Pre-welded Reinforcing Assembly for Quick Span

Waterloo, Ontario

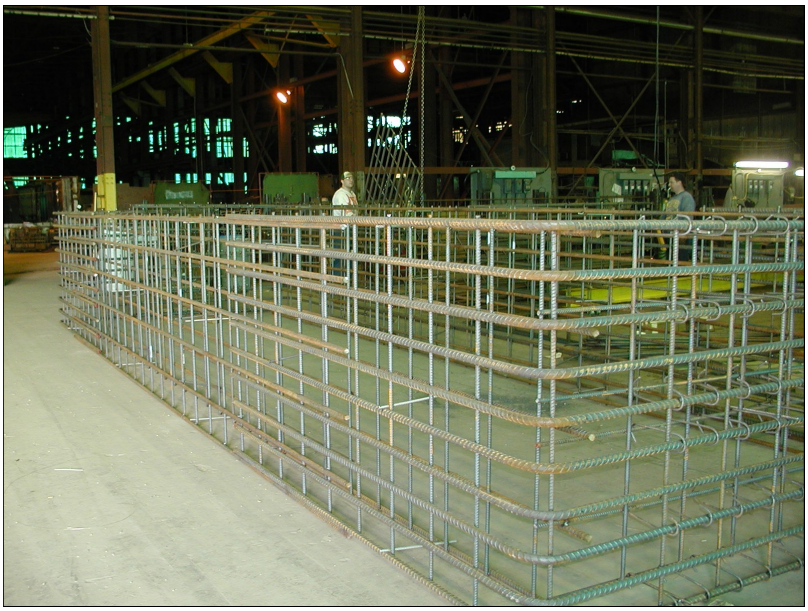
Project:
Westmount Road Extension (Northfield Drive to Bearinger Road. Pre-welded reinforcement assemblies provided for 8 wing wall units, 20 typical Quick Span units, and two narrow units to meet the overall culvert length.

Owner:
Regional Municipality of Waterloo

Contractor:
E&E Seegmiller Limited

Consulting Engineer:
McCormick Rankin Corporation

Product:
30M rebar spaced at 150 mm on centre around the exterior corner of the units. Leg section units reinforced with wire stirrups.



Pre-weld assembly, complete with stainless steel spacers, supplied to Hanson for insert into the Quick Span form, ready to receive concrete.

Recently introduced to the Ontario marketplace is a precast concrete product that makes full use of a pre-welded reinforcing assembly. Supplied complete with stainless steel spacers, all that the precaster has to do is place the assembly into the form and pour the concrete. There are no additional steps, and the precaster is assured that the specified concrete cover over the reinforcement has been engineered into the design of the assemblies. Pre-welded reinforcing often contributes to net cost savings of a precaster by reducing labour costs, cost of materials and other overhead expenses.

Reinforcement assemblies were fabricated on a specially designed jig at StelCrete's Fort Erie plant, so that all assemblies were consistent in design. The design called for 30M rebar spaced at 150 mm on centre around the exterior corner of the bridge sections. The leg sections were additionally reinforced with wire stirrups, specially fabricated on the MEP automatic stirrup machine at Ronco Steel, StelCrete's affiliated plant in Burlington, Ontario. The precast units were designed in accordance with the Canadian Highway Bridge Design Code to support significant loads from trucks and approximately 1.4 metres of earth fill. The assemblies were shipped to the precaster, as required, to speed production and to help make best use of floor space and human resources at their plant.

StelCrete is fully certified by The Canadian Welding Bureau (CWB) to CSA Standard W186M, "Welding of Reinforcing Bars in Reinforced Concrete Construction," and to CSA Standard W47.1, "Fusion Welding of Steel Structures." The first standard governs the rebar assembly prod-

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ucts produced, and the second standard covers products that incorporate structural shapes, such as cast-in hardware for concrete work. Domestic steel is used in the assemblies and is CSA-certified under standard G30.18, "Billet-Steel Bars for Concrete Reinforcement."

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Hanson Pipe & Products Canada, Inc produced the precast *Quick Span* with a pre-welded reinforcement assembly. It was installed in Waterloo, Ontario immediately north of the University of Waterloo campus by E & E Seegmiller Limited, contracted in March 2004 to undertake the Regional Road 50 (Northfield Drive) widening. Included in the $5.6 million contract was the Westmount Road extension from Northfield Drive to Bearinger Road. The four-lane extension passes through the southern extremity of the Laurel Creek Conservation Area and crosses Laurel Creek. The width of the travelled road and design elements required by the Grand River Conservation Authority made a three-sided precast concrete structure the best alternative for the crossing.

Rebar dowels pre-attached to reinforcing cages of *Quick Span* end units.

Design flows of Laurel Creek through all seasons, as well as wildlife passage are accommodated by the structure. It was designed with a light portal in the centre for placement in the road median, and a cobble bed to enhance the aquatic ecosystem of the stream. StelCrete delivered two special assemblies for the cast-in place portal as well as assemblies for the concrete barrier walls with rebar dowels pre-attached to the reinforcing cages. Hanson's casting method meant that expensive dowel bar couplers could be substituted with normal rebar projecting through the top of the precast deck. Assemblies were also provided for 8 wing wall units, 20 typical units, and two narrow units to meet the overall culvert length specified on this project.

Two special unit reinforcement assemblies designed for a light portal in the structure.

Hanson poured the *Quick Span* units with 45 MPa design-strength using self-compacting concrete. The stripping strength was well over 25 MPa. Twenty-six units were produced in their Whitby plant, as well as eight precast wing wall units over a production period of 35 days. The culvert was installed over Laurel Creek in less than two days once the footings were poured in place. Pre-welded reinforcement assemblies contributed to meeting both the production schedule of the precaster and the installation schedule of the contractor. Combining precast products with outsourced reinforcement assemblies has proved the efficiency and economy of this form of production and business practice.

StelCrete

Quality… Service… Value

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