CHAPTER 9

DESIGN STANDARDS AND CONSTRUCTION SPECIFICATIONS

CONTENTS

9.1 INTRODUCTION

This chapter directs the designer to the design standards, design guidance, other technical guidelines, and construction & materials specifications which must be followed when designing a locally administered Federal-aid transportation project.

Once design standards and construction specifications have been established, they should be set forth in the *Design Report* and the design section of the *Project Management Plan* (PMP) (see Chapter 2). The PMP, which is required for all projects, shall clearly identify the parties responsible for the Quality Assurance (QA) and the Quality Control (QC) of the design, materials, and construction of the project.

When a local project sponsor (Sponsor) prepares contract documents using New York State Department of Transportation (NYSDOT) Specifications, Standard Sheets, plans, procedure manuals, and/or other design & construction documents; and these documents reference NYSDOT performing review & approval during design, or on-site inspection during construction; it is to be understood that such activities are actually the responsibility of the Sponsor's NYS-licensed design professional[1]. The Sponser must identify and document in both the Project and Construction Management plans who will be performing these functions when NYSDOT will not be. Contact the Regional Local Project Liaison (RLPL) for assistance defining these roles.

For certain construction materials, NYSDOT Specifications call for off-site QA (which can include shop drawing review). In these instances and when the transportation project is on the State or National Highway System, the QA will be performed by NYSDOT. When *off* the State or National Highway Systems, QA remains the Sponsor's responsibility. However, in these cases, the Sponsor may still request assistance from NYSDOT. If NYSDOT will *not* be involved in the material approval or inspections required by NYSDOT Standard Specifications, the Sponsor must provide an appropriate level of approval and inspection – ***not to be performed by the contractor***. In either case, the process for material approval and inspections required by NYSDOT Standard Specifications; Construction and Materials should be clearly stated in the *Construction Management Plan* (CMP) and covered by a note in the bid documents (see Chapter 12).

NYSDOT will be responsible for QA for project elements involving innovative or unique materials, construction methods, or structures.

9.2 DESIGN STANDARDS

NYSDOT design standards are based generally on American Association of State Highway and Transportation Officials (AASHTO) standards and have been approved by the Federal Highway Administration (FHWA) for use on all Federal-aid projects.

AASHTO design standards, developed and approved by a committee of Federal and State transportation officials, are based on decades of research and multinational experience, and are tailored to the highway functional class, design speed, terrain, traffic volumes, and other characteristics of the highway. They apply to all types of road facilities, and recent studies have confirmed their cost effectiveness.

[1]Engineer, Architect, Landscape Architect, or Land Surveyor; whose practice is in the discipline of the work.

For all locally administered Federal-aid transportation projects in New York State, Sponsors (except for cities with populations greater than three million) must use NYSDOT design standards for all projects regardless of highway system. Project elements for which NYSDOT or AASHTO have no established standards must conform to appropriate Federal, state, local, or industry codes & standards, as approved by NYSDOT. An automated tool is available to help generate a table of design criteria[2] to be included in the design approval document is available from NYSDOT.

In general, locally administered Federal-aid transportation projects must be designed to meet or exceed the critical design criteria elements in Chapter 2 of the *NYSDOT Highway Design Manual* (HDM) and Section 2 of the *NYSDOT Bridge Manual.* However, AASHTO standard values may be used for the criteria for segments of projects off the State Highway System. In some situations it may be appropriate to not meet these standards entirely because slightly less stringent values can still allow the Sponsor to build a project that is safe and of good quality, but in a more cost-effective manner. When requesting the inclusion of nonstandard design features into a project, the Sponsor must submit a formal justification to the Regional Local Project Liaison (RLPL) who will coordinate its review and approval (see HDM Chapter 2). When evaluating nonstandard elements, some factors NYSDOT will consider include accident analyses, cost, compatibility with adjacent sections, environmental impacts, Right-of-Way (ROW) impacts, etc.

In addition to the *critical* design elements, there are other design elements (see HDM Chapter 5) with established values or parameters which must also be considered when scoping and designing a project. These additional elements are important because they can considerably affect the cost, scope, schedule, and quality of a project. Prior to design approval, any decisions to vary from recommended values or accepted practices for these elements must be explained and documented in the scoping and/or Design Approval Documents. When identified after design approval, a re-evaluation of Design Approval Documents might be required (this must be documented in project files). The more significant the deviation, or the more important an element is to quality design, the more detailed the explanation must be.

The *Project Approvals Matrix* (see Chapter 8) identifies which authorities have jurisdiction over the approval of nonstandard features, and the Chapter 8 Appendix includes a form for preparing a nonstandard feature justification. Work on or related to more than one system (e.g., local bridge over an Interstate, intersection reconstruction with only one route on the NHS), evaluated with associated cost estimates for each system, affects approval authority. Refer to the footnotes in the Matrix for further guidance.

9.2.1 Justification of Nonstandard Features

A *nonstandard feature* occurs when established design criteria for a *critical design element* are not met. All nonstandard features to be retained must be listed, justified, and approved in accordance with HDM Chapter 2 and the NYSDOT *Project Development Manual* (PDM).

Many of the values for critical design elements depend on design speed. The selection and justification of a nonstandard design speed, however, is not permitted (23 CFR 625). Instead, the design speed should be determined (in accordance with HDM Chapter 2), and any

[2] /https://www.dot.ny.gov/divisions/engineering/design/applications/design-criteria

nonstandard critical design elements individually justified. Design Approval Documents. Refer to HDM Chapter 5 for further information about these types of design elements.

To support the rationale for including a nonstandard feature, a completed *Nonstandard Feature Justification Form* (HDM Exhibit 2-15) must be provided, or an explanation given as to why the information requested in the form was not considered applicable. This is required only for the alternative for which design approval is sought.

The following is additional guidance for completing the *Nonstandard Feature Justification Form*.

Similar features with similar accident histories may be justified with a single form. Examples of those which may be grouped together include: a series of curves with similar radii, shoulders on a grouping of similar ramps, and bridge widths for a series of bridges to be rehabilitated or replaced in a future project.

Advisory Speed – The advisory speed is defined in Section 2C-46 of the *New York State Supplement to the Manual on Uniform Traffic Control Devices*. The advisory speed may be determined by calculating the speed from the existing geometry and from formulas in HDM Chapter 5. The advisory speed for horizontal alignment may also be determined using a ball bank indicator reading as per §2C-46 of the *NYS Supplement*. Note that the results will differ slightly for each of these methods.

Accident Analysis – Refer to HDM Chapter 5.

Cost Estimates – An approximate construction cost estimate should be used. A Benefit/Cost ratio should be determined and should consider accident cost, user delay, etc.

Mitigation Measures – Refer to the accident reduction factors[3] on the NYSDOT website for a list of measures to consider and for guidance in evaluating their effectiveness. If further assistance is required, contact the RLPL for consultation with the Regional Traffic Group.

As suggested above, strictly adhering to the Design Standards in all instances may be inappropriate. Instead, they should serve as a guide, since the Standards are often set at discrete thresholds for variables which in reality exist across a continuous range. Furthermore, if a sidewalk, ramp, curb ramp, stairway, or other pedestrian facility cannot fully comply with the accessibility standards found in the *Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities* (ADAAG), then follow the guidance in HDM §18.6.1, *the facility must still be made accessible to the* ***maximum extent practicable***.

The reasons that full compliance with the guidelines might not be feasible must be documented in the Design Approval Document and be consistent with the definition of *Technical Infeasibility* (HDM §18.4) and ADAAG justification requirements.

9.2.2 Non-Conforming Features

In addition to the critical design elements covered in HDM Chapter 2 there are other design elements with established values or parameters requiring consideration. While not identified as *critical* design elements, they are nonetheless important and can significantly affect a project. Any decision to vary from recommended values or accepted practices needs to be explained

[3] https://www.dot.ny.gov/divisions/operating/osss/highway/accident-reduction

and documented (as nonconforming features) in the scoping/design approval documents. Refer to HDM Chapter 5 for further information about these types of design elements. The following references may be used to support justifying the inclusion or retention of nonstandard and nonconforming features (to address accident history, environmental impacts, cost to correct, etc.):

- AASHTO's *A Guide for Achieving Flexibility in Highway Design* (current edition)
- *Proposed Treatments for the Rehabilitation of the National Register Eligible Long Island Parkways*, December 1997.
- *Recommendations of the Parkway Standard Task Force*, Jan 1989 (amended 10/25/90)
- NYS Scenic Byways Program: Individual Corridor Management Plans

During the project development process trade-offs of various attribute values of design elements are routinely evaluated. Quantitative measures (safety, constructability, environmental effects, cost, etc.) should be used, whenever possible, to compare the consequences of the different options. When NYSDOT evaluates such trade-offs in the course of considering transportation needs and community needs, public safety remains a foremost issue, as it should for Sponsors.

As stated before, the more significant the deviation or the more important an element is to quality design, the more detailed its explanation needs to be. For example, a justification similar in detail to the requirements for a *nonstandard* feature is appropriate for a *nonconforming* feature if a Sponsor proposes to build an acceleration lane at 75% of the length recommended in AASHTO's *A Policy on Geometric Design of Highways and Streets*. On the other hand, not achieving the minimum length of a superelevation runout by a few feet would only warrant a brief explanation in the report.

The following is a listing of some of the other elements which are described in detail in the HDM. It is being provided here to give a representative sample of items to be considered when scoping and designing a project. It is not in order of priority or intended to be all-inclusive.

- Level of Service (LOS) (This is a critical design element on Interstate projects only.)
- Clear zone
- Intersection radii (including accommodation of identified oversized vehicles)
- Intersection and decision sight distance
- Superelevation runoff/runout length
- Minimum length of vertical curves
- Lane drops
- Broken back curves
- Compound curves
- Auxiliary lane lengths
- Adequate provisions for pedestrians and bicyclists (See Chapter 18 of this manual)
- Transit and High-Occupancy Vehicle facilities and accommodations
- Design storm for drainage facilities (see Chapter 8)
- Curbing
- Guide rail
- Permanent and temporary soil erosion and sediment control

9.2.3 Approval Authority for Non-Conforming and Non-Standard Features

Table 8-1, *Project Approvals Matrix,* identifies the approval authorities for important milestones of the preliminary design process. Other required steps and approvals can be found in Sections 4.4 and 4.5 of the *Project Development Manual* (PDM).

The following PDM subsections apply to a project occurring on more than one system:

4.2.5.1 Approvals for: Design, PS&E & Amendments
4.2.5.2 Non-Standard Feature Approval

HDM Chapters 2, 4, and 7 describe the critical design elements and procedure to follow when one or more of these standards can not be achieved. Nonstandard features off the State system and off the NHS may be approved by the responsible local official (or designee) in coordination with other agencies, groups, stakeholders, etc. The approval shall be based on a request memo that includes certification by the NYS-licensed design professional who is in responsible charge of the project. Nonstandard features on the State system or the NHS are to be approved by the Region (Regional Director or designee), Main Office (Deputy Chief Engineer), or FHWA as indicated in the Non-Standard Feature column of PDM Exhibit 4-2.

The profile and span length of a bridge are normally set to allow the geometry of the underlying transportation facility to adhere to standard design. When standards cannot be met for the underlying travelway, the proposed nonstandard or nonconforming features must be justified and subsequently approved by the individual with authority for the impacted facility, as determined from PDM Exhibit 4-2. In coordination with its owner, the Regional Director will approve nonstandard features on a locally owned facility. Nonstandard features for the bridge and approaches are to be approved by the individual with authority for the travelway carried by the bridge (PDM Exhibit 4-2).

NYSDOT design standards and construction specifications are included in the current edition of the following:

<u>Highways</u>

- HDM Chapter 2 *Design Criteria*; based on the applicable highway functional classification, for new construction and reconstruction projects.
- HDM Chapter 7 *Resurfacing, Restoration, and Rehabilitation* (1R, 2R & 3R).
- *National Manual on Uniform Traffic Control Devices (MUTCD) and the New York State Supplement.*

<u>Bridges</u>

- HDM Chapter 2 *Design Criteria*; based on the applicable highway functional classification for new construction and reconstruction projects.
- HDM Chap 4 *Design Criteria & Guidance for Bridge Projects on Low Volume Highways*.
- *NYSDOT Bridge Manual*.
- *NYSDOT LRFD*[4] *Bridge Design Specifications*.
- *NYSDOT Standard Specifications for Highway Bridges*.

New structures, replacement structures, and bridge superstructure replacements must be designed using the current version of the *NYSDOT LRFD Bridge Design*

[4] Load and Resistance Factor Design

Specifications. *NYSDOT Standard Specifications for Highway Bridges* may be used for bridge rehabilitation or bridge repair projects.

The design specifications that may be used for rehabilitation and repair projects include: *NYSDOT LRFD Bridge Design Specifications, NYSDOT Standard Specifications for Highway Bridges* or the specifications used in the original design.

Miscellaneous Projects

- Design guidance for projects such as bicycle and pedestrian facilities, lighting improvements, guide rail & median barrier improvements, sign and/or signal upgrades, drainage system restorations, etc. can be found in the HDM (see following table).

Design Standards/Guidance for Select Project Types	
Project Type	Design Standards/Guidance
Sign/Signal Upgrading Projects	MUTCD* & NYS Supplement to NMUTCD. AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals (2001 edition)
Drainage System Restoration	HDM Chapter 8 *Highway Drainage* HDM Chapter 19 *Reinforced Concrete Box Culverts and Similar Structures*
Bicycle Facilities	HDM Chapter 17 *Bicycle Facility Design* AASHTO *Guide for the Development of Bicycle Facilities**
Park-and-Ride Lot Rehabilitation	AASHTO *Guide for the Design of Park-and-Ride Facilities**
Rest Area Rehabilitation	HDM Chapter 27 *Highway Rest Areas and Roadside Parking Areas*. FHWA *Safety Rest Area-Planning, Location, Design*
Pedestrian Facilities	HDM Chapter 18 *Pedestrian Facility Design* *ADA Accessibility Guidelines for Buildings and Facilities*
Lighting Upgrading Projects	HDM Chapter 12 *Highway Lighting*
Guide Rail & Median Barrier Upgrade Projects	HDM Chapter 10 *Roadside Design, Guiderail*

*Check Engineering Information Issuance System[5] to find which edition is the latest NYSDOT-adopted.

Innovative or Nontraditional Projects

- Innovative and nontraditional projects are those which require a unique approach to the design, construction, or material aspects of the project. Additionally, a project may be considered unusual because: (a) NYSDOT has no experience with its type, (b) its design is not partially or fully covered by existing specifications, (c) it requires uncommon or single-source materials, construction options, or maintenance of traffic, or (d) the design method required is not in regular use. Examples of innovative or nontraditional projects could include ferry terminals, railroad spurs, historic building rehabilitations, etc.
- Innovative or nontraditional bridges are special cases for bridge design. They typically require the development of special design criteria, which goes beyond the provisions of the *NYSDOT LRFD Bridge Design Specifications.* These types of bridge projects shall be progressed following §20.2.2 of the *NYSDOT Bridge Manual*.
- The project designer must make the innovative/nontraditional project determination as early in the project development process as practical. The designer must notify the RLPL once the project has been identified as such. This determination must be documented in the Design Approval Document and must provide the rationale for the recommendation, including unique project characteristics, proposed design and construction methods, proposed materials, and any relevant technical justifications.

[5] https://www.dot.ny.gov/eieb

- The RLPL will obtain concurrence from the Regional Director (or designee) that the project is unusual. If so, the project will be reviewed by the appropriate NYSDOT staff and experts in the areas relevant to the unique features of the project. This review must provide a recommendation as to the need for any additional technical progress reviews or peer reviews to be included as part of the project's QA process.

All Projects

- NYSDOT is responsible for the State Highway System. The use of NYS highway ROW must be in accordance with the terms and conditions of a Highway Work Permit[6] issued by the Commissioner of Transportation or a duly assigned agent, in accordance with NYS Highway Law §52. In order to conduct *any* work on the State or National Highway System, a Highway Work Permit must be obtained.

9.3 CONSTRUCTION SPECIFICATIONS

Locally administered Federal-aid transportation projects must be constructed in accordance with the current version of *NYSDOT Standard Specifications; Construction and Materials* including any and all modifications to the Standard Specifications issued by the Engineering Information Issuance System, and NYSDOT-approved Special Specifications for general use (cities with a population of 3 million or more may pursue approval of their own construction specifications on a project by project basis and then be allowed to use these approved construction specifications for general use thereafter).

When a project includes an element not specifically addressed in *NYSDOT Standard Specifications; Construction and Materials* or in a NYSDOT-approved Special Specification for general (as opposed to project-specific) use, the designer must generate a Special Specification (see Section 9.3.3). All design standards and specifications must comply with Federal and State laws, rules, and regulations and must be prepared and endorsed by a design professional licensed in New York State, whose field of practice and expertise is in the discipline of the work type. Sponsors may incorporate NYSDOT Special Specifications (approved for general use) into contract documents, and the RLPL will help locate those applicable.

9.3.1 QA for Projects on the State or National Highway System

For projects (or segments) on the State or National Highway System, NYSDOT will perform off-site QA and approval for materials as required by the *NYSDOT Standard Specifications; Construction and Materials* the same as it would for State-let projects. The Sponsor must document this fact in the CMP (see Chapter 12) and via a Special Note in the contract documents, a suggested sample of which is provided below:

Special Note:

1. The contractor understands and agrees the inspection and approval of materials to be used on this project will be performed by NYSDOT.

2. When the contractor receives direction from NYSDOT regarding the approval/rejection of materials such as hot mix asphalt, Portland cement concrete, structural steel, concrete structural elements and/or components, the contractor understands the decision is final and will accept it as such.

[6] https://www.dot.ny.gov/divisions/operating/oom/transportation-systems/traffic-operations-section/highway-permits

3. The contractor will not allow off-site materials subject to the inspection and approval of NYSDOT to be shipped to the project site prior to receiving authorization from NYSDOT.

4. As soon after award as practicable, and prior to the pre-construction conference, the contractor shall provide the following information to the Sponsor and NYSDOT Regional Local Project Liaison.

   A. The name and address of each manufacturer of all materials and portions thereof requiring off-site quality assurance in accordance with NYSDOT's specifications to be used in this project.

   B. The name and address of each fabricator fabricating structural steel items or any portion thereof to be used in this project.

   C. The name and address of each fabricator manufacturing structural concrete items or any portion thereof to be used in this project.

5. The contractor agrees that it and its subcontractors and suppliers will only acquire materials for this project through NYSDOT-approved manufacturing, batching and fabrication facilities.

9.3.2 QA for Projects off the State or National Highway System

For projects off the State or National Highway System (including highways which are signed as US or NY touring routes but are not State-owned) NYSDOT *may* want to be involved in the material testing and approval (QA) required by *NYSDOT Standard Specifications; Construction and Materials*. The RLPL must be consulted during the Initial Project Proposal (IPP) for a determination as to who will be responsible for material approval and inspections.

If NYSDOT is not involved in the QA required by *NYSDOT Standard Specifications; Construction and Materials*, the Sponsor must provide the appropriate level of approval and inspection.

In either case, the process for material approval and inspections required by the *NYSDOT Standard Specifications; Construction and Materials* must be clearly stated in the CMP and covered by a Special Note in the contract documents.

Under no circumstance shall the contractor provide Quality Assurance. Quality Assurance is material testing, and approval process and can either be supplied by the Sponsor through its Construction Inspection firm or an independent testing firm or a combination of both. The contractor is responsible for the Quality Control (QC) of their activities.

9.3.3 Special Specifications

NYSDOT Special Specifications are written by the Regions, various Main Office functional groups, and other agencies, such as the NYS Thruway Authority, to specify work not addressed in the *NYSDOT Standard Specifications; Construction and Materials*. Special Specifications are typically developed for items which are infrequently used (e.g., nontraditional projects containing architectural components). Sponsors are encouraged to use these previously-approved Special Specifications, which can be found in NYSDOT's Pay Item Catalog[7]. The RLPL should be consulted if the Sponsor has any difficulty locating a Special Specification.

[7] https://www.dot.ny.gov/main/business-center/engineering/specifications/pay-item-catalog

Detailed information about Special Specifications and guidelines on creating new ones can be found in HDM Chapter 21, *Contract Plans, Specifications, and Estimates*.

After creating the new specification or modifying an existing one, the Sponsor must submit the specification with justification to the RLPL for review and approval by the appropriate subject matter experts in coordination with NYSDOT's Design Quality Assurance Bureau (DQAB)[8]. The request for Special Specification review and approval must contain enough supporting information, including whether or not it is safety related, so a reviewer can make an informed decision regarding its suitability. No Special Specifications will be reviewed or approved without supporting justification (as discussed in the HDM). NYSDOT has Special Specification approval authority even when the items are not safety related and (a) do not require off-site QA, or (b) the Sponsor provides an equivalent level of off-site QA, or (c) NYSDOT desires to be involved in the material testing and approval (QA) required by *NYSDOT Standard Specifications; Construction and Materials*. During IPP development the Sponsor needs to be in consultation with the RLPL in the determination of QA responsibility.

Special specifications for safety-related items including structural steel, structural concrete, HMA top course, bridge railing, guide rail, median barrier, impact attenuators, retaining walls, bridge bearings, etc. must be submitted to the RLPL for review and approval by the appropriate program area per Table 8-1, *Project Approvals Matrix.*

Materials called out under a Special Specification will be accepted based upon certification of conformance to the Special Specification, by a NYS-licensed design professional.

Use and approval of Special Specifications must be documented in the Plans, Specifications & Estimate (PS&E)/Contract Document transmittal letter.

9.3.3.1 Proprietary Items

Under 23 CFR 635.411 *Material and Product Selection* federal funds must not be used, directly or indirectly, in payment for any premium or royalty on any patented or proprietary material, specification, or process specifically set forth in the plans and specifications for a project, unless: (1) such patented or proprietary item is purchased or obtained through competitive bidding with equally suitable unpatented items; or (2) the state transportation department certifies either that such patented or proprietary item is essential for synchronization with existing highway facilities, or that no equally suitable alternate exists – this alternative may be pursued if the appropriate approval authority identified in the *Project Approvals Matrix* finds the use of the article or material to be in the public interest – or (3) such patented or proprietary item is used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes.

To obtain approval for a Special Specification for a proprietary item a justification must be prepared showing how the request is in compliance with one or more of the points mentioned above. This approval may be obtained only on a project-by-project basis (HDM Chapter 21).

[8]Special Specification approval process: Sponsor submits Special Specification to RLPL. RLPL reviews for completeness and forwards to Regional Special Specification Coordinator (RSSC) who then forwards it to the appropriate Main Office Technical Expert. Technical Expert approves and sends back to RSSC indicating that the item may be entered into the system. RSSC forwards the item to DQAB for an item number. The Special Specification is then posted on NYSDOT's website.

Special Specifications calling out a single manufacturer's item to be used on an urban street project for drainage basins, water valves, and manhole covers – *in order to match current designs* – are in conflict with the above CFR. This conflict may be resolved by either (a) providing "as manufactured by [at least two, preferably three (for competitive purposes) firms typically manufacturing/forging such castings]," requiring knowledge that each foundry/company can produce the specified casting; or (b) providing a generically written specification providing dimensioning, engineering properties and the municipality's raised letter name/logo.

9.3.3.2 Salvage

In lieu of salvage, miscellaneous highway appurtenances[9], dismantled bridge superstructures, and bituminous concrete millings which are determined to have little maintenance value should be turned over to the contractor for disposal in order to avoid costs associated with re-handling. Contract bid prices should then reflect the scrap value of these items.

The Sponsor may elect to salvage appurtenances and pavement millings for future maintenance use. Bridge beams, girders and other superstructure materials from dismantled bridges can also be appropriate for salvage. No credit to federal-aid funding is required for salvaged items as long as the following conditions are met:

1. Salvaged material is to be used for highway maintenance and not sold as scrap.

2. Additional cost is not incurred for special handling or replacement of material damaged during salvage operations.

3. As a rule, specifications shall not call out for the contractor to deliver salvaged material to the Sponsor's maintenance yards. Occasionally, however, exemptions to this Federal policy (stated in 23 CFR 635.407(g)) regarding transport are appropriate and should be within a reasonable distance. Requests seeking exemptions will be based on meeting the requirements of 1 & 2 above, in addition to providing environmental benefits as a result of incorporating the salvage material into future highway maintenance activities (recycling versus disposal). The exemption should be in the form of a Public Interest Finding. Material requiring delivery and the location to be delivered should be identified in a special note.

Disposition of millings and recycled materials shall be described in a Special Note in the contract documents.

9.4 ENGINEERING INFORMATION ISSUANCES AND CONSULTANT INSTRUCTIONS

NYSDOT publishes three types of issuances to guide engineering practice; an Engineering Directive (ED), Engineering Instruction (EI), and Engineering Bulletin (EB). Sponsors are only required to follow those issuances pertinent to their specific project or applicable to Federal-aid projects in general. Sponsors and their designers are responsible for keeping up-to-date with current issuances of EDs, EIs, and EBs. RLPLs will do their best to keep Sponsors informed about relevant issuances coming into effect.

[9] signs, signals, light poles, guide rail, bridge rail, wood posts, frames, grates & manhole covers, hydrants, and similar materials

EDs are issued by the NYSDOT Chief Engineer to convey information deemed critical to the continuation of essential engineering activities. They are issued infrequently, can be time-sensitive, and take effect upon issuance.

EIs are issued to announce NYSDOT is changing some aspect of its current policy, standards, guidelines, or specifications contained in manuals such as the *Highway Design Manual*, *Bridge Manual*, *Standard Specifications*, *Standard Sheets*, *Manual of Uniform Record Keeping* (MURK), *Project Development Manual*, etc. EIs also issue direction, guidance, or explanation of policy or procedures that will not be incorporated elsewhere. EIs often have extensive supporting or related material attached, referenced, or distributed by other means (with instructions on how to obtain). EIs take effect as announced in the EI or if it affects the Capital Letting program on one of three annual effective dates, and remain in effect unless, or until, a subsequent EI or EB directs otherwise.

EBs are used to announce NYSDOT is issuing a new publication, or amending an existing publication, such as the *HDM*, *Bridge Manual*, etc., or that such amendments are available from NYSDOT. EBs can also transmit replacement pages for existing publications including current EIs, rescind a current EI, issue temporary guidance, or extend the effective date of an EB soon to expire. Other materials are often attached. EBs take effect as announced in the EB and expire one year after issuance.

Additional information, how to get copies, how to be added to the distribution list, etc. is available on NYSDOT's Engineering Information Issuance System.

Consultant Instructions[10] (prepared by the Contract Management Bureau) are issuances that can also be applicable, and so should regularly be checked by Sponsors.

9.5 LIST OF DESIGN STANDARDS AND CONSTRUCTION SPECIFICATIONS

The following design standards and construction specifications are included in the SAFETEA-LU Agreement between FHWA and NYSDOT:

1. A Policy on Geometric Design of Highways and Streets, AASHTO
2. Transportation Research Board Special Report 209, Highway Capacity Manual
3. NYSDOT Highway Design Manual
4. NYSDOT Standard Sheets
5. NYSDOT Policy and Standards for Entrance to State Highways (HDM Appendix 5A)
6. NYSDOT Comprehensive Pavement Design Manual (CPDM)
7. NYSDOT Standard Specifications for Highway Bridges*
8. NYSDOT Bridge Manual
9. NYSDOT Bridge Detail Sheets
10. NYSDOT Engineering Instructions
11. NYSDOT Engineering Bulletins
12. NYSDOT Engineering Directives
13. NYSDOT Standard Specifications for Construction and Materials
14. NYSDOT Manual of Uniform Traffic Control Devices**
15. National Manual on Uniform Traffic Control Devices**
16. NYSDOT Surveying Standards and Procedures Manual

[10] https://www.dot.ny.gov/main/business-center/consultants/architectural-engineering/consultant-instructions

17. NYSDOT Materials Bureau Materials Methods
18. NYSDOT MURK 1B (Construction Inspection Manual)
19. NYSDOT MURK 2 (Materials Inspection Manual)
20. NYSDOT Geotechnical Engineering Bureau Manuals and Procedures
21. NYSDOT Special Specifications contained in PS&Es which have been approved in accordance with Appendix B
22. NYSDOT CADD Standards and Procedure Manual
23. AASHTO's Guide for Development of Rest Areas on Major Arterials and Freeways

* Subsequent to the SAFETEA-LU Appendix being created, the State of New York superseded NYSDOT Standard Specifications for Highway Bridges by Engineering Instruction 08-042.

** SAFETEA-LU Agreement, Appendix A, provides for NYSDOT Manual of Uniform Traffic Control Devices and National Manual on Uniform Traffic Control Devices. Subsequent to SAFETEA-LU Appendix being created the State of New York adopted the National Manual on Uniform Traffic Control Devices with the New York State Supplement