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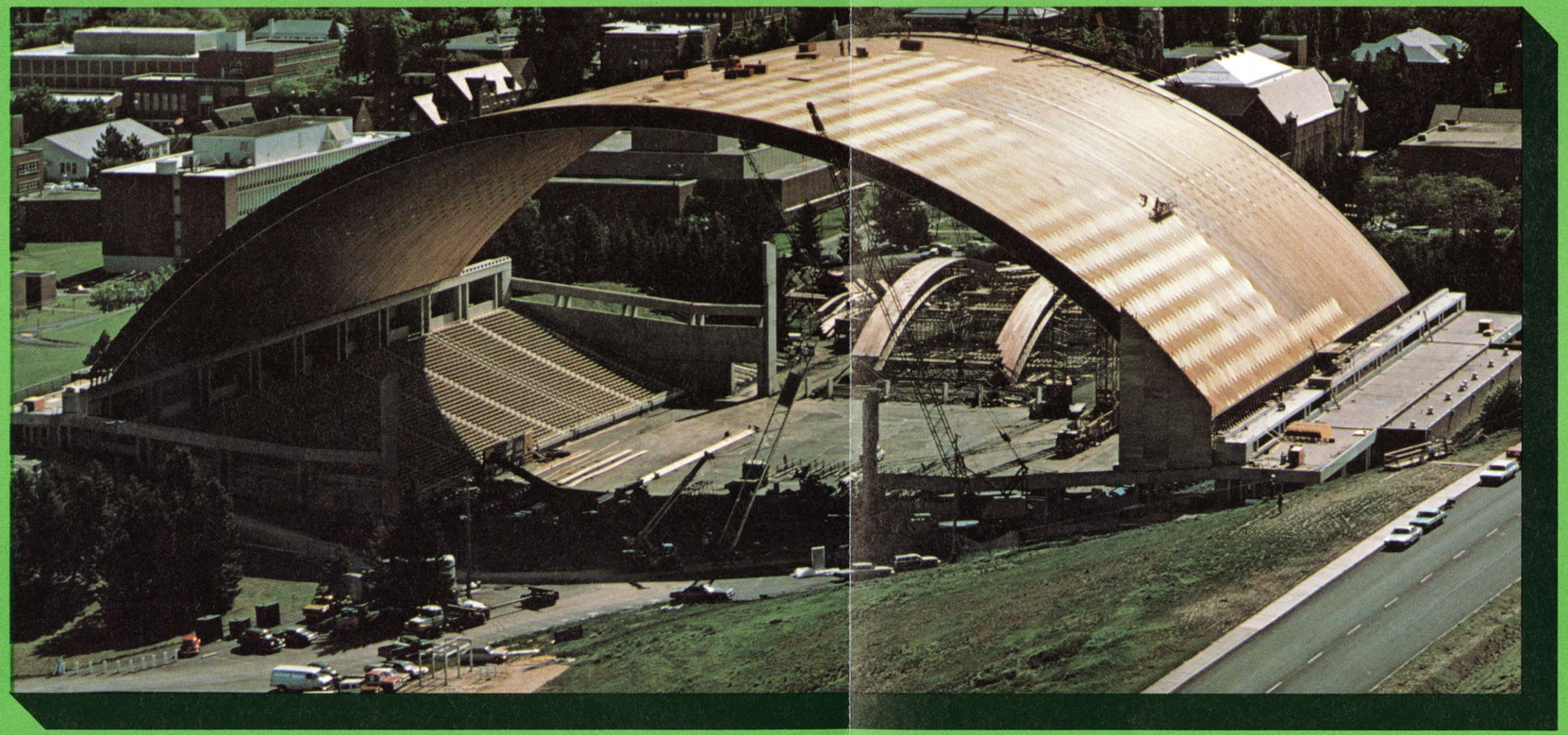
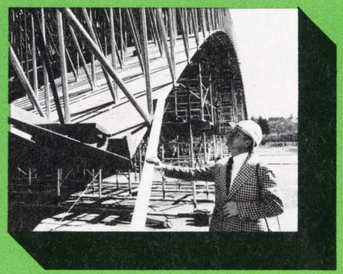
TRUS JOIST - CREATIVE ENGINEERING IN STRUCTURAL WOOD

Case In Point: University of Idaho Varsity Center, Moscow, Idaho





Dwarfed by 80′ modules, architect Glen Cline—Cline, Smull, Hamill Associates, inspects pre-assembly staging area operations as first arch segment is ready to be lifted into place.

Remember the last time you watched a football game in the cold, wet winter's air? Those who follow University of Idaho football remember, and they've done something about it.

They've turned to TRUS JOIST for a clear span roofing system of wood and steel to lock out the wind and weather of seasons past.

This barrel arch cover employs a dual deck, open web system of MICRO=LAM and tubular steel for strong, light weight efficiency. They've turned to TRUS JOIST, leaders in the structural uses of wood, confident in their proven ability to perform to critical engineering, quality and manufacturing tolerances so necessary in a project of this scope. All TRUS JOIST systems, from the simplest to the most complex, receive the same careful attention at every stage of operation.

This fall will open a new era in the university's history. It also marks the comfortable transition from tolerance to enjoyment on the part of its followers.

We invite you to look into the amazing cover that's taken Moscow by storm and in from out of the cold.

We at TRUS JOIST undertook the challenge of Moscow, confident in our ability to achieve results and supported by the success tested knowledge that has gone into each and every TRUS JOIST product on the market today. Engineering excellence, manufacturing know-how, backed by the industry's finest quality control standards, highlight the broad, full service capabilities offered in every item we sell. The results of these efforts are pictorially reflected below.

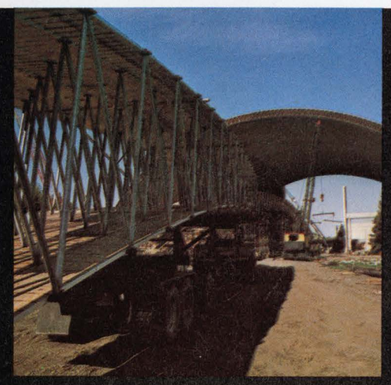
Whether your spanning needs are large or small, TRUS JOIST has the systems and the answers. TJI. TJL. TJM. TJH. TJ/50 and TJ/60. A complete line-up to get your job done quickly, efficiently and economically.

What goes into covering a stadium? The same ingredients that go into any job; people, product and a plan. But above all, a company with integrity you can count on. Stadium cover or shopping center, warehouse or school, you can depend on the experts from TRUS JOIST.

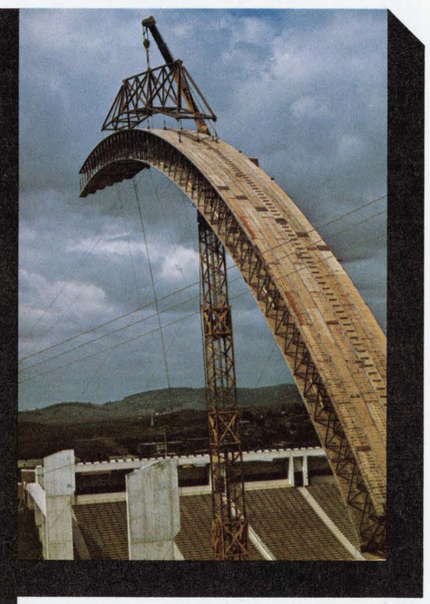
1 As with all TRUS JOIST products, precision engineering and adherence to the highest quality standards help position TRUS JOIST as the industry leader in the structural uses of wood. Here, portions of the 2,300, 2′x80′x1⅞″ thick MICRO=LAM billets, in combination with tubular steel webbing, are easily and quickly pre-assembled on scaffolding, prior to erection. This method of on-site fabrication reflected substantial labor and equipment savings over conventional factory built methods.

2 Key to the fabrication segment of Moscow project was accuracy. Each MICRO=LAM billet was pre-cut and pre-drilled at the factory, with overall tolerances of 1/32″±. Because of MICRO=LAM's superior physical properties, extremely tight tolerances were maintained throughout the project, assuring that each arch, when lifted into place, would properly fit with adjacent arches by bolting to the welded steel clips.

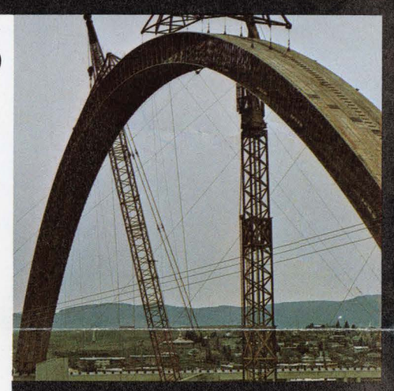
3 Six MICRO=LAM billets are connected side by side, to form a module 12′6″ wide by 80′ long. This light weight assembly was then easily transported to the staging area where three such modules were joined to form a completed, half arch.

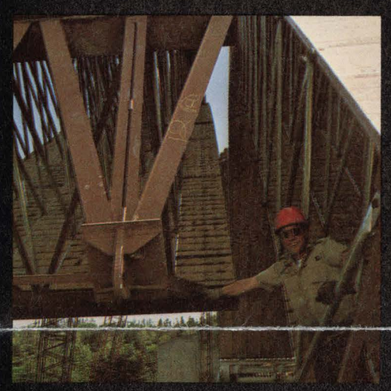


4 Two, 125 ton cranes lift each 45,000 pound half arch into place. Each section was then attached to the foundation on either side of the stadium. The same ease and sophistication found in all TRUS JOIST systems enabled the entire cover assembly to be erected in 24 working days.



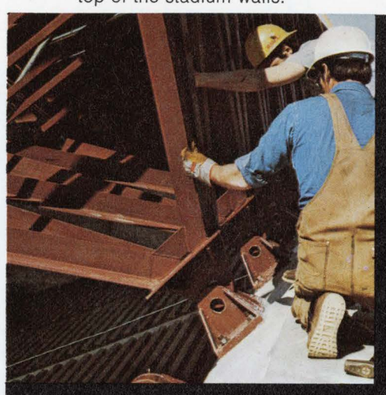
5 Once secure at the base, the load was transferred to a portable tower crane, freeing the mobile cranes to return to the scaffolding to pick up the second half of the arch. The two half arches were then connected at the center of the field, 150′ above the stadium floor.



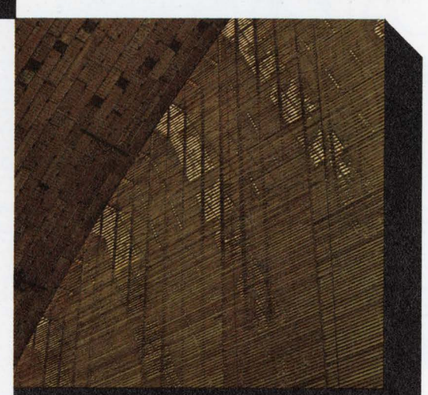


6 TRUS JOIST's precision engineering and strict quality control standards, combined with excellent teamwork on the part of crane and erection crews, enabled workmen to rapidly secure in-place each successive module. The standard bolt/clip connection employed in this particular TRUS DEK system allowed the vast majority of the assembly work to be completed on the ground by general contractor teams, minimizing the use of highly skilled, highly paid workers for aerial construction.

7 One by one the continuous arch support trusses, attached to the end of each 240′ section, were brought into place and securely anchored at the foundation base. The reaction of the arch is uniformly distributed across a light weight, continuous beam through 192 pin assemblies located along the top of the stadium walls.

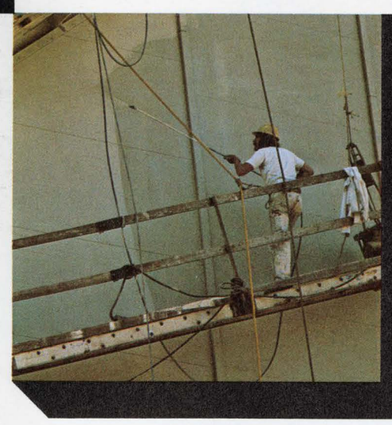


8 Consecutive sections are rapidly hoisted into place. Each module has a 7½′ clearance between the top and bottom MICRO=LAM decks to accommodate the stadium's various mechanical and electrical support systems. Catwalks, ducts, plenums, sound systems and dividing nets are all supported from this area, allowing ease of access and maintenance, with a maximum of safety.



9 End wall construction provides for esthetical as well as acoustical considerations. Here, the versatility of TRUS JOIST's full product line comes into play. Conventional trusses, varying in length from 20′ to 103′ were used vertically to withstand the high wind load conditions to which the end walls will be subjected. 1x4 horizontal battens were used to complete the interior ends of the stadium. Designed for flexibility, portions of these walls can be removed at a later date to accommodate additional end zone seating.

10 With the uniformity and predictability found in all TRUS JOIST products, thousands of ¾″, 4x8 sheets of plywood sheathing were easily and quickly applied over the assembled modules. The entire TRUS DEK roofing system, designed for extreme snow and high wind loads, was then covered with one inch of insulation to insure economical and efficient year 'round comfort. An elastomeric coating was then applied over the insulation.



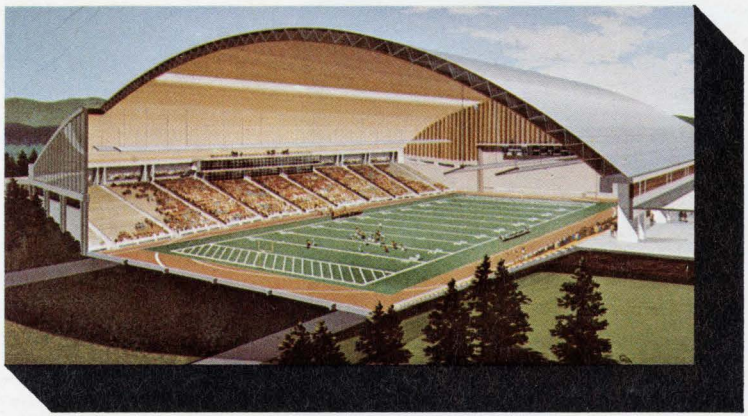
11 Once completed, several coats of all weather paint were applied to the end-walls to compliment the surrounding structures and nearby countryside.

More and more architects and engineers are turning to the wide variety of TRUS JOIST systems for maximum efficiency, performance and value. Total material costs for cover and end-wall sections of the stadium project were just over one million dollars, comparatively low by today's enclosed stadium standards.

12 With the unique TRUS JOIST assembly and erection system, jobsite encumbrances are held to a minimum. Existing landscaping in and about surrounding area was easily protected.

Typical of other series in the TRUS JOIST line, the entire TRUS DEK system, designed and engineered for speed, versatility and efficiency, can transform your existing or future stadium, bulk storage or other clear span application plans into a reality in no time at all. TRUS DEK. Latest in the innovative line of TRUS JOIST products.

SPECIFICATIONS



General Information

Job—University of Idaho Varsity Center, Moscow, Idaho
Project:
Phase I and II: Removal of old wooden stadium, driving of piles, pouring of substructure for new stadium, installation of seats, playing field. Completed fall of 1973.

Phase III: Covering of stadium (roof and end walls), sound system, mechanical and electrical work—completed fall of 1975.

Stadium cover—400′ clear span TRUS DEK System
Stadium length—400′
Capacity—21,000
Height—150′ above stadium floor at center
Arch configuration—
- Width—400′ overall, 12′6″ per module
- Radius—247′
- Depth—7′8″ ±
- Rise—100′
- Span—397′ brg. pin to brg. pin
- Arch Length—455′ brg. pin to brg. pin
- Weight per 12′6″ module—90,000 pounds

Parties Involved:
- TRUS JOIST Corporation, Boise, Idaho—Originated system concept and assisted in final design. Material supplier for roof and end wall system.
- KKBNA, Structural Engineers, Denver, Colorado—Proved design concept, determined stresses, sized members.
- Cline, Smull, Hamill and Associates—Architects, Boise, Idaho
- Emerick Construction Company—Prime Contractor, Portland, Oregon
- MacGregor Triangle Company—Assembly and erection subcontractor, Boise, Idaho
- Gray Crane and Rigging—Portland, Oregon

Component Parts

TRUS DEK Roof System
- MICRO=LAM—2,300 billets 2′ x 80′ x 1⅞″, predrilled for splice plate and clip connections. Overall billet length and cumulative edge clip hole tolerances 1/32″ ±.
- Steel Web Members—Cold rolled zinc galvanized steel tube 2″ 16 ga. to 2¼″ 13 ga. Quantity 35,000.
- Connecting Clip Assembly—Quantity 35,000.
- Anchor hardware—Steel truss support with pin connections mounted on a concrete beam, 4′1″ on centers.
- Splice Plates—8,000, ⅛″ x 11⅞″ by 22″.

End Wall System
- TRUS JOISTS—20′ to 103′ in length (conventional TJM and TJH trusses 54″ deep used vertically, 4′ on center).
- Interior Finish—1 x 4 battens nailed horizontally and stained.
- Exterior Finish—¾″ tongue and groove plywood, nailed directly to truss chord members.

Costs

Total contract for Phase III—$3.8 million.
TRUS DEK cover and wall segment, material and support—$1.2 million.

TRUS JOIST® CORPORATION

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