PROJECT MANAGEMENT 101
MLGMA WINTER INSTITUTE
FEBRUARY 4, 2016

Dan Durkee, AIA, LEED AP, Senior Architect
Fishbeck, Thompson, Carr & Huber, Inc.
PROJECT MANAGEMENT 101

Presentation Outline

• Brief FTCH profile
• Defining project needs and goals
• Establishing a preliminary budget
• Selecting design and construction professionals
• Project delivery options
• Navigating the design and construction process
• Methods for stakeholder and public input
• Trends in sustainable design and project delivery
• Questions
FTCH PROFILE

• Established in 1956 as a multidiscipline firm

• Architecture/Engineering | Civil | Environmental | Construction Management

• Over 360 Staff in Michigan, Ohio, and Indiana

• Grand Rapids | Novi | Macomb | Lansing | Kalamazoo | Cincinnati | Columbus | Lafayette
Over 70% municipal/governmental work

City/Township Halls | Libraries | Community Centers
Public Safety | Public Works | Infrastructure
DEFINING PROJECT NEEDS AND GOALS

Design Process

• Programming
• Schematic Design
• Design Development
• Construction Documents
• Bidding and Contract Award
• Construction Administration
DEFINING PROJECT NEEDS AND GOALS

**Programming** is the first stage of the design process in which current and projected space needs, goals, and values of the owner and user are identified and documented for all areas including:

- General administrative – offices, conference
- Specialized functions – laboratories, equipment
- Public and common – lobby, restrooms, meeting
- Circulation – corridors, stairs, elevator
- Support – mechanical, electrical, storage
DEFINING PROJECT NEEDS AND GOALS

Programming Process

• Gather information about owner’s current and projected space needs
  • Tour existing facility and operation
  • Distribute questionnaire and interview key staff
  • Calculate current areas from existing floor plan
• Research general demographic trends and projections
  • Regional Planning Commission data
DEFINING PROJECT NEEDS AND GOALS
DEFINING PROJECT NEEDS AND GOALS

Programming Process

• Tour other similar facilities
  • Photograph areas and details
  • Talk with owner to review lessons learned
    • What would you do the same?
    • What would you do differently?
• Review industry standards for specific building type
  • Wisconsin Public Library Space Needs Planning Guide
DEFINING PROJECT NEEDS AND GOALS

Roscommon Area District Library - Space Needs Worksheet

Fishbeck, Thompson, Carr & Huber, Inc. Project No. G110508SD

Date: July 14, 2011
Updated: July 22, 2011; August 10, 2011

By: Anders Dahlgren, Consultant for Public Library Construction and Planning, Wisconsin Department of Public Instruction

Step 1. Service Population
a. Current 2010 direct service population .......................................................... 6,295
b. Projected 20 year increase to direct service population (EMCOG estimated 3.3%) 209
c. Projected 2030 direct service population ......................................................... 6,503
d. Summer increase to service population (estimated 20%) ................................. 1,391
e. Projected 2030 design service population ....................................................... 7,894

Step 2. Collection Space
a. Books
design population x volumes per capita = 7,804 x 3.5 = 27,314 volumes
27,314 volumes / 8 items per sq.ft. ........................................................................... 3,414 sq.ft.
b. Audio Recordings
design population x items per capita = 7,804 x 0.0125 = 98 items
98 items / 10 items per sq.ft. ..................................................................................... 10 sq.ft.
c. Video Recordings
design population x items per capita = 7,804 x 0.116 = 905 items
905 items / 10 items per sq.ft. .................................................................................. 91 sq.ft.
d. Periodical display
design population x titles per capita = 7,804 x 0.01000 = 78 titles
78 titles / 1 item per sq.ft. ....................................................................................... 78 sq.ft.
Total projected collection ....................................................................................... 28,395
e. Digital Resources (computer stations)
16 terminals x 50 sq. ft. per terminal ...................................................................... 750 sq.ft.
TOTAL (a+b+c+d+e) ............................................................................................... 4,343 sq.ft.
DEFINING PROJECT NEEDS AND GOALS

Programming Process

• Prepare final program document including:
  • Current and projected space needs for each building area
  • Critical success factors for the project
  • Summary of staff comments and recommendations
  • List of preferred elements from tour of similar facilities

• Program is an important tool and becomes the building block for the Schematic Design process

“First define then design.”
# Defining Project Needs and Goals

Cascade Charter Township  
Facility Master Plan and Administrative Office Design Study  
Preliminary Program for Office Areas

Fishbeck, Thompson, Carr & Huber, Inc.  
Project No. G140721  
December 4, 2014

<table>
<thead>
<tr>
<th>OFFICE AREAS</th>
<th>EXISTING</th>
<th>PROJECTED</th>
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<tbody>
<tr>
<td></td>
<td>Department/ Function</td>
<td># of Staff</td>
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<tr>
<td>1 ADMINISTRATION</td>
<td>a Supervisor</td>
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<tr>
<td></td>
<td>b Manager</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>c Senior Accountant</td>
<td>1</td>
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<tr>
<td></td>
<td>d Human Resources (future)</td>
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<tr>
<td></td>
<td>e Receptionist/Support</td>
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<tr>
<td></td>
<td>f Accounting Clerk (future)</td>
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<tr>
<td></td>
<td>g Public Computer Counter Station</td>
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<tr>
<td></td>
<td>h Receipt Processing</td>
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<td>Subtotal - Admin. (NSF)</td>
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<table>
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<tr>
<th>2 ASSESSING</th>
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<td></td>
<td>Department/ Function</td>
<td># of Staff</td>
</tr>
<tr>
<td></td>
<td>a Assessor</td>
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<td></td>
<td>b Senior Residential Appraiser</td>
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<td>c Residential Appraiser</td>
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<tr>
<td></td>
<td>d Clerk (future)</td>
<td>0</td>
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<td></td>
<td>e Deed Counter Station</td>
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<td>486</td>
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ESTABLISHING A PRELIMINARY BUDGET

What Impacts Project Costs?

• Quantity – Programmed areas
• Quality – Materials, finishes, and systems
• Schedule – Labor time
• Location – Labor rates

“Quality, cost, time...pick two.”
ESTABLISHING A PRELIMINARY BUDGET

Preliminary Budgeting Options

Programmed areas and rough square foot costs
  • Published cost data guides – RS Means, Dodge
  • Past similar projects – regional and inflationary adjustments
  • Quickest but most risky

Schematic Design for your specific project
  • Accounts for specific site and building conditions
  • Provides vision for project design and promotion
  • Added time and expense but most accurate approach
ESTABLISHING A PRELIMINARY BUDGET

Design Process

- Programming
- Schematic Design
- Design Development
- Construction Documents
- Bidding and Contract Award
- Construction Administration
Site Environment

Roscommon Area District Library
Site Analysis

Schematic Design

Roscommon Area District Library
Site Plan

Schematic Design

Roscommon Area District Library
Floor Plan

Schematic Design

Roscommon Area District Library
# ESTABLISHING A PRELIMINARY BUDGET

## Roscommon Area District Library

**PROJECT COST MODEL**

*July 22, 2011*

Fisher, Thompson, Carr & Huber, Inc. - Project No. 01060100

<table>
<thead>
<tr>
<th>Cost Line</th>
<th>Conceptual Design</th>
<th>Construction Cost Line</th>
<th>Option 1</th>
<th>Option 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cost</td>
<td>Design</td>
<td>Total</td>
<td>Cost</td>
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<tr>
<td>Building &amp; Site Construction Costs</td>
<td>$650,000</td>
<td>$100,000</td>
<td>$750,000</td>
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<tr>
<td>A. New Building Construction</td>
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<td>$100,000</td>
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<td>B. Site Improvements</td>
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<td>$100,000</td>
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<td>C. Sustained Building and Site Construction Costs</td>
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<td>$100,000</td>
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<tr>
<td>D. Contingency - 10%</td>
<td>$650,000</td>
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<td>$1,300,000</td>
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<td>E. Total Building &amp; Site Construction Costs</td>
<td>$650,000</td>
<td>$100,000</td>
<td>$750,000</td>
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### Supplemental Building Costs - Allowances

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<tr>
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<tbody>
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<td>A. Technology</td>
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<td>B. Technology &amp; Equipment</td>
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<td>C. Access to Building System Analyses</td>
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<td>D. Sustained Building Cost Allowances</td>
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<td>E. Contingency - 10%</td>
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<td>F. Total - Supplemental Building Cost Allowances</td>
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### Project Support Costs - Allowances

<table>
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<th>Conceptual Design</th>
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<tbody>
<tr>
<td>A. Administrative and Legal Expenses</td>
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<td>$10,000</td>
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<td>B. Campaign and Preliminary Planning Costs</td>
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<td>$10,000</td>
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<td>D. AV/C Commissioning</td>
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<td>E. Interior Design Professional Service Fees and Expenses</td>
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<tr>
<td>F. Construction Testing/Site Borings/Inspections</td>
<td>$20,000</td>
<td>$20,000</td>
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<td>G. Site Acquisition</td>
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<td>H. Mining Expenses</td>
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</table>

### Total Estimated Project Costs

- Roscommon Area District Library
  - Grand Total Estimated Project Cost - Range: $1,400,000 - $2,000,000
  - Grand Total Estimated Project Cost - Average: $1,650,000
## Establishing a Preliminary Budget

<table>
<thead>
<tr>
<th>Facility</th>
<th>Year Completed</th>
<th>Type of Construction</th>
<th>Total Cost</th>
<th>Bldg Only Construction Costs</th>
<th>Bldg Site Construction Costs</th>
<th>Cost Adjusted to 10-2014</th>
<th>Furnishings Cost</th>
<th>Furnishings Costs</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>KOU/Lingleford Branch (Lowell)</td>
<td>1997</td>
<td>New</td>
<td>$8,396,065</td>
<td>$136</td>
<td>$196</td>
<td>$196</td>
<td>$116</td>
<td></td>
<td></td>
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<tr>
<td>KOU/Rutland (Greenfield Library)</td>
<td>1999</td>
<td>New</td>
<td>$2,396,065</td>
<td>$136</td>
<td>$196</td>
<td>$196</td>
<td>$116</td>
<td></td>
<td></td>
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<tr>
<td>BPR/Keene Branch</td>
<td>2000</td>
<td>New</td>
<td>$1,396,065</td>
<td>$136</td>
<td>$196</td>
<td>$196</td>
<td>$116</td>
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<td>2001</td>
<td>Add/Remake</td>
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<td>$196</td>
<td>$196</td>
<td>$116</td>
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<td></td>
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<tr>
<td>BPR/Medford Square-Bendd</td>
<td>2001</td>
<td>New</td>
<td>$56,065</td>
<td>$136</td>
<td>$196</td>
<td>$196</td>
<td>$116</td>
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<td>Renovation</td>
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<td>BPR/Union Leonard Branch</td>
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<tr>
<td>BRL/Walton Branch</td>
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<td>Add/Remake</td>
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<td>$196</td>
<td>$196</td>
<td>$116</td>
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<tr>
<td>BPR/West-Cape</td>
<td>2003</td>
<td>Renovation</td>
<td>$40,065</td>
<td>$136</td>
<td>$196</td>
<td>$196</td>
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<td>Hatton Area Public Library</td>
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<tr>
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<td>$196</td>
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<td>BRL/Exeter Branch</td>
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<td>BPL/Island View Branch</td>
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SELECTING DESIGN PROFESSIONALS

Approaches to A/E Selection

• Reference from an associate or peer
• Select from list of as-needed service providers
  • Common with smaller projects
• Request for qualifications and proposals - RFQ/RFP
  • Common with larger projects
  • Usually involves shortlist and interview process
• Qualifications based selection (QBS)
  • Assures qualifications are primary selection criteria
SELECTING DESIGN PROFESSIONALS

Qualifications Based Selection

• QBS process offers a guideline for evaluation and selection of A/E

• Supported and utilized by numerous federal and state agencies and local municipalities including the GSA

http://www.qbs-mi.org
SELECTING CONSTRUCTION PROFESSIONALS

Project Delivery Options

• Design-Bid-Build
  • Traditional General Contractor (GC)

• Design-Build
  • Use growing in municipal market

• Construction Management (CM)
  • At-risk or agency contract

• Integrated Project Delivery (IPD)
  • Three-party shared risk/reward

• Integrated Services
  • Blend A/E with construction management
DESIGN-BID-BUILD
DESIGN-BUILD
CM AT-RISK
CM AGENCY

Owner

Architect/Engineer

Construction Manager

General Contractor

Subcontractors
INTEGRATED PROJECT DELIVERY

- Architect
- Engineer
- Construction Manager
- Owner
- Mechanical
- Concrete
- Landscape
- Structural
- Electrical
- Civil
- Specialty Consultants
- Interior Design
INTEGRATED SERVICES
NAVIGATING THE DESIGN AND CONSTRUCTION PROCESS

Design Process

• Programming
• Schematic Design
• **Design Development**
• Construction Documents
• Bidding and Contract Award
• Construction Administration
DESIGN DEVELOPMENT

Preparation of Design Development Drawings and Outline Specifications

• Architectural – Floor plan, sections, and interior finishes
• Civil – Site development, utilities, and landscaping
• Structural – Foundations and framing systems
• Mechanical – HVAC and plumbing systems
• Electrical – Power and lighting systems
• Budget – Updated cost estimate
• Schedule – Project timeline
NAVIGATING THE DESIGN AND CONSTRUCTION PROCESS

Design Process

• Programming
• Schematic Design
• Design Development
• Construction Documents
• Bidding and Contract Award
• Construction Administration
CONSTRUCTION DOCUMENTS

Preparation of Bidding Documents

• Drawings and specifications necessary to illustrate the requirements for the construction of the project
• Comply with local zoning and code requirements
• Coordinate periodic reviews with owner
• Review and update cost estimate and schedule
• Submit for review and approval by permitting agencies
NAVIGATING THE DESIGN AND CONSTRUCTION PROCESS

Design and Construction Process

- Programming
- Schematic Design
- Design Development
- Construction Documents
- Bidding and Contract Award
- Construction Administration
BIDDING AND CONTRACT AWARD

Coordinate and Assist with Bidding Process

• Advertisement for bids
• Reproduction and distribution of bidding documents
• Conduct pre-bid conference
• Prepare and release addenda as necessary
• Review bids and make recommendation for award
• Assist with preparation of construction contract
Design and Construction Process

• Programming
• Schematic Design
• Design Development
• Construction Documents
• Bidding and Contract Award
• Construction Administration
CONSTRUCTION ADMINISTRATION

Review Progress and Quality of Construction

• Make periodic site visits throughout construction
• Review and respond to Requests for Information (RFI)
• Review shop drawing and material submissions
• Review applications for payment
• Perform final punch list review of completed project
• Collect equipment manuals and coordinate owner training session
• Conduct warranty site visit
NAVIGATING THE DESIGN AND CONSTRUCTION PROCESS

Owner Involvement and Commitment

DESIGN

• Review and coordinate design contract
• Attend regular project team meetings
• Respond to questions from architect/engineer
• Update staff on project status

CONSTRUCTION

• Review and coordinate construction contract
• Attend regular construction progress meetings
• Respond to questions from contractors
• Review and approve applications for payment
NAVIGATING THE DESIGN AND CONSTRUCTION PROCESS

Internal Project Management

• Planning and design
• Construction
• Furnishings and equipment
• Data, communication, and security systems
• Move management

Optional Approaches

• Add staff/management support – full or part-time
• Retain a program management consultant
• Incorporate with integrated services
METHODS FOR PUBLIC INPUT

Public Informational Meetings

• Held periodically during the programming and design process
• Serves to keep the public informed of design and progress on the project
• Can be supplemented with print and e-mail communication
• Is not designed to solicit input from the public
METHODS FOR PUBLIC INPUT

Public Workshops or Charrette Sessions

• Key representatives of the design team and owner gather for design workshop in space available for extended period
• Opportunity for public to participate in the design process
• Occurs early in design and held over a 1 to 2 day period
• Ideas are generated quickly and evaluated in ‘real time’
• Basic conceptual design is defined and refined later
• Need to be sensitive to all ideas presented – good and bad
• Can save time but be costly due to time commitment of team
TRENDS IN SUSTAINABLE DESIGN

  - Program introduced in 2000 and continuing to be developed – now in Version 4
  - Enhanced requirements for certification – especially in energy conservation

- Other sustainable design programs available
  - Green Building Initiative – Green Globes
  - Society of Environmentally Responsible Facilities (SERF)
  - Many others
TRENDS IN SUSTAINABLE DESIGN

The number of points a project earns determines the level of LEED certification.

There are four levels of certification - the number of points a project earns determines the level of LEED certification that the project will receive. Typical certification thresholds are:

- **CERTIFIED**
  - 40-49 Points

- **SILVER**
  - 50-59 Points

- **GOLD**
  - 60-79 Points

- **PLATINUM**
  - 80+ Points
TRENDS IN SUSTAINABLE DESIGN

LEED is flexible enough to apply to all project types.

Each rating system groups requirements that address the unique needs of building and project types on their path towards LEED certification. Once a project team chooses a rating system, they'll use the appropriate credits to guide design and operational decisions.

There are five rating systems that address multiple project types:

- **BD+C**: Building Design and Construction
- **ID+C**: Interior Design and Construction
- **O+M**: Building Operations and Maintenance
- **ND**: Neighborhood Development
- **HOMES**: Homes
# TRENDS IN SUSTAINABLE DESIGN

## LEED v4 for BD+C: New Construction and Major Renovation

### Project Checklist

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<th>Credit</th>
<th>Category</th>
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### 1. Location and Transportation

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### 2. Sustainable Sites

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### 3. Water Efficiency

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### 4. Energy and Atmosphere

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### Materials and Resources

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### Indoor Environmental Quality

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### Innovation

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### Program Priorities

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TRENDS IN PROJECT DELIVERY

Interest in Alternative Project Delivery Models

DESIGN–BUILD

• Involvement by construction professional during design
• Early cost modeling and commitment – GMP
• More municipalities considering – Marquette MSC and SOCRRA

INTEGRATED PROJECT DELIVERY (IPD)

• Geared toward larger, complex projects
• Few local projects completed to date

INTEGRATED SERVICES

• Value in single source, open book delivery
ADDITIONAL RESOURCES

American Institute of Architects – AIA/Michigan
http://www.aiami.com/

Qualifications Based Selection – QBS/Michigan
http://www.qbs-mi.org/

Associated General Contractors – AGC/Michigan
http://www.agcmichigan.org/

Design-Build Institute of America - DBIA
http://www.dbia.org/Pages/default.aspx

US Green Building Council – LEED Certification
http://www.usgbc.org/
QUESTIONS
THANK YOU

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