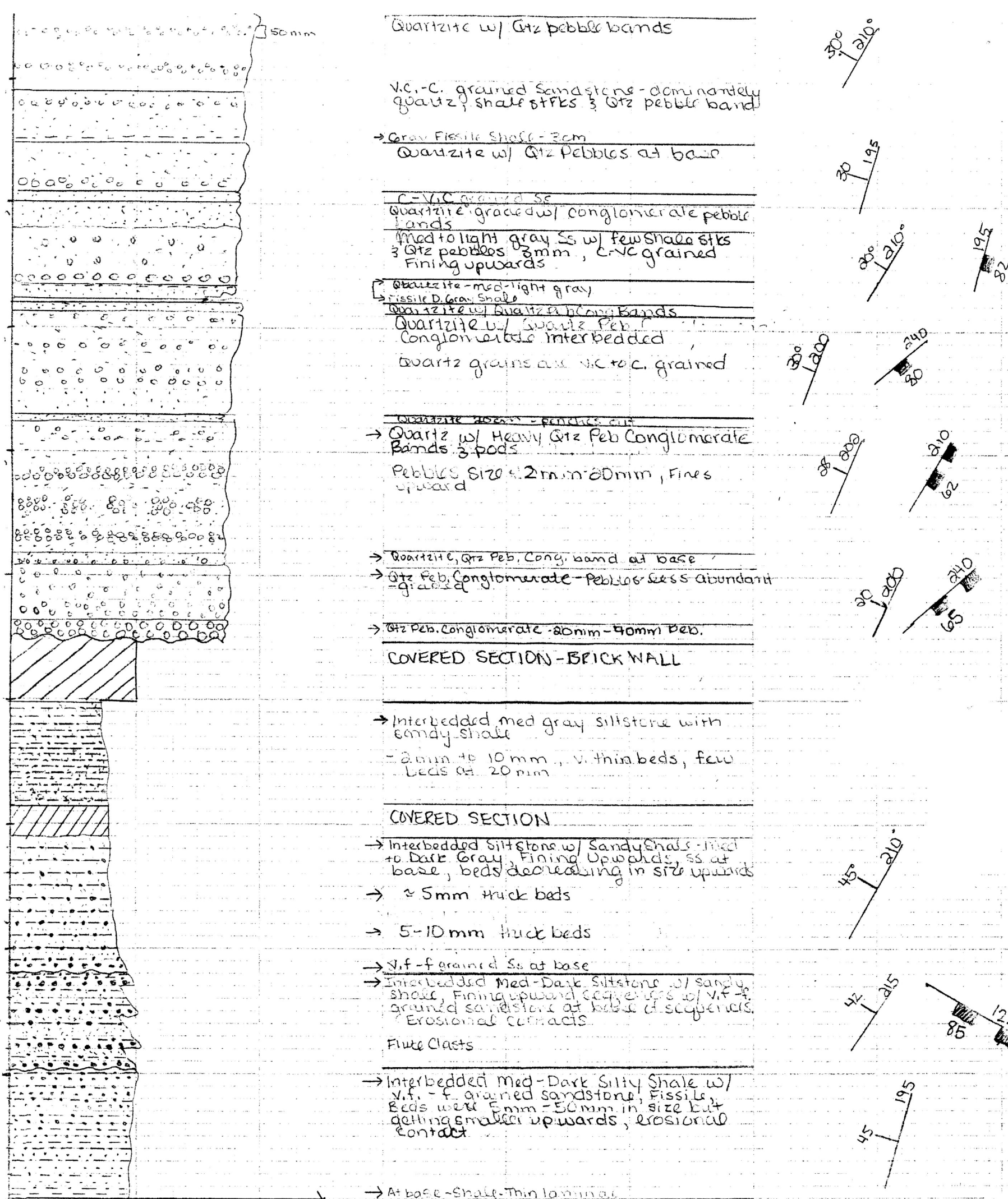
In the 1820's, 10 years before railroads entered the transportation picture, a group of Orange County businessmen lobbied for the planned Delaware and Hudson (D&H) Canal to cross Orange County. In 1825 these gentlemen proposed that a tunnel be dug through the Shawangunk ridge and that a canal be built through Orange County to Newburgh where it would join the Hudson River. Since one of the strong backers of the D&H Canal was George Duncan Wickham, a prominent citizen of Orange County and a member of the D&H Board, the D&H Board of Managers had to treat the proposal seriously. Wickham made a motion to the Board to explore alternatives to the planned route up the valley west of Shawangunk Mountain to Kingston on the Hudson and the board approved (Skye, 2009).

Benjamin Wright, the nation's foremost canal engineer was asked to explore alternatives to the Kingston route. Wright evaluated the proposed Orange County route and determined that a tunnel two miles long would be needed and that the additional cost would be prohibitive. It is worth noting that the black powder blasting technology available at the time would surely have delayed the completion of the canal well beyond the actual completion date of 1828 when the canal was opened to Kingston (Skye, 2009).

Ten years after Wright rejected the idea of a D&H Canal tunnel, he had to consider the idea of a Shawangunk tunnel again. Wright had become the chief engineer for the New York and Erie (later the Erie) Railroad, designed to connect New York City with the Great Lakes region. He had to decide whether the Erie (the shorter, later name is used here) should cross the Shawangunks at Otisville by going over the top or through a tunnel. He opted for a deep cut through the Deerfield Gap at Otisville in the route plan he completed in 1835. He did not support the idea of a tunnel at the time since the amount of traffic expected could not justify the expense of a tunnel he estimated would have to be over half a mile long. He did state in his report to the New York Secretary of State that in 20 years time the increase in the railroad's business would demand that such a tunnel be built. Although ground was broken for the railroad in 1835, it was not until 1846 that construction really got underway. In 1847 the railroad finally accepted Wright's recommendation and built the line through Deerfield Gap, proceeding on to Port Jervis and points west. In 1873 the Erie reconsidered its decision on building a tunnel, but nothing came of that effort (Skye, 2009). The Erie was originally built wide gauge (6 ft), but was converted to standard gauge (4 ft 8.5 in) on 22 June 1880. The Otisville cut probably owes its imposing width to the original wide gauge of the railroad.



Preliminary geologic map and section of the Otisville, NY, area, showing the angular unconformity between the Shawangunk and Martinsburg Formations, and the overturned syncline overlapped by the Taconic unconformity. Standard structure symbols used for bedding and axial tract of syncline. Pink dashed line shows the Otisville Tunnel with portals and the white "X" marks the Erie Railroad cut. Ds = Scholastic Formation through Bossardville Limestone; Sbp = Poxono Island Formation and Bloomsburg Red Beds; Ss = Shawangunk Formation; Om = Martinsburg Formation. Map and cross section modified from Epstein & Lyttle 1987.



Stratigraphic section of the Shawangunk /Martinsburg Formations on the north side of the abandoned Erie Railroad cut at Otisville, New York. Measured and described by Chloe Wonnell, SUNY Oswego Geologic Field Camp, late May 2012.



Shawangunk conglomerate cliff along NY Rte. 61 just north of the abandoned Erie Railroad cut through Deerfield Gap, west of Otisville . The tunnel which replaced the grade through the cut is situated a little beyond the left (north side) of the photo.



Stone wall reinforcement at the Shawangunk-Martinsburg contact (Taconic unconformity) on the north side of the abandoned cut. The necessity of strengthening the contact zone here emphasizes its instability in the nearby Otisville Tunnel, and in the High View Tunnel as well. (STOP 9, 77th Annual Field Conference of Pennsylvania Geologists, 20 October 2012.)



The Taconic unconformity—i.e., Shawangunk/Martinsburg contact—on the south side of the abandoned Erie Railroad cut west of Otisville. Bedding in the Shawangunk is N36E/28NW and in the Martinsburg, N16E/44NW (Epstein, 2012).



Close-up of the Taconic unconformity on the south side of the abandoned Erie Railroad cut west of Otisville. Between the two formations here is a thin diamictite zone up to 1 ft thick and containing angular to rounded pebbles of various lithologies—quartzite, graywacke, red siltstone, dark-gray shale, vein quartz, etc. The diamictite may mark a zone of tectonic movement or be a poorly sorted sedimentary deposit (Epstein, 2012).



Abandoned cut through Shawangunk Mountain in the wind gap at Otisville, looking east (GPS 41° 28' 32.4"N/74° 33' 05.9"W). The cut is 0.5 mi south of the later tunnel and several hundred feet higher in elevation. The beds exposed are northwest-dipping (~30°) quartzitic conglomerate and sandstone of the Shawangunk Formation, the unconformable contact with the Martinsburg Formation being exposed at the east end of the cut.