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Iowa Army National Guard

Design Criteria Checklist (DCC)

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PART 1 - INSTRUCTIONS

1.1 The Design Criteria identified in this document are to be incorporated into the project Contract Documents where applicable to the project. DO NOT USE PREVIOUS VERSIONS OF THIS DOCUMENT. UPDATES ARE MADE FREQUENTLY.

1.2 Architect/Engineer (A/E) is ultimately responsible for the coordination, clarity, and completeness of the Contract Documents including any of the items identified in this document which are incorporated in whole or in part.

1.3 Refer to the Project Book for all references to Tabs (i.e. **Tab X**). DO NOT USE PREVIOUS VERSIONS OF THE PROJECT BOOK. UPDATES ARE MADE FREQUENTLY.

1.4 A/E may direct any questions, clarifications or concerns regarding any of the items identified in this document to the contact listed in the cover page footer.

1.5 Where a checklist item identifies text to be incorporated into the Specifications, the text or format may be modified to fit a Consultant's format **(unless noted to be "verbatim")**, but the intent of the text must remain the same.

1.6 All A/E's shall review this document prior to 30% submittal to become familiar with these requirements to help prevent future redesign and corrections.

1.7 This document shall be returned in electronic format to the Guard's project manager at the 60% and 90% stages. A/E shall complete the checklist by indicating the status of each item **and referencing the drawing or specification which addresses the item**. All items must be addressed or marked "N/A" at the 90% submittal.

PART 2 - DRAWINGS AND GENERAL DESIGN

2.1 MISCELLANEOUS

A. PROJECT NUMBER & CONTRACT NUMBER:

1. Include the Project Number and Contract Number on the Title Sheet below the Project Name.

2. Include the Project Number and Contract Number and in the title block of every drawing sheet.

B. OWNER STANDARDS:

1. Incorporate the following Owner developed Standards where applicable to the project:

a. Contract Document and CADD Standards. (Refer to **Tab T**).

b. Anti-Terrorism/Force Protection (AT/FP) and Physical Security. (Refer to **Tab X**).

c. Telecommunications. (Refer to **Tab Z**).

C. ENERGY & SUSTAINABLE DESIGN:

1. Consultants shall comply with the Iowa Army National Guard "Engineering Performance Requirements for Energy and Efficiency Upgrades". (Refer to **Tab U**).

2. Consultants shall participate in any available utility provider rebate programs. (Refer to **Tab U**).

3. Consultants shall design projects to achieve LEED Silver if required for the project, as directed by Owner.

2.2 CIVIL / ARCHITECTURAL / STRUCTURAL

A. GEOTECHNICAL EXPLORATION REPORT:

1. Provide Geotechnical Exploration Report of proposed site for all projects involving a new building, addition to existing facility, new vehicular paving, or anything requiring a foundation, unless otherwise directed by Owner.
2. Submit a copy of the Geotechnical Exploration Report to the Owner for inclusion in the Owner-provided front-end specifications.
3. The purpose of the Geotechnical Exploration Report is to aid the Architect, Civil and Structural Engineer in designing, engineering and specifying the project. The Architect, Civil and Structural Engineer shall review the report and incorporate those aspects of the report they deem appropriate into their designs and documents. The report shall not be simply referenced in the Contract Documents; leaving its interpretation up to the Contractor.

2.3 CIVIL

A. MISCELLANEOUS:

1. Provide concrete collars around clean-outs and valve box covers at grade when not located in paving or sidewalks. Sleeve assembly to allow for movement. Tracer wire terminations should be within the concrete collar to prevent mower blight.
2. When laying out the site plan, provide considerations for areas in which to push/pile snow, especially in areas adjacent to fences to avoid having to lift and dump snow over fences or push snow into fences causing damage.
3. Detectable Warning Surfaces at sidewalk crossings: consider cast iron plates for durability.
4. Avoid discharging downspouts or lamb tongues across sidewalks or walkways.

B. ABOVE GROUND FUEL TANKS:

1. All projects involving above ground fuel tanks (including generator fuel tanks) shall be closely coordinated with the CFMO Environmental Branch. All tanks, regardless of size, must be submitted to the State Fire Marshal for plan review in accordance with sub rule 661 Iowa Administrative Code 221.3(3).
   a. The Engineer of Record shall be responsible for completing the submission forms and provide any required attachments for Plan Reviews. The Engineer of Record shall be responsible for any and all plan review fees. The submission form is available at:

      http://www.dps.state.ia.us/fm/inspection/flammable/PDFs/AST_Plan_Packet.pdf.

   b. Forward a copy of the submission to the Owner's Project Manager.
   c. Forward a copy of the State Fire Marshal's letter of approval (and review comments, if any) to the Owner's Project Manager.
   d. Tanks 1,100 gallons or larger must also be registered with the State Fire Marshal office. The Owner will file for registration following the above approved plan review process.

C. STORMWATER MANAGEMENT:

1. **Engineering Calculations:**

a. Design Engineer shall submit a copy of storm water calculations to the Owner. Include a short design narrative describing any storm water management measures implemented.

2. Low Impact Development (for projects subject to NGB review only)

a. Projects with a footprint exceeding 5,000 s.f. shall meet the requirements of Section 438 of the Energy Independence and Security Act (EISA). The objective is to maintain or restore the predevelopment hydrology of the project with regard to the temperature, rate, volume, and duration of flow. This shall be achieved through the design and construction to the greatest extent feasible of Low Impact Development (LID) features called Best Management Practices (BMPs). Guidance and support can be found in the following documents:

1). Army LID Guidance: Army Stormwater Management Using Low Impact Development.

2). Army Low Impact Development Technical User Guide.

3). Army LID Planning and Cost Estimating Tools.

4). Low Impact Development UFC 3-210-10.

5). EPA Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act.

b. Design Engineer shall submit a completed "Low Impact Development (LID) Reporting Form (obtain copy from Owner).

3. Stormwater Pollution Prevention:

a. When construction activity disturbs an area greater than one acre, Consultant shall be responsible for designing storm water pollution control structures in accordance with best standard practices and the Iowa Department of Natural Resources, NPDES General Permit No. 2 requirements. Designs shall be incorporated into the Drawings and Specifications, to include, but not limited to: silt fences, sedimentation basins, staging areas, concrete washout areas, stabilized construction entrances and existing vegetation protection practices.

b. Include the following text verbatim on the Drawings:

Storm Water Management

1. *Storm Water Discharge Permit*

a. *This project requires a Storm Water Pollution Prevention Plan, Notice of Intent and NPDES General Permit Number 2 for "Storm Water Discharge Associated with Construction Activities". These documents will be provided by the Iowa Army National Guard's Director of Installation Management Environmental Branch. These and the General Contractor's project inspection diary must be kept on-site and presented to federal, state or local environmental regulatory personnel, and the Owner, when requested.*

b. *The General Contractor, and each subcontractor that has a responsibility for a task described in the plan, will be a co-permittee with the Owner. The General Contractor shall be responsible for ensuring compliance with and fulfilling all requirements of the NPDES General Permit Number 2, the Storm Water Pollution Prevention Plan and requirements described in the project's drawings and specifications*

c. *The Owner will file a Notice of Discontinuation upon final stabilization of the disturbed area. The General Contractor will provide the original project inspection diary and the marked-up copy of the Storm Water Pollution Prevention Plan to the Owner at the completion of the project.*

2. *Storm Water Pollution Prevention. The General Contractor shall be responsible for implementing the storm water control measures described here, those described in the Storm Water Pollution Prevention Plan and those in the project's drawings and specifications.*

a. *Protect adjoining property including public utilities, storm and sanitary drainage systems, and streets from any damage resulting from storm water movement of earth or other debris from the project site. Repair any damage immediately at no additional cost.*

b. *Prior to initiating site clearing or grading operations, install silt fence downstream of disturbing activities as shown on the plans. Additional silt fencing will be added to areas deemed necessary during the course of the project.*

c. *Preserve existing vegetation in areas not needed for construction and minimize the total area disturbed by construction operations at any time.*

d. *When specified, construct a storm water detention basin and route existing storm water flows from the construction area to the basin.*

e. *Provide temporary sediment basins at the rate of 3,600 cubic feet of storage per acre disturbed over 10 acres. If not attainable, a combination of silt fences, multiple sediment traps or equivalent controls are required for side slopes and down slope boundaries of the disturbed area. For disturbed area less than 10 acres, the same erosion controls are required although construction of a sediment basin is optional.*

f. *Provide stabilized construction entrances where there is potential for sediment tracking onto public roadways, and install concrete washout area(s) that can contain all rinsate and are located a minimum of 50 feet from storm drains, open ditches or surface waters. Protect adjacent or newly constructed storm sewer inlets with silt barriers, and protect soil stockpiles with temporary vegetation and/or silt fencing.*

g. *Provide temporary and/or permanent seeding, and additional silt fence or other controls as areas reach their final grade. "Final Stabilization" means all soil disturbing activities are complete and a uniform perennial vegetative cover has been established as defined by the Iowa DNR NPDES General Permit No. 2 and/or in accordance with city or county requirements, whichever is more stringent.*

h. *If activity in a disturbed area is not planned for 21 days, the area shall be stabilized by temporary erosion controls within 14 days of ceasing construction activities.*

i. *Maintain all temporary and permanent erosion control measures in working order, including cleaning, repairing, replacing and sediment removal throughout the permit period. Cleaning of silt control devices shall begin when they have reached 50 percent of their capacity.*

j. *Maintain a minimum of 4 inches of topsoil on all areas not covered by concrete, asphalt, gravel or other such material, after soil disturbing activities are completed and final stabilization is achieved. On areas where less than 4 inches*

of topsoil exists prior to initiating soil disturbing activities, the minimum depth of topsoil shall be equal to, or greater than, the depth that existed prior to beginning the project. Soil depths less than 4 inches must be documented by a qualified person and written into the Storm Water Pollution Prevention Plan.

k. *Provide an individual experienced with storm water pollution prevention plans and techniques to inspect the project area and erosion control measures every seven days and after rainfall events. At the time of each inspection, the inspector will review the project's Storm Water Pollution Prevention Plan, verify that every aspect of the plan and project drawings are in place, identify any additional erosion control required, verify subcontractors responsible for tasks in the plan have signed on as co-permittees, and verify the plan has been updated with the sequence of major construction activities and changes to erosion and sediment controls, staging areas, concrete washouts, stabilized entrances, etc. The inspector will provide an electronic copy of the inspection results, to include photographs of any deficiencies, to the General Contractor and provide a copy to the Owner. The General Contractor is responsible for maintaining a copy of each inspection report in the plan.*

3. *The Storm Water Pollution Prevention Plan is a living document. After installation of the Engineer's initial erosion control measures identified on the project drawings, the Contractor will review the weekly and rainfall storm water inspection reports and address any deficiencies within seven days. Deficiencies may also be identified by the Owner at any time. Corrective actions may include installation of additional erosion controls and/or maintenance of existing controls.*

a. *The General Contractor shall be responsible for continuing compliance with all SWPPP requirements until final stabilization is achieved regardless of whether Substantial Completion has been granted or the Owner has occupied any portion of the site or facility. Such practices shall include, but not be limited to, inspections and reports and maintenance of erosion control measures as described above.*

4. *Local Ordinances. The General Contractor has the responsibility to identify, obtain and implement any local grading or storm water management permits.*

c. For projects that do not require a SWPPP, include the following text verbatim on the Drawings:

a. *Proper placement and maintenance of erosion control measures is the responsibility of the contractor. Erosion control measures are required to keep storm water contaminated with pollutants (e.g., soil, chemicals, etc.) on the construction site and prevent contaminant discharges to nearby streets, ditches, sewers or waterways. This includes any control measures described in the Contract Documents and control measures that become necessary during construction to protect against siltation.*

D. SECURITY FENCING:

1. Refer to **Tab R** for standard details. Edit details as appropriate to be project specific and incorporate into drawings.

2. Unless otherwise directed, provide:

a. Motor Vehicle Pools: 6'-0" high fencing with 1'-0" barbed wire (for 7'-0" total height).

b. Site Perimeter: 6'-0" without barbed wire. Consider black vinyl coated fences and gates for fences along public ways. Verify with Owner. Verify that the height and finishes comply with local city ordinances.

3. Clearly indicate different fence type locations on the site plan.

4. Verify with Owner which gates, if any, are to be electrically operated. Manual gates with concrete drives though them may require conduit to be installed under the drives to facilitate future gate operator installation. Verify each condition with Owner.

5. Verify grades at all chain link gates to ensure that the maximum clearance allowed is maintained across the entire length of the gate in the closed position. Verify the grades in the sliding or swinging path of the gates do not prohibit the gate from being installed at the proper elevation.

6. Provide a 5 foot wide swinging personnel gate adjacent to all electrically operated sliding gates.

7. Provide a traffic control device where access control is required by AT/FP standards. Verify with Owner if a drop arm, dual swing, or chain gate should be provided. Refer to **Tab R** for standard details.

E. SITE SIGNAGE:

1. Facility Sign: Projects off Camp Dodge typically require a facility sign. Verify with Owner if sign is required for project. Indicate sign location on Civil plan. Refer to **Tab R** for standard detail to include on drawings.

2.4 ARCHITECTURAL:

A. CODE REVIEW PLAN:

1. Provide a Code Review Plan immediately after the title sheet in the drawing set.

2. Summarize fire extinguisher requirements on the Code Review Plan. Include a diagram with circles identifying the acceptable coverage area and identify travel distance (actual path of travel) for each extinguisher.

B. ROOM AND DOOR NUMBERING:

1. Unless otherwise directed, addition and/or renovation projects shall include a renumbering of the entire facility. Once a schematic floor plan has been approved, and prior to 30% submittal, Owner will propose a new numbering scheme.

2. Specify removal and replacement of existing room and door signage as required.

C. DOOR SCHEDULE:

1. Identify each opening to receive door or frame prep and reference the appropriate rough-in diagram.

D. FINISHES:

1. Avoid resilient flooring at Supply Storage Rooms and Equipment Locker Rooms. Consider high-performance paint or sealed or polished concrete floors at these areas. Office area within a Supply Storage Area may be carpeted or resilient tile but circulation area to Vault and Unit Supply Storage shall be epoxy paint or sealed or polished concrete.

2. All offices to have carpeting and acoustical ceilings (verify exceptions with Owner).

3. All Classrooms to have resilient flooring (verify exceptions with Owner). VET or LVT preferred over VCT.

4. Include the following verbatim as a general note to the Room Finish Schedule:

   a. *All data cabling (including concealed or above ceilings) shall be protected from drywall mud or paint overspray or installed after drywall finishing and painting is completed. Paint or drywall mud on data cabling voids the cable manufacturer's warranty. Any data cabling with paint or drywall mud on them shall be replaced by the contractor at no additional cost to the Owner.*

E. BOLLARDS:

1. Concrete-filled steel bollards should be provided at the following locations:
   a. To protect each exterior jamb of overhead door openings.
   b. To protect (where subject to potential vehicular damage- i.e. adjacent to driveways or parking) gas meters, transformers, fire hydrants, building corners, railings, etc.
   c. To protect ground-set air conditioning condensers. Consider setting condensers on a poured concrete slab with bollards set into slab.

F. ROOF ACCESS:

1. Provide ladders and access hatches to the roof when feasible if not already existing. Stairs to roof are preferred where feasible. Ships ladders are the next preference. Vertical ladders are least preferred. Provide wall mounted ladders from lower sections of roofs to upper sections of roof. Provide continuous walk pads between all roof access points (ladders, roof hatches, etc.) and to and around all serviceable equipment.

G. FIRE EXTINGUISHERS:

1. Identify all fire extinguisher locations on floor plans. Indicate whether cabinet or wall hung. Indicate Type "K" at kitchens.
2. Provide wall-mounted, equipment mounted, or portable weatherproof fire extinguisher cabinets within 75 feet of roof mounted equipment requiring maintenance. Review unique or questionable situations with the State Fire Marshal.

H. VAULTS & SUPPLY OFFICE/STORAGE:

1. Refer to **Tab R** for typical Vault / Supply Office / and Supply Storage Layout and miscellaneous vault details. Include details on drawings as appropriate.
2. For new vault designs, maintain a minimum of 42" from the latch side of the vault door to the adjacent wall to ensure adequate room for IDS equipment.
3. Ensure the vault doors are shown on the floor plan and listed in the door schedule.
4. Ensure both vault door and day gate door swings are indicated on the floor plan and the necessary clearances are provided to allow the vault door to swing open far enough to provide full width clearance of the opening. See **Tab R** for Autocad block of door.

I. KITCHEN NOTES

1. Do not place open wall shelves over clean areas.
2. Allow sufficient space on clean side of dishwasher for clean dish baskets.
3. Indicate chrome plated angle slip flanges for all pipe penetrations through top of back splash on stainless sinks, tables and counters.
4. All exposed piping to be chrome plated (Exception: piping beneath countertops).

5. Grease interceptors shall be sized appropriately for the facility. HPDE construction preferred for durability. Larger interceptors should be located on the exterior of the building for ease of maintenance. Smaller interceptors may be located inside the facility.
6. Bottom of all Kitchen hoods shall be a minimum of 6'-6" above finished floor.
7. Refer to **Tab S** for Kitchen equipment layout and schedule to be incorporated into drawings.

J. WIRE MESH PARTITIONS:

1. When separation of areas is required for secured storage, Wire Mesh Partitions shall be used. Provide 5'-0" wide sliding doors where feasible. Locking shall be provided with padlock hasps. Refer to **Tab R** for typical padlock hasp details. Incorporate the applicable details on the drawings.

K. CONCRETE SPLASHBLOCKS:

1. Provide standard precast concrete splashblocks on poured concrete base at all downspouts or lamb's tongues discharging onto grade. See **Tab R** for typical splashblock detail.
2. Provide sacrificial splash pads at downspouts or lamb's tongues discharging onto rooftops. See Division 7, Roof Accessories.

L. OPERABLE PANEL PARTITIONS

1. Verify allowable deflection of structure at operable panel partitions. Design new structures and reinforce existing structures to be within the tolerances allowed by the operable panel partition manufacturer. Include review of resistance to longitudinal forces where panels are stacked.
2. Provide note on drawings that Contractor is to provide lateral bracing of the operable panel partition supports if required by the manufacturer.

M. ROOFING DESIGN:

1. The Project Designer is responsible for researching and identifying in the Contract Documents all necessary information and determining the fastener and plate types, appropriate fastening rates, fastening patterns, and all associated information required to meet the design standards identified. Designer shall not pass this responsibility through to the Contractor.
2. The Project Designer shall address all details in the Contract Documents. Contractor shall not be responsible for developing details. Contractor can, however, provide suggestions to improve details supplied by the Project Designer. Such suggestions shall be reviewed by the Project Designer and Owner and may be incorporated only when approval is given.
3. Detail adequate lap of all roof edge flashing onto top of masonry or finished wall surfaces. Provide 4" minimum.

N. MISCELLANEOUS:

1. Provide double doors into Table and Chair Storage Rooms.
2. Provide a minimum 4 foot concrete apron on frost footings at all overhead doors. Provide positive slope from doors.
3. Provide small wall mounted coat rack with shelf in open office areas. Provide individual coat hooks on back of doors of private offices.

4. Provide a sit-up bar in fitness rooms. See **Tab R** for standard detail.
5. Provide one or two adjustable pull-up bars in fitness room. Adjustable chin-up bar Model #40065 by Powersystems or equal. http://www.power-systems.com/p-3949-adjustable-chin-up-bar.aspx. Anchors to resist 350 lbs. without pull-out. Verify mounting height with Owner.
6. Provide hook strips for NBC Mask storage. See **Tab R** for standard detail.
7. Provide individual showers and drying areas for male and female showers. Provide shower curtain between shower and drying area and between drying area and circulation. Ensure design is such that shower water will not escape the individual shower areas and flood the common areas. Male showers may be "gang-type" where approved by the Owner.
8. Facilities that support workers using chemicals, paints, and other toxic materials require Locker and Break Rooms separate from those for administrative personnel. Reference the Industrial Hygiene Design Review Guide for guidance.
9. Verify the building thermal envelope complies with the Chapter 5 requirements of the current adopted IECC.
10. Clearly identify in the Door Schedule all doors to receive access control rough-in and reference the specific detail in the remarks column.
11. Incorporate space in Lactation Room cabinetry for a microwave.
12. Ensure metal deck flutes at exterior walls are filled with insulation to prevent mold.

2.5 STRUCTURAL:

A. VAULTS:

1. Walls, ceilings, and floors of newly constructed vaults shall meet the criteria outlined in Army Regulation AR190-11, Appendix G-1 (See document on Project CD, **Tab X**). This criteria is summarized below for convenience:
   - **a.** Walls: Walls shall be a minimum of 8 inches of concrete with No. 4 rebar at 9 inches on center in each direction in each face of the wall. Reinforcement in the two faces of the wall shall be staggered on each face to form a projected grid approximately 4 1/2 inches square. Reinforcement in the walls shall be tied into floors and ceilings in accordance with American Concrete Institute standards.
   - **b.** Ceilings and roofs: Ceilings and roofs shall be a minimum of 6 inches of concrete with No. 4 rebar or larger spaced to form a grid so that the area of any opening does not exceed 96 square inches.
   - **c.** Floors: Floors, if on grade shall be a minimum of 6" thick concrete reinforced with 6x6 - W4 x W4 welded wire fabric or equivalent steel reinforcing bars (based on area of steel per square foot). Where the floor slab acts as the ceiling of an underlying room or area, the ceiling standards shall apply. Where equivalent steel reinforcing bars are used, bar spacing shall form a grid so that the area of any opening does not exceed 96 square inches.
2. Modular vaults meeting Fed Spec AA-V-2737(1) may be used in lieu of poured-in place concrete.
3. Non-compliant existing vaults shall be upgraded as part of a renovation as needed to meet the criteria outlined in Army Regulation AR190-11, Appendix G-2 (See document on Project CD, **Tab X**). Verify requirements with Owner.

2.6 ENERGY:

A. ENERGY CODE:

1. Submit a copy of the Iowa State Energy Code Statement of Review Form along with applicable energy calculations or software printouts to the Owner concurrently with submittal to the State Fire Marshal. Form is available for download from: http://www.dps.state.ia.us/fm/building/energy/index.shtml

B. ENERGY REBATES:

1. All equipment designed and specified for projects shall take advantage of any local utility rebate program to the fullest extent possible. Consultant shall list here all proposed equipment and characteristics satisfying an energy rebate requirement. A copy of the local utilities energy rebate program literature, if available is enclosed under **Tab U**.

2. Refer to the Supplementary Conditions, Article 13.8 for additional energy rebate requirements.

2.7 MECHANICAL / ELECTRICAL / TELECOMMUNICATION / ESS

A. MISCELLANEOUS

1. Fire alarm, plumbing, mechanical, or other equipment that produces vibrations or otherwise operates in a way that may produce nuisance alarms shall not be placed on the interior or exterior of walls or ceilings of rooms protected by IDS. When equipment must be located near a room with IDS, it shall be placed as far away as possible and measures shall be taken to prevent the transmission of vibrations. Fire alarm horns or speakers shall face away from IDS rooms wherever feasible.

2. The following text shall be included verbatim as a general note on the first page of each of M/E/P/T drawings:

a. *No loads shall be permitted to be hung from metal roof decking. All hangers shall be hung directly from the top member of structural steel or supplementary members acceptable to the Structural Engineer and only with prior approval.*

2.8 MECHANICAL:

A. GEOTHERMAL:

1. The following text shall be included verbatim as a general note on the Mechanical Site Plan:

a. *Geothermal well construction wastewater discharges cannot leave the construction site and enter a ditch, sewer or other conveyance that will ultimately reach a Water of the United States. If on-site management procedures cannot provide this protection, the General Contractor is required to apply to the Iowa Department of Natural Resources for and implement the conditions of National Pollutant Discharge Elimination System General Permit Number 6.*

B. VAULTS:

1. Dehumidifiers:

a. All new and existing vaults must have a shelf-mounted dehumidifier installed, if not already existing. The dehumidifier shall be Danby Model DDR30 Series or approved equal with the following salient characteristics:

1). 30 pints/day
2). R410A refrigerant
3). Direct Drain option

4). Energy Star compliant
5). Auto Restart
6). Auto Defrost
7). 120V
8). Adjustable humidistat
9). Removable filter

b. Pipe condensate from dehumidifier through the vault wall to condensate pump or nearest drain (No drains allowed inside the vault). If possible, avoid running condensate lines directly to the exterior as they will be susceptible to freezing. Refer to **Tab R** for typical dehumidifier shelf detail.

2. Vaults shall be heated and cooled in accordance with DG 415-1, Appendix C, Table 3. Cooling temperature listed shall apply to both "Occupied" and "Unoccupied" modes.

3. Provide medium security grilles (Titus SG-3300RL or equal) at all duct penetrations into vault greater than 96 sq. inches.

4. Provide non-conductive rubber or canvas duct connections to vault.

5. Refer to **Tab R** for thru-wall vent and weapons anchor details.

C. EXHAUST HOODS

1. Exhaust Hoods/Kitchen HVAC design must incorporate strategies for maintaining temperatures and prevention of water pipe freezing in Kitchens. Unless otherwise approved, provide fire dampers in all Type I grease hoods. Provide aluminum, gravity backdraft dampers in all Type II condensate hoods. Refer to **Tab R** for standard Kitchen Hood Exhaust Damper.

2. Mount pull-station for kitchen hood fire suppression system along the egress route to exit (Not directly adjacent to hood). Verify maximum distance allowed by NFC.

D. BACKFLOW PREVENTORS:

1. At all backflow preventers, ensure at least one foot clearance on all sides of the device for repairs and testing is provided as well as a permanent platform if the device is mounted more than four feet above the floor.

2. Avoid cast iron backflow preventers whenever feasible.

3. Provide two 100% capacity backflow preventers installed in parallel to allow for routine maintenance without shutting off water supply to facility.

E. EMERGENCY PLUMBING FIXTURES:

1. Provide Emergency Shower and Eye/Face Wash Stations (ES/EFWS) in all areas where eye hazards exist due to use of hazardous chemicals to include but limited to Maintenance Bays and Battery, Flammable Storage, Controlled Waste, and POL Rooms.

2. Locate ES/EFWS within a 10-second walk (approximately 55 feet) from any hazard. Unit shall be on the same level as the hazard and the path of travel shall be free of obstruction. Note- one door may be present along the path of travel if it opens in the direction of travel.

3. ES/EFWS for Battery rooms shall be placed within the room immediately adjacent to the hazard (within 25 feet).

4. ES/EFWS shall be made of corrosion resistant materials.

5. The shower water supply shall include a thermostatic mixing valve which is approved and rated for use with emergency fixtures.

6. The shower shall be connected to a clean potable water source.
7. The mixing valve shall be tamper resistant or enclosed in a tamper resistant enclosure.
8. Identify each ES/EFWS with a sign highly visible within the area being served by the unit.
9. The area around each ES/EFWS shall be well lit.
10. Where the possibility of freezing conditions exist, the ES/EFWS unit shall be protected from freezing.
11. Provide an alarm for each ES/EFWS to initiate upon activation.
    a. Provide a local audible signal device, a silencing switch, and a flashing strobe for each ES/EFWS.
    b. Mount on wall or ES/EFWS column, immediately above the level of the showerhead.
    c. In addition to the local alarm, provide central reporting to a manned location via the BAS system or other approved remote alarm method.
12. Provide Ground Fault Interrupter (GFI) protection for all 120V electrical power outlets within 6 feet of an ES/EFWS and below the elevation of the showerhead. Do not install components that have the potential to cause electrical shock within 6 feet of an ES/EFWS below the elevation of the showerhead.
13. Provide a floor drain at each ES/EFWS capable of accommodating the volume of water required for weekly and annual testing. Route drains through the grit/oil separator if present.

F. GREEN PROCUREMENT PROGRAM:

1. As part of the Green Procurement Program (GPP), the Iowa National Guard strives to reduce the use of Ozone Depleting Substances (ODS).
2. When specifying refrigeration and air conditioning equipment, foam insulation, cleaning solvents, fire suppressants, aerosol solvents and propellants, sterilants, or adhesives, coatings, and inks, the following rules shall apply:
    a. Class I ODS are not allowed.
    b. Class II ODS are acceptable but not preferred.
    c. Acceptable substitutes for Class II ODS shall be specified wherever feasible and practical.
3. The Environmental Protection Agency (EPA) has established the Significant New Alternatives Program (SNAP) to identify alternatives to Class I and Class II ODS. Lists of acceptable and unacceptable substitutes are provided on the web site http://www.epa.gov/ozone/snap/lists/index.html. For this project, identify any ODS and/or acceptable substitutes being used.
4. Products with "Energy Star" ratings shall be used where practical and feasible.

G. GRIT/OIL TRAPS:

1. Clearly identify and dimension the location of shut-off valves on the plumbing plans. Shut-off valves for Grit/Oil Traps must be located in a position where they can be easily accessed for emergency shut-off when a vehicle is present in the work bay or wash bay.
2. Refer to **Tab R** for standard Grit/Oil Trap detail.

H. MISCELLANEOUS:

1. If no existing water softener system exists in a facility, perform a water hardness test. If the results are 3.5 grains/gal. or more, include a water softener system in the scope of work unless otherwise directed by the Owner.
2. Consideration must be given to air quality in Storage Rooms, Locker Rooms, and similar spaces. Although not normally occupied they require ventilation, temperature and/or humidity control to prevent damage to stored materials.
3. Ductwork Insulation:
   a. Requirements for ductwork to be insulated and the type of insulation required shall be clearly scheduled on the drawings or in the specifications.
   b. Do not specify internal insulation at any ductwork (exception: transfer ducts for noise control).
4. Provide recessed hose bibs on all sides of building at ground level. Provide hose bibs at roof level or freeze-proof hydrants through roof so that no point on roof is further that 200 feet from a hydrant and no rooftop unit require periodic cleaning is more than 100 feet from a hydrant.
5. Engineer shall identify here any equipment or systems utilizing 50 lbs. or more of refrigerant.
6. Gas Service Entrance: Field verify whether the gas service pipe through-wall penetration is properly protected in accordance with the utility provider's requirements. If not, make corrective work part of the project.
7. Local or Industrial Exhaust Ventilation Systems: Reference the Industrial Hygiene Design Review Guide for guidance.
8. Noise and Vibration Controls:
   a. Design the lowest noise emission levels that are technologically and economically feasible to maintain.
   b. Specify appropriate noise control methods (isolated housekeeping pads, vibration isolators on equipment, sound blankets, etc.),
   c. Avoid locating equipment producing potentially disruptive noise adjacent to spaces with incompatible noise tolerances.
   d. Include anticipated noise levels of equipment with the design submission.
9. Hand Washing Stations:
   a. Provide a minimum of one hand washing station in maintenance areas. For large shops, provide one hand washing station for every four work bays.

2.9 ELECTRICAL / TELECOMMUNICATION / ESS

A. MISCELLANEOUS

1. Electrical, Telecommunication, and Electronic Security Work shall be described on separate drawing sheets.
2. J-Boxes for power and data in areas with wire mesh partitions shall be mounted on the exterior side of the caging adjacent to the door into each caged area. Provide a j-box for one duplex receptacle and a j-box for two data ports per caged area. Alternately, a j-box for one quad receptacle and a j-box for four data ports may be mounted between the doors to be shared by cages which are side by side. Review all locations with Owner. Refer to **Tab R** for a typical j-box installation detail to be incorporated into the drawings.

This detail may also be used for light switches when the layout of the caging makes mounting the switch on caging in lieu of a hard wall appropriate.

2.10 ELECTRICAL

A. ARC FLASH ANALYSIS:

1. An arc flash analysis for the electrical systems within the building shall be made part of the construction contract. Analysis shall be performed by a licensed Electrical Engineer hired by the Contractor. The Engineer of Record for the project may be listed as option to be hired by the Contractor. The analysis shall include all new and existing (if applicable) electrical systems. The Engineer shall provide the calculations and labels as part of this analysis. The Electrical Contractor shall provide any information that is required for the calculations and shall install the appropriate labels. Define the requirements for the Electrical Contractor's participation in the Arc Flash Analysis as part of the project's electrical specifications.

2. The scope of the analysis shall be as follows:

a. Review the site, existing and new shop drawings, as-built floor plans, and electrical one-line diagrams to collect the needed data including:

1). Approximate new and existing feeder lengths. Lengths shall be provided to the Engineer by the electrical contractor during construction.
2). Cable type.
3). Conduit material type.
4). Over-current protection including manufacturer name, device type, and catalog number.

b. Review the site and gather data related to circuit breaker trip settings.

c. Perform an arc flash analysis of the electrical distribution system, per NFPA 70E and calculated in accordance with IEEE 1584.2002. The analysis shall be for the equipment as listed in NEC 110.16 and NFPA 70E.

d. Arc Flash Analysis would be provided for the following equipment that may need to be maintained while energized.

1). Panels and switchboards.
2). Transformers.
3). Lighting contactors and control panels.
4). Motor control centers.
5). Variable frequency drives.
6). Combination starters.

e. The following equipment that is rarely maintained while energized would not be included in the analysis.

1). Disconnects.
2). Switches.
3). Devices.
4). Starters.

f. Provide a report that will include:

1). Graphical electrical one-line diagrams.
2). Arc flash study output.
3). Coordination study for adjustable trip breakers to include settings by Contractor.
4). Recommendations on deficiencies.

g. Provide color-coded, self-adhesive warning labels that indicate the device name, the arc flash boundary, the incident energy level, and the appropriate PPE (Personal Protective Equipment) class for this device when worked on in an energized state.

B. GENERATORS:

1. All projects involving new generators shall be closely coordinated with the CFMO Environmental Branch. (See also Article 2.3.B).

2. Remote generator annunciator shall be flush-mounted in a public corridor near the electrical room.

C. LIGHTING:

1. For Alteration or Renovation projects, all existing lighting should be replaced with LED lighting as part of the project if feasible.

2. Specify LED fixtures exclusively.

a. Any existing fluorescent fixtures to remain shall have wire guards added if not present.

3. At all classrooms, conference rooms, or other areas where presentations involving projection may occur:

a. Provide dimmable general lighting or dimmable recessed can lights in addition to general lighting to allow for control of light during presentations.

b. Provide separate switching for first row of lights adjacent to markerboards/screens.

c. For larger classrooms, provide controls for all lights at both the entrances to rooms and at front of rooms near podiums. For smaller classrooms, provide controls at entrance.

4. Indirect, diffused, or shielded lighting shall be provided to reduce glare in spaces where computers or projection will be used. Such spaces include: all offices, classrooms, conference rooms, workrooms, etc.

5. Provide “nightlight” fixtures throughout facility for safety. Provide only the minimum number of fixtures required in an effort to conserve energy. Nightlight fixtures in areas of buildings which may be dark even during daylight hours (i.e. internal corridors) shall operate 24/7. Nightlight fixtures in areas of buildings which receive sufficient daylight (i.e. Drill Halls with clerestory windows) shall be controlled by photocell.

6. Provide a 24/7 wall-mounted light fixture above the exterior side of all vault doors to illuminate the area in front of the door for visual surveillance. If the vault is located within another locked room (i.e. supply storage), locate the light fixture outside the door to that room. Provide keyed switching to avoid inadvertently being turned off.

7. Provide occupancy sensor switches where appropriate (Janitor closets, Table and Chair Storage, Restrooms, etc.). Review and verify all proposed locations with Owner.

8. All exit signs to be LED.

9. Emergency lighting shall be mounted high enough to avoid tampering (9’-0”? minimum).

10. Exterior building/site/security lighting:

a. Provide LED where feasible.

b. Provide two means of automatic control to meet energy and physical security requirements by zone. Example strategies are listed in Table 4-2 of UFC 3-530-01.

Lighting strategies and controls shall be reviewed with Owner's Energy Manager and Physical Security Specialist.

D. MISCELLANEOUS:

1. Provide electrical service receptacles at roof where required by code and at accessible locations for maintenance of rooftop equipment.
2. Provide disconnects at all overhead door electric operators.
3. Provide disconnects at all permanently installed equipment requiring routine repair work to allow for lock out and tag.
4. Incorporate the following text verbatim on the Electrical Demolition drawings:
   a. *Lamps, bulbs, and ballasts shown to be removed by the contractor, and not shown to be reused on the project, can be salvaged by the owner or the contractor. If not salvaged, the contractor will pay required fees and ensure proper disposal as regulated waste (ballasts labeled as "PCB Free" can be disposed as solid waste).*
5. All self-luminous or photo-luminescent (radioactive tritium) exit signs shown to be removed by the Contractor shall be removed without damage and turned over to the Owner for disposal.

2.11 TELECOMMUNICATION

A. MISCELLANEOUS

1. Electrical receptacle locations shall be shown as a background layer on the telecommunication floor plans to allow for Owner review of quantity and proximity to data outlets.
2. Provide data port for wall mounted phones adjacent to door at all rooms with common access (i.e. Vestibules, Drill Hall, Classrooms, Break Rooms, Locker Rooms, Unit Storage, Mechanical, Electrical, Telecom, MVSB, AUSB, Table and Chair Storage, Physical Fitness, etc.). For rooms with multiple doors, data port need only be installed adjacent to one (primary) door.
3. For Renovation projects: All existing telecommunication cabling scheduled to be abandoned or abandoned because of new work shall be removed in its entirety.
4. Provide two (2) Cat 5E cables from all fire alarm panels to the Telecommunications closet.

2.12 AUDIO/VISUAL

A. PROJECTOR ROUGH-IN AND PROJECTOR MOUNTS:

1. Classrooms and in some instances, the Drill Hall may require rough-in and projector mounts installed for Owner provided projectors. Refer to **TAB R** for standard rough-in detail. Verify applicable rooms with the Owner.

2.13 FIRE ALARM SYSTEMS

A. MISCELLANEOUS:

1. Refer to **Tab R** for 'Fire Alarm Control Panel Connection Detail' and 'RJ-31X Wiring Diagram' detail to be included on the drawings.
2. Identify vault siren locations on the ESS drawings.
3. Confirm the distance from all vaults to the DMARC is less than 300 feet. If exceeded, review requirements with Owner's ESS Specialist.

2.14 ELECTRONIC SECURITY SYSTEMS

A. INTRUSION DETECTION SYSTEMS (IDS), ACCESS CONTROL SYSTEMS (ACS), AND SECURITY INTERCOM SYSTEMS (SIS):

1. Review all plans with Owner's ESS Manager to determine which rooms or doors, if any, will receive IDS, ACS, or SIS.
   a. Refer to **Tab R** for standard rough-in diagrams and general notes to include on the drawings. Include only those diagrams that are applicable to the project.
2. Provide a dedicated 120V, 20 Amp service receptacle in each telecommunication closet to serve ESS equipment. Verify final location with Owner's ESS Manager. Label the cover "ESS".

PART 3 - SPECIFICATIONS

3.1 ALL DIVISIONS

A. MISCELLANEOUS

1. Consultant shall specify extra materials as appropriate for the project in the respective specification Sections. Refer to **Tab R** for recommended extra materials checklist.
2. Asbestos containing materials or products shall not be specified.
3. Carefully review the "Submittals" and "Warranties" requested in all specification sections. The project website will use these to populate the submittal and closeout logs before construction start-up. Ensure that all items desired for review or documentation are listed and that items which really are not required are removed from the specs.

3.2 DIVISION 01

A. SUMMARY OF WORK

1. Include square footage totals for New Construction, Addition and/or Renovation work in the Summary of Work.
2. If any electronic files (i.e. civil files for bidder's use in determining quantities) are going to be made available to the bidders, include instructions including contact info for obtaining files and any disclaimers.

B. ALLOWANCES

1. Mechanical and Electrical Engineer shall coordinate with the local utility companies to determine a cost estimate for installation of the utility mains for projects off Camp Dodge. This estimate shall be included as an allowance to the project. Utility mains for projects on Camp Dodge are handled outside the project contract.

C. PRICE AND PAYMENT PROCEDURES

1. Include the following text verbatim if this specification section is included:
   a. *Electronically submit Applications for Payment to the Architect or Engineer per the Supplementary Conditions.*

D. ELECTRONIC SUBMITTAL PROCEDURES

1. Include Specification Section "01 33 05 – Electronic Submittal Procedures" verbatim (See **Tab P**). Edit Consultant's "01 33 00 - Submittal Procedures" and any other applicable Division 1 specifications to reference this Section for Electronic Submittals.

E. QUALITY REQUIREMENTS

1. Testing & Inspections:

   a. Architect/Engineer shall determine which, if any, Special Inspections are required for this project and prepare a “Statement of Special Inspections” in accordance with Section 1704 and 1705, Current Version IBC. This “Statement of Special Inspections” shall be included in the specification. Special Inspections will be paid for by the Owner.

   b. Owner will also pay for any pavement or subgrade testing.

   c. All other Testing & Inspections required by these specs, code, or governing authorities (other than Special Inspections, pavement, or subgrade testing) shall be arranged and paid for by the Contractor.

F. PRODUCT REQUIREMENTS

1. Incorporate the following text verbatim in the Specifications under Product Substitutions:

   a. *Requests for substitutions during the bid period shall comply with Article 14 – Substitutions of the Instructions to Bidders and with this specification section.*

   b. *Subsequent requests for substitutions will be considered in the case of product unavailability or other conditions beyond the control of the Contractor or as follows:*

      1). *Timing: Architect will consider requests for substitution if received within 60 days after commencement of the Work or the Notice to Proceed. Requests received after that time may be considered or rejected at the discretion of the Architect.*

      2). *Condition: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:*

         a). *Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.*
         b). *Requested substitution does not require extensive revisions to the Contract Documents.*
         c). *Requested substitution is consistent with the Contract Documents and will produce indicated results.*
         d). *Substitution request is fully documented and properly submitted.*
         e). *Requested substitution will not adversely affect Contractor's Construction Schedule.*
         f). *Requested substitution has received necessary approvals of authorities having jurisdiction.*
         g). *Requested substitution is compatible with other portions of the Work.*
         h). *Requested substitution has been coordinated with other portions of the Work.*
         i). *Requested substitution provides specified warranty.*

2. Incorporate the following text verbatim in the Specifications under Product Requirements:

a. *Effective dates of warranties shall be the Date of Substantial Completion (not the date of delivery or installation) and must be identified on the warranty or by signed letter modifying the warranty.*

G. CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

1. Include Specification Section 01 74 19 – Construction Waste Management & Disposal. Refer to **TAB P** of the Project Book. Edit text in red as appropriate for the Project.

H. PROJECT CLOSE-OUT:

1. Incorporate the following text verbatim in the Specifications under Substantial Completion:

a. *After all utilities have been installed but prior to substantial completion, Contractor shall demonstrate, in the presence of the Owner, continuity of all tracer wires from end to end at all underground utilities. Tracer wires which fail a continuity test shall be repaired or replaced and re-tested until a successful continuity test is achieved. Provide Owner 48 hour notice of this activity.*

2. Incorporate the following text verbatim in the Specifications under Record Documents:

a. *Maintain on site in the Field Office one set of the following documents:*

1). *Drawings.*
2). *Specifications.*
3). *Addenda.*
4). *Change Orders and other modifications to the Contract (SI's, RFI's, RFP's, RFC's, etc.).*
5). *Reviewed Shop Drawings, Product Data, and Samples.*
6). *Manufacturer's instruction for assembly, installation, and adjusting.*

b. *Record all revisions to the work. All recorded changes shall be "clouded" or otherwise clearly identified; make reference to the document that originated the change.*

c. *Ensure entries are complete and accurate, enabling future reference by Owner.*

d. *Store record documents separate from documents used for construction.*

e. *Record information concurrent with construction progress, not less than weekly. Provide status update as agenda item at regular progress meetings. Provide record documents for review during progress meeting when requested.*

f. *Specifications: Legibly mark and record at each product section a description of actual products installed, including the following:*

1). *Manufacturer's name and product model of actual products installed.*
2). *Product substitutions or alternates utilized and approved.*
3). *Changes made by Addenda.*
4). *Changes made by the following:*

a). *Change Orders.*
b). *Supplemental Instructions (SI).*
c). *Responses to Requests for Information (RFI).*
d). *Construction Change Directives (CD)*
e). *Changes documented by Meeting Notes or Field Reports discussed and agreed to during Progress Meetings or Site Observations.*

g. *Record Drawings and Shop Drawings: Legibly mark each item to record actual construction on one "Record" set of the Drawings and Shop Drawings, including the following:*

1). *Changes made by Addenda.*
2). *Measured depths of foundations in relation to finish first main floor datum.*
3). *Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.*
4). *Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.*
5). *Actual Equipment locations.*
6). *Revisions to routing of piping and conduit.*
7). *Revisions to electrical circuitry.*
8). *Record information of any work that is described schematically in the Contract Documents.*
9). *Field changes of dimensions and details.*
10). *Details not on the original Contract Drawings.*
11). *Changes made by the following:*

a). *Change Orders.*
b). *Supplemental Instructions (SI).*
c). *Responses to Requests for Information (RFI).*
d). *Construction Change Directives (CD)*
e). *Changes documented by Meeting Notes or Field Reports discussed and agreed to during Progress Meetings or Site Observations.*

h. *Submit Record Documents to Owner's Representative at Project Close-out.*

3. Incorporate the following text verbatim in the Specifications under Closeout Submittals. See **Tab R** for Project Closeout Submittal Checklist. Edit items in red appropriately. Include this Checklist as an Attachment or Appendix Item of this Section:

a. *PROJECT CLOSEOUT SUBMITTALS:*

1). *See 01 78 00 for "Project Closeout Submittal Checklist". This checklist shall be completed in its entirety and uploaded to the Project Website prior to requesting and receiving final payment".*

4. Incorporate the following text in the Specifications under Operation and Maintenance Data:

a. *O&M binders shall include all final, approved submittals that have been uploaded to the Closeout Tab of the Project Website. Do not submit O&M binders until all electronic copies of the required O&M and Warranty submittals have been uploaded to the Project Website and have achieved final approval.*

b. *Submit the number of copies of O&M binders requested by the A/E for review (up to three copies maximum). A/E shall review the O&M binders to verify completion. Contractor shall make any corrections to the O&M binders noted and upon final approval submit the number of final copies requested by the Owner (up to two copies maximum).*

3.3 DIVISION 03

A. CONCRETE

1. Specify expansion joint filler material with “tear-off” strips where joint is intended to be filled with sealant. These strips help ensure a consistent, correct joint depth. Joints must be primed as required by the sealant manufacturer. Acceptable products:
   a. Expansion Strips by “Reflectix” http://www.reflectixinc.com/
   b. Cellu-Cushion EXP 200 by “Sealed Air” https://sealedair.com/
   c. 1000 Series Expansion Board Caps by “BoMetals, Inc.” http://bometals.com/
2. Consolidate all concrete with mechanical vibration equipment.

3.4 DIVISION 04

A. UNIT MASONRY

1. Require all new and/or salvaged masonry to be “toothed-in” to existing masonry at exposed locations.
2. New 4” CMU walls should be avoided. If used on project, cores shall be reinforced and grouted and tops of walls braced. Existing 4” CMU walls shall be replaced or braced off to structure at top of walls.
3. All unit masonry to be laid in running bond, no stack bond.
4. Provide radius edge units for exposed corners at interior masonry.
5. Require inside corners to be raked out and sealant installed at all locations where CMU walls butt adjacent CMU walls.
6. Install sealant in lieu of mortar in horizontal joints at bearing ends of exterior steel lintels.
7. Provide 26 gauge stainless steel flashing with drip at all thru-wall flashing locations. Extend 1/2” out from face of wall, with this 1/2” bent down 30 degrees and hemmed to form a drip. Provide pre-fabricated corner pieces. Membrane flashing should lap down over the steel flashing to within 1 inch of exterior face of wall. Adhere flashing continuously to the drip edge.

3.5 DIVISION 05

A. STEEL

1. The following items shall be galvanized steel:
   a. Exterior lintels, ledges, and shelf angles.
   b. Bollards.
   c. Roof access ladders.
   d. Steel door frames or jamb protection at exterior overhead doors.
   e. Angles protecting edges of concrete (i.e. overhead door sills, edge of dock, etc.).
   f. Exterior handrails and railings.
   g. Interior lintels and miscellaneous steel in areas of high humidity (i.e. steel lintels at sculleries and showers, steel bench supports at locker rooms, etc.).
   h. Steel plates at exterior site features (ie. tread plates over sidewalk trench drains, etc.).
   i. All architectural exterior steel.
2. For all architectural steel (i.e. decorative or exposed interior or exterior structural steel), specify the use of continuous welds or intermittent welds with plastic filler. Grind all welds and sand plastic filler for a neat and smooth finish.

B. STEEL DECK AND JOISTS

1. All holes “burned though” steel roof deck when welding shall be repaired and touched-up with primer.

C. METAL FABRICATIONS

1. The following items shall be galvanized steel:
   - **a.** Exterior lintels, ledges, and shelf angles.
   - **b.** Bollards.
   - **c.** Roof access ladders.
   - **d.** Steel door frames or jamb protection at exterior overhead doors.
   - **e.** Angles protecting edges of concrete (i.e. overhead door sills, edge of dock, etc.).
   - **f.** Exterior handrails and railings.
   - **g.** Interior lintels and miscellaneous steel in areas of high humidity (i.e. steel lintels at sculleries and showers, steel bench supports at locker rooms, etc.).
   - **h.** Steel plates at exterior site features (ie. tread plates over sidewalk trench drains, etc.).
   - **i.** All architectural exterior steel.
2. For all architectural steel (i.e. railings) and metal fabrications, specify the use of continuous welds or intermittent welds with plastic filler. Grind all welds and sand plastic filler for a neat and smooth finish.

3.6 DIVISION 06

A. ARCHITECTURAL WOODWORK

1. Provide solid surface countertops at all countertops in wet locations (i.e. Break Rooms with sinks, Restrooms, Lactation Rooms, etc.). Specify integral backsplash and bullnose edge and loose, field installed, custom-fit end-splashes.
2. Provide solid surface sills at windows.

3.7 DIVISION 07

A. STRUCTURE SUB-DRAINAGE

1. Foundation perimeter drain tile: Specify Schedule 40 PVC perforated pipe (no corrugated black plastic)
   - **a.** Install in free-draining granular material fully wrapped with filter fabric (no drainage tile “socks”).

B. EIFS

1. Insulation for an Exterior Insulation & Finish System must be attached with adhesive and mechanical fasteners regardless of substrate.
2. EIFS systems must be a drainable system to allow moisture to escape.

C. SINGLE-PLY ROOFING SYSTEMS:

1. Roofing system shall be:
   - **a.** Reinforced polyvinyl chloride (PVC) sheet membrane unless otherwise directed by Owner.
   - **b.** Mechanically attached vs. fully adhered shall be at the recommendation of the Consultant. Fully-adhered is preferred if the budget allows.
2. REFERENCES: Unless otherwise addressed below, the following standards shall be referenced in the Project Manual for compliance:

a. NRCA - The NRCA Roofing and Waterproofing Manual, Fifth Edition.
b. UL 790: Conform to applicable code for roof assembly fire hazard requirements.
c. FM – 1-60 design standards for wind uplift (fully adhered attached).
d. FM – 1-90 design standards for wind uplift (mechanically attached).
e. ASTM – latest revisions.
f. Membrane manufacturer's current published specifications, application instructions, and technical bulletins.

3. Incorporate the following text verbatim in the Specifications under Qualifications:

a. *Qualifications of Manufacturer:*

1). *Products used in the work included in this section shall be produced by the manufacturer and must have a history of successful production acceptable to the Owner. Private labeled products are not eligible for approval.*

2). *The roofing membrane reinforcement, formulation, and sheet configuration shall not have been altered by the manufacturer over the past 15 years. Upon request, Manufacturer shall provide a documentation supporting such claims.*

3). *Manufacturers/distributors submitting products for "approved equal" status will be required to complete a "Substitution Request Form" prior to being considered for approval. Completion of the form does not imply or guarantee approval.*

4). *Manufacturer must have existing installations similar to the specified system, being at least 15 years old and installed in a climate similar to that of the proposed installation. Upon request, Manufacturer shall provide documentation supporting such claims.*

b. *Qualifications of Contractor:*

1). *All contractors must be certified by the membrane manufacturer as an approved applicator of the products specified within these contract documents.*

2). *All contractors shall have had said approval for a minimum of **ten** years prior to the date set for opening of bids. Contractors not meeting the minimum experience requirements must be able to provide supporting documentation of experience with like and/or similar systems that is acceptable to the owner.*

3). *The contractor will demonstrate 10 years of experience as the "bidding entity." A bidder is defined as the "bidding entity," i.e., the corporation, partnership or other entity in whose name a bid is submitted. Experience and qualifications required of "the bidder" will refer, first, to the bidding entity rather than the experience, either individual or aggregate, of the individuals who make up the company. The experience of key personnel will also be considered in the process of evaluating the bidding entity.*

4). *The bidding entity shall submit a list of five (minimum) projects of comparable size and complexity, utilizing like / similar roof systems. Include contact names and numbers for the General Contractor and the Owner for each project listed.*

5). *The bidding entity will have never defaulted on, failed to complete, or requested to be relieved of the responsibilities of a contract with a public entity.*

4. WARRANTIES: The following warranties shall be required for roof systems:

a. 20-year No-Dollar-Limit Manufacturer's Roof System Warranty.

b. 2-year Contractor's warranty

5. PRODUCTS: Incorporate the following verbatim under Roof Membrane. Delete line items referencing fully adhered or mechanically attached as applicable. If the project includes both fully adhered and mechanically attached membranes, indicate clearly on the drawings or in the specs the locations on the roof where fully adhered and mechanically attached systems are to be used:

a. *PVC or KEE fiber or fabric reinforced sheet (ASTM D4434), Approved Manufacturers & Products:*

1). *Sarnafil Roofing System by Sarnafil, Inc.:*

a). *Fully Adhered: G410*
b). *Mechanically Attached: S327*
c). *Minimum Thickness: 60 mils +/-3 mil.*

2). *Fibertite Roofing System by Seaman Corporation:*

a). *Fully Adhered: FiberTite SM (with Elvaloy Kee polymer)*
b). *Mechanically Attached: FiberTite SM (with Elvaloy Kee polymer)*
c). *Minimum Thickness: 45 mils +/-3 mil.*

3). *Flex Roofing System by Flex International Corp.:*

a). *Fully Adhered or Mechanically Attached: Flex MF/R 60 PVC, Minimum Thickness: 60 mils +/-3 mil.*
b). *Fully Adhered or Mechanically Attached: Flex MF/R 45 (with Elvaloy Kee polymer), Minimum Thickness: 45 mils +/-3 mil.*

b. *Substitutions: (subject to compliance with specifications) Submit Document 00 43 25 Supplement F – Proposed Substitution Form (Bidding Phase).*

b. *Exposed Face Color: White.*

c. *All field membrane material shall have "factory" edges.*

d. *Maximum Roll Width for fully adhered: Standard size recommended by the manufacturer.*

e. *Maximum spacing of fastener rows for mechanically attached: 6 foot unless otherwise approved by Owner.*

D. ROOF INSULATION:

1. Acceptable Roof Insulation Types:

a. Polyisocyanurate Foam Flat & Tapered Roof Insulation:

1). Closed-cell, polyisocyanurate foam core with factory-laminated facers conforming to ASTM specification C 1289-95, Type II. Foam core is to have minimum compressive strength of 20 psi according to ASTM C 165-95 or D 1621.

b. Sheet Size:

1). 4' x 4' for applications where one or more layer of insulation is adhered.

2). 4' x 8' for applications where insulation is mechanically fastened.

3). 2" maximum board thickness. (Use multiple layers of boards as required to achieve overall insulation thickness). All roof systems require a minimum of 2 layers (4 inches) of insulation.

E. COVER BOARD:

1. All roof systems shall incorporate a cover board.

2. Acceptable Manufacturers and Products:

   a. Fully Adhered: “DensDeck Prime” Roof Board as manufactured by Georgia-Pacific or “Securock” Gypsum Fiber Roof Board as manufactured by USG, 1/4” thickness minimum, 4’ x 8’ sheets.

   b. Mechanically Attached: “DensDeck” Roof Board as manufactured by Georgia-Pacific or “Securock” Gypsum Fiber Roof Board as manufactured by USG, 1/4” thickness minimum, 4’ x 8’ sheets.

F. WALKWAYS:

1. Specify manufacturer’s walkway protection material:

   a. “Sarnatread”, light grey, 39” wide x 32 foot rolls by Sarnafil.

   b. “Mellow Yellow” walkway material, 30” wide x 50 foot rolls by FiberTite.

   c. “Flex Walkway Pad”, gray, 29” wide x 60 foot rolls by Flex International.

G. VAPOR AIR RETARDER:

1. Vapor barrier/air retarder should be applied on the warm side of cold rooms.
2. Vapor barrier/air retarder should be applied only over areas with high humidity or high pressures.
3. If a vapor barrier/air retarder is recommended by the Project Designer for other areas, the Project Designer shall justify its need to the Owner with dew point calculations or justifications for reducing wind uplift.

H. ROOF DRAIN:

1. Roof Drain Covers to be ductile iron (not plastic).

I. ROOF INSTALLATION:

1. Incorporate the following text verbatim under execution:

   a. *Ponding of water in any spot on the roof is unacceptable. Ponding shall be defined as any water that remains on a roof surface longer than 48 hours after the termination of the most recent rain event. All incidents of ponding shall be repaired until ponding is eliminated.*

J. ROOF INSPECTION:

1. Incorporate the following text verbatim under roof inspection:

   a. *All membrane roofs shall be inspected by the roofing manufacturer’s factory representative. Owner’s representative shall be present during the inspection. Contractor shall notify the Owner a minimum of 48 hours prior to this inspection.*

K. CLEANING OF ROOFS:

1. Incorporate the following text verbatim under cleaning:

   a. *All stains (including rust stains), fasteners, dirt, debris, etc. shall be cleaned and removed by the roofing installer upon completion of installation. Roof membrane shall be cleaned again by the roofing installer, or by the General Contractor in accordance with the manufacturer’s recommendations just prior to substantial completion to remove subsequent stains (including rust stains), fasteners, dirt, debris, etc.*

L. FLASHING AND SHEET METAL

1. Cleats (Hook Strips) shall be minimum 22 gauge, galvanized steel, continuous.
2. Specify continuous butyl tape to be installed between the edge of the roof membrane and the face of the wall behind the continuous cleats.
3. Specify matching prefinished metal covers and trim to hide membrane visible from ground level (i.e. at roof scuppers, etc.).

M. ROOF ACCESSORIES

1. Specify a sacrificial splash pad in lieu of precast splashblocks at all downspouts or lamb's tongues emptying onto roofs. Splash pads shall consist of a 2' x 3' piece of walkway protection mat welded to a similarly sized sacrificial piece of roofing membrane. Weld sacrificial piece of membrane to roof membrane.
2. Roof access hatches
   a. Specify "Railing Ready" design for roof hatches.
   b. Minimum roof access hatch size to be 30" x 36".
   c. Roof hatch lid shall have an auxiliary "pull-down" handle separate from the latch handle. Similar to Milcor Model "M-1".
   d. Specify a guard rail with self-closing gate option for roof access hatches. KeeHatch Model RHSR-SS or equal. Guard Rail shall be galvanized steel (not PVC or aluminum) and shall mount to roof hatch cap flashing (do not penetrate curb flashing).

N. FIRESTOPPING and FIRESAFING

1. Firestopping where cabling penetrates fire rated walls shall facilitate ease of future cabling.
   a. Specify "EZ-Path" as manufactured by Specified Technologies, Inc. or approved equal.
   b. Where "EZ-Path" type is not feasible, specify "pillow" or "brick" type.
   c. Size penetrations to allow for installed cables plus 50 percent growth.

3.8 DIVISION 08

A. HOLLOW METAL DOORS & FRAMES

1. Doors:
   a. Incorporate the following into the specifications verbatim:
      1). *Exterior Doors to be SDI Level 3, Extra Heavy Duty, Model 2, seamless design, 0.053 inch (nom. 16-gage) thick, zinc coated steel. "Seamless design" means all seams on the vertical edges are continuously welded the full height of the door, filled, and finished smooth for no visible seams.*
      2). *Interior Doors to be SDI Level 2, Heavy Duty, Model 2, seamless design, 0.042 inch (nom. 18 gage) thick zinc coated steel. "Seamless design" means all seams on the vertical edges are continuously welded the full height of the door, filled, and finished smooth for no visible seams.*
   b. Non-handed doors are not acceptable.
   c. All exterior doors and interior vestibule doors to have two pair of hinges per leaf.
   d. Cut ends of material (i.e. glazing stops) must be primed and painted.

e. Incorporate the following into the specifications verbatim:

1). *All exterior doors shall be closed flush at the top and bottom edges. Install minimum 20 gauge channels (legs down at top of door, legs up at bottom of door) even with the top and bottom edges of door face sheets (no recesses). Seam wire weld continuous or spot weld around entire perimeter of channel. Fill all welds and seams and finish smooth for no visible seams. Provide openings in the bottom closure channel to permit the escape of entrapped moisture.*

2. Frames:

a. Exterior frames to be 0.067 inch (nom. 14 gage) thick, zinc coated steel.

b. Interior frames to be 0.053 inch (nom 16 gage) thick zinc coated steel.

c. Face dimension of frame heads shall be increased to align with masonry coursing.

d. All frames to be full-profile welded; grind, fill, dress, and make smooth, flush and invisible.

e. All frames in new masonry walls to be filled with cementitious based grout (mortar) as walls are laid up. Rubber door silencer buttons MUST be installed prior to filling. Gypsum based grout in frames is prohibited.

f. All frames in non-masonry walls or frames inserted into existing openings or openings cut into existing masonry walls shall be un-grouted. Stuff with fiberglass batt insulation for sound deadening.

g. Frames identified to receive rough-in for Electronic Security Systems shall have the mortar boxes and conduits within the frames installed by the frame manufacturer. Install mortar boxes regardless of whether or not the frame will be grouted.

h. Coat the inside of exterior frames with a corrosion inhibiting bituminous material.

i. Frames to be securely anchored to the structural portion of the wall and not the brick veneer.

j. Knock-down frames are not acceptable.

k. Countersink anchors, fill and make smooth, flush, and invisible on exposed faces.

l. Cut ends of material (i.e. glazing stops) must be primed and painted.

B. VAULT DOORS AND DAY GATES

1. Incorporate the enclosed Vault Doors and Day Gates Specification Section verbatim (Refer **Tab Q**):

a. Notes:

1). Edit the referenced Section numbers (in red).

2). Coordinate hardware with door hardware section.

C. COILING DOORS

1. Incorporate the following text verbatim in the Specifications for Fire Rated Coiling Doors:

a. *At all fire-rated doors: Provide motor-operated doors with 'auto-reset' feature at each door for convenient testing and resetting of fire-release mechanism(s) by Owner. The automatic closing system shall be designed such that routine testing and resetting of the door can be performed without requiring physical, mechanical resetting. Each fire door shall be able to be reset after alarm signal activation or*

power interruption via electric operation from floor level by pressing the "open" button. Battery back-up is not allowed.

2. The following fire rated door models will meet the above requirement and are approved. Verify the manufacturer model numbers listed with the mounting style:

   a. CHI Overhead Doors:

      1). Service Door: Series 7000 with Auto Reset Motor.
      2). Counter Door: Series 7500 with Auto Reset Motor.

   b. The Cookson Company:

      1). Service Door: Type FDO-A (auto test).
      2). Counter Door: Type FDO-A10 (auto test).

   c. Cornell Iron Works Inc.:

      1). Service Door: Model ERD10 with M-100 Motor Operated System.
      2). Counter Door: Model ERC10 with M-100 Motor Operated System.

   d. McKeon Door Company:

      1). Service Door: Model Autoset FSFD.
      2). Counter Door: Model Autoset CFS.

   e. Substitutions: (subject to compliance with specifications) Submit Document 00 43 25 Supplement F – Proposed Substitution Form (Bidding Phase).

3. Specify a cover for the motor on coiling counter doors in finished areas (in addition to the hood for the coiling door itself).

D. SECTIONAL OVERHEAD DOORS

1. Sectional overhead doors that are subject to ever having an operator, electric or chain operated, will have the horizontal track sloped and compression spring (not leaf) at the end of the track.
2. Provide electric operator at all sectional overhead doors unless directed otherwise by Owner.
3. Provide chain hoist operation on all large doors wider than 8 feet or taller than 10 feet.
4. All doors to have a spring-loaded steel or bronze cam mounted to bottom door roller assembly on each side designed to stop door automatically if either or both cables break.
5. Provide sliding dead bolt type locking latch, operable at one side. Provide latch inside only, no key lock on outside. (Delete latch when electric operators are used.)
6. When electric door operators are used, provide remote control 3-button station with momentary contact button for "open" and "stop" and constant pressure button for "close".
7. Automatic reversing controls are not to be used. The close button must be held to close the door allowing the person operating to observe the safety of the door closing.

E. TRANSLUCENT WALL AND ROOF PANEL ASSEMBLIES

1. Specify either Polycarbonate (i.e. CPI Daylighting) or fiberglass (Kalwall) sandwich panel systems. Polycarbonate is preferred. Do not specify both as they are not equals.
2. If fiberglass sandwich panels are proposed for the project, the following warranties shall be included in the specifications verbatim:

   a. *Products shall be warranted against:*

1). *Failure of materials or workmanship including leakage, excessive deflection, and defective materials and construction: 5 years.*

2). *Excessive yellowing or loss of light transmission. Excessive yellowing is defined as a change greater than four (4) Delta E units during the first five years and greater than eight (8) Delta E units during the first ten years: 10 years.*

3). *Fiberbloom: 25 years.*

4). *Delamination: 10 years.*

F. WINDOWS AND STOREFRONT

1. All new or replacement windows and glazing in exterior doors shall comply with UFC 4-010-01 document under **Tab X**
2. Specify that all window frame anchorage shall have finished trim covers to match the window finish (i.e. no exposed fasteners visible).
3. Wider frames (4" to 4 1/2") are recommended to ensure coverage of wall cavity spaces.
4. Verify if wood blocking, additional steel, etc. is required by the window manufacturer at perimeter of opening for anchoring frames (ie. to satisfy blast-resistance requirements). If yes, indicate requirements on drawings.

G. WINDOW SECURITY SCREENS

1. Certain rooms are classified by the Owner as "Secured Storage". If such rooms have windows in them, the windows may require the installation of security window screens on the exterior side of each window. All projects will be reviewed by the Owner's Security Specialist at the various design submittal phases to identify which windows shall receive security screens.
   a. Refer to **Tab Q** for standard specification (Section 08 56 56 - Security Window Screen) to be incorporated into the Specifications when applicable. Edit specification to be project specific as appropriate.

H. HARDWARE

1. Incorporate the following text verbatim in the Specifications under Qualifications:
   a. *Hardware Supplier Personnel: Employ Architectural Hardware Consultant (AHC) qualified person to assist in work of this section.*
2. Incorporate the following text verbatim in the Specifications under Field Quality Control:
   a. *Hardware Supplier's Architectural Hardware Consultant shall field inspect and certify hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.*
3. Security Locks:
   a. Certain rooms and buildings are classified as "Secured Storage" and as such may require deadbolt locks. All projects will be reviewed by the Owner's Security Specialist at the various design submittal phases to identify which doors shall receive deadbolt locks. The following list includes examples of such rooms:
      1). Unit Storage.
      2). Unit Supply Office.
      3). Unit Supply Storage.
      4). Equipment Locker Rooms.

5). Nuclear/Biological/Chemical (NBC) mask storage.
6). Tool Rooms.
7). Parts Storage.
8). Shops.
9). Mechanical Rooms.
10). Telecommunication Rooms.
11). Doors into Office Suites.
12). Auxiliary Unit Storage Buildings (AUSB).
13). Motor Vehicle Storage Buildings (MVSB).

b. Deadbolt Locks shall be:

1). *BHMA A156.13, Series 1000, Operational Grade 1, Security Grade 2, mortise locks with "anti-panic" operation, (Inside lever simultaneously retracts deadbolt and latchbolt).*

2). Refer to **Tab R** for examples of approved locking functions by three manufacturers.

3). Specify **ANSI F13** locking function.

4. Provide devices on double doors (astragals, latch protectors?) as required to maintain security and prevent tampering with latching hardware.

5. Exterior hinges to be stainless steel with non-removal hinge pins. Pins and fasteners to be stainless steel.

6. All exterior doors and interior vestibule doors to have two pair of NRP hinges per leaf.

7. Floor mounted doorstops are not allowed. Where wall stops will not work, specify overhead stops.

8. Provide hold-opens at all exterior doors, high-traffic doors (ie. Doors across corridors), and at doors (with closers) of rooms where equipment and supplies may be moved in and out. Verify locations with Owner. Coordinate electrical requirements for electromagnetic hold-opens at doors in rated walls.

9. Closer arms utilizing a "plunger and ball" hold-open device shall have "T-handle" or "Wings" on the thumbturn which make it obvious whether the hold-open is engaged or disengaged to aid in preventing premature wear of the plunger device.

10. All electromagnetic hold-opens shall be 24 volt.

11. Provide removable mullions at exterior double-doors with appropriate weatherstripping. Verify locations with Owner. Coordinate with electronic hardware if any.

12. Closers: Include "Stanley" as an acceptable manufacturer.

13. Exit Devices: Include "Precision" as an acceptable manufacturer.

14. Locksets and Latchsets:

a. Heavy commercial duty to accept specified Small Format Interchangeable Cores.

b. Specify mortise locksets unless otherwise directed by Owner.

c. Acceptable Manufacturers:

1). Best
2). Falcon.
3). Sargent.
4). Schlage.

5). Yale.

15. Interchangeable cores:

a. ANSI A156.5, Grade 1, 7-pin type, A2 System, Small Format Interchangeable Core (SFIC).

b. Acceptable Manufacturers:

1). Best
2). Falcon.
3). No substitutions.

c. Specify Keyway "Q".

d. Control Number:

1). Verify with Owner if existing system is being matched.
2). Supplier to assign a new Control Number if all doors and/or hardware are being replaced.

16. Keying:

a. Keyed to Owner's requirements. All keying and coordination shall be by hardware supplier. Coordinate Owner's keying requirements during course of Work. Upon return of reviewed finish hardware schedule, arrange a meeting between the Owner, hardware supplier, Interchangeable Core Manufacturer's Representative (if req'd.) and other involved parties to establish a keying schedule based on Owner's project requirements.

b. Provide temporary construction cores for all key removable core cylinders.

c. Provide 3 cut keys per door plus an additional 3 blank keys per door to be cut as directed by Owner. (Add as a Hardware Group).

d. Provide an additional ten percent extra cores for Owner's future use (Add as a Hardware Group).

e. Provide bitting list with set-up chart to Owner at Project Closeout.

17. All exit devices shall have dogging capabilities (hex-key or cylinder) unless otherwise directed by Owner.

18. Provide "Knox-Box" at front entrance and front gate for fire department access. (Add as a hardware group). Recess into new wall construction when feasible. Specify 3200 Series with unless otherwise directed by local fire department. Provide door and rear tamper switches. Tamper switches shall be tied into the fire alarm control panel (FACP). Contractor shall run all necessary wiring to FACP. Coordinate requirements with FACP installer.

19. Provide kickplates on the push-side of all doors. Verify any exceptions with Owner.

20. Exterior frames to have continuous field installed rain drip at head. Specify Pemko 346 Series, Reese R201 Series, or equal. Pick a color or finish appropriate for door color. Rain drips may be omitted at recessed doors protected by soffits.

21. Dutch Doors:

a. Dutch doors in rated walls shall have the following hardware arrangement:

1). Security lock as described above with "anti-panic" operation (@ lower to engage the frame).

2). Auxiliary latch (@ upper leaf engaging strike in lower leaf, Sargent SSL1 or Yale YSSL10).
3). Closer and magnetic hold-open.
4). Horizontal astragal on upper leaf to catch and close lower leaf.

b. If the Dutch Door is into a space requiring a security lock, add the following deadbolt. Variance shall be requested from the State Fire Marshal. Obtain sample Variance request from Owner:

1). Deadbolt (@ upper leaf to engage the frame, Schlage L463 or equal).

22. Electric Hardware for Electronic Security Systems:

a. All electric hardware shall be 24V, provided by contractor.

b. At standard single doors and fixed mullion locations, provide electric strikes.

c. At removable mullion conditions, provide electric exit devices with Request to Exit (REX) feature, and electric hinges or electrical power transfers.

d. Electric hardware shall be fail-secure. Specify Hess (preferred) or Von-Duprin products (no substitutions).

23. Vault Door Day Gates:

a. Coordinate locks and cylinders for vault door day gates. Cylinders to receive specified interchangeable cores.

b. Hardware schedule shall require Contractor to provide any extensions or accessories required for proper installation and operation of the vault door day gate locking hardware.

I. GLAZING

1. Wire glass shall not be used.

2. Surface applied films shall not be used.

3. Use annealed (float) glass in inboard, laminated panes unless performance requirements require heat-strengthened glass. The use of heat-strengthened glass in laminated panes increases the likelihood of objectionable distortion. If heat-strengthened glass must be used, require a full-size mock-up for Owner review and acceptance.

3.9 DIVISION 09

A. GYPSUM BOARD

1. Specify GA-214, Level 4 finish with light orange peel texture for walls to receive paint.

2. Include the following verbatim under execution:

a. *All data cabling (including concealed or above ceilings) shall be protected from drywall mud or paint overspray or installed after drywall finishing and painting is completed. Paint or drywall mud on data cabling voids the cable manufacturer's warranty. Any data cabling with paint or drywall mud on them shall be replaced by the contractor at no additional cost to the Owner.*

B. TILE

1. Provide change of color in floor tile at changes in elevations (i.e. recessed shower floors, etc.)

C. ACOUSTICAL TILE CEILINGS

1. All tile to be 24” x 24” with reveal (tegular) edge.
    a. Acoustical tile and grid, if proposed for Kitchens, Latrines, etc., shall be appropriate for high humidity areas with no edge reveal.
2. Suspension of grid from roof decking is prohibited.
3. Tile to be installed after all other work has been completed above the grid system and inspected by A/E or their representative. Border tile requiring cutting may be installed as long as it permits observation of all work above the ceiling.
4. Specify hold-down clips at all ceiling tile within 20 feet of exterior doors.

D. CARPET

1. Carpet tile are preferred over broadloom.
2. Recommended <u>minimum</u> weight and densities are:
    a. Carpet Tiles: Min. 20 oz. and 6,000 density.
    b. Broadloom Carpet: 26 oz. and 6,000 density.

E. RESILIENT FLOORING

1. VCT: Factory sealer shall be stripped and resealed with one coat of manufacturer recommended sealer. Install 5 coats of manufacturer recommended commercial quality floor polish. Buff floor to glossy finish.
2. VET, SVT, or LVT preferred over VCT as feasible. Specify any required or recommended initial finishing is to be performed by contractor prior to putting floor into service.
3. Rubber Tile: Specify tile with glossy, hammered surface for ease of cleaning- “Triumph” by Johnsonite or equal.

F. PAINTS & COATINGS

1. Paint finishes shall be semi-gloss. Flat finish may be used on ceilings only. Verify any other exceptions with Owner.
2. Painting equipment is to be cleaned in Contractor furnished receptacles with waste being properly disposed. The waste is not to be poured down the sanitary sewer, storm sewer or poured out on the ground. Any costs incurred by Owner for cleanup will be charged to the Contractor.
3. High performance paint:
    a. Specify minimum 71% solids by weight.
    b. Specify for the following items:
        1). Exterior lintels and exposed structural items.
        2). Bollards (unless concealed by plastic bollard covers).
        3). Steel door frames or jamb protection at exterior overhead doors.
        4). Exterior handrails and railings.
        5). All architectural or miscellaneous exterior steel.
        6). Exterior steel doors and frames.
        7). Exterior overhead doors.
4. Under “Preparation for Painting”, add the following text verbatim:
    a. *All existing misc. anchoring components (nails, screws, expansion anchors, hangers, etc., shall be removed by Contractor from existing exposed surfaces. All existing or*

new holes, voids, cracks or otherwise damaged wall surfaces shall be patched and repaired to match existing surfaces prior to application of new finishes.

5. CMU intended to receive paint finish shall have two coats of block filler. Specify each coat to be sprayed and back-rolled.
6. Include the following verbatim under execution:
   a. *All data cabling (including concealed or above ceilings) shall be protected from drywall mud or paint overspray or installed after drywall finishing and painting is completed. Paint or drywall mud on data cabling voids the cable manufacturer's warranty. Any data cabling with paint or drywall mud on them shall be replaced by the contractor at no additional cost to the Owner.*
7. Include the following verbatim under Mock-Ups:
   a. *Contractor shall provide mock-up on site of each specified interior wall/door/trim color for Owner acceptance.*

3.10 DIVISION 10

A. SIGNAGE

1. Provide a schedule at the end of the specification section for all signs on the project indicating:
   a. Sign Type.
   b. Text copy.
   c. Quantity.
   d. Gov't Furnished / Contractor Installed, or Contractor Furnished / Contractor Installed.
   e. Notes on where and how to install.
   f. Use the "Type" designations indicated below where applicable
2. **Type A: Door Number Signs:**
   a. Provide at all pedestrian doors, vault doors, and full height and counter coiling doors. (Not required at overhead sectional doors or wire mesh partition gates).
   b. Laminated acrylic plastic, 1 ½" high x 6" wide.
   c. Engraved 1" high text centered.
   d. Face color selected by Architect over white backing.
   e. Text Copy: Match door numbers on door schedule.
   f. Mounting: double-face VHB tape.
   g. Mount on door head frame on exterior side of interior doors and interior side of exterior doors.
3. **Type B: Permanent room signs:**
   a. Provide at all Stairways, Elevators, Toilets, Hazardous Areas, or other areas required by code.
   b. Acrylic plastic, 9 1/2" high x 6 1/2" wide.
   c. Provide raised white International ADA approved symbols centered.
   d. Room Number:
      1). 1" high raised text with Braille beneath at upper left of sign.
      2). White text on panel color selected by Architect.
      3). Text Copy: Match room numbers on floor plan.
   e. Room Name:
      1). 1" high raised text with Braille beneath centered at bottom of sign.
      2). White text on panel color selected by Architect.

3). Text Copy: Match room names on floor plan.

f. Mounting: double-face VHB tape.

4. Type C: Interchangeable room signs:

a. Provide at all other rooms.

b. Acrylic plastic, 8 1/2" high x 8 1/2" wide overall, Provide 2 1/4" high clear "window" across bottom of sign to receive interchangeable paper inserts for room name.

c. Room Number:

1). 1" high raised text with Braille beneath at upper left of sign.
2). White text on panel color selected by Architect.
3). Text Copy: Match room numbers on floor plan.

d. Room Name:

1). 1 or 2 rows of ¾" high text.
2). Print black text on white cardstock inserts.
3). Provide a Microsoft Word template for use in creating future inserts.
4). Text Copy: As scheduled.

e. Mounting: double-face VHB tape.

5. Type D: Miscellaneous Signs:

a. Type D-1: Kitchen Scullery Pot & Pan Sink:

1). Provide above appropriate sink compartment.
2). Laminated acrylic plastic, 8" high x 10" wide.
3). Engraved 1" high text for "WARNING" and ¾" high text for remainder.
4). Red face over white backing.
5). Text Copy:

a). Top Line: "WARNING"

b). Remaining Lines: "THIS SINK BOWL CONTAINS 180 DEGREE F HOT WATER. USE EXTREME CARE".

6). Mounting: Stainless steel flat-head screws.

b. Type D-2: Kitchen Fire Extinguisher:

1). Provide above Kitchen fire extinguisher.
2). Laminated acrylic plastic, 5" high x 10" wide.
3). Engraved 1" high text for "WARNING" and ¾" high text for remainder.
4). Red face over white backing.
5). Text Copy:

a). Top Line: "WARNING"

b). Remaining Lines: "THIS EXTINGUISHER TO BE USED ONLY ON COOKING APPLIANCE FIRES".

6). Mounting: Stainless steel flat-head screws.

c. Type D-3: Drill Hall Occupant Load:

1). Provide in conspicuous location in Drill Hall.
2). Laminated acrylic plastic, 12" high x 12" wide.
3). Engraved 1 1/2" high text.
4). Red face over white backing.

a). Text Copy: “MAXIMUM OCCUPANT LOAD: 0000”.

5). Mounting: Stainless steel flat-head screws.

d. Specify other signs as required for project (i.e. Fan Control Warning, etc).

6. Type E: Security Signs:

a. Type E-1A: “WARNING – OFF LIMITS TO UNAUTHORIZED PERSONNEL” (with Code of Iowa reference):

1). Owner Provided / Contractor Installed.
2). 24” W x 18” H Aluminum.
3). Install on chain link fencing every 100 feet and adjacent to all entrances to the site. Tie to fence fabric at four corners of sign with fence wire ties – twisted on protected side of fence.
4). Location:
a). Armory Perimeter Fences.

b. Type E-1B: “WARNING – OFF LIMITS TO UNAUTHORIZED PERSONNEL” (with Code of Iowa reference):

1). Owner Provided / Contractor Installed.
2). 18” W x 12” H Aluminum.
3). Bolt to traffic control devices (chain gates, drop arms, etc).

c. Type E-2A: “FIREARMS & AMMUNITION PROHIBITED”:

1). Owner Provided / Contractor Installed.
2). Sites with perimeter fence:
a). 24” W x 18” H Aluminum.
b). Install on chain link fencing adjacent to main entrance to the site. Tie to fence fabric at four corners of sign with fence wire ties – twisted on protected side of fence.

d. Type E-2B: “FIREARMS & AMMUNITION PROHIBITED”:

1). Owner Provided / Contractor Installed.
2). Sites without perimeter fence:
a). 18” W x 12” H Aluminum.
b). Mount adjacent to main door of facility with double-face VHB tape or stainless steel flat-head screws.

e. Type E-3A: “WARNING – RESTRICTED AREA”:

1). Owner Provided / Contractor Installed.
2). 24” W x 18” H Aluminum.
3). Install on chain link fencing every 100 feet and adjacent to all entrances to the site. Tie to fence fabric at four corners of sign with fence wire ties – twisted on protected side of fence.
4). Location:
a). AASF Perimeter Fences.

f. Type E-3B: “WARNING – RESTRICTED AREA”:

1). Owner Provided / Contractor Installed.
2). 18” W x 12” H Aluminum.
3). Install on door with double-face VHB tape.
4). Locations:
a). Arms Vaults.

b). Ammo Supply Rooms
c). SCIFs / SIPRNET Rooms

g. Type E-4: "WARNING – OFF LIMITS TO UNAUTHORIZED PERSONNEL":

1). Owner Provided / Contractor Installed.
2). 18" W x 12" H Aluminum.
3). Install on doors of rooms identified by Owner as restricted areas with double-face VHB tape.
4). Locations:
a). Locker Rooms.
b). Supply Rooms.
c). Tool Rooms.

h. Type E-5: "PROTECTED BY ALARM SYSTEM":

1). Owner Provided / Contractor Installed.
2). 10" W x 7" H Aluminum.
3). Install on vault door with double-face VHB tape.
4). Locations:
a). Vaults.
b). SCIFs / SIPRNET Rooms.

i. All Security Signs on fencing and doors to be installed at 5'-6" from ground level to center of sign.

7. Type F: Misc. Exterior Signs:

a. Type F-1: Exterior Facility Sign:

1). Projects off Camp Dodge typically require a facility sign. Verify with Owner if sign is required for project.

2). Specifications shall reference the drawings for standard sign detail. Refer to **Tab R** for standard detail to include on drawings.

3). Include "Iowa Prison Industries" in the list of approved manufacturers.

b. Type F-2 "F-24 FUEL":

1). Owner Provided / Contractor Installed.
2). 16" W x 16" H Aluminum.
3). Install on fencepost or chain link fencing where directed by Owner.

c. Specify other misc. exterior signs as required for project (e.g. Edge of Dock Warning, traffic regulation, pedestrian crossing, etc).

B. MARKER BOARDS

1. All marker boards to be porcelain enamel steel.

C. TOILET COMPARTMENTS

1. Toilet compartments to be floor mounted and overhead braced including the urinal screens.

2. Toilet Compartments and screens to be solid plastic, high density polyethylene (HPDE) sheets. Provide stainless-steel heat-sink strips applied to bottom edge of panel.

D. FIRE EXTINGUISHERS & CABINETS

1. Fire Extinguisher Cabinets shall be Contractor Furnished/Contractor Installed (CF/CI). Provide cabinets that will accommodate 10# extinguishers.

2. Fire extinguisher cabinets should have full vision panels (not breakable glass) and require only a latch (No lock).

3. Fire Extinguishers shall be Government Furnished/Contractor Installed (GF/CI) on federally-funded projects requiring National Guard Bureau review.

4. Fire Extinguishers shall be Contractor Furnished/Contractor Installed (CF/CI) on all other projects. Specify Amerex Model B456 (no substitutions).

E. WIRE MESH PARTITIONS

1. When separation of areas is required for secured storage, Wire Mesh Partitions shall be used. Refer to **Tab Q** for a standard specification (Section 10 22 13 – Wire Mesh Partitions). The specification shall be edited to be project specific.

F. TOILET ACCESSORIES

1. Toilet tissue holder to be double roll, theft-resistant spindles, and without controlled delivery.

2. Surface-Mounted Soap Dish at showers: One piece construction of stainless steel for front surface mounting on wall; furnish with mounting clamp or lugs appropriate for wall construction indicated. Product: Gamco MSA-5 or ASI 145.

3. Shower Curtains and Rods:

   a. Shower Curtain Rods shall be Contractor Furnished/Contractor Installed (CF/CI).

   b. Shower Curtains shall be provided by Government Furnished/Contractor Installed (GF/CI) on federally funded projects which require National Guard Bureau review.

   c. Shower curtains to be Contractor Furnished/Contractor Installed (CF/CI) on all other projects.

4. Paper Towel Dispensers: Shall accept c-fold or multi-fold towels. Dispensers to be stainless steel (recessed or semi-recessed where feasible).

5. Provide sufficient area near restroom exits for a stand-alone garbage can.

6. Soap Dispensers:

   a. Specify “Spartan Lite'n Foamy Hand Soap Dispenser, White, Product No. 9756” (www.spartanchemical.com).

7. Shower and Locker Room Benches: Avoid wall-mounted benches. Provide one of the following floor-mounted benches (or equals) at shower drying and dressing areas (Refer to **Tab R** for cut sheets). Anchor to concrete with stainless steel sidewalk bolts or button cap socket screws in expansion anchors:

   a. 9 ½” x 1 ¼” Hardwood Locker Room Bench Top Model #HWLRBT with 304 stainless steel bench pedestals, Model #RSCSSP304 by Robinson Steel Co. (http://www.rsclockers.com/).

   b. Premier Polysteel (http://www.premierpolysteel.com/) Champion Bench (10” width) with surface mount legs, or equals.

8. Electric Hand Dryers: Where feasible, include high-speed electric hand dryers in Latrines in addition to paper towel dispensers.

   a. Preferred Make and Model: Excel “Xlerator XL” Series.
   b. Minimum specifications for substitutions shall be:
      1). Minimum air flow: 17,500 lfm.
      2). Sound level: 80 db. max.

3). Exit Air Temperature: 113 deg. F min.
4). Automatic shut-off after 60 seconds of continuous use.

G. METAL STORAGE SHELVING

1. When required for the project, provide metal storage shelving and pallet racks. Refer to **Tab Q** for a standard specification (Section 10 56 13 – Metal Storage Shelving). The specification shall be edited to be project specific.

H. METAL LATRINE LOCKERS

1. Metal lockers specified for Latrines shall be vented.

I. FLAGPOLE

1. Flagpoles shall be lit with three above ground-mounted fixtures controlled by photocell or timeclock (or DDC if available). Do not use recessed (in-ground) fixtures. Elevate light fixtures on concrete bases 8" minimum above grade. Provide "eggcrate" style baffles where lights may be in pedestrian's line of sight.

2. Refer to **Tab Q** for standard specification (Section 10 75 16 – Flagpoles) to be incorporated into the Specifications. The specification shall be edited to be project specific as appropriate.

3.11 DIVISION 11

A. KITCHEN NOTES

1. Specify chrome plated angle slip flanges for all pipe penetrations through top of back splash on stainless sinks, tables and counters.

2. All exposed piping to be chrome plated (piping beneath countertops may be excluded).

3. Refer to **Tab S** for Kitchen equipment item descriptions to be incorporated into the specifications.

3.12 DIVISION 20

A. GENERAL FACILITY SERVICES COMMON REQUIREMENTS

1. The following requirements shall be included in the "General Facility Services Common Requirements" Section. If no such Section is provided, these requirements shall be incorporated into each Mechanical, Electrical, Plumbing, and Telecommunication specifications.

a. Close-Out Submittals: Contractor shall submit completed Energy Rebate Forms as required by the Supplementary Conditions.

b. At penetrations through exterior walls, form or core drill for sleeves. Sleeves in new concrete to have integral water stop. Provide "Link-Seal" and exterior sealant to neatly seal opening or propose alternative for review and approval by Owner. Sealant color shall be as per Architect.

c. No loads shall be permitted to be hung from metal roof decking. All hangers shall be hung directly from the top member of structural steel or supplementary members acceptable to the Structural Engineer and only with prior approval.

d. Tracer System: See Tracer System Requirements under Division 33, Article A.1.

e. All major mechanical, electrical, and plumbing equipment (rooftop units, VAV units, pumps, transformers, etc.) shall be labeled by the Contractor with identification marks to match the schedules on the drawings (i.e. "RTU-1" for Rooftop Unit 1). Labels shall be acrylic with black lettering on white background. Minimum letter height shall

be 1 ½". Install onto exterior equipment with stainless steel screws where feasible. All others install with VHB adhesive tape.

3.13 DIVISION 21

A. FIRE SUPPRESSION

1. Provide Double-Interlock, Preaction system at all Vaults and Telecom Closets.
2. In addition to the one year warranty, Contractor shall include in their bid one year of testing, inspection, and maintenance for all fire suppression systems (including Kitchen Hood Systems) in accordance with NFPA and the authority having jurisdiction.

3.14 DIVISION 22

A. MISCELLANEOUS

1. Rooftop Pipe Supports:
   a. All rooftop pipe supports shall be "Dura-Blok DB Series" by Cooper B-Line, "Caddy Pyramid 50" series by Erico, or "Strut Model Pipe Guard" by OMG. Provide roof membrane slip sheet under all supports.
   b. Use galvanized iron for all pipe hangers and copper plated hangers for copper pipes.
2. Air Hoses: Specify "300 psi" air hoses, not "300 psi or higher".
3. Plumbing Piping:
   a. At piping other than gravity drains, the Engineer shall provide means of isolating convenient portions of the piping system, so that small portions may be shut down leaving the remainder in operation and so that drainage of the entire system is not required to enable repair of a portion of it.
   b. Valves to accomplish the above isolation shall be clearly indicated on the plumbing drawings.

B. WATER DISTRIBUTION:

1. For all projects involving new, expanded, or modified water distribution service, add the following under Part 3 Execution; Field Quality Control:
   a. *Conduct Flushing and Disinfection and Pressure Leak Test in the presence of the Owner prior to Substantial Completion. Submit completed "Water Distribution/Service Form A and B" (Reference Section 01 78 00 – Project Closeout for "Project Closeout Submittal Checklist")*

C. PLUMBING FIXTURES

1. Electric Water Coolers:
   a. Provide water filter option.
   b. Provide bottle filler option.
2. Roof drain covers to be ductile iron (not plastic).
3. Specify 4" wrist blade handles on all faucets.
4. Stop valves for plumbing fixtures to have fixed key handle control.
5. Faucets and Flush Valves:
   a. Faucets and flush valves shall be manual.
   b. Flush valves to be Sloan or Zurn- no substitutions.

c. Specify dual-flush toilets and low-flow urinals (1/8 gpf).

6. Shower Fixtures:

a. Surface mounted fixtures preferred:

1). Bradley WS-1X (non-ADA).
2). Bradley WS-1X-HN (ADA).

b. Specify mounting height from shower head to floor shall be 6'-0" for non-ADA fixtures.

c. Specify to provide stainless steel vertical (and horizontal) shrouds to conceal all exposed piping as required.

D. EMERGENCY PLUMBING FIXTURES:

1. Emergency Showers and Eye/Face Washes shall comply with ANSI Z358.1 (current version).

2. Add the following under Part 3 Execution; Field Quality Control:

a. *All emergency plumbing fixtures shall be tested in Owner's presence prior to Substantial Completion. Submit completed "Emergency Fixture Testing Checklist A and B" (Reference Section 01 78 00 – Project Closeout for "Project Closeout Submittal Checklist")*

E. BACKFLOW PREVENTERS:

1. Add the following under Part 3 Execution; Field Quality Control:

a. *All backflow preventers shall be tested in Owner's presence prior to Substantial Completion. Submit completed "Backflow Device Test Report" (Reference Section 01 78 00 – Project Closeout for "Project Closeout Submittal Checklist")*

F. WATER HEATERS, BOILERS & PRESSURE VESSELS

1. Comply with ASME CSD-1.

2. Comply with Iowa Statue & Administrative Rules for Boilers & Unfired Pressure Vessels.

3. Install emergency shutdown switch on interior, latch side of mechanical room doors. (Contractor to receive approval from Boiler Inspector- In the past, they have allowed us to put them on the inside of the room to prevent vandalism.) If the switch is placed outside the room, a clear plastic cover should be provided (without a lock).

4. No galvanic pipe or fittings may be used on any object. (This includes connection to domestic water heater and water lines.)

5. Contractor shall provide a minimum ten day's written notice of intention to install the equipment to the Boiler Inspector. Include website link in specifications: https://www.iowadivisionoflabor.gov/sites/authoring.iowadivisionoflabor.gov/files/boil.adv_.ins_.notice_3.pdf

6. All fees associated with installation and inspection to be paid by the Contractor.

G. EXPANSION TANKS

1. Provide expansion tanks for both instantaneous and tank-type water heaters.

2. All expansion tanks shall meet ASME Code (Sec VIII).

H. POWER WASHERS

1. Specify a draft inducer and motorized damper for all power washers. Coordinate with electrical for damper requirements.
2. Include requirements in the specifications that power washers shall be set-up and tested by the power washer manufacturer's representative. Testing shall include Owner training.

3.15 DIVISION 23

A. CONTROLS

1. Consider programmable thermostats for smaller facilities (verify with Owner). Specify "Allure Communicating Thermostat, RT Series by Distech Controls". Otherwise provide Direct Digital Control systems.
2. Direct Digital Control Systems shall be compatible with **"Tridium's Niagara AX"** platform
3. Refer to **Tab Q** for Owner's standard HVAC Instrumentation and Controls Specification. Incorporate specification into project documents. If any edits are recommended by the Consultant, confirm with Owner prior to making changes. Verify "points list" with Owner.
4. Critical Alarms:
   a. HVAC systems with Direct Digital Controls shall have critical alarm status lights installed. Provide red and green indicator pilot lights in the corridor ceiling outside of the mechanical room tied to the DDC controls. Green indicator shall light for normal status. Red indicator shall light for critical alarms. List of alarms shall be reviewed with the Owner to determine which alarms will be deemed critical.
   b. The above critical alarms shall also be sent out via email message to Owner established distribution list. Contractor shall provide all equipment and software necessary to tie into Owner's network. Coordinate requirements with Owner's Telecommunication Specialist.

B. GEOTHERMAL GROUND LOOP

1. All projects involving horizontal or vertical drilling for ground loops shall include the following submittal requirements verbatim:
   a. *Project Record Documents:*
      1). *Drilling Contractor shall submit a report which includes the following information:*
         a). *Starting and ending dates for drilling activities.*
         b). *Boring Logs.*
         c). *Drawing indicating accurate as-built locations of all borings and pipe trenches.*
         d). *Copies of permits from the City, the County Health Department and the DNR.*
         e). *Test results for grout conductivity tests.*
         f). *Documentation of circuit cleaning and purging.*
         g). *Circuit pressure test logs.*
         h). *Percent of solution and quantity of system antifreeze installed.*
         i). *Material and installation warranty certificates.*

C. CONDENSER COILS

1. Provide hoods or hail guards for protection against hail damage to condenser coils.

D. EXHAUST HOODS

1. In addition to the one year warranty, Contractor shall include one year of maintenance (Two inspections- semi-annually) for kitchen hood fire suppression systems in their bid.

E. MISCELLANEOUS

1. Specify Honeywell CO2 and NO2 detectors.
2. Dedicated HVAC system in telecommunication rooms shall be ductless, split system A/C units. Minimum SEER 13 rating.
3. Drill Hall overhead door positions shall be monitored by the BAS system. If the door is open for longer than 5 minutes (adjustable) HVAC serving the Drill Hall shall be disabled and alarm activated. System shall automatically reset when the door is closed.
4. Buildings shall maintain positive pressure.
5. All filters in place during construction shall be replaced with new filters just prior to substantial completion.
6. Specify direct-drive equipment in lieu of belt-driven (i.e. exhaust fans) whenever feasible.
7. Provide bird screens on all exterior equipment. Ensure the mesh is of a sufficiently small size to effectively prevent birds from entering and nesting in equipment.
8. Work Bay Vehicle Exhaust: If a flexible hose vehicle exhaust system is part of the project, specify the last fifteen-foot section of each hose or any portion of hose that could drag on the floor shall have an external metal helix and be constructed of wear resistant silicone coated Nomex fabric (Model “CNX” by Ventaire or approved equal).

3.16 DIVISION 26

A. ELECTRICAL DEMOLITION:

1. Add the following to Part 3 – Execution or as a note on the Drawings:
   a. *All abandoned or unused electrical pathways, devices, components, etc. shall be removed in their entirety prior to final painting.*

B. CONDUCTORS AND CABLES

1. Provide drop cords above worktables in the center of Kitchens in lieu of floor boxes. Specify “Woodhead” or equal weatherproof box with “SO” cord, strain relief grips, and GFCI receptacles. See **Tab R** for a typical drop cord installation detail.
2. For all projects involving new, expanded, or modified electrical systems, Add the following under Part 3 Execution; Field Quality Control:
   a. *All secondary cables, cables from generators, and feeders from main distribution panels shall be tested to check integrity of cable insulation prior to Substantial Completion. Submit completed “High Potential Test Report” (Reference Section 01 78 00 – Project Closeout for “Project Closeout Submittal Checklist”). “Megger” Test reports are an acceptable substitution.*

C. CONDUIT AND SURFACE RACEWAY

1. Specify concealed conduit in finished areas. Exposed conduit may be used in other areas. For Alteration or Renovation projects, surface raceway (e.g. Wiremold V2100 Series) should be specified when conduit cannot be feasibly concealed.
2. Specify all conduit to be held down from bottom of roof deck a minimum of 6”.
3. Rooftop Conduit Supports:

a. All rooftop conduit supports shall be “Dura-Blok DB Series” by Cooper B-Line, “Caddy Pyramid 50” series by Erico, or “Strut Model Pipe Guard” by OMG. Provide roof membrane slip sheet under all supports.

D. DEVICES

1. Color of all devices to be gray (except emergency to be red).

2. Wall Plates to be Type 302 stainless steel with matte finish.

a. Specify all device wall plates to be labeled with the respective panel and circuit number. Provide black lettering on ½” clear adhesive tape to front of wall plates.

E. TRANSIENT VOLTAGE SURGE SUPPRESSION

1. Provide Surge Protection Devices (SPD's) for the following:

a. Main service panel (i.e. main switchboard).

b. Mid-Building panels (i.e. distribution panelboards).

c. All sub-panels serving electronics or computer equipment.

d. Communications and related systems.

e. Interior and Exterior Lighting Systems (in accordance with UFC 3-530-01, current version).

f. All emergency panels (in accordance with NFPA 70, Section 700).

2. Sizing and Design of SPD's shall be in accordance with UFC 3-520-01, current version.

3. Exceptions include MVSB, cold storage buildings, utility buildings, shelters, and similar buildings with no sensitive or expensive equipment that may be damaged by voltage surges.

F. POWER FOR ICN EQUIPMENT

a. When existing ICN Racks are relocated, relocate or provide adequate power in the new location. Label the j-box with the respective circuit ID’s.

b. Contractor to provide flex connection overhead from wall box(es) to ICN equipment. Coordinate with Owner.

G. EMERGENCY POWER GENERATION

1. For facilities with emergency generator transfer switches, incorporate the following text verbatim in the Specifications under Execution:

a. *The Contractor shall demonstrate complete and operational transference to emergency power generation and back using Owner provided emergency generator.*

b. *Contractor shall provide a laminated document listing the step by step procedures for emergency generator start-up and power transfer. Include Electrical Contractor’s business card or contact information on document. Mount document inside transfer switch door.*

2. Emergency generators shall have the following features

a. “Non-resettable” hour meters.
b. Double-wall fuel tank for 100% containment.
c. Leak detection switch at inner tank.
d. Acoustical cabinet enclosure.
e. Remote annunciator panel.

f. Generators shall be programmed to exercise under load weekly on Wednesdays at 9:00 a.m. unless otherwise directed by Owner.

3. Transfer switches shall be sized to power 100% of the facility unless otherwise directed by Owner. Generator size, whether permanent or portable, will be determined on a case by case basis.

H. MISC

1. Electromagnetic hold-opens shall be 24 volt.

3.17 DIVISION 27

A. TELECOMMUNICATION

1. Refer to IAARNG Telecommunication Cabling Template. See enclosed document under **Tab Z**.

2. Provide new or expand existing paging systems per the Telecommunication Cabling Template.

3. Provide solid-state telephone circuit protectors for all telecommunication lines to outbuildings.

4. When exterior cable is required provide PE-89, Polymer coated aluminum shield/polymer coated steel armor and black polyethylene jacket.

5. Specify Cisco Wall mount Kit Model "CP-7811-WMK=" for all wall phones. Wall Mounts to be Contractor Furnished / Government Installed.

6. Include the following verbatim under execution:

a. *All data cabling (including concealed or above ceilings) shall be protected from drywall mud or paint overspray or installed after drywall finishing and painting is completed. Paint or drywall mud on data cabling voids the cable manufacturer's warranty. Any data cabling with paint or drywall mud on them shall be replaced by the contractor at no additional cost to the Owner.*

3.18 DIVISION 28

A. ELECTRONIC SECURITY SYSTEMS

1. See **Tab Q** for standard specification "Section 28 05 25 - Common Work Results for Electronic Security Systems". Edit as appropriate for project.

B. FIRE ALARM SYSTEMS

1. Camp Dodge Projects Only: Fire Alarm Systems shall be 'Desigo' Series by Siemens Industry, Inc. (no substitutions) to allow for compatibility with and extension of existing networked Desigo system, and reporting to Owner's 'Siemens Desigo CC' monitoring workstation located at Camp Dodge.

2. Fire Safety Management System (DCC)

a. Model 'Siemens Desigo CC'
b. Switch Model X204-2LD

3. Fire Alarm Control Panel (FACP):

a. Model FV-2025 for up to 252 points, with mass notification.
b. Model FV-2050 for up to 504 points, with mass notification.
c. Model FN2012-A1 Network Card

1). Model VN2002-A1 for Multi-Mode Fiber
2). Model VN2003-A1 for Single-mode Fiber.

4. Fire Alarm System shall meet UFC 4-021-01 Mass Notification System requirements.
   a. Upon completion of the installation, the contractor shall complete performance testing of the MNS for compliance with the UFC. Corrective actions shall be taken by the contractor to bring any non-conforming areas into compliance.
5. Include the following verbiage verbatim under Part 3 - Execution:
   a. *Fire alarm panel installer shall coordinate termination of the CAT 5E cables and programming of the fire alarm panel with the Owner's telecommunication representative prior to work being performed.*
6. Include the following verbiage verbatim under Part 3 - Execution:
   a. *Contractor shall provide a qualified electrician to put the fire system into bypass mode for each zone impacted by construction. All other zones shall remain operationally active if occupied during construction. Bring deactivated zones back online at completion of construction.*
7. In addition to the one year warranty, Contractor shall include in their bid one year of testing, inspection, and maintenance for the fire alarm system in accordance with NFPA and the authority having jurisdiction.
8. Specify "Fixed Temperature" heat detectors in Kitchens to prevent false alarms from sudden temperature changes.
9. Fire alarm panels shall be configured to be monitored by the Owner's monitoring contractor. Panel shall include a programmable DACT fully compatible with Owner's central monitoring workstation for point by point reporting. Installer shall demonstrate successful reporting to workstation.
10. Include the following submittal requirements verbatim (these are <u>minimum</u> required submittals- add as necessary):
    a. *Shop Drawings to include:*
       1). *Written narrative providing intent and system description.*
       2). *Riser diagram.*
       3). *Floor plan layout showing location of all devices and control equipment.*
       4). *Sequence of operation in an input/output matrix.*
    b. *Product Data to include:*
       1). *Equipment technical data sheets including manufacturer's published instructions.*
       2). *Battery calculations.*
       3). *Voltage drop calculations for notification appliance circuits.*
    c. *Closeout Documents to include:*
       1). *Operation and maintenance instructions.*
       2). *Record (as-built) drawings.*
       3). *Copy of site-specific software.*
    d. *Testing Reports:*
       1). *Completed Record of Completion*
       2). *Completed Record of Inspection and Testing.*

e. *Warranties*

3.19 DIVISION 31

A. EARTH MOVING

1. Incorporate the following text verbatim in the Specifications under Construction Layout Staking:

a. *The Contractor shall supply all construction layout staking for this project, including for exterior improvements and utilities. Engineer will supply geometric information for purposes of staking upon request. Contractor shall give Engineer 48-hour notice per request for said information.*

3.20 DIVISION 32

A. CONCRETE PAVING

1. Specify expansion joint filler material with "tear-off" strips where joint is intended to be filled with sealant. These strips help ensure a consistent, correct joint depth. Joints must be primed as required by the sealant manufacturer. Acceptable products:

a. Expansion Strips by "Reflectix" http://www.reflectixinc.com/

b. Cellu-Cushion EXP 200 by "Sealed Air" https://sealedair.com/

c. 1000 Series Expansion Board Caps by "BoMetals, Inc." http://bometals.com/

2. Specify all concrete to be consolidated with mechanical vibration equipment.

3. Specify all pavement marking to be yellow (verify state or local requirements for ADA markings).

4. Specify concrete contraction joints to be cut a minimum of 1-1/2" or D/3.

B. SECURITY FENCING

1. Refer to **Tab Q** for a standard specification (Section 32 31 00 – Chain Link Fencing and Gates). The specification shall be edited to be project specific.

C. BOLLARD COVERS

1. OUTSTATE PROJECTS ONLY: Specify plastic bollard covers in lieu of painting bollards- similar to http://www.idealshield.com/products/bollard-covers/. Domed top, smooth finish.

D. PLANTINGS

1. The following tree species shall not be specified:

a. Ash trees susceptible to the emerald ash borer, including everything in the Fraxinus genus - the most familiar are the green and white ashes.

b. American Linden/Basswood (Tilia Americana).

c. Little Leaf Linden (Tilia cordata)

d. Silver Maple (Acer Saccharinum)

2. The following species and their cultivars are good replacements trees of similar size:

a. Frontier Elm "Ulmus Hybrid".
b. Gingko (male only)
c. Hackberry
d. Honey Locust

e. Kentucky Coffeetree
f. Norway, Sugar and Black Maple.
g. Swamp White Oak

3.21 DIVISION 33

A. UTILITIES

1. Tracer System:

a. Tracer wire shall be provided on all site utilities, including but not limited to:

1). Telecommunication/copper.
2). Empty conduits.
3). Storm
4). Sanitary.
5). Gas.
6). Water.
7). Exceptions:

a). Straight storm runs with daylight each end do not require tracer wire).
b). Underground electrical lines do not require tracer wire.

b. Tracer wire: Solid, AWG #12, blue insulated, direct bury, Type TWHN. Install in trench attached directly to, parallel with, and centered above or below the utility.

c. Underground splices: Use Scotchcast splicing kits, 3M Company or approved equal.

d. Engineer shall provide specific details for tracer wire termination at each condition. Avoid receptacle boxes on posts in lawn areas (Install receptacle boxes on face of building or in flush ground boxes).

e. In addition to tracer wire, Contractor shall install underground pipe markers: bright colored continuously printed plastic ribbon tape, 6" wide by 3.5 mils thick, manufactured for direct burial, with aluminum foil core for location by non-ferric metal detectors and bold lettering identifying buried item. Install 8" to 10" below grade directly above buried utilities.

f. Incorporate the following text verbatim in the Specifications:

1). *After all utilities have been installed but prior to substantial completion, Contractor shall demonstrate, in the presence of the Owner, continuity of all tracer wires from end to end at all underground utilities. Tracer wires which fail a continuity test shall be repaired or replaced and re-tested until a successful continuity test is achieved. Provide Owner 48 hour notice of this activity.*