



The Key To Affordable Housing

Connecticut Housing Finance Authority

Construction Guidelines:
Project Planning &
Technical Services
Review

2018

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I. PROJECT PLANNING AND TECHNICAL SERVICES REVIEW

A. Introduction

1. CHFA has developed a series of “Construction Guidelines” (Guidelines) to further assist development teams through the application, planning, design and review process. Each of these Guidelines focuses on specific subjects of major interest in this process, including: Construction Cost, Environmental & Hazardous Materials, Energy Conservation and Project Planning and Technical Services Review (Technical Review Process). These Guidelines are to be used in conjunction with the Multifamily Design, Construction and Sustainability Standards (the Standards).
2. This Guideline outlines the construction document review requirements for multifamily housing financed by CHFA. It is the intent of the Standards, and the Guidelines, that multifamily housing financed through CHFA is designed to serve the needs of its residents with as much quality, durability, comfort, indoor air quality and environmental sustainability as the market and resources permit. It is acknowledged, however, that individual developments may face unique site, design, financing or market constraints, for which full compliance may be difficult or impossible. It is intended that such unique constraints be identified early in the design and underwriting review process, so that the owner/developers may request a modification of specific items that prove to be problematic. CHFA will consider such requests on a case-by-case basis.

II. DEVELOPMENT TEAM/DESIGN APPROACH

Owners/Developers should assemble an integrated development team – including a qualified architect, a general contractor (GC), and other professional consultants for the project.

A. Development Team Selection Process

CHFA encourages the owner/developer to follow an organized development team selection process whereby the owner/developer:

1. issues a Request for Qualifications (“RFQ”) for architectural/engineering services;
2. selects several candidates, from the Architectural/Engineering (“A/E”) firms, or teams, that respond to the RFQ, to be interviewed;
3. conducts the interviews, selects an architectural firm or team, and negotiates a contract; and
4. selects a GC, and negotiates a contract using the same RFQ and interview process.

B. Architect

The architect is the licensed design professional who: a) coordinates the owner/developer’s design goals, aesthetics, function, safety, economy, and future user needs; b) develops documents which enable the GC to build the project; and c) acts as the owner/developer’s representative throughout the design and construction process, to ensure that the final product meets the owner/developer’s expectations; and supervises the design team, bidding and construction administration services.

1. **Architect Qualifications:** The architect shall be licensed by the State of Connecticut and must have a minimum of five (5) years of relevant, multifamily residential design and construction experience. Proof of such experience, in the form of three (3) reference letters from current and/or past clients,

performance on multifamily residential projects of similar types and sizes, must be provided. The architect's professional consultants shall submit similar documentation of relevant, multifamily residential design and construction experience in their specific disciplines. Proof of experience may be provided at the discretion of Technical Services if the architect has successfully delivered prior CHFA projects.

2. Owner/Architect Agreement: The owner/developer/architect agreement shall include the following AIA contract documents:
 - a. AIA Document B101-2007 (formerly B141-1997 Part 1) – Standard Form of Agreement between owner and architect with Standard Form of Architect's Services
 - b. AIA Document B201-2007 (formerly B141-1997 Part 2) – Standard Form of Architect's Services: Design and Construction Administration
 - c. Contract documents shall be assignable to CHFA.
 - d. The construction administration portion of the architect's fee should be a minimum of 35% of the total fee, to be paid in equal monthly installments based upon the length of the agreed-upon construction schedule.
 - e. Architect's Services: The scope of the architect's services shall include the preparation of agenda, scheduling and running weekly job-site meetings with the owner/developer, GC, and any professional consultants, sub-contractors or other parties necessary to maintain work progress. The CHFA field observer will attend job meetings bi-weekly, or as otherwise may be required. The architect shall also record meeting minutes and distribute copies to all attendees, the CHFA field observer and CHFA.
 - f. The architect shall also prepare and distribute a final punch list to all parties, and verify that the work is completed by the GC.
 - g. The architect shall contract with currently-licensed professional consultants as necessary to carry out the design. All professional consultants shall be licensed by the State of Connecticut and must have a minimum of five (5) years of relevant, multifamily residential design and construction experience.
3. Insurance and Other Requirements for Design/Supervisory Architects and Professional Consultants:
 - a. Professional liability insurance in a form, amount and term satisfactory to CHFA shall be provided prior to the date of initial closing. All insurance policies must be in full force and effect as of the date of submission, and must be maintained for a period of seven (7) years after substantial completion of construction. CHFA shall be a named certificate holder on all insurance certificates.
 - b. For detailed CHFA insurance requirements, refer to the CHFA website.

C. Architectural Design Responsibilities

1. All architectural, planning, engineering, landscaping and other services, which contribute to drawings and specifications, shall be under the direction of the design architect. As a general rule, CHFA discourages multiple professional service contracts; however, consideration for such arrangements may be made, on a case-by-case basis. Exceptions may be made for civil engineering site work and licensed survey work contracted directly by the developer; however, the architect will be required to coordinate these with other design work.
2. Design architect shall review and opine on the reasonableness of the GC's proposed cost estimate and submit it as a letter to CHFA.
3. Design architect for CHFA-financed rehabilitation projects must determine which existing interior building components are suitable for re-use, and which are acceptable to CHFA.

Replacement building materials, components and finishes shall comply with the requirements of the Standards, and all work shall conform to applicable codes.

4. CHFA prefers the traditional Owner/Architect/GC development process, in which the owner, architect, professional consultants and contractor are separate, independent business interests. Typically, design/build development teams shall not be used; however, consideration for such arrangements may be made, on a case-by-case basis. Exceptions may be made for experienced development teams with a minimum of five (5) years of affordable multifamily development experience and/or three (3) successfully completed projects.

Typically, construction trade or design/build contractors and sub-contractors shall not be employed to carry out design work; however, consideration for such arrangements may be made, on a case-by-case basis. Where work such as fire suppression design, irrigation design, truss design, commercial kitchen design, and modular building design is proposed to be carried out by design-build contractors, such work shall be certified by a licensed engineer, and the design architect shall be responsible for coordinating and accepting their work.

D. General Contractor

CHFA encourages constructive participation by the GC during the design process, and recommends the GC's regular input to help maintain cost control for the development.

1. The GC is responsible for the construction or development of a property, pursuant to the terms of a primary contract with the owner/developer. The GC is responsible for all means and methods such as materials, vehicles, tools and labor used in the construction of the project, in accordance with the contract documents such as construction contract, schedule, general conditions, material/systems specifications and drawings prepared by the architect. The GC manages the construction process, including planning, staffing, organizing, budgeting, scheduling and supervision.
2. GC Qualifications: The GC shall be licensed by the State of Connecticut as a major contractor, and must have a minimum of five (5) years of relevant experience in the construction of residential facilities. The GC shall provide proof of such experience by submitting a minimum of three (3) reference letters from current and/or past clients, regarding the GC's performance on residential projects of similar type and size. The GC shall provide a minimum of three (3) reference letters from major material suppliers, regarding the GC's credit account payment history.
3. Owner/GC Agreement: The agreement shall include the following AIA contract documents:
 - a. AIA Document A102-2007 (formerly A101 – 1997) Standard Form of Agreement Between owner and GC where the basis of payment is the Cost of the Work Plus a fee with a Guaranteed Maximum Price. The eligible construction cost shall be computed per Div./Trade Line Item and CHFA recognized amount for cost certification purposes shall be the lesser of:
 - (i) the actual cash paid and to be paid at final closing, as reflected on the General Contractor's Certificate of Actual Costs, or
 - (ii) the contract price under the construction contract, as reflected on the most recent approved project cost summary

General Requirements and Builder's Overhead and Profit shall be calculated as a percentage of the eligible construction cost (percentage as reflected on the most recent approved project cost summary).

All CHFA approved change orders will be an adder to the above mentioned eligible construction cost. Additional bond and/or permit costs generated by the change order preparation and approval process during construction will be handled separately through a final change order at the completion of construction.

Any hard cost savings realized during or at the end of the construction will be added to the construction contingency via credit change orders. These savings will be controlled by the owner. Upon approval from CHFA, these savings may be used for betterments to the project. Any cost saving agreement between Owner and GC must be disclosed to and approved by CHFA at the time of initial closing. All remaining hard cost savings will be allocated as described in the [Multifamily Rental Housing Program Guideline](#).

The Guaranteed Maximum Price contract is preferred. However, if a Stipulated Sum (also known as Fixed Price or Lump Sum) contract is favored by the Development Team, this will be considered by CHFA. For a Stipulated Sum contract, project must be competitively bid in order to achieve the lowest reasonable construction cost and the bids must be shared with CHFA. If the Development Team does not select the GC with the lowest bid, they must demonstrate in writing that there is sufficient justification to go with a GC with a higher bid price. The final contract amount is subject to CHFA approval.

The eligible construction cost amount shall be the contract price under the construction contract, as reflected on the most recent approved project cost summary. All CHFA approved change orders will be an adder to the above mentioned eligible construction cost. The amount of actual cash paid or to be paid as described above shall be reduced by CHFA to the extent such amount includes any costs disallowed by CHFA in its review of the contractor's certificate of actual cost.

For guidance on Cost Certifications, refer to Cost Certification Preparation Guideline on the CHFA website.

- b. AIA Document A201 – 2007 (formerly A201 – 1997) General Conditions of the Contract for Construction, with Instructions
 - c. AIA Document A312 –2010 Performance Bond, with Instructions
 - d. Contracts must be assignable to CHFA, and shall include dates for commencement and completion of construction, and provisions for liquidated damages (if any), progress payments and reduction of retainage.
4. Other Requirements for GCs:
 - a. The GC must use his own employees to perform at least 15% of the construction work, but can utilize the services of specialty trade firms such as sub-contractors to perform particular tasks under the direction and coordination of the GC in a direct contractual relationship, to complete the project.
 - b. The GC will divide the total general conditions cost into equal monthly payments based upon the length of the agreed-upon construction schedule, which will be included in the monthly payment requisitions during construction.
 - c. For detailed CHFA insurance requirements, refer to the CHFA website.
 - d. Refer to CHFA Procedures for bonding requirements.

5. General Contracting arrangement: The traditional owner/architect/GC (GC) construction project delivery process is preferred, in which the GC provides the material, labor, equipment (such as engineering vehicles and tools) and services necessary for the construction of the project for a guaranteed maximum price. The GC's responsibilities generally include applying for building permits, securing the property, providing temporary utilities on site, managing personnel on site, providing site surveying and engineering, disposing or recycling of construction waste, monitoring schedules and cash flows, maintaining accurate records and also hiring specialized subcontractors to portions of the construction work the GC's own employees cannot provide.
6. Construction Manager as Constructor and Construction Manager at-Risk (CM@R) agreements: Typically, the construction management project delivery method shall not be employed; however, consideration for such arrangements may be made. Exceptions may be made for experienced construction management firms with a proven record of minimum five (5) years of affordable multifamily development experience or three (3) successfully-completed affordable multifamily development projects.

These terms refer to a business relationship of owner, architect and construction manager, which entails a commitment by the construction manager to deliver the project within a Guaranteed Maximum Price (GMP). The CM as Constructor is similar to the GC during the construction phase. The CM@R delivery method is an alternative procurement process similar to longstanding private sector construction contracting, wherein the construction manager acts as consultant to the owner in the design development phase, but as the equivalent of a GC during the construction and final closing phases.

The CM as Constructor and CM@R shall work closely with the owner/developer and architect on design review, project schedule analysis, constructability review and cost control management. The CM as Constructor and CM@R shall value engineer all building systems at each of the major milestones, with a lifecycle analysis for major building elements, such as site, building envelope, HVAC and lighting. In conjunction with the architect, CM shall prepare a cost estimate and evaluate the cost estimate against the construction budget. CM shall recommend, if necessary, the appropriate action to correct and/or avoid potential cost over-runs. The CM as Constructor and CM@R shall not include a construction cost contingency in its fee proposal; construction cost contingencies shall be included as a line item in the approved Owner's development budget. For detailed CHFA insurance requirements, see the CHFA website and refer to CHFA Procedures for bonding requirements.

7. Cost estimates shall reflect the best professional estimate of actual anticipated costs, while establishing internal estimating allowances consistent with good professional practices appropriate to each phase of development. Larger allowances held at early phases of development are assumed to gradually diminish to zero for the final cost estimate. Describe specific measures implemented to reduce project costs and quantify projected savings as a letter to CHFA.

III. FIELD ENGINEERING SUBMISSION REQUIREMENTS

A. Boundary and Topographic Site Survey

The purpose of these specifications is to describe the minimum requirements for a boundary and topographic site survey for use in the design, construction and post-construction verification of "as-built" conditions. In general, the surveyor shall perform all field work necessary to accurately determine the location of property lines and existing physical conditions of the site, set monument markers, establish

benchmarks and record on a Property and Topographic Survey, the information and data as required. The surveyor shall obtain such information and data from public and other records, including a review of underlying documents to current title work (within 120 days). All data and information required by these specifications shall be depicted and noted on a survey map in accordance with the pertinent portions of the current Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and Sections 20-300b-1 through 20-300b-20 of the Regulations of Connecticut State Agencies – Standards for Surveys and Maps in the State of Connecticut as adopted by the Connecticut Association of Land Surveyors, Inc. All surveys shall meet or exceed Horizontal Accuracy Class A-2 and Topographic Accuracy Class T-2, shall be signed and sealed by a Connecticut licensed professional land surveyor, and shall include the following:

1. North Arrow with appropriate source reference (record map; CT Coordinate System; NAD27; NAD83; etc.)
2. Precise legal perimeter description (“metes and bounds” or “course and distances”) shall appear on the face of the survey map, preceded by identification of the appropriate street address, if available. Said description shall conform entirely to the survey. Any contiguous plot shall be described by a single perimeter description of the entire subject property. Division into parcels shall be avoided, unless such is requested so as to serve a special purpose. If the property is described as being on a filed map, the survey map shall specifically reference that filed map.
3. Two benchmarks referenced to an established datum permanent objects adjacent to the site located and described
4. All boundary lines, labeled with bearings and distances
5. Mark all corners of the site and other boundary line intersections not previously marked by a monument. Where existing structures preclude setting monuments at the intersection of property lines, a brass pin should be set in the property line extended, tagged and so noted, along with the distance from the true corner. At least one corner of the property shall be designated by course and distance from, or by the coordinates of, a readily discernible reference marker. Depict and label position and description of each marker.
6. Designate the total area within boundary lines in both square feet and acreage. If the overall boundary is made up of individual parcels, include the area of each.
7. Easements, Encroachments, and Improvements
 - a. Indicate any and all servient and appurtenant easements by Book and Page, if any, the origin (e.g. Deed from A to B), if applicable, and nature. It is also desirable to describe an easement appurtenant to a fee parcel by using a separate parcel description.
 - b. Clearly indicate the location, dimensions and nature of (A) all encroachments upon the property; (B) all encroachments upon adjoining property, streets or alleys, by any buildings, structures or other improvements upon the property; and (C) all party walls between, with or adjoining the property and other property.
 - c. Indicate position, size and material of any and all improvements on the property, including buildings, retaining walls, decorative walls, areaways, driveways, paving, etc. Indicate the existence and location of off-site structures within 10 feet of the property lines. Indicate the location of any and all adjacent building lines. Note names of adjoining property owners.

8. Trees: Indicate location, species and size of trees over 6" in trunk diameter, measured at breast height (dbh).
9. Roads and Rights of Way: The following data shall be indicated on survey drawing for all streets, alleys, roads, highways and rights-of-way adjacent to the site:
 - a. Dimensions and distances from property lines
 - b. Type(s) and condition of material(s)
 - c. Type(s) of curbs and gutters
 - d. Elevations of sidewalks along edges nearest the site, at 20-foot intervals, at corners, and points of slope change
 - e. Elevations of tops of curbs and flow-line of gutters, at 20-foot intervals, at corners, and points of slope change
10. Sanitary Service: Development of sites without access to sanitary service is discouraged, due to the costs associated with providing well-designed, efficient on-site wastewater treatment and disposal systems. Development of sites without access to public water and sanitary services will not be funded. The following data pertaining to utilities adjacent to the site shall be depicted and noted on the survey:
 - a. Location and type of available electric service, including lines, poles and manholes
 - b. Location of water mains, hydrants and manholes, indicating size of water mains
 - c. Location and size of gas mains, including type (low or high pressure)
 - d. Location, size, direction of flow, pipe slope, and type(s) of material of sanitary, storm or combined sewer mains. Indicate public or private, and if use is exclusively for sanitary waste or storm water drainage. Indicate elevations of flow-line, "in" and "out" inverts, and locations of manholes.
 - e. If a utility is not available at the site, it shall be noted whether or not, and where service is available in the community.
 - f. List the company or governmental body of jurisdiction for all utilities.
11. Topography: Elevations of the site shall be taken on a grid suitable to the topography and size of the site. Contour lines shall be at two-foot intervals. Elevations shall be marked on contour lines at regular intervals, and the reference datum shall be specifically stated.
12. Miscellaneous Information:
 - a. Note other information pertaining to site conditions, e.g. abandoned foundations, ditches, culverts, mine shafts and tunnels (if visible or known), wells, sanitary drain fields, excavations, etc. Also indicate locations of any and all waterways, wetlands, and established floodplains and floodways.
 - b. In addition to other contractual services, the surveyor shall obtain and/or verify requisite information and data from public records, including names, locations, dimensions and elevations of streets, curbs, gutters, sidewalks, established building lines, easements, utilities, proposed improvements, condemnations, etc., necessary for, and incidental to, a completed site survey, preparation of the drawing thereof, and the certification by the surveyor that the data presented meets, at a minimum, the horizontal and topographic accuracy classifications specified in the referenced standards to which the survey was prepared.
13. Coordination with Legal Survey: The survey shall meet the requirements of CHFA's Legal Department; including long-form certification language.

B. Capital Needs Assessment (CNA) Report

If rehabilitation work is involved, the owner/developer shall commission CT-licensed Architectural and/or Engineering professionals to conduct a physical assessment and evaluation of all building components to remain during and after the rehabilitation. The findings shall be compiled into a Capital Needs Assessment (CNA) Report, including a written description indicating the level of the rehabilitation and 20-year replacement schedule. For new construction projects, submit a Capital Needs Assessment (CNA) six months post-construction. This aids the Development Team to consider and plan for the long-term capital needs of the project in the early phase of project development. This helps encourage more efficient design, as well as maintenance of appropriate reserve levels, which improve the viability of the project over the long term.

In the case of a complete gutting of buildings, provide an Architectural Needs Assessment Report by an Architect, and a Structural Needs Assessment Report by a structural engineer, to identify and assess the age, appearance, condition, useful life expectancy, and structural capacity of all materials, assemblies, fabrications, equipment and systems that are to remain after the gut rehabilitation. The reports shall include the age, the material, the condition and life expectancy for such components. However, if the applicant submits drawings and specifications that are at least 90% complete as part of their application, in lieu of a Structural Needs Assessment Report, the applicant may submit structural drawings and specifications that are at least 90% complete and have been professionally stamped and signed by the structural engineer for the project.

CNA requirements include the following:

1. The CNA consultant(s) to be, or to consult with, licensed and insured professional architects or professional engineers.
2. A narrative description of the development, including the evaluator's overall assessment of the property condition including of the building exterior and interior, including mechanical and accessible spaces; e.g., attics, roofs, crawl spaces, etc. Any spaces not accessed shall be noted in the report. The narrative shall include property location, age, physical attributes, number of units inspected and the physical condition of the units inspected.
3. The presence of, or suspected presence of, environmental hazards, such as asbestos, lead paint or mold shall be detailed.
4. The number of living units required to be assessed shall be as follows:
 - a. Developments with 4 – 40 units \geq 50%
 - b. Developments with 41 – 60 units \geq 35%
 - c. Developments with 61 – 80 units \geq 30%
 - d. Developments with 81 – 100 units \geq 25%
 - e. Developments over 100 units \geq 20%

If determining the number of units to be assessed results in a fraction, round up to the next number.

5. The report shall include photographs of building characteristics that accurately reflect the existing conditions present.
6. Physical Assessment: The report shall further examine and analyze:

- a. The site, including general topography, ground water drainage, bituminous/concrete pavement, bituminous/concrete walks and curbs, site amenities, water, storm, sanitary sewer, gas and electric services
- b. Structural systems, both for substructures and super structure, including exterior wall systems, doors and windows, roofing system and drainage
- c. Common area and unit interiors, including existing finishes (carpet, vinyl wall covering, paint, VCT, ceramic tile, etc.), appliances, cabinets, toilet fixtures, exhaust fans, range hoods, etc.
- d. Building thermal envelope components, including an evaluation of insulation and air-sealing measures
- e. Building mechanical systems and controls, including HVAC systems, plumbing and domestic hot water, fire protection, electrical lighting and power, communication and security systems, etc.
- f. Any components which are non-compliant with the ADA, Section 504 or Fair Housing Guidelines. The report shall include a copy of the owner's certification that the specific development complies with all of the ADA and 504 regulations, along with compliance with Fair Housing Guidelines. If the owner is unable to so certify, then the report shall state how the owner plans to achieve compliance.

7. Energy Assessment: The report shall include a Level I – Walk-through Energy Assessment (minimum) to assess building energy efficiency, identify defects and simple, low-cost improvements, and create a list of energy conservation measures and retrofit opportunities, including implementation costs and energy savings. This inspection is based on visual verifications, study of installed equipment and operating data, analysis of historic energy use and cost, and a benchmarking comparison to the performance of similar buildings in the area. A Level II – Detailed/General Audit is preferred.
 - a. Coordinate with the utility companies and fuel vendors to analyze common area annual energy usage data. Living units to be assessed for energy efficiency shall be:
 - i. If owners are responsible for residential utility costs, coordinate with the utility companies and fuel vendors to analyze energy usage data for all units.
 - ii. If tenants are responsible for utility costs, and annual energy usage is not currently tracked by the owner, a sample of information from 10% of the residential units, including at least one of each unit type, shall be assessed.
 - b. For developments served by Municipal utilities, the CT Green Bank or CEEF may be able to provide no-, or low-cost Level I Energy Audit and assessment services and on-site testing, and financial incentives for energy conservation measures and retrofit opportunities.
8. The report shall include an interview with on-site property management and maintenance personnel to gain knowledge of past repairs, pending repairs and chronic physical deficiencies. The consultant shall obtain and include a 5-year history of the owner's capital repair expenditures for the development.
9. The report shall include a budget and an in-depth scope of work for the proposed rehabilitation work. This budget shall include expenditures and costs for all property improvements that may affect the project's future marketability. Improvements may include energy efficiency upgrades, adding central air to the development, community room additions, etc.

All proposed improvements (e.g., doors, windows, siding, roofing, paving, etc.) shall strive to comply with the Standards. Individual building materials, components, fabrications, and equipment for all proposed repair, replacement and capital improvement projects shall comply with the applicable section(s) of the current Standards. However, when determining the scope of work for proposed repair, replacement and capital improvement projects, owners and property managers are strongly

encouraged to consider the interconnectedness of building materials, components, fabrications, and equipment that comprise a fully-functioning building.

10. The CNA report shall include a spreadsheet that outlines, by line item, the costs of proposed improvements expensed in year one, with a life-cycle replacement budget reflecting appropriate line item costs expensed over the proposed mortgage term, if applicable; otherwise a 20 year life-cycle is acceptable. The spreadsheet shall show all costs in today's dollars, with an appropriate rate of inflation for costs expended over the life-cycle term. Please refer to the "Comprehensive Capital Needs Assessment Schedule", which can be found on the CHFA website.

C. Soil Boring Reports

The soil survey is to be performed under the direction of a civil engineer registered in the State of Connecticut. The entire site is to be inspected to note variations in types of soils and ground water conditions. Locations for borings are to reflect varying site conditions. Special attention is to be given to boring locations in low or marshy areas, areas where there is a history or evidence of fill or where rock may be expected.

1. Soil borings are to be made with a drilling rig, taking samples as often as the character of the soil changes, and describing it in accordance with acceptable engineering standards. Samples are to be submitted to a soil specialist for analysis.
2. The engineer is to indicate the location of borings on a boundary survey and log the borings on the site plan or on a separate document. The logs are to use an exaggerated vertical scale to indicate, with acceptable key names and symbols, the nature of soil composition at each stratum to a depth of 15 to 20 feet.
3. For sites anticipating high-rise buildings, borings are to be concentrated in the area of the anticipated building location. At least one of these borings shall be drilled to a depth of 100 feet or to hardpan.
4. Borings are to be performed after buildings have been located on the site plan. There shall be a minimum of two borings per building for low-rise structures and at least two borings per wing for mid-rise structures with a minimum of three to four borings overall for this building type. Borings shall also be carried out in parking areas and roadways.
5. The engineer shall indicate bearing capacities of soils at various levels with a recommendation for the footing/foundation type for proposed structures and shall provide a recommendation for pavement design of roads and parking.
6. The engineer shall note ground water conditions such as high water tables, flood zones, etc. and make recommendations for remedies as needed.

D. Remediation/Re-use of Existing Brownfield Sites

CHFA encourages the re-use and redevelopment of abandoned or underutilized commercial and industrial sites, where redevelopment and re-use has not occurred due to the presence or potential presence of pollution in the buildings, soil and/or groundwater, which requires remediation before, or in conjunction with, the restoration, redevelopment and re-use of the property. CHFA will recognize abandoned, underutilized commercial and industrial sites as Brownfields, if they are included by the Federal Government or the State of Connecticut on a published list of Brownfields, or can be documented to have received Brownfield remediation funds from the Federal Government or the State of Connecticut.

IV. CRITERIA FOR EVALUATING DEVELOPMENT PROPOSALS

In evaluating the suitability of a project or in selecting one proposal from several, CHFA considers a number of criteria. Regarding housing for elderly persons, particular emphasis is placed on locating these developments in close proximity to services such as medical care and senior citizens centers. If federal funding is involved, such as HOME funds, particular care must be taken in selecting sites that are fully accessible.

A. Site Selection

Ideally, development sites shall not be selected if the surroundings would detract excessively from the quality of development, or where the development would have an adverse effect upon its surroundings. By considering issues such as lot orientation, storm-water management, access to transit, and minimizing street widths early on, many environmental benefits can be accrued at later stages of the project. Site considerations include:

1. Planning and Zoning
2. Land and Soil
3. Site Utilities
4. Existing Structures
5. Site Development Cost

B. Development Costs

Overall costs of development shall be considered in relation to the quality of the resulting development, and not only to the number of dwelling units constructed. Location, available services, ease of development, type of construction, quality of materials, size and number of units and amenities provided, all contribute to overall costs. The development budget shall be prepared and evaluated for what it provides, as well as overall and per dwelling costs. It must be supported by the rents generated by the marketplace. Site improvement and building costs shall be consistent with the type and quality of the proposed development and reasonable in cost per dwelling. Costs shall be evaluated for their adequacy to provide construction which reduces the consumption of energy and the amount of maintenance required over the mortgage life of the development, and for the amenities planned in its design.

C. Project Data for Construction Cost

In order for CHFA to evaluate the construction costs for proposed developments, provide the following project data, which must be updated and re-submitted for each phase of the Technical Review Process:

1. Number of Buildings
2. Building Gross Area (Total Project Square Footage – all buildings)
3. Total Number of Units and Breakdown of Unit Type (including number of bedrooms and accessibility types)
4. Unit Net Area (Net Residential Area – each dwelling unit)
5. Total Living Unit Area
6. Total Common Area (Net Common Area – all buildings)
7. Total Commercial Area (Net Commercial Area – mixed-use buildings)

D. Area and Use Definitions for Construction Cost Calculations (for use in conjunction with the Architect SF Info Table from the Consolidated Application)

1. Building Gross Area

- a. All floor areas, including construction and shaft spaces within the building, measured from the outside of the exterior walls; spaces only partially enclosed, such as balconies, entrance canopies, etc., are not included; basements in town houses are not included. Floor areas of non-housing, such as commercial spaces, are to be included; basements with common space that has a housing use are included.
2. Unit Net Area: The floor area inside the finished surfaces of a residential unit, inside face of all walls.
3. Residential Area: Spaces to be included in Residential Area calculations include dwelling units (including the manager's unit), entry vestibules, lobby spaces deemed necessary for foot travel from the building entry to the elevator and from the elevator to the unit entry, corridors, elevator lobbies, elevators, receiving, mechanical/electrical/meter rooms, stairways, trash rooms and required tenant storage.
4. Common Area: Spaces to be included in Common Area calculations include community buildings, community rooms, common kitchens, offices, reception areas, maintenance areas, library areas, meeting rooms, common laundries, lounges, restrooms, mailrooms, janitor closets, craft rooms, game rooms, conference rooms, mechanical/electrical rooms for common areas and common storage space. Note: the lobby space deemed necessary for foot travel from the building entry to the elevator, and from the elevator to the unit entry, is not considered common space.
5. Commercial Area: Spaces to be included in Commercial Area calculations include all areas available for commercial lease in mixed-use buildings.
6. Parking Garage: If a parking garage is included within the footprint of the building, provide the Net Square Footage of the garage itself. If a separate garage structure is included in the project, provide the Gross Square Footage of the entire garage.

E. Project Cost Summary and Trade Payment Breakdown

The submission of the CHFA/DOH Consolidated Application exhibits for Project Cost Summary and Trade Payment Breakdown are intended as a statement of Guaranteed Maximum Price (GMP) based on the projected costs developed by the Contractor for each of the 16-divisions of the MasterFormat 1995 standard filing system for architectural, design, engineering, and construction professionals, and serves as the contractor's requisition template and cost certification template.

F. Prevailing Wages/Davis-Bacon Wages

Prevailing Wages and/or Davis-Bacon Wage Rates may be required. It is the responsibility of the applicant to determine if such requirements apply to their project. Please contact the necessary authorities to determine the applicability of prevailing wages and/or Davis-Bacon wage rates. When Prevailing Wage Rates are required by the Connecticut Department of Labor, and/or Davis-Bacon Wage Rates are required by the U.S. Department of Labor, documentation and itemization of all current required wage rates shall be provided to CHFA.

G. CHFA Very Low-Income (VLI) Construction Employment Policy

All multifamily projects funded by CHFA are required to comply with CHFA's Very Low-Income (VLI) Construction Employment Policy. Refer to this policy located on the CHFA website.

H. CHFA Cost Acceptance Limits

1. General Requirements: 9% of Total Hard Cost (max.)
2. Overhead & Profit: 7% of Total Hard Cost (max.)
3. Percentage Stacking: Percentages shall remain the same for all Change Orders; Percentage Stacking is not allowed

V. TECHNICAL SERVICES REVIEW

A. Pre-Design Meeting

It is encouraged that the owner/developer schedule a pre-design meeting with CHFA prior to submittal of a financing application as early as possible to discuss drawings, programmatic parameters and process requirements. Note that the Standards may be more restrictive in some cases than local planning and zoning requirements; as such, the local municipality's planning and zoning review/approval process should be concurrent with the CHFA application process.

B. Design Review Process

Projects will be evaluated by the CHFA Technical Services Department at full application. For all developments, including those receiving Low-Income Housing Tax Credits (both 9% and 4%) and developments financed with tax-exempt bonds, the review of construction documents is the first stage of the Technical Review Process between the development team and CHFA Technical Services.

Sufficient detail must be provided to enable the development team's estimator to determine the project cost data to be submitted on the Project Cost Summary and Exploded Trade Payment Breakdown finance application exhibits, and to facilitate CHFA Technical Services' review. Other documents required at this stage include recommendations for the phasing and schedule of the construction, site and landscape plans, structural, mechanical, electrical, plumbing and fire protection plans and other information such as soil boring documents, consistent with construction documents at varied phases of completeness as described below.

C. 40% Construction Contract Document Submission Requirements

Submit a complete CHFA/DOH Consolidated Application with all of the threshold Technical Services-related forms, exhibits, and attachments, etc., including, but not limited to one full size printed set of 40% complete Construction Drawings and Specifications, in accordance with requirements for financing consideration with dimensions on major common areas and typical units, basic layouts, types and sizes of mechanical and electrical equipment and systems, materials and operations, and typical building sections, wall sections and details. All drawings that are to be developed for use in the construction of the development shall be coordinated to allow printing on the same standard sized print pages, and all pages shall be bound together as a complete set. All drawings must include sheet titles and numbers, graphic and lettered scales, and a north arrow. Note that all 40% construction contract document requirements apply, regardless of construction type, means and methods. In the case of modular box construction, the architect shall be familiar enough with the means and methods of the selected manufacturer to provide 40% drawings and specifications indicating all materials, assemblies, fabrications, equipment and systems, and all such items must be reflected in the construction cost-related application exhibits and back-up documentation.

1. Title Sheet: Provide development location, including location map, names and contact information for the Sponsor, Architect, Landscape Architect, Site Planner, Surveyor, Engineer and any other special consultants, revision dates, index of drawings, a development data summary, a graphic/tabular analysis of the applicable Building Codes to which the proposal has been designed and a large note on the title sheet clearly indicating that the drawings are intended as “40% Construction Drawings”. Building Code requirements to be addressed in the analysis include, but are not limited to: use and occupancy classification(s), building height(s) and area(s), type(s) of construction and fire-resistance rating(s), fire protection system(s), means of egress and accessibility, and the architects square footage information table as detailed in the Consolidated Application.
2. Boundary and Topographic Survey
3. Site Plans: The Design Development Site Plan shall indicate refined arrangements and functional groupings of units to scale, to create a meaningful sequence of usable spaces. Specific relationship of unit arrangement, of the structure to the site, site grading, circulation, lighting, paving, screening, setbacks, parking, play areas and recreation areas shall be presented, including:
 - a. Zoning: A table with information regarding the applicable requirements for the zone, use, lot area, frontage, setbacks, bulk, height, density, parking, gross and net square footage, etc. and an indication of compliance or non-compliance for each requirement.
 - b. Structures: Locations, shapes, sizes, arrangements and groupings of all structures
 - c. Circulation and Parking: Vehicular and pedestrian route layouts and materials; parking/dwelling unit relationships, location, types and number of parking spaces
 - d. Soils: Locations of soil borings; data and analysis of topsoil (may be a separate report)
 - e. Utilities: General layouts of major utilities, easements and connections; irrigation water source and pressure (if proposed)
 - f. Recreation: Locations and types of facilities
 - g. Grading and Landscaping: General character/major features of finished grading, existing and proposed contours at 2' (min.) intervals, berms and mounds, sections, etc.; storm water management/detention and retention areas; general character of plantings, screening concepts, relationship to units and open space, etc.; areas of no-disturbance/ tree and vegetation protection and areas acceptable for construction vehicles and material storage
 - h. Lighting: Location and character of proposed fixtures (catalog illustrations), height, wattage and photometric information and a separate Site Lighting Photometric Plan indicating conformance with CHFA-required exterior illumination levels)
4. Residential and Community Building Plans: Definitive designs for typical dwelling units, residential buildings and community building(s) shall be developed and submitted to CHFA. These designs shall be based on careful study of the development program and concept plan.
 - a. Residential Buildings: Provide residential building floor plans, sections and elevations of typical residential buildings at 1/8"= 1'-0" scale (min.), indicating overall dimensions, gross area, basic construction technique and exterior materials and keyed to the Site Plan, and dwelling unit floor plans for each unit type (including door and window locations, door swings, and furniture layout), indicating designation, dimensions and area of each room and space, at 1/4"=1'-0" scale (min.)
 - b. Community Buildings/Facilities: Provide community building floor plans, sections and elevations of community buildings at 1/4"= 1'-0" scale (min.), keyed to the Site Plan, and indicating overall basic dimensions, gross area, basic construction technique and exterior materials, door and window locations, door swings, and furniture layouts, and designation, dimensions and area of each room and space
 - c. Non-residential Facilities: Provide community building floor plans, sections and elevations of commercial and other non-residential facilities included in development at 1/4"= 1'-0" scale (min.), keyed to the Site Plan, and indicating overall basic dimensions, gross area, basic

construction technique and exterior materials, door and window locations, door swings, and furniture layouts, and designation, dimensions and area of each room and space

- d. All Buildings: Provide residential and non-residential building structural, HVAC, fire suppression and electrical floor plans at 1/8"= 1'-0" scale (min.), indicating designation of each room and space, system layouts and fixture, equipment and control locations
- e. Provide a code sheet and accessibility plan outlining the major code and ADA implications of the building and project including site issues.

5. 40% Specifications: Outline specifications and “scope of work” lists are not acceptable as 40% Specifications. Provide one printed copy of a Construction Contract Project Manual at a 40% level of completion which defines all proposed major building components and systems in division 2 through 16, of the 5-digit-based CSI MasterFormat 1995, including Part 1 – General: Warranty information and Part 2 – Products: Manufacturer, Material/Component/Manufactured Unit and Performance information (min.). Project Manuals organized under MasterFormat 1995 are preferred, since the Project Cost Summary (Construction Schedule of Values) and Exploded Trade Payment Breakdown exhibits in the CHFA/DOH Consolidated Application, construction phase payment requisition and post-construction Cost Certification Templates are organized by 16-divisions. Use of the 50-division, six-digit code 2014 MasterFormat filing system in Project Manuals is acceptable, provided all information is re-organized into 16-divisions for CHFA/DOH application exhibits and construction cost-related forms. Provide a large note on the cover sheet clearly indicating that the specifications are intended as a “40% Project Manual”.

D. 9% LIHTC Financial Efficiency and Sustainability Review

- 1. Building Plans and Specifications:
 - a. Plans and Specifications \geq 90% complete may be provided. Note that, except for additional post-bid clarifying notes, details, and any necessary revisions due to value engineering, \geq 90% complete drawings and specifications are expected to include all of the elements outlined below, and to be construction contract bid- and building permit review-ready. All hard costs shall be reflected in the project cost summary.
- 2. Sustainable Design:
 - a. Plans and Specifications \geq 40% complete and reflecting Passive House Design and construction measures may be provided. Note that \geq 40% complete plans and specifications are expected to include all of the necessary requirements described in sections V.C. and D.1. above. In addition, a detailed scope of proposed Passive House design and construction measures, coordinated with section details of the proposed building thermal envelope at key intersections (footings, foundations, slabs, floors, walls, windows, doors, projections/overhangs, roofs, etc.), and a preliminary modeling analysis/output report prepared by a certified Passive House consultant through the Passive House Planning Package (PHPP) as developed by the Passive House Institute (PHI), or through WUFI Passive, as developed by the Passive House Institute United States (PHIUS), must also be provided. It is expected that submissions under the Passive House Design category are “pre-certification-ready”; i.e., all documentation required by PHI or PHIUS to be submitted for pre-certification review must be provided, so that submission for pre-certification review can be made immediately upon notification of an award of tax credits. In order to facilitate Passive House certification by PHI or PHIUS, it is important that the development of final construction drawings be informed and guided by their pre-certification review comments. In addition, all Passive House projects must receive third-party verification of all PHIUS+ requirements during construction, provided by PHIUS+ certified raters, who are not part of the design or construction development team (this requirement applies regardless of which Passive House organization approves the pre-certification). All Passive House-related soft and hard costs

shall be identified and included in the development budget, project cost summary and exploded trade payment breakdown, and an itemized breakdown of the additional construction costs for Passive House upgrades shall be provided.

– and/or –

- b. If the application is for the minor, moderate or substantial rehabilitation of existing low-rise buildings, as defined in the CHFA Guidelines, plans and specifications \geq 40% complete, and an Energy Conservation Plan reflecting High-performance Building Design, which provides for a projected reduction in energy consumption \geq 33%, may be provided. A summary letter or report from a Professional Engineer, BPI-, RESNET HERS-, and/or ENERGY STAR-certified assessor/rater verifying the energy modeling must also be provided. All soft and hard costs shall be identified and included in the development budget, project cost summary and exploded trade payment breakdown.
 - and/or –*
- c. If the application is for a new low-rise building, or the gut rehabilitation of existing low-rise buildings (as defined in the CHFA Guidelines) or for new construction, plans and specifications \geq 40% complete and an Energy Conservation Plan reflecting High-performance Building Design, which provides for a projected HERS Index for all proposed dwelling units \leq 52, based on the ENERGY STAR Certified Home v 3.1 HERS Index Target Procedure, may be provided. For the purposes of this category, renewable energy systems may not be included in the energy modeling to artificially lower the HERS ratings. A summary letter or report from a Professional Engineer, BPI-, RESNET HERS-, and/or ENERGY STAR-certified assessor/rater verifying the energy modeling must also be provided. All soft and hard costs shall be identified and included in the development budget, project cost summary and exploded payment breakdown.
 - and/or –*
- d. If the application is for a new high-rise building, or the gut rehabilitation of existing high-rise buildings (as defined in the CHFA Guidelines) or for the construction of a new high-rise building, and the building is eligible for the ENERGY STAR MFHR Program (as determined by the EPA ENERGY STAR Multifamily New Construction Program Decision Tree), plans and specifications \geq 40% complete and an Energy Conservation Plan reflecting High-performance Building Design, which provides for energy cost savings \geq 20% over ASHRAE 90.1-2010 (or 25% over ASHRAE 90.1-2007) Standards, may be provided. A summary letter or report from a Professional Engineer, BPI-, RESNET HERS-, and/or ENERGY STAR-certified assessor/rater verifying the energy modeling must also be provided. All soft and hard costs shall be identified and included in the development budget, project cost summary and exploded trade payment breakdown.
 - and/or –*
- e. Plans and specifications \geq 40% complete reflecting a proposed Renewable Energy System – roof-top, building-integrated or landscape-integrated Photovoltaic (PV) electrical generation system with a minimum goal of providing \geq 33% of site lighting energy requirements, or an ENERGY STAR-qualified central geothermal HVAC system – may be provided. A summary letter or report from a Professional Engineer and/or qualified solar/geo-thermal engineer/designer describing and verifying the qualifying capacity of the proposed system must also be provided. All soft and hard costs shall be identified and included in the development budget, project cost summary and exploded trade payment breakdown.

3. Additional 9% LIHTC Financial Efficiency and Sustainability Review Guidance:

- a. Applications submitting qualifying documentation for the various available categories of Financial Efficiency and Sustainability may be awarded points, or partial points, under more than one category. For example, qualifying Passive House Design dwelling units would most likely

also meet the qualifications for High-performance Building Envelope units and, although designing for Passive House certification does not require a renewable energy system, a qualifying Renewable Energy System might also be proposed. For example, if a total of 100% of the units in a development application were proposed to be new, qualifying Passive House Design units, and a qualifying Renewable Energy System were also to be proposed, 100% of the available Passive House Design points would be awarded, 100% of the available High-performance Building Design points would most likely be awarded, and the available points for Renewable Energy System would also be awarded.

b. If an application includes a mix of new construction and rehab work, and/or a mix of dwelling units under the Passive House Design and High-performance Building Envelope categories, partial points may be awarded based upon the applicable percentage of units in each construction type and/or design category. For example, if less than 100% of the units proposed in a development application were proposed to be new, qualifying Passive House Design units, 1 point would be awarded if $\leq 33\%$ of the units were Passive House units, 2 points for $\geq 34\%$ but $\leq 66\%$ new Passive House units, and 3 points for $\geq 67\%$ but $\leq 100\%$ new Passive House units. Similarly, if less than 100% units proposed in a development application were qualifying High-performance Building Design units, 1 point would be awarded if $\leq 50\%$ of the units were High-performance Building Design units, and 2 points for $\geq 51\%$ but $\leq 100\%$ qualifying High-performance Building Design units.

VI. 100% CONSTRUCTION CONTRACT DOCUMENTS and INITIAL CLOSING

The review of 100% complete construction documents is the second stage of the CHFA Technical Review Process between the development team and CHFA Technical Services. This phase culminates with the final documents from which the development will be constructed: construction contract documents.

A. 100% Construction Contract Document and Initial Closing Submission Requirements

1. Architect and GC qualifications, zoning approval, capital, energy and/or structural needs assessments should have been submitted with the original application. If any of these have changed, updated documents are required for review.
2. Environmental Assessment: Provide final Environmental Site Assessment and Hazardous Material Survey reports.
3. Soils Report: If not previously submitted, or if revisions to previously-submitted boring and test pit report by a licensed Geotechnical Engineer, provide additional or updated documents.
4. Energy Conservation Plan: Provide a final estimate of anticipated energy incentives from the utilities based on a Letter of Agreement (LOA) with incentive amounts, energy savings details and verification requirements.
5. Availability of Utilities: If not previously submitted, submit updated documents. If the development is existing and there are no changes to the existing utilities which are available, this may not be required.
6. Property and Topographic Survey and Legal Description: Submit two copies of the Property and Topographic Surveys, including a certification statement to CHFA, its successors and assigns; the title insurance company/companies insuring the Mortgage; the owner/developer, DOH (if applicable) and/or other interested parties; with no statement of facts objectionable to CHFA. The survey

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certification language and attendant notes should include the following basic elements in a format acceptable to CHFA, and should be used for both the pre-construction and As-built surveys:

a. Survey Certification Statement:

To: Connecticut Housing Finance Authority, [State of Connecticut/DOH/Other Lenders], [Title Insurance Company], [owner/developer] [Other Interested Parties]:

This is to certify that this map and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes items 1(existing), 2, 3, 4, 5, 6, 7(a), 8, 9, 10, 11, 13, 14, 16, 17, 18, 19, 20 and 21 of Table A thereof. The fieldwork was completed on [Date].

Date: [Certification Date]

Signature: [Licensed Land Surveyor's Signature with Professional Seal Affixed]

b. Applicable Notes (including, but not necessarily limited to):

- i. This survey map has been prepared in accordance with Sections 20-300b-1 through 20-300b-20 of the Regulations of Connecticut State Agencies and the "Standards for Surveys and Maps in the State of Connecticut" as adopted by the Connecticut Association of Land Surveyors, Inc. as a Property and Topographic Survey, the Boundary Determination Category of which is a [Resurvey or First Survey] conforming to Horizontal Accuracy Class A-2 Topographic Accuracy Class T-2. This [survey/resurvey] is intended to be used for conveyance or financing purposes, and as a base for engineering site design.
- ii. Reference is made to [List of Maps] of the [Municipality] Land Records.
- iii. Reference is made to deeds of record found in [List of Books/Pages] of the [Municipality] Land Records.
- iv. Reference is made to instruments of record as labeled hereon.
- v. Areas of the surveyed parcel(s):
 1. Total = [Sq. Ft. (Acres)]
- vi. There are no wetlands on the subject property as indicated in [Wetlands/Watercourses and Soils Report], prepared by [Soils Science and Environmental Services Consultant], [Date].
- vii. Property does not lay within a FEMA Flood Hazard Zone, as depicted on Flood Insurance Rate Map, Panel [Number], Map [Number], Effective Date: [Date].
- viii. Reference is made to map titled [Title] dated [Date], prepared by [Surveyor].
- ix. Elevations depicted hereon are based on the North Atlantic Vertical Datum of 1988 (NAVD88).
- x. Subsurface utility, structure and facility locations depicted hereon have been compiled, in part, from municipal records and field measurements. These locations must be considered as approximate, may not be complete, and other such structures may exist on site. The size, location and existence of all such features must be verified by the appropriate authorities prior to construction.

7. 100% Construction Contract Drawings: Provide one full size printed set of 100% complete Construction Drawings, in accordance with CHFA requirements. All drawings developed for use in the construction of the development shall be coordinated to allow printing on the same standard sized print pages, and all pages shall be bound together as a complete set. All drawings must include sheet titles and numbers, graphic and lettered scales, and a north arrow. Changes to previously-submitted drawings (revisions and additional notes/details, etc.) based on specific 40% review comments shall be identified in accordance with architectural graphic standards by drawing a "cloud".

- a. Title Sheet: Development location, including location map, names and contact information for the Sponsor, Architect, Landscape Architect, Site Planner, Surveyor, Engineer and any other special consultants, revision dates, index of drawings, a development data summary, a list of the applicable Building Codes, use group, building classification to which the proposal has been

designed and a large note on the title sheet clearly indicating that the drawings are intended as “100% construction drawings”.

- b. Boundary and Topographic Survey
- c. Site Plans (list of typical site plan drawings):
 - i. Demolition Plan
 - ii. Road and Building Location Plan
 - iii. Site Layout Plan
 - iv. Grading Plan
 - v. Planting Plans
 - vi. Site Utility Plan
 - vii. Site Lighting and Photometric Plan
 - viii. Sewer Profiles
 - ix. Irrigation Plans
- d. Residential and Community Building Plans (list of typical Residential and Community Building construction drawings):
 - i. Building Demolition Plans and Elevations (scale not less than 1/8"=1'0"):
 - ii. Building Foundation Plan (scale not less than 1/8"=1'0"):
 - iii. Interior Demolition Plans and Elevations (scale not less than 1/4"=1'0"):
 - iv. Building Elevations (scale not less than 1/8"= 1'-0"):
 - v. Building Roof Plan (scale not less than 1/8"= 1'-0"):
 - vi. Unit Floor Plans (scale not less than 1/4"= 1'-0"):
 - vii. Unit Interior Elevations (scale not less than 1/4"= 1'-0"):
 - viii. Building Sections (scale not less than 1/4"= 1'-0"):
 - ix. Exterior Section Details (scale not less than 3/4"= 1'-0"):
 - x. Interior Architectural Construction Details (scale not less than 1 1/2"= 1'-0"):
 - xi. Door, Window and Finish Schedules (gut rehab and new projects) and Scope of Work Matrix (less-than-gut rehab projects)
 - xii. Structural Framing Plans (Composite floor/roof plans (scale not less than 1/8"= 1'-0") and unit floor plans and mechanical equipment room plans (scale not less than 1/4"= 1'-0")
 - xiii. Mechanical, Plumbing, Fire Protection and Electrical Plans (Composite floor/roof plans (scale not less than 1/8"= 1'-0") and unit floor plans and mechanical equipment room plans (scale not less than 1/4"= 1'-0")

8. 100% Construction Contract Specifications: Provide one printed copy of a Construction Contract Project Manual at a 100% level of completion, which defines all required bidding, contract and general requirements in division 1, of the 5-digit-based CSI MasterFormat 1995, and technical specifications for all building materials, components, assemblies, fabrications, equipment and systems in divisions 2 through 16, including Part 1 – General, Part 2 – Products and Part 3 – Execution. Project Manuals organized under MasterFormat 1995 are preferred, since the Project Cost Summary (Construction Schedule of Values) and Exploded Trade Payment Breakdown exhibits in the CHFA/DOH Consolidated Application, construction phase payment requisition and post-construction Cost Certification Templates are organized by 16-divisions. Use of the 50-division, six-digit code 2014 MasterFormat filing system in Project Manuals is acceptable, provided all information is re-organized into 16-divisions for CHFA/DOH application exhibits and construction cost-related forms. Unless otherwise permitted by CHFA, manufacturers’ instructions shall be followed for the installation of all materials, products and equipment. Provide a large note on the cover sheet clearly indicating that the submission is intended as a “100% Project Manual”.

9. Other Contract Documents related to the Architect:

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- a. Standard AIA owner/Architect Agreement and Amendments, if any [the fee distributed for construction administration (CA) shall be 30 - 35% of the architect's total fee as determined by CHFA based upon project cost and schedule]
- b. Certificate of Liability Insurance naming CHFA as certificate holder
- c. Certification that the documents adhere to all applicable codes and CHFA requirements
- d. ADA/ Uniform Federal Accessibility Standards Compliance Certification

10. Other Contract Documents related to the GC:

- a. Contractor's Qualifications
- b. Standard AIA owner/Contractor Agreement, including contract time, contract sum, list of addenda, list of drawings and specs, and liquidated damages
- c. Riders and Exhibits
- d. Contractor's General Liability, Automobile, Umbrella, Worker's Compensation and Latent Defects insurance coverage per applicable CHFA requirements for multi-family developments under construction and/or with permanent financing, which can be found in the Multifamily Rental Housing Development Document Library section of the CHFA website
- e. Schedule of Values
- f. Construction Schedule: CHFA prefers Critical Path Method (CPM) construction schedules, such as those created with Primavera, Suretrack, Microsoft Project or other project scheduling and control software, in order to develop, analyze, update, monitor and report the progression of construction projects such that the owner/developer is informed quickly and accurately of project events, potential problems, and corrective actions. If Microsoft Excel-type bar charts are used, the all construction operations shall be consolidated onto one page, or a series of pages, to continuously show all concurrent work. If the project is to be divided into major sub-projects for multiple buildings, color coding the bars can keep the sub-project work together.
- g. Performance & Payment Bonds – refer to CHFA Procedures for requirements.
- h. List of Sub-contractor(s).
- i. Building Permit(s).

B. Early-Start

CHFA discourages owner/developers from starting construction prior to initial closing. Early Start is entirely at the owners/developers own risk. If the owner/developer finds that there is no other viable alternative, and chooses to assume total liability for all construction costs, fees (including those for a CHFA Field Observer) and all liens and encumbrances incurred prior to initial closing and the recordation of a mortgage. A "Notification of Intent to Commence Construction" form (see CHFA website) may be executed and submitted to CHFA. Additional information and documentation such as proof of ownership of the project site/buildings/appurtenances, building permits, commencement date, construction schedule, professional service and construction contracts, insurance policies, environmental assessment and implementation plans, construction drawings and specifications, and CHFA cost breakdown forms will be required and a pre-construction meeting with the owner/developer, architect, general contractor, bonding company representative, and CHFA Field Observer and CHFA staff, must be held.

1. All support documentation submitted with the Notification of Intent to Commence Construction form must meet all the Standards, and the owner/developer will be responsible for revisions and resubmission as required by CHFA.
2. The owner/developer must understand that CHFA will not be responsible for any liens or any other objection to title, which might result from the fact that construction of a project commenced prior to the CHFA Initial Closing and the recordation of a mortgage. In addition, it must be understood that

CHFA acceptance of a prior start of construction for a development will not in any respect be deemed to obligate CHFA in any way.

VII. CONSTRUCTION and POST-CONSTRUCTION

A. CHFA Construction Observation Requirements

For all developments with CHFA funding, or other funds administered by CHFA, construction observation is required by an assigned CHFA Field Observer. For all developments funded through tax credit equity only – both 9% and 4%, CHFA staff may periodically visit the development to conduct on-site observations of the construction process. Observations may occur at any time within the duration of the construction process, up to the placed-in-service date, or up to the execution of the IRS Form 8609. The observations will confirm compliance with the Standards. In addition, as-built drawings and Specifications reflecting compliance with the Standards, prepared by the GC, and verified/approved by the architect, shall be submitted prior to the execution of the IRS Form 8609.

B. Pre-Construction Meeting

After Initial Closing, a pre-construction meeting will be held at CHFA. Those attending the meeting representing the development team should include the owner, the architect, the contractor and any other project management/administrative personnel deemed necessary by the owner. Attendance by the Energy Consultant is strongly recommended. CHFA representatives will include staff from underwriting and Technical Services Departments, requisition processor and the CHFA Field Observer assigned to the project. The CHFA Field Observer shall perform bi-weekly site visits to the development and provide field reports and progress photos, among other duties and tasks as the representative for CHFA.

The purpose of the pre-construction meeting is to review CHFA-required project management and administrative procedures, responsibilities and expectations during, and immediately after, the construction phase. The typical agenda for a CHFA pre-construction meeting is outlined in the CHFA document “Pre-construction Meeting”, which can be found on the CHFA website. Subjects reviewed during the pre-construction meeting include CHFA Field Observation accommodations, requisition and lien waiver processes and submission requirements, job meeting agendas/meeting minutes, forms/documentation/record-keeping requirements, change order processes and submission requirements, project sign requirements, special testing documentation/submission requirements, stored material policy/process and submission requirements, construction schedule maintenance, photo records/submission requirements, Permission to Occupy (PTO)/first reduction of retainage process and submission requirements and final closing/reduction of retainage process and submission requirements.

C. Initial Site Meeting

Discussion and coordination of the following construction-phase logistical issues and process recommendations by the Development Team and the CHFA Field Observer at the first site meeting is recommended:

1. Introductions/exchange of business cards
2. Schedule of Values
3. List of Sub-contractors
4. Change Orders
5. As-built Drawings
6. Building Permits
7. Additional Sets of Drawings
8. Project Site Cleaning
9. Deliveries and Site Access
10. Color Schedule
11. Start/Completion Dates
12. Construction Schedule
13. Coordination of Work
14. Daily Reports
15. Roles of Architects and Engineers
16. Testing Requirements
17. Examination of Site
18. Dimensions
19. Enclosures and Barricades
20. Field Office
21. Utility Connections and Charges
22. Fire Extinguishers
23. Emergency Phones
24. Insurance
25. Warranties and Guarantees
26. Applications for Payment
27. Protection and Safety
28. Project Sign
29. Sanitary Facilities
30. Shop Drawings
31. Soil Erosion and Sedimentation Control
32. Soils Information
33. Substitutions
34. Lien Waivers
35. Surveyor
36. Minority Work Requirements
37. Labor Rates
38. RFI Log
39. PCO Log
40. Allowance Log

Building materials, components, fabrications, assemblies and equipment for all proposed development projects (rehabilitations and new construction), and all capital improvement repair, replacements and installations, must comply with all applicable Building Codes, State and Federal regulations. It is recommended that the project adhere to the current *“However, if a Notice of Funding Availability (NOFA) or the Qualified Allocation Plan (QAP) has different requirements, the NOFA or QAP shall take precedence.”* All finance applications must comply with CHFA Procedures and the requirements of the CHFA/DOH Consolidated Application.

D. Energy-efficient new and rehabilitated buildings

Proposed minor, moderate and substantial rehabilitation projects financed through CHFA must be designed and constructed to provide for a projected reduction in energy consumption $\geq 20\%$.

Proposed minor/moderate rehabilitation projects in the 9% LIHTC program pursuing points for High-Performance Building Design must be designed and constructed to provide for a projected reduction in energy consumption $\geq 33\%$. Projected energy consumption reduction shall be calculated based on current estimated energy consumption.

Proposed new and gut-rehabilitated projects financed through CHFA must be designed and constructed to meet or exceed ENERGY STAR certification program requirements. Proposed new and gut-rehabilitated 9% LIHTC projects may be designed to reflect High-Performance Building Design: (1) low-rise new and gut rehabilitations providing for a projected HERS Index for all proposed dwelling units ≤ 52 , based on the ENERGY STAR Certified Homes v 3.1 HERS Index Target Procedure and/or (2) mid/high rise new and gut rehabilitations providing for energy cost savings $\geq 20\%$ over ASHRAE 90.1-2010 (or 25% over ASHRAE 90.1-2007) Standards. Refer to the

EPA ENERGY STAR Multifamily New Construction Program Decision Tree, Version 1.3, to determine which ENERGY STAR which program is applicable to the design of each building.

Proposed new and gut-rehabilitated 9% LIHTC projects may also be designed and constructed to meet or exceed the Passive House certification requirements of the Passive House Planning Package (PHPP) as developed by the Passive House Institute (PHI), or WUFI Passive, as developed by the Passive House Institute United States (PHIUS),

To ensure that developments awarded limited CHFA, State and Federal financial resources are built in accordance with the energy efficiency data represented in the Energy Conservation Plan submitted with the application, design and construction phase modeling, inspection, testing and verification in accordance with national and regional certification requirements are required for all projects funded through CHFA. Evidence of the necessary soft costs for the ongoing consulting services by the energy professional of record, to review any proposed energy-related scope of work changes to the building envelope assembly and/or adjustments to mechanical systems during construction, and for inspection, blower door and duct blaster air leakage testing, HVAC commissioning and verification of installed components and systems by qualified HERS raters working under a RESNET HERS Quality Assurance (QA) Provider accredited by EPA, must be evident in the development budget provided with the application. In order to ensure proper operation and maximum HVAC system efficiency under building occupancy conditions, a minimum two-year service contract commencing upon completion of the commissioning of the HVAC system, and benchmarking building performance with the ENERGY STAR Portfolio Manager interactive online tool for tracking and assessing energy use, water consumption and greenhouse gas emissions for a minimum of two years, are strongly recommended.

1. The following documentation must be submitted to CHFA with the cost certification documents at Final Closing:
 - a. Low-rise (1- to 3-story) minor, moderate and substantial rehabilitation projects:
 - i. Confirmation from a HERS Rater, on company letterhead, that the building components included in the scope of retrofit energy conservation measures outlined in the Energy Conservation Plan submitted with the application have been visually inspected and installed according to RESNET Standards.
 - b. Low-rise (1- to 3-story) new and gut-rehabilitation construction projects (and certain 4- and 5-story projects based on the ENERGY STAR Multifamily New Construction Decision Tree v 1.3):
 - i. ENERGY STAR v. 3.1 Certificates for each dwelling unit
 - ii. Final as-built HERS Rating Certificates (HERCs) for each dwelling unit
 - c. High-rise (\geq 6-story) new and gut-rehabilitation construction buildings financed through CHFA (and certain 4- and 5-story buildings per the ENERGY STAR Multifamily New Construction Decision Tree v. 1.3):
 - i. Confirmation from the licensed professional, on company letterhead, that the building components included in the scope of energy conservation measures outlined in the Energy Conservation Plan submitted with the application have been installed, visually inspected, tested and verified according to ENERGY STAR MFHR program and As-Built Submittal Validation package forms and other document requirements.
 - ii. Final as-built energy model comparison to ASHRAE 90.1-2010 (or ASHRAE 90.1-2007) Standards.
 - d. Certain gut rehabilitation projects subject to State and Federal historic tax credit restrictions, which may be ineligible for ENERGY STAR certification due to SHPO/NPS restrictions:
 - i. A letter from the project architect, on company letterhead, providing an outline of any ENERGY STAR program requirements not able to be met due to NPS/SHPO restrictions,

and an outline, and the rationale for, any as-built “equal or better” construction phase substitutions due to SHPO/NPS restrictions,

- ii. Confirmation from the HERS Rater or licensed professional, on company letterhead, that the building components included in the scope of energy conservation measures outlined in the Energy Conservation Plan submitted with the application, and any “equal or better” substitutions, have been installed, visually inspected, tested and verified according to ENERGY STAR requirements.
- e. Passive House:
 - i. Finalized documents accepted for pre-certification by PHI or PHIUS, including:
 - WUFI Passive or Passive House Planning Package (PHPP) energy model
 - Construction drawings and specifications
 - System/equipment data sheets and performance specifications
 - Confirmation of pre-certification by PHI or PHIUS
 - ii. As-Built inspection, testing and verification documents, including:
 - Declaration of the Construction Supervisor and PHIUS+ Rater/Verifier that the buildings were constructed in accordance with the drawings, technical specifications and energy model accepted for pre-certification by PHI or PHIUS
 - Quality Assurance (QA)/Quality Control (QC) reports by the PHIUS+ Rater/Verifier
 - Final As-Built energy model based on the QA/QC reports