Clean-Interior Pre-Grooved Fire Sprinkler System

75% Faster BIM-to-Cx Schedule, −30% Total Division 21 Labor & $0 Net CapEx Premium ($572,000 Baseline)

1. Core Economics & Lifecycle Timing (Data Centers, Fabs, Industrial & Multifamily)

- **75% Schedule Compression (BIM-to-Commissioning):** Standardized Single-SKU 11-ft pre-grooved pipe modules eliminate the 3–6 week post-BIM fabrication-shop queue so crews hang pipe immediately upon BIM sign-off, assemble single-handedly via Hybrid 80/20 (Victaulic + Viega MegaPress 1-1/2"–4"), and bypass chemical flushing prior to Commissioning (Cx).
- **30% Total Fire Protection Labor Savings (50% → 35% of T.I.C.):** Fixed BIM, hangers, and testing remain funded while fab-shop & on-site cutting/grooving, custom spool tagging/sorting, and two-person 21-ft pipe handling convert into pure assembly—saving 660 shop & field man-hours (−$85,800).
- **Optimal Intervention & 15-Year Warranty:** Lock BOD specs during Design/Precon; issue Direct-to-GC or OFCI PO during Shell & Core (~10–14 wks pre-MEP) for stackable-rack DDP container drops; safeguard critical-path RFS dates with a written 15-Year Limited MIC Leak Warranty ($500 deductible; 10% incident / 30% aggregate pipe caps; $O_2 \leq 2\%$).

2. 100,000 sq. ft. Total Installed Cost (T.I.C.) Value Transfer (11,000 LF / 1,000 Modules)

Cost Category	Conventional	JOSH System	USD Delta	Benchmark Basis & Commercial Driver
Pipe Material	$57,200 (10%)	$143,000 (25%)	**+$85,800**	1,000 × 11-ft UL/cUL EX15151 Sch 10 bare-metal pre-grooved modules ($13.00/ft DDP weighted avg across 1.5"–4").
Equipment & N_2	$200,200 (35%)	$228,800 (40%)	**+$28,600**	Funds 98% N_2 skid ($16.5k), 20% Viega MegaPress/XL ($8.85k delta), & 725 Threaded Outlet Couplings ($3.25k delta).
Pipe Flushing	$28,600 (5%)	$0 (0%)	**−$28,600**	Zero oil coatings or hole-drilling shavings eliminates chemical flushing & oily-water disposal; 100% funds hardware tier.
Div. 21 Labor	$286,000 (50%)	$200,200 (35%)	**−$85,800**	−30% total labor (2,200 → 1,540 hrs @ $130/hr burdened); −75% BIM-to-Cx schedule; 100% funds clean-interior pipe.
Total T.I.C.	**$572,000 (100%)**	**$572,000 (100%)**	**$0 (0%)**	**Identical $5.72/sq. ft. CapEx + Zero-Roll-Groover flameless jobsite + 15-Year Limited MIC Leak Warranty.**

3. Copy-Pasteable CSI Division 21 Basis of Design (BOD) Clause

> **CSI MASTERFORMAT SECTION 21 13 00 — MANDATORY BOD SPECIFICATION CLAUSE**
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> “For fire sprinkler piping in sizes 1-1/2" through 4", all pipes must be UL/cUL listed, 100% bare-metal clean-interior, free of any oil coatings or internal debris from the factory. These specified pipes, when synergized with a nitrogen inerting system, must carry a minimum 15-Year Manufacturer Leak Warranty against MIC (Microbiologically Influenced Corrosion).”

Zero-Roll-Groover & No-Mixing Execution: Deliver 11-ft pre-grooved modules (UL/cUL EX15151); prohibit field roll-grooving, cutting oils, mechanical-tee hole-sawing, and mixing oiled black pipe; join ≤20% dry cold-cut drops/offsets via Viega MegaPress/XL.

Next-Step Verification & Direct Written Contact (Email Only): For qualified GC, Owner, and A&E project evaluations, please email your project scope, square footage, or specification questions to request a DDP module take-off or a 2" bare-metal pre-grooved Schedule 10 verification sample (air-freighted upon project qualification). To ensure fast, accurate written technical and commercial documentation across time zones, all project inquiries are handled exclusively via email.

Josh Lin, President | Josh Global Corporation (FireSprinklerPipe.com) | Email (Preferred & Exclusive): josh@firesprinklerpipe.com | Web: https://www.firesprinklerpipe.com