

Constructability Guidelines

The Constructability Guidelines offer a list of items that should be considered by Constructability function personnel during the Concept Development Phase through the Final Design Phase.

The Guidelines consist of several categories:

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Few projects will use every Guideline list.

Constructability function personnel should be aware of all of the category lists and the content of each category and select the appropriate lists for any project.

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Project Type

Identify Type of Project (use for selecting appropriate Guideline lists)

- Safety – Safety Improvements/Signals/Geometric/ Guide Rail
- Removal / Demolition Building or Structure
- Electrical – Highway Lighting
- Drainage – Pipe/Culverts/Basins/etc
- Structure – Bridge (over Water; Railroad; Roadway/Highway)
- Pavement Management – resurfacing/reconstruct
- Utility – Overhead or Underground
- Environmental Mediation
- Combination of Above

Site Visits

Items needed for all Site Visits include:

- Maps
- Field Book
- Reflective vest and hard hat
- Paper and pencil
- Digital camera –with extra batteries
- Tape measure / measuring wheel
- Introduction letter from Department to eliminate potential conflicts with Homeland Security
- Sturdy shoes or boots

Initial Site Visit Guidelines

Use appropriate list(s) and reference materials. The following is a list of constructability issues and questions to consider while preparing for and conducting the site visit:

- Earthwork and Grading
- Signalization - Conflicts with Utilities / Staging, including temporary signals
- Possible Staging and Traffic Control - Maintenance of Traffic
- Utility issues – construction coordination / overhead & underground issues
- Are there possible work areas for Contractor staging?
- Is the project in a remote area?
- Can access be constructed to remote locations? (Review – Construction Procedures Manual – Section 2 Subsection A)
- Are there Unusual Site Conditions? – Identify and explain.
- Should the project be closed to traffic?
- Should detours be used
- Could there be impacts to school bus routes or emergency vehicles?
- Sanitary Sewer / Force Mains – any possible conflicts?
- Drainage – Existing Pipe Lines and Drainage Conflicts – underground utilities?
- Existing slope conditions - Soil Erosion/Sediment Control – Drainage runoff

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- () Environmental Issues - wetlands
- () Structures – Existing condition: Detour or open to traffic during construction?
- () Residential & Commercial properties–Any possible access problems to driveways?
- () How could possible staging affect access?
- () Could timing of project affect local/seasonal events, such as shore traffic, fairs, etc.?
- () Any Historic considerations within proposed project limits?
- () Research and note any other NJDOT Projects proposed in vicinity of project

Ongoing Site Visits

Use appropriate list(s) and reference materials. The following is a list of constructability issues and questions to consider while preparing for and conducting the site visit.

- () Construction Concepts - good engineering judgment
- () Earthwork and Grading
- () Signalization - Conflicts with Utilities / Staging
- () Staging and Traffic Control Plans - Maintenance of Traffic
- () Is access provided to work areas?
- () Can access be constructed to remote locations?

Right of Way

- () Has ROW been acquired?

Earthwork and Grading

- () Any available stockpiling sites?
- () Can available construction equipment meet project requirements? (e.g., Crane limits, height limits, etc. Minimize restricted areas that eliminate normal equipment use
- () Is earthwork phasing compatible with construction requirements?
- () Are cuts in rock wide enough to accommodate equipment?
- () Are roadway grading/ fill widths compatible with equipment size?
- () Can contractor access remote locations on project?
- () Is there presence of ground water or active streams within project limits?
- () Water table vs. excavation depth
- () Does the Earthwork Summary need to be presented by stage?

Pavements and Base Courses

- () Minimize low production or hand work areas
- () Can overloads / widths be hauled through job?
- () Design roadway widening that will accommodate standard equipment
- () Is there enough room to allow for concrete/bituminous concrete paving equipment?
- () Are special material sources available and within reasonable haul distance?

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Pipelines and Drainage

- Identify possible underground utility conflicts
- Is underground work sequenced with roadway operation?
- Any potential drainage or flooding problems through temporary construction?
- Through the stages, is the outfall portion of the drainage system constructed before the up-gradient portion
- Could sidewalk pond water at transition to bridge deck?

Drainage-Water Runoff/Soil Erosion/Sediment Control

- Are there areas of soil erosion – wash-outs?
- Check drainage staging to ensure functional during all stages
- Does staging trap water or push water down side streets or driveways?
- Will site work cause flooding or ponding on private property?
- Are silt fence and or floating turbidity barriers required?

Structures

- Will caisson drilling require special measures?
- Is dewatering required?
- Consider working areas needs around structures
- Check for overhead utility conflicts
- Consider access to structure site
- Consider requirements for temporary utility ductwork support
- Are there aerial utilities that will limit crane usage?
- Are there drainage conflicts that may affect bridge?
- Pedestrian usage of structure during construction
- Limits on other local structures that hinder truck delivery of contract items
- Will vibrational effect of work, such as pile driving, affect local structures?

Staging Plans and Traffic Control Plans

- Ensure that detour design fits field / traffic needs
- Does detour allow enough area for planned work?
- Consider staged construction - vertical elevation differences for traffic lanes
- Check access for local business/ residents
- Is traffic control plan coordinated with job phasing/staging?
- Can traffic conflicts be reduced by innovative haul roads?
- Are work zones large enough for equipment access?
- Can emergency vehicles travel through work zones without delays?
- Positive road closure when existing structure is being demolished
- Provide emergency pull-offs when shoulders are eliminated during construction staging

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Electrical

- Will temporary signals or highway lighting be required for staging?
- Are there any existing loop detectors?
- Does required conduit installation fit construction staging?

Utility Issues

- Do power lines or other utilities conflict – including above or below ground?
- Do services need to be relocated as a result of project construction?
- Is there a conflict with utilities for contractor equipment – pile driving, bridge erection, sheeting, noise walls, retaining walls, overhead signs, culverts, etc?
- Does area require pre-design underground utility locations verified – test pits?
- Is there a need to relocate underground utilities?
- Is existing lighting impacted by construction? – Are street lights impacted?
- Is there evidence of buried underground fiber optic lines or ITS facilities?
- Can utility relocations start prior to construction by Contractor?
- Can utility relocations be performed by the State's Contractor?
- Is project in proximity to railroad property? – active or exempt
- Are there conflicts with railroads and do they have limitations on work hours?
- Check driveways/ sidewalks for conflicts with utilities

Incidentals

- Is temporary fencing needed to protect work sites
- Has pedestrian access been provided during construction staging
- Are there constructability items, issues, or concerns related to Materials and Specialty Items, Maintenance of Right of Way, Demolition, or Environmental categories?

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