

CHAPTER 7. ARCHITECTURAL ANALYSIS

SECTION I. GENERAL

7-1 PURPOSE AND SCOPE OF ARCHITECTURAL ANALYSIS

- A. Purpose. To determine the acceptability of the physical improvements; provide architectural conclusions essential to minimize mortgage risk; and improve housing.
- B. Scope of Analysis. The buildings and their mechanical and construction elements and attachments; parking facilities and their adaptation to the site; land improvements (including water supply, sanitary sewage disposal systems, gas mains, heating tunnels), and all other elements of design or construction.

7-2 ARCHITECTURAL STAFF. The lender must be able to review all designs submitted and to inspect construction.

- A. The architectural staff must be headed by a professional architect or engineer (referred to here as the "chief architect"). The chief architect may be a full time employee of the Lender or under contract. If qualified, the chief architect may serve as the chief cost analyst.
- B. The architectural staff must have enough qualified personnel to provide architectural and engineering analysis and inspection.
- C. The lender may contract for consultants to provide architectural, engineering and inspection services in lieu of full time staff. However, there must be a chief architect capable of supervising consultants.

7-3 CHIEF ARCHITECT

- A. Makes assignments
- B. Gives technical advice to lender, staff and consultants.
- C. Reviews work of architectural staff or consultants.
- D. Trains staff or consultants.

(7-3) E. Determines if the sponsor's architect (or other persons or

organizations licensed to perform architectural services) is qualified to design the project and administer the construction contract.

F. Sees that data outlined in paragraph 7-4 is pertinent, accurate, current, and accessible.

G. Guides noise abatement and control. (See paragraph 7-14.)

7-4 LENDER TECHNICAL SPECIALISTS. Mechanical, structural, sanitary, site engineers, etc., may be required for review of a particular project.

7-5 ARCHITECTURAL DATA. Maintain for use in architectural processing to assure fast, accurate, and acceptable underwriting determinations.

A. Collect data for each area in which the lender operates. Subdivide, identify, and store so that particular information can be retrieved quickly. File using the 16 basic divisions of the Uniform System for Construction Specifications, Data Filing and Cost Accounting. Include:

- 1) Material distributed by HUD. For example: Minimum Property Standards; Materials Releases; Use of Materials Bulletins; applicable handbooks, etc.
- 2) Pertinent maps. For example: Topographic maps prepared by the U.S. Geological Survey.
- 3) American Standards for Testing and Materials (ASTM) Standards in Building Codes.
- 4) Commercial or product standards prepared by the Department of Commerce.
- 5) Local and national codes.
- 6) Architect's Handbook of Professional Practice.
- 7) Standards of the American Gas Association, National Fire Protection Association, and Underwriters Laboratories, Inc.
- 8) Soil information classified as to type and bearing capacity.

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(7-5) 9) Heating and cooling design factors. Include economic analysis of various fuels and utilities for design-stage

comparative analysis of of proposed installation, type of fuel and energy, and method of purchase.

- 10) Information affecting structural considerations.
  - 11) Information about design aesthetics.
  - 12) Information affecting durability considerations.
  - 13) Information on fire resistance, flame spread and smoke generation of various materials and assemblies.
  - 14) Information on drainage.
  - 15) Local and HUD environmental criteria standards including Information relating to implementation.
  - 16) Maps showing size, location, and continuity of streets, highways, and utilities.
  - 17) Maps of airport noise contours.
  - 18) Standards for Rehabilitation, Guidelines for Rehabilitation of Historic Buildings, Secretary of Interior.
- B. Keep files on materials, installations, contractors, construction superintendents, and licensed architects.
- C. Use the following sources of data:
- 1) Regional or city planning commissions
  - 2) Tax assessor's office
  - 3) Local health authority
  - 4) HUD Headquarters
  - 5) Building material manufacturers and distributors
  - 6) Professional and trade associations
  - 7) Reference books and other publications
  - 8) Other projects having similar features
  - 9) Staff experience, training, and records

- A. Comply with applicable building codes, HUD Minimum Property Standards and environmental criteria and standards, 24 CFR Part 504.
- B. Comply with applicable laws, ordinances and deed restrictions.
- C. Use good planning and construction practice.
- D. Provide living accommodations meeting market demands.
- E. Provide appropriate facilities, services and equipment.
- F. Have character and visual appeal.
- G. Be designed and constructed for continuing appeal, economic maintenance, and a sustained project Income providing adequate net return.

7-7 COMMERCIAL USE. The term "commercial" applies to any space or facilities for nonresidential use, from which income is derived or anticipated. However, facilities such as swimming pools, garages and laundry facilities for use solely by occupants are not commercial even though fees may be collected. (See also paragraph 7-8 B, below.)

- A. In general, the project's net commercial floor area may not exceed 5 percent of its net residential floor area. (See paragraph 3-1.J.)
- B. The design must be harmonious with the project and conform to generally accepted standards of design, construction, and local zoning and code requirements.

7-8 DAY-CARE FACILITIES should be included if a market need exists and such facilities are not readily available in the neighborhood.

- A. Space must be adequate, appropriate to the market need, and meet local and State requirements.
- B. In processing consider as "commercial" space, except that the area may be over and above the maximum area allowed for commercial areas.

7-9 WORKS OF ART. The Federal Government encourages the fine arts, with emphasis on the work of living American artists.

(7-9) A. Art included in architectural analysis (and as a project expense) must be a part of the real estate. It may be

sculpture and related construction and decorative mosaics and murals, and must be located to be seen by project occupants.

- B. Works of art must be sufficiently beneficial to warrant the anticipated cost and to justify the additional rentals necessary to support such cost. However, they can justify their presence if they serve to enrich the project, relieve monotony, and contribute to a desirable residential environment.
- C. The aggregate cost of works of art must not exceed 1 percent of the estimated cost of the structure.
- D. Selection of artist or sculptor is the responsibility of the project architect or mortgagor.
- E. Works of art may be attached to, or be integral with, the structure, or they may be free-standing. They must be of materials suitable for the purpose and location and afford reasonable resistance to exposure, vandalism, and theft.
- F. The art must compliment the design of the structures or grounds. The concepts, subject matter, or content should be appropriate to the residential use and be likely to appeal to the project occupants.

7-10 ELIGIBLE EQUIPMENT

- A. Equipment to be included as part of the security must be acknowledged by the mortgagor and mortgagee to be part of the real estate and:
  - 1) Essential for market acceptance and successful operation of the project. All equipment needed for market acceptance should be included in the project.
  - 2) Have qualities in design, construction, materials and finishes not subject to early deterioration or obsolescence. The long-term nature of the loan dictates that such equipment be relatively lasting.
  - 3) Appropriate to the location, the design of the buildings, and the anticipated occupants.
- B. Equipment must not include:

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- (7-10) 1) Supply items, utensils, tools, vehicles, portable equipment, furniture, furnishings, or accessories normally provided by management operators or their agents and employees.

- 2) Built-in or attached furniture that may become out-moded or limit flexibility in the use of space by the tenant.
- 3) Fixtures, furnishings, finish or equipment in commercial spaces other than customary in competitive projects.

7-11 WATER AND DOMESTIC SEWERAGE. Public water and sewer facilities should be available for all projects. If extension of public facilities is infeasible, water and sewer facilities must be constructed as part of the project or provided from existing offsite privately-owned systems.

A. Water and sewer facilities must:

- 1) Provide enough water, delivered with adequate pressure, and with satisfactory bacterial and chemical qualities.
- 2) Provide a sewerage system that: adequately collects, treats and finally disposes of domestic waste; requires minimum maintenance; and which will not endanger public health.
- 3) Provide continuous service at reasonable rates.

B. Duplicate systems are not acceptable unless construction of a single system is topographically infeasible.

C. Subsurface soil absorption methods to dispose of the treatment plant effluent are not generally suitable for multifamily construction because of the maintenance problems. When this method of sewerage disposal is proposed, require a sanitary engineer to investigate soil and site conditions and make recommendations as to suitability.

D. Privately owned offsite water and/or sewerage systems must have, acceptable control by an organization that owns, operates, and maintains the system.

1) Acceptable control may be provided by:

- a) Certificate of Convenience and Necessity from the State Utility Regulatory Commission

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- (7-11) b) Franchise from a local unit of government
  - c) Trust Deed

- d) Third Party Beneficiary Agreement
  - e) Incorporated nonprofit property owners association
- 2) If control of continuity of service and the equitableness of the service rate schedule are to be assured by a property owners association or b, c, d, and e above, all legal documents and other appropriate exhibits must be acceptable to lender's counsel.

7-12 SITES NEAR HIGH-PRESSURE GAS AND LIQUID PETROLEUM TRANSMISSION PIPELINES. No part of any residential structure may be less than 10 feet from the outer boundary of the pipeline easement.

A. When new construction is proposed in areas outside the above 10-foot limit but within 220 yards of the centerline of a high pressure transmission line, the developer must give the lender a certification from the pipeline company that each of the following paragraphs of Title 49, "Transportation," of the Code of Federal Regulations, have been complied with:

- 1) CFR 192.607 - Initial determination of class location and confirmation or establishment of maximum allowable operation pressure.
- 2) CFR 192.609 - Required study for change in class location.
- 3) CFR 192.611 - Change in class location: confirmation or revision of maximum allowable operation pressure.
- 4) CFR 192.613 - Continuing surveillance practices (Identification and operating methods used by survey team.)
- 5) CFR 195.210 - Pipeline location within easement or right-of-way.
- 6) CFR 195.248 - Depth of cover over buried pipeline.

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(7-12) B. Pipeline companies must keep records of the above per agreement with the Department of Transportation (as recorded in Federal Register, Volume 35, Number 161, August 19, 1970.)

C. When it is determined that high pressured gas or liquid petroleum transmission pipeline is within the 220-yard

area, cited in A above, from a proposed housing development site, the depth of the pipeline must be ascertained and the acceptable separation distance from the pipeline determined in accordance with criteria contained in 49 CFR Part 195, 24 CFR Part 51C and the HUD Hazard Guidebook, Urban Development Siting with Respect to Hazardous Commercial/Industrial Facilities.

- D. The statements obtained by the developer must be retained in the project file.

7-13 SUBSURFACE EXPLORATIONS. Before foundation design and application for conditional commitment, reliable information on the soils and other materials underlying the site (i.e., soils reports, test boring logs, test pit data, soil bearing values, etc.) must be available to mortgagor's architect and submitted to and reviewed by the lender.

- A. The architect must advise the owner of the scope and type of soils information and/or subsurface investigation required for structural design.
- B. The owner must provide the services of a soils engineer or other consultant for determining subsurface conditions. These services must be provided as stated in the Owner-Architect Agreement.
- C. The chief architect will assure that the owner's architect has comprehensive, well-documented soils information and that project foundation design follows the recommendations of the report. When necessary, the chief architect may have engineers review soil reports and related designs.
- D. Minimum soils reports requirements:
  - 1) All soils must be identified and described by the nomenclature of the Unified Soil Classification System, ASTM D2487 and/or Description of Soils, Visual Manual Procedure, ASTM D2488.
  - 2) Borings must be in or adjacent to the proposed foundation area.

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- (7-13) 3) One boring must be made for every 2500 sq. ft. of foundation area; for buildings supported on piling -- one boring for every 1600 sq. ft. of foundation area.
  - 4) Borings must be at least to the bottom of footings and deep enough to locate bearing strata that will support

the proposed structure. When rock is encountered, depth of drilling into rock must be at least 5 feet or enough to establish rock quality regarding voids, fissures and strength, or whether the rock is a boulder.

- 5) Borings and sizes and types of samples for standard tests must be according to ASTM D1586 and D1587. Alternate methods must be justified by the soils engineer.
- 6) When ground water conditions influence the building design, observation of ground water levels must be recorded at the time of boring and at least 48 hours later.

7-14 NOISE ABATEMENT AND CONTROL. The chief architect must identify existing and potential sources of noise and assure compliance with HUD noise standards in 24 CFR Part 51B (Handbook 1390.4) and recommend either:

- A. Appropriate means of separating or attenuating uncontrollable noise sources from residential areas; or
- B. Rejection of the project.

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## SECTION II. ARCHITECTURAL EXHIBITS AND REQUIREMENTS

7-15 SITE ANALYSIS. Before processing the chief architect, staff or consultants visit the site and report all features and surroundings that may affect the project feasibility, including any offsite requirements, demolitions, and unusual site conditions. The report must alert the lender to any soil faults, drainage problems, zoning ordinances, and other possible design problems, particularly those that may increase the site development cost or decrease the land value.

7-16 CONDITIONAL COMMITMENT PROCESSING: The lender's architect must:

- A. Evaluate data from site analysis and discuss with the designing architect those that are pertinent.
- B. Give timely suggestions to the designing architect concerning betterments that may be incorporated into the project.
- C. Provide guidance on meeting environmental conditions/ requirements from the findings and recommendations on the Environmental Assessment, Form HUD-4128.
- D. See that design architect is aware of responsibilities

for coinsured projects.

- E. Review any requirements or recommendations of the lender.
- F. Review reports of site engineers, sanitary engineers, and other specialists.
- G. Guide the cost analyst on architectural fees.
- H. Keep abreast of the development of the schematics in relation to the target date.
- I. Evaluate the schematics, as they develop, in relation to:
  - 1) The concept of the SAMA letter.
  - 2) Local market acceptance. (If there is any problem, check with the appraiser).

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- (7-16) 3) The adequacy of the design to meet all controlling factors and design conditions. (If there is any problem, check with the proper person: site engineer, sanitary engineer, structural engineer, mechanical engineer, or other lender specialist).
  - J. When necessary, request technical evaluation and guidance by any specialist to achieve a balanced and comprehensive design analysis.
  - K. Review the schematics for compliance with building codes and Minimum Property Standards. (Contact HUD Field Office with jurisdiction to determine applicable codes.)
  - L. Give design architect or mortgagor a unified report with all requirements for design or construction.
  - M. Keep a journal of problems and solutions accepted, decisions, and job progress.
  - N. Prepare Form HUD-92264, Rental Housing Project Income Analysis and Appraisal.
- 7-17 FIRM COMMITMENT PROCESSING. The lender's architect must:
- A. See that drawings and specifications clearly define the scope of work, design, and construction.
  - B. See that they define good construction that is generally within the project budget and complies with building codes

and Minimum Property Standards.

- C. Be available to discuss drawings and specifications, answer questions pertaining to lender/HUD architectural requirements, and provide advisory services to assure that the project is well-designed.
- D. Determine that the exhibits comply with all conditions, agree with schematics, and logically develop the accepted basic design.
- E. Discuss with the designing architect all lender/HUD-developed or industry-originated norms that apply to the project.
- F. Determine whether proposed materials are appropriate in terms of purchase price, installation cost and maintenance cost after completion.

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- (7-17)G. Determine that specifications provide for all materials and construction shown on the drawings.
  - H. Review the drawings and specifications submitted prior to closing to determine conformance with lender conditions and other requirements.

7-18 REQUIRED LICENSED PROFESSIONAL SERVICES

- A. A licensed professional architect, engineer, or designer is required for: all elevator projects; all projects of 16 or more living units; and any smaller projects with complex design or construction methods, or site problems.
- B. Architects, engineers or designers providing design and construction services must be professionally licensed to practice architecture in the State in which the project will be built.
- C. The architect, engineer or designer providing design and construction services must submit to the lender evidence of professional liability insurance. (Certificate or memorandum of insurance from the Insurance company.)

7-19 THE OWNER-ARCHITECT AGREEMENT. Use AIA Document B181 and the HUD Amendment (see Appendix 70) which shall be incorporated in Article 10.

- A. Requests for modification may be approved at the lender's discretion except that:

- 1) Changes may not delete any necessary service; and
  - 2) No modification to the HUD Amendment is permitted.
- B. An architect with an identity-of-interest with the owner or general contractor cannot administer the construction contract but may perform design services. An identity-of-interest will be construed to exist:
- 1) When the licensed professional, referred to as the architect, has any financial interest in the project other than the fee for professional services;
  - 2) When the owner or contractor or any officer, director, stockholder, or partner of such owner or contractor has any financial interest whatsoever in the architectural firm;
  - 3) When the architect has stock or any financial interest

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- (7-19) 4) When the owner or contractor or any officer, director, stockholder or partner of such owner or contractor provides any of the required architectural services; or where the owner or contractor or any officer, director, stockholder or partner of such owner or contractor, while not directly providing an architectural service, acts as a consultant to the project architect.
  - 5) When there exist (or come into being) any side deals, agreements, contracts or undertaking, thereby altering, amending, or cancelling any of the required closing documents.
- C. On the rare project not requiring the services of an architect, the lender must review drawings and specifications and make sufficient construction inspections to:
- 1) Reduce adverse effects due to the absence of professional authorship of the contract documents; and
  - 2) Minimize deficiency in the administration of the Construction Contract.

7-20 DUTIES AND RESPONSIBILITIES OF THE SPONSOR'S ARCHITECT. The mortgagor's architect (or other licensed professional) develops documents that conform to applicable building codes and to the concept of the mortgagor's proposal.

- A. The construction documents must:
- clearly fix the scope of work
  - define and describe the materials to be used
  - illustrate the construction and methods of assembly
  - include drawings and specifications
  - contain all necessary information for constructing the project.
- B. Alternates can be included in the drawings and specifications to adjust construction costs to the established budget. Alternates which are to be part of the construction contract must be clearly identified before issuing a firm commitment.

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7-21 SCHEMATICS. Schematics must be prepared to scale and include:

- A. Site Plan, showing:
- 1) Lot lines and dimensions;
  - 2) Adjacent buildings (show outline and number of floors);
  - 3) Buildings, outline and overall dimensions;
  - 4) Parking areas and total number of cars that can be parked;
  - 5) Driveways;
  - 6) Adjacent streets and utilities and their sizes. If public facilities are not available to the site, the architect shall specify the manner in which sewer and water facilities are to be provided and include the on-site or offsite locations;
  - 7) Patios, recreation, and other areas;
  - 8) Any offsite work;
  - 9) Living unit types, composition, and total;
  - 10) Contours when topography or drainage is a design factor;
  - 11) North point, and
  - 12) Areas: site and gross floor.
- B. Basement plans or foundation plans where no basements are

provided.

- C. A Dimensioned Plan of each typical living unit.
- D. Elevations of each typical building.
- E. A Typical Floor.
- F. For Elevator and Complex Construction Types:
  - 1) Lobby Floor;
  - 2) Floor showing mechanical, service, storage, and other nonrent facilities; and
  - 3) Floors showing commercial areas.

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7-22 CONTRACT DRAWINGS AND SPECIFICATIONS. Submit two complete sets, which must include:

A. Cover Sheet:

- 1) Project name and identification number
- 2) Spaces for signatures of architect, owner, contractor and bonding company
- 3) Tabulation of living units:
  - a) Number of units of each type
  - b) Number of units and type in each building
  - c) Nonrental living units
  - d) Number of parking spaces, open and covered

B. Index of drawings by name, numbered consecutively, with date of preparation and latest revision date.

C. Topographic Survey, that is, a "transit survey" at a minimum scale of 1-inch-to-40-feet, current, dated and signed by a registered surveyor, and including:

- 1) Contours at one-or two-foot intervals, except that for steeply sloping sites the intervals may be five feet.
- 2) City, county, State, and lot and block numbers of the property and those adjacent.

- 3) Distance to the nearest street; dimensioned length of each boundary; physical indication of boundaries, such as monuments, markers, fences, etc.; and all encroachments or deviations from description of the subject property or conflicts with descriptions of adjacent properties.
- 4) Easements, rights-of-way, setback lines, and other restrictions.
- 5) Existing streets, alleys, and drives as well as surfacing, curbs, street names, and other data.
- 6) Location and sizes of public utilities with invert sewer elevations and direction of flow.
- 7) Preservable trees.

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(7-22 - Contract Drawings cont'd)

- 8) Location and description of all existing structures.
  - 9) Legal description of the property, with total square footage and acreage.
- D. Plot plan at a scale not less than 1-inch-to-40-feet, showing:
- 1) Land boundaries, dimensions and North Point.
  - 2) Streets, alleys or roads adjacent or within the project boundaries, together with walks, curbs, pavements, steps, ramps, play areas, parking areas and drying yards, and utilities such as gas, water, electric and sewer lines.
    - a) Dimension or size with distance from location points; material indication for such items as walks and pavements, and extent of each.
    - b) Indications of "new" or "existing" and public dedication of any streets or alleys in the project.
  - 3) Buildings, building designations, locating dimensions, and overall dimensions.
  - 4) Elevations of first floor; elevations of finish and existing grade at building corners and entrances; elevations of curbs and streets; and invert elevations of main sewer and direction of flow.
  - 5) Utilities servicing the property, or distance to point

of connection and utility lead-ins or service connections; yard lighting; lawn hydrants and lawn sprinkler systems with the pipe sizes and controls; drains; and fire hydrants.

- 6) Retaining and garden walls, fences, guard rails, garages and accessory structures, with dimensions.
  - 7) Existing trees and other natural features and whether to be removed or preserved.
- E. Grading and drainage plan at a scale not less than 1-inch-to-40-feet when essential information cannot be clearly shown entirely on the plot plan.
- 1) Grade elevations at all building corners and at entrances, walks, drives, parking areas, terraces, yards,

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(7-22 - Contract Drawings cont'd)

- walls and steps, and first floor elevations. Existing and proposed grading contours at appropriate intervals.
- 2) Yard and roof drainage with controlling grades and dimensions of drainage lines, culverts, catch basins, drain inlets, gutters, curbs, drainage disposal, and any existing facilities.
- F. Planting plan at a scale not less than 1-inch-to-20-feet, indicating:
- 1) Outline of buildings and other improvements with physical features of the site to establish the location and relationship of planting and landscape construction.
  - 2) Distribution of plant material: location, quantity and key number of each general species in each group; outline of planting beds, primary lawn areas, secondary lawn areas and existing trees to be preserved or transplanted.
  - 3) List of plant material using English and Latin names, key number for each variety for reference to plan, and the size, quality or other description.
- G. Basement plans for each building type at a scale not less than 1/8-inch-to-1-foot. (Foundation plans when no basements.)
- 1) Dimensions and names indicating use of spaces, with

the layout of permanent equipment.

- 2) Location of structural elements with dimensions or notes as to: thickness and size; windows; vents; areaways; doors; lights and switches; drains; sumps; etc. Unless there is a separate foundation plan, show locations and size of footings, piling and other substructure work.
- 3) Larger-scale drawings or detail of spaces not clearly shown.

#### H. Floor Plans

- 1) Unit floor plans at a scale not less than 1/4-inch-to-1-foot for each basic type living unit and any major variation. Separate unit plans are not required when the general floor plans are provided at 1/4-inch scale and contain all essential information.

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(7-22 - Contract Drawings cont'd)

- a) Partitions to scale; rooms, closet and hall dimensions; over-all dimensions; window locations and type designations referring to schedule showing sizes; door swings and type designations referring to schedule showing design, thickness and size; dimensioned stair locations, runs and width, landings, handrails.
  - b) Plumbing fixtures; soil and vent stacks; kitchen cabinets and equipment; electric lights; switches, receptacles and special power outlets; closet shelving and clothes rods; radiators or other heating devices, chimneys, and all other such items.
  - c) Location of structural elements such as columns, lintels, joists, beams, girders, and bearing partitions. Show sizes, spacing and direction of members. Separate structural drawings are required where the structural information would obscure other information.
  - d) All conditions where units are to join other units; end-unit conditions.
  - e) Identification of living unit types by a number or letter.
- 2) General floor plans at a scale not less than

1/8-inch-to-1-foot.

- a) Dimensional relation of living and building units with overall dimensions of building units and buildings; partition arrangement and fenestration of end units, units at corners and units at offsets; other partitions as necessary to show variations from the typical unit plans and relation of rooms in adjacent living units; walls separating building units, and their material and thickness.
- b) Buildings and these units, identified by numbers or letter.

I. Roof plans at a scale not less than 1/8-inch-to-1-foot.

- 1) Relation of intersection of the various building unit roofs; direction of slopes; parapets, chimneys, vents, and other projections; downspout locations and sizes.

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(7-22 Contract Drawings cont'd)

- 2) Omit where the essential information can be shown clearly on the plot plan or other drawings.

J. Elevations

- 1) General elevations at a scale not less than 1/8-inch-to-1-foot. Exterior design of all Sides of buildings with existing and proposed grades at buildings, floor lines and elevations, floor height dimensions, roofs, attic vents, parapets, cornices, downspouts, openings, material notes, and other essential features.
- 2) Typical elevations at a scale not less than 1/4-inch-to-1-foot to show portions of facade with the special exterior design. Show materials, jointing, special features, windows, doorways, cornices, parapets and details.

K. Sections

- 1) Outline sections - Scale not less than 1/4-inch-to-1-foot. Show various height conditions, cross sectional characteristics, and floor level relations, when other drawing Information is not adequate.
- 2) Detail sections - Scale not less than 3/8-inch-to-1-foot. Show each type of exterior wall and bearing

wall or partition, from footings to roof.

- 3) Exterior wall sections - Show complete construction of walls with thickness at various stories, floors, furring, waterproofing, ceilings, roofs, including pitch and flashings, room heights, anchorage and bearings, cornice and gutter, insulation, vapor barrier, foundation walls and footings, conditions at various basement depths, basement floors or access space, roof space, attic and foundation vents.

L. Details at a scale not less than 3/8-inch-to-1-foot. Provide the following except where such features do not occur:

- 1) Front and rear entrances, plan of each with elevations and sections.
- 2) Stair plans and sections showing stringers, treads, risers, newels, balusters, handrails, rise, run and headroom.

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(7-22 - Contract Drawings cont'd)

- 3) Kitchen cabinet plans, elevations and sections.
- 4) Bathroom plans with elevations showing accessories and cabinets.
- 5) Entrance lobbies.
- 6) Platforms and areaways.
- 7) Special exterior and Interior details, such as bay windows, dormers, cupolas, vents, fireplaces, built-in furniture.

M. Schedules

- 1) Door schedule - Size, thickness, material and design of each door, with plan identification. Fire doors, show rating.
- 2) Window schedule - Size, thickness, materials and design of each window, with plan identification.
- 3) Finish schedule - Material and type finish of floors, base or wainscot (with height), walls, ceilings and trim for various rooms or spaces.

- N. Structural. Drawings and details at appropriate scale, with complete structural information, must be provided when such information cannot be shown on general drawings without obscuring other information.
- O. Mechanical. Heating, cooling, plumbing and electrical layouts on separate drawings unless the systems are simple enough to be shown on other drawings. Include all pertinent design data. Show special mechanical installations such as vertical transaction and ventilating systems separately.
- 1) Heating drawings for each system (information in specification shouldn't be on drawings.)
    - a) Location and size of boilers, furnaces, or heaters; the make, model number or type and net output of each.
    - b) Layout, location and sizes of supply and return piping, ducts, risers, and branches, and insulation locations.

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(7-22 - Contract Drawings cont'd)

- c) Location, sizes and output in Btu of radiators, registers, grille and panel surfaces; valves, vents, traps, dampers and other accessories; make, model number or type of each.
- d) Make, model number and firing rate of all firing equipment, and similar detailed data on other components of each system--such as controls, pumps, blowers, and filters.
- e) Location, type, manufacturer's name and model number of domestic water heating and related equipment including: storage; arrangement and sizes of connecting piping; make and model number and other pertinent information for control equipment and safety devices.
- f) Design data for the system, including: outside design temperature; boiler operating temperature, Btu output, pressure or temperature drops, air temperatures at registers, pump or fan capacities, volumes, and velocities, heat loss for each space to be heated; output capacity in Btu of each radiator, convector registers, or panel surfaces; total heat loss of each building and total calculated

heat load connected to each heating system; net output in Btu of each boiler and each system.

- g) Design data for each domestic hot water system and, when connected to a heating system, the additional heat load included in the total for the connected system.
- 2) Plumbing drawings
- a) Horizontal sewer and drain system with soil, waste and vent stacks; branch wastes and vents; drains, cleanouts, traps, sump pumps, etc., connections to sewer, sizes of lines and stacks. Diagram of typical stack including soil, waste, and vents.
  - b) Cold water distribution system, size of mains and branches, location of hose bibbs, valves and drains.
  - c) Hot water distribution system together with circulating lines and pumps, valves, sizes of mains and branches.

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(7-22 - Contract Drawings cont'd)

- d) Gas distribution system, size of mains and branches, meters, etc.
- 3) Electric drawings
- a) Service lines, primary distribution and secondary distribution, service characteristics and wire sizes.
  - b) Meter and panel locations and manner of mounting.
  - c) Interior distribution and wiring of typical units.
  - d) Lights, receptacles, switches, special purpose outlets and connections to equipment if not on architectural plans.
  - e) Yard lighting and lighting of all public spaces in the buildings, and ground controls.
- 4) Air conditioning drawings
- a) Locations, cooling capacity, and horsepower of: compressor; cooling tower; and individual cooling

units. Make, model number, and rating.

- b) Layout of system including ducts, grille, pipe sizes, and location of valves, vents, dampers and controls.
- c) Btu load for each space, size, and rating of equipment.
- d) Design data for the system, including: CFM space requirements; blower ratings, type of condenser cooling; inlet and outlet water temperature; and GPM water-flow rate.
- e) Electric wiring layout, location of motors, fans, pumps, switches, and their load requirements.

P. Any other drawings required by lender.

7-23 CONTRACT SPECIFICATIONS. Use 16 basic divisions of the "Uniform System for Construction Specifications, Data Filing, and Cost Accounting."

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- (7-23)A. Describe all materials, equipment, and construction and include two, and preferably three, comparable products where practicable, or specify by performance characteristics.
- B. Include the latest edition of the "General Conditions of the Contract for Construction," AIA Document A201.
- C. Fully describe all materials, including alternates, and do not use general references to HUD's Minimum Property Standards. Do not include the words "or equal."
- D. Divide into sections separately describing the work to be done by each trade essential to project completion. Consecutively number pages and include:
  - 1) A cover sheet: Must include Title of Project, the lender project number, project location, and a signature block setting forth:

IDENTIFICATION

Architect (Print Name) by (Signature)  
 Owner (Print Name) by (Signature and Title)  
 Contractor (Print Name) by (Signature and Title)  
 Bonding Co. (Print Name) by (Signature and Title)  
 Date\_\_\_\_\_

- 2) Index containing reference to each trade by title and consecutive page number, and under each trade a reference by page number to the salient features of the work of that trade.
  - 3) Trade sections. Include:
    - a) Specific detail of all work to be performed by that trade. This will include descriptions of "Scope of Work," "Workmanship" and "Materials" and the manufacturer, grade or model designation of each item of equipment.
    - b) Necessary specific instructions for coordinating the work with other trades.
    - c) Specific instructions and detailed descriptions of work not clearly evident from the drawings.
- E. Cash or lump sum provisions are not acceptable in the specifications.

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- 7-24 OFFSITE CONSTRUCTION. Describe all work outside the boundaries of the property essential to the project on separate drawings and specifications.
- 7-25 DISTRIBUTION OF EXHIBITS. The chief architect will distribute the two sets of architectural drawings and specifications prior to construction start as follows:
- A. Set No. 1 (Master Set) is the contract document and is retained by the lender. The master set of drawings and specifications and a copy of each change order, each Architect's Supplemental Instruction are retained by the lender until after the one-year guarantee period. When the last guarantee inspection has been made, integrate the set of drawings, specifications, and change orders and store for seven years.
  - B. Set No. 2 is used by lender's inspector in the inspection function and to record all construction changes and conform it to the contractor's "Record Set". Upon completion of the project construction, the inspector will return the record set of exhibits to the chief architect. Set No. 1 is then used by architectural personnel in making guarantee inspection during the one-year guarantee period as required by the construction contract. The chief architect will use this set for reviewing the master set after the final guarantee inspection is completed. Set No. 2 is then

forwarded to the Housing Management staff.

7-26 ESTIMATED PROGRESS SCHEDULE. General contractor must submit an "Estimated Progress Schedule for Work" prior to initial endorsement as stated in Article 4.10 of the AIA General Conditions. The chief architect must:

- A. Review the schedule for completeness and require modifications, if warranted.
- B. Submit a copy to the mortgage credit staff for use in processing of Form HUD-92403, Application for Insurance of Advance of Mortgage Proceeds.

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### SECTION III. ARCHITECTURAL INSPECTION

7-27 PURPOSE.

- A. Protect interests of lender and HUD.
- B. Evaluate performance of contractor and architect responsible for administration of construction contract (inspecting architect).
- C. See that construction is according to contract documents.
- D. Report on conformance with the prevailing wage and other contract requirements.

7-28 ACCESS. The lender and HUD must have access to the property at all times and the right to inspect all work performed and materials furnished to complete the project.

7-29 LENDER'S ARCHITECT. The chief architect is responsible for:

- A. Proper performance of inspections.
- B. Instructing and supervising all architectural staff and consultants.
  - 1) Make at least two field review inspections on each project.
  - 2) Record comments on trip report.
  - 3) Review all of inspector's trip reports and advise inspector if problems occur.
- C. Keeping informed of general progress of work and being

familiar with problems.

7-30 ASSIGNMENT. The chief architect will assign a staff member or consultant as inspector before the beginning of construction and give the inspector:

- A. Set No. 2 of the contract drawings and specifications. This set becomes the lender's as-built set by the lender's inspector conforming it to the contractor's "Record Set."

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(7-30)C. Copy of Owner-Architect Agreement.

- D. Copy of Contractor's and/or Mortgagor's Cost Breakdown-Schedule of Values.
- E. Copy of Drawings and specifications pertaining to offsite improvements.
- F. Copy of Agreements or Contracts providing for offsite construction.

7-31 DUTIES OF LENDER'S INSPECTOR. The inspector is the field representative of the lender, not a superintendent for the contractor or "clerk of the works" for the owner or architect. The inspector must see that construction conforms to the drawings, specifications, and sound construction practice within the scope of the contract. The inspector must be factual and explicit in all statements reporting and recording significant construction developments when observed.

- A. Report the date of initial construction start and the date of the start of permanent construction.
  - 1) The date of the initial construction start, for recording and reporting purposes, is the "start of construction" used in connection with labor standards and prevailing wage requirements. This is the beginning of initial site clearance and preparation, provided those activities are pursued diligently and are followed, without appreciable delay, by other construction activities.
  - 2) The date of the start of permanent construction, for the purpose of determining that the inspection fee is earned, is the first day that permanent on-site building elements were put into place (e.g., footing/foundations, piling, utility lines, etc.).

- B. Study site, drawings and specifications. If discrepancies

or site conditions not considered in the design are found, notify the designing and inspecting architect(s) and report the condition to the chief architect.

- C. Review the drawings and specifications being used by the contractor to assure that they are the same as those approved by the lender at firm commitment stage.
- D. Make at least two job site visits each month. Schedule visits to observe major construction operations without neglecting lesser operations.

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- (7-31)E. Evaluate the construction supervision of the contractor and contract administration of the architect:
  - 1) Review the architect's log
  - 2) Review copies of architect's decisions.
- F. Determine that construction conforms to the contract documents.
  - 1) Report observed errors, omissions, and unsatisfactory construction to the architect administering the contract and to the chief architect.
  - 2) Spot-check change orders:
- G. Conduct employee wage interviews and check payrolls to determine compliance with prevailing wage requirements where applicable. (Wage compliance activities may be conducted by other lender personnel).
- H. Check whether shop drawings are being submitted by the contractor for approval of the architect. The contractor will make available copies of tests, certifications and any other data required by the contract documents when requested by the inspector or architect.
- I. If offsite fabricated components are involved, discuss with the chief architect the need for inspection at the factory to determine acceptability. (If insured advances are being made on components stored offsite, inspection is required.)
- J. Check all offsite work for conformity with terms of the contract and report progress by percentages to the chief architect.
- K. Report to the chief architect any work stoppage unless it

is due to inclement weather or similar reasons. State the reason for the stoppage and when resumption of construction is anticipated.

- L. On projects not requiring an architect, perform detailed and thorough inspections and protect the Interests of the lender and HUD.
- M. Maintain a record of construction to include:
  - 1) Minutes of the preconstruction conference.

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- (7-31) 2) Journal.
    - a) Drawings and specifications: Sets #1 and #2. (Referenced in journal though filed elsewhere. Record storage location of set 1 and use of #2.)
    - b) Offsite drawings and specifications. (Referenced in journal.)
  - 3) Construction Contract, HUD Form-92442.
  - 4) Owner-Architect Agreement.
  - 5) Progress Schedule.
  - 6) Contractor's and/or Mortgagor's Cost Breakdown, Form FHA-2328.
  - 7) Inspection Reports.
  - 8) Contractor's Requisition, Form HUD-92448.
  - 9) Change Orders; Form HUD-92437, AIA G710.
  - 10) Letters and memoranda, notes, and worksheets.
  - 11) Journal of Architectural Actions (If separate binder).
  - 12) Survey, Form FHA-2457 (Final and others if requested).
  - 13) Permission(s) to Occupy, Form FRA-2485.
  - 14) Record of established escrow including amounts escrowed, a complete list of unfinished construction items, record of call back inspections and recommendations for monies of call back inspections and recommendations for monies to be released.

7-32 PAYMENT CONSIDERATION. Requests for insurance of advances during construction are approved on the basis of the contractor's requisition. Requests for insurance of advances for noncompliant work cannot be approved. (See paragraph 7-35.E.)

- A. Use pertinent data in conjunction with the contractor's schedule of values when determining amounts allowable for any trade.
- B. Select data that will minimize the possibility of excessive disbursements, which might leave insufficient funds to cover incomplete work.

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(7-32)C. If the project is to be insured on completion, record at the end of each month the percentage of completion of the project as a whole. (This is for general information and not for disbursements.)

7-33 ARCHITECT'S DUTIES IN ADMINISTERING CONSTRUCTION CONTRACT.

- A. The inspecting architect is under contract with the mortgagor and is not under the direction of the lender. However, the inspecting architect must notify the lender as well as the mortgagor of omissions, substitutions, defects or deficiencies in construction, and of applications by the contractor for insured construction advances where provided by the lender.
- B. The inspecting architect must report in writing the results of periodic visits to the construction site. The inspecting architect's log should show work progress and actions taken to insure that the work is being accomplished in the best interests of all the parties.
  - 1) AIA Form G711, Architect's Report, may be used for the log.
  - 2) A log of each visit should show as a minimum the following:
    - a) Date of inspections
    - b) Lender's project identification and location
    - c) Time, weather and temperature range
    - d) Estimated percent of completion
    - e) Work in progress and conformance with schedule

- f) Persons present at work
- g) Observations and items to verify
- h) Information or action required
- i) Firm name; signature

7-34 ADEQUACY OF SUPERVISION. (The provision for architectural supervision is covered by the Owner-Architect Agreement and in the General Conditions of the Contract for Construction, AIA

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(7-34) Document A201.) The inspector must determine the adequacy of the inspecting architect's supervision. The determination will not be based on the number of on-site visits by the architect, but by construction compliance with contract documents as a result of the architect's observation.

- A. When the inspector determines that the services of the inspecting architect are deficient, he must notify the chief architect in writing.
- B. Unacceptable performance, undue delay, misrepresentation or failure to act by the inspecting architect or associates and employees could be reasons for terminating the architect's services on the project.

7-35 CONSTRUCTION CHANGES. Construction changes must be submitted on Form HUD-92437.

- A. Construction changes may be necessary to prevent a hardship; however, they must not alter the intent of the contract documents or impair the quality or value of the project.
- B. The inspecting architect must certify either that the changes will not conflict with the contract drawings and specifications or that they are necessary to overcome an unpredictable condition that would otherwise impede or bar construction.
- C. Each change order must state the amount of any cost difference and why the change is necessary.
- D. The inspecting architect gives the lender topics of all field orders and change orders. Change orders are signed by the inspecting architect, owner and contractor, and when acceptable to all of these, must be analyzed and approved by the lender.

E. Construction changes cannot be made without prior approval by the lender except as provided for in the construction contract. In insurance of advances cases, mortgage proceeds will not be disbursed for unauthorized changes. (See paragraph 7-32.)

7-36 OCCUPANCY. The inspector completes the portion, "FHA Inspection Report of Form FHA-2485, Permission to Occupy," when submitted and sends to chief architect and chief underwriter for signature.

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7-37 FINAL INSPECTION is made after construction is substantially complete and a request for a final inspection is made by the owner. The lender's inspector, owner, contractor and inspecting architect should attend.

- A. All offsite utilities must be installed and connected, and the buildings served by safe and adequate facilities for pedestrian and vehicular traffic.
- B. The final inspection report lists all on-site construction as complete even though some items may involve work that qualifies for delayed completion. The report includes the percentage of offsite improvements completed. The inspector prepares a list of any items of delayed completion with a complete description of each and lists any incomplete offsite work.
- C. Items of delayed completion are minor items that do not preclude occupancy and cannot be completed because of conditions beyond control of the contractor. The chief architect recommends that construction be accepted provided funds are escrowed to cover the cost of completion.
- D. The chief architect endorses the final report and forwards a copy to the chief underwriter.
- E. If items of offsite construction remain to be completed following the final inspection, intermittent inspections must be made.

7-38 SURVEYS. Before final endorsement, a survey by a licensed surveyor is required showing the exact location of all on-site improvements, including all water, sewer, gas and electric lines and mains, and all existing utility easements.

7-39 INSPECTIONS AFTER COMPLETION. Guarantee inspections are made by the lender's architectural staff at the 9th and 12th months to determine that the construction is acceptable and there

are not latent defects. The contractor will correct any latent defects as required in the construction contract.

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SECTION IV. - REHABILITATION

7-40 GENERAL. All instructions of this chapter apply to rehabilitation projects unless modified by this section.

7-41 ARCHITECTURAL PROCESSING. Rehabilitation processing may consist of three stages: Feasibility; Conditional Commitment; and Firm Commitment. The lender may allow the owner to combine one or more of the processing stages.

A. Feasibility Stage. Upon notification of the receipt of an application, the chief architect will assign a staff member or consultant to the project.

1) Feasibility exhibits for architectural processing are:

- a) Application (Form HUD-92013 or Form HUD-92013E as applicable)
- b) Project location map
- c) Survey or site plan
- d) Drawings or sketches of the existing building(s)
- e) Description of the proposed rehabilitation (work write-up), including any post-rehabilitation sketches

2) Make a joint inspection of the project and modify owner's work write-up, as needed.

B. Conditional Commitment. Provide liaison to the owner's architect during preparation of the rehabilitation architectural exhibits if professional design service has been required. (See paragraph 7-44 below.)

- 1) Review architectural exhibits to determine compliance with requirements of the work write-up.
  - 2) Provide architectural conditions for the conditional commitment.
  - 3) Review the Owner-Architect Agreement.
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- (7-41) 4) If an abnormal amount of time has elapsed since the joint inspection, or if property damage may have occurred, reinspect the property to determine current physical condition and provide any necessary additional conditions for the conditional commitment.
- C. Firm Commitment. Provide liaison with owner's architect during design process if professional design services have been required to assure the rehabilitation architectural exhibits meet conditions.
- 1) If conditions in 4, above, exist, reinspect and require additional rehabilitation as may be necessary.
  - 2) Review the final rehabilitation contract documents for compliance with conditions.
  - 3) Review the Owner-Architect Agreement, if not previously submitted, for scope of services.
- 7-42 STANDARDS. Rehabilitation must comply with applicable codes and ordinances. New construction or additions that enlarge existing buildings are not rehabilitation and must meet applicable codes and MPS for new construction.
- A. Rehabilitation projects are subject to environmental requirements, statutes, Executive Orders and HUD Standards and Criteria (24 CFR Part 51) cited in 24 CFR Part 50.4 and documented on HUD-4128.1 (Appendix 19a).
  - B. Projects that include Historic Structures or affect Historic Structures or Districts are subject to the requirements of 24 CFR Part 50.4(a)(i), (2), (3) and (4), compliance with Section 106 of the National Housing Historic Preservation Act and the Secretary of Interior, Standards for Rehabilitation, Guidelines for Rehabilitating Historic Buildings.
- 7-43 REQUIRED PROFESSIONAL SERVICES. The services of a professional (architect, engineer or designer), licensed or registered to practice architecture in the State in which the project is located, must be required for design and construction of a rehabilitation project where the lender determines that:
- A. Working drawings and specifications will be necessary to properly define the scope and concept of the rehabilitation,
  - B. A change of building use is proposed altering spaces and structure, or
  - C. Additions are proposed to the existing building(s),

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7-44 JOINT INSPECTION. As soon as possible after receiving the feasibility application, the lender must schedule an on-site inspection with the owner.

A. Team members:

- 1) Must include architectural, cost and appraisal representatives of lender and the owner's architect (representative). Also, if a representative of the local government's building department isn't present, the team must have a copy of the latest official inspection for compliance with local codes and ordinances.
- 2) May include other specialists or consultants as the lender or owner may wish to have.

B. Purpose:

- 1) Determine project's condition - particularly concerning major defects, deterioration, obsolescence.
- 2) Determine type and extent of work that would:
  - Appropriately rehabilitate the project for intended occupants
  - Result in reasonable operating costs
  - Ensure continued marketability after rehabilitation

C. Scope. Since conclusions from this inspection become the basis for the work write-up, cost estimate, commitment conditions and required exhibits, inspection must be thorough and include:

- 1) All features of the project site, buildings and improvements, utilities, roads and parking, and surroundings.
- 2) Enough living units to ascertain all necessary rehabilitation. (This may range from selected typical units to all units.)

7-45 ENGINEERING REPORTS. Surveys or special reports may be required of the owner for proper evaluation of the project.

A. Notify the owner by letter, immediately after the joint inspection, of any requirement for an engineering survey or special report.

(7-45)B. Clearly state the exact nature of the engineering investigation or special report and the items to be covered.

C. Specify any special tests, such as pressure or flow tests of plumbing or cutting of plumbing line segments for examination.

D. The work write-up cannot be completed until any required engineering surveys or special reports are analyzed by the lender's architect, with a determination of need for any additional rehabilitation requirements.

7-46 WORK WRITE-UP. The owner or its architect prepares the work write-up, reflecting the work agreed to at the joint inspection or may prepare drawings and/or specifications that describe clearly the work agreed to at the joint inspection, in lieu of the work write-up. The owner's architect must:

A. Describe in narrative form the required rehabilitation. Divide the description as follows:

1) General Requirements. Include work items applicable to all elements in the project, for example: site work; exterior work; painting and decorating; rehabilitation of kitchens, bathrooms, roofs, mechanical systems, electrical systems, interior walls, floors, windows and doors.

2) Special Requirements. Describe work for a specific item, room unit, space or building. For example, the general requirements would state, "Sand and refinish all wood floors," but a special requirement would be, "Sand and refinish the living room floor in apartment 201."

B. All requirements must be specific and state the location, type and amount of work to be done. Do not use general phrases such as, "repair or replace" or "as required."

C. In cases of "gut" rehabilitation, where only the structure will remain and the drawings and specifications will be as detailed as for new construction, the work write-up need only be detailed enough to be a basis for the cost estimate and serve as a memorandum of understanding between the lender and the owner.

7-47 CONTRACT DOCUMENTS. Because the nature and extent of rehabilitation may vary widely among individual projects, the particular contract documents for each case cannot be determined until the joint inspection and work write-up are complete.

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- (7-47)A. Drawings, when required, must clearly define the concept of the rehabilitation, any demolition or removal, repairs and replacement.
- 1) Require complete drawings and details similar to those for new construction if: the structure will be gutted; there will be extensive structural modifications; or there are additions to the existing structure.
  - 2) For projects with minor changes in space arrangement, structural or mechanical systems, require only drawings sufficient to show existing conditions and proposed work.
  - 3) Do not require drawings if the rehabilitation can be clearly and completely described in a specification format.
- B. Specifications are always required and must clearly define the scope of the rehabilitation, establish the quality of materials and workmanship, and the conditions of construction.

7-48 INSPECTION. Follow instructions in Section III.