

**Recommendations for Alignment of Scope and Budget**  
**WTR D.D. Estimate and Value Management Option Analysis**  
**10/28/2011**

**Recommendations**  
**Dated 10/28/11**

Item Description		WTR 9/16/11 Reconciled DD Cost Estimate	Revised Estimated inclusive of Category 1 Changes	Revised Estimated inclusive of Category 1 and 2 Changes	Revised Estimated inclusive of Category 1, 2 and 3 Changes	Revised Estimated inclusive of Category 1, 2, 3 and 4 Changes
Estimated Cost of Work <sup>1</sup>		\$25,598,441	\$25,598,441	\$25,598,441	\$25,598,441	\$25,598,441
Estimated VE Savings						
- Category 1			(\$1,019,409)	(\$1,019,409)	(\$1,019,409)	(\$1,019,409)
- Category 2				(\$2,375,213)	(\$2,375,213)	(\$2,375,213)
- Category 3					(\$223,667)	(\$223,667)
- Category 4						(\$811,810)
Total Estimated VE Savings			(\$1,019,409)	(\$3,394,622)	(\$3,618,289)	(\$4,430,099)
Revised Cost of Work		\$25,598,441	\$24,579,032	\$22,203,819	\$21,980,152	\$21,168,342
CM General Conditions and Fee		\$3,263,800	\$3,263,800	\$3,263,800	\$3,263,800	\$3,263,800
Design and Estimating Contingency	2.70%	\$691,158	\$663,634	\$599,503	\$593,464	\$571,545
Escalation Contingency	3.00%	\$767,953	\$737,371	\$666,115	\$659,405	\$635,050
CM Contingency	1.30%	\$332,780	\$319,527	\$288,650	\$285,742	\$275,188
<b>Total Estimated Construction Cost (Projected GMP)</b>		<b>\$30,654,132</b>	<b>\$29,563,364</b>	<b>\$27,021,886</b>	<b>\$26,782,563</b>	<b>\$25,913,926</b>

<sup>1</sup> Includes \$100,000 allowance for theater lighting not shown on DD set

**Alternates**

**Alternate 1:** Restore auditorium entry features per DD design (feature wall, metal paneling at canopy and ceiling)

\$22,695

**Alternate 2:** Install new dimmable light fixtures in classrooms, auto dimming and network lighting controls per original DD design

\$301,592

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Value Engineering Summary

10/28/2011

Seq. #	VE Item #	Nature of Change	VE Description	Cost carried per 9/16/11 DD Set	Revised Cost per VE Change	Estimated Net Cost Impact	Remarks	STATUS					LEED Impact
								Yes	Rec'd	Poss	Undes.	Reject	
<b>CATEGORY ONE - DESIGN CLARIFICATIONS, TECHNICAL VE AND NON-PROGRAM CHANGES</b>													
1	3	Clarification	<u>Technology</u> : Remove category 6 cabling from scope of technology work. Scope will include boxes and raceways only.			(\$103,500)	Cost to be carried under technology budget, not construction budget	x					No
2	4	Clarification	Replace CMU back-up at Addition exterior walls with GWB on It gauge frame. This includes stairwell walls shown 1 & 2/A-325. Pull back termination of freestanding wall on column line 20 by 8'-8".	\$204,110	\$107,525	(\$96,586)		x					No
3	54	Clarification	Delete Energy recovery unit at new addition and utilize mixed air, gas fired, packaged roof top equipment. Mixed airflow ratios will allow the deletion of preheating coils. Include, a gas fired section as a safety only. All exhaust air to be wasted to the atmosphere. (ERV's are expensive, Packaged units tend to be 50% of the cost)	\$109,000	\$56,000	(\$53,000)	The need for only two hoods has been confirmed	x					No
4	97	Clarification	Clarify design intent for hand rails at upper auditorium seating section and re-price accordingly	\$117,750	\$82,425	(\$35,325)		x					No
5	95	Clarification	Epoxy paint in lieu of GFRP throughout	\$35,090	\$4,785	(\$30,305)		x					No
6	40	Clarification	<u>Stand-By Generator</u> : TCI to investigate the possibility to reduce the size of the 350 kw generator and associated Electrical distribution system (to 300 kw)			(\$20,000)		x					No
7	9	Clarification	Locker Counts: Team Rooms total 76 lockers 18" x 18" x 6'-0" with single height doors. Physical Education total 142 lockers 12" x 12" x 6'-0" with double height doors.	\$82,800	\$65,400	(\$17,400)		x					No
8	15	Clarification	Delete exhaust air valves in entirety. Gang hoods where feasible, provide standby fans for failure. Systems shall remain constant volume and shall be commissioned to function continually.			(\$15,000)	Remove four EA valves and hoods from estimate	x					No
9	16	Clarification	<u>Reuse of TV Studio unit</u> : Assume the TV studio is not moving or being modified. Unit serving the area was recently replaced and is in good working order. Delete RTU-1 and all related appurtenances i.e. ductwork, curb, gas piping connection, controls, structural elements, etc.	\$14,400	\$0	(\$14,400)	Any issues with the unit would be a maintenance item and not be a project cost.	x					No
10	17	Clarification	Delete chain link fence	\$13,745	\$0	(\$13,745)	Cost carried under track project	x					No

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11	18	Clarification	Reduce AC-5 from 30,000 CFM to 25,000 CFM	\$75,000	\$62,250	(\$12,750)		x						Yes - helps energy model
12	24	Clarification	Roof parapet: Deleted approximately 200 lf of parapet as shown on A-322 and replace with flush expansion joint	\$11,400	\$2,400	(\$9,000)		x						No
13	96	Clarification	Reduce interior metal column covers from 19 to 15			(\$6,800)		x						No
14	5	Value Engineering	GWB Partitions changes: Reduce layers of GWB on partition Type P from 4 total (double layers on two sides) to 3 total (double layers on one side and single layer on other). This provides STC of 45 which is equivalent to existing 8" CMU walls.	\$713,748	\$642,602	(\$71,146)		x						No
15	20	Value Engineering	Reduce Alteration of existing roof to width of four W18x35 at two locations (i.e., rotate RTU's)	\$93,900	\$39,000	(\$54,900)		x						No
16	33	Value Engineering	<b>Gas Fired Furnace:</b> Delete hot water coil section and replace with a gas furnace section for HV-1 thru HV-5. Associated air volumes for units remain as scheduled. Delete hot water piping connections and associated controls for these units. Add gas pipe connections to gas furnace sections and control points to MFRG packaged controls for furnace.	\$340,000	\$295,000	(\$45,000)		x						
17	7	Value Engineering	Utilize MC cables for normal branch circuit wiring in lieu of wire in conduit as permitted by NEC and Mass. State Electrical Codes. Emergency wiring shall be in conduits			(\$40,000)		x						No
18	8	Value Engineering	Delete retaining wall at loading dock	\$39,037	\$0	(\$39,037)		x						No
19	42	Value Engineering	Consider deletion of stainless steel ductwork for Fume hoods and utilize sealed and tested G90 coated ductwork or G90 ductwork. (stainless, continuously welded is expensive)	\$59,760	\$28,200	(\$31,560)	TCJ: Keep two hood connections stainless, but runoff as galvanized.	x						No
20	10	Value Engineering	Interior Storefront: Change Storefront Types S7, S8, S11, S11a to hollow metal frames and wood doors. Delete S22. Delete S5. Replace S21 with S23. Reduce height of S18, S19, S23 and S25 to 10'-0". Reduce height of S1 and S2 to 8'-8".	\$100,020	\$69,484	(\$30,536)	JCJ to provided sketch to show reduction or changes in storefront. These changes were coordinated with any potential floor layout changes to ensure no double-counting	x						No
21	12	Value Engineering	FA system replace conduit with FA MC cable	\$191,100	\$137,500	(\$26,800)	Verify code compliance. Assume only 50% of savings due to recommended re-use of existing FA (shown elsewhere)	x						No

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22	13	Value Engineering	Reduce paving scope per Sketch A, Sketch B and marked up L-100	\$114,170	\$90,052	(\$24,118)		x						No
23	14	Value Engineering	Delete freestanding masonry seat wall	\$23,940	\$0	(\$23,940)		x						No
24	19	Value Engineering	Replace Type V1 partition with Type L partitions at vertical duct chases. Provide angle framed openings in floor slab for individual duct penetrations. Fill annular spaces with firestop system (bricks or pillows) and fire barrier sealant.	\$30,250	\$18,150	(\$12,100)	JCJ to provide details of what this change involves	x						No
25	22	Value Engineering	Provide packaged combination exhaust and make up air units for the kitchen hoods. Size RTU to support space heating and cooling only. Do not size RTU to support Kitchen exhaust hood makeup. (RTU size is reduced substantially)			(\$10,000)	Savings for shared curb and reduced roof penetration only	x						No
26	2	Aesthetic	Eliminate 40% of ceramic wall tile	\$324,086	\$201,396	(\$122,690)		x						No
27	11	Aesthetic	Change brick veneer at interior of New addition stairwell to drywall finish	\$37,908	\$9,113	(\$28,796)	Estimate assumes use of abuse resistant GWB. If more expensive option is utilized, then estimate of savings must be adjusted accordingly	x						No
28	21	Aesthetic	Replace metal panels at underside of new addition overhang with DAFS	\$35,595	\$14,238	(\$21,357)		x						No
29	23	Aesthetic	Delete Stair A101 canopy shown on drawings S-121	\$9,620	\$0	(\$9,620)		x						No
<b>TOTAL CATEGORY ONE CHANGES</b>						<b>(\$1,019,409)</b>								

CATEGORY TWO - SCOPE CHANGES RECOMMENDED														
30	90	Value Engineering / Aesthetics / Program	<b>Plan modification:</b> Addition reduction (Toilet and stair), locker/team combination, weight room relocation. <u>Includes</u> savings from two items previously presented as standalone VE (reduce curtainwall at rear of new addition; do not relocate woodshop)	\$1,099,706	\$144,518	(\$955,188)	NOTE: Redundancy associated with VE#2, VE #4, and VE#11 accounted for to exclude double counting of these savings. Estimated cost impact for this item assumes the other VE item savings have already been captured as Cat 1 or Cat 2 changes.		X					No
32	27	Value Engineering	<b>Heat Mirror ("Triple glazed") Windows in lieu of radiant.</b> Delete perimeter heating radiant panels. Increase glass type to heat mirror high performance glass. (cost of radiant panels, inclusive of all hot water piping, is approximately \$1500 per lineal foot, installed)	\$655,443	\$273,480	(\$381,963)	TCI estimates that any increases in operating cost will be marginal.		x					Yes
33	29	Aesthetic	Delete Alucabond at Feature wall separating new addition from existing building. Replace with abuse resistant construction.	\$217,530	\$72,131	(\$145,399)	Priced with abuse resistant drywall		x					No

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								Yes	Rec'd	Poss	Undes.	Reject			
34	93	Value Engineering	Delete approximately 550 lf of casework from typical classrooms (12" deep x 30" high) where unit ventilators are demolished	\$124,525		(\$124,525)			x						No
35	32	Value Engineering	Re-use existing house lights in <b>auditorium</b> in lieu of replacing with new	\$76,150	\$5,000	(\$71,150)	Money added for new LED lamps		x						Yes
36	43	Value Engineering	Re-use existing lights in <b>gymnasium</b> in lieu of replacing with new			(\$15,000)			x						Yes
37	44	Value Engineering	Deletion wood proscenium brow in Auditorium	\$10,250	\$0	(\$10,250)	Deletion of wood proscenium brow only		x						No
38	6	Aesthetic	Replace metal panels with masonry in-fill at existing window area: Rear and West Side only	\$76,933	\$31,416	(\$45,517)			x						No
39	34	Aesthetic	Replace metal panels with masonry in-fill at existing window area: Front of Building	\$62,945	\$25,704	(\$37,241)			x						No
41	35	Program	<del>Delete Air Conditioning at 2nd floor NW classrooms</del> ; Extend cooling to business classroom adjacent to admin space	\$130,000	\$70,000	(\$60,000)			x						Yes - helps energy model
42	36	Program	<del>Air Condition Auditorium in lieu of Cafeteria</del>	\$135,000	\$115,000	(\$20,000)			x						Yes - helps energy model
43	37	Program	Delete loading dock and equipment	\$32,112	\$1,918	(\$30,194)			x						No
44	50	Value Engineering	Revised approach to lighting controls: - Delete network lighting controls - Use step-ballast approach in lieu of dimmable light fixtures in classrooms - In existing building, assume classroom light fixture 80% salvaged/re-used from existing; 20% new non-dimmable fixtures	\$537,996	\$236,404	(\$301,592)	Possible consideration for an alternate		x						Yes
45	55	Aesthetic	Ground Face block at new addition in lieu of brick	\$161,200	\$99,200	(\$62,000)			x						No
48	98	Program	Delete classroom speech amplification system in 27 classrooms (8 classrooms to receive speech amplification under base bid)	\$92,500	\$20,000	(\$72,500)			x						No
51	39	Aesthetic	Auditorium Entry canopy and feature wall: Eliminate wall as shown on A-114, metal composite canopy as shown on A-200. Provide DAFS at existing soffit overhang in lieu of metal composite canopy as shown on AC-114. Provide ACT in Store D103 in lieu of metal composite ceiling	\$25,713	\$3,018	(\$22,695)	JCJ to provide sketch and/or narrative to describe exact scope of changes. Also, this item might be contingent upon other changes re: location of main entrance		x						No

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52	41	Value Engineering	Utilize Aluminum bus bars in all distribution and branch circuit panel boards in lieu of copper			(\$20,000)			x					No
			<b>TOTAL CATEGORY TWO CHANGES</b>			<b>(\$2,375,213)</b>								

CATEGORY THREE - SCOPE CHANGES / OTHER OPTIONS														
47	91	Value Engineering	<b>Fire partition at addition</b> Replace 2-hour shaftwall and stud construction of deep feature wall with Type 'L' (3 5/8" stud with two layers of gypsum wall board on single side	\$101,115	\$40,000	(\$61,115)	Need to conform code requirements. If code compliant, this should be category 1.				x			No
50	92	Value Engineering	<b>Physical Education and Athletics Lockers:</b> reuse existing PE and Team room lockers in new layout. Provide only new lockers for a limited number of accessible locations.	\$82,800	\$56,300	(\$26,500)	Assumes 80% salvage/re-use and 20% new replacements				x			No
31	89	Value Engineering	<b>Administration C116 entry:</b> Relocate interior access from Cafeteria C106 to Corridor C140. Delete one opening in rated wall partitions including fusible link fire shutters	\$10,000	\$0	(\$10,000)					x			No
40	45	Aesthetic	Replace portion of the cafeteria storefront with stucco	\$31,320	\$15,269	(\$16,052)					x			No
46	59	Program	<b>Delete Air Conditioning to Media Center</b>	\$60,000	\$0	(\$60,000)				x				Yes - helps energy model
49	28	Aesthetic	Redesign new addition Front Entry Canopy, Curtain wall, Feature Wall and East Elevation Curtain Wall to reduce cost by target amount of \$50,000	\$280,000	\$230,000	(\$50,000)	This item requires additional design work if it is to be pursued further				x			No
			<b>TOTAL CATEGORY THREE CHANGES</b>			<b>(\$223,667)</b>								

CATEGORY FOUR - SCOPE CHANGES, NOT RECOMMENDED														
53	63	Value Engineering	Consider Plenum return air systems . (reduce ductwork costs by 15%)	\$1,269,000	\$1,078,650	(\$190,350)	Not advised. Estimate based on 15% net reduction in GI duct costs.					x		
54	64	Value Engineering	<b>Media Center:</b> Redesign to minimize demo, new partitions, and steel reinforcement. Reduced storefront and reduced type C masonry partition	\$206,462	\$63,878	(\$142,584)	Includes deletion of structural steel floor re-framing					x		No

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								Yes	Rec'd	Poss	Undes.	Reject		
55	52	Value Engineering	<b>Admin/Classrooms:</b> Keep admin in current location. Avoid major re-work floors and partitions in existing north side classroom and admin areas	\$186,828	\$62,980	(\$123,848)	Assume ETR floors throughout, with 20% floor patching required.				x			No
56	75	Value Engineering	Minimize control system needs to large equipment only. Smaller, ancillary equipment shall not have ATC integration. (reduce cost by 50%)	\$465,582	\$372,466	(\$93,116)	This might be a possibility; however, Mass. state energy code requires fairly high level of control. Further investigation and details are required if this is to be pursued further				x			Maybe
57	76	Value Engineering	Consider providing small modular boilers or consider "traditional" technology. Buderus "condensing" boilers are expensive	\$140,000	\$100,000	(\$40,000)	This is reasonable, however, condensing boilers are recommended to reduce operating costs.				x			Yes
58	57	Value Engineering	Remove, salvage and re-install existing lights in corridors	\$75,800	\$39,350	(\$36,450)					x			No
59	53	Value Engineering	<b>Double pane in lieu of triple pane.</b> Additional cost savings for deleting perimeter radiant heating, but staying with double pane glass system (in lieu of triple pane)	\$110,262	\$85,000	(\$25,262)	Operating costs will increase significantly. Heating system will have to be extended. Savings not that significant. Not recommended				x			Yes
60	67	Value Engineering	Delete security camera and cabling	\$21,300	\$0	(\$21,300)					x			No
61	71	Value Engineering	<b>Theatrical Lighting:</b> The theatrical lighting is taken out of the project, then the associated power distribution system could be eliminated.	\$111,600	\$0	(\$111,600)	Includes \$100K theater lighting allowance plus power to theater lighting system				x			No
62	72	Value Engineering	Reduce amount of spare circuit breakers in switchboard	\$90,000	\$80,000	(\$10,000)					x			No
63	62	Value Engineering	<b>Auditorium changes:</b> Re-upholster existing auditorium seating in main seating area and replace existing seats with new in upper seating areas.	\$102,000	\$93,200	(\$8,800)	Not worth it!				x			No
64	73	Value Engineering	Consider reducing hot water generator/boiler sizing, while increasing roof top gas fire sections for needed preheat. Utilize hot water for reheat only and cabinet unit heater needs. Reduced load of boiler due to reduced or deleted radiant panels.			(\$5,000)	This was discussed. Boiler reduction not likely as long as primary heating is hot water. This would also increase operating cost because the gas fired furnace is less efficient.				x			Yes
65	74	Value Engineering	Dry type transformers shall have aluminum core and oils in lieu of copper			(\$3,500)					x			No
			<b>TOTAL CATEGORY FOUR CHANGES</b>			<b>(\$811,810)</b>								

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			<b>CATEGORY FIVE - REJECTED; NOT VIABLE</b>											
66	66	Value Engineering	<b>Fitness/Lockers:</b> Move fitness/cardio areas to first floor; and boys/girls lockers to second floor. Reduced structural work and no SOG replacement.			(\$61,532)	No longer under consideration in lieu of VE #90						x	No
67	65	Value Engineering	Delete sound attenuation			(\$55,820)	Not viable under LEED						x	Yes
68	30	Value Engineering	<b>Fire Alarm System:</b> Reuse the existing fire alarm devices only. (New FA panels and cabling throughout per DD set).	\$75,011	\$37,506	(\$37,506)	Assume 50% savings on the cost of initiating and AV devices in the existing building		x					No
69	82	Value Engineering	Reduce underslab rigid insulation to two feet at perimeter	\$37,875	\$2,100	(\$35,775)	Required by code						x	No
70	68	Value Engineering	Media Center: In conjunction with room layout preservation above, assume 40% ETR floors	\$53,407	\$35,000	(\$18,407)	No longer deemed viable in lieu of VE #64						x	No
71	80	Value Engineering	Reduce quantity of terminal boxes				We have reviewed the floor plans again and we do not see an opportunity to reduce the number of boxes. By code, academic spaces are required to be individually zoned. WTR: Verify that both air and temperature have to be zoned.						x	Maybe
72	81	Value Engineering	Install fin tube radiator instead of radiant panels				Consider deleting this one and replace with delete Radiant panels and go to Triple pane glass.						x	Yes
73	83	Value Engineering	Consider deleting all VAV terminal boxes while keeping hot water reheat coils. System will become constant volume. (terminals with controls are \$1200 each). Or, consider ganging multiple classrooms on a single VAV (with a dedicated reheat coil per classroom, downstream of the VAV box).				CV systems are only allowed for small simple systems or programmatic requirements. Academic spaces require individual control. Also see IECC 503.4.5.						x	Yes
74	84	Value Engineering	Consider Wall or ceiling mounted unit ventilators. Delete all ductwork distribution associated with ventilation needs for perimeter spaces. (60% of total)				UV's will not meet LEED prereq.						x	Yes
75	85	Value Engineering	Delete VFDs for H&V units. Configure for constant volume operation. (VFDs are 3000 each, roughly)				As noted above, VAV control required for central air systems.						x	Yes
76	86	Value Engineering	Consider reducing scope of reflected ceiling systems. Utilize "cloud" ceiling systems throughout. Consider grid systems in the corridors with exposed cavities. Utilize partial soffits and ceilings for focal areas. Consider exposed ceilings in classrooms.				This primarily will not meet acoustic requirements.						x	Yes

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77	87	Value Engineering	Split RTUs into smaller units, with additional risers. This will minimize ductwork quantity and sizes throughout the floors. Routing large ducts through the floor plates are expensive and difficult to accomplish. Minimizing Horizontal runs will translate into direct savings.				More specific info is required to review. However, in our experience, multiple smaller units cost more to install than fewer larger units.					x		No
			<b>TOTAL CATEGORY FIVE CHANGES</b>			<b>(\$209,040)</b>								