



The Raymond Group
Statement of Qualifications
Building Information Modeling (BIM)



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THE RAYMOND GROUP

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MISSION & VALUES

ENGINEERING CORPORATE PROFILE

DESIGN ASSIST APPROACH

BIM/3D PROJECT EXPERIENCE

2D PROJECT EXPERIENCE



MISSION

Develop an industry leading BIM and IPD Project Delivery Capability to support our clients' construction and design services; both in the development of new projects as well as the project design process, while providing cost effective support for the production of such projects.

VALUES

Trust | Conducting ourselves in a manner that will earn the respect of our employees, clients and vendors

Integrity | Operating with the highest moral standard

Quality | Achieving excellence in all that we do

Safety | Protecting the well-being of our employees

Respect | Recognizing and appreciating people's contributions

Continuous Improvement | Committing to move from good to great

Work/Life Harmony | Balancing a passion for work and a zest for life

Teamwork | Maximizing the collective talents of our people to accomplish our goals

A BRIEF HISTORY

Raymond's shop drawing capabilities have developed over the years as a result of the opportunities offered. Beginning in 1993, theming work presented the first need for the coordination that good shop drawings could provide. As this capability developed, it allowed us to layout framing precisely, as well as design finish components that would fit, prior to actual construction.

This enabled parts to be manufactured concurrent with field activities, allowing Raymond to meet the tight schedules demanded by our casino customers. It also allowed us to provide specific information to our structural engineers, as well as design framing systems that were cost effective to build. For the first several years, these were largely 2D projects.

In the late 90's, Raymond began to see more usage of 3D models in our theming work. As 3D projects, we were pushed to develop new capabilities both from a knowledge standpoint and a hardware/software systems standpoint. In many cases we were pushing the envelope with the available software and our capabilities to bring these projects to reality. This process opened the door to manufacturing complex shapes and components directly from our CAD files.

Then along came BIM. Within a very short period of time, owners, architects, and general contractors began to have a serious interest in coordinating trades in a 3D environment. This development increased the advantages and potential for 3D to be used on all kinds of projects where substantial coordination of MEP and architecture were involved, including hospitals and laboratories, as well as iconic theaters, museums, malls, and hospitality projects.

WHY BIM

Why make BIM and IPD the centerpiece of your long range plan?

- As technology and ease of use has improved, owners and contractors are increasingly seeing the benefits of using BIM and IPD on simpler buildings. Hospitals have been using this technology for some time due to the complexity of coordinating the MEP systems.
- By having access to these services you are operating farther upstream on the project delivery cycle, which should be a key goal in your business development strategy. Getting in early on a project most likely gives you an advantage in negotiating the construction work.
- BIM and IPD are increasingly becoming the preferred project delivery method for larger, more difficult, projects. Having access to these capabilities will keep you in the forefront.
- Defining the project through the BIM and IPD process helps to understand your costs and define your budgets.
- The coordination aspect of BIM helps you to resolve discrepancies and fill in missing information prior to performing the work, which improves your efficiency in the field.

This is a developing technology and a dynamic market. Several years ago, 3D modeling was limited to exotic structures that could not (easily) be built using conventional design methods. The software (and necessary hardware) was expensive and difficult to use, requiring highly trained personnel.

Owners and Architects

Raymond has been brought in early on several projects to work with the design team to develop a 3D model for our scope of work.

General Contractors

Responsibility for developing accurate 3D models and coordinating all trades on complex projects oftentimes is given to the General Contractor. In many ways, this makes the most sense, as the General Contractor usually selects the subcontracting team, and has the ultimate responsibility for coordination and scheduling of all field activities.

Working for the General Contractor, our scope typically consists of modeling the work within our trade and working through "Big Room" sessions using Navisworks to identify and resolve clashes with other trades. Most importantly, this scope includes accurately representing the structural elements and their locations within the walls and ceilings. This allows the MEP trades to coordinate their work without interfering with the primary framing members.

The issues that are important to the General Contractor are more specifically related to trade coordination, costs and schedule.

DESIGN ASSIST APPROACH

OVERALL BIG GOALS

External

- Understand Owner/Client defined needs.
- Clearly communicate project objectives.
- Develop project specific processes to fulfill objectives.
- Select the best people for roles/responsibilities/fit.
- Establish ownership and team commitment to goals.

Internal

- Cradle to grave approach to design assist: field, management, design.
- Project Design Captain supports ongoing project operations.
- Best Practice for Model transition to field staff.
- Safety, Contract Administration, Human Resources, Accounting, Engineering, Operations.

USING THE RIGHT PEOPLE

The Raymond Project Manager and Field Superintendent are collectively the designated design assist coordinators. These two members are kept constant throughout the pre-construction and construction phase. They are collectively responsible for the following:

- Participate in the daily/weekly design assist meetings.
- Advise and approve all Raymond constructability approaches.
- Acts as a liaison for all estimating exercises.
- Review and quality-check progressing BIM model on daily/weekly basis.
- Attend Big Room clash detection meetings and advise detailers of any changes.
- Review and quality check out-coming 2D shop drawings ready for construction.

- Review and quality-check “coordinated construction model” at start of construction.
- Advise detailers and engineering team of any changes during construction phase.

USING THE RIGHT TOOLS

The following are BIM and Design Assist tools used during the delivery process:

BIM Software

- AutoCAD
- Architectural Desktop (Full BIM)
- Mechanical Desktop (Partial BIM)
- Inventor (Full BIM)
- Revit (Full BIM - Preferred choice)
- Rhino (Partial BIM)
- Metal Wood Framing (Add-on to Revit)
- Programming (Custom - as need basis)

Complex 3D Software

- AutoCAD
- Mechanical Desktop
- Inventor
- Rhino

Project Coordination Software

- WebEx/GotoMeeting/Microsoft Lync
- Autodesk Design Review
- NavisWorks Manage
- Miscellaneous Format Conversion Software

DESIGN ASSIST APPROACH

Continued:

SPECIFIC DESIGN ASSIST GOALS

Drywall Metal Stud Contractors Model Coordination Scope:

Phase 1 – Coordination of major MEP runs with structure, walls and ceilings:

1. As major MEP system sizes and locations are defined by respective contractors, Raymond verifies its integration with ceiling and wall planes – coordinate so that architectural ceiling heights and partition layouts are achieved.
2. Study, identify and help resolve major structural steel conflicts with proposed wall and ceiling finish layouts.
3. Review and help value engineer finishes and wall constructabilities.
4. Refresh estimates as scheduled through BIM process.

Level of Detail 1 – Focus Items

- Floor Plan Validation
- Rated Wall by Color/Pattern
- Identify Pre-Rock Interference and Leave-outs
- Exit Passageways
- RCP Validations
- 2D Study Sections for Review
- Refresh Estimates

Phase 2 – Coordination of MEP device penetrations through ceilings and walls:

1. Define sizes and configurations (specs) for all diffusers, lights, speakers, sprinkler heads, cameras, fire safety devices, etc.
2. Each trade to provide locations, actual dimensions, and orientation for all devices penetrating ceilings and walls.
3. Coordinate devices with architectural configuration and themed shapes and finishes.

Level of Detail 2 – Focus Items

- Top of Wall Track Conditions
- Vertical/Horizontal Shafts
- Soffits with Studs and Kickers
- Primary Studs (King, Corner, etc.)
- Bent Plate to Exterior
- Light Coves
- Full Height Walls with Studs and Tracks
- Partial Height Walls
- In Wall Backing
- RCP Layout with Devices
- Box Headers
- Wide Penetration Openings

Phase 3 – Finalizing Deliverables:

1. Produce 2D dimensioned layouts to allow coordination and layout in the field.
2. Produce detailed finish shop drawings for themed finishes and constructability.
3. Produce coordinated/signoff 3D Navis Model with respective viewpoints to aid field during construction.

Level of Detail 3 – Focus Items

- Curtain Tracks
- Compression Posts
- Corner Guards
- Handrails
- Layout Shop Drawings
- Field 3D Models
- Added Intelligent Model Information in Revit Walls and Ceilings for 5D (Cost and Facility Management)
- Modeling/Layering for 4D (Scheduling and Logistics), later in project
- Custom Modeling for non-scope Items

DESIGN ASSIST APPROACH

Continued:

Phase 4 (LOD 4-5) – Construction and post construction phase:

1. Produce custom Navis model for field studies and review along with 2D shops.
2. Use the model to produce priority wall layouts for construction sequencing with MEP.
3. Keep the model updated with any field changes and extra conflicts that arise for field conditions.
4. Keeping the field equipped with laptops and personnel to review model on daily basis.
5. Employing web meeting tools for direct and on demand communication with field and engineers.

GOING BEYOND

- Define deliverables very clearly
- Assemble the best BIM Team for the task that also thinks out of the box
- Be transparent during the process
- Deliver beyond what was promised
- Full IPD team efficient with 4D and 5D capabilities
- Pre-fab wall assemblies integrated with MEP
- Complete Building Information Model embedded with advanced wall and ceiling assemblies

QUALITY CONTROL (MEP COORDINATION)

Quality Control Process during MEP Coordination:

1. Project Manager/Field Superintendent review and quality check BIM model at all phases of process. As our PM and Superintendent are part of the clash detection meetings, the direction to detailers is more accurate and constructible.
2. Best BIM practices and standards are outlined for all detailers to follow. Raymond BIM Director reviews and enforces these standards.
3. The flow of information is controlled and filtered through PM, Superintendent, Engineers, Design Team, and General Contractor before it becomes a part of the model, thus preserving the accuracy.
4. Revisions to existing info are strictly followed through chain of commands before becoming a part of the documentation, thus ensuring its cost impact, constructability and accuracy.
5. High and low level communication (face to face or via online daily meetings) is practiced between detailers and design and construction team to ensure accuracy and completeness.

BIM/3D
PROJECT EXPERIENCE

DISNEY'S LITTLE MERMAID ATTRACTION

Design Assist with LOD 500 BIM
Anaheim, CA
Walt Disney Imagineering

DISNEY'S CARTHAY CIRCLE THEATRE

Design Assist with LOD 500 BIM
Anaheim, CA
The Bergman Company

WALT DISNEY CONCERT HALL - FOUNDERS ROOM

Design Assist with LOD 500 BIM
Los Angeles, CA
Matt Construction

ART OF THE MOTORCYCLE AT THE GUGGENHEIM

Design Assist with LOD 500 BIM
Las Vegas, CA
Taylor International Corporation

MOHEGAN SUN

Design Assist with LOD 500 BIM
Uncasville, CT
Perini Building Company

VENETIAN PALAZZO PODIUM

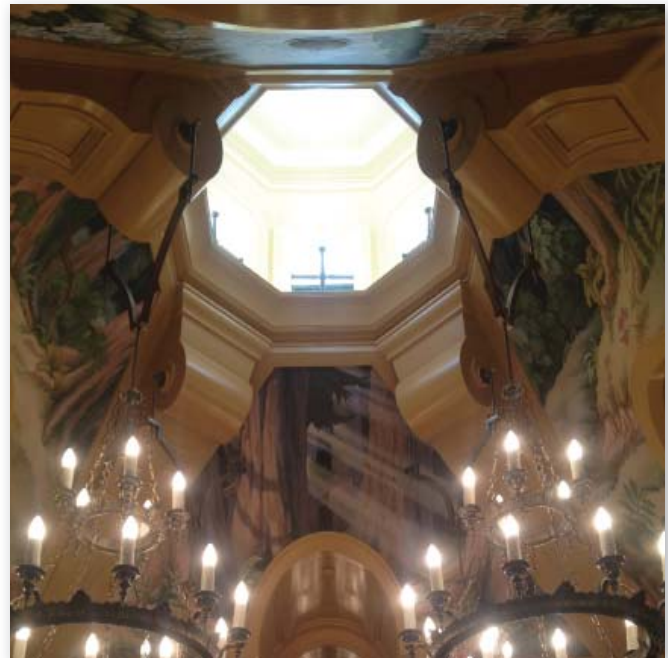
Las Vegas, NV
Taylor International Corporation

MGM CIRQUE BAR

Design Assist with LOD 500 BIM
Las Vegas, NV
Penta Building Group, Inc.

ENCORE SWITCH BEACH CLUB

Las Vegas, NV
Penta Building Group, Inc.



Disney's Carthay Circle Theatre



Encore Switch Beach Club

BIM/3D PROJECT EXPERIENCE

BIM/3D PROJECT EXPERIENCE

SOBELLA RETAIL INTERIOR

Design Assist with LOD 500 BIM
Las Vegas, NV
Perini Building Company

VENETIAN - BARNEY'S RETAIL AT THE PALAZZO

Design Assist with LOD 500 BIM
Las Vegas, NV
The Venetian Hotel & Casino

NORTH LAS VEGAS CITY HALL

Design Assist with LOD 500 BIM
North Las Vegas, NV
Whiting-Turner Contracting Company

CEDARS SINAI MEDICAL CENTER - AHSP

Design Assist with LOD 500 BIM
Los Angeles, CA
Hathaway Dinwiddie Construction Company

UCSF LABORATORY 19A

Design Assist with LOD 500 BIM
San Francisco, CA
Clark Construction

KAISER SAN MARCOS

Design Assist with LOD 500 BIM
San Marcos, CA
Swinerton Builders

SOUTH HEALTH CENTER

Design Assist with LOD 500 BIM
Los Angeles, CA
McCarthy Building Companies, Inc.

PALMDALE MEDICAL CENTER

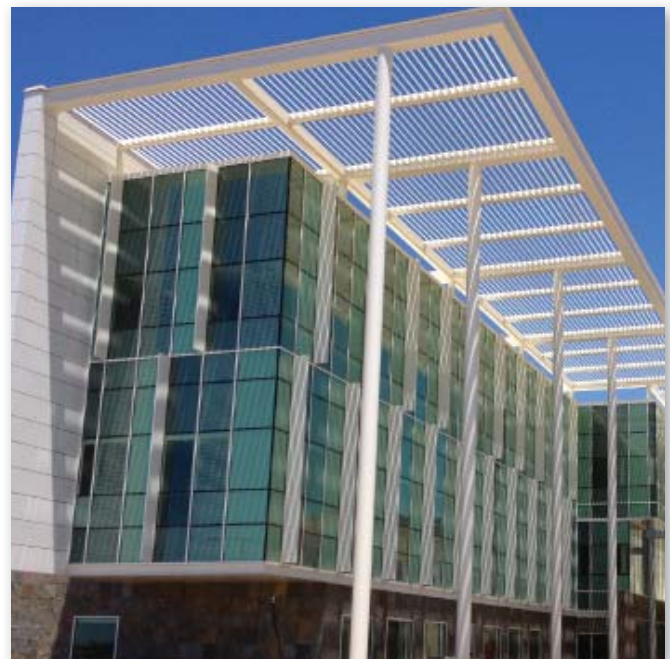
Design Assist with LOD 500 BIM
Palmdale, CA
Turner Construction

JACOBS TOWER

Design Assist with LOD 500 BIM
La Jolla, CA
Kitchell Construction



Sobella Retail



Kaiser San Marcos

FEATURED PROJECT

MOHEGAN SUN *Design Assist with LOD 500 BIM*

Client: Perini Building Company

Architect: Kohn Pederson Fox Architects (Architect)
Rockwell Group Architects (Designer)

Completion Date: 2000

Square Footage: 25,000

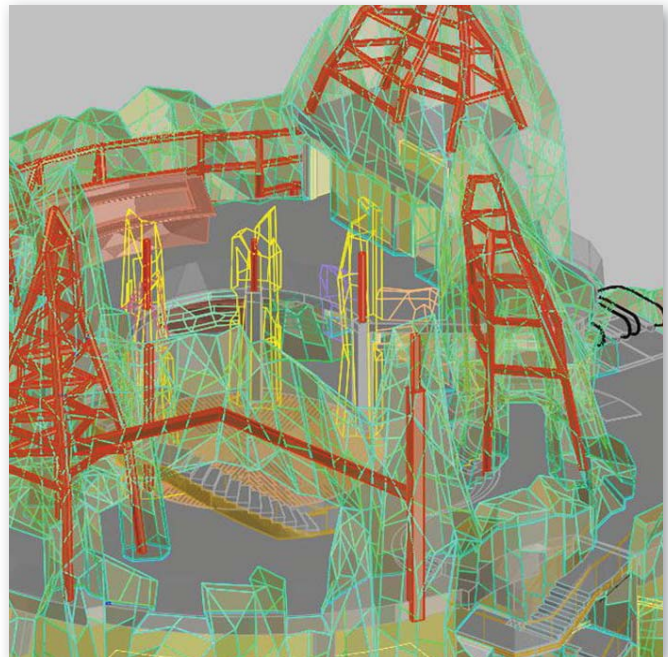
Construction Contract Value: \$18 MM

Construction Scope: Bead Panels, BIM, Casework, Drywall, Framing, Painting, Stone, Theming, Tile, Wall Covering, Wood Millwork, and Wood Trellises.

BIM Scope: Design Assist of 3D Walls and Ceilings, MEP Coordination, 3D Modeling of Themed Elements and Sub Structures, Fabricaion of Shop Drawings.



Mohegan Sun

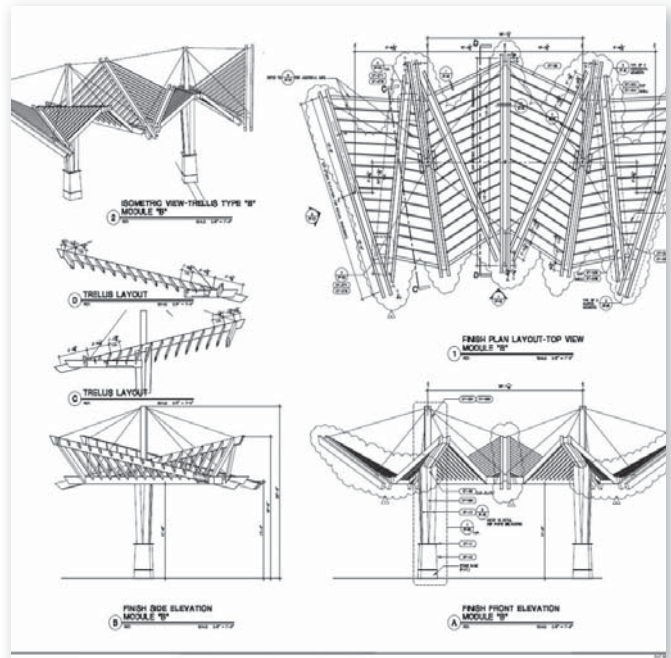


Complex Ceiling Surfaces Documented

FEATURED PROJECT

MOHEGAN SUN *Design Assist with LOD 500 BIM*

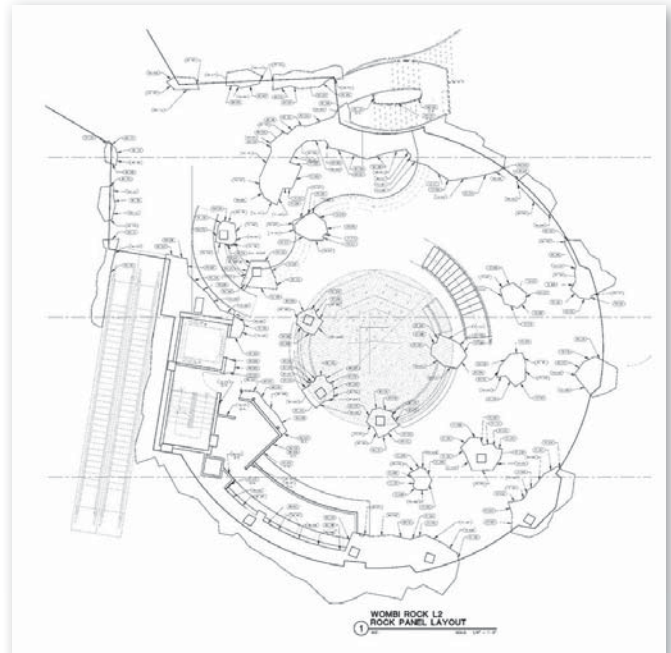
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Fabrication Drawings from 3D Model



Complex Ceiling Surfaces Documented



Shop Drawing with Fabrication Part Numbers

FEATURED PROJECT

WALT DISNEY CONCERT HALL FOUNDERS ROOM

Design Assist with LOD 500 BIM

Client: Matt Construction

Architect: Frank Gehry

Completion Date: 2004

Square Footage: 4,800

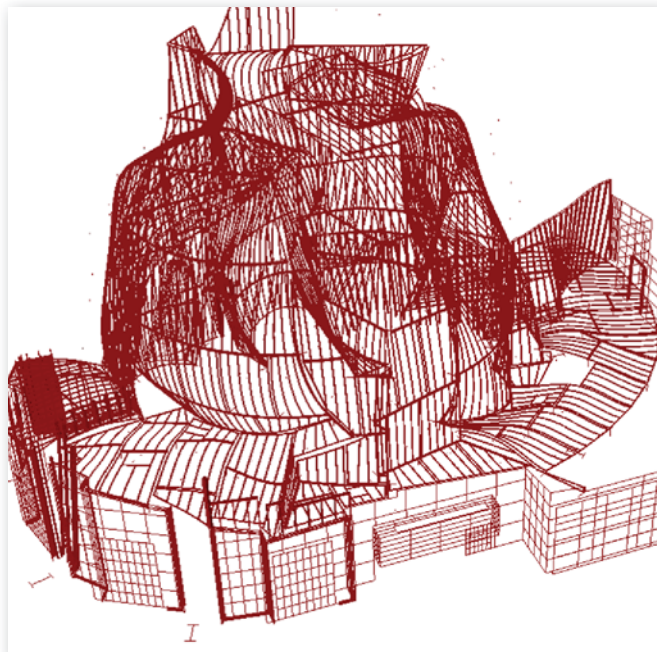
Construction Contract Value: \$950 K

Construction Scope: BIM, Design Assist, Lath and Plaster.

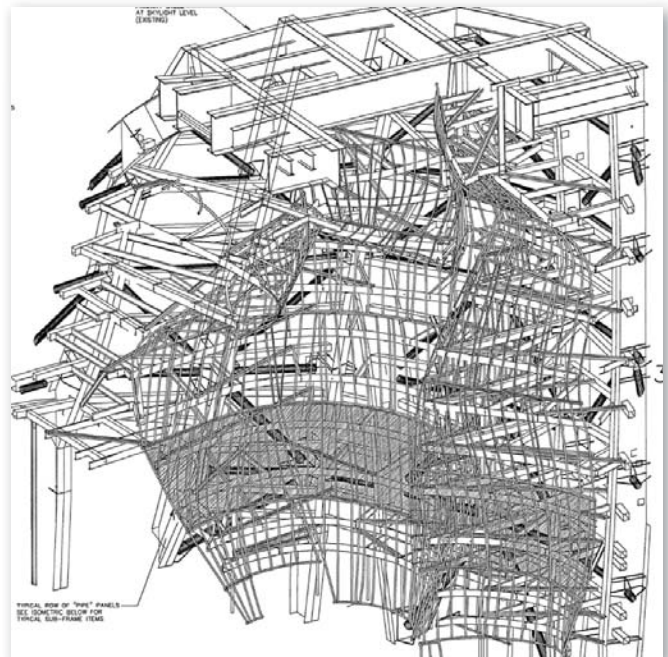
BIM Scope: Design Assist of all 3D Walls and Ceilings, MEP Coordination, 3D Modeling of Themed Elements and Sub Structures, Fabrication of Shop Drawings.



Disney Founders Room



Fully Detailed and Coordinated BIM Model for Fabrication



Detailed Construction Documents from 3D Model

FEATURED PROJECT

ART OF THE MOTORCYCLE AT THE GUGGENHEIM

Design Assist with LOD 500 BIM

Client: Taylor International Corporation

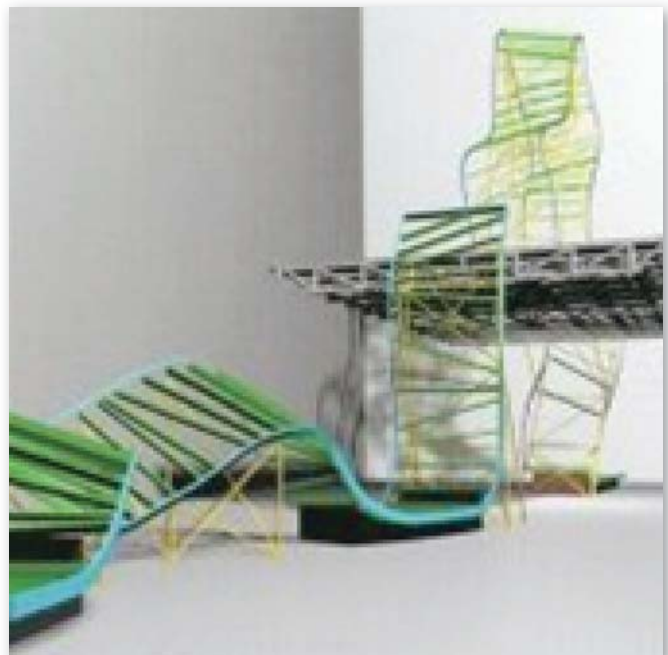
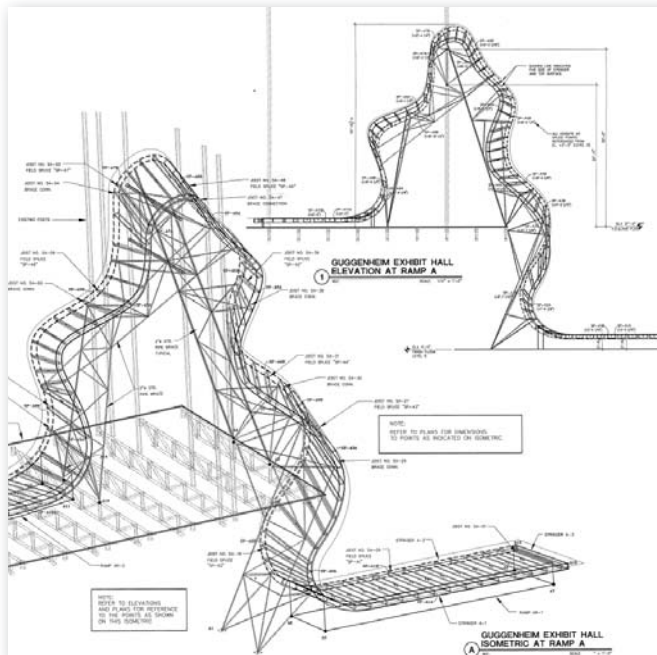
Architect: TSA of Nevada, Inc.

Completion Date: 2002

Construction Contract Value: \$2.3 MM

Construction Scope: BIM, Drywall, Framing, Paint, Plaster, and Theming.

BIM Scope: Design Assist of all 3D Walls and Ceilings, MEP Coordination, 3D Modeling of Themed Elements and Sub Structures, Fabrication of Shop Drawings.



DISNEY'S LITTLE MERMAID ATTRACTION

Design Assist with LOD 500 BIM

Client: Walt Disney Imagineering

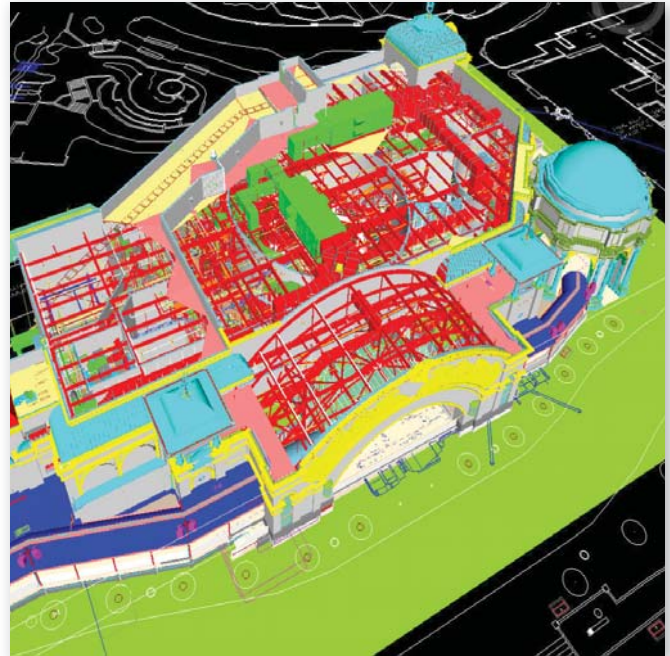
Architect: Walt Disney Imagineering

Completion Date: 2011

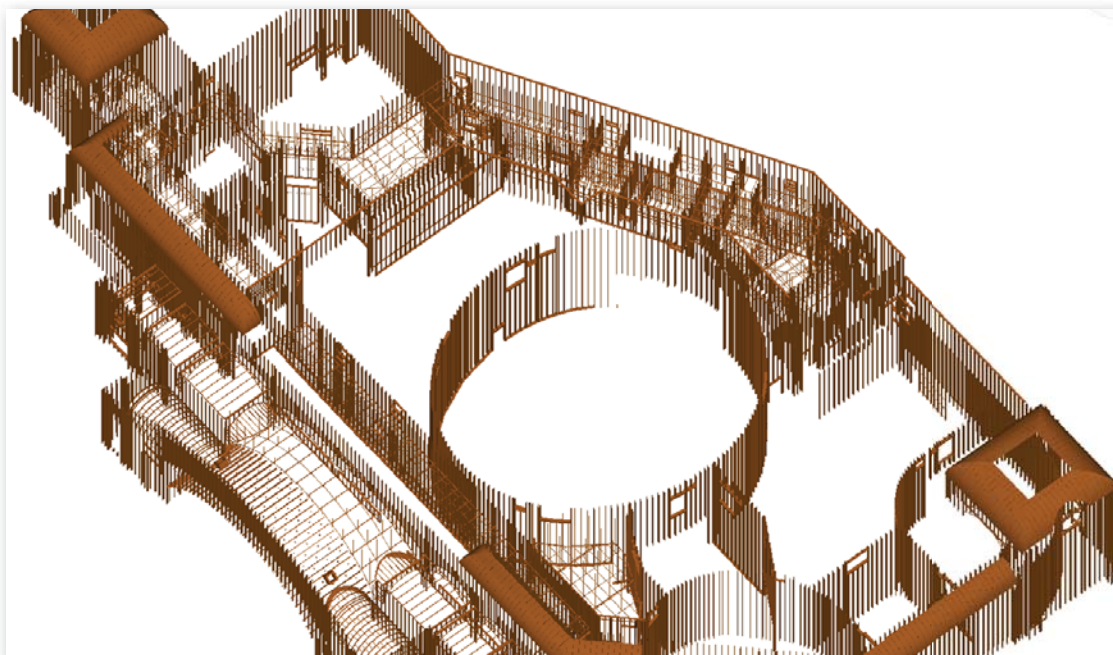
Construction Contract Value: \$7 MM

Construction Scope: BIM, Design Assist, Drywall, Metal Stud Framing, and Plaster.

3D Scope: Door/Window Jamb Studs, Infill Studs, Ceilings Joists, ACT Ceiling Grids, Compression Posts, Above Ceiling Soffits, Kickers/Braces, Rated Enclosures, Color Coded Wall Types, Curved Ceiling and Wall Framing, Headers, MEP Openings, MEP Coordination, and Layout of Shop Drawings.



Disney's Little Mermaid



Light Gauge Framing Model with LOD 500

FEATURED PROJECT

CITY CENTER - SOBELLA RETAIL *Design Assist with LOD 500 BIM*

Client: Perini Building Company

Architect: Studio Daniel Libeskind
Adamson Associates International

Completion Date: 2010

Square Footage: 500,000

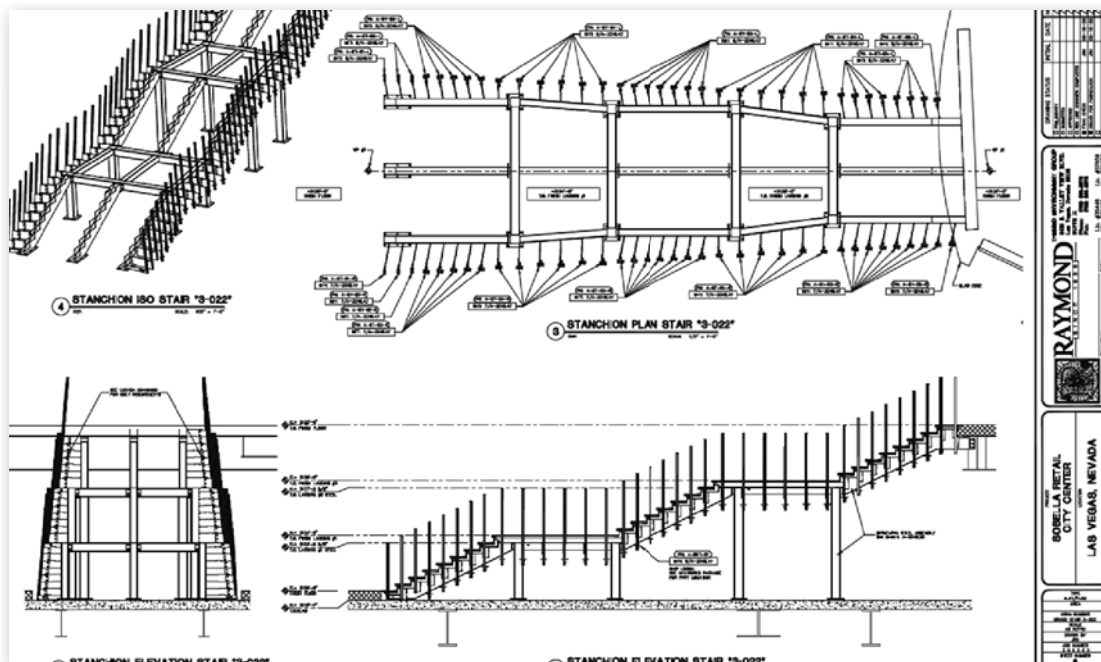
Construction Contract Value: \$41 MM

Construction Scope: BIM, Design Assist, Drywall, Framing, Painting, and Theming.

BIM Scope: Design Assist of all 3D Walls and Ceilings, MEP Coordination, 3D Modeling of Themed Elements and Sub Structures, Fabrication of Shop Drawings.



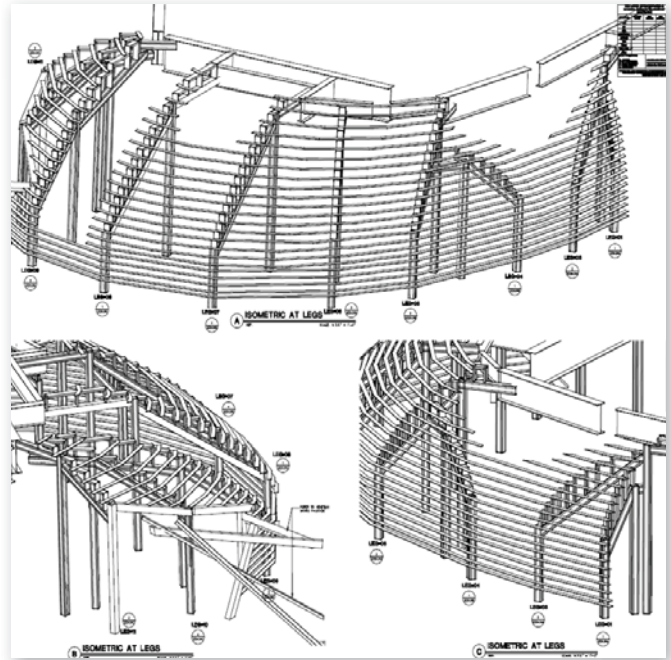
Sobella Retail



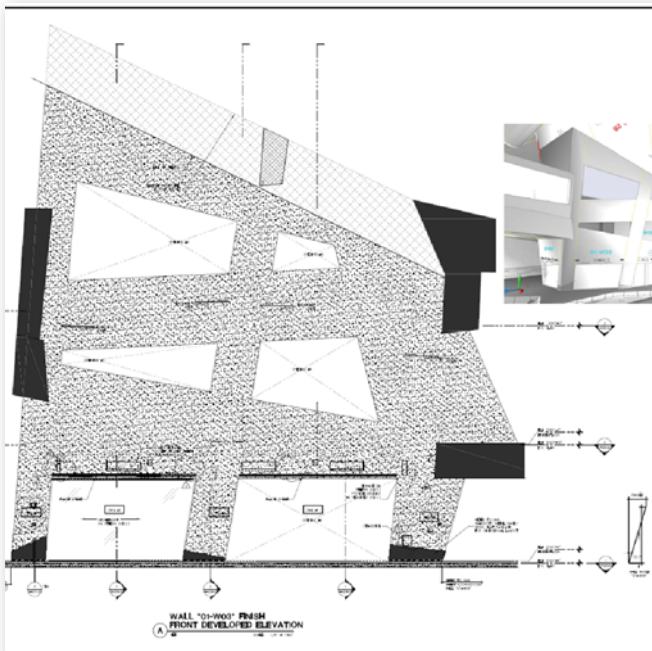
Grand Stairs Modeled for Fabrication

CITY CENTER - SOBELLA RETAIL
Design Assist with LOD 500 BIM

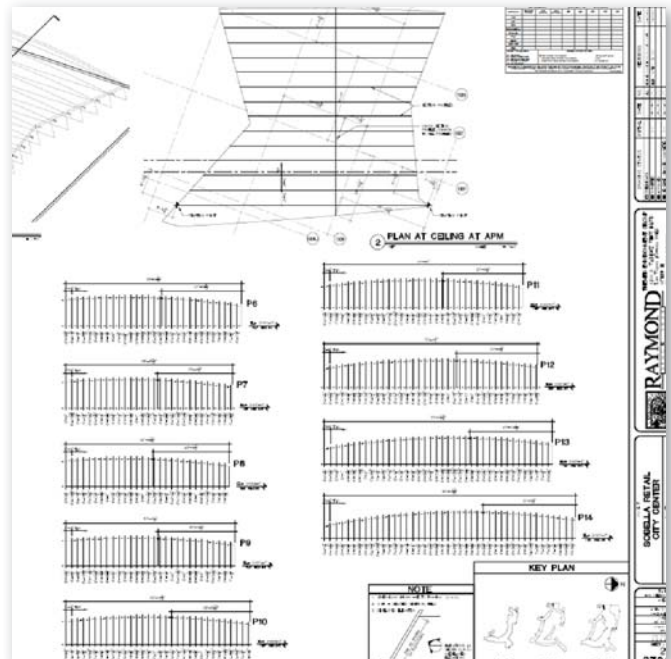
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"Oyster Bar" Modeled for Fabrication



All Walls Extracted from 3D Model



Complex Ceiling Surfaces Documented

FEATURED PROJECT

CITY CENTER - SOBELLA RETAIL

Design Assist with LOD 500 BIM

Client: Perini Building Company

Architect: Studio Daniel Libeskind
Adamson Associates International

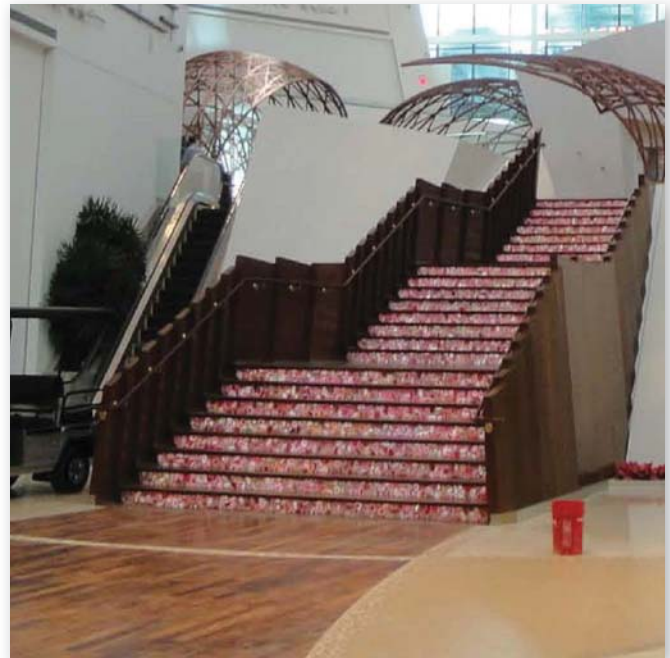
Completion Date: 2010

Square Footage: 500,000

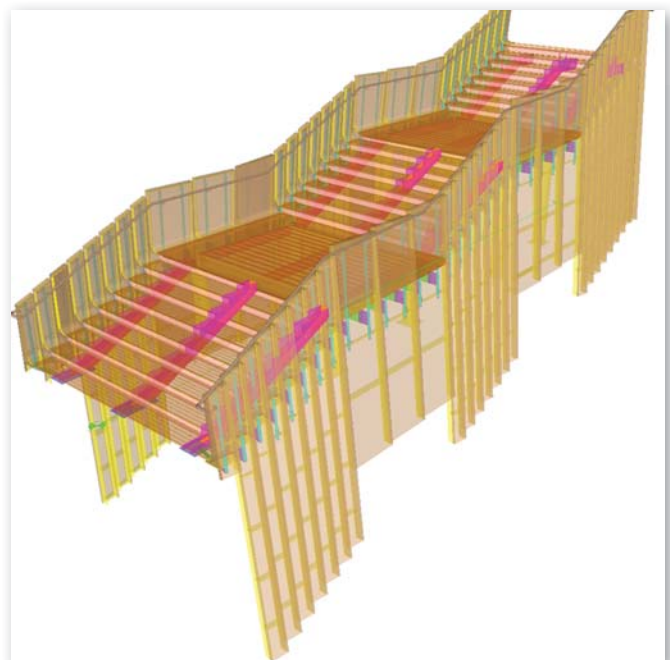
Construction Contract Value: \$41 MM

Construction Scope: BIM, Design Assist, Drywall, Framing, Painting, and Theming.

BIM Scope: Design Door/Window Jamb Studs, Infill Studs, Ceiling Joists, ACT Ceiling Grids, Compression Posts, Above Ceiling Soffits, Kickers/Braces, Rated Enclosures, Color Coded Wall Types, Curved Ceiling & Wall Framing, Headers, MEP Openings, Layout Shop Drawings, and MEP Coordination.



Sobella Retail



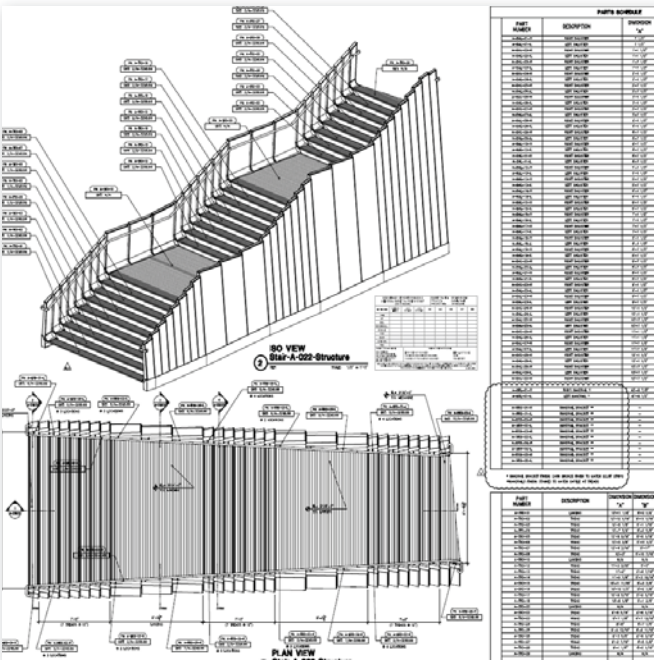
Modeled "Grand Stairs" - LOD 500



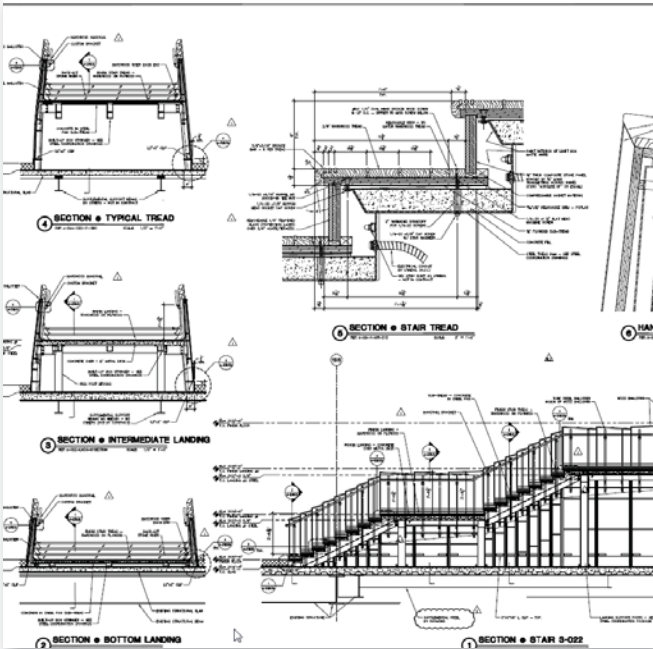
FEATURED PROJECT

CITY CENTER - SOBELLA RETAIL *Design Assist with LOD 500 BIM*

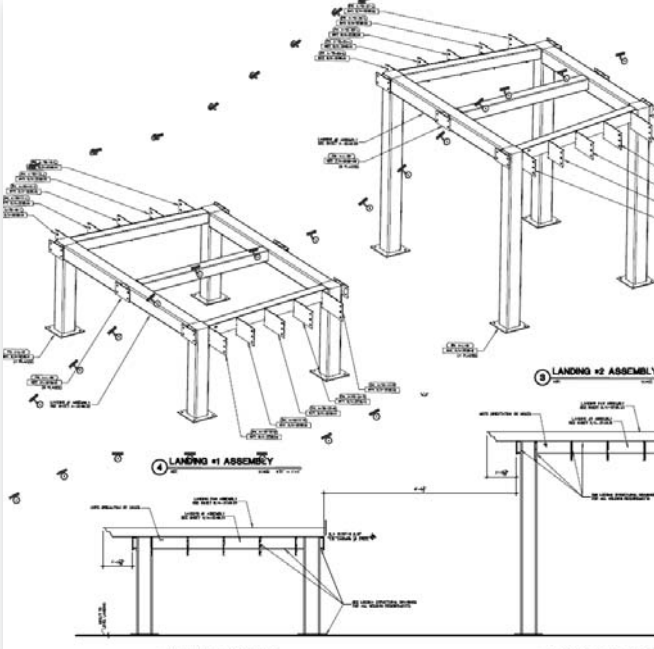
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Fabrication Part Numbers



Fabrication Detailed Shop Drawings



Fabrication Detailed Shop Drawings

NORTH LAS VEGAS CITY HALL *Design Assist with LOD 500 BIM*

Client: Whiting-Turner Contracting Company

Architect: Fentress Architects

Completion Date: 2012

Square Footage: 200,000

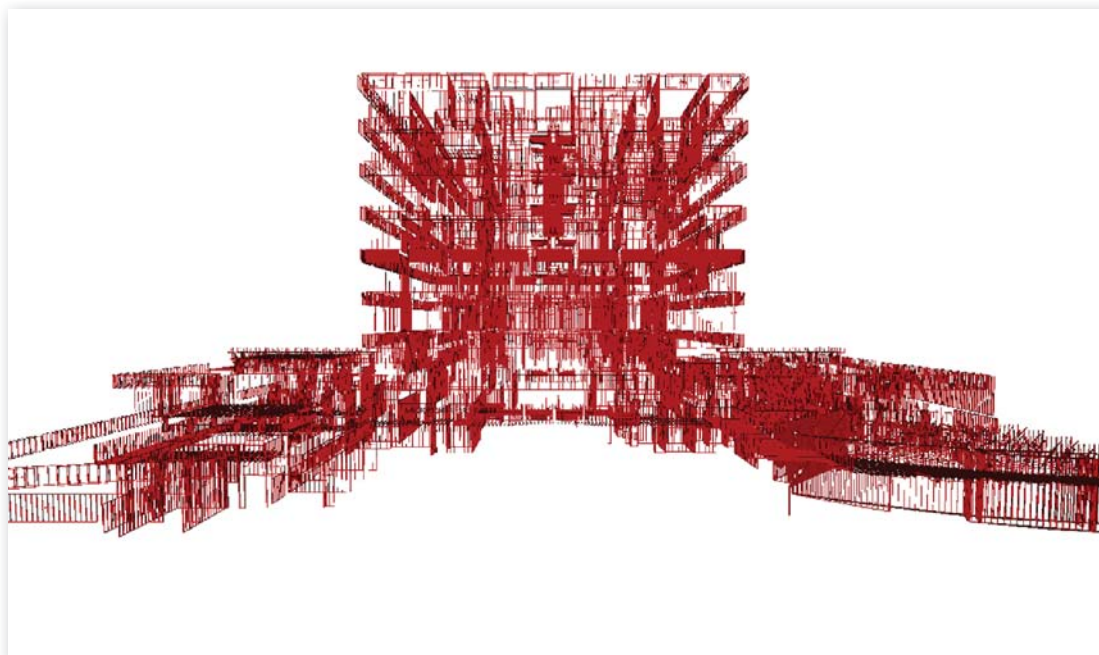
Construction Contract Value: \$3.7 MM

Construction Scope: BIM and Interior Walls and Ceilings.

BIM Scope: LOD 400 of the following elements; Door/ Window Jamb Studs, Infill Studs, Ceiling Joists, ACT Ceiling Grids, Compression Posts, Above Ceilings Soffits, Kickers/Braces, Rated Enclosures, Color Coded Wall Types, Curved Ceiling and Wall Framing, Headers, MEP Openings, Layout of Shop Drawings, and MEP Coordination.



North Las Vegas City Hall Rendering



*Light Gauge Framing Model with LOD 500
Nine Different Coordinated Levels*

UCSF LABORATORY #19A
Design Assist with LOD 500 BIM

Client: Clark Construction

Architect: Skidmore, Owings, and Merrill, LLP

Completion Date: 2012

Square Footage: 237,000

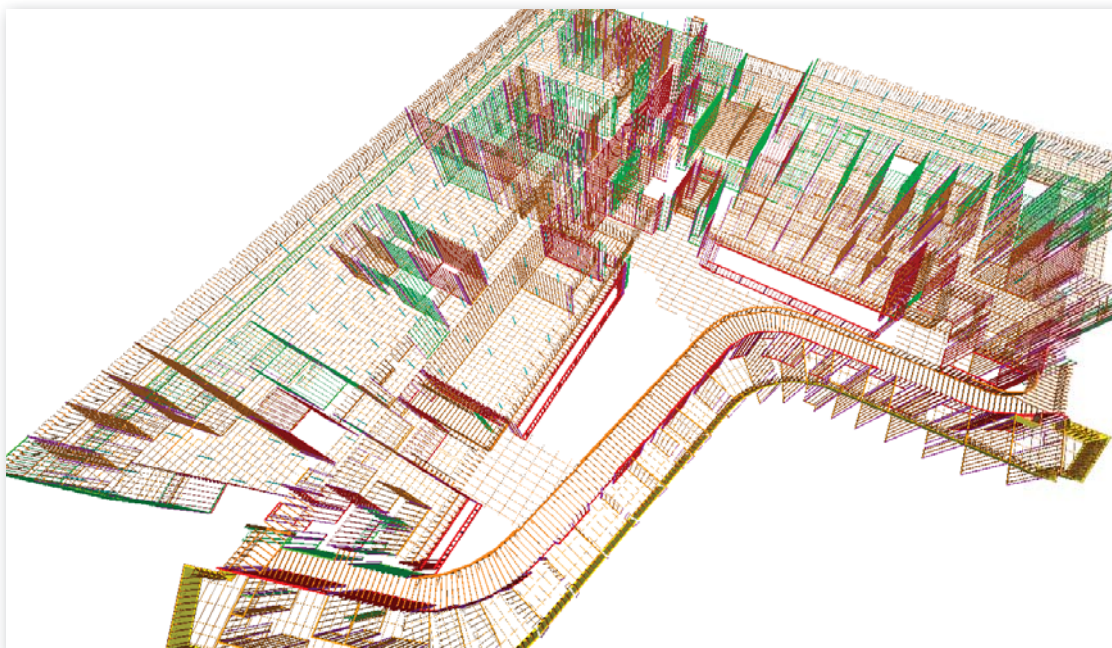
Construction Contract Value: \$7.8 MM

Construction Scope: Framing, Drywall, and Acoustical Ceilings.

3D Scope: Door/Window Jamb Studs, Infill Studs, Ceiling Joists, ACT Ceiling Grids, Compression Posts, Above Ceiling Soffits, Kickers/Braces, Rated Enclosures, Color Coded Wall Types, Curved Ceiling & Wall Framing, Headers, MEP Openings, Layout Shop Drawings, and MEP Coordination.



UCSF Lab #19A Rendering



*Light Gauge Framing Model with LOD 500
5 Different Coordinated Levels*

FEATURED PROJECT

CEDARS SINAI ADVANCED HEALTH SCIENCES PAVILION

Design Assist with LOD 500 BIM

Client: Hathaway Dinwiddie Construction Company

Architect: HOK

Completion Date: 2013

Square Footage: 440,000

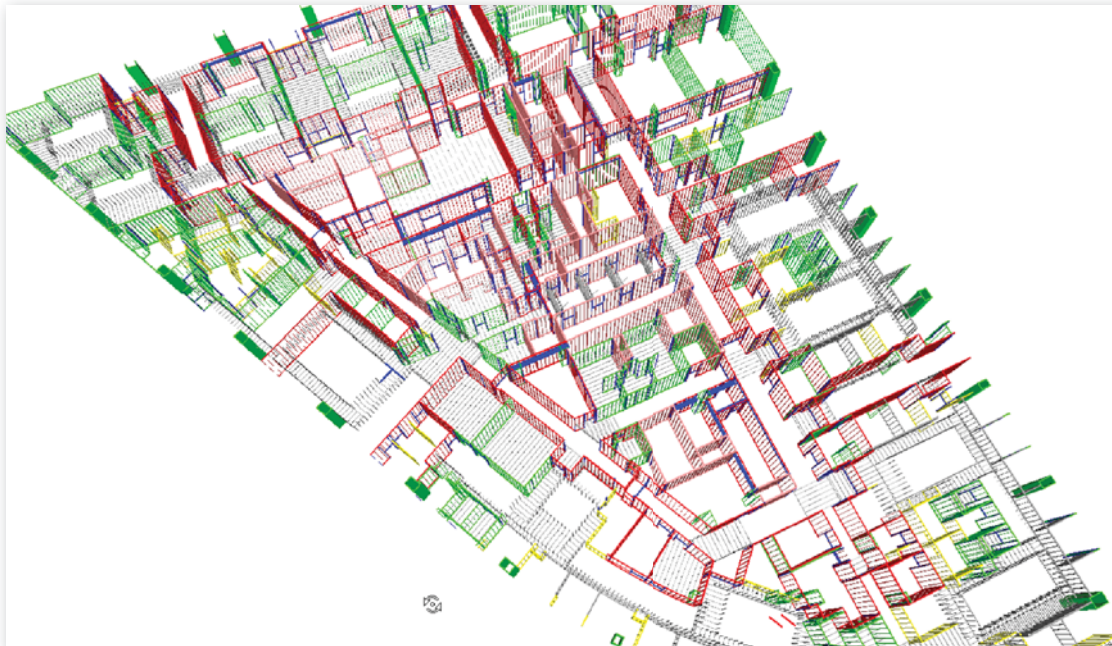
Construction Contract Value: \$17 MM

Construction Scope: BIM, Drywall, Light Gauge Metal Framing, Fireproofing, Insulation, Firestopping, Cement Plaster, Venetian Plaster, GFRG Panels.

BIM Scope: Door/Window Jamb Studs, Infill Studs, Ceiling Joists, ACT Ceiling Grids, Compression Posts, Above Ceiling Soffits, Kickers/Braces, Rated Enclosures, Color Coded Wall Types, Curved Ceiling & Wall Framing, Headers, MEP Openings, Layout Shop Drawings, and MEP Coordination.



Cedars Sinai - AHSP Rendering



*Light Gauge Framing Model with LOD 500
15 Different Coordinated Levels*

2D PROJECT EXPERIENCE

2D PROJECT EXPERIENCE

DISNEY GC3

Glendale, CA
Hathaway Dinwiddie Construction Company

DISNEY CALIFORNIA ADVENTURE

Anaheim, CA
Walt Disney Imagineering

ALIANTE STATION INTERIOR

Las Vegas, NV
Penta Building Group

WYNN ENCORE - SPA FOYER

Las Vegas, NV
Tutor Saliba Corporation

DISNEY VACATION CLUB RESORT AND SPA

Anaheim, CA
Walt Disney Imagineering

MOVIDA FIRST FOOD BAR

Las Vegas, Nevada
Taylor International Corporation

THE GROVE AT FARMER'S MARKET

Los Angeles, CA
Whiting-Turner Contracting Company

PARIS CASINO & RESORT INTERIOR

Las Vegas, NV
Perini Building Company

PELICAN HILL RESORT & SPA

Newport Coast, CA
Snyder Langston



Wynn Encore Spa Foyer



The Grove at Farmers Market

FEATURED PROJECT

PELICAN HILL RESORT & SPA *2D Fabrication & Shop Drawings*

Client: Snyder Langston

Architect: Altevers Association

Completion Date: 2008

Square Footage: 127,622

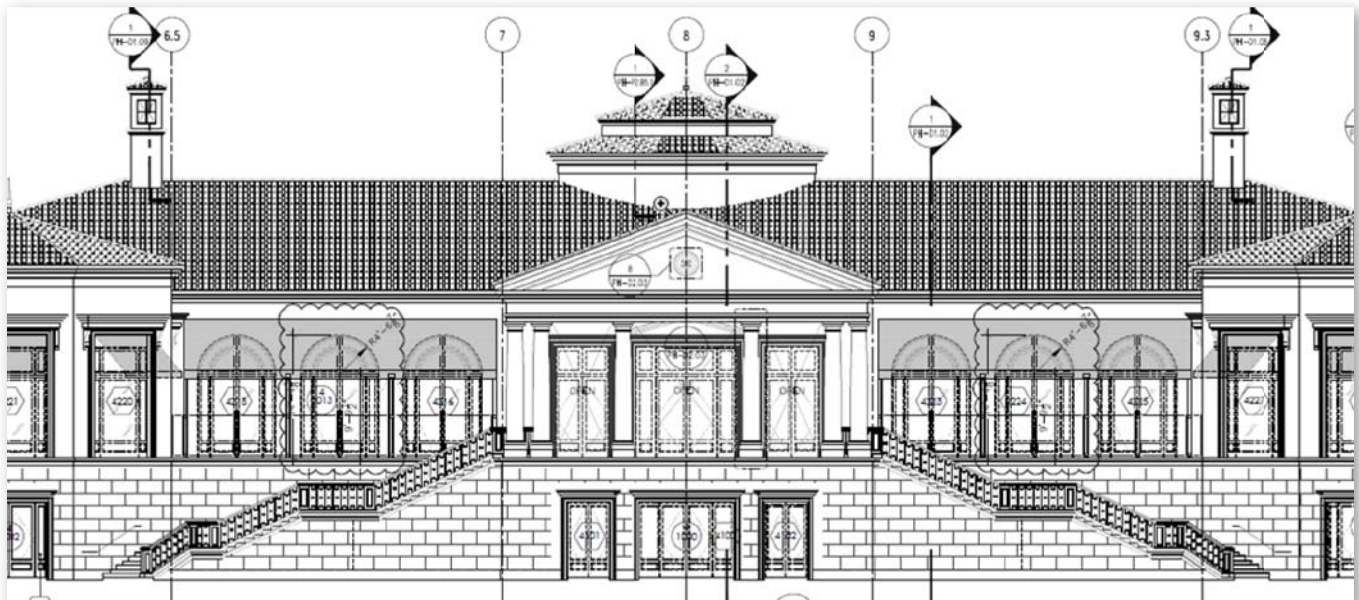
Construction Contract Value: \$20 MM

Construction Scope: Design Assist, Drywall, Interior and Exterior Architectural Shapes, Italian Plaster, Venetian Plaster, Lath, Metal Stud Framing, Sheathing, and Themed Exterior and Interior Build-Out.

2D Scope: Design Assist of Walls and Ceilings, Fabrication of Shop Drawings



Pelican Hill Resort & Spa

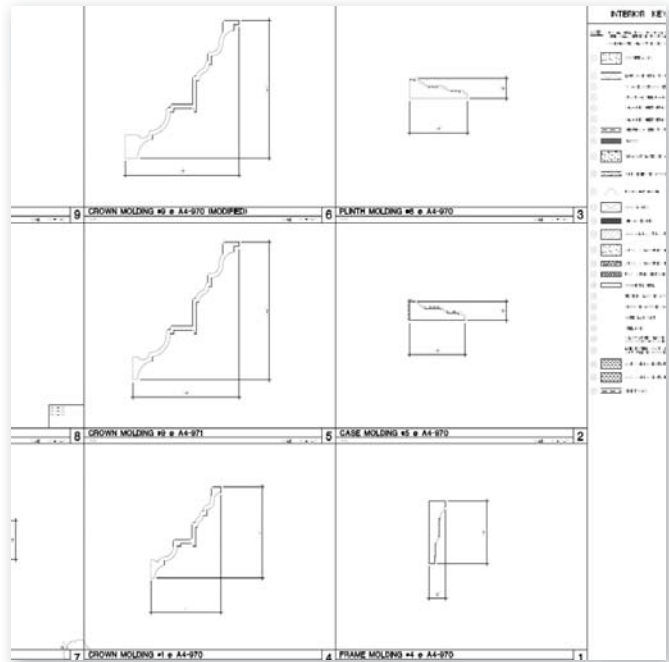


Detailed 2D Shop Drawings

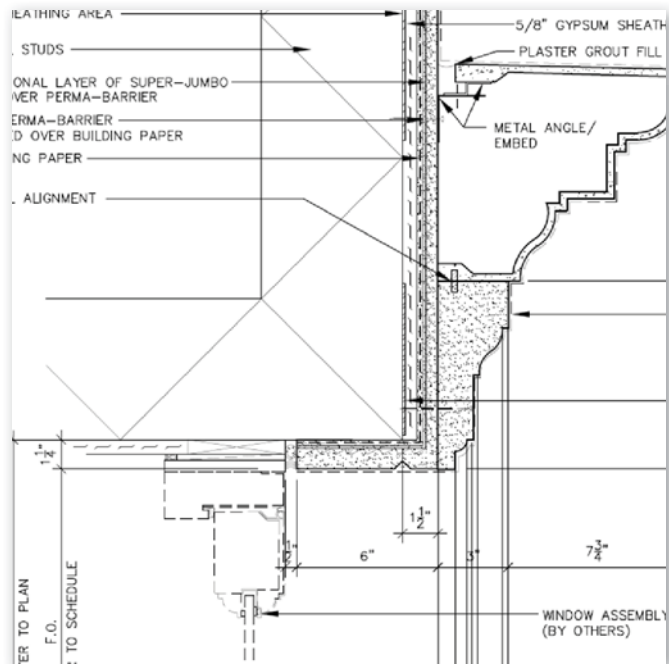
FEATURED PROJECT

PELICAN HILL RESORT & SPA 2D Fabrication & Shop Drawings

Continued



Fabrication Shop Drawing



Fabrication Detail

FEATURED PROJECT

PARIS CASINO RESORT *2D Fabrication & Shop Drawings*

Client: Perini Building Company

Architect: KGA Architecture / Dougall Design

Completion Date: 2005

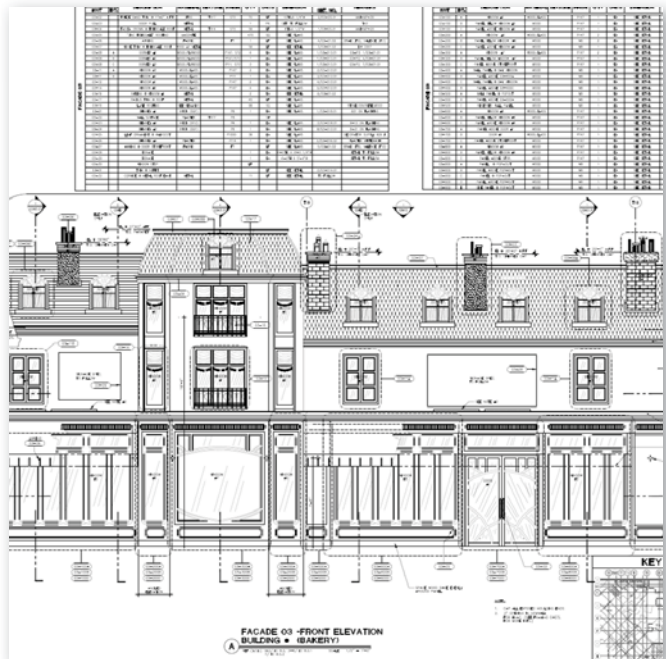
Construction Contract Value: \$23 MM

Construction Scope: Design Assist Package including: Miscellaneous Iron Features, Light Gauge Metal Framing, Sheathing, Plaster Systems, Cast (GFRG, GFRC), Decorative Metalwork, Faux Paint.

2D Scope: Design Assist of Walls and Ceilings, Fabrication of Shop Drawings



Paris Casino Resort

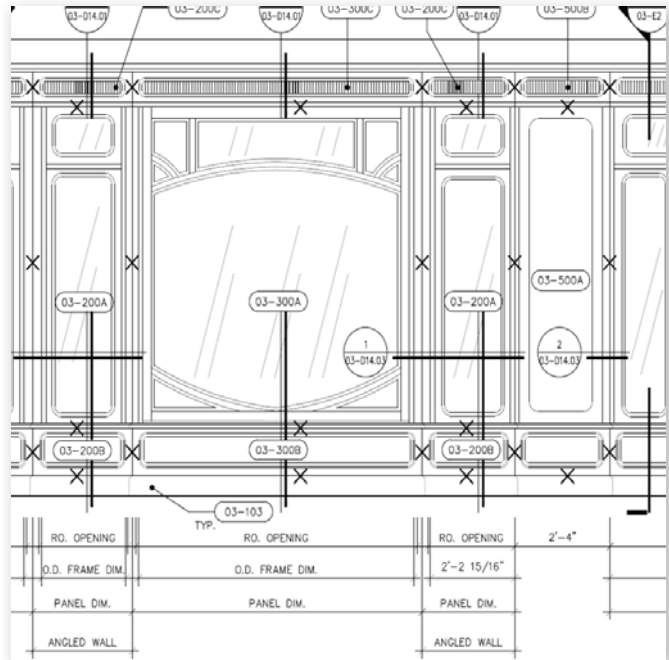


Detail 2D Shop Drawings with Itemized Part Numbers

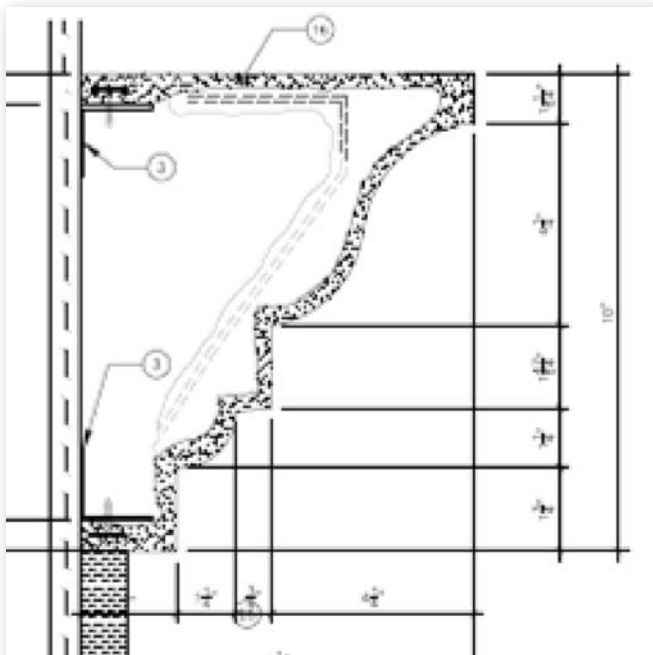
FEATURED PROJECT

PARIS CASINO RESORT 2D Fabrication & Shop Drawings

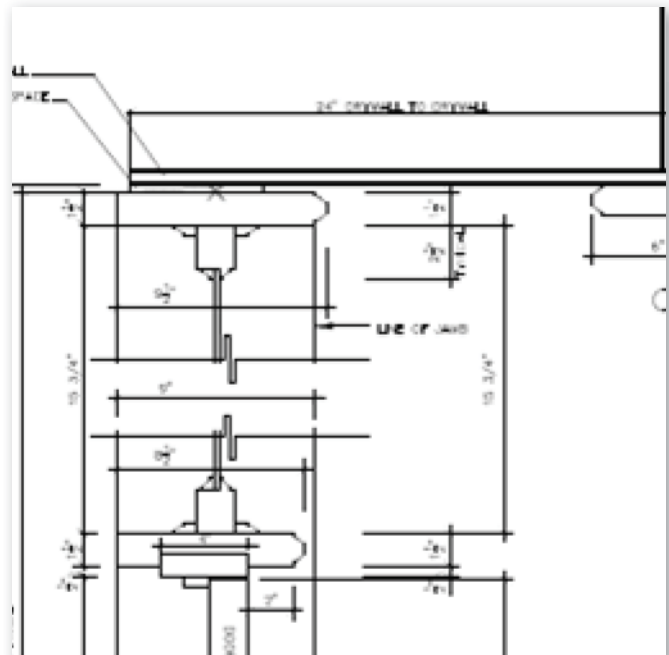
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Detail 2D Shop Drawings with Itemized Part Numbers



Fabrication Details



Millwork Details