



STATE OF NEW JERSEY

SCHOOLS DEVELOPMENT AUTHORITY

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NJSDA Design Manual for Design-Bid-Build Projects

Design Phase Deliverables and Submission Requirements

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NJSDA Design Manual for Design-Bid-Build Projects

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Design Deliverables and Submission Requirements

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1. General Submission Procedures

- 1.1 This Design Manual defines the minimum design deliverables and submission requirements for Authority projects being delivered through a Design-Bid-Build form of agreement. Design submissions shall demonstrate conformance with the requirements of all applicable NJSDA Design Standards and project requirements.
- 1.2 Design submissions shall be made in accordance with the approved Project Schedule. In general, all Design submissions shall be made in sufficient time to allow fourteen (14) calendar days for Authority review as well as sufficient time for revision, resubmission, and acceptance prior to any subsequent activities related to or dependent upon the submission.

2. General Submission Requirements

2.1 Transmittal

- A. Each design submission shall be accompanied by a transmittal sheet in a format acceptable to the Authority and listing the following information:
 - (1) Submission date.
 - (2) Name, title, firm name and address of sender and recipient.
 - (3) NJSDA Project number.
 - (4) Project School District.
 - (5) Project name.
 - (6) Document listing with exact name, date and number of copies for each document comprising the submission.
 - (7) Notes and comments.
 - (8) Copy recipients.

2.2 Design Submission Information

- A. Each design submission document (drawing sheet, specification book, report, etc.) shall include the following information:
 - (1) Names of the Project, School District, Construction Manager (if applicable), the Authority's package number and the Department of Education (DOE) project number.
 - (2) Name, address and telephone number of the Design Consultant.
 - (3) Name, address and telephone number of Design Subconsultant (if any) responsible for the document.
 - (4) Document name.
 - (5) Document number (if applicable).

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- (6) Submission block with the name of the submission or resubmission for which the document has been prepared, and the date of the submission.
 - (7) Revisions block with original document date, all previous revision date(s), and current revision date, with brief description of purpose of each revision.
 - (8) A space designated for the signature, raised seal, and printed name and license number of the registered professional responsible for the document.
- B. Design documents shall be organized into volumes in a logical manner acceptable to the Authority. Each drawing volume shall be post-bound with paper binding cover. Specification and report volumes shall be post-, comb- or wire-bound in a manner appropriate to the size and content of the volume.
- (1) Each drawing and specification volume shall include an index listing *all* drawing sheets or specification sections by volume.
- C. Revisions and Resubmissions
- (1) Unless otherwise directed, each design resubmission shall include all drawing sheets or specification sections included in the original submission.
 - (2) Each revision shall be “bubbled” or otherwise highlighted to indicate clearly the extent of the revision.
 - (a) Each revision bubble shall be tagged to a revision date as listed in the index and sheet revisions block.
 - (b) Where details, specification paragraphs or other information are deleted, *do not* remove the information from the document. Use strikethroughs, cross-outs or notations to indicate the extent of the deletion, while leaving the original information legible.
 - (3) The index of each submission volume and each subsequent resubmission shall include a table tracking each successive resubmission date for every drawing or specification section in the complete volume.
 - (4) Each report and similar resubmission document shall include on its cover a similar listing of each resubmission date for the document.
 - (5) Each paper resubmission shall include additional copies of the updated index sheet(s) or page(s) for insertion into all previous paper submission copies.

2.3 Design Submission Format Requirements

A. Drawing Sheet and Electronic File Identification

- (1) Drawing sheets and electronic files thereof shall be identified in accordance with the United States National CAD Standard (“NCS”), latest version.
- (2) Electronic drawing file identifiers shall be identical to drawing sheet numbers, followed by a brief sheet description and the submission date in YYMMDD format.
- (3) All other electronic files shall be named so as to be readily identifiable and end with current revision date, formatted YYMMDD.
- (4) File names of subsequent versions of electronic files shall be identical to the first version except for the date.

B. Drawings

- (1) Unless otherwise agreed to, all full-size drawings shall be submitted on consistent sheet sizes of Arch E1 (30" x 42").
- (2) Lettering shall be a minimum of 1/8" high.
- (3) Maintain consistent orientation of building between site and floor plans, with north up preferred, and consistent scale for each type of view.
- (4) Typical drawing scales are as follows, with modifications based on the size of the project and as needed to convey essential information:
 - (a) Site plans (all disciplines): 1" = 30'-0" or as otherwise appropriate to the size of the site.
 - (b) Overall floor plans: 1/16" = 1'-0" or as otherwise appropriate to the size of the project.
 - (c) Partial floor plans, roof plans, reflected ceiling plans (all disciplines): 1/8" = 1'-0".
 - (d) Enlarged floor plans for toilet rooms, elevators, stairs, ramps and other critical spaces: 1/4" = 1'-0".
 - (e) Overall exterior elevations: 1/16" = 1'-0" or as otherwise appropriate to the size of the project.
 - (f) Partial exterior elevations: 1/8" = 1'-0".
 - (g) Building sections: 1/8" = 1'-0".
 - (h) Wall sections, details and other drawings: Scale as appropriate to level of detail being portrayed.

- (5) Provide key drawings on each partial plan and elevation sheet to indicate each portion of project in relationship to the whole.
 - (6) Schedules may be included in drawings or specifications as appropriate to the information being conveyed.
 - C. Color renderings: Minimum size: 20" x 30", framed with matte and non-reflective glazing.
 - D. Interior finish color and material selection boards: Format appropriate to the materials and information being presented, but not larger than 24" x 36".
 - E. Specifications: 8½" x 11", utilizing the naming and numbering system of CSI MasterFormat 2014.
 - F. Other reports, including calculations, shall be 8½" x 11" with larger fold-outs as needed.
- 2.4 Electronic document submission requirements: In addition to required number and type of hard copy submissions, submit electronic copies in accordance with the following requirements.
 - A. Electronic file submission organization: Provide individual document files, in formats as described below, as well as composite copies of all final end-of-phase submissions in .pdf format, organized similar to submission organization.
 - B. Layering: File layers shall be organized and named in accordance with the NCS layering system.
 - C. Electronic File Formats
 - (1) Drawings: Provide electronic copies of all files in .dwg and .pdf formats.
 - (2) Other documents: Provide electronic copies of all documents in native application format (.docx, .xlsx, etc.) and in .pdf format.
 - D. When creating pdf files from within AutoCAD, be sure to disable the function that converts SHX text to comments in the pdf. Guidelines for disabling this function are available through Autodesk support.
 - E. Transmittal of electronic files shall be via FTP site or other means acceptable to the Authority.
- 2.5 Submission Quantity Requirements
 - A. Design Submissions
 - (1) Three complete, full-sized sets of all deliverables and two half-sized sets of all large-format deliverables.
 - (2) One complete electronic set of all submission documents.

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- B. Schematic and Final Educational Adequacy (FEA) submission, for review by the Authority prior to submission by the Authority to DOE.
 - (1) Three complete, full-sized sets of all deliverables and two half-sized sets of all large-format deliverables.
 - (2) One complete electronic set of all submission documents.
- C. Department of Community Affairs (DCA) plan review submission and resubmission(s), for review by the Authority prior to submission to DCA.
 - (1) Three complete, full-sized sets of all deliverables and two half-sized sets of all large-format deliverables.
 - (2) One complete electronic set of all submission documents.
- D. Approved DCA plan release (full or partial release, as applicable) and other agency approval submissions, conformed documents and as-built documents.
 - (1) Three complete, full-sized sets of all documents and two half-sized sets of all large-format documents.
 - (2) One complete electronic set of all submission documents.

3. Schematic Design Phase Submission Requirements

3.1 Drawings

- A. Cover Sheet(s)
 - (1) Name of Project, the Authority's package number, DOE number, location map, New Jersey State Seal and name of the Governor.
 - (2) Drawing index, legends, abbreviations and symbols.

3.2 Educational Specifications

- A. Educational Specifications in accordance with the requirements of N.J.A.C. 6A:26-5.2 and DOE requirements.
- B. In addition to the requirements of DOE and N.J.A.C. 6A:26-5.2, Educational Specifications shall include the following:
 - (1) A summary of the educational programs to be delivered in the proposed School Facility Project.
 - (2) A description of required parking, play areas, outdoor physical education facilities, and other required site facilities.
 - (3) A narrative description of the organization of the educational programs and the necessary organization of programmatic elements.
 - (4) An adjacency matrix indicating required and desirable adjacencies of all programmatic elements.
 - (5) A room finish schedule listing finishes for walls, floors and ceilings.

- 3.3 Schematic Design Drawings
 - A. Schematic Design drawings in accordance with the requirements of N.J.A.C. 6A:26-5.3 and DOE requirements.
 - B. Schematic building elevations.
 - C. Schematic building sections.
 - D. Schematic building three-dimensional view.
- 3.4 Any additional information provided to the New Jersey Department of Education (DOE) pursuant to its determination of educational adequacy.
- 3.5 Project Narrative
 - A. A written summary description of the proposed design's basic characteristics, materials and systems, organized in a manner consistent with CSI MasterFormat, identifying any proposed variances from SDA Materials and Systems Standards.
- 3.6 Other Schematic Design Documents
 - A. Schematic Design Construction Cost Estimate.
 - B. Project Schedule.
 - C. Copies of all transmittals and will-serve letters, approvals, review comments, and other regulatory correspondence pertaining to the design of the Project.
 - D. Final versions of any other studies or reports which were prepared during the Schematic Design Phase.

4. Design Development Phase Submission Requirements

- 4.1 Detailed Materials and Systems Review Report
- 4.2 Drawings
 - A. Cover Sheet(s)
 - (1) Name of Project, the Authority's package number, DOE number, location map, New Jersey State Seal and name of the Governor.
 - (2) Drawing index, legends, abbreviations and symbols.
 - (3) Rendering of project.
 - B. Sitework Drawings
 - (1) Boundary and topographic survey, updated as necessary.
 - (2) Utility survey, updated as necessary.
 - (3) Site logistics plan indicating location of temporary facilities for construction including site access, fencing, trailers, staging, lay-down, and storage areas.

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- (4) Site remediation, abatement, demolition and construction phasing drawings as applicable.
 - (5) Grading plan(s) indicating:
 - (a) Existing and proposed grades at 1-foot contour intervals, distinguishing visually between existing and proposed.
 - (b) Proposed spot elevations at all entrances, exits, and building corners, and on a 20-foot grid for parking lots and open areas.
 - (6) Site plan(s) showing size and location of all site improvements, including:
 - (a) All buildings and structures.
 - (b) Site ingress and egress.
 - (c) Site pedestrian and vehicular access, parking, barrier-free and emergency access, and other circulation improvements.
 - (d) Fencing, lighting, landscaping, site furniture and retaining walls.
 - (7) Site drainage plan showing storm water drainage, retention, detention, infiltration and any other above- or below-grade drainage systems and structures, with proposed elevations and inverts in plan and profile.
 - (8) Soil erosion and sediment control plan showing compliance with applicable codes and requirements during construction.
 - (9) Site utility plan showing location, inverts and sizing of all above- and below-grade utilities serving the building and site.
 - (10) Site plan demonstrating compliance with New Jersey's Best Practices Standards for Schools under Construction or Being Planned for Construction ("Best Practices") requirements.
 - (11) Typical site details for all site structures and improvements.
- C. Addition and Renovation Project Drawings
- (1) Building Survey, Inventory and Documentation information, updated as necessary.
 - (2) Selective Demolition Drawings
 - (a) Floor plans, elevations, sections, and other drawings as necessary to indicate the extent of selective demolition.
 - (b) Demolition phasing drawings if necessary to indicate extent of demolition impact on Project School District operations.

- D. Architectural Drawings
 - (1) Code Analysis Drawings
 - (a) Code analysis sheet(s) with the following information:
 - (i) List of applicable codes and standards, with issuance dates or versions.
 - (ii) Use groups and occupancies, by floor.
 - (iii) Special detailed code requirements based on use and occupancy.
 - (iv) Building height and area calculations, with comparison to code limitations.
 - (v) Type(s) of construction, with building element ratings and fire separation distances.
 - (vi) Fire and smoke protection features.
 - (vii) Listing of egress components with basis of code analysis information.
 - (viii) Key to symbols used in egress plans.
 - (ix) Plumbing fixture calculations.
 - (x) Notes and other information as necessary to describe the basis of code analysis for the project.
 - (b) Floor plans and other drawings as necessary to indicate the following information:
 - (i) Fire ratings for all rated building elements.
 - (ii) Space name, room number, net square feet, and calculated occupant load for every space.
 - (iii) Path of egress travel from every space to exit, with travel distance in feet.
 - (iv) Accumulated occupant load along each path of egress travel.
 - (v) Common paths of egress travel, with common path distance in feet.
 - (vi) Egress width, egress capacity, and design occupant load for every door, stair, or other egress component.
 - (vii) Project features to address the requirements of the New Jersey Best Practices document.

- (2) Floor plans indicating the following:
 - (a) Sufficient detail and dimensions, including net area of all rooms, so that critical dimensions, clearances, and relationships can be ascertained and confirmed.
 - (b) Wall, floor and shaft types and ratings and all required chases and shafts.
 - (c) Doors and windows, structural elements affecting room layouts, and all furniture, furnishings, and equipment.
 - (d) Overall and partial floor plans as needed to indicate all floors at the required scales.
 - (e) Identification and references for all building elevations, sections, and enlarged plans.
- (3) Room layout plans locating and identifying each item of furniture, fixtures, and equipment, consistent with the DOE-approved documents, indicating necessary clearances, with schedule indicating whether each item is to be provided by the Contractor, the Authority or the Project School District.
- (4) Enlarged floor plans for all spaces such as toilet rooms and kitchens with built-in architectural fixtures and equipment, with dimensions as required to demonstrate compliance with egress and barrier-free requirements.
- (5) Interior partition schedules indicating partition types and demonstrating compliance with requirements for fire ratings and acoustic values.
- (6) Coordinated roof plan(s) showing roof types, drainage systems, all rooftop features and equipment (including dunnage, exposed ducts and piping mains, if any), walk pads, roof ladders, railings and penetrations.
- (7) Building elevations of all exterior conditions indicating exterior materials, appurtenances, floor levels, floor-to-floor heights, rooftop equipment, and section references.
- (8) Building sections for all types of rooms and sectional conditions, indicating floor-to-floor heights and ceiling heights, with all spaces labeled.
- (9) Interior elevations for all typical spaces, assembly spaces and specialized instructional spaces, indicating all doors, windows, equipment, and any special acoustic treatment, materials, or finishes.
- (10) Wall sections and typical details of each type of exterior wall and fire wall to indicating compliance with requirements for fire ratings,

energy performance, acoustic values, and continuity of building envelope.

- (11) Reflected ceiling plans including ceiling types and heights and locations of lighting, registers, grilles and ceiling-mounted equipment. Indicate any special acoustic materials or treatment in assembly areas or other areas with special acoustic requirements.
- (12) Finish schedule identifying wall, base, floor, and ceiling finishes for all spaces, indicating ceiling height and any special finish conditions.
- (13) Preliminary details of any special items or conditions.
- (14) Door and hardware schedule indicating door, frame and hardware types as well as fire and acoustical ratings and other special requirements.
- (15) Door and window elevations indicating size and fenestration patterns and any special glazing requirements.
- (16) Other typical details as required to demonstrate compliance with project requirements.

E. Structural Drawings

- (1) Preliminary foundation plan(s) showing location, type, size and depth of each foundation component. Identify expansion joints, fire walls, and any other isolation assemblies.
- (2) Preliminary structural plans for each floor and roof, indicating columns, beams, bearing and shear walls, slabs, decks, and other major structural elements, with typical sizing. Identify expansion joints, fire walls, and any other isolation assemblies
- (3) Preliminary structural sections through foundations, below-grade construction, slabs on grade, walls, floors and roofs, with depths of structural elements.
- (4) Preliminary plan and section details of typical structural conditions, including building movement and fire separation conditions.
- (5) Roof equipment support types and locations.

F. Food Service Drawings

- (1) Enlarged floor plan(s) of food service areas indicating size and location of all required food service equipment and demonstrating necessary operating clearances.
- (2) Equipment schedule of all required food service equipment with utility requirements.

- G. Plumbing Drawings
 - (1) Floor plans indicating utility entrances, fixtures, equipment, pumps and drains, and location and routing of all piping systems including sanitary, storm, domestic water, natural gas and radon mitigation, with sizing.
 - (2) Enlarged plans and/or sections for Kitchen, Mechanical and Pump Rooms, and other spaces with special plumbing requirements.
 - (3) Vent stacks and other roof penetrations.
- H. Fire Protection Drawings
 - (1) Floor plans with performance criteria noting Use Group, hazard and hydraulic flow test summary and date of test.
 - (2) Floor plan(s) noting incoming fire water service size and location, zone control valve assemblies, standpipes, fire pumps, and other major components.
 - (3) Enlarged floor plans of areas to be served by specialized fire protection systems such as dry pipe, pre-action, or chemical fire suppression systems
- I. Heating, Ventilating and Air Conditioning (HVAC) Drawings
 - (1) Floor plans showing HVAC system distribution drawings for all floors indicating equipment, piping, ductwork and unitary equipment. The following must also be indicated:
 - (a) HVAC system zoning, with floor plans highlighting HVAC zoning for each area of the building.
 - (b) Duct sizes and single-line ductwork layouts in plan and section.
 - (c) Diagrammatic indication of air terminal units, reheat coils, fan coil units, heat pumps, and unitary systems, noting zoning and dedicated conditions of specialized spaces.
 - (d) Detailed layout of typical spaces occurring multiple times, including ductwork distribution, air devices, thermostat locations and perimeter systems.
 - (e) Diagrammatic indication of perimeter systems, including finned tube panels, radiation elements, ceiling radiation, fan powered air terminals, etc.
 - (f) Locations and ratings of fire and smoke dampers and other rated conditions.

- (g) Heating and cooling pipe main distribution, noting main sizes, equipment connections, typical connections to common terminal equipment, and roof and wall penetrations.
 - (h) Specialized and independent systems serving areas such as computer rooms, telecommunication rooms, kitchen, etc.
 - (i) Services for special equipment.
 - (2) Riser and flow diagrams sufficient to describe basic system design.
 - (3) Enlarged floor plans of mechanical equipment rooms indicating equipment, piping and ductwork mains, and louvers, indicating all required shafts and soffits to and from mechanical equipment rooms.
 - (4) Rooftop equipment.
 - (5) Equipment schedule identifying all equipment. Indicate capacity, outside air quantity, location and area(s) served by each item of equipment.
- J. Electrical Drawings
- (1) Electrical site plan showing utility transformer, incoming underground conduit bank to main electrical room, telephone/data conduit bank, perimeter grounding system and other services, with manholes and related equipment.
 - (2) Site lighting plan with light fixture locations, photometric lighting level information and typical pole types.
 - (3) Lighting floor plans of each floor indicating type and location of light fixtures throughout building, including typical room layouts, indicating controls and emergency lighting.
 - (4) Power floor and roof plans showing main distribution switchboard, panel boards, motor control centers, transformers, conduit bank routing/size from main electric room to electric closets and risers, major HVAC and plumbing equipment, elevator motors, and any other major equipment or systems.
 - (5) Enlarged floor plans of main electric room and electrical closets, with all equipment and required clearances.
 - (6) Photometric plans for each room type demonstrating lighting levels and compliance with code and project requirements.
 - (7) Light fixture schedule indicating all fixtures types, including photometric and other performance information.
 - (8) Equipment schedules for all switchboards, panels and motor control centers.

- (9) Fire alarm plans and riser diagram showing fire alarm control panels and typical components.
 - (10) Preliminary electrical grounding grid plan, showing building grounding.
 - (11) Preliminary lightning protection plan showing all components.
- K. Technology Drawings (including Information Technology, Security and Audiovisual Systems)
- (1) Floor plans indicating main distribution frame (MDF) and intermediate distribution frame (IDF) rooms, main point of entry (MPOE), and other designated technology systems spaces, including the following:
 - (a) Entrance cabling and conduit paths.
 - (b) MDF to IDF conduit paths. Include bend radius where applicable to all conduits.
 - (c) Distribution paths from MDF and IDF locations to equipment locations and station drops.
 - (d) Paths and locations of wire trays, ladder racks, J-hooks, ceiling straps and any other distribution support systems. Display all bend radiuses.
 - (2) Enlarged floor plans for MDF and IDF rooms indicating placements and clearances on all sides for two-post racks, server cabinets, freestanding floor equipment, wall-mounted equipment, power receptacles with NEMA type, overhead cable pathways, conduit entrances and equipment grounding.
 - (3) Interior elevations of MDF and IDF rooms depicting rack elevations, wall-mounted equipment, cross-connect blocks and overhead cable pathway access points.
 - (4) Enlarged floor plans of typical instructional areas indicating types, interface requirements and locations of all technology systems outlets, devices, equipment, and other components.
 - (5) Technology system plans indicating types and locations of all system components, in sufficient detail to demonstrate compliance with project requirements and Best Practices requirements.

4.3 Outline Specifications

- A. Provide outline specifications describing the type and fundamental characteristics of all materials and systems to be incorporated in the Work.
 - (1) Provide specifications organized in accordance with the divisions and sections of the latest version of CSI MasterFormat.
 - (a) Generally the division and the first level of subdivisions should be used. Use additional subdivisions when necessary to accommodate technically detailed requirements or industry practices.
- B. Describe materials and systems in sufficient detail to demonstrate compliance with project requirements. Typical information includes the following:
 - (1) Architectural, Civil and Structural
 - (a) General and regulatory requirements.
 - (b) Preliminary building code and accessibility analysis.
 - (c) Structural criteria and requirements.
 - (d) Acoustical criteria.
 - (e) Description of interior and exterior construction and materials.
 - (2) Mechanical, Electrical, Plumbing and Fire Protection
 - (a) Utility requirements.
 - (b) Schedule of design criteria including indoor and outdoor conditions, ventilation, air circulation, minimum exhaust, sound levels, system diversities and building envelope thermal characteristics.
 - (c) Detailed system descriptions and criteria.
 - (d) Preliminary fixture and equipment selections.
 - (e) Energy analysis.

4.4 Other Design Information

- A. Criteria, reports, analyses and other information developed by other consultants and required for preliminary review and approval and/or coordination with work of other disciplines.

4.5 Material, Color and Product Selections

- A. Exterior Materials and Colors
 - (1) Exterior material and color boards: Provide sample boards of proposed exterior materials and color finishes, including masonry products and color samples of exterior doors and windows and

frames, signage and appurtenances, metal roofing, copings, flashings, and other trim materials.

- (2) Exterior renderings: Provide color renderings of all exterior elevations indicating application of exterior materials, including masonry patterning.

B. Interior Colors and Finishes

- (1) Interior color and finish boards: Provide sample boards of proposed interior materials, colors, and finishes including flooring, base, ceiling finishes, and paint colors.
- (2) Finish plans: Provide color floor plans indicating application of interior color and finishes including floor patterns and any special finish applications.

C. Product Selections

- (1) Provide catalog information and photographs of typical products as specified for the following items:
 - (a) Door hardware.
 - (b) Floor finishes.
 - (c) Plumbing fixtures.
 - (d) Lighting fixtures.

4.6 Color Renderings

- A. Following acceptance of exterior material and color selections, provide one color rendering of an exterior view of the design as selected by Authority.

4.7 LEED Compliance

- A. LEED Checklist identifying elements and features incorporated in design to achieve required LEED certification.
- B. Copies of any project submissions made to USGBC to date.
- C. Provide designated Authority staff members with online access to Project information via the LEED website.

4.8 Building Commissioning Submissions

- A. Preliminary Commissioning schedule.
- B. Preliminary Commissioning Plan.
- C. Preliminary Commissioning checklists and forms.

4.9 Other Design Development Submission Requirements

- A. Supplementary geotechnical data required by code.

- B. Preliminary analyses and calculations required by code and as needed to support the design. Examples, without limitation, include:
 - (1) Stormwater and drainage analysis.
 - (2) Structural analysis indicating all static and dynamic loads on major structural elements.
 - (3) HVAC load and energy model calculations using an approved energy modeling method.
 - (4) Plumbing calculations and sizing.
 - (5) Electrical calculations and sizing.
- C. HVAC control diagrams and preliminary written sequence of operation of the HVAC system depicting control devices and components, safety devices, control and monitoring points, and other system components and equipment to be interlocked.
- D. Updated Construction Cost Estimate.
- E. Updated Project Schedule.

5. Construction Documents Phase Submission Requirements

5.1 Drawings

- A. Cover Sheet(s)
 - (1) Name of Project, the Authority's package number, DOE number, location map, New Jersey State Seal and name of the Governor.
 - (2) Drawing index, legends, abbreviations, symbols and mounting heights.
 - (3) Rendering of project.
- B. Existing Conditions Drawings
 - (1) Boundary and topographic survey showing contours at 1-foot intervals and all existing site improvements and other features.
 - (2) Utility survey showing the type, size, location, and approximate depth of all existing utilities within the site and in any adjoining streets or sidewalks.
- C. For addition and renovation projects, existing conditions drawings, updated as necessary.
- D. Sitework Drawings
 - (1) Site logistics plan indicating location of temporary facilities for construction including site access, fencing, trailers, staging, lay-down, and storage areas.

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- (2) Grading and drainage plan showing grading, storm water drainage, retention, detention, infiltration and any other above- or below-grade drainage systems, with elevations and inverts, in plan and profile.
 - (3) Site remediation, abatement, demolition and construction phasing drawings as applicable.
 - (4) Soil erosion and sediment control plan demonstrating compliance with Soil Conservation District rules and regulations.
 - (5) Utility plan showing all utilities, location and size of building services, and electrical transformer and generator locations.
 - (6) Sitework plan describing the following:
 - (a) All proposed site improvements, buildings and structures.
 - (b) Pedestrian and vehicular access, parking and circulation improvements.
 - (c) Fencing, lighting, landscaping, site furniture and retaining walls.
 - (d) Playing fields and playgrounds.
 - (e) Existing and proposed grades at 1-foot contour intervals
 - (f) Spot elevations at all entrances, exits, and building corners, and on a 20-foot grid for parking lots and open areas.
 - (7) Sitework sections, details and schedules.
 - (8) Landscape plan describing the following:
 - (a) All proposed trees, shrubs, ground covers and other planting materials.
 - (b) A schedule of all planting materials.
 - (c) All other ground surface treatments such as synthetic turf, rubberized safety surface, etc.
 - (d) Provisions for irrigation and other on-site landscape care systems or features.
 - (9) Landscape sections, details and schedules.
- E. Building code drawings, including the following:
- (1) Building code analysis with code-related information such as the following:
 - (a) List of applicable codes and versions.
 - (b) Building code analysis establishing use and occupancy classification and requirements, construction type, building

- height and area, fire resistance ratings, and description of code-related features and systems.
 - (c) Schedule of firestop systems.
 - (d) Plumbing fixture calculations.
 - (2) Code and egress plans for each floor level showing:
 - (a) Fire separations and applicable ratings.
 - (b) Fixed furnishings, net area, occupancy type and occupancy load for each space.
 - (c) Travel distances, egress width, exit capacity and total occupancy load for each exit component.
 - (d) Other code-related features as required to demonstrate code compliance.
 - (3) Best practices plan(s) indicating design features that address each requirement of the Best Practices document.
- F. Selective Demolition Drawings
 - (1) Floor plans, elevations, sections, and other drawings as necessary to indicate the extent of selective demolition.
- G. Architectural Drawings
 - (1) General notes, symbols and abbreviations.
 - (2) Architectural floor plans for each level of the building, indicating the following:
 - (a) Overall floor plans, keyed to partial plans.
 - (b) Partial floor plans as needed to indicate all floors at the scales noted above.
 - (c) All room layouts with sufficient detail and dimensions, including net area of all rooms, so that critical dimensions, clearances, and relationships can be ascertained.
 - (d) Wall types and ratings and all required chases and shafts.
 - (e) Structural elements, doors and windows.
 - (f) All furnishings and equipment to be provided by the Contractor.
 - (g) All furnishings and equipment to be provided by the Authority or the Project School District for which support or connection must be provided by the Contractor.

- (h) References to all building elevations, sections, and other drawings.
- (3) Roof plans showing roof types, drainage systems, rooftop equipment (including exposed ducts and piping), railings, walk pads, roof ladders and penetrations.
- (4) Exterior elevations identified by orientation and labeled with preliminary floor and roof elevations for each level, and indicating the following;
 - (a) All building exterior wall materials.
 - (b) Door, window and glazing types.
 - (c) Control joints, wall-mounted lighting, canopies, signage, and other exterior wall-mounted features and appurtenances.
 - (d) Rooftop equipment and stair and elevator penthouses.
 - (e) A key plan indicating the location of each building elevation.
- (5) Building sections with all spaces labeled and showing the following:
 - (a) Vertical relationships between building elements and all changes in building section.
 - (b) Floor-to-floor heights and all changes in floor elevation.
 - (c) Ceiling heights.
- (6) Wall sections and details of each major type of exterior wall and fire wall treatment, to indicate compliance with requirements for fire ratings, acoustic values, and continuity of building envelope.
- (7) Plan and section details as required to show relationships between systems and materials at a scale appropriate to the information being conveyed.
- (8) Door and hardware drawings and schedule indicating door, frame, glazing and hardware types as well as fire and acoustical ratings.
- (9) Window and glazing elevations, with nominal dimensions and other characteristics such as swing and opening type, keyed to building elevations.
- (10) Enlarged toilet room plans with critical dimensions.
- (11) Enlarged elevator plans and sections.
- (12) Enlarged stair and ramp plans and sections with critical dimensions.
- (13) Elevator, stair and ramp details.
- (14) Enlarged plans and interior elevations of typical classrooms and other instructional spaces, with critical dimensions.

- (15) Interior details.
 - (16) Interior partition drawings and schedules identifying all partition types and demonstrating compliance with fire separations, acoustic performance and other requirements.
 - (17) Reflected ceiling plans showing all ceiling features and types, with dimensions where necessary for layout.
 - (18) Ceiling details.
 - (19) Finish and signage plans, schedules and details indicating application of interior color and finishes including floor patterns and any special finish applications.
 - (20) Casework and equipment plans, schedules and details.
- H. Structural Drawings
- (1) Structural design criteria and analysis indicating all static and dynamic loads on major structural elements.
 - (2) Foundation plans showing type, location, size and depth of each foundation component.
 - (3) Structural plans for each floor and roof, indicating columns, beams, bearing and shear walls, slabs, decks, bracing, and other major structural elements, with typical sizing.
 - (4) Structural sections through foundations, below-grade construction, slabs on grade, walls, floors and roofs, with depths of structural elements.
 - (5) Plan and section details of typical and special structural conditions, including building movement and fire separation conditions.
- I. Food Service Drawings
- (1) General notes, symbols and abbreviations.
 - (2) Food service equipment and rough-in plans.
 - (3) Food service reflected ceiling plans indicating equipment and utilities.
 - (4) Food service details, elevations and sections as needed to indicate compliance with codes and Project requirements..
 - (5) Food service equipment schedules with utility requirements and locations.
- J. Plumbing Drawings
- (1) General notes, symbols and abbreviations.

- (2) Plumbing plans for each floor and roof showing utility entrances; locations and quantity of fixtures, equipment, pumps and drains; and all piping systems including sanitary, storm, domestic water, natural gas and radon mitigation (where required), with sizing.
 - (3) Riser diagrams of sanitary, storm, domestic water, natural gas and radon mitigation systems, with main pipe sizes and equipment indicated.
 - (4) Equipment schedules identifying each type of fixture and item of equipment, with pertinent product data.
 - (5) Enlarged plans, sections and/or details for toilet rooms, kitchens, mechanical and pump rooms and other spaces with special plumbing requirements and conditions.
- K. Fire Protection Drawings
- (1) General notes, symbols and abbreviations.
 - (2) Fire protection plans with performance criteria noting Use Group, hazard and hydraulic flow test summary and date of test.
 - (3) Enlarged plans noting incoming fire water service size and location, zone control valve assemblies, standpipes, fire pumps, and other major components.
 - (4) Enlarged plans of areas to be served by specialized fire protection systems such as dry pipe, pre-action, or chemical fire suppression systems.
 - (5) Fire protection riser diagrams.
 - (6) Fire protection schedules and details.
- L. HVAC Drawings
- (1) General notes, symbols and abbreviations.
 - (2) Ductwork plans showing system distribution for all floors indicating ductwork and equipment, as follows:
 - (a) Double-line ductwork for all mains 24 inches and larger, with sizes noted.
 - (b) Single-line ductwork downstream of air terminal units to air devices.
 - (c) Double-line ductwork within shafts and mechanical rooms and for ductwork exposed to the outdoors and penetrating walls or roofs.
 - (3) Piping plans for all floors indicating HVAC piping and equipment.

- (4) Enlarged plans of HVAC equipment rooms indicating equipment, piping and ductwork mains, and louvers, and all required shafts and soffits to and from mechanical equipment rooms.
 - (5) HVAC details.
 - (6) Ventilation schedules.
 - (7) Equipment schedules indicating capacities, outside air quantities, locations and areas served.
 - (8) Air flow diagrams
 - (9) Water riser diagrams.
 - (10) Control block and wiring diagrams.
- M. Electrical Drawings
- (1) General notes, symbols and abbreviations.
 - (2) Site power plan showing utility transformer, incoming underground conduit bank to main electrical room, telephone/data conduit bank and other services, with manholes and related equipment.
 - (3) Site lighting plan with light fixture locations, photometric information and typical pole types.
 - (4) Power plans for all floors and roof showing receptacles, panel boards, motor control centers, transformers, conduit banks, HVAC and plumbing equipment, elevator motors, and other electrical equipment.
 - (5) Lighting plans for all floors showing light fixtures, lighting control system, exit signs, and emergency lights.
 - (6) Photometric lighting level plans indicating lighting levels and room schedules to indicate compliance with code and project requirements.
 - (7) Fire detection and alarm system plans for all floors.
 - (8) Electrical grounding grid plan, showing building grounding and typical details.
 - (9) Lightning protection plan showing all components and typical details.
 - (10) Enlarged power and lighting plans for kitchen, auditorium, and other spaces with special fixtures and equipment.
 - (11) Electrical details.
 - (12) Power panel schedules.
 - (13) Lighting panel schedules.
 - (14) Lighting control panel schedules.
 - (15) Mechanical panel schedules.

- (16) Power riser diagrams.
- (17) Fire alarm riser diagrams.
- N. Technology Drawings (including Information Technology, Security and Audiovisual Systems)
 - (1) General notes, symbols and abbreviations.
 - (2) Floor plans indicating main distribution frame (MDF) and intermediate distribution frame (IDF) rooms, main point of entry (MPOE), and other designated technology systems spaces, including the following:
 - (a) Entrance cabling and conduit paths.
 - (b) MDF to IDF conduit paths. Include bend radius where applicable to all conduits.
 - (c) Distribution paths from MDF and IDF locations to equipment locations and station drops.
 - (d) Paths and locations of wire trays, ladder racks, J-hooks, ceiling straps and any other distribution support systems. Display all bend radiuses.
 - (e) Placement and count for all data drops, with labels for all data drops.
 - (3) Floor plans showing locations and types of all information technology, security and audiovisual terminations and devices, including those pertaining to windows, doors and hardware, mechanical and plumbing equipment, power and lighting controls, and other building components and systems.
 - (4) Enlarged floor plans for MDF and IDF rooms indicating placements and clearances on all sides for two-post racks, server cabinets, freestanding floor equipment, wall-mounted equipment, power receptacles with NEMA type, overhead cable pathways, conduit entrances and equipment grounding.
 - (5) Interior elevations of MDF and IDF rooms depicting rack elevations, wall-mounted equipment, cross-connect blocks and overhead cable pathway access points.
 - (a) List all port densities per rack with relevant patch panel count(s).
 - (b) Indicate rack, patch panel and patch panel port numbering to match station labeling.

- (6) Enlarged floor plans of all typical and specialized instructional areas indicating type and location of all technology system outlets, devices, equipment, and other components.
- (7) Line diagrams indicating MDF to IDF cable types, conduits, and termination types.
- (8) Riser diagrams depicting cable types, counts, and total length.
- (9) MDF and IDF grounding diagrams, grounding points and continuity.
- (10) Equipment schedules for cable routing and support systems, including J-Hooks, ceiling straps, wire trays, ladder racks and other distribution mechanisms.
- (11) Station outlet elevations and back box details.
- (12) Cable tray details and master label scheme.
- (13) Conduit, penetration, firestopping, grounding and bonding details.
- (14) Wiring schedules and block diagrams for all technology systems and equipment.
- (15) Equipment schedules for all technology equipment and devices.

5.2 Specifications

- A. Detailed technical specifications describing the type and characteristics of all materials and systems to be incorporated in the Work.
 - (1) Provide specifications organized in accordance with the divisions and sections of the latest version of CSI MasterFormat.
 - (2) Describe all materials and systems in sufficient detail to demonstrate compliance with all codes and project requirements.
 - (3) Identify requirements for submittals, quality assurance, warranties, and guarantees, as well as all requirements for LEED and commissioning.

5.3 Color and Material Selections

- A. Exterior Material and Color Boards
 - (1) Final material and color boards with all exterior materials and color finishes, including masonry products and color samples of exterior doors and windows and frames, signage and appurtenances, metal roofing, copings, flashings, and other trim materials.
- B. Interior Material and Color Boards
 - (1) Final material and color boards with all interior materials, colors, and finishes including flooring, base, ceiling finishes, and paint colors for walls and exposed elements such as structure and ductwork.

- 5.4 Product Selections
 - A. Updated catalog information and photographs of typical products as specified for the following items:
 - (1) Door hardware.
 - (2) Floor finishes.
 - (3) Plumbing fixtures.
 - (4) Lighting fixtures.
- 5.5 Other Design Information
 - A. Supplementary geotechnical data required by code.
 - B. Final structural calculations.
 - C. Final load calculations for all energy and utility systems.
 - D. Final energy model calculations using an approved energy modeling method.
 - E. Final HVAC control diagrams and written sequence of operation of the HVAC system depicting control devices and components, safety devices, control and monitoring points, and other system components and equipment to be interlocked.
- 5.6 LEED Compliance
 - A. Updated LEED Checklist identifying elements and features incorporated in design to achieve required LEED certification.
 - B. Copies of all LEED submissions to USGBC made to date.
- 5.7 E-Rate and Smart Start Programs
 - A. If directed by the Authority, provide separate drawings, specifications and related information required for submission to the Schools and Libraries Program of the Universal Services Fund (“E-Rate”) and Smart Start Program.
 - (1) Coordinate all E-Rate and Smart Start documents with other documents to ensure that contractors’ responsibilities are clear and reimbursements are maximized.
- 5.8 Building Commissioning Submissions
 - A. Commissioning schedule.
 - B. Commissioning Plan.
 - C. Commissioning checklists and forms.

- 5.9 Other Submission Requirements
 - A. Updated Construction Cost Estimate.
 - B. Updated Project Schedule.
 - C. OSC submission specifications.
 - D. Final Educational Adequacy submission plans and specifications.
 - E. Copies of all submissions to and communications with the DCA and other regulatory agencies in conjunction with regulatory reviews and approvals.