WHAT YOU WANT TO KNOW ABOUT THE DESIGN & CONSTRUCTION PROCESS

But Were Too Afraid to Ask
Meet Your Presenters

About Granger Construction

- Established in 1959
- Extensive Experience in Building for a Variety of Markets including Government, Corrections and Education, to name a few
- Lansing, Novi and Grand Rapids

Glenn Simon, VP

- 27 years in the Industry
- 20 years with Granger
- Focused on Government and Energy Markets, Project Staffing & Operations
Meet Your Presenters

About Fishbeck, Thompson, Carr and Huber (FTCH)

- Established in 1956
- Professional Architectural/Engineering, Civil Engineering, Environmental and Construction Services Consulting Firm
- Grand Rapids, Kalamazoo, Lansing, Novi and Macomb

Dan Durkee, AIA, VP

- 37 years Industry Experience
- 21 years with FTCH, Focused on Municipal Projects
- Senior Architect
- LEED Accredited Professional
Goals of Presentation

- Familiar with Steps Preceding a Project
- Understanding of Elements that Promote Success
- Mindful of Considerations During a Project
- Increased Awareness of Trends
Today’s Discussion

- Project Need
- Selecting the Best Team
  - Internal Team
  - Designer
  - Constructor
- Establishing Goals
- Define the Project
- Project Implementation
- Trends
- Wrap Up
- Questions
Project Need
Thinking About a Project?

Validate Need

- Establish ‘Broad Brush’ Goals
  - Where will you be in 10 years…20 years?
- Estimate Current and Projected Space Needs
  - Services Provided
  - Space Consolidation
Thinking About a Project?

Validate Need

- Critical Success Factors
  - Budget and Funding
  - Schedule
  - Location
  - Site and Building Design
Internal Team
Structure and Skills

- Finance
- Facilities/Safety/Security
- Legal
- Real Estate
- Marketing and Communications
- Architecture and Engineering
- Construction
- Owner’s Representative
Team Considerations

Early Discussions
- Renovation or New Building?
- Existing Site or New?
- Financing Options
- Community Support
Delivery Methods
Delivery Methods

- General Contracting
- Construction Management
- Design-Build
General Contracting

- Also Referred to as “Hard Bid”
- Sequential:
  - Owner Hires Architect
  - Architect Completes Design
  - Owner Obtains Bids from Contractors
- Usually a Lump-Sum Contract

Things to Consider:
- Time is not a crucial factor
- Funding sources may require GC
- Owner has sufficient resources to engage more fully in process
- Competitive pricing (however, with risk)
- Overall cost not known until bids are received
Construction Management

- Construction Manager (CM) is an Extension of Your Staff
- Owner has Choice of Holding Trade Subcontracts
- CM Provides Early Recommendations On:
  - Estimating / Budgeting
  - Scheduling
  - Design and Constructability
- Focus is on Local Participation
- Usually a Fee-Based Contract

Things to Consider:

- Time is somewhat critical
- Collaborative team environment
- Focus on up-front coordination
- Trade contractors are vetted for competency and financial strength
- Less risk to Owner
Design-Build

- Designer-Builder Provides Both Design and Construction Services
- Often Key Trades are Hired Early On to Assist with:
  - Design
  - Pricing
  - Coordination
  - Schedule
- Usually a Guaranteed Maximum Price (GMP) Contract

Things to Consider:

- Time is critical
- Ultimate collaboration is desired
- Processes become more efficient
- More stakeholders to support the project and spread the risk
Selecting the Best Team
Selecting the Best Team

- Architecture/Engineering Firm
- Construction Manager
- Design-Build Team

Things to Consider:

- Qualifications Criteria – design and construction experience in your project type; references, services required

- Selection Process – Requests for Qualifications/Proposal (RFQ/P), Interviews to test Team chemistry, collaborative nature
Selecting the Best Team

- Qualifications-Based Selection (QBS) Process Offers a Guideline for Evaluation and Selection of A/E
  - http://www.qbs-mi.org
- Supported and Utilized by Numerous Federal and State Agencies and Local Municipalities
Qualifications-Based Selection

Owner Issues a Request for Qualifications (RFQ)

Firms Submit Qualifications for Evaluation

Owner Short-lists Firms to be Interviewed

Interviews are Conducted and Firms are Ranked
Qualifications-Based Selection

1. Owner Invites the Highest-Ranked Firm to Assist in Defining a Detailed Scope of Work
2. Firm Submits a Detailed Scope and Fee Proposal
3. If the Proposal Fee is Acceptable, the Owner and Firm Work Together to Develop a Final Agreement
4. If an Agreement Cannot be Reached, Negotiations Begin with the Next-Most-Qualified Firm
Clarify Need
Clarify Needs

Programming

- Document Existing Space Use
  - Review Existing Facilities and Plans
  - Generate Base Program Spreadsheet

- Identify Projected/Future Space Needs
  - Interview Key Staff
  - Investigate Demographic Projections
  - Review/Tour Recent Comparable Projects
Clarify Needs

- Identify Owner Project Requirements (OPR)
  - Site Requirements
  - Building Design and Construction
  - Mechanical and Electrical Systems
  - Furnishings, Fixtures and Equipment (FF&E)

- Review Sustainability Goals
  - Leadership in Energy and Environmental Design (LEED) Certification
MSU Grand River Parking Ramp
Establishing Project Goals
Project Goals Criteria

- Critical for Success
- Guide for Decision Making
- Measurable
- Published and Communicated
- Don't Rank Goals
- Consider Risk / Reward Tied to Goals
Define Common Goals

- Budget
- Schedule
- Safety
- Exceptional Teamwork
- Project Transparency
- Rapid Mitigation of Unforeseen Issues
- Everyone is Successful
- Enhance Operational Efficiencies
- Minimize Requests for Information
- Minimize Costly Change Orders
- High Quality at All Levels - *the First Time*
Sample Project Dashboard
Sample Project Dashboard

SAFETY
- 0 Recordable Incidents
- 0 Lost Time
- 7,692 Days Worked through March 2015
- 0.0 Incident Rate
- 393 Safety Trainings Attendance Count

Recordable Incident Rates
- OSHA
  - Jan: 47
  - Feb: 53
  - Mar: 50

Schedule
- Project Completion Dates
- 39% of Duration

CUSTOMIZED
Sample Project Dashboard

CUSTOMIZED
Sample Project Dashboard

**Important Issues**
- Crane Lift - June 20
- Substation Replacement
- Construction Detour Planning

**Measurables**
- 293 Submittals
  - Average Response: 11 Days
  - Target: 10 Days
- 168 RFIs
  - Average Response: 9 Days
  - Target: 5 Days

**Diversity Participation**
- 10% No. of Solicited Trade Contractors
- 25% Awarded Trade/Sub-contracts Value

**Sustainability**
- 28% IAQ Plan - Negative Air
- 25% Low or No VOC Products
- 20% FSC Wood
- 10% Commissioning
- 80% Construction Activity Pollution Prevention Plan

**Customized**
Risk Mitigation

- Identify Risks to Project Success
- Unlikely to Certain
- Low Impact to High Impact
- Assemble Strategies to Mitigate Each
Risk Mitigation

- **Certain**
  - A. Weather
  - B. Price Escalation
  - C. Slow Payments
  - D. Environmental Issues
  - E. Political Fallout
  - F. Scope Creep
  - G. Limited Labor Pool
  - H. Slow Review Process
  - I. Subcontractor Default

- **Unlikely**
  - F. Scope Creep
  - H. Slow Review Process
  - I. Subcontractor Default

- **Low Impact**
  - A. Weather
  - B. Price Escalation
  - C. Slow Payments
  - D. Environmental Issues
  - E. Political Fallout

- **High Impact**
  - A. Weather
  - B. Price Escalation
  - C. Slow Payments
  - D. Environmental Issues
  - E. Political Fallout
MTU Great Lakes Research Center (GLRC)
Risk Mitigation

**Type**
- Design

**Risk**
- Owner Changes

**Consequences**
- Delays, Re-work, Cost

**Mitigation Strategy**
- Clear Initial Understanding of Owner's Objectives
Building Information Modeling (BIM)
Risk Mitigation

**Type**
- Design
- Construction

**Risk**
- Owner Changes
- Safety

**Consequences**
- Delays, Re-work, Cost
- Injury, Litigation, Delays

**Mitigation Strategy**
- Clear Initial Understanding of Owner's Objectives
- Pre-Task Hazard Analysis
Risk Mitigation

Type

- Design
- Construction
- Community

Risk

- Owner Changes
- Safety
- Public Resistance

Consequences

- Delays, Re-work, Cost
- Injury, Litigation, Delays
- Delays, Costs, Negative Publicity

Mitigation Strategy

- Clear Initial Understanding of Owner's Objectives
- Pre-Task Hazard Analysis
- Community Information Sessions
Community Meetings
Define The Project
Define The Project

- **Design Process**
  - Programming
    - Define Project and Space Needs
  - Schematic Design
    - Explore and Select Conceptual Alternatives
Define The Project

- **Design Process Continued…**
  - Design Development
    - Refine Plans and Elevations
    - Determine Building Systems
      - Civil/Site
      - Structural, Mechanical and Electrical
    - Select Interior Design and Finishes
  - Construction Documents
    - Detailed Drawings and Specifications for Bidding
Implementation
Project Implementation

- Competitive Bidding/ Negotiating Trades Work
- Trade Contractor Selections/ Approvals/Award of Contracts
- Permit Applications
- Construction

Things to Consider:
- Timely decisions
- Communication plan
- Reporting content, format and frequency
- Document sharing
- Progress meetings
- Billing process
- Executive leadership
Trends
Trends

Technology

- Building Information Modeling (BIM)
  - Enhanced Designer/Contractor/Subcontractor interface
  - Improved Drawings and Bidding
  - Minimizes Requests for Information (RFIs) and Field Conflicts During Construction
    - Clash Detection During Design
Trends

Technology

- High-Definition 3-D Laser Scanning
  - Cost Effective Tool to Document Existing Conditions
  - Highly Accurate 3-D ‘Point Cloud’
  - Can be Utilized with BIM Model
Trends

Project Delivery

- Design-Build
  - Early Involvement and Input by Construction Professional
  - Provides Early Cost Modeling and Commitment
- Integrated Project Delivery (IPD)
  - 3 Party Contract – Owner/Designer/Constructor
  - Shared Risk and Reward
Trends

Sustainability

- Leadership in Energy and Environmental Design – LEED
  - Continued Development of Program – Version 4
  - Enhanced Requirements for Certification – Energy
- Other Sustainable Programs Available
  - Green Building Initiative - Green Globes
  - Society of Environmentally Responsible Facilities – SERF
  - Many others
Wrap Up
Wrap Up

- Familiar with Steps Preceding a Project
- Understanding of Elements that Promote Success
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