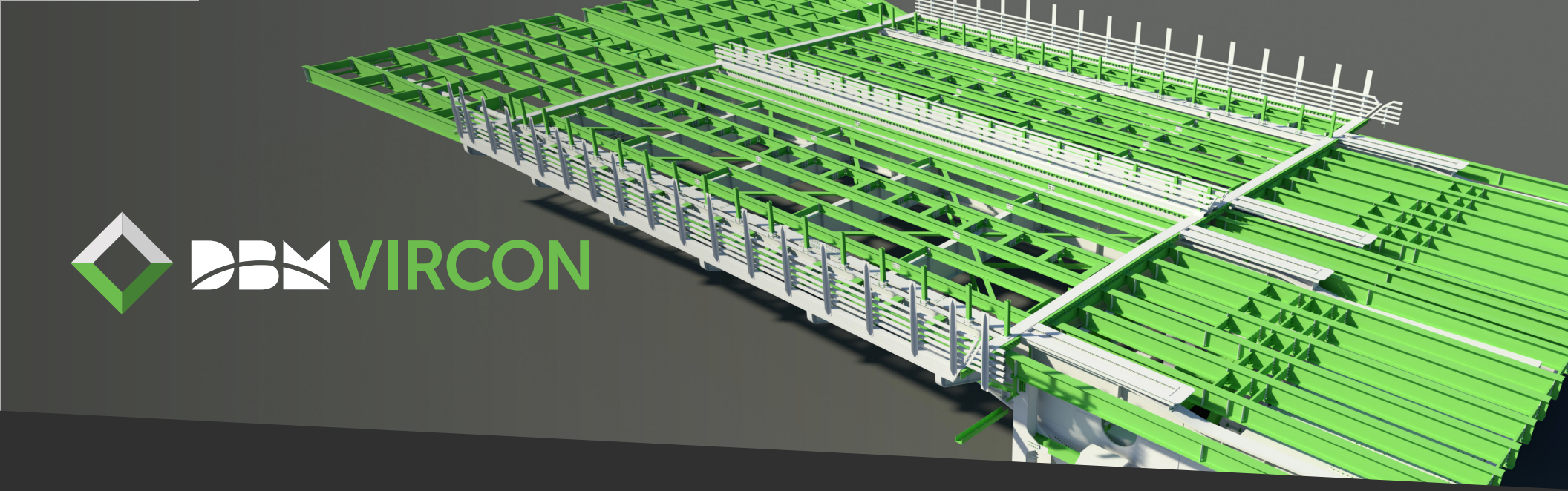


DBM VIRCON

Capability Statement

Integrated Design and Detailing

Transforming How Complex Infrastructure Is Designed, Detailed, and Built

Integrated Design and Detailing (IDD) is a collaborative, model-centric project methodology that unifies all major stakeholders — owners, designers, contractors, fabricators, specialist consultants, and construction teams — around a single, shared digital environment.

IDD is executed with discipline, technical rigor, and deep industry expertise, resulting in faster delivery, fewer surprises, and unparalleled constructibility outcomes.

In an era when infrastructure is growing more complex, schedules tighter, and site conditions more challenging, our IDD approach is redefining what effective project delivery looks like.

A New Standard for Collaborative Project Delivery

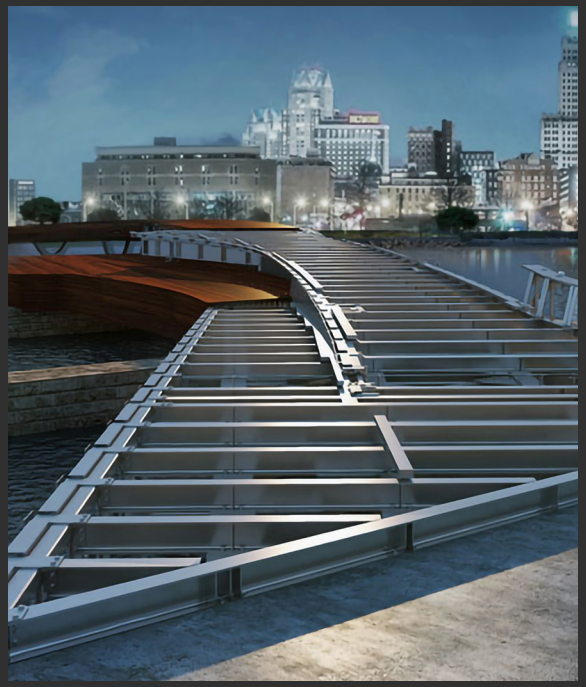
Traditional design–bid–build workflows rely on sequential handoffs, isolated decision-making, and fragmented communication. These siloed structures introduce avoidable risk, increase rework, and often limit the ability to respond quickly to design evolution or site-driven changes.

IDD replaces linear processes with an integrated, transparent, real-time ecosystem in which:

- Design, detailing, construction planning, and fabrication planning progress concurrently
- All contributors access the same live model, reducing disconnects and duplication
- Key decisions are made collectively, improving accuracy and efficiency
- Issues are resolved early, long before they become costly or unsafe in the field

For complex, high-risk, and schedule-sensitive projects, IDD is not just beneficial. It is transformative.





Why IDD Matters for Complex Projects

PROACTIVE PROBLEM SOLVING THROUGH EARLY INTEGRATION

Complex projects typically encounter unforeseen conditions, evolving design requirements, and intricate interfaces. By integrating structural designers, contractors, steel detailers, fabricators, and field specialists early, IDD creates an environment where potential clashes and constructibility issues can be resolved months before construction begins.

Our digital models allow the team to:

- Test erection strategies
- Validate connection geometry
- Assess access, reach, and equipment constraints
- Optimize temporary works
- Anticipate challenges before they affect the schedule

This early engagement avoids costly downstream impacts and enables informed, collaborative decision-making.

A SHARED DIGITAL MODEL AS THE SINGLE SOURCE OF TRUTH

IDD relies on a highly detailed, constructible 3D model that acts as the central reference point for all design and delivery decisions. For many clients, this is the most visible, and most valuable, aspect of our IDD approach.

Through platforms such as Trimble Connect, all teams work from the same model, enabling:

- Clear visualization of design intent
- Real-time comparison of design iterations
- Shared understanding of geometry, sequencing, and site staging
- Faster interpretation of complex assemblies and interfaces

When everyone sees the same information, clarity improves, alignment increases, and teams work with greater confidence.

EARLY DETAIL, PRECISION DATA, AND SEAMLESS FABRICATION

One of our defining strengths is our ability to model to fabrication-level detail early in the project lifecycle. This allows contractors and fabricators to make accurate early procurement decisions and gives designers immediate feedback on constructibility.

This precision leads to:

- Early procurment of steel, including high-performance steel with longer lead times
- CNC-ready data generated directly from the model
- Fewer field adjustments and virtually no rework
- Optimized material usage and reduced waste
- Highly predictable fabrication timelines

For remote projects or those with narrow construction windows, this accuracy can be the deciding factor in project success.

BUILT-IN ADAPTABILITY FOR EVOLVING CONDITIONS

The reality of major infrastructure delivery is that requirements change, sometimes daily. Whether due to site constraints, late-stage structural adjustments, or shifting client priorities, adaptability is critical.

IDD supports rapid iteration because:

- The model can be updated in real time
- Changes propagate immediately across all drawings and fabrication data
- All teams see updates simultaneously
- Decisions can be made quickly, backed by accurate information

This agility improves project resilience and ensures teams remain aligned, even as conditions evolve.

The IDD Difference

Not all IDD workflows are created equal. Our approach stands apart through its unique combination of experience, capability, and technical depth.

DEEP MULTIDISCIPLINARY EXPERTISE

We seamlessly integrate structural design support, steel detailing, temporary works modeling, fabrication requirements, and construction sequencing in one environment. Few organizations can bridge these disciplines with equal proficiency.

FABRICATION-GRADE MODELING USED EARLY AND OFTEN

Our Level of Development (LOD 400+) models enable early steel take-offs, advance bills of materials, and CNC code generation, often months ahead of traditional schedules.

VIRTUAL MODEL APPROVAL (VMA)

We replace static 2D review cycles with model-based approval workflows. Stakeholders review the actual constructible model, not only drawings, dramatically reducing RFIs and accelerating engineering sign-off.

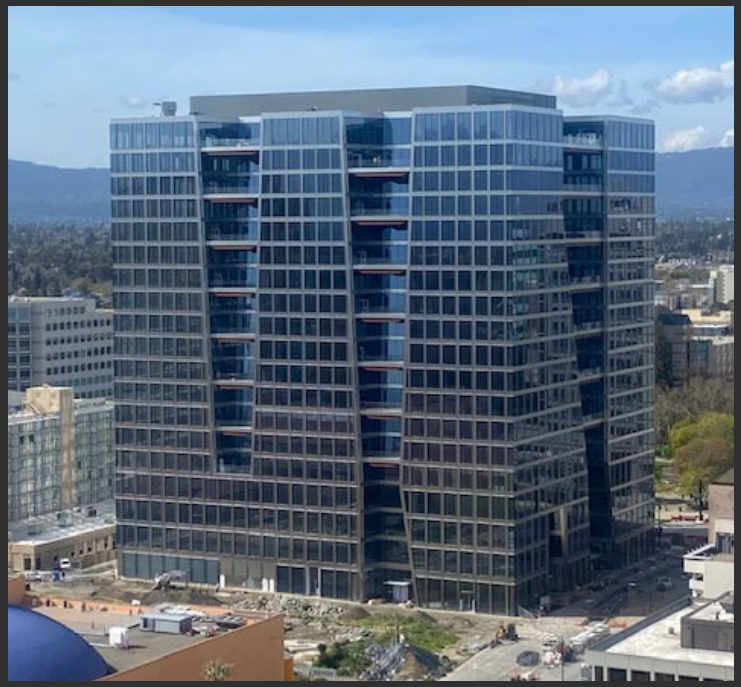
RIGOROUS CONSTRUCTIBILITY ANALYSIS

Our teams evaluate everything from bolt access to crane swing paths to the assembly sequence of large modular components. We ensure that what is designed can truly be built safely, efficiently, and without surprises.

PROVEN SUCCESS ACROSS THE WORLD'S MOST COMPLEX PROJECTS

Our IDD approach has been successfully implemented on some of the most challenging bridge, industrial, and infrastructure projects globally. Whether dealing with challenging sites, extreme climates, large-scale steel structures, or accelerated delivery programs, our approach consistently delivers superior outcomes.





Delivering Real, Measurable Benefits

When IDD is executed effectively, the benefits are undeniable.

REDUCED RFIS & REWORK

Coordination happens up front, eliminating many of the design ambiguities that create issues in the field.

GREATER COST & SCHEDULE CERTAINTY

Early decision-making and real-time model coordination enable predictable procurement and fabrication.

IMPROVED SAFETY

By visualizing site constraints and access conditions digitally, IDD improves planning for field operations and reduces risk.

FASTER CONSTRUCTION

Accurate models, early fabrication data, and well-coordinated temporary works reduce delays and increase build efficiency.

HIGHER QUALITY OUTCOMES

Precision digital modeling results in exceptional fabrication accuracy and highly coordinated onsite assembly.



One Team. One Model. One Vision.

At its core, Integrated Design and Detailing is about unity, bringing every discipline together to design and construct smarter, faster, and more effectively.

Our IDD approach fosters:

- Shared ownership of outcomes
- Transparent communication
- Cross-disciplinary trust
- Data-driven decision-making
- A culture of collaboration and continuous improvement

The result is a delivery framework where innovation thrives, risks are reduced, and complex problems find well-coordinated solutions.

Integrated Design and Detailing with DBM Vircon

BUILDING CERTAINTY IN AN UNCERTAIN WORLD

From climate-impacted bridge sites to remote industrial facilities, DBM Vircon's Integrated Design and Detailing approach is helping project teams overcome the most demanding technical, environmental, and logistical challenges.

When complexity rises,
IDD is how you deliver with confidence.

When the stakes are high,
we are the partners who bring clarity.

IDD Project Case Study

Pretty Rocks Bridge in Denali National Park, Alaska

The Pretty Rocks Bridge is one of the most complex and technically demanding steel bridge projects undertaken in recent U.S. infrastructure. Located deep within Denali National Park, the site sits directly atop the Pretty Rocks rock glacier, an ice-rich permafrost body whose movement accelerated from inches per year to over 12 inches per day due to climate-driven thaw. This rapid ground deformation rendered the existing road unsafe and cut off public access to the western half of the park. A long-span bridging solution became the only viable way to restore access.





The selected design is a 475-ft single-span weathering steel Warren truss constructed on the east side of the landslide and launched across the unstable slope in a single controlled operation. The project faced extraordinary challenges: an active landslide incapable of supporting falsework; a narrow mountain bench with virtually no laydown space; severe environmental restrictions; a remote supply chain; and an urgent need to compress the delivery schedule to reopen the park as quickly as possible.

To meet these constraints, the Federal Highway Administration developed a General Contractor delivery model with a highly integrated technical team. DBM Vircon played a pivotal role, providing comprehensive Integrated Design and Detailing (IDD) services from the earliest phases of design through to fabrication and construction planning.

Working alongside KWH, Jacobs (lead designer), Granite (general contractor), and Somerset (launch engineering), DBM Vircon developed a fully constructible BrIM model in parallel with structural design. **This significantly accelerated decision-making and reduced project risk.**

DBM Vircon's fabrication-level Tekla model captured permanent works, temporary launching truss components, cambered and launched geometries, floorbeams, deck interfaces, and connection details to LOD 400. This early constructible detail enabled the project to issue Advance Bills of Materials and place steel procurement orders months earlier than possible under traditional workflows. The model also served as the primary coordination tool, enabling rapid Virtual Model Approval (VMA), real-time clash detection, and collaborative resolution of constructibility challenges.

The IDD approach proved critical to the project's success. It reduced detailing and approval cycles by an estimated seven months, supported a highly complex incremental launch strategy, and delivered exceptional accuracy. This resulted in near-zero field rework on a 475-ft truss installed in one of the most inaccessible locations in North America. The digital model also guided fabrication, trial assembly, transport logistics, and field erection, ensuring the multidisciplinary team remained aligned throughout delivery.





The Pretty Rocks Bridge is now recognized as a landmark example of how advanced digital integration can overcome extreme geotechnical, environmental, and logistical challenges. Our IDD expertise was instrumental in transforming an almost unbuildable site into a constructible, climate-resilient bridge that will restore access to Denali National Park for decades to come.

DBM VIRCON

Talk to us about Integrated Design & Detailing for your project.
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