



Concord Middle School Project

Project Manager Report

June 2022





CONCORD MIDDLE SCHOOL PROJECT

PROJECT MANAGER'S REPORT JUNE 2022

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Executive Summary

Town of Concord

Concord Middle School Project



Executive Summary

This Project Manager's Report for the Concord Middle School Project is submitted by **Hill International** (Hill) and covers activities through the months of **June 2022**.

Project Progress

Project related meetings are being held in a hybrid format both via Zoom Video Conferencing and in person at various locations in Concord, MA.

The Project Team continued to make advances through the Design Development phase. Hill and SMMA attended Concord Middle School Building Committee (SBC) meetings on June 2nd and June 30th; a Sustainability Subcommittee (SSC) meeting on June 16th; and a Commissioning Kick-off meeting hosted by AKF+SGH on June 22nd. Hill and SMMA also facilitated a Design Development estimate reconciliation meeting on June 21st with PM&C and AM Fogarty. Hill set-up and facilitated weekly Leadership Team meetings on June 1st, 8th, 15th, 22nd, and 29th. Hill and SMMA also met weekly to coordinate work tasks and deliverables to the SBC and subcommittees.

Milestones

The following milestones were achieved during the month of June 2022:

- At the June 2nd SBC meeting, Hill reported on their recommendation for award to AKF+SGH for Commissioning Services, which had been submitted and accepted by the Town Manager on May 13th. Hill also presented the project organizational chart and cash flow summary attached for reference. SMMA presented a recap of design advances made throughout the Design Development phase which included:
 - Changes to layout of classrooms to better coordinate with MEP systems
 - Landscape developments including outdoor classrooms and the use of retaining walls and grading to create an outdoor terrace along the media center and cafeteria.
 - Interior and exterior color palette selection and incorporation into design features
 - The use of themes of nature, Eddy space, and wood finishes to create aesthetically pleasing and functional interior design elements
- At the June 16th SSC meeting, SMMA led discussions surrounding items in a Sustainability Memorandum (attached) they had assembled which included:
 - Predicted EUI 25 kBtu/sf/yr
 - End use EUI management
 - Tracking LPD of .46 watts/sq. ft.
 - Potentially reducing insulation as a Value Management recommendation with a corresponding increase to EUI of .8-1.0 kBtu/sf/yr
 - Thermal Energy Demand Intensity calculations
 - Commercial Electric Dishwasher (see attached cut sheets) that uses 2.70% of total DHW load
 - All Electric Water Heater System: basis of design is resistance electric water heater, not a heat pump as proposed in Schematic Design.
 - Load calculations for proposed generator (attached)
 - Lighting Controls: a networked lighting control system that provides opportunity to maximize lighting energy savings
 - Solar PV System design coordination with SDA (5/25/22 DD set attached)
 - LEED certification: the SSC maintains that certification is not required

Town of Concord

Concord Middle School Project



- At the June 21st Design Development estimate reconciliation meeting, Hill facilitated estimate reconciliation with SMMA, PM&C, and AM Fogarty which resulted in a reconciled construction cost estimate of \$86,105,312. This cost estimate is \$5,332,865 over the construction budget of \$80,772,447. The reconciled estimate summary as well as the detail is attached for reference. A comparison of the Design Development estimate and the Schematic Design Estimate was prepared by Hill as well, also attached.
- At the June 30th SBC meeting Hill International presented the Design Development reconciled construction cost estimate as well as the DD and SD estimate comparison. Hill further presented the estimating path to bidding (60% CD estimate and 90% CD estimate) and next steps. Options and risks were presented to the committee for consideration and Hill and SMMA provided professional opinions accordingly. A summary of information is shown below:
 - The construction budget is \$80,772,447. There is also a \$2,019,312 bidding contingency included in the total project budget.
 - The reconciled Design Development construction estimate is \$86,105,312.
 - There is a \$5,332,865 variance from the construction budget and a \$3,313,553 variance from the construction budget + bidding contingency.
 - There will be a 60% CD cost estimate prepared in September/October 2022 and a 90% CD cost estimate prepared in December 2022.
 - The 100% CD package/bid set is planned to be complete on February 22, 2023 and the bidding timeframe for the project is March 10 through April 13, 2023.
 - PM&C and AM Fogarty outlined their estimating experience in the MA construction market including preparing similar public-school estimates for 45-60% of their business. They reported on drastic material (and labor) increases in 2022 (higher than projected) for roofing at double the cost, steel at a 20% increase; some MEP equipment at double to triple the cost; glass at a 40% increase, as well as drywall and other trades across the board. They indicated that actual costs on CM projects are now typically worse than DBB projects. They reported that a 4.67% and 5% escalation is being carried to conservatively cover escalation through the April 2023 project bid. The construction market is volatile and is being impacted by oil prices. Current unknowns in the market are also driving costs.
 - A Value Management Log has been prepared by Hill and SMMA and will be shared with the committee in July 2022.
 - Consideration: the reconciled DD Construction estimate without 5% escalation is \$82,520,420 which aligns with the construction budget + bidding contingency. This is a “best case” scenario in which current construction costs would need to hold steady through April 2023.
 - Potential Options & Risks were presented as follows:
 - Option 1: Proceed with the building design unaltered, re-assess the budget and do value management at the 60% CD phase in October 2022.
 - Option 2: Ask the Town for additional funding
 - Option 3: Through value management, reduce the scope of the project to meet the construction budget of \$80,772,447.
 - Option 4: Through value management, reduce the scope of the project to the meet the construction budget + bidding contingency of \$82,791,759.
 - Option 5: Pause design and wait until more favorable market conditions.

Town of Concord

Concord Middle School Project



The Concord Middle School Building Committee voted to proceed with option 1 as recommended by Hill. SMMA will proceed with Contract Document preparation for a 60% CD estimate set to be delivered by September 29, 2022.

Milestones projected for the coming months are:

- Execute contract for Commissioning Agent
- Submit finalized Design Development report
- 60% CD package

Issues

- Current construction market cost conditions
- Construction budget alignment at 60% CD estimate

Schedule

Major milestones are as follows:

- | | |
|--|--|
| ■ OPM Selection | Completed Aug. 28 th , 2019 |
| ■ Designer Selection | Completed Nov. 18 th , 2019 |
| ■ Feasibility Study | Completed April 29 th , 2021 |
| ■ Schematic Design | Completed December 9 th , 2021 |
| ■ Town Hearing | Completed December 16 th , 2021 |
| ■ Special Town Meeting | Completed January 20 th , 2022 |
| ■ Town Vote | Completed February 3 rd , 2022 |
| ■ Design Development | February 7 th , 2022 (start date) |
| ■ 60% Contract Documents | See attached schedule |
| ■ 90% Contract Documents | See attached schedule |
| ■ 100% Contract Documents | See attached schedule |
| ■ Bidding | See attached schedule |
| ■ Construction | See attached schedule |
| ■ Substantial Completion (New Building) | See attached schedule |
| ■ Demolition of Existing Building and Add New Fields | See attached schedule |
| ■ Closeout | |

Budget

In January 2022, the Town of Concord held a Special Town Meeting to present the Middle School Building Project and hold an in-person vote on a not-to-exceed project budget \$104,316,000 to be reflected on the ballot at the February 3rd Town Vote.

In February 2022, the Town of Concord voted by ballot to approve debt authorization amounting to \$102,816,000 for the new Concord Middle School project bringing the total project budget including Feasibility and Schematic Design Phase to \$104,316,000.

Town of Concord

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In June 2022, the Design Development estimate was presented at \$5,332,865 over the construction budget of \$80,772,447. However, the Concord Middle School Building Committee voted to proceed with Contract Document design preparation at the June 30, 2022 CMSBC Meeting with the idea that value management and budget alignment must happen no later than October 2022 at the 60% CD estimate phase.

Cash Flow

Total project budget is \$104,316,000.

Total encumbered to date is \$12,704,575.00.

Total spent on construction to date is \$0.00.

Total spent to date is \$2,775,152.50. 22% of total encumbered.

Project Team Summary

Awarding Authority	Town of Concord (ToC)
Client	Town of Concord / Concord Public Schools
Owner's Project Manager	Hill International, Inc. (Hill)
Commissioning Agent	AKF Group / Simpson Gumpertz and Heger (AKF/SGH)
Designer	SMMA
CM / GC	TBD



Project Dashboard



Town of Concord
Concord Middle School

Project Dashboard

June 30, 2022

EXECUTIVE SUMMARY



Project Accomplishments this Month					Current Issues & Areas of Focus				Current Progress Photos		
<p>At the June 2nd Building Committee meeting, Hill International informed the CMSBC of their recommendation of AKF + SGH for Commissioning Agent. SMMA presented a recap of design advances made made during the Design Development phase.</p> <p>At the June 16th Sustainability Subcommittee meeting, SMMA reported on potentially reducing insulation thickness and its corresponding impact, preliminary calculations for TEDI, and the All Electric Hot Water System. SMMA also reported on the EUI, CFM, and Btu/hr/sf metrics being tracked to meet the sustainable goals expectd by the the Town.</p> <p>On June 22nd, AKF hosted a Commissiong Kick-off meeting with Hill and SMMA in attendance. AKF noted they would provide the framework of their OPR report to Hill and SMMA for review.</p> <p>On June 21st Hill International hosted SMMA, PM&C and AM Fogarty to conduct a Design Development reconciliation meeting. The reconciled Design Development Estimate is \$86,105,312</p> <p>At the June 30th CMSBC meeting, Hill presented the Design Development reconciled estimate to the committee. Hill presented options on how to proceed with the project given the estimate being over budget. The Committee voted to have SMMA proceed to the Contract Document phase with the idea that the budget and scope will need to be aligned by October 2022 at the 60% CD estimate.</p>					<p>Current construction market conditions and uptick in actual escalation.</p> <p>Construction budget alignment at 60% CD estimate.</p>						
Projected Major Tasks next Month					Diversity Compliance				Project Cash Flow - Plan vs Actual		
<p>Submit finalized DD report</p> <p>Execute contract for Commissioning Agent</p> <p>60% CD package</p>					Metric	Target	Actual				
					Designer's WBE/MBE	TBD	TBD				
					Contractor's WBE/MBE	TBD	TBD				
Schedule Summary - Upcoming Milestones											
	Scheduled Start	Scheduled Finish	Actual Start	Actual Finish							
Designer Procurement	9/25/2019	11/18/2019	9/25/2019	12/9/2019							
Feasibility/Schematic Design	11/19/19	7/1/2020	11/19/19	12/9/2021							
Special Town Meeting	12/17/21	12/17/21	1/20/22	1/20/2022							
Town Vote	2/3/22	2/3/22	2/3/22	2/3/22							
Design Development / Contract Documents	2/7/22	2/22/23	2/7/22								
Bidding	10/24/22	4/23/23									
Construction	5/9/23	12/10/24									
Punch List & Move-in	12/11/24	4/11/25									
Demolition Existing Building	4/15/25	9/12/25									
Closeout	9/12/25	1/15/26									
PROJECT FINANCIAL OVERVIEW										Scope changes from the Original Scope	
Description	BUDGET				COST				CASH FLOW		N/A
	Baseline	Budget	Authorized Changes	Approved Budget	Committed Costs	Uncommitted Costs	Forecast Costs	Total Project Costs	Expenditures to Date	Balance To Spend	
Site Acquisition	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Construction	\$ 80,000,000	\$ 772,477	\$ 80,772,477	\$ 80,772,477	\$ -	\$ 80,772,477	\$ -	\$ 80,772,477	\$ -	\$ 80,772,477	
Design Services	\$ 8,281,000	\$ 936,347	\$ 9,217,347	\$ 9,217,347	\$ 8,937,347	\$ 280,000	\$ -	\$ 9,217,347	\$ 2,274,924	\$ 6,942,423	
Administrative	\$ 4,279,595	\$ 607,638	\$ 4,887,233	\$ 4,887,233	\$ 3,767,228	\$ 1,120,005	\$ -	\$ 4,887,233	\$ 500,228	\$ 4,387,005	
FF&E	\$ 2,677,500	\$ (52,500)	\$ 2,625,000	\$ 2,625,000	\$ -	\$ 2,625,000	\$ -	\$ 2,625,000	\$ -	\$ 2,625,000	
SUBTOTAL	\$ 95,238,095	\$ 2,263,962	\$ 97,502,057	\$ 97,502,057	\$ 12,704,575	\$ 84,797,482	\$ -	\$ 97,502,057	\$ 2,775,153	\$ 94,726,905	
Construction Contingency (Hard Cost)	\$ 4,000,000	\$ 38,927	\$ 4,038,927	\$ 4,038,927	\$ -	\$ 4,038,927	\$ -	\$ 4,038,927	\$ -	\$ 4,038,927	
Owner's FFE Contingency	\$ -	\$ 2,019,312	\$ 2,019,312	\$ 2,019,312	\$ -	\$ 2,019,312	\$ -	\$ 2,019,312	\$ -	\$ 2,019,312	
Owner's Contingency (Soft Cost)	\$ 761,905	\$ (6,201)	\$ 755,704	\$ 755,704	\$ -	\$ 755,704	\$ -	\$ 755,704	\$ -	\$ 755,704	
SUBTOTAL	\$ 4,761,905	\$ 2,052,038	\$ 6,813,943	\$ 6,813,943	\$ -	\$ 6,813,943	\$ -	\$ 6,813,943	\$ -	\$ 6,813,943	
PROJECT TOTAL	\$ 100,000,000	\$ 4,316,000	\$ 104,316,000	\$ 104,316,000	\$ 12,704,575	\$ 91,611,425	\$ -	\$ 104,316,000	\$ 2,775,153	\$ 101,540,848	
Project Budget Transfers											
										N/A	



Budget Update



June 30, 2022

Town of Concord

Concord Middle School

Project Budget and Cost Summary



A	C	D (Bud. Adj. Tab)	E (C+D)	F (Com. Cost tab)	G (E-F)	H (Forecast. tab, >G)	I (F+G+H)	J (Invoice Tab)	K (I-J)
Description	BUDGET			COST				CASH FLOW	
	Intial Budget	Authorized Changes	Approved Budget	Committed Costs	Uncommitted Costs	Forecast Costs	Total Project Costs	Expenditures to Date	Balance To Spend
20 Construction									
Construction	\$80,000,000	\$772,477	\$80,772,477	\$0	\$80,772,477	\$0	\$80,772,477	\$0	\$80,772,477
Subtotal	\$80,000,000	\$772,477	\$80,772,477	\$0	\$80,772,477	\$0	\$80,772,477	\$0	\$80,772,477
30 Architectural & Engineering									
Designer - Basic Services	\$6,590,600	\$589,400	\$7,180,000	\$7,180,000	\$0	\$0	\$7,180,000	\$1,125,000	\$6,055,000
Schematic Design	\$889,400	\$232,447	\$1,121,847	\$1,121,847	\$0	\$0	\$1,121,847	\$1,098,857	\$22,990
Geotechnical Engineering CA	\$250,000	-\$45,000	\$205,000	\$205,000	\$0	\$0	\$205,000	\$32,918	\$172,083
Geoenvironmental Engineering-allowance	\$51,000	\$134,000	\$185,000	\$185,000	\$0	\$0	\$185,000	\$0	\$185,000
Site Survey	\$50,000	-\$30,000	\$20,000	\$10,000	\$10,000	\$0	\$20,000	\$0	\$20,000
Survey of Existing Conditions / Wetlands	\$50,000	-\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Hazardous Materials	\$100,000	\$45,000	\$145,000	\$145,000	\$0	\$0	\$145,000	\$0	\$145,000
A&E Sub Consultants	\$0	\$70,500	\$70,500	\$70,500	\$0	\$0	\$70,500	\$18,150	\$52,350
Other Reimbursable Costs	\$100,000	-\$80,000	\$20,000	\$20,000	\$0	\$0	\$20,000	\$0	\$20,000
Printing (Over the Minimum)	\$50,000	-\$30,000	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000
Testing & Inspections	\$150,000	\$100,000	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000
Subtotal	\$8,281,000	\$936,347	\$9,217,347	\$8,937,347	\$280,000	\$0	\$9,217,347	\$2,274,924	\$6,942,423
40 Administrative Costs									
Owner's Project Manager Basic Services	\$3,200,000	\$443,580	\$3,643,580	\$3,383,575	\$260,005	\$0	\$3,643,580	\$116,575	\$3,527,005
OPM Feasibility Study	\$299,800	\$78,353	\$378,153	\$378,153	\$0	\$0	\$378,153	\$378,153	\$0
OPM Cost Estimates	\$0	\$5,500	\$5,500	\$5,500	\$0	\$0	\$5,500	\$5,500	\$0
Commissioning Agent	\$200,000	\$80,000	\$280,000	\$0	\$280,000	\$0	\$280,000	\$0	\$280,000
Advertising	\$29,795	\$205	\$30,000	\$0	\$30,000	\$0	\$30,000	\$0	\$30,000
Other Administrative Costs	\$50,000	\$0	\$50,000	\$0	\$50,000	\$0	\$50,000	\$0	\$50,000
Other Project Costs (Moving)	\$150,000	\$50,000	\$200,000	\$0	\$200,000	\$0	\$200,000	\$0	\$200,000
Utility Fees	\$300,000	\$0	\$300,000	\$0	\$300,000	\$0	\$300,000	\$0	\$300,000
Legal	\$50,000	-\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal	\$4,279,595	\$607,638	\$4,887,233	\$3,767,228	\$1,120,005	\$0	\$4,887,233	\$500,228	\$4,387,005



June 30, 2022

Town of Concord
Concord Middle School
Project Budget and Cost Summary



A	C	D (Bud. Adj. Tab)	E (C+D)	F (Com. Cost tab)	G (E-F)	H (Forecast. tab, >G)	I (F+G+H)	J (Invoice Tab)	K (I-J)
Description	BUDGET			COST				CASH FLOW	
	Intial Budget	Authorized Changes	Approved Budget	Committed Costs	Uncommitted Costs	Forecast Costs	Total Project Costs	Expenditures to Date	Balance To Spend
50 Furniture, Fixtures and Equipment									
Furniture, Fixtures and Equipment	\$1,225,000	\$140,000	\$1,365,000	\$0	\$1,365,000	\$0	\$1,365,000	\$0	\$1,365,000
Security	\$227,500	-\$227,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Technology	\$1,225,000	\$35,000	\$1,260,000	\$0	\$1,260,000	\$0	\$1,260,000	\$0	\$1,260,000
Subtotal	\$2,677,500	-\$52,500	\$2,625,000	\$0	\$2,625,000	\$0	\$2,625,000	\$0	\$2,625,000
Project Sub-Total	\$95,238,095	\$2,263,962	\$97,502,057	\$12,704,575	\$84,797,482	\$0	\$97,502,057	\$2,775,153	\$94,726,905
70 Project Contingency									
Construction Contingency	\$4,000,000	\$38,927	\$4,038,927		Current Contingency	Potential Risk	Potential Contingency		
Owner's Bid Contingency	\$0	\$2,019,312	\$2,019,312		\$4,038,927	\$0	\$4,038,927		\$4,038,927
Owner's Contingency	\$761,905	-\$6,201	\$755,704		\$2,019,312	\$0	\$2,019,312		\$2,019,312
Subtotal	\$4,761,905	\$2,052,038	\$6,813,943		\$755,704	\$0	\$755,704		\$755,704
					\$6,813,943	\$0	\$6,813,943		\$6,813,943
Project Total	\$100,000,000	\$4,316,000	\$104,316,000	\$12,704,575	\$91,611,425	\$0	\$104,316,000	\$2,775,153	\$101,540,848
*Includes \$1.5M from Feasibility and Schematic Design Phase									
Construction Cost Estimates	Date	Amount	Gross Square Feet	Cost Per SF		Budget Revisions Summary		Date	Amount
Schematic Design Estimate	11/03/21	\$82,512,622	143,510	\$574.96					
Design Development	06/29/22	\$86,105,512	142,704	\$603.19					
Construction Documents (60%)									
Construction Documents (90%)									
Finalized GC Contract									

Concord Middle School Estimated Project Cash Flow



	Month		OPM + Commissioning	Designer & Consultants	FF&E & Misc. Admin.	Construction	Contingency	Estimated Expenditures	Actual Expenditures	Estimated Cumulative Expenditures	Actual Cumulative Expenditures
Feasibility Study	1	Oct-19	\$25,110					\$25,110	\$25,110	\$25,110	\$25,110
	2	Nov-19	\$34,595					\$34,595	\$34,595	\$59,705	\$59,705
	3	Dec-19	\$20,660					\$20,660	\$20,660	\$80,365	\$80,365
	4	Jan-20	\$12,565	\$75,645				\$88,210	\$88,210	\$168,575	\$168,575
	5	Feb-20	\$16,445	\$151,290				\$167,735	\$167,735	\$336,310	\$336,310
	6	Mar-20	\$25,890	\$75,645				\$101,535	\$101,535	\$437,845	\$437,845
	7	Apr-20	\$34,480	\$75,645				\$110,125	\$110,125	\$547,970	\$547,970
	8	May-20	\$50,035	\$50,430				\$100,465	\$100,465	\$648,435	\$648,435
Pause	9	Jun-20	\$33,130	\$40,344				\$73,474	\$73,474	\$721,909	\$721,909
	10	Jul-20	\$15,520					\$15,520	\$15,520	\$737,429	\$737,429
	11	Aug-20	\$3,785					\$3,785	\$3,785	\$741,214	\$741,214
	12	Sep-20	\$720					\$720	\$720	\$741,934	\$741,934
	13	Oct-20	\$2,590					\$2,590	\$2,590	\$744,524	\$744,524
	14	Nov-20						\$0	\$0	\$744,524	\$744,524
Restart Feasibility Study	15	Dec-20	\$16,798					\$16,798	\$16,798	\$761,322	\$761,322
	16	Jan-21						\$0	\$0	\$761,322	\$761,322
	17	Feb-21	\$300,000.00 SMMA Design Development May @ 70% complete							\$761,322	\$761,322
	18	Mar-21	\$8,662.50 SMMA Design Development May Geotech @ 16% complete							\$761,322	\$761,322
	19	Apr-21	\$9,075.00 SMMA Design Development May Septic System Design @ 30% complete							\$761,322	\$761,322
Schematic Design	20	May-21	\$29,337.50 Hill International May 22 DD Billing							\$761,322	\$761,322
	21	Jun-21		\$2,400				\$2,400	\$2,400	\$763,722	\$763,722
	22	Jul-21		\$69,318				\$69,318	\$69,318	\$833,040	\$833,040
	23	Aug-21		\$69,318				\$69,318	\$69,318	\$902,358	\$902,358
	24	Sep-21		\$69,318				\$69,318	\$69,318	\$971,676	\$971,676
	25	Oct-21		\$73,918				\$73,918	\$73,938	\$1,045,594	\$1,045,614
	26	Nov-21		\$57,765				\$57,765	\$57,765	\$1,103,359	\$1,103,379
Town Proce	27	Dec-21	\$18,016	\$42,361				\$60,377	\$60,377	\$1,163,736	\$1,163,756
	28	Jan-22	\$78,353	\$7,202				\$85,555	\$78,357	\$1,249,291	\$1,242,113
Design Development & Construction Documents	29	Feb-22	\$53,017					\$53,017	\$7,950	\$1,302,308	\$1,250,063
	30	Mar-22	\$53,017	\$436,495				\$489,512	\$62,018	\$1,791,820	\$1,312,081
	31	Apr-22	\$53,017	\$436,495				\$489,512	\$382,447	\$2,281,332	\$1,694,528
	32	May-22	\$53,017	\$436,495				\$489,512	\$733,550	\$2,770,844	\$2,428,078
	33	Jun-22	\$47,017	\$436,495				\$483,512	\$347,075	\$3,254,356	\$2,775,153
	34	Jul-22	\$107,867	\$424,658	\$16,667			\$549,191	\$0	\$3,803,547	
	35	Aug-22	\$56,117	\$424,658	\$16,667			\$497,441	\$0	\$4,300,989	
	36	Sep-22	\$55,207	\$424,658	\$16,667			\$496,531	\$0	\$4,797,520	
	37	Oct-22	\$55,207	\$424,658	\$29,795			\$509,660	\$0	\$5,307,179	
	38	Nov-22	\$55,207	\$424,658	\$7,143			\$487,007	\$0	\$5,794,187	
	39	Dec-22	\$99,207	\$424,658	\$7,143			\$531,007	\$0	\$6,325,194	
	40	Jan-23	\$62,857	\$424,658	\$7,143			\$494,657	\$0	\$6,819,851	
	41	Feb-23	\$57,820	\$424,665	\$7,143			\$489,627	\$0	\$7,309,479	
Bid	42	Mar-23	\$68,030	\$127,350	\$7,143			\$202,523	\$0	\$7,512,002	
	43	Apr-23	\$106,980	\$127,350	\$7,143			\$241,473	\$0	\$7,753,474	
e 1 (New School)	44	May-23	\$80,630	\$96,200	\$7,143			\$183,973	\$0	\$7,937,447	
	45	Jun-23	\$99,130	\$96,200	\$8,333	\$3,094,687	\$272,669	\$3,571,019	\$0	\$11,508,467	
	46	Jul-23	\$100,630	\$96,200	\$8,333	\$3,094,687	\$272,669	\$3,572,519	\$0	\$15,080,986	
	47	Aug-23	\$94,880	\$96,200	\$8,333	\$3,094,687	\$272,669	\$3,566,769	\$0	\$18,647,756	
	48	Sep-23	\$94,880	\$96,200	\$8,333	\$3,094,687	\$272,669	\$3,566,769	\$0	\$22,214,525	
	49	Oct-23	\$94,880	\$96,200	\$8,333	\$3,094,687	\$272,669	\$3,566,769	\$0	\$25,781,294	
	50	Nov-23	\$94,880	\$96,200	\$8,333	\$3,094,687	\$272,669	\$3,566,769	\$0	\$29,348,064	
	51	Dec-23	\$94,880	\$96,200	\$8,333	\$3,094,687	\$272,669	\$3,566,769	\$0	\$32,914,833	
	52	Jan-24	\$94,880	\$96,200	\$8,333	\$3,094,687	\$272,669	\$3,566,769	\$0	\$36,481,603	
	53	Feb-24	\$94,880	\$96,200	\$8,333	\$3,094,687	\$272,669	\$3,566,769	\$0	\$40,048,372	
	54	Mar-24	\$94,880	\$96,200	\$8,333	\$3,094,687	\$272,669	\$3,566,769	\$0	\$43,615,141	
	55	Apr-24	\$94,880	\$96,200	\$8,333	\$3,094,687	\$272,669	\$3,566,769	\$0	\$47,181,911	

Concord Middle School
Estimated Project Cash Flow



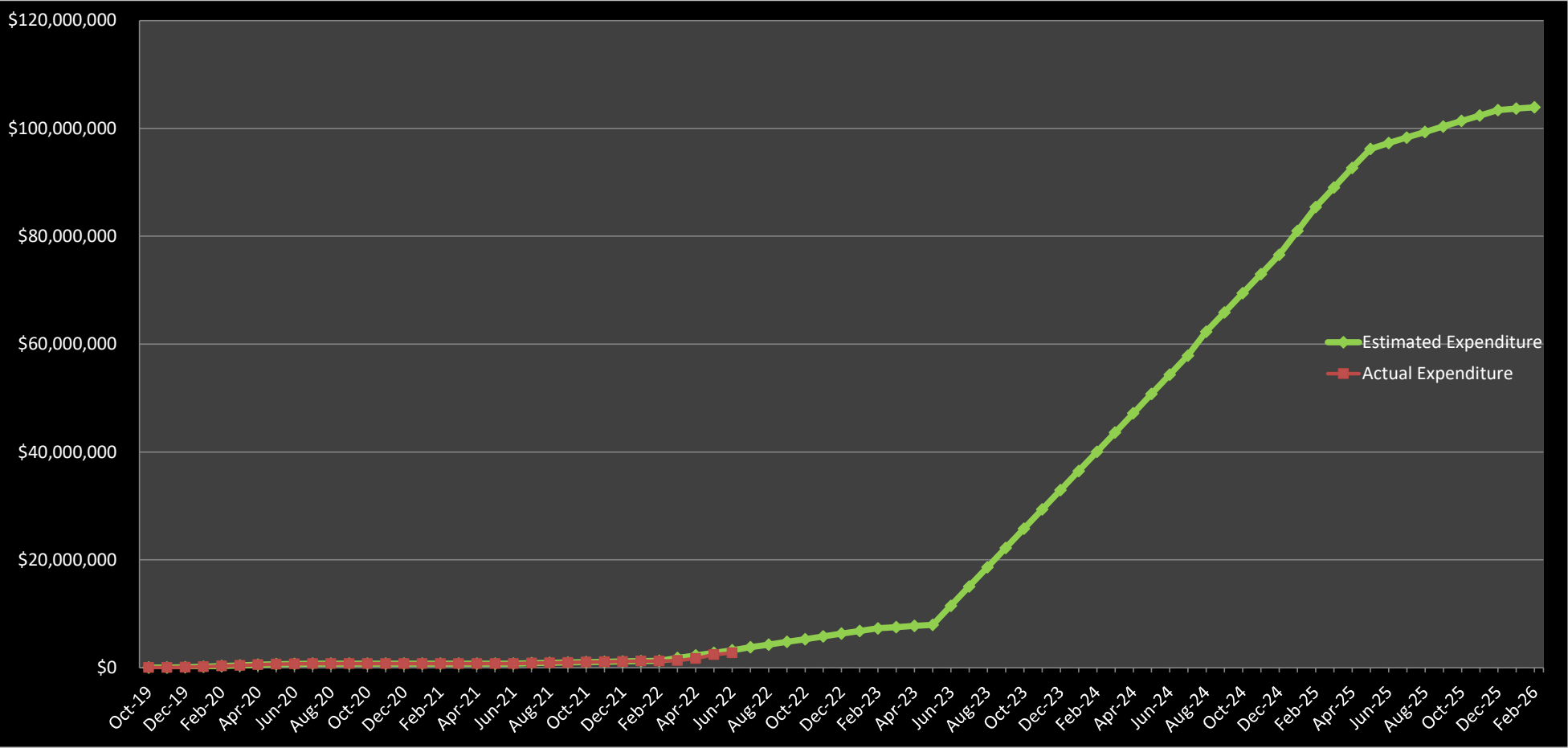
	Month	OPM + Commissioning	Designer & Consultants	FF&E & Misc. Admin.	Construction	Contingency	Estimated Expenditures	Actual Expenditures	Estimated Cumulative Expenditures	Actual Cumulative Expenditures
Construction Phase	56 May-24	\$94,880	\$96,200	\$8,333	\$3,094,687	\$272,669	\$3,566,769	\$0	\$50,748,680	
	57 Jun-24	\$94,880	\$96,200	\$8,333	\$3,094,687	\$272,669	\$3,566,769	\$0	\$54,315,450	
	58 Jul-24	\$94,880	\$96,200	\$8,333	\$3,094,687	\$272,669	\$3,566,769	\$0	\$57,882,219	
	59 Aug-24	\$81,380	\$96,200	\$887,500	\$3,094,687	\$272,669	\$4,432,436	\$0	\$62,314,655	
	60 Sep-24	\$81,380	\$96,200	\$12,500	\$3,094,687	\$272,669	\$3,557,436	\$0	\$65,872,091	
	61 Oct-24	\$81,380	\$96,200	\$12,500	\$3,094,687	\$272,669	\$3,557,436	\$0	\$69,429,527	
	62 Nov-24	\$81,380	\$96,200	\$12,500	\$3,094,687	\$272,669	\$3,557,436	\$0	\$72,986,963	
	63 Dec-24	\$81,380	\$96,200	\$12,500	\$3,094,687	\$272,669	\$3,557,436	\$0	\$76,544,400	
	64 Jan-25	\$81,380	\$96,200	\$887,500	\$3,094,687	\$272,669	\$4,432,436	\$0	\$80,976,836	
	65 Feb-25	\$81,380	\$96,200	\$887,500	\$3,094,687	\$272,669	\$4,432,436	\$0	\$85,409,272	
Phase 2 (Demo & Fields)	66 Mar-25	\$81,380	\$96,200	\$87,500	\$3,094,687	\$272,669	\$3,632,436	\$0	\$89,041,708	
	67 Apr-25	\$81,380	\$96,200	\$87,500	\$3,094,687	\$272,669	\$3,632,436	\$0	\$92,674,144	
	68 May-25	\$81,380	\$57,143	\$12,500	\$3,094,687	\$272,669	\$3,518,379	\$0	\$96,192,523	
	69 Jun-25	\$81,380	\$57,143	\$58,538	\$857,143	\$34,388	\$1,088,592	\$0	\$97,281,114	
	70 Jul-25	\$77,780	\$57,143		\$857,143	\$34,388	\$1,026,454	\$0	\$98,307,568	
	71 Aug-25	\$77,780	\$57,143		\$857,143	\$34,388	\$1,026,454	\$0	\$99,334,022	
	72 Sep-25	\$77,780	\$57,143		\$857,143	\$34,388	\$1,026,454	\$0	\$100,360,475	
	73 Oct-25	\$68,800	\$57,143		\$857,143	\$34,388	\$1,017,474	\$0	\$101,377,949	
	74 Nov-25	\$60,255	\$57,143		\$857,143	\$34,388	\$1,008,929	\$0	\$102,386,877	
	75 Dec-25	\$56,055	\$41,667		\$857,143	\$34,388	\$989,252	\$0	\$103,376,130	
Closeout	76 Jan-26	\$47,705	\$41,667		\$166,667	\$29,180	\$285,218	\$0	\$103,661,348	
	77 Feb-26	\$41,855	\$41,667		\$166,667		\$250,188	\$0	\$103,911,536	
	78 Mar-26	\$38,355	\$41,667		\$166,647		\$246,668	\$0	\$104,158,205	
	79 Apr-26	\$28,407	\$41,667				\$70,074	\$0	\$104,228,278	
	80 May-26	\$25,060	\$41,667				\$66,727	\$0	\$104,295,005	
	81 Jun-26	\$20,995					\$20,995	\$0	\$104,316,000	
	82 Jul-26						\$0	\$0	\$104,316,000	
	83 Aug-26						\$0	\$0	\$104,316,000	
	84 Sep-26						\$0	\$0	\$104,316,000	
	Subtotal for FY '19	\$252,910	\$468,999	\$0	\$0	\$0	\$721,909			
	Subtotal for FY '20	\$39,413	\$2,400	\$0	\$0	\$0	\$41,813			
	Subtotal for FY '21	\$355,454	\$2,135,180	\$0	\$0	\$0	\$2,490,634			
	Subtotal for FY '22	\$904,259	\$3,844,367	\$138,128	\$3,094,687	\$272,669	\$8,254,110			
	Subtotal for FY '23	\$1,144,310	\$1,154,401	\$100,000	\$37,136,249	\$3,272,024	\$42,806,983			
	Subtotal for FY '24	\$990,060	\$1,076,286	\$2,966,871	\$34,898,704	\$3,033,743	\$42,965,665			
	Subtotal for FY '25	\$620,827	\$535,714	\$0	\$5,642,837	\$235,507	\$7,034,886			
	TOTAL	\$4,307,233	\$9,217,347	\$3,205,000	\$80,772,477	\$6,813,943	\$104,316,000			



Town of Concord
Concord Middle School
Estimated Project Cash Flow Graph



June 30, 2022





Schedule Update



Design Development Progress

To: CMS Sustainability Sub Committee
From: Martine Dion
Project: Concord Middle School
Re: DD Sustainability Updates
Distribution: SMMA team, Hill team, (MF)

Date: 6/14/2022
Project No.:19153.00

Memorandum

The following is an update on the following Sustainability items for the Design Development phase:

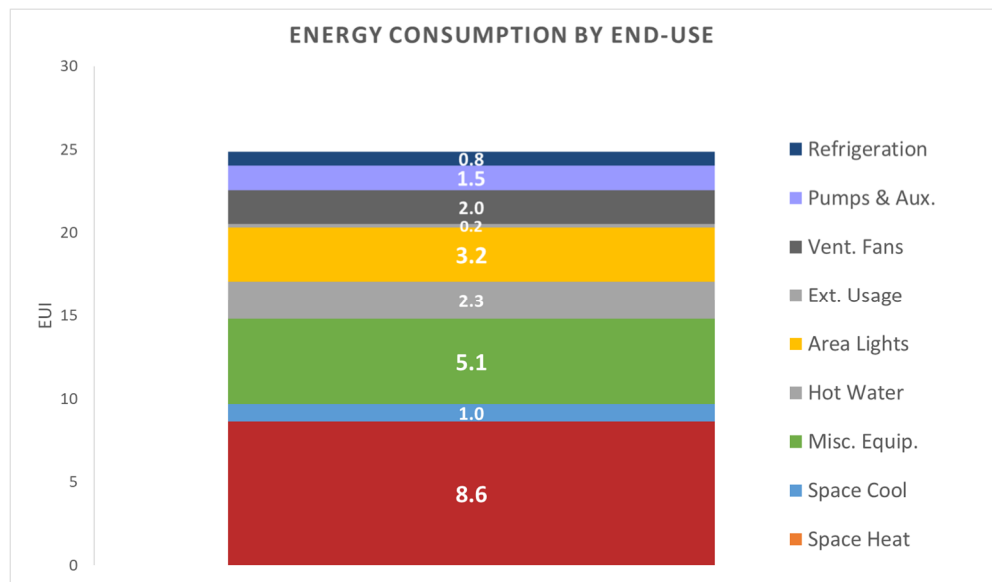
NZE/EUI Update

1. Predicted EUI

- 25.0 kBtu/SF/yr.
- EUI Breakdown by end use is shown in the table below. The top 3 end uses to be considered as part of the EUI management effort, once the building is occupied are
 - Space Heating: 35% of Total EUI
 - Misc. Equipment (plug loads): 21% of total EUI
 - Lighting Systems: 13% of the total predicted EUI.

Note: The Misc. Equipment include the kitchen equipment (less the refrigerators), 0.7 EUI out of the Misc. Equipment 5.1 EUI.

- Occupant behavior and operational practices will impact the top 3 end uses once the building is occupied and should be the areas of focus to optimize the new school's EUI.



2. The VE insulation reduction analysis
 - Feasible VE options:
 - Roof R-50 (vs. R-60)
 - Roof R-34 (vs. R-40)
 - Slab R-12 (R-20 for 6' perimeter, R-10 central area)
 - EUI increase: ~0.8-1.0 kBtu/SF/yr.
 - BE Cx and whole bldg. air infiltration testing are critical keep low EUI if VE options are approved.
 - PV sizing impact [order of magnitude]
 - Current Design: 1.1-1.2 MWh/yr. [DD-Occupancy contingency]
 - PV system site capacity: 1.6 MWh/yr [latest per SDA]
 - Room for PV downsizing: ~ 400,000 kWh/yr
 - VE insulation impact: 50,000-75,000 kWh
3. TEDI Update [Thermal Energy Demand Intensity]
 - Proposed Design TEDI: 1.5-2.0 Btu/Hour/SF
 - Proposed E-Z Code TEDI: 5.0 Btu/Hour/SF

Commercial Electric Dishwasher

1. Cutsheet for proposed dishwasher is attached
2. An optimized energy and water efficient dishwasher has been selected, per Kitchen Consultant.

All-Electric Hot Water System (resistance electric vs. heat pump)

1. Proposed Design: The resistance electric water heater design is currently sized as a duplex 250 gallons of storage, 295 GPH recovery rate and an electrical load of 72-kW, 480 Volts, 3 phase. The basis of design will be (2) LAARS EVO 250. Listed equal manufacturers include Watts and A.O. Smith.
2. Heat Pump type hot water system was studied and discussed during SD. While the operating costs of a heat pump are lower than the resistance electric type, the upfront costs of the heat pump are significantly higher. In addition, the heat pump may take space on the roof and reduce the PV array footprint. For these reasons we recommend the resistance electric water heater design over the heat pump type.

Electrical Update

1. Generator: The emergency generator will be a natural-gas fired engine system, and is currently sized at 500-kW, 480/277 Volts, 3 phase. The basis of design will be Cummins. Listed equal manufactures include Caterpillar, and Kohler.

A comprehensive list of equipment and loads on generator backup power has been provided for review (See Generator Load Calculations Memo, dated April 28th, 2022). The generator will be installed outdoors, pad mounted, within a

Level 2 Sound attenuating enclosure. In addition, a sound dampening wall will be provided around the generator, as recommended by the acoustical engineering to meet property line sound pressure requirements.

2. Lighting Control: The school will be designed with a networked lighting control system that will provide the opportunity for maximum lighting energy savings by reducing power or shutting off fixtures when appropriate. The basis of design for the system is Acuity nLight, an experienced and trusted manufacturer in lighting controls. Listed equal manufacturers include Lutron, and Wattstopper.

The lighting control system will be following the latest Enhanced Digital Lighting Control Code requirements, as defined in the International Energy Code, section C406. The requirement entails a fully addressable, interior lighting control system that allows for

- a. Continuous dimming
- b. Individual, digitally addressed luminaires
- c. Control reconfiguration based on digital addressability
- d. Load shedding and demand response compatibility

A predominantly wireless lighting control system is being designed to help offset the increased cost of devices and materials required, by reducing in-field labor hours of programming, wiring, and installing the system.

The system will include a web-based, graphic user interface that will allow for complete programmability, device status monitoring, and energy usage reports. It will also communicate directly with the Building Management System for simplicity and convenience.

Solar PV System

SMMA has received the current PV design documents from SDA, dated 5/25/2022, see attached. CMS is scheduling a joint design meeting with CMLP, SDA and the Design Team to begin coordination.

LEED USGBC/GBCI Registration and Review Certification Costs

Registration, Design and Construction Review, final plaque and certificates will cost approximately \$15,000 to \$20,000, pending GBCI's fee increases by the time the project is completed.

Attachments:

Proposed Kitchen Dishwasher Cut Sheet

SDA- Current PV Design Documents

**CONCORD MIDDLE SCHOOL
FOOD SERVICE EQUIPMENT
Design Development**

ITEM NO.: 84

Quantity: One (1)

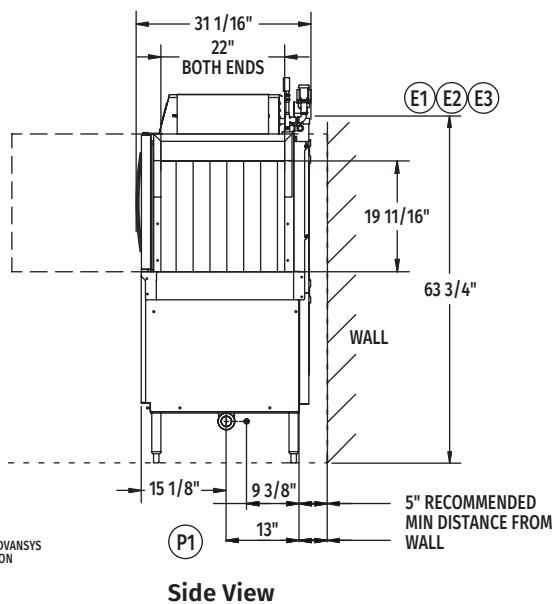
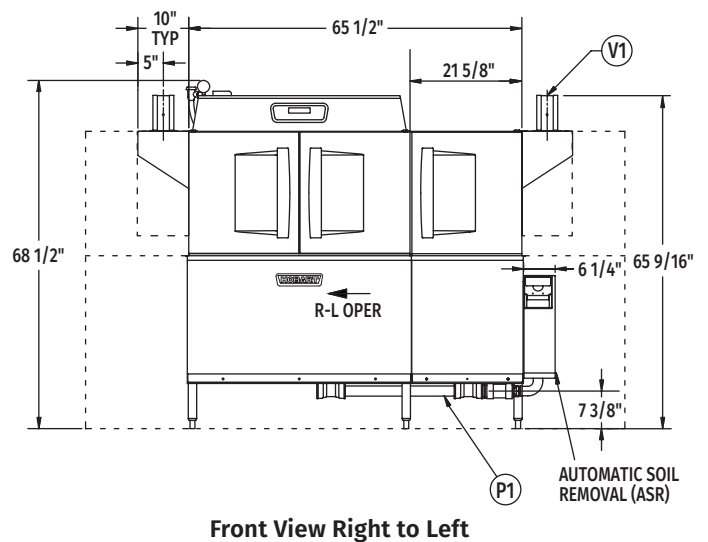
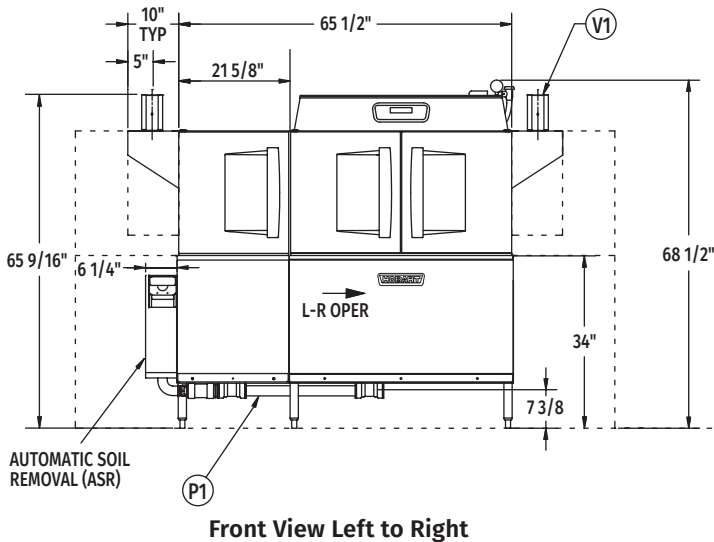
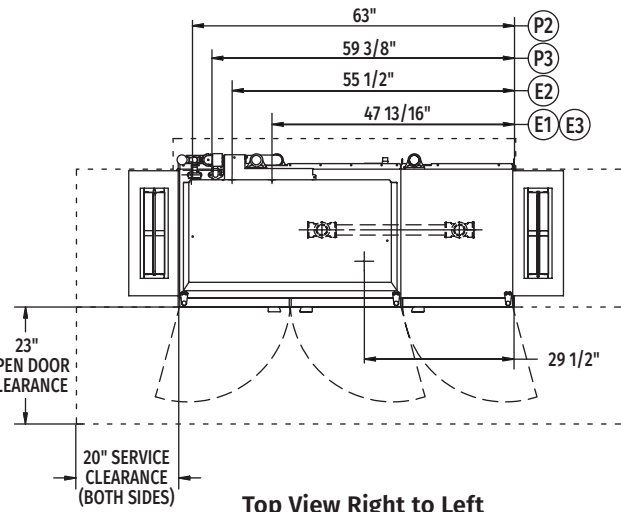
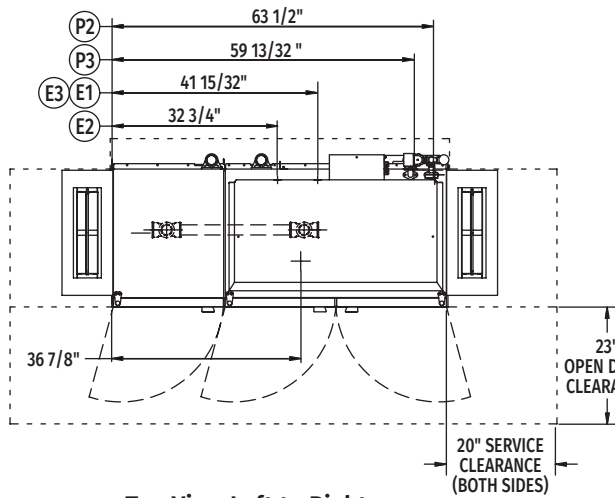
Description: CONVEYOR DISHWASHER WITH BOOSTER

Remarks: 66" Conveyor type
High chamber to accommodate 18" x 26" sheets pans
Power scrapper
Double of std. compliment of dish racks
Energy Star

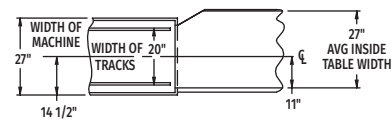


CLPS66eN-ADV **advansys** ELECTRIC

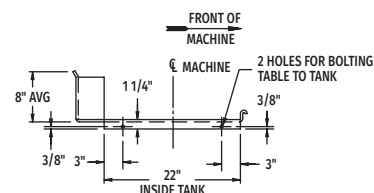
High Temperature Rack Conveyor Dishwashing Machine



Tabling Connection: 66" inside tank (at table connection)



Suggested Track and Table Layout



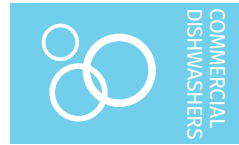
View Showing Hole Locations in
Turned Down Portion of Table

MODEL:
CLPS66eN ADVANSYS
L-R OPERATION
D-974807
REV B

MODEL:
CLPS66eN ADVANSYS
R-L OPERATION
D-974806
REV B

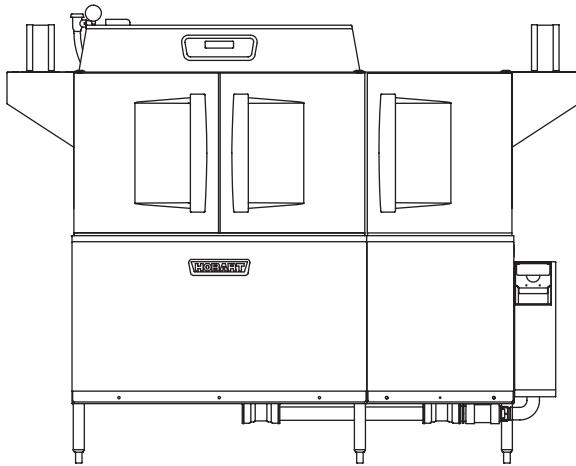


Project _____
AIA # _____ SIS # _____
Item # _____ Quantity _____ C.S.I. Section 114000



CLPS66eN-ADV advansys ELECTRIC

High Temperature Rack Conveyor Dishwashing Machine



SPECIFIER STATEMENT

Specified dishwasher will be Hobart CLPS66eN Advansys electric tank heat model with drain water energy recovery (DWER), automatic soil removal (ASR) and Opti-Rinse™. Includes 22" power scrapper, insulated ergonomic cabinet style doors, dirty water indicator, configurable "intelligent" de-lime notification, top mounted computer controls, and NSF approved pot and pan cycle mode. The wash tank utilizes durable precision pressure sensor monitors in lieu of conventional mechanical floats. The 19.5" standard chamber height will accommodate up to (6) standard sheet pans at a time on an open-end sheet pan rack.

STANDARD FEATURES

- + 202 racks per hour
- + 22" power scrapper
- + Drain water energy recovery (DWER)
- + Automatic soil removal (ASR)
- + Opti-Rinse™ system
- + Drain water tempering kit
- + Rapid return conveyor drive mechanism
- + Internal stainless steel pressure-less 30 KW booster heater
 - ☐ Dual point electrical connection standard on 208/60/3 and 240/60/3 voltage machines; single point kits available (see page 3)
 - ☐ Single point connection standard on 480/60/3 and 600/60/3 voltage machines
- + Large double door opening for ease of cleaning
- + Doors are insulated & hinged with door interlock switches
- + 19.5" chamber height opening (accepts sheet pans)
- + Top mounted micro-processor control module
- + Energy saver mode (programmable auto-shut down)
- + Dirty water indicator
- + Manager activated low temperature alert
- + NSF rated configurable pot and pan dwell mode
- + Configurable "intelligent" delime notification
- + Service diagnostics
- + Self-aligning wash manifolds
- + Stainless steel anti-clogging wash arms
- + Removable pump intake screen
- + Stainless steel self-draining pump and impeller
- + Single, sloping scrap screen and deep scrap basket
- + Stainless panels enclose perimeter and bottom
- + Door actuated drain closure
- + Vent fan control
- + Booster heater control
- + Power scrapper vent cowl curtain kit
- + ENERGY STAR® Certified

OPTIONS & ACCESSORIES (Available at extra cost)

- ☐ Standard, short, and extended stainless steel vent hoods
- ☐ Direct drive unloader – adds 38" length. Reference spec F39520 for more details
- ☐ Side loader – SL23 adds 23" length, SL30 adds 30" length. Reference specs F40926 and F40927 for more details
- ☐ Blower-dryer – adds 33½" to length. Reference spec F40252 for more details (ships separate from dishmachine, contact Hobart Service for installation)
- ☐ Flanged feet kit (requires two kits)
- ☐ Higher than standard chamber (24" opening)
- ☐ Table limit switch with 10' wire
- ☐ Correctional package (contact Hobart for details)
- ☐ Pressure regulator valve (PRV), for use with external booster
- ☐ Water shock absorber kit
- ☐ Factory-mounted circuit breakers (contact Hobart for details)
- ☐ Field installed single point kits available for 208/60/3 and 240/60/3 machines when equipped with internal booster

CLen SERIES – CLPS66eN-ADV advansys ELECTRIC

Approved by _____ Date _____ Approved by _____ Date _____



CLPS66eN-ADV **advansys** **ELECTRIC**
High Temperature Rack Conveyor
Dishwashing Machine

WARNING: Plumbing and electrical connections should be made by qualified personnel who will observe all the applicable plumbing, sanitary, safety codes and National Electrical Code.

Plumbing Notes: Minimum incoming water temperatures: 110°F for 30kW internal booster. Building flowing water pressure to dish machine is 20 PSI, (+/- 5 PSI).

Single cold water connection supplies both drain water energy recovery and drain water tempering.

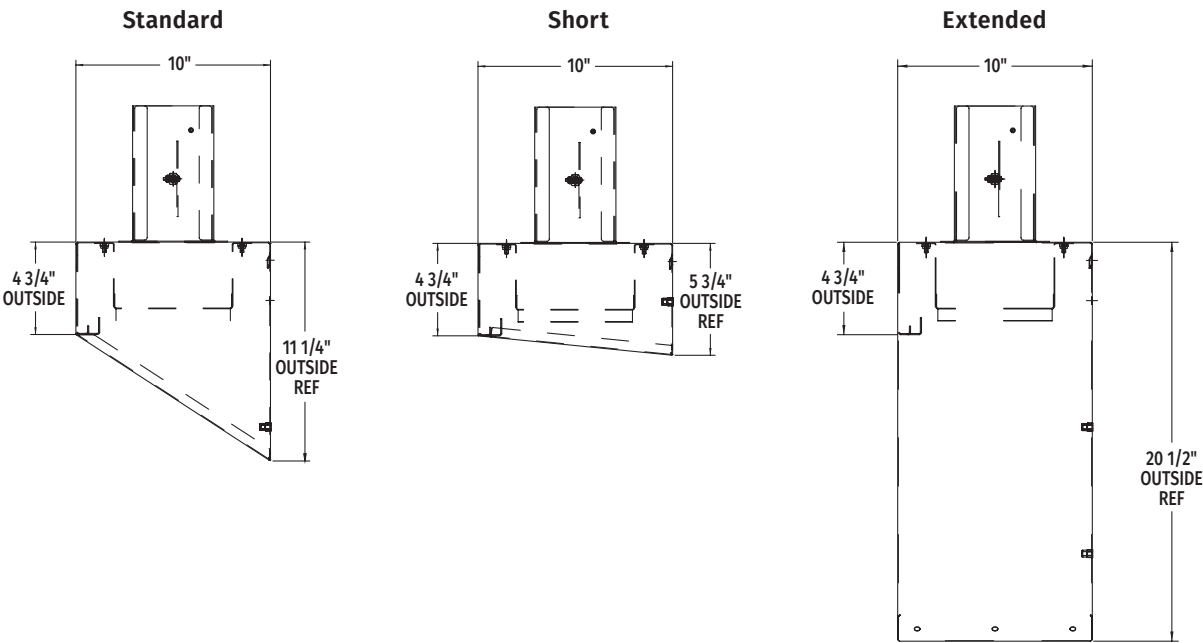
Recommended water hardness to be 3 grains or less for best results.

Electrical Note: Dishmachine not provided with internal GFCI protection.

CPS66eN-ADV Electric Heat Dissipation	
BTU/HR.	
Latent	Sensible
43,200	18,500

NOTE: Additional CLeN Voltages and Amperages are available, see document F40972.

VENT HOOD OPTIONS (Adjustable, vent stack can be adjusted 1" to either side)



As continued product improvement is a policy of Hobart, specifications are subject to change without notice.



CLPS66eN-ADV **advansys** ELECTRIC

High Temperature Rack Conveyor Dishwashing Machine

LEGEND

Electrical Connections	
Required when machine equipped with SINGLE POINT ELECTRICAL CONNECTION	
E1	Tank heat, motors, controls AND 30kW booster heater – multiple knockouts provided, 63-3/4" AFF.
Required when machine equipped with DUAL POINT ELECTRICAL CONNECTION	
E2	Tank heat, motors and controls – multiple knockouts provided, 63-3/4" AFF.
E3	Internal 30kW booster heater – multiple knockouts provided, 63-3/4" AFF.
Multiple knockouts provided for 2", 1" and 1/2" trade size conduits.	
Plumbing Connections	
P1	Drain. May be drained to either side of valve, plug opposite side 2" FPT. Recommend a floor drain minimum of 12" from machine for access and maintenance. 7-3/8" AFF.
P2	Hot water. 1/2" FPT connection. 1/2", 11-3/16" AFF. See plumbing notes for required temperatures.
P3	Cold water connection 1/2" FPT, cold water temperature 80°F, maximum 7-3/8" AFF.
Vent Connections	
V1	Optional vent hoods, 4" x 16" vent stack with damper.

SPECIFICATIONS

Capacities

Racks per Hour (NSF rated)	202
Wash Tank (U.S. gallons)	23
Power Scraper (U.S. gallons)	23
Conveyor Speed (feet per minute)	5.6

Motor Horsepower

Drive	1/6
Wash	2
Power Scraper	2
ASR	1/2

Water Consumption

U.S. Gallons per Hour (maximum use at 20 PSI)	126
U.S. Gallons per Rack	0.62
Peak Drain Flow (U.S. gallons per minute)	38

Heating

Tank Heat, Electric (kW)	15
Electric Booster (built-in) (kW for 70°F rise)	30

Venting

Load End (minimum CFM)	200
Unload End (minimum CFM)	400

Shipping Weight (approximate) 942 lbs.

Crated Dimensions 76"L x 38"W x 78"H

E1	Single Point Electrical Connection with internal 30 kW Booster Heater		
Voltage	(E1) Tank Heat, Motors, Controls 30kW Booster Heater		Single Point Service Connection
	Rated Amps	Minimum Supply Circuit Ampacity / Maximum Protective Device	
208/60/3	145.0	175	Field Installed SGLPT-KIT4-CLE required, order separately
240/60/3	138.2	150	Field Installed SGLPT-KIT2-CLE required, order separately
480/60/3	70.7	90	Ships Standard, Factory Installed
600/60/3	49.4	75	Ships Standard, Factory Installed

E2	Dual Point Electrical Connection with Internal 30 kW Booster Heater				
E3	(E2) Tank Heat, Motors, Controls		(E3) 30kW Booster Heater		Dual Point Service Connection
Voltage	Rated Amps	Minimum Supply Circuit Ampacity / Maximum Protective Device	Rated Amps	Minimum Supply Circuit Ampacity / Maximum Protective Device	
	Rated Amps	Minimum Supply Circuit Ampacity / Maximum Protective Device	Rated Amps	Minimum Supply Circuit Ampacity / Maximum Protective Device	
208/60/3	60.6	80	83.9	90	Dual Point Ships Standard
240/60/3	58.0	80	80.2	90	Dual Point Ships Standard
480/60/3	30.6	40	40.1	50	Field Convertible
600/60/3	22.6	35	26.9	40	Field Convertible

Memorandum

To: Town of Concord, MA
From: Anthony Jimenez, PE
Project: Concord Middle School
Re: Generator Load Calculations Memo, DD Estimates
Distribution: LBF, MDR, JLS, CKG, AJ, IP, SM, JC (MF)

Date: April 28, 2022
Project No.: 19153.00

The purpose of this memo is to provide a comprehensive list of proposed equipment that shall be provided with standby generator power for review and approval. The generator set for the new Concord Middle School program will be a natural gas-fired emergency/standby generator, as required per Concord Zoning Bylaws. The current selection for generator size is **500-kW**, at 480 Volts, 3-phase. Please note the proposed size has increased 100 kW from the SD phase.

Concord Middle School will be designed as a Net-Zero ready building and therefore will be designed with an all-electric HVAC system. The generator design will include life safety equipment, base level heating for freeze protection during an extended utility power outage event, and the additional systems listed below. The school will not be designed as a Shelter for an emergency event and will not be designed to include general school operational equipment.

The priority of the design teams considerations for an emergency event is as follows:

- Emergency egress lighting and exit signs must be illuminated (Code Required).
- Fire Pump must start and run when required to (Code Required).
- Fire Alarm System and Firefighter Bi-Directional Antenna System must remain active (Code Required).
- Maintain a minimum temperature of 50-55°F in all areas of the building to prevent pipes from freezing, such as fire protection sprinkler lines, domestic water lines, etc (Code-Optional Standby).
- Security, Emergency Communication, and Building Management System will remain active (Code-Optional Standby).
- Tel/data system will remain active (Code-Optional Standby).
- Elevator will automatically recall to ground floor in the event of a power outage. Operational use can remain active, if desired. Design team will coordinate with Concord Fire Department to ask if they have a preference (Code-Optional Standby).
- Domestic Booster Pump will remain active (Code-Optional Standby).
- Septic system pumps will remain active (Code-Optional Standby).

To: Town of Concord, MA
Date: 4/28/2022

- Kitchen freezers will remain active (Code-Optional Standby).
- Selective outlets in Administration area / Nurse area will remain active (Code-Optional Standby).
- Split system AC cooling will remain active only for spaces that house active emergency system heat generating equipment (Code-Optional Standby).

Please review the chart below of the various equipment's estimated total electrical load.

Standby Generator Estimated Electrical Design Loads:

Generator Load Description	Preliminary Total Connected Loads
Life Safety Egress Lighting	25.2 kW
Fire Pump 30 HP	33.2 kW
Fire Alarm System / BDA	10 kW
General Building Heating System (VRF)	264.1 kW
Gymnasium Heating System	126.4 kW
Auditorium Heating System	127.2 kW
Cafeteria Heating System	143 kW
Security/Tel-data/Communication System	15 kW
Elevator 20 HP	22.4 kW
Domestic Booster Pump 2-15 HP	28.2 kW
Septic Pumps 2-20 HP, (N+1)	22.4 kW
Kitchen Freezers	15 kW
Misc Loads (admin area receptacles, flush valves, etc.)	5 kW
Split System AC Units	25 kW
Total Connected Load:	862.5 kW
Total Diversified Load:	416.8 kW

As shown, the preliminary total connected load at the generator is 862 kW at 480 Volts, 3-phase, or 1037 Amps. Note that the systems that will not be accounted for on generator system include school operational equipment, the Photovoltaic system, most of the kitchen equipment, Audio-Visual systems other than those required for life safety,

To: Town of Concord, MA
Date: 4/28/2022

Gymnasium equipment, Auditorium equipment, Media Center equipment, HVAC ventilation, HVAC cooling except where specified above, electric water heaters and non-emergency lighting systems.

A large percentage of the connected load is the electrical heating system. Considering the buildings estimated strong thermal performance, as well as considering the electrical heats primary objective of freeze protection (not overall comfort) in an emergency event, diversities can be applied to the electrical heat. Furthermore, the electrical heating system shall be programmed with an “emergency generator event” sequence of operations to reduce peak demand on the generator system. This event will “stage” the heating equipment on and off, alternating sections of the building, to maintain the minimum temperature set point, and limiting equipment that would run at the same time.

Total diversified load for the generator system is estimated at 416.8 kW, 501 Amps at 480 Volts, 3-phase. Adding a 15% safety factor for to account for inrush start currents and for changes in equipment throughout the design, SMMA preliminary proposes a 500-kW generator to meet the needs of the Concord Middle School program. As we are designing a natural gas generator tied into the grid we do not need to size a fuel oil system or consider run time fuel storage capacity. In the event of an emergency the generator will be able to run indefinitely as long as there is not an interruption of the natural gas grid.

PHOTOVOLTAIC SYSTEM FOR CONCORD MIDDLE SCHOOL

835 OLD MARLBORO ROAD, CONCORD MA 01742



HARVARD, MA 01451-0242
www.solar design associates.com
tel: 978-456-6555
fax: 978-772-9715

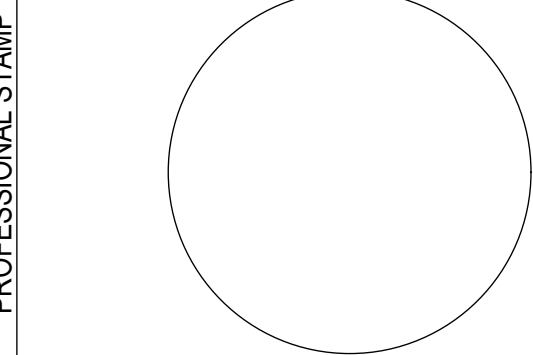
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CONCORD MIDDLE SCHOOL

PRELIMINARY DESIGN

Wednesday, May 25, 2022



NOT FOR CONSTRUCTION

MARK	DATE	DESCRIPTION
-	2022-0525	PRELIMINARY DESIGN

CONTRACTOR	NAME
	STREET
	CITY/ST/ZIP
	NOTES

SITE	NAME
	STREET
	CITY/ST/ZIP
	NOTES

FILE NAME	2022-0412 Concord Middle School.pln
SCALE	AS NOTED
DRAWN BY	MJ, CW
CHECKED BY	RE
	DATE DRAFTED: 5/25/2022
	SHEET SIZE: ARCH D

DRAWING NO.	PV001
DRAWING TITLE	PV SITE PLAN



1 1,388.66 kWdc (1,287.4 kWac) PV ARRAY WITH 3,052 QTY MODULES AT 7° THRU 10° FIXED TILTS

PV SYSTEM SUMMARY						
ARRAYS	FIXED TILT	AZIMUTH	MODULES	DC POWER	AC POWER	ANNUAL AC ENERGY
WALKWAY CANOPY	7°	262.1/82.1°	405/ 455W	184.275 kWdc	158.3 kWac	212,779 kWh/yr
NORTH PARKING CANOPIES	7°	VARIES	929/ 455W	422.695 kWdc	375.0 kWac	491,354 kWh/yr
SOUTH PARKING CANOPIES	7°	VARIES	583/ 455W	265.265 kWdc	254.1 kWac	312,918 kWh/yr
ROOFTOP	10°	VARIES	1,135/ 455W	516.425 kWdc	500.0 kWac	644,024 kWh/yr
TOTAL	-	-	3,052 MODULES	1,388.66 kWdc	1,287.4 kWac	1,661,075 kWh/yr

BESS SYSTEM SUMMARY		
AC POWER	FULL LOAD RUNTIME	ENERGY STORAGE
1000 KW	4-HOUR	4 MW-hr

ESTIMATED ANNUAL ENERGY PRODUCTION BASED ON:
HELIOSCOPE CALCULATOR
LAT, LON 42.44, -71.40 WEATHER DATA
PREMIUM MODULE
16% SYSTEM LOSSES
FIXED TILT
98.5% INV EFFICIENCY



2 LOCUS MAP



3 SIMILAR PARKING CANOPY

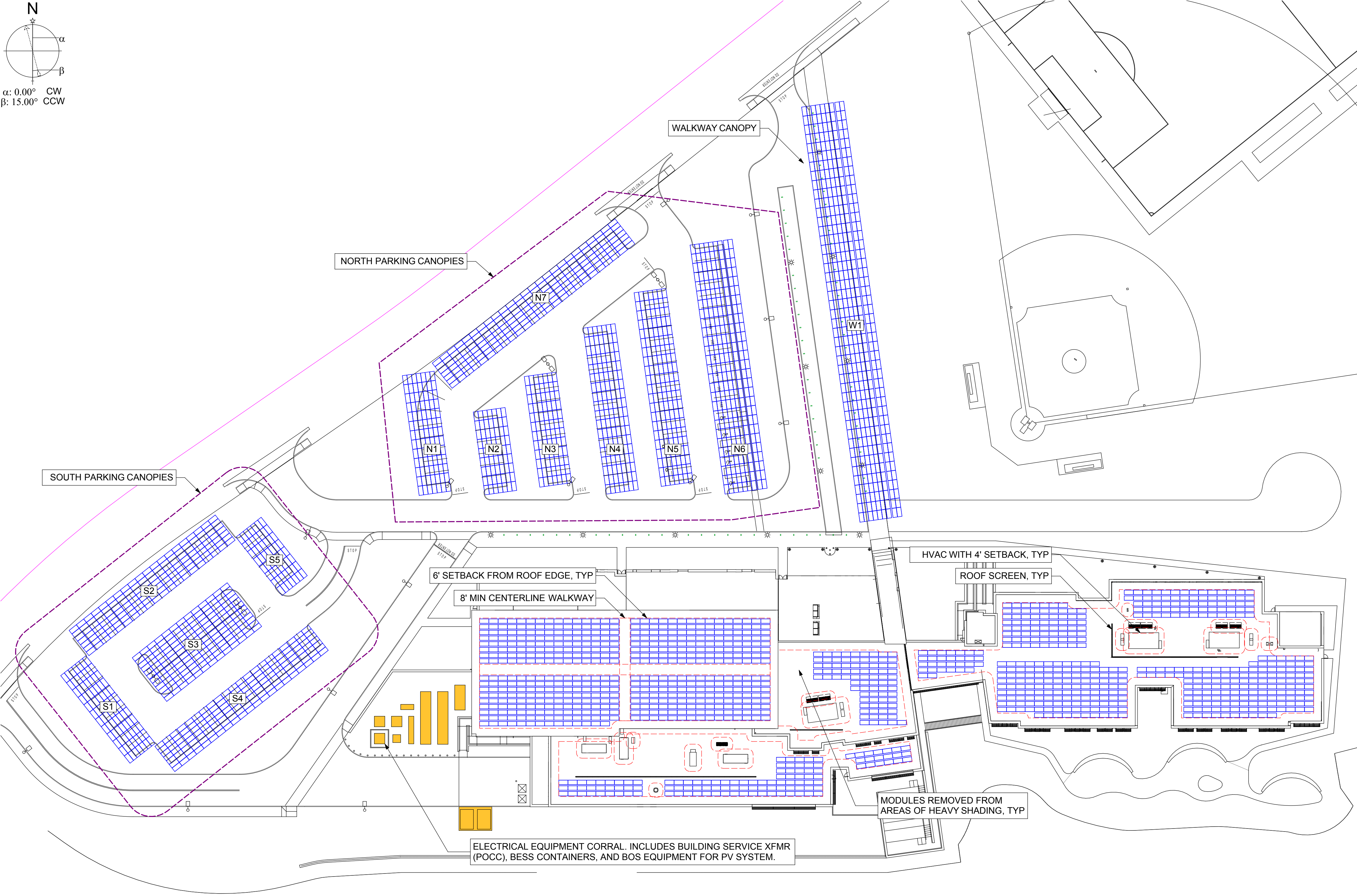
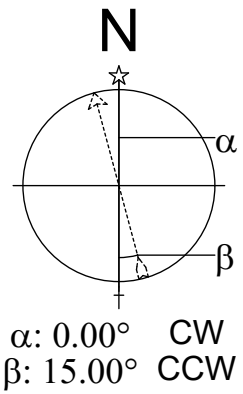


4 SIMILAR ROOFTOP ARRAY

PV SYSTEM SUMMARY					
ARRAYS	FIXED TILT	AZIMUTH	MODULES	DC POWER	AC POWER
WALKWAY CANOPY	7°	262.1/82.1°	405/ 455W	184.275 kWdc	158.3 kWac
NORTH PARKING CANOPIES	7°	VARIES	929/ 455W	422.695 kWdc	375.0 kWac
SOUTH PARKING CANOPIES	7°	VARIES	583/ 455W	265.265 kWdc	254.1 kWac
ROOFTOP	10°	VARIES	1,135/ 455W	516.425 kWdc	500.0 kWac
TOTAL	-	-	3,052 MODULES	1,388.66 kWdc	1,287.4 kWac

BESS SYSTEM SUMMARY		
AC POWER	FULL LOAD RUNTIME	ENERGY STORAGE
1000 KW	4-HOUR	4 MW-hr

ESTIMATED ANNUAL ENERGY PRODUCTION BASED ON:
HELIOSCOPE CALCULATOR
LAT, LON 42.44, -71.40 WEATHER DATA
PREMIUM MODULE
16% SYSTEM LOSSES
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CONCORD MIDDLE SCHOOL

SUBMISSION

PRELIMINARY DESIGN

Wednesday, May 25, 2022

PROFESSIONAL STAMP

NOT FOR CONSTRUCTION

MARK	DATE	DESCRIPTION
-	2022-0525	PRELIMINARY DESIGN

CONTRACTOR

NAME

STREET

CITY/ST/ZIP

NOTES

SITE

NAME

STREET

CITY/ST/ZIP

NOTES

DRAWING

FILE NAME

SCALE

DRAWN BY

CHECKED BY

DRAWING NO.

DRAWING TITLE

2022-0412 Concord Middle School.pln

AS NOTED

MJ, CW

RE

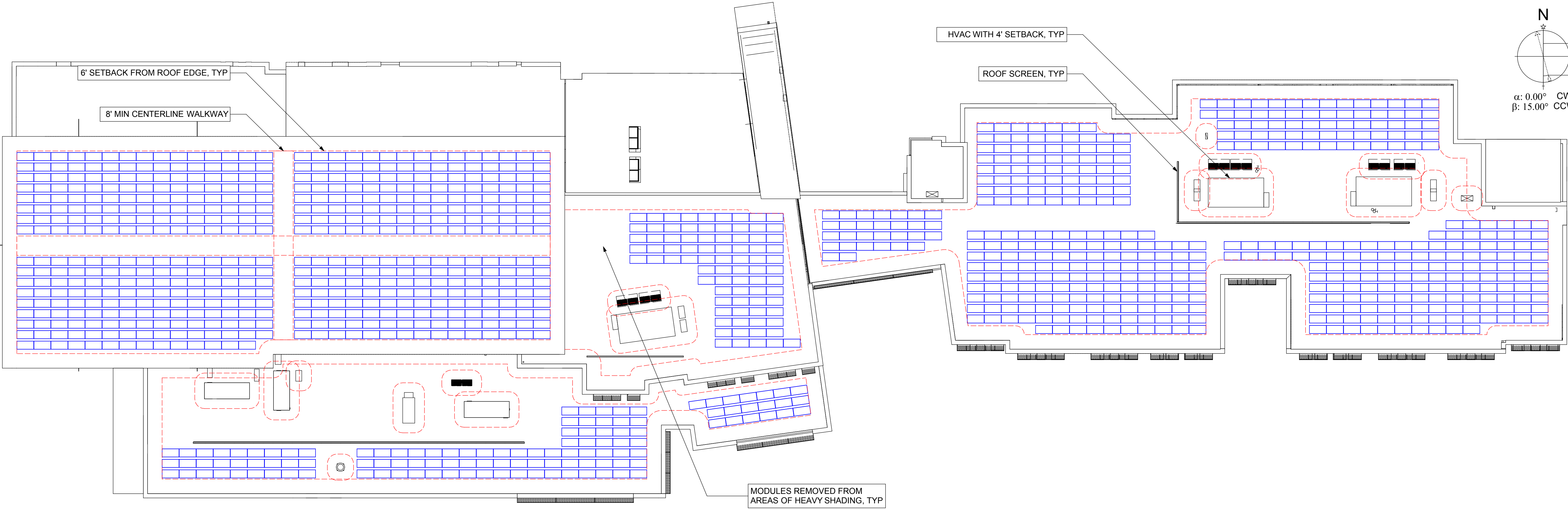
DATE DRAFTED: 5/25/2022

SHEET SIZE: ARCH D

PV101

PV LAYOUT

DRAWING NO.	PV102
DRAWING TITLE	CANOPY LAYOUT



1 516.425 kWdc, ROOFTOP PV ARRAYS WITH 1,135 QTY MODULES AT 10° FIXED TILTS

ROOFTOP ONLY, PV SYSTEM SUMMARY						
ARRAYS	FIXED TILT	AZIMUTH	MODULES	DC POWER	AC POWER	ANNUAL AC ENERGY
ROOFTOP	10°	VARIES	1,135/ 455W	516.425 kWdc	500.0 kWac	644,024 kWh/yr

ESTIMATED ANNUAL ENERGY PRODUCTION BASED ON:
HELIOSCOPE CALCULATOR
LAT, LON 42.44, -71.40 WEATHER DATA
PREMIUM MODULE
16% SYSTEM LOSSES
FIXED TILT
98.5% INV EFFICIENCY

solar

design

associates

inc

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CONCORD MIDDLE SCHOOL

SUBMISSION

PRELIMINARY DESIGN

Wednesday, May 25, 2022

PROFESSIONAL STAMP

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-	2022-0525	PRELIMINARY DESIGN

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2022-0412 Concord Middle School.pln

AS NOTED

MJ, CW

DATE DRAFTED: 5/25/2022

RE

SHEET SIZE: ARCH D

PV103

ROOF LAYOUT



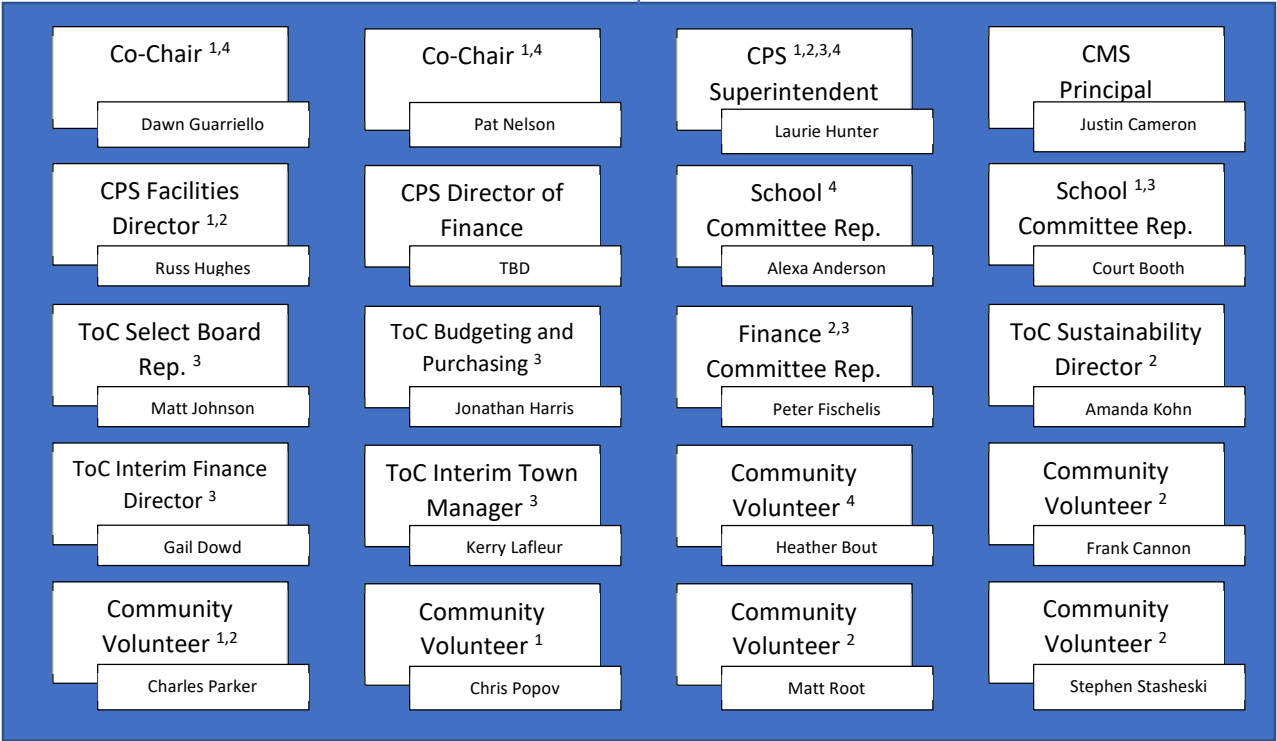
Project Organizational Chart

5/23/22

TOWN OF CONCORD CONCORD MIDDLE SCHOOL PROJECT

CONCORD MIDDLE SCHOOL BUILDING COMMITTEE

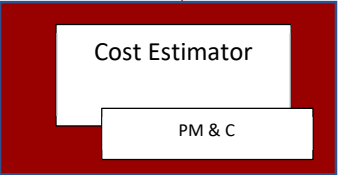
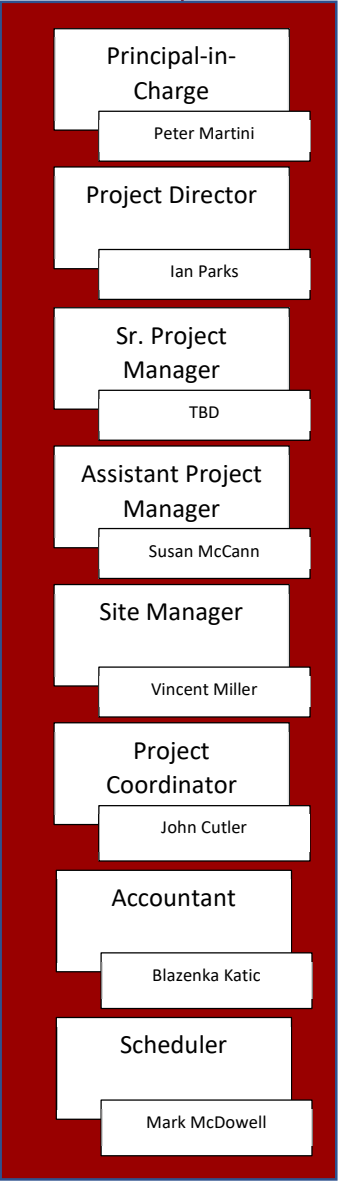
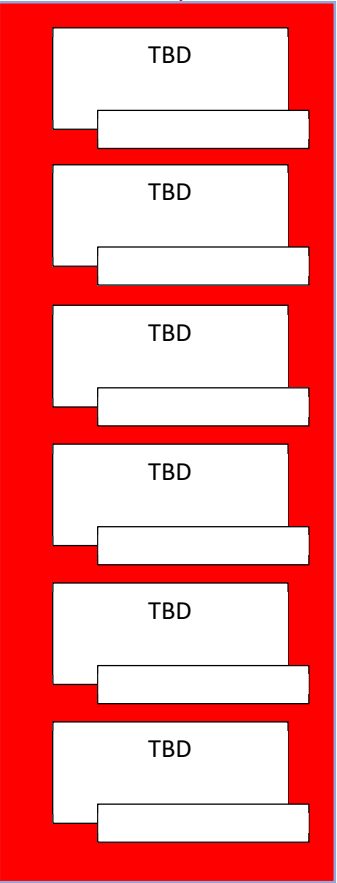
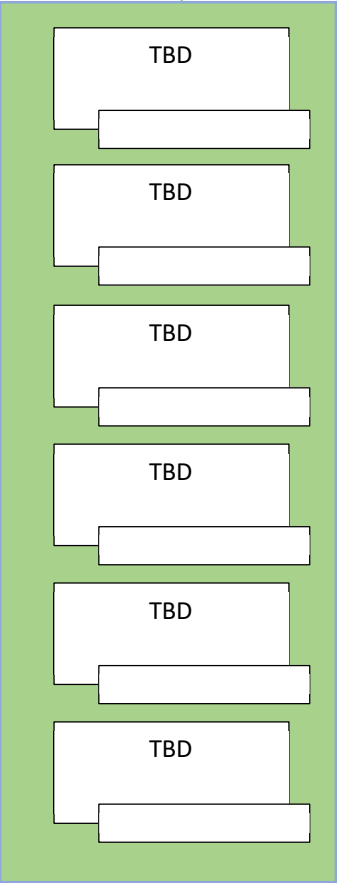
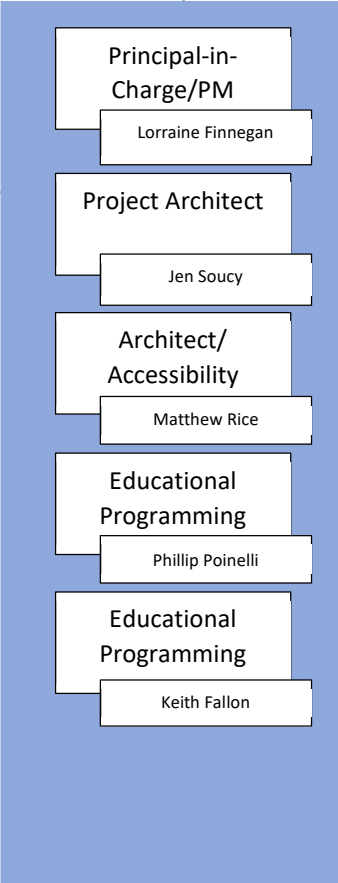
OPM HILL INTERNATIONAL



DESIGNER SMMA

GENERAL CONTRACTOR TBD

COMMISSIONING AGENT TBD



SMMA Consultants

Architect: EwingCole
Civil/Environmental: Nitsch Engineering
Data/Communications: 3si
Geotech: McArdle Gannon Associates
Geoenvironmental/Hazmat: Nobis Engineering
Cost Estimating: AM Fogarty
Kitchen/Food Services: Schiavone Design
Acoustical Consultant: Acentech
Code Consultant: Building, Fire and Access
FF & E: Alison Smith Interior Design
Traffic Consultant: Bryant
Security Consultant: Good Harbor Techmark

CMSBC SUBCOMMITTEES	
SUBCOMMITTEE	DENOTATION
DESIGN	1
SUSTAINABILITY	2
FINANCE	3
COMMUNICATION	4

Concord Middle School
DESIGN DEVELOPMENT COST ESTIMATE - RECONCILED

6/29/2022 REV



6/29/2022 REV			142,704. sf			142,704. sf			142,704. sf		International	
			RECONCILED VALUE (Average)			PM & C, dated 6/21/2022 R1			AM Fogarty, dated 6/24/2022 R1		DELTA	
	Program Area			Cost/SF			Cost/SF			Cost/SF	PM&C - AMF	
NEW BUILDING			142,704	SF		142,704 SF			142,704 SF			
A	Substructure										(\$399,119)	
A10	Foundations											
	A1010 Standard Foundations		\$2,855,444	\$20.01 /sf		\$2,642,760	\$18.52 /sf		\$3,068,127	\$21.50 /sf	(\$425,367)	
	A1020 Special Foundations		\$0	\$0.00 /sf		\$0	\$0.00 /sf		\$0	\$0.00 /sf	\$0	
	A1030 Lowest Floor Construction		\$1,526,469	\$10.70 /sf		\$1,539,593	\$10.79 /sf		\$1,513,345	\$10.60 /sf	\$26,248	
A20	Basement Construction											
	A2010 Basement Excavation		\$0	\$0.00 /sf		\$0	\$0.00 /sf		\$0	\$0.00 /sf	\$0	
	A2020 Basement Walls		\$0	\$0.00 /sf		\$0	\$0.00 /sf		\$0	\$0.00 /sf	\$0	
B	Shell										(\$171,105)	
B10	Superstructure											
	B1010 Floor Construction		\$4,111,061	\$28.81 /sf		\$4,339,947	\$30.41 /sf		\$3,882,175	\$27.20 /sf	\$457,772	
	B1020 Roof Construction		\$2,906,841	\$20.37 /sf		\$2,690,025	\$18.85 /sf		\$3,123,657	\$21.89 /sf	(\$433,632)	
B20	Exterior Enclosure											
	B2010 Exterior Walls		\$5,302,253	\$37.16 /sf		\$5,195,168	\$36.41 /sf		\$5,409,337	\$37.91 /sf	(\$214,169)	
	B2020 Windows		\$2,693,307	\$18.87 /sf		\$2,697,148	\$18.90 /sf		\$2,689,466	\$18.85 /sf	\$7,682	
	B2030 Exterior Doors		\$131,421	\$0.92 /sf		\$116,880	\$0.82 /sf		\$145,961	\$1.02 /sf	(\$29,081)	
B30	Roofing											
	B3010 Roof Coverings		\$3,114,494	\$21.82 /sf		\$3,141,315	\$22.01 /sf		\$3,087,672	\$21.64 /sf	\$53,643	
	B3020 Roof Openings		\$69,940	\$0.49 /sf		\$63,280	\$0.44 /sf		\$76,600	\$0.54 /sf	(\$13,320)	
C	Interiors										(\$123,629)	
C10	Interior Construction											
	C1010 Partitions		\$4,041,269	\$28.32 /sf		\$4,131,695	\$28.95 /sf		\$3,950,843	\$27.69 /sf	\$180,852	
	C1020 Interior Doors		\$1,057,482	\$7.41 /sf		\$1,010,560	\$7.08 /sf		\$1,104,404	\$7.74 /sf	(\$93,844)	
	C1030 Specialties/Millwork		\$1,443,417	\$10.11 /sf		\$1,501,206	\$10.52 /sf		\$1,385,627	\$9.71 /sf	\$115,579	
C20	Stairs											
	C2010 Stair Construction		\$347,000	\$2.43 /sf		\$318,000	\$2.23 /sf		\$376,000	\$2.63 /sf	(\$58,000)	
	C2020 Stair Finishes		\$40,939	\$0.29 /sf		\$37,832	\$0.27 /sf		\$44,046	\$0.31 /sf	(\$6,214)	
C30	Interior Finishes											
	C3010 Wall Finishes		\$1,735,760	\$12.16 /sf		\$1,662,096	\$11.65 /sf		\$1,809,423	\$12.68 /sf	(\$147,327)	
	C3020 Floor Finishes		\$1,283,572	\$8.99 /sf		\$1,262,738	\$8.85 /sf		\$1,304,406	\$9.14 /sf	(\$41,668)	
	C3030 Ceiling Finishes		\$1,685,821	\$11.81 /sf		\$1,649,317	\$11.56 /sf		\$1,722,324	\$12.07 /sf	(\$73,007)	
D	Services										\$43,592	
D10	Conveying											
	D1010 Elevators		\$225,350	\$1.58 /sf		\$227,400	\$1.59 /sf		\$223,300	\$1.56 /sf	\$4,100	
D20	Plumbing											
	D20 Plumbing		\$3,030,897	\$21.24 /sf		\$3,078,865	\$21.58 /sf		\$2,982,929	\$20.90 /sf	\$95,936	
D30	HVAC											
	D30 HVAC		\$8,467,944	\$59.34 /sf		\$8,645,002	\$60.58 /sf		\$8,290,886	\$58.10 /sf	\$354,116	
D40	Fire Protection											
	D40 Fire Protection		\$1,016,303	\$7.12 /sf		\$1,036,200	\$7.26 /sf		\$996,405	\$6.98 /sf	\$39,795	
D50	Electrical											
	D50 Electrical		\$7,478,466	\$52.41 /sf		\$7,253,288	\$50.83 /sf		\$7,703,643	\$53.98 /sf	(\$450,355)	
E	Equipment & Furnishings										(\$72,596)	
E10	Equipment											
	E10 General		\$1,812,808	\$12.70 /sf		\$1,785,845	\$12.51 /sf		\$1,839,770	\$12.89 /sf	(\$53,925)	
E20	Furnishings											
	E2010 Fixed Furnishings		\$1,270,170	\$8.90 /sf		\$1,260,834	\$8.84 /sf		\$1,279,505	\$8.97 /sf	(\$18,671)	
F	Special Construction & Hazmat Removals										(\$107,283)	
F10	Special Construction										\$0	
	F1010 Special Construction		\$0	\$0.00 /sf		\$0	\$0.00 /sf		\$0	\$0.00 /sf	\$0	
F20	Building Demolition										\$0	
	F2010 Building Elements Demolition		\$698,539	\$4.90 /sf		\$644,897	\$6.78 /sf		\$752,180	\$5.27 /sf	(\$107,283)	
	F2020 Hazardous Components Abatement		\$1,010,444	\$7.08 /sf		\$1,010,444	\$7.08 /sf		\$1,010,444	\$7.08 /sf	\$0	
	Sub-total for above trade work		\$59,357,405	\$415.95 /sf		\$58,942,335	\$413.04 /sf		\$59,772,475	\$418.86 /sf	(\$830,140)	
G	Sitework										\$387,451	
G 10	Site Preparation		\$2,121,694	\$14.87 /sf		\$2,067,443	\$14.49 /sf		\$2,175,945	\$15.25 /sf	(\$108,502)	
G 20	Site improvements		\$6,403,917	\$44.88 /sf		\$6,517,159	\$45.67 /sf		\$6,290,674	\$44.08 /sf	\$226,485	
G 30	Utilities		\$2,023,605	\$14.18 /sf		\$2,181,401	\$15.29 /sf		\$1,865,808	\$13.07 /sf	\$315,593	
G 40	Site Electric		\$703,683	\$4.93 /sf		\$680,620	\$4.77 /sf		\$726,745	\$5.09 /sf	(\$46,125)	
	Sub-total incl. Sitework & Demo		\$70,610,303	\$494.80 /sf		\$70,388,958	\$493.25 /sf		\$70,831,647	\$496.35 /sf	(\$442,689)	
	Markups											
	Escalation		0.00%	\$3,585,092	\$25.12 /sf	4.67%	\$3,451,523	\$24.19 /sf	5.00%	\$3,718,661	\$26.06 /sf	(\$267,138)
	Design and Estimating Contingency		0.00%	\$3,530,515	\$24.74 /sf	5.00%	\$3,519,448	\$24.66 /sf	5.00%	\$3,541,582	\$24.82 /sf	(\$22,134)
	Sub-total incl. Escalation & Design Cont			\$77,725,910	\$544.67 /sf		\$77,359,929	\$542.10 /sf		\$78,091,890	\$547.23 /sf	(\$731,961)
	General Conditions - Main Building		20mo	\$2,700,000	\$18.92 /sf	20mo	\$2,700,000	\$18.92 /sf	20mo	\$2,700,000	\$18.92 /sf	\$455,000
	General Conditions - Demo + Sitework		7mo	\$455,000	\$3.19 /sf	7mo	\$455,000	\$3.19 /sf	7mo	\$455,000	\$0.00 /sf	Incl. Above
	General Requirements		2.00%	\$1,554,519	\$10.89 /sf	2.00%	\$1,547,199	\$10.84 /sf	2.00%	\$1,561,838	\$10.94 /sf	(\$14,639)
	Bonds		1.00%	\$738,213	\$5.17 /sf	1.00%	\$773,599	\$5.42 /sf	0.90%	\$702,827	\$4.93 /sf	\$70,772
	Insurance		1.00%	\$831,737	\$5.83 /sf	1.00%	\$828,357	\$5.80 /sf	1.00%	\$835,116	\$5.85 /sf	(\$6,759)
	Permit		N/A	\$0	\$0.00 /sf	N/A	\$0	\$0.00 /sf	N/A	\$0	\$0.00 /sf	\$0
	Overhead & Profit		2.50%	\$2,100,135	\$14.72 /sf	2.50%	\$2,091,602	\$14.66 /sf	2.50%	\$2,108,667	\$14.78 /sf	(\$17,065)
	Total Estimated Construction Cost			\$86,105,512	\$603.39 /sf		\$85,755,686	\$600.93 /sf		\$86,455,338	\$605.84 /sf	(\$699,652)

- Notes:
- 1.) Variance of \$699,652 between the two estimates is under 2%, which is an acceptable standard.
 - 2.) Other FF&E has been included in the total project budget under soft costs for non-fixed equipment and furniture.
 - 3.) Construction hard costs include security scope. Technology scope has been included in the total project budget under soft costs.
 - 4.) Existing building demolition assumes 89,271 SF for main structure and 5,848 SF for the modular units.
 - 5.) Hazardous materials abatement is per the Nobis environmental survey and report.
 - 6.) AM Fogarty carried 4.67% escalation and PM&C carried 5% escalation which accounts for \$267,138 of the variance between estimates.
 - 7.) Duration of Phase 1 work assumes (20) months for General Conditions.
 - 8.) Assumes permit fees waived.

DESIGN DEVELOPMENT AND SCHEMATIC DESIGN COST ESTIMATE COMPARISON

142,704. sf

	Sub-total incl. Escalation & Design Cont		\$77,725,910	\$544.48 /sf
	General Conditions - Main Building	20mo	\$2,700,000	\$18.92 /sf
	General Conditions - Demo + Sitework	7mo	\$455,000	\$3.19 /sf
	General Requirements	2.00%	\$1,554,519	\$10.89 /sf
	Bonds	1.00%	\$738,213	\$5.17 /sf
	Insurance	1.00%	\$831,737	\$5.83 /sf
	Permit	N/A		\$0.00 /sf
	Overhead & Profit	2.50%	\$2,100,135	\$14.71 /sf
	Total Estimated Construction Cost		\$86,105,512	\$603.19 /sf

143,510. sf

	\$73,830,433	\$514.46 /sf	\$3,895,476
24mo	\$3,240,000	\$22.58 /sf	(\$540,000)
7mo	\$455,000	\$3.17 /sf	Incl. Above
2.00%	\$1,476,609	\$10.29 /sf	\$77,910
1.00%	\$701,046	\$4.88 /sf	\$37,167
1.00%	\$797,031	\$5.55 /sf	\$34,706
N/A	\$0	\$0.00 /sf	\$0
2.50%	\$2,012,503	\$14.02 /sf	\$87,632
	\$82,512,622	\$574.96 /sf	\$3,592,890



Design Development Estimate Summary



Hill International

Design Dev. Estimate & Budget Comparison

\$80,772,447	Construction Budget
\$2,019,312	Bidding Contingency
\$82,791,759	Construction Budget w/ Bid Contingency
\$86,105,312	Reconciled DD Estimate
\$5,332,865	Variance from Budget (OVERRUN)
\$3,313,553	Variance from Budget + Bidding Cont. (OVERRUN)

Design & Estimating Path to Bidding

60% CD Cost Estimate

- September 30 – October 14, 2022
- 3 months less “unknowns” than DD

90% CD Cost Estimate

- December 19 – 30, 2022
- 6 months less “unknowns” than DD

100% CD Package / Bid Set

- February 22, 2023

Bidding

- March 10 – April 13, 2023



Hill International

Construction Market Conditions

PM&C and AM Fogarty Cost Estimating



Hill International

Design Development Estimate

Reconciliation Summary & DD vs. SD Comparison



Hill International

Value Management Log

In Progress through 90% CD's



Hill International

Next Steps

Vote to provide SMMA approval to proceed with Contract Documents



Hill International

Potential Options & Risks

OPTION 1 - Do Nothing, Re-Assess @ 60% CD Estimate in Sept 2022

<u>Scenario:</u> current market maintains through bid	\$80,772,447	Construction Budget	<u>Risk:</u> escalation continues <u>Response:</u> VM @ 60% CD
	\$2,019,312	Bidding Contingency	
	\$82,791,759	Construction Budget w/ Bid Contingency	
	\$82,520,420	Reconciled DD Estimate w/o Escalation	
	(\$271,339)	Variance (UNDER BUDGET)	

OPTION 2 - Ask for More Money **Risk:** failed approval or addtl. funding not really required

OPTION 3 - VM to \$80,772,447 Construction Budget **Risk:** unnecessary scope cuts

OPTION 4 - VM to \$82,791,759 Construction Budget + \$2M Bidding Contingency **Risk:** unnecessary scope cuts

OPTION 5 - Pause the Design **Risk:** increases the “unknowns” by pushing out bid



Meeting Minutes

Concord Middle School Building Committee
Meeting Minutes
June 2nd, 2022

Name	Present	Name	Present	Name	Present
CONCORD MIDDLE SCHOOL BUILDING COMMITTEE:					
Alexa Anderson*	P	Jon Harris	P	Chris Popov*	P
Court Booth*	P	Russ Hughes	NP	Charlie Parker*	P
Heather Bout*	P	Laurie Hunter*	P	Matt Root*	P
Frank Cannon*	P	Matt Johnson*	P	Steven Stasheski*	P
Justin Cameron	P	Amanda Kohn	P	Gail Dowd	P
Peter Fischelis*	P	Kerry Lafleur	NP	Suresh Bhatia	P
Dawn Guarriello*	P	Pat Nelson*	NP		
Hill International					
Peter Martini	P	Ian Parks	P	Susan McCann	P
John Cutler	P				
SMMA / Ewing Cole					
Lorraine Finnegan	NP	Matt Rice	NP	Keith Fallon	P
Will Smarzewski	P	Phil Poinelli	NP	Saul Jabbawy	P
Chase Gibson	P	Michael Dowhan	NP	Jen Soucy	P

P=Present, NP= Not Present

*=Voting Member

CALL TO ORDER

Co-Chair Dawn Guarriello called the meeting to order at 7:30 A.M. via Zoom Virtual Conference call. Here is a link to the recording: [Concord Middle School Building Committee Meeting - Zoom](#). This recording will be made available at the Concord Public School's project page and Town of Concord's website.

APPROVAL OF MINUTES

C Booth recommended edits to the April 14th and May 19th Design Subcommittee meeting minutes. There were no recommended edits from the March 17th Design Subcommittee meeting minutes. Chris Popov motioned to accept all three Design Subcommittee meeting minutes as amended. Peter Fischelis seconded the motion. The motion carried unanimously. There were no recommended edits to the April 28th Concord Middle School Building Committee meeting minutes. Matt Root motioned to approve the April 28th Concord Middle School Building Committee meeting minutes. Heather Bout seconded the motion. The motion carried unanimously.

OPM UPDATES

Commissioning Agent Update

I Parks reported on the process Hill and the Commissioning agent selection panel utilized to select a Commissioning Agent for the Concord Middle School project through proposal reviews, interviews, and final evaluations. Proposal from six firms were received and three firms were interviewed including FST-HEA, Colliers, and AKF Group +SGH. Hill made a recommendation to award to AKF Group + SGH on May 13, 2022, which was accepted by the Town Manager thereafter. A contract between the Town and AKF will be executed in the coming weeks.

Project Schedule Update

I Parks reviewed the updated project schedule. The schedule originally carried (20) months of construction which was validated by a recent schedule comparison from a local contractor. Hill noted that they contacted the Mass Attorney General's office to confirm that there are no conflicts of interest in engaging a local

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contractor with respect to a potential future bid; the Attorney General's Office agreed that there is no conflict of interest. Hill further reported that revised logic for the punch list and move-in phase (reducing the move-in to two weeks before and during February Break 2025, and allowing for occupancy of the building concurrent with punch list activities as done on other school projects) resulted in moving the school opening date up to February 24, 2025. M Johnson questioned the need to vote on this schedule change. Hill advised that the committee could do so to formalize this change. However, a vote was not held since this was a schedule improvement and not a proposed schedule delay.

Project Organizational Chart Update

I Parks presented the project organizational chart and requested committee review and feedback with regards to updated subcommittee members.

Project Budget Update

I Parks presented the current project cash flow through May 31, 2022 as well as projections through the end of the project. Project expenditures to date are \$2,431,103 including monthly progress payments made to Hill and SMMA.

ARCHITECT UPDATES

Design Development progress (Floor Plan)

Keith Fallon and William Smarzewski presented:

- Recap of project goals, site plan and footprint, and educational programming goals.
- Recap of ground floor plan including three classroom teams, media center, administrative offices, music room, and gymnasium.
- Recap of Upper-level floor including language department classrooms and art rooms.

Design Development (Exterior Material Palette)

Saul Jabbany presented:

- Slides visualizing the exterior material palette coordination for brick, CMU, and phenolic wood.
- Slides visualizing how the building will flow with the landscape slope, which rolls under the main lobby entrance as design intended to incorporate landscape in the design of the building.
- New slides showing the grade relative to the cafeteria terrace and media center in the development of the retaining walls to make the area more aesthetically appealing.
- Outdoor learning areas will be integrated into paths around the East side of the building.
- There will be cable elements installed to encourage growth of natural plants to soften the area.

Design Development (Interior Design)

William Smarzewski and Saul Jabbany presented:

- Interior color palette inspired by themes of nature.
 - The use of color to identify academic clusters or building levels
 - Incorporation of color palette with interior materials
- Incorporation of Concord River theme throughout the corridor spaces with design features and color palette reinforcing this theme.
- Use of pylons to create more personalized Eddy spaces

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- Display cases incorporated into the media center wall
- Wood benches along the corridor to create additional seating along the corridors and wood screens to create more Eddy spaces but also to relate back to the theme of nature.
- Walls in auditorium designed to enhance acoustics and provide color to the space as well as sculpted ceilings to further enhance sound.
- Trusses in gymnasium featuring color palette as well as walls and seating

GENERAL COMMENTS

Members of the CMSBC responded to SMMA's presentation:

- H Bout commented on the Concord River theme and lighting in the auditorium
 - W Smarzewski noted that there aren't lighter colors in the auditorium to reduce bounce lighting from the stage.
- M Johnson asked if the cost estimate will give an understanding of the interior design concepts such as wood screening and the Concord River theme.
 - K Fallon responded that Schematic Design defined the parameters for interior materials and their associated quantities was addressed in the Schematic Design estimate.
 - By contrast, the Design Development package reflects the accepted VE items for interior materials, which will further define the application of the interior materials to inform the upcoming Design Development estimate.

COMMUNICATION/NEW BUSINESS

- H Bout reported there were two emails from the public for the committee
 - One requesting the building to fully wired in lieu of wireless
 - One requesting a contact person/liaison for the CMSBC
- D Guarriello reported on correspondence from K Lafleur
 - On 5/24 the Town received bids for the 2022 obligation bond which included \$12 million for the Concord Middle School project
 - 11 bids received
 - Morgan Stanley won the bid
 - This was a strong response and a good outcome for the CMS Project
- M Johnson reported the Finance Committee has nominated Suresh Bhatia as the new observer to the CMSBC on behalf of the Finance Committee.

PUBLIC COMMENT

Town resident Karlen Reed noted a concern with regards to visualizing the camera location in the auditorium on the renderings in the presentation.

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NEXT STEPS

The next Concord Middle School Building Committee will be held on June 30th to review the Design Development Estimates and Value Management Log. The next Sustainability meeting date is still being coordinated.

ADJOURNMENT

Co-Chair Dawn Guarriello adjourned the meeting at **8:57 AM**.

DRAFT

Sustainability Subcommittee (SSC)
Concord Middle School Building Committee (CMSBC)
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Virtual Meeting conducted via Zoom

PRESENT: Matt Root, Frank Cannon, Charlie Parker, Russ Hughes

PRESENT FROM HILL INTERNATIONAL: Ian Parks, Susan McCann, John Cutler

PRESENT FROM SMMA and Ewing Cole: Martine Dion, Charles Gibson, Lorraine Finnegan, Luis Moreno, Anthony Jimenez

Matt Root called the online meeting to order at 1 PM. The Chair noted that the meeting was being recorded, then performed a roll call for attendance.

Approval of Minutes: Matt Root, Sustainability Subcommittee Chair

- Approval of meeting minutes from the May 9th Sustainability Subcommittee meeting was pushed to the upcoming Concord Middle School Building Committee meeting.
- M Root proposed minor edits to the minutes and he will follow-up via email to Hill

SMMA Memorandum Discussion: Lorraine Finnegan, Martine Dion, Chase Gibson, Luis Moreno, SMMA

- M Dion reported SMMA was tracking EUI 25 kBtu/SF/yr
 - Top three (3) end uses for EUI managements:
 - Space heating; 35% of total EUI
 - Misc. Equipment (plug loads); 21% of total EUI
 - Lighting Systems; 13% of the total predicted EUI
 - Occupant behavior and practices will impact the top three (3) end uses
 - Areas of focus to optimize EUI
- M Dion reported LPD is .46 watts/sq. ft.
 - Occupancy scheduled was provided by the school district
 - Gym and one section of classrooms in use in the summer impacting the cooling period
 - When there isn't much use in the summer the cooling is reduced
- M Dion reported on impact of potentially reducing insulation through VE
 - Reduce roof, wall, and some under slab insulation
 - Reduction of approximately 2 inches in wall and roof insulation
 - Increase in EUI of .8-1.0 kBtu/SF/yr
 - Corresponding VE savings are currently unknown, but SMMA estimates at least \$100,000.
 - M Root indicated approval with a reduction in insulation as long as the air barrier and thermally broken wall were assured.
 - C Parker expressed a desire to see the other VE items prior to committing to reducing insulation as increasing EUI as a result.
- C Gibson reported on preliminary calculations for the Thermal Energy Demand Intensity (TEDI)
 - Proposed Design TEDI: 1.5-2.0 Btu/hr/SF
 - E-Z Code TEDI: 5.0Btu/hr/SF
 - SMMA is tracking wall area as an isolated efficiency and will expand to include other systems
- M Dion reported on the proposed Commercial Electronic Dishwasher

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- Optimized energy and water efficiency
- The SSC supported the selection as it meets the standards previously set by the committee for sustainability.
- L Moreno reported on All Electric Hot Water System
 - Hot water makes up approximately 10% of building energy consumption
 - Almost half of hot water energy consumption comes from faucets and showers
 - Commercial Electronic Dishwasher contributes to this energy consumption (SMMA follow-up reported that the DW is calculated to use 2.70% of the total DHW load)
 - SMMA proposed a resistance electric water heater design rather than the originally discussed heat pump type water system.
 - The heat pump water system costs more upfront and requires space on the roof which would reduce the photovoltaic footprint.
- A Jimenez reported on the load calculations of the proposed generator
 - SMMA have worked to manage the load calculations while achieving maximum cost efficiency as requested by the SSC.
 - The SSC agreed to support the proposed generator at the upcoming Building Committee meeting.
- SMMA and the SSC discussed the lighting control system, the latest Enhanced Digital Lighting Control Code, and load shedding and demand response compatibility.
- SMMA and the SSC discussed the Solar photovoltaic system
 - The SSC originally hoped for the solar photovoltaic system to match the buildings energy consumption
 - SSC are comfortable with a system that produces 1 million kilowatts per hour per year but are comfortable with a system which produces less than that if affordability was a concern.
- L Finnegan reported on the costs associated with LEED registration and review certification
 - Registration, design and construction review, final plaque and certificates will cost approximately \$15,000-\$20,000.
 - SMMA noted that the decision to proceed with LEED certification would have to be decided in DD phase.
 - The SSC is still comfortable with not pursuing certification

Open Discussion: Sustainability Subcommittee, SMMA, Hill International

- Hill International reported that the project Commissioning Agent (AKF) was conducting a review and providing comments on the Design Development drawings and specifications.
 - M Root requested the comments be shared with the committee
 - L Finnegan noted that all the comments would be included in the final DD package, but the comments could be sent to the SSC sooner.
- The Sustainability Sub Committee will produce a list of specific metrics that the committee would like tracked and reviewed.
- M Root noted that the SSC comments on the DD set were largely voiced within this meeting but any project professional comments received on the set would be compiled.

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- M Root noted that he didn't see the air infiltration testing (whole building air leakage testing) in the Design Development Specifications.
- L Finnegan noted that it is traditionally laid out in the front end of the building commissioning specification which SMMA does not have yet, as the Commissioning Agent was recently brought onto the project. This will be added in the next design iteration.
- M Dion noted that the cost for air infiltration testing is traditionally carried within the soft costs of the project budget (not construction costs).

Next Steps:

- Next meeting will be scheduled when SMMA has the DD energy model update.

Adjournment 2:29 PM

Adjournment	M Root
Motion to approve	No Motion
Seconded	
Discussion	None
Vote	No vote; Adjourned by Sub Committee Chair

A recording of this meeting is available at:

[Concord Middle School Sustainability Subcommittee Meeting - Zoom](#)