

**EXHIBIT "B-4"**  
**IMPROVEMENT SPECIFICATIONS**

**ARROWHEAD REGIONAL MEDICAL CENTER (ARMC) – OFFICE SPACE**  
**MOSS COLTON PROPERTIES, LLC**  
**1930 WEST VALLEY BOULEVARD - COLTON**

**GENERAL SPECIFICATIONS:**

On all items listed within **Exhibit "A-1"**, Premises Specifications, **COUNTY** is to select and/or approve all colors, textures, types, models, styles, etc., used on the exterior and interior of the leased facility. Where "**COUNTY approved color board**" (**CACB**) is specified; only those materials and colors on the board may be used; any necessary substitutions must be approved by **COUNTY**. Where a brand name product is indicated, it shall be that brand name identified or a **COUNTY** approved equal. Any existing building conditions that do not meet the specifications of **EXHIBIT "A-1"** must be noted and approved as acceptable by the **COUNTY**. **LANDLORD** is to coordinate and provide for all health, Americans with Disabilities Act (ADA), building, safety, and fire requirements pursuant to all local, **COUNTY**, state and federal codes. Any required permitted construction drawing set/s is to be provided at **LANDLORD'S** expense. In the event any specified item is discontinued on the open market, **LANDLORD** must notify **COUNTY** to seek approval for an alternate product.

**Abbreviations:**

<b>AP1</b>	-	<b>Acoustical ceiling panels</b>
<b>CACB</b>	-	<b>COUNTY approved color board</b>
<b>CARP</b>	-	<b>Carpet</b>
<b>CT1</b>	-	<b>Glazed porcelain floor tile (lobby)</b>
<b>CT2</b>	-	<b>Glazed ceramic wall tile (restroom)</b>
<b>CT3</b>	-	<b>Glazed ceramic wall tile (accent)</b>
<b>CT4</b>	-	<b>Glazed porcelain floor tile (restroom)</b>
<b>P1</b>	-	<b>Low Sheen/Eggshell</b>
<b>P2</b>	-	<b>Low sheen/Eggshell (accent)</b>
<b>P3</b>	-	<b>Low sheen/Eggshell (accent)</b>
<b>P4</b>	-	<b>Semi-gloss</b>
<b>VT</b>	-	<b>Vinyl floor, anti-static</b>

## 1.0 CONSTRUCTION GUIDELINES

### 1.1 CEILING:

- a. 2' x 4' suspended acoustic ceiling with *Donn DX* exposed ceiling tile tee systems, white. Fire rated system in areas required by Code.
- b. Ceilings are to be nine foot (9'), unless otherwise specified.
- c. Three fourths inch (3/4") thick Armstrong #1811 Fine Fissured High NCR acoustical ceiling panels (**AP-1**), NRC range 0.70, color – white, when specified in Finish Specifications.

### 1.2 LIGHTING:

- a. 2' x 4' three (3), or four (4) tube fluorescent drop-in fixtures or as allowed by current Energy Codes. Lighting must meet all Uniform Building Codes applicable to commercial office buildings. All rooms to have separate lighting controls (switches or light sensors).
- b. Each fluorescent light fixture shall be identified; with black permanent pen or equivalent, as to which circuit and electrical sub panel it receives power. Marking must be done in such a way as to be easily seen when cover is removed, but not seen with cover on.
- c. Lighting fixtures must run parallel of work surfaces, or shelving units in storage rooms. All reflected ceiling plans (light fixture locations) must be reviewed and coordinated with the modular furniture vendor and approved by the **COUNTY**.
- d. Night light fluorescent fixtures are to remain on at all times in each lobby, open area, and inside employee entrance door.
- e. Energy efficient emergency exit signs must be provided as per local building code. Provide additional emergency lighting for all restrooms and exit passages per local code approval. If fluorescent light fixtures are utilized for emergency battery back-up lighting purposes, they must be marked by dots (no larger than 1/4") or equivalent for easy identification. Dots must be able to be seen from floor level.
- f. All light switches that control lighting in lobbies or open work area are to be ganged together in the adjacent lobbies or open work areas. No light switches are to be located in areas used by the public.
- g. Hallway lighting controls should be located convenient to the designated employee entrance.

### 1.3 AIR CONDITIONING:

- a. The facility HVAC system shall be zone controlled properly to provide an even comfortable temperature throughout the facility as defined by the Mechanical Engineering Standards, unless noted otherwise. **COUNTY** is to approve HVAC control locations.
- b. **LANDLORD** shall provide the **COUNTY** with a copy of any air and hydraulic balance report from a "third party" firm duly licensed to inspect and certify the performance of the HVAC and hydraulic systems.
- c. **LANDLORD** shall make any adjustments, repairs or replacement of equipment necessary to achieve an even comfortable temperature and even water flow in all areas of the structure as to maintain the Mechanical Engineering Standards.
- d. Air conditioning supply register: Shall be a two-way adjustable type if by a wall and four-way adjustable if in a room or open area. All registers are to be covered with tamper proof shields. Supply and return registers are to be approved by **COUNTY**.
- e. All rooms are to have ducted air conditioning supplies and returns. Except the janitor, IDF and telephone rooms.

- f. Main heating and air conditioning controls shall be placed in electrical room with remote sensors placed in the return air ducts or otherwise not accessible to employees.
- g. Air conditioning requirements for the Telephone/Data Room are included in Attachment "2" (see pages 10 - 19).

**1.4 WINDOW COVERINGS:**

- a. Blinds to be made of Shade cloth material that will provide solar insulation to reduce glare and heat gain. Valance size to be consistent throughout facility. Product and design to be approved by **COUNTY**.

**1.5 WALL CONSTRUCTION:**

- a. The interior sides of all exterior concrete or block walls, and all interior concrete or block walls, are to be furred.
- b. All interior walls shall be constructed from floor to ceiling, at a minimum, unless otherwise noted and approved by **COUNTY**.
- c. All exposed interior walls shall be drywall finished, both sides, unless otherwise noted.
- d. All exposed interior walls in high traffic areas shall have corner guards, 48" high, stainless steel.

**1.6 WALL COVERINGS: See **RESTROOM FACILITIES** for complete specifications.**

**1.7 PAINTED WALLS:**

- a. All interior walls shall be orange peel textured with one coat of primer. Apply color topcoats to match the selected color chip provided by manufacturer, with a minimum of two coats of paint, the final coat rolled on for a smooth finish.
- b. All paint shall be Dulux, Sinclair, Dunn-Edwards, or Spectratone.
- c. Paint colors (**P1**) Low sheen/Eggshell, (**P2**) Low sheen/Eggshell accent, (**P3**) Low sheen/Eggshell accent and (**P4**) Semi-gloss to be approved by **COUNTY**. Placement of accent **P2**, **P3** and Semi-gloss **P4** within the facility to be approved by **COUNTY**. All other painted walls will be **P1**.

**1.8 INSULATION/SOUNDPROOFING:**

- a. All wall cavities around hallways, rest rooms, offices, break rooms, meeting/conference rooms, lobby areas and any special areas as specified by **COUNTY** shall be completely filled with insulation to help reduce sound transmission.
- b. If walls in these areas do not extend above T-bar, sound tape must be installed between finished ceiling and top wall track.

**1.9 FLOORING:**

Ground floor flooring must be constructed to withstand a minimum force of 125 pounds per square foot; all floors above the first floor must meet local building code.

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**1.11 FLOOR COVERING:  
CARPET:**

- a. A combination of high-density modular 36" squares of Milliken Contract Colorweave and/or matching rolls stock of Shaw Movement (**CARP**). Manufacturer, type, color and placement in facility to be approved by **COUNTY**.
- b. Installation to be as per manufacturer recommendations, using approved adhesives and seam sealers, as applicable.
- c. Base to be installed in all carpeted areas. Base to match carpet. Installation to be as per manufacturer recommendations.

**1.12 VINYL FLOOR:**

- a. Manufacturer, type, color and placement to be approved by **COUNTY**. Armstrong Exelon vinyl tile (**VT**) 1/8" gauge, 12" x 12". 4" rubber wall base.
- b. Vinyl planking. Manufacturer, type, color and placement to be approved by **COUNTY**.
- c. Welded Seam. Manufacturer, type, color and placement to be approved by **COUNTY**.

**1.13 PORCELAIN FLOOR TILE:**

Glazed floor tile (**CT-1**) and (**CT-4**) with a sanitary base to be of same manufacturer of tile selected. All flooring must meet ADA guidelines. Manufacturer, size, type, color, grout, and placement to be approved by **COUNTY**. (See: **RESTROOM FACILITIES** for additional tile requirements).

**1.14 SIGNS:**

**INTERIOR:**

- a. Contractor to provide all ADA, emergency and directional interior signage.
- b. **COUNTY** will provide all other interior signage .

**EXTERIOR:**

- a. If exterior signage/monuments are present **COUNTY** has first right of refusal/approval to use as representing the department. Landlord will be responsible for design modifications, permits, fees and/or removal disposal costs.
- b. Landlord will provide exterior premise signage, as consistent with adjacent building/businesses, if applicable, and as approved by **COUNTY**.
- c. Raised, non-illuminated letters, monument type on stand-alone buildings, per City regulation and **COUNTY** approval.
- d. Landlord to provide building signage to have address and logo. **COUNTY** to approve logo design.
- e. Landlord to provide entry door lettering: **COUNTY** name, agency name, and hours of operation, as allowed by jurisdiction and **COUNTY** approved.

**1.15 CABINETRY:**

- a. Unless otherwise noted, all exterior surfaces are to be of Corian-type of finish. All countertops to be of solid surface and/or Corian-type with finished edges. If using Corian-type materials the seams shall be placed and installed away from all water sources. Material and colors to be approved by **COUNTY** prior to manufacturing.
- b. The inside of cabinets and drawers are to be completely lined with thermal fused material black in color, must be washable melamine.
- c. Unless otherwise noted, adjustable shelves in all cabinets, 3/4" stock, thermal fused material all sides.
- d. Where water is present, countertop edges are to be elevated bull-nosed or V-cap, with flat end trim. Counters in open areas must have rounded corners.
- e. Heavy-duty hinges on all lower cabinets.

- f. ADA hardware on all cabinetry.
- g. 4" toe kick on all lower cabinets.
- h. Millwork shop drawings, material and colors to be approved by **COUNTY** prior to manufacturing.

**1.16 EMPLOYEE BREAKROOM:**

- a. Locking over-counter storage cabinets with microwave enclosures, under-counter storage cabinets and drawers with counter top. Design and materials to be **COUNTY** approved.
- b. Counter top to be 34" finished height. Design and materials to be **COUNTY** approved.
- c. Soap and paper towel dispensers convenient to sink and microwaves, design to be approved by **COUNTY**. Dispensers set at location and height to accommodate ADA requirements.
- d. Stainless steel double bowl sink, 36" wide, minimum of 7 1/2" deep
- e. ADA approved faucet set, deck mount, gooseneck spigot, stainless steel or chrome finish, washerless. Delta or **COUNTY** approved equal.
- f. Garbage disposal, minimum 1/2 h.p, In-Sink Erator
- g. Provide Two (2) 22 C.F. refrigerators, white, with icemaker.
- h. Provide One (1) Cubelet Ice Machine/Dispenser
- i. Provide One (1) microwave ovens, white in color.
- j. Plumbing connection for icemaker shall be recessed into wall, one per refrigerator.
- k. All water line connections from recessed valve to refrigerators must be made by landlord and deemed operational. Water line connections from Ice Machine must be made by Landlord.
- l. All break rooms shall be designed to minimize the migration of food/cooking smells into the general work areas. Designs to include the segregation of the break areas into the more utility portions of the building, separately zoning the AC as to not carry smells into other areas.
- m. Accommodate allowance for three (3) vending machines (vendor tba)

**1.17 CLIENT AND CONFERENCE BREAK ROOM:**

Refer to room-by-room specifications for requirements.

**1.18 DOORS AND DOOR HARDWARE:**

- a. Door schedules to be approved by **COUNTY**.
- b. Haley Luan solid core doors for all interior door use, color and finish to be approved by **COUNTY**.
- c. Schlage Heavy-Duty, unless otherwise specified.
- d. Von Duprin 99L-RH (LH for left side handle) panic bars, 36" device, 2060 finish, electronic opening controls will be required on all doors utilizing the **COUNTY** installed card access system unless otherwise specified.
- e. Any interior or exterior door utilizing **COUNTY** installed card-access system shall have data boxes installed in wall @ 42" from floor. See drawing for conduit and data box locations (see attached drawings for reference pg. 22).
- f. Door closures on all lobby, rest room, entry/exit and any door that requires the **COUNTY** card access system.
- g. Push plates and pull handles instead of doorknobs or lever handles on rest room entrance doors, except for privacy restrooms, as allowed by code.
- h. All lockable doors must be pinned using a Grand Master hierarchy. **COUNTY** to approve all sub masters and change keys.
- i. All hardware must meet local and ADA requirements.

**1.19 RESTROOM ROOM FACILITIES:**

- a. All elements of rest room facilities must meet ADA requirements. All tile, grout, surface materials, and colors to be **COUNTY** approved.
- b. Installation of all components, fixtures and signage must be compliant to all applicable health, safety, and ADA codes.
- c. Floors: Glazed porcelain tile, 2" x 2", *American Olean* or *Daltile* (**CT-4**). The sanitary base tile and trim to be of same tile selected.
- d. Walls: Glazed ceramic interior wall tile, 4 1/4" x 4 1/4", *American Olean* or *Daltile*, (**CT-2**), tiled floor to ceiling with an accent tile (**CT-3**) or feature strip. A sanitary base to be of same manufacturer of tile selected. Use small grout width on all walls.
- e. *Custom Building Products-Polyblend*, or *Hydromet Standard/Designer Series* grout. Tile and grout colors to be selected by **COUNTY**.
- f. Design: Recessed canned lighting over sink cabinet, minimum of one (1) light per sink.
- g. Rimless under-counter sink with countertop to be 34" finished height. Mirrors to be installed above counters centered on sinks. Size and locations to be approved by **COUNTY**.
- h. Sink faucets to be Sloan, Optima Systems sensor operated electronic hand washing faucet #EAF-200-ISM with transformer, and grid strainer drain assembly #ETF-460-A.
- i. Hot water, 110 degrees, with (optional) recirculating timer.
- j. Non-ADA toilets to be Kohler Wellcomme K4350, white, with Olsonite No. 95 ComfortCurve plastic seat, white, Royal Model Flushometer #111 ES-S 1.6 gallon valves with hands free flushing plumbing feature.
- k. ADA toilets to be Kohler Highcliff K4368 with Olsonite No. 95 ComfortCurve plastic seat, white, and Royal Model Flushometer # 111 ES-S 1.6 gallon valves with hands free flushing plumbing feature.
- l. Urinals, white, Kohler Dexter K-5016-ET, with hands free flushing plumbing feature.
- m. Stall and urinal partitions are to be Stainless Steel, **COUNTY** to approve selections. Stalls are to be Overhead Braced in addition to both walls and floor installed per manufacturers specifications using manufacturers hardware and fittings in brushed stainless steel finish. Urinal partitions are to be Mills, Model 5, installed using Mills GSA hardware, "Government flanged with Wing Bracket."
- n. Floor drains are to be located central to the stalls, out of the path of travel, under a partition. All floor drain P-Traps shall have a means of filling from a water primer device.
- o. Fixtures: minimum of one (1) hands free motion-activated single-towel dispenser per sink, one (1) hands free motion-activated soap dispenser per sink. Adequate number of trash bins, size, color and location to be determined by **COUNTY**. In each woman's restroom stall; sanitary napkin dispenser and disposal container. In each stall: one (1) seat cover dispenser and multiple toilet paper roll dispenser, one (1) coat hook. Fixtures must be sized to hold adequate supplies, and be approved by **COUNTY**.
- p. One (1) air freshener pre restroom, to be approved by **COUNTY**. Refills to be provided by **LANDLORD**.
- q. Exhaust fans are required in each restroom and should provide one (1) exchange every 10 minutes.
- r. Provide and install, per all manufacturers guidelines, diaper changing tables in each restroom and public restroom ADA stall: Diaper Deck manufactured by American Infant Care Products, Koala, Rubbermaid Commercial line, or **COUNTY** approved equal.

**1.20 DRINKING FOUNTAIN:**

Two (2), two-station wall mount electric refrigerated water cooler, installed per manufacturers and ADA guidelines.

**1.21 ELECTRICAL CONNECTIONS:**

- a. **LANDLORD** is responsible for all electrical connections from portable partitions to power source on site. **LANDLORD** to insure electrical connections to **COUNTY**-owned furniture comply with Title 24 Regulations.
- b. Large open work area to have electrical "J" boxes above ceiling for modular furniture power pole connection. The **COUNTY** requires a minimum of a 3:1 ratio, three (3) cubicles per one (1) electrical circuit. **COUNTY** will provide final furniture plan with total "J" boxes and circuits needed.
- c. **COUNTY** to approve all data/phone and duplex locations.

**1.22 TELEPHONE AND DATA ROOMS AND EQUIPMENT:** Specifications are included in Attachment "2" (see pages 10 -19), and as shown on plans. **LANDLORD** is responsible for the following:

- a. All telephone/data jack locations shall have 3/4-inch conduit, with pull strings, stubbed out above the ceiling. If the ceiling is not accessible for pulling cable, the conduit must home run to the nearest IDF location.
- b. Blank covers must be installed over all unused telephone/data outlets.
- c. Telephone and data equipment, lines, and jacks to be installed by **COUNTY**.

**1.23 OUTSIDE PATIO AREA:**

- a. All building entrance, exit areas, including sidewalk leading to patio are to be concreted and covered. Patio area to have a minimum of 7' height wrought iron fence with lockable gate and vision-obscuring landscape/plants, or other vision obscuring, solid materials. **COUNTY** to approve design of patio area and covers.
- b. **COUNTY** will require card access at the exterior gate/s for the patio. All conduit runs to support the card access will require **COUNTY** approval.
- c. **LANDLORD** to supply a minimum of four (4) commercial-type picnic table with attached benches; model and installation location to be approved by **COUNTY**.
- d. **LANDLORD** shall provide lighting under patio cover and/or wall area.

**1.24 EXTERIOR REFUSE:**

- a. At a minimum, one (1) block constructed enclosure with swinging metal gates. Enclosure should hold a minimum of four (4) dumpsters with one (1) dumpster designated for recycling. Design and location of enclosure to be approved by **COUNTY** and must meet all City, **COUNTY**, State and Federal code requirements.
- b. At a minimum, four (4) deluxe boulder trash receptacles (concrete) with plastic liner and attached lids. Location and style to be approved by **COUNTY**.
- c. At a minimum, four (4) pebble ash urns (concrete) filled with silica sand. Location and style to be approved by **COUNTY**.

**1.25 MAIL BOX: TBD**

**1.26 FIRE ALARM:**

- a. Fire alarm system to be installed at **LANDLORD** expense with strobe lights and audible alarm in all rest rooms, general usage areas, hallways, lobbies, and any other area for common use as required to meet ADA requirements.
- b. **COUNTY** to approve location of fire alarm control panel.
- c. Fire alarm system must meet all City, **COUNTY**, State and Federal fire code requirement.

**1.27 PLAN COPIES:**

**LANDLORD** will supply to **COUNTY**:

- a. Two (2) clean, complete and reproducible hardcopy sets of building construction plans.
- b. One (1) electronic CAD copy of the same plans in .dwg format, one (1) As-Built set of permitted drawings and one (1) set of red line drawings with building changes noted in red pen, over an approved set of plans; attach Change Orders and Addendum's that reflect the Tenant Improvements Only.
- c. The As-built plan set must be delivered to the **COUNTY** within 60 days of issuance of Certificate of Occupancy.

**1.28 LANDSCAPING – PEST CONTROL:**

- a. **LANDLORD** to supply, install and maintain landscaping appropriate to the local flora.
- b. **LANDLORD** shall maintain all flora to thrive and maintain a hardy attractive appearance at all times.
- c. **LANDLORD** to keep landscape areas weed free at all times.
- d. **LANDLORD** shall maintain a monthly exterior and interior pest control service and/or provide these services as needed.

**1.29 EXTERIOR PARKING:**

- a. **LANDLORD** to supply, install and maintain secured parking for (30) **COUNTY** vehicles shall be adjacent to the building in addition to general parking required by the **COUNTY**.
- b. **LANDLORD** shall provide a parking ratio to building square footage of (7) per 1,000 square feet.
- c. Secured parking area must be enclosed with a fence, automatic gate operator and pedestrian gate. **COUNTY** to approve fence material and gate locations.
- d. Secured parking must have perimeter lighting.
- e. **LANDLORD** to install all necessary conduit and power required to operate gate/s and **COUNTY** card access system.

**1.30 DOORS – EXTERIOR TO INTERIOR ACCESS:**

All exterior doors that lead into the lobby, hallways or any other work areas shall have a solid, water-tight and water-proofed overhead covering extending at least 3' from the door with a width that covers the entire entrance.

**1.31 EXTERIOR BUILDING PENETRATIONS:**

**LANDLORD** to provide ¾" to 1" exterior penetrations to permit / facilitate mounting and wiring of **COUNTY** supplied and installed security camera system, all locations to be indicated by **COUNTY**.

**2.0 INFORMATION TECHNOLOGY (IT) TELEPHONE SWITCH / DATA / MICROWAVE ROOM**

**2.1 DIMENSIONS:**

The main Telephone/Data/Microwave/Communication room size shall be a minimum of 12 feet by 14 feet in dimension. The room should be centrally located on a given floor within the proposed building. Do not use other equivalent area within the building to substitute for this specified location. This room is to be used for Telecommunications/data equipment only. No fire alarm equipment or other services shall be placed in this room except for security alarm systems an illuminated exit sign, and emergency battery back up light device shall be installed above the room entrance door. Please note that all portions of the room, including power, air-conditioning, grounding, and lighting shall be completed prior to the requested "in service" date.

## **2.2 POWER AND ELECTRICAL OUTLETS:**

- a. The main Telephone/Data/Communication room shall have an independent 24 position, 100/200 Amp, 120/208, three phase, four wire, surface mounted, sub-panel with a White Neutral buss bar, and a Isolated Green Ground buss bar inside. The normal size sub-panel in the room for the majority of the locations will be specified at 100 Amp capabilities unless otherwise identified. The grounding screw in the sub panel neutral buss will not be tightened to make contact with the sub-panel frame unless otherwise required by code.
- b. EMT conduits attached to the sub-panel frame and run to receptacle box/s attached to the overhead cable tray would otherwise transport voltage irregularities such as voltage spikes and noise onto the frames of the installed equipment racks that have to be earthquake braced to the overhead cable trays. Grounding the cable trays through the EMT conduit attachments would defeat the purpose of the isolated green ground and void equipment warranties. (See **COUNTY** electrical receptacle drawing)
- c. This room shall have a second, separate/independent (Home Run) 4/0 or less size cable, depending on the distance between the Edison meter ground and the Telephone/Data/Microwave Radio Room. This Green Ground cable, if not a green sheath will be banded green at both ends. This cable will be properly terminated on the Edison Meter Ground Rod and on the Communication Room cable tray in the room. This green ground cable shall be in contiguous conduct from beginning to destination. (See **COUNTY** electrical receptacle drawing).
- d. The **COUNTY** will install a Green Ground copper buss bar on a wall in this room, and will further connect a #6 stranded green sheath cable between the buss bar and the green ground bus bar in the sub-panel. OR if the county wall mounted buss bar is not in place at the time, connect the green ground cable in the sub panel and leave approximately 15 to 20 feet coiled above the drop ceiling of the room, ready to be extended to where ever the wall green ground buss bar is to be eventually installed by the **COUNTY**. Do not connect the green ground buss bar to the overhead cable tray in the room.

## **2.3 ADDITIONAL ITEMS (NOTES):**

- a. Long distances will require this second Green Ground cable to be of larger size and home run. Keep in mind that this cable is a non-current carrying conductor; the larger diameter is used only to reduce the resistance per foot over the pull. In no case, will the second green ground cable be less in size than either the electrical panel green ground, neutral or hot conductors in the room sub-panel (See **COUNTY** electrical receptacle drawing).
- b. The room shall have Type "A" isolated green ground, Orange color duplex, 20 Amp dedicated wall receptacles. There will be 4s wall boxes, surface mounted, one foot off the floor level with two duplex receptacles per wall box. In addition, One each simplex, Orange color Hubbell twist lock NEMA IG- L5-30R receptacle, rated at

30 Amps will be dedicated and installed in a single gang box at the bottom rear rail of an electrical equipment rack, or other suitable location adjacent to where a planned Data ATM switch would be installed. The location of this 30 Amp Dedicated receptacle will be dictated by the proposed equipment layout as identified on the room floor plan. (Install Only If a data switch is planned for installation in the room). (See county electrical receptacle standard wiring drawing)

- c. One each, additional Hubbell twist lock, NEMA IG L14-30R simplex orange color receptacle will be installed in a 4S box, mounted on the rear rail of the room overhead cable tray, above the designated location where the communication room battery charger is to be located and installed. (See **COUNTY** electrical receptacle standard drawing).
- d. Communication rooms requiring use of MFA 150-48 or MFA 600-48 to support Telephone Switching centers, shall have two (2) circuits, if MFC-150, or up to six circuits, if MFA 600. Each circuit will be 208-volt AC circuits, hard-wired between the power supply location and the communication room sub-panel. Each of these circuits will be connected to a dedicated two pole 20-Amp circuit breaker. All conduits between the frame of either of the above power supplies and the communication room sub-panel are required to be gray color, water tight insulated flex. Conduit size is to be determined through coordination with the county technician involved with the specific installation. All circuits must carry two hot, and a green ground.
- e. If Intermediate Distribution Frame (IDF) rooms are required, each shall have a minimum of Five each 5-20R type "A" isolated green ground, 20 Amp Orange color, 120 VAC receptacles with dedicated circuit breakers using isolated green ground sub-panel, located and near the room/s. Where IDF closets/rooms are located above the main Telephone/Data rooms, run these IDF AC circuits out of the Main Telephone / Data Room.
- f. **COUNTY** needs for future electrical capacity may be required to be installed. The planning for these may require some deviation from these specifications. Please refer to **COUNTY** approved construction documents for final layout. See 4.0, **APPROVAL**

#### **2.4 BACKBOARDS:**

The main Telephone/Data room walls shall be covered with 3/4 inch, White Melamine composite sheets. These sheets shall be 4' wide by 8' feet, mounted vertically beginning at floor level. The top of the door way shall be covered to the ceiling. Each IDF location shall have a minimum of two each 3/4 inch, White melamine composite sheets installed in a similar manner. Each Microwave radio room, if separate, shall have at least one wall covered with this material if separated from the Main and IDF rooms.

#### **2.5 FIRE SPRINKLERS:**

If a fire sprinkler system is required in a building, having Telephone/Data rooms/Microwave Radio Rooms, the sprinklers shall be a high temperature standard response with a 360 Degree coverage head, with heavy-duty safety cage.

#### **2.6 AIR CONDITIONING:**

- a. The heat load within the Telephone/Data/Microwave-Radio Rooms will vary directly with the installation of the type and quantity of active electronic equipment to be placed there. If an individual is assigned and positioned there, additional BTU per person should be added to the calculations. The room's air-conditioning should be designed to handle the equipment load in addition to normal construction heat load designs. Once the total heat load requirements are calculated and the air conditioner

size is selected, an additional matching redundant air conditioning unit will be required and electronically controlled by the room controls. The electronic controls shall include a "Lead-Lag" system, programmed to alternate the lead starting unit with the two independent air conditioning units. The **COUNTY** shall approve the set-up temperature settings and the time frames for the "Lead-Lag" programming.

- b. The electronic equipment and backup battery plant requires a normal operating temperature of 77 degrees Fahrenheit with a relative humidity range of 30 % to 55 %, and must be controlled by a thermostat within the room. The room air-conditioning units may require a heat pump depending on the elevation above sea level such as in remote mountain locations. This air-conditioning system should be installed as stand-alone systems and not a part of the building air-conditioning system. This system is required to be available for operation on a 24-7 basis. The BTU heat loading for equipment and personnel can be computed as follows:
- 12,000 BTU (British Thermal Units) equals one ton of Air Conditioning.
  - Allow 400 BTU for each person assigned to work permanently in the room as applies.
  - If you know the wattage of the equipment, multiply the Watts/Hr. times 3.409 to obtain BTU.

**2.7 FLOOR COVERING:**

The floor shall be covered with dust sealed vinyl tile. The room dust density should be zone 4 (0.00014g/m to the third order) or better.

**2.8 DOOR:**

The Telephone/Data/Microwave Radio room door shall be no less than 36 Inches wide with standard height. This door shall be keyed separately from the doors in the rest of the building.

**2.9 LIGHTING:**

The room shall have ceiling lights strategically placed to provide for adequate and best working conditions. Coordinate positions with electronic rack line up in the room.

**2.10 WEATHER SEAL:**

All exterior doors shall be weather sealed.

**2.11 CONDUIT REQUIREMENTS:**

Conduit requirements will vary with each installation and type of room involved. Depending on the type of building construction, conduits will be of adequate size and will be based on the length and configuration of the pull involved. Contiguous runs are required from a room having hard ceilings and extending to a point where the area becomes open above where drop ceilings begin. In non-security areas, where there is no threat of disruption or where data, control, and telephone drop pairs are free from interference, conduits of adequate size and number may be stubbed off 6 inches above the drop ceiling of the communication room. All conduit runs will use sweeps ten times the diameter of the conduit, where out of line directions are required.

**2.12 ENTRANCE CONDUITS:**

To accommodate for future expansion, there shall be at least three (3) each 4-inch diameter schedule 40 conduits placed underground and stubbed off 3-inches above the Telephone/Data/Microwave Communication Room floor level and to provide adequate

cabling from the telephone company serving the building. Pull ropes will be placed in these entrance conduits. Bends within 10-feet of the building shall be 48-inch / 45 degrees, and mid-point bends shall be a minimum of 72-inches. See attached drawing for conduit placement location in the Telephone room. Contact the local telephone operating company for their connection requirements at the street.

**2.13 MDF TO IDF CONDUITS:**

ALL IDF rooms shall be connected to the Telephone room/data/communication room using a minimum of two (2) each, 4-inch diameter, Schedule 40 gray PVC conduit, In the event that both phone and data are required, there shall be a minimum quantity of Two (2) each. If only phone or only data is required, there shall be only one (1) of these 4-inch conduits required. Do not intermingle fiber and copper in the same conduit. One is used for Fiber optic cabling, one is used for copper cable pulls. If overhead cable tray is installed, between the phone room and an IDF on the same floor, no conduits are required.

**2.14 JACK CONDUITS:**

All Telephone/Data wall jack locations installed within room walls shall have ¾-inch EMT conduit connected to a 2s/4s wall box one foot above the floor level and stubbed off 6 inches above a drop ceiling. Each conduit will have a pull rope installed. Where modular furniture is to be installed in an office, coordination for conduit placement is required.

**2.15 INTER FLOOR CONDUITS:**

- a. In buildings where IDF rooms are stacked one above the other, there shall be a minimum of two (2) each 4-inch diameter schedule 40 PVC gray conduits through the ceiling of the room below and the room above. These conduits will extend into the rooms at least three inches below drop ceilings and above floor level.
- b. In buildings where IDF rooms are not planned to be one above the other these two 4-inch conduits shall be contiguous runs with pull ropes. In this event Minimum bend radius will be 48 inches / 45 degrees.

**2.16 CONDUIT SLEEVES:**

The Telephone/Data room shall have a minimum of Four (4) each EMT conduit sleeves extending above the drop ceiling for cable access. Each sleeve shall extend 5" on either side of the ceiling.

**2.17 BUILDING INTERCONNECT:**

Conduits used between buildings shall be 4-inch minimum diameter using schedule 40 gray PVC. Bends within 10 feet of each building shall be 48-inch/45 degrees and midpoint bends shall be a minimum of 72-inch radius.

**2.18 FIRE WALLS:**

Conduit sleeves through firewalls, block, or concrete walls connecting units within a building or to adjacent buildings shall use either 3-inch or 4-inch I.D. Gray PVC Conduit, unless otherwise specified by code. These sleeves will extend 5-inches on either side of the wall, and will be made fire safe after the cabling has been passed through.

**3.0 IDF ROOMS:**

**3.1 SIZE:**

Each floor above the ground floor, minimum size of 10 feet D x 10 feet W. Whenever possible, the room(s) shall be stacked directly above one another and directly above the ground floor communication room.

**3.2 POWER:**

Provide three (3) 4" EMT conduits that will run between the main communication room/data room and the individual IDF room(s) on each floor to separate the phone, data and fiber cabling. Do not use equivalent area to substitute for the room 10 D x 10 W dimensions. The rooms are to be used for telecommunications/data equipment only. No building alarm equipment or other services shall be placed in these rooms unless **COUNTY** approved. Provide two (2) each 4S quad boxes with two (2) each orange color duplex isolated ground, 20-amp receptacles on opposite walls in each IDF. Connect both 4S box (with 2 duplex outlets) to a dedicated 20 Amp circuit breaker to be installed in the nearest electrical sub-panel on each respective floor. Where IDF closets are located above the main communication room, run these circuits out of the main communication room sub-panel. Identify the circuit breakers and receptacles for their use (See attached floor plan).

**3.3 IDF Conduits:**

The room(s) shall have two (2) EACH 4 inch EMT conduit sleeves in the ceiling for local fiber/data/communication cable access. Each sleeve shall extend 6 inches on either side of the ceiling.

**3.4 IDF Backboard:**

The room walls shall be covered with ¾ inch x 4 ft. x 8 ft. melamine composite sheets mounted vertically starting at floor level.

**3.5 IDF Fire Sprinkler:**

If a fire sprinkler is required in the room, the sprinkler shall be of high temperature standard response (360 Degree) Head with heavy-duty safety cage.

**3.6 IDF Floor Covering:**

The floor shall be covered with dust sealed vinyl tile. The room dust density should be zone 4 (0.00014g/m to the third power) or better. The floor must be capable of supporting minimum bearing loads of 100 pounds / Ft. squared.

**3.7 IDF Door:**

The IDF door shall be a minimum of 36 inches wide and keyed separately from the rest of the building.

**3.8 IDF Lighting:**

The IDF room shall have adequate lighting positioned for good visibility, reflecting on each of the room walls, so as not to create human shadows when working on punch blocks.

**3.9 Earthquake Bracing, All Communication Rooms:**

Most, if not all of **San Bernardino County** are considered Zone 4 for this purpose. Where walls, ceilings and or overhead cable tray are not positioned directly adjacent to electrical equipment racks, this required support would be provided using Southwest Data Products part number "SWE2562 that includes, nuts and bolts and swivel brackets. NOT INCLUDED but REQUIRED, is the 5/8-11 all thread rods. Specify this diameter and length of "all thread" rod. Additionally, a "B"-Line / Saunders Bros. Part number SB 1157 (For 5/8-11 rod) red color insulator is to be inserted in the 5/8-11 "All thread" rod. The purpose

of the insulator is to isolate the rack from the support point that could produce ground loops.

In the event that the overhead cable tray is immediately adjacent and above the electrical equipment racks, and where the above identified SWE brace cannot be used for earthquake bracing, a "B" Line / Saunders Bros. Part number insulated brace kit, Part number SB2501 that includes an insulator is to be used for this purpose so as to prevent ground loops but provide the required earthquake support.

**4.0 Approval:**

The **San Bernardino County**, Information Services Department, and Network Services Division must approve any exceptions or modifications to these specifications.