HIGHWAY DESIGN MANUAL

Chapter 21

Contract Plans, Specifications and Estimate

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21.1 INTRODUCTION

The contract plans (if applicable), specifications, and estimate (PS&E) comprise the final design information necessary for contract letting. Guidance regarding PS&E preparation and submission is detailed in this chapter within the context of the project development process. Project data requirements are outlined. Instructions regarding the procedural steps to be followed for the type of project being progressed are included in the Design Phase I through VI steps in Chapter 4 of the Project Development Manual.

Refer to Appendix A for guidance regarding contract and PS&E preparation for projects involving construction (or alteration) of buildings exceeding $500,000 in combined cost.

21.2 PROPOSAL ONLY CONTRACTS (8 ½" x 11" size sheets)

Proposal Only Contracts are intended to be simple projects that do not involve "permanent construction." "Permanent construction" is defined in this context as any construction that substantially changes physical features within the ROW.

Proposal Only Contracts are developed for printing on 8.5"x11" (ANSI size A) paper. There is no separate set of "plans" in a Proposal Only Contract. Work Zone Traffic Control and other details may be provided in the 8.5"x11" format as part of the proposal. These details must be in conformance with CADD Standards for font size and legibility. Standard drawings on 11"x17" (ANSI size B) paper, shall not be reduced for printing on 8.5"x11" paper. In such instances, the standard drawings should be re-drafted.

It is important that Proposal Only contracts are limited to those that do not involve "permanent construction." This is because Department processes and record retention policies do not provide for the creation of "As-built" Record Plans for Proposal Only contracts, and there are no plans to change these processes and policies at this time. If the Region or others have a need for record plans to be retained, the project should be advanced as a plans project.

There will be situations where work order type contracts (Job Order, Where & When, Emergency Standby) that were progressed to letting as proposal-only contracts result in permanent construction, such as a culvert replacement. In these situations, plan sheets covering the engineering content should be developed, sealed and signed, and submitted to DQAB in accordance with the Office of Construction's field change or as-built revision processes. Reference Sections 91 and 93 of the Contract Administration Manual.

Table 21-1 provides more guidance on determining whether a Proposal Only Contract is appropriate for a project, through common examples. If it is unclear to the Region whether a project may be advanced as a Proposal Only Contract, the Regional Quality Control Engineer should contact the MO PS&E Section Leader who is responsible for Record Plans.

Table 21-1 Examples to Aid in Determining Whether a Proposal Only Contract Is Appropriate

Construction is not Permanent* Proposal Only Contract is Appropriate	Construction is Permanent* Proposal Only Contract is Not Appropriate
Guide rail maintenance (replacement in kind-isolated sections)	Guide rail placed at a new location, guide rail placed on a revised alignment, a change in type of guide rail, in kind replacement of entire runs of guide rail.
Ground mounted signs	Overhead sign structures.
Single Course Overlay (2" maximum thickness)	
Resurfacing – Spot T&L and 2" max Top Course	Spot T&L with Resurfacing over 2"; Mill and Fill over 2"
Crack/joint sealing	
Bridge washing, Bridge painting, Deck Sealing, Approach Slab Replacement in kind	Bridge rehabilitation work.
Curb and curb ramp replacement in kind, Sidewalk replacement in kind	New sidewalks, and other curb/drainage work
Culvert Cleaning/Culvert Repair	Culvert work other than culvert cleaning or repair.
Closed Drainage Cleaning	
Pavement markings	
Signal Maintenance	Signal Work.
Emergency standby contracts	
Where and When	
Job Order	
Temporary Traffic Control	
Test wells, Soils drilling (preliminary engineering)	
Fencing, Landscaping/Plant Enhancement	
Ditch Cleaning, Mowing, Tree Cutting/Tree Removal, Misc. Clean-up, Ice jam removal	
Sweeping Contracts	Embankment stabilization, rock slope remediation, and river restoration projects.

*The implied definition for "Permanent Construction" in these examples is not intended to be used for other purposes.

21.2.1 Proposal Preparation

A signed title sheet followed by a professional seal sheet are required for all Proposal Only Contracts. The signatures and seal cover all project and engineering content within the proposal. Working copies of these sheets are provided as cells that can be found in the nyu_sheet.cel cell library. For internal

NYSDOT users, the settings are included in the project's managed workspace. External users may download the settings from the CADD Settings/Resource Files webpage.

Title Sheet:
Signatures for Proposal Only Contracts should be obtained for the proposal title sheet, using the same guidance as for obtaining Signatures for Contracts with Plans. (See Section 21.3.9.2 A.5.)

A location plan with North Arrow should be provided as part of the proposal title sheet. A short statement of approximate project location, which would enable someone to locate the project with an ordinary road map, should be provided in the space below the words "PROJECT LOCATION".

For projects receiving GreenLITES certification, the appropriate GreenLITES Certification Symbol (also available as cells in the nyu_sheet.cel library) should be located on the signed title sheet.

Professional Seal Sheet:
A professional seal on the professional seal sheet shall be provided for all Proposal Only Contracts, regardless of the extent of design/engineering content within the Proposal, along with the 'violation note. The sealing requirements stated in Section 21.3.9.1 also apply to Proposal Only Contracts.

An attestation similar to the following shall be provided: "Contract has been designed in accordance with NYSDOT policies and guidelines and the Final Design Approval document on MM/DD/YYYY"

Any following sheets requiring a different seal shall be sealed by the applicable professional (e.g., engineer, land surveyor, landscape architect).

Project Detail Sheets:
When necessary, Earthwork Definitions Sheets, and Earthwork Summary Sheet, should be provided as discussed in HDM Chapter 9 Section 9.8.1.

Other Project Details (Work Zone Traffic Control details or other illustrative information) should be placed on the Blank Proposal Sheet Border in accordance with the CADD Standards.

All remaining proposal materials for Proposal Only Contracts are identical to the proposal materials for Contracts with Plans. See Section 21.9.2.2.

21.3 CONTRACTS WITH PLANS (11”x17” size sheets)

Plans are official contract drawings required for projects that involve permanent construction. They should be prepared to use “B” size paper (11”x17”) when printed. The plans should show the location, character, dimensions, and details of the work to be performed. The level of detail provided in the plans should be commensurate with the type of project being undertaken.

Standard Sheets are standard drawings approved for repetitive use in Department contracts. They show design and/or construction details associated with a particular item of work. Guidance regarding standard sheets is provided in Section 21.7. The entire standard sheet book (multiple volumes) as published three times a year on the Department website will be part of every contract.

Examples of applicable project types and work types for which plans should be prepared are:

- New Construction, Reconstruction, Resurfacing, Restoration, Rehabilitation (2R/3R).
- New Bridges, Bridge Replacements, Bridge Removals, Major Bridge Rehabilitation.
- Projects with acquisitions.
- Projects for which permanent record of the work is desired.

21.3.1 Terrain Data

Terrain data is needed to produce contract plans. For the simplest of projects (i.e., sidewalk, ADA curb ramps, or guide rail projects), record plans, orthoimages, and/or uncorrected images may provide sufficient detail for plan preparation. Other projects will require one or more of the following: base mapping, terrain models, hydraulic cross sections, and orthoimagery. When a project requires base mapping, it also requires a terrain model. Following is a brief discussion of each deliverable associated with terrain data.

A. Base Mapping

Base mapping is a graphical representation, in MicroStation DGN format, of the terrain features. Base mapping used for design development and right of way is generally provided to plot at 1:480 scale, (1” = 40’) for use on ‘B’ size paper.

B. Original Ground Terrain Model

An original ground terrain model is a triangulated 3D surface in a .DGN file. The original ground terrain models, along with the base mapping, define the existing project area terrain upon which the new, proposed project features are designed. The terrain model is the source for the development of project alignments, typical sections, cross sections, quantities, and the layout of design elements.

C. Hydraulic Cross Sections

Hydraulic cross sections are cross sections taken upstream and downstream of a bridge or culvert. These sections are perpendicular to the stream/river and the associated flood plain. Hydraulic cross sections consist of field surveyed points in the stream channel and overbank areas extending far enough each side of the stream to contain the design or check flood. Field surveyed points may be supplemented with photogrammetric survey outside of the stream channel.

For new or replacement bridges over waterways, hydraulic cross sections require a field survey upstream and downstream of the bridge, and at the bridge fascia locations. For cross section location and spacing, refer to Appendix 3B of the Bridge Manual, and refer to the Land Surveying Standards and Procedures Manual for field procedures.

Hydraulic cross sections are recommended for culverts with a span between 12 feet and 20 feet. (See Highway Design Manual Section 19.1). It is recommended that the Hydraulic Engineering Unit be consulted prior to obtaining the cross section survey in these instances.

D. Orthoimages

Orthoimages are digital aerial photographs which have been corrected for distortion effects of camera orientation angle and terrain relief to achieve a uniform scale. These raster images are arranged to form a single image that extends beyond a project's mapping. These orthoimages form an image backdrop referenced to the mapping which can be valuable for displays at public hearings, and used directly for scaled 2D measurements.

21.3.1.1 Method of Terrain Data Collection

Terrain data should be collected by either field survey, photogrammetry or a combination of the two.

A. Field Survey

Field survey deliverables consist of base mapping, terrain models, and hydraulic cross sections. Field survey products are compiled according to the Land Surveying Standards & Procedures Manual and Chapter 20 CADD Standards and Procedures. Field survey work is required on most projects as either the initial mapping of the project or to provide supplemental field survey information. Field survey may specifically be requested to compile roadway pavement elevations, bridge elevations, or to locate property lines, right of way (ROW), utility facilities, sign data, and underwater areas, which are unavailable through aerial photography.

For hydraulic cross sections, field survey or a combination of field survey and photogrammetry can be used. Only field survey can obtain underwater data or data in areas of dense foliage. Refer to the Land Surveying Standards & Procedure Manual for information regarding field survey data requirements for waterways.

B. Photogrammetry

Photogrammetric deliverables consist of base mapping, terrain models, partial hydraulic cross sections, and orthoimages. Detailed information on photogrammetry products and how to request them is available in the Catalog of Photogrammetric Services. All mapping and terrain models are compiled following Chapter 20 CADD Standards and Procedures and the Specifications for Photogrammetric Stereocompilation. For orthoimagery, photogrammetry must be requested for the mapping, terrain models, and the generation of the orthoimage. Hydraulic cross sections can be partially produced by photogrammetry, but underwater sections or areas in dense foliage require field survey.

Photogrammetry is more cost-effective than field survey for initial mapping of medium to large projects. However, there are cases where field survey or a combination of field survey and photogrammetry are needed:

1. If a project has urban streets, dense foliage, or design features that require a higher level of accuracy, field survey should be the preferred alternative for these areas.
2. On projects with obstructed aerial views, the designer should determine if the photogrammetric data needs to be supplemented with field survey elevations.
3. The Regional Land Surveyor should be consulted about the best approach to provide mapped deliverables over the life of the project development, with consideration given to the cost of associated resources.

When a combination of field survey and photogrammetry are used, the photogrammetric mapping and terrain models are merged with the field survey mapping and terrain models to create a single deliverable. All users of the project data should be aware of the differences in the positional tolerances of these two data types as shown in Exhibit 21-2. The designer should request enough field survey to assure that the survey data extends beyond any critical design areas. Refer to the Land Surveying Standards & Procedures Manual for information regarding field survey data requirements for bridge replacements. When field survey data will be collected in addition to the photogrammetric data, the field survey data should be collected first to help facilitate the development of the Original Ground terrain model. It should be noted that Laser Scanning technology (LIDAR-Light Detection and Ranging) may contribute to the deliverables received from photogrammetry or survey.

21.3.1.2 Terrain Data Accuracies

The accuracy of the terrain model is contingent on the terrain data accuracy. The terrain model portrays the existing ground surface and is constructed from lines and points that form a triangulated network that defines the features and terrain character. The ground surface between the measured points is interpolated. The overall accuracy and quality of the terrain model is based on the density of points, the selected location of the points, and the accuracy of the points.

21.3.1.3 Process for Requesting Terrain Data

While the terrain data requests will typically originate from Design, the data should also serve the requirements of Construction, eliminating the need for additional terrain data collection during the construction stage. The project design manager and Regional Senior Land Surveyor should determine the terrain data requirements for the project. Terrain data should be requested early in the project development process and will have a significant impact on the schedule, quality, and accuracy of the plans.

Once the terrain data requirements have been decided, the terrain data may be obtained by various methods (e.g., any combination of in-house photogrammetry, in-house field survey, and use of consultants.). For Department designed projects, terrain data should be acquired through in-house photogrammetry and/or field survey as applicable. When in-house resources are not available, terrain data should be acquired using field survey and/or photogrammetric consultants. For consultant designed projects, terrain data collection may be included as part of the consultant design agreement or can be obtained through the Regional Senior Land Surveyor. The Regional Senior Land Surveyor is generally responsible for obtaining the field survey data through in-house or consultant forces and for coordinating the photogrammetric data deliverables. If photogrammetric mapping is required, a “Request for

Photogrammetric Services" should be submitted to the Regional Senior Land Surveyor, who coordinates regional requests. If field survey mapping is required, the request should also be submitted to the Regional Senior Land Surveyor.

Table 21-2 Terrain Data Accuracies [1,2]

Feature	Obtained by Field Survey		Obtained by Photogrammetry	
	Horizontal (ft)	Vertical (ft)	Horizontal (ft)	Vertical (ft)
Points (Door Sills, Corner of Frames/Grates)	0.1	0.15	0.25	0.3
Structures (Buildings, Walls, Bridges, Culverts)	0.25	0.15	0.25 [3]	0.3 [3]
Hard Paved Surfaces (Driveways, Roadways, Sidewalks)	0.25	0.15	0.25	0.3
Underground Features (Drainage Lines, Utilities Mains)	0.3	0.3	N/A	N/A
Graded Areas (Lawns, Gravel Drives)	0.6	0.6	0.6	0.6
Sparsely Vegetated Natural Areas (Open Fields)	1.5	1.5	1.5	1.5

Notes:
1. The accuracy of terrain data is the difference between a location on the Original Ground Model surface and the actual location of that point.
2. The accuracies listed in the above table are based on the two standard deviation level which means that 95% of the tested points will be within the listed accuracy.
3. The tops of vertical surfaces (faces of curbs and walls) are offset to avoid data conflicts. Photogrammetry uses the roof overhang to portray buildings rather than the building walls.

21.3.1.4 Terrain Data Needs by Project Type

The following factors should be considered when determining the type of terrain data necessary for a project:

1. Size and scope (or type) of the project.
2. Level of accuracy needed for terrain data to design and eventually construct the project, or portions of projects. More vertical accuracy may be required in certain situations. For example: in areas where existing and proposed pavement alignments are to be tied together; in flat or level areas, where the slopes of existing drains tend to be very small, and when small differences in elevation can be critical; 2R or 3R Projects need more vertical accuracy along the entire length of roadways where the proposed alignment is to match into existing conditions. More accurate terrain models should be produced for these situations and should be completed by field survey.
3. Time required from data collection to the start of design.
4. Estimated data collection resources required.

21.3.1.5 Width of Mapping Limits

Mapping widths should be kept as narrow as possible but should be wide enough to include sidewalks, roadside ditches and back slopes, embankments (critical to the support of the roadway), drainage structures, roadway guide rail, signs, driveway entrances, bridge structures, and the potential clear zone. In urban or suburban areas, the minimum mapping width on 2R/3R projects will generally go out to the front faces of buildings, while on Reconstruction (& Bridge Replacements) or New Construction Projects the mapping width generally will run along the rear of buildings. Mapping widths should include at a minimum, all area within existing highway boundary so the terrain data will be sufficient for ROW mapping purposes. The mapping width limit can vary within a project to cover intersecting roads, ramps, and drainage features.

Table 21-3 indicates the project work type, recommended terrain data deliverable, and typical mapping width that are generally required based on project type. As indicated in Table 21-3, some projects may require more than one type of terrain data deliverable. In addition to the guidance provided in Table 21-3, consideration should be given to the following:

1. 2R/3R Projects require higher accuracy terrain data along the roadway to provide sufficient information to make informed decisions on which types of surface treatments should be utilized on a project. Decisions on how to improve an existing pavement cross slope to ensure it conforms to standards should be based on having accurate terrain data. An engineer's ability to accurately estimate the work and material quantities required to provide a finished road surface which meets standards, is affected by the accuracy of the terrain data.
2. Higher accuracy terrain data is necessary for urban streets out to faces of buildings (including wide sidewalks, porch steps and building sills) to ensure proper drainage and access to the roadway.
3. Major bridge rehabilitations, such as superstructure replacements, require accurate terrain data for the location of the substructure and approach roadways. Terrain models for bridge projects (e.g., bridge replacements, bridge widenings) require accurate tie-downs to existing profiles at the approaches, especially where no other work is anticipated for the project.
4. Projects to construct a highway on new alignment, add through-travel lanes, or significantly alter the horizontal or vertical alignment, require Type I Noise Studies (Section 4.4.18 of The Environmental Manual) These studies generally require base mapping and terrain models extending 500 ft from the outside travel lanes (i.e., a 1000 ft plus mapping width). There may be some Type I projects where the 500 ft may need to be reduced (e.g., where a noise barrier analysis will not be possible, lack of access control). Designers should contact their Regional Environmental Unit Supervisor to determine if a noise study and any special terrain data are required.
5. Most pavement preventive and/or corrective maintenance type projects (e.g., 1R, microsurfacing, chip seal, and quick-set slurry) do not require a terrain data deliverable. However, limited data, such as pavement elevations where superelevation adjustments are anticipated, may be needed for a 1R project.
6. Other projects may require project-wide terrain data. For example, drainage reconstruction or construction of a recharge basin require project-wide base mapping, and other projects may require very limited data. If only limited terrain data is needed, then it should be collected using field survey.

Table 21-3 Terrain Data Requirements by Project Type

Project Work Type (PDM Appendix 5)	Terrain Data Deliverables[1]	Typical Mapping Width [5]
Safety Related Work	Base Mapping & Terrain Model (may be required)	Determine on a project by project basis
Pavement Preventive and Corrective Maintenance (e.g., 1R Projects)	No Base Mapping[2] or Terrain Model	N/A[4,7]
Resurfacing, Restoration & Rehabilitation (2R/3R)	Base Mapping[5] & Terrain Model	Map to front of buildings or to limit of expected work.
Reconstruction & New Construction	Base Mapping[5] & Terrain Model	Map to rear of buildings or to limit of expected work.
Minor Intersection Reconstruction	No Base Mapping[2] or Terrain Model	N/A
Major Intersection Reconstruction	Base Mapping[5] & Terrain Model	Map to front of buildings or to limit of expected work.
Preventive & Corrective Bridge Maintenance	No Base Mapping[2] or Terrain Model	N/A
Minor Bridge Rehabilitation	No Base Mapping[2] or Terrain Model	N/A[4]
Major Bridge Rehabilitation	Base Mapping[5], Terrain Model & HCS[3]	Map to front of buildings or to limit of expected work.
New & Replacement Bridges	Base Mapping[5], Terrain Model & HCS[3]	Map to rear of buildings or to limit of expected work.
Other Projects and Miscellaneous/ Special Projects	Determine on a project by project basis	Determine on a project by project basis

Notes:
1. The base mapping and terrain models meet the requirements of Chapter 20 of this manual.
2. Instead of new base mapping, consider the use of record plans or new imagery supplemented by field survey checks.
3. Hydraulic Cross Sections (HCS) may be required. The need for HCS should be discussed with the Structures Design and Construction Group.
4. Sufficient Terrain data to establish minimum vertical clearance at structures is required.
5. Projects that require Type I noise analysis generally require base mapping and terrain models extending 500 ft from the outside travel lanes.
6. Orthoimagery is useful for information within and beyond the base mapping extent and for presentations at public meetings, and is supplied with each photogrammetry project.
7. Some 1R projects that involve superelevation improvements may require survey of pavement sections.

21.3.1.6 Field Editing of Terrain Data

Mapping and terrain models from field survey generally include feature annotation from the original survey. Photogrammetric Mapping or terrain models products generally require field editing to add or clarify feature information. The field editing is generally completed after the project mapping or terrain model has been completed by Photogrammetry, and before design work begins. Most field editing can be completed by either the designer, or by a survey field crew, but some more precise field locations of edited information will necessitate field crew measurement with survey instruments. During a field edit, the mapping or terrain model surface should be compared with actual field terrain to ensure that it portrays what is currently present on the project site.

Field edits should consider locating, identifying, measuring or labeling the following features:

1. Utility pole numbers, valves or manholes, types of overhead or underground lines, and utility owners.
2. Building structure addresses, owner/business names, and structure type. Storm or sanitary sewer inverts, pipe sizes and directions of flow, and material types.
3. Pavement or building structure materials. Plant species, size and or condition.
4. Sign text, types and sizes.
5. Open drainage flow patterns and/or stream flow directions. Cross culverts sizes, types and inverts.
6. Guide rail, headwalls and other highway appendage types and/or materials. Traffic signal controller boxes, pull boxes and signal head locations

21.3.2 Preliminary Information

Prior to preliminary design, the designer should evaluate all elements of design that will be necessary to complete design and produce the contract plans. Some examples of preliminary information that should be assembled and stored in ProjectWise include:

- Utilities (e.g., public utility, private utility, etc.)
- Accident Diagrams and Data
- Rock Outcrops
- Traffic Volume Data
- Wetland Boundaries
- Existing ROW
- Existing Drainage
- Cultural Resources

The designer should contact any functional area groups to determine which method they prefer to use to transfer the information. Gather information in electronic format when possible. Once the information is gathered, all pertinent information to the design should be added to the appropriate DGN files and/or Terrains.

21.3.3 Design Data

Design data (e.g., CADD information from DGN and XML formats) is any civil and non-civil data used to develop the project design and project plans. It is used by the contractor for layout, by bidders to develop project bids, by construction inspection staff to ensure the project is constructed as intended by the designer, and by operations for asset maintenance. A project is typically the result of several people working collaboratively, so consistency in the development of design data is essential. Consistent design data prevents unnecessary confusion and questions after the data is transferred to bidders, construction staff, and contractors. The designer should create a complete set of working plots (i.e., plans, profiles, and cross sections) and update this set as new information is generated or becomes available.

21.3.3.1 Accuracy and Rounding

Design data that ties into terrain data is limited by the accuracy of the terrain data used to develop it. Designers (and all users of terrain data) can determine the accuracy of the original ground terrain data based on the method of collection. The method of collection is shown on the item types of the Terrain Feature Properties. For example; PHO_ for terrain data developed from Photogrammetry, SVY_ for terrain data developed by Main Office Survey, no prefix for terrain data developed by Regional Office Survey, and LID_ for terrain data developed from LiDAR (accuracies not yet defined for LiDAR but should be considered at least equivalent to photogrammetry).

Pay item quantities should be determined and shown in the Engineer's Estimate and on plans with an accuracy consistent with the method of measurement stated for the item in its associated specification. Plan dimensions that are not associated with quantities should be rounded as shown in Table 21-4.

Table 21-4 Plan Dimension Accuracy

Element	Dimension *(value shown on plan is rounded to the nearest decimal indicated)*
Project Control	
Horizontal Alignments	0.01 ft
Distances	0.01 ft
Angles	0'-00'-01"
Topography	
Station	0.1 ft
Offset	0.1 ft
Bearings	0'-00'-10"
Reference Points	
Station	0.01 ft
Ties	0.01 ft
Bench Marks	
Station	0.1 ft
Offset	0.1 ft
Elevation	0.01 ft
Profile	
P.V.I. Stations	0.01 ft
P.V.I. Elevations	0.01 ft
Rate of Grade	0.01%
Length of Vertical Curve	10 ft
Stopping Sight Distance & Headlight Sight Distance	5 ft
Drainage Structures/Pipe Invert Elevations	0.01 ft
Superelevation	0.5%
Subsurface Exploration	
Station	0.1 ft
Offset	0.1 ft

21.3.4 Preliminary Design

Items developed during preliminary design create the foundation for the final design and the final contract drawings. They usually include finalized alignments, taking line limits, and preliminary cross sections, and represent about 30% of the final plans. However, it should be noted that the percent of final plans completed during preliminary design can vary depending on the of the project. The actual percentage is dependent on the types of impacts that must be addressed in the Design Approval Documents.

21.3.4.1 Existing Alignments

Baseline alignments from the survey, should be completed by Survey. The designer should develop the additional horizontal alignments necessary to complete the existing roadway model, such as centerline,

pavement edge, ditch lines, etc. If record plan alignments are available and usable, the alignment data from the record plans can be used to reconstruct existing alignments.

It is not always necessary to “coordinate” or ”mathematize” all alignments. This should be done if there is a use for the designer, or if the alignment will be used for layout during construction. Otherwise, alignments can be created graphically or, in the case of vertical alignments, generated from the surface.

21.3.4.2 Modeling the Proposed Roadway

Modeling the proposed roadway should be accomplished using as few typical sections/templates as possible. Control alignments used in conjunction with variable width typical sections/templates should be used to model variable width roadways.

Superelevation should be evaluated at this stage. Chapter 5 Basic Design discusses superelevation. OpenRoads Designer relies on several input parameters to correctly calculate superelevation transitions and does not calculate non-standard transition lengths effectively. Superelevation transitions should first be calculated by using a spreadsheet application, such as Microsoft Excel. (Calculations for each curve should be added to the project files.) Next, calculate the rate, and build transitions using the calculated rate.

Roadways should be modeled with transition control lines (features) displayed. The features should then be copied into a final terrain model and used for final model creation and editing. Features should be created using unique feature names according to the standard feature names stated in Chapter 20 CADD Standards and Procedures. For projects with multiple alignments (e.g. intersections, divided highways, etc.), each road should be modeled separately and then combined into a single Terrain file during final design.

21.3.4.3 Conceptual Drainage

The type(s) of proposed drainage (closed, open) should be determined and laid out during the preliminary design stage. Basins, gutters, ditches, and outlets should be conceptually laid out according to the physical features of the roadway. Refer to Chapter 8 Highway Drainage. Permanent erosion control, and storm water treatment measures discussed in the Design Approval Document should be laid out including any additional ROW that is needed for this purpose.

21.3.4.4 Utilities

Utility coordination should begin early in the project to determine if any record plan information regarding existing utility facility locations can be transmitted electronically for use during design. Chapter 13 Utilities provides further information on Utility coordination. Utility facility information should be presented in a 3D DGN format so they can be incorporated into the project cross sections.

21.3.4.5 Geotechnical Information

All pertinent geotechnical features should be outlined. Chapter 9 Soils, Walls, and Foundations provides further information on geotechnical investigations. All boring locations, rock outcrops, and slope treatments should be included in the 3D model.

21.3.4.6 Wetland Boundaries

For areas where work, workers, or equipment will be off the highway embankment, wetlands should be delineated, as early as possible, and draped to the existing terrain to create 3D DGN graphics that can be viewed in the cross sections. Wetland boundaries should be displayed using the appropriate line style in MicroStation. Typically, wetland boundaries are collected by Regional Landscape/Environmental staff using GPS equipment.

21.3.4.7 Traffic Signals

Preliminary traffic signal plans should be developed during preliminary design and include aspects of signal design which may affect alignment and/or right-of-way. Detailed signal design should be completed during Design Phase V. Chapter 11 Signs, Signals, and Delineation provides information on traffic signal design.

21.3.4.8 Other

It may be appropriate for certain design work to be advanced to greater detail during preliminary design, depending on project specific issues identified during the environmental process (i.e. Permits). The project manager will coordinate this work with appropriate Regional groups.

21.3.5 Preliminary Plans for Design Approval Documents

Plans and profiles should be created to minimize duplication of effort. Labeling, sheet layout, plot setup, text separation, level designation and symbology are all items that, if done with consideration, only need to be done once during the course of a project. Plan to reuse as much of the information developed during Phases I-IV as possible during final design. Information needed for the Design Approval Document Plans that will differ from the contract plans should be placed on user defined levels, since it will not be included in the advanced detailed and final plans.

21.3.5.1 Plans

Preliminary Plan view information should include, as appropriate for the project:

1. North arrow (grid). (Grid north is the north direction within the NYS Plane Coordinate System of 1983) The north arrow should preferably be located in and point in the direction of the upper right quadrant of the sheet. Avoid north arrows pointing diagonally down or to the left.

2. A graphic scale bar.

3. Existing topography including structures such as houses; schools; businesses; storm water management features; streets and roads; including their names (with routes and state highway numbers) and destinations; natural features (including names when applicable) such as bodies of water, streams, wetlands, swamps, lakes and woods etc. Existing pavement edges, bridges, interchanges, intersections, and driveways. For urban projects, other existing features such as sidewalks, utility strips, and parking.

4. Municipal boundaries, public parks and recreation areas and other publicly owned property.

5. Approximate Highway Boundary (AHB) lines (scaled from record information) or Highway Boundary (HB) lines (determined only by licensed land surveyors). Consult with the Regional Land Surveyor.

6. Existing railroad tracks and facilities, existing major utility facilities and existing drainage structures.

7. Project limits: Project Begins and Project Ends, identifying the extreme limits of the improvements accomplished under the project.

8. Proposed alignment data. Label the roadway centerline as follows - PC, curve number, and station; PT, curve number, and station, etc. Label centerline tangent bearings or azimuths. When spirals are used, spiral data should be labeled (i.e., TS, curve number, and station).

9. Tabulated curve information. Provide the curve number, radius, length of circular curve, and central angle. Show horizontal sight distance on curves (similarly, provide spiral data for spiral curves). See curve boxes provided as cells in nyu_sheet.cell library.

10. Proposed: pavement edges, bridges, interchanges, intersections, driveways, sidewalks, utility strips, and parking.

11. Approximate right-of-way acquisition lines (including with or without access), reputed property owners' names (if a taking or easement is anticipated), and property lines. All buildings to be acquired should be clearly identified.

12. Proposed work on railroad tracks and facilities.

13. Proposed relocations and/or adjustments of major utility facilities.

14. Proposed drainage structures and proposed drainage system

15. Detour plans, with the information noted previously in this Section, for on-site detours on new alignments that require ROW acquisitions.

16. Approximate cut and fill lines.

21.3.5.2 Profile(s)

Profiles should include:

1. Percent grades, location and length of vertical curves, stopping and/or headlight sight distances for the mainline, ramps, service roads and intersecting roads.
2. Banking diagram including horizontal control points (e.g., PC, PT) and cross slope (superelevation) percentages.
3. Location of intersections and ramp take-offs.
4. Existing and proposed drainage and utility facility crossings.
5. Bridge(s) and/or culverts.

Detour profiles, with the information noted in the above four items, should be provided for on-site detours on new alignment.

21.3.5.3 Typical Sections

Typical highway sections should be provided for the mainline, ramps, turning roadways, service roads, and intersecting roadways. Typical bridge sections should be provided for all new bridges and bridge rehabilitations. Normal crown typical sections should always be shown. Superelevated typical sections should also be shown. Detour typical sections should be shown where detours are on new alignments or to assist in describing special traffic control plan schemes, such as staged construction schemes with restricted lane widths.

Consult the Bridge Manual for information that should be shown on bridge typical sections, and bridge approach typical sections. Highway typical sections should include:

1. Travel, auxiliary, parking, turning and climbing lane widths and cross slopes
2. Shoulder widths and curb offsets
3. Pavement type and/or pavement rehabilitation treatments and depths
4. Curbs (note whether traversable, mountable or vertical faced; stone or concrete)
5. Sidewalk, bicycle lanes, and snow storage areas and their widths
6. Front and backslopes out to original ground for both cut and fill sections
7. Median type, width and cross slope
8. Ditches and gutters
9. Guide railing and median barrier
10. Approximate location (Station to Station)
11. Existing and proposed horizontal clearance

21.3.6 Cross Sections

Cross sections provide an excellent medium to illustrate how the proposed design relates to the existing terrain. A 3D model allows the designer (and later, construction personnel and the contractor) to "cut" cross sections at desired locations anywhere within the model. Cross sections allow designers to evaluate and refine a preliminary design or validate and communicate a final design.

Copies of any Final Cross Sections (.pdf version) can become part of the contract documents when listed on the CONR 9 Form (Supplemental Information Available to Bidders).

Construction personnel should be provided with any Final Cross Sections that have been developed during design, along with the Final 3D model. This occurs prior to the letting date when Design Data is transferred to Construction.

If a Final 3D model is not provided to construction, cross sections should be provided at a regular stationing interval (i.e. every 50' for 1:480 scale plans) as part of the Design Data transferred to Construction. Cross sections should depict the original ground, proposed finished ground, the proposed sub-grade, and non-triangulated features. The following features (Refer to HDM Chapter 20.7 for guidance) should be annotated using InRoads:

- Original Ground - AC, PE, PET
- Finished Ground – AC_P, PET_P, PE_P, RC_P, RSW_P, RBSP, LCUT_P, LFILL_P
- Non-Triangulated Features - Existing ground data and proposed data, including, but not limited to:
  - Highway Boundary/ROW - Right-of-way lines, property lines, easement
  - Drainage - drainage structures, pipe runs, and underdrain.
  - Utilities - subsurface utilities, utility poles.
  - Landscape - plantings and amenities.
  - Ground mounted sign locations.
  - Guide rail

Cross sections may be used to illustrate slope treatments, estimated benching locations, approximate boring-log locations, assumed rock lines, anticipated construction staging arrangements, undercuts, and depth of unsuitable material replacement as applicable. Labeling of various features shown on the cross-section should be the minimum necessary to provide appropriate illustration including offsets, slopes, subbase, subgrade, utilities, obstructions, and cut/fill volumes.

Additional sections are often needed at closer intervals in critical areas such as intersecting roads, driveways, and culverts. They should include the roadway and the affected areas adjacent to the roadway. The individual cross section should also contain the centerline or baseline station where the cross section was taken.

Care should be taken so that cross sections do not contain information and instructions which conflict with that provided elsewhere in the contract documents. Cut/fill volumes should be computed using the end area method from the terrain model and DGN file to achieve accurate earthwork volume calculations.

Plotted and bound paper copies of cross sections can be useful for designers and construction personnel in the field. Paper copies of cross sections, when provided or requested, should be plotted at 1:120 (1" = 10') scale or 1:240 (1" = 20') and sent to a "B" size printer using InterPlot Organizer. Sheets should then be collated, in station order, and bound.

21.3.7 Plan Preparation

21.3.7.1 Plan Sheet Format

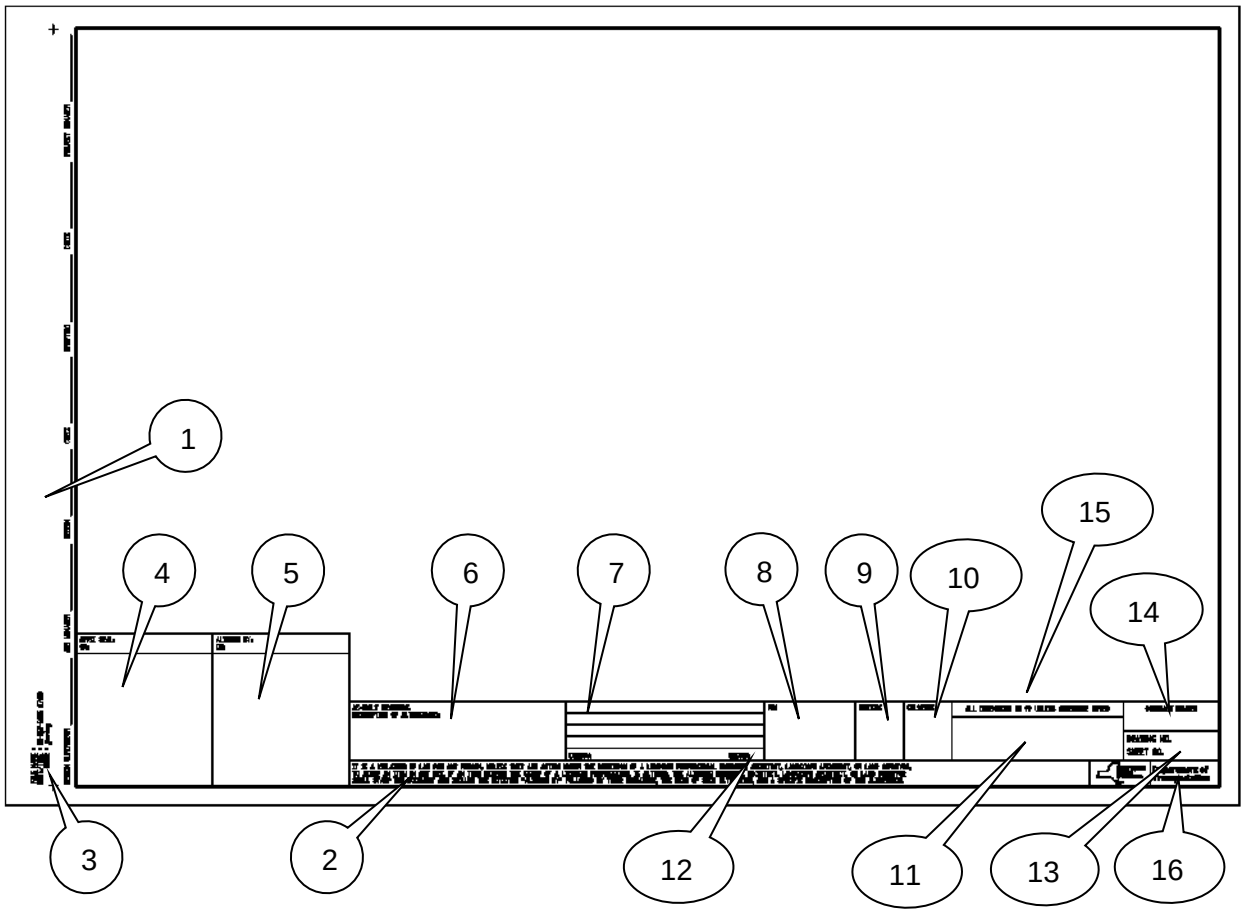
The Standard Plan Sheet Border provides a common format for the plans. Except for the title sheet, all plan sheets follow this same format, which provides for the placement of project related information common to the set of plans - sheet borders, title block (bottom of sheet), and left margin text. Standard plan sheets are provided as 2 different types of cells– one with space for Professional Seals and one without (Refer to Table 21-5 for guidance when a professional seal is required), and these cells should be used to prepare the plans. Working copies of these cells should be obtained from the nyu_sheet.cel cell library. For internal NYSDOT users, the settings are included in the project's managed workspace. External users may download the settings from the CADD Resources & Settings webpage.

In compliance with New York State Education Law, the following note shall be included on each plan and proposal sheet that contains a professional seal and signature by a Professional Engineer, Land Surveyor and/or a Licensed Landscape Architect:

> "It is a violation of law for any person, unless they are acting under the direction of a licensed professional engineer, architect, landscape architect, or land surveyor, to alter an item in any way. If an item bearing the stamp of a licensed professional is altered, the altering engineer, architect, landscape architect, or land surveyor shall stamp the document and include the notation "altered by" followed by their signature, the date of such alteration, and a specific description of the alteration".

Note: Sheet number changes/drawing number changes and spelling corrections on signed and sealed documents do not require "resealing" by the licensed professional.

Figure 21-1 Standard Plan Sheet Border



The standard plan sheet border in Figure 21 -1 contains the following items:

1. Left border area. This area should be used by the Regions and Main Office Program Areas to aid in their quality control efforts by identifying project staff to answer questions and provide plan review confirmation.
   - Design Supervisor – The licensed professional supervising the Job Manager. The supervisor may seal work performed under their direction or if the Job Manager under their supervision is not proficient in a particular subject area.
   - Job Manager – The licensed professional responsible for the technical content of the sheet. The Job Manager typically seals the sheet unless performing work outside of their area of expertise.
   - Design – The Designer developing the sheet under the supervision of the Job Manager. The Job Manager may also be the Designer.
   - Check – The person responsible for checking the design of the individual sheet.
   - Drafting – The person who drafted the sheet under the direction of the Designer. The Designer or Job Manager may also be the draftsperson.
   - Check – The person responsible for checking the drafting of the individual sheet.
   - Project Manager – The person managing the capital project. The Job Manager may also be the Project Manager.

2. Standard location of “Violation Note” on plan sheets requiring professional seals and signatures.
3. Document Name \ File Name. Refer to Appendix 14 of the Project Development Manual for appropriate document names.
4. Affix Professional Seal block. This area is to accommodate the professional seal and signature of the professional responsible for the production of the sheet.
5. Altered by Professional Seal block. This area is to accommodate the professional seal and signature should the plan sheet be altered. Note that it is not necessary to “reseal” a plan sheet for a drawing number/sheet number change, or a spelling correction.
6. As Built Revisions. This area is to document the description of alterations for As-Built Revisions. Refer to the Manual of Uniform Record Keeping (MURK) for more information regarding As-Builts.
7. State Highway Name and State Highway Number. Four lines are provided to accommodate State Highway Names and Numbers. Off system projects, on town or county highways, should be treated similarly.
   - County. The fifth line is provided to list the applicable counties. If there is more than one county, the county line should read “various”.
8. PIN.
   - US or NY Route Number. This may be left blank for off system project (from South or West project terminus to North or East project terminus).
   - Utility Quality Level. The Utility Quality level should only be included on plan sheets which contain subsurface utility information (e.g. General Plans, Utility Plans).
9. Bridge Identification Numbers.
10. Culvert Identification Numbers.
11. Drawing Name
    - Structure over the Feature Crossed
12. Region Number.
13. Drawing Number and Sheet Number. References in the plans should be made to drawing numbers rather than sheet numbers. (e.g., the first sheet of general plans would be assigned drawing number GNP-01.) Plan Sheets should be numbered sequentially.
14. Contract D number.
15. Predominant Dimension Note. (Example: ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED)
16. In the space provided, consultants may replace the DOT logo in the lower right of the sheet with their own identifying logo.

Items 1,3 and 7–14 shall be filled in from ProjectWise attributes using the Update Title Block command in MicroStation. This information is contained within the sheet border cell as MicroStation tags. Consultants may fill in this information using the Edit Tag command.

21.3.7.2 Creating Plan Sheets

Any CADD document which contains a sheet border can be referred to as a plot file. The most common type of plot file contains a sheet border, with other files (containing various information) referenced to it. Selected information in the reference files is displayed or “turned on” to create the desired general plans, utility plans, or drainage plans, etc. A plot file should be created using a new file, using references to display all other information except for the sheet border, match lines, north arrow and scale bar. Information contained in documents which are typically attached as references to a plot file include base mapping, proposed information, and ROW mapping. Plot files should consist of one sheet border in each plot file, and adjacent sheets should be attached as references. A set of plot files for general plans can be copied to create a base for a set of utility plans. Simply rename the copied file and

adjust the reference files as necessary. Use rotated views and place one sheet per plot file. These files can be plotted by using InterPlot within MicroStation, although if plotting more than two sheets, it is more efficient with InterPlot Organizer.

Each sheet border cell includes a yellow plotting border that both IPlot and InterPlot Organizer utilize to plot sheets to the correct size with the appropriate margins. The plotting border is considered a "construction attribute" in MicroStation. The display of the plotting border may be turned on and off by selecting ***Settings > View Attributes > Constructions***. The yellow plotting border should never be deleted from a sheet border.

Match lines should be placed perpendicular to the roadway in the plot file. The match line should extend to the inside plan sheet border (or clipping border if the clipping border is shown). Match lines should be labeled (for example with "MATCH TO DWG NO. ___") with subtitle size text on the outside of the line in the plot file.

To improve legibility, all plan sets (i.e., General Plans, Drainage and Utility Plans, WZTC Plans, etc.) shall utilize grayscale base mapping and all utility information shall be displayed using the standard color assigned to each utility. Utility information shall be displayed in color on plan sets only and not on details, typical sections, profiles, etc. Designers are also encouraged to use gray shading in place of hatching, where appropriate. Instructions on how to plot utility information in color and how to use grayscale base mapping and gray shading are available on the NYSDOT HDM Chapter 21 internet page.

Some projects may involve digital delivery/electronic design data where instead of by plan sheets, some of the data is conveyed by CADD files (without sheet borders). Often these CADD files are supplemented with a roll plot(s) which similar to plan sheets provides a means to view portions of the project area in one (or more) PDF documents (but roll plots typically cover a much larger area of the project).

21.3.7.3 Creating and Organizing Typical Section Sheets, Detail Sheets, and Table Sheets

A separate document should be created for each typical section sheet, detail sheet, and table sheet. The base mapping should be attached as a reference and the typical section sheet, detail sheet, or table sheet should be placed in the general vicinity of the project. This facilitates using CADD tracking commands to identify and verify applicable station ranges and is a good method of organizing information. The scale used to place the sheet border cell when preparing typical sections depends on the width of roadway section. The cell should be placed at a commonly used scale when each typical section sheet, detail sheet, or table sheet file is created, reference the previous sheet to the new file and place the next border at an even interval from the previous border using drafting functrions, like Accudraw. CADD automatic dimensioning functions should be used whenever dimensioning a drawing. Automatic dimensioning places extension lines, dimension lines, arrowheads, and dimension text.

21.3.7.4 Pay Item Numbers

When drafting, pay item numbers should be consistent with the format used in the standard or special specification.

21.3.7.5 Contract Number

A request for assignment of a contract number (a.k.a., 'D number') shall be submitted to the PS&E

Section of the Design Quality Assurance Bureau (DQAB) by e-Mail to *dot.dl.PSE.Section*. It is recommended that at least one additional project contact person be identified in the E-mail (add them as a cc: recipient is sufficient). The request should be submitted 4 to 6 weeks prior to PS&E submission.

This request should include the project identification number (PIN), project title, target PS&E submittal date, letting date, advertisement length, approximate number of plan sheets, approximate engineer's estimate, approved project funding type and amount and fiscal year if applicable, contract procurement method (e.g., Design-Bid-Build, Best Value, Design Build), the approval status of all special specifications requiring DQAB approval. (See Status of Special Specifications Table), notice of whether FHWA review after PS&E submittal is required, notice of whether Office of Structures review after PS&E submittal is required, notice of if a railroad agreement is required, notice of when the contract is an annual/reoccurring contract and if so provide the contract number of the existing contract to be replaced, other information which may be relevant to the PS&E process (e.g., project has been approved for expedited PS&E processing; project is of special Department interest; project was previously let as DXXXXXX), and the E-mail sender's contact information including a telephone phone number.

The following format is recommended for contract number requests:

E-mail Subject Line: D Number Request PIN [XXXX.XX]

E-Mail Message:
A contract D number is requested for the following project:
PIN [XXXX.XX]
[Project Title] (can be one or multiple lines)
PS&E [XX/XX/XXXX]
Letting [XX/XX/XXXX] (check the bid opening schedule for valid dates)
[X] week ad
[XXX] plan sheets (or "Proposal Only Contract", or another applicable contract type)
$[XXX]M Engineer's Estimate
$[XXX]M Approved STIP Funding, Funding Year 20[XX] (or "100% State Funded")
Design-Bid-Build (or "Best Value", or other applicable procurement method)
Special spec approval required [and status] (or "No special spec approval required")
FHWA review required (or "No FHWA review required")
Structures review required (or "No Structures review required")
Railroad agreement required (or "No Railroad agreement required")
This is a reoccuring contract, this contract will replace D[XXXXXX] (if applicable, otherwise omit)
[Additional relevant information, as appropriate]
[Sender's contact information, including telephone number]

21.3.8 Advance Detail Plans (ADPs) and the Developing Contract

The Advance Detail Plan (ADP) phase (i.e., Design Phase V of the Design Stage) provides for a review of the nearly complete detailed final plans by Regional Office functional units, Regional quality control and, as appropriate, the FHWA[1], the Thruway Authority[2], Main Office functional advisory units, and Local

[1] ADPs should be submitted to the FHWA for comments on all projects that require FHWA approval. See Chapter 4 of the Project Development Manual.
[2] The ADPs for Department projects that include, adjoin, or otherwise impact portions of the Thruway system should be submitted to the NYSTA Administrative Headquarters Design Support Services Bureau for review (200

Agencies and organizations with jurisdiction over the project facility. This occurs before Design Phase VI (i.e., the PS&E phase).

The ADP phase also provides for a review of other key components of the developing contract. The ADPs and supporting materials should be submitted for review as discussed in Chapter 4 of the Project Development Manual and Regional Policy. An ADP design review checklist is available on the HDM Chapter 21 web page. This checklist is meant to be used by the design team prior to sending ADPs to the various Regional Office functional units for review.

There are several goals for the reviews in the ADP phase:

- Confirm that scope is consistent with prior approvals, and verify that commitments made in Design Phase I- IV have been incorporated into the plans and proposal. This includes design criteria and standards, approved non-standard features, agreements and/or permits with municipalities, outside agencies or property owners, and any other commitments made by the Department in the course of developing the project;
- Confirm that no non-standard features, without prior justification and approval, have been introduced into the project since the Design Approval Document was signed;
- Confirm that the contract documents are consistent with department guidance;
- Determine whether the project, as designed, is biddable, and buildable, at a reasonable cost and within a reasonable timeframe,
- Anticipate potential problems that if not addressed could affect the project schedule and;
- Evaluate the current cost estimate

During the ADP phase, the estimate is refined as project details are defined. Work items are determined and estimates of unit prices can be made. Special Specifications and Proposal Special Notes are evolving during the ADP phase.

For ADP review, the project materials should be developed to the extent noted below:

Plans

- Should be organized in the same manner as the final plans
- Plan sets shall utilize grayscale base mapping and all utility information shall be displayed using the standard color assigned to each utility. See Section 21.3.7.2
- Should contain all the applicable sections of the plans (and content) discussed in Section 21.3.9.1
- Should contain about 90% of the information necessary for the final plans
- Need not include a completed Title Sheet
- Need not include completed Miscellaneous Tables.

Proposal Materials

- All special notes that will be included in the proposal should be in draft form.
- Special specifications for the project that have not previously been used for other PINs should, as a minimum, have a title and description.

Southern Boulevard, PO Box 189, Albany NY 12201-0189). Two copies should be submitted. The Design Support Services Bureau at the NYSTA HQ will coordinate the Thruway review with their affected Division(s) Office and provide a single response back to the NYSDOT Regional office that submitted the ADP's.

Estimate

- A current estimated construction cost (include 5-10% contingency)
  All items that will be contained in the contract should be identified, including their titles and unit price estimates. Price estimates for lump sum items need not be finalized. Considerations in determining the unit price is to be documented for the top 10% of all contract items by estimated cost as discussed in section 21.6.3.2.A.3. This is with recognition that item changes may occur based on ADP comments.
- Quantities should be estimated but need not be finalized

Environmental

- A draft of the Environmental Commitments Checklist (ECC) for the project, completed as much as possible.
- Draft GreenLITES evaluation

When ADPs and project materials are distributed for review, they should be accompanied with a written discussion on the applicability and status of the following items:

- Betterments
- Encroachments
- Street closings
- Detours
- Transfer of jurisdiction
- Abandonments
- Right-of-way availability or problems
- Status of utility inventory report.
- Status of railroad agreements
- Status of agreements
- Resolutions
- Status of permits or other environmental requirements
- Potential staging or spoil areas within or adjacent to the project limits
- Anticipated letting and construction completion dates and if Critical Path Method (CPM) Scheduling item is required
- Anticipated coordination problems with other Department projects or projects constructed by others (e.g., overlapping maintenance and protection of traffic)
- Any other special problems such as coordination with other states or Canada for projects at the border
- Fund source participation limits when applicable

Each of the reviewers evaluates the contract materials from the perspective of their specialty and involvement in the project. The reviews in the ADP phase provide a formal opportunity for reviewers to communicate to Design the need for changes or additions to the contract documents, prior to PS&E.

The Regional Estimating Engineer will review the evolving estimate for the reasonableness of unit price estimates if requested by the Project Manager. Comments on the Environmental Commitments Checklist should be specifically requested from the Regional Construction Group and the Regional Environmental Contact.

21.3.8.1 Preparation for Handoff to Construction

A request to the Regional Construction Group for a constructability review for the project should be made at this time in project development, if one has not already been completed. The scope and type of Construction's review is based on the project's complexity. The constructability review addresses two fundamental questions - Can the project be bid rationally, and can it be built without significant contract change? On larger, more complex projects the constructability review may have already been conducted in earlier phases of the design. Regardless, ADP plans provide more detail to evaluate constructability at a more refined level, and it is important that Regional Construction Group be provided the opportunity to review ADP's. Review for sufficient working clearances to utilities (per current OSHA guidance), traffic, and other hazards or obstacles will be of interest to Construction.

Designers should discuss the proposed contract duration and sequence of operations with the Construction Supervisor at this time. Work zone traffic control, seasonal limitations of work activities, time-related contract provisions, permit and agreement requirements, the shop drawing process, concrete curing periods, fabrication and delivery of materials, and any other factors in determining the contract completion date should be discussed. The collaborative development of a bar chart or other scheduling aid may be particularly useful for this purpose.

The ADP review process also offers Regional Construction the formal opportunity to communicate their needs on the project for an Engineer's field office, inspection equipment, and other Section 637 items as noted in Section 21.4.3; the need for Section 639 Construction Contract Management Systems pay items; Training Requirements as noted in Section 21.4.3.2; special requests for CADD data or plots; other special requirements for the project; the designation of Specialty Items; as well as input on D/M&WBE goals for the project if there are unique circumstances, such as project location or demand for certain types of labor.

Designers should look for and encourage this type of feedback from Construction on the ADP's, as it will help in finalizing the contract documents and tailoring the design data provided to Construction with the Handoff Memo (See Section 21.13).

21.3.9 Final Plans

21.3.9.1 Organization and Sealing

The final plans should be organized and sealed as indicated in Table 21-5.

Professional seals shall be an electronic version. The signature of the professional whose name appears on the seal shall be provided over, or in close proxity to the seal, without obscuring the name or number on the seal and within the defined space on the sheet for the seal.Seals and signatures shall comply with NYS Professional Licensure requirements. Only professional seals of licensed individuals are acceptable, corporate seals are not acceptable.

Table 21-5 Sheets Requiring Professional Seals and the Order of Sheets

Sheet	Order	Professional Seal Required
Title Sheet		No
Index and Abbreviations		No
Legend Sheets		No
Typical Sections		Yes
General Notes		Yes
Small Scale Plans - 1” = 100’ or smaller		Yes
Small Scale Profile - Major Construction or Reconstruction 1” = 100’H, 1” = 20’V or smaller		Yes
Traffic Control	Notes; Tables; Details; Plans	Yes
Survey Control sheets (if separate)		Yes
Highway Maintenance Jurisdiction	Notes; Tables; Details; Plans	No
Miscellaneous Tables (except Table of Property Releases)		Yes
Miscellaneous Details		Yes
Earthwork Summary Sheets		No
Special Plans		Yes
Erosion and Sediment Control	Notes; Tables; Details; Plans	Yes
General Plans – 1” = 40’ or larger		Yes
Profile – 1” = 40’H 1” = 10’V or larger		Yes
Signs and Sign Structures	Notes; Tables; Details; Plans	Yes
Traffic Signal	Notes; Tables; Details; Plans	Yes
Lighting	Notes; Tables; Details; Plans	Yes
Landscape	Notes; Tables; Details; Plans	Yes
Pavement Markings	Notes; Tables; Details; Plans	Yes
Utility and Drainage	Notes; Tables; Details; Plans	Yes
Large Culverts	Notes; Tables; Details; Plans	Yes
Retaining Walls	Notes; Details	Yes
Bridge Plans		Yes

21.3.9.2 Guidance for Plan Sheet Preparation

Sections 21.3.9.2 A through 21.3.9.2 X provide guidance regarding the preparation of plan sheets. Many of the plan sheets are produced by starting with a Cell from the Cell Library in MicroStation. Cells referenced in this section can be viewed (PDF format) at the Chapter 21 internet page Sample Plan/Proposal Sheets link.

Please note that most contracts do not include all the types of plan sheets discussed in this Section. This Section provides a general listing of different types of plan sheets and the content that is typically included on them. The level of detail and types of plan sheets included in any given contract should be commensurate with the type of project.

To improve legibility, all plan sets (i.e., General Plans, Drainage and Utility Plans, WZTC Plans, etc.) shall utilize grayscale base mapping and all utility information shall be displayed using the standard color assigned to each utility. Utility information shall be displayed in color on plan sets only and not on details, typical sections, profiles, etc. Designers are also encouraged to use gray shading in place of hatching, where appropriate. Instructions on how to plot utility information in color and how to use grayscale base mapping and gray shading are available on the NYSDOT HDM Chapter 21 internet page.

A. Title Sheet

A title sheet shall be prepared for all projects. The title sheet should be prepared by starting with an empty DGN file and placing the title sheet cell using the Place Plan Sheet command in MicroStation. The title sheet cell and the Place Plan Sheet command work with ProjectWise attributes to automatically update title block information.

Confirm after signatures are applied that the PDF of the title sheet matches the dimensions/size of the other plan sheets in the plan set (typically 17”W x 11”H).

The following items should be provided on the title sheet as applicable:

A.1 Contract Title. Include: Type of Work, Route Number, Municipality(ies), State Highway Number

The following are examples to aid in providing a contract title:

- *Parking Lot Construction in The Town of Warwick*
- *Replacement of Signs on Various Routes*
- *Structural Steel Repair on Route 97 Bridge over Delaware River S.H. 5671 in Hancock*
- *Pile Repair Wantagh State Parkway Bridge over Sloop Channel S.H.9511*
- *Traffic Signals & Overhead Sign Installation at Various Locations in Region 3*
- *Pier Protection Replacement/Rehabilitation on Route 440 S.H. WSE 67-1 in New York City*
- *Replacement of County Road 1 Bridge over Conrail in the Town of Alden*
- *Replacement of Route 244 Bridges over Genesee River and Feathers Creek and the Greenwich Street Bridge over Phillips Creek S.H. 1559*

A.2 County(ies)

A.3 Contract Number

A.4 Indication of Federal Funding. For Federally funded projects, the phrase “F.A. Project” should be provided below the contract title to indicate federal participation.

A.5 Signatures.

REQUIRED SIGNATURES.

- Regional Director - An approval signature indicating that the procedural steps prerequisite to PS&E transmittal have been accomplished, and that the project design is consistent with established standards, policies, and regulations is required on the title sheet. This approval signature shall be completed by the Regional Director (or, pursuant to current Official Order, his or her authorized designee). When the Regional Director is not a professional engineer licensed in New York State and any portion of the contract plans were prepared by Department design staff, a co-approval signature by the Regional Design Engineer is also required. Signature Block Label: ‘Approved By’.

- Consultants - If a consultant has designed all or part of the project, the responsible person must sign the title sheet (individual's name, signature, PE license number, name of firm represented). If the consultant designed only a portion of the project, a note indicating the work performed should be shown with their signature (Examples: “PREPARED SHEETS 49-65”, “DESIGN OF LANDSCAPING PLANS”, or “DESIGNED RTE 123 STRUCTURE”). Consultants shall include the professional seal of the person responsible for the production and include their consultant firm name on each individual plan sheet they prepare. Signature Block Label: “Prepared By”.

- Local Government - Obtaining contract title sheet signature(s) of approval from local government chief executive(s) (Mayor, Town Supervisor, and/or County Executive3) is required under any of the following conditions:
  - If the project is funded in part by county or local government monies;
  - If there will be county or local maintenance of some constructed or reconstructed facet of the project following construction completion; and
  - If in the opinion of the Region local road use patterns are significantly affected either during construction (detours) or following construction completion.

  Local government chief executive signature of approval on the title sheet signifies local approval of the specifics of the project undertaking, and provides additional practical and legal benefits beyond the general terms contained within statutory requirements (i.e., resolutions and/or agreements, see Highway Design Manual Chapter 14 for additional information). Obtaining signature(s) under the above conditions also provides a clear, concise and readily-accessible record that both the opportunity for input on and agreement with the final plans and the details of future maintenance responsibilities has occurred. Signature Block Label: ‘Approved By’.

OTHER SIGNATURES.

- Regional Groups - The Regional Director may require the signatures of the Regional Design Engineer and other Group Directors to signify their recommendation for approval of the plans. Signature Block Label: ‘Recommended By’.

- FHWA - A signature block for the Federal Highway Administration shall not appear on the title sheet. When required for certain Federal-aid projects, FHWA’s PS&E approval is obtained by DQAB in letter form.

SIGNATURE DETAILS

- Missing Signatures - If for some reason a required signature cannot be obtained by the Region, it should be noted in the Table of Incomplete Items in the PS&E Transmittal Memo. Lack of a required signature may jeopardize contract advertisement, letting, and award.

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[3] The signature of another official, e.g., City Engineer, does not suffice to signify approval unless specific resolution or statute confers this approval authority. For projects within New York City, it is acceptable to substitute the signature of the Commissioner of the New York City Department of Transportation (and/or other NYC agency as appropriate) for the local government chief executive’s signature.

- Signature Format – Signatures should be legible and include any applicable professional accreditation (e.g., P.E.). Electronic signatures are allowed. A graphical image/representation of a 'wet signature', whether via an eSignature feature or just inserting an image, is preferred over an actual wet signature (which would then require the title sheet to be scanned).

- Signature By Designee – An authorized designee can sign on the signature line for a signatory. On the lines directly below the name of the signatory, provide the name and job title of the designee. The designee's name should be provided proceed by "P.P." (Latin: per procurationem). See example below.

- Signature Blocks – Signature blocks should follow the format provided in the title sheet cell. Signature blocks not used should be removed from the title sheet.

Signature Block Examples:

APPROVED BY

John Doe, P.E. 5/4/2022

REGIONAL DIRECTOR, ACTING DATE
JOHN DOE, P.E.

APPROVED BY

Claire Voyant, P.E. 3/14/2022

REGIONAL DIRECTOR DATE
PHILLIP DUNPHY, P.E.
P.P. CLAIRE VOYANT, P.E.
REGIONAL CONSTRUCTION ENGINEER

RECOMMENDED BY

Joshua Allen
Digitally signed by Joshua Allen
Date: 2025.02.09 17:17:28 – 04'00'

REGIONAL DIRECTOR OF OPERATIONS DATE
JOSHUA ALLEN, P.E.

PREPARED BY

James Bondi, P.E. 10/07/2022

HMS CONSULTING SERVICES, LLC DATE
JAMES BONDI, P.L.A.
PREPARED SHEETS: 49-62, 85

A.6 Location Map. A location map 9.25" wide by 4.5" high maximum size on B size paper shall be provided above the words "PROJECT LOCATION". Maps in MicroStation format are available for copy out through ProjectWise which can be attached as reference; the section of map that contains the project area can then be clipped to fit in the area provided on the title sheet cell. Since the map is labeled "NOT TO SCALE" it is not necessary to provide a scale for the map. Text imported from the maps shall be changed to the appropriate text height/width of the plot scale used for the title sheet. Location maps should always have true orientation (north is up). Color maps are acceptable so long as the colors do not reduce the ability to read the pertinent information (i.e., careful of very dark or very light shades). The map should be professional looking in appearance and avoid the display of third party trademarks/watermarks.

The project location shall be shown on the map indicating the contract limits (by station and reference marker or circle the site location for contracts such as bridge replacement), and the Federal-aid project limits (where more than one project or combination State-funded and Federal-aid work is involved) on the map, if practical. A short statement of approximate project location, which would enable someone to locate the project with an ordinary road map, should be provided in the space below the words "PROJECT LOCATION".

A.7 Title Block (lower right corner). There are four lines for contract information; a fifth may be added if necessary. The route number, State Highway names and numbers, and county(ies) should be included in this block (or State Highway numbers only when improvements are being made at numerous locations).

A.8 Index Sheet Reference. Indicate, in the block provided, the sheet number where the index is located.

A.9 GreenLITES Certification Symbol The appropriate GreenLITES Certification Symbol (available as a cell in the nyu_sheet.cel library) for projects receiving GreenLITES Certification should be placed in the lower left box labeled "Area for GreenLITES cell certification."

A.10 Standard Notes The following notes shall be included on all contract title sheets (Proposal Only Contracts and Contracts with Plans). These notes are provided with the Title Sheet cells and shall not be modified nor deleted as they provide legal references to the versions of official documents that are applicable to the contract.

Note pertaining to Standard Sheets (Proposal Only Contracts and Contracts with Plans):

"THE LATEST REVISIONS OF THE STANDARD SHEETS MAINTAINED BY THE DEPARTMENT, WHICH ARE CURRENT AS OF THE STANDARD SPECIFICATIONS ADOPTION DATE SHOWN ON THE PROPOSAL COVER, SHALL BE CONSIDERED TO BE IN EFFECT. ALL PAY ITEMS AND WORK CONTAINED IN THE CONTRACT AND ANY ADDITIONAL PAY ITEMS AND WORK ENCOUNTERED DURING THE COURSE OF THE CONTRACT SHALL BE SUBJECT TO THE APPLICABLE STANDARD SHEET(S) UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS."

Note pertaining to Standard Specifications (Proposal Only Contracts):

"ALL WORK CONTEMPLATED UNDER THIS CONTRACT IS TO BE COVERED BY AND IN CONFORMITY WITH THE STANDARD SPECIFICATIONS (US CUSTOMARY/METRIC) REFERENCED IN THE CONTRACT PROJECT "PROPOSAL" EXCEPT AS MODIFIED BY CHANGES SET FORTH IN THE CONTRACT PROJECT "PROPOSAL".

Note pertaining to Standard Specifications (Contracts with Plans):

"ALL WORK CONTEMPLATED UNDER THIS CONTRACT IS TO BE COVERED BY AND IN CONFORMITY WITH THE STANDARD SPECIFICATIONS (US CUSTOMARY/METRIC) REFERENCED IN THE CONTRACT PROJECT "PROPOSAL" EXCEPT AS MODIFIED BY THESE PLANS OR BY CHANGES SET FORTH IN THE CONTRACT PROJECT "PROPOSAL"."

B. Index and Abbreviations Sheet

An index and abbreviations sheet shall be provided for all projects. The standard index and abbreviation sheet is available as a cell. The index can be specific (indicating categories of details shown on each sheet; e.g., Sheet 44 - Drainage Details; Sheet 175 - Structure No. 5, Bar List) or general (indicating plan categories; e.g., Sheets 4-10 - Typical Sections; Sheets 210-230 - Structure No. 3, Route 66 over Erie Canal). The total number of sheets should be included on the Index and Abbreviations Sheet.

C. Legend Sheets

Legend Sheets shall be provided for every project. The legend sheets should be prepared by starting with an empty design file and placing the legend sheet cells using the Place Plan Sheet command. These sheets should be provided for all projects and include standard symbols shown

on the plans. A separate legend block should be placed on plan sheets which contain feature symbology not included on the standard legend sheets.

D. Typical Sections
Typical sections should be prepared for most projects. The standard typical section border is available as a cell. Two columns for item numbers, descriptions, and units, followed by a single column for notes are provided on the bottom of the sheet. All text in the lower blocks is placed using data entry fields. All typical sections should identify the horizontal control, theoretical grade line, and point of rotation locations. Refer to HDM Chapters 3 and 9 for guidance regarding what should be shown on these sheets.

E. General Notes
General project notes that are not provided as Special Notes (see Section 21.5) in the contract proposal, may be provided on a separate plan sheet. The utility quality level (as defined in Chapter 13 of this manual) shall be included in the General Notes. Indiscriminate use of General Notes can create uncertainty or potentially call out questionable requirements. Conflicts between plans, the proposal, and specifications may result in higher bid prices and/or claims. General notes which modify or otherwise conflict with specifications or standard sheets should be avoided. General notes should not include statements already contained in Section 100 of the Standard Specifications, or other already stated specification provisions.

F. Small Scale Plans 1:1200 (1” = 100’) or Smaller Scale
Small Scale Plans should be provided in addition to General Plans (see Section 21.3.9.2.N) for projects that contain extensive plan content (such as a reconstruction project in a residential or commercial setting). The purpose of Small Scale Plans in this case is to provide a general overview of the project limits, impacts, and types of work, without the clutter of numerous pay items and leader notes. Small Scale Plans should generally show the same type of information shown on the Preliminary Plans (see Section 21.3.5.1). Detailed plan content can then be shown on separate, larger scale plan sheets - the General Plans. For projects where there are too many details for the General Plan sheets, the plans should be further separated into utility and drainage plans, sign plans, lighting plans, landscape development plans, ROW plans, bridge plans, etc., as necessary for clarity.

Small Scale Plans may be used in lieu of General Plans for projects of significant length and minor plan content, such as Interstate resurfacing or pavement marking projects, where larger scale plans are not necessary. For these type of projects, all necessary plan content can be conveyed on the Small Scale Plans.

Small Scale Plans should include:

1. Major project elements (such as those shown on the Preliminary Plans, Section 21.3.5.1).
2. Other information deemed important for a general overview of the project, and to facilitate readability of the plan set.
3. When appropriate, provide a “key” for locating General Plans Sheets on the Small Scale Plans. This is particularly helpful on projects with intersections, ramps, or a number of changes in direction when the project is not linear.
4. The information listed under General Plans (Section 21.3.9.2.N), if General Plans are not being prepared for the project.

G. Small Scale Profile (1" = 100' H, 1" = 20' V) or smaller scale
Small scale profiles should be provided whenever small scale plans are included in the plan set. The profiles should contain the following information:

1. Datum elevation.
2. Theoretical Grade Line
3. Vertical Curve Information - P.V.I. station and elevation, length of V.C., center correction, stopping sight distance or headlight sight distance
4. Existing ground profile.
5. Ramps, bridges, and crossroad center lines. Centerlines of major driveways should also be labeled.
6. Begin and end paving limits.

H. Work Zone Traffic Control (WZTC) Plan Sheets
This section of the plans should include any necessary WZTC notes, WZTC typical sections, and WZTC plans. The intended WZTC plan for a given project may be able to be accommodated by referencing/utilizing the appropriate 619 Series Standard Sheets on the Index and Abbreviation Sheet, with additional project-specific information shown in this section of the plans as necessary. Information and details shown on the Standard Sheets should not be repeated within the plans.

WZTC Plan Sheets that may be necessary include:

1. Work Zone Traffic Control Notes Sheets
Notes should be project specific and should not duplicate the standard specifications. Notes should describe the overall intent and sequence of the WZTC plan, allowable lane closures, suggested congestion mitigation measures that may be taken if queues exceed specific thresholds, special contract provisions, and more. See HDM Chapter 16, Section 16.4.8 Work Zone Traffic Control Contract Documents for additional information.

   While the suggested congestion mitigation measures should be mentioned in the bid documents, the possible implementation of them should not be accounted for with items/quantities and/or ambiguous notes, since there are many variables involved and the suggestions are only based on what might occur. Rather, implementation will be handled by the Regional Construction Group in accordance with the Contract Administration Manual, if appropriate and depending on if the situation calls for using the suspension of work and/or extra work provisions of the contract.

2. Work Zone Traffic Control Typical Section Sheets
Include typical sections for detours and staged construction if necessary. These sections may be shown on the applicable WZTC Plan Sheet(s). See HDM Chapter 16.4.8 Work Zone Traffic Control Contract Documents for additional information.

3. Work Zone Traffic Control Plan Sheets
Staging plans, Detour plans, Temporary Signal plans, and other plan information may be necessary, depending on the complexity of the WZTC plan. See HDM Chapter 16.4.8 Work Zone Traffic Control Contract Documents for additional information.

I. Survey Control Sheets

Survey Control Sheets provide a logical place to show related information as follows: Plan view of proposed centerline and baseline with the tables listed in Miscellaneous Tables K1, K2, K3 and K4 below. In lieu of dedicated sheets for Survey Control, this information may be shown on sheets elsewhere in the plans.

J. Plan and Table of Highway Maintenance Jurisdiction

The table of highway maintenance jurisdiction should state maintenance responsibilities for the highway mainline; sidewalks (See HDM Chapter 18, Section 18.14 of this manual); utility strips; lighting, landscaping, relocated and rebuilt side roads; structures; drainage facilities (located on the state ROW or on a permanent easement); permanent water treatment facilities, existing roads destroyed by construction, discontinued, or for which maintenance responsibility is transferred as a result of construction; and snow and ice control. An appropriate scale plan should be included to show maintenance jurisdiction limits. Refer to Chapter 15 of this manual for additional guidance regarding the preparation of these sheets.

K. Miscellaneous Tables

Tables in the plan set are primarily used to show contract information that is not available elsewhere in the plans. Tables that only provide a summary of proposed contract items shown elsewhere in the plans should be provided with the quantity workups and made available to bidders as supplemental information.

The following list of tables should be provided for most projects. Templates for these tables (Estimate Comp Sheet and Misc Table Shell) and instructions for linking MS Excel tables to CADD files are located on the NYSDOT HDM Chapter 21 Internet page. Particular contracts may warrant additional tables at the discretion of the designer.

1. Road Alignment Data - When not included in General Plans.

2. Horizontal Control - Provide horizontal control line (HCL) point, HCL station, baseline station, offset, and coordinates (northing and easting), and equalities.

3. Right of Way Information
   - Right of Way Acquisitions - Required for all projects w/ROW acquisitions. Show map no., parcel no. reputed owner, trn no., dwg. no., type of take, area (yd^2, acres), and remarks.
   - Existing Monumentation to be Tied, Preserved, and/or Replaced - Show point number, baseline station, side, offset, type, reestablishment record, type.
   - Proposed Acquisition Right of Way Markers - Show baseline station, side, offset.
   - Existing Highway Boundary Right of Way Markers - Show baseline station, side, offs
   - Permanent Survey Markers - Show baseline station, side, offset

4. Survey Control
   - Base Line Ties - Show when not included in General Plans.
   - Project Survey Baseline - Show station, bearing, distance, northing, easting, reestablishment record.
   - Project Benchmarks - Show benchmark number, baseline station, side, offset, description, and elevation.
   - Horizontal Control Stations - Show monument, northing, easting, elevation, and description

- Vertical Control Stations - Show monument, elevation, and description.

5. Property Releases - Show purpose of the release, property owner, and date release was obtained.

6. Drainage Structures - Show structure number, location (station and offset), structure type, elevations, description of work, and for closed drainage structures, show the structure (basin or pipe) that the structure connects to.

7. Guide Rail, Median Barrier, and End Assemblies - Show item number, location, length, payment factor and payment length (in accordance with applicable specification).

8. Underdrain. Show location, side, and outlet.

9. Driveways

10. Curb Ramps - Location and type.

11. Clear Zone Widths - Required on certain contracts. Refer to HDM Chapter 10 discussion on Clear Zone Documentation and the corresponding "Sample Table of Clear Zone Widths".

12. Utility Specials (water and sanitary lines, etc.) - Show item number, location and length.

13. Utility Test Hole Information

14. Tree Removals and other misc. landscape items

L. Miscellaneous Details

The purpose of drawing a detail is to provide the dimensions of critical elements in a design. The following guidelines should be considered when preparing details:

1. Scale. Although details are drawn to scale for drafting ease and proportion, they are not meant to be scaled from the printed drawing, and should therefore be labeled "NOT TO SCALE" in the plan sheet title box.
2. Pay items. Pay items shall be stacked up flush right or flush left depending on whether the leader is to the right or left.
3. Leader lines and dimension lines. Leader lines and dimension lines shall be arranged in a manner to clearly depict the intent of the drawing. Care should be taken to minimize any crossing or overlapping of either leader lines or dimension lines.
4. Labeling and text. For each detail, the detail title shall be labeled using the applicable title text size for the plot ratio used. Detail titles shall be located under the applicable detail. Station to station limits where the detail applies shall be labeled using subtitle size text for the plot ratio used. Do not underline title or subtitle text. Refer to Chapter 20 of the Highway Design Manual for guidance regarding text size associated with plot ratios.

The following types of miscellaneous details should be provided as applicable to the project:

1. Special guide rail and barricade details.
2. Intersection details.
3. Special slope protection treatment should be shown or reference made to the applicable standard sheet.
4. Special drainage structures, ditches, and culvert inlet design. Payment lines for trench and culvert excavation should be shown in accordance with the item specification.
5. Utility facility line excavation should be detailed showing excavation and backfill payment lines.
6. Special Driveway Details. As noted in Appendix 5A of this manual, standard sheets exist for driveways.
7. Channelization details.
8. Any other special job details.

A Design Detail Library containing details used on previous capital projects is available on ProjectWise at the following location:

NYSDOT\Documents\RESOURCE INFORMATION\Highway\Details & Typical Sections\.

(Note: These are in MicroStation V8i 1:1000 units of resolution format.)

M. Earthwork Summary Sheets

Earthwork Summary Sheets, located in the nyu_sheet.cell library, are required for most projects with items 203.02, 203.03, and 206.0201 in the Engineer's Estimate. A spread sheet (Estimate Comp Sheet and Misc Table Shell) located on the NYSDOT HDM Chapter 21 internet page has been developed to assist designers in filling out these sheets. Also refer to Chapter 9, Section 9.8.1 of this manual for further guidance.

N. Special Plans

Special plans should be used for special situations, at scales appropriate to the level of detail needed to be shown. Following are examples of special plans:

1. 1:480 scale (1" = 40') or smaller plans may be used to show limits of unsuitable excavation where extensive removal is necessary.

2. 1:480 scale (1" = 40') or smaller grading contour plans:
   - Are required for interchanges and rest area layouts.
   - May be needed to show wetlands or wetland mitigation.
   - Are recommended for major construction projects and should also show drainage for the contract. Subsurface exploration symbols should be shown.
   - Should be considered for parks, plazas, parking lots, and areas to be heavily planted.

3. Paving contour layouts may be needed for intersections. Drainage structures should be shown on these contour plans.

4. Separate ROW plans may be needed to legibly document acquisitions, or to clearly show contract items for disposal of buildings.

5. PCC Pavement Joint Layout. The need to provide a complete joint layout in the plans varies with project complexity. Generally, it is not practical to provide a complete joint layout in the plans because moving one joint during construction alters the layout significantly. It is recommended that the longitudinal joint locations be included in the plans if there are multiple stages of work zone traffic control.

   Separate sheets devoted solely to joint layout, showing the longitudinal joint locations and projections within 10 in of the bottom of the PCC slabs, are helpful to both the Contractor and Engineer when laying out joints at the project.

   It is highly preferable to align longitudinal joints between travel lanes with the final longitudinal pavement markings. The Contractor is required to submit the final joint layout based on construction staging and the locations of projections, tapers, irregular areas, etc. The joint layout is subject to the Engineer's approval. Guidance for joint layout is found in the Standard Sheets.

   For PCC intersections, a proposed joint layout should be included in the plans to provide the Contractor with a reasonable expectation of the work required. Intersection joint layouts are typically complex because of projections and intersecting centerlines. In the plans, reference Note 1 on Standard Sheet 502-08, Utility Isolation and Joint Layout - General Notes, to inform the Contractor that the joint layout is proposed only, and they are responsible for developing the final joint layout. The Field Engineering II Section of the Materials Bureau is available to assist in developing the proposed joint layout. When designing a PCC intersection, extend the PCC limits to the point where hot mix asphalt (HMA) rutting and shoving are likely to begin.

6. Landscape plans may be needed to specify desired planting locations and other landscape features and treatments such as tree removals and protection of existing vegetation.

7. Environmental impact mitigation details and plans (noise barrier, wetland mitigation plans, erosion control plans, details and notes related to historic sites and structures, hazardous material removal, etc.).

O. Erosion Control Sheets
   Consult Regional Landscape Architect or Certified Professional in Erosion and Sediment Control (CPESC).

P. General Plans 1:480 (1" = 40') or Larger Scale
   Most projects should contain General Plans at a scale of 1" = 40' or larger. Some projects (for example Interstate resurfacing or pavement marking projects) may only need Small Scale Plans (Section 21.3.9.2.F) to sufficiently convey plan content. Some projects (for example urban reconstruction projects) may include Small Scale Plans in addition to General Plans to sufficiently convey plan content. General Plans should include:

   1. A North arrow (grid). The north arrow (grid) should point to the upper right quadrant of the sheet. (Grid north is the north direction within the NYS Plane Coordinate System of 1983) In cases where this would cause numerous match lines, this may be modified. Avoid north arrows pointing diagonally down or to the left.
   2. The stationing of equalities.
   3. A graphic scale bar.

4. Match lines (See section 21.3.7.2 for guidance).

5. In addition to existing features shown on the Preliminary Plan (See Section 21.3.5.1) and Small Scale Plan; show existing fences, walls, hedges, sidewalks, stairs, size and type of trees, culverts (size, type, direction of flow, invert elevations), utilities (cables, poles, gas lines, water mains, sewers, etc.) guide rail, signs, billboards, parking lots, playgrounds, and any existing features identified during the design. To improve legibility of the plan sheets, all existing features shall be displayed using grayscale except for the existing utility information, which shall be displayed in the standard color assigned to each utility.

6. Contract limits with stationing to the nearest foot.
   Contract Limit - The limits that encompass all advanced/trailing signing for the project. For contracts with multiple sites, the contract limits may be defined as a single larger limit if the sites are in close proximity, or as multiple sets of contract limits if the sites are widely separated. On site contract work cannot be conducted outside the contract limits. If it is not practical or possible to show the physical location of one or more of the contract limits on the plans, then a note defining the contract limit(s) or referring to the Standard Specification definition shall be included on the appropriate plan sheet(s). Contract Limits do not need to be shown on side roads or other Work Limits within the contract. These Work Limits are considered within the Contract Limits.

7. Project begins, Project ends, with stationing to the nearest foot.
   Project Begins and Project Ends identify the extreme limits of the improvements accomplished under the project. There is only one Project Begins, usually shown on the left side of the first plan sheet. There is only one Project Ends, usually shown on the right side of the last plan sheet.

8. Work Limits, all with stationing to the nearest foot.
   Work Limits identify limits of improvements - other than the Project Begins and Project Ends associated with the project - such as on a side road. There can be multiple work limits, (or there may be none if there are no side roads) and they can be located on any plan sheet. Work Limits are considered within the overall Contract Limits

9. Fund source limits, with stationing to the nearest foot.
   If applicable, it is necessary to indicate on the plan sheets the location of change in Federal-aid fund source, or the separation of a Federally-funded section of the contract from a 100% State-funded section of the contract.

10. Existing highway boundaries (with year acquired, if known) including existing ROW monuments. New right of way line(s) (indicate W/A or WO/A) including proposed ROW monuments. Property lines, corner markers, and reputed owners. Individual ROW parcels, map and parcel numbers, and type of acquisition.

11. Survey baseline. Stations, ties, azimuths, and relation to new center line. Bench marks.

12. Stationing. Project stationing should increase from the south to the north or from west to east. Stationing should always be increasing from left to right and from bottom to top on a plan sheet (except for ramps or other anomalies)**.** For 1:480 scale (1" = 40') plans, the centerline should be stationed with annotated major ticks every 100' and minor ticks every 50'.

13. Alignment data. Label the roadway centerline as follows - PC, curve number, and station; PT, curve number, and station, etc. Label centerline tangent bearings or azimuths. When spirals are used, spiral data should be labeled (i.e., TS, curve number, and station). Show alignment data for crossroads and frontage roads.

14. Tabulated curve information. Provide the curve number, radius, length of circular curve, and central angle (similarly, provide spiral data for spiral curves). See curve boxes provided as cells in ny_sheet.cell library.
15. All proposed features to be constructed: for example - pavement, shoulders, driveways, new culverts, drainage structures, sewers, gutters, special ditches (show invert and other control elevations), new guide rail, major sign structures, traffic signals, fencing, pavement markings, new planting locations, legends for plant material, incidental work on private land (if a release has been obtained), etc. All proposed utility information shall be displayed in the standard color assigned to each utility.
16. Access to properties where existing road is abandoned.
17. Grading limits - toe and top of slopes.
18. Location of subsurface explorations, limits of unsuitable material to be removed, and special soils treatments:
    - Plan location of all subsurface exploration, by appropriate symbols.
    - Limits of unsuitable material removal, shown in sufficient detail to indicate both the extent and depth of removal.
    - Areas requiring lightweight fill, stabilizing beams, undercuts, etc.
19. Buildings to be removed.

Q. Profile (e.g., 1:480’ H (1” = 40’), 1:96 V (1’ = 8’) or Smaller Scale)
The horizontal scale for the profile should be the same as the general plans scale. The vertical scale should be chosen to adequately show the needed details. Generally, the ratio between horizontal and vertical scale should be 1 to 5. Separate profiles should be provided for crossroads, ramps, closed drainage, ditch lines, and sewers, as appropriate. Profiles related to drainage should include Hydraulic Grade Line and Energy Grade Lines.

The profile should contain the following information:

1. A graphic scale bar shall be shown. Place the scale bar showing horizontal and vertical scale utilizing the barscale.cel library.
2. Annotation. Display curve information with the annotation group commands. Annotate the following information:
    - Datum elevation
    - Existing ground line
    - Proposed grade line
    - Percent of grades
    - The original surface and the proposed surface elevations
    - Station and elevation of P.V.I.
    - Length of V.C.
    - Center correction for vertical curve
    - Station of P.V.C. and P.V.T.
    - Stopping sight distance (SSD) at crest vertical curves and headlight sight distance (HSD) for sag vertical curves. SSD automatically calculates and labels on all curves. The HSD on sag curves are calculated correctly but must be edited to be HSD not SSD.
    - Stationing of equalities
    - Superelevation and transitions. These items should be labeled using annotation group settings.

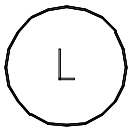
3. Ramp noses
4. Special ditches
5. Location of intersecting roads
6. Cross culverts and closed drainage systems.
7. Bridge(s). Label with the Bridge Identification Number (BIN) and a short description. The structure can be shown very simply.
8. Intersecting utilities as deemed appropriate.

R. Signs and Sign Structures

Contracts that contain signs, sign structures, reference markers, and/or delineators as part of the work should be presented in the contract documents as discussed in Sections R.1 through R.3.

R.1 Sign Location Plan – The Sign Location Plan provides an overview of the project signing, addressing new signs, existing signs that are to remain in place, existing signs that will be relocated or removed, etc. The Sign Location Plan should communicate conceptually what signing work is to be done, without the clutter of details to distract from this purpose.

1. New Sign Symbol (Bubble) For each new sign on the Sign Location Plan, an arrow should be placed that points to the approximate sign location. It should be annotated with the symbol, ("bubble"), as shown below:



The "L" in this symbol (bubble) is the Location Number of that sign.

The designer should assign Location Numbers so that they progress sequentially in the direction of the centerline stationing per plan sheet, i.e. signs on the first Sign Location Plan sheet would have location numbers, 1-1, 1-2, 1-3, etc. Signs on the second Sign Location Plan sheet would have location numbers 2-1, 2-2, 2-3 etc. In this way, a plan user could quickly find a sign on a sheet without flipping through extraneous sheets.

2. Sign Face Graphic The Sign Face Graphic (i.e., sign text for the sign assembly) shall be shown on the Sign Location Plan, for new and relocated signs. Location plans should be drawn to a scale that allows the placement and readability of all Sign Face Graphics for new signs.

3. Post Item Numbers and Quantities Under each sign face graphic, the item number for the post and the quantity of posts, for that installation must be shown. (Posts are associated with a location and a sign assembly, and do not appear on sign data sheets.)

4. Sign Removals A sign removal table should be provided that shows each removal location, in Station and Offset format, with the associated item number and a brief description. (In the absence of survey data, uncoordinated stationing may be provided for reference purposes). The sign removal table should be placed on the sign location plan (space allowing). Otherwise there should be a note referencing the table on a separate sheet.

Special circumstances, such as sign relocations, or incidental signs to remain, should be provided in note format on the Sign Location Plan.

5. Pavement Markings If clarity is not reduced, pavement markings (See Section 21.3.9.2.S) should be shown on the Sign Location Plans.

6. Reference Markers The Start and End of reference marker locations (if applicable) may be shown on the sign location plans.

7. Delineators Location of delineators (if applicable) can be shown on the Sign Location Plans, space allowing.

R.2 Sign Data Sheet(s)

1. New Signs Sign Data Sheets should contain data tables that provide additional information about the sign panels shown on the sign graphics in the Sign Location Plans. (empty table is located in the nyu_sheet.cel library) Each unique sign panel on the Sign Location Plan has a corresponding entry in a Sign Data Table. The various locations of the panels are shown in the Location Column of the table, which corresponds to the location symbols on the plan sheet. The plan user must consult the sign graphics on the sign location plan to determine the placement of the panel within the sign assembly.

2. Notes The Sign Data Sheet(s) contains standard notes typically used on all projects. Additional project specific notes may be added to the Sign Data Sheet(s).

Sample entries from a Sign Data Table with sample notes are illustrated on the following page. Guidance for table entries is provided.

Table 21-6 Sample Sign Data Sheet Entries

DESIGNATION & COLOR (SEE NOTE 2)	LOCATION	TEXT	ITEM	SIZE	PAYMENT AREA (SEE NOTE 3)
				AREA (SEE NOTE 3)	TOTAL PAYMENT AREA
R1-1	2-13, 2-16, 2-34, 2-35 4*	STOP	645.5202	30 X 30	6.3 SF
				5.0 SF	25.2 SF
M6-1 WHITE ON BLUE	2-2, 2-19, 2-11 3		645.5102	21 X 15	2.2 SF
				2.2 SF	6.6 SF
M6-1 WHITE ON GREEN	2-11, 2-29 2-2, 2-11 2-17A, 2-19 6		645.5102	21 X 15	2.2 SF
				2.2 SF	13.2 SF

* Number of locations

Sample Signing Notes:

1. “SIGN LOCATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL INSTALL NEW SIGNS IN ACCORDANCE WITH THE MUTCD AND NYS SUPPLEMENT.”

2. “THE COLOR IS SHOWN ONLY WHEN THERE IS A COLOR OPTION THAT MUST BE SPECIFIED.”

3. “THE AREA, AND PAYMENT AREA, FOR SIGNS ARE FROM THE APPLICABLE STANDARD SHEETS OR SIGN FACE LAYOUTS.”

Guidnce regarding the information to be provided under each column description is provided below:

- Designation and Color: Sign Designation (and color as necessary, when there is an option) as defined in the MUTCD and NYS Supplement.
- Location: “L” in the New Sign Symbol (Bubble) as defined in 21.3.9.2 R.2 1 above.
- This box should show a graphical representation of the required sign panel. The sign graphics used do not have to be to scale or be an exact duplicate of the actual sign.
- Item: NYSDOT item number for the corresponding sign panel.
- Area: Actual Area of the Sign Panel, used for computing wind moments and sizing the sign posts.
- Payment Area: Area used for computing payment for the sign. This may be different from the actual area used for computing wind moments.

R.3 Other Sign Related Information

As applicable, the following sign related information should be provided in this section of the plans:

- Sign Structures. Refer to:
  - Overhead Sign Structures Design Manual
  - BD Sheets
  - Location/Elevation Diagrams for Overhead Sign Structures

- Post Item Numbers and Quantities. A separate summary table should be provided containing the item number for the post and the quantity of posts. (See table cell library: ny_detail_tables.cel)

S. Traffic Signal Plans

Traffic signal plans should be provided for each intersection at which signalization is proposed. The traffic signal plan should include the horizontal alignment or project control and highway boundary/ROW lines. Existing features should be illustrated for infrastructure that is not replaced or to be removed by the project. Show existing highway features such as drainage structures, and all utility facilities (e.g., above and below ground) which have the potential to conflict with the proposed traffic signal installation depending on actual field location. Show proposed pavement markings, signs, driveways, turn lanes, sidewalks, sidewalk ramps, and crosswalks.

The traffic signal design should be drafted to display any proposed span wire, mast arm and pedestrian signal poles, power supply, controller, proposed vehicle and pedestrian signal head layout including signal face numbering, vehicle and pedestrian detectors including numbering, pullboxes, conduit, and traffic control phase numbering. Adjacent intersection control features such as overhead lane designation signs should be illustrated if located within plan boundary. If space permits, each proposed feature should be identified with a leader arrow and item number. In cases of insufficient space availability, leader arrows with numerical identification bubbles are optional. Notes specific to the detailed intersection traffic signal design, or referencing specific portions of the contract plans for the subject intersection, should be provided. If space is available on the plan sheet, a table of estimated quantities should be included. Otherwise, a master table of estimated quantities for all intersections should be provided on a separate detail or table sheet.

Show signalization details on a separate sheet (if necessary to improve clarity). Tabulate how the traffic signal is designed to operate and be constructed. Include Tables of Operations, Clearances, Quantities (this should indicate what work items are to be performed: item number, description, quantity, work unit and a legend corresponding to the work location shown on the signal plan), Switchpacks, Input Wiring, Loop Wiring, and Interconnect or communication device details. Also include a phasing diagram.

Traffic signal design shall be consistent with the MUTCD and NY Supplement, Chapter 11 of this Manual, and active Engineering Instructions on traffic signal topics. Consult the Regional Traffic Safety and Mobility Group for additional design guidance if necessary.

T. Lighting Plans
Refer to Chapter 12 of this manual for guidance regarding lighting plans.

U. Landscape Plans
Consult Regional Landscape Architect.

V. Pavement Marking Plans
Depending on the complexity of the project, pavement marking plans can be standalone plans, combined with sign location plans, or for very simple projects shown on the general plan sheets. Pavement marking plans should indicate pavement markings to be applied at each pavement location (pavement edges, pavement center line(s), gore area, etc.) by item number (type of pavement marking material), line type (broken line, solid line, etc.), and width (4”, 6”, 12” etc.).

Use a pavement marking legend to show additional information not included on the plan due to clarity reduction, and pavement marking details to depict complex pavement marking patterns or where pavement marking placement in relation to pavement joints must be considered. The Department has issued a series of 685 standard sheets which provide pavement marking details. Several of the details have options which must be specified in the contract documents. Other details include default values or details which will apply unless otherwise indicated in the contract documents. Designers need only include appropriate details in the plans for special marking situations not covered by the Standard Sheets. Options related to the standard sheets which must be specified in the plans include:

1. Hatch Island Detail. 15º Hatch Line, 20º Hatch Line, or 45º Hatch Line
2. Stop Line. 18 “or 24” wide
3. Cross Walk. Standard, Ladder Bar or Ladder Bar with Transverse Lines
4. Parking Details. Indicate if Standard Markings or the Alternate Markings will be used.

* These values are noted as the default values on the Standard Sheets unless otherwise specified by the designer in the contract documents.

The Railroad crossing markings distance should also be indicated.

For line types defined on Standard Sheet 685-01 (Sheet 1), line codes for pavement marking lines and supplemental lines are provided on the standard sheet and can be used on the plans in lieu of the full description.

Note: Refer to the MUTCD and NYS Supplement for guidance regarding the type of line to be specified. Refer to EI 87-30 “Pavement Marking Policy”, and EI 92-44 "Pavement Marking Policy Epoxy Pavement Markings 6" Wide Pavement Markings Wet Night Visibility Spheres" for guidance on pavement marking material and line width specification.

W. Utility and Drainage Plans

Show existing utility facilities, existing Utility Quality Levels (e.g., QLA, QLB, etc.), proposed utility facility relocation and/or adjustment, and any new utility facilities. All utility information shall be displayed in the standard color assigned to each utility. An example note to be included on the plans is as follows:

Underground utilities known on this project:

* Waterlines: Sta. 0+35 lt. - Sta. 1+30 lt. = QLA; Sta. 1+30 lt.-Sta. 2+35, lt.=QLC; etc.
* Sanitary Sewers: (Town) Sta. 5+20 rt.-7+90, rt. =QLD; (City) Sta. 7+90 rt. - Sta. 9+15 rt. = QLD; etc.

Utilities and utility facilities are discussed in Chapter 13 of this manual.

Drainage features are typically shown with the utility plan, clarity allowing.

X. Large Culvert Details (Reinforced Concrete Box Culverts and Similar Structures)

Inlet and outlet treatments and excavation and backfill details for each large culvert should be shown. Plan, profile, and structural details should be shown when required for clarity. See Chapter 19 of this manual for additional design guidance and more specific plan requirements.

Y. Retaining Walls

Show station, offset, elevation, dimensions, and type of wall. See Highway Design Manual Section 9.4 for guidance. Refer specific questions to the Regional Geotechnical Engineer.

Z. Bridge Plans

Bridge plans should be prepared consistent with the Bridge Manual.

21.4 SPECIFICATIONS

Specifications discussed within this Section are the body of directions, requirements, etc. contained in the Standard Specifications, together with all special specifications, to be furnished as part of a Department contract.

Beginning with the publications dated September 1, 2015, the Standard Specifications published on the Department's public website are the Department's official documents. The Standard Specifications books will be published three times a year, dated January 1, May 1, and September 1. The Department will publish official versions of the Standard Specifications on the Department's internet website approximately 12 weeks prior to their effective dates. The official documents will be retained on the Department's website for a minimum of seven years, beginning with the documents dated September 1, 2015. Documents in the Department's electronic archives will be retained indefinitely.

Unofficial versions of the Standard Specifications, illustrating the changes from one version to the next, will also be published on the Department's public website as the "Updated Standard Specifications". The files will show what content has been deleted from and what content has been added to the preceding official version.

The Standard Specifications that apply to a Contract will be the version in effect on the original letting date identified on the Proposal cover. Any references to the Standard Specifications shall reference only the "Standard Specifications" with no date. Designers shall use the most current versions of the Title Sheets on all contracts; these versions include the Standard Notes pertaining to the Standard Sheets and Standard Specifications (see Section 21.3.9.2.A.10).

Project developers (e.g., designers) should choose Standard Specifications whenever possible. Only when a standard specification does not exist to provide instruction regarding a necessary contract work item, should a special specification be considered.

Special specifications are authored by the Regions, various Main Office functional groups, and other agencies such as the Thruway Authority to specify work not provided for in the Standard Specifications. Special Specifications may include Proprietary Items (Section 21.4.1.2F) or Experimental Items (Section 21.4.1.2G). Special specifications to be used on a project shall be contained in the proposal, and are to be provided by the Region with the PS&E submittal.

An inventory of Department Specifications is contained in the Pay Item Catalog where the current approval status of the Specification is shown (See Section 21.4.4). The approval status will be one of the following:

- General - Specifications approved for use on any project.
- PINONLY - Special Specifications that must be approved for use on a project by project basis (Section 21.4.2.3C).
- Disapproved – Specifications disapproved for technical reasons, that should not be used on Department Contracts

Refer to Sections 21.4.1 and 21.4.2 for guidance on preparation of specifications that are not already in the inventory, or for specifications that need approval prior to use.

Department personnel can use the Online System for Specifciation Management (a.k.a., SpecTracker, OSSM) application to determine the appropriate coordinator to contact if questions arise during specification use or development. Consultants should contact the regional project liaison for assistance in specification use or development.

DQAB will post all special specifications to the P drive at P:\Toolbox\Documents & Resources\Special Specifications.

21.4.1 Preparing Specifications

The major Sections of the Standard Specifications are organized as follows –

Section 100 – General Provisions
Section 200 – Earthwork
Section 300 – Bases and Subbases
Section 400 – Flexible Pavement (Hot/Warm Mix Asphalt)
Section 500 – Portland Cement Concrete and Rigid Pavement
Section 550 – Structures
Section 600 – Incidental Construction
Section 700 – Materials Requirements

Special specifications numbering shall be assigned to correspond with the appropriate Section of the Standard Specifications.

Standard and special specifications shall be prepared using Microsoft Word to facilitate use and consistency.

21.4.1.1 Format

A. General
Standard specifications contained within Sections 200-600, and special specifications, shall be written following the format guidelines established by the American Association of State Highway and Transportation Officials (AASHTO) and frequently referred to as the AASHTO format- with the additional requirements established by the Department pertaining to item number and title. The complete Specification includes an item number and title, and the five sections prescribed in the AASHTO format that make up the body of the specification – Description, Materials, Construction Details, Method of Measurement, and Basis of Payment. Each of these sections shall be included in a specification. If there are no requirements for a section, “None specified” or something similar should be stated to prevent any questions regarding if the section may have been inadvertently left out.

A.1 Item No. The format of a standard specification contract item is a 3-digit root number, a decimal point, and then either a two, four, or six-digit extension number (XXX.XX, XXX.XXXX or XXX.XXXXXX) The three digit root number denotes the standard specifications section to which the contract pay item relates. (i.e., 564 / Structural Steel)

The format of a special specification contract pay item is the same as the standard specification contract pay item number, but a two-digit origin code number is added as a suffix so that there are 8 digits to the right of the decimal point (XXX.XXXXXXRR). Section

21.4.1. A.1.b below provides more information on origin codes.

A.1.a Serialized or "Tablized" item numbers As a general rule, the 3rd 4th 5th and 6th digits after the decimal point may be used for "tablized" items and the 5th and 6th digits are for serialized items. "Tablization" and Serialization allow the designer to more narrowly define an item efficiently with numbers. This is best illustrated by example:

Serialization
Item 573.0100NN Structural Steel Painting Field Applied, Total Removal

A contract to paint 10 Superstructures would have pay item numbers:
Item 573.010001, Item 573.010002, Item 573.010003, Item 573.010004,
Item 573.010005, Item 573.010006, Item 573.010007, Item 573.010008,
Item 573.010009, Item 573.010010

Each Item represents the pay quantity for a unique Structure at a unique location in the contract. Serialization is accomplished in the 5th and 6th digits after the decimal point. (Serialization should start with the 6th digit after the decimal point as shown above.) All possible serializations should not be entered in AASHTOWare Project (Estimator or Preconstruction); rather only the serializations that are needed should be entered. Generally, the designer should include a table in the plans that correlates pay item number and proposed work location, or show the pay item directly in the plan details.

Serialized pay items are generally used when the specification author wishes to establish separate bid prices for similar work items.

"Tablization"
Item 604.30XXYY Rectangular Drainage Structure

Rectangular Drainage Structure provides a good example of "tablization." By definition (in the standard specifications and the drainage standard sheets), the XX digits allow the designer to specify the particulars of the vertical portion of the drainage structure (inside width and length dimensions), and the YY digits allow the designer to specify the particulars of the frame type. The combination of XX digits with YY digits allows the designer great flexibility in specifying the exact combination of the two.

Definitions of the XX and YY should be provided in the specification. Allowable values of XX and YY may be provided in the specification or standard sheets.

The original "tablized" pay items were the landscape planting series, which initially could have amounted to thousands of pay items if all possible combinations of plant type, size, quality, and so forth were individually entered into the system. Other pay items that use this type of entry include signal pay items, such as conduit, traffic signal poles, conductors, and so forth. Thus, sometimes, all the possible combinations of XX and YY are not entered in AASHTOWare Project (Estimator or Preconstruction). Rather they may be entered on demand.

A.1.b Origin Codes The last two digits of an item number (i.e., 7th and 8th digit after the decimal point) designate the Region, Main Office group, or other Agency (e.g. Thruway) that originated the special specification. Origin codes are also called *program area indicators*. 63 designates a pay item associated with an emergency

standby contract, and may be assigned by any Region or Main Office group.

Listed below are the currently used *program area indicators* and corresponding program area.

None….Standard Specification Item
01-11…Regions 1 through 11
12…….Canal
13…….Planning
14…….Traffic and Safety
15…….DQAB
16…….Structures
17…….Geotech
18…….Materials
19 ……Research
20 ……Construction
21…….Maintenance
22…….Environmental
23 ……Railroads
24…….Landscape
25 ……Thruway
26…….Aviation
39…….New York City
63…….Emergency
64…….Demand Response
91…….Experimental (See Section 21.4.1.2G)
** ……Letters such as AL, NA, LL etc. to designate special specifications developed by local municipalities.

A.2 Title The title should be descriptive of the type of work required but should be kept as short as possible. Department software limits the title or full description to 120 characters and the abbreviated description to 40 characters. Therefore, the title of all specifications shall be less than or equal to 120 characters, including spaces. The title does not have to explain all the work that is required; that information belongs in the description section of the specification. Below are a few rules and recommendations:

- Repeat the title at the top of each page of a specification, in a header that also contains the pay item number
- Avoid the names of utilities, municipalities, highways, and base line stations in the title.
- No abbreviations are allowed (i.e., F&I, ea, ft).
- Although limited in length, the title should be understandable.

The following illustrates commonly used words which should be avoided, and recommended alternatives.

Words to Avoid	Recommended Alternatives
furnishing	furnish
installing	install
transporting	transport
relocating	relocate
permanent	–
complete	–
removal of existing	remove
new	–

To facilitate shorter yet descriptive titles, someone should be able to understand the title when printed using 2 lines of no more than 60 characters each.

When a specification is “tablized” or “serialized” (e.g. white or yellow pavement markings, of different thicknesses), the specification title may be shortened by using an abbreviated title and showing the xx or xxyy as placeholders in the item number. The abbreviated title would be accompanied by a general description common to all of the items. And on the last sheet, following the Basis of Payment, complete pay item numbers (no placeholders) should be listed with the unique part of the full title for all item numbers.

A.3 Description The Description section should provide the Contractor with a brief but precise, general description of the work involved. The following phrase should be used to begin this section:

"This work shall consist of"

Use of “As ordered by the Engineer” (AOBE) or “As directed by the Engineer” (ADBE) is discouraged, because the Engineer’s control of the contract work is provided for in Standard Specifications Section 100. However, when it is determined that it is necessary to use one of these phrases, the Description Section of the specification is the only section where it should appear.

A.4 Materials Rather than providing material requirements in this section, material requirements from the Standard Specifications should be referenced whenever possible. (In addition to not duplicating information already available elsewhere, this practice will provide Site Manager Administrators with the information necessary to complete the mandatory data field for a “material reference” in the Site Manager Software, for each pay item.)

The following guidance should be adhered to regarding references:

- When referencing a materials section of the standard specifications (for more than one type of material), use a listing format, with the referenced sections of the standard specifications listed in numerical order. For example:

Portland Cement Concrete Production	501-2
Frames, Grates and Covers	655-2
Concrete Repair Material	701-04
Precast Concrete Drainage Units	706-04

- When a reference to a proprietary product is necessary (generally only appropriate for special specifications), list the names of the product and supplier instead of including them in a paragraph.

  Include the statement "or equal as approved by_____". Proprietary products should not be specified simply to give the contractor a sample of the quality of material required or to assist the contractor in locating the material. The following illustrates the desired format:

AA Splice Plate	Corner Splice Plate
Manufactured by	Manufactured By
Big Steel Company	Best Steel
12 Allen St.	Box 223
Troy, NY 11111	Albany, NY 22222

  Or equal as approved by _____

  It should be noted that the above example is a *reference to a proprietary product* as opposed to a *proprietary specification*. A proprietary specification does not give the contractor options. Refer to Section 21.4.1.2 F for guidance regarding use of proprietary specifications.

- Material References for Precast Concrete Item Specifications. There have been orders-on-contract required because special specifications for precast items contained incorrect information or did not contain enough information to fabricate, sample, test and accept precast units in accordance with Materials Bureau procedures. This can be avoided by referencing Materials specification §704-03 Precast Concrete-General in all specifications (i.e., standard and/or special) for precast concrete items which are to be fabricated under the authority of the Materials Bureau. Section §704-03 contains all the general material, fabrication, sampling, testing, and acceptance requirements for precast items made under the Materials Bureau's authority. If the item is made under the authority of the Office of Structures, then the Prestressed Concrete Construction Manual should be referenced instead of § 704-03. Consult the Materials Bureau or the Office of Structures if needed.

  If an appropriate material reference is not available, use the Materials Section of the specification as the place to provide all necessary material requirements, as well as any required tests for the material, or any options available to the contractor in supplying the material.

A.5 Construction Details The Construction Details section should explain the work in the sequence that it will be performed. Below are some recommendations regarding terminology:

- "Shall" and "will". Use "shall" for things that the Contractor is to do. Use "will" for things that are to be done by the State.
- "Any". Use "any" only when a choice is intended. Otherwise use "all".
- "To the satisfaction of" or "acceptable to". These subjective phrases should not be used because they leave the Contractor guessing what the Engineer may want done.
- "Furnish and place" should be reserved for items that are prefabricated.
- "Construct" should be used for items that the Contractor builds in the field.

A.6 Method of Measurement The Method of Measurement section specifies the units that will be used to measure the work, where the measurements will be taken, and how the quantity will be calculated. One of the following is recommended to start this section. The second statement is acceptable even though payment is mentioned.

- This work will be measured as the number of ...
- This work will be measured for payment as the number of ...

Frequently, specifications are prepared that discuss money in this section. As a general rule of thumb, matters related to money and payment factors should be discussed in the Basis of Payment section.

"Will" rather than "shall" is used in this section because the State is the party that should be doing the measuring.

The manner in which the work is to be measured should be given consideration. Possible scenarios are as follows:

- Walls can have two sides, two ends, and a top. The method of measurement should state which area is to be measured.
- Temporary sheet piling may be measured by the area of the exposed face. If staged construction results in both sides being exposed, the method of measurement should state that only one exposed face will be measured, if that is what the designer intends.
- Linear measurements along a highway should state if the measurement will be taken along the edge of the roadway (resulting in two measurements, one on each side), or along the centerline (in which case only one measurement would be made).

The following units of measurement are available for use:

Acre, Bag, Calendar Day, Cubic Feet, Crew Day, Calendar Week, Cubic Yard, Day, Device-Day, Dollars and Cents, Each, Each Pair, Each Location, Gallon, Hour, Inch, Intersection Month, Pound, Linear Feet, Lane Mile, Lump Sum, Thousand Gallon, Mile, Month, Percent, Pressure Distributor Day, Quality Unit, Square Feet, Site, Square Yard, Tons, Unit Month, Vehicle Day.

A few things to note:

- Items having units of measurement “Quality Units” and “Dollars and Cents” are always Fixed Price.
- Items having unit of measurement “Lump Sum” always have a Quantity of 1.
- “Dollars and Cents” unit of measurement is very similar to Fixed Price “Lump Sum” unit of measurement except the Quantity and Unit Price figures are switched (the Unit Price is always 1). This unit of measure was created because the Quantity figure can be adjusted much more accurately in Site Manager than the Extended Amount.
- Fixed Price “Lump Sum” unit of measure should not be used when payments are based on the Contractor producing receipts for payment or when the total price for the item is very small (less than or equal to $1000). This is because the Dept. accounting system is not able to reconcile the final figures accurately in such situations. Instead “Dollars and Cents” unit of measure should be used.

A.7 Basis of Payment

A.7.a General It is important that the specification be very clear about the basis of payment for an item of work.

The following statement should cover the majority of specifications:

"The unit price bid (include unit and item of work, e.g., for each end section, or per linear feet) shall include the cost of all labor, materials, and equipment necessary to satisfactorily complete the work."

Some specifications require more individualized statements addressing the basis of payment. For instance, clarification is often necessary when parts of the work are described in the Description Section of the Specification, but paid for under different items (e.g. earthwork). The basis of payment section should be written so that this is clear to the reader. Similarly, if a certain portion of work is normally included under the standard specification covering similar work that should be clearly communicated as well. Regardless of the particulars, the basis of payment section should be written so that there is no confusion as to exactly what work the payment is to be made for, and what work it does not cover.

A.7.b Progress Payments Progress payments are partial payments for an item of work, made to the contractor for work that is not yet complete. The terms under which progress payments will be made should be described in the basis of payment section of the specification, when applicable.

Progress payments may be considered in the following situations:

- Lump sum items because the contractor expends money throughout the contract, but cannot be paid until all the work is complete.
- It is anticipated that there will be a delay between the time something is removed and when it is reinstalled.
- It is desired to pay a percentage of the bid price when the item is installed, and the remainder when it is removed from the site.
- The contractor has up front costs, such as designing a temporary bridge, that occur a significant time before construction.

Progress payments shall be provided for in water and sanitary sewer main specifications because payment for water main work is often held up until testing of the system is complete. This often results in the payment being delayed a considerable time after a majority of the work is completed. The following statement is to be included in the basis of payment section as appropriate.

“Progress payments will be made at the unit price bid for 80 percent of the quantity of pipe installed. The remaining 20 percent will be paid once the system has been tested and found satisfactory.”

A.7.c Special Considerations The following Basis of Payment options are appropriate in a limited number of situations and should be used sparingly (except for pay units that are supposed to be fixed price such as “Quality Units”, “Dollars and Cents”, etc.) The project

manager and Regional Estimate Engineer should collaborate on the appropriateness of these payment options for the particular use under consideration.

- Fixed Price. The fixed price is established by the Department for an item of work, and is displayed in the contract proposal. Fixed Price basis of payment is appropriate for items where the item price is pre-negotiated with another entity, such as a Utility. Fixed Price can also be appropriate when the lump sum quantity of work is unknown and the Fixed Price sum is "drawn down" as work progresses. The following language should be added as the final paragraph in Basis of Payment (when there are multiple items in a spec, please also spell out the items that are Fixed Price):

  FIXED PRICE ITEM(S)
  "The fixed price shown in the proposal is not to be altered in any manner by the bidder. Should the amount be altered, the new figure will be disregarded and the original price will be used to determine the total amount bid for the Contract."

- Minimum Bid Price. For certain items of work, the designer may want to force a bid by the Contractor. This strategy is used very sparingly. The Minimum Bid Price is established by the Department and is shown in the proposal.

  The following language should be added as the final paragraph in Basis of Payment (when there are multiple items in a spec, also spell out the items that are Minimum Bid):

  MINIMUM BID PRICE ITEM(S)
  "The minimum bid price shown in the proposal is the lowest a bidder is allowed to bid for that item. If the bid price submitted is lower than the figure shown in the proposal, the bid price will be disregarded and the minimum price shown will be used to determine the total amount bid for the Contract.'

- Maximum Bid Price. For certain items of work, the designer may want to prevent excessively high bidding by the Contractor. This strategy is used very sparingly. The maximum bid price is established by the Department and is shown in the proposal.

  The following language should be added as the final paragraph in Basis of Payment (when there are multiple items in a spec, also spell out the items that are Maximum Bid):

  MAXIMUM BID PRICE ITEM(S)
  "The maximum bid price shown in the proposal is the highest a bidder is allowed to bid for that item. If the bid price submitted is higher than the figure shown in the proposal, the bid price will be disregarded and the maximum price shown will be used to determine the total amount bid for the Contract."

B. Simplified Specification Format
A simplified format, without all five of the sections contained in the body of the specification, is acceptable when a special specification makes only a slight modification to a standard specification. In reality, this format does contain these sections since it references those in the

Standard Specifications. The simplified format shall not be used to modify special specifications.

A proper and an improper example of the simplified format follow. Example 1 refers to the provisions of Section 604 of the standard specifications, whereas Example 2 refers to a pay item number. Since pay item numbers are more likely to change than section numbers, the format in Example 1 should be used. If section numbers were to change, all the special specs in that section would be disapproved and new pay item numbers assigned in the new section. If the standard pay item number were to be deleted or changed, the specification might continue to be used inadvertently.

Example 1. (Use This Method)

ITEM 604.50190108 Offset Catch Basin
Subsection 604-2.01 shall apply with the following additions: Sheet piling to be left in place shall conform to the requirements of Subsection 552-2.01. Sheet piling to be left in place need not be new.

Example 2. (Do Not Use This Method)

ITEM 604.50190108 Offset Catch Basin
The standard specifications for Item 604.5019 shall apply with the following additions: Sheet piling to be left in place shall conform to the requirements of Subsection 552-2.01. Sheet piling to be left in place need not be new.

C. Special Specification Format – Page Layout
Special Specifications are placed directly in the project proposals, so it is important that they have a uniform appearance in addition to having the necessary information, in a familiar order as described above. There should be uniformity between multiple special specifications in one proposal, as well as uniformity from one proposal to another. Specification format is independent of the author and of the reviewer. Adherence to the following formatting guidance when creating special specifications will ensure consistency and pleasing aesthetics in the contract proposals.

C.1 Text

C.1.a Item Number The word "ITEM" shall be used before the pay item number and both should be provided in the same header. A maximum of 16 spaces may be used for the pay item number and separation of the pay item number from the title. The pay item number itself can take up to 12 spaces including the decimal point; the remaining 4 spaces are used to separate it from the title of the specification. The author shall adhere to one of the following options pertaining to item number, presented below.

- *Provide a portion of the Pay Item Number.* The first digits of the item number are the specification book section and the last digits are the Origin code. (e.g., 570.XXXXXX03). XXXXXXs should be provided as placeholders for the remaining interior digits which will be filled in by the Main Office. If the specification is returned to the Region for revision with an assigned pay item number (complete with interior digits), the assigned pay item number should be used from that point forward and should be included in the resubmitted specification.

- *The entire pay item number may be provided* and shown with the specification (e.g., 570.00010003). When selecting a pay item number, review the Pay Item Catalog

(both approved and disapproved items) to verify that the number to be used has not already been assigned to a special specification. In addition, the transmittal memo must indicate that the specification is new and that the pay item number has been selected by the author. This option allows the tentative pay item number to be placed on the plans, referenced in special notes, and used in the preparation of the Engineer's Estimate. DQAB will occasionally need to specify the use of a different number.

DQAB will enter pay item number(s) into the AASHTOWare Project Item Catalog after special specification approval. See section 21.4.2 for the complete process for specification approval.

C.1.b Page Number Page numbering should be provided in a footer which appears centered on all pages of the special specification. The footer should contain the word PAGE, followed by (page number) of (total pages in specification) i.e., PAGE 3 of 7.

C.1.c Date The date should be in the month year format and be flush right. See Figure 21-2. The Date Code should not be used because it updates each time the specification is opened in MS Word.

Special specifications that undergo minor revisions should be identified by replacing the original date with the revised date. Example: “Rev 6/2/2008”.

The following diagram illustrates the desired format for a special specification. Notes 1 through 4 discuss the document formatting.

Figure 21-2 Special Specification Format

ITEM 203.17050815 - THE TITLE GOES HERE

DESCRIPTION
Start text below the heading using Times New Roman Font- size 12.

MATERIALS

CONSTRUCTION DETAILS

METHOD OF MEASUREMENT

BASIS OF PAYMENT

PAGE 1 OF 1 Rev. Aug. 2024

Notes:
1. Margins. A 1-inch border should be provided to facilitate binding, and accommodate the additional information (contract number and proposal page number) placed onto the specification page during creation of the contract proposal. Margins (other than the top margin) may be slightly reduced in order to prevent a few lines of text from being carried over to an additional page. The footer (page numbers and date) may be placed below the 1-inch bottom margin.
2. Fonts. All fonts, including the title, should be 12 point Times New Roman. The title of the specification and item number should be, capitalized, underlined, and bold.
3. Paragraph format. Paragraphs should be block format (not indented) and text should be left justified.
4. Text. Text associated with the five sections should start on the line below the section heading.

C.2 Drawings Associated with Special Specifications

In some cases it is appropriate to provide drawings as part of a special specification, to properly convey the details of the required work. Drawings associated with a special specification shall be created using the same standards used for creating a contract plan sheet. The drawing should be scaled for an 8 ½ x 11 sheet of paper. The file name of the detail should be the same as the special specification file, except "doc" should be replaced by “dgn”, e.g. 202.11000002.dgn. If there are multiple sheets to the detail, the sheet number should be added before the second decimal, e.g. 202.11000002-1.dgn. The drawing shall be supplied to Main Office DQAB’s Specifications and Standards Section along with the specification file. The drawing will be stored in ProjectWise at the following location:

NYSDOT\Documents\Resources\Resource Information\DQAB

The drawing(s) will be converted to .pdf format and attached to the .pdf version of the specification by DQAB’s Specifications and Standards Section. Also the MS Word version of the special specification will contain the path of the .dgn file as the last page.

21.4.1.2 Specification Considerations and Provisions

The specification author should be mindful of the following general guidance when preparing specifications.

A. Standard Specification Section 100

Section 100 contains the general provisions applicable to all Department construction contracts. Special notes, special specifications, and notes in the plans should not contain provisions which modify any of the general provisions.

B. Measurement and Payment

Specifications should not be prepared that provide payment items for very small quantities, unless these quantities are for discrete items (e.g., mailboxes, delineators) which are paid on an "each" basis. For example, the *Establishing Turf* item should not be used on projects with less than 1000 SY to seed. Similarly, specifying 1 CY of unclassified excavation, 200 lbs. of reinforcing steel or 1 CY of concrete creates unnecessary item measurement and payment, and will cause overrun problems if an excessive item unit bid price is received. A composite specification (see below) should be written to include related work under one payment item.

C. Composite Specification

Highway work is divided into logical elements or pay items in order to reduce risk and provide progress payments. Sometimes, however, this practice produces the undesirable side effect of having too many items with small quantities. In addition to increasing the time and effort needed to estimate and measure these numerous small quantities, the practice invites unbalanced bidding.

The solution is to combine work items of varying complexity, quantity and cost associated with a particular work operation, work items which otherwise would have been paid for separately. Specifications that do this are referred to as "composite".

In general, composite items cause no problems when their components are in constant proportion to each other and to the measured quantity. When this is not the case, such as for items with high set up or other fixed costs, composite items may lead to losses or windfall profits for the contractor. Varying site conditions which alter the proportion of the elements of the work can also lead to the same problems.

In order to provide an equitable basis for bidding and contract payments, each designer should be aware of the aforementioned problems. Work of a composite nature may be included in an item only when it can be reasonably estimated and there is little potential for significant variations in quantities. In the latter case, a special payment item should be provided and the quantity should be estimated as realistically as possible to reduce potential windfalls via unbalanced bidding.

ITEM 608.0105NN09 - CURB RAMP CONFIGURATION TYPE X is a good example of a composite specification. Work under this specification requires small quantities - in relatively constant proportion to each other - saw cutting, excavation, disposal, fill, subbase material, compaction, repairs to affected asphalt, etc.

D. Salvage Items

Miscellaneous highway appurtenances, dismantled bridge superstructures, and bituminous concrete millings which are determined to have little maintenance value should typically be turned over to the contractor for disposal in lieu of salvage to avoid the costs associated with re-handling of these materials. Contract bid prices should then reflect the scrap value of these items. "Appurtenances" is defined to include such items as signs, signals, light poles, guide rail, bridge rail, wood posts, frames, grates and manhole covers, hydrants and other similar materials.

The Department may elect to salvage appurtenances and bituminous concrete millings for future maintenance use by the State or local governments. Bridge beams, girders and other superstructure materials from dismantled bridges are also appropriate for salvage. When special specifications and notes are written or used which entail reference to items to be salvaged, prior written approval of such salvage should be received from the Regional Director of Operations/Regional Maintenance Engineer or Regional Traffic Engineer (for signal and lighting equipment). No credit to Federal-aid funding is required for salvaged items so long as the following conditions are met:

1. Salvaged materials are to be used for highway maintenance purposes and not sold as scrap.

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

3. Generally, specifications shall not provide for delivery by the Contractor of salvaged material to State or local agency maintenance yards. Occasionally, exemptions to this federal policy (stated in 23 CFR 635D, Section 635.407g and adopted as State policy), regarding transport are appropriate. Requests seeking exemption will be based on meeting the requirements of 1 and 2 above, in addition to providing environmental benefits as a result of incorporating the salvage material into future highway maintenance activities (recycling versus disposal).

Good judgment should be exercised when requiring the contractor to transport materials off-site. Final destinations should be within a reasonable distance of the contract site so that excessive transport costs are not incurred.

The following procedure is to be followed when seeking approval of a special specification which includes transport of salvage material off the job site:

1. The designer, through the Regional Special Specifications Coordinator, sends the justification and regional specification approval request to the Main Office Program area responsible for the specification. For projects requiring FHWA PS&E approval, (Per Design

Related Approval Matrix Exhibit 4-2 of the Project Development Manual) the submission shall request Main Office DQAB's Specification and Standards Section to also obtain FHWA approval for transport of salvage material off the job site.

2. The Main Office program area (and FHWA if applicable) reviews the justification to see if it adequately addresses all of the required points. On all projects except those requiring FHWA PS&E approval, the Main Office program area will also approve satisfactory justifications.

3. The Main Office program area documents and files the decision to approve the justification, and transmits this approval to the Region for their project files.

Refer to the Federal-Aid Policy Guide (FAPG) 23 CFR 140I for requirements pertaining to salvage on railroad work, and 23 CFR 645A for utility work.

E. Warranty Clauses

Section 105-19 provides the Department's standard specification provisions regarding warranties and guarantees. Use of warranty clauses in specifications is strongly discouraged. If warranty provisions are absolutely necessary in a specification, consult the Office of Construction for the proper method and/or wording.

F. Proprietary Specifications

A special specification is said to be proprietary if:

1. It requires, either directly, or by reference, that a product or process be that of a certain named manufacturer or:

   (Note: If more than one such product or process is mentioned and the words, "or equal as approved by _____" are added, the specification is not proprietary, although 3 or more product/process names are preferred for a non-proprietary specification.)

2. While not mentioning a manufacturers name, the specification's structure, language and detailed requirements are such that only one manufacturer can furnish a product(s) meeting the specification requirements. This will usually happen when the manufacturer's guide specification is incorporated into a DOT specification, or unnecessary requirements are called out.

Restrictions on Use:

It is the policy of the federal government and the State of New York to foster competition and to obtain the best possible products at the lowest possible price. Because putting an unnecessary limit on the number of competitors is essentially unfair and can potentially lead to higher prices, the policy of both the federal government and the State is not to use proprietary specifications. It is recognized, however, that there will be a limited number of special cases where exceptions to this policy may be appropriate. (See Section 21.4.2.3E for the approval process). FHWA and the State will not participate in the costs of a proprietary material, specification or process unless:

1. The proprietary article is being bid competitively against non-proprietary material or articles; or

2. The State certifies either that the use of such patented or proprietary item is essential for synchronization with existing facilities or no equally suitable alternate exists; or

3. The patented or proprietary item is being used for research or experimental purposes, or
4. For federally funded projects, the FHWA Division Administrator approves the State's request for use of a proprietary product as being in the public interest (See Section 21.4.2.3E), as provided in 23 CFR 635.411 (c).

The above guidance is pursuant to 23 CFR 635.411.

For project work funded by municipalities, or funded by others, competitive bidding requirements found in the General Municipal Law, or in other statutes, may also prohibit or limit the use of proprietary specifications.

G. Experimental Specification

The purpose of an experimental specification is to evaluate new or innovative highway technology, or alternative standard technology, under actual construction and operating conditions by means of a program or experimental construction project.

An experimental feature may be a material process, method, equipment item, traffic operational device or other feature that: (1) has not been sufficiently tested under actual service conditions to merit acceptance without reservation in normal highway construction, or (2) has been accepted, but needs to be compared with alternative acceptable features to determine their relative merits and cost effectiveness.

An experimental specification:

- Shall have a work plan (See Section 21.4.2.3.F) submitted with the first request for approval of use of the item(s). All subsequent approval requests for the item(s) shall reference the approved work plan.
- Shall have a 91 suffix on the item number and be PIN approved.
- Shall not be used in more than five (5) Contracts unless an approved work plan requires more projects for good data.
- Will sunset (be marked inactive) after two (2) construction seasons unless stated otherwise in the work plan.
- Need not be issued by an Engineering Instruction
- May eventually be disapproved, depending on the results.

21.4.2 Specification Review and Approval

All new specifications, and existing PINONLY special specifications, are to be reviewed and approved to ensure technical appropriateness and consistency with policies. The request for specification review and approval must contain enough supporting information so a reviewer can make a decision regarding its suitability. No specifications will be reviewed or approved without supporting justification as discussed below.

21.4.2.1 Justification

When preparing a justification, the following information should be provided:

- A discussion of why the work is required, what the work consists of, and what other standard or special specifications, if any, pertain to the work and why they are not acceptable.
- If a change is made to a standard specification or another special specification, explain what is being changed, what the change will accomplish, and how the change is better. If an existing specification does not accomplish the work for which it was intended, request that it be disapproved so that it is not used in other projects.
- If a specification is experimental, indicate how this experimental use of the item fits into a work plan (see Section 21.4.2.3.F)
- If a specification contains provisions for contractor salvage transport beyond the contract limits or it contains proprietary references, it must be justified using the guidance provided in Section 21.4.1.2 D and 21.4.1.2 F respectively.
- State if the specification is to be approved for General Use or project by project (PIN ONLY). Note the review process is the same for both.
- State if there are any warranty and/or guarantee provisions in the specification.
- State if any pay item is fixed price, maximum bid or minimum bid.

Listed below are examples of justifications that have been submitted, and while they may be true, they do not meet the criteria in the previous paragraph, and are <u>not acceptable</u>:

- No standard specification exists.
- This specification was developed by the Regional Landscape Architect, Geotech Engineer, Materials Engineer, etc.
- Approval is requested for the following specifications.
- There is no other specification that covers this work.
- Please review the attached special specification and assign a pay item number for our records.
- Request to use this previously PIN approved specification on the subject contract.
- The specification is modeled after a Region X special specification.
- This is a new specification that is being used by order-on-contract on an existing project.
- The Region has expressed an interest in using this item on future projects.
- This specification is similar to item xxx.nnnnnnRR with minor changes recommended by the Regional Construction group.
- This item is required to satisfactorily construct the project.
- This item is required to process the estimate for this project.
- We request approval for the following pay item numbers.
- Attached is a list of eleven USC general-use special specifications for your review and approval.
- This specification is needed for inclusion in an upcoming amendment for the subject project.

21.4.2.2 Review and Approval of Standard Specifications

New standard specifications and revisions to existing standard specifications are typically developed by main office personnel in conjunction with the Regional offices. They are issued via Engineering Instruction (EI). Beginning with the publications dated September 1, 2015, the Standard Specifications published on the Department's public website are the Department's official documents. The Standard

Specifications books will be published three times a year, dated January 1, May 1, and September 1 with all of the interim changes incorporated.

In rare instances, new or revised specifications may be issued between the publish dates. In such instances, the interim specifications will be inserted directly into the contract proposal and then incorporated into the next official published book.

Unofficial versions of the Standard Specifications, illustrating the changes from one version to the next, will also be published on the Department's public website as the "Updated Standard Specifications". The files will show what content has been deleted from and what content has been added to the preceding official version.

21.4.2.3 Review and Approval of Special Specifications

The Review and Approval of a Special Specification differs depending on the type of Special Specification. The following sections, A-H provide guidance on the process, based on the type of Special Specification.

Each section A-H refers to the Status of Special Specifications Table. The use of this Table is a Quality Control measure that is used in combination with the Estimate Checks program. The table should be created for a project when the first Special Specification Approval is requested. As the project progresses, the table should be continually updated until it is ultimately submitted to DQAB with the PS&E transmittal memo. Existing generally approved Special Specifications do not need to be included in the Status of Specifications Table.

Additional current guidance (for Department personnel) pertaining to Special Specifications can be found on SharePoint/IntraDOT.

A. Review and Approval of New Special Specifications Prepared by the Region and on behalf of the Region.

New special specifications prepared by the Region, or on behalf of the Region by consultants, are typically a result of a need for a specification to perform a given aspect of project work which is not covered by a Standard Specification. As such, the specification may have limited applicability across the state, and the review and approval process is not as encompassing as the process associated with special specifications prepared in the Main Office (MO). The following bullets briefly describe the process associated with the review and approval of special specifications prepared by the Region.

- After the specification and justification have been reviewed within the Region and comments resolved, the proposed specification and justification should be provided (by the Regional Special Specifications Coordinator) to: 1) the Main Office Program Areas assigned to that item and; 2) the DQAB Specification and Standards Section (S&S Section) for review and approval, at least 4 weeks prior to final PS&E submittal.
- Comments should be provided and resolved within this 4 week period.
- After approval by the MO program area, the Region should provide the DQAB S&S Section with an electronic version of the specification for posting and entering the pay item number into the AASHTOWare Project Item Catalog. The Regional transmittal to DQAB should copy the MO program area also involved with approving the specification.

- The Status of Special Specifications Table should be completed for each project containing special specifications. The completed table should be submitted to DQAB's PS&E Section with the PS&E transmittal memo.

B. Review and Approval of New Special Specifications prepared by the Main Office

New special specifications prepared by a Main Office program area are typically the result of a need for a specification to perform an aspect of project work having state-wide applicability and not covered in a Standard Specification. As such, the specification should be issued by engineering issuance(Either an Engineering Bulletin (EB) or Engineering Instruction (EI)) After approval and issuance, DQAB will post the specification, and enter the pay item number into the AASHTOWare Project Item Catalog. New Special Specifications prepared by the Main Office will normally be designated as General in the ID column of the Item Catalog.

C. Review and Approval of Existing PIN ONLY Special Specifications

Existing special specifications requiring approval on a project by project basis (i.e., special specifications designated as PIN ONLY in the ID column of the Pay Item Catalog), shall be justified for use by the designer and submitted to their Regional Special Specifications Coordinator. The Regional Special Specifications Coordinator shall submit it through theOnline System for Specifciation Management (a.k.a., SpecTracker, OSSM) application. The Main Office program area responsible for that item will review the submission and approve or deny the use of the PIN ONLY item.

Approval Status of PIN ONLY special specifications should be entered into the Status of Special Specifications Table. The completed table should be submitted to DQAB's PS&E Section with the PS&E transmittal memo.

D. Existing GENERAL Special Specifications

Existing special specifications designated as GENERAL in the ID column of the Pay Item Catalog are approved for general use and do not require additional review/approval.

Existing special specifications designated as GENERAL in the ID column of the Pay Item Catalog do not need to be included in the Status of Special Specifications Table.

E. Review and Approval of Proprietary Specifications

Approval for a proprietary specification is on a project by project basis. Proprietary specifications are special specifications and follow the same review and approval process as a special specification, with the following additional requirements:

1. The justification should document why the proprietary item is appropriate for use on the project. (i.e., why it is appropriate to limit the number of competitors. See Section 21.4.1.2 F)
2. The manufacturer's name, address, and product name or identifying numbers should be verified during proprietary specification preparation.
3. The Regional Special Specifications Coordinator shall formally request approval (by email) from the DQAB Specifications and Standards Section for each proprietary specification, after all comments from the MO Program Area assigned to that item have been resolved.
4. DQAB's approval of the proprietary specification, if granted, will come in the form of an e-mail notifying that the item number is available. (For projects that require FHWA PS&E approval, DQAB will request FHWA approval for the proprietary specification and when approved will notify the Region that the item number is available.)

The date that approval is granted by DQAB Specifications and Standard's Section should be documented in the Status of Special Specifications Table. The completed table should be submitted to DQAB's PS&E Section with the PS&E transmittal memo.

5. For projects that require FHWA PS&E approval, Regions are strongly encouraged to allow extra time for the approval process.

F. Review and Approval of Experimental Specifications and Associated Work Plan

Approval for a specification with an experimental item is on a project by project basis. Specifications for Experimental Items are special specifications and follow the same review and approval process as a special specification, with the following additional requirements:

Every use of an experimental item must be documented and evaluated under an approved work plan (required regardless of the reason an experimental feature is initiated.) The work plan must be reviewed and approved by the Design Quality Assurance Bureau. Notification that the item number is available for the project signifies DQAB approval.

The work plan should include the following (per FHWA guidelines):

1. Description and objective of the experimental feature (with respect to purpose, expected implementation, and benefits to be derived)
2. Program area or individual responsible for inspecting, reporting and evaluation
3. Characteristics of the experimental feature to be evaluated
4. Reporting, inspection and evaluation requirements to be conducted by responsible parties (both during and after construction)
5. Control sections to be studied
6. Method of construction to be used
7. Estimate of total cost (itemized breakdown) and how the experimental feature will be funded
8. Attachments: plan sheets, special provisions, work drawings, etc., as appropriate
9. Estimate of time and number of projects to complete evaluation and when final report will be submitted
10. Contact information of the responsible program area or individual for the final report.
11. Final report documenting the observations, results and recommendation(s)
12. Planned distribution of the final report

One hard copy of the final report shall be sent to the Transportation Research Library and another copy shall be sent to the Design Quality Assurance Bureau (DQAB) to be sent to the FHWA. DQAB shall also receive an electronic copy of the final report.

DQAB will make the Final Reports and Approved Work Plans available to all NYSDOT staff with a link from the Specs and Standards Section page. DQAB will notify Regional Construction Engineers, Regional Design Engineers, the Office of Technical Services, the Office of Construction and the Office of Design when new Final Reports or Approved Work Plans are added.

Experimental Items should be entered into the Status of Special Specifications Table. The completed table should be submitted to DQAB's PS&E Section with the PS&E transmittal memo

G. Review and Approval of Specifications that Transfer Equipment or Materials to DOT

Purchasing equipment or materials for DOT use, via capital contracts, that are not directly related to or fully incorporated into the project is generally prohibited. Any proposed specification that does this will require a detailed justification and approval by the Office of Legal Services as well

as DQAB and the Main Office Program Area responsible for the specification. This requirement does not apply to specifications where portions of material already belonging to DOT become the property of DOT at the conclusion of the work (e.g., pavement millings, scrap metal, guiderail or sign parts). This requirement applies only to equipment or materials that are proposed to be transferred from the contractor to DOT for a use that is separate from the original contract.

21.4.3 Specifications to be Considered for All Contracts

21.4.3.1 Mobilization

The estimate for all projects shall include the pay item 699.040001 for mobilization, except for Job Order, Where and When, Work Order, Design Build, and certain specialty contracts (e.g., plumbing, HVAC, electrical work). The item should be added to General Building Contracts.

Mobilization shall be allocated to each estimate share by multiplying the total share by the contract mobilization factor.

21.4.3.2 Training Requirements

For federally-funded contracts with an Engineers Estimate of $5 million or more, Designers shall include special specification 691.04000020, subject to concurrence of the Regional Construction Engineer.

For federally-funded contracts with an Engineers Estimate between $1 million and $5 million, Designers shall confer with the Regional Construction Group to determine if special specification 691.04000020 should be included by exception. Such determination is based on the likelihood of the contract including meaningful and effective construction training opportunities compared to future contracts to be let in the Region, the Region's need to address programmatic construction contract Equal Employment Opportunity shortfalls, and the need to evaluate the potential benefits of a lower criterion in future years. Concurrence from the Office of Construction will be required.

The quantity for special specification 691.04000020 *Training Requirements* should be estimated to the nearest 1,000 (the unit price for a Dollars-cents item is $1.00) and placed in the largest dollar value engineering share. The quantity should be based on an estimated number of training hours and an average Prevailing Wage Rate for AA targeted values. Consult with the Regional Construction Group for the estimated quantity.

21.4.3.3 Field Change Payment

The Field Change Payment (FCP) provides a contract contingency allowance for the timely payment of authorized extra work that was completed to fulfill the intent of the original contract documents. **It is a payment mechanism used to streamline and expedite the payment process for authorized extra work, within the scope of the contract.** Contract Pay Item 697.03 *Field Change Payment* shall be specified consistent with the applicability criteria provided in Table 21-7.

Table 21-7 Field Change Payment Applicability Criteria

Applicability Criteria	Include / Do Not Include
All projects with a total Engineer's Estimate of less than $100,000.	Do Not Include
All projects with a total Engineer's Estimate greater than or equal to $100,000. Exception: Do not include in projects comprised solely of indeterminate work / force account work (e.g., projects where the construction activities are all to be reimbursed under 636 series pay items).	Include

The value for **FCP** item shall be determined as a function of the eligible Engineer's Estimate (EE) items as per the formula – **(0.05 + L) x Eligible* EE Items**, where L is an indicator of the level of accuracy and details in the plans and possible variations in contract quantities due to uncertainty of field conditions during construction.
(* Eligible EE items = All items **except** FCP and Mobilization items, any Items for time related contract provisions (e.g., incentive/disincentive, lane rental, etc.) and all lump sum pay items).

L varies from 0 to 0.05 (5%). The value of L rises with diminishing levels of accuracy and details in plans. It also rises with increasing possibility of quantity changes due to unexpected variations in field conditions during construction. Possible variations in quantities could be a result of accelerated designs, projects with limited mapping or survey data, complex utility involvement, projects in an urban context, discovery of field repairs under the top course, high levels of unevenness of ground surface, subsurface elements, projects with limited details, etc. The value of L should be determined at the ADP review phase in coordination with the Regional Construction group and evaluation of past contract data and field conditions for similar work. The final FCP value should be rounded to the nearest $1,000 if it is under $5 million and to the nearest $10,000 if it is equal to or over $5 million. The FCP value will always be equal to or less than 10% of total EE.

This FCP value should then be distributed over all the engineering shares proportionally based on the cost of each share except any engineering share value of less than $20,000 need not include the FCP item cost - [FCP quantity/value x (Eligible Engineering Share Cost / Total of Eligible Shares)].

The Field Change Payment item has a Dollars-Cents pay unit, where the number of dollars is entered as the quantity, and the unit price is fixed at $1.00.

21.4.3.4 Price Adjustment Items

Price adjustment clauses provide additional compensation to the Contractor for increases, or refunds to the Department for decreases, in the price of asphalt, fuel, or steel/iron products. Since the inclusion of price adjustment items in a contract affects the bid prices of other items, and cannot be added by order-on-contract after bid letting/contract award, it is Department Policy to include these items in all contracts and delete them after construction, if they are not used. The only exceptions to this policy are Job Order Contracts, Contracts where the only biddable items are percent overhead and profit, Bridge Cleaning/Washing Contracts, Bridge Painting Contracts and Pavement Marking Contracts.

Price adjustments are associated with only certain eligible pay items. For fuel and asphalt, the eligible pay items are listed in conversion factor tables on contract proposal notes inserted by Main Office. Requests for revisions to the lists of eligible pay items should be directed to the Office of Construction.

The amount included in each contract should be estimated based on the price adjustment formulas for eligible items and recent market trends. Guidelines for estimating the price adjustment items are available at the Chapter 21 website and will be updated periodically.

To ensure that any payments or refunds are shared by the various funding participants, the price adjustment items shall be distributed based on funding as discussed in section 21.6.3.5 (It is not necessary to distribute these items among various engineering shares that use the same funding source. The entire quantity may be included in the largest engineering share. Refer to section 21.6.3.5 for more information regarding engineering shares and funding.) However, adjustment items should not be placed in the shares of municipalities or utilities, unless the share is very large, and contains significant adjustment eligible work. Separate shares that require the Department to seek additional funds from outside entities, which is resource intensive, time consuming, and may cause potentially compensable delays to the contract, should only be contemplated if the potential amount of funds warrants the significant additional effort.

21.4.3.5 Engineer's Field Office/Laboratory, Inspection, and Administration

Each Department construction contract must be properly staffed and equipped to provide for adequate construction inspection and administration. This is achieved by including standard and/or special specification items that are applicable to the individual contract. The items may include provisions for a field office and office supplies, field laboratory, equipment, testing supplies, and administrative systems.

The following provides guidance on selecting the appropriate items for a particular project. Divergence from the recommendation is acceptable if it will better meet the project needs or will add cost-effective capabilities and quality improvements to the construction work environment. Expect input from the Regional Construction Group during the Advance Detail Plan Review regarding the resources that will be needed for construction inspection and administration of the project (see Section 21.3.8.1).

A. Office/Structures

A.1 Engineer's Field Office The type of field office to be selected should be based upon the estimated number of inspection staff that will be assigned to the construction contract. An engineer's office should not be specified on small contracts such as demolition or signing jobs which can be adequately supervised from a nearby Regional Office or Residency.

A.2 Field Laboratory As per Chapter 9, Subsection 9.7.3.2 of the Highway Design Manual: "The contract should include a payment item for a laboratory building when one is needed. It should be included on any projects that will require significant field testing or processing of samples for testing. On projects requiring minimal field testing or processing of samples, the Engineer's Field Office will serve this purpose. The Regional Geotechnical Engineer should be consulted regarding the need for a laboratory building."

B. Miscellaneous Devices

B.1 Rain Gauge A rain gauge system should be included on all construction contracts that require coverage under the NYSDEC SPDES General Permit for Stormwater Discharges

from Construction Activity.

C. Inspection and Testing

C.1 Inspection Boat An inspection boat may be included if necessary for construction inspection. The determination of whether a Type A or B inspection boat should be specified based on the water conditions in the vicinity of the site, number of personnel to be concurrently in the boat, and the available docking facilities.

C.2 Construction Testing Supplies – Consumables This item is for the purchase and supply of consumable testing materials for projects. The Designer should budget $100 in each contract for item 637.36.

Testing supplies may include but are not limited to: cylinder molds and lids; asphalt & emulsion collection tins; Ottawa sand for compaction testing; replicator tape for testing anchor profile; and sample containers, bags and ties for shipping purposes.

C.3 Concrete Cylinder Curing Equipment Contracts that will have structural concrete (bridge, major culvert, etc.) poured on-site should typically include the concrete cylinder curing equipment contract pay item in the bid documents. The Regional Materials Group should be consulted – they may determine that the cylinders could be cured in their lab, for example.

C.4 Digital Inspection Device Contracts that are digital delivery should include the digital inspection device item in the bid documents.

D. Contract Administration

D.1 Office Technology Supplies The intended use of the office technology supplies contract pay item is to provide technology-related materials and supplies only in situations when they are unavailable from the State. The Construction Supervisor and Designer may determine a need exists for this contract pay item, and the appropriate amount to budget.

D.2 Partnering Workshop The Partnering Workshop contract pay item should be included if any of the following criteria apply:

1. Projects located in Regions 01 - 09 that are estimated to cost $5 million or more.
2. Projects located in Regions 10 & 11 that are estimated to cost $10 million or more.
3. Projects that are complex, controversial or involve new or unusual technology, regardless of cost.
4. Projects with substantial involvement of utilities, railroads, community groups, other agencies etc., regardless of cost.
5. Projects of regional significance, as determined by the Regional Director, such as projects critical to local safety, traffic or other program needs.
6. Projects that contain time related provisions (A+B, Incentive/Disincentive, Lane Rentals, etc.).

A quantity of 5,000 is recommended for this Dollars-Cents pay item.

D.3 Critical Path Method (CPM) Scheduling CPM scheduling is appropriate for certain projects. Its use during construction provides a fully modeled and detailed plan for the execution of the project, and the CPM Schedule is an excellent written and graphic means to aid in the

communication of those issues between all project stakeholders. Collaborative use of CPM Scheduling by the Contractor and the Engineer assists in planning and scheduling work activities, and then managing change as it occurs through proactive decisions and contract administration, thereby avoiding or minimizing costly delays. CPM Scheduling is also an industry accepted method to resolve delay disputes and claims.

Project selection criteria have been developed to identify those projects where CPM scheduling is most suitable:

1. Projects that contain incentive/disincentive (I/D) provisions for early completion, projects that use cost-plus-time bidding (A+B bidding), lane rental, or have other time-related contract provisions, such as interim milestone dates or a contract completion date with significant liquidated damage provisions. Time is of the essence in contracts with these provisions, and time equates to direct monetary costs. CPM scheduling provides a rational method to measure time and the apportionment of both delays and advancements. For projects with very short I/D phases or limited, time-related work, the CPM may be required for only part of the project. The Designer should contact the Regional Construction Group to develop the appropriate special notes.

2. Projects that require the Contractor to coordinate activities with utility companies, railroad companies, or other contractors. The other parties' work must be significant to the extent that it has a controlling stake in the contract completion. This includes projects with other contracts in close proximity where adjacent highway sections must be coordinated, as well as buildings that are constructed with multiple contracts, i.e., Wick's Law contracts. CPM on these projects will help avoid time-related disputes and potential delay disputes.

3. Projects of Regional significance, as determined by the Regional Director, that would warrant additional effort to ensure timely completion.

4. Projects estimated to cost more than $20 million. Large projects such as a major interchange construction or reconstruction projects with several bridges, multiple construction phases, numerous subcontractors, etc., should be scheduled using CPM due to their size and complexity.

The project designer shall determine if a project meets the criteria for the CPM schedule item. The project designer shall contact the Regional Construction Engineer (RCE) to confirm the appropriateness of including a CPM schedule item, and the appropriate item to use. If a CPM item will be included, the project designer will indicate such in the Advance Detail Plan (ADP) distribution letter.

The RCE may request that the CPM schedule be required for only part of a project - for example, a short duration I/D phase. The RCE may also justify use of a CPM item for projects not meeting the selection criteria. In these situations, appropriate special notes shall be developed and the appropriate item shall be included in the plans. The estimated cost of the item shall be adjusted in proportion to the value of the work in the schedule period, and the number of months that Progress Schedule submissions are required, using the cost estimating equation below.

Use the following criteria for cost estimation purposes of the minimum bid when using a Type 1 or Type 2A CPM Progress Schedule item based on the value of the Engineer's Estimate (EE). For a Type 2B progress schedule (bi-weekly), multiply the below by a factor of 1.5. For a Type 2C progress schedule (weekly progress schedule), multiply the below by a factor of 2. For engineer's estimates

close to the threshold criteria below, the engineer may estimate to the next threshold up or down based on complexity and duration of the project.

Recommended CPM Scheduling Cost =

Engineer's Estimate	CPM item estimate (minimum bid)
Up to $10M	$50k
$10M to $25M	$75K
$25M to $50M	$100K
$50M to $100M	$200k
$200M and up	$250k (add $50k per each additional $100M of EE)

21.4.4 Pay Item Catalog

The Pay Item Catalog is an electronic version of the Department's Inventory of Pay Items. It contains the approval status of all specification pay items. The status of all existing special specifications to be included in the project should be looked up in the Catalog to determine if they need approval for the project. Approval requests must be made at least 4 weeks before PS&E.

The following information is contained in the Pay Item Catalog:

1. Item Number - Item Number as discussed in section 21.4.1.1.A1.
2. Link to the Bid Price History Data
3. Special Specification Indicator - If the Specification is a Special Specification, it is noted with a check mark.
4. Approval Status – information regarding the approval status of the pay item number. It would be "General Approval", "PIN Approval", or "Disapproved".
5. Effective Date – date the current Approval Status was effective (there may also be an obsolete date).
6. Units – the abbreviated unit of payment for the specification. Item numbers that are fixed price, minimum, or maximum bid items are explicitly called out.
7. Price Indicator – Fixed, Minimum, or Maximum.
8. Links to the Special Specification Document and to the issuing EI.
9. Message - A message may provide information regarding the specification. Messages are listed when the "Estimate Checks" program is run after the Engineer's Estimate is uploaded to AASHTOWare Project Preconstruction.
10. Description - the pay item full description (i.e., special specification item number full description or title, or the standard pay item full description)

21.5 PROPOSAL SPECIAL NOTES

Proposal Special notes should state special directions, provisions, or requirements specific to the project. Section 21.5.1 provides guidance regarding the use and preparation of Proposal Special Notes. Proposal Special Notes which are commonly used are listed in Section 21.5.2 of this Chapter.

21.5.1 Guidance and Format

Indiscriminate use of special notes can lead to a set of contract documents that is hard to follow and confusing. Conflicts between plans, the proposal, and specifications may result in higher bid prices and/or claims. The following items provide guidance regarding the use of special notes:

- Proposal Special Notes should not relate to specific plan details. Notes for this purpose should be placed directly with the details on the plan sheets.

- Proposal Special Notes should not include or modify statements contained in the General Provisions (Section 100) of the Standard Specifications or other already stated specification provisions.

- Proposal Special Notes which modify existing specifications should be avoided. A special specification should be written when modification of a standard or existing special specification is required.

- Manufacturers' names should be avoided in Proposal Special Notes and on the plans. If trade names cannot be avoided, the same procedure should be followed as if a proprietary reference or proprietary special specification were being prepared. See Section 21.4.1.2 F and 21.4.2.3 E. for guidance regarding proprietary specifications.

- Proposal Special Notes should not refer to a specific contract completion date.

- Proposal Special Notes should not require that bidders submit anything with their bid (e.g., listing of equipment, subcontractors, etc.). If for some reason this is desired, the issue should be brought to the attention of the Contract Management Bureau.

Special notes should be prepared in MS Word using 12 point Times New Roman font and a 1-inch border all around. Each Special Note should have a title in bold, all capital letters. Multiple-page Special Notes should be numbered “Page 1 of 2”, etc. Single-page Special Notes may be numbered. As indicated in Section 21.9, Special Notes may be submitted with the PS&E either as a single .pdf file containing all Special Notes, or as separate .pdf files with a name unique to each Special Note. If Special Notes are submitted as a single .pdf file, more than one Special Note may be shown on the same page.

21.5.2 Special Notes Commonly Prepared by the Region

Required insurance coverage special notes:

- Additional Insured - A listing of Additional Insured Parties (Refer to Section 107-06.A.4 of the Standard Specifications and the below guidance) for which the Contractor must provide insurance coverage must be submitted with each PS&E. DQAB’s PS&E Section will include this listing within

the Required Contract Provisions section of the proposal. Section 21.9.2.2. provides a sample of the note. Designers should download the latest version of the note from the HDM Chapter 21 webpages.

For contracts with known locations and limits, the listing of Additional Insured Parties should include: The State of New York; New York State Department of Transportation; any municipality (i.e., Village, Town, City, County) upon whose property the work is being performed; and any public benefit corporation (e**.**g., Metropolitan Transportation Authority and its subsidiaries, NYS Thruway Authority, etc.); railroad; or public utility (e.g., National Grid, NYSEG, Verizon, etc.) whose property is occupied or facilities are affected by the work. If the project does not call for or authorize entry upon the land of one of the owners, they should not appear on the list. The fact that a project is located in a municipality does not automatically make it necessary for the municipality to be named. The required additional insureds should be listed by Legal name.

For contracts where the precise location(s) and impact(s) of the contract work is not known at the time of the PS&E submission (e.g., Where and When type contracts), the listing of Additional Insured Parties should include any known entities in accordance with the above guidance. For these types of contracts, a statement regarding the addition of applicable Additional Insured Parties as work locations are added should be added to the note.

- Insurance Coverage – The “Insurance Coverage” note is required to specify the types of insurance not required for the specific project, and/or to specify coverage limits that differ from or are not provided in the Standard Specifications. DQAB’s PS&E Section will include this note within the Required Contract Provisions section of the proposal. Section 21.9.2.2. provides a sample of the note. Designers should download the latest version of the note from the HDM Chapter 21 webpages. Section 107-06 of the Standard Specification includes all types of insurance that might be required on any NYSDOT project. Not every type of insurance will be required for every project. Therefore any or all of the following types of insurance may need to be eliminated:

    1. **Professional Liability/ Errors and Omissions** - Include in projects where professional services requiring the signature, stamp or certification of a licensed professional, including, without limitation, erection plans, demolition plans, containment plans, coffer dams, and temporary sheeting are required by the project scope.

    2. **Railroad Protective Liability Insurance** - Include in projects with any Work Affecting Railroads as described in §105-09.

    3. **Marine Protection & Indemnity** - Include in projects with any Work to be performed on a navigable waterway using barges or other watercraft or necessitating the use of a rescue boat or skiff. If marine protection and indemnity insurance is required, a special note shall be inserted into the proposal. Section 21.9.2.2. provides a sample of the note. Designers should download the latest version of the note from the HDM Chapter 21 webpages.

    4. **Pollution Liability Insurance** - Include in projects where the Contractor will employ mobile equipment or tanks or facilities for fueling vehicles or equipment on-site.

    5. **Builders’ Risks Policy** - **I**nclude in projects valued at $25M or more that call for the construction of any “Structure” or building including, but not limited to pump stations. Require coverage valued at no less than 20% of the estimated “Structure” and/or building construction costs.

In addition, the following types of insurance may require insurance coverage limits to be included in the contract proposal:

1. **Railroad Protective Liability Insurance** - include in projects where the Work affecting railroads requires limits of insurance that differ from the "$5M per occurrence with a $10M aggregate" limits in the Standard Specifications; adjusting as follows:

   a. Coverage limits may be reduced to "$2M per occurrence with an aggregate of $6M" (per 23 CFR Section 646.111), where the railroad right-of-way for which the project requires entry is not used for intra- or inter-city passenger service nor major freight rail traffic (e.g., Railroads such as Canadian Pacific, CSX Transportation and Norfolk Southern Railway are considered to carry major freight rail traffic).

   b. Coverage limits may be increased on the advice of counsel, "in cases involving real and demonstrable danger of appreciable higher risks" (ref 23 CFR Section 646.111) and the identified danger/risks warranting the increase provided to Construction with the Handoff Memo (See Section 21.13).

      DQAB's PS&E Section will include this note within the Required Contract Provisions section of the proposal.

2. **Builders' Risks Policy** - when applicable, the insurance limits included in the contract proposal should be no less than 20% of the estimated "Structure" and/or building construction costs by rounding the calculated value of 20% up to the next million dollars (e.g., for a $25M project with and estimated $16.3M in "Structures" work, the insurance coverage would be $4M (i.e., calculated value of 20%, $3.26M, rounded up)). DQAB's PS&E Section will include this note within the Required Contract Provisions section of the proposal. Section 21.9.2.2. provides a sample of the note. Designers should download the latest version of the note from the HDM Chapter 21 webpages.

Special notes are commonly prepared on the following subjects:

- "Coordination with the Utility Schedule". Examples are provided in Appendix 13E of Chapter 13 of this manual (see HDM App. 13E).

- Landscape Architecture: These are provided, as needed, by the Regional Landscape Architecture Group to supply any additional project–specific information on planting or other landscape/aesthetic features. For example: topsoil type, fertilizer type and method, color, existing features to be matched, etc.

- Permit parameters. If any permit required for the project contains specific construction constraints or conditions, the constraints or conditions should be included in the contract proposal in the form of special notes.

- Others, based on contract requirements. For example:

  1. Projects subject to a State Pollutant Discharge Elimination System (SPDES) permit shall contain shall contain the special note illustrated in Section 4.3.B.3 of the Environmental Procedures Manual (soon to become Section 4.4.8 - *Stormwater Management* of The Environmental Manual (TEM))

2. Buildings on state financed contracts require a special note, refer to Appendix A.

3. Section 104-08 of the Standard Specifications provides for restricted highway designation upon contract award unless otherwise specified. The designer should identify non-restricted highways, when appropriate, by special note in the contract proposal. See Chapter 16.4.6.3 for guidance on when this is appropriate. All other highway contracts will be designated Restricted Highways by the Regional Director when awarded and therefore no special note should be provided.

4. Special Note - Availability of R.O.W. This special note shall be provided consistent with the guidance provided in the Office of Right of Way Instruction A02-1-08 - Projection of ROW Availability on Capital Projects. The need for this note is also discussed in Section 21.9.2.5 B 13a of this Chapter.

5. Specialty Items, per Section 108-05 of the Standard Specifications. A Special Note designating Specialty Items should only be prepared on an exception basis when appropriate for the contract. Additional information on the designation of Specialty Items can be found at the Tools You Can Use page of the PS&E Section's IntraDOTsite.

6. Special notes applicable to bridge projects are discussed in Section 17 of the *Bridge Manual* (see Bridge Manual).

21.6 ESTIMATE

This section provides guidance regarding the estimate within the context of the project development process. The estimate is an attempt to determine a "reasonable cost" to perform the work if the project were to be bid at the time the estimate is made. Estimates are prepared and refined throughout the life of a project to:

- Develop and update the capital program
- Estimate design resources
- Compare the cost of alternatives within a project
- Determine the cost/benefit of doing the project
- Judge the reasonableness of the bids at letting

21.6.1 Milestones

Estimates shall be produced at the following key milestones during the project development process. Additional intermediate estimates should be prepared as the scope of work is refined or significantly changed.

- Initial Project Proposal (IPP) Approval - Conceptual Estimate
- Scope Approval - Preliminary Estimate
- Design Approval – Updated Preliminary Estimate
- Advance Detail Plan Submission - Detailed Engineer’s Estimate
- PS&E Approval – Final Detailed Engineer’s Estimate

21.6.1.1 Initial Project Proposal (IPP) Approval - Conceptual Estimate

The construction cost estimate at this stage is usually made without benefit of detailed field investigations or project design details. Rules of thumb based on experience can be used (cost per mile, cost per square foot, etc.). It should be understood that the degree of accuracy of this cost estimate will vary considerably by complexity of project and the extent of unknowns. Nevertheless, it should be the most accurate cost estimate possible; for the project scope most reasonably expected at construction completion.

21.6.1.2 Scope Approval - Preliminary Estimate

At this stage, major design elements for the simplest projects can be identified and major quantities can be estimated with a fair degree of certainty. The project scoping process benefits from field investigations; and from detailed scoping activities involving representatives from all functional areas with project interests or responsibilities. The preliminary cost estimates for all alternatives considered should be the most accurate possible estimate given the available information.

21.6.1.3 Design Approval - Preliminary Estimate

At this stage, field investigations and condition data collection are essentially complete. Preliminary design has been accomplished and design approval is imminent. Project scope is not expected to

change, except through the refinement of design details. The cost estimate should be updated with the most accurate possible estimate.

Designers shall use the Preliminary Cost Estimating Tool (PCET), located on the HDM Chapter 21 web page, to aid in the development of the preliminary estimate.

21.6.1.4 Advance Detail Plan Submission - Detailed Engineer's Estimate

At Design Phase V, a detailed estimate should be created based on the items necessary and quantities calculated for the work to be performed. Considerations in determining the unit price are to be documented for the top 10% of all contract items by estimated cost as discussed in Section 21.6.3.2.A.3.

21.6.1.5 PS&E Approval - Detailed Engineer's Estimate

The project cost estimate is refined throughout detailed design, culminating with the Engineer's Estimate for PS&E. The estimate at the time of PS&E should reflect the anticipated cost of the project in sufficient detail to permit an effective review and comparison of the bids received.

The estimate accuracy at this phase must be credible to be effective. The preparation and accuracy of the engineer's estimate should be reviewed if estimates are consistently higher or lower than the bids received, or if other anomalies consistently recur. The low bid/engineers estimate (LB/EE) ratio is expected to fall within the range of .85 to 1.05, 50% of the time. The remaining 50% of the time LB/EE ratios are expected to be fairly equally distributed above and below these limits. By monitoring the results using these criteria, estimating procedures can be reviewed, and adjustments can be made to improve accuracy.

The engineer's estimate should include the total contract cost, and total cost and quantity for each pay item, in significant figures appropriate for the total quantity. Documentation of the unit price determination provided at the ADP phase for the top 10% of all contract items by estimated cost is to be updated as necessary. Additional discussion regarding quantity estimates is provided in Section 21.6.3.2.

21.6.1.6 Contingency Factors for Project Development Estimates

Cost escalation of a project from the conceptual stage to the final project acceptance has a severe detrimental effect on the Department's ability to efficiently deliver the capital program. There are several factors that contribute to cost escalation including project complexity, scope changes and scheduling changes.

Proper estimating requires risk management techniques to minimize the effects that risks may have on a project. Risk Management has long been a requirement of our project management process,[4] and the basic steps in any risk management process should be followed when generating estimates throughout project development. Risk Management is the continuing process of planning, qualifying, handling, and controlling future events that may have an impact on the project success. Each time a new estimate is generated throughout project development, the potential risks to the project need to be reevaluated and the risk management strategy should be updated.

[4] Procedure for Managing Projects, Third Working Draft, pp. 81, 82 September 3, 1991

Contingency is included in the estimate to account for substantial uncertainties in quantities and unit costs and the possibility of currently unforeseen risk events related to quantities, work elements, errors in predicting the rate of inflation, (inflation is applied as a separate factor in the estimate based on guidelines issued by the Policy and Planning Division) or other project requirements. The purpose of this guidance is to establish contingency factor ranges to be considered by the Estimator person when estimates are developed at IPP, Scoping, Design Phase I to Design Approval and at ADP. The following table includes the suggested ranges.

Table 21-9 Contingency Factor Range

PROJECT PHASE	CONTINGENCY FACTOR RANGE (% of Estimate)
IPP	25-40
Scoping	20-25
Design Phase 1 to Design Approval	15-20
ADP	5-10

These ranges are provided as suggestions. Contingency is to be established with the endorsement of the Project Manager and/or Regional Estimate Engineer who is familiar with risk management. It is important that the Estimator person be cognizant of the definition of estimate in determining the contingency factor for a particular project. An estimate is the most probable cost for a project, consisting of normal costs, contingencies, and the probable cost of risk events[5]. Thus, an Estimator person will be justified in using a higher contingency in the estimate if the risk potential to the project can warrant the higher contingency.

Regardless of the phase of project development, the Estimator person needs to first perform a risk analysis in order to establish the contingency. Estimator persons need to be familiar with preparing estimates of the project type and complexity and they should draw on experience needed to sufficiently qualify the risks. Understanding project complexity will allow for the determination of appropriate risk and contingency factors. The contingency should not account for items that

should be known and detailed at the given project phase. Known miscellaneous items that may reasonably be estimated should not be included in the contingency. The Estimator person's focus needs to be on arriving at the most probable cost of the project. It is imperative that the Estimator person recognize the importance of the estimate at the time of its development, appropriately detail the estimate and establish a reasonable contingency commensurate with the risk to the project.

This guidance is not applicable to projects with an estimated total cost of $100M or more (cost in "year of expenditure" dollars). Such projects require an annual Financial Plan (refer to FHWA Financial Plan Guidance) and all contingencies should be sufficiently detailed and managed.

[5] NCHRP Report 574 Guidance for Cost Estimation and Management for Highway Projects During Planning, Programming, and Preconstruction, p A-155, A-156, and C-2

21.6.2 Estimating Programs

The Department uses transportation software, AASHTOWare Project Suite, supported by AASHTO and used in numerous other State Highway Agencies. There are various modules available within the software to support a project from its inception through preliminary design, final design, construction, and historical archiving of the Engineer's Estimate, bidding, and final cost data. AASHTOWare Project Estimator is the module used for preparing estimates. Note: An account is necessary to use AASHTOWare Project Estimator, contact DQAB for training and to request new accounts.

Estimates shall be prepared using the most current recommended version of AASHTOWare Project Estimator (See EB 21-009 for example of a recommended version announcement).

Manuals, training needs and general questions concerning usage of the software should be directed to the Regional Estimating Engineer.

Additional information regarding estmation programs and resources is avilable through the Department's website and the PS&E Unit SharePoint page (internal use only).

21.6.3 Engineer's Estimate

The engineer's estimate is the estimated cost of the project based on the quantity and unit price estimate for each item of work (pay item) in the project. The engineer's estimate should reflect the amount that NYSDOT considers fair and reasonable and is willing to pay for performance of the contemplated work.

The engineer's estimate provides information for forecasting the amount of funding necessary to build the project, a point of reference for reviewing bids to determine whether contracts should be awarded, and a framework for itemized reimbursement of construction work.

21.6.3.1 Quantity Work-ups

Quantity work-ups are an important source of information; they confirm the intent of the designer regarding the pay limits of work for each item in the contract and are needed to prepare the estimate. Quantity work-ups are useful to contractors during bid preparation, and are useful for the construction contractor, subcontractors, the Engineer and field staff during construction. Well prepared and detailed quantity work-ups help to document the intented scope of work which can reduce risks/unknowns for bidders which in turn results in better bids, and they can also reduce disputes and change orders during construction.

Quantity work-ups for the highway work (i.e., all work other than bridges/structures) shall be provided using the most recent version of the Estimate Comp Sheet spreadsheet located on the HDM Chapter 21 web page. The final submitted version shall be one file that covers the entire project. A separate quantity work-up file for all combined structure/bridge work is acceptable. Refer to the Bridge Manual for acceptable tools for development of the structures/bridge quantity work-ups (e.g., spreadsheet or MathCAD), with the final deliverable file being the spreadsheet or a PDF copy of the MathCAD data. Design tools (e.g., CADD, MathCAD) can be used to help develop the quantities, but the quantity work-up information from those tools must be summarized and shown in the quantity work-up file(s). Any files referenced in the quantity work-ups as sources for the computations (i.e., CADD files) should be provided with the quantity work-up files. (Note: Any referenced files which are already provided elsewhere as

supplemental information to bidders do not have to be provided again with the quantity work-up information.)

Designers shall provide quantity work-ups (without price information) as part of Supplemental Information Available to Bidders. The Designer shall remove all cost information (Exception: prices that will appear on the contract bid sheets are allowed to remain, e.g., fixed bid prices). Quantity work-ups are required on all projects except for response type projects for indeterminate work (e.g., JOCs, Where & When, Emergency Response). Quantity work-ups are required for Requirements type contracts as they typically contain determinate work in addition to indeterminate work.

Designers shall also save a copy of the quantity work-ups (with price information) in the project records (ProjectWise). Recommend including "_with prices" to the filename to differentiate it from the file to be submitted for PS&E (without price information). Unless the price will appear on the contract bid sheets (e.g., fixed price pay items), cost information should not be included on the individual estimate comp sheets within the spreadsheet. Cost information should otherwise only be entered on the 'Estimate Summary' tab/sheet in the spreadsheet. As applicable, copies of supporting files (e.g., CADD, MathCAD, other spreadsheets) used to develop the estimate and quantity work-ups should be saved as part of the project records as well.

Quantity work-ups, should be developed to an accuracy consistent with the unit of measurement for the associated pay item, as defined in its specification, as well as to an accuracy that allows:

- The contractor to properly bid the item
- The Department to estimate the funds needed for construction
- For survey tolerances
- Inspectors to perform a secondary check of the contractor's request for payment (verification is performed by the inspection measurements, weight tickets, etc.).

For example, earth work quantities are developed based off of surveyed original ground models that have an accuracy of +/- 0.6 feet in graded areas off of the roadway. Typically, a designer will add a certain percentage to the earth work quantity to make up for the possible inaccuracy of the original ground model while still allowing the contractor to provide a reasonable unit price for the anticipated work.

The following information shall be provided for each item of work:

- Item number, description & unit of measurement.

- Quantity computations which are divided into sections for each individual engineering share (a.k.a., category) with subtotals for each engineering share and an overall item total.
    - Within a engineering share, extensive and complex areas of work should be subdivided further into smaller, more manageable sections/subsections (Examples: separate computations for each side street, and break the mainline into sections from sidestreet to sidestreet).
    - When subdividing, consider how the work may be performed and broken into different sections/operations during construction.

- Location for each section of work
    - Examples: 'Main St STA 1+00 to STA 5+25', 'Front Street', Hart Ave Bridge/BIN1234567'.
    - If the item of work (or a section of the work) involves a bridge or culvert, include the BIN or CIN in the location description.

- A reasonable explanation and level of detail as to how the quantities were arrived at.
  - A drawing/detail can often be a useful addition to help illustrate the scenario.
  - Identify if specific design applications (e.g., CADD, MathCAD) were used.
  - Noting that area is “derived from CADD” is not sufficient information for a quantity work-up in the absence of a corresponding drawing/detail (which can be in a separate file).
  - The filenames for any files used to aid in the compuations should be provided.

- For both the Estimator person (prepared by) & the Checker (checked by), provide their initials; and provide the date the item information was last verified (comp date).

It is also a recommended best practice to:

- Identify where in the contract plans (by specific sheet title or sheet #) and/or proposal (by specific note title or page #) the pay item is referenced/used.

A. Tools to Develop Quantity Work-ups

1. Spreadsheets
   Spreadsheets (e.g., MS Excel) offer the latitude of automatically computing and tallying quantities once they are set up and are easily updated as changes occur during the design process. A summary sheet listing share, item number, quantity and pay unit in each field can be easily imported into AASHTOWare Project Estimator that will automatically generate the pricing information. Refer to the NYSDOT AASHTOWare Project Estimator User’s Guide (Section 8).

2. CADD
   Electronic Engineering Data from CADD can be used to generate quantities in an XML file format that can be exported/imported into AASHTOWare Project Estimator. Guidance is available through the Engineering Technology Unit (ETU) of the Design Mapping & Automation Bureau. Guidance on creating CADD files that supplement the quantity work-ups is available on the HDM Chapter 21 webpage and in the Bridge Manual (Section 14.2.5 - Bridge Quantity Measurement File and Appendix 14C).

3. MathCAD
   This stand alone application has the functionality of creating more advanced spreadsheets where not only the design calculations can be completed but quantity work-ups could be shown as well. Graphic images such as bitmaps or jpg files can be imbedded into the worksheets to illustrate the computations and work-ups. Guidance on the use of this application is available through the Office of Structures.

B. Quality Control of Quantity Work-ups
   All quantity work-ups and supporting documentation shall be checked. It would be advantageous to have someone that is not familiar with the project to be the Checker for the quantity work-ups, to assure that not only the computations are complete, accurate and legible; but more importantly to assure there are no omissions or discrepancies in the design documents and the quantity work-ups. This will assure there is no misunderstanding of the intent of the scope of work that needs to be accomplished once the project is being constructed.

It's a recommended practice to list the items of work at the bottom of each plan sheet corresponding to the tables, sections and details shown. The Estimator person and Checker can then highlight each item number as they complete their estimate to assure quantity work-ups are accurate and that no items of work are being omitted from the estimate taken from the plan sheets. Similarly, quantity work-ups taken from tables and details in the proposal need to be addressed in the same manner.

For rehabilitation projects, designers should be aware of the amount and rate of degradation of field conditions that occur over time between initial project mapping/site investigations and start of construction . This can change the quantities and limits of work and in some cases the scope of work for a project. Designers/Estimator persons need to reevaluate the quantities in the field if an inordinate amount of time elapses between when the quantities were first field verified in design to when the project is scheduled for letting.

The designer shall confirm unit price information is not included in the quantity work-up files to be published as contract supplemental information.

The designer shall keep the quantity work-ups consistent with the pay item information provided in the contract bid sheets throughout the PS&E submittal to letting project phase. For pay item changes made after submission of the PS&E but prior to the need for a contract amendment, updated quantity work-ups shall be provided to the PS&E Section. For pay item changes made by contract amendment, updated quantity work-ups shall be provided with the amendment.

21.6.3.2 Estimating Item Prices

Item price estimates are confidential information until the award of the contract. See Section 21.6.5 Confidentiality of the Engineer’s Estimate & Unit Bid Prices.

A. Estimating the cost of unit items
There are basically three techniques used to estimate the cost of unit items:

1. The use of historic data from recently awarded contracts is a cost-effective method to develop the engineer's estimate, however, solely relying on historic data may not be appropriate when the data is based on a non-competitive bidding environment. This method requires the collection of previous unit bid prices according to type, size, and location of project Upcoming projects should be matched to the most recent projects to develop base prices for estimating the value of the unit prices. Under this approach, bid data are summarized and adjusted for project conditions (i.e., project location, size, quantities, etc.) and the general market conditions.

   This approach requires the least amount of time and personnel to develop and produces an adequate estimate for use in budgeting/programming, as long as competitive bid prices are used to build the estimate. Non-competitive bidding and unbalanced practices are the least recognizable using the historic data approach to estimating. Further adjustment of the base prices should be considered based upon the age of the similar projects.

2. The cost based approach takes into consideration factors related to actual performance of the work (i.e. the current cost of labor, equipment, and materials; sequence of operations; production rates; and a reasonable value of overhead and profit). This approach requires the Estimator person to have a good working knowledge of construction methods and equipment.

Also, the Estimator person should have resources available for determining production rates from actual work performed by the contracting industry on similar type projects as well as resources for determining current construction methods and equipment. While adjustments for current market conditions may be required, this approach typically produces an accurate estimate and is useful in the bid review process in aiding the decision to award or reject the project. It is also useful in estimating unique items of work where there is insufficient bid history. However, this method may be more time consuming and may not be practical for all projects.

3. The third approach combines the use of pastl bid data with actual cost development. Most projects contain a small number of items that together comprise a significant portion (e.g., 70 percent) of the total cost. These major contract items may include portland cement concrete pavement, structural concrete, structural steel, asphalt concrete pavement, embankment, or other items. Prices for these items are estimated from actual costs and adjusted for specific project conditions. The remaining items are estimated based on past prices and adjusted as appropriate for the specific project.

Regardless of the approach used to estimate the cost of unit items, the age of the bid price information, the impact of the allowable contract time, construction staging and other unique project requirements also need to be considered when preparing the price estimates. For most items, historical bid price data can be used to estimate the cost of an item. Bid price data is available from a variety of sources including AASHTOWare Project Estimator bid history catalog, Weighted average bid price data, Bid tabulation reports produced by AASHTOWare Project and the Historical bid price listing. The Regional Estimate Engineer should be consulted for pricing information and insight into current price trends.

At the Advanced Detail Plan (ADP) and Plans, Specifications, and Estimate (PS&E) phases of the project, the considerations in determining the unit price is to be documented for the top 10% of all contract items by estimated cost. This documentation is to be stored with the project files on ProjectWise. Guidance on estimating best practices and unit price documentation worksheets are available on the HDM Chapter 21 web page.

B. Adjusting Estimates for Inflation

After an estimate is completed to reflect current year dollars, the Estimator person should adjust item prices to reflect any anticipated cost escalation due to inflation. The NYSDOT Policy and Planning Division periodically issues inflation assumptions for the Program Update Process. These rates are also included in the Departments Program Support System (PSS). To be consistent with PSS estimates, whenever estimates are projected to the midpoint of construction, the Program Update/PSS inflation values shall be used. Questions regarding these inflation rates should be directed to the Regional Planning and Program Manager.

C. Estimating the Cost of Lump Sum Items

Due to the historically high variability of bids received and the amount of work involved in creating a labor, material and equipment price analysis for Items 619.01 – Basic Work Zone Traffic Control and 625.01 – Survey Operations, a spread sheet has been developed to assist designers estimating these items. The spread sheet uses bid price histories based on project type, size, location, and other factors. This method is acceptable for all projects including those requiring FHWA approval. The spread sheet (Estimate Comp Sheet and Misc Table Shell) is available on the NYSDOT HDM Chapter 21 internet page.

Unless otherwise instructed by an Engineering Instruction or other Sections within the HDM, the cost of all other lump sum items shall be determined using a labor, material and equipment price analysis. These lump sum price analyses shall be kept separate from the quantity work-ups for other unit price items. While any price analysis information is not to be shared with bidders, other estimate information that would help bidders understand the scope of work included of a lump sum item should be shared as part of the quantity work-ups provided as supplemental information to bidders. For projects that require FHWA PS&E approval, the lump sum price analyses shall be submitted to DQAB with the PS&E.

Lump sum price analysis involves cost based estimating where labor, material and equipment usages are determined by estimating time durations to complete a certain task or item of work. Production rates are established usually through construction personnel that are familiar with the contractor's operations from similar type projects. In absence of expert opinion, inspector reports from similar type projects would be another source of information. The Estimator person can reference the RS Means Catalog for Heavy Construction, rental rate blue book and the NYS prevailing wage schedule to determine labor, material and equipment rates that can be used to calculate the subtotal lump sum cost. Appropriate markups would then be applied for overhead and profit to calculate the total lump sum costs for a particular type of work. The Regional Construction Office is also a good resource for price information from Order on Contract price analysis data.

In AASHTOWare Project Estimator, lump sum items must always be entered with a quantity of 1.0 in each category.

21.6.3.4 Engineer's Estimate Book

This is a complete set of documents that contains the estimate (unit price estimates and their extensions) as well as quantity work-ups, organized numerically by item number. The Engineer's Estimate Book should be transmitted to the Engineer-in-Charge with the Handoff Memo (see Section 21.13).

21.6.3.5 Engineer's Estimate Shares

An Engineering Share is a grouping of items that relate to one another in some way. For example, this could include items that are all associated with a roadway, bridge, specific work site location or items to be paid for with specified funds such as Federal Aid or a utility. Although our estimating software provides the flexibility to create multiple Engineering Shares per contract with an unlimited number of items per Engineering Share, the creation of too many Engineering Shares complicates the estimating, letting and construction process. Multiple Engineering Shares may temporarily be developed to facilitate the estimating process, however, at PS&E the number of Engineering Shares should be held to the minimum required in accordance with the following guidelines.

A. Contracts That Do Not Include Bridge Work

For contracts that do not include bridge work, separate Engineering Shares are only needed at PS&E to facilitate cost reimbursement by the various funding participants. If all items in a contract are eligible for payment using one fund source such as 100% State Funds **or** one Federal Aid fund source and an associated matching state fund source (for example, 80% NHS, 20% SDF State Dedicated Funds), then all items should be included in 1 Engineering Share. If the work will be paid for using more than one Federal/State match or other multiple fund sources then one of

the following methods will be used.

1. Item and Quantity level funding based on fund eligibility If a contract includes items and quantities of work that are eligible for reimbursement by multiple funding participants, the items must be segregated based on funding eligibility. Questions regarding funding and funding eligibility should be directed to the Regional Planning and Program Manager. Some examples include:
   - On a Federal Aid project, if particular pay items are ineligible for Federal Aid, a separate 100% State Engineering Share is needed which includes those items and quantities ineligible for Federal Aid (Eng. Share 1 = all items eligible for 80% STP Flex, 20% SDF State Dedicated Funds, Eng. Share 2 = all items funded with 100% SDF State Dedicated Funds).
   - Separate shares are needed to identify items and quantities eligible for different Federal Aid or State fund source combinations used on the same contract. For example, if a contract includes work at multiple sites and one site is eligible for Federal Aid Interstate Maintenance funds (90% IM, 10% State Matching funds) and the rest of the sites will be funded with Federal Aid STP flex funds (80% STP Flex, 20% State Matching funds), the contract should include 2 Engineering Shares. One Engineering Share would include all items and quantities of work at the site eligible for Interstate Maintenance funds; a second Engineering Share would include the items and quantities of work for all other sites.
   - Utility work performed by the contractor that will be paid for by the utility under a utility work agreement (HC-140) shall be included in a separate Engineering Share. Each utility funded in this manner shall have a separate Engineering Share. Refer to HDM Chapter 13.
   - Betterment work performed by the contractor that will be paid for by others shall be accounted for in a separate Engineering Share. Refer to HDM Chapter 14 and Section 21.6.3.6.

   Distributing Overhead items between funding participants NYSDOT and Contractor overhead items such as: Mobilization; Engineer's Field Office, Laboratory and Equipment; and Field Change Payment shall be considered and included as applicable in all Engineering Shares. Refer to HDM Section 21.4.3 for specific guidelines on estimating these items of work.

   Work Zone Traffic Control items and Survey Operations should normally be prorated between the various funding participants on a percentage basis.

2. Rollover Funding If a capped fund source(s) will be used for a contract in conjunction with an additional fund source to cover the balance, only one Engineering Share is required for the estimate. In this situation, capped fund sources will be exhausted in priority order (assigned after PS&E) before billing against the remaining fund source.

B. Contracts That Include Bridge Work

For contracts that include bridge work, in addition to creating separate Engineering Shares to group items for cost reimbursement as discussed above, the Office of Structures requires certain bridge item groupings in a separate Engineering Share to help comply with the Department's responsibility to report unit bridge costs for New and Replacement Bridges to the FHWA. These same bridge item groupings are also used to support the Preliminary Estimate Worksheet for New and Replacement Bridges, which is used early in the project development process to estimate bridge costs. Therefore, for contracts that include new and replacement bridges, a separate Engineering Share shall be created for each new and replacement bridge.

Separate Engineering Shares are not required for bridge rehabilitation or maintenance work. However, separate Engineering Shares may be created to support the estimate development process. For example, a contract to perform major rehabilitation work on a few bridges at various locations may be submitted with separate Engineering Shares for each bridge. A contract to paint, clean or perform minor maintenance work on 30 bridges should not be developed and submitted with separate Engineering Shares for each bridge. Additional information regarding the Bridge Estimate can be found in Section 16 of the Bridge Manual.

21.6.3.6 Betterments

A Betterment is considered any additional work performed by the State on behalf of, at the request of, and at the expense of others. Replacement-in-kind is defined as an equivalent replacement, taking into account present day standards as required by Code, Law, Rule, Regulation, or mandated by any public or private agency or authority. A utility of the same size and on the same alignment is a replacement-in-kind. Replacement-in-kind due to impacts from a Department project is not considered a betterment.

A. Separating Costs Associated with Betterments

When a betterment is being provided, the costs that are above and beyond the replacement-in–kind costs are placed in a separate engineering share that will be paid for by the owner; and costs equal to the replacement-in–kind work are placed in a separate NYSDOT participating engineering share. The following procedure shall be used to separate the betterment costs from the replacement- in-kind costs.

1. Establish a separate engineering share for items and quantities to be paid by each betterment owner(s), and a separate engineering share for the corresponding NYSDOT participating items and quantities associated with replacement-in- kind cost.
2. Items added solely for the betterment shall be included in the 100% betterment owner(s)' engineering share.
3. When an increase in item quantity is necessary for a betterment, the increased quantity shall be included in the betterment owner(s)' engineering share; the replacement "in kind" quantity shall be shown in the NYSDOT participating engineering share. The "in-kind" quantity is the quantity that would have been necessary to construct a system comparable to the existing system being replaced.
4. If an improved or betterment item (e.g., increased pipe size) is to be substituted for an in-kind replacement item, quantities of the improved item must be apportioned between the betterment owner(s) and NYSDOT participating engineering shares on the basis of estimated item price ratios.
5. When determining whether Work Zone Traffic Control and Survey & Stakeout should be included in the betterment engineering share, consider whether they are needed to complete the betterment work. For instance, it would be reasonable to assume that installation of a utility on a new bridge would not require additional Work Zone Traffic Control. A new water main not previously existing, and outside of any proposed excavation for other purposes may require additional Work Zone Traffic Control as well as Survey and Stakeout. Installation of a utility on a bridge rehabilitation project may require additional Work Zone Traffic Control if the utility work is not completed within the time frame of the rehabilitation work.

B. Documentation for Betterments

Betterment work sheets showing computations for apportionment of quantities to each

engineering share, as described above, shall be prepared for all projects. The basis for determining whether or not to apportion an item between the engineering shares should be included in the work sheet. These work sheets should be submitted to DQAB's PS&E Section with the PS&E transmittal for projects that require FHWA PS&E approval (based on the design related approval matrix Exhibit 4-2 of the Project Development Manual). The worksheets should be retained in the project file for all other projects.

The Utility Work Agreement (form HC 140) must include the estimated total betterment cost, plus necessary overhead costs. The amount of the Agreement shall be the total of these two costs, plus a 15% additive for engineering (e.g., construction inspection and administrative/design effort). Refer to Chapter 13 of this manual for guidance regarding preparing the HC 140.

21.6.4 Alternate Bid Items

Alternate bid items can be used to require a contractor to bid on one or more alternate designs, such as alternate bridge types or alternate rehabilitation methods. Also, different items can serve as alternates for each other, which means that a bidder can choose to bid on one item or the other, but not both.

An alternate bid scenario refers to a specific portion of the contract work for which alternate designs (a.k.a., 'alternates' or 'choices') are available to bid upon. There may be multiple pay items associated with each alternate.

For submitting project estimates using AASHTOWare Project Estimator, a three character code is used to identify each of the alternate bid options. The first two characters specify the alternate bid scenario (a.k.a., alternate set ID) and the third character indicates the choice (a.k.a., alternate member ID) within the set. Note: In AASHTOWare Preconstruction, the alternate set ID and alternate member ID are stored as separate data fields.

Most contracts will have only one alternate bid scenario and it should be assigned the alternate set ID of 'AA'. In the event of a second alternate bid scenario within a contract, it would be assigned the alternate set ID of 'AB', and so on.

Most alternate bidding scenarios will have only two choices. The choice with the lowest estimated cost shall be assigned the alternate member ID of '1', the next lowest as '2', and so on. So 'Alternate #1' should be the lowest estimated cost option, 'Alternate #2' the next lowest, etc.

If a pay item exists in the work associated with an alternate and in work not associated with an alternate, an alternate pay item number must be assigned. This will allow for separate unit prices to be bid for otherwise the same item of work. The alternate pay items utilize a portion of alternate set ID and the alternate member ID as a pay item suffix to distinguish them from the 'normal' pay item. For example, if Item 203.02 is being used elsewhere on the contract and an alternate pay item for Item 203.02 is needed for work that is part of Alternate #1 (of Alternate set 'AA'), it would be assigned Item 203.020000A1. Contact DQAB for guidance and for approval of the necessary special specifications (alternate pay item numbers).

A sample special note for alternate bidding is shown in Figure 21-3. For additional guidelines on using alternate items, contact the Regional Quality Control Engineer and/or DQAB's PS&E Section.

Figure 21-3 Sample Alternate Bid Special Note

This Contract contains Alternate Designs for Pavement and Bridge Deck items that must be bid on in accordance with this Special Note. The itemized proposal contains all items that can be bid, including the alternate design items. Alternate design items are designated by an alternate item code included with the item description in the itemized proposal. In addition to the alternate item codes, certain items in the contract will include a suffix (e.g., A1, A2) to facilitate the bidding process.

ALTERNATE AA – PAVEMENT ALTERNATE DESIGN

The Contractor will have the choice of bidding one of two alternates for replacing the full depth concrete panels.

ALTERNATE AA1

ITEM 202.970000A1	PAVEMENT REMOVAL
ITEM 502.0039	PORTLAND CEMENT CONCRETE PAVEMENT, UNREINFORCED, NONPROFILOGRAPHED, HES, FRICTION TYPE 9

OR

ALTERNATE AA2

ITEM 18502.3101	FULL DEPTH PORTLAND CEMENT CONCRETE (PCC) LIFT OUT
ITEM 502.01000091	INSTALLATION OF PRECAST CONCRETE HIGHWAY PAVEMENT SLABS

The Contractor must bid on all alternate AA1 items or all alternate AA2 items.

NOTE: Item 202.970000A1 represents the additional pavement removal required under alternate AA1. Whenever this item appears in the contract, the provisions of specification pay item 202.97000001 shall apply.

21.6.5 Confidentiality of the Engineer's Estimate & Unit Bid Prices

Section 38 of the "Highway Law", and "Official Order No. 539" established the confidentiality of the Engineer's Estimate and the Bidder's Unit Bid Prices. The Engineer's Estimate, which includes the unit prices used to establish the estimate, shall be considered as confidential until award of the Contract. The Contractor's Unit Bid Prices are also confidential information until the award of the Contract. When all bids are rejected this information remains confidential until award, following the re-letting. To minimize the possibility of disclosure of confidential information, this information will only be made available to authorized personnel on a need-to-know basis.

21.6.6 Bid Evaluation Process

During the bid evaluation process, Estimator persons may be asked to review bid data to assist the Regional Director or the Office of Construction in determining whether or not to recommend award of the contract. The procedures used during the evaluation of bids are contained in MAP 7.1-5, COMPARISON AND EVALUATION OF LOW BID WITH THE DEPARTMENT'S CONSTRUCTION COST ESTIMATE. This procedure categorizes contracts as CASE I or CASE II based on the difference between the engineers estimate and the low bid. The CASE I definition identifies contracts that are within acceptable cost thresholds so that the Office of Construction can recommend award of the contract with minimal review from the Region. The CASE II definition identifies contracts that require the Regional Director to

recommend award due to higher than anticipated costs. Although these contracts may require a re-evaluation of the original estimate, it should be noted that the criteria used to determine if a contract is CASE I or CASE II is not intended to be a measure of the accuracy of the engineers estimate. Adherence to the guidance established in Section 21.6.1.5, 21.6.3.1 and Section 21.6.3.2. will minimize the number of detailed CASE II analyses required.

2.6.6.1 Bid Evaluation Process for Estimates with Alternate Bid Items

When using alternate bid items, the engineer's estimate is developed using Alternate 1 which is estimated at a lower value than Alternate 2. For bid analysis purposes, even if the low bidder's bid includes Alternate 2, this does not change the Department's engineer's estimate. The programmed funds are based on the estimate total using Alternate 1.

The Case II analysis is triggered using the Alternate 1 engineer's estimate. When the low bidder's bid includes Alternate 2, then those specific pay items from the Alternate 2 engineer's estimate should be compare to the bid. Also, look in to any bids received using Alternate 1 to illustrate that costs for that option would have been equally as, if not more, expensive.

21.7 STANDARD SHEETS

Standard Sheets are standard drawings, approved for repetitive use, which show design and/or construction details associated with a particular item of work. Beginning with the publications dated September 1, 2015, the Standard Sheets published on the Department's public website are the Department's official documents. The Standard Sheets books will be published three times a year, dated January 1, May 1, and September 1. The Department will publish official versions of the Standard Sheets on the Department's internet website approximately 12 weeks prior to their effective dates. The official documents will be retained on the Department's website for a minimum of seven years, beginning with the documents dated September 1, 2015. Documents in the Department's electronic archives will be retained indefinitely.

Standard Sheet numbers correspond to the respective section of the Standard Specifications (e.g., 606 series guide rail Standard Sheets correspond to Section 606 of the Standard Specifications, and the pay items provided in that section). Standard Sheets corresponding to items of project work should be reviewed to determine the need for additional details in the plans, to aid in pay item selection, and to understand the work requirements.

Some Standard Sheets have multiple pages to make a complete set. All the pages have the same number (e.g. 606-01 - Cable Guide Railing has 3 pages and all 3 pages have the same number 606-01). The Standard Sheet number with its effective date defines a sheet uniquely. When changes are made to a Standard Sheet, the number stays the same but the effective date changes.

A standard sheet should not be copied and pasted into the plans. Referencing a Standard Sheet with multiple pages (e.g. 606-01) automatically references all the pages of that sheet, and all pages become part of the contract documents. In most instances a specification item along with a standard sheet should leave no ambiguity about the work expected. If a designer feels that a particular standard sheet needs to be called out for the work expected at location to remove ambiguity, they are advised to do so within the contract plans. In instances where a detail from the standard sheet is being modified for project specific reasons, there should be no reference to the standard sheet, and the modified detail should be drawn directly into the contract plans.

All active and recently superseded Standard Sheets are posted on the Department website.

Note: Standard Sheets should not be confused with Bridge Detail Sheets (BD Sheets). BD Sheets are intended to show how typical parts that make up a bridge are to be detailed. BD Sheets are modified and included in the plans, rather than referenced into the plans as Standard Sheets are.

21.8 SUPPLEMENTAL INFORMATION AVAILABLE TO BIDDERS

Project designers should assess pertinent data used during design for individual projects, and provide as appropriate. Providing this data can assist bidders in gaining project familiarity, and can reduce perceived risks attributed to unknown conditions, resulting in lower bids. *Supplemental Information Available to Bidders* is a component of the Contract Documents, and is referred to as *Base Line Data* in Section 102 of the Standard Specifications. Section 102 also lists the order of precedence of the Contract Document Components.

Electronic format is the required format for all Supplemental Information Available to Bidders (other than pavement/rock cores or other special circumstances). Form *CONR 9* - *Supplemental Information Available to Bidders*, should be completed and submitted with the PS&E materials for all projects, along with all Supplemental Information files. If no Supplemental Information is being provided, this should be selected at the top of the form.

The electronic Supplemental Information must be provided within compressed (zipped) folders and less than 90 megabytes. Each compressed folder should be intuitively named according to the CONR 9 headings, as they will be individually posted "as is" to the Department's web site, for review by prospective bidders and others. The CONR 9 form filename shall be Dnnnnnn_R#_CONR9.pdf. "Dnnnnnn" is the contract number, and "R#" represents the Region with a two-digit number (i.e., "01", etc.).

The Supplemental Information should be submitted by posting the compressed folders to the Bid Documents directory on the "P" Drive at:

> **P:\Toolbox\Documents & Resources\Bid Documents\Mailbox\PS&E Transmittals\Dnnnnnn**
> where "Dnnnnnn" is the contract number for the individual project. A separate subfolder titled SUPPLEMENTAL INFORMATION will have been created by the PS&E Section to house the Supplemental Information zip folders and a copy of the CONR 9 form.

The above mailbox directory is not a folder to work in. A file or folder that has been placed in the mailbox cannot be deleted, moved to another folder, renamed, or replaced. For this reason, all supplemental information files should be complete and organized in a separate location prior to transferring to the mailbox.

Supplemental Information typically includes numerous files that can be overwhelming if unfamiliar with the project. All file names and descriptions shall be listed on the CONR 9 and include the document format extension. All supplemental information file names shall begin with the project identification number. The goal is for the user of the Supplemental Information Available to Bidders to be able to easily locate and understand the particular information he/she is looking for.

If for some reason the Supplemental Information files are not available at the time of PS&E Submission, this shall be noted as an Table of Incomplete Item in the PS&E Transmittal Memo. The designer must follow up with the PS&E Section Reviewer when the files are available, and they shall be submitted by posting the files to the "To DQAB" folder within the above Mailbox directory. **The Supplemental Information files must be provided no later than two weeks prior to the scheduled advertisement date.**

The PS&E Section and Contract Management Bureau will coordinate the posting of the Supplemental Information files to the Department's Business Center web site by the advertisement date.

21.8.1 Content of Supplemental Information Listed on CONR 9 Form

The information covered by the CONR 9 is summarized below:

1. CADD Drawings - CADD drawings in MicroStation format are required on all projects except 1R and 2R projects. The drawings shall include all documents containing contract plan sheets (cph and cpb document categories- see Table 14-2 in Appendix 14 of the Project Development Manual) and their associated reference documents (map and fea document categories). These drawings must include survey baseline, existing highway boundary lines, proposed ROW lines and alignment stationing.

2. CADD Surfaces - CADD surfaces in both Terrain files and XML files are required on all projects except 1R and 2R projects. The surfaces shall include the original ground, finished grade, subgrade and the proposed non-triangulated features.

   The XML format is used by the contracting community to view and use electronic data in the absence of having brand-specific CADD software. Bentley Systems, Inc. provides a free downloadable viewer (Bentley View) for MicroStation files on their internet site. There are no free viewers for XML files. There are instructions for saving CAD surface files to LandXML format.

3. CADD Alignments - CADD alignments in both XML and graphical civil DGN format are required on all projects except 1R and 2R projects. The alignments shall include project horizontal and vertical control.

4. Quantity Work-ups - Quantity work-ups are required on all projects except for response type projects for indeterminate work (e.g., JOCs, Where & When, Emergency Response). The highway and bridge work-ups shall be provided as supplemental information and should be in accordance with the guidance in HDM section 21.6.3.2 and Bridge Manual section 14.2.5 and appendix 14C. The work-ups should typically include the designer's quantity work-ups for all of the pay items in the contract other than lump sum items or any other items that are estimated using labor, material and equipment rates.

   Quantity work-ups made available to bidders must NOT show the engineer's estimate of unit costs.

   The quantity work-ups shall be kept current with the contract bid sheets.

5. Layered PDF or 3D PDF - Adobe PDF format files may be provided to the contractor provided that they are unsealed so that they won't be mistaken for contract documents.

6. Cross Sections - Cross Sections should be provided in CADD or Adobe PDF format and prepared in accordance with the guidance in Section 21.3.5.

7. Record Plans - If Record Plans are provided, the contract numbers should be included on the CONR 9 form. Consideration should be given to providing the pertinent sheet numbers. Most Record Plans are available electronically on the P drive at: P:\Record Plans

8. Sign Face Layouts - Sign Face Layouts must be drawn to scale, fully dimensioned and submitted in Adobe PDF format.

9. Subsurface Information - If prepared for the project, will be provided to the Designer by the Geotechnical Engineer. For example:

- Rock Cores - Rock samples (i.e., cores) obtained for the project should be made available for inspection. Rock samples are not available for sale.
- Subsurface Exploration Logs, with soil sample descriptions.
- Undisturbed Sample Logs, with soil sample descriptions.
- Laboratory Test Data from Soil Samples (This data may be in summary form or included on the logs described above.
- Tabulated Results of Probing
- Tabulated Depth to Bedrock as determined by geophysical investigations (seismic).
- Rock Core Evaluation Logs
- Compression Test Data from Rock Samples
- Rock Outcrop Maps
- Granular Materials Resource Survey Reports
- Terrain Reconnaissance Reports
- Pertinent subsurface information or data obtained from sources outside the Department and used in the design of the project.
- Information pertaining to sources of granular material and aggregates.
- Special reports, drawings and documents that contain subsurface information or data pertinent to the construction of the project.

Subsurface information shall be provided in complete sets, that is, a complete set of bridge logs, a complete set of highway logs or both sets together.

10. Anticipated Construction Schedule - If an anticipated or suggested construction schedule (for example, a bar chart) was developed in collaboration with the Regional Construction Group in final design, it should be provided in PDF format.

11. Special Reports or Other Information - Examples of information which should be made available include (provided in Adobe PDF format):
    - Design Approval Document (DAD) including appendices.
    - Project Labor Agreement
    - Stormwater Pollution Prevention Plan
    - Permits. (If any permit required for the project contains specific construction constraints or conditions, the specific constraints or conditions should be included in the contract proposal in the form of special notes.)
    - Asbestos Blanket Variances
    - Asbestos Report
    - Survey Control Report
    - Wetland Compensation Report
    - Project Location or Information (provided in KMZ format).
    - Other pertinent information assimilated into the design which can aid the contractor in evaluating costs and methods of construction.
    - The results from analytical testing procedures used for environmental sampling in hazardous waste and contaminated materials assessments.

12. Bridge Information – Camber and haunch tables provided in excel format are required for new, replacement and superstructure replacement projects.

21.9 PS&E SUBMISSION

This section states the requirements for a PS&E submission, including the required format and content for PS&E transmittal memos. If it is determined during the preparation of the PS&E submission that changes will be required, the PS&E should be held and revised in order to avoid changes after PS&E Submission (Section 21.9.3) and/or the amendment process (Section 21.10).

Requirements for Design Phase IV submission, and instructions regarding the procedural steps to be followed in Design Phase IV for the type of project being progressed, are provided in Chapter 4 of theProject Development Manual. Preliminary plans and Advance Detail Plans should be prepared for submittal as discussed in Section 21.3.5 and 21.3.8 of this Chapter.

PS&E components shall be posted electronically to the PS&E Transmittals folder on the "P" Drive, with e-mail notification to affected Main Office program areas of the availability of the PS&E materials. See Section 21.9.2.5 for directions on the e-mail notification. The notification e-mail should not be sent until the plans, proposal materials, supporting materials for project processing and Supplemental Information materials have been posted to the "P" Drive in accordance with the requirements of this Section; and the engineer's estimate has been uploaded to AASHTOWare Project Preconstruction.

Please note that all Department staff have read/write access to the "P" drive folders discussed in Sections 21.9 and 21.10. This does not include the ability to rename or delete files in these folders. If files placed in the folders need to renamed and/or deleted, the PS&E Section should be contacted (Email address: *dot.dl.PSE.Section)*.

21.9.1 Deadlines

The Project Management Bureau issues the Department's bid opening schedule for the State Fiscal Year (SFY). The schedule is posted on the DQAB PS&E Unit SharePoint page. This schedule tabulates letting dates, PS&E submission deadlines, special specification approval submittal deadlines, and amendment deadlines, among other information. These are dates by which material must be received by DQAB and must be followed in order to maintain the scheduled letting. Deadlines for projects requiring FHWA PS&E approval are critical due to FHWA review time requirements.

21.9.2 Format and Submittal

The PS&E submission to the DQAB, PS&E Section, shall consist of the following components:

1. Plans, if applicable (See Section 21.9.2.1). Some projects may be prepared and submitted in proposal only format as discussed in Section 21.2 of this Chapter.
2. Proposal materials (See Section 21.9.2.2)
3. Supplemental Information Available to Bidders (See Section 21.8)
4. Supporting materials for project processing (See Section 21.9.2.3)
5. Engineer's Estimate (uploaded to AASHTOWare Project Preconstruction, see Section 21.9.2.4)
6. PS&E transmittal memo (See Section 21.9.2.5)

These components and the required e-mail notification are described in further detail in the following pages. PS&E processing will not commence until the above components have been submitted.

All PS&E submittal components other than the Engineer's Estimate shall be submitted by posting the files to the "PS&E Transmittal mailbox" folder located on the "P" Drive at:

P:\Toolbox\Documents & Resources\Bid Documents\Mailbox\PS&E Transmittals\Dnnnnnn
where "Dnnnnnn" is the contract number for the individual project.

Separate subfolders for Plans, Proposal Materials, Supplemental Information, and Supporting Materials should be created to compartmentalize the various required components.

Please note that the Mailbox folder system is intended as a transfer directory only, and files will be periodically purged. Regional staff should be sure to save back-up copies to ProjectWise or another location. Also note that any changes to the PS&E materials after PS&E submission should NOT be placed in the PS&E Transmittals folder. Changes to PS&E materials after PS&E submission should be avoided, but if necessary must be coordinated through the PS&E Section (dot.dl.PSE.Section) or the Reviewer assigned to the project. See Section 21.9.3 for additional information.

21.9.2.1 Plans

The plans should be prepared as discussed in Section 21.3 of this Chapter. All plan sheets shall be submitted ready for printing to 11" x 17" sheet size.

Plans shall be submitted in Portable Document Format (pdf). In the event that signed/sealed plan sheets are scanned for submittal, set the scanner for 300 to 600 LPI Resolution.

Certain projects may involve digital delivery (hybrid or full model-based plans) where CADD and/or other electronic files are used to provide some of the contract plan information. There shall be a plan sheet that identifies any electronic data that is to be considered as part of the contract plans. Any required professional seals for the electronic data shall be provided on this pan sheet.

Due to constraints with both the hard copy plan sets and the posting of .pdf plan sets to the department's internet site, plan set files must be limited to 400 total plan sheets and a file size of 75 megabytes.

Projects with 400 total plan sheets or less should be submitted as a single .pdf file named: Dnnnnnn_R#_Plans.pdf, as long as the file size is less than 75 megabytes. "Dnnnnnn" is the contract number, and "R#" represents the Region with a 2 digit number (i.e., "01", etc).

Projects with greater than 400 total plan sheets or greater than 75 megabytes must be submitted as two or more .pdf files, with no file containing greater than 400 plan sheets or exceeding 75 megabytes. Designers should choose a natural break point to separate the files so that contractor and construction personnel do not have to navigate separate volumes to review similar work (e.g., all General Plans should be in the same file, etc.) When more than one .pdf file is required, the naming convention shall be Dnnnnnn_R#_Plans_VolXofY.pdf, with "VolXofY" indicating the planset volume number, for example Vol2of3.

It shall be the responsibility of the designer to ensure that changes and amendments to the PS&E plans are coordinated in such a manner that the Microstation files transferred to Construction and the .pdf files submitted to DQAB's PS&E Section remain in sync.

21.9.2.2 Proposal Materials

All proposal materials shall be submitted ready for printing to 8 ½" x 11" sheet size.

Proposal materials shall be submitted in .pdf format as separate pdf files as indicated below. The pdf files should be generated directly from native file formats whenever possible. If sealed/signed pages are scanned, the above best practices should be followed. Contract numbers should not be applied to the proposal materials supplied by the Region. See Table 21-9A for a listing of proposal material to be provided by the Region.

Table 21-9A Proposal Materials to Be Provided by Region

Material to Include in Proposal	When to Include	Filename to Be Used (Submit data as a single PDF file)
Signed Title Page	Proposal only projects	Dnnnnnn_R#_Title Page.pdf
Professional Seal and Violation Note Page	Proposal only projects	Dnnnnnn_R#_ProfSeal.pdf
Additional Location Map(s)	Proposal only projects, if necessary	Dnnnnnn_R#_LocationMap.pdf
Earthwork Definitions and Earthwork Summary Sheet	Proposal only projects, refer to Section 21.2.1	Dnnnnnn_R#_Earthwork Summary Sheets.pdf
Project Detail Sheets	Proposal only projects, if appropriate. Refer to Section 21.2.1	Dnnnnnn_R#_Project Details.pdf
Listing of Additional Insured Parties	Refer to Section 21.5	Dnnnnnn_R#_Additional Insureds.pdf (Use latest version of the note shell, available from HDM Chapter 21 webpage > References > Sample Plan and Proposal Sheets)
Insurance Coverage	Refer to Section 21.5	Dnnnnnn_R#_ Insurance Coverage.pdf (Use latest version of the note shell, available from HDM Chapter 21 webpage > References > Sample Plan and Proposal Sheets)
Railroad Protective Liability Insurance	Refer to Section 21.5	Dnnnnnn_R#_ Railroad Insurance.pdf (Note: Provided to the Region by the Main Office Rail Agreement Unit)
Special Notes	Refer to Section 21.5	Dnnnnnn_R#_Special Notes.pdf
Special Specifications	Refer to Section 21.4	Create a "Special Specifications" subfolder within the Proposal Materials folder. Use the provided filename for the approved special specification. Each Special Specification shall be submitted as a separate PDF file.
Form CONR 9 Supplemental Information Available to Bidders	Refer to Section 21.8	Dnnnnnn_R#_CONR9.pdf

21.9.2.3 Supporting Materials for Project Processing

See Table 21-9B for a listing of supporting materials to be provided by the Region for project processing. This is only a general listing, other project related materials may be required.

Table 21-9B Supporting Materials to Be Provided by Region

Supporting Material to Be Provided	When to Include	Filename to Be Used (Submit data as a single PDF file)
ROW Certificate and any accompanying materials	All projects	Dnnnnnn_R#_ROWCert.pdf
Environmental Commitments Checklist	All projects	Dnnnnnn_R#_EnviroCom.pdf
Status of Special Specifications Table	All projects	Dnnnnnn_R#_SpecialSpecStatus.xls (Submitted as an Excel file)
GreenLITES Scorecard	Required for all projects other than emergency standby, where and when, or job order contracts	Dnnnnnn_R#_GreenLITES.xls (Submitted as an Excel file)
DBE Pre-Letting Goal Assessment	All federally funded projects	Dnnnnnn_R#_DBE Assessment.pdf
MBE/WBE/SDVOB Goal Waiver (signed)	Any 100% State funded project when goals other than the baseline goals are proposed	Dnnnnnn_R#_Goal Waiver.pdf
Lump Sum Price Analyses (computations performed to estimate the cost and quantity for lump sum items)	Only required for projects requiring FHWA PS&E approval.	Dnnnnnn_R#_LS Price Analyses.pdf
Betterment Work Sheets (Shows distributution of betterment costs across funding shares)	Only required for projects requiring FHWA PS&E approval. See Section 21.6.3.6	Dnnnnnn_R#_Betterment Sheets.pdf
Design Approval (or IPP/FDR) Document	All projects	Dnnnnnn_R#_DAD.pdf
Project Re-Evaluation	All federally funded projects and/or projects with a significant change since design approval	Dnnnnnn_R#_ReEvaluation.pdf

21.9.2.4 Engineer's Estimate Submittal

The Region shall upload the Engineer's Estimate to the AASHTOWare Project Preconstruction system (Precon), run several quality control processes to ensure the estimate is ready for submittal, and enter several key data components to the project in Precon prior to providing e-mail notification of the availability of the PS&E materials. These steps are explained in further detail on the PS&E Unit page

(internal SharePoint site). Note: An account is required to access Precon to upload the project file/estimate; designated Uploaders can contact DQAB (Email address: *dot.dl.PSE.Section)* to request training and an account.

21.9.2.5 PS&E Transmittal Memo

Purpose - The PS&E transmittal memo transmits the project from the Region to the Main Office to prepare for advertisement and letting and documents the status of numerous project details at that point in time. The PS&E Transmittal Memo also conveys information regarding the project's status (i.e., information to support advertisement, letting, and award) to groups within the Department and outside agencies. In addition, it provides information needed for the Main Office to: distribute the PS&E materials for review; prepare the final contract documents; request FHWA PS&E approval (when required as indicated by the Region) and authorization to advertise the project (when federal funds are involved); advertise for letting; and let and award the project.

Memo Shell - The latest PS&E transmittal memo shell should be used to prepare the submission by the functional group responsible for the design and forwarded by the project manager. General instructions to complete the PSE Transmittal Memo are provided on the "Index and Instructions" tab. The PS&E Transmittal Memo shall be submitted as an excel file with this naming convention:

Dnnnnnn_R#_PSE Transmittal Memo.xlsm (e.g., *D264999_R9_PSE Transmittal Memo.xlsm*)

Approvals - Submission of a PS&E transmittal memo implies approval from the appropriate Regional administrators. There are places in the memo where the Regional Planning and Program Manager (RPPM) and the Regional Director (RD) can denote their approval. The RPPM's approval denotes administrative approval of the project (i.e., it is consistent with the Region's program). The Regional Director's approval constitutes the Region's recommendation to proceed to contract advertisement and letting.

Required Reviews - In the PS&E Transmittal Memo, the designer shall indicate if a review of the PS&E Materials by the FHWA (for projects requiring FHWA PS&E approval), NYS Thruway Authority or Canal Corporation (for projects involving those entities), the Office of Structures (for bridge projects requiring a PS&E review per Section 20 of the Bridge Manual), or DQAB's Rail Agreements Unit (for projects involving railroads) is required. The PS&E Section will coordinate these reviews.

Transfer of Files - After the plans, proposal materials, Supplemental Information materials, and supporting materials for project processing have been posted to the "P" Drive in accordance with the requirements of this Section; and the engineer's estimate has been uploaded to the AASHTOWare Project Preconstruction system (Precon).

Recipients - A notification Email should be sent from the Region to DQAB's PS&E Section and appropriate MO Functional Units. Additional Guidance on the notification Email can be found in the PS&E Transmittal Memo. Main Office Functional Units must be copied on the notification E-mail as indicated in the following table.

Table 21-9C Main Office Functional Units

Main Office Functional Unit	Outlook Group Name	When Required to Notify
DQAB PS&E Section	dot.dl.PSE.Section	All Projects
Project Management Bureau	dot.dl.Project.Mgmt	All Projects
Project Management Bureau – Phase Authorizations	dot.sm.pgm.mgt.phase.auth.requests @dot.ny.gov	
Project Management Office	dot.sm.mo.pmo	All Projects
Office of Construction	dot.sm.mo.construction	All Projects
Contract Management Bureau	dot.dl.ContractMgmtBur.PSEMemo	All Projects
Geotechnical Engineering Bureau	dot.dl.mo.Geotech	All Projects
Office of Right of Way	dot.dl.RE.programming	All Projects
Statewide Policy Bureau, GreenLITES Administrator	dot.sm.mo.green.lites	All Projects except where & when, demand response, or job order contracts
Office of Environment	dot.dl.MO.Landscape.Architecture.REL	All Projects
DQAB Rail Agreements Unit	dot.dl.MO.Rail.Agreements.Unit	Projects Involving Railroads
Office of Structures	dot.dl.Structures.PSE.Review	Projects Involving Bridges which meet the criteria in Section 20.2.2 (Table 20-1A) of the Bridge Manual.
Office of Traffic Safety and Mobility	dot.dl.MO.Traffic.Safety&Mobility	Projects Involving Safety Programs, Intersection Improvements, and Intelligent Transportation Systems
Office of Transportation System Maintenance	dot.sm.mo.transportation.maintenance	Projects Involving Pavement and/or Bridge Preventive Maintenance

The PS&E Transmittal Memo addresses numerous project details, including:

A. Letting Date and Contract Completion Date State the suggested letting date and contract completion date. The contract completion date will be listed on page 1 of the contract proposal. As project letting dates are in a state of flux to meet the Department's program needs, it is not recommended to repeat the letting date or contract completion date in Special Notes or any other portion of the bid documents. This will enable the Department to implement changes to contract completion dates with minimal conflicts.

Consult with Regional Construction before establishing the completion date. When proposing a completion date, factors to consider include the time of year construction will start, project urgency, length of construction season, waiting time for embankments, planting seasons, utility

facility adjustments, lead time for materials (e.g., structural steel, signal poles), and probable construction sequencing.

On landscape development contracts where planting work will be the major part of the project, the Regional Landscape Architecture and Environmental Services Group should be consulted, and contract completion dates should be set at the end of the period of establishment.

B. Prebid Meeting State whether or not a prebid meeting will be held, and if so, where and when. The notice for a prebid meeting will be included in the advertisement for project letting and on page 1 of the contract proposal.

Department policy is for the Region to schedule a prebid meeting for all projects with an estimated construction cost equal to or greater than $10 million. The Regional Director may approve a waiver to this policy at his/her discretion. The reason(s) for the waiver should be discussed in this section of the memo.

For projects less than $10 million, prebid meetings are optional. Prebid meetings should be considered for these projects when they require special construction methods, equipment, time constraints, sequential operations, or exhibit unusual features. The Office of Audit or the Office of Diversity and Opportunity may notify the Regional Director of any project less than $10 million which may require a prebid meeting on the basis of affirmative action matters.

Prebid meetings are worthwhile to clarify contract requirements with contractors, and identify areas where additional or revised information is required to be issued by amendment (based on the meeting) before bids are received. In addition, they provide an opportunity to alleviate confusion and provide useful discussion concerning construction issues and D/M/WBE goals.

Prebid meetings should not be scheduled on letting dates. Additionally, it is desirable to avoid the two previous days, or at a minimum, the day before a scheduled letting. To meet the amendment deadline, the prebid meeting should be held approximately five weeks before the letting date.

In order to provide bidders a reasonable amount of time to examine the bid documents and determine possible problem areas in the period between the date the bid documents are available and the pre-bid meeting, a six week ad is the minimum necessary.

Although bidders will be advised to attend the prebid meeting at a specified Regional location, attendance is not a mandatory prerequisite to submitting a bid. However, attendance at prebid meetings will be viewed as an element of good faith for the purpose of clarifying D/M/WBE issues. An agenda for a prebid meeting may include a brief project description and a discussion of:

1. Unusual construction features.
2. Environmental concerns (such as protected wetlands), and special commitments included in the Design Approval Document.
3. Additional approvals, permits or requirements by other agencies or groups.
4. Special utility involvements.
5. Special notes or specifications.
6. Work Zone Traffic Control requirements.
7. Schedule conditions (incentive/disincentive clauses, etc.).
8. D/M/WBE goals and other required contract provisions.
9. ROW availability.

The Regional Design Engineer will notify the different Departmental organizations, and consultants, if appropriate, who have an interest in, or are requested to participate in the prebid meeting. At the meeting, all contractors will be required to enter their name, title, and function onto an attendance sheet that notes: "The contractor's attendance at this prebid meeting is not a substitute for compliance with Article 3 of the Standard Form Agreement. This Article requires, among other things, the bidder's careful examination of the contract documents, the site of the proposed work as well as its surrounding territory, and all of the conditions affecting the work to be done as specified in the contract documents."

The meeting attendance record will be considered part of the contract records. There will be no formal transcript of the meeting proceedings, but notes or recordings may be kept for internal Department use.

The Regional Design Engineer will designate the individual responsible for conducting a prebid meeting. Care must be taken in prebid meetings to avoid off-the-cuff interpretations which could contradict and vary from the terms required by the contract or make interpretations without the benefit of a normal detailed review. Oral responses by Department personnel should be in conformance with specification requirements. If, as a result of the prebid meeting, any clarification of the specifications is warranted, it will be incorporated into an amendment (assuming there is time to meet the amendment deadline) and sent to all prospective bidders. If there is not time to issue an amendment, consideration should be given to postponing the letting.

C. Federal Aid Procedure For Federal Aid projects, state if FHWA approval of the PS&E is necessary. This determination should be based on the Design Related Approval Matrix, provided as Exhibit 4-2 in the *Project Development Manual*. In addition, reference the approval status of any proprietary specifications shown on the Status of Special Specifications Table. Also reference any approvals associated with the use of salvaged materials (See Section 21.4.1.2 D).

For projects that require FHWA PS&E approval, the designer must also submit the computations performed to estimate the cost and quantity for lump sum items, and work sheets used to calculate utility betterment participation, if applicable.

D. Newspaper Advertisement Length Indicate the desired advertisement length. The length of contract advertisement must provide enough time for bidders and suppliers to determine estimated costs of the work to be performed. Guidance regarding advertisement durations is provided in Table 21-10, below. Cost alone may not be an appropriate guide for determining an ad length. For example, a 4-week advertisement may be appropriate for a 10 mile freeway resurfacing contract with an engineer's estimate over $5,000,000, since it may not be substantially more difficult to estimate than a similar project half as long and less expensive. Conversely, an increase in the recommended advertisement duration may be appropriate for complex projects and projects requiring special trade expertise.

Table 21-10 Recommended Newspaper Advertisement Lengths

News Ad Length (weeks)	Project Parameters
6 or more	• Engineers estimate over $10 M. • Complex projects (e.g., unusual designs, alternate bridge designs, traffic control plans consisting of several stages). • Projects with pre-bid meetings (see B.8)
5	• Engineers estimate of $5 M to $10 M.
4	• Recommended ad length for engineers estimates under $5 M.
3	• Approved by Regional Director. Limited to small, noncomplex projects or projects initiated as a result of an emergency.
Less than 3	• Rare. See note below for special requirements.

Notes: Projects with News Ad lengths of less than 3 weeks require special handling due to a legal requirement that contract notices be published in the New York State Contract Reporter a minimum of 15 business days prior to the date the bid is due. In addition, if the project requires FHWA PS&E approval, the FHWA has approval authority over proposed News Ad lengths of less than 3 weeks (reference 23CFR635.112 Advertising for Bids). DQAB's PS&E Section should be consulted prior to proposing a News Ad length of less than 3 weeks.

F. Prerequisites to Advertisement Right-of-way, environmental determinations, permits, approvals, resolutions, and agreements (i.e., state-railroad force account, municipal, utility) should be finalized or obtained prior to advertisement. If any of these activities are not completed at the time of PS&E submission to DQAB, the Region shall address the status of these activities in the PS&E Transmittal Memo.

G. Right of Way (ROW) State that the ROW Clearance Certificate (ROW 9-14A) has been posted. In general, the ROW Clearance Certificate is prepared by the Regional Right of Way Group and provided to the Regional Functional Group preparing the PS&E Transmittal Memo (Reference - Office of Right of Way Instruction Manual Instruction A02-1-7 "Certification of Right of Way Clearance for Capital Projects" and the Project Development Manual Phase VI steps), certifying the Department's compliance with the Highway Law, the Eminent Domain Procedure Law, The Uniform Relocation Act, and Title 23 of the Code of Federal Regulations, Part 635 Section 309 Para (c) (23 CFR 635.309).

If item (c) of the ROW Clearance Certificate is checked, the Acquisition and Clearance Status Report (ROW 9-15A) should accompany the ROW Clearance Certificate, as provided by the Regional Right of Way Group.

If item (d) of the ROW Clearance Certificate is checked, it is indicative that necessary property will not be acquired and cleared prior to project advertisement. In these rare situations, called projections, the Acquisition and Clearance Status Report (ROW 9-15A) and Special Note – Availability of ROW (ROW 9-16A) should accompany the ROW Clearance Certificate, as provided by the Regional Right of Way Group. In addition, the Regional Functional Group preparing the PS&E Transmittal Memo is responsible for preparing an engineering justification to proceed to advertisement, letting & award without having all of the right of way necessary for the project; and a contract plan sheet showing the projected area(s) with expected date(s) of availability(s). This is in accordance with Office of Right of Way Instruction A02-1-08 - Projection of ROW Availability on Capital Projects.

H. Environmental Issues

1. National Environmental Policy Act (NEPA) - For federally funded projects, state which one of the following types of environmental determination has been made, the date of the determination, and who (i.e., NYSDOT Regional Director, FHWA, Thruway Authority, etc.) made the determination.

   A. Class II Project (Categorical Exclusion, state c list or d list).
   B. Class III project (Finding of No Significant Impact (FONSI)). Processed with an Environmental Assessment (EA).
   C. Class I project (Record of Decision (ROD). Processed with an Environmental Impact Statement (EIS). For those projects subject to reevaluation, state the date that the reevaluation was made.

2. State Environmental Quality Review Act (SEQR) - For all projects, state the SEQR Type and environmental determination, the date of the determination, and who within the Region made the determination (Per the Design Related Approval Matrix (PDM Ex 4-2); the SEQR determination is made by the Deputy Chief Engineer-Design (DCED) for SEQR Non-Type II projects and where the DCED or FHWA grants Design Approval, and by the Regional Director where Design Approval authority has been delegated to the Region).

   A. Exempt – not subject to SEQR
   B. Type II projects – No Significant Effect.
   C. Non-Type II projects processed with an Environmental Assessment -Determination of No Significant Effect (DONSE) (i.e., Negative Declaration).
   D. Non-Type II projects processed with an EIS - Record of Decision.

3. Environmental Permits/Approvals - List all environmental permits/approvals required for the project and their status.

I. Statewide Transportation Improvement Program (STIP)/ Transportation Improvement Program (TIP). State whether or not the project is on the STIP (and TIP, for projects under the jurisdiction of a local Metropolitan Planning Organization), and if the STIP (and TIP, if applicable) needs to be amended. This information should be obtained from the Regional Planning and Program Management Group.

J. Resolutions/Agreements List all municipal resolutions and agreements required for the project, and the status of their transmittal to DQAB's PS&E Section.

K. Utility Involvement List affected utilities and give an indication of the status of any pending agreements and other contract provisions (i.e., betterments) which have an influence on the contract award. State that a final Utilities Inventory (Form HC 203) has been submitted directly to the Design Support Services Section of DQAB by the Regional Utilities Engineer.

For federally funded projects, to comply with the requirements of 23 CFR 635.309, the statement should also indicate that no utilities are affected by the project, or that utility work has been completed, or that arrangements have been made to complete the utility work during construction.

L. Railroads. State whether or not a railroad exists within the contract limits. If a state railroad agreement is necessary, indicate the current status and anticipated completion date. For federally funded projects the statement is necessary to comply with the requirements of 23 CFR 635.309.

M. DBE/MBE/WBE/SDVOB Goals. For projects funded wholly or partially with any amount of federal funds, provide the appropriate Contract Group Type # and corresponding Disadvantaged Business Enterprise (DBE) Goal for the project, and indicate if a change to the Department's assigned goal is being requested (see discussion below). The Procedural Steps for Setting DBE Goals, Table of Construction Contract Groups, Table of Region/County breakdown, and Table of DBE Goals for Construction Contracts are available through the Office of Diversity and Opportunity website.

For 100% state-funded projects, provide the Minority Business Enterprise (MBE) goal, Women's Business Enterprise (WBE) goal, and Service Disabled Veteran Owned Business (SDVOB) goal for the project. For information regarding baseline M/WBE goal assignment refer to the latest Engineering Instruction (EI) for 'M/WBE AND SDVOB BASELINE PARTICIPATION GOALS' as well as to the Office of Diversity and Opportunity's website.

Requesting a Change to Assigned Goal(s): The Region may request a change (increase, decrease, or waiver) to the assigned goal(s). For projects which are of a specialized nature, with only a few pay items, that could result in limited opportunities for D/M/WBE sub-contracting participation, a waiver or decrease to the goal(s) shown may be requested. Changes to the assigned goal(s) may also be requested on an exception basis if the project is the result of significant public interest such as health or safety, or if there are other extenuating circumstances. Conversely, the Region or Office of Diversity and Opportunity may have an interest in increasing D/M/WBE participation on any given project.

In the interest of expediting processing, designers should consult with the Regional Compliance Specialist in the Regional Construction Group's Civil Rights Unit to get their advice and recommendation on the proposed goal(s) prior to submitting the PS&E. Questions regarding the appropriateness of goals may also be referred directly to the Office of Diversity and Opportunity.

Changes in the Department's assigned goals must be initiated using form HC-258, Pre-Letting Goal Assessment (Note: the 'HC-258' link is for NYSDOT staff only, links to the Department's intranet).

The Project Manager will coordinate the review of the pre-letting goal assessment with the Office of Diversity and Opportunity. The specific reason(s) for the request must be stated on the submitted form along with any applicable supporting materials. The request will be approved, modified, or denied after the Office of Diversity and Opportunity has reviewed the request. If a change is authorized, a copy of the signed form HC-258 shall be provided with the PS&E materials.

N. Incomplete Items State what's needed to complete the PS&E package (e.g., indicate whether special specifications require approval, resolutions/agreements are pending, materials are to be submitted at a later date, etc.).

Failure to finalize items 13a through 13f may delay proceeding to advertisement, letting, and award because these items are considered prerequisites to those activities. Proceeding to advertisement, letting, and award without completing items 13a through 13f puts the Department at risk, and may result in contractor delay claims and/or violations of law if an award is made. Therefore, it is imperative that any of these activities which are not finalized are followed up on by the Region. The project may need to be delayed/postponed, or amended to include appropriate special notes.

21.9.3 Changes After PS&E Submittal

If it is discovered during the preparation of the PS&E that changes will be required, the PS&E should be held and revised in order to avoid changes after PS&E submission. If such changes cannot be avoided or are not discovered until after PS&E submission, they must be coordinated through the PS&E Section (dot.dl.PSE.Section, if the project is not yet assigned to a Reviewer) or directly through the Reviewer assigned to the project (see Regional PS&E Submission Reports on the PS&E Section's Intradot site to see if a Reviewer has been assigned to the project).

If soon after PS&E submission, it is learned that revisions/corrections to the information on the PS&E Transmittal Memo need to be made, contact the PS&E Section/assigned Reviewer to assess whether or not a corrected PS&E Transmittal Memo needs to be resent to the entire Email mailing list of recipients. When resending, add "(RESUBMISSION)" to the end of the Email subject line. If multiple resubmissions are necessary add a revision number,e.g., "(RESUBMISSION #2)".

Other changes after PS&E submission may require preparation of an amendment, as discussed in the following Section and in consultation with the Reviewer.

All changes after PS&E submission, regardless of whether or not an amendment is required, shall be submitted to the PS&E Section by posting the files to the "To DQAB mailbox" folder located on the "P" Drive at:

P:\Toolbox\Documents & Resources\Bid Documents\Mailbox\To DQAB\Dnnnnnn
Where "Dnnnnnn" is the contract number for the individual project. The "Dnnnnnn" folder is created by DQAB, and may not be available until after DQAB in-processes the PS&E submission.

Changes after PS&E submission should NOT be placed in the PS&E Transmittals folder on the "P" drive.

21.10 AMENDMENTS

An amendment is a formal alteration of a proposed contract by addition, deletion, or modification, issued subsequent to the publication of bid documents and prior to the opening of bids. Changes to the contract documents that arise shortly after PS&E submittal may be able to be incorporated without an amendment. The assigned Reviewer in DQAB's PS&E Section should be contacted to make this determination.

The following items discuss when an amendment is, and is not, warranted. If an amendment is not warranted, the project should proceed to letting and award as advertised.

1. When errors are discovered in quantity computations, an amendment request should be prepared and submitted if the changes meet either of the following criteria:

    - Any item quantity change with a magnitude of 20%, either plus or minus.
    - Any item quantity change where the change, either plus or minus, multiplied by the estimated unit price, changes the total engineer's estimate by more than 1%.

2. Amendment requests to add entire segments of work to a project should be avoided. The Region should request that the submitted project be returned, so that it may be redesigned to include the additional work.

3. Changes that are significant enough to warrant an amendment should not be deliberately deferred for inclusion by order-on-contract. They should be incorporated by amendment.

21.10.1 Deadlines

Amendment requests shall be submitted to DQAB's PS&E Section by the amendment deadline noted in the Department's bid opening schedule, available on the PS&E Unit page (internal SharePoint site). As noted on the schedule, the amendment deadline varies with the magnitude of the changes to the contract documents; minor changes require less time to process and digest than extensive changes. Extensive changes and minor changes (defined below) which cannot be submitted by the published amendment deadline should be coordinated with DQAB's PS&E Section on a case-by-case basis.

Changes are considered "extensive" when the cumulative effect of modifications to the contract documents meet or exceed the following thresholds:

1. Addition, deletion and / or replacement equal to or exceeding 20% or 25 sheets of the contract plans; or
2. Addition, deletion and / or replacement equal to or exceeding 20% or 25 pages of the contract proposal; or
3. Pay item quantity changes equal to or exceeding 20% or 25 pay items, or resulting in a cost change of $250,000 or 10% of the engineer's estimate at PS&E; or
4. Any addition, deletion or replacement of special contract provisions (e.g., A+B Bidding, Incentive/Disincentive Specifications, Lane Rental, Night Time Construction, etc.).

Changes are considered "minor" when they do not meet any of the thresholds defined above. Minor changes can be reasonably processed and digested by prospective bidders in the time available.

Postponement of a project to accommodate amendments should be considered when time is limited and a significant effort will be required for prospective bidders to account for the changes in their bids. If the

situation is serious enough to warrant a postponement of the project, a postponement request and explanation must be submitted (e-mail is acceptable), by the Regional Director or his/her designee, to the Project Management Bureau as soon as possible prior to the scheduled letting date. Copies of the official postponement letter will be forwarded to all involved Department Units.

21.10.2 Format and Submittal

Prior to preparing the amendment request, Designers should contact the PS&E Section Reviewer assigned to the project. The reviewer assigned to the project can be determined by viewing the PS&E Submission Status Report from the PS&E Unit page (internal SharePoint site). The Reviewer may be able to offer guidance to streamline the amendment request submittal process.

Amendment requests shall be submitted electronically, with .pdf files generated from native file formats whenever possible rather than scanned. Scanned files are larger than generated files, and scanned documents are not searchable. Best practices for scanning include setting the scanner for at least 300 LPI Resolution (600 LPI is best). For non-color original documents, it is recommended to scan as a 'BITMAP' image; and if the resulting quality is not acceptable, scan as a 'Grayscale' image. Any color plan sheets shall be scanned as a color image.

Amendment request submissions should consist of the following components, as applicable:

- Amendment plan sheets shall be submitted as individual portable document format (.pdf) files set for printing on 11" x 17" paper. Refer to Section 21.10.3.
- Amendment proposal pages (replacement and added) shall be submitted as a single .pdf file set for printing on 8 ½" x 11" paper. Refer to Section 21.10.4.
- Pay item changes shall be prepared and submitted in table format as specified in Section 21.10.5.
- Supplemental Information changes/additions shall be submitted as specified in Section 21.10.6.
- The Amendment Transmittal Memo shall be prepared as outlined in Section 21.10.7.
- An Amendment Body document, summarizing all changes in statement form and forming the basis of the amendment sent to all plan buyers, shall be prepared in accordance with Section 21.10.8.

These components are described in further detail in the following pages. Amendment processing will not commence until the necessary components have been submitted.

All amendment components shall be submitted to the DQAB, PS&E Section by posting the files to the Bid Documents directory on the "P" Drive at:

P:\Toolbox\Documents & Resources\Bid Documents\Mailbox\To DQAB\Dnnnnnn
Where "Dnnnnnn" is the contract number for the individual project.

After the submitting individual has placed the files in the appropriate folder, he/she must send a notification e-mail to the PS&E Section Reviewer assigned to the project, with a copy to the dot.dl.pse.section e-mail address. The Amendment Transmittal Memo should be attached to the notification e-mail.

Please note that the Mailbox folder system is intended as a transfer directory only, and files will be periodically purged. Regional staff should be sure to save back-up copies to ProjectWise or another location.

It is highly recommended that designers use the Amendment Generator files when preparing an amendment. The Amendment Generator files are available at the PS&E Unit page (internal SharePoint site) The files include detailed instructions on preparing an amendment, as well as samples of the various tables and shells required to submit the amendment.

21.10.3 Plan Sheets

Guidance on amending plan sheets is as follows:

- Plan sheets are typically amended with the issuance of either replacement plan sheets or added plan sheets. A replacement sheet is issued when a revision of a previously submitted sheet is necessary. This replacement sheet will supersede the previously submitted sheet in its entirety. An added sheet shall be prepared and submitted when a new plan sheet that is not a revision of any previously submitted sheet is necessary. Plan sheets may also be deleted by amendment. When deleting a plan sheet from a contract, a replacement sheet is always needed. The submitted replacement sheet should have an "X" through the sheet with "N.I.C." (not in contract) in large bold font.

- Amendment plan sheets should be submitted as individual .pdf files named:

  Dnnnnnn_A#_Plans_Sheet #.pdf

  Where Dnnnnnn is the contract number, A# is the amendment request number, and Sheet # is the amendment plan sheet number in accordance with the numbering convention explained in No. 6 below.

- For minor changes to plan sheets (for example adding a note, deleting a detail, etc.), Designers may be able to avoid the issuance of a replacement plan sheet by simply including a statement in the Amendment Body document (see Section 21.10.8). Example statements are provided below.

  - On Contract Plan sheet 20, add the following note: "_____".
  - On Contract Plan sheet 23, delete detail "A".

- When replacing, adding, and/or deleting plan sheets, a table summarizing the changes shall be prepared and submitted with the amendment. A Word file (Changes to Plan Sheets.doc) containing a sample table is available in the Amendment Generator files. Replacement and added plan sheets should include a brief description of the revision/addition, so that the change(s) is readily discernible to prospective bidders. This table may be submitted as a file named Dnnnnnn_AR#_Changes to Plan Sheets.doc, or it may be submitted as part of the Amendment Body document (see Section 21.10.8).

- When submitting a replacement sheet, the following note shall be conspicuously placed in the upper right corner of the replacement sheet:

  "THIS SHEET SUPERSEDES SHEET ____."

- When submitting an added sheet, the following note shall be conspicuously placed in the upper right corner of the added sheet.

  "THIS SHEET DOES NOT SUPERSEDE ANY SHEET."

- Amendment plan sheets shall be numbered as described below:

  - Replacement sheets. To replace (or to delete) sheet 42 of 272, the replacement plan sheet number should be 42A1. If more than one sheet is required to replace sheet 42, they should be numbered 42A1, 42A2, etc.

  - Added sheets. To insert a sheet to supplement sheet 42 of 272, the added sheet should be numbered 42A1. If more than one sheet is required to be inserted in this section of the plans, they should be numbered 42A1, 42A2, etc. Added sheets that do not supplement any previously submitted sheet should be numbered 272A1, 272A2, etc.

  - Replacing plan sheets from a previous amendment. To replace sheet 42A1 of 272, the replacement plan sheet number should be 42A2, and the note should indicate "THIS SHEET SUPERSEDES SHEET 42A1".

  When revisions to plan sheets affect pay items (e.g., changes in quantities, prices, etc.), the guidance in Section 21.10.5 should also be followed.

21.10.4 Proposal Pages

Guidance on amending proposal pages is as follows:

- Proposal pages are also typically amended with the issuance of either replacement proposal pages or added proposal pages. Proposal pages may also be deleted by amendment.

- Replacement and added proposal pages should be accompanied by a brief description of the revision/addition, so that the change(s) is readily discernible to prospective bidders.

- Amendment proposal pages shall be numbered as described below:

  - If a proposal page replaces another proposal page it would retain the original page number with the suffix A1. For example, if page 292 were to be replaced by a single page, the replacement page number would be 292A1. If more than one page is required to replace page 292, they will be numbered 292A1, 292A2, etc.

  - Added proposal pages will be numbered to indicate the logical location where each page or group of pages would be inserted into the proposal. If three added pages logically followed after existing page 153, they would be numbered as 153A1, 153A2, and 153A3.

  - Amendment proposal pages should be combined and submitted as a single .pdf file named:

    Dnnnnnn_A#_ProposalPages.pdf
    Where Dnnnnnn is the contract number and A# is the amendment request number.

  When revisions to proposal pages affect pay items (e.g., changes in quantities, etc.), the guidance in Section 21.10.5 should also be followed.

21.10.5 Pay Item Changes

Changes by amendment to the estimate in AASHTOWare Project Preconstruction (including quantities, fixed prices, and schedule changes), require a new Expedite file to be created and posted to the internet so that plan holders may download and update their electronic bid. When such changes occur, a statement in the amendment will direct the recipients to the website to download the updated Expedite file.

Pay items to be deleted, added, or modified (quantity or unit price changes, changes in share distribution) should be transmitted via an Excel Worksheet (Pay Item Changes.xls) which is available in the Amendment generator files. Separate files entitled DELETE ITEMS(S), ADD ITEM(S), QUANTITY CHANGE(S), and UNIT PRICE CHANGE(S) are contained within the worksheet. The tables presented are formatted to reduce the potential for errors and to facilitate data entry into AASHTOWare Project Preconstruction. The pay item changes should be submitted as a single Excel file named:

Dnnnnnn_A#_Pay Item Changes.xls

The PS&E Section may determine that due to the sheer number of required pay item quantity and/or unit price changes after bid document publication, it is in the best interests of the Department to return control of the engineer's estimate to the Region to make the changes. In these situations, the PS&E Section shall obtain the approval of the Deputy Chief Engineer (Design) prior to returning control of the estimate to the Region and include a complete replacement set of the contract bid sheets in the eventual amendment.

In the event of pay item changes by amendment, the Quantity Work-ups which are provided as supplemental information shall be updated by the designer to reflect the changes and re-issued as part of the amendment. The designer shall confirm unit price information is not included in the quantity work-up files to be published as contract supplemental information.

21.10.6 Supplemental Information

Changes by amendment to Supplemental Information should be infrequent (although there may be necessary periodic updates to the quantity work-up related supplemental information). If there are revisions or additions to the Supplemental Information files that have been posted to the Department's website, the Amendment Body Document should spell out the changes.

The revised/added files should be place in the appropriate subfolder in the DQAB mailbox. If Supplemental Information has been added, the CONR 9 Form must be amended as well.

The filename for all files submitted in association with an amendment shall begin with:

Dnnnnnn_A#.

21.10.7 Amendment Transmittal Memo

The Amendment Transmittal Memo explains the rationale supporting the amendment request and provides a summary of the materials submitted.

At a minimum, the following information should be provided in the memo:

1. Provide the PIN, letting date, contract number (i.e., "D" number), and amendment number.

2. State who initiated the amendment, how the amendment improves the quality of the PS&E submittal (e.g., corrects quantities, clarifies notes, etc.), and whether it includes “extensive” or “minor” changes.

3. List what is being transmitted. (File names and contents). Include the approval status of any Special Specifications to be added to the contract.

4. The directory to which the associated files have been posted.

A Word file (Amendment Transmittal Memo.doc) containing a sample Amendment Transmittal Memo is available in the Amendment Generator files. The Amendment Transmittal Memo shall be submitted as a single Word file named:

Dnnnnnn_A#_TransMemo.doc

21.10.8 Amendment Body Document

The Amendment Body document communicates all the changes for a given amendment in statement form. The statements are presented in a particular order to aid the PS&E Section reviewer in preparing the final amendment. The Amendment Body document contains several types of estimate changes in tabular form. These tables are required in addition to the tables described in Section 21.10.5. The tables introduced in Section 21.10.5 were designed to facilitate accurate data entry into AASHTOWare Project Preconstruction. The tables included in the Amendment Body document are designed to convey information to the plan holders.

A Word file (Amendment Body Document.doc) containing a sample Amendment Body document is available in the Amendment Generator files. The Amendment Body document shall be submitted as a single Microsoft Word file named:

Dnnnnnn_A#_Body.doc

Figure 21-4 on the following page contains a list of statements and the order in which they should appear in the Amendment Body document. This list is not all-inclusive, but does include the majority of statements that will appear in an amendment. Note that no single statement necessarily applies to all amendments.

Figure 21-4 Amendment Body Document

AMENDMENT NO. TO:

CONTRACT NO.
F. A. PROJECT
COUNTY
PIN

IN THE LETTING OF
MONTH XX, 20XX

NOTICE TO PROSPECTIVE BIDDERS

1. The letting for this contract has been rescheduled to **MONTH XX, 20XX,** and an amended Project Bid file will be posted at: https://www.dot.ny.gov/bids-and-lettings/construction-contractors/electronic-bid-system/expedite-download-center . Bidders are authorized to change the cover of the Contract Proposal to read **LETTING OF MONTH XX, 20XX.**
2. An amended Project Bid file will be posted at: https://www.dot.ny.gov/bids-and-lettings/construction-contractors/electronic-bid-system/expedite-download-center.
3. The Supplemental Information Available to Bidders for the contract has been updated [Explain what has been updated….ie..Record Plan file RC 1797.pdf has been replaced] The Supplemental Information files have been posted at: https://www.dot.ny.gov/portal/page/portal/doing-business/opportunities/const-notices.
4. On page one of the Contract Proposal, the **COMPLETION DATE** of MONTH XX, 20XX has been changed to **MONTH XX, 20XX**. Bidders are authorized to change page one to read **MONTH XX, 20XX**.
5. Delete the following items:

ITEM NO.	UNIT	QUANTITY	CONTRACT PROPOSAL PAGE

The Bidder shall not enter a bid for these items. They shall **CROSS OUT** the above items now shown in the Contract Proposal.

If the Bidder fails to make these changes the Department will do so and adjust the TOTAL BID accordingly.

Delete all other references to the above items in the Contract Plans and Contract Proposal.

6. Change the ESTIMATE QUANTITIES for the following items:

ITEM NO.	UNIT	QUANTITY

The Bidder shall **CROSS OUT** the ESTIMATE QUANTITIES for the above items now shown in the Contract Proposal and **SUBSTITUTE** the above quantities for the appropriate item with the bid based on the above quantities.

If the Bidder fails to make these changes the Department will do so and adjust the AMOUNT BID and the TOTAL BID accordingly.

Change all other references to the above item quantities in the Contract Plans and Contract Proposal.

7. The Pay Items listed below are hereby added to the Contract Proposal. Special Specifications are attached for items marked with an asterisk. **BE SURE TO RETURN PAGES _____ WITH YOUR BID.**

PAY ITEMS

8. In the Contract Proposal on Page __, **Item XXXX.XXXX,** change the Fixed Price Amount Bid to $ _____.

9. Wherever in the Contract Plans or Proposal the old item listed below appears, the new item shall apply.

OLD ITEM NEW ITEM

10. Proposal page deletions/additions/replacements are summarized in the following table:

Old Prop. Page # (Replacement or Deleted Pages Only)	New Prop. Page #	Dwg. # (if applicable)	Description of Changes

11. Plan sheet deletions/additions/replacements are summarized in the following table:

Old Plan Sheet # (Replacement or Deleted Sheets Only)	New Plan Sheet #	Dwg. #	Description of Changes

12. Continue with additional statements to explain changes as necessary.

PLEASE BE GOVERNED ACCORDINGLY WHEN SUBMITTING BIDS.

(End of Figure 21-4)

21.11 PRE-BID QUESTIONS

During the period between advertisement and letting for a project, Department employees may be asked questions by prospective bidders, subcontractors, or suppliers. It is imperative that prospective bidders receive consistent information on which to base their bids. The contract documents indicate that all communications regarding advertised projects are to be channeled through the Contract Management Bureau via the Contract Documents tab within the Construction Contracting section of the Business Center on the Department's web site. Any inquiries received by Department employees should be responded to with a referral to the web site.

The Contract Management Bureau will review all submitted questions and coordinate a response. In many cases, this will require outreach to the Primary Contact provided in the PS&E Transmittal Memo. The Primary Contact should then determine whether the question or inquiry is a result of significant error or ambiguity in the bidding documents which requires formal clarification prior to the bid opening. All questions received will be responded to and available to all prospective bidders through the above-mentioned web site.

Many questions may be able to be answered informally and posted to the web site, as determined by the Contract Management Bureau. The response will indicate that the inquiry does not warrant an amendment to the contract documents, and prospective bidders should prepare their bid based on the information in the contract documents. The response may offer information that clarifies information in the contract documents. If the Region and Contract Management Bureau determine that the inquiry requires formal clarification, the response to the inquiry will indicate that an amendment to the contract documents is necessary. The Region shall then coordinate the preparation and issuance of an amendment with the DQAB's PS&E Section.

If the deadline for amendments has passed and the revision is essential to secure valid bids, the Region may need to coordinate a postponement of the project letting through their RPPM's office, in order to provide sufficient time for the amendment to be issued and reviewed by bidders.

21.12 PROJECT LETTING AND RE-LETTING

Project letting is the process by which bids are received, opened and publicly read, and apparent low bidders for each project are determined. After bids have been verified by the Contract Management Bureau (CMB), the Regional Director is notified of the letting (or bidding) results. For each project, the Regional Director then requests that Regional Design or Regional Construction make a recommendation to him for award or rejection of bids. Bids may be rejected for various reasons, for example: lack of bidders, bids are too high, bids are unbalanced, or the low bidder lacks sufficient experience, capacity, or resources for the work. Additional reasons for rejecting bids may include lack of proper permits (environmental or regulatory), lack of a railroad agreement, lack of funding, or quantity changes discovered during the bid review process which result in a change in the low bidder.

The Region may reach out informally to the staff-level Contract Review Unit (CRU) when weighing whether or not to recommend rejection of bids. This outreach should be conducted through the Office of Construction. Intent to reject bids comes from the Regional Director and shall be transmitted by memorandum to the Director of the Office of Construction explicitly stating the reasons for the recommendation. The staff-level CRU will evaluate the recommendation to ensure it is supported in a reasonable, factual, and verifiable way. At this point, the following steps, which are described to provide the project manager with an overview of the process and facilitate their monitoring of project activities, will take place:

1. The Director of the Office of Construction will prepare a memorandum to the Chief Engineer and Chief Counsel requesting concurrence to reject bids. Their sign-off signifies executive-level CRU concurrence.

2. When concurrence from the executive-level CRU has been received, the Office of Construction will notify the CMB by memorandum, and the CMB will issue an announcement stating that all bids have been rejected. (For projects requiring FHWA PS&E approval, CMB will request concurrence from FHWA to reject all bids. After concurrence from FHWA is received, CMB will issue an announcement to reject all bids.) At this time, DQAB will return the project to the Region for further action.

3. If the Region decides to re-let the project, the Regional Functional Group (e.g., Regional Design) reviews the bid documents to determine what changes are required to the project prior to PS&E re-submission, and then coordinates a new PS&E submittal date and letting date with the Regional Planning and Program Management Group. A new contract “D” number will be required.

4. The Regional Functional Group (e.g., Regional Design) prepares a new PS&E package and re-submits the PS&E in accordance with Section 21.9 of this Chapter.

5. The Main Office proceeds to advertise, let, and award the project.

21.13 DESIGN DATA TO BE SUPPLIED TO CONSTRUCTION

Prior to the project letting date, the Designer will prepare the Handoff Memo to the Engineer (EIC). This memo is intended to provide for the transfer of project information from Design to Construction, who will now have the lead in delivering the project. The Handoff Memo will be sent to the Engineer (E-mail is preferred) before the pre-construction meeting, with an electronic copy to the Construction Supervisor, Design Supervisor, Landscape Architecture/Environmental Science (LA/ES) job manager, Work Zone Traffic Control representative, Design Quality Control Engineer, Public Information Officer, and Transportation Management Center (if applicable). The Project Manager will update the stakeholder contacts list just prior to the handoff to construction.

The Handoff Memo to the Engineer includes conveyance of the following as appropriate for the project:

A. The objectives of the contract.

B. Supplemental Information Available to Bidders (see Section 21.8 of this Chapter).

C. Additional Documents placed in the ProjectWise “Construction” folder/subfolders. If information listed on the Supplemental Information Available to Bidders Form exists, but was not provided to bidders, it should now be made available to Construction. A copy of the Engineer’s Estimate Book shall always be provided.

D. WorkZone Traffic Control (WZTC) information. The overall intent of the WZTC plan should be conveyed to the Engineer. Specific milestones or lane closure restrictions should be noted, or specific references to the contract bid documents provided. Any time-related contract provisions should be noted or referenced. The overall recommended sequence of work should be noted or referenced. Project-specific WZTC issues that may arise, and suggested congestion mitigation measures, should be noted as appropriate, and may have been mentioned in notes in the bid documents (For example: “Traffic may back up into the signalized intersection of State and Pearl Streets. If this occurs, we suggest that Portable Variable Message signs be relocated/added as appropriate, and the Construction Supervisor should be apprised of the situation for potential further mitigating action”). Potential implementation and payment are not covered in the bid documents. This will be handled by the Regional Construction Group in accordance with the Contract Administration Manual, if appropriate and depending on if the particular situation calls for using the suspension of work and/or extra work provisions of the contract.

E. Any changes to the Table of Property Releases that was included in the as-let contract documents, if applicable.

F. Commitments made to property owners or local government officials. Include their names and contact info on the Stakeholder List.

G. Project Stakeholder Information (for all affected parties, i.e. emergency services, schools, public transit, local government officials, contacts for permits received for the project etc.).

H. Identify any locations where construction is anticipated to be complex.

I. Status of Restricted Highways located within the contract.

J. FHWA Project of Divisional Interest (PoDI) Determination Letter, if applicable.

K. Other information (special issues or concerns, etc.) that the Designer or the Project Manager feels is appropriate.

L. Identify any relevant resolutions and/or agreements associated with the project and their status.

An example Handoff Memo to the Engineer is provided as a template and should be altered to convey the information required for a particular project.

In addition to the Handoff Memo, a site walk through with the Engineer is helpful and encouraged. A site walk through provides additional opportunity for communicating details of the project, as well as establishing relationships for continued coordination throughout construction.

At this point in the project development process, the Regional Design Group shall request the ProjectWise Data Manager to archive all electronic project design data for the project located in ProjectWise. In accordance with Section 20.4 of Chapter 20 of the HDM, and Project Development Manual Appendix 14, the Regional Design Group shall work with the ProjectWise Data Manager to create the necessary folders for use by Construction, and provide the Regional Construction Group with the appropriate access to the folders and data within the folders. Files supplied which are Supplemental Information Available to Bidders (see Section 21.8 of this Chapter) should be placed in a folder called “Supplemental Information Available to Bidders”. Guidance pertaining to the Construction folder structure and file naming convention is provided in Project Development Manual Appendix 14.

It is the responsibility of the Project Manager to ensure that fully executed versions of all project relevant resolutions and/or agreements (as determined by the Region) are provided to the Engineer. Electronic copies (.pdf) of the documents should be provided. ProjectWise is the recommended method for conveying the files to the Engineer. Documents should be provided as separate (.pdf) files with intuitive naming conventions, for example: *Dnnnnnn_R#_Village of Hoosick Falls_Lighting Resolution.pdf*.

APPENDIX A - PS&E PREPARATION FOR BUILDINGS ON STATE FINANCED CONTRACTS

21A.1 INTRODUCTION

This section provides guidance regarding PS&E preparation of state-administered contracts that include the erection, construction or alteration of buildings for the state.

It is noted that provisions similar to those contained in Section 135 of the State Finance Law, as described below, exist under the General Municipal Law and must be considered for locally-administered contracts. Also, buildings that will be constructed or altered on locally-administered contracts should comply with any local building codes and requirements.

This section also provides guidance on initiating the necessary construction permit application process with the New York State Office of General Services (OGS). OGS is a code permitting agency employed to permit and inspect work at NYSDOT facilities.

21A.2 SECTION 135 OF THE STATE FINANCE LAW AND WHAT IT MEANS TO PS&E SUBMITTALS

Section 135 of the State Finance Law requires separate and independent bidding on three subdivisions of work for projects including the construction or alteration of buildings with total costs exceeding certain cost thresholds. This results in the need for separate contracts for: (1) general building construction; (2) plumbing and gas fitting; (3) heating, ventilating and air conditioning; and (4) electrical work; when constructing (or altering) buildings for the state. Separate contracts are required when the estimated total cost of all of the work exceeds:

1. $3M in Bronx, Kings, New York, Queens, and Richmond Counties
2. $1.5M in Nassau, Suffolk, and Westchester Counties
3. $500,000 in all other counties.

Section 135 of the State Finance Law creates unique challenges in contract document preparation and contract administration for projects including comfort stations, parking garages, toll plazas, or other buildings where the total estimate exceeds these cost thresholds. Instead of one contractor on the site, who is responsible for all the work to be performed, there could be as many as four or five contractors – a highway contractor, a general construction contractor, and up to three additional contractors who specialize in the subdivisions of work listed above. For such projects, it is necessary that the following guidelines be used:

1. If the project includes highway work, the general building construction work may be included in the prime highway construction contract, or it can be set up as a separate contract.

2. All contracts – general construction and each of the applicable specialties – shall be let on the same date. This will permit the specialty contractors to order materials early and plan their work. All contracts shall also have the same completion date.

3. The general construction contractor and the specialty contractors shall be required to prepare a work plan in accordance with the special note titled "Relationships Between General Building Contractor and Specialty Contractors". This special note is illustrated in Section 21A.4 and shall be provided in each contract.

4. The PS&E submission for each of the four contracts shall be in accordance with Section 21.9 of the HDM. Plans, specifications, and an estimate shall be provided for each separate contract and shall contain only the work requirements for that contract. The plans and proposal materials shall include any details and notes necessary for each contractor to properly bid and coordinate their work with the other contractors. Care should be taken to make sure that all necessary work is included in the appropriate contractor's plans and specifications and that no work is duplicated in the plans and specifications of others.

For projects including the erection, construction, or alteration of buildings with total costs **not** exceeding the above cost thresholds, separate contracts are not required. However, the bidder shall submit, with his bid, a sealed envelope (sent separately by mail, if using Bid Express) containing the names of each specialty subcontractor and the agreed-upon amount to be paid to each specialty subcontractor, in accordance with the special note titled "Listing of Specialty Contractors". This special note is illustrated in Section 21A.4 and shall be included in the project proposal.

21A.3 INITIATING CONSTRUCTION PERMIT APPLICATION PRIOR TO PS&E SUBMITTAL

This section provides guidance on initiating the necessary permit application process. Buildings that will be owned and/or operated by a New York State Agency require a construction permit issued through the NYS Office of General Services (OGS). Time frames for the permit process should be anticipated and included in the project schedule.

Early in Final Design, an OGS REQUEST FOR SERVICES and CONSTRUCTION PERMIT APPLICATION should be prepared and submitted to the OGS (see form for contact information).

In addition, the designer should:

- Provide a copy of the completed form to the designated NYSDOT Contact for OGS Services on NYSDOT Capital Projects (in the Facilities Section in the Maintenance Program Planning Bureau).
- Provide additional information to the designated NYSDOT Contact for OGS Services upon request; so that the Contact can determine the appropriate arrangements for billing.
- Request the Cost Center, Variable, Year, and Object Code for the project from the Transportation Budgeting Bureau (TBB); and provide this information to the designated NYSDOT Contact for OGS Services.

The OGS staff assigned to the project will contact the Department employee listed on the REQUEST FOR SERVICES form for copies of the drawings to review. It should be noted that OGS has been requesting full sized plan sheets for performing their compliance review needed to issue the construction permit. It is recommended that the documents needed for the compliance review be discussed with OGS in advance to avoid any problems with the compliance review schedule.

21A.4 EXAMPLE SPECIAL NOTES

For projects including the construction or alteration of buildings with total costs exceeding the cost thresholds presented in Section 21A.2, the special note titled "Relationships Between General Building Contractor and Specialty Contractors" is to be included in the proposal materials.

For projects including the construction or alteration of buildings with total costs **not** exceeding the cost thresholds presented in Section 21A.2, the special note titled "Listing of Specialty Contractors" is to be included in the proposal materials.

Example *Relationships Between General Building Contractor and Specialty Contractors* Special Note:

SPECIAL NOTE

Relationships Between General Building Contractor and Specialty Contractors

This building is to be constructed under more than one contract. In addition to the general construction contract, there will be one or more specialty contracts for the following special types of work:

1. Plumbing and gas fitting
2. Steam heating, hot water heating, ventilating, and air conditioning apparatus
3. Electrical wiring and standard illuminating fixtures

Therefore, each contractor will not have exclusive occupancy of the area within or adjacent to the building site. The general construction contractor and the specialty contractors will be required to coordinate their work schedules to ensure the orderly and timely progression of the work. Their respective operations shall be arranged and conducted so that delays will be avoided and the work will be performed in an efficient and workmanlike manner.

The general construction contractor and the specialty contractors shall prepare a work plan as hereinafter described, for the express purpose of providing a means for the Engineer to coordinate and monitor the activities of all the contractors.

- As soon as possible after the opening of bids, the Department shall schedule a pre-award conference with all of the contractors for the purpose of discussing their work schedules and establishing a work plan that is acceptable to all. The work plan shall be a coordinated progress schedule, in graphic format to a suitable scale. It shall include the time of performance and completion date for each significant activity. After the general construction contractor and the specialty contractors have developed a work plan that is agreeable to all contractors, the general construction contractor will furnish the Department with six copies signed by all the contractors. If such a work plan is not submitted within 25 days of the bid opening, the Department reserves the right to establish a reasonable work plan which will be binding on all the contractors, to reject all bids, or to take any other action which the Department deems to be in the best interest of the State.

- Each contractor shall progress its own activities so as to permit the other contractors to complete their work in accordance with the work plan. Each contractor shall notify the Engineer when each significant activity is completed and of any delay to its operations by any other contractor. The Engineer shall inspect such work, and if it is satisfactory, the Engineer shall document this fact, and advise the contractor. If a contractor's work is not completed to the satisfaction of the Engineer, the contractor shall perform any additional work required to allow the next contract activity to start. Should the work plan become obsolete, the Engineer shall notify the general construction contractor to meet with the other specialty contractors in order that they provide an acceptable, updated coordinated progress schedule.

The State cannot guarantee the responsibility, efficiency, unimpeded operations or performance of any contractor. The State shall not be held responsible or be in any way liable for damages or delays caused

to any contractor in the performance of his/her work, by reason of another contractor's acts or omissions, or by reason of another contractor's default in performance. Any affected contractor shall look to the offending contractor or contractors in order to recover any resulting damages caused thereby, and the State shall be held harmless from any liability arising by reason of such delays, acts, omissions, or default.

- Liquidated damages shall be assessed for each calendar day that any work shall remain uncompleted after the completion date provided for in all contracts, provided that due account shall be taken of any extension of time granted by the Commissioner of Transportation. The liquidated damages for each contractor will be established at the daily rate listed in Table 108-1 of Section 108-03 (B) of the Standard Specifications. In addition to liquidated damages, engineering charges shall be assessed as provided for in Section 108-03 (A) of the Standard Specifications. The number of days of liquidated damages and engineering charges levied against each contractor will be dependent upon how much the late completion of that contractor's activities contributes to the total delay in completing the contract.

- No separate payment will be made for any of the work required in this Special Note. The cost of such work, including but not limited to the costs of attending coordination meetings and preparing coordinated progress schedules, shall be included in the price bid for the various items of the respective contracts.

(End of Example)

Example *Listing of Specialty Contractors* Special Note:

SPECIAL NOTE
Listing of Specialty Contractors

The bidder shall submit, with its bid, a separate sealed list that names each subcontractor that the bidder will use to perform work on the contract, and the agreed-upon amount to be paid to each subcontractor for (1) plumbing and gas fitting; (2) heating, ventilating and air conditioning; and (3) electrical work. Bidders submitting bids through BidExpress must submit the sealed list to the NYSDOT Contract Management Bureau at the address on the cover of this proposal prior to the bid opening. After the low bid is announced, the sealed list of subcontractors submitted with such low bid shall be opened and the names of such subcontractors shall be announced. Thereafter, any change of subcontractor or agreed-upon amount to be paid to each shall require the approval of the public owner and may only be changed after award based on legitimate construction need as determined by the State. Legitimate construction need shall include, but shall not be limited to, a change in project specifications, a change in construction material costs, a change to subcontractor status as determined pursuant to paragraph (e) of subdivision two of section two hundred twenty-two of the labor law, or where the subcontractor has become otherwise unwilling, unable or unavailable to perform the subcontract. The sealed lists of subcontractors submitted by all other bidders shall be returned to them unopened after contract award.

(End of Example)

APPENDIX B – CONSTRUCTION CONTRACT NUMBERS AND STATE HIGHWAY NUMBERS

21B.1 INTRODUCTION

This appendix documents past and current practices associated with the assignment of construction contract numbers and state highway numbers.

21B.2 PAST PRACTICE

Prior to 1940, State Highway (SH) numbers and construction contract numbers were the same for any given project. SH1 through SH 1965 were highways built as county highways and subsequently taken over by the State. SH 5000 series were highways built without federal aid and SH 8000 series were highways built with federal aid. SH 9000 series were special highways and takeovers of existing highways; the 9000 series is still being used.

Problems with the numbering system began to arise when the SH 8000 series began to approach 9000, and as roads which were previously constructed as State Highways were reconstructed and the reconstruction series overlapped increasingly over the SH series. The solution decided upon in 1940 was to use the letters “FA” to represent federally aided contracts, an “SH” series to represent new State Highways and their corresponding contracts, and an “RC” series to represent reconstruction contracts. The “SH” and “RC” were followed by the year the contract was let and a sequence number.

Subsequent to 1940 this system was modified and expanded to include a wide variety of funding types, laws, systems, arterials, and work types.

In 1975-76, the Department began logically differentiating State Highway numbers from construction contract numbers, as the State Highway number is intended to represent a physical segment of road that is owned by the Department or another State Agency, and the construction contract number is intended to identify the construction contract. This change did not affect State Highway numbers or construction contract numbers assigned prior to 1975.

21B.2.1 Construction Contract Numbers

The Department began the practice of using the Audit and Control account number as the construction contract number (for example, D95201). The Audit and Control account number changed from a 5-digit number to a 6-digit number in 1981. The words “Federal Aid” were placed beneath the contract number on the proposal cover of federally-funded projects to indicate federal participation. The federal aid project number was listed on the plans and in the proposal as it had been prior to 1976.

21B.2.2 State Highway Numbers

New highways constructed and owned by the State were assigned a sequence number based on the year in which the construction contract for it was let. New highways for which the Department had jurisdiction were prefaced by an “SH” (e.g. SH 76-1). New highways for which the Department did not have jurisdiction were designated as original construction and prefaced by an “OC” (e.g. OC 76-2). The State Highway number appeared in the title description of the proposed construction contract plans and proposal. Facilities not owned by the State used the identifying label supplied by the County, City or other owner.

21B.3 CURRENT PRACTICE

Current practice for assigning construction contract numbers and state highway numbers is as follows:

21B.3.1 Construction Contract Numbers

The construction contract number is assigned by DQAB at the time of the PS&E Submittal. The contract number is 6 digits preceded by a “D”, for example D259001. Construction contract numbers are assigned in sequential order. The listing of the federal aid project number on the plans and proposal was discontinued at the end of 2002.

21B.3.2 State Highway Numbers

New highways constructed and owned by the State will be assigned a sequence number by DQAB based on the year that Design Approval was granted prefaced by “SH” (for example, SH 2000-1). The State Highway number will appear in the title description of the proposed construction contract plans and proposal. Facilities not owned by the State should use the identifying label supplied by the County, City or other owner.

As mentioned previously, special highways and takeovers of existing highways will be assigned numbers in the SH 9000 series. These numbers are assigned by the Operations Division by Official Order in accordance with M.A.P. 2.5-1-1.