

CIP Building Design Standards & Guidelines

Introduction

These Capital Implementation Program (CIP) Building Design Standards & Guidelines are developed from lessons learned on past CIP building projects, facilities maintenance requirements and subject matter experts (SME) that are utilized throughout the design process. These Standards & Guidelines are written for Architects/Engineers (A/E's) that provide design services to the City of Albuquerque (COA) on CIP building projects. The goal of these Standards & Guidelines is to provide the design professional an efficient and effective way of developing contract bid documents for CIP building design and construction projects. The A/E design team is required to incorporate these Standards & Guidelines as they apply to the design and construction documents. Any deviation from these Standards & Guidelines will require approval from the City Architect.

Codes & Requirements

These design standards & guidelines are to be used in conjunction with the following: **Include in the contract documents all of the following requirements as they apply to the project:**

COA – Current Building Code list

The list is located on the CABQ.gov website under the Codes portion of the Planning Department

COA - Design Review and Construction Forms

Forms, files and documents for the Design Review and Construction process

www.cabq.gov/planning/development-review-services/design-review-construction-forms

COA - Building Safety & Permit Requirements

The current review process is via ePlan electronic submission. Permit process can be found on the CABQ.gov website under the Planning Department

DOJ - 2010 ADA Standards for Accessible Design

www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/ada-standards

ICC Public Access - ICC A117.1-2009 Accessible and Usable Buildings and Facilities

ICC Public Access – Use the 2021 I-Codes tab

<https://codes.iccsafe.org/public/collections/I-Codes>

Note: The City of Albuquerque is now using the 2021 International Energy Conservation Code

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State of NM - Handbook for New Mexico Building Officials

Manual on Uniform Traffic Control Devices 2009 (or current) Edition

[MUTCD 11th Edition - FHWA MUTCD](#)

Integrated Development Ordinance Requirements

<http://www.cabq.gov/planning/codes-policies-regulations/integrated-development-ordinance>

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Civil Design

Include in the contract documents all of the following building and site requirements:

Public Utility Requirements for All Disciplines

See Public Utility Requirements for All Disciplines section towards the end of this document and coordinate work between all disciplines as required.

General Requirements for Civil Design

Show roof drain points of discharge at ground level (NOTE: cannot discharge from balconies onto public Right of Way (ROW). Avoid discharge on north side of buildings and areas with shade during winter months.

Provide First Flush ponds on the site (see Predesign Criteria below)

Show removals and extents of removals

Must have approved easements

Must have approved Grading & Drainage plans

Provide a flood plain permit if work is in a SFHA Flood Hazard Zone

Provide Riprap or equal at discharge into ponds

Provide adequate water block, 0.83' is standard

Show valley gutters where needed

Provide slope treatment for slopes greater than 3:1

More than 2' grade difference requires a NM registered Design Professional to design the retaining wall system.

See Landscape Buffer Swale information in Landscape Design below.

See Predesign Criteria for General Hydrology Criteria below

Concrete Slabs, Sidewalks and Paving

Provide an expansion and control joint plan that clearly shows and labels all joints. All joints shall be spaced to meet the 1:1 ratio (or as close as possible). All exterior expansion joints shall have self-leveling sealant typical. Sidewalk finishes shall be a medium broom finish.

Gates and gate operators

Gates either track or cantilever shall be approved by the General Services Department.

Flag Poles

Three Flag Poles are required for new facilities.

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General Hydrology Criteria (New drainage requirements may replace these requirements)

- Beyond 10' of a structure, all landscape beds to be depressed below grade. Runoff within 10' shall be directed away from the structure.

- All new development projects shall manage the runoff from precipitation which occurs during the 90th Percentile Storm Events, referred to as the “first flush.” The Site Plan/Drainage Plan must indicate all areas and mechanisms intended to capture the first flush. For volume calculations, the 90th Percentile storm event is 0.44 inches. For Land Treatment D the initial abstraction is 0.1”, therefore the first flush volume should be based on $0.44'' - 0.1'' = 0.34''$ and only consider the impervious areas.
 - State how the first flush will be managed and supporting calculations
 - State the area of Land Treatment D on the plan

- Conceptual or Final Grading and Drainage plans submitted to the Hydrology Section:
 - Provide a DTIS sheet – an information sheet required for all Hydrology and Transportation submittals
 - The engineer should research the Master Drainage Plan and/or adjacent sites – essentially practice due diligence prior to submitting. The narrative on the G&D plan should reference the master drainage plan or other sources that indicate the intended drainage for that area. **The applicant should provide excerpts from the supporting documents and/or grading plans.**
 - Final Drainage Reports should have an appendix with all supporting documentation. Supporting documentation should include the following information:
 - Allowable discharge from the site
 - Allowable discharge points

- When determining allowable discharge from a site
 - If a Master Drainage Report planned an allowable discharge for a site, determine if the basis for that discharge is still valid or if conditions have since changed.
 - If discharging to the street, determine if the street has capacity. Also determine if the storm drain has capacity.
 - If discharging to the back of inlets, determine if doing so will still provide capacity for the discharge from the street
 - When determining inlet capacity using the orifice equation (Sump), the area for a single grate should be 3.84 sq. ft.

- If there are improvements in the R.O.W. but project is **not** required to go thru the DRC process (Work Order)
 - show quarter point data for the curb returns
 - show flowline elevations for valley gutters
 - Side walk culverts need to be extended 2' past the back of Sidewalk. Note that bolts are to be tack welded to plate (SO-19 Permit required)

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- Show existing flowline elevations where new construction ties in
- An Erosion and Sediment Control (ESC) Permit will be required for all construction, demolition clearing and grading operations that disturb one acre or more of land. Forms are available from Curtis Cherne or the Hydrology Section. Prior to obtaining ESC Permit, approvals are required for the following:
 - ESC Plan
 - Grading/Paving plan
 - Flood Plain Permit (if construction is within a SFHA -Special Flood Zone)
 - Need to include the eNOI # on the application, which requires obtaining an NPDES General Permit from the EPA

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Landscape Design

Include in the contract documents all of the following building and site requirements:

Landscape Design Information

Design information for Landscape can be found at the www.cabq.gov/planning/ webpage.

See Landscape Buffer Swale information below

See Predesign Criteria for General Hydrology Criteria above

Coordinate with Parks and Recreation when building is located on City Park

Planting and Irrigation

Do not place planting or irrigation within 5'-0" of the building foundation.

Trees shall be planted to prevent damage to building (from either branches or roots) an acceptable distance based on the type of tree.

Irrigation controllers shall be Rain Bird.

Irrigation shall have "hot boxes" enclosures included with their installation that may have above ground backflows and such enclosures shall have a dedicated circuit for heat tape. Trees shall be planted to prevent damage to building (from either branches or roots) an acceptable distance based on the type of tree.

Weed Barrier overlap and Turn Down Edge Requirements

Provide weed barrier under all graver mulch. Weed barrier fabric shall have 3" min. edge overlap and 6" min. edge turn down 4" min. at concrete curbs and sidewalk edges typical.

Gravel Mulch Requirements

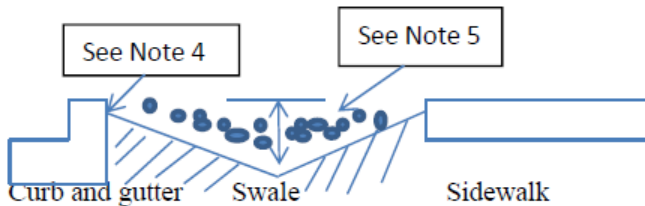
Use small gravel mulch and large boulders in landscape areas around building and site when design calls for this type of material. Do not place large rocks and cobble around building and site to avoid damage due to vandalism. Downtown buildings shall be excluded from this.

No larger than 7/8" gravel allowed. (window breakers)

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Provide 4" of gravel mulch in planting areas where gravel mulch is used. Gravel mulch shall be within 1/4" of top of curb/slab/sidewalk/pavement when used.

Landscape Buffer Swale - Revision to City Standard Drawing 2405A and 2405B



Landscape Buffer Swale Notes:

1. Swale to be 6" deep when the distance between back of curb and the sidewalk is 5 feet.
2. Swale to be 1" deeper than the distance in feet between the back of curb and the sidewalk for landscape buffers more than 5 feet wide.
3. For wide landscape buffers, greater than 10 feet, the maximum depth is 10 inches.
4. Final grade of dirt to be 1 inches below top of curb and top of sidewalk grade without gravel.
5. Surface between back of curb and sidewalk to be covered with gravel mulch (minimum 4"), cobbles or rip-rap per design requirements. Do not fill entire swale.
6. Provide a check dam for swales on steeper longitudinal slopes and for longer sections of swales. The engineer will determine the location.
7. Landscape fabric is required, between the dirt and the stone. When landscape fabric is to be used it is to be permeable.
8. Detail is to be built for all new construction. In the case where the sidewalk is existing and the landscape buffer is improved with landscaping and/or some form of erosion protection, this requirement does not apply.
9. See Integrated Development Ordinance Requirements.

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Structural Design

Include in the contract documents all of the following building and site requirements:

Public Utility Requirements for All Disciplines

See Public Utility Requirements for All Disciplines section towards the end of this document and coordinate work between all disciplines.

UFER Grounding

UFER Grounding at foundation. See Electrical Design section for foundation requirement.

Metal Stud Framing

All metal framing that requires a slip track shall use the 2-1/2" or 3" slotted top track, depending on the design deflection and drift.

Roof Design Requirements

See Architectural Design section for roof design requirements concerning wind load, uplift and future photovoltaic roof loading.

Sleeve Penetrations

Provide framed or pipe sleeves at all Foundation wall, fire wall and sound wall penetrations. Use proper sealant, fire and sound caulk, with indicator coloring, inside sleeves and gang piping/conduit/duct frames.

Fire & Sound Rated Walls

Use 2" minimum labels above ceiling at every three feet that state "Fire Wall – Do Not Penetrate" or "Sound Wall – Seal Penetrations."

Concrete Slabs, Sidewalks and Paving

Provide an expansion and control joint plan that clearly shows and labels all joints. All joints shall be spaced to meet the 1:1 ratio. All exterior expansion joints shall have self-leveling sealant typical. Sidewalk finishes shall be a medium broom finish.

Special Inspections IBC

Special Inspection Services are provided by the City.

See architectural section of this document.

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Architectural Design

Include in the contract documents all of the following building and site requirements:

General Design Requirements

A/E design team shall provide all project design calculations to the City PM prior to proceeding with the construction document phase. The design calculations shall include, but are not limited to, civil, structural, power, gas, water, etc. This information will need to be neatly organized with the responsible design professional's seal, signature and date on the cover sheet of each calculation report. These documents will be filed as City records.

Demolition on Existing Buildings and Sites

Prior to any Design work, the A/E design shall Contact the Department of Technology & Innovation and General Services Department to coordinate all work. An asbestos survey is required prior to any demolition.

Public Utility Requirements for All Disciplines

See Public Utility Requirements for All Disciplines section towards the end of this document and coordinate work between all disciplines.

ADA Requirements

Use the DOJ 2010 ADA Standards, with 2012 update, along with the ANSI A117.1 Accessibility Standards (referenced in the 2009 IBC) and transitioning into the 2009 to 2015 ANSI A-117.1

Metal Stud Framing

See Structural Design Section of this document.

Sleeve Penetrations

See Structural Design Section of this document.

Fire & Sound Rated Walls

See Structural Design Section of this document.

Concrete Slabs, Sidewalks and Paving

See Structural Design Section of this document.

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Knox-Box – Include as part of the bid documents the following: Contractor shall furnish, install and pay for all requirements, scheduling, documentation and keying for Albuquerque Fire Department (AFD) site and building access, AFD inspection and direct payment to supplier. Knox-Box locations on site and building shall be coordinate with the COA Fire Marshall’s office by the Architect.

Door Hardware Keying – Include as part of the bid documents the following: Contractor shall furnish, install and pay for all building and site keying requirements, documentation, scheduling of work, keying plan/access control/schedule for COA review and approval. COA along with the Architect shall inspect all locksets upon completion of keying installation. General contractor will coordinate and provide direct payment to the COA approved Locksmith.

Sandia Safe & Lock is the current Locksmith vendor for the COA. The keyway shall be, Large or Small Format Interchangeable Core (LFIC or SFIC) depending on the needs of the Department. The designer is to verify which one is required for their specific project. Design team shall check with Sandia Safe & Lock for compatible lockset brands to include in the contract bid sets. Coordinate with City PM, Facilities Manager and City Architect for Grand Master/ Master/ Individual keying requirements. **Brush Nickle finish.**

A pdf is available to the Design Team that outlines the Allegion Steel Doors and Hardware requirements. Request the current version from the General Services Department. **The Contractor is to confirm the COA approved locksmith prior to work/purchase.**

Special Inspections IBC

Special Inspection Services may be required per the current Building Code

IBC Chapter 17 inspection by third party, paid for by the City through a third party inspection company.

COA Plan Check/Permit/Impact Fee Allowance

Include in bid set the GC Responsibilities to coordinate and pay for:

The entire fee shall be paid by the General Contractor after the preconstruction meeting. A/E will fill out all of the paperwork at the permit desk and include the entire cost in the project manual/bid documents as an allowance. Architect of record or representative will obtain the actual plan check/permit/impact fees at the permit desk prior to final permit and submission for bid. Architect may be required to sign a “promise to pay” form.

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Air Quality/Fugitive Dust Permit

Include in bid set the GC Responsibilities to coordinate and pay for:

Air Quality/Fugitive Dust Permit. General Contractor needs to fill out the form and pay the fee to the Environmental Health Department as part of the base bid. The permit needs to be paid and in place prior to commencing any earthwork on the site. See Environmental Health for Air Quality/Fugitive Dust Permits requirements for disturbed land under 3/4 of an acre in size or building demolition under 75,000 cubic feet.

This includes air quality permitting for any emergency diesel power generators, or any item identified by Environmental Health as a recognized emissions generator including water heaters **or boilers** of a specific size.

Drawings & Specifications (Pre-Install Meetings) – include in the bid set mandatory pre-installation meetings on any special system and systems that have more than 2 trades on the installation. These meetings can occur during the weekly construction progress meetings. Ask for Mockups of systems that require a good installation and ask for manufacturer representatives to attend the construction progress meetings to answer material & installation questions. Prior to the final construction design documents (preferably before the DD level of design)- engineers and architects shall work with General Services Department in developing detail design using standard design criteria based on building type, occupancy, etc.

Drawings & Specifications (House Keeping) – include language within the specifications to not allow any tobacco products (including chewing tobacco and electronic cigarettes) on the building site and food or drinks within the building perimeter. We have found trash and debris in past constructed walls that get covered up and cause an odor later during occupancy. Provide a statement to clean the sub slab area daily of all debris to avoid left over construction material under the access floor.

Drawings & Specifications (Substantial Completion & Certificate of Occupancy (CO)) – Make it clear that the Certificate of Occupancy (CO) is the substantial completion date on CIP contract. This is the time that the City will take over site security and transfer insurance liability and utility payments from the General Contractor to the City (coordinate with the Energy and Sustainability Department). It is also the time when City customers can occupancy the building. Punch list corrections and commissioning may continue to project

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closeout. All site work, landscape planting and irrigation will need to be construction complete prior to CO.

Commissioning Will be required as described in the current IECC.

If required by the IECC, A Commissioning Agent (CxA) for non LEED buildings will be provided by the City. The A/E is to include specifications to support this effort with coordination with the Commissioning Agent. This includes Building Envelope Commissioning.

The Design Team will need to work closely with the General Services Department to verify commissioning, verify functionality per the sequence of operations.

Casework Requirements

Provide heavy duty, well-made casework that will last heavy use.

All casework needs to be approved by COA **General Services Division** prior to final design.

Provide industry standard backing for casework.

Doors and drawers pulls shall be integrated.

Hinges, drawer glides and locks shall be heavy duty, long lasting.

Kitchen sinks shall be deep and wide enough to allow for the washing of large pots and pans.

Kitchen faucet stem shall be high enough to allow for washing of large pots and pans.

Bathroom faucet stems need to extend out far and high enough to allow for easy hand & face washing. Touchless sensor type faucets for lavatories.

Bathroom sinks shall be stainless or solid surface with smooth edges.

Casework finish needs to resist stains and low impact.

Emergency Evacuation Plans - Include in bid set - Contractor will provide signage per Fire Marshall Requirements. Plans shall be mounted to the walls in prefabricated frames that will allow changes to the evacuation plans as needed. Locations of the evacuation plans shall be determined by the Architect and Fire Marshall. Plans will show evacuation routes, fire extinguishers locations, room names, exits, etc. Architect will provide floor plans electronically with evacuation routes for the evacuations plans.

Room Occupancy Load Signs – Include in bid set - Contractor will provide signage per Fire Marshall Requirements. These are only required in areas of assembly and mezzanines spaces. Architect will provide design and information for these signs.

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Room Labeling & Wayfinding - in those cases where room/office addressing and wayfinding signage is incomplete, the architect shall verify with the COA to improve the space by including wayfinding and room addressing.

As-built drawings - Include in bid set as GC Responsibilities – Update on a daily basis and to be reviewed weekly for completeness by A/E representative. As-built drawings will be provided to the Architect of Record and City PM at the end of the project in electronic format described below. Architect shall update and create record drawings and specifications for City PM records at project closeout.

Design Reviews – For each design review, at a minimum, provide both ½ sized hard copy and an electronic pdf copy (less than 10 MB). **Electronic copies may be provided at the request of the City PM.**

Record Drawings - Once appropriate signatures have been obtained (if required by the City) an electronic digital copy (PDF & ACAD/REVIT/BIM Model) of the construction drawings shall be provided to the Department of Municipal Development/Construction Services/Maps and Records Section before construction begins.–At the end of construction the Sealed Record Drawings shall be submitted in PDF & ACAD/REVIT/BIM format to the Maps and Records Section the City PM and the General Services Division. In each case the digital record criteria below shall be followed. Operations and Maintenance Manuals must be provided to the Department of General Services for all equipment.

1. A single pdf file, multiple page, image based, electronic pdf file containing one pdf sheet for each sheet of the project drawing plan set. File to be named Project Number.pdf.
2. Each sheet shall have the design professional’s seal and the sheets shall be oriented as if reading the drawings on a desk (i.e. top to bottom, left to right; no rotated images).
3. Each sheet of the single multiple-paged pdf should be sequentially numbered and in order in accordance with the plan set.
4. The resolution should be no less than 300 dpi.

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SWPPP (Storm Water Pollution Prevention Plan)

Include in bid set the GC Responsibilities to coordinate and pay for:

All work and fees related to the SWPPP as part of the base bid. Note that there is a NOI 14 day waiting period per EPA prior to any disturbance of earth. Tell the CG to limit the areas of construction and mobilization, including driving routes onto and around the site. These areas will have to be part of the SWPPP inspection and later soil stabilization sign off.

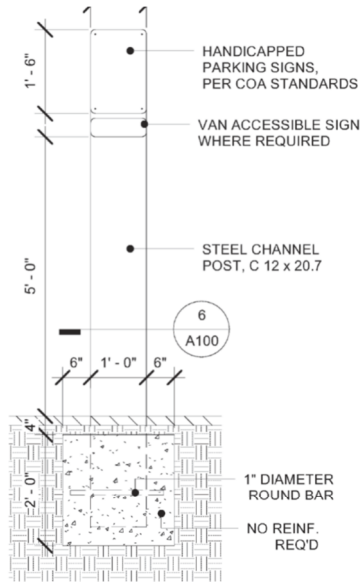
This will need to be mentioned at the Pre Bid and Pre Construction meeting since it will affect the construction schedule.

Inform the GC that they will have to submit their SWPPP to DMD Engineering for review and Engineering Manager sign-off. Note that the City may provide their own certified SWPPP inspector for periodic site visits.

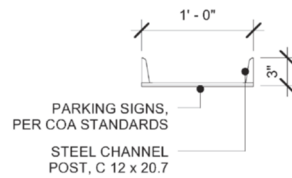
Parking and other sign mounting detail

This detail is recommended for all sign that have to be mounted on a pole... See detail and photo below.

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7 PARKING SIGN
1/2" = 1'-0"



6 PARKING SIGN - SECTION
1" = 1'-0"



Sample Parking Sign Post

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Concrete Slabs, Sidewalks and Paving

Provide an expansion and control joint plan that clearly shows and labels all joints. All joints shall be spaced to meet the 1:1 ratio. All exterior expansion joints shall have self-leveling sealant typical. Sidewalk finishes shall be a medium broom finish.

Accessible Doors

Refer to the Department of General Services for standardized requirements for doors/hardware.

ADA Compliant Full Reach Range Switches

Recommended automatic door operator switch for swing doors is the INGRESS'R switch.

See Web Site http://www.wikk.com/sw_spec.html

Note that this switch is not required on sliding doors.

Mount bottom of switch 6" min. A.F.F. and no closer than 4'-0" from door with operator and no further than 15 feet from the door controlled.

Prefer mounting is on building wall. Use post/bollard mounting if wall is not adjacent to the door.

Restroom Requirements

Toilet Partition Recommendation

See Flush Metal Partitions, LLC - <http://flushmetal.com/flushung-ss-bathroom-partitions>

Design floor mounted partitions with textured stainless steel or solid surface finish.

Request finish samples for selection. Call out in the design to provide floor and wall bracing to support partitions.

Coat Hooks in Toilet Stalls – Specify coat hooks that do not protrude more than 2" and allow the toilet stall door to open a full 90 degrees into the stall. Hooks shall have a flat face similar to Bobrick B-671, B-6717, B-672, B-6727 and B-677. Other manufacturers with similar coat hooks will be acceptable as long as they do not have sharp edges, faces and follow the above requirements.

Solid Surfaces and Stainless Steel Surfaces

Provide solid surface material at all wet areas, break areas and lobby counters. All edges shall be 1-1/2" minimum thickness at the perimeter and 3/4" minimum in the field areas. Stainless steel surfaces may be used for wet areas if it meets the design intent and building type.

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Ceramic Tile

Provide ceramic tile in restroom and public areas as required by the design team. Use epoxy grout instead of grout sealer as part of the installation. Slope to drain. Coordinate with the Department of General Services for flooring and carpet options.

Window Sills Exterior and Interior

Show full details in the bid set for construction. Do not rely on the contractor to figure out window details in the field.

Painting & Textures

Provide Semi-Gloss paints and light to medium textures (Knockdown finish preferred) on all interior gypsum board walls and ceilings to hide surface imperfections and for easy matching or touchup during maintenance. Provide gloss paint on all restrooms walls and ceilings. Flat and egg shell paint is not allowed on City projects unless approved by City Architect and PM. See attached standardize color options per the Department of General Services (at the back of the Guidelines) for walls and door frames.

Ceiling Tiles:

Per the Department of General Services all ceiling tiles shall be standard Armstrong 895 tiles.

Exterior Insulation and Synthetic Finish System

Provide light to medium textures to hide surface imperfections and for easy matching or touchup during maintenance. Use the mesh up to at least 8' AFF.

Roofing Standards for New and Replacement flat roofs

Systems:

- Provide **80 mil** Minimum PVC for all new and replacement flat roofs. The system can be either fully adhered or heat inducted welded based on the deck type. Fleece backed membrane can be used in fully adhered systems.
- Insulation:
 - Insulation can be mechanically attached and or fully adhered depending on the deck type.
 - Insulation shall be Polyisocyanurate.
 - Tapered insulation may be required to provide a minimum 1/8" per

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- foot to provide positive slope.
 - Crickets or saddles should be built to a 3 to 1 ratio and be at least ¼” greater than the slope of the deck.
 - R-value must meet the current IECC and City requirements.
 - All insulation must be in a minimum of 2 layers & have a ½” DensDeck type cover board.
- Roofing design specifications for City approval require an FM Global approved roof assembly, minimum required assembly design is Class 1-75 wind uplift. The roof assembly must be listed with a RoofNav number and approval listing including specific cover, insulation, fastener, deck or substrate. Provide the full assembly listed under an FM Global approved manufacturer for both the basis of design specification and the contractor's submittal packet, do not substitute FM Approved products listed in the RoofNav report.
 - Provide a roof assembly complying with the following:
 - For roof decks, securement requirements of the roof decking for minimum Class 1-75 wind uplift rated roofs are described in FM Global Property Loss Prevention Data Sheet 1-28.
 - For above deck components, securement requirements of the above deck components for minimum Class 1-75 wind uplift rated roofs are referenced in FM Global Property Loss Prevention Data Sheet 1-29.
 - For standing seam and panel roofs, provide securement requirements for corner, perimeter, and as appropriate roof peak, of standing seam and panel roof systems for minimum Class 1-75 wind uplift rated roofs, refer to FM Global Property Loss Prevention Data Sheet 1-31.
 - For preliminary insulation fastening, refer to Data Sheet 1-29, Table 6 for pre-securement fastening requirements.
 - For recover and reroof design, specification must include testing prior to installing fasteners for recovering and reroofing existing decks, fastener withdrawal tests are needed to confirm the adequacy of fasteners and fastening pattern. Refer to FM Global Property Loss Prevention Data Sheet 1-29 for details.
 - For system specification and quality control, include trial fasteners. Installations of row attached mechanically attached single ply roof covers over steel deck (new or recover) require that the roof cover be laid perpendicular to the ribs of the steel roof deck. This requirement is made to ensure that the mechanical fasteners are installed perpendicular to the steel

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deck ribs and take advantage of the steel deck rib module and engage the top flange of the steel deck. Specify in the design, before beginning the securement, that a trial fastener must be driven to determine that the fastener is in fact engaging the top flange of the steel deck. Engagement in the top flange of the steel deck is a requirement of all fasteners for Approval of all steel deck roof constructions.

- As part of the design deliverables, provide a complete FM Global RoofNav Contractor Package for review and submission to the FM Global field office including a Contractors Checklist for Roofing Systems, FM Global RoofNav document form number X2688, summary of information for an FM Approved roof assembly with specific product selections, and information regarding securement patterns, corner and perimeter enhancements, perimeter flashing, and prescriptive safety information required for an insured's construction coverage applicability and responsibility review.
- All low slope copings, and roof edges must have wood nailers that are fire treated and meet ES-1 Code requirements.
- Provide coping flashing or snap on edge copings that meet SMACNA and ES-1 requirements, have a Kynar type finish with a 20-year paint warranty and factory finish color selected by the Architect/Owner.
- **No pitch pans allowed.**
- Provide 2-30" wide walking pads at entrance onto the roof, window cleaning rigging access, **roof to roof discharge areas** and all working sides of units and a single 30" row to the mechanical units to the roof access.
- Use roofing manufacturer's recommended membrane premanufactured boots at all duct/pipe/conduit penetrations. Hand wrapped membrane boots maybe used when premanufactured boots are inaccessible.
- All curbs and penetrations must meet roofing manufacturer's requirements. All penetrations must be separated for proper flashing with membrane boots.
- Roof curb must be installed with the membrane wrapped onto the top of the curb and a new slip metal flashing installed.
- For reroofing projects design in all new equipment curbs.
- Provide continuous, fire rated, plywood backing at all parapet walls & fire rated decking. Provide continuous fire rated 2x nailer on top of parapet.
- On all scuppers provide membrane coated metal liners.
- All gutters must have bottom brackets and laps sealed with a peel and stick

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EPDM or Enteral bond type product following SMACNA standards.

- Provide pre-manufactured concrete splash blocks at drain and downspouts discharge areas typical.
- All drains must be water tested at project completion.
- All conduit, gas lines and other supported piping that runs on top of the roof must have manufactured pipe supports with slip flashing that has been fully adhered. Use only pre-manufactured conduit/pipe supports. **Wood supports are not allowed.** **Paint all gas piping yellow with DTM paint.**
- Roofing manufacturer representative shall inspect final roof placement and may be required at the roofing preinstall meeting.
- Provided a 20 year NDL manufacturer's warranty with a contractor's 2 year warranty.
- Follow roofing manufacturer's recommendations for the installation or Architects/Roofing consultants' requirements which is ever more stringent.
- Roofing must meet current Building code requirements, be tested by FM, SMACNA ES-I ANSI SPRY, current ASCE7, OSHA, energy star rated and have moderate hail resistance.
- Metal roofing systems shall be standing seam. Coping and metal roofing materials shall match in color. **Provide a 20-year warranty.**

Solar Panel Roof Requirements

Design all new flat roof systems to support future photovoltaic panels.

Typical roof mounted solar modules weigh 20 to 50 pounds each and are distributed evenly across the roof along with the racking systems that support them. The design shall include the combined weight of solar modules and the racking that supports them to approximately 3-4 pounds of weight per square foot. Other consideration would need to be included such as wind and snow loads that are attributed to the solar panels.

Roof Hatch, Railing, Ladder & Safety Cage

The design of all roof hatches, railing, ladders and safety cages must comply with OSHA and all applicable building codes. The design will be assessed on a design by design basis.

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Fire Protection

Include in the contract documents all of the following building and site requirements:

Fire Marshall Requirements

All designs will need to be reviewed by the COA Fire Marshall's office during design development phase, contract document phase and prior to submitting the plans for permit review. Any modifications to city maintained facilities that will affect the fire panel must be coordinated through the General Services Division. **Only non-proprietary equipment will be allowed.**

Sleeve Penetrations

Provide framed or pipe sleeves at all Foundation wall, fire wall and sound wall penetrations. Use proper sealant, fire and sound caulk, with indicator coloring, inside sleeves and gang piping/conduit/duct frames.

Wet Systems

Wet systems shall have a 1 year PM plan included in the installation to include any subsequent equipment including but not limited to fire pumps, fire pump controllers, monitoring devices, etc. **Only non-proprietary equipment will be allowed.**

Dry Systems

Dry systems shall be pre-action type and have a 2 year PM package to cover maintenance on all subsequent equipment including compressor, diaphragms and pressure switches associated with system including fire alerting system.

If a project occurs in sprinkled space that has sprinkler heads that are at or near 80% life cycle shall be replaced in their entirety of the construction footprint.

The City of Albuquerque reserves the right to have a fire sprinkler consultant review fire sprinkler design for input and approval.

Fire Alerting systems shall be approved prior to installation by **the City of Albuquerque**.

Fire Alerting systems installed shall have a 2 year PM plan as part of the installation.

CIP Building Design Standards & Guidelines

Plumbing Design

Include in the contract documents all of the following building and site requirements:

Public Utility Requirements for All Disciplines

See Public Utility Requirements for All Disciplines section towards the end of this document and coordinate work between all disciplines.

Water Service

All water service lines and connections, within the building, shall be copper. All valves shall be copper or brass. Any changes to this requirement will need prior approval from the City assigned PM and **the City of Albuquerque**.

No Hub Couplings

When No Hub couplings are used in the design of the plumbing system waste and drain, use stainless steel heavy duty coupling with 4 stainless steel clamps. This insures that the joint will stays together when the system is snaked. All waste water cast iron pipe must be epoxy coated inside and out.

Water Isolation Ball Valves

Isolate all water lines, hot and cold water, with ball valves at each restroom for one restroom shut down at a time during maintenance. Provide interior isolation valves at all exterior hose Bibbs and wall/rooftop hydrants. Locate all roof top hydrants along nearest parapet roof edge to provide a larger open roof area for future solar panels.

Toilet Mounting

Use floor mounted toilets only. Discuss, during the design process, which type of toilet mount is preferred. Note that Senior Center type buildings require all toilet heights to be 17" to 19" ADA height.

Toilet Accessories Recommendations

Verify with the specific **City Department**.

CIP Building Design Standards & Guidelines

Access Panels

Provide access panels at all concealed valves. Provide valves within 6" of ceiling and walls for easy maintenance access. Access panels shall be sized for maintenance staff access during the design process. 18"x18" minimum size.

Trap Guards

Provide trap guards at all interior sanitary sewer drains.

Sleeve Penetrations

Provide framed or pipe sleeves at all Foundation wall, slab, fire wall and sound wall penetrations. Use proper sealant, fire and sound caulk, with indicator coloring, inside sleeves and gang piping/conduit/duct frames.

Fire & Sound Rated Walls

Use 2" minimum labels above ceiling at every three feet that state "Fire Wall – Do Not Penetrate" or "Sound Wall – Seal Penetrations".

All drinking fountains shall have bottle filler option with filtration.

Water heating systems may be on demand tankless type with circulating loop and pump. Verify current requirements with the **specific City Department.**

CIP Building Design Standards & Guidelines

Mechanical Design

Refer to the standardized guidelines for HVAC **building automated system with BACNET** prepared by Energy & Sustainability Management Department. All new facilities shall include Automated Logic Controls for compatibility into the City's monitoring system and shall not be propriety. Existing controls shall be evaluated for rehab work to determine the life expectancy and removed and replaced with **building automated system with BACNET**, Automated Logic Controls when deemed unsalvageable.

Include in the contract documents all of the following building and site requirements:

Public Utility Requirements for All Disciplines

See Public Utility Requirements for All Disciplines section towards the end of this document and coordinate work between all disciplines.

HVAC Systems

During design, provide a comparative list of HVAC systems with energy savings and cost information to allow the City to choose the right system for the building type.

Provide energy efficient mechanical systems that have a proven record of at least 10 years of operation with little or no breakdown issues and obsolete replacement parts. HVAC units must meet the current IECC requirements.

All disconnects must be non-fused

High altitude orifice kits

High efficiency units, 85% efficiency 16 SEER or greater or what is required by the current IECC.

Unit must have factory hail guard protection

Unit must be name brand with factory warranty, (Trane, Carrier, York Etc.) no sub brand

Rubber or composite sleepers with slip sheets, no wood sleepers shall be used

Unit must come with a Bacnet Card installed for future control if a BAS is not included in the construction project

New sensor t-stats throughout the building

CIP Building Design Standards & Guidelines

New duct detectors

If a VRF system is designed, all interior piping must be hard piped, no soft copper within the building

If a VRF system is designed all exterior piping must include a wrap to deter the breakdown of exposed insulation due to the elements

New units and during remodel, Test and verify the HVAC system is balanced correctly to accommodate design use. Test and Balance Report shall be submitted to DMD & GSD. The design needs to meet the requirements of the current IECC.

HVAC Maintenance for the first year after Certificate of Occupancy

Include in the drawings and specifications a statement that the General Contractor and their subcontractor are responsible for the quarterly maintenance of all installed HVAC units for the first year after certificate of occupancy is issued. **The General Contractor and their subcontractors must include a 10-month trend from the date of Certification of Occupancy and make proper adjustments** including but not limited to: chillers, boilers, filter replacement, greasing bearings, filter replacement, replacing belts, coil cleaning, measuring discharge air temps, measuring water supply and return temps, recording, strainer cleaning, lubrication of rotating/moving parts, faulty wiring replacement, control connections/operations, seasonal heating/cooling switch over, etc. **and quarterly reports must be submitted** to the City of Albuquerque representative.

Roof Top Units

All roof top units (RTU'S) shall have a curb height above finished roof membrane to membrane termination and noted elsewhere in this guideline. Provide an exterior rated convenience outlet at each unit with all wiring and conduit routed inside RTU curb. Provide hail guards on all RTU's. As safely as feasible possible, locate all RTU'S and route all gas lines along nearest parapet roof edge to allow for a larger open roof area for future solar panels. Also see HVAC maintenance requirements above.

Include hard labeling of HVAC circuit panel and OCPD number on the disconnect of the HVAC unit. The convenience outlet shall also have the circuit identified.

RTU'S shall be either TRANE/Automated Logic controls compatible.

CIP Building Design Standards & Guidelines

RTU Units: Shall have disconnects and convenience outlets installed along with new rubber blocking for the new units and gas lines. Install frost free hose bids for maintenance purposes.

CIP Building Design Standards & Guidelines

Electrical Design

Include in the contract documents all of the following building and site requirements:

Public Utility Requirements for All Disciplines

See Public Utility Requirements for All Disciplines section towards the end of this document and coordinate work between all disciplines.

UFER Grounding

Provide UFER Grounding detail (A.K.A. Concrete Encased Electrode). Design is mandatory for all new building installations. See NEC 250-52(A) (3) (1) for requirements.

Service Connection

All service connection conductors shall be copper. Any changes to this requirement will need prior approval from the City assigned PM and **City of Albuquerque representative.**

Sleeve Penetrations

Provide framed or pipe sleeves at all Foundation wall, slab, fire wall and sound wall penetrations. Use proper sealant, fire and sound caulk, with indicator coloring, inside sleeves and gang piping/conduit/duct frames.

EXTERIOR OUTLETS

Exterior power outlets are to be on a dedicated Circuit home run. The exterior receptacles shall have dedicated 20 amp circuits for no more than 10 receptacles. Any additional receptacles shall have another dedicated circuit provided for up to an additional 10 receptacles.

LED Lighting

Provide in all designs LED lighting and controls. All lighting and controls shall be coordinated and reviewed by the Energy and Sustainability Department and they have cutsheets of what is acceptable.

Flat panels should be used only in warehouse/institutional applications.

Lighting color temps shall be no warmer than 3000 kelvin without GSD approval.

Outdoor lighting shall be LED and controlled by Intermatic timer with automatic DST.

CIP Building Design Standards & Guidelines

Photocells shall be wall mounted at 9' AFF.

Conduits for Future Charging Stations

Provide 2" conduits to the parking area for future charging stations for electric vehicles (one for data only and one each for power to each pair of parking space). Design the termination such that four parking spaces may have access to the service. Design the termination in the facility's electrical panel and IT room and design the power requirements for the future demand of this service.

Conduits for Future Photo Voltaic panels

Provide one 2" conduit from each rooftop to the electrical room and one 2" conduit to the IT room for connection to future Photo Voltaic panels. Provide the same for any site applied PV panels.

EMT electrical metallic tubing is acceptable for runs in existing framed wall systems.

General requirements:

Under no circumstances fused disconnects or fused distribution equipment shall be used.

All Overcurrent Protection Devices (OCPD) shall be a circuit breaker.

All distribution equipment shall be square D

All exit signs in downtown facilities shall be red lettering

Every panelboard and distribution equipment shall have, at a minimum, of 30 percent available spacing in the panel/ distribution equipment for future loads.

As a precautionary method, underground raceways shall have at least one spare raceway equal to the size of the largest underground raceway.

MC cable shall not be used as a home run.

MC cable cannot exceed more than 15 feet in ceilings and no more than 10 feet in wall cavities.

All lighting "whips" shall have the dimming conductors incorporated into the cabling. Whether the systems is being dimmed or not.

Conduit fill shall not exceed 50 % of the conduit fill capacity.

All junction boxes shall be deep.

Floor boxes shall have brass covers.

All wall cover plates shall be stainless steel with circuit identified on wither the front side of the cover plate or in some cases listed behind the cover plate.

CIP Building Design Standards & Guidelines

PVC schedule 80 under no circumstance shall be used as an above ground raceway. All above ground raceways shall be metal.

All VFDs shall be ABB

Liquid tight metallic flex conduit is allowed at no more than 6 feet in total length and only for equipment termination.

Photovoltaic Systems

All PV system installations are subject to compliance with these requirements.

PV systems shall not in any circumstance prevent access to rooftop equipment.

PV system raceways shall be installed equally spaced from each other, and supported every 6 feet horizontally with rooftop approved raceway support systems. Ariel power supply shall only be used by the local electrical utility (PNM). All customer owned electrical distribution installations including PV shall be underground.

CIP Building Design Standards & Guidelines

Special Systems / Telecommunication Design

Include in the contract documents all of the following building and site requirements:

Public Utility Requirements for All Disciplines

See Public Utility Requirements for All Disciplines section towards the end of this document and coordinate work between all disciplines.

Coordinate all work through the COA Department of Technology and Innovation (DTI)

Include in bid set the GC Responsibilities to coordinate and pay for the backbone:

All Voice, Data and Communication Work internal to the building related to the permitting, cabling, connector, faceplates, devices, racks and related equipment other than the bid document required 1" conduits, J-boxes, pull strings all home run to the communication closets. A/E design team needs to get quotes from the City vendors that provide this work. Be sure to have the vendor use prevailing wage rates on projects over \$60k in their quotes.

COA Department of Technology & Innovation (DTI)

Standards/Policies for Network Infrastructure

~~PURPOSE: This section describes installation standards and procedures for network infrastructure. SCOPE: Applies to the network infrastructure in all City owned or leased facilities~~

~~REVISED: 4/22/2022~~

~~The DTI Network group is responsible for all design, installation, and maintenance of networks in City owned and leased facilities. The DTI Network group will work with department program and procurement staff to provide appropriate quotes and contract information to aid with the purchase of all City network equipment and services. This includes, working with City contract and architecture staff in the design of any remodel or construction projects. All devices connecting to the City's intranet must support TCP/IP.~~

Network Equipment Requirements:

- ~~1. Switches must comply with all of the following:
 - ~~a. Enterprise level switches manufactured by Cisco~~~~

CIP Building Design Standards & Guidelines

- ~~b. Must be configurable by console port/command line~~
 - ~~c. Must have LAN based image or higher (No LAN-Lite images)~~
 - ~~d. Must support encryption (No NPE Images)~~
 - ~~e. Dual power supplies shall be purchased whenever possible~~
 - ~~f. Must be compatible with the Cisco DNA Infrastructure~~
 - ~~g. Must support IEEE 802.3at (PoE+)~~
 - ~~h. Manageable by SNMP~~
- ~~2. Routers must comply with all of the following:~~
- ~~a. Only Enterprise level routers manufactured by Cisco~~
 - ~~b. Must be configurable by console port/command line.~~
 - ~~c. Must have IP Services image or equivalent (Full support of EIGRP and BGP)~~
 - ~~d. Must support encryption (No NPE Images)~~
 - ~~e. Dual power supplies shall be purchased whenever possible~~
 - ~~f. Must be compatible with the Cisco DNA Infrastructure~~
 - ~~g. Manageable by SNMP~~
 - ~~h. SRST capability FXO/FXS~~
- ~~3. Wireless Access Points must comply with all of the following:~~
- ~~a. Only Enterprise level WAPs manufactured by Cisco/Meraki please consult with Networking for current configurations.~~
 - ~~b. Must be compatible with Cisco Infrastructure~~
 - ~~c. Must work with Cisco Wireless Controllers and or Meraki dashboard.~~
 - ~~d. Must have dual 2.4 and 5ghz radios with 802.11n(AC/AX) support.~~
 - ~~e. Must support Cisco Clean Air technology for spectrum analysis~~
- ~~4. IP Telephony~~
- ~~a. Must be manufactured by Cisco~~
 - ~~b. Must be supported by current version of Cisco unified communications manager CUCM.~~
 - ~~c. Desk phones shall have two ports, allowing for PC connectivity through the phone~~
 - ~~d. Plug-ins or additional telephony software or features must integrate with the current CUCM environment.~~

CIP Building Design Standards & Guidelines

The City of Albuquerque, Department of Technology and Innovation standards and guidelines for Information Technology Infrastructure and Facilities (10/25)

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1. Introduction

The City of Albuquerque (City) utilizes a structured approach to the deployment, integration, and operation of Information Technology (IT) for both the technology itself and the facilities the technology resides in. The City's Department of Technology and Innovation (DTI) must ensure that any IT solution that is purchased by the City is installed in compliance with modern standards and best practices. This practice provides the following benefits the City:

Use equipment and services/equipment from multiple vendors

Obtain consistent Designs and Installation practices

Better management of building space resources

Improved reliability of IT systems and infrastructure

Improved troubleshooting and fault isolation

Ability to better manage "adds, moves, and changes" with IT systems, infrastructure and City personnel.

2. Acronyms

ACR Attenuation to Crosstalk Ratio

CIP Building Design Standards & Guidelines

AFF	Above Finished Floor
CRAC	Computer Room Air Conditioner Unit
CUCM	Cisco Unified Call Manager
DTI	Department of Technology and Innovation
FDU	Fiber Distribution Unit
FTP	Foiled Twisted Pair
HVAC	Heating Ventilation and Air Conditioning
IDF	Intermediate Distribution Frame
LMR	Land Mobile Radio
MDF	Main Distribution Frame
NEXT	Near End Cross Talk
UPS	Uninterruptable Power Supply
UPT	Unshielded Twisted Pair

3. Purpose

The purpose of this document is to identify standards and specifications that must be followed when designing or planning new construction or the retrofit of existing facilities that are owned by the City of Albuquerque. Federal, state, and local codes, rules, regulations, and ordinances will govern the designs and work and will cover the requirements for following areas:

- Main Distribution Frame
- Intermediate Distribution Frame
- Server Rooms
- Intrabuilding Pathways
- Conduits
- Cable Tray
- Equipment Racks and Cabinets
- Optical Fiber Backbone Cable
- Multi pair Copper Backbone Cable
- Coaxial Cable
- Copper F/UTP Cable
- Communications Vaults/Hand Holes/Pull Boxes
- Project Requirements, Documents and Warranty
- Scheduling Requirements
- Testing, Labeling, Documentation and Acceptance

4. Term Period

CIP Building Design Standards & Guidelines

This document is intended to be a living document that will be reviewed and updated by DTI periodically as warranted by changes in building construction techniques and communication technology. DTI retains the right to modify these documents on an interim basis between updates for project specific requirements to meet the needs of the City. Any and all deviations from the identified standards must be submitted in writing to the Director of DTI.

5. Standards

The specifications included within these Guidelines, incorporate generally accepted communications infrastructure practices described in industry recognized standards documents (and addenda) published by recognized standards bodies and organizations. These include but are not limited to applicable standards published by ANSI, IEEE, the Telecommunications Industry Association/Electronics Industries Alliance (TIA/EIA), ISO/IEC and Building Industry Consultant Services International (BICSI).

Note: It is the responsibility of the architect, design team and contractor to provide, plan, design, engineer, construct and install IT systems that meet the requirements of the City's IT guidelines and specifications that are industry standard's compliant and meets the warranty and installation requirements of the system's manufacturer.

Note: The architect, design team and contractor are directly responsible to provide, plan, design, engineer, construct and install in City facilities in compliance to all building and trade codes and laws applicable to the State of New Mexico, City and the code Authority Having Jurisdiction (AJH). This includes code modifications to existing conditions within the project boundaries and adjacent areas where associated project work is required such as pathways and IT equipment spaces.

Provide full compliance with the American Disabilities Act of 1990 for all IT installations.

The most recent editions of the codes, laws, standards and specifications listed below shall be referenced for project design and construction requirements unless specifically addressed in the City's Design Guideline and/or Specifications.

ANSI/TIA/ EIA 568B, Commercial Building Telecommunications Cabling Standard

CIP Building Design Standards & Guidelines

This prescribes the requirements for Intra building copper and optical fiber cable performance, installation and testing.

ANSI/TIA/EIA 569A, Telecommunication Standard for Pathways and Spaces

This standard includes specifications for the design and construction of pathways and spaces within buildings required to support information technology equipment and cable media.

ANSI/TIA/EIA 607, Commercial Building Grounding and Bonding Standard

This document includes the components of an effective grounding system for communication systems within public and commercial buildings.

ANSI/TIA/EIA 758 Customer Owned Outside Plant Telecommunications Cabling Standard

This standard provides specifications for Inter Building communication facilities that include cable media, pathways and spaces.

ANSI/TIA/EIA 862, Building Automation Systems Cabling Standard for Commercial Buildings

This standard describes the generic cable system for building automation systems (BAS) that are intended to support a multi-product, multi-vendor automation environment within public and commercial buildings.

ISO/IEC 11801

International Standard ISO/IEC 11801 specifies general-purpose telecommunication cabling systems (structured cabling) that are suitable for a wide range of applications (analog and ISDN telephony, various data communication standards, building control systems, factory automation).

Building Industry Consulting Services International (BICSI) Telecommunications Distribution Methods Manual

This is a manual of proven design guidelines and methods accepted by the telecommunications industry.

Building Industry Consulting Services International (BICSI) Specialty Manuals Customer Owned Outside Plant Wireless

CIP Building Design Standards & Guidelines

ANSI/NFPA 70, National Electrical Code, (NEC) Current Edition

NFPA 90 A: Installation of Air Conditioning and Ventilating Systems

This standard prescribes requirements for cabling fire ratings in ceiling spaces and the distribution of cabling within.

American Disabilities Act of 1990

This law mandates construction and installation requirements for handicap accessibility

Additional Standards:

All work not specifically related to the fore mentioned standards shall be performed in accordance with the applicable ANSI or International Standards associated to it. Manufactures Specifications and Instructions: In addition, all work shall be performed to the applicable manufacturer's specifications and instructions pertaining to that work.

6. General MDF/IDF Requirements

MDF/IDF Room Dimensions

Dedicated DTI MDF/IDF rooms need to be 8ft long, 8ft wide, and have a ceiling height of ten feet at a minimum. If constructing a room to these dimensions is not possible, notify DTI as soon as possible.

If an MDF/IDF is to be shared or used for anything other than a dedicated MDF/IDF, the room needs to be 12ft long, 12ft wide and have a ceiling height of ten feet at a minimum. If constructing a room to these dimensions is not possible, notify DTI as soon as possible.

MDF/IDF rooms will not be designed to be shared with a storage space.

MDF/IDF Separation

The MDF and IDFs need to be placed throughout the facility so that copper cabling from the MDF and IDFs to not exceed the length of 295 ft from the patch panel in the MDF/IDFs to the RJ-45 ethernet wall plates. The 295ft limitation applies to both horizontal cable runs (same floor) as well as vertical cable runs (different floors).

Walls Requirements

Fire rated backer board is to be installed on all walls that starts 4 inches above finished floor and ends at the ceiling.

Ceiling Requirements

CIP Building Design Standards & Guidelines

Drop ceilings will not be installed in MDF/IDF rooms.

HVAC Requirements

Each MDF/IDF will have a unique requirement based on what equipment is going to be installed in the room. Calculations must be made for each MDF/IDF based on square footage and the total thermal output of equipment within in the room. This includes, but not limited to, network equipment, UPS system, lighting, facility power devices, etc.

Security Requirements

The MDF/IDFs must have physical security that limits access to authorized personnel. If this is accomplished with a physical key, DTI will need to have keys, or access to the keys while on site. If this is accomplished by digital locks or key card access, DTI will need to be added to the access groups or lists that permit entry.

Power Requirements

Each MDF/IDF will have of two duplex 20Amp power outlets. These outlets must be put on dedicated power breakers and clearly labeled.

Each MDF/IDF requires one 30Amp twist lock outlet for a UPS. This outlet must be on a power breaker and clearly labeled.

7. Grounding

All grounding and bonding will be done in accordance with the ANSI/TIA/EIA 607, Commercial Building Grounding and Bonding Standard.

8. Pathways

Conduits

A minimum of two 4-inch entrance conduits is to be installed, each containing four 1" rigid innerducts with pull strings. These conduits will begin outside the facility where service providers' cabling will enter the building and end within the MDF room. All installed conduits must have at least one pull string.

A minimum of one 4-inch conduit will be installed starting at the MDF to each of the IDFs. All installed conduits must have at least one pull string.

A minimum of 1-inch conduits will be used when running cables from the MDF/IDFs to the RJ-45 ethernet wall plates. Each conduit will be stubbed out at the nearest accessible ceiling space closest to the RJ-45 ethernet wall plate. All installed conduits must have at least one pull string.

Trays and Raceways

CIP Building Design Standards & Guidelines

Cable trays and raceways will be installed in accordance with industry standards and best practices when needed.

Floor Access Systems

If a floor access system is to be used instead of a RJ-45 ethernet wall plate, the floor access box must be installed as close to the center of the room as possible unless directed otherwise. The floor access box must be connected by conduit and not fed by cabling that is run under the carpet.

9. Cables

Cables will be installed in accordance with industry standards and best practices.

Fiber

Multi-Mode

MM Fiber with a diameter of 50um/125um (OM2) will be used except when compatibility with 62.5um/125um fiber (OM1) is needed. This will be determined by the DTI Network Engineer that is assigned the project.

Single-Mode

SM Fiber with a diameter between 8 to 10um with cladding diameter of 125um will be used when needed to travel long distances. This will be determined by the DTI Network Engineer that is assigned the project.

Termination

All installed fiber will be terminated with LC type connectors and connected to the FDUs. Fiber will be labeled at both ends of the run. Kevlar strain relief should be tied inside the service access of the FDU. Rigid member should be secured in the service access of the FDU.

Service Loops

External

When installing fiber optic cable in ductwork and pull boxes between buildings, there shall be a minimum of one complete loop; minimum of 12 feet in length, in the manhole and it shall be pulled in a protective liner inside the manhole to prevent damage to the cable.

Internal

When installing fiber optic cable in conduit, ductwork and pull boxes inside buildings, there shall be a minimum of one complete loop; minimum of 12 feet in length mounted in a circular configuration on fire rated backer board.

Pathing Testing

All strands must be tested per BICSI standards.

Patch Cables

CIP Building Design Standards & Guidelines

Installation of fiber optics patch cables in City facilities be appropriate length. Length of the cables will be determined by the DTI Network Engineer that is assigned the project.

Copper

The City requires that all copper network cabling be 23 AWG Cat-6 cable. Two Cat-6 cables will be ran from the MDF/IDFs to each RJ-45 ethernet wall plate.

FTP/UTP

FTP will be used in areas that will be known (or predicted) to have high levels of interference. The contractor will need to work with all City departments involved with the facility to identify areas where there will likely be increased amounts of Radio Frequency, large machinery to include generators and HVAC, special lighting systems, etc.

UTP will be used for the most common network cabling applications.

Special Cabling

It is the responsibility of the contractor to determine when special cabling is required. Special cabling could include but are not limited to riser or plenum rated cabling.

Termination

All Cat-6 cable will be terminated at both ends using the T568B wiring standard unless directed otherwise.

Service Loops

A 10ft service loop on all Cat-6 network cables is required within the MDF/IDFs.

A 1ft service loop is required on all Cat-6 network cables at the RJ-45 ethernet wall plate or floor access system.

Pathing

Cables that are ran outside of conduits for the purpose of connecting equipment to the network or connecting different pieces of network equipment together, must take the most direct path that is possible while traversing any trays or raceways. Any length of cabling that exceeds what is necessary and factoring in the service loops will not be accepted.

Testing

All cabling systems will be thoroughly tested for continuity and correct termination sequence. The criteria for testing cable are length, exposure to electromagnetic interference, and other conditions that might cause transmission problems. Testing tools should test for reversed, opened, shorted, and transposed pairs, and verifies the cable is within parameters of NEXT, impedance, capacitance, and ACR. No pass is not accepted. Cable tests to be turned over to DTI.

CIP Building Design Standards & Guidelines

Coax

Any coaxial cable that is installed in the facility that enters the MDF or IDFs will need to properly grounded and have a polyphaser installed (when possible) and connected to the facility's ground.

Coaxial cables will need to be labeled at both ends as to what it is being used for, LMR, TV, Bi-Directional Amplifiers, commercial carrier boosters, CCTV, etc.

10. Racks and Cabinets

Equipment Racks

Physical Requirements

Racks are standard 2 or 4 post racks. Racks are to have dimensions of 19 inches between posts and 84 inches tall (45U) unless otherwise stated by the DTI Network Engineer that is assigned the project.

Exception will be a Vertical mount 6U cabinet. Location must be approved by the DTI Network Engineer that is assigned the project.

Location of rack must be approved by the DTI Network Engineer that is assigned the project.

Equipment Cabinets

An enclosed equipment cabinet may be called for by the DTI Network Engineer that is assigned the project in specific areas or situations. Equipment cabinets must be completely enclosed, have lockable front and rear doors, and a ventilation system located at the top.

11. Project Requirements

Schedule

The project schedule will be provided to DTI as soon as available.

Equipment/system documents

All documents that pertain to network equipment that was purchased and installed will be turned over to DTI Networking at project completion.

Installation documentation

All installation drawings (As-Builts) will be turned over to DTI at project completion.

As-builts are required and need to contain at least:

Floor Plans

HVAC System locations

Electrical Wiring Locations

Network Cabling Locations

Network Equipment Installation Locations

Testing Documentation

CIP Building Design Standards & Guidelines

All documents pertaining to the testing of network equipment and cabling will be turned over to DTI at project completion

Acceptance Documentation

The DTI Network Engineer that is assigned the project will be the one who will accept the work performed in regards to the network equipment and cabling portion of the project and sign any documentation. The Network Engineer can accept the work even if there are known issues/problems as long as they are identified on the overall projects punch-list.

Phone Service

All telephone service and design needs are to be fully coordinated with COA Department of Technology & Innovation (DTI). Provide the minimum number of dedicated phone line depending on building service requirements. All Special Systems i.e., elevator, emergency phones, fire alarm monitoring systems, security monitoring systems, etc. are to have Cellular Communicators installed in place of all copper/POTS needs.

CABQ Fire Alarm System Standards

SCOPE: Applies to fire alarm systems and related equipment in all City owned or leased facilities

REVISED: 10/25

***All fire alarm projects to be submitted to TRC (Technical Review Committee/DTI)*

System Make/Model

- Fire alarm systems and components shall not be proprietary
- Fire alarm systems shall be compatible with Genetec, and can be an intrusion/fire combo (e.g., Bosch B9512G) when approved by CABQ FMO

Cybersecurity

- Fire alarm network adaptor shall have firmware updated prior to commissioning
- Fire alarm network adaptor shall have default logins removed and replaced with CABQ provided credentials

CIP Building Design Standards & Guidelines

Monitoring

- Monitored fire alarm systems shall have primary connections to a monitoring center via Cellular connection only
- **Cellular Communicator needs to be installed.**
- Fire alarm systems shall connect to the City's Genetec system

Location/Mapping

- Sensors/Zones should be programmed and or wired to current fire code
- Sensors/Zones shall be mapped in Genetec using the facility floorplan

Networking

- **Fire alarm panels shall be networked to a DTI approved Arista switch by Smart Cities.**
- **Facility shall have a minimum 10% free switch capacity after Network/Genetec connections**
- Please refer to the CABQ DTI Standards for Network Infrastructure to ensure compliance

Licensing

- A fire or intrusion (Bosch) license for Genetec must be purchased for each fire alarm panel installed and applied to System ID: GSC-200519-119676
- The City of Albuquerque holds an Enterprise Client license – Individual user licenses will not be required
- Ongoing costs for Genetec Advantage and any vendor provided maintenance plans should be considered and it shall not be assumed DTI or GSD will provide ongoing funding.

CIP Building Design Standards & Guidelines

CABQ Intrusion Alarm System Standards

SCOPE: Applies to intrusion alarm systems and related equipment in all City owned or leased facilities

REVISED: 4/2025

***All intrusion projects to be submitted to TRC*

Intrusion System Make/Model

- Intrusion alarm control panels shall use the Genetec Intrusion Protocol (currently Bosch, DMP)
- Intrusion alarm systems and components shall not be proprietary

Cybersecurity

- Intrusion system shall have firmware updated prior to commissioning
- Intrusion system shall have default logins removed and replaced with CABQ provided credentials

Monitoring

- Monitored intrusion alarm systems shall have a primary connection to a monitoring center via Cellular connection only
- Cellular shall be ordered immediately upon TRC approval
- Intrusion alarm systems shall connect to the City's Genetec system

Location/Mapping

- Sensors/Zones should be programmed and or wired to identify specific doors, windows, etc. whenever possible.
- Sensors/Zones shall be mapped in Genetec using the facility floorplan

Networking

- Intrusion equipment shall be networked to a DTI approved Arista switch, where needed
- All networking shall terminate in a patch panel
- Please refer to the CABQ DTI Standards for Network Infrastructure to ensure compliance

Licensing

- An intrusion license for Genetec must be purchased for each intrusion alarm panel installed and applied to System ID: GSC-200519-119676
- The City of Albuquerque holds an Enterprise Client license – Individual user licenses will not be required
- Ongoing costs for Genetec Advantage and any vendor provided maintenance plans should be considered and it shall not be assumed DTI or GSD will provide ongoing funding.
- Any required permits are the responsibility of the vendor

CIP Building Design Standards & Guidelines

CABQ Access Control Standards

SCOPE: Applies to access control and related equipment in all City owned or leased facilities

REVISED: 9/2025

**All access control projects to be submitted to TRC

Reader Make/Model

- Readers shall be WaveLynx Generation2 with terminal strip connection
- Readers shall be ordered preprogrammed for CABQ when possible
- Smart Cities will program any reader that was not preprogrammed.

Cybersecurity

- Access control hardware shall have firmware updated prior to commissioning
- Access control hardware shall have default logins removed and replaced with CABQ provided credentials
- All readers must use OSDP2 with encryption for communication

Hardware

- All doors shall be fail-secure. Specific exceptions to this standard can be reviewed by Smart Cities.
- ADOs shall be controlled via access control hardware and not rely on software control
- All hardware installed shall meet the requirements of current fire codes
- Each facility shall maintain one Cloudlink for communication
- Conduit accessible by public shall be saddle strapped (2 hole) using double straps
- All line voltage shall be piped, no SO cord or plugs allowed
- Access Control panels shall not be located in public areas, install in MDF or IDF
- Installation shall be centralized, not distributed
- Access control low voltage shall be piped up to grid
- No panel shall be located behind a maglock
- All composite cable to be RS485 (OSDP2)

Location/Mapping

- Access control shall be provided for any MDF/IDF (networking room)
- Access control should be provided for electrical/mechanical rooms
- Employee entrances shall have access control with a keypad reader
- Secure locations should have keypad reader
- Money rooms / vaults shall have read-in, read-out
- Access rules shall include doors only, no areas unless it is a specialty door area (first badge, man trap, anti-passback)
- Parking gates shall be read-in, read-out with no exit loop on gates
- Doors shall be mapped in Genetec using the facility floorplan including FOV
- *NOTE-There shall be a path from the employee entrance to any MDF/IDF that does not require physical key access. Additional access control may be required*

Networking

CIP Building Design Standards & Guidelines

- Access control equipment shall be networked to a DTI approved Arista switch, where needed
- All networking cables shall terminate on a patch panel
- Facility shall have a minimum 10% free switch capacity after network connections
- Please refer to the CABQ DTI Standards for Network Infrastructure to ensure compliance

Licensing

- Door licenses for Genetec must be purchased for each door installed and applied to System ID: GSC-200519-119676
- The City of Albuquerque holds an Enterprise Client license – Individual user licenses will not be required
- Ongoing costs for Genetec Advantage and any vendor provided maintenance plans should be considered

Any required permits are the responsibility of the vendor

CIP Building Design Standards & Guidelines

CABQ Security Camera Standards

SCOPE: Applies to security cameras and related equipment in all City owned or leased facilities

REVISED: 4/2025

**All camera projects to be submitted to TRC

Camera Make/Model

- Camera shall be NDAA compliant and manufactured by a Genetec Gold Partner (currently Axis, Hanwha, Panasonic i-PRO, Bosch)
- Camera shall not be NOS (discontinued)
- Camera shall have a minimum of three streams
- Camera shall have a minimum resolution of 1920x1080 @ 30FPS
- Camera shall have H264 capability
- Camera should have H265 capability
- PTZ cameras shall have home position capability and be programmed to return to home
- Camera should have advanced analytics matched to facility needs (object analysis, intrusion detection, loitering, etc.)
- Camera shall have IR

Cybersecurity

- Camera shall have firmware updated prior to commissioning
- Camera shall have default logins removed and replaced with CABQ provided credentials

Archiver

- Each facility shall have a Genetec Streamvault archiver on site
- Archiver shall be sized to retain a minimum of 30 days of footage for all cameras, at full resolution and framerate, recording continuously
- Camera streams shall be set to current Smart Cities recommendations
- Any required analytics and /or event to action programming shall be included in the SOW

Location/Mapping

- A camera shall be located in any MDF/IDF (networking room), money room, vault, and cash register or other cash handling area
- Cameras should be located on any door with exterior access control
- Cameras shall have location coordinates entered into Genetec
- Cameras shall be mapped in Genetec using the georeferenced facility floorplan including FOV, PTZ Track, motion

Networking

- Cameras shall be networked to a DTI approved Arista switch, where needed
- All networking cables shall terminate on a patch panel
- Facility shall have a minimum 10% free switch capacity after network connections
- Please refer to the CABQ DTI Standards for Network Infrastructure to ensure compliance

CIP Building Design Standards & Guidelines

Sleeve Penetrations

Provide framed or pipe sleeves at all Foundation wall, slab, fire wall and sound wall penetrations. Use proper sealant, fire and sound caulk, with indicator coloring, inside sleeves and gang piping/conduit/duct frames.

Fire & Sound Rated Walls

Use 2" minimum labels above ceiling at every three feet that state "Fire Wall – Do Not Penetrate" or "Sound Wall –Seal Penetrations".

Underground Utility Spotting

The Contractor is to be responsible for all underground utility spotting within the Limits of Construction of the project.

Public Utility Requirements for All Disciplines

Include in the contract documents all of the following building and site requirements:

Make sure to include the following items in the bid documents (Drawings & Specifications) that will make the General Contractor responsible for coordination of all documentation, payments to the service provider and maintaining the construction schedule. The design team engineers will need to coordinate with and incorporate many of the public utility and miscellaneous requirements in the contract bid documents.

PNM Utility- Include in bid set the GC Responsibilities to coordinate and pay for:

Engineering and scheduling service connection, Transformer & Pad, 2- 4" conduit placement requirements, documentation requirements, PNM inspections, utility easement requirements and direct payment. Provide a note to make the GC responsible to plan ahead for this utility installation.

ABCWUA Utility- Include in bid set the GC Responsibilities to coordinate and pay for:

Water and Sanitary Sewer service connection, taps, meters, UEC charges and all documentation requirements, scheduling, pipe placement requirements, inspections by ABCWUA coordination, utility easement requirements and direct payment. Provide a note to make the GC responsible to plan ahead for this utility installation.

CIP Building Design Standards & Guidelines

NM Gas Utility- Include in bid set the GC Responsibilities to coordinate and pay for: Engineering and scheduling service connection, all documentation requirements, gas line placement requirements, inspection by NM Gas coordination, utility easement requirements and direct payment. Provide a note to make the GC responsible to plan ahead for this utility installation.

CenturyLink Utility- Include in bid set the GC Responsibilities to coordinate and pay for: Engineering and scheduling service connection, all documentation requirements, 2- 4" conduit placement requirements with 1" ridged inner duct and pull strings, inspection by CenturyLink coordination, utility easement requirements and direct payment.

Comcast Utility- Include in bid set the GC Responsibilities, if required, to coordinate and pay for: Engineering and scheduling service connection, all documentation requirements, conduit placement requirements with inner duct and pull strings, inspection by Comcast coordination, utility easement requirements and direct payment.

Sleeve Penetrations

Provide framed or pipe sleeves at all Foundation wall, slab, fire wall and sound wall penetrations. Use proper sealant, fire and sound caulk, with indicator coloring, inside sleeves and gang piping/conduit/duct frames.

Miscellaneous Bid Document Requirements

Commissioning Specification – include as a minimum pre commissioning meetings, pre-functional checklist requirements, scope of all commissioning expectations from kick off meeting to final commissioning closeout and direct digital control requirements for closeout.


Some City Facilities are maintained outside of the oversight of the General Services Division. For coordination that references The General Services Division include the specific City Department too. Verify with the City PM at project onset.

CIP Building Design Standards & Guidelines


More items may be added to this document during plan reviews...

CIP Building Design Standards & Guidelines

Sample Title Block



ALBUQUERQUE ZOO JAGUAR EXHIBIT DD Review Not for Construction



**CITY OF ALBUQUERQUE
BIOPARK**
Department of Municipal Development

April 08, 2015
Department of Municipal Development - Owner

FINAL FOR CONSTRUCTION
DATE: XX/XX/2015

JAGUAR EXHIBIT
PROJECT #: 6213.00

Property Information

Property Address: 903 10th Street SW
Albuquerque, NM
87102

Zone: SU-2 Zoo

List of Potential Alternates

No. 1 - Sidewalk at North End
No. 2 - Heat Pad and All Required Power
No. 3 - Heated Log and Required Power
No. 4 - Rockwork Facade

UTILITY COMPANY CONTACTS

CALL BEFORE YOU DIG!

STATEWIDE FUNDUS ALBUQUERQUE #11

NEW MEXICO GAS COMPANY

REV	SHEETS	CITY ENGINEER	DATE	USER DEPARTMENT	DATE	USER DEPARTMENT	DATE

Legal Description

RIO GRANDE PARK & ZOO VAC STS B 60 & 61
REYNOLDS B 5 TO 8 REALTY SALES CO MA

Consultants

The Response Group, Inc. - Electrical Engineering - 323-7629
ArSed Engineering Group, LLC - Plumbing & Mechanical Engineering - 761-3100
Unify Engineering, PC - Structural Engineering - 270-5047

ENGINEERS STAMP & SIGNATURE	APPROVED	ENGINEER	DATE	APPROVED FOR CONSTRUCTION
	ORC Chairman			City Architect Date
	Transportation			
	Water/Wastewater			
	Hydrology			
	Parks			
				City Engineer Date

DATE: 3/13/2015

PROJECT # 6213.00

SHEET 1 OF

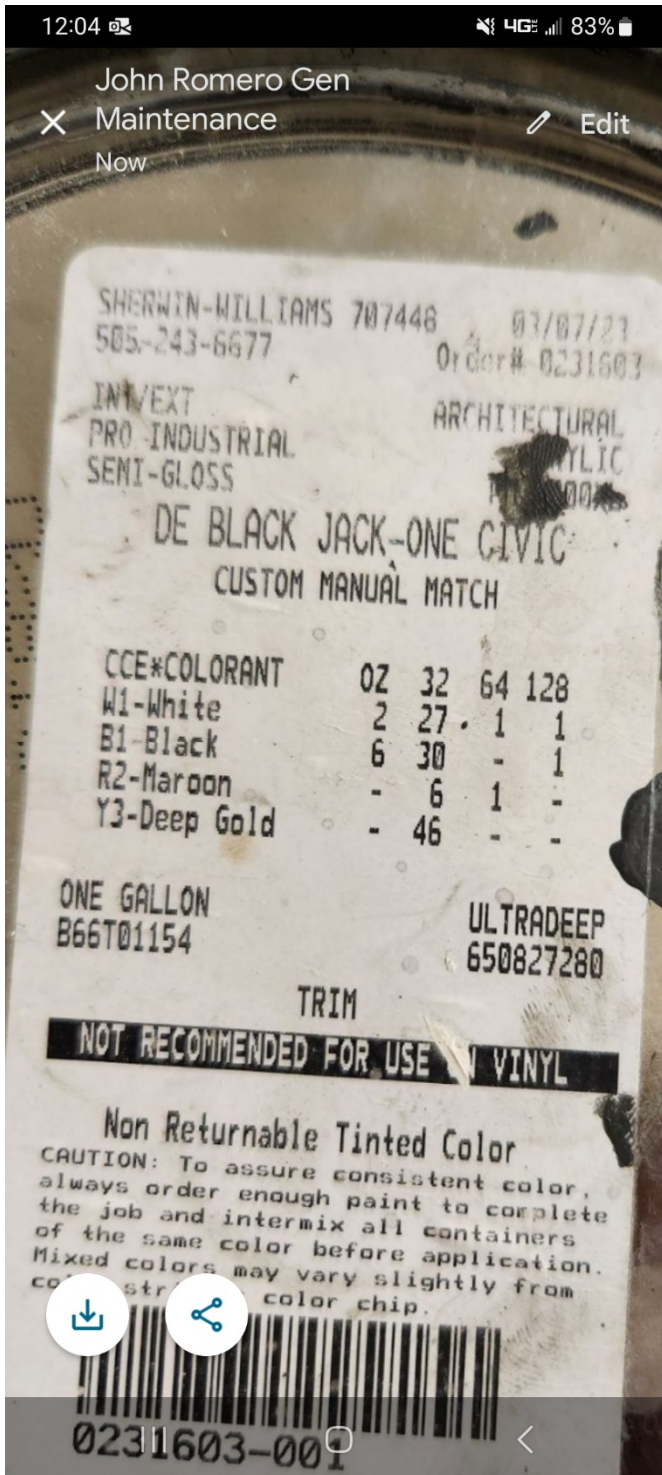
REV.	SHEETS	CITY ENGINEER	DATE	USER DEPARTMENT	DATE	USER DEPARTMENT	DATE
ENGINEERS STAMP & SIGNATURE		APPROVED	ENGINEER	DATE	APPROVED FOR CONSTRUCTION		
		ORC Chairman			City Architect Date		
		Transportation					
		Water/Wastewater					
		Hydrology					
		Parks					
					City Engineer Date		
DATE: 3/13/2015		PROJECT #	6213.00	SHEET 1 OF			

CIP Building Design Standards & Guidelines



Standard Paint options at City Hall

CIP Building Design Standards & Guidelines



Door Frame Colors at City Hall

CIP Building Design Standards & Guidelines



CABQ Color
Palettes - Building.p

PDF of Approved Exterior Building color palettes from the City Administration. Verify color scheme with the City PM during design.