DOWNEY & SCOTT, LLC
Construction Management Services

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ACRJ Renovation & Addition
Budget analysis & update

Date Prepared: **7-Nov-24**
Prepared by: **Kevin Fallin**

Design Submission: Design Development
Architect Estimate Dated: 10/10/24
Design Architect: Moseley Architects

		New Building	***Renovation***	***Total***	**Notes**
Gross Square Footage		33,500	24,000	57,500	Schematic Design
	Cost per SF - hard costs	*$803*	*$546*	*$696*	*Includes site development costs*
Includes Building, Site		**$26,894,451**	**$13,102,619**	**$39,997,070**	***Forella SD Estimate dated 10/10/24***
					Includes Design Contingency - $2,941,268
					Includes Escalation to Mid-Point - $2,533,412
				$1,878,793.00	Add Alternate #1 - Replace existing Hypalone Roofing
Construction Contingency		**$2,399,824**			
	Contingency Remaining	**$2,399,824.20**			
Soft Costs - carried forward		$9,130,057			
Total Project Estimated Hard and Soft Costs		**$49,127,127**			*Combined Hard & Soft costs*
Total Project Budget Per ACRJ Board and Jurisdiction Approvals		***$49,021,414***			*Option #3 Approved by ACRJ Board on 4/11/24*
			$11,689,250		*Approved for Reimbursement*
					Cost Allocation by Jurisdiction
			-$5,305,751	45.39%	*Albemarle*
			-$4,660,504	39.87%	*Charlottesville*
			-$1,722,995	14.74%	*Nelson*
			-$11,689,250	**100.00%**	
Total project estimate vs funds available (clash detection)		***$105,713***	*		*Negative Value represents under-budget, positive value represents over budget.*
					*** Does Not Include Hypalone Roofing Add Alternate**

Preliminary Owner FF&E and other soft cost items

Security systems including access control		$0	Included in Hard Construction Costs
Digital video recording systems		$0	Included in Hard Construction Costs
Multi media equipment		$0	Included in Hard Construction Costs
Loose tables, chairs, desks		$0	Relocate existing
Loose Shelving & storage		$0	Included in Hard Construction Costs
Administrative phone system - VOIP server and phones		$0	Relocate existing
CATV		$0	Included in Hard Construction Costs
Appliances		$10,000	Budget Only - Kitchen Appliances (microwave, coffee maker, etc) and TV's
Radio Communications equipment		$0	Relocate existing
Roof mounted antenna array		$0	incl above
IT head end equipment - secure		$0	Relocate existing
IT Desk top equipment - secure		$0	Relocate existing
IT Wireless Access Points and wireless network public		$0	Included in Hard Construction Costs
IT/AV Switches, Servers, WAP, Configuration, Installation		$0	
IT/AV Installation Costs - Interview Rooms		$0	
Broadcast Solution Cameras		$0	
AV Equipment		$10,000	Budget Only - Monitors, Televisions
Communications Equipment		$73,917	Budget from Planning Study dated 12/22/21
FFE Equipment		$337,500	Lobby Furniture, Control Room Chairs, Classroom chairs/tables
Fitness Equipment		$0	Relocate Existing
Foodservice Equipment - Staff Lounge Area		$250,000	Budget Allowance Only
Monument Signs		$0	
Construction Camera		$0	Supplied by Contractor as required in Specifications
Wayfinding signage		$0	Included in Hard Construction Costs
Directory Sign, Staff Entrance, No Smoking, Video Monitoring		$0	
Moving & Storage Expenses		$0	N/A
Permits & Fees		$290,652	Albemarle County - Demolition, and New Construction. Calculated based on cost of Building Permit Only. Trade Permits by Contractor. Budget from Planning Study dated 12/22/21.
Permit Expeditor		$0	
Utility availability fees - sewer & water availability		$0	Not Required - Connect to existing
Purchase of nutrient credits		$10,000	Budget Only
LEED Registration Fees		$0	Included in Moseley Architects Proposal
LEED Certification Fees - Split Design/Construction		$0	Included in Moseley Architects Proposal
NEPA Report		$0	
Other utility meter fees		incl above	
Geotech Report		$0	Included in Moseley proposal dated 10/27/23
Materials Testing & Special Inspections		$300,000	Budget Only
HAZMAT Inspection-Testing		$25,000	Budget Only
HAZMAT Abatement		$225,000	Budget Only
HAZMAT Abatement Monitoring		$20,000	Budget Only
Utility Costs (Comcast, Washington Gas, etc.)		$0	
Commissioning		$175,000	Budget Only - LEED-NC Certified, Fundamental, Enhanced, and Envelope
Value Engineering Study		$46,180	3rd Party VE Provider
Printing & Reproduction		$10,000	Budget from Planning Study dated 12/22/21
Survey, Topo, and Utility Location		$0	Included in Moseley proposal dated 10/27/23
A/E Design Fees		$4,150,380	Moseley Architects proposal dated October 27, 2023 including all Supplemental Services
CBCP / Planning Study		$0	Paid for outside the project budget ($185,000.00)
Construction Contingency	**6.00%** of Hard Costs	$2,399,824	Construction Contingency (no inflation or escalation)
VDOT		$0	
IT Systems Installation		$0	
Downey & Scott PM Fees		$796,604	Downey & Scott Proposal Dated 06/02/23
Total		**$9,130,057**	

Design Development
Estimate of Probable Cost

FORELLA

Project: ***Albemarle-Charlottesville Regional Jail Expansion & Renovation***

Location: ***Charlottesville, VA***

Owner: **Board of Local and Regional Jails**

Architect: ***Moseley Architects***

Date: ***October 10, 2024***

PROGRAM & PROJECT MANAGEMENT, COST MANAGEMENT, VALUE ENGINEERING, CONSTRUCTIBILITY REVIEWS, DIAGNOSTICS, DISPUTE RESOLUTION, ASSET MANAGEMENT

Project: Albemarle Charlottesville Regional Jail
Design Phase: Design Development
October 10, 2024

INTRODUCTION

Project Description

Expansion & Renovation

Size: **57,500 GSF**

Delivery: **Design Bid Build**

Overview

We are pleased to provide the enclosed estimate of probable cost for the Albemarle Charlottesville Regional Jail project located in Charlottesville, VA. Our work is based on the Design Development documents and other information provided by Moseley Architects dated Aug-22-2024. If there are any questions, please do not hesitate to contact Mr. Aguero at (703) 560-2200 or israel@forellagroup.com.

Contract Limits: We have assumed construction operations will be confined to the contract limits of the subject property. No work offsite is anticipated.

Prevailing Wage Rates: Our labor costs are based on current Davis Bacon wage determination.

Contingencies: We have added a Design Contingency to budget for unidentified scope requirements not yet delineated and a Cost Escalator to adjust for the inflationary effects that will occur between now and the time of bid.

Soft Costs & Secondary Scope Issues: The subject submission provides opinions of hard construction costs. There are numerous soft costs and secondary scope issues with cost implications associated with a construction project, today. For further information on these, please refer to the Special Notes and Additional Notes and Clarifications sections of this report.

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Special Scope Notes

1. We have not included any hazmat abatement scope.
2. We have assumed that the construction will be performed during regular business hours.
3. We have assumed that the project will have a 22 month duration and that the construction will start Jun 2025.
4. Cost Control Process: Scope and documents evolve. Controlling cost is a team wide effort that requires ongoing scope and cost management processes from inception to occupancy.

Section A

Cost Summary

FORELLA

Project: Albemarle Charlottesville Regional Jail
Design Phase: Design Development
October 10, 2024

FORELLA

COST SUMMARY

	ADDITION			RENOVATION			Project Total		
CSI DIVISIONS	**% CoW**	**$ / GSF**	**33,500 GSF**	**% CoW**	**$ / GSF**	**24,000 GSF**	**% CoW**	**$ / GSF**	**57,500 GSF**
DIV 01 GENERAL CONDITIONS	3.81%	$ 24.18	$ 810,000	3.51%	$ 15.00	$ 360,000	3.71%	$ 20.35	$ 1,170,000
DIV 02 EXISTING CONDITIONS	1.94%	$ 12.31	$ 412,221	12.65%	$ 54.12	$ 1,298,938	5.43%	$ 29.76	$ 1,711,159
DIV 03 CONCRETE	3.59%	$ 22.81	$ 764,182	0.39%	$ 1.67	$ 40,006	2.55%	$ 13.99	$ 804,188
DIV 04 MASONRY	12.25%	$ 77.77	$ 2,605,167	3.07%	$ 13.12	$ 314,967	9.26%	$ 50.78	$ 2,920,133
DIV 05 METALS	7.41%	$ 47.02	$ 1,575,283	0.77%	$ 3.31	$ 79,474	5.25%	$ 28.78	$ 1,654,757
DIV 06 WOODS, PLASTICS, COMPOSITES	0.58%	$ 3.69	$ 123,718	0.30%	$ 1.27	$ 30,439	0.49%	$ 2.68	$ 154,156
DIV 07 THERMAL & MOISTURE PROTECTION	5.51%	$ 34.98	$ 1,171,967	0.26%	$ 1.13	$ 27,072	3.80%	$ 20.85	$ 1,199,039
DIV 08 OPENINGS	1.52%	$ 9.67	$ 323,779	1.00%	$ 4.26	$ 102,181	1.35%	$ 7.41	$ 425,960
DIV 09 FINISHES	4.13%	$ 26.25	$ 879,465	3.84%	$ 16.44	$ 394,605	4.04%	$ 22.16	$ 1,274,071
DIV 10 SPECIALTIES	0.93%	$ 5.88	$ 196,989	0.35%	$ 1.51	$ 36,305	0.74%	$ 4.06	$ 233,294
DIV 11-EQUIPMENT	11.71%	$ 74.38	$ 2,491,643	20.46%	$ 87.56	$ 2,101,476	14.56%	$ 79.88	$ 4,593,119
DIV 12 FURNISHINGS	0.10%	$ 0.65	$ 21,815	0.45%	$ 1.91	$ 45,926	0.21%	$ 1.18	$ 67,741
DIV 13 SPECIAL CONSTRUCTION	0.00%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -
DIV 14 CONVEYING EQUIPMENT	1.32%	$ 8.41	$ 281,593	0.00%	$ -	$ -	0.89%	$ 4.90	$ 281,593
DIV 21 FIRE PROTECTION	1.20%	$ 7.62	$ 255,270	1.63%	$ 6.99	$ 167,640	1.34%	$ 7.35	$ 422,910
DIV 22 PLUMBING	9.09%	$ 57.73	$ 1,934,071	10.23%	$ 43.76	$ 1,050,280	9.46%	$ 51.90	$ 2,984,351
DIV 23 HVAC	13.09%	$ 83.13	$ 2,784,941	24.04%	$ 102.9	$ 2,468,964	16.66%	$ 91.37	$ 5,253,904
DIV 26 ELECTRICAL	11.51%	$ 73.07	$ 2,447,796	9.46%	$ 40.48	$ 971,522	10.84%	$ 59.47	$ 3,419,319
DIV 27 COMMUNICATIONS	1.40%	$ 8.88	$ 297,562	0.45%	$ 1.94	$ 46,651	1.09%	$ 5.99	$ 344,213
DIV 28 ELECTRONIC SAFETY & SECURITY	3.21%	$ 20.37	$ 682,551	7.13%	$ 30.51	$ 732,309	4.49%	$ 24.61	$ 1,414,860
DIV 31 EARTHWORK	1.11%	$ 7.06	$ 236,499	0.00%	$ -	$ -	0.75%	$ 4.11	$ 236,499
DIV 32 EXTERIOR IMPROVEMENTS	3.08%	$ 19.57	$ 655,692	0.00%	$ -	$ -	2.08%	$ 11.40	$ 655,692
DIV 33 UTILITIES	1.50%	$ 9.52	$ 318,824	0.00%	$ -	$ -	1.01%	$ 5.54	$ 318,824
TRADE SUBTOTAL			**$ 21,271,027**			**$ 10,268,753**			**$ 31,539,780**
DESIGN CONTINGENCY		**9.00%**	$ 1,914,392		**10.00%**	$ 1,026,875			$ 2,941,268
SUBTOTAL			**$ 23,185,419**			**$ 11,295,628**			**$ 34,481,048**
GC MARK UP / OH+P	**6.00%**		$ 1,391,125			$ 677,738			$ 2,068,863
SUBTOTAL			**$ 24,576,545**			**$ 11,973,366**			**$ 36,549,911**
BONDS & INSURANCE	**2.50%**		$ 614,414			$ 299,334			$ 913,748
SUBTOTAL			**$ 25,190,958**			**$ 12,272,700**			**$ 37,463,658**
ESCALATION TO MIDPT 05/2026	**6.76%**		$ 1,703,493			$ 829,919			$ 2,533,412
TOTAL			**$ 26,894,451**			**$ 13,102,619**			**$ 39,997,070**
BUILDING + SITE $/GSF IN CURRENT DOLLARS			$ 752			$ 511			$ 652
BUILDING ONLY $/GSF IN CURRENT DOLLARS			$ 709			$ 511			$ 627

ALTERNATES

ADD ALTERNATE 1 **$ 1,878,793**

Replace existing Hypalone roofing with TPO roofing

Section B

Detailed Cost Estimate

FORELLA

ADDITION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Division 01 - GENERAL CONDITIONS				810,000
General Conditions	1	LS	810,000.00	810,000
Division 02 - EXISTING CONDITIONS				412,221
BUILDING DEMOLITION				
Raze existing single-story east wing	16,000	GSF	19.22	307,558
SITE DEMOLITION				
Hardscape Removals				
Remove staircase w/brick wall & wall mounted handrails	1	LS	5,058.95	5,059
Remove sidewalk	748	SF	1.71	1,277
Remove asphalt	25,090	SF	1.93	48,507
Sawcut pavement	327	LF	3.96	1,295
Remove curb	1,035	LF	4.12	4,267
Remove curb & gutter	184	LF	5.55	1,021
Landscape Removals				
Clear & grub	9,048	SF	0.95	8,603
Remove trees	15	EA	241.66	3,625
Miscellaneous Removals				
Remove fence	295	LF	6.40	1,889
Remove signs	14	EA	104.29	1,460
Remove flagpole	2	EA	297.62	595
Remove wheel stop	4	EA	29.00	116
Site Utility Removals				
Remove grate inlet	1	EA	96.67	97
Remove storm pipe/culvert & associated structure	49	LF	20.97	1,031
Remove storm pipe & associated structure	204	LF	18.43	3,756
Remove underground power line & relocate	616	LF	22.24	13,707
Remove light pole	3	EA	639.72	1,919
Transportation & disposal including dump fees	10	Pulls	644.00	6,440
Hazmat removal allowance		None Indicated		
Division 03 - CONCRETE				764,182
Footings				
Wall footing	229.61	CY	611.00	140,295
Column footings	18.92	CY	652.73	12,350
Concrete pier	0.62	CY	633.68	394
Retaining wall beam	11.82	CY	611.00	7,224
Mat footing @ elevator	6.45	CY	611.00	3,939
Slab on Grade				
4" Slab on grade @ building area	12,829	SF	9.94	127,493
6" Slab on grade @ recreation yards	8,628	SF	12.59	108,661

ADDITION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Slab on Deck				
4.75" overall: 3.25" Concrete on 1.5" composite metal deck	16,170	SF	8.90	143,867
5" overall: 3" Concrete on 2" composite metal deck	10,514	SF	9.17	96,420
6" overall: 4" Concrete on 2" composite metal deck	105	SF	9.31	980
6" Concrete slab	363	SF	10.42	3,785
Concrete, Foundation walls				
8" Concrete below grade wall	1,653	SF	34.43	56,920
12" Concrete below grade wall	830	SF	39.26	32,587
Stair 1, 4'-3" wide				
Treads & risers	22	EA	392.68	8,639
Landings	45	SF	18.38	818
Miscellaneous Items				
Elevator pit concrete	2	Elev	9,904.75	19,810
Division 04 - MASONRY				2,605,167
Masonry				
Cast stone veneer	473	SF	68.32	32,303
Brick veneer	13,114	SF	45.77	600,167
4" CMU veneer	403	SF	41.99	16,929
CMU, Foundation walls				
8" CMU	3,948	SF	24.33	96,031
12" CMU	832	SF	27.64	23,002
15" CMU composite	549	SF	32.26	17,724
16" CMU @ rec yard	288	SF	33.26	9,590
19" CMU composite	143	SF	37.26	5,325
CMU Back-UP, Exterior	14,204			
8" CMU backup	7,555	SF	24.33	183,787
12" CMU backup	6,649	SF	27.64	183,760
CMU, Interior Partitions	41,723			
S7, Security wall - 6" CMU partition	543	WSF	29.41	15,966
S1, Perimeter security wall - 8" CMU partition	1,158	WSF	33.51	38,803
S1-2, Perimeter security wall - 8" CMU partition 3 hr rated	3,255	WSF	38.11	124,062
S2, Interior security wall - 8" CMU partition	22,774	WSF	33.51	763,241
S2-1, Interior security wall - 8" CMU partition, 2 hr rated	1,258	WSF	36.24	45,601
S3, Perimeter security wall- 12" CMU partition	1,500	WSF	36.52	54,761
S3-1, Perimeter security wall- 12" CMU partition, 3 hr rated	813	WSF	41.12	33,417
S4, Interior security wall- 12" CMU partition	2,642	WSF	36.52	96,474
S4-1, Interior security wall- 12" CMU partition, 3 hr rated	2,939	WSF	41.12	120,836
M1, 8" CMU partition	4,206	WSF	29.29	123,198
M1-2, 8" CMU partition, 1 hr rated	183	WSF	31.07	5,702
M1-3, 8" CMU partition, 2 hr rated	453	WSF	32.01	14,487

ADDITION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Division 05 - METALS				1,575,283
Steel Frame	5.8	Lbs/SF		
Wide flange steel	28	TNS	5,700.91	158,487
Joist steel	26	TNS	5,700.91	145,634
Lintel assembly	10	TNS	5,700.91	58,149
Columns	7	TNS	5,700.91	38,490
Unidentified steel	14	TNS	5,700.91	80,152
Miscellaneous connections	13	TNS	5,700.91	72,137
Deck				
1 1/2" Metal roof deck	4,167	SF	6.07	25,296
1 1/2" Composite metal deck	16,170	SF	6.07	98,163
2" Composite metal deck	10,620	SF	7.13	75,705
Stair, 4' wide				
Treads & risers	19	EA	327.08	6,215
Landings	204	SF	16.21	3,301
Walkway, Stairs & Handrails				
Metal plate walkway @ mezzanine	2,921	SF	49.99	146,047
Guardrail pipe @ stair & walkway	423	LF	335.86	142,118
Stairs to mezzanine access	3	EA	16,466.84	49,401
Handrail	203	LF	247.62	50,267
Handrail 1 1/4" wall mounted	63	LF	221.92	13,981
Exterior and Interior Miscellaneous Metals				
Elevator pit ladder	2	EA	204.37	409
Elevator pit grates	2	EA	1,032.49	2,065
Elevator sill supports	4	EA	916.83	3,667
Miscellaneous				
RFA4, Corrugated metal overhang @ recr. yard	1,070	SF	84.69	90,588
RFA5, Security mesh grating @ recr. yard	2,921	SF	71.84	209,867
Misc. metals allowance	33,500	GSF	3.14	105,144
Division 06 -WOODS, PLASTICS, COMPOSITES				123,718
Rough Carpentry	33,500	GSF	1.27	42,487
Custom				
Reception desk @ welcome center w/ 4" thick wood countertop	24	LF	1,129.71	26,749
Countertop	**1.26**	**$/ GSF**		
Solid surface counter	275	SF	92.28	25,385
Casework				
Base cabinet, PLAM	45	LF	325.25	14,480
Wall cabinet closed, PLAM	13	LF	176.73	2,283
Shelving	**0.26**	**$/ GSF**		
Metal utility shelving	143	LF	61.51	8,783
Window Sill	**0.11**	**$/ GSF**		
Solid surface sill	55	LF	65.04	3,551

ADDITION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Division 07 - THERMAL & MOISTURE PROTECTION				1,171,967
Roofing				
TPO roofing assembly	20,337	SF	35.28	717,477
Roofing Accessories				
Metal coping	776	SF	21.98	17,056
Roof accessories: misc.	20,337	SF	0.99	20,038
Soffits & Fascia				
Canopy assembly	400	SF	122.84	49,135
Exterior column wrap, aluminum	8	EA	3,064.03	24,512
Exterior Wall Assembly				
Aluminum metal panels	890	SF	58.15	51,756
Exterior Wall Back-up Assembly				
Air/vapor barrier	13,989	SF	2.50	34,970
Caulking and Sealants				
General caulking & sealants & safing	33,500	GSF	0.84	28,012
Spray fireproofing	33,500	GSF	4.60	154,236
Firestopping / fire safing	33,500	GSF	0.29	9,776
Dampproofing / Waterpoofing				
Waterproofing @ foundation walls	8,244	SF	7.88	65,000
Division 08 - OPENINGS				323,779
Frames				
Steel single frame	70	EA	631.81	44,227
Steel double frame	1	EA	1,062.37	1,062
Doors				
Steel leaf	45	Leafs	921.47	41,466
Solid core wood leaf	27	Leafs	1,198.10	32,349
Grout fill Steel frames	88	EA	44.97	3,958
Premium for STC rated doors	10	EA	89.43	894
Premium for fire rated	6	EA	175.46	1,053
Finish Hardware				
Standard hardware set	72	EA	874.48	62,963
Interior Glazing				
Storefront assembly, non detention type, 1/4" clear	93	SF	96.65	8,984
Storefront assembly, non detention type, 1" spandrel panel	20	SF	96.65	1,915
Sidelite, 1/4" clear	38	SF	69.56	2,609
Sidelite, grade 2, security typ.	24	SF	171.16	4,072
Interior Storefront Doors				
Storefront doors, interior	2.00	Leafs	5,697.78	11,396
Exterior Glazing				
Storefront assembly, non detention type	938	SF	96.65	90,661
Spandrel premium	123	SF	23.35	2,875
Exterior Storefront Doors & Glazed Entry Doors				
Storefront doors, exterior	2.00	Leafs	6,078.78	12,158

ADDITION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Exterior Door Thermal, Moisture Treatments				
Weatherstripping	4	EA	185.52	742
Thresholds	5	Leafs	79.42	397
Division 09 - FINISHES				879,465
Drywall Partitions	13,094			
P5, 3 5/8" stud w/ 5/8" GWB 1s	2,002	WSF	13.97	27,974
P1, 3 5/8" stud w/ 5/8" GWB 2s	4,580	WSF	16.40	75,104
P1-1, 3 5/8" stud w/ 5/8" GWB 2s - 1 hr rated	443	WSF	17.67	7,819
P2, 6" stud w/ 5/8" GWB 2s	763	WSF	19.30	14,732
P3, 2 1/2" furring w/ 5/8" GWB 1s	5,307	WSF	6.92	36,747
1hr rated shaft wall @ security plank ceiling	3,938	SF	35.14	138,376
Ceiling Finishes				
ACT: 2' x 2'	10,765	SF	4.51	48,539
GWB on mtl std	1,716	SF	8.98	15,417
Bulkheads & Trim				
Shallow bulkheads	258	LF	21.98	5,672
Floor				
Porcelain floor tile	1,833	SF	15.67	28,737
Resinous flooring	7,229	SF	8.70	62,890
LVT flooring	1,721	SF	4.21	7,239
Carpet tile - A & B	2,490	SF	5.83	14,516
Linoleum flooring	6,619	SF	8.53	56,427
Sheet vinyl	407	SF	8.08	3,290
SDT flooring	154	SF	9.96	1,529
Concrete with cure & seal finish @ detention cells	7,773	SF	3.60	27,945
Concrete finish @ rec. yard	2,227	SF	3.60	8,006
Rubber floor tile / Resilient stair tread / Resilient stair riser	316	SF	6.14	1,940
Base Finishes				
Resilient base	3,194	LF	2.00	6,402
Porcelain tile base	462	LF	15.67	7,244
Wall Finishes				
Glazed wall tile @ toilet rms	765	WSF	14.72	11,258
Epoxy paint	3,671	WSF	9.16	33,628
Resinous wall finish	2,254	WSF	9.61	21,651
Acoustical panels @ dayroom, lobby & library	1	LS	30,483.97	30,484
Metal panels @ phone area	1	LS	4,575.97	4,576
Wall Graphic				
Vinyl wall murals @ dayroom, lobby & library	1	Allow	20,323.97	20,324
Painting				
Exterior & interior painting	33,500	GSF	4.81	160,999

ADDITION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Division 10 - SPECIALTIES				196,989
Toilet Accessories				
Grab bars	7	SET	193.17	1,352
Soap dispensers	7	EA	133.48	934
Toilet paper dispenser	7	EA	206.39	1,445
Sanitary napkin disposal	7	EA	179.72	1,258
Paper towel dispenser	7	EA	330.73	2,315
Curtain/ rod/ hooks at shower	7	EA	77.00	539
Shower seat	7	EA	437.56	3,063
Mop racks/ holder	2	EA	282.98	566
Mirror				
Mirror	7	EA	145.11	1,016
Fire Protection Specialties	**0.08**	**$/ GSF**		
Extinguishers	7	EA	160.70	1,125
Cabinet, fire ext, stainless stl	7	EA	228.67	1,601
Signage, Graphics	**1.17**	**$/ GSF**		
Exterior signage, building mounted	36	EA	379.93	13,677
Interior, room signs	193	EA	122.02	23,550
Way finding signage	10	EA	180.47	1,805
Security Mesh Panels	**3.66**	**$/ GSF**		
Security wire mesh panels/partition	4,377.66	SF	27.97	122,457
Miscellaneous	**0.61**	**$/ GSF**		
Display case, corner guards	33,500	GSF	0.61	20,287
Division 11 - EQUIPMENT				2,491,643
Detention Grade Equipment				
Doors & Frames	**7.22**	**$/ GSF**		
12 GA Single frame	82	EA	786.16	64,465
12 GA Double frame	-	EA	1,166.06	-
12 GA Doors	82	EA	1,905.06	156,215
12 GA Sliding doors & frames	5	EA	4,207.15	21,036
Detention hardware sets	82	EA	1,932.06	158,429
Detention Cells Enclosures Systems	**22.67**	**$/ GSF**		
Cell encl., regular, 12'x10'x7', including hinged door	65	EA	10,435.21	678,289
Cell encl., ADA, 12'x10'x8', including hinged door	7	EA	11,572.62	81,008
Detention Glass Systems	**10.41**	**$/ GSF**		
Interior detention glass	1160	SF	300.64	348,741
Detention Security Ceiling	**16.49**	**$/ GSF**		
Security mesh @ ceiling	2,913	SF	33.77	98,348
Acoustic security ceiling panels	3,554	SF	65.31	232,115
Security plank ceiling assembly	3,938	SF	56.40	222,116
Detention Equipment & Furnishing	**3.76**	**$/ GSF**		
Bed, single	79	EA	1,595.51	126,046
Detention Grade Standard Toilet Accessories & Mirrors	33,500	GSF	3.89	130,319

ADDITION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Detention Special	**4.69**	**$/ GSF**		
Access doors	23	EA	596.11	13,711
Miscellanoues, including security fasteners @ inmates occupied areas	1	LS	143,308.30	143,308
Non-Detention Grade Equipment				
Residential Appliances		By Owner		
Refrigerators, freezer, microwaves		By Owner		
Classroom FFE		By Owner		
Miscellaneous Equipment	33,500	GSF	0.52	17,497
Media Boards, projection screens,		Included Above		
Projection Screens		Included Above		
Lockers and Benches		Included Above		
Non Detention Athletic Equipment		Included Above		
Medical & Dental Equipment		Included Above		
Loading Dock Equipment		Included Above		
Solid Waste Handing Equipment		Included Above		
Division 12 - FURNISHINGS				21,815
Floor Mats				
Walk-off mat w/ frame	111	SF	44.57	4,961
Window Treatment	**0.50**	**$/ GSF**		
Manual roller shades/ blinds @ interior glazing	980	SF	12.81	12,553
Manual roller shades/ blinds @ exterior glazing	306	SF	14.08	4,301
Division 13 - SPECIAL CONSTRUCTION		None Indicated		-
Division 14 - CONVEYING EQUIPMENT				281,593
Elevators				
Passenger elevators	4	Stops	70,398.26	281,593
Division 21 - FIRE PROTECTION				255,270
New Sprinkler System	33,500	GSF	7.62	255,270
Division 22 - PLUMBING				1,934,071
Equipment				
Quote, harry eklof	1	LS	42,100.50	42,101
Neutralizer, price included above, install only	1	EA	462.56	463
Common vent connector w/ cascade cable, price included above, install only	1	EA	462.56	463
4 unit Side by side Manifold Kit, price included above, install only	1	EA	462.56	463
2 unit Side by side Manifold Kit, price included above, install only	1	EA	462.56	463
GWH-xx, Gas water heater, price included above, install only	6	EA	1,156.39	6,938
RCP-1, Recirculating pump	1	EA	4,178.42	4,178
Domestic water booster pump	1	EA	14,075.25	14,075
Elevator sump pump	2	EA	2,638.42	5,277
ET-1, Expansion tank	1	EA	9,896.83	9,897

ADDITION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Fixtures				
LA-1, Lavatory	7	EA	780.21	5,461
MB-1, Mop basin	7	EA	2,628.21	18,397
WC-1, Water closet	7	EA	1,940.31	13,582
PLA-1, Wall hung lavatory	1	EA	1,262.73	1,263
PSH-1, Individual cabinet shower	7	EA	4,506.83	31,548
PSH-2, Individual cabinet shower	5	EA	5,276.83	26,384
PWA-1, Combination fixture	10	EA	5,276.83	52,768
PWA-2, Combination fixture	74	EA	6,046.83	447,466
PWC-1, Floor mounted water closet	1	EA	2,248.31	2,248
TD-1 2 ft trench drain	3	EA	503.05	1,509
AD-1, Area drain	6	EA	1,858.21	11,149
FD, Floor drain	23	EA	1,391.10	31,995
Rough-ins	151	EA	1,704.21	257,335
Sanitary/Waste/Vent System				
Sanitary pipe and fittings, above grade				
Piping, cast iron, w/ fittings & hangers, 2"	64	LF	55.10	3,529
Piping, cast iron, w/ fittings & hangers, 3"	56	LF	74.06	4,121
Piping, cast iron, w/ fittings & hangers, 6"	229	LF	181.17	41,470
Storm water piping				
Storm Water Management, above grade				
Piping, cast iron, w/ fittings & hangers, 4"	56	LF	101.39	5,642
Piping, cast iron, w/ fittings & hangers, 8"	121	LF	275.50	33,266
Roof drain	10	EA	506.93	5,069
Gas piping				
Gas equipment quick connects	6	EA	774.92	4,650
Additional plumbing piping allowance	33,500	GSF	19.05	638,175
Special	33500	GSF	6.35	212,725
Trade contractor general conditions		Included Above		
Systems cleaning, testing, commissioning		Included Above		
Systems identification		Included Above		
Fire stop penetrations		Included Above		
Division 23 - HVAC				2,784,941
Equipment				
RTU-A - 6460 CFM - Air handling unit	1	EA	187,449.43	187,449
DOAS-HD - 3235 CFM - Rooftop unit with enthalpy wheel	1	EA	96,826.93	96,827
DOAS-HA-1/2 - 1325 CFM - Rooftop units with enthalpy wheel	2	EA	41,971.24	83,942
DSS-x - 420 CFM - Ductless split system	9	EA	7,270.25	65,432
SEF-HD - 9500 CFM - Exhaust fan	1	EA	16,929.21	16,929
SEF-H-B/C - 8750 CFM - Exhaust fans	2	EA	15,717.39	31,435
SSF-HD - 7960 CFM - Exhaust fans	1	EA	14,440.95	14,441
SSF-H-B/C - 7360 CFM - Exhaust fans	2	EA	13,471.50	26,943
SEF-HA-2/4 - 3400 CFM - Exhaust fans	2	EA	6,680.15	13,360
SSF-HA-4/5 - 2840 CFM - Exhaust fans	2	EA	5,735.99	11,472
SSF-HA-2 - *Not Sized* - Exhaust fans	1	EA	5,004.79	5,005
EF-11/12 - 900 CFM - Exhaust fans	2	EA	2,370.62	4,741
EF-15 - 790 CFM - Exhaust fan	1	EA	2,080.90	2,081
EF-14 - 535 CFM CFM - Exhaust fan	1	EA	2,080.90	2,081
EF-10 - 450 CFM - Exhaust fan	1	EA	2,080.90	2,081
EF-17 - 300 CFM - Exhaust fan	1	EA	2,080.90	2,081

ADDITION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
EF-16 - 220 CFM - Exhaust fan	1	EA	2,080.90	2,081
EF-13 - 75 CFM - Exhaust fan	1	EA	2,080.90	2,081
HWUH-1/4 - 245 CFM - Hot water unit heater	2	EA	1,720.92	3,442
HWUH-2/3 - 500 CFM - Hot water unit heater	2	EA	2,361.90	4,724
TU-X - Terminal unit	18	EA	2,080.90	37,456
Air Distribution				
Sheet metal ductwork and accessories	36,511	LB	16.15	589,774
Duct liner/insulation	19,375	SF	11.06	214,313
Flex duct	620	LF	9.62	5,966
Grilles & registers	253	EA	300.74	76,088
VD/MD - Dampers	142	EA	230.49	32,730
Louver 18x12	1	EA	1,483.98	1,484
Louver 24x12	1	EA	1,854.97	1,855
Louver 36x14	1	EA	2,225.97	2,226
Mechanical Piping & Insulation				
Heating hot water Piping & Insulation				
Piping, copper, w/ fittings & hangers, 3/4"	633.15	LF	51.29	32,476
Piping, copper, w/ fittings & hangers, 1"	97.65	LF	58.04	5,668
Piping, copper, w/ fittings & hangers, 1-1/4"	139.65	LF	66.34	9,264
Piping, copper, w/ fittings & hangers, 1-1/2"	139.65	LF	73.09	10,207
3/4" Insulation	633.15	LF	10.48	6,634
1" Insulation	97.65	LF	12.62	1,232
1-1/4" Insulation	139.65	LF	17.12	2,391
1-1/2" Insulation	139.65	LF	21.17	2,956
Condensate Drain				
3/4" D	126	LF	58.04	7,314
1-1/4" D	60.9	LF	69.42	4,228
Additional HVAC allowance	33500	GSF	15.24	510,540
Automatic Controls	260	CP	1,524.00	396,240
Miscellaneous	33,500	GSF	7.62	255,270
General Conditions		Included Above		
BIM Coordination		Included Above		
Coring, sleeves & fire stopping		Included Above		
Startup and testing		Included Above		
Rigging		Included Above		
Vibration isolation		Included Above		
Commissioning		Included Above		
Division 26 - ELECTRICAL				2,447,796
Temporary Electric				
Temporary power service & main equipment	1	EA	29,206.23	29,206
Temporary lighting and receptacles	33,500	GSF	0.51	17,012
Power & Distribution			**9.03**	
Short circuit, coordination & arc flash study	1	EA	28,100.00	28,100
Utility company meter socket & empty conduit	1	EA	702.50	703
Main switchboard	1	EA	51,842.35	51,842
CT cabinet	1	EA	3,223.65	3,224
Distribution panel	1	EA	21,560.67	21,561
Branch panelboards	6	EA	6,090.17	36,541
Distribution Panel, TVSS / SPD, surge protection	1	EA	1,208.87	1,209

ADDITION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Branch Panel, TVSS / SPD, surge protection	2	EA	850.31	1,701
Panel support hardware (per section)	7	EA	208.79	1,462
Transformer w/ flex, CU, 480Vx120/208V, 3ph, 125 kVA	1	EA	25,651.81	25,652
Transformer w/ flex, CU, 480Vx120/208V, 3ph, 250 kVA	1	EA	35,736.55	35,737
Grounding for transformers	2	EA	288.31	577
Additional power and distribution allowance	33,500	GSF	2.81	94,135
Emergency Power Generator & Transfer Switches			**14.10**	
Diesel Generator, 1000KW	1	EA	361,591.31	361,591
Fuel, assume full load for 48 hours	4,095	GAL	7.03	28,770
Generator annunciator panel	1	EA	5,042.30	5,042
ATS-O, 1200A	1	EA	41,513.88	41,514
ATS-E, 400A	1	EA	15,159.42	15,159
ATS-S 100A	1	EA	10,733.38	10,733
Generator docking station, 100A	1	EA	9,678.80	9,679
Primary Power				
NOTE: Primary service cable by electric company NIC		NIC	**1.00**	
Concrete encased duct bank w/excav, (2)6" allowance	200	LF	93.80	18,759
PVC adapter to rigid elbow & stub up, 6"	4	EA	1,669.30	6,677
Concrete pad for transformer	1	EA	4,753.46	4,753
Misc. coordination for incoming services	1	EA	3,473.26	3,473
Secondary Power			**3.04**	
Concrete encased duct bank w/excav, (6)4" allowance	100	LF	153.18	15,318
PVC adapter to rigid elbow & stub up, 4"	12	EA	891.90	10,703
Wire installed in ductbank, (5) Sets 4#600, 1#250G	110	LF	690.58	75,964
Feeders & Misc. Electrical Distribution			**2.25**	
(3) sets of 3" EMT w/ elbows, fittings, hangers &4#350, 1#1/0G	150	LF	343.46	51,520
2-1/2" EMT w/ elbows, fittings, hangers & 4#4/0, 1#4G	300	LF	79.70	23,909
Branch Power			**1.72**	
Duplex receptacle w/ plate, box & connectors	154	EA	66.95	10,310
GFCI duplex receptacle w/ plate, box & connectors	18	EA	84.03	1,513
WP-GFCI duplex receptacle w/ plate, box & connectors	2	EA	139.03	278
Power for CATV outlet adjacent to comm outlet	15	EA	66.95	1,004
Power for video visit station adjacent to comm outlet	10	EA	66.95	670
Power for monitor outlet adjacent to comm outlet	2	EA	66.95	134
3/4" EMT w/ couplings, hangers & branch wire	3,980	LF	11.00	43,786
Motor Connections			**7.21**	
Elevator connection, complete	2	EA	5,042.30	10,085
RTU-A conn, 3pH, 100A, N3R	1	EA	1,373.74	1,374
VFD for RTU-A, Standard, NEMA-3R, 7HP	1	EA	4,624.73	4,625
DOAS-HD conn, 3pH, 50A	1	EA	721.96	722
VFD for DOAS-HA, Standard, NEMA-1, 5HP	1	EA	3,889.07	3,889
DOAS-HA 1/2 conn, 3pH, 30A	2	EA	491.84	984
VFD for DOAS-HA, Standard, 2.5HP	2	EA	3,556.36	7,113
DSS-x conn, 1pH, 20A	9	EA	216.94	1,952
CU-x conn, 208V, 1pH, 20A, N3R	9	EA	410.27	3,692
SEF-HD conn, 3pH, 60A	1	EA	721.96	722
VFD for SEF-HD , Standard,NEMA-1, 7.5HP	1	EA	4,624.73	4,625
SEF-H-B/C conn, 3pH, 60A	2	EA	721.96	1,444
VFD for SEF-H - B/C , Standard,NEMA-1, 7.5HP	2	EA	4,624.73	9,249
SSF-HD conn, 3pH, 60A	1	EA	721.96	722
VFD for SSF-HD , Standard, NEMA-1, 5HP	1	EA	3,889.07	3,889
SSF-H-B/C conn, 3pH, 60A	2	EA	721.96	1,444
VFD for SSF-H-B/C , Standard, 5HP	2	EA	3,889.07	7,778

ADDITION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
SEF-HA-2/4 conn, 3pH, 40A, N3R	2	EA	683.06	1,366
VFD for SEF-HA-2/4 , Standard, 3HP	2	EA	3,556.36	7,113
SSF-HA-4/5 conn, 3pH, 30A	2	EA	491.84	984
VFD for SSF-HA-4/5 , Standard, 2HP	2	EA	3,556.36	7,113
SSF-HA-2 conn, 3pH, 30A	1	EA	491.84	492
VFD for SSF-HA-2 , Standard, 2HP	1	EA	3,556.36	3,556
EF- x conn, 1pH, 20A	8	EA	223.96	1,792
HWUH-1/2/3/4 conn, 1pH, 20A	4	EA	223.96	896
TU-X conn, 1pH, 20A	18	EA	223.96	4,031
GWH-xx conn, 1pH, 20A	6	EA	223.96	1,344
RCP-1 conn, 1pH, 20A	1	EA	223.96	224
Elevator sump pump conn, 1pH, 20A	2	EA	223.96	448
Booster pump, 3pH, 60A	1	EA	721.96	722
Access control connections, 20A	131	EA	216.94	28,419
3/4" EMT w/ fittings, hangers & branch wire	8,950.00	LF	11.00	98,463
3/4" EMT w/ couplings, hangers & 3#10, 1#10G	250.00	LF	12.92	3,231
3/4" EMT w/ couplings, hangers & 3#8, 1#10G	100.00	LF	18.11	1,811
1-1/4" EMT w/ elbows, fittings, hangers & 3#6, 1#10G	525.00	LF	21.97	11,535
1-1/4" EMT w/ elbows, fittings, hangers & 3#3, 1#8G	100.00	LF	36.00	3,600
Lighting fixture			**19.18**	
A1 - 2 x 4 Flat panel LED	46	EA	496.67	22,847
A3 - 2 x 2 Flat panel LED - GTD	2	EA	450.47	901
A5 - 2 x 2 Flat panel LED	35	EA	450.47	15,766
A7 - 2 x 2 Volumetric light - GTD	19	EA	450.47	8,559
B1 - 2 x 4 Vandal resist Lens LED	21	EA	1,189.67	24,983
B2 - 2 x 4 Vandal resist Lens LED w/ battery pack	7	EA	1,374.47	9,621
B5 - 2x2 Vandal resist lens	31	EA	1,189.67	36,880
B6 - 2x2 Vandal resist lens w/ battery pack	17	EA	1,374.47	23,366
D1 - 4' Max security LED,TP	106	EA	1,112.67	117,943
D2 - 4' Max security LED, EM w/ battery pack, TP	41	EA	1,297.47	53,196
D4 - 4' Max security LED, EM, TP	80	EA	1,112.67	89,014
G1 - 6" Downlight	31	EA	604.47	18,739
G3 - 6" Downlight w/ battery pack	2	EA	789.27	1,579
G4 - 6" Downlight	9	EA	562.59	5,063
H1 - Vandal resist industrial LED	9	EA	1,420.67	12,786
J1 - 4' Wraparound LED	1	EA	388.87	389
K1 - 4' Industrial LED	22	EA	650.67	14,315
K2 - 4' Industrial LED w/ battery pack	2	EA	835.47	1,671
M1 - 4' Stair fixture LED	6	EA	727.67	4,366
R2 - Exterior wall mount LED	25	EA	573.67	14,342
X1/X2, Exit light	25	EA	388.87	9,722
X3 - Exit light w/ battery pack	5	EA	587.63	2,938
Lighting rough-in box w/ connectors	542	EA	43.74	23,708
3/4" EMT w/ couplings, hangers & branch wire	10,840	LF	11.97	129,804
Lighting controls			**3.03**	
S - Single pole switch w/ plate, box & conn	43	EA	124.76	5,365
S 3 - Three pole switch w/ plate, box & conn	5	EA	127.38	637
SOS - Switch with occupancy sensor w/ plate, box & conn	15	EA	296.47	4,447
SOD - Dimmer switch with occupancy sensor w/ plate, box & conn	29	EA	296.47	8,598
SD - Dimming switch w/ plate, box & conn	4	EA	227.17	909
Occupancy sensor w/ plate, box & conn	6	EA	296.47	1,779
Lighting control relays w/ conductor, allowance	1	LS	55,240.04	55,240
Lighting control cable	2,040	LF	11.97	24,428
Grounding & Lightning Protection				
Grounding allowance	33,500	GSF	0.87	28,978
Lightning Protection system allowance	33,500	GSF	0.78	26,054

ADDITION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Commissioning of Electrical Systems				
Electric systems testing & commissioning support	1	LS	317,500.00	317,500
Division 27 - COMMUNICATIONS				297,562
Telecom Conduit, Cable Tray & Raceways			**2.93**	
3/4" Fire rated plywood backboard	600.00	SF	8.47	5,082
Ladder tray w/ supports, 12" x 4"	40.00	LF	53.78	2,151
Ladder cable tray 90 elbow and Ts, 12" x 4"	2.00	EA	499.06	998
Cable tray basket type w/ supports	1,300.00	LF	38.33	49,828
Cable tray basket type 90 elbow and Ts	19.00	EA	307.70	5,846
Telecom system grounding	1.00	LS	8,265.96	8,266
Telecom riser conduit allowance	1.00	LS	9,093.26	9,093
4" Fire rated sleeves	8.00	EA	1,133.56	9,068
Telecom outlet box w/ EMT stub-up	55	EA	128.42	7,063
WAP - Wireless access point rough-in box	1	EA	128.42	128
J-Hook cable support, drop(s) to corridor	112	EA	5.03	563
Telecom Racks, Panels & Backbone Cable			**1.40**	
MDF room racks, patch panels, blocks & misc. allowance	1.00	EA	20,996.52	20,997
IDF room racks, patch panels, blocks & misc. allowance	1.00	EA	13,308.26	13,308
Telecom backbone cabling	1.00	LS	12,480.96	12,481
Telecom Horizontal Cabling & Terminations			**1.45**	
1 - Telecom plate w/ (1) Cat V jack	55	EA	24.42	1,343
WAP - Wireless point cable w/ 2 Cat V	1.00	EA	52.60	53
Category V, plenum cable - 4 pair	8,250	LF	5.66	46,715
Cat V connector at patch panel	57	EA	8.27	471
AV / Intercom Systems			**3.11**	
M - Video monitor back box w/ conduit stub-up	5	EA	454.66	2,273
Inmate emergency intercom back box w/ conduit stub-up	79	EA	157.08	12,409
Intercomm wall station back box w/ conduit stub-up	87	EA	157.08	13,666
Master intercom back box w/ conduit stub-up	5	EA	384.41	1,922
GUI local control back box w/ conduit stub-up	5	EA	157.08	785
Talk thru unit, box w/ conduit stub-up	10	EA	157.08	1,571
Call button, back box w/ conduit stub-up	10	EA	157.08	1,571
S - Paging speaker, back box w/ conduit stub-up	11	EA	157.08	1,728
AV cable	31,800	LF	2.14	68,181
Division 28 - ELECTRONIC SAFETY & SECURITY				682,551
Security System Access Control & Monitoring			**8.88**	
Access control headend allowance	1	LS	13,308.26	13,308
A - 8" Jamb MTD electro-mechanical lock	113	EA	768.83	86,877
B - 2" Jamb MTD electro-mechanical lock	13	EA	384.41	4,997
D - Electro mech sliding door	5	EA	909.33	4,547
E - Non-detention door w/ interfacing to security touch screen	6	EA	909.33	5,456
PB - Door release push button	6	EA	384.41	2,306
DPS - Door position switch	6	EA	297.58	1,785
CR - Proximity card reader	7	EA	576.62	4,036
EL - Electric lock device w/ REX and DPS	5	EA	628.33	3,142
DA - Duress alarm	11	EA	454.66	5,001
Security access control conduit & wire (per device)	172	EA	382.45	65,782
Door access control home run conduit & wire (per door)	131	EA	764.90	100,202

ADDITION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Security System CCTV Video Surveillance			**8.70**	
CCTV video surveillance head end allowance	1	LS	13,308.26	13,308
Camera - fixed, interior	87	EA	2,236.77	194,599
Camera - multi-lens, interior	6	EA	2,965.12	17,791
Camera - multi-lens, exterior	4	EA	3,297.83	13,191
CCTV camera conduit & wire (per each)	97	EA	542.06	52,580
Fire Alarm System			**2.80**	
Connect to ex. FACP	1	LS	1,914.86	1,915
Fire alarm annunciator panel	1	EA	6,222.28	6,222
Fire alarm speaker/strobe	28	EA	360.58	10,096
Fire alarm smoke detectors	18	EA	383.07	6,895
Fire alarm manual pull station	1	EA	245.97	246
Fire alarm rough-in box w/ EMT conn	47	EA	47.64	2,239
3/4" EMT w/ coupl, hangers, fire alarm cables	47	EA	12.95	609
Fire Alarm testing & certification (per device)	940	EA	69.60	65,419
Division 31 - EARTHWORK				236,499
Traffic Controls		Assume not required		
Erosion Control				
Silt fence	698	LF	11.37	7,929
Inlet protection	8	EA	426.39	3,411
Construction entrance	1,997	SF	5.39	10,758
Safety fence	993	LF	6.88	6,826
Removals [coordinate with super's laborer line]	40	CHrs	308.57	12,343
Top Soil				
Topsoil, strip & stockpile, on-site	56	CY	18.37	1,026
Topsoil, respreads, on-site	71	CY	13.78	981
Topsoil, import	18	CY	50.52	909
Cut & Fill				
Cut to fill	1,658	CY	20.30	33,659
Bring & compact	236	CY	50.52	11,922
Excavation and backfill @ bldg retaining wall	1	LS	15,088.64	15,089
Final Grade & Shaping: Final Elevation				
Proof roll building	2,624	SY	1.08	2,846
Proof roll pavements	3,244	SY	1.08	3,519
Dewatering allowance		Assume not required		
Temporary excavation support		Assume not required		
Replace the existing loose fill	1	LS	100,279.82	100,280
Rock excavation allowance	1	LS	25,000.84	25,001
Division 32 - EXTERIOR IMPROVEMENTS				655,692
Site Walls				
CMU site wall on concrete foundation	180	LF		
Foundation concrete @ CMU site wall	11	CY	643.04	7,152
CMU backup	756	WSF	26.44	19,976
Brick veneer	756	WSF	47.39	35,804

ADDITION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Low accent screen wall	57	LF		
Foundation concrete @ screen wall	9	CY	643.04	5,677
12" CMU with grout fill @ low accent screen wall	119	WSF	30.74	3,652
8" CMU wall backup	634	WSF	26.44	16,754
Stone veneer	634	WSF	72.03	45,646
Site Hardscape				
Concrete sidewalk (4" conc. + 6" gravel)	2,995	SF	10.07	30,163
Concrete heavy duty	1,227	SF	12.02	14,743
Concrete ramp	570	SF	15.51	8,835
Concrete equipment pad @ generator	149	SF	17.81	2,656
Unit paving	114	SF	33.57	3,813
Gravel pavement	223	SF	5.59	1,246
Curb & Gutter				
Flush curb	103	LF	23.59	2,423
CG-2, Concrete curb, 6"	368	LF	25.49	9,381
CG-6, Concrete curb & gutter, 6"	555	LF	28.03	15,564
Paving, Bituminous				
Light duty asphalt (3" sc + 8" aggr.)	2,517	SY	50.20	126,340
Heavy duty asphalt (1.5" sc + 3" bc + 8" aggr.)	141	SY	81.31	11,462
Paving Specialties/ Markings				
Hatching @ ADA and cross walking	560	SF	1.72	963
Paint striping per parking stall	1,040	LF	3.64	3,786
Paint symbols, HC/ ADA & traffic arrows & words	3	EA	117.29	352
Wheel stops	5	EA	128.76	644
Signage				
EV, ADA & Site Signage	6	EA	210.81	1,265
Foundation for EV, ADA & Site Signage	6	EA	344.79	2,069
Landscaping				
Trees	8	EA	1,086.76	8,694
Shrubs	18	EA	130.01	2,340
Ground cover	11	EA	71.15	783
Planting mix	71	CY	66.21	4,701
Mulch	427	SY	1.48	633
Fencing				
Secured fencing with razor wire, 12'	299	LF	705.32	211,068
Fence gate	1	EA	6,900.03	6,900
Site Accessories & Equipment				
Site bench	5	EA	2,833.28	14,166
Bollards, incl. foundations	18	EA	819.06	14,743
Flagpoles, incl. foundations	2	EA	2,312.52	4,625
Bike racks, incl footing	6	EA	649.67	3,898
One table & 4 chair set	1	EA	2,216.06	2,216
Accent boulders, assumed	6	EA	1,073.06	6,438
Seating, assumed	1	EA	4,121.06	4,121

ADDITION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Division 33 - UTILITIES				318,824
Site demolition				
Rx light poles	3	EA	570.93	1,713
Relocate fiber line allowance	1	LS	7,932.79	7,933
Site Lighting				
WP1, Wall LED, WP	4	EA	873.68	3,495
B5, Bollard lights	1	EA	1,184.89	1,185
WM4, Wall LED, WP	1	EA	873.68	874
V3- Single head pole light	3	EA	4,572.07	13,716
V4W - Double head pole lights	2	EA	5,074.57	10,149
S3 - Outdoor step light	7	EA	873.68	6,116
Concrete base for site light pole	6	EA	1,892.07	11,352
Site lighting branch conduit & wiring	1,800	EA	32.93	59,274
EV charging stations	2	EA	19,811.25	39,622
Telecom Service to Building				
Concrete encased duct bank, (2-way) 4"	200	LF	81.87	16,374
Communication handhole	1	EA	3,618.75	3,619
PVC adapter to rigid elbow & stub up, 4"	8	EA	570.50	4,564
Water Service				
Connect to existing	1	LOC	2,991.73	2,992
Fire department connection	1	LOC	5,055.26	5,055
Dedicated fire hydrant assembly	1	EA	10,056.58	10,057
Water valve	1	EA	1,820.82	1,821
DIP Pipe Assembly				
6" DIP Assembly	115	LF		
Pipe lengths	115.23	LF	106.45	12,266
Fittings	7.00	EA	229.63	1,607
Trench excav & backfill (Av Trench Width)				
Trench Dimension, Calculator				
Excavation + backfill	102.42	CY	31.51	3,227
Gravel bed	19.20	Tons	64.20	1,233
Sanitary Service				
Connect to existing	1	LOC	1,673.13	1,673
Clean out	4	EA	883.16	3,533
Manhole	1	LOC	6,274.68	6,275
PVC Pipe Assemblies				
6" PVC Assembly	248	LF		
Pipe lengths	248.20	LF	45.93	11,399
Fittings	15.00	EA	65.39	981
Trench excav & backfill (Av Trench Width)				
Trench Dimension, Calculator				
Excavation + backfill	220.62	CY	31.51	6,951
Gravel bed	41.37	Tons	64.20	2,656

ADDITION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
8" PVC Assembly	80	LF		
Pipe lengths	79.91	LF	56.90	4,546
Fittings	5.00	EA	73.43	367
Trench excav & backfill (Av Trench Width)				
Trench Dimension, Calculator				
Excavation + backfill	71.03	CY	31.51	2,238
Gravel bed	13.32	Tons	64.20	855
Storm Sewer				
Connect to existing	2.00	LOC	1,596.93	3,194
Inlet structures	2.00	EA	2,955.83	5,912
Storm Pipe Assemblies				
15" HDPE Assembly	58	LF		
Pipe lengths	58.04	LF	50.45	2,928
Fittings	4.00	EA	245.21	981
Trench excav & backfill (Av Trench Width)				
Trench Dimension, Calculator				
Excavation + backfill	51.59	CY	31.51	1,626
Gravel bed	9.67	Tons	64.20	621
15" RCP Assembly	122	LF		
Pipe lengths	122.46	LF	97.32	11,918
Fittings	7.00	EA	307.20	2,150
Trench excav & backfill (Av Trench Width)				
Trench Dimension, Calculator				
Excavation + backfill	108.85	CY	31.51	3,429
Gravel bed	20.41	Tons	64.20	1,310
Foundation perimeter drainage	500.00	LF	30.08	15,038
Nutrient credits	1	LS	10,000.00	10,000
ADDITION TRADE TOTAL				**21,271,027**

RENOVATION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Division 01 - GENERAL CONDITIONS				360,000
General Conditions	1	LS	360,000.00	360,000
Division 02 - EXISTING CONDITIONS				1,298,938
Selective Interior Demolition				
Remove partition/wall/item	1,716	LF	12.89	22,113
Remove window assembly, framing, including anchors	81	LF	7.73	629
Remove counter top	75	SF	4.12	309
Remove doors & frame incl. hardware, anchors & threshold	87	Leafs	193.33	16,820
Remove toilet partitions	6	EA	579.99	3,480
Remove urinal screen	1	EA	145.00	145
Modifications at existing areas	1	LS	1,203,960.20	1,203,960
Underpinning allowance	1	LS	45,042.91	45,043
Transportation & disposal including dump fees	10	Pulls	644.00	6,440
Hazmat removal allowance		None Indicated		
Division 03 - CONCRETE				40,006
Miscellaneous concrete allowance	1	LS	40,005.52	40,006
4" Concrete	86	Included Above		
12" Concrete below grade wall	24	Included Above		
Type A- 6" CIP	239	Included Above		
Type C- 8" interior	40	Included Above		
Division 04 - MASONRY				314,967
CMU, Interior Partitions	10,552			
6" CMU partition	719	WSF	21.77	15,664
8" CMU partition	1,109	WSF	24.33	26,967
S7, Security wall - 6" CMU partition	4,991	WSF	29.41	146,808
S2, Interior security wall - 8" CMU partition	3,591	WSF	33.51	120,351
S3, Perimeter security wall- 12" CMU partition	142	WSF	36.52	5,176
Division 05 - METALS				79,474
Lintel assembly	364	LF	188.66	68,751
Stairs, 3'- 2" wide		Flight		
Treads & risers	14	EA	258.94	3,625
Guardrail	15	LF	247.62	3,645
Handrail	29	LF	117.39	3,452
Division 06 -WOODS, PLASTICS, COMPOSITES				30,439
Rough Carpentry	24,000	GSF	1.27	30,439

RENOVATION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Division 07 - THERMAL & MOISTURE PROTECTION				27,072
Caulking and Sealants				
General caulking & sealants & safing	24,000	GSF	0.84	20,068
Spray fireproofing		Assume not required		
Firestopping/ fire safing	24,000	GSF	0.29	7,003
Division 08 - OPENINGS				102,181
Frames				
Steel single frame	31	EA	631.81	19,586
Doors				
Steel leaf	28	Leafs	921.47	25,801
Solid core wood leaf	5	Leafs	1,198.10	5,990
Grout fill Steel frames	85	EA	44.97	3,823
Finish Hardware				
Standard hardware set	33	EA	874.48	28,858
Interior Glazing				
Storefront assembly	140	SF	76.75	10,781
Sidelite, 1/4" clear	13	SF	69.56	903
Sidelite, grade 2, security typ.	4	SF	171.16	740
Interior Storefront Doors				
Storefront doors, interior	1	Leafs	5,697.78	5,698
Division 09 - FINISHES				394,605
Drywall Partitions	1,539			
P5, 3 5/8" stud w/ 5/8" GWB 1s	992	WSF	13.97	13,857
P1, 3 5/8" stud w/ 5/8" GWB 2s	403	WSF	16.40	6,612
P3, 2 1/2" furring w/ 5/8" GWB 1s	144	WSF	6.92	996
Ceiling Finishes				
ACP	985	SF	4.51	4,441
Floor				
Porcelain floor tile	1,040	SF	15.67	16,307
Resinous flooring	5,944	SF	8.70	51,715
Linoleum flooring	3,214	SF	8.53	27,400
Concrete with cure & seal finish	40	SF	3.60	144
Rubber floor tile / Resilient stair tread / Resilient stair riser	1,242	SF	6.14	7,619
Poured epoxy flooring	12,500	SF	8.70	108,751
Base Finishes				
Resilient base	309	LF	2.00	619
Porcelain tile base	271	LF	15.67	4,245
Wall Finishes				
Glazed wall tile @ toilet rms	353	WSF	14.72	5,203
Epoxy paint	1,839	WSF	9.16	16,847
Resinous wall finish	55	WSF	9.61	528
Acoustical panels @ attn.	1	LS	10,163.97	10,164
Metal panels @ phone area	1	LS	3,813.97	3,814

RENOVATION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Painting				
Exterior & interior painting	24,000	GSF	4.81	115,343
Division 10 - SPECIALTIES				36,305
Toilet Accessories				
Grab bars	4	SET	193.17	773
Soap dispensers	4	EA	133.48	534
Toilet paper dispenser	4	EA	206.39	826
Sanitary napkin disposal	4	EA	179.72	719
Paper towel dispenser	4	EA	330.73	1,323
Curtain/ rod/ hooks at shower	4	EA	77.00	308
Shower seat	4	EA	437.56	1,750
Mop racks/ holder	2	EA	282.98	566
Mirror				
Mirror	4	EA	145.11	580
Fire Protection Specialties	**0.08**	**$/ GSF**		
Extinguishers	5	EA	160.70	804
Cabinet, fire ext, stainless stl	5	EA	228.67	1,143
Signage, Graphics	**0.52**	**$/ GSF**		
Interior, room signs	102	EA	122.02	12,446
Miscellaneous	**0.61**	**$/ GSF**		
Display case, corner guards, wire mesh partition	24,000	GSF	0.61	14,534
Division 11 - EQUIPMENT				2,101,476
Detention Grade Equipment				
Doors & Frames	**17.53**	**$/ GSF**		
12 GA Single frame	91	EA	786.16	71,541
12 GA Double frame	-	EA	1,166.06	-
12 GA Doors	91	EA	1,905.06	173,360
Detention hardware sets	91	EA	1,932.06	175,818
Detention Glass Systems	**5.37**	**$/ GSF**		
Interior detention glass	428.5	SF	300.64	128,824
Detention Security Ceiling	**39.86**	**$/ GSF**		
Acoustic security ceiling panels	13,484	SF	65.31	880,659
Security plank ceiling assembly	1,347	SF	56.40	75,984
Detention Equipment & Furnishing	**4.67**	**$/ GSF**		
Bed, single	52	EA	1,595.51	82,967
Bed, double bunk	12	EA	2,421.01	29,052
Detention Grade Standard Toilet Accessories & Mirrors	24,000	GSF	3.89	93,363
Detention Special	**4.40**	**$/ GSF**		
Access doors	12	EA	596.11	7,153
Miscellanoues, including security fasteners @ inmates occupied areas	1	LS	98,454.08	98,454
Non-Detention Grade Equipment				

RENOVATION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Commercial Kitchen/Laundary Equipment				
Commercial kitchen equip: quote provided by Food Design associates	1	LS	235,630.97	235,631
Non Detention Lockers and Benches	**1.39**	**$/ GSF**		
Lockers	48	EA	686.06	32,931
Bench	1	EA	461.27	461
Residential Appliances		By Owner		
Refrigerators, freezer, microwaves		By Owner		
Classroom FFE		By Owner		
Athletic Equipment		By Owner		
Miscellaneous Equipment	24,000	GSF	0.64	15,278
Media Boards		Included Above		
Projection Screens		Included Above		
Medical & Dental Equipment		Included Above		
Loading Dock Equipment		Included Above		
Solid Waste Handing Equipment		Included Above		
Division 12 - FURNISHINGS				45,926
Floor Mats				
Walk-off mat w/ frame	81	SF	44.57	3,604
Countertop	**1.51**	**$/ GSF**		
Solid surface counter	110	SF	92.28	10,150
Casework				
Base cabinet, PLAM	51	LF	325.25	16,564
Wall cabinet closed, PLAM	54	LF	176.73	9,557
Window Treatment	**0.25**	**$/ GSF**		
Manual roller shades/ blinds @ interior glazing	473	SF	12.81	6,051
Division 13 - SPECIAL CONSTRUCTION		None Indicated		-
Division 14 - CONVEYING EQUIPMENT		None Indicated		-
Division 21 - FIRE PROTECTION				167,640
Sprinkler System	24,000	GSF	6.99	167,640

RENOVATION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Division 22 - PLUMBING				1,050,280
Demolition				
Rx fixtures and assoc piping	122	EA	419.77	51,212
Fixtures				
LA-1, Lavatory	4	EA	647.92	2,592
MB-2, Mop basin	2	EA	2,171.92	4,344
SH-1, Shower	2	EA	4,089.85	8,180
SK-1, Sink	1	EA	2,425.92	2,426
WC-1, Water closet	4	EA	1,733.89	6,936
PLA-2, Wall hung lavatory	4	EA	1,363.91	5,456
PSH-1, Individual cabinet shower	5	EA	4,089.85	20,449
PSH-2, Individual cabinet shower	23	EA	4,089.85	94,066
PWA-2, Combination fixture	4	EA	4,089.85	16,359
PWA-3, Combination fixture	64	EA	4,724.85	302,390
FD, Floor drain	16	EA	1,149.46	18,391
Rough-ins	129	EA	1,409.92	181,880
Sanitary/Waste/Vent System				
Sanitary pipe and fittings, above grade				
Piping, cast iron, w/ fittings & hangers, 4"	40	LF	77.49	3,092
Gas piping				
Gas equipment quick connects	6	EA	774.92	4,650
Connect to existing	2	EA	98.48	197
Additional plumbing piping allowance	24,000	GSF	9.21	220,980
Special	24000	GSF	4.45	106,680
Trade contractor general conditions	Incl. above			
Systems cleaning, testing, commissioning	Incl. above			
Systems identification	Incl. above			
Fire stop penetrations	Incl. above			
Division 23 - HVAC				2,468,964
Demolition				
Remove air handler w/ assoc. heat pump and ref. piping	1	EA	5,450.46	5,450
Remove RTU w/ assoc. ductwork and grilles. Remove exhaust fans w/ assoc. duc	3	EA	5,450.46	16,351
Remove RTU	5	EA	4,360.36	21,802
RX ex. water cooled screw chiller	2	EA	9,084.09	18,168
Remove all mech equipment, ductwork, controls and piping	1	EA	3,633.64	3,634
RX chilled water pumps	4	EA	1,090.09	4,360
Remove exhaust system incl. ductwork, fan and grilles	4	EA	1,090.09	4,360
Remove exhaust/roof fan	19	EA	581.38	11,046
Remove FCU and heating radiators w/ assoc. piping	52	EA	508.71	26,453
Remove and replace unit ventilator	4	EA	145.35	581
Remove and replace wall mounted radiator	1	EA	145.35	145
Remove and replace concentric grilles	2	EA	54.50	109
Remove TU and store it for reuse	2	EA	218.02	436
Remove TU w/ assoc. ductwork and air devices	5	EA	290.69	1,453
Equipment				
CH-1/2 - 160 Tons - Water cooled screw chillers	2	EA	312,067.27	624,135
DOAS-HBC - 6460 CFM - Rooftop units with enthalpy wheel	1	EA	128,513.46	128,513
DOAS-RFJ-RFK - 1800 CFM - Rooftop units with enthalpy wheel	1	EA	37,923.64	37,924
DOAS-RFI-RFL - 1800 CFM - Rooftop units with enthalpy wheel	1	EA	37,923.64	37,924

RENOVATION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
DOAS-RFB-RFD - 1800 CFM - Rooftop units with enthalpy wheel	1	EA	37,923.64	37,924
DOAS-R700 - 1680 - Rooftop unit with enthalpy wheel	1	EA	35,637.64	35,638
DOAS-1/3 - 900 CFM - Dedicated outdoor air system	2	EA	26,493.64	52,987
AHU-RWRC3 - 900 CFM - Air handling unit	1	EA	26,493.64	26,494
AH-1 - 525 CFM - Split system heat pump indoor unit	1	EA	7,857.07	7,857
HP-1 - Split system heat pump outdoor unit	1	EA	5,171.73	5,172
SEF-R700 - 5700 CFM - Exhaust fan	1	EA	9,776.89	9,777
SEF-R800 - 5100 CFM - Exhaust fan	1	EA	8,862.49	8,862
SEF-RGK/RGL - 4200 CFM - Exhaust fans	2	EA	7,272.87	14,546
SEF-RF-A/C - 1890 CFM	2	EA	3,534.41	7,069
SEF-RWRC-1/3 - 1890 CFM - Exhaust fans	2	EA	3,534.41	7,069
SEF-RF-I/J/K/L - 1150 CFM - Exhaust fans	4	EA	2,772.13	11,089
SEF-RWRC-2/4 - 1150 CFM - Exhaust fans	2	EA	2,772.13	5,544
SEF-RF-B/D - 1150 CFM - Exhaust fans	2	EA	2,772.13	5,544
EF-RWRC-1 - 960 CFM - Exhaust fan	1	EA	2,337.51	2,338
EF-8 - 600 CFM - Exhaust fan	1	EA	1,960.04	1,960
EF-R400 - 600 CFM - Exhaust fan	1	EA	1,960.04	1,960
EF-2/3 - 325 CFM - Exhaust fan	2	EA	1,960.04	3,920
EF-9 - 300 CFM - Exhaust fan	1	EA	1,960.04	1,960
EF-351 - 220 CFM - Exhaust fan	1	EA	1,960.04	1,960
EF-1 - 150 CFM - Exhaust fan	1	EA	1,960.04	1,960
EF-347/348 - 70 CFM - Exhaust fan	2	EA	1,960.04	3,920
EF-419 - 70 CFM - Exhaust fan	1	EA	1,960.04	1,960
EF-330 - 50 CFM - Exhaust fan	1	EA	1,960.04	1,960
FCU-03-01 - 400 CFM - Fan coil unit	1	EA	3,629.38	3,629
CWP-1/2 - 480 GPM - Pumps	2	EA	12,426.25	24,853
CHWP-1/2 - 310 GPM - Pumps	2	EA	8,176.69	16,353
WMHP-A - 700 CFM - Wall mounted heat pumps	3	EA	5,171.73	15,515
WMHP-B - 875 CFM - Wall mounted heat pumps	4	EA	5,489.23	21,957
GP-2 - 1400 CFM - Packaged gas/electric unit	1	EA	5,806.73	5,807
GP-1 - 1050 CFM - Packaged gas/electric unit	1	EA	6,587.07	6,587
EUH-01 - 2 KW - Electric unit heater	1	EA	1,887.36	1,887
Unit ventilator	4	EA	2,068.69	8,275
TU-X - Terminal unit	5	EA	1,887.36	9,437
Reinstall salvage TU-X	5	EA	290.69	1,453
Air intake	2	EA	326.67	653
Air Distribution				
Sheet metal ductwork and accessories	9,561	LB	14.70	140,583
Duct liner/insulation	5,235	SF	10.08	52,745
Flex duct	235	LF	8.75	2,056
Grilles & registers	182	EA	272.17	49,535
VD/MD - Dampers	114	EA	208.67	23,788
Louver 18x10	2	EA	1,342.67	2,685
Louver 24x10	9	EA	1,678.34	15,105
Louver 30x10	6	EA	2,014.01	12,084
Hooded wall vent	1	EA	453.67	454
Connect to ex. ductwork	25	EA	118.89	2,972
Mechanical Piping & Insulation				
Heating hot water/chilled water Piping & Insulation				
Piping, copper, w/ fittings & hangers, 3/4"	105	LF	42.65	4,478
Piping, copper, w/ fittings & hangers, 1"	303.45	LF	48.28	14,650
Piping, copper, w/ fittings & hangers, 1-1/2"	334.95	LF	60.80	20,365
Piping, copper, w/ fittings & hangers, 2"	70.35	LF	68.24	4,801
Piping, copper, w/ fittings & hangers, 2-1/2"	5.25	LF	80.58	423
3/4" Insulation	105	LF	8.66	910
1" Insulation	303.45	LF	10.43	3,166
1-1/2" Insulation	334.95	LF	17.51	5,865

RENOVATION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
2" Insulation	70.35	LF	18.96	1,334
2-1/2" Insulation	5.25	LF	21.05	111
Connect to ex. piping	24	EA	112.54	2,701
Additional HVAC allowance	24000	GSF	3.81	91,440
Automatic Controls	332	CP	1,524.00	505,968
Miscellaneous	24,000	GSF	8.00	192,024
General Conditions		Included Above		
BIM Coordination		Included Above		
Coring, sleeves & fire stopping		Included Above		
Startup and testing		Included Above		
Rigging		Included Above		
Vibration isolation		Included Above		
Commissioning		Included Above		
Division 26 - ELECTRICAL				971,522
Electrical Demoliton			**2.44**	
Disconnect & remove ex. panels	9	EA	285.47	2,569
Disconnecct & remove ex. Transformer	1	EA	285.47	285
Rx. and store branch power devices for relocation	11	EA	71.37	785
Rx. and store the data devices for relocation	29	EA	71.37	2,070
Rx. and store the fire alarm device	12	EA	71.37	856
Rx smoke detector and store for relocation for relocation	3	EA	71.37	214
Rx. lighting fixtures and controls	616	EA	71.37	43,962
Rx. Branch power devices	61	EA	71.37	4,353
Rx. Fire alarm devices	4	EA	71.37	285
Rx. AV / intercom devices	21	EA	71.37	1,499
Rx. CCTV cameras	15	EA	71.37	1,071
Rx. Security devices	8	EA	71.37	571
Temporary Electric		None indicated		
Power & Distribution Modifications			**2.20**	
Branch panelboard, 400A MCB	1	EA	8,571.18	8,571
Branch panelboard, 225A MCB	4	EA	4,380.46	17,522
Branch panelboard, 100A MCB	1	EA	3,428.25	3,428
Branch Panel, TVSS / SPD, surge protection	2	EA	769.87	1,540
Panel support hardware (per section)	6	EA	190.41	1,142
Transformer w/ flex, CU, 480Vx120/208V, 3ph, 70 kVA	1	EA	20,370.76	20,371
Grounding for transformers	1	EA	261.87	262
Emergency Power Generator & Transfer Switches		Existing to remain		
Feeders & Misc. Electrical Distribution Minimal			**0.34**	
(2) sets of 2" EMT w/ elbows, fittings, hangers & 4#3/0, 1#3G	20	LF	112.27	2,245
2-1/2" EMT w/ elbows, fittings, hangers & 4#4/0, 1#4G	50	LF	72.32	3,616
1-1/2" EMT w/ elbows, fittings, hangers & 4#1, 1#8G	65	LF	35.80	2,327
Branch Power			**0.62**	
Duplex receptacle w/ plate, box & connectors	39	EA	58.60	2,285
Duplex GFI receptacle w/ plate, box & connectors	6	EA	71.97	432
Power for CATV outlet adjacent to comm outlet), ex circuit	2	EA	58.60	117
Power for CATV outlet adjacent to comm outlet	6	EA	58.60	352
Reinstall relocated power for CATV outlet adjacent to comm outlet	6	EA	47.58	285
3/4" EMT w/ couplings, hangers & branch wire	1,140	LF	10.03	11,432

RENOVATION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Motor Connections			**9.28**	
CH-1/2 conn, 3pH, 200A	2	EA	1,341.70	2,683
DOAS-HBC - 3pH, 35A	1	EA	372.94	373
VFD for DOAS-HBC, Standard,NEMA-1, 4HP	1	EA	3,523.78	3,524
DOAS-RFJ-RFK conn, 3pH, 20A, N3R	1	EA	372.94	373
VFD for DOAS-RFJ-RFK, Standard, NEMA-3R, 4HP	1	EA	3,841.28	3,841
DOAS-RFI-RFL conn, 3pH, 20A, N3R	1	EA	372.94	373
VFD for DOAS-RFI-RFL, Standard,NEMA-3R, 4HP	1	EA	3,841.28	3,841
DOAS-RFB-RFD conn, 3pH, 20A, N3R	1	EA	372.94	373
VFD for DOAS-RFB-RFD, Standard, NEMA-3R, 4HP	1	EA	3,841.28	3,841
DOAS-R700 conn, 3pH, 35A	1	EA	372.94	373
VFD for DOAS-RFB-RFD, Standard, NEMA-1, 1.2HP	1	EA	3,222.20	3,222
DOAS-1/3 - 3pH, 20A, N3R	2	EA	372.94	746
VFD for DOAS-1/3, Standard, NEMA-3R, 1HP	2	EA	3,238.12	6,476
AHU-RWRC3 conn, 3pH, 60A, N3R	1	EA	861.08	861
VFD for AHU-RWRC3, Standard, NEMA-3R, 1HP	1	EA	3,238.12	3,238
AH-1 conn, 1pH, 25A	1	EA	234.86	235
HP-1 conn, 1pH, 20A, N3R	1	EA	372.94	373
SEF-R700 conn, 3pH, 60A	1	EA	657.88	658
VFD for SEF-R700, Standard, NEMA-1, 3HP	1	EA	3,222.20	3,222
SEF-R800 conn, 3pH, 60A	1	EA	657.88	658
VFD for SEF-R800, Standard, NEMA-1,3HP	1	EA	3,222.20	3,222
SEF-RGK/RGL conn, 3pH, 60A	2	EA	657.88	1,316
VFD for SEF--RGK/RGL, Standard, NEMA-1, 2HP	2	EA	2,920.62	5,841
SEF-RF-A/C conn, 3pH, 30A	2	EA	447.69	895
VFD for SEF--RF A/C, Standard, NEMA-1, 1HP	2	EA	2,920.62	5,841
SEF-RWRC-1/3 conn, 3pH, 30A	2	EA	447.69	895
SEF-RF-I/J/K/L conn, 3pH, 30A	4	EA	447.69	1,791
SEF-RWRC-2/4 conn, 3pH, 30A	2	EA	447.69	895
SEF-RF-B/D conn, 3pH, 30A	2	EA	447.69	895
EF-RWRC-1 conn, 1pH, 20A	1	EA	197.56	198
EF-8 conn, 1pH, 20A, N3R	1	EA	372.94	373
EF-R400 conn, 1pH, 20A	1	EA	197.56	198
EF-2/3 conn, 1pH, 20A	2	EA	197.56	395
EF-9 conn, 1pH, 20A	1	EA	197.56	198
EF-351 conn, 1pH, 20A	1	EA	197.56	198
EF-1 conn, 1pH, 20A, N3R	1	EA	372.94	373
EF-347/348 conn, 1pH, 20A	2	EA	197.56	395
EF-419 conn, 1pH, 20A, N3R	1	EA	372.94	373
EF-330 conn, 1pH, 20A	1	EA	197.56	198
FCU-03-01 conn, 1pH, 20A, N3R	1	EA	372.94	373
CWP-1/2 conn, 3pH, 60A	2	EA	657.88	1,316
VFD for CWP-1/2, Standard, NEMA-1, 10HP	2	EA	4,730.09	9,460
CHWP-1/2 conn, 3pH, 60A	2	EA	657.88	1,316
VFD for CHWP-1/2, Standard, NEMA-1, 20HP	2	EA	6,952.40	13,905
WMHP-A conn, 1pH, 60A	3	EA	460.23	1,381
WMHP-B conn, 1pH, 70A	4	EA	460.23	1,841
GP-2 conn, 3pH, 35A	1	EA	372.94	373
GP-1 conn, 3pH, 30A	1	EA	372.94	373
EUH-01 - 1pH, 20A	1	EA	197.56	198
Unit ventilator conn, 1pH, 20A	4	EA	197.56	790
TU-X conn, 1pH, 20A	5	EA	197.56	988
Access control connections, 20A	81	EA	197.56	16,002
3/4" EMT w/ fittings, hangers & branch wire	5,500.00	LF	10.03	55,156
3/4" EMT w/ couplings, hangers & 3#10, 1#10G	650.00	LF	11.77	7,653
3/4" EMT w/ couplings, hangers & 3#8, 1#10G	200.00	LF	16.52	3,305
1-1/4" EMT w/ elbows, fittings, hangers & 3#6, 1#10G	900.00	LF	19.99	17,995
1-1/4" EMT w/ elbows, fittings, hangers & 3#3, 1#8G	400.00	LF	32.71	13,082
2" EMT w/ elbows, fittings, hangers & 3#3/0, 1#6G	200.00	LF	66.62	13,324

RENOVATION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Lighting fixture			**17.69**	
A1 - 2 x 4 Flat panel LED	100	EA	402.96	40,296
A3 - 2 x 2 Flat panel LED - GTD	18	EA	360.81	6,495
A5 - 2 x 2 Flat panel LED	8	EA	360.81	2,886
A7 - 2 x 2 Volumetric light - GTD	4	EA	360.81	1,443
B1 - 2 x 4 Vandal resist Lens LED	20	EA	1,061.06	21,221
B2 - 2 x 4 Vandal resist Lens LED w/ battery pack	3	EA	1,242.59	3,728
D1 - 4' Max security LED, TP	81	EA	990.81	80,256
D2 - 4' Max security LED - EM w/ battery pack, TP	64	EA	1,172.34	75,030
D4 - 4' Max security LED - EM w/ NL, TP	39	EA	990.81	38,642
D5 - 2' Max security vanity LED, TP	12	EA	694.30	8,332
D6 - 4' Max security corner MTD LED w/ NL, TP	8	EA	990.81	7,926
D7 - 4' Max security corner MTD LED w/ NL, TP	57	EA	990.81	56,476
F1 - 8' Strip kitchen LED	12	EA	609.21	7,311
F2 - 8' Strip kitchen LED w/ battery pack	9	EA	790.74	7,117
F4 - 2 x 4 Vandal resist lens LED - FS rated	2	EA	1,061.06	2,122
J1 - 4' Wrap around LED	19	EA	304.61	5,788
K1 - 4' Industrial LED	37	EA	569.31	21,064
K4 - 4' Industrial LED, High output	6	EA	597.41	3,584
M4 - 4' Stair fixture LED - CLG	3	EA	639.56	1,919
P1 - Recessed canopy LED w/ battery pack	6	EA	709.81	4,259
X1/X2, Exit light	15	EA	304.61	4,569
X3 - Exit light w/ battery pack	5	EA	537.84	2,689
Lighting rough-in box w/ connectors	528	EA	40.37	21,314
3/4" EMT w/ couplings, hangers & branch wire		ETR		
Lighting controls			**3.15**	
S - Single pole switch w/ plate, box & conn	23	EA	115.36	2,653
SOS - Switch with occupancy sensor w/ plate, box & conn	15	EA	272.01	4,080
SOD - Dimmer switch with occupancy sensor w/ plate, box & conn	26	EA	272.01	7,072
SD - Dimming switch w/ plate, box & conn	3	EA	208.79	626
Occupancy sensor w/ plate, box & conn	6	EA	272.01	1,632
Lighting control relays w/ conductor, allowance	1	LS	43,390.96	43,391
Lighting control cable	1,460	LF	11.00	16,062
Grounding & Lightning Protection				
Grounding allowance	24,000	GSF	0.80	19,237
Commissioning of Electrical Systems				
Electric systems testing & commissioning support	1	LS	95,250.00	95,250
Division 27 - COMMUNICATIONS				46,651
Telecom Conduit, Cable Tray & Raceways			**0.06**	
Reinstall relocated data outlet box	18	EA	59.47	1,071
Telecom outlet box w/ EMT stub-up	2	EA	122.97	246
J-Hook cable support, drop(s) to corridor	40	EA	4.58	183
Telecom Racks, Panels & Backbone Cable		ETR		
Telecom Horizontal Cabling & Terminations			**0.07**	
1 - Telecom plate w/ (1) Cat V jack	2	EA	22.26	45
Category V, plenum cable - 4 pair	300	LF	5.20	1,561
Cat V connector at patch panel	2	EA	7.54	15

RENOVATION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
AV / Intercom Systems			**1.81**	
Inmate emergency intercom back box w/ conduit stub-up	60	EA	142.83	8,570
Intercomm wall station back box w/ conduit stub-up	34	EA	142.83	4,856
M - Video monitor back box w/ conduit stub-up	2	EA	412.66	825
Master intercom back box w/ conduit stub-up	1	EA	349.16	349
GUI central control box w/ conduit stub-up	1	EA	349.16	349
AV cable	14,700	LF	1.94	28,582
Division 28 - ELECTRONIC SAFETY & SECURITY				732,309
Security System Access Control & Monitoring			**5.89**	
A - 8" Jamb MTD electro-mechanical lock	81	EA	698.31	56,563
Security access control conduit & wire (per device)	81	EA	349.06	28,274
Door access control home run conduit & wire (per door)	81	EA	698.12	56,548
Replace headend equipment for existing building to remain	1	LS	60,000.00	60,000
Security System CCTV Video Surveillance	24,000	GSF	5.08	121,920
Fire Alarm System			**0.32**	
Connect to ex. FACP	1	LS	1,763.34	1,763
Reinstall relocated Fire alarm speaker/strobe	14	EA	69.79	977
Fire alarm strobe	5	EA	132.84	664
Reinstall fire alarm strobe	7	EA	55.84	391
Reinstall relocated smoke detector	6	EA	83.75	503
Fire alarm rough-in box w/ EMT conn	32	EA	44.25	1,416
3/4" EMT w/ coupl, hangers, fire alarm cables		ETR		
Fire Alarm testing & certification (per device)	32	EA	64.69	2,070
Tower Area Security				
AV / Intercom Systems				
Intercomm wall station back box w/ conduit stub-up	156	EA	142.83	22,281.15
Security System Access Control & Monitoring				
J - Existing (Lock)	123	EA	825.31	101,513.32
DA - Duress alarm	3	EA	412.66	1,237.97
MD - Motion detector	21	EA	317.41	6,665.52
Security access control conduit & wire (per device)	147	EA	349.06	51,312.04
Door access control home run conduit & wire (per door)	123	EA	698.12	85,869.13
Security System CCTV Video Surveillance				
Camera - fixed, interior	45	EA	2,023.94	91,077.51
Camera - PTZ	3	EA	2,658.94	7,976.83
CCTV camera conduit & wire (per each)	48	EA	495.02	23,760.83
Electric systems testing & commissioning support	1	LS	9,525.00	9,525

RENOVATION DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
Division 31 - EARTHWORK		None Indicated		-
Division 32 - EXTERIOR IMPROVEMENTS		None Indicated		-
Division 33 - UTILITIES		None Indicated		-
RENOVATION TRADE TOTAL				**10,268,753**

Project: Albemarle Charlottesville Regional Jail
Location: Charlottesville, VA
Design Phase: Design Development
October 10, 2024

FORELLA

A/E: Moseley Architects
Owner/Agency: Board of Local and Regional Jails

ALTERNATES DETAILED COST ESTIMATE

Description	Quantity	UOM	Loaded Unit Cost	Loaded Extension
ADD ALTERNATE 1 - Replace existing Hypalone roofing with TPO roofing				1,481,526
Remove and replace hypalone roof with TPO	34613.25	SF	42.80	1,481,526.48
ALTERNATES TRADE TOTAL				**1,481,526**

Section C

Additional Notes & Clarifications

FORELLA

ADDITIONAL NOTES, CLARIFICATIONS / CROSS CHECK

Virtually every project includes soft costs, financing fees, interest, furniture, fixture and equipment expenses, owner staffing expenses, and other non-construction related scope. The following can be a helpful way to **Cross Check** that all relevant costs have been evaluated, captured and accounted for. Other special costs not itemized may also apply. Unless identified otherwise, none of the costs listed below have been included in our computations.

A. OWNER'S REAL ESTATE ACQUISITIONS & LEASING

- Due diligence fees and expenses.
- Real estate acquisitions and/or leases, including those pertaining to any necessary easements and rights of way.
- Settlement charges, fees, taxes, transfer and / or recordation fees.
- Brokerage commissions.
- Permanent financing fees, expenses, interest, bonds.
- Fees and expenses related to special government programs.
- Accounting both internal and external.
- Appraisal fees.
- Start-up working capital to cover initial operating deficit.

B. OWNER'S PROJECT & CONTRACT MANAGEMENT

- Development fees.
- Project / contract management costs and expenses.
- Communications, telephones, cell phones, web services, facsimile expenses, e-mail, long distance telephone expenses, etc.
- Travel, parking, courier services, office equipment, office supplies, security fees and expenses.
- Reprographics expenses.
- Messenger and overnight expenses.

C. OWNER FINANCING

- Financial feasibility analyses.
- Construction and interim financing fees, expenses and interest.
- Permanent financing fees, expenses, interest, bonds.
- Fees and expenses related to special government programs.
- Accounting both internal and external.
- Appraisal fees.
- Start-up working capital to cover initial operating deficit.

D. OWNER'S INSURANCE

Insurance premiums purchased at appropriate limits for the following categories. We recommend that the A.M. Best Company ratings be A [minus] or above. Some or all the following costs are provided via contract through the AE, general contractor / CM, trade contractors, etc.

- General liability insurance.
- Professional liability insurance.
- Excess liability or umbrella insurance.
- Bonds.
- Builder's risk insurance.
- Moving and storage insurance.
- Title insurance.
- Worker's compensation insurance.
- Auto insurance.
- Pollution, hazardous materials liability insurance.

ADDITIONAL NOTES, CLARIFICATIONS / CROSS CHECK

E. LEGAL

- Legal services related to acquisitions and title.
- Legal services related to zoning, subdivisioning, use and proffers.
- Legal services related to partnership and joint venture agreement preparations and reviews.
- Legal services related to financing.
- Legal services related to contract preparation and reviews.
- Legal services related to leasing document preparation and reviews.

F. REGULATORY PROCESSES

- Site, building, occupancy permit fees, expenses, bonds.
- Fees and expenses pertaining to special zoning and uses.
- Primary water, sewer, gas, power, communications fees and expenses.
- State and local highway fees, bonds.
- On and off-site improvements or contributions mandated by regulatory agencies that may be required as a condition of their approvals.

G. DESIGN FEES & EXPENSES

- Surveys, such as ALTA/NSPS Land Title Surveys.
- Civil engineering fees and expenses.
- Architectural fees and expenses.
- Interior design fees and expenses.
- Structural engineering fees and expenses.
- Mechanical engineering fees and expenses.
- Electrical engineering fees and expenses.
- AVIT engineering fees and expenses.
- Traffic consultant's fees and expenses.
- Acoustical engineering fees and expenses.
- Lighting consultant's fees and expenses.
- Testing & inspections.
- Permit expeditor.

H. PROPERTY MANAGEMENT, OPERATIONS & MAINTENANCE

- Property management fees and expenses.
- Operations and maintenance costs.

I. MARKETING, PUBLIC RELATIONS & ADVERTISING

- Consultant's fees for market analyses, strategies, public relations, advertising and merchandizing.
- Expenses related to promotional photography, graphics, artwork, reproduction, postage, signage, etc.
- Promotional events, hearings, fund raisers, etc.

J. MOVING & STORAGE COSTS

- Moving and storage fees and expenses.
- Hauling and disposal expenses that can occur during and following a move.

K. TEMPORARY FACILITIES

- Temporary owner/user office facility leases or purchases.
- Temporary owner/user utilities fees and charges, etc.
- Temporary owner/user furniture, fixture & equipment.

L. MISCELLANEOUS

- *Construction Contingency*: This contingency budgets for change orders and / or additional costs charged by the contractor after the construction contract award.
- *Owner Paid Inspections and Testing:* We have included inspections and testing costs called for in the specifications. Owners can require additional inspections and testing over and above those required of the contractor.

ADDITIONAL NOTES, CLARIFICATIONS / CROSS CHECK

- *Existing Conditions:* Unless noted otherwise, we have not included costs pertaining to wetland issues, geotechnical issues, archeological finds or hazardous materials.
- *Furniture, fixtures & equipment [F.F. and E.]:* We typically do not include owner or user required items that are not permanently attached or fastened to the facility or part of the general contract for construction. Some common gray areas include owner-user communications equipment, special equipment purchases and/or leases.

M. RISK MANAGEMENT

Where cost risk is of particular concern, Forella Group can provide additional risk management techniques which isolate and more closely track issues of concern.

N. OPINION OF PROBABLE COST

Controlling cost requires processes that span from inception to occupancy. Our work represents an opinion of the costs probable from surveys, observations and data available at the time. We exercise no control over evolving design documents and fluctuating market conditions. Our opinions are based on our best judgement. We cannot in any way warrant, indemnify, guarantee or hold harmless for actual costs which could vary from our opinions of probable cost.

NEELU INC.
CONSULTING ENGINEERS
601 Bassett CT, SE, Smyrna, GA 30080
Ph: 770-312-2014

DOWNEY & SCOTT
Construction Management Services
6799 Kennedy Road, Unit F, Warrenton, VA 20187
Ph 540-347-5001, Fax 540-347-5021

DELIVERABLE DATE

October 28, 2024

VALUE ENGINEERING STUDY REPORT

Albemarle-Charlottesville Regional Jail Expansion & Renovation

Contract No.: 2025-0918224-05

PREPARED FOR:

DESIGNER:

MOSELEY ARCHITECTS

3200 NORFOLK STREET, RICHMOND, VA 23230

STUDY DATES:

October 14-18, 2024

October 28, 2024

Col. Martin Kumer
Superintendent
Albemarle-Charlottesville Regional Jail
160 Peregory Ln.
Charlottesville, VA 22902

RE: Value Engineering Study Report
Albemarle-Charlottesville Regional Jail – Additions/Renovations
Contract No.: 2025-0918224-05

Dear Col. Kumer,

With this letter, we have distributed an electronic PDF copy of Neelu Inc., Downey & Scott's Value Engineering (VE) Report on the Albemarle-Charlottesville Regional Jail (ACRJ) Additions/Renovations, Charlottesville, Virginia.

The study provided Forty-Six (46) Value Engineering Alternatives and Design Suggestions that should assist ACRJ, and the end-users in achieving their vision with increased quality and economy. It is important to note that some of these Value Engineering Alternatives and Design Suggestions are mutually exclusive of each other.

Should you desire to extend the scope of our project and require us to be present at the final implementation meeting with the Designers, we would be happy to assist. We will contact you to coordinate the time, place, and agenda for that working session as appropriate.

Thank you for allowing Neelu Inc. and Downey & Scott to participate in this project. It is always an honor to apply the Value Engineering methodology to the impressive work of a respectable firm like Moseley Architects and their Team. The Design team's time and hard work were evident as we analyzed the plans and made recommendations.

We sincerely hope our services and performance on this project are meaningful and useful. Please let us know if you have any questions or concerns regarding our report.

Sincerely yours,

Ramesh Kalvakaalva, PE, CVS
(SAVEI CVS No. 2011105000)
VE Facilitator
Ph: 770-312-2014
Email: Ramesh.Neeluinc@Gmail.com

William Downey
Principal
Project Manager
Ph: 540-272-6730
Email: billd@downeyscott.com

Tab I

INTRODUCTION

Neelu Inc., conducted a Value Engineering (VE) virtual workshop from October 14th through October 18th, 2024, on the ***Albemarle-Charlottesville Regional Jail Expansion & Renovation*, Contract No.: 2025-0918224-05**. Moseley Architects and its design team are performing the design. The construction cost estimate at the Preliminary Design stage for this project is approximately $40 Million, made known to the VE Team during the workshop.

The Value Engineering Study began Monday, October 14th, and included a presentation from Moseley Architects Lead Designer and support team and ACRJA representative. During the subsequent VE Workshop sessions, the VE team went through the Value Engineering Job Plan and arrived at some important conclusions and suggestions that were presented at the VE Team's informal out-briefing on Friday, October 18th.

In later sections of this report, readers will find narratives reflecting the study results, the methodology followed, and the project description. In the results section, the reader will find documentation of the ideas developed and presented on the last day of the workshop. These ideas represent opportunities to:

- Get the best return for construction dollars spent
- Assist in bringing the project within budget
- Assist in identifying the best approach for project delivery
- Reduce the risks associated with project delivery
- Minimize Life Cycle Costs for O & M
- Enhance the project outcome
- Where costs are reduced, do so without compromising vital functions

These developed alternatives should be the subject of an implementation meeting in the near future to make the most of the possibilities they represent.

PROJECT DESCRIPTION

The project replaces a portion of the existing jail as well as interior renovation of the existing jail to remain.
The project is intended to bring the Jail up to the current jail standards.

The "Project" is described as the construction of improvements as indicated in the Community Based Corrections Plan Planning Study dated December 22, 2021, as generally summarized below, and indicated
on the enclosed Exhibit C.

- Demolition of existing east wing of 1975 facility
- Construction of two-story expansion in the area of the demolished east wing
- Renovation of existing housing units
- Renovation and reconfiguration of existing administration areas
- Renovation of corridors and circulation
- New detainee outdoor recreation area

The ACRJ shall remain operational and functional during the entire duration of construction. The existing 16,000 square foot, single-story east wing of the 1975 facility will be demolished and a 33,500 square foot expansion will be constructed in the area of the demolished structure. A Phased Construction approach will be utilized to achieve the objective.

PURPOSE & NEED

The Need for the project is to Improve Resident Rehabilitation. The Purpose of the project is to Update Compliance and Implement Standards.

PROJECT SCOPE:

The Scope of Work includes:

1. Renovate and reconfigure approximately 60,000 square feet of the West Wing and Ground Floor portion of the 1974 original facility.
2. Demolish 16,000 square feet of the East Wing.
3. Construct a two story 32,000 square foot portion in the footprint of the 1974 East Wing. To Create:
    a. New facility entry
    b. Increase office space
    c. House the redesigned family, friends and professional visitation
    d. Include more private visitation areas.
4. Remove bar grate from the facility to:
    a. Increase the dormitory and dayroom space.
5. Replace existing (and adding additional) toilets and showers to meet the BLRJ 2018 compliance standards.
6. Replace lighting throughout the facility
7. Replace and upgrade HVAC and plumbing.

CONSTRUCTION COST ESTIMATE

As made available to the VE Team, the cost estimate was prepared based on the 100% Design Development submittal and totaled approximately $40 Million.

HIGHLIGHTS OF THE STUDY

The workshop resulted in the development of Twenty-One (21) Design Alternatives (some mutually exclusive) that offer an estimated $275 Thousand in potential first cost savings to be considered for implementation. These alternatives were selected as being reasonable considerations for incorporation in the design. There were also Twenty-Five (25) Design Suggestions that offer measures to simplify construction, provide means for reducing costs (in these cases, these savings are hard to quantify), help improve the finished facilities' operational requirements, and reduce the construction duration. The results are clearly defined in the tabbed section of this report entitled “Study Results.” Also included is a copy of the table in Section III, which outlines the Developed Alternatives and Design Suggestions. This table can also be used as an agenda and “score sheet” for the implementation work session that should be held very promptly. It should also be noted that the results of a VE work session may be quickly overtaken by the events of a fast-moving project of this nature. It is strongly recommended that the implementation work session be held as soon as this report has been received and the key stakeholders have had time to digest its content.

Albemarle-Charlottesville Regional Jail -Expansion & Renovation

Value Engineering Study

Charlottesville, VA

Contract No.: 2025-0918224-05

SUMMARY OF RESULTS - ALTERNATIVES

VE Idea No.	*Description of Alternative*	Ranking	*Initial Cost*			*Life Cycle Cost Impact*	*Net Savings*	*Final Disposition*
			Original Design	*Alternative*	*Savings*			
				ARCHITECTURAL & STRUCTURAL (AS)				
AS-02	Consider Stainless Steel In-Lieu of Galvanized Screening at Exercise Yard	5	$ 262,830	$ 457,319	($194,489)		($194,489)	
AS-03	Utilize Kane Fabric Screening In-Lieu of Galvanized Screening at Exercise Yard	5	$ 262,830	$ 91,464	$171,366		$ 171,366	
AS-04	Lower Roof Deck over the Detention Cells	4	$ 182,798	$ 80,444	$102,354		$ 102,354	
AS-05	Use 8" CMU In-Lieu of 12" CMU	5	$ 641,592	$ 580,909	$60,683		$ 60,683	
AS-06	Review Requirement for Future PVs at Roof Structure for Reduced Loads	5	$ 182,406	$ 169,584	$12,822		$ 12,822	
AS-08	Use CMU In-lieu of Concrete for Foundation Walls	4	$ 112,107	$ 79,106	$33,001		$ 33,001	
AS-10	Install Linoleum Sheet Flooring In-Lieu of LVT Flooring	5	$ 19,400	$ 15,089	$4,311		$ 4,311	
AS-11	Re-evaluate Joist Loading	4	$ 182,406	$ 173,286	$9,120		$ 9,120	
AS-12	Provide Joist Loading Diagram	See AS-11	See AS-11					
AS-13	Re-evaluate Classroom/Dayroom Joist Live Load	See AS-11	See AS-11					
AS-21	Evaluate Reducing Slab Thickness in the Cell Unit Areas	4	$ 136,098	$ 123,627	$12,471		$ 12,471	
AS-22	Evaluate Resinous Flooring in Janitors Closets	4	$ 2,179	$ 902	$1,277		$ 1,277	
AS-23	In-Lieu of Architectural Soffit Panels at Exterior Canopies Consider Field Applied Epoxy Coating	5	$ 19,990	$ 3,682	$16,308		$ 16,308	
AS-24	Use Linoleum In-Lieu of Athletic Rubber Flooring in Locker Rooms R-403 and Corridor R-404	5	$ 29,734	$ 22,456	$7,278		$ 7,278	
AS-25	Install Cost Efficient Two-Tier Lockers	5	$ 41,246	$ 29,459	$11,787		$ 11,787	
SUBTOTALS (SOME ALTERNATIVES ARE MUTUALLY EXCLUSIVE):			*$ 2,075,616*	*$ 1,827,327*	*$ 248,289*		*$ 248,289*	

Albemarle-Charlottesville Regional Jail -Expansion & Renovation

Value Engineering Study

Charlottesville, VA

Contract No.: 2025-0918224-05

SUMMARY OF RESULTS - ALTERNATIVES

VE Idea No.	Description of Alternative	Ranking	Initial Cost			Life Cycle Cost Impact	Net Savings	Final Disposition
			Original Design	Alternative	Savings			
	MECHANICAL, PLUMBING & ELECTRIC (ME)							
ME-01	Use Aluminum Conductors In-Lieu of Copper for Secondary of the Transformer	4	$ 95,065	$ 52,355	$ 42,710		$ 42,710	
ME-02	Use Aluminum In-Lieu of Copper for the Feeders to the New Panel Boards	4	$ 94,501	$ 56,363	$ 38,138		$ 38,138	
ME-03	Use Aluminum Bus Bars in the Switch Boards In-Lieu of Copper	4	$ 91,936	$ 78,281	$ 13,655		$ 13,655	
ME-04	Use Aluminum Bus Bars in the Panel Boards In-Lieu of Copper	4	$ 82,739	$ 55,060	$ 27,679		$ 27,679	
ME-05	Use Two 500 KW Generators In-Lieu of Single 1000 KW Generator	4	$ 362,311	$ 382,013	($19,702)		($19,702)	
ME-17	Utilize a Sewage Grinder Pump (Muffin Monster)	4	$ -	$ 75,150	($75,150)		($75,150)	
	SUBTOTALS (SOME ALTERNATIVES ARE MUTUALLY EXCLUSIVE):		*$ 726,552*	*$ 699,222*	*$ 27,330*		*$ 27,330*	
	TOTAL (Includes Value Additions):		*$ 2,802,168*	*$ 2,526,549*	*$ 275,619*		*$ 275,619*	

Albemarle-Charlottesville Regional Jail -Expansion & Renovation

Value Engineering Study

Charlottesville, VA

Contract No.: 2025-0918224-05

SUMMARY OF RESULTS - DESIGN SUGGESTIONS

VE Idea No.	*Description of Alternative*	Ranking	*Initial Cost*			*Life Cycle Cost Impact*	*Net Savings*	*Final Disposition*
			Original Design	*Alternative*	*Savings*			
				ARCHITECTURAL & STRUCTURAL (AS)				
AS-09	Conclude HAZMAT Survey and Generate Report for Final Bid Documents	DS	DESIGN SUGGESTION					
				CONSTRUCTABILITY & CIVIL (CC)				
CC-01	Improve Exterior Aesthetics Along Gateway Avon Rd	DS	DESIGN SUGGESTION					
CC-03	Identify Staging and Material Lay Down Areas	DS	DESIGN SUGGESTION					
CC-04	Identify Emergency Ingress and Egress To and From Facility During Construction	DS	DESIGN SUGGESTION					
CC-05	Identify Fire Department Connection During Phased Construction	DS	DESIGN SUGGESTION					
CC-06	Verify Materials and Methods of the Gazebo at the Staff Outdoor Eating Area	DS	DESIGN SUGGESTION					
CC-07	Verify Stormwater Management Connection Points to Existing and Outfall Elevation and Sheet flow	DS	DESIGN SUGGESTION					
CC-08	Coordinate Civil with the Plumbing Plans all Roof Drain Tie-ins to Storm Drains Including Laterals	DS	DESIGN SUGGESTION					
CC-09	Coordinate Civil with the Plumbing Plans all Condensate Drain Tie-ins to Storm Drains	See CC-08	DESIGN SUGGESTION					
CC-12	Investigate Condition of Sanitary/Sewer Lines Prior to Acceptance	DS	DESIGN SUGGESTION					

Albemarle-Charlottesville Regional Jail -Expansion & Renovation

Value Engineering Study

Charlottesville, VA

Contract No.: 2025-0918224-05

SUMMARY OF RESULTS - DESIGN SUGGESTIONS

VE Idea No.	*Description of Alternative*	Ranking	*Initial Cost*			*Life Cycle Cost Impact*	*Net Savings*	*Final Disposition*
			Original Design	*Alternative*	*Savings*			
MECHANICAL, PLUMBING & ELECTRICAL (ME)								
ME-06	Reduce Size of Generator to Serve Only Critical Loads	DS	DESIGN SUGGESTION					
ME-10	Install Security Cameras at Entrance to Main Mechanical and Electrical Rooms	DS	DESIGN SUGGESTION					
ME-11	Utilize R32 Refrigerant In-Lieu of R410A for the RTUs	DS	DESIGN SUGGESTION					
ME-12	Utilize R454B Refrigerant In-Lieu of R134A for the Chillers	DS	DESIGN SUGGESTION					
ME-15	Utilize New Generator as Backup for Existing Generator	DS	DESIGN SUGGESTION					
ME-16	Evaluate Need for Fire Pump	DS	DESIGN SUGGESTION					
ME-18	Confirm Diesel Fuel Storage Tank Size to Provide Minimal Operational Time	DS	DESIGN SUGGESTION					
ME-20	Elaborate Where Keynote #2 (Pre-Action System) On the Fire Protection Drawings Applies	DS	DESIGN SUGGESTION					
ME-21	Expand The Requirements for The Fire Suppression System To Clarify The Scope	DS	DESIGN SUGGESTION					
ME-22	Add Notes to The Fire Protection Drawings Regarding Shutdown And Tie-Ins to the Existing Fire Suppression System	DS	DESIGN SUGGESTION					
ME-23	Review Notes in DOAS Unit In Mechanical Schedule	DS	DESIGN SUGGESTION					
ME-24	Review GP-1 & GP-2 Notes on Mechanical Schedule Sheet	DS	DESIGN SUGGESTION					
ME-25	Standardize Ambient Design Temperature Used in Mechanical Schedules	DS	DESIGN SUGGESTION					
ME-29	Expand The Notes on Mechanical Sheet M2.8.3 To Clarify The Demo As Well As The New Work	DS	DESIGN SUGGESTION					
ME-30	Add FLA And MCA to the Mechanical Schedules	DS	DESIGN SUGGESTION					

Tab II

PROJECT LOCATION

INTRODUCTION

(Source: Moseley Architects– 100% Design Development Documents, Design Narrative, Cost Estimate, VE Workshop Kick-off Presentation; October 14, 2024)

PROJECT DESCRIPTION

The project replaces a portion of the existing jail as well as interior renovation of the existing jail to remain. The project is intended to bring the Jail up to the current jail standards.

The “Project” is described as the construction of improvements as indicated in the Community Based Corrections Plan Planning Study dated December 22, 2021, as generally summarized below, and indicated on the enclosed Exhibit C.

- Demolition of existing east wing of 1975 facility
- Construction of two-story expansion in the area of the demolished east wing
- Renovation of existing housing units
- Renovation and reconfiguration of existing administration areas
- Renovation of corridors and circulation
- New detainee outdoor recreation area

The ACRJ shall remain operational and functional during the entire duration of construction. The existing 16,000 square foot, single-story east wing of the 1975 facility will be demolished and a 33,500 square foot expansion will be constructed in the area of the demolished structure. A Phased Construction approach will be utilized to achieve the objective.

The building will be designed in accordance with the 2021 Virginia Statewide Building Code (VUSBC). The primary use group is Institutional (I-3), and the construction type is IIB, non-combustible construction. The building will be fire protected with an NFPA-13 sprinkler system.

The building will be designed to reach the certified level of the Leadership in Energy and Environmental Design (LEED) Green Building Rating System as developed by the United States Green Building Council. The project will be delivered using a design-bid-build delivery method and constructed under a single, stipulated sum construction contract pursuant to solicitation of contractors through a publicly advertised, award-to-low-bid process.

PURPOSE & NEED

The Need for the project is to Improve Resident Rehabilitation. The Purpose of the project is to Update Compliance and Implement Standards.

EXISTING SITE CONDITIONS

The existing Albemarle regional jail facility is located at 160 Peregory Lane in the county of Albemarle, Virginia. Public access to the jail comes off of Peregory lane. Secure access to the facility’s sally port is off of Avon Street (state route 742). There is another entrance adjacent to the secure sally port entrance to the magistrate lot off of Avon Street. Adjacent properties include Blue Ridge Juvenile detention center and the national guard armory to the south and west, residential developments to the east across Avon Street and interstate 64 to the north. The site is currently zoned R-1 Residential, and improvements will not re-quire
rezoning or special use permits. The setbacks have been confirmed by the Albemarle County community development office to be 5’ front yard, 5’ side yard and 20’ rear yard setbacks.

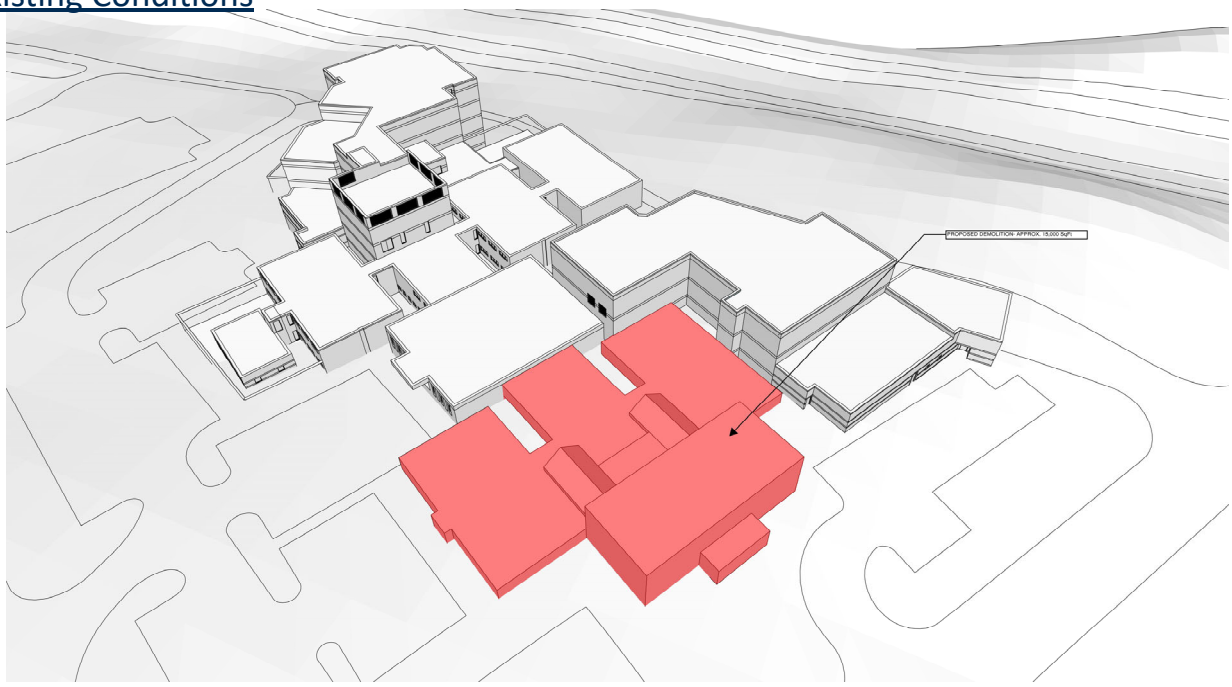
PROJECT SCOPE:

The Scope of Work includes:

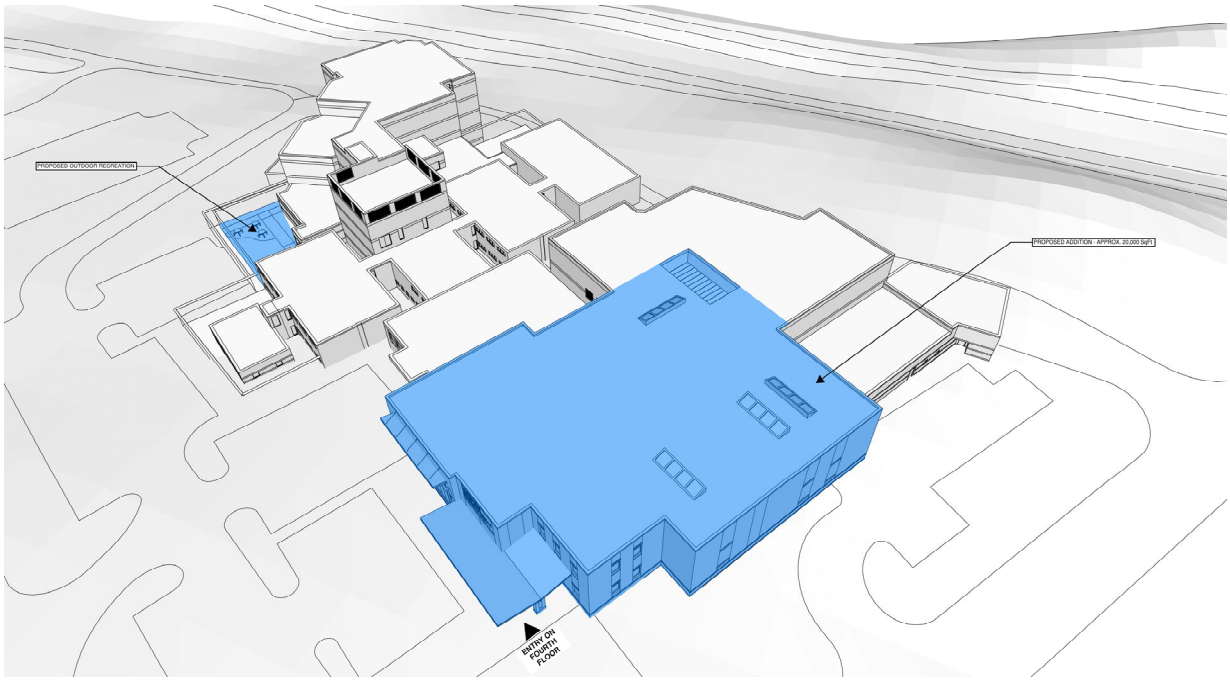
1. Renovate and reconfigure approximately 60,000 square feet of the West Wing and Ground Floor portion of the 1974 original facility.
2. Demolish 16,000 square feet of the East Wing.
3. Construct a two story 32,000 square foot portion in the footprint of the 1974 East Wing. To Create:
    a. New facility entry
    b. Increase office space
    c. House the redesigned family, friends and professional visitation
    d. Include more private visitation areas.
4. Remove bar grate from the facility to:
    a. Increase the dormitory and dayroom space.
5. Replace existing (and adding additional) toilets and showers to meet the BLRJ 2018 compliance standards.
6. Replace lighting throughout the facility
7. Replace and upgrade HVAC and plumbing

PROPOSED LAYOUTS:

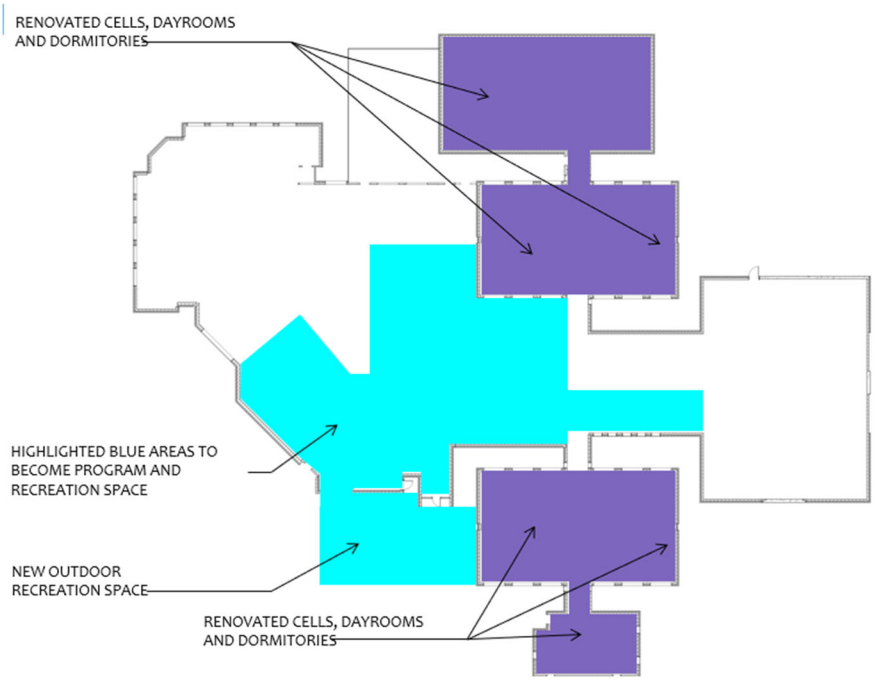
Existing Conditions



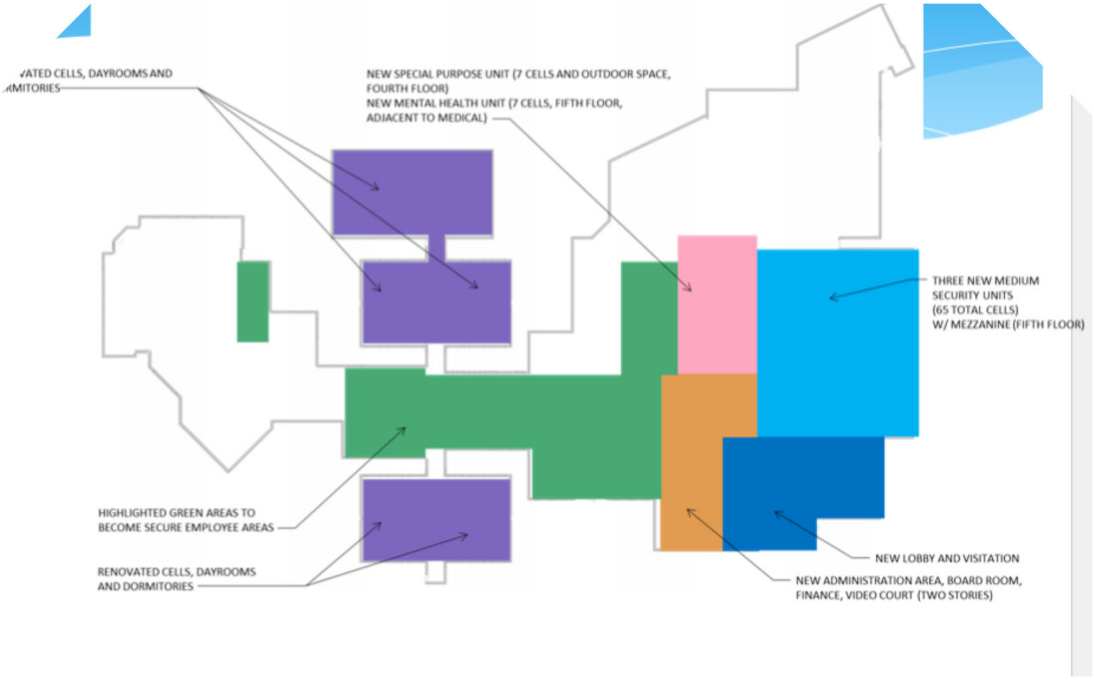
Additions/Renovations



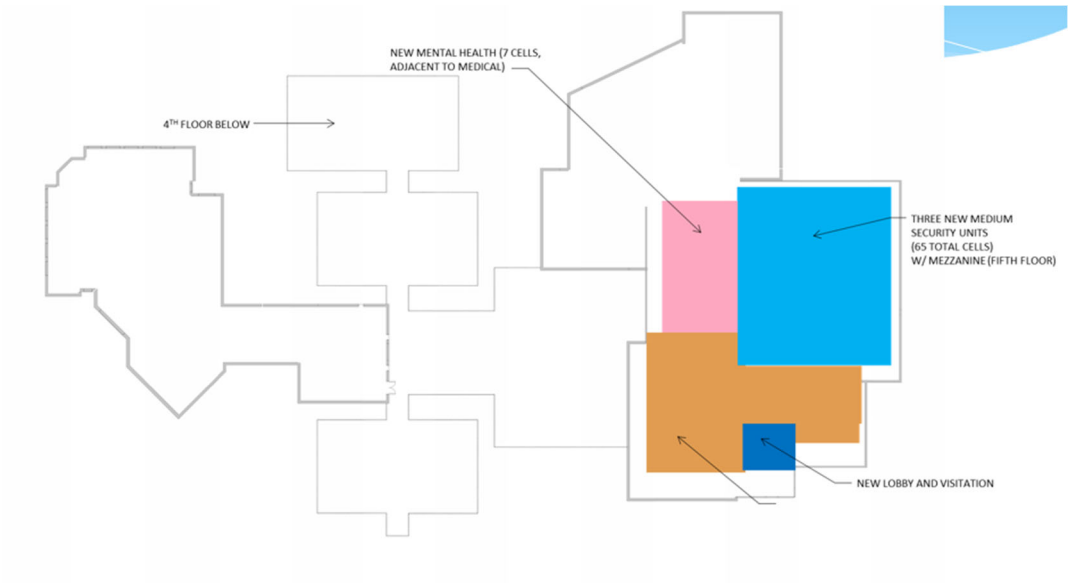
Third Floor Plan



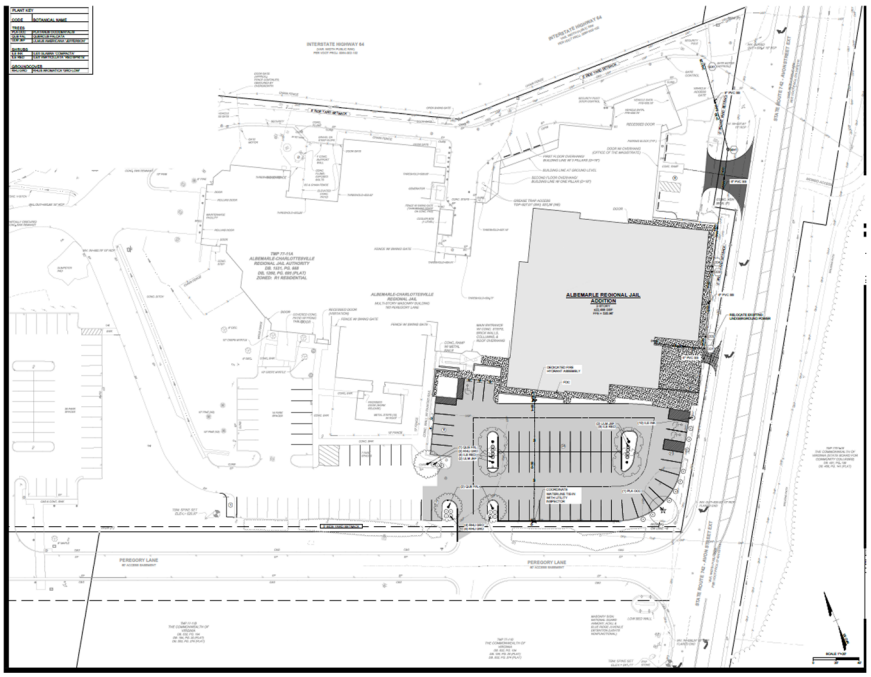
Fourth Floor Plan



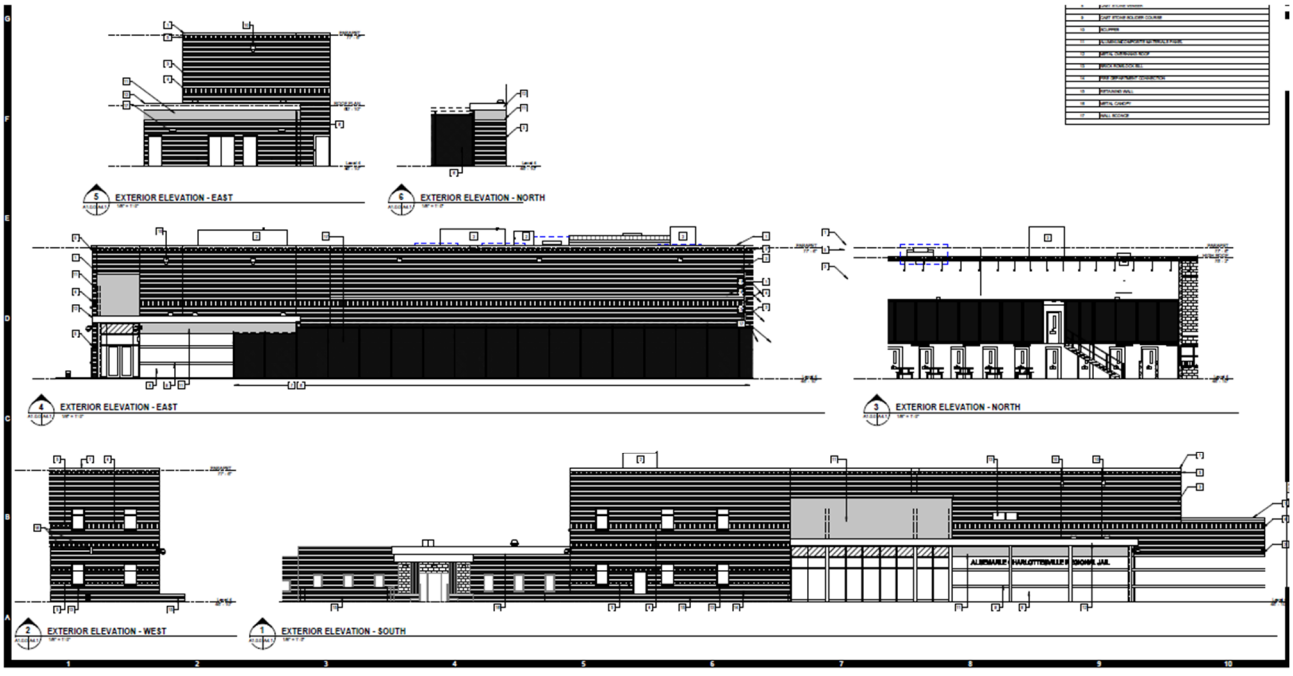
Fifth Floor Plan



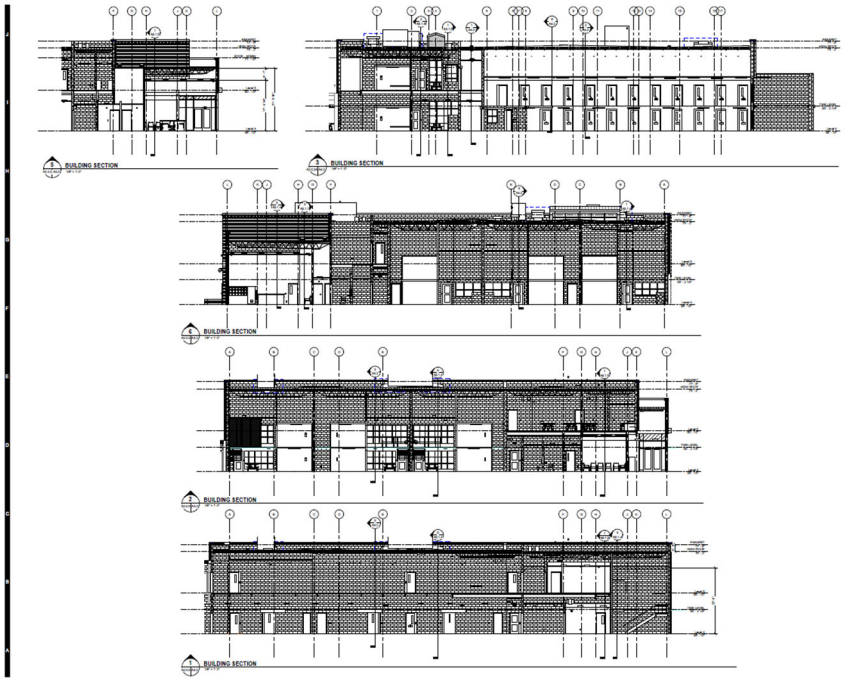
Site Plan



Elevation 1



Elevation 2



CONSTRUCTION COST

The current estimated construction cost is approximately **$40 Million.** A more detailed description of costs is provided in Section IV of this VE Report.

A significant amount of construction cost information has been generated by the planning/design team as it relates to the current stage of preliminary design. It is anticipated that, as the design process progresses, these estimates will continue to be refined and updated as new information becomes available.

NEED AND PURPOSE OF VALUE ENGINEERING STUDY

Prior to advancing to final design and construction, Albemarle-Charlottesville Jail Authority requires a Value Engineering Study to be conducted on the project. The primary objective of this VE Study Report is to:

- Get the best return for construction dollars spent
- Assist in bringing the project within budget
- Assist in identifying the best approach for project delivery
- Reduce the risks associated with project delivery
- Minimize Life Cycle Costs for O & M
- Enhance the project outcome
- Where costs are reduced, do so without compromising vital functions

Tab III

INTRODUCTION

The measurement of the success of a Value Engineering study can be done in several important ways, mainly depending on the nature of the project under review. In the current instance, it should be expected that the VE study provides the Owner with alternatives that offer opportunities for initial and life cycle cost reductions, opportunities to reduce the project delivery time, and a chance to enhance the effectiveness of the design before it goes to construction. The VE team used these objectives as they selected creative ideas to carry forward for development. The workshop resulted in the development of Twenty-One (21) Design Alternatives (some mutually exclusive) that offer an estimated $275 Thousand in potential first cost savings to be considered for implementation. These Alternatives were selected as being reasonable considerations for incorporation in the design. The additional Twenty-Five (25) Design Suggestions offer measures to simplify construction, reduce costs (in these cases, these savings are hard to quantify), help improve the finished facilities' operational requirements, and reduce the construction duration.

Enclosed with our report is a copy of the Summary of Design Alternatives and Design Suggestions worksheet that lists the workshop results. This worksheet provides a “score sheet” for the stakeholders to use in a formal implementation meeting. Following the summary sheet are documents developed by the VE team intended to offer the logic behind the developed alternatives and the design suggestions. These are complete with comparisons between the original design (where available) and the alternative, sketches, technical calculations, and cost estimates for the original and alternative design components. Note that some design suggestions were not developed since the listed title enables the reader to gauge their merits.

These documents should be thoroughly evaluated as part of the implementation discussions. All of the Alternatives and Design Suggestions apply to ACRJ Additions and Renovations.

The order in which we present the alternatives is as follows:

AS: Architectural and Structural

CC: Constructability & Civil

ME: Mechanical & Electrical (Includes Plumbing & Fire Protection)

Additional Notes:

The Creative Idea Listing should serve as an Index for referencing the Developed ideas in the VE Study Report.

The cost estimates are intended as general indicators (Rough Order of Magnitude) of the cost results should the alternatives be accepted as they are written.

If the alternatives are approached positively, the best results can be obtained from this workshop by reviewing the alternatives with an eye on how best to use the alternative in question. Before rejecting a Design Alternative or Design Suggestion, the reviewers should first ask, “if we take this idea and change it to do_____, then we can accept it.” This is a positive approach. If the alternative is unacceptable, a reason or reasons should be clearly recorded for its rejection. Some of the ideas may be mutually exclusive from others being considered. In these instances, the cost impact should reside with the alternative that is finally accepted.

ALTERNATIVES

Albemarle-Charlottesville Regional Jail -Expansion & Renovation

Value Engineering Study

Charlottesville, VA

Contract No.: 2025-0918224-05

SUMMARY OF RESULTS - ALTERNATIVES

VE Idea No.	*Description of Alternative*	Ranking	*Initial Cost*			*Life Cycle Cost Impact*	*Net Savings*	*Final Disposition*
			Original Design	*Alternative*	*Savings*			
				ARCHITECTURAL & STRUCTURAL (AS)				
AS-02	Consider Stainless Steel In-Lieu of Galvanized Screening at Exercise Yard	5	$ 262,830	$ 457,319	($194,489)		($194,489)	
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AS-25	Install Cost Efficient Two-Tier Lockers	5	$ 41,246	$ 29,459	$11,787		$ 11,787	
SUBTOTALS (SOME ALTERNATIVES ARE MUTUALLY EXCLUSIVE):			*$ 2,075,616*	*$ 1,827,327*	*$ 248,289*		*$ 248,289*	

Albemarle-Charlottesville Regional Jail -Expansion & Renovation

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ME-04	Use Aluminum Bus Bars in the Panel Boards In-Lieu of Copper	4	$ 82,739	$ 55,060	$ 27,679		$ 27,679	
ME-05	Use Two 500 KW Generators In-Lieu of Single 1000 KW Generator	4	$ 362,311	$ 382,013	($19,702)		($19,702)	
ME-17	Utilize a Sewage Grinder Pump (Muffin Monster)	4	$ -	$ 75,150	($75,150)		($75,150)	
	SUBTOTALS (SOME ALTERNATIVES ARE MUTUALLY EXCLUSIVE):		*$ 726,552*	*$ 699,222*	*$ 27,330*		*$ 27,330*	
	TOTAL (Includes Value Additions):		*$ 2,802,168*	*$ 2,526,549*	*$ 275,619*		*$ 275,619*	

Value Analysis Alternative

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-02**
DESCRIPTION:	**Consider Stainless Steel In-Lieu of Galvanized Screening at Exercise Yard**	SHEET NO.: **1 of 4**

ORIGINAL DESIGN:

The original design calls for galvanized screening material to installed horizontally over the designated Exercise Yards.

ALTERNATIVE:

The alternative design suggests a stainless-steel screening material to installed horizontally over the designated Exercise Yards.

PROS:

- POTENTIAL EXTENSION OF LIFE CYCLE OF MATERIAL SELECTION

CONS:

- POTENTIAL ADDED MATERIAL COST.
- POTENTIAL NON-COMPATIBLE MATERIAL VENT SPACE OPENINGS

TECHNICAL DISCUSSION:

The original design calls for a galvanized metal screen and support framing for a horizontally placed ventilated screen above the Exercise yards. The main program need is to have vent material to reject passage of contraband as small as a pill bottle potentially dropped by drone from above.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRI COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 262,830	$	$ 262,830
ALTERNATIVE	$ 457,319	$	$ 457,319
VALUE ADDITION	($ 194,489)	$	($ 194,489)

Item Calculations

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-02**
DESCRIPTION:	**Consider Stainless Steel In-Lieu of Galvanized Screening at Exercise Yard**	SHEET NO.: **3 of 4**

Assumptions:
1) Galvanized screening material to installed horizontally over the designated Exercise Yards
2) Material change from Galvanized to Stainless steel in similar configuration and size of area covered.

Quantities:

Original Design:
Horizontal area at 3 new equal yards and 1 separate smaller yard = 2,921 SF
Galvanized metal unit cost identified as $71.84/SF
Total cost estimated $209,867

Alternative:
Horizontal area at 3 new equal yards and 1 separate smaller yard = 2,921 SF
Stainless steel unit cost identified as $125.00/SF
Total cost estimated $365,125

NEELU INC. CONSULTING ENGINEERS

Cost eet

DOWNEY & SCOTT Construction Management Services

PROJECT:	**Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-02**
DESCRIPTION:	**Consider Stainless Steel In-Lieu of Galvanized Screening at Exercise Yard**	SHEET NO. **4 of 4**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Galv. mtl screen/exercise yards	SF	2,921	$71.84	$ 209,845		$0	$ -
St. stl mtl screen/exercise yards	SF			$ -	2921	$ 125.00	$ 365,125
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
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				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 209,845			$ 365,125
Mark-up at 25.25%				$ 52,986			$ 92,194
TOTAL				**$ 262,830**			**$ 457,319**
Potential Savings / (Value Addition):							**($194,489)**

Value Analysis Alternative

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-03**
DESCRIPTION:	**Utilize Alternate Fabric Screening In-Lieu of Galvanized Screening at Exercise Yard**	SHEET NO.: **1 of 4**

ORIGINAL DESIGN:

The original design calls for galvanized screening material to be installed horizontally over the designated Exercise Yards.

ALTERNATIVE:

The alternative design suggests an alternate fabric type screening (tensile fiberglass or polyester) material be installed horizontally over the designated Exercise Yards

PROS:

- POTENTIAL EXTENSION OF LIFE CYCLE OF MATERIAL SELECTION
- POTENTIAL COST REDUCTION FOR MATERIAL AND INSTALLATION LABOR
- POSSIBLE SIZE & WEIGHT REDUCTION OF SUPPORT FRAMING MEMBERS

CONS:

- POSSIBLE COMPLIANCE CONFLICT WITH JAIL STANDARDS PER PRODUCT SPECIFICATION
- POTENTIAL IMBALANCE OF VENTILATION (OPENINGS) OF THE MATERIAL

TECHNICAL DISCUSSION:

The original design calls for a galvanized metal screen and support framing for a horizontally placed ventilated screen above the Exercise yards. The main program need is to have vent material to reject contraband deployment dropped from above or thrown over the demising wall.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRI COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 262,830**	**$**	**$ 262,830**
ALTERNATIVE	**$ 91,464**	**$**	**$ 91,464**
SAVINGS	**$ 171,367**	**$**	**$ 171,367**

Item Calculations

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-03**
DESCRIPTION:	**Utilize Alternate Fabric Screening In-Lieu of Galvanized Screening at Exercise Yard**	SHEET NO.: **3 of 4**

Assumptions:
1) Galvanized screening material to be installed horizontally over the designated Exercise Yards
2) Material change from Galvanized to a fabric type in similar configuration and size of area covered.

Quantities:

Original Design:
Horizontal area at 3 new equal yards and 1 separate smaller yard = 2,921 SF
Galvanized metal unit cost identified as $71.84/sf
Total cost estimated $209,867

Alternative:
Horizontal area at 3 new equal yards and 1 separate smaller yard = 2,921 SF
Tensile fiberglass / polyester fabric unit cost identified as $25.00/sf
Total cost estimated $73,025.00

Cost eet

PROJECT:	**Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-03**
DESCRIPTION:	**Utilize Alternate Fabric Screening In-Lieu of Galvanized Screening at Exercise Yard**	SHEET NO. **4 of 4**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Galv. mtl screen/exercise yards	SF	2,921	$72	$ 209,845		$0	$ -
Tensile fiberglass / polyester fabric exercise yards	SF			$ -	2921	$ 25.00	$ 73,025
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 209,845			$ 73,025
Mark-up at 25.25%				$ 52,986			$ 18,439
TOTAL				**$ 262,830**			**$ 91,464**
Potential Savings / (Value Addition):							**$171,367**

Value Analysis Alternative

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-04**
DESCRIPTION:	**Lower Roof Deck Over Detention Cells**	SHEET NO.: **1 of 4**

ORIGINAL DESIGN:

The original design calls for uniform High Roof height throughout majority of the East Wing Addition.

ALTERNATIVE:

The alternative design suggests lowering the roof level over the 2-tier detention cell area.

PROS:

- REDUCED CMU WALL AND STEEL COLUMN MATERIALS
- REDUCED NEW SNOW DRIFT LOADING ON ADJACENT BUILDING ROOF
- REDUCED CONDITIONED AREA SF
- REDUCED SPRINKLED AREA SF
- REDUCED FIRE ALARM AREA SF

CONS:

- MINIMAL IMPACT ON INTERSTITIAL MEP SPACE BELOW ROOF
- ADDITIONAL COORDINATION FOR ROOF MAINTENANCE ACCESS

TECHNICAL DISCUSSION:

The original design calls for a uniform High Roof height of 75'-2" which creates an approximately 7 ft minimum interstitial space between bottom of roof joists and top of 2-tier detention cell area.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 182,798**	**$**	**$ 182,798**
ALTERNATIVE	**$ 80,444**	**$**	**$ 80,444**
SAVINGS	**$ 102,354**	**$**	**$ 102,354**

Item Calculations

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-04**
DESCRIPTION:	**Lower Roof Deck Over The Detention Cells**	SHEET NO.: **3 of 4**

Assumptions:
1) Roof deck lowered 3’-6” over the detention cells

Quantities:

Original Design:
…..

Alternative:
…..

Cost Worksheet

PROJECT:	**Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-04**
DESCRIPTION:	**Lower Roof Deck Over Detention Cells**	SHEET NO. **4 of 4**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Exterior CMU/Brick Wall Staging/Logistics	SF			$ -	1	$7,500.00	$ 7,500
Interior CMU Partitions	SF	548	$41.12	$ 22,534	274	$41.12	$ 11,267
Provide Fire Alarm in Area	SF	8,150	$2.80	$ 22,820			$ -
Fire Protect (Sprinkler) Area	SF	8,150	$7.62	$ 62,103			$ -
Structural Columns	TN	6.75	$5,700.91	$ 38,490	6.57	$ 5,700.91	$ 37,460
Allowance for Roofing on two different levels				$ -	1	$ 8,000.00	$ 8,000
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 145,946			$ 64,227
Mark-up at 25.25%				$ 36,851			$ 16,217
TOTAL				**$ 182,798**			**$ 80,444**
Potential Savings / (Value Addition):							**$102,354**

Value Analysis Alternative

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-05**
DESCRIPTION:	**Use 8” CMU In-Lieu of 12” CMU**	SHEET NO.: **1 of 4**

ORIGINAL DESIGN:

The original design calls for 12” nominal CMU blocks at exterior secured walls in East Wing Addition.

ALTERNATIVE:

The alternative design suggests using 8” nominal CMU blocks throughout the East Wing Addition

PROS:

- **REDUCED CMU WALL WEIGHT AND REQUIRED GROUT/MORTAR MATERIALS**
- **MAINTAIN 3 HOUR FIRE RATING**
- **UNIFORM CMU SIZE THROUGHOUT PROJECT**

CONS:

- **NONE APPARENT**

TECHNICAL DISCUSSION:

The original design calls for 12” nominal CMU blocks for exterior secured walls. The is no apparent requirement for using 12” CMU vs. 8” CMU used in other areas of project. Per VA BOC Jail Standards, all CMU cells for security perimeter walls must be grout filled with vertical reinforcement bars. This provides a robust 8” CMU wall design to resist applied gravity and lateral loads.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 641,592**	**$**	**$ 641,592**
ALTERNATIVE	**$ 580,909**	**$**	**$ 580,909**
SAVINGS	**$ 60,683**	**$**	**$ 60,683**

Item Calculations

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-05**
DESCRIPTION:	**Use 8” CMU In-Lieu of 12” CMU**	SHEET NO.: **3 of 4**

Assumptions:
1) Original design quantities per 10/10/24 Forella estimate
2) Alternative unit costs per Forella estimate for similar 8” CMU wall

Quantities:

Original Design:
12" CMU Foundation Walls = 832 SF @ $27.64 per SF = $23,002
12" CMU Backup, Exterior = 6,649 SF @ $27.64 per SF = 183,760
S3, 12" CMU Perimeter = 1,500 WSF @ $36.52 per WSF = $54,791
S3-1, 12" CMU Perimeter, 3 hr = 813 WSF @ $41.12 per WSF = $33,417
S4, 12" CMU Interior = 2,642 WSF @ $36.52 per WSF = $96,474
S4-1, 12" CMU Interior, 3 hr = 2,393 WSF @ $41.12 per WSF = $120,836

Alternative:
8" CMU Foundation Walls = 832 SF @ $24.33 per SF = $20,243
8" CMU Backup, Exterior = 6,649 SF @ $24.33 per SF = $161,770
S1, 8" CMU Perimeter = 1,500 WSF @ $33.51 per WSF = $50,265
S1-2, 8" CMU Perimeter, 3 hr = 813 WSF @ $38.11 per WSF = $30,983
S2, 8" CMU Interior = 2,642 WSF @ $33.51 per WSF = $88,533
8" CMU Interior, 3 hr = 2,393 WSF @ $38.11 per WSF = $112,005

Alternative maintains CMU quantity and reduces cost by approximately 10%

DOWNEY & SCOTT
Construction Management Services

Cost Worksheet

PROJECT:	**Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-05**
DESCRIPTION:	**Use 8" CMU In-Lieu of 12" CMU**	SHEET NO. **4 of 4**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
12" CMU Foundation Walls	SF	832	$27.65	$ 23,002			$ -
12" CMU Backup, Exterior	SF	6,649	$27.64	$ 183,760			$ -
S3, 12" CMU Perimeter	WSF	1,500	$36.51	$ 54,761			$ -
S3-1, 12" CMU Perimeter, 3 hr	WSF	813	$41.10	$ 33,417			$ -
S4, 12" CMU Interior	WSF	2,642	$36.52	$ 96,474			$ -
S4-1, 12" CMU Interior, 3 hr	WSF	2,939	$41.11	$ 120,836			$ -
				$ -			$ -
8" CMU Foundation Walls	SF			$ -	832	$24.33	$ 20,243
8" CMU Backup, Exterior	SF			$ -	6,649	$24.33	$ 161,770
S1, 8" CMU Perimeter	WSF			$ -	1,500	$33.51	$ 50,265
S1-2, 8" CMU Perimeter, 3 hr	WSF			$ -	813	$38.11	$ 30,983
S2, 8" CMU Interior	WSF			$ -	2,642	$33.51	$ 88,533
8" CMU Interior, 3 hr	WSF			$ -	2,939	$38.11	$ 112,005
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 512,249			$ 463,800
Mark-up at 25.25%				$ 129,343			$ 117,109
TOTAL				**$ 641,592**			**$ 580,909**
Potential Savings / (Value Addition):							**$60,683**

Value Analysis Alternative

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-06**
DESCRIPTION:	**Review Requirement for Future PVs at Roof Structure for Reduced Loads**	SHEET NO.: **1 of 4**

ORIGINAL DESIGN:

The original design calls for an additional roof dead load for ballasted photovoltaic panel systems (PVs)

ALTERNATIVE:

The alternative design suggests reviewing the requirement for this design load.

PROS:

- **POTENTIAL FOR REDUCED DESIGN LOADS**
- **REDUCED ROOF JOIST TONNAGE IF LOAD IS ELIMINATED**

CONS:

- **NONE APPARENT**

TECHNICAL DISCUSSION:

The original design calls for 8 psf superimposed dead load for future PV solar panels. The requirement for this additional load should be reviewed for potential elimination.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 182,406**	**$**	**$ 182,406**
ALTERNATIVE	**$ 169,584**	**$**	**$ 169,584**
SAVINGS	**$ 12,822**	**$**	**$ 12,822**

Illustrations

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-06**
DESCRIPTION:	**Review Requirement for Future PVs at Roof Structure for Reduced Loads**	SHEET NO.: **2 of 4**

ORIGINAL DESIGN:

4. DEAD LOADS

ROOF (NON-SECURE)	20 PSF
ROOF (SECURE)	60 PSF
ALL FRAMED FLOORS, U.N.O.	59 PSF
PHOTOVOLTAIC PANEL SYSTEMS	8 PSF BALLASTED

ALTERNATIVE:

4. DEAD LOADS

ROOF (NON-SECURE)	20 PSF
ROOF (SECURE)	60 PSF
ALL FRAMED FLOORS, U.N.O.	59 PSF
~~PHOTOVOLTAIC PANEL SYSTEMS~~	~~8 PSF BALLASTED~~

Item Calculations

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-06**
DESCRIPTION:	**Review Requirement for Future PVs at Roof Structure for Reduced Loads**	SHEET NO.: **3 of 4**

Assumptions:
1) Original design quantity and pricing per 10/10/24 Forella estimate

Quantities:
Original Design:

Roof (Secured) dead load = 60 psf
Superimposed PV dead load = 8 psf
Unreduced roof live load = 20 psf
Snow Load = 40.6 psf (Controls)
Total Load = 108.6 psf

Joist Steel = 26 TNS @ $5,700.91 per TNS = $145,634

Alternative:

Roof (Secured) dead load = 60 psf
Superimposed PV dead load = 0 psf
Unreduced roof live load = 20 psf
Snow Load = 40.6 psf (Controls)
Total Load = 100.6 psf
Original / Alternative = 7% reduction in total roof load

Joist Steel = 23.75 TNS @ $5,700.91 per TNS = $135,397

Alternative reduces cost by approximately 7%

Cost Worksheet

PROJECT:	**Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-06**
DESCRIPTION:	**Review Requirement for Future PVs at Roof Structure for Reduced Loads**	SHEET NO. **4 of 4**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Joist steel	TNS	26	$5,701	$ 145,634	24	$5,701	$ 135,397
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 145,634			$ 135,397
Mark-up at 25.25%				$ 36,773			$ 34,188
TOTAL				**$ 182,406**			**$ 169,584**
Potential Savings / (Value Addition):							**$12,822**

Value Analysis Alternative

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-08**
DESCRIPTION:	**Use CMU In-Lieu of Concrete for Foundation Walls**	SHEET NO.: **1 of 4**

ORIGINAL DESIGN:

The original design calls for concrete foundation walls.

ALTERNATIVE:

The alternative design suggests using CMU foundation walls.

PROS:

- **ELIMINATES BELOW GRADE CONCRETE FORMWORK**
- **ELIMINATES WORKSPACE CONSTRAINTS BETWEEN NEW AND EXISTING WALLS**
- **REDUCED MASONRY AND CONCRETE TRADE COORDINATION**

CONS:

- **NONE APPARENT**

TECHNICAL DISCUSSION:

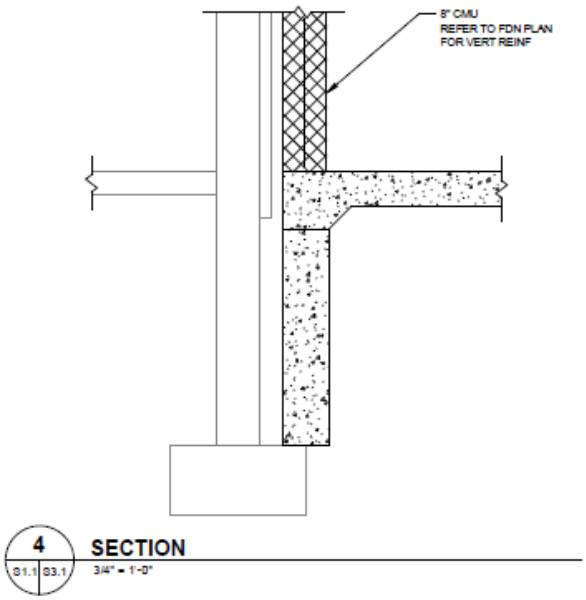
The original design calls for concrete foundation walls along the interface of the East Wind Addition and existing building. Below grade CMU foundation walls are already designed at other exterior walls in the Addition.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 112,107**	**$**	**$ 112,107**
ALTERNATIVE	**$ 79,106**	**$**	**$ 79,106**
SAVINGS	**$ 33,001**	**$**	**$ 33,001**

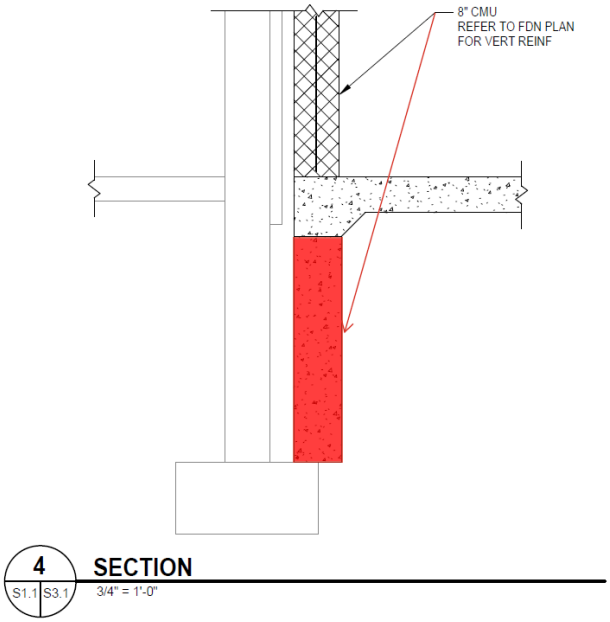
Illustrations

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-08**
DESCRIPTION:	**Use CMU In-Lieu of Concrete for Foundation Walls**	SHEET NO.: **2 of 4**

ORIGINAL DESIGN:



ALTERNATIVE:



Item Calculations

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-08**
DESCRIPTION:	**Use CMU In-Lieu of Concrete for Foundation Walls**	SHEET NO.: **3 of 4**

Assumptions:
1) Original design quantities per 10/10/24 Forella estimate

Quantities:

Original Design:
8” concrete below grade foundation walls = 1,653 SF @ $34.43 per SF = $56,920

12” concrete below grade foundation walls = 830 SF @ $39.26 per SF = $32,587

Alternative:
8” CMU below grade foundation walls = 1,653 SF @ $24.33 per SF = $40,217

12” CMU below grade foundation walls = 830 SF @ $27.64 per SF = $22,941

Alternative reduces cost by approximately 30%

Cost Worksheet

PROJECT:	Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05	ALTERNATIVE NO.: AS-08
DESCRIPTION:	Use CMU In-Lieu of Concrete for Foundation Walls	SHEET NO. 4 of 4

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
8" concrete foundation walls	SF	1,653	$34.43	$ 56,920			$ -
12" concrete foundation walls	SF	830	$39.26	$ 32,587			$ -
8" CMU foundation walls	SF			$ -	1653	$24.33	$ 40,217
12" CMU foundation walls	SF			$ -	830	$27.64	$ 22,941
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 89,507			$ 63,159
Mark-up at 25.25%				$ 22,600			$ 15,948
TOTAL				**$ 112,107**			**$ 79,106**
Potential Savings / (Value Addition):							**$33,001**

Value Analysis Alternative

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-10**
DESCRIPTION:	**Install Linoleum Sheet Flooring In-Lieu of LVT Flooring**	SHEET NO.: **1 of 4**

ORIGINAL DESIGN:

The original design calls for installation of LVT flooring, located in administrative corridors, copy & file rooms, elevator cab, and Visitation rooms.

ALTERNATIVE:

The alternative design suggests installation of Linoleum sheet flooring located in administrative corridors, copy & file rooms, elevator cab, and Visitation rooms

PROS:

- REDUCED SEAMS AND MATERIAL JOINTS
- POTENTIAL REDUCED MATERIAL COST (SF)
- REDUCED INSTALLATION LABOR DURATION
- POTENTIAL LIFE CYCLE BENEFIT BASED ON MATERIAL GRADE

CONS:

- REDUCED AESTHETIC APPEAL AT STAFF CIRCULATION CORRIDORS AND ADMIN FILE ROOMS.

TECHNICAL DISCUSSION:

The original design calls for installation of LVT flooring, located in administrative corridors, copy & file rooms, elevator cab, and Visitation rooms. The alternative design suggests installation of Linoleum sheet flooring located in administrative corridors, copy & file rooms, elevator cab, and Visitation rooms which allow for a seamless or minimal seams at the staff circulation corridors and file rooms. The Visitation areas are individual small rooms with limited visibility.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRI COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 19,400**	**$**	**$ 19,400**
ALTERNATIVE	**$ 15,089**	**$**	**$ 15,089**
SAVINGS	**$ 4,311**	**$**	**$ 4,311**

Item Calculations

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-10**
DESCRIPTION:	**Install Linoleum Sheet Flooring In-Lieu of LVT Flooring**	SHEET NO.: **3 of 4**

Assumptions:
1) Installation of LVT flooring, located in administrative corridors, copy & file rooms, elevator cab, and Visitation rooms
2) *Cost of quantities are based on the 100% DD cost estimate, costs below are based on industry
3) Installation of seamless linoleum flooring minimizes material jointing points and potentially increases the life cycle of the flooring.

Quantities:

Original Design:
*LVT flooring 1,721 SF
*Product Cost $9.00/sf
*Total cost $15,489

Alternative:
Linoleum flooring 1,721 SF
Product Cost $7.00/sf
Total cost $12,047

NEELU INC. CONSULTING ENGINEERS

Cost eet

DOWNEY & SCOTT Construction Management Services

PROJECT:	**Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-10**
DESCRIPTION:	**Install Linoleum Sheet Flooring In-Lieu of LVT Flooring**	SHEET NO. **4 of 4**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
LVT Flooring	SF	1,721	$9.00	$ 15,489		$0	$ -
Linoleum Flooring	SF			$ -	1721	$ 7.00	$ 12,047
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 15,489			$ 12,047
Mark-up at 25.25%				$ 3,911			$ 3,042
TOTAL				**$ 19,400**			**$ 15,089**
Potential Savings / (Value Addition):							**$4,311**

Value Analysis Alternative

PROJECT:	*Albemarle-Charlottesville Regional Jail Expansion & Renovation* Contract No.: 2025-0918224-05	ALTERNATIVE NO.: **AS-11**
DESCRIPTION:	**Re-evaluate Joist Loading**	SHEET NO.: **1 of 4**

ORIGINAL DESIGN:

The original design calls for heavy Classroom/Dayroom floor and unreduced roof live loads to be supported by open web steel joists

ALTERNATIVE:

The alternative design suggests re-evaluating the design live loads and providing steel joist loading designations and diagrams on plans.

PROS:

- **POTENTIAL FOR REDUCED DESIGN LOADS**
- **ALLOWS MANUFACTURER TO OPTIMIZE JOIST DESIGN AND COST**

CONS:

- **NONE APPARENT**

TECHNICAL DISCUSSION:

The original design calls for 50 psf / 1000 lb Classroom/Dayroom and 20 psf unreduced roof live load. IBC minimum floor live load for Classrooms as well as Penal institutions cell blocks is 40 psf. IBC minimum 20 psf roof live load is reducible when tributary area is greater than 200 SF. Providing Total Load / Live Load in steel joist designations as well as joist loading diagrams allows the joist manufacturer to optimize the design.

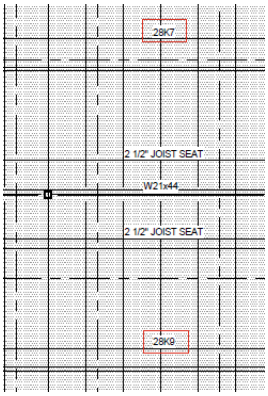
COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 182,406**	**$**	**$ 182,406**
ALTERNATIVE	**$ 173,286**	**$**	**$ 173,286**
SAVINGS	**$ 9,120**	**$**	**$ 9,120**

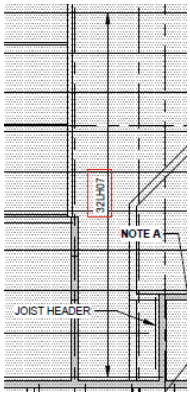
PROJECT:	*Albemarle-Charlottesville Regional Jail Expansion & Renovation* Contract No.: 2025-0918224-05	ALTERNATIVE NO.: **AS-11**
DESCRIPTION:	**Re-evaluate Joist Loading**	SHEET NO.: **2 of 4**

ORIGINAL DESIGN:

DESIGN LOAD DATA

1. CLASSIFICATION OF BUILDING			
RISK CATEGORY (IBC TABLE 1604.5)		III	
2. FLOOR LIVE LOADS		UNIFORM	CONCENTRATED
CELLS		40 PSF	
CONTROL ROOMS		50 PSF	
OFFICES / VISIT ROOMS		50 PSF	2000 LB
CLASSROOMS / DAYROOMS		50 PSF	1000 LB
LOBBIES / CORRIDORS		100 PSF	
SALLYPORTS / STAIRS		100 PSF	
CONFERENCE ROOMS		100 PSF	
MECH / ELEC / SECURITY ELEC ROOMS		150 PSF	
HANDRAILS AND GUARDS		50 PSF	200 LB
LOADS ARE NOT CONCURRENT AND ARE TO BE APPLIED IN ANY DIRECTION			
CONCENTRATED LOAD APPLIED OVER 2'-6" x 2'-6" AREA.			
REDUCTION OF FLOOR LIVE LOAD HAS NOT BEEN UTILIZED.			
3. ROOF LIVE LOADS			
MINIMUM ROOF LIVE LOAD		20 PSF	300 LB
CONCENTRATED LOAD APPLIED OVER 2'-6" x 2'-6" AREA.			
REDUCTION OF MINIMUM ROOF LIVE LOAD HAS NOT BEEN UTILIZED.			



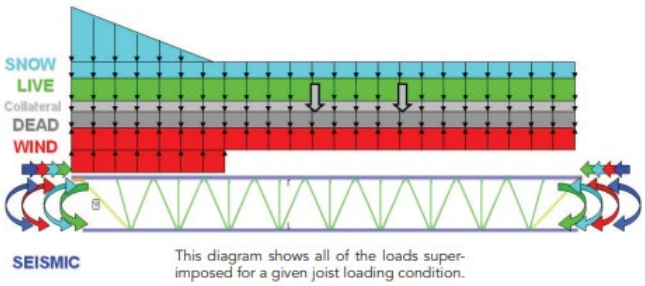


ALTERNATIVE:

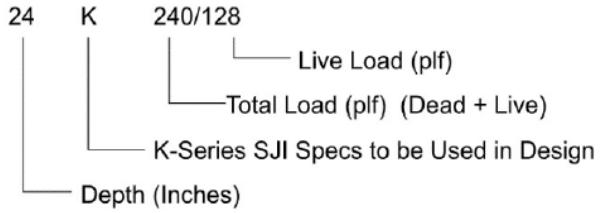
DESIGN LOAD DATA

1. CLASSIFICATION OF BUILDING			
RISK CATEGORY (IBC TABLE 1604.5)		III	
2. FLOOR LIVE LOADS		UNIFORM	CONCENTRATED
CELLS		40 PSF	
CONTROL ROOMS		50 PSF	
OFFICES / VISIT ROOMS		50 PSF	2000 LB
CLASSROOMS / DAYROOMS		40 PSF	1000 LB
LOBBIES / CORRIDORS		100 PSF	
SALLYPORTS / STAIRS		100 PSF	
CONFERENCE ROOMS		100 PSF	
MECH / ELEC / SECURITY ELEC ROOMS		150 PSF	
HANDRAILS AND GUARDS		50 PSF	200 LB
LOADS ARE NOT CONCURRENT AND ARE TO BE APPLIED IN ANY DIRECTION			
CONCENTRATED LOAD APPLIED OVER 2'-6" x 2'-6" AREA.			
REDUCTION OF FLOOR LIVE LOAD HAS NOT BEEN UTILIZED.			
3. ROOF LIVE LOADS		REDUCIBLE	
MINIMUM ROOF LIVE LOAD		20 PSF	300 LB
CONCENTRATED LOAD APPLIED OVER 2'-6" x 2'-6" AREA.			
REDUCTION OF MINIMUM ROOF LIVE LOAD HAS NOT BEEN UTILIZED.			

Typical Open Web Steel Joist



This diagram shows all of the loads super-imposed for a given joist loading condition.



Item Calculations

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-11**
DESCRIPTION:	**Re-evaluate Joist Loading**	SHEET NO.: **3 of 4**

Assumptions:
1) Original design quantity and pricing per 10/10/24 Forella estimate
1) Steel roof joist is 28K9 with span = 30'-0" and spacing = 4'-6"

Quantities:
Original Design:

Floor dead load = 59 psf
Classroom/Dayroom floor live load = 50 psf
Total floor load = 109 psf

28K9 SJI Roof Joist Load Designation: 550 plf (Total Load) / 500 plf (Live Load)

Joist Steel = 26 TNS @ $5,700.91 per TNS = $145,634

Alternative:

Floor dead load = 59 psf
Classroom/Dayroom floor live load = 40 psf
Total Load = 99 psf
Original / Alternative = 9%

Roof (Secured) dead load = 60 psf
Unreduced roof live load = 20 psf
Snow Load = 40.6 psf (Controls)
Specific Roof Joist Load Designation: 455 plf (Total Load) / 185 plf (Live Load)

Joist Steel = 24 TNS @ $5,700.91 per TNS = $138,352

Alternative reduces cost by approximately 5%

Cost Worksheet

PROJECT:	**Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-11**
DESCRIPTION:	**Re-evaluate Joist Loading**	SHEET NO. **4 of 4**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Joist steel	TNS	26	$5,701	$ 145,634	24	$5,701	$ 138,352
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 145,634			$ 138,352
Mark-up at 25.25%				$ 36,773			$ 34,934
TOTAL				**$ 182,406**			**$ 173,286**
Potential Savings / (Value Addition):							**$9,120**

Value Analysis Alternative

PROJECT:	*Albemarle-Charlottesville Regional Jail Expansion & Renovation* Contract No.: 2025-0918224-05	ALTERNATIVE NO.: **AS-21**
DESCRIPTION:	**Evaluate Reducing Slab Thickness in the Cell Unit Areas**	SHEET NO.: **1 of 4**

ORIGINAL DESIGN:

The original design calls for 6" thick slab-on-grade with welded wire fabric (WWF) in the cell unit and rec yard areas.

ALTERNATIVE:

The alternative design suggests reducing the slab thickness to 4" with steel fiber reinforcement.

PROS:

- REDUCES REQUIRED CONCRETE MATERIAL
- ELIMINATES WWF MATERIAL AND INSTALL COST
- STEEL FIBERS ADDED TO CONCRETE MIX AT BATCH PLANT

CONS:

- NONE APPARENT

TECHNICAL DISCUSSION:

The original design calls for 6" thick slab-on-grade with 4x4-W4.5xW4.5 WWF in the cell unit and rec yard areas. WWF is provided in slab for temperature and shrinkage reinforcement only and adds no flexural capacity to the slab. Using Dramix 4D steel fibers eliminates the need for WWF and allows for reduction in slab thickness while increasing flexural capacity.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 136,098**	**$**	**$ 136,098**
ALTERNATIVE	**$ 123,627**	**$**	**$ 123,627**
SAVINGS	**$ 12,471**	**$**	**$ 12,471**

Item Calculations

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-21**
DESCRIPTION:	**Evaluate Reducing Slab Thickness in the Cell Unit Areas**	SHEET NO.: **3 of 4**

Assumptions:
1) Original design quantities per 10/10/24 Forella estimate

Quantities:

Original Design:
6” concrete slab-on-grade with WWF= 8,628 SF @ $12.59 per SF = $108,661
4” concrete slab-on-grade with WWF @ $9.94 per SF

Alternative:
4” concrete slab-on-grade with WWF = 8,628 SF @ $9.94 per SF = $85,762
Additional cost for Steel Fibers = 8,628 SF @ $1.50 per SF = $12,942

Alternative reduces cost by approximately 10%

Cost Worksheet

PROJECT:	**Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-21**
DESCRIPTION:	**Evaluate Reducing Slab Thickness in the Cell Unit Areas**	SHEET NO. **4 of 4**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
6" slab on grade	SF	8,628	$13	$ 108,661			$ -
4" slab on grade	SF			$ -	8628	$10	$ 85,762
Steel Fibers	SF			$ -	8628	$1.50	$ 12,942
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
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				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 108,661			$ 98,704
Mark-up at 25.25%				$ 27,437			$ 24,923
TOTAL				**$ 136,098**			**$ 123,627**
Potential Savings / (Value Addition):							**$12,471**

Value Analysis Alternative

PROJECT:	*Albemarle-Charlottesville Regional Jail Expansion & Renovation* Contract No.: 2025-0918224-05	ALTERNATIVE NO.: **AS-22**
DESCRIPTION:	**Evaluate Resinous Flooring in Janitors Closets**	SHEET NO.: **1 of 4**

ORIGINAL DESIGN:

The original design calls for resinous flooring at Janitors closets – Renovations & New areas.

ALTERNATIVE:

The alternative design suggests a sealed & tinted flooring at Janitors closets – Renovations & New areas.

PROS:

- REDUCED MATERIAL COST.
- REDUCED INSTALLATION LABOR COST.
- INACCESSIBLE & NO VISIBILITY TO INMATES AND PUBLIC DUE TO LOCKED DOORS.
- SEALED CONCRETE FLOORING PROVIDES MOISTURE PROTECTION OF CONCRETE FLOORS.

CONS:

- POTENTIAL DIMINISHED AESTHETIC APPEARANCE.
- POTENTIAL REDUCTION OF LIFE CYCLE DUE TO MATERIAL THICKNESS.

TECHNICAL DISCUSSION:

The original design calls for resinous flooring at Janitors closets. The alternative design suggests sealed & tinted flooring at Janitors closets. Janitor closets at inmate areas L124 and R330 (to be located on plans) are designated with a sealed concrete floor.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRI COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 2,179**	**$**	**$ 2,179**
ALTERNATIVE	**$ 902**	**$**	**$ 902**
SAVINGS	**$ 1,278**	**$**	**$ 1,278**

Item Calculations

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-22**
DESCRIPTION:	**Evaluate Resinous Flooring in Janitors Closets**	SHEET NO.: **3 of 4**

Assumptions:
1) The original design calls for resinous flooring at Janitors closets – Renovations & New areas.
2) The alternative design suggests a sealed & tinted flooring at Janitors closets – Renovations & New areas.

Quantities:

Original Design:
Resinous flooring finish – 200sf
Unit cost per sf - $8.70
Total Resinous flooring cost - $1,740.00

Alternative:
Sealed concrete flooring finish – 200sf
Unit cost per sf - $3.60
Total Resinous flooring cost - $720.00

Cost Worksheet

PROJECT:	**Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-22**
DESCRIPTION:	**Evaluate Resinous Flooring in Janitors Closets**	SHEET NO. **4 of 4**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Resinous flooring at Janitors closets – Renovations & New areas	SF	200	$8.70	$ 1,740			$ -
Sealed & tinted flooring at Janitors closets – Renovations & New areas	SF			$ -	200	$ 3.60	$ 720
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
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				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 1,740			$ 720
Mark-up at 25.25%				$ 439			$ 182
TOTAL				**$ 2,179**			**$ 902**
Potential Savings / (Value Addition):							**$1,278**

Value Analysis Alternative

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-23**
DESCRIPTION:	**In-Lieu of Architectural Soffit Panels at Exterior Canopies Consider Field Applied Epoxy Coating**	SHEET NO.: **1 of 4**

ORIGINAL DESIGN:

The original design calls for architectural soffit panels at the underside of the exterior canopies.

ALTERNATIVE:

The alternative design suggests an epoxy coated finish on an exposed structural underside of the exterior canopies.

PROS:

- **REDUCED MATERIAL AND INSTALLATION LABOR COST.**
- **REDUCED MAINTENANCE REQUIREMENTS OF FINISHED SURFACE**

CONS:

- **POTENTIAL AESTHETIC DIFFERENCE AT EXPOSED STRUCTURE.**
- **POTENTIAL BIRD / INSECT NESTING AT ANY EXPOSED STRUCTURAL FRAMING.**

TECHNICAL DISCUSSION:

The original design calls for architectural soffit panels at the underside of the exterior canopies. The alternative design suggests an epoxy coated finish on an exposed structural underside of the exterior canopies. Canopy details are in development and construction methods and finishes are in progress.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRI COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 19,990**	**$**	**$ 19,990**
ALTERNATIVE	**$ 3,682**	**$**	**$ 3,682**
SAVINGS	**$ 16,308**	**$**	**$ 16,308**

Item Calculations

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-23**
DESCRIPTION:	**In-Lieu of Architectural Soffit Panels at Exterior Canopies Consider Field Applied Epoxy Coating**	SHEET NO.: **3 of 4**

Assumptions:
1) The original design calls for architectural soffit panels at the underside of the exterior canopies.
2) The alternative design suggests an epoxy coated finish on an exposed structural underside of the exterior canopies.
3) Canopy details are in development and construction methods and finishes are in progress.

Quantities:

Original Design:
Architectural soffit panels at underside of exterior canopy– 420sf
Unit cost per sf - $38.00
Total Athletic rubber flooring cost - $15,960.00

Alternative:
Epoxy coating at underside of exterior canopy– 420sf
Unit cost per sf - $7.00
Total Athletic rubber flooring cost - $2,940.00

Cost Worksheet

PROJECT:	**Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-23**
DESCRIPTION:	**In-Lieu of Architectural Soffit Panels at Exterior Canopies Consider Field Applied Epoxy Coating**	SHEET NO. **4 of 4**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
architectural soffit panels at the underside of the exterior canopies	SF	420	$38.00	$ 15,960			$ -
epoxy coated finish on an exposed structural underside of the exterior canopies.	SF			$ -	420	$ 7.00	$ 2,940
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
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				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 15,960			$ 2,940
Mark-up at 25.25%				$ 4,030			$ 742
TOTAL				**$ 19,990**			**$ 3,682**
Potential Savings / (Value Addition):							**$16,308**

Value Analysis Alternative

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-24**
DESCRIPTION:	**Use Linoleum In-Lieu of Athletic Rubber Flooring in Locker Rooms R-403 and Corridor R-404**	SHEET NO.: **1 of 4**

ORIGINAL DESIGN:

The original design calls for Athletic rubber flooring throughout the Staff Fitness room, locker room R403 and adjacent corridor R404.

ALTERNATIVE:

The alternative design suggests linoleum flooring at the locker room R403 and adjacent corridor R404 locations.

PROS:

- **REDUCED MATERIAL AND INSTALLATION LABOR COST.**
- **REDUCED MAINTENANCE REQUIREMENTS AND WEAR FOR FLOORING.**
- **STABLE FLOORING SUBSTRATE FOR LOCKER AREAS**

CONS:

- **JOINT THRESHOLDS REQUIRED AT TRANSITION LOCATIONS FROM ONE MATERIAL TO OTHER.**

TECHNICAL DISCUSSION:

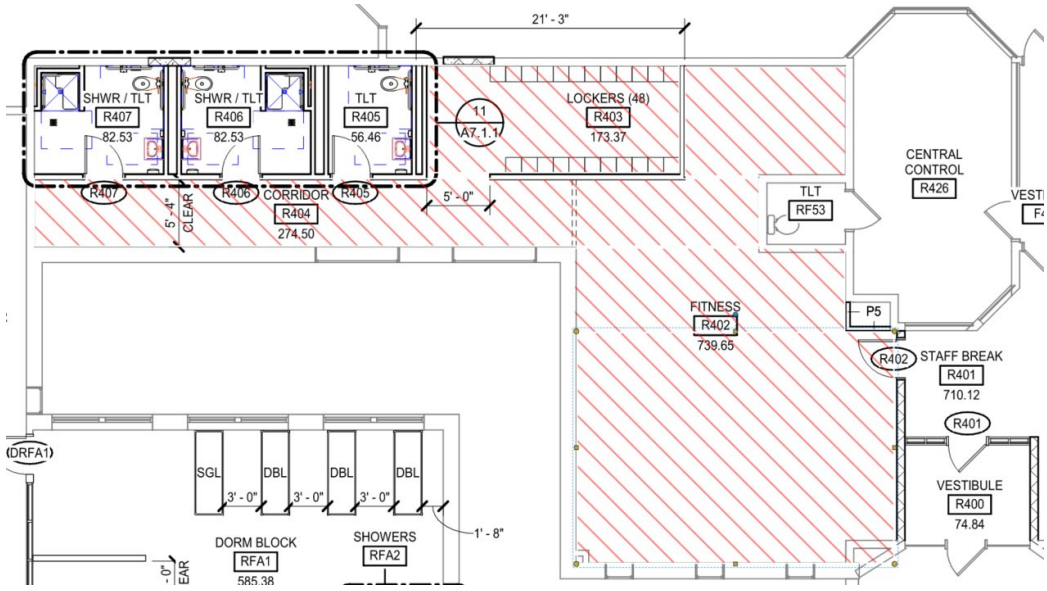
The original design calls for Athletic rubber flooring throughout the Staff Fitness room, locker room R403 and adjacent corridor R404. The alternative design suggests linoleum flooring at the locker room R403 and adjacent corridor R404 locations. The Staff fitness room flooring remains per the proposed documents.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRI COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 29,734**	**$**	**$ 29,734**
ALTERNATIVE	**$ 22,456**	**$**	**$ 22,456**
SAVINGS	**$ 7,278**	**$**	**$ 7,278**

Illustrations

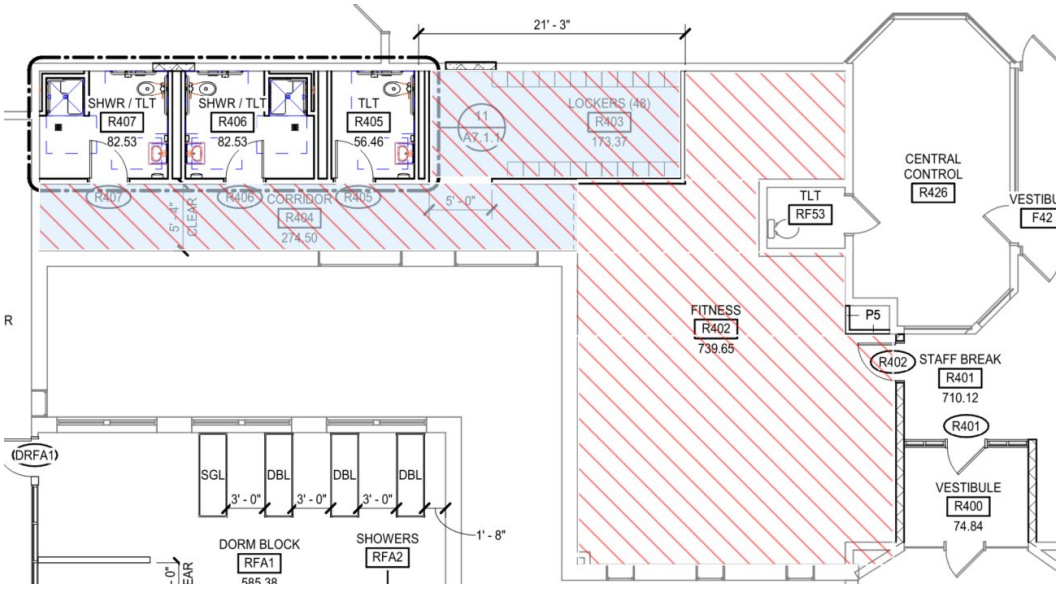
PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-24**
DESCRIPTION:	**Use Linoleum In-Lieu of Athletic Rubber Flooring in Locker Rooms R-403 and Corridor R-404**	SHEET NO.: **2 of 4**

ORIGINAL DESIGN:



The original design calls for Athletic rubber flooring throughout the Staff Fitness room, locker room R403 and adjacent corridor R404.

ALTERNATIVE:



The alternative design suggests linoleum flooring at the locker room R403 and adjacent corridor R404 locations

Item Calculations

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-24**
DESCRIPTION:	**Use Linoleum In-Lieu of Athletic Rubber Flooring in Locker Rooms R-403 and Corridor R-404**	SHEET NO.: **3 of 4**

Assumptions:
1) The original design calls for Athletic rubber flooring throughout the Staff Fitness room, locker room R403 and adjacent corridor R404.
2) The alternative design suggests linoleum flooring at the locker room R403 and adjacent corridor R404 locations

Quantities:

Original Design:
Athletic Rubber Flooring at Fitness Rm, Corridor and Locker Rm – 1,187sf
Unit cost per sf - $20.00
Total Athletic rubber flooring cost - $23,740.00

Alternative:
Athletic Rubber Flooring at Fitness Rm, – 740sf
Unit cost per sf - $7.00
Total Athletic rubber flooring cost - $14,800.00

Linoleum flooring at Corridor and Locker Rm – 447sf
Unit cost per sf - $7.00
Total Linoleum flooring cost - $3,129.00

Cost Worksheet

PROJECT:	**Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-24**
DESCRIPTION:	**Use Linoleum In-Lieu of Athletic Rubber Flooring in Locker Rooms R-403 and Corridor R-404**	SHEET NO. **4 of 4**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Athletic Rubber Flooring at Staff Fitness rm Corridor and locker rm	SF	1,187	$20.00	$ 23,740			$ -
Athletic Rubber Flooring at Staff Fitness rm	SF			$ -	740	$ 20.00	$ 14,800
Linoleum Flooring at Corridor and locker rm	SF			$ -	447	$ 7.00	$ 3,129
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
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				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 23,740			$ 17,929
Mark-up at 25.25%				$ 5,994			$ 4,527
TOTAL				**$ 29,734**			**$ 22,456**
Potential Savings / (Value Addition):							**$7,278**

Value Analysis Alternative

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-25**
DESCRIPTION:	**Install Cost Efficient Two-Tier Lockers**	SHEET NO.: **1 of 4**

ORIGINAL DESIGN:

The original design calls for 48 Staff lockers in the fitness locker room R403

ALTERNATIVE:

The alternative design suggests (48) cost effective L-shaped stepped, 2-tier lockers in locker room R403.

PROS:

- REDUCED MATERIAL COST.
- UNIT SIZED TO ALLOW FOR COAT / SHIRT HANGERS AND GYM BAGS
- EFFICIENCY OF ROOM SPACE NEEDS.

CONS:

- PRODUCT SPECIFICATION MATERIAL GAUGE NOT DEFINED PER 100%DD DOCUMENTS.

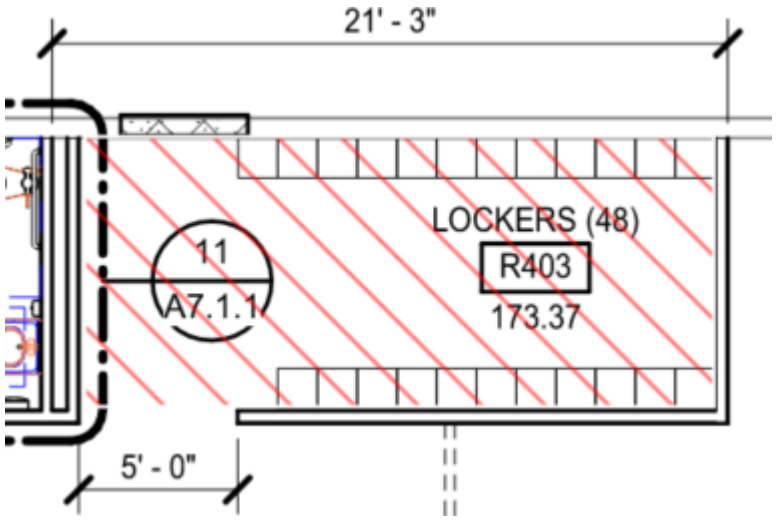
TECHNICAL DISCUSSION:

The original design calls for (48) Staff lockers in the fitness locker room R403. The alternative design suggests (48) cost effective L-shaped stepped, 2-tier lockers in locker room R403.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRI COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 41,246**	**$**	**$ 41,246**
ALTERNATIVE	**$ 29,459**	**$**	**$ 29,459**
SAVINGS	**$ 11,787**	**$**	**$ 11,787**

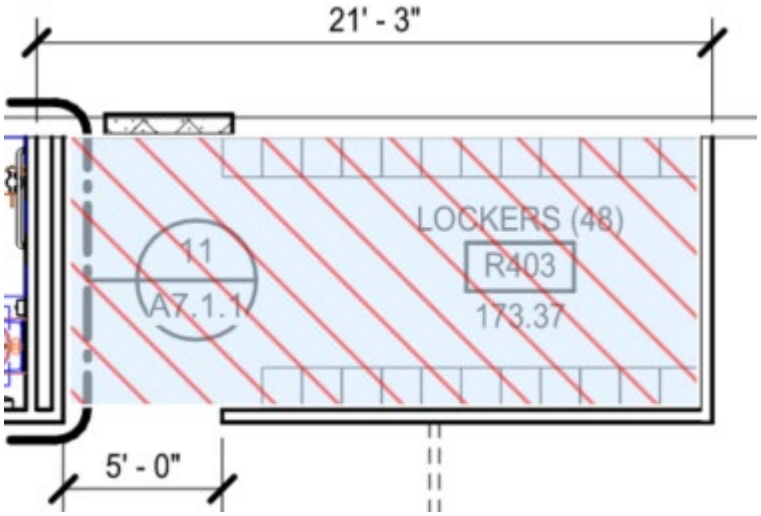
PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-25**
DESCRIPTION:	**Install Cost Efficient Two-Tier Lockers**	SHEET NO.: **2 of 4**

ORIGINAL DESIGN:



The original design calls for (48) Staff lockers in the fitness locker room R403.

ALTERNATIVE:



The alternative design suggests (48) cost effective L-shaped stepped, 2-tier lockers in locker room R403.

Item Calculations

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-25**
DESCRIPTION:	**Install Cost Efficient Two-Tier Lockers**	SHEET NO.: **3 of 4**

Assumptions:
1) The original design calls for (48) Staff lockers in the fitness locker room R403
2) The alternative design suggests (48) cost effective L-shaped stepped, 2-tier lockers in locker room R403.

Quantities:

Original Design:
Non-detention (48) 2-tier lockers – 48 of
Unit cost - $686.06
Total cost - $32,931.00

Alternative:
Non-detention (48) 2-tier L-shaped lockers – 48 of
Unit cost - $490.00
Total cost - $23,520.00

Cost Worksheet

PROJECT:	**Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **AS-25**
DESCRIPTION:	**Install Cost Efficient Two-Tier Lockers**	SHEET NO. **4 of 4**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
48 2-tier lockers at locker rm	LS	48	$686.06	$ 32,931			$ -
48 2-tier L-shaped lockers at locker rm	LS			$ -	48	$ 490.00	$ 23,520
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 32,931			$ 23,520
Mark-up at 25.25%				$ 8,315			$ 5,939
TOTAL				**$ 41,246**			**$ 29,459**
Potential Savings / (Value Addition):							**$11,787**

Value Analysis Alternative

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-01**
DESCRIPTION:	**Use Aluminum Conductors In-Lieu of Copper for Secondary of the Transformer**	SHEET NO.: **1 of 3**

ORIGINAL DESIGN:

The original design calls for utilizing copper conductors for the secondary of the transformer.

ALTERNATIVE:

The alternative design suggests using aluminum conductors for the secondary of the transformer.

PROS:	**CONS:**
• **REDUCED COST**	• **NONE APPARENT**

TECHNICAL DISCUSSION:

The original design calls for copper feeders to the new electrical panelboards. Even though copper conductors are superior to aluminum conductors, they come at a major cost disadvantage. When properly installed, aluminum feeders are safe and have been used since 1970s in a significant number of commercial buildings.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRI COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 95,065**	**$**	**$ 95,065**
ALTERNATIVE	**$ 52,355**	**$**	**$ 52,355**
SAVINGS	**$ 42,710**	**$**	**$ 42,710**

PROJECT:	*Albemarle-Charlottesville Regional Jail Expansion & Renovation* **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-01**
DESCRIPTION:	**Use Aluminum Conductors In-Lieu of Copper for Secondary of the Transformer**	SHEET NO.: **2 of 3**

ORIGINAL DESIGN:

The original design calls for utilizing copper conductors for the secondary of the transformer. This recommendation is appropriate when the budget needs to be trimmed. Aluminum conductor costs much less than copper conductor. Following is a brief discussion of the pros and cons of copper vs aluminum conductors.

When to use copper conductors: Copper wiring should be used in facilities utilizing high tech and sensitive equipment and when the budget allows higher cost copper in lieu of aluminum.

Pros of copper wiring

- Conductivity. Copper wire has higher conductivity when compared to aluminum.
- Tensile strength. Copper wire does not expand and contract as much as aluminum. Copper conductors are better in handling wear and tear, about 40 percent better than aluminum wiring.
- Higher ampacity. Copper has a higher current carrying capacity.
- Easy to recycle. Copper is easier to recycle than aluminum, hence better for the environment.
- Longevity. Copper has a longer life than aluminum with less maintenance.
- Copper conductors are superior to aluminum and should be used when budget allows

Cons of copper wire

- Price. Copper is much more expensive than aluminum.
- Weight. Copper is heavier than aluminum.
- Theft. Thieves often target copper wire over aluminum wire because it's more expensive than other types of wiring.
- Support. Copper wire requires more support over long distances. This of course is not an issue when used for secondary of transformer

ALTERNATIVE:

The alternative design suggests using aluminum conductors for the secondary of the transformer. This suggestion is primarily for cost reduction purposes. Most multi-family and other commercial buildings utilize aluminum for comparatively low-cost reasons.

When to use aluminum wire: Aluminum wiring became popular in the 1960s and 1970s when copper prices soared. Aluminum wiring for commercial buildings generally saves a lot of money, and when properly installed, it is safe. But there are some drawbacks.

Pros of aluminum wire

- Lighter weight. Aluminum is a lightweight material.
- Less expensive per pound. Aluminum is considerably less expensive than copper.

Cons of aluminum wire

- Less longevity. Prone to cracking and failure when subject to vibration. Aluminum is also more subject to corrosion than copper, with shorter useful life than copper.
- Difficult to solder. Aluminum is more difficult to solder, limiting its flexibility. Oxidation on aluminum often inhibits soldering.
- Larger size. Because aluminum conductors are larger than copper conductors, larger raceways or more conduits are required'.
- Potential dangers when used incorrectly. When aluminum is properly installed. Aluminum conductors have higher expansion and contraction, which over time can loosen connections. Periodic inspections are recommended.
- Terminal points. Aluminum requires an anti-oxidation compound at each terminal point due to its susceptibility to oxidation.

Cost Worksheet

PROJECT:	**Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-01**
DESCRIPTION:	**Use Aluminum Conductors In-Lieu of Copper for Secondary of the Transformer**	SHEET NO. **3 of 3**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Secondary conductors-copper	LF	110	$690.00	$ 75,900			$ -
Secondary conductors-aluminum	LF			$ -	110	$ 380.00	$ 41,800
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 75,900			$ 41,800
Mark-up at 25.25%				$ 19,165			$ 10,555
TOTAL				**$ 95,065**			**$ 52,355**
Potential Savings / (Value Addition):							**$42,710**

Value Analysis Alternative

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-02**
DESCRIPTION:	**Use Aluminum Conductors In-Lieu-of Copper Conductors for Feeders to the New Panels**	SHEET NO.: **1 of 3**

ORIGINAL DESIGN:

The original design calls for utilizing copper conductors for the feeders to the new electric panels.

ALTERNATIVE:

The alternative design suggests using aluminum conductors for the feeders to the new electric panels.

PROS:

- **REDUCED COST**

CONS:

- **NONE APPARENT**

TECHNICAL DISCUSSION:

The original design calls for copper feeders to the new electrical panelboards. Even though copper conductors are superior to aluminum conductors, they come at a major cost disadvantage. When properly installed, aluminum feeders are safe and have been used since 1970s in a significant number of commercial buildings.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 94,501**	**$**	**$ 94,501**
ALTERNATIVE	**$ 56,363**	**$**	**$ 56,363**
SAVINGS	**$ 38,139**	**$**	**$ 38,139**

Illustrations

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-02**
DESCRIPTION:	**Use Aluminum Conductors In-Lieu-of Copper Conductors for Feeders to the New Panels**	SHEET NO.: **2 of 3**

ORIGINAL DESIGN:
The original design calls for utilizing copper conductors for the feeders to the new electric panels.
When to use copper conductors: Copper wiring should be used in facilities utilizing high tech and sensitive equipment and when the budget allows higher cost copper in lieu of aluminum.
Pros of copper wiring

- Conductivity. Copper wire has higher conductivity when compared to aluminum.
- Tensile strength. Copper wire does not expand and contract as much as aluminum. Copper conductors are better in handling wear and tear, about 40 percent better than aluminum wiring.
- Higher ampacity. Copper has a higher current carrying capacity.
- Easy to recycle. Copper is easier to recycle than aluminum, hence better for the environment.
- Longevity. Copper has a longer life than aluminum with less maintenance.
- Copper conductors are superior to aluminum and should be used when budget allows.

Cons of copper wire

- Price. Copper is much more expensive than aluminum.
- Weight. Copper is heavier than aluminum.
- Theft. Thieves often target copper wire over aluminum wire because it's more expensive than other types of wiring.
- Support. Copper wire requires more support over long spans.

ALTERNATIVE:
The alternative design suggests using aluminum conductors for the feeders to the new electric panels. This suggestion is primarily for cost reduction purposes. Most multi-family and other commercial buildings utilize aluminum for comparatively low-cost reasons. Use of aluminum feeders should be limited to sizes 1/0 and larger. Smaller conductors should be copper.
When to use aluminum wire: Aluminum wiring became popular in the 1960s and 1970s when copper prices soared. Aluminum wiring for commercial buildings generally saves a lot of money, and when properly installed, it is safe. But there are some drawbacks.
Pros of aluminum wire

- Lighter weight. Aluminum is a lightweight material.
- Less expensive per pound. Aluminum is considerably less expensive than copper.

Cons of aluminum wire

- Less longevity. Prone to cracking and failure when subject to vibration. Aluminum is also more subject to corrosion than copper, with shorter useful life than copper.
- Difficult to solder. Aluminum is more difficult to solder, limiting its flexibility. Oxidation on aluminum often inhibits soldering.
- Larger size. Because aluminum conductors are larger than copper conductors, larger raceways or more conduits are required'.
- Potential dangers when used incorrectly. When aluminum is properly installed. Aluminum conductors have higher expansion and contraction, which over time can loosen connections. Periodic inspections are recommended.
- Terminal points. Aluminum requires an anti-oxidation compound at each terminal point due to its susceptibility to oxidation.

NEELU INC. CONSULTING ENGINEERS

DOWNEY & SCOTT Construction Management Services

Cost Worksheet

PROJECT:	**Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-02**
DESCRIPTION:	**Use Aluminum In-Lieu of Copper for the Feeders to the New Panel Boards**	SHEET NO. **3 of 3**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
3 sets-3"EMT, 4-350+1/0G-CU	LF	150	$343.00	$ 51,450			$ -
2-1/2" EMT, 4-4/0+#4G-CU	LF	300	$80.00	$ 24,000			$ -
				$ -			$ -
3-sets, 4"EMT,4-500+3/0G-AL	LF			$ -	150	$ 190.00	$ 28,500
				$ -			$ -
2-1/2" EMT, 4-300+#2G-AL	LF			$ -	300	$ 55.00	$ 16,500
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 75,450			$ 45,000
Mark-up at 25.25%				$ 19,051			$ 11,363
TOTAL				**$ 94,501**			**$ 56,363**
Potential Savings / (Value Addition):							**$38,139**

Value Analysis Alternative

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-03**
DESCRIPTION:	**Use Aluminum Bus Bars in the Main Switchboard In-Lieu of Copper**	SHEET NO.: **1 of 3**

ORIGINAL DESIGN:

The original design calls for utilizing copper bus bars in the new main switchboard.

ALTERNATIVE:

The alternative design suggests using aluminum bus bars in the new main switchboard.

PROS:

- **REDUCED COST**

CONS:

- **NONE APPARENT**

TECHNICAL DISCUSSION:

The original design calls for copper bus bars in the new electrical switchboard. Even though copper bus bars are superior to aluminum bus bars, they come at a major cost disadvantage. Copper is a more durable and conductive material. Switchboards in buildings with critical equipment or critical operations would benefit from the use of copper bus bars. However, when cost is a major factor switchboards with aluminum bus bars can safely be utilized.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 91,936**	**$**	**$ 91,936**
ALTERNATIVE	**$ 78,281**	**$**	**$ 78,281**
SAVINGS	**$ 13,655**	**$**	**$ 13,655**

Illustrations

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-03**
DESCRIPTION:	**Use Aluminum Bus Bars in the Main Switchboard In-Lieu of Copper**	SHEET NO.: **2 of 3**

ORIGINAL DESIGN:

The original design calls for utilizing copper bus bars in the new switchboard.

When to use copper bus bars:

- **Critical infrastructure and operation:** Copper busbars are recommended for critical infrastructure projects where reliability and longevity are of primary concern, including substations, data centers, telecommunications facilities, and industrial plants.
- **Harsh environments:** If the switchboard is installed in an outdoor or corrosive environment where busbars may be exposed to moisture, chemicals, or extreme temperatures, copper is the preferred material, due to its relatively superior corrosion resistance and durability.
- **Low-resistance connections:** Copper busbars are recommended if the project demands low-resistance connections, as is the case with high-current applications, motor control centers, switchgear, and power distribution panels.

ALTERNATIVE:

The alternative design suggests using aluminum bus bars in the new main switchboard.

This suggestion is primarily for cost reduction purposes. Roughly 50% of the commercial buildings utilize switchboards with aluminum bus bars for comparatively low-cost reasons. Switchboards with aluminum bus bars cost less than switchboards with copper bus bars.

Overall, switchboards with copper bus bars are higher quality when compared with switchboards with aluminum bus bars.

Ultimately, the client can determine if the cost savings from using switchboards with aluminum bus bars are significant enough to accept this alternative.

Cost Worksheet

PROJECT:	Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05	ALTERNATIVE NO.: ME-03
DESCRIPTION:	Use Aluminum Bus Bars in the Switchboard In-Lieu of Copper	SHEET NO. 3 of 3

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
1200A, 480v,3p copper bus SWB	LS	1	$51,842	$ 51,842			$ -
MSB distribution section-copper	LS	1	$21,560	$ 21,560			$ -
1200A, 480v,3p Alum bus SWB	LS			$ -	1	$ 44,200	$ 44,200
MSB distribution section-Alum	LS			$ -	1	$ 18,300	$ 18,300
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
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				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 73,402			$ 62,500
Mark-up at 25.25%				$ 18,534			$ 15,781
TOTAL				**$ 91,936**			**$ 78,281**
Potential Savings / (Value Addition):							**$13,655**

Value Analysis Alternative

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-04**
DESCRIPTION:	**Use Aluminum Bus Bars in the Panelboards In-Lieu of Copper**	SHEET NO.: **1 of 3**

ORIGINAL DESIGN:

The original design calls for utilizing copper bus bars in the new panelboards.

ALTERNATIVE:

The alternative design suggests utilizing aluminum copper bus bars in the new panelboards.

PROS:

- **REDUCED COST**

CONS:

- **NONE APPARENT**

TECHNICAL DISCUSSION:

The original design calls for copper bus bars in the new electrical panelboards. Even though copper bus bars are superior to aluminum bus bars, they come at a major cost disadvantage. Copper is a more durable and conductive material. Panelboards in buildings with critical equipment or critical operations would benefit from the use of copper bus bars. However, when cost is a major factor panelboards with aluminum bus bars can safely be utilized.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 82,739**	**$**	**$ 82,739**
ALTERNATIVE	**$ 55,060**	**$**	**$ 55,060**
SAVINGS	**$ 27,679**	**$**	**$ 27,679**

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-04**
DESCRIPTION:	**Use Aluminum Bus Bars in the Panelboards In-Lieu of Copper**	SHEET NO.: **2 of 3**

ORIGINAL DESIGN:

The original design calls for utilizing copper bus bars in the new panelboards.

When to use copper bus bars:

- **Critical infrastructure and operation:** Copper busbars are recommended for critical infrastructure projects where reliability and longevity are of primary concern, including substations, data centers, telecommunications facilities, and industrial plants.
- **Harsh environments:** If the Panelboard is installed in an outdoor or corrosive environment where busbars may be exposed to moisture, chemicals, or extreme temperatures, copper is the preferred material, due to its relatively superior corrosion resistance and durability.
- **Low-resistance connections:** Copper busbars are recommended if the project demands low-resistance connections, as is the case with high-current applications, motor control centers, switchgear, and power distribution panels.

ALTERNATIVE:

The alternative design suggests using aluminum bus bars in the new panelboards.

This suggestion is primarily for cost reduction purposes. A significant number of the commercial buildings utilize panelboards with aluminum bus bars for comparatively low-cost reasons. Panelboards with aluminum bus bars cost less than Panelboards with copper bus bars.

Overall, panelboards with copper bus bars are higher quality when compared with panelboards with aluminum bus bars.

Ultimately, the client can determine if the cost savings from using panelboards with aluminum bus bars are significant enough to accept this alternative.

Cost Worksheet

PROJECT:	**Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-04**
DESCRIPTION:	**Use Aluminum Bus Bars in the Panelboards In-Lieu of Copper**	SHEET NO. **3 of 3**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Add'n Panelboards-copper bus	EA	6	$6,090	$ 36,540			$ -
Repl 400A MCB-copper bus	EA	1	$8,571	$ 8,571			$ -
Repl 225A MCB-copper bus	EA	4	$4,380	$ 17,520			$ -
Repl 100A MCB-copper bus	EA	1	$3,428	$ 3,428			$ -
				$ -			$ -
				$ -			$ -
Add'n Panelboards-aluminum bus	EA			$ -	6	$ 3,750	$ 22,500
Repl 400A MCB-copper bus	EA			$ -	1	$ 5,950	$ 5,950
Repl 225A MCB-copper bus	EA			$ -	4	$ 3,280	$ 13,120
Repl 100A MCB-copper bus	EA			$ -	1	$ 2,390	$ 2,390
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 66,059			$ 43,960
Mark-up at 25.25%				$ 16,680			$ 11,100
TOTAL				**$ 82,739**			**$ 55,060**
Potential Savings / (Value Addition):							**$27,679**

Value Analysis Alternative

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-05**
DESCRIPTION:	**Use Two 400 KW Generators In-Lieu of Single 800 KW Generator**	SHEET NO.: **1 of 3**

ORIGINAL DESIGN:

The original design calls for utilizing a single 800 kw stand-by generator.

ALTERNATIVE:

The alternative design suggests two 400 kw stand-by generators in-lieu-of a single 800 kw generator.

PROS:

- REDUCED COST
- REDUCED NOISE
- LOWER HEIGHT
- MORE EFFICIENT OPERATION
- REDUNDANCY

CONS:

- REQUIRES MORE SPACE FOR INSTALALTION

TECHNICAL DISCUSSION:

The original design calls for a 800 kw generator. Alternative design proposes utilizing two parallel-mounted 400 KW generators with a paralleling gear to provide redundancy. Additional benefits of the alternative are lower noise level, more efficient operation, lower equipment height and possibly equipment shorter lead time.

The original design, as well as the alternative, will provide full back up of the new 1200 amp electrical service. This will ensure that all systems can operate in the event of loss of power from the utility company.

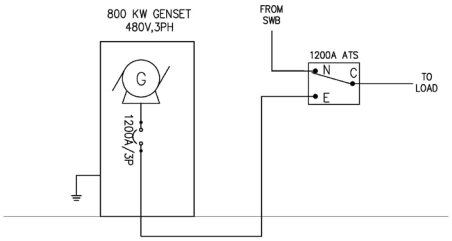
COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 362,311**	**$**	**$ 362,311**
ALTERNATIVE	**$ 382,013**	**$**	**$ 382,013**
VALUE ADDITION	**($ 19,702)**	**$**	**($ 19,702)**

Illustrations

PROJECT:	*Albemarle-Charlottesville Regional Jail Expansion & Renovation* Contract No.: 2025-0918224-05	ALTERNATIVE NO.: **ME-05**
DESCRIPTION:	**Use Two 400 KW Generators In-Lieu of Single 800 KW Generator**	SHEET NO.: **2 of 3**

ORIGINAL DESIGN:
The original design calls for utilizing a single 800 kw stand-by generator.
The proposed generator is designed to provide full back-up of the entire new addition. This approach to a correctional facility is most appropriate, as a significant number of systems requiring power are essential to the operation of the facility. The emergency loads are:

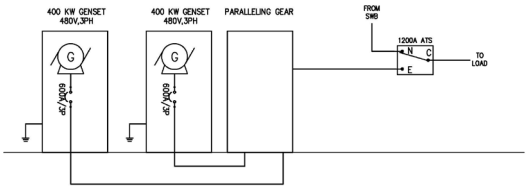
- Lighting
- Elevator
- Communication
- Security
- Smoke exhaust
- HVAC



ALTERNATIVE:
the alternative design suggests two 400 kw stand-by generators in-lieu-of a single 800 kw generator.
Advantages are:

- Redundancy. This facility cannot afford extended, or even limited down times due to the nature of its operation.
- Lower height. Smaller generators will be approximately 2 feet shorter than a single 800 KW generator. View from the main street appears to be a concern.
- Lower noise level.
- More efficient operation
- Possibly shorter lead time

A preliminary cost estimate points to higher cost of the alternative. Despite the higher cost, the alternative is being recommended and it is believed that this will be a value-added feature, for the simple fact that it will provide redundancy to a facility that cannot afford down times.
A more detailed cost analysis is warranted to ascertain the cost comparison of the original design vs the alternative.



Cost Worksheet

PROJECT:	**Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-05**
DESCRIPTION:	**Use Two 400 KW Generators In-Lieu of Single 800 KW Generator**	SHEET NO. **3 of 3**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
800 KW diesel generator	EA	1	$289,270	$ 289,270			$ -
400 KW generator	EA			$ -	2	$ 105,000	$ 210,000
paralleling gear	EA			$ -	1	$ 95,000	$ 95,000
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 289,270			$ 305,000
Mark-up at 25.25%				$ 73,041			$ 77,013
TOTAL				**$ 362,311**			**$ 382,013**
Potential Savings / (Value Addition):							**($19,702)**

Value Analysis Alternative

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-17**
DESCRIPTION:	**Utilize a Sewage Grinder Pump (Muffin Monster)**	SHEET NO.: **1 of 2**

ORIGINAL DESIGN:

The original design does not indicate utilizing a grinder system for the sewage effluent.

ALTERNATIVE:

The alternate design suggests adding a grinder system to the sewage effluent.

PROS:

- **FEWER BACK-UPS IN THE SEWER SYSTEM**
- **REDUCED MAINTENANCE**

CONS:

- **HIGHER COST**

TECHNICAL DISCUSSION:

None.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 0**	**$**	**$ 0**
ALTERNATIVE	**$ 75,150**	**$**	**$ 75,150**
VALUE ADDITION	**$ (75,150)**	**$**	**$ (75,150)**

Cost Worksheet

PROJECT:	**Albemarle-Charlottesville Regional Jail Expansion & Renovation Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-17**
DESCRIPTION:	**Utilize a Sewage Grinder Pump (Muffin Monster)**	SHEET NO. **2 of 2**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Muffin Monster	EA			$ -	1	$60,000	$ 60,000
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
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				$ -			$ -
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				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ -			$ 60,000
Mark-up at 25.25%				$ -			$ 15,150
TOTAL				**$ -**			**$ 75,150**
Potential Savings / (Value Addition):							**($75,150)**

DESIGN SUGGESTIONS

Albemarle-Charlottesville Regional Jail -Expansion & Renovation

Value Engineering Study

Charlottesville, VA

Contract No.: 2025-0918224-05

SUMMARY OF RESULTS - DESIGN SUGGESTIONS

VE Idea No.	*Description of Alternative*	Ranking	*Initial Cost*			*Life Cycle Cost Impact*	*Net Savings*	*Final Disposition*
			Original Design	*Alternative*	*Savings*			
				ARCHITECTURAL & STRUCTURAL (AS)				
AS-09	Conclude HAZMAT Survey and Generate Report for Final Bid Documents	DS	DESIGN SUGGESTION					
				CONSTRUCTABILITY & CIVIL (CC)				
CC-01	Improve Exterior Aesthetics Along Gateway Avon Rd	DS	DESIGN SUGGESTION					
CC-03	Identify Staging and Material Lay Down Areas	DS	DESIGN SUGGESTION					
CC-04	Identify Emergency Ingress and Egress To and From Facility During Construction	DS	DESIGN SUGGESTION					
CC-05	Identify Fire Department Connection During Phased Construction	DS	DESIGN SUGGESTION					
CC-06	Verify Materials and Methods of the Gazebo at the Staff Outdoor Eating Area	DS	DESIGN SUGGESTION					
CC-07	Verify Stormwater Management Connection Points to Existing and Outfall Elevation and Sheet flow	DS	DESIGN SUGGESTION					
CC-08	Coordinate Civil with the Plumbing Plans all Roof Drain Tie-ins to Storm Drains Including Laterals	DS	DESIGN SUGGESTION					
CC-09	Coordinate Civil with the Plumbing Plans all Condensate Drain Tie-ins to Storm Drains	See CC-08	DESIGN SUGGESTION					
CC-12	Investigate Condition of Sanitary/Sewer Lines Prior to Acceptance	DS	DESIGN SUGGESTION					

Albemarle-Charlottesville Regional Jail -Expansion & Renovation

Value Engineering Study

Charlottesville, VA

Contract No.: 2025-0918224-05

SUMMARY OF RESULTS - DESIGN SUGGESTIONS

VE Idea No.	*Description of Alternative*	Ranking	*Initial Cost*			*Life Cycle Cost Impact*	*Net Savings*	*Final Disposition*
			Original Design	*Alternative*	*Savings*			
MECHANICAL, PLUMBING & ELECTRICAL (ME)								
ME-06	Reduce Size of Generator to Serve Only Critical Loads	DS	DESIGN SUGGESTION					
ME-10	Install Security Cameras at Entrance to Main Mechanical and Electrical Rooms	DS	DESIGN SUGGESTION					
ME-11	Utilize R32 Refrigerant In-Lieu of R410A for the RTUs	DS	DESIGN SUGGESTION					
ME-12	Utilize R454B Refrigerant In-Lieu of R134A for the Chillers	DS	DESIGN SUGGESTION					
ME-15	Utilize New Generator as Backup for Existing Generator	DS	DESIGN SUGGESTION					
ME-16	Evaluate Need for Fire Pump	DS	DESIGN SUGGESTION					
ME-18	Confirm Diesel Fuel Storage Tank Size to Provide Minimal Operational Time	DS	DESIGN SUGGESTION					
ME-20	Elaborate Where Keynote #2 (Pre-Action System) On the Fire Protection Drawings Applies	DS	DESIGN SUGGESTION					
ME-21	Expand The Requirements for The Fire Suppression System To Clarify The Scope	DS	DESIGN SUGGESTION					
ME-22	Add Notes to The Fire Protection Drawings Regarding Shutdown And Tie-Ins to the Existing Fire Suppression System	DS	DESIGN SUGGESTION					
ME-23	Review Notes in DOAS Unit In Mechanical Schedule	DS	DESIGN SUGGESTION					
ME-24	Review GP-1 & GP-2 Notes on Mechanical Schedule Sheet	DS	DESIGN SUGGESTION					
ME-25	Standardize Ambient Design Temperature Used in Mechanical Schedules	DS	DESIGN SUGGESTION					
ME-29	Expand The Notes on Mechanical Sheet M2.8.3 To Clarify The Demo As Well As The New Work	DS	DESIGN SUGGESTION					
ME-30	Add FLA And MCA to the Mechanical Schedules	DS	DESIGN SUGGESTION					

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **CC-01**
DESCRIPTION:	**Improve Exterior Aesthetics Along Avon Drive**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The original design calls for the minimum standards being met for landscaping and visual elements of hardscapes along Avon Drive.

ALTERNATIVE:

The alternative design suggests adding additional landscape plantings and screening materials to the project. It is likely that (unless supplemented prior to submission) the ARB approval / certificate of appropriateness for the project process will result in several back and forth meetings which could be avoided if a more robust screening is proposed.

PROS:

- INCREASE THE LIKELIHOOD OF APPROVAL IN FIRST SUBMISSION TO THE ALBEMARLE COUNTY ARB
- INDICATES TO THE COMMUNITY THAT THE FACILITY IMPROVEMENTS CAN IMPROVE AESTHETICS

CONS:

- ADDITIONAL FIRST COST OF SUPPLEMENTAL PLANTINGS.
- MORE PLANTINGS TO MAINTAIN
- VDOT DOES NOT ALWAYS CONSIDER AESTHETICS AND COULD OBJECT TO LINE OF SIGHT RESTRICTIONS AT ALL ENTRANCES

TECHNICAL DISCUSSION:

None needed

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **CC-03**
DESCRIPTION: **On**	**Identify Contractor Staging And Lay-down Areas**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN: **Plans**

The DD plan set / design documents are silent on the areas of the site that will be dedicated to temporary contractor staging and materials storage / lay-down during the construction phase

ALTERNATIVE:

Create a separate site plan sheet indicating the physical limits of contractor staging areas and temporary safety fencing / barricades. Contractor requirements for maintaining the safety zones during construction should also be developed on the plan sheet. It could be included on the phasing sheets or on a separate plan.

PROS:

- **PUBLIC SAFETY OF THE COMMUNITY MEMBERS WHO VISIT THE FACILITY CAN BE MANAGED**
- **ALLOWS ACRJ STAFF TO PROACTIVELY PLAN THE TEMPORARY MEASURES THEY WILL HAVE TO ENFORCE DURING CONSTRUCTION**
- **BRINGS PREDICTABILITY TO THE CONTRACTORS BIDDING THE PROJECT**

CONS:

- **NONE**

TECHNICAL DISCUSSION:

None needed

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **CC-04**
DESCRIPTION:	**Identify Emergency Ingress and Egress To and From Facility During Construction**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

Similar to CC-03 (Design Suggestion) - the plan set / design documents are silent on the areas of the site that will be dedicated to emergency Ingress and Egress during the construction phase

ALTERNATIVE:

It should be included on the phasing sheets or on a separate plan and developed with Command Staff feedback and input prior to finalization.

PROS:

- PUBLIC SAFETY OF THE COMMUNITY MEMBERS WHO VISIT THE FACILITY CAN BE MANAGED
- ALLOWS ACRJ STAFF TO PROACTIVELY PLAN THE TEMPORARY MEASURES THEY WILL HAVE TO ENFORCE DURING CONSTRUCTION
- BRINGS PREDICTABILITY TO THE CONTRACTORS BIDDING THE PROJECT

CONS:

- NONE

TECHNICAL DISCUSSION:

None needed

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **CC-05**
DESCRIPTION:	**Identify Fire Department Connection During Phased Construction**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The existing Fire Department Connection for the facility is located within the 1970's wing being razed in the beginning of phase 1. This DS is Similar to CC-03 & CC-04 (Design Suggestions) - the plan set / design documents are silent on the temporary Fire Dept Connection during construction of Phase 1.

ALTERNATIVE:

Plan location and related details should be included on the plan sheets and detailed on the construction documents and developed with Command Staff feedback and input prior to finalization.

PROS:

- **FIRST RESPONDER PUBLIC SAFETY AND FIRE MARSHALL COMPLIANCE DURING CONSTRUCTION**
- **ALLOWS ACRJ STAFF TO PROACTIVELY PLAN THE LOCATION OF INTERIM / TEMPORARY MEASURES THEY WILL HAVE TO ENFORCE DURING CONSTRUCTION**
- **BRINGS PREDICTABILITY TO THE CONTRACTORS BIDDING THE PROJECT**

CONS:

- **NONE**

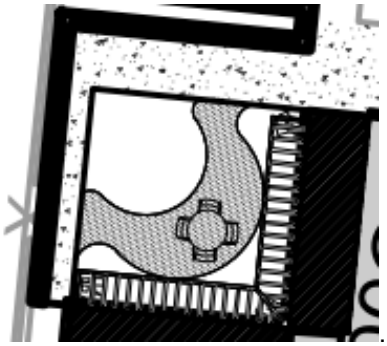
TECHNICAL DISCUSSION:

None needed

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **CC-06**
DESCRIPTION:	**Verify Materials and Methods of the Gazebo at the Staff Outdoor Eating Area**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

Plan View  .

ALTERNATIVE:

Verify materials and methods for the vertical design element / screen. Wood, Aluminum or Steel and provide details of the assembly for owner consideration. The function is to screen the staff outdoor dining area from the parking lot. It could achieve the same result utilizing prefabricated / manufactured components in lieu of custom metal work.

PROS:

- ALLOW OWNER TO MAKE INFORMED DESIGN DECISIONS
- POTENTIAL COST SAVINGS

CONS:

- **NONE**

TECHNICAL DISCUSSION:

None needed

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **CC-07**
DESCRIPTION:	**Verify Stormwater Management Connection Points to Existing and Outfall Elevation and Sheet flow**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

Plans indicate the mew Storm Water collection system will connect to existing storm system in several locations. Sheet flow along the surface is also part of the current design.

ALTERNATIVE:

Need to verify assumptions made for conditions of existing structures, existing piping (both outfall and invert elevations. Verify surface sheet flow in pedestrian areas in freeze conditions.

PROS:

- REDUCES RISK OF UNFORESEEN EXISTING CONDITIONS DURING CONSTRUCTIONS

CONS:

- **NONE**

TECHNICAL DISCUSSION:

None needed

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **CC-08 & CC-09**
DESCRIPTION:	**Coordinate Civil with the Plumbing Plans all Roof Drain Tie-ins to Storm Drains Including Laterals and Coordinate Civil with the Plumbing Plans all Condensate Drain Tie-ins to Storm Drains**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

Plans do not yet indicate locations of pipe and connection points for roof drain laterals and condensate drain laterals. The plans do note that the GC is required to coordinate, but the construction documents need to show details and plan view connections and where the tie ins occur to the storm water collection system.

ALTERNATIVE:

Show locations of connection of roof and condensate drains on plans with connection details.

PROS:	**CONS:**
• REDUCES RISK OF UNFORESEEN EXISTING CONDITIONS DURING CONSTRUCTIONS	• **NONE**

TECHNICAL DISCUSSION:

None needed

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **CC-12**
DESCRIPTION:	**Investigate Condition of Sanitary/Sewer Lines Prior to Acceptance**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

While we understand specifications are in progress (other than narratives / outline specifications), to date, specifications have not included video camera requirements of the in slab on grade waste lines prior to owner acceptance.

ALTERNATIVE:

Require the Contractor to video camera all waste lines in the slab on grade areas prior to owner acceptance and submit the video for review and approval. If areas of waste line bellies and blockages / breakage are identified during video review, require the contractor to break and remove slab, correct belly / blockage, and re-pour slab. Require video resubmission of corrective actions for approval.

PROS:

- REDUCES RISK OF WASTE LINE BELLIES AND BLOCKAGES / BREAKAGE FROM CONCRETE SLAB POURS DURING CONSTRUCTION
- PREVENTS HIDDEN "LATENT" DEFECTS FROM THE WASTE LINES EMBEDDED INTO CONCRETE

CONS:

- NONE

TECHNICAL DISCUSSION:

None needed

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-06**
DESCRIPTION:	**Reduce Size of Generator to Serve Only Critical Loads**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The original design calls for full back-up of the new 1200 A, 480v, 3ph electric service with a stand-by generator.

ALTERNATIVE:

The alternative design suggests providing back-up power via stand-by generator only to loads that are considered critical.

PROS:

- REDUCED COST
- REDUCED NOISE
- LOWER HEIGHT

CONS:

- REDUCED SIZE OF THE GENERATOR MAY COMPROMISE THE OPERATION OF THE FACILITY, AS NOT ALL LOADS WILL BE BACKED-UP.
- MOST MAJOR LOADS IN THE BUILDING ARE CONSIDERED TO BE CRITICAL, THERE MAY NOT BE ENOUGH LOADS TO SHED TO JUSTIFY THE GENERATOR SIZE REDUCTION,

TECHNICAL DISCUSSION:

None.

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-10**
DESCRIPTION:	**Install Security Cameras at Entrance to Main Mechanical and Electrical Rooms**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The original design does not indicate security cameras at the proposed stand-by generator and the main electrical room.

ALTERNATIVE:

The alternative design suggests adding security cameras at the proposed stand-by generator and the main electrical room.

PROS:

- **ENHANCED SECURITY OF THE GENERATOR AND THE MAIN ELECTRIC ROOM**

CONS:

- **ADDED COST**

TECHNICAL DISCUSSION:

Enhanced Security.

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-11**
DESCRIPTION:	**Utilize R32 Refrigerant In-Lieu of R410A for the RTUs**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The original design does not indicate the type of refrigerant required for the roof top units.

ALTERNATIVE:

The alternative design suggests specifying the newer refrigerant R-32 or R-454B with a lower carbon footprint in all the new units.

PROS:

- LOWER CARBON FOOTPRINT
- WILL BE AVAILABLE FOR THE FORESEEABLE FUTURE
- R410A REFRIGERANT CURRENTLY USED IN THE ROOFTOP UNITS IS BEING PHASED OUT

CONS:

- THERE MAY BE SOME LIMITATION IN THE AVAILABILITY OF EQUIPMENT

TECHNICAL DISCUSSION:

Phasing out of R410A in the near future would render its procurement difficult.

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-12**
DESCRIPTION:	**Utilize R454B Refrigerant In-Lieu of R134A for the Chillers**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The original design does not indicate the type of refrigerant required for the replacement chillers.

ALTERNATIVE:

The alternative design suggests specifying the newer refrigerant R-513A or R-454B with a lower carbon footprint in all the new units in lieu of R-134a refrigerant.

PROS:

- LOWER CARBON FOOTPRINT
- WILL BE AVAILABLE FOR THE FORESEEABLE FUTURE
- USE OF R134A IN NEW CHILLERS WAS PHASED OUT AS OF JANUARY 2024.

CONS:

- NONE APPARENT

TECHNICAL DISCUSSION:

Phasing out of R134A would render its procurement difficult.

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-15**
DESCRIPTION:	**Utilize New Generator as Backup for Existing Generator**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The original design does not provide back-up to the existing 600 kw stand-by generator.

ALTERNATIVE:

The alternative design suggests providing back-up from the new generator(s) to the existing generator.

PROS:

- **REDUNDANCY**

CONS:

- **ADDED COST**

TECHNICAL DISCUSSION:

None.

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-16**
DESCRIPTION:	**Evaluate The Need for Fire Pump**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The original design is utilizing the existing 125HP fire pump for the existing building as well as the new addition.

ALTERNATIVE:

The alternative design suggests requesting a new hydrant flow test to determine if a fire pump is necessary and what the exact requirements may be.

PROS:

- **FUTURE COST AVOIDANCE WHEN REPLACEMENT IS NEEDED.**
- **WILL FAVORABLY AFFECT THE LOAD ON THE EXISTING GENERATOR. IT MAY BE POSSIBLE TO ADD MORE CRITICAL SYSTEMS TO THE EXISTING GENERATOR.**

CONS:

- **NONE APPARENT**

TECHNICAL DISCUSSION:

None.

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-18**
DESCRIPTION:	**Confirm Diesel Fuel Storage Tank Size to Provide Minimal Operational Time**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The original design is. Accounting for a 4000-gallon custom made belly tank for the stand-by generator in the cost estimate.

ALTERNATIVE:

The alternative design suggests verifying the minimum run time for the stand-by generator (48 hours vs 72 hours).

PROS:

- **COMPLIANCE WITH CODES.**

CONS:

- **HIGHER COST FOR IF A LARGER TANK IS REQUIRED**

TECHNICAL DISCUSSION:

None.

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-20**
DESCRIPTION:	**Elaborate Where Keynote #2 (Pre-Action System) On the Fire Protection Drawings Applies**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The original design indicates a pre-action fire sprinkler system with keynote #2 on fire sprinkler drawings.

ALTERNATIVE:

The alternative design suggests verifying where pre-action system is required.

PROS:

- **CLARIFICATION**

CONS:

- **POSSIBLE COST IMPACT**

TECHNICAL DISCUSSION:

None.

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-21**
DESCRIPTION:	**Expand The Requirements for The Fire Suppression System To Clarify The Scope**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The original fire suppression scope of work can benefit from additional information on the drawings.

ALTERNATIVE:

The alternative design suggests expanding the information presented on the fire suppression plans to better clarify the scope of work.

PROS:

- **CLARIFICATION**

CONS:

- **NONE APPARENT**

TECHNICAL DISCUSSION:

None.

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-22**
DESCRIPTION:	**Add Notes to The Fire Protection Drawings Regarding Shutdown And Tie-Ins to the Existing Fire Suppression System**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The original fire suppression scope of work can benefit from additional information on the drawings regarding shutdown and tie-in and requirements for fire watch of other safety and security means

ALTERNATIVE:

The alternative design suggests adding notes to indicate how shutdown and tie-ins of the new to the existing fire system are accomplished. This could include instituting fire watch or other safety and security measures.

PROS:

- **ADDED SAFETY**
- **CODE REQUIREMENTS**

CONS:

- **NONE APPARENT**

TECHNICAL DISCUSSION:

None.

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-23**
DESCRIPTION:	**Review Notes in DOAS Unit In Mechanical Schedule**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The original design indicates a few notes under the DOAS schedule which may not apply.

ALTERNATIVE:

The alternative design suggests reviewing the notes and editing them as appropriate.

Also, if the DOAS units are utilizing hot and chilled water, clarify how reheat for humidity/temperature control is to be accomplished.

PROS:

- **CLARIFICATION**

CONS:

- **NONE APPARENT**

TECHNICAL DISCUSSION:

None.

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-24**
DESCRIPTION:	**Review GP-1 & GP-2 Notes on Mechanical Schedule Sheet**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The original design indicates a 7-day programmable timer in the mechanical schedule for GP-1 & GP-2. Also, notes 6 &10 are contradicting each other.

ALTERNATIVE:

The alternative design suggests reviewing the notes in the mechanical schedule for GP-1 & GP-2 and editing them appropriately. It is believed that BAS system will be used for controls vs 7-, programmable timers.

PROS:	**CONS:**
• **CLARIFICATION**	• **NONE APPARENT**

TECHNICAL DISCUSSION:

None.

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-25**
DESCRIPTION:	**Standardize Ambient Design Temperature Used in Mechanical Schedules**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The original design indicates different ambient design temperatures in the mechanical schedules for heat pumps, DOAS, enthalpy wheels and chillers.

ALTERNATIVE:

The alternative design suggests standardizing the ambient design temperature for all mechanical units.

PROS:

- **CLARIFICATION**

CONS:

- **NONE APPARENT**

TECHNICAL DISCUSSION:

None.

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-29**
DESCRIPTION:	**Expand The Notes on Mechanical Sheet M2.8.3 To Clarify The Demo As Well As The New Work**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The original design indicates the demo work with key notes, however new work key notes are missing.

ALTERNATIVE:

The alternative design suggests adding notes for the new work, which includes replacing the existing chillers and pumps with new.

PROS:

- **CLARIFICATION**

CONS:

- **NONE APPARENT**

TECHNICAL DISCUSSION:

None.

Value Analysis Design Suggestion

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	ALTERNATIVE NO.: **ME-30**
DESCRIPTION:	**Add FLA And MCA to the Mechanical Schedules**	SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The original design is missing electrical information on mechanical equipment schedules such as FLA & MCA.

ALTERNATIVE:

The alternative design adding electrical information such as FLA & MCA to facilitate coordination between mechanical and electrical drawings.

PROS:

- **CLARIFICATION**

CONS:

- **NONE APPARENT**

TECHNICAL DISCUSSION:

None.

Tab IV

INTRODUCTION

This report is being generated to summarize the analysis and conclusions of the Neelu, Inc, led Value Engineering Study during the period of October 14th through October 18th, 2024, via a Virtual Workshop, for the ***Albemarle-Charlottesville Regional Jail Expansion & Renovation*, Contract No.: 2025-0918224-05**, which was the subject of the Value Engineering study. The design is being performed by Moseley Architects. and their design team. The construction cost estimate for this project is approximately $40 million (not including additional updates to the design as it progresses). A cost model is included in this section.

The Value Engineering workshop team leadership was provided by Neelu Inc., with Team Members of Neelu, Inc. and Downey & Scott, LLC. The VE Team members are listed below:

Ramesh Kalvakaalva, PE, CVS	VE Facilitator – Neelu, Inc.
William Downey	Project Manager, Downey & Scott, LLC
Jeffery Warmington	Architect, Neelu, Inc.
Vigen Yedigarian	Electrical Engineer, Neelu, Inc.
Phillip Nejman	Structural Engineer, Neelu, Inc.
Stephen Bradley	Cost Estimator, Downey & Scott, LLC
Kevin Fallin	Civil Engineer, Downey & Scott, LLC

The Value Engineering team followed the six step Value Engineering job plan as promulgated by SAVE International. This six-step job plan included the following:

I. **Information Phase**
II. **Function Analysis Phase**
III. **Speculation/Creative Phase**
IV. **Evaluation Phase**
V. **Development Phase**
VI. **Presentation Phase**

- **Information Phase** – during this phase of the team's work, the team received a briefing from the designers, Moseley Architects and their design team, and representatives of the *Albemarle-Charlottesville Regional Jail*. This briefing included discussions of the design intent behind the project, constraints, the cost concerns, and was followed by a general discussion and Q & A session for all the participants. Following the presentation, the team also took time to review the construction cost estimate for the project and noted the high-cost items that should be carefully reviewed during the course of the workshop. The VE team leader also made it clear that it was not the full intent of the study to cut costs for the project – that there is a great significance to be attached to alternatives that add value to the project, even if the alternative adds cost to the project. The sign-in sheet for the attendance during this phase can be found at the end of the section.

- **Function Analysis Phase** – during this phase the team reviewed the project from the simplest format in asking the questions of "*What is the project supposed to do*?", and "*How is it supposed to accomplish this purpose?*". In the Value Engineering vernacular, the answers to these questions are cast in the form of active verbs and measurable nouns. These verb/noun pairs form the basis of the function analysis that distinguishes a Value Engineering effort from a potentially damaging cost cutting exercise. The team classified the Functions and associated Risks each poses to the project. The Function Tabulation is included in the following pages.

- **Creative/Brainstorming Phase** – The Value Engineering team performed a brainstorming session to identify ideas that might help meet the team objectives:

  - Reduce the current budget overrun (if any) and reduce life cycle costs
  - Improve functionality and quality of the Facility
  - Overcome project constraints
  - Reduce the time of construction
  - Incorporate innovative technologies

- Clarify risks and opportunities associated with the project. Also, to identify ways to mitigate risks and act on opportunities

This brainstorming session initially identified a large volume of ideas that were then evaluated in the next phase. The reader will find the creative worksheets enclosed. These same work sheets were also used to record the results of the Judgment or Evaluation Phase.

- **Judgment or Evaluation Phase –** Once the team identified the various creative ideas, it was necessary to decide which alternatives should be carried forward. This is the work of the Judgment or Evaluation Phase. The team reflected back on the project constraints and objectives shared with the team by the owner's / designers, in the kick-off meeting on the first day of the workshop. From that guidance, the team settled on the following values as measures of whether or not an alternative had enough merit to be carried forward in the Value Engineering process:

  - Construction Cost Savings
  - Life Cycle Costs
  - Ability to Implement the Idea
  - General Acceptability of the Alternatives
  - Constructability
  - Operator Friendliness
  - Process Improvement

  Project Attributes - The project attributes were well defined and helped to fix the evaluation factors for the creative ideas that were to be judged. These included:
  - Schedule/Fiscal Years – Construction is expected to begin in the Fall of 2025.
  - Budget – The estimated total eligible project costs for the Facility is approximately $40 million.
  - Operations -- The project has been carefully worked through, taking into account a myriad of component interworking that will afford a high level of efficiency in the day-to-day activities of the finished project. This functionality is important to the project.
  - Coordination -- The current design takes into account many coordination efforts.

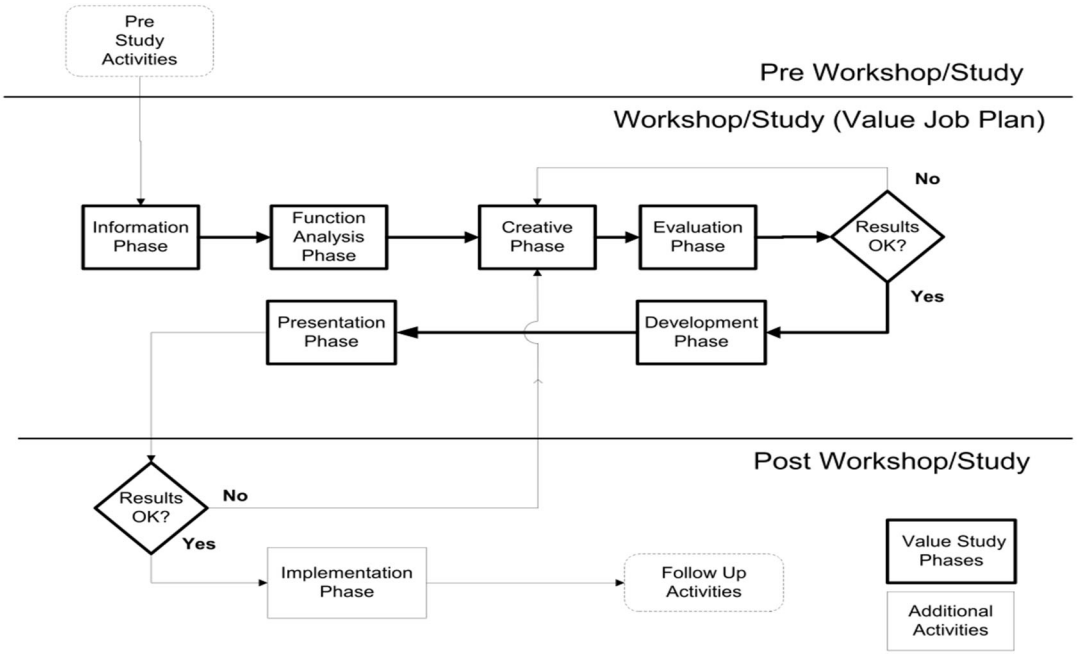
  Evaluation Factors — The VE team used the performance metrics perspectives to decide on whether the alternatives should be carried forward. With each of the approximately 41 creative ideas, the VE team rated them with the following ratings:

5	Excellent Idea
4	Good Idea
3	Marginal but it may offer some interest in the event there are budget problems.
2 and 1	Not to be carried forward
ABD	Already Being Done
DS	Design Suggestion

- **Development Phase** – During this phase, the VE team developed each of the selected alternatives whose score was 4 or higher because of time constraints. The worksheets (see the tabbed section titled ***Study Results***) provide a description of the changes to be made from the original design, sketches are prepared, cost estimates, calculations, and technical discussions are provided. All of these are intended to assist the decision makers in deciding on the merits of the alternatives. Some of the ideas are documented or listed in the form of Design Suggestions, which is a less detailed manner of providing guidance and suggestions for aspects of the project as it moves forward to construction. In some instances, a Life Cycle Cost Analysis was performed.

- **Presentation Phase** – This written report is one of three parts of the presentation phase. The first part was the informal presentation by the VE team on the last day of the VE workshop. The second part is this report. It is intended to formalize the findings of the workshop and set the stage for the implementation meeting by the Project Delivery Team. The final part, if requested by *Albemarle-Charlottesville Regional Jail* outside the original scope of services, will be the letter report update on this written report. The letter report will summarize the findings of the implementation meeting.

The following is a flow chart that represents the work done prior to, during, and after the VE workshop is completed on site:



Value Engineering Job Plan
Source: SAVE International

STUDY AGENDA

The agenda for this VE workshop follows this narrative. On Monday, October 14th, subsequent to the Owner/Designer presentation, the VE Team continued with the information phase based on additional information provided by the Designers.

It must be noted that since this agenda was proposed prior to the start of the VE Workshop, some deviations were warranted as the actual VE Workshop took shape.

VE WORKSHOP AGENDA
Albemarle-Charlottesville Regional Jail (ACRJ) – Renovations and Replacement
VIRTUAL PLATFORM (MS Teams)
October 14-18, 2024

Day One	Intro by VE Team Leader	8:30 am – 9:00 am
	EOR Presentation to Team	9:00 am – 10:00 am
	Q&A between EOR and Team	10:00 am – 11:00 am
	Review Project Documents	11:00 am – 12:00 pm
	Lunch	12:00 pm – 1:00 pm
	Review Project Documents (cont'd)	1:00 pm – 4:45 pm
	Summarize Site Review & Constraints	4:45 pm – 5:00 pm
Day Two	Cost Model & Function Analysis	8:30 am – 9:00 am
	FAST Diagram	9:00 am – 10:00 am
	Intro to Creative Thinking	10:00 am – 10:15 am
	Creative Idea Listing/Function	10:15 am – 12:00 pm
	Lunch	12:00 pm – 1:00 pm
	Creative/Evaluation Phase	1:00 pm – 5:00 pm
Day Three	Evaluation Phase	8:30 am – 12:30 pm
	Lunch	12:30 pm – 1:00 pm
	Mid-point review and determine economic factors	1:00 pm – 2:00 pm
	Begin Development Phase	2:00 pm – 5:00 pm
Day Four	Continue Development Phase	8:30 am – 12:30 pm
	Lunch	12:30 pm – 1:30 pm
	Continue Development Phase	1:30 pm – 3:00 pm
Day Five	Continue Development Phase	8:30 am – 12:30 pm
	Lunch	12:30 pm – 1:30 pm
	Presentation Phase	1:30 pm – 3:00 pm
	Begin Draft Value Engineering Report (Team Leader)	3:00 pm – 5:00 pm

Note: Actual duration of sessions may vary during the course of the VE Workshop based on Team Dynamics and progress.

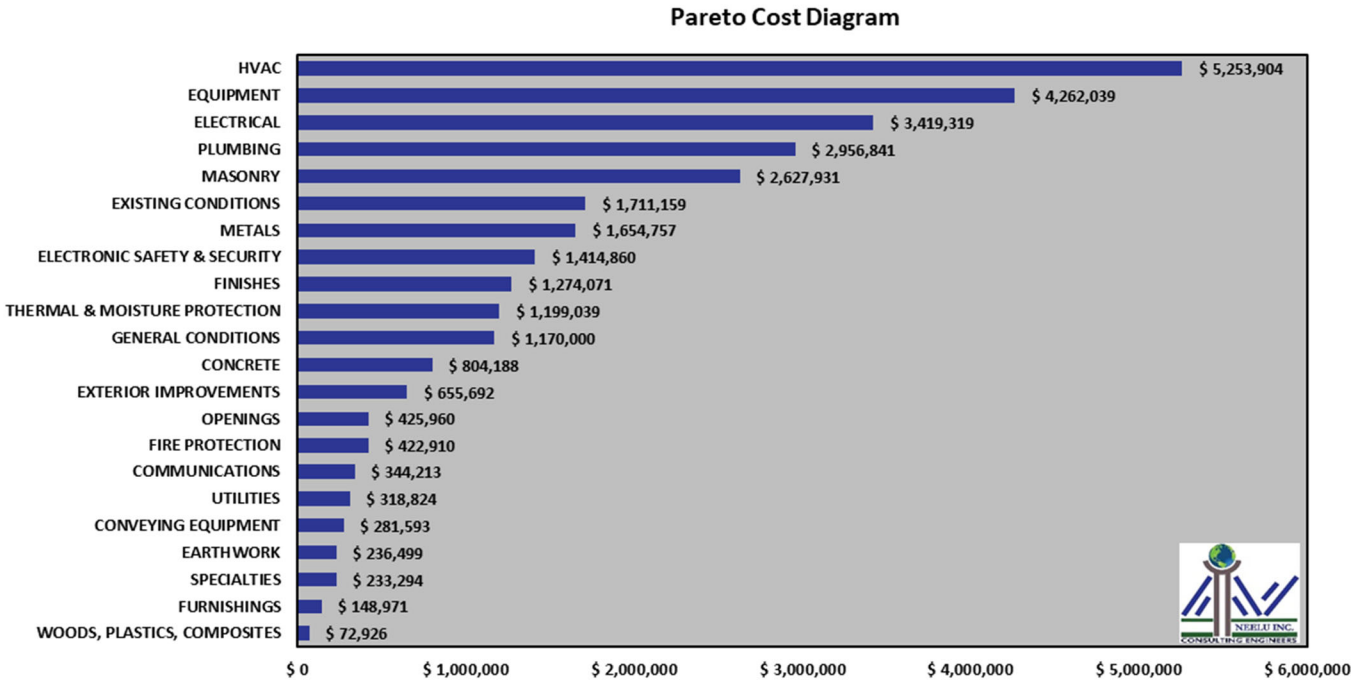
CONSTRUCTION COST ESTIMATE

The cost estimate from the design team was prepared based on the Design Development Phase (35%) submittal and totals approximately $40 million.

A Cost Model (Distribution and Pareto Chart) is shown below:

DIVISION		Percent	Cum. Percent	Cost
DIV 13	SPECIAL CONSTRUCTION	0.00%	0.00%	$0
DIV 06	WOODS, PLASTICS, COMPOSITES	0.24%	0.24%	$ 72,926
DIV 12	FURNISHINGS	0.48%	0.72%	$ 148,971
DIV 10	SPECIALTIES	0.76%	1.48%	$ 233,294
DIV 31	EARTHWORK	0.77%	2.25%	$ 236,499
DIV 14	CONVEYING EQUIPMENT	0.91%	3.16%	$ 281,593
DIV 33	UTILITIES	1.03%	4.19%	$ 318,824
DIV 27	COMMUNICATIONS	1.11%	5.30%	$ 344,213
DIV 21	FIRE PROTECTION	1.37%	6.67%	$ 422,910
DIV 08	OPENINGS	1.38%	8.05%	$ 425,960
DIV 32	EXTERIOR IMPROVEMENTS	2.12%	10.17%	$ 655,692
DIV 03	CONCRETE	2.60%	12.77%	$ 804,188
DIV 01	GENERAL CONDITIONS	3.79%	16.56%	$ 1,170,000
DIV 07	THERMAL & MOISTURE PROTECTION	3.88%	20.44%	$ 1,199,039
DIV 09	FINISHES	4.12%	24.56%	$ 1,274,071
DIV 28	ELECTRONIC SAFETY & SECURITY	4.58%	29.14%	$ 1,414,860
DIV 05	METALS	5.36%	34.50%	$ 1,654,757
DIV 02	EXISTING CONDITIONS	5.54%	40.04%	$ 1,711,159
DIV 04	MASONRY	8.51%	48.55%	$ 2,627,931
DIV 22	PLUMBING	9.57%	58.12%	$ 2,956,841
DIV 26	ELECTRICAL	11.07%	69.19%	$ 3,419,319
DIV 11	EQUIPMENT	13.80%	82.99%	$ 4,262,039
DIV 23	HVAC	17.01%	100.00%	$ 5,253,904
TOTAL ESTIMATED COST (No Markups):				**$30,888,990**

PARETO CHART:



FUNCTION ANALYSIS

TABULAR FUNCTION ANALYSIS Albemarle-Charlottesville Regional Jail , Expansion & Renovation, Contract No.: 2025-0918224-05			
Project Element	**Function Verb - Noun**	**Type**	**Project Risk**
Need	Implement Standards	Higher Order	Low
Purpose	Update Compliance	Basic	Low
Enhance Program	Facilitate Rehabilitation	Project Goal	Low
Interior Improvements	Accommodate Staff Needs	Project Goal	Low
Interior Improvements	Accommodate Resident Needs	Project Goal	Low
Interior Improvements	Improve Hospitability	Secondary	Low
Site Improvements	Separate Parking	Required Secondary	Medium
Life Safety Improvements	Enhance Security	Required Secondary	Low
Interior Improvements	Elevate Resident Experience	Secondary	Low
Maintain Program	Maintain Capacity	Secondary	Low
Enhance Design Life	Improve Infrastructure	Required Secondary	Medium
Aesthetics	Enhance Interior	Secondary	Low
Aesthetics	Enhance Exterior	Required Secondary	Low
Aesthetics	Match Existing Exterior	Required Secondary	Low
Maintain Program	Maintain Functionality	Required Secondary	Low
Enhance Design Life	Modernize Facility	Required Secondary	Low
Sustainability Goals	Incorporate Sustainability	Required Secondary	Low
Maintain Program	Modify Culture	Secondary	Low
Maintain Program	Facilitate Consultation	Required Secondary	Low
Circulation	Improve Access	Secondary	Low
Circulation	Improve Circulation	Secondary	Low
Sustainability Goals	Utilize Daylight	Required Secondary	Low
Maintain Program	Provide Vocational Training	Secondary	Low
Maintain Program	Impart Education	Secondary	Low
Maintain Program	Provide Mental Health Services	Required Secondary	Low
Life Safety Improvements	Confirm Hydrant Pressure	Required Secondary	Medium
Comfort	Mitigate Noise (Generator)	Required Secondary	Medium
Civil Site Design	Manage Stormwater	Required Secondary	Medium
Life Safety Improvements	Improve Safety	Required Secondary	Low
Sustainability Goals	Increase Daylight	Required Secondary	Low
ADA Compliance	Incorporate ADA Compliance	Required Secondary	Low

CREATIVE IDEAS LIST

PROJECT:	***Albemarle-Charlottesville Regional Jail Expansion & Renovation*** **Contract No.: 2025-0918224-05**	
NO.	**IDEA DESCRIPTION**	**RATING**
	ARCHITECTURAL AND STRUCTURAL (AS)	
AS-01	Eliminate Interior Wood Slat Ceiling	ABD
AS-02	Consider Stainless Steel In-Lieu of Galvanized Screening at Exercise Yard	5
AS-03	Utilize Kane Fabric Screening In-Lieu of Galvanized Screening at Exercise Yard	5
AS-04	Lower Roof Deck over the Detention Cells	4
AS-05	Use 8” CMU In-Lieu of 12” CMU	5
AS-06	Review Requirement for Future PVs at Roof Structure for Reduced Loads	5
AS-07	Use Structural Steel Columns and Beams In-lieu of CMU Loads Bearing Walls	3
AS-08	Use CMU In-lieu of Concrete for Foundation Walls	4
AS-09	Conclude HAZMAT Survey and Generate Report for Final Bid Documents	DS
AS-10	Install Linoleum Sheet Flooring In-Lieu of LVT Flooring	5
AS-11	Re-evaluate Joist Loading	4
AS-12	Provide Joist Loading Diagram	See AS-11
AS-13	Re-evaluate Classroom/Dayroom Joist Live Load	See AS-11
AS-14	Utilize Joists In-lieu of Wide Flange Beams for Floor Framing	3
AS-15	Salvage and Reuse Brick Veneer from Existing Building Demolition	2
AS-16	Utilize Thin Brick Veneer	2
AS-17	Reconcile Thickness of Metal Stud Partitions	DS
AS-18	Re-evaluate Need for Acoustic Panels	DS
AS-19	Use Precast Tilt-up In-Lieu of CMU Walls	2
AS-20	Reduce Overall Building Height	1
AS-21	Evaluate Reducing Slab Thickness in the Cell Unit Areas	4
AS-22	Evaluate Resinous Flooring in Janitors Closets	4
AS-23	In-Lieu of Architectural Soffit Panels at Exterior Canopies Consider Field Applied Epoxy Coating	5
AS-24	Use Linoleum In-Lieu of Athletic Rubber Flooring in Locker Rooms R-403 and Corridor R-404	5
AS-25	Install Cost Efficient Two-Tier Lockers	5
	CONSTRUCTABILITY & CIVIL (CC)	
CC-01	Improve Exterior Aesthetics Along Gateway Avon Rd	DS

CC-02	Install EV Charging Stations at Parking	ABD
CC-03	Identify Staging and Material Lay Down Areas	DS
CC-04	Identify Emergency Ingress and Egress to and From Facility During Construction	DS
CC-05	Identify Fire Department Connection During Phased Construction	DS
CC-06	Verify Materials and Methods of the Gazebo at the Staff Outdoor Eating Area	DS
CC-07	Verify Stormwater Management Connection Points to Existing and Outfall Elevation and Sheet flow	DS
CC-08	Coordinate Civil with the Plumbing Plans all Roof Drain Tie-ins to Storm Drains Including Laterals	DS
CC-09	Coordinate Civil with the Plumbing Plans all Condensate Drain Tie-ins to Storm Drains	See CC-08
CC-10	Use E-Pave In-Lieu of Hot Mix Asphalt for Parking Area	1
CC-11	Install Wheel Stops in Parking Lot	2
CC-12	Investigate Condition of Sanitary/Sewer Lines Prior to Acceptance	DS
MECHANICAL & ELECTRICAL (ME)		
ME-01	Use Aluminum Conductors In-Lieu of Copper for Secondary of the Transformer	4
ME-02	Use Aluminum In-Lieu of Copper for the Feeders to the New Panel Boards	4
ME-03	Use Aluminum Bus Bars in the Switch Boards In-Lieu of Copper	4
ME-04	Use Aluminum Bus Bars in the Panel Boards In-Lieu of Copper	4
ME-05	Use Two 500 KW Generators In-Lieu of Single 1000 KW Generator	4
ME-06	Reduce Size of Generator to Serve Only Critical Loads	DS
ME-07	Use 2-Tank Type High Efficiency Gas Water Heaters In-Lieu of Instantaneous Gas Water Heaters	3
ME-08	Use PVC Sch. 40 In-Lieu of CIP for Above Ground Sanitary and Storm Piping	3
ME-09	Include Enhanced Commissioning	ABD
ME-10	Install Security Cameras at Entrance to Main Mechanical and Electrical Rooms	DS
ME-11	Utilize R32 Refrigerant In-Lieu of R410A for the RTUs	DS
ME-12	Utilize R454B Refrigerant In-Lieu of R134A for the Chillers	DS
ME-13	Utilize Electric Re-Heat for VAV Boxes In-Lieu of Hot Water	1
ME-14	Forgo Purchasing Green Power If Not Required to Achieve LEED Certification	2
ME-15	Utilize New Generator as Backup for Existing Generator	DS
ME-16	Evaluate Need for Fire Pump	DS
ME-17	Utilize a Sewage Grinder Pump (Muffin Monster)	4
ME-18	Confirm Diesel Fuel Storage Tank Size to Provide Minimal Operational Time	DS

ME-19	Coordinate BAS Systems with New and Modified HVAC	ABD
ME-20	Elaborate Where Keynote #2 (Pre-Action System) On the Fire Protection Drawings Applies	DS
ME-21	Expand The Requirements for The Fire Suppression System to Clarify the Scope	DS
ME-22	Add Notes to The Fire Protection Drawings Regarding Shutdown and Tie-Ins to the Existing Fire Suppression System	DS
ME-23	Review Notes in DOAS Unit in Mechanical Schedule	DS
ME-24	Review GP-1 & GP-2 Notes on Mechanical Schedule Sheet	DS
ME-25	Standardize Ambient Design Temperature Used in Mechanical Schedules	DS
ME-26	Consider Increasing Chilled Water Supply Temperature From 42F To 44F For Energy Efficiency.	1
ME-27	Review Freeze Protection for The Water Coils in The Air Handling Units	1
ME-28	Review Freeze Protection for The Chiller and Entire CHW System	1
ME-29	Expand The Notes on Mechanical Sheet M2.8.3 To Clarify the Demo as Well As The New Work	DS
ME-30	Add FLA And MCA to the Mechanical Schedules	DS

Rating: **1→2 = Not to be Developed;** **3 = Varying Degrees of Development Potential;** **4→5 = Most likely to be Developed;**
DS = Design Suggestion; **ABD = Already Being Done**

Appendix A

Value Engineering Workshop

October 14-18, 2024

Albemarle-Charlottesville Regional Jail - Expansion & Renovation
Charlottesville, VA

Contract No.: 2025-0918224-05

NEELU INC. CONSULTING ENGINEERS

DOWNEY & SCOTT
Construction Management Services

1

Value Engineering
SIX STEP JOB PLAN

* INFORMATION PHASE
* FUNCTION ANALYSIS PHASE
* CREATIVE PHASE
* EVALUATION PHASE
* DEVELOPMENT PHASE
* PRESENTATION PHASE

2

Value Engineering Workshop

VIRTUAL VE STUDY

3

Project Information

Location:

4

Project Information

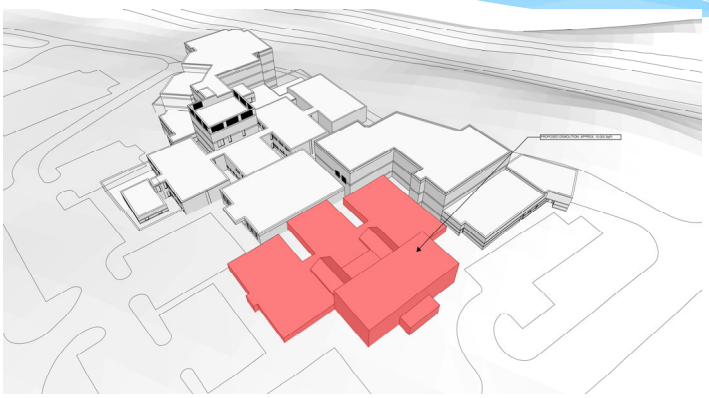
Scope of Work:

- Renovate and reconfigure approximately 60,000 square feet of the West Wing and Ground Floor portion of the 1974 original facility.
- Demolish 16,000 square feet of the East Wing.
- Construct a two story 32,000 square foot portion in the footprint of the 1974 East Wing. To Create:
  - New facility entry
  - Increase office space
  - House the redesigned family, friends and professional visitation
  - Include more private visitation areas.
- Remove bar grate from the facility to:
  - Increase the dormitory and dayroom space.
- Replace existing (and adding additional) toilets and showers to meet the BLRJ 2018 compliance standards.
- Replace lighting throughout the facility
- Replace and upgrade HVAC and plumbing

5

Project Information

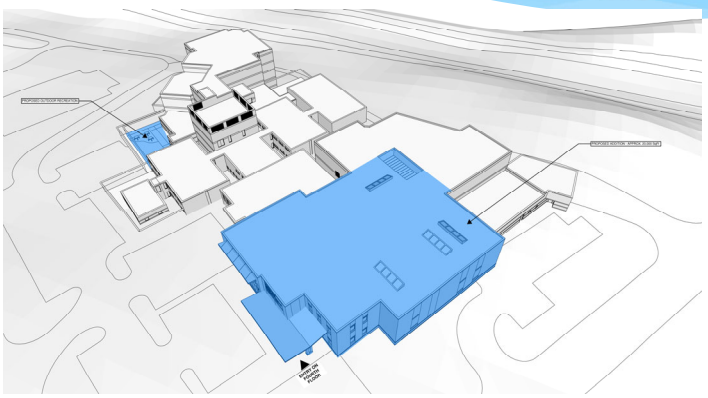
Existing Conditions:



6

Project Information

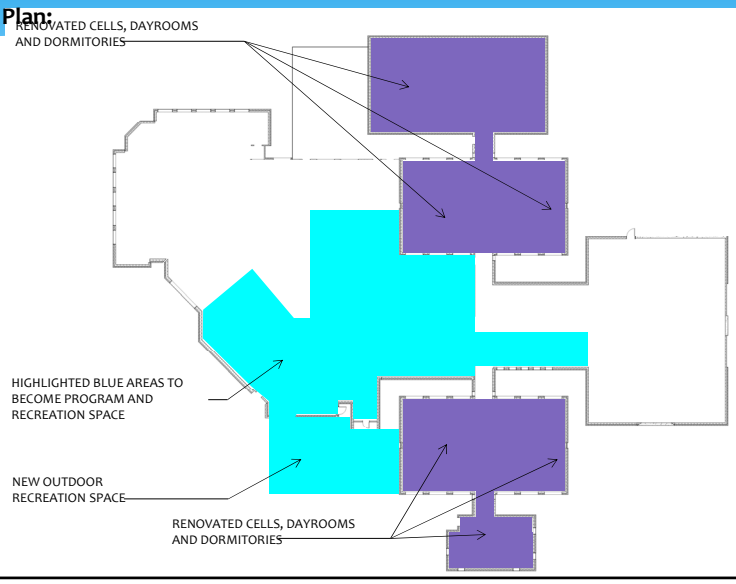
Additions/Renovations:



7

Project Information

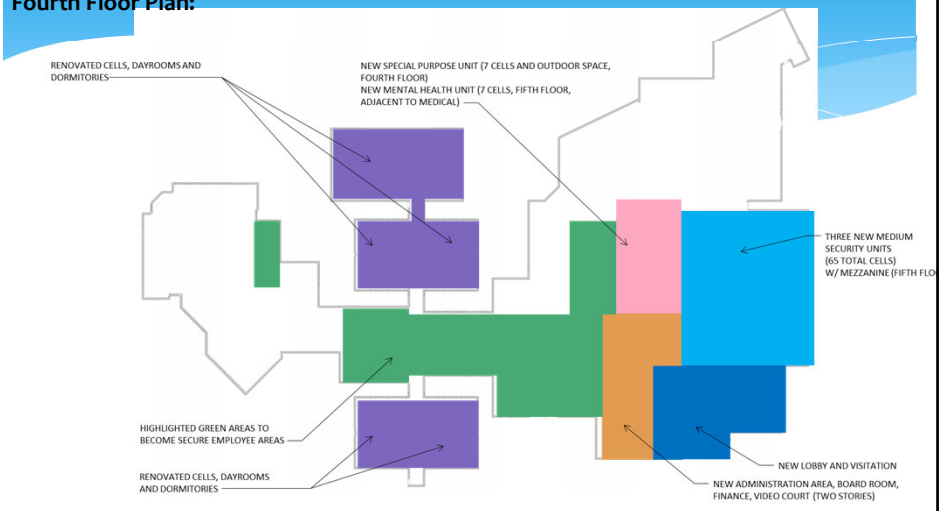
Third Floor Plan:



8

Project Information

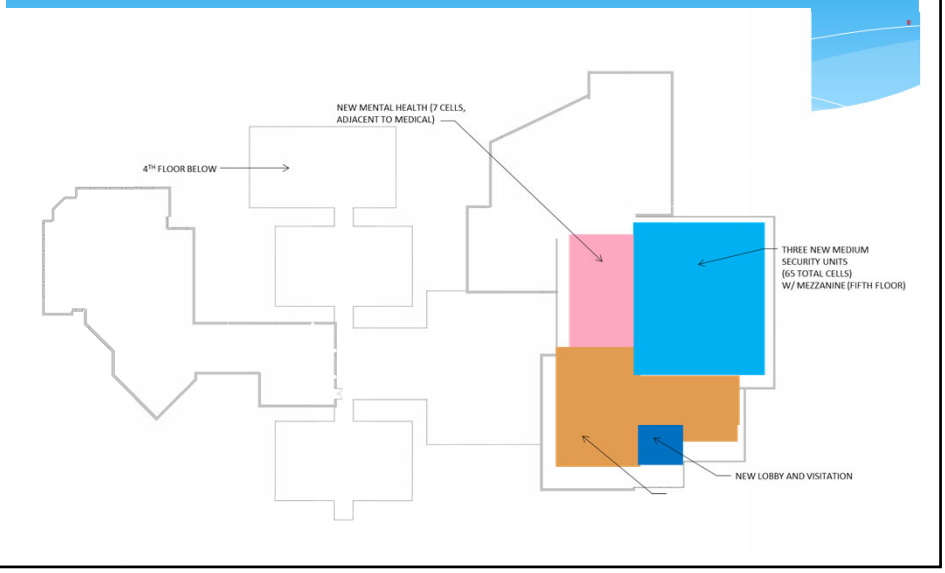
Fourth Floor Plan:



9

Project Information

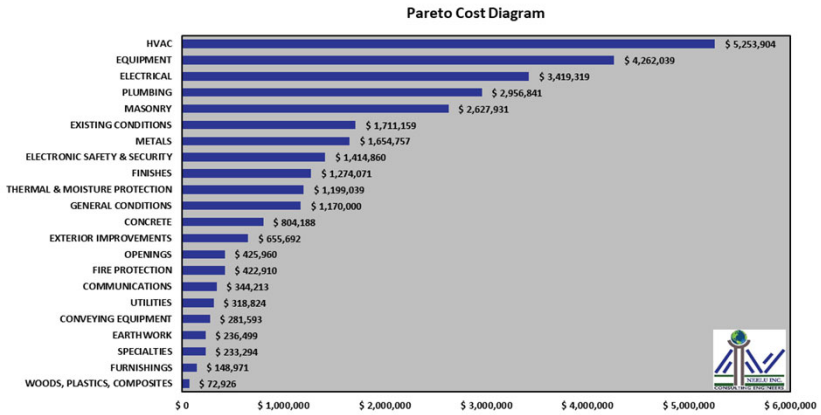
Fifth Floor Plan:



10

INFORMATION PHASE

* PROJECT CONSTRUCTION COST:
  * PARETO CHART



15

FUNCTION ANALYSIS

TABULAR FUNCTION ANALYSIS
Albemarle-Charlottesville Regional Jail , Expansion & Renovation, Contract No.: 2025-0918224-05

Project Element	Function Verb - Noun	Type	Project Risk
Need	Implement Standards	Higher Order	Low
Purpose	Update Compliance	Basic	Low
Enhance Program	Facilitate Rehabilitation	Project Goal	Low
Interior Improvements	Accommodate Staff Needs	Project Goal	Low
Interior Improvements	Accommodate Resident Needs	Project Goal	Low
Interior Improvements	Improve Hospitability	Secondary	Low
Site Improvements	Separate Parking	Required Secondary	Medium
Life Safety Improvements	Enhance Security	Required Secondary	Low
Interior Improvements	Elevate Resident Experience	Secondary	Low
Maintain Program	Maintain Capacity	Secondary	Low
Enhance Design Life	Improve Infrastructure	Required Secondary	Medium
Aesthetics	Enhance Interior	Secondary	Low
Aesthetics	Enhance Exterior	Required Secondary	Low
Aesthetics	Match Existing Exterior	Required Secondary	Low
Maintain Program	Maintain Functionality	Required Secondary	Low
Enhance Design Life	Modernize Facility	Required Secondary	Low
Sustainability Goals	Incorporate Sustainability	Required Secondary	Low
Maintain Program	Modify Culture	Secondary	Low

16

FUNCTION ANALYSIS

Maintain Program	Facilitate Consultation	Required Secondary	Low
Circulation	Improve Access	Secondary	Low
Circulation	Improve Circulation	Secondary	Low
Sustainability Goals	Utilize Daylight	Required Secondary	Low
Maintain Program	Provide Vocational Training	Secondary	Low
Maintain Program	Impart Education	Secondary	Low
Maintain Program	Provide Mental Health Services	Required Secondary	Low
Life Safety Improvements	Confirm Hydrant Pressure	Required Secondary	Medium
Comfort	Mitigate Noise (Generator)	Required Secondary	Medium
Civil Site Design	Manage Stormwater	Required Secondary	Medium
Life Safety Improvements	Improve Safety	Required Secondary	Low
Sustainability Goals	Increase Daylight	Required Secondary	Low
ADA Compliance	Incorporate ADA Compliance	Required Secondary	Low

17

CREATIVE PHASE

* BRAINSTORMING SESSION
* THINK "OUTSIDE THE BOX"
* IGNORED CONSTRAINTS
* LISTED *67 CREATIVE IDEAS*
* BASED ON INFORMATION PROVIDED

18

EVALUATION PHASE

- CAN IT BE DONE?
- IS IT APPLICABLE TO THE PROJECT?
- DOES IT COMPLY WITH STANDARDS?
- ANY ADVERSE IMPACTS?
- IS IT BENEFICIAL TO THE PROJECT?
- RANKING ON A SCALE OF 1-5
- DESIGN SUGGESTION WHEN NOT QUANTIFIABLE BUT BENEFICIAL TO THE PROJECT
- STUDY RESULTS:
  - *22 ALTERNATIVES (some are mutually exclusive)*
  - *24 DESIGN SUGGESTIONS*

19

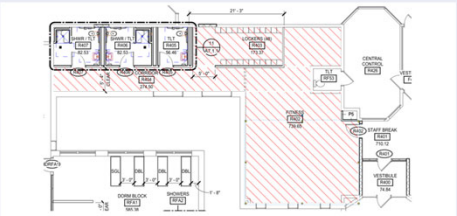
DEVELOPMENT PHASE

- TOTAL EXPECTED SAVINGS FROM MUTUALLY EXCLUSIVE IDEAS:
  - About $275 Thousand based on future implementation meeting

20

ALTERNATIVE AS-24: Use Linoleum In-Lieu of Athletic Rubber Flooring in Locker Rooms R-403 and Corridor R-404

ORIGINAL DESIGN: The original design calls for Athletic rubber flooring throughout the Staff Fitness room, locker room R403 and adjacent corridor R404

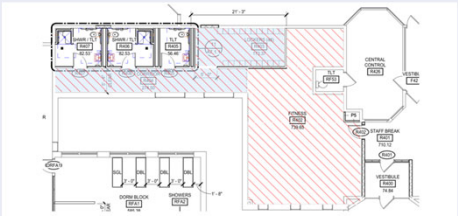


The original design calls for Athletic rubber flooring throughout the Staff Fitness room, locker room R403 and adjacent corridor R404.

OPPORTUNITIES:

- REDUCED MATERIAL AND INSTALLATION LABOR COST.
- REDUCED MAINTENANCE REQUIREMENTS AND WEAR FOR FLOORING.
- STABLE FLOORING SUBSTRATE FOR LOCKER AREAS

ALTERNATIVE: The alternative design suggests linoleum flooring at the locker room R403 and adjacent corridor R404 locations.



The alternative design suggests linoleum flooring at the locker room R403 and adjacent corridor R404 locations

RISKS:

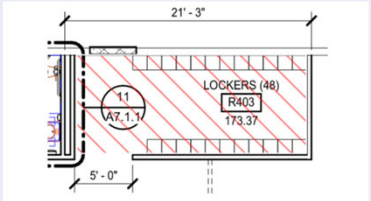
- JOINT THRESHOLDS REQUIRED AT TRANSITION LOCATIONS FROM ONE MATERIAL TO OTHER.

COST AVOIDANCE: $7,278

33

ALTERNATIVE AS-25: Install Cost Efficient Two-Tier Lockers

ORIGINAL DESIGN: The original design calls for 48 Staff lockers in the fitness locker room R403

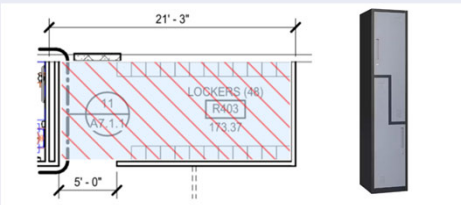


The original design calls for 48 Staff lockers in the fitness locker room R403.

OPPORTUNITIES:

- REDUCED MATERIAL COST.
- UNIT SIZED TO ALLOW FOR COAT / SHIRT HANGERS AND GYM BAGS
- EFFICIENCY OF ROOM SPACE NEEDS.

ALTERNATIVE: The alternative design suggests 48 cost effective L-shaped stepped, 2-tier lockers in locker room R403.



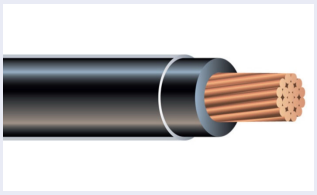
The alternative design suggests 48 cost effective L-shaped stepped, 2-tier lockers in locker room R403.

RISKS:

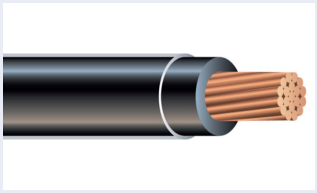
- PRODUCT SPECIFICATION MATERIAL GAUGE NOT DEFINED PER 100%DD DOCUMENTS.

COST AVOIDANCE: $11,787

34

ALTERNATIVE ME-01: Use Aluminum Conductors In-Lieu of Copper for Secondary of the Transformer	
ORIGINAL DESIGN: The original design calls for utilizing copper conductors for the secondary of the transformer	**ALTERNATIVE: The alternative design suggests using aluminum conductors for the secondary of the transformer**
Copper conductors 	**Aluminum conductors** 
OPPORTUNITIES: ▪ REDUCED COST	**RISKS:** ▪ NONE APPARENT
COST AVOIDANCE: $42,710	

35

ALTERNATIVE ME-02:Use Aluminum In-Lieu of Copper for the Feeders to the New Panel Boards	
ORIGINAL DESIGN: The original design calls for utilizing copper conductors for the feeders to the new electric panels	**ALTERNATIVE: The alternative design suggests using aluminum conductors for the feeders to the new electric panels**
Copper conductors 	**Aluminum conductors** 
OPPORTUNITIES: ▪ REDUCED COST	**RISKS:** ▪ NONE APPARENT
COST AVOIDANCE: $38,139	

36

ALTERNATIVE ME-03: Use Aluminum Bus Bars in the Switch Boards In-Lieu of Copper	
ORIGINAL DESIGN: The original design calls for utilizing copper bus bars in the new main switchboard	**ALTERNATIVE: The alternative design suggests using aluminum bus bars in the new main switchboard**
1200-amp copper bus switchboard 	**1200-amp aluminum bus switchboard** 
OPPORTUNITIES: ▪ REDUCED COST	**RISKS:** ▪ NONE APPARENT
COST AVOIDANCE: $13,655	

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ALTERNATIVE ME-04: Use Aluminum Bus Bars in the Panel Boards In-Lieu of Copper	
ORIGINAL DESIGN: The original design calls for utilizing copper bus bars in the new panelboards	**ALTERNATIVE: The alternative design suggests using aluminum bus bars in the new panelboards**
400-amp copper bus panelboard 	**400-amp aluminum bus panelboard** 
OPPORTUNITIES: ▪ REDUCED COST	**RISKS:** ▪ NONE APPARENT
COST AVOIDANCE: $27,679	

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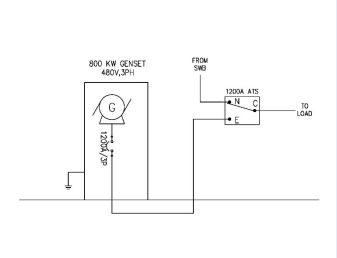
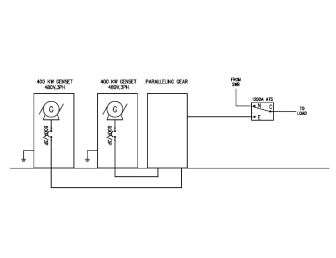
ALTERNATIVE ME-05: Use Two 500 KW Generators In-Lieu of Single 1000 KW Generator	
ORIGINAL DESIGN: The original design calls for utilizing a single 800 KW Generator	**ALTERNATIVE: The alternative design suggests using two 400 KW stand-by generators ILO one single 800 KW generator**
Single 800 KW generator	**Two 400 KW generators with paralleling gear**
	
OPPORTUNTIES: ▪ REDUCED COST ▪ REDUCED NOISE ▪ LOWER HEIGHT ▪ MORE EFFICIENT OPERATION ▪ REDUNDANCY	**RISKS:** ▪ ONE ADDITIONAL PIECE OF EQUIPMENT TO MAINTAIN ▪ MORE FOOTPRINT REQUIRED
VALUE ADDITION: $(19,702)	

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ALTERNATIVE ME-17: Utilize a Sewage Grinder Pump (Muffin Monster)	
ORIGINAL DESIGN: The original design does not indicate utilizing a grinder system for the sewage effluent	**ALTERNATIVE: The alternative design suggests adding a grinder system to the sewage effluent**
	
OPPORTUNTIES: ▪ FEWER BACK-UPS IN THE SEWER SYSTEM ▪ REDUCED MAINTENANCE	**RISKS:** ▪ ADDITIONAL COST
VALUE ADDITION: $(75,150)	

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ALL DESIGN SUGGESTIONS

ARCHITECTURAL & STRUCTURAL

AS-09	Conclude HAZMAT Survey and Generate Report for Final Bid Documents

ONSTRUCTABILITY & CIVIL (CC)

CC-01	Improve Exterior Aesthetics Along Gateway Avon Rd
CC-03	Identify Staging and Material Lay Down Areas
CC-04	Identify Emergency Ingress and Egress To and From Facility During Construction
CC-05	Identify Fire Department Connection During Phased Construction
CC-06	Verify Materials and Methods of the Gazebo at the Staff Outdoor Eating Area
CC-07	Verify Stormwater Management Connection Points to Existing and Outfall Elevation and Sheet flow
CC-08	Coordinate Civil with the Plumbing Plans all Roof Drain Tie-ins to Storm Drains Including Laterals
CC-09	Coordinate Civil with the Plumbing Plans all Condensate Drain Tie-ins to Storm Drains
CC-12	Investigate Condition of Sanitary/Sewer Lines Prior to Acceptance

MECHANICAL, PLUMBING & ELECTRICAL (ME)

ME-06	Reduce Size of Generator to Serve Only Critical Loads
ME-10	Install Security Cameras at Entrance to Main Mechanical and Electrical Rooms
ME-11	Utilize R32 Refrigerant In-Lieu of R410A for the RTUs
ME-12	Utilize R454B Refrigerant In-Lieu of R134A for the Chillers
ME-15	Utilize New Generator as Backup for Existing Generator
ME-16	Evaluate Need for Fire Pump
ME-18	Confirm Diesel Fuel Storage Tank Size to Provide Minimal Operational Time
ME-20	Elaborate Where Keynote #2 (Pre-Action System) On the Fire Protection Drawings Applies
ME-21	Expand The Requirements for The Fire Suppression System To Clarify The Scope
ME-22	Add Notes to The Fire Protection Drawings Regarding Shutdown And Tie-Ins to the Existing Fire Suppression System
ME-23	Review Notes in DOAS Unit In Mechanical Schedule
ME-24	Review GP-1 & GP-2 Notes on Mechanical Schedule Sheet
ME-25	Standardize Ambient Design Temperature Used in Mechanical Schedules
ME-29	Expand The Notes on Mechanical Sheet M2.8.3 To Clarify The Demo As Well As The New Work
ME-30	Add FLA And MCA to the Mechanical Schedules

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THANK YOU!
ANY QUESTIONS?

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