HIGHWAY DESIGN MANUAL

Chapter 21
Contract Plans, Specifications and Estimate

Revision 62

April 13, 2011
General Changes

Various

Changed from metric to U.S Customary units.

Updated to provide new electronic processes- see individual Section Changes below for descriptions.


Updated References to the current MUTCD.

Deleted references to the CADD Standards and Procedures Manual chapters that have been incorporated into the HDM.

Updated References to the Environmental Procedures Manual, now the The Environmental Manual (TEM).

Updated reference to the Control Report Catalog of Metric Pay Items, now the Pay Item Catalog.

Separated Plans Versus No Plans section into two Sections with new titles. (new titles- Proposal Only Contract, Contracts with Plans).

Moved Cross Section material into Section 21.3 Contracts with Plans.

Moved Terrain Data from HDM Chapter 5 to the Contracts with Plans Section in this Chapter.

Removed Previous Sections 21.9.1 and 21.9.2., Design Phase IV and V Submissions. Information was enhanced and moved to Sections 21.3.4, 21.3.5 and 21.3.8 and reader is referred to the Project Development Manual for additional
information on these subjects.

Removed Previous Section 21.14, Material to be Supplied to the Successful Bidder after Award. New procedures will be documented in the Construction Administration Manual.

Removed Previous Section 21.15, References. References are included in the body of the document instead.

Updated references to the www.dot.ny.gov and provided active links.

Scale references provided in dual formats, and modified where necessary.

Incorporated guidance from EI 10-040 Permission to Perform Contract Work on Private Land.

Appendices

Eliminated Appendices C, D, E, F in favor of providing the information with online references.

Introduction

Updated $ threshold for applying guidance for contracts involving construction or alteration of buildings. (Revised Wick’s Law).

Proposal Only Contracts

Added guidance on proposal preparation and what project are appropriate for proposal only contracts.

Contracts With Plans

Added guidance from EI 08-001 for incorporating professional seals into contract plans.

Added additional/revised guidance from EI 08-002 on standard plan and proposal sheets.

Revised Guidance for Plan Sheet Preparation – Sign Location Plan, Sign Data Sheet and Pavement Marking Plans.
Added guidance for determining what method of terrain data collection was used for establishing the original ground.

Preliminary Information Section 21.3.2

Items were added to the list.

Accuracy and Rounding Section 21.3.3.1

Changed the title of the Section and the Table. Profile data in the table changed. Angular Accuracy was changed.

Preliminary Design Section 21.3.4.

New Subsection Added for clarity

Preliminary Plans for Design Approval Documents Section 21.3.5.1

This section has been reorganized along with Section 21.3.9.2F and 21.3.9.2N for consistency and clarity.

Typical Sections Section 21.3.5.3

Removed the requirement that Design Approval Document – Typical Sections have non technical labeling.

Cross Sections Section 21.3.6

Section Rewritten to reflect “electronic” world. Plot info modified.

Plan Sheet Format Section 21.3.7.1

Revised the sheet cell drawing to move the violation note to the body of the sheet from the margin, and to match the sheet cell(s) now provided in the sheet cell library. Added language to reference State Education law and added information about revisions that do not require an “altered by” professional seal.

Advance Detail Plans(ADPs) Section 21.3.8

Additional guidance added to this section, Added Section 21.3.8.1 Preparation for Handoff to Construction.

04/13/2011
Changes to Chapter 21

Organization and Sealing Section 21.3.9.1

Added Erosion control Sheets and Survey Control sheets to Table 21-5 Sheets Requiring Professional Seals and the Order of Sheets. Excluded seal requirement for Releases to Perform Contract Work on Private Land.

Guidance for Plan Sheet Preparation Section 21.3.9.2

Revisions made to:
A. 5 Signatures Additional Guidance provided for requiring local government signatures on the Plan title sheet. Also requirement was added to list the inability to obtain local government signature in the PS&E transmittal memo

J. Plan and Table of Highway Maintenance Jurisdiction,
K. Miscellaneous Tables
M. Earthwork Summary Sheets (Notes referring to Stripping/Storing Topsoil tables have also been added to the Earthwork Summary sheets in the sheet cell library)
P. General Plans
Q. Profiles,
R. Signs and Sign Structures

Specifications Section 21.4

Defined “Inactive Specification”. Removed references to a shell file for creating a special specification.

Format Section 21.4.1

Added a list of the major sections of the Standard Specifications.

Added examples to illustrate Serialized and “Tablized” item numbers modified example.

A.2 Modified “words to avoid”, A4 removed info pertaining to precast items, A6 added additional guidance on Method of Measurement, A7 modified Basis of Payment and added guidance for Special Considerations, C2 updated link.

Added new guidance for formatting Drawings Associated with Special Specifications

Removed Section 21.4.1.1 H Item Numbers and Trns*port – Trouble shooting.

Specification Considerations and Provisions Section 21.4.1.2

Guidance for Proprietary Specifications, Experimental Specifications and Inactive Specifications has been added as per clearance review on unissued EI

Abbreviated the Section on Warranty clauses and strongly discouraged the use of these clauses.
Changes to Chapter 21

Specification Review
Section 21.4.2
Specifications to be Considered for All Contracts
Section 21.4.3

Added a requirement for completing a “Status of Special Specifications Table” with the PS&E submittal, for all projects that have special specs (other than “general” special specifications).

Guidance regarding Field Change Order Section 697 and Price Adjustments Section 698 has been revised per EI 07-024.

Design Guidance for Section 637 – Engineer’s Field Office, Laboratory and Equipment has been revised per EI 06-021.

Guidance regarding Engineer’s Field Office, Laboratory and Equipment Section 637 has been revised per EI -08-010.

Guidance regarding Engineer’s Field Office, Laboratory and Equipment Section 637 has been revised per EI -10-035.

Design Guidance for CPM Scheduling per EI 04-043 has been included.

Guidance regarding Training Requirements Section has been revised per EI 06-019.

Guidance on Mobilization has been revised.

Pay Item Catalog
Section 21.4.4

Removed sentence about special specifications that affect bridge structures.

Clarified the difference between “proprietary reference” “proprietary item” and “proprietary product.”

Modified language to be consistent with the new Web based version of the Pay Item Catalog.

Special Notes
Section 21.5.2

Restricted use of Specialty Items to an exception basis only.

The information about a special note to identify non-Restricted Highways was eliminated.

Estimate
Section 21.6

Reorganized for clarity.

04/13/2011
Added guidance on Contingency Factors for Project Development Estimates, added info on inflation, modified.

Added guidance on Quantity Computations,

Added guidance on Estimating Item Prices

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<th>Standard Sheets</th>
<th>Explanation of the relationship between Standard Sheets, pages, and revision date has been added. Eliminated sentence about effective date. Provided guidance on modifying details on standard sheets.</th>
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<th>Updated the list of information (and corresponding form CONR9) to reflect the electronic formats that information is currently produced and maintained in. Added new column. Added guidance on the format of the CD/DVD.</th>
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<th>PS&amp;E</th>
<th>Added new guidance on Additional Insureds</th>
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Eliminated Forms C114-1 (EE Title Sheet), AD-102f (Project Description for Newspaper Use), and TE 200c (Traffic Signal
Changes to Chapter 21

Equipment).

Additional guidance for Engineer’s Estimate submittal.

Added guidance for electronic distribution of PS&E Transmittal Memo.

Revised the guidance for the PS&E transmittal memo (also revised).

Amendments
Section 21.10
Revised per EI 10-036 Electronic Plans, Specifications & Estimate (PS&E) and Amendment Submissions.

A section has been added for guidance on amending the proposal.

Tables have been modified for communicating Pay Item changes to the PS&E Unit.

Prebid Questions
Section 21.11
Revises procedures for prebid questions to be addressed by the Regional Contact listed on Page 1 of the proposal.

Project Letting and Reletting
Section 21.12
Revised to more accurately reflect current practice.

Design Data to be Supplied to Construction
Section 21.13
Formalized the transfer of data from Design to Construction with the requirement for a Handoff Memo that summarizes the data that is being conveyed. Provides more detail and more current guidance for what should be conveyed and gives a link to the new Handoff Memo Shell.

Updated to require info that exists but was not supplied to bidders be handed off to Construction. Encouraged site walkthrough for Design and Construction personnel.

Guidance for archiving project data into ProjectWise (at this point in the project) has been added.

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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 (8½” 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”, 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” x 11” 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”, 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 particular 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 particular 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

<table>
<thead>
<tr>
<th>Construction is not Permanent* Proposal Only Contract is Appropriate</th>
<th>Construction is Permanent* Proposal Only Contract is not Appropriate</th>
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<tr>
<td>Guide rail maintenance (replacement in kind-isolated sections)</td>
<td>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.</td>
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<td>Ground mounted signs</td>
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<td>Single Course Overlay (2” maximum thickness)</td>
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<td>Crack/joint sealing</td>
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<td>Bridge washing, Bridge painting, Deck Sealing, Approach Slab Replacement in kind</td>
<td>Bridge rehabilitation work.</td>
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<td>Curb and curb ramp replacement in kind, Sidewalk replacement in kind</td>
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<td>Ditch Cleaning, Mowing, Tree Cutting/Tree Removal, Misc. Clean-up, Ice jam removal</td>
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<td>Sweeping Contracts</td>
<td>Embankment stabilization, rockslope remediation, and river restoration projects.</td>
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*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 sheet containing the appropriate professional seal (engineer/land surveyor or landscape architect) and violation note is required for Proposal Only Contracts. The sealed and signed sheet covers all 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. They can be downloaded through LANDesk (on the Department’s network) by downloading the CADD Resources and Settings Package (Department staff) or by choosing CADD Settings/Resource Files from www.dot.ny.gov (for consultants).

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.

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”.

When necessary, Earthwork Definitions Sheets, and Earthwork Summary Sheet, should be provided as discussed in HDM Chapter 9 Section 9.7.1.

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 part of the contract when specifically included by reference. They 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. 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.

04/13/2011
• 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, digital terrain models (DTMs), hydraulic cross sections, and orthoimagery. When a project requires base mapping, it also requires a DTM. 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 Digital Terrain Model (DTM)**

An original ground digital terrain model is a triangulated 3D surface in InRoads DTM format. The original ground DTM, along with the photogrammetric base mapping, define the existing project area terrain upon which the new, proposed project features are designed. The digital terrain model is the source for the development of project alignments, typical sections, cross sections, quantities, and 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
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, DTMs, 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, DTMs, 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 DTMs are compiled following Chapter 20 CADD Standards and Procedures and the Specifications for Photogrammetric Stereocompilation. For orthoimagery, photogrammetry must be requested for the mapping, DTM, 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 DTMs are merged with the field survey mapping and DTMs 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 DTM. 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 DTM is contingent on the terrain data accuracy. The DTM 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 DTM surface 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 \(^1,2\)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Obtained by Field Survey</th>
<th>Obtained by Photogrammetry</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Horizontal (ft)</td>
<td>Vertical (ft)</td>
</tr>
<tr>
<td>Points (Door Sills, corner of frames &amp; grates)</td>
<td>0.1</td>
<td>0.15</td>
</tr>
<tr>
<td>Structures (Buildings, Walls, Bridges, Culverts)</td>
<td>0.25</td>
<td>0.15</td>
</tr>
<tr>
<td>Hard Paved Surfaces (Driveways, Roadways, Sidewalks)</td>
<td>0.25</td>
<td>0.15</td>
</tr>
<tr>
<td>Underground Features (Drainage Lines, Utilities Mains)</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Graded Areas (Lawns, Gravel Drives)</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Sparsely Vegetated Natural Areas (Open Fields)</td>
<td>1.5</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**Notes:**
1. The accuracy of terrain data is the difference between a location on the DTM surface and the actual location of that point.
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CONTRACT PLANS, SPECIFICATIONS AND ESTIMATE

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 DTMs 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. DTMs 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 TEM) These studies generally require base mapping and DTMs 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

<table>
<thead>
<tr>
<th>Project Work Type (PDM Appendix 5)</th>
<th>Terrain Data Deliverables$^1$</th>
<th>Typical Mapping Width$^5$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Related Work</td>
<td>Base Mapping &amp; DTM (may be required)</td>
<td>Determine on a project by project basis</td>
</tr>
<tr>
<td>Pavement Preventive and Corrective Maintenance (e.g., 1R Projects)</td>
<td>No Base Mapping$^2$ or DTM</td>
<td>N/A$^4,7$</td>
</tr>
<tr>
<td>Resurfacing, Restoration &amp; Rehabilitation (2R/3R)</td>
<td>Base Mapping$^6$ &amp; DTM</td>
<td>Map to front of buildings or to limit of expected work.</td>
</tr>
<tr>
<td>Reconstruction &amp; New Construction</td>
<td>Base Mapping$^5$ &amp; DTM</td>
<td>Map to rear of buildings or to limit of expected work.</td>
</tr>
<tr>
<td>Minor Intersection Reconstruction</td>
<td>No Base Mapping$^2$ or DTM</td>
<td>N/A</td>
</tr>
<tr>
<td>Major Intersection Reconstruction</td>
<td>Base Mapping$^5$ &amp; DTM</td>
<td>Map to front of buildings or to limit of expected work.</td>
</tr>
<tr>
<td>Preventive &amp; Corrective Bridge Maintenance</td>
<td>No Base Mapping$^2$ or DTM</td>
<td>N/A</td>
</tr>
<tr>
<td>Minor Bridge Rehabilitation</td>
<td>No Base Mapping$^2$ or DTM</td>
<td>N/A$^4$</td>
</tr>
<tr>
<td>Major Bridge Rehabilitation</td>
<td>Base Mapping$^6$, DTM &amp; HCS$^3$</td>
<td>Map to front of buildings or to limit of expected work.</td>
</tr>
<tr>
<td>New &amp; Replacement Bridges</td>
<td>Base Mapping$^7$, DTM &amp; HCS$^4$</td>
<td>Map to rear of buildings or to limit of expected work.</td>
</tr>
<tr>
<td>Other Projects and Miscellaneous/ Special Projects</td>
<td>Determine on a project by project basis</td>
<td>Determine on a project by project basis</td>
</tr>
</tbody>
</table>

**Notes:**

1. The base mapping and DTMs 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 DTMs 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 DTM's from field survey generally include feature annotation from the original survey. Photogrammetric Mapping or DTM products generally require field editing to add or clarify feature information. The field editing is generally completed after the project mapping or DTM 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 DTM 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 MicroStation files and/or InRoads DTMs.

21.3.3 Design Data

Design data (for example CADD information from Microstation DGN and InRoads DTM, ALG, and XML formats) is 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 in Microstation and InRoads) are able to determine the accuracy of the original ground terrain data based on the method of collection. The method of collection is shown on the tags in the InRoads Surface 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 Rounding

<table>
<thead>
<tr>
<th>Element</th>
<th>Dimension (value shown on plan is rounded to the nearest decimal indicated)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Control</strong></td>
<td></td>
</tr>
<tr>
<td>Horizontal Alignments</td>
<td>0.01 ft</td>
</tr>
<tr>
<td>Distances</td>
<td>0.01 ft</td>
</tr>
<tr>
<td>Angles</td>
<td>0°-00'-01&quot;</td>
</tr>
<tr>
<td><strong>Topography</strong></td>
<td></td>
</tr>
<tr>
<td>Station</td>
<td>0.1 ft</td>
</tr>
<tr>
<td>Offset</td>
<td>0.1 ft</td>
</tr>
<tr>
<td>Bearings</td>
<td>0°-00'-10&quot;</td>
</tr>
<tr>
<td><strong>Reference Points</strong></td>
<td></td>
</tr>
<tr>
<td>Station</td>
<td>0.01 ft</td>
</tr>
<tr>
<td>Ties</td>
<td>0.01 ft</td>
</tr>
<tr>
<td><strong>Bench Marks</strong></td>
<td></td>
</tr>
<tr>
<td>Station</td>
<td>0.1 ft</td>
</tr>
<tr>
<td>Offset</td>
<td>0.1 ft</td>
</tr>
<tr>
<td>Elevation</td>
<td>0.01 ft</td>
</tr>
<tr>
<td><strong>Profile</strong></td>
<td></td>
</tr>
<tr>
<td>P.V.I. Stations</td>
<td>0.01 ft</td>
</tr>
<tr>
<td>P.V.I. Elevations</td>
<td>0.01 ft</td>
</tr>
<tr>
<td>Rate of Grade</td>
<td>0.01%</td>
</tr>
<tr>
<td>Length of Vertical Curve</td>
<td>10 ft</td>
</tr>
<tr>
<td>Stopping Sight Distance &amp; Headlight Sight Distance</td>
<td>5 ft</td>
</tr>
<tr>
<td>Drainage Structures/ Pipe Invert Elevations</td>
<td>0.01 ft</td>
</tr>
<tr>
<td><strong>Subsurface Exploration</strong></td>
<td></td>
</tr>
<tr>
<td>Station</td>
<td>0.1 ft</td>
</tr>
<tr>
<td>Offset</td>
<td>0.1 ft</td>
</tr>
</tbody>
</table>

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 particulars 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 “mathemetize” all alignments in InRoads. This should be done if there is a particular 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, imported from the DTM 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. InRoads 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. (Printouts for each curve should be added to the project files.) Next, calculate the rate, and build transitions in InRoads using the calculated rate. See Inroads training courses for additional guidance on superelevation.

Roadways should be modeled with transition control lines (features) displayed. The features should then be copied into a final DTM 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 one DTM during final design. Features can be edited inside the DTM using Surface> Edit Surface commands.

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 stormwater 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 added to the non-triangulated existing features DTM, and added to cross section sets using the Evaluation > Cross Sections > Update Cross Sections command in InRoads as soon as the information is available.

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 InRoads DTM.

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 added to the non-triangulated features DTM. Wetland boundaries should be displayed using the appropriate linestyle 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, stormwater management features, streets and roads, including their names with routes and state highway numbers and their 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.

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. Location of intersections and ramp take-offs.

3. Existing and proposed drainage and utility facility crossings.

4. Bridge(s).

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.
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 9k. (Supplemental Information for 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
- Non-Triangulated Features - Existing ground data and proposed data, including, but not limited to:
  - Highway Boundary/ROW - Right-of-way lines, property lines, easements.
  - 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 InRoads digital terrain model (.dtm) and Microstation 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 available through LANDesk (on the Department’s network) by downloading the CADD Resources and Settings Package (Department staff) or by accessing the CADD Settings on www.dot.ny.gov (for Consultants).

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

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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.
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 they are 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. 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-Buillets.

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.

8. County. The fifth line is provided to list the applicable counties. If there is more than one county, the county line should read “various”.

9. PIN.

10. 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).

11. 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).


14. Drawing Name

15. Structure over the Feature Crossed

16. Region Number.

17. 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.

18. Contract D number. The contract number should be requested in writing (e-mail) from the PS&E Section of the Design Quality Assurance Bureau (DQAB) 4-6 weeks prior to PS&E submission to allow time for placement on the contract Plan Sheets. This request should include the project identification number (PIN), letting date, advertisement length, approximate number of plan sheets, approximate engineer’s estimate and the approval status of all special specifications requiring DQAB approval. (see Status of Special Specifications Table)
15. Predominant Dimension Note. For 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 MicroStation 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.

Shading of work zones or other areas on the plan sheets should be avoided due to legibility issues when printed drawings are reproduced. Similarly, using grey lines or small symbols should be avoided due to legibility.

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

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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 InRoads 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. As 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 MicroStation’s Accudraw. MicroStation’s automatic dimensioning 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.

21.3.8 **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 FHWA¹, the Thruway Authority², Main Office functional advisory units, and Local 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.

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.

¹ ADP’s 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 ADP’s 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 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.

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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
- 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 a completed Estimate of Quantities Sheet(s)
- 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.

Estimate
- A current estimated construction cost (include 5-10% contingency)
- All items that will be contained in the contract, including their titles and unit price estimates*, should be identified. This is with recognition that item changes may occur based on ADP comments.
  (*Price estimates for lump sum items need not be finalized)
- Quantities should be estimated but need not be finalized.

Environmental
- A draft of the Environmental Commitments and Obligations Package (ECOPAC) for the project, completed as much as possible.

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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 ECOPAC 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 particular 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; 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.
Table 21-5 Sheets Requiring Professional Seals and the Order of Sheets

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

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. 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 Geneseo 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. 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). A co-approval signature by the Regional Design Engineer is also required 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. Additionally, 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 blocks not used should be removed from the title sheet.

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 (Example: Structures designed by ). 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.

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.

Obtaining contract title sheet signature(s) of approval from local government chief executive(s) (Mayor, Town Supervisor, and/or County Executive) 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

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.

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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.

If for some reason a required local official signature cannot be obtained by the Region, it should be noted in Item 15, Incomplete Items, of the PS&E Transmittal Memo. Lack of a required signature may jeopardize contract advertisement, letting, and award.

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).

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.cell library) for projects receiving GreenLITES.
Certification should be placed in the lower left box labeled “Area for GreenLITES cell certification.”

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. The list of standard sheets which are applicable to items of work in the contract should be placed on the Index and Abbreviations Sheet. The list of all approved Standard Sheets is provided as a cell.

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.

H. Work Zone Traffic Control (WZTC) Plan

This section of the plans should include plans, profiles and typical sections of detours, staging plans, construction signs, channelization, temporary barriers, temporary pavement markings, temporary signals, work site access, temporary drainage, traffic control plan notes, temporary sidewalks and driveways, special traffic control plan sheets for structures, and any other WZTC information. Information shown on the Standard Sheets should not be repeated on the plans. Refer to Chapter 16 of this manual for guidance regarding this section of the plans and to the 619 Series Standard Sheets.

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 should show contract information which may not be shown elsewhere on the plans, or data which may be conveniently summarized to show proposed contract item use. The
CONTRACT PLANS, SPECIFICATIONS AND ESTIMATE

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Tables listed below are commonly used; working copies of most tables can be obtained from the tables cell library (ny_detail_tables.cel). Particular contracts may warrant additional tables.

1. Road Alignment Data - Show 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 (yd², 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, offset.
   • 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. Removal of Structures and Obstructions. Show location, side, description.
6. Cold Milling. Show location, length, width, and depth.
7. 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.
8. Underdrain. Show location, side, and outlet.
9. Guide Rail, Median Barrier, and End Assemblies. Show item number, location, length, payment factor and payment length (in accordance with applicable specification).
10. Highway Barricade. Show item number, location and length.
11. Fence. Show location, and side.
12. Driveways.
13. Curb. Show item no., location and side.
15. Mailboxes. Show location, side, and quantity.
17. Planting. Show item number, symbology and/or the abbreviation of the plant, plant name, and quantity.
18. Bank and Channel Protection. Show location, side, length, width, and depth.
19. Paved Gutters. Show location, side, and length.
20. Delineators. Show location, side, color, spacing.
23. Utility Specials (water and sanitary lines, etc.). Show item number, location and length.
25. Ditches.
26. Property Releases: Show purpose of the release, property owner, and date release was obtained.
27. 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”.

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 CADD Standards and Procedures 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.

M. Earthwork Summary Sheets

These sheets, located in the nyu_sheet.cell library are required for most projects with items 203.02, 203.03, 206.02, and/or 206.04 in the Engineer's Estimate. Refer to Chapter 9, Section 9.8.1 of this manual for guidance regarding preparing these sheets.

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).
CONTRACT PLANS, SPECIFICATIONS AND ESTIMATE

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.

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
CONTRACT PLANS, SPECIFICATIONS AND ESTIMATE

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

10. 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.

11. 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.


13. 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 (with the exception of 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’.

14. 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.

15. 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.

16. 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.

17. Access to properties where existing road is abandoned.

18. Grading limits - toe and top of slopes.

19. Location of subsurface explorations, limits of unsuitable material to be removed, and special soils treatments.

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• 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.

20. Buildings to be removed.

Q. Profile (e.g., 1:480'H (1"=40'), 1:96V (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 Drawing Utility Tool Box > Place Scale Bar.

2. Annotation. Display curve information with the InRoads View Vertical Annotation command. 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 generated using Inroads commands.

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:

   ![L](image)

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

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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

<table>
<thead>
<tr>
<th>DESIGNATION &amp; COLOR (SEE NOTE 2)</th>
<th>LOCATION</th>
<th>TEXT</th>
<th>ITEM</th>
<th>SIZE AREA (SEE NOTE 3)</th>
<th>PAYMENT AREA AREA (SEE NOTE 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1-1</td>
<td>2-13, 2-16, 2-34, 2-35</td>
<td>STOP</td>
<td>645.5202</td>
<td>30 x 30</td>
<td>6.3 SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.2 SF</td>
<td>25.2 SF</td>
</tr>
<tr>
<td>M6-1 WHITE ON BLUE</td>
<td>2-2, 2-19, 2-11</td>
<td>←</td>
<td>645.5102</td>
<td>21 x 15</td>
<td>2.2 SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.2 SF</td>
<td>6.6 SF</td>
</tr>
<tr>
<td>M6-1 WHITE ON GREEN</td>
<td>2-11, 2-29, 2-2, 2-11, 2-17A, 2-19</td>
<td>←</td>
<td>645.5102</td>
<td>21 x 15</td>
<td>2.2 SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.2 SF</td>
<td>13.2 SF</td>
</tr>
</tbody>
</table>

* Number of locations

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.

Guidance 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 spanwire, 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 stand alone 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. An example note to be included on the Plans is as follows:

Underground utilities known on this project:

* Waterlines: Sta. 0+035 lt. - Sta. 1+030 lt.= QLA; Sta. 1+030 lt.-Sta. 2+035, lt.=QLC; etc.

* Sanitary Sewers: (Town) Sta. 5+020 rt.-7+090, rt.=QLD; (City) Sta. 7+090 rt. - Sta. 9+015 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.

**AA. Estimate of Quantities Sheet(s)**

The Estimate of Quantities Sheet(s) shall be prepared by DQAB for all projects. DQAB will add the estimate of quantities plan sheet(s) utilizing the Engineer's Estimate provided at the time of Final PS&E submission. To determine how many sheets will be needed to accommodate the estimate of quantities, use an estimate of 60 items per sheet. Regions shall include these sheets in the index and count them in the tally of total number of sheets shown on the index.

### 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.

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).

• Inactive – Previously approved Special Specification Items (including serialized numbers) that have not seen a single usage in the past five calendar years. Special Specifications with an “inactive” status need to be re-approved for project use (Section 21.4.2.3G)

• 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 refer to the link for Main Office Program Area on the IntraDot to determine the appropriate coordinator to contact if questions arise during specification use or development. Consultants should contact the regional project liason 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.

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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 whether or not 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. (ie. 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:

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 Trns-port; 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 604.32XXXYY  Rectangular Drainage Structure with Concrete Cap

Rectangular Drainage Structure with Concrete Cap 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 - the inside width and length dimensions, and the YY digits allow the designer to specify the particulars of the concrete cap (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 Trns-port. 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

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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.

<table>
<thead>
<tr>
<th>Words to Avoid</th>
<th>Recommended alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>furnishing</td>
<td>furnish</td>
</tr>
<tr>
<td>installing</td>
<td>install</td>
</tr>
<tr>
<td>transporting</td>
<td>transport</td>
</tr>
<tr>
<td>relocating</td>
<td>relocate</td>
</tr>
<tr>
<td>permanent</td>
<td>–</td>
</tr>
<tr>
<td>complete</td>
<td>–</td>
</tr>
<tr>
<td>removal of existing</td>
<td>remove</td>
</tr>
<tr>
<td>new</td>
<td>–</td>
</tr>
</tbody>
</table>

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:

  Cast-In Place Concrete-Class A 501-2
  Frames and Grates 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:

<table>
<thead>
<tr>
<th>AA Splice Plate</th>
<th>Corner Splice Plate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufactured by</td>
<td>Manufactured By</td>
</tr>
<tr>
<td>Big Steel Company</td>
<td>Best Steel</td>
</tr>
<tr>
<td>12 Allen St.</td>
<td>Box 223</td>
</tr>
<tr>
<td>Troy, NY 11111</td>
<td>Albany, NY 22222</td>
</tr>
</tbody>
</table>

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, Barrel, Board Feet, Calendar Day, Cubic Feet, Crew Day, Calendar Week, Cubic Yard, Cubic Yard Mile, Day, Dollars and Cents, Each, Each Pair, Each Intersection, Each Location, Gallon, Hour, Inch, Intersection Month, Pound, Linear Feet, Lane Mile Calendar Day, Lane Mile, Lump Sum, Light Day, Thousand Board Feet, Thousand Gallon, Mile, Thousand Linear Feet, Month, Percent, Pressure Distributor Day, Quality Unit, Square Feet, Site, Square Yard, Thousand Man Hour, Ton Mile, Tons, Unit Month, Vehicle Calendar Week, 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 603 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 sections...
CONTRACT PLANS, SPECIFICATIONS AND ESTIMATE

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 603.05020007 Round Corrugated Steel Pipe (1.5” x 0.5”, 6” diameter, 16 gage) with End Plugs

All the provisions of Section 603 pertaining to Round Corrugated Steel Pipe shall apply, and in addition the Contractor shall plug each end of the pipe with standard galvanized steel end plugs.

The cost of furnishing and installing the end plugs shall be included in the price bid for this item.

Example 2. (Do not use this Method)

ITEM 603.05020007 Round Corrugated Steel Pipe (1.5” x 0.5”, 6” diameter, 16 gage) with End Plugs

The standard specifications for Item 603.0502 shall apply, and in addition the Contractor shall plug each end of the pipe with standard galvanized steel end plugs.

The cost of furnishing and installing the end plugs shall be included in the price bid for this item.

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

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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.XXXXXXX03). X XXXXXs 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 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 Trns-Port 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.

The diagram on the following page 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

Note 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.

Note 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.

Note 3. Paragraph format. Paragraphs should be block format (not indented) and text should be left justified.

Note 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\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.


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 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.

4. Use and approval is documented in the PS&E transmittal memo.

Refer to the Federal-Aid Policy Guide (FAPG) 23 CFR 140I for requirements pertaining to

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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 manufacturer's 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 not acceptable:

- 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.
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). To have the new specification, or revised standard specification, become part of the contract documents, a copy of the new or revised standard specification must be inserted directly into the contract proposal. DQAB will take this action when the corresponding item number appears in the Engineer’s Estimate for the project.

Approximately every five years, the Standard Specifications are published in a bound volume with all of the interim changes included.

At times within the five years, interim specifications may be collected and issued as Addenda to the specifications. Then the Addenda may be included in the contracts by reference. This cuts down on the volume of specifications that must be inserted directly into proposals.

Note: “Unofficial “Updated Standard Specifications” are posted 3 times per year on www.dot.ny.gov, for informational purposes only. They are the current version of the bound Standard Specifications, modified with officially issued changes.

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-G provide guidance on the process, based on the type of Special Specification.

Each section A-G 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 Dept. personnel) pertaining to Special Specifications can be found on the 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 TRNS-PORT. 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 Instruction. After approval and issuance, DQAB will post the specification, and enter the pay item number into TRNS-PORT. New Special Specifications prepared by the Main Office will normally be designated as General in the ID column of the Pay 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 approved for use by the Regional Special Specifications Coordinator and the Main Office program area responsible for that item. It is not necessary to email a copy of the Existing PIN ONLY specification when requesting approval. A link to the specification is sufficient. (Special Specifications reside on www.dot.ny.gov)

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 Standards’ 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 Inactive Specifications

“Inactive Specifications” are Special Specification Items (including serialized numbers) that have not seen a single usage in the previous five years. Because availability and appropriateness may have changed during that period, specifications flagged as inactive will require approval before they may be included in a project.

Note: Regions will be given advance notice of specifications that are scheduled to become inactive. A list of these specifications will be generated each December, and with no objection from the Regions, will become inactive the following March. Inactive items will not appear in the TrnsPort Estimator catalog, but will appear in the Pay Item Catalog database marked as “Inactive”.

An inactive specification may be reactivated (approved) with proper justification. When requesting reactivation, established procedures for existing PINONLY Special Specifications shall be followed.

After approval by the MO program area, DQAB S&S Section will remove the “inactive” status from the specification in the Pay Item Catalog, update the Trns-port Estimator catalog, and advise the Region that the item is available.

The Status of Special Specifications Table should be completed for each project containing inactive special specifications that are being reactivated. The completed table should be submitted to DQAB’s PS&E Section with the PS&E transmittal memo.

21.4.3 Specifications to be Considered for All Contracts

21.4.3.1 Mobilization

The estimate for all projects (except specialty contracts for plumbing; heating, ventilating and air conditioning; electrical work, or to Job-Order, Where and When, and Work Order Contracts) shall include the pay item 699.040001 for mobilization. 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 (usually 4%).

21.4.3.2 Training Requirements

For contracts with an Engineers Estimate of $5 million or more, Designers shall include special specification 691.03000020, subject to concurrence of the Regional Construction Engineer.
For contracts with an Engineers Estimate between $1 million and $5 million, Designers shall confer with the Regional Construction Group to determine if special specification 691.03000020 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 691.03000020 Training Requirements should be estimated as 1,000 (the unit price for a Dollars-cents item is $1.00) placed in the largest dollar value engineering share.

21.4.3.3 Field Change Payment

The Field Change Payment 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 only, and does not indicate an authorization for extra work. Contract Pay Item 697.03 Field Change Payment shall be specified consistent with the applicability criteria provided in Table 21-7.

<table>
<thead>
<tr>
<th>Applicability Criteria</th>
<th>Include / Do not Include</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projects for which there is little or no opportunity for use regardless of cost (e.g., single-payment contracts; response contracts, including standby and where and when contracts; force account based contracts; lump sum only contracts, including bridge washing; etc.); and projects with an Engineer's Estimate less than $100,000.</td>
<td>Do not Include</td>
</tr>
<tr>
<td>All projects with an Engineer's Estimate greater than or equal to $100,000, except as listed above.</td>
<td>Include</td>
</tr>
</tbody>
</table>

The quantity for this item shall be determined as a function of the Engineer’s Estimate (EE) as shown in Table 21-8. The quantity should then be distributed over all the engineering shares proportionally based on the cost of each share. [FCP Cost x (Engineering Share Cost / EE Eligible Items)]. Any engineering share value of less than $20,000 need not include the FCP item. The Field Change Payment item has a Dollars-Cents pay unit, where the number of dollars is entered as the quantity, and the price is fixed as $1.00.
Table 21-8 Estimating Item 697.03 Field Change Payment

<table>
<thead>
<tr>
<th>*Engineer's Estimate (EE Eligible Items)</th>
<th>Item 697.03 Quantity (FCP Cost)</th>
<th>Quantity Rounding</th>
<th>Price (Fixed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.1 M to $5.0 M</td>
<td>0.05 x EE</td>
<td>Nearest 1,000</td>
<td>$1.00</td>
</tr>
<tr>
<td>$5.0 M to $10.0 M</td>
<td>250,000 + 0.04 x (EE - 5.0 M)</td>
<td>Nearest 10,000</td>
<td>$1.00</td>
</tr>
<tr>
<td>$10.0 M to $25.0 M</td>
<td>450,000 + 0.03 x (EE - 10.0 M)</td>
<td>Nearest 10,000</td>
<td>$1.00</td>
</tr>
<tr>
<td>$25.0 M to $155.0 M</td>
<td>900,000 + 0.02 x (EE - 25.0 M)</td>
<td>Nearest 10,000</td>
<td>$1.00</td>
</tr>
<tr>
<td>$155.0 M and Above</td>
<td>3,500,000</td>
<td>None</td>
<td>$1.00</td>
</tr>
</tbody>
</table>

* Items to be excluded from the FCP calculation: Mobilization and Time Related Contract Provisions (e.g., incentive/disincentive, lane rental or similar items).

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.

Due to the difficulty in estimating the amount needed in each contract, NYSDOT only includes a nominal amount of funds in the original contract for each item and makes adjustments based on market conditions using the change order process. The following amounts shall be included in each contract:

- Asphalt Price Adjustment – estimated quantity of 100 at a fixed price of $1.00 = $100.
- Fuel Price Adjustment – estimated quantity of 100 at a fixed price of $1.00 = $100.
- Steel/Iron Price Adjustment – estimated quantity of 100 at a fixed price of $1.00 = $100.

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 100 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, Communications, 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. Communications

Standard Specifications Section 637 contains several communication equipment pay items (Mobile telephone, Pager, and Two Way Radio System) for which the actual quantity of equipment units to be provided are not defined on the Estimate of Quantities sheets of the contract proposal. Therefore, the actual quantity of equipment units to be provided should be identified in a Proposal Special Note entitled “Section 637 Pay Item Quantities” as shown below. If the “Number of Units to be included in the Contract” is zero for any of the items, either do not include the item in the note, or place a “0” in the column so that its omission will not appear to be an oversight.
B.1 Mobile Telephone(s) A mobile telephone should typically be supplied for each member of the inspection staff without a state issued mobile telephone.

B.2 Pager(s) When the Regional Construction Group indicates that a mobile phone is not necessary for each person assigned to the contract, yet there is a need for providing a method of contacting personnel over long distances or from off-site or non-Department sources, pagers should be included in the contract.

B.3 Two-Way Radio System If there is inadequate mobile telephone service, then the two-way radio system contract pay item can be used to provide the on-site communications system. Only the necessary components of the Two-way Radio System should be specified (example: just the handheld radios). The Special Note shown below “Section 637 Pay Item Quantities” should be used to specify the individual number of base stations, in-vehicle radios and handheld radios to be provided.

**Figure 21-3 Special Note Section 637 Pay Item Quantities**

<table>
<thead>
<tr>
<th>Pay Item Description</th>
<th>Pay Item #</th>
<th>Number of Units to be included in Contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Telephone</td>
<td>637.21</td>
<td></td>
</tr>
<tr>
<td>Pager</td>
<td>637.22</td>
<td></td>
</tr>
<tr>
<td>Two-Way Radio System</td>
<td>637.23</td>
<td>Base Stations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In-Vehicle Radios</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Handheld Radios</td>
</tr>
</tbody>
</table>

C. Miscellaneous Devices

C.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.
D. Inspection and Testing

D.1 Inspection Vehicle Contractor-provided inspection vehicles are typically included only when State-provided vehicles will be unavailable or are incapable of providing the necessary services.

D.2 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.

D.3 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.

D.4 Concrete Cylinder Curing Box Contracts that will have structural concrete (bridge, major culvert, etc.) poured on-site should typically include the concrete cylinder curing box 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.

E. Contract Administration

E.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.

E.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.

E.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 equation for cost estimation purposes when using a CPM scheduling item in the Engineer's Estimate:

\[
\text{Estimated CPM Scheduling Cost} = 10,000 + \left(0.0005 \times \text{Total Engineer's Estimate} \times \text{number of Monthly Progress Schedule submissions required}\right)
\]

(Note: Round the estimated cost to the nearest $1,000)

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. (DOT personnel see Deadlines.)

The following information is contained in the Pay Item Catalog:

1. Item Number - Item Number is discussed in section 21.4.1.1.A1.
2. Link to the Bid Price History Data
3. Approval Status – information regarding the approval status of the pay item number. It would be "GENERAL", "PINONLY", "INACTIVE", or "DISAPRV".
4. Special Specification Indicator - If the Specification is a Special Specification, it is noted with a check mark.
5. Effective Date – date the current Approval Status was effective (except Inactive Specifications)
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. Links to the Special Specification Document and to the issuing EI.
8. 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

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uploaded to Trns•port PES.

7. 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 statements contained in the General
  Provisions (Section 100) of the Standard Specifications (see US Customary 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.

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21.5.2 **Special Notes Commonly Prepared By The Region**

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.

- Special Note pertaining to Section 637 Items. (see Section 21.4.3.5)

- Others, based on contract requirements. For example:

  1. Projects subject to a State Pollutant Discharge Elimination System (SPDES) permit 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 as discussed in Appendix 21A.

  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 A02-1-8 (see [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 Intradot site.

Special notes applicable to bridge projects are discussed in Section 17 of the [Bridge Manual](#) (see [Bridge Manual](#)).

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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.

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.

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. 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, and the basic steps in any risk management process should be followed when


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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.

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 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

<table>
<thead>
<tr>
<th>PROJECT PHASE</th>
<th>CONTINGENCY FACTOR RANGE % of Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPP</td>
<td>25-40</td>
</tr>
<tr>
<td>SCOPING</td>
<td>20-25</td>
</tr>
<tr>
<td>Design Phase 1 to Design Approval</td>
<td>15-20</td>
</tr>
<tr>
<td>ADP</td>
<td>5-10</td>
</tr>
</tbody>
</table>

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 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 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 needs to first perform a risk analysis in order to establish the contingency. Estimators 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’s focus needs to be on arriving at the most probable cost of the project. It is imperative that the estimator 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 (Intradot Link-NYSDOT personnel only, Internet Link) and all contingencies should be sufficiently detailed and managed.

21.6.2 Estimating Programs

The Department uses transportation software, Trns•port, 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.

Consultants shall prepare and submit cost estimates to the NYSDOT project manager in accordance with Consultant Instruction 03-04, “Requirements to Use Trans•port Estimator Program for Preparing and Submitting Engineer’s Estimates”.

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

Additional information regarding Trns•Port Estimator is available through the Department’s website.

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 determining whether funds are available to build the project, a basis for reviewing bids to determine whether contracts should be awarded, and a format for charging costs to appropriate fund sources.

21.6.3.1 Quantity Work-ups

Quantity work-ups are an important source of information. They are needed to prepare the estimate, are useful to contractors during bid preparation, and are useful for the construction contractor, subcontractors, EIC and staff during construction. The EIC and staff use quantity work-ups to control project expenditures and to avoid costly orders on contract (OOC) and/or
field change payments. Quantity work-ups confirm the intent of the designer regarding the pay limits of work for each item in the contract. Designers are encouraged to provide quantity work-ups as part of Supplemental Information Available to Bidders.

Quantity work-ups can be completed using hand written computation sheets, electronically through spreadsheets, or by capturing electronic engineering data through the use of CADD or related software. Quantity work-ups for a given project can be developed using one or more of these mediums, but the final version should be combined into one file (.pdf recommended). 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.

Regardless of the medium used to compute overall quantities for any project, the estimator, at a minimum, should include the following information for each item of work.

- PIN, BIN or CIN if available, work location, estimator & checker initials and date(s).
- Item number, description & unit of measurement.
- Sketch(s) and/or reference(s) to plan sheet(s)/details in the plans, page(s) in the proposal, and quantities derived from design programs (Noting that area is “derived from CADD” is not sufficient information for a quantity work-up in the absence of a corresponding sketch). A quantity should not be calculated for extremely complicated areas, lengths, or volumes, etc. directly. Rather, subtotals for smaller, simpler areas should be provided, as well as a reasonable explanation and level of detail as to how the quantities were arrived at.
- Quantity computations for each individual engineering share with subtotal and total amounts.

A. Mediums to complete Quantity Work-ups

The medium(s) that the estimator chooses to complete the quantity work-up will depend on the project work type, extent of the work and software used during design. It would be more conducive to complete hand written computations and/or spreadsheets on projects that use a minimum number of items of work, have short project limits or limited work locations. For more complex projects that use CADD or related design software, quantities can often be derived automatically using special features of the software. In these instances, copies of the output sheets should be made available for documenting quantity work-ups.

1. Design Detail Computation Sheet (Form DIST 22)
   Hand written computations performed to establish an item quantity estimate should be made on form DIST 22 (commonly called “comp. sheets” or “work-up sheets”). In addition, this form should be used to perform the computations leading up to the cost estimate for lump sum items, and fixed price items. The estimator shall complete the upper right hand corner of the form (sheet no., date, etc.). An item quantity estimate that requires more than one sheet should contain the total quantity on the first sheet, with reference to the other work-up sheets for detailed computation. Individual item
quantity computations should be organized by share on the sheet. Tabulate, in a section preceding all the sheets, the total contract quantity of every item, with reference to the item work-up sheets where estimation is shown.

2. Spread Sheets Review and Approval of Existing PIN ONLY Special Specifications
MS Excel Spread sheets 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 Trns*port Estimator that will automatically generate the pricing information. Refer to the NYSDOT Trns*port Estimator Guidelines and Chapter 8 of the Trns*port Estimator Users Guide for further instructions.

3. Microstation Inroads Quantity Manager
Surfaces that are modeled in INROADS or drawings created in 2d or 3d are a source of Electronic Engineering Data that can be used to generate quantities in an XML file format that also can be exported/imported into Trns*port Estimator. Users of this CAD software can seamlessly generate quantities through Quantity Manager, and as the design of the project evolves the quantities in the XML file are updated accordingly. Guidance on the use of this software is available through the Engineering Technology Section of the Design Quality Assurance Bureau.

4. 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 recommended that the designer list the items of work at the bottom of each plan sheet corresponding to the tables, sections and details shown. The estimator 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.

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For rehabilitation projects, designers should be aware of ever-degrading field conditions that occur over time. This can change the quantities and limits of work and in some cases the scope of work for a project. Designers/estimators 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.

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 to have a good working knowledge of construction methods and equipment. Also the estimator 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 historical 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 historical 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 Trns*Port Estimator bid history catalog, Weighted average bid price data, Bid tabulation reports produced by Trns*Port LAS and the Historical bid price listing. The Regional Estimate Engineer should be consulted for pricing information and insight into current price trends.

B. Adjusting Estimates for Inflation

After an estimate is completed to reflect current year dollars, the estimator 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 mid point 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

Unless otherwise instructed by an Engineering Instruction or other Sections within the HDM, the cost of all lump sum items shall be determined using a labor, material and equipment price analysis. Lump sum price analyses shall be kept separate from the quantity work-ups for other unit price items. For projects that require FHWA PS&E approval, the lump sum price analyses shall be submitted to DQAB with the PS&E.

Lump sum items involve 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 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 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% NHS, 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 NHS funds (80% NHS, 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. To code these items in Trns*Port Estimator the first two characters of the item alternate code specify the alternate set and the third character indicates the choice within the set. If alternate bid items are included in the estimate, the designer must "code" these items — AAA for Alternate A (which should be clearly identified in the plans and should be the lowest cost option) or AAB for Alternate B (also identified in the plans). A 99 suffix and explanatory special note can also be used to account for additional quantities of an item included in an alternate.

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

**Figure 21-4 Sample Alternate Bid Special Note**

<table>
<thead>
<tr>
<th>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 of 99 to facilitate the bidding process.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ALTERNATE AA – PAVEMENT ALTERNATE DESIGN</strong></td>
</tr>
<tr>
<td>The Contractor will have the choice of bidding one of two alternates for replacing the full depth concrete panels.</td>
</tr>
<tr>
<td><strong>ALTERNATE AAA</strong></td>
</tr>
<tr>
<td>ITEM 202.97000099 – PAVEMENT REMOVAL</td>
</tr>
<tr>
<td>ITEM 502.0039 – PORTLAND CEMENT CONCRETE PAVEMENT, UNREINFORCED, NONPROFILOGRAPHED, HES, FRICTION TYPE 9</td>
</tr>
<tr>
<td>OR</td>
</tr>
<tr>
<td><strong>ALTERNATE AAB</strong></td>
</tr>
<tr>
<td>ITEM 18502.3101 – FULL DEPTH PORTLAND CEMENT CONCRETE (PCC) LIFT OUT</td>
</tr>
<tr>
<td>ITEM 502.01000091 – INSTALLATION OF PRECAST CONCRETE HIGHWAY PAVEMENT SLABS</td>
</tr>
<tr>
<td>The Contractor must bid on all alternate AAA items or all alternate AAB items.</td>
</tr>
<tr>
<td>NOTE: Item 202.97000099 represents the additional pavement removal required under alternate AAA. Whenever this item appears in the contract, the provisions of specification pay item 202.97000001 shall apply.</td>
</tr>
</tbody>
</table>

**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, Design Estimators 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.

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. 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. As previously stated in Section 21.3.9.2 B, Standard Sheets which are applicable to those items of work in the contract shall be listed on the contract plans Index and Abbreviations Sheet. 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 instances where a detail from the standard sheet is being modified for project specific reasons, there should be no reference to the standard sheet on the Index and Abbreviations 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.

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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

Form CONR 9 - Supplemental Information Available to Bidders, shall be completed and submitted with the PS&E materials for all projects. Project designers should assess pertinent data used during design for individual projects. 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 preferred format for all Supplemental Information Available to Bidders. Documents shall be named intuitively or in accordance with Appendix 14 of the Project Development Manual. The Supplemental Information shall be supplied on CD or DVD media, and the completed CONR 9 should be included on the CD/DVD. Hyperlinks from the text in the Information Column on the CONR 9 form, to the appropriate document or folder on the CD/DVD, should be provided. A document offering guidance on the preparation of a hyperlinked CONR 9 is available on the “Tools You Can Use” page of the PS&E Section’s Intradot site. Alternatively, a document that correlates the information listed on the CONR 9 with the file names stored on the CD/DVD may be provided. In either case, the user of the Supplemental Information Available to Bidders should be able to easily find the particular information he/she is looking for on the CD/DVD.

21.8.1 Conveying Supplemental Information to Prospective Bidders

Traditionally, Supplemental Information is made available for review and sale only at the Regional Office during the project advertisement period, either on CD/DVD and/or hard copy. Bidders requesting hard copies of information listed as being available should be charged consistent with PUB1, Sale of Printed Material and Services. Bidders requesting a CD/DVD should be charged in accordance with guidance provided by the Contract Management Bureau.

Alternatively, the Supplemental Information may be made available to bidders with the bid documents, both on the bid document CD that is available for sale at MO and Regional Plan Sales Offices and through Bid Express, the subscription-based service. For this to occur, the Supplemental Information must be submitted electronically with the remainder of the PS&E materials. Advance arrangements must be made with the PS&E Section to accommodate conveyance of the Supplemental Information in this manner. A revised CONR 9 form and Special Note are highly recommended.
21.8.2 Content of Supplemental Information listed on CONR 9 Form

The information covered by the CONR 9 is summarized below:

1. Applicable Asbestos Blanket Variances and/or Asbestos Reports may be provided in Adobe PDF format.

2. CADD Information in MicroStation DGN and InRoads (DTM, ALG, XML) format. CADD information in MicroStation format shall include all documents containing contract plan sheets (cph and cpb document categories- see Table 14-2 Project Development Manual) and their associated reference documents (map and fea document categories). CADD information in InRoads DTM format shall include the original ground DTM, the finished grade DTM, subgrade DTM, and the proposed nontriangulated features DTM; this information should also be made available in XML format. CADD information in InRoads ALG format shall include the survey baseline, existing highway boundary lines, proposed ROW lines, and project horizontal and vertical control; this information should also be made available in XML format.

3. Cross Sections should be provided in Adobe PDF format and prepared in accordance with the guidance in Section 21.3.5.

4. Quantity Work-ups. Quantity work-ups provided as supplemental information should be provided in accordance with the guidance in Section 21.6.3.2, and 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.

If Quantity work-ups for all pay items (other than lump sum items) will not be made available, indicate such on the CONR 9, and specify which quantity work-ups will be available. Drainage Item work-ups, Earthwork Item work-ups, and Utility Item work-ups are among the most useful to bidders.

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

5. Record Plans. If Record Plans are checked as available, the contract numbers should be included on the form. In addition, consideration should be given to indicating the sheet numbers of interest associated with the record plans contract. Most Record Plans are available electronically on the P drive at: P:\Record Plans

6. Rock cores. Rock Samples (i.e., cores) obtained for the project should be available for inspection. Rock cores are not available for sale.

7. Sign Face Layouts in Adobe PDF format. Sign Face Layouts are drawn to scale and fully dimensioned.

8. Stormwater Pollution Prevention Plan in Adobe PDF format.

9. Subsurface Information. Subsurface information, if prepared for the project, will be provided to the Designer by the Geotechnical Engineer. For example:
a. Subsurface Exploration Logs, with soil sample descriptions.
b. Undisturbed Sample Logs, with soil sample descriptions.
c. Laboratory Test Data from Soil Samples (This data may be in summary form or included on the logs described above.)
d. Tabulated Results of Probing
e. Tabulated Depth to Bedrock as determined by geophysical investigations (seismic).
f. Rock Core Evaluation Logs
g. Compression Test Data from Rock Samples
h. Rock Outcrop Maps
i. Granular Materials Resource Survey Reports
j. Terrain Reconnaissance Reports

10. Subsurface Information, Other Information.
   a. Pertinent subsurface information or data obtained from sources outside the Department and used in the design of the project.
   b. Information pertaining to sources of granular material and aggregates.
   c. Special reports, drawings and documents that contain subsurface information or data pertinent to the construction of the project.

The above information that are in readily reproducible form can be sold to bidders, unless the proprietary rights of others prohibit such sale. Subsurface information included under 9 and 10 shall be sold in complete sets, that is, a complete set of bridge logs, a complete set of highway logs or both sets together.

11. 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.

12. Special Reports or Other Information. Examples of information which shall be made available include:
   a. The results from analytical testing procedures used for environmental sampling in hazardous waste and contaminated materials assessments.
   b. 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.)
   c. Design Approval Document (DAD) and related information (e.g. all documents and information included in appendices).
   d. Other pertinent information assimilated into the design which can aid the contractor in evaluating costs and methods of construction (e.g., the Environmental Commitments & Obligations Package (ECOPAC) for Construction form).
   e. Survey Control Report in Adobe PDF format.
21.9 PS&E SUBMISSIONS

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 the Project 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, 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 Trns*port PES.

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 at dot.dl.pse.section.

21.9.1 Deadlines

The Project Management Bureau issues the Department’s bid opening schedule annually. The schedule is posted on the DQAB PS&E Section’s Intradot site. 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.
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CONTRACT PLANS, SPECIFICATIONS AND ESTIMATE

2. Proposal materials (See Section 21.9.2.2)
3. Supporting materials for project processing (See Section 21.9.2.3)
4. Engineer’s Estimate (uploaded to Trns*port PES, see Section 21.9.2.4)
5. 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 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.

Separate subfolders for Plans, Proposal Materials, 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, be sure to follow the below best practices:

- Set the scanner for 300 to 600 LPI Resolution.
- Conduct a test scan using BITMAP mode. If the quality is not acceptable, change to Grayscale mode.
- Avoid RGB mode or any color scanning mode.

Projects with 200 total plan sheets or less should be submitted as a single pdf file named: Dnnnnnn_R#_Plans.pdf.

Projects with greater than 200 total plan sheets must be submitted as two or more pdf files, with no file containing greater than 200 plan sheets. Designers should choose a natural break point.

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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,

Where “Dnnnnnn” is the contract number, “R#” is a two-digit number representing the Region (i.e., “01”, etc.), and “VolXofY” indicates 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 synch.

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.

Proposal materials provided by the Region include the following:

- Signed Title Page (for proposal only projects) submitted as a pdf file named: Dnnnnnn_R#_Title Page.pdf
- Professional Seal and Violation Note Page (for proposal only projects) submitted as a pdf file named: Dnnnnnn_R#_ProfSeal.pdf
- Additional Location Map(s) (for proposal only projects, if necessary) submitted as a single pdf file named: Dnnnnnn_R#_LocationMap.pdf
- Earthwork Definitions and Earthwork Summary Sheet (for proposal only projects, as discussed in HDM Section 21.2.1) submitted as a single pdf file named: Dnnnnnn_R#_Earthwork Summary Sheets.pdf
- Project Detail Sheets (for proposal only projects, if appropriate as discussed in HDM Section 21.2.1) submitted as a single pdf file named: Dnnnnnn_R#_Project Details.pdf
Special Notes (discussed in Section 21.5). All Regional Special Notes shall be submitted in .pdf format either in one .pdf file containing all special notes or in separate .pdf files for each special note.
Dnnnnnnn_R#_Special Notes.pdf

Special Specifications (discussed in Section 21.4). Each separate Special Specification shall be submitted as a separate pdf file. A Special Specifications subfolder should be created within the Proposal Materials folder.

Form CONR 9 Supplemental Information Available to Bidders (discussed in Section 21.8), submitted as a pdf file named:
Dnnnnnnn_R#_CONR9.pdf.

Railroad Agreement (if required and available), submitted as a pdf file named:
Dnnnnnnn_R#_RR Agreement.pdf

Listing of Additional Insured Parties (discussed below) submitted as a pdf file named:
Dnnnnnnn_R#_Additional Insureds.pdf

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.

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) in which 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. The listing of Additional Insureds should also include the following statements:

“Coverage must also be provided for any consultant inspecting engineer or inspector (and their agents) working for or on the project”, and;

“The above listing supplements Section 107-06 INSURANCE of the Standard Specifications.”

For emergency contracts or other contracts where the precise location(s) and impact(s) of the contract work is not known at the time of the PS&E submission, the listing of Additional Insured Parties should include any known entities in accordance with the above guidance. In addition, for these types of contracts, the listing of Additional Insured Parties should include the following statement:

“As the location(s) of work becomes known, the Engineer-In-Charge will call for the addition of Additional Insured Parties to the contractor’s insurance requirements as specified in Section 107-06 A.4. of the Standard Specifications.”
21.9.2.3 Supporting Materials for Project Processing

Supporting Materials for Project Processing shall be submitted in file formats as indicated below. Supporting Materials may include the following:

- **ROW Certificate and any accompanying materials** (See Section 21.9.2.5.B, Content of PS&E Transmittal Memo, for additional information), submitted as a single pdf file named: Dnnnnnnn_R#_ROWCert.pdf

- **ECOPAC**, submitted as a single pdf file named: Dnnnnnnn_R#_ECOPAC.pdf

- **Status of Special Specifications Table**, submitted as an Excel file named: Dnnnnnnn_R#_SpecialSpecStatus.xls

- **GreenLITES Scorecard** (required for all projects other than emergency standby, where and when, or job order contracts), submitted as an Excel file named: Dnnnnnnn_R#_GreenLITESScorecard.xls

- **Request for Change in Goals Form**, HC 258 (only when a change from the assigned goal(s) is being requested, see Section 21.9.2.5.B Content of PS&E Transmittal Memo for additional information), submitted as a pdf file named: Dnnnnnnn_R#_HC258.pdf

- **Lump Sum Price Analyses** – The computations performed to estimate the cost and quantity for lump sum items (only required for projects requiring FHWA PS&E approval). These should be submitted as a single pdf file named: Dnnnnnnn_R#_LS Price Analyses.pdf

- **Betterment Work Sheets** – Work sheets used in determining how to allocate project costs between funding shares when a betterment is provided, see Section 21.6.3.6 (only required for projects requiring FHWA PS&E approval). These should be submitted as a single pdf file named: Dnnnnnnn_R#_Betterment Sheets.pdf

- **Resolutions and/or Agreements** – Required executed resolutions and/or agreements, as determined by the Region, should be submitted as separate pdf files with intuitive naming conventions, for example: Dnnnnnnn_R#_Village of Hoosick Falls_Lighting Resolution.pdf

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21.9.2.4 Engineer’s Estimate Submittal

The Region shall upload the Engineer’s Estimate to the Trns-port Proposal & Estimates System (PES), run several quality control processes to ensure the estimate is ready for submittal, and enter several key data components to the project in PES prior to providing e-mail notification of the availability of the PS&E materials. These steps are explained in further detail at the “Tools You Can Use” page of the PS&E Section Intradot Site.

21.9.2.5 PS&E Transmittal Memo

The PS&E transmittal memo formally transmits the project from the Region to the Main Office to prepare for advertisement and letting. It should be prepared by the functional group responsible for the design and forwarded by the project manager via the Regional Planning and Program Manager (RPPM) to the Regional Director for signature. The RPPM’s recommendation denotes administrative approval of the project (i.e., it is consistent with the Region’s program). The Regional Director’s signature constitutes the Region’s recommendation to proceed to contract advertisement and letting.

The PS&E transmittal memo informs various groups that the PS&E is being submitted, and 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. Guidance and requirements regarding the distribution and content of the PS&E transmittal memo are provided in Sections A and B on the following pages.

The PS&E Transmittal Memo shall be submitted as a pdf file named: Dnnnnnnn_R#_PSE Transmittal Memo.pdf

A. Notification of Availability of PS&E Transmittal Memo and PS&E Materials

After the plans, proposal 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 Trns*port PES; a notification e-mail should be sent from the Region to DQAB’s PS&E Section and appropriate MO Functional Units.

The e-mail should come from the individual responsible for submitting the PS&E, and be addressed to DQAB’s PS&E Section at dot.dl.PSE.Section. It should include the PIN, D# and a brief project description. The e-mail should also provide a hyperlink to the path to the PS&E Transmittal Memo and PS&E materials available on the “P” drive. Regional notification of the availability of the PS&E Transmittal Memo and materials may also be built into this process.
Main Office Functional Units must be copied on the notification e-mail as indicated below:

<table>
<thead>
<tr>
<th>Main Office Functional Unit</th>
<th>Outlook Group Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>DQAB PS&amp;E Section</td>
<td>dot.dl.PSE.Section</td>
</tr>
<tr>
<td>(All Projects)</td>
<td></td>
</tr>
<tr>
<td>Project Management Bureau</td>
<td>dot.dl.Project.Mgmt</td>
</tr>
<tr>
<td>(All Projects)</td>
<td></td>
</tr>
<tr>
<td>Office of Construction</td>
<td>dot.sm.mo.construction</td>
</tr>
<tr>
<td>(All Projects)</td>
<td></td>
</tr>
<tr>
<td>Contract Management Bureau</td>
<td>dot.dl.PSE.contracts</td>
</tr>
<tr>
<td>(All Projects)</td>
<td></td>
</tr>
<tr>
<td>Geotechnical Engineering Bureau</td>
<td>dot.dl.mo.Geotech</td>
</tr>
<tr>
<td>(All Projects)</td>
<td></td>
</tr>
<tr>
<td>Office of Right of Way</td>
<td>dot.dl.RE.programming</td>
</tr>
<tr>
<td>(All Projects)</td>
<td></td>
</tr>
<tr>
<td>Statewide Policy Bureau</td>
<td>dot.sm.mo.green.lites</td>
</tr>
<tr>
<td>(All Projects)</td>
<td></td>
</tr>
<tr>
<td>Office of Environment</td>
<td>dot.dl.MO.Landscape.Architecture.REL</td>
</tr>
<tr>
<td>(All Projects)</td>
<td></td>
</tr>
<tr>
<td>DQAB DSS, Rail Agreements Unit</td>
<td>dot.dl.MO.Rail.Agreements.Unit</td>
</tr>
<tr>
<td>(Projects Involving Railroads)</td>
<td></td>
</tr>
<tr>
<td>Office of Structures</td>
<td>dot.dl.Structures.PSE.Review</td>
</tr>
<tr>
<td>(Projects Involving Bridges)</td>
<td></td>
</tr>
<tr>
<td>Office of Traffic Safety and Mobility</td>
<td>dot.dl.MO.Traffic.Safety&amp;Mobility</td>
</tr>
<tr>
<td>(Projects Involving Safety Programs, Intersection Improvements, and Intelligent Transportation Systems)</td>
<td></td>
</tr>
<tr>
<td>Office of Transportation System Maint.</td>
<td>dot.sm.mo.transportation.maintenance</td>
</tr>
<tr>
<td>(Projects Involving Pavement and/or Bridge Preventive Maintenance)</td>
<td></td>
</tr>
</tbody>
</table>

B. Content of PS&E Transmittal Memo.
The PS&E Transmittal Memo, in addition to transmitting the PS&E to DQAB, conveys information regarding the project’s status (i.e., information to support advertisement, letting, and award) to groups within the Department and outside agencies.

The latest PS&E Transmittal Memo shell is available on both the Department's Internet and the PS&E Section's Intradot sites. The shell contains sample statements for the various items. Additional guidance on completing the shell appears as redlined text. Redlined and bracketed letters “[A]”, “[B]”, etc. contain alternate responses from which one must be chosen. All redlined text should be deleted from the final version of the memo. Designers should always download the most recent version of the memo.

General guidance on addressing the information required in the PS&E Transmittal Memo is provided below. The item numbers correspond to those in the shell.

At the beginning of 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.

B.1 PS&E Materials  Indicate that the Engineer’s Estimate has been uploaded to Trns*port PES. List the Engineer’s Estimate Total, Specification Year/Units, Number of Engineering Shares, and Number of Items.

List all files that have been posted to the “P” Drive.

The notification e-mail should not be sent until the Engineer’s Estimate has been uploaded and all files have been posted.

B.2 Project Description  The Project Description is useful to all recipients of the PS&E Transmittal Memo as a general reference, and should be particularly useful to the Regional Public Information Officer and Regional Construction staff. In addition, the information provided is used by DQAB’s PS&E Section to request wage rates, prepare the newspaper advertisement, and enter the project into the Record Plans database.

   a. Route Number(s) (State Highway Number(s)). Each Route (e.g., I 90, US 9W, NY 155, etc.) and corresponding State Highway Number that the project includes work on should be listed. For Region- or County-wide projects, emergency standby projects, job order contracts, etc., “various” is an appropriate response.

   b. Counties. List all counties in which contract work will be performed.

   c. Categories of Work. List the main categories of work that are included in the contract, such as drainage installation, pavement resurfacing, sidewalk
installation, bridge rehabilitation, and so on. This information is useful for both obtaining wage rates from the Department of Labor and analyzing the D/M/WBE goals, if applicable.

d. Project Limits. Using familiar local points/crossroads, describe the work begin and end points. This item will not be applicable for some projects.

e. Project Length. State approximate (within 0.1 mile) centerline length of the project, if available, for general reference purposes.

f. Roadway Improvements. The intent of this item is to highlight improvements that will be included in the project, such as adding a turning lane, widening or reconstructing the shoulders, replacing or adding closed drainage, adding sidewalk and/or curbs, and so on.

g. Structure Improvements. Again, the intent is to highlight improvements, such as replacing the structural deck, replacing the bridge rail, joints, substructure components, and so on. The BIN for each structure being worked on should be listed. For bridge rehabilitation or replacement projects, the Bridge Type (e.g., multigirder) should be listed for inclusion in the advertisement.

h. Other Public Benefits/Noteworthy Features. Other features not described above, such as a new off-street parking lot, access modifications, pocket parks, and so on. In general, things that the media, public, or Department management would be interested to know are part of your project.

i. Traffic Management Plan. As brief a description as possible. Indicate whether lane closures are expected, or if a detour will be in effect. For complex, multi-phase projects, a statement to that effect with a reference to the plans will suffice.

j. Special Required Contract Provisions. Indicate whether the project includes alternate bidding, night work, or any time related or other special contract provisions. This information is important to prospective bidders and will be highlighted in the advertisement for the contract.

k. General Project Description. Write a short sentence or paragraph that describes the project in terms understandable to the general public.

B.3 Agency Coordination List agencies directly involved in construction, maintenance, or ownership of the project, and state that the Region has provided them with a copy of the plans and other project documents as appropriate.

B.4 Project Work Type State the project work type per Appendix 5 of the Project Development Manual. If the project is a Pavement or Bridge Preventive/Corrective Maintenance project, additional information is required as explained in the PS&E Transmittal Memo shell. This information is tracked by the Office of Transportation Maintenance.

B.5 Previous Letting(s) If the project is being relet, indicate previous Contract D number and letting date(s). Also indicate why the project is being relet (i.e. all bids were rejected or
no bids were received).

B.6 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.7 Construction Inspection State whether inspection of construction will be performed by State or consultant forces.

B.8 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.

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 contract construction issues and D/M/WBE goals.

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 Director of the
Audit and Civil Rights Division shall 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 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.

B.9 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.

B.10 Design Approval State the type of Design Approval Document used, the date of design approval, and who granted design approval. List any non-standard feature approvals since design approval was granted.

B.11 Priority Award State if a priority award is being requested, and if so, state why. A priority award refers to shortening the duration between project letting and award. The duration is reduced from the usual 45 days maximum to 22 days maximum. (Reference Manual of Administrative Procedures, Code 7.1-7).

B.12 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

<table>
<thead>
<tr>
<th>News Ad Length (weeks)</th>
<th>Project Parameters</th>
</tr>
</thead>
</table>
| 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. |

**Note.** 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.

B.13 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.

B.13.a 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).

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 Right of Way on Capital Projects”.

B.13.b 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). Also state the type (automatic, programmatic, or categorical exclusion with documentation).
   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.
   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.

B.13.c 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.

B.13.d **Resolutions/Agreements** List all municipal resolutions and agreements required for the project, and the status of their transmittal to DQAB’s PS&E Section.

B.13.e **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.

B.13.f **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.

B.14 **Disadvantaged/Minority/Women’s Business Enterprise 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 Chapter 21 website.

For 100% state-funded projects, provide the appropriate Contract Group Type # and corresponding Minority Business Enterprise (MBE) and Women’s Business Enterprise (WBE) goals for the project. Indicate if a change to the Department’s assigned goals are being requested (see discussion below). As with DBE goals, the procedural steps and tables for M/WBE goals are available through the Chapter 21 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 Civil Rights may have an interest in increasing D/M/WBE participation on any given project.

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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 Civil Rights.

Changes in the Department’s assigned goals must be initiated using form HC-258, Request for Change in Goal(s). The signed form should be posted with the PS&E materials. The specific reason(s) for the request must be stated on the signed form.

DQAB’s PS&E Section will coordinate the review of the Request for Change in Goal(s) with the Office of Construction and the Office of Civil Rights. The request will be approved, modified, or denied after both Offices have reviewed the request. The PS&E Section will inform the Region of the decision and resultant goal(s).

B.15 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.

B.16 Contact Persons. List the names and telephone numbers of a primary and secondary contact for the PS&E Submission, as well as the Program Area (e.g., Regional Design Group) responsible for the PS&E. The primary contact person and telephone number will be listed as the Regional Contact for project-related technical questions or comments on page 1 of the contract proposal.

B.17 Regional Planning and Program Management. The designer should obtain the RPPM’s signature prior to forwarding the PS&E Transmittal Memo to the Regional Director’s office. The RPPM’s signature assures the Regional Director that the project is consistent with the Region’s program.
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). Changes after PS&E submission should NOT be placed in the PS&E Transmittals folder on the “P” drive. Changes after PS&E submission may require preparation of an amendment, as discussed in the following section.

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 highway letting schedule, available on the PS&E Section’s Intradot page. As noted on the letting 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.

“Extensive” and “minor” changes are defined as follows:

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 Regional PS&E Submission Report for the appropriate Region from the PS&E Section’s Intradot page.) 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). It is recommended to conduct a test scan using BITMAP mode. If the quality is not acceptable, change to Grayscale Mode. RGB mode or any color scanning mode should be avoided.
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.

- The Amendment Transmittal Memo shall be prepared as outlined in Section 21.10.6.

- 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 21.10.7.

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 Section’s Intradot 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.

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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:
  
  Dnnnnnnn_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 21.10.7). 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 21.10.7).

- 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 Trns-port PES (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 as discussed in Tables 21-11a through 21-11e below. The tables presented are formatted to reduce the potential for errors and to facilitate data entry into Trns-port PES. They should not be combined into one table.

To assist with the preparation of the tables, an Excel worksheet (Pay Item Changes.xls) is available in the Amendment Generator files. Separate tabs titled DELETE, ADD, CHANGE (SAME SHARE), CHANGE (NEW SHARE), and UNIT PRICE CHANGES corresponding to Tables 21-11a thru 21-11e on the following page are contained within the worksheet.

Tables 21-11a thru 21-11e, as applicable, may be submitted as a single Excel file named:

Dnnnnnnn_A#_Pay Item Changes.xls
Table 21-11a thru Table 21-11e - Summary of Pay Item Changes

11a. Summarize pay item(s) to be deleted from the contract as follows:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Unit of Payment</th>
<th>Total Estimated Quantity</th>
<th>Quantity by Engineering Share</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11b. Summarize pay item(s) to be added to the contract as follows:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Unit of Payment</th>
<th>Unit Price</th>
<th>Total Estimated Quantity</th>
<th>Quantity by Engineering Share</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11c. Summarize changes in quantities to pay items already in the contract (within the same engineering share(s) as follows:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Unit of Payment</th>
<th>Total Estimated Quantity</th>
<th>Quantity by Engineering Share(s)</th>
<th>1, 2, 3, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Indicate no change (i.e., NC), if no change has been made to the share quantity from the original submission.
2. If deleting an item from a share, indicate this with (DEL).
3. Adding items already in the contract to additional shares is to be submitted in a separate table as noted in item 4 below.

11d. Summarize changes in quantities to pay items already in the contract (but not already in the engineering share(s) in question) as follows:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Unit of Payment</th>
<th>Unit Price</th>
<th>Total Estimated Quantity</th>
<th>Quantity by Engineering Share</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11e. Summarize unit price changes to pay items as follows:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Unit Price</th>
<th>Fixed Price Item (See Note 1)</th>
<th>Min/Max Item (See Note 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Indicate if the item is a Fixed Price Item by placing an “FP” in this column.
2. Indicate if the item is a Minimum or Maximum Item by placing either “Min” or “Max” in this column.
21.10.6 **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

21.10.7 **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 Trns-port PES. 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 21-5 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.
1. The letting for this contract has been rescheduled to **MONTH XX, 20XX**, and an amended Expedite file has been posted.

2. Bidders are authorized to change the cover of the Contract Proposal to read **LETTING OF MONTH XX, 20XX**

3. 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**.

4. Delete the following items:

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>UNIT</th>
<th>QUANTITY</th>
<th>CONTRACT PROPOSAL PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Bidder shall not enter a bid for these items. He/she 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.

5. Change the **ESTIMATE QUANTITIES** for the following items:

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>UNIT</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.
6. 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**

7. In the Contract Proposal on page ____, **Item XXXX.XXXX**, change the Fixed Price Amount Bid to $ ______.

8. Wherever in the Contract Plans or Proposal the old item listed below appears, the new item shall apply.

<table>
<thead>
<tr>
<th>OLD ITEM</th>
<th>NEW ITEM</th>
</tr>
</thead>
</table>

8. Plan sheet deletions/additions/replacements are summarized in the following table:

<table>
<thead>
<tr>
<th>Old Plan Sheet # (Replaced or Deleted Sheets Only)</th>
<th>New Plan Sheet #</th>
<th>Dwg. #</th>
<th>Description of Changes</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
</table>

9. Proposal page deletions/additions/replacements are summarized as follows:

10. Continue with additional statements to explain changes as necessary.

**PLEASE BE GOVERNED ACCORDINGLY WHEN SUBMITTING BIDS.**

21.11 **PREBID 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, except for project-related technical questions or
comments which may be directed to the Regional Contact listed on Page 1 of each proposal (the Regional Contact listed in the proposal will be the same individual as the Primary Contact provided in Item 16 of the PS&E Transmittal Memo). Any inquiries received by Department employees should be referred to either the listed Regional Contact or the Contract Management Bureau.

The Regional Contact may respond to technical inquiries informally over the telephone, as long as he or she has determined that the response will not provide the caller a competitive advantage over other prospective bidders. In all other circumstances, the Regional Contact should record the caller's name, number, and inquiry and indicate that they will return the call upon reviewing the inquiry. The Regional 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.

If the Region determines that the inquiry requires formal clarification, the Regional Contact should return the call and indicate that an amendment to the contract documents is necessary. They 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 Regional Contact should 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. It should be noted that all published amendments, including postponements, are available on the Department's internet site.

If the Region determines that the inquiry does not require formal clarification, the Regional Contact should return the call and indicate that the particular issue raised does not warrant an amendment to the contract documents, and the prospective bidder should prepare their bid based on the information in the contract documents.

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 Project Manager and Designer will prepare the Handoff Memo to the Engineer-in-Charge (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 EIC before the pre-construction meeting, with an electronic copy to the Construction Supervisor, the Design Supervisor, the Landscape Architecture/Environmental Science (LAES) job manager, the Work Zone Traffic Control representative and the Design Quality Control Engineer. Others may be included as electronic cc’s, as applicable. The Project Manager will update the stakeholder contacts list just prior to the handoff to construction.

The Handoff Memo to the Engineer-in-Charge includes conveyance of the following as appropriate for the project:

04/13/2011
A. The intent of the contract (i.e. what problems it is correcting).

B. Supplemental Information Available to Bidders (see Section 21.8 of this Chapter).

C. Additional Documents placed in the ProjectWise Construction Folder. 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. Any special issues or concerns discovered.

E. Status of Permission to Perform Work on Private Land for any work releases that are needed for the project.

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. Other information that the designer or the Project Manager feels is appropriate.

An example Handoff Memo to the Engineer-in-Charge 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 EIC 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 (see HDM Chapter 20), and Project Development Manual Appendix 14, the Regional Design Group shall work with the ProjectWise Data Manager to copy all information to be handed off to Construction to a ProjectWise folder named “Construction”, and provide the Regional Construction Group with ProjectWise access to data in that folder. Files supplied which are Supplemental Information Available to Bidders (see Section 21.8 of this Chapter) should be placed in a subfolder to the Construction Folder called “Supplemental Information Available to Bidders”. Files should be named in accordance with Section 5.1 of Appendix 14 of the PDM (see PDM App. 14).
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
APPENDIX A
PS&E PREPARATION FOR BUILDINGS ON STATE FINANCED CONTRACTS

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). 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. The OGS will bill the Department for permit, review, and inspection fees.

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.
### 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.
SPECIAL NOTE
Relationships Between General Building Contractor and Specialty Contractors
(continued)

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.
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. 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.
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 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.