A/E Design Deliverable Checklist

Design deliverables for the Design Development phase shall include all items listed in the Design Development column as well as those all items listed in the Schematic Design column of the table.

Design deliverables for the Construction Document phase shall include all items listed in the Construction Document column as well as those all items listed in the Design Development column of the table.

Item	Schematic Design	Design Development	Construction Document
General Description	• Narrative documenting design concepts, project issues and major components including: site, architectural, structural, mechanical and electrical. Narrative should discuss all relationships to original program (e.g., comparison of floor areas to program). • List of applicable building codes on drawing title sheet • Building code review • List of anticipated building code variance requests • Anticipated building and space occupancy schedules. • Life safety (egress) plans with identification of security and access control points • List of sustainability features incorporated into project design.	• Description of construction phasing • Description of any proposed occupancy within construction area • Description of water & vapor characteristics of roof & exterior walls	• Documentation on drawings as required by building codes • List of all code variances (on drawings cover sheet) • If multiple bid packages, clear indication of scope of each release • Identification of construction phasing, including temporary occupancy requirements during each phase
Specifications	System & material narrative description	Outline or preliminary specifications indicating project specific features of major equipment as well as component materials.	Complete specification
Site	• Existing conditions	• General dimensions &	• Extent of construction area

Item	Schematic Design	Design Development	Construction Document
	• Demolition • Building outline(s) • Future expansion • Site entrance • Roads & driveways • Parking locations • Bus stop/shelter • Loading dock location • Waste/recycling collection locations • Walkway locations • Stairway locations • Emergency telephone locations • Utility requirements • Site utilities • Preliminary grading plan • Soil retention work • Preliminary site lighting plan • Storm water pre and post construction calculations.	elevations • Permanent exterior signage • Parking/roadway plans & elevations • Vehicle & pedestrian traffic controls • Grading plan • Site lighting plans, simulations, specifications, equipment cut sheets and photometrics • Concept details of site fixtures & equipment • Utility plans, elevations & details for local governing agency approval • Sanitary sewer flow calculations for • Plan to address existing hazardous/contaminated materials. • Soil erosion and sedimentation control plan (for both construction and occupancy) • Soil erosion and sedimentation control • Dewatering plan	• Area traffic plan, if existing roads/walks are impacted • Site development phasing • Construction site access • Staging area • Construction signage • Site details, including hardscape • Profiles for underground utilities • Pipe sizes • Connection details • Copy of local government review comments on utilities and modifications in right(s)-of-way
Storm Water	• Evaluate existing Conditions (soils, flow paths, pre-development flow rates) • Layout site, protecting sensitive areas and leaving room for permanent post-construction BMPs.	• Provide models and calculations demonstrating that 1) Water Quality Requirement: minimum water quality volume requirements are met or exceeded (first 0.5 inch); 2) Water Quantity Goal: to the extent feasible, post-	• Structural and non-structural post-construction BMP details • Maintenance and inspection plan for post-construction structural BMPs

Item	Schematic Design	Design Development	Construction Document
		development flow rates do not exceed pre-development conditions (24-hr, 100-year storm event) • Structural and non-structural post-construction BMP selection • If site constraints preclude meeting the required water quality control volume, select alternate site/location for BMPs that will achieve substantially equivalent stormwater performance.	
Landscape	• Existing conditions • Landscaping concept • Existing irrigation • Landscape Protection Plan	• Planting plan • Irrigation plan	• Protection for existing trees and significant plantings during construction • Soil preparation & planting specifications • Guying diagrams • Piping diagrams • Pipe sizes • Landscape and irrigation details and legends
Structural	• Structural scheme plans • Written description	• Foundation plan • Typical floor framing plan • Framing plans at unique features • Main member sizing • Structural sections	• Definition of control joints • Beam, column & slab schedules • Mechanical and electrical concrete house-keeping pads • Foundation details • Structural details • Structural notes • Structural calculations

Item	Schematic Design	Design Development	Construction Document
Building Envelope	• Typical elevations • Fenestration layout • Material designations • Overall building cross-sections • Roof layout. Typical floor plans (min 1/16" scale) w/ legends	• All building elevations w/dimensional heights • Typical wall sections • Parapet & coping details • Roof & drainage plan • Exterior door details • Typical window details • Details of unique features • Expansion joint locations • Large scale building cross-sections	• Roof-mounted equipment • Roof details • Exterior details • Flashing details • Control joint definition & details
Building Interior	• Floor plans • Demolition plans • Area use identification & area in square ft. • Mechanical, electrical & other service closets & rooms • Circulation paths • Area tabulations compared to program requirements • Show flexibility for expansion • & alterations • Preliminary layout of major spaces w/ fixed equipment • Preliminary room numbering per NU Design Standard	• All Floor plans with NU Design Standard compliant room and door numbering • Enlarged plans at elevation changes (such as stairs) • Enlarged plans at toilet rooms • Reflected ceiling plans • Wall types, fire ratings, smoke control zones • Plan to address existing hazardous materials, if applicable • Fixed seating • Defined seating, serving, & kitchen facilities • Equipment & furniture layouts • Important interior elevations • Details of unique features • Details of fixed equipment • Preliminary finish schedule • Preliminary door schedule	• Dimensioned floor plans with NU Design Standard compliant room numbering • Enlarged plans • Partition details • Interior details • Interior elevations • Finish schedules • Door & hardware schedules • Schedule of proposed movable equipment that is NOT indicated on documents (for reference) • Schedule of lab fixtures
Elevators	• Elevator locations • Equipment room locations	• Elevator shaft section • Equipment description	• Dimensioned plans • Sections & details of hydraulic cylinder, if applicable • Description of shaft sump pits

Item	Schematic Design	Design Development	Construction Document
			• Elevator car & equipment support details • Description of controls & fixtures • Door & frame details • Interior details including lighting
HVAC	• One-line diagrams for each air, hydronic (including chilled water), steam, condensate and all other HVAC related systems, and other materials as required to describe the fundamental design concept for all mechanical systems • Indication of the amount of redundancy for all major pieces of mechanical equipment. • Major equipment locations • Air intake & discharge locations • HVAC zoning (e.g., what air handling system serves what area). • Mechanical legend • Special occupancy zones	• Overall building air flow diagram indicating air handlers, exhaust fans, duct risers, and duct mains • Schematic diagrams showing room pressurization and/or airflow relationships in laboratories and other specialized areas. • Plans indicating shaft, chase, recess requirements • Duct layout for typical spaces • Equipment schedules (major equipment) • Equipment locations with enlarged mechanical plans • Indication of typical locations of fire dampers, smoke dampers, and combination F/S dampers • Outline of major control sequences of operation • M/E smoke control schemes • Preliminary floor plans of mechanical rooms w/all components and required service access areas drawn to scale • Utility meter locations and design flow rates	• Detailed piping and duct design with all sizes indicated • Schematic one-line diagrams for all steam / hydronic systems including pipe specialties, instrumentation, valving requirements. • Detailed floor plans of mechanical rooms w/ all components and required service access areas drawn to actual scale • Cross-sections through mechanical rooms and areas where there are installation and coordination issues (e.g., tight space, zoning of utilities). Indicate required service access areas • Equipment details, including structural support requirements • Penetration/sleeve details • Installation details • Duct construction schedule (on the drawings), indicating materials and pressure class for each duct system • Detailed HVAC sequences of operation • Utility meter details

Item	Schematic Design	Design Development	Construction Document
Plumbing	• Description of all major plumbing systems with indication of the amount of redundancy • Main water supply, storm, and sanitary leads • Major equipment locations • Restroom locations	• Piping schematic or riser diagrams for every plumbing system as required to describe the fundamental design concept for all plumbing systems • Preliminary piping plans (domestic & process) with indication of required service access areas • Water meter locations • Back flow prevention locations • Fixture schedules, to include lab fixtures • Equipment schedules (major equipment) • Preliminary floor plans of mechanical rooms w/all components and required service access areas drawn to scale	• Water riser diagram, including assumed fixture counts per floor connection • Waste and vent riser diagrams including assumed fixture counts per floor connection • Foundation drains • Detailed piping design with all pipe sizes indicated • Typical plumbing details, including structural support requirements • Piping details • Penetration/sleeve details
Lighting	• General photometric levels • Fixture, lamp, and controls descriptions • Preliminary interior lighting plans • Preliminary outdoor lighting plans	• Typical interior lighting and control plans • Outdoor lighting and control plans • Fixture types and schedule • Lighting control system and control device descriptions • Typical photometric calculations • Dimming, daylighting and low voltage control zones	• Interior and exterior lighting plans, including control systems and devices, lighting panels, switching and circuiting • Lighting control system schematics and wiring diagrams • Lighting control system detailed sequences of operation • Installation details, including structural support details
Electrical Power Distribution	• Electrical demolition • One-line diagrams with equipment ratings	• Manhole, duct bank, and building entry plans and details • Normal power riser diagram with circuit breaker, fuse,	• Details of power service to building • Power plans, including primary cable raceways, feeder

Item	Schematic Design	Design Development	Construction Document
	• Manhole, duct bank, and building entry locations • Exterior equipment locations including transformer and metering • Substation, generator and ATS descriptions • Substation and generator locations and sizes • Preliminary service size and location • Electric room locations and sizes • Preliminary substation and generator room plans • Panel numbering scheme • Electrical distribution and branch panelboard layout	conduit and wire sizes • Emergency power riser diagram with circuit breaker, fuse, conduit and wire sizes • Generator size • Grounding riser diagram • Fault current and coordination studies used to specify equipment ratings • Service sized, distribution equipment sized and branch panelboards sized • Substation standard details • List of equipment on emergency power • Panel schedules • Electrical equipment location plans • Typical electrical outlet location plans • Plan for temporary power during construction. • Electric meter location with design amps and voltage	conduits, electrical loads, duplex and special receptacles, and circuiting • Emergency power system plans, controls, and details • Connections to other building • systems, including fire alarm and HVAC systems • Details of non-standard electrical installations • Conduit and wire sizes for services, feeders, and special branch circuits • MCC elevations • Grounding details • Roof and floor penetration details
Energy	• Estimated peak (design) and monthly energy usage for all energy inputs. Typically, this will include steam, chilled water and electricity for buildings located on campus.	• Estimated peak (design) and monthly energy usage for all energy inputs including steam, chilled water, and electricity.	
Fire Protection	• One-line diagrams for each fire protection system, and other materials as required to describe the fundamental design concept for all fire protection systems	• Fire protection zoning extents • Location of main headers and risers • Location of test headers and fire department connections • Fire pump sizing calculations	• Fire protection service entrance details • Location of all sprinkler zone valves, drains, and fire hose connections • Typical sprinkler installation

Item	Schematic Design	Design Development	Construction Document
	• Connection to utility • Fire service entry location • Location of fire pump and controller, jockey pump and sprinkler valves		details, including structural support details • Penetration/sleeve details
Fire Alarm	• System description • Panel locations	• Riser diagram • Panel, device and appliance location plans	• Detailed panel, device and appliance location plans including duct detectors, fire/smoke dampers, sprinkler flow and tamper switches, monitor and control modules, door hold-opens, door lock releases, etc. • Strobe light candela ratings • General notes on conduit and wire sizes • Details of connections to HVAC, fire pump, fire suppression, door hold-open, door lock • Detailed operation sequences
Telecommunications (Voice, Data, Video)	• Manhole, duct bank , and building entry locations • Building Entrance (BE) and local Telecomm Room (TR) locations • Riser diagram • Preliminary cable tray plans	• BE and TR locations, sizes, and door swings • Backboard locations in BE and TR's • Raceway and grounding riser diagrams • Conduit and cable tray plans with conduit and cable tray sizes • Material cut-sheets • List of equipment to share telecom rooms • BE and TR heat loads • Typical voice, data and video outlet location plans	• Detailed voice, data and video outlet locations • Details of telecommunications service to the building • Floor box schedule • Conduit, outlet box and floor box installation details • Power outlet locations in the BE and TR's • Locations of non-telecom equipment in the BE and TR's

Item	Schematic Design	Design Development	Construction Document
		• Emergency phone locations and types (i.e., wall or pedestal) • Courtesy phone locations	
Card Access, CCTV, AV and Other Specialty Electronic Systems	• System descriptions • Panel locations • Preliminary device location plans	• Riser diagrams • Equipment location plans	• Detailed equipment location plans • Equipment schedules • Wiring diagrams • Installation details • Detailed sequences of operation
Models and Graphics	Renderings, models, or other graphics as necessary to clearly present concept	Updated renderings, models and graphics required only as appropriate for design development	Updated renderings, models and graphics required only as appropriate for construction document preparation
Construction Cost Estimates	Yes	Yes	Yes