US Army Corps of Engineers
Louisville District

P2# 146414; PN#65941
OPERATIONAL READINESS TRAINING COMPLEX
McGregor Range Camp, Ft. Bliss, TX
Project Definition Report Stage

Value Engineering Study Report

September 2009

Design Consultant
U.S. Army Corps of Engineers
Louisville District

Value Engineering Consultant

Lewis & Zimmerman Associates, Inc.

an ARCADIS company

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Date:
September 14, 2009

Contact:
David Hamilton, PE, CVS

Phone:
253-229-7703

Email:
dahamilton@lza.com

Our ref:
LZ087531.0000

Re: P2# 146414, PN# 65941 Operational Readiness Training Complex (ORTC)
McGregor Range Camp, Fort Bliss, Texas
Value Engineering Study Report

Dear Mr. Weber:

Lewis & Zimmerman Associates, Inc. is pleased to submit 3 hard copies and 3 CDs of the referenced report on the value engineering study conducted August 10 - 14, 2009. The report contains both quantitative and qualitative proposals for value enhancement related to the project documents.

We would like to thank Doug Pohl, LRL and the COE VE team members for their assistance during the VE workshop effort. Please do not hesitate to call me if you or any of the reviewers have any questions regarding the information presented in this report.

Sincerely yours,

LEWIS & ZIMMERMAN ASSOCIATES, INC.

David A. Hamilton, PE, CVS, CCE, LEED[AP]
Vice President

Attachment

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EXECUTIVE SUMMARY

INTRODUCTION

This value engineering (VE) study report documents the events and results of the VE study conducted by Lewis & Zimmerman Associates, Inc. (LZA) for the United States Army Corps of Engineers, Louisville District (District). The subject of the study was the P2#146414, PN# 65941, Operational Readiness Training Complex (ORTC) to be site-adapted from the Standard ORTC Standard Model and constructed at the McGregor Range Camp, Ft. Bliss, TX. The Project Definition Report (PDR), Operations Readiness Training Complex, PN 65941, dated 01 December 2008 served as the basis for this study.

The VE workshop was conducted 10 – 14 August 2009 at the Hampton Inn, Louisville, Kentucky and followed the six-phase VE Job Plan:

- Information Phase
- Function Analysis Phase
- Creative Phase
- Evaluation Phase
- Development Phase
- Presentation Phase

PROJECT DESCRIPTION

This project uses the ORTC Standard Model design and site-adapts it for the McGregor Range Camp, Ft. Bliss, TX. The project will provide economical, minimum essential housing, dining, administration and operational facilities to accommodate transient training and mobilization/ demobilization activities at power projection platforms (PPP), power support platforms (PSP), and post mobilization maneuver training complexes (PMMTC). This ORTC includes Battalion Headquarters facilities, Officers Quarters, Dining Facility (720 Person), Company Operations Facility, Vehicle Maintenance Facility, and Company Sheds. Figure 1 presents the layout of the McGregor Range Camp Site Plan for the ORTC facilities.

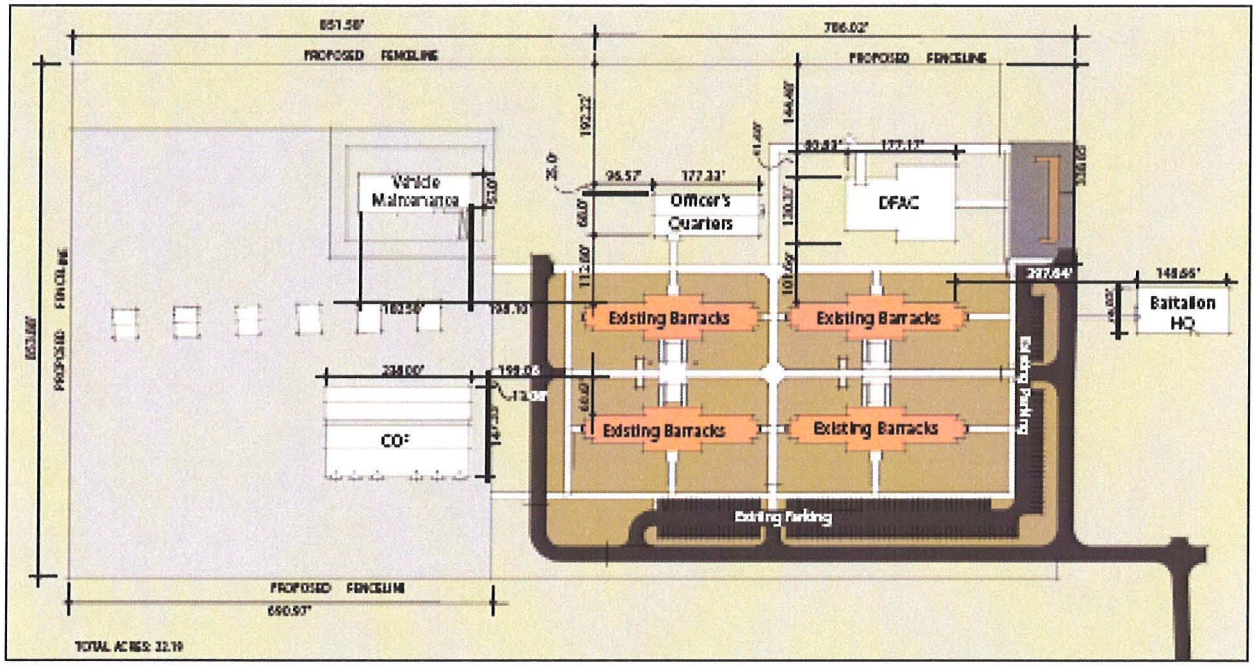

Figure 1 - ORTC McGregor Range Camp

Project Cost

The ORTC for Range Camp McGregor includes the following building types, sizes, and estimated costs per the PC-Cost Detailed Report dated 9 January 2009.

McGregor Range Camp, Ft. Bliss
ORTC Project Cost Summary

PRIMARY FACILITY	QUANTITY	COST ($000)
Transient Battalion HQ	11,237 SF	1,787
Transient Company Ops (6 CO's/Bn	19,579 SF	3,074
Company Operations Facilities	19,579 SF	2,859
Dining Facility (720 Person)	16,761 SF	6,942
Covered Hardstand Building	12,852 SF	652
Company Sheds	4,800 SF	226
Enlisted Barracks (4/Battalion)	122,232 SF	17,601
Vehicle Maintenance Shop	11,855 SF	2,904
Transient Training Officers Quarters	22,579 SF	5,696
Motor Pool Hardstand	33,000 SF	2,031
Organizational Vehicle Parking	6,056 SF	405
IDS/EMCS/SDD, Bldg. Info., AT/FP		1,087
Supporting Facilities		8,077
ESTIMATED CONTRACT COST		**$32,665**
ESTIMATED PROJECT COST		**$36,000**

CONCERNS AND OBJECTIVES

Concerns

The primary concerns of the PDT were identified as a result of information gathering by the VE team and discussions held during the project design In-Brief held 10 August 2009. The key concerns include the establishment of criteria for the development of the space program, building functions, planning ratios for male/female personnel, and planning ratios for enlisted personnel to officers. Since the project has been in the development stage for several years and many of the key participants in the project have changed, much history has been lost, and justifications for many of the past decisions are lacking.

Noting this lack of historical documentation and background, new efforts should include a period of reestablishment, buy-in, and consensus building. Some decisions may need to be revisited as the overall composition of the ORTC project is resurrected, formulated, confirmed, and verified. A directed management approach should include participants from the Centers of Standardization as well as key activities throughout the Army. This blending of active experience with design expertise should yield well thought-out facilities with functional space plans that provide the flexibility needed to serve transient troops.

RESULTS OF THE STUDY

The VE team developed 8 design suggestions specifically for the McGregor Range Camp ORTC plus numerous alternatives and design suggestions for the ORTC CoS Standard Model. Results from the ORTC CoS Model study are included in this report in the Appendix and should be reviewed in conjunction with the site specific comments identified for the McGregor Range Camp.

The combined VE alternatives for the McGregor and the CoS Standard Model would provide for the basic functions of the project but at a lower total cost of construction. To achieve these cost savings and work within the funds available, major redesign efforts will be necessary in all disciplines. The following group of VE alternatives for the McGregor Range Camp project focuses on streamlining the building systems, optimizing exterior building shapes and locations, and optimizing the parking layout without reducing the space program.

<u>SITE MASTER PLAN (CM)</u>

CM-1/2 Rotate the DFAC building 90-degrees so the dining exit faces south and the loading dock faces north.

CM-4 Investigate alternative wastewater treatment options such as package plants in lieu of enlarging the existing oxidation pond system.

CM-5 Double load and extend the DFAC parking to provide for 65 staff.

CM-7 Rotate the Company Sheds 90-degrees so the back of the sheds face west to mitigate the blowing sand issue.

CM-8 Relocate the Battalion Headquarters to avoid a potential electrical utilities conflict.

CM-9 Re-evaluate the design including location of the DFAC loading dock to determine the best design for the site.

CM-10 Re-evaluate the design including location of the Vehicle Maintenance and Warehouse loading dock to determine the best design for the site and operational practices.

All of the alternatives and design suggestions developed by the VE team are summarized on the following Summary of VE Alternatives table and detailed in Section Two of the report. The recommendations from the ORTC Standard Model are included in the Appendix to this report and should be evaluated in unison with the site specific recommendations for the McGregor Range Camp.

IMPLEMENTATION RESULTS

On August 27, 2009, Howard Greenfield, PE, CVS of LZA facilitated an implementation meeting with Jason Weber, District VEO, and several members of the District's project development team on the ORTC Model. During this meeting, approximately $374,000 of cost avoidance opportunities were accepted for implementation into the ORTC Model as noted on the VE Workshop Summary Implementation Review sheet and detailed on the Value Engineering Implementation Decisions spreadsheets provided in the appendix of this report. The ORTC Model recommendations will be incorporated into the Camp McGregor Design/Build RFP which will be developed in the next phase of design.

From this point forward, the project will move ahead with the development of a Design/Build RFP and additional decisions will be make to provide the needed functions of the project.

VE WORKSHOP SUMMARY
IMPLEMENTATION REVIEW

Operational Readiness Training Complex – P2# 146414 ORTC Located at McGregor Range Camp Ft. Bliss, Texas		
ITEM NO.	**ITEM**	**DESCRIPTION**
1	Study Date	August 10 - 14, 2009
2	Implementation Review Date	August 2009
3	P2# for the Project	146414
4	Number of Quantitative Proposals	0
5	Number of Accepted Quantitative Proposals	0
6	Number of Qualitative Proposals	8
7	Number of Accepted Qualitative Proposals	8
8	Maximum Cost Avoidance Proposed (Gross)	**$0**
9	Accepted Cost Avoidance (Gross)	$0
10	**Study Cost to Government**	**50% of $39,875 = $19,938**
11	Calculated Return on Investment	0: 0
12	Study Team Leader: (Lewis & Zimmerman Associates, Inc.)	David Hamilton, PE, CVS, CCE
13	Study Team Members: Cost Estimator (Civil Design & Construction, Inc.) Architect (COE-LRL) Dining/Food Service (NAO) Architect (COE-LRL) Civil Engineer (NAB) PM/Ft. Bliss Value Program Manager	 Mark Starkey Ronnie Pride, RA David Gary, PE Melissa Mizaian, RA Carrie Ozgar, PE James Tuskan, PE Jason Weber, PE, SE, AVS
NOTES:	***The Camp McGregor project will be a Design/Build site adapt based upon the accepted ORTC Model. VE alternatives accepted for the ORTC Model will be incorporated into the Camp McGregor project as the RFP is developed and the specifications are developed.***	

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SUMMARY OF VALUE ENGINEERING ALTERNATIVES AND DISPOSITION

PROJECT: **P2#146414, PN# 65941, OPERATIONAL READINESS TRAINING COMPLEX, McGREGOR RANGE CAMP**
Ft. Bliss, TX

ALT. NO.	DESCRIPTION	PRESENT WORTH OF COST SAVINGS: ORIGINAL COST	ALTERNATIVE COST	INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS	IMPLEMENTATION: DIS-POSITION	INITIAL SAVINGS	O&M SAVINGS	IMPLEMENTED LCC SAVINGS	REMARKS
	SITE PLAN - CAMP MCGREGOR (CM)										
CM-1/ CM-2	Rotate the DFAC building 90-degrees so the dining exits face south and loading dock faces north.	DESIGN SUGGESTION					ACCEPT	$0			
CM-4	Investigate alternative wastewater treatment options such as packaged plants in lieu of enlarging the existing oxidation ponds.	DESIGN SUGGESTION					ACCEPT	$0			
CM-5	Double load and extend the DFAC parking to provide 65 stalls.	DESIGN SUGGESTION					ACCEPT	$0			
CM-7	Rotate the Company Sheds 90-degrees so the back of the sheds face west.	DESIGN SUGGESTION					ACCEPT	$0			
CM-8	Relocate the Battalion Headquarters to avoid a potential electrical utilities conflict.	DESIGN SUGGESTION					ACCEPT	$0			
CM-9	Re-evaluate the design of the DFAC loading dock to determine the best layout for the site.	DESIGN SUGGESTION					ACCEPT	$0			
CM-10	Re-evaluate the design of the Vehicle Maintenance and Warehouse loading dock to determine the best layout for the site and operational practices.	DESIGN SUGGESTION					ACCEPT	$0			
CM-11	Eliminate reference to "private sector" from the Project Design Report to improve the quality of the bids.	DESIGN SUGGESTION					ACCEPT	$0			
Maximum Cost Avoidance Proposed (Gross)			**$0**								
No. of Proposed Design Suggestions without Cost			**8**								
Accepted Design Suggestions without Cost			**8**								

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STUDY RESULTS

INTRODUCTION

The results of the value engineering study conducted on the P2#146414, PN# 65941, ORTC, McGregor Range Camp, Ft. Bliss, TX, portray the benefits that can be realized by the District and users. The results will directly affect the project design and will require coordination by with the District and the end customer to determine the disposition of each alternative.

During the VE workshop, many ideas for potential value enhancement were conceived and evaluated by the VE team for technical feasibility, applicability to the project, and the ability to meet the owner's objectives. Research performed on those ideas considered to have potential to enhance the value of the project resulted in the development of individual alternatives identifying specific changes to individual elements that comprise the project. For each alternative developed, the following information has been provided:

- A summary of the original design;
- A description of the proposed change to the project;
- Sketches and design calculations, if appropriate;
- A capital cost comparison and life cycle discounted present worth cost comparison of the alternative and original design, if appropriate;
- A descriptive evaluation of the advantages and disadvantages of selecting the alternative; and
- A brief narrative to compare the original design and the proposed change and provide a rationale for implementing the change into the project.

Each alternative developed is identified with an alternative number (Alt. No.) that can be tracked through the value analysis process and facilitates referencing between the Creative Idea Listing and Evaluation worksheets, the alternatives, and the Summary of Value Engineering Alternatives table. The CM prefix in the Alt. No. refers to ideas addressing the general site plan at Camp McGregor.

Summaries of the alternatives are provided on the Summary of Value Engineering Alternatives table. The complete documentation of the developed alternatives follows the tables.

KEY ISSUES

The following concerns for both the ORTC CoS Model and McGregor Range Camp site-adapt were identified as a result of information gathering by the VE team and discussions held during the project Design In-Brief held 10 August 2009.

Deviations to the original scope of work

- No deviations from the original scope of work are noted at this time since this project is being developed from a standard design, which is also in the development stage.

Action Items

- The project documents must be ready for advertising not later than September 2010.
- Contract award must be made not later than October 2010.
- The bid period will be 30 days.
- The RFPs need updating, editing, and publishing.

Key Agreements

- Agreement is needed on an acquisition strategy.
- No bid options are allowed.
- The bid will be on the standard design for Conus applications.
- Acquisition will be either by Design/Build or Design/Bid/Build.
- The program needs to be confirmed during preparation of the Project Definition Report.

Critical Assumptions

- Utilities will be available.
- Utility improvements could be a separate contract.

Critical Constraints

- There is a lack of design and contracting staff for the Ft. Bliss project
- Utility capacity is an issue at Ft. Bliss
- The existing standard design is an approved Army design, but optimizations are acceptable
- The Base Design Guide and Area Design Guide must be included in the specification
- The budget for the Ft. Bliss project is $36M
- These facilities will serve a transient population and durability is a key issue
- The project must meet AT/FP requirements
- Site area limitations control
- Energy monitoring is required

Risks to Management Strategies

- Procurement production does not meet award dates
- Potential for construction cost escalation

Quality Objectives

- Arms Vaults may need to be added to the standard design to meet safety requirements.
- LEED Silver design is required for all facilities.
- Durability is needed and is a major issue due to a highly transient population.

- Maintainability and low life cycle costs are key issues.
- A cost-effective building skin is important within the limits of the Area Design Guide.
- Energy independence is desired by 2030.

In addition, the project team asked the VE team to pay particular attention to the project budget, risk issues associated with procurement, site utilities, constructability, space programming, space adjacencies, and other elements which would impact either the project cost or delivery schedule.

STUDY OBJECTIVES

The VE team was tasked with the following objectives:

- Identify betterments to improve the quality and function of the facility
- Identify cost reduction ideas

To meet these objectives, the VE team focused on the key elements associated with the project, paying particular attention to the site layout, building orientations, wastewater management, and parking requirements.

RESULTS OF THE STUDY

Research of the ideas identified as having potential for enhancing the value of the project resulted in the development of eight design suggestions for consideration by the District. The greatest opportunities for added value center on building orientations and layout, site access and circulation, and parking requirements.

Each of the developed alternatives should be given careful consideration for the potential cost savings that they offer compared to the tradeoffs.

EVALUATION OF ALTERNATIVES AND DESIGN SUGGESTIONS

When reviewing the study results, the District and its customer should consider each part of an alternative on its own merit. There may be a tendency to disregard an alternative because of a concern about one part of it. Each area within an alternative that is acceptable should be considered for use in the final design, even if the entire alternative is not implemented. Variations of these alternatives by the owner or designer are encouraged.

All alternatives were developed independently of each other to provide a broad range of options to consider for implementation. Therefore, some of them are “mutually exclusive,” so acceptance of one may preclude the acceptance of another. In addition, some of the alternatives are interrelated, so acceptance of one or more may not yield the total of the cost savings shown for each alternative.

The District should evaluate all alternatives carefully in order to select the combination of ideas with the greatest beneficial impact on the project. Once this has been accomplished, the total cost savings

resulting from the VE study can be calculated based on implementing a revised, all-inclusive design solution.

SUMMARY OF VALUE ENGINEERING ALTERNATIVES

PROJECT: **P2#146414, PN# 65941, OPERATIONAL READINESS TRAINING COMPLEX, McGREGOR RANGE CAMP**
Ft. Bliss, TX

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	INITIAL COST SAVINGS	PRESENT WORTH OF COST SAVINGS: RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
	SITE PLAN - CAMP MCGREGOR (CM)					
CM-1/ CM-2	Rotate the DFAC building 90-degrees so the dining exits face south and loading dock faces north.	DESIGN SUGGESTION				
CM-4	Investigate alternative wastewater treatment options such as packaged plants in lieu of enlarging the existing oxidation ponds.	DESIGN SUGGESTION				
CM-5	Double load and extend the DFAC parking to provide 65 stalls.	DESIGN SUGGESTION				
CM-7	Rotate the Company Sheds 90-degrees so the back of the sheds face west.	DESIGN SUGGESTION				
CM-8	Relocate the Battalion Headquarters to avoid a potential electrical utilities conflict.	DESIGN SUGGESTION				
CM-9	Re-evaluate the design of the DFAC loading dock to determine the best layout for the site.	DESIGN SUGGESTION				
CM-10	Re-evaluate the design of the Vehicle Maintenance and Warehouse loading dock to determine the best layout for the site and operational practices.	DESIGN SUGGESTION				
CM-11	Eliminate reference to "private sector" from the Project Design Report to improve the quality of the bids.	DESIGN SUGGESTION				

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VALUE ENGINEERING ALTERNATIVE

PROJECT: **OPERATIONAL READINESS TRAINING COMPLEX** ***McGregor Range Camp, McGregor, Fort Bliss, TX*** ***P2# 146414, PN# 65941***	ALTERNATIVE NO.: **CM-1/CM-2**
DESCRIPTION: **ROTATE THE DFAC 90 DEGREES SO THE DINING EXITS FACE SOUTH AND THE LOADING DOCK FACES NORTH**	SHEET NO.: **1 of 3**

ORIGINAL DESIGN: (sketch attached)

Using the revised building layout in the Project Definition Report (PDR), the Dining Facility (DFAC) is oriented with the exits from the dining facility on the east end and the loading dock on the west end.

ALTERNATIVE: (sketch attached)

Rotate the building 90-degrees clockwise and orient the DFAC in the north-south direction to allow deliveries to be made on the north side, out of the prevailing wind (from the west) and blowing sand. Orienting the patron entries on the south end of the building and east-west sides of the building, allows better access from work areas, barracks, officer quarters, battalion headquarters, and off-complex personnel from the south. The delivery dock on the north end allows for a 60-ft-long combination truck to be staged with an additional 60 ft for a turn-around/hammerhead.

ADVANTAGES:

- Minimizes blowing sand entering the delivery area and food preparation
- Balances access to entry on east and west by all users
- Exiting to the south is the most convenient location for all users
- Delivery on the north side provides a better location for trucks to back in and unload with the fewest restraints

DISADVANTAGES:

- The west entry may become unusable during high winds due to blowing sand without some additional protection

DISCUSSION:

Under the current arrangement, one entry is on the north side and inconvenient to almost everyone. The delivery dock facing west is at the greatest risk to blowing sand and the exit to the east faces the opposite direction most people need to go. Rotating the building 90 degrees clockwise resolves these issues as well as minimizes the issues related to the truck access and unloading. While blowing sand into the newly oriented west entry can be an issue, additional protection for an entry would be far less expensive than to protect the entire delivery area.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

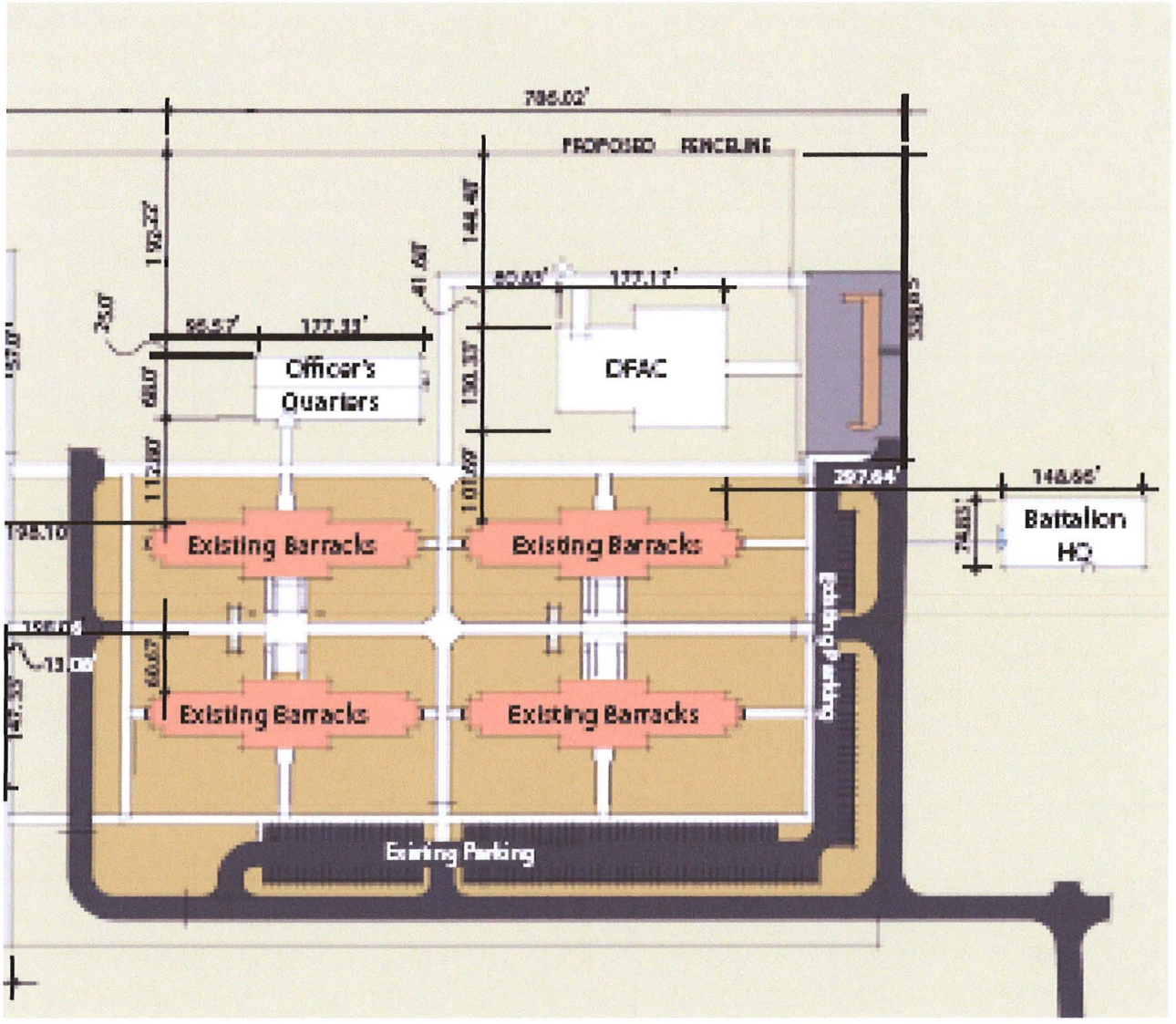
SKETCH

PROJECT: **OPERATIONAL READINESS TRAINING COMPLEX**
McGregor Range Camp, McGregor, Fort Bliss, TX
P2# 146414 PN# 6594)

ALTERNATIVE NO.: **CM-1/2**

ORIGINAL DESIGN ☒ ALTERNATIVE DESIGN ☐ BOTH ☐

SHEET NO.: 2 **of** 3



SITE PLAN

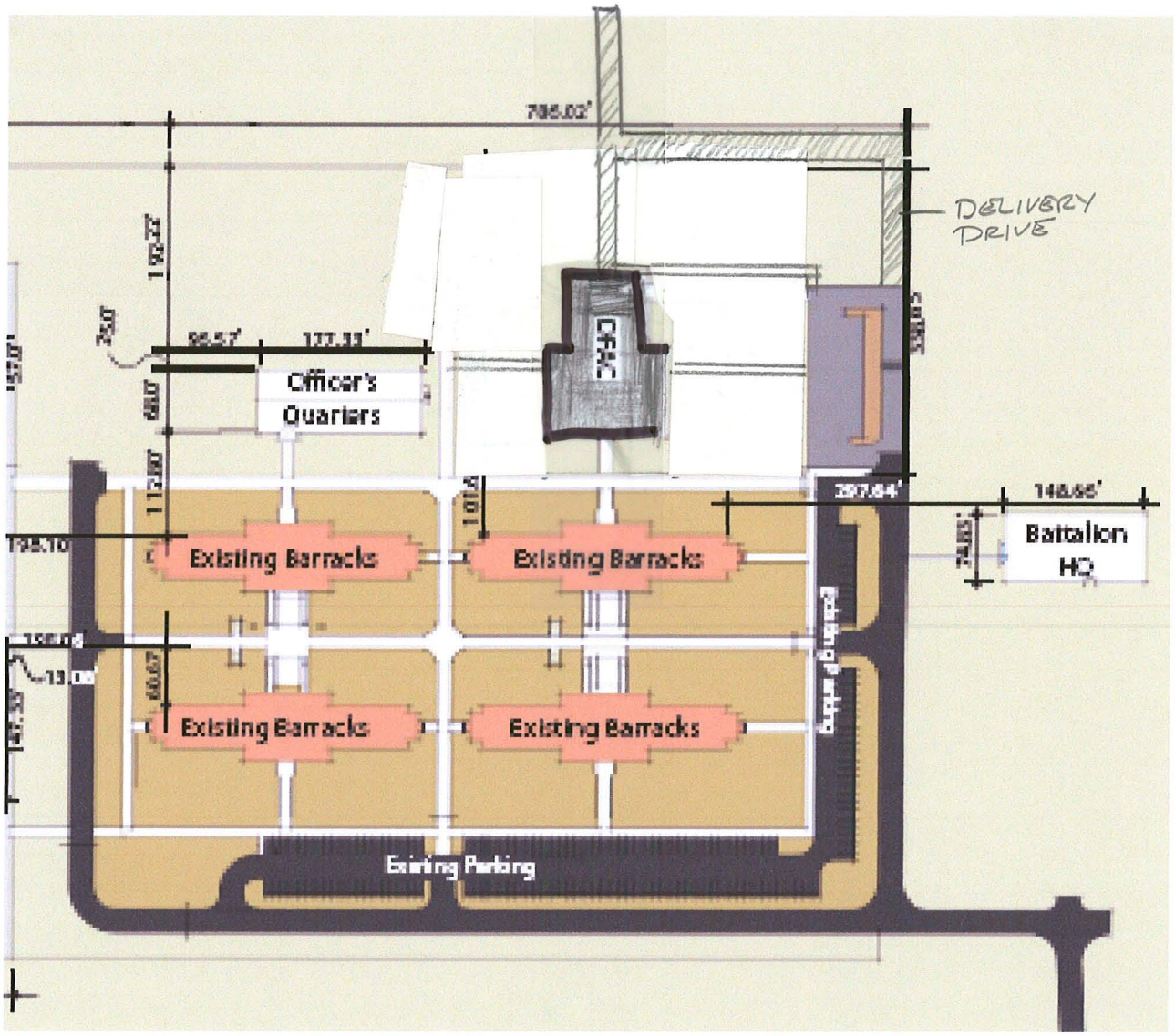
SKETCH

PROJECT: **OPERATIONAL READINESS TRAINING COMPLEX**
McGregor Range Camp, McGregor, Fort Bliss, TX
P2# 146414 PN# 65941

ALTERNATIVE NO.: **CM-1/2**

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☒ BOTH ☐

SHEET NO.: 3 of 3



SITE PLAN

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VALUE ENGINEERING ALTERNATIVE

PROJECT: **OPERATIONAL READINESS TRAINING COMPLEX** *McGregor Range Camp, McGregor, Fort Bliss, TX* *P2# 146414, PN# 65941*	ALTERNATIVE NO.: **CM-4**
DESCRIPTION: **INVESTIGATE ALTERNATIVE WASTEWATER TREATMENT OPTIONS SUCH AS PACKAGED PLANTS IN LIEU OF ENLARGING THE EXISTING OXIDATION PONDS**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The DD1391 specifies enlarging the existing oxidation pond to treat the additional wastewater coming from the new facilities.

ALTERNATIVE:

Research alternative treatment methods for handling the new wastewater flows. Consider more advanced treatment methods such as sequencing batch reactors and eliminate the concept of expanding the existing oxidation pond system. Since a septic system is not allowed, a packaged type system may be viable and provide a more cost-effective treatment system than the pond.

ADVANTAGES:

- Potential improvement in operating efficiency
- More effective wastewater treatment
- "Cleaner" operations
- Higher quality effluent

DISADVANTAGES:

- Two types of wastewater treatment technology on the base
- Formal wastewater treatment plant may be more expensive to operate
- A feasibility study is needed to evaluate various treatment options

DISCUSSION:

Oxidation pond wastewater treatment is an effective method of treating a waste stream. However, there are newer wastewater treatment technologies that may provide more benefit and a cleaner operation. The drawback is there would be two different systems on the base which would require more training of staff to maintain and operate. A feasibility study is needed to evaluate this option.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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VALUE ENGINEERING ALTERNATIVE

PROJECT: **OPERATIONAL READINESS TRAINING COMPLEX** *McGregor Range Camp, McGregor, Fort Bliss, TX* *P2# 146414, PN# 65941*	ALTERNATIVE NO.: **CM-5**
DESCRIPTION: **DOUBLE LOAD AND EXTEND DFAC PARKING TO PROVIDE 65 STALLS**	SHEET NO.: **1 of 3**

ORIGINAL DESIGN: (sketch attached)

In the PDR drawings a single row of parking for 19 personnel operated vehicles (POV) is provided adjacent to the Dining Facility (DFAC). The PDR does not specify a parking requirement for the DFAC.

ALTERNATIVE: (sketch attached)

The new DFAC requires 65 POV parking spaces reserved for building staff. Double load the proposed parking to accomplish this goal.

ADVANTAGES:

- Meets DFAC requirements for POV parking
- DFAC moves to the west to accommodate the parking, which moves it closer to the work area

DISADVANTAGES:

- The existing parking area is under-utilized and in combination with new parking could provide sufficient parking if that condition is standard
- More paving is required although still less than the maximum allowed

DISCUSSION:

The existing parking area in combination with new parking could provide sufficient parking although some people would need to walk more than 700 feet to get to the loading dock entry. Since the parking for the rest of the facility is specified as 10 - 25% of non-DFAC personnel, this existing parking could fill if spaces in the existing area are not designated as DFAC employee parking. There is sufficient space to double load the parking by moving the DFAC west, if necessary. Cost is not affected as there is more paving allowed in the DD1391 than is shown on the plans.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

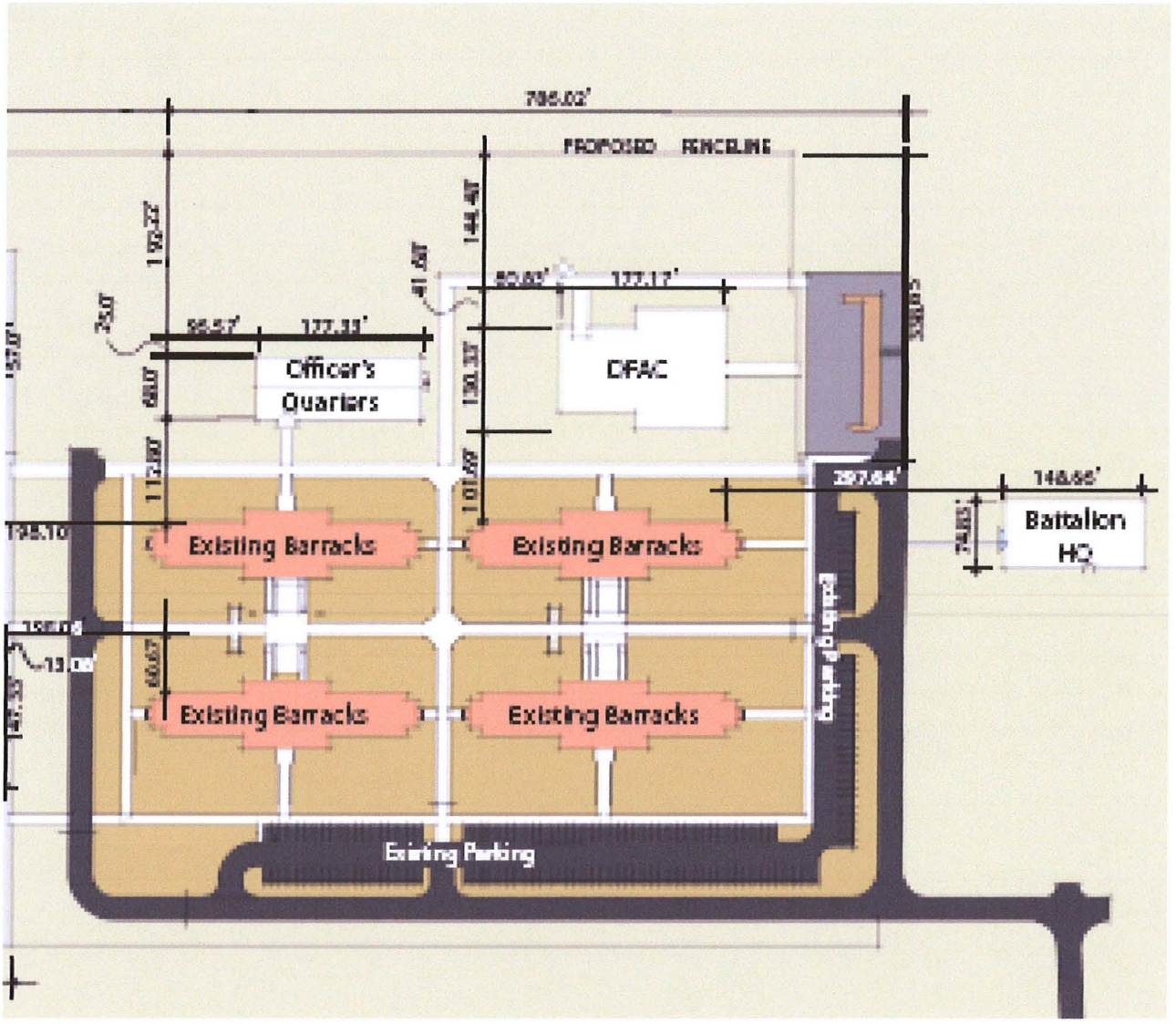
SKETCH

PROJECT: **OPERATIONAL READINESS TRAINING COMPLEX**
McGregor Range Camp, McGregor, Fort Bliss, TX
P2# 146414 PN# 65941

ALTERNATIVE NO.: **CM-5**

ORIGINAL DESIGN ☒ ALTERNATIVE DESIGN ☐ BOTH ☐

SHEET NO.: 2 of 3



SITE PLAN

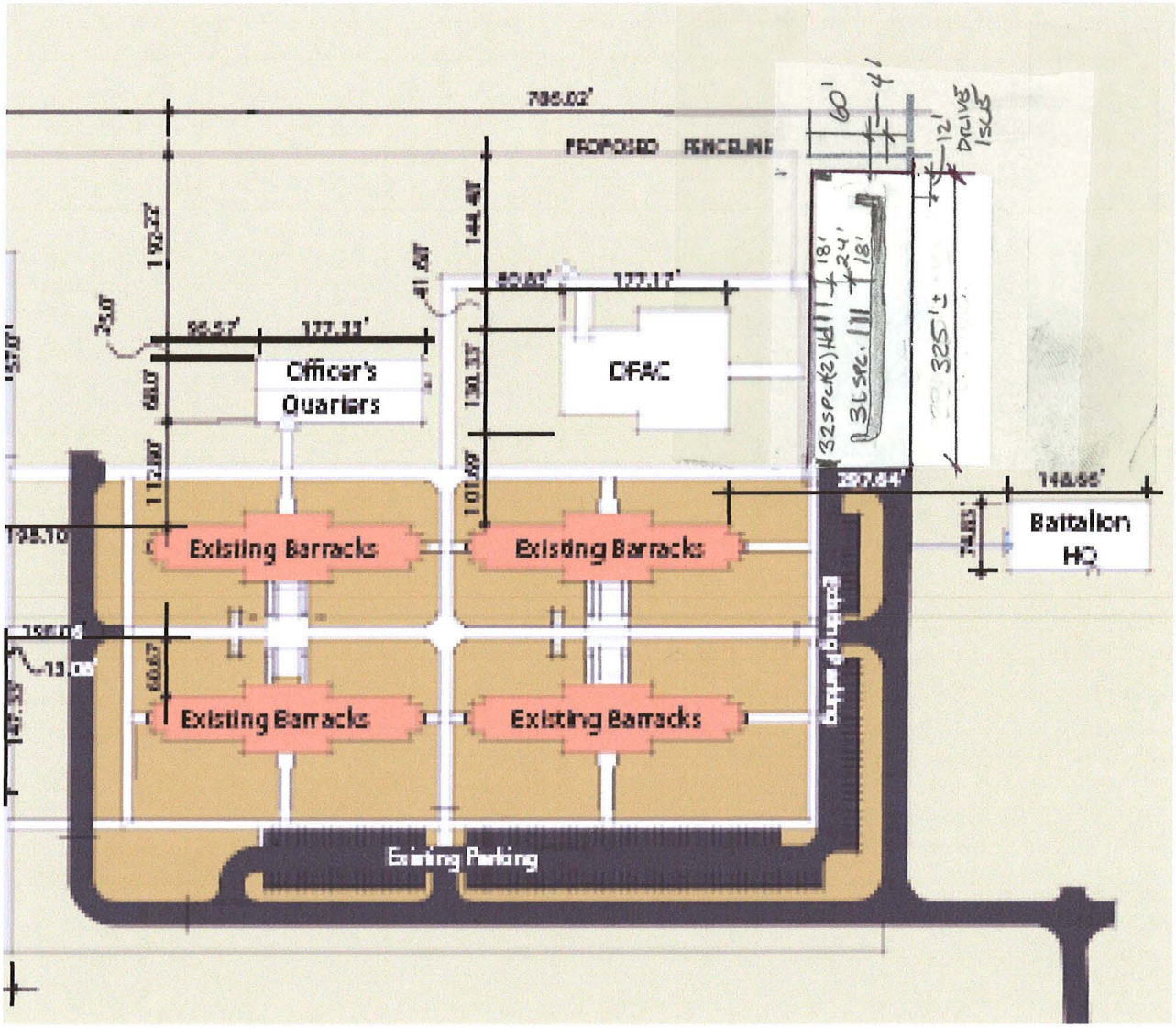
SKETCH

PROJECT: **OPERATIONAL READINESS TRAINING COMPLEX**
McGregor Range Camp, McGregor, Fort Bliss, TX
P2# 146414 PN#65941

ALTERNATIVE NO.: **CM-5**

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☒ BOTH ☐

SHEET NO.: 3 of 3



SITE PLAN

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VALUE ENGINEERING ALTERNATIVE

PROJECT: **OPERATIONAL READINESS TRAINING COMPLEX** ***McGregor Range Camp, McGregor, Fort Bliss, TX*** ***P2# 146414, PN# 65941***	ALTERNATIVE NO.: **CM-7**
DESCRIPTION: **ROTATE THE COMPANY SHEDS 90 DEGREES SO THE BACK OF THE SHEDS FACE WEST**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The drive through side of each company shed is oriented east-to-west.

ALTERNATIVE:

Rotate each company shed with the drive through oriented north-to-south.

ADVANTAGES:

- Protects drive through from prevailing winds and blowing sand

DISADVANTAGES:

- None apparent

DISCUSSION:

Rotating each shed drive through out of the prevailing wind will protect the equipment and personnel from weather and blowing sand.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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VALUE ENGINEERING ALTERNATIVE

PROJECT: **OPERATIONAL READINESS TRAINING COMPLEX** ***McGregor Range Camp, McGregor, Fort Bliss, TX*** ***P2# 146414, PN# 65941***	ALTERNATIVE NO.: **CM-8**
DESCRIPTION: **RELOCATE THE BATTALION HEADQUARTERS TO AVOID A POTENTIAL UTILITY CONFLICT**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The location of the Battalion Headquarters as shown on the New Construction Plan and the Electrical Lines Plan pages 24 and 25 of 144 in the PDR shows a conflict with the existing electrical lines.

ALTERNATIVE:

Relocate existing electrical lines or move the Battalion Headquarters to avoid conflict.

ADVANTAGES:

- Avoids potential conflict with electrical lines

DISADVANTAGES:

- None apparent

DISCUSSION:

Plans show a potential conflict between the Battalion Headquarters and the existing electrical lines. Since Camp McGregor is located in a remote area and real estate is available, it would be possible to shift the building to the east to avoid these conflicts. If this is not an option, then the existing electrical lines would need to be relocated to go through the building.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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VALUE ENGINEERING ALTERNATIVE

PROJECT: **OPERATIONAL READINESS TRAINING COMPLEX** ***McGregor Range Camp, McGregor, Fort Bliss, TX*** ***P2# 146414, PN# 65941***	ALTERNATIVE NO.: **CM-9**
DESCRIPTION: **REVISE THE LOADING DOCK FOR THE DFAC**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

Existing plan as shown in the PDR has the DFAC loading dock on the right (north) side of the building. In addition, the current DFAC plan shows the loading dock being depressed with a ramp down to create the grade differential required for truck loading/unloading.

ALTERNATIVE:

The revised standard design plan for the DFAC has relocated the loading dock to the back left (lower west) corner of the building. Consider alternate ways to design the truck loading/unloading area.

ADVANTAGES:

- May reduce drainage requirements
- May improve access
- May reduce problems associated with accumulation of blowing sand in a depressed loading dock

DISADVANTAGES:

- An alternative assessment may increase design requirements and extend the design schedule

DISCUSSION:

The standard floor plan for the DFAC has changed and the site will need to be revised to reflect the current architectural plans. The standard DFAC currently shows a depressed loading dock. The design of the loading dock should be re-evaluated to determine the best design for the site. There are several alternatives, the building could be raised to accommodate truck unloading with a raised dock, the building could be on-grade and the dock area have a ramp down to achieve the grade differential required, or a mechanical system may be used to assist in the unloading of trucks. Site conditions such as flat terrain and blowing sand may discourage the use of a depressed loading dock, which would require drainage and possibly a pump to elevate the water to then flow by gravity.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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VALUE ENGINEERING ALTERNATIVE

PROJECT: **OPERATIONAL READINESS TRAINING COMPLEX**
McGregor Range Camp, McGregor, Fort Bliss, TX
P2# 146414, PN# 65941

ALTERNATIVE NO.: **CM-10**

DESCRIPTION: **REVISE THE LOADING DOCK FOR THE VEHICLE MAINTENANCE AND WAREHOUSE**

SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

Standard design of the Vehicle Maintenance and Warehouse Loading Dock shows an elevated floor slab for the warehouse.

ALTERNATIVE:

Evaluate the site conditions and operational practices to determine the best way to provide a truck loading and unloading area.

ADVANTAGES:

- May reduce drainage requirements
- May improve access
- May reduce problems associated with accumulation of blowing sand in a depressed loading dock

DISADVANTAGES:

- An alternative assessment may increase design requirements and extend the design schedule

DISCUSSION:

Vehicle Maintenance and Warehouse standard design currently shows an elevated loading dock. The design of the loading dock should be re-evaluated to determine the best design for the site and operational practices. There are several alternatives, the building could be raised to accommodate truck unloading with a raised dock (as currently designed), the building could be on-grade and the dock area have a ramp down to achieve the grade differential required, or a mechanical system may be used to assist in the unloading of trucks. Site conditions such as flat terrain and blowing sand may discourage the use of a depressed loading dock, which would require drainage and possibly a pump to elevate the water to then flow by gravity.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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VALUE ENGINEERING ALTERNATIVE

PROJECT: **OPERATIONAL READINESS TRAINING COMPLEX** ***McGregor Range Camp, McGregor, Fort Bliss, TX*** ***P2# 146414, PN# 65941***	ALTERNATIVE NO.: **CM-11**
DESCRIPTION: **ELIMINATE "PRIVATE SECTOR" FROM THE PDR**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The current PDR states the facilities shall be similar to local "Private Sector" facilities.

ALTERNATIVE:

Eliminate "Private Sector" language from PDR.

ADVANTAGES:

- Eliminates confusion associated with bidder's interpretation of "Private Sector" building finishes
- Improves quality of the bids

DISADVANTAGES:

- May require further design effort to clarify the specific finishes requirements

DISCUSSION:

The use of "private sector" in comparing level of finishes for the facility should be eliminated. This phrase is subjective and may not demonstrate requirements and expectations for building finishes.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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PROJECT DESCRIPTION

The McGregor Range Camp ORTC project at Fort Bliss, TX will use the ORTC CoS Model design. Figure 1 presents the layout of the McGregor Range Camp ORTC.

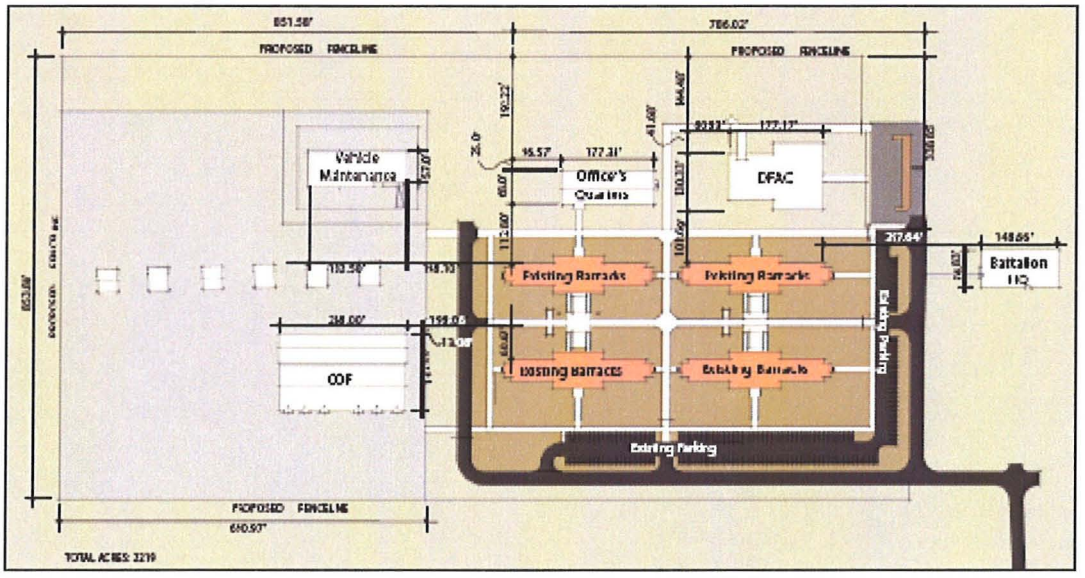

Figure 1 - McGregor Range Camp ORTC Site Plan

Standard ORTC Model

The McGregor Range Camp ORTC project will site-adapt the standard ORTC design, provide economical, minimum essential housing, dining, administration and operational facilities to accommodate transient training and mobilization/demobilization activities. The ORTC Model includes Battalion Headquarters facilities, Officers Quarters, Dining Facility (720 Person), Company Operations facility, Vehicle Maintenance Facility, and Company Sheds.

The Battalion Headquarters facilities are to house transient Battalion level administrative functions and classrooms for soldiers. This facility type is intended to be both functionally and technically similar to office and classroom type buildings in the private sector community surrounding the Installation. It is assumed in the model that 20 percent of the personnel are female.

The Officers Quarters facilities are for 80 persons. This project type is to house transient senior enlisted officers in a two-bed per room configuration. This facility type is intended to be similar both functionally and technically to hotel facilities in the private sector community surrounding the installation. The dining facility is to prepare and serve food and include a seated dining area. The seated dining area can also serve as a gathering place.

The Dining Facility is intended to be similar to a college cafeteria facility in the private sector community for feeding 720 soldiers per meal within 90 minutes, three times per day, seven days a week, 52 weeks per year.

Company Operations facilities are to house transient company administrative operations and facilitate storage and movement of supplies. Also provided is a covered hardstand area for training and mobilization. It is intended to be similar to office and warehouse type buildings in the private sector community.

Vehicle Maintenance facilities are to provide facilities for the purpose of maintaining and repairing vehicles and provide temporary storage of unit supplies and equipment. These facilities are intended to be similar to equipment or motor pool facilities in the private sector community.

Company Sheds are intended to provide shelter for light vehicle maintenance. A Battalion Complex will be provided with one shed per company module.

Project Cost

The McGregor Range Camp ORTC includes the following building types, sizes, and estimated costs per the PC-Cost Detailed Report dated 9 January 2009.

PRIMARY FACILITY	QUANTITY	COST ($000)
Transient Battalion HQ	11,237 SF	1,787
Transient Company Ops (6 CO's/Bn	19,579 SF	3,074
Company Operations Facilities	19,579 SF	2,859
Dining Facility (720 Person)	16,761 SF	6,942
Covered Hardstand Building	12,852 SF	652
Company Sheds	4,800 SF	226
Enlisted Barracks (4/Battalion)	122,232 SF	17,601
Vehicle Maintenance Shop	11,855 SF	2,904
Transient Training Officers Quarters	22,579 SF	5,696
Motor Pool Hardstand	33,000 SF	2,031
Organizational Vehicle Parking	6,056 SF	405
IDS/EMCS/SDD, Bldg. Info., AT/FP		1,087
Supporting Facilities		8,077
ESTIMATED CONTRACT COST		**$32,665**
ESTIMATED PROJECT COST		**$36,000**

VALUE ANALYSIS AND CONCLUSIONS

INTRODUCTION

This section describes the procedure used during the VE study on the P2#146414, McGregor Range Camp ORTC which is to be procured through a Design/Build process. The McGregor Range Camp ORTC will be a site adapt of the ORTC CoS Model.

A systematic approach was used in the VE study, which is divided into three parts: (1) Preparation Effort, (2) Workshop Effort, and (3) Post-Workshop Effort. A task flow diagram outlining each of the procedures included in the VE study is attached for reference.

Following this description of the procedure, separate narratives and supporting documentation identify the following:

- VE workshop agenda
- VE workshop participants
- Economic data
- Cost model
- Function analysis
- Creative ideas and evaluations

PREPARATION EFFORT

Preparation for the workshop consisted of scheduling workshop participants and tasks and providing necessary project documents for team members to review before attending the workshop. The documents listed below were used as the basis for generating VE alternatives and for determining the cost implications of the selected VE alternatives:

- Department of the Army, Facilities Standardization Program, Operational Readiness Training Complex (ORTC) Standard Design Drawings, dated 16 February 2006, prepared by U.S. Army Corps of Engineers, Louisville District.
- PC-Cost Detailed Report, Operational Readiness Battalion Complex, dated 09 January 2009, prepared by CESWF-EC-AC.
- Geotechnical Engineering Study, Operational Readiness Training Complex (ORTC), McGregor Range, NM, dated 18 February 2009, prepared by ENCON International, Inc.
- Camp McGregor ORTC, Ft. Bliss, TX Topographic Survey, dated January 2009, prepared by Jacobs/Huit-Zollars.
- Project Definition Report, Operations Readiness Battalion Complex, PN 65941, Fort Bliss, TX, dated 01 December 2008, prepared by U.S. Army Corps of Engineers, Fort Worth District.
- DD1391- Operational Readiness Training Complex – 720 Person Dining Facility, dated 19 May 2009.
- DD1391 – Operational Readiness Training Complex – 1,428 Person Dining Facility, dated 19 May 2009.

Value Engineering Study Task Flow Diagram

Preparation Effort

Coordinate Project
- Verify Schedule
- Suggest Format for Designer Presentation
- Outline Project Responsibilities
- Outline Needed Background Data
- Define *Project Value Objectives*
- Identify Project Constraints

→

Prepare for Workshop
- Collect Project Data
- Distribute Data to Team Members
- Verify Cost Data
- Team Members Become Familiar with Project

→

Construct Cost Models
- Construct Cost Models
- Construct Graphic Function Analysis
- Outline High Cost Areas

→

LCC Model
- Process Areas
- Staffing
- Chemicals
- Energy
- User Impact

Workshop Effort

Information Phase
- Introduction by VETL
- Project Description and Presentation by Designer
- Outline Owner Requirements
- Review Project Data
- Visit Project Site (Alt.)

→

Function Identification and Analysis Phase
- Analyze Project Costs and Energy Usage
- Perform Function Analysis and FAST Diagram
- Identify High Cost and Energy Areas
- Calculate Cost/Worth Ratios
- Identify Paradigms

List Ideas Generated During Function Analysis

→

Creative Phase
- Introduction by VETL
- Creative Idea Listing:
  - Quantity of Ideas
  - Association of Ideas

Brainstorming
- Creative Thinking:
  - Group & Individual

Use Checklist for Ideas

→

Evaluation Phase
- Eliminate Impractical Ideas
- Rank Ideas with Advantages/Disadvantages
- Evaluate Alternatives (Include Non-Economic considerations: Safety, Reliability, Environment, Aesthetics, O & M, etc.)
- Select Best Ideas for Implementation

→

Development Phase
- Develop Proposed Alternatives
- Prepare Alternative Design Sketches
- Estimate Costs
- Perform Life Cycle Comparison
  - Initial Cost
  - Redesign Cost
  - O & M Cost
  - LCC Cost

→

Presentation Phase
- Summarize Findings
- Present VE Ideas to Owner/User/Designer
- Oral Presentation

Post-Workshop Effort

VE Study Report
- Prepare Preliminary VE Report
- Designer Prepares Responses to VE Report
- Owner Evaluates Recommendations

→

Implementation Phase
- Participate in Implementation Meeting with Owner/User/Designer/VE Team, as needed
- Prepare Final VE Report

→

Final Acceptance
- Redesign by Designer

- Value Engineering Study, Dining Facility Prototypes, dated 06 January 2009, prepared by CH2MHILL.
- Value Engineering Study, McGregor Base Camp, New Mexico (Ft. Bliss, Texas), Barracks – Mobilization and Training.

Information relating to the project's purpose and need, owner concerns, project stakeholder concerns, design criteria, project constraints, funding sources and availability, regulatory agency approval requirements, and the project's schedule and costs is very important as it provides the VE team with insight about how the project has progressed to its current state.

To prepare for this exercise, the VE team carefully studied the documents listed above provided by the District and PDT. The VE Team Leader also prepared a basic cost model using the project costs contained in the DD1391 to distribute the total project cost among the various deliverables. The VE team used the cost model to help identify higher cost elements and elements providing little or no value to the overall objectives.

VALUE ENGINEERING WORKSHOP EFFORT

The VE workshop was a 5-day effort beginning with the design overview at 8:30AM on Monday, August 10, 2009, and concluding with the VE Presentation at 7:00 AM on Friday, August 14, 2009. During the workshop, the VE Job Plan was followed in compliance with SAVE International Value Standard guidelines for conducting a VE study. The Job Plan guided the search for alternatives to mitigate or eliminate high-cost drivers, secondary functions providing little or no value, and potential project issues or risks. Alternatives to specifically address the project team concerns and enhance value by reducing costs, improving construction schedule, and delivering required functional objectives were also considered. The Job Plan includes six phases:

- Information Phase
- Function Analysis Phase
- Creativity Phase
- Evaluation Phase
- Development Phase
- Presentation Phase

Information Phase

At the beginning of the study, the decisions that have influenced the project's design have to be reviewed and understood. For this reason, the workshop began with a detailed discussion and review of the ORTC CoS Model Drawings and the McGregor Range Camp ORTC project including an overview by the project manager and the design team leader. The overview highlighted the information provided in the documentation reviewed by the VE team before the workshop and expanded on it to include a history of the project's development and any underlying influences that caused the design to develop to its current state. During this presentation, VE team members were given the opportunity to ask questions and obtain clarification about the information provided.

Function Analysis Phase

Having gained some information on the project, the VE team proceeded to define the functions provided by the project, identifying the costs to provide these functions, and determining whether the value provided by the functions has been optimized. Function analysis is a means of evaluating a project to see if the expenditures actually perform the requirements of the project or if there are disproportionate amounts of money spent on support functions. Elements performing support functions add cost to the project but have a relatively low worth to the basic function.

Function is defined as the intended use of a physical or process element. The team attempted to identify functions in the simplest manner using measurable noun/verb word combinations. To accomplish this, the team first looked at the project in its entirety and randomly listed its functions, which were recorded on Random Function Analysis Worksheets (provided in this section). Then the individual functions of the major components of the project depicted on the cost model were identified.

After identifying the functions, the team classified the functions according to the following:

Abbreviation	Type of Function	Definition
HO	Higher Order	The primary reason the project is being considered or project goal.
B	Basic	A function that must occur for the project to meet its higher order functions.
S	Secondary	A function that occurs because of the concept or process selected and may or may not be necessary.
R/S	Required Secondary	A secondary function that may not be necessary to perform the basic function but must be included to satisfy other requirements or the project cannot proceed.
G	Goal	Secondary goal of the project.
O	Objective	Criteria to be met.
LO	Lower Order	A function that serves as a project input.

Higher order and basic functions provide value, while secondary functions tend to reduce value. The goal of the next job phase is to reduce the impact of secondary functions and thereby enhance project value.

The VE team used the cost model previously prepared to seek out the areas where most of the project funds are being applied. Because of the magnitude of these high-cost elements or functions, they also became initial targets for value enhancement.

Overall, these exercises stimulated the VE team members to focus on apparently low value areas and initially channel their creative idea development in these places.

Creativity Phase

This phase involved the creation and listing of ideas. The VE Team began by identifying the highest cost project elements with a high absolute cost compared to other elements in the project, and secondary functions providing little or no value. Then, using the classic brainstorming technique, the VE team began to generate as many ideas as possible to provide the necessary functions at a lower total life cycle cost, or to improve the quality of the project. Innovative ideas for reducing costs, reducing schedule, and delivering required functional objectives were encouraged. At this stage of the process, the VE team was

looking for a large quantity of ideas and free association of ideas. A Creative Idea Listing worksheet was generated and organized by the project element being addressed.

The District and the PDT may wish to review these creative lists since they may contain ideas that were not pursued by the VE team but can be further evaluated for potential use in the design.

Evaluation Phase

Since the goal of the Creativity Phase was to conceive as many ideas as possible without regard for technical merit or applicability to the project goals, the Evaluation Phase focused on identifying those ideas that do respond to the project value objectives and are worthy of additional research and development before being presented to the owner. The selection process consisted of the VE team evaluating the ideas originated during the Creativity Phase. The following criteria were identified and used as a basis during the evaluation of each idea.

- Must not exceed Capital Budget of $36M
- Must meet contract award goals and contracting methods
- Must be accomplished within the prescribed site boundaries
- Must meet functional requirements for the ORTC

The VE team rated each idea by consensus according to the following approach. A scale of 1 to 5 was used, with 5 or 4 indicating an idea with the greatest potential to be technically sound and provide cost savings or improvements in other areas of the project with minimal risk, 3 indicating an idea that provides marginal value but could be used if the project was having budget problems, 2 indicating an idea with a major technical flaw, and 1 indicating an idea that does not respond to project requirements. Generally, ideas rated 4 and 5 are pursued in the next phase and presented to the owner during the Presentation Phase.

The team also used the designation "DS" to indicate a design suggestion, which is an idea that may not have specific quantifiable cost savings but may reduce project risk, improve constructability, help to minimize claims, enhance operability, ease maintenance, reduce schedule time, or enhance project value in other ways. Design suggestions could also increase a project's cost but provide value in areas not currently addressed. These are also developed in the next phase of the VE process.

Development Phase

In this phase, each highly rated idea was expanded into a workable solution designated as a VE alternative. The development consisted of describing the current design and the alternative solution, describing the advantages and disadvantages of the proposed alternative solution, and writing a brief narrative to compare the original design to the proposed change and provide a rationale for implementing the idea into the design. Sketches and design calculations, where appropriate, were also prepared in this part of the study. The VE alternatives are included in Section Two of this report.

Presentation Phase

The formal presentation was held at 7:00 AM on August 14, 2009. The goal of the presentation was to provide the attendees with an overview of the suggestions for value enhancement resulting from the VE

study and afford them the opportunity to ask questions to clarify specific aspects of the alternatives presented.

POST-WORKSHOP EFFORT

The post-workshop portion of the VE study consisted of the preparation of this VE Study Report. Personnel from the District and the PDT will analyze each alternative and prepare a short response, recommending incorporation of the alternative into the project, offering modifications before implementation, or presenting reasons for rejection. LZA is available at your convenience as you review the alternatives. Please do not hesitate to call on us for clarification or further information as you consider an implementation approach.

After the District and the PDT have reviewed the VE alternatives and design suggestions, the VETL will facilitate an implementation meeting via a teleconference to determine which ideas should be implemented into the project's documentation. The actions taken by participants will be documented and reported to the District.

VALUE ENGINEERING WORKSHOP AGENDA

Lewis & Zimmerman Associates will conduct a 5-day value engineering (VE) workshop August 10 – 14, 2009 on the Operational Readiness Training Complex (ORTC), Project P2# 156591 and P2# 146414, Centers of Standardization (CoS)-ORTC and ORTC-Ft. Bliss. This study will review multiple building types, including standard designs from the CoS and project specific documents for the Design/Build ORTC at Ft. Bliss.

The VE workshop will be conducted at:

Hampton Inn Hotel
101 East Jefferson Street
Louisville, KY 40202

Meeting Location: Liberty Room (Mon.)
Clark Room (Tues. – Fri.)

The USACE – Louisville District Project Design Team (PDT) and CoS personnel will provide an overview of the project documents at the start of the VE workshop and will be available to answer technical questions during the study effort.

AGENDA

Monday, August 10, 2009 **Location: Liberty Room**

8:00 am – 8:30 am **VE Team Informal Gathering** **(VE Team)**

VE Team gathers for informal introductions
VE Team prepares questions for PDT

8:30 am – 11:00 am **Design Overview (In-Briefing)** **(All Participants)**

Conf. Call Number: **877-923-3712**
Participant Code: **6778000**

Overview, Scope, and VE Study Requirements provided by the District PDT and CoS personnel
Review Key Design Issues and areas of focus for all Disciplines
The District PDT fields VE Team questions

11:00 am – 12:00 noon **Function Analysis Phase** **(VE Team)**

Discuss Project Constraints and Key Issues
Identify basic and secondary functions by discipline
Analyze cost model(s) and worth assignments

12:00 noon – 1:00 pm **Lunch** **(VE Team)**

1:00 am – 5:00 noon **Creative Phase – CoS ORTC Facilities** **(VE Team)**

Begin the analysis of the CoS portion of the VE study by the review of the following building types. The effort will focus on building space programming, adjacencies, and overall layout. Creative ideas will be recorded for each of the following 8 building types.

• Battalion Headquarters	• Brigade Headquarters
• Dining Facilities (720pp and 1,428pp)	• Officer Quarters
• Barracks	• Vehicle Maintenance Shop
• Company Sheds	• Hardstand

Tuesday, August 11, 2009 **Location: Clark Room**

8:00 am – 12:00 noon **Creative Phase** **(VE Team)**

Continue brainstorming the CoS ORTC facilities and recording creative ideas to optimize the space plans, adjacencies, and overall layouts.

12:00 noon – 1:00 pm **Lunch** **(VE Team)**

1:00 pm – 5:00 pm **Creative Phase – Ft. Bliss Project** **(VE Team)**

Brainstorming of the Ft. Bliss ORTC facilities.

Wednesday, August 12, 2009 **Location: Clark Room**

8:00 am – 10:00 am **Evaluation Phase** **(VE Team)**

The VE team will establish the criteria for evaluation and rate each idea on a scale of 1 to 5, identifying the "best" ideas for development. Ideas rated 4 or higher will be assigned to team members for development.

10:00 am – 12:00 noon **Development Phase** **(VE Team)**

The VE team will develop creative ideas into value engineering alternatives including sketches, calculations and written justifications. Initial and life-cycle cost estimates comparing baseline and proposed designs will be prepared as needed.

12:00 noon – 1:00 pm **Lunch** **(VE Team)**

1:00 pm – 5:00 pm **Development Phase (continued)** **(VE Team)**

VE team continues the development of the higher ranked creative ideas.

Thursday, August 13, 2009 **Location: Clark Room**

8:00 am – 12:00 noon **Development Phase (continued)** **(VE Team)**

The VE team will continue the development phase effort on the ORTC facilities.

12:00 noon – 1:00 pm **Lunch** **(VE Team)**

1:00 pm – 5:00 pm **Development Phase (continued)** **(VE Team)**

Friday, August 14, 2009 **Location: Clark Room**

8:00 am – 12:00 noon **Development Phase (continued)** **(VE Team)**

The VE team will complete the development phase effort. The VE Team Leader will prepare and distribute the Summary of Potential Savings to the District PDT in preparation for the out-briefing. Copies of the VE alternatives will be prepared, scanned, and emailed to all participants prior to the start of the Presentation.

12:00 noon – 1:00 pm **Lunch** **(VE Team)**

1:00 pm – 3:00 pm **Presentation Phase – Clark Room** **(All Participants)**

Conf. Call Number: **877-923-3712**
Participant Code: **6778000**

The VE team will present the value engineering alternatives to the District PDT. A draft copy of the Summary of Potential Savings will be distributed to the participants.

3:00pm **Wrap-up/Adjourn** **(All Participants)**

VE TEAM PARTICIPANTS

Member	Discipline	Firm/Agency
David Hamilton, PE, CVS, CCE, LEED^{AP}	VE Team Leader/Civil	Lewis & Zimmerman Assoc.
Mark Starkey	Cost/Constructability	Kohnen-Starkey
Doug Pohl	Architect/PM	LRL
Ronnie Pride	Architect	LRL
David Gary	Dining/Electrical	NAO
Melissa Mizaian	Architect	LRL
Carrie Ozgar	Civil	NAB
James Tuskan	Construction/PM	SWF Contractor
Jason Weber, CE, SE, AVS	Asst. VPM	LRL

OUTLINE FOR DESIGN OVERVIEW (IN-BRIEFING)

To assist the Project Design Team with the design overview discussion topics, we have provided the following typical outline for your consideration in developing a project specific presentation.

- Deviations from the DD1391
- Quality objectives
- Key agreements
- Critical constraints
- Critical assumptions
- Risks (both threats and opportunities) with management strategies
- Action items (specific items for VE Team/PDT)

The Facilitator shall provide the information documented on these topics to the LRL PM, PE/A, and VPM in electronic format. The Facilitator shall be prepared to out-brief the information documented in the above referenced charts.

VALUE ENGINEERING WORKSHOP PARTICIPANTS

The VE team was organized to provide specific expertise in the project elements involved with the McGregor Range Camp ORTC. The multidisciplinary team comprised professionals with architecture, civil engineering, cost estimating expertise, and a working knowledge of VE procedures. The following lists the VE team members:

Participant	Specialization	Affiliation
David Hamilton, PE, CVS, CCE, LEED^{AP}	VE Team Leader/Civil	Lewis & Zimmerman Associates
Mark Starkey	Cost/Constructability	Kohnen-Starkey
Doug Pohl, RA	Architect/PM	LRL
Ronnie Pride, RA	Architect	LRL
David Gary, PE	Dining/Electrical	NAO
Melissa Mizaian, RA	Architect	LRL
Carrie Ozgar, PE	Civil	NAB
James Tuskan, PE	Construction/PM	SWF Contractor
Jason Weber, PE, SE, AVS	Asst. Value Program Manager	COE - LRL

DESIGNER'S PRESENTATION

An overview of the project was provided on 10 August 2009 by the District Project Development Team (PDT). The purpose of this design overview, in addition to being an integral part of the Information Phase of the VE study, was to bring the VE team "up to speed" regarding the overall project specifics. Additionally, the overview afforded the PDT the opportunity to highlight areas of particular interest. An attendance list for the design overview meeting is attached.

VALUE ENGINEERING TEAM'S PRESENTATION

The VE Team's formal presentation was held on Friday, 14 August 2009. The purpose of the meeting was to provide the District with an overview of the suggestions for value enhancement resulting from the VE study and afford them the opportunity to ask questions to clarify specific aspects of the alternatives presented. Copies of the Draft Summary of Value Engineering Alternatives worksheet and detailed VE Alternatives and design suggestions were provided to the attendees. An attendance list for the meeting is attached.

DESIGN PRESENTATION

MEETING PARTICIPANTS

PROJECT: **CoS – ORTC AND ORTC – FT. BLISS, TX**
Operational Readiness Training Complex

DATE: **AUGUST 10, 2009**

NAME & E-MAIL (please print)	ORGANIZATION/TITLE	PHONE/FAX
David Hamilton, PE, CVS, CCE, LEED em dahamilton@lza.com	VE Team Leader/Civil Lewis & Zimmerman Associates	ph mob 253-229-7703 fx
MELISSA MIRZAIAN em melissa.e.mirzaian@usace.army.mil	TECHNICAL MGR CoS ~~[illegible]~~, ARCHITECT LOUISVILLE, DISTRICT	ph 502-315-6232 mob x fx 502-315-6236
JIM TUSKAN em JAMES.G.TUSKAN@USACE.ARMY.MIL	PROGRAM MGR - USACE FORT BLISS EXPANSION	ph 817-886-1614 mob 214-708-3623 fx
DOUG POHL em doug.pohl@usace.army.mil	COE Chief Architectural Section Louisville District	ph 502.315.6233 mob fx x 6236
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RONNIE PRIDE em ronnie.b.pride@usace.army.mil	CoS TEAM LEADER/ARCHITECT LOUISVILLE DISTRICT	ph 502-315-6295 mob fx 6236
Jason M. Weber em jason.m.weber@usace.army.mil	Value Program Manager Louisville District	ph 502-315-6485 mob fx x6373
em		ph mob fx

VE TEAM PRESENTATION

MEETING PARTICIPANTS

PROJECT: **CoS – ORTC AND ORTC – FT. BLISS, TX**
Operational Readiness Training Complex

DATE: **AUGUST 14, 2009**

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ECONOMIC DATA

The comparisons of life cycle costs between the VE alternatives and the current design solutions were performed on the basis of discounted present worth. To accomplish this, the VE team developed economic criteria to use in its calculations based on information gathered from the DD1391 and the PC-Estimate. The following parameters were used when calculating discounted present worth:

Year of Analysis:	2009
Discount Rate:	3.2%
Escalation Rate	0.0%

The VE Team assumed that the unit prices in the construction cost estimate included all markups for contractor overhead and profit and used these prices as the baseline when preparing VE alternative cost worksheets.

Each VE alternative compares the projected bid price for two different design concepts and attempts to predict the net impact of the proposed VE change on bid day contractor prices. The comparison does not include items such as re-design cost necessary to modify the design.

COST MODEL

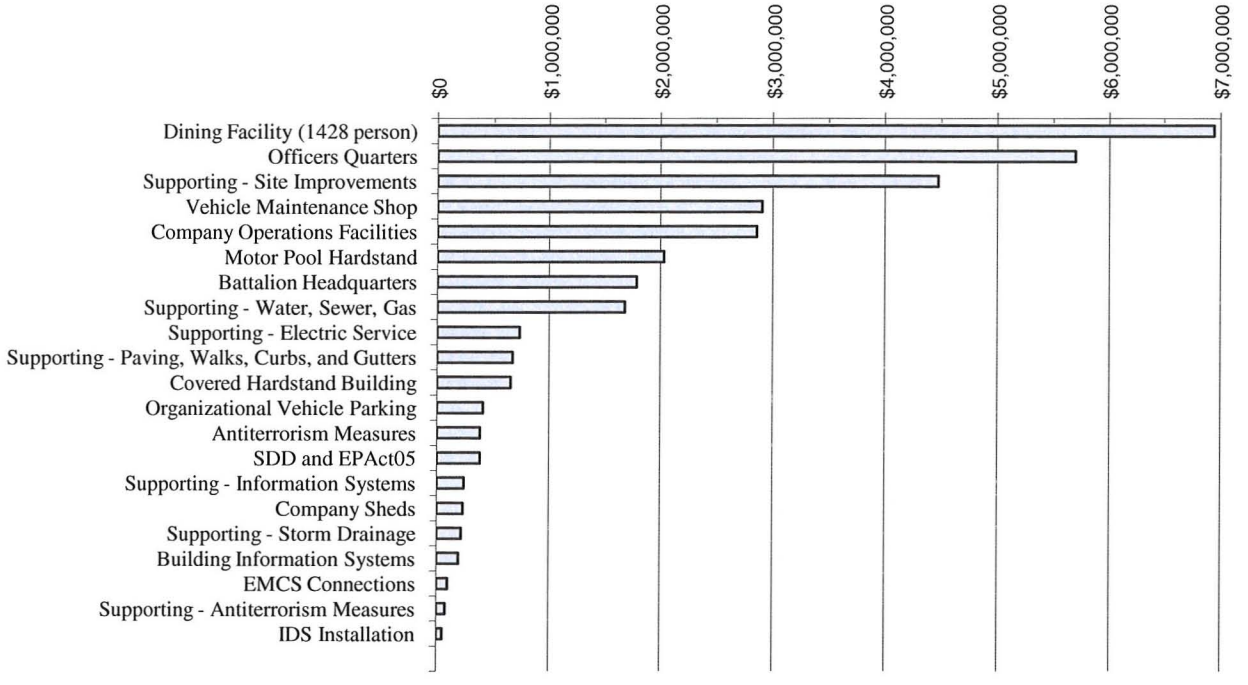
The VE team leader prepared a cost histogram or Pareto chart for the project that follows this page. The cost histogram displays the major construction elements in descending order of magnitude identified in the DD1391 dated 19 May 2009. From this model it can be seen that the Dining Facility was the largest expenditure in the building model.

The attached cost model information was used to help prioritize the areas of focus during the VE study.

COST HISTOGRAM

PROJECT: **P2# 146414, OPERATIONAL READINESS TRAINING COMPLEX (ORTC)**
McGregor Range Camp, Fort Bliss, Texas
Project Definition Report

TOTAL PROJECT COST		COST	PERCENT	CUM. PERCENT
Dining Facility (1428 person)		6,942,500	21.25%	21.25%
Officers Quarters		5,695,800	17.44%	38.69%
Supporting - Site Improvements		4,471,000	13.69%	52.38%
Vehicle Maintenance Shop		2,904,500	8.89%	61.27%
Company Operations Facilities		2,858,500	8.75%	70.02%
Motor Pool Hardstand		2,030,800	6.22%	76.24%
Battalion Headquarters		1,786,700	5.47%	81.71%
Supporting - Water, Sewer, Gas		1,681,000	5.15%	86.85%
Supporting - Electric Service		732,000	2.24%	89.09%
Supporting - Paving, Walks, Curbs, and Gutters		671,000	2.05%	91.15%
Covered Hardstand Building		651,900	2.00%	93.14%
Organizational Vehicle Parking		404,700	1.24%	94.38%
Antiterrorism Measures		378,000	1.16%	95.54%
SDD and EPAct05		378,000	1.16%	96.70%
Supporting - Information Systems		235,000	0.72%	97.42%
Company Sheds		226,300	0.69%	98.11%
Supporting - Storm Drainage		212,000	0.65%	98.76%
Building Information Systems		189,000	0.58%	99.34%
EMCS Connections		95,000	0.29%	99.63%
Supporting - Antiterrorism Measures		75,000	0.23%	99.86%
IDS Installation		47,000	0.14%	100.00%
Construction Total		***32,665,700***	100.00%	
Contingency	5.00%	1,633,285	5.00%	
SIOH	5.70%	*1,955,042*		
Design/Build - Design Cost	0.00%			
Category E Equipment	0.00%			
TOTAL CONSTRUCTION		**$ 36,254,027**	Cum. Markup	**10.99%**



FUNCTION ANALYSIS

A random function analysis of the McGregor Range Camp ORTC project was performed to (1) understand the project purpose and need, (2) define the requirements for each project element, (3) ensure a complete and thorough understanding by the VE team of the basic functions needed to attain the given project purpose and need, (4) identify other goals, and (5) identify secondary functions that should be addressed by the VE team. The Random Function Analysis worksheet completed by the team for the project in its entirety and the various elements follow.

The key opportunity areas for potential cost reduction and added value established during the function analysis session (including input from the District during the design overview) includes the following:

- Dining Facility
  - Building Orientation
  - Loading Dock
- Vehicle and Maintenance Facility
  - Loading dock
- Site Development
  - Treat Wastewater
  - Park vehicles
  - Route Utilities
  - Avoid Obstructions

RANDOM FUNCTION ANALYSIS

PROJECT: **P2# 146414, OPERATION READINESS TRAINING CENTER**
McGregor Range Camp, Fort Bliss, Texas

SHEET NO.: **1 of 2**

DESCRIPTION	FUNCTION		
	VERB	NOUN	KIND
PROJECT FUNCTIONS	***Support***	***Troops***	***HO***
	Improve	***Operations***	***HO***
	Train	***Troops***	***G***
DINING FACILITY (1428pp)	***Prepare***	***Food***	***B***
	Unload	Supplies	RS
	Store	Food	RS
	Cook	Food	RS
	Serve	Food	RS
	Feed	Soldiers	RS
	Collect	Money	RS
VEHICLE MAINTENANCE SHOP	***Maintain***	***Vehicles***	***B***
	Store	Parts	RS
	Replace	Components	RS
	Assess	Condition	RS
	Position	Vehicles	RS
	Lift	Components	RS
COMPANY OPERATIONS FACILITIES	***Manage***	***Operation***	***B***
	Store	Supplies	RS
	Access	Data	RS
	Analyze	Needs	RS
MOTOR POOL HARDSTAND	***Position***	***Vehicles***	***B***
	Store	Vehicles	RS
	Stage	Vehicles	RS
	Support	Load	RS

Function defined as: Action Verb, Measurable Noun

Kind: B = Basic; S = Secondary; RS = Required Secondary; HO = Higher Order; LO = Lower Order; G = Goal

RANDOM FUNCTION ANALYSIS

PROJECT: **P2# 146414, OPERATION READINESS TRAINING CENTER**
McGregor Range Camp, Fort Bliss, Texas

SHEET NO.: **2 of 2**

DESCRIPTION	FUNCTION		
	VERB	NOUN	KIND
BATTALION HEADQUARTERS	***Manage***	***Operation***	***B***
	Store	Supplies	RS
	Access	Data	RS
	Analyze	Needs	RS
COVERED HARDSTAND BUILDING	***Stage***	***Gear***	***B***
	Protect	Equipment	RS
	Protect	Personnel	RS
	Organize	Space	RS
COMPANY SHEDS	***Store***	***Material***	***B***
	Control	Material	RS
	Segregate	Material	RS
ORGANIZATION VEHICLE PARKING	***Stage***	***Vehicles***	***B***
	Store	Vehicles	RS
	Support	Load	RS
SITE UTILITIES/IMPROVMENETS	***Support***	***Buildings***	***B***
	Supply	Utilities	RS
	Prepare	Site	RS
	Secure	Site	RS
BARRACKS	***House***	***Personnel***	***B***
	Support	Personnel	RS
	Store	Gear	RS
	Manage	Operation	RS

Function defined as:	Action Verb Measurable Noun	Kind:	B = Basic S = Secondary RS = Required Secondary	HO = Higher Order LO = Lower Order G = Goal

CREATIVE IDEA LISTING AND EVALUATION OF IDEAS

During the Creativity Phase, numerous ideas were generated for the McGregor Range Camp ORTC project using conventional brainstorming techniques. These ideas were recorded and are shown with their corresponding ranking on the attached Creative Idea Listing Worksheets. For the convenience of tracking an idea through the VA process, the ideas were grouped according to the following category and numbered in the order in which they were conceived. The following letter prefix was used to identify the category.

PROJECT ELEMENT	PREFIX
Site Plan – Camp McGregor	CM

Creative Idea Evaluation

After discussing each idea, the team evaluated the ideas by consensus. This effort produced eight ideas to develop as design suggestions to be included in Section Two of the report. Ideas that were not developed further may have been combined with another related idea or discarded as a result of additional research indicating the concept as not being cost effective or technically feasible. The District and the PDT are encouraged to review the Creative Idea Listing and Evaluation worksheet since it may suggest additional ideas that can be applied to the design.

CREATIVE IDEA LISTING

PROJECT: **OPERATIONAL READINESS TRAINING COMPLEX**
McGregor Range Camp, ***Fort Bliss, Texas***
P2# 146414

SHEET NO.: **1 of 1**

NO.	IDEA DESCRIPTION	RATING
	SITE PLAN (CM)	
CM-1	Rotate DFAC 90 degrees clockwise to improve access	DS
CM-2	Improve truck access and approach	DS
CM-3	Eliminate new parking on the east side of the DFAC	1
CM-4	Research the capacity of the wastewater treatment plant; use a package plant	DS
CM-5	Double load and extend DFAC parking lot	DS
CM-6	Add septic fields for new facilities	1
CM-7	Rotate company sheds 90 degrees in place	DS
CM-8	Relocate the Battalion Headquarters to avoid a potential electrical utilities conflict.	DS
CM-9	Re-evaluate the design of the DFAC loading dock to determine the best layout for the site.	DS
CM-10	Re-evaluate the design of the Vehicle Maintenance and Warehouse loading dock to determine the best layout for the site and operational practices.	DS
CM-11	Eliminate reference to "private sector" from the Project Design Report to improve the quality of the bids.	DS

Rating: 1→2 = Not to be developed 3→4 = Varying degrees of development potential 5 = Most likely to be developed
DS = Design suggestion ABD = Already being done

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US Army Corps
of Engineers
Louisville District

MEETING RECORD

SUBJECT:	**VE In-Briefing**		
PROJECT:	Operational Readiness Training Center CoS - ORTC and ORTC – Ft. Bliss, TX	**DATE:**	**10 August 2009**
P2. NO.:	156591 and 146414	**TIME:**	8:30 am
BY:	D.A. Hamilton (LZA)	**PHONE:**	253-229-7703
ATTENDED:			

See Attached Attendance List

SUMMARY OF DISCUSSION:

The following items were identified during the project in-briefing for the Center of Standardization (CoS) – Operational Readiness Training Center (ORTC) and ORTC – Ft. Bliss (Camp McGregor):

The following concerns were identified as a result of information gathering by the VE team and discussions held during the project Design In-Brief held 10 August 2009 and a copy of the meeting attendance list is attached.

Deviations to the original scope of work

- No deviations from the original scope of work are noted at this time since these projects are being developed from the standard designs.

Action Items

- The project documents must be ready for advertising not later than September 2010
- Award must be made not later than October 2010
- Bid period will be 30 days
- The RFP's need updating, editing, and publishing

Key Agreements

- Agreement is needed on acquisition strategy
- No bid options are allowed
- The bid will be on the standard design for Conus applications
- Acquisition will be either by Design/Build or Design/Bid/Build
- Program needs to be confirmed during the Project Definition Report

Critical Assumptions

- Projects will be site adapted following approval of the design standards
- Utilities will be available

- Site cost will be project specific
- Utility improvements could be a separate contract

Critical Constraints

- Lack of design and contracting staff for the Ft. Bliss project
- Utility capacity is an issue at Ft. Bliss
- The existing standard design is an approved Army design, but optimizations are acceptable
- The Base Design Guide and Area Design Guide must be included in the specification
- Budget for the Ft. Bliss project is $36M
- These facilities will serve a transient population and durability is a key issue
- Must meet AT/FP requirements
- Site area limitations control
- Energy monitoring is required

Risks to Management Strategies

- Procurement production does not meet award dates
- Potential for construction cost escalation
- Male/Female mix requires flexibility in design
- Transient population results in a mix of male/female and user types
- Site constraints vary from site to site
- Cost of site development may vary widely at different facilities

Quality Objectives

- Arms Vaults may need to be added to the standard to meet safety requirements
- LEED Silver is required on all facilities
- Durability is needed and is a major issue due to a highly transient population
- Maintainability and low life cycle costs are key issues
- A cost effective building skin is important within the limits of the Area Design Guide
- Energy independence is desired by 2030
- Designs must be adaptable to a wide range of sites

In addition, the project team asked the VE team to pay particular attention to the project budget, risk issues associated with procurement, site utilities, constructability, space programming, space adjacencies, and other elements which would impact either the project cost or delivery schedule.

DESIGN PRESENTATION

MEETING PARTICIPANTS

PROJECT: **CoS – ORTC AND ORTC – FT. BLISS, TX**
Operational Readiness Training Complex

DATE: **AUGUST 10, 2009**

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em		ph mob fx

US Army Corps
of Engineers
Louisville District

MEETING RECORD

SUBJECT:	**VE Out-Briefing**		
PROJECT:	Operational Readiness Training Center CoS - ORTC and ORTC – Ft. Bliss, TX	**DATE:**	**14 August 2009**
P2. NO.:	156591 and 146414	**TIME:**	7:00 am
BY:	D.A. Hamilton (LZA)	**PHONE:**	253-229-7703
ATTENDED:			

See Attached Attendance List

SUMMARY OF DISCUSSION:

A Value Engineering Out-briefing for the Operational Readiness Training Center – CoS/Model and ORTC – Camp McGregor (Ft. Bliss, TX) was held on 14 August 2009. A copy of the attendance list is attached.

The VE team leader presented each VE alternative or design suggestion for the ORTC CoS/Model followed by the ORTC - Camp McGregor alternatives, and items were discussed with the attendees to clarify the intent of each idea, include any needed advantages or disadvantages, and ensure that the documentation was complete. Several alternatives needed to be added to the list and it was agreed that additional items from the PDR would be added to the draft VE report in PDF format and issued the following week for distribution to all attendees.

The narratives of several of the alternatives were also updated to reflect and expand upon the material presented and make sure that all aspects of the idea were addressed. Due to the unique nature of the ORTC standard, it was understood that the implementation process would require interaction with other Districts and activities to gain feedback on the VE ideas.

The meeting was adjourned at 9:30am.

VE TEAM PRESENTATION

MEETING PARTICIPANTS

PROJECT: **CoS – ORTC AND ORTC – FT. BLISS, TX**
Operational Readiness Training Complex

DATE: **AUGUST 14, 2009**

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US Army Corps of Engineers
Louisville District

P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX (ORTC) Center of Standardization Model

Value Engineering Study Report

September 2009

Design Consultant

U.S. Army Corps of Engineers
Louisville District

Value Engineering Consultant

Lewis & Zimmerman Associates, Inc.

an ARCADIS company

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Date:
September 9, 2009

Contact:
David Hamilton, PE, CVS

Phone:
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Email:
dahamilton@lza.com

Our ref:
LZ087531.0000

Re: P2#156591, Operational Readiness Training Complex (ORTC)
Center of Standardization (CoS) Model
Value Engineering Study Report

Dear Mr. Weber:

Lewis & Zimmerman Associates, Inc. is pleased to submit 3 hard copies and 3 CDs of the referenced report on the value engineering study conducted August 10 - 14, 2009. The report contains both quantitative and qualitative proposals for value enhancement related to the project documents.

We would like to thank Doug Pohl, LRL and the COE VE team members for their assistance during the VE workshop effort. Please do not hesitate to call me if you or any of the reviewers have any questions regarding the information presented in this report.

Sincerely yours,

LEWIS & ZIMMERMAN ASSOCIATES, INC.

David A. Hamilton, PE, CVS, CCE, LEED^{AP}
Vice President

Attachment

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EXECUTIVE SUMMARY

INTRODUCTION

This value engineering (VE) study report documents the events and results of the VE study conducted by Lewis & Zimmerman Associates, Inc. (LZA) for the United States Army Corps of Engineers, Louisville District (District). The subject of the study was the P2#156591, Operational Ready Training Complex (ORTC), Center of Standardization (CoS) Model, to be used for the construction of facilities at various locations through the United States. The Standard Design Drawings, dated 16 February 2006, prepared by U.S. Army Corps of Engineers, Louisville District, served as the basis of the study.

The VE workshop was conducted 10 – 14 August 2009 at the Hampton Inn, Louisville, Kentucky and followed the six-phase VE Job Plan:

- Information Phase
- Function Analysis Phase
- Creative Phase
- Evaluation Phase
- Development Phase
- Presentation Phase

Decision Making

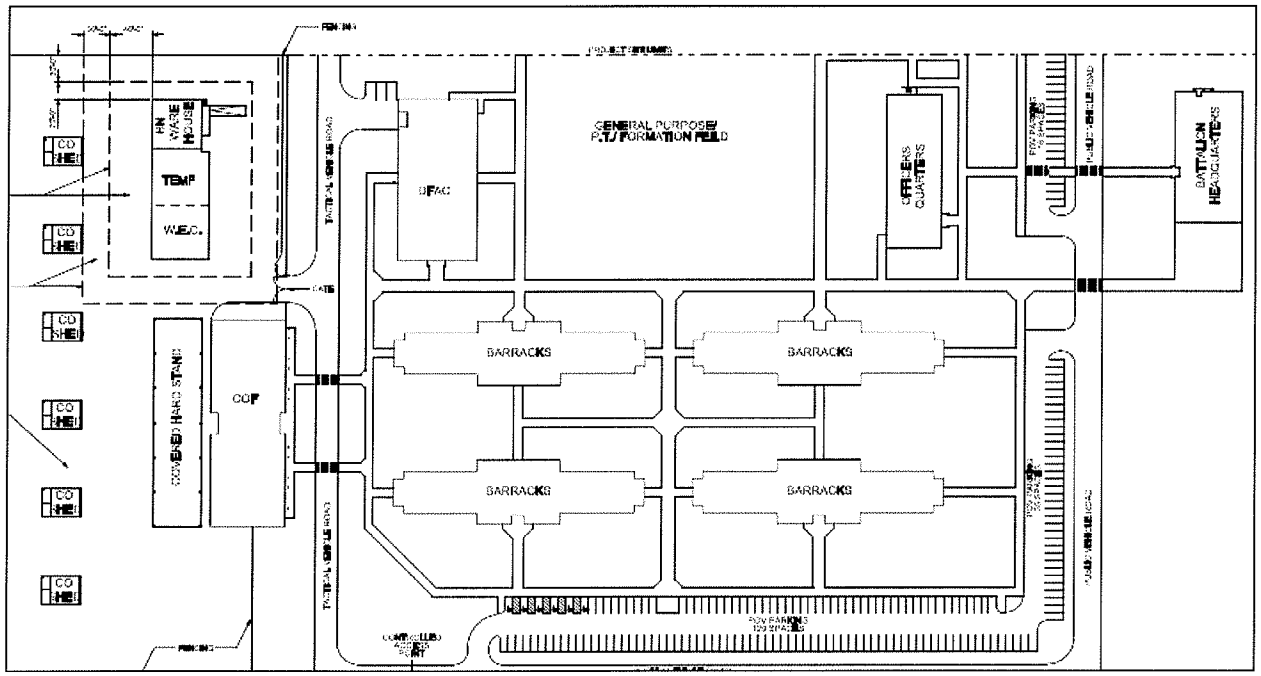
Value engineering studies identify alternate design schemes, construction methods, and project delivery options, which if accepted by the project users and design team, may impact the final scope, design documents, budget, schedule, functionality, and appearance of the ORTC CoS Model. The task of the VE team is to identify possible solutions, whereas the task of the Louisville District and the Project Development Team (PDT) is to choose the most favorable of the VE alternatives for incorporation into the project.

The project team should feel free to accept alternatives which support its construction program and similarly reject alternatives which do not optimize the goals of the ORTC Standard Model.

PROJECT DESCRIPTION

This standard design focuses on Operational Readiness Training Complexes that will provide economical, minimum essential housing, dining, administration and operational facilities to accommodate transient training and mobilization/demobilization activities at power projection platforms (PPP), power support platforms (PSP), and post mobilization maneuver training complexes (PMMTC). The ORTC Model includes Battalion Headquarters facilities, Officers Quarters, a Dining Facility (720 Person or 1,428 Person), a Company Operations facility, a Vehicle Maintenance Facility, and Company Sheds. The basic model using the larger dining facility (1,428 Person) includes a total of 196,413 SF of programmed building space. Figure 1 presents the layout of the Standard Site Model for the ORTC facilities.

Figure 1 - ORTC Standard Site Model



Project Cost

The ORTC Standard Model includes the following building types, sizes, and estimated costs per the DD1391 dated 19 May 2009.

PRIMARY FACILITY	QUANTITY	COST ($000)
Transient Battalion HQ	11,237 SF	1,798
Transient Company Ops (6 CO's/Bn	19,579 SF	3,074
Dining Facility (1,428 Person)	20,786 SF	6,282
Enlisted Barracks (4/Battalion)	122,232 SF	17,601
Transient Training Officers Quarters	22,579 SF	4,177
ESTIMATED CONTRACT COST ***(with 1,428 person Dining Facility)***	**196,413 SF**	**$37,259**

CONCERNS AND OBJECTIVES

Concerns

The primary concerns, identified as a result of information gathering by the VE team and discussions held during the ORTC project Design In-Brief held 10 August 2009, include the establishment of criteria for the development of the space program, building functions, planning ratios for male/female personnel, and enlisted personnel to officers. Since the project has been in the development stage for several years and many of the key participants in the project have changed, much history has been lost and justifications for many of the past decisions are lacking.

Noting this lack of historical documentation and background, new efforts should include a period of reestablishment, buy-in, and consensus building. Some decisions may need to be revisited as the overall composition of the ORTC project is resurrected, formulated, confirmed, and verified. A directed management approach should include workshops to include participants from the Centers of Standardization as well as key activities throughout the Army. This blending of active experience with design expertise should yield well thought-out facilities with functional space plans that provide the flexibility needed to serve transient troops.

Objectives

As a result of the concerns noted above, the VE team established the following objectives for the VE study:

- Identify opportunities to improve the functionality of the facilities in the ORTC complex and
- Identify opportunities to reduce the costs to construct the facilities

RESULTS OF THE STUDY

The VE team developed 14 cost savings alternatives, 7 alternatives that will enhance functionality but add to the cost of the facilities and 23 design suggestions. Several of the VE alternatives focus on streamlining the building systems without reducing the space program, optimizing the exterior building shapes, and optimizing the parking layout for the site. If the following cost saving alternatives are accepted, a total present worth cost avoidance (gross) of $700,908 could be realized.

<u>SITE MASTER PLAN (S)</u>

S-3 Provide double loaded parking in lieu of single loaded parking to maximize the efficiency of the access roads.

<u>BRIGADE HEADQUARTERS (BR)</u>

BR-4 Reduce the workstation count in the open office from 48 cubicles to 42 cubicles.

<u>ENLISTED BARRACKS (EB)</u>

EB-2 Reduce the width of the corridor from 10 ft to 8 ft.

EB-8 Combine the stair and the vestibule space at the building entry.

<u>VEHICLE MAINTEANCE (VM)</u>

VM-1 Lower the warehouse finished floor level and provide a recessed truck dock.

DINING FACILITY (1,428 person) (D14)

D14-1 Use sealed, stained concrete in lieu of quarry tile floors.

D14-2 Use an exposed ceiling in lieu of acoustical suspended ceilings in the Dining/Queuing Area.

D14-4 Use high build epoxy wall finish in lieu of ceramic tile on walls.

D7-12/
D14-11 Use scissor lift equipment in lieu of the 4-ft-high loading dock with a dock leveler.

All of the alternatives and design suggestions developed by the VE team are summarized on the following Summary of VE Alternatives table and detailed in Section Two of the report.

IMPLEMENTATION RESULTS

On August 27, 2009, Howard Greenfield, PE, CVS of LZA facilitated an implementation meeting with Jason Weber, District VEO, and several members of the District's project development team. During this meeting, approximately $374,000 of cost avoidance opportunities were accepted for implementation into the project as noted on the VE Workshop Summary Implementation Review sheet and detailed on the Value Engineering Implementation Decisions spreadsheets provided at the end of this section of the report.

SUMMARY OF VALUE ENGINEERING ALTERNATIVES

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX (ORTC)**
Center of Standardization Model

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
				PRESENT WORTH OF COST SAVINGS		
	PROJECT MANAGEMENT (PM)					
PM-1	Research, develop, and document program requirements and constraints.	DESIGN SUGGESTION				
PM-2	Validate Louisville ORTC facilities in relationship to regular Army facilities.	DESIGN SUGGESTION				
PM-3	Standardize workstation and furniture dimensions for all buildings.	DESIGN SUGGESTION				
	SITE MASTER PLAN (S)					
S-2	Show a 1,428 person DFAC instead of the 720 person DFAC on the site plan to clarify geometric constraints.	$5,184,000	$5,758,300	($574,300)	$0	($574,300)
S-3	**Provide double loaded parking in lieu of single loaded parking.**	**$85,056**	**$64,253**	**$20,803**	**$0**	**$20,803**
S-3A	Add 65 parking spaces for DFAC staff and use double loaded parking in lieu of single loaded parking.	$11,713	$91,323	($79,610)	$0	($79,610)

SUMMARY OF VALUE ENGINEERING ALTERNATIVES

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX (ORTC)**
Center of Standardization Model

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
				PRESENT WORTH OF COST SAVINGS		
	BRIGADE HEADQUARTERS (BR)					
BR-1	Relocate the SIPRNET Room away from the Comm. Room to meet criteria.	DESIGN SUGGESTION				
BR-2	Remove the separation wall between the Vending and the Recycle spaces.	DESIGN SUGGESTION				
BR-3	Provide sufficient water closets to meet building code requirements.	DESIGN SUGGESTION				
BR-4	**Reduce the workstation count in the open office from 48 cubicles to 42 cubicles.**	**$859,280**	**$791,200**	**$68,080**	**$0**	**$68,080**
BR-5	Increase the size of the cubicles and reduce the number of workstations from 48 to 42.	DESIGN SUGGESTION				
BR-7	Reduce square footage requirement in the office area from 110 GSF/person to 110 GSF/person.	DESIGN SUGGESTION				

SUMMARY OF VALUE ENGINEERING ALTERNATIVES

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX (ORTC)**
Center of Standardization Model

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
				PRESENT WORTH OF COST SAVINGS		
	BATTALION HEADQUARTERS (BH)					
BH-4	Eliminate the windows in the classrooms of the Battalion Headquarters Building and replace with alternate natural light sources such as clerestory.	DESIGN SUGGESTION				
BH-5	Remove the separation wall between the Vending and the Recycle Spaces.	DESIGN SUGGESTION				
BH-6	Add an Arms Vault in the building.	DESIGN SUGGESTION				
BH-7	Reduce the SF requirement in the Open Area from 110 sf/person to 100 sf/person.	DESIGN SUGGESTION				
BH-8	Move the Vestibule door to be flush with the exterior wall in lieu of recessed.	DESIGN SUGGESTION				

SUMMARY OF VALUE ENGINEERING ALTERNATIVES

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX (ORTC)**
Center of Standardization Model

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	PRESENT WORTH OF COST SAVINGS: INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
	ENLISTED BARRACKS (EB)					
EB-2	**Reduce the width of the corridor from 10 ft to 8 ft.**	**$20,241,619**	**$19,993,882**	**$247,737**	**$0**	**$247,737**
EB-6/ EB-12	Enlarge the TV/Activity Area and convert to a TV Space; reduce the corridor width.	$0	$10,598	($10,598)	$0	($10,598)
EB-7	Install a single door in place of the double door in the corridor.	$2,846	$1,824	$1,022	$0	$1,022
EB-8	**Combine the stair and the vestibule space at the building entry.**	**$8,503**	**$0**	**$8,503**	**$0**	**$8,503**
EB-9/ EB-10	Revise the Laundry Room to use stacked washers/dryers.	DESIGN SUGGESTION				
EB-11	Move 2nd Floor wall flush with the exterior wall at the Internet Café.	$12,363	$14,548	($2,185)	$0	($2,185)
EB-13/ EB-14	Provide hardwire or wireless internet connection at each bed and delete the Internet Café.	DESIGN SUGGESTION				

SUMMARY OF VALUE ENGINEERING ALTERNATIVES

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX (ORTC)**
Center of Standardization Model

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	PRESENT WORTH OF COST SAVINGS: INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
	VEHICLE MAINTEANCE (VM)					
VM-1	**Lower the warehouse finish floor level and provide a recessed truck dock.**	**$82,386**	**$71,767**	**$10,619**	**$0**	**$10,619**
VM-2	Add an Arms Vault to the Vehicle Maintenance building.	$0	$39,514	($39,514)	$0	($39,514)
VM-3/ VM-4/ VM-5	Add an Arms Vault to the building and revise the footprint.	DESIGN SUGGESTION				
	OFFICERS QUARTERS (OQ)					
OQ-1/ OQ-9	Move the building entrance from the end to the middle of the building to improve circulation.	DESIGN SUGGESTION				
OQ-2/ OQ-3	Design a one story facility in lieu of two and reduce the space program and building capacity.	DESIGN SUGGESTION				
OQ-4	Centralize utility spaces in the building.	DESIGN SUGGESTION				
OQ-5/ OQ-7	Reduce the Laundry Room floor area and use stacked washers/dryers only on the first floor.	DESIGN SUGGESTION				
OQ-6	Enlarge the Activity Room to improve functionality.	DESIGN SUGGESTION				
OQ-8	Provide hardwired or wireless internet connection in each room.	DESIGN SUGGESTION				

SUMMARY OF VALUE ENGINEERING ALTERNATIVES

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX (ORTC)**
Center of Standardization Model

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	PRESENT WORTH OF COST SAVINGS: INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
	DINING FACILTY - 720 PP DFAC (D7)					
D7-1	Use sealed, stained concrete floors in lieu of quarry tile.	$212,118	$40,286	$171,832	$0	$171,832
D7-2	Use exposed ceiling in lieu of acoustical tile in the Dining and Que Areas.	$19,458	$0	$19,458	$0	$19,458
D7-4	Use a high build epoxy wall in lieu of ceramic tile.	$122,073	$57,314	$64,759	$0	$64,759
D7-6/ D14-6	Add 65 dining facility staff parking spaces.	$0	$76,485	($76,485)	$0	($76,485)
D7-10/ D14-9	Revise loading dock location from the side to the back of the DFAC and lengthen the approach from 50 ft to 60 ft.	$30,602	$106,364	($75,762)	$0	($75,762)
D7-12	**Use scissor lift equipment in lieu of a 4-ft-high loading dock with a dock leveler.**	**$124,321**	**$100,021**	**$24,300**	**$0**	**$24,300**
D7-13/ D14-12	Increase the interior window size at the DFAC Offices from 3 ft wide to 6 ft wide.	DESIGN SUGGESTION				

SUMMARY OF VALUE ENGINEERING ALTERNATIVES

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX (ORTC)**
Center of Standardization Model

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	PRESENT WORTH OF COST SAVINGS: INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
	DINING FACILTY - 1428 PP DFAC (D14)					
D14-1	**Use sealed, stained concrete in lieu of quarry tile.**	**$270,710**	**$51,549**	**$219,161**	**$0**	**$219,161**
D14-2	**Use exposed ceiling in lieu of ACT suspended ceilings in the Dining and Queing Areas.**	**$34,574**	**$0**	**$34,574**	**$0**	**$34,574**
D14-4	**Use high build epoxy wall finish in lieu of ceramic tile.**	**$126,615**	**$59,484**	**$67,131**	**$0**	**$67,131**
D14-14	Use a forklift in lieu of a 4-ft-high truck unloading dock.	$124,321	$89,050	$35,271	$0	$35,271
	COMPANY OPERATIONS (CO)					
CO-3	Increase the number of lockers from 25% coverage to 100% and use stacked lockers in lieu of single high.	DESIGN SUGGESTION				
	Maximum Cost Avoidance Proposed (Gross)			**$700,908**		
	(Items identified in bold)					

VE WORKSHOP SUMMARY
IMPLEMENTATION REVIEW

P2# 156591 OPERATIONAL READINESS TRAINING COMPLEX (ORTC) *Center of Standardization (CoS) Model*		
ITEM NO.	**ITEM**	**DESCRIPTION**
1	Study Date	August 10 – 14, 2009
2	Implementation Review Date	August 27, 2009
3	P2# for the Project	156591
4	Number of Quantitative Proposals	19
5	Number of Accepted Quantitative Proposals	17
6	Number of Qualitative Proposals	26
7	Number of Accepted Qualitative Proposals	22
8	Maximum Cost Avoidance Proposed (Gross)	$700,908*
9	**Accepted Cost Avoidance (Gross)**	**$375,494****
10	Study Cost to Government	$35,125***
11	Calculated Return on Investment	10.69:1
12	Study Team Leader: (Lewis & Zimmerman Associates, Inc.)	David A. Hamilton, PE, CVS, LEED AP
13	Study Team Members: Cost/Constructability (Kohen Starkey) Architect (Louisville District USACE) Architect (Louisville District USACE) Dining Electrical (NAO) Architect (Louisville District USACE) Civil Engineer (NAB) Construction/PM (SWF Contractor) Value Engineering Coordinator	 Mark Starkey Douglas Pohl, RA Ronnie Pride, RA David Gary, PE Melissa Mizaian, RA Carrie Ozgar, PE James Tuskan, PE Jason Weber, CE, SE, AVS

Notes:

* The maximum cost avoidance is only for those qualitative alternatives that will save project costs. Several of the qualitative alternatives will add cost to the project and were accepted for implementation because they added to the project's functionality as well.

** The accepted cost avoidance amount is for those qualitative alternatives that were accepted for implementation and will actually reduce the project's cost. Cost savings were used only for the larger DFAC to avoid double counting of items.

*** 60% of the $39,875 A-E fee was applied to this project because a second study on a site adapt project was also performed during the same workshop.

VALUE ENGINEERING IMPLEMENTATION DECISIONS

PROJECT:	**P2# 156591 OPERATIONAL READINESS TRAINING COMPLEX (ORTC)** *Center of Standardization (CoS) Model*	PRESENT WORTH OF COST SAVINGS					IMPLEMENTATION	
ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS	DIS-POSITION	REMARKS
	PROJECT MANAGEMENT (PM)							
PM-1	Research, develop, and document program requirements and constraints.	DESIGN SUGGESTION					Accept	Meet in October to work out details
PM-2	Validate Louisville ORTC facilities in relationship to regular Army facilities.	DESIGN SUGGESTION					Accept	Submit to Facility Design Team to confirm implementation
PM-3	Standardize workstation and furniture dimensions for all buildings.	DESIGN SUGGESTION					Accept	
	SITE MASTER PLAN (S)							
S-2	Show a 1428 person DFAC instead of the 720 person DFAC on the site plan to clarify geometric constraints.	$5,184,000	$5,758,300	($574,300)	$0	($574,300)	Accept	Show the larger facility but have a design for the smaller facility
S-3	**Provide double loaded parking instead of single loaded to maximize efficiency of access road.**	**$85,056**	**$64,253**	**$20,803**	**$0**	**$20,803**	Accept	
S-3A	Add 65 parking spaces for DFAC staff and provide double loaded parking instead of single loaded.	$11,713	$91,323	($79,610)	$0	($79,610)	Accept	Place parking closer to the DFAC
	BRIGADE HEADQUARTERS (BR)							
BR-1	Relocate the SIPRNET Room away from the Comm. Room to meet criteria.	DESIGN SUGGESTION					Accept	
BR-2	Remove the separation wall between the Vending and the Recycle spaces.	DESIGN SUGGESTION					Accept	
BR-3	Provide sufficient water closets to meet building code requirements	DESIGN SUGGESTION					Accept	
BR-4	Reduce the workstation count in the open office from 48 cubes to 42 cubes.	DESIGN SUGGESTION					Accept	
BR-5	Increase the size of the cubicles and reduce the number of workstations from 48 to 42.	DESIGN SUGGESTION					Reject	See BR-4
BR-7	Reduce square footage requirement for the office area from 110 GSF/person to 110 GSF/person	DESIGN SUGGESTION					Accept	

VALUE ENGINEERING IMPLEMENTATION DECISIONS

PROJECT:	**P2# 156591 OPERATIONAL READINESS TRAINING COMPLEX (ORTC)** *Center of Standardization (CoS) Model*	PRESENT WORTH OF COST SAVINGS					IMPLEMENTATION	
ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS	DIS-POSITION	REMARKS
	BATTALION HEADQUARTERS (BH)							
BH-4	Eliminate the windows in the classrooms of the Battalion Headquarters Building and replace with alternate natural light sources such as clerestory.	DESIGN SUGGESTION					Reject	Rationale for change is incorrect
BH-5	Remove the separation wall between the Vending and the Recycle Rooms.	DESIGN SUGGESTION					Accept	
BH-6	Add an Arms Vault in the building.	DESIGN SUGGESTION					Accept	Submit to Facility Design Team to confirm implementation
BH-7	Reduce square footage requirement for the office area from 110 GSF/person to 110 GSF/person	DESIGN SUGGESTION					Accept	
BH-8	Move the Vestibule door to be flush with the exterior wall instead of recessed.	DESIGN SUGGESTION					Reject	Adds to square footage of building exceeding allowable
	ENLISTED BARRACKS (EB)							
EB-2	Reduce the width of the corridor from 10ft to 8ft.	$20,241,619	$19,993,882	$247,737	$0	$247,737	Accept Conditionally	Use space for other purposes such as an arms vault or activity room, thus no cost savings
EB-6/ EB-12	Enlarge the TV/Activity Area and convert to a TV Space; reduce the corridor width.	$0	$10,598	($10,598)	$0	($10,598)	Accept	
EB-7	**Install a single door in place of the double door in the corridor.**	**$2,846**	**$1,824**	**$1,022**	**$0**	**$1,022**	Accept	
EB-8	**Combine the stair and the vestibule space at the building entry.**	**$8,503**	**$0**	**$8,503**	**$0**	**$8,503**	Accept	Simplifies circulation
EB-9/ EB-10	Revise the Laundry Room to use stacked washer/dryers.	DESIGN SUGGESTION					Accept	
EB-11	Move 2nd Floor wall flush with the exterior wall at the Internet Café.	$12,363	$14,548	($2,185)	$0	($2,185)	Accept Conditionally	Accept if it can be combined with another alternative that saves square footage in order to not exceed the total building square footage
EB-13/ EB-14	Provide hardwire connection and delete the Internet Café.	DESIGN SUGGESTION					Accept	

VALUE ENGINEERING IMPLEMENTATION DECISIONS

PROJECT:	**P2# 156591 OPERATIONAL READINESS TRAINING COMPLEX (ORTC)** *Center of Standardization (CoS) Model*	PRESENT WORTH OF COST SAVINGS					IMPLEMENTATION	
ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS	DIS-POSITION	REMARKS
	VEHICLE MAINTEANCE (VM)							
VM-1	Set the warehouse floor elevation base on site topography and position the loading dock to minimize the overall building cost	DESIGN SUGGESTION					Accept	
VM-2	Add an Arms Vault to the building.	$0	$39,514	($39,514)	$0	($39,514)	Reject	Implement VM-3/VM-4/VM-5
VM-3/ VM-4/ VM-5	Add an Arms Vault to the building and revise the footprint.	DESIGN SUGGESTION					Accept	
	OFFICERS QUARTERS (OQ)							
OQ-1/ OQ-9	Move the building entrance from the end to the middle of the building to improve circulation.	DESIGN SUGGESTION					Accept	Submit to Facility Design Team to confirm implementation
OQ-2/ OQ-33	Design a one story facility in lieu of two and reduce the space program and building capacity.	DESIGN SUGGESTION					Accept	
OQ-4	Centralize the utility spaces such as Mech. Rm., Elect. Rm., and Comm. Rm to minimize runs.	DESIGN SUGGESTION					Accept	
OQ-5/ OQ-7	Reduce the Laundry Room floor area and use stacked washers/dryers. Plan for only one Laundry Rm on the	DESIGN SUGGESTION					Accept	
OQ-6	Enlarge the Activity Room and provide two open spaces.	DESIGN SUGGESTION					Accept	
OQ-8	Provide hardwired or wireless internet connections in each room.	DESIGN SUGGESTION					Accept	

VALUE ENGINEERING IMPLEMENTATION DECISIONS

PROJECT:	**P2# 156591 OPERATIONAL READINESS TRAINING COMPLEX (ORTC)** *Center of Standardization (CoS) Model*	PRESENT WORTH OF COST SAVINGS					IMPLEMENTATION	
ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS	DIS-POSITION	REMARKS
	DINING FACILTY - 720 PP DFAC (D7)							
D7-1	Use sealed stained concrete in lieu of quarry tile floors.	$212,118	$40,286	$171,832	$0	$171,832	Accept	Submit to Facility Design Team to confirm implementation
D7-2	Use exposed ceilings in lieu of the suspended acoustical tile in the Dining/Queuing Area.	$19,458	$0	$19,458	$0	$19,458	Accept	
D7-4	Use a wall finish of high build epoxy finish in lieu of ceramic tile.	$122,073	$57,314	$64,759	$0	$64,759	Accept	
D7-6 & D14-6	Add 65 parking spaces for the DFAC staff.	$0	$76,485	($76,485)	$0	($76,485)	Accept	
D7-10 & D14-9	Revise the dock location from the side to the back of the DFAC and lengthen the approach from 50ft. To 60ft	$30,602	$106,364	($75,762)	$0	($75,762)	Accept	
D7-12 & D14-11	**Use a scissors lift in lieu of a 4ft high dock with a dock leveler.**	**$124,321**	**$100,021**	**$24,300**	**$0**	**$24,300**	Accept	
D7-13 & D14-12	Increase the interior window size at the DFAC offices from 3-ft-wide to 6-ft-wide.	DESIGN SUGGESTION					Accept	
	DINING FACILTY - 1428 PP DFAC (D14)							
D14-1	**Use sealed stained concrete in lieu of quarry tile.**	**$270,710**	**$51,549**	**$219,161**	**$0**	**$219,161**	Accept	
D14-2	**Use an exposed ceiling in lieu of acoustical suspended ceilings in the Dining/Queuing Area.**	**$34,574**	**$0**	**$34,574**	**$0**	**$34,574**	Accept	
D14-4	**Use high build epoxy paint in lieu of ceramic tile.**	**$126,615**	**$59,484**	**$67,131**	**$0**	**$67,131**	Accept	
D14-14	Use a forklift in lieu of a 4ft high truck unloading dock.	$124,321	$89,050	$35,271	$0	$35,271	Reject	Need an operator and a storage area for the fork lift
	COMPANY OPERATIONS (CO)							
CO-3	Verify the sizes and number of lockers in the Company Operation facilty and use stacked lockers in lieu of single high. Provide lockers for 100% instead of 25% of personnel.	DESIGN SUGGESTION					Accept	
	Maximum Cost Avoidance Proposed (Gross)			**$375,494**				
	(Items identified in bold)							

VE TEAM IMPLEMENTATION MEETING

MEETING PARTICIPANTS

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX Center of Standardization (CoS) Model** DATE: **27 AUGUST 2009**

NAME & E-MAIL (please print)	ORGANIZATION/TITLE	PHONE/FAX
Howard Greenfield, PE, CVS, LEED AP em hgreenfield@lza.com	Principal Lewis & Zimmerman Associates	ph 301-984-9590 x 20 mob 443-421-0326 fx 410-381-0109
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STUDY RESULTS

INTRODUCTION

The results of the value engineering study conducted on the P2#156591, Operational Ready Training Complex (ORTC), Center of Standardization (CoS) Model, portray the benefits that can be realized by the District and the users. The results will directly affect the project design and will require coordination by with the District and the end customer to determine the disposition of each alternative.

During the VE workshop, many ideas for potential value enhancement were conceived and evaluated by the VE team for technical feasibility, applicability to the project, and the ability to meet the owner's objectives. Research performed on those ideas considered to have potential to enhance the value of the project resulted in the development of individual alternatives identifying specific changes to individual elements that comprise the project. These are in the form of VE alternatives (accompanied by cost estimates) or design suggestions (without cost estimates). For each alternative developed, the following information has been provided:

- A summary of the original design;
- A description of the proposed change to the project;
- Sketches and design calculations, if appropriate;
- A capital cost comparison and life cycle discounted present worth cost comparison of the alternative and original design, if appropriate;
- A descriptive evaluation of the advantages and disadvantages of selecting the alternative; and
- A brief narrative to compare the original design and the proposed change and provide a rationale for implementing the change into the project.

The capital cost comparisons for each alternative use unit quantities from the DD1391, dated 19 May 2009. If unit quantities were not available, published databases, such as the one produced by the RS Means Company, or team member or owner databases were consulted.

Each design suggestion contains the same information as the VE alternatives, except that no cost information is included. Design suggestions are presented to bring attention to areas of the design that, in the opinion of the VE team, should be changed for reasons other than cost. Examples of these reasons may include ease of maintenance, ease of construction, safer working conditions, and reduced project risk. In addition, some ideas cannot be quantified in terms of cost with the design information provided; these are also presented as design suggestions and are intended to improve the quality of the project.

Each alternative or design suggestion developed is identified with an alternative number (Alt. No.) that can be tracked through the value analysis process and facilitates referencing between the Creative Idea Listing and Evaluation worksheets, the alternatives, and the Summary of Value Engineering Alternatives table. The Alt. No. includes a prefix that refers to one of the major project elements:

PROJECT ELEMENT	PREFIX
Project Management	PM
Site Master Plan	S
Brigade Headquarters	BR
Battalion Headquarters	BH
Enlisted Barracks	EB
Vehicle Maintenance	VM
Officers Quarters	OQ
Dining Facility (720 DFAC)	D7
Dining Facility (1,428 DFAC)	D14
Company Operations	CO

Summaries of the alternatives are provided on the Summary of Value Engineering Alternatives table, which is divided into project elements and used to divide the results section. The complete documentation of the developed alternatives and design suggestions follows the tables.

RESULTS OF THE STUDY

The following items were identified during the ORTC, CoS Model project in-briefing held 10 August 2009:

Deviations to the original scope of work

- No deviations from the original scope of work are noted at this time. This project involves the development of a standard design

Key Agreements

- Bids will be on the standard design for Conus applications
- Acquisition will be either by Design/Build or Design/Bid/Build
- The program needs to be confirmed during the Project Definition Report

Critical Assumptions

- Projects will be site adapted following approval of the design standards
- Utilities will be available
- Site cost will be project specific
- Utility improvements could be a separate contract

Critical Constraints

- The Base Design Guide and Area Design Guide must be included in the specification

- These facilities will serve a transient population and durability is a key issue
- Facilities must meet AT/FP requirements
- Site area limitations control
- Energy monitoring is required

Risks to Management Strategies

- Procurement production does not meet award dates
- Potential for construction cost escalation
- Male/Female mix requires flexibility in design
- Transient population results in a mix of male/female and user types
- Site constraints vary from site to site
- The cost of site development may vary widely at different facilities

Quality Objectives

- Arms Vaults may need to be added to the standard design to meet safety requirements
- LEED Silver design is required for all facilities
- Durability is needed and is a major issue due to a highly transient population
- Maintainability and low life cycle costs are key issues
- A cost-effective building skin is important within the limits of the Area Design Guide for each location
- Energy independence is desired by 2030
- Designs must be adaptable to a wide range of sites

In addition, the project team asked the VE team to pay particular attention to the project budget, risk issues associated with procurement, site utilities, constructability, space programming, space adjacencies, and other elements which would impact either the project cost or delivery schedule.

Research of the ideas identified as having potential for enhancing the value of the project resulted in the development of 14cost saving alternatives, 7 alternatives that will enhance functionality but add to the cost of the facilities and 23 design suggestions that will enhance the functionality of the facilities. Each of the developed alternatives should be given careful consideration for the potential cost savings that they offer compared to the tradeoffs.

EVALUATION OF ALTERNATIVES AND DESIGN SUGGESTIONS

When reviewing the study results, the District and its customer should consider each part of an alternative or design suggestion on its own merit. There may be a tendency to disregard an alternative because of a concern about one part of it. Each area within an alternative or design suggestion that is acceptable should be considered for use in the final design, even if the entire alternative or design

suggestion is not implemented. Variations of these alternatives and design suggestions by the owner or designer are encouraged.

All alternatives and design suggestions were developed independently of each other to provide a broad range of options to consider for implementation. Therefore, some of them are "mutually exclusive," so acceptance of one may preclude the acceptance of another. In addition, some of the alternatives are interrelated, so acceptance of one or more may not yield the total of the cost savings shown for each alternative.

The District should evaluate all alternatives carefully in order to select the combination of ideas with the greatest beneficial impact on the project. Once this has been accomplished, the total cost savings resulting from the VE study can be calculated based on implementing a revised, all-inclusive design solution.

SUMMARY OF VALUE ENGINEERING ALTERNATIVES

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX (ORTC)**
Center of Standardization Model

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	PRESENT WORTH OF COST SAVINGS: INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
	PROJECT MANAGEMENT (PM)					
PM-1	Research, develop, and document program requirements and constraints.	DESIGN SUGGESTION				
PM-2	Validate Louisville ORTC facilities in relationship to regular Army facilities.	DESIGN SUGGESTION				
PM-3	Standardize workstation and furniture dimensions for all buildings.	DESIGN SUGGESTION				
	SITE MASTER PLAN (S)					
S-2	Show a 1,428 person DFAC instead of the 720 person DFAC on the site plan to clarify geometric constraints.	$5,184,000	$5,758,300	($574,300)	$0	($574,300)
S-3	**Provide double loaded parking in lieu of single loaded parking.**	**$85,056**	**$64,253**	**$20,803**	**$0**	**$20,803**
S-3A	Add 65 parking spaces for DFAC staff and use double loaded parking in lieu of single loaded parking.	$11,713	$91,323	($79,610)	$0	($79,610)

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VALUE ENGINEERING ALTERNATIVE

PROJECT:	***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX** ***Center of Standardization (CoS) Model*** *Department of the Army* *Facilities Standardization Program*	ALTERNATIVE NO.: **PM-1**
DESCRIPTION:	**RESEARCH, DEVELOP AND DOCUMENT PROGRAM REQUIREMENTS AND CONSTRAINTS**	SHEET NO.: **1 of 2**

ORIGINAL DESIGN: (sketch attached)

The ORTC documents present the functional requirements.

ALTERNATIVE: (sketch attached)

Provide additional program requirements, needs, constraints, and supporting documentation.

ADVANTAGES:

- Refined requirements and constraints will provide better definition for the design-builders in preparation of providing a proposal and reduce the potential for change requests during the design and construction
- Refining the program requirements and constraints will ensure that the user will end up with a project that meets its needs

DISADVANTAGES:

- Additional development of the program is needed to document decisions

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

VALUE ENGINEERING ALTERNATIVE

PROJECT:	***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX** ***Center of Standardization (CoS) Model*** *Department of the Army* *Facilities Standardization Program*	ALTERNATIVE NO.: **PM-1**
DESCRIPTION:	**RESEARCH, DEVELOP AND DOCUMENT PROGRAM REQUIREMENTS AND CONSTRAINTS**	SHEET NO.: **2 of 2**

DISCUSSION:

The current ORTC standard identifies building layouts, finishes, and other miscellaneous requirements, but does not include several additional requirements that would help meet the needs of the facility managers and COS and address other potentially important constraints. It is recommended that the program be further defined by considering the following list of additional requirements and constraints.

- Distance requirements between each facility on site and the required relationship between one facility and the other facilities
- Access and turn radius requirements for loading dock areas
- Parking space requirements and maximum distance from the related facility
- Ratio of the number of commanders to enlisted personnel
- Arms vault requirements for each facility
- Identification of the minimum finishes required for an "austere facility"
- Allowance for restrooms and showers for women in the barracks (i.e., 20%)
- AT/FP requirements, etc.

It would be helpful to identify the scopes of work that are open for the design-builder to interpret based on specific site location constraints for a given project. Additionally, the documents should identify all of the items that are not open for revision and modification by the design-builder. By defining the precise program guidelines and constraints, the Owner will obtain the expected facility without the risk of receiving variances that do not meet the facility program requirements. The request for change notifications will be lessened when the program requirements are precisely defined. It may be beneficial to place each of the buildings in its desired location on a site plan and provide the required dimensions between the buildings to tie down their relationships.

VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **PM-2**

DESCRIPTION: **VALIDATE LOUISVILLE ORTC FACILITIES IN RELATIONSHIP TO REGULAR ARMY FACILITIES**

SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The ORTC contains similar named facilities as the regular Army facilities. In some cases, the ORTC facilities do not appear to mirror regular Army facilities relating to standard layouts and procedures. The ORTC facilities do not appear to be using the current "Lesson Learned" updates.

ALTERNATIVE:

Other than specifying "austere", coordinate the ORTC facilities with other Army Standards so similar facility types are consistent.

ADVANTAGES:

- Consistency within facilities types allows "Lessons Learned" to be coordinated throughout the entire Army Standards
- Long-term cost savings may be achieved by standardizing designs because the type of facility would not have to be re-created each time

DISADVANTAGES:

- New/revised standards would need to be created at an unknown initial cost

DISCUSSION:

The benefit to standardizing facilities throughout the Army simplifies and maximizes the "Lesson Learned" for each facility.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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VALUE ENGINEERING ALTERNATIVE

PROJECT:	***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX** ***Center of Standardization (CoS) Model*** *Department of the Army* *Facilities Standardization Program*	ALTERNATIVE NO.: **PM-3**
DESCRIPTION:	**STANDARDIZE WORKSTATIONS AND FURNITURE DIMENSIONS FOR ALL BUILDINGS**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The ORTC Standard Design dated 16 Feb 2006 depicts multiple workstation types, sizes, and furniture configurations. This variability leads to different densities of office cubicles within the space plans.

ALTERNATIVE:

Use one workstation size and type for all furniture configurations in the open office area and private offices. Verify that all office areas use the same area density for modular furniture space programming.

ADVANTAGES:

- Consistency will clarify office areas
- Flexibility for future configuration using the same type and make/model of furniture
- Larger quantities of specific items can be ordered at a discount

DISADVANTAGES:

- The same furnishings are provided for all ranks except Commander
- Discontinuation of furniture model/parts as buildings are built over time

DISCUSSION:

Similar models of furniture/workstations should be used in the same complex to optimize consistency and improve flexibility of equipment usage.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **S-2**

DESCRIPTION: **SHOW A 1,428 PERSON DFAC IN LIEU OF THE 720 DFAC ON THE SITE PLAN TO CLARIFY GEOMETRIC CONSTRAINTS**

SHEET NO.: **1 of 4**

ORIGINAL DESIGN: (sketch attached)

The ORTC Complex Standard Design shows the 720 DFAC on the Battalion Complex Site Plan and on the Brigade Complex Plan.

ALTERNATIVE: (sketch attached)

Revise the ORTC Complex Standard Design to show the 1,428 person DFAC on the Battalion Complex Site Plan and on the Brigade Complex instead of the smaller 720 person DFAC.

ADVANTAGES:

- Standard would include maximum real estate required
- Standard cost estimate would include maximum cost of construction for the DFAC

DISADVANTAGES:

- The 1,428 DFAC may provide more capacity than required

DISCUSSION:

Since a standard is being developed for this complex, it would be appropriate that the standard reflect the maximum real estate required for the ORTC and the cost estimate would reflect an increase in cost. However, the increase in cost would be at a reduced rate per square foot. The current cost estimates show the 720 DFAC at $309/SF and the 1428 DFAC at $302/SF. Since the kitchen area and equipment are the same for both DFACs and the increase is in the dining area of the facility, the increase cost per SF would be reduced from the overall cost. It should be noted that the kitchens of both DFACs have been revised to move the loading area to the rear wall and that the ORTC Complex Standard Design will be revised.

The cost increase from the 720 person DFAC to the 1,428 person DFAC is $574,300. This assumes $150/SF for the 3,760 SF increase in space and results in only a 10.8% increase in the building's total cost.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 5,184,000	—	$ 5,184,000
ALTERNATIVE	$ 5,758,300	—	$ 5,758,300
SAVINGS (Original minus Alternative)	$ (574,300)	—	$ (574,300)

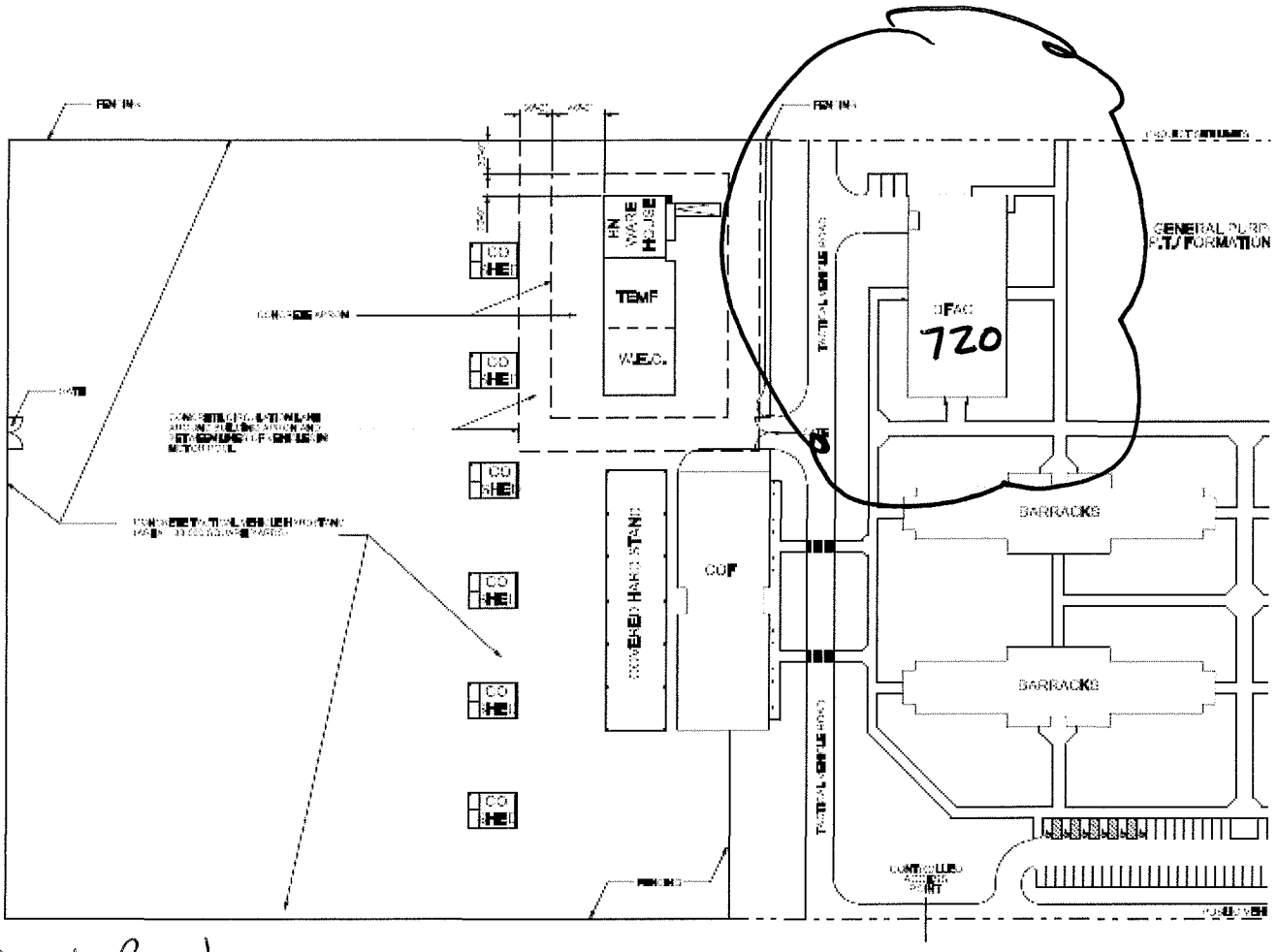
SKETCH

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **S-2**

ORIGINAL DESIGN ☒ ALTERNATIVE DESIGN ☐ BOTH ☐

SHEET NO.: 2 of 4



South Road
36x28 = 1000 sf

DFAC Parking
18x3x9 + 3x24x9 = 1134 sf

Sidewalk
36x7 = 252 sf

Bldg $150/sf x 3670 = $574,000

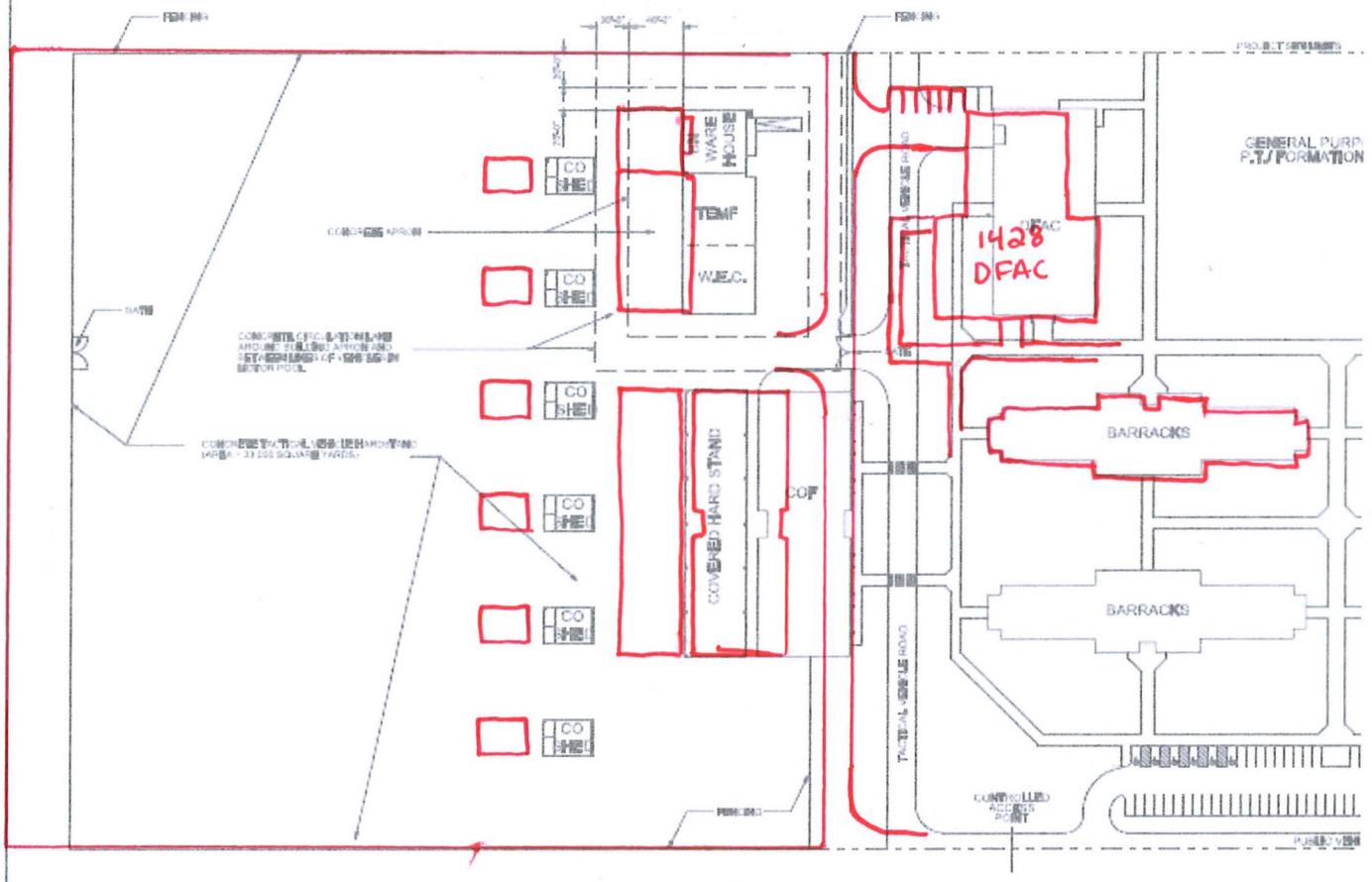
SKETCH

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **S-2**

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☒ BOTH ☐

SHEET NO.: 3 of 4



COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **S-2**

SHEET NO.: **4 of 4**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Building Area							
- Build 1428 (increase SF)	SF				3,760	150.00	564,000
- South Road (increase)	SF				1,000	4.00	4,000
- DFAC Parking (increase)	SF				1,134	4.00	4,536
- Sidewalk (increase)	SF				252	7.00	1,764
Original DFAC	LS	1	5,184,000.00	5,184,000	1	5,184,000.00	5,184,000
Subtotal				5,184,000			5,758,300
Markup (%) at	**Included**						
TOTAL				5,184,000			5,758,300

VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **S-3**

DESCRIPTION: **PROVIDE DOUBLE LOADED PARKING IN LIEU OF SINGLE LOADED PARKING**

SHEET NO.: **1 of 4**

ORIGINAL DESIGN: (sketch attached)

The ORTC Complex Standard Design shows 54 single loaded parking spaces in front of the Officers' Quarters and along the side of the Barracks on the Battalion Complex Site Plan and on the Brigade Complex Plan.

ALTERNATIVE: (sketch attached)

Revise the ORTC Complex Standard Design to eliminate single loaded parking and provide 65 spaces for DFAC employee parking on the Battalion Complex Site Plan and on the Brigade Complex.

ADVANTAGES:

- Reduces cost per space by maximizing drive aisles
- Centralizes parking for facilities
- Provides large continuous open areas
- Adds 19 parking spaces

DISADVANTAGES:

- In Alt. No. S-3, DFAC parking may be further than 1,000 ft from facility
- Alt. No. S-3A site may have to be reconfigured to meet ATFP requirements
- Project Site Limits may require more area

DISCUSSION:

The ORTC Complex Standard Design shows 54 single loaded parking spaces in front of the Officers' Quarters and along the side of the Barracks on the Battalion Complex Site Plan and on the Brigade Complex Plan. This plan does not address the requirement for 65 spaces for the DFAC employees. Assuming the barracks house 672 beds and the Officers' Quarters have an 80 bed capacity, the total bed count for the Battalion is 752. If the parking requirement is 10 - 25% of the Battalion standard intended occupants, then 75 to 188 parking spaces are required based on occupancy and an additional 65 spaces are required for the DFAC employees, or 140 to 253 total parking spaces. The original design provides 180 parking spaces and Alt. No. S-3 provides 199 parking spaces.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 85,056	—	$ 85,056
ALTERNATIVE	$ 64,253	—	$ 64,253
SAVINGS (Original minus Alternative)	$ 20,803	—	$ 20,803

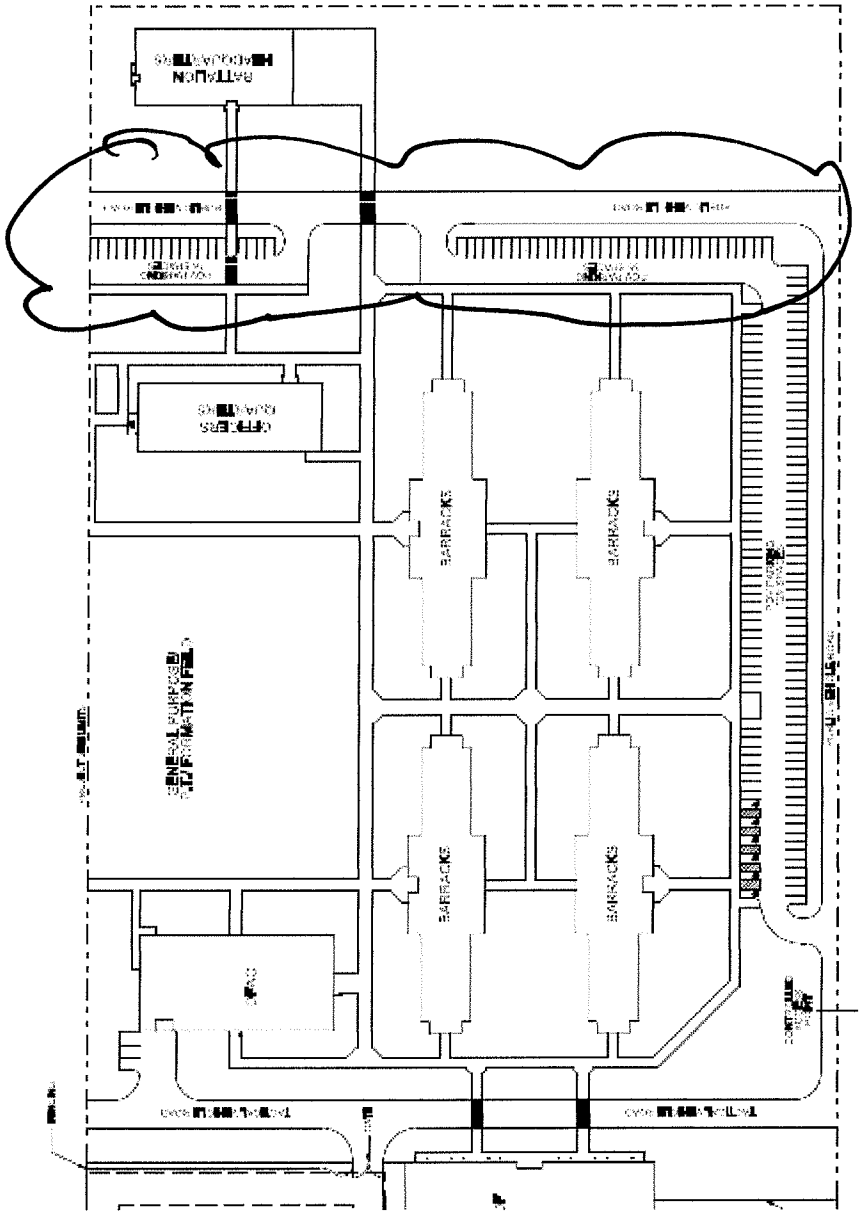
SKETCH

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **S-3**

ORIGINAL DESIGN ☒ ALTERNATIVE DESIGN ☐ BOTH ☐

SHEET NO.: 2 of 4



SITE PLAN

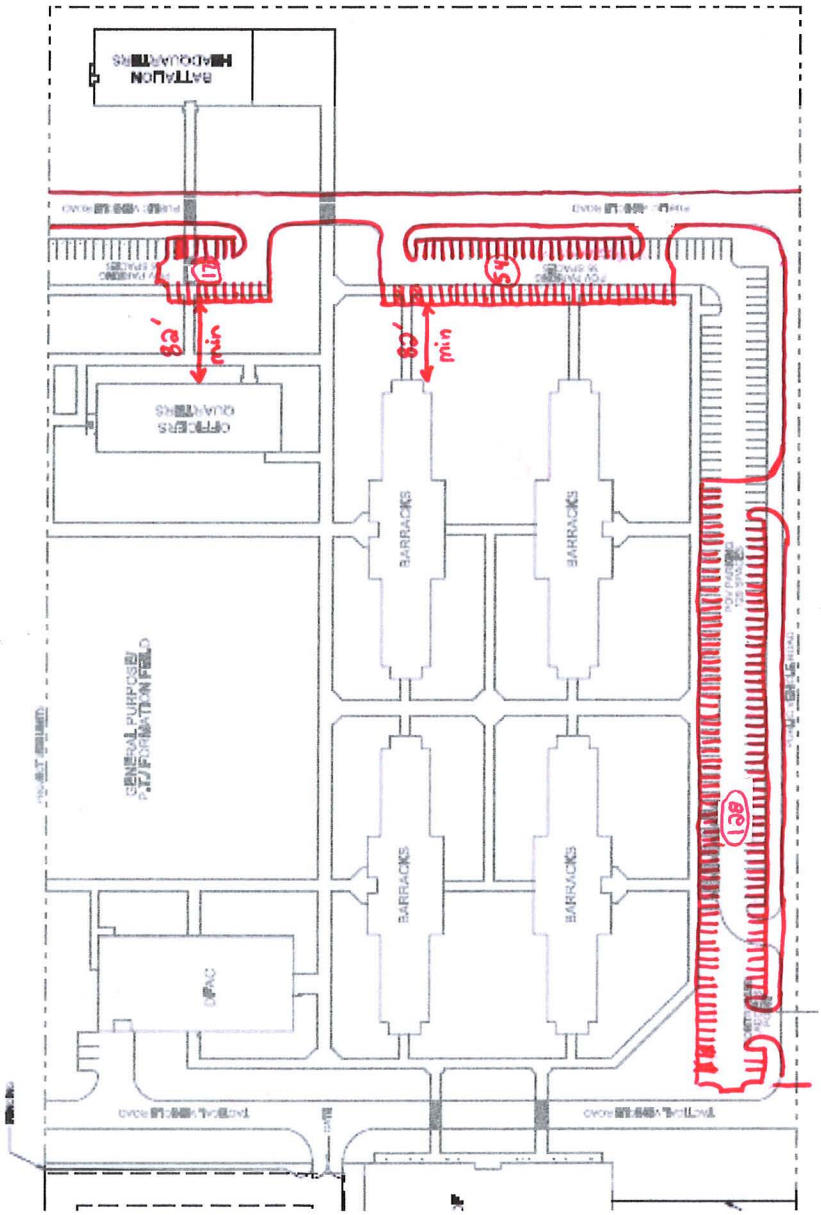
SKETCH

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **S-3**

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☒ BOTH ☐

SHEET NO.: 3 of 4



SITE PLAN

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **S-3**

SHEET NO.: **4 of 4**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Revise Parking Qty Difference							
- Grade and Compact	SY	2,135	1.25	2,669	1,594	1.25	1,993
- Asphalt Paving (2-1/2" on 6" base) Parking Spac	SY	1,100	31.50	34,650	1,330	31.50	41,895
- Asphalt Paving (2-1/2" on 6" base) Drive Aisle	SY	1,035	31.50	32,603	264	31.50	8,316
- Curb and Gutter	LF	360	10.00	3,600	320	10.00	3,200
- Striping (12 spaces added)	LF	1,100	0.40	440	1,170	0.40	468
Note: There are 12 added spaces, but a							
reduction in asphalt qty. based on							
reduction of drive aisle.							
Subtotal				73,962			55,872
Markup (%) at 15%				11,094			8,381
TOTAL				85,056			64,253

VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **S-3A**

DESCRIPTION: **ADD 65 PARKING SPACES FOR DFAC PERSONNEL AND USE DOUBLE LOADED PARKING VERSUS SINGLE LOADED PARKING**

SHEET NO.: **1 of 4**

ORIGINAL DESIGN: (sketch attached)

The ORTC Complex Standard Design shows 54 single loaded parking spaces in front of the Officer's Quarters and along the side of the Barracks on the Battalion Complex Site Plan and on the Brigade Complex Plan. This plan does not address the requirement for 65 parking spaces for the DFAC employees.

ALTERNATIVE: (sketch attached)

Revise the ORTC Complex Standard Design to eliminate single loaded parking and provide 65 spaces for DFAC employee parking on the Battalion Complex Site Plan and on the Brigade Complex.

ADVANTAGES:

- Reduces cost/space by maximizing drive aisles
- Centralizes parking for facilities
- Provides large continuous open areas
- Provides parking for DFAC staff

DISADVANTAGES:

- In Alt. No. S-3, DFAC parking may be further than 1,000 ft from the facility
- Alt. S-3A site may have to be reconfigured to meet ATFP requirements
- Project site limits may require more area
- Adds cost to project

DISCUSSION:

The ORTC Complex Standard Design shows 54 single loaded spaces in front of the Officer's Quarters and along the side of the Barracks on the Battalion Complex Site Plan and on the Brigade Complex Plan. This plan does not address the requirement for 65 parking spaces for DFAC employees. Assuming the Barracks house 672 beds and the Officers' Quarters have an 80 bed capacity, the total bed count for the Battalion is 752. If the parking requirement is 10% – 25% of the Battalion standard intended occupants, then 75 – 188 parking spaces are required based on occupancy and an additional 65 parking spaces are required for the DFAC employees. The original design provides 180 spaces and Alt. No. S-3 provides 199 spaces.

Revise the parking requirements to state that "the minimum parking required is 10% of the total number of beds in the complex plus 65 parking spaces for DFAC staff located adjacent to the DFAC and the maximum is 25% of the total number of beds in the complex plus 65 parking spaces for DFAC staff located adjacent to the DFAC depending upon conditions at the location where the facilities are to be constructed."

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 11,713	—	$ 11,713
ALTERNATIVE	$ 91,323	—	$ 91,323
SAVINGS (Original minus Alternative)	$ (79,610)	—	$ (79,610)

VALUE ENGINEERING ALTERNATIVE

PROJECT:	***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX** ***Center of Standardization (CoS) Model*** *Department of the Army* *Facilities Standardization Program*	ALTERNATIVE NO.: **S-3A**
DESCRIPTION:	**ADD 65 SPACES FOR DFAC PERSONNEL AND USE DOUBLE LOADED PARKING VERSUS SINGLE LOADED PARKING**	SHEET NO.: **2 of 4**

DISCUSSION:

Alt. No. S-3A provides parking in closer proximity to the DFAC. This solution raises the questions regarding AT/FP and offsets for the buildings along the access road to the DFAC. Note that the loading dock for the DFAC has been revised and will require additional site area to provide adequate pavement for truck turning movements.

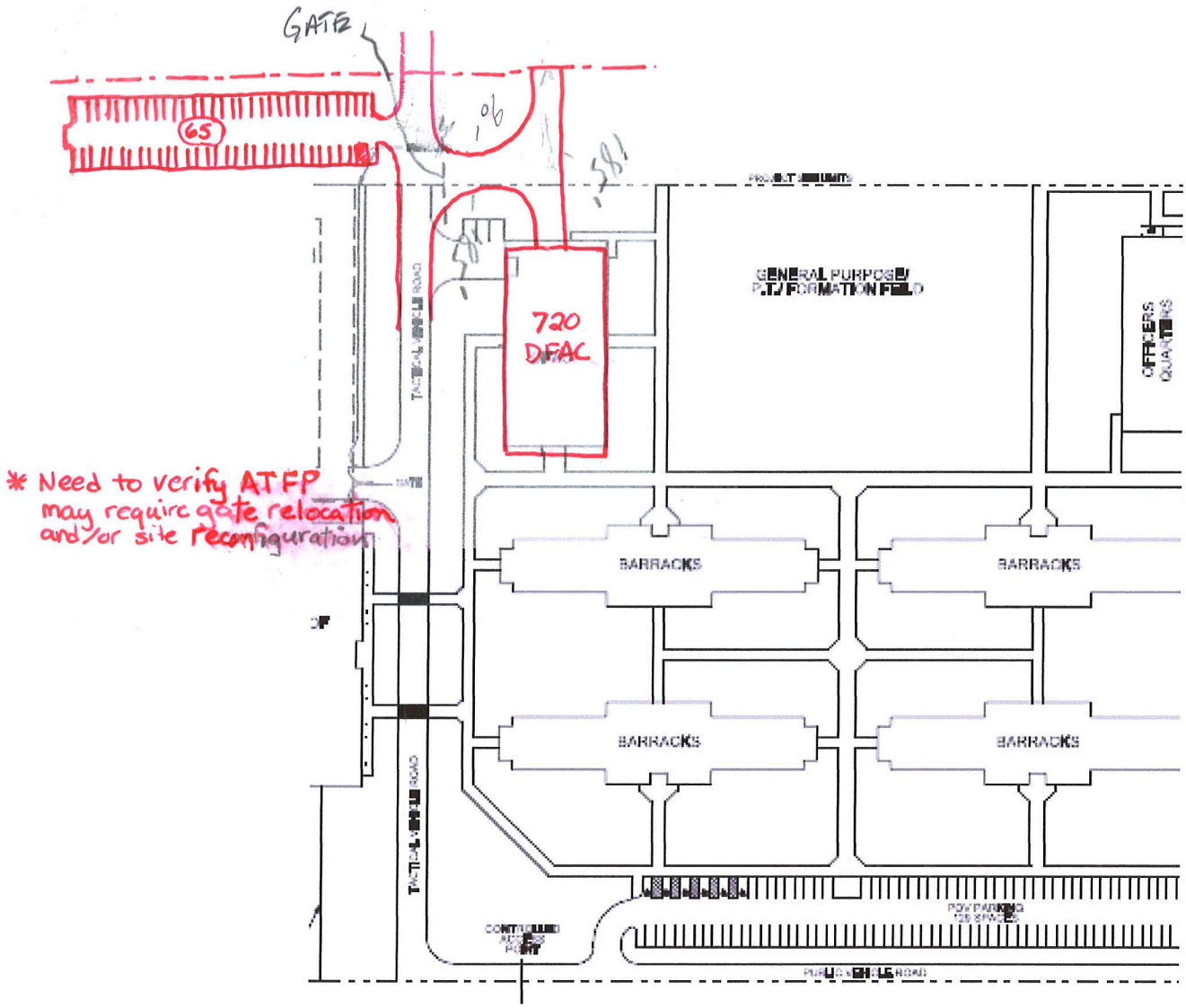
SKETCH

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: S-3A

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☒ BOTH ☐

SHEET NO.: 3 of 4



ALTERNATIVE - SITE PLAN

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **S-3A**

SHEET NO.: **4 of 4**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Revise Parking Qty Difference							
- Grade and Compact	SY	270	1.25	338	2,180	1.25	2,725
- Asphalt Paving (2-1/2" on 6" base) Parking Spaces	SY	54	31.50	1,701	1,190	31.50	37,485
- Asphalt Paving (2-1/2" on 6" base) Drive Aisle	SY	216	31.50	6,804	990	31.50	31,185
- Curb and Gutter	LF	132	10.00	1,320	754	10.00	7,540
- Striping (12 spaces added)	LF	54	0.40	22	1,190	0.40	476
Note: There are 12 added spaces, but a							
reduction in asphalt qty. based on							
reduction of drive aisle.							
Subtotal				10,185			79,411
Markup (%) at 15%				1,528			11,912
TOTAL				11,713			91,323

SUMMARY OF VALUE ENGINEERING ALTERNATIVES

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX (ORTC)**
Center of Standardization Model

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
				PRESENT WORTH OF COST SAVINGS		
	BRIGADE HEADQUARTERS (BR)					
BR-1	Relocate the SIPRNET Room away from the Comm. Room to meet criteria.	DESIGN SUGGESTION				
BR-2	Remove the separation wall between the Vending and the Recycle spaces.	DESIGN SUGGESTION				
BR-3	Provide sufficient water closets to meet building code requirements.	DESIGN SUGGESTION				
BR-4	**Reduce the workstation count in the open office from 48 cubicles to 42 cubicles.**	**$859,280**	**$791,200**	**$68,080**	**$0**	**$68,080**
BR-5	Increase the size of the cubicles and reduce the number of workstations from 48 to 42.	DESIGN SUGGESTION				
BR-7	Reduce square footage requirement in the office area from 110 GSF/person to 110 GSF/person.	DESIGN SUGGESTION				

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VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **BR-1**

DESCRIPTION: **RELOCATE THE SIPRNET AWAY FROM THE COMM ROOM TO MEET CRITERIA**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A019, Brigade Headquarters Floor Plan, dated 16 Feb 2006, the COMM (Rm. 108) and SIPRNET (Rm. 111) are adjacent to each other.

ALTERNATIVE:

Move the SIPRNET across the hall.

ADVANTAGES:

- Meets the space separation requirement

DISADVANTAGES:

- May reduce Storage square footage depending on plan reconfiguration
- Requires moving of the space

DISCUSSION:

Per ISEC COMM Standard, a separation is required between these two spaces. Plan changes are dependent upon other possible space plan modifications, but the two spaces need to be separated to meet criteria.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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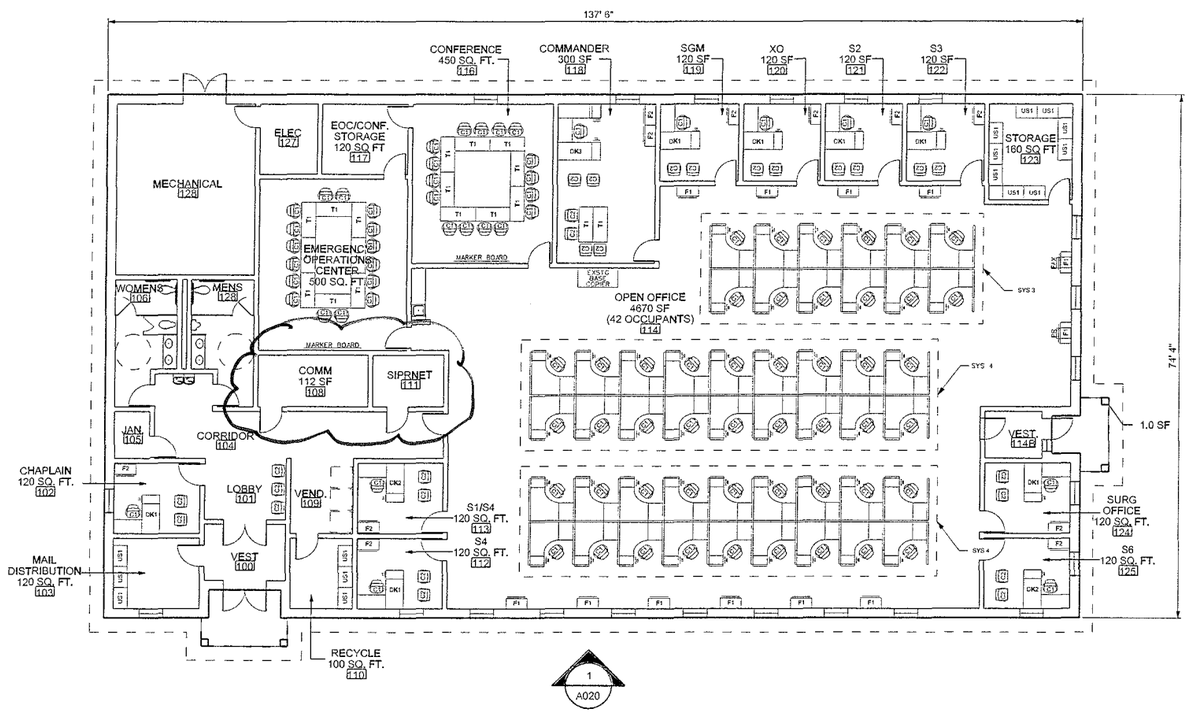
ALT. NO. BR-1 2 of 2



BRIGADE HEADQUARTERS FLOOR PLAN
SCALE: 3/32" = 1'-0"

GENERAL

THE BRIGADE HEADQUARTERS FACILITY SHOULD NORMALLY BE PROVIDED AFTER OR IN CONJUNCTION WITH THE FOURTH BATTALION. THE FACILITY SERVES AS THE COMMAND AND CONTROL FACILITY FOR THE BRIGADE.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC 3-600-01.

2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.

3. LIFE SAFETY AND AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND UFC 1-200-01 DESIGN: GENERAL BUILDING REQUIREMENTS.

4. USE AND OCCUPANCY CLASSIFICATION:
IBC, CHAPTER 3
SECTION 304, BUSINESS GROUP B
PARAGRAPH 304.1
GROUP B (OFFICES)

NFPA 101, CHAPTER 38
NEW BUSINESS OCCUPANCIES
(OFFICES)

OVERALL FLOOR PLAN REQUIREMENTS

ADMINISTRATION AREA SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE COMMANDER, EXECUTIVE OFFICER (XO), SERGEANT MAJOR (SGM), S1, S2, S3, S4, S6, AND BRIGADE SURGEON. EACH PRIVATE OFFICE SHALL INCLUDE A 3'-0" WIDE DOOR.
2. PROVIDE AN EMERGENCY OPERATIONS CENTER (EOC). PROVIDE A 3'-0" WIDE DOOR FROM OPEN OFFICE AREA. PROVIDE 4' H X 8' W MARKER BOARD.
3. PROVIDE A CONFERENCE ROOM. PROVIDE A 3'-0" WIDE DOOR FROM OPEN OFFICE AREA. PROVIDE 4' H X 8' W MARKER BOARD.
4. PROVIDE AN EOC/CONF STORAGE ROOM. PROVIDE TWO 3'-0" WIDE DOORS TO SERVE THE CONFERENCE AND EOC ROOMS.
5. PROVIDE OPEN OFFICE WITH MINIMUM AREA OF 110 SQUARE FEET PER OCCUPANT. AREA INCLUDES CIRCULATION AND FILE STORAGE.

BREAK AREA:
1. PROVIDE 7'-0" LONG SOLID POLYMER COUNTERTOP WITH 19" x19" STAINLESS STEEL SINK AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS. PROVIDE PLASTIC LAMINATE SURFACED BASE CABINET WITH HINGED DOOR(S).

SOLDIER SERVICES SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE CHAPLAIN AND ASSISTANT CHAPLAIN.
2. PROVIDE STORAGE AREA FOR BUILDING SUPPLY STORAGE.

MEN'S LATRINE:
1. PROVIDE MINIMUM 4'-6" WIDE SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" x12" LAVATORIES AND 4" HIGH COVED BACK SPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH MIRROR GLASS, FULL WIDTH OF VANITY COUNTERTOP.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR.
4. PROVIDE MINIMUM ONE HANDICAP ACCESSIBLE FLOOR MOUNTED TOILET WITH FULL SEAT.
5. PROVIDE MINIMUM OF ONE WALL HUNG URINAL.
6. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

WOMEN'S LATRINE:
1. PROVIDE MINIMUM 4'-6" WIDE SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" x12" LAVATORIES AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH MIRROR GLASS, FULL WIDTH OF VANITY COUNTERTOP.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR.
4. PROVIDE MINIMUM ONE HANDICAP ACCESSIBLE AND ONE STANDARD FLOOR MOUNTED TOILET WITH FULL SEAT.
5. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

JANITOR:
1. PROVIDE FLOOR MOP SINK.
2. PROVIDE MOP RACK FOR THREE MOPS.
3. PROVIDE MINIMUM 6'-0" OF LINEAR STAINLESS STEEL SHELVING.
4. PROVIDE 3'-0" DOOR.
5. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

STORAGE:
1. PROVIDE 10'-0" OF LINEAR SHELVING.
2. PROVIDE 3'-0" DOOR.

VENDING:
1. PROVIDE LOCATION FOR SOFT DRINK AND SNACK VENDING MACHINE, AND ICE MACHINE.
2. PROVIDE FLOOR DRAIN NEAR ICE MACHINE.

MINIMUM CORRIDOR WIDTH SHALL BE 6'-0".

MECHANICAL:
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. PROVIDE MECHANICAL ROOM ON GROUND FLOORS WITH DOORS OPENING TO EXTERIOR

ELECTRICAL:
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. LOCATE MAIN ELECTRICAL ROOM ON GROUND FLOOR.

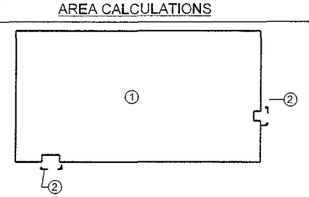
COMMUNICATIONS ROOM:
1. PROVIDE DEDICATED INTERIOR ROOMS FOR COMMUNICATIONS EQUIPMENT.

SIPRNET:
1. PROVIDE DEDICATED INTERIOR ROOMS FOR SIPRNET EQUIPMENT.

BUILDING SPACES DESCRIPTION

	FINISHES				MINIMUM CEILING HEIGHT	MINIMUM STC	NOTES
	FLOOR	BASE	WALL	CEILING			
COMMAND SUITE							
COMMANDER	CONC	RB	GWB	ACT	8'-0"	45	
SRGT MAJOR	CONC	RB	GWB	ACT	8'-0"	45	
EXECUTIVE OFFICER	CONC	RB	GWB	ACT	8'-0"	45	
S2 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S3 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S4 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S6 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
SURGICAL OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
OPEN OFFICE	CONC	RB	GWB	ACT	9'-0"	45	
EMERG. OPS CENTER	CONC	RB	GWB	ACT	9'-0"	45	
CONFERENCE ROOM	CONC	RB	GWB	ACT	9'-0"	45	
STORAGE	CONC	RB	GWB	ACT	8'-0"	45	
SOLDIER SERVICES							
CHAPLAIN	CONC	RB	GWB	ACT	8'-0"	45	
MAIL DISTRIBUTION	CONC	RB	GWB	ACT	8'-0"	45	
WOMENS	CT	CT	GWB	GWB	8'-0"	45	
MENS	CT	CT	GWB	GWB	8'-0"	45	
ENTRY	CONC	RB	GWB	ACT	9'-0"		
VENDING	CONC	RB	GWB	ACT	8'-0"		
JANITOR	CONC	RB	GWB	ACT	8'-0"		
CORRIDOR	CONC	RB	GWB	ACT	9'-0"		
SERVICE							
STORAGE	CONC	RB	GWB	ACT	8'-0"		
MECHANICAL	CONC		GWB	ACT		45	
ELECTRICAL	CONC		GWB	ACT	8'-0"		
COMM	CONC		GWB	ACT	8'-0"		
SIPRNET	CONC		GWB	ACT	8'-0"		

AREA CALCULATIONS



FLOOR PLAN GROSS AREA CALCS

1	BUILDING AREA AT FULL VALUE:	10,165.0 SF
	EXTERIOR COVERED AREA AT HALF VALUE:	
2	PORCHES [(86.0+61.0) x 1/2] =	73.5 SF
	BUILDING TOTAL:	10,238.5 SF

FINISH LEGEND

CONC - SEALED CONCRETE
RB - RUBBER BASE
CMU - PAINTED CMU
GWB - PAINTED GYPSUM WALL BOARD
CT - CERAMIC TILE
ACT - 2'X2' ACOUSTICAL TILE CEILING

FINISH NOTES

1. ROOM FINISHES SHOWN ARE MINIMUM REQUIRED.

GRAPHIC SCALE

8 0 8 16FT

SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville Distnct

Revisions
Symbol | Description | Code | ADK

Date: 28 JULY 2009
Scale:
Drawing Code: X-XXXX-XX-XXX

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
COE LOUISVILLE DISTRICT Project Engineer/Architect | Date

BRIGADE HEADQUARTERS FLOOR PLAN

DEPARTMENT OF THE ARMY
FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A019
SHEET 27 OF 31

CORRECTED FINAL

DATE: 05-AUG-2009 10:09

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VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **BR-2**

DESCRIPTION: **REMOVE THE SEPARATION WALL BETWEEN THE VENDING AND RECYCLE SPACES**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A019, Brigade Headquarters Floor Plan, dated 16 Feb 2006, the Vending Room (Rm. 109) and Recycle Room (Rm. 110) configuration includes a separation wall with a door between the two spaces.

ALTERNATIVE:

Remove the separation wall and door between the spaces and combine the two rooms into a single space.

ADVANTAGES:

- Saves cost of door/hardware and wall construction
- Provides easy access for all users
- Encourages recycling, meets LEED required MR Prerequisite 1: Storage & Collection of Recyclables

DISADVANTAGES:

- Possible odor from recycled items will be in both spaces
- Layout needs to be modified

DISCUSSION:

No separation of spaces is required and no area increase will result from this change.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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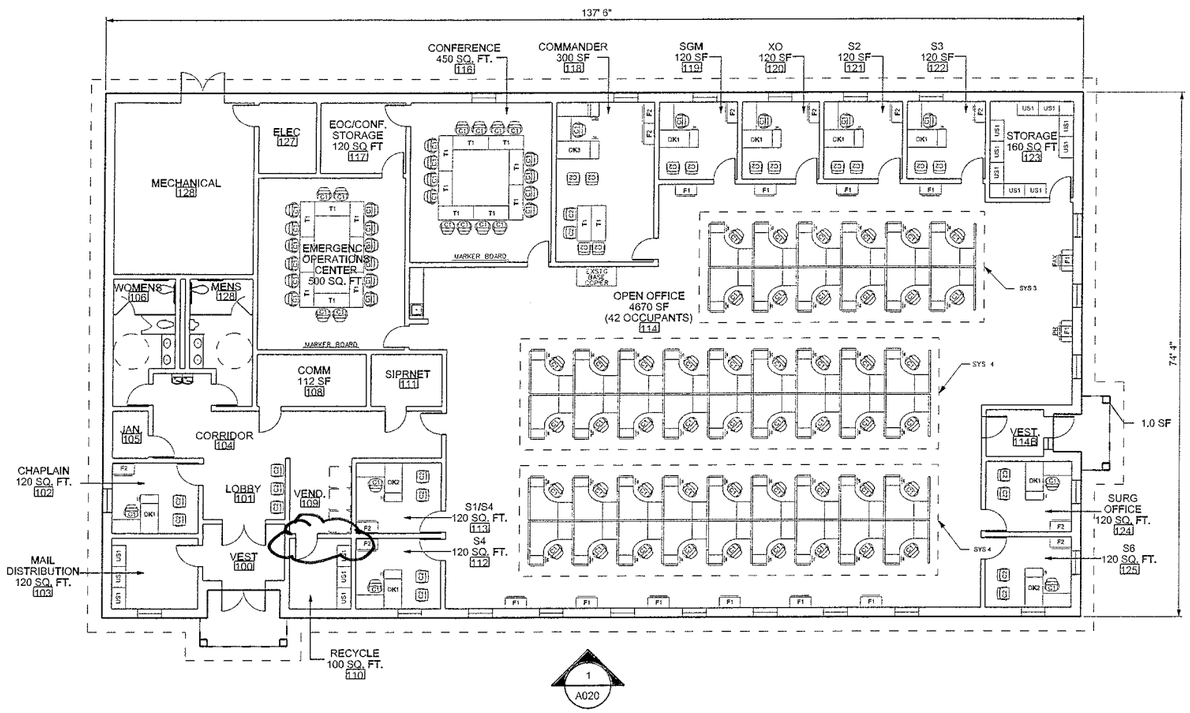
*** SAFETY PAYS ***

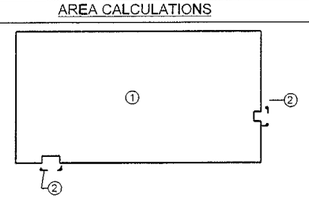


BRIGADE HEADQUARTERS FLOOR PLAN
SCALE: 3/32" = 1'-0"

BUILDING SPACES DESCRIPTION

	FINISHES				MINIMUM CEILING HEIGHT	MINIMUM STC	NOTES
	FLOOR	BASE	WALL	CEILING			
COMMAND SUITE							
COMMANDER	CONC	RB	GWB	ACT	8'-0"	45	
SRGT MAJOR	CONC	RB	GWB	ACT	8'-0"	45	
EXECUTIVE OFFICER	CONC	RB	GWB	ACT	8'-0"	45	
S2 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S3 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S4 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S6 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
SURGICAL OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
OPEN OFFICE	CONC	RB	GWB	ACT	9'-0"	45	
EMERG. OPS CENTER	CONC	RB	GWB	ACT	9'-0"	45	
CONFERENCE ROOM	CONC	RB	GWB	ACT	9'-0"	45	
STORAGE	CONC	RB	GWB	ACT	8'-0"	45	
SOLDIER SERVICES							
CHAPLAIN	CONC	RB	GWB	ACT	8'-0"	45	
MAIL DISTRIBUTION	CONC	RB	GWB	ACT	8'-0"	45	
WOMENS	CT	CT	GWB	GWB	8'-0"	45	
MENS	CT	CT	GWB	GWB	8'-0"	45	
ENTRY	CONC	RB	GWB	ACT	9'-0"		
VENDING	CONC	RB	GWB	ACT	8'-0"		
JANITOR	CONC	RB	GWB	ACT	8'-0"		
CORRIDOR	CONC	RB	GWB	ACT	9'-0"		
SERVICE							
STORAGE	CONC	RB	GWB	ACT	8'-0"		
MECHANICAL	CONC		GWB	ACT		45	
ELECTRICAL	CONC		GWB	ACT	8'-0"		
COMM	CONC		GWB	ACT	8'-0"		
SIPRNET	CONC		GWB	ACT	8'-0"		

AREA CALCULATIONS



FLOOR PLAN GROSS AREA CALCS

1 BUILDING AREA AT FULL VALUE: 10,165.0 SF

EXTERIOR COVERED AREA AT HALF VALUE:

2 PORCHES [(86.0+61.0) x 1/2] = 73.5 SF

BUILDING TOTAL: 10,238.5 SF

FINISH LEGEND

CONC - SEALED CONCRETE
RB - RUBBER BASE
CMU - PAINTED CMU
GWB - PAINTED GYPSUM WALL BOARD
CT - CERAMIC TILE
ACT - 2'X2' ACOUSTICAL TILE CEILING

FINISH NOTES

1. ROOM FINISHES SHOWN ARE MINIMUM REQUIRED.

GENERAL

THE BRIGADE HEADQUARTERS FACILITY SHOULD NORMALLY BE PROVIDED AFTER OR IN CONJUNCTION WITH THE FOURTH BATTALION. THE FACILITY SERVES AS THE COMMAND AND CONTROL FACILITY FOR THE BRIGADE.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC 3-600-01.

2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.

3. LIFE SAFETY AND AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND UFC 1-200-01 DESIGN: GENERAL BUILDING REQUIREMENTS.

4. USE AND OCCUPANCY CLASSIFICATION:
IBC, CHAPTER 3
SECTION 304, BUSINESS GROUP B
PARAGRAPH 304.1
GROUP B (OFFICES)

NFPA 101, CHAPTER 38
NEW BUSINESS OCCUPANCIES
(OFFICES)

OVERALL FLOOR PLAN REQUIREMENTS

ADMINISTRATION AREA SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE COMMANDER, EXECUTIVE OFFICER (XO), SERGEANT MAJOR (SGM), S1, S2, S3, S4, S6, AND BRIGADE SURGEON. EACH PRIVATE OFFICE SHALL INCLUDE A 3' -0" WIDE DOOR.
2. PROVIDE AN EMERGENCY OPERATIONS CENTER (EOC). PROVIDE A 3'-0" WIDE DOOR FROM OPEN OFFICE AREA. PROVIDE 4' H X 8' W MARKER BOARD.
3. PROVIDE A CONFERENCE ROOM. PROVIDE A 3'-0" WIDE DOOR FROM OPEN OFFICE AREA. PROVIDE 4' H X 8' W MARKER BOARD.
4. PROVIDE AN EOC/CONF STORAGE ROOM. PROVIDE TWO 3'-0" WIDE DOORS TO SERVE THE CONFERENCE AND EOC ROOMS.
5. PROVIDE OPEN OFFICE WITH MINIMUM AREA OF 110 SQUARE FEET PER OCCUPANT. AREA INCLUDES CIRCULATION AND FILE STORAGE.

BREAK AREA:
1. PROVIDE 7'-0" LONG SOLID POLYMER COUNTERTOP WITH 19" x19" STAINLESS STEEL SINK AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS. PROVIDE PLASTIC LAMINATE SURFACED BASE CABINET WITH HINGED DOOR(S).

SOLDIER SERVICES SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE CHAPLAIN AND ASSISTANT CHAPLAIN.
2. PROVIDE STORAGE AREA FOR BUILDING SUPPLY STORAGE.

MEN'S LATRINE:
1. PROVIDE MINIMUM 4'-6" WIDE SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" x12" LAVATORIES AND 4" HIGH COVED BACK SPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH MIRROR GLASS, FULL WIDTH OF VANITY COUNTERTOP.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR.
4. PROVIDE MINIMUM ONE HANDICAP ACCESSIBLE FLOOR MOUNTED TOILET WITH FULL SEAT.
5. PROVIDE MINIMUM OF ONE WALL HUNG URINAL.
6. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

WOMEN'S LATRINE:
1. PROVIDE MINIMUM 4'-6" WIDE SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" x12" LAVATORIES AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH MIRROR GLASS, FULL WIDTH OF VANITY COUNTERTOP.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR.
4. PROVIDE MINIMUM ONE HANDICAP ACCESSIBLE AND ONE STANDARD FLOOR MOUNTED TOILET WITH FULL SEAT.
5. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

JANITOR:
1. PROVIDE FLOOR MOP SINK.
2. PROVIDE MOP RACK FOR THREE MOPS.
3. PROVIDE MINIMUM 6'-0" OF LINEAR STAINLESS STEEL SHELVING.
4. PROVIDE 3'-0" DOOR.
5. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

STORAGE:
1. PROVIDE 10'-0" OF LINEAR SHELVING.
2. PROVIDE 3'-0" DOOR.

VENDING:
1. PROVIDE LOCATION FOR SOFT DRINK AND SNACK VENDING MACHINE. AND ICE MACHINE.
2. PROVIDE FLOOR DRAIN NEAR ICE MACHINE.

MINIMUM CORRIDOR WIDTH SHALL BE 6'-0".

MECHANICAL:
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. PROVIDE MECHANICAL ROOM ON GROUND FLOORS WITH DOORS OPENING TO EXTERIOR

ELECTRICAL:
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. LOCATE MAIN ELECTRICAL ROOM ON GROUND FLOOR.

COMMUNICATIONS ROOM:
1. PROVIDE DEDICATED INTERIOR ROOMS FOR COMMUNICATIONS EQUIPMENT.

SIPRNET:
1. PROVIDE DEDICATED INTERIOR ROOMS FOR SIPRNET EQUIPMENT.

GRAPHIC SCALE

8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville Distnct

Revisions
Symbol | Description | Date | Appr.

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
COE LOUISVILLE DISTRICT Project Engineer/Architect
Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX
COE LOUISVILLE DISTRICT Date

BRIGADE HEADQUARTERS FLOOR PLAN

DEPARTMENT OF THE ARMY FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A019
SHEET 27 OF 31

CORRECTED FINAL

*** SUPPORT VALUE ENGINEERING - IT PAYS ***

DATE: 05-AUG-2009 10:09

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VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **BR-3**

DESCRIPTION: **PROVIDE SUFFICIENT WATER CLOSETS TO MEET BUILDING CODE REQUIREMENTS**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A019, Brigade Headquarters Floor Plan dated 16 Feb 2006, two water closets are provided in the Women's Room and one water closet and one urinal is provided in the Men's Room.

ALTERNATIVE:

Provide an additional water closet in the Women's Room and a urinal in the Men's Room to meet the UFC Plumbing System fixture count requirement.

ADVANTAGES:

- Adds two water closets to the building per code

DISADVANTAGES:

- Requires space be made available within the existing footprint to accommodate the new fixtures

DISCUSSION:

This alternative adds a water closet and urinal so that the building will meet code requirements.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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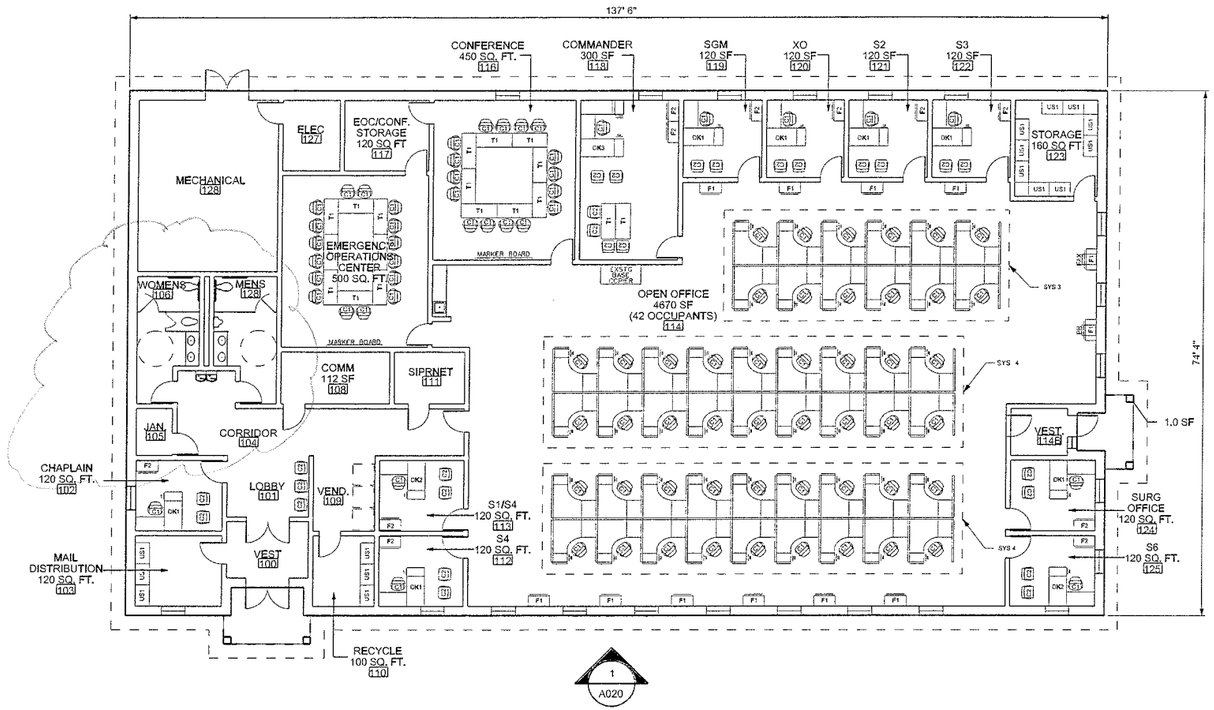

BRIGADE HEADQUARTERS FLOOR PLAN
SCALE: 3/32" = 1'-0"

BUILDING SPACES DESCRIPTION

	FINISHES				MINIMUM CEILING HEIGHT	MINIMUM STC	NOTES
	FLOOR	BASE	WALL	CEILING			
COMMAND SUITE							
COMMANDER	CONC	RB	GWB	ACT	8'-0"	45	
SRGT MAJOR	CONC	RB	GWB	ACT	8'-0"	45	
EXECUTIVE OFFICER	CONC	RB	GWB	ACT	8'-0"	45	
S2 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
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OPEN OFFICE	CONC	RB	GWB	ACT	9'-0"	45	
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STORAGE	CONC	RB	GWB	ACT	8'-0"	45	
SOLDIER SERVICES							
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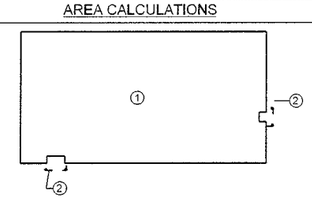
WOMENS	CT	CT	GWB	GWB	8'-0"	45	
MENS	CT	CT	GWB	GWB	8'-0"	45	
ENTRY	CONC	RB	GWB	ACT	9'-0"		
VENDING	CONC	RB	GWB	ACT	8'-0"		
JANITOR	CONC	RB	GWB	ACT	8'-0"		
CORRIDOR	CONC	RB	GWB	ACT	9'-0"		
SERVICE							
STORAGE	CONC	RB	GWB	ACT	8'-0"		
MECHANICAL	CONC		GWB	ACT		45	
ELECTRICAL	CONC		GWB	ACT	8'-0"		
COMM	CONC		GWB	ACT	8'-0"		
SIPRNET	CONC		GWB	ACT	8'-0"		

AREA CALCULATIONS



FLOOR PLAN GROSS AREA CALCS

1 BUILDING AREA AT FULL VALUE: 10,165.0 SF

EXTERIOR COVERED AREA AT HALF VALUE:

2 PORCHES [(86.0+61.0) x 1/2] = 73.5 SF

BUILDING TOTAL: 10,238.5 SF

FINISH LEGEND

CONC - SEALED CONCRETE
RB - RUBBER BASE
CMU - PAINTED CMU
GWB - PAINTED GYPSUM WALL BOARD
CT - CERAMIC TILE
ACT - 2'X2' ACOUSTICAL TILE CEILING

FINISH NOTES

1. ROOM FINISHES SHOWN ARE MINIMUM REQUIRED.

GENERAL

THE BRIGADE HEADQUARTERS FACILITY SHOULD NORMALLY BE PROVIDED AFTER OR IN CONJUNCTION WITH THE FOURTH BATTALION. THE FACILITY SERVES AS THE COMMAND AND CONTROL FACILITY FOR THE BRIGADE.

CODE REQUIREMENTS

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2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.

3. LIFE SAFETY AND AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND UFC 1-200-01 DESIGN: GENERAL BUILDING REQUIREMENTS.

4. USE AND OCCUPANCY CLASSIFICATION:
IBC, CHAPTER 3
SECTION 304, BUSINESS GROUP B
PARAGRAPH 304.1
GROUP B (OFFICES)

NFPA 101, CHAPTER 38
NEW BUSINESS OCCUPANCIES
(OFFICES)

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ADMINISTRATION AREA SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE COMMANDER, EXECUTIVE OFFICER (XO), SERGEANT MAJOR (SGM), S1, S2, S3, S4, S6, AND BRIGADE SURGEON. EACH PRIVATE OFFICE SHALL INCLUDE A 3'-0" WIDE DOOR.
2. PROVIDE AN EMERGENCY OPERATIONS CENTER (EOC). PROVIDE A 3'-0" WIDE DOOR FROM OPEN OFFICE AREA. PROVIDE 4' H X 8' W MARKER BOARD.
3. PROVIDE A CONFERENCE ROOM. PROVIDE A 3'-0" WIDE DOOR FROM OPEN OFFICE AREA. PROVIDE 4' H X 8' W MARKER BOARD.
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5. PROVIDE OPEN OFFICE WITH MINIMUM AREA OF 110 SQUARE FEET PER OCCUPANT. AREA INCLUDES CIRCULATION AND FILE STORAGE.

BREAK AREA:
1. PROVIDE 7'-0" LONG SOLID POLYMER COUNTERTOP WITH 19" x19" STAINLESS STEEL SINK AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS. PROVIDE PLASTIC LAMINATE SURFACED BASE CABINET WITH HINGED DOOR(S).

SOLDIER SERVICES SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE CHAPLAIN AND ASSISTANT CHAPLAIN.
2. PROVIDE STORAGE AREA FOR BUILDING SUPPLY STORAGE.

MEN'S LATRINE:
1. PROVIDE MINIMUM 4'-6" WIDE SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" x12" LAVATORIES AND 4" HIGH COVED BACK SPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH MIRROR GLASS. FULL WIDTH OF VANITY COUNTERTOP.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR.
4. PROVIDE MINIMUM ONE HANDICAP ACCESSIBLE FLOOR MOUNTED TOILET WITH FULL SEAT.
5. PROVIDE MINIMUM OF ONE WALL HUNG URINAL.
6. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

WOMEN'S LATRINE:
1. PROVIDE MINIMUM 4'-6" WIDE SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" x12" LAVATORIES AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
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JANITOR:
1. PROVIDE FLOOR MOP SINK.
2. PROVIDE MOP RACK FOR THREE MOPS.
3. PROVIDE MINIMUM 6'-0" OF LINEAR STAINLESS STEEL SHELVING.
4. PROVIDE 3'-0" DOOR.
5. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

STORAGE:
1. PROVIDE 10'-0" OF LINEAR SHELVING.
2. PROVIDE 3'-0" DOOR.

VENDING:
1. PROVIDE LOCATION FOR SOFT DRINK AND SNACK VENDING MACHINE, AND ICE MACHINE.
2. PROVIDE FLOOR DRAIN NEAR ICE MACHINE.

MINIMUM CORRIDOR WIDTH SHALL BE 6'-0".

MECHANICAL:
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. PROVIDE MECHANICAL ROOM ON GROUND FLOORS WITH DOORS OPENING TO EXTERIOR

ELECTRICAL:
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. LOCATE MAIN ELECTRICAL ROOM ON GROUND FLOOR.

COMMUNICATIONS ROOM:
1. PROVIDE DEDICATED INTERIOR ROOMS FOR COMMUNICATIONS EQUIPMENT.

SIPRNET:
1. PROVIDE DEDICATED INTERIOR ROOMS FOR SIPRNET EQUIPMENT.

GRAPHIC SCALE

8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Revisions

Symbol	Description	Date	Appr.

Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX
Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
COE LOUISVILLE DISTRICT Project Engineer/Architect
Date

BRIGADE HEADQUARTERS FLOOR PLAN

DEPARTMENT OF THE ARMY FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A019
SHEET 27 OF 31

CORRECTED FINAL

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VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **BR-4**

DESCRIPTION: **REDUCE WORKSTATION COUNT IN THE OPEN OFFICE FROM 48 CUBICLE TO 42 CUBICLES**

SHEET NO.: **1 of 4**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A019, Brigade Headquarters Floor Plan, dated 16 Feb 2006, the Open Office (Rm. 114) plan has 48 workstations yet the requirement is for only 42 workstations.

ALTERNATIVE: (sketch attached)

Eliminate six workstations to meet the 42 workstation programming requirement.

ADVANTAGES:

- Resolves conflict in the number of workstations

DISADVANTAGES:

- Reduces number of workstations

DISCUSSION:

The change resolves and clarifies the number of workstations to be 42 instead of the 48 denoted in the plan.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 859,280	—	$ 859,280
ALTERNATIVE	$ 791,200	—	$ 791,200
SAVINGS (Original minus Alternative)	$ 68,080	—	$ 68,080

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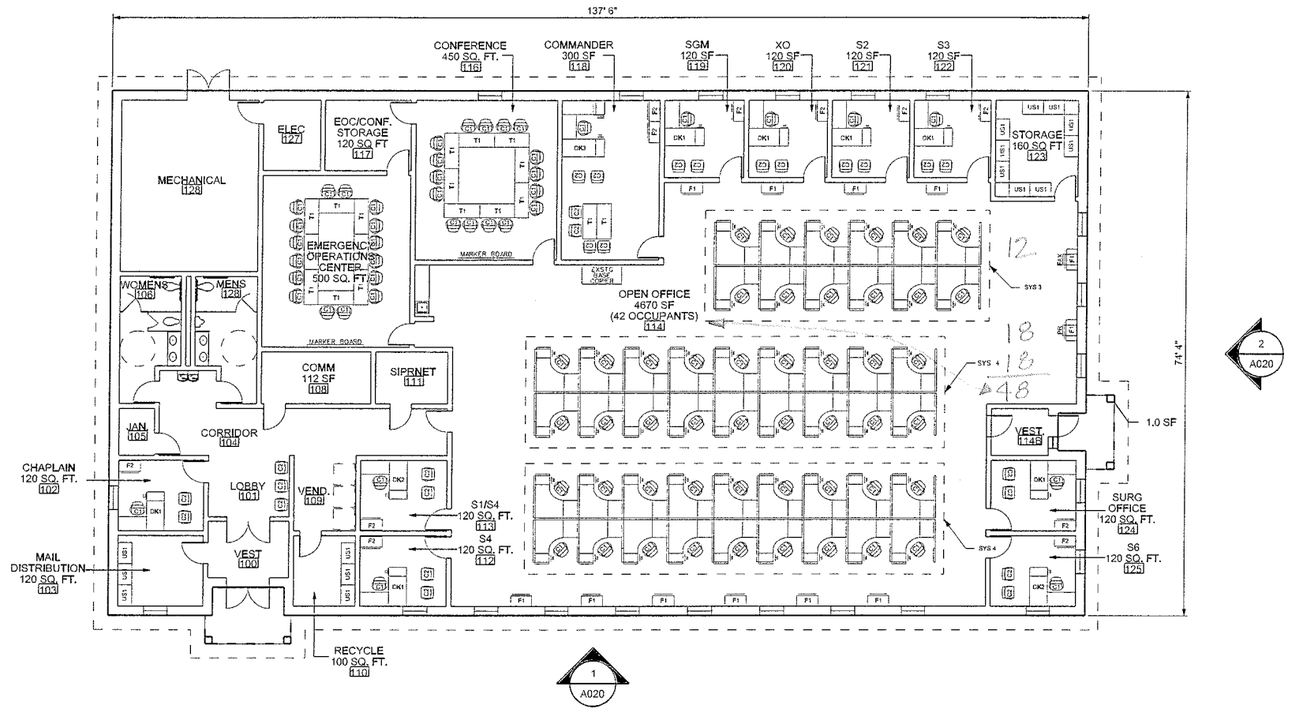
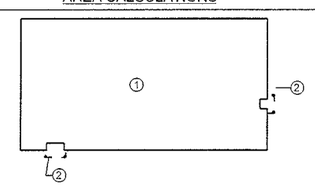
ALT. NO. BR-4 Sht. 2 of 4



BRIGADE HEADQUARTERS FLOOR PLAN
SCALE: 3/32" = 1'-0"

AREA CALCULATIONS



FLOOR PLAN GROSS AREA CALCS

1	BUILDING AREA AT FULL VALUE:	10,165.0 SF
	EXTERIOR COVERED AREA AT HALF VALUE:	
2	PORCHES [(86.0+61.0) x 1/2] =	73.5 SF
	BUILDING TOTAL:	10,238.5 SF

BUILDING SPACES DESCRIPTION

	FINISHES				MINIMUM CEILING HEIGHT	MINIMUM STC	NOTES
	FLOOR	BASE	WALL	CEILING			
COMMAND SUITE							
COMMANDER	CONC	RB	GWB	ACT	8'-0"	45	
SRGT MAJOR	CONC	RB	GWB	ACT	8'-0"	45	
EXECUTIVE OFFICER	CONC	RB	GWB	ACT	8'-0"	45	
S2 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S3 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S4 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S6 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
SURGICAL OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
OPEN OFFICE	CONC	RB	GWB	ACT	9'-0"	45	
EMERG. OPS CENTER	CONC	RB	GWB	ACT	9'-0"	45	
CONFERENCE ROOM	CONC	RB	GWB	ACT	9'-0"	45	
STORAGE	CONC	RB	GWB	ACT	8'-0"	45	
SOLDIER SERVICES							
CHAPLAIN	CONC	RB	GWB	ACT	8'-0"	45	
MAIL DISTRIBUTION	CONC	RB	GWB	ACT	8'-0"	45	
WOMENS	CT	CT	GWB	GWB	8'-0"	45	
MENS	CT	CT	GWB	GWB	8'-0"	45	
ENTRY	CONC	RB	GWB	ACT	9'-0"		
VENDING	CONC	RB	GWB	ACT	8'-0"		
JANITOR	CONC	RB	GWB	ACT	8'-0"		
CORRIDOR	CONC	RB	GWB	ACT	9'-0"		
SERVICE							
STORAGE	CONC	RB	GWB	ACT	8'-0"		
MECHANICAL	CONC		GWB	ACT		45	
ELECTRICAL	CONC		GWB	ACT	8'-0"		
COMM	CONC		GWB	ACT	8'-0"		
SIPRNET	CONC		GWB	ACT	8'-0"		

FINISH LEGEND

CONC - SEALED CONCRETE
RB - RUBBER BASE
CMU - PAINTED CMU
GWB - PAINTED GYPSUM WALL BOARD
CT - CERAMIC TILE
ACT - 2'X2' ACOUSTICAL TILE CEILING

FINISH NOTES

1. ROOM FINISHES SHOWN ARE MINIMUM REQUIRED.

GENERAL

THE BRIGADE HEADQUARTERS FACILITY SHOULD NORMALLY BE PROVIDED AFTER OR IN CONJUNCTION WITH THE FOURTH BATTALION. THE FACILITY SERVES AS THE COMMAND AND CONTROL FACILITY FOR THE BRIGADE.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC 3-600-01.

2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.

3. LIFE SAFETY AND AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND UFC 1-200-01 DESIGN: GENERAL BUILDING REQUIREMENTS.

4. USE AND OCCUPANCY CLASSIFICATION:
IBC, CHAPTER 3
SECTION 304, BUSINESS GROUP B
PARAGRAPH 304.1
GROUP B (OFFICES)

NFPA 101, CHAPTER 38
NEW BUSINESS OCCUPANCIES
(OFFICES)

OVERALL FLOOR PLAN REQUIREMENTS

ADMINISTRATION AREA SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE COMMANDER, EXECUTIVE OFFICER (XO), SERGEANT MAJOR (SGM), S1, S2, S3, S4, S6, AND BRIGADE SURGEON. EACH PRIVATE OFFICE SHALL INCLUDE A 3' -0" WIDE DOOR.
2. PROVIDE AN EMERGENCY OPERATIONS CENTER (EOC). PROVIDE A 3'-0" WIDE DOOR FROM OPEN OFFICE AREA. PROVIDE 4' H X 8' W MARKER BOARD.
3. PROVIDE A CONFERENCE ROOM. PROVIDE A 3'-0" WIDE DOOR FROM OPEN OFFICE AREA. PROVIDE 4' H X 8' W MARKER BOARD.
4. PROVIDE AN EOC/CONF STORAGE ROOM. PROVIDE TWO 3'-0" WIDE DOORS TO SERVE THE CONFERENCE AND EOC ROOMS.
5. PROVIDE OPEN OFFICE WITH MINIMUM AREA OF 110 SQUARE FEET PER OCCUPANT. AREA INCLUDES CIRCULATION AND FILE STORAGE.

BREAK AREA:
1. PROVIDE 7'-0" LONG SOLID POLYMER COUNTERTOP WITH 19" x19" STAINLESS STEEL SINK AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS. PROVIDE PLASTIC LAMINATE SURFACED BASE CABINET WITH HINGED DOOR(S).

SOLDIER SERVICES SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE CHAPLAIN AND ASSISTANT CHAPLAIN.
2. PROVIDE STORAGE AREA FOR BUILDING SUPPLY STORAGE.

MEN'S LATRINE:
1. PROVIDE MINIMUM 4'-6" WIDE SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" x12" LAVATORIES AND 4" HIGH COVED BACK SPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH MIRROR GLASS. FULL WIDTH OF VANITY COUNTERTOP.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR.
4. PROVIDE MINIMUM ONE HANDICAP ACCESSIBLE FLOOR MOUNTED TOILET WITH FULL SEAT.
5. PROVIDE MINIMUM OF ONE WALL HUNG URINAL.
6. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

WOMEN'S LATRINE:
1. PROVIDE MINIMUM 4'-6" WIDE SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" x12" LAVATORIES AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH MIRROR GLASS. FULL WIDTH OF VANITY COUNTERTOP.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR.
4. PROVIDE MINIMUM ONE HANDICAP ACCESSIBLE AND ONE STANDARD FLOOR MOUNTED TOILET WITH FULL SEAT.
5. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

JANITOR:
1. PROVIDE FLOOR MOP SINK.
2. PROVIDE MOP RACK FOR THREE MOPS.
3. PROVIDE MINIMUM 6'-0" OF LINEAR STAINLESS STEEL SHELVING.
4. PROVIDE 3'-0" DOOR.
5. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

STORAGE:
1. PROVIDE 10'-0" OF LINEAR SHELVING.
2. PROVIDE 3'-0" DOOR.

VENDING:
1. PROVIDE LOCATION FOR SOFT DRINK AND SNACK VENDING MACHINE, AND ICE MACHINE.
2. PROVIDE FLOOR DRAIN NEAR ICE MACHINE.

MINIMUM CORRIDOR WIDTH SHALL BE 6'-0".

MECHANICAL:
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. PROVIDE MECHANICAL ROOM ON GROUND FLOORS WITH DOORS OPENING TO EXTERIOR

ELECTRICAL:
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. LOCATE MAIN ELECTRICAL ROOM ON GROUND FLOOR.

COMMUNICATIONS ROOM:
1. PROVIDE DEDICATED INTERIOR ROOMS FOR COMMUNICATIONS EQUIPMENT.

SIPRNET:
1. PROVIDE DEDICATED INTERIOR ROOMS FOR SIPRNET EQUIPMENT.

GRAPHIC SCALE
8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville Distnct

Revisions
Symbol | Description | Date | Appr.

Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX
Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
COE LOUISVILLE DISTRICT Project Engineer/Architect
Date

BRIGADE HEADQUARTERS FLOOR PLAN

DEPARTMENT OF THE ARMY
FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A019
SHEET 27 OF 31

CORRECTED FINAL

DATE: 05-AUG-2009 10:09

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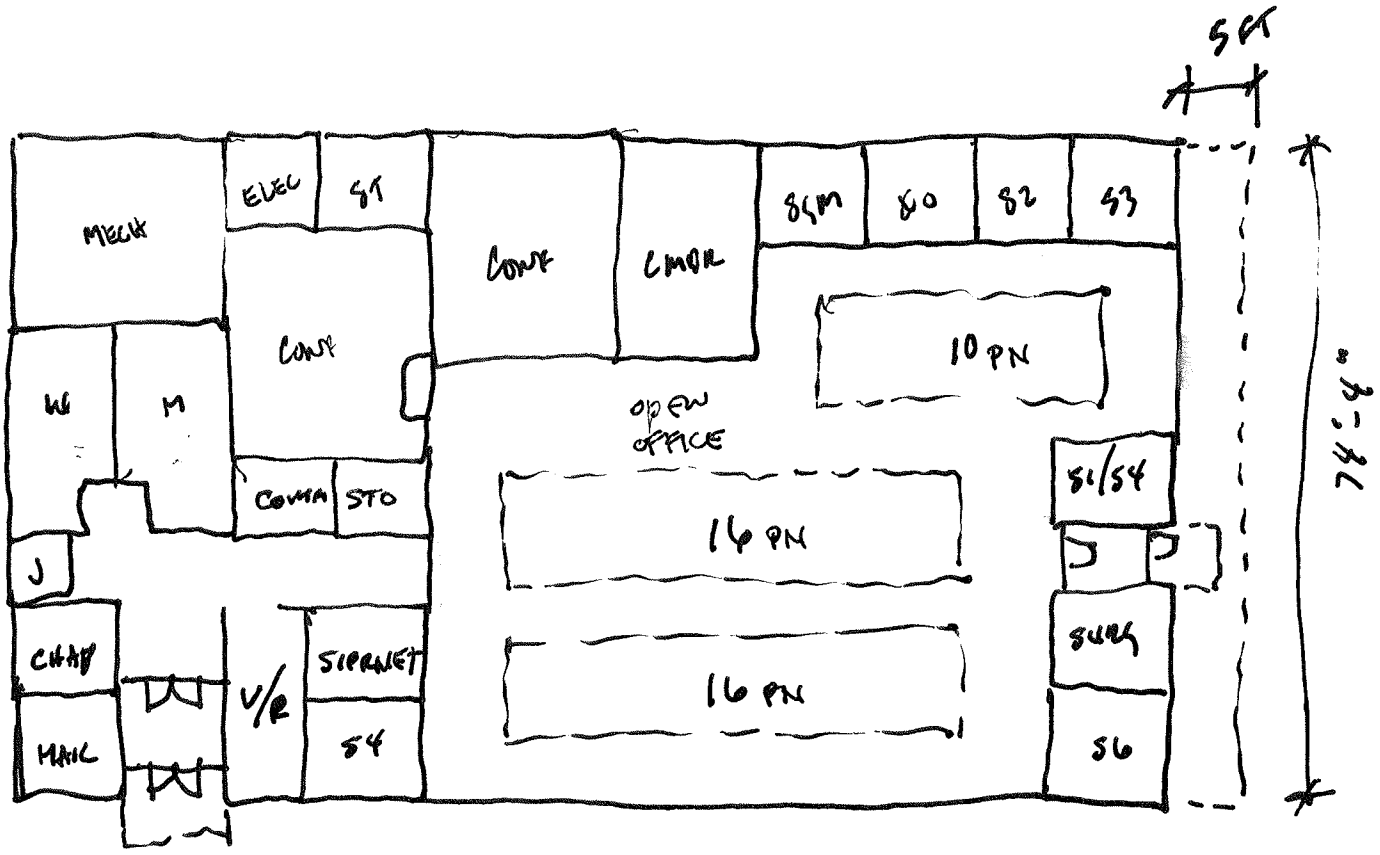
SKETCH

PROJECT: **OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization – ORTC

ALTERNATIVE NO.: BR-4

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☒ BOTH ☐

SHEET NO.: 3 of 4



BRIGADE HQTRS
REVISED

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **BR-4**

SHEET NO.: **4 of 4**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Building Area							
- Floor Space - Open Office	SF	4,670	160.00	747,200	4,300	160.00	688,000
Subtotal				747,200			688,000
Markup (%) at 15%				112,080			103,200
TOTAL				859,280			791,200

VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **BR-5**

DESCRIPTION: **INCREASE THE SIZE OF CUBICLES AND REDUCE THE NUMBER OF WORKSTATIONS FROM 48 TO 42**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A019, Brigade Headquarters Floor Plan dated 16 Feb 2006, the Open Office (Rm. 114) plan has 48 workstations yet it requires only 42 workstations.

ALTERNATIVE:

Increase the workstation size from 100 GSF/person to 110 GSF/person and reduce the number workstations shown from 48 to 42.

ADVANTAGES:

- Provides efficient use of required area
- Eliminates the conflict on the plan

DISADVANTAGES:

- Requires the purchase of larger workstations
- Fewer workstations available

DISCUSSION:

This alternative resolves/clarifies the number of workstations required and optimizes the layout, configuration, and use of the space.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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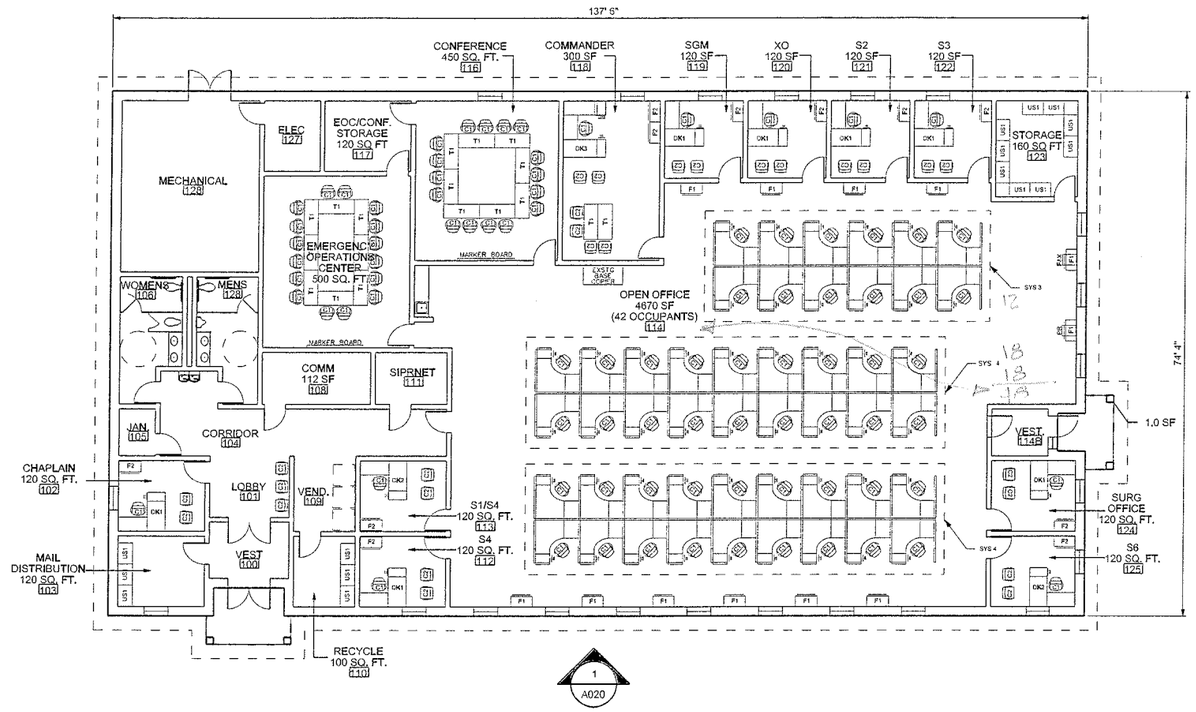
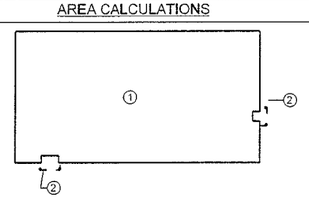
ALT. NO. BR-5 sht 2 of 2



BRIGADE HEADQUARTERS FLOOR PLAN

SCALE: 3/32" = 1'-0"

AREA CALCULATIONS



FLOOR PLAN GROSS AREA CALCS

① BUILDING AREA AT FULL VALUE: 10,165.0 SF

EXTERIOR COVERED AREA AT HALF VALUE:

② PORCHES [(86.0+61.0) x 1/2] = 73.5 SF

BUILDING TOTAL: 10,238.5 SF

BUILDING SPACES DESCRIPTION

	FINISHES				MINIMUM CEILING HEIGHT	MINIMUM STC	NOTES
	FLOOR	BASE	WALL	CEILING			
COMMAND SUITE							
COMMANDER	CONC	RB	GWB	ACT	8'-0"	45	
SRGT MAJOR	CONC	RB	GWB	ACT	8'-0"	45	
EXECUTIVE OFFICER	CONC	RB	GWB	ACT	8'-0"	45	
S2 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S3 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S4 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S6 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
SURGICAL OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
OPEN OFFICE	CONC	RB	GWB	ACT	9'-0"	45	
EMERG. OPS CENTER	CONC	RB	GWB	ACT	9'-0"	45	
CONFERENCE ROOM	CONC	RB	GWB	ACT	9'-0"	45	
STORAGE	CONC	RB	GWB	ACT	8'-0"	45	
SOLDIER SERVICES							
CHAPLAIN	CONC	RB	GWB	ACT	8'-0"	45	
MAIL DISTRIBUTION	CONC	RB	GWB	ACT	8'-0"	45	
WOMENS	CT	CT	GWB	GWB	8'-0"	45	
MENS	CT	CT	GWB	GWB	8'-0"	45	
ENTRY	CONC	RB	GWB	ACT	9'-0"		
VENDING	CONC	RB	GWB	ACT	8'-0"		
JANITOR	CONC	RB	GWB	ACT	8'-0"		
CORRIDOR	CONC	RB	GWB	ACT	9'-0"		
SERVICE							
STORAGE	CONC	RB	GWB	ACT	8'-0"		
MECHANICAL	CONC		GWB	ACT		45	
ELECTRICAL	CONC		GWB	ACT	8'-0"		
COMM	CONC		GWB	ACT	8'-0"		
SIPRNET	CONC		GWB	ACT	8'-0"		

FINISH LEGEND

CONC - SEALED CONCRETE
RB - RUBBER BASE
CMU - PAINTED CMU
GWB - PAINTED GYPSUM WALL BOARD
CT - CERAMIC TILE
ACT - 2'X2' ACOUSTICAL TILE CEILING

FINISH NOTES

1. ROOM FINISHES SHOWN ARE MINIMUM REQUIRED.

GENERAL

THE BRIGADE HEADQUARTERS FACILITY SHOULD NORMALLY BE PROVIDED AFTER OR IN CONJUNCTION WITH THE FOURTH BATTALION. THE FACILITY SERVES AS THE COMMAND AND CONTROL FACILITY FOR THE BRIGADE.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC 3-600-01.

2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.

3. LIFE SAFETY AND AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND UFC 1-200-01 DESIGN: GENERAL BUILDING REQUIREMENTS.

4. USE AND OCCUPANCY CLASSIFICATION:
IBC, CHAPTER 3
SECTION 304, BUSINESS GROUP B
PARAGRAPH 304.1
GROUP B (OFFICES)

NFPA 101, CHAPTER 38
NEW BUSINESS OCCUPANCIES
(OFFICES)

OVERALL FLOOR PLAN REQUIREMENTS

ADMINISTRATION AREA SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE COMMANDER, EXECUTIVE OFFICER (XO), SERGEANT MAJOR (SGM), S1, S2, S3, S4, S6, AND BRIGADE SURGEON. EACH PRIVATE OFFICE SHALL INCLUDE A 3' -0" WIDE DOOR.
2. PROVIDE AN EMERGENCY OPERATIONS CENTER (EOC). PROVIDE A 3'-0" WIDE DOOR FROM OPEN OFFICE AREA. PROVIDE 4' H X 8' W MARKER BOARD.
3. PROVIDE A CONFERENCE ROOM. PROVIDE A 3'-0" WIDE DOOR FROM OPEN OFFICE AREA. PROVIDE 4' H X 8' W MARKER BOARD.
4. PROVIDE AN EOC/CONF STORAGE ROOM. PROVIDE TWO 3'-0" WIDE DOORS TO SERVE THE CONFERENCE AND EOC ROOMS.
5. PROVIDE OPEN OFFICE WITH MINIMUM AREA OF 110 SQUARE FEET PER OCCUPANT. AREA INCLUDES CIRCULATION AND FILE STORAGE.

BREAK AREA:
1. PROVIDE 7'-0" LONG SOLID POLYMER COUNTERTOP WITH 19" x19" STAINLESS STEEL SINK AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS. PROVIDE PLASTIC LAMINATE SURFACED BASE CABINET WITH HINGED DOOR(S).

SOLDIER SERVICES SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE CHAPLAIN AND ASSISTANT CHAPLAIN.
2. PROVIDE STORAGE AREA FOR BUILDING SUPPLY STORAGE.

MEN'S LATRINE:
1. PROVIDE MINIMUM 4'-6" WIDE SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" x12" LAVATORIES AND 4" HIGH COVED BACK SPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH MIRROR GLASS, FULL WIDTH OF VANITY COUNTERTOP.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR.
4. PROVIDE MINIMUM ONE HANDICAP ACCESSIBLE FLOOR MOUNTED TOILET WITH FULL SEAT.
5. PROVIDE MINIMUM OF ONE WALL HUNG URINAL.
6. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

WOMEN'S LATRINE:
1. PROVIDE MINIMUM 4'-6" WIDE SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" x12" LAVATORIES AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
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JANITOR:
1. PROVIDE FLOOR MOP SINK.
2. PROVIDE MOP RACK FOR THREE MOPS.
3. PROVIDE MINIMUM 6'-0" OF LINEAR STAINLESS STEEL SHELVING.
4. PROVIDE 3'-0" DOOR.
5. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

STORAGE:
1. PROVIDE 10'-0" OF LINEAR SHELVING.
2. PROVIDE 3'-0" DOOR.

VENDING:
1. PROVIDE LOCATION FOR SOFT DRINK AND SNACK VENDING MACHINE, AND ICE MACHINE.
2. PROVIDE FLOOR DRAIN NEAR ICE MACHINE.

MINIMUM CORRIDOR WIDTH SHALL BE 6'-0".

MECHANICAL:
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. PROVIDE MECHANICAL ROOM ON GROUND FLOORS WITH DOORS OPENING TO EXTERIOR

ELECTRICAL:
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. LOCATE MAIN ELECTRICAL ROOM ON GROUND FLOOR.

COMMUNICATIONS ROOM:
1. PROVIDE DEDICATED INTERIOR ROOMS FOR COMMUNICATIONS EQUIPMENT.

SIPRNET:
1. PROVIDE DEDICATED INTERIOR ROOMS FOR SIPRNET EQUIPMENT.

GRAPHIC SCALE

8 0 8 16FT

SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Revisions: Symbol | Description | Date | Appr.

Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
COE LOUISVILLE DISTRICT Project Engineer/Architect | Date

BRIGADE HEADQUARTERS FLOOR PLAN

DEPARTMENT OF THE ARMY FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER: ORTC-A019
SHEET 27 OF 31

CORRECTED FINAL

DATE: 05-AUG-2009 10:09

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VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **BR-7**

DESCRIPTION: **REDUCE SQUARE FOOTAGE REQUIREMENT IN THE OFFICE AREA FROM 110 GSF/PERSON TO 100 GSF/PERSON**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A019, Brigade Headquarters Floor Plan dated 16 Feb 2006, the office area uses 110 gross square ft (GSF)/person in sizing the space.

ALTERNATIVE:

Revise the footprint and reduce the overall building area. Use 100 GSF per person in lieu of 110 GSF per person for the open office area. Relocate Storage (Rm. 123) and S1/S4 (Rm. 113) and reduce the overall length of the building by 5 ft.

ADVANTAGES:

- Provides efficient use of required spaces
- Eliminates the conflicts on the plan

DISADVANTAGES:

- Reduces open office area square footage and program DD1391

DISCUSSION:

Reconsider the 110 GSF per person requirement in the open office area to meet the minimal NFPA 101 code requirement of 100 GSF per person for Business Occupancy.

This change provides the following:

- Resolution of the open office space conflict and
- Windows for all private offices

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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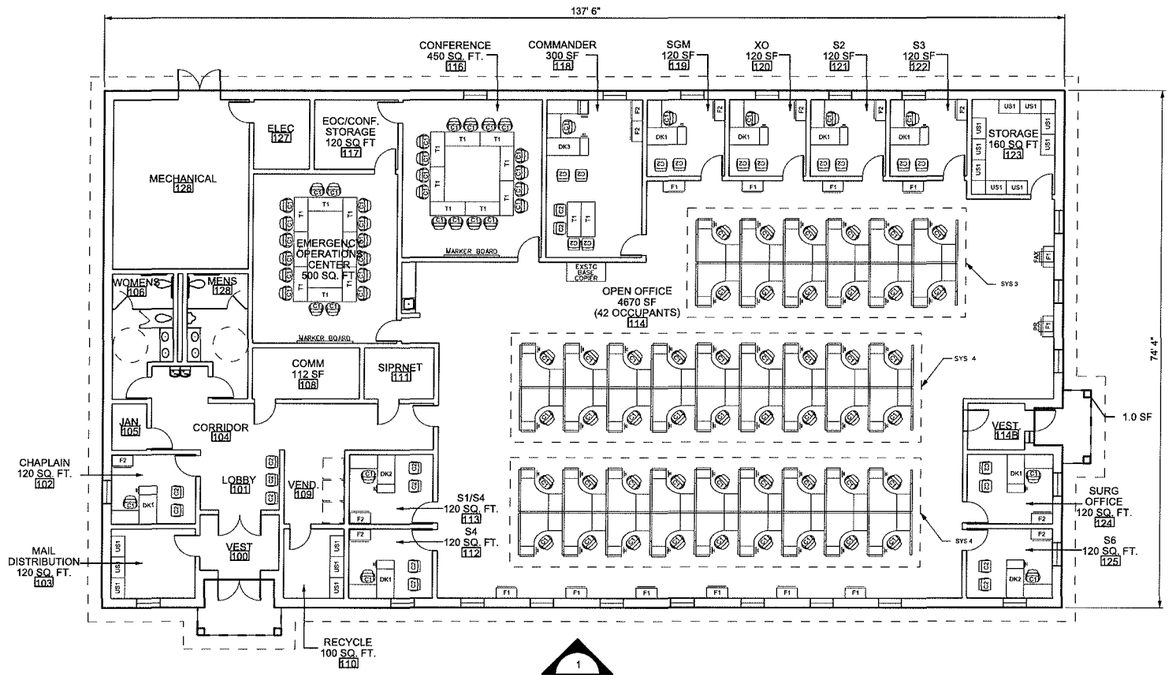
ALT. NO. BR-7

2 of 2



BRIGADE HEADQUARTERS FLOOR PLAN
SCALE: 3/32" = 1'-0"

GENERAL

THE BRIGADE HEADQUARTERS FACILITY SHOULD NORMALLY BE PROVIDED AFTER OR IN CONJUNCTION WITH THE FOURTH BATTALION. THE FACILITY SERVES AS THE COMMAND AND CONTROL FACILITY FOR THE BRIGADE.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC 3-600-01.

2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.

3. LIFE SAFETY AND AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND UFC 1-200-01 DESIGN: GENERAL BUILDING REQUIREMENTS.

4. USE AND OCCUPANCY CLASSIFICATION:
IBC, CHAPTER 3
SECTION 304, BUSINESS GROUP B
PARAGRAPH 304.1
GROUP B (OFFICES)

NFPA 101, CHAPTER 38
NEW BUSINESS OCCUPANCIES
(OFFICES)

OVERALL FLOOR PLAN REQUIREMENTS

ADMINISTRATION AREA SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE COMMANDER, EXECUTIVE OFFICER (XO), SERGEANT MAJOR (SGM), S1, S2, S3, S4, S6, AND BRIGADE SURGEON. EACH PRIVATE OFFICE SHALL INCLUDE A 3'-0" WIDE DOOR.
2. PROVIDE AN EMERGENCY OPERATIONS CENTER (EOC). PROVIDE A 3'-0" WIDE DOOR FROM OPEN OFFICE AREA. PROVIDE 4' H X 8' W MARKER BOARD.
3. PROVIDE A CONFERENCE ROOM. PROVIDE A 3'-0" WIDE DOOR FROM OPEN OFFICE AREA. PROVIDE 4' H X 8' W MARKER BOARD.
4. PROVIDE AN EOC/CONF STORAGE ROOM. PROVIDE TWO 3'-0" WIDE DOORS TO SERVE THE CONFERENCE AND EOC ROOMS.
5. PROVIDE OPEN OFFICE WITH MINIMUM AREA OF 110 SQUARE FEET PER OCCUPANT. AREA INCLUDES CIRCULATION AND FILE STORAGE.

BREAK AREA:
1. PROVIDE 7'-0" LONG SOLID POLYMER COUNTERTOP WITH 19" x19" STAINLESS STEEL SINK AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS. PROVIDE PLASTIC LAMINATE SURFACED BASE CABINET WITH HINGED DOOR(S).

SOLDIER SERVICES SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE CHAPLAIN AND ASSISTANT CHAPLAIN.
2. PROVIDE STORAGE AREA FOR BUILDING SUPPLY STORAGE.

MEN'S LATRINE:
1. PROVIDE MINIMUM 4'-6" WIDE SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" x12" LAVATORIES AND 4" HIGH COVED BACK SPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH MIRROR GLASS, FULL WIDTH OF VANITY COUNTERTOP.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR.
4. PROVIDE MINIMUM ONE HANDICAP ACCESSIBLE FLOOR MOUNTED TOILET WITH FULL SEAT.
5. PROVIDE MINIMUM OF ONE WALL HUNG URINAL.
6. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

WOMEN'S LATRINE:
1. PROVIDE MINIMUM 4'-6" WIDE SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" x12" LAVATORIES AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH MIRROR GLASS, FULL WIDTH OF VANITY COUNTERTOP.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR.
4. PROVIDE MINIMUM ONE HANDICAP ACCESSIBLE AND ONE STANDARD FLOOR MOUNTED TOILET WITH FULL SEAT.
5. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

JANITOR:
1. PROVIDE FLOOR MOP SINK.
2. PROVIDE MOP RACK FOR THREE MOPS.
3. PROVIDE MINIMUM 6'-0" OF LINEAR STAINLESS STEEL SHELVING.
4. PROVIDE 3'-0" DOOR.
5. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

STORAGE:
1. PROVIDE 10'-0" OF LINEAR SHELVING.
2. PROVIDE 3'-0" DOOR.

VENDING:
1. PROVIDE LOCATION FOR SOFT DRINK AND SNACK VENDING MACHINE, AND ICE MACHINE.
2. PROVIDE FLOOR DRAIN NEAR ICE MACHINE.

MINIMUM CORRIDOR WIDTH SHALL BE 6'-0".

MECHANICAL:
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. PROVIDE MECHANICAL ROOM ON GROUND FLOORS WITH DOORS OPENING TO EXTERIOR

ELECTRICAL:
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. LOCATE MAIN ELECTRICAL ROOM ON GROUND FLOOR.

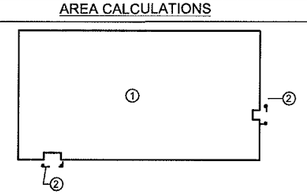
COMMUNICATIONS ROOM:
1. PROVIDE DEDICATED INTERIOR ROOMS FOR COMMUNICATIONS EQUIPMENT.

SIPRNET:
1. PROVIDE DEDICATED INTERIOR ROOMS FOR SIPRNET EQUIPMENT.

BUILDING SPACES DESCRIPTION

	FINISHES				MINIMUM CEILING HEIGHT	MINIMUM STC	NOTES
	FLOOR	BASE	WALL	CEILING			
COMMAND SUITE							
COMMANDER	CONC	RB	GWB	ACT	8'-0"	45	
SRGT MAJOR	CONC	RB	GWB	ACT	8'-0"	45	
EXECUTIVE OFFICER	CONC	RB	GWB	ACT	8'-0"	45	
S2 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S3 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S4 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S6 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
SURGICAL OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
OPEN OFFICE	CONC	RB	GWB	ACT	9'-0"	45	
EMERG. OPS CENTER	CONC	RB	GWB	ACT	9'-0"	45	
CONFERENCE ROOM	CONC	RB	GWB	ACT	9'-0"	45	
STORAGE	CONC	RB	GWB	ACT	8'-0"	45	
SOLDIER SERVICES							
CHAPLAIN	CONC	RB	GWB	ACT	8'-0"	45	
MAIL DISTRIBUTION	CONC	RB	GWB	ACT	8'-0"	45	
WOMENS	CT	CT	GWB	GWB	8'-0"	45	
MENS	CT	CT	GWB	GWB	8'-0"	45	
ENTRY	CONC	RB	GWB	ACT	9'-0"		
VENDING	CONC	RB	GWB	ACT	8'-0"		
JANITOR	CONC	RB	GWB	ACT	8'-0"		
CORRIDOR	CONC	RB	GWB	ACT	9'-0"		
SERVICE							
STORAGE	CONC	RB	GWB	ACT	8'-0"		
MECHANICAL	CONC		GWB	ACT		45	
ELECTRICAL	CONC		GWB	ACT	8'-0"		
COMM	CONC		GWB	ACT	8'-0"		
SIPRNET	CONC		GWB	ACT	8'-0"		

AREA CALCULATIONS



FLOOR PLAN GROSS AREA CALCS

1 BUILDING AREA AT FULL VALUE: 10,165.0 SF

EXTERIOR COVERED AREA AT HALF VALUE:
2 PORCHES [(86.0+61.0) x 1/2] = 73.5 SF
BUILDING TOTAL: 10,238.5 SF

FINISH LEGEND

CONC - SEALED CONCRETE
RB - RUBBER BASE
CMU - PAINTED CMU
GWB - PAINTED GYPSUM WALL BOARD
CT - CERAMIC TILE
ACT - 2'X2' ACOUSTICAL TILE CEILING

FINISH NOTES

1. ROOM FINISHES SHOWN ARE MINIMUM REQUIRED.

GRAPHIC SCALE

8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Revisions
Symbol | Description | Date | Appr.

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
COE LOUISVILLE DISTRICT Project Engineer/Architect
Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX

BRIGADE HEADQUARTERS FLOOR PLAN

DEPARTMENT OF THE ARMY
FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A019
SHEET 27 OF 31

CORRECTED FINAL

DATE: 05-AUG-2009 10:09
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SUMMARY OF VALUE ENGINEERING ALTERNATIVES

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX (ORTC)**
Center of Standardization Model

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
				PRESENT WORTH OF COST SAVINGS		
	BATTALION HEADQUARTERS (BH)					
BH-4	Eliminate the windows in the classrooms of the Battalion Headquarters Building and replace with alternate natural light sources such as clerestory.	DESIGN SUGGESTION				
BH-5	Remove the separation wall between the Vending and the Recycle Spaces.	DESIGN SUGGESTION				
BH-6	Add an Arms Vault in the building.	DESIGN SUGGESTION				
BH-7	Reduce the SF requirement in the Open Area from 110 sf/person to 100 sf/person.	DESIGN SUGGESTION				
BH-8	Move the Vestibule door to be flush with the exterior wall in lieu of recessed.	DESIGN SUGGESTION				

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VALUE ENGINEERING ALTERNATIVE

PROJECT:	***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX** ***Center of Standardization (CoS) Model*** *Department of the Army* *Facilities Standardization Program*	ALTERNATIVE NO.: **BH-4**
DESCRIPTION:	**ELIMINATE WINDOWS IN CLASSROOM OF BATTALION HEADQUATERS BUILDING AND REPLACE WITH ALTERNATE NATURAL LIGHTING SYSTEM SUCH AS A CLERESTORY**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

Fourteen windows are shown around the perimeter of the classroom in the Battalion Headquarters Building.

ALTERNATIVE:

Provide a clerestory, indirect lighting, skylights or other system to provide natural lighting.

ADVANTAGES:

- Simplifies wall construction
- Natural light is maintained/improved
- Possible to obtain a LEED point
- It is documented that natural lighting improves morale and reduces absences

DISADVANTAGES:

- More complex roof construction
- Potential for roof leaks increases with additional roof penetrations
- Probably more expensive to build

DISCUSSION:

Typically, windows in classrooms have blinds which remain closed and do not provide the intended function. Using an alternative natural lighting method would allow for natural lighting which has been shown to improve moral and reduce absences while possibly adding LEED point(s). The drawback would be there is an increased potential for leaks in the roof as the number of penetrations increases; therefore, extra care is required in construction of the roof to minimize the risk.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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VALUE ENGINEERING ALTERNATIVE

PROJECT:	***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX** ***Center of Standardization (CoS) Model*** *Department of the Army* *Facilities Standardization Program*	ALTERNATIVE NO.: **BH-5**
DESCRIPTION:	**REMOVE THE SEPARATION WALL BETWEEN THE VENDING AND RECYCLE SPACES**	SHEET NO.: **1 of 2**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A001, Battalion Headquarters Floor Plan, dated 16 Feb 2006 the Vending Room (Rm. 111) and Recycle Room (Rm. 110) have a separation wall with a door in between.

ALTERNATIVE:

Combine the two rooms and eliminate the separation wall and door between the spaces.

ADVANTAGES:

- Saves cost of door/hardware and wall construction
- Provides easy access for all users
- Encourages recycling, meets LEED required MR Prerequisite 1: Storage & Collection of Recyclables

DISADVANTAGES:

- Possible odor from recycled items will be in both areas

DISCUSSION:

No separation of spaces is required and no square ft increase will result.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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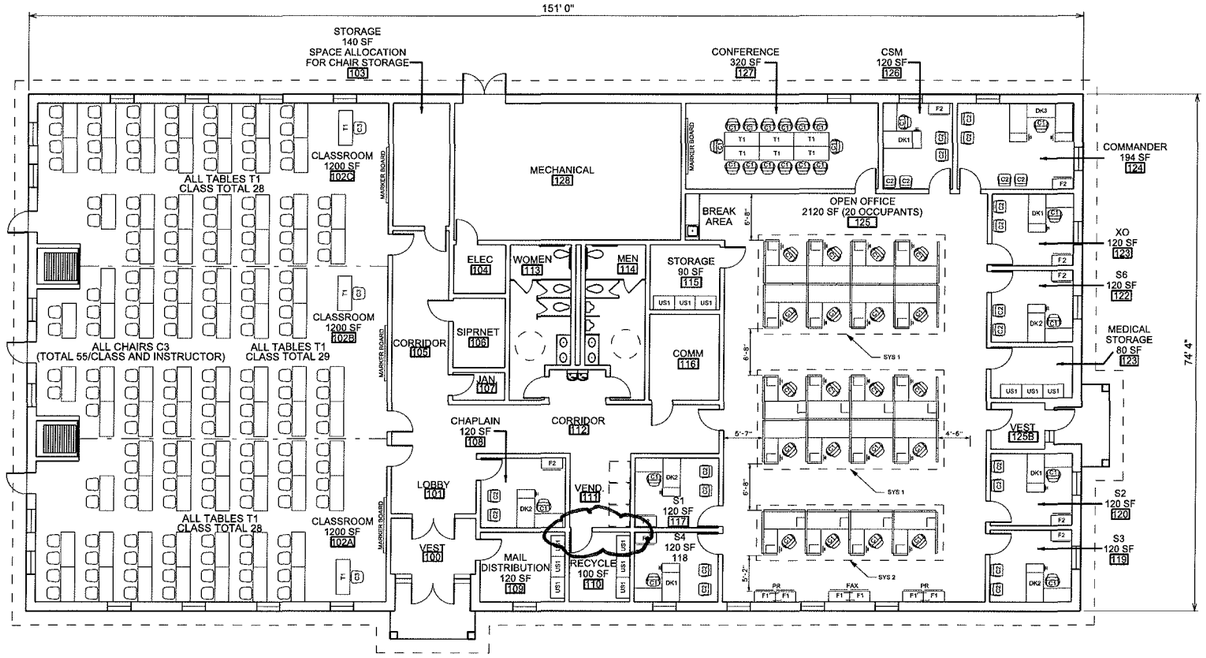
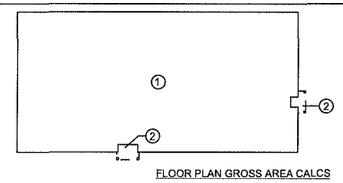
ALT. NO. PH. 5
Sht. 2 of 2



BATTALION HEADQUARTERS FLOOR PLAN
SCALE: 3/32" = 1'-0"

AREA CALCULATIONS



FLOOR PLAN GROSS AREA CALCS

① BUILDING AREA AT FULL VALUE: 11,160.3 SF

EXTERIOR COVERED AREA AT HALF VALUE:

② PORCHES {(88.0+66.0) x 1/2} = 77.0 SF

BUILDING TOTAL: 11,237.3 SF

BUILDING SPACES DESCRIPTION

	FINISHES				MINIMUM CEILING HEIGHT	MINIMUM STC	NOTES
	FLOOR	BASE	WALL	CEILING			
COMMAND SUITE							
COMMANDER	CONC	RB	GWB	ACT	8'-0"	45	
CSM OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
XO OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S2 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S3 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S4 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S1 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S6 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
MEDICAL STORAGE	CONC	RB	GWB	ACT	8'-0"	45	
OPEN OFFICE	CONC	RB	GWB	ACT	9'-0"	45	
CONFERENCE ROOM	CONC	RB	GWB	ACT	9'-0"	45	
STORAGE	CONC	RB	GWB	ACT	8'-0"	45	
SOLDIER SERVICES							
CHAPLAIN	CONC	RB	GWB	ACT	8'-0"	45	
MAIL DISTRIBUTION	CONC	RB	GWB	ACT	8'-0"	45	
CORRIDOR	CONC	RB	GWB	ACT	8'-0"	45	
CLASSROOMS	CONC	RB	GWB	ACT	9'-0"		
MEN	CT	CT	GWB	GWB	8'-0"	45	
WOMEN	CT	CT	GWB	GWB	8'-0"	45	
LOBBY	CONC	RB	GWB	ACT	9'-0"		
VENDING	CONC	RB	GWB	ACT	8'-0"		
JANITOR	CONC	RB	GWB	ACT	8'-0"		
STORAGE	CONC	RB	GWB	ACT	9'-0"		
CORRIDOR	CONC	RB	GWB	ACT	8'-0"	45	
SERVICE							
STORAGE	CONC	RB	GWB	GWB	8'-0"		
MECHANICAL	CONC	-	GWB	EXP		45	
ELECTRICAL	CONC	-	GWB	GWB	8'-0"		
COMM	CONC	-	GWB	GWB	8'-0"		
SIPRNET	CONC	-	GWB	GWB	8'-0"		

FINISH LEGEND

CONC - SEALED CONCRETE
RB - RUBBER BASE
CMU - PAINTED CMU
GWB - PAINTED GYPSUM WALL BOARD
CT - CERAMIC TILE
ACT - 2'X2' ACOUSTICAL TILE CEILING
EXP - EXPOSED STRUCTURE

FINISH NOTES

1. ROOM FINISHES SHOWN ARE MINIMUM REQUIRED.

GENERAL

THE BATTALION HEADQUARTERS FACILITY SUPPORTS TWO DISTINCT FUNCTIONS; COMMAND AND CONTROL (C2) AND ASSEMBLY.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC'S.
2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.
3. LIFE SAFETY AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND IBC.
4. USE AND OCCUPANCY CLASSIFICATION:
   MIXED OCCUPANCY
   IBC

   IBC, CHAPTER 3
   SECTION 303, ASSEMBLY GROUP A
   GROUP A-3 (CLASSROOMS)

   SECTION 304, BUSINESS GROUP B
   GROUP B (OFFICES)

OVERALL FLOOR PLAN REQUIREMENTS

ADMINISTRATION AREA SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE FOLLOWING SPACES: COMMANDER, CSM, EXECUTIVE OFFICER (XO), S1 OFFICER, S2 OFFICER, S3 OFFICER, S4 OFFICER (2), S6 OFFICER, AND MEDICAL STORAGE. EACH PRIVATE OFFICE SHALL INCLUDE A 3'-0" WIDE DOOR.
2. PROVIDE OPEN OFFICE WITH A MINIMUM AREA OF 110 SQUARE FEET PER OCCUPANT. AREA INCLUDES CIRCULATION.
3. PROVIDE A CONFERENCE ROOM. PROVIDE A 3'-0" WIDE DOOR FROM OPEN OFFICE AREA. PROVIDE 4'-0" HIGH X 8'-0" WIDE MARKER BOARD.
4. PROVIDE TWO STORAGE CLOSETS FOR STORAGE OF OFFICE SUPPLIES AND CONFERENCE ROOM EQUIPMENT.

BREAK AREA
1. PROVIDE 6'-0" LONG SOLID POLYMER COUNTERTOP WITH 19" x19" STAINLESS STEEL SINK AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS. PROVIDE PLASTIC LAMINATE SURFACED VANITY BASE CABINET WITH HINGED DOOR(S).

SOLDIER SERVICES SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE FOLLOWING SPACES CHAPLAIN AND ASSISTANT CHAPLAIN.
2. PROVIDE STORAGE AREA FOR BUILDING SUPPLY STORAGE
3. PROVIDE THREE CLASSROOMS THAT SHALL BE DIVIDED BY OPERABLE PANEL PARTITIONS AND PROVIDED WITH APPROPRIATE ENTRANCES AND EXITS TO ALLOW TWO OR THREE CLASSROOMS TO BE COMBINED FOR USE AS ONE LARGE CLASSROOM.
4. PROVIDE STORAGE AREA ADJACENT TO CLASSROOMS FOR STORAGE OF CHAIRS AND TABLES

MENS TOILET ROOM
1. PROVIDE MINIMUM 4'-6 " LONG SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" x 12" LAVATORY AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH MIRROR GLASS, FULL WIDTH OF VANITY COUNTERTOP.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR.
4. PROVIDE MINIMUM ONE HANDICAP ACCESSIBLE AND ONE STANDARD FLOOR MOUNTED TOILET WITH FULL SEAT.
5. PROVIDE MINIMUM OF TWO WALL HUNG URINALS.
6. PROVIDE FLOOR DRAINS AT TOILET AREA AND LAVATORY AREA.

WOMENS TOILET ROOM
1. PROVIDE MINIMUM 4'-6" LONG SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" X12" LAVATORY AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH MIRROR GLASS, FULL WIDTH OF VANITY COUNTERTOP.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR
4. PROVIDE MINIMUM ONE HANDICAP ACCESSIBLE FLOOR MOUNTED TOILET WITH FULL SEAT.
5. PROVIDE TWO STANDARD FLOOR MOUNTED TOILETS WITH FULL SEATS.
6. PROVIDE FLOOR DRAINS AT TOILET AREA AND LAVATORY AREA.

JANITOR
1. PROVIDE FLOOR MOP SINK
2. PROVIDE MOP RACK FOR THREE MOPS
3. PROVIDE MINIMUM 6'-0" OF LINEAR STAINLESS STEEL SHELVING
4. PROVIDE 3'-0" DOOR
5. PROVIDE FLOOR DRAIN

STORAGE
1. PROVIDE 10'-0" OF LINEAR SHELVING
2. PROVIDE 3'-0" DOOR

VENDING
1. PROVIDE LOCATION FOR SOFT DRINK AND SNACK VENDING MACHINE, AND ICE MACHINE.
2. PROVIDE FLOOR DRAIN NEAR ICE MACHINE

CORRIDOR
1. MINIMUM CORRIDOR WIDTH SHALL BE 6'-0".
2. PROVIDE WATER COOLER/DRINKING FOUNTAINS INCLUDING ONE TO BE A.D.A. COMPLIANT.

MECHANICAL
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. PROVIDE MECHANICAL ROOM ON GROUND FLOORS WITH DOORS OPENING TO EXTERIOR.

ELECTRICAL
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. LOCATE MAIN ELECTRICAL ROOM ON GROUND FLOOR.

COMM ROOM.
1. PROVIDE DEDICATED INTERIOR ROOMS FOR COMMUNICATIONS EQUIPMENT

SIPRNET
1. PROVIDE DEDICATED INTERIOR ROOMS FOR SIPRNET EQUIPMENT

GRAPHIC SCALE

8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Symbol	Revisions Description	Date	Appr.

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX
COE LOUISVILLE DISTRICT Project Engineer/Architect
Date

BATTALION HEADQUARTERS FLOOR PLAN

DEPARTMENT OF THE ARMY FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A001
SHEET 6 OF 31

CORRECTED FINAL

DATE: 05-AUG-2009 10:07
FILE: IP_PWP:dms07722*156591-A001.dgn

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VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **BH-6**

DESCRIPTION: **ADD AN ARMS VAULT IN THE BUILDING**

SHEET NO.: **1 of 3**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A001, Battalion Headquarters Floor Plan, dated 16 Feb 2006, the program does not provide for an arms vault.

ALTERNATIVE: (sketch attached)

Provide an arms vault for storage of Officers' weapons at their duty station.

ADVANTAGES:

- Secures firearms
- Meets Army requirements

DISADVANTAGES:

- Reduces Mechanical Room (Rm. 128) and Chair Storage Room (Rm. 103) spaces

DISCUSSION:

Providing an arms vault assumes the ORTC Standard Design is incorrect and there is a requirement for this space.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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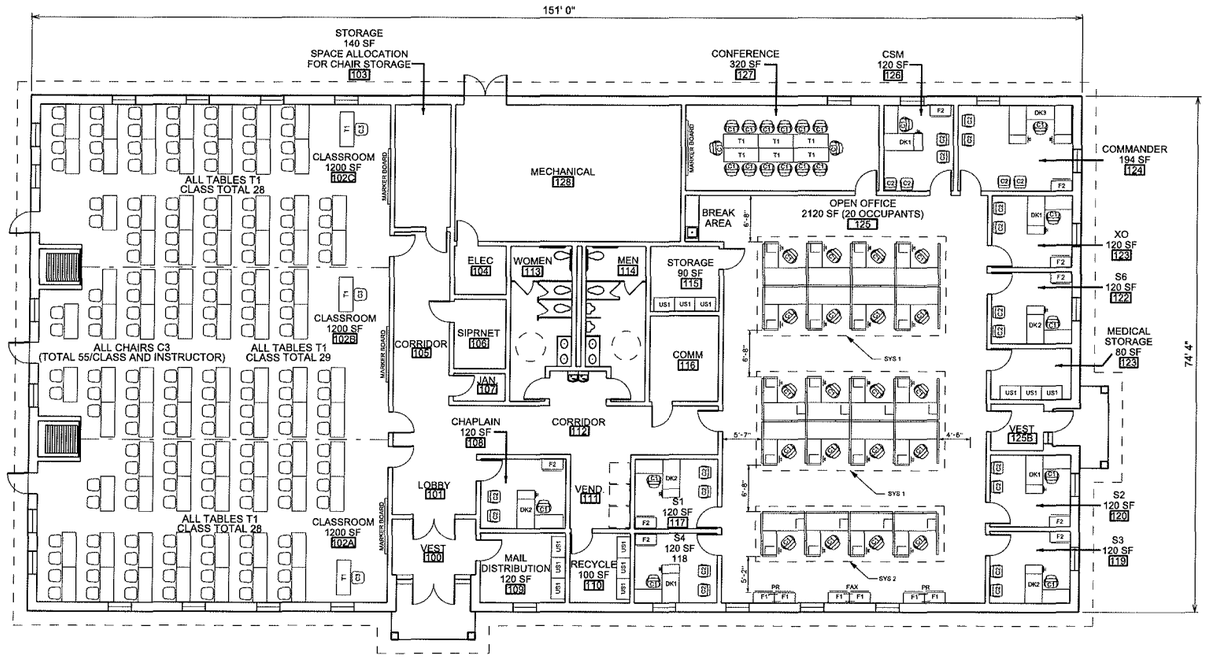
Alt. No. BH-6
Sht. 2 of 3



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A002

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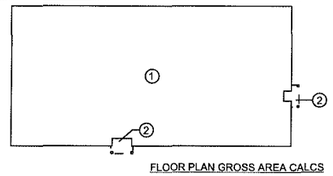
BATTALION HEADQUARTERS FLOOR PLAN

SCALE: 3/32" = 1'-0"

AREA CALCULATIONS



FLOOR PLAN GROSS AREA CALCS

1	BUILDING AREA AT FULL VALUE:	11,160.3 SF
	EXTERIOR COVERED AREA AT HALF VALUE:	
2	PORCHES	[(88.0+66.0) x 1/2] = 77.0 SF
	BUILDING TOTAL:	11,237.3 SF

BUILDING SPACES DESCRIPTION

	FINISHES						
	FLOOR	BASE	WALL	CEILING	MINIMUM CEILING HEIGHT	MINIMUM STC	NOTES
COMMAND SUITE							
COMMANDER	CONC	RB	GWB	ACT	8'-0"	45	
CSM OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
XO OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S2 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S3 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S4 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S1 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S6 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
MEDICAL STORAGE	CONC	RB	GWB	ACT	8'-0"	45	
OPEN OFFICE	CONC	RB	GWB	ACT	9'-0"	45	
CONFERENCE ROOM	CONC	RB	GWB	ACT	9'-0"	45	
STORAGE	CONC	RB	GWB	ACT	8'-0"	45	
SOLDIER SERVICES							
CHAPLAIN	CONC	RB	GWB	ACT	8'-0"	45	
MAIL DISTRIBUTION	CONC	RB	GWB	ACT	8'-0"	45	
CORRIDOR	CONC	RB	GWB	ACT	8'-0"	45	
CLASSROOMS	CONC	RB	GWB	ACT	9'-0"		
MEN	CT	CT	GWB	GWB	8'-0"	45	
WOMEN	CT	CT	GWB	GWB	8'-0"	45	
LOBBY	CONC	RB	GWB	ACT	9'-0"		
VENDING	CONC	RB	GWB	ACT	8'-0"		
JANITOR	CONC	RB	GWB	ACT	8'-0"		
STORAGE	CONC	RB	GWB	ACT	9'-0"		
CORRIDOR	CONC	RB	GWB	ACT	8'-0"	45	
SERVICE							
STORAGE	CONC	RB	GWB	GWB	8'-0"		
MECHANICAL	CONC	-	GWB	EXP		45	
ELECTRICAL	CONC	-	GWB	GWB	8'-0"		
COMM	CONC	-	GWB	GWB	8'-0"		
SIPRNET	CONC	-	GWB	GWB	8'-0"		

FINISH LEGEND

CONC - SEALED CONCRETE
RB - RUBBER BASE
CMU - PAINTED CMU
GWB - PAINTED GYPSUM WALL BOARD
CT - CERAMIC TILE
ACT - 2'X2' ACOUSTICAL TILE CEILING
EXP - EXPOSED STRUCTURE

FINISH NOTES

1. ROOM FINISHES SHOWN ARE MINIMUM REQUIRED.

GENERAL

THE BATTALION HEADQUARTERS FACILITY SUPPORTS TWO DISTINCT FUNCTIONS; COMMAND AND CONTROL (C2) AND ASSEMBLY.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC'S.
2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.
3. LIFE SAFETY AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND IBC.
4. USE AND OCCUPANCY CLASSIFICATION:
   MIXED OCCUPANCY
   IBC

   IBC, CHAPTER 3
   SECTION 303, ASSEMBLY GROUP A
   GROUP A-3 (CLASSROOMS)

   SECTION 304, BUSINESS GROUP B
   GROUP B (OFFICES)

OVERALL FLOOR PLAN REQUIREMENTS

ADMINISTRATION AREA SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE FOLLOWING SPACES: COMMANDER, CSM, EXECUTIVE OFFICER (XO), S1 OFFICER, S2 OFFICER, S3 OFFICER, S4 OFFICER (2), S6 OFFICER, AND MEDICAL STORAGE. EACH PRIVATE OFFICE SHALL INCLUDE A 3'-0" WIDE DOOR.
2. PROVIDE OPEN OFFICE WITH A MINIMUM AREA OF 110 SQUARE FEET PER OCCUPANT. AREA INCLUDES CIRCULATION.
3. PROVIDE A CONFERENCE ROOM. PROVIDE A 3'-0" WIDE DOOR FROM OPEN OFFICE AREA. PROVIDE 4'-0" HIGH X 8'-0" WIDE MARKER BOARD.
4. PROVIDE TWO STORAGE CLOSETS FOR STORAGE OF OFFICE SUPPLIES AND CONFERENCE ROOM EQUIPMENT.

BREAK AREA
1. PROVIDE 6'-0" LONG SOLID POLYMER COUNTERTOP WITH 19" x19" STAINLESS STEEL SINK AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS. PROVIDE PLASTIC LAMINATE SURFACED VANITY BASE CABINET WITH HINGED DOOR(S).

SOLDIER SERVICES SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE FOLLOWING SPACES CHAPLAIN AND ASSISTANT CHAPLAIN.
2. PROVIDE STORAGE AREA FOR BUILDING SUPPLY STORAGE
3. PROVIDE THREE CLASSROOMS THAT SHALL BE DIVIDED BY OPERABLE PANEL PARTITIONS AND PROVIDED WITH APPROPRIATE ENTRANCES AND EXITS TO ALLOW TWO OR THREE CLASSROOMS TO BE COMBINED FOR USE AS ONE LARGE CLASSROOM.
4. PROVIDE STORAGE AREA ADJACENT TO CLASSROOMS FOR STORAGE OF CHAIRS AND TABLES

MENS TOILET ROOM
1. PROVIDE MINIMUM 4'-6 " LONG SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" x 12" LAVATORY AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH MIRROR GLASS, FULL WIDTH OF VANITY COUNTERTOP.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR.
4. PROVIDE MINIMUM ONE HANDICAP ACCESSIBLE AND ONE STANDARD FLOOR MOUNTED TOILET WITH FULL SEAT.
5. PROVIDE MINIMUM OF TWO WALL HUNG URINALS.
6. PROVIDE FLOOR DRAINS AT TOILET AREA AND LAVATORY AREA.

WOMENS TOILET ROOM
1. PROVIDE MINIMUM 4'-6" LONG SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" X12" LAVATORY AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH MIRROR GLASS, FULL WIDTH OF VANITY COUNTERTOP.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR
4. PROVIDE MINIMUM ONE HANDICAP ACCESSIBLE FLOOR MOUNTED TOILET WITH FULL SEAT.
5. PROVIDE TWO STANDARD FLOOR MOUNTED TOILETS WITH FULL SEATS.
6. PROVIDE FLOOR DRAINS AT TOILET AREA AND LAVATORY AREA.

JANITOR
1. PROVIDE FLOOR MOP SINK
2. PROVIDE MOP RACK FOR THREE MOPS
3. PROVIDE MINIMUM 6'-0" OF LINEAR STAINLESS STEEL SHELVING
4. PROVIDE 3'-0" DOOR
5. PROVIDE FLOOR DRAIN

STORAGE
1. PROVIDE 10'-0" OF LINEAR SHELVING
2. PROVIDE 3'-0" DOOR

VENDING
1. PROVIDE LOCATION FOR SOFT DRINK AND SNACK VENDING MACHINE, AND ICE MACHINE.
2. PROVIDE FLOOR DRAIN NEAR ICE MACHINE

CORRIDOR
1. MINIMUM CORRIDOR WIDTH SHALL BE 6'-0".
2. PROVIDE WATER COOLER/DRINKING FOUNTAINS INCLUDING ONE TO BE A.D.A. COMPLIANT.

MECHANICAL
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. PROVIDE MECHANICAL ROOM ON GROUND FLOORS WITH DOORS OPENING TO EXTERIOR.

ELECTRICAL
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. LOCATE MAIN ELECTRICAL ROOM ON GROUND FLOOR.

COMM ROOM.
1. PROVIDE DEDICATED INTERIOR ROOMS FOR COMMUNICATIONS EQUIPMENT

SIPRNET
1. PROVIDE DEDICATED INTERIOR ROOMS FOR SIPRNET EQUIPMENT

GRAPHIC SCALE

8 0 8 16FT

SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Revisions

Symbol	Description	Date	Appr

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
COE LOUISVILLE DISTRICT Project Engineer/Architect
Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX
Date

BATTALION HEADQUARTERS FLOOR PLAN

DEPARTMENT OF THE ARMY
FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A001
SHEET 6 OF 31

CORRECTED FINAL

DATE: 05-AUG-2009 10:07
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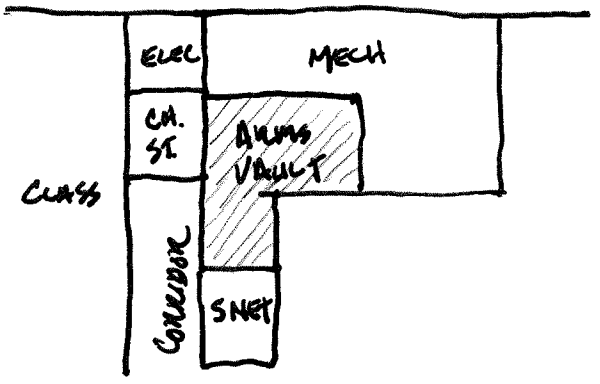
SKETCH

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: BH-6

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☒ BOTH ☐

SHEET NO.: 3 of 3



BATTALION HQ PARKING PLAN
REVISED

BH-6

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VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **BH-7**

DESCRIPTION: **REDUCE SQUARE FOOTAGE REQUIREMENT IN THE OPEN OFFICE AREA FROM 110 GSF/PERSON TO 100 GSF/PERSON**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A019, Battalion Headquarters Floor Plan dated 16 Feb 2006, 110 gross square ft (GSF) per person is provided in the Open Office Area (Rm. 125).

ALTERNATIVE:

Reduce the overall building area by adjusting the size of the office cubicles from 110 GSF/person to 100 GSF/person and reduce the overall length of the building by 2 ft.

ADVANTAGES:

- Reduction in square footage produces a cost savings
- Provides efficient use of required spaces

DISADVANTAGES:

- Reduces the length of the Conference Room (Rm. 127)

DISCUSSION:

Reconsideration of the 110 GSF per person requirement in Open Office meets the minimal NFPA 101 code requirement of 100 GSF per person for Business Occupancy, thus resulting in a reduction in building area of 140 SF (2 ft cut). This will resolve the Open Office space conflict.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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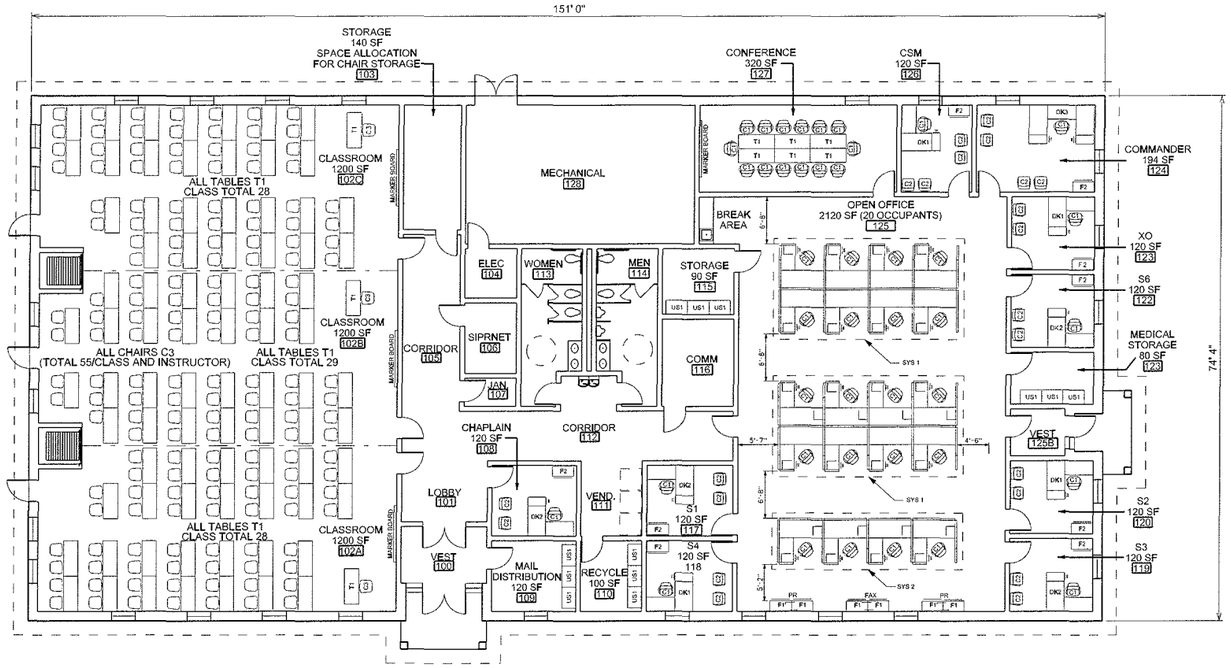
ALT. NO. BH-7
Sht 2 of 2



BATTALION HEADQUARTERS FLOOR PLAN
SCALE: 3/32" = 1'-0"

GENERAL

THE BATTALION HEADQUARTERS FACILITY SUPPORTS TWO DISTINCT FUNCTIONS; COMMAND AND CONTROL (C2) AND ASSEMBLY.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC'S.

2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.

3. LIFE SAFETY AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND IBC.

4. USE AND OCCUPANCY CLASSIFICATION:
MIXED OCCUPANCY
IBC

IBC, CHAPTER 3
SECTION 303, ASSEMBLY GROUP A
GROUP A-3 (CLASSROOMS)

SECTION 304, BUSINESS GROUP B
GROUP B (OFFICES)

OVERALL FLOOR PLAN REQUIREMENTS

ADMINISTRATION AREA SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE FOLLOWING SPACES: COMMANDER, CSM, EXECUTIVE OFFICER (XO), S1 OFFICER, S2 OFFICER, S3 OFFICER, S4 OFFICER (2), S6 OFFICER, AND MEDICAL STORAGE. EACH PRIVATE OFFICE SHALL INCLUDE A 3'-0" WIDE DOOR.
2. PROVIDE OPEN OFFICE WITH A MINIMUM AREA OF 110 SQUARE FEET PER OCCUPANT. AREA INCLUDES CIRCULATION.
3. PROVIDE A CONFERENCE ROOM. PROVIDE A 3'-0" WIDE DOOR FROM OPEN OFFICE AREA. PROVIDE 4'-0" HIGH X 8'-0" WIDE MARKER BOARD.
4. PROVIDE TWO STORAGE CLOSETS FOR STORAGE OF OFFICE SUPPLIES AND CONFERENCE ROOM EQUIPMENT.

BREAK AREA
1. PROVIDE 6'-0" LONG SOLID POLYMER COUNTERTOP WITH 19" x19" STAINLESS STEEL SINK AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS. PROVIDE PLASTIC LAMINATE SURFACED VANITY BASE CABINET WITH HINGED DOOR(S).

SOLDIER SERVICES SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE FOLLOWING SPACES CHAPLAIN AND ASSISTANT CHAPLAIN.
2. PROVIDE STORAGE AREA FOR BUILDING SUPPLY STORAGE
3. PROVIDE THREE CLASSROOMS THAT SHALL BE DIVIDED BY OPERABLE PANEL PARTITIONS AND PROVIDED WITH APPROPRIATE ENTRANCES AND EXITS TO ALLOW TWO OR THREE CLASSROOMS TO BE COMBINED FOR USE AS ONE LARGE CLASSROOM.
4. PROVIDE STORAGE AREA ADJACENT TO CLASSROOMS FOR STORAGE OF CHAIRS AND TABLES

MENS TOILET ROOM
1. PROVIDE MINIMUM 4'-6 " LONG SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" x 12" LAVATORY AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH MIRROR GLASS, FULL WIDTH OF VANITY COUNTERTOP.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR.
4. PROVIDE MINIMUM ONE HANDICAP ACCESSIBLE AND ONE STANDARD FLOOR MOUNTED TOILET WITH FULL SEAT.
5. PROVIDE MINIMUM OF TWO WALL HUNG URINALS.
6. PROVIDE FLOOR DRAINS AT TOILET AREA AND LAVATORY AREA.

WOMENS TOILET ROOM
1. PROVIDE MINIMUM 4'-6" LONG SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" X12" LAVATORY AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
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6. PROVIDE FLOOR DRAINS AT TOILET AREA AND LAVATORY AREA.

JANITOR
1. PROVIDE FLOOR MOP SINK
2. PROVIDE MOP RACK FOR THREE MOPS
3. PROVIDE MINIMUM 6'-0" OF LINEAR STAINLESS STEEL SHELVING
4. PROVIDE 3'-0" DOOR
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STORAGE
1. PROVIDE 10'-0" OF LINEAR SHELVING
2. PROVIDE 3'-0" DOOR

VENDING
1. PROVIDE LOCATION FOR SOFT DRINK AND SNACK VENDING MACHINE, AND ICE MACHINE.
2. PROVIDE FLOOR DRAIN NEAR ICE MACHINE

CORRIDOR
1. MINIMUM CORRIDOR WIDTH SHALL BE 6'-0".
2. PROVIDE WATER COOLER/DRINKING FOUNTAINS INCLUDING ONE TO BE A.D.A. COMPLIANT.

MECHANICAL
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. PROVIDE MECHANICAL ROOM ON GROUND FLOORS WITH DOORS OPENING TO EXTERIOR.

ELECTRICAL
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. LOCATE MAIN ELECTRICAL ROOM ON GROUND FLOOR.

COMM ROOM.
1. PROVIDE DEDICATED INTERIOR ROOMS FOR COMMUNICATIONS EQUIPMENT

SIPRNET
1. PROVIDE DEDICATED INTERIOR ROOMS FOR SIPRNET EQUIPMENT

BUILDING SPACES DESCRIPTION

	FINISHES				MINIMUM CEILING HEIGHT	MINIMUM STC	NOTES
	FLOOR	BASE	WALL	CEILING			
COMMAND SUITE							
COMMANDER	CONC	RB	GWB	ACT	8'-0"	45	
CSM OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
XO OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S2 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S3 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S4 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S1 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S6 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
MEDICAL STORAGE	CONC	RB	GWB	ACT	8'-0"	45	
OPEN OFFICE	CONC	RB	GWB	ACT	9'-0"	45	
CONFERENCE ROOM	CONC	RB	GWB	ACT	9'-0"	45	
STORAGE	CONC	RB	GWB	ACT	8'-0"	45	
SOLDIER SERVICES							
CHAPLAIN	CONC	RB	GWB	ACT	8'-0"	45	
MAIL DISTRIBUTION	CONC	RB	GWB	ACT	8'-0"	45	
CORRIDOR	CONC	RB	GWB	ACT	8'-0"	45	
CLASSROOMS	CONC	RB	GWB	ACT	9'-0"		
MEN	CT	CT	GWB	GWB	8'-0"	45	
WOMEN	CT	CT	GWB	GWB	8'-0"	45	
LOBBY	CONC	RB	GWB	ACT	9'-0"		
VENDING	CONC	RB	GWB	ACT	8'-0"		
JANITOR	CONC	RB	GWB	ACT	8'-0"		
STORAGE	CONC	RB	GWB	ACT	9'-0"		
CORRIDOR	CONC	RB	GWB	ACT	8'-0"	45	
SERVICE							
STORAGE	CONC	RB	GWB	GWB	8'-0"		
MECHANICAL	CONC	-	GWB	EXP		45	
ELECTRICAL	CONC	-	GWB	GWB	8'-0"		
COMM	CONC	-	GWB	GWB	8'-0"		
SIPRNET	CONC	-	GWB	GWB	8'-0"		

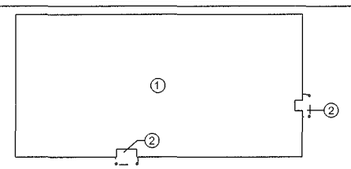
FINISH LEGEND

CONC - SEALED CONCRETE
RB - RUBBER BASE
CMU - PAINTED CMU
GWB - PAINTED GYPSUM WALL BOARD
CT - CERAMIC TILE
ACT - 2'X2' ACOUSTICAL TILE CEILING
EXP - EXPOSED STRUCTURE

FINISH NOTES

1. ROOM FINISHES SHOWN ARE MINIMUM REQUIRED.

AREA CALCULATIONS



FLOOR PLAN GROSS AREA CALCS

1 BUILDING AREA AT FULL VALUE: 11,160.3 SF

EXTERIOR COVERED AREA AT HALF VALUE:

2 PORCHES [(88.0+66.0) x 1/2] = 77.0 SF

BUILDING TOTAL: 11,237.3 SF

GRAPHIC SCALE

8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Revisions
Symbol | Description | Date | Appr.

Date: 28 JULY 2009
Scale:
Drawing Code: X-XXXX-XX-XXX

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
COE LOUISVILLE DISTRICT Project Engineer/Architect Date

BATTALION HEADQUARTERS FLOOR PLAN

DEPARTMENT OF THE ARMY FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A001
SHEET 6 OF 31

CORRECTED FINAL

DATE: 05-AUG-2009 10:07
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VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **BH-8**

DESCRIPTION: **MOVE THE VESTIBULE DOOR TO BE FLUSH WITH THE EXTERIOR WALL IN LIEU OF RECESSED**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A019, Battalion Headquarters Floor Plan dated 16 Feb 2006, the Vestibule (Rm. 100) is recessed approximately 4 ft from the exterior wall.

ALTERNATIVE:

Move the vestibule wall out to meet the exterior wall line. This will increase the size of the building and may require other modifications of the space plan to maintain the maximum building size.

ADVANTAGES:

- Optimizes the building volume
- Provides efficient use of required spaces

DISADVANTAGES:

- Adds area to the building

DISCUSSION:

The extra space captured by moving the vestibule wall out to the current exterior wall line takes advantage of the existing walls and roof and obtains this space at very little added construction cost.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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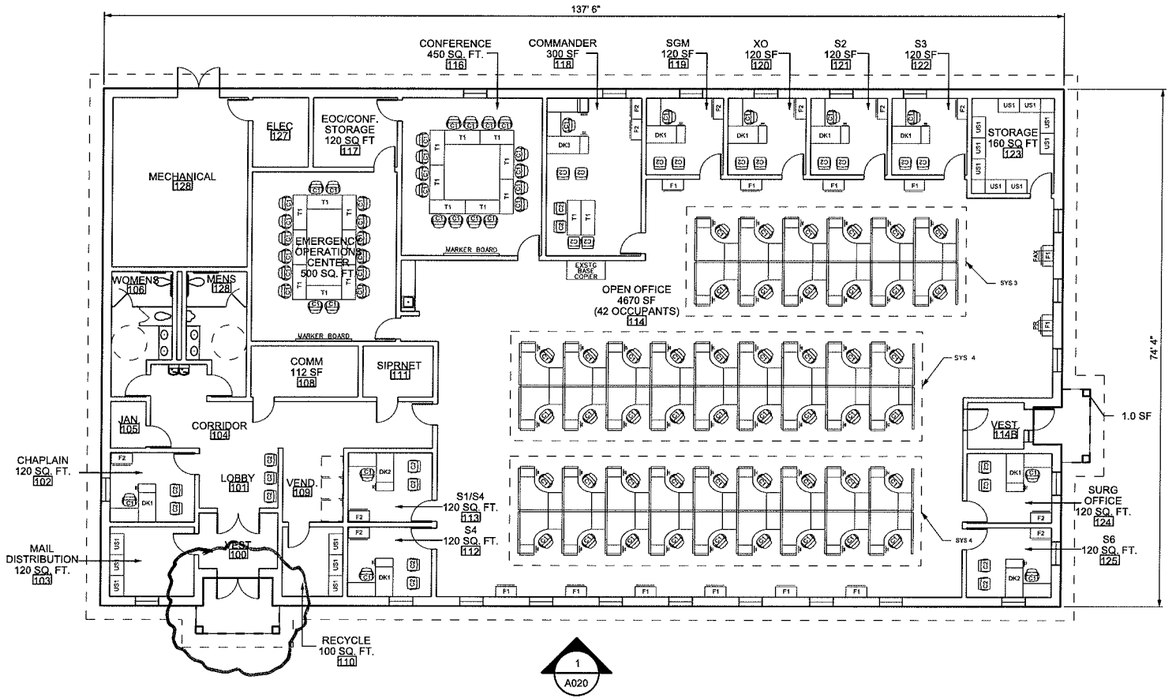
ALT. NO. BH-8
2 of 2



BRIGADE HEADQUARTERS FLOOR PLAN
SCALE: 3/32" = 1'-0"

GENERAL

THE BRIGADE HEADQUARTERS FACILITY SHOULD NORMALLY BE PROVIDED AFTER OR IN CONJUNCTION WITH THE FOURTH BATTALION. THE FACILITY SERVES AS THE COMMAND AND CONTROL FACILITY FOR THE BRIGADE.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC 3-600-01.

2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.

3. LIFE SAFETY AND AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND UFC 1-200-01 DESIGN: GENERAL BUILDING REQUIREMENTS.

4. USE AND OCCUPANCY CLASSIFICATION:
IBC, CHAPTER 3
SECTION 304, BUSINESS GROUP B
PARAGRAPH 304.1
GROUP B (OFFICES)

NFPA 101, CHAPTER 38
NEW BUSINESS OCCUPANCIES
(OFFICES)

OVERALL FLOOR PLAN REQUIREMENTS

ADMINISTRATION AREA SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE COMMANDER, EXECUTIVE OFFICER (XO), SERGEANT MAJOR (SGM), S1, S2, S3, S4, S6, AND BRIGADE SURGEON. EACH PRIVATE OFFICE SHALL INCLUDE A 3' -0" WIDE DOOR.
2. PROVIDE AN EMERGENCY OPERATIONS CENTER (EOC). PROVIDE A 3'-0" WIDE DOOR FROM OPEN OFFICE AREA. PROVIDE 4' H X 8' W MARKER BOARD.
3. PROVIDE A CONFERENCE ROOM. PROVIDE A 3'-0" WIDE DOOR FROM OPEN OFFICE AREA. PROVIDE 4' H X 8' W MARKER BOARD.
4. PROVIDE AN EOC/CONF STORAGE ROOM. PROVIDE TWO 3'-0" WIDE DOORS TO SERVE THE CONFERENCE AND EOC ROOMS.
5. PROVIDE OPEN OFFICE WITH MINIMUM AREA OF 110 SQUARE FEET PER OCCUPANT. AREA INCLUDES CIRCULATION AND FILE STORAGE.

BREAK AREA:
1. PROVIDE 7'-0" LONG SOLID POLYMER COUNTERTOP WITH 19" x19" STAINLESS STEEL SINK AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS. PROVIDE PLASTIC LAMINATE SURFACED BASE CABINET WITH HINGED DOOR(S).

SOLDIER SERVICES SHALL INCLUDE THE FOLLOWING SPACES WITH MINIMUM AREA SHOWN ON FLOOR PLAN:

1. PROVIDE PRIVATE OFFICES FOR THE CHAPLAIN AND ASSISTANT CHAPLAIN.
2. PROVIDE STORAGE AREA FOR BUILDING SUPPLY STORAGE.

MEN'S LATRINE:
1. PROVIDE MINIMUM 4'-6" WIDE SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" x12" LAVATORIES AND 4" HIGH COVED BACK SPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH MIRROR GLASS, FULL WIDTH OF VANITY COUNTERTOP.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR.
4. PROVIDE MINIMUM ONE HANDICAP ACCESSIBLE FLOOR MOUNTED TOILET WITH FULL SEAT.
5. PROVIDE MINIMUM OF ONE WALL HUNG URINAL.
6. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

WOMEN'S LATRINE:
1. PROVIDE MINIMUM 4'-6" WIDE SOLID POLYMER COUNTERTOP WITH TWO INTEGRALLY MOLDED 16" x12" LAVATORIES AND 4" HIGH COVED BACKSPLASH. PROVIDE 4" HIGH SIDE SPLASH AT SIDEWALLS.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH MIRROR GLASS, FULL WIDTH OF VANITY COUNTERTOP.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR.
4. PROVIDE MINIMUM ONE HANDICAP ACCESSIBLE AND ONE STANDARD FLOOR MOUNTED TOILET WITH FULL SEAT.
5. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

JANITOR:
1. PROVIDE FLOOR MOP SINK.
2. PROVIDE MOP RACK FOR THREE MOPS.
3. PROVIDE MINIMUM 6'-0" OF LINEAR STAINLESS STEEL SHELVING.
4. PROVIDE 3'-0" DOOR.
5. PROVIDE MINIMUM OF ONE FLOOR DRAIN.

STORAGE:
1. PROVIDE 10'-0" OF LINEAR SHELVING.
2. PROVIDE 3'-0" DOOR.

VENDING:
1. PROVIDE LOCATION FOR SOFT DRINK AND SNACK VENDING MACHINE, AND ICE MACHINE.
2. PROVIDE FLOOR DRAIN NEAR ICE MACHINE.

MINIMUM CORRIDOR WIDTH SHALL BE 6'-0".

MECHANICAL:
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. PROVIDE MECHANICAL ROOM ON GROUND FLOORS WITH DOORS OPENING TO EXTERIOR

ELECTRICAL:
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. LOCATE MAIN ELECTRICAL ROOM ON GROUND FLOOR.

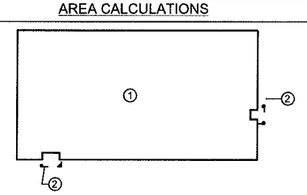
COMMUNICATIONS ROOM:
1. PROVIDE DEDICATED INTERIOR ROOMS FOR COMMUNICATIONS EQUIPMENT.

SIPRNET:
1. PROVIDE DEDICATED INTERIOR ROOMS FOR SIPRNET EQUIPMENT.

BUILDING SPACES DESCRIPTION

	FINISHES				MINIMUM CEILING HEIGHT	MINIMUM STC	NOTES
	FLOOR	BASE	WALL	CEILING			
COMMAND SUITE							
COMMANDER	CONC	RB	GWB	ACT	8'-0"	45	
SRGT MAJOR	CONC	RB	GWB	ACT	8'-0"	45	
EXECUTIVE OFFICER	CONC	RB	GWB	ACT	8'-0"	45	
S2 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S3 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S4 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
S6 OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
SURGICAL OFFICE	CONC	RB	GWB	ACT	8'-0"	45	
OPEN OFFICE	CONC	RB	GWB	ACT	9'-0"	45	
EMERG. OPS CENTER	CONC	RB	GWB	ACT	9'-0"	45	
CONFERENCE ROOM	CONC	RB	GWB	ACT	9'-0"	45	
STORAGE	CONC	RB	GWB	ACT	8'-0"	45	
SOLDIER SERVICES							
CHAPLAIN	CONC	RB	GWB	ACT	8'-0"	45	
MAIL DISTRIBUTION	CONC	RB	GWB	ACT	8'-0"	45	
WOMENS	CT	CT	GWB	GWB	8'-0"	45	
MENS	CT	CT	GWB	GWB	8'-0"	45	
ENTRY	CONC	RB	GWB	ACT	9'-0"		
VENDING	CONC	RB	GWB	ACT	8'-0"		
JANITOR	CONC	RB	GWB	ACT	8'-0"		
CORRIDOR	CONC	RB	GWB	ACT	9'-0"		
SERVICE							
STORAGE	CONC	RB	GWB	ACT	8'-0"		
MECHANICAL	CONC		GWB	ACT		45	
ELECTRICAL	CONC		GWB	ACT	8'-0"		
COMM	CONC		GWB	ACT	8'-0"		
SIPRNET	CONC		GWB	ACT	8'-0"		

AREA CALCULATIONS



FLOOR PLAN GROSS AREA CALCS

1 BUILDING AREA AT FULL VALUE: 10,165.0 SF

EXTERIOR COVERED AREA AT HALF VALUE:
2 PORCHES [(86.0+61.0) x 1/2] = 73.5 SF
BUILDING TOTAL: 10,238.5 SF

FINISH LEGEND

CONC - SEALED CONCRETE
RB - RUBBER BASE
CMU - PAINTED CMU
GWB - PAINTED GYPSUM WALL BOARD
CT - CERAMIC TILE
ACT - 2'X2' ACOUSTICAL TILE CEILING

FINISH NOTES

1. ROOM FINISHES SHOWN ARE MINIMUM REQUIRED.

GRAPHIC SCALE

8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Revisions
Symbol | Description | Date | Appr.

Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX
Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
COE LOUISVILLE DISTRICT Project Engineer/Architect Date

BRIGADE HEADQUARTERS FLOOR PLAN

DEPARTMENT OF THE ARMY
FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A019
SHEET 27 OF 31

CORRECTED FINAL

DATE: 05-AUG-2009 10:09
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SUMMARY OF VALUE ENGINEERING ALTERNATIVES

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX (ORTC)**
Center of Standardization Model

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	PRESENT WORTH OF COST SAVINGS: INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
	ENLISTED BARRACKS (EB)					
EB-2	**Reduce the width of the corridor from 10 ft to 8 ft.**	**$20,241,619**	**$19,993,882**	**$247,737**	**$0**	**$247,737**
EB-6/ EB-12	Enlarge the TV/Activity Area and convert to a TV Space; reduce the corridor width.	$0	$10,598	($10,598)	$0	($10,598)
EB-7	Install a single door in place of the double door in the corridor.	$2,846	$1,824	$1,022	$0	$1,022
EB-8	**Combine the stair and the vestibule space at the building entry.**	**$8,503**	**$0**	**$8,503**	**$0**	**$8,503**
EB-9/ EB-10	Revise the Laundry Room to use stacked washers/dryers.	DESIGN SUGGESTION				
EB-11	Move 2nd Floor wall flush with the exterior wall at the Internet Café.	$12,363	$14,548	($2,185)	$0	($2,185)
EB-13/ EB-14	Provide hardwire or wireless internet connection at each bed and delete the Internet Café.	DESIGN SUGGESTION				

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VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **EB-2**

DESCRIPTION: **REDUCE WIDTH OF CORRIDOR FROM 10 FT TO 8 FT**

SHEET NO.: **1 of 5**

ORIGINAL DESIGN: (sketch attached)

Per Sheets ORTC-A003 and A004, Enlisted Barracks Floor Plans, dated 16 Feb 2006, the Corridor and S1 (Rm. 103 and Rm. 203) current configuration has a width of 10 ft.

ALTERNATIVE: (sketch attached)

Reduce the minimum corridor width from 10 ft to 8 ft.

ADVANTAGES:

- Produces a total floor square footage reduction of 374 SF
- Reduces roof area

DISADVANTAGES:

- Reduces corridor area
- Less queuing space available
- Vending area congested
- Structural symmetry lost; the roof gable is not in line from high to low bay

DISCUSSION:

This change results in a reduction in gross building area and will require that the building footprint be modified.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 20,241,619	—	$ 20,241,619
ALTERNATIVE	$ 19,993,882	—	$ 19,993,882
SAVINGS (Original minus Alternative)	$ 247,737	—	$ 247,737

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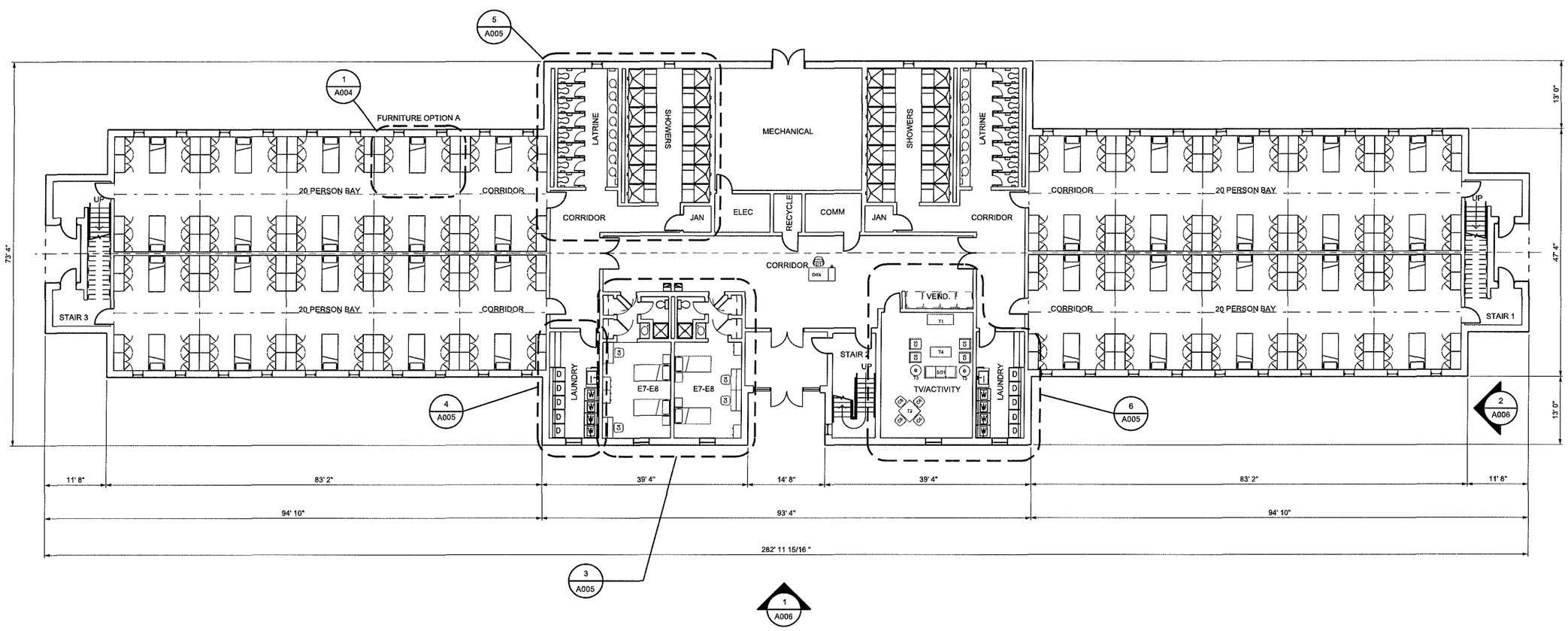
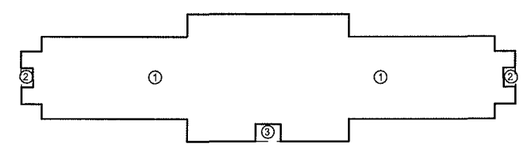
ALT. NO. EB-2

2 of 5



ENLISTED BARRACKS: FIRST FLOOR PLAN
SCALE: 3/32" = 1'-0"

NOTE:
PLAN DEPICTS TYPICAL CONFIGURATION FOR ENLISTED BARRACKS



FIRST FLOOR GROSS AREA CALCS

GENERAL

THE BARRACKS PORTION OF THE BATTALION SET CONSISTS OF FOUR TWO-STORY BUILDINGS. EACH BUILDING HAS EIGHT BAYS DESIGNED TO HOUSE 20 SOLDIERS. THE HVAC AND OTHER UTILITY SYSTEMS ARE ZONED SO EACH CAN BAY OPERATE INDEPENDENT OF THE OTHER BAYS. UTILITIES TO UNUSED BAYS CAN HAVE THE HVAC SHUT DOWN OR SET TO MINIMUM SUSTAINMENT LEVELS. IN ADDITION TO THE OPEN BAYS, EACH BUILDING HAS FOUR SEMI-PRIVATE ROOMS WITH A BATH CAPABLE OF HOUSING A TOTAL OF 8 PERSONNEL IN GRADES E7 - E8.

THE BARRACKS, IN CONJUNCTION WITH THE OFFICERS QUARTERS, ARE SIZED TO ACCOMMODATE A BATTALION OF A HEAVY UNIT OF ACTION. THE COMBINED DESIGN CAPACITY OF THE BARRACKS AND OFFICERS' QUARTERS IS 752 (FOUR BUILDINGS @ 168 PLUS ONE OFFICER BUILDING AT 80).
EACH BARRACKS BUILDING IS DESIGNED TO HOUSE 160 PERSONNEL IN GRADES E1 - E6 AND 8 PERSONNEL IN GRADES E7 - E8. A BATTALION SET OF BARRACKS PROVIDES 640 E1 - E6 AND 32 E7-E8 PERSONNEL EXCLUSIVE OF THE OFFICERS' QUARTERS.

THE FACILITY HVAC AND UTILITY SYSTEMS AND FIXTURES ARE DESIGNED TO SUPPORT AN ADDITIONAL FOUR PERSONNEL IN EACH OF OF THE E1 - E6 BAYS, WHICH CAN BE ACHIEVED BY DOUBLE BUNKING FOUR BUNKS IN EACH BAY. THIS INCREASES THE TOTAL CAPACITY OF THE BUILDING TO 192 E1 - E6 AND EIGHT E7 - E8 SPACES FOR A TOTAL OF 200 PERSONNEL. THIS INCREASES THE CAPACITY OF A BATTALION SET OF BARRACKS FROM 672 TO 800.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC'S.

2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.

3. LIFE SAFETY AND AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND IBC.

4. USE AND OCCUPANCY CLASSIFICATION:
IBC, RESIDENTIAL GROUP R.

MINIMUM REQUIREMENTS

1. INTERIOR CORRIDOR
A. PROVIDE FIRE EXTINGUISHER CABINETS TO COMPLY WITH APPLICABLE CODES.
B. PROVIDE A MINIMUM 6'-0" CORRIDOR/AISLE BETWEEN SLEEPING AREA IN OPEN BAY.

2. STAIR
A. PROVIDE TO ALLOW CIRCULATION TO UPPER FLOORS AND TO COMPLY WITH APPLICABLE CODE EGRESS REQUIREMENTS.

3. MECHANICAL
A. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
B. PROVIDE MECHANICAL ROOM ON GROUND FLOORS WITH DOORS OPENING TO EXTERIOR.

4. ELECTRICAL
A. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
B. LOCATE MAIN ELECTRICAL ROOM ON GROUND FLOOR.

5. COMM ROOM
A. PROVIDE DEDICATED INTERIOR ROOMS FOR COMMUNICATIONS EQUIPMENT.

AREA CALCULATIONS

1ST FLOOR:

FULL VALUE:		
1 INTERIOR SPACE		15,132.4 SF
HALF VALUE:		
2 EXTERIOR COVERED	[(73.3 x 2) x 1/2] =	73.3 SF
3 EXTERIOR COVERED	(147.0 x 1/2) =	73.5 SF
	1ST FLOOR TOTAL:	15,279.2 SF

GRAPHIC SCALE

8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Revisions

Symbol	Description	Date	Appr.

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
COE LOUISVILLE DISTRICT
Project Engineer/Architect
Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX
Date

ENLISTED BARRACKS: FIRST FLOOR PLAN

DEPARTMENT OF THE ARMY
FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A003
SHEET 8 OF 31

CORRECTED FINAL

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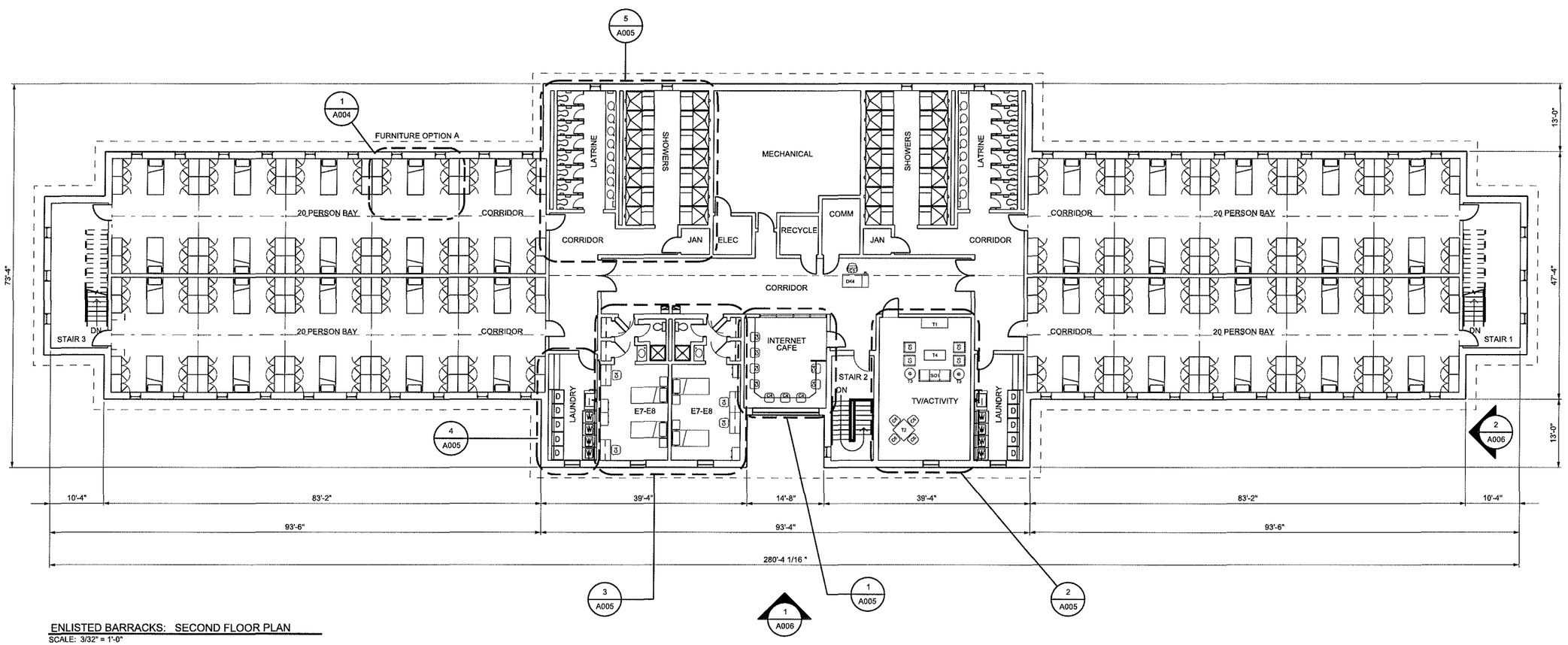
FILE: IP_PWP:dms07722*156591-A003.dgn

ALT. NO. EB-2

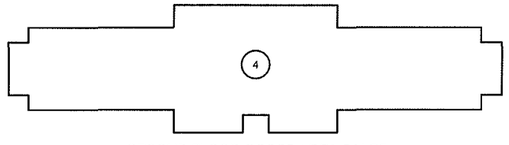
3 of 5



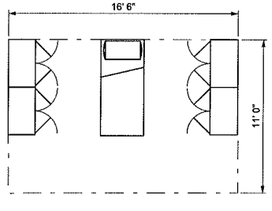
ENLISTED BARRACKS: SECOND FLOOR PLAN

SCALE: 3/32" = 1'-0"

NOTE:
PLAN DEPICTS TYPICAL CONFIGURATION FOR ENLISTED BARRACKS



SECOND FLOOR GROSS AREA CALCS



E1-E6 BED SPACE - OPTION A (1 / A003 / A004)

SCALE: 3/16" = 1'-0"

FURNITURE OPTION A: INTENDED OCCUPANCY-BUNKED BEDS

E1-E6 BED SPACE

1. PROVIDE MINIMUM 90 NET SQUARE FEET PER OCCUPANT. AREA TO INCLUDE CIRCULATION.

GENERAL

1. PROVIDE 3'-0" WIDE LOCKABLE DOOR TO SEPARATE OPEN BAY BARRACKS FROM COMMONS SPACE.

2. PROVIDE 3'-0" WIDE EXTERIOR DOOR.

3. PROVIDE A MINIMUM OF ONE WINDOW PER BED LOCATED ON AN EXTERIOR WALL. WINDOW SILL HEIGHT SHALL BE A MINIMUM OF 7'-0" ABOVE FINISHED FLOOR. WINDOW SHALL BE A MINIMUM OF 2'-0" HIGH X 2'-0" WIDE.

FURNISHINGS PER BED SPACE

- TWO BEDS 40"x 85" - BUNKED
- FOUR STORAGE CABINETS MINIMUM 42"Wx24"Dx78"H

AREA CALCULATIONS

2ND FLOOR:
FULL VALUE:

(4) INTERIOR SPACE		15,279.3 SF
	2ND FLOOR TOTAL:	15,279.3 SF
1ST FLOOR TOTAL:		15,279.2 SF
2ND FLOOR TOTAL:		15,279.3 SF
	BUILDING TOTAL:	30,558.5 SF

GRAPHIC GROUP

4 0 4 8FT
SCALE: 3/16" = 1'-0"

8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Revisions

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Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
COE LOUISVILLE DISTRICT Project Engineer/Architect
Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX
Date

ENLISTED BARRACKS OPTIONAL FURNITURE LAYOUTS

DEPARTMENT OF THE ARMY
FACILITY STANDARDIZATION PROGRAM

OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A004
SHEET 9 OF 31

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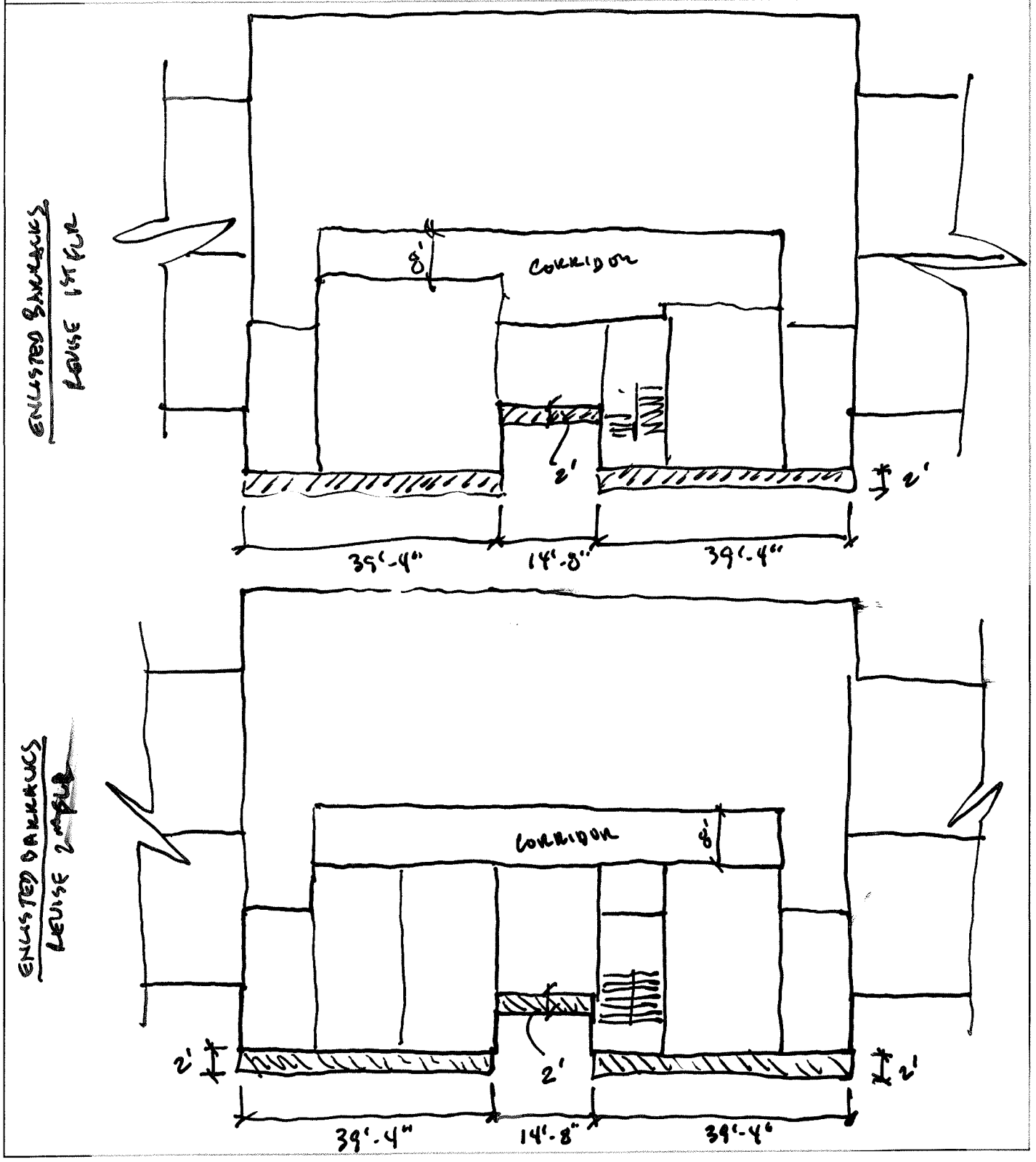
SKETCH

PROJECT: **P2# 156591, ORTC**
Center of Standardization Moel

ALTERNATIVE NO.: EB-2

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☒ BOTH ☐

SHEET NO.: 4 of 5



COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **EB-2**

SHEET NO.: **5 of 5**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Building Area							
- Floor Space - Building (4 bldgs.)	SF	122,232	144.00	17,601,408	120,736	144.00	17,385,984
Subtotal				17,601,408			17,385,984
Markup (%) at 15%				2,640,211			2,607,898
TOTAL				20,241,619			19,993,882

VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **EB-6/EB-12**

DESCRIPTION: **ENLARGE THE TV/ACTIVITY AREA AND CONVERT TO TV SPACE**

SHEET NO.: **1 of 5**

ORIGINAL DESIGN: (sketch attached)

Per Sheets ORTC-A003 and A004, Enlisted Barracks Floor Plans, dated 16 Feb 2006, the TV/Activity Rooms (Rms. 104 and 204) plan shows space for eight persons.

ALTERNATIVE: (sketch attached)

Enlarge the 1st and 2nd Floor TV/Activity area by 2 to 3 ft in length and reconfigure the room to support only TV viewing with single chairs. Reduce the corridor area.

ADVANTAGES:

- Larger area supports more persons
- Flexible, could be used for a meeting area

DISADVANTAGES:

- Reduces corridor area
- Less queuing space available
- Possible vending area congestion
- Increases capital cost

DISCUSSION:

The increase in square footage for the TV/Activity area creates flexibility for space usage. The vending area must be redesigned to accommodate circulation and gatherings in front of the machines.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 0	—	$ 0
ALTERNATIVE	$ 10,598	—	$ 10,598
SAVINGS (Original minus Alternative)	$ (10,598)	—	$ (10,598)

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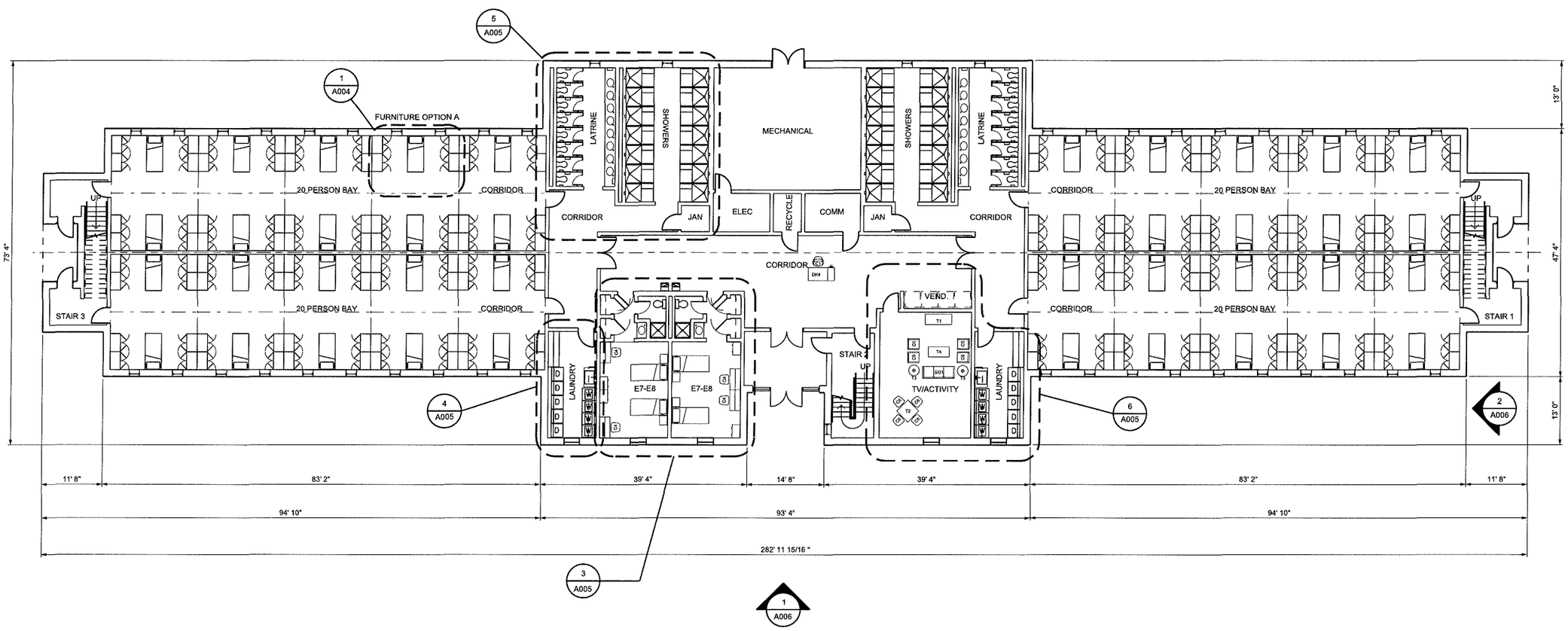
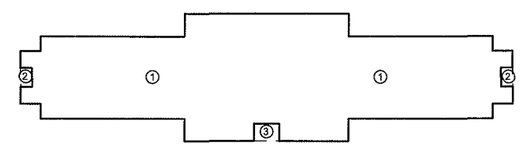
*** SAFETY PAYS ***



ENLISTED BARRACKS: FIRST FLOOR PLAN
SCALE: 3/32" = 1'-0"

NOTE:
PLAN DEPICTS TYPICAL CONFIGURATION FOR ENLISTED BARRACKS



FIRST FLOOR GROSS AREA CALCS

GENERAL

THE BARRACKS PORTION OF THE BATTALION SET CONSISTS OF FOUR TWO-STORY BUILDINGS. EACH BUILDING HAS EIGHT BAYS DESIGNED TO HOUSE 20 SOLDIERS. THE HVAC AND OTHER UTILITY SYSTEMS ARE ZONED SO EACH CAN BAY OPERATE INDEPENDENT OF THE OTHER BAYS. UTILITIES TO UNUSED BAYS CAN HAVE THE HVAC SHUT DOWN OR SET TO MINIMUM SUSTAINMENT LEVELS. IN ADDITION TO THE OPEN BAYS, EACH BUILDING HAS FOUR SEMI-PRIVATE ROOMS WITH A BATH CAPABLE OF HOUSING A TOTAL OF 8 PERSONNEL IN GRADES E7 - E8.

THE BARRACKS, IN CONJUNCTION WITH THE OFFICERS QUARTERS, ARE SIZED TO ACCOMMODATE A BATTALION OF A HEAVY UNIT OF ACTION. THE COMBINED DESIGN CAPACITY OF THE BARRACKS AND OFFICERS' QUARTERS IS 752 (FOUR BUILDINGS @ 168 PLUS ONE OFFICER BUILDING AT 80).
EACH BARRACKS BUILDING IS DESIGNED TO HOUSE 160 PERSONNEL IN GRADES E1 - E6 AND 8 PERSONNEL IN GRADES E7 - E8. A BATTALION SET OF BARRACKS PROVIDES 640 E1 - E6 AND 32 E7-E8 PERSONNEL EXCLUSIVE OF THE OFFICERS' QUARTERS.

THE FACILITY HVAC AND UTILITY SYSTEMS AND FIXTURES ARE DESIGNED TO SUPPORT AN ADDITIONAL FOUR PERSONNEL IN EACH OF OF THE E1 - E6 BAYS, WHICH CAN BE ACHIEVED BY DOUBLE BUNKING FOUR BUNKS IN EACH BAY. THIS INCREASES THE TOTAL CAPACITY OF THE BUILDING TO 192 E1 - E6 AND EIGHT E7 - E8 SPACES FOR A TOTAL OF 200 PERSONNEL. THIS INCREASES THE CAPACITY OF A BATTALION SET OF BARRACKS FROM 672 TO 800.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC'S.

2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.

3. LIFE SAFETY AND AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND IBC.

4. USE AND OCCUPANCY CLASSIFICATION:
IBC, RESIDENTIAL GROUP R.

MINIMUM REQUIREMENTS

1. INTERIOR CORRIDOR
A. PROVIDE FIRE EXTINGUISHER CABINETS TO COMPLY WITH APPLICABLE CODES.
B. PROVIDE A MINIMUM 6'-0" CORRIDOR/AISLE BETWEEN SLEEPING AREA IN OPEN BAY.

2. STAIR
A. PROVIDE TO ALLOW CIRCULATION TO UPPER FLOORS AND TO COMPLY WITH APPLICABLE CODE EGRESS REQUIREMENTS.

3. MECHANICAL
A. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
B. PROVIDE MECHANICAL ROOM ON GROUND FLOORS WITH DOORS OPENING TO EXTERIOR.

4. ELECTRICAL
A. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
B. LOCATE MAIN ELECTRICAL ROOM ON GROUND FLOOR.

5. COMM ROOM
A. PROVIDE DEDICATED INTERIOR ROOMS FOR COMMUNICATIONS EQUIPMENT.

AREA CALCULATIONS

1ST FLOOR:

FULL VALUE:		
1 INTERIOR SPACE		15,132.4 SF
HALF VALUE:		
2 EXTERIOR COVERED	[(73.3 x 2) x 1/2] =	73.3 SF
3 EXTERIOR COVERED	(147.0 x 1/2) =	73.5 SF
1ST FLOOR TOTAL:		15,279.2 SF

GRAPHIC SCALE

8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Revisions

Symbol	Description	Date	Appr.

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
COE LOUISVILLE DISTRICT Project Engineer/Architect
Date: 28 JULY 2009
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Date

ENLISTED BARRACKS: FIRST FLOOR PLAN

DEPARTMENT OF THE ARMY
FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A003
SHEET 8 OF 31

CORRECTED FINAL

*** SUPPORT VALUE ENGINEERING - IT PAYS ***

DATE: 05-AUG-2009 10:08
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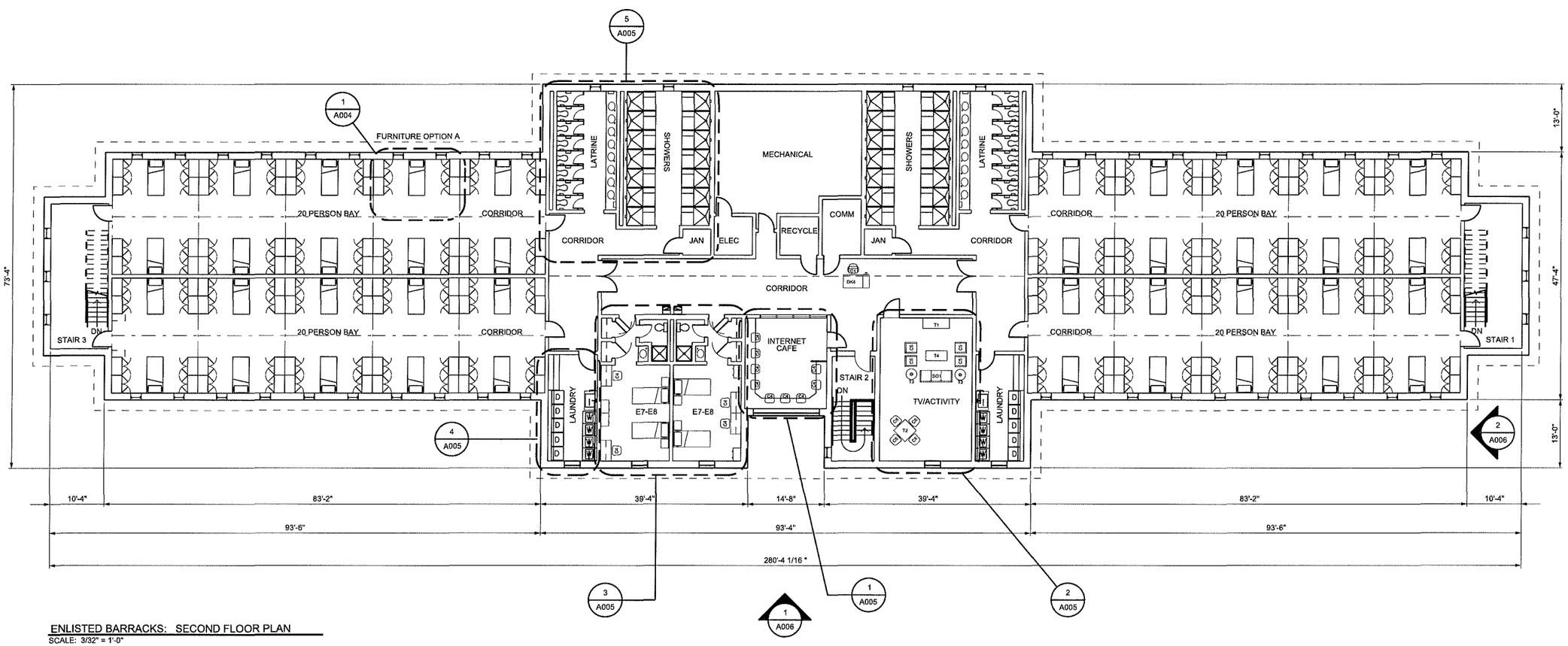
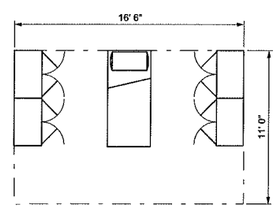


ENLISTED BARRACKS: SECOND FLOOR PLAN
SCALE: 3/32" = 1'-0"

NOTE:
PLAN DEPICTS TYPICAL CONFIGURATION FOR ENLISTED BARRACKS



E1-E6 BED SPACE - OPTION A (1 / A003 / A004)
SCALE: 3/16" = 1'-0"

FURNITURE OPTION A: INTENDED OCCUPANCY-BUNKED BEDS

E1-E6 BED SPACE

1. PROVIDE MINIMUM 90 NET SQUARE FEET PER OCCUPANT. AREA TO INCLUDE CIRCULATION.

GENERAL

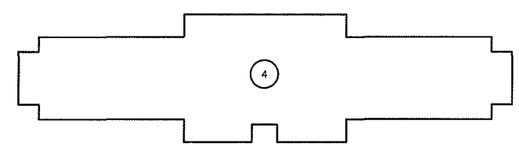
1. PROVIDE 3'-0" WIDE LOCKABLE DOOR TO SEPARATE OPEN BAY BARRACKS FROM COMMONS SPACE.

2. PROVIDE 3'-0" WIDE EXTERIOR DOOR.

3. PROVIDE A MINIMUM OF ONE WINDOW PER BED LOCATED ON AN EXTERIOR WALL. WINDOW SILL HEIGHT SHALL BE A MINIMUM OF 7'-0" ABOVE FINISHED FLOOR. WINDOW SHALL BE A MINIMUM OF 2'-0" HIGH X 2'-0" WIDE.

FURNISHINGS PER BED SPACE

- TWO BEDS 40"x 85" - BUNKED
- FOUR STORAGE CABINETS MINIMUM 42"Wx24"Dx78"H



SECOND FLOOR GROSS AREA CALCS

AREA CALCULATIONS

2ND FLOOR:
FULL VALUE:

4 INTERIOR SPACE		15,279.3 SF
	2ND FLOOR TOTAL:	15,279.3 SF
1ST FLOOR TOTAL:		15,279.2 SF
2ND FLOOR TOTAL:		15,279.3 SF
	BUILDING TOTAL:	30,558.5 SF

GRAPHIC GROUP

4 0 4 8FT
SCALE: 3/16" = 1'-0"

8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Revisions

Symbol	Description	Date	Appr.

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX
COE LOUISVILLE DISTRICT
Project Engineer/Architect
Date

ENLISTED BARRACKS OPTIONAL FURNITURE LAYOUTS

DEPARTMENT OF THE ARMY
FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A004
SHEET 9 OF 31

CORRECTED FINAL

*** SUPPORT VALUE ENGINEERING - IT PAYS ***

DATE: 05-AUG-2009 10:08
FILE: IP_PWP:dms07722*156591-A004.dgn

SKETCH

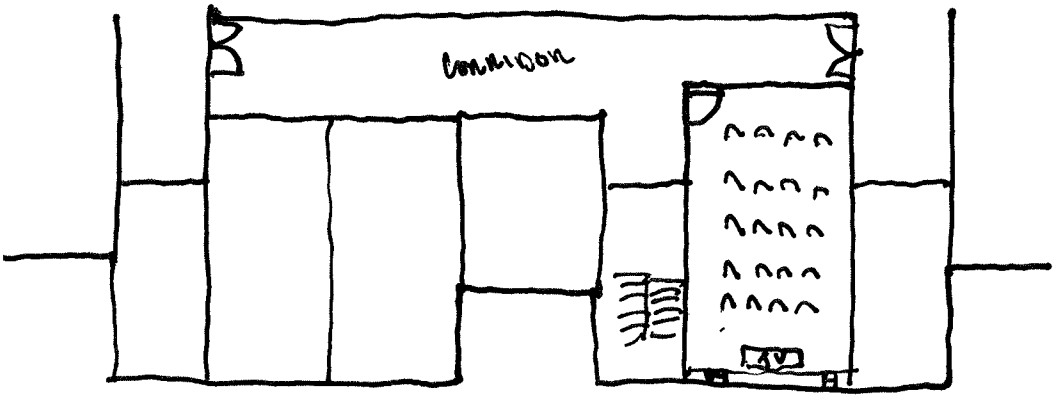
PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: EB-6 / EB-12

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☒ BOTH ☐

SHEET NO.: 4 of 5

1ST FLR BARRACKS
REVISED



2ND FLR BARRACKS
REVISED

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Moel

ALTERNATIVE NO.: **EB-6/EB-12**

SHEET NO.: **5 of 5**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Enlarge Room							
- Added Walls (includes finish)	SF				576	16.00	9,216
- Floor & Ceiling Finishes (NC)							
Subtotal							9,216
Markup (%) at 15%							1,382
TOTAL							10,598

VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **EB-7**

DESCRIPTION: **INSTALL A SINGLE DOOR IN PLACE OF DOUBLE DOORS IN THE CORRIDOR**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN:

Double doors are included at the interior corridors.

ALTERNATIVE:

Install single doors in the place of the double doors.

ADVANTAGES:

- Reduces material requirements
- Opening only one door into the corridor reduces the maintenance issues associated with double doors
- Not required by code
- Could allow more space for the restroom/shower areas

DISADVANTAGES:

- With a full barracks, having only one door may cause an access problem between the bunk area and corridor

DISCUSSION:

Installing a single door reduces the maintenance associated with double doors. With the barracks potentially not at full capacity the majority of the time, a single door will allow for a smooth flow of people and more space in the restroom/shower areas. Cost savings can be realized by installing single doors.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 2,846	—	$ 2,846
ALTERNATIVE	$ 1,824	—	$ 1,824
SAVINGS (Original minus Alternative)	$ 1,022	—	$ 1,022

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **EB-7**

SHEET NO.: **2 of 2**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Swap Door Sizes							
- Double Door, Frame, HDWRE	PR	1	2,250.00	2,250			
- Single Door, Frame, HDWRE	EA				1	1,100.00	1,100
- CMU Wall	SF				21	15.00	315
- Paint Doors	EA	1	225.00	225	1	150.00	150
- Paint Walls	SF				21	1.00	21
Subtotal				2,475			1,586
Markup (%) at 15%				371			238
TOTAL				2,846			1,824

VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **EB-8**

DESCRIPTION: **COMBINE STAIR AND VESTIBULE SPACE AT THE BUILDING ENTRY**

SHEET NO.: **1 of 4**

ORIGINAL DESIGN: (sketch attached)

Per Sheets ORTC-A003 Enlisted Barracks 1st Floor Plan, dated 16 Feb 2006, the Vestibule (Rm. 101) and Stair (Rm. 102) configuration has a wall and door separation.

ALTERNATIVE: (sketch attached)

Delete the 1st Floor Stair (Rm. 102) doors and separating wall to allow direct access to the Vestibule for exiting.

ADVANTAGES:

- Saves cost of door, hardware and wall construction
- Provides easy access for all users
- Simplifies circulation

DISADVANTAGES:

- Longer travel distance from 2nd Floor to vending area

DISCUSSION:

This alternative provides an easy solution for improving circulation while reducing cost.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 8,503	—	$ 8,503
ALTERNATIVE	$ 0	—	$ 0
SAVINGS (Original minus Alternative)	$ 8,503	—	$ 8,503

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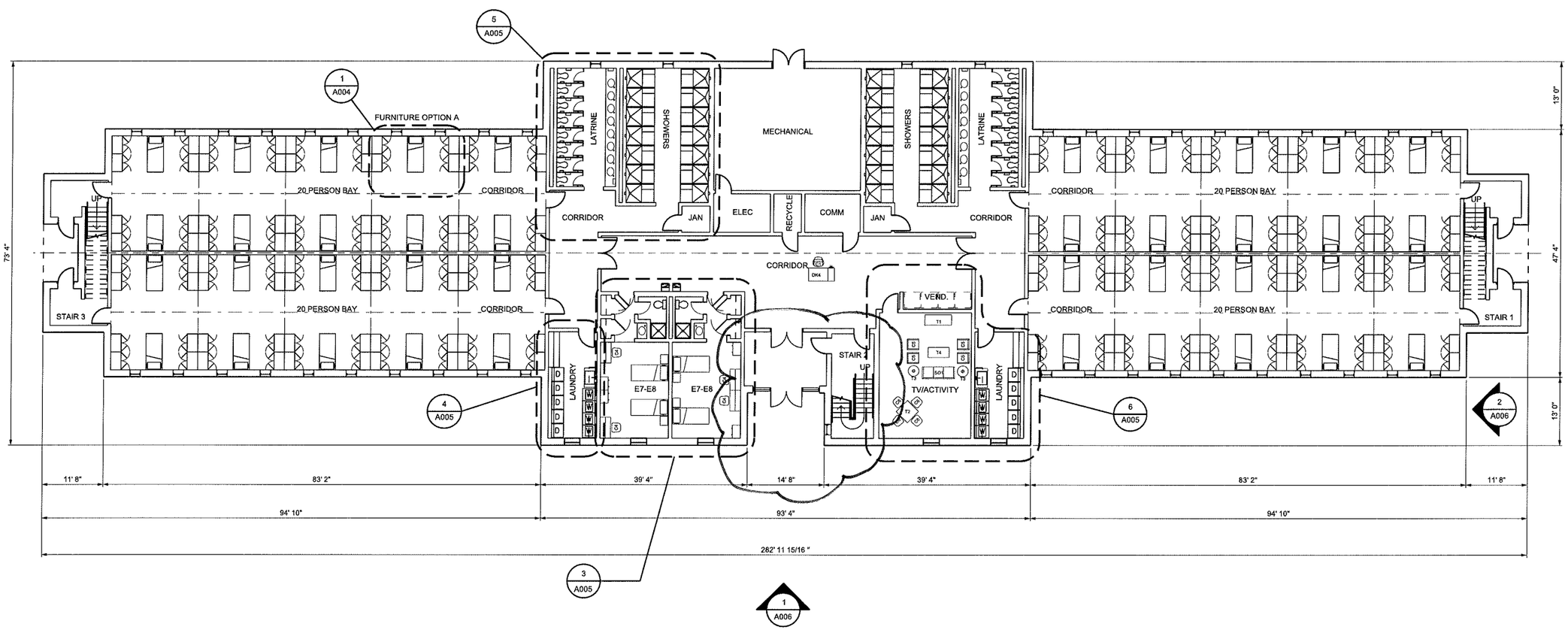
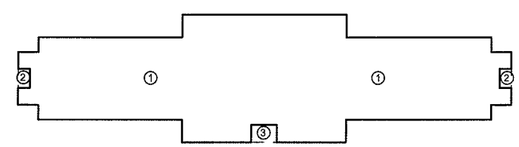
*** SAFETY PAYS ***



ENLISTED BARRACKS: FIRST FLOOR PLAN
SCALE: 3/32" = 1'-0"

NOTE:
PLAN DEPICTS TYPICAL CONFIGURATION FOR ENLISTED BARRACKS



FIRST FLOOR GROSS AREA CALCS

GENERAL

THE BARRACKS PORTION OF THE BATTALION SET CONSISTS OF FOUR TWO-STORY BUILDINGS. EACH BUILDING HAS EIGHT BAYS DESIGNED TO HOUSE 20 SOLDIERS. THE HVAC AND OTHER UTILITY SYSTEMS ARE ZONED SO EACH CAN BAY OPERATE INDEPENDENT OF THE OTHER BAYS. UTILITIES TO UNUSED BAYS CAN HAVE THE HVAC SHUT DOWN OR SET TO MINIMUM SUSTAINMENT LEVELS. IN ADDITION TO THE OPEN BAYS, EACH BUILDING HAS FOUR SEMI-PRIVATE ROOMS WITH A BATH CAPABLE OF HOUSING A TOTAL OF 8 PERSONNEL IN GRADES E7 - E8.

THE BARRACKS, IN CONJUNCTION WITH THE OFFICERS QUARTERS, ARE SIZED TO ACCOMMODATE A BATTALION OF A HEAVY UNIT OF ACTION. THE COMBINED DESIGN CAPACITY OF THE BARRACKS AND OFFICERS' QUARTERS IS 752 (FOUR BUILDINGS @ 168 PLUS ONE OFFICER BUILDING AT 80).
EACH BARRACKS BUILDING IS DESIGNED TO HOUSE 160 PERSONNEL IN GRADES E1 - E6 AND 8 PERSONNEL IN GRADES E7 - E8. A BATTALION SET OF BARRACKS PROVIDES 640 E1 - E6 AND 32 E7-E8 PERSONNEL EXCLUSIVE OF THE OFFICERS' QUARTERS.

THE FACILITY HVAC AND UTILITY SYSTEMS AND FIXTURES ARE DESIGNED TO SUPPORT AN ADDITIONAL FOUR PERSONNEL IN EACH OF OF THE E1 - E6 BAYS, WHICH CAN BE ACHIEVED BY DOUBLE BUNKING FOUR BUNKS IN EACH BAY. THIS INCREASES THE TOTAL CAPACITY OF THE BUILDING TO 192 E1 - E6 AND EIGHT E7 - E8 SPACES FOR A TOTAL OF 200 PERSONNEL. THIS INCREASES THE CAPACITY OF A BATTALION SET OF BARRACKS FROM 672 TO 800.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC'S.

2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.

3. LIFE SAFETY AND AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND IBC.

4. USE AND OCCUPANCY CLASSIFICATION:
IBC, RESIDENTIAL GROUP R.

MINIMUM REQUIREMENTS

1. INTERIOR CORRIDOR
A. PROVIDE FIRE EXTINGUISHER CABINETS TO COMPLY WITH APPLICABLE CODES.
B. PROVIDE A MINIMUM 6'-0" CORRIDOR/AISLE BETWEEN SLEEPING AREA IN OPEN BAY.

2. STAIR
A. PROVIDE TO ALLOW CIRCULATION TO UPPER FLOORS AND TO COMPLY WITH APPLICABLE CODE EGRESS REQUIREMENTS.

3. MECHANICAL
A. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
B. PROVIDE MECHANICAL ROOM ON GROUND FLOORS WITH DOORS OPENING TO EXTERIOR.

4. ELECTRICAL
A. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
B. LOCATE MAIN ELECTRICAL ROOM ON GROUND FLOOR.

5. COMM ROOM
A. PROVIDE DEDICATED INTERIOR ROOMS FOR COMMUNICATIONS EQUIPMENT.

AREA CALCULATIONS

1ST FLOOR:

FULL VALUE:		
1	INTERIOR SPACE	15,132.4 SF
HALF VALUE:		
2	EXTERIOR COVERED	[(73.3 x 2) x 1/2] = 73.3 SF
3	EXTERIOR COVERED	(147.0 x 1/2) = 73.5 SF
	1ST FLOOR TOTAL:	15,279.2 SF

GRAPHIC SCALE

8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Revisions
Symbol | Description | Date | Appr.

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
COE LOUISVILLE DISTRICT Project Engineer/Architect
Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX
Date

ENLISTED BARRACKS: FIRST FLOOR PLAN

DEPARTMENT OF THE ARMY
FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A003
SHEET 8 OF 31

CORRECTED FINAL

*** SUPPORT VALUE ENGINEERING - IT PAYS ***

DATE: 05-AUG-2009 10:08
FILE: IP_PWP:dms07722*156591-A003.dgn

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SKETCH

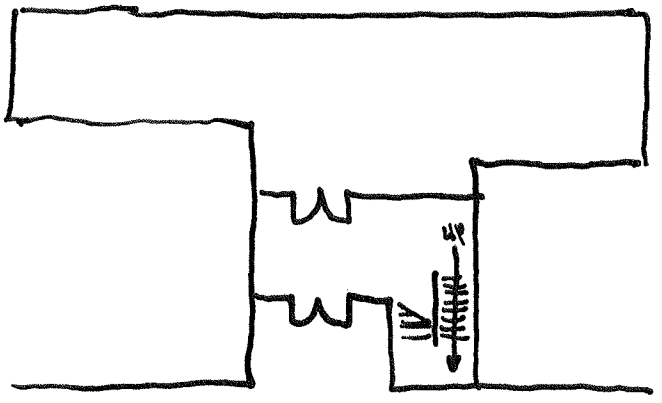
PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: EB-8

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☒ BOTH ☐

SHEET NO.: 3 of 4

EB-8



ENLISTED BARRACKS
REVISE STAIR/VESTIBULE

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **EB-8**

SHEET NO.: **4 of 4**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Open Wall to Stair							
- CMU Wall (w/finish)	SF	384	16.00	6,144			
- HM Door/Frame/HDWRE	EA	1	1,100.00	1,100			
- Paint Door	EA	1	150.00	150			
Subtotal				7,394			
Markup (%) at 15%				1,109			
TOTAL				8,503			

VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **EB-9/EB-10**

DESCRIPTION: **STACK WASHERS AND DRYERS IN LAUNDRY ROOM**

SHEET NO.: **1 of 3**

ORIGINAL DESIGN: (sketch attached)

Per Sheets ORTC-A003 and A004 Enlisted Barracks 1st & 2nd Floor Plans, dated 16 Feb 2006, the Laundry (Rm. 112, 122/212, 222) configuration depicts separate washer and dryer units.

ALTERNATIVE:

Minimize space required for washers/dryers by providing commercial, stacked machines to make the room more efficient.

ADVANTAGES:

- Provides easy access and better circulation for users

DISADVANTAGES:

- Specification for the washer/dryer needs to change

DISCUSSION:

Reconfigure space to include:

- Four stacked washers/dryers with lower capacity loads
- One dryer for higher capacity loads

This will meet the 1:12 washer ratio requirement and 1:8 dryer ratio requirements for 42 occupants per housing wing.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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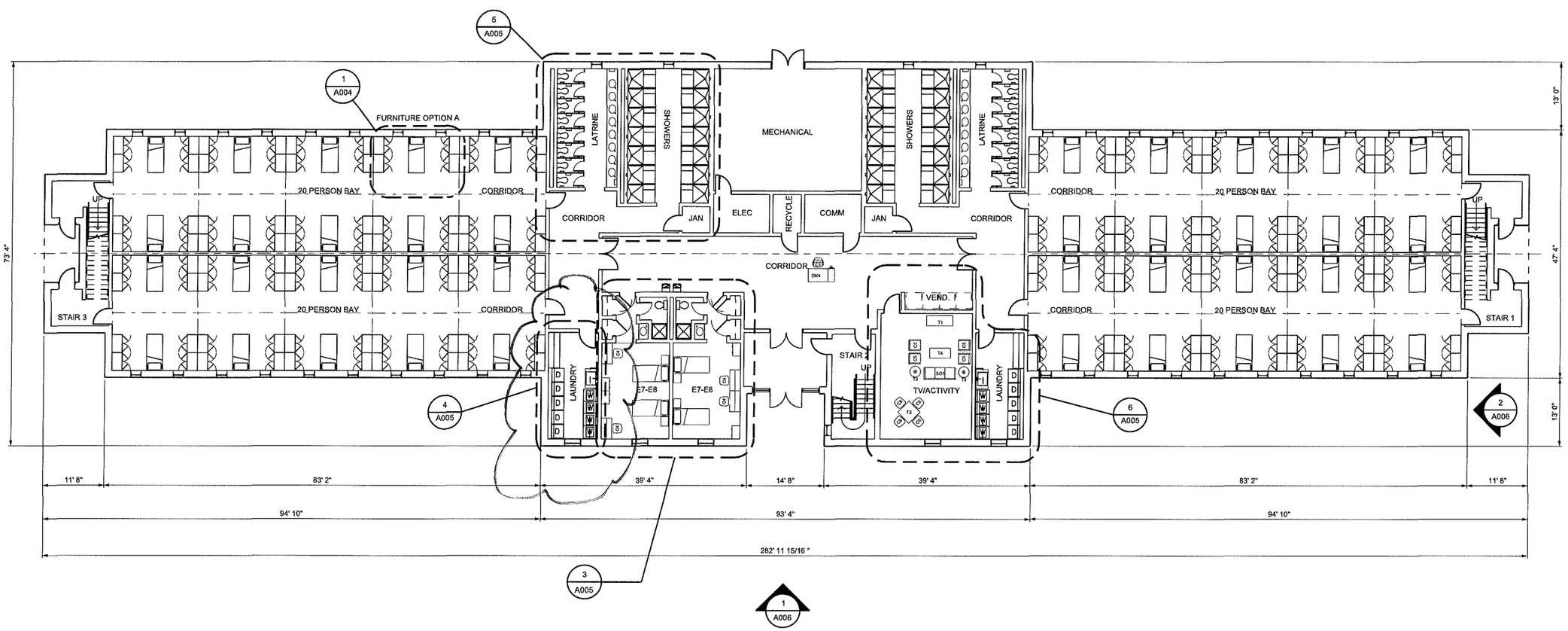
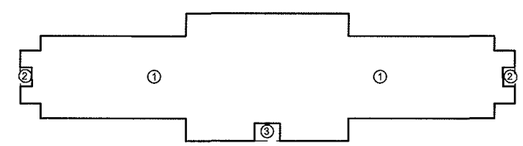
*** SAFETY PAYS ***



ENLISTED BARRACKS: FIRST FLOOR PLAN
SCALE: 3/32" = 1'-0"

NOTE:
PLAN DEPICTS TYPICAL CONFIGURATION FOR ENLISTED BARRACKS



FIRST FLOOR GROSS AREA CALCS

GENERAL

THE BARRACKS PORTION OF THE BATTALION SET CONSISTS OF FOUR TWO-STORY BUILDINGS. EACH BUILDING HAS EIGHT BAYS DESIGNED TO HOUSE 20 SOLDIERS. THE HVAC AND OTHER UTILITY SYSTEMS ARE ZONED SO EACH CAN BAY OPERATE INDEPENDENT OF THE OTHER BAYS. UTILITIES TO UNUSED BAYS CAN HAVE THE HVAC SHUT DOWN OR SET TO MINIMUM SUSTAINMENT LEVELS. IN ADDITION TO THE OPEN BAYS, EACH BUILDING HAS FOUR SEMI-PRIVATE ROOMS WITH A BATH CAPABLE OF HOUSING A TOTAL OF 8 PERSONNEL IN GRADES E7 - E8.

THE BARRACKS, IN CONJUNCTION WITH THE OFFICERS QUARTERS, ARE SIZED TO ACCOMMODATE A BATTALION OF A HEAVY UNIT OF ACTION. THE COMBINED DESIGN CAPACITY OF THE BARRACKS AND OFFICERS' QUARTERS IS 752 (FOUR BUILDINGS @ 168 PLUS ONE OFFICER BUILDING AT 80).
EACH BARRACKS BUILDING IS DESIGNED TO HOUSE 160 PERSONNEL IN GRADES E1 - E6 AND 8 PERSONNEL IN GRADES E7 - E8. A BATTALION SET OF BARRACKS PROVIDES 640 E1 - E6 AND 32 E7-E8 PERSONNEL EXCLUSIVE OF THE OFFICERS' QUARTERS.

THE FACILITY HVAC AND UTILITY SYSTEMS AND FIXTURES ARE DESIGNED TO SUPPORT AN ADDITIONAL FOUR PERSONNEL IN EACH OF OF THE E1 - E6 BAYS, WHICH CAN BE ACHIEVED BY DOUBLE BUNKING FOUR BUNKS IN EACH BAY. THIS INCREASES THE TOTAL CAPACITY OF THE BUILDING TO 192 E1 - E6 AND EIGHT E7 - E8 SPACES FOR A TOTAL OF 200 PERSONNEL. THIS INCREASES THE CAPACITY OF A BATTALION SET OF BARRACKS FROM 672 TO 800.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC'S.

2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.

3. LIFE SAFETY AND AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND IBC.

4. USE AND OCCUPANCY CLASSIFICATION:
IBC, RESIDENTIAL GROUP R.

MINIMUM REQUIREMENTS

1. INTERIOR CORRIDOR
A. PROVIDE FIRE EXTINGUISHER CABINETS TO COMPLY WITH APPLICABLE CODES.
B. PROVIDE A MINIMUM 6'-0" CORRIDOR/AISLE BETWEEN SLEEPING AREA IN OPEN BAY.

2. STAIR
A. PROVIDE TO ALLOW CIRCULATION TO UPPER FLOORS AND TO COMPLY WITH APPLICABLE CODE EGRESS REQUIREMENTS.

3. MECHANICAL
A. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
B. PROVIDE MECHANICAL ROOM ON GROUND FLOORS WITH DOORS OPENING TO EXTERIOR.

4. ELECTRICAL
A. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
B. LOCATE MAIN ELECTRICAL ROOM ON GROUND FLOOR.

5. COMM ROOM
A. PROVIDE DEDICATED INTERIOR ROOMS FOR COMMUNICATIONS EQUIPMENT.

AREA CALCULATIONS

1ST FLOOR:

FULL VALUE:		
1 INTERIOR SPACE		15,132.4 SF
HALF VALUE:		
2 EXTERIOR COVERED	[(73.3 x 2) x 1/2] =	73.3 SF
3 EXTERIOR COVERED	(147.0 x 1/2) =	73.5 SF
1ST FLOOR TOTAL:		15,279.2 SF

GRAPHIC SCALE

8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Revisions

Symbol	Description	Date	Appr

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
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Date: 28 JULY 2009
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Drawing Code: X-XXX-XX-XXX
COE LOUISVILLE DISTRICT
Project Engineer/Architect
Date

ENLISTED BARRACKS: FIRST FLOOR PLAN

DEPARTMENT OF THE ARMY
FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

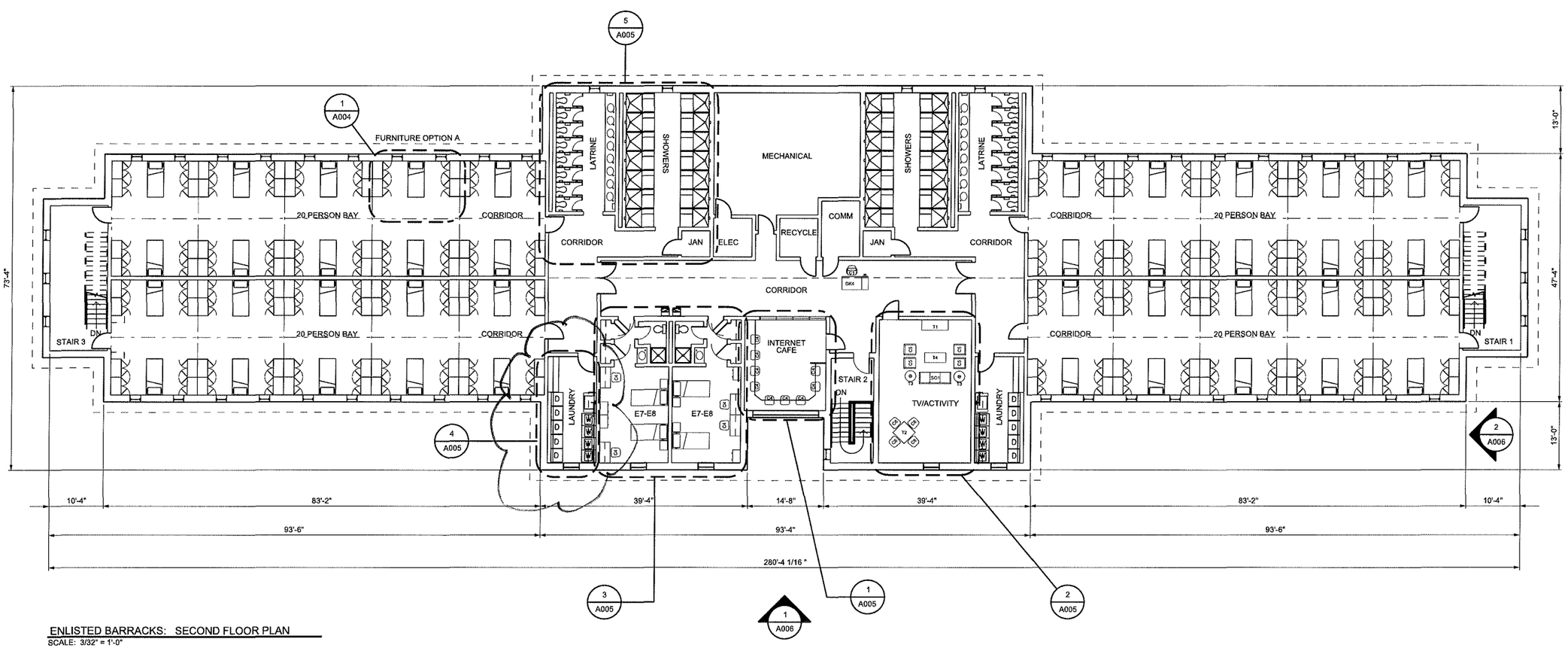
SHEET REFERENCE NUMBER:
ORTC-A003
SHEET 8 OF 31

CORRECTED FINAL

*** SUPPORT VALUE ENGINEERING - IT PAYS ***

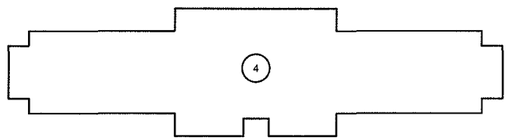
DATE: 05-AUG-2009 10:08
FILE: IP_PWP:dms07722*156591-A003.dgn

*** SAFETY PAYS ***

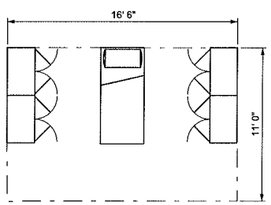


ENLISTED BARRACKS: SECOND FLOOR PLAN
SCALE: 3/32" = 1'-0"

NOTE:
PLAN DEPICTS TYPICAL CONFIGURATION FOR ENLISTED BARRACKS



SECOND FLOOR GROSS AREA CALCS



E1-E6 BED SPACE - OPTION A (1 / A003 / A004)
SCALE: 3/16" = 1'-0"

FURNITURE OPTION A: INTENDED OCCUPANCY-BUNKED BEDS

E1-E6 BED SPACE

1. PROVIDE MINIMUM 90 NET SQUARE FEET PER OCCUPANT. AREA TO INCLUDE CIRCULATION.

GENERAL

1. PROVIDE 3'-0" WIDE LOCKABLE DOOR TO SEPARATE OPEN BAY BARRACKS FROM COMMONS SPACE.

2. PROVIDE 3'-0" WIDE EXTERIOR DOOR.

3. PROVIDE A MINIMUM OF ONE WINDOW PER BED LOCATED ON AN EXTERIOR WALL. WINDOW SILL HEIGHT SHALL BE A MINIMUM OF 7'-0" ABOVE FINISHED FLOOR. WINDOW SHALL BE A MINIMUM OF 2'-0" HIGH X 2'-0" WIDE.

FURNISHINGS PER BED SPACE

- TWO BEDS 40"x 85" - BUNKED
- FOUR STORAGE CABINETS MINIMUM 42"Wx24"Dx78"H

AREA CALCULATIONS

2ND FLOOR:
FULL VALUE:

(4) INTERIOR SPACE		15,279.3 SF
	2ND FLOOR TOTAL:	15,279.3 SF
1ST FLOOR TOTAL:		15,279.2 SF
2ND FLOOR TOTAL:		15,279.3 SF
	BUILDING TOTAL:	30,558.5 SF

GRAPHIC GROUP

4 0 4 8FT
SCALE: 3/16" = 1'-0"

8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Symbol	Description	Date	Appr.

Revisions

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
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COE LOUISVILLE DISTRICT Project Engineer/Architect
Date

ENLISTED BARRACKS OPTIONAL FURNITURE LAYOUTS

DEPARTMENT OF THE ARMY FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A004
SHEET 9 OF 31

CORRECTED FINAL

*** SUPPORT VALUE ENGINEERING - IT PAYS ***

DATE: 05-AUG-2009 10:08
FILE: IP_PWP:dms07722*156591-A004.dgn

VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **EB-11**

DESCRIPTION: **MOVE 2ND FLOOR WALL FLUSH WITH EXTERIOR AT INTERNET CAFÉ**

SHEET NO.: **1 of 4**

ORIGINAL DESIGN: (sketch attached)

The Internet Café is located on an exterior wall of the second floor. The exterior wall has been inset into the building.

ALTERNATIVE: (sketch attached)

Move the exterior wall of the Internet Café space to be flush with the outside wall of the building on the second floor.

ADVANTAGES:

- Allows more floor space for activities area or internet café space
- Relatively low cost for added space

DISADVANTAGES:

- Will change the appearance of a full height setback on the exterior
- Modest cost increase

DISCUSSION:

By moving the 2nd floor wall at the Internet Café out to be flush with the exterior, additional space will be available for the activities area and the Internet Café. The roof area already exists, so there will be no added cost for a roof extension. By moving the wall out, there will be more interior wall which is less expensive than exterior wall.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 12,363	—	$ 12,363
ALTERNATIVE	$ 14,548	—	$ 14,548
SAVINGS (Original minus Alternative)	$ (2,185)	—	$ (2,185)

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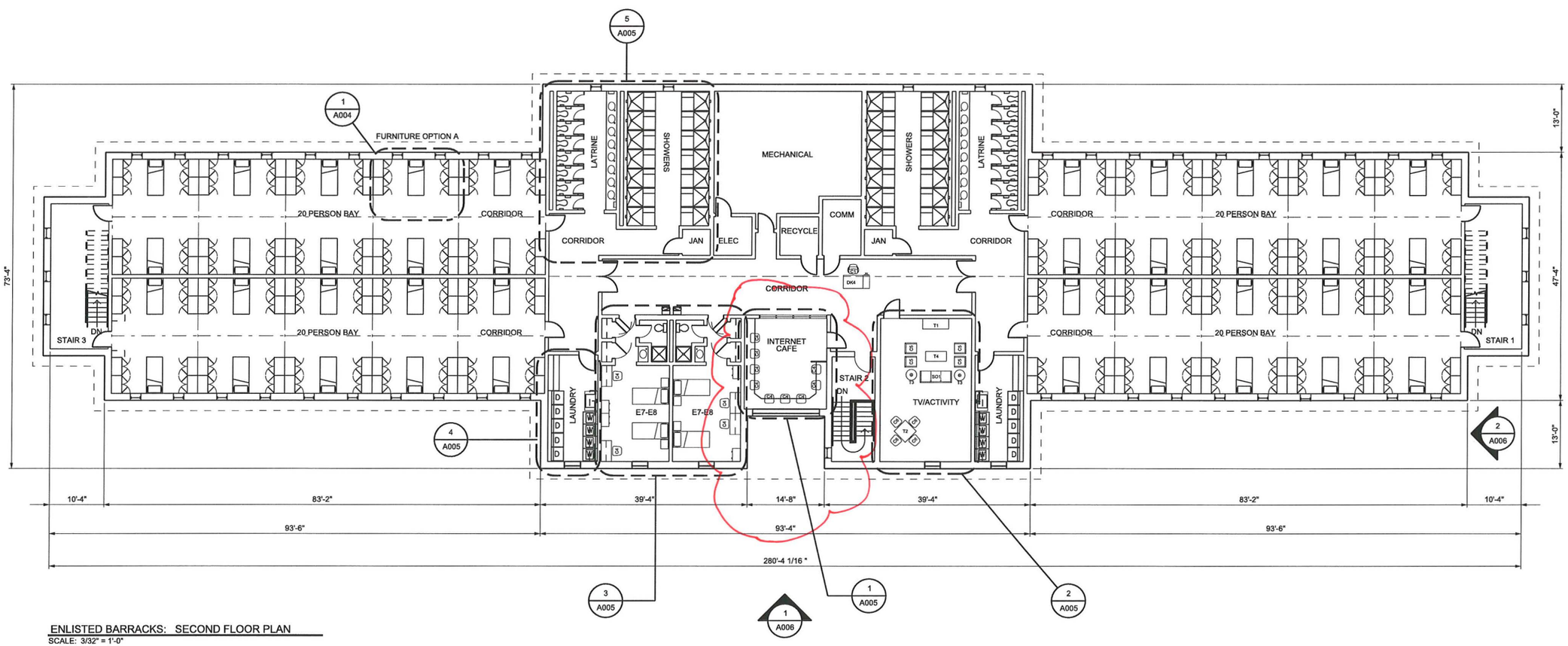
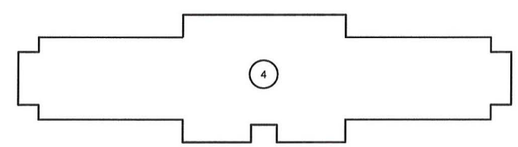
*** SAFETY PAYS ***

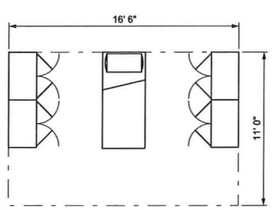


ENLISTED BARRACKS: SECOND FLOOR PLAN
SCALE: 3/32" = 1'-0"

NOTE:
PLAN DEPICTS TYPICAL CONFIGURATION FOR ENLISTED BARRACKS



SECOND FLOOR GROSS AREA CALCS



E1-E6 BED SPACE - OPTION A (1 / A003 / A004)
SCALE: 3/16" = 1'-0"

FURNITURE OPTION A: INTENDED OCCUPANCY-BUNKED BEDS

E1-E6 BED SPACE

1. PROVIDE MINIMUM 90 NET SQUARE FEET PER OCCUPANT. AREA TO INCLUDE CIRCULATION.

GENERAL

1. PROVIDE 3'-0" WIDE LOCKABLE DOOR TO SEPARATE OPEN BAY BARRACKS FROM COMMONS SPACE.

2. PROVIDE 3'-0" WIDE EXTERIOR DOOR.

3. PROVIDE A MINIMUM OF ONE WINDOW PER BED LOCATED ON AN EXTERIOR WALL. WINDOW SILL HEIGHT SHALL BE A MINIMUM OF 7'-0" ABOVE FINISHED FLOOR. WINDOW SHALL BE A MINIMUM OF 2'-0" HIGH X 2'-0" WIDE.

FURNISHINGS PER BED SPACE

- TWO BEDS 40"x 85" - BUNKED
- FOUR STORAGE CABINETS MINIMUM 42"Wx24"Dx78"H

AREA CALCULATIONS

2ND FLOOR:
FULL VALUE:

(4) INTERIOR SPACE		15,279.3 SF
	2ND FLOOR TOTAL:	15,279.3 SF
1ST FLOOR TOTAL:		15,279.2 SF
2ND FLOOR TOTAL:		15,279.3 SF
	BUILDING TOTAL:	30,558.5 SF

GRAPHIC GROUP

4 0 4 8FT
SCALE: 3/16" = 1'-0"

8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Revisions

Symbol	Description	Date	Appr

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
COE LOUISVILLE DISTRICT Project Engineer/Architect
Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX

ENLISTED BARRACKS OPTIONAL FURNITURE LAYOUTS

DEPARTMENT OF THE ARMY FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A004
SHEET 9 OF 31

CORRECTED FINAL

*** SUPPORT VALUE ENGINEERING - IT PAYS ***

DATE: 05-AUG-2009 10:08
FILE: IP_PWP:dms07722*156591-A004.dgn

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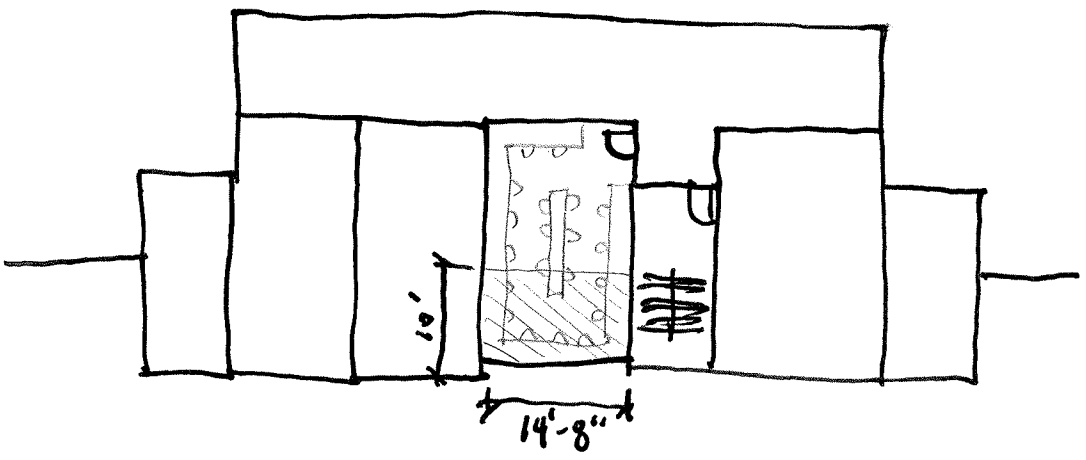
SKETCH

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: EB-11

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☒ BOTH ☐

SHEET NO.: 3 of 4



2ND FLR BARRACKS
ENLARGE INTERNET
RM

EB-11

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **EB-11**

SHEET NO.: **4 of 4**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Exterior Wall at 2nd Floor							
- Floor Construction	SF				140	15.00	2,100
- Exterior Wall	SF	430	25.00	10,750	190	25.00	4,750
- Ceiling Finish (none req'd.)							
- Interior Walls (w/finish)	SF				240	16.00	3,840
- Floor Finish (none req'd.)							
- Electrical	SF				140	5.00	700
- Mechanical	SF				140	5.00	700
- Fire Protection	SF				140	3.00	420
- Fire Alarm	SF				140	1.00	140
Subtotal				10,750			12,650
Markup (%) at 15%				1,613			1,898
TOTAL				12,363			14,548

VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **EB-13/EB-14**

DESCRIPTION: **PROVIDE HARDWIRE OR WIRELESS INTERNET CONNECTION AT EACH BED AND DELETE THE INTERNET CAFÉ SPACE**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A004 Enlisted Barracks 2nd Floor Plans, dated 16 Feb 2006, an Internet Café (Rm. 201) is included in the program.

ALTERNATIVE: (sketch attached)

Provide hardwire or wireless internet connection/capacity in each Officer Quarter for each Officer and at each enlisted soldier bunk bed and delete the Internet Café.

ADVANTAGES:

- Private internet access for each Officer in their quarters and for each soldier at his/her bunk is provided
- No central internet access required
- Enhances officer/soldier morale

DISADVANTAGES:

- Cost of wiring the building with internet – could install wireless system for little cost

DISCUSSION:

A majority of the Officers and enlisted soldiers use the internet for communications and entertainment. Provide additional note on plan to clarify. The COE may choose to delete the Internet Café area or change it to an additional activity area.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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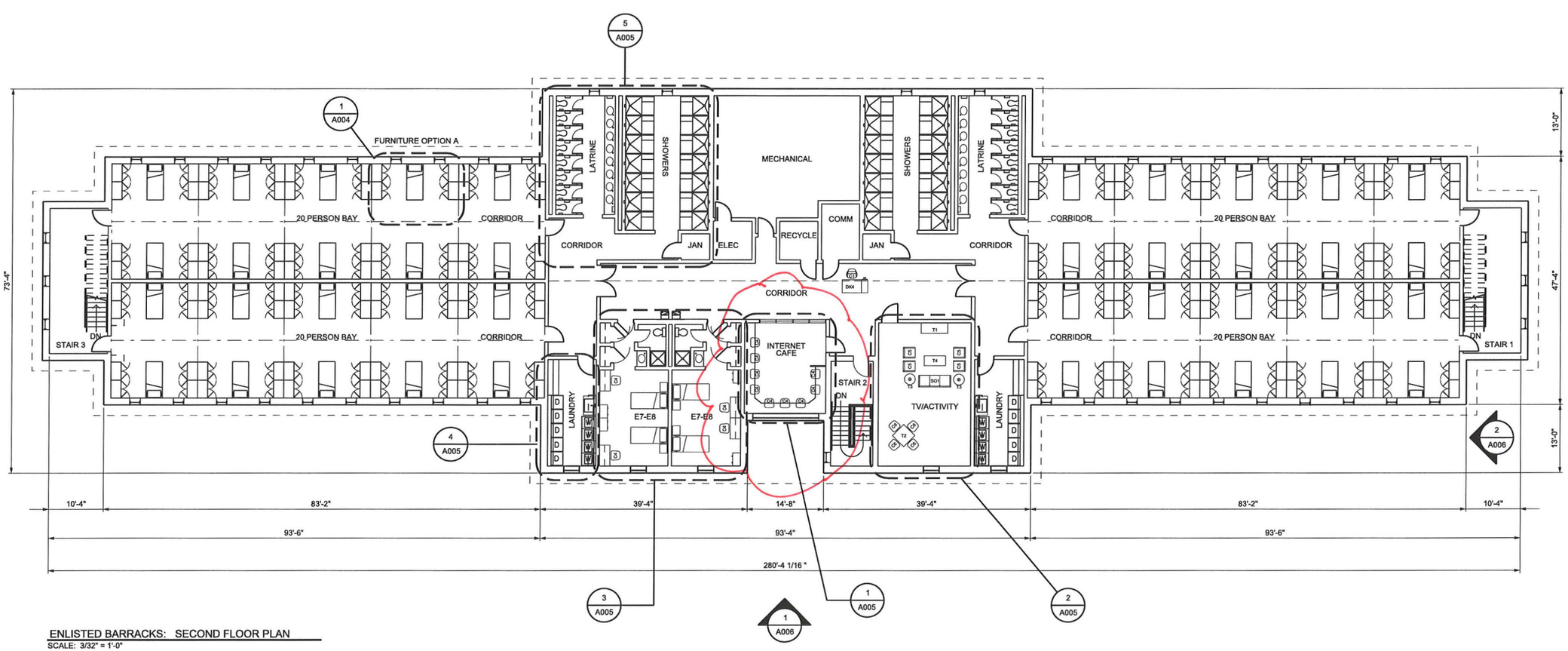
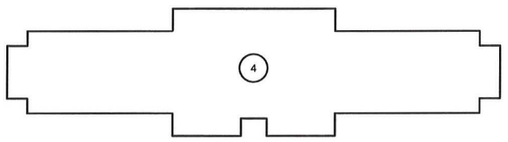
ALT. NO. EB-13/EB-14 Sht. 2 of 2



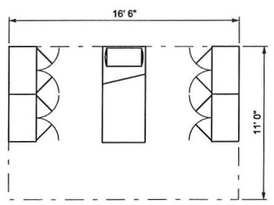
ENLISTED BARRACKS: SECOND FLOOR PLAN

SCALE: 3/32" = 1'-0"

NOTE:
PLAN DEPICTS TYPICAL CONFIGURATION FOR ENLISTED BARRACKS



SECOND FLOOR GROSS AREA CALCS



E1-E6 BED SPACE - OPTION A (1 / A003 / A004)
SCALE: 3/16" = 1'-0"

FURNITURE OPTION A: INTENDED OCCUPANCY-BUNKED BEDS

E1-E6 BED SPACE

1. PROVIDE MINIMUM 90 NET SQUARE FEET PER OCCUPANT. AREA TO INCLUDE CIRCULATION.

GENERAL

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2. PROVIDE 3'-0" WIDE EXTERIOR DOOR.

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FURNISHINGS PER BED SPACE

- TWO BEDS 40"x 85" - BUNKED
- FOUR STORAGE CABINETS MINIMUM 42"Wx24"Dx78"H

AREA CALCULATIONS

2ND FLOOR:
FULL VALUE:

(4) INTERIOR SPACE		15,279.3 SF
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GRAPHIC GROUP

4 0 4 8FT
SCALE: 3/16" = 1'-0"

8 0 8 16FT
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US Army Corps of Engineers
Louisville District

Revisions

Symbol	Description	Date	Appr

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
Project Engineer/Architect: COE LOUISVILLE DISTRICT
Date: 28 JULY 2009
Scale:
Drawing Code: X-XXXX-XX-XXX
Date

ENLISTED BARRACKS OPTIONAL FURNITURE LAYOUTS

DEPARTMENT OF THE ARMY
FACILITY STANDARDIZATION PROGRAM

OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A004
SHEET 9 OF 31

CORRECTED FINAL

DATE: 05-AUG-2009 10:08
FILE: IP_PWP:dms07722*156591-A004.dgn

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SUMMARY OF VALUE ENGINEERING ALTERNATIVES

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX (ORTC)**
Center of Standardization Model

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	PRESENT WORTH OF COST SAVINGS: INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
	VEHICLE MAINTEANCE (VM)					
VM-1	**Lower the warehouse finish floor level and provide a recessed truck dock instead.**	**$82,386**	**$71,767**	**$10,619**	**$0**	**$10,619**
VM-2	Add an Arms Vault to the Vehicle Maintenance building.	$0	$39,514	($39,514)	$0	($39,514)
VM-3/ VM-4/ VM-5	Add an Arms Vault to the building and revise the footprint.	DESIGN SUGGESTION				
	OFFICERS QUARTERS (OQ)					
OQ-1/ OQ-9	Move the building entrance from the end to the middle of the building to improve circulation.	DESIGN SUGGESTION				
OQ-2/ OQ-3	Design a one story facility in lieu of two and reduce the space program and building capacity.	DESIGN SUGGESTION				
OQ-4	Centralize utility spaces in the building.	DESIGN SUGGESTION				
OQ-5/ OQ-7	Reduce the Laundry Room floor area and use stacked washers/dryers only on the first floor.	DESIGN SUGGESTION				
OQ-6	Enlarge the Activity Room to improve functionality.	DESIGN SUGGESTION				
OQ-8	Provide hardwired or wireless internet connection in each room.	DESIGN SUGGESTION				

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VALUE ENGINEERING ALTERNATIVE

PROJECT:	***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX** ***Center of Standardization (CoS) Model*** *Department of the Army* *Facilities Standardization Program*	ALTERNATIVE NO.: **VM-1**
DESCRIPTION:	**SET THE WAREHOUSE FLOOR ELEVATION BASED ON SITE TOPOGRAPHY AND POSITION THE LOADING DOCK TO MINIMIZE OVERALL BUILDING COSTS**	SHEET NO.: **1 of 3**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A016, Vehicle Maintenance Battalion Warehouse Floor Plan dated 16 Feb 2006, the Warehouse area is depicted as 4 ft above grade requiring a raised loading dock, 4-ft-high foundation walls, and earth fill.

ALTERNATIVE: (sketch attached)

Allow the design team to set the warehouse floor elevation based on the topography of the site and place the loading dock so that the most cost-effective overall building design is achieved. This could result in a 4-ft-high loading dock above grade, a 4-ft depressed loading dock area, or a flush loading dock with scissor lifts for moving equipment and supplies.

ADVANTAGES:

- Possibility of lowering overall roof height
- Requires two less exit stairs if the warehouse floor is at grade level
- Less fill and foundation walls required if the warehouse floor is at grade level
- Matches floor level and topography to achieve the lowest overall building cost

DISADVANTAGES:

- Requires a trench drain if a depressed loading dock is used and maybe retaining walls to create a ramp

DISCUSSION:

The Warehouse finished floor elevation should be dependent on the site topography to achieve the lowest overall cost for the facility.

It should be noted that the Standard Warehouse Design has been modified and provided to the Proponent (ACSIM) awaiting direction for redesign of facility.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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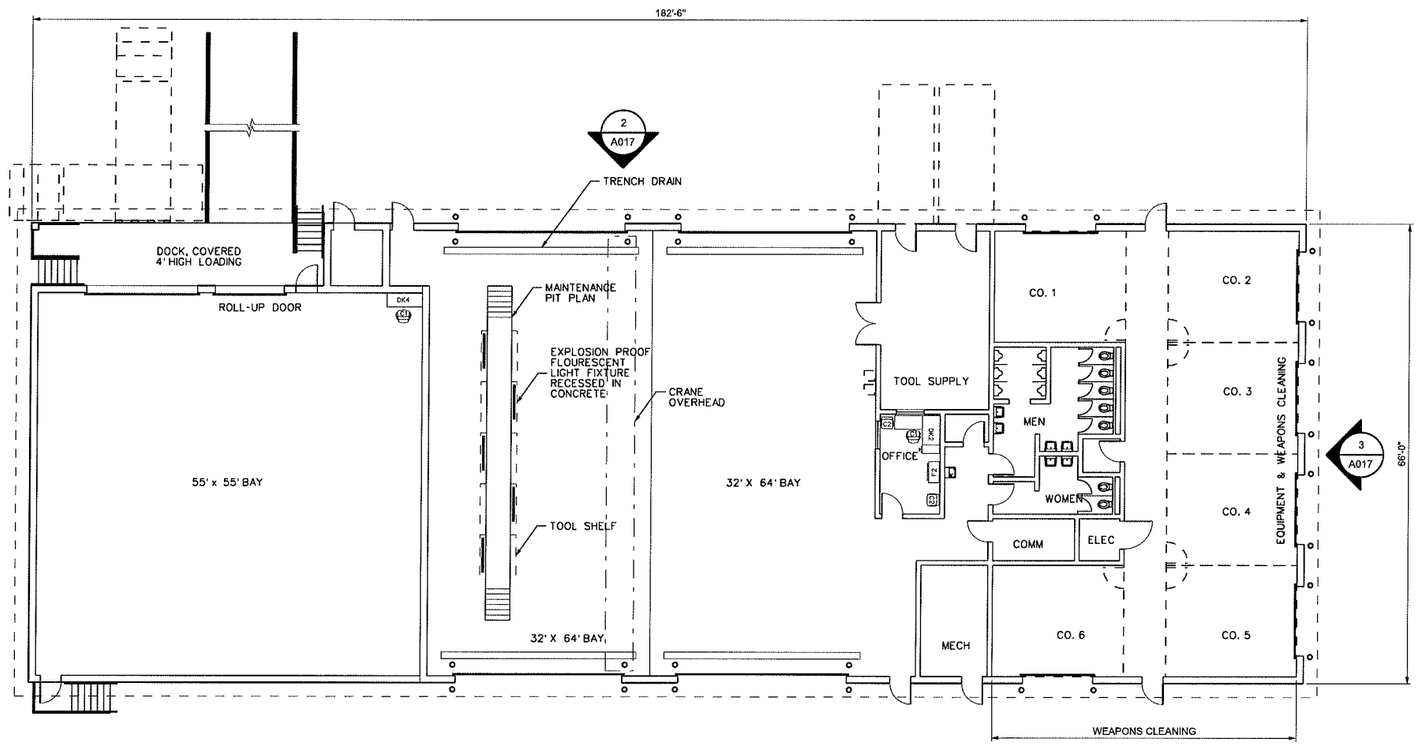
ALT. NO. VM-1
2 of 3



VEHICLE MAINTENANCE/BATTALION WAREHOUSE PLAN
SCALE: 3/32" = 1'-0"

GENERAL

THE VEHICLE MAINTENANCE BUILDING IS DESIGNED TO SUPPORT UNIT VEHICLE AND EQUIPMENT MAINTENANCE AND REPAIR ACTIVITIES AND PROVIDE TEMPORARY STROAGE OF UNIT SUPPLIES AND EQUIPMENT.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC 3-600-01.
2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.
3. LIFE SAFETY AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND UFC 1-200-01 DESIGN GENERAL BUILDING REQUIREMENTS.
4. USE AND OCCUPANCY CLASSIFICATION:

IBC, CHAPTER 3	NFPA 101, CHAPTER 42
SECTION 311, STORAGE GROUP S	STORAGE OCCUPANCIES
PARAGRAPH 311.2	(MODERATE HAZARD STORAGE)
GROUP S-1 (MODERATE HAZARD STORAGE)	

OVERALL FLOOR PLAN REQUIREMENTS

WEAPONS CLEANING
1. PROVIDE A WEAPONS AND EQUIPMENT CLEANING ROOM TO BE SUB-DIVIDED FURTHER INTO 6 BAYS SEPARATED BY WIRE MESH PARTITIONS.
2. PROVIDE A 10'-0" WIDE X 10'-0" HIGH EXTERIOR OVERHEAD COILING DOOR INTO EACH OF THE SIX WEAPONS AND EQUIPMENT CLEANING BAYS
3. PROVIDE A CORRIDOR AND WIRE MESH DOOR CONNECTING EACH OF THE SIX BAYS WITH THE VEHICLE MAINTENANCE AREA OF THE FACILITY.

VEHICLE MAINTENANCE
1. PROVIDE TWO 32' x 64' DRIVE THROUGH SERVICE BAYS.
2. PROVIDE A 24' WIDE X 16' HIGH OVERHEAD DOOR AT EACH END OF BOTH BAYS.
3. PROVIDE AN OVERHEAD CRANE CAPABLE OF SUPPORTING 10 TONS WITH A MINIMUM OVERALL HOOK HEIGHT OF 20FT. CRANE SHALL SERVE BOTH SERVICE BAYS.
4. PROVIDE AN OFFICE WITH A WINDOW FACING THE SERVICE BAYS. OFFICE SHALL HAVE DATA AND PHONE CONNECTION.
5. PROVIDE OVERHEAD VEHICLE EXHAUST SYSTEM AS DESCRIBED IN SHEET M001.
6. PROVIDE DATA AND PHONE CONNECTION TO EACH SERVICE BAY.
7. PROVIDE TRENCH DRAINS WITH OIL/WATER SEPARATOR AT INTERIOR OF COILING/ROLL-UP DOORS.
8. PROVIDE EMERGENCY EYE WASH POINTS.
9. PROVIDE HOSE BIBS BETWEEN ROLL-UP DOORS.
10. PROVIDE COMPRESSED AIR SYSTEM FOR SERVICE BAYS.
11. PROVIDE MINIMUM OF ONE MAINTENANCE PIT.

MEN'S AND WOMEN'S LATRINES
1. PROVIDE MINIMUM OF TWO WALL HUNG LAVATORIES IN THE WOMENS LATRINE AND FOUR WALL HUNG LAVATORIES IN THE MENS LATRINE.
2. PROVIDE 1/4" THICK BY MINIMUM 3' -6" HIGH BY 2'-0" WIDE MIRROR GLASS AT EACH LAVATORY.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR.
4. PROVIDE MINIMUM TWO WALL MOUNTED TOILETS WITH FULL SEAT IN THE WOMENS LATRINE AND A MINIMUM OF FIVE IN THE MENS LATRINE.
5. PROVIDE MINIMUM ONE FLOOR DRAIN EACH LATRINE.

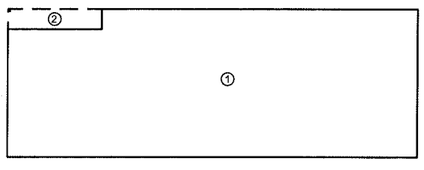
TOOL ROOM/PLL
1. PROVIDE OPEN TOOL AND PARTS STORAGE AREA WITH 6'-0" DOOR OPENING INTO THE SERVICE BAYS. OPTIONAL CAGES MAY BE PROVIDED TO SEPARATE AREAS FOR PARTS AND TOOLS.
2. PROVIDE DATA AND PHONE CONNECTION.

BATTALION WAREHOUSE
1. PROVIDE A MINIMIM 3025 SQUARE FEET CLEAR AREA
2. PROVIDE A MINIMUM CLEAR HEIGHT OF 14'-0".
3. PROVIDE A MINIMUM 30'-0" LONG x 8' -0" WIDE x 4' -0" HIGH LOADING DOCK. OPTION - DEPENDING ON EXISTING SITE CONDITIONS AND INSTALLATION PREFERENCE, LOADING DOCK COULD BE EITHER RAISED (BATTALION WAREHOUSE FINISH FLOOR 4'-0" ABOVE FINISHED GRADE) OR RECESSED TYPE (BATTALION WAREHOUSE FINISH FLOOR EQUAL TO FINISH GRADE).
4. PROVIDE STAIRS FROM THE LOADING DOCK TO FINISHED GRADE.
5. PROVIDE A ROOF FOR THE LOADING DOCK.
6. PROVIDE A MINIMUM 16'-0" WIDE X 12'-0" HIGH OVERHEAD COILING DOOR AT LOADING DOCK.
7. PROVIDE ELECTRICAL, DATA AND PHONE CONNECTION FOR ONE WORKSPACE WITHIN THE WAREHOUSE.
8. OPTIONAL - PROVIDE RAMP TO ACCOMMODATE ACCESS TO BUILDING BY FORKLIFT IF REQUIRED BY BATTALION. PROVIDE A MINIMUM 10'-0" WIDE X 12'-0" HIGH OVERHEAD COILING DOOR AT TOP OF RAMP.
9. OPTIONAL - STORAGE RACKS OR BINS MAY BE PERMANENTLY INSTALLED (INSTALLED EQUIPMENT) AND FUNDED AS PART OF THE CONSTRUCTION CONTRACT.

MECHANICAL
1. PROVIDE AIR CONDITIONING ONLY TO THE OFFICE AND TOILET ROOMS.
2. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE
3. PROVIDE MECHANICAL ROOM ON GROUND FLOORS WITH DOORS OPENING TO EXTERIOR

ELECTRICAL
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. LOCATE MAIN ELECTRICAL ROOM ON GROUND FLOOR.

AREA CALCULATIONS



FLOOR PLAN GROSS AREA CALCS

1	COF BUILDING AREA AT FULL VALUE:	11,667 SF
	EXTERIOR COVERED AREA AT HALF VALUE:	
2	LOADING DOCK: (375 x 1/2) = 187.5 SF	
	EXTERIOR COVERED SUBTOTAL:	234 SF
	BUILDING TOTAL GSF:	11,854.5 SF

BUILDING SPACES DESCRIPTION

	FINISHES				MINIMUM CEILING HEIGHT	MINIMUM STC	NOTES
	FLOOR	BASE	WALL	CEILING			
WAREHOUSE	CONC		CMU	EXP	VAR		
VEHICLE MAINT.							
VEHICLE MAINTENANCE	CONC		CMU	EXP	VAR		
TOOL ROOM/PLL	CONC		CMU	EXP	VAR		
OFFICE	CONC		CMU	GWB	8'-0"	45	
MEN'S LATRINE	CT	CT	CMU	GWB	8'-0"		
WOMEN'S LATRINE	CT	CT	CMU	GWB	8'-0"		
WEAPON CLEAN	CONC		CMU	EXP	VAR		
CORRIDOR	CONC		CMU	GWB	8'-0"		
SERVICE							
STORAGE	CONC		CMU		8'-0"		
MECHANICAL	CONC		CMU		VAR		
ELECTRICAL/COMM	CONC		CMU		8'-0"		

FINISH LEGEND

CONC - SEALED CONCRETE
RB - RUBBER BASE
CMU - PAINTED CMU OR CONCRETE
CT - CERAMIC TILE
EXP - PAINTED EXPOSED STRUCTURE
GWB - PAINTED GYPSUM WALL BOARD

FINISH NOTES

1. ROOM FINISHES SHOWN ARE MINIMUM REQUIRED.

GRAPHIC SCALE
8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Revisions
Symbol | Description | Date | Appr

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
Project Engineer/Architect: COE LOUISVILLE DISTRICT
Date: 28 JULY 2009
Scale: -
Drawing Code: X-XXX-XX-XXX
Date

VEHICLE MAINTENANCE/ BATTALION WAREHOUSE FLOOR PLAN

DEPARTMENT OF THE ARMY
FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A016
SHEET 24 OF 31

CORRECTED FINAL

DATE: 05-AUG-2009 10:09
FILE: IP_PWP:dms07722*156591-A016.dgn

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COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **VM-1**

SHEET NO.: **3 of 3**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Recessed Dock							
- Excavate for Ramp	CY				300	4.00	1,200
- Grade and Compact	SY				445	1.25	556
- Excavate for Walls	CY				55	6.00	330
- Ramp Footings (neat dig)	CY				25	300.00	7,500
- Ramp Walls	CY				30	350.00	10,500
- Backfill Walls	CY				40	7.00	280
- Trench Drain	LF				22	100.00	2,200
- Ramp Slab and Base	SF				4,000	6.00	24,000
- Sump Pump	EA				1	300.00	300
- Metal Stair	EA				1	3,500.00	3,500
- Dock Leveler	EA				1	9,000.00	9,000
- Dock Bumpers	EA				2	120.00	240
- Leveler Pit (includes angle/ excavation)	CY				2	400.00	800
- MEP	LS				1	2,000.00	2,000
Raised Truck Dock and Storage							
- Fill @ Truck Bay (on-site material)	CY	600	15.00	9,000			
- Foundations @ Perimeter Walls	CY	26	350.00	9,100			
- Perimeter Walls	CY	35	300.00	10,500			
- Drive SOG and Base	SF	4,000	6.00	24,000			
- Metal Stairs	EA	2	3,500.00	7,000			
- Dock Leveler	EA	1	9,000.00	9,000			
- Dock Bumpers	EA	2	120.00	240			
- Leveler Pit (includes angle/ excavation)	CY	2	400.00	800			
- MEP	LS	1	2,000.00	2,000			
Subtotal				71,640			62,406
Markup (%) at 15%				10,746			9,361
TOTAL				82,386			71,767

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VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **VM-2**

DESCRIPTION: **ADD AN ARMS VAULT TO THE VEHICLE MAINTENANCE FACILITY**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN:

No arms vault is currently planned for the Vehicle Maintenance building.

ALTERNATIVE:

Add an arms vault in the Vehicle Maintenance building.

ADVANTAGES:

- Provides the units with a place to store their rifles when at the facility. The weapons will be stored when not being cleaned.
- Secures firearms

DISADVANTAGES:

- Adds cost
- Need to locate a space for the vault

DISCUSSION:

Currently the Vehicle Maintenance building does not have an arms vault. For the safety of the troops, an arms vault should be added for firearm lock-up. Since this is the building in which the weapons are cleaned, it would be prudent to have a vault for storage.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 0	—	$ 0
ALTERNATIVE	$ 39,514	—	$ 39,514
SAVINGS (Original minus Alternative)	$ (39,514)	—	$ (39,514)

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **VM-2**

SHEET NO.: **2 of 2**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
New Arms Vault							
- Thickened Slab Under Walls	CY				4	300.00	1,200
- New Secure Walls	SF				630	25.00	15,750
- Concrete Lid on Room	CY				1	450.00	450
- Add Vault Door	EA				1	8,200.00	8,200
- Add Day Gate	EA				1	3,000.00	3,000
- Paint Walls	SF				1,260	1.00	1,260
- Added FCU	EA				1	2,000.00	2,000
- Electrical	LS				1	2,500.00	2,500
Subtotal							34,360
Markup (%) at	**15%**						5,154
TOTAL							39,514

VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **VM-3/VM-4/VM-5**

DESCRIPTION: **ADD AN ARMS VAULT AND MAINTENANCE AREA — CENTRAL VEHICLE CORRIDOR IN THE BUILDING AND REVISE THE FOOTPRINT**

SHEET NO.: **1 of 4**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A016, Vehicle Maintenance/Battalion Warehouse Floor Plan, dated 16 Feb 2006, the design does not provide an arms vault. The Weapons Cleaning Room does not have access to the Maintenance Bay and the plan does not have the new Maintenance Area – Central Vehicle Corridor required by ACSIM.

ALTERNATIVE: (sketch attached)

Reconfigure the building to incorporate mandatory requirements as shown in the original Standard Design and provide an Arms Vault for each company and Maintenance Area – Central Vehicle Corridor.

ADVANTAGES:

- Provides a place to secure firearms
- Meets Army requirements for new Vehicle Corridor
- Improves circulation throughout the building

DISADVANTAGES:

- Adds additional square footage to building gross square footage

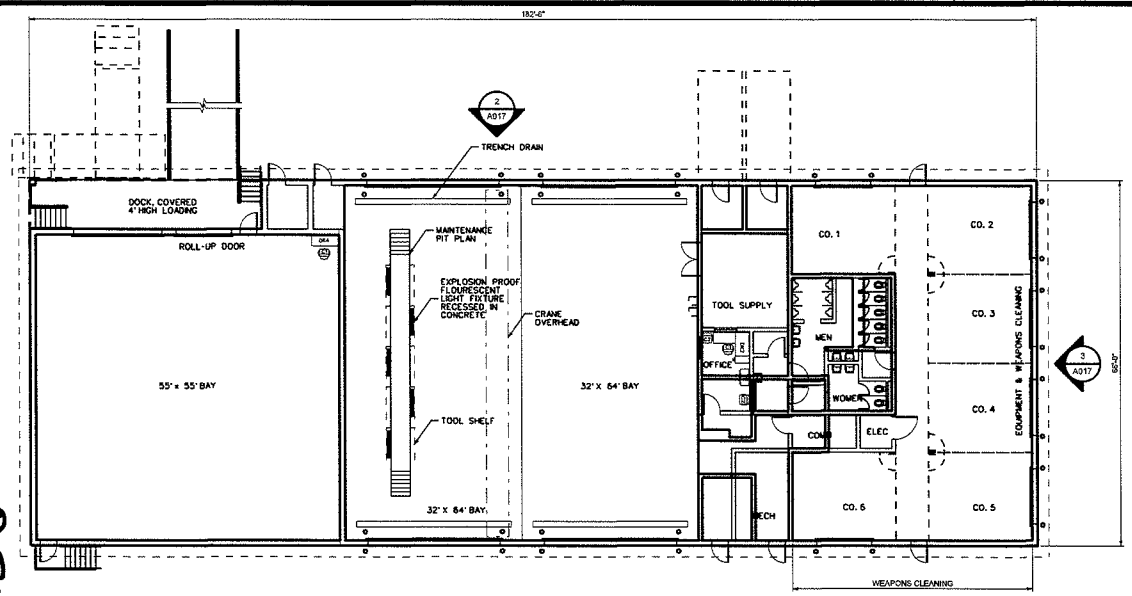
DISCUSSION:

Providing an arms vault assumes the ORTC Standard Design is incorrect and there is a requirement.

The District has redesigned the ORTC Vehicle Maintenance Facility to incorporate mandated changes in bay size (from 32 ft x 64 ft to 32 ft x 96 ft) and the addition of a perpendicular 32 ft wide bay running the length of the building. The original functional features of the Vehicle Maintenance Facility Standard Design have been integrated into the scheme. The proposed solution was modeled after the Small TEMF (SAS Standard Design). New design = 19,248 SF; original design = 11,854 SF.

The District also recommends the following be incorporated in the proposed solution: 1. Change the direction of the 10-ton crane to run horizontal (64 ft) in plan versus vertically (96 ft) as shown. 2. For the warehouse, depress the truck ramp. This would allow the warehouse to be located on grade eliminating the need for multiple levels and corresponding stairs.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			



VEHICLE MAINTENANCE/BATTALION WAREHOUSE PLAN 1 A016
SCALE: 3/32" = 1'-0"

GENERAL

THE VEHICLE MAINTENANCE BUILDING IS DESIGNED TO SUPPORT UNIT VEHICLE AND EQUIPMENT MAINTENANCE AND REPAIR ACTIVITIES AND PROVIDE TEMPORARY STROAGE OF UNIT SUPPLIES AND EQUIPMENT.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC 3-600-01.
2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.
3. LIFE SAFETY AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND UFC 1-200-01 DESIGN GENERAL BUILDING REQUIREMENTS.
4. USE AND OCCUPANCY CLASSIFICATION:

IBC, CHAPTER 3
SECTION 311, STORAGE GROUP S
PARAGRAPH 311.2
GROUP S-1 (MODERATE HAZARD STORAGE)

NFPA 101, CHAPTER 42
STORAGE OCCUPANCIES
(MODERATE HAZARD STORAGE)

BUILDING SPACES DESCRIPTION

	FINISHES				MINIMUM CEILING HEIGHT	MINIMUM STC	NOTES
	FLOOR	BASE	WALL	CEILING			
WAREHOUSE	CONC		CMU	EXP	VAR		
VEHICLE MAINT.							
VEHICLE MAINTENANCE	CONC		CMU	EXP	VAR		
TOOL ROOM/PLL	CONC		CMU	EXP	VAR		
OFFICE	CONC		CMU	GWB	8'-0"	45	
MEN'S LATRINE	CT	CT	CMU	GWB	8'-0"		
WOMEN'S LATRINE	CT	CT	CMU	GWB	8'-0"		
WEAPON CLEAN	CONC		CMU	EXP	VAR		
CORRIDOR	CONC		CMU	GWB	8'-0"		
SERVICE							
STORAGE	CONC		CMU		8'-0"		
MECHANICAL	CONC		CMU		VAR		
ELECTRICAL/COMM	CONC		CMU		8'-0"		

FINISH LEGEND

CONC - SEALED CONCRETE
RB - RUBBER BASE
CMU - PAINTED CMU OR CONCRETE
CT - CERAMIC TILE
EXP - PAINTED EXPOSED STRUCTURE
GWB - PAINTED GYPSUM WALL BOARD

FINISH NOTES

1. ROOM FINISHES SHOWN ARE MINIMUM REQUIRED.

OVERALL FLOOR PLAN REQUIREMENTS

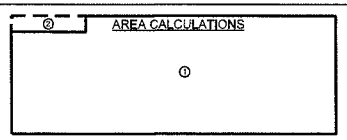
VEHICLE MAINTENANCE
1. PROVIDE TWO 32' x 64' DRIVE THROUGH SERVICE BAYS.
2. PROVIDE A 24' WIDE X 16' HIGH OVERHEAD DOOR AT EACH END OF BOTH BAYS.
3. PROVIDE AN OVERHEAD CRANE CAPABLE OF SUPPORTING 10 TONS WITH A MINIMUM OVERALL HOOK HEIGHT OF 20FT. CRANE SHALL SERVE BOTH SERVICE BAYS.
4. PROVIDE AN OFFICE WITH A WINDOW FACING THE SERVICE BAYS. OFFICE SHALL HAVE DATA AND PHONE CONNECTION.
5. PROVIDE OVERHEAD VEHICLE EXHAUST SYSTEM AS DESCRIBED IN SHEET M601.
6. PROVIDE DATA AND PHONE CONNECTION TO EACH SERVICE BAY.
7. PROVIDE TRENCH DRAINS WITH OIL/WATER SEPARATOR AT INTERIOR OF COILING/ROLL-UP DOORS.
8. PROVIDE EMERGENCY EYE WASH POINTS.
9. PROVIDE HOSE BIBS BETWEEN ROLL-UP DOORS.
10. PROVIDE COMPRESSED AIR SYSTEM FOR SERVICE BAYS.
11. PROVIDE MINIMUM OF ONE MAINTENANCE PIT.

MEN'S AND WOMEN'S LATRINES
1. PROVIDE MINIMUM OF TWO WALL HUNG LAVATORIES IN THE WOMENS LATRINE AND FOUR WALL HUNG LAVATORIES IN THE MENS LATRINE.
2. PROVIDE 1/4" THICK BY MINIMUM 3'-6" HIGH BY 2'-6" WIDE MIRROR GLASS AT EACH LAVATORY.
3. PROVIDE WALL MOUNTED VANITY LIGHT FIXTURE ABOVE MIRROR.
4. PROVIDE MINIMUM TWO WALL MOUNTED TOILETS WITH FULL SEAT IN THE WOMENS LATRINE AND A MINIMUM OF FIVE IN THE MENS LATRINE.
5. PROVIDE MINIMUM ONE FLOOR DRAIN EACH LATRINE.

TOOL ROOM/PLL
1. PROVIDE OPEN TOOL AND PARTS STORAGE AREA WITH 6'-0" DOOR OPENING INTO THE SERVICE BAYS. OPTIONAL CAGES MAY BE PROVIDED TO SEPARATE AREAS FOR PARTS AND TOOLS.
2. PROVIDE DATA AND PHONE CONNECTION.

WEAPONS CLEANING
1. PROVIDE A WEAPONS AND EQUIPMENT CLEANING ROOM TO BE SUB-DIVIDED FURTHER INTO 6 BAYS SEPARATED BY WIRE MESH PARTITIONS.
2. PROVIDE A 10'-0" WIDE X 10'-0" HIGH EXTERIOR OVERHEAD COILING DOOR INTO EACH OF THE SIX WEAPONS AND EQUIPMENT CLEANING BAYS
3. PROVIDE A CORRIDOR AND WIRE MESH DOOR CONNECTING EACH OF THE SIX BAYS WITH THE VEHICLE MAINTENANCE AREA OF THE FACILITY.

AREA CALCULATIONS



FLOOR PLAN GROSS AREA CALCS

1 BUILDING AREA AT FULL VALUE: 11,657.0 SF

EXTERIOR COVERED AREA AT HALF VALUE:

2 LOADING DOCK (375.0 x 1/2) = 197.5 SF

BUILDING TOTAL: 11,854.5 SF

BATTALION WAREHOUSE
1. PROVIDE A MINIMIM 3025 SQUARE FEET CLEAR AREA
2. PROVIDE A MINIMUM CLEAR HEIGHT OF 14'-0".
3. PROVIDE A MINIMUM 30'-0" LONG x 8'-0" WIDE x 4'-0" HIGH LOADING DOCK. OPTION - DEPENDING ON EXISTING SITE CONDITIONS AND INSTALLATION PREFERENCE. LOADING DOCK COULD BE EITHER RAISED (BATTALION WAREHOUSE FINISH FLOOR 4'-0" ABOVE FINISHED GRADE) OR RECESSED TYPE (BATTALION WAREHOUSE FINISH FLOOR EQUAL TO FINISH GRADE).
4. PROVIDE STAIRS FROM THE LOADING DOCK TO FINISHED GRADE.
5. PROVIDE A ROOF FOR THE LOADING DOCK.
6. PROVIDE A MINIMUM 18'-0" WIDE X 12'-0" HIGH OVERHEAD COILING DOOR AT LOADING DOCK.
7. PROVIDE ELECTRICAL, DATA AND PHONE CONNECTION FOR ONE WORKSPACE WITHIN THE WAREHOUSE.
8. OPTIONAL - PROVIDE RAMP TO ACCOMMODATE ACCESS TO BUILDING BY FORKLIFT IF REQUIRED BY BATTALION. PROVIDE A MINIMUM 10'-0" WIDE X 12'-0" HIGH OVERHEAD COILING DOOR AT TOP OF RAMP.
9. OPTIONAL - STORAGE RACKS OR BINS MAY BE PERMANENTLY INSTALLED (INSTALLED EQUIPMENT) AND FUNDED AS PART OF THE CONSTRUCTION CONTRACT.

MECHANICAL
1. PROVIDE AIR CONDITIONING ONLY TO THE OFFICE AND TORLET ROOMS.
2. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE
3. PROVIDE MECHANICAL ROOM ON GROUND FLOORS WITH DOORS OPENING TO EXTERIOR

ELECTRICAL
1. SIZE AND LOCATE ROOM TO ALLOW EQUIPMENT REMOVAL AND MAINTENANCE.
2. LOCATE MAIN ELECTRICAL ROOM ON GROUND FLOOR.

GRAPHIC SCALE
8 0 8 16FT
SCALE: 3/32" = 1'-0"

8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Revisions
Drawn by: | Date | Appr.
Checked

Designed by: CORPS OF ENGINEERS LOUISVILLE DISTRICT
Drawn by:
Checked by:
CORPS OF ENGINEERS LOUISVILLE DISTRICT
Chief, Engineering Division
Date: 18 MARCH 2005
Scale:
Drawing Code: XXXXX.XX.XXX

L3SP ASSOCIATES LTD.
2700 MIDDLE STREET
CHARLESTON, SOUTH CAROLINA

VEHICLE MAINTENANCE/ BATTALION WAREHOUSE FLOOR PLAN

DEPARTMENT OF THE ARMY
FACILITY STANDARDIZATION PROGRAM

OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
A016
SHEET 24 OF 30

CORRECTED FINAL

- ORIGINAL -

DATE: 07-JUL-2009 12:10
FILE: IP_PWP:dmsD7722#156591-A016.dgn

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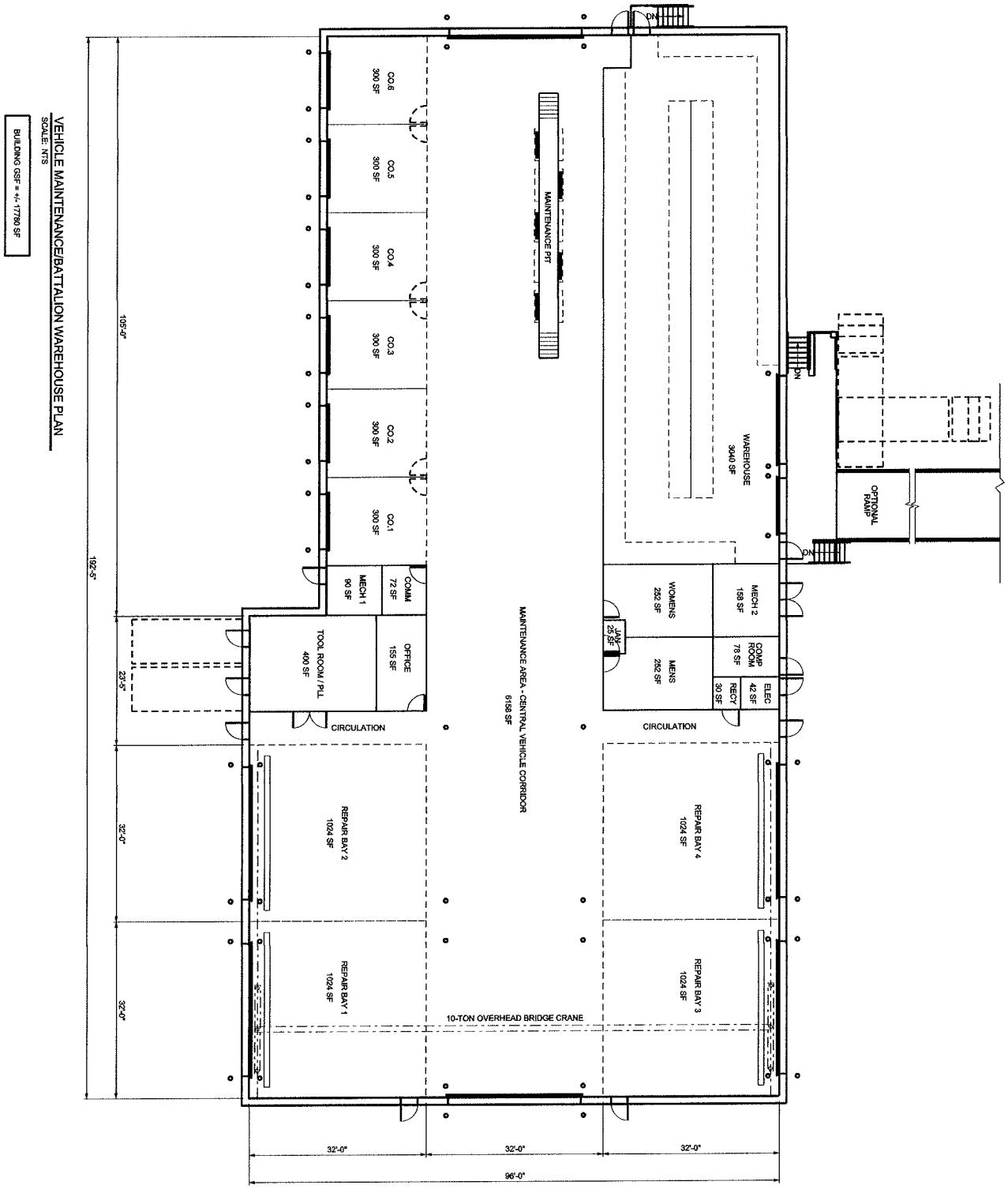
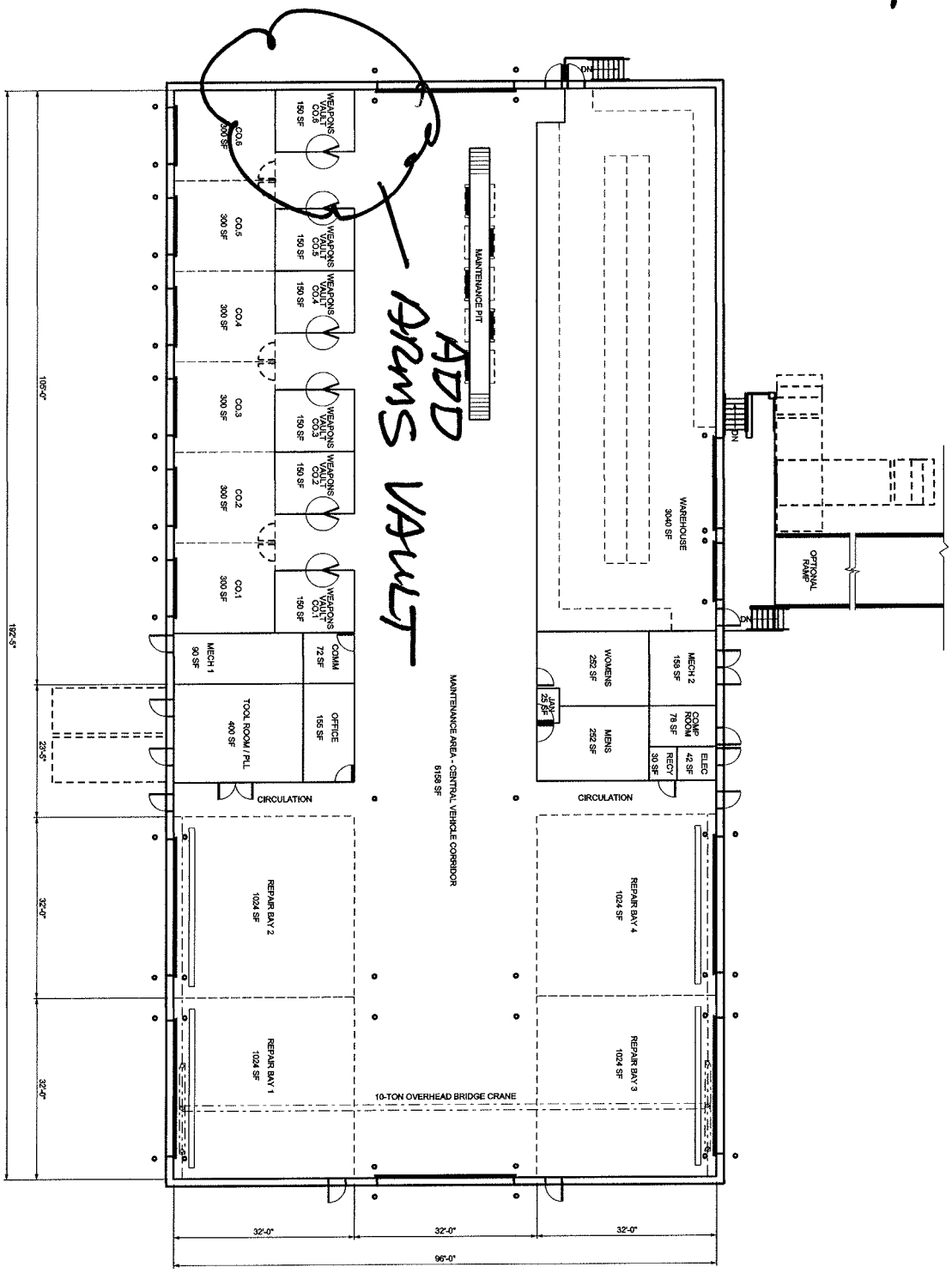
VM-3
2 of 4

VM-3
3 OF 4



PROPOSED DRAFT - 07 JULY 09

VM-3
4 OF 4



VEHICLE MAINTENANCE/BATTALION WAREHOUSE PLAN
SCALE: NTS

BUILDING GSF = +/- 19248 SF

PROPOSED VE DRAFT - 13 AUG 09

VALUE ENGINEERING ALTERNATIVE

PROJECT:	***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX** ***Center of Standardization (CoS) Model*** *Department of the Army* *Facilities Standardization Program*	ALTERNATIVE NO.: **OQ-1/OQ-9**
DESCRIPTION:	**MOVE THE BUILDING ENTRANCE FROM THE END TO THE MIDPOINT OF THE BUILDING**	SHEET NO.: **1 of 3**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A007, Officer's Quarters Floor Plan, dated 16 Feb 2006, the Entrance and Vestibule (Rm. 101) is located at the end of building. An interior and exterior stair is provided.

ALTERNATIVE: (sketch attached)

Move the Entrance and Vestibule (Rm. 101) to the middle of the building. Provide an interior and exterior stair at each end of the building.

ADVANTAGES:

- Less travel distance to the entrance/exit
- Consistent with Enlisted Barracks Floor Plan
- All support functions are centrally located
- Provides a symmetrical building layout
- Provides more efficient circulation

DISADVANTAGES:

- Adds cost of an exterior stair

DISCUSSION:

Relocating the Entrance and Vestibule (Rm. 101) to the middle of the building will centrally locate all support functions, reduce travel distance to the entrance/exit, and provide more efficient building circulation. This alternative is consistent with the Enlisted Barracks Floor Plan and provides a more symmetrical building layout for the moderate cost of adding an exterior stair.

Currently, the Standard Design denotes the exterior stair as full project scope. Therefore adding an additional exterior stair does not increase total building square footage. The exterior stair should be developed to include a covered canopy the entire length of the stair at half scope.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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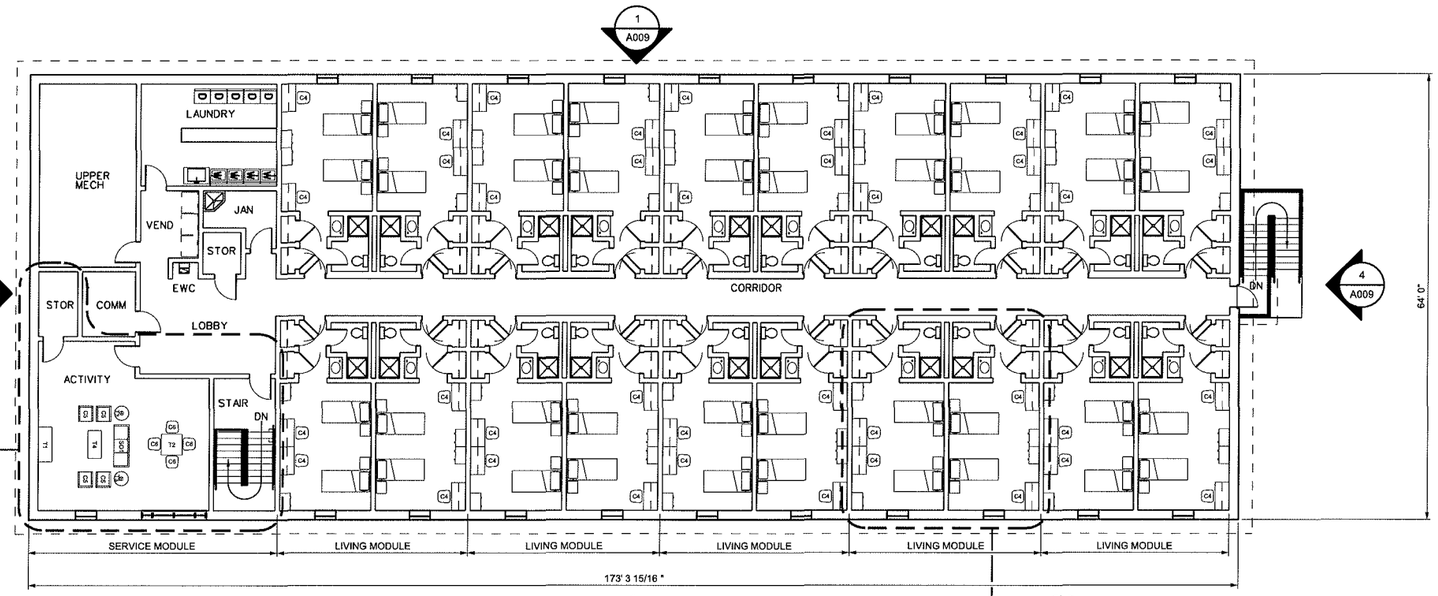
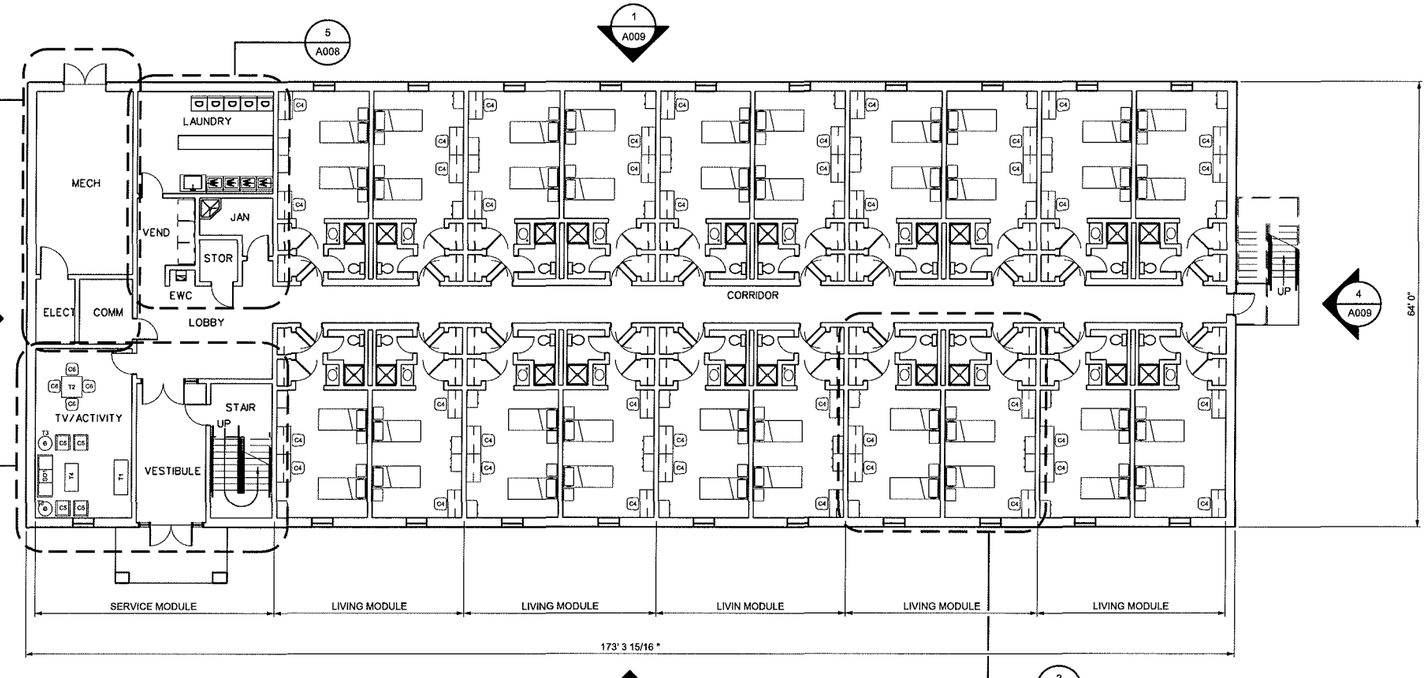
*** SAFETY PAYS ***



OFFICERS' QUARTERS - SECOND FLOOR OVERALL PLAN
SCALE: 3/32" = 1'-0"



OFFICERS' QUARTERS - FIRST FLOOR OVERALL PLAN
SCALE: 3/32" = 1'-0"

GENERAL

THE OFFICERS'/SENIOR ENLISTED QUARTERS ARE LOCATED IN CLOSE PROXIMITY TO THE BATTALION HEADQUARTERS AND THE ENLISTED BARRACKS. THIS TWO-STORY BUILDING WILL HOUSE UP TO 80 OFFICERS OR OTHER SENIOR PERSONNEL IN 20 MODULES ON TWO FLOORS. THE QUARTERS ARE SIZED TO ACCOMODATE A HEAVY ARMOR BCT TO INCLUDE THE E7 AND E8 PERSONNEL THAT CANNOT BE HOUSED IN THE SEMI-PRIVATE ROOMS IN THE BARRACKS.

EACH MODULE CONSISTS OF TWO SEMI-PRIVATE ROOMS. EACH ROOM HAS A BATHROOM WITH SHOWER AND TWO CLOSETS. EACH ROOM HAS SPACE FOR TWO BEDS. THE BUILDING PROVIDES A LAUNDRY ROOM, ACTIVITY ROOM AND VENDING ON EACH FLOOR, AND AN INTERNET CAFE AREA IS PROVIDED ON THE SECOND FLOOR. THE ROOMS CAN BE ASSIGNED AS DOUBLE OR SINGLE OCCUPANCY CONSISTENT WITH SPACE AUTHORIZED BY GRADE.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC'S.

2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.

3. LIFE SAFETY AND AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND UFC IBC.

4. USE AND OCCUPANCY CLASSIFICATION:
IBC, CHAPTER 3
RESIDENTIAL GROUP R

OVERALL FLOOR PLAN REQUIREMENTS

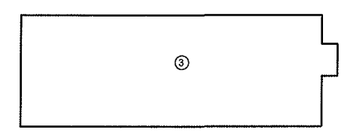
1. INTERIOR CORRIDOR
A. PROVIDE FIRE EXTINGUISHER CABINETS TO COMPLY WITH APPLICABLE CODES.
B. MINIMUM CORRIDOR WIDTH SHALL BE 5'-0".

2. EXTERIOR STAIR
A. PROVIDE TO ALLOW CIRCULATION TO UPPER FLOORS AND TO COMPLY WITH APPLICABLE CODE EGRESS REQUIREMENTS.
B. EXTERIOR STAIRS SHALL BE COVERED.

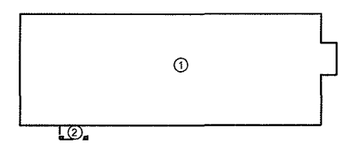
3. INTERIOR STAIRS
A. PROVIDE TO ALLOW CIRCULATION TO UPPER FLOORS AND TO COMPLY WITH APPLICABLE CODE EGRESS REQUIREMENTS.

4. OPTIONAL - IF TWO BATTALION COMPLEXES ARE BUILT, AND TWO OFFICERS QUARTERS ARE NECESSARY TO MEET REQUIREMENTS, THE TWO BUILDINGS CAN BE COMBINED INTO A SINGLE FACILITY. ONE METHOD OF ACCOMPLISHING THIS TO MIRROR THE BUILDING ALONG THE OUTSIDE WALL OF THE ACTIVITY AND MECHANICAL ROOM. THIS WILL DOUBLE THE SIZE OF THE MECHANICAL ROOM AS WELL AS PROVIDE ADEQUATE FACILITIES THOSE PERSONNEL HOUSED IN THE FACILITY. OTHER METHODS FOR ACCOMODATING THE INCREASED CAPACITY, INCLUDING ADDITIONAL STORIES, ARE POSSIBLE AS LONG AS DESIGN CRITERIA SET FORTH IN THIS STANDARD DESIGN ARE FOLLOWED.

AREA CALCULATIONS



SECOND FLOOR GROSS AREA CALCS



FIRST FLOOR GROSS AREA CALCS

FIRST FLOOR:
FULL VALUE:
(1) LIVING MODULES, LAUNDRY, COMMON SPACE, MECHANICAL, ETC. 11,259 SF

HALF VALUE:
(2) EXTERIOR COVERED (122.0 x 1/2) = 61.0 SF

1ST FLOOR TOTAL: 11,320 SF

SECOND FLOOR:
FULL VALUE:
(3) LIVING MODULES, LAUNDRY, COMMON SPACE, MECHANICAL, ETC. 11,259 SF

2ND FLOOR TOTAL: 11,259 SF

BUILDING TOTAL: 22,579 SF

GRAPHIC SCALE

32 16 0 32 64FT
SCALE: 1/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Symbol	Description	Date	Appr.

Revisions

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX
COE LOUISVILLE DISTRICT
Project Engineer/Architect
Date

OFFICER'S QUARTERS FLOOR PLANS

DEPARTMENT OF THE ARMY
FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A007
SHEET 13 OF 31

CORRECTED FINAL

*** SUPPORT VALUE ENGINEERING - IT PAYS ***

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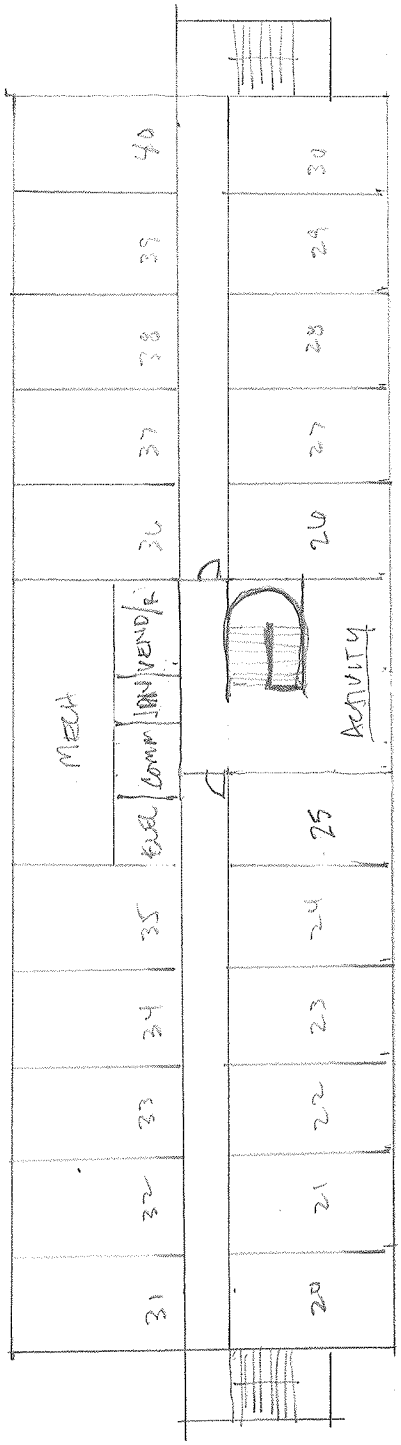
SKETCH

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

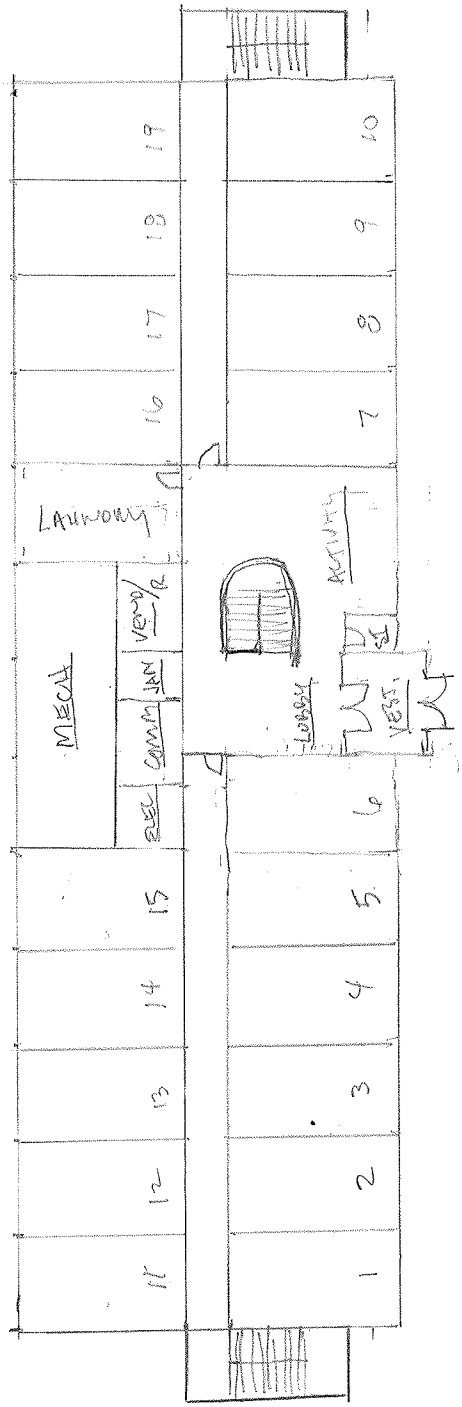
ALTERNATIVE NO.: OQ-1/OQ-9

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☒ BOTH ☐

SHEET NO.: 3 of 3



OFFICERS QUARTERS
2nd FLOOR



OFFICERS QUARTERS
1st FLOOR

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VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **OQ-2/OQ-3**

DESCRIPTION: **DESIGN A ONE STORY FACILITY IN LIEU OF A TWO STORY AND REDUCE THE PROGRAM SPACE**

SHEET NO.: **1 of 3**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A007, Officer's Quarters Floor Plan, dated 16 Feb 2006, a two-story building layout is designed.

ALTERNATIVE: (sketch attached)

Centralize the support function and remove the 2nd Floor to eliminate the possibility for unused sleeping quarters.

ADVANTAGES:

- Reduces total building gross square footage
- No stairs required
- Provides efficient circulation
- Less utilities are required

DISADVANTAGES:

- Accommodates fewer Officers

DISCUSSION:

This alternative assumes that the Officer-to-enlisted soldier ratio is excessive in the current program and that a more conservative ratio is appropriate.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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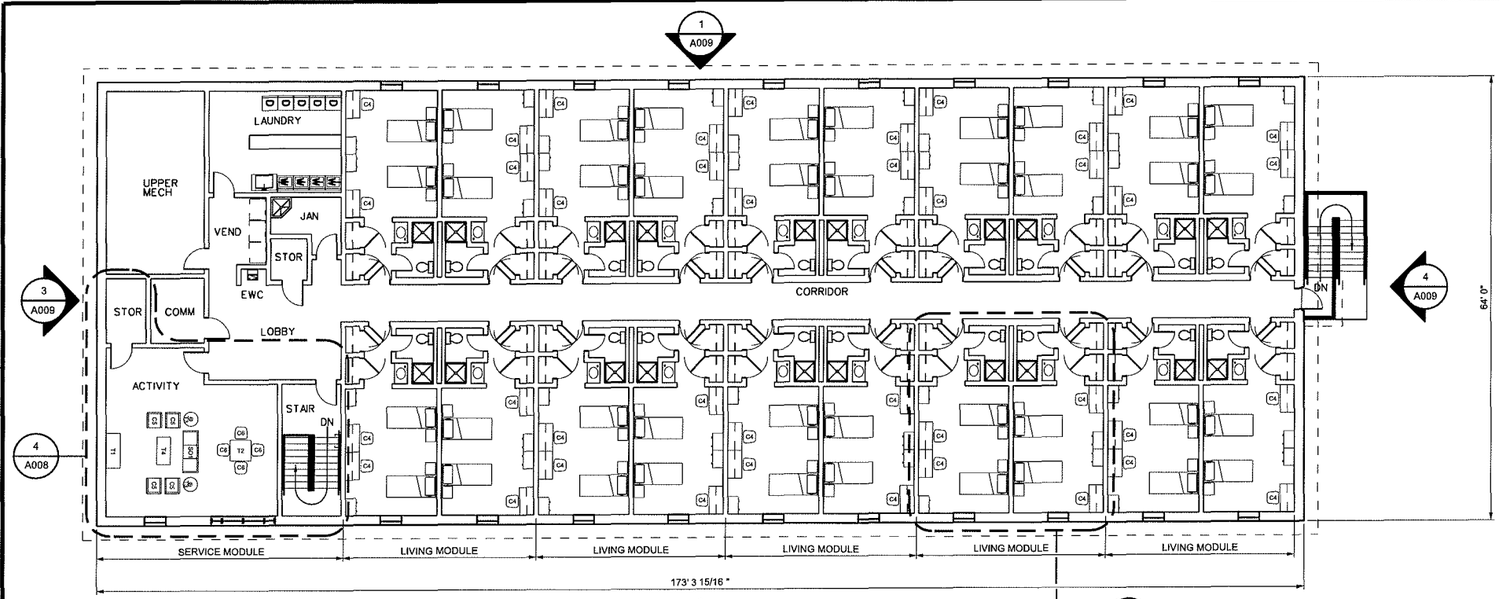
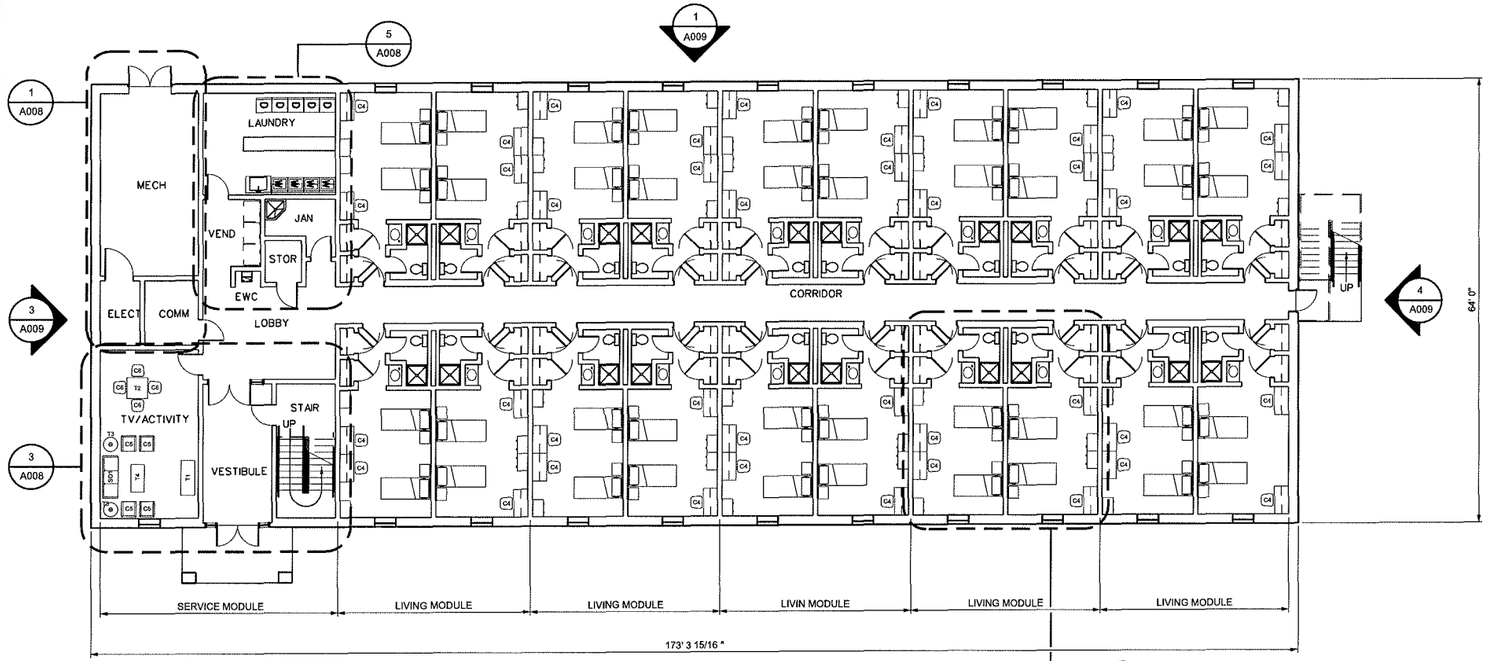
*** SAFETY PAYS ***



OFFICERS' QUARTERS - SECOND FLOOR OVERALL PLAN
SCALE: 3/32" = 1'-0"



OFFICERS' QUARTERS - FIRST FLOOR OVERALL PLAN
SCALE: 3/32" = 1'-0"

GENERAL

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CODE REQUIREMENTS

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2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.

3. LIFE SAFETY AND AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND UFC IBC.

4. USE AND OCCUPANCY CLASSIFICATION:
IBC, CHAPTER 3
RESIDENTIAL GROUP R

OVERALL FLOOR PLAN REQUIREMENTS

1. INTERIOR CORRIDOR
A. PROVIDE FIRE EXTINGUISHER CABINETS TO COMPLY WITH APPLICABLE CODES.
B. MINIMUM CORRIDOR WIDTH SHALL BE 5'-0".

2. EXTERIOR STAIR
A. PROVIDE TO ALLOW CIRCULATION TO UPPER FLOORS AND TO COMPLY WITH APPLICABLE CODE EGRESS REQUIREMENTS.
B. EXTERIOR STAIRS SHALL BE COVERED.

3. INTERIOR STAIRS
A. PROVIDE TO ALLOW CIRCULATION TO UPPER FLOORS AND TO COMPLY WITH APPLICABLE CODE EGRESS REQUIREMENTS.

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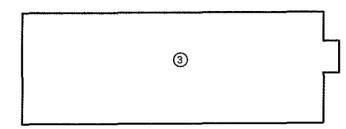
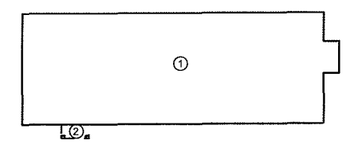
AREA CALCULATIONS



SECOND FLOOR GROSS AREA CALCS



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(1) LIVING MODULES, LAUNDRY, COMMON SPACE, MECHANICAL, ETC. 11,259 SF

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BUILDING TOTAL: 22,579 SF

GRAPHIC SCALE

32 16 0 32 64FT
SCALE: 1/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Revisions
Symbol | Description | Date | Appr.

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX
COE LOUISVILLE DISTRICT Project Engineer/Architect
Date

OFFICER'S QUARTERS FLOOR PLANS

DEPARTMENT OF THE ARMY
FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A007
SHEET 13 OF 31

CORRECTED FINAL

*** SUPPORT VALUE ENGINEERING - IT PAYS ***

DATE: 05-AUG-2009 10:08
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SKETCH

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: OQ-2

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☒ BOTH ☐

SHEET NO.: 3 of 3

OFFICERS QUARTERS

ONE-STORY OPTION

OQ-2

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VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX** ***Center of Standardization (CoS) Model*** *Department of the Army* *Facilities Standardization Program*	ALTERNATIVE NO.: **OQ-4**
DESCRIPTION: **CENTRALIZE UTILITY SPACES IN THE BUILDING**	SHEET NO.: **1 of 2**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A007, Officer's Quarters Floor Plan, dated 16 Feb 2006, the Mechanical Room (Rm. 106/206), Electrical Room (Rm. 105/205) and COMM Room (Rm. 105/205) are located at the end of building.

ALTERNATIVE:

Modify the layout and centralize the utility spaces within the building to improve utility distribution.

ADVANTAGES:

- Utility runs are more efficient
- Consistent with Enlisted Barracks Floor Plan; all utilities are centrally located in plan
- Easy access to electrical equipment

DISADVANTAGES:

- Changes the layout

DISCUSSION:

The placement of utility rooms in the center of the building will provide a central location for support functions, improve access to electrical equipment, and reduce utility run requirements.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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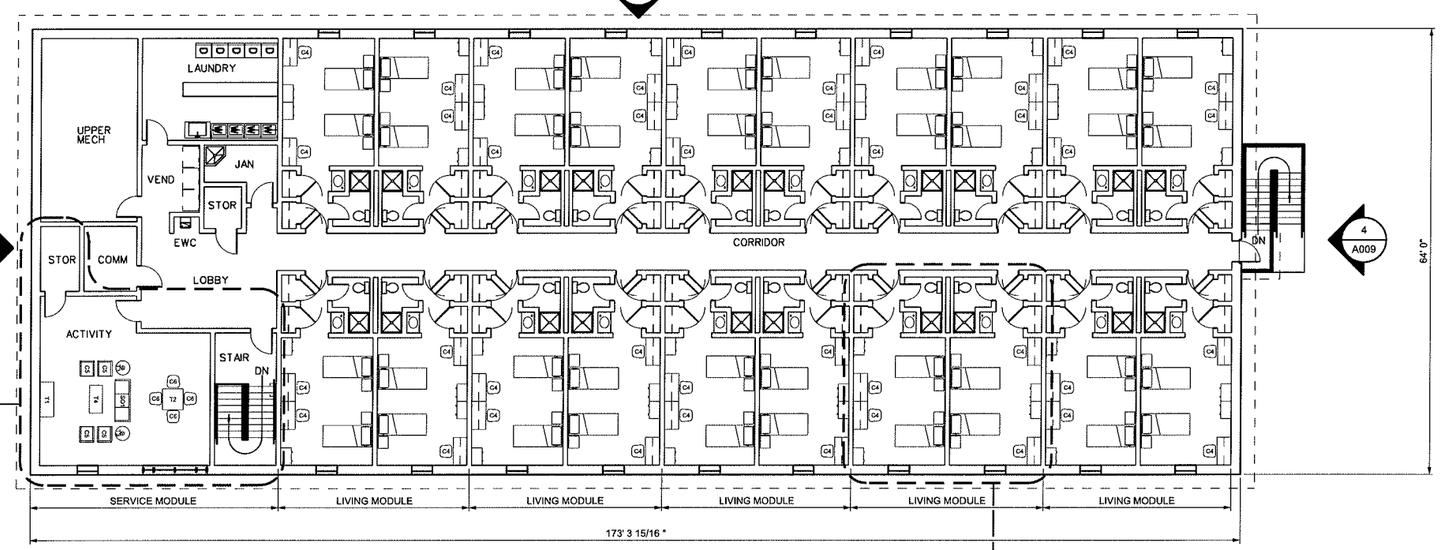
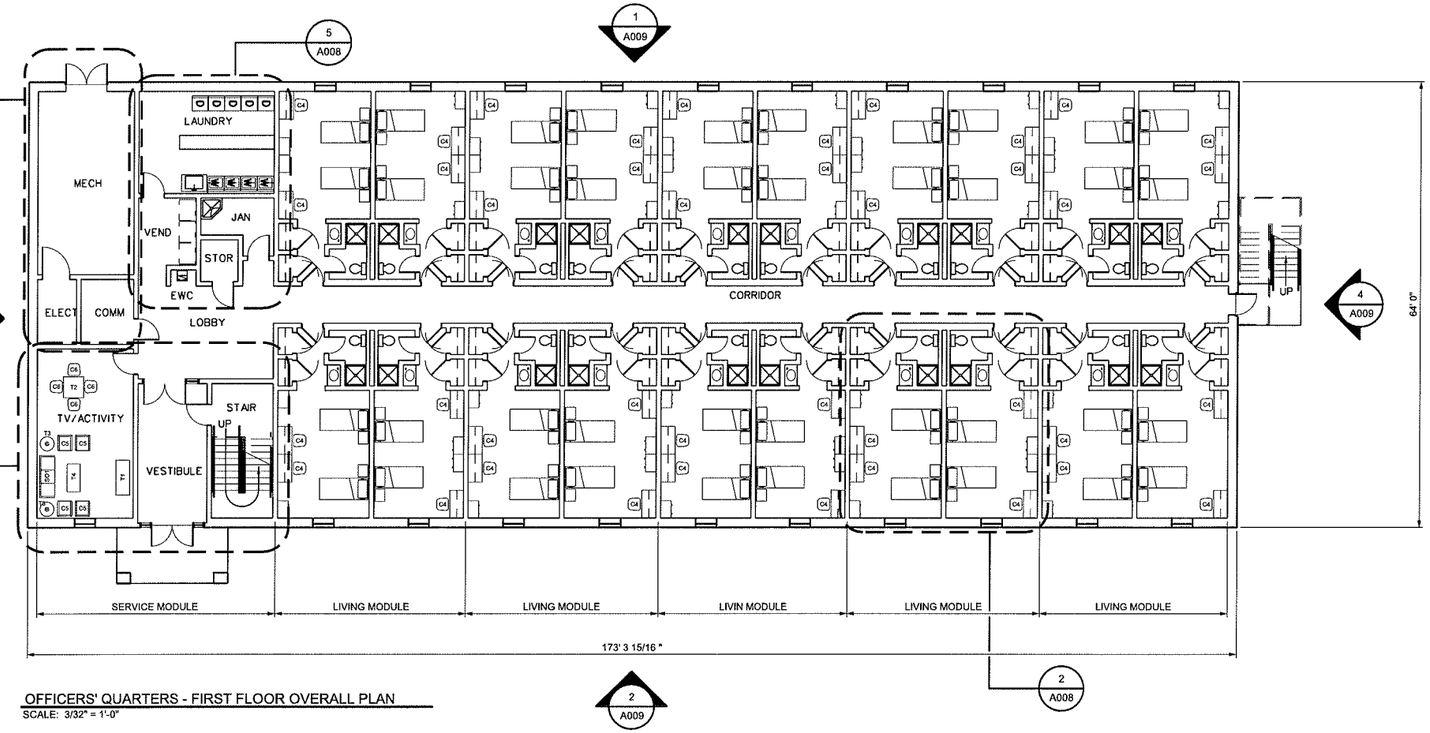
*** SAFETY PAYS ***



OFFICERS' QUARTERS - SECOND FLOOR OVERALL PLAN
SCALE: 3/32" = 1'-0"



OFFICERS' QUARTERS - FIRST FLOOR OVERALL PLAN
SCALE: 3/32" = 1'-0"

GENERAL

THE OFFICERS'/SENIOR ENLISTED QUARTERS ARE LOCATED IN CLOSE PROXIMITY TO THE BATTALION HEADQUARTERS AND THE ENLISTED BARRACKS. THIS TWO-STORY BUILDING WILL HOUSE UP TO 80 OFFICERS OR OTHER SENIOR PERSONNEL IN 20 MODULES ON TWO FLOORS. THE QUARTERS ARE SIZED TO ACCOMODATE A HEAVY ARMOR BCT TO INCLUDE THE E7 AND E8 PERSONNEL THAT CANNOT BE HOUSED IN THE SEMI-PRIVATE ROOMS IN THE BARRACKS.

EACH MODULE CONSISTS OF TWO SEMI-PRIVATE ROOMS. EACH ROOM HAS A BATHROOM WITH SHOWER AND TWO CLOSETS. EACH ROOM HAS SPACE FOR TWO BEDS. THE BUILDING PROVIDES A LAUNDRY ROOM, ACTIVITY ROOM AND VENDING ON EACH FLOOR, AND AN INTERNET CAFE AREA IS PROVIDED ON THE SECOND FLOOR. THE ROOMS CAN BE ASSIGNED AS DOUBLE OR SINGLE OCCUPANCY CONSISTENT WITH SPACE AUTHORIZED BY GRADE.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC'S.

2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.

3. LIFE SAFETY AND AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND UFC IBC.

4. USE AND OCCUPANCY CLASSIFICATION:
IBC, CHAPTER 3
RESIDENTIAL GROUP R

OVERALL FLOOR PLAN REQUIREMENTS

1. INTERIOR CORRIDOR
A. PROVIDE FIRE EXTINGUISHER CABINETS TO COMPLY WITH APPLICABLE CODES.
B. MINIMUM CORRIDOR WIDTH SHALL BE 5'-0".

2. EXTERIOR STAIR
A. PROVIDE TO ALLOW CIRCULATION TO UPPER FLOORS AND TO COMPLY WITH APPLICABLE CODE EGRESS REQUIREMENTS.
B. EXTERIOR STAIRS SHALL BE COVERED.

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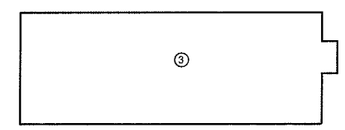
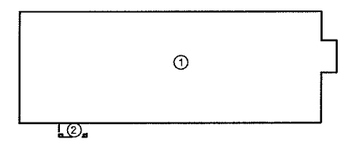
AREA CALCULATIONS



SECOND FLOOR GROSS AREA CALCS



FIRST FLOOR GROSS AREA CALCS

FIRST FLOOR:
FULL VALUE:
(1) LIVING MODULES, LAUNDRY, COMMON SPACE, MECHANICAL, ETC. 11,259 SF

HALF VALUE:
(2) EXTERIOR COVERED (122.0 x 1/2) = 61.0 SF

1ST FLOOR TOTAL: 11,320 SF

SECOND FLOOR:
FULL VALUE:
(3) LIVING MODULES, LAUNDRY, COMMON SPACE, MECHANICAL, ETC. 11,259 SF

2ND FLOOR TOTAL: 11,259 SF

BUILDING TOTAL: 22,579 SF

GRAPHIC SCALE

32 16 0 32 64FT
SCALE: 1/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Symbol	Revisions Description	Date	Appr.

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX
COE LOUISVILLE DISTRICT Project Engineer/Architect
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DEPARTMENT OF THE ARMY
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VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **OQ-5/OQ-7**

DESCRIPTION: **REDUCE LAUNDRY FLOOR AREA AND PLACE STACKED WASHERS/DRYERS ONLY ON THE FIRST FLOOR**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A007, Officer's Quarters Floor Plan, dated 16 Feb 2006, a Laundry Room is provided on each floor (Rms. 107 and 207).

ALTERNATIVE:

Minimize the number of washers/dryers. Provide commercial stacked washer/dry machines to reduce floor area. Provide one central Laundry Room on the first floor adjacent to the Mechanical Room. Provide six stacked Washer/Dryers for lower capacity loads. Provide four dryers and one washer for higher capacity loads. This will meet the 1:12 washer ratio requirement and 1:8 dryer ratio requirements for 80 occupants.

ADVANTAGES:

- Minimizes building square footage dedicated to laundry areas
- Minimizes utility runs
- Requires cleaning of one area versus two

DISADVANTAGES:

- No back-up space if Laundry Room ever becomes unusable (i.e., maintenance)
- Second floor occupants must walk to the first floor to use washers/dryers

DISCUSSION:

The placement of the Laundry Room on the first floor works with other centralized supporting space. Direct access from the Activity Room to the Laundry Room is more desirable.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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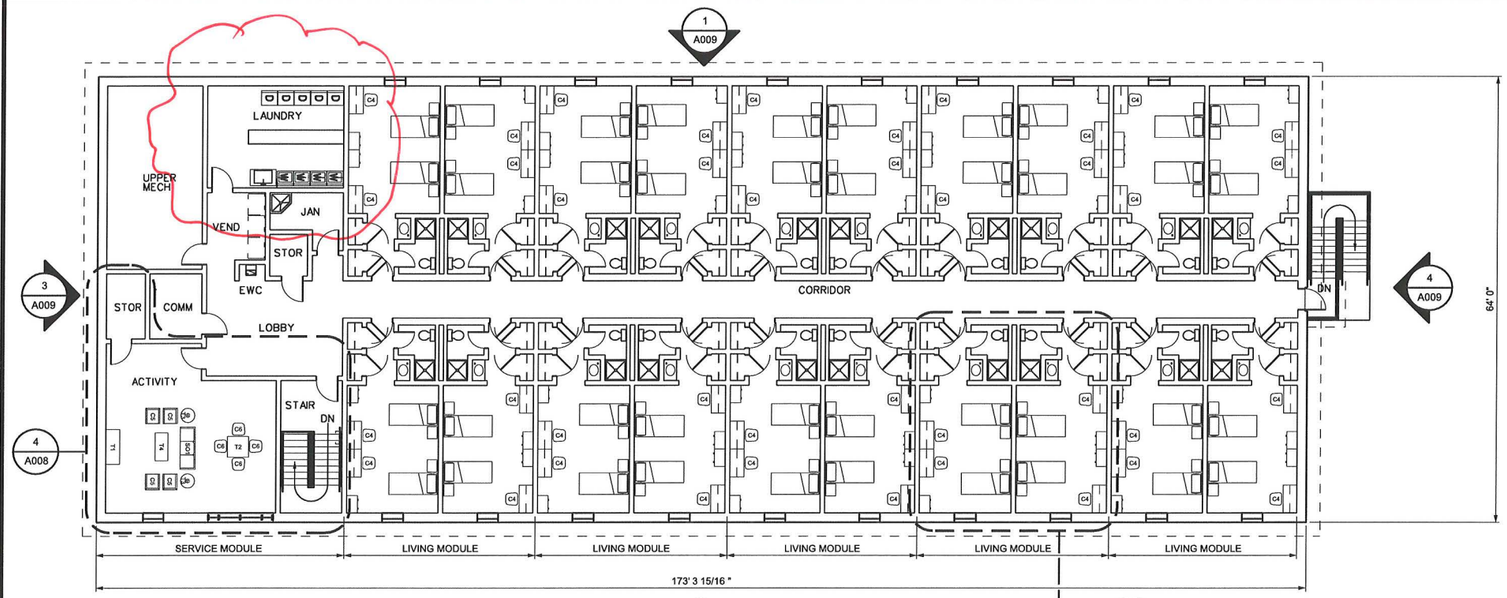
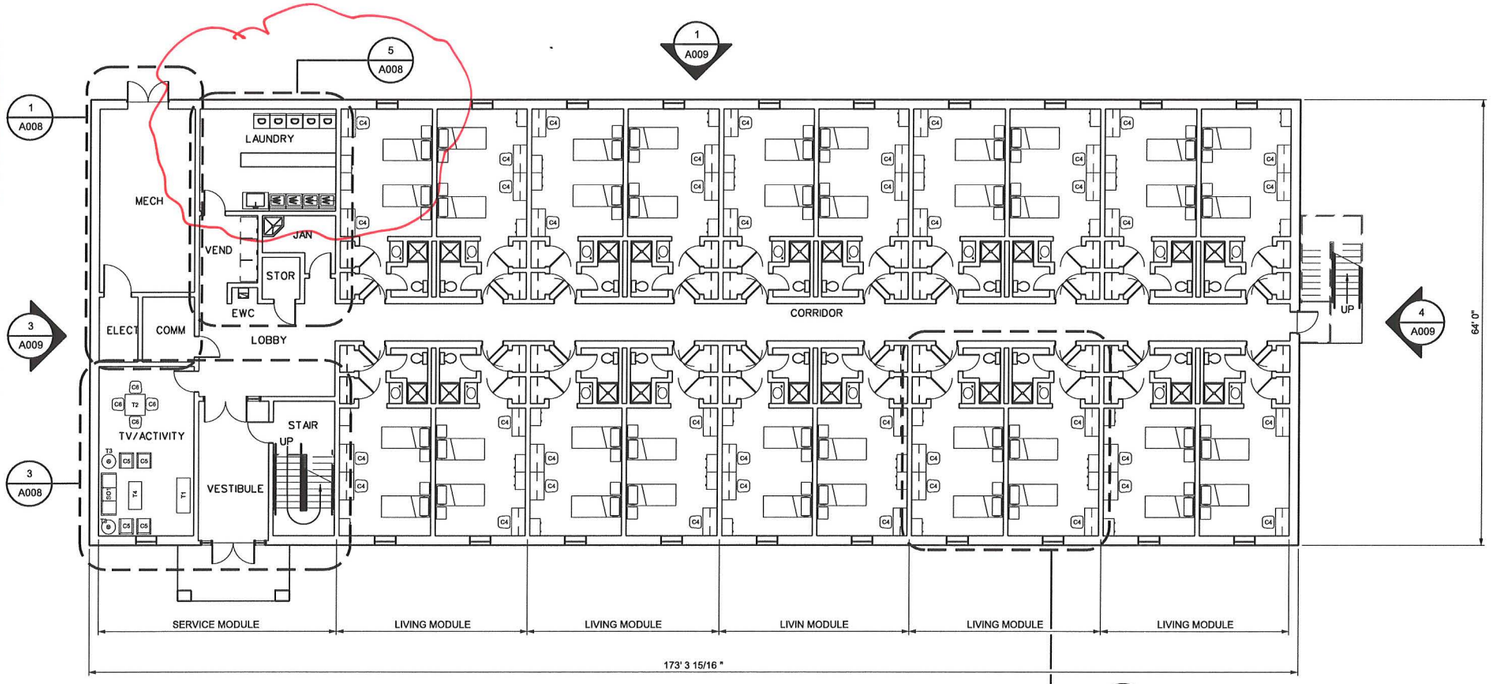


OFFICERS' QUARTERS - SECOND FLOOR OVERALL PLAN
SCALE: 3/32" = 1'-0"



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4. USE AND OCCUPANCY CLASSIFICATION:
IBC, CHAPTER 3
RESIDENTIAL GROUP R

OVERALL FLOOR PLAN REQUIREMENTS

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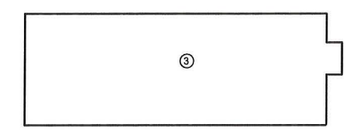
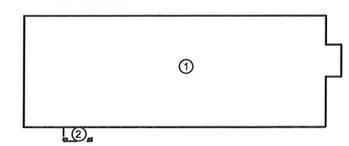
AREA CALCULATIONS



SECOND FLOOR GROSS AREA CALCS



FIRST FLOOR GROSS AREA CALCS

FIRST FLOOR:
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HALF VALUE:
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1ST FLOOR TOTAL: 11,320 SF

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2ND FLOOR TOTAL: 11,259 SF

BUILDING TOTAL: 22,579 SF

GRAPHIC SCALE

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SCALE: 1/32" = 1'-0"

US Army Corps of Engineers
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Revisions

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OFFICER'S QUARTERS FLOOR PLANS

DEPARTMENT OF THE ARMY
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VALUE ENGINEERING ALTERNATIVE

PROJECT:	***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX** ***Center of Standardization (CoS) Model*** *Department of the Army* *Facilities Standardization Program*	ALTERNATIVE NO.: **OQ-6**
DESCRIPTION:	**ENLARGE THE ACTIVITY ROOM TO IMPROVE FUNCTIONALITY**	SHEET NO.: **1 of 2**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A007, Officer's Quarters Floor Plan, dated 16 Feb 2006, one enclosed Activity Room is provided per floor (Rm. 103 and Rm. 203).

ALTERNATIVE:

Provide two open Activity Rooms on each floor.

ADVANTAGES:

- Encourages social activities
- Discourages deviant behavior due to open layout
- Remove door and wall construction

DISADVANTAGES:

- May create additional noise in lobby area

DISCUSSION:

The open layout of the Activity Rooms promotes social activities while maximizing efficient use of the space.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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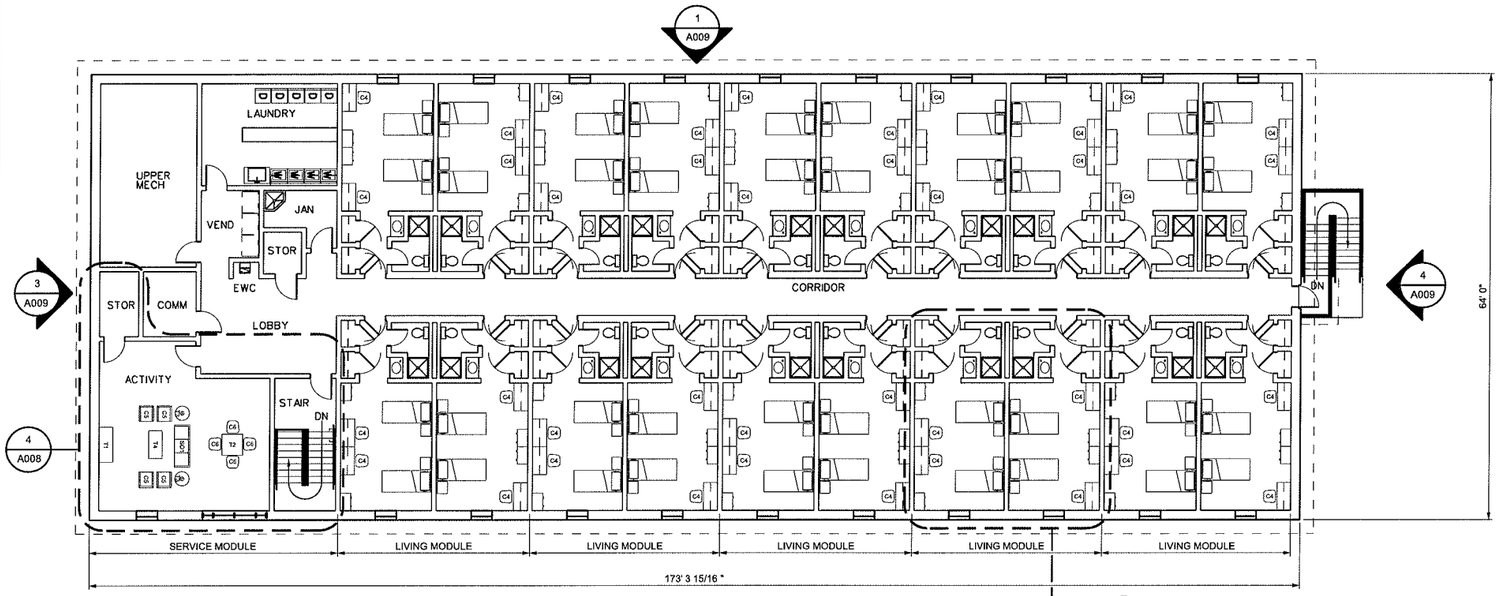
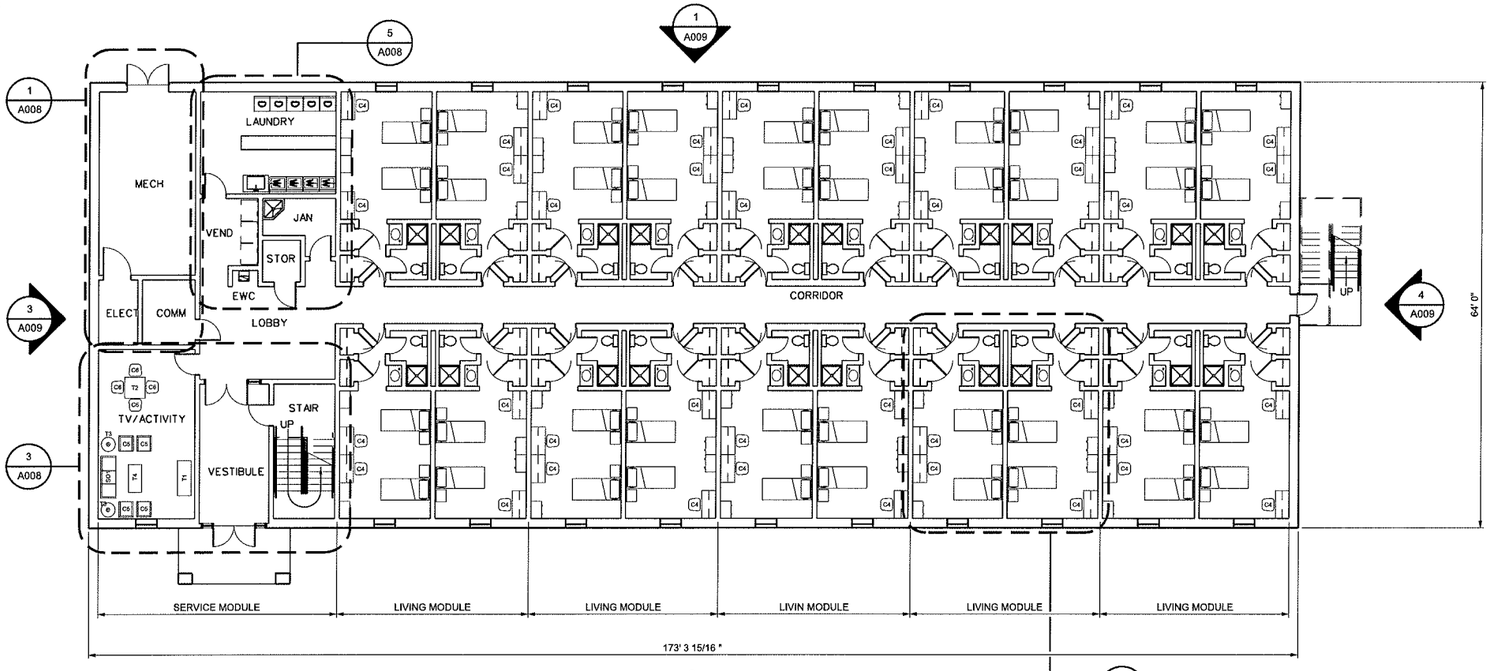


OFFICERS' QUARTERS - SECOND FLOOR OVERALL PLAN
SCALE: 3/32" = 1'-0"



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IBC, CHAPTER 3
RESIDENTIAL GROUP R

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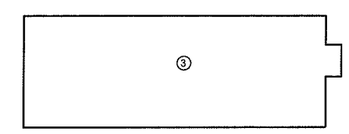
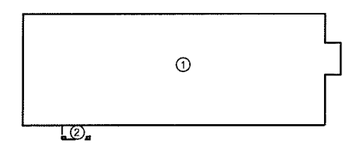
AREA CALCULATIONS



SECOND FLOOR GROSS AREA CALCS



FIRST FLOOR GROSS AREA CALCS

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BUILDING TOTAL: 22,579 SF

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SCALE: 1/32" = 1'-0"

US Army Corps of Engineers
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Revisions
Symbol | Description | Date | Appr.

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
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Project Engineer/Architect | Date

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VALUE ENGINEERING ALTERNATIVE

PROJECT:	***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX** ***Center of Standardization (CoS) Model*** *Department of the Army* *Facilities Standardization Program*	ALTERNATIVE NO.: **OQ-8**
DESCRIPTION:	**PROVIDE HARDWIRED OR WIRELESS INTERNET CONNECTION IN EACH ROOM**	SHEET NO.: **1 of 2**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A007, Officer's Quarters Floor Plan, dated 16 Feb 2006, dedicated COMM Rooms (Rm. 105 and Rm. 205) are provided. However, no dedicated space has been provided to support internet use.

ALTERNATIVE:

Provide a hardwired or wireless internet connection in each Officer Quarter.

ADVANTAGES:

- Provides private internet access for each Officer in his/her Quarters
- No central internet access required
- Enhances Officer morale

DISADVANTAGES:

- Cost of wiring the building

DISCUSSION:

The majority of the Officers use the internet for communication and entertainment. This alternative facilitates the use of the internet.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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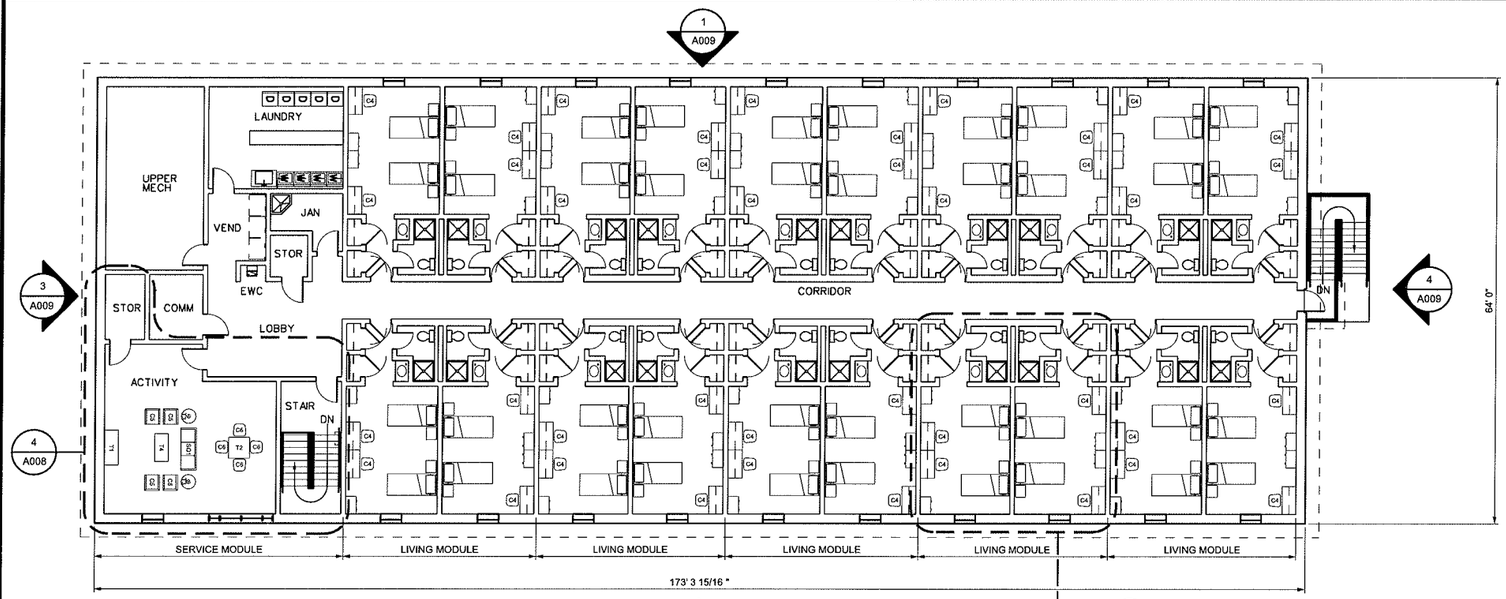

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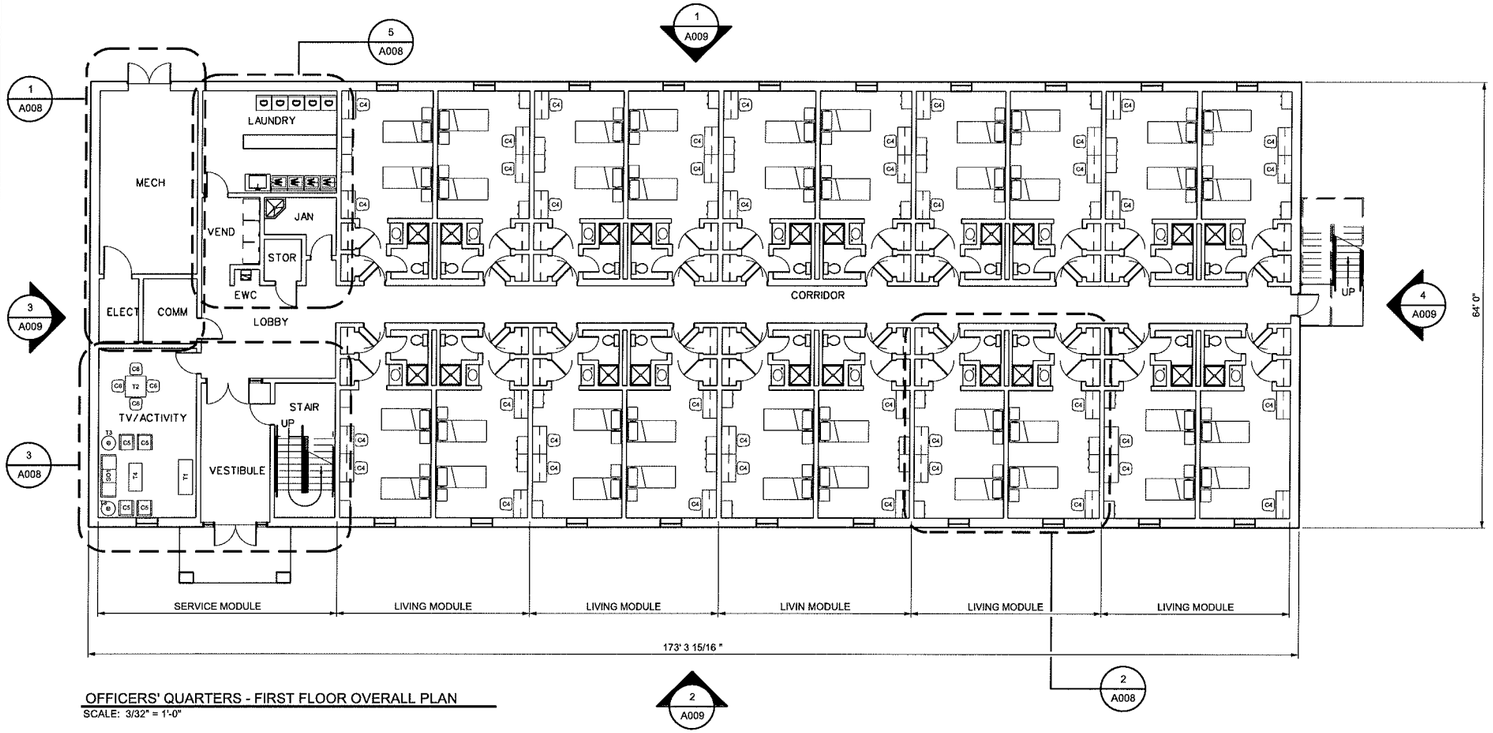
SCALE: 3/32" = 1'-0"



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2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.

3. LIFE SAFETY AND AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND UFC IBC.

4. USE AND OCCUPANCY CLASSIFICATION:
IBC, CHAPTER 3
RESIDENTIAL GROUP R

OVERALL FLOOR PLAN REQUIREMENTS

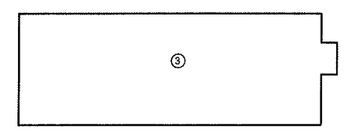
1. INTERIOR CORRIDOR
A. PROVIDE FIRE EXTINGUISHER CABINETS TO COMPLY WITH APPLICABLE CODES.
B. MINIMUM CORRIDOR WIDTH SHALL BE 5'-0".

2. EXTERIOR STAIR
A. PROVIDE TO ALLOW CIRCULATION TO UPPER FLOORS AND TO COMPLY WITH APPLICABLE CODE EGRESS REQUIREMENTS.
B. EXTERIOR STAIRS SHALL BE COVERED.

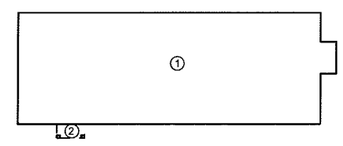
3. INTERIOR STAIRS
A. PROVIDE TO ALLOW CIRCULATION TO UPPER FLOORS AND TO COMPLY WITH APPLICABLE CODE EGRESS REQUIREMENTS.

4. OPTIONAL - IF TWO BATTALION COMPLEXES ARE BUILT, AND TWO OFFICERS QUARTERS ARE NECESSARY TO MEET REQUIREMENTS, THE TWO BUILDINGS CAN BE COMBINED INTO A SINGLE FACILITY. ONE METHOD OF ACCOMPLISHING THIS TO MIRROR THE BUILDING ALONG THE OUTSIDE WALL OF THE ACTIVITY AND MECHANICAL ROOM. THIS WILL DOUBLE THE SIZE OF THE MECHANICAL ROOM AS WELL AS PROVIDE ADEQUATE FACILITIES THOSE PERSONNEL HOUSED IN THE FACILITY. OTHER METHODS FOR ACCOMODATING THE INCREASED CAPACITY, INCLUDING ADDITIONAL STORIES, ARE POSSIBLE AS LONG AS DESIGN CRITERIA SET FORTH IN THIS STANDARD DESIGN ARE FOLLOWED.

AREA CALCULATIONS



SECOND FLOOR GROSS AREA CALCS



FIRST FLOOR GROSS AREA CALCS

FIRST FLOOR:
FULL VALUE:
(1) LIVING MODULES, LAUNDRY, COMMON SPACE, MECHANICAL, ETC. 11,259 SF

HALF VALUE:
(2) EXTERIOR COVERED (122.0 x 1/2) = 61.0 SF

1ST FLOOR TOTAL: 11,320 SF

SECOND FLOOR:
FULL VALUE:
(3) LIVING MODULES, LAUNDRY, COMMON SPACE, MECHANICAL, ETC. 11,259 SF

2ND FLOOR TOTAL: 11,259 SF

BUILDING TOTAL: 22,579 SF

GRAPHIC SCALE

32 16 0 32 64FT
SCALE: 1/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Symbol	Description	Date	Appr.

Revisions

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
COE LOUISVILLE DISTRICT Project Engineer/Architect
Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX
Date

OFFICER'S QUARTERS FLOOR PLANS

DEPARTMENT OF THE ARMY
FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A007
SHEET 13 OF 31

CORRECTED FINAL

*** SUPPORT VALUE ENGINEERING - IT PAYS ***

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SUMMARY OF VALUE ENGINEERING ALTERNATIVES

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX (ORTC)**
Center of Standardization Model

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	PRESENT WORTH OF COST SAVINGS: INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
	DINING FACILTY - 720 PP DFAC (D7)					
D7-1	**Use sealed, stained concrete floors in lieu of quarry tile.**	**$212,118**	**$40,286**	**$171,832**	**$0**	**$171,832**
D7-2	**Use exposed ceiling in lieu of acoustical tile in the Dining and Que Areas.**	**$19,458**	**$0**	**$19,458**	**$0**	**$19,458**
D7-4	**Use a high build epoxy wall in lieu of ceramic tile.**	**$122,073**	**$57,314**	**$64,759**	**$0**	**$64,759**
D7-6/ D14-6	Add 65 dining facility staff parking spaces.	$0	$76,485	($76,485)	$0	($76,485)
D7-10/ D14-9	Revise loading dock location from the side to the back of the DFAC and lengthen the approach from 50 ft to 60 ft.	$30,602	$106,364	($75,762)	$0	($75,762)
D7-12	**Use scissor lift equipment in lieu of a 4-ft-high loading dock with a dock leveler.**	**$124,321**	**$100,021**	**$24,300**	**$0**	**$24,300**
D7-13/ D14-12	Increase the interior window size at the DFAC Offices from 3 ft wide to 6 ft wide.	DESIGN SUGGESTION				

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VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **D7-1**

DESCRIPTION: **USE SEALED, STAINED CONCRETE FLOORS IN LIEU OF QUARRY TILE**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN:

Quarry tile floor finishes are included in the DFAC finish schedule throughout the facility.

ALTERNATIVE:

Use sealed, stained concrete floors with vinyl base in lieu of quarry tile and quarry tile base.

ADVANTAGES:

- Eliminates maintenance and repair of quarry tile
- Complies with "austere" finish guidelines
- Minimal maintenance of sealed concrete is required
- Stained concrete floors can be quite attractive

DISADVANTAGES:

- If an austere look is not desired, then sealed concrete finish may not be desirable
- Quality control of concrete floor finish/levelness becomes more critical

DISCUSSION:

By using sealed, stained concrete, the project can be constructed faster by eliminating the quarry tile installation. The sealed concrete would likely be more sanitary, and easier to clean than quarry tile, thus, less costly to maintain. The capital cost savings achieved using sealed concrete is substantial.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 212,118	—	$ 212,118
ALTERNATIVE	$ 40,286	—	$ 40,286
SAVINGS (Original minus Alternative)	$ 171,832	—	$ 171,832

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **D7-1**

SHEET NO.: **2 of 2**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Quarry Tile							
- Remove Quarry Tile	SF	14,125	12.00	169,500			
- Quarry Tile Base	LF	1,300	11.50	14,950			
Concrete Sealer							
- Add Concrete Sealer	SF				14,125	0.25	3,531
- Rubber Base	LF				1,300	2.50	3,250
- Add Concrete Stain	SF				14,125	2.00	28,250
Subtotal				184,450			35,031
Markup (%) at	**15%**			27,668			5,255
TOTAL				212,118			40,286

VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **D7-2**

DESCRIPTION: **USE EXPOSED CEILING IN LIEU OF ACOUSTICAL TILE IN THE DINING AND QUEUE AREAS**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN:

Acoustical tile (ACT) ceiling is provided in the DFAC dining and queue areas.

ALTERNATIVE:

Use an exposed ceiling in the DFAC dining and queue areas.

ADVANTAGES:

- Eliminates maintenance and repair of ACT
- Complies with "austere" finish guidelines
- Reduces construction time

DISADVANTAGES:

- If an austere look is not desired, then ACT may have value
- The exposed ceiling area might require cleaning from time to time. Cleaning of exposed structure would be time consuming.

DISCUSSION:

ACT requires replacement of damaged and stained ceiling tiles over time. With an open structure, this maintenance item would be eliminated. An open structure gives the feeling of a larger space than when enclosed with a ceiling. There is a reasonable cost savings with not installing ACT.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 19,458	—	$ 19,458
ALTERNATIVE	$ 0	—	$ 0
SAVINGS (Original minus Alternative)	$ 19,458	—	$ 19,458

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **D7-2**

SHEET NO.: **2 of 2**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Ceiling Finish							
- Remove Acoustical Ceiling Tile	SF	4,230	4.00	16,920			
- Leave Ceiling Exposed							
Subtotal				16,920			
Markup (%) at 15%				2,538			
TOTAL				19,458			

VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591*, OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **D7-4**

DESCRIPTION: **USE A HIGH BUILD EPOXY WALL FINISH IN LIEU OF CERAMIC TILE**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN:

Ceramic tile is used on the walls of the Dining Facility.

ALTERNATIVE:

Use a high build epoxy coating on the walls instead of ceramic tile where shown on the finish schedule.

ADVANTAGES:

- Eliminates maintenance and repair of ceramic tile
- Complies with "austere" finish guidelines
- The high build epoxy coating is more durable than ceramic tile

DISADVANTAGES:

- If an austere look is not desired, then ceramic tile may be more appealing

DISCUSSION:

A high build epoxy coating is very durable and easy to maintain. Ceramic tile can crack, lose mortar joints, come loose, and may require constant maintenance. The epoxy coating is strong and requires almost no maintenance. The high build coating is smooth, easy to clean, and typically acceptable in food preparation areas.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 122,073	—	$ 122,073
ALTERNATIVE	$ 57,314	—	$ 57,314
SAVINGS (Original minus Alternative)	$ 64,759	—	$ 64,759

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **D7-4**

SHEET NO.: **2 of 2**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Wall Finish							
- Ceramic Tile Wall	SF	11,650	8.00	93,200			
- Ceramic Tile Base	LF	1,295	10.00	12,950			
- Wall Sealer (high build epoxy)	SF				11,650	4.00	46,600
- Vinyl Base	LF				1,295	2.50	3,238
Subtotal				106,150			49,838
Markup (%) at	**15%**			15,923			7,476
TOTAL				122,073			57,314

VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **D7-6/D14-6**

DESCRIPTION: **ADD 65 DINING FACILITY STAFF PARKING SPACES**

SHEET NO.: **1 of 3**

ORIGINAL DESIGN:

There is no parking identified for the DFAC staff.

ALTERNATIVE: (sketch attached)

Provide 65 DFAC staff parking spaces as required by the standard design.

ADVANTAGES:

- Complies with the standard design
- Creates parking for the DFAC staff for convenience

DISADVANTAGES:

- If most of the people attending this facility are being deployed after training, they will likely not have vehicles. Thus the other parking areas would be sufficient and the added cost for the 65 parking spaces may not be required.

DISCUSSION:

The standard requires 65 parking spaces be made available to the DFAC staff. The location of this parking area is not identified in the standard design. The 65 spaces need to be added if the current parking design determined to be insufficient to provide for the DFAC staff.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 0	—	$ 0
ALTERNATIVE	$ 76,485	—	$ 76,485
SAVINGS (Original minus Alternative)	$ (76,485)	—	$ (76,485)

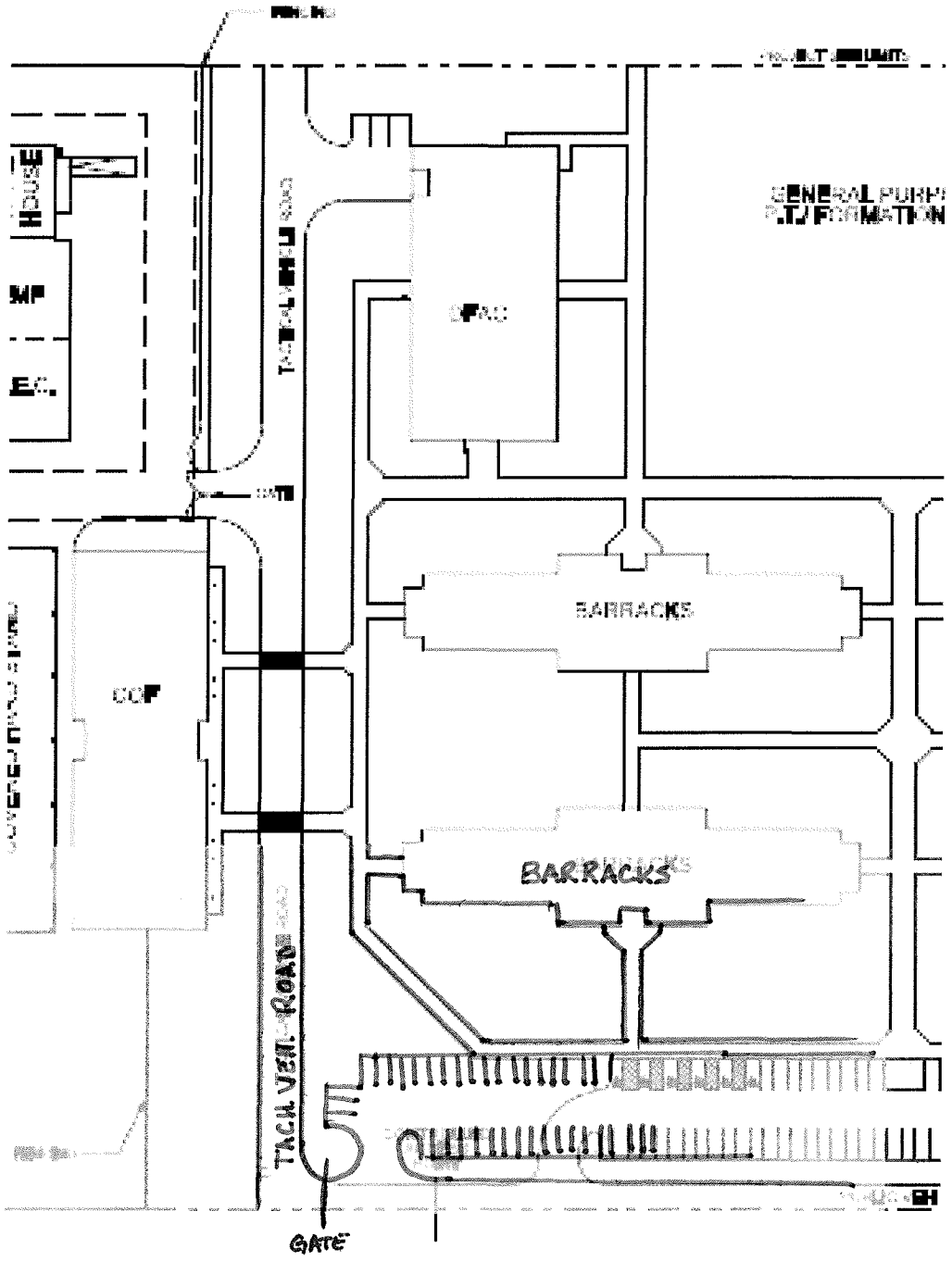
SKETCH

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: D7-6/D14-6

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☒ BOTH ☐

SHEET NO.: 2 of 3



SITE PLAN

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **D7-6/D14-6**

SHEET NO.: **3 of 3**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Added Parking							
- Grading and Compaction	SY				1,865	1.25	2,331
- Curb and Gutter	LF				365	10.00	3,650
- Added 2-1/2" paving on 6" base	SY				1,865	31.50	58,748
- Topsoil	CY				40	40.00	1,600
- Seed	SY				360	0.50	180
Subtotal							66,509
Markup (%) at 15%							9,976
TOTAL							76,485

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VALUE ENGINEERING ALTERNATIVE

PROJECT: *P2# 156591,* **OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **D7-10/D14-9**

DESCRIPTION: **REVISE LOADING DOCK LOCATION FROM THE SIDE TO THE BACK OF THE DFAC AND LENGTHEN THE APPROACH FROM 50 FT TO 60 FT**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN:

The original design calls for a side loading dock with three parking spaces and 50 ft approach.

ALTERNATIVE:

Modify the Dining Facility (DFAC) with capacities of either 720 or 1,428 personnel by moving the loading dock from the side of the building to the back of the kitchen area. This will improve unloading and maneuverability for the WB-53 tractor-trailers. This requires a 60-ft-long approach as part of the 180-degree hammerhead entry.

ADVANTAGES:

- Will provide more room for truck navigation in the loading dock area
- Required by new DFAC design

DISADVANTAGES:

- Increases land requirement

DISCUSSION:

The trucks will have a difficult time backing into the loading dock with the current road layout. Increasing the truck access lane will reduce the time it takes the driver to back into the loading area. Also with the additional space, it is less likely the driver will cause damage to the truck and the facility.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 30,602	—	$ 30,602
ALTERNATIVE	$ 106,364	—	$ 106,364
SAVINGS (Original minus Alternative)	$ (75,762)	—	$ (75,762)

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **D7-10/D14-9**

SHEET NO.: **2 of 2**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Relocate Truck Receiving from W. to N.							
- Excavate for Ramp	CY	128	4.00	512	440	4.00	1,760
- Grade and Compact	SY	270	1.25	338	1,320	1.25	1,650
- Backfill Ramp Walls	CY	6	10.00	60	28	10.00	280
- Excavate for Walls/Footings	CY	25	6.00	150	95	6.00	570
- Ramp Footings	CY	12	300.00	3,600	40	300.00	12,000
- Ramp Walls	CY	7	350.00	2,450	27	350.00	9,450
- Trench Drain	LF	22	100.00	2,200	22	100.00	2,200
- Ramp Slab and Base	SF	270	6.00	1,620	2,900	6.00	17,400
- Asphalt Drive (N/A @ Original)	SY		31.50		1,000	31.50	31,500
- Sump Pump	EA	1	300.00	300	1	300.00	300
- Metal Stair	EA	1	3,500.00	3,500	1	3,500.00	3,500
- Dock Leveler	EA	1	9,000.00	9,000	1	9,000.00	9,000
- Dock Bumpers	EA	4	120.00	480	4	120.00	480
- Leveler Pit (includes angle/ excavation)	CY	1	400.00	400	1	400.00	400
- MEP	LS	1	2,000.00	2,000	1	2,000.00	2,000
Subtotal				26,610			92,490
Markup (%) at	**15%**			3,992			13,874
TOTAL				30,602			106,364

VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **D7-12/D14-11**

DESCRIPTION: **USE SCISSOR LIFT EQUIPMENT IN LIEU OF A 4-FT-HIGH LOADING DOCK WITH A DOCK LEVELER**

SHEET NO.: **1 of 3**

ORIGINAL DESIGN:

The original design has an elevated, 4-ft-high loading dock with a dock leveler.

ALTERNATIVE: (sketch attached)

Eliminate the 4-ft-high loading dock and provide two scissor lifts to unload supplies/equipment from delivery trucks.

ADVANTAGES:

- Loading area of DFAC will be at grade
- Truck trailer will be level for easier unloading
- No need for retaining wall at dock
- No need for trench drain at dock
- No need for loading dock ramp
- No need for loading dock stairs

DISADVANTAGES:

- Slower unloading of equipment because only one load could be unloaded at once
- Requires maintenance of scissor lift
- Difficult to unload trucks in the event that a scissor lift fails

DISCUSSION:

By eliminating the dock ramp, the trench drain and pit area at the bottom of ramp can be eliminated to avoid maintenance issues with clogging, sand and dirt build-up, and possible sump pump damage. Maintenance of the scissor lift will take the place of dock leveler maintenance. Removing the ramp will also facilitate better truck access by easing the backing in to the dock.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 124,321	—	$ 124,321
ALTERNATIVE	$ 100,021	—	$ 100,021
SAVINGS (Original minus Alternative)	$ 24,300	—	$ 24,300

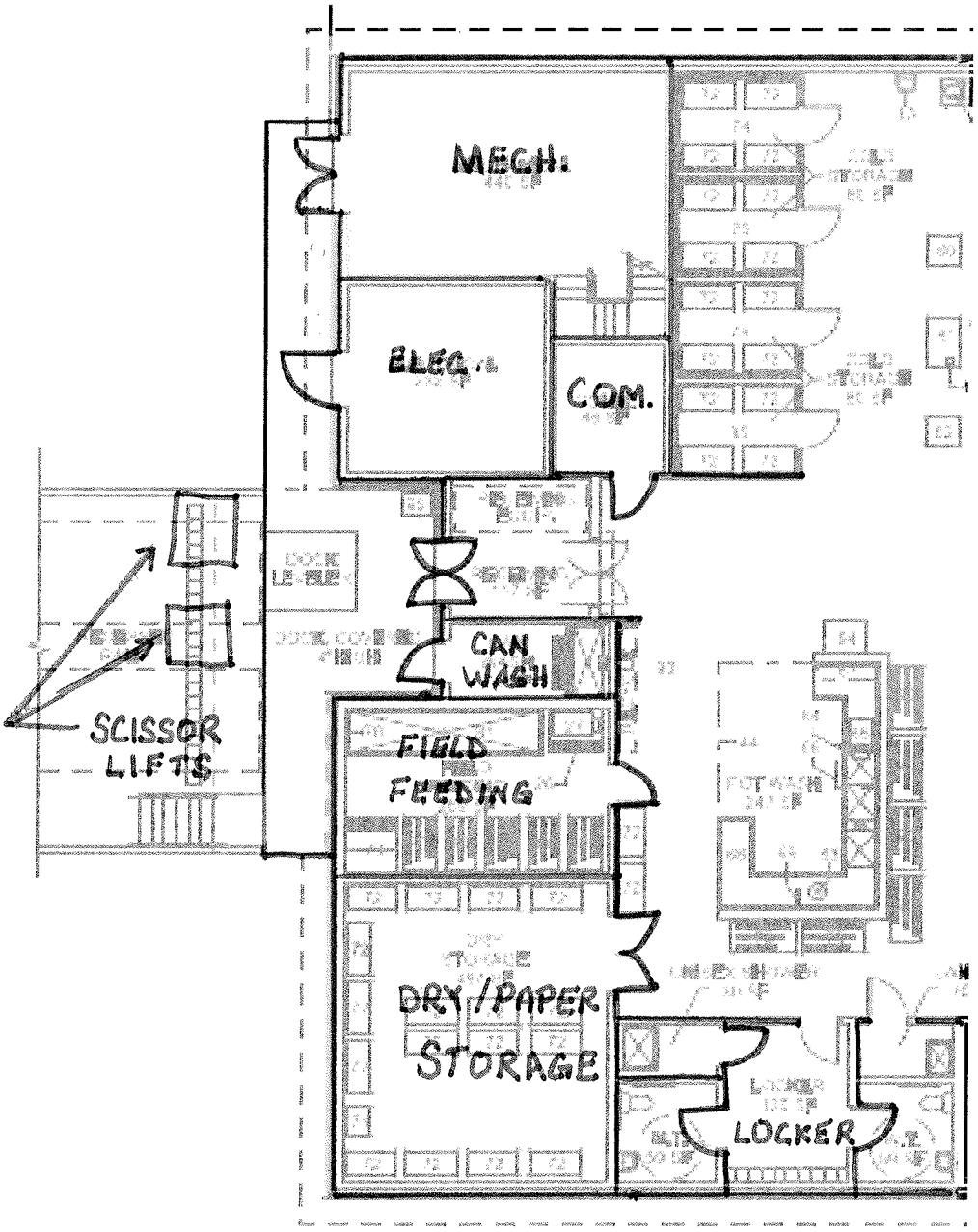
SKETCH

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: D7-12/D14-11

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☒ BOTH ☐

SHEET NO.: 2 of 3



DINING FACILITY - PLAN

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **D7-12/D14-11**

SHEET NO.: **3 of 3**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Recessed Dock							
- Excavate for Ramp	CY	1,780	4.00	7,120			
- Grade and Compact	SY	1,100	1.25	1,375			
- Excavate for Walls	CY	55	6.00	330			
- Ramp Footings	CY	35	300.00	10,500			
- Ramp Walls	CY	30	350.00	10,500			
- Trench Drain	LF	22	100.00	2,200			
- Ramp Slab and Base	SF	10,000	6.00	60,000			
- Sump Pump	EA	1	300.00	300			
- Metal Stair	EA	1	3,500.00	3,500			
- Dock Leveler	EA	1	9,000.00	9,000			
- Dock Bumpers	EA	4	120.00	480			
- Leveler Pit (includes angle/ excavat	CY	2	400.00	800			
- MEP	LS	1	2,000.00	2,000			
Ramp at Grade							
- Grade and Compact	SY				1,100	1.25	1,375
- SOG and Base	SF				10,000	6.00	60,000
- Platform Lift	EA				2	10,000.00	20,000
- Platform Pit (includes angle/ excava	CY				4	400.00	1,600
- MEP	EA				1	4,000.00	4,000
Subtotal				108,105			86,975
Markup (%) at 15%				16,216			13,046
TOTAL				124,321			100,021

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VALUE ENGINEERING ALTERNATIVE

PROJECT:	***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX** ***Center of Standardization (CoS) Model*** *Department of the Army* *Facilities Standardization Program*	ALTERNATIVE NO.: **D7-13/D14-12**
DESCRIPTION:	**INCREASE INTERIOR WINDOW SIZE AT MANAGER'S OFFICE AND ADMINISTRATION OFFICE FROM 3-FT-WIDE TO 6-FT-WIDE**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The original design has 3-ft-wide windows near the door of the Manager's Office and the Administration Office.

ALTERNATIVE:

Provide larger windows (approximately 6 ft wide) at the Manager's Office and the Administration Office.

ADVANTAGES:

- Provides a larger viewing angle for the kitchen operations
- Decreases cost for wall construction and wall finishes

DISADVANTAGES:

- Increases cost for larger window

DISCUSSION:

The current layout for the windows restricts viewing from the Manager's Office into the kitchen area. The added width of glass is a minor cost to create a better viewing area.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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SUMMARY OF VALUE ENGINEERING ALTERNATIVES

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX (ORTC)**
Center of Standardization Model

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	PRESENT WORTH OF COST SAVINGS: INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
	DINING FACILTY - 1428 PP DFAC (D14)					
D14-1	**Use sealed, stained concrete in lieu of quarry tile.**	**$270,710**	**$51,549**	**$219,161**	**$0**	**$219,161**
D14-2	**Use exposed ceiling in lieu of ACT suspended ceilings in the Dining and Queing Areas.**	**$34,574**	**$0**	**$34,574**	**$0**	**$34,574**
D14-4	**Use high build epoxy wall finish in lieu of ceramic tile.**	**$126,615**	**$59,484**	**$67,131**	**$0**	**$67,131**
D14-14	Use a forklift in lieu of a 4-ft-high truck unloading dock.	$124,321	$89,050	$35,271	$0	$35,271
	COMPANY OPERATIONS (CO)					
CO-3	Increase the number of lockers from 25% coverage to 100% and use stacked lockers in lieu of single high.	DESIGN SUGGESTION				
	Maximum Cost Avoidance Proposed (Gross)			**$700,908**		
	(Items identified in bold)					

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VALUE ENGINEERING ALTERNATIVE

PROJECT: *P2# 156591,* **OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **D14-1**

DESCRIPTION: **USE SEALED, STAINED CONCRETE IN LIEU OF QUARRY TILE**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN:

A quarry tile floor finish is included in the DFAC finish schedule throughout the facility.

ALTERNATIVE:

Use sealed, stained concrete and vinyl base in lieu of quarry tile and quarry tile base.

ADVANTAGES:

- Eliminates maintenance and repair of quarry tile
- Complies with "austere" finish guidelines
- Minimal maintenance of sealed stained concrete is required
- Reduces construction time

DISADVANTAGES:

- If austere look is not desired, then sealed concrete finish may not be desirable
- The quality control of concrete floor finish/levelness becomes more critical

DISCUSSION:

By having sealed, stained concrete the project can be constructed faster because the quarry tile installation is eliminated. The sealed concrete would likely be more sanitary, and easier to clean than the quarry tile. In addition, the maintenance of sealed concrete would be less costly. The capital cost savings achieved using sealed concrete is substantial.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 270,710	—	$ 270,710
ALTERNATIVE	$ 51,549	—	$ 51,549
SAVINGS (Original minus Alternative)	$ 219,161	—	$ 219,161

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **D14-1**

SHEET NO.: **2 of 2**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Quarry Tile							
- Remove Quarry Tile	SF	17,700	12.00	212,400			
- Quarry Tile Base	LF	2,000	11.50	23,000			
Concrete Sealer							
- Add Concrete Sealer	SF				17,700	0.25	4,425
- Rubber Base	LF				2,000	2.50	5,000
- Stained Concrete Finish	SF				17,700	2.00	35,400
Subtotal				235,400			44,825
Markup (%) at	**15%**			35,310			6,724
TOTAL				270,710			51,549

VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **D14-2**

DESCRIPTION: **USE EXPOSED CEILING IN LIEU OF AN ACOUSTICAL TILE SUSPENDED CEILING IN DINING AND QUEUE AREAS**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN:

An acoustical tile (ACT) ceiling is provided in the DFAC dining and queue areas.

ALTERNATIVE:

Use an exposed ceiling in DFAC dining and queue areas instead of the acoustical tile (ACT).

ADVANTAGES:

- Eliminates maintenance and repair of ACT
- Complies with "austere" finish guidelines

DISADVANTAGES:

- If an austere look is not desired, then ACT may be desirable
- An exposed ceiling open to the area might require cleaning from time to time. Cleaning of exposed structure would be time consuming.

DISCUSSION:

ACT requires replacement of damaged and stained ceiling tiles. With an open structure, this maintenance item would be eliminated. An open structure gives the feeling of a larger space than when enclosed by a ceiling. There is a reasonable capital cost savings by not installing ACT.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 34,574	—	$ 34,574
ALTERNATIVE	$ 0	—	$ 0
SAVINGS (Original minus Alternative)	$ 34,574	—	$ 34,574

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **D14-2**

SHEET NO.: **2 of 2**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Ceiling Finish							
- Remove Acoustical Ceiling Tile	SF	7,516	4.00	30,064			
- Leave Ceiling Exposed							
Subtotal				30,064			
Markup (%) at 15%				4,510			
TOTAL				34,574			

VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **D14-4**

DESCRIPTION: **USE HIGH BUILD EPOXY WALL FINISH IN LIEU OF CERAMIC TILE**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN:

Install ceramic tile (CT) on walls as defined in the finish schedule.

ALTERNATIVE:

Install a high build epoxy coating on the walls where ceramic tile is currently scheduled to be installed.

ADVANTAGES:

- Eliminates maintenance and repair of ceramic tile
- Complies with "austere" finish guidelines
- High build epoxy coating is more durable than ceramic tile
- Easier to clean than ceramic tile

DISADVANTAGES:

- If an austere look is not desired, then ceramic tile may be desirable

DISCUSSION:

The high build epoxy coating is very durable and easy to maintain. Ceramic tile can crack, lose mortar joints and come loose. This requires constant maintenance. An epoxy coating is strong and requires almost no maintenance. The high build coating will allow for easy cleaning.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 126,615	—	$ 126,615
ALTERNATIVE	$ 59,484	—	$ 59,484
SAVINGS (Original minus Alternative)	$ 67,131	—	$ 67,131

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **D14-4**

SHEET NO.: **2 of 2**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Wall Finish							
- Ceramic Tile Wall	SF	12,100	8.00	96,800			
- Ceramic Tile Base	LF	1,330	10.00	13,300			
- Wall Sealer (high build epoxy)	SF				12,100	4.00	48,400
- Vinyl Base	LF				1,330	2.50	3,325
Subtotal				110,100			51,725
Markup (%) at 15%				16,515			7,759
TOTAL				126,615			59,484

VALUE ENGINEERING ALTERNATIVE

PROJECT: *P2# 156591,* **OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **D14-14**

DESCRIPTION: **USE FORKLIFT EQUIPMENT IN LIEU OF A 4-FT-HIGH TRUCK UNLOADING DOCK**

SHEET NO.: **1 of 3**

ORIGINAL DESIGN:

The original design has an elevated, 4-ft-high loading dock with a dock leveler.

ALTERNATIVE: (sketch attached)

Eliminate the loading dock and use a forklift to unload supplies/equipment from delivery trucks.

ADVANTAGES:

- Loading area of DFAC will be at grade
- Truck trailer will be level for easier unloading
- No need for retaining wall at dock
- No need for trench drain at dock
- No need for loading dock ramp
- No need for loading dock stairs

DISADVANTAGES:

- Slower unloading of supplies as only one load could be unloaded at once
- Maintenance of forklift is required
- Difficult to unload trucks in the event that the forklift fails
- Would need to add a forklift operator
- Requires a storage area for forklift

DISCUSSION:

By eliminating the dock ramp, the trench drain and pit area at the bottom of ramp can be eliminated to avoid maintenance issues with clogging, sand and dirt build-up, sump pump damage, etc. Some of the forklift maintenance will be offset by the dock leveler maintenance. Removing the ramp will also facilitate better truck access by simplifying backing into the dock.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 124,321	—	$ 124,321
ALTERNATIVE	$ 89,050	—	$ 89,050
SAVINGS (Original minus Alternative)	$ 35,271	—	$ 35,271

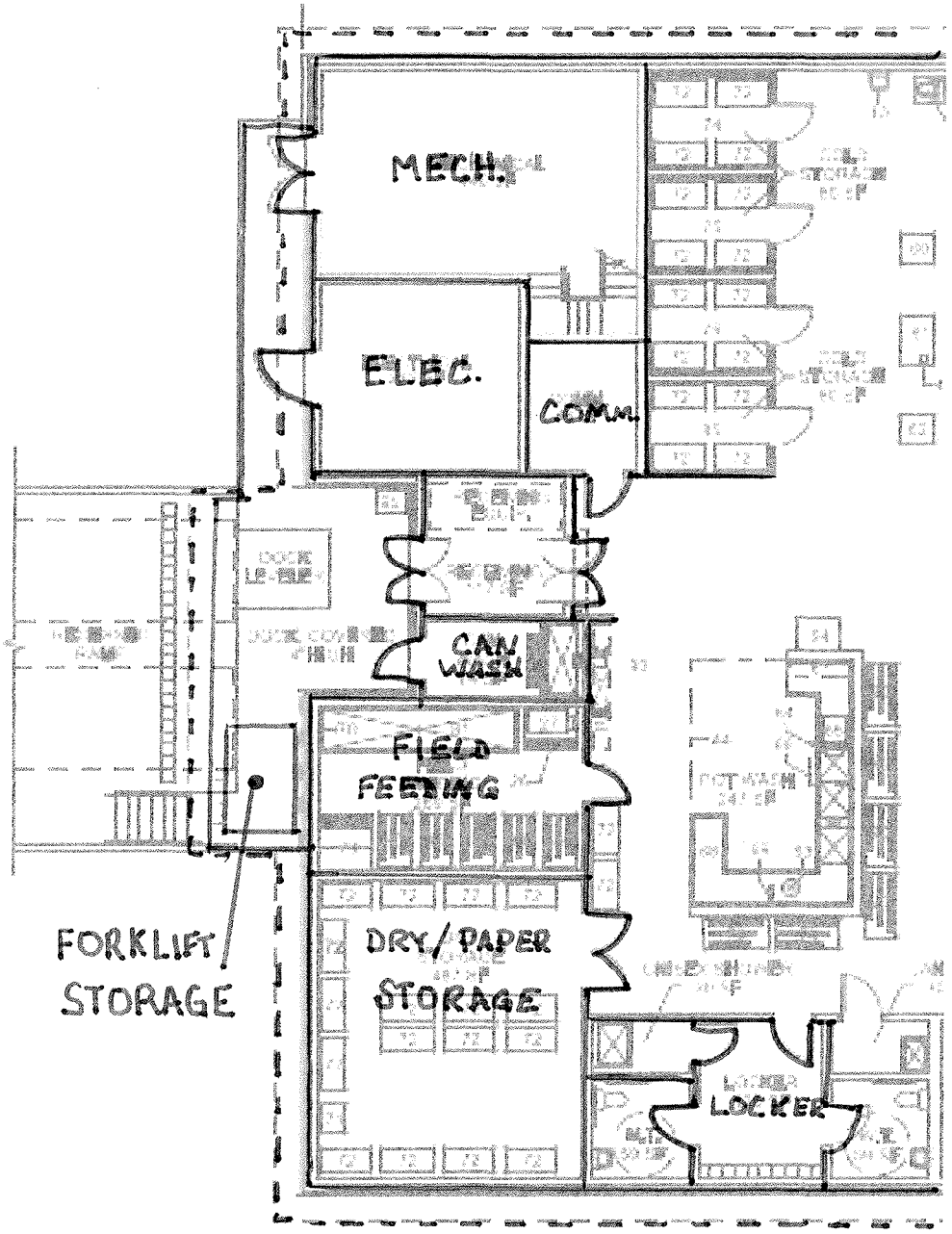
SKETCH

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: D14-14

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☒ BOTH ☐

SHEET NO.: 2 of 3



DINING FACILITY - PLAN

COST WORKSHEET

PROJECT: **P2# 156591, ORTC**
Center of Standardization Model

ALTERNATIVE NO.: **D14-14**

SHEET NO.: **3 of 3**

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Recessed Dock							
- Excavate for Ramp	CY	1,780	4.00	7,120			
- Grade and Compact	SY	1,100	1.25	1,375			
- Excavate for Walls	CY	55	6.00	330			
- Ramp Footings	CY	35	300.00	10,500			
- Ramp Walls	CY	30	350.00	10,500			
- Trench Drain	LF	22	100.00	2,200			
- Ramp Slab and Base	SF	10,000	6.00	60,000			
- Sump Pump	EA	1	300.00	300			
- Metal Stair	EA	1	3,500.00	3,500			
- Dock Leveler	EA	1	9,000.00	9,000			
- Dock Bumpers	EA	4	120.00	480			
- Leveler Pit (includes angle/ excavat	CY	2	400.00	800			
- MEP	LS	1	2,000.00	2,000			
Ramp at Grade							
- Grade and Compact	SY				1,100	1.25	1,375
- SOG and Base	SF				10,000	6.00	60,000
- Forklift Purchase	EA				1	12,500.00	12,500
- Forklift Training	EA				1	1,000.00	1,000
- Operator (assume 1 of 65 staff is tra							
- Increase Canopy Width	SF				64	40.00	2,560
Subtotal				108,105			77,435
Markup (%) at 15%				16,216			11,615
TOTAL				124,321			89,050

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VALUE ENGINEERING ALTERNATIVE

PROJECT: ***P2# 156591,* OPERATIONAL READINESS TRAINING COMPLEX**
Center of Standardization (CoS) Model
Department of the Army
Facilities Standardization Program

ALTERNATIVE NO.: **CO-3**

DESCRIPTION: **INCREASE THE NUMBER OF LOCKERS FROM 25% COVERAGE TO 100% AND USE STACKED LOCKERS IN LIEU OF SINGLE HIGH LOCKERS**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN: (sketch attached)

Per Sheet ORTC-A013, Company Operations Facility Floor Plan, dated 16 Feb 2006, the TA-50 Lockers are shown as 5 ft x 8 ft under the covered hardstand with access on one end. This appears to provide facilities for only 25% of the personnel.

ALTERNATIVE:

Modify the TA-50 locker arrangement and use 3-ft-wide x 2-ft-high x 4-ft-deep lockers with access on one side and stacked two lockers high. This will provided 100% coverage for the personnel.

ADVANTAGES:

- Provides 100% coverage: one locker per person

DISADVANTAGES:

- The Covered Hardstand is not large enough. The structure's square footage will become larger
- More lockers will increase the project's cost

DISCUSSION:

Verify the required TA-50 size and configuration. The COE may need to reconfigure the layout and size of the Covered Hardstand. Currently, each locker is shown on the drawings as 5 ft x 8 ft. Jim Tuskan suggests that each 5 ft x 8 ft space holds eight lockers and there should be one locker per person for 100% coverage. The Standard Design requires 25% coverage with each having a 5 ft x 8 ft locker.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS (Original minus Alternative)			

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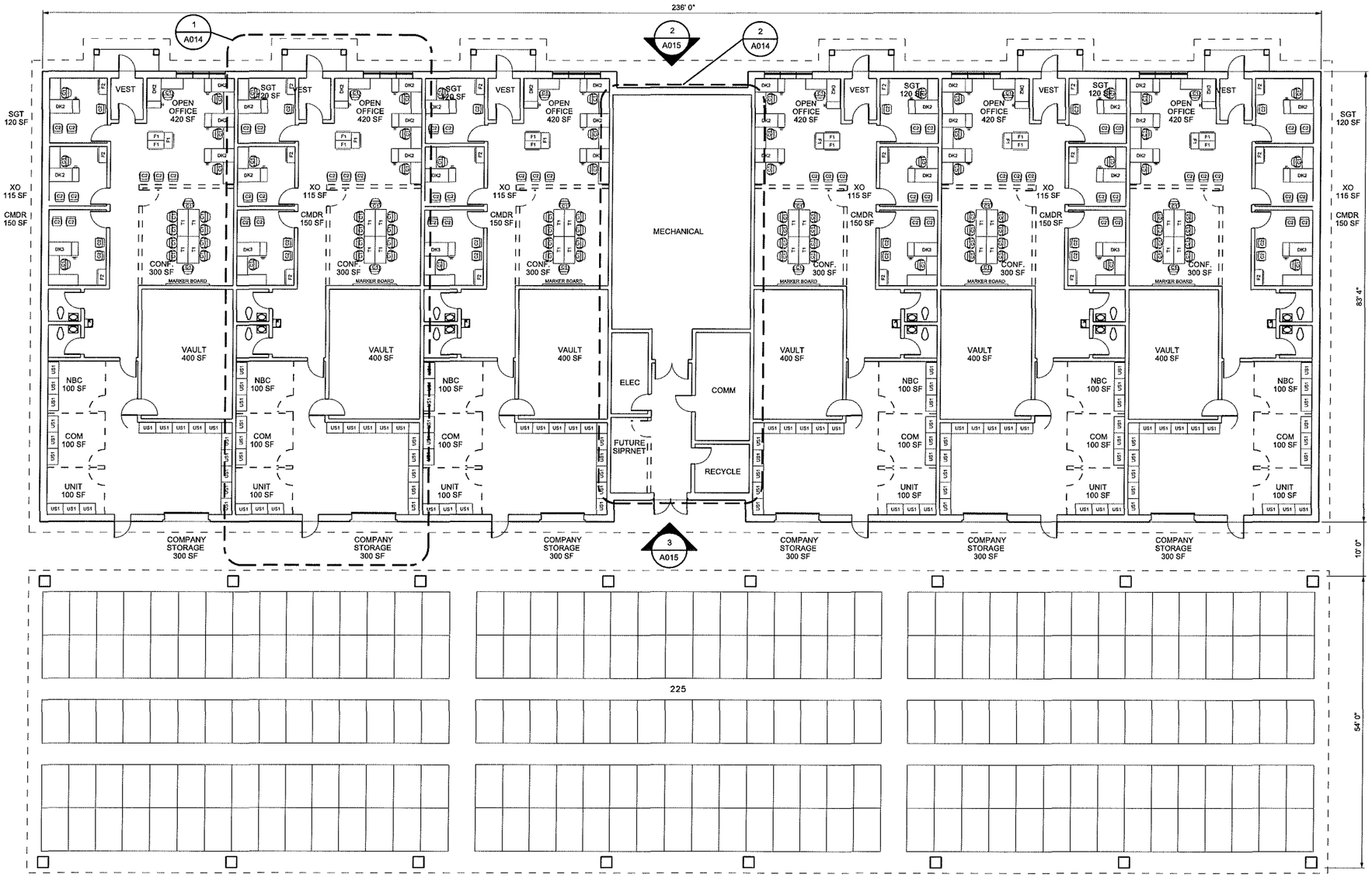


COMPANY OPERATIONS FACILITY - OVERALL FLOOR PLAN
SCALE: 3/32" = 1'-0"

GENERAL

THE DESIGN OF THE COMPANY OPERATIONS FACILITY (COF) REFLECTS THE PROGRAMMATIC REQUIREMENTS FOR BOTH TRAINING EXERCISES AND MOBILIZATION. BECAUSE BATTALIONS VARY IN SIZE, THE COF CAN BE BUILT IN EITHER FOUR OR SIX COMPANY CONFIGURATIONS. ONLY ONE COF WILL BE BUILT PER BATTALION COMPLEX. THE COF CONSISTS OF FOUR OR SIX COMPANY MODULES AND A MECHANICAL CORE. EACH MODULE HAS AN ADMINISTRATIVE SUITE AND A LOGISTICS SUITE. THE ADMINISTRATIVE SUITE CONSISTS OF OFFICES FOR THE COMMANDER, FIRST SERGEANT, EXECUTIVE OFFICER AND OPEN OFFICE AREA. THE OPEN OFFICE AREA CAN BE DIVIDED INTO OPEN OFFICE AREA AND CONFERENCE AREA. THE LOGISTICS SUITE INCLUDES AN ARMS VAULT. A SINGLE, COVERED HARDSTAND IS PROVIDED FOR EACH COF BUILDING WITH SUFFICIENT 5' x 8' LAY DOWN AREAS TO SUPPORT AN ESTIMATED 25% OF THE AUTHORIZED BATTALION STRENGTH. A TOTAL OF 225 SPACES ARE PROVIDED FOR THE SIX MODULE COF AND 150 SPACES ARE PROVIDED FOR THE FOUR MODULE COF.

CODE REQUIREMENTS

1. BUILDING SHALL BE FULLY PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE LATEST NFPA DOCUMENTS AND UFC 3-600-01.

2. FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH NFPA 10.

3. LIFE SAFETY AND AND BUILDING CONSTRUCTION SHALL BE IN ACCORDANCE WITH NFPA 101 AND UFC 1-200-01 DESIGN: GENERAL BUILDING REQUIREMENTS.

4. USE AND OCCUPANCY CLASSIFICATION:
IBC, CHAPTER 3
SECTION 304, BUSINESS GROUP B
PARAGRAPH 304.1
GROUP B (OFFICES)

NFPA 101, CHAPTER 38
NEW BUSINESS OCCUPANCIES
(OFFICES)

COVERED HARDSTAND REQUIREMENTS

1. HARDSTAND AREA REQUIREMENTS ARE BASED ON A MANEUVER BATTALION OF AN ARMORED BCT.

2. LOCATE ADJACENT TO THE COMPANY STORAGE AREA OF COMPANY OPERATIONS FACILITY

3. PROVIDE A STEEL FRAME ROOF STRUCTURE SUPPORTED BY EXPOSED COLUMNS.

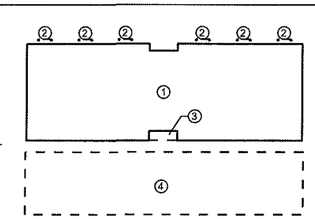
4. SPACE SHALL ACCOMMODATE 25% OF EACH COMPANY'S PERSONNEL FOR TA-50 PRE-DEPLOYMENT AND POST-DEPLOYMENT CHECKS, EQUIPMENT MAINTENANCE, WEAPONS CLEANING, ETC.

5. PROVIDE THE FOLLOWING UTILITIES: LIGHTING, POWER RECEPTACLES AT THE COLUMNS, HOSE BIBBS ALONG THE EXTERIOR WALL OF THE COMPANY OPERATIONS FACILITY FOR PERIODICAL WASHING OF THE HARDSTAND, AND GROUNDING POINTS FOR POWER GENERATORS.

AREA CALCULATIONS

FLOOR PLAN GROSS AREA CALCS

①	COF BUILDING AREA AT FULL VALUE:	19,345 SF
	EXTERIOR COVERED AREA AT HALF VALUE:	
②	PORCHES:	[(46 x 6) x 1/2] = 138 SF
③	EXIT COVERED AREA:	(192 x 1/2) = 96 SF
	EXTERIOR COVERED SUBTOTAL:	234 SF
	BUILDING TOTAL GSF:	19,579 SF
④	HARDSTAND AREA AT FULL VALUE:	12,852 SF



GRAPHIC SCALE
8 0 8 16FT
SCALE: 3/32" = 1'-0"

US Army Corps of Engineers
Louisville District

Revisions
Symbol | Description | Date | Appr.

Designed by: COE LOUISVILLE DISTRICT
Drawn by:
Checked by:
COE LOUISVILLE DISTRICT Project Engineer/Architect
Date: 28 JULY 2009
Scale:
Drawing Code: X-XXX-XX-XXX

COMPANY OPERCATIONS FAC. OVERALL FLOOR PLAN

DEPARTMENT OF THE ARMY FACILITY STANDARDIZATION PROGRAM
OPERATIONAL READINESS TRAINING COMPLEX STANDARD DESIGN

SHEET REFERENCE NUMBER:
ORTC-A013
SHEET 22 OF 31

CORRECTED FINAL

*** SUPPORT VALUE ENGINEERING - IT PAYS ***

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PROJECT DESCRIPTION

Introduction

The scope of this standard design focuses on Operational Readiness Training Complexes to provide economical, minimum essential housing, dining, administration and operational facilities to accommodate transient training and mobilization/demobilization activities at power projection platforms (PPP), power support platforms (PSP), and post mobilization maneuver training complexes (PMMTC). This Operational Readiness Training Complex (ORTC) Model includes Battalion Headquarters facilities, Officers Quarters, Dining Facility (720 Person or 1,428 Person), Company Operations facility, Vehicle Maintenance Facility, and Company Sheds. The basic model using the larger dining facility (1,428 Person) includes a total of 196,413SF of programmed building space.

Project Description

Each Operations Readiness Battalion Complex is intended to be similar to a college campus in the private sector community.

The Battalion Headquarters facilities are to house transient Battalion level administrative functions and classrooms for soldiers. This facility type is intended to be similar both functionally and technically to private sector office and classroom type buildings located in the community surrounding the Installation. It is assumed in the model that 20 percent of the personnel are female.

The Officers Quarters facilities are for 80 persons. This project type is to house transient senior enlisted officers in a two bed per room configuration. This facility type is intended to be similar both functionally and technically to hotel facilities in the private sector community surrounding the installation.

The dining facility is to be used for the preparation and serving of food and include a seated dining area. The dining facility is to provide capacity for feeding 1,428 soldiers per meal within 90 minutes, three times per day, seven days a week, 52 weeks per year. The seated dining area can also serve as a gathering place.

Company Operations facilities are to house transient company administrative operations and facilitate storage and movement of supplies. Also provided is a covered hardstand area for training and mobilization. It is intended to be similar to office and warehouse type buildings in the private sector community.

The Vehicle Maintenance facility is to provide facilities for maintaining and repairing vehicles and provide temporary storage of unit supplies and equipment. It is intended to be similar to equipment or motor pool facilities in the private sector community. Company Sheds are intended to provide shelter for light vehicle maintenance. A Battalion Complex will be provided with one shed per company module.

PROJECT COST

The ORTC Center of Standardization Model includes the following building types, sizes, and estimated costs per the DD1391 dated 19 May 2009.

PRIMARY FACILITY	QUANTITY	COST ($000)
Transient Battalion HQ	11,237 SF	1,798
Transient Company Ops (6 CO's/Battalion)	19,579 SF	3,074
Dining Facility (720 Person)	16,761 SF	5,184
Enlisted Barracks (4/Battalion)	122,232 SF	17,601
Transient Training Officers Quarters	22,579 SF	4,177
ESTIMATED CONTRACT COST ***(with 720 person Dining Facility)***	**192,388 SF**	**$36,117**

PRIMARY FACILITY	QUANTITY	COST ($000)
Transient Battalion HQ	11,237 SF	1,798
Transient Company Ops (6 CO's/Battalion)	19,579 SF	3,074
Dining Facility (1,428 Person)	20,786 SF	6,282
Enlisted Barracks (4/Battalion)	122,232 SF	17,601
Transient Training Officers Quarters	22,579 SF	4,177
ESTIMATED CONTRACT COST ***(with 1,428 person Dining Facility)***	**196,413 SF**	**$37,259**

VALUE ANALYSIS AND CONCLUSIONS

INTRODUCTION

This section describes the procedure used during the VE study on the P2# 156591, ORTC Center of Standardization Model.

A systematic approach was used in the VE study, which is divided into three parts: (1) Preparation Effort, (2) Workshop Effort, and (3) Post-Workshop Effort. A task flow diagram outlining each of the procedures included in the VE study is attached for reference.

Following this description of the procedure, separate narratives and supporting documentation identify the following:

- VE workshop agenda
- VE workshop participants
- Economic data
- Cost model
- Function analysis
- Creative ideas and evaluations

PREPARATION EFFORT

Preparation for the workshop consisted of scheduling workshop participants and tasks and providing necessary project documents for team members to review before attending the workshop. The documents listed below were used as the basis for generating VE alternatives and for determining the cost implications of the selected VE alternatives:

- Department of the Army, Facilities Standardization Program, Operational Readiness Training Complex (ORTC) Standard Design Drawings, dated 16 February 2006, prepared by U.S. Army Corps of Engineers, Louisville District.
- PC-Cost Detailed Report, Operational Readiness Battalion Complex, dated 09 January 2009, prepared by CESWF-EC-AC.
- DD1391- Operational Readiness Training Complex – 720 Person Dining Facility, dated 19 May 2009.
- DD1391 – Operational Readiness Training Complex – 1,428 Person Dining Facility, dated 19 May 2009.
- Value Engineering Study, Dining Facility Prototypes, dated 06 January 2009, prepared by CH2MHILL.
- Value Engineering Study, McGregor Base Camp, New Mexico (Ft. Bliss, Texas), Barracks – Mobilization and Training.

Value Engineering Study Task Flow Diagram

Preparation Effort

Coordinate Project
- Verify Schedule
- Suggest Format for Designer Presentation
- Outline Project Responsibilities
- Outline Needed Background Data
- Define *Project Value Objectives*
- Identify Project Constraints

→

Prepare for Workshop
- Collect Project Data
- Distribute Data to Team Members
- Verify Cost Data
- Team Members Become Familiar with Project

→

Construct Cost Models
- Construct Cost Models
- Construct Graphic Function Analysis
- Outline High Cost Areas

→

LCC Model
- Process Areas
- Staffing
- Chemicals
- Energy
- User Impact

Workshop Effort

Information Phase
- Introduction by VETL
- Project Description and Presentation by Designer
- Outline Owner Requirements
- Review Project Data
- Visit Project Site (Alt.)

→

Function Identification and Analysis Phase
- Analyze Project Costs and Energy Usage
- Perform Function Analysis and FAST Diagram
- Identify High Cost and Energy Areas
- Calculate Cost/Worth Ratios
- Identify Paradigms

List Ideas Generated During Function Analysis

→

Creative Phase
- Introduction by VETL
- Creative Idea Listing:
  - Quantity of Ideas
  - Association of Ideas

Brainstorming
- Creative Thinking:
  - Group & Individual

Use Checklist for Ideas

→

Evaluation Phase
- Eliminate Impractical Ideas
- Rank Ideas with Advantages/Disadvantages
- Evaluate Alternatives (Include Non-Economic considerations: Safety, Reliability, Environment, Aesthetics, O & M, etc.)
- Select Best Ideas for Implementation

→

Development Phase
- Develop Proposed Alternatives
- Prepare Alternative Design Sketches
- Estimate Costs
- Perform Life Cycle Comparison
  - Initial Cost
  - Redesign Cost
  - O & M Cost
  - LCC Cost

→

Presentation Phase
- Summarize Findings
- Present VE Ideas to Owner/User/Designer
- Oral Presentation

Post-Workshop Effort

VE Study Report
- Prepare Preliminary VE Report
- Designer Prepares Responses to VE Report
- Owner Evaluates Recommendations

→

Implementation Phase
- Participate in Implementation Meeting with Owner/User/Designer/VE Team, as needed
- Prepare Final VE Report

→

Final Acceptance
- Redesign by Designer

Information relating to the project's purpose and need, owner concerns, project stakeholder concerns, design criteria, project constraints, funding sources and availability, regulatory agency approval requirements, and the project's schedule and costs is very important as it provides the VE team with insight about how the project has progressed to its current state.

To prepare for this exercise, the VE team carefully studied the documents listed above provided by the District and PDT. The VE Team Leader also prepared a basic cost model using the project costs contained in the DD1391 to distribute the total project cost among the various deliverables. The VE team used the cost model to help identify higher cost elements and elements providing little or no value to the overall objectives.

VALUE ENGINEERING WORKSHOP EFFORT

The VE workshop was a 5-day effort beginning with the design overview at 8:30AM on Monday, August 10, 2009, and concluding with the VE Presentation at 7:00 AM on Friday, August 14, 2009. During the workshop, the VE Job Plan was followed in compliance with SAVE International Value Standard guidelines for conducting a VE study. The Job Plan guided the search for alternatives to mitigate or eliminate high-cost drivers, secondary functions providing little or no value, and potential project issues or risks. Alternatives to specifically address the project team concerns and enhance value by reducing costs, improving construction schedule, and delivering required functional objectives were also considered. The Job Plan includes six phases:

- Information Phase
- Function Analysis Phase
- Creativity Phase
- Evaluation Phase
- Development Phase
- Presentation Phase

Information Phase

At the beginning of the study, the decisions that have influenced the design have to be reviewed and understood. For this reason, the workshop began with a detailed discussion and review of the ORTC Center of Standardization Drawings including an overview by the project manager and the design team leader. The overview highlighted the information provided in the documentation reviewed by the VE team before the workshop and expanded on it to include a history of the ORTC CoS Model development and any underlying influences that caused the design to develop to its current state. During this presentation, VE team members were given the opportunity to ask questions and obtain clarification about the information provided.

Function Analysis Phase

Having gained some information on the ORTC CoS Model, the VE team proceeded to define the functions provided by the ORTC CoS Model, identifying the costs to provide these functions, and determining whether the value provided by the functions has been optimized. Function analysis is a means of evaluating a design to see if the expenditures actually perform the requirements of the design

or if there are disproportionate amounts of money spent on support functions. Elements performing support functions add cost to the design but have a relatively low worth to the basic function.

Function is defined as the intended use of a physical or process element. The team attempted to identify functions in the simplest manner using measurable noun/verb word combinations. To accomplish this, the team first looked at the design in its entirety and randomly listed its functions, which were recorded on Random Function Analysis Worksheets (provided in this section). Then the individual functions of the major components of the project depicted on the cost model were identified.

After identifying the functions, the team classified the functions according to the following:

Abbreviation	Type of Function	Definition
HO	Higher Order	The primary reason the project is being considered or project goal.
B	Basic	A function that must occur for the project to meet its higher order functions.
S	Secondary	A function that occurs because of the concept or process selected and may or may not be necessary.
R/S	Required Secondary	A secondary function that may not be necessary to perform the basic function but must be included to satisfy other requirements or the project cannot proceed.
G	Goal	Secondary goal of the project.
O	Objective	Criteria to be met.
LO	Lower Order	A function that serves as a project input.

Higher order and basic functions provide value, while secondary functions tend to reduce value. The goal of the next job phase is to reduce the impact of secondary functions and thereby enhance value.

The VE team used the cost model previously prepared to seek out the areas where most of the design costs are being applied. Because of the magnitude of these high-cost elements or functions, they also became initial targets for value enhancement.

Overall, these exercises stimulated the VE team members to focus on apparently low value areas and initially channel their creative idea development in these places.

Creativity Phase

This phase involved the creation and listing of ideas. The VE Team began by identifying the highest cost design elements with a high absolute cost compared to other elements in the project, and secondary functions providing little or no value. Then, using the classic brainstorming technique, the VE team began to generate as many ideas as possible to provide the necessary functions at a lower total life cycle cost, or to improve the quality of the design. Innovative ideas for reducing costs, reducing schedule, and delivering required functional objectives were encouraged. At this stage of the process, the VE team was looking for a large quantity of ideas and free association of ideas. A Creative Idea Listing worksheet was generated and organized by the design element being addressed.

The District and the PDT may wish to review these creative lists since they may contain ideas that were not pursued by the VE team but can be further evaluated for potential use in the design.

Evaluation Phase

Since the goal of the Creativity Phase was to conceive as many ideas as possible without regard for technical merit or applicability to the design goals, the Evaluation Phase focused on identifying those ideas that do respond to the value objectives and are worthy of additional research and development before being presented to the owner. The selection process consisted of the VE team evaluating the ideas originated during the Creativity Phase. The following criteria were identified and used as a basis during the evaluation of each idea.

- Must not exceed Capital Budget of $40M
- Must be accomplished within the prescribed site boundaries
- Must meet functional requirements for the ORTC

The VE team rated each idea by consensus according to the following approach. A scale of 1 to 5 was used, with 5 or 4 indicating an idea with the greatest potential to be technically sound and provide cost savings or improvements in other areas of the design with minimal risk, 3 indicating an idea that provides marginal value but could be used if the design was having budget problems, 2 indicating an idea with a major technical flaw, and 1 indicating an idea that does not respond to design requirements. Generally, ideas rated 4 and 5 are pursued in the next phase and presented to the owner during the Presentation Phase.

The team also used the designation "DS" to indicate a design suggestion, which is an idea that may not have specific quantifiable cost savings but may reduce risk, improve constructability, enhance operability, ease maintenance, reduce schedule time, or enhance value in other ways. Design suggestions could also increase a design's cost but provide value in areas not currently addressed. These are also developed in the next phase of the VE process.

Development Phase

In this phase, each highly rated idea was expanded into a workable solution designated as a VE alternative. The development consisted of describing the current design and the alternative solution, describing the advantages and disadvantages of the proposed alternative solution, and writing a brief narrative to compare the original design to the proposed change and provide a rationale for implementing the idea into the design. Sketches and design calculations, where appropriate, were also prepared in this part of the study. The VE alternatives are included in the Section Two of this report.

Presentation Phase

The formal presentation was held at 7:00 AM on August 14, 2009. The goal of the presentation was to provide the attendees with an overview of the suggestions for value enhancement resulting from the VE study and afford them the opportunity to ask questions to clarify specific aspects of the alternatives presented.

POST-WORKSHOP EFFORT

The post-workshop portion of the VE study consisted of the preparation of this VE Study Report. Personnel from the District and the PDT will analyze each alternative and prepare a short response,

recommending incorporation of the alternative into the project, offering modifications before implementation, or presenting reasons for rejection. LZA is available at your convenience as you review the alternatives. Please do not hesitate to call on us for clarification or further information as you consider an implementation approach.

After the District and the PDT have reviewed the VE alternatives and design suggestions, the VETL will facilitate an implementation meeting via a teleconference to determine which ideas should be implemented into the design. The actions taken by participants will be documented and reported to the District.

VALUE ENGINEERING WORKSHOP AGENDA

Lewis & Zimmerman Associates will conduct a 5-day value engineering (VE) workshop August 10 – 14, 2009 on the Operational Readiness Training Complex (ORTC), Project P2# 156591 and P2# 146414, Centers of Standardization (CoS)-ORTC and ORTC-Ft. Bliss. This study will review multiple building types, including standard designs from the CoS and project specific documents for the Design/Build ORTC at Ft. Bliss.

The VE workshop will be conducted at:

Hampton Inn Hotel
101 East Jefferson Street
Louisville, KY 40202

Meeting Location: Liberty Room (Mon.)
Clark Room (Tues. – Fri.)

The USACE – Louisville District Project Design Team (PDT) and CoS personnel will provide an overview of the project documents at the start of the VE workshop and will be available to answer technical questions during the study effort.

AGENDA

Monday, August 10, 2009 **Location: Liberty Room**

8:00 am – 8:30 am **VE Team Informal Gathering** **(VE Team)**

VE Team gathers for informal introductions
VE Team prepares questions for PDT

8:30 am – 11:00 am **Design Overview (In-Briefing)** **(All Participants)**

Conf. Call Number: **877-923-3712**
Participant Code: **6778000**

Overview, Scope, and VE Study Requirements provided by the District PDT and CoS personnel
Review Key Design Issues and areas of focus for all Disciplines
The District PDT fields VE Team questions

11:00 am – 12:00 noon **Function Analysis Phase** **(VE Team)**

Discuss Project Constraints and Key Issues
Identify basic and secondary functions by discipline
Analyze cost model(s) and worth assignments

12:00 noon – 1:00 pm **Lunch** **(VE Team)**

1:00 am – 5:00 noon **Creative Phase – CoS ORTC Facilities** **(VE Team)**

Begin the analysis of the CoS portion of the VE study by the review of the following building types. The effort will focus on building space programming, adjacencies, and overall layout. Creative ideas will be recorded for each of the following 8 building types.

• Battalion Headquarters	• Brigade Headquarters
• Dining Facilities (720pp and 1,428pp)	• Officer Quarters
• Barracks	• Vehicle Maintenance Shop
• Company Sheds	• Hardstand

Tuesday, August 11, 2009 **Location: Clark Room**

8:00 am – 12:00 noon **Creative Phase** **(VE Team)**

Continue brainstorming the CoS ORTC facilities and recording creative ideas to optimize the space plans, adjacencies, and overall layouts.

12:00 noon – 1:00 pm **Lunch** **(VE Team)**

1:00 pm – 5:00 pm **Creative Phase – Ft. Bliss Project** **(VE Team)**

Brainstorming of the Ft. Bliss ORTC facilities.

Wednesday, August 12, 2009 **Location: Clark Room**

8:00 am – 10:00 am **Evaluation Phase** **(VE Team)**

The VE team will establish the criteria for evaluation and rate each idea on a scale of 1 to 5, identifying the "best" ideas for development. Ideas rated 4 or higher will be assigned to team members for development.

10:00 am – 12:00 noon **Development Phase** **(VE Team)**

The VE team will develop creative ideas into value engineering alternatives including sketches, calculations and written justifications. Initial and life-cycle cost estimates comparing baseline and proposed designs will be prepared as needed.

12:00 noon – 1:00 pm **Lunch** **(VE Team)**

1:00 pm – 5:00 pm **Development Phase (continued)** **(VE Team)**

VE team continues the development of the higher ranked creative ideas.

Thursday, August 13, 2009 **Location: Clark Room**

8:00 am – 12:00 noon **Development Phase (continued)** **(VE Team)**

The VE team will continue the development phase effort on the ORTC facilities.

12:00 noon – 1:00 pm **Lunch** **(VE Team)**

1:00 pm – 5:00 pm **Development Phase (continued)** **(VE Team)**

Friday, August 14, 2009 **Location: Clark Room**

8:00 am – 12:00 noon **Development Phase (continued)** **(VE Team)**

The VE team will complete the development phase effort. The VE Team Leader will prepare and distribute the Summary of Potential Savings to the District PDT in preparation for the out-briefing. Copies of the VE alternatives will be prepared, scanned, and emailed to all participants prior to the start of the Presentation.

12:00 noon – 1:00 pm **Lunch** **(VE Team)**

1:00 pm – 3:00 pm **Presentation Phase – Clark Room** **(All Participants)**

Conf. Call Number: **877-923-3712**
Participant Code: **6778000**

The VE team will present the value engineering alternatives to the District PDT. A draft copy of the Summary of Potential Savings will be distributed to the participants.

3:00pm **Wrap-up/Adjourn** **(All Participants)**

VE TEAM PARTICIPANTS

Member	Discipline	Firm/Agency
David Hamilton, PE, CVS, CCE, LEED^{AP}	VE Team Leader/Civil	Lewis & Zimmerman Assoc.
Mark Starkey	Cost/Constructibility	Kohnen-Starkey
Doug Pohl	Architect/PM	LRL
Ronnie Pride	Architect	LRL
David Gary	Dining/Electrical	NAO
Melissa Mizaian	Architect	LRL
Carrie Ozgar	Civil	NAB
James Tuskan	Construction/PM	SWF Contractor
Jason Weber, CE, SE	Asst. VPM	LRL

OUTLINE FOR DESIGN OVERVIEW (IN-BRIEFING)

To assist the Project Design Team with the design overview discussion topics, we have provided the following typical outline for your consideration in developing a project specific presentation.

- Deviations from the DD1391
- Quality objectives
- Key agreements
- Critical constraints
- Critical assumptions
- Risks (both threats and opportunities) with management strategies
- Action items (specific items for VE Team/PDT)

The Facilitator shall provide the information documented on these topics to the LRL PM, PE/A, and VPM in electronic format. The Facilitator shall be prepared to out-brief the information documented in the above referenced charts.

VALUE ENGINEERING WORKSHOP PARTICIPANTS

The VE team was organized to provide specific expertise in the project elements involved with the ORTC CoS Model. The multidisciplinary team comprised professionals with architecture, civil engineering, cost estimating expertise, and a working knowledge of VE procedures. The following lists the VE team members:

Participant	Specialization	Affiliation
David Hamilton, PE, CVS, CCE, LEED^{AP}	VE Team Leader/Civil	Lewis & Zimmerman Associates
Mark Starkey	Cost/Constructability	Kohnen-Starkey
Doug Pohl, RA	Architect/PM	LRL
Ronnie Pride, RA	Architect	LRL
David Gary, PE	Dining/Electrical	NAO
Melissa Mizaian, RA	Architect	LRL
Carrie Ozgar, PE	Civil	NAB
James Tuskan, PE	Construction/PM	SWF Contractor
Jason Weber, PE, SE, AVS	Asst. Value Program Manager	COE - LRL

DESIGNER'S PRESENTATION

An overview of the design was provided on 10 August 2009 by the District PDT. The purpose of this design overview, in addition to being an integral part of the Information Phase of the VE study, was to bring the VE team "up to speed" regarding the overall design specifics. Additionally, the overview afforded the PDT the opportunity to highlight areas of particular interest. An attendance list for the design overview meeting is attached.

VALUE ENGINEERING TEAM'S PRESENTATION

The VE Team's formal presentation was held on Friday, 14 August 2009. The purpose of the meeting was to provide the District with an overview of the suggestions for value enhancement resulting from the VE study and afford them the opportunity to ask questions to clarify specific aspects of the alternatives presented. Copies of the Draft Summary of Value Engineering Alternatives worksheet and detailed VE Alternatives and design suggestions were provided to the attendees. An attendance list for the meeting is attached.

DESIGN PRESENTATION

MEETING PARTICIPANTS

PROJECT: **CoS – ORTC AND ORTC – FT. BLISS, TX**
Operational Readiness Training Complex

DATE: **AUGUST 10, 2009**

NAME & E-MAIL (please print)	ORGANIZATION/TITLE	PHONE/FAX
David Hamilton, PE, CVS, CCE, LEED em dahamilton@lza.com	VE Team Leader/Civil Lewis & Zimmerman Associates	ph mob 253-229-7703 fx
MELISSA MIRZAIAN em melissa.e.mirzaian@usace.army.mil	TECHNICAL MGR COS ~~[illegible]~~, ARCHITECT LOUISVILLE, DISTRICT	ph 502-315-6232 mob x fx 502-315-6236
JIM TUSKAN em JAMES.G.TUSKAN@USACE.ARMY.MIL	PROGRAM MGR * USACE FORT BLISS EXPANSION	ph 817-886-1614 mob 214-708-3623 fx
DOUG POHL em doug.pohl@usace.army.mil	COE Chief Architectural Section Louisville District	ph 502.315.6233 mob fx x 6236
Carole Lee Rankin em carole.l.rankin@usace.army.mil	Value Program Manager Louisville District	ph 502.315.6374 mob 502.216.0659 fx
Carrie Ozgar em carrie.a.ozgar@usace.army.mil	USACE-NAB-VE	ph 410 962 4408 mob 443 604 1802 fx
MARK STARKEY em MSTARKEY@KOHNEN-STARKEY.Com	KOHNEN-STARKEY, INC. VP	ph mob 571-246-8572 fx
RONNIE PRIDE em ronnie.b.pride@usace.army.mil	COS TEAM LEADER/ARCHITECT LOUISVILLE DISTRICT	ph 502-315-6295 mob fx 6236
Jason M. Weber em jason.m.weber@usace.army.mil	Value Program Manager Louisville District	ph 502-315-6485 mob fx x6373
em		ph mob fx

VE TEAM PRESENTATION

MEETING PARTICIPANTS

PROJECT: **CoS – ORTC AND ORTC – FT. BLISS, TX**
Operational Readiness Training Complex

DATE: **AUGUST 14, 2009**

NAME & E-MAIL (please print)	ORGANIZATION/TITLE	PHONE/FAX
David Hamilton, PE, CVS, CCE, LEED em dahamilton@lza.com	VE Team Leader/Civil Lewis & Zimmerman Associates	ph mob 253-229-7703 fx
Carole Lee Ranlan em carole.l.ranlan@usace.army.mil	Corps of Engineers VPM/VEO LRL	ph 502.315.6374 mob 502.216.0659 fx
Carrie Ozgar em carrie.a.ozgar@usace.army.mil	USACE-NAB-VE	ph 410 962 4408 mob fx
Jason M. Weber em jason.m.weber@usace.army.mil	~~USACE~~ Value Program Manager Louisville District	ph 502-315-6485 mob fx x6373
MARK STARKEY em MSTARKEY@KOHNEN-STARKEY.com	KOHNEN-STARKEY COST ESTIMATING/CONSTRUCTABILITY	ph 540-364-3333 mob 571-246-8572 fx
DOUG POHL em doug.pohl@	Chief Arch Section	ph 502.315.6233 mob fx x6236
JIM TUSKAN em JAMES.G.TUSKAN@USACE.ARMY.MIL	PROGRAM MGR. FORT BLISS EXPANSION	ph 817-886-1614 mob 214.708.3623 fx
DAVID GARY em DAVID.A.GARY@USACE.ARMY.MIL	USACE CENAO-TS-EO DINING FACILITY LEAD MANAGER	ph 757 201 7519 mob 757 903 1068 fx 757 201 7831
MELISSA MIRZAIAN em melissa.c.mirzaian@USACE.ARMY.MIL	Corps of Eng - LOUISVILLE COS TECH MGR - ARCHITECT	ph 502-315-6232 mob fx 502-315-6236
RONNIE PRIDE em ronnie.b.pride@usace.army.mil	USACE - LOUISVILLE COS TEAM LEADER	ph 502 315 6295 mob fx 502 315 6236

ECONOMIC DATA

The comparisons of life cycle costs between the VE alternatives and the current design solutions were performed on the basis of discounted present worth. To accomplish this, the VE team developed economic criteria to use in its calculations based on information gathered from the DD1391 and the PC-Estimate. The following parameters were used when calculating discounted present worth:

Year of Analysis:	2009
Discount Rate:	3.2%
Escalation Rate	0.0%

The VE Team assumed that the unit prices in the construction cost estimate included all markups for contractor overhead and profit and used these prices as the baseline when preparing VE alternative cost worksheets.

Each VE alternative compares the projected bid price for two different design concepts and attempts to predict the net impact of the proposed VE change on bid day contractor prices. The comparison does not include items such as re-design cost necessary to modify the design.

COST MODEL

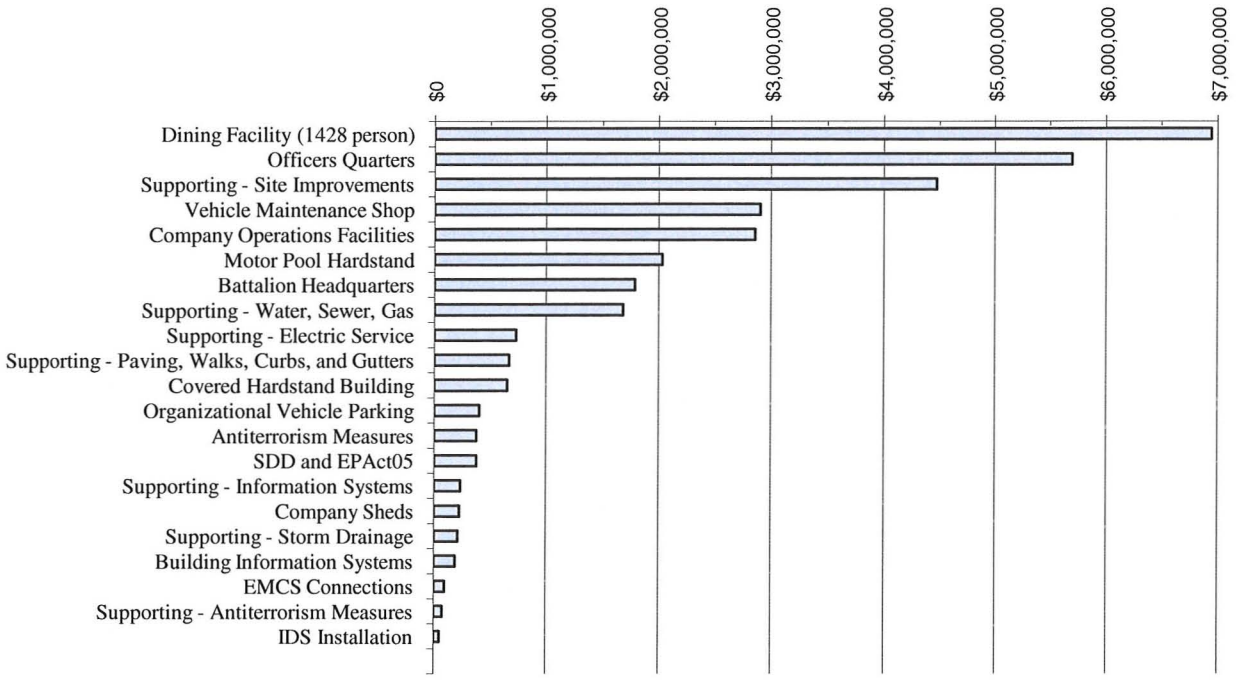
The VE team leader prepared a cost histogram or Pareto chart for the project that follows this page. The cost histogram displays the major construction elements in descending order of magnitude identified in the DD1391 dated 19 May 2009. From this model it can be seen that the Dining Facility was the largest expenditure in the building model.

The attached cost model information was used to help prioritize the areas of focus during the VE study.

COST HISTOGRAM

PROJECT: **OPERATIONAL READINESS TRAINING COMPLEX (ORTC)**
Centers of Standardization

TOTAL PROJECT COST		COST	PERCENT	CUM. PERCENT
Dining Facility (1428 person)		6,942,500	21.25%	21.25%
Officers Quarters		5,695,800	17.44%	38.69%
Supporting - Site Improvements		4,471,000	13.69%	52.38%
Vehicle Maintenance Shop		2,904,500	8.89%	61.27%
Company Operations Facilities		2,858,500	8.75%	70.02%
Motor Pool Hardstand		2,030,800	6.22%	76.24%
Battalion Headquarters		1,786,700	5.47%	81.71%
Supporting - Water, Sewer, Gas		1,681,000	5.15%	86.85%
Supporting - Electric Service		732,000	2.24%	89.09%
Supporting - Paving, Walks, Curbs, and Gutters		671,000	2.05%	91.15%
Covered Hardstand Building		651,900	2.00%	93.14%
Organizational Vehicle Parking		404,700	1.24%	94.38%
Antiterrorism Measures		378,000	1.16%	95.54%
SDD and EPAct05		378,000	1.16%	96.70%
Supporting - Information Systems		235,000	0.72%	97.42%
Company Sheds		226,300	0.69%	98.11%
Supporting - Storm Drainage		212,000	0.65%	98.76%
Building Information Systems		189,000	0.58%	99.34%
EMCS Connections		95,000	0.29%	99.63%
Supporting - Antiterrorism Measures		75,000	0.23%	99.86%
IDS Installation		47,000	0.14%	100.00%
Construction Total		***32,665,700***	100.00%	
Contingency	5.00%	1,633,285	5.00%	
SIOH	5.70%	*1,955,042*		
Design/Build - Design Cost	0.00%			
Category E Equipment	0.00%			
TOTAL CONSTRUCTION		**$ 36,254,027**	Cum. Markup	**10.99%**



1. COMPONENT	FY 2011 MILITARY CONSTRUCTION PROJECT DATA	2. DATE
ARMY		19 MAY 2009 19 MAY 2009

3. INSTALLATION AND LOCATION	4. PROJECT TITLE
Fort Example CONUS	Operational Readiness Training Complex

5. PROGRAM ELEMENT	6. CATEGORY CODE	7. PROJECT NUMBER	8. PROJECT COST ($000)
	141 84	75120	41,000

9. COST ESTIMATES

ITEM	U/M	QUANTITY	UNIT COST	COST ($000)
PRIMARY FACILITY				37,259
Transient Battalion HQ	SF	11,237	160.00	(1,798)
Transient Company Ops (6 COs/Bn)	SF	19,579	157.00	(3,074)
Dining Facility (1428 Person)	SF	20,786	302.20	(6,282)
Enlisted Barracks (4/Battalion)	SF	122,232	144.00	(17,601)
Transient Training Officers Quarters	SF	22,579	185.00	(4,177)
Total from Continuation page(s)				(4,327)
SUPPORTING FACILITIES				
ESTIMATED CONTRACT COST				37,259
CONTINGENCY (5.00%)				1,863
SUBTOTAL				39,122
SUPERVISION, INSPECTION & OVERHEAD (5.70%)				2,230
TOTAL REQUEST				41,352
TOTAL REQUEST (ROUNDED)				41,000
INSTALLED EQT-OTHER APPROPRIATIONS				(310)

10. Description of Proposed Construction

Construct a standard design battalion sized Operational Readiness Training Complex, to include battalion headquarters, company operations/covered hardstand, vehicle maintenance, dining, enlisted barracks, officer quarters, company storage sheds, organizational vehicle parking, information systems, fire protection and alarm systems, video surveillance system installation, Intrusion Detection System (IDS) installation, and Energy Monitoring Control Systems (EMCS) connection. Sustainable Design and Development (SDD) and Energy Policy Act of 2005 (EPAct05) features will be provided. Supporting facilities include site development, utilities and connections, lighting, paving, parking, walks, curbs and gutters, storm drainage, information systems, landscaping and signage. Heating and air conditioning will be provided by (self contained system/connection to the existing energy plant/etc.). Measures in accordance with the Department of Defense (DoD) Minimum Antiterrorism for Buildings standards will be provided. Comprehensive building and furnishings related interior design services are required. Access for individuals with disabilities will be provided.

1. COMPONENT	FY 2011 MILITARY CONSTRUCTION PROJECT DATA	2. DATE
ARMY		19 MAY 2009 19 MAY 2009

3. INSTALLATION AND LOCATION

Fort Example
CONUS

4. PROJECT TITLE	5. PROJECT NUMBER
Operational Readiness Training Complex	75120

9. COST ESTIMATES (CONTINUED)

Item	U/M	Qty	Unit Cost	Cost ($000)
PRIMARY FACILITY (CONTINUED)				4,327
Vehicle Maintenance Shop	SF	11,854	140.99	(1,671)
Company Storage Sheds (6/Bn)	SF	4,800	76.00	(365)
Cvd Hardstand w/4" Concrete (w/COF)	SF	12,852	66.71	(857)
SDD and EPAct05	LS	--	--	(717)
Antiterrorism Measures	LS	--	--	(717)

11. REQ: NONE ADQT: NONE SUBSTD: NONE

PROJECT:
Construct a standard design battalion sized Operational Readiness Training Complex.

ADDITIONAL:
The Deputy Assistant Secretary of the Army (Installations and Housing) certifies that this project has been considered for joint use potential. The facility will be available for use by other components.

ESTIMATED CONSTRUCTION START:	MAR 2011	INDEX: 2531
ESTIMATED MIDPOINT OF CONSTRUCTION:	OCT 2011	INDEX: 2556
ESTIMATED CONSTRUCTION COMPLETION:	MAY 2012	INDEX: 2583

DATE 19 MAY 2009 FY 2011 PROGRAM
PROJECT NUMBER: 75120
PROJECT TITLE: Operational Readiness Training Complex
INSTALLATION: Fort Example
LOCATION: CONUS

GENERAL JUSTIFICATION DATA

REMARKS and/or PREPARER NOTES FOR STANDARD FACILITIES

1. The facilities indicated on the line items for this template depicts minimum requirements for a battalion level ORTC Complex. If a brigade level ORTC complex is required, indicate requirement for six (6) battalion sets and add a Brigade HQ (Catcode 14187; 10,238 SF). 2. At the discretion of the installation, a large Dining Facility (1428 person, Catcode 72212; 20,786 SF) may be used. 3. Hardstand for organizational vehicle parking shall be designed to accommodate wheel loading for the heaviest vehicle at the project installation. 4. The Covered Hardstand Facility includes building, lighting, power, lightning protection and 4 inch concrete slab. Design slab to meet local/soil conditions.

DATE 19 MAY 2009 FY 2011 PROGRAM
PROJECT NUMBER: 75120
PROJECT TITLE: Operational Readiness Training Complex
INSTALLATION: Fort Example
LOCATION: CONUS

FURNISHINGS AND EQUIPMENT

FURNISHINGS AND EQUIPMENT

LINE	DESCRIPTION	TOTAL COST	PROC APPR FY	PROC APPR
1)	Bn HQ furnishings	136	2012	OMA
2)	COF (6 Co) furnishings	185	2012	OMA
3)	Barracks (4-Bldgs) furnishings	1,838	2012	OMA
4)	Officer's Qtrs furnishings	229	2012	OMA
5)	Veh Maint/Bn Warehouse furnishin	4	2012	OMA
6)	DFAC (1428-PN) furnishings	362	2012	OMA
7)	DFAC (1428-PN) equipment	310	2012	OPA

LINE		EST. DELIVERY DATE	PROC STATUS	EST. INSTL COST	INSTL FY	INSTL APPR
1)	(CONT'D)			0	0000	
2)	(CONT'D)			0	0000	
3)	(CONT'D)			0	0000	
4)	(CONT'D)			0	0000	
5)	(CONT'D)			0	0000	
6)	(CONT'D)			0	0000	
7)	(CONT'D)			0	0000	

FOOTNOTES:

LINE ITEM 2)
Source of furniture pricing data is the Center of Standardization for this facility type.

LINE ITEM 4)
Source of furniture pricing data is the Center of Standardization for this facility type.

LINE ITEM 6)
Source of furniture pricing data is the Center of Standardization for this facility type.

DATE 19 MAY 2009 FY 2011 PROGRAM
PROJECT NUMBER: 75120
PROJECT TITLE: Operational Readiness Training Complex
INSTALLATION: Fort Example
LOCATION: CONUS

FURNISHINGS AND EQUIPMENT

INFORMATION SYSTEMS FURNISHINGS AND EQUIPMENT (CONTD..)

TOTALS BY APPROPRIATION TYPE:

TOTAL OMA/OMN/3400/OM DHP:	2,754
INSTALLED EQUIPMENT - OTHER APPROPRIATIONS:	310
TOTAL RELATED FURNITURE & EQUIPMENT AMOUNT:	3,064

1. COMPONENT	FY 2011 MILITARY CONSTRUCTION PROJECT DATA	2. DATE
ARMY		19 MAY 2009 19 MAY 2009

3. INSTALLATION AND LOCATION	4. PROJECT TITLE
Fort Example CONUS	Operational Readiness Training Complex

5. PROGRAM ELEMENT	6. CATEGORY CODE	7. PROJECT NUMBER	8. PROJECT COST ($000)
	141 84	75119	40,000

9. COST ESTIMATES

ITEM	U/M	QUANTITY	UNIT COST	COST ($000)
PRIMARY FACILITY				36,117
Transient Battalion HQ	SF	11,237	160.00	(1,798)
Transient Company Ops (6 COs/Bn)	SF	19,579	157.00	(3,074)
Dining Facility (720 Person)	SF	16,761	309.31	(5,184)
Enlisted Barracks (4/Battalion)	SF	122,232	144.00	(17,601)
Transient Training Officers Quarters	SF	22,579	185.00	(4,177)
Total from Continuation page(s)				(4,283)
SUPPORTING FACILITIES				
ESTIMATED CONTRACT COST				36,117
CONTINGENCY (5.00%)				1,806
SUBTOTAL				37,923
SUPERVISION, INSPECTION & OVERHEAD (5.70%)				2,162
TOTAL REQUEST				40,085
TOTAL REQUEST (ROUNDED)				40,000
INSTALLED EQT-OTHER APPROPRIATIONS				(217)

10. Description of Proposed Construction

Construct a standard design battalion sized Operational Readiness Training Complex, to include battalion headquarters, company operations/covered hardstand, vehicle maintenance, dining, enlisted barracks, officer quarters, company storage sheds, organizational vehicle parking, information systems, fire protection and alarm systems, video surveillance system installation, Intrusion Detection System (IDS) installation, and Energy Monitoring Control Systems (EMCS) connection. Sustainable Design and Development (SDD) and Energy Policy Act of 2005 (EPAct05) features will be provided. Supporting facilities include site development, utilities and connections, lighting, paving, parking, walks, curbs and gutters, storm drainage, information systems, landscaping and signage. Heating and air conditioning will be provided by (self contained system/connection to the existing energy plant/etc.). Measures in accordance with the Department of Defense (DoD) Minimum Antiterrorism for Buildings standards will be provided. Comprehensive building and furnishings related interior design services are required. Access for individuals with disabilities will be provided.

1. COMPONENT	FY 2011 MILITARY CONSTRUCTION PROJECT DATA	2. DATE
ARMY		19 MAY 2009 19 MAY 2009

3. INSTALLATION AND LOCATION

Fort Example
CONUS

4. PROJECT TITLE	5. PROJECT NUMBER
Operational Readiness Training Complex	75119

9. COST ESTIMATES (CONTINUED)

Item	U/M	Qty	Unit Cost	Cost ($000)
PRIMARY FACILITY (CONTINUED)				4,283
Vehicle Maintenance Shop	SF	11,854	140.99	(1,671)
Company Storage Sheds (6/Bn)	SF	4,800	76.00	(365)
Cvd Hardstand w/4" Concrete (w/COF)	SF	12,852	66.71	(857)
SDD and EPAct05	LS	--	--	(695)
Antiterrorism Measures	LS	--	--	(695)

11. REQ: NONE ADQT: NONE SUBSTD: NONE

PROJECT:
Construct a standard design battalion sized Operational Readiness Training Complex.

ADDITIONAL:
The Deputy Assistant Secretary of the Army (Installations and Housing) certifies that this project has been considered for joint use potential. The facility will be available for use by other components.

ESTIMATED CONSTRUCTION START:	MAR 2011	INDEX: 2531
ESTIMATED MIDPOINT OF CONSTRUCTION:	OCT 2011	INDEX: 2556
ESTIMATED CONSTRUCTION COMPLETION:	MAY 2012	INDEX: 2583

DATE 19 MAY 2009 FY 2011 PROGRAM
PROJECT NUMBER: 75119
PROJECT TITLE: Operational Readiness Training Complex
INSTALLATION: Fort Example
LOCATION: CONUS

GENERAL JUSTIFICATION DATA

REMARKS and/or PREPARER NOTES FOR STANDARD FACILITIES

1. The facilities indicated on the line items for this template depicts minimum requirements for a battalion level ORTC Complex. If a brigade level ORTC complex is required, indicate requirement for six (6) battalion sets and add a Brigade HQ (Catcode 14187; 10,238 SF). 2. At the discretion of the installation, a large Dining Facility (1428 person, Catcode 72212; 20,786 SF) may be used. 3. Hardstand for organizational vehicle parking shall be designed to accommodate wheel loading for the heaviest vehicle at the project installation. 4. The Covered Hardstand Facility includes building, lighting, power, lightning protection and 4 inch concrete slab. Design slab to meet local/soil conditions.

DATE 19 MAY 2009 FY 2011 PROGRAM
PROJECT NUMBER: 75119
PROJECT TITLE: Operational Readiness Training Complex
INSTALLATION: Fort Example
LOCATION: CONUS

FURNISHINGS AND EQUIPMENT

FURNISHINGS AND EQUIPMENT

LINE	DESCRIPTION	TOTAL COST	PROC APPR FY	PROC APPR
1)	Bn HQ furnishings	136	2012	OMA
2)	COF (6 Co) furnishings	185	2012	OMA
3)	DFAC (720-PN) furnishings	207	2012	OMA
4)	DFAC (720-PN) equipment	217	2012	OPA
5)	Barracks (4-Bldgs) furnishings	1,838	2012	OMA
6)	Officer's Qtrs furnishings	229	2012	OMA
7)	Veh Maint/Bn Warehouse furnishin	4	2012	OMA

LINE		EST. DELIVERY DATE	PROC STATUS	EST. INSTL COST	INSTL FY	INSTL APPR
1)	(CONT'D)			0	0000	
2)	(CONT'D)			0	0000	
3)	(CONT'D)			0	0000	
4)	(CONT'D)			0	0000	
5)	(CONT'D)			0	0000	
6)	(CONT'D)			0	0000	
7)	(CONT'D)			0	0000	

FOOTNOTES:

LINE ITEM 2)
Source of furniture pricing data is the Center of Standardization for this facility type.

LINE ITEM 4)
Source of furniture pricing data is the Center of Standardization for this facility type.

LINE ITEM 7)
Source of furniture pricing data is the Center of Standardization for this facility type.

DATE 19 MAY 2009 FY 2011 PROGRAM
PROJECT NUMBER: 75119
PROJECT TITLE: Operational Readiness Training Complex
INSTALLATION: Fort Example
LOCATION: CONUS

FURNISHINGS AND EQUIPMENT

INFORMATION SYSTEMS FURNISHINGS AND EQUIPMENT (CONTD..)

TOTALS BY APPROPRIATION TYPE:

TOTAL OMA/OMN/3400/OM DHP:	2,599
INSTALLED EQUIPMENT - OTHER APPROPRIATIONS:	217
TOTAL RELATED FURNITURE & EQUIPMENT AMOUNT:	2,816

FUNCTION ANALYSIS

A random function analysis of the ORTC Center of Standardization Model was performed to (1) understand the project purpose and need, (2) define the requirements for each project element, (3) ensure a complete and thorough understanding by the VE team of the basic functions needed to attain the given project purpose and need, (4) identify other goals, and (5) identify secondary functions that should be addressed by the VE team. The Random Function Analysis worksheet completed by the team for the project in its entirety and the various elements follow.

The key opportunity areas for potential cost reduction established during the function analysis session (including input from the District during the design overview) includes the following:

- Dining Facility
  - Floor and Wall Materials
  - Ceilings
  - Docks, Parking, and Logistic Issues
- Site Development
  - Parking Layout
  - Utility Needs
- Design Development and CM
  - Standard Drawing Development
  - Verification of Criteria

RANDOM FUNCTION ANALYSIS

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING CENTER**
Center of Standardization Model

SHEET NO.: **1 of 2**

DESCRIPTION	FUNCTION		
	VERB	NOUN	KIND
PROJECT FUNCTIONS	***Support***	***Troops***	***HO***
	Improve	***Operations***	***HO***
	Train	***Troops***	***G***
DINING FACILITY	***Prepare***	***Food***	***B***
	Unload	Supplies	RS
	Store	Food	RS
	Cook	Food	RS
	Serve	Food	RS
	Feed	Soldiers	RS
	Collect	Money	RS
VEHICLE MAINTENANCE SHOP	***Maintain***	***Vehicles***	***B***
	Store	Parts	RS
	Replace	Components	RS
	Assess	Condition	RS
	Position	Vehicles	RS
	Lift	Components	RS
COMPANY OPERATIONS FACILITIES	***Manage***	***Operation***	***B***
	Store	Supplies	RS
	Access	Data	RS
	Analyze	Needs	RS
MOTOR POOL HARDSTAND	***Position***	***Vehicles***	***B***
	Store	Vehicles	RS
	Stage	Vehicles	RS
	Support	Load	RS

Function defined as: Action Verb, Measurable Noun

Kind: B = Basic; S = Secondary; RS = Required Secondary; HO = Higher Order; LO = Lower Order; G = Goal

RANDOM FUNCTION ANALYSIS

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING CENTER**
Center of Standardization Model

SHEET NO.: **2 of 2**

DESCRIPTION	FUNCTION		
	VERB	NOUN	KIND
BATTALION HEADQUARTERS	***Manage***	***Operation***	***B***
	Store	Supplies	RS
	Access	Data	RS
	Analyze	Needs	RS
COVERED HARDSTAND BUILDING	***Stage***	***Gear***	***B***
	Protect	Equipment	RS
	Protect	Personnel	RS
	Organize	Space	RS
COMPANY SHEDS	***Store***	***Material***	***B***
	Control	Material	RS
	Segregate	Material	RS
ORGANIZATION VEHICLE PARKING	***Stage***	***Vehicles***	***B***
	Store	Vehicles	RS
	Support	Load	RS
SITE UTILITIES/IMPROVMENETS	***Support***	***Buildings***	***B***
	Supply	Utilities	RS
	Prepare	Site	RS
	Secure	Site	RS
BARRACKS	***House***	***Personnel***	***B***
	Support	Personnel	RS
	Store	Gear	RS
	Manage	Operation	RS

Function defined as:	Action Verb Measurable Noun	Kind:	B = Basic S = Secondary RS = Required Secondary	HO = Higher Order LO = Lower Order G = Goal	

CREATIVE IDEA LISTING AND EVALUATION OF IDEAS

During the Creativity Phase, numerous ideas were generated for the ORTC Center of Standardization Model using conventional brainstorming techniques. These ideas were recorded and are shown with their corresponding ranking on the attached Creative Idea Listing Worksheets. For the convenience of tracking an idea through the VA process, the ideas were grouped according to the following categories and numbered in the order in which they were conceived. The following letter prefixes were used to identify the categories.

PROJECT ELEMENT	PREFIX
Project Management	PM
Site Master Plan	S
Brigade Headquarters	BR
Battalion Headquarters	BH
Enlisted Barracks	EB
Vehicle Maintenance	VM
Officers Quarters	OQ
Dining Facility (720 DFAC)	D7
Dining Facility (1,428 DFAC)	D14
Company Operations	CO

Creative Idea Evaluation

After discussing each idea, the team evaluated the ideas by consensus. This effort produced 22 ideas rated 4 or 5 to research and develop into formal VE alternatives and over 30 ideas to develop as design suggestions to be included in Section Two of the report. Ideas that were not developed further may have been combined with another related idea or discarded as a result of additional research indicating the concept as not being cost effective or technically feasible. The District and the PDT are encouraged to review the Creative Idea Listing and Evaluation worksheet since it may suggest additional ideas that can be applied to the design.

CREATIVE IDEA LISTING

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX** SHEET NO.: **1 of 4**
Center of Standardization Model

NO.	IDEA DESCRIPTION	RATING
	ENLISTED BARRACKS (EB)	
EB-1	Modify toilet area to add flexibility for males and females	See EB-14
EB-2	Reduce the width of the corridor	5
EB-3	Use gang showers	1
EB-4	Increase the size of the communication room	DS
EB-5	Identify space for possible elevator (recycle space)	DS
EB-6	Increase the size of the activity area	5
EB-7	Use singular doors in lieu of double doors for the interior corridor	4
EB-8	Open up the wall at stair vestibule (Room 101/102)	4
EB-9	Stack the washers and dryers and add a table	DS
EB-10	Remove the sink in the laundry area	DS
EB-11	Push the internet wall towards the exterior wall on the 2nd floor	4
EB-12	Convert the television/activity room to all television space	DS
EB-13	Add "wired" or wireless computer access and delete Internet Café space	DS
EB-14	Review toilet and shower counts	DS
	OFFICE QUARTERS (OQ)	
OQ-1	Place the entry in the center, not the end	DS
OQ-2	Design one-story and two-story concepts	DS
OQ-3	Ratio of 8:1 appears high for officers/staff	DS
OQ-4	Place mechanical spaces in the middle of building in lieu of the end	DS
OQ-5	Stack washers and dryers	DS
OQ-6	Enlarge the Activity Room	DS
OQ-7	Reduce the laundry area; add to the recycle area	See OQ-5
OQ-8	Wire each room with the internet	DS
OQ-9	Move the stairs to the end of the building	See OQ-1

Rating: 1→2 = Not to be developed 3→4 = Varying degrees of development potential 5 = Most likely to be developed
DS = Design suggestion ABD = Already being done

CREATIVE IDEA LISTING

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX** SHEET NO.: **2 of 4**
Center of Standardization Model

NO.	IDEA DESCRIPTION	RATING
	COMPANY OPERATIONS (CO)	
CO-1	Use back-to-back plumbing layout (flip company layout)	2
CO-2	Remove canopies from the front of the building	1
CO-3	Add more lockers	DS
CO-4	Eliminate the small shed sprinkler system	5
	PROJECT MANAGEMENT (PM)	
PM-1	Research, develop and document program requirements and constraints	
PM-2	Hold one-on-one meetings with COS/product line technical managers	DS
PM-3	Standardize work stations for all open office areas of private offices	DS
	VEHICLE MAINTENANCE	
VM-1	Lower finished floor elevation; depress truck loading dock drive	5
VM-2	Add arms vault	5
VM-3	Reduce the number of toilets	DS
VM-4	Add connection between weapons cleaning and restrooms	DS
VM-5	Flip maintenance bays; move to the right end of the building	5
VM-6	Have high roof area over the warehouse and lower over the maintenance area	1
VM-7	Use overhead crane to unload trucks	1
	BRIGADE HEADQUARTERS (BR)	
BR-1	Separate the community and the SIPRNET rooms	DS
BR-2	Remove the wall between the vending and recycle areas	DS
BR-3	Reduce corridor widths and total building size by 5 ft	5
BR-4	Reduce the number of office cubes from 48 to 42	
BR-5	Increase the size of the cubes to meet 110 GSF/person (verify)	DS
BR-6	Coordinate/standardize office cube size and layout	
BR-7	Review the overall layout	DS

Rating: 1→2 = Not to be developed 3→4 = Varying degrees of development potential 5 = Most likely to be developed
DS = Design suggestion ABD = Already being done

CREATIVE IDEA LISTING

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX** SHEET NO.: **3 of 4**
Center of Standardization Model

NO.	IDEA DESCRIPTION	RATING
	SITE – MASTER PLAN (S)	
S-1	Add more parking (65 spaces) for DFAC	See D14-6
S-2	Add the 1428 DFAC to site plan; check dimensions	DS
S-3	Change from single-loaded to double-loaded parking	4
S-4	Spread handicapped parking spaces throughout the site	DS
	BATTALION HEADQUARTERS (BH)	
BH-1	Reduce the size of the mechanical room	1
BH-2	Increase the number of toilet fixtures	1
BH-3	Reduce the width of the corridors	2
BH-4	Eliminate windows in classrooms and use other forms of light	DS
BH-5	Remove the wall between the vending and recycle rooms	See BR-2
BH-6	Add arms vault (optional)	DS
BH-7	Improve net/gross area	DS
BH-8	Move the vestibule doors flush with the exterior wall	DS
BH-9	Add space for a copy area	DS
	DINING FACILITY 1428 (D14)	
D14-1	Use sealed stained concrete floors in lieu of quarry tile	5
D14-2	Use exposed ceilings in lieu of ACT	5
D14-3	Modify FF&E specifications to be austere, i.e., "ORTC"	ABD
D14-4	Use smooth wall finish in lieu of ceramic tile	4
D14-5	Use tile/quarry in lieu of carpet	1
D14-6	Add staff parking spaces	4
D14-7	Increase feeding time from 90 minutes to 120 minutes	1
D14-8	Change the tray size from 14 in to 12 in	1
D14-9	Increase the truck access lane from 60 ft to 120 ft long	DS
D14-10	Raise the whole building up by 4 ft	1

Rating: 1→2 = Not to be developed 3→4 = Varying degrees of development potential 5 = Most likely to be developed
DS = Design suggestion ABD = Already being done

CREATIVE IDEA LISTING

PROJECT: **P2# 156591, OPERATIONAL READINESS TRAINING COMPLEX** SHEET NO.: **4 of 4**
Center of Standardization Model

NO.	IDEA DESCRIPTION	RATING
	DINING FACILITY 1428 (D14) (continued)	
D14-11	Use scissors lift in lieu of a raised loading dock	4
D14-12	Increase the interior window size in office areas	DS
D14-13	Change the mechanical room stair to ships ladder access	1
D14-14	Eliminate the truck ramp; side off-load with forklift	4
	DINING FACILITY 720 (D7)	
D7-1	Use sealed concrete floors in lieu of quarry tile	5
D7-2	Use exposed ceilings in lieu of ACT	5
D7-3	Modify FF&E specifications to be durable, i.e., "ORTC"	ABD
D7-4	Use smooth wall finish in lieu of ceramic tile	4
D7-5	Use tile in office floors in lieu of carpet	1
D7-6	Add staff parking spaces	4
D7-7	Reduce the building area in the kitchen area	3
D7-8	Increase feeding time from 90 minutes to 120 minutes	1
D7-9	Change tray size (14 in now)	1
D7-10	Increase the truck access lane from 60 ft long to 120 ft long	DS
D7-11	Raise the whole building up by 4 ft	1
D7-12	Use scissor lift in lieu of having a raised loading dock	4
D7-13	Increase the interior window size in office areas	DS
D7-14	Change the mechanical room stair to ladder access	1
D7-15	Identify expandability potential for the building	1
D7-16	Do not build 720 unit; build only 1428	See S-2

Rating: 1→2 = Not to be developed 3→4 = Varying degrees of development potential 5 = Most likely to be developed
DS = Design suggestion ABD = Already being done

US Army Corps
of Engineers
Louisville District

MEETING RECORD

SUBJECT:	**VE In-Briefing**		
PROJECT:	Operational Readiness Training Center CoS - ORTC and ORTC – Ft. Bliss, TX	**DATE:**	**10 August 2009**
P2. NO.:	156591 and 146414	**TIME:**	8:30 am
BY:	D.A. Hamilton (LZA)	**PHONE:**	253-229-7703
ATTENDED:			

See Attached Attendance List

SUMMARY OF DISCUSSION:

The following items were identified during the project in-briefing for the Center of Standardization (CoS) – Operational Readiness Training Center (ORTC) and ORTC – Ft. Bliss (Camp McGregor):

The following concerns were identified as a result of information gathering by the VE team and discussions held during the project Design In-Brief held 10 August 2009 and a copy of the meeting attendance list is attached.

Deviations to the original scope of work

- No deviations from the original scope of work are noted at this time since these projects are being developed from the standard designs.

Action Items

- The project documents must be ready for advertising not later than September 2010
- Award must be made not later than October 2010
- Bid period will be 30 days
- The RFP's need updating, editing, and publishing

Key Agreements

- Agreement is needed on acquisition strategy
- No bid options are allowed
- The bid will be on the standard design for Conus applications
- Acquisition will be either by Design/Build or Design/Bid/Build
- Program needs to be confirmed during the Project Definition Report

Critical Assumptions

- Projects will be site adapted following approval of the design standards
- Utilities will be available

- Site cost will be project specific
- Utility improvements could be a separate contract

Critical Constraints

- Lack of design and contracting staff for the Ft. Bliss project
- Utility capacity is an issue at Ft. Bliss
- The existing standard design is an approved Army design, but optimizations are acceptable
- The Base Design Guide and Area Design Guide must be included in the specification
- Budget for the Ft. Bliss project is $36M
- These facilities will serve a transient population and durability is a key issue
- Must meet AT/FP requirements
- Site area limitations control
- Energy monitoring is required

Risks to Management Strategies

- Procurement production does not meet award dates
- Potential for construction cost escalation
- Male/Female mix requires flexibility in design
- Transient population results in a mix of male/female and user types
- Site constraints vary from site to site
- Cost of site development may vary widely at different facilities

Quality Objectives

- Arms Vaults may need to be added to the standard to meet safety requirements
- LEED Silver is required on all facilities
- Durability is needed and is a major issue due to a highly transient population
- Maintainability and low life cycle costs are key issues
- A cost effective building skin is important within the limits of the Area Design Guide
- Energy independence is desired by 2030
- Designs must be adaptable to a wide range of sites

In addition, the project team asked the VE team to pay particular attention to the project budget, risk issues associated with procurement, site utilities, constructability, space programming, space adjacencies, and other elements which would impact either the project cost or delivery schedule.

DESIGN PRESENTATION

MEETING PARTICIPANTS

PROJECT: **CoS – ORTC AND ORTC – FT. BLISS, TX**
Operational Readiness Training Complex

DATE: **AUGUST 10, 2009**

NAME & E-MAIL (please print)	ORGANIZATION/TITLE	PHONE/FAX
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em		ph mob fx

US Army Corps
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Louisville District

MEETING RECORD

SUBJECT:	**VE Out-Briefing**		
PROJECT:	Operational Readiness Training Center CoS - ORTC and ORTC – Ft. Bliss, TX	**DATE:**	**14 August 2009**
P2. NO.:	156591 and 146414	**TIME:**	7:00 am
BY:	D.A. Hamilton (LZA)	**PHONE:**	253-229-7703
ATTENDED:			

See Attached Attendance List

SUMMARY OF DISCUSSION:

A Value Engineering Out-briefing for the Operational Readiness Training Center – CoS/Model and ORTC – Camp McGregor (Ft. Bliss, TX) was held on 14 August 2009. A copy of the attendance list is attached.

The VE team leader presented each VE alternative or design suggestion for the ORTC CoS/Model followed by the ORTC - Camp McGregor alternatives, and items were discussed with the attendees to clarify the intent of each idea, include any needed advantages or disadvantages, and ensure that the documentation was complete. Several alternatives needed to be added to the list and it was agreed that additional items from the PDR would be added to the draft VE report in PDF format and issued the following week for distribution to all attendees.

The narratives of several of the alternatives were also updated to reflect and expand upon the material presented and make sure that all aspects of the idea were addressed. Due to the unique nature of the ORTC standard, it was understood that the implementation process would require interaction with other Districts and activities to gain feedback on the VE ideas.

The meeting was adjourned at 9:30am.

VE TEAM PRESENTATION

MEETING PARTICIPANTS

PROJECT: **CoS – ORTC AND ORTC – FT. BLISS, TX**
Operational Readiness Training Complex

DATE: **AUGUST 14, 2009**

NAME & E-MAIL (please print)	ORGANIZATION/TITLE	PHONE/FAX
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