

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>			1. CONTRACT ID CODE	PAGE OF PAGES 1   45
2. AMENDMENT/MODIFICATION NO. 0001	3. EFFECTIVE DATE 21-Mar-2007	4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO.(If applicable)
6. ISSUED BY AFGHANISTAN ENGINEER DISTRICT US ARMY CORPS OF ENGINEERS KABUL APO AE 09356	CODE W917PM	7. ADMINISTERED BY (If other than item 6) <b>See Item 6</b>		
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		X	9A. AMENDMENT OF SOLICITATION NO. W917PM-07-R-0050	
		X	9B. DATED (SEE ITEM 11) 14-Mar-2007	
			10A. MOD. OF CONTRACT/ORDER NO.	
			10B. DATED (SEE ITEM 13)	
CODE	FACILITY CODE			
<b>11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS</b>				
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended. Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning <u>1</u> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.				
12. ACCOUNTING AND APPROPRIATION DATA (If required)				
<b>13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.</b>				
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.				
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).				
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:				
D. OTHER (Specify type of modification and authority)				
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.				
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)  Design and Construction of seven (7) Afghanistan National Police (ANP) Uniformed Police District Headquarters facilities to be located at Bughan, Garm Seir, Nad Ahi, Nahr-i-Saraj, Registan, Sin Boldock and Zhelai. Helmand and Kandahar Provinces of Afghanistan.  The following Sections 01015 - Technical Requirements and Appendix A - Drawings are hereby deleted in their entirety and replaced therefore with the attached Revised Section 01015 Technical Requirements and Drawings.  All other terms and conditions remain unchanged.  Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.				
15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)		
		TEL:	EMAIL:	
15B. CONTRACTOR/OFFEROR  _____ (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA  BY _____ (Signature of Contracting Officer)		16C. DATE SIGNED  21-Mar-2007

## SECTION SF 30 BLOCK 14 CONTINUATION PAGE

**The following items are applicable to this modification:**REVISED SECTION 01015SECTION 01015  
Revised  
TECHNICAL REQUIREMENTS**1. GENERAL**

1.1 The Contractor's site adaptation of the design and construction must comply with technical requirements contained herein. All requirements set forth in Section 01010 (Scope of Work) but not included in the Technical Requirements, shall be considered as set forth in both, and vice versa. The Contractor shall provide design and construction using the best blend of cost, construction efficiency, system durability, ease of maintenance and environmental compatibility.

1.2 These design and product requirements are minimum requirements. The Contractor is encouraged to propose alternate design or products (equipment and material) that are more commonly used in the region; will be equally or more cost effective or allow for more timely completion, but furnish the same system durability, ease of maintenance and environmental compatibility. The Contractor will be required to submit information as requested by the Contracting Officer to make a comparison of the proposed alternate. All variations must be approved by the Contracting Officer.

**1.3 ASBESTOS CONTAINING MATERIALS**

Asbestos containing material (ACM) shall not be used in the design and construction of this project. If no other material is available which will perform the required function or where the use of other material would be cost prohibitive, a waiver for the use of asbestos containing materials must be obtained from the Contracting Officer.

**1.4 SAFETY****1.4.1 Unexploded Ordnance (UXO)**

The Contractor shall perform search and clearing operations for clearance of mines and UXO's and provide the government a letter indicating that the site is clear of unexploded ordnance and is available for construction operations to proceed. The Contractor shall be responsible for clearing the entire site of all mines and unexploded ordnance (UXO). All mine and UXO clearing shall be done in accordance with the International Mine Action Standards (IMAS), or Afghanistan Mine Action Standards (AMAS) whichever is more stringent, and clearance shall be accomplished to the anticipated foundation depth. These standards can be found at <http://www.mineactionstandards.org/imas.htm>. No work will commence in any area that has not been cleared. If during the performance of the work under this contract, the Contractor encounters U.S. UXO, the Contractor is to immediately stop work in this area and notify the Contracting Officer.

NOTE: For previous de-mining information, the following points of contact from the UN Mine Action Center for Afghanistan are provided:

Reiko Kurihara, project manager, email [reiko@unmaca.org](mailto:reiko@unmaca.org)  
Cell phone: +93 070 284 686

Sandy Powell, chief Operations Officer, [sandy@unmaca.org](mailto:sandy@unmaca.org)  
Cell phone: +93 (0) 79 330 992

**1.4.1.1 Unexploded Ordnance (UXO) Safety Support During Construction**

It is the responsibility of the Contractor to be aware of the risk of encountering UXO and to take all actions necessary to assure a safe work area to perform the requirements of this contract. If after the entire site has been cleared of UXO/mines per the International Mine Action Standards (IMAS) and clearance is done to the anticipated foundation depth, the Contractor becomes aware of or encounters UXO or potential UXO during construction, the Contractor shall immediately stop work at the site of the encounter, move to a safe location, notify the COR, and mitigate any delays to scheduled or unscheduled contract work.

#### **1.4.1.2 Explosives Safety**

##### **1.4.1.2.1 General Safety Considerations**

General safety considerations applicable to personnel, both essential and non-essential, at project sites where UXO may be encountered include:

- a. Do not carry fire or spark-producing devices.
- b. Do not conduct explosive or explosive-related operations without approved procedures and proper supervision and UXO safety support.
- c. Do not become careless by reason of familiarity with UXO or the reported probability level of UXO contamination.
- d. Do not conduct explosive or potentially explosive operations during inclement weather.
- e. Avoid contact with UXO except during UXO clearance operations.
- f. Conduct UXO-related operations during daylight hours only.
- g. Employ the "buddy system" at all times.

##### **1.4.1.2.2 Activity Hazard Analysis (AHA) Briefings**

- a. Activity Hazard Analysis's shall be prepared in accordance with the Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1.
- b. Hazard analyses will be prepared and briefed by personnel that are knowledgeable in UXO and explosives safety standards and requirements. These personnel should understand the specific operational requirement and hazard analysis methodologies. A hazard analysis will be performed for each activity to determine the significance of any potential explosive-related hazards. Explosive residues may be discovered or exposed during UXO operations in the form of powder or various granular and powder based pellets. These contaminants can enter the body through the skin or by ingestion if proper personal hygiene practices are not followed. Explosive fillers such as white phosphorus are dangerously reactive in air and acute exposure can result in serious injury to the skin, eyes, and mucous membranes. They are also a fire hazard.

Safety requirements (or alternatives) that will either eliminate the identified hazards, mitigate or control them to reduce the associated risks to an acceptable level will be developed. The adequacy of the operational and support procedures that will be implemented to eliminate, control, or abate identified hazards or risks will then be evaluated and a second risk assessment completed to verify that a satisfactory safety level has been achieved.

##### **1.4.1.3 Notification of Noncompliance**

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor shall make no part of the time lost due to such stop orders the subject of claim for extension of time or for excess costs or damages.

## 1.5 LIMITATION OF WORKING SPACE

The Contractor shall, except where required for service connections or other special reasons, confine his operations strictly within the boundaries of the site. Workmen will not be permitted to trespass on adjoining property. Any operations or use of space outside the boundaries of the site shall be by arrangement with all interested parties. It must be emphasized that the Contractor must take all practical steps to prevent his workmen from entering adjoining property and in the event of trespass occurring the Contractor will be held entirely responsible.

Areas located immediately outside the construction area are known to contain mines and unexploded ordnance (UXO). Contractors assume all risks when venturing in or out of the designated work area.

## 1.6 TEMPORARY STRUCTURES

The Contractor shall erect suitable temporary fences, lighting, and necessary structures to safeguard the site, materials and plant against damage or theft and for the protection of the general public and shall adequately maintain the same throughout the course of the contract.

## 1.7 SUBCONTRACTORS

Compliance with the provisions of this section by subcontractors will be the responsibility of the contractor.

## 1.8 LIST OF CODES AND TECHNICAL CRITERIA

The following codes and technical criteria and those referenced therein shall be required for this project. References within each reference below shall be required and adhered to. This list is not exhaustive and is not necessarily complete.

American Water Works Association, ANSI/AWWA C651-99 standard  
 ASCE 7-02, Minimum Design Loads for Buildings and Other Structures, 2002  
 ASTM - American Society for Testing and Materials  
 AWS - American Welding Society  
 EIA ANSI/TIA/EIA-607: (1994) Commercial Building Grounding/Bonding Requirement Standard.  
 Factory Mutual (FM) Approval Guide-Fire Protection (2002).  
 IBC - International Building Code (and its referenced codes including those inset below)  
   IPC – International Plumbing Code  
 Lighting Handbook, IESNA, latest edition  
 Codes and Standards of the National Fire Protection Association (NFPA)  
 [as applicable and enacted in 2003, unless otherwise noted].  
 NFPA 10, Portable Fire Extinguishers, 2002 edition  
 NFPA 70, National Electrical Code, 2005 edition  
 International Mine Action Standards, latest edition; see <http://www.mineactionstandards.org> for copy of standards.  
 UFC 1-200-01, Design: General Building Requirements, 31 July 2002  
 UFC 3-230-19N Water Supply Systems  
 UFC 3-240-03, Operation and Maintenance: Wastewater Treatment System Augmenting Handbook  
 UFC 3-240-04A Wastewater Collection  
 UFC 3-240-07FA Sanitary and Industrial Wastewater Collection  
 UFC 3-280-01A Guidance for Ground Water/Fuel Extraction and Ground Water Injection Systems  
 UFC 3-230-17FA Drainage in Areas Other than Airfields

Underwriters' Laboratories (UL) Fire Protection Equipment Directory (2002).

The publications to be taken into consideration shall be those of the most recent editions. Standards other than those mentioned above may be accepted if the standards chosen are internationally recognized and meet the minimum

requirements of the specified standards. The Contractor shall be prepared to submit proof of this if requested by the Contracting Officer.

## **2. SITE DEVELOPMENT**

The project includes furnishing all materials, equipment and labor for constructing water, sanitary sewer and storm sewer systems, as applicable. Work also includes, but is not limited to, geotechnical and topographic surveys, site clearing and grading, demolition, installation of roads and sidewalks, perimeter wall and gates, entry control points, and other facilities as described in Section 01010.

### **2.1 GEOTECHNICAL, FOUNDATIONS AND SURVEY**

#### **2.1.1 General**

The foundations shall be constructed using reinforced concrete materials as shown on the drawings and stated in the specifications. A bearing capacity of 0.75 kg/sq. cm was assumed and used in designing the building foundations; see foundation plans and paragraph 5, STRUCTURAL. The contractor is responsible for performing a geotechnical investigation to determine if the assumed bearing capacity and foundations as shown and designed will perform satisfactory. The maximum allowable settlement between footings shall be less than 2.5 cm. If the contractor determines, after completing his geotechnical investigation, that the foundations as designed will not perform satisfactory, the contractor shall redesign the foundations accordingly. The contractor is responsible for the design and construction of the foundations.

#### **2.1.2 Geotechnical Investigation**

The contractor shall perform a site specific geotechnical investigation to verify the foundations, pavements, material, earthwork and any other geotechnical related items shown on the contract drawings and specifications will perform satisfactory. The contractor shall determine all necessary geotechnical conditions by appropriate field and laboratory testing and analyses.

#### **2.1.3 Geotechnical Qualifications**

A geotechnical engineer or geotechnical firm responsible to the contractor shall develop all geotechnical engineering design parameters. The geotechnical engineer or geotechnical firm shall be qualified by: education in geotechnical engineering; professional registration; and a minimum of ten (10) years of experience in geotechnical engineering design.

#### **2.1.4 Design Certification**

The contractor shall certify in writing that the design of the project has been developed consistent with the site-specific geotechnical conditions. The certification shall be stamped by the geotechnical engineer of the geotechnical firm and shall be submitted with the final design.

#### **2.1.5 Survey and Mapping**

2.1.5.1 General Work to be performed - Conduct topographic survey, mapping and documentation of the project site to include surface physical features, buildings, existing utilities, hydrological, geological, botanical or other physical conditions that could impact design. Topographic survey data shall include horizontal and vertical (H&V) controls. The limits of the survey shall be 10 meter outside of the anticipated construction area and 15 meter wide along utility lines to be replaced.

2.1.5.2 For Horizontal and Vertical Control, the surveyor shall use established monuments, if available. If monuments have been destroyed or do not exist, the mapping shall be based on WGS84 geodetic system and converted to UTM coordinates. All site plans and master plans shall be drawn in the following projection and datum for incorporation into the U.S. Army Corps of Engineers GIS system: WGS 1984 UTM Zone 42 N. The horizontal

and vertical control established on site shall be a closed loop with third order accuracy and procedures.

2.1.5.3 All of the existing control points used at the site shall be plotted at the appropriate coordinate point and shall be identified by name or number, and adjusted elevations.

## **2.2 ENVIRONMENTAL PROTECTION**

### **2.2.1 Applicable Regulations**

The Contractor shall comply with all Afghani laws, rules, regulations or standards concerning environmental pollution control and abatement with regard to discharge of liquid waste into natural streams or manmade channels. The Contractor shall review local environmental regulations with the contracting officer prior to design and discharge of any liquid wastes into natural streams or manmade channels.

### **2.2.2 Notification**

The Contracting Officer will notify the Contractor in writing of any observed non-compliance with the foregoing provisions. The Contractor shall immediately take corrective action. If the Contractor fails or refuses to promptly take corrective action, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No extension of time or damages will be awarded to the Contractor unless it was later determined that the Contractor was in compliance.

### **2.2.3 Spillages**

Measures shall be taken to prevent chemicals, fuels, oils, greases, bituminous materials, waste washings, herbicides and insecticides, and construction materials from polluting the construction site and surrounding area.

### **2.2.4 Disposal**

Disposal of any materials, wastes, effluents, trash, garbage, oil, grease, chemicals, etc., shall be taken to a dumpsite off site and subject to the approval of the Contracting Officer. Burning at the project site for the disposal of refuse and debris will not be permitted.

## **2.3 CIVIL SITE DEVELOPMENT**

### **2.3.1 Site Plan**

The contractor shall locate the facilities in general agreement with the drawings included and any requirements in these technical specifications.. All buildings, roads, parking areas, entry control points, guard towers, fence, utility structures, and other site features shall be clearly defined and dimensioned on the site plan. Buildings shall be located to provide access for emergency vehicles and fire fighting. Roads and parking areas shall be designed for turning radius of the largest vehicle entering the compound.

### **2.3.2 Demolition**

Demolition shall include removal of all structures, foundations, pavements, and utilities, and clearing and grubbing. All refuse and debris shall be disposed of off site. Holes and depressions shall be backfilled. Fill materials shall be composed of satisfactory soils or aggregates defined in ASTM D 2487 as GW, GP, GM, SP, SM, SW, CL-ML. Minimum soil compaction shall be 95 percent of maximum density as defined in ASTM D 1557.

### **2.3.3 Grading and Drainage**

The contractor will provide all necessary site grading to insure adequate drainage so that no buildings or pavements will be flooded due to a rainfall of a 10-year frequency. Drainage of the area should be compatible with the existing terrain. Building floor elevations shall be a minimum 150 mm above finish grade. Finished grades shall slope away from the building on all sides at a minimum of 2%.

### **2.3.4 Paving**

#### **2.3.4.1 Roads**

Contractor shall construct roads and parking areas using aggregate surface. Subgrade shall be a minimum of 150mm (6 inches) minimum in depth scarified and compacted to 95% proctor density. Aggregate surfacing shall be a minimum of 150mm (6 inches). All roads shall be of wearing surface 7.3 meters (24 feet) wide, unless otherwise noted, graded for proper drainage, provided with necessary drainage structures and completed with prescribed surfaces in accordance with applicable sections of TM 5-822-2 and TM 5-822-5 standards. If geotechnical report indicates that thicker pavement sections are required then the Contractor shall adjust thicknesses accordingly. Aggregate surfacing material must be well graded, durable aggregate uniformly moistened and mechanically stabilized by compaction. Degree of compaction shall be expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557 or equivalent DIN, BS, or EN standards.

#### **2.3.4.2 Bridges and Site Grading Plan**

The Contractor shall notify the Contracting Officer immediately if initial site survey determines that area hydrology requires major drainage structures or bridges. The contractor shall design a site grading plan that provides positive drainage and minimizes the requirement for major structures in a cost effective manner. Drainage shall be designed for a 10 year storm frequency.

#### **2.3.4.3 Sidewalks**

Sidewalks shall be provided to connect parking areas with buildings and adjoining buildings where foot traffic is anticipated. Sidewalks shall be constructed with aggregate surfacing. Aggregate surfacing shall be 100mm (4 inches). Aggregate surfacing material must be well graded, durable aggregate uniformly moistened and mechanically stabilized by compaction.

### **2.3.5 Masonry/Stone Compound Walls**

#### **2.3.5.1 Exterior Compound Wall**

Construct perimeter walls where indicated on the site plan from masonry or native stone when available, as shown on drawing details. Install outriggers and single-strand concertina wire on top of the wall. The walls shall measure at least 2.4 m high with a thickness of the walls not less than 0.60 m.

#### **2.3.5.2 Gates**

The gates shall be swing type. Hinged gates shall be a pair of 3.65 m wide x 2.4 m high leaves, constructed of a steel tube frame and steel tube intermediate posts and rails. The design of the gates shall insure that it is dimensionally

stable, square, true and planar. Gate leafs shall not rack or deflect when install on its hinges. Gates shall have a sufficient number of hinges; anchor mounted to the exterior masonry walls, to support each gate leaf. Provide a locking mechanism that holds the gates together when in the closed position as well as a drop bolt that engages a steel sleeve embedded in the pavement.

### **2.3.5.3 Reinforced Barbed Tape**

Reinforced barbed tape shall be 600 mm diameter concertina style coil consisting of 31 loops. Each loop shall consist of 19 barb clusters per loop. Adjacent coils loops shall be alternately clipped together at three points about the circumference to produce the concertina effect upon deployment. Spacing between attachments points when deployed shall be 400 mm. The reinforced barbed tape shall be fabricated from 430 series stainless steel with hardness range of Rockwell (30N) 37-45 conforming to the requirements of ASTM A 176. Each barb shall be a minimum of 30.5 mm (1.2 inch) in length, in groups of 4, spaced on 102 mm (4 inch) centers. The stainless steel core wire shall have a 2.5 mm (0.098 inch) diameter with a minimum tensile strength of 895 MPa. Sixteen gauge stainless steel twistable wire ties shall be used for attaching the barbed tape to the barbed wire. The reinforced barbed tape shall be equivalent to NSN: 5660-01-457-9852.

### **2.3.5.4 Outriggers**

Outrigger supporting arms shall be “Y” shaped with post securely embedded into the top of the wall. Posts shall conform to ASTM F 1083, Pipe, Steel, Hot Dipped Zinc Coated (Galvanized) Welded.

### **2.3.5.5 Vehicle Barriers**

#### **2.3.5.5.1 Active Barriers**

Active barriers shall be tire shredder type with manual latch down capability. Shredders shall extend the entire width of the roadway opening where installed.

#### **2.3.5.5.2 Drop Arm Gates**

The height of the beam shall be a minimum of 30 inches above finished grade. The crash beam must be capable of blocking a minimum road width of 4.0 meters. The crash beam shall be manually raised and lowered with less than 30 pounds of force using counter balance. The end of the crash beam should include a locking pin with padlock acceptance for securing the beam when it is in the down position.

#### **2.3.5.5.3 Passive Barriers**

Barriers shall be concrete blocks of one meter by one meter by one meter dimensions. Similar arrangements of Concrete jersey barriers, large stones (one cubic meter size), concrete filled 55-gal drums or equal sized obstacles may be used.

## **2.3.6 Civil Utilities**

### **2.3.6.1 General**

The design of the water and sanitary systems shall be sized to provide flow and discharge based on a fixture unit basis. The design drawings shall show all utility lines, line sizes, valves, manholes, disinfection systems, and applicable details associated with water and sanitary system designs. Specifications covering water lines, valves, pumps, controls, sanitary sewers and storm sewers shall be submitted as part of the design and shall require standard materials that are available in-country. Contractor shall install and connect exterior sanitary sewer collection and water supply piping to service connection points of each facility.

**2.3.6.2 Water Supply** The contractor shall construct water well(s) inside the compound, to provide sufficient supply for the facility. If unavailable within the compound, Contractor shall notify the COR for resolution. Off site

water wells then may become a possibility. Unless noted elsewhere, wells shall be capable of supplying one day demand with 16 hours of pumping time. Well construction shall be in accordance with AWWA A100 Water Wells.

**Well installation** - Well shall be drilled or augured to a minimum depth of 20 meters below the existing water table. Refer to contract documentation (drawings and technical provisions) for installation of well and pump.

**Casing** - In unconsolidated material, casing shall be extended to the top of the well screen. In rock formations (drilled wells) the hole may be left open with casing extended 3 meters into the rock formation. All wells will be cased 0.5 m above grade (i.e., base of pit, ground surface, etc.) and be fitted with a lockable cap with air gap (vacuum relief during pumping). Each section of casing will be joined with standard couplings and full-threaded joints, or by proper welding, so that all joints are sound and watertight. Well casing alignment shall not interfere with the proper installation and operation of the pump. The bottom of the casing will be fitted with a metal or PVC well screen that will permit maximum transmission of water without clogging. The minimum length of screen shall be at least 3 meters. A base plate with reverse ball valve (check valve) will be placed at the base of the screen. A watertight Pump suction pipe will be placed inside the casing, with a submerged piston pump cylinder at the base of the pipe. The piston pump cylinder will be no more than 1.5 m from the base of excavation. The pump suction pipe will have a weep hole in pipe 2.0 meters below grade. Casing size shall be 100mm to 200mm in inside diameter. Casing material shall be Schedule 40 steel, Schedule 40 PVC, or equivalent material.

**Sealing** - The drilling process will create a hole (borehole) larger than the casing. The entire space between the casing and the edge of the borehole will be filled with gravel, overburden, or concrete as follows:

- a. The upper 3 meters of the well bore will be sealed with cement grout. Grout shall be placed in one continuous mass and be impermeable.
- b. The space around the well screen will be filled with crushed stone or gravel (gravel pack). Average gravel particle size will be approximately 1 centimeter in diameter.
- c. The space between the top of the gravel pack and the base of the grout seal may be backfilled with overburden or other clean earth material.

**Disinfection** - Disinfection of the source will be provided in accordance with locally accepted methods and standards. At a minimum the source will be developed until all suspended material associated with drilling have been removed.

**Source protection** - Surface drainage within 30 m of wellhead will ensure no ponding, flooding or collection of runoff adjacent to the well. This can be accomplished through surface grading or use of gravel drains to modify site drainage in the vicinity of the well. Contractor will identify all sources of contamination and ensure the proposed well site meets minimum standoff distances as indicated below:

Sewage storage areas (outhouses, tanks, individual sewage pits) – 30 m  
 Septic fields (infiltration galleries) - 30 m  
 Animal pens and yards – 60 m  
 Fuel storage, engine maintenance/repair – 30 m

**Pumps** - A standard hand pump will be attached to well with approved seal and air gap with concrete pad around it.

**Crushed stone for well sealing** - Shall consist of crushed stone containing angular shapes and surfaces with no rounded surfaces with the following gradation:

Sieve Size	% Total Wt. Passing
12.5 mm	100
4.75 mm	75 +/- 13
1.18 mm	25 +/- 15
75 um	8 +/- 4

All aggregate shall contain less than 5% of shale, clay lumps, coal, lignite, soft or unfragmented stone, or other deleterious materials.

**Cement Grout for well sealing** - Mixture shall consist of one part Portland cement to 4 parts washed sand. Water shall be mixed to produce a flowable consistency in order to fill all cracks and voids around the well casing.

**Concrete** - Mixture shall consist of seven sacks per cubic meter. Each sack is 49 kg of Portland cement. The mix ratio shall be 1:2:4 (Portland cement: sand: crushed angular aggregate (12.5 mm max)).

### **Quality control and testing**

a. Pump Testing: In order to ensure that the source is capable of providing the required demand capacity, the completed well shall be tested for yield and drawdown by pumping at a minimum sustained rate of 20 liters/minute for four hours duration. The well must maintain a minimum head under sustained pumping conditions of  $\frac{1}{4}$  the depth of the well. (for example, for a 40m deep well, head should be maintained at 10m from the bottom of the well).

b. Water quality testing: Water will be provided from the source that is acceptable for the intended use. Sources that do not meet the requirements of the intended use will be deemed unacceptable and another source must be established at no additional cost. Water quality testing (i.e., bacteria, chemical, turbidity, etc.) will be conducted in accordance with locally accepted methods and standards.

c. Well house: At new wells, construct a permanent well house. The floor of the well house shall slope away from the casing approximately 1 cm per 100 cm (1/8" per foot). Floor of well house shall be above floodplain. The well house design should be such that the well pump, motor and drop pipe could be removed readily. The well house shall protect valves and pumping equipment plus provide freeze protection for the pump discharge piping beyond the check valve. The well house shall be insulated. The well house shall have door locks and hatch lock on roof.

The well is to be drilled at a location recommended in writing by the contractor. The water source should be located at the highest elevation possible within the adjacent area. The well house shall have a 2.4 meter high chain link security fence with gate surrounding it. The fence and gate shall be topped with barbed wire and outriggers.

d. The site population is 120 personnel.

### **2.3.6.3 Water Storage**

Tank capacity shall be at least 6,000 gallons (1 day at a use of 50 gal per person per day). The tank shall be adjacent to the well house and Booster Pump Station as indicated on the drawings. The tank shall be concrete as indicated on drawings.

The tank shall be lined with sheet material. Material shall be chlorosulfonated polyethylene 1.14 mm thick with a plus or minus 0.100 mm, thickness tolerance. The liners shall be Hypalon product, or approved equal, NSF 54 and NSF 61 approved for potable water storage. White material is required so that any mechanical damage to the liner can be easily found when the tank is empty. Potable grade chlorosulfonated polyethylene reinforced liner shall be compounded from the first quality material and specifically can be used in hydraulic structures. Only virgin materials shall be used with no regrind or reprocessed materials added. The liner compound shall be specifically designed for liner applications. The liner shall be constructed from two plies of sheeting laminated together over one ply of 10 x 10 - 1000 denier polyester fabric. Liner resin shall comprise greater than 45% by weight of the total sheeting formulation. Fabric shall be fully encapsulated by same material at roll edges. Exposed fabric will not be accepted. The finished lining shall be a sunlight and weather resistance membrane that is flexible, durable, watertight and free from pinholes, blisters and contaminants. The liner shall not impart any impurity to the water so as to render it impotable for human consumption.

Contractor shall design hypochlorite system for disinfection. A hypo-chlorinator shall be used to feed a sodium hypochlorite solution of 5-15% available chlorine into the system. Hypochlorite compound may be a liquid or solid form. The hypo chlorination system shall consist of a chemical solution tank for hypochlorite, diaphragm-type pump, power supply, water pump, pressure switch and storage tank. The pump shall feed a hypochlorite solution in proportion to the water demand. The hypo-chlorinator shall have a pumping rate, liters per day (lpd) adequate to deliver 5 percent available hypochlorite solution adjustable to the quantity of water being produced from the source. Dosage rate will vary somewhat depending on actual pump production rate and available residual chlorine in the system. Contractor shall determine the required dosage rate milligrams per liter (mg/l) to maintain the required chlorine residual (usually 0.2-0.4mg/l) in the distribution system. Chlorine solution tank shall be large enough to hold a three days supply of hypochlorite solution. A fresh solution shall be prepared every two or three days because the solution may lose its strength over time and this will affect the actual chlorine feed rate. The hypochlorite shall be stored in a cool dry place. Sodium hypochlorite can lose from two to four percent of its available chlorine content per month at room temperature. Contractor shall verify required minimum residual chlorine in accordance with local requirements verified and approved by the Contracting Officer. The chlorination system shall have the capability for manually adjusting the dosage rate and be installed in such a manner that the system can be easily disconnected and bypassed in the event of health safety or routine maintenance and repair.

Contractor shall locate the hypochlorite system in the Well House.. The Contractor shall provide manufacturers catalog information and shop drawing to the Contracting Officer for approval.

#### **2.3.6.4 Water Distribution**

The Contractor shall provide a hydro pneumatic system with pumps, hydro pneumatic tank and other appurtenances as necessary to supply the pressure required to all facilities. The equipment shall be protected from the environment, especially freezing temperatures. The distribution system shall be designed to provide a minimum 276 kPa (40 psi) at ground level at all points in the systems. Minimum pressures of 207 kPa (30 psi), under peak domestic flow conditions, can be tolerated in small areas as long as all peak flow requirements can be satisfied. Maximum water pressures in distribution mains and service lines shall not exceed 517 kPa (75 psi) at ground elevation.

The Contractor shall install water distribution mains, branches, laterals, lines and service connections to include all pipe, valves, fittings and appurtenances. Exterior water line construction shall include service to all buildings as described in the Scope of Work. Adequate cover must be provided for frost protection. The required Average Daily Demand (ADD) is 50 gallons per capita per day (gpcd). Provide one outside water tap per building for landscaping purposes.

The Contractor shall provide pipe of adequate strength, durability and be corrosion resistant with no adverse effect on water quality. The exterior surface of the pipe must be corrosion resistant. If the pipe is installed underground pipe shall be encased with polyethylene in accordance with AWWA C105. Water distribution pipe material shall be PVC or Ductile Iron (DI). Ductile iron pipe shall conform to AWWA C104, et al. DI fittings shall be suitable for 690kPa (75psi) pressure unless otherwise specified. Fittings for mechanical joint pipe shall conform to AWWA C110. Fittings for use with push-on joint pipe shall conform to AWWA C110 and C111. Fittings and specials shall be cement mortar lined (standard thickness) in accordance with C104. Polyvinyl Chloride (PVC) pipe shall conform to ASTM D 1785. Plastic pipe coupling and fittings shall be manufactured of material conforming to ASTM D 1784, Class 12454B. PVC screw joint shall be in accordance with ASTM D 1785. PVC pipe couplings and fittings shall be manufactured of material conforming to ASTM D 1784, Class 12454B. Pipe less than 80mm (3 inch), screw joint, shall conform to dimensional requirements of ASTM D schedule 80. Elastomeric gasket-joint, shall conform to dimensional requirements of ASTM D 1785 Schedule 40. All pipe and joints shall be capable of 690kPa (75psi) working pressure.

#### **2.3.6.5. Hydrostatic, Leakage and Disinfection Tests**

The Contracting Officer will be notified not less than 48 hours in advance of any water piping test and will be given full access for monitoring testing procedures and results. Where any section of water line is provided with concrete thrust blocking for fittings or hydrants tests shall not be made until at least 5 days after installation of the concrete

thrust blocking, unless otherwise approved.

#### **2.3.6.5.1 Pressure Test**

After the pipe is laid, the joints completed, and the trench partially backfilled leaving the joints exposed for examination, the newly laid piping or any valve section of piping shall, unless otherwise specified, be subjected for 1 hour to a hydrostatic pressure test of 690kPa (75psi). Each valve shall be opened and closed several times during the test. Exposed pipe, joints, fittings, hydrants and valves shall be carefully examined during the partially opened trench test. Joints showing visible leakage shall be replaced or remade as necessary. Cracked or defective pipe, joints, fittings, hydrants and valves discovered following this pressure test shall be removed and replaced and retested until the test results are satisfactory.

#### **2.3.6.5.2 Leakage Test**

Leakage test shall be conducted after the pressure tests have been satisfactorily completed. The duration of each leakage test shall be at least 2 hours and during the test the water line shall be subjected to not less than 690kPa (75psi). Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valve or approved section, necessary to maintain pressure to within 34.5kPa (5 psi) of the specified leakage test pressure after the pipe has been filled with water and the air expelled. Pipe installation will not be accepted if leakage exceeds the allowable leakage, which is determined by the following formula:

$L = 0.0001351ND (P \text{ raised to } 0.5 \text{ power})$  L = Allowable leakage in gallons per hour N = Number of joints in the length of pipeline tested D = Nominal diameter of the pipe in inches P = Average test pressure during the leakage test, in psi gauge

Should any test of pipe disclose leakage greater than that calculated by the above formula, the defective joints shall be located and repaired until the leakage is within the specified allowance, without additional cost to the government.

#### **2.3.6.5.3 Disinfection Procedure**

Before acceptance of potable water operation, each unit of completed waterline shall be disinfected as prescribed by AWWA C651. After pressure tests have been completed, the unit to be disinfected shall be thoroughly flushed with water until all entrained dirt and mud have been removed before introducing the chlorinating material. Flushing will be performed in a manner and sequence that will prevent recontamination of pipe that has previously been disinfected. The chlorinating material shall be liquid chlorine, calcium hypochlorite, or sodium hypochlorite. The chlorinating material shall provide a dosage of not less than 50 ppm and shall be introduced into the water lines in an approved manner. Polyvinyl Chloride (PVC) pipelines shall be chlorinated using only the above-specified chlorinating material in solution. The agent shall not be introduced into the line in a dry solid state. The treated water shall be retained in the pipe long enough to destroy all non-spore forming bacteria. Except where a shorter period is approved, the retention time shall be at least 24 hours and shall produce not less than 25 ppm of free chlorine residual throughout the line at the end of the retention period. Valves on the lines being disinfected shall be opened and closed several times during the contact period. The line shall then be flushed with clean water until the residual chlorine is reduced to less than 1.0 ppm. During the flushing period, each fire hydrant on the line shall be opened and closed several times.

#### **2.3.6.5.4 Sampling**

For each building connected to the water system, personnel from the Contractor's commercial laboratory shall take at least 3 water samples from different points, approved by the Contracting Officer, in proper sterilized containers and perform a bacterial examination in accordance with approved methods. The commercial laboratory shall be verified to be qualified by the appropriate authority for examination of potable water.

#### **2.3.6.5.5 Acceptance Requirements**

The disinfection shall be repeated until tests indicate the absence of pollution for at least two full days. The unit will not be accepted until satisfactory bacteriological results have been obtained.

#### **2.3.6.5.6 Time for Making Tests**

Except for joint material setting or where concrete thrust blocks necessitate a 5-day delay, pipeline jointed with rubber gaskets, mechanical or push-on joints, or couplings may be subjected to hydrostatic pressure, inspected and tested for leakage at any time after partial completion of backfill.

#### **2.3.6.5.7 Concurrent Tests**

The Contractor may elect to conduct the hydrostatic tests using either or both of the following procedures. Regardless of the sequence of tests employed, the results of pressure tests, leakage tests, and disinfection shall be recorded for submission and approval. Replacement, repair or retesting required shall be accomplished by the Contractor at no additional cost to the Government.

- a. Pressure test and leakage test may be conducted concurrently,
- b. Hydrostatic tests and disinfection may be conducted concurrently, using water treated for disinfection to accomplish the hydrostatic tests. If water is lost when treated for disinfection and air is admitted to the unit being tested, or if any repair procedure results in contamination of the unit, disinfection shall be re-accomplished.

#### **2.3.6.6 Sanitary Sewer**

- a. Construct a sanitary sewer system in accordance with the contract documentation, providing service from all buildings requiring sewage collection.. Leach fields and septic tanks are specified in the contract documentation. Leach fields and septic tanks are to be located inside the perimeter compound (see site plan). If leach field is found to be unsuitable, the Contractor shall notify the COR. Septic tank capacity shall be a minimum of 5000 gallons. Leach field shall be sized to accommodate the average daily flow of 4800 gallons per day.
- b. Exterior sanitary sewer line construction includes service to all buildings requiring sewage collection. Contractor shall construct the sanitary sewer collection system using finished floor elevations. Main collection sewers will follow the most feasible route to the point of discharge. The sewer collection system shall be constructed to accommodate the facility. Construction required shall include appurtenant structures and building sewers to points of connection with Building drains 1.5m outside the building, to which the sewer collection system is to be connected.
- c. The Contractor shall use the following criteria where possible to provide a layout which is practical, economical and meets hydraulic requirements:
  - Follow slopes of natural topography.
  - Avoid routing sewers through areas which require extensive restoration or underground demolition.
  - Avoid areas of high groundwater and placement of sewer below the groundwater table.
  - Locate manholes at change in direction, size or slope of gravity sewers.
  - Use straight sections between manholes, curved alignment shall not be permitted.
  - Avoid placing manholes where the tops will be submerged or subject to surface water inflow.

- Evaluate alternative sewer routes where applicable.
- Verify that final routing selected is the most cost effective alternative that meets service requirements.

d. Protection of water supplies - Unless noted elsewhere, the Contractor shall construct an appropriate size leach field inside the district headquarter compound; ensure that the sewer design meets the following criteria:

- Sanitary sewers will be located no closer than 15m horizontally to water wells or reservoirs to be used for potable water supply.
- Sanitary sewers will be no closer than 3m horizontally to potable water lines; where the bottom of the water pipe will be at least 305mm above the top of the sanitary sewer, horizontal spacing shall be a minimum of 1.8m.
- Sanitary sewers crossing above potable water lines shall be constructed of suitable pressure pipe or fully encased in concrete for a distance of 2.7m on each side of the crossing. Pressure pipe will be as required for force mains in accordance with local standards and shall have no joint closer than 0.9m horizontally to the crossing, unless the joint is encased in concrete.
- Sanitary sewers shall be constructed to allow flow at 90 to 95 percent full. Sanitary sewer velocities shall be designed to provide a minimum velocity of 0.6 meters per second (mps) at the ADD flow rate and a minimum velocity of 0.8 to 1.05 mps at the peak diurnal flow rate. In no case shall the velocity drop below 0.3 mps, to prevent settlement of organic solids suspended in the wastewater. Pipe slopes shall be sufficient to provide the required minimum velocities and depths of cover on the pipe. Unless otherwise indicated. Gravity sewer pipe shall be installed in straight and true runs in between manholes with constant slope and direction. Adequate cover must be provided for frost protection. A minimum cover of 80cm will be required to protect the sewer against freezing.
- The Contractor shall provide standard depth manholes (MH), that best meets the specific depth required, with an inside dimension of 1.2 meters. Manholes shall be made of cast-in-place reinforced concrete with reinforced concrete cover. The manholes, frames and covers shall be traffic rated, H-20 load rating. All manholes shall be provided with a concrete bench with a flow line trough, smoothly formed to guide waste flow to the outlet pipe from the inlet pipe(s). The top surface of the bench shall be above the crown of all pipes within the manhole. All surfaces of the bench shall be sloped smoothly toward the trough to guide flow, even under peak flow conditions.
  - 1) Manholes are required at junctions of gravity sewers and at each change in pipe direction, size or slope, except as noted hereinafter for building connections.
  - 2) Spacing. The distance between manholes must not exceed 120m in sewers of less than 460mm in diameter. For sewers 460mm and larger, a spacing of up to 180m is allowed provided the velocity is sufficient to prevent the settlement of solids.

### **2.3.6.7 Storm Drainage System**

#### **2.3.6.7.1 Hydraulic Design**

New storm drain pipes, if required, shall be designed for gravity flow during the 10-year design storm unless otherwise approved by the Government. The hydraulic grade line shall be calculated for the storm drain system and all energy losses accounted for.

### **2.3.6.7.2 Manholes**

Diameter of manholes shall be large enough to accommodate pipes entering/exiting the manhole. Manhole cast iron frames shall have a minimum opening diameter of 600mm.

### **2.3.6.7.3 Area Inlets**

Area inlets shall be properly sized and designed to accommodate the design flows.

### **2.3.6.7.4 Head walls and Flared End Sections**

Unless otherwise approved, head walls or flared end sections shall be provided at the ends of culverts and at storm drain outfalls. Protection from erosion and scouring at head wall and flared end section outfalls shall be provided as needed.

### **2.3.6.7.5 Culverts**

Culvert pipes shall have a minimum diameter of 450mm wherever possible.

### **2.3.6.7.6 Storm Drain and Culvert Pipe**

The Contractor shall select the appropriate storm drain and culvert pipe materials from local sources. Pipe, bedding, and backfill shall be of adequate strength (or stiffness) to support the earth, live, and construction loads imposed on the pipe. If using an open channel earth ditch such as a trapezoidal or V-ditch, apply slope protection and erosion control measures on the surface of the ditch.

### **2.3.7 Trash Point**

The Contractor shall place, in a location convenient for easy removal, a trash collection point. It shall be located outside the compound walls. The trash point shall be a 1.8 m X 1.8 m concrete pad with a 1.8 meter tall wooden fence about the perimeter. One side shall have a 1.2 m wide gate entrance.

## **3. NOT USED**

## **4. ARCHITECTURAL**

### **4.1 GENERAL**

All material approved shall become standardized material to be used throughout the facilities under contract. Different sub-contractors shall not use different material or standards under the contract. Intent of the project is to use locally procured materials (unless specified otherwise) and labor to the maximum extent possible while satisfying seismic building code. Conflicts between criteria and local standards shall be brought to the attention of the Contracting Officer for resolution. In such instances, the Contractor shall furnish all available information with justification to the Contracting Officer.

### **4.2 DESIGN CRITERIA**

The Codes, Standards, and Regulations listed below shall be used in the construction of this project. The publications shall be the most recent editions. Standards other than those mentioned may be accepted provided they meet the minimum requirements and the contractor shall submit proof of equivalency to the Contracting Officer for approval.

IBC- International Building Code

### **4.3 EXCAVATION**

Trench excavation shall be made for concrete footings. Trenches shall be a minimum of .8 meter deep. Trenches deeper than 1.5 meters shall have protective shoring to protect workers or have the sides of the trench sloped back at a slope of 1.5:1. Care shall be taken when backfilling of foundation trenches to avoid damage to walls. Any excess dirt shall become the property of the Contractor and shall be removed from the site to a location approved by the Contracting Officer.

#### **4.4 CONCRETE**

Place 10cm (4") of capillary water barrier below areas to receive a concrete slab on properly compacted soil free of organic material. A plastic vapor barrier (10 mils thick) shall be placed over the crushed stone prior to placing of concrete slabs. Concrete flooring in wet areas shall slope to the floor drain and not allow for water to puddle. Concrete slabs in all areas shall not be placed prior to inspection and approval of piping and sub-surface by the Contracting Officer. Foundation trenches shall be level and free of loose material. Trenches shall be inspected and approved by the Contracting Officer prior to placing of any concrete foundations. See paragraph 5 for structural characteristics of concrete and reinforcing steel for foundations and slabs.

#### **4.5 MASONRY**

Storage of masonry materials shall be in a dry place or materials shall be covered with a plastic protective layer. Cover open walls each day to keep them protected and dry. Concrete masonry units (CMU) shall be 200mm wide x 400mm x 200mm high as shown on drawings. They shall be installed in running bond level and plumb. Mortar joints shall be 9mm on all sides between CMU. Joints shall be struck with a concave tool to provide a smooth recessed curved surface. Install only quality units. The surface shall be free of chips, cracks, or other imperfections that would detract from the overall appearance of the finished wall. Defective CMU or mortar shall be rejected. CMU shall conform to ASTM C 90. For other requirements, see paragraph 5 "Structural."

#### **4.6 METAL**

##### **4.6.1 Metal Window Sills**

Galvanized metal window sills, 1mm (20 gauge) shall be installed on the exterior of all windows. The metal window sills shall have a turn down of 5cm over the exterior masonry and stucco. Metal sills shall extend from side to side of the masonry opening in a single piece. Extend the metal window sill a minimum of 2 cm under the bottom of the metal window frame. Install masonry mortar as required for a smooth surface under the window sills. Sills shall slope a minimum of 6mm to the exterior and not allow water to puddle. Sealants shall be applied between joints of two (2) different materials.

##### **4.6.2 Steel Cook Top**

Provide steel cook top in kitchens minimum thickness of 1cm. Provide circular cut outs. Consult with the Contracting Officer for the diameter of circular cutouts. Provide steel infill plates for all cut out openings. Cook top can be made of several pieces for ease of handling. Adjacent plates shall be tight fitting to each other. The Contractor shall submit detailed shop drawings for review and approval prior to fabrication and installation.

##### **4.6.3 Pass-Through Counter Top**

Provide 1.6mm (16 gauge) stainless steel, or 4cm marble, pass through counter tops at openings between the kitchen and dining area. Edges shall be turned down 3 cm and corners shall be welded and ground smooth. Provide anchor angles welded to the bottom of the counters to anchor tops to masonry walls below. Provide eight (8) anchors on the Serving Counter, four (4) on each side of the wall. Anchor angles to wall with masonry expansion sleeves and stainless steel screws. Counter tops are to be 60cm wide x length of opening shown.

##### **4.6.4 Mirror Frames**

Frames for plate glass mirrors larger than 450 by 750 mm shall be fabricated from extruded aluminum with anodized finish. Frames shall be provided with concealed fittings and tamperproof mountings.

#### **4.6.5 Trench Covers and Frames**

Trench covers shall be designed to meet the indicated load requirements. Trench frames and anchors shall be all welded steel construction designed to match cover. Covers shall have flush drop handles formed of 6 mm round stock, and shall be steel floor plate. Grating opening widths shall not exceed 25 mm.

### **4.7 CARPENTRY**

#### **4.7.1 Metal Roof Wood Framing**

Submit calculations and drawings for wood framing for metal sloping roof. See drawing details for roofing configuration. Typical roof slope shall be 1 in 10.

#### **4.7.2 Wood Purlins**

If Contractor chooses to utilize wood purlins, provide and install roof purlins of natural wood, locally available material 1 meter on center securely wedged between steel H structural joists. Tightly fit 30 mm boards over roof structure and nail into wood purlins. New roofing shall extend a minimum of 300 mm past the exterior surface of the wall.

#### **4.7.3 Data Required**

Submit calculations and drawings for all proposed structural members.

#### **4.7.4 Natural Decay- and Insect-Resistant Wood**

Natural decay-resistant and insect-resistant wood can be an alternative to treated wood.

#### **4.7.5 Structural Lumber**

Except where a specific grade is indicated or specified, any of the species and grades shall have allowable unit stresses in kPa per code requirements. Use for joists, rafters, headers, trusses, beams, columns, posts, stair stringers, girders, and all other members shall be stress rated. Design of members and fastenings shall conform to AITC OT-01.

#### **4.7.6 Framing Lumber and Board Lumber**

Framing lumber such as studs, plates, caps, collar beams, cant strips, bucks, sleepers, nailing strips, and nailers, and board lumber such as subflooring and wall and roof sheathing shall be the species and grades per WWPA G-5.

#### **4.7.7 Hardware**

Unless otherwise indicated or specified, rough hardware shall be of the type and size necessary for the project requirements. Sizes, types, and spacing of fastenings of manufactured building materials shall be as recommended by the product manufacturer unless otherwise indicated or specified. Hardware exposed to the weather or embedded in or in contact with preservative treated wood, exterior masonry, or concrete walls or slabs shall be zinc-coated.

##### **4.7.7.1 Bolts, Nuts, Studs, and Rivets**

ANSI B18.2.1, ANSI B18.5.2.1M, ASME B18.5.2.2M, ASME B18.2.2, and ASTM A 687.

#### **4.7.7.2 Anchor Bolts**

ASTM A 307, size as indicated, complete with nuts and washers.

#### **4.7.7.3 Lag Screws and Lag Bolts**

ANSI B18.2.1.

#### **4.7.7.4 Nails**

Nails shall be the size and type best suited for the purpose and shall conform to ASTM F 547. Nails shall be hot-dip galvanized or aluminum when used on exterior work.

#### **4.7.8 Trim, Finish, and Frames**

Provide species and grades listed for materials to be paint finished. Provide materials that are to be stain, natural, or transparent finished one grade higher than that listed. Provide species indicated for materials to be transparent finished.

#### **4.7.9 Steel Ladder**

Shop drawings shall be submitted for the ladder to the guard towers as shown. The Contractor shall design all steel framing.

### **4.8 ROOFING AND WEATHERPROOFING**

#### **4.8.1 Sloped Roofs**

On sloping roofs provide and install .70mm (24 gauge) galvanized steel in either corrugated or standing seam design. Metal roofing shall be anchored to wood deck sub-surface using exposed fasteners at 30cm on center at all seams and at 60cm on center in the panel field. Fasteners shall be placed at the top of the corrugation taking care not to dent panel. Roof sealant or adhesive shall be placed over each anchor head. Roofing system shall include all edge, ridge and penetration flashings necessary for a watertight installation. Roofing shall be galvanized mil finish. Panels shall be overlapped two corrugations side to side and be continuous sheets from ridge to eave. Provide continuous ridge vents on all gable roofs.

#### **4.8.2 Not Used**

#### **4.8.3 Sheet Metal**

##### **4.8.3.1 Materials**

Any metal listed by ASTM, DIN, BS or EN standards. Manual for a particular item may be used, unless otherwise specified or indicated. Materials shall conform to the requirements specified below and to the thicknesses and configurations established in ASTM, DIN, BS or EN standards. Standards other than those mentioned may be accepted provided they meet the minimum requirements, and the Contractor shall submit written proof of equivalency for approval. Written proof shall constitute a copy of the alternative standard and an analysis of equivalency.

##### **4.8.3.2 Steel Sheet, Zinc-Coated (Galvanized)**

Zinc coated steel conforming to ASTM A 525, DIN BS or EN Standards.

##### **4.8.3.3 Aluminum Wall Capping**

Aluminum wall capping conforming to ASTM B 209 M, DIN 18339, BS or EN Standards.

#### **4.8.3.4 Scuppers, Gutters and Downspouts**

Galvanized scuppers, gutters and downspouts shall be installed as indicated. Gutters and downspouts shall be rigidly attached to the building. Supports shall be spaced according to manufacturer's recommendations. Gutters and downspouts shall be designed and fabricated on site. Unless otherwise specified or indicated, exposed edges shall be folded back to form a 13 mm (1/2 inch) hem on the concealed side, and bottom edges of exposed vertical surfaces shall be angled to form drips.

#### **4.8.3.5 Wall, Floor, and Ceiling Control Joints Over Plaster and Stucco**

Control joints shall be provided as specified in ASTM, DIN, BS or EN Standards.

#### **4.8.3.6 Connections and Jointing**

##### **4.8.3.6.1 Soldering**

Soldering shall apply to copper and stainless steel items. Edges of sheet metal shall be pre-tinned before soldering is begun. Soldering shall be done slowly with well heated soldering irons so as to thoroughly heat the seams and completely sweat the solder through the full width of the seam. Edges of stainless steel to be pre-tinned shall be treated with soldering acid flux. Soldering shall follow immediately after application of the flux. Upon completion of soldering, the acid flux residue shall be thoroughly cleaned from the sheet metal with a water solution of washing soda and rinsed with clean water.

##### **4.8.3.6.2 Seaming**

Flat-lock and soldered-lap seams shall finish not less than 25 mm. wide. Unsoldered plain-lap seams shall lap not less than 75 mm. unless otherwise specified. Flat seams shall be made in the direction of the flow.

##### **4.8.3.7 Cleats**

A continuous cleat shall be provided where indicated or specified to secure loose edges of the sheet metalwork. Butt joints of cleats shall be spaced approximately 3 mm. apart. The cleat shall be fastened to supporting wood construction with nails evenly spaced not over 300 mm. on centers. Where the fastening is to be made to concrete or masonry, screws shall be used and shall be driven in expansion shields set in concrete or masonry.

##### **4.8.3.8 Lintel Flashing**

Lintel flashing shall extend the full length of lintel. Flashing shall extend through the wall one masonry course above the lintels and shall be bent down over the vertical leg of the outer steel lintel angle not less than 50 mm, or shall be applied over top of masonry and pre-cast concrete lintels. Bed joints of lintels at joints shall be under laid with sheet metal bond breaker.

##### **4.8.3.9 Sill Flashing**

Sill flashing shall extend the full width of the sill and not less than 100 mm beyond ends of sill except at joint where the flashing shall be terminated at the end of the sill.

##### **4.8.3.10 Wall Capping**

Wall Capping shall be installed according to the manufacturer's recommendations.

#### **4.8.4 Sealants**

**4.8.4.1 Interior Sealant**

ASTM C 834 or ASTM C 920, Type S or M, Grade NS, Class 12.5, Use NT, DIN, BS, or EN equal standards.

**4.8.4.2 Exterior Sealant**

For joints in vertical and horizontal surfaces, provide ASTM C 920, Type S or M, Grade NS, DIN, BS, or EN equal standards.

**4.8.4.3 Floor Joint Sealant**

(ASTM C 920) Type S or M, Grade P, class 25, use T

**4.8.4.4 Primers**

Provide a non-staining, quick-drying type and consistency recommended by the sealant manufacturer for the particular application.

**4.8.4.5 Bond Breakers**

Provide the type and consistency recommended by the sealant manufacturer to prevent adhesion of the sealant to backing or to bottom of the joint.

**4.8.4.6 Backstops**

Backing shall be 25 to 33 percent oversize for closed cell and 40 to 50 percent oversize for open cell material, unless otherwise indicated.

**4.8.4.7 Cleaning Solvents**

Provide type(s) recommended by the sealant manufacturer except for aluminum and bronze surfaces that will be in contact with sealant.

**4.8.4.8 Surface Preparation**

Surfaces shall be clean, dry to the touch, and free from dirt, frost, moisture, grease, oil, wax, lacquer, paint, or other foreign matter that would tend to destroy or impair adhesion. Oil and grease shall be removed with solvent and surfaces shall be wiped dry with clean cloths. When resealing an existing joint, remove existing calk or sealant prior to applying new sealant. For surface types not listed below, the sealant manufacturer shall be contacted for specific recommendations.

**4.8.4.9 Masking Tape**

Masking tape shall be placed on the finish surface on one or both sides of a joint cavity to protect adjacent finish surfaces from primer or sealant smears. Masking tape shall be removed within 10 minutes after joint has been filled and tooled.

**4.8.4.10 Backstops**

Install backstops dry and free of tears or holes. Tightly pack the back or bottom of joint cavities with backstop material to provide a joint of the depth specified.

**4.8.4.11 Primer**

Immediately prior to application of the sealant, clean out loose particles from joints. Where recommended by sealant manufacturer, apply primer to joints in concrete masonry units, wood, and other porous surfaces in accordance with sealant manufacturer's instructions. Do not apply primer to exposed finish surfaces.

#### **4.8.4.12 Bond Breaker**

Provide bond breakers to the back or bottom of joint cavities, as recommended by the sealant manufacturer for each type of joint and sealant used, to prevent sealant from adhering to these surfaces. Carefully apply the bond breaker to avoid contamination of adjoining surfaces or breaking bond with surfaces other than those covered by the bond breaker.

#### **4.8.4.13 Sealants**

Provide a sealant compatible with the material(s) to which it is applied. Do not use a sealant that has exceeded shelf life or has jelled and can not be discharged in a continuous flow from the gun. Apply the sealant in accordance with the manufacturer's instructions with a gun having a nozzle that fits the joint width. Force sealant into joints to fill the joints solidly without air pockets. Tool sealant after application to ensure adhesion. Sealant shall be uniformly smooth and free of wrinkles. Upon completion of sealant application, roughen partially filled or unfilled joints, apply sealant, and tool smooth as specified. Sealer shall be applied over the sealant when and as specified by the sealant manufacturer.

#### **4.8.4.14 Protection**

Protect areas adjacent to joints from sealant smears. Masking tape may be used for this purpose if removed 5 to 10 minutes after the joint is filled.

#### **4.8.4.15 Final Cleaning**

Upon completion of sealant application, remove remaining smears and stains and leave the work in a clean and neat condition.

- a. Masonry and Other Porous Surfaces: Immediately scrape off fresh sealant that has been smeared on masonry and rub clean with a solvent as recommended by the sealant manufacturer. Allow excess sealant to cure for 24 hour then remove by wire brushing or sanding.
- b. Metal and Other Non-Porous Surfaces: Remove excess sealant with a solvent-moistened cloth.

### **4.9 WINDOWS, DOORS & GLAZING**

#### **4.9.1 Windows**

##### **4.9.1.1 Materials**

A. Aluminum Extrusions: Provide alloy and temper recommended by the window manufacturer for the strength, corrosion resistance, and application of required finish, meeting the DIN 1725 raw material requirements, but not less than 215 N/mm<sup>2</sup> ultimate tensile strength and not less than 1.5 mm thick at any location for main frame and sash members.

B. Fasteners: Provide aluminum, nonmagnetic stainless steel, epoxy adhesive, or other materials warranted by the manufacturer to be non-corrosive and compatible with aluminum window members, trim, hardware, anchors, and other components of window units.

1. Reinforcement: Where fasteners screw-anchor into aluminum less than 0.125 inch thick, reinforce the interior with aluminum or nonmagnetic stainless steel to receive screw threads or provide standard non-corrosive pressed-in splined grommet nuts.

2. Exposed Fasteners: Except where unavoidable for application of hardware, do not use exposed fasteners. For application of hardware, use fasteners that match the finish of the member or hardware being fastened, as appropriate.

C. Anchors, Clips, and Window Accessories: Fabricate anchors, clips, and window accessories of aluminum, nonmagnetic stainless steel, or hot-dip zinc-coated steel or iron complying with the requirements of DIN 1748; provide sufficient strength to withstand design pressure indicated. As a minimum provide 3 anchors on each side of the frame.

D. Compression-Type Glazing Strips and Weatherstripping: Unless otherwise indicated, and at the manufacturer's option, provide compressible stripping for glazing and weatherstripping such as molded EPDM or neoprene gaskets.

E. Sealant: For sealants required within fabricated window units, provide type recommended by the manufacturer for joint size and movement. Sealant shall remain permanently elastic non-shrinking, and non-migrating. Comply with Sealants of these specifications for selection and installation of sealants.

F. Wire Fabric Insect Screen shall be permanently fixed to the exterior.

#### **4.9.1.2 Hardware**

Provide the manufacturer's standard hardware fabricated from aluminum, stainless steel, or other corrosion-resistant material compatible with aluminum and of sufficient strength to perform the function for which it is intended.

#### **4.9.1.3 Fixed, Casement, Projected and Sliding Windows**

Provide window units meeting UL 752, level 5, but no less than 16 mm laminated single glazed. This standard shall apply to all window units within guard shack, guard house, guard tower, and guard rooms in Headquarters Building.

#### **4.9.1.4 Fabrication**

Provide aluminum windows with factory finish in all buildings to fit the masonry openings. Window openings shall be provided with insect screening permanently fixed to the exterior. Provide a locking device on the interior of each window. Provide anchors on each side of the frame into the adjoining masonry, 3 on each side. Provide weather stripping system for all exterior windows and doors.

#### **4.9.1.5 Finishes**

Apply baked enamel in compliance with paint manufacturer's specifications for cleaning, conversion coating, and painting.

Color: Selections by Contracting Officer

#### **4.9.1.6 Inspection**

Inspect openings before beginning installation. Verify that rough or masonry opening is correct and the sill plate is level. Masonry surfaces shall be visibly dry and free of excess mortar, sand, and other construction debris.

#### **4.9.1.7 Installation**

Comply with manufacturer's specifications and recommendations for installation of window units, hardware, operators, and other components of the work. Set window units plumb, level, and true to line, without warp or rack of frames or sash. Provide proper support and anchor securely in place. Set sill members and other members in a bed of compound or with joint fillers or

gaskets, as shown, to provide weathertight construction. Refer to the Sealant sections for compounds, fillers, and gaskets to be installed concurrently with window units. Coordinate installation with wall flashings and other components of the work.

#### 4.9.1.8 Adjusting

Adjust operating sash and hardware to provide a tight fit at contact points and at weatherstripping for smooth operation and a weathertight closure.

#### 4.9.1.9 Cleaning

Clean aluminum surfaces promptly after installation of windows. Exercise care to avoid damage to protective coatings and finishes. Remove excess glazing and sealant compounds, dirt, and other substances. Lubricate hardware and other moving parts.

#### 4.9.2 Doors

Generally, doors shall be hollow metal doors, sizes as shown on the drawings with hollow metal frames to match door masonry openings. All glazed doors shall have 6 mm tempered or laminated glass glazing in the upper half of the door. Heavy gauge metal exterior doors are required for higher security areas. Doors and frames within ballistic required areas shall meet UL 752, level 5. Commercial duty lock sets and hardware shall be used on all doors. Install required louvers, as called for in paragraph 6, in the lower portion of the door. Within ballistic rated door and frame units, louvers shall be rated to the same ballistic requirement as the door assembly. Provide 3 hinges on all doors. Provide door handles and locksets that can be locked with a key on all doors. Coordinate the final keying schedule with Contracting Officer prior to ordering lock sets. Generally each building should have 8 master keys fitting all locks, 8 sub-master keys fitting all exterior doors and 3 keys each for each interior door. Include 25% spare key blanks for the amount of keys provided per building. Provide numbering system identifying key to associated room door. All glazing in or adjacent to doors shall be tempered per IBC. Provide weather stripping system for all exterior doors. Submit shop drawings together with lock sets for approval. Door hardware sets shall be provided as follows:

##### HW-1

1-1/2 pr Hinges, A5111  
 1 ea Lockset, F04 Entry Lock w/levers, Grade 1, Exit Devices  
 1 ea Door Closer, C02061  
 1 ea Threshold, J32130

##### HW-2

3 pr Hinges, A5111  
 2 ea Exit Device, Conc Vert Rod, F04 w/Levers, Grade 1  
 2 ea Door Closers, C02061  
 1 ea Threshold, J32130  
 1 ea Removable Astragal

##### HW-3

1-1/2 pr Hinges, 8112  
 1 ea Latch Set, F01 w/Levers, Grade 1  
 1 ea Door Closer, C02061  
 3 ea Silencers

##### HW-4

1-1/2 pr Hinges, A8112  
 1 ea Lockset, F05

1 ea Stop, L02101 or L02161  
 3 ea Silencers

#### HW-5

1-1/2 pr Hinges, 8112  
 1 ea Door Pull, J405  
 1 ea Door Closer, C02051  
 1 ea Stop, L02101 or L02161  
 3 ea Silencers  
 1 ea Kick Plate, J102  
 1 ea Mop Plate, J103  
 1 ea Marble Threshold

#### HW-6

1-1/2 pr Hinges, 8112  
 1 ea Lockset, F07 Storeroom Lock  
 1 ea Stop, L02101 or L02161  
 3 ea Silencers

#### HW-7

1-1/2 pr Hinges, A8112  
 1 ea Lockset, F02  
 1 ea Stop, L02101 or L02161  
 3 ea Silencers  
 1 ea Marble Threshold

HW-8 Heavy Duty Steel Door  
 1-1/2 pr Hinges A8112  
 1 ea Heavy Duty Dead Bolt Lock

HW-9 Not Used

HW-10 Not Used

#### HW-11

1-1/2 pr Hinges A8112  
 1 ea Heavy Duty Dead Bolt Lock – see paragraph 4.9.2.1 for prison cell door

### 4.9.2.1 Steel Doors

SDI A250.8, except as specified otherwise. Prepare door to receive specified hardware. Exterior doors shall have top edge closed flush and sealed to prevent water intrusion. Doors shall be 44.5 mm thick, unless otherwise indicated. Doors shall be constructed using heavy gauge steel with minimum thickness of 1.2 mm.

#### 4.9.2.1.1 Steel Doors (Armory)

Doors shall be constructed using heavy gauge steel with minimum thickness of 3 mm (11 gauge steel door) with a dead-bolt lock. The door shall have a heavy duty dead bolt lock. Door frames shall have minimum (4) anchors per jamb at least 10cm into structural reinforced wall. Door frame shall be grouted solid.

#### 4.9.2.1.2 Steel Doors (Cell Doors)

Doors shall be constructed using heavy gauge steel with minimum thickness of 3 mm (11 gauge steel door) with a dead-bolt lock. The door shall have a pass-through slot for passing food trays with a hinged cover lockable from

the outside. Built into the bottom of the door shall be a 0.3m wide by 0.5m tall door for passing a bucket in and out with a hinged cover lockable from the outside. Door frames shall have minimum (4) anchors per jamb at least 10cm into structural reinforced wall. Door frame shall be grouted solid.

#### **4.9.2.1.3 Standard Steel Frames**

SDI A250.8, except as otherwise specified. Form frames to sizes and shapes indicated, with welded corners or knock-down field-assembled corners. Provide steel frames for doors, transoms, and mullions unless otherwise indicated.

#### **4.9.2.1.4 Welded Frames**

Continuously weld frame faces at corner joints. Mechanically interlock or continuously weld stops and rabbets. Grind welds smooth.

#### **4.9.2.1.5 Not Used**

#### **4.9.2.1.6 Stops and Beads**

Form stops and beads from 0.9 mm thick steel. Provide for other openings in standard steel frames. Secure beads to frames with oval-head, countersunk Phillips self-tapping sheet metal screws or concealed clips and fasteners. Space fasteners approximately 300 to 400 mm on centers. Miter molded shapes at corners. Butt or miter square or rectangular beads at corners.

#### **4.9.2.1.7 Anchors**

Provide anchors to secure the frame to adjoining construction. Provide steel anchors, zinc-coated or painted with rust-inhibitive paint, anchors not lighter than 1.2 mm thick.

##### **4.9.2.1.7.1 Wall Anchors**

Provide at least three anchors for each jamb. For frames which are more than 2285 mm in height, provide one additional anchor for each jamb for each additional 760 mm or fraction thereof.

- a. Masonry: Provide anchors of corrugated or perforated steel straps or 5 mm diameter steel wire, adjustable or T-shaped;
- b. Completed openings: Secure frames to previously placed concrete or masonry with expansion bolts

##### **4.9.2.1.7.2 Floor Anchors**

Provide floor anchors drilled for 10 mm anchor bolts at bottom of each jamb member. Where floor fill occurs, terminate bottom of frames at the indicated finished floor levels and support by adjustable extension clips resting on and anchored to the structural slabs.

#### **4.9.2.1.8 Hardware Preparation**

Provide minimum hardware reinforcing gages as specified in ANSI A250.6. Drill and tap doors and frames to receive finish hardware. Prepare doors and frames for hardware in accordance with the applicable requirements of SDI A250.8 and ANSI A250.6. For additional requirements refer to BHMA A115. Drill and tap for surface-applied hardware at the project site. Build additional reinforcing for surface-applied hardware into the door. Locate hardware in accordance with the requirements of SDI A250.8, as applicable. Punch door frames, with the exception of frames that will have weatherstripping or lightproof or soundproof gasketing, to receive a minimum of two rubber

or vinyl door silencers on lock side of single doors and one silencer for each leaf at heads of double doors. Set lock strikes out to provide clearance for silencers.

#### **4.9.2.1.9 Finishes**

All surfaces of doors and frames shall be thoroughly cleaned, chemically treated and factory primed with a rust inhibiting coating as specified in SDI A250.8, or paintable A25 galvanized steel without primer. Where coating is removed by welding, apply touchup of factory primer.

#### **4.9.2.1.10 Fabrication and Workmanship**

Finished doors and frames shall be strong and rigid, neat in appearance, and free from defects, waves, scratches, cuts, dents, ridges, holes, warp, and buckle. Molded members shall be clean cut, straight, and true, with joints coped or mitered, well formed, and in true alignment. Dress exposed welded and soldered joints smooth. Design door frame sections for use with the wall construction indicated. Corner joints shall be well formed and in true alignment. Conceal fastenings where practicable. On wraparound frames for masonry partitions, provide a throat opening 3 mm larger than the actual masonry thickness. Design other frames in exposed masonry walls or partitions to allow sufficient space between the inside back of trim and masonry to receive calking compound.

##### **4.9.2.1.10.1 Grouted Frames**

For frames to be installed and to be filled with mortar or grout, fill the stops with strips of rigid insulation to keep the grout out of the stops and to facilitate installation of stop-applied head and jamb seals.

#### **4.9.2.1.11 Installation**

##### **4.9.2.1.11.1 Frames**

Set frames in accordance with SDI 105. Plumb, align, and brace securely until permanent anchors are set. Anchor bottoms of frames with expansion bolts or powder-actuated fasteners. Build in or secure wall anchors to adjoining construction. Backfill frames with mortar. When an additive is provided in the mortar, coat inside of frames with corrosion-inhibiting bituminous material.

##### **4.9.2.1.11.2 Doors**

Hang doors in accordance with clearances specified in SDI A250.8. After erection and glazing, clean and adjust hardware.

#### **4.9.2.1.12 Protection and Cleaning**

Protect doors and frames from damage. Repair damaged doors and frames prior to completion and acceptance of the project or replace with new, as directed. Wire brush rusted frames until rust is removed. Clean thoroughly. Apply an all-over coat of rust-inhibitive paint of the same type used for shop coat. Upon completion, clean exposed surfaces of doors and frames thoroughly. Remove mastic smears and other unsightly marks.

#### **4.9.2.1.13 Weatherstripping**

Provide weatherstripping that is a standard cataloged product of a manufacturer regularly engaged in the manufacture of this specialized item. Weather stripping shall be looped neoprene or vinyl held in an extruded non-ferrous metal housing. Air leakage of weather stripped doors shall not exceed 0.003125 cubic meter per second of air per square meter of door area when tested in accordance with ASTM E 283

#### **4.9.2.1.14 Prefitting**

At the Contractor's option, doors may be provided factory pre-fit. Doors shall be sized and machined at the factory by the door manufacturer in accordance with the standards under which they are produced. The work shall include sizing, beveled edges, mortising, and drilling for hardware and providing necessary beaded openings for glass and louvers. Provide the door manufacturer with the necessary hardware samples, and frame and hardware schedules as required to coordinate the work.

#### **4.9.2.1.15 Finishes**

Provide door finish colors as selected by the Contracting Officer from the color selection samples.

#### **4.9.2.1.16 Installation**

Before installation, seal top and bottom edges of doors with the approved water-resistant sealer. Seal cuts made on the job immediately after cutting using approved water-resistant sealer. Fit, trim, and hang doors with a 2 mm minimum, 3 mm maximum clearance at sides and top, and a 5 mm minimum, 6 mm maximum clearance over thresholds. Provide 10 mm minimum, 11 mm maximum clearance at bottom where no threshold occurs. Bevel edges of doors at the rate of 3 mm in 50 mm. Door warp shall not exceed 6 mm when measured in accordance with WDMA I.S. 1-A.

#### **4.9.2.1.17 Weather stripping**

Install doors in strict accordance with the manufacturer's printed instructions and details. Weather strip exterior swing-type doors at sills, heads and jambs to provide weather tight installation. Apply weather stripping at sills to bottom rails of doors and hold in place with a brass or bronze plate. Apply weather stripping to door frames at jambs and head. Shape weather stripping at sills to suit the threshold.

### **4.9.3 Glazing**

ASTM C 1036, or ASTM C 1172 or equal. Acceptable manufacturer: Gürsan or equal

#### **4.9.3.1 Tempered Glass**

Tempered glass shall be kind FT fully tempered flat type. Class 1 clear, condition A uncoated surface, Quality q3-glazing select, conforming to ASTM, DIN, BS or EN standards. Color shall be clear.

#### **4.9.3.2 Plastic Glazing (Acrylic Sheets)**

ASTM D 4802, Type II, heat resistant, clear and smooth on both sides, ultraviolet stabilized, scratch resistant, 5 mm thick.

#### **4.9.3.3 Glazing Accessories**

##### **4.9.3.3.1 Sealant**

Sealant shall be elastomeric conforming to ASTM, DIN, BS, or EN standards. Type S or M, Grade NS, Class 12.5, Use G. Color of sealant shall be as selected from manufacturer's full range of standard colors by Contracting Officer.

##### **4.9.3.3.2 Glazing Gaskets**

Glazing gaskets shall be extruded with continuous integral locking projection designed to engage into metal glass holding members to provide a watertight seal during dynamic loading, building movements and thermal movements. Glazing gaskets for a single glazed opening shall be continuous one-piece units with factory-fabricated injection-molded corners free of flashing and burrs. Glazing gaskets shall be in lengths or units recommended by manufacturer to ensure against pull-back at corners.

#### **4.9.3.3.3 Fixed Glazing Gaskets**

Fixed glazing gaskets shall be closed-cell (sponge) smooth extruded compression gaskets of cured elastomeric virgin neoprene compounds conforming to ASTM, DIN, BS, or EN standards.

#### **4.9.3.3.4 Wedge Glazing Gaskets**

Wedge glazing gaskets shall be high-quality extrusions of cured elastomeric virgin neoprene compounds, ozone resistant, conforming to ASTM, DIN, BS, or EN standards.

#### **4.9.3.3.5 Putty and Glazing Compound**

Glazing compound shall conform to ASTM, DIN, BS, or EN standards for face-glazing metal sash. Putty shall be linseed oil type conforming to DIN, BS, or EN standards for face-glazing primed wood sash. Putty and glazing compounds shall not be used with insulating glass or laminated glass.

#### **4.9.3.3.6 Setting and Edge Blocking**

Neoprene setting blocks shall be dense extruded type conforming to ASTM, DIN, BS, or EN standards. Silicone setting blocks shall be required when blocks are in contact with silicone sealant. Profiles, lengths and locations shall be as required and recommended in writing by glass manufacturer.

#### **4.9.3.4 Preparation**

Openings and framing systems scheduled to receive glass shall be examined for compliance with glass manufacturer's recommendations including size, squareness, offsets at corners, presence and function of weep system, face and edge clearance requirements and effective sealing between joints of glass-framing members. Detrimental materials shall be removed from glazing rabbet and glass surfaced and wiped dry with solvent. Glazing surfaces shall be dry and free of frost.

#### **4.9.3.5 Installation**

Glass and glazing work shall be performed in accordance with, glass manufacturer's instructions and warranty requirements. Glass shall be installed with factory labels intact and removed only when instructed. Edges and corners shall not be ground, nipped or cut after leaving factory. Springing, forcing or twisting of units during installation will not be permitted.

#### **4.9.3.6 Cleaning**

Upon completion of project, outside surfaces of glass shall be washed clean and the inside surfaces of glass shall be washed and polished in accordance with glass manufacturer's recommendations.

#### **4.9.3.7 Protection**

Glass work shall be protected immediately after installation. Glazed openings shall be identified with suitable warning tapes, cloth, or paper flags, attached with non-staining adhesives. Reflective glass shall be protected with a protective material to eliminate any contamination of the reflective coating. Protective material shall be placed far enough away from the coated glass to allow air to circulate to reduce heat buildup and moisture accumulation on the glass. Glass units which are broken, chipped, cracked, abraded, or otherwise damaged during construction activities shall be removed and replaced with new units.

#### **4.10 FINISHES**

Provide color boards with all materials for COR approval prior to ordering materials.

- 4.10.1** The exterior of all buildings shall be stucco. A temperature of between 4 and 27 degrees C shall exist for a period of not less than 48 hours prior to application of plaster and for a period of at least 48 hours after plaster has set. Control joints shall be designed for expansion and contraction of plaster work due to thermal exposure. Control joints shall comprise of back to back casing beads. Install new stucco in 2 coats. The first coat shall be a scratch coat approximately 1 cm thick. Allow 7 days to cure. The second coat shall be finish stucco, smooth finish, approximately 1 cm thick. Allow 7 days to cure before painting. Stucco showing oversanding, cracks, blisters, pits, checks, discoloration or other defects is not acceptable. Defective plaster work shall be removed and replaced with new plaster at the expense of the Contractor. Patching of defective work will be permitted only when approved by the Contracting Officer. Patching shall match existing work in texture and color. Paint shall be designated for exterior use, with less than .06% lead by weight. Stucco shall be painted with one coat of primer and two coats of finish paint, color to be selected by the Contracting Officer from the color board provided by the Contractor.
- 4.10.2** Interior walls shall be cement plaster applied in a similar manner as exterior stucco. Paint with 2 coats of semi-gloss off-white with less than .06% lead by weight color to be selected by the Contracting Officer from the color board provided by the Contractor.
- 4.10.3** Ceilings shall be plaster applied over cast-in-place concrete slabs or beams. Paint ceiling with 2 coats of flat white, with less than .06% lead by weight.
- 4.10.4** Not Used
- 4.10.5** Not Used
- 4.10.6** Exposed exterior steel trim, frames, doors and pipe railings: Paint with one coat water-based primer, with 2 coats of water-based paint, color to be selected by the Contracting Officer from the color board provided by the Contractor.
- 4.10.7** Not Used
- 4.10.8** Tile: Tile work shall not be performed unless the substrate and ambient temperature is at least 10 degrees C and rising. Temperature shall be maintained above 10 degrees C while the work is being performed and for at least 7 days after completion of work. Upon completion, tile surfaces shall be thoroughly cleaned in accordance with manufacturer's approved cleaning instructions. Acid shall not be used for cleaning glazed tile. Floor tile with resinous grout or with factory mixed grout shall be cleaned in accordance with instructions of the grout manufacturer. After the grout has set, tile wall surfaces shall be given a protective coat of a non-corrosive soap or other approved method of protection.
- 4.10.8.1** Floors in wet areas shall be ceramic tile. Joints shall be 2-3mm. Waterproof gray grout shall be applied the full depth of the tile. Floors shall slope, minimum 1/50, to floor drains. Slope shall be obtained with sloping mortar bed of minimum 2cm thickness. Provide continuous waterproofing membrane beneath sloping mortar bed, turn up wall 30cm behind wall base. Membrane shall be fully sealed at joints and shall shed water into body of floor drain. Color of tile shall be selected by the Contracting Officer from samples provided by the Contractor.
- 4.10.8.2** Floors in administration areas/living quarters, dining, and corridors shall be 30cm x 30cm terrazzo tile with thin set mortar. Joints shall be 2-3mm. Waterproof gray grout shall be applied the full depth of the tile. Color of tile shall be selected by the Contracting Officer from samples provided by the Contractor.
- 4.10.8.3** Walls in wet areas shall be tiled with 150mm x 150mm glazed ceramic tile up to 2.2 meters above the floor to include interior of toilet stalls, showers and behind sinks. Joints shall be 2-3mm. Waterproof gray grout shall be applied full depth of the tile. Grout shall cure for 72 hours and then be sealed with a commercial grout sealant in two coats. Color of tile shall be selected by the Contracting Officer from samples provided by the Contractor.

**4.10.9** See Finish Schedule for finish types.

**4.10.10** Kitchen shall be covered with quarry tile flooring. Walls in kitchen shall be ceramic tile up to 2.2 meters above finished floor. Floor in dining area shall be terrazzo tile.

#### **4.11 SPECIALTIES**

##### **4.11.1 Mirrors**

0.6m x 0.9m, 6mm plate glass, shall be mounted above all lavatories. Mount bottom of mirrors 1.1m above finished floor.

##### **4.11.2 Toilet Paper Holders.**

Toilet paper holders, stainless steel, shall be installed approximately 200 mm above floor in Eastern Toilets.

##### **4.11.3 Shower Curtain Rods & Shower Curtain.**

Shower curtain rods, stainless steel, heavy duty, 18 gauge shall be mounted between the screen walls of each shower stall. Mount rod at 2.0 m above finished floor. Provide a shower curtain with support rings for each shower stall.

##### **4.11.4 Grab Bars**

Stainless steel grab bars, heavy duty, 18 gauge, two each 900 mm and 1050 mm long, 40 mm diameter. shall be mounted behind and beside all eastern toilets, and bathtubs as occur.

##### **4.11.5 Paper Towel Dispensers**

Paper towel dispensers, 0.683 mm Type 304 stainless steel, surface mounted. Furnish tumbler key lock locking mechanism.

##### **4.11.6 Light Duty Metal Shelf**

Provide a 600 mm long, light duty stainless steel shelf and brackets over each lavatory.

##### **4.11.7 Robe hooks on all toilet and shower stalls required.**

##### **4.11.8 Other toilet accessories shall be as shown on drawings.**

#### **4.12 STANDARDS**

The Contractor should use the following American standards to provide sound structural design if local standards are not available, relevant, or applicable. The Contractor shall follow American Concrete Institute Standards for design and installation of all concrete structures.

Concrete	280.0 kg./sq.cm cylinder strength @ 28 days (ASTM-. C 31M)
Steel Reinforcement	4218.0 kg./sq.cm(Fy= 60.0 ksi),yield strength.
Welded Wire Fabric	ASTM A185
Anchor Bolts	ASTM A307 using A36 steel.
Concrete Masonry Units	ASTM C90, Type I (normal wt, moisture Cntrl).
Mortar	ASTM C270, Type S (Ultimate compressive strength of 130.0 kg/sq. cm.)
Proportion	1 part cement, 0-1/2 part lime and 4-1/2 parts aggregate
Grout	ASTM C476 (Slump between 200 mm to 250 and Compressive Strength 14 MPa (2000 psi) at 28 days.

Joint Reinforcement	Standard 9 gage minimum, Ladder Type
Structural Steel	ASTM A36: 2530.0 kg./sq.cm (Fy = 36,000psi)
Welding	AWS (American Welding Society) D1.1-2002.

## **5 STRUCTURAL**

### **5.1 GENERAL**

The project consists of various structures. The new buildings shall be constructed as shown on the drawings and stated in the specifications. However, the building foundations have been designed based on assumed geotechnical design parameters. These assume parameters are shown on the foundation plans and stated in Paragraph 5.8, FOUNDATIONS. The contractor shall perform a geotechnical investigation as required in paragraph 2.1 GEOTECHNICAL, FOUNDATIONS AND SURVEY, to verify that the foundations as designed will perform satisfactory. If the contractor determines the building foundations as designed will not function satisfactory, the contractor shall redesign the foundations accordingly. The contractor is responsible for the foundation design and construction of the foundations. Building foundations shall be founded a minimum of 800 mm below grade.

### **5.2 DESIGN**

Foundation design shall be performed and design documents signed by a registered professional structural engineer. Calculations shall be in SI (metric) units of measurements. All components of the building shall be designed and constructed to support safely all loads without exceeding the allowable stress for the materials of construction in the structural members and connections.

### **5.3 DEAD AND LIVE LOADS**

Dead loads consist of the weight of all materials of construction incorporated in the buildings. Live loads used for design shall be in accordance with the American Society of Civil Engineers, ASCE STANDARD, and Minimum Design Loads for Buildings and Other Structures, ASCE 7, edition as referenced herein.

### **5.4 WIND LOADS**

Wind loads shall be calculated in accordance with ASCE 7 using a "3-second gust" wind speed of 125 km/hr. All facilities shall be classified as a minimum of Category II in accordance with Table 1-1 in ASCE 7, referenced herein.

### **5.5 SEISMIC**

The building and all parts thereof shall be designed for the seismic requirements as defined by the International Building Code referenced herein. Site-specific data: Spectral ordinates SS=1.65g and S1=0.75g.

### **5.6 STRUCTURAL CONCRETE**

Concrete structural elements shall be designed and constructed in accordance with the provisions of the American Concrete Institute, Building Code Requirements for Structural Concrete, ACI 318, latest edition. A minimum cylinder compressive strength of 4000 psi (28 mPa) shall be used for design and construction of all concrete. Reinforcing steel shall be deformed bars conforming to American Society for Testing and Materials (ASTM) publication ASTM a 615, Deformed and Plain Billet-Steel Bars for Concrete Reinforcement. Concrete at or below grade shall have maximum water-cement ration of 0.40. No concrete shall be placed when the ambient air temperature exceeds 32 degrees C (90 degrees F) unless an appropriate chemical retardant is used. In all cases when concrete is placed at 32 degrees C (90 degrees F) or hotter it shall be covered and kept continuously wet for a minimum of 48 hours. Concrete members at or below grade shall have a minimum concrete cover over reinforcement of 3" (75 millimeters).

## **5.7 MASONRY**

Masonry shall be designed and constructed in accordance with the provisions of Building Code Requirements for Masonry Structures, ACI 530/ASCE 5/TMS 402, latest editions. Mortar shall be Type S and conform to ASTM C 270, latest edition. Masonry shall not be used below grade, unless for fully reinforced and grouted foundation stem walls. All cells of exterior CMU walls shall be fully grouted and reinforced.

## **5.8 FOUNDATIONS**

The foundations shall be constructed by using reinforced concrete materials. The foundations system for the two-story building shall be spread footings for individual column footings and grade beams as shown on the drawings. Minimum length and width of spread footings shall be as shown on the drawings. A bearing capacity of 0.75 kg/sq. cm was assumed and used in designing the building foundations. The allowable bearing pressure shall be determined by the Contractor after performing his geotechnical investigation. The maximum allowable settlement between footings shall be less than 2.5 cm. It is the contractors' responsible to perform a geotechnical investigation and determine if the foundations as shown and designed will perform satisfactory, see paragraph 2.1 GEOTECHNICAL, FOUNDATIONS AND SURVEY. If the contractor determines the foundations as designed will not perform satisfactory, the contractor shall redesign the foundations accordingly.

## **6 NOT USED**

## **7 MECHANICAL**

### **7.1 GENERAL**

Heating and cooling shall be provided by the use of split system heat pumps, liquid propane (LP) gas heaters, multi-speed ceiling and wall oscillating fans, ceiling or wall exhaust fans or electric unit heaters as indicated on the drawings. Gas heaters shall be vented type and installed in accordance with local standards, complete with direct and conventional flue vents or stacks to ventilate combustion gases to the outside environment.

### **7.2 SPECIALIST SUB-CONTRACTORS QUALIFICATIONS**

The heating/ventilation work shall be executed by an air-conditioning specialist sub-contractor experienced in the construction of these types of systems.

### **7.3 CODES, STANDARDS AND REGULATIONS**

The equipment, materials and works covered under the heating, ventilation and air-conditioning services shall conform to the referenced standards, codes and regulations where applicable except where otherwise mentioned under each particular clause.

### **7.4 DESIGN CONDITIONS**

Air-conditioning in the selected offices and bedrooms to maintain 23.8°C (75°F) in summer at 50% RH and 21.1°C (70°F) in winter.

Heating using gas or wood stoves in other areas to maintain 21.1°C (70°F) indoor temperature in winter

Noise levels inside occupied spaces generated by HVAC systems shall not exceed NC 35.

#### **7.4.1 THERMAL PERFORMANCE**

Assemblies shall meet the requirements of TI-800, Design Criteria, UFC 3-400-01 Design: Energy Conservation,

and ASHRAE Standard 90.1, latest editions, but shall meet the following minimum requirements:

Assembly	Minimum Thermal Value
exterior walls (above grade)	RSI 2.288 (R 13)
ceilings/roof	RSI 6.688(R 38)
basement wall	RSI
floor (over unheated space)	RSI 5.28 (R 30)
exterior doors	RSI 0.25 (R 1.43)
exterior windows/ (glazing within doors)	RSI 0.308(R 1.75)

## 7.5 VENTILATION AND EXHAUST SYSTEMS

All fans shall be used for building ventilation and pressurization with capacities to be selected for minimum noise level generated. Unit mounted fans either used for supply or exhaust shall be centrifugal forward curved, backward inclined, or airfoil fans with non-overloading characteristics of high efficiency and quiet running design. The fans shall be of the heavy-duty type with durable construction and proved performance in a desert environment. Each exhaust fan shall be provided with shut-off dampers which close automatically when the fan is not running. Also, each fan shall be complete with vibration isolator, external lubricators where bearings require routine lubrication, and all accessories and sound attenuators as necessary.

Kitchen shall be provided with exhaust hood located over major heat producing equipment. System design and installation shall be in accordance with the requirements of NFPA 96 and the recommendations of the 1999 ASHRAE Applications handbook. Each hood shall exhaust air to the outside of the facility and contain grease (washable) filters.

### 7.5.1 Duct & Piping Insulation.

All intake and exhaust ductwork as required and refrigerant piping, shall be provided insulation and vapor barrier for thermal efficiency, to prevent condensation, and for energy conservation. Insulation exposed to weather or physical damage shall be protected with aluminum jacketing.

### 7.5.2 Submittals

The Contractor shall submit the following for the equipment to be provided under this section of the specification: manufacturer's data including performance characteristics at design conditions; catalog cuts showing dimensions, performance data, electrical requirements, compliance with standards as stated in paragraph CODES, STANDARDS AND REGULATIONS; drawings indicating location and installation details.

## 7.6 ELECTRIC RESISTANCE SPACE HEATERS

### 7.6.1 Unit Heater

Provide a self-contained electric heating unit, suspended from ceiling or structure, with fan and heating elements. Provide control-circuit terminals and single source of power supply with disconnect. Heating wire element shall be nickel chromium. Include limit controls for overheat protection of heaters. Provide tamper resistant integral thermostat.

### 7.6.2 Cabinet Heater

Provide a self-contained electric heating unit, surface mounted in wall or structure, with fan and heating elements. Provide control-circuit terminals and single source of power supply with disconnect. Heating wire element shall be nickel chromium. Include limit controls for overheat protection of heaters. Provide tamper resistant integral

thermostat.

### **7.6.3 Submittals**

The Contractor shall submit the following for the equipment to be provided under this section of the specification: manufacturer's data including performance characteristics at design conditions; catalog cuts showing dimensions, performance data, electrical requirements, compliance with standards as stated in paragraph CODES, STANDARDS AND REGULATIONS; drawings indicating location and installation details.

## **7.7 CEILING AND WALL FANS**

### **7.7.1 Ceiling Fan**

Provide 1320mm blade ceiling fans at one per 40 square meters of floor space. Fans shall have reversible motors. Center or distribute evenly in room. Coordinate placement with the lighting plan to prevent conflict or casting shadows. Fan mount shall be flush, standard, or angle mount depending on ceiling height. Fan shall be mounted such that the fan blade is approximately 2.4 meters above the finished floor. The fan shall be provided with out light kit. The finish shall be factory painted white. The controls shall be from either a single pole switch or from two 3 way switches to provide on/off operation. The electrical supply shall be 220volts, single phase, and 50 hertz. Install per manufacturers' instructions.

### **7.7.2 Oscillating Wall Fans**

Provide 460mm diameter wall fans as shown on plans. Coordinate placement with the lighting plan to prevent conflict or casting shadows. Fan mount shall be painted steel wall bracket and mounted such that the fan blade is approximately 2.1 meters above the finished floor. The finish shall be factory painted white. The controls shall be from either a single pole switch or from two 3 way switches to provide on/off operation. The electrical supply shall be 220volts, single phase, and 50 hertz. Install per manufacturers' instructions.

### **7.7.3 Submittals**

The Contractor shall submit the following for the equipment to be provided under this section of the specification: manufacturer's data including performance characteristics at design conditions; catalog cuts showing dimensions, performance data, electrical requirements, compliance with standards as stated in paragraph CODES, STANDARDS AND REGULATIONS; drawings indicating location and installation details.

## **7.8 SPLIT SYSTEM HEAT PUMPS**

### **7.8.1 Split System Heat Pumps**

Unit shall be a split type, factory made assembly, consisting of an indoor section and an outdoor section, designed to work together to provide year round heating and cooling, air-circulating, ventilating, air-cleaning, and dehumidifying functions. The separate sections shall be standard commercial products of the same manufacturer, and shall have ratings based on their being used as matched assemblies.

Minimum Coefficient of Performance (COP) shall be 2.9. Minimum Seasonal Energy Efficiency Ratio (SEER) shall be 10. Refrigerant shall be non-CFC.

#### **7.8.1.1 Indoor Section**

Indoor section shall be a factory assembled unit consisting of indoor coil, centrifugal blower, motor, motor controls, filters, electric resistance heaters, enclosure, and condensate pan, with controls, relief devices, piping, wiring, controls and accessories required for operation. Outlet grille shall be constructed to permit adjustable directional air flow. Unit shall be wall mounted console type construction. The sound level rating shall be less than 45 decibels (dB).

### **7.8.1.2 Outdoor Section**

Outdoor section shall be a factory assembled unit consisting of outdoor coil, propeller type fans arranged for horizontal discharge, refrigerant circuit with filter-dryer, and hermetically sealed compressor with crankcase heater, internal overload protection and pressure relief valve, all contained in a weather resistant outer casing. Defrost controls, and necessary tubing, piping, controls, control circuits, and required accessories shall be provided. System shall be factory pre-charged with oil and refrigerant. Air inlet and discharge grilles with bird screens shall be provided. The sound level rating shall be less than 60 dB. The unit shall be mounted on a fabricated metal stand a minimum of 300mm on a concrete pad at grade.

### **7.8.2 Electrical Requirements**

Each section shall be equipped with a main power panel and shall include complete branch circuit protection for every electrical component. Main power panel shall completely protect the unit from primary single phasing and over current. Fuses and protective devices shall be provided by the manufacturer and installed at the factory. All components of the main power panel and all control devices shall be UL listed. Wiring shall be in accordance with UL and NFPA 70 requirements. Equipment shall operate on 220 volt, single phase, 50 hertz electrical service.

### **7.8.3 Controls**

A switch with fan/off/cool positions shall be mounted in the unit or with the remote thermostat. Thermostat shall be remotely mounted where shown on the drawing.

Building wall penetrations shall be carefully made so as not to deteriorate the structural integrity of the wall system. The Contractor shall consult with the building manufacturer, if possible, to determine the best way to penetrate the wall. If the building manufacturer is not available, a structural engineer shall be consulted. In either case, the recommendations of the engineer shall be strictly adhered to.

### **7.8.4 Submittals**

The Contractor shall submit the following for the equipment to be provided under this section of the specification: manufacturer's data including performance characteristics at design conditions; catalog cuts showing dimensions, performance data, electrical requirements, compliance with standards as stated in paragraph CODES, STANDARDS AND REGULATIONS; drawings indicating location and installation details.

## **7.9 Space Heating**

Refer to Spec section 01010, Paragraph 2.10 for using propane gas as the preferred fuel for space heating and cooking as indicated on the plans. For the Compound sites where there is no commercial availability of propane gas, the Contractor shall consider use of wood stove for cooking and space heating only after approval by the Contracting Officer.

### **7.9.1 Wood Stove (*only in area where propane can not be found*)**

Provide Cast Iron stoves, minimum cast iron wall thickness shall be 5mm. Install with adequate clearances per manufactures installation guide. Route the chimney runs inside the building envelope (inside the heated space) so air and flue gases stay at least as warm as the air in the building until they are expelled outside. The chimney shall penetrate the highest part of the building envelope so the chimney functions better. The chimney shall rise at least 60 cm (24 inches) above the roof ridge and its top is clear of obstacles to wind flow so it can produce stable draft and it has a chimney (rain) cap because without one any chimney is vulnerable to adverse wind pressures. The chimney flue shall be insulated and be the correct size for the appliance so flue gases are kept warm and flow quickly through the system. The flue pipe, if used, shall run straight up from the appliance to the chimney and the chimney has no offsets because each change in direction presents resistance to flow. The appliance and venting system shall be reasonably well-sealed to prevent leaks that introduce cool air and make the system more vulnerable to adverse pressures. The stove shall be certified for low smoke emissions or have equivalent characteristics so it is unlikely to

smolder. The system shall be installed in a building that has a balanced ventilation system. There shall be no exhaust fan in the stove exhaust.

### **7.9.2 PROPANE HEATER SPACE HEATING**

Provide vented propane heaters at the locations indicated. Install with adequate clearances per manufactures installation guide. Provide isolation valve and drip leg at each heater connection point. The appliance shall be designed for vented indoor installation and be provided with either a standing pilot or electronic ignition system. The system shall be installed in a building that has a ventilation system to introduce. Combustion air route vents through nearest wall or roof as coordinated with the Resident Engineer.

### **7.9.3 Submittals.**

The Contractor shall submit the following for the equipment to be provided under this section of the specification: manufacturer's data including performance characteristics at design conditions; catalog cuts showing dimensions, performance data; drawings indicating location and installation details.

### **7.10.A Propane Stove Cooking**

Cooking area shall be provided canopy type exhaust only kitchen hoods and associated exhaust fans. These exhaust hoods shall include baffle type aluminum filters to trap grease/oil. The exhaust fan sizing calculations should recognize the use of propane stoves in the kitchen. Sizing should accommodate all propane burning stoves running simultaneously. Additionally, the placement of the exhaust hood should allow enough clearance for an average sized male to stand on top of the stove platform unobstructed, for standing on the stove is common local cooking practice. The higher than average placement of the hood will require the extension of the lip of the hood out further than normal, in order to catch the majority of the smoke and adequately vent the area.

Make-up air for kitchen hood exhaust shall be pulled in from roof mounted intake hood with permanent washable air filter and from adjoining Kitchen/Dining areas.

### **7.10.B Wood Stove Cooking**

Route the chimney runs inside the building envelope (inside the heated space) so air and flue gases stay at least as warm as the air in the building until they are expelled outside. The Contractor shall protect chimney by means of metal rails or masonry wall from damage from large pots during cooking. The chimney shall penetrate the highest part of the building envelope so the chimney functions better. The chimney shall rise at least 60 cm (24 inches) above the roof ridge and its top is clear of obstacles to wind flow so it can produce stable draft and it has a chimney (rain) cap because without one, any chimney is vulnerable to adverse wind pressures. The chimney flue shall be insulated and be the correct size for the appliance so flue gases are kept warm and flow quickly through the system. The flue pipe, if used, shall run straight up from the appliance to the chimney and the chimney has no offsets because each change in direction presents resistance to flow. The appliance and venting system shall be reasonably well-sealed to prevent leaks that introduce cool air and make the system more vulnerable to adverse pressures. The system shall be installed in a building that has a balanced ventilation system. There shall be no exhaust fan in the stove exhaust. The Wood stove kitchen shall be well vented with louvers located high at walls on the building ends.

## **7.11 TESTS ON COMPLETION**

After completion of the work, the Contractor shall demonstrate to the Contracting Officer that the installation is adjusted and regulated correctly to fulfill the function for which it is intended. The Contractor shall test, adjust, balance and regulate the section or sections of concern as necessary until the required conditions are obtained. Include tests for all interlocks, safety cutouts and other protective device to ensure correct functioning. All such tests shall be carried out and full records of the values obtained shall be prepared along with the final settings and submitted to the Contracting Officer in writing.

## **8 PLUMBING**

### **8.1 SYSTEM REQUIREMENTS**

Domestic water and waste systems shall be provided to each area with fixtures requiring water and/or waste connections such as toilets, etc. The entire water system shall include cold water to each fixture as well as to a water heater. Hot water shall be distributed to all kitchen sinks, showers, etc. as indicated. The water distribution and waste systems shall be in complete accordance with the requirements of the International Plumbing Code (IPC, latest edition). The Contractor shall furnish, install and test the domestic water supply system as shown on the drawings. Each supply system shall comprise of a booster pump, booster tank and water heater. Mechanical equipment shall be housed inside an insulated enclosure designed for year around operation and suitably protected from weather elements. Contractor shall design and install a domestic water tank system that can be easily converted to a permanent system in the future. All water distribution system components exposed to the outdoors shall be provided with freeze protection to ensure water is available throughout the year.

## **8.2 PIPING MATERIALS**

Domestic water shall be distributed by means of PVC (cold water only), CPVC (cold or hot water) or copper for the pressure to be utilized. PVC and CPVC shall not be used in areas where it will be exposed to outdoor sun.

### **8.2.1 Insulation**

All domestic water pipe and fittings exposed and not inside an insulated wall shall be insulated. In addition, all water pipe that is exposed shall also be covered with metal jacketing. Water piping exposed to outdoor conditions shall be insulated and jacketed and provided with heat trace to prevent freezing.

## **8.3 FIXTURES**

All plumbing fixtures shall be provided with p-traps and shall be vented to the roof per International Plumbing Code, latest edition. Plumbing fixtures within holding and/or detention cells shall be jail grade type with no exposed valves or plumbing lines.

### **8.3.1 Eastern Style Water Closet with Flush Tank**

Provide acid resisting fired porcelain enameled cast iron water closet complete with rotating No-Hub 'P' trap and No-Hub coupling to meet piping requirements. Eastern Style water closet shall be furnished with integral non-skid foot pads and bowl wash down non-splashing flushing rim. The water closet shall be completely self supporting requiring no external mounting hardware and shall be flush with floor. The Eastern Style water closet shall incorporate waterproofing membrane flashing flange. Provide wall mounted faucet on the right hand side of the water closet stall as viewed from the in-use position. Toilets shall be oriented north and south. Toilets shall not face east or west.

### **8.3.2 Lavatories**

All sinks shall be trough type constructed of block and concrete with ceramic tile exterior and lining capable of withstanding abuse. Faucets shall be chrome plated brass single lever mixing type. Provide maintenance access to waste piping and P-traps from under the sink. Lavatories inside the prison cells shall be temper-proof with integral spout, soap depression, and outlet connection to slip 40mm OD tubing.

### **8.3.3 Water Heater**

Electric type water heaters shall conform to UL 174 with dual heating elements. Each element shall be 4.5 KW. The elements shall be wired so that only one element can operate at a time. Each water heater shall have controls with an adjustable range that includes 32 to 71 degrees C. Electrical wiring shall be installed per the NEC and the manufacturer's instructions. Piping and fittings for hot, cold, drain, and pressure temp connections shall be installed per the manufacturer's recommendations.

### **8.3.4 Plastic Shower Stalls**

Provide one piece or four piece white solid acrylic pressure molded fiberglass reinforced plastic shower stalls. Shower stalls shall be scratch resistant, waterproof, and reinforced. Provide recessed type shower stalls approximately 914 mm wide, 914 mm front to rear, 1829 mm high, and 125 mm high curb with shower stall bottom or feet firmly supported by a smooth level floor. Provide PVC shower floor drains and stainless steel strainers. Install shower stall in accordance with the manufacturer's written instructions. Provide smooth 100 percent silicone rubber white bathtub calk between the top, sides, and bottom of shower stalls and bathroom walls and floors.

### **8.3.5 Scullery Sink (Kitchen Area)**

Provide 14 gauge, type 304, (18-8) stainless steel, sink with drain board. Compartments shall be large enough to wash posts 1 meter in diameter. Sink shall be supported on four stainless steel legs. Sink shall have pre-drilled in backsplash at manufacturer for commercial faucet. Commercial faucet shall be solid brass construction, chrome finish, wall mount 203mm center arc tube.

### **8.3.6 Floor Drain and Shower Drain**

Floor drains and shower drains shall consist of a galvanized body, integral seepage pan, and adjustable perforated or slotted chromium-plated bronze, nickel-bronze, or nickel-brass strainer, consisting of grate and threaded collar. Floor drains shall be cast iron except where metallic waterproofing membrane is installed.

### **8.3.7 Trench Type Floor Drain**

Trench type floor drains shall consist of a cast iron or galvanized body, integral seepage pan, and slotted chromium-plated bronze, nickel-bronze, or nickel-brass grate. Grate shall be 300 mm wide and 2000 mm long.

### **8.3.8 Floor Sink**

Floor sink shall be circular or square, with 300mm overall width or diameter and 250 nominal overall depth. It shall have acid resistant enamel interior with cast iron body, aluminum sediment bucket and perforated grate of cast iron. Outlet size as indicated on plans.

### **8.3.9 Grease Interceptor**

Steel construction, manual cleaning type with removable checker-plate cover; complete with flow control valve. Tested and rated in accordance with PDI G-101. Concrete shall have 21 MPa (3045 PSI) minimum compressive strength in 28 days.

### **8.3.9 Hose Bibb (HB)**

Room hose bibs and building wall hydrants shall be provided as required. Hose bibs shall be provided at interior locations as follows and in other locations where required.

## **8.4 Not Used**

## **8.5 Generator Fuel Storage**

The work shall include the fabrication and installation of the entire fuel storage and distribution system. Tanks shall be skid mounted. Tanks of this type that have a capacity above 2640 L will be provided with either a dike or a spill containment system. The dike or spill containment system should have enough capacity for the entire contents of the tank plus 10 percent. Provide a molded neoprene isolation pad to isolate an aboveground tank from the concrete pad underneath. Steel tank supports specifically are prone to encounter premature rusting due to constant exposure to

moisture and their incompatibility with concrete. Tank shall be designed and manufactured for horizontal installation. Tank shall be mounted on the tank manufacturer's standard support skid. Skid shall span the entire length of the tank and shall separate the tank from the reinforced concrete slab by a minimum of 200 mm. Indicate on the drawings the number and size of each tank man way required. Tanks of 3,780 to 45,430 L to capacity will be provided with 760 mm diameter man ways. Tanks larger than 45,430 L will be provided with 915 mm diameter man ways. Tanks 3,780 L and larger will be provided with a minimum of 1 tank man way to allow for internal tank access. Piping will not penetrate through access man ways. Tank shall be provided with a combination cleanout and gauge connection. Vent pipe sizing shall be not less than 32 mm nominal inside diameter. Vent shall be the rupture disc type calibrated to burst at 13.8 kPa pressure, and operate at 80 percent of burst setting. Tank shall be provided with an overflow alarm system. Tank shall be provided with 2 stick gauges graduated in m and mm. Stick gauge shall be of wood and treated after graduating to prevent swelling or damage from the fuel being stored. Each storage tank shall be provided with an automatic analog reading gauge which is directly mounted to a tank's man way cover. Provide an in-line centrifugal pump as par of the day tank package for fuel transfer from the bulk storage tanks to the day tank. Day tanks shall provide sufficient fuel for four hours of generator operation without refill. Provide cathodic protection for metal components. Storage tanks shall be handled with extreme care to prevent damage during placement and shall be installed in accordance with the manufacturer's installation instructions. Piping shall be inspected, tested, and approved before burying, covering, or concealing. Piping shall be installed straight and true to bear evenly on supports. Piping shall be free of traps, shall not be embedded in concrete pavement, and shall drain toward the corresponding storage tank. Any pipe, fittings, or appurtenances found defective after installation shall be replaced. Belowground nonmetallic pipe shall be installed in accordance with pipe manufacturer's instructions. Belowground piping shall be laid with a minimum pitch of 25 mm per 6 m.

**External Fuel Fill Point:** For each specific site, the Contractor shall coordinate with the Resident Engineer and provide a fuel unloading point outside of the perimeter wall to facilitate transfer of fuel from the commercial fuel tanker to the bulk fuel storage at the Power Plant. This transfer shall include interconnecting piping and valves between the fuel point and the two bulk fuel storage tanks.

### **8.5.1 Testing**

A tightness test shall be performed on each aboveground storage tank. The tests shall be performed prior to making piping connections. Tests shall be capable of detecting a 0.1 mL/s leak rate from any portion of the tank while accounting for effects of thermal expansion or contraction. Each storage tank shall be pressurized with air to 35 kPa and monitored for a drop in pressure over a 2-hour period during which there shall be no drop in pressure in the tank greater than that allowed for pressure variations due to thermal effects. Following the tank tightness test, each storage tank shall be leak tested in accordance with the manufacturer's written test procedure if the manufacturer's test procedure is different from the tightness tests already performed. Each storage tank shall be filled with the proper fuel.

### **8.5.2 Submittals**

The Contractor shall submit the following for the equipment to be provided under this section of the specification: Manufacturer's standard catalog data, Installation Manual Operation and Maintenance Manuals and test results.

#### **Tests Results:**

Six copies of each test containing the information described below in bound letter-size booklets. Individual reports shall be provided for the storage tank tests, the piping tests, the system performance tests, the high level alarm test, and the system leak tests. Drawings shall be folded blue lines, with the title block visible.

- a. The date the tests were performed.
- b. A list of equipment used, with calibration certifications.
- c. A copy of measurements taken.
- d. The parameters to be verified.

- e. The condition specified for the parameter.
- f. The inspection results, signed, dated, and certified by the installer. The certification shall state that required procedures were accomplished, that the procedures were conducted in compliance with the plans and specifications.
- g. A description of adjustments performed.

## **8.6 Submittals.**

The Contractor shall submit the following for the equipment to be provided under this section of the specification: manufacturer's data including performance characteristics at design conditions; catalog cuts showing dimensions, performance data, electrical requirements, drawings indicating location and installation details and test results.

## **8.7 Testing and Inspection**

Testing of each piping system shall be as per International Plumbing Codes. The contractor's designer shall specify that all new, altered, extended, or replaced plumbing systems shall be left uncovered and unconcealed until it has been tested and approved. The installation contractor shall furnish all equipment, materials, and labor required for testing a plumbing system. All such tests shall be carried out in the presence of the Contracting Officer and full written records of the test data and final settings shall be submitted to the Contracting Officer.

The final test shall include a smoke test for drainage and vent system and pressure test for the domestic water piping. After completing the work, the Contractor shall demonstrate that all plumbing systems operate to fully satisfy the function for which these systems have been designed. The Contractor shall test, adjust, balance and regulate the system and its controls as necessary until the required designed conditions are met. The Contractor shall include tests for interlocks, safety cutouts and other protective devices to demonstrate safe operation. After all tests are complete, the entire domestic hot and cold water distribution system shall be disinfected. The system shall not be accepted until satisfactory bacteriological results have been obtained.

## **9 FIRE PROTECTION**

### **9.1 GENERAL**

Facility construction and fire protection systems shall be installed in accordance with the publications listed herein and the publications referenced therein. Where a conflict occurs among various criteria, the more stringent requirement shall take precedence.

### **9.2 BUILDING CONSTRUCTION**

Building construction shall conform to fire resistance requirements, allowable floor area, building height limitations and building separation distance requirements of the building code.

### **9.3 FIRE PROTECTION EQUIPMENT**

Per user, a sprinkler system is not required and is not provided.

### **9.4 FIRE ALARM AND DETECTION**

Per user, a fire alarm and detection system is not required and is not provided.

### **9.5 WATER SUPPLY FOR FIRE PROTECTION**

Water supply for fire protection is not required and is not provided.

## **9.6 PORTABLE FIRE EXTINGUISHERS**

Portable fire extinguishers (PFEs) shall be provided (and installed) in the Kitchen, DFAC, and in each hallway in accordance with the requirements of NFPA 10. Portable fire extinguishers shall be Multi-purpose Dry Chemical rated 4A:60B:C. Extinguishers shall be wall-mounted on hanger hooks with at least 12 inches clearance from the floor in easily accessible locations. Travel distance to an extinguisher from any location in the building shall be no greater than 75 feet.

## **10 ELECTRICAL**

### **10.1 SCOPE OF WORK**

10.1.1 General. Contractor shall construct following systems in compliance with the attached contract drawing and as described below. Systems shall include but not limited to:

- (a) On-site Prime Power Generating Plant
- (b) Exterior Underground Secondary Power Distribution System
- (c) Interior Secondary Distribution System
- (d) Lighting and power branch circuitry
- (e) Interior telephone wiring
- (f) Closed Circuit Television (CCTV) System.
- (g) Lightning Protection System

All of the systems shall be designed for the ultimate demand loads, plus 20% spare capacity. Above Systems shall be designed for and to provide service to the following facilities as a minimum:

- 1. ANP Headquarters
- 2. Guard Shacks (2)
- 3. Guard House (1)
- 4. Guard Towers (4)
- 5. Power Plant
- 6. Administration Building - A (Future) Not-In-Contract
- 7. Administration Building - B (Future) Not-In-Contract
- 8. Well House

See Site Plan for details.

### **10.2 DESIGN CRITERIA**

#### **10.2.1 Applicable Standards**

- a. National Fire Protection Association, NFPA 70 (National Electric Code, 2005 Edition).
- b. National Fire Protection Association, Life Safety Code, NFPA 101
- c. National Fire Protection Association, Lightning Protection Code, NFPA 780
- d. Illuminating Engineering Society of North America (IES)

10.2.2 Design shall be in metric units.

10.2.3 Conflicts between criteria and/or local standards shall be brought to the attention of the Contracting Officer for resolution. In such instances, all available information shall be furnished to the Contracting Officer for approval.

### **10.3 MATERIAL**

- 10.3.1 General: Unless noted otherwise, all material used shall be in compliance with the requirements of the applicable German (DIN) Standards. In the event DIN Standard material is unavailable, contractor may then select comparable British Standard (BS), or Underwriters Laboratories Inc. (UL) listed material. Equipment enclosure types shall be in compliance with the National Electrical Manufacturer's Association (NEMA) or the International Electro-Technical Committee (IEC) standards. Material and equipment installed under this contract shall be for the appropriate application.
- 10.3.2 Standard Product: All material and equipment shall be a standard product of a manufacturer regularly engaged in the manufacture of the product and shall essentially duplicate items that have been in satisfactory use for at least two (2) years prior to bid opening.
- 10.3.3 Design Conditions: All equipment shall be rated and designed for 50 Degree Centigrade and elevation of 2000 meters above sea level.
- 10.3.4 Restrictions: Aluminum conductors shall not be used or specified. Neutral conductors shall be considered current carrying conductors and shall be sized the same as phase conductors. Reduced sized neutral conductors shall NOT be permitted.

### **10.4 DESIGN REQUIREMENTS**

- 10.4.1 Power Plant: On-site Prime Power Generating Plant shall be provided for this Compound as per that attached drawings. Electrical equipment shall include, but not be limited to, diesel engine generators, secondary voltage switchboard, day tanks, relaying equipment and all other auxiliary equipment that is necessary for operating a Prime Power Plant. All major equipment shall have brief operating instructions posted on them in English and Afghan languages. Secondary wiring within the building shall be per paragraph 'Secondary Power Distribution System', as noted below. All cabling within the Power Plant associated with Power Generation (Generator to Switchboard) shall be installed underground in direct buried PVC Schedule 40 (Sch 40) conduits. Power plant shall be provided with a Lightning Protection System.
- 10.4.1.1 Generators: Two (2) generators, rated at 120 kW each, shall be provided inside 'weather-proof' enclosures and shall be for exterior application. Generators shall be skid mounted standard industry size, 1500 RPM; diesel-engine Prime Power rated units. Generating voltage shall be 3 phase, 380 volts and 50 Hertz, for Compound wide Secondary Power Distribution, through the generator switchboard as described below. Generator starting shall be electric. Each generator shall be provided with a day tank with a minimum fuel capacity of 8 hours operating at 100% generator rating (name plate kW rating). Sharing of Compound demand load between the generators shall be via generator synchronizing equipment. See drawings for detail requirements.
- 10.4.1.2 Load Bank: Contractor shall provide a factory manufactured, industry standard permanent load bank connected to the generator secondary switchboard bus to supplement for low demand load on the operating generator. Load bank shall be rated at a minimum of 40 kW, with 5, 10, or 20 kW load steps. Unit shall be provided with a control panel and necessary circuit protection. Load bank shall automatically prevent the generator(s) from operating at less than 40% load and keep the generator(s) from "wet-stacking".
- 10.4.1.3 Fuel Storage / Distribution System: Refer to Mechanical Section 01015 and design drawings for generator fuel storage / distribution system requirements.
- 10.4.1.4 Miscellaneous: Contractor shall be responsible for providing all relaying, metering and power plant grounding equipment necessary for safe and efficient operation of the power plant. Relaying shall include, but not be limited to, differential, locking-out, over current, directional and reverse power.

- 10.4.1.5 Generator Switchboard: Generator Switchboard shall be located with the generators and shall be the central distributing point for the Site Secondary Power Distribution System. Switchboard shall be circuit breaker type, consisting of a main circuit breaker, feeder circuit breakers for service to various facilities on the Compound. Switchboard shall be sized and provided with the required number of circuit breakers to service all facilities in this Contract and future facilities identified on the Site Plan. In addition, the Switchboard shall be provided with two (2) spaces for any future 3 pole circuit breakers. See Power Plant design drawings for details. Switchboard shall be provided inside a 'weather-proof' enclosure and shall be for exterior application.
- 10.4.1.6 Operating Instructions: Contractor shall provide, mounted in a frame, a complete electrical one-line diagram of the power plant with detail operating instruction. Instructions shall be mounted inside respective generator and switchboard enclosures. Similarly, complete fuel and cooling system schematic diagrams shall also be provided with the operating instructions. Brief operating instructions shall be posted on major components at the power plant. These instructions shall be written in English and Afghanistan languages.
- 10.4.2 Site Secondary Power Distribution System: This shall include installation of Secondary Power Distribution Systems in underground, direct buried PVC Schedule 40 conduits system. System shall include hand-holes for secondary power cables.
- 10.4.2.1 Raceways: Exterior raceways (conduits) shall be installed at a slope towards the hand-hole to avoid collection of water in the raceway. Conduit shall be PVC, Schedule 40. Secondary cable shall be installed in conduit no less than 50mm (2 inch). Duct bank conduits shall be cleaned with a wire mandrel prior to the installation of cables. Minimum of two (2) spare conduits shall be provided in all main trunks and capped at both ends. Top of the conduits shall be below the frost line or a minimum of 24 inch (600mm) below grade.
- 10.4.2.2 Cables: All secondary voltage cables shall be copper, designed for underground installation and shall have appropriate secondary voltage ratings.
- 10.4.3 Secondary Power Distribution System: Secondary Power shall be 380/220 volts, 3 phase, 4 wire, 50 Hz. Building secondary power distribution system shall include main distribution panel. All panel boards shall be factory fabricated, 'bolt-on' circuit breaker type and each provided with a main circuit breaker. In large buildings, with 225 Amp or greater service, separate lighting and power panels shall be provided. Minimum size circuit breaker shall be rated at 16 amperes. Circuit breakers shall be connected to bus bar(s) within the panel boards. Daisy chain (breaker-to-breaker) connection(s) shall not be acceptable. Indoor distribution panels and load centers shall be flush mounted in finished areas. All circuit breakers shall be labeled with an identification number corresponding to the panel schedule. A 3-pole circuit breaker shall be a single unit and not made up of 3 single pole circuit breakers connected with a wire or bridged to make a 3-pole breaker. All wiring shall be copper, minimum # 12 AWG (4mm sq) and installed in surface mounted metal conduits. All panels shall be provided with a minimum of 20% spare capacity for future load growth. Power receptacles (outlets) shall be duplex, 240 volts, 50 HZ, German (DIN) Standard. All splicing and terminations of wires shall be performed in a junction or device boxes. Proper wire nuts/connectors shall be used for splicing wire. No twist-wire connections with electrical tape wrapped around it shall be acceptable. All electrical installation shall be in accordance with the requirements of NFPA 70 (National Electric Code). Main Distribution Panel in large buildings shall be provided with an ammeter, voltmeter and kilowatt-hour meter. Selector switch shall be provided for reading all 3 phases. All service entrance cables and equipment, such as main distribution panels etc., to the facilities shall be sized for the ultimate facility loads, to include any heating and air-conditioning loads, initial and / or future, to be provided by others.
- 10.4.3.1 All panels shall be phase balanced; phase imbalance shall not exceed 10% at each panel.
- 10.4.3.2 Receptacles: General purpose receptacles shall be duplex, grounding (earthed) type, 'surface' wall mounted type, color ivory and installed 500 mm above finished floor (AFF). In general, provide a minimum of one (1) receptacle on each wall 0.6 meter or wider. On longer walls provide one (1) receptacle spaced at every three (3) meters intervals. Each corridor shall be provided with at least one (1) receptacle. CEE Type receptacles with plugs (2P+E (240v) or 3P+E (380v) and with appropriate rating, shall be provided for, but

not be limited to, kitchen equipment and any other type of large plug-able equipment. Receptacle shall be complete to include box, cover plate and necessary screws/connectors and of the type most commonly used in Afghanistan. Receptacles near sinks or lavatories shall be switch operated and Ground Fault Circuit Interrupter (GFCI), or Residual Current Disconnect (RCD) type, with the trip setting of 30 milliampere or less.

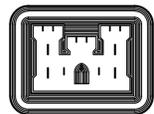
- 10.4.3.3 Lighting: Light Fixtures: Lighting fixtures shall be a standard manufacturer's product. Fluorescent light fixtures shall be power factor corrected and equipped with standard magnetic ballast(s). All light fixtures shall be capable of receiving standard lamps used and available locally. Light fixtures shall be mounted at 2.7M, minimum, AFF. Fixtures may be pendant or ceiling mounted, depending on the ceiling height and type. Emergency lighting, emergency egress 'exit' lights and exterior building lighting shall be provided, as shown on the drawings.  
Light fixtures provided inside jail cells shall be vandal resistant and detention center grade fixtures. All fixtures shall be fully factory wired.
- 10.4.3.3.1 Light Switch: Light switch shall be single pole. Minimum of one light switch shall be provided in every room. Lighting in large rooms/areas may be controlled from multiple switches. Lighting contactors may be used to operate lighting in open or large bay areas.
- 10.5** Search Light: Search light shall be prison / security search light and provided on top of each Guard Tower. Search light shall be operable from inside the guard tower cab. See design drawings for details.
- 10.6** Conductors: All cable and wire conductors shall be copper. Conductor jacket or insulation shall be color coded to satisfy local utility requirements.
- 10.7** Grounding & Bonding: Grounding and bonding shall comply with the requirements of NFPA 70. Underground connections shall be exothermal welded. All exposed non-current carrying metallic parts of electrical equipment in the electrical system shall be grounded. Insulated grounding conductor (separate from the electrical system neutral conductor) shall be installed in all feeder and branch circuit raceways. Grounding conductor shall be green-colored, unless the local authority requires a different color-coded conductor. Ground rods shall be 20mm in diameter, 3 meter long and of copper-clad steel. Ground resistance shall not exceed 25 ohms when measured more than 48 hours after rainfall.
- 10.8** Enclosures: Enclosures for exterior and interior applications shall be NEMA Type 3S (IEC Classification IP54) and NEMA Type 1 (IEC Classification IP10), respectively.
- 10.9** Closed Circuit Television (CCTV): CCTV System shall be complete and basic. System shall include CCTV cameras, cable installed in metal conduit system, digital video recorder and monitor(s). CCTV cameras shall be placed such that to monitor the jail cells. CCTV monitor shall be located in the Guard Room. Final location of the CCTV monitor(s) and cameras shall be coordinated with the Contracting Officer. See design drawings for details.
- 10.10** Telephone/DATA System: Telephone/DATA System shall include cross-connect box, duplex RJ-45 telephone outlets with a minimum of 4 pair Category 5E (CAT 5E) cable terminating at each outlet (jack). The Contracting Officer shall determine outlet locations for individual rooms. Telephone wiring shall be surface mounted in metal conduits. Two (2) 50mm conduits with pull-wire shall be provided from the cross connect box to the outside communication hand-hole. Exterior plant telephone cabling shall be provided/installed by others/User. See design drawings for details.
- 10.11** Lightning Protection System: Lightning Protection System shall be provided in accordance with the requirements of NFPA 780 and shall be for all facilities to be built under this Contract.
- 10.12** Identification Nameplates: Major items of electrical equipment, such as the generators, switchboard, panel boards and load centers, shall be provided with a permanently installed engraved identification nameplate.

- 10.13** Schedules: All panel boards and load centers shall be provided with a panel schedule. Schedule shall be typed written in English and Afghan languages.
- 10.14** Single Line Diagrams: Complete single line diagram shall be provided in the Power Plant Switchboard Room and in Panelboards in each building. Single line diagram shall show all panels serviced from the generator switchboard and from main distribution panel in each building.
- 10.15** Acceptance Tests: All systems shall be tested in the presence of the COR for satisfactory operation prior to the turnover and acceptance of the facilities by the Government.

-- End of Section --

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# Afghanistan National Police (ANP) Headquarters (2 Story) Compound Afghanistan



US Army Corps  
of Engineers  
Transatlantic Programs Center  
Afghanistan Engineering District

ADDENDUM

19 March 2007

# DRAWING INDEX

SHT.REF. NO.	FILE NO.	REVISIONS		TITLE	SHT.REF. NO.	FILE NO.	REVISIONS		TITLE
		REV. NO.	AM/COP NO.				REV. NO.	AM/COP NO.	
	AF0701--GI01GN			DRAWING INDEX					GUARD HOUSE (D)
				SITE DESIGN					
C-1	AF0701--CI01PN			SITE PLAN	A-1	AF0701D-AR01PN			BUILDING PLANS & ELEVATIONS
C-2	AF0701--CI02DT			DETAILS	A-2	AF0701D-AR02SC			ROOM/FINISH SCHEDULES
C-3	AF0701--CI03DT			DETAILS	S-1	AF0701D-SB01PN			FOUNDATION AND SLAB PLAN ROOF FRAMING PLAN
C-4	AF0701--CI04DT			WELL PLAN AND SECTION	S-2	AF0701D-SB02DT			FOOTING DETAILS
C-5	AF0701--CI05DT			WELL PLAN DETAILS	S-3	AF0701D-SF03DT			SLAB-ON-GRADE DETAILS
C-6	AF0701--CI06DT			BOOSTER STATION SECTION	S-4	AF0701D-SB04DT			ROOF BEAM AND STRUCTURAL SLAB DETAILS
C-7	AF0701--CI07DT			PIPING DETAILS					
C-8	AF0701--CI08DT			STANDARD PLUMBING DETAILS	M-1	AF0701D-MH01PN			HVAC PLAN
C-9	AF0701--CI09DT			SEPTIC TANK DETAILS	E-1	AF0701D-EL01PN			LIGHTING & POWER PLAN
XM-1	AF0701--MS01PN			MECHANICAL SITE PLAN					
XM-2	AF0701--MS02DI			FUEL OIL SCHEMATIC					GUARD TOWER (E)
XE-1	AF0701--ES01PN			ELECTRICAL SITE PLAN					
XE-2	AF0701--ES02DI			ONE LINE DIAGRAM	A-1	AF0701E-AR01PN			FLOOR PLANS AND ELEVATIONS
					S-1	AF0701E-SB01PN			FOUNDATION AND SLAB PLAN ROOF FRAMING PLAN
					S-2	AF0701E-SB02DT			FOOTING DETAILS
					S-3	AF0701E-SF03DT			SLAB-ON-GRADE DETAILS
				POLICE HEADQUARTERS (A)	S-4	AF0701E-SF04DT			ROOF BEAM AND STRUCTURAL SLAB DETAILS
A-1	AF0701A-AR01PN			FIRST FLOOR PLAN	M-1	AF0701E-MH01PN			HVAC PLAN
A-2	AF0701A-AR02PN			SECOND FLOOR PLAN	E-1	AF0701E-EL01PN			LIGHTING & POWER PLAN
A-3	AF0701A-AR03EL			BUILDING ELEVATIONS					
A-4	AF0701A-AR04SE			BUILDING SECTION					GUARD SHACK (F)
A-5	AF0701A-AR05PN			ROOF PLAN	A-1	AF0701F-AR01PN			FLOOR PLANS AND ELEVATIONS
A-6	AF0701A-AR06SC			DOOR SCHEDULE	S-1	AF0701F-SB01PN			FOUNDATION AND SLAB PLAN ROOF FRAMING PLAN
A-7	AF0701A-AR07SC			FINISH SCHEDULE	S-2	AF0701F-SB02DT			FOOTING DETAILS
S-1	AF0701A-SB01PN			FOUNDATION PLAN	S-3	AF0701F-SF03DT			SLAB-ON-GRADE DETAILS
S-2	AF0701A-SB02PN			FIRST FLOOR STRUCTURAL PLAN	S-4	AF0701F-SF04DT			ROOF BEAM AND STRUCTURAL SLAB DETAILS
S-3	AF0701A-SB03PN			LOWER ROOF STRUCTURAL PLAN					
S-4	AF0701A-SB04PN			UPPER ROOF STRUCTURAL PLAN	M-1	AF0701F-MH01PN			HVAC PLAN
S-5	AF0701A-SB05SE			INTERIOR TYPICAL STAIRWAY	E-1	AF0701F-EL01PN			LIGHTING & POWER PLAN
S-6	AF0701A-SF06DT			SLAB-ON-GRADE DETAILS					
S-7	AF0701A-SF07DT			ROOF BEAM AND STRUCTURAL SLAB DETAILS					
S-8	AF0701A-SB08DT			STANDARD BEAM AND COLUMN DETAIL					
M-1	AF0701A-MH01PN			FIRST FLOOR HVAC PLAN					
M-2	AF0701A-MH02PN			SECOND FLOOR HVAC PLAN					
M-3	AF0701A-MH03PN			FIRST FLOOR HEATING PLAN					
M-4	AF0701A-MH04PN			SECOND FLOOR HEATING PLAN					
M-5	AF0701A-MH05PN			PARTIAL ROOF PLAN					
P-1	AF0701A-MP01PN			FIRST FLOOR PLUMBING PLAN					
P-2	AF0701A-MP02PN			SECOND FLOOR PLUMBING PLAN					
P-3	AF0701A-MP03LS			FIRST FLOOR ENLARGED TOILET PLANS-WTR SUPPLY					
P-4	AF0701A-MP04LS			SECOND FLOOR ENLARGED TOILET PLANS-WTR SUPPLY					
P-5	AF0701A-MP05LS			FIRST FLOOR ENLARGED TOILET PLANS-WASTE & VENT					
P-6	AF0701A-MP06LS			SECOND FLOOR ENLARGED TOILET PLANS-WASTE & VENT					
P-7	AF0701A-MP07DI			WATER SUPPLY RISER DIAGRAM					
P-8	AF0701A-MP08SC			PLUMBING SCHEDULES					
E-1	AF0701A-EL01PN			FIRST FLOOR LIGHTING PLAN					
E-2	AF0701A-EL02PN			SECOND FLOOR LIGHTING PLAN					
E-3	AF0701A-EP03PN			FIRST FLOOR POWER PLAN					
E-4	AF0701A-EP04PN			SECOND FLOOR POWER PLAN					
E-5	AF0701A-EL05PN			GROUNDING AND LIGHTNING PROTECTION PLAN					
E-6	AF0701A-EP06SC			PANEL SCHEDULES					
E-7	AF0701A-EP07SC			PANEL SCHEDULES					
TC-1	AF0701A-TC01PN			FIRST FLOOR COMMUNICATIONS PLAN					
TC-2	AF0701A-TC02PN			SECOND FLOOR COMMUNICATIONS PLAN					



SYMBOL	DESCRIPTION	DATE	APP.



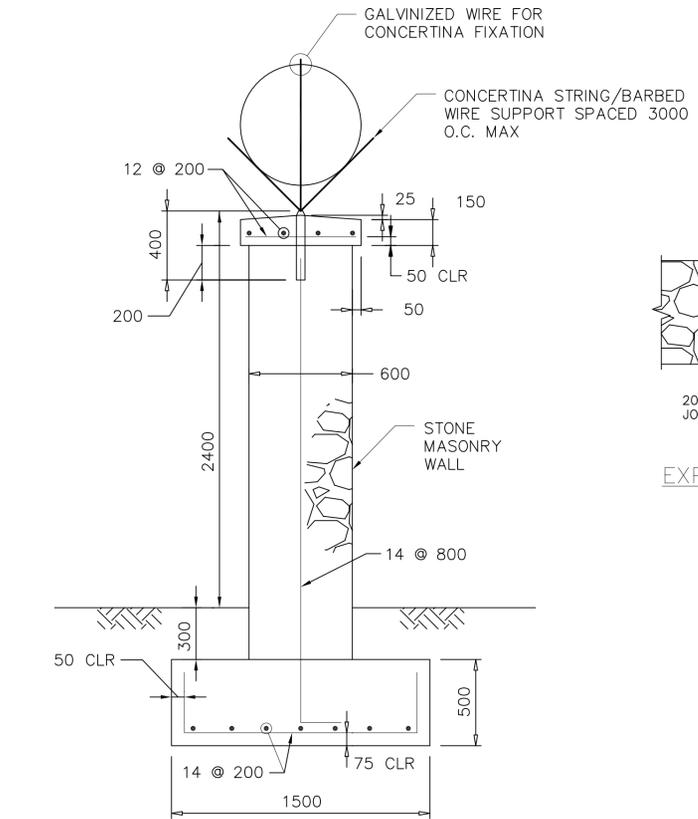
AFGHANISTAN NATIONAL POLICE  
HEADQUARTERS (2 STORY)  
AFGHANISTAN  
DRAWING INDEX SHEET 1



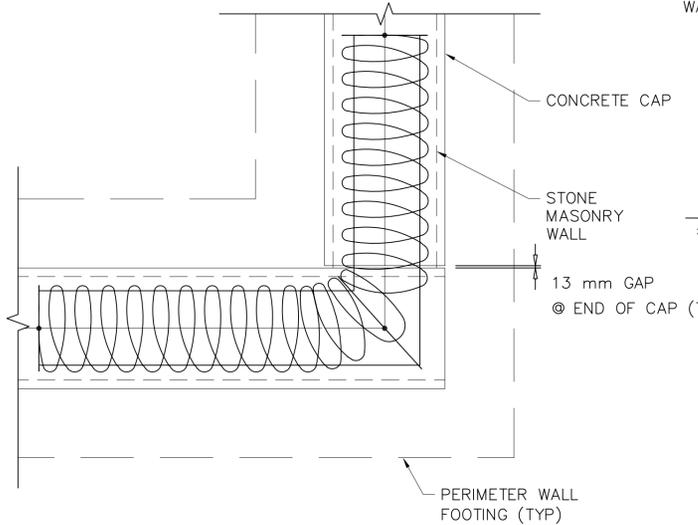


A B C D E F G H

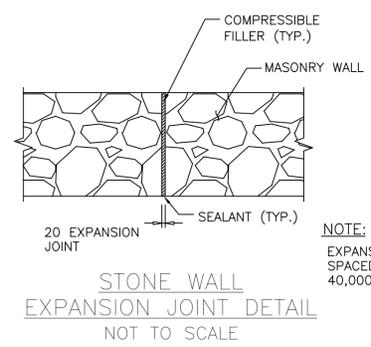
6  
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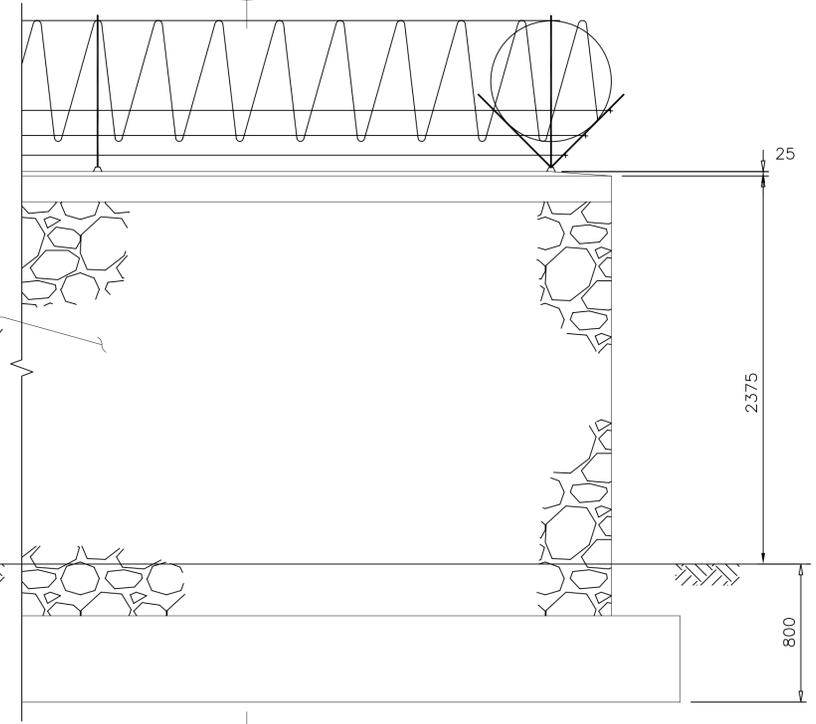
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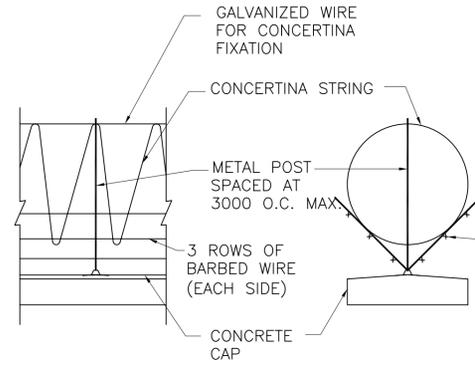
PERIMETER - STONE WALL CORNER - PLAN  
(END CONDITION SIMILAR)  
NOT TO SCALE



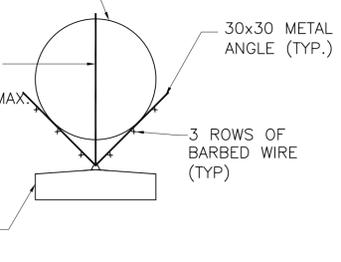
NOTE:  
EXPANSION JOINTS SHALL BE  
SPACED A MAXIMUM OF  
40,000.



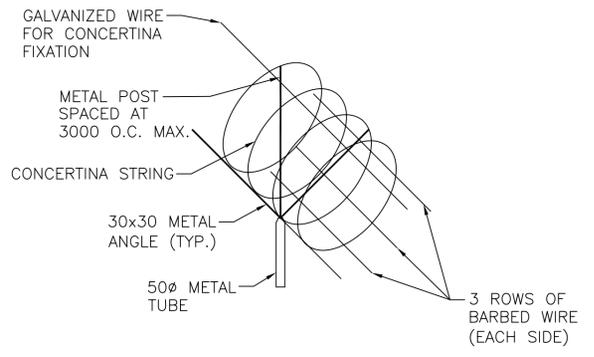
ELEVATION B  
NOT TO SCALE



ELEVATION

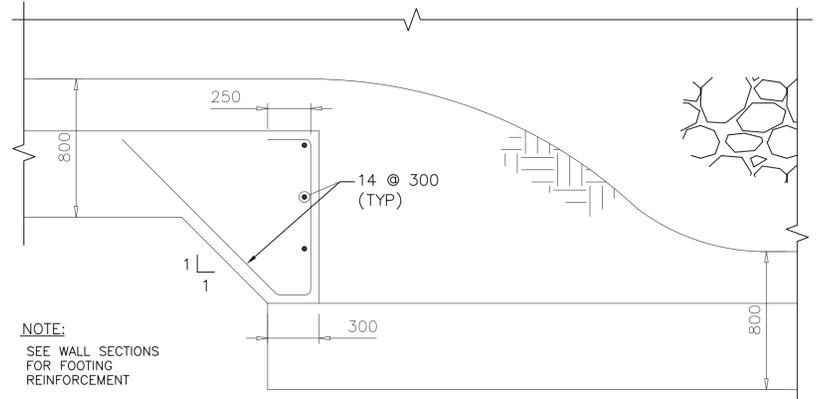


SECTION



ISOMETRIC VIEW

CONCERTINA STRING & BARBED WIRE DETAILS  
NOT TO SCALE



NOTE:  
SEE WALL SECTIONS  
FOR FOOTING  
REINFORCEMENT

STEPPED FOOTING DETAIL FOR  
GRADE CHANGE GREATER THAN 15 DEGREES  
NOT TO SCALE

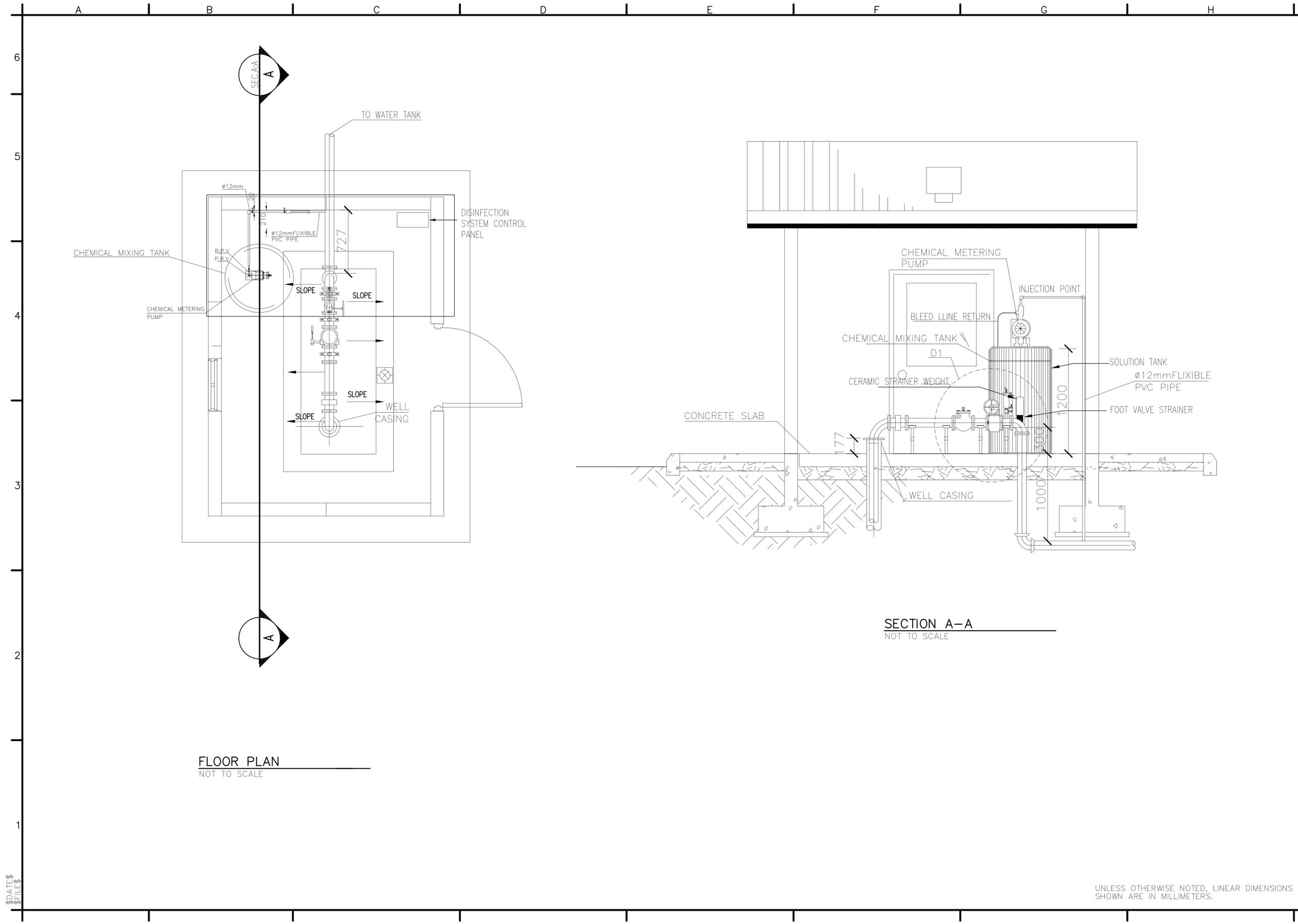
DESIGNED BY:	DATE:	19/03/2007
DRAWN BY:	DATE:	
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SYMBOL:	DESCRIPTION:	

DESIGNED BY:	DATE:	02-05-07
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SYMBOL:	DESCRIPTION:	

AFGHAN NATIONAL POLICE  
HEADQUARTERS (2 STORY)  
COMPOUND  
AFGHANISTAN  
SITE DESIGN  
DETAILS

SHEET  
REFERENCE  
NUMBER:  
C-2





FLOOR PLAN  
NOT TO SCALE

SECTION A-A  
NOT TO SCALE

REVISIONS	DATE	APP
19/03/2007		

DESIGNED BY: MW	DATE: 02-05-07
DRAWN BY: TSR	SUBMITTED BY: R. KORTYOHANN
CHECKED BY: REK	CHECKED SITE DEV: AF0701 --C040T

US Army Corps of Engineers  
Transatlantic Programs Center



AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
SITE DESIGN  
WELL PLAN AND SECTION

SHEET REFERENCE NUMBER:  
C-4

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

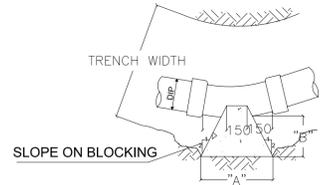
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A B C D E F G H

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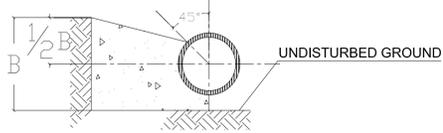
PLAN VIEW

NOTE:  
VERTICAL HIGHT  
"C" DIMENSION

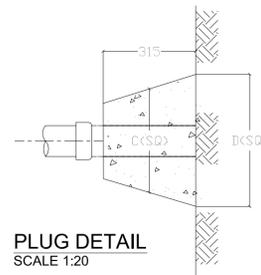
45°	A	B	C	22 1/2°	A	B	C
50	100	NOTE 9	300	50	100	NOTE 9	200
75	200	NOTE 9	400	75	200	NOTE 9	300
100	300	NOTE 9	400	100	200	NOTE 9	300
150	500	NOTE 9	500	150	400	NOTE 9	400

BLOCKING DETAIL FOR 22 1/2° & 45° BENDS  
SCALE :NTS

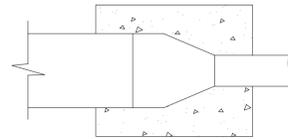
D1



BENDS & TEES  
SCALE 1:20

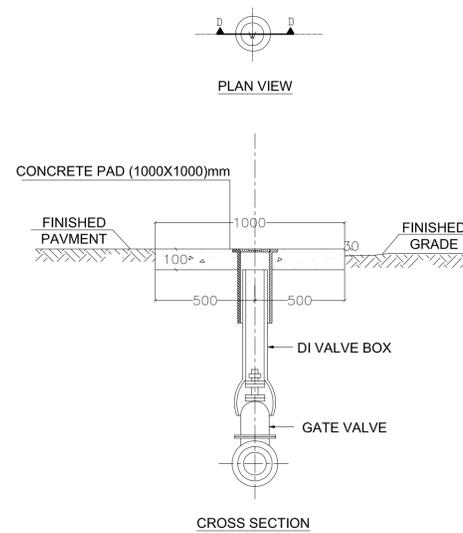


PLUG DETAIL  
SCALE 1:20



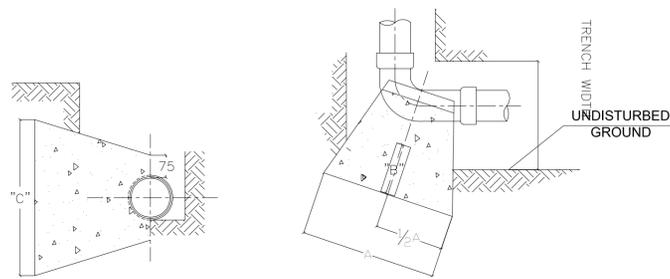
REDUCER DETAIL  
SCALE 1:20

D2



INLINE VALVE BLOCKING DETAIL  
SCALE :NTS

D3



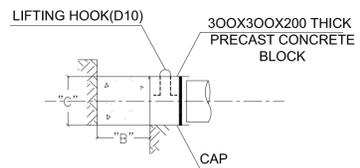
CROSS SECTION

PLAN VIEW

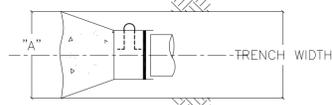
90°	A	B	C
50	200	NOTE 9	300
75	300	NOTE 9	400
100	400	NOTE 9	500
150	600	NOTE 9	700

BLOCKING DETAIL FOR 90° ELBOWS  
SCALE :NTS

D4



CROSS SECTION

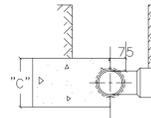


PLAN VIEW

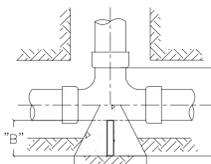
	A	B	C
50	200	NOTE 9	300
75	300	NOTE 9	400
100	300	NOTE 9	500
150	500	NOTE 9	700

BLOCKING DETAIL FOR DEADEND AND BRANCHES  
SCALE :NTS

D5



CROSS SECTION

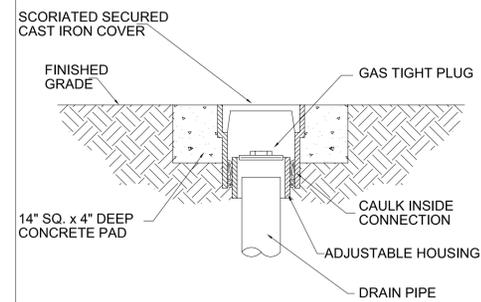


PLAN VIEW

TEE	A	B	C
50	200	NOTE 9	300
75	300	NOTE 9	400
100	300	NOTE 9	500
150	500	NOTE 9	700

BLOCKING DETAIL FOR TEE  
SCALE :NTS

D6



CLEANOUT TO GRADE  
SCALE. NTS

D7

NOTE

1. REACTION BEARING AREAS SHALL BE IN A VERTICAL PLAN IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.
2. CONCRETE BLOCKING IS TO BE FORMED TO ENSURE ACCESSIBILITY TO FITTING AND POURED AGAINST UNDISTURBED EARTH.
3. FITTING ARE TO COMPLETELY WRAPPED WITH PLASTIC,PRIOR TO POURING CONCRETE.
4. CONCRETE SHALL BE 20 MPa.
5. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
6. TRENCHES SHALL CONFORM TO STANDARD BEDDING DETAIL
7. NOT USED
8. ALL BENDS AND INTERSECTION SHALL HAVE CONCRETE THRUST BLOCKING .
9. USE ONE HALF TRENCH WIDTH PLUS 75mm.

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.



DATE	APR
SYMBOL	
DESCRIPTION	

DESIGNED BY:	DATE:	02-05-07
CHK BY:	REK	
FILE NO.:	AF0701	--C070T

US Army Corps of Engineers  
Transatlantic Programs Center

AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
SITE DESIGN PIPING DETAILS

SHEET REFERENCE NUMBER:  
C-7

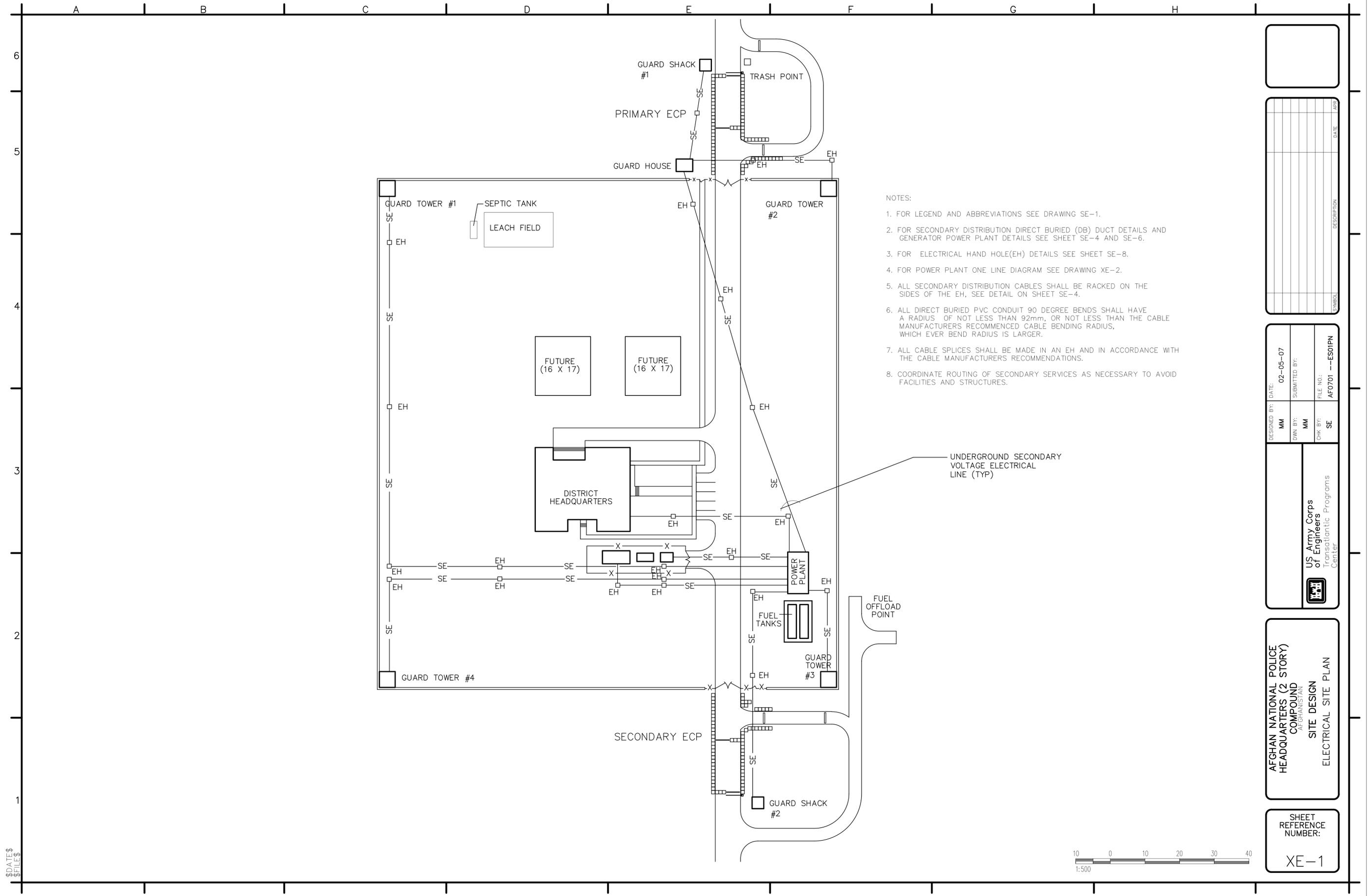
DATE\$ FILE\$











- NOTES:
1. FOR LEGEND AND ABBREVIATIONS SEE DRAWING SE-1.
  2. FOR SECONDARY DISTRIBUTION DIRECT BURIED (DB) DUCT DETAILS AND GENERATOR POWER PLANT DETAILS SEE SHEET SE-4 AND SE-6.
  3. FOR ELECTRICAL HAND HOLE(EH) DETAILS SEE SHEET SE-8.
  4. FOR POWER PLANT ONE LINE DIAGRAM SEE DRAWING XE-2.
  5. ALL SECONDARY DISTRIBUTION CABLES SHALL BE RACKED ON THE SIDES OF THE EH, SEE DETAIL ON SHEET SE-4.
  6. ALL DIRECT BURIED PVC CONDUIT 90 DEGREE BENDS SHALL HAVE A RADIUS OF NOT LESS THAN 92mm, OR NOT LESS THAN THE CABLE MANUFACTURERS RECOMMENCED CABLE BENDING RADIUS, WHICH EVER BEND RADIUS IS LARGER.
  7. ALL CABLE SPLICES SHALL BE MADE IN AN EH AND IN ACCORDANCE WITH THE CABLE MANUFACTURERS RECOMMENDATIONS.
  8. COORDINATE ROUTING OF SECONDARY SERVICES AS NECESSARY TO AVOID FACILITIES AND STRUCTURES.

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SYMBOL	DESCRIPTION	DATE	APP

DESIGNED BY: DATE: 02-05-07	SUBMITTED BY:	FILE NO.: AF0701 --ES01PN
MM	MM	SE
CHK BY:		

US Army Corps of Engineers  
Transatlantic Programs Center

AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
SITE DESIGN ELECTRICAL SITE PLAN

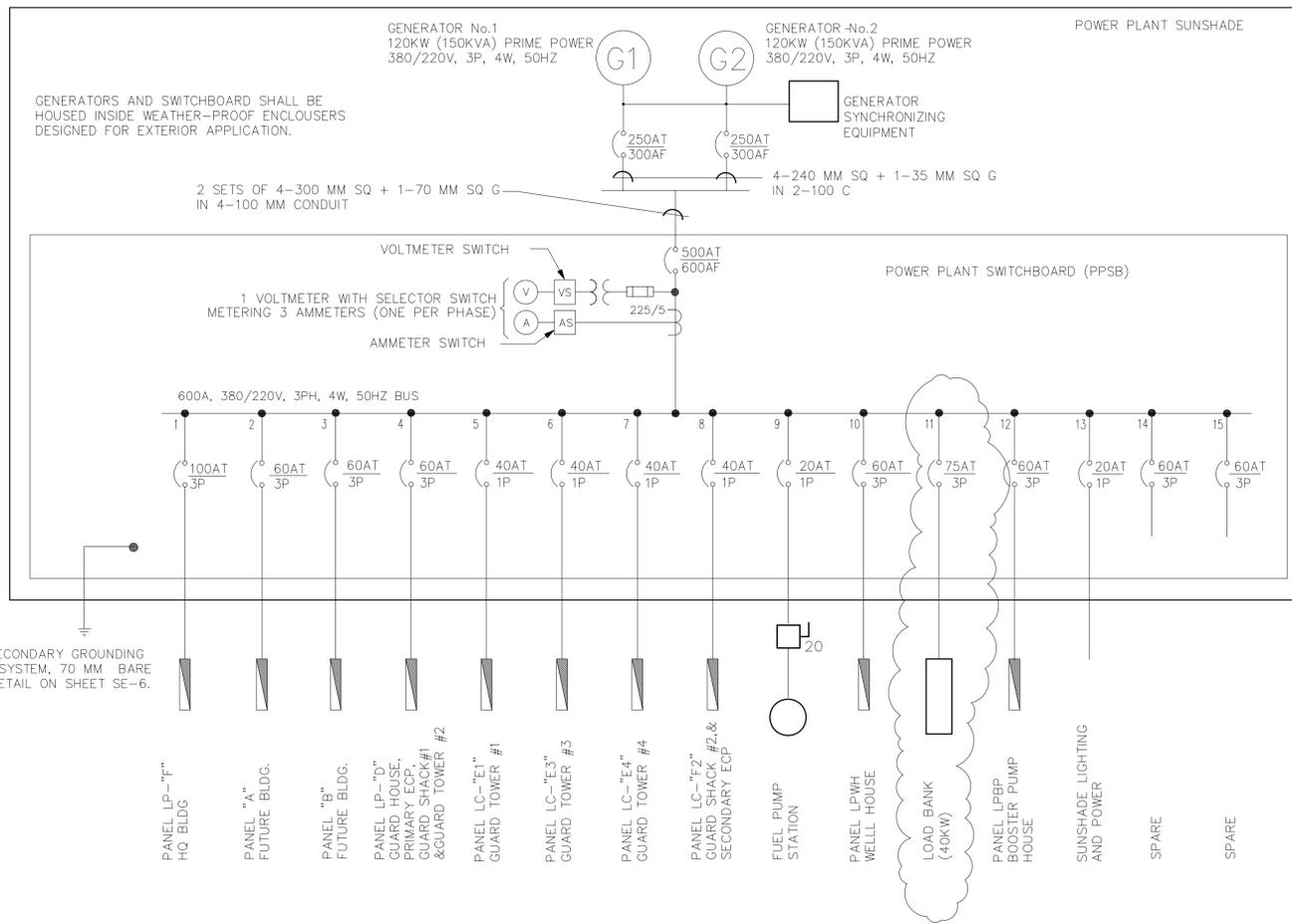
SHEET REFERENCE NUMBER:  
XE-1



DATE\$  
FILES\$

GENERATORS OPERATING LOGIC:  
 1. ONE GENERATOR SHALL OPERATE AT ALL TIMES.  
 2. WHEN THE OPERATING GENERATOR REACHES 90% OF IT'S RATED CAPACITY (108KW), THE SECOND GENERATOR SHALL START, SYNCHRONIZE WITH THE OPERATING GENERATOR AND COME ON-LINE TO SHARE THE TOTAL DEMAND LOAD EQUALLY.  
 3. WHEN THE TOTAL DEMAND LOAD ON THE SWITCHBOARD REACHES 80% OF THE FIRST GENERATOR RATING (96KW), THE SECOND GENERATOR SHALL COME OFF-LINE, RUN THROUGH A COOL DOWN CYCLE AND GO INTO A STAND-BY MODE.  
 4. GENERATOR SYNCHRONIZING EQUIPMENT SHALL BE ADJUSTABLE BETWEEN 60% TO 95% OF THE GENERATOR RATING.

- NOTES:
- FOR LEGEND AND ABBREVIATIONS SEE DRAWING SE-1.
  - FOR POWER PLANT GROUNDING DETAILS SEE SHEET SE-6.
  - CONTRACTOR SHALL CONFIRM THAT ALL FINAL CIRCUIT RATINGS ARE BASED ON THE ACTUAL NAMEPLATE OF THE SUPPLIED EQUIPMENT.
  - ALL PPSB SECONDARY DISTRIBUTION CIRCUIT CONDUITS SHALL BE RAN FROM THE BOTTOM OF PPSB THROUGH GENERATOR CONCRETE SLAB TO ELEC RIC HAND HOLES IN SCHEDULE 40 PVC CONDUIT.
  - ALL SECONDARY DISTRIBUTION CABLES SHALL BE 600V - FOUR CORE OR TWO CORE (AS INDICATED) COPPER CONDUCTOR PVC INSULATED PVC SHEATHED CABLES (CU/PVC/PVC).
  - THE POWER PLANT SWITCHBOARD SHALL BE A MANUFACTURERS STANDARD PRODUCT WITH MOLDED CASE CKT BREAKERS, DEAD FRONT CONSTRUCTION IN AN APPROVED IP54 ENCLOSURE.
  - FOR A TYPICAL POWER PLANT EQUIPMENT LAYOUT SEE THE GROUNDING PLAN ON SHEET SE-6.
  - CONTRACTOR SHALL DESIGN AND CONSTRUCT A COVERED SHELTER/SUNSHADE TO HOUSE THE GENERATORS AND ASSOCIATED SWITCHBOARD AND EQUIPMENT.



ONE LINE DIAGRAM  
NOT TO SCALE

PANELBOARD: PPSB  
MOUNTED: FLOOR

ASYM. A.I.C. MIN: MINIMUM 22,000  
MAIN BREAKER (AT/AF): 400/500

VOLTAGE RATING: 380/220V, 3PH, 4W, 50HZ  
BUS AMP. RATING: 600

CKT. NO.	TRIP AMPS	NO. POLES	WIRE MM <sup>2</sup>	GND MM <sup>2</sup>	CONDUIT MM	CONNECTED	REMARKS
1	225	3	150	50	100	125.94	PANEL LPF, HEADQUARTERS BUILDING
2	60	3				30.00	PANEL "A" FUTURE
3	60	3				30.00	PANEL "B", FUTURE
4	60	3	16	6	38	16.70	PANEL LP-"D": GUARD HOUSE, PRIMARY ECP, GUARD SHACK #1, GUARD TOWER #2
5	40	1	25	16	38	5.0	PANEL LC-"E1": GUARD TOWER #1
6	40	1	10	6	25	5.0	PANEL LC-"E3": GUARD TOWER #3
7	40	1	16	6	32	5.0	PANEL LC-"E4": GUARD TOWER #4
8	40	1	25	16	38	4.3	PANEL LC-"E2": GUARD SHACK #2 & SECONDARY ECP
9	20	1	16	6	32	3.5	FUEL PUMPS
10	60	3	16	6	38	9.94	WELL PUMP
11	75	3	70	70	50		LOAD BANK
12	60	3	16	6	38	12.87	PANEL LPBP, BOOSTER PUMP HOUSE
13	20	1	6	4	25	0.51	SUNSHADE LIGHTING AND POWER
14	60	3					SPARE
15	60	3					SPARE
TOTAL CONNECTED LOAD						248.76	KVA

CONN. LOAD: 248.76 KVA, 80% DEMAND = EST DEM LOAD 199.00 KVA  
SUPPLIED FROM: GENERATORS

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.



NO.	REVISIONS	DATE	APP.
1		19/02/2007	

DESIGNED BY: MM	DATE: 02-05-07
DRAWN BY: MM	SUBMITTED BY:
CHK BY: SE	FILE NO.: AF0701 --E502D1

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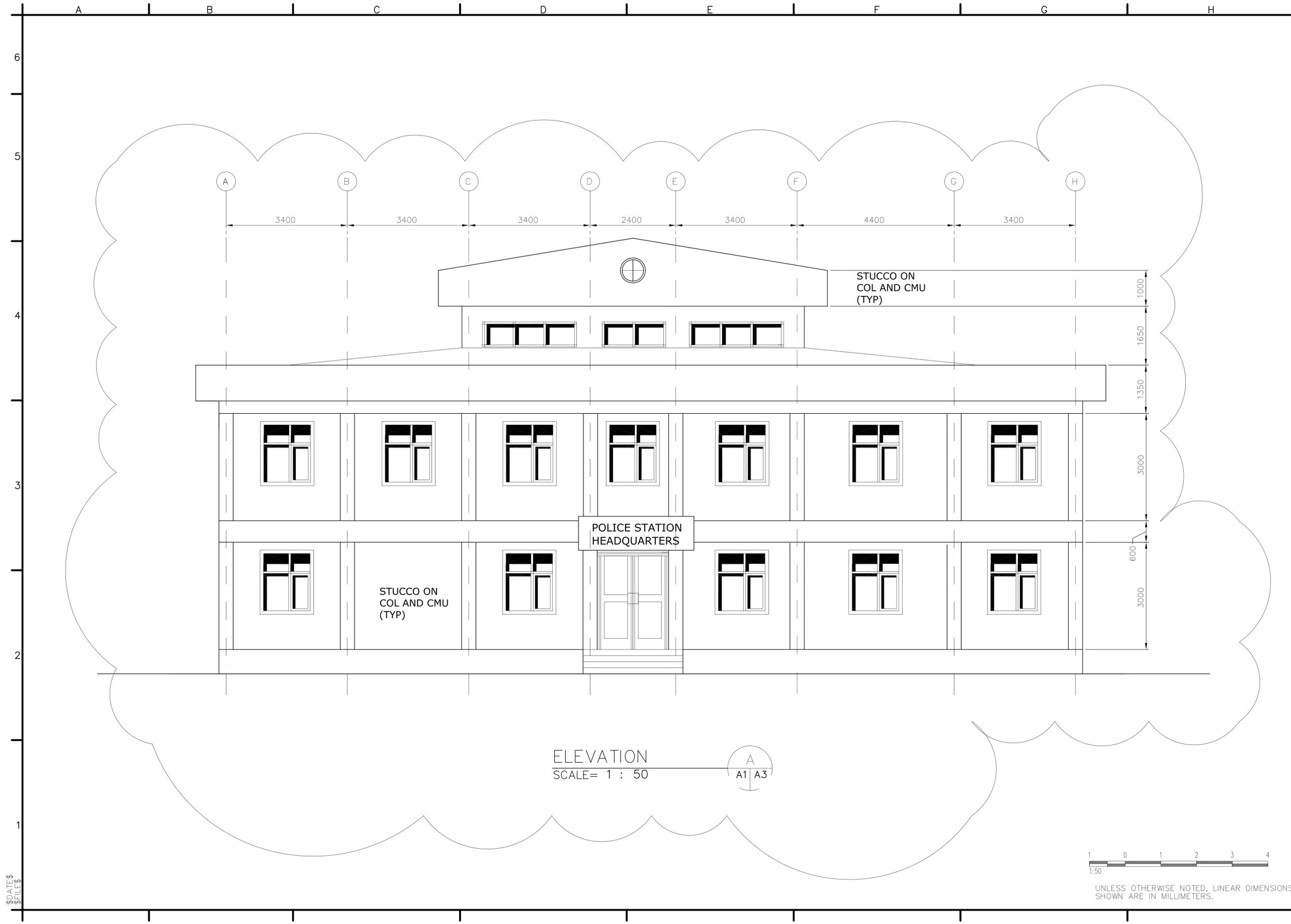
AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
SITE DESIGN  
ONE LINE DIAGRAM

SHEET REFERENCE NUMBER:  
XE-2

DATE\$\$\$\$  
FILE\$\$\$\$







DATE\$  
FILE\$

ELEVATION  
SCALE= 1 : 50



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.



SYMBOL	DESCRIPTION	DATE	APP
*	ELEVATION	19/03/2007	

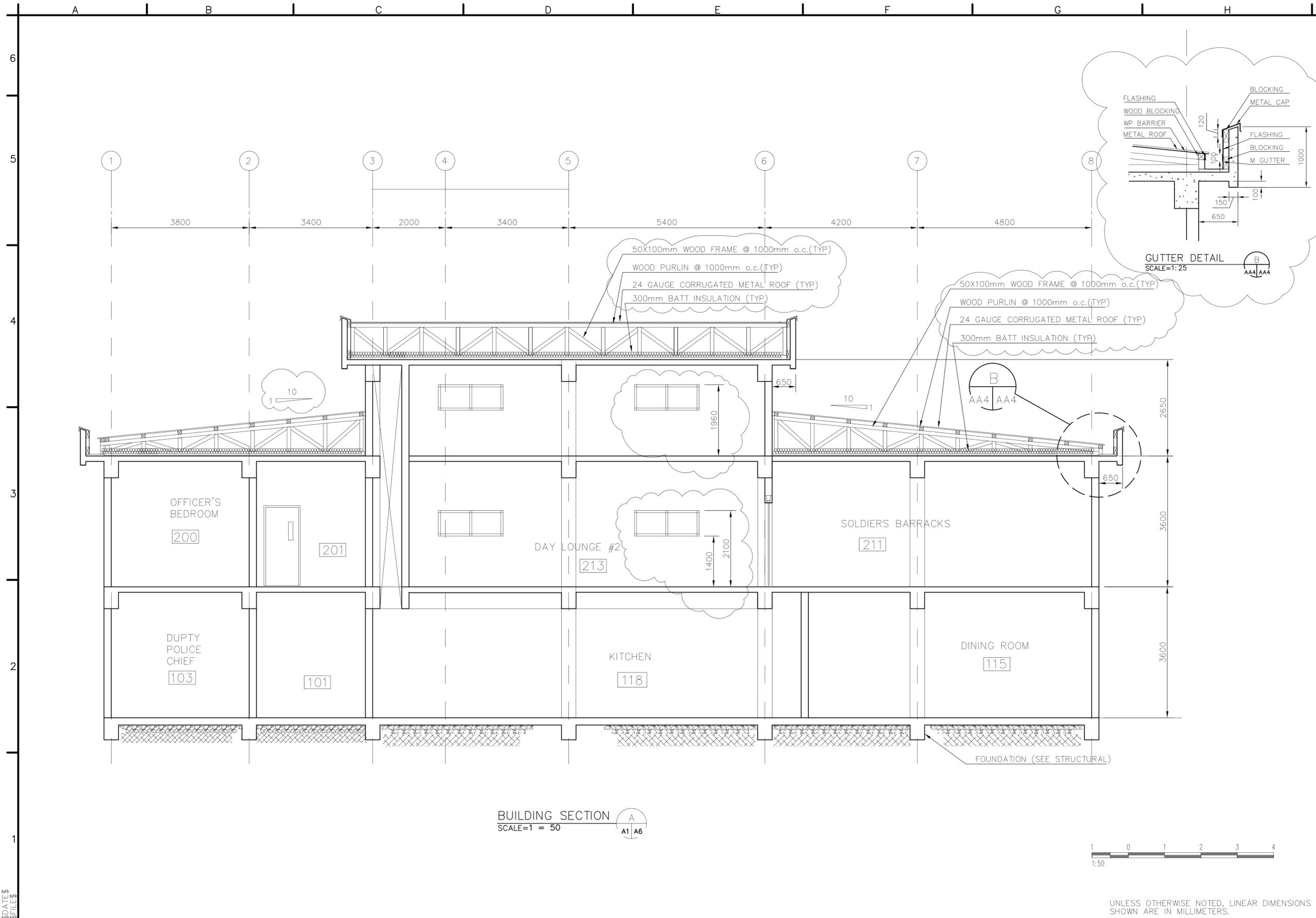
DESIGNED BY:	DATE:	02-05-07
S. Hanna	SUBMITTED BY:	PHILIP L. PINELLO
OWN BY:	PHILIP L. PINELLO	CHIEF OF POLICE FACILITIES DEV
S. Hanna	CHK BY:	FILE NO: AF0701 A-AR03EL
CHECK BY:		

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AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
POLICE HEADQUARTERS BUILDING ELEVATION

SHEET REFERENCE NUMBER:  
A  
A-3



SYMBOL	DESCRIPTION	DATE	APP
* DETAILS		19/03/2007	

DESIGNED BY:	S. Hanna	DATE:	02-08-07
OWN BY:	S. Hanna	SUBMITTED BY:	PHILIP L. PINELLO
CHK BY:	CHECK_BY	FILE NO.:	AF0701 A-AR04SE
US Army Corps of Engineers Transatlantic Programs Center			

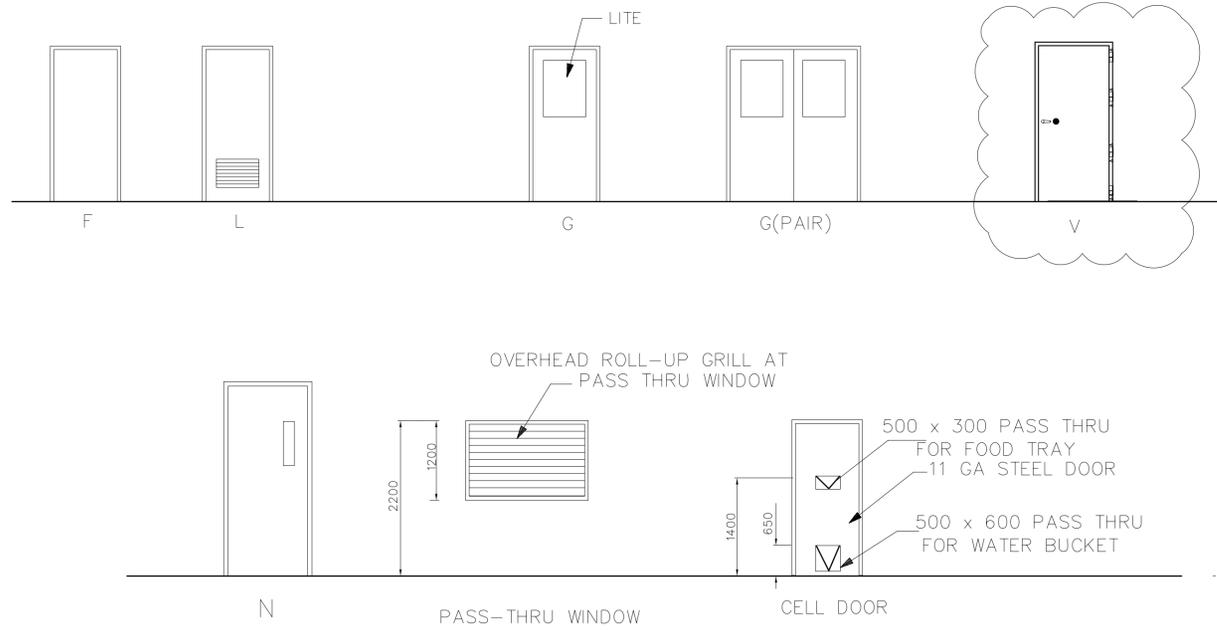
AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
 POLICE HEADQUARTERS BUILDING SECTION

SHEET REFERENCE NUMBER:  
 A  
 A-4

\$DATE\$\$  
 \$FILES\$



DOOR SCHEDULE												
DOOR							FRAME			FIRE LABEL	HDW SET	REMARKS
NO.	LOCATION	TYPE	MAT'L	WIDTH	HEIGHT	THICK	HEAD	JAMB	SILL			
<b>FIRST FLOOR</b>												
(101)	LOBBY	G (PR)	H.M.	1800	2150	45	H-1	J-1	S-1	H.M.	2	6
(102)	COORDINATOR	G (PR)		1800			H-2	J-2	S-2		2	5, 6
(103)	OFFICE	N		900			H-2	J-2	S-2		4	
(104)	ARMORY	V		900			H-2	J-2	S-2		8	5
(105)	STAIR #1	F		900			H-2	J-2	S-2		4	5
(105A)	STAIR #1	F		900			H-2	J-2	S-2		4	6
(106)	UTILITY/STORAGE	F		900			H-2	J-2	S-2		6	5
(107)	WOMEN'S TOILET	L		900			H-2	J-2	S-2		5	5
(108)	MEN'S TOILET	L		900			H-2	J-2	S-2		5	5
(109)	TOILET	L		600			H-2	J-2	S-2		7	
(110)	TOILET	L		600			H-2	J-2	S-2		7	
(111)	ENTRANCE	G		900			H-1	J-1	S-1		1	
(112)	TO PRISONERS CELL	N		900			H-2	J-2	S-2		4	
(112A)	CORRIDOR	N		900			H-2	J-2	S-2		4	
(113)	W'S PRISONERS CELL	F (C)		900			H-2	J-2	S-2		11	
(114)	M'S PRISONER CELL	F (C)		900			H-2	J-2	S-2		11	
(115)	KITCHEN	N (PR)		1800			H-2	J-2	S-2		2	
(115A)	PANTRY ROOM	N (PR)		1800			H-2	J-2	S-2		2	5
(116)	ENTRANCE	G (PR)		1800			H-1	J-1	S-1		2	6
(117)	MEN'S TOILET	L		900			H-1	J-1	S-1		5	
NOT USED	SHOWER	OPENING		700							---	
NOT USED	SHOWER	OPENING		700							---	
(120)	TOILET	L		600			H-2	J-2	S-2		7	
(121)	TOILET	L		600			H-2	J-2	S-2		7	
(122)	STAIR #2	F		900			H-1	J-1	S-1		4	
(123)	OFFICER'S TOILET	L		900			H-2	J-2	S-2		4	
(124)	POLICE CHIEF OFF	N		900			H-2	J-2	S-2		3	
(125)	DUPY CHIEF OFF	N		900			H-2	J-2	S-2		3	
(126)	NIGHT GUARD OFF	N		900			H-2	J-2	S-2		3	
(127)	DINING ROOM	G (PR)		1800			H-2	J-2	S-2		2	6
<b>SECOND FLOOR</b>												
(201)	STAIR #2	F		900			H-2	J-2	S-2		4	5
NOT USED	NOT USED	NOT USED		NOT USED							---	
(203)	OFFICER'S TOILET	L		900			H-2	J-2	S-2		4	5
(204)	OFFICER'S BD. RM	F		900			H-2	J-2	S-2		7	
(205)	OFFICER'S BD. RM	F		900			H-2	J-2	S-2		7	
(206)	OFFICER'S SUITE	N		900			H-2	J-2	S-2		4	
(207)	OFFICE	N		900			H-2	J-2	S-2		4	
(208)	WOMEN'S BARRECKS	F		900			H-2	J-2	S-2		7	
(209)	UTILITY/STORAGE	N		900			H-2	J-2	S-2		6	
(210)	STAIR #1	F		900			H-2	J-2	S-2		4	5
(211)	WOMEN'S TOILET	L		900			H-2	J-2	S-2		5	5
NOT USED	SHOWER	OPENING		700							---	
(213)	TOILET	L		600			H-2	J-2	S-2		7	
(214)	TOILET	L		600			H-2	J-2	S-2		7	
NOT USED	NOT USED	NOT USED									---	
(216)	DAY LOUNGE #1	N		900			H-2	J-2	S-2		4	
(217)	UTILITY/STORAGE	N		900			H-2	J-2	S-2		6	
(218)	MEN'S TOILET	L		900			H-2	J-2	S-2		5	5
(219)	TOILET	L		600			H-2	J-2	S-2		7	
(220)	TOILET	L		600			H-2	J-2	S-2		7	
NOT USED	SHOWER	OPENING		700							---	
NOT USED	SHOWER	OPENING		700							---	
(223)	MEN'S TOILET	L		900			H-2	J-2	S-2		5	5
NOT USED	SHOWER	OPENING		700							---	
NOT USED	SHOWER	OPENING		700							---	
(226)	TOILET	L		600			H-2	J-2	S-2		7	
(227)	TOILET	L		600			H-2	J-2	S-2		7	
(228)	DAY LOUNGE #2	N		900			H-2	J-2	S-2		4	



DOOR NOTES:  
 1. FOR HEAD, JAMB AND SILL DETAILS, SEE SHEET SA-2.  
 2. SEE DOOR SCHEDULE FOR DOOR AND FRAME SIZES.

TYPICAL DOOR TYPES  
(NOT TO SCALE)

- DOOR SCHEDULE NOTES:
- CELL DOOR SHALL BE 11 GA STEEL DOOR WITH PASS-THRU WINDOWS AS SHOWN ON SA-2. PROVIDE HINGED DOORS TO
  - PROVIDE 600 X 400 LOUVERS IN DOOR TYPE ( L )
  - UNDERCUT ALL DOORS BY 12 mm.
  - THESE PASS-THRU WINDOWS WITH PADLOCKS TO THE OUTSIDE.
  - SEE SPECS FOR ARMORY DOOR
  - ADD THRESHOLD AND DOOR SWEEP.
  - ADD PANIC HARDWARE.

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

DESIGNED BY: S. Hanna	DATE: 02-08-07
DRAWN BY: S. Hanna	SUBMITTED BY: PHILIP L. DINELLO
CHECKED BY: CHECK_BY	FILE NO: AF0701 A-AR06SC
US Army Corps of Engineers Transatlantic Programs Center	
AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN POLICE HEADQUARTERS DOOR SCHEDULE	
SHEET REFERENCE NUMBER: A-6	

DATE\$

ROOM FINISH SCHEDULE											
ROOM NO.	ROOM NAME	FLOOR		BASE		WALLS		CEILING		REMARKS	
		MAT'L.	COLOR	MAT'L.	COLOR	MAT'L.	COLOR	MAT'L.	COLOR		HEIGHT
<b>FIRST FLOOR</b>											
100	LOBBY	F2	2	B2	11	W2	21	C2	31	3.4 m	XXXXXXXXXX
101	COORIDOR	F2	2	B2	11	W2	21	C2			
102	POLICE CHIEF OFF	F2	2	B2	11	W2	21	C2			
103	DUPTY CHIEF OFF	F2	2	B2	11	W2	21	C2			
104	NIGHT GUARD OFF	F2	2	B2	11	W2	21	C2			
105	OFFICE	F2	2	B2	11	W2	21	C2			
106	ARMORY	F2	2	B2	11	W2	21	C2			
107	STAIR #1	F1	4	B4	13	W2	20	C2			
108	UTILITY/STORAGE	F2	2	B2	11	W2	21	C2			
109	WOMEN'S TOILET	F3	3	B3	12	W3	23	C2			
110	MEN'S TOILET	F3	3	B3	12	W3	23	C2			
111	PRISONERS GUARD ROOM	F2	2	B2	11	W2	21	C2			
112	PRISONERS GUARD ROOM	F2	2	B2	11	W2	21	C2			
113	W'S PRISONERS CELL	F2	2	B2	11	W2	21	C2			
114	M'S PRISONER CELL	F2	2	B2	11	W2	21	C2			
115	DINING ROOM	F2	2	B2	11	W2	21	C2			
116	MEN'S TOILET	F3	3	B3	12	W3	23	C2			
117	PANTRY	F2	2	B2	11	W2	21	C2			
118	KITCHEN	F2	2	B2	11	W2	21	C2			
119	STAIR #2	F1	4	B4	13	W2	20	C2			
120	OFFICER'S TOILET	F3	3	B3	12	W3	23	C2			
<b>SECOND FLOOR</b>											
200	COORIDOR	F2	2	B2	11	W2	21	C2			
201	OFFICER'S LOBBY	F2	2	B2	11	W2	21	C2			
201A	OFFICER'S TOILET	F3	3	B3	12	W3	23	C2			
202	OFFICER'S BEDROOM	F2	2	B2	11	W2	21	C2			
203	OFFICER'S BEDROOM	F2	2	B2	11	W2	21	C2			
204	OFFICE	F2	2	B2	11	W2	21	C2			
205	WOMEN'S BARRECKS	F2	2	B2	11	W2	21	C2			
206	UTILITY/STORAGE	F2	2	B2	11	W2	21	C2			
207	STAIR #1	F1	4	B4	13	W2	20	C2			
208	WOMEN'S TOILET	F3	3	B3	12	W3	23	C2			
209	DAY LOUNGE #1	F2	2	B2	11	W2	21	C2			
210	UTILITY/STORAGE	F2	2	B2	11	W2	21	C2			
211	MEN'S TOILET	F3	3	B3	12	W3	23	C2			
212	SOLDER,S BARRECKS	F2	2	B2	11	W2	21	C2			
213	MEN'S TOILET	F3	3	B3	12	W3	23	C2			
214	DAY LOUNGE #2	F2	2	B2	11	W2	21	C2			
215	STAIR #2	F1	4	B4	13	W2	20	C2			

**ROOM FINISH SCHEDULE NOTES:**

- ALL NEW INTERIOR AND EXTERIOR SURFACES NOT PROVIDED WITH A COLOR FACTORY FINISH SHALL RECEIVE PAINT IN ACCORDANCE AS DIRECTED BY THE CONTRACTING OFFICER.
- WHERE SCHEDULED, PLASTER OR TILE WALL FINISH SHALL EXTEND TO UNDERSIDE OF CEILING.
- ALL WALL PENETRATIONS SHALL BE SEALED TO PROVIDE A NEAT APPEARANCE. PENETRATIONS OF EXTERIOR WALLS SHALL BE SEALED TO BE WATER-TIGHT. SEALANT SHALL BE APPLIED IN ACCORDANCE WITH SPECIFICATION SECTION 07920.
- SEALANTS SHALL MATCH THE COLOR OF ADJACENT SURFACES

**ROOM FINISH SCHEDULE LEGEND**

**FLOOR TYPE**  
 F1 SEALED CONCRETE  
 F2 TERRAZZO TILE  
 F3 CERAMIC TILE  
 F4 RUBBER

**FLOOR COLOR**  
 1 SEALED CONCRETE - NATURAL FINISH  
 2 TERRAZZO TILE - NAT'L TERRAZZO & MOSAIC ASSN, INC, NO. S-330  
 3 CERAMIC TILE - AMERICAN OLEAN, C-11, ALABASTER  
 4 DARK GRAY

**BASE TYPE**  
 B2 TERRAZZO  
 B3 CERAMIC  
 B4 100 m RUBBER  
 B5 NO BASE

**BASE COLOR**  
 11 TERRAZZO TILE - NAT'L TERRAZZO & MOSAIC ASSN, INC, NO. S-330  
 12 CERAMIC TILE - AMERICAN OLEAN, D-12, ALMOND  
 13 DARK GRAY

**WALL TYPE**  
 W1 PAINTED CMU  
 W2 PAINTED PLASTER  
 W3 CERAMIC TILE

**WALL COLOR**  
 20 PAINTED CMU -HEMPEL, 1005-Y50R-25400, LIGHT BEIGE  
 21 PAINTED PLASTER-HEMPEL, 0502-Y-15420, OFF WHITE  
 22 METAL PANEL - HEMPEL, 0502-Y-15420, OFF WHITE  
 23 CERAMIC TILE -AMERICAN OLEAN, D-12, ALMOND

**CEILING TYPE**  
 C1 PAINTED EXPOSED STRUCTURE  
 C2 PAINTED PLASTER

**CEILING COLOR**  
 30 PAINTED EXPOSED STRUCTURE - HEMPEL, 0502-Y-15420, OFF WHITE  
 31 PAINTED PLASTER HEMPEL, 0502-Y-15420, OFF WHITE

NOTE: PATTERN AND COLOR ARE SHOWN FOR REFERENCE ONLY, OTHER MANUFACTURER'S SIMILAR PATTERN AND COLOR MAY BE USED AS APPROVED BY THE CONTRACTING OFFICER.

**EXTERIOR FINISH SCHEDULE**

**ROOF**  
 METAL ROOF:  
 SHERWIN WILLIAMS #SW2445, CREAMY WHITE

**WALL**  
 INTEGRALLY COLORED SPLIT-FACED CMU  
 SHERWIN WILLIAMS #SW2036, PELICAN TAN

EXTERNAL INSULATION FINISH SYSTEM (EIFS):  
 SHERWIN WILLIAMS #SW2036, PELICAN TAN

**WINDOW AND DOOR FRAMES**  
 ALUMINUM FRAMES:  
 SHERWIN WILLIAMS #SW2042, TERRACE BROWN  
 HOLLOW METAL FRAMES:  
 SHERWIN WILLIAMS #SW2294, CARRIAGE DOOR

**DOORS:**  
 SHERWIN WILLIAMS #SW2036, PELICAN TAN

HANDRAILS & GUARD RAILS: SHERWIN WILLIAMS #SW2042, TERRACE BROWN

**CONCRETE FRAMES, BEAMS, FRAMES ETC**  
 SHERWIN WILLIAMS #SW2036, PELICAN TAN

DOWNSPOUTS, GUTTERS, LOUVERS, FLASHING AND SEALANTS SHALL MATCH ADJACENT WALL COLOR.

**SOFFITS:**  
 METAL SOFFIT PANELS: SHERWIN WILLIAMS, #SW2205, TOWNHALL TAN

- NOTES:**
- PATTERN, COLOR AND TEXTURE ARE SHOWN FOR REFERENCE ONLY. OTHER MANUFACTURER'S SIMILAR PATTERN, COLOR AND TEXTURE MAY BE USED AS APPROVED BY THE CONTRACTING OFFICER.
  - ALL INTERIOR AND EXTERIOR DOORS, WINDOWS AND FRAMES SHALL HAVE A SEMI-GLOSS FINISH.
  - TOILETS AND JANITOR CLOSET WALLS AND PLASTER CEILINGS, WHERE THEY OCCUR SHALL HAVE A SEMI-GLOSS FINISH.

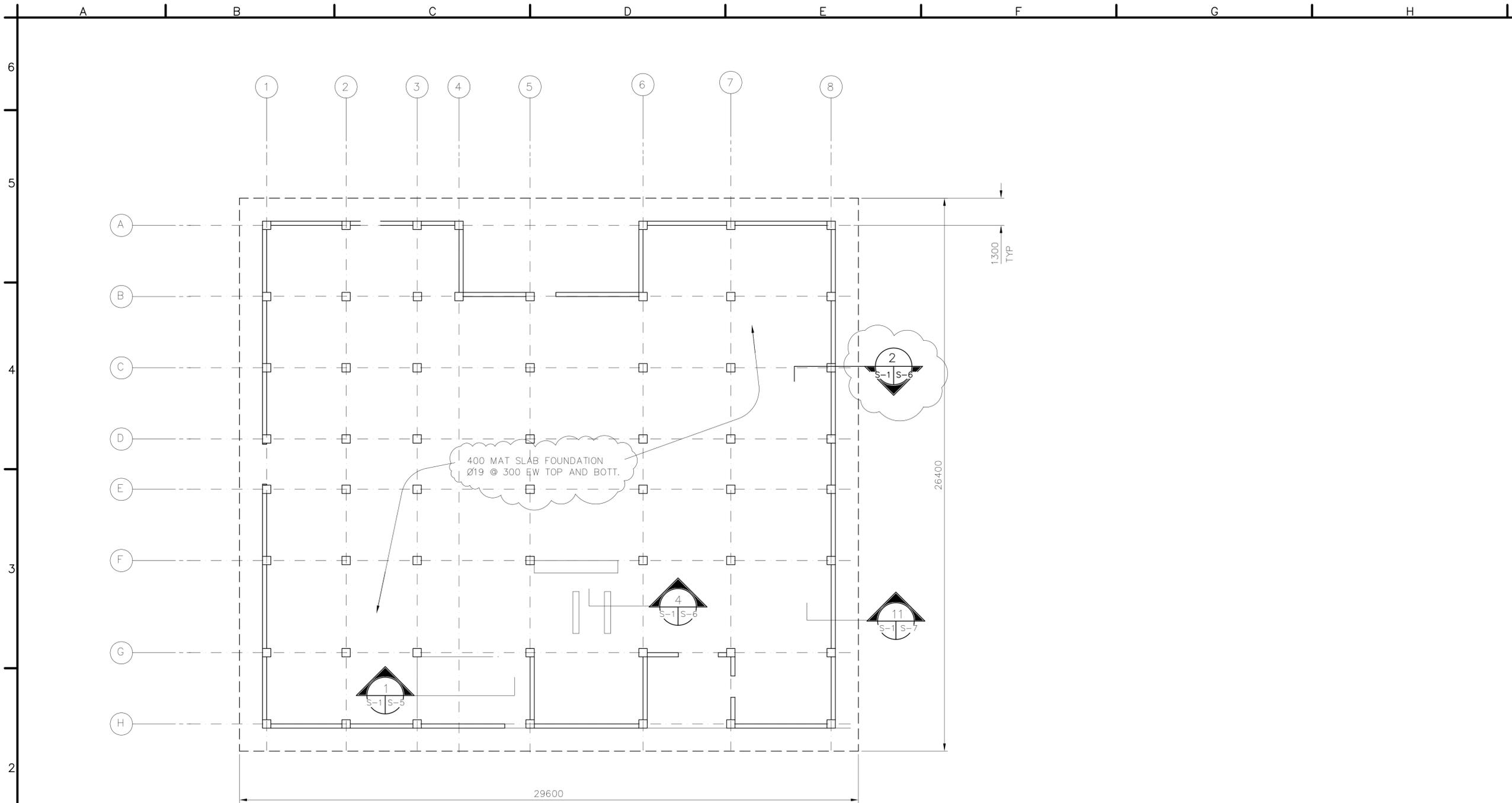
REVISIONS	DATE	DESCRIPTION
19/03/2007		

DESIGNED BY: S. Hanna	DATE: 02-08-07
DRAWN BY: S. Hanna	SUBMITTED BY: PHILIP L. DINELLO
CHECKED BY: S. Hanna	CHIEF OF POLICE FACILITIES DEV
	FILE NO: AF0701 A-AR075C



AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
 POLICE HEADQUARTERS FINISH SCHEDULE

SHEET REFERENCE NUMBER:  
 A  
 A-7



**FOUNDATION PLAN**  
SCALE= 1:100

- |   |  |   |  |
|---|--|---|--|
| <p>1. DESIGN LOADS (SERVICE)</p> <p><b>LIVE LOADS:</b></p> <p>ROOF: 1.0 KPA (20 PSF)<br/>OTHERS: 4.8 KPA (100 PSF)<br/>8.9 KN (2.0 K) CONCENTRATED LOAD</p> <p><b>WIND LOADS PER IBC-2003</b></p> <p>USING A "3-SECOND" WIND VELOCITY OF 125 KPH (78 MPH),<br/>EXPOSURE C AND IMPORTANCE FACTOR I=1.0</p> <p><b>EARTHQUAKE LOADS PER IBC-2003:</b></p> <p>USING A SEISMICITY: <math>S_s=1.65g</math> AND <math>S_1=0.75g</math></p> | <p>2. MATERIALS:</p> <p>CONCRETE: 28 MPa (4 KSI)<br/>CYLINDER STRENGTH AT 28 DAYS</p> <p>REINFORCING: ASTM A615 GRADE 60 (60 KSI)</p> <p>WELDED WIRE FABRIC: ASTM A185</p> <p>CONCRETE MASONRY UNITS:<br/>ASTM C90, TYPE I (NORMAL WEIGHT, MOISTURE CONTROLLED) MORTAR, ASTM C270, TYPE S<br/>GROUT, ASTM C 476<br/>JOINT REINFORCEMENT, LADDER TYPE</p> | <p>3. WORK THESE STRUCTURAL DRAWINGS WITH THE STANDARD-DETAILS DRAWINGS.</p> <p>4. A RELATIVE (DATUM) FINISH FLOOR ELEVATION EQUAL TO 100.00 M. IS USED AS REFERENCE ELEVATION FOR ALL STRUCTURAL DRAWINGS. REFER TO CIVIL DRAWINGS FOR ACTUAL FINISH ELEVATIONS.</p> <p>5. NO CONTROL JOINTS IN THE MAT SLAB..</p> | <p>6. FOUNDATIONS ARE DESIGNED USING AN ALLOWABLE BEARING PRESSURE OF 0.75 KG/SQ. CM (1500 PSF), AND BOTTOM OF FOOTINGS ARE PLACED AS SHOWN ON DRAWINGS. GEOTECHNICAL INVESTIGATION SHALL CONFIRM BEARING CAPACITY TO BE NO LESS THAN 0.75 KG/SQ CM. IF GEOTECHNICAL INVESTIGATION SHOWS LESS THAN 0.75 KG/SQ CM THE CONTRACTOR SHALL REDESIGN FOOTINGS BASED ON THE GEOTECHNICAL INVESTIGATION. SEE SPECIFICATION 01015 PARAGRAPH, GEOTECHNICAL, FOUNDATION AND SURVEY.</p> <p>7. MAT SLAB FOUNDATION IS OFFSET FROM OUTSIDE COLUMN LINES 1.3 METERS.</p> <p>8. ALL COLUMNS ARE C-1 AS SHOWN ON S-6 COLUMN TYPES.</p> |
|---|--|---|--|



NO.	REVISIONS	DATE	APP.
1	19/03/2007		

DESIGNED BY: DATE: 02-05-07	SUBMITTED BY: PHILIP L. PINELLO
TOP	CHIEF OF FACILITIES DEV
OWN BY: TOP	CHK BY: KGO
FILE NO: AF0701 A-SB01PN	

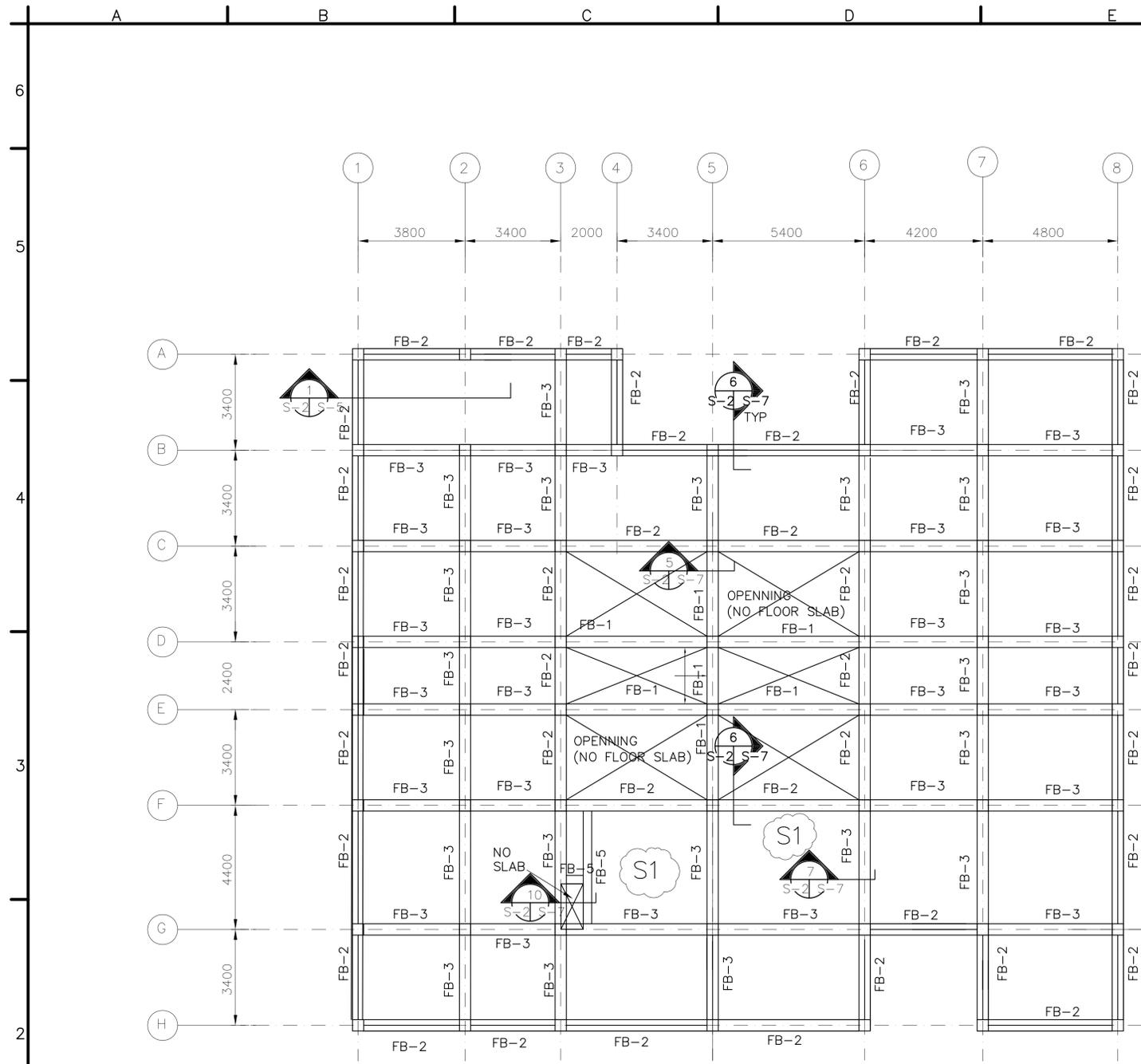
**US Army Corps of Engineers**  
Transatlantic Programs Center

**AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN**

**POLICE HEADQUARTERS FOUNDATION PLAN**

SHEET REFERENCE NUMBER:  
**A**  
**S-1**

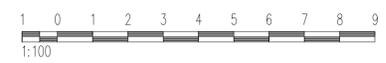
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SECOND FLOOR STRUCTURAL PLAN  
SCALE= 1:100

SLAB REINFORCEMENT SCHEDULE  
 S1:  $\phi 12@150$  EW TOP  $\phi 12@300$  BOTTOM.  
 ALL OTHER SLAB EXCEPT "S1"  
 $\phi 12@250$  EW TOP  $\phi 12@300$  BOTTOM

NOTES:  
 1. ALL COLUMNS ON THE SECOND FLOOR ARE C2 AS SHOWN ON S-6 COLUMN TYPES.  
 2. LIVE LOAD: 100PSF  
 3. ALL SLABS THICKNESS 150mm.



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.



NO.	REVISIONS	DATE	APP.
1		19/03/2007	

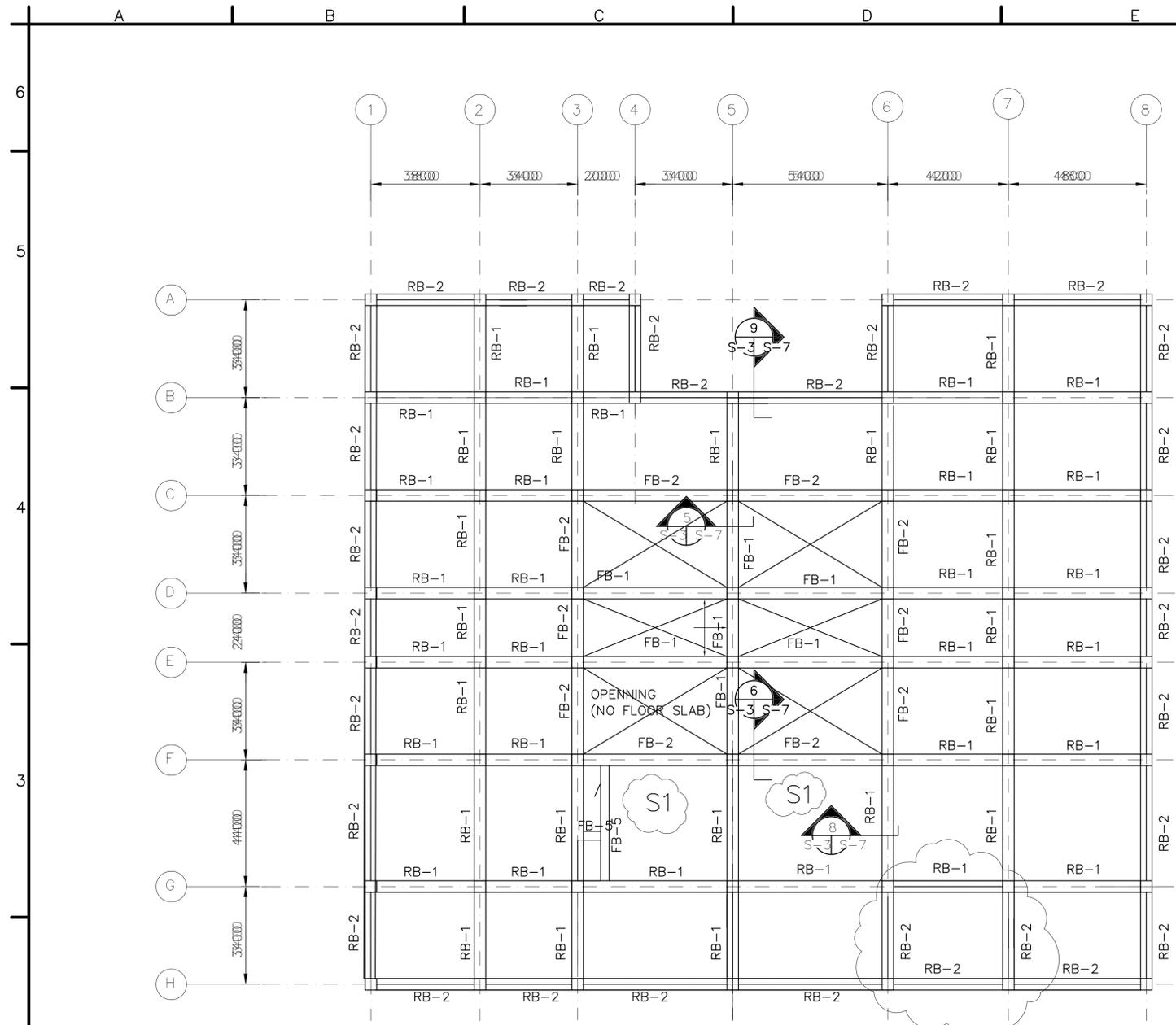
DESIGNED BY:	DATE:	02-05-07
TOP	SUBMITTED BY:	PHILIP L. PINELLO
DOWN BY:	CHK BY:	KGO
TOP	FILE NO.:	AF0701 A-SB02PN

US Army Corps of Engineers  
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AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
 POLICE HEADQUARTERS  
 SECOND FLOOR STRUCTURAL PLAN

SHEET REFERENCE NUMBER:  
 A  
 S-2

DATE\$\$\$\$  
 FILE\$\$\$\$



LOWER ROOF STRUCTURAL PLAN  
SCALE= 1:100

ALL SLAB THICKNESS 150mm  
 SLAB REINFORCEMENT SCHEDULE  
 S1:  $\phi 12 @ 150$  O.C. EW TOP  $\phi 12 @ 300$  O.C. BOTTOM.  
 ALL OTHER SLAB EXCEPT "S1"  
 $\phi 12 @ 250$  O.C. EW TOP  $\phi 12 @ 300$  O.C. BOTTOM

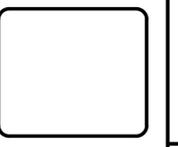
NOTE:

- ALL COLUMNS ARE C2, AS SHOWN ON S-6 COLUMN TYPES.
- A WOODEN TRUSS SYSTEM IS TO BE PROVIDED ON TOP OF THE ROOF SLAB. THIS IS TO BE DESIGNED AND CONSTRUCTED BY THE CONTRACTOR. THE TRUSSES SHALL USE NO LESS THAN 50 X 100 LUMBER AND THE TRUSSES SHALL BE SPACED NO MORE THAN 1 METER ON CENTER. SEE SHEET A-5 FOR MORE INFORMATION.

DESIGN LOADS:  
 A. LIVE LOAD: 1.0 KPA (20 PSF)  
 B. WIND LOAD: PER IBC-2003  
 USE A "3-SECOND" WIND VELOCITY OF 125 KPH (78 MPH),  
 EXPOSURE C AND IMPORTANCE FACTOR I=1.0.  
 C. EARTHQUAKE LOAD: PER IBC-2003  
 SEISMICITY:  $S_a=1.65g$  AND  $S=0.75g$



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.



19/03/2007	DATE
APR	DATE
DESCRIPTION	DESCRIPTION
SYMBOL	SYMBOL

DESIGNED BY: DATE: 02-05-07	SUBMITTED BY: PHILIP L. PINELLO
TOP	CHIEF, PPT FACILITIES DEV
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AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
 POLICE HEADQUARTERS LOWER ROOF STRUCTURAL PLAN

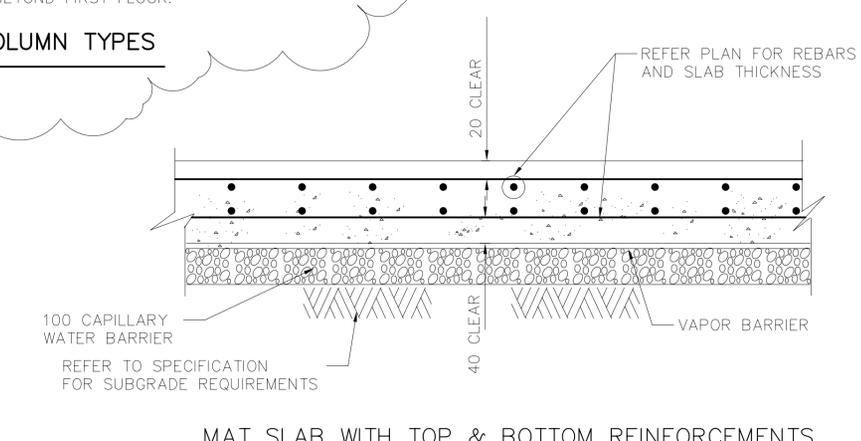
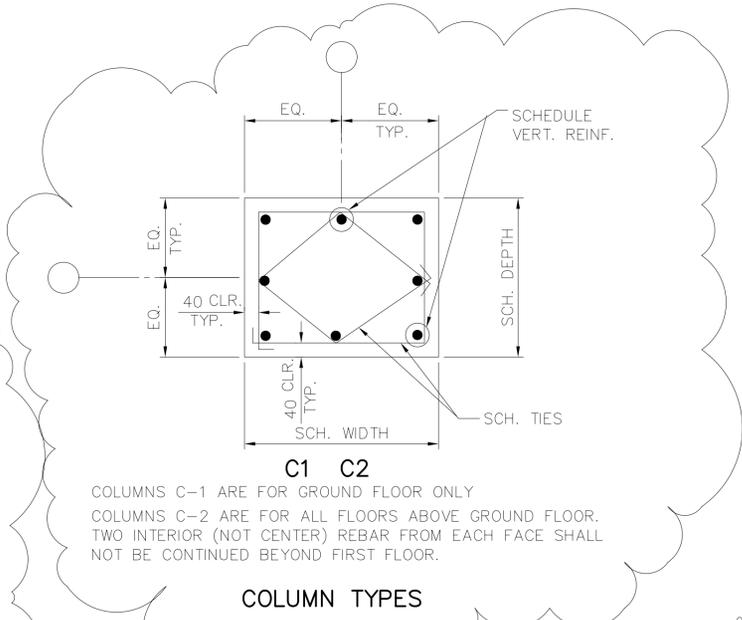
SHEET REFERENCE NUMBER:  
 A  
 S-3

DATE: \$  
 FILE: \$

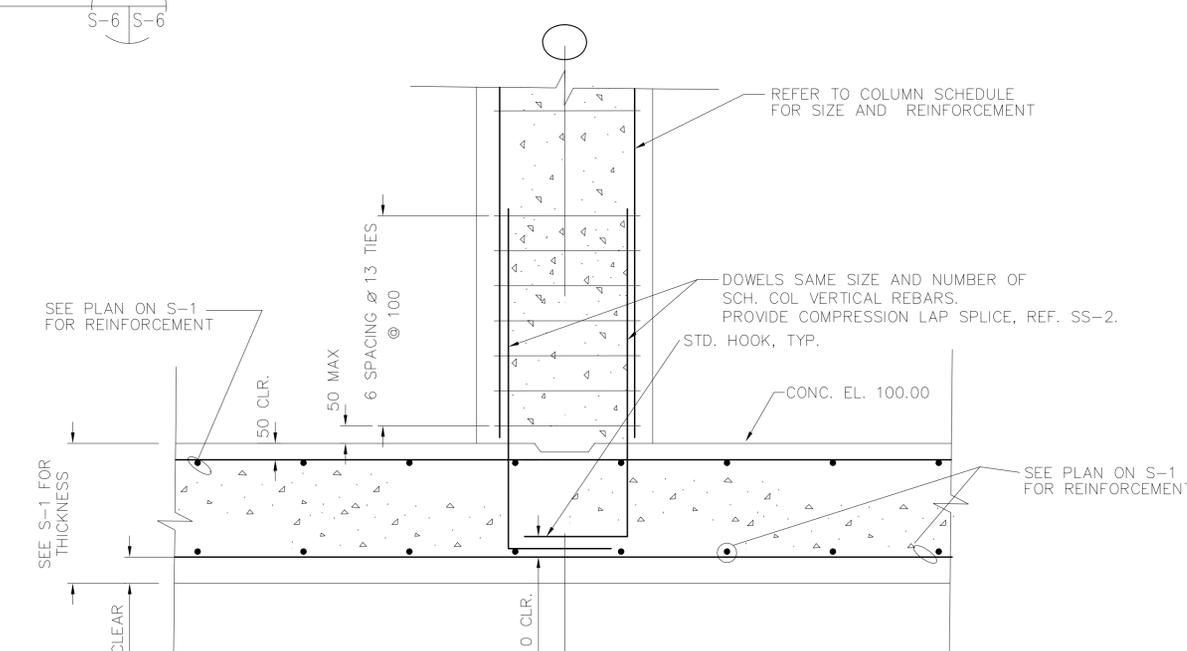




COLUMN SCHEDULE								
COLUMN GRIDS	STORY	COLUMN TYPE	CONCRETE DIMENSIONS		VERTICAL REINFORCEMENT	TIE REINFORCEMENT		
			WIDTH	DEPTH		SIZE	SPACING	SETS
A-1, A-2, A-3, A-4, A-6, A-7, A-8 B-1, B-2, B-3, B-4, B-5, B-6, B-7, B-8 C-1, C-2, C-3, C-5, C-6, C-7, C-8 D-1, D-2, D-3, D-5, D-6, D-7, D-8 E-1, E-2, E-3, E-5, E-6, E-7, E-8 F-1, F-2, F-3, F-5, F-6, F-7, F-8 G-1, G-2, G-3, G-5, G-6, G-7, G-8 H-1, H-2, H-3, H-5, H-6, H-7, H-8	FIRST FLOOR	C1	400	400	8- $\phi$ 22	$\phi$ 10	300	3
A-1, A-2, A-3, A-4, A-6, A-7, A-8 B-1, B-2, B-3, B-4, B-5, B-6, B-7, B-8 C-1, C-2, C-3, C-5, C-6, C-7, C-8 D-1, D-2, D-3, D-5, D-6, D-7, D-8 E-1, E-2, E-3, E-5, E-6, E-7, E-8 F-1, F-2, F-3, F-5, F-6, F-7, F-8 G-1, G-2, G-3, G-5, G-6, G-7, G-8 H-1, H-2, H-3, H-5, H-6, H-7, H-8	SECOND FLOOR	C2	400	400	8- $\phi$ 22	$\phi$ 10	300	2
C-3, C-5, C-6 D-3, D-5, D-6 E-3, E-5, E-6 F-3, F-5, F-6	THIRD LEVEL	C2	400	400	8- $\phi$ 22	$\phi$ 10	300	2

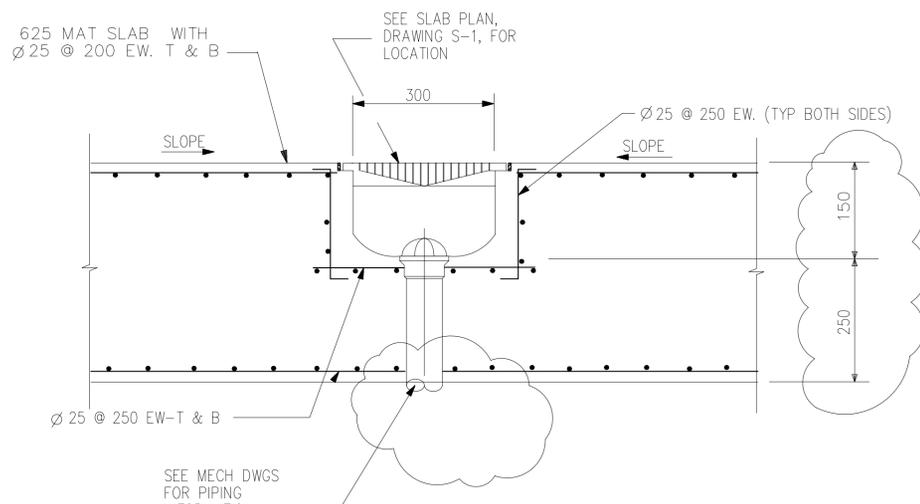


**DETAIL A**  
N.T.S.  
S-6 S-6



**DETAIL 2**  
N.T.S.  
S-1 S-6

**DETAIL D**  
N.T.S.  
S-6 S-6



**SECTION 4**  
N.T.S.  
S-2 S-6

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

REVISIONS	DATE	APP
	19/03/2007	

DESIGNED BY: DATE: 02-05-07	SUBMITTED BY: PHILIP L. DINELLO	FILE NO: AF0701 A-SF06DT
RC	TOP	CHK BY: KGO
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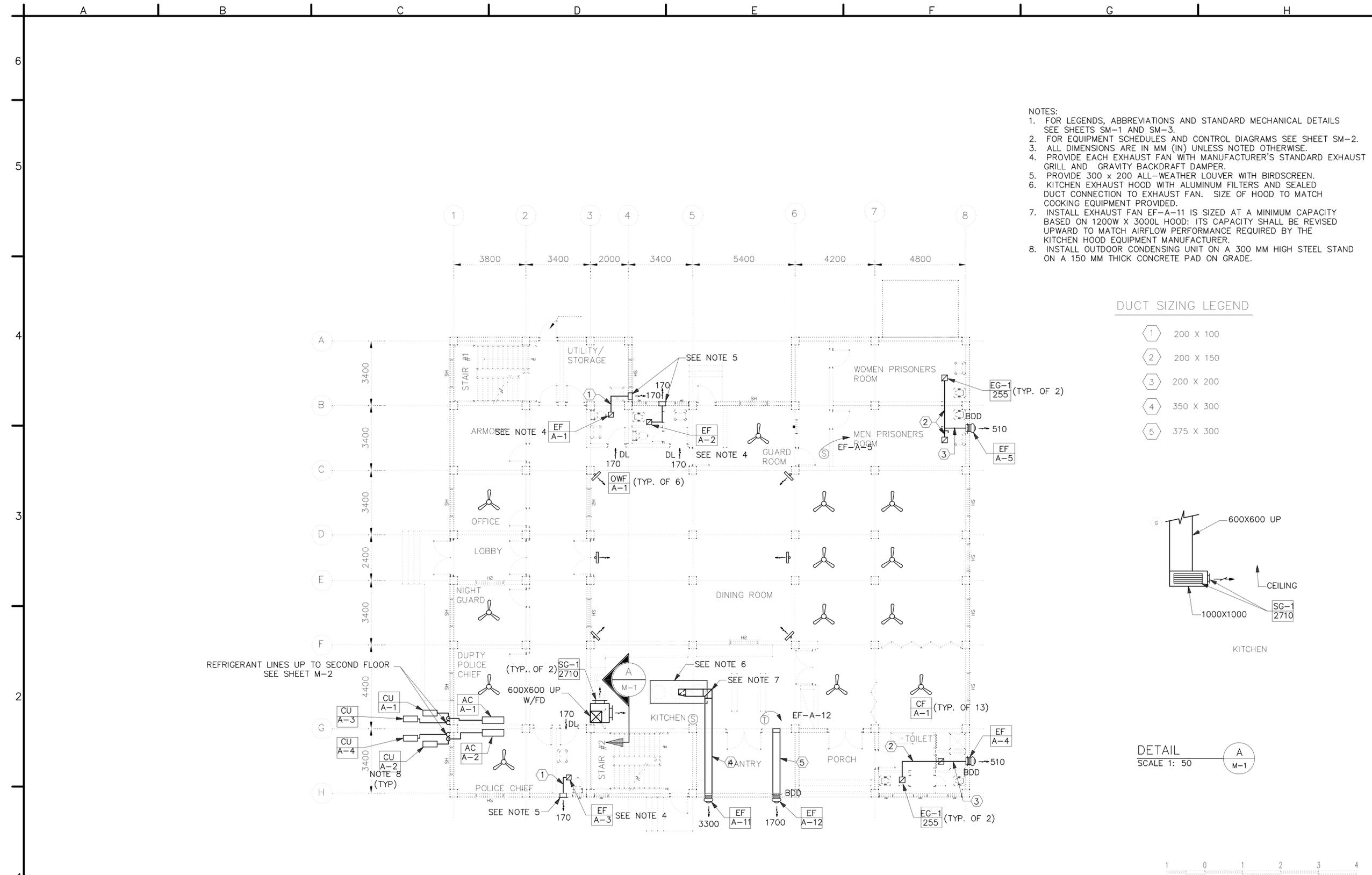
AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
POLICE HEADQUARTERS SLAB-ON-GRADE DETAILS

SHEET REFERENCE NUMBER:  
**A**  
**S-6**

DATE: \$  
FILE: \$



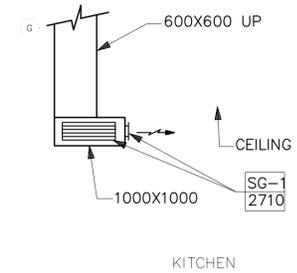




- NOTES:
1. FOR LEGENDS, ABBREVIATIONS AND STANDARD MECHANICAL DETAILS SEE SHEETS SM-1 AND SM-3.
  2. FOR EQUIPMENT SCHEDULES AND CONTROL DIAGRAMS SEE SHEET SM-2.
  3. ALL DIMENSIONS ARE IN MM (IN) UNLESS NOTED OTHERWISE.
  4. PROVIDE EACH EXHAUST FAN WITH MANUFACTURER'S STANDARD EXHAUST GRILL AND GRAVITY BACKDRAFT DAMPER.
  5. PROVIDE 300 x 200 ALL-WEATHER LOUVER WITH BIRDSCREEN.
  6. KITCHEN EXHAUST HOOD WITH ALUMINUM FILTERS AND SEALED DUCT CONNECTION TO EXHAUST FAN. SIZE OF HOOD TO MATCH COOKING EQUIPMENT PROVIDED.
  7. INSTALL EXHAUST FAN EF-A-11 IS SIZED AT A MINIMUM CAPACITY BASED ON 1200W X 3000L HOOD; ITS CAPACITY SHALL BE REVISED UPWARD TO MATCH AIRFLOW PERFORMANCE REQUIRED BY THE KITCHEN HOOD EQUIPMENT MANUFACTURER.
  8. INSTALL OUTDOOR CONDENSING UNIT ON A 300 MM HIGH STEEL STAND ON A 150 MM THICK CONCRETE PAD ON GRADE.

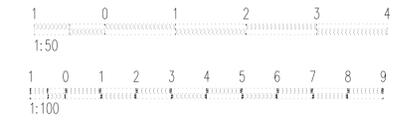
DUCT SIZING LEGEND

- ① 200 X 100
- ② 200 X 150
- ③ 200 X 200
- ④ 350 X 300
- ⑤ 375 X 300



DETAIL A M-1  
SCALE 1: 50

FIRST FLOOR HVAC PLAN  
SCALE= 1:100



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

REVISIONS	DATE	APP
	19/03/2007	

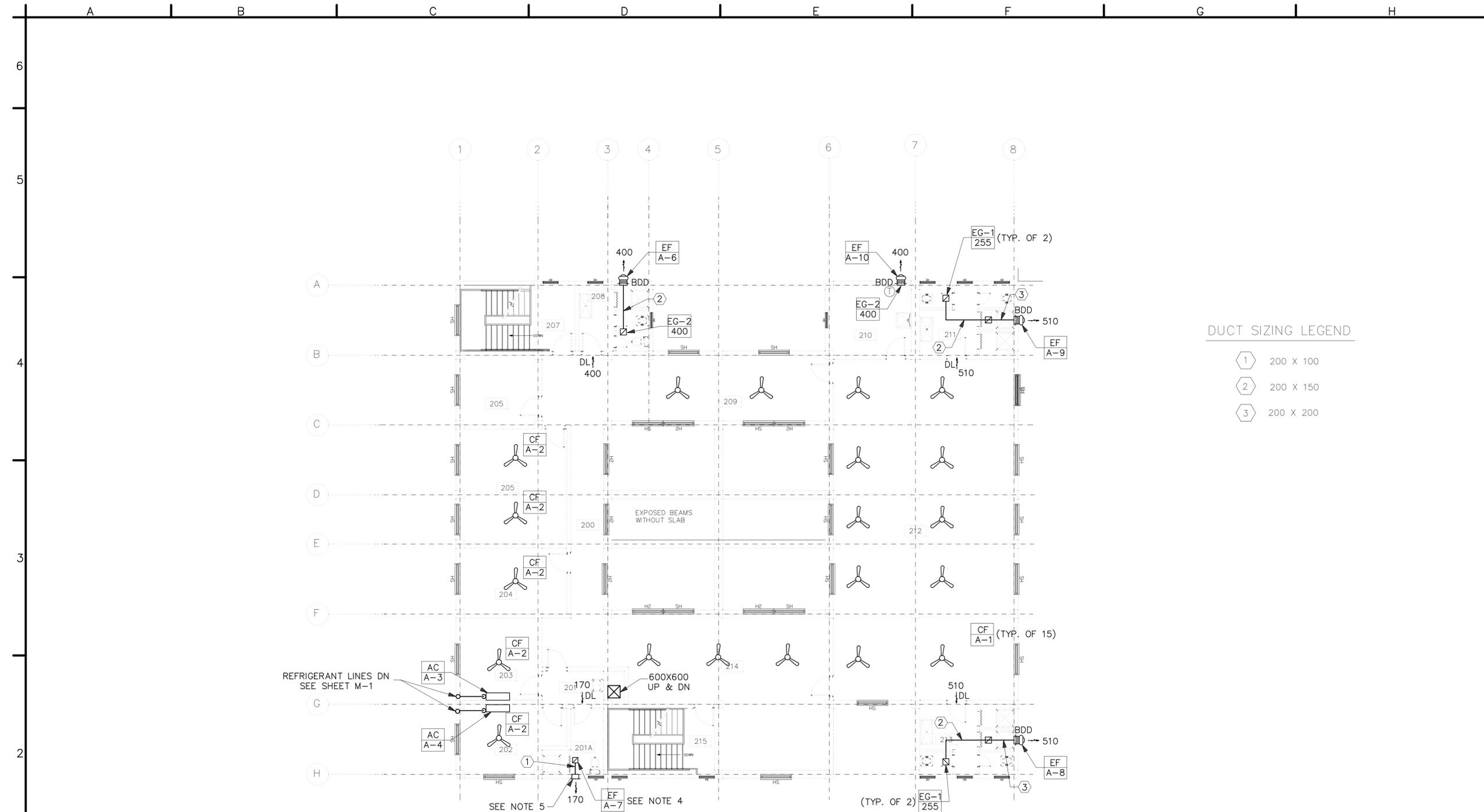
DESIGNED BY: DATE: 02-05-07	SUBMITTED BY: SVED ENAYATULLA	FILE NO: AF0701 A-MH01PN
OWN BY: RMS	CHEF, BLDG SYSTEMS	
CHK BY: SE		

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AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
POLICE HEADQUARTERS  
FIRST FLOOR HVAC PLAN

SHEET REFERENCE NUMBER:  
A  
M-1

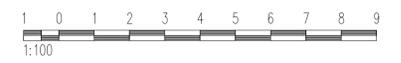
DATE\$  
FILE\$



DUCT SIZING LEGEND

- ① 200 X 100
- ② 200 X 150
- ③ 200 X 200

SECOND FLOOR HVAC PLAN  
SCALE= 1:100



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

DATE: \$  
FILE: \$

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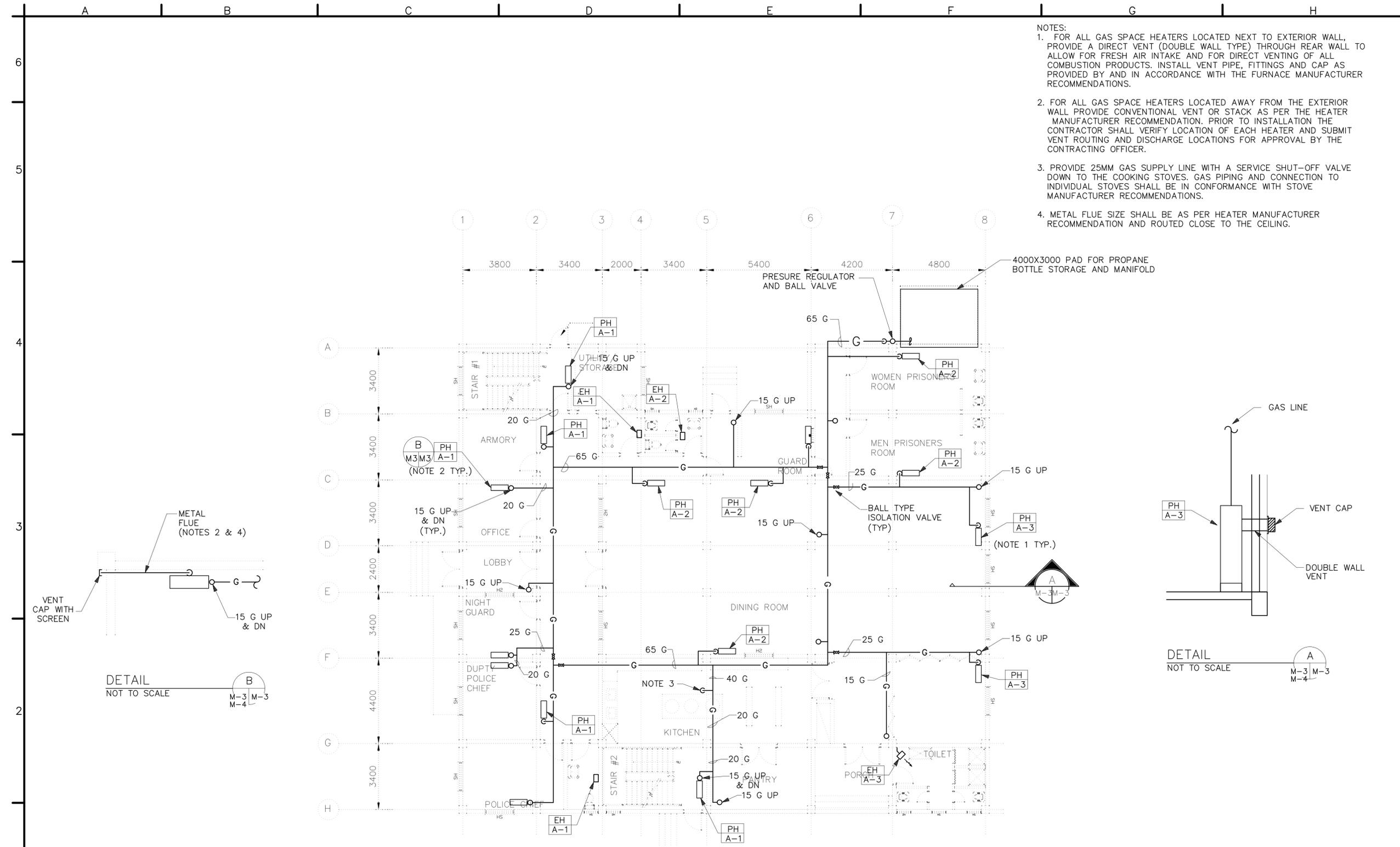
REVISIONS	DATE	APP
	19/03/2007	

DESIGNED BY: RMS	DATE: 02-05-07
DRAWN BY: RMS	SUBMITTED BY: SYED ENAYATULLA
CHECK BY: SE	CHIEF, BLDG. SYSTEMS
	FILE NO.: AF0701 A-MH02PN

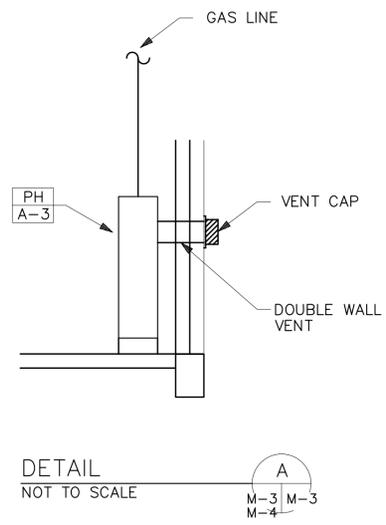
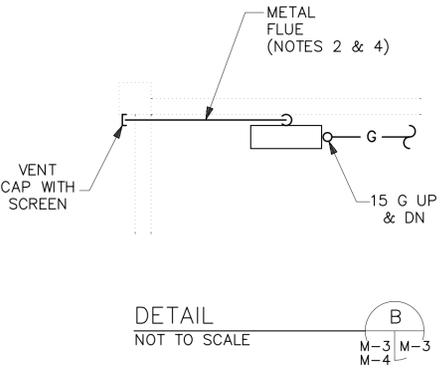
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AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
POLICE HEADQUARTERS  
SECOND FLOOR HVAC PLAN

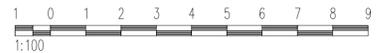
SHEET REFERENCE NUMBER:  
A  
M-2



- NOTES:
1. FOR ALL GAS SPACE HEATERS LOCATED NEXT TO EXTERIOR WALL, PROVIDE A DIRECT VENT (DOUBLE WALL TYPE) THROUGH REAR WALL TO ALLOW FOR FRESH AIR INTAKE AND FOR DIRECT VENTING OF ALL COMBUSTION PRODUCTS. INSTALL VENT PIPE, FITTINGS AND CAP AS PROVIDED BY AND IN ACCORDANCE WITH THE FURNACE MANUFACTURER RECOMMENDATIONS.
  2. FOR ALL GAS SPACE HEATERS LOCATED AWAY FROM THE EXTERIOR WALL PROVIDE CONVENTIONAL VENT OR STACK AS PER THE HEATER MANUFACTURER RECOMMENDATION. PRIOR TO INSTALLATION THE CONTRACTOR SHALL VERIFY LOCATION OF EACH HEATER AND SUBMIT VENT ROUTING AND DISCHARGE LOCATIONS FOR APPROVAL BY THE CONTRACTING OFFICER.
  3. PROVIDE 25MM GAS SUPPLY LINE WITH A SERVICE SHUT-OFF VALVE DOWN TO THE COOKING STOVES. GAS PIPING AND CONNECTION TO INDIVIDUAL STOVES SHALL BE IN CONFORMANCE WITH STOVE MANUFACTURER RECOMMENDATIONS.
  4. METAL FLUE SIZE SHALL BE AS PER HEATER MANUFACTURER RECOMMENDATION AND ROUTED CLOSE TO THE CEILING.



FIRST FLOOR HEATING PLAN  
SCALE= 1:100



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

SYMBOL	DESCRIPTION	DATE	APP

DESIGNED BY: DATE: 02-05-07	SUBMITTED BY: SYED ENAYATULLA	FILE NO.: AF0701 A-MH03PN
RMS	CHIEF, BLDG. SYSTEMS	
DOWN BY: RMS		
CHK BY: SE		

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AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
POLICE HEADQUARTERS  
FIRST FLOOR HEATING PLAN

SHEET REFERENCE NUMBER:  
A  
M-3

DATE\$  
FILE\$



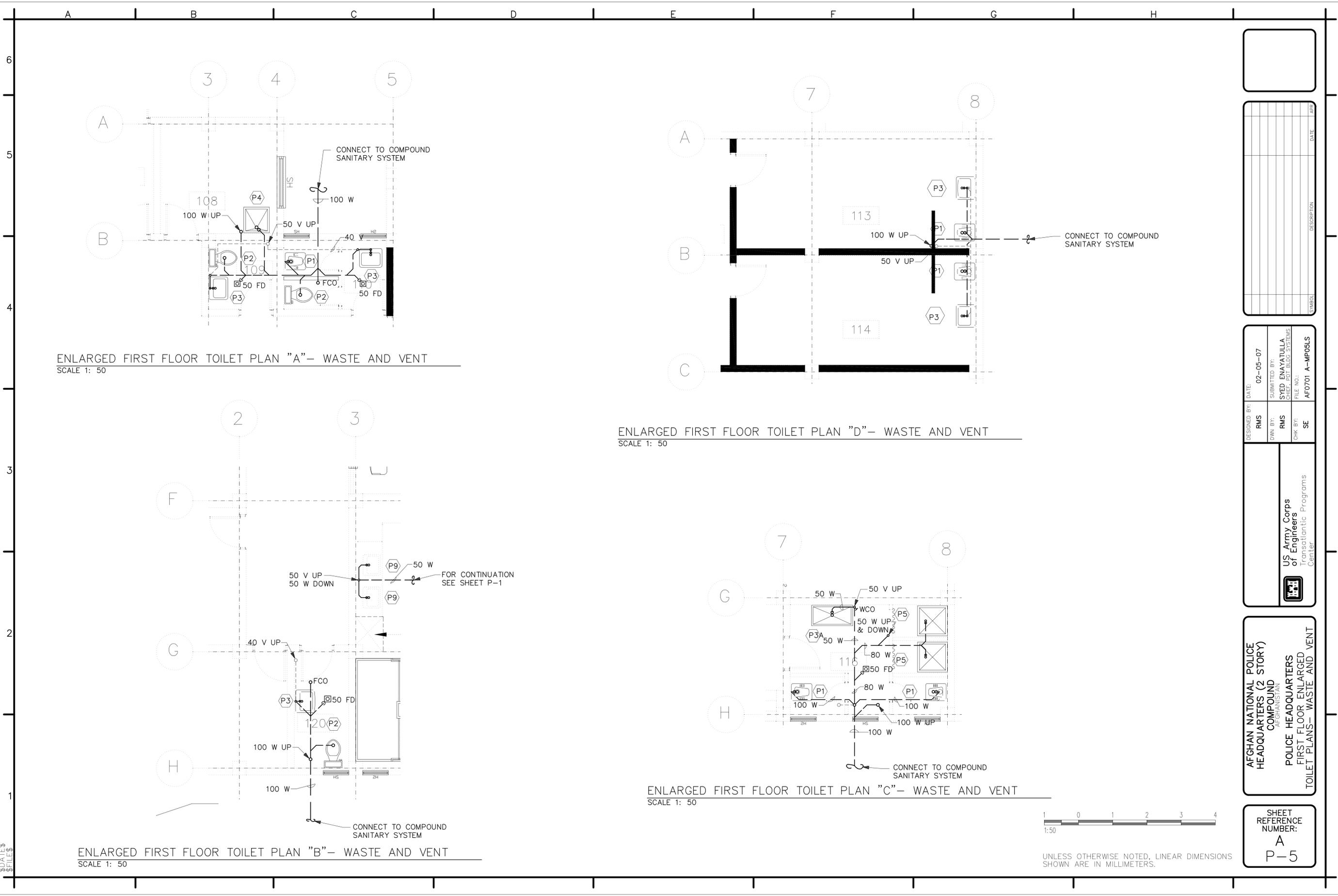












ENLARGED FIRST FLOOR TOILET PLAN "A" - WASTE AND VENT  
SCALE 1: 50

ENLARGED FIRST FLOOR TOILET PLAN "D" - WASTE AND VENT  
SCALE 1: 50

ENLARGED FIRST FLOOR TOILET PLAN "C" - WASTE AND VENT  
SCALE 1: 50

ENLARGED FIRST FLOOR TOILET PLAN "B" - WASTE AND VENT  
SCALE 1: 50



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

SYMBOL	DESCRIPTION	DATE	APP

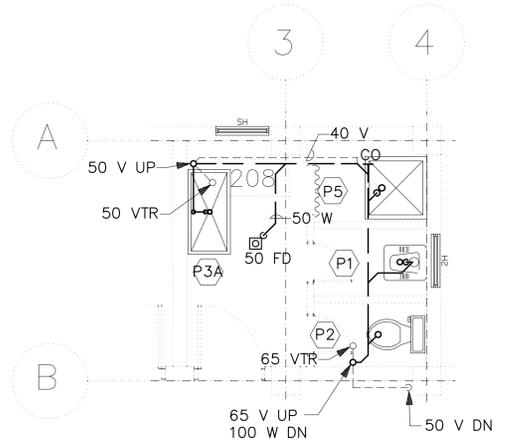
DESIGNED BY: RMS	DATE: 02-05-07
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	FILE NO.: AF0701 A-MP06LS

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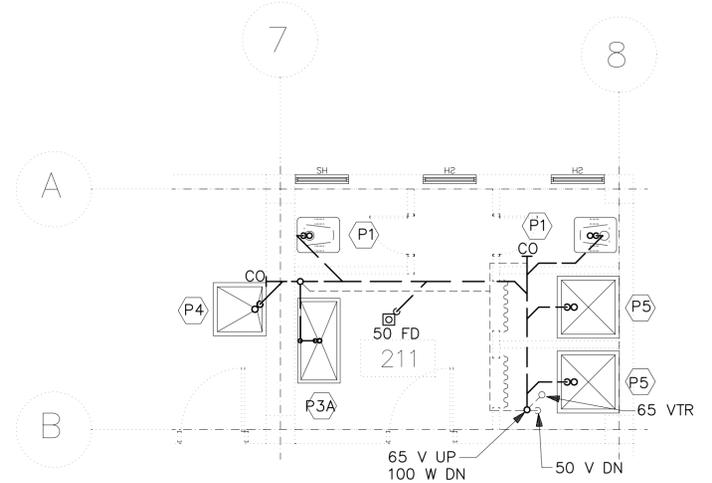
AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
POLICE HEADQUARTERS FIRST FLOOR ENLARGED TOILET PLANS - WASTE AND VENT

SHEET REFERENCE NUMBER:  
A  
P-5

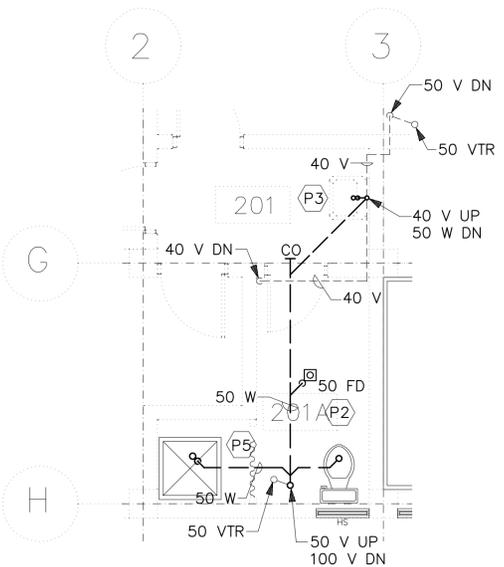
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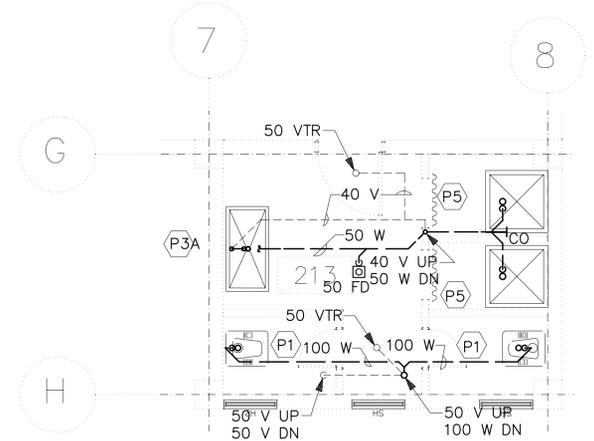
ENLARGED SECOND FLOOR TOILET PLAN "E" - WASTE AND VENT  
SCALE= 1: 50



ENLARGED SECOND FLOOR TOILET PLAN "H" - WASTE AND VENT  
SCALE= 1: 50



ENLARGED SECOND FLOOR TOILET PLAN "F" - WASTE AND VENT  
SCALE= 1: 50



ENLARGED SECOND FLOOR TOILET PLAN "G" - WASTE AND VENT  
SCALE= 1: 50



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

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SYMBOL	DESCRIPTION	DATE	APP

DESIGNED BY: RMS	DATE: 02-05-07
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FILE NO.: AF0701 A-MP06LS	

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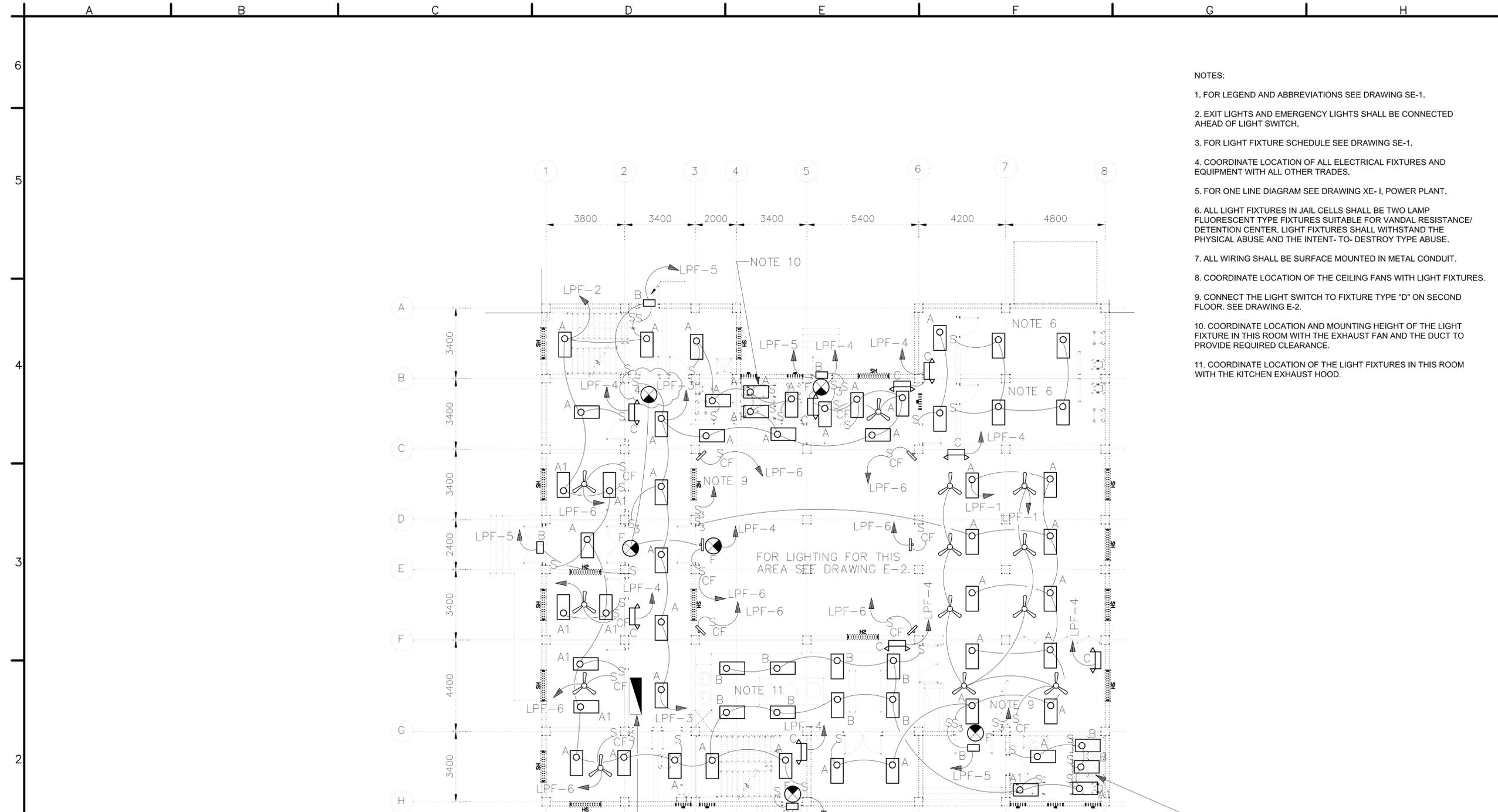
AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
POLICE HEADQUARTERS SECOND FLOOR ENLARGED TOILET PLANS - WASTE AND VENT

SHEET REFERENCE NUMBER:  
A  
P-6

DATE\$\$\$\$  
FILE\$\$\$\$



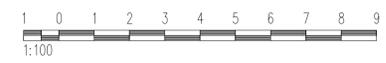




- NOTES:
1. FOR LEGEND AND ABBREVIATIONS SEE DRAWING SE-1.
  2. EXIT LIGHTS AND EMERGENCY LIGHTS SHALL BE CONNECTED AHEAD OF LIGHT SWITCH.
  3. FOR LIGHT FIXTURE SCHEDULE SEE DRAWING SE-1.
  4. COORDINATE LOCATION OF ALL ELECTRICAL FIXTURES AND EQUIPMENT WITH ALL OTHER TRADES.
  5. FOR ONE LINE DIAGRAM SEE DRAWING XE-1, POWER PLANT.
  6. ALL LIGHT FIXTURES IN JAIL CELLS SHALL BE TWO LAMP FLUORESCENT TYPE FIXTURES SUITABLE FOR VANDAL RESISTANCE/ DETENTION CENTER. LIGHT FIXTURES SHALL WITHSTAND THE PHYSICAL ABUSE AND THE INTENT- TO- DESTROY TYPE ABUSE.
  7. ALL WIRING SHALL BE SURFACE MOUNTED IN METAL CONDUIT.
  8. COORDINATE LOCATION OF THE CEILING FANS WITH LIGHT FIXTURES.
  9. CONNECT THE LIGHT SWITCH TO FIXTURE TYPE 'D' ON SECOND FLOOR. SEE DRAWING E-2.
  10. COORDINATE LOCATION AND MOUNTING HEIGHT OF THE LIGHT FIXTURE IN THIS ROOM WITH THE EXHAUST FAN AND THE DUCT TO PROVIDE REQUIRED CLEARANCE.
  11. COORDINATE LOCATION OF THE LIGHT FIXTURES IN THIS ROOM WITH THE KITCHEN EXHAUST HOOD.

DATE\$  
FILE\$

FIRST FLOOR LIGHTING PLAN  
SCALE= 1:100



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

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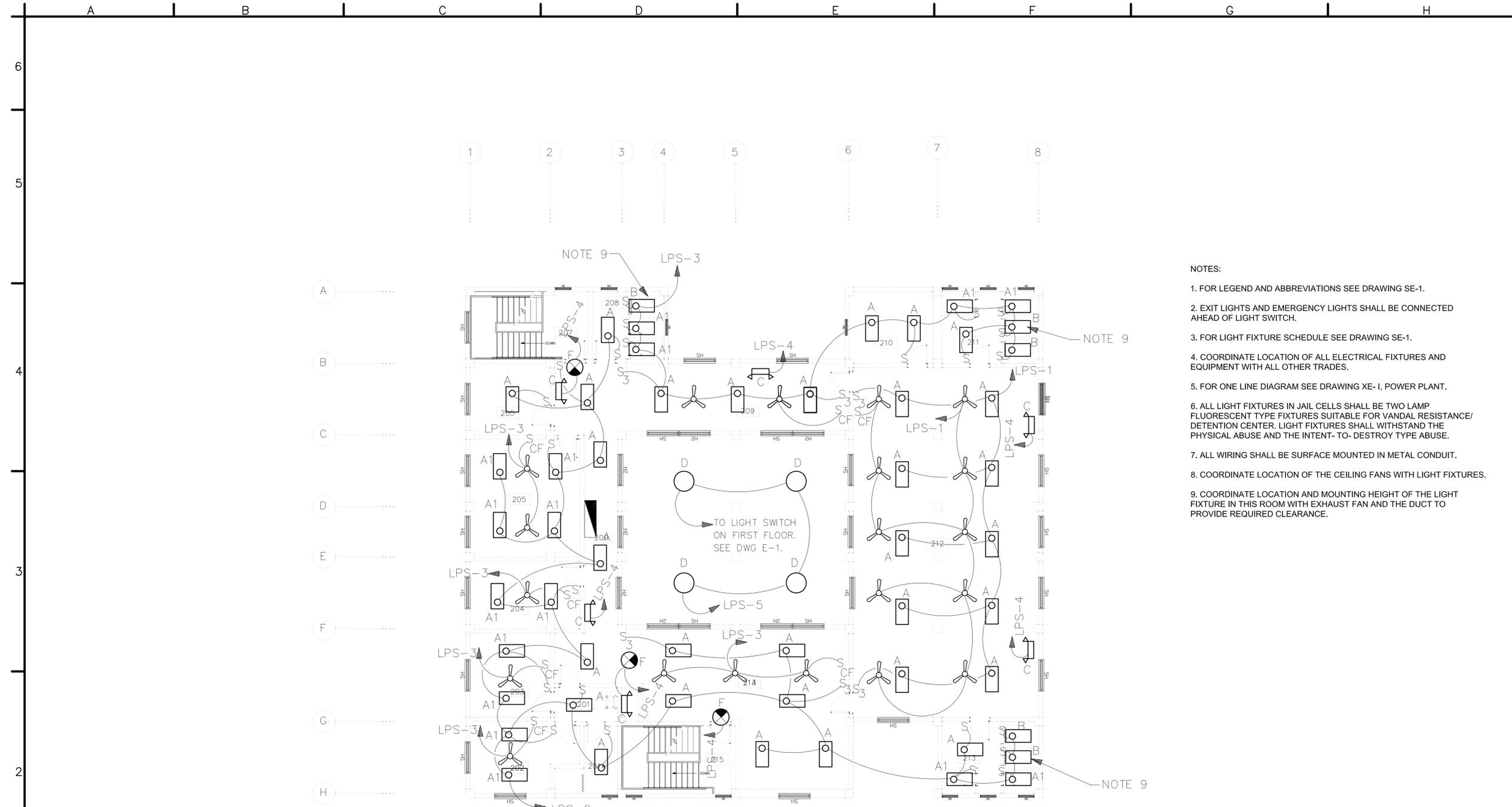
NO.	REVISIONS	DATE	APP.
1		19/03/2007	

DESIGNED BY:	DATE:	02-05-07
DRAWN BY:	SUBMITTED BY:	SYED ENAYATULLA
CHK BY:	CHIEF:	
	FILE NO.:	AF0701 A-ELO1PN

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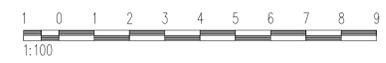
AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
POLICE HEADQUARTERS FIRST FLOOR LIGHTING PLAN

SHEET REFERENCE NUMBER:  
A  
E-1



SECOND FLOOR LIGHTING PLAN  
SCALE= 1:100

- NOTES:
1. FOR LEGEND AND ABBREVIATIONS SEE DRAWING SE-1.
  2. EXIT LIGHTS AND EMERGENCY LIGHTS SHALL BE CONNECTED AHEAD OF LIGHT SWITCH.
  3. FOR LIGHT FIXTURE SCHEDULE SEE DRAWING SE-1.
  4. COORDINATE LOCATION OF ALL ELECTRICAL FIXTURES AND EQUIPMENT WITH ALL OTHER TRADES.
  5. FOR ONE LINE DIAGRAM SEE DRAWING XE- I, POWER PLANT.
  6. ALL LIGHT FIXTURES IN JAIL CELLS SHALL BE TWO LAMP FLUORESCENT TYPE FIXTURES SUITABLE FOR VANDAL RESISTANCE/ DETENTION CENTER. LIGHT FIXTURES SHALL WITHSTAND THE PHYSICAL ABUSE AND THE INTENT- TO- DESTROY TYPE ABUSE.
  7. ALL WIRING SHALL BE SURFACE MOUNTED IN METAL CONDUIT.
  8. COORDINATE LOCATION OF THE CEILING FANS WITH LIGHT FIXTURES.
  9. COORDINATE LOCATION AND MOUNTING HEIGHT OF THE LIGHT FIXTURE IN THIS ROOM WITH EXHAUST FAN AND THE DUCT TO PROVIDE REQUIRED CLEARANCE.



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

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SYMBOL	DESCRIPTION	DATE	APP

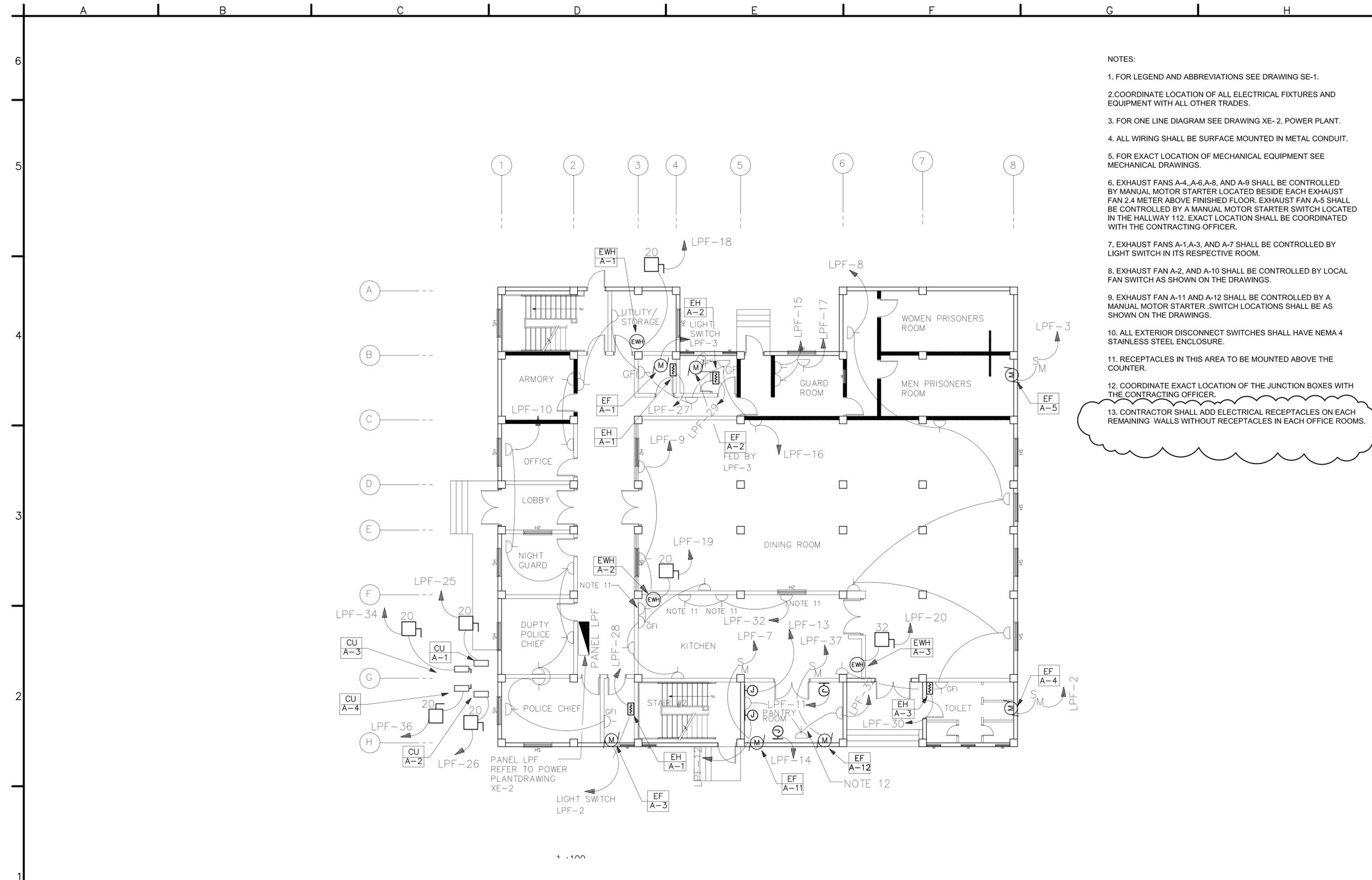
DESIGNED BY: MM	DATE: 02-05-07
DRAWN BY: MM	SUBMITTED BY: SYED ENAYATULLA
CHECKED BY: SE	CHIEF, BLDG. SYSTEMS
FILE NO.: AF0701 A-EL02PN	

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AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
POLICE HEADQUARTERS  
SECOND FLOOR LIGHTING PLAN

SHEET REFERENCE NUMBER:  
A  
E-2

DATE\$  
FILE\$



FIRST FLOOR POWER PLAN  
SCALE= 1:100

- NOTES:
1. FOR LEGEND AND ABBREVIATIONS SEE DRAWING SE-1.
  2. COORDINATE LOCATION OF ALL ELECTRICAL FIXTURES AND EQUIPMENT WITH ALL OTHER TRADES.
  3. FOR ONE LINE DIAGRAM SEE DRAWING XE-2, POWER PLANT.
  4. ALL WIRING SHALL BE SURFACE MOUNTED IN METAL CONDUIT.
  5. FOR EXACT LOCATION OF MECHANICAL EQUIPMENT SEE MECHANICAL DRAWINGS.
  6. EXHAUST FANS A-4, A-6, A-8, AND A-9 SHALL BE CONTROLLED BY MANUAL MOTOR STARTER LOCATED BESIDE EACH EXHAUST FAN 2.4 METER ABOVE FINISHED FLOOR. EXHAUST FAN A-5 SHALL BE CONTROLLED BY A MANUAL MOTOR STARTER SWITCH LOCATED IN THE HALLWAY 112. EXACT LOCATION SHALL BE COORDINATED WITH THE CONTRACTING OFFICER.
  7. EXHAUST FANS A-1, A-3, AND A-7 SHALL BE CONTROLLED BY LIGHT SWITCH IN ITS RESPECTIVE ROOM.
  8. EXHAUST FAN A-2, AND A-10 SHALL BE CONTROLLED BY LOCAL FAN SWITCH AS SHOWN ON THE DRAWINGS.
  9. EXHAUST FAN A-11 AND A-12 SHALL BE CONTROLLED BY A MANUAL MOTOR STARTER. SWITCH LOCATIONS SHALL BE AS SHOWN ON THE DRAWINGS.
  10. ALL EXTERIOR DISCONNECT SWITCHES SHALL HAVE NEMA 4 STAINLESS STEEL ENCLOSURE.
  11. RECEPTACLES IN THIS AREA TO BE MOUNTED ABOVE THE COUNTER.
  12. COORDINATE EXACT LOCATION OF THE JUNCTION BOXES WITH THE CONTRACTING OFFICER.
  13. CONTRACTOR SHALL ADD ELECTRICAL RECEPTACLES ON EACH REMAINING WALLS WITHOUT RECEPTACLES IN EACH OFFICE ROOMS.

CONTRACTOR SHALL ADD ELECTRICAL RECEPTACLES ON EACH REMAINING WALLS WITHOUT RECEPTACLES IN EACH OFFICE ROOMS.

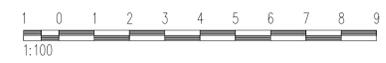
NO.	REVISIONS	DATE	APP.
1		19/03/2007	

DESIGNED BY: DATE: 02-05-07	SUBMITTED BY:	FILE NO: AF0701 A-EF03FN
MM	MM	SE
DOWN BY:	CHK BY:	

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AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
POLICE HEADQUARTERS  
FIRST FLOOR POWER PLAN

SHEET REFERENCE NUMBER:  
A  
E-3



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

DATE: \$  
FILE: \$

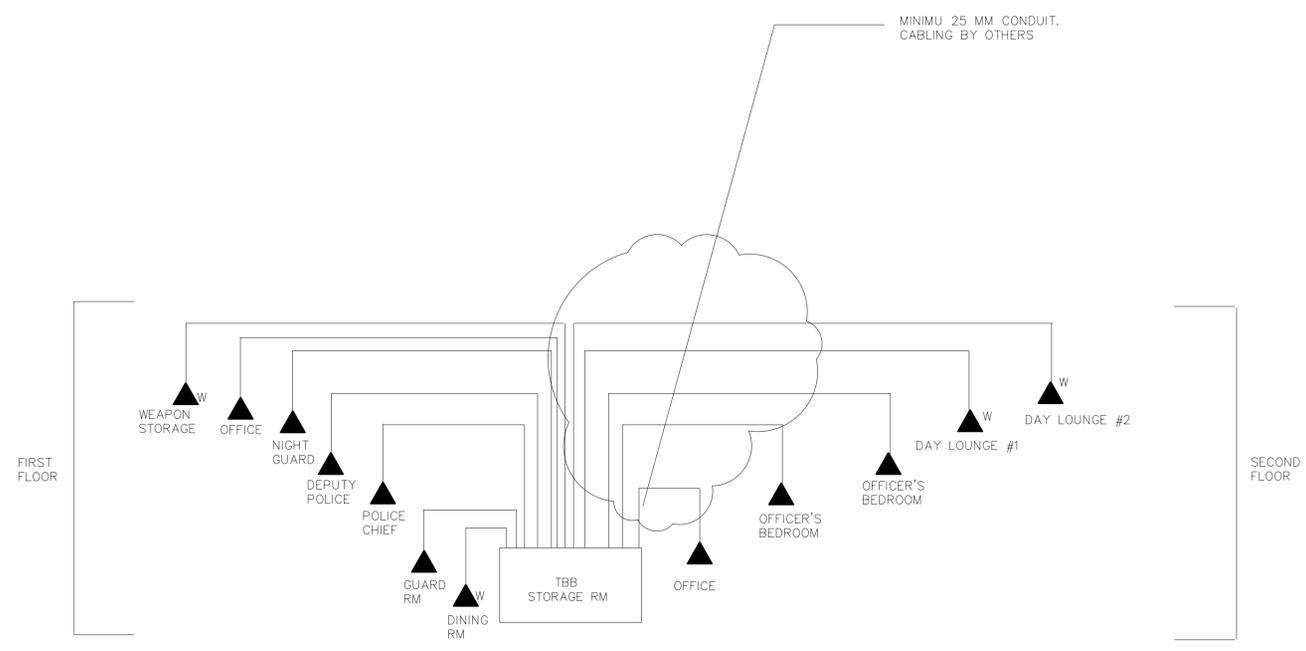




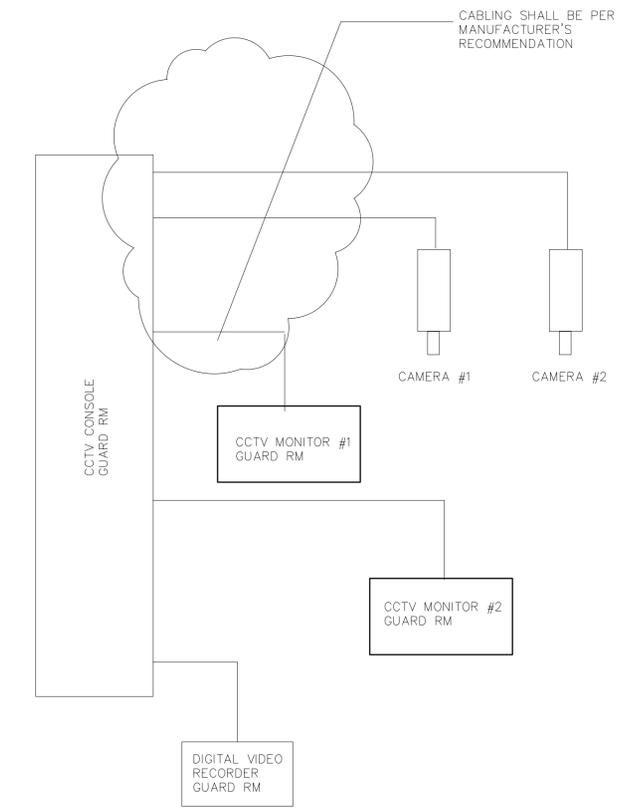
PANELBOARD LPF FLUSH MOUNTED MINIMUM 22,000 ASYM. A.I.C. MIN.  
 AMP. MAIN LUGS (OR) 225 AMP. MAIN BREAKER W/ 225 AMP. TRIP  
 CIRCUIT BREAKER TYPE 380/220 VOLTS 3 PHASE 4 WIRE 250 AMP. BUS 50 HZ

Ckt. No.	TRIP AMPS	NO. POLES	WIRE MM2	GND MM2	CONDUIT MM	LOAD SERVED	LOAD-V.A.			LOAD-V.A.			LOAD SERVED	CONDUIT MM	GND MM2	WIRE MM2	NO. POLES	TRIP AMPS	Ckt. No.	
							A0	B0	C0	A0	B0	C0								
1	20	1	4	4	20	LIGHTING & CEILING FAN	3400			3360			LIGHTING & EXHAUST FAN	20	4	4	1	20	2	
3	20	1	4	4	20	LGHT,EF,CEILING FAN		3440		650			EXIT AND EMERGENCY LIGHTING	20	4	4	1	20	4	
5	20	1	4	4	20	EXTERIOR LIGHTING			500		2000	CEILING FANS	20	4	4	1	20	6		
7	20	1	4	4	20	EF-A-11	750			1260			RECEPTACLES	20	4	4	1	20	8	
9	20	1	4	4	20	RECEPTACLES		1260		1440			RECEPTACLES	20	4	4	1	20	10	
11	20	1	4	4	20	JB FOR REFRIGERATOR/FREEZER			2000		2000	JB FOR REFRIGERATOR/FREEZER	20	4	4	1	20	12		
13	20	1	4	4	20	JB FOR REFRIGERATOR/FREEZER	2000			2000			JB FOR REFRIGERATOR/FREEZER	20	4	4	1	20	14	
15	20	1	4	4	20	RECEPTACLES CCTV CONSOLE		720			1440	RECEPTACLES	20	4	4	1	20	16		
17	20	1	4	4	20	RECEPTACLES, GUARD RM			180		2500	ELECTRIC WATER HEATER A-1	20	4	4	1	20	18		
19	20	3	4	4	20	ELECTRIC WATER HEATER-2	2000			4000			ELECTRIC WATER HEATER A-3	25	6	6	3	30	20	
21								2000			4000								22	
23									2000		4000								24	
25	20	1	4	4	20	CU-A-1	750			900			CU-A-2	20	4	4	1	20	26	
27	20	1	4	4	20	EH-A-1		750			750			EH-A-1	20	4	4	1	20	28
29	20	1	4	4	20	EH-A-2			1500		3000			EH-A-3	20	4	4	1	20	30
31	150	3	70	50	100	PANEL LPS SECOND FLOOR	21403			540			RECEPTACLES	20	4	4	1	20	32	
33								21403			750			CU-A-3	20	4	4	1	20	34
35									21403			900		CU-A-4	20	4	4	1	20	36
37	20	1	4	4	20	EF-A-12	250						SPARE				1	20	38	
39	20	1				SPARE							SPARE				1	20	40	
41	20	1				SPARE							SPARE				1	20	42	
							30553	32326	27583	12060	9030	14400								

TOTAL CONN. LOAD 125.94 KVA. 60 % DEMAND = ESTIMATED DEMAND LOAD: 75.56 kVA  
 TOTAL CONN. LOAD PER PHASE (KVA): A0 42.61 B0 41.35 C0 41.98  
 SUPPLIED FROM POWER PLANT SWITCHBOARD(PPSB)



TELEPHONE RISER DIAGRAM



CCTV RISER DIAGRAM

- NOTES:
- FOR LEGEND AND ABBREVIATIONS SEE DRAWING SE-6.
  - CONTRACTOR SHALL CONFIRM THAT ALL CIRCUIT RATINGS ARE BASED ON THE ACTUAL NAMEPLATE OF THE SUPPLIED EQUIPMENT.
  - CABLING FOR CCTV SYSTEM SHALL BE PER MANUFACTURER'S RECOMMENDATION.

NO.	DATE	DESCRIPTION
1	19/03/2007	

DESIGNED BY: DATE: 02-05-07	SUBMITTED BY:	FILE NO.: AF0701 A-EF06SC
MM	MM	SE
CHK BY:		

US Army Corps of Engineers  
 Transatlantic Programs Center

AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
 POLICE HEADQUARTERS PANEL SCHEDULES

SHEET REFERENCE NUMBER:  
 A  
 E-6

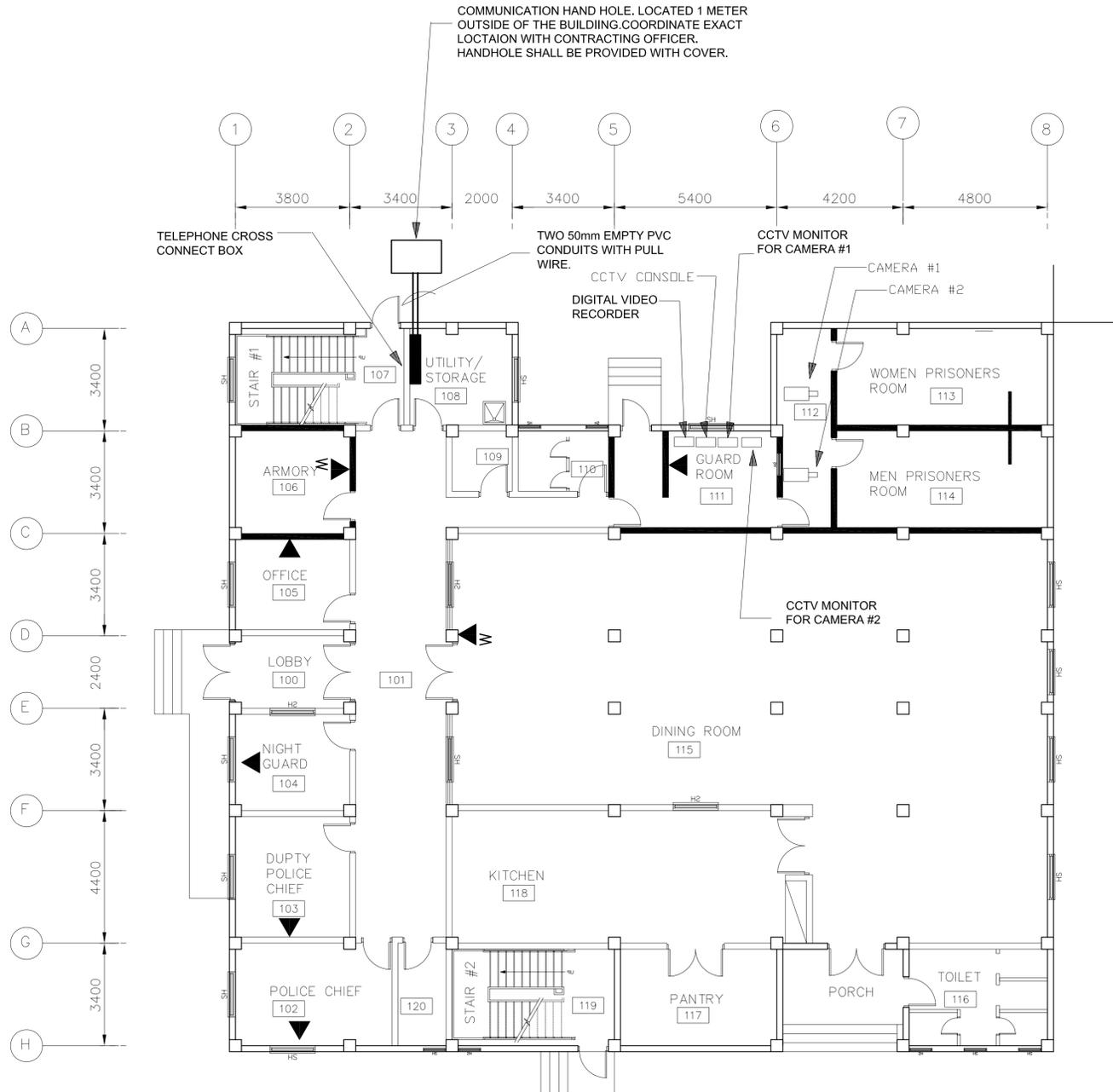
UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

DATE\$  
 FILE\$



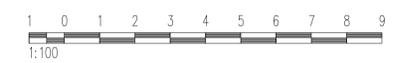
A B C D E F G H

6  
5  
4  
3  
2  
1



- NOTES:
1. FOR LEGEND AND ABBREVIATIONS SEE DRAWING SE-1.
  2. COORDINATE LOCATION OF ALL COMMUNICATION FIXTURES AND EQUIPMENT WITH ALL OTHER TRADES.
  3. ALL EMPTY CONDUITS SHALL BE PROVIDED WITH PULL WIRES.
  4. FOR TELEPHONE RISER DIAGRAM AND CCTV RISER DIAGRAM SEE DRAWING E-7.
  5. CCTV WIRING SHALL BE SURFACE MOUNTED IN METAL CONDUIT.
  6. TELEPHONE RACEWAY SYSTEM SHALL BE METAL CONDUIT. WIRING SHALL BE BY OTHERS.

FIRST FLOOR COMMUNICATIONS PLAN  
SCALE= 1:100



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

SYMBOL	DESCRIPTION	DATE	APP

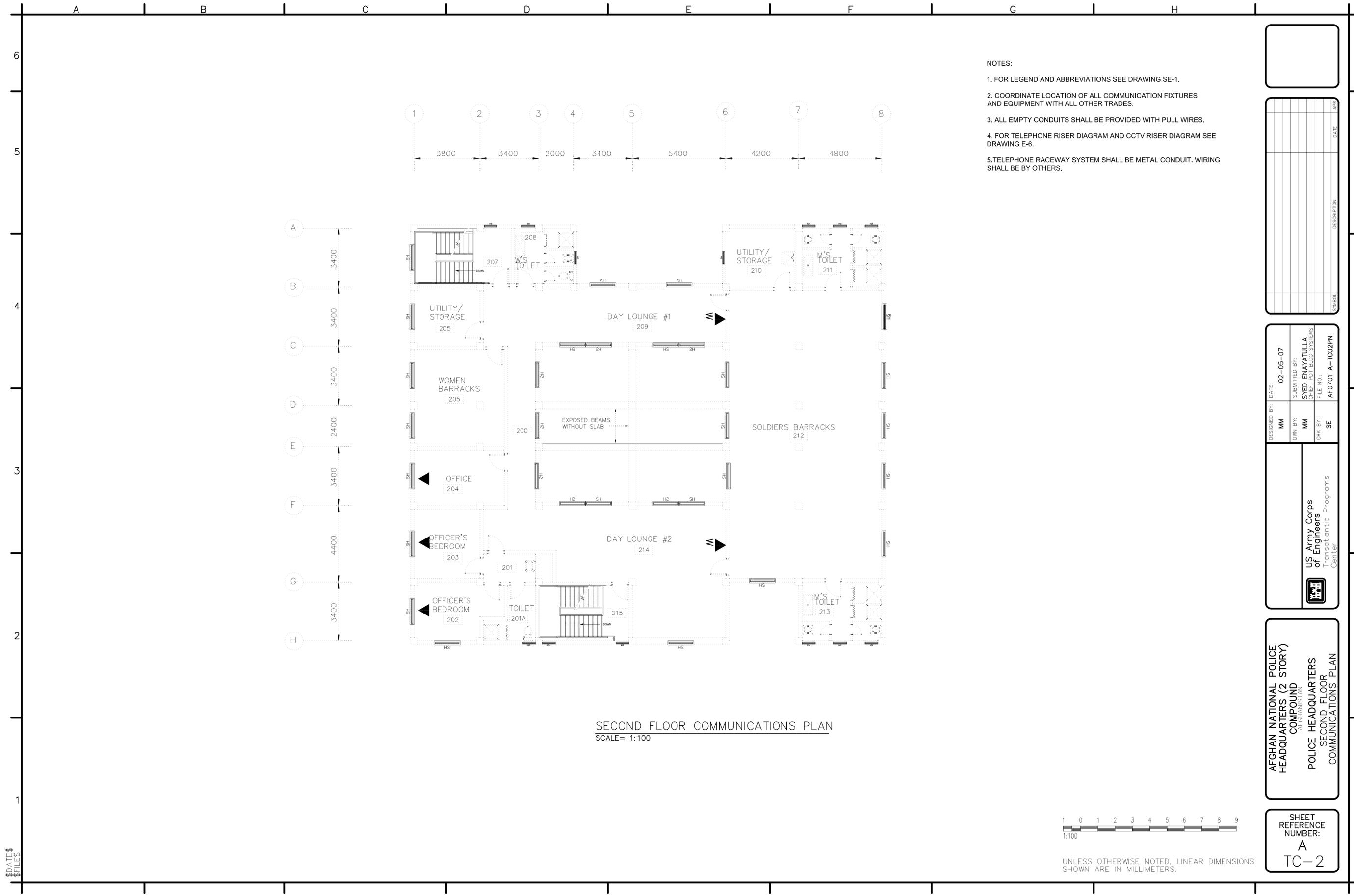
DESIGNED BY: MM	DATE: 02-05-07
DRAWN BY: MM	SUBMITTED BY: SYED ENAYATULLA
CHECKED BY: SE	CHIEF, BLDG. SYSTEMS
FILE NO.: AF0701 A-TC01PN	

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Transatlantic Programs Center

AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
POLICE HEADQUARTERS FIRST FLOOR COMMUNICATIONS PLAN

SHEET REFERENCE NUMBER:  
A  
TC-1

DATE\$  
FILE\$



SECOND FLOOR COMMUNICATIONS PLAN  
SCALE= 1:100

- NOTES:
1. FOR LEGEND AND ABBREVIATIONS SEE DRAWING SE-1.
  2. COORDINATE LOCATION OF ALL COMMUNICATION FIXTURES AND EQUIPMENT WITH ALL OTHER TRADES.
  3. ALL EMPTY CONDUITS SHALL BE PROVIDED WITH PULL WIRES.
  4. FOR TELEPHONE RISER DIAGRAM AND CCTV RISER DIAGRAM SEE DRAWING E-6.
  5. TELEPHONE RACEWAY SYSTEM SHALL BE METAL CONDUIT. WIRING SHALL BE BY OTHERS.



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

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SYMBOL	DESCRIPTION	DATE	APP

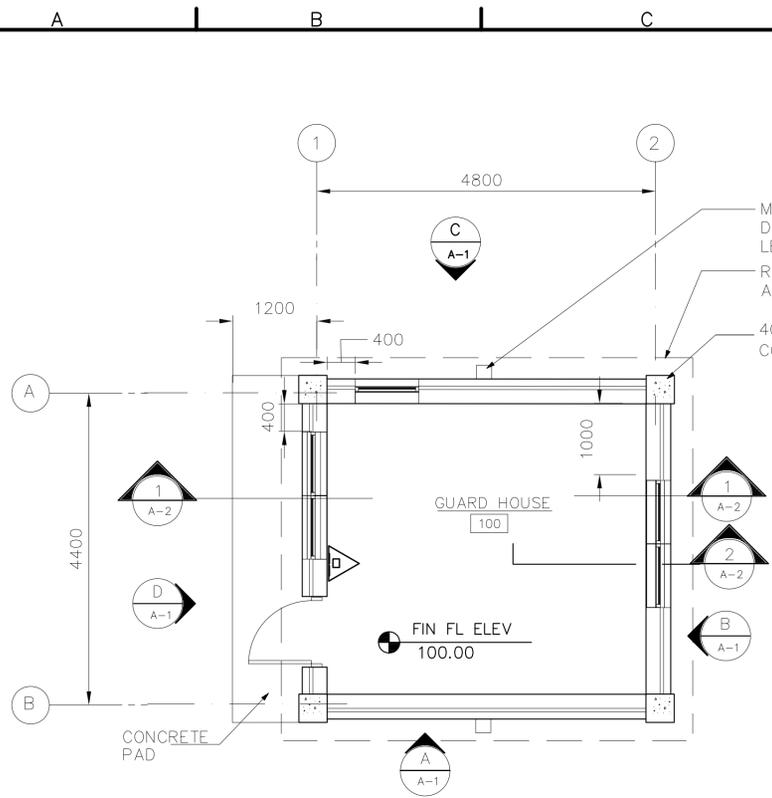
DESIGNED BY: MM	DATE: 02-05-07
DOWN BY: MM	SUBMITTED BY: SYED ENAYATULLA
CHK BY: SE	CHIEF, BDT, BLDG SYSTEMS
	FILE NO.: AF0701 A-TC002PN

US Army Corps of Engineers  
Transatlantic Programs Center

AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
POLICE HEADQUARTERS SECOND FLOOR COMMUNICATIONS PLAN

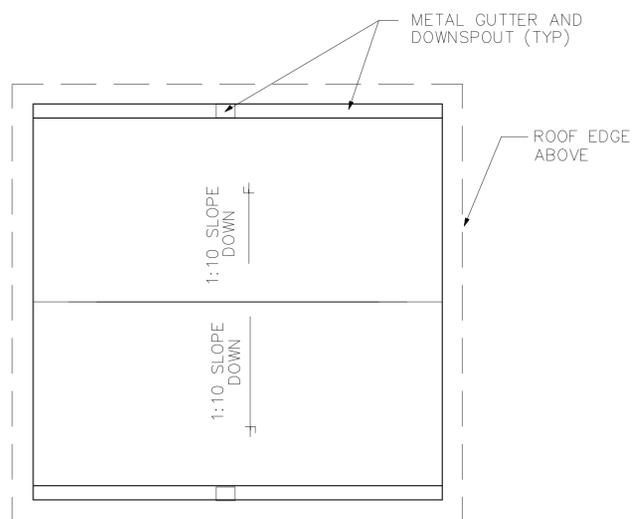
SHEET REFERENCE NUMBER:  
A  
TC-2

DATE\$  
FILE\$

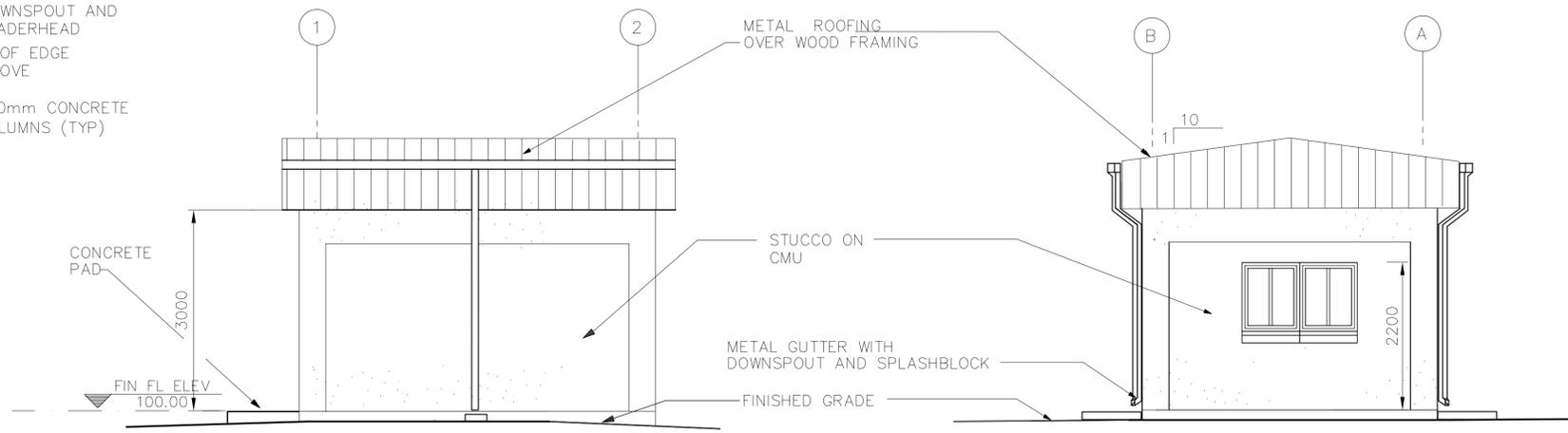


FLOOR PLAN  
SCALE=1: 50

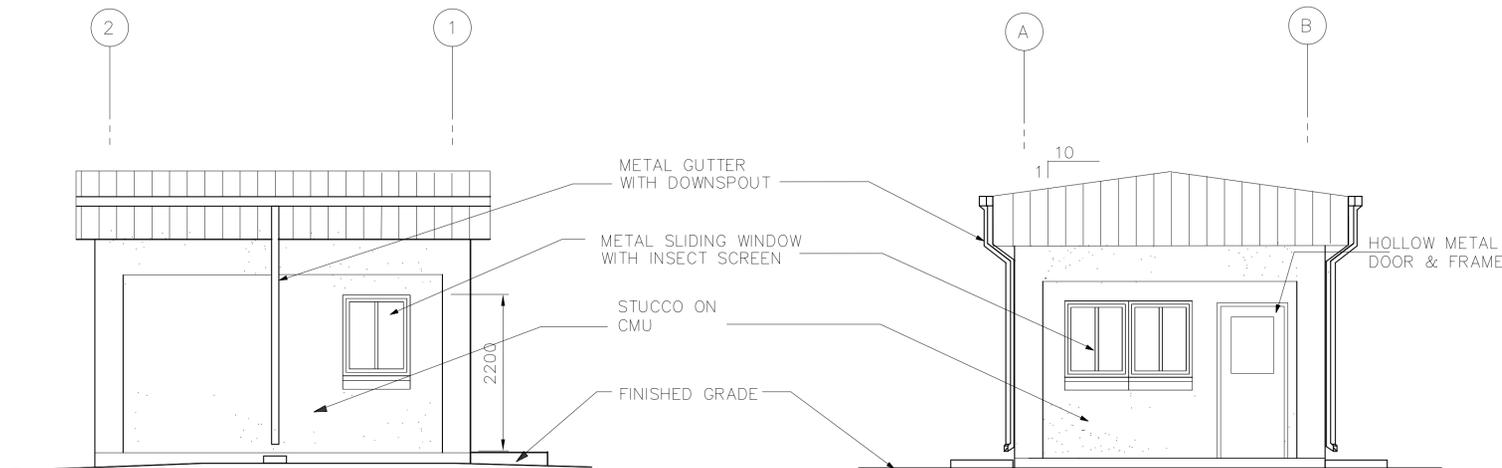
△ PROVIDE PORTABLE FIRE EXTINGUISHER, ABC  
DRY CHEMICAL 4A:60B:C



ROOF PLAN  
SCALE= 1: 50



ELEVATION  
SCALE=1: 50



ELEVATION  
SCALE=1: 50

ELEVATION  
SCALE=1: 50

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

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SYMBOL	DESCRIPTION	DATE	APP

DESIGNED BY:	S. Hanna	DATE:	02-05-07
DRAWN BY:	S. Hanna	SUBMITTED BY:	PHILIP L. DANIELLO
CHECKED BY:	CHECK_BY	FILE NO.:	AF0701 D-AR01pn

US Army Corps of Engineers  
Transatlantic Programs Center

AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN GUARD HOUSE BUILDING PLANS & ELEVATIONS

SHEET REFERENCE NUMBER:  
D  
A-1

DATE\$  
FILE\$

ROOM FINISH SCHEDULE											
ROOM NO.	ROOM NAME	FLOOR		BASE		WALLS		CEILING			REMARKS
		MAT'L.	COLOR	MAT'L.	COLOR	MAT'L.	COLOR	MAT'L.	COLOR	HEIGHT	
101	GUARD HOUSE	F2	2	B2	11	W2	21	C2	31	--	

DOOR SCHEDULE													
DOOR							FRAME				FIRE LABEL	HDW SET	REMARKS
NO.	LOCATION	TYPE	MAT'L	WIDTH	HEIGHT	THICK	HEAD	JAMB	SILL	MAT'L			
100	GUARD HOUSE	G	HM	900	2150	45	H-1/SA2	J-1/SA2	S-1/SA2	HM		1	

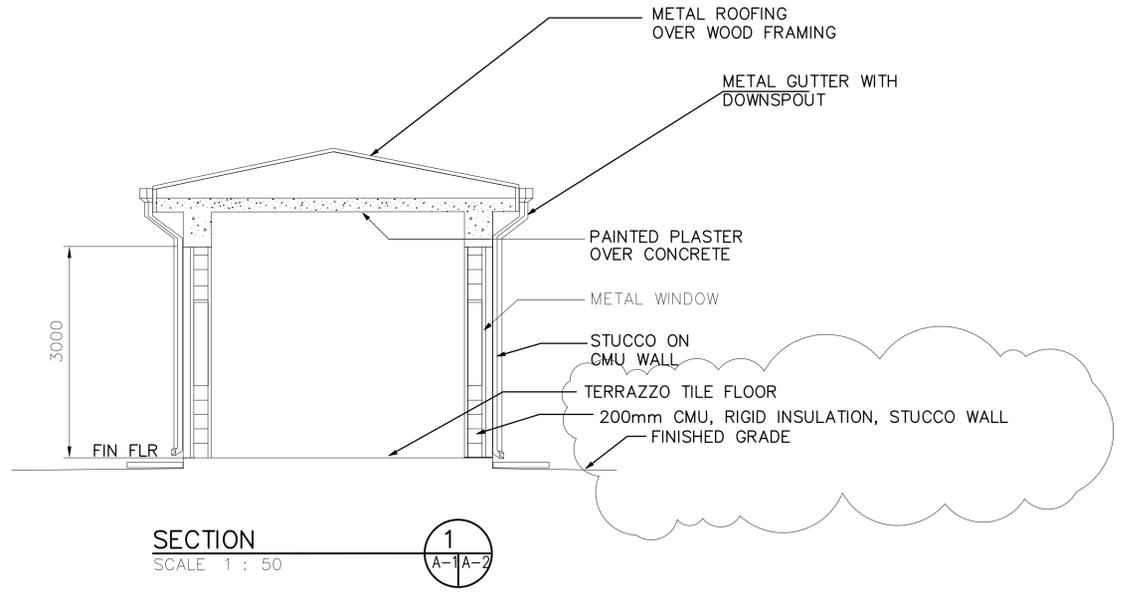
### ROOM FINISH SCHEDULE LEGEND

<b>FLOOR TYPE</b>	<b>WALL TYPE</b>
F1 SEALED CONCRETE	W1 PAINTED CMU
F2 TERRAZZO TILE	W2 PAINTED PLASTER
F3 CERAMIC TILE	W3 CERAMIC TILE
F4 QUARRY TILE	
<b>FLOOR COLOR</b>	<b>WALL COLOR</b>
1 SEALED CONCRETE - NATURAL FINISH	20 PAINTED CMU - HEMPEL, 1005-Y50R-25400, LIGHT BEIGE
2 TERRAZZO TILE - NAT'L TERRAZZO & MOSAIC ASSN, INC. NO. S-330	21 PAINTED PLASTER - HEMPEL, 0502-Y-15420, OFF WHITE
3 CERAMIC TILE - AMERICAN OLEAN, C-11, ALABASTER	22 METAL PANEL - HEMPEL, 0502-Y-15420, OFF WHITE
4 QUARRY TILE - AMERICAN OLEAN, NO. Q03, SAHARA	23 CERAMIC TILE - AMERICAN OLEAN, D-12, ALMOND
<b>BASE TYPE</b>	<b>CEILING TYPE</b>
B2 TERRAZZO	C1 PAINTED EXPOSED STRUCTURE
B3 CERAMIC	C2 PAINTED PLASTER
B4 QUARRY	
B5 NO BASE	
<b>BASE COLOR</b>	<b>CEILING COLOR</b>
11 TERRAZZO TILE - NAT'L TERRAZZO & MOSAIC ASSN, INC. NO. S-330	30 PAINTED EXPOSED STRUCTURE - HEMPEL, 0502-Y-15420, OFF WHITE
12 CERAMIC TILE - AMERICAN OLEAN, D-12, ALMOND	31 PAINTED SUSPENDED PLASTER HEMPEL, 0502-Y-15420, OFF WHITE

NOTE: PATTERN AND COLOR ARE SHOWN FOR REFERENCE ONLY, OTHER MANUFACTURER'S SIMILAR PATTERN AND COLOR MAY BE USED AS APPROVED BY THE CONTRACTING OFFICER.

**ROOM FINISH SCHEDULE NOTES:**

- ALL WALL PENETRATIONS SHALL BE SEALED TO PROVIDE A NEAT APPEARANCE. PENETRATIONS OF EXTERIOR WALLS SHALL BE SEALED TO BE WATER-TIGHT.
- SEALANTS SHALL MATCH THE COLOR OF ADJACENT SURFACES.



NO.	DATE	DESCRIPTION
1	19/03/2007	

DESIGNED BY: <b>S. Hanna</b>	DATE: <b>02-05-07</b>
DRAWN BY: <b>S. Hanna</b>	SUBMITTED BY: <b>PHILIP L. PINELLO</b> CHIEF, PRT FACILITIES DEV
CHECKED BY: <b>CHECK_BY</b>	FILE NO.: <b>AF0701 D-AR02SC</b>

**US Army Corps of Engineers**  
Transatlantic Programs Center

AFGHAN NATIONAL POLICE  
HEADQUARTERS (2 STORY)  
COMPOUND  
AFGHANISTAN  
GUARD HOUSE  
ROOM/FINISH SCHEDULES

SHEET  
REFERENCE  
NUMBER:  
**D**  
**A-2**

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

DATE\$\$\$\$  
FILE\$\$\$\$

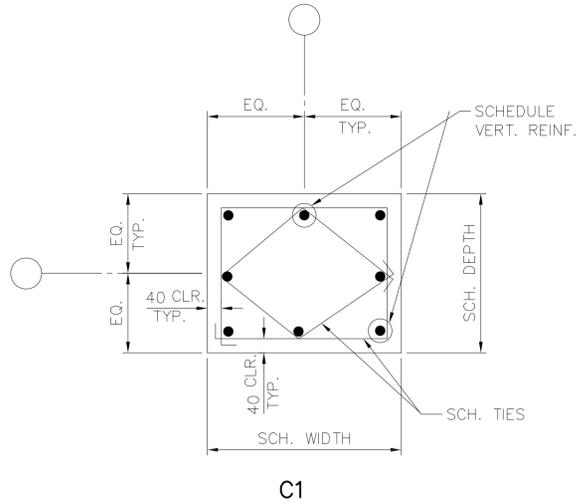




**COLUMN SCHEDULE**

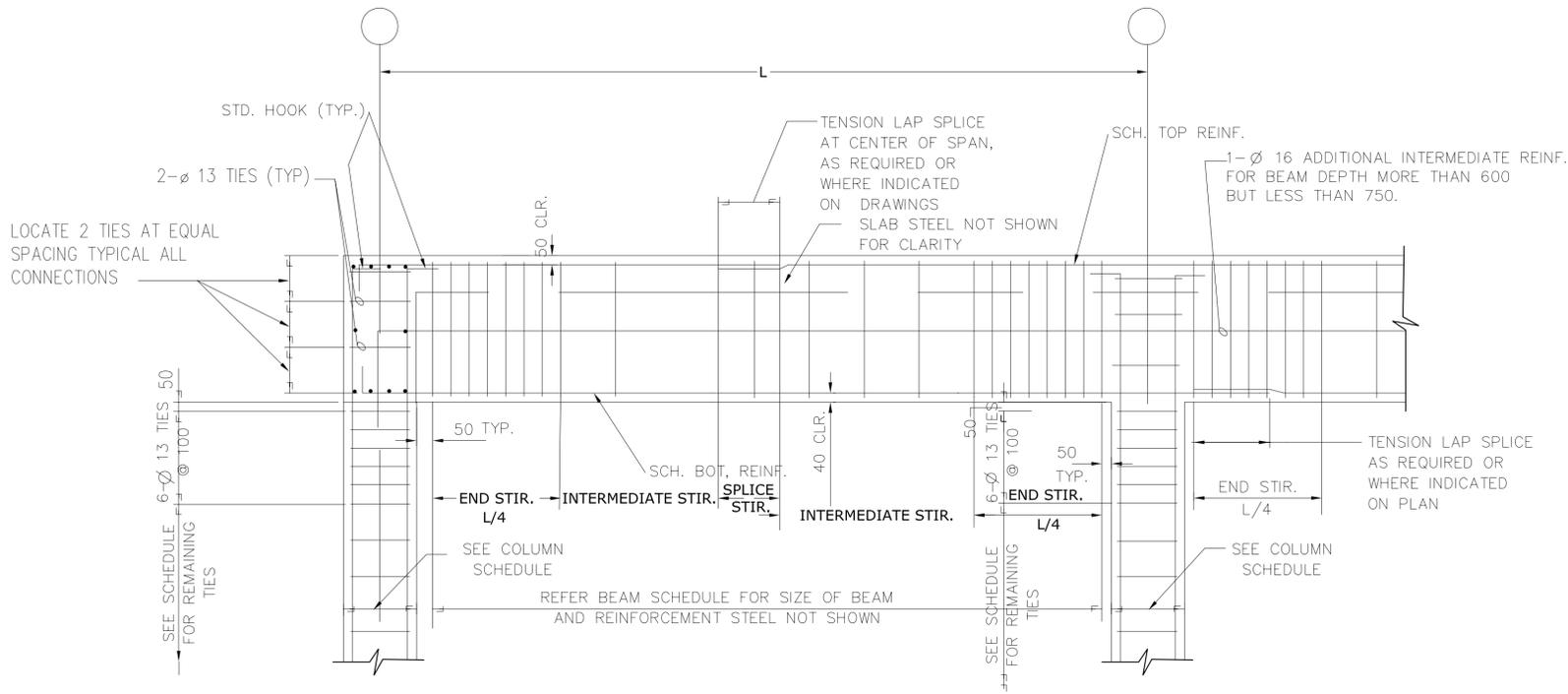
NOTES: 1. REFER TO DETAILS B&C/S-3 AND A/S-2 FOR TYPICAL COLUMN DETAILS.

COLUMN GRIDS	COLUMN TYPE	CONCRETE DIMENSIONS		VERTICAL REINFORCEMENT	TIE REINFORCEMENT	
		WIDTH	DEPTH		SIZE	SPACING
A-1, A-2 B-1, B-2	C1	400	400	8- $\phi$ 16	$\phi$ 10	300



**COLUMN TYPE**

**DETAIL A**  
SCALE=N.T.S.

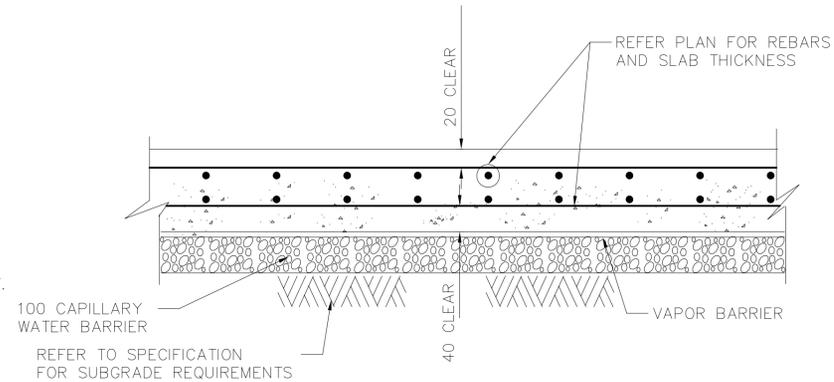


**TYPICAL BEAM TO COLUMN END CONNECTION**

**TYPICAL BEAM TO COLUMN INTERIOR CONNECTION**

**DETAIL B**  
SCALE=N.T.S.

**DETAIL C**  
SCALE=N.T.S.



**SLAB-ON-GRADE WITH TOP & BOTTOM REINFORCEMENTS**

NO.	REVISIONS	DATE	APP.

DESIGNED BY:	DATE:	02-05-07
RC	SUBMITTED BY:	PHILIP L. PINELLO
OWN BY:	TOP	CHIEF, PORT FACILITIES DEV
CHK BY:	KGO	FILE NO.: AF0701 D-SF030T

**US Army Corps of Engineers**  
Transatlantic Programs Center

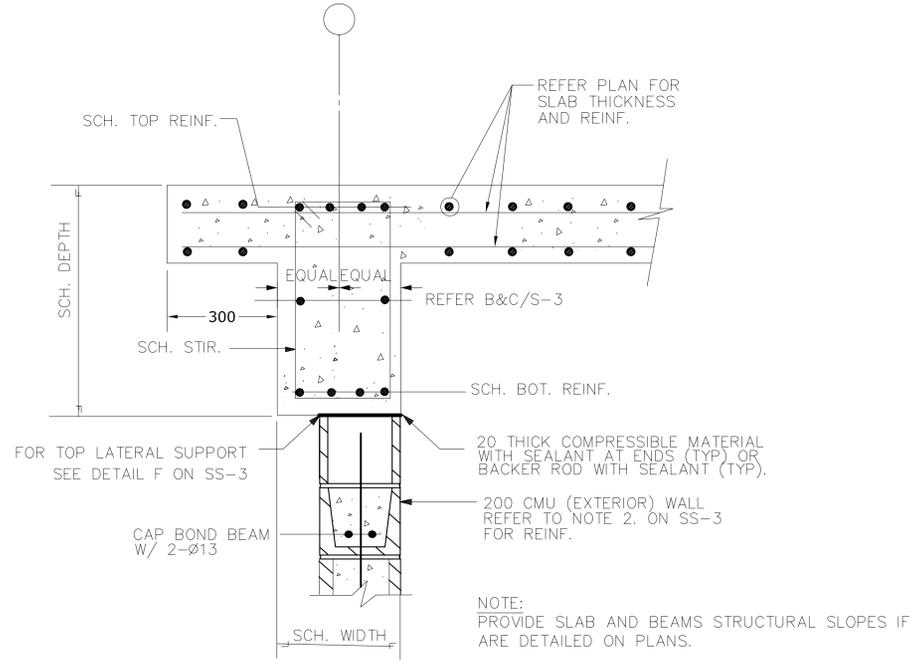
**AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND**  
AFGHANISTAN  
**GUARD HOUSE**  
SLAB-ON-GRADE DETAILS

SHEET REFERENCE NUMBER:  
**D**  
**S-3**

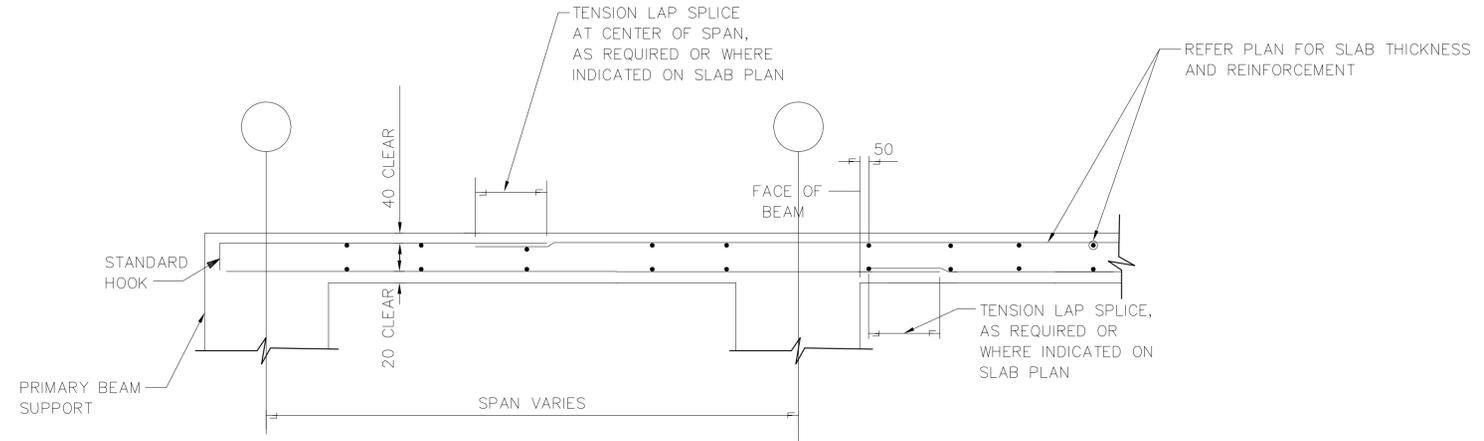
UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

BEAM SCHEDULE									
MARK	CONCRETE DIMENSIONS		FLEXURAL REINFORCEMENT		STIRRUP REINFORCEMENT				REMARKS
	WIDTH	DEPTH	TOP	BOTTOM	SIZE	TYPE	SPACING		
							ENDS & SPLICE	INTERMEDIATE	
RB1	300	600	3- $\phi$ 16	3- $\phi$ 16	$\phi$ 10		200	300	

NOTE: REFER TO DETAILS B&C/S-3 FOR TYPICAL BEAM ELEVATIONS AND SECTION 1/S-4 FOR TYPICAL BEAM SECTION.



SECTION 1/S-4  
SCALE=N.T.S.



STRUCTURAL SLAB WITH TOP & BOTTOM REINFORCEMENTS

TYPICAL SECTIONS FOR STRUCTURAL SLABS  
SCALE=N.T.S.

- NOTE:
1. PROVIDE SIMILAR REINFORCEMENT PATTERNS FOR REINFORCEMENT RUNNING PERPENDICULAR TO SECTIONS.
  2. PROVIDE SLAB AND BEAMS STRUCTURAL SLOPES IF ARE DETAILED ON PLANS.

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

--

NO.	REVISIONS	DATE	APP.

DESIGNED BY: RC	DATE: 02-05-07
DRAWN BY: TOP	SUBMITTED BY: PHILIP L. PINELLO
CHECKED BY: KGO	CHIEF, PRT FACILITIES DEV
FILE NO.: AF0701 D-SF04DT	

US Army Corps of Engineers  
Transatlantic Programs Center

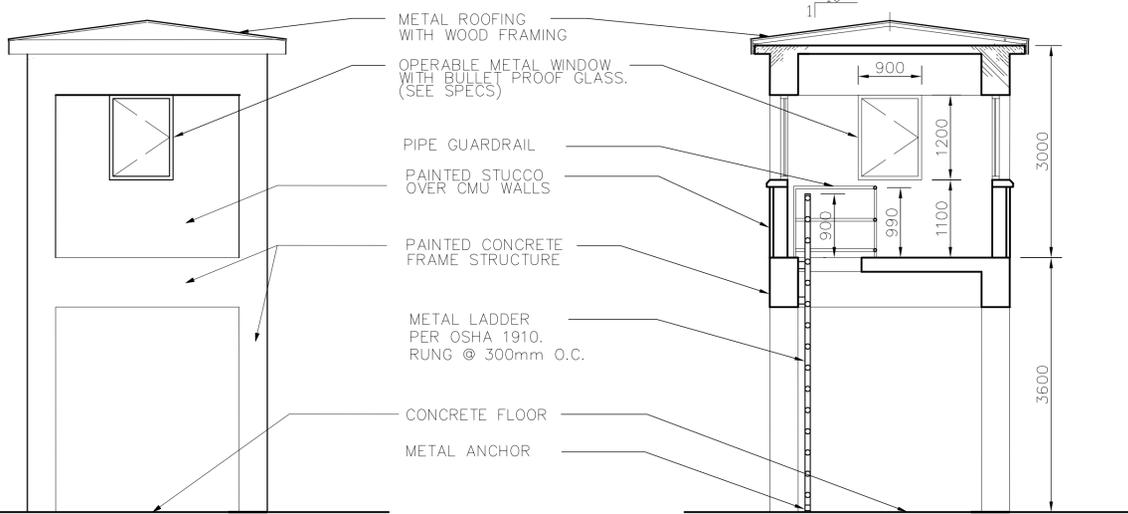
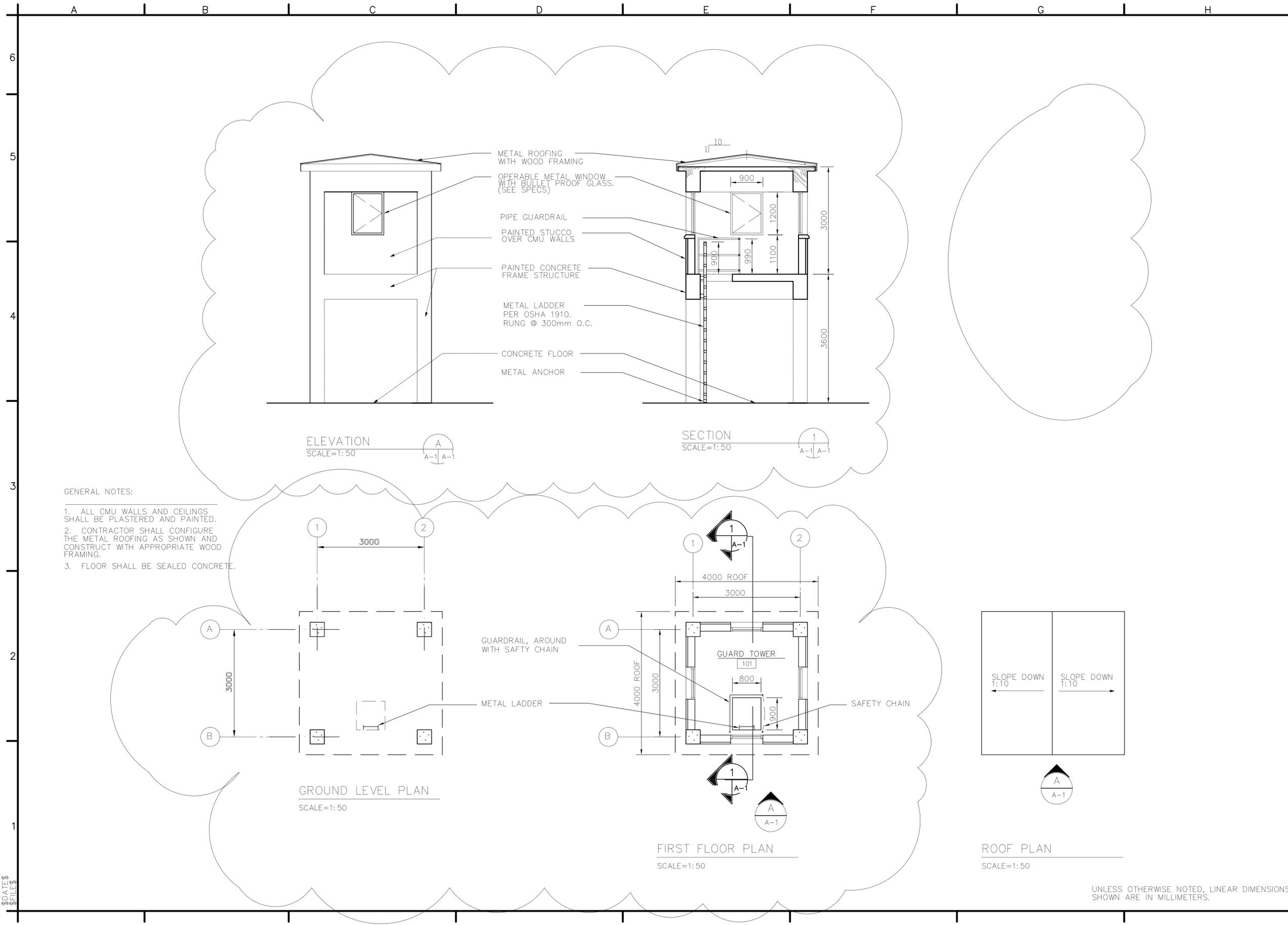
AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN GUARD HOUSE ROOF BEAM AND STRUCTURAL SLAB DETAILS

SHEET REFERENCE NUMBER:  
D  
S-4

DATE\$ FILE\$



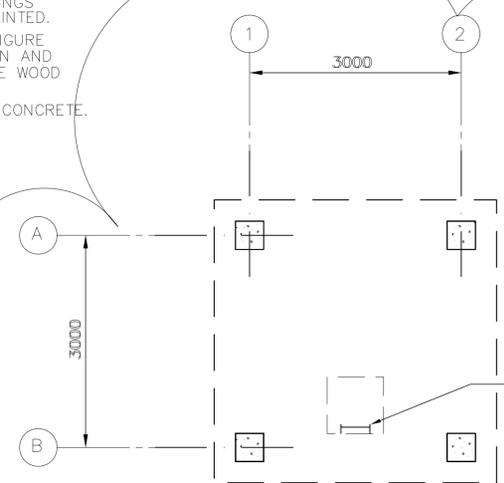




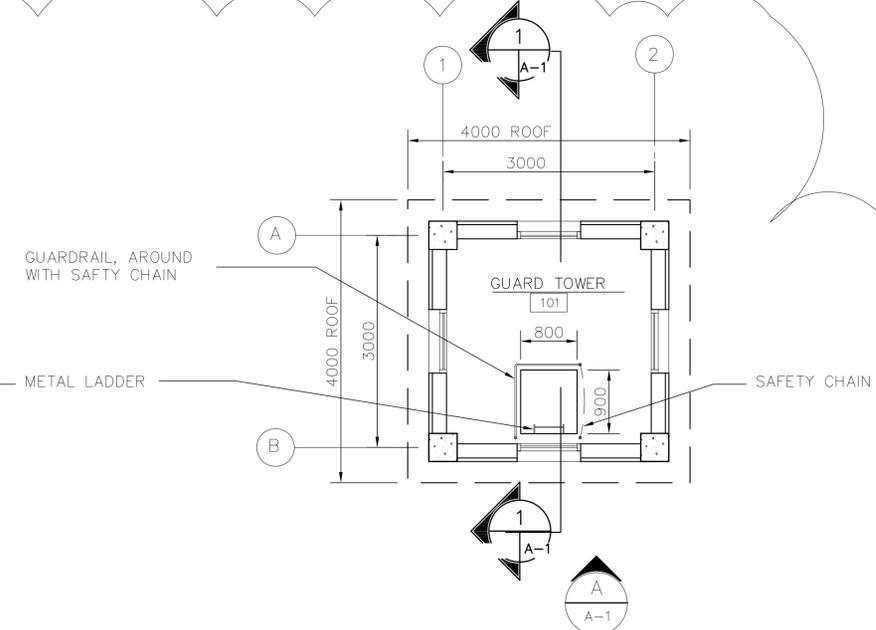
ELEVATION  
SCALE=1:50

SECTION  
SCALE=1:50

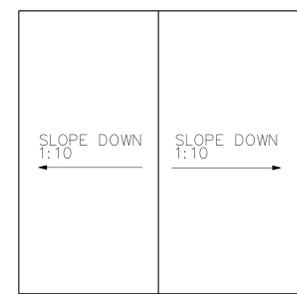
- GENERAL NOTES:
1. ALL CMU WALLS AND CEILINGS SHALL BE PLASTERED AND PAINTED.
  2. CONTRACTOR SHALL CONFIGURE THE METAL ROOFING AS SHOWN AND CONSTRUCT WITH APPROPRIATE WOOD FRAMING.
  3. FLOOR SHALL BE SEALED CONCRETE.



GROUND LEVEL PLAN  
SCALE=1:50



FIRST FLOOR PLAN  
SCALE=1:50



ROOF PLAN  
SCALE=1:50

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

--

NO.	REVISIONS	DATE	APP.

DESIGNED BY: S. Hanna	DATE: 02-05-07
DRAWN BY: S. Hanna	SUBMITTED BY: PHILIP L. PINELLO
CHK BY: S. Hanna	CHIEF, ROT FACILITIES DEV
	FILE NO.: AF0701 E-AR01PN

US Army Corps of Engineers  
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AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
GUARD TOWER  
FLOOR PLANS AND ELEVATIONS

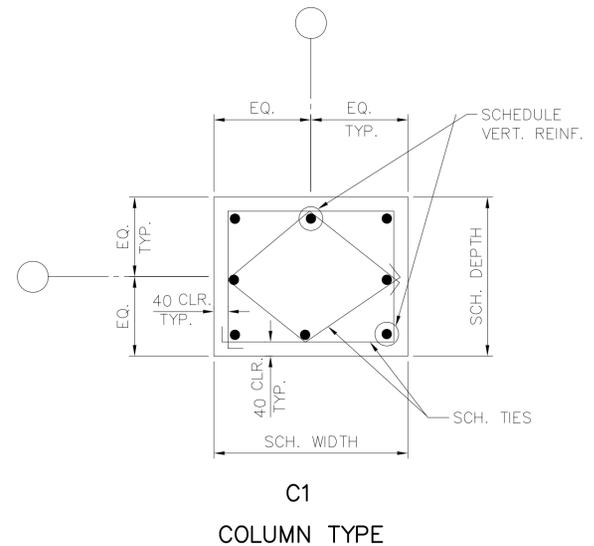
SHEET REFERENCE NUMBER:  
E  
A-1

DATE\$\$\$\$  
FILE\$\$\$\$

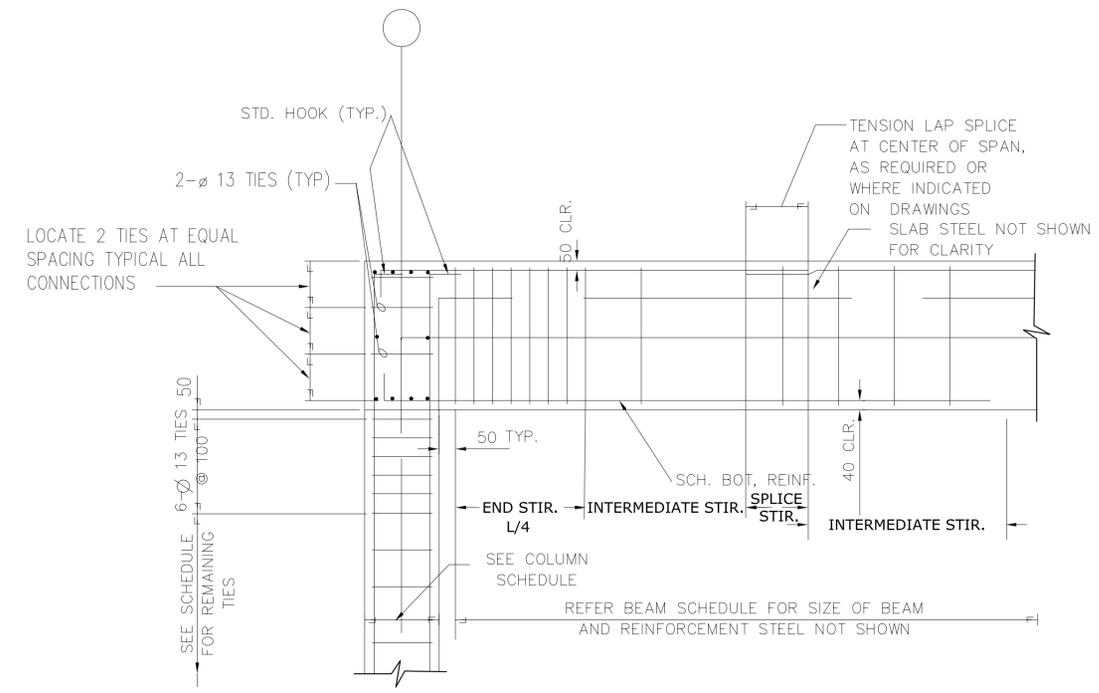




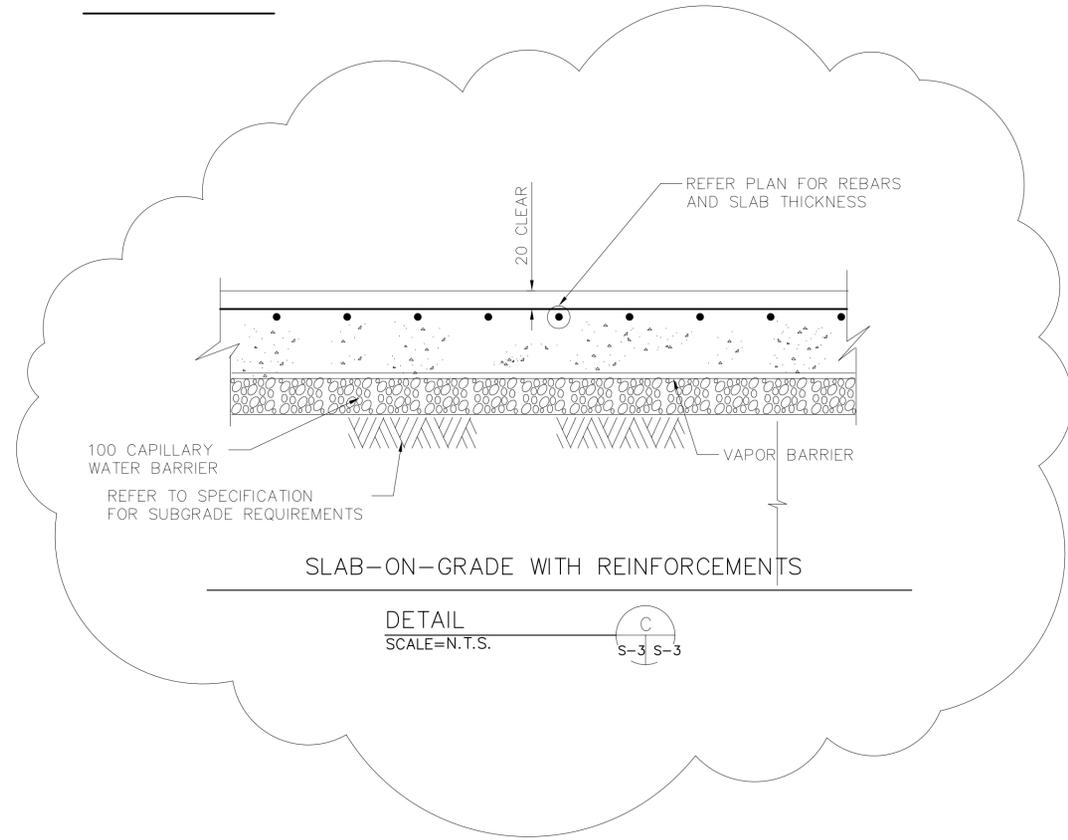
COLUMN SCHEDULE		NOTES: 1. REFER TO DETAILS B/S-3 AND 1/S-2 FOR TYPICAL COLUMN DETAILS.				
COLUMN GRIDS	COLUMN TYPE	CONCRETE DIMENSIONS		VERTICAL REINFORCEMENT	TIE REINFORCEMENT	
		WIDTH	DEPTH		SIZE	SPACING
A-1, A-2 B-1, B-2	C1	400	400	8- $\emptyset$ 16	$\emptyset$ 10	300



**DETAIL**  
SCALE=N.T.S. A  
S-3 S-3



**TYPICAL BEAM TO COLUMN END CONNECTION**  
**DETAIL**  
SCALE=N.T.S. B  
S-3 S-3



NO.	REVISIONS	DATE	APP.

DESIGNED BY: RC	DATE: 02-05-07	SUBMITTED BY: PHILIP L. PINELLO	FILE NO.: AF0701 E-SF03DT
OWN BY: TCP	CHK BY: KGO	CHIEF: PRT FACILITIES DEV	

**US Army Corps of Engineers**  
Transatlantic Programs Center

**AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND**  
AFGHANISTAN  
**GUARD TOWER**  
SLAB-ON-GRADE DETAILS

SHEET REFERENCE NUMBER:  
**F**  
**S-3**

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

DATE\$\$\$\$  
FILE\$\$\$\$







SYMBOL	DESCRIPTION	DATE	APP

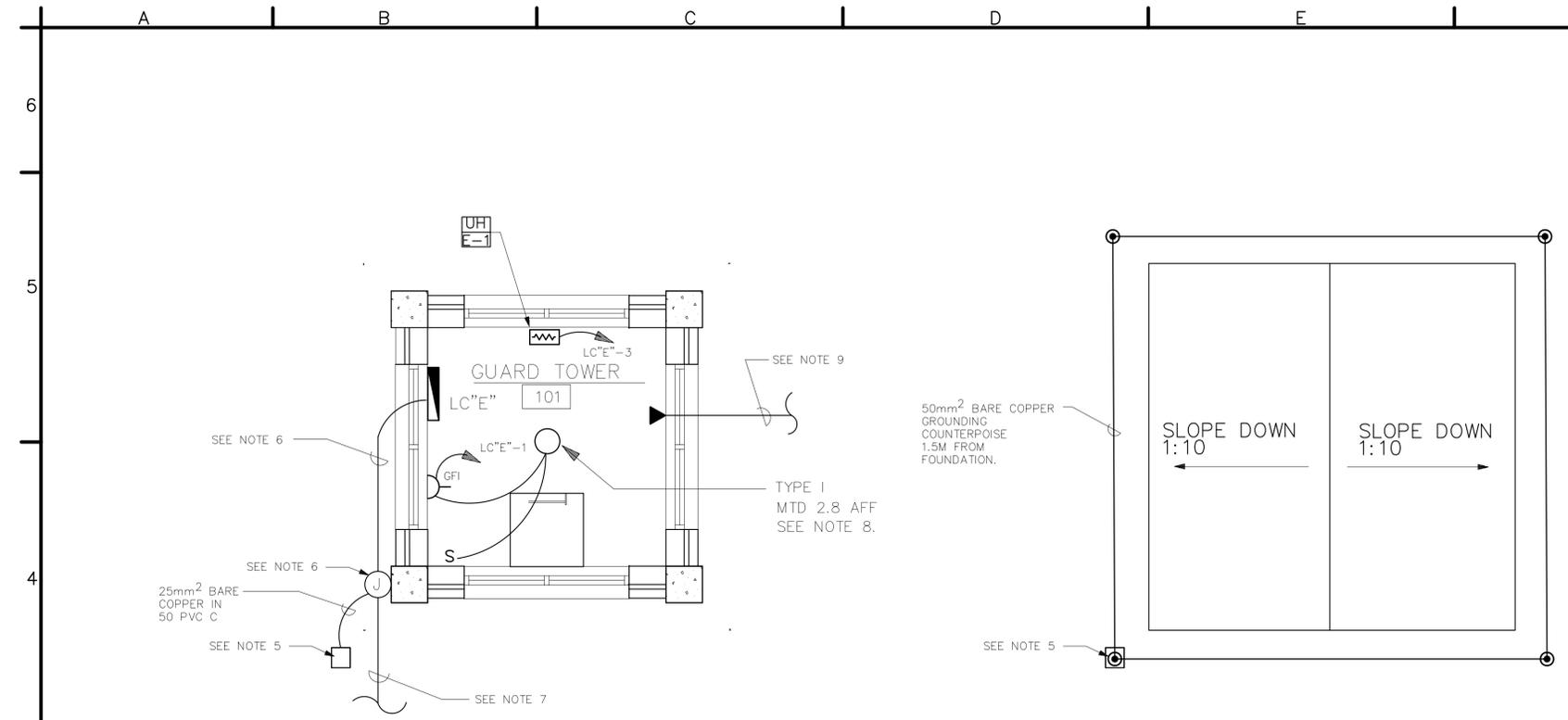
DESIGNED BY: DATE: 02-05-07	SUBMITTED BY:	FILE NO.: AF0701 E-EL01PN
MM	MM	SE
CHK BY:	MM	SE

US Army Corps of Engineers  
Transatlantic Programs Center

AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
GUARD TOWER  
LIGHTING & POWER PLAN

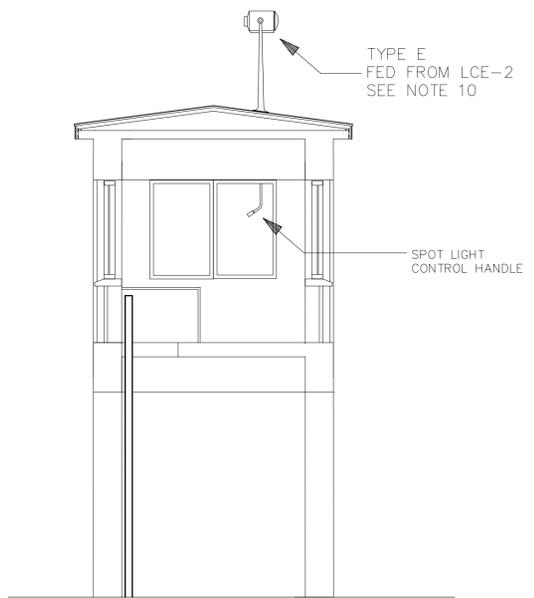
SHEET REFERENCE NUMBER:  
E  
E-1

- NOTES:
- FOR LEGEND, ABBREVIATIONS AND LIGHT FIXTURE SCHEDULE SEE DRAWING SE-1.
  - COORDINATE LOCATION OF ALL ELECTRICAL DEVICES AND EQUIPMENT WITH ALL OTHER TRADES.
  - ALL WIRING SHALL BE IN CONCEALED OR SURFACE MOUNTED METAL CONDUIT.
  - PLAN IS TYPICAL FOR ALL GUARD TOWERS 1-4. GUARD TOWERS #1, 3, & 4 ARE POWERED FROM PPSB. GUARD TOWER #2 IS POWERED FROM THE GUARD HOUSE PANEL LC"D", SEE GUARD HOUSE PANEL SCHEDULE DRAWING E-1.
  - FOR GROUNDING ROD ACCESS BOX DETAIL SEE SHEET SE-3.
  - PROVIDE 50MM METAL CONDUIT WITH TWØ 16mm COPPER CONDUCTORS AND 16mm<sup>2</sup> COPPER GROUNDING CONDUCTOR TO JUNCTION BOX. FOR JUNCTION BOX DETAIL SEE SHEET SE-5.
  - REFER TO DRAWING XE-1' FOR CONDUIT AND CONDUCTOR SIZE.
  - PROVIDE A MANUFACTURER SUPPLIED RED, BLUE, AND BLACK LIGHT FIXTURE GLOBE.
  - PROVIDE 25MM EMPTY PVC CONDUIT WITH PULL WIRE TO A COMMUNICATION HAND HOLE LOCATED 1 METER OUTSIDE OF THE BUILDING. COORDINATE EXACT LOCATION OF THE HAND HOLE WITH THE CONTRACTING OFFICER. HAND HOLE SHALL BE PROVIDED WITH COVER.
  - SPOT LIGHT SHALL BE BALLISTIC RESISTANT TYPE AND SHALL HAVE ANTI-SHOCK LAMPHOLDER TO PREVENT BREAKAGE OF THE FILAMENT DUE TO IMPACT FROM BULLETS.



LIGHTING & POWER  
NOT TO SCALE

GROUNDING SYSTEM  
NOT TO SCALE



SPOTLIGHT MOUNTING DETAIL  
NOT TO SCALE

LOAD CENTER "E" GUARD TOWER #1, 2, 3, & 4 (SEE NOTE 4)  
40 AMP MAIN CIRCUIT BREAKER, 220V, 1 PH, 2W, 50 HZ, 100A BUS, 10000 AIC

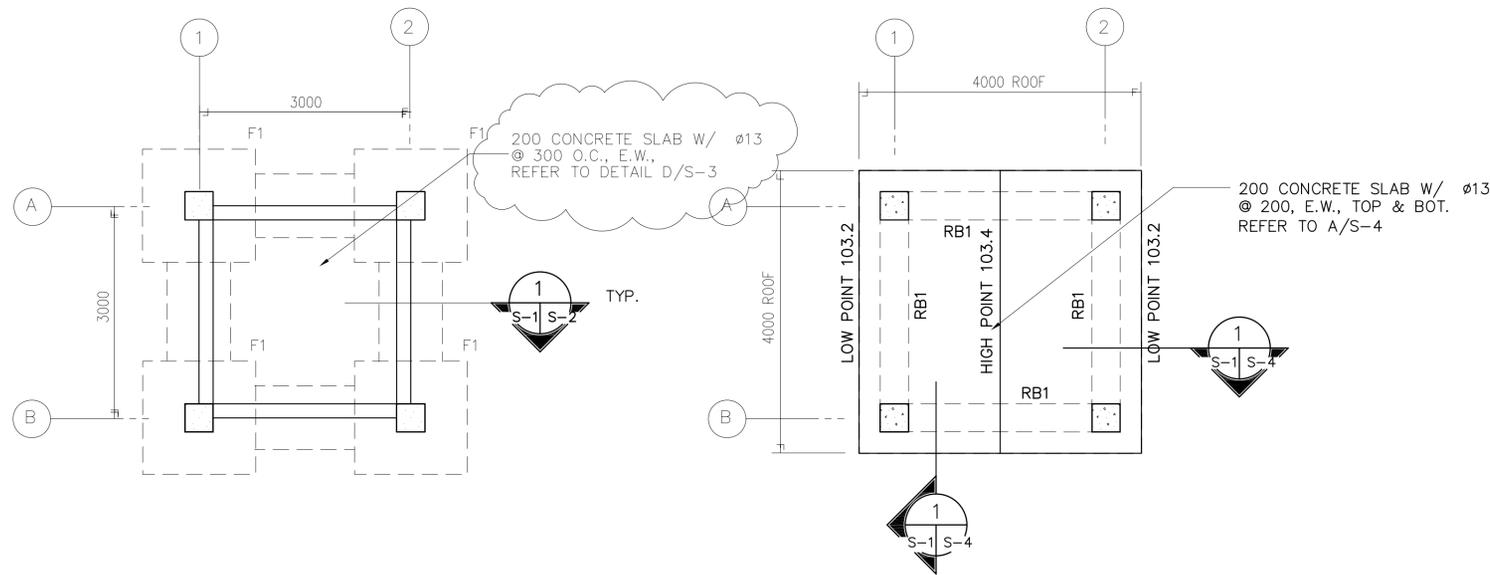
CKT. NO.	TRIP AMPS	NO. POLES	WIRE <sub>2</sub> MM	GND <sub>2</sub> MM	CONDUIT MM	LOAD SERVED	LOAD-V.A.
1	20	1	4	4	20	LIGHTING & RECEPTACLES	280
2	20	1	4	4	20	SPOT LIGHT, 1000W	1000
3	20	1	4	4	20	ELECT.HEAT GUARD SHACK#2	4000
4	20	1				SPARE	500
5	20	1				SPARE	500
6						SPACE	
7						SPACE	
8						SPACE	
TOTAL CONN. LOAD							6280

TOTAL CONN. LOAD 6.3 KVA.  
80 %DEMAND = EST. DEMAND LOAD: 5.0 SERVED FROM: PPSB

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

DATE\$ \$FILES\$





FOUNDATION AND SLAB PLAN  
SCALE=1:50

ROOF PLAN  
SCALE=1:50

1. DESIGN LOADS (SERVICE)

LIVE LOADS:

ROOF: 1.0 KPA (20 PSF)  
OTHERS: 4.8 KPA (100 PSF)  
8.9 KN (2.0 K) CONCENTRATED LOAD

WIND LOADS PER IBC-2003

USING A "3-SECOND" WIND VELOCITY OF 125 KPH (78 MPH),  
EXPOSURE C AND IMPORTANCE FACTOR I=1.0

EARTHQUAKE LOADS PER IBC-2003:

USING A SEISMICITY:  $S_s=1.65g$  AND  $S_I=0.75g$

2. MATERIALS:

CONCRETE: 28 MPa (4 KSI)  
CYLINDER STRENGTH AT 28 DAYS

REINFORCING: ASTM A615 GRADE 60 (60 KSI)

WELDED WIRE FABRIC: ASTM A185

CONCRETE MASONRY UNITS:

ASTM C90, TYPE I (NORMAL WEIGHT, MOISTURE  
CONTROLLED) MORTAR, ASTM C270, TYPE S  
GROUT, ASTM C 476

JOINT REINFORCEMENT, LADDER TYPE

3. WORK THESE STRUCTURAL DRAWINGS WITH THE  
STANDARD-DETAILS DRAWINGS.

4. A RELATIVE (DATUM) FINISH FLOOR ELEVATION EQUAL TO  
100.00 M. IS USED AS REFERENCE ELEVATION FOR ALL  
STRUCTURAL DRAWINGS. REFER TO CIVIL DRAWINGS FOR  
ACTUAL FINISH ELEVATIONS.

5. FOUNDATIONS ARE DESIGNED USING  
AN ALLOWABLE BEARING PRESSURE OF  
0.75 KG/SQ. CM (1500 PSF), AND BOTTOM  
OF FOOTINGS ARE PLACED AS SHOWN  
ON DRAWINGS. GEOTECHNICAL INVESTIGATION  
SHALL CONFIRM BEARING CAPACITY TO BE  
NO LESS THAN 0.75 KG/SQ CM. IF GEOTECHNICAL  
INVESTIGATION SHOWS LESS THAN 0.75 KG/SQ CM  
THE CONTRACTOR SHALL REDESIGN FOOTINGS  
BASED ON THE GEOTECHNICAL INVESTIGATION.  
SEE SPECIFICATION 01015 PARAGRAPH, GEOTECHNICAL,  
FOUNDATION AND SURVEY.



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS  
SHOWN ARE IN MILLIMETERS.

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NO.	REVISIONS	DATE	APP.

DESIGNED BY:	RC	DATE:	02-05-07
DRAWN BY:	TOP	SUBMITTED BY:	PHILIP L. PINELLO
CHK BY:	KGO	FILE NO.:	AF0701 F-SB01PN

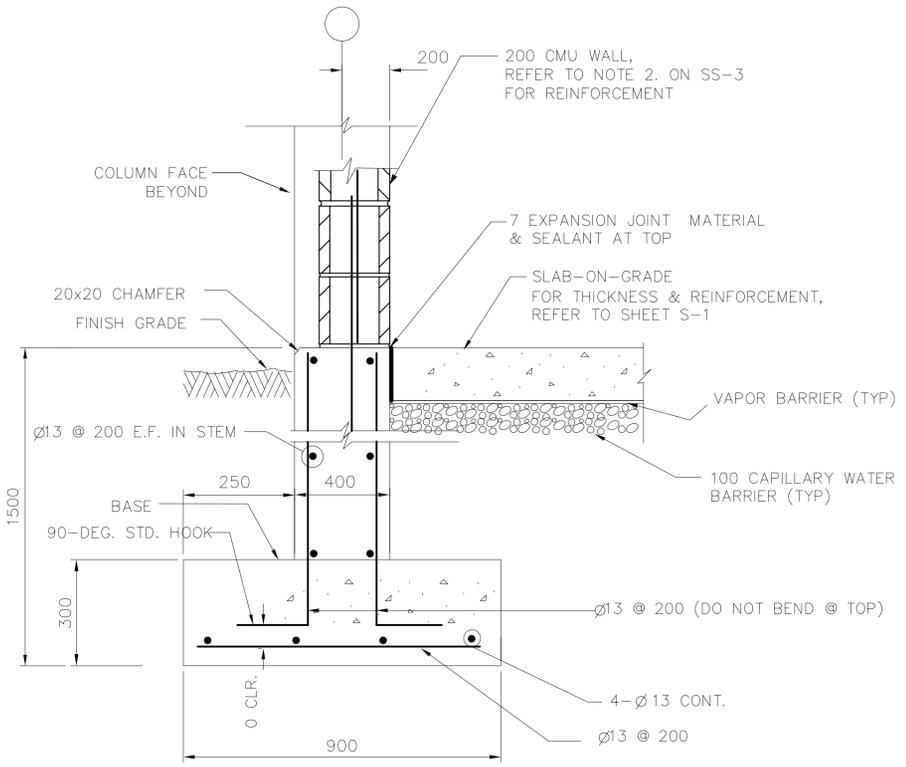
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of Engineers  
Transatlantic Programs  
Center

AFGHAN NATIONAL POLICE  
HEADQUARTERS (2 STORY)  
COMPOUND  
AFGHANISTAN  
GUARD SHACK  
FOUNDATION AND SLAB PLAN  
ROOF FRAMING PLAN

SHEET  
REFERENCE  
NUMBER:  
F  
S-1

DATE\$  
FILE\$

FOOTING SCHEDULE							NOTE: REFER TO A/S-2 FOR TYPICAL SECTION OF FOOTINGS.
MARK	CONCRETE DIMENSIONS			REINFORCEMENT		FTG. BOTTOM EL. METERS	REMARKS
	WIDTH	LENGTH	THICKNESS	TOP	BOTTOM		
F1	1600	1600	300	—	5- $\phi$ 16 E.W.		

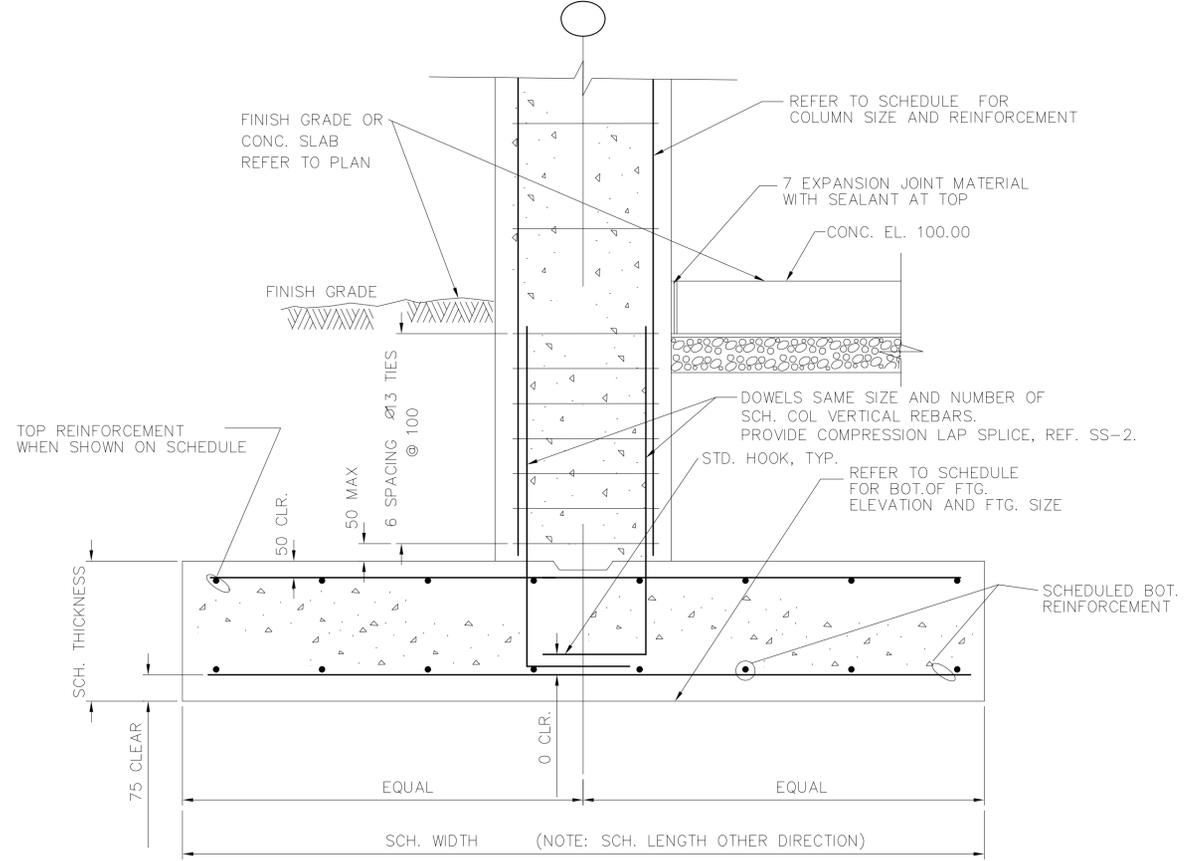


**TYPICAL WALL FOOTING**

SECTION  
SCALE=N.T.S.

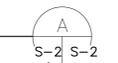


- NOTES:
- HORIZONTAL STEM WALL AND FOOTING REINFORCEMENTS ARE CONTINUOUS THROUGH COLUMN AND COLUMN FOOTING
  - AT DISCONTINUOUS STEM WALL BARS TERMINATE WITH STANDARD HOOK IN COLUMN. FOOTING BARS TERMINATE WITH 600 MM EMBEDMENT IN COLUMN FOOTING.
  - REFER TO CIVIL DWGS FOR ACTUAL FINISH FLOOR ELEVATIONS.



**TYPICAL COLUMN FOOTING**

DETAIL  
SCALE=N.T.S.



REVISIONS	DATE	APP
19/03/2007		

DESIGNED BY: RC	DATE: 02-05-07
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CHECKED BY: KGO	CHIEF, PORT FACILITIES DEV
	FILE NO.: AF0701 F-SB02DT

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Transatlantic Programs Center

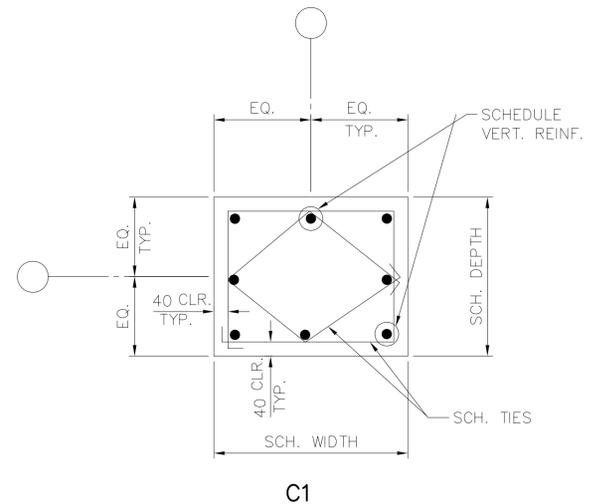
AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
GUARD SHACK FOOTING DETAILS

SHEET REFERENCE NUMBER:  
F  
S-2

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

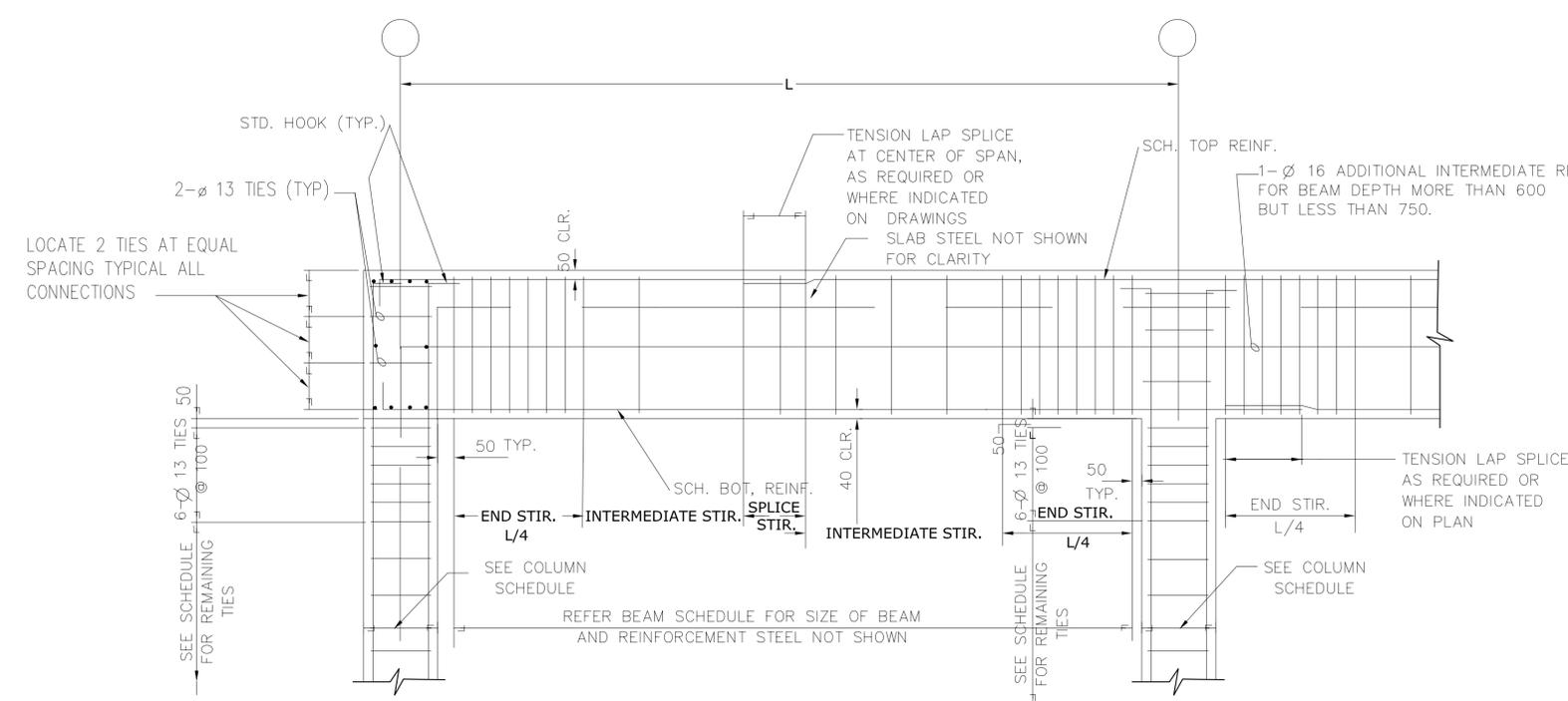
DATE\$\$\$\$  
FILE\$\$\$\$

COLUMN SCHEDULE		NOTES: 1. REFER TO DETAILS B&C/S-3 AND A/S-2 FOR TYPICAL COLUMN DETAILS.				
COLUMN GRIDS	COLUMN TYPE	CONCRETE DIMENSIONS		VERTICAL REINFORCEMENT	TIE REINFORCEMENT	
		WIDTH	DEPTH		SIZE	SPACING
A-1, A-2 B-1, B-2	C1	400	400	8- $\phi$ 16	$\phi$ 10	300



C1  
COLUMN TYPE

DETAIL  
SCALE=N.T.S. A  
S-3 S-3

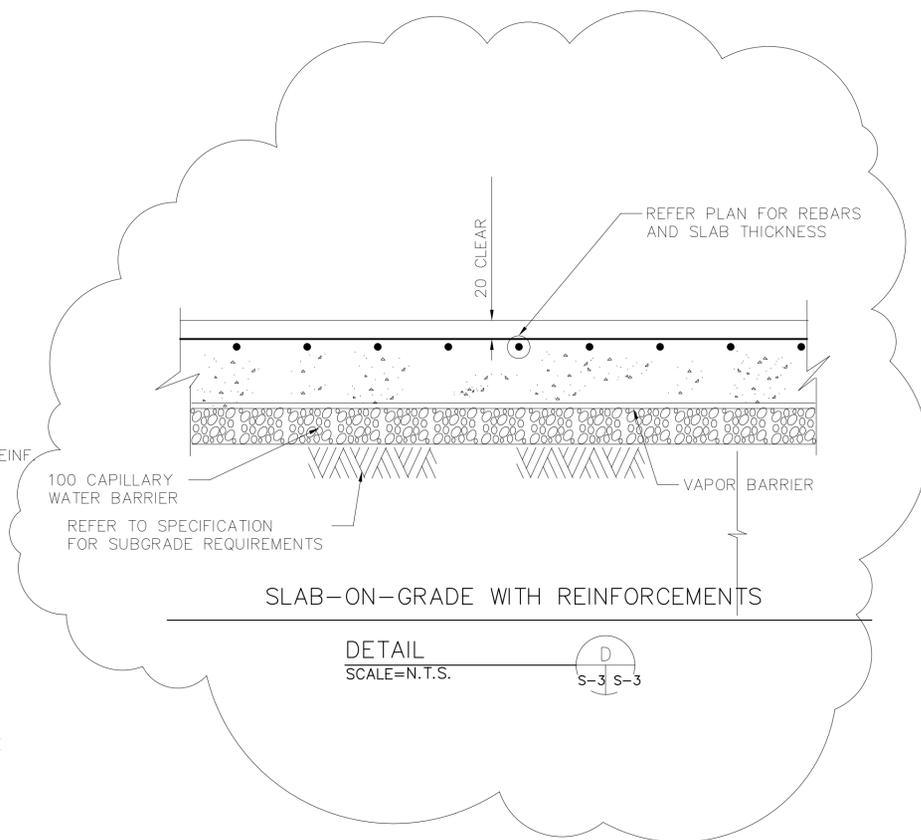


TYPICAL BEAM TO COLUMN END CONNECTION

DETAIL  
SCALE=N.T.S. B  
S-3 S-3

TYPICAL BEAM TO COLUMN INTERIOR CONNECTION

DETAIL  
SCALE=N.T.S. C  
S-3 S-3



SLAB-ON-GRADE WITH REINFORCEMENTS

DETAIL  
SCALE=N.T.S. D  
S-3 S-3

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DRAWN BY: TCP	SUBMITTED BY: PHILIP L. PINELLO
CHECKED BY: KGO	CHIEF, PORT FACILITIES DEV
FILE NO.: AF0701 F-SB03DT	DATE: 19/03/2007
SYMBOL	DESCRIPTION

US Army Corps of Engineers  
Transatlantic Programs Center

AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
GUARD SHACK  
SLAB-ON-GRADE DETAILS

SHEET REFERENCE NUMBER:  
F  
S-3

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

DATE\$\$\$\$  
FILE\$\$\$\$

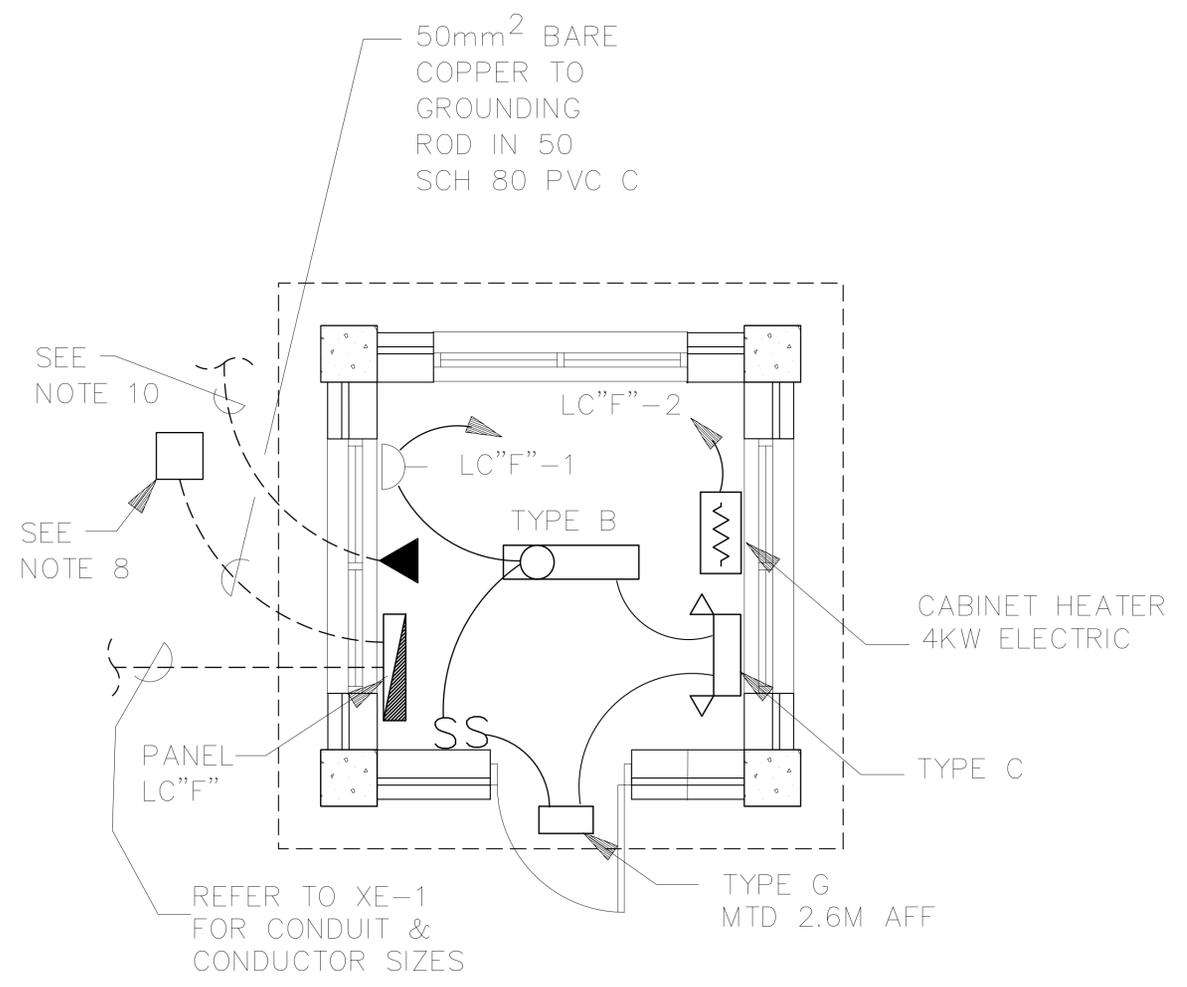




A B C D E F G H

6  
5  
4  
3  
2  
1

- NOTES:
- FOR LEGEND AND ABBREVIATIONS SEE DRAWING SE-1.
  - EMERGENCY LIGHT SHALL BE CONNECTED AHEAD OF LIGHT SWITCH.
  - FOR LIGHT FIXTURE SCHEDULE SEE DRAWING SE-1.
  - COORDINATE LOCATION OF ALL ELECTRICAL FIXTURES AND MECHANICAL EQUIPMENT WITH ALL OTHER TRADES.
  - ALL WIRING SHALL BE CONCEALED OR SURFACE MOUNTED IN METAL CONDUIT.
  - PLAN IS TYPICAL FOR GUARD SHACK #1 AND #2. GUARD SHACK #1 SECONDARY SERVICE IS SUPPLIED FROM PANEL LOAD CENTER "D" (LC "D") LOCATED IN THE GUARD HOUSE (GH). GUARD SHACK #2 SECONDARY SERVICE IS SUPPLIED FROM PPSB.
  - SEE DRAWING XE-1 FOR LOCATION OF GUARD SHACKS.
  - FOR GROUNDING ROD ACCESS BOX SEE SHEET SE-3.
  - FOR SECONDARY DISTRIBUTION SEE DRAWINGS XE-1 AND XE-2.
  - PROVIDE 25MM EMPTY PVC CONDUIT WITH PULL WIRE TO A COMMUNICATION HAND HOLE LOCATED 1 METER OUTSIDE OF THE BUILDING. COORDINATE THE EXACT LOCATION OF THE HAND HOLE WITH THE CONTRACTING OFFICER. HAND HOLE SHALL BE PROVIDED WITH COVER.



LOAD CENTER "F" GUARD SHACK #1 & #2 (SEE NOTE 6)

40 AMP MAIN CIRCUIT BREAKER, 220V, 1 PH, 2W, 50 HZ, 100A BUS, 10000 AIC

CKT. NO.	TRIP AMPS	NO. POLES	WIRE <sub>2</sub> MM <sup>2</sup>	GND <sub>2</sub> MM <sup>2</sup>	CONDUIT MM	LOAD SERVED	LOAD-V.A.
1	20	1	4	4	20	LIGHTING & RECP. GUARD SHACK #2	400
2	30	1	6	6	20	ELECT. HEAT GUARD SHACK #2	4000
3	20	1				SPARE	500
4	20	1				SPARE	500
5						SPACE	
6						SPACE	
7						SPACE	
8						SPACE	
TOTAL CONN. LOAD							5400

TOTAL CONN. LOAD 5.4 KVA.  
80 % DEMAND = EST. DEMAND LOAD: 4.3 SERVED FROM: PPSB

LIGHTING & POWER  
SCALE: 1:25



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

DESIGNED BY: MM	DATE: 02-05-07
DRAWN BY: MM	SUBMITTED BY:
CHK BY: SE	FILE NO.: AF0701 F-EL01PN

REVISIONS

NO.	DESCRIPTION	DATE	APP.
19/03/2007			

AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN GUARD SHACK LIGHTING & POWER PLAN

US Army Corps of Engineers Transatlantic Programs Center

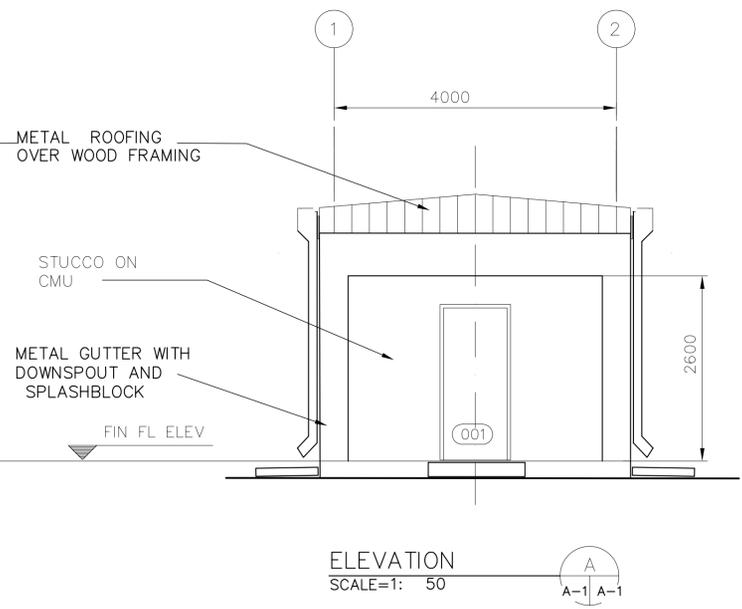
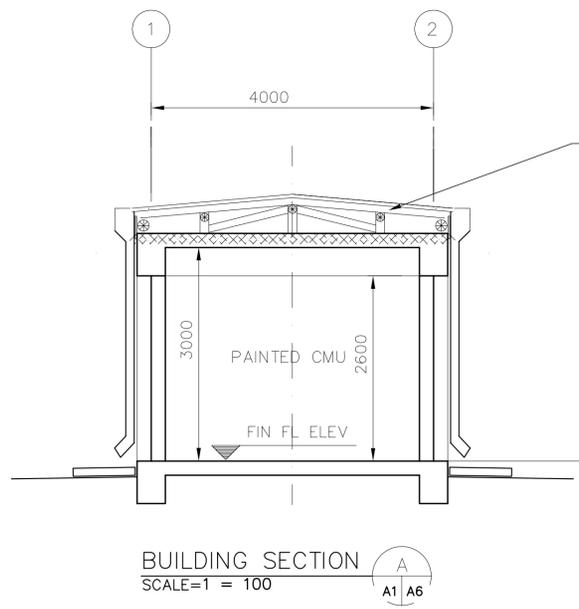
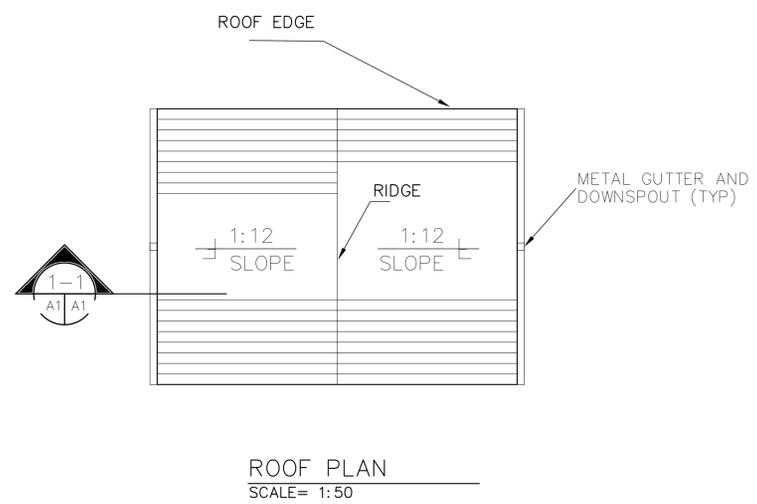
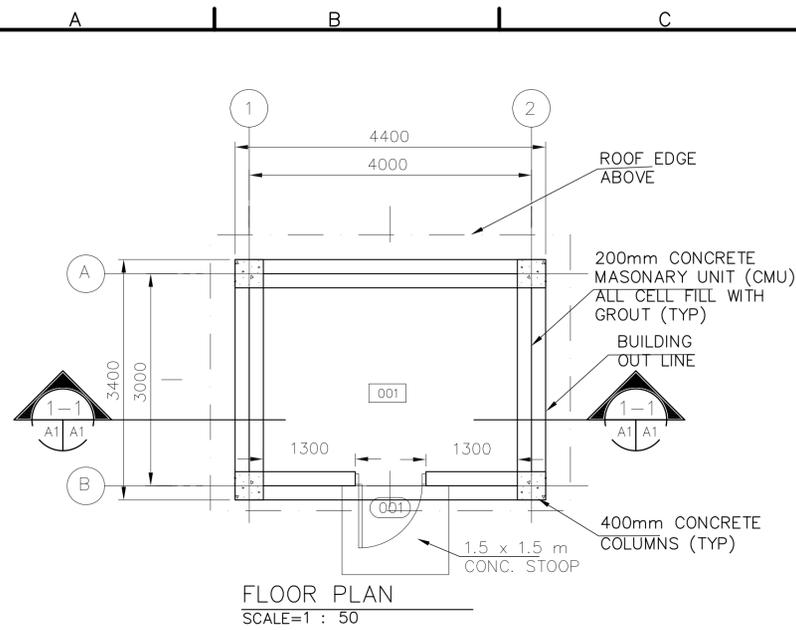
SHEET REFERENCE NUMBER: F E-1

DATE\$ FILE\$









**ROOM FINISH SCHEDULE LEGEND**

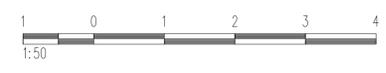
- FLOOR TYPE**  
F1 SEALED CONCRETE
- FLOOR COLOR**  
1 SEALED CONCRETE - NATURAL FINISH
- WALL TYPE**  
W1 PAINTED CMU
- WALL COLOR**  
20 PAINTED CMU -HEMPEL, 1005-Y50R-25400,
- CEILING TYPE**  
C1 PAINTED EXPOSED STRUCTURE
- CEILING COLOR**  
30 PAINTED EXPOSED STRUCTURE - HEMPEL, 0502-Y-15420, OFF WHITE

**ROOM FINISH SCHEDULE NOTES:**

- ALL WALL PENETRATIONS SHALL BE SEALED TO PROVIDE A NEAT APPEARANCE. PENETRATIONS OF EXTERIOR WALLS SHALL BE SEALED TO BE WATER-TIGHT.
- SEALANTS SHALL MATCH THE COLOR OF ADJACENT SURFACES.

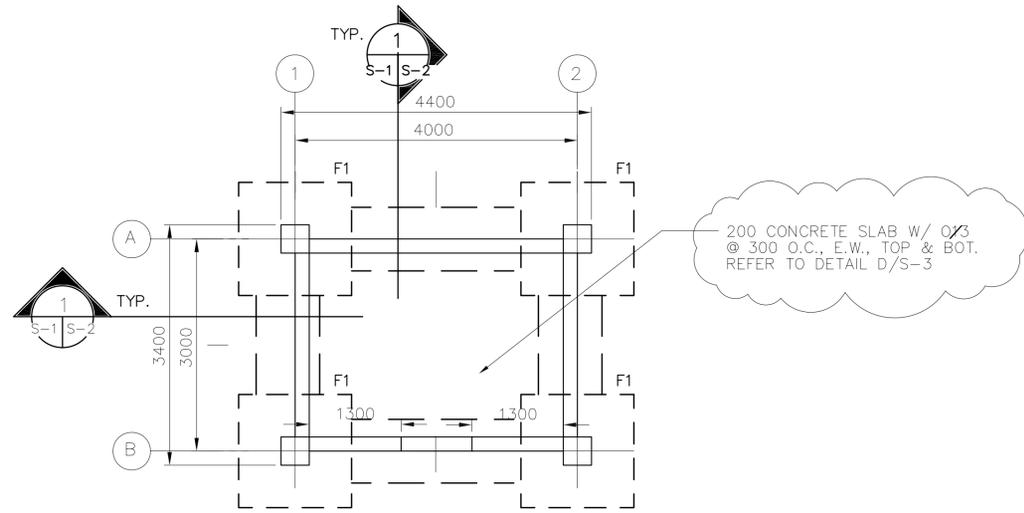
ROOM FINISH SCHEDULE											
ROOM NO.	ROOM NAME	FLOOR		BASE		WALLS		CEILING			REMARKS
		MAT'L.	COLOR	MAT'L.	COLOR	MAT'L.	COLOR	MAT'L.	COLOR	HEIGHT	
001	WELL HOUSE ROOM	F1	1	--	--	W1	20	C1	30	3400	

DOOR SCHEDULE													
NO.	LOCATION	DOOR					FRAME				FIRE LABEL	HDW SET	REMARKS
		TYPE	MAT'L	WIDTH	HEIGHT	THICK	HEAD	JAMB	SILL	MAT'L			
001	WELL HOUSE ROOM	F	HM	900	2150	45	H-1/SA2	J-1/SA2	S-1/SA2	HM	--	6	

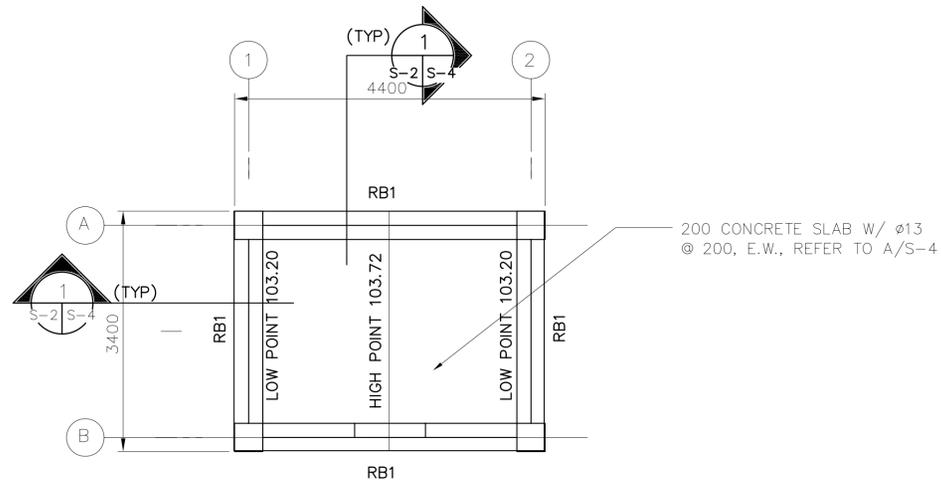


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DESIGNED BY:	DATE:	SUBMITTED BY:	FILE NO.:	DATE:														
S. Hanna	02-05-07	PHILIP L. PINELLO	AF0701 H-AR01PN															
<b>US Army Corps of Engineers</b> Transatlantic Programs Center																		
AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN	WELL HOUSE BUILDING FLOOR PLAN/ELEVATION/SCHEDULE																	
SHEET REFERENCE NUMBER: <b>H</b> <b>A-1</b>																		

\$DATE\$  
 \$FILES\$



FOUNDATION AND SLAB PLAN  
SCALE=1:50



ROOF FRAMING PLAN  
SCALE=1:50

1. DESIGN LOADS (SERVICE)

LIVE LOADS:

ROOF: 1.0 KPA (20 PSF)  
OTHERS: 4.8 KPA (100 PSF)  
8.9 KN (2.0 K) CONCENTRATED LOAD

WIND LOADS PER IBC-2003

USING A "3-SECOND" WIND VELOCITY OF 125 KPH (78 MPH),  
EXPOSURE C AND IMPORTANCE FACTOR I=1.0

EARTHQUAKE LOADS PER IBC-2003:

USING A SEISMICITY:  $S_s=1.65g$  AND  $S_1=0.75g$

2. MATERIALS:

CONCRETE: 28 MPa (4 KSI)  
CYLINDER STRENGTH AT 28 DAYS

REINFORCING: ASTM A615 GRADE 60 (60 KSI)

3. WORK THESE STRUCTURAL DRAWINGS WITH THE  
STANDARD-DETAILS DRAWINGS.

4. A RELATIVE (DATUM) FINISH FLOOR ELEVATION EQUAL TO  
100.00 M. IS USED AS REFERENCE ELEVATION FOR ALL  
STRUCTURAL DRAWINGS. REFER TO CIVIL DRAWINGS FOR  
ACTUAL FINISH ELEVATIONS.

5. FOUNDATIONS ARE DESIGNED USING  
AN ALLOWABLE BEARING PRESSURE OF  
0.75 KG/SQ. CM (1500 PSF), AND BOTTOM  
OF FOOTINGS ARE PLACED AS SHOWN  
ON DRAWINGS. GEOTECHNICAL INVESTIGATION  
SHALL CONFIRM BEARING CAPACITY TO BE  
NO LESS THAN 0.75 KG/SQ CM. IF GEOTECHNICAL  
INVESTIGATION SHOWS LESS THAN 0.75 KG/SQ CM  
THE CONTRACTOR SHALL REDESIGN FOOTINGS  
BASED ON THE GEOTECHNICAL INVESTIGATION.  
SEE SPECIFICATION 01015 PARAGRAPH, GEOTECHNICAL,  
FOUNDATION AND SURVEY.



NO.	REVISIONS	DATE	APP.
1		19/03/2007	

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CHK BY:	KGO	FILE NO.: AF0701 H-SB01PN

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Center

AFGHAN NATIONAL POLICE  
HEADQUARTERS (2 STORY)  
COMPOUND  
AFGHANISTAN  
WELL HOUSE BUILDING  
FOUNDATION PLAN AND  
ROOF PLAN

SHEET  
REFERENCE  
NUMBER:  
T  
S-1

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS  
SHOWN ARE IN MILLIMETERS.

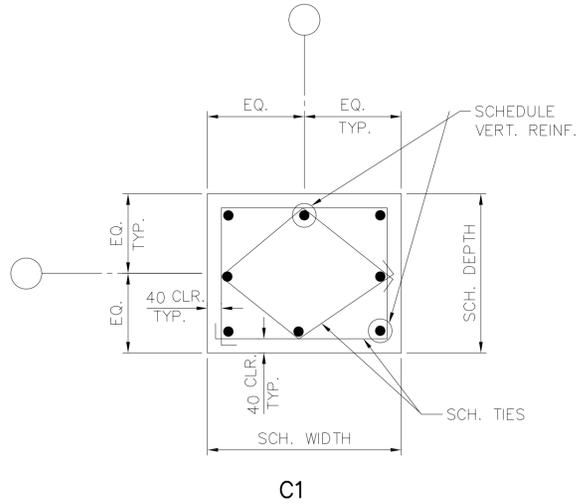
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**COLUMN SCHEDULE**

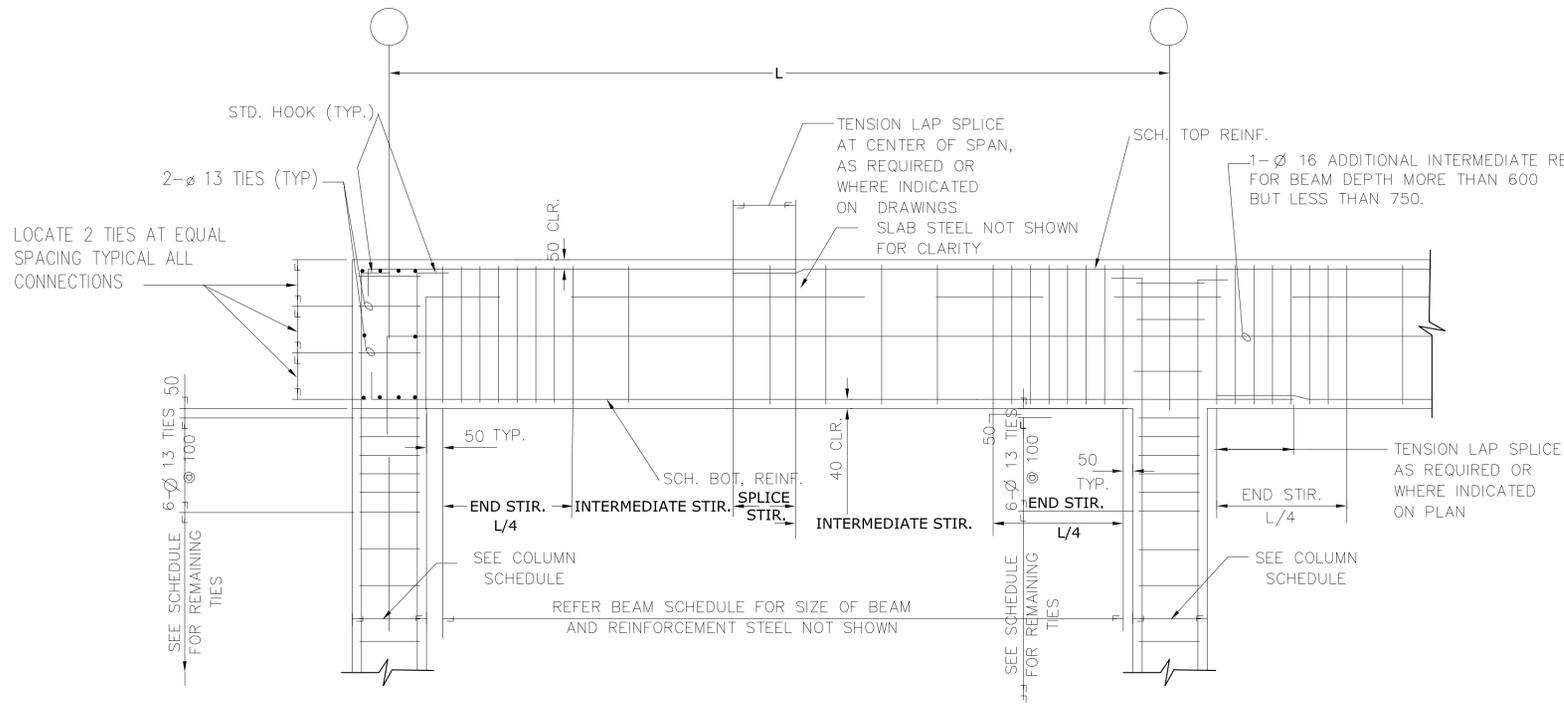
NOTES: 1. REFER TO DETAILS B&C/S-3 AND A/S-2 FOR TYPICAL COLUMN DETAILS.

COLUMN GRIDS	COLUMN TYPE	CONCRETE DIMENSIONS		VERTICAL REINFORCEMENT	TIE REINFORCEMENT	
		WIDTH	DEPTH		SIZE	SPACING
A-1, A-2 B-1, B-2	C1	400	400	8- $\phi$ 16	$\phi$ 10	300



**COLUMN TYPE**

**DETAIL A**  
SCALE=N.T.S.

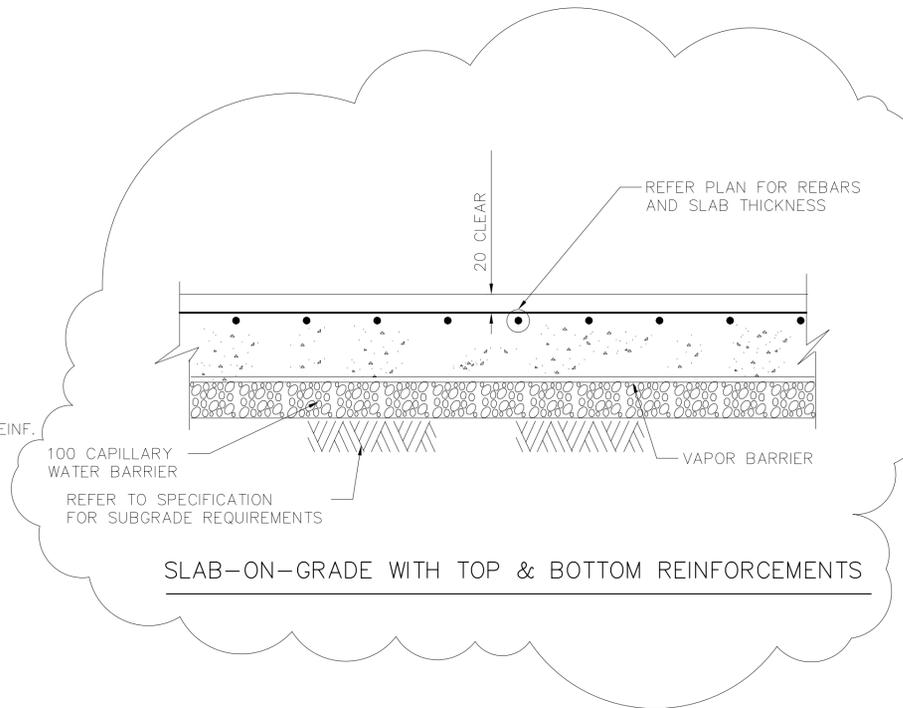


**TYPICAL BEAM TO COLUMN END CONNECTION**

**DETAIL B**  
SCALE=N.T.S.

**TYPICAL BEAM TO COLUMN INTERIOR CONNECTION**

**DETAIL C**  
SCALE=N.T.S.



NO.	REVISIONS	DATE	APP.
1	19/03/2007		

DESIGNED BY: DATE: 02-05-07	SUBMITTED BY: PHILIP L. PINELLO
RC	TOP
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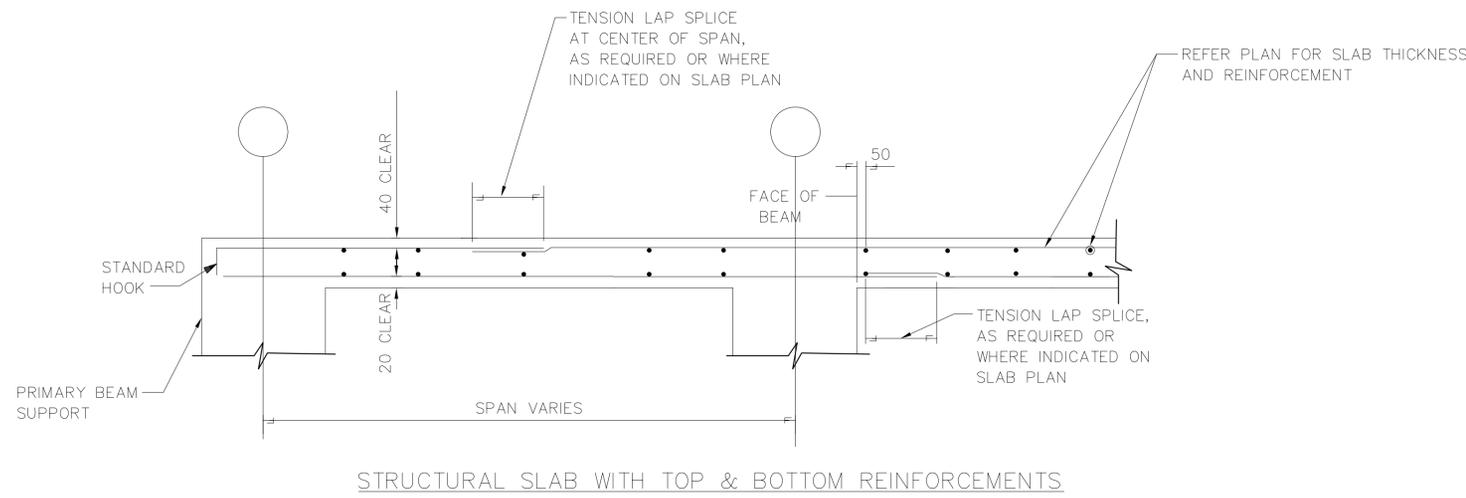
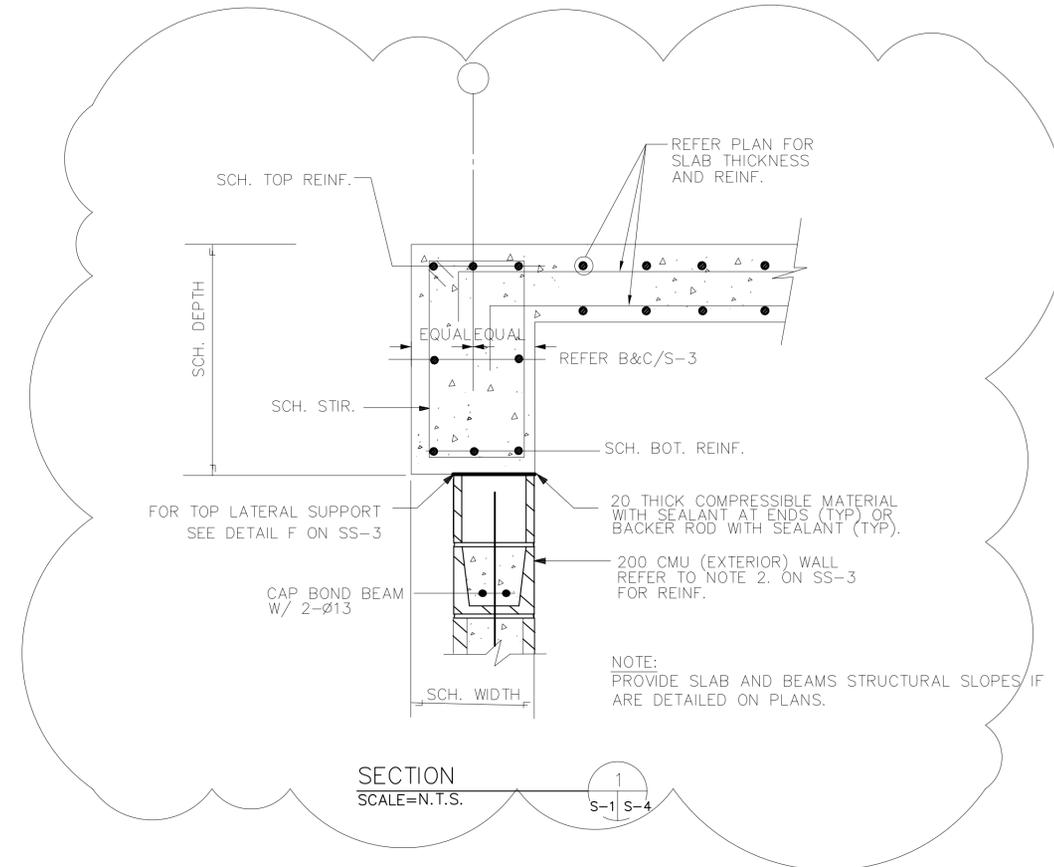
**AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND**  
AFGHANISTAN  
**WELL HOUSE BUILDING**  
SLAB-ON-GRADE DETAILS

SHEET REFERENCE NUMBER:  
**T**  
**S-3**

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

BEAM SCHEDULE									
MARK	CONCRETE DIMENSIONS		FLEXURAL REINFORCEMENT		STIRRUP REINFORCEMENT				REMARKS
	WIDTH	DEPTH	TOP	BOTTOM	SIZE	TYPE	SPACING		
							ENDS & SPLICE	INTERMEDIATE	
RB1	300	600	3- $\phi$ 16	3- $\phi$ 16	$\phi$ 10		200	300	

NOTE: REFER TO DETAILS B&C/S-3 FOR TYPICAL BEAM ELEVATIONS AND SECTION 1/S-4 FOR TYPICAL BEAM SECTION.



TYPICAL SECTIONS FOR STRUCTURAL SLABS  
SCALE=N.T.S. A  
S-4 S-4

- NOTE:
1. PROVIDE SIMILAR REINFORCEMENT PATTERNS FOR REINFORCEMENT RUNNING PERPENDICULAR TO SECTIONS.
  2. PROVIDE SLAB AND BEAMS STRUCTURAL SLOPES IF ARE DETAILED ON PLANS.

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

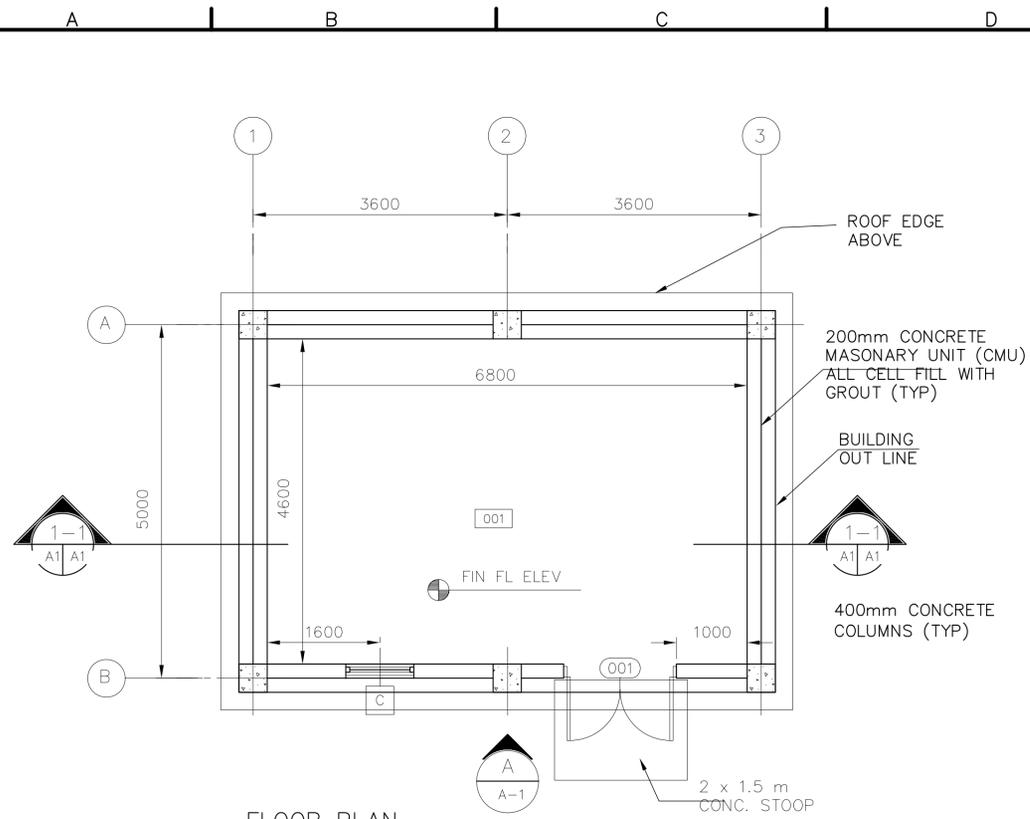
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DESIGNED BY:	DATE:	SUBMITTED BY:	FILE NO.:	DESCRIPTION	DATE
RC	02-05-07	PHILIP L. PINELLO CHIEF, PORT FACILITIES DEV	AF0701 H-SF04DT		
DOWN BY:	TOP	CHK BY:	KGO	US Army Corps of Engineers Transatlantic Programs Center	
<b>AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND</b> WELL HOUSE BUILDING ROOF BEAM AND STRUCTURAL SLAB DETAILS					
SHEET REFERENCE NUMBER:					
T					
S-4					

DATE\$ FILE\$

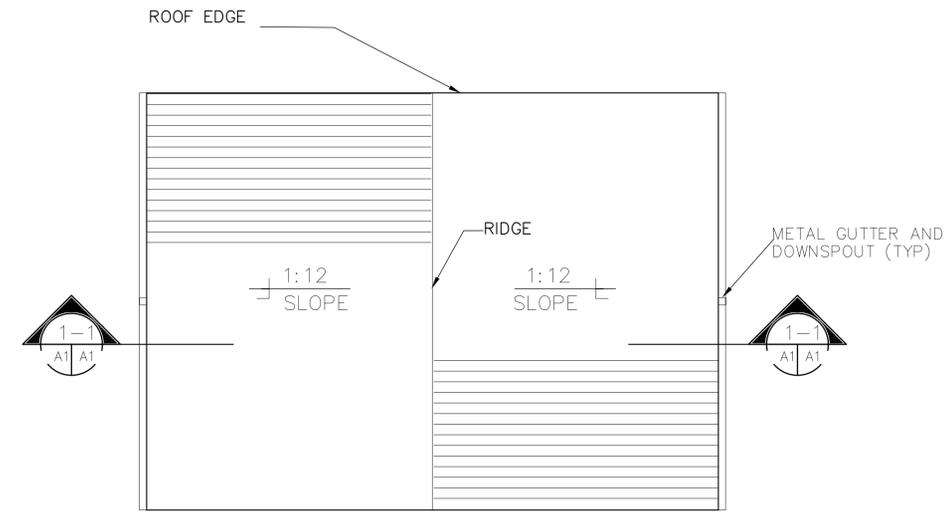




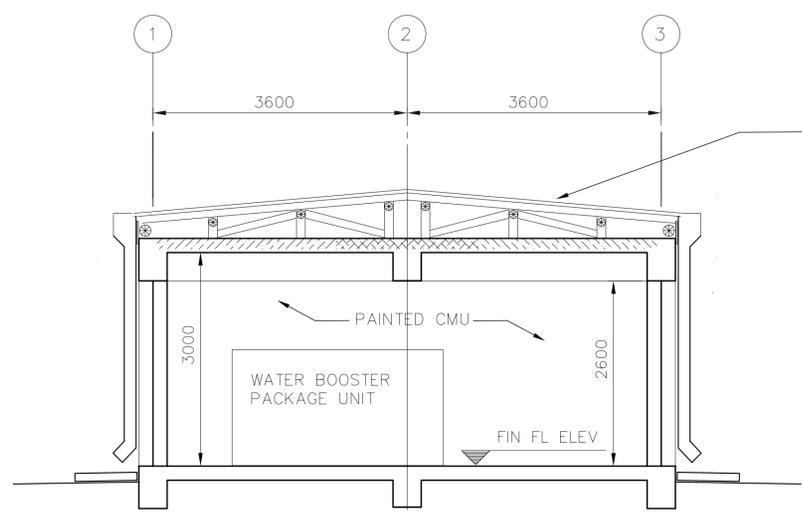




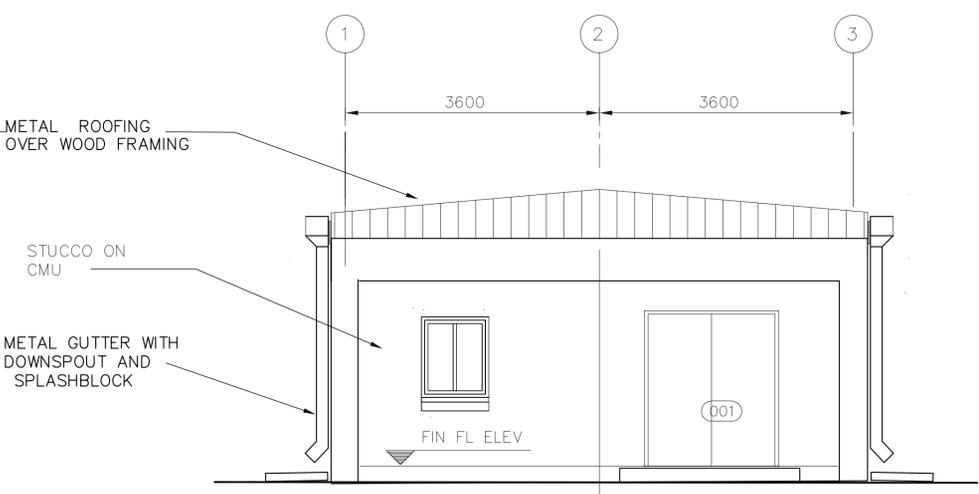
FLOOR PLAN  
SCALE=1 : 50



ROOF PLAN  
SCALE= 1:50



BUILDING SECTION  
SCALE=1 = 100



ELEVATION  
SCALE=1: 50

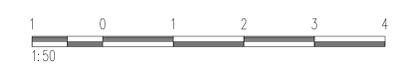
ROOM FINISH SCHEDULE LEGEND

- FLOOR TYPE**  
F1 SEALED CONCRETE
- FLOOR COLOR**  
1 SEALED CONCRETE - NATURAL FINISH
- WALL TYPE**  
W1 PAINTED CMU
- WALL COLOR**  
20 PAINTED CMU -HEMPEL, 1005-Y50R-25400,
- CEILING TYPE**  
C1 PAINTED EXPOSED STRUCTURE
- CEILING COLOR**  
30 PAINTED EXPOSED STRUCTURE - HEMPEL, 0502-Y-15420, OFF WHITE

ROOM FINISH SCHEDULE											
ROOM NO.	ROOM NAME	FLOOR		BASE		WALLS		CEILING			REMARKS
		MAT'L.	COLOR	MAT'L.	COLOR	MAT'L.	COLOR	MAT'L.	COLOR	HEIGHT	
001	WATER BOOSTER ROOM	F1	1	--	--	W1	20	C1	30	3400	

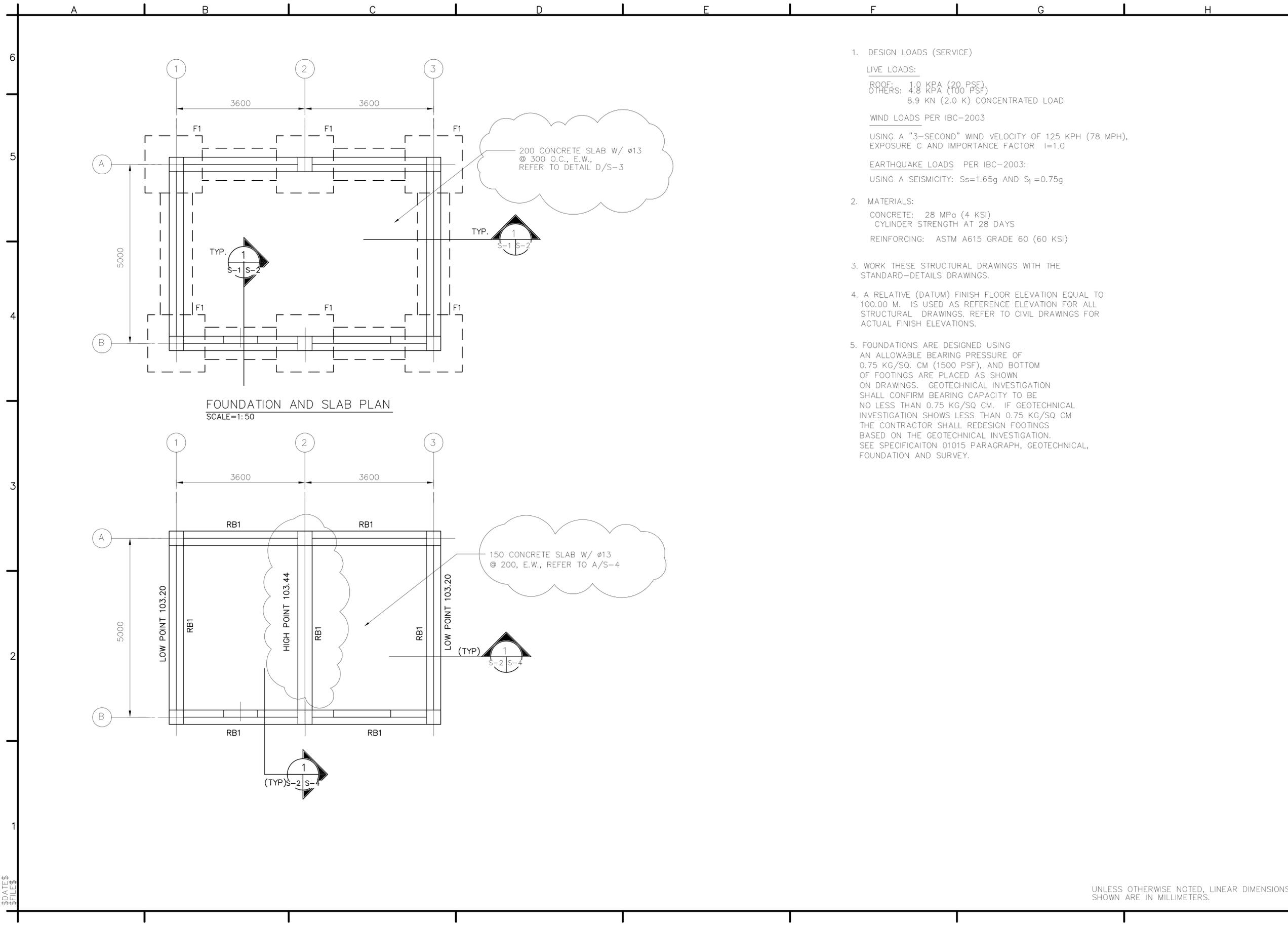
DOOR SCHEDULE													
NO.	LOCATION	DOOR TYPE	DOOR				FRAME				FIRE LABEL	HDW SET	REMARKS
			MAT'L	WIDTH	HEIGHT	THICK	HEAD	JAMB	SILL	MAT'L			
100	WATER BOOSTER ROOM	F	HM	1800	2150	45	H-1/SA2	J-1/SA2	S-1/SA2	HM	--	2	

- ROOM FINISH SCHEDULE NOTES:
- ALL WALL PENETRATIONS SHALL BE SEALED TO PROVIDE A NEAT APPEARANCE. PENETRATIONS OF EXTERIOR WALLS SHALL BE SEALED TO BE WATER-TIGHT.
  - SEALANTS SHALL MATCH THE COLOR OF ADJACENT SURFACES.



DESIGNED BY: S. Hanna	DATE: 02-05-07
DRAWN BY: S. Hanna	CHECKED BY: S. Hanna
SUBMITTED BY: PHILIP L. PINELLO	FILE NO.: AF0701 H-AR01PN
CHIEF, PRT FACILITIES DEV	
US Army Corps of Engineers	Transatlantic Programs Center
AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN	BOOSTER PUMP HOUSE BUILDING/ELEVATION DOOR/FINISH SCHEDULES
SHEET REFERENCE NUMBER: A-1	

DATE\$ FILE\$



FOUNDATION AND SLAB PLAN  
SCALE=1:50

- DESIGN LOADS (SERVICE)  
LIVE LOADS:  
ROOF: 1.0 KPA (20 PSF)  
OTHERS: 4.8 KPA (100 PSF)  
8.9 KN (2.0 K) CONCENTRATED LOAD  
WIND LOADS PER IBC-2003  
USING A "3-SECOND" WIND VELOCITY OF 125 KPH (78 MPH),  
EXPOSURE C AND IMPORTANCE FACTOR I=1.0  
EARTHQUAKE LOADS PER IBC-2003:  
USING A SEISMICITY:  $S_s=1.65g$  AND  $S_1=0.75g$
- MATERIALS:  
CONCRETE: 28 MPa (4 KSI)  
CYLINDER STRENGTH AT 28 DAYS  
REINFORCING: ASTM A615 GRADE 60 (60 KSI)
- WORK THESE STRUCTURAL DRAWINGS WITH THE STANDARD-DETAILS DRAWINGS.
- A RELATIVE (DATUM) FINISH FLOOR ELEVATION EQUAL TO 100.00 M. IS USED AS REFERENCE ELEVATION FOR ALL STRUCTURAL DRAWINGS. REFER TO CIVIL DRAWINGS FOR ACTUAL FINISH ELEVATIONS.
- FOUNDATIONS ARE DESIGNED USING AN ALLOWABLE BEARING PRESSURE OF 0.75 KG/SQ. CM (1500 PSF), AND BOTTOM OF FOOTINGS ARE PLACED AS SHOWN ON DRAWINGS. GEOTECHNICAL INVESTIGATION SHALL CONFIRM BEARING CAPACITY TO BE NO LESS THAN 0.75 KG/SQ CM. IF GEOTECHNICAL INVESTIGATION SHOWS LESS THAN 0.75 KG/SQ CM THE CONTRACTOR SHALL REDESIGN FOOTINGS BASED ON THE GEOTECHNICAL INVESTIGATION. SEE SPECIFICATION 01015 PARAGRAPH, GEOTECHNICAL, FOUNDATION AND SURVEY.



NO.	REVISIONS	DATE	APP.
1		19/03/2007	

DESIGNED BY:	DATE:	02-05-07
TOP	SUBMITTED BY:	PHILIP L. PINELLO
DOWN BY:	TOP	CHIEF, PRT FACILITIES DEV
CHK BY:	KGO	FILE NO.: AF0701 I-SB01PN

US Army Corps  
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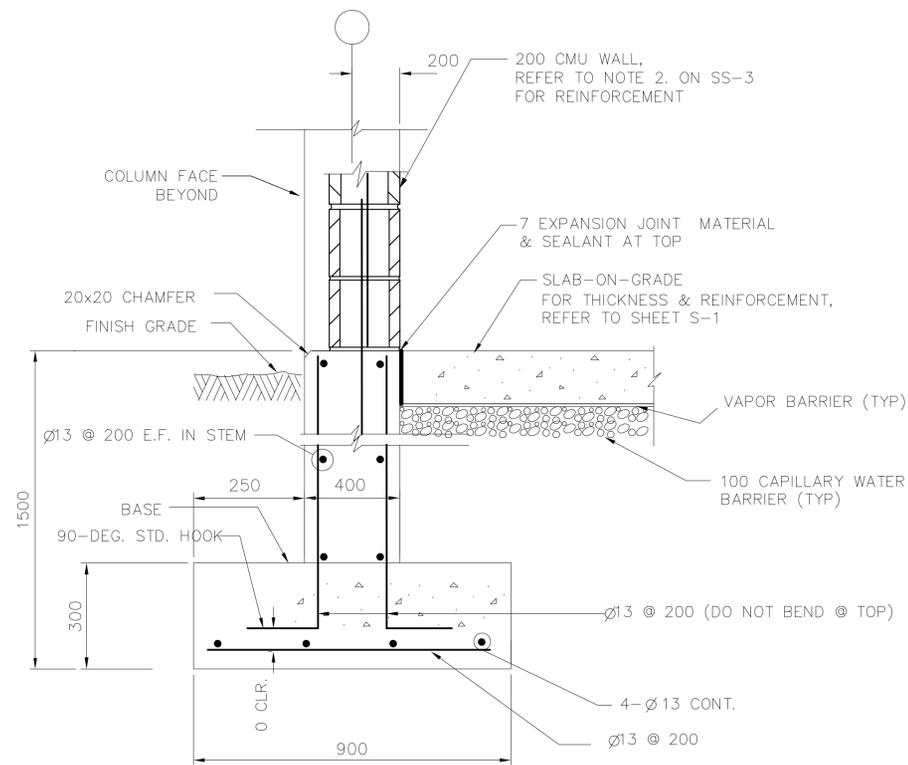
AFGHAN NATIONAL POLICE  
HEADQUARTERS (2 STORY)  
COMPOUND  
AFGHANISTAN  
BOOSTER PUMP HOUSE  
FOUNDATION, SLAB AND  
ROOF PLAN

SHEET  
REFERENCE  
NUMBER:  
S-1

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

DATE\$\$\$\$  
FILE\$\$\$\$

FOOTING SCHEDULE							NOTE: REFER TO A/S-2 FOR TYPICAL SECTION OF FOOTINGS.
MARK	CONCRETE DIMENSIONS			REINFORCEMENT		FTG. BOTTOM EL. METERS	REMARKS
	WIDTH	LENGTH	THICKNESS	TOP	BOTTOM		
F1	1600	1600	300	—	5- $\phi$ 16 E.W.	98.5	



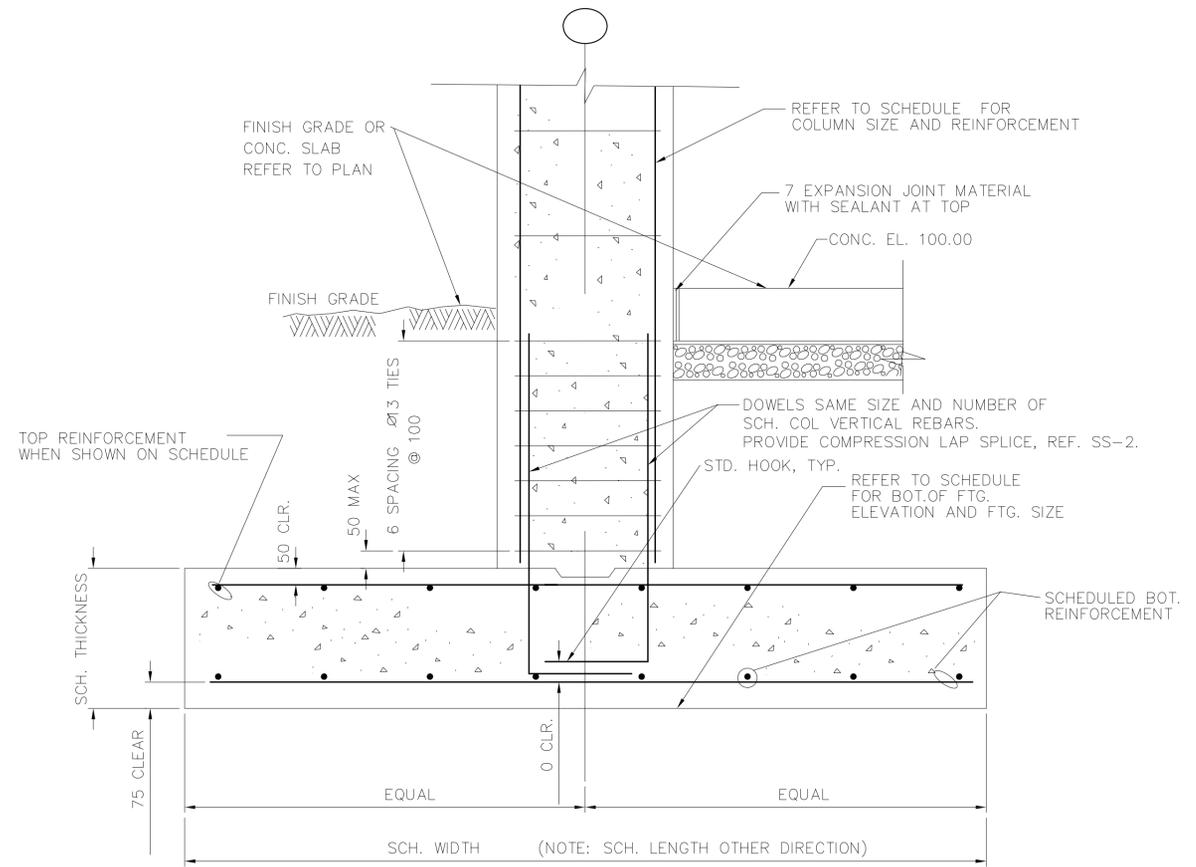
TYPICAL WALL FOOTING

SECTION  
SCALE=N.T.S.



NOTES:

- HORIZONTAL STEM WALL AND FOOTING REINFORCEMENTS ARE CONTINUOUS THROUGH COLUMN AND COLUMN FOOTING
- AT DISCONTINUOUS STEM WALL BARS TERMINATE WITH STANDARD HOOK IN COLUMN. FOOTING BARS TERMINATE WITH 600 MM EMBEDMENT IN COLUMN FOOTING.
- REFER TO CIVIL DWGS FOR ACTUAL FINISH FLOOR ELEVATIONS.



DETAIL  
SCALE=N.T.S.



TYPICAL COLUMN FOOTING

REVISIONS	DATE	APP
19/02/2007		

DESIGNED BY: RC	DATE: 02-05-07
DRAWN BY: TOP	SUBMITTED BY: PHILIP L. PINELLO
CHECK BY: KGO	CHIEF, PRT FACILITIES DEV
	FILE NO.: AF0701 I-SB02DT

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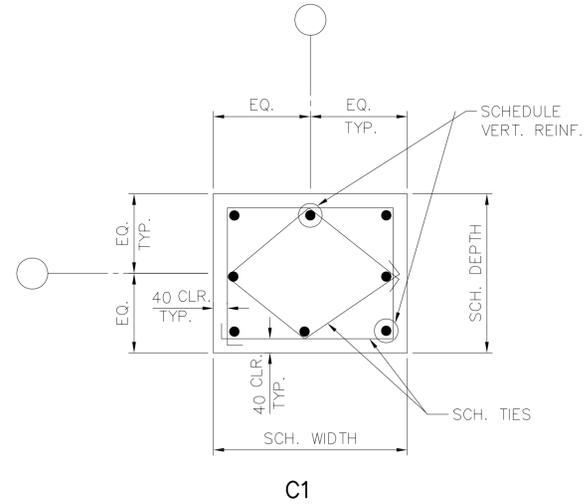
AFGHAN NATIONAL POLICE  
HEADQUARTERS (2 STORY)  
COMPOUND  
AFGHANISTAN  
BOOSTER PUMP HOUSE  
FOOTING DETAILS

SHEET  
REFERENCE  
NUMBER:  
S-2

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

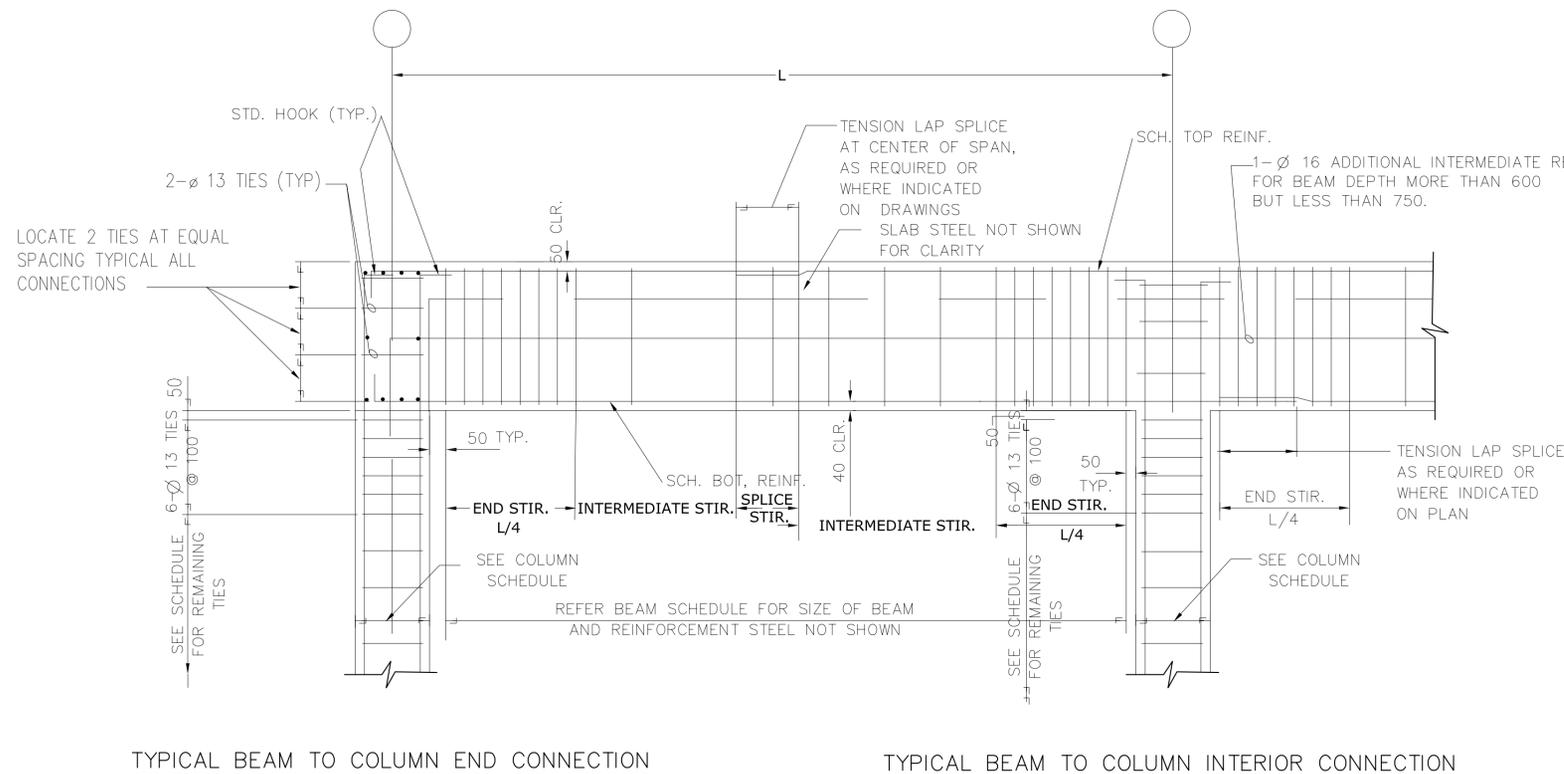
COLUMN SCHEDULE						
COLUMN GRIDS	COLUMN TYPE	CONCRETE DIMENSIONS		VERTICAL REINFORCEMENT	TIE REINFORCEMENT	
		WIDTH	DEPTH		SIZE	SPACING
A-1, A-2, A-3 B-1, B-2, B-3	C1	400	400	8-Ø19	Ø13	300

NOTES: 1. REFER TO DETAILS B&C/S-3 AND A/S-2 FOR TYPICAL COLUMN DETAILS.



COLUMN TYPE

DETAIL A  
SCALE=N.T.S.

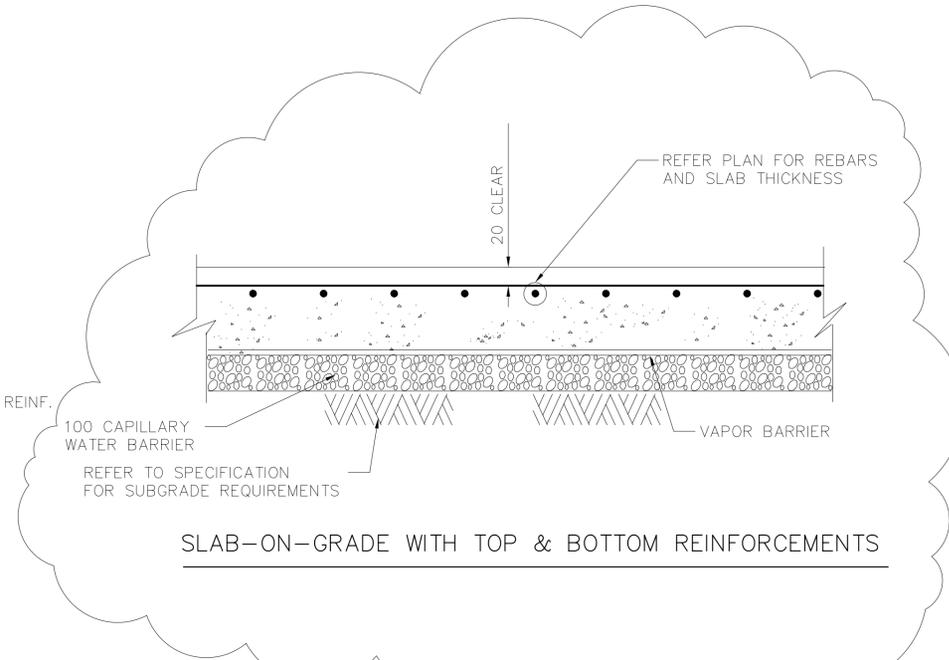


TYPICAL BEAM TO COLUMN END CONNECTION

TYPICAL BEAM TO COLUMN INTERIOR CONNECTION

DETAIL B  
SCALE=N.T.S.

DETAIL C  
SCALE=N.T.S.



SLAB-ON-GRADE WITH TOP & BOTTOM REINFORCEMENTS

NO.	REVISIONS	DATE	APP.
1	19/03/2007		

DESIGNED BY: RC	DATE: 02-05-07
DRAWN BY: TOP	SUBMITTED BY: PHILIP L. PINELLO
CHECKED BY: KGO	CHIEF, PORT FACILITIES DEV
	FILE NO.: AF0701 I-SF03DT

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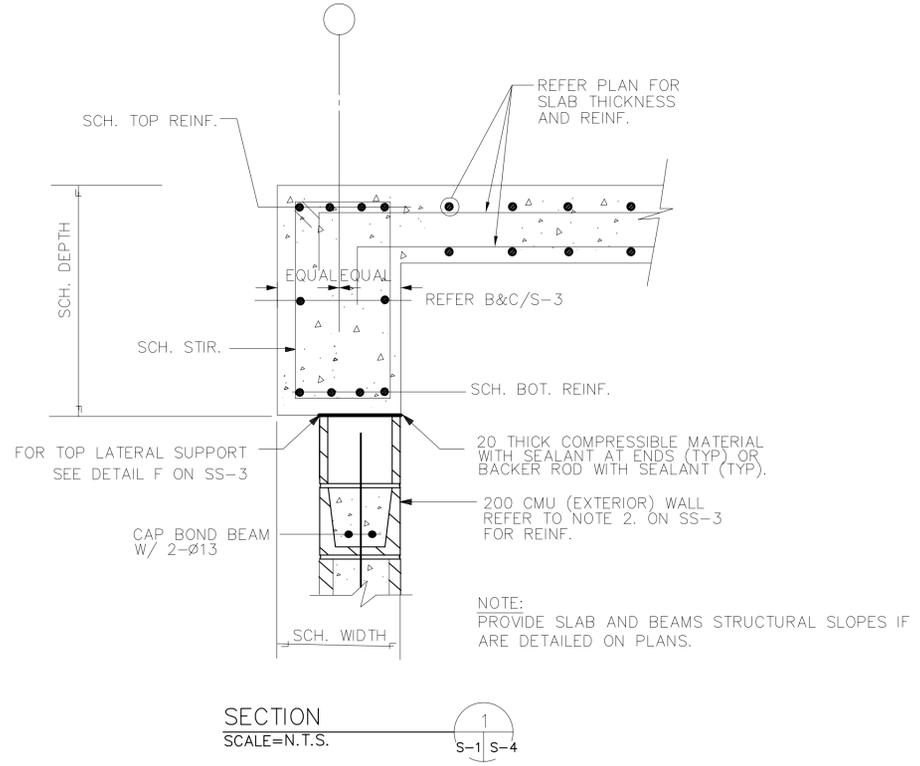
AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
BOOSTER PUMP HOUSE SLAB-ON-GRADE DETAILS

SHEET REFERENCE NUMBER:  
S-3

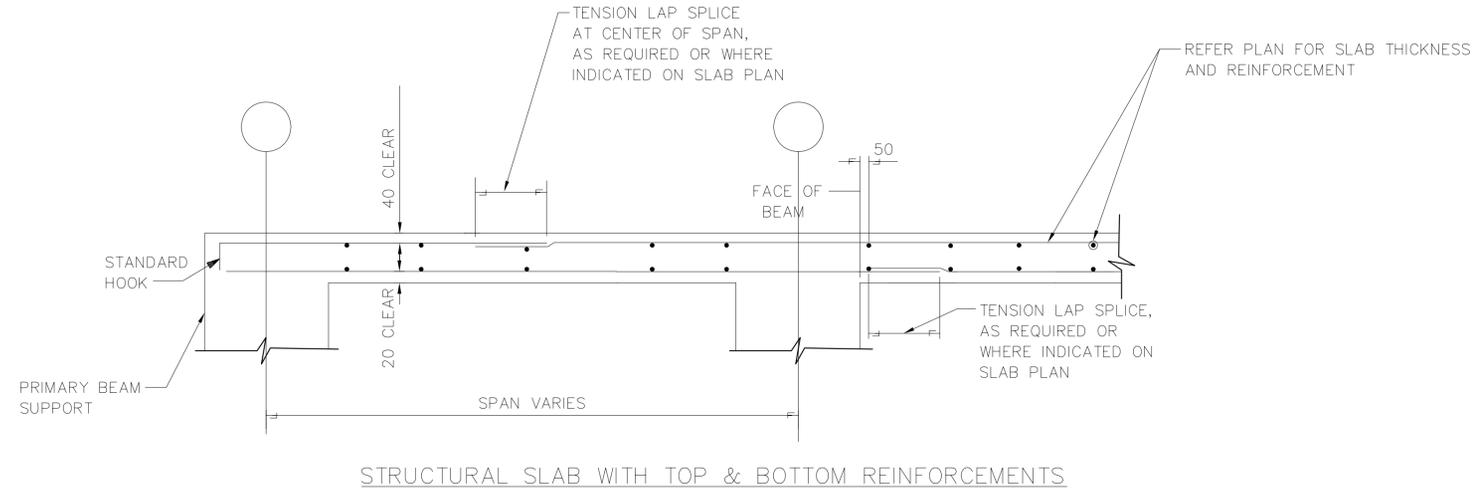
UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

BEAM SCHEDULE									
MARK	CONCRETE DIMENSIONS		FLEXURAL REINFORCEMENT		STIRRUP REINFORCEMENT				REMARKS
	WIDTH	DEPTH	TOP	BOTTOM	SIZE	TYPE	SPACING		
							ENDS & SPLICE	INTERMEDIATE	
RB1	300	600	4- $\phi$ 19	4- $\phi$ 19	$\phi$ 10		200	300	

NOTE: REFER TO DETAILS B&C/S-3 FOR TYPICAL BEAM ELEVATIONS AND SECTION 1/S-4 FOR TYPICAL BEAM SECTION.



SECTION 1/S-4  
SCALE=N.T.S.



TYPICAL SECTIONS FOR STRUCTURAL SLABS  
SCALE=N.T.S.

- NOTE:
1. PROVIDE SIMILAR REINFORCEMENT PATTERNS FOR REINFORCEMENT RUNNING PERPENDICULAR TO SECTIONS.
  2. PROVIDE SLAB AND BEAMS STRUCTURAL SLOPES IF ARE DETAILED ON PLANS.

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

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NO.	REVISIONS	DATE	APP.

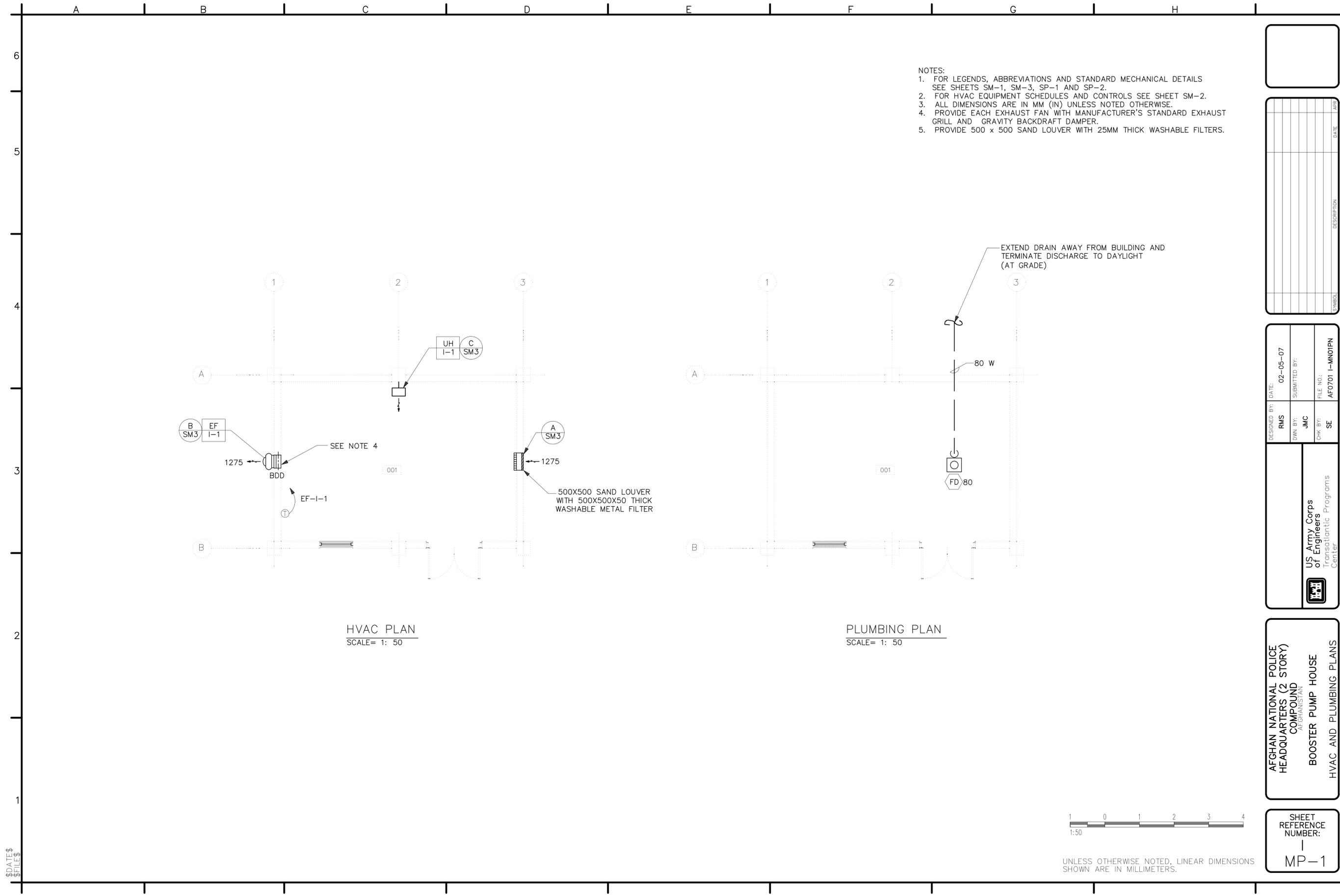
DESIGNED BY:	RC	DATE:	02-05-07
DOWN BY:	TOP	SUBMITTED BY:	PHILIP L. PINELLO
CHK BY:	KGO	CHIEF OF PARTY:	PHILIP L. PINELLO
		FILE NO.:	AF0701 I-SF04DT

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AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
BOOSTER PUMP HOUSE ROOF BEAM AND STRUCTURAL SLAB DETAILS

SHEET REFERENCE NUMBER:  
S-4

DATE\$ FILE\$



- NOTES:
1. FOR LEGENDS, ABBREVIATIONS AND STANDARD MECHANICAL DETAILS SEE SHEETS SM-1, SM-3, SP-1 AND SP-2.
  2. FOR HVAC EQUIPMENT SCHEDULES AND CONTROLS SEE SHEET SM-2.
  3. ALL DIMENSIONS ARE IN MM (IN) UNLESS NOTED OTHERWISE.
  4. PROVIDE EACH EXHAUST FAN WITH MANUFACTURER'S STANDARD EXHAUST GRILL AND GRAVITY BACKDRAFT DAMPER.
  5. PROVIDE 500 x 500 SAND LOUVER WITH 25MM THICK WASHABLE FILTERS.

HVAC PLAN  
SCALE= 1: 50

PLUMBING PLAN  
SCALE= 1: 50



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

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DESIGNED BY: RMS	DATE: 02-05-07
DRAWN BY: JMC	SUBMITTED BY: JMC
CHECKED BY: SE	FILE NO: AF0701 I-MN01PN

US Army Corps of Engineers  
Transatlantic Programs Center

AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
BOOSTER PUMP HOUSE  
HVAC AND PLUMBING PLANS

SHEET REFERENCE NUMBER:  
MP-1

DATE\$  
FILE\$



A B C D E F G H

6  
5  
4  
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1

PANELBOARD LPBP SURFACE MOUNTED MINIMUM 14,000 ASYM. A.I.C. MIN.  
60 AMP. MAIN LUGS (OR) 60 AMP. MAIN BREAKER W/ 60 AMP. TRIP  
 CIRCUIT BREAKER TYPE 380/220 VOLTS 3 PHASE 4 WIRE 100 AMP. BUS

CKT. NO.	TRIP AMPS	NO. POLES	WIRE MM2	GND MM2	CONDUIT MM	LOAD SERVED	LOAD-V.A.			LOAD-V.A.			LOAD SERVED	CONDUIT MM	GND MM2	WIRE MM2	NO. POLES	TRIP AMPS	CKT. NO.
							AO	BO	CO	AO	BO	CO							
1	20	3	4	4	25	BOOSTER PUMP	1273			1273			BOOSTER PUMP	25	4	4	3	20	2
3								1273			1273								4
5									1273		1273								6
7	25	1	6	6	20	ELECTRIC HEAT UH-I-1	4000			250		540	EF-I-1	20	4	4	1	20	8
9	20	1	4	4	20	LIGHTING		450					RECEPTACLES	20	4	4	1	20	10
11	20	1				SPARE							SPARE				1	20	12
13	20	1				SPARE							SPACE						14
15						SPACE							SPACE						16
							5273	1723	1273	1523	1813	1273							

TOTAL CONN. LOAD 12.87 KVA 80 % DEMAND = ESTIMATED DEMAND LOAD: 10.30 KVA

TOTAL CONN. LOAD PER PHASE (KVA): AO 6.80 BO 3.53 CO 2.54  
 SUPPLIED FROM POWER PLANT SWITCHBOARD(PPSB)

NOTES:

- FOR LEGEND AND ABBREVIATIONS SEE DRAWING SE-1.
- EMERGENCY LIGHT SHALL BE CONNECTED AHEAD OF LIGHT SWITCH.
- FOR LIGHT FIXTURE SCHEDULE SEE DRAWING SE-1.
- COORDINATE LOCATION OF ALL ELECTRICAL FIXTURES AND EQUIPMENT WITH ALL OTHER TRADES.
- ALL WIRING SHALL BE IN CONCEALED OR SURFACE MOUNTED METAL CONDUIT.
- REFER TO DRAWING XE-2 FOR CONDUIT AND CONDUCTOR SIZE.
- CONTRACTOR SHALL CONFIRM THAT ALL CIRCUIT RATING IS BASED ON THE ACTUAL NAME PLATE OF THE SUPPLIED EQUIPMENT.

NO.	REVISIONS	DATE	APP.
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DESIGNED BY: DATE: 02-05-07	MM	DOWN BY: SUBMITTED BY:	MM	FILE NO.: AF0701 I-EP02SC
CHK BY: SE				

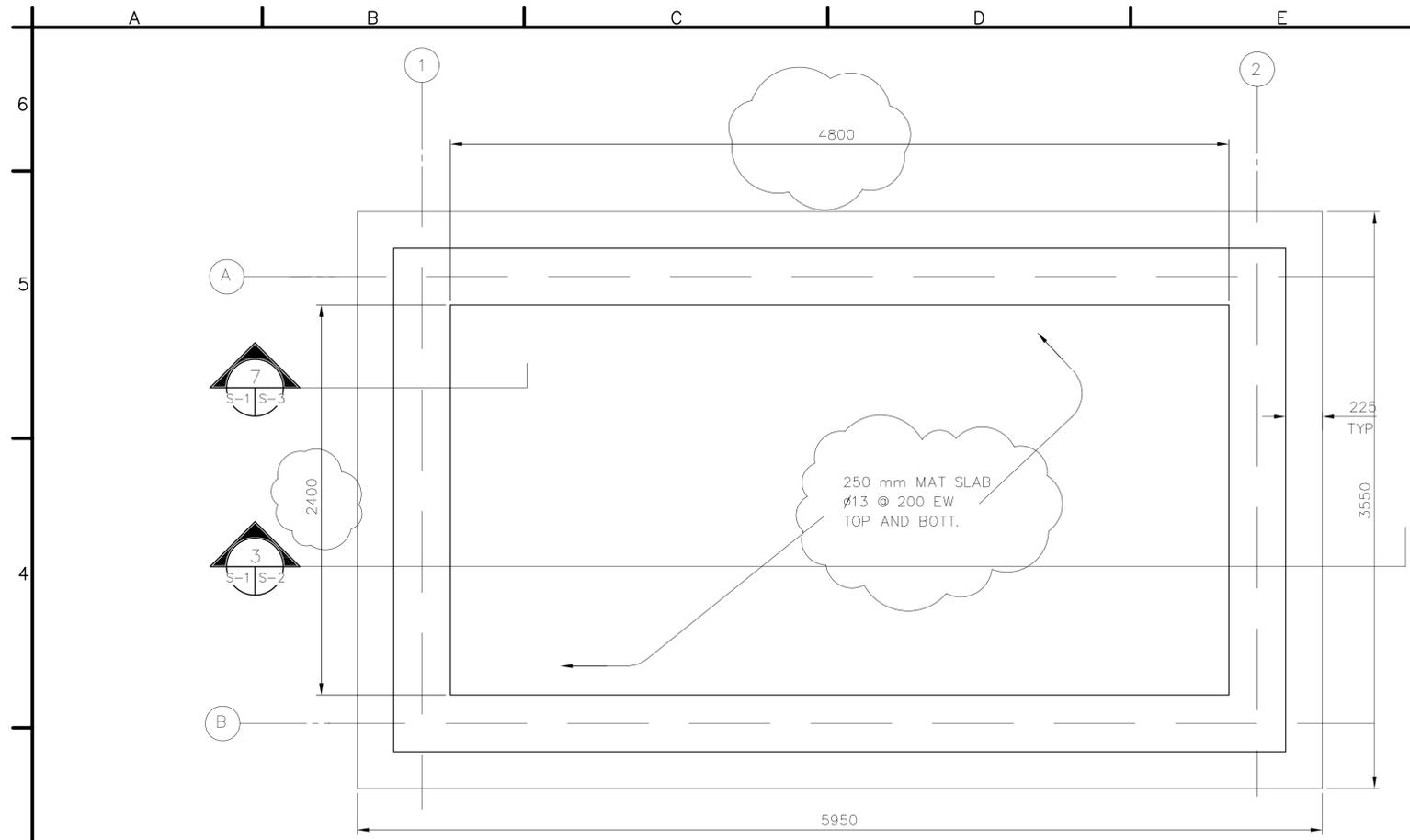
US Army Corps of Engineers  
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AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
 BOOSTER PUMP HOUSE  
 PANEL SCHEDULES

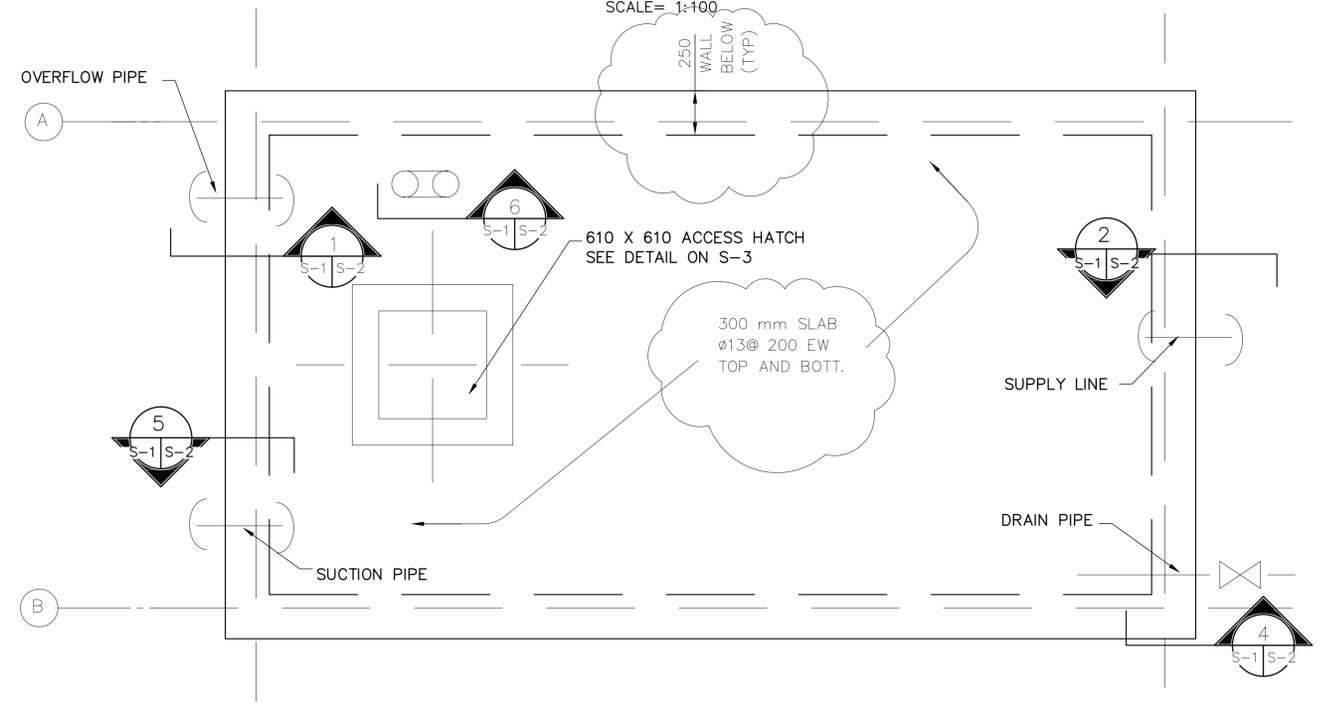
SHEET REFERENCE NUMBER:  
 E-2

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

DATE\$ FILE\$



FOUNDATION PLAN  
SCALE= 1:100



TOP COVER SLAB PLAN  
SCALE= 1:100

- DESIGN LOADS (SERVICE)  
LIVE LOADS:  
ROOF: 1.0 KPA (20 PSF)  
OTHERS: 4.8 KPA (100 PSF)  
8.9 KN (2.0 K) CONCENTRATED LOAD  
WIND LOADS PER IBC-2003  
USING A "3-SECOND" WIND VELOCITY OF 125 KPH (78 MPH),  
EXPOSURE C AND IMPORTANCE FACTOR I=1.0  
EARTHQUAKE LOADS PER IBC-2003:  
USING A SEISMICITY: S<sub>s</sub>=1.65g AND S<sub>1</sub>=0.75g
- MATERIALS:  
CONCRETE: 28 MPa (4 KSI)  
CYLINDER STRENGTH AT 28 DAYS  
REINFORCING: ASTM A615 GRADE 60 (60 KSI)
- WORK THESE STRUCTURAL DRAWINGS WITH THE STANDARD-DETAILS DRAWINGS.
- A RELATIVE (DATUM) FINISH FLOOR ELEVATION EQUAL TO 100.00 M. IS USED AS REFERENCE ELEVATION FOR ALL STRUCTURAL DRAWINGS. REFER TO CIVIL DRAWINGS FOR ACTUAL FINISH ELEVATIONS.
- FOUNDATIONS ARE DESIGNED USING AN ALLOWABLE BEARING PRESSURE OF 0.75 KG/SQ. CM (1500 PSF), AND BOTTOM OF FOOTINGS ARE PLACED AS SHOWN ON DRAWINGS. GEOTECHNICAL INVESTIGATION SHALL CONFIRM BEARING CAPACITY TO BE NO LESS THAN 0.75 KG/SQ. CM. IF GEOTECHNICAL INVESTIGATION SHOWS LESS THAN 0.75 KG/SQ. CM THE CONTRACTOR SHALL REDESIGN FOOTINGS BASED ON THE GEOTECHNICAL INVESTIGATION. SEE SPECIFICATION 01015 PARAGRAPH, GEOTECHNICAL, FOUNDATION AND SURVEY.
- PIPE LOCATIONS SHALL BE COORDINATED WITH WATER DISTRIBUTION SYSTEM.

DATE\$\$\$\$  
FILE\$\$\$\$

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

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NO.	REVISIONS	DATE	APP.

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TOP	SUBMITTED BY:	PHILIP J. PINELLO
DOWN BY:	TOP	CHIEF, PWT FACILITIES DEV
CHK BY:	KGO	FILE NO.: AF0701 J-SE01PN

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AFGHAN NATIONAL POLICE  
HEADQUARTERS (2 STORY)  
COMPOUND  
AFGHANISTAN  
WATER TANK  
FOUNDATION PLAN AND  
TOP COVER SLAB PLAN

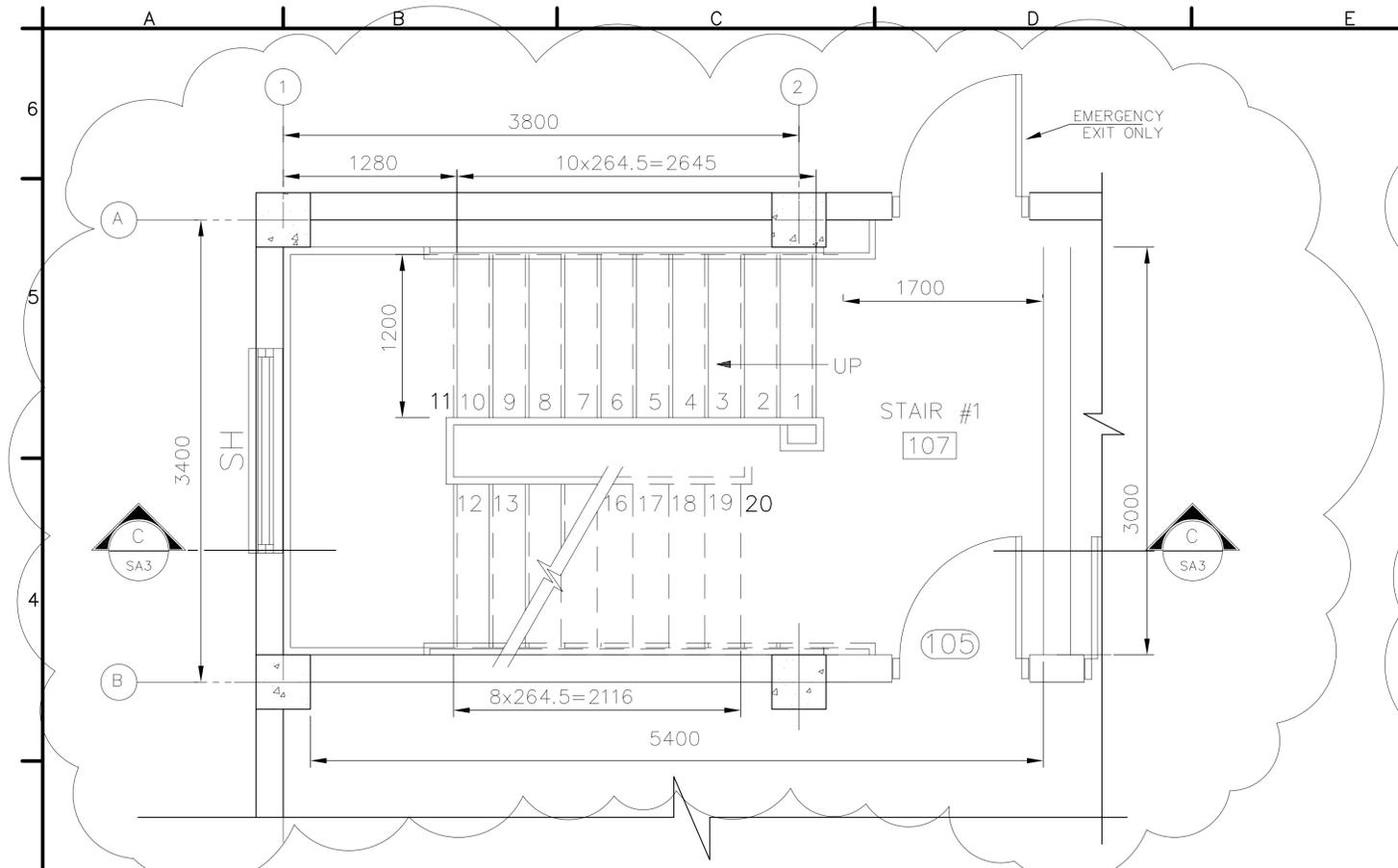
SHEET  
REFERENCE  
NUMBER:  
J  
S-1



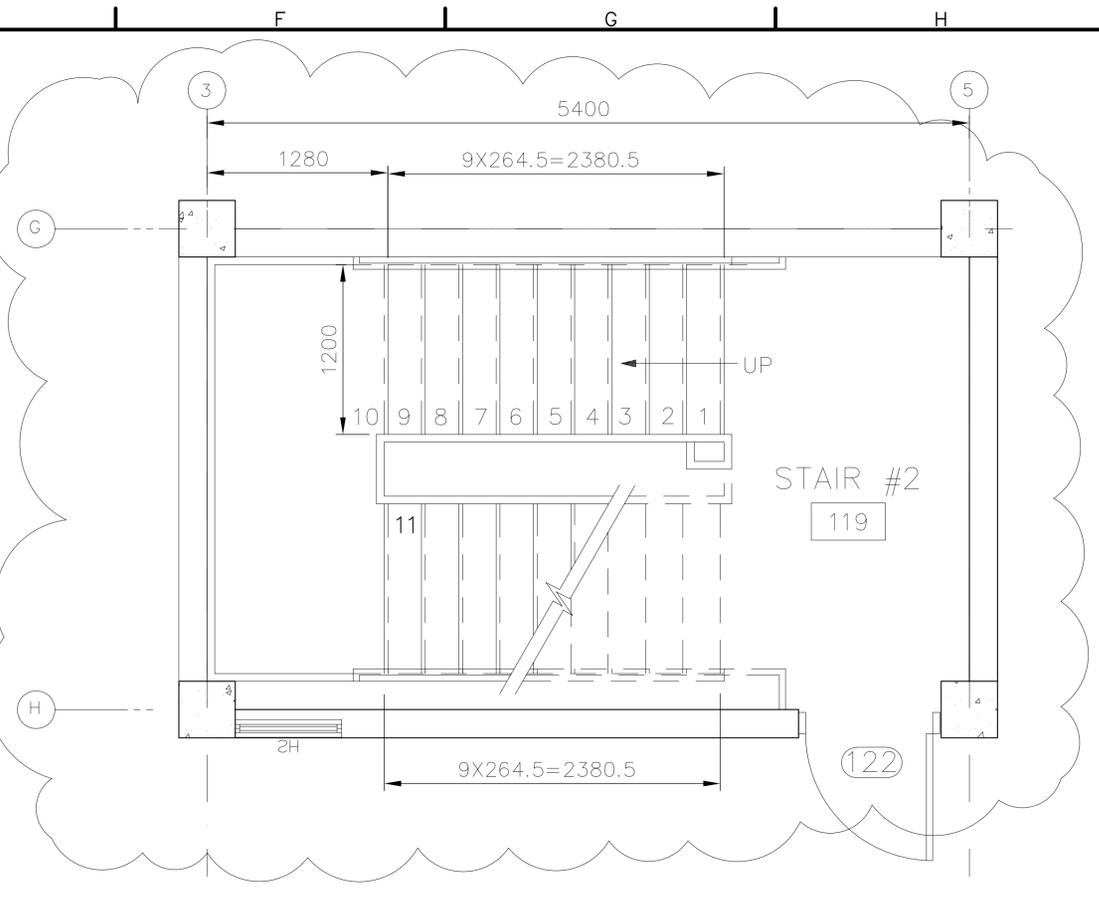




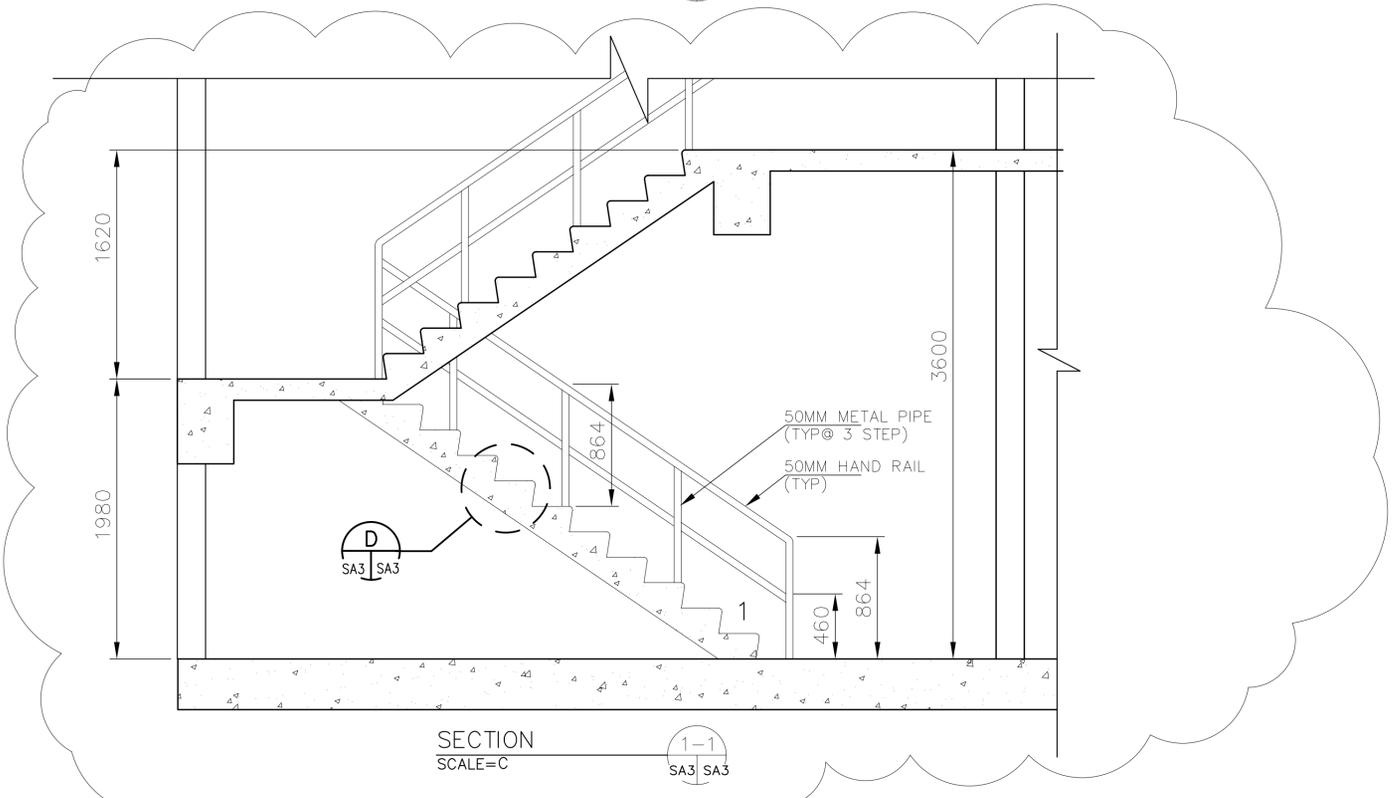




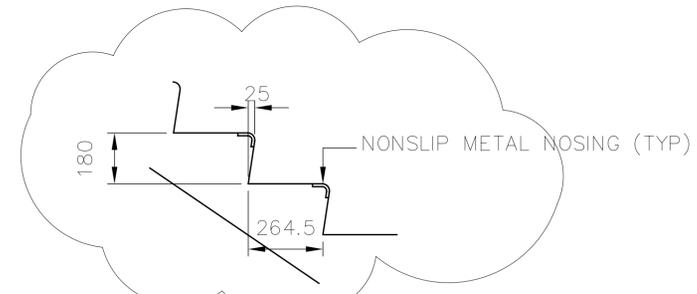
ENLARGED PLAN  
SCALE=1:25  
AA1 SA3



ENLARGED PLAN  
SCALE=1:25  
B AA1 SA3



SECTION  
SCALE=C  
1-1 SA3 SA3



DETAIL  
SCALE=1:50  
D SA3 SA3

NOTE  
1. SEE STRUCTURAL DRAWINGS FOR RE BAR DETAILS



SYMBOL	DESCRIPTION	DATE	APP
19/03/2007	OSAR		

DESIGNED BY: S. Hanna	DATE: 02-05-07
DRAWN BY: S. Hanna	SUBMITTED BY: PHILIP L. PINELLO
CHECKED BY: S. Hanna	CHIEF, PPT FACILITIES DEV
FILE NO: AF0701	\$-AR03DT

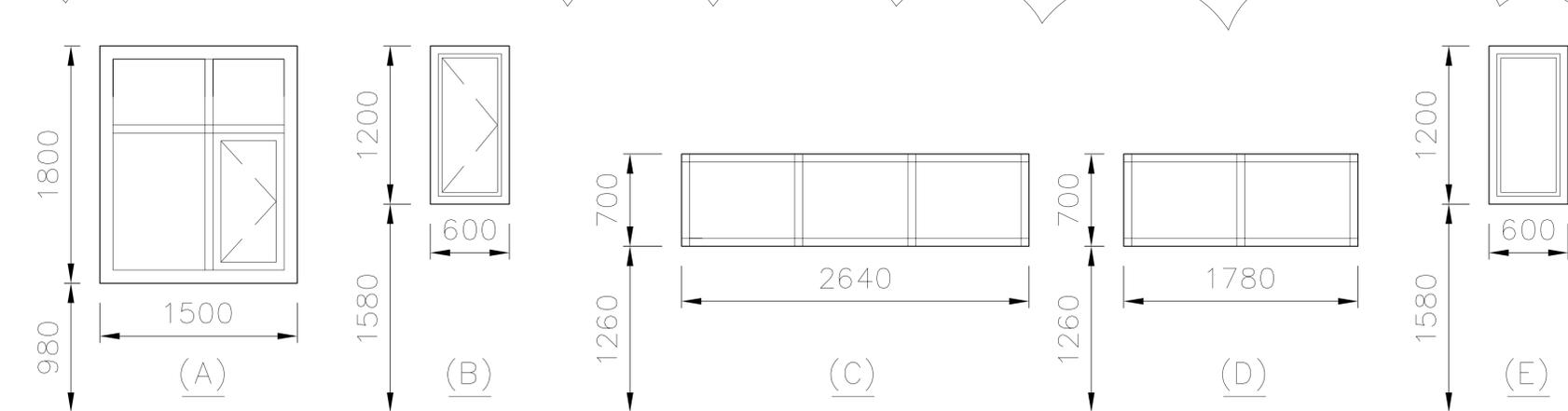
US Army Corps of Engineers  
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AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
STANDARD DETAILS  
WALL TYPES

SHEET REFERENCE NUMBER:  
SA-3

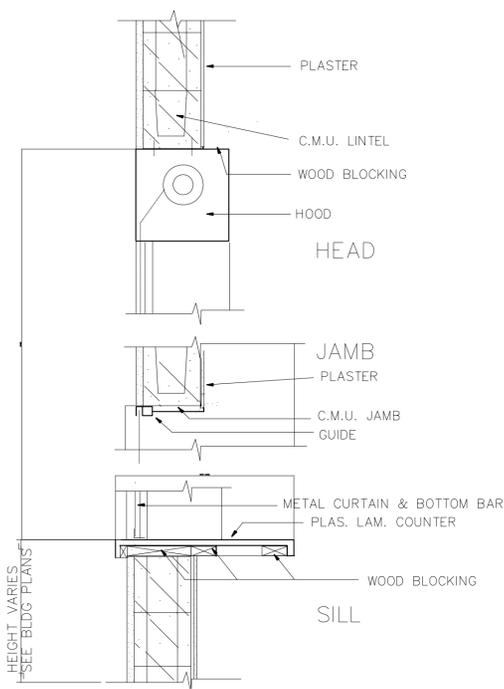
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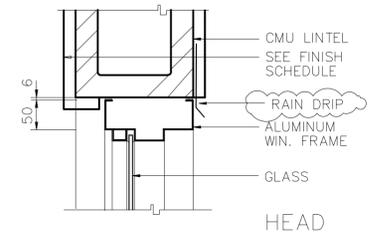


**NOTE**

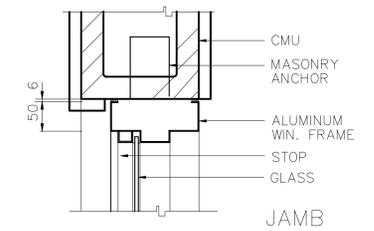
1. ALL WINDOW SHALL HAVE INSLATED LAMINATED GLASS.
2. PROVIDE PROTECTIVE COATING AT ALL DISSIMILAR METALS CONTACT AREAS, WHERE APPROPRIATE
3. ALL OPERABLE EXTERIOR WINDOWS SHALL BE PROVIDED WITH INSECT SCREENS.
4. TYPE "E" PROVIDE FIXED 16mm LAMINATED GLAZING METAL FRAME.



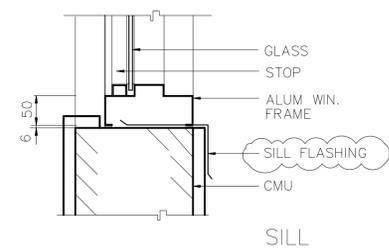
SECTION AT ROLL-UP  
COUNTER SHUTTER  
SCALE 1:5



HEAD



JAMB



SILL

WINDOW SECTION AT  
CONC MASONRY WALL

SCALE 1:5



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.



NO.	REVISIONS	DATE	APP.
1	19/03/2007		

DESIGNED BY: S. Hanna	DATE: 02-08-07
DRAWN BY: S. Hanna	SUBMITTED BY: PHILIP L. PINELLO
CHECKED BY: S. Hanna	FILE NO.: AF0701 \$-AR04EL

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AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
STANDARD DETAILS  
WINDOW DETAILS

SHEET REFERENCE NUMBER:  
SA-4

DATE\$ FILE\$

**GENERAL NOTES**

**GENERAL**

1. DESIGN REFERENCES:
  - A. AMERICAN CONCRETE INSTITUTE (ACI) BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318).
  - B. SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS – ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN (S335).
  - C. AMERICAN WELDING SOCIETY (AWS) STRUCTURAL WELDING CODE – STEEL (AWS D1.1).
  - D. INTERNATIONAL BUILDING CODE (IBC-2003).
  - E. BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (ACI 530-05).
  - F. STEEL JOIST INSTITUTE (SJI) STANDARD SPECIFICATIONS, AND WEIGHT TABLES FOR STEEL JOIST AND JOIST GIRDERS.
  - G. STEEL DECK INSTITUTE (SDI) DESIGN MANUAL FOR COMPOSITE DECKS, FORM DECKS, AND ROOF DECKS.
  - H. MBMA MANUAL FOR LOW RISE BUILDINGS SYSTEMS.
2. DIMENSIONS PROVIDED IN SECTIONS OR DETAILS AND ON PLAN AND ELEVATION VIEWS ARE SHOWN USING MILLIMETERS, UNLESS OTHERWISE NOTED.
3. ALL BUILDING ELEVATIONS ARE GIVEN AS REFERENCE ELEVATIONS TO THE FINISHED GROUND FLOOR ELEVATION. A REFERENCE FLOOR ELEVATION OF 100.00 IS USED FOR THE FINISHED GROUND FLOOR.
4. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AFFECTING THE WORK AT THE JOB SITE.
5. ALL STRUCTURAL WORK AND MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
6. DO NOT SCALE DRAWINGS.
7. FOR LOCATION AND DIMENSIONS OF PARTITIONS, DEPRESSIONS, GROOVES, SLEEVES, CURBS, OPENINGS, EMBEDDED OR ATTACHED ITEMS, REFER TO ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS
8. FOR ADDITIONAL INFORMATION REFER TO INDIVIDUAL SHEETS FOR EACH STRUCTURE.
9. METAL BUILDING SYSTEMS SHALL BE AS REQUIRED IN THE SPECIFICATIONS.
10. FOOTING ELEVATIONS GIVEN ARE AT TOP OF FOOTING BASE.
11. ALL STRUCTURES SHALL BE FOUNDED ENTIRELY ON NATURAL MATERIAL OR ENTIRELY ON COMPACTED STRUCTURAL FILL. FOR STRUCTURES FOUNDED ON BEDROCK, PROVIDE A MEDIUM OF LEAN CONCRETE HAVING A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 14 MPA (2000 PSI) BETWEEN FOOTING BASES AND BEDROCK LAYER, AS REQUIRED.
12. ALL FOOTING EXCAVATIONS SHALL BE INSPECTED AND APPROVED BY THE CONTRACTING OFFICER OR HIS APPROVED AGENT PRIOR TO PLACING CONCRETE.

**CONCRETE**

1. EMBEDDED MATERIAL:
  - A. BEFORE PLACING CONCRETE, CARE SHALL BE TAKEN TO INSURE THAT ALL EMBEDDED ITEMS ARE IN POSITION AND SECURELY FASTENED IN PLACE.
  - B. ELECTRIC CONDUITS AND PIPING TO BE EMBEDDED IN CONCRETE SHALL MEET THE APPLICABLE REQUIREMENTS OF ACI 38.
  - C. WATERSTOPS, WHERE REQUIRED, SHALL BE MADE CONTINUOUS, ALL PROJECTING WATERSTOPS SHALL BE SUPPORTED AND PROTECTED FROM DAMAGE DURING CONSTRUCTION.

2. PROVIDED 20 MILLIMETER CHAMFER FOR ALL EXPOSED EDGES OF COLUMNS, BEAMS, WALLS AND ANY OTHER MEMBERS AS DIRECTED BY THE CONTRACTING OFFICER.
3. EVERY INTERIOR SLAB-ON-GRADE SHALL HAVE ONE LAYER OF ASPHALT IMPREGNATED 30# BUILDING FELT BETWEEN THE SLAB AND ADJACENT WALL, UNLESS OTHERWISE NOTED.
4. PROVIDE APPROPRIATE DEPRESSION IN SLABS FOR TILE OR OTHER SIMILAR MATERIALS. MAINTAIN FULL SLAB THICKNESS BELOW THESE DEPRESSIONS. SEE ARCHITECTURAL INTERIOR FINISH SCHEDULES, FLOOR PLANS, AND DETAILS FOR REQUIRED DEPRESSIONS.
5. JOINTS SHALL BE LOCATED AS SHOWN ON DRAWINGS.
6. FOR SLABS ON GRADE, CONTROL JOINTS SHALL BE LOCATED NOT MORE THAN 7.6 METERS APART IN EITHER DIRECTION.
7. CONSTRUCTION JOINTS FOR STRUCTURAL SLABS, BEAMS AND GIRDERS SHALL BE LOCATED WITHIN THE MIDDLE THIRD OF THEIR SPAN. JOINTS IN GIRDERS SHALL BE OFFSET A MINIMUM DISTANCE OF TWO TIMES THE WIDTH OF AN INTERSECTING BEAM.
8. A SET OF DRAWINGS SHOWING CONCRETE PLACING SEQUENCE AND LOCATION OF JOINTS SHALL BE SUBMITTED TO THE CONTRACTING OFFICER FOR APPROVAL PRIOR TO PREPARATION OF AFFECTED REINFORCING SHOP DRAWINGS.
9. ALL REINFORCING BARS SHALL BE PLACED IN ACCORDANCE WITH ACI BUILDING CODE (ACI-318).
10. ALL REINFORCING BARS SHALL BE DEFORMED BILLET-STEEL CONFORMING TO ASTM A-615, GRADE 60 OR APPROVED EQUAL WITH THE FOLLOWING MINIMUM REQUIREMENTS: MINIMUM YIELD STRENGTH 413 MPa (60,000 PSI).
11. WELDED WIRE FABRIC SHALL BE COLD DRAWN CONFORMING TO ASTM A-185, GRADE 60, OR APPROVED EQUAL WITH THE FOLLOWING MINIMUM REQUIREMENTS: MINIMUM YIELD STRENGTH 413 MPa (60,000 PSI).
12. DETAILING OF REINFORCEMENT SHALL BE IN ACCORDANCE WITH THE LATEST ACI MANUAL FOR DETAILING (SP-66)
13. DIMENSION AND SPACING OF BARS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. THUS,  $\varnothing$  19 X 300 LG.
14. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 28 MPa (4,000 PSI) AND CONTAIN ASTM C-150 TYPE I CEMENT UNLESS OTHERWISE NOTED.
15. REINFORCEMENT MAY BE MOVED WITH APPROVAL OF THE CONTRACTING OFFICER TO CLEAR PIPES, SEALS, RECESSES, EMBEDDED METAL WORK AND CONDUITS.
16. CLEAR CONCRETE COVER FOR REINFORCING BARS IN CAST-IN-PLACE CONCRETE SHALL BE PROVIDED AS FOLLOWS, UNLESS OTHERWISE NOTED:
  - A. FOOTINGS OR BEAMS CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 75mm
  - B. FORMED SURFACES EXPOSED TO WEATHER OR EARTH:
    - (1) 16 BARS OR SMALLER: 40mm
    - (2) ALL OTHERS: 50 mm
  - C. FORMED SURFACES NOT EXPOSED DIRECTLY TO WEATHER OR EARTH:
    - (1) SLABS, WALLS: 20mm
    - (2) BEAMS, GIRDERS, COLUMNS: 40mm
17. REINFORCEMENT SHALL BE CONTINUOUS THROUGH ALL CONSTRUCTION JOINTS, BUT DISCONTINUOUS AT ALL CONTROL JOINTS, UNLESS OTHERWISE INDICATED.
18. REINFORCING BARS SHALL NOT BE BENT OR STRAIGHTENED IN A MANNER THAT WILL INJURE THE MATERIAL. BARS WITH KINKS OR IMPROPER BENDS SHALL NOT BE USED.
19. THE FIRST AND LAST BAR IN SLABS AND WALLS SHALL BE PLACED AT A MAXIMUM OF ONE-HALF OF THE BAR SPACING SHOWN, UNLESS OTHERWISE NOTED.
20. THE CLEAR DISTANCE BETWEEN PARALLEL BARS IN A LAYER SHALL NOT BE LESS THAN THE NOMINAL DIAMETER OF THE BAR, NOR 25mm. THE CLEAR DISTANCE BETWEEN LONGITUDINAL BARS IN COLUMNS SHALL NOT BE LESS THAN 1.5 TIMES THE NOMINAL BAR DIAMETER NOR 40mm OF THE CURRENT AWS, D1.1, STRUCTURAL WELDING CODE – STEEL.
21. PROVIDE 1-  $\varnothing$  13 REBAR IN MID-DEPTH OF SLAB AT ALL RE-ENTRANT CORNERS.
22. PROVIDE SEALANT INDICATED AT ALL CONTROL AND ISOLATION JOINTS. WHERE CONCRETE SLAB WORK WILL NOT BE COVERED BY SOME OTHER FINISH FLOOR MATERIAL, PROVIDE TOOLED CONTROL JOINTS HAVING A RADIUS OF 3mm.

**STRUCTURAL STEEL**

1. ALL METAL WORK SHOWN ON DRAWINGS SHALL BE FABRICATED OF STRUCTURAL STEEL UNLESS OTHERWISE NOTED.
2. DESIGN OF STRUCTURAL STEEL WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS – ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN (S335).
3. ALL WELDING SHALL BE IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF THE CURRENT AWS, D1.1, STRUCTURAL WELDING CODE – STEEL.
4. WHERE WELD SIZE IS NOT CALLED OUT, USE AISC MINIMUM SIZE.
5. STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500, GRADE B FOR STRUCTURAL TUBING AND ASTM A36 FOR OTHER STRUCTURAL SHAPES (UNLESS OTHERWISE NOTED).
6. ALL BOLTED CONNECTIONS SHALL BE BEARING TYPE CONNECTIONS MADE WITH #19 BOLTS MEETING REQUIREMENTS OF ASTM A36 FOR OTHER STRUCTURAL SHAPES (UNLESS OTHERWISE NOTED).
7. SHOP CONNECTIONS MAY BE BOLTED OR WELDED. ALL FIELD CONNECTIONS SHALL BE BOLTED UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
8. UNLESS OTHERWISE NOTED, BEAM END CONNECTIONS SHALL CONFORM TO AISC STANDARD TWO ANGLE WEB CONNECTIONS, WHETHER BOLTED OR WELDED, EACH END CONNECTION SHALL BE CAPABLE OF SUPPORTING ONE-HALF THE TOTAL UNIFORM LOAD CAPACITY SHOWN IN THE ALLOWABLE UNIFORM LOAD TABLES. PART II OF THE AISC MANUAL OF STEEL CONSTRUCTION, HOLES WILL BE SHORT AND SLOTTED IN THE OUTSTANDING ANGLE LEGS (THOSE CONNECTED TO THE SUPPORTING MEMBER) AND STANDARD OTHERWISE.

SHAPE (MM)	MASS (Kgs/M)	BOLT ROWS	
		N(MIN)	N(MAX)
W610	262-82	4	7
W530	248-66	4	6
W460	213-52	3	5
W410	149-39	3	4
W360	196-134	3	3
W360	122-64	2	3
W360	58-33	2	4
W310	129-60	2	3
W310	52-21	2	3
W250	167-49	2	2
W250	45-18	2	3
W200	100-36	2	2
W200	31-15	2	2

VALUES OF N ARE BASED ON ROW SPACING OF 75 MILLIMETERS AND AN EDGE DISTANCE OF 30 MILLIMETERS.

9. ALL ANCHOR BOLTS SHALL BE ASTM A36, EXCEPT AS OTHERWISE NOTED.
10. STRUCTURAL STEEL DESIGN IS BASED ON ALLOWABLE STRESS DESIGN.

NO.	SYMBOL	DESCRIPTION	DATE	APP.

DESIGNED BY: RC	DATE: 02-05-07	SUBMITTED BY: PHILIP L. PINELLO	FILE NO.: AF0701
CHK BY: KGO	TOP	CHIEF, PRT. FACILITIES DEV	SB01GN

US Army Corps of Engineers  
Transatlantic Programs Center

AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
STANDARD DETAILS GENERAL NOTES

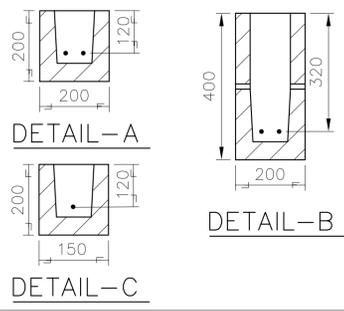
SHEET REFERENCE NUMBER: SS-1

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

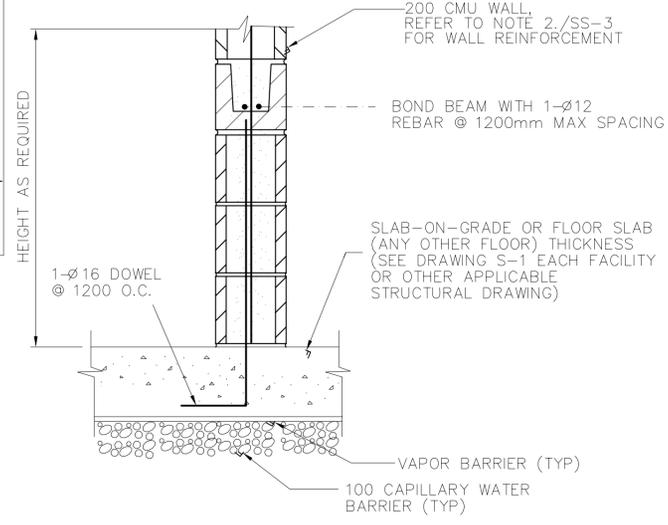
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MASONRY LINTEL SCHEDULE			
OPENING WIDTH	NOMINAL SIZE	REBAR BOTTOM	DETAIL
0-1800	200X200	2-Ø13	A
1800-2000	200X200	2-Ø16	A
2000-2200	200X200	2-Ø19	A
2200-4000	200X400	2-Ø13	B
4000-4400	200X400	2-Ø16	B
4400-4600	200X400	2-Ø19	B
0-1350	150X200	1-Ø13	C



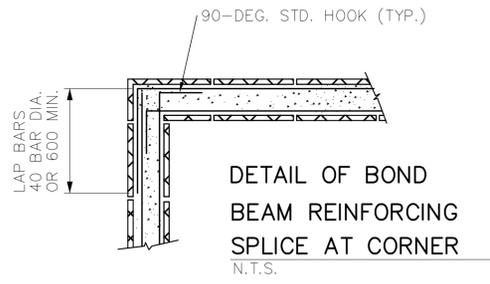
(FOR ALL BUILDINGS REQUIRING FORCE PROTECTION MEASURES, THE FIRST INTERIOR WALLS ON BOTH SIDES SHALL BE FULLY GROUTED)



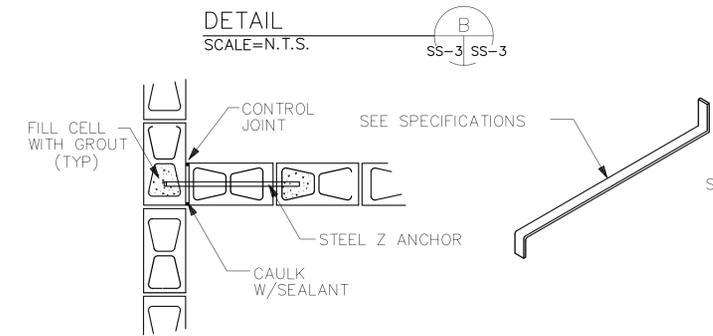
INTERIOR WALL DETAIL  
SCALE: 1:10

MASONRY NOTES:

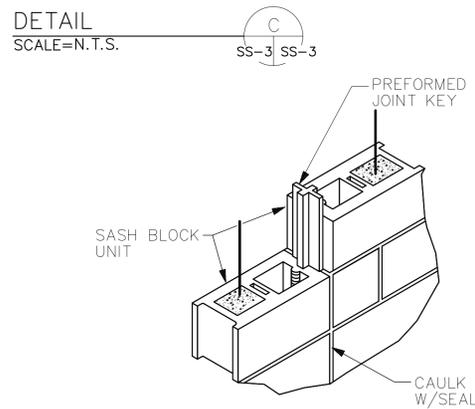
- WORK THIS SHEET WITH ARCHITECTURAL SHEETS.
- EXCEPT AS AND WHERE SPECIFICALLY NOTED OR INDICATED ON THE DRAWINGS, VERTICAL AND HORIZONTAL REINFORCEMENT FOR THE CMU WALLS SHALL BE AS FOLLOWS:
  - 200 CMU WALLS
    - 1Ø @ 600 VERTICAL AT EXTERIOR WALLS
    - 1Ø @ 1000 VERTICAL AT INTERIOR WALLS
    - 9 GAGE SIDE RODS @ 400 LADDER TYPE HORIZONTAL JOINT REINFORCEMENT
    - 1- 1Ø BOND BEAMS @ 1000
    - 2- 1Ø AT CAP-BOND BEAMS
- IN ADDITION TO JOINT REINFORCEMENT IDENTIFIED FOR PLACEMENT IN NOTE 2 ABOVE, PROVIDE JOINT REINFORCEMENT ADJACENT TO SILLS AND HEADS OF ALL OPENINGS HAVING A MASONRY WIDTH GREATER THAN 1.60 METERS. EXTEND (OR OTHERWISE ANCHOR) SUCH REINFORCEMENT A MINIMUM OF 600 MILLIMETERS BEYOND EACH FACE OF OPENING.
- DISCONTINUE BOND BEAM AND JOINT REINFORCEMENT AT MASONRY CONTROL JOINTS UNLESS OTHERWISE NOTED.
- UNLESS NOTED OTHERWISE, PROVIDE A MINIMUM OF 2- 13Ø REBAR IN LINTEL BEAMS SPANNING MASONRY OPENINGS HAVING A WIDTH GREATER THAN ONE METER. EXTEND (OR OTHERWISE ANCHOR) SUCH REINFORCEMENT A MINIMUM OF 600 MILLIMETERS BEYOND EACH FACE OF OPENING.
- WHERE REINFORCEMENT FOR A BOND BEAM AND LINTEL ARE ALIGNED WITHIN A MINIMUM OF 600 MILLIMETERS BEYOND EACH FACE OF OPENING. A MASONRY COURSEING EXTEND (OR OTHERWISE ANCHOR) REBAR FOR THE LINTEL
- PROVIDE A MASONRY BOND TO INTERSECTING LOAD-BEARING WALLS AT CORNERS ONLY. WHERE A LOAD-BEARING WALL TERMINATES AT THE FACE OF ANOTHER LOAD-BEARING WALL, PROVIDE A CONTROL JOINT. FOR LATERAL SUPPORT BETWEEN SUCH WALLS PROVIDE STEEL TIE BARS, SPACED NOT MORE THAN 800 MM ON CENTER VERTICALLY.
- IN ADDITION TO THE VERTICAL REINFORCEMENT INDICATED ON WALL DETAILS FOR PLACEMENT, PROVIDE 1 - 13Ø REBAR ADJACENT TO SIDES OF MASONRY OPENINGS.
- CMU BLOCK DETAILS SHALL MATCH DETAILING OF EXISTING BUILDINGS ON SITE.
- THERE SHALL BE A FOUNDATION DOWEL FOR EACH VERTICAL REINFORCING BAR. FOUNDATION DOWELS SHALL EXTEND A MINIMUM OF 30 DIAMETERS INTO THE FOUNDATION CONCRETE, AND 40 DIAMETERS OR 600 MINIMUM INTO THE MASONRY WALL. LAPS OR SPLICES OF REINFORCING STEEL IN MASONRY SHALL BE 40 DIAMETERS OR 600 MINIMUM.
- PROVIDE MASONRY CONTROL JOINT LOCATIONS WITHOUT CUTTING BLOCK. MAXIMUM SPACING OF CONTROL JOINTS SHALL BE 7.2 METERS.
- ALL CELLS OF EXTERIOR WALLS SHALL BE FULLY GROUTED.



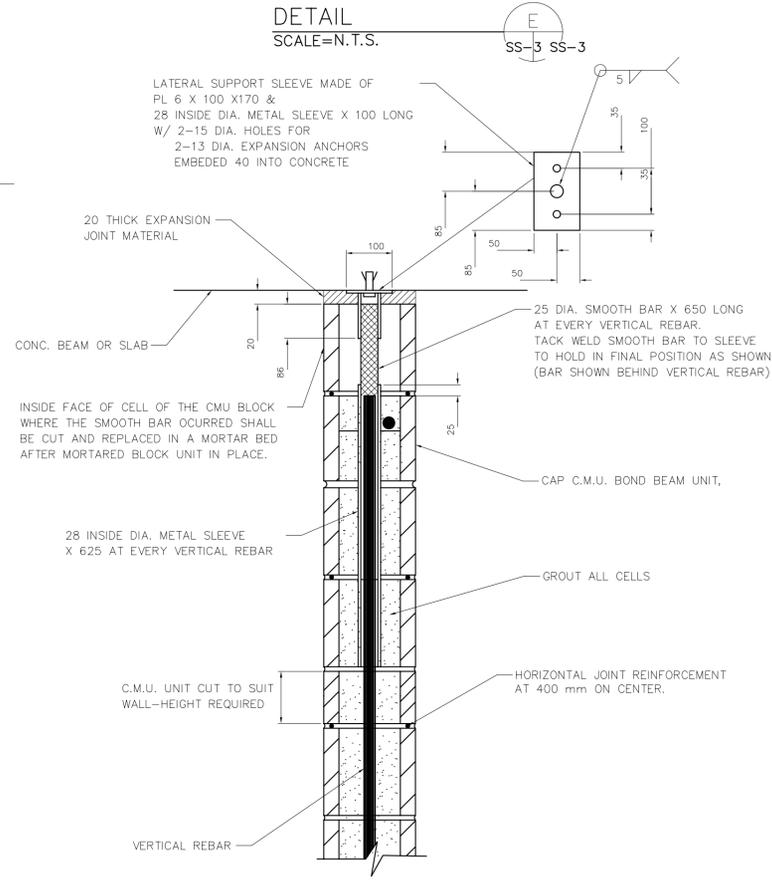
DETAIL OF BOND BEAM REINFORCING SPLICE AT CORNER  
N.T.S.



INTERSECTION OF WALLS OR PARTITIONS  
SEE NOTES 10 AND 11



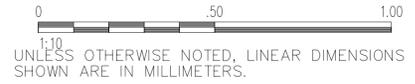
MASONRY CONTROL JOINT DETAILS



TOP LATERAL SUPPORT FOR C.M.U. EXTERIOR WALLS

STEEL ANGLE LINTEL SCHEDULE FOR 100 THICK C.M.U. OR BRICK VENEER WALLS	
OPNG. WIDTH	STEEL ANGLE SIZE
UP TO 1.22 M.	L 89X89X6.4
UP TO 1.52 M.	L 102X89X6.4
UP TO 1.98 M.	L 127X89X7.9
UP TO 2.44 M.	L 152X89X9.5

- NOTE:
- PROVIDE 150 MINIMUM BEARING AT EACH END OF OPENING.
  - USE L 152X89X9.5 FOR OPENING UP TO 4.30 M. AT MECH. LOUVERS OPENINGS IN MAIN TERMINAL BUILDING.



UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

DESIGNED BY: DATE: 02-05-07  
 SUBMITTED BY: PHILIP L. PINELLO  
 DOWN BY: TOP  
 CHECKED BY: KGO  
 FILE NO.: AF0701 \$-SB03DT

US Army Corps of Engineers  
 Transatlantic Programs Center

AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
 STANDARD DETAILS MASONRY DETAILS

SHEET REFERENCE NUMBER:  
 SS-3







## PIPING LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	THREE-WAY VALVE (ANY TYPE OF OPERATOR)		BRANCH CONNECTION OUT OF TOP
	GATE VALVE		BRANCH CONNECTION OUT OF BOTTOM
	BALL VALVE		BRANCH CONNECTION OUT OF SIDE
	GLOBE VALVE		CAP ON END OF PIPE
	ANGLE GLOBE VALVE		CONCENTRIC REDUCER
	PRESSURE RELIEF VALVE		ECCENTRIC REDUCER
	PRESSURE-TEMPERATURE RELIEF VALVE		ANCHOR POINT
	BALANCING COCK		FLEXIBLE CONNECTION
	BUTTERFLY VALVE		FLOW SWITCH
	CHECK VALVE		EXPANSION JOINT
	UNION (SCREWED)		FLUSH VALVE
	PRESSURE CONTROL VALVE (SELF-CONTAINED)		HOSE BIBB
	SOLENOID VALVE		WATER FIXTURE
	MOTOR OPERATED CONTROL VALVE		MIXING FAUCET COLD & HOT WATER
	AIR ELIMINATOR		DRAIN VALVE
	AIR VENT, AUTOMATIC		SIGHT GLASS
	AIR VENT, MANUAL		FLOW METER
	BACK PRESSURE VALVE		PET COCK
	PRESSURE REDUCING VALVE		FLOW DIRECTION
	"Y" STRAINER		INLINE-PUMP
	AIR VALVE		CALIBRATED BALANCE VALVE
	TEMPERATURE REGULATING VALVE		AQUASTAT
	EXPANSION VALVE, HAND		MOTOR OPERATED BUTTERFLY VALVE
	EXPANSION VALVE, THERMOSTATIC		
	THERMOMETER, DIAL TYPE		
	THERMOMETER, VERTICAL TYPE		
	PRESSURE GAGE		
	RISER DOWN (ELBOW)		
	RISER UP (ELBOW)		
	PITCH DOWN IN DIRECTION OF FLOW		
	RISE OR DROP		
	CHILLED WATER SUPPLY		
	CHILLED WATER RETURN		
	CONDENSATE DRAIN		

FACILITY DESIGNATION	
A	HEADQUARTERS
B,C	FUTURE BUILDINGS
D	GUARD HOUSE
E	GUARD TOWER
F	GUARD SHACK
H	WELL HOUSE
I	PUMP ROOM

\* NO MECHANICAL WORK IN 'G' & 'J' FACILITIES

## ABBREVIATIONS

AAV	AIR VENT AUTOMATIC	LAV	LAVATORY
AC	AIR CURTAIN FAN	LFAC	LOCAL FIRE ALARM CONTROL PANEL
ACMH	ACTUAL CUBIC METERS PER HOUR	LP	LITERS PER MINUTE
ACC	AIR COOLED CHILLER	LPH	LITERS PER HOUR
ACCU	AIR COOLED CONDENSING UNIT	LS	LEVEL SWITCH
AF	AIR FILTER	LVG	LEAVING LOUVER
AFF	ABOVE FINISHED FLOOR	LVR	LOUVER
AD	AREA DRAIN	M	METER
AHU	AIR HANDLING UNIT	M <sup>2</sup>	SQUARE METER
AP	ACCESS PANEL	M <sup>3</sup>	CUBIC METER
BF	BOTTOM FLAT	MAX	MAXIMUM
BD	BALANCING DAMPER	MECH	MECHANICAL
BDD	BACKDRAFT DAMPER	MIN	MINIMUM
BFP	BACKFLOW PREVENTER	MISC	MISCELLANEOUS
BHP	BRAKE HORSEPOWER	MM	MILLIMETER
BOD	BOTTOM OF DUCT	MVD	MANUAL VOLUME DAMPER
°C	DEGREES CELSIUS	NC	NORMALLY CLOSED
CD	CEILING DIFFUSER	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
CHW	CHILLED WATER	NO	NORMALLY OPEN/NUMBER
CLG	CEILING	NOM	NOMINAL
CM	CENTIMETER	NTS	NOT TO SCALE
CMH	CUBIC METER PER HOUR	OA	OUTSIDE AIR
CONN	CONNECTION	OC	ON CENTER
CONT	CONTINUATION	OD	OVERFLOW DRAIN
CW	CHILLED WATER COOLING COIL	OI	OIL INTERCEPTOR
D	DROP/DEPTH	Ø	PHASE
DB	DRY BULB	P	PUMP
DET	DETAIL	PD	PRESSURE DIFFERENTIAL
DIA	DIAMETER	PRESS	PRESSURE
DH	DUCT HEATER	PRV	PRESSURE REDUCING VALVE
DIFF	DIFFERENTIAL	PS	PRESSURE SWITCH
DG	DOOR GRILLE	QTY	QUANTITY
DN	DOWN	R	RISE
DWG	DRAWING	RA	RETURN AIR
DX	DIRECT EXPANSION	RC	REFRIGERATION COOLER
EA	EXHAUST AIR	RD	ROOF DRAIN
EAT	ENTERING AIR TEMPERATURE	REQD	REQUIRED
EDB	ENTERING DRY BULB	RF	RETURN FAN
EDH	ELECTRIC DUCT HEATER	RG	RETURN GRILLE
EF	EXHAUST FAN	RH	RELATIVE HUMIDITY
EG	EXHAUST GRILLE	RL	REFRIGERANT LIQUID
EL	ELEVATION	RM	ROOM
ELEC	ELECTRICITY/ELECTRICAL	RPM	REVOLUTIONS PER MINUTE
EQUIP	EQUIPMENT	RR	RETURN REGISTER
ER	EXHAUST REGISTER	RS	REFRIGERANT SUCTION
EWB	ENTERING WET BULB	S	SOIL/SOUTH/SECOND
EWH	ELECTRIC WATER HEATER	SA	SUPPLY AIR
EWT	ENTERING WATER TEMPERATURE	SD	SUPPLY AIR DIFFUSER
EXH	EXHAUST	SENS	SENSIBLE
EXT	EXTERNAL/EXTERIOR	SF	SUPPLY FAN
FCO	FLOOR CLEAN OUT	SG	SUPPLY GRILLE
FCU	FAN COIL UNIT	SH	SHEET
FCV	FLOW CONTROL VALVE	SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
FD	FLOOR DRAIN/FIRE DAMPER	SOV	SHUT-OFF VALVE
FIN	FINISHED	SP	STATIC PRESSURE
FL	FLOOR	SQ FT	SQUARE FOOT/SQUARE FEET
FS	FLOOR SINK	SR	SUPPLY REGISTER
FSD	COMBINATION FIRE/SMOKE DAMPER	SST	SATURATED SUCTION TEMPERATURE
GA	GAUGE	TCP	TEMPERATURE CONTROL PANEL
HB	HOSE BIBB	TCV	TEMPERATURE CONTROL VALVE
HC	HEATING COIL	TEMP	TEMPERATURE
HORIZ	HORIZONTAL	TG	TRANSFER GRILLE
HP	HORSEPOWER	TK	TANK
HR	HOUR	TP	TRAP PRIMER
HVAC	HEATING, VENTILATING & AIR CONDITIONING	TYP	TYPICAL
HZ	HERTZ	UC	UNDERCUT DOOR
ID	INSIDE DIAMETER	UL	UNDERWRITER'S LABORATORIES
IH	INTAKE HOOD	V	VOLTS
IS	INERTIAL SEPARATOR	VEL	VELOCITY
INV.EL.	INVERT ELEVATION	VH	VENT HOOD
KG	KILOGRAM	WCCU	WATER COOLED CONDENSING UNIT
KH	KITCHEN HOOD	WG	WATER GAGE
KW	KILOWATT		
KPa	KILO PASCALS		

## GENERAL NOTES:

- SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF LOUVERS, EQUIPMENT PADS AND SUPPORT PLATFORMS.
- SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF DIFFUSERS, REGISTERS, AND GRILLES.
- INSULATE DUCTWORK AND REFRIGERANT PIPING SYSTEMS IN ACCORDANCE WITH SPEC. SECTION 01015, THERMAL INSULATION FOR MECHANICAL SYSTEMS.
- ALL DIMENSIONS SHOWN IN mm UNLESS INDICATED OTHERWISE.
- ALL DUCT DIMENSIONS SHOWN ON THE DRAWINGS ARE CLEAR INSIDE DIMENSIONS.
- MOUNT WALL THERMOSTATS 1.5M ABOVE FINISHED FLOOR.
- OUTDOOR CONDENSING UNITS SHALL BE INSTALLED ON 300 HIGH STEEL PLATFORM ON A CONCRETE PAD AND PROVIDED WITH VIBRATION PADS.

## CONTROL LEGEND

SYMBOL	DESCRIPTION
	MOTORIZED CONTROL DAMPER
	CONTROL CONNECTION
	START/STOP CONTROL
	HUMIDISTAT, TWO POSITION
	HUMIDISTAT, MODULATING
	HUMIDITY SENSOR
	SMOKE DETECTOR
	THERMOSTAT, TWO POSITION
	SPACE THERMOSTAT
	FLOW SWITCH
	TEMPERATURE INDICATOR
	SPACE TEMPERATURE SENSOR

## EQUIPMENT DESIGNATION

EH	ELECTRICAL CABINET HEATER
PH	PROPANE SPACE HEATER
CF	CEILING FAN
OWF	OSOLATING WALL FAN
UH	UNIT HEATER
AC	AIR CONDITIONING UNIT
CU	CONDENSING UNIT
EF	EXHAUST FAN

AFGHAN NATIONAL POLICE  
HEADQUARTERS (2 STORY)  
COMPOUND  
AFGHANISTAN  
STANDARD DETAILS  
LEGENDS AND ABBREVIATIONS

SHEET  
REFERENCE  
NUMBER:

SM-1

<div style="display: flex; justify-content: space-around;"> <span>CU A-X</span> <span>AC A-X</span> </div> SPLIT SYSTEM SCHEDULE											
EQUIPT. NO.	LOCATION	CAPACITY COOL/HEAT	SEER	AIR QUANTITY CMH	ELECTRICAL DATA				CONTROL DIAGRAM	COP	REMARKS
					W	VOLTS	PH	HZ			
AC-A-1 AC-A-3	DY. CHIEF OFFICE	2.3/2.5KW	10	474	750	220	1	50	SEE SPEC.	2.9	HIGH WALL MOUNTED. PROVISION FOR FRESH AIR THROUGH MOVABLE LOUVERS.
AC-A-2 AC-A-4	CHIEF OFFICE	2.6/3.0KW	10	474	900	220	1	50	SEE SPEC.	2.9	HIGH WALL MOUNTED. PROVISION FOR FRESH AIR THROUGH MOVABLE LOUVERS.

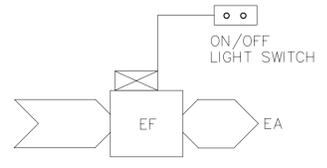
<div style="display: flex; justify-content: space-around;"> <span>EF A-X</span> </div> EXHAUST FAN SCHEDULE											
EQUIPT. NO.	LOCATION	AIR QUANTITY CMH	S.P. MM-W.G.	FAN TYPE	ELECTRICAL DATA				CONTROL DIAGRAM	SOUND POWER dBA	REMARKS
					HP	VOLTS	PH	HZ			
EF-A-1, 3, & 7	TOILET ROOMS	170	7	CEILING CABINET	80 WATTS	220	1	50	E1	50	CEILING MOUNTED WITH GRAVITY BACKDRAFT DAMPER AND CEILING GRILE
EF-A-2	MEN'S TOILET	170	7	CEILING CABINET	80 WATTS	220	1	50	E3	50	CEILING MOUNTED WITH GRAVITY BACKDRAFT DAMPER AND CEILING GRILE
EF-A-4, 5, 8, & 9	MEN'S TOILET	510	7	WALL CENTRIFUGAL	1/12	220	1	50	E2	50	WALL MOUNTED WITH BACKDRAFT DAMPER
EF-A-6	WOMEN'S TOILET	400	7	WALL CENTRIFUGAL	1/12	220	1	50	E2	50	WALL MOUNTED WITH BACKDRAFT DAMPER
EF-A-10	UTILITY STORAGE	400	7	WALL CENTRIFUGAL	1/12	220	1	50	E4	50	WALL MOUNTED WITH BACKDRAFT DAMPER
EF-A-11	KITCHEN	3,300	14	WALL CENTRIFUGAL	3/4	220	1	50	E3	65	RATED FOR 175° C AND KITCHEN HOOD
EF-A-12	KITCHEN	1,700	8	WALL CENTRIFUGAL	1/4	220	1	50	E4	60	WALL MOUNTED WITH BACKDRAFT DAMPER
EF-H-1	WELL HOUSE	600	10	WALL CENTRIFUGAL	1/4	220	1	50	E4	65	WALL MOUNTED WITH BACKDRAFT DAMPER
EF-I-1	PUMP ROOM	1,275	10	WALL CENTRIFUGAL	1/4	220	1	50	E4	60	WALL MOUNTED WITH BACKDRAFT DAMPER

<div style="display: flex; justify-content: space-around;"> <span>EH X-X</span> <span>UH X-X</span> </div> ELECTRIC CABINET/UNIT HEATER SCHEDULE											
EQUIPT. NO.	LOCATION ①	DISCHARGE	CAPACITY (KW)	AIR FLOW (CMH)	ELECTRICAL DATA				TEMP. RISE DEG C	SOUND POWER dBA	REMARKS
					HP	VOLTS	PH	HZ			
EH-A-1	TOILETS	HORIZONTAL	0.75	68	1/70	220	1	50	30		WALL MOUNTED CABINET HEATER
EH-A-2	TOILET	VERTICAL	1.5	270	1/70	220	1	50	19		CEILING MOUNTED CABINET HEATER
UH-A-3	TOILETS/SHOWERS	HORIZONTAL	3.0	510	1/20	220	1	50	17		WALL MOUNTED UNIT HEATER SEE DETAIL C ON SHT. SM3.
UH-D-1	GUARD HOUSE	HORIZONTAL	4	425	1/30	220	1	50	10		FLOOR MOUNTED CABINET HEATER
UH-E-1	GUARD TOWER	HORIZONTAL	4	425	1/20	220	1	50	10		FLOOR MOUNTED CABINET HEATER
UH-F-1	GUARD SHACK	HORIZONTAL	4	425	1/30	220	1	50	10		FLOOR MOUNTED CABINET HEATER
UH-H-1	WELL HOUSE	HORIZONTAL	3.0	510	1/20	220	1	50	17		WALL MOUNTED UNIT HEATER SEE DETAIL C ON SHT. SM3.
UH-I-1	PUMP ROOM	HORIZONTAL	4.0	600	1/20	220	1	50	20		WALL MOUNTED UNIT HEATER SEE DETAIL C ON SHT. SM3.

① SEE PLANS FOR LOCATION AND QUANTITY.

<div style="display: flex; justify-content: space-around;"> <span>PH A-X</span> </div> VENTED LIQUID PROPANE (LP) HEATER SCHEDULE											
EQUIPT. NO.	LOCATION ①	EQPT. TYPE	CAPACITY (KW)	AIR FLOW (CMH)	ELECTRICAL DATA				GAS INLET (MM)	SOUND POWER dBA	REMARKS
					HP	VOLTS	PH	HZ			
PH-A-1	MULTIPLE	VENTED	2.5	102	1/70	220	1	50	10		WALL/FLOOR MOUNTED CABINET HEATER W/BLOWER
PH-A-2	MULTIPLE	VENTED	4.1	102	1/70	220	1	50	10		WALL/FLOOR MOUNTED CABINET HEATER W/BLOWER
PH-A-3	MULTIPLE	VENTED	7.3	127	1/20	220	1	50	12.5		WALL/FLOOR MOUNTED CABINET HEATER W/BLOWER

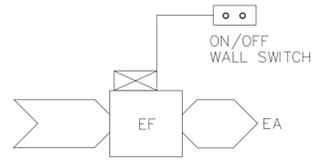
① SEE PLANS FOR LOCATION AND QUANTITY.



TEMPERATURE CONTROL DIAGRAM E1

E1 SEQUENCE OF CONTROL

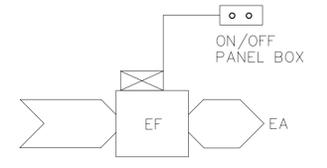
START-UP  
THE EXHAUST FAN SHALL BE STARTED MANUALLY FROM A LOCAL START/STOP LIGHT SWITCH.



TEMPERATURE CONTROL DIAGRAM E2

E2 SEQUENCE OF CONTROL

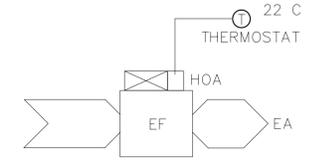
START-UP  
THE EXHAUST FAN SHALL BE STARTED MANUALLY FROM A LOCAL START/STOP LIGHT SWITCH.



TEMPERATURE CONTROL DIAGRAM E3

E3 SEQUENCE OF CONTROL

START-UP  
THE EXHAUST FAN SHALL BE STARTED MANUALLY FROM AN ON-OFF SWITCH IN THE PANEL BOX.



TEMPERATURE CONTROL DIAGRAM E4

E4 SEQUENCE OF CONTROL

START-UP  
THE EXHAUST FAN SHALL BE STARTED MANUALLY BY PLACING THE HAND-OFF-AUTO (HOA) SWITCH IN THE HAND POSITION. IN THE AUTO POSITION, FAN OPERATION SHALL BE CONTROLLED OFF AN ADJUSTABLE THERMOSTAT.



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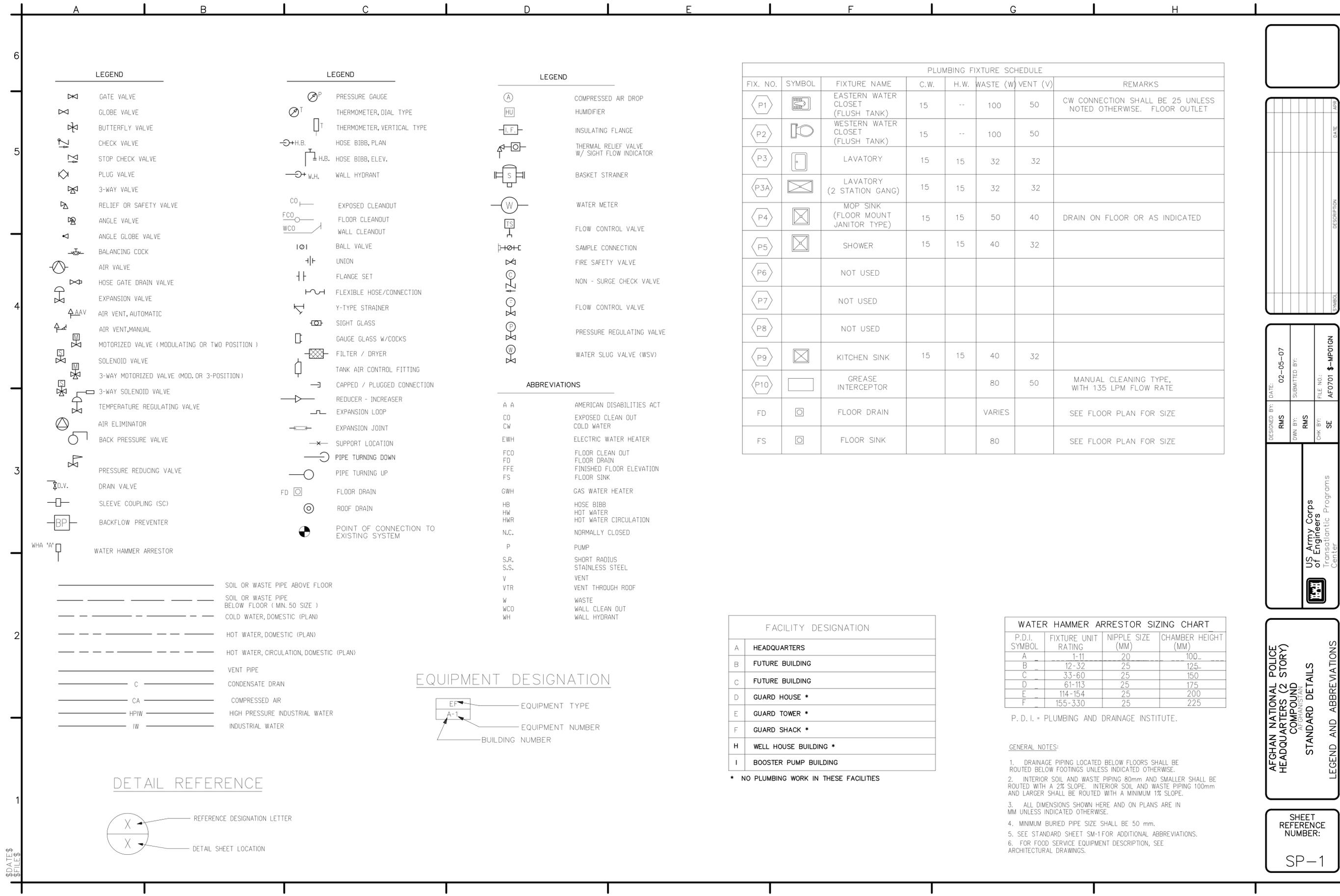
DESIGNED BY: RMS  
 DATE: 02-05-07  
 DRAWN BY: RMS  
 CHECKED BY: SE  
 FILE NO.: AF0701-MH02SC  

 US Army Corps of Engineers  
 Translational Programs Center

AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
 STANDARD DETAILS  
 MECHANICAL SCHEDULES

SHEET REFERENCE NUMBER:  
 SM-2





**LEGEND**

- GATE VALVE
- GLOBE VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- STOP CHECK VALVE
- PLUG VALVE
- 3-WAY VALVE
- RELIEF OR SAFETY VALVE
- ANGLE VALVE
- ANGLE GLOBE VALVE
- BALANCING COCK
- AIR VALVE
- HOSE GATE DRAIN VALVE
- EXPANSION VALVE
- AIR VENT, AUTOMATIC
- AIR VENT, MANUAL
- MOTORIZED VALVE (MODULATING OR TWO POSITION)
- SOLENOID VALVE
- 3-WAY MOTORIZED VALVE (MOD. OR 3-POSITION)
- 3-WAY SOLENOID VALVE
- TEMPERATURE REGULATING VALVE
- AIR ELIMINATOR
- BACK PRESSURE VALVE
- PRESSURE REDUCING VALVE
- DRAIN VALVE
- SLEEVE COUPLING (SC)
- BACKFLOW PREVENTER
- WATER HAMMER ARRESTOR

**LEGEND**

- PRESSURE GAUGE
- THERMOMETER, DIAL TYPE
- THERMOMETER, VERTICAL TYPE
- HOSE BIBB, PLAN
- HOSE BIBB, ELEV.
- WALL HYDRANT
- EXPOSED CLEANOUT
- FLOOR CLEANOUT
- WALL CLEANOUT
- BALL VALVE
- UNION
- FLANGE SET
- FLEXIBLE HOSE/CONNECTION
- Y-TYPE STRAINER
- SIGHT GLASS
- GAUGE GLASS W/COCKS
- FILTER / DRYER
- TANK AIR CONTROL FITTING
- CAPPED / PLUGGED CONNECTION
- REDUCER - INCREASER
- EXPANSION LOOP
- EXPANSION JOINT
- SUPPORT LOCATION
- PIPE TURNING DOWN
- PIPE TURNING UP
- FLOOR DRAIN
- ROOF DRAIN
- POINT OF CONNECTION TO EXISTING SYSTEM

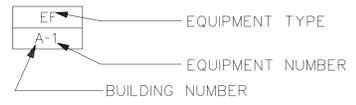
**LEGEND**

- COMPRESSED AIR DROP
- HUMIDIFIER
- INSULATING FLANGE
- THERMAL RELIEF VALVE W/ SIGHT FLOW INDICATOR
- BASKET STRAINER
- WATER METER
- FLOW CONTROL VALVE
- SAMPLE CONNECTION
- FIRE SAFETY VALVE
- NON - SURGE CHECK VALVE
- FLOW CONTROL VALVE
- PRESSURE REGULATING VALVE
- WATER SLUG VALVE (WSV)

**ABBREVIATIONS**

- A A AMERICAN DISABILITIES ACT
- CO EXPOSED CLEAN OUT
- CW COLD WATER
- EWHE ELECTRIC WATER HEATER
- FCO FLOOR CLEAN OUT
- FD FLOOR DRAIN
- FFE FINISHED FLOOR ELEVATION
- FS FLOOR SINK
- GWHE GAS WATER HEATER
- HB HOSE BIBB
- HW HOT WATER
- HWRC HOT WATER CIRCULATION
- N.C. NORMALLY CLOSED
- P PUMP
- S.R. SHORT RADIUS
- S.S. STAINLESS STEEL
- V VENT
- VTR VENT THROUGH ROOF
- W WASTE
- WCO WALL CLEAN OUT
- WH WALL HYDRANT

**EQUIPMENT DESIGNATION**



**DETAIL REFERENCE**



PLUMBING FIXTURE SCHEDULE							
FIX. NO.	SYMBOL	FIXTURE NAME	C.W.	H.W.	WASTE (W)	VENT (V)	REMARKS
P1		EASTERN WATER CLOSET (FLUSH TANK)	15	--	100	50	CW CONNECTION SHALL BE 25 UNLESS NOTED OTHERWISE. FLOOR OUTLET
P2		WESTERN WATER CLOSET (FLUSH TANK)	15	--	100	50	
P3		LAVATORY	15	15	32	32	
P3A		LAVATORY (2 STATION GANG)	15	15	32	32	
P4		MOP SINK (FLOOR MOUNT JANITOR TYPE)	15	15	50	40	DRAIN ON FLOOR OR AS INDICATED
P5		SHOWER	15	15	40	32	
P6		NOT USED					
P7		NOT USED					
P8		NOT USED					
P9		KITCHEN SINK	15	15	40	32	
P10		GREASE INTERCEPTOR			80	50	MANUAL CLEANING TYPE, WITH 135 LPM FLOW RATE
FD		FLOOR DRAIN			VARIES		SEE FLOOR PLAN FOR SIZE
FS		FLOOR SINK			80		SEE FLOOR PLAN FOR SIZE

FACILITY DESIGNATION	
A	HEADQUARTERS
B	FUTURE BUILDING
C	FUTURE BUILDING
D	GUARD HOUSE *
E	GUARD TOWER *
F	GUARD SHACK *
H	WELL HOUSE BUILDING *
I	BOOSTER PUMP BUILDING

\* NO PLUMBING WORK IN THESE FACILITIES

WATER HAMMER ARRESTOR SIZING CHART			
P.D.I. SYMBOL	FIXTURE UNIT RATING	NIPPLE SIZE (MM)	CHAMBER HEIGHT (MM)
A	1-11	20	100
B	12-32	25	125
C	33-60	25	150
D	61-113	25	175
E	114-154	25	200
F	155-330	25	225

P. D. I. = PLUMBING AND DRAINAGE INSTITUTE.

**GENERAL NOTES:**

- DRAINAGE PIPING LOCATED BELOW FLOORS SHALL BE ROUTED BELOW FOOTINGS UNLESS INDICATED OTHERWISE.
- INTERIOR SOIL AND WASTE PIPING 80mm AND SMALLER SHALL BE ROUTED WITH A 2% SLOPE. INTERIOR SOIL AND WASTE PIPING 100mm AND LARGER SHALL BE ROUTED WITH A MINIMUM 1% SLOPE.
- ALL DIMENSIONS SHOWN HERE AND ON PLANS ARE IN MM UNLESS INDICATED OTHERWISE.
- MINIMUM BURIED PIPE SIZE SHALL BE 50 mm.
- SEE STANDARD SHEET SM-1 FOR ADDITIONAL ABBREVIATIONS.
- FOR FOOD SERVICE EQUIPMENT DESCRIPTION, SEE ARCHITECTURAL DRAWINGS.



NO.	DATE	DESCRIPTION	BY

DESIGNED BY: RMS	DATE: 02-05-07
DRAWN BY: RMS	SUBMITTED BY:
CHECK BY: SE	FILE NO.: AF0701 - MP0101N

**US Army Corps of Engineers**  
Transatlantic Programs Center

**AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN**  
**STANDARD DETAILS**  
**LEGEND AND ABBREVIATIONS**

SHEET REFERENCE NUMBER:  
**SP-1**

DATE\$ FILE\$



**LEGEND**

-  FLUORESCENT LIGHT FIXTURE,
-  LIGHT FIXTURES, FIXTURE MARK AS INDICATED
-  EXIT SIGN, TYPE F FIXTURE, MTD 2.2M AFF
-  EMERGENCY LIGHT, TYPE C FIXTURE, MTD 2.4M AFF
-  WP,S  
DUPLEX SOCKET OUTLET (13A, 250V), BS 1363  
S - A/C OR WATER HEATER SWITCH-RECEPTACLE COMBINATION  
WP - WEATHERPROOF
-  J  
JUNCTION BOX
-  S<sub>3,WP</sub>  
SWITCH, WP-WEATHERPROOF, 3-3 WAY, EP-EXPLOSION PROOF
-  S  
LIGHT SWITCH
-  S<sub>F</sub>  
EXHAUST FAN SWITCH
-  S<sub>CF</sub>  
CEILING FAN SWITCH
-  J<sub>20</sub>  
SAFETY DISCONNECT SWITCH, SWITCH SHALL BE 1P56 ENCLOSURE, 20A UNO
-  M  
MOTOR (1/3 HP)
-  S<sub>M</sub>  
MANUAL MOTOR STARTER
-  E  
ELECTRIC UNIT HEATER
-  EWH  
ELECTRIC WATER HEATER
-  LP-2  
HOMERUN, PNL LP, CIRCUIT 2
-  LP-2  
HOMERUN, PNL LP, 3PH CKT, CIRCUIT 2
-  COMBINATION LIGHTING AND POWER PANEL (LP), OR LOAD CENTER (LC)
-  400AT  
600AF  
3 POLE, 600A ADJUSTABLE TRIP CIRCUIT BREAKER
-  150AT  
3P  
3 POLE, 150A CIRCUIT BREAKER
-  COMBINATION TELEPHONE/DATA OUTLET. SEE DETAIL SHEET SE-5  
MOUNTED 0.5M AFF
-  W  
SINGLE TELEPHONE ONLY OUTLET, WALL MOUNTED 1.2M AFF
-  TBB  
TELEPHONE BACK BOARD (TVBB INDICATES TELEVISION BACKBOARD)  
(1200mmx600mmx12mm) UNLESS NOTED OTHERWISE
-  WALL MOUNTED CLOSED CIRCUIT TELEVISION (CCTV) CAMERA,  
FIXED TYPE UNLESS PAN-TILT-ZOOM (PTZ) IS INDICATED, MH 2.4M  
AFF UNO
-  EXOTHERMIC WELDED GROUND CONNECTION
-  GROUND ROD (EARTH ELECTRODE) WITH EXOTHERMIC WELD CONNECTION,  
COPPER, 20mm DIA X 3.0m LENGTH
-  EM 1  
ELECTRIC POWER MANHOLE, H INDICATES HANDHOLE.
-  CM 1  
COMMUNICATIONS MANHOLE, H INDICATES HANDHOLE.
-  SE  
UNDERGROUND SECONDARY DISTRIBUTION POWER LINE, DIRECT BURIED IN SCHEDULE  
40 PVC C, UNO
-  UNDERGROUND DIRECT BURIED SCH 40 PVC C, AS INDICATED, 600 BFG, UNO

**GENERAL NOTES:**

1. REFER TO SECTION 01015 FOR ADDITIONAL / DETAIL REQUIREMENTS.
2. ALL WIRING INSTALLATION FOR LIGHTING, POWER, TELECOMMUNICATIONS, AND CCTV SHALL BE IN APPROVED METAL CONDUIT, EITHER CONCEALED OR SURFACE MTD.
3. EXIT AND EMERGENCY LIGHTING FIXTURES SHALL BE CONNECTED TO AN UN SWITCHED POWER CIRCUIT.
4. MOUNTING HEIGHT FOR ALL PENDANT MTD LIGHT FIXTURE IS 3M AFF UNO ON THE DRAWINGS OR IN THE LIGHT FIXTURE SCH.
5. MOUNT ALL LIGHT AND FAN SWITCHES 1.2M AFF UNO.
6. MOUNT ALL RECEPTACLES 500 AFF UNO. MOUNT ALL COUNTER TOP RECEPTACLES 100 ABOVE COUNTER TOP, AND PROVIDE GFI PROTECTION.
7. ALL SPARE OR EMPTY CONDUITS SHALL HAVE A PULL STRING SECURED AT BOTH ENDS OF CONDUIT.
8. ALL ELECTRICAL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND THE NEC.
9. BOND LIGHTNING PROTECTION/GROUND SYSTEMS TO BUILDING ELECTRICAL GROUND SYSTEM PER NEC 250.16

LIGHTING FIXTURE SCHEDULE * SEE LIGHTING FIXTURE DETAILS ON DRAWINGS SE-2 & SE-3						
FIXTURE MARK	LINE VOLT.	TYPE	LAMPS		MOUNTING	REMARKS
			NO.	WATTAGE		
A	240	230B1	3	40	SURFACE/PENDANT	INDUSTRIAL FLUORESCENT, WITH ELECTRONIC BALLAST
A1	240	230A1	2	40	SURFACE/PENDANT	INDUSTRIAL FLUORESCENT, WITH ELECTRONIC BALLAST
B	240	232	2	40	SURFACE/PENDANT	VAPORTIGHT FLUORESCENT
C	240	603	-	-	SURFACE	EMERGENCY BATTERY PACK, MTD 2.4M AFF
D	240	PH8	1	250	PENDANT	METAL HALIDE LOW BAY INDUSTRIAL
E	240	-	1	1000	ROOF	SPOT LIGHT
F	240	XF2	1	8	SURFACE/PENDANT	EXIT LIGHT MTD 2.2M AFF
G	240	502B	1	70	SURFACE	HID EXTERIOR WALL LIGHT
H	240	SF-11	1	100	SURFACE	VAPOR PROOF PROTECTED INCANDESCENT WITH CLEAR, RED, BLUE, OR BLACK GLOBE AS INDICATED ON THE DRAWINGS

**ABBREVIATIONS**

- AFG ABOVE FINISHED GRADE
- AFF ABOVE FINISHED FLOOR
- AF AMP FRAME
- AT AMP TRIP
- ACCU AIR COOLED CONDENSING UNIT
- A AMPERE
- AHU AIR HANDLING UNIT
- AIC AMPERE INTERRUPTING CAPACITY
- BFG BELOW FINISHED GRADE
- CH COMMUNICATIONS HANDHOLE
- CKT CIRCUIT
- CM COMMUNICATIONS MANHOLE
- CND CONDUCTOR(S)
- C CONDUIT
- COR CONTRACTING OFFICERS REPRESENTATIVE
- EF EXHAUST FAN
- EH ELECTRIC POWER HANDHOLE
- EM ELECTRIC POWER MANHOLE
- EP EXPLOSION PROOF
- ELCB EARTH LEAKAGE CIRCUIT BREAKER
- FACP FIRE ALARM CONTROL PANEL
- GFI GROUND FAULT INTERRUPTING
- GFCI GOVERNMENT FURNISHED CONTRACTOR INSTALLED
- HP HORSEPOWER
- HPS HIGH PRESSURE SODIUM
- HZ HERTZ
- KV KILOVOLT
- KW KILOWATT
- KVA KILOVOLT-AMPERE
- M METERS
- MBB METERING BACK BOARD
- MDF MAIN DISTRIBUTION FRAME
- MEW HOST NATION MINISTRY OF ELECTRICITY AND WATER
- MTD MOUNTED
- NEC NATIONAL ELECTRICAL CODE
- NFPA NATIONAL FIRE PROTECTION ASSOCIATION
- NIC NOT IN CONTRACT
- PH, Q PHASE
- P POLE
- XXX HOST NATION ARMED FORCES
- TEL TEL CO.
- RM ROOM
- SCH SCHEDULE
- SN SOLID NEUTRAL
- TBB TELEPHONE TERMINAL BACKBOARD
- TCB TELEPHONE CONNECTION BOX (BY TEL CO)
- TYP. TYPICAL
- UNO UNLESS NOTED OTHERWISE
- V VOLT
- W WIRE
- WP WEATHERPROOF
- XFMR,T TRANSFORMER

AWG KCMIL	COMPUTED CONVERSION mm <sup>2</sup>	ADVISED CROSS SECTION mm <sup>2</sup>
16	1.31	1.5
14	2.08	2.5
12	3.31	4
10	5.27	6
8	8.4	10
6	13.3	16
4	21.2	25
3	26.7	25
2	33.6	35
1	42.4	50
1/0	53.4	50
2/0	67.5	70
3/0	85.0	95
4/0	107.2	120
250	126.7	120
300	152.0	150
350	177.4	185
400	202.7	240
500	253.4	300

mm	INCHES
20	3/4
25	1
32	1 1/4
38	1 1/2
50	2
60	2 1/2
80	3
90	3 1/2
100	4

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

ELEVATION	19/02/2007	DATE	APR
SYMBOL	DESCRIPTION	DATE	APR

DESIGNED BY: DATE: 02-05-07  
 SUBMITTED BY: MM  
 CHECKED BY: MM  
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**US Army Corps of Engineers**  
Transatlantic Programs Center

AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
**STANDARD DETAILS**  
 LEGEND & ABBREVIATIONS

SHEET REFERENCE NUMBER:  
**SE-1**

DATE\$ FILE\$









A B C D E F G H

B = EMBEDDED LENGTH  
D = BOLT DIAMETER  
E = HOOK LENGTH  
P = BOLT PROJECTION  
IF NOT INDICATED, COORDINATE WITH EQUIPMENT FURNISHED  
R = 3D

NOTE:  
UNLESS OTHERWISE INDICATED, TYPE V OR VI ANCHOR RODS MAY BE USED AT THE CONTRACTOR'S OPTION

SCHEDULE			
D (IN)	B (mm)	E (mm)	REMARKS
3/8	125	125	
1/2	150	150	
5/8	200	180	
3/4	255	220	
7/8	305	280	
1'	355	330	

SCHEDULE			
D (IN)	B (mm)	E (mm)	REMARKS
3/8	180	75	
1/2	230	75	
5/8	280	100	
3/4	355	125	
7/8	405	180	
1'	485	200	

TYPE V ANCHOR RODS  
HOOKED BOLT

TYPE VI ANCHOR RODS  
HOOKED BOLT

GENERATOR(S)  
GENERATOR FOUNDATION  
300 MIN ALL AROUND  
16# @ 300 EW T&B

NOTES:  
1. SEE DRAWING XE-1 FOR GENERATOR LOCATIONS.  
2. COORDINATE PAD SIZE AND ANCHOR BOLT REQUIREMENTS WITH THE EQUIPMENT SUPPLIED.

TYPICAL EXTERIOR GENERATOR FOUNDATION  
NOT TO SCALE

GROUND ROD ACCESS BOX  
SEE DETAIL 2 ON SHEET SE-3. (TYP OF 3)  
SCH 80 PVC C SLEEVE FOR GROUND. (TYP)  
CONCRETE PAD  
EQUIPMENT GROUND, 70mm² (TYP) SEE DETAIL 5 ON SHEET SE-7  
GENERATOR GROUND, 70mm² (TYP)  
GENERATOR  
DAY TANK  
PPSB  
70mm² BARE COPPER  
70mm² BARE COPPER

SEE DETAIL 1 ON SHEET SE-3

GENERATOR POWER PLANT GROUNDING PLAN  
NOT TO SCALE

NOTES:  
1. GROUNDING COUNTERPOISE SHALL BE 1.5M AWAY FROM GENERATOR PAD FOUNDATION AND 0.760M BELOW FINISHED GRADE.  
2. ALL GROUNDING CONNECTIONS SHALL BE EXOTHERMIC WELD CONNECTIONS, SEE DETAIL 5 ON SHEET SE-7.  
3. THE DAY TANK MAY BE AN INTEGRAL PART OF EACH GENERATOR SET.

D = BOLT DIAMETER  
K = THREADS (2D+2")  
P = BOLT PROJECTION  
IF NOT INDICATED, COORDINATE WITH EQUIPMENT FURNISHED  
SQUARE ?  
WELD 3 PTS  
DAMAGE LAST THREAD TO PREVENT REMOVAL OF BOLT

SCHEDULE				
D	A	B	SQUARE ?	REMARKS
3/4	50mm	250mm	?13x75x75	
7/8	75mm	300mm	?16x90x90	
1 1/8	75mm	400mm	?20x100x100	
1 1/4	75mm	460mm	?20x110x110	

TYPE II ANCHOR RODS  
UNSLEEVED BOLT

TYPICAL ANCHOR ROD DETAILS  
NOT TO SCALE

300 MIN  
EDGE OF DAY TANK  
150x150 CURB WHERE REQUIRED  
ROUGHENED JOINT, PROVIDE BONDING AGENT AND WATERSTOP  
50 CLEAR  
STD HOOK  
100 LIND  
300 MIN  
150 CAPILLARY WATER BARRIER  
FINISHED GRADE  
13# DOWELS @ 600  
13# CONT  
13# @ 300 EW  
13# HOR TYP  
13# @ 300 VERT

NOTES:  
1. SEE DRAWING XE-1 FOR SLAB LOCATIONS, SIZE IAW GENERATOR DAY TANK REQUIREMENTS, COORDINATE WITH EQUIPMENT FURNISHED. PROVIDE MINIMUM EDGE CLEARANCE AS INDICATED.

TYPICAL DAY TANK SLAB  
NOT TO SCALE

MINIMUM CONTACT AREA 50 SQ CM (8 SQUARE INCHES)  
STEEL COLUMN  
70mm² BARE COPPER BENDS SHALL NOT EXCEED 90 DEGREES & BENDING RADIUS SHALL NOT BE SMALLER THAN 203 mm  
EXOTHERMIC WELDED CONNECTION  
GROUND ROD BOND TO BUILDING GROUND SYSTEM  
1.5M  
3M

COLUMN GROUNDING DETAIL  
NOT TO SCALE

DETAIL 6  
NOT TO SCALE

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

19/03/2007	DATE
	APR
	DESCRIPTION
	SYMBOL
	DATE
	APR

DESIGNED BY: DATE: 02-05-07  
SUBMITTED BY: MM  
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FILE NO.: AF0701-EL06DT

US Army Corps of Engineers  
Transatlantic Programs Center

AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
STANDARD DETAILS  
POWER PLANT DETAILS

SHEET REFERENCE NUMBER:  
SE-6

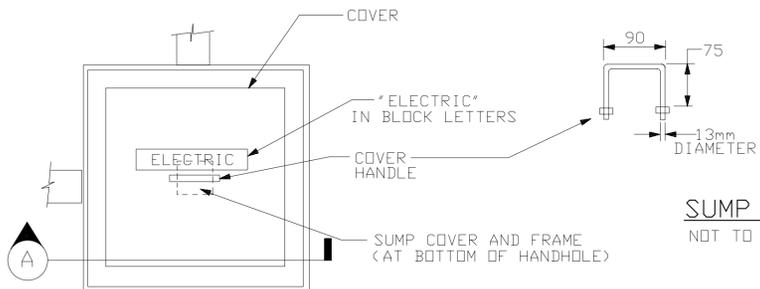
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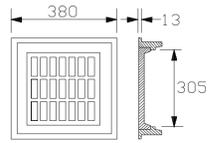
A B C D E F G H

6  
5  
4  
3  
2  
1

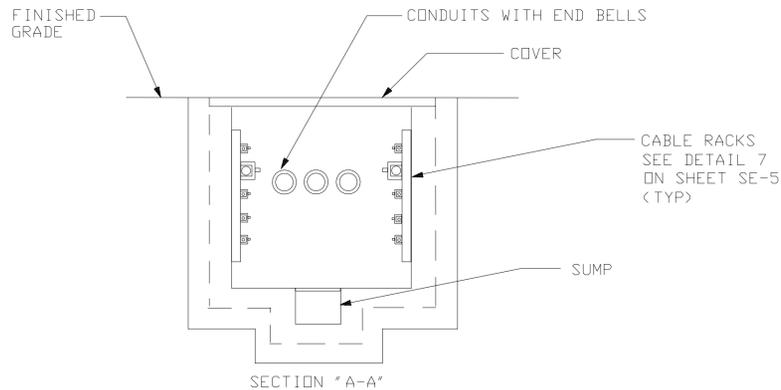
CONSTRUCTION REQUIREMENTS				
CLEAR MINIMUM INSIDE REQUIREMENTS FOR INSTALLATION AND MAINTENANCE PURPOSES				
TYPE	HEIGHT	LENGTH	WIDTH	SUMP DEPTH
HH	1.2M	1.2M	1.2M	0.3M
MINIMUM CONCRETE THICKNESS				
HANDHOLE WALLS TOP, AND FLOORS		SUMP WALLS AND FLOOR		
150mm		100mm		
MINIMUM REINFORCING				
1. BARS WILL BE A MINIMUM OF 13Ø ROUND DEFORMED. 2. WALLS AND FLOOR WILL HAVE BARS AT 200mm MAXIMUM ON CENTERS WITH A MINIMUM 300mm HOOK AT CORNERS AND INTERSECTIONS. 3. THE TOP SHALL HAVE BARS INSTALLED AS SHOWN AT A MINIMUM OF 50mm FROM THE OPENING AND WITH A MINIMUM 100mm SPACING BETWEEN BARS.				
NOTE: REINFORCING SHALL BE INCREASED WHERE REQUIRED TO SUIT ACTUAL INSTALLATION. MINIMUM REQUIREMENTS ARE FOR A H20 WHEEL LOADING (ASSHTO).				



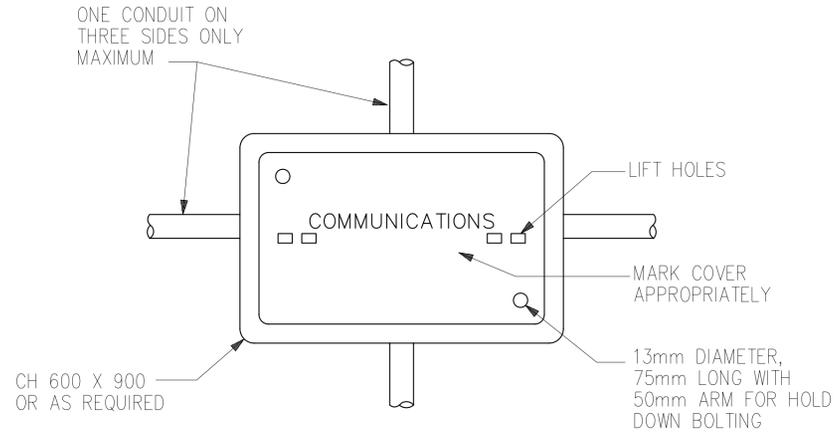
HANDHOLE COVER DETAIL  
NOT TO SCALE



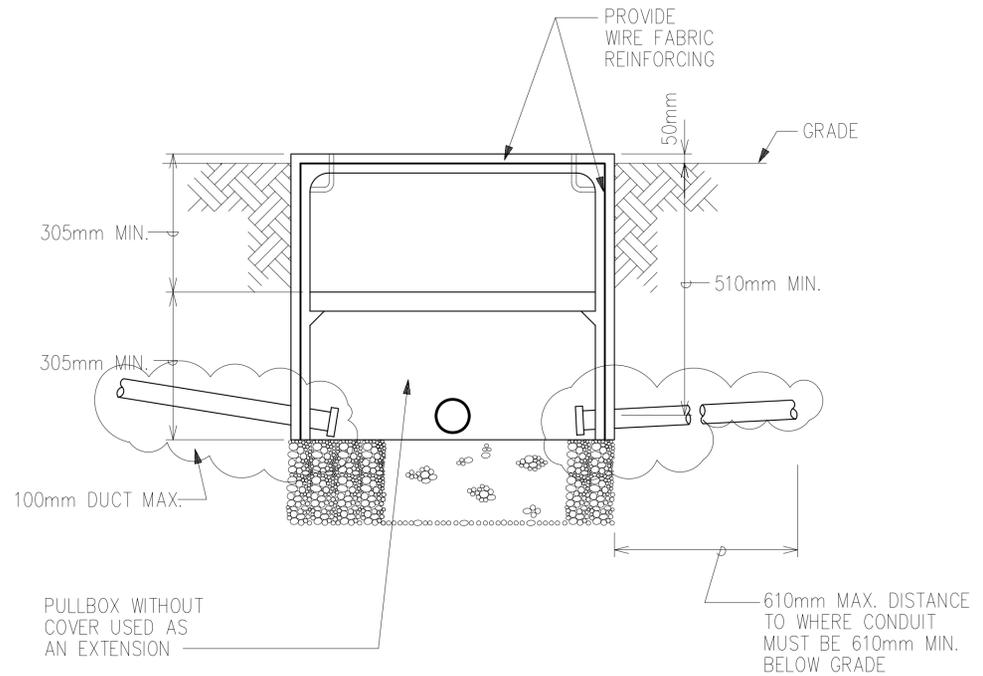
SUMP FRAME AND COVER DETAIL  
NOT TO SCALE



SECTION "A-A"  
HANDHOLE DETAIL  
NOT TO SCALE



PLAN



ELEVATION  
COMMUNICATIONS AND SIGNAL CIRCUIT  
PULLBOX DETAIL

CONTRACTOR MAY PROVIDE  
POURED CONCRETE BOX AS OPTION,  
CONTRACTOR MUST SUBMIT SHOP DRAWINGS

UNLESS OTHERWISE NOTED, LINEAR DIMENSIONS SHOWN ARE IN MILLIMETERS.

19/03/2007	DATE
	APR
	DESCRIPTION
	SYMBOL

02-05-07	DATE
	DESIGNED BY:
	DOWN BY:
	MM
	MM
	SE
	CHK BY:
	FILE NO.:
	AF0701
	EL08DT

US Army Corps of Engineers  
Transatlantic Programs Center

AFGHAN NATIONAL POLICE HEADQUARTERS (2 STORY) COMPOUND AFGHANISTAN  
STANDARD DETAILS  
HAND HOLE DETAILS

SHEET REFERENCE NUMBER:  
SE-8

DATE\$ FILE\$