Construction of Intermodal Facility at Stockton, CA

What happens when a company does careful planning and works closing with local agencies to construct a new world class facility?

The outcome is BNSF's intermodal facility, near Stockton, CA, which recently received a 2002 Regional Excellence Award for innovative use of lime treatment for subgrade.

Also in 2002, BNSF was previously recognized by area agencies as the premier pollution preventer for its efforts. The County of San Joaquin gave BNSF the award citing improvements in the environmental categories of land, water and air. Besides providing additional wildlife habitat, storm water runoff being controlled, traffic congestion and number of trucks on area highways were reduced. John Fleming, Resident Engineer, accepted the award on behalf of BNSF. "The project faced many challenges during construction and during that time the BNSF construction team established a great working relationship with all agencies concerned. The project was completed ahead of schedule, under budget, and over 300,000 man-hours worked without a loss time injury."

The facility opened April 2001, has grown in volume, with additional parking added at the end of 2002. The initial construction created two 7,700 ft. long strip tracks, three storage tracks and 900 parking stalls. The design allows for future parking, strip and storage tracks. The facility can handle a minimum of 300,000 lifts per year. DMJM Harris, Long Beach, CA, was the designer and construction manager for the project. Kleinfelder, Stockton, CA, provided the geotechnical support and designed the subgrade.

The civil work was performed by Granite Construction, Stockton, CA, and BNSF track forces constructed all trackage. The real challenge involved stabilization of native soils before paving materials were applied. A lime-stabilized section 31 inches thick was constructed under the concrete paved loading and unloading areas. The entire lime treating process made it one of the largest lime stabilization projects in the United States, totaling 440,000 cubic yards of treated soil covering 220 acres.

Drainage features included 3 retention basins totaling 46 acres and 1 million cubic yards of excavation, 7 miles of subdrains, and 6 miles of storm drain pipe. The contractor used some creative thinking to overcome environmental and material supply obstacles. One example was the concrete storm drain was not readily available, so a cast in place approach was used to prevent schedule delays.

Another challenge to timely completion was Weber Slough, which cuts diagonally across the site. This waterway was identified as a habitat for the giant garter snake, a threatened species. From October through April, work could not be performed in this area.. The mitigation for the waterway, other wetland impacts and several animal species will be discussed later. Another creative approach used by the contractor, to expedite the concrete box construction in the slough, was the use of rolling steel forms. The bottom slab was prepared first, then movable forms used to construct the walls and top of the boxes in segments. Since the concrete box section consisted of four barrels with a total width of 53 feet and a depth of 7 feet 6 inches. This structure could not have been easily pre-cast and placed.

The concrete paving for the loading and unloading area was designed to accommodate use of a reach stacker. Although this type of equipment is not currently used, the flexibility to use it in the future was desired. Since expansive clays were the predominate soil type on the site, the deep

lime section, previously mentioned, allowed the concrete pavement to be only 13 inches thick. The overall support structure was economically designed and with actual strengths being exceeded, the durability of the pavement section was enhanced. The paving machine, used on the project was only one of four that existed at that time. It was totally computerized; capable of paving a 40-foot wide section, and had such special features such as an automatic dowel bar inserter. This saved the manual labor that is normally used for this step. An onsite batch plant was setup to produce nearly 66,000 cubic yards of concrete that was required.

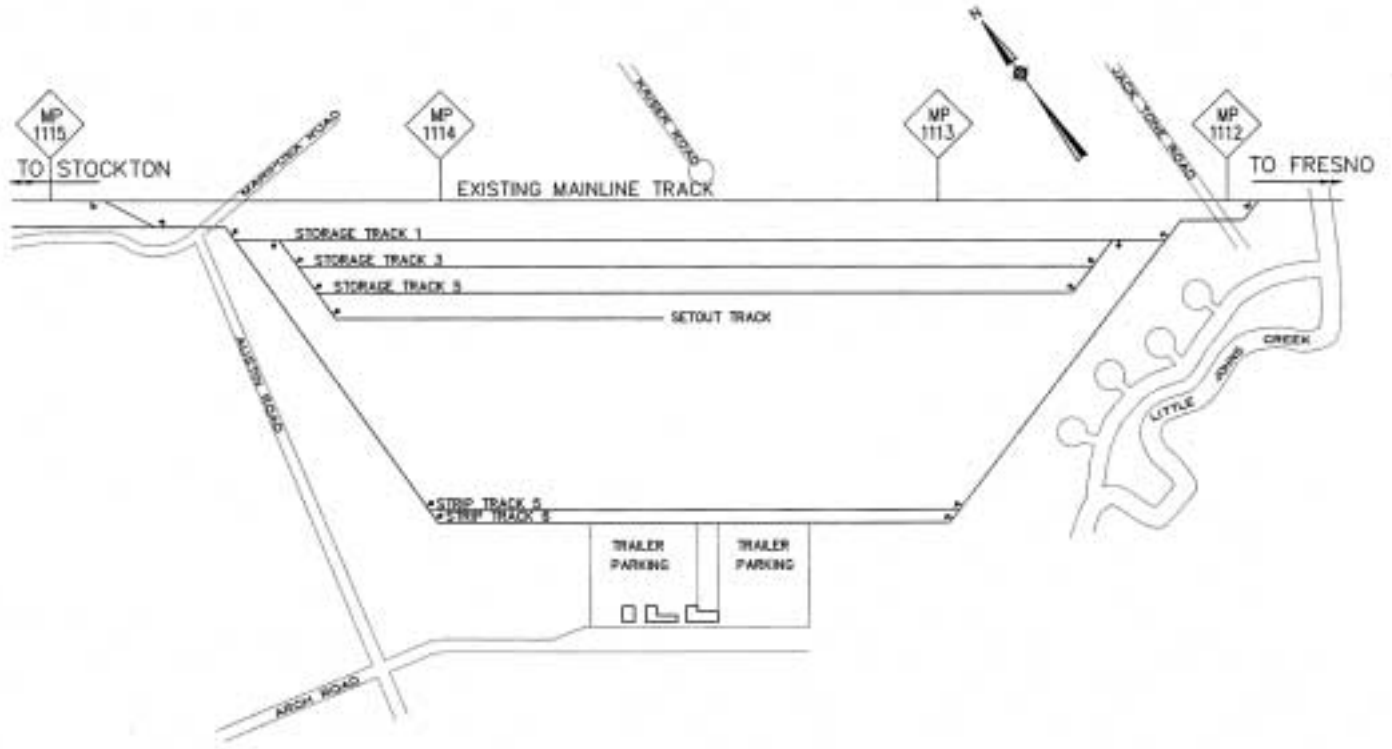
The mitigation for wetlands and loss of habitat for some animal species resulted in construction of a wetland preserve, which covers 56 acres. Four side pools were created by diverting water from the mitigation channels via diversion channels. A native planting plan was implemented within the preserve along with a temporary drip irrigation system.

Another successful part of the construction was encouraging the contractor to make value-engineering recommendations through the CRIPS, or Cost Reduction Incentive Programs. The savings were shared between BNSF and the contractor. Two such recommendations involved changes in the strip track drainage system and the jointing of the concrete pavement.

Gene Schubel, Director Engineering Services, BNSF, was the Project Manager for the project. “As with any project, some mistakes were made and lessons learned to apply to future projects.” With the deep lime section, some deficiencies were discovered. Although very large mixers were used with the lime, they were not calibrated each day of operation causing some insufficient depth of treatment. Additionally the 31-inch deep sections were constructed using two lifts, which pushed the equipment to its limits. If a similar section were constructed again, three lifts should be used. Some areas were reconstructed and the concrete section was increased from twelve inches to thirteen inches. Another lesson was with lead time for materials. Any common materials with known delivery times were considered, but the high mast light pole delivery was impacted by increased demand in the marketplace and a manufacturer’s backlog. The moral is to consider delivery for any materials that can ultimately impact schedule.

Through careful planning and well-managed construction, a facility was built that meets the needs of BNSF intermodal team. Trains move efficiently in and out of the facility. The bonus was the recognition the facility received for engineering design and environmental excellence. If interested in more details about this project, see the proceedings from the 2001 AREMA conference held in Chicago,IL.

Phase I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