

**This presentation was given at a dinner meeting on October 22, 2015  
to the American Society of Highway Engineers (ASHE) First State.**

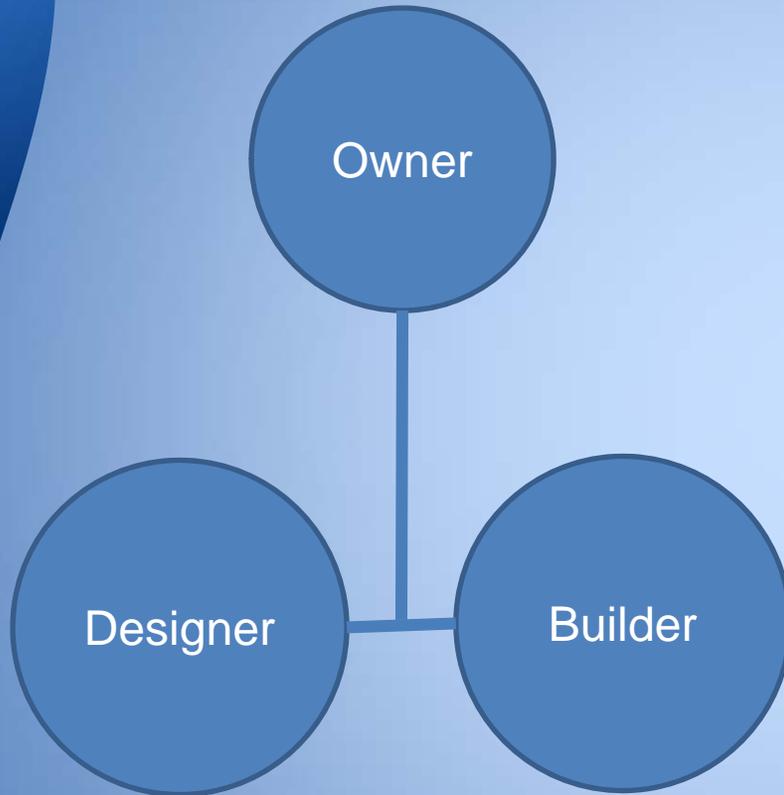
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# Innovative Contracting

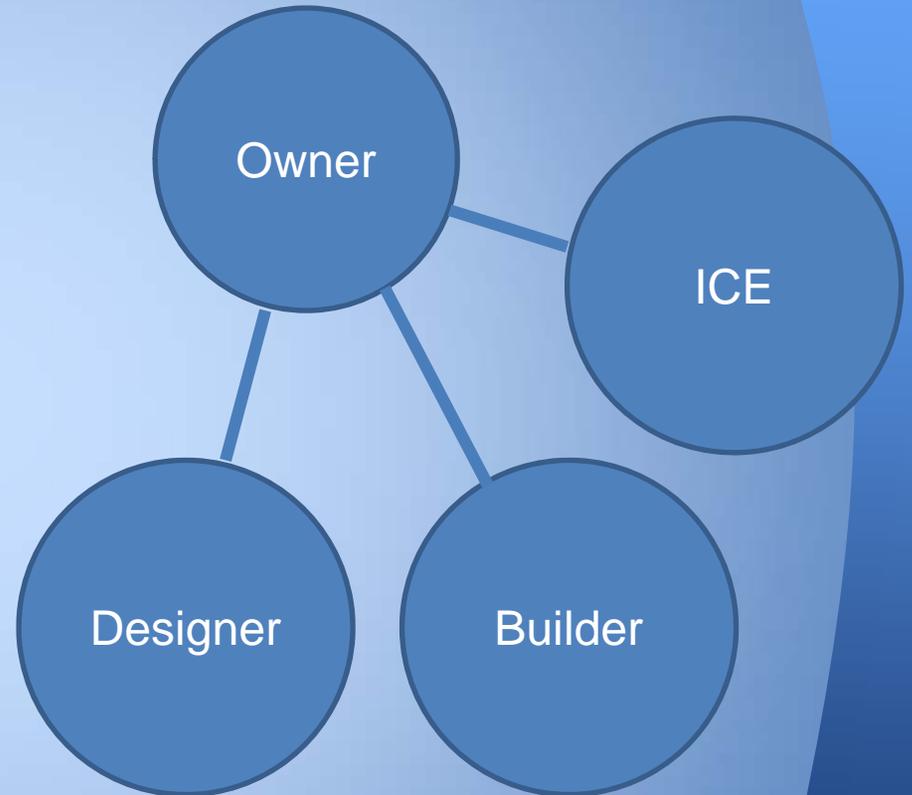
Construction Manager/General Contractor (CM/GC)  
&  
Design - Build (DB)

DeIDOT

# Types of Procurement



Design-Build



CM/GC

# Promises of “Innovative Contracting”

- More creative solutions
- Improved constructability
- Better management of risk
- Shortened project delivery
- Fewer change orders
- Fewer delays

# Risks of “Innovative Contracting”

- Might not be the lowest cost option
- Selection of CM can be subjective
- Collaboration between Designer and Builder can lead to fraud
- Increased public scrutiny
  - How were firms selected?
  - Did State really get the best deal?

# CM/GC Epilogue

## SS 1 for SB 160, 148<sup>th</sup> GA

1 (vi) provisions as needed to accommodate the New Castle County Sewer Interceptor project including (A)  
2 provisions for the relocation of such privately owned facilities, within the State's rights-of-way, if efforts to find a  
3 reasonable and industry accepted alternative that does not involve a relocation of the privately owned facilities cannot  
4 be found and (B) provisions for the prompt determination of a reasonable and industry accepted alternative, including  
5 cost allocation and liability acknowledgement, through an agreement between New Castle County and Linde LLC  
6 that is acceptable to the Department of Transportation;  
7 (vi) provisions for bonding or other acceptable forms of security for the eventual removal of such facilities;  
8 (vii) provisions for the conversion of the contract to a standard franchise agreement with a utility corporation  
9 regulated by the Public Service Commission, if these privately owned facilities are ever acquired by such entity; and  
10 (viii) provisions for compensating the State for the use of these rights-of-way, based on a fair market value  
11 assessment. This compensation shall be calculated and expressed as a property lease payment. Any such payments  
12 shall be deposited to the credit of the Transportation Trust Fund created under Title 2 of the Delaware Code.

13 **Section 130. Construction Manager/General Contractor Pilot.** The United States Department of  
14 Transportation is encouraging states to explore procurement alternatives for transportation project delivery, through its  
15 Every Day Counts Initiative, aimed at shortening the time frame required for project completion and reducing overall  
16 project costs, while still providing quality assurance for the results. Therefore, the Department of Transportation is  
17 hereby authorized to utilize Construction Manager/General Contractor ("CM/GC") procurement mechanisms, for up to  
18 six transportation construction projects. "Construction Manager/General Contractor" is a project delivery method  
19 under which an owner selects a General Contractor to provide consultation during the design of the project. After the  
20 project design is completed, the General Contractor may submit a bid to perform the construction work. The owner  
21 evaluates the bid and may decide to award the construction contract to the General Contractor, or advertise the  
22 construction contract to be bid. CM/GC entities may be a single firm, a consortium, a joint venture, or a combination  
23 of entities. The use of these experimental procurement approaches is further subject to the following conditions:

- 24 (a) The construction contract terms shall include provisions to pay prevailing wage rates as provided in 29 Del.  
25 C. § 6960, or the applicable Federal prevailing wage rate, whichever is higher.  
26 (b) The following additional provisions of 29 Del. C. c. 69 shall also be incorporated into these contracts: (1) §  
27 6962(d)(4a), (anti-pollution, conservation environmental measures); (2) § 6962(d)(7) (equal employment  
28 opportunity assurances); and (3) § 6962(d)(8) (performance bonding requirements).

1 (c) Any such contracts shall conform to all applicable Federal laws and regulations concerning CM/GC  
2 contracting, without regard to the source of funds.  
3 (d) Any such contracts shall also be subject to the provisions of 17 Del. C. c. 8 (construction payments held in  
4 trust for protection of subcontractors and suppliers).  
5 (e) All other provisions of 29 Del. C. c. 69 shall not be applicable to these projects, except as referenced in this  
6 section.  
7 (f) The Co-Chairs of the Joint Legislative Committee on the Capital Improvement Program and the Director of  
8 the Office of Management and Budget shall approve all projects subject to this section.

9 **Section 131. Delaware Academy of Science, Iron Hill Museum.** Notwithstanding the provisions of 29 Del.  
10 C. to the contrary, the Delaware Department of Transportation is hereby authorized to use Community Transportation  
11 Funds for a one-time reimbursement to the Delaware Academy of Science, Iron Hill Museum in the amount of  
12 \$46,000.00 for parking lot improvements.

13 **Section 132. Five Points Fire Company.** Notwithstanding the provisions of 29 Del. C. to the contrary, the  
14 Delaware Department of Transportation is hereby authorized to use Community Transportation Funds for a one-time  
15 reimbursement to the Five Points Fire Company in the amount of \$25,000.00 for sign improvements.

16 **Section 133. Collector-Distributor Road/Modification to Scarborough Road Interchange.** The  
17 Department of Transportation (the "Department") is hereby directed to take such actions and enter into such contracts  
18 as it deems necessary and appropriate for the evaluation and assessment of a possible Collector-Distributor Road  
19 modification to the Scarborough Road Interchange (the "C-D Road"), including but not limited to (1) a feasibility  
20 study designed to evaluate and assess viability and implications of the C-D Road, (2) a toll study designed to ascertain  
21 the volume of traffic likely to utilize the C-D Road and the prospects for generating toll revenues therefrom, and (3) a  
22 wetlands delineation to determine whether or not any wetlands mitigation may be required in order to construct the C-  
23 D Road, provided, however, that (a) the owner of the property occupied by The Dover Mall (the "Developer") shall  
24 pay all of the costs to conduct the aforesaid study, not to exceed \$250,000.00; (b) the Department shall conduct the  
25 feasibility study in consultation with the Developer; and (c) upon completion of the aforesaid feasibility study, the  
26 Department shall report back to the Joint Committee on the Capital Improvement (Bond Committee) Program  
27 regarding the feasibility of the C-D Road, before the Department undertakes commencement of the aforesaid toll study  
28 and wetlands delineation.

# Request for Proposals CM/GC

## RFP Advertisement

- Project Description
- Project Goals
- Key Issues
- Estimated Cost
- Estimated Duration

## Responses

- Team members & their qualifications
- Experience on similar projects
- Preconstruction approach
- Construction approach
- Project risks
- Innovation opportunities
- Approach to price
- Surety and Bonding information

# Elements of CM/GC

## Phase I

- Owner hires Designer, Construction Manager, and Independent Construction Estimator (ICE) under separate contracts
- Selections will be made using an RFP process that is qualifications based
- CM provides input to the design team regarding construction phasing, MOT, innovative construction techniques, constructability, and feedback on design options including costs and risks

## Phase II

- At 100% Plans, CM submits their guaranteed maximum price to construct the project
- Owner compares CM's price to cost estimate from Independent Construction Estimator (ICE)
- If acceptable, owner proceeds with CM to act as GC
- If rejected, owner finishes design and advertises for bids
- CM may bid on the project

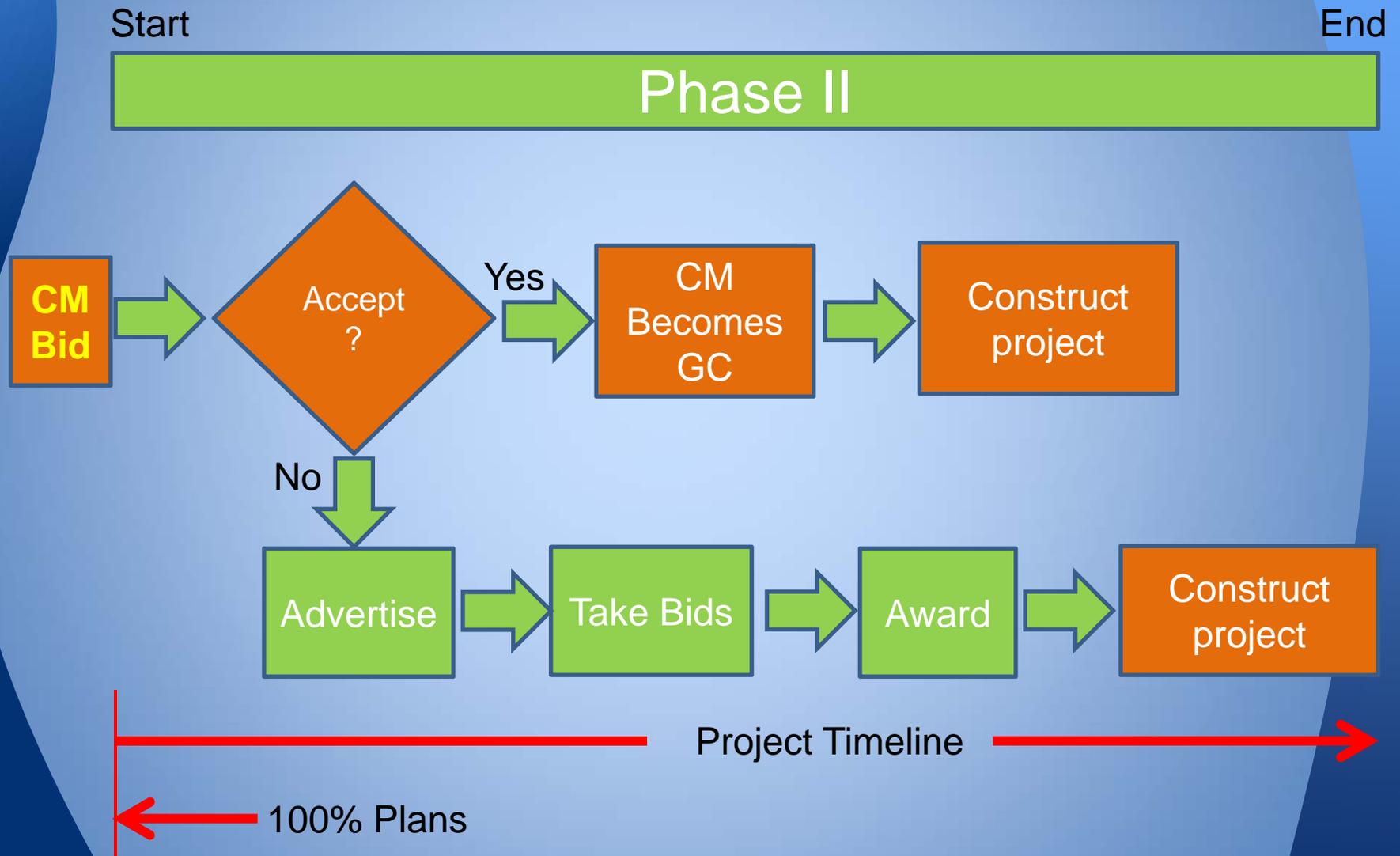
# Elements of CM/GC

Start

End



# Elements of CM/GC



# BR 1-227 on Paper Mill Road (SR 72)

- ADT on SR 72 at this location is over 16,000.
- Detour length is 11 miles around (one side of the bridge to the other).
- Through traffic from Newark would be diverted down Kirkwood Hwy. adding 6 miles each way.



# BR 1-227 on Paper Mill Road (SR 72)



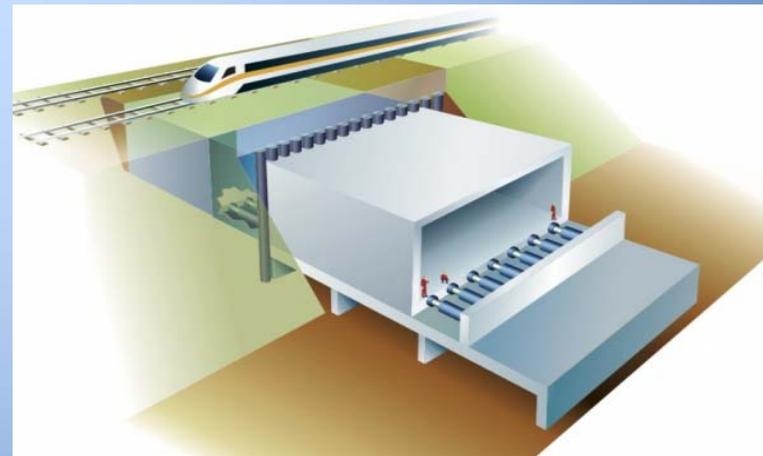
Looking North.



East Elevation.  
Bike trail goes through culvert.

# BR 1-227 on Paper Mill Road (SR 72)

- Road is not wide enough to maintain traffic and replace the bridge.
- Options are total road closure (ABC) or jack a culvert under the road while maintaining 2 lanes of traffic.
- There is a gas line under the road which passes under the culvert within close proximity.
- First CM/GC Bridge Project.



# BR 3-150 N&S on SR 1 over Lewes-Rehoboth Canal

- ADT on SR 1 at this location is almost 31,000 (peak season).
- Local traffic will use 1A.
- Through detour goes all the way to US 113 in Millsboro. This detour is has to go around the Rehoboth Bay and is over 30 miles long.



# BR 3-150 N&S on SR 1 over Lewes-Rehoboth Canal



Br. 3-150N&S: 3-span Prestressed Concrete Beams with a center “drop in” span.

# BR 3-150 N&S on SR 1 over Lewes-Rehoboth Canal



Br. 3-150S: Deck spall with exposed rebar.



Br. 3-150S: Span 1, Pier 1.  
Extensive cracking is a sign of ASR.

# BR 3-150 N&S on SR 1 over Lewes-Rehoboth Canal



Br. 3-150S: Mis-aligned drop in span.  
Spalls in diaphragms.



Br. 3-150N: Failed joint at abutment.  
Vertical mis-alignment, spalling of  
anchorages and missing compression  
joint.

# BR 3-150 N&S on SR 1 over Lewes-Rehoboth Canal

- The bridge requires a lot of work, including total deck replacement and correction of the vertical alignment, re-alignment of the drop in span, new bearings and joints and major substructure repairs.
- High volume of traffic in a resort area will mean tight time restrictions.
- Limited work space.
- Good candidate for a CM/GC Bridge Project.



# CMP Culvert Replacements Project

## CMP Epidemic

- There are two types of CMPS in Delaware...Those that have failed, and those that are going to fail.
- We have replaced around 30 per year through in-house maintenance and capital projects, but we continue to “find” new ones at nearly the same rate.
- We currently have 253 CMPs remaining.
- We are trying to find innovative ways to replace them all quickly.



Typical corroded CMP.



Failure at Lion Hope Road.

# CMP Culvert Replacements Project

## D/B Project

- 35 locations statewide.
- All locations are pipe for pipe replacements.
- All locations are eligible for federal funding.
- None of the pipes are currently structurally deficient.
- 4 year contract.
- DB team will prepare plans, coordinate utilities, devise detour or MOT, negotiate RW and prepare acquisition papers and prepare permit impact sheets.

