

CPR – REBUILT TO LAST



Infrastructure Rehabilitation in Winnipeg, Manitoba – Canada

>>> CONCRETE PAVEMENT REHABILITATION & DIAMOND GRINDING

IN THE SPRING OF 2009, Manitoba Infrastructure and Transportation (MIT) determined it was time for some well deserved repairs to Provincial Trunk Highway 75 — a main route between Winnipeg and the U.S. border. A 15.8 mile (25.4 km) stretch of this highway that extended from the town of Morris to the Marais River was in dire need of rehabilitation due to slab faulting, caused by the loss of aggregate interlock and load transfer capability. The undoweled concrete pavement was 17 to 18 years old and most of the panels were faulted .39-.59 inches (10 to 15-mm) due to the lack of mechanical load transfer. The average International Roughness Index (IRI) was 2.53 mm/m and the panel faulting caused tire thumping and a very rough ride. There were dips at most of the through grade culverts and some randomly cracked panels. Further, many transverse joints were spalled in the wheel path and many corners were cracked or chipped at the junction of the transverse and centerline joints.

Although an asphalt overlay was considered, MIT opted for concrete pavement rehabilitation because the projected costs were half as much. The methods selected included dowel bar retro-

fit, partial and full depth repairs, transverse joint sealing and diamond grinding. The shoulders were upgraded from gravel to bituminous pavement and rumble strips were added on two sections of the southbound lanes. Temporary detours were also constructed for future projects.

The use of dowel bar retrofit and diamond grinding was unique and new to Manitoba. In addition to being the first project to utilize these techniques, the project was bid during the occurrence of the second largest flood on record in 100 years in Manitoba. The normal level of the river is 6.5 feet (1.98 m), but at one point, the flood waters threatened to push that level past 22.6 feet (6.89 m). During the bidding period, the highway was under water and closed to all traffic which actually caused the bidding period to be extended. The excessive flooding created many challenges such as soft shoulders and other unscheduled delays. Some of the operations were completed during night shifts while maintaining traffic, including the cutting of the dowel bar slots and diamond grinding.

Gary Dyck, Maintenance Superintendent for the area, notes that “Highway 75 is finally smooth

TEAM MEMBERS

- Manitoba Infrastructure and Transportation (Owner)
- Borland Construction (Prime contractor)

and the difference for the snow plows and their operators is unbelievable. The smooth pavement should dramatically reduce wear and tear on the equipment for years to come.”

The roadway now boasts a smooth riding surface with an expected life span increase of 10 to 15 years. This result will not only save the taxpayers money, but will provide for a smooth ride for years to come due to the addition of retrofitted dowel bars. With a project value of \$9,000,000, the final cost of the dowel bar retrofit, partial and full depth repairs and diamond grinding was \$360,000 (Canadian) per kilometer, which averages out to be \$575,000 (USD) per mile.

Plans are already underway for another project in 2011.