

CHAPTER 3

PLAN APPROVALS AND INSPECTION PROCEDURES

SECTION 301 GENERAL

301.1 Scope. Provisions of this chapter shall apply to off-site construction and shall include any on-site connection details and instructions for items installed on site. In order to obtain plan approval, the manufacturer shall be required to provide documentation to the AHJ. Documents shall consist of plans, specifications, calculations, test results, product evaluation reports and critical manufacturer's instruction, and other documentation that describes in detail the product and manufacturing processes employed to produce off-site buildings or components. The documents shall also include plans and details for site-completed portions of the project that require direct interface with the modular completed portions.

301.2 Remote virtual inspections. The AHJ shall have the option to conduct remote virtual inspections (RVI). Except for unmanned aerial vehicles (drones), the camera shall be operated by the permit holder at the direction of the inspector. The inspector shall have the ability to communicate directly with the camera operator to perform a thorough inspection of the project. The response of the camera operator to the directions of the inspector shall be verified by live video feed. State and local requirements shall be followed as if in-person inspections are being conducted.

SECTION 302 GENERAL REQUIREMENTS FOR PLAN APPROVAL

302.1 Plans, specifications, calculations and other documentation. Where required by the AHJ, construction documents and other documentation shall bear the signature and seal of a registered design professional. If the registered design professional is the same firm as the third-party inspection or design agency, that relationship must be disclosed to the AHJ.

302.2 Structural calculations cover page. The structural calculations cover page shall be dated, be identified with the project information, include an index and be signed by a registered design professional.

302.3 Name and location. Documents shall indicate the name and location of the manufacturer, registered design professional or other entity submitting the plans.

302.4 Drawing cover sheet. The following shall be included on the drawing cover sheet:

1. List of design firms and professionals used for the project, including the business address and phone number with the listing.
2. An index for the drawing set.
3. The use and occupancy classification.
4. The applicable codes.

302.5 Insignia of approval. Drawings shall indicate the location of the insignia of approval.

302.6 Details, lists or tables. Drawings shall provide details, lists or tables delineating the aspects of the project that are constructed and installed in the factory and in the field, with a clear delineation of scope on the AHJ inspection responsibilities.

302.7 Note of revisions. Drawings shall provide a note that any revisions made to the certified unit on site shall be submitted to and inspected by the AHJ to verify code compliance.

302.8 Space for stamp of approval. Each sheet shall include a blank space in the lower right corner for the stamp of approval. The blank space shall not be less than 3" wide by 3" high.

302.9 Modular building layout and sequencing plan. Construction documents shall include a layout plan of modular building and a sequencing plan. Location of cranes shall also be identified.

SECTION 303 GENERAL BUILDING AND ARCHITECTURAL

303.1 Table, schedule or schematic identifier. A combination of one or more tables, schedules or schematics shall be provided to identify the following requirements:

1. Use and occupancy classifications.
2. Type of construction.
3. Building area and number of occupants.
4. Building height in feet and stories.
5. Methods used to determine height and area increases.
6. Fire-rating requirements for the building elements and any minimum separation distance requirements.
7. Structural design loads:
 - 7.1. Roof live and dead load.
 - 7.2. Floor live and dead load.
 - 7.3. Design wind speed and exposure.
 - 7.4. Seismic design criteria and risk category.
 - 7.5. Ground and roof snow load.
 - 7.6. Climatic design zones.

303.2 Floor plan and elevation. Floor plans and typical elevations shall be provided with dimensions and notations showing compliance with space requirements including room areas, horizontal dimensions, location of space relative to finished grade level, ceiling height and overall building height.

303.3 Cross sections. Cross sections and interior elevations shall be provided to identify major building components.

303.4 Details of all finished materials. Details of finished materials shall be provided; for example, flashing material and gauge to be used such as at openings and at penetrations through roofs.

303.5 Attic access and attic ventilation. Attic access and attic ventilation shall be provided. Where attic access is provided, attic floor loading criteria shall be indicated.

303.6 Exterior envelope. Information on exterior envelope, including water-resistive barriers and required fire-resistance-rated assemblies, shall be provided in accordance with the applicable building code.

303.7 Interior wall. Information on interior wall and floor/ceiling material, including any required fire-resistance-rated assemblies, shall be provided.

303.8 Door and window schedule. A door and window schedule shall be provided that identifies the following:

1. Dimensions. Example: emergency escape and rescue requirements. Required and provided light and ventilation where applicable.
2. Data satisfying the applicable energy conservation construction code. Required and provided design pressure where applicable.

SECTION 304 BUILDING ACCESSIBILITY

304.1 General. If accessibility provisions are not a requirement for the project, a statement identifying the code qualifying exception shall be provided.

304.2 Detail sheets. Typical detail sheets for required accessible features and facilities for the modular portions of the project shall be provided.

304.3 Scaled clearances. Typical scaled clearances visible on plans, in the areas where accessibility is required by the applicable building code, shall be provided.

SECTION 305 FIRE SAFETY

305.1 Fire and smoke protection features. The construction documents shall provide the:

1. Type of construction.
2. Fire-resistance rating of building elements.
3. Fire-resistance-rated assemblies.
4. Fire-resistant joint systems.
5. Through-penetration firestop systems.
6. Methods of determining fire resistance, such as listed assemblies, test reports and engineering analysis.
7. Information on how to meet the requirements for the concealed spaces created between off-site components.

305.2 Fire-resistance-rated assemblies. A separate sheet that shows detail for fire-resistance-rated assemblies, including reference to listing, test report, engineering analysis or

methodology used to determine the fire-resistance rating, shall be provided and shall include the following:

1. Applicable rated assemblies detailed including separation from unit to unit, unit to common spaces, shafts, plumbing, HVAC, stair and elevator.
2. Plans shall identify applicable fire-resistance-rated locations.

305.3 Life safety plan. Where required by the AHJ, a life safety plan to describe the means of egress, including details that describe aisles, exits, corridors, passageways, travel distance and stairway enclosures, shall be provided.

305.4 Flame spread and smoke-developed classifications. Flame spread and smoke-developed classifications for interior finish materials shall be provided.

305.5 Draftstops and fireblocking. Locations of required draftstops and fireblocking, including the identification of how provisions are satisfied, shall be provided.

305.6 Opening protectives in fire-resistance-rated systems and assemblies. Details for opening protectives in fire-resistance-rated systems and assemblies, including reference to listings for required doors, windows, frames and hardware to complete the opening protective requirements, shall be provided.

305.7 Fire protection systems. Drawings for fire protection systems, including sprinkler systems, standpipes, fire alarms, and detection systems where required in modular portions of the project, shall be provided.

SECTION 306 MECHANICAL SYSTEMS

306.1 Equipment location, size and material specifications. The location, size and material specifications for equipment and components provided by the manufacturer as part of the factory-installed portion of the project shall be provided, including electric heating systems; hydronic heating systems; heating, ventilating and air-conditioning systems; water reclamation systems; and appliances.

306.2 Heat loss calculation. Where required by the applicable building code, a heat loss calculation shall be provided.

306.3 Ratings and manufacturer's listings. Input/output ratings and manufacturer's listing requirements shall be provided for equipment and appliances provided by the manufacturer as part of the factory-installed portion of the project.

306.4 Method to supply combustion air. The method to supply combustion air shall be provided where applicable.

306.5 Ventilation air. The method for providing ventilation air shall be provided.

306.6 Makeup air. The method for providing makeup air shall be provided where applicable.

306.7 Flues, vents and chimneys. The location of flues, vents and chimneys shall be provided, including the clearances from air intakes, combustible materials, and other vents and flues, where applicable.

306.8 Manufacturer's data. Manufacturer's data, instructions and listing information for the installation of fuel-burning equipment shall be provided including specific details on the drawings, where applicable.

SECTION 307 PLUMBING AND GAS SYSTEMS

307.1 Drawings of the plumbing system. Drawings of the plumbing system, DWV and water lines shall be provided, including the size of piping, fitting locations, traps, vents, cleanouts and valves.

307.2 Site-installed plumbing. All plumbing on drawings to be site installed shall be identified.

307.3 Plumbing materials. Plumbing materials shall be identified.

307.4 Locations of all equipment. Locations of all equipment, appliances and safety controls to be installed shall be shown.

307.5 Gas line sizing. Gas line sizing information, including developed length and pressure rating, shall be shown.

SECTION 308 ELECTRICAL SYSTEM

308.1 General. Equipment manufacturer's instructions shall be provided as part of the factory-installed components of the project.

308.2 Load calculations for service and feeders. Load calculations for service and feeders shall be provided.

308.3 Main disconnect and overcurrent protective devices. The size, rating and location of the main disconnect and overcurrent protective devices shall be shown and identified.

308.4 Locations of outlets, junction boxes, fixtures and appliances. The locations of outlets, junction boxes, fixtures and appliances, including required locations of GFCI protection, shall be shown and identified.

308.5 Lighting plan. A lighting plan shall be provided. Exterior and interior lighting locations shall be shown. Required smoke detecting alarm device locations and circuitry shall be identified.

308.6 Wire type and size. The wire type and size shall be provided.

SECTION 309 ENERGY CONSERVATION SYSTEM

309.1 Compliance with mandatory energy code requirements. Details and calculations to show compliance with mandatory energy code requirements shall be provided.

309.2 Building thermal envelope. Drawings and details of materials and assemblies that describe the building envelope shall be provided.

SECTION 310 STRUCTURE

310.1 Load listings. Construction documents shall include the information required by IBC Section 1603.

1. Dead loads.
2. Live loads.
3. Ground snow load and roof snow load.
4. Seismic design category and assumed soil site classification.
5. Risk category.
6. Wind speed and exposure category.

310.2 Engineering analysis. An engineering analysis for design loads to support the selection of all structural members and connections in compliance with applicable codes shall be provided.

310.3 Design calculations. Design calculations shall:

1. Identify reference standards and/or code tables, and present design methodology in a step-by-step reviewable format.
2. Include applicable design loads and load paths.
3. Demonstrate compliance with the loads required by the building code adopted by the AHJ.
4. If the design is using a prescriptive method of design, clearly identify the source utilized.

310.4 Specifications of materials. Materials shall comply with the material requirements of the IBC, IRC or adopted codes as applicable, and shall provide information to enable determination of design strengths.

310.5 Details of structural elements and subsystems. Details of structural elements and subsystems, including framing details, spacing, size, connections and fasteners, shall be provided. This includes:

1. Engineered roof details.
2. Truss specifications data sheet.
3. Truss or rafter uplift connections.
4. Attachment of roof coverings.
5. Braced wall lines identified on the drawings.
6. Specifications for shear walls and diaphragms.
7. Structural adequacy of shear walls and diaphragms confirmed.
8. Locations and specifications for hold-down devices.
9. Column and post schedule.
10. Header and beam schedule.
11. Continuity of uplift resistance confirmed.
12. Details of module interconnection.
13. Windborne debris protection, as applicable.
14. Floor details.
15. Connections of all framing members.

310.6 Blocking plan and foundation loads imposed by modules. The resulting uniform and concentrated load vectors for magnitude and direction imposed by the modules on the suggested foundation plans shall be provided. All loads, both gravity and lateral loads due to wind and seismic, shall be identified.

310.7 Foundation plans. Where required by the AHJ, foundation plans and details of connections of modules to foundations shall be provided by a registered design professional. This information includes:

1. Allowable soil bearing pressure.
2. Minimum concrete strength required for specified anchoring devices.
3. Locations and specifications for anchoring devices.
4. The actual gravity, lateral and uplift loads.

SECTION 311 CONNECTIONS

311.1 On-site connections. On-site connections, including interconnection details and instructions and connections from site-built elements to modules or panels, shall be provided.

311.2 Information about on-site connections. Construction documents shall include details of the following types of connections:

1. Interconnections between off-site components at site.
2. Connections and attachments between off-site components and site-built building assemblies.
3. Connections between all construction components connected and completed at the site, including fire-rated architectural elements such as walls; floors; ceiling; roofs; and structural/nonstructural, mechanical, plumbing, electrical, communications, fire protection, technology and HVAC systems and assemblies.

311.3 Manufacturer's instructions. On-site connections shall follow approved manufacturer's instructions.

SECTION 312 INSPECTION PROCEDURES

312.1 General. Typical inspections for projects with off-site components include in-plant and on-site.

312.2 In-plant inspections. In-plant inspections that are conducted by employees of a third-party inspection agency shall verify that constructions are in compliance with the approved construction documents. The third-party inspection agency shall inspect each modular or panelized unit in a phase of construction or inspect modular components to verify that construction is in compliance with the approved construction documents and the approved quality documents.

312.2.1 Remote virtual inspections. The AHJ shall have the option to conduct remote virtual inspections (RVI).