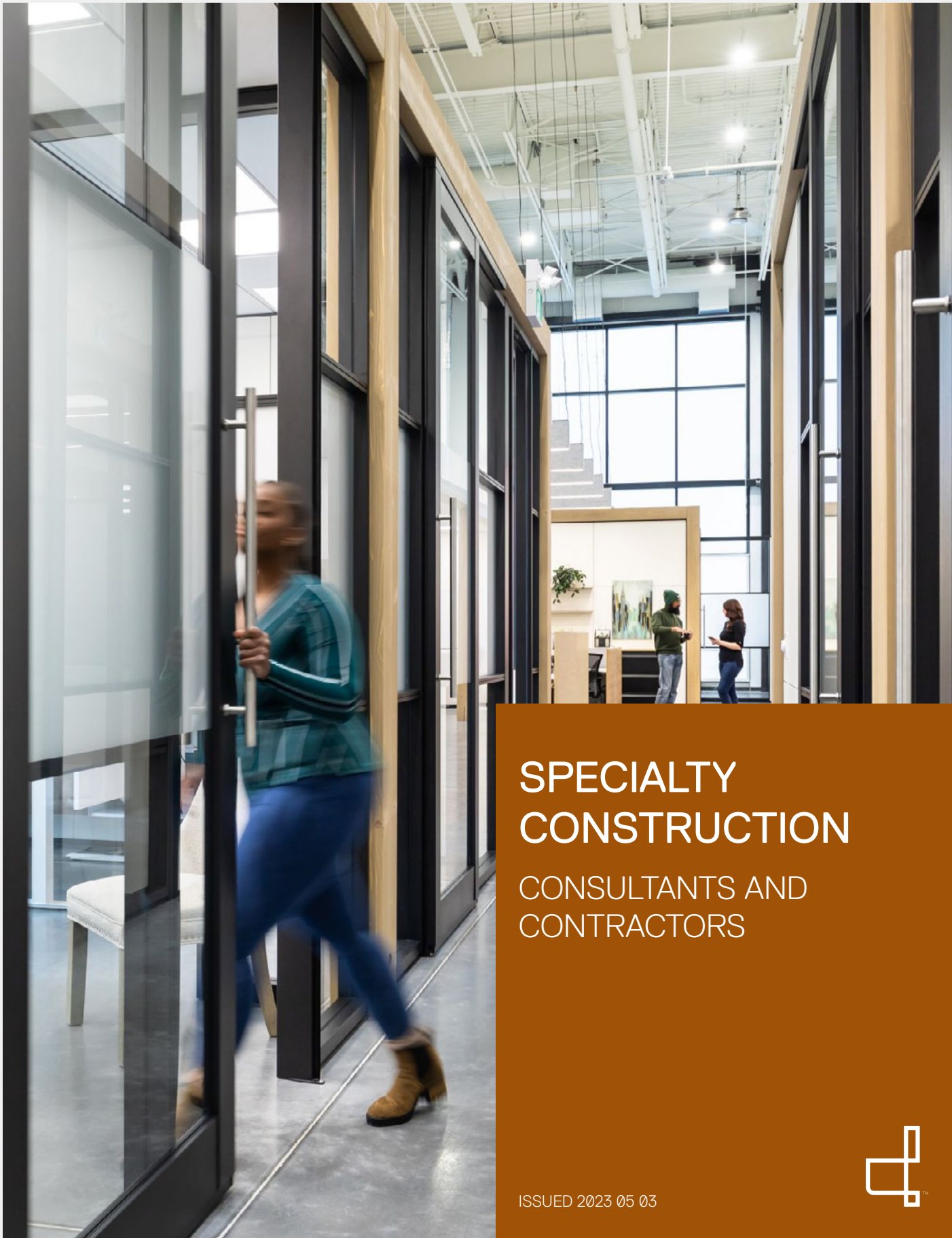
DIRTT®



# SPECIALTY CONSTRUCTION

## CONSULTANTS AND CONTRACTORS

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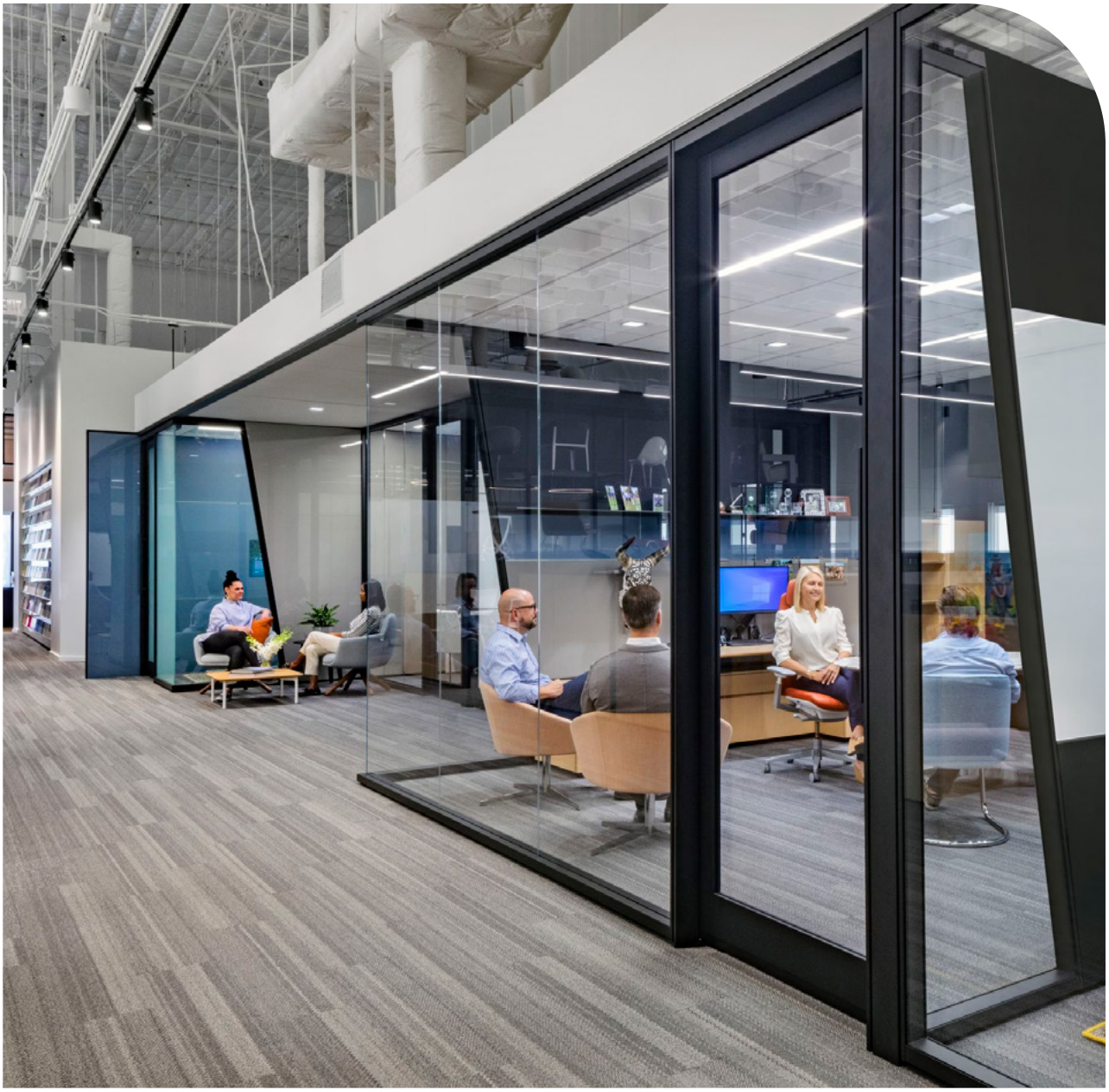
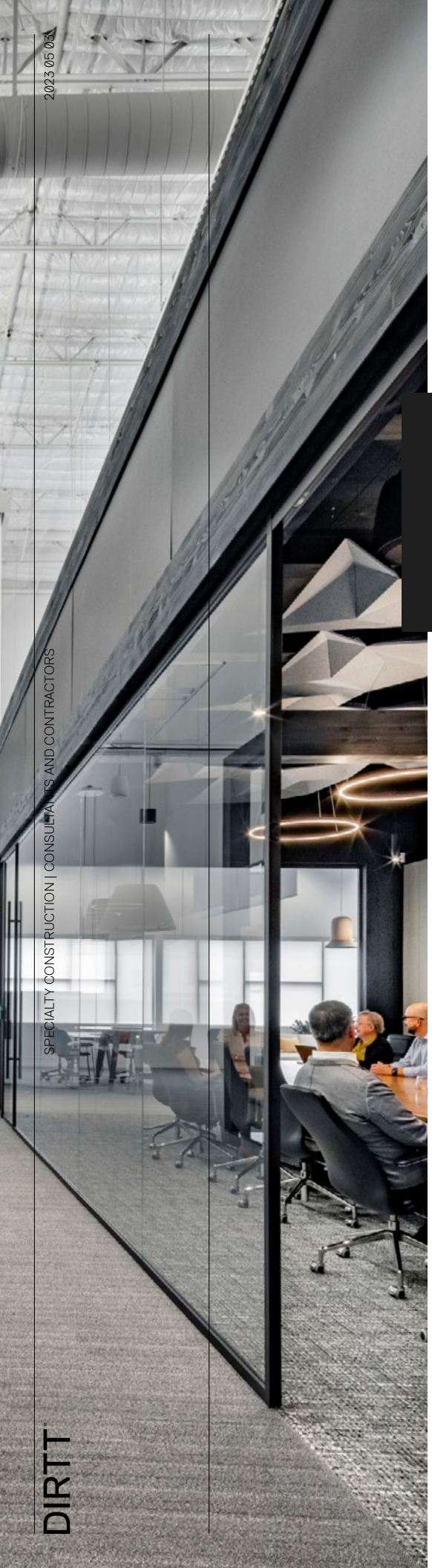


## Summary

- A high-level overview of the DIRTT team's role during design and construction.
- Define how the DIRTT team adds value during design and construction as a specialty construction consultant and contractor.
- Outline of the process which enables proper scoping of work by DIRTT and other trades.

## Why So Early

- DIRTT's goal during design and construction is to help facilitate a process that improves quality and cost certainty and provides clean, custom, rapid manufactured construction solutions. For the design and construction team to leverage the full potential of DIRTT, it's critical as specialists in manufactured construction that the DIRTT team be involved early. This insures the greatest positive impact on schedule, cost, and constructability.





## The DIRTT Team

- DIRTT – The manufacturer, subject matter experts (SME) and DIRTT partner support.
- DIRTT Construction Partner - Specialty construction consultant and contractor. Throughout the design/pre-construction phase of the project, this role is vital for providing support to the architect and engineers in order to help them successfully design with DIRTT solutions. Later in the project life cycle, this role will transition into that of a specialty contractor under the general contractor/construction manager (GC/CM).

## Programming / Pre-design

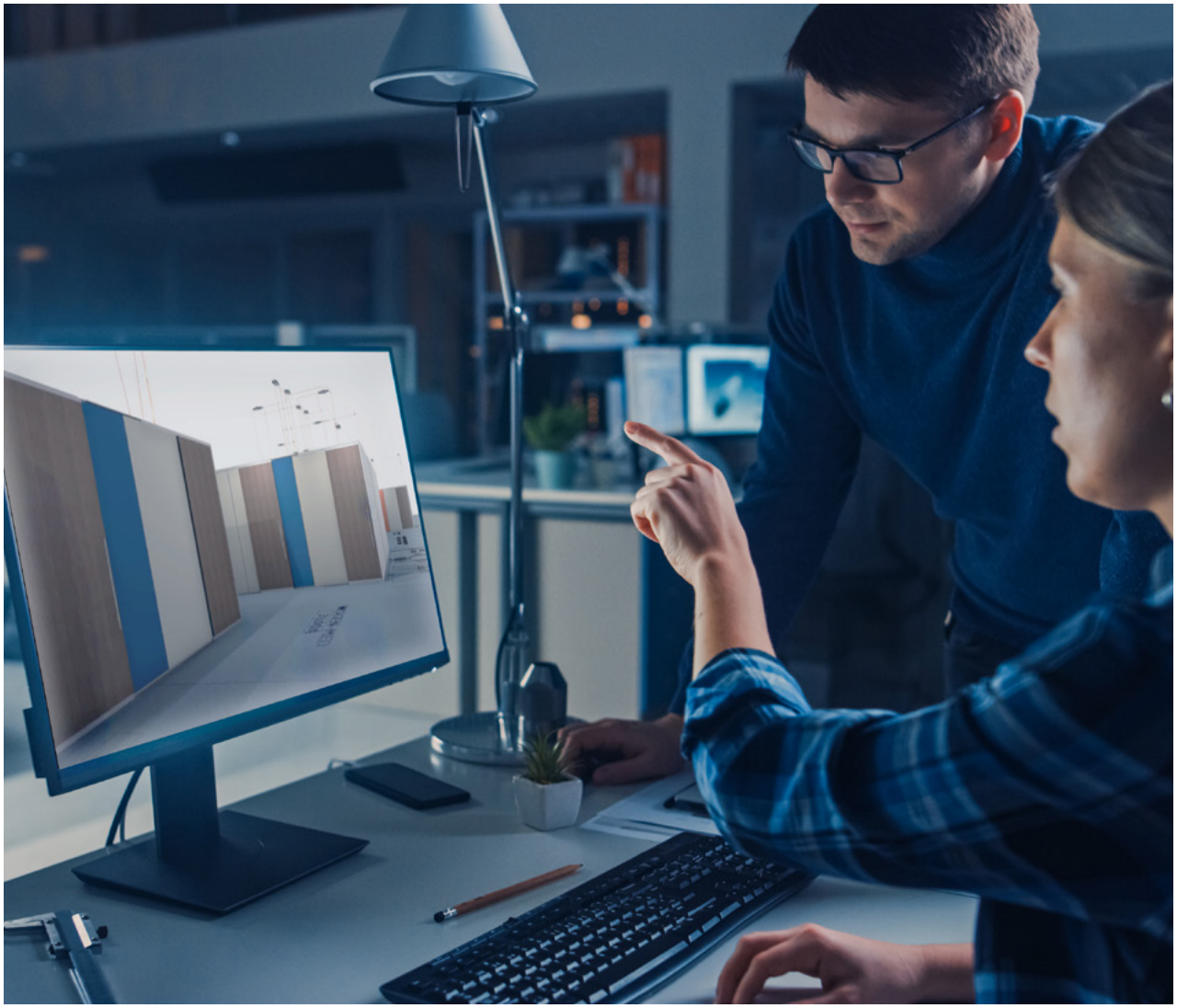
**WHAT TO EXPECT**

→ Define project goals
→ Demonstrate ICE®
→ Define scopes of work
→ Review DIRTT impact on other trades
→ Provide preliminary budgets

**VALUE ADD**

→ Maximize efficiencies of manufactured construction
→ Quickly establish construction budgets
→ ICE software enhances design process

- Meet with all stakeholders to understand the project goals and delivery method. This includes Design-Bid-Build, Design-Build, General Contractor/ Construction Manager (GC/CM), Construction Management at Risk (CMAR) and Integrated Project Delivery (IPD) among others.
- Review the program to identify which areas DIRTT solutions can be utilized and which areas will require conventional construction.
- Review constructability best practices and guidelines to maximize the efficiencies of manufactured construction.
- Demonstrate how DIRTT will impact the design approach with ICE and how ICE integrates with the design team's building information modeling (BIM) workflows.
- Review how ICE will benefit the design process:
    - Interior elevation development and material selections.
    - Casework design development and drawing production.
    - Door hardware selection.
    - Mechanical, electrical, and plumbing (MEP) coordination.
    - Integration of technology, IT, and AV.
    - Real-time cost impacts of design decisions.
- Attend preliminary meetings with critical design team members to review how DIRTT as a method of manufactured construction will impact the project schedule and the scope of other trades. This will include a review of typical Construction Specifications Institute (CSI) sections that are impacted and the trade guidelines.
- Review with all potential disciplines (architectural, mechanical, electrical, etc.) how DIRTT will impact them. Refer to scope of work documents and trade guidelines to communicate the handoff between DIRTT and the impacted trades.
- Provide a Rough Order of Magnitude (ROM) in a dollars per square foot format to help with establishing capital planning budgets. The ROM for DIRTT scope will relate to the overall budget and goals of the project as established by the end user and design team. The DIRTT Construction Partner will reconcile the costs per trade with the design and construction team to ensure all items are accounted for and scope costs have not been duplicated.



## Schematic Design

**WHAT TO EXPECT**

→ Constructability review
→ Confirm DIRTT scope
→ Develop DIRTT timeline
→ ROM pricing

**VALUE ADD**

→ Quickly identify DIRTT scope
→ Enhance BIM capabilities
→ Improve project outcomes by designing with DIRTT behaviours

- Review floor plans and any other schematic drawings with the project team to confirm which areas will utilize DIRTT manufactured construction solutions.
- Assist in implementing a BIM execution plan that enhances the design process and compliments DIRTT's manufactured construction approach.
- Coordinate how to design with DIRTT and establish best practices for graphically representing DIRTT in the design documents.
- Begin developing project-specific DIRTT solutions in ICE after the owner has approved the architect's schematic plans.
- Coordinate the design of DIRTT solutions with the design team (architect and engineers).
- Prepare 3D fly-through for the design/construction team and owner for approval of the preliminary design concepts.
- Prepare budgets at intervals as predetermined by the project team.

# Design Development

**WHAT TO EXPECT**

→ Constructability review
→ Define scope transitions
→ Develop design in ICE
→ BIM coordination
→ Refine design based on budget

**VALUE ADD**

→ Refine details and scope for maximum efficiencies during construction
→ Real-time cost estimate updates
→ Leverage BIM capabilities with ICE

- Attend design/coordination meeting(s) for review of design documents and BIM models to discuss all critical points of scope transitions between DIRTT and other trades (electrical, communications, audio visual equipment, plumbing, etc.).
- Work with the design team to maximize the efficiencies of anufactured construction and help develop the drawings and specifications to capture those efficiencies.
- Prepare 3D fly-throughs and virtual reality (VR) experiences for the design team and owner to review for improved design coordination.
- Prepare budgets at intervals as predetermined by the project team.
- Provide preliminary shop drawings and trade guidelines to be included in the design documents for project coordination and pricing by other trades.
- Provide Revit/BIM files as required for BIM coordination.
- Review design documents to ensure DIRTT scope of work is properly coordinated with other trades. Provide feedback to project team if any coordination issues are discovered.
- Review and confirm DIRTT timeline based on scope. Coordinate and revise durations in the overall project schedule.
- Managing project expectations and outcomes for all stakeholders. What you see in ICE and other BIM software is what you get.

## Permit Documents

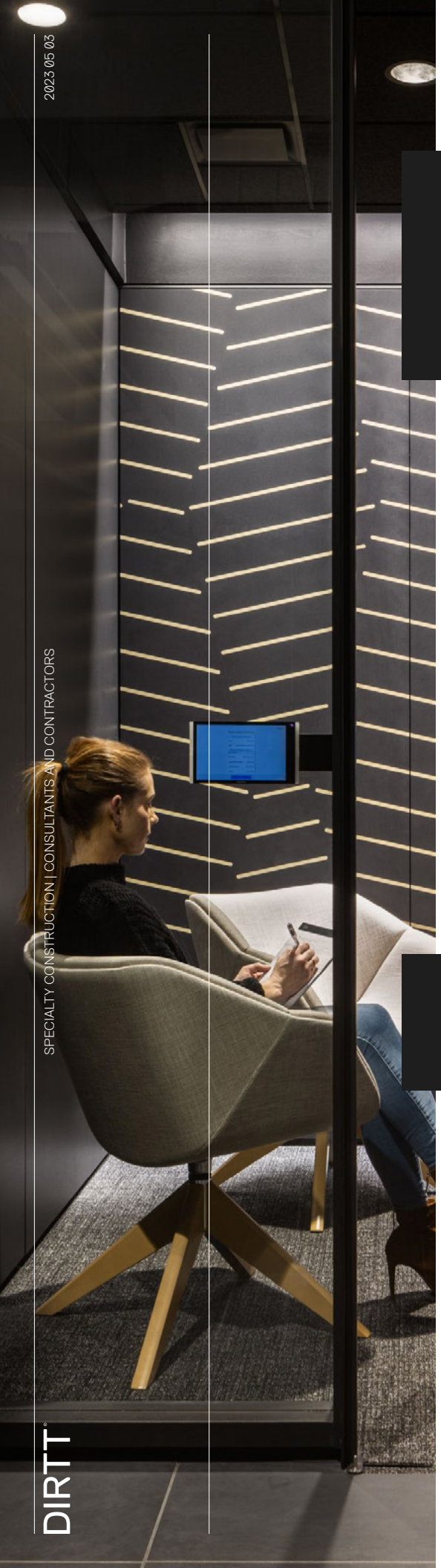
| WHAT TO EXPECT | VALUE ADD |
| --- | --- |
| → Preliminary shop drawings and signed and sealed structural calculations (as required)<br>→ Respond to AHJ questions/comments | → DIRTT SME assists with obtaining AHJ approvals |

- Provide preliminary shop drawings, trade guidelines, and structural calculations, if required. These are to be included with the architect of record's drawing set for submission to any Authorities Having Jurisdiction (AHJ) for review and approval.
- Meet with local AHJ along with the design team to review the DIRTT scope of work and how it relates to life safety, electrical, and plumbing codes.
- Address any permit review questions/comments included in correction letters from AHJ.

## Construction/Bid Documents

| WHAT TO EXPECT | VALUE ADD |
| --- | --- |
| → Preliminary shop drawings for inclusion in construction document set<br>→ Prepare ICE 3D fly-through<br>→ Prepare final budget<br>→ Confirm DIRTT timeline | → Tighten up budgets<br>→ Finalize preliminary shop drawings and BIM coordination<br>→ Review subcontractor cost estimates for scope duplication |

- Attend design/coordination meeting(s) for review of design documents and BIM models to discuss all critical points of scope transitions between DIRTT and other trades (electrical, communications, audio visual equipment, plumbing, etc.).
- Work with the design team to maximize the efficiencies of manufactured construction and help develop the drawings and specifications to capture those efficiencies.
- Prepare 3D fly-throughs and VR experiences for the design team and owner to review for improved design coordination.
- Prepare budgets at intervals as predetermined by the project team.
- Provide preliminary shop drawings and trade guidelines to be included in the construction/bid documents for project coordination and pricing by other trades.
- Provide project specific CSI specifications to be included in the project manual.
- Provide Revit/BIM files as required for BIM coordination.
- Review design documents to ensure DIRTT scope of work is properly coordinated with other trades. Provide feedback to project team if any coordination issues are discovered.
- Review and confirm DIRTT timeline based on scope. Coordinate and revise durations in the overall project schedule.
- Respond to requests for information (RFIs) as needed.
- Revise drawings as necessary for addendums.





## Construction

| WHAT TO EXPECT | VALUE ADD |
|---|---|
| → Provide full ICE file walk-through | → Expert job site specialty contractors |
| → Provide punch list and schedule work to complete | → Lean construction practices to shorten schedules |
| → Attend meetings | → High-quality manufactured construction |
| → Provide updates | → Clean job site |

- DIRTT partner transitions to the role of specialty contractor.
- DIRTT partner to provide full ICE file walk-through so that trades impacted by DIRTT scope can visualize what is being built.
- Attend pull planning sessions to implement a lean construction process.
- DIRTT partner project manager (PM) to attend job site meetings.
- DIRTT partner PM to attend training and security meetings if required.
- DIRTT partner PM to provide updates on status of material arrival and labor required for schedule coordination.
- DIRTT certified specialty contractor to perform site verification and obtain site dimensions in preparation of finalizing shop drawings.
- DIRTT partner PM to provide deficiency reports after regularly scheduled walk-throughs with the owner, architect and GC/CM.
- DIRTT partner PM to schedule work required to correct items noted in deficiency reports.
- DIRTT tech on-site at regular intervals to assure a successful and warrantable install of DIRTT solutions.

## Close Outs

| WHAT TO EXPECT | VALUE ADD |
|---|---|
| → Note and complete any work required for final inspections | → DIRTT's standard 10-year warranty |
| → Provide all close-out documents | → Future-proof flexibility |

- DIRTT partner PM to provide any final deficiency reports and/or punch lists for project completion to the owner, architect and GC/CM.
- DIRTT partner PM to schedule work required to correct items noted in deficiency reports and punch lists for final inspections.
- DIRTT to provide all necessary close-out documents:
  - Warranty
  - One-year workmanship letter
  - Operation and maintenance documents
  - Material safety data sheets (MSDS) for cleaning and maintenance
  - On-site training and demonstrations
  - As-built drawings including a final Revit or CAD file (if required)
  - Photo documentation of final project