

Alternative Project Delivery

Presented to
Theodore Roosevelt Expressway

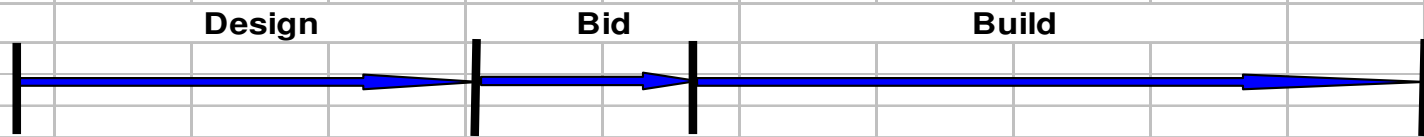


Why Owners Are Using Alternate Delivery Methods

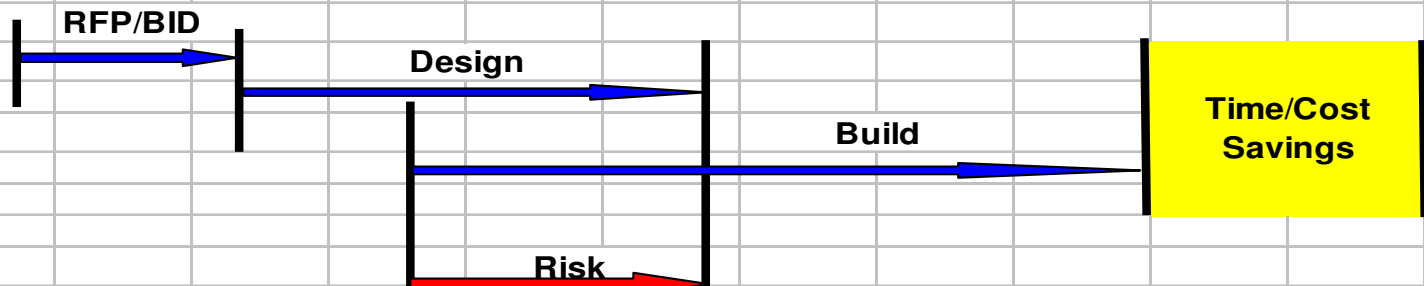
- Single point of Responsibility
- Engineering and Construction on the same team
- Errors are addressed-Not used as Claims
- Constructor involvement enhances Constructability
- Provides an Early Cost Commitment
- Fewer Changes- Less Litigation
- Faster – More cost-effective Project Delivery

Schedule

Typical Project Delivery



Design Build Delivery



Alternative Contract Delivery Methods

- Design-Bid-Build w/A + B, no excuse bonus, lane rental, other criteria
- Design-Build
- Design-Assist/CM @ Risk
- ECI with Off-Ramp Options
- Cost Plus
- Public Private Partnerships or PPP (Development Agreements and Concession Agreements)

Alternative Delivery Methods

- D-B-B (A + B, lane rental, no excuse bonus)
 - Traditional delivery method (unit cost)
 - Accounts for schedule and MHT performance
 - Some QBS elements
- Design-Build
 - Single-source project delivery
 - Lump-sum price
 - Provides substantial time and cost savings
- Design-Assist (CM @ Risk)
 - Qualification-based selection (QBS)
 - Partnership between contractor and designer under separate contracts
 - Tiered development of price

Alternative Delivery Methods (con't)

- ECI with Off-Ramps
 - Allows for design and const. to work together
 - Does give the Owner options to re-evaluate D-B team
- Cost Plus
 - Best applied to high-risk scopes of work (tunnels, emergency repairs)
 - Established rates, fees
 - Minimal contractor contingencies
- PPP (development/concession)
 - Contractor assumes substantial development risk
 - Owner contracts for front-end project development support, traditional D-B services and back-end O&M
 - Expanded team

Delivery Comparisons

Metric	D-B v D-B-B	CM@R v. D-B-B	D-B v. CM@R
Unit Cost	6.1% lower	1.6% lower	4.5 % lower
Const. Speed	12% faster	5.8% faster	7% faster
Delivery Speed	33.5% faster	13.3% faster	23.5% faster
Cost Growth	5.2% less	7.8% more	12.6% less
Schedule Growth	11.4% less	9.2% less	2.2% less

Not for every project

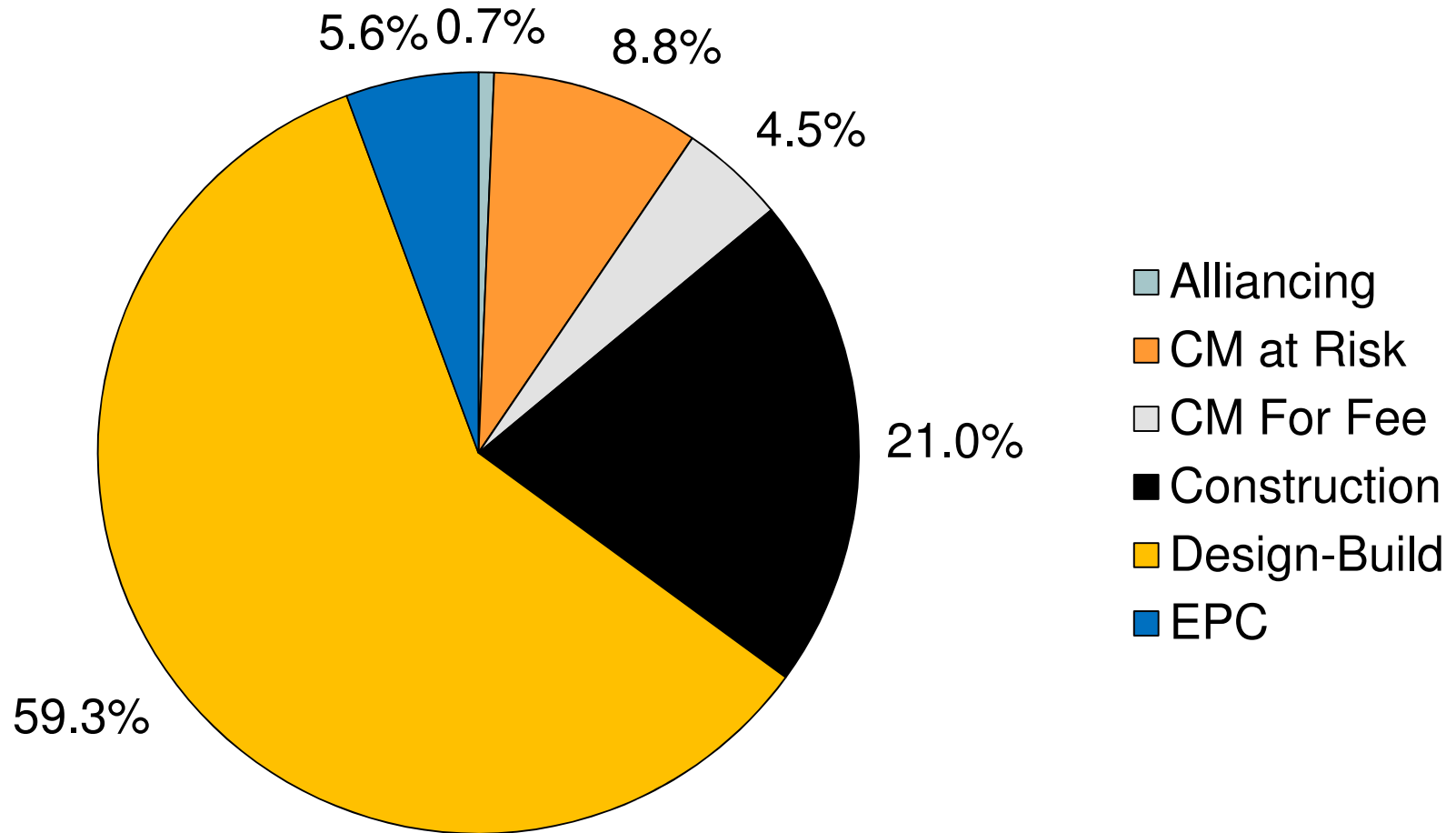
One of a number of project delivery methods

- Design-bid-build
- Design-build
- Comprehensive Development Agreement (CDA)

Design-build applicable to projects...

- Urgently required (need, support, and commitment)
- At 30% or less design (less is better)
- Of any size - SEP 15 ramifications (smaller projects)
- Balance RFQ-RFP requirements with interest-job

2010 Backlog by Delivery Method



Subcontracting

Opportunities for Everybody
Counting on local help

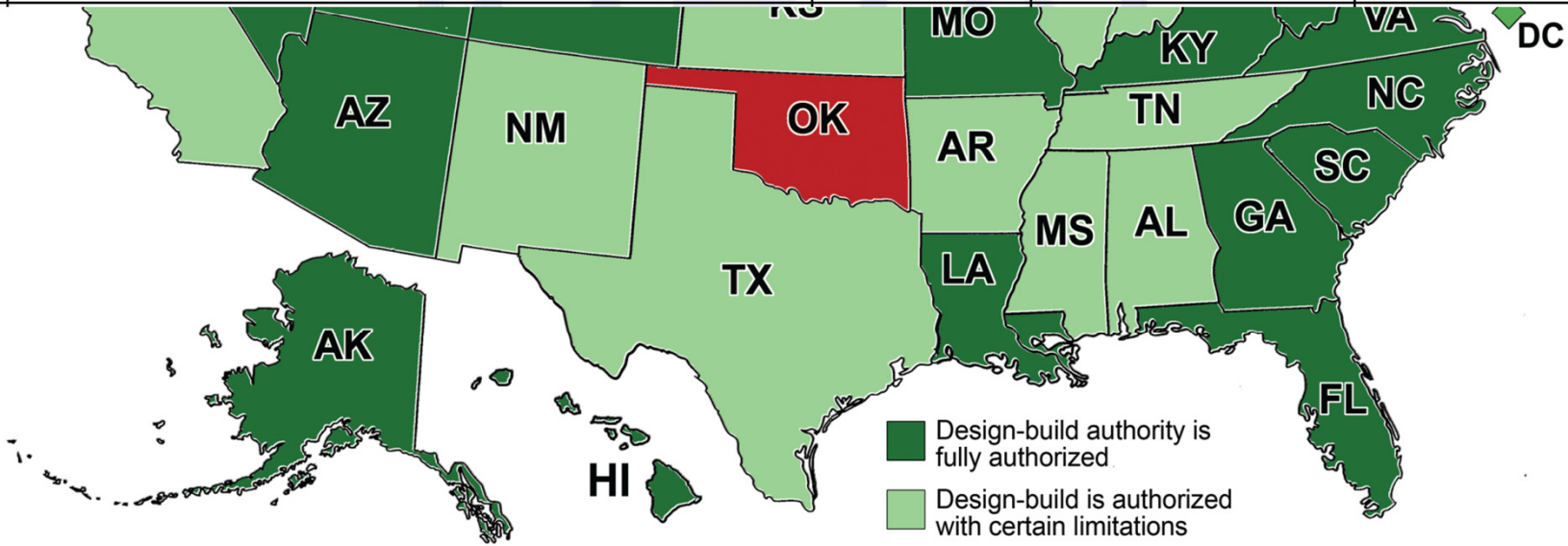
Project	Contract Value (\$ mil)	Subcontractors/Suppliers	Consultants	Subcontract/Supply Value (\$ mil)
MoDot 554	\$488	48	22	\$325
Northwest Pkwy	\$190	60	11	\$77
T-REX (I-25)	\$1,180	232	42	\$700
I-15	\$1,300	179	46	\$748
San Joaquin	\$800	75	10	\$348
<i>Hiawatha LRT*</i>	\$307	87	19	\$238
<i>Largo*</i>	\$218	34	12	\$114
<i>US 70*</i>	\$130	34	9	\$61

* *Non-Kiewit Projects*

2011 Design-Build State Laws for Transportation Procurement



State	Design-Build and Public Procurement Laws	Citations	Comments	Design-Build Licensing Requirements
ND	<ul style="list-style-type: none"> The DOT is authorized to use design-build on one signal light and one box culvert project The state water Commission is authorized to use design-build for construction of the Devils Lake Outlet Municipalities and political subdivisions are authorized to combine price and technical evaluation selection process. They must choose the lowest and best bid. 	<p>NDCC 24-02-47</p> <p>NDCC 61-02-23.2</p> <p>NDCC 44-08-01.1</p>		The Design-build firm is not required to be licensed if the subcontractor performing the work is licensed. 24-02-47



- Design-build authority is fully authorized.
- Design-build is authorized with certain limitations
- Design-build is not specifically authorized *



Selection Process



Owner's Preliminary Activities

- Complete preliminary design
- Execute intergovernmental and utility agreements
- Acquire permanent right-of-way
- Environmental permitting

Industry Reviews of Draft RFP

- Conduct individual meetings with shortlisted teams
- Consider issues that may have impacts on pricing
- Finalize industry review prior to Issuing RFP
- Key benefit: proposals that meet both parties' expectations

Final RFP Should Clearly Communicate

Project-specific goals

- Schedule
- Budget
- Quality
- Others...

Responsibility matrix

Evaluation criteria

Confidential ATC approval process







Risk Management Approach

What's best for project?

Who's best able to control risk?

















Owner's Risks

	Owner	Design-Builder
Hazardous waste		
Changes in law		
Force majeure events		
Differing site conditions		

Owner's Risks

	Owner	Design-Builder
Cost of design		
Constructibility of design		
Quantity growth		
Changes in subcontractor prices		
Changes in materials prices		

Shared Risks

	Owner	Design-Builder
Design liability		
Schedule		
Permits		
Right-of-way		
Utility relocations		
Unusual escalators		
Maint. during construction		
Commitments to third parties		

Shared Risks by Delivery Method

Risk	Design-Build	CMR	DBB	Cost Reimb.
Design cost	C	O	O	O
Constructibility of design	C	S	O	O
Quantity growth	C	O	O	O
Changes in sub pricing	C	O	C	O
Changes in material pricing	C	O	C	O
Design Liability	C	O	O	O
Scheduling	C	C	C	O
Permits	S	O	O	O
ROW	S	O	O	O
Utility Relocates	S	O	O	O
Third Party agreements	O	O	O	O

C – Contractor, O – Owner, S – Shared

Delivery Process



Partnering

Cornerstone of effective design-build

- New relationships
- Senior management participation essential
- Continues throughout project
- Create “one team” environment
- Focus on project goals

Provide issue escalation ladder

- Timely resolution of issues
- Minimize conflicts at production level

Establish “win-win” attitude

Co-Location

Design-build team

Key benefits

- Improved communications
- Accelerated decisions and project delivery
- Improved quality

Significantly enhanced
by owner participation



VG

MD

Task Forces

Organize project into manageable components

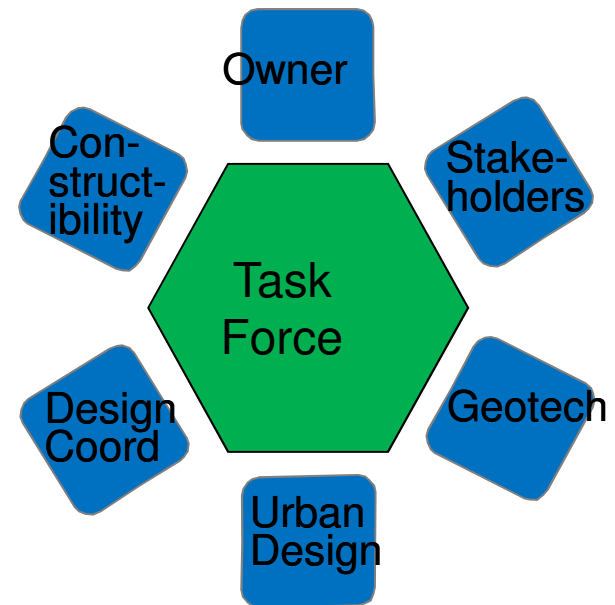
Bring team together

- Brainstorm
- Guide process

Participants

- Owner
- Design-builder
- Third parties as appropriate

Most effective when team empowered



Design Quality

Customary design check procedures

Over-the-shoulder reviews

Task forces

Design milestone reviews (30%, 65%, 100%)

- Technical reviews
- Interdisciplinary reviews
- Constructibility reviews
- Quality assurance audit

DOT design quality
verification



TC

LC

Constructability Reviews

Adequacy of plans and specs to construct work

Consistency with

- Design concept objectives
- Environmental requirements

Ability to construct work

- Practicality of achieving specified tolerances
- Access needed
- Interdisciplinary conflicts

Other factors affecting construction

- Site restrictions
- Equipment required

Early Construction Process

Necessary to achieve time savings

Contract should specifically allow

- Early construction of individual elements or segments of the project
- Use of “Approved for Construction” drawings, even if not 100% complete
- Establish agreed upon procedures for at-risk construction

Design-Builder's Role in Construction Quality

- Training
- Work plans
- Quality analyses
- Pre-activity meetings
- Process control inspection and testing
- Sampling, testing and inspections to be used for DOT acceptance
- Report to joint executive committee



Owner's Role in Construction Quality

Approve design-builder's Quality Management Plan

Participate in

- Quality Task Force
- Weekly quality meetings

Conduct verification tests

- OVT/QA statistical comparison
- Independent assurance of OVT/QA

Audit design-builder's

- Compliance with QMP
- Field processes (both construction and inspection)
- Quality records

Responsible for final acceptance

Community Relations

Owner's role

- Set overall message and direction
- Explain project's mission, funding
- Comments on design-builder's performance

Design-builder's role

- Coping messages

“One team, one voice”

Summary



Summary

Alternative Delivery offers numerous benefits

- Accelerated delivery
- Lower cost
- Equal or better quality
- Abundant subcontractor opportunities

Keys to success

- Effective industry review process
- Early availability of reliable project data
- Alternative technical concepts
- Risks assigned to those best able to mitigate
- Commitment to partnering

Overriding Themes of Successful Design-Build

Partnering

- Teamwork
- Collaboration
- Cooperation
- Commitment
- Communications

Discussion



Outline

- The Basics
- History
- Design-Build Experience
- Design-Build Benefits
- Selection Process
- Risk Allocation
- Delivery Process
- **Keys from the Contractor's Perspective**
- Summary



The Basics



Kiewit Corporation

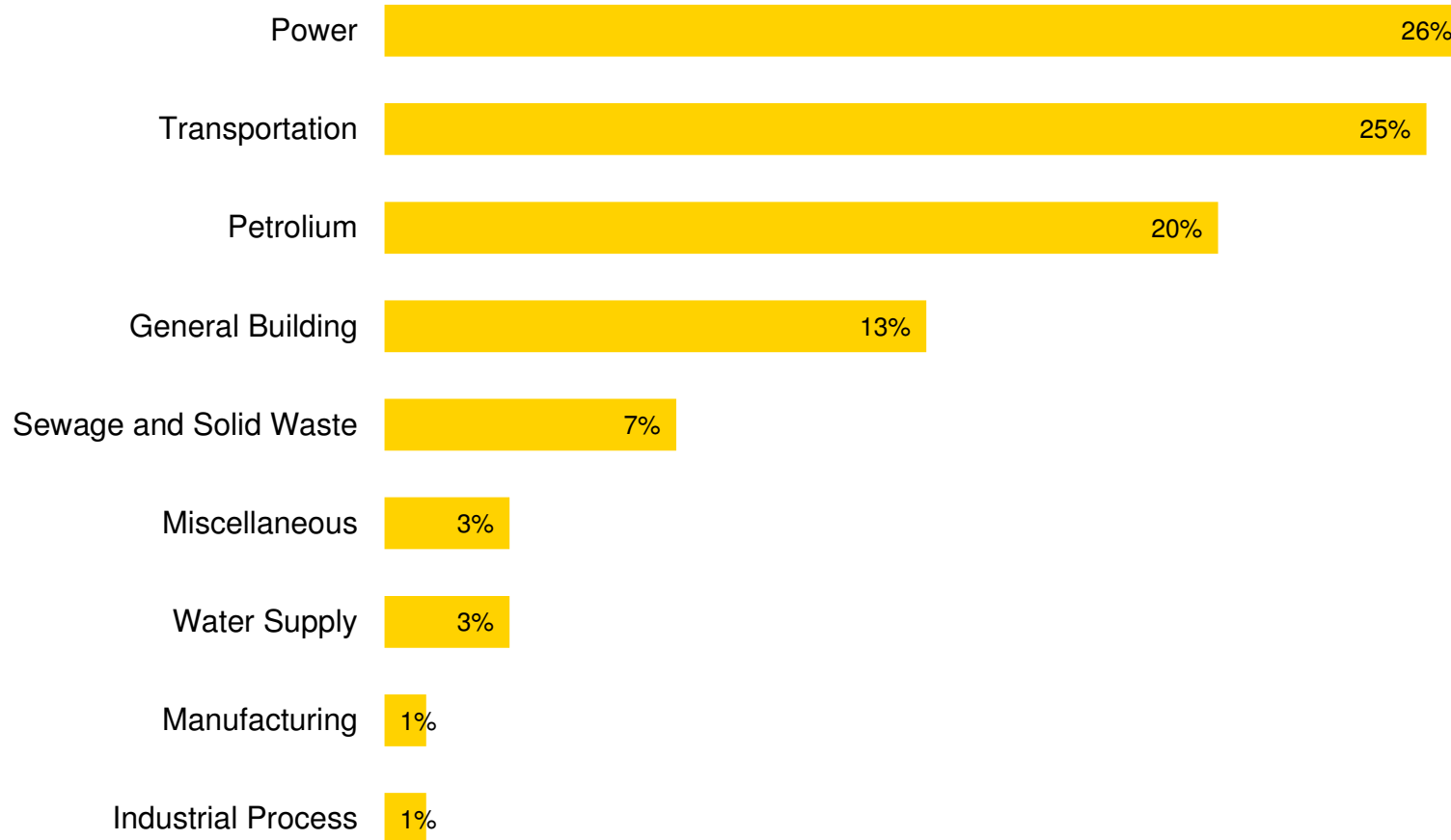
- More than 125 years of construction excellence
- Operations throughout North America
- Owned by active employees
- More than \$9 billion in 2009 revenue
- One of the largest privately owned equipment fleets in North America
 - 21,500 units
 - More than \$2 billion replacement value



Facilities Across North America



Strength Through Market Diversity

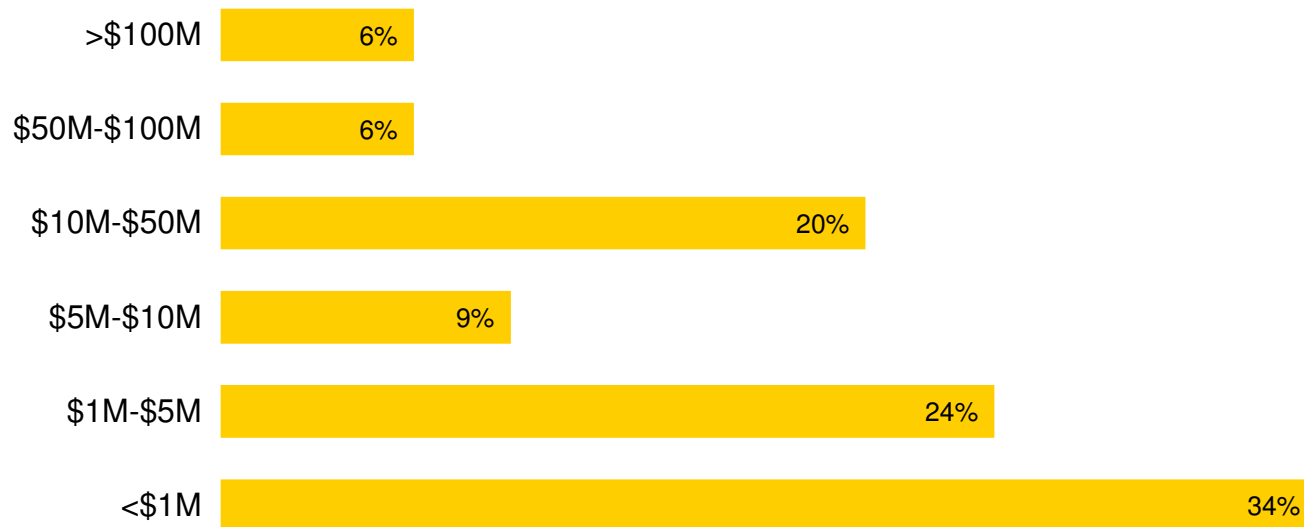


Market categories by construction and design revenue as reported to ENR in 2009

Local Contractor, National Support

- Competitive as a local contractor
- Not dependent on any one project
- Uniquely positioned for large, complex projects

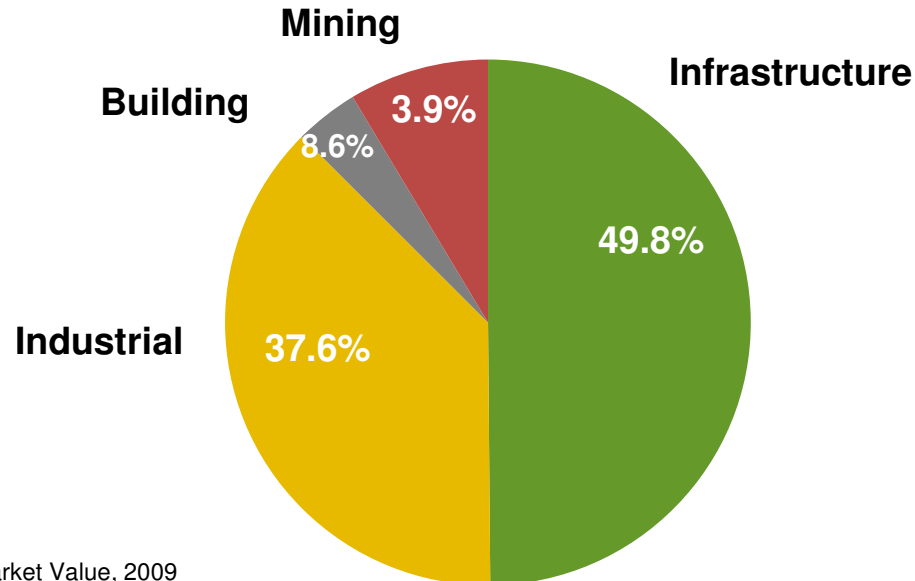
Contract Size



Project size by value, 2009

Strength Through Financial Stability

- Organized around operating groups
- Strong balance sheet
- No long-term debt
- A+ Standards & Poors rating for Kiewit Corporation



Market Value, 2009



History



1884-1940 Kiewit's beginnings

- Kiewit begins by building brick foundations for homes
- Kiewit wins large building contracts.
- In 1924, young Peter takes on more responsibility
- Kiewit wins contracts for reservoirs and hydroelectric plants
- Kiewit expands throughout the U.S.



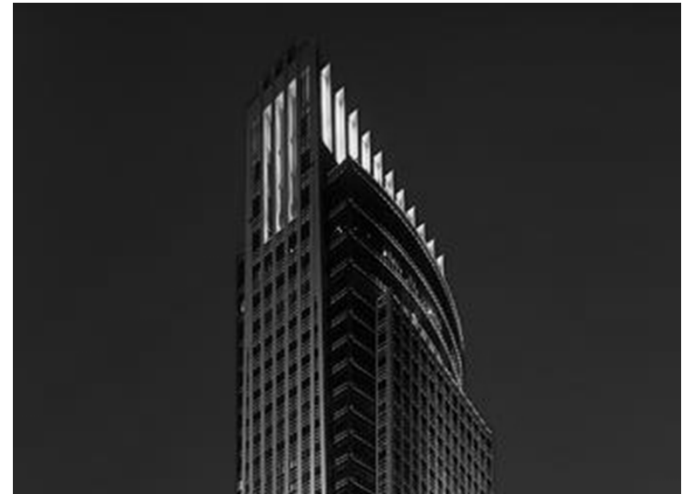
1940-2000

- In the early 1940s, Kiewit builds more than \$500 million of work for the government
- Kiewit ventures into a new line of business – coal mining
- In the 1950s, Kiewit works on the country's early superhighways
- In the mid-1960s, Kiewit establishes a presence in eastern Canada
- Throughout the 80s and 90s, Kiewit undergoes significant changes and corporate restructuring



2000 and today

- In 2001, Kiewit took on billion dollar-plus jobs such as the \$1.28 billion T-REX project in Denver
- Kiewit engineers now create concept models including 3-D computer-aided design
- Kiewit completes the first Gold-certified Leadership in Energy and Environmental Design (LEED®) project in Nebraska





Why Owners Might Choose D-B (continued)

- Single point of responsibility for Owner
- Professional relationship with Contractor & Designer
- A/E & Constructor on the same team providing unified recommendations to Owner
- Errors are addressed - not used as excuses or claims
- Early Constructor involvement enhances constructability
- The Owner needs an early cost commitment
- Project will benefit from value engineering & innovation
- Project requires a construction cost guarantee during design
- Complex Project - requiring close coordination of design & construction expertise

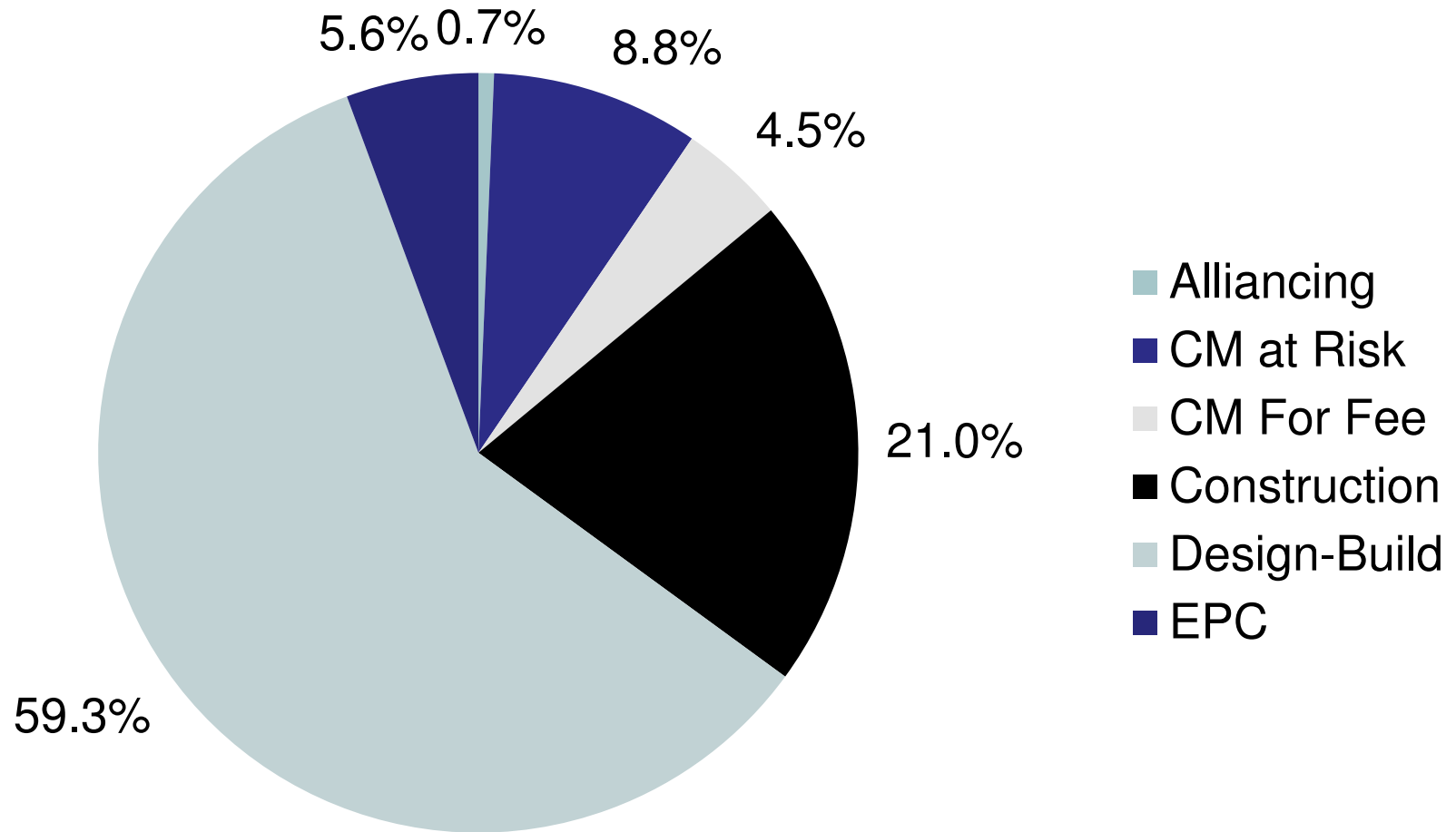


Why Owners Might Choose D-B (continued)

- Fewer changes, fewer claims & less litigation
- The Owner considers controlling project risks under one entity a high priority
- Allocate risks to those who can best manage
- Owner “out of middle”
- Earlier knowledge of firm costs
- Design submission & pricing project at proposal stage possible
- Faster, more cost-effective delivery system
- The Owner wishes to fast track the project
- Project requires complex phasing
- Owner is able to specify performance requirements & specifications

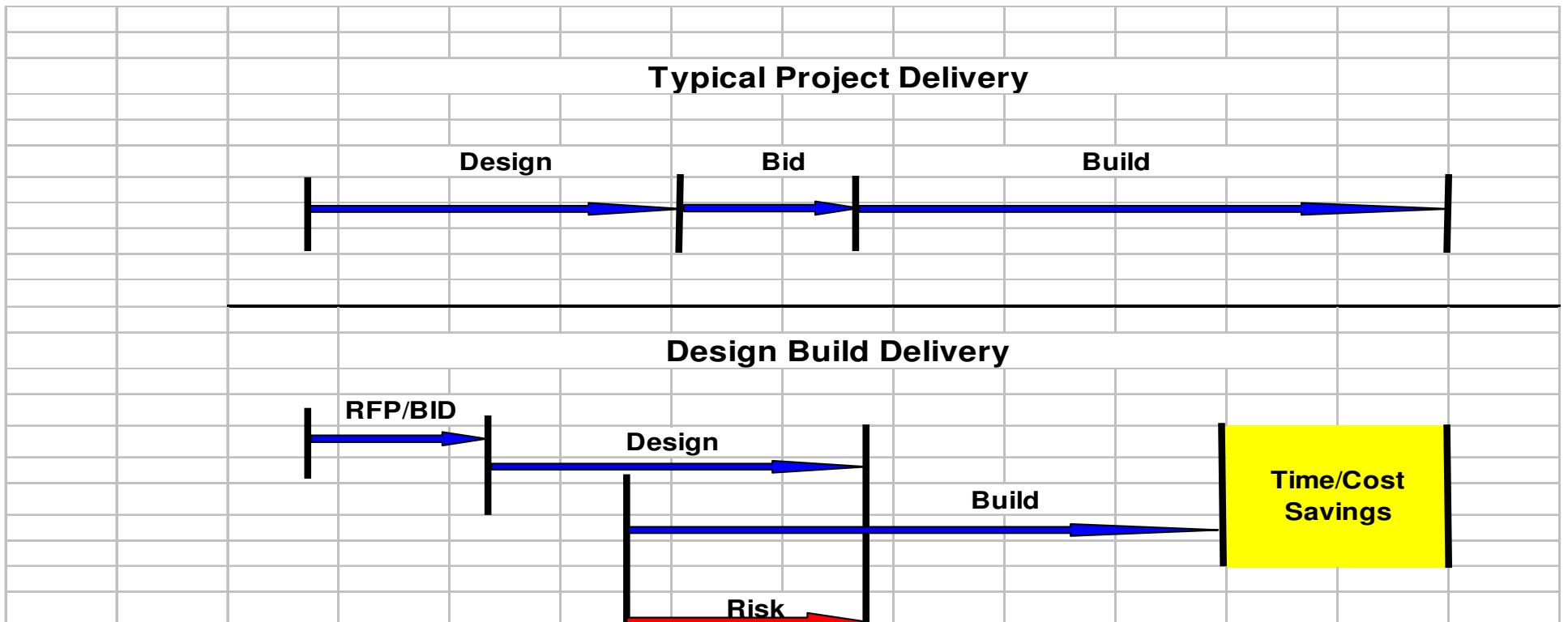


2010 Backlog by Delivery Method



Owner Challenges

Understanding Design/Build – Risk Management



Design-Build Benefits



Alternative Contract Delivery Methods

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- Design-Build
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- Cost Plus
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Defining Alternative Delivery Methods

- Design-Build
 - Single-source project delivery
 - Lump-sum price
 - Provides substantial time and cost savings
- Design-Assist (CM @ Risk)
 - Quality-based selection (QBS)
 - Partnership between contractor and designer under separate contracts
 - Tiered development of price
- Other (A + B, lane rental, no excuse bonus)
 - Traditional delivery method (unit cost)
 - Accounts for schedule and MHT performance
 - Some QBS elements

Defining Alternative Delivery Methods (con't)

- **Cost Plus**
 - Best applied to high-risk scopes of work (tunnels, emergency repairs)
 - Established rates, fees
 - Minimal contractor contingencies
- **PPP (development/concession)**
 - Contractor assumes substantial development risk
 - Owner contracts for front-end project development support, traditional D-B services and back-end O&M
 - Expanded team

Benefits

- Time savings
 - Early start
 - Early use-revenues
- Cost savings
 - Design and construction
 - Owner's administration
 - Fewer change orders
- Improved...
 - Quality
 - Communications (internal and external)
 - Traffic phasing

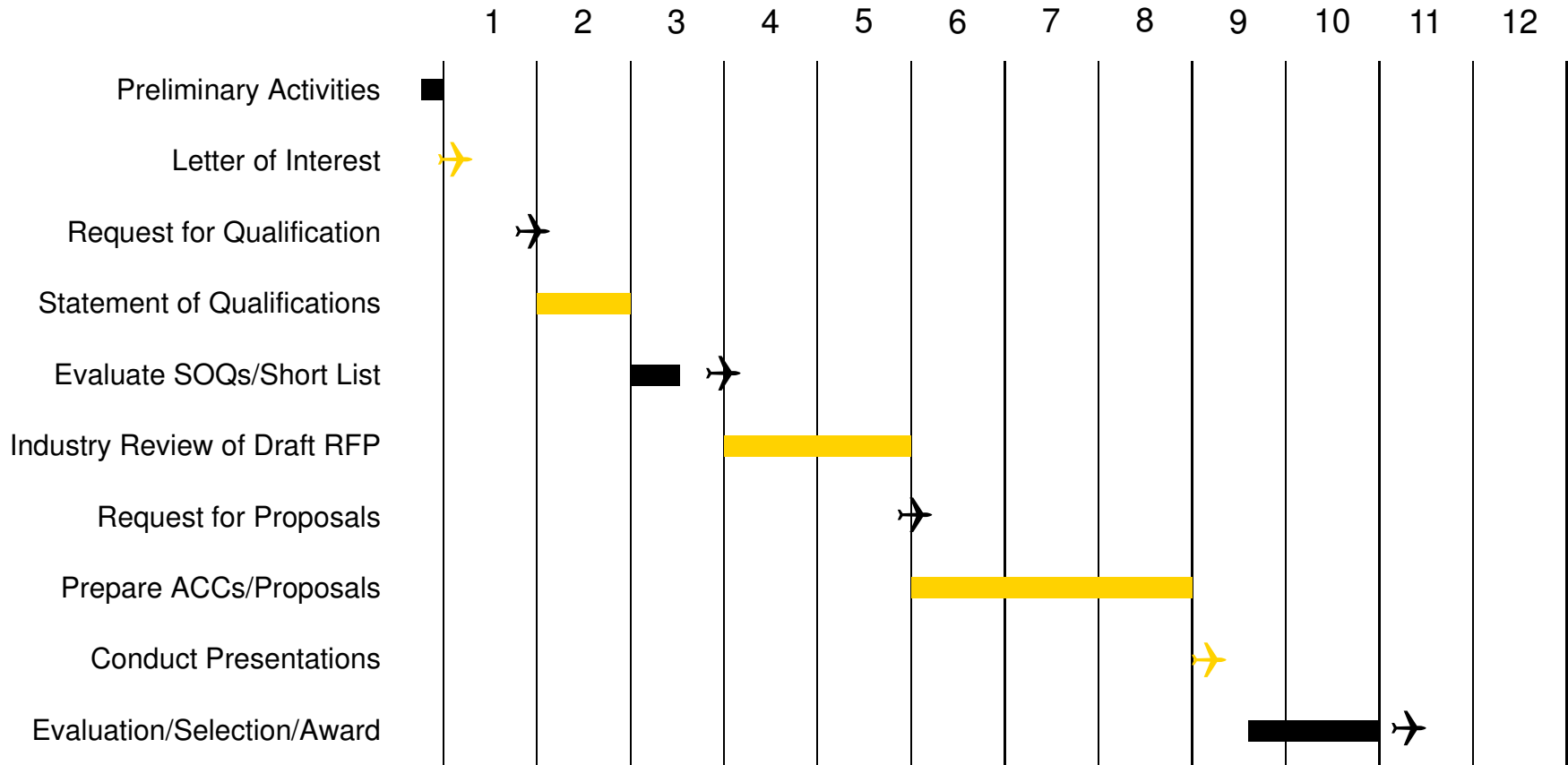
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Selection Process



Design-Build Representative Time-Line [DOT]



■ Owner ■ Design-Builders

Owner's Preliminary Activities

- Complete preliminary design
 - Basic configuration
 - Geotechnical
 - Environmental permits
 - Utility locations
 - Drainage
 - Operations concepts
 - Urban design/aesthetics
- Execute intergovernmental and utility agreements
- Acquire permanent right-of-way
- Allow design-builders to rely on this information

Industry Reviews of Draft RFP

- Conduct individual meetings with shortlisted teams
- Consider issues that may have unintended impacts on pricing
- Finalize industry review prior to issuing an RFP
- Key benefit: proposals that meet both parties' expectations

Final RFP Should Clearly Communicate

- Project-specific goals
 - Schedule
 - Budget
 - Quality
 - Others
- Responsibility matrix
- Evaluation criteria
- Confidential ATC approval process

Alternative Technical Concepts (ATCs)

- Provide prompt review and feedback
- Streamline review process
- Approve well in advance of proposal due date
- Approved ATC should become baseline configuration



Risk Allocation







Recommended Approach






What's best for project?

Who's best able to control risk?

















Owner's Risks

	Owner	Design-Builder
Hazardous waste		
Changes in law		
Force majeure events		
Differing site conditions		

Owner's Risks

	Owner	Design-Builder
Cost of design		
Constructibility of design		
Quantity growth		
Changes in subcontractor prices		
Changes in materials prices		

Shared Risks

	Owner	Design-Builder
Design liability		
Schedule		
Permits		
Right-of-way		
Utility relocations		
Unusual escalators		
Maintenance during construction		
Commitments to third parties		

Shared Risks by Delivery Method

Risk	Design-Build	Design-Assist	A+B	Cost Plus
Design cost	C	O	O	O
Constructibility of design	C	S	O	O
Quantity growth	C	O	O	O
Changes in sub-pricing	C	O	O	O
Changes in material pricing	C	O	O	O
Design liability	C	O	O	O
Scheduling	C	C	C	O
Permits	S	O	O	O
ROW	S	O	O	O
Utility relocates	S	O	O	O
Third-party agreements	O	O	O	O

C – Contractor, O – Owner, S – Shared

Geotechnical Studies

- Pre-proposal investigation sufficient for:
 - Permanent design
 - Temporary ground support
 - Mining methods
- Geotechnical Baseline Report (“GBR”)
 - Solicit contractor input during industry review
 - Define contingent items (grouting, water control)

Delivery Process



Partnering

- Cornerstone of effective design-build
 - New relationships
 - Senior management participation essential
 - Continues throughout project
 - A “one team” environment
 - A focus on project goals
- Provide issue escalation ladder
 - Timely resolution of issues
 - Minimize conflicts at production level
- Establish a “win-win” attitude



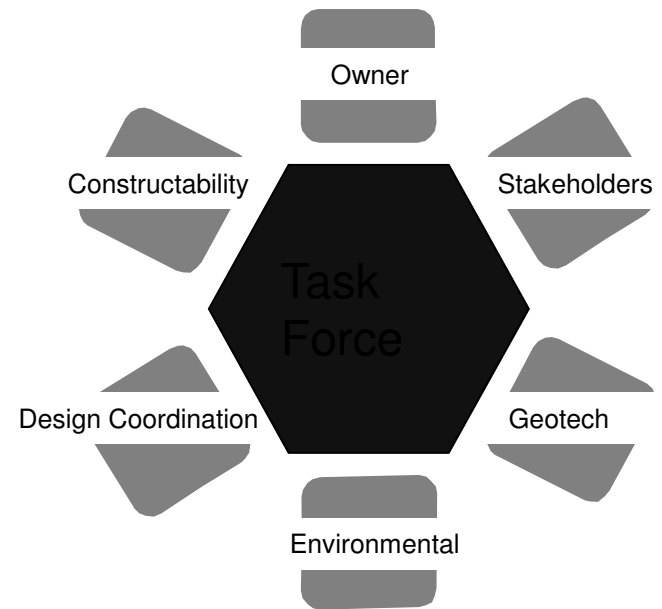
Co-Location

- Design-build team
- Key benefits
 - Improved communications
 - Accelerated decisions and project delivery
 - Improved quality
- Significantly enhanced by owner participation



Task Forces

- Organize project into manageable components
- Bring team together
 - Brainstorm
 - Guide process
- Participants
 - Owner
 - Design-builder
 - Third parties as appropriate
- Most effective when team empowered



Design Quality

- Customary design check procedures
- Over-the-shoulder reviews
- Task forces
- Design milestone reviews (30%, 65%, 100%)
 - Technical reviews
 - Interdisciplinary reviews
 - Constructibility reviews
 - Quality assurance audit
- DOT design quality verification



Constructibility Reviews

- Adequacy of plans and specs to construct work
- Consistency with
 - Design concept objectives
 - Environmental requirements
- Ability to construct work
 - Practicality of achieving specified tolerances
 - Access needed
 - Interdisciplinary conflicts
- Other factors affecting construction
 - Site restrictions
 - Equipment required

Early Construction Process

- Necessary to achieve time savings
- Contract should specifically allow
 - Early construction of individual elements or segments of the project
 - Use of “Approved for Construction” drawings, even if not 100% complete
 - Establish agreed upon procedures for at-risk construction

Design-Builder's Role in Construction Quality

- Training
- Work plans
- Quality analyses
- Pre-activity meetings
- Process control inspection and testing
- Sampling, testing and inspections to be used for DOT acceptance
- Report to joint executive committee



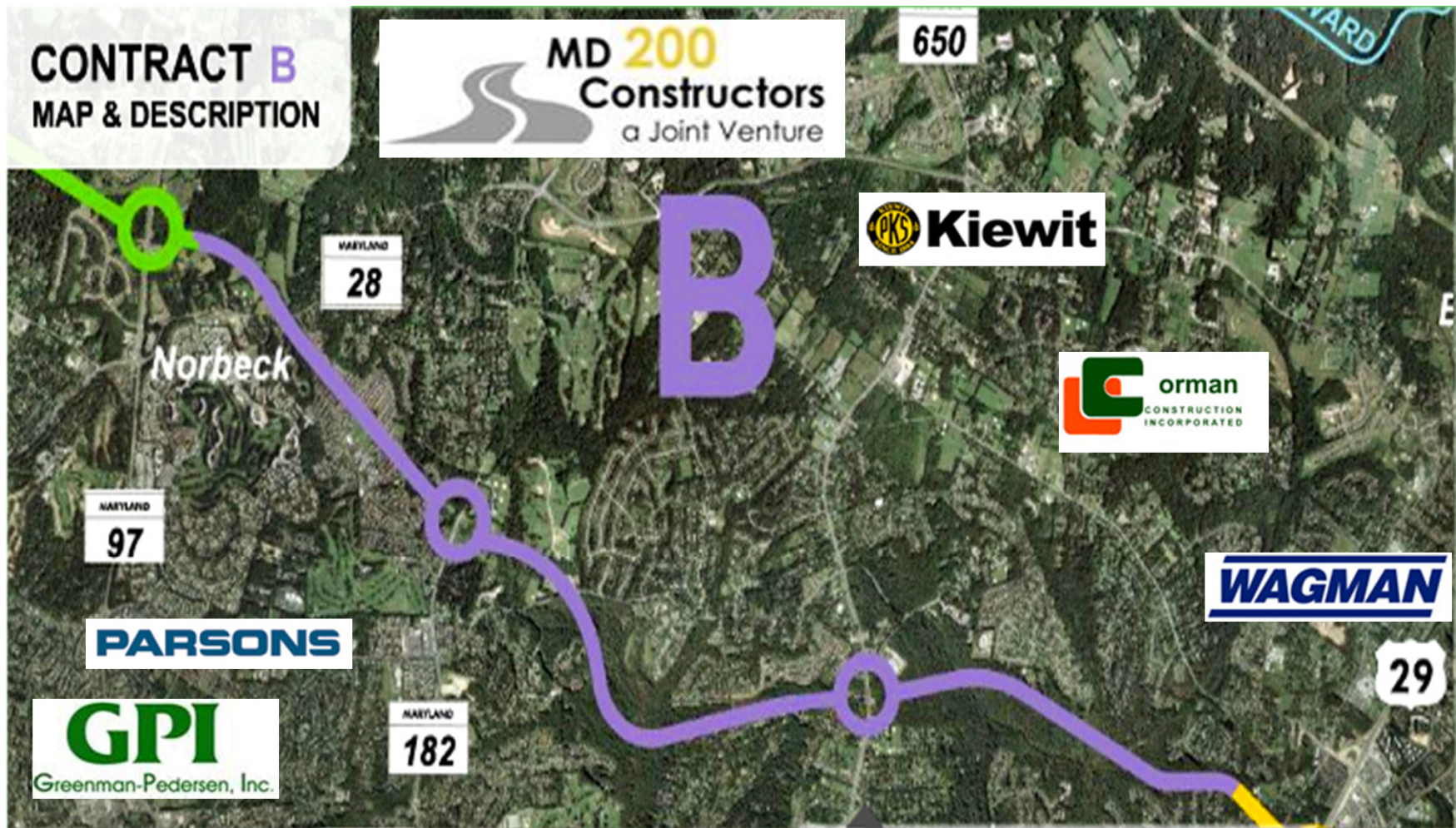
Owner's Role in Construction Quality

- Approve design-builder's Quality Management Plan
- Participate in
 - Quality Task Force
 - Weekly quality meetings
- Conduct verification tests
 - OVT/QA statistical comparison
 - Independent assurance of OVT/QA
- Audit design-builder's
 - Compliance with QMP
 - Field processes (both construction and inspection)
 - Quality records
- Responsible for final acceptance

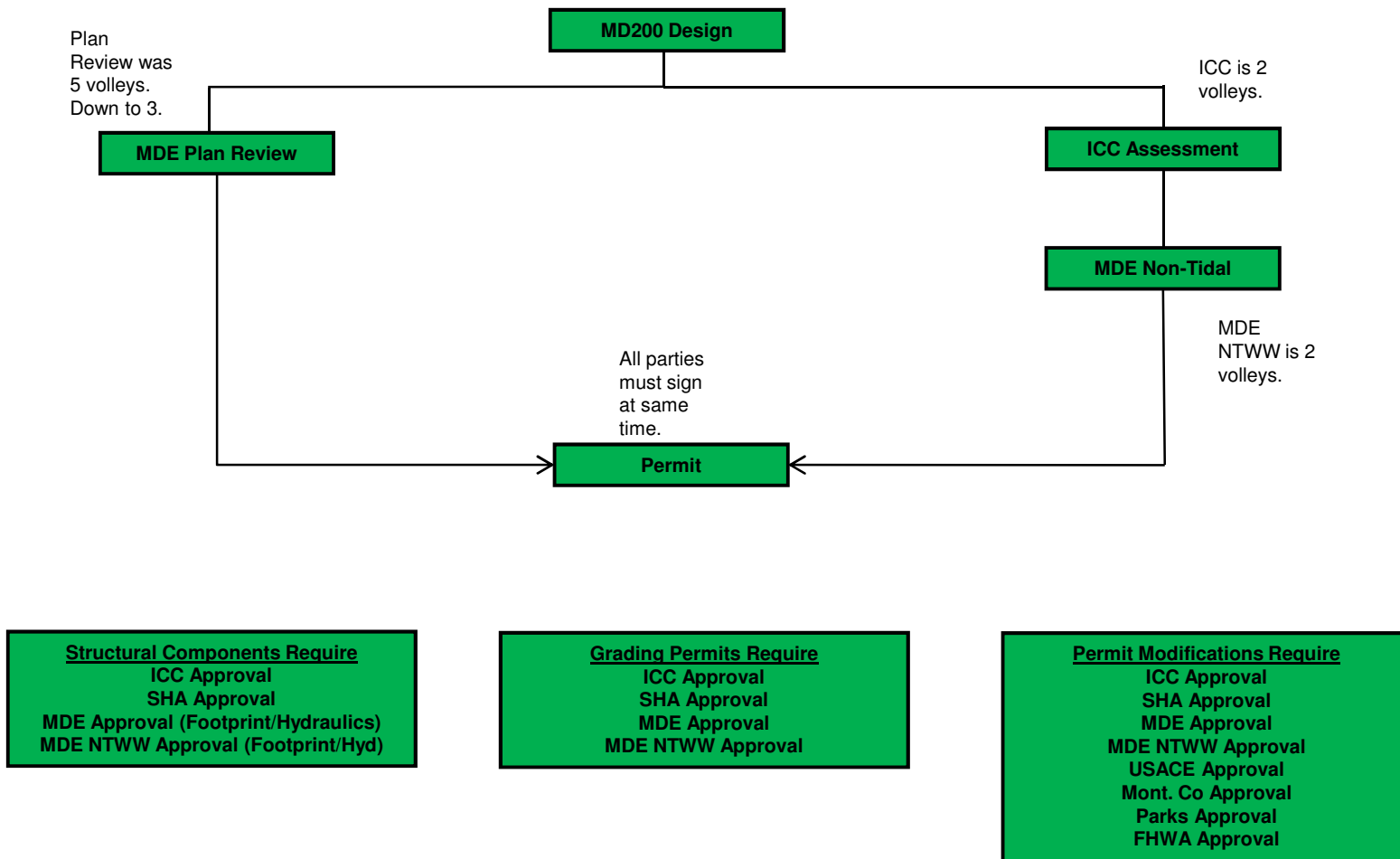
Contractor's Perspective



ICC B – Lessons Learned



Design Approval Process/Permitting



ICC B – Permit Review

Package Submit		Permit	Duration
W1B EGD	3/6/09	4/20/09	45 Days (5 Volleys)
E2B EGD	4/22/09	6/10/09	49 Days (5 Volleys)
W1C EGD	5/5/09	7/10/09	66 Days (4 Volleys)
W1A EGD	5/8/09	8/6/09	90 Days (5 Volleys)
SPA	6/10/09	<i>12/28/09</i>	<i>201 Days (5 Volleys)</i>
W1BC RGD	7/9/09	9/11/09	64 Days (3 Volleys)
W1A RGD	7/15/09	9/1/09	48 Days (3 Volleys)
E2A EGD	7/23/09	10/14/09	83 Days (3 Volleys)
West Final	10/16/09	<i>12/28/09</i>	<i>73 Days (3 Volleys)</i>
East Final	10/14/09	<i>12/28/09</i>	<i>71 Days (3 Volleys)</i>

ICC B – E&S Controls



Drainage



Subsurface - Foundations



Summary



Summary

- Design-build offers numerous benefits
 - Accelerated delivery
 - Lower cost
 - Equal or better quality
 - Abundant subcontractor opportunities
- Keys to success
 - Effective industry review process
 - Early availability of reliable project data
 - Alternative technical concepts
 - Risks assigned to those best able to mitigate
 - Commitment to partnering

Overriding Themes of Successful Design-Build

- Partnering
 - Teamwork
 - Collaboration
 - Cooperation
 - Commitment
 - Communications

