

Constructability Lessons Learned

Design Bid Build and Design Build

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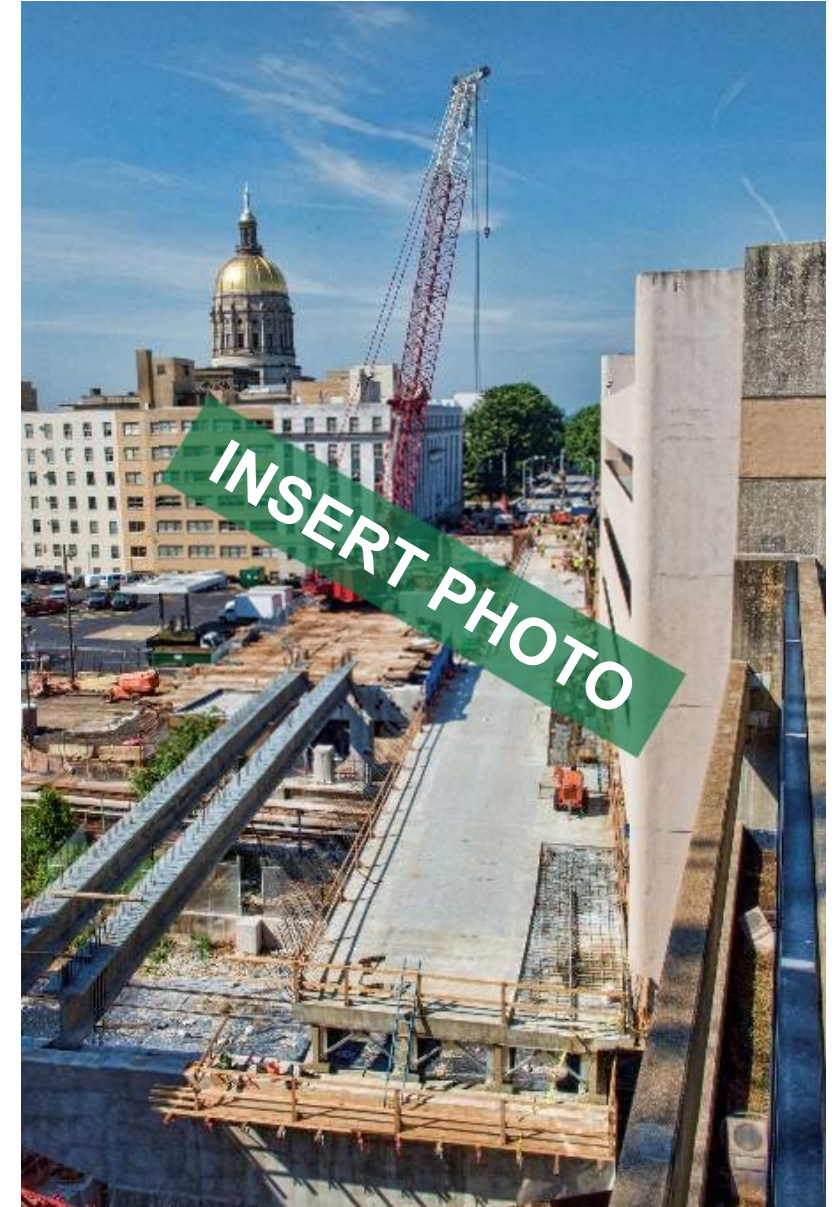
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Scenarios where design plans were well coordinated

Elaborate on what was done well

- 1.



Common misses found in construction plans during construction

Staging

1. On tapers in transitions, between the two lanes, there is possibilities of water holding after heavy rain events.
2. Consider temporary paving around the roundabout to allow the center to be constructed first.
3. Grade differences/cross slope at shift tie-ins which caused some hot lap settlement on asphalt.
4. Plans show lanes being shifted but crossovers not shown
5. Access to properties due to grade changes
6. Large drop-offs with no temporary barrier wall
7. Traffic placed on shoulders that exceed the slope different



Common misses found in construction plans during construction

Staging

1. Need to support utility relocation
2. Bridge and roadway staging need to match
3. Consider how staging transitions
4. *Reduce speed limit to XX mph for the duration of the project*



Common misses found in construction plans during construction

Utilities

1. Notes not being transferred from the preliminary plans to the final plans
2. Facilities being left off plans even when a SUE was conducted



Common misses found in construction plans during construction

Temporary drainage

1. Temporary drainage pipes were shown on the final plans for staging. These locations could have utilized the new permanent structures by using temporary drop inlet boxes, connected to the existing structures.
2. Transition between stages
3. Include the pay items



Common misses found in construction plans during construction

Right of Way

1. Enough area to construct retaining wall
2. Limited space beyond cut/fill limits
3. OBF restricting right of way or easement
4. Strap lengths or tie back lengths
5. The need for shoring for wall construction



Change orders that have occurred due to misses in plans

1. Asphalt quantities being too low on projects
2. Missing EC items such as slope drain
3. Signs incorrect
4. Incorrect or missing note
5. Lighting missed
6. Type 7T Transition for guardrail attachment
7. Temporary Pipe Slope Drain
8. Safety End Sections
9. Message Boards
10. Temporary Portable Attenuators
11. Incorrect standard/pay item
12. Not enough information



Practical construction methods to consider during design

1. Clear directions
2. Know the specification
3. Use drilled shafts instead of square columns in large flowing streams such as rivers.
4. Make sure the correct Detail or Standard is used.
5. Design of cap to be a little wider than the columns provides better flexibility during construction
6. Roundabout projects when the traffic shift turns a signalize intersection into a 4 way stop condition in an urban area



Environmental Challenges during Construction

1. a

1. Bridge foundations that require additional pile
2. Shifting of a stream from its location previously documented on the plans
3. Addition of rip-rap



A little additional investigation

1. Culverts/storm drains being retained that have issues and require maintenance or replacement.
2. Poor soils and groundwater.
3. Barges being set up and not enough water elevation at construction causing work bridges or jetties to be added
4. Rock excavation,
5. Rock embankment, undercut
6. Issues noted in soil survey but not incorporated in plans
7. Sink holes in Bartow County
8. Shoulder is not able to support traffic load



Work Zone Safety Awareness Week

TIPS FOR APPROACHING AND DRIVING IN WORK ZONES

- **Expect the Unexpected.** Things may change quickly. Normal speed limits may be reduced, traffic lanes may be closed, narrowed, or shifted, and people may work on or near the road.
- **Slow Down. Don't Tailgate.** Speed is a factor in many accidents. Keep a safe distance between you and the car ahead of you, and the construction workers and their equipment.
- **Obey Road Crew Flaggers and Pay Attention to Signs.** Failure to obey speed limit signs or a flagger's traffic control directions can result in hefty fines and/or imprisonment.
- **Stay Alert and Minimize Distractions.** Pay full attention to the roadway and avoid changing radio stations or using cell phones and other electronic devices.
- **Keep Up with Traffic Flow.** Do not slow down to gawk at road work.
- **Know Before You Go.** Expect delays, leave early and schedule enough time to drive safely. For 24/7 real-time traffic information, call 511 or visit www.511ga.org before you get into the car. And follow Georgia DOT on Twitter for additional updates.
- **Be Patient, Stay Calm.** Crews are working to improve the road and to make your future drive better.
- **Wear Your Seatbelt.** It is your best defense in a crash. And make sure your passengers are buckled up.

Agenda

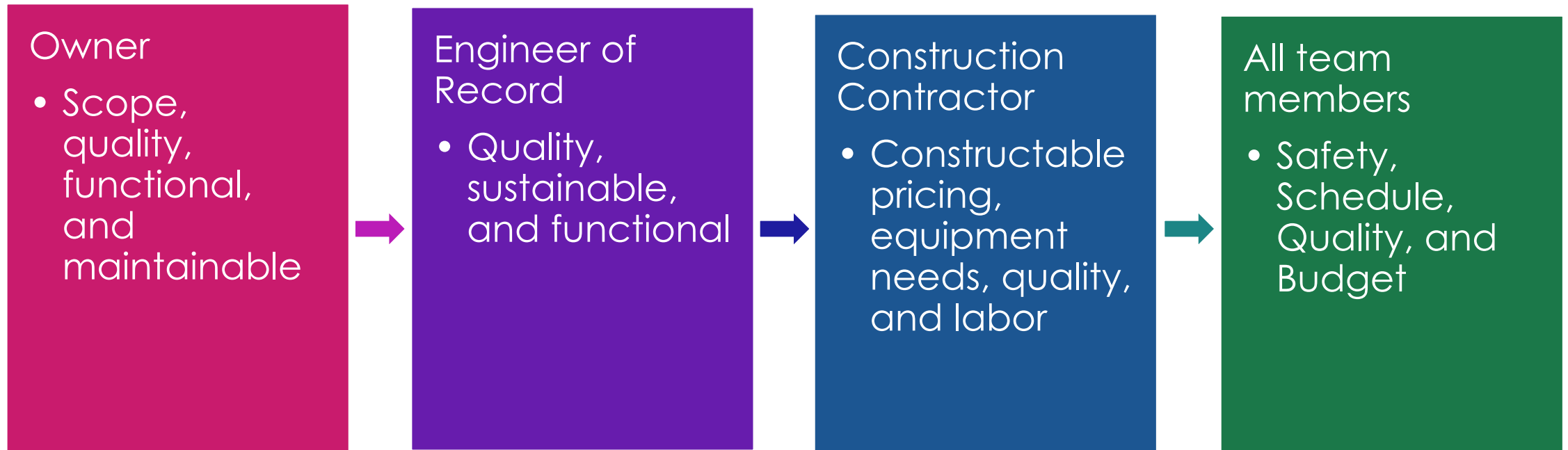
- **Constructability in Design Build**
 - **What**
 - **Expectations**
 - **Why**
 - **Results**

Constructability Review

“An independent and structured review of construction bid documents by construction professionals to make certain that the work requirements are clear, the documents are coordinated, and that they assist the contractor in bidding, construction and project administration to result in reduced impacts to the project.”

“Constructability Review – An Introduction” written by Stephen R. Pettee, PE, CCM

Expectations



Why consider constructability?

Safety

Schedule efficiency

Budget control

Traffic management

Staging

Right of Way

Permitting

Utilities

Results of not considering constructability

Loss of DB efficiency

Schedule impacts

Redesign

ROW impacts

Additional regulatory engagement

Environmental impacts

Erosion of stakeholder trust

Increase costs

Field results for not considering constructability

Profile issues

Stage construction

Drainage during stage construction

Transition between projects

Missing work

Design elements not integrated

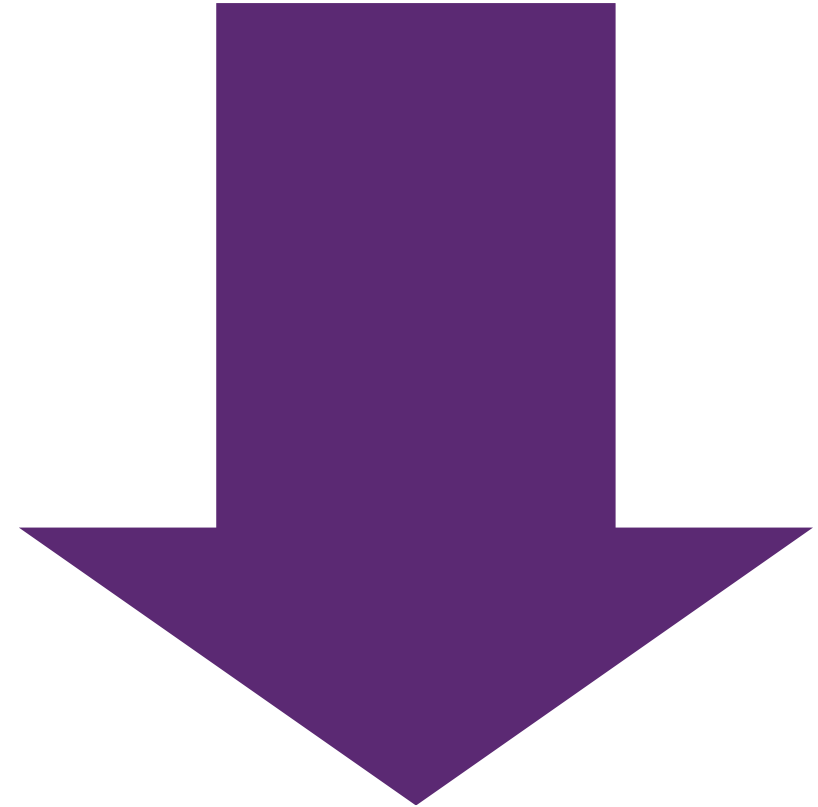
Overly conservative permitting process



[The Worst Architectural Fails \(30 Photos\) - FunCage](#)

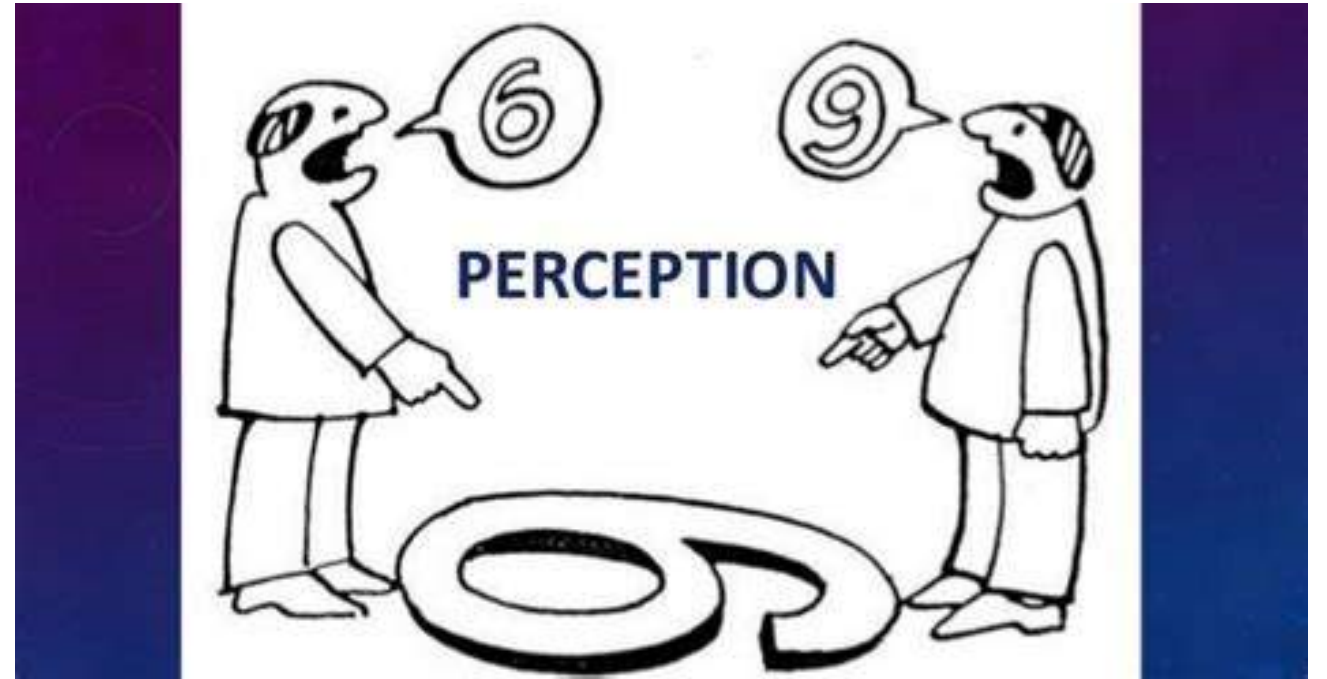


**Let's perform
constructability**



First and Foremost

- Clear scope in the DBA
- Be careful of multiple interpretations
- ✓ Improves speed of construction
- ✓ Reduce impacts
- ✓ Cost Reduction



Actions supporting constructability

DBT clearly understand scope

Selection of team members

Integration of the DBT – no silos

Collaboration of SME

Planning process

Actions supporting constructability

DBT Quality Control process

Identification of constraints

EOR / Construction alignment

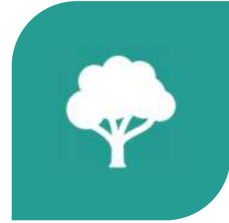
Regulatory engagement

Stakeholder engagement

Benefits of constructability review



SAFETY



REALIZE
ENVIRONMENTAL
IMPACTS



EFFICIENT
CONSTRUCTION
PRACTICES



MAXIMIZE
EFFICIENCY OF
DB



MINIMIZE
REDESIGN



SCHEDULE
EFFICIENCY



BUDGET
CERTAINTY

Constructability benefits for owner/DBT

Expectation setting between owner and DBT

DBT develops deliverable schedule

DBT may segment project

Collaboration between owner and DBT

Owner provide targeted comments based on requirements

Timely review process

Constructability benefits for owner/DBT

Promotes communication between owner and DBT

Promotes trust between owner and DBT

Prevents tension during design review process

Understand the “why”

Promotes ownership

Questions?



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Thank You

For Viewing