

Hydraulic Issues for Design-Build vs. Design-Bid-Build Projects



Night and Day

Design-Build vs. Design-Bid-Build

- Different routes – Same destination
- What are the differences? (Cost-Time-Quality)
- Myths – Rumors – What you have heard
- Which method is better? It depends...
- What to look for? Who to consult with?
- Don't copy from another project
- Sometimes less is more. More information may not be better



Design-Build and Drainage Design

Take Away Points

- ❖ Cost – Time – Quality (never ending debate)
- ❖ Continuous improvement: learn from the past, close the loops, better preparation next time
- ❖ TRUST and VERIFY (Owner and Contractor)
- ❖ Clarity – what do you want? How red is the sun?
- ❖ Shall – Should – Must: are these the same?
- ❖ Risk vs. Cost (Risk down – Cost down)
- ❖ Change orders: are there change orders in D-B?
- ❖ Design-Build your ways?

Design-Bid-Build Method

- Approved Hydraulic Reports
- Build per plans
- Change orders
- WSDOT is responsible for the designs and bears the risks.
- WSDOT controls the schedules and the costs.



Design-Build Method

- Conceptual Hydraulic Reports (10%-30% design approximately)
- Request-For-Proposal (RFP) Development. Chapter 1, 2
- Chapter 2.14 Hydraulics
- Purpose of the RFPs. To supplement the current manuals
- What should be included in the RFPs



Design-Build Method

- Design-Builder (D-B) is responsible for the design as well as the construction of it.
- D-B bears the risks. Some risks are shared between WSDOT and D-B.
- Design-Build process after awarded
- Preliminary Hydraulic Report
- Design packages



Design-Build Method

- Review timeline (14 calendar days)
- Review and concurrence process
- Weekly or bi-weekly meetings
- Existing drainage features must be documented
- Mandatory Standards (HRM, HM, Design, Construction and others)
- Permits (WSDOT and DB)



Design-Build Method

- The final products (Final hydraulic reports with as-built plans, the final drainage features built in the field)
- Final walk through with Hydraulics Office, PE Office, Maintenance Office and the Design-Builder
- Final Acceptance/Approval. All the issues must be resolved before we can accept the final hydraulic report.



Design-Build Method

Design-Builders' goals

- Cost is not everything
- Balance between cost, schedule, customer service and reputation (for future jobs consideration)



Design-Build Method

WSDOT's goals

- Cost (cost is not everything)
- Final product quality
- D-Bs' reputation, previous job performance, capability
- Safety
- Public involvement, perspectives
- Impact to the traveling public



Design-Build Method

RFP Development

- How long does it take? 2 weeks to 2 years. Typically, less than a year.
- Less design work upfront
- More risks to the Design-Builder
- Clearly define the requirements, what can or can not be done
- Identify deviations. Ideally, deviations should be approved prior to awarding



Design-Build Method

RFP Development

- Piezometers should be installed as early as possible.
- Geotechnical work, infiltration rates should be determined prior to awarding.
- All the commitments should be clearly documented in the RFP.
- Permits should be obtained prior to awarding but not required.



Design-Build Method

RFP Development

- Right-of-Way should be obtained prior to awarding but not required.
- Utilities conflicts are mostly not looked at in details during RFP development.
- There are no structure notes in the contract plans or in the hydraulic reports
- Innovative designs: what are allowed
- Flow spreads during construction
- Temporary Erosion and Sediment Control (TESC) – Water quality during

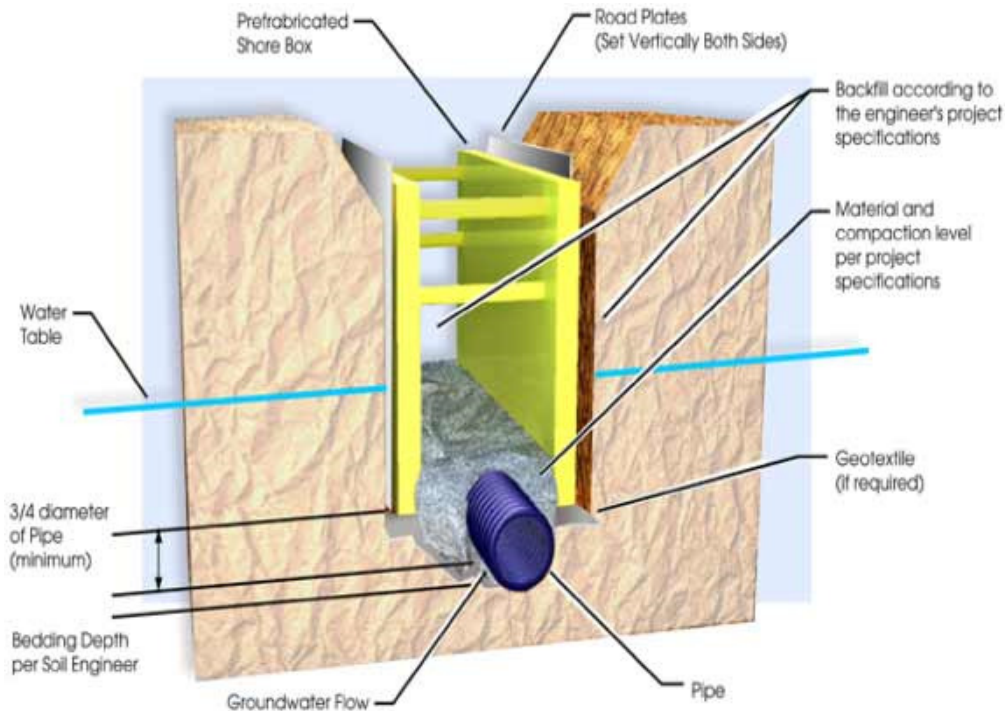


Lessons Learned



- Is pipe liner considered as new pipe? **Yes** **No**
- Be very specific in the RFP about the requirements or what the final products will be.
 - If it is not clear, provide examples.

Lessons Learned



Acceptable construction methods.

Open cut /
Jacking

- Large culverts, fish passage culverts
- Construction windows (during summer time, one-weekend closure)
- Utilities conflicts (Who will be responsible?)

Lessons Learned



Catch basins installed next to barriers and curbs.

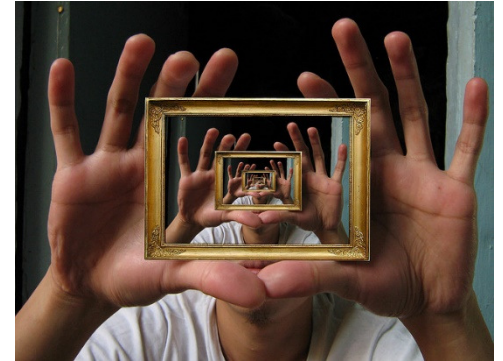
Openings must be flushing with the barrier face or curb face.

Design-Build and Drainage Design

Interpreting the Hydraulics Manual and Highway Runoff Manual

- If a manual doesn't say I can do it, then I shouldn't do it - WSDOT interpretation
- If a manual doesn't say I can't do it, then I can do it – D-B interpretation

Use the RFP Chapter 2.14 to clarify the design so that you get what you want!



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Design-Build Method



Any questions?

Design-Build Resources and Training

<http://www.wsdot.wa.gov/Projects/delivery/designbuild/Default.htm>