

Introduction

MBI (Morse Bros) has been a prestressed concrete supplier to the state of Oregon and its surrounding states since the early 1950's. Over those many years the prestressed division has developed many precast solutions for buildings, bridges, docks, architectural cladding, and specialty products including stadium risers and raker beams, dock and ramp panels, marine structures, fish and water flumes, radiation enclosures, retaining walls, abutment walls and foundations. Morse Bros is one of the industries pioneers in spliced girder construction, precast moment frame construction, and long bridge girder production. With help of the Oregon DOT MBI produced and improved a varying spliced tub section that emulates a parabolic arch. Precast structural systems have been integrated with post-tensioned decks.

Morse Bros has along with the bridge and structural building products developed a myriad of architectural finishes using special aggregate and colored additives. These architectural products have also taken on many shapes and forms. Morse Bros has supplied, based on project specifications, many specialty concretes containing fibers, corrosion inhibitors, slag, silica fume, flyash, and viscosity modifiers. Other specialty materials have included epoxy coated and stainless steel reinforcing, stainless steel embeds, all sorts of proprietary connection hardware, and electrical conduit and fixtures. MBI is a member of the Altus Group, an organization of selected US PCI certified precast manufacturers that use state-of-the-art proprietary carbon fiber reinforcing in sandwich panel walls and precast cladding.

Morse Bros is in tune with the precast industry. We are active members in the Precast/Prestressed Concrete Institute to learn, network and understand how to make our precast products better and more

economical. Often Morse Bros is at the leading edge in developing innovative solution involving precast/prestressed products. MBI has a commitment to its customers to provide quality, on-time precast products that are long lasting, durable, low maintenance, secure, fire resistant, and pest resistant. We are willing to help our customers develop efficient, low cost precast solutions for a myriad of structures.

History of MBI

Morse Bros was started by the three Morse brothers, Joe, Forrest and Bill in 1941 as a supplier of sand and gravel from their first pit in Harrisburg, Oregon. Services and materials offered to the construction industries expanded to include ready-mix, highway construction services and material for roads and highways. In 1958 Morse Bros built its structural prestressing plant in a nearby field in Harrisburg to supply prestressed girders for new highway construction throughout Oregon and the Northwest.

In 1967, Morse Bros became one of PCI's earliest certified plants and we remain one of the major PCI producers in the Northwest. Dick Imper, general manager in 1994, served as national chairman of PCI. Morse Bros prestressed division has been a leader in the northwest in developing and producing new generations of precast bridge members and other construction products. Morse Bros has also been a leader in designing and producing other concrete products such as frame members and seat riser units for arenas and

outside stadiums, and support structures and enclosures for industrial process facilities.

In 1973 Morse Bros added the current architectural precast and prestressing plant at the 42-acre Harrisburg facility. Morse Bros has and continues to produce architectural precast and/or prestressed concrete building cladding and framing components as well as moment frame beam/column components for buildings and elevated parking garages.



What Sets Us Apart?

At MBI, total customer satisfaction is our ultimate goal, and total customer service is the key to that goal. Whether it is providing preliminary budget pricing, offering design assistance from one of our qualified staff engineers, or attending project meetings, we realize that the success of your job is directly linked to the services we provide.

Communication is the cornerstone of any successful project; that is communication between the designers, the architects, the contractors, the other trades, and the precaster. MBI believes that early and continuing involvement in all levels of communication on each project yields beneficial results ranging from design-cost reduction, to the on-time delivery of “perfect-fit” precast components.

We have a long history of working with our customers to achieve complete fulfillment of their expectations. Customers expect quality and we pride ourselves on the level of detailing we devote to each and every project. You expect straightforward pricing and we honor our prices at bid time. You expect on-time delivery and we operate an extensive fleet of trucks and hauling equipment, specially outfitted for the rigorous demands of over-width, over-length, and over-weight loads. When necessary, we visit difficult delivery sites to assist our customer with solutions to site access.

We are certified by the Precast/Prestressed Concrete Institute (PCI), a national association that assures adherence to industry standards and practices. Our commitment to and continuing involvement with PCI allows us access to a broad-based resource of industry experts, thus greatly expanding our available knowledge base for time-intensive research of challenging precast projects. In addition, we maintain a comprehensive archive of our past projects, thus

placing us in a prime position to be able to assist the design community in the evaluation and upgrade of existing precast structures.

At MBI, we place all of our resources to the job at hand; your job. We believe that once a project is completed, all concerned with its design and construction should feel a sense of pride and accomplishment, knowing that it was a project that was designed to project plans and specifications, delivered on-time, and completed within budget.

We are committed to quality—the quality of the products we produce, the quality of the services we supply, the quality of the business relationships we cultivate. And that’s really “What Sets Us Apart”.





MBI
MORSE BROS INC



Reading the Charts and Tables

The charts and tables presented in the following pages use the symbols defined here. The load tables (derived in accordance with ACI-318), section properties tables, and diagrams are intended to be read by trained professionals. If you need assistance or additional information, don't hesitate to call us.

Key to Symbols

A_c	Area of core of spirally reinforced compression member measured to outside diameter of spiral
A_g	Gross area of section
A_{ps}	Area of prestressed reinforcement
b	Width of compression face of member
f'_c	Specified compressive strength of concrete
f_{pc}	Average compressive stress in concrete due to effective prestress force only
f_{ps}	Stress in prestressed reinforcement at nominal strength
f_{pu}	Specified tensile strength of prestressing tendons
f_{se}	Effective stress in prestress reinforcement
f_y	Specified yield strength of non-prestressed reinforcement
h	Overall depth of member
I	Moment of inertia of section

M_n	Nominal moment strength at section
M_u	Factored moment at section
N	Design axial load normal to cross section
P_n	Nominal axial load strength at given eccentricity
P_o	Nominal axial load strength at zero eccentricity
P_u	Factored axial load at given eccentricity
r	Radius of gyration of cross section
Y_b	Distance from bottom fibre to center of gravity of section
Z	Section modulus
Z_b	Section modulus with respect to bottom fiber
Z_t	Section modulus with respect to top fiber
δ	Moment magnification factor
ϕ	Strength reduction factor
ρ_g	Ratio of total reinforcement area to cross-sectional area of column

Strand Designation	5.8	number of strands	Diameter	A_{ps}
			3/8"	0.085 in ²
			7/16"	0.115 in ²
			1/2"	0.153 in ²
			1/2" Special	0.167 in ²
			0.6"	0.217 in ²