

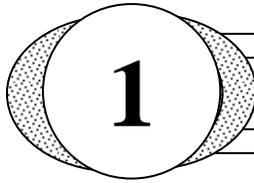
U.S. Army
Corps of Engineers
Huntsville Center
Installation Support Center of Expertise (ISCX)

Battle Command Training Capability (BCTC)

**Army Criteria Tracking System
Standard Information
Category Code 17213
June 2006**

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CATEGORY CODE DATA

Chapter 1 – Category Code Data.

1.1 Category Code 172.13, Battle Command Training Capability (BCTC)

1.2 Area UM = SF

1.3 Other UM = PN

1.4 Program UM = SF

1.5 Type = B – Building

1.6 Glac = 1730 – Building

1.7 Proponent = DCS Army G3

1.8 IC = 05 – Training Facilities

1.9 FCC = 172 – Training Buildings

1.10 FCG = 17213 – Battle Command Training Capability

1.10.1. FAC = 17213 – Battle Command Training Center

1.11 ISR Facility Class = 1100 – Operations and Training

1.12 ISR Category = 1120 – Training Instruction Facilities

1.13 ISR Subcategory = 1113 – Battle Command Training Center

1.14 DA Pam 415-28 (*Category Code*) Revise name for 17213 from Simulation Facilities to Battle Command Training Center

1.1.14 Table B–31, *Simulation Facilities (172) - CATCD: 17213*

Revise as follows:

Long title: BATTLE COMMAND TRAINING CENTER - **Short title:** BCTC

Facility type: Building

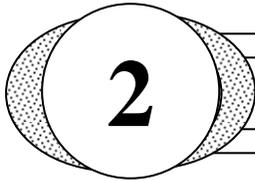
UM1: SF- **UM2:** PN- **Program UM:** SF

FAC: 1724 - **FCG:** F17200

Proponent: DCS, G-3

GLAC: 1730 - **Investment code:** 05

Description: A dedicated building for conducting individual and collective battle staff training. Usually includes a large clear span room used either as a reconfigurable tactical operations center (for example, terrain board) or auditorium (for example, electronic battlefield imaging) and dedicated, separate rooms large enough to accommodate complete staff elements of organizations that are battalion-sized or above (for example, S-1 through S-8) with computer terminals interlinked to a central server that replicates tactical dispersion sites on a battlefield (for example, Battle Command Training Center) or can be used for the conduct of command post exercises. Facilities in this category also may require additional space to accommodate opposing force staff elements of similar organizational size. Differs from both Automation-Aided Instruction Building (17136), whose separate classrooms are intended to deliver instruction or courses that are not dependent upon interaction with activities conducted in adjacent classrooms and Battle Lab (17214), which is dedicated to developing new technologies, organization composition, or war-fighting doctrine using primarily electronically generated staff elements.



DESCRIPTION & INTERNAL FUNCTIONS

Chapter 2 – Description & Internal Functions.

2.1 DESCRIPTION. DA PAM 415-28: A building that includes primarily classroom space for multipurpose training and instruction typically conducted by an installation Director of Plans & Training using Government and Contractor staff. These facilities may include: classrooms, multi purpose classrooms/work centers, video teleconferencing centers (VTC), after action review facilities (AAR), secure VTC's, Sensitive Compartmented Information Facility (SCIF) or a Top Secret Working Area (TSWA), Network Operations Center (NOC), Simulations and C4I technical Control Areas, general supply and storage, secure storage, compact item electronic maintenance and repair, break areas, latrines, reconfigurable tactical operations center areas (RTOC), and administrative support space. This is a general and multi purpose facility intended for use by installation Directors of Plans and Training (DPT) training centers of the Active and Reserve components, and combined arms training center in major training areas. These facilities are distinct from organizational classroom areas (17119) associated with battalion headquarters and trainee barracks. This facility is reported also with unit of measure persons (PN). PN refers to the student capacity of the entire facility, which is defined by Army G3 based on total Army training needs. A Spoke or Hub sized facility is determined at Army and MACOM level, the relative size of the standard facility, small, medium or large is likewise determined by Army G3 and MACOMs.

2.2 INTERNAL FUNCTIONAL ELEMENTS. A facility that includes primarily classroom space for multi-purpose training instruction. The facility may include: classrooms, multi purpose classrooms/work centers, video teleconferencing centers (VTC), after action review facilities (AAR), secure VTC's, sensitive compartmented information facility (SCIF) or a Top Secret Working Area (TSWA), Network Operations Center (NOC), Simulations and C4I technical Control Areas, general supply and storage, secure storage, compact item electronic maintenance and repair, break areas, latrines, reconfigurable tactical operations center areas (RTOC), and administrative support space. This is a general purpose facility intended for use by installation DPT training. This facility is not to be confused with organizational classrooms included within the battalion headquarters. Figure 2.2 demonstrates functional relationships of notional design space.

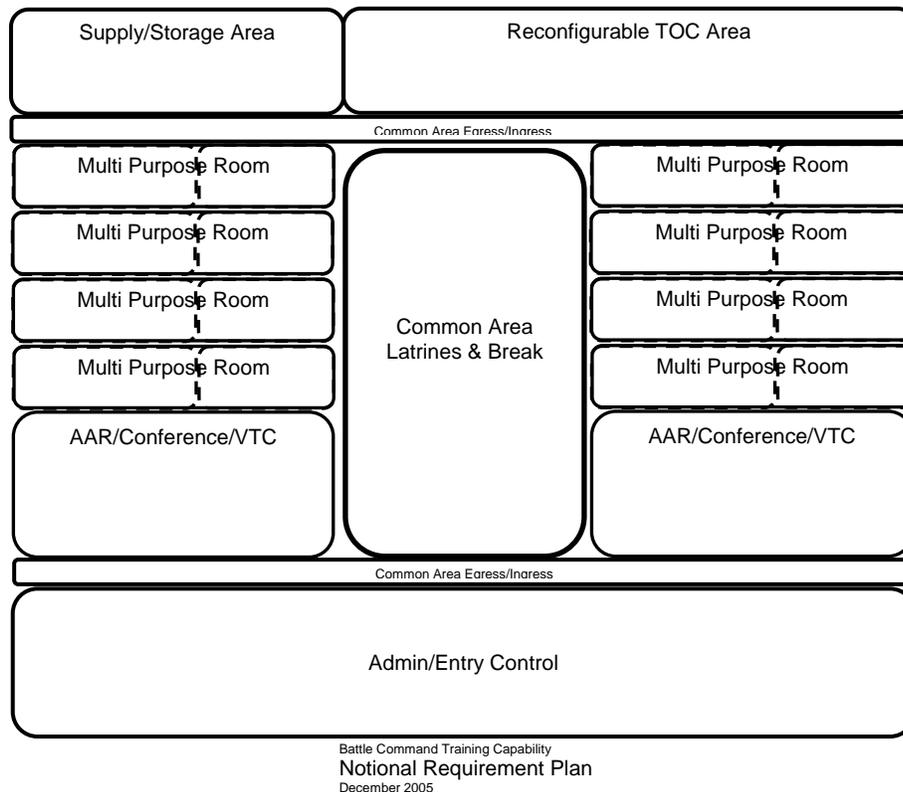


Figure 2.2

2.3 INPUTS. Number of Government and Contractor support personnel found in the TDA paragraphs and contract documents Daily student loads as developed by Army G3 mission design for small, medium (Spoke) and large (HUB) facilities.

2.3.1. Battle Command Training Facility Average Daily Occupancy.

2.3.1.1. STAFF: The full time staff required to support Battle Command Training Capability, plan all training events, prepare data bases and simulations, and support all training events. This category includes contractor support and government management. Based on validated staffing metrics.

2.3.1.2. DAILY INDIVIDUAL DIGITAL TRAINING LOAD: This category includes the training audience for individual digital Command, Control, Communications, Computer and Intelligence (C4I) systems training. This training consists of

operator, maintainer, integrator, battle staff officer/NCO and decision maker training on Army and Joint Battle Command Systems.

2.3.1.3. DAILY COLLECTIVE DIGITAL TRAINING LOAD:

This category includes the command and staff aspects of digital and C4I systems training. This training takes place using the reconfigurable TOCs, units deployed in a field environment, and workstations within the BCTC. Multiple units may train concurrently.

3

BASIC CRITERIA

Chapter 3 – Basic Criteria.

3.1 The US Army Standard Design Criteria, Army Criteria Tracking System for: General Purpose Administration, category code 61050; General and Multi Purpose Classrooms, category code 17119 & 17120; General Supply & Storage and Soldier Unique Storage from AR405-70, Table D-3; AAR, Conference Areas and Reception space from AR405-70, Table D-4; Latrines, Janitor Closets and Break Areas from ACTS for Category Codes 17119; Compact Item Repair from ACTS for category code 21410; and Reconfigurable Tactical Operations Center (RTOC) from published TOC data for Army G3 equipment density and recommended field configuration.

3.2 STANDARD DESIGN CRITERIA.

3.2.1 TRAINING SPACE, CLASSROOM.

3.2.1.1. Classroom design focuses on instructor use, instructor led training, and instructor facilitated self-paced student training. The level classroom used in these facilities is "Level 3 / High Tech Room". It is an open architecture, standards compliant, fully networked multimedia classroom with interoperable Video Tele-training (VTT), C4I consoles matching the current Command, Control, Communication, Computer and Intelligence (C4I) systems in the supported training audience units, Internet access, Installation networked with full distance learning capability. Gross area derived from 36 Net SF allowance and 45% factor to convert to Gross = 52.2GSF per student. Figure 3.2.1.1 shows allowance for each facility size.

Figure 3.2.1.1

| BCTC Size | Students | Gross Area (SF) |
|-----------|----------|-----------------|
| Small | 165 | 8,613 |
| Medium | 338 | 17,744 |
| Large | 627 | 32,729 |

3.2.1.2. Work Cell/Tactical Automation Labs. These spaces have the flexibility to accommodate teaching in the traditional lecture mode, perform computer instruction at each desk, and use projection media. and provide computer interoperability with simulations and C4I systems. Since this type of space requires only slightly more space than a traditional lecture class, Multi-Purpose Classroom criteria shall be used in lieu of Traditional Classrooms. Gross area derived from 36 Net SF allowance and 45% factor to convert to Gross = 52.2GSF per student. Figure 3.2.1.2 shows allowance for each facility size.

| Figure 3.2.1.2 | | |
|----------------|----------|-----------------|
| BCTC Size | Students | Gross Area (SF) |
| Small | 165 | 8,613 |
| Medium | 338 | 17,744 |
| Large | 627 | 32,729 |

3.3.1 Video-Tele Conference (VTC) Room. The spaces have full reach capabilities with 2-way audio-video communication. The room is served through Network Operations Center (NOC) and remote communication closets. This space can also serve as conferencing or general purpose administrative use via scheduling and is intended to support training surge events. Figure 3.3.1 shows allowance for each facility size.

| Figure 3.3.1 | | |
|--------------|----------|-----------------|
| BCTC Size | Students | Gross Area (SF) |
| S/M/L | 25 | 500 |

3.4.1 ADMINISTRATIVE SPACES.

3.4.1.1. Information / Reception. Students and visitors receive security access screening and information is provided for daily activities in the facility. Customer waiting area outside of secure training environment. A factor of 14.5 GSF per staff member used to calculate this space allowance. Figure 3.4.1.1 shows allowance for each facility size.

| Figure 3.4.1.1 | | |
|----------------|-------|-----------------|
| BCTC Size | Staff | Gross Area (SF) |
| Small | 33 | 479 |
| Medium | 87 | 1262 |
| Large | 125 | 1813 |

3.4.1.2. Director's Office. Office space for the director and deputy who oversees the program operation and facility management. A factor of 162 GSF per staff member used to calculate this space allowance Figure 3.4.1.2 shows allowance for each facility size.

| Figure 3.4.1.2. | | |
|-----------------|-------|-----------------|
| BCTC Size | Staff | Gross Area (SF) |
| S/M/L | 2 | 324 |

3.4.1.3. Administration Offices. Space for building operations, budget, scheduling, technical support, contracting officer representative, visiting officer and dignitary operations area, program and training administration. A factor of 162 GSF per staff member used to calculate this space allowance Figure 3.4.1.3 shows allowance for each facility size.

| Figure 3.4.1.3 | | |
|----------------|-------|-----------------|
| BCTC Size | Staff | Gross Area (SF) |
| Small | 34 | 5508 |
| Medium | 91 | 14742 |
| Large | 133 | 21546 |

3.4.1.4. Conference Room. The conference room provides comfortable seating and meeting space. Includes capability for portable VTC equipment, LAN & WAN access for remote AAR viewing. A factor of 500 GSF per room used to calculate this space allowance. Figure 3.4.1.4 shows allowance for each facility size.

| Figure 3.4.1.4 | | |
|----------------|------------|-----------------|
| BCTC Size | # of Rooms | Gross Area (SF) |
| Small | 2 | 1000 |
| Medium | 3 | 1500 |
| Large | 4 | 2000 |

3.4.1.5. Computer/electronic Equipment Maintenance Area. For computer set-up, storage, maintenance serving classrooms, multi purpose classrooms, work centers, VTC, conference areas, AAR and administrative areas. A factor of 105 GSF per repair person used to calculate this space allowance Figure 3.4.1.5 shows allowance for each facility size.

| Figure 3.4.1.5 | | |
|----------------|----------------|-----------------|
| BCTC Size | # of Repair PN | Gross Area (SF) |
| Small | 2 | 210 |
| Medium | 4 | 420 |
| Large | 6 | 630 |

3.5.1 WAREHOUSING AND STORAGE.

3.5.1.1. Loading Dock. A loading dock is important for new stand-alone facilities. It should be remote from the student entrance and collocated with supply/storage area and RTOC. Space calculation is included in general supply/storage allowances.

3.5.1.2. Soldier Storage/Mud Room. Secure storage for soldier/student personal and tactical equipment storage during training events. They bring equipment and climatic clothing that is removed and stored. Security is necessary based on large number of students at any given time. Allowance is based on

using a valet rack @ 8 GSF/PN. Figure 3.5.1.2 shows allowance for each facility size.

| Figure 3.5.1.2 | | |
|-----------------------|-----------------|------------------------|
| BCTC Size | Students | Gross Area (SF) |
| Small | 165 | 1320 |
| Medium | 338 | 2704 |
| Large | 627 | 5016 |

3.5.1.3. Supply/Storage Room. General Purpose Warehouses use an average of 8 NSF/PN served. An additional 4 NSF per person served is added to support training aides and devices associated with BCTC events. The combined 12NSF/PN derived using criteria, assumptions and actual storage measurements in existing BCTC facilities. 45% conversion from Net to Gross = 17.4 GSF/PN. . Figure 3.5.1.3 shows allowance for each facility size.

| Figure 3.5.1.3 | | |
|-----------------------|-----------------|------------------------|
| BCTC Size | Students | Gross Area (SF) |
| Small | 165 | 2871 |
| Medium | 338 | 5881 |
| Large | 627 | 10910 |

3.6.1 SPECIAL FUNCTIONAL USE AREAS.

3.6.1.1. Latrines w>Showers. Male and female latrines with standard fixtures. Allowance is derived from ACTS and is 8.3 GSF/PN. Showers are provided in both male and female latrines (single location only and adjacent to RTOC). Shower allowance based on number of 45 PN break areas. Figure 3.6.1.1 shows allowance for each facility size.

| Figure 3.6.1.1 | | |
|-----------------------|-----------------|------------------------|
| BCTC Size | Students | Gross Area (SF) |
| Small Showers | 165 2 EA | 1370 Included |
| Medium Showers | 338 4EA | 2805 Included |
| Large Showers | 627 6EA | 5204 Included |

3.6.1.2. Student/Staff Break Areas. Refrigerator, sink, microwave, vending, phones, television. Lounge type furniture w/ tables and with seating for 45 personnel. Break Room/lounge allowance is 8.7 GSF/PN. Assume 45% of student daily load with other observer personnel and adjust to provide 45 PN break areas. Figure 3.6.1.2 shows allowance for each facility size.

| Figure 3.6.1.2 | | |
|-----------------------|-----------------------|------------------------|
| BCTC Size | # of Break Rms | Gross Area (SF) |
| Small | 2 | 783 |
| Medium | 4 | 1566 |
| Large | 6 | 2349 |

3.6.1.3. Secure Operations Storage. Secure storage area for secure devices (KG / KY) and for classified hard drives and other sensitive communication and automation components. Allowance derived using standard area for TCSIMS operations @ 972 GSF. Figure 3.6.1.3 shows allowance for each facility size.

| Figure 3.6.1.3 | | |
|-----------------------|-----------------------|----------------------|
| BCTC Size | Allowance Each | Net Area (SF) |
| Small | 1 | 972 |
| Medium | 1 | 972 |
| Large | 1 | 972 |

3.6.1.4. Sensitive Compartmented Information Facility (SCIF). High security operations room where Top Secret information is processed routinely. DIAM50 governs detailed space requirements and follow-on accreditation requirements. Allowance derived using standard criteria for general purpose administration @ 162 gross square feet per person assigned. Figure 3.6.1.4 shows allowances for each facility size.

| Figure 3.6.1.4 | | |
|-----------------------|-------------|------------------------|
| BCTC Size | # PN | Gross Area (SF) |
| Small | NR | 0 |
| Medium | NR | 0 |
| Large | 12 | 1944 |

3.6.1.5. After Action Review Theater (AAR). AAR (after action review) room is the location where formal debriefing of training events takes place. This room is fully audio - visually equipped to include ability to show simulation and live video. Tiered, fixed seating with dual screen projection, sliding wall map boards, sliding wall dry erase boards, LAN/WAN connectivity for front row participants only, dual presenter stations, and special lighting. Allowance derived from AR405-70 Conferencing @ 14.5 GSF/PN. (Add 150GSF for AARs greater than 60 PN). Figure 3.6.1.4 shows allowance for each facility size.

| Figure 3.6.1.4 | | |
|-----------------------|-----------------|------------------------|
| BCTC Size | Students | Gross Area (SF) |
| Small | 60 | 870 |
| Medium | 80 | 1310 |
| Large | 100 | 1600 |

3.6.1.6. Reconfigurable Tactical Operations Centers (RTOC). The reconfigurable TOCs are areas within the BCTC facility that can be used to simulate a unit TOC complete with C4I and communications equipment. Includes overhead cable trays, floor mounted covered power drops. Open space with high ceilings to permit optimum tactical configurations. Allowance based on replicated field environment TOC dimensions at 3250 GSF per brigade or battalion unit size. Figure 3.6.1.5 shows allowance for each facility size.

| Figure 3.6.1.5 | | |
|-----------------------|-------------------------|------------------------|
| BCTC Size | # of BDE/BN Sets | Gross Area (SF) |
| Small | 1BDE/2BN | 6500 |
| Medium | 2BDE/4BN | 13000 |
| Large | 3BDE/6BN | 19500 |

3.7.1 SUPPORT SPACES.

3.7.1.1. Janitor Closet. Provide one at each group of toilets. Allowance is based on 0.3 GSF per student served, from ACTS for CC17119. Figure 3.7.1.1 shows allowance for each facility size.

| Figure 3.7.1.1 | | |
|-----------------------|-----------------|------------------------|
| BCTC Size | Students | Gross Area (SF) |
| Small | 165 | 50 |
| Medium | 338 | 101 |
| Large | 627 | 188 |

3.7.1.2. Mechanical/Electrical Space. Provide dedicated interior spaces and exterior areas for plumbing, fire protection, and HVAC equipment. Allowances based on industry averages as follows: Buildings less than 50,000 GSF use 7% of gross space; less than 100,000 GSF use 5% of gross space; greater than 100,000 GSF use 3% of gross space. Figure 3.7.1.2 shows allowance for each facility size.

| Figure 3.7.1.2 | | |
|-----------------------|---------------|------------------------|
| BCTC Size | Factor | Gross Area (SF) |
| Small | 7% | 3000 |
| Medium | 5% | 4057 |
| Large | 3% | 4221 |

3.7.1.3. Corridors. Provide as required for circulation; minimum corridor width shall be not less than 6 feet for student areas, 8-12 feet is appropriate for large facilities; 5 feet for administrative areas. Corridors in classroom areas include wainscots and protective rails to reduce wall damage associated with high traffic furniture movement activities.

3.7.1.4. Stairs. Provide as required for circulation and egress in multi-story buildings. Interior stairs are preferable in most climates. A stair shall be conveniently located near the Lobby/Elevator/Public Entrance to the building. Minimum stair width shall not be less than 48 inches. The main student use stair should be at least 6 feet wide.

3.7.1.5. Elevator. Provide at least one hydraulic handicapped accessible passenger elevator in each multi-story building.

3.8.1 Gross Area Factor. Used to convert net areas to gross 1.45.

3.9.1 FPS Calculation Methodology.

The GSF per student is derived from criteria and then applying the 1.45 net to gross adjustment factor in the following manner:

36.0 NSF per Student for Multi Purpose Classroom

5.7 NSF per Student for Latrine

0.2 NSF per Student for Janitor Closet

6.0 NSF per Student for Lounge

The auditorium size is computed at 7.5 NSF per seat.

3.10.1 OCONUS Exceptions, None.

3.11.1 PRIMARY FACILITY TOTALS.

| Figure 3.11.1 | | |
|----------------------|-----------------|------------------------|
| BCTC Size | Students | Gross Area (SF) |
| Small | 165 | 46,060 |
| Medium | 338 | 85,630 |
| Large | 627 | 145,585 |

4 DESCRIPTION AND EXTERIOR SUPPORT CRITERIA

Chapter 4 – Description & Exterior Support Criteria.

4.1 Battle Command Training Capability (BCTC) is an emerging training environment. Current exterior training support features and functional space will continue to change. The current criteria are derived from actual field investigations and surveys from how units are training in 2005. Primary functional areas are: Tactical Operations Pads (TOP); Access Control Points for personnel vehicles/equipment; and communications tower for tactical antennae mounting.

4.2 TACTICAL OPERATIONS PADS (TOP). Basic components of the TOP are: paved hardstand, drainage, and communications – LAN/WAN-power hubs via protected risers, lighting and security. Figure 4.2 illustrates the notional array for a Brigade size TOP. Figure 4.2.1 illustrates size associated with notional array. Total gross square footage is 5,415 GSF.

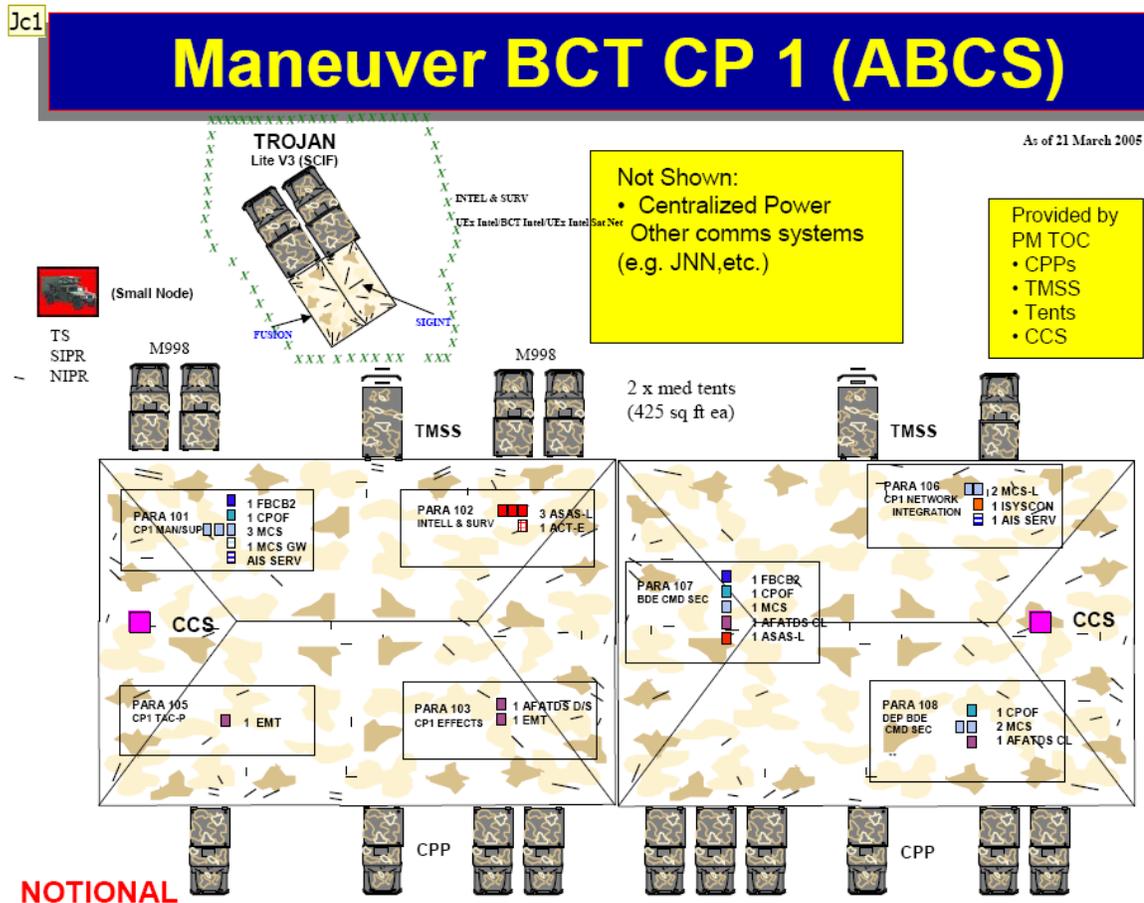
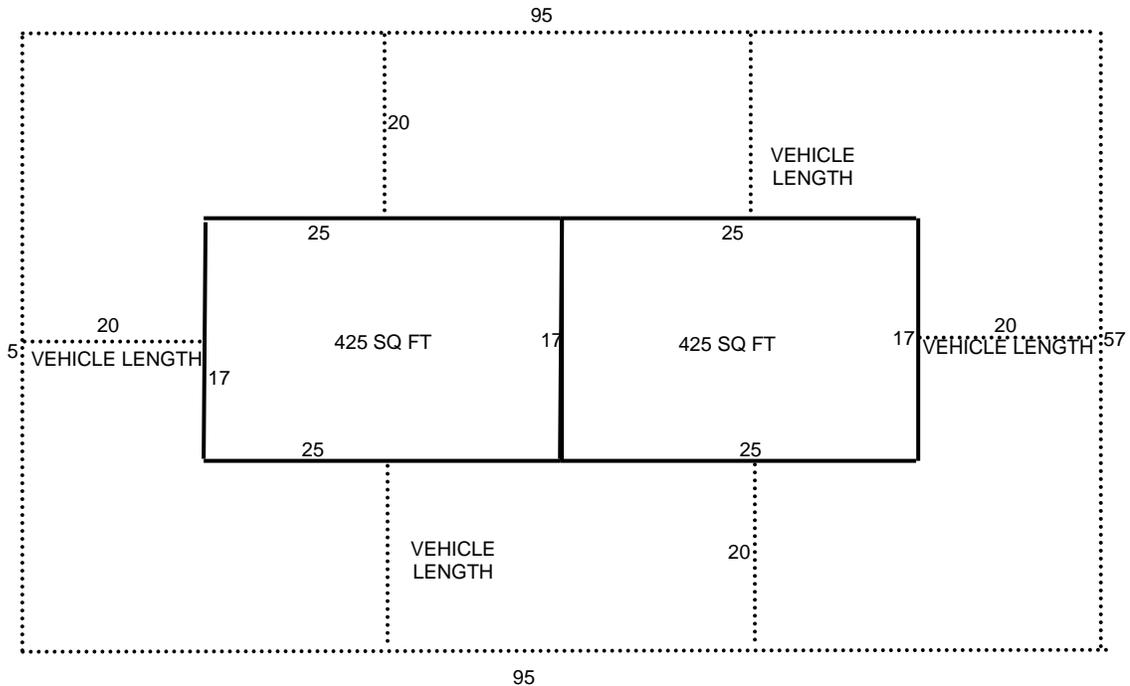


Figure 4.2



5415 SQ FT
Figure 4.2.1

4.2.1 Communications provide access to local telephone and primary facility intercom system.

4.2.2 LAN/WAN supports access to C4I SIM LAN, SIPR/NIPR networks, and installation LAN.

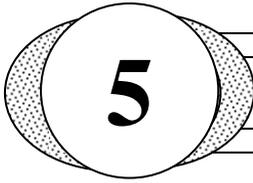
4.2.3 Electrical power provides a commercial source of single phase 120 volt multi capacity power to reduce tactical generation requirements. Each TOP riser should provide as a minimum:

- 4.2.1.1** 200 Amp Service
- 4.2.1.2** Grounding
- 4.2.1.3** FM Antennae mounting

4.2.4 Area security lighting and fencing is needed to support TOP areas.

4.3 ACCESS CONTROL POINT (ACP). Access control for personnel and equipment is important based on multiple security levels associated with training. A standard design ACP building of 400 GSF provides space for pre-training access badge and security roster processing. It also supports vehicle and parking management needs by way of access pass issue and processing. This building is located central to compound egress and ingress and serves as the site access control.

4.4 COMMUNICATION ANTENNAE TOWER. This structure provides a fixed structure to support tactical antennae mounting with conduit, cabling and grounding supporting the tactical communication antennae requirements. The vertical height is determined based on site geometry. Value design should determine physical shape. The structure is intended to be a low maintenance structure of suitable height to support placement of multiple antennae and satellite dishes as needed. Close coordination with installation training staff and Information Management personnel are important to size this structure adequately. Planning factors include a minimum 50 vertical foot, (12'x12' at base) tubular galvanized steel frame, concrete foundation tower with conduit, tactical antennae coaxial cabling, mounting angle iron, obstruction lighting and grounding. Access ladders for personnel to mount antennae and signage. Conduit extends to primary facility designated areas to support tactical communications inside the building and also at the exterior Tactical Operation Pads (TOP). Maximum distance for FM antennae coaxial cabling is 200 feet.



LAND USE CRITERIA

Chapter 5 – Land Use Criteria.

5.1 PLANNING CONSIDERATIONS - Training/Ranges Land Use or Heavy to Light Industrial. Priority for land use is associated with large acreage requirements to support the full range of Battle Command Training Capability (BCTC). Each facility and support area must factor as a minimum 100% land area for future expansion. BCTC is a training magnet of functional space and provides increasing opportunity for simulation and virtual training. Light Industrial land use is first priority based on proximity to troop housing areas and higher potential for large acreage tracts to support BCTC needs. Second order priority would be for heavy industrial land use based on potential for large acreage tracts availability. Third order priority would be for Range/Training Areas in close proximity to heavy industrial land use versus further down range or remote to cantonment areas. Direct access for troops is the priority for proximity. Consideration must be made for tactical vehicle access, LAN & WAN communication and instrumentation access and high volume vehicle traffic loads.

5.2 LAND REQUIREMENTS. Components of land requirements are: primary facility; site egress and ingress; utility access; Installation Design Guide standards; POV parking; Tactical vehicle parking; Exterior Tactical Operations Center areas/pads; and, force protection stand-off distances. Future expansion needs should factor a minimum 100% expansion of each functional component. Figure 5.2 established site selection quantity ranges for each BCTC size:

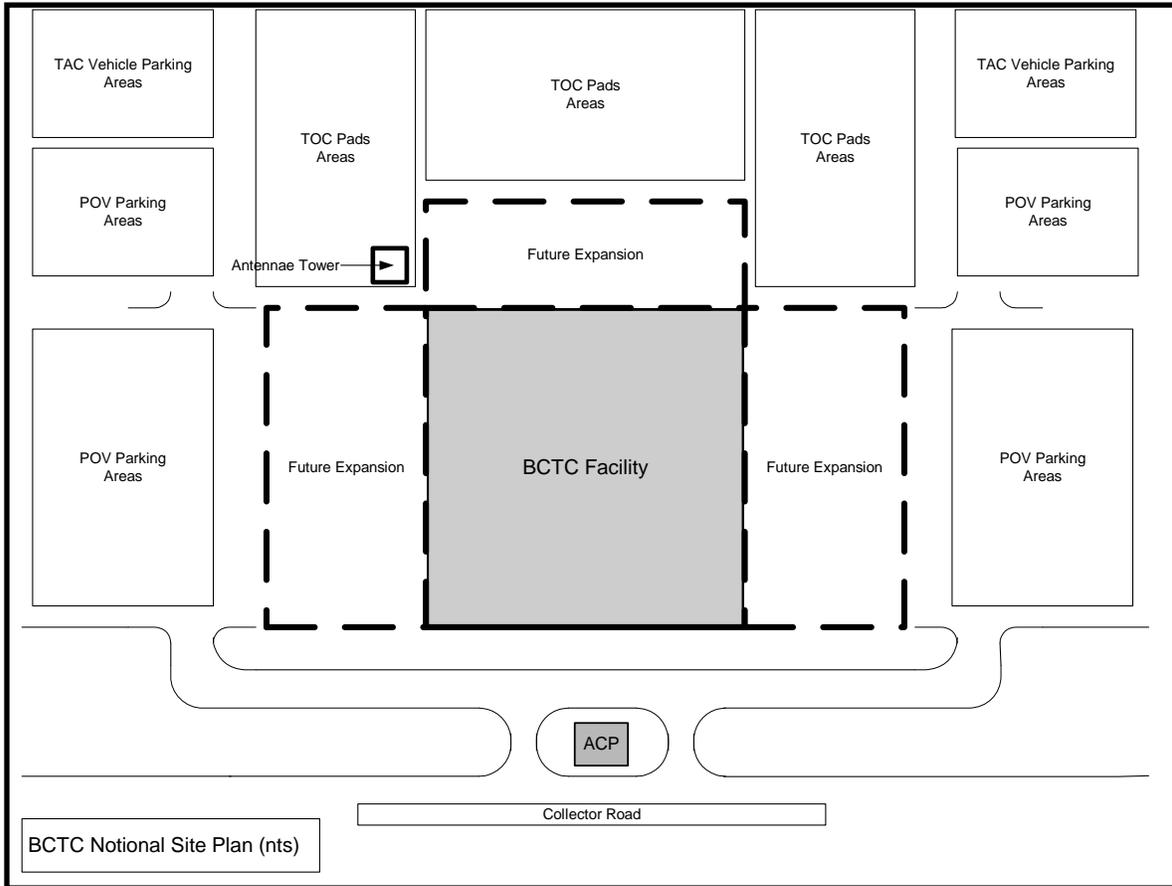
Figure 5.2

| BCTC Size | Bldg (SF) | 60% Occupant POV (35SY/VH) | 20 VEH BDE.BN Tactical (35SY/VH) | TOC Pads @ 720SY/ BDE.BN | Circulation Factor @ 15% (SY) | Gross Area (AC) |
|-----------|-----------|----------------------------|----------------------------------|--------------------------|-------------------------------|-----------------|
| Small | 46,060 | 118 (4130) | 60 (2100) | 3 (2160) | 2060 | 7.0 - 10.0 |
| Medium | 85,630 | 255 (8920) | 120 (4200) | 6 (4320) | 4130 | 13.0 – 18.0 |
| Large | 145,585 | 454 (15900) | 180 (6300) | 9 (6480) | 6655 | 21.0 – 25.0 |

5.3. AFFINITIES. Battle Command Training should be located in close proximity to other training facilities: classroom and simulations. Integration of tactical vehicles for tactical operations center (TOC) interaction with BCTC events invokes proximity needs for existing tactical vehicle maintenance facilities and tank trails or combat vehicles routes for direct or instrumented access.

5.3.1 INFRASTRUCTURE. Utilities requirements must consider water for fire protection and potable needs; waste water treatment, electrical power, 3-phase; primary heating commodity for geographic area, and most importantly, fiber optic connectivity for communications and data.

5.4 NOTIONAL SITE LAYOUT



NOTE: Antennae tower is for communications and may be incorporated as part of the building. There is a 200 linear foot distance limitation for FM radio antennae cables that must be factored in final placement. Other technical information supporting actual communication signal and transmission must be discovered during design phase.