

Memorandum

July 19, 2007

To: J. Conrad, Columbia University
B. Fleming, Yale University

From: R. Alber, FESS/Engineering

Subject: Project Definition Report
MicroBooNE Shield Block Building
FESS/Engineering Project No. 6-7-82

FESS/E has investigated the proposed MicroBooNE Shield Block Building addition near the MiniBooNE Detector Building and has developed suggested budgetary cost estimates for the conventional construction portion of the work.

Project Description

This project will erect a shield block building to house technical equipment for the MicroBooNE Experiment adjacent to the MiniBooNE beamline near the existing detector building.

The construction materials and methods will be similar to existing installations found along Road A and the Fixed Target Area. The items listed below are included in the construction cost estimates:

- Site construction, including; final grading, electrical and telecommunications service and an access roadway,
- Concrete construction, specifically, the concrete foundation. The walls and roof of the building will be constructed of existing shield blocks found on-site. FNAL will provide the blocks to the subcontractor who will place the blocks with a mobile crane,
- Walls and finishes, including; painting and roofing,
- Mechanical and Electrical Equipment, including; lighting, heating and cooling (HVAC).

The following assumptions were used in preparing this cost estimate;

- No water services are required from the existing detector building,
- All precast shielding blocks are currently on-site and available for use,
- Exterior walls will be painted shield blocks and the roof will be covered by a single ply roofing membrane,
- Typical experimental building HVAC requirements, i.e. heating and cooling require,
- No provisions are made for fire protection in this building.

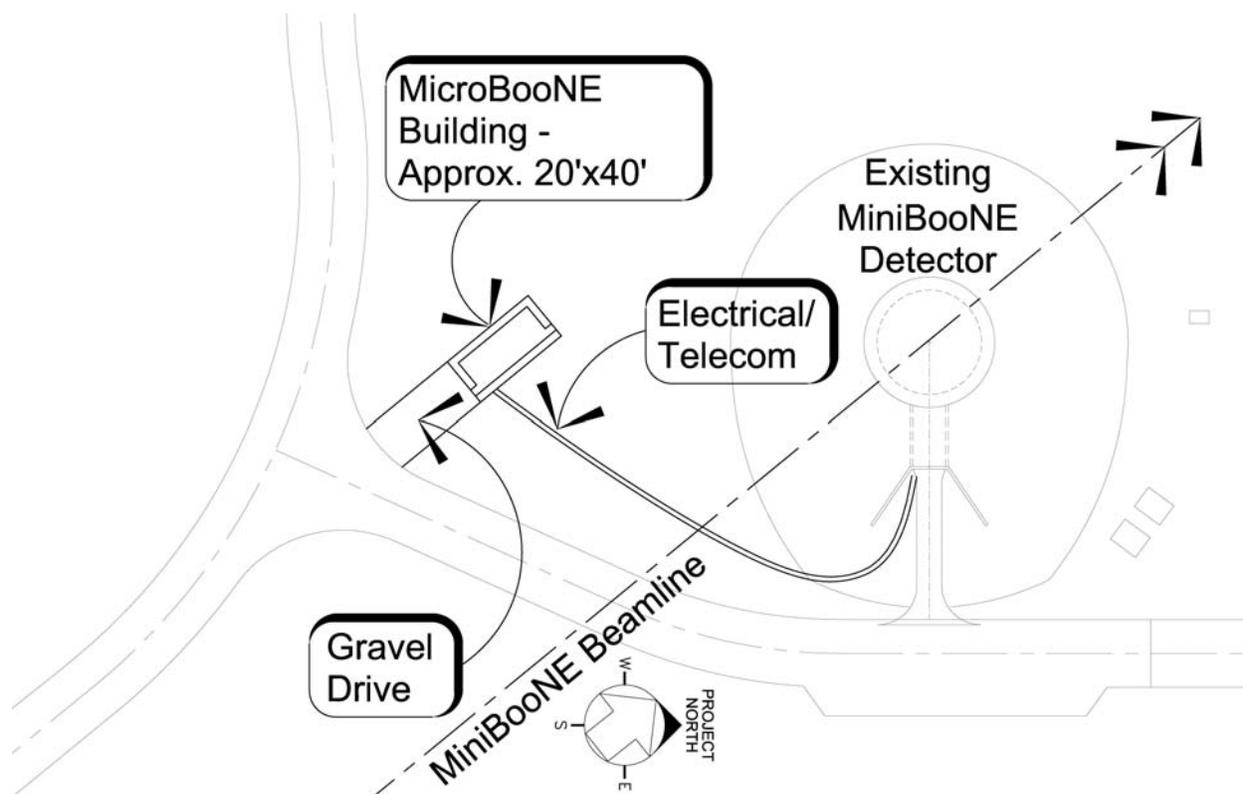


Figure 1 - Location Plan of MicroBooNE Shield Block Building

Suggested Project Budget

Listed below is the estimated construction cost for this project as described in the sections above:

	MicroBooNE
Construction	\$155,000
EDIA @ 22%	\$34,000
Management Reserve @ 30%	\$57,000
Indirects	\$44,000
CONSTRUCTION TOTAL	\$290,000

Cost Estimate Basis

The costs ranges contained in this Project Definition Report are based on FY2007 dollars. Appropriate escalation will need to be applied once a funding source and schedule is identified.

The above suggested project budget is based on cost data taken from Means Cost Estimating Guides, historical data and recent construction history here at Fermilab. While the suggested project budget can provide input for the feasibility of the project, further design refinement will affect the final cost of the project.

Engineering Design and Inspection (ED&I) activities are included in the suggested project budget. ED&I activities include the engineering and design activities in Titles I and II, the inspection activities associated with Title III. The descriptions are based on DOE Directive G430.1-1, Chapter 6. Administration activities include those defined by DOE Directive G430.1-1, Chapter 6 as Project Management (PM) and Construction Management (CM). Past historical data and DOE Directive G430.1-1, Chapter 25 indicate that 18%-25% of the construction costs is an appropriate range.

Based on DOE Directive G430.1-1, Chapter 11 DOE guidelines and the pre-conceptual nature of the design at this stage a Management Reserve of 15%-35% of the above costs is considered an appropriate range. Based on the scope and scale of the proposed project, the determination of the suggested Management Reserve did not include a Monte-Carlo analysis. If required, this analysis can be accomplished. The suggested project budget listed above contains a 25% multiplier for Management Reserve.

Indirect Costs rates are defined by DOE Order 4700.1 that states indirect costs are "...costs incurred by an organization for common or joint objectives and which cannot be identified specifically with a particular activity or project. If this work should become a GPP project, Indirect Costs will have to be applied, but the amount will be affected by the rates in effect at the time this project is initiated. Currently, the Indirect Cost multiplier is approximately 19% of the above costs.

Schedule

Listed below is an estimated schedule for the work described above:

S + 0 days - Start

S + 30 days - Develop Subcontract Documents - issue for Comment and Compliance Review

S + 46 days - Complete drawings, ready to send out for bids

S + 60 days - Award subcontract

S + 120-140 days - Complete Construction

Summary

This Project Definition Report provides suggested budgetary cost estimates based on preliminary designs and conversations and is intended for planning purposes. The information produced is subject to refinement during the subsequent design process.

Please contact me at x2501 with questions.

Encl. Construction Cost Estimate

cc: R. Ortgiesen, FESS (w/encl.)
E. Crumpley, FESS/E (w/encl.)
Project File 6-7-82 (electronic copy)

FERMILAB: FESS COST ESTIMATE

Project Title:		Project No.	Status:	Date:	Revision Date:
MicroBooNE Shield Block Building		6/7/1982	Prelim	07/19/2007	
ITEM NO.	DESCRIPTION OF WORK:	QUANTITY	UNITS	UNIT COST	AMOUNT
01	SITE CONSTRUCTION \$34,500				
	Demolition of Offsetting Square Footage	660	SF	\$30.00	\$19,800.00
	Mobilization	1	Lot	\$1,500.00	\$1,500.00
	Soil Erosion Control	1	Lot	\$2,000.00	\$2,000.00
	Clear & grub	60	SY	\$10.00	\$600.00
	Excavation	1	Lot	\$3,500.00	\$3,500.00
	Electrical service from MiniBooNE Detector Building	1	Lot	\$2,500.00	\$2,500.00
	Tele/Fiber service from MiniBooNE Detector Building	1	Lot	\$1,800.00	\$1,800.00
	Access roadway (gravel)	50	SY	\$35.00	\$1,800.00
	Final grading and seeding	1	Lot	\$1,000.00	\$1,000.00
	Assume: No Water Services Required				
02	CONCRETE \$24,700				
	Concrete Fdn. Walls (below frostline)	14	CY	\$350.00	\$4,900.00
	Concrete Slab-on-grade	16	CY	\$300.00	\$4,800.00
	Placing precast concrete shield blocks (FNAL supplied)	1	Lot	\$15,000.00	\$15,000.00
	Assume: No New Precast Items Required				
03	WALLS & FINISHES \$18,500				
	Paint exposed surfaces	3000	SF	\$3.00	\$9,000.00
	Single-ply roofing over shield blocks	660	SF	\$12.00	\$7,900.00
	Exterior doors and trim	2	Ea	\$800.00	\$1,600.00
	Assume: Exterior Walls Painted Concrete Shield Blocks				
04	MECHANICAL/ELECTRICAL \$51,400				
	Lighting	420	SF	\$7.50	\$3,200.00
	Unit Heaters	4	Ea	\$800.00	\$3,200.00
	2 Marvair HVAC Units	2	Ea	\$15,000.00	\$30,000.00
	Receptacles	30	Ea	\$250.00	\$7,500.00
	Misc. panelboards and electrical supplies	1	Lot	\$7,500.00	\$7,500.00
	Assume: Typical Building HVAC (Heating and Cooling Required)				
	Assume: NO Fire Protection Required				
	SUBTOTAL:			\$129,100	
	OVERHEAD & PROFIT @ 20%			\$25,800	
	TOTAL:			\$155,000	