

## CODWELL ELEMENTARY SCHOOL ROOF REPLACEMENT

The subject facility is a functioning elementary school that was originally constructed in 1970 based on the “open-campus” concept with independent building enclosures tied together with open air covered walkways. The original and existing roof was a gravel-surfaced built-up roof membrane over a lightweight insulating concrete fill and metal form deck supported by open-web steel bar joists. The slope of the roof of the building enclosures located along the perimeter of the complex was 2/12. The slope of the building enclosures located within the interior of the complex was 1/4-inch to 1/2-inch per foot and the slope of the covered walkways was 1/8-inch to 1/4-inch per foot. Due to the degree of slope of the roof and the positioning of the perimeter buildings, the surface of the roof was visible at ground/street elevation. As part of the renovation program instituted at the school and the budgetary development phase, a standing seam metal panel roof system was selected to be installed on the steep-sloped visible roof areas. A torch-applied modified bitumen roof membrane over insulation board was selected for the low-slope roof areas.

The existing BUR roof membrane was removed down to the lightweight insulating concrete fill, a fiberglass base sheet was mechanically attached and a torch-applied modified bitumen secondary roof membrane fully-was adhered to the base sheet. Z-purlins (6-inch height) were then installed on top of the secondary roof and anchored to the metal form deck utilizing self-tapping screws. Due to uneven areas in the existing substrate, the purlins were either shimmed using metal plates or a composite support composed of a steel angle (4-inch height) and smaller purlins (4-inch height) were used to achieve height adjustability. A 6-inch thick fiberglass blanket insulation was then installed between the purlins. Continuous length, eave-to-ridge, standing seam metal panels with a pre-finished, Kynar 500 color were installed on the purlins.

Special details utilized and installed consisted of a venting-type ridge cap, venting-type details along the eaves and rakes (utilizing “CoreVent” prefabricated vent structure), pre-manufactured curbs (color to match), pre-fabricated boot flashings at penetrations, gutters/downspouts and transitional flashings at the intersections of the steep slope to the low-slope roof areas. A manufacturer’s twenty-year watertightness warranty was issued for the SSMR system.

On the low-slope roof areas, a two ply modified bitumen roof system was installed. A layer of polyisocyanurate insulation board was loose-laid and then a fiberglass base sheet was mechanically attached over the insulation board and into the metal form deck. A two-ply torch-applied APP modified bitumen was adhered to the base sheet. An acrylic elastomeric coating was applied to the granule surfacing of the modified bitumen cap sheet. Pre-finished sheet metal flashings, color to match the metal roof panels, were utilized on the low-slope roof. Existing equipment hoods were painted to match the color of the metal panels. The elastomeric coating was also applied to stucco wall finishes located above the roof line. A full-system, no-dollar-limit, 20-year warranty was issued on the modified bitumen roof.

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### PROJECT TEAM

Owner: Houston Independent School District  
Houston, Texas

Consultant: Price Consulting, Inc. (PCI)  
Houston, Texas

Contractor: PRC Roofing Company, Inc.  
Houston, Texas

Construction Value: \$498,000

Construction Schedule: August to December 2000

PCI Services: Development of Scope and Budget  
Preparation of Drawings/Specifications  
Construction Administration  
Quality Assurance Inspection