

Barlow Campus Improvement Project

Granite Curbing and Cobblestone Apron

The Barlow Campus Improvement Project was designed to address facility infrastructure deficiencies, in order to preserve the community assets on the Barlow Campus.

Our priority is to provide our students, staff, and town residents a high school complex designed to meet the needs and expectations of the community.

The Region 9 Board considered initial cost, durability, and ongoing maintenance expenses in order to plan this project in the most **cost-efficient** manner.

Granite Cobblestone Apron

- The Barlow Driveway Entrance from Black Rock has been a problematic area for many years.
- The old asphalt apron was repaved many times, but the high traffic volume and the “wear and tear” from the buses on the sloped apron resulted in continual degradation of the road. This enabled moisture to get under the surface of the road. Winter freeze and thaw conditions could compromise the road surface and jeopardize the the lifespan of the driveway entrance area.
- The granite cobblestone entrance was designed with a reinforced base to withstand the impact. The stones are projected to last 40 to 50 years. This apron can remain intact for many years allowing the district to mill and repave when the road reaches end of life.

Curbing

- The Bid package included two alternates for Precast Concrete and Granite curbing.
- The pricing difference between the Precast concrete and the granite was \$74,685
- The Board selected the granite based on lower maintenance costs and its longer lifespan.
- Granite curbing also provides greater structure to the roadway, which may increase the longevity of the surface.

Life-Cycle Cost Comparison

Life-cycle cost analysis is a procedure in which initial cost, maintenance requirements, and life span are jointly considered in the evaluation of alternative project designs. The present worth of the initial cost and future maintenance and replacement costs are considered rather than just the initial costs.

Based on this analysis, if the precast curbing lasted only 10 years, its Net Present Value would be \$46.20 (43% more costly) compared to granite's \$26.50

Additional benefits of granite curbing

- Granite curbing needs substantially fewer repairs than Precast Concrete curbing.
- The durability and longevity of the granite curbing may allow the District to mill and repave Barlow Drive when the asphalt road surface reaches end of life. This approach would save taxpayers in excess of \$100,000 in road preparation costs.

Conclusion

The physical comparison clearly indicates that granite is a superior curb material in New England where winters, road salt, and plowing are tough on Portland cement concrete. The economic analysis indicates that when the inevitable replacement of Precast PCC is considered, granite curb is a less expensive curb material. The only advantage of using Precast PCC curb is its lower initial cost. This advantage is negated, however, by granite's durability, longevity, and reusability.

● REFERENCES

- 1. LifeCycle Cost Comparison, Dr. John Collura, P.E. Department of Civil Engineering University of Massachusetts at Amherst
- 2. U.S. Department of Transportation, Federal Highway Administration, “White Paper, Infrastructure and Asset Management”
- 3. U.S. Department of Transportation, Federal Highway Administration, “Economic Analysis Primer”
- 4. U.S. Department of Transportation, Federal Highway Administration, ”Life Cycle Cost Analysis Primer Office of Asset Management”
- 5. Sassone, Peter, and W. Schaffer, Cost-Benefit Analysis. A Handbook, Academic Press, Inc., New York, 1978