CENTER DIRECTIVES MANAGEMENT SYSTEM
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Ames Procedural Requirement

APR 8829.1

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COMPLIANCE IS MANDATORY

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Document History Log

Status/Change/Revision	Change Date	Originator/Phone	Description
Basic	8/16/2009	Larry Manning/4-3158	New Document
Revision	9/17/2010	Larry Manning	This revision clarifies the relationship between the Chief Building Official and the Authority Having Jurisdiction, clarifies the area of applicability, and converts the format to conform to Ames APR format requirements

Subject: Construction Permit Process

Responsible Office: JCE/Facilities Engineering Branch, Ext. 4-6180, M/S 213-8

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Preface

P.1 Purpose

This document establishes the Construction Permit Process and the requirements imposed on all construction activities at Ames Research Center. The permit process assures the provision of:

- A safe, environmentally responsible working and living environment
- Communication among involved organizations/individuals
- Proper and timely inspection of work
- Configuration management

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P.2 Applicability

This directive applies to all real property under the jurisdiction of Ames Research Center including, but not limited to: the area commonly known as the Ames Campus; the planning areas known as Bay View, Wetlands, Eastside Airfield, the Shenandoah Plaza Historic District, the NASA Research Park South Campus, the Storm Water Retention Pond, the Eastern Diked Marsh, and the Western Diked Marsh; the Air National Guard's Temporary Use Areas, and all property constituting Camp Parks. The areas known as the Shenandoah Plaza Historic District and the NASA Research Park South Campus are collectively referred to under the designation of NASA Research Park. Throughout the rest of this document, all of these areas will be encompassed under the designation Ames Research Center (ARC), and they (excepting Camp Parks) are displayed in Appendix A. In this map, the red line shows the boundary of the NASA Ames area of authority.

Lands at Crows Landing Flight Facility in Patterson, California, are excluded from this directive. Additionally, Ames may exclude property or properties from this directive through mutual written agreements. Specifically, a permit agreement between NASA Ames and the Air Force excludes the Air National Guard "Cantonment Area."

This directive applies to all civil service and contractor employees, to all tenant personnel and to all special event/special outdoor event organizers and their personnel, while they are on-site in any of the included areas.

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P.3 Authority

- NPD 8820.2 Design and Construction of Facilities
- APD 8829.1 Construction Permits

P.4 Applicable Documents

- NPR 8715.3 NASA General Safety Program Requirements
- NPR 8820.2 Facility Project Requirements
- NASA STD 8719.11 Safety Standards for Fire Protection
- NASA STD 8719.17 Facility Systems Safety Guidebook
- APR 1700.1Ames Health & Safety Procedural Requirements

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P.5 Measurement/Verification

The Chief of the Facilities Engineering Branch shall maintain a log of the active Permits, Waivers, and Certificates of Occupancy for temporary occupancy, as well as an archive of closed Permits, Certifications of Construction Completion, and Certificates of Occupancy for permanent occupancy.

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P.6 Cancellation

None

S. Pete Worden
Director

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Chapter 1.0 Construction Work Covered

This document covers the Construction Permit process from initiation of a Planning Clearance application for covered construction work, through the Construction Permit submission and review, the approval of the data package, the identification and posting of the Inspection Record, the close-out of the construction work, and the issuing of the Certificate of Occupancy. The following Construction Permit process is to be used for all construction work encompassed within the scope of APD 8829.1.

Construction work is defined as tasks that involve the demolition, repair, alteration, upgrade, renovation, or construction of buildings, structures, utilities, or building subsystems. A Construction Permit is required for all facility and construction work that occurs at Ames Research Center falling under the authority of this Policy; this includes but is not limited to the following:

A. Utility systems including electrical, communications, water, sewer, storm drains, natural gas, and compressed air systems.

B. Fire protection systems including fire suppression systems and life safety alarm subsystems.

C. Modification(s) that effect security systems listed as follows: Security Access Systems and Intrusion Detection Systems (IDS), closed circuit television (CCTV) systems, and physical security systems such as security fences, physical security barriers, all doors, and other systems that impact the physical security of Ames assets. Additionally, all new equipment, material and installation must comply with all current codes, standards and requirements and a Construction Permit may be required in order to confirm compliance with all current codes, standards and requirements.

D. Security Access systems & Intrusion Detection Systems (IDS), closed circuit television (CCTV) systems, and physical security systems including security fences, physical security barriers, all doors, and other systems that impact the physical security of Ames assets.

E. Emergency repairs require a Construction Permit for all work that significantly modifies the original system. Emergency repairs do not require a permit prior to starting work. Emergency is defined as an unexpected occurrence from which serious consequences could arise without prompt action. When a permit is required, it must be submitted for review within 15 calendar days from the start of the emergency.

F. Ground based pressure systems whose design and operational certification is under the authority of the Ames Pressure Systems Manager as per NPD 8710.5, NASA STD 8719.17 and APR 1700.1 Chapter 10 shall require a Construction Permit for work in accordance with this APD when that work involves new or modified load interfaces with building structures or concrete embedments.

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Chapter 2.0 Responsibilities

2.1 Permit Applicant

1. Understand and be familiar with the Ames Construction Permit policy defined in Ames Policy Directive 8829.1 (APD 8829.1) and the procedural requirements defined in this Ames Procedural Requirement 8829.1 (APR 8829.1).
2. Prepare project description and design documentation to demonstrate compliance with all applicable codes, standards and requirements identified in this APR 8829.1.
3. Submit preliminary project description and design documentation to the Ames Facilities Planning Office in order to obtain Planning Clearance prior to submitting a Construction Permit Application to the Construction Permit Office. The application for Planning Clearance shall be on a form determined by the Ames Facilities Planning Office.

4. Prior to submittal of a Construction Permit application, ensure that the design of all aspects of the improvement for which a Construction Permit application is being made are in full conformance with all applicable codes, standards and requirements defined in this APR 8829.1. All work for which a Construction Permit is required shall be designed by a California licensed architect, engineer, or contractor as required by the current California Architects Practice Act and/or the current California Profession Engineers Act. All design drawings and design calculations submitted as part of a Construction Permit application shall be stamped and wet signed by the responsible California licenser architect, engineer, or contractor as required by the current California Architects Practice Act and/or the current California Professional Engineers Act prior to issuance of the Construction Permit.
5. Submit complete Construction Permit Form ARC 57 with applicable supporting documentation to the Construction Permit Office. The form can be obtained at http://server-mpo.arc.nasa.gov/Services/AEFS/AEFSHome.tml.
6. If Permit Board review comments are issued for the Construction Permit application, revise the design and design documents as necessary to respond to all review comments. Incorporate changes to construction documents as required by reviewing officials. Respond clearly in writing to all review comments and submit revised design documents and written plan review responses to the Construction Permit Office for further review.
7. Do not proceed with construction work until a Construction Permit is approved and issued by the Chief Building Official.
8. Once the Construction Permit is issued, post a copy of the approved Construction Permit at the work site in a visible location for the duration of construction.
9. Comply with all conditions and requirements set forth in the Construction Permit during the construction work.
10. Maintain a set of the approved, stamped drawings at the work site; mark changes on these drawings as work progresses.
11. Perform work in accordance with applicable Federal, State and NASA Ames safety and construction standards and the approved Construction Permit. Develop and submit a project specific safety plan prior to start of site work and additional documents as required by the Ames Health and Safety Manual (AHSM), APR 1700.1. All work must comply with the Ames Health and Safety Manual, APR 1700.1, viewable at http://adms.arc.nasa.gov.
12. Require contractor's valid safety qualifications and certificates prior to commencing improvement work as required for the work. Submit hazardous materials information for review by the Safety Division.
13. Include the NASA Ames construction safety specialist as part of the bid walk and pre-construction site visit meeting (if applicable).
14. Notify the Construction Permit Office of all proposed design changes that affect conformance with codes, standards and requirements identified in this APR 8829.1. Do not proceed with construction of proposed design changes until such proposed design changes have been submitted to, reviewed and approved by the Construction Permit Office.
15. Notify the Construction Permit Office when required inspection points are reached to arrange for site inspection(s).
16. Once as-built drawings have been reviewed and accepted by the project construction manager, the construction manager shall submit them in industry standard format (i.e., the latest AutoCAD, Solid works, etc. format) to Engineering Document Center (EDC) and/or all other applicable document control systems for archiving.
17. Building/Installation Acceptance and integration into the Plant Engineering Branch's Ames electronic building system inspection, testing and maintenance program.

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2.2 Construction Permit Office

1. Receive and record Construction Permit applications.

2. Distribute new and updated/resubmitted Construction Permit applications to Construction Permit Review Board members for review.
3. Archive and maintain records of Construction Permit applications.
4. Maintain an updated database of issued Construction Permits, Construction Permit applications, the current status of Construction Permit applications.
5. Coordinate and facilitate weekly Permit Review Board meetings.
6. Return results of the reviewed Construction Permit applications (approved/disapproved) to permit applicant along with site inspection card if permit is approved.
7. Reproduce Construction Permit application documents including any drawings and make those documents available to the Construction Permit Review Board members as necessary and as requested.
8. Receive, submit to Review Board for approval, and archive results for any design changes to an approved construction work.
9. Receive notification of pending inspection points and arrange for site inspections.
10. Receive, submit to Review Board for approval, and archive any requests for deviations/waivers.

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2.3 Chief Building Official (CBO)

1. The Chief Building Official shall be the Chief, Facilities Engineering Branch or designee.
2. The Chief Building Official is the approval authority for all Construction Permit applications.
3. The Chief Building Official approves/disapproves requests for Construction Permit Waivers and other construction-related waivers.
4. The Chief Building Official certifies the completion of construction (Form ARC 842).
5. The Chief Building Official is not responsible for design errors made by the applicant.
6. The Chief Building Official shall enforce the requirements of this APR 8829.1.
7. The Chief Building Official (or designate) shall have authority to assess and shut down non-permitted construction work or construction work that fails to meet any part of this process.
8. The Chief Building Official shall possess regulatory and/or technical knowledge, skills and abilities that are directly related to the construction industry.

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2.4 Permit Reviewers

1. Permit reviewers for ARC shall represent the following organizations:
2. Facilities Engineering Branch, Occupational Safety, Health & Medical Services Division, System Safety & Mission Assurance Division, Pressure Systems Manager (as appropriate), Environmental Management Division; Plant Engineering Branch, Facilities Planning Office, Facilities Planning Group, Protective Services Office, and Aviation Management Office.
3. Permit reviewers for NRP shall represent the following organizations: NASA Research Park Office, Facilities Engineering & Real Property Management Division, Occupational Safety, Health and Medical Services, Environmental Management Division, Protective Services Office.
4. Permit reviewers shall review Construction Permit applications and application documentation in a timely and accurate manner within their area of technical purview for conformance with the codes, standards and requirements identified in this APR 8829.1.
5. Communicate with Construction Permit applicants and other Construction Permit Review Board members as necessary to provide adequate, clear and specific plan review comments.

6. If submitted Construction Permit application documentation does not comply with codes, standards and requirements of this APR 8829.1, Permit Reviewers prepare plan review comments to be issued to the permit applicant that identify the condition(s) of non-conformance.
7. Identify and maintain up-to-date the criteria, codes, standards and regulations by which permits applications are judged.
8. Permit reviewers shall possess and maintain regulatory and/or technical knowledge, skills and abilities that directly relate to the construction industry.
9. Permit reviewers shall maintain competency in the contemporary criteria by which permit applications are objectively evaluated.

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2.5 Authority Having Jurisdiction (AHJ)

1. The Center Director has designated the Chief, Protective Services to be the AHJ per NPR 8715.3 paragraph 5.2.2.i.
2. The AHJ has the responsibility for assuring that all activities within the scope of this APR meet the requirements of NASA-STD-8719.11.
3. The AHJ shall appoint a representative to participate in the review of all Construction Permit and Waiver requests.
4. The AHJ has the approval authority for the issuing of the Certificate of Occupancy (Form ARC 843 - both temporary and permanent) as specified in NASA-STD 8719.11, paragraph 6.6.

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Chapter 3.0 Facility Design and Construction Codes, Standards and Regulations

Federal, state, and local government agencies, in cooperation with the development and construction industry have adopted consensus development and construction codes, standards and regulations to assure the development and construction of facilities, buildings and structures that are both safe and functional. These codes, standards and regulations provide a minimum requirement for the design, development and construction for most facilities, buildings, and structures, while leaving the design practicality and functionality to the engineers, architects and related professional or technical design professionals. It is NASA and Ames Research Center policy to comply with these codes, standards and regulations in the design and construction of all facilities, buildings and structures in any applicable on-site or off-site Ames Research Center community. The following NASA mandated codes, standards and regulations define NASA and Ames Research Center requirements with regards to the development and construction of facilities, buildings and structures.

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3.1 Applicability

All construction and facility modification work that occurs at any on-site or off-site Ames Research Center community must conform to applicable Federal, state, and local codes, standards, and regulations including those identified in this APR 8829.1. In cases of overlap between such requirements, the more stringent one shall prevail and be used as the basis for design, subject to the established requirements deviation process. Applicable requirements include all amendments thereto adopted prior to the effective date each permit application is submitted.

As required by NASA policy, all pre-construction and final facility designs shall conform to the latest code

edition of the requirement adopted by this APR 8829.1 for the year in which the design work was started. This version of the requirement must be identified in the submitted construction documents because the construction work will be inspected to the requirements listed in the approved documents or, if not otherwise specified, to the current edition of the requirements. This scenario may result in a one-year lag in the requirements used by the construction management and inspection organizations. All construction and improvement work shall be planned from the design state to eliminate or control potential safety hazards as reasonably as possible.

A process for deviation/waiver from requirements has been established to address situations in which a design cannot conform to the codes and standards specified requirements. Such deviation/waiver from requirements is granted in the exceptional instances when strict adherence to a particular requirement or group of requirements is determined, through a formal set of written findings, to be impractical or unsafe for circumstances relating to the specific project (see Section 8). Economic hardship alone is never an acceptable reason for deviation from or wavier of code requirements. The formal use and enforcement of the 2007 edition of California's development and construction related codes became effective at Ames Research Center on June 1, 2008.

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3.2 Federal Codes, Standards and Regulations:

1. Uniform Federal Accessibility Standards
2. Code of Federal Regulations (CFR) in its entirety, including:

    a. 29 CFR Part 1910, Occupational Safety and Health Standards
    b. 29 CFR Part 1926, Safety and Health Regulations for Construction
    c. 29 CFR Part 1960, Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters
    d. 14 CFR Part 1216, National Aeronautics and Space Administration, Environmental Quality
    e. 40 CFR, especially:

        i. Part 82, Protection of Stratospheric Ozone
        ii. Part 112, Oil Pollution Prevention
        iii. Part 1500, National Environmental Policy Act
        iv. Part 260 et seq, Proper Management of Hazardous Waste
        v. Part 370, Hazardous Chemical Reporting: Community Right-to-Know
        vi. Part 761, Polychlorinated biphenyls
        vii. Part 763, Asbestos Hazard Emergency Response Act (AHERA)
        viii. Part 61, Subpart M, National Emissions Standards for Hazardous Air Pollutants (NESHAPS)

    f. 49 CFR, Transportation
    g. Toxic Substances Control Act (TSCA), Title 4
    h. Resource Conservation and Recovery Act (RCRA)
    i. 50 CFR Part 402, Endangered Species Act Regulations

3. United States statutes (codified in the United States Code (USC):

    a. Migratory Bird Treaty (16 USC S703)

b. Archaeological and Historic Preservation Act of 1976 (16 USC S469 et seq.)
c. Archaeological Resources Protection Act (16 USC S470aa-et seq.)
d. Clean Water Act (33 USC S1251 et seq.)
e. Coastal Zone Management Act of 1972 (16 USC S1451 et seq.)
f. National Environmental Policy Act of 1969 (42 USC S4321 et seq.)
g. National Historic Preservation Act of 1966 (16 USC S470 et seq.)
h. Clean Air Act (42 USC S7401 et seq.)
i. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (42 USC S9601 et seq.)
j. Pollution Prevention Act of 1990 (42 USC S13101 et seq.)

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3.3 NASA-Mandated Codes, Standards and Regulations:

The following documents define NASA facility design and construction policies and requirements.

1. Unified Facilities Guide Specifications - 013526
2. NPR 8553.1A - NASA Environmental Management System (w/Change 2)
3. NPR 8570.1 - Energy Efficiency and Water Conservation (w/Change 2)
4. NPR 8590.1 - NASA Environmental Compliance and Restoration Program
5. NPR 8715.1 - NASA Occupational Safety and Health Programs (w/Change 3)
6. NPR 8715.3C - NASA General Safety Program Requirements (w/Change 3)
7. NPR 8820.2C - Design and Construction of Facilities
8. NPR 8820.2F - Facility Project Requirements
9. NPR 8831.2E - Facilities Maintenance and Operations Management
10. NASA-STD-8719.7 - Facility system Safety Guidebook
11. NASA-STD-8719.11A - Safety Standard for Fire Protection
12. APD 8800.4 - Ames Environmental Programs
13. APD 8822.1 - NASA Research Park Design Review Program
14. APD 8830.1 - Reliability Centered Maintenance Program for Institutional Equipment
15. APR 1700.1 - Ames Health and Safety Procedural Requirements also known as the Ames Health and Safety Manual (in its entirety with particular attention to Chapter 27)
16. APR 8800.3 - Ames Environmental Procedural Requirements (in its entirety)
17. NASA Technical Standard 8719.11A, Safety for Fire Protection (November 19, 2008
18. Ames Standard Construction Specifications - latest edition supplemented or amended as required. (A0 - 9601-XR1, Rev. 2, August 2, 2006)
19. NPD 8710.5 - Policy for Pressure Vessels and Pressurized Systems
20. NASA STD 8719.17 - NASA Requirements for Ground Based Pressure Vessels and Pressurized Systems

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3.4 California Codes, Standards and Regulations

3.4.1. California Code of Regulations, Title 24 (California Building Standard Code)

The 2007 triennial edition of the California Code of Regulations (CCR), Title 24 (California Building Standards Code) applies to all occupancies that applied for a building permit on or after June 1, 2008, and remains in effect until the effective date of the 2010 triennial edition.

The 2007 triennial edition of CCR, Title 24 consists of the following 12 parts:

- Part 1 - 2007 California Building Standards Administrative Code
  Contains administrative regulations of the California Building Standards Commission, and regulations of all state agencies that implement or enforce building standards.
- Part 2 - 2007 California Building Code, Title 24, Part 2, Volume 1 of 2 and Volume 2 of 2
  Reflects major changes in building design and construction requirements relating to fire and life safety and structural safety. Volumes 1 and 2 contain complete regulations and general construction building standards of state adopting agencies. Volume 1 contains administrative, fire and life safety, and field inspection provisions, including all nonstructural provisions and those structural provisions necessary for field inspections. This volume is preassembled with Volume 1 of the 2006 International Building Code of the International Code Council (ICC). Volume 2 contains provisions for structural engineering design. This volume is preassembled with Volume 2 of the 2006 International Building Code of the (ICC).
- Part 3 - 2007 California Electrical Code
  Contains electrical building standards of state adopting agencies. This Code is preassembled with the 2005 National Electrical Code of the National Fire Protection Association (NFPA).
- Part 4 - 2007 California Mechanical Code
  Contains mechanical standards of state adopting agencies. This Code is based on the 2006 Uniform Mechanical Code Standards relate to the design, construction, installation, and maintenance of:
  - Heating, ventilating, cooling, and refrigeration systems
  - Incinerators
  - Other heat-producing appliances
- Part 5 - 2007 California Plumbing Code
  Contains plumbing standards of state adopting agencies. This Code is based on the 2006 Uniform Plumbing Code
- Part 6 - 2007 California Energy Code
- Contains energy conservation standards.
- Part 7 - 2007 California Elevator Safety Construction Code - A17.1-2004
  Contains energy conservation standards
- Part 8 - 2007 California Historical Building Code
  Contains alternative building standards for the renovation of qualified historical buildings or structures.
- Part 9 - 2007 California Fire Code, Title 24, Part 9.
  Contains fire-safety-related building standards referenced in other parts of Title 24. This Code is based on the 2006 International Fire Code of the International Code Council.
- Part 10 - 2007 California Code of Building Conservation
  Contains amendments to the Uniform Code for Building Conservation, Appendix Chapter 1, Seismic Strengthening Provisions for Unreinforced Masonry Bearing Wall Buildings, and references the 2006 International Code for Building Conservation of the ICC.
- Part 11 - (Not used)
- Part 12 - 2007 California Reference Standards Code
  Contains minimum test standards required by the California Building Standards Code.

3.4.2.Cal/OSHA CCR/DOSH Title 8

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3.5 Other Adopted Codes, Standards and Regulations

3.5.1 Seismic Evaluation

1. American Society of Civil Engineers (ASCE) 31-02 (formerly Federal Emergency Management Agency (FEMA) 310) D Seismic evaluation is performed in accordance with Standards for Seismic Safety for Existing Federally Owned or Leased Buildings (RP6). This document requires that a building evaluation be performed in accordance with Handbook for the Seismic Evaluation of Buildings D A Prestandard (ASCE 31-02), and strengthening be performed in accordance with Prestandard and Commentary for the Seismic Rehabilitation of Buildings (FEMA 356). (See also CCR Title 24, Part 10, above.)
2. ASCE 7, Minimum Design Loads
3. Sheet Metal & Air Conditioning Contractors National Association, Inc. - Seismic Restraint Manual "Guidelines for Mechanical Systems"

3.5.2 Fire Protection and Life Safety

1. National Fire Protection Association, National Fire Codes, 2009 Edition
2. National Fire Protection Assoc. Standard for the Installation of Sprinkler Systems, NFPA 13 2002
3. National Fire Protection Assoc. National Fire Alarm Code, NFPA 72
4. National Fire Protection Assoc. Life Safety Code, NFPA 101 2006
5. NASA Standard 8719.11 - Safety Standard for Fire Protection especially: Section 7.3
6. By reference, adoption of: National Fire Protection Standards and Recommended Practices and Guides, current editions
7. (See also CCR, Title 24, Part 9, above.)

3.5.3 Environmental Compliance, Standards and Requirements

1. The Pollution Prevention Act (42 USC S13101 et seq.)
2. The Clean Air Act (42 USC S7401 et seq.)
3. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (42 USC S9601 et seq.)
4. The Safe Drinking Water Act (42 USC S300f et seq.)
5. The Emergency Planning & Community Right-To-Know Act (42 U.S.C. S11011 et seq.)
6. Endangered Species Act (16 USC S1531 et seq)
7. National Environmental Policy Act of 1969 (42 USC S4321 et seq.)
8. Migratory Bird Treaty (16 USC S703)
9. Executive Order 11988 Floodplains Management.
10. Executive Order 11990 Wetlands Management.
11. Executive Order 12898 Environmental Justice.
12. ASHRAE Standard 90.1-2007 Energy Standard for Buildings Except Low-Rise Residential Buildings

3.5.4 Safety and Health Codes and Standards

1. ANSI/ASSE A10.32 (2004) - Fall Protection Systems for Construction and Demolitions.
2. ANSI/ASSE A10.34 - Protection of the Public on or Adjacent to Construction Sites.
3. ANSI/ASSE Z359.1 - 2007: Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components.
4. NFPA 70E 2009: Standard for the Electrical Safety in the Workplace.
5. ASHRAE Guideline 12-2000: Minimizing the Risk of Legionellosis Associated with Building Water

Systems

6. CAL OSHA, Title 8, Construction and Electrical Safety Orders.
7. CAL OSHA, Title 8, Section 1529 asbestos protection regulations and requirements.
8. CAL OSHA, Title 8, Section 1532.1 Lead in Construction

3.5.5 Pressure Systems and Piping

1. ASME B31.1 - Power Piping
2. ASME B31.3 - Process Piping
3. ASME B31.5 - Refrigeration Piping
4. ASME B31.8 - Gas Transportation & Distribution
5. ASME B31.9 - Building Services
6. ASME Boiler & Pressure Vessel Code

3.5.6 Accessibility Standards

1. American National Standards Association (ANSI) 117.1
2. California Accessibility Standards, 2007 California Building Code, Chapters 10 and 11.

3.5.7 Elevator Codes

1. American Society of Mechanical Engineers (ASME) A17.3-2008 Safety Code for Elevators and Escalators

3.5.8 Additional California Codes, Standards and Regulations

1. California Code of Regulations, Title 8, Division of Industrial Safety
2. California Code of Regulations, Title 19, Public Safety, Division 1, State Fire Marshal.
3. California Code of Regulations, Title 19, Public Safety, Division 2, Office of Emergency Services.
4. California Code of Regulations, Title 19, Public Safety, Division 3 Seismic Safety Commission.
5. California Code of Regulations, Title 19, Chapter 2, Subchapter 3, Article 4
6. California Code of Regulations, Title 22, Section 66260, Hazardous Waste Management
7. California Code of Regulations, Title 22, Division 19, State Fire Marshal
8. California Code of Regulations, Title 22, Division 19.1, Office of Emergency Services
9. California Health and Safety Code, Chapter 6.95

3.5.9 Local Administrative Agency Codes and Standards

1. NS-517.31, Santa Clara County Hazardous Materials Storage Ordinance
2. City of Sunnyvale Sewer Use Ordinance, Title 12
3. NS-517.44, Santa Clara County Toxic Gas Ordinance
4. City of Palo Alto Sewer Use Ordinance, Chapter 16.09
5. CAS000001 General Industrial Storm Water Discharge Permit
6. CAS000002 General Construction Stormwater Discharge Permit
7. City of Mountain View Sewer Specifications, City of Mountain View Public Works Department (David

Serge, Utility Services Manager 650-903-6329)

8. Bay Area Air Quality Management District Regulations 1-13.

3.5.10 By reference, adoption of:

1. American National Standards Institute (ANSI) Standards including: ANSI/IEEE C2, National Electrical Safety Code (Latest edition)
2. Institute of Electrical and Electronic Engineers (IEEE) Standards
3. International Electrical Testing Association (NETA) including: NETA ATS, Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems (Latest Edition)
4. National Electrical Manufacturer's Association (NEMA) Standards
5. American Society for Testing and Materials (ASTM) Standards
6. Electronics Industries Association (EIA)
7. Product Safety Standards such as Underwriter's Laboratories (UL), Factory Mutual (FM), Instrument, Systems and Automation Society (ISA), etc.
8. National Board Inspection Code, NB-23

3.5.11 Interpretive Handbooks

1. NEC Handbook
2. International Building Code Handbook
3. IMC Handbook
4. IPC Handbook
5. ASME A17.1 Handbook-2007 on Safety Code for Elevators and Escalators
6. NFPA, NFPA 1 Handbook (NFPA 1).
7. NFPA, Automatic Sprinkler Systems Handbook (NFPA 13; NFPA 13D; NFPA 13R).
8. NFPA, Handbook for Stationary Fire Pumps (NFPA 20)
9. NFPA, Water-Based Fire Protection Systems Handbook (NFPA 25).
10. NFPA, Flammable & Combustible Liquids Code Handbook (NFPA 30; NFPA 30A).
11. NFPA, National Fuel Gas Code Handbook (NFPA 54).
12. NFPA, L-P Gas Code Handbook (NFPA 59).
13. NFPA, NEC Handbook (NFPA 70).
14. NFPA, NFPA 70E Handbook (NFPA 70E).
15. NFPA, National Fire Alarm Handbook (NFPA 72).
16. NFPA, Life Safety Code Handbook (NFPA 101).
17. NFPA, Guide for Fire & Explosion Investigations (NFPA 921).
18. NFPA, Fire Protection Handbook (NFPA National Fire Codes), 20th Edition.
19. International Code Council, 2007 CFC Fundamentals (California Fire Code, 2007 Edition).
20. International Code Council, 2007 CBC Nonstructural Fire and Life Safety Principles (California building Code, 2007 Edition).

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Chapter 4.0 Planning Clearance and Construction Permit Procedure

4.1 Applicant Preparation for Submitting a Planning Clearance and Construction Permit Application

Applicant reviews and becomes familiar with the Ames Construction Permit policy, process and requirements defined in APD 8829.1 and this APR 8829.1.

Applicant prepares construction work project description documentation conforming to the requirements of APD 8829.1 and this APR 8829.1. Typical documents of the project description include a project purpose description, a description of the scope of proposed improvements, preliminary location plan, site plan, overall building floor plan, improvement area floor plan, elevations, details, etc. as are applicable to communicate the proposed construction work.

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4.2 Applicant Applies for Ames Planning Office Planning Clearance

Applicant submits Planning Clearance application and project description documentation for Planning Clearance to the Ames Facilities Engineering Branch. The applicant shall submit at a conceptual design stage (no more that 15% complete of design documentation).

Within the Ames Facilities Engineering Branch, the Ames Facilities Planning Group (AFPG) reviews the application. If the proposed improvements are located in the NASA Research Park, the AFPG forwards the application and documentation to the NASA Research Park Design Review Board for review of the Planning Clearance application and the same review process is followed (see APD 8822.1).

The proposed construction work may be approved with no restrictions or conditions of approval and if so approved, an unconditioned Planning Clearance document is issued.

The proposed construction work may be approve with restrictions or conditions of approval and if so a conditioned Planning Clearance document is issued with specific written conditions that must be met in order to proceed with the proposed construction work.

The proposed construction work may be disapproved and if so, a statement as to the reasons for disapproval of the proposed construction work is issued. The applicant may revise the proposed construction work permit request to correct the deficiencies and resubmit or may abandon the proposed construction work.

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4.3 Applicant Preparation of an Ames Construction Permit Application package

It is a requirement of the Ames Construction Permit Office that all architectural and engineering improvement plans submitted for an Ames Construction Permit must be stamped and wet signed by an architect or engineer licensed by the State of California prior to the submission of an application for a Construction Permit to show that the plans were prepared under the direct supervision of a California licensed architect or engineer. (Exception: Plans prepared for pressure systems construction work are not required to be stamped and signed by a California licensed engineer.)

Construction Permit applications (two full sets) must be prepared and submitted as an entire and complete package with as much documented information concerning the proposed construction work as possible. Information about the proposed construction work must describe and detail any and all modifications, additions or removal of building systems including structural, electrical, plumbing, fire protection, fire alarm, security, heating, ventilating and air conditioning, etc. Information about the proposed construction work must address all building code requirements including construction type, occupancy, means of egress, disabled persons accessibility, etc. Incomplete or unclear applications are difficult to review and could

cause a delay in approval. As a minimum, the following items are to be included in the Construction Permit application package:

- Completed Construction Permit Form ARC 57, which can be obtained at
- http://server-mpo.arc.nasa.gov/Services/AEFS/AEFSHome.html
- Project Description and Statement of Work
- Plans, drawings, sketches, or other graphical renderings of the project in order to confirm conformance of all applicable codes, standards and requirements identified in this APR 8829.1.
- Structural, electrical, mechanical, fire protection or other engineering calculations necessary to confirm conformance with all applicable codes, standards and requirements identified in this APR 8829.1.
- Reference compliance with safety and health regulations and requirements.
- Specifications as necessary to clearly communicate the proposed construction work.
- Approved Request for Waiver form ARC 815, if applicable The form can be obtained at http://server-mpo.arc.nasa.gov/Services/AEFS/AEFSHome.html
- A complete and clear statement identifying any items of the proposed construction work that will be submitted to the Ames Construction Permit Office at a later date for review and approval shall be provided. Such items to be submitted for review and approval at a later date are termed "deferred submittals."

Designs can be submitted as early as the 30-percent design stage for review, or at the 90-percent design stage or greater for approval. Each application shall be checked to ensure prior approval and issuance of a Planning Clearance from the AFPG.

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4.4 Applicant Submits Ames Construction Permit Application package to Ames Construction Permit Office

The applicant submits an AFPG Clearance document, Ames Construction Permit application documents, detailed project description and engineered design documentation for Construction Permit to the NASA Ames Construction Permit Office. The permit application and documentation package maybe hand carried to Building 213, Room 28 or to a Construction Permit Board meeting. The applicant must call the permit office prior to bring a new permit application before the Permit Board. The telephone number for the Construction Permit Office is (650) 604-1517. The mailing address is: Construction Permit Office, NASA Ames Research Center, Mail Stop 213-1, Moffett Field, CA 94035.

Construction Permit application and documentation packages must be submitted in multiple sets. Six sets are required to obtain timely approval of a permit application.

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4.5 The Ames Construction Permit Board reviews Construction Permit applications and approves or disapproves Construction Permit applications

The Construction Permit Office or Construction Permit Review Board screens all Construction Permit applications for completeness. If, after screening by the Construction Permit Office, a Construction Permit application is determined suitable for review by the Construction Permit Review Board, the Construction Permit Office distributes the Construction Permit application to the appropriate Construction Permit Board reviewers. In order to reduce reviewing time, multiple sets of the permit applications are distributed for reviews.

The Construction Permit Board reviewers meet regularly to discuss the Construction Permit applications and may request project clarification from the permit applicant. The Construction Permit(s) may be signed at the meetings (Appendix B, Construction Permit Process Flow Diagram).

For small, simple projects, the Construction Permit application can be submitted, reviewed, and signed at a Permit Board meeting. Larger and more complex Construction Permit applications require advanced submission, and may require multiple consultations during the design process (if necessary).

The time required for the review process depends on the magnitude and complexity of the proposed work. The goal for most projects is a two-week review schedule. A well-prepared Construction Permit application package for proposed improvements that conform to all applicable codes, standards and requirements helps avoid unnecessary delays. Additionally, the appropriate reviewers should be involved in the design review process for significant projects. In many instances, these code and regulatory specialists can aid the project manager in making key design decisions and providing invaluable insight. The Construction Permit Office has a list of current permit reviewers.

NASA Permit Board technical reviewers review all of the Construction Permit application documents in order to confirm that the applied for proposed improvements conform to all of the applicable codes, standards and requirements required by this APR 8829.1.

Each NASA Ames Permit Board technical reviewer, after completing a document review, makes a determination on whether the submitted Construction Permit application and documentation conforms to the requirements defined in this APR 8829.1 and whether the submitted documentation is suitable for issuance of an Ames Construction Permit. Each Permit Board technical reviewer may make one of the following three determinations:

1. "Approved" - Approves the Construction Permit application documents as submitted without restrictions or conditions of approval for issuance of an Ames Construction Permit. The Ames Construction Permit approval includes requirements for inspections by Ames Construction Permit Inspectors at specific stages of completion of the construction work.
2. "Approved as Noted" - Approves the Construction Permit application documents as submitted with restrictions or conditions of approval without requiring re-submittal of the Construction Permit application documents. "Approved As Noted" means that the documents submitted do not meet all of the codes, standards and requirements of this APR but that the project may proceed with construction conditioned upon incorporation into the plans and construction of all of the requirements contained in a written "Conditions of Approval" document or as noted on the plans by the Permit Board Technical Reviewers.

   It is the interpretation of the Permit Board Technical Reviewers that their noted requirements are clearly defined, that the incorporation of the requirements is relatively straight-forward and that the noted requirements can readily be incorporated into the project construction in a predictable implementation and without significant impact on other elements of the project design.

   Further it is the interpretation of the Permit Board Technical Reviewers that incorporation of their noted requirements will not require redesign of elements of the project that would require subsequent compliance review by the Permit Board Technical Reviewers.
3. "Revise and Resubmit" - Disapproves the submitted Construction Permit application and documents as submitted. The Permit Board Technical Reviewers shall issue to the applicant a document describing the items in the Construction Permit application documents that do not conform with the requirements defined in this APR 8829.1. The applicant then has three options: (a) revise and resubmit the Construction Permit application documents with modifications to conform to the requirements defined in this APR 8829.1; (b) resubmit the application with a Request for Deviation/Waiver - ARC 815; or (c) abandon the previously proposed construction work.

   "Revise and Resubmit" means that the documents submitted do not meet all of the codes, standards and requirements of this APR 8829.1, that there may be insufficient information provided in the submittal for the Permit Board Technical Reviewers to confirm conformance with the requirements of this APR 8829.1 and/or that there are significant issues and elements of non-conformance with the requirements of this APR 8829.1 that must be addressed and responded to by the applicant. Any Permit Board Technical Reviewer comment that requires submittal of engineering calculations necessitates a "Revise and Resubmit" in order that the project design and engineering calculations can be reviewed by an appropriate Permit Board Technical Reviewer to verify conformance with the

requirements of this APR 8829.1.

It is the interpretation of the Permit Board Technical Reviewers that design solutions to their noted requirements are not clearly identifiable, that the incorporation of the requirements is not straight-forward and that the noted requirements cannot readily be incorporated into the project design and construction in a predictable implementation and that incorporation of the noted requirements may have a significant impact on other elements of the project design.

Further it is interpretation of the Permit Board Technical Reviewers that incorporation of their noted requirements may require redesign of elements of the project that would require subsequent compliance review by the Permit Board Technical Reviewers to confirm that the resubmitted documents demonstrate conformance with the requirements of this APR 8829.1.

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4.6 Ames Chief Building Official issues Ames Construction Permits to applications approved by the Ames Permit Review Board

An Ames Construction Permit shall be issued by the Ames Chief Building Official to the applicant only after submitted documentation has been determined, by all Permit Board Technical Reviewers, to conform to the requirements defined in this APR 8829.1 or for which an approved Request for Deviation/Waiver has been approved.

When a permit application is approved, the applicant is given the following:

- Original permit application package with approval signature
- One set of drawings stamped "Approved - Job Copy"
- Comments from reviewers, if applicable
- Conditions of Approval, if applicable
- Copy of the job inspection card, noting inspections required

A copy of the approved Construction Permit is to be posted along with other postings required by labor laws, OSHA and NASA Ames by the applicant in a conspicuous location at all times at the site of the construction work. This copy shall provide contact points for the project in the event of a fire, emergency, or other issue.

A set of the Chief Building Official approved Construction Permit documentation (including all plans and conditions of approval) shall be marked boldly as "Job Copy," this "Job Copy" shall be maintained on the site of the construction work at all times and shall be made available for all inspections by the Ames Construction Permit Inspector.

The approved permit is valid for the duration of the project, provided construction begins within 180 calendar days of permit issuance and, upon commencement, is diligently and continuously prosecuted in a safe and code-compliant manner to completion. If the construction does not commence within that 180 days, then the permit shall automatically terminate. Before the construction can be restarted, the project must submit a new Construction Permit request, be reviewed again and a new permit issued. NASA project are exempted from this requirement.

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4.7 Construction Work is inspected by an Ames Construction Permit Inspector

Construction work carried out under an Ames Construction Permit is inspected by an Ames Construction Permit Inspector to confirm that the construction work is in conformance with plans, documentation, and conditions of approval or restrictions approved for issuance of an Ames Construction Permit and for

conformance with the requirements of the codes, standards and requirements identified in this APR 8829.1.

Construction Permit application and documentation package shall include a Job Inspection Card which identifies all required inspections. This card is a summary of the Inspection Records (page 4 of ARC 57) filled out by the Technical Reviewers and indicates when inspections are required during construction, and at what point. A heavy-duty copy of this card is to be posted at the work-site. The Construction Permit Office should be notified at least one business day before an inspection should occur. An inspector shall be dispatched to review the work. On large projects, this effort should be coordinated well in advance with the Facilities Engineering Branch.

1. The Inspector marks off the original Job Inspection Card, which is kept by the Permit Office.
2. A partial inspection is noted on the Construction Permit "Approved - Job Copy" drawings. When the work is complete and fully inspected, it is signed off on the inspection card.
3. If the Inspector finds that the work was not properly completed, a discrepancy form is completed and forwarded to the construction manager listed on the permit. Discrepancies must be corrected by the organization performing the work.

At the completion of construction work under an Ames Construction Permit, the work is inspected by an Ames Construction Permit Inspector to confirm that the construction work was completed in conformance with plans, documentation, and conditions of approval or restrictions approved for issuance of an Ames Construction Permit and for conformance with the requirements of the codes and standards identified in this APR 8829.1. If the Ames Construction Permit Inspector confirms that the work is completed in conformance with plans and documentation approved for issuance of an Ames Construction Permit and in conformance with the requirements of the codes and standards identified in this APR 8829.1, the Ames Construction Permit Inspector approves the Final Inspection documentation and forwards the documentation to the Ames Chief Building Official.

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4.8 Changes during construction

Substantive changes during construction and deviations from the approved Construction Permit application documentation must be submitted to the Construction Permit Office for Permit Board review and approval prior to incorporation into the construction work. Any substantive changes or deviations that are constructed without approval of the Permit Board may be ordered to be removed by the Chief Building Official at the Construction Permit holder's expense.

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4.9 Job Completion, Construction Permit close-out

After the final inspection is performed and discrepancies are corrected, and final acceptance has been granted, permit closure is possible. The signed job inspector card is returned to the Construction Permit Office. For all alterations or modifications over $5,000 in improvement costs, the Applicant/Permit Holder shall complete and submit a NASA Form 1046 to the Ames Real Property Officer. In instances where as-built drawings are required, the organization that performed the work is responsible for preparing and submitting the documentation to the Engineering Documentation Center (EDC) and a copy of the submittal form to the Construction Permit Office. The EDC is located in the basement of Building N-213, Room 28, and can be reached at (650) 604-1517. The permit is closed after the final inspection sign-off and the submission of the approved as-built drawings to EDC with the issuance of the Certification of Construction Completion, ARC Form 842 which can be found at http://server-mpo.arc.nasa.gov/Services/AEFS/AEFSHome.tml by entering the form number.

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4.10 "Certificate of Occupancy" issuance by the Authority Having Jurisdiction

Upon receipt of the approved Final Inspection documentation from the Ames Construction Permit Inspector and satisfaction of job completion and Construction Permit close-out requirements, the Authority Having Jurisdiction issues to the Construction Permit holder a "Certificate of Occupancy" to occupy or use the area of construction work designated in the Ames Construction Permit. The area of construction work designated in the Ames Construction Permit shall not be occupied or used until a "Certificate of Occupancy" has been issued by the Authority Having Jurisdiction, Form ARC 843 which can be found at http://server-mpo.arc.nasa.gov/Services/AEFS/AEFSHome.tml by entering the form number.

A temporary "Certificate of Occupancy" may be issued by the AHJ for sections of a building prior to completion of construction. However this does not absolve the contractor from the requirements to complete the facility nor of the requirement for a final "Certificate of Occupancy."

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4.11 Other Reviews/Permits

The construction permit process does not preclude other reviews/permits that may or may not be required on a proposed project. These may include:

- Architectural design reviews
- Local governmental agency reviews
- Historical Society reviews and permits
- Other operational permits required by other NASA organizations (including Safety and Environmental)
- Safety Clearance Permit (Form ARC 135), which includes
    - Electrical Power
    - Excavation
    - High Noise Level
    - Open Flame
    - Welding/Flame Cutting
    - Confined Space
    - Radiation
    - Explosives
    - Facility Closure

The Construction Permit Office will provide assistance in obtaining information regarding these permits and reviews.

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Chapter 5.0 Request for DEVIATION/WAIVER:

Except as specifically allowed by Section 104.10 and Section 104.110 of Appendix Chapter 1 of the California Building Code, 2007 Edition and by Section 104.8 and Section 104.9 of Appendix Chapter 1 of the California Fire Code, 2007 Edition, a request for a deviation/waiver is required in exceptional instances when a specific project cannot conform to specified requirements and the strict adherence to a particular requirement or requirements is determined, through a formal set of written findings, to be impractical or unsafe for circumstances relating to the specific project must be submitted to the Ames Construction Permit Office on an ARC 815, Construction Permit Request for Deviation/Wavier. Contact the Safety, Environmental, and Mission Assurance Division, (650) 604-1838, for information on completing the form. A submitted ARC Form 815 shall not be accepted by the Ames Construction Permit Office unless it contains

approval signatures from the Ames Authority Having Jurisdiction (AHJ), the Ames Occupational Safety, Health & Medical Services Division, and the Ames Chief Building Official (or their appointed representatives).

In order to avoid unnecessary time delays during the Construction Permit review process, any project deviation/waiver must be formally processed prior to the submission of any project's Construction Permit application.

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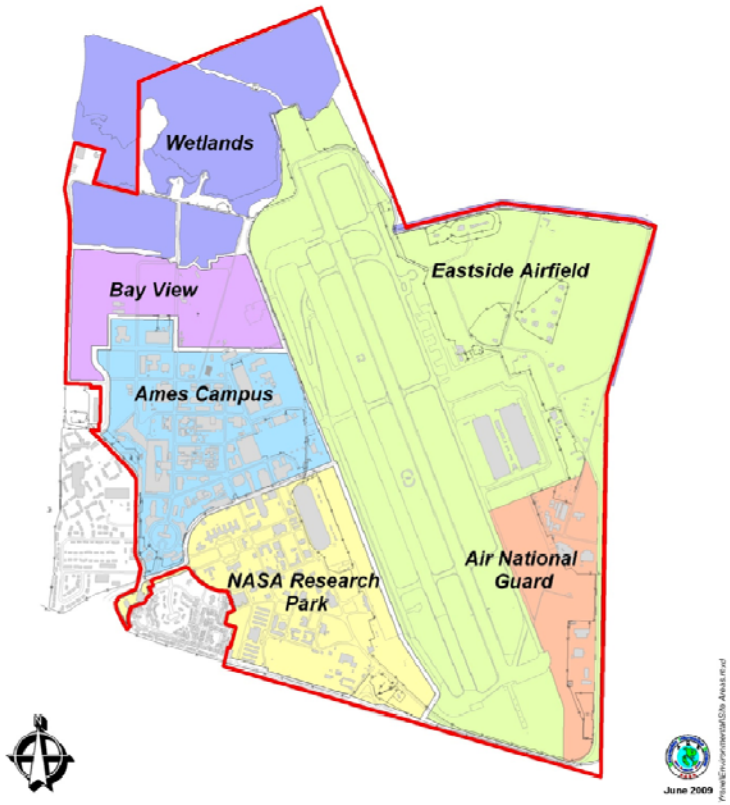
Appendix A: Map of Ames Research Center and included Areas



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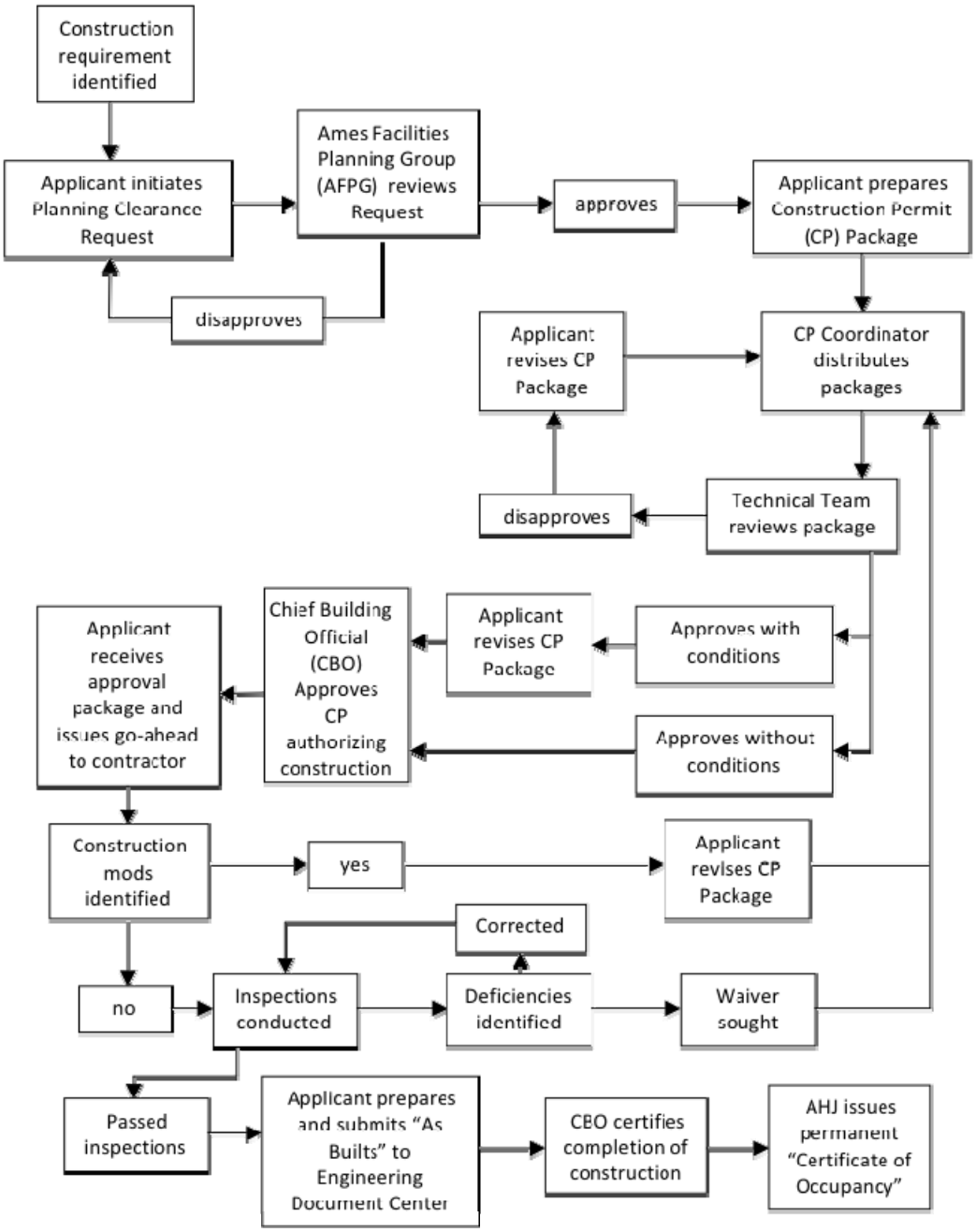
Appendix B: Construction Permit Process Flow Diagram

Appendix B – Construction Permit Process Flow Diagram



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