CONSTRUCTION PROCEDURES HANDBOOK

SECTION II	SUBSECTION A	DATE
PROJECT SCOPING TO CONTRACT AWARD	CONSTRUCTABILITY-RISK ANALYSIS WORKSHOPS/ TEAM REVIEWS	01/21/2020

The New Jersey Department of Transportation has endorsed constructability-risk analysis workshop/team reviews in an effort to improve the total quality of our construction bid package and to ensure that designs can be built. The intent of the workshops is to identify constructability risks and opportunities as well as risk mitigation strategies. The Department will optimize the use of construction knowledge and experience in project concept development (CD), preliminary engineering (PE) and into final design (FD) to achieve the overall project objectives.

The requirement for an independent formal constructability-risk analysis workshop/team reviews during CD, PE and FD shall depend on the type, size, cost, inherent risks and complexity of the project. The PM shall make this determination. For limited-scope projects that the PM has determined do not require a separate constructability-risk analysis workshop/team review, the PM and the Designer shall also review the project for constructability. The supervisor of the Constructability-Risk Analysis Unit, within the Bureau of Construction Management (BCM) shall take the lead in scheduling completion of a constructability- risk analysis workshop/team review on al selected projects.

The formal constructability-risk analysis workshop/team review sessions shall be held at a location to be determine by, and facilitated by, the Supervisor of the Constructability – Risk Analysis Unit, within the BCM. The workshop/team reviews shall be performed on select alternatives during CD Phase (before selection of Preferred Alternative), during the PE Phase, and on the Preferred Alternative during the Final Design Phase. .

The constructability- risk analysis workshop/review team makeup and size depends on the complexity of the project. It shall include, but not be limited to, the following:

a) PM
b) Supervisor of the Constructability-Risk Analysis Unit
c) RE/FM
d) Various Design Units' SMEs, as determined by the PM
e) Various Operations Units
f) Constructability Unit in the BCM
g) Community Relations (as required, depending on community sensitive issues such as potential impacts on businesses, noise ordinances, and night work)
h) FHWA Area Engineer (PODI projects only)

The constructability-risk analysis workshop/team review for the BCM and Regional Construction Office should focus on ways to reduce the construction time, extra costs associated with changes, claims, maintenance needs and public inconvenience.

Environmental concerns, traffic problems, safety and noise pollution issues all should be addressed.

The Team should schedule a field visit, if deemed appropriate to identify potential issues, risks or elements not shown on the plans that should be shown on the plans.

Checklists should be used as a guide in the constructability-risk analysis process and updated periodically so that they remain relevant and useful to the participants. They should not be relied on solely for the review procedure, since it does not always cover all aspects of the work and may not be applicable to the area of concern.

As part of the project's constructability- risk analysis workshop/Team review, optimum construction scheduling and staging of the project will be considered, including such things as:

a) A + B Bidding, as an alternate contracting method.
b) Lane rentals or limitations on lane closures to mitigate traffic impacts.
c) Incentives for early completion to mitigate impacts.
d) Multiple crews and/or shifts to accelerate work and shorten durations.
e) Use of night work to mitigate impacts, if feasible.
f) Interim completion dates for stage construction milestones, including winter layover periods.
g) Use of items like Moveable Construction Barrier, Variable Message Signs, limited duration detours, etc. to shorten durations and mitigate traffic impacts.
h) Higher liquidated damages for untimely completion and/or violation of lane closure times (Road user costs).
i) Construction methods and practices
j) Traffic staging/use of detour
k) Need to install sheeting for cofferdams and/or soil stability
l) Review of project limits
m) Access issues during construction
n) Major utility conflicts
o) Utility relocation agreements and their scheduling impacts, including possible start of utility relocations prior to start of construction.
p) Right-of-Way availability
q) Construction easements (temporary and permanent)
r) Permit requirements and restraints.
s) Identification of major risks/obstacles not shown
t) Public perception and impacts caused by Construction
u) Determine whether NJSP and/or Municipal Police will provide Traffic Safety Services. For guidelines for the use of Traffic Safety Services, refer to CPH Section VIII.

During FD, all plan, special provisions and scheduling review comments are to be submitted to the Constructability-Risk Analysis Unit, within the BCM. The PM will input any external commitments and/or program consideration (funding) before passing the information on to the Designer.

During FD submission, the Constructability-Risk Analysis Unit within the BCM shall not concur with constructability of the project without having all the information that would impact construction scheduling, including any changes made after the FD review. This may necessitate a commitment from the PM for mutual establishment of the completion dates which are listed under the FD Submission, as part of a Constructability–Risk Analysis Unit sign off.

PROJECT SCOPING CHECKLIST AND PRELIMINARY AND FINALDESIGN SUBMISSION REVIEW QUALITY ASSURANCE GUIDE

1) CONSTRUCTABILITY ISSUES

a) How should the project be staged? Will temporary overlays or patching be needed for needed for staging
b) Should detours be used? Will detour routes need upgrades, if implemented? Is any special signing needed?
c) Should work done during or night? If performed at night, will the intended work conflict with existing local noise ordinances? Can the intended work be performed in the allotted night-time hours?
d) Should the project be closed to traffic? If so, how do we handle locals? Are special signs needed? What about impact to school bus routes and/or emergency vehicles? Are temporary sidewalks needed for pedestrians? Are temporary chain fences needed?
e) Will there be access problems for private driveways or businesses? How will staging affect access? Are special signs needed?
f) Will there be a need for variable message boards and/or highway advisory radio? Could any other extraordinary traffic mitigation efforts (e.g. project acceleration) be applicable on this project?
g) Will timing of project interfere with tourism, holiday shopping, fish spawning or local event like shore traffic, county fairs, race tracks, sporting events, high volume traffic generators, shopping malls, etc.?
h) When should the project start/finish? What do you thing the optimum month to bid the project is for construction efficiency and to reduce CE costs should be (Avoiding winter layovers, seasonal restraints, etc.)?
i) Are adequate size work zones and storage space available at the site for the proposed work? Will construction easements be needed to complete the proposed work? Are the work sites accessible?
j) Could Moveable Construction Barrier expedite or improve productivity in the construction work zone, thereby shortening the construction duration?
k) Ensure that if staging of the project utilizes a shoulder as an active lane of traffic and a new shoulder is not built, that the impact of mail delivery, garbage pickup and school buses are taken into consideration (turning radii, stopping in an active lane for children pick up/drop of, garbage collection, etc.)
l) Are there adjacent projects which may pose a conflict with traffic management during construction, including on parallel routes?
m) What special snow removal concerns are applicable in this area?
n) If barrier curb is required, make sure enough space is provided between barrier curb for snow plowing and oversized loads exiting highway ramps.
o) Is it possible for the field office site location to be within the project limits?
p) Recommend seismic/vibration monitoring if pile driving/sheeting is being driven in close proximity to buildings or underground utilities. Pay particular attention to historic structures.

2) Should the limits of construction be extended based on field conditions at the proposed end limits?
3) Are the appropriate types of repairs provided for bridge rehabilitation projects? Should decks be patched or overlaid with Latex Modified Concrete/Silica Fume Concrete? What protection is required for the roadway or water course under the structure?
4) Are there any apparent major environmental concerns (buried tanks, landfills, wetlands, asbestos, contaminated (regulated/hazardous) excavation areas, lead paint, etc.)?

5) PAVEMENT ISSUES

   a) Is full depth pavement box needed, or will milling and resurfacing of existing pavement be sufficient?
   b) Are there any distressed areas where joint repair or bituminous patch is needed?
   c) Will sawing and sealing of joints be required?
   d) What types of pavement should be used?
   e) What type of subbase should be used? Is material available locally?
   f) Will the proposed pavement widths and milling depths be constructible within equipment limitations?
   g) Will rutting require special milling treatments to achieve the new cross slope or typical section?
   h) Will Raised Pavement Markers (RPM's) have to be removed and replaced?
   i) Will rumble strips have to be removed for stage construction?

6) DRAINAGE ISSUES

   a) Is the current drainage sufficient? If not, identify locations.
   b) Do existing inlets and drainage structures need to be cleaned out? If so, identify locations.
   c) Do existing inlets and/or manholes need to be reconstructed or have castings replaced? If so, identify locations.
   d) Can you foresee any drainage problems with adjacent properties?
   e) Will any existing underdrains, septic systems, or outlet drains be affected?
   f) Are existing inlet grates acceptable, or should bicycle safe grates be used?
   g) Are new curb pieces needed? If so, specify what height and color is required?
   h) If staged, will the project drain properly in all stages? Will castings have to be reset to allow winter plowing? Will supplemental pumping be required?
   i) Will grades changes create problems with surface drainage or driveways?

7) GUIDERAIL ISSUES

   a) Are there any areas where guiderail should be extended, removed or upgraded?
   b) Does existing guiderail need to be reset? If so, are extra posts needed to provide for replacements? Are upgraded wood spacers needed?
   c) Is new rail element needed to replace damaged rail? If so, identify locations.

d) Will staging require resetting of guiderail?
e) Do end treatments need to be upgraded? Is there space for upgrade?
f) Will additional areas need to be cleared for guiderail placement?
g) Where existing guiderail ties into structures, are any upgrades needed? Conditions of parapets and sidewalks should be noted.

8) ELECTRICAL ISSUES

a) Should any electrical services be upgraded or relocated?
b) Do any traffic signals or highway lighting fixtures need to be upgraded or relocated?
c) Will temporary signals or highway lighting be required for staging?
d) Are there any existing loop detectors?
e) Will new traffic signals and/or highway lighting be in conflict with power lines or other utilities?

9) MAINTENANCE OF RIGHT-FOF-WAY ISSUES

a) What driveways need to be reviewed for access compliance?
b) Check the condition of curbs, sidewalks and driveways. Are any replacements required?
c) Handicap ramps new or upgraded should be addressed?
d) When designing concrete islands, consider very carefully where vegetation/grass is used, since this can be a maintenance problem after construction.
e) Does existing highway singing need refurbishing, replacement or relocation?
f) Are there any privately owned signs, fencing, lighting, or sprinklers in our R.O.W. that are visible and may not belong? Should they be removed on this project?
g) Will this project require changes to, or a new, jurisdictional agreement?

10) UTILITY ISSUES

a) Do any power lines or other utilities, including above and below ground property services, need to be relocated as a result of the project or construction work such as equipment for pile driving operations, bridge erection, roadway sheeting, guide rail installation or construction of noise walls, overhead signs or culverts? If so, can they be moved before construction?
b) Does the area require predesign underground utility locations verification? Should test pits be dug? I s there a need to relocate underground utilities? Does the project require subsurface Utility Engineering by the designer?
c) Is there any evidence of buried fiber lines or Intelligent Transportation System (ITS) facilities?
d) Can utility relocations be done under master agreement or will a specific project agreement be required before relocation work can be done?
e) Can utility relocations start prior to the construction Contractor?
f) Can utility relocations relocation be performed by the State’s Contractor during construction?

g) Is the project in proximity to railroad property- active or exempt?
h) Will utility betterments be incorporated into this project?

11) Additional templates and issues can be found on the DOT shared S: drive folder Constructability Memos and Templates.