SKANSKA AEDALUS PERKINS+WILL

PROJECT - Belmont High School
CLIENT - Town of Belmont
LOCATION - Belmont, MA
4/30/2019
Design Development VE List

**Current Project Estimate** **$ 262,712,341**

| Action Item # | Description | Comments | DISCUSSIO | Priority | REVISIT | Estimated Impact | POTENTIAL SAVINGS DISTRIBUTION BY PRIORITY $ 1 Proposed Saving HIGHLY LIKELY | $ 2 Proposed Savings POSSIBLE Needs more discussion | $ 3 Proposed Savings UNLIKELY at this time |
|---|---|---|---|---|---|---|---|---|---|
| | **GENERAL** | | | | | | | | |
| **#001** | Reduce Floor to Floor/Building height | Reduce by 8"/floor; includes reduction in interior partitions; will impact steel package; finishes, etc..(ceiling height ~8'-10"). Total material SF reduction = ~7,400sf | | 1 | | $ (998,346) | $ (998,346) | $ - | $ - |
| **#002** | Remove trailer (do not use for equipment) | | | 3 | | $ (35,250) | $ - | $ - | $ (35,250) |
| **#003** | Reduce Mock-ups | Reduce Budget by 20% | | 1 | | $ (52,875) | $ (52,875) | $ - | $ - |
| **#004** | Eliminate Green roof | Delete Hot Fluid Applied Membrane & Green Roof/ Add TPO | | 1 | | $ (217,348) | $ (217,348) | $ - | $ - |
| **#005** | Eliminate Roof Terrace | Delete Roof Pavers, CW Doors, Planters, Raised boxed planters, mtl picked fence. THIS OPTION IS SOMETHING THAT CAN BE EASILY BROUGHT BACK | | 2 | | $ (332,537) | $ - | $ (332,537) | $ - |
| **#005A** | Reduce Roof Terrace by 25% | | | 1 | | $ (83,134) | $ (83,134) | $ - | $ - |
| **#006** | Target Logistics/phasing cost reductions | | | | | $ - | $ - | $ - | $ - |
| **#006a** | Eliminate groundbreaking allowance | | | 1 | | $ (11,750) | $ (11,750) | $ - | $ - |
| **#006b** | Reduce trailer budget and trailers by 25 percent | Remove (1) OPM Trailer and (1) CM Trailer | | 1 | | $ (176,250) | $ (176,250) | $ - | $ - |
| **#006c** | Reduce allowances in BP#2 | | | | | | $ - | $ - | $ - |
| | **MASONRY** | | | | | | | | |
| **#007A** | Replace CMU backup wall by cavity wall (if cheaper) | Pricing is based on the following Stud Cavity Wall Assemble: (5/8" Sheathing, 6" LGMF, 6" acoustical Batt insuslation, 6" Mtl Stud & 5/8" GWB) | | 3 | | $ 92,690 | $ - | $ - | $ 92,690 |
| **#007B** | Replace CMU backup wall by cavity wall (if cheaper) (Cavity wall based 1-row of 6" LGMF & 1-row of 3-5/8" Mtl Stud) | Pricing is based on the following Stud Cavity Wall Assemble: (5/8" Sheathing, 6" LGMF, 3.5" acoustical Batt insuslation, 3-5/8 Mtl Stud & 5/8" GWB) | | 1 | | $ (72,069) | $ (72,069) | $ - | $ - |
| **#008** | | | | | | $ - | $ - | $ - | $ - |
| **#009** | | | | | | $ - | $ - | $ - | $ - |
| **#010** | | | | | | $ - | $ - | $ - | $ - |
| | **GEOTHERMAL** | | | | | | | | |
| **#011** | Reduce geothermal wells (320 wells based on 50 year bldg) reduce to 300 | | | 1 | | $ (364,250) | $ (364,250) | $ - | $ - |
| **#012** | Changing loops from 1.5" to 1.25" | Clarify w/CDMSmith | | 3 | | $ - | $ - | $ - | $ - |
| **#013** | Reduce vaults from 7 to 2 | Clarify w/CDMSmith | | 2 | | $ (88,125) | $ - | $ (88,125) | $ - |
| **#014** | | | | | | $ - | $ - | $ - | $ - |
| **#015** | | | | | | $ - | $ - | $ - | $ - |
| | **SITE/LANDSCAPE** | | | | | | | | |
| **#016** | Clarify traffic mitigation to reduce cost | See Item #046 & #047 | | 3 | | $ - | $ - | $ - | $ - |
| **#017** | Elimination of the ornamental grasses and groundcover at the upper and lower school arrival areas. Substitute with seeded lawn | Need area; Target $200K. **4/30/19 Review w/planning board. May have additional maintenance impacts. Easy to Add back in** | | 2 | | $ (235,000) | $ - | $ (235,000) | $ - |
| **#018** | Elimination of the shrubs and groundcovers in the 'Park' area south of the building facing Concord Avenue. Substitute with seeded lawn | Need area; included above. Review w/planning board | | 1 | | $ (146,875) | $ (146,875) | $ - | $ - |
| **#019** | ReduceTree planting by 30% | Per Sketch #019 by P+W: Delete 15 ea - 3.5" trees; Add 5 5" Trees; "JB" Shrubs @ generator were not on DD Drawings and are not in estimate | | | | $ (3,525) | $ - | $ - | $ - |

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| **#020** | Eliminate the bollards at the upper and lower school drop offs. | | | 1 | | $ (111,625) | $ (111,625) | $ - | $ - |
| **#021** | Elimination of the (2) bike shelters near the rugby field | | | 1 | | $ (23,500) | $ (23,500) | $ - | $ - |
| **#022** | Eliminate the full-depth granite treads on the two stairs leading to the dining terrace. Substitute with CIP concrete stairs | Two 10' Wide x 15 ' Long Granite Steps - Dwg L109. | | 2 | | $ (23,500) | $ - | $ (23,500) | $ - |
| **#023** | Eliminate the stainless steel illuminated handrails at the stairs leading down from the dining terrace. Substitute with aluminum or painted steel pipe rails with no integral lighting | Two Rails at Granite Stairs - Dwg L109 | | 1 | | $ (5,875) | $ (5,875) | $ - | $ - |
| **#024** | Eliminate the granite cladding on the terrace walls and the two free-standing seatwalls at the outdoor classrooms. Substitute with CIP concrete walls | Assuming Granite cap stays? | | 1 | | $ (113,592) | $ (113,592) | $ - | $ - |
| **#025** | Eliminate the special concrete paving at the upper and lower school drops-offs (including integral color, retardant finish and/or sandblasting, and sawcut joints). Substitute with standard pedestrian concrete paving | | | 1 | | $ (93,971) | $ (93,971) | $ - | $ - |
| **#026a** | Eliminate the concrete unit pavers at the dining terrace and outdoor classrooms. Substitute with special concrete paving | | | 1 | | $ (138,944) | $ (138,944) | $ - | $ - |
| **#026b** | Eliminate the Special Concrete Paving at the dining terrace and outdoor classrooms. Substitute with standard pedestrian concrete | Includes reducing scale | | 1 | | $ (38,571) | $ (38,571) | $ - | $ - |
| **#027** | Maximize the amount of porous asphalt vs vehicular concrete paving | Took 100% of vehicular concrete | | 1 | | $ (171,679) | $ (171,679) | $ - | $ - |
| **#028** | Reduce parking count by 36 spaces (from current count) | | | 1 | | $ (15,402) | $ (15,402) | $ - | $ - |
| **#029** | Eliminate the two free-standing seatwalls at the outdoor classrooms | | | 1 | | $ (141,881) | $ (141,881) | $ - | $ - |
| **#30A** | Reduce Duplicated Site Liting items | | | 1 | | $ (325,837) | $ (325,837) | $ - | $ - |
| **#030** | Increase site lighting pole heights throughout the project, thereby reducing the number of poles and fixtures | Reduced by (5) | | 2 | | $ (23,332) | $ - | $ (23,332) | $ - |
| **#031** | Eliminate synthetic turf | Change to grass **4/30: Additional Maintenance cost and capital cost to be considered for grass vs turf. Other Fields on East Side of site will require maintenance program. Easy to Add back in at a later date** | | 3 | | $ (740,250) | $ - | $ - | $ (740,250) |
| **#032** | Reduce Aluminum benches | Target 50% | | 1 | | $ (33,781) | $ (33,781) | $ - | $ - |
| **#033** | Reduce concrete benches by 50% | | | 1 | | $ (41,125) | $ (41,125) | $ - | $ - |
| **#034** | Keep MBTA fencing, replace only at retaining wall | (50%, skanska to review) | | 2 | | $ (98,776) | $ - | $ (98,776) | $ - |
| **#035** | Reuse (2) batting cages | Reuse existing Batting cages. Cost of Relocation included. | | 1 | | $ (7,000) | $ (7,000) | $ - | $ - |
| **#036** | Reuse (2) score boards | | | 1 | | $ (14,805) | $ (14,805) | $ - | $ - |
| **#037** | Eliminate flag poles: (2) at middle school & (2) at high school. Keep (1) at HS & (1) at MS | | | 1 | | $ (13,395) | $ (13,395) | $ - | $ - |
| **#038** | Replace 100% granite curbs w/asphalt | Skanska to revise based on SK Received | | 3 | | $ (217,375) | $ - | $ - | $ (217,375) |
| **#039** | Eliminate anchored furnishing at exterior terrace | | | 1 | | $ (80,000) | $ (80,000) | $ - | $ - |
| **#040** | Waterline coordination at the culvert & taping on existing line | To be evaluated & included in bulleltin #1 EBP2 | | 2 | | $ - | $ - | $ - | $ - |
| **#041** | Eliminate curb edgers (Skanska Item #1384, 1385) | Warner Larson Does NOT RECOMMAND | | 2 | | $ (27,143) | $ - | $ (27,143) | $ - |
| **#042** | Reduce extent of fencing around play fields (Skanska item #2578, 2579, 2580) | Warner Larson Does NOT RECOMMAND. P&W to provide Sketches. | | 2 | | $ - | $ - | $ - | $ - |
| **#043** | Eliminate irrigation at multi-sport field (Skanska item #2622) | Mislabeled in Estimate -Not related to synthetic turf | | 3 | | $ (322,538) | $ - | $ - | $ (322,538) |

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| **#044** | Reduce plantings to less expensive alternatives (that are still on the town list) | Target 25% reduction. (P&W need to provide sketches or clarification to value date the 25% reduction) | | 1 | | $ (293,750) | $ (293,750) | $ - | $ - |
| **#045** | Reduce South Plaza hardscape area | Target 30% reduction (Seeded Lawn is provided ilo of hardscaped areas) | | 1 | | $ (96,314) | $ (96,314) | $ - | $ - |
| **#046** | Eliminate Concord Ave raised bicycle path westbound and match reconfiguration on eastbound side | | | 1 | | $ (722,625) | $ (722,625) | $ - | $ - |
| **#047** | Eliminate Concord Ave & Cottage Intersection signalization | Per BL Email dated 4-26-19 | | 3 | | $ (235,000) | $ - | $ - | $ (235,000) |
| **#048** | Review the need to complete landscaping Phase 3 West Fields | Potential Coordination with Hockey Rink | | 3 | | $ (2,221,333) | $ - | $ - | $ (2,221,333) |
| **#048A** | Reduce Landscaping West of Harris Field By 20% | 4/30: BC requested 20% of item 48 & Item 47 | | 1 | | $ (491,266.56) | $ (491,267) | $ - | $ - |
| | **STRUCTURAL** | | | | | | | | |
| #050 | Structural Steel: Reduce tonnage, more columns, beam sizes, complex shapes reduction | Included based on Reconciliation. Target 1Lbs/sf reduction | | | | $ - | $ - | $ - | $ - |
| #051 | Structural Steel: Reduce Spans & add columns | Refer to Item 056 and 109 | | | | $ - | $ - | $ - | $ - |
| **#052** | Reduce piles by (32) | | | 1 | | $ (233,555) | $ (233,555) | $ - | $ - |
| **#053** | Auditorium Structure: add columns at ramp | Reference SK-VE070. Need structural sizing.Only shows added columns not reduced structure. P&W to advise. | | | | $ - | $ - | $ - | $ - |
| **#054** | Remove PV supporting structure at mechanical well | Structure above pool only. Structure over auditorium not on DD Drawings | | 1 | | $ (144,055) | $ (144,055) | $ - | $ - |
| **#055** | Eliminate band room clerestory windows not located on line A | Structural modification only. For material (roof/coping, etc..) see item #175. | | 1 | | $ (12,925) | $ (12,925) | $ - | $ - |
| **#056** | Move the south side canopy columns forward to reduce the cantilevered structure. Deduce 30 tons of WF steel, 12 tons of HSS steel and add 12 tons of WF steel | Sketch Provided by PW VE056. Need dimiensions & sizing. | | 1 | | $ (200,925) | $ (200,925) | $ - | $ - |
| **#057** | Reduce number of columns at Middle School entrance - structural solution is efficient so no change | No Cost Change | | 1 | | $ - | $ - | $ - | $ - |
| **#058** | Replace 7,700 sf of framed slab at west arcade with sidewalk slab | The West Arcade shown in Building section A is calculated @ 3,835sf not 7,700sf. Design to advise on where the additional area is coming from? | | 1 | | $ (82,201) | $ (82,201) | $ - | $ - |
| **#059A** | Revise beam sizes for typical purlins and reduce steel tonnage by 65 tons | | | 1 | | $ (274,950) | $ (274,950) | $ - | $ - |
| **#059B** | Revise girder sizes by inducing camber and reduce steel tonnage by 35 tons | | | 1 | | $ (148,050) | $ (148,050) | $ - | $ - |
| **#434** | Reduce HSS bracing and connections by 49 tons | | | 1 | | $ (230,300) | $ (230,300) | $ - | $ - |
| **#435** | Reduce level 2 framing area B by 25 tons and 5,000 sf of concrete slab and deck | P&W Need to confirm where the 5,000sf is being reduced? Cost only represent Structural Steel Deduct. | | 1 | | $ (155,688) | $ (155,688) | $ - | $ - |
| **#436** | Eliminate 18 moment connections at area B west cantilever overhang | | | 1 | | $ (15,863) | $ (15,863) | $ - | $ - |
| **#437** | Eliminate 186 moment connections at perimeter girts | | | 1 | | $ (163,913) | $ (163,913) | $ - | $ - |
| **#438** | Reduce 105 tons of HSS columns and add 105 tons of WF columns | | | 1 | | $ (50,760) | $ (50,760) | $ - | $ - |
| **#439** | Reduce cantilever framing for support of Maker spaces and reduce 41 tons of steel framing | Saving based on structural reduction only. Sketches are needed to understand any supplemental changes. | | 1 | | $ (173,430) | $ (173,430) | $ - | $ - |
| **#440** | Reframe the area over the pool roof by introducing story deep trusses which decreases steel framing by 12 tons and eliminates 3 mini piles and adds 2 PC piles | | | 1 | | $ (124,198) | $ (124,198) | $ - | $ - |

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| **#442a** | Façade of field house and little gym to remain, no new façade, no demo if existing façade, no new grade beam support, no CMU reinforcement, no new steel clips or new bracing above the wall, add 10 percent repointing of existing | To be include Reroofing FH and Insulation. Need info on re roofng, Kalwall & other requirements to properly price. ($100k precast reduction) **NOT additive to 442b or 442c** | | 3 | | $ (3,172,500) | $ - | $ - | $ (3,172,500) |
| **#442b** | Façade of field house and little gym to remain. New Kall-wall | Materials at exterior wall (Kall-wall) **NOT additive to 442 or 442c** | | 1 | | $ (2,791,800) | $ (2,791,800) | $ - | $ - |
| **#442c** | Façade of field house and little gym to remain. New roofing. | Roofing. Energy Code TB reviewed. **NOT Additive to 442 or 442b** | | 3 | | $ (2,093,321) | $ - | $ - | $ (2,093,321) |
| **#443** | Change auditorium flat structural slab and geofoam infill with stepped topping slab to sloped structural slab with steps – eliminate 2,100 cubic feet of geofoam fill and 1,400 feet of 3" concrete topping slab | | | 1 | | $ (30,000) | $ (30,000) | $ - | $ - |
| **#444** | Reframe auditorium balcony with two hangers to roof to eliminate excessive vibrations, reduce steel weight by 20 tons | | | 1 | | $ (84,600) | $ (84,600) | $ - | $ - |
| **#445** | Anticipated Structural Revisions | Items 50 - 440 Assume 1.0 #/sf deduct | | 3 | | $ (1,035,525) | $ - | $ - | $ (1,035,525) |
| | **DOORS** | | | | | | | | |
| **#060** | Potential reduction of accordion fire doors & coiling overhead fire shutters. Two potential locations have been identified (Stair 4, Level 3 and Stair 3, Level 4) where fire shutter and accordion door may be reduced. Cost savings for proposed alternates should be evaluated. | Ref Sketch #060 for location of accordion and overhead fire shutter and proposed alternates at 2 locations. Reduction of fire doors and shutters at most locations will have extensive design change implications. | | 2 | | $ (320,305) | $ - | $ (320,305) | $ - |
| **#060A** | Partial Reduction of #060 Above | Target $100,000 in savings | | 1 | | $ (100,000) | $ (100,000) | $ - | $ - |
| **#061** | Reduce Qty of Operable Partitions | **4/30 - May need to add more in west wing** | | 3 | | $ (194,839) | $ - | $ - | $ (194,839) |
| **#062** | Art Room exterior doors: Reduce to single glazed door | | | 1 | | $ (300,000) | $ (300,000) | $ - | $ - |
| **#064** | Eliminate door film on FG designated doors (Skanska items #314, 1874) | | | 3 | | $ (49,632) | $ - | $ - | $ (49,632) |
| **#065** | Reduce number of entry doors | Based on reducing 1 exterior & 1 Interior HS vestibule door. PW to advise | | 2 | | $ (29,375) | $ - | $ (29,375) | $ - |
| **#066** | Eliminate typical classroom door hold-opens on automatic closures | Skanska price Hardware per the Hardware schedule. Per the hardware schedule HW#58 is the only hardware schedule to receive Hold opens. VM is based on the Eliminated the Hold open only at HW#58. | | 2 | | $ (18,330) | $ - | $ (18,330) | $ - |
| **#067** | Add Hold Opens per Cost tracking log | **4/30: May be challenging to add back in after the fact. Priority 1 reflects adding the Hold Opens back into the project/ Priority 2 or 3 reflects this item not be included in the project budget** | | 2 | | $ 118,440 | $ - | $ 118,440 | $ - |
| **#068** | | | | | | $ - | $ - | $ - | $ - |
| **#069** | | | | | | $ - | $ - | $ - | $ - |
| | **INTERIORS** | | | | | | | | |
| **#071** | Simplify Ceilings: reduce GWB ceiling | Sketch Provided by PW (11,492 sf) | | 1 | | $ (93,650) | $ (93,650) | $ - | $ - |
| **#072** | Remove GWB ceilings at bathrooms, replace with 2x2 ACT & anchoring clips | Reference SK 71 (6,915 sf) | | 2 | | $ (52,813) | $ - | $ (52,813) | $ - |
| **#073** | Remove GWB ceilings at bathrooms, leave open ceiling | Reference SK 71 (6915 sf) | | 2 | | $ (134,144) | $ - | $ (134,144) | $ - |
| **#074** | Reduce scope of AC-1 Arktura Ceiling Baffle @ Maker/Innovation (Skanska items #682, 2082) | Reference SK 71 - PW Recommends exploring alternative products. Target: reduce cost by 25%. | | 1 | | $ (219,067) | $ (219,067) | $ - | $ - |

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| #075 | Floor mounted bathroom partitions in lieu of ceiling mounted | Skanska already carried Floor mounted partitions in estimate | | 2 | | $ - | $ - | $ - | $ - |
| #076 | Simplify Ceilings: reduce metal perforated panels | Reduce 50% and use 2x2 ACT ceiling | | 1 | | $ (443,892) | $ (443,892) | $ - | $ - |
| #077 | Simplify Ceilings: reduce decorative acoustic ceilings (corridors) | Reduced costs by 25% and use 2x2 ACT ceiling. Duplicate see 074 | | 3 | | $ - | $ - | $ - | $ - |
| #078a | Rubber tiles (RF-1 thru 4) to Marmolium floor (Based on 3MM) | PW to provide pros & cons of products (full color) (Skanska: Cost is pending Product Model Selection. Cost is base on $8/sf) | | 1 | | $ (817,860) | $ (817,860) | $ - | $ - |
| #078b | Rubber tiles (RF-1) 3mm to 2mm | (PW to check that a 2mm item would not be proprietary). SKANSKA not recommanding. No Cost Savings | | 2 | | $ - | $ - | $ - | $ - |
| #079a | OPTION A: Terrazzo (liquid product) to Marmolium | | | 3 | | $ (995,870) | $ - | $ - | $ (995,870) |
| #079b | OPTION B: All epoxy Terrazzo to be large format Porcelain Tile (including bench, desk, stairs) | Can't be taken if changing to marmolium above taken. PW to porcelain tile over heated slab. | | 1 | | $ (263,060) | $ (263,060) | $ - | $ - |
| #081 | No glass railing at auditorium | PW SK070 Provided (Based on Painted metal Mesh) Revised to SK#100 4-29-19 per P&W, SKA to review and follow up if revised pricing is required | | 1 | | $ (90,240) | $ (90,240) | $ - | $ - |
| #082 | Reduce interior glazing - rail & full height | Target 30% reduction. (glass wall to be gwb with wood cap) | | 1 | | $ (847,283) | $ (847,283) | $ - | $ - |
| #083 | Interior glazing: Replace all 1/2" tempered glazing to 3/8" tempered except at C290 Media Center | | | 1 | | $ (494,152) | $ (494,152) | $ - | $ - |
| #084 | Change glazing to woven wire mesh panels at Orchestra/balcony level | See Item 81 | | 3 | | $ - | $ - | $ - | $ - |
| #085 | Reduce back painted glass by 50% | Wall surface - Sketch received VE085 | | 1 | | $ (169,376) | $ (169,376) | $ - | $ - |
| #086 | | | | | | | | | |
| #087 | Eliminate shades at Skylights | | | 1 | | $ (11,750) | $ (11,750) | $ - | $ - |
| #088 | Eliminate sidelight shades | @ Classrooms | | 1 | | $ (192,888) | $ (192,888) | $ - | $ - |
| #089 | Reduce electric Shades (at curtain wall) by 50% | (Remove at north facing MS | | 1 | | $ (126,975) | $ (126,975) | $ - | $ - |
| #090 | Reduce tackable wall surfaces by 50% | | | 1 | | $ (124,274) | $ (124,274) | $ - | $ - |
| #091 | Reduce interior (acoustical) wood panels (general areas) | Reduced costs by 25% | | 1 | | $ (223,062) | $ (223,062) | $ - | $ - |
| 92a | Reduce Casework (see options by PW) High School. **OPTION A:** Remove (2) wardrobes, plastic lam panels | Revisit Options Per SK's by PW - Quality of Material to be reviewed | | 1 | | $ (187,289) | $ (187,289) | $ - | $ - |
| 92b | Reduce Casework (see options by PW) High School. **OPTION B:** Remove (2) wardrobes, plastic lam panels; remove open shelving base cabinets | | | 3 | | $ (646,232) | $ - | $ - | $ (646,232) |
| #094a | Simplify fixed wood plywood at classroom (at soffit) | Target $20 PSF savings. Painted drywall w/access panels. Cannot be accepted with VM# 092.93,95&96 | | 1 | | $ (75,670) | $ (75,670) | $ - | $ - |
| 95a | Reduce Casework (see options by PW?) Middle School. **OPTION A:** Remove upper cabs, plam panels & countertop, remove (2) tall casework cabs | Per sketches provided by PW | | 1 | | $ (377,933) | $ (377,933) | $ - | $ - |
| 95b | Reduce Casework (see options by PW?) Middle School. **OPTION C:** Remove upper cabs, plam panels, remove (2) single wardrobes, base cabinets under countertop | Per sketches provided by PW | | 3 | | $ (329,758) | $ - | $ - | $ (329,758) |
| | | | | | | | | | |
| #098 | Remove K-13 insulation at Small Gym & Field house | PW to review w/Acentech | | 1 | | $ (467,873) | $ (467,873) | $ - | $ - |
| #099 | Simplify/reduce monumental stairs | Taken in other Items (See underside of stairs/Handrails/etc.) | | 3 | | $ (28,024) | $ - | $ - | $ (28,024) |

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| **#100** | Change auditorium base from architectural concrete to large format porcelaine tiles. (Added 4/29/19 with SS Edging) | Large porcelaine tile.match floor tile. Ref SK#100 4/29/19 SKA to review | | 1 | | $ - | $ - | $ - | $ - |
| **#101** | Reduce height of interior porcelain tile | Target 20% reduction (reduce from 10ft to 8ft, child reach) | | 1 | | $ (126,536) | $ (126,536) | $ - | $ - |
| **#102** | Reduce Acoustic panels: in Ensemble Room | Additional informaiton is needed - reduce by 425 sf per P&W 4/29/19 | | 1 | | $ (12,484) | $ (12,484) | $ - | $ - |
| **#103** | Eliminate AWP-11 Acoustic Fabric Panel at Office, Admin (Skanska line #617, 2045) | Skanska to review (need to deduct paint) | | 1 | | $ (236,144) | $ (236,144) | $ - | $ - |
| **#104** | Change ACT-6 ceilings to ACT-2 | See Sketch 071 | | 1 | | $ (334,812) | $ (334,812) | $ - | $ - |
| **#105** | Eliminate Bio wall WC-1 coverings to painted walls, keep level 5 finish | PW to review locations | | 3 | | $ - | $ - | $ - | $ - |
| **#106** | Reduce stair wall finishes | target | | 3 | | $ (58,750) | $ - | $ - | $ (58,750) |
| **#106A** | Reduce Stair Wall Finishes 2' Above Rail | Based on the atrium side of the wall only receiving AWP-1. | | 1 | | $ (18,800) | $ (18,800) | | |
| **#107** | Catwalk only at Physics not other maker spaces | Revise size? | | 1 | | $ (30,198) | $ (30,198) | $ - | $ - |
| **#108** | MS Maker Space: Ceiling & lights double counted | Skanska Confirm the Ceiling was not double counted & the Lighting double count was correct at reconiliation | | 1 | | $ - | $ - | $ - | $ - |
| **#109** | Add columns to media and maker space to reduce long span beams at lvl 3. See line #00X | Included in Structure | | 3 | | $ - | $ - | $ - | $ - |
| **#110** | IT closets; shorten utility runs by rethinking the locations of these spaces floor to floor | | | 3 | | $ (23,500) | $ - | $ - | $ (23,500) |
| **#111** | Music room HVAC units; Move them to the Auditorium roof, eliminate the 2nd level slab; (add Acoustical panels) | Included in Structure | | 3 | | $ (58,750) | $ - | $ - | $ (58,750) |
| **#112** | Change exterior base trim; Change stainless steel trim to cheaper alternative | SS currently acts as flashing | | 3 | | $ (23,500) | $ - | $ - | $ (23,500) |
| **#113** | Provide alternate finish to W1D Flush GFRC Panels – standard at Gym (Skanska line #148) | Dependent on Item 442 (Can not take both) | | 3 | | $ (352,500) | $ - | $ - | $ (352,500) |
| **#114** | Paint HSS in lieu of GFRC columns at Outdoor Terrace (Skanska line #151) | Code Implications - Not Recommended | | 3 | | $ - | $ - | $ - | $ - |
| **#115A** | Eliminate area of impact resistant GWB – use regular gyp (Skanska line #253, 270, 274, 279, 282, 1831,1834, 1837, 1843, 1849) | Currently Specified - Clarified in SK by PW Targeting 60% Reduction | | 1 | | $ (20,000) | $ (20,000) | $ - | $ - |
| **#116** | Reduce height/extent of FRP in Janitor Closets (Skanska items #547, 587, 2016, 2038) | 4' height | | 1 | | $ (65,495) | $ (65,495) | $ - | $ - |
| **#117** | Eliminate GWB and paint to underside of stairs – leave underside of stair pan exposed (Skanska line items #246, 563, 1820, 2027) | | | 1 | | $ (53,217) | $ (53,217) | $ - | $ - |
| **#118** | Reduce Magnetic Marker Boards. (Teaching Wall only in Classrooms). | SK provided by PW | | 3 | | $ - | $ - | $ - | $ - |
| **#119** | Eliminate the "kiosk" in main hs entry. | | | 3 | | $ - | $ - | $ - | $ - |
| **#120** | Auditorium Lobby & Corridor finishes: Reduce finish cost approach | Captured Above | | 3 | | $ - | $ - | $ - | $ - |
| **#121** | Eliminate classroom door sidelights | To be reviewed with Item 66 - Door Hold Opens | | 2 | | $ (98,906) | $ - | $ (98,906) | $ - |

SKANSKA AEDALUS PERKINS+WILL

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|---|---|---|---|---|---|---|---|---|---|
| **#122** | Change operable Nana glazing wall to standard fixed storefront (inside at keyboarding & music areas) | Excluded Doors at these locations - Not in DD Estimate. (To be ful height glazing and reduce the width by 50%) | | 1 | | $ (24,088) | $ (24,088) | $ - | $ - |
| **#123** | Interior CW? Remove interior glass curtain wall system (~30ft height) at Middle school / ADD steel to support storefront system at mid height. To be changed to storefront | P&W to provide Steel information for VM to be priced. Skanska to review estimate and remove | | 1 | | $ (449,965) | $ (449,965) | $ - | $ - |
| **N/A** | Refinish small gym floor v/s new | Skanska to check if taken out of estimate already | | | | $ - | $ - | $ - | $ - |
| **#125a** | AWP-6 @ BOH Aud Vestibule/Corridors above 8' & 8' high CT | | | 1 | | $ (77,534) | $ (77,534) | $ - | $ - |
| **#125b** | $15/sf cost Reduction for AWP-7 @ Aud Vestibule/Corridor | | | 1 | | $ (34,686) | $ (34,686) | $ - | $ - |
| **#126** | Control Room Windows (384 SF @ $70/SF). Correct area of Aud control rooms + BB control room to 328 SF | | | 1 | | $ (6,251) | $ (6,251) | $ - | $ - |
| **#127** | $15/sf cost Reduction for AWP-7 @ Black Box | | | 1 | | $ (96,409) | $ (96,409) | $ - | $ - |
| | **AUDITORIUM:** | | | | | | | | |
| **#130** | Remove balcony at level 3; resolve storage and maker space at level 2 | Redundant | | 3 | | $ - | $ - | $ - | $ - |
| **#131a** | Simplify auditorium catwalks A; Integrate ramps into catwalks + eliminate extra slab; replace stage stair w.caged ladder | Catwalks Option A | | 3 | | $ (23,500) | $ - | $ - | $ (23,500) |
| **#132** | Auditorium structure; add columns at ramps | Redundant with Item Above | | 3 | | $ - | $ - | $ - | $ - |
| **131b** | Simplify auditorium catwalks B; Integrate ramps into catwalks + eliminate extra slab; caged ladder from stage to gallery catwalk; 22" wide switchback stair connecting catwalk levels above stage (or spiral stair if code-permitted and cheaper) | Catwalks Option B, was #133 | | 3 | | $ (29,375) | $ - | $ - | $ (29,375) |
| **131c** | Auditorium Catwalks C: Simplify ramped access, lower catwalks (keep stage stair to catwalks) | SELECTED OPTION (either 131a, 131b, 131c, OR 131d) Reference Sketch #131c | | 1 | | | | | |
| **131d** | Simplify auditorium catwalks C;Add lift to Follow/Spot room; only 1 ramp; replace stair w. caged ladder | Catwalks Option D, was #134 | | 3 | | $ (11,750) | $ - | $ - | $ (11,750) |
| **#135** | Reduce physical space and equipment required for mech and elec rooms by combining them | Moved to a different category Carried in Line Item Above | | 3 | | $ (35,250) | $ - | $ - | $ (35,250) |
| **#136** | Remove grid iron platform at stage | | | 1 | | $ (223,250) | $ (223,250) | $ - | $ - |
| **#137** | Refine scope at auditorium/blackbox: Option1: DDSK-01 removes the wires grid but retains the perimeter catwalk | 4/30: 5' x 5' Pipe Grid. Attachments to be made from lift | | 2 | | $ (79,900) | $ - | $ (79,900) | $ - |
| **#138** | Refine scope at auditorium/blackbox: Option2: DDSK-02 removes both the wires grid & the perimeter catwalk | Sketch provided | | 3 | | $ (152,750) | $ - | $ - | $ (152,750) |
| **139a&b** | Refine scope at auditorium/blackbox: Option2: simplify grid iron walking surface | | | 3 | | $ (132,804) | $ - | $ - | $ (132,804) |
| **139b** | | | | 3 | | | | | |
| **#140** | Refine scope at auditorium/blackbox: Option2: correct black box seating platform quantity | | | 1 | | $ (64,625) | $ (64,625) | $ - | $ - |
| **#141** | No acoustical shell in base (at stage) BlackBox - | **4/30: Reuse Existing Acoustic Shell** | | 1 | | $ (235,000) | $ (235,000) | $ - | $ - |
| **#142** | Grid at Auditorium stage - Eliminate | Same as 136 | | 3 | | $ - | $ - | $ - | $ - |
| **#143** | Proscenium wall AWP-12 reduced. Top of proscenium wall to be painted GWB. Eliminated area to be painted GWB | Sketch Provided by PW | | 1 | | $ (41,606) | $ (41,606) | $ - | $ - |
| **#144** | Thrust Stage at Auditorium | **4/30: Not a functionally vialble solution for Theater Dept.** | | 1 | | $ (88,125) | $ (88,125) | $ - | $ - |

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|---|---|---|---|---|---|---|---|---|---|
| **#145** | AUDITORIUM: Finish ceiling simplified to be flat (curved panels eliminated) and to be 80% open wire mesh in Auditorium. | **4/30: Flat panels have no impact acoustically vs curved** | | 1 | | $ (70,500) | $ (70,500) | $ - | $ - |
| **#146** | AUDITORIUM: Overhead reflectors simplified to flat painted GWB panels (hung above finish ceiling, shaded purple) | **4/30: Not visable. Fully Functional** | | 1 | | $ (52,875) | $ (52,875) | $ - | $ - |
| **#147** | AUDITORIUM: Acoustic shell ceiling panels simplified to flat painted GWB panels faced with metal mesh (shaded pink) | **4/30: Simplified Ceiling in Auditorium - Sketch Provided by PW.** | | 2 | | $ (22,325) | $ - | $ (22,325) | $ - |
| **#148** | Capture Saving in Auditorium | **4/30: Captured in Items above** | | 3 | | $ (200,000) | $ - | $ - | $ (200,000) |
| **#149** | Metal guardrails @ Ramp 3, Area B. Reduce to just wall-mounted handrails. Do not need guardrails at ramps between grid lines 6 & 6.3 nor between grid lines 8.7 & 9. | | | 1 | | $ (70,500) | $ (70,500) | $ - | $ - |
| **#600** | Orchestra Pit | | | 3 | | $ 881,250 | $ - | $ - | $ 881,250 |
| **#601** | Orchestra Pit (Withouth Lift) | | | 2 | | $ 528,750 | $ - | $ 528,750 | $ - |
| | **ARCHITECTURAL EXTERIORS:** | | | | | | | | |
| **#150** | Reduce 10'-0" wide granite dimensions at base to 5' Wide | Must be removed if items selected below from 152 series. | | 1 | | $ (70,021) | $ (70,021) | $ - | $ - |
| **151a** | Keep granite in specific locations per sketch; use precast concrete at remaining base locations (north Elevation only). Finish precast concrete to resemble granite | | | 1 | | $ (51,759) | $ (51,759) | $ - | $ - |
| **#151b** | Use precast concrete in lieu of Granite at all base locations. Finish precast concrete to resemble granite | | | 1 | | $ (100,000) | $ (100,000) | $ - | $ - |
| **152.1A** | Provide Skewed Taktl & 10'-0" Wd Granite Panels w/ Flush Glazed Windows @ Ground level | | | 3 | | $ (45,402) | $ - | $ - | $ (45,402) |
| **152.1B** | Provide Skewed Equitone & 10'-0"wd Granite Panels w/ Flush Glazed Windows @ Ground level | | | 3 | | $ (583,458) | $ - | $ - | $ (583,458) |
| **152.1C** | Provide Skewed Reider Fiberc Panels & 10'-0" Wd Granite Panels w/ Flush Glazed Windows @ Ground level | | | 3 | | $ - | $ - | $ - | $ - |
| **152.1D** | Provide Skewed Procelanosa Panels & 10'-0" Wd. Granite Panels w/ Flush Glazed Windows @ Ground level | | | 3 | | $ - | $ - | $ - | $ - |
| ~~**#XXX**~~ | ~~Eliminate the Slant at the Ground Floor CW~~ | ~~Redundant VE #152~~ | | ~~3~~ | | ~~$ (19,023)~~ | ~~$~~ | ~~$~~ | ~~$ (19,023)~~ |
| **152.2A** | Provide Skewed Taktl & 5'-0" Wd Granite Panels w/ Flush Glazed Windows @ Ground level | Cannot be taken with item #150 or the othe 152 options | | 3 | | $ (115,423) | $ - | $ - | $ (115,423) |
| **152.2B** | Provide Skewed Equitone & 5'-0"wd Granite Panels w/ Flush Glazed Windows @ Ground level | Cannot be taken with item #150 or the othe 152 options | | 1 | | $ (653,479) | $ (653,479) | $ - | $ - |
| **152.2C** | Provide Skewed Reider Fiberc Panels & 5'-0" Wd Granite Panels w/ Flush Glazed Windows @ Ground level | | | 3 | | $ - | $ - | $ - | $ - |
| **152.2D** | Provide Skewed Procelanosa Panels & 5'-0" Wd. Granite Panels w/ Flush Glazed Windows @ Ground level | | | 3 | | $ - | $ - | $ - | $ - |
| **152.3A** | Provide Flush Taktl & Granite Panels w/ Flush Glazed Windows @ Ground level | Cannot be taken with item #150 or the othe 152 options | | 3 | | $ (453,820) | $ - | $ - | $ (453,820) |
| **152.3B** | Provide Flush Equitone & Granite Panels w/ Flush Glazed Windows @ Ground level | Cannot be taken with item #150 or the othe 152 options | | 3 | | $ (929,543) | $ - | $ - | $ (929,543) |

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|---|---|---|---|---|---|---|---|---|---|
| **152.3C** | Provide Flush Reider Fiberc Panels & Granite Panels w/ Flush Glazed Windows @ Ground level | | | 3 | | $ - | $ - | $ - | $ - |
| **152.3D** | Provide Flush Procelanosa Panels & Granite Panels w/ Flush Glazed Windows @ Ground level | | | 3 | | $ - | $ - | $ - | $ - |
| **#153** | Simplify detail and change material from TAKTL to 4"x16" Ground Face Silica block. OPTION B | | | 3 | | $ (1,900,692) | $ - | $ - | $ (1,900,692) |
| **#154** | Simplify detail and change material from TAKTL to reinforced porcelain rainscreen | | | 3 | | $ (568,148) | $ - | $ - | $ (568,148) |
| | Reduce Ground Floor Façade Materiality Change | Target $1M | | 3 | | $ (1,000,000) | $ - | $ - | $ (1,000,000) |
| **#155** | Overflow roof drains: substitute perimeter roof scuppers for overflow roof drains | PW not recommended | | 3 | | $ - | $ - | $ - | $ - |
| **#156** | Roofing: EPDM in lieu of TPO roofing | Not recommended and may not be a real cost savings. Based on a 60Mil EPDM. . | | 3 | | $ (180,347) | $ - | $ - | $ (180,347) |
| **#157A** | Reduce exterior cantilevered brick fins at stair ends. (Areas A,B,D,F). Brick fin walls may shorten by 2'-0". See sketch #157 | | | 1 | | $ (56,459) | $ (56,459) | $ - | $ - |
| **#157B** | Remove exterior cantilevered brick fins at stair ends. (Areas A,B,D,F). | | | 3 | | $ (112,918) | $ - | $ - | $ (112,918) |
| **#161** | Canopy roof drain and formed metal gutter have a high risk of long-term failure due to trapped debris and freeze/thaw cycles. Provide alternative using conventional membrane roof and roof drain products. (A32-A3) | External Gutter not included in reconcilied estimate. | | 3 | | $ - | $ - | $ - | $ - |
| **#162** | Eliminate CW window at North Side Auditorium | VM included the removal of the 1 CW Window and provide a W1A panel in place of the window. | | 1 | | $ (20,000) | $ (20,000) | $ - | $ - |
| **#163A** | Review Material Selection of Auditorium Wall (VM is base on 10'-0" high Panels ilo of the Auditorium Panels that are 26'0" & 15'-0" High | See detail 6/A20-11 the | | 2 | | $ (29,287) | $ - | $ (29,287) | $ - |
| **#163B** | Review Material Selection of Auditorium Wall (VM is base on removing all GRFC Panels and Provided non-Skewed metal panels at are standard sized. | See detail 6/A20-11 the | | 2 | | $ (117,148) | | | |
| **#164** | Eliminate operable windows in classrooms | (classrooms only) | | 2 | | $ (107,865) | $ - | $ (107,865) | $ - |
| **#165A** | Carry TPO and Rubber pavers at Canopies ILO Metal Panel | | | 1 | | $ (347,875) | $ (347,875) | $ - | $ - |
| **#165B** | Carry TPO Roofing at all Canopies (Without Rubber Pavers) | | | 3 | | $ (456,586) | $ - | $ - | $ (456,586) |
| **166a** | Simplify fins panel at CW/Stairs with Mullion Cap | See SK (no sketch provide at this time Pricing is based on Provide a 10" Knife Edge Vertical Shade ilo of VF2.5 & 2.6 perforated metal vertical sunshades. | | 1 | | $ (100,956) | $ (100,956) | $ - | $ - |
| **#166b** | Eliminate vertical fins on curtainwall | | | 3 | | $ (348,711) | $ - | $ - | $ (348,711) |
| **#168** | Sunscreen part of Curtain Wall Assembly (Design assist) | Skin Supported in locations which overhang: To be Coordinated with CW Classroom Evaluation | | 2 | | $ (215,730) | $ - | $ (215,730) | $ - |

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|---|---|---|---|---|---|---|---|---|---|
| **#169** | Soffits at Canopies (building overhang Alucobond/metal panels MCM at canopies) | Need to validate based on SK | | 3 | | $ - | $ - | $ - | $ - |
| **#170** | CW to window system. Reduce complexity; | Sketch #174 (Pricing Based on a single pane vs double pane window system) Cannot be accepted with item #188A | | 2 | | $ (193,875) | $ - | $ (193,875) | $ - |
| **#175** | Eliminate band room clerestory windows not located on line A | Need to validate based on SK. Material only, for structural modification see item # | | 1 | | $ (10,575) | $ (10,575) | $ - | $ - |
| **#176** | Eliminate Design Assist | | | 1 | | $ (205,625) | $ (205,625) | $ - | $ - |
| **#177** | Change soffit panel from Alucobond to flat seam panels | See Item Above - Not Recommended | | 3 | | $ (507,506) | $ - | $ - | $ (507,506) |
| **#178** | Wood Benches to be removed from all classroom fenestrations | Cannot be accepted with item #188A | | 1 | | $ (380,700) | $ (380,700) | $ - | $ - |
| **#179a** | Reduce 1 of the 2 inovation space skylights by 40% | Need to validate based on SK | | 1 | | $ (45,802) | $ (45,802) | $ - | $ - |
| **#179b** | Reduce MS Skylight by 15.5% | | | 3 | | | $ - | $ - | $ - |
| **#180** | Remove all skylights | | | 3 | | $ (278,669) | $ - | $ - | $ (278,669) |
| **#181** | Simplify CW at corner stairs (width adjustment, mullions) | PW Does not Recommend. Skanska req's more info to price | | 2 | | $ - | $ - | $ - | $ - |
| **#182** | Simplify coping at parapet | Sketches need (P&W already Rejected, Noted testing the assemble is required) | | 3 | | $ - | $ - | $ - | $ - |
| **#183** | B5 "triple glazing system" keep at music room only. (acoustic). GL1D only at North façade | This Item was removed during Reconciliation- no cost adjustment | | 3 | | $ - | $ - | $ - | $ - |
| **#184** | Modify length (height) of Curtain Wall glass panels (less than 14') | See VM item #302 | | 2 | | $ - | $ - | $ - | $ - |
| **#185** | Remove North wall acoustical screens at mechanical well: REVISED TO REFLECT REMOVAL OF SPECIFIED LOUVER WALL | Skanska Estimate is based on Louver per Spec 089119 ("Fixed Louvers") No Acoustical screen wall has been included in the reconcilied DD estimate. | | 3 | | $ (378,697) | $ - | $ - | $ (378,697) |
| **#185a** | Provide Acoustical Screens at Mechanical Well Above Pool | Skanska Estimate is based on Louver per Spec 089119 ("Fixed Louvers") No Acoustical screen wall has been included in the reconcilied DD estimate. | | 3 | | $ 164,829 | $ - | $ - | $ 164,829 |
| **#185b** | Provide Acoustical Screens at Mechanical Well @ Roof Terrace | Skanska Estimate is based on Louver per Spec 089119 ("Fixed Louvers") No Acoustical screen wall has been included in the reconcilied DD estimate. | | 3 | | $ 64,155 | $ - | $ - | $ 64,155 |
| **#186** | Substitute acoustic panel for aluminum louver at Mechanical Well in High School Area | Skanska Estimate is based on 4" Non Drainable Louver w/ no blankoff panel per Spec 089119 ("Fixed Louvers") No Acoustical screen wall has been included in the reconcilied DD estimate. | | 3 | | $ - | $ - | $ - | $ - |
| **#188** | Reduce classroom window heights by 5" & reduce all upper floor doors to 7'-0" height. | For Single Plane Reduce & Window sill reduction see VM Item #170, #178 | | 1 | | $ (132,305) | $ (132,305) | $ - | $ - |
| **~~#189~~** | ~~Delete classroom window seat and align windows in single plane~~ | ~~CANNOT BE ACCEPTED WITH ITEM #178. Include GWB Sills~~ | | 3 | | $ - | $ - | $ - | $ - |
| **#189** | Middle School Entry Reduction | Reduction of MS Enrty | | 2 | | $ (95,463) | $ - | $ (95,463) | $ - |
| **#189a** | Narrow spacing of curtainwall mullions results in significant penalty for thermal performance. It also increases cost. Provide geometry that results in optimal spacing for thermal performance and reduced construction cost. (A34-02). | See item # 184 | | | | $ - | $ - | $ - | $ - |

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|---|---|---|---|---|---|---|---|---|---|
| **#300** | Provide Storefront ilo Curtain Wall at all Ground Level Glazing | | | 3 | | $ (125,878) | $ - | $ - | $ (125,878) |
| **#302** | Provide Intermediate Floor Transition Steel at all Structured Curtainwall ILO Nest Steel | | | 1 | | $ (138,085) | $ (138,085) | $ - | $ - |
| **#304** | Eliminate Vertical fins at the Roof Terrace Curtain Wall | Similar Mullion Detail | | | | $ (16,009) | $ - | $ - | $ - |
| **#305** | Delete 1 of the 2 High School Entrance Canopies | PW To Evaluate and Provide SK | | 3 | | $ - | $ - | $ - | $ - |
| **#425** | Reduce south canopy roof overhang | Item Carried Above | | 3 | | $ - | $ - | $ - | $ - |
| **#428** | Eliminate exterior classroom sunshades and consider pull shades, different window product or resize windows to achieve same net energy performance | | | 2 | | $ (122,905) | $ - | $ (122,905) | $ - |
| **#429** | Eliminate exterior classroom sunshades and pull shades, | Skanska to verify that manual shades not already carried. | | 2 | | $ (192,888) | $ - | $ (192,888) | $ - |
| **#430** | Reducing cantilever by 7'-0" @ West Stair. | Target Design to budget based on Sketches/renderings provided by P&W dated 4/29/19 | | 1 | | $ (120,000) | $ (120,000) | $ - | $ - |
| | | | | | | $ - | $ - | $ - | $ - |
| | **HVAC** | | | | | | | | |
| **#190** | Reduce the number of science classrooms with fume hoods. Currently, each science room is provided with a laboratory type roof exhaust fan for a total of 12 exhaust systems. | Deducted 4-classroom fume hood exhaust set ups. | | 1 | | $ (168,923) | $ (168,923) | $ - | $ - |
| **#191** | Delete the central (Aircuity) carbon dioxide monitoring and control system. Provide local combined room temperature / carbon dioxide sensors integrated directly with the BMS. | Ramifications to LEED | | 1 | | $ (183,071) | $ (183,071) | $ - | $ - |
| **#192** | Utilize ductless ceiling cassette VRF fan coil units in lieu of ducted in HS and MS admin suites where zones consist of a single space. | Impact on electrical scope. Cost includes 5-units from Phase-1/Area-A. Phase-2/Area-F is unclear as to how many units serve a single space (no ductwork is shown). More info is required. | | 2 | | $ (24,384) | $ - | $ (24,384) | $ - |
| **#193** | In lieu of four-pipe chilled beam units, provide geothermal water-cooled heat recovery VRF systems with indoor fan coil units for the Area D and/or Area F classrooms. This essentially consists of Phase 2. Eliminates pump mixing station #2. Reduces central chiller-heater plant capacity. Reduces size of chilled water and hot water feeds to phase 2 to serve common area radiant floor systems and HRU-5 &6. Actual extent and feasibility to be determined. | Impact on electrical scope. Assumes indoor mounted VRF condensing units and ceiling cassette FCU's are utilized. | | 2 | | $ (88,125) | $ - | $ (88,125) | $ - |
| **#194** | In addition to Item 4, provide geothermal water cooled condensing section for heat recovery units HRU-5 and 6 in lieu of chilled/hot water coils, if possible. Reduces central chiller-heater plant capacity. Reduces size of chilled water and hot water feeds to phase 2 to serve common area radiant floor systems. Feasibility to be confirmed. | Impact on electrical scope. More information will be required from the mechanical engineering design team to provide a realistic number for this item. | | 2 | | $ (58,750) | $ - | $ (58,750) | $ - |
| **#195** | In lieu of four-pipe chilled beam units, provide geothermal water-cooled heat recovery VRF systems with indoor fan coil units for the Area B classrooms on the 2nd, 3rd, and 4th floors. Reduces central chiller-heater plant capacity. Reduces size of chilled water and hot water feeds to Area B to serve common area radiant Floor systems. Actual extent and feasibility to be determined. | Impact on electrical scope. More information will be required from the mechanical engineering design team to provide a realistic number for this item. | | 2 | | $ (88,125) | $ - | $ (88,125) | $ - |

SKANSKA AEDALUS PERKINS+WILL

PROJECT - Belmont High School
CLIENT - Town of Belmont
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4/30/2019
Design Development VE List

**Current Project Estimate** **$ 262,712,341**

| Action Item # | Description | Comments | DISCUSSIO | Priority | REVISIT | Estimated Impact | POTENTIAL SAVINGS DISTRIBUTION BY PRIORITY $ 1 Proposed Saving HIGHLY LIKELY | $ 2 Proposed Savings POSSIBLE Needs more discussion | $ 3 Proposed Savings UNLIKELY at this time |
|---|---|---|---|---|---|---|---|---|---|
| **#196** | Remove 4 pipe system on VAV boxes and replace with 2 pipe heating only. | There are no 4-pipe VAV boxes in this design. There are however 4-pipe FCU's that serve the stairwells. I would recommend eliminating the 4-pipe FCU's on the upper floors and installing hot water CUH's on the bottom floor of each stairwell. | | 3 | | $ (24,675) | $ - | $ - | $ (24,675) |
| **#197** | There appears to be no perimeter heat in most zones. How does HVAC system supply heat at night, without turning on AHUs? Consider dual-wheel AHUs with fan powered boxes driving the chilled beams, such that the fan powered boxes can supply primary air to operate the chilled beams at night. Reduce AHU capacity to align with minimum ventilation rate required. Will likely result in nearly 50% reduction in HRU capacity required (current total of 111,250 cfm can likely be reduced to 60,000 cfm) | Impact on electrical scope. More information will be required from the mechanical engineering design team to provide a realistic number for this item. | | | | $ - | $ - | $ - | $ - |
| **#198** | Consider supplying make up air to the kitchen via dual-wheel HRUs, relying on general exhaust air from other portions of the building, rather than relying on a dedicated Make Up Air Unit without heat recovery. May result in a net savings, due to potential reduced geothermal system capacity required. Also removing Make Up Air Unit or reducing size to direct feed to hood should reduce costs. | More information will be required from the mechanical engineering design team to provide a realistic number for this item. | | | | $ - | $ - | $ - | $ - |
| **#199** | Energy recovery schedule is incomplete. Also, Summer sensible effectiveness indicates below 60%. This is poor performance. Specify at least 75%. This may result in a net savings, due to reduced geothermal system capacity required. (M50-01) | More information will be required from the mechanical engineering design team to provide a realistic number for this item. | | | | $ - | $ - | $ - | $ - |
| **#199a** | Scroll chillers (Climacool) only have a 15-year lifespan and are highly prone to poor quality manufacturing. Consider screw chillers with significantly better quality manufacturing and 25-year lifespan. High efficiency screw chillers also have significantly better energy performance. Three (3) screw chillers may also be less expensive than eleven (11) scroll chillers. Consider using Trane RTHD and RTWD scroll chillers (M50-01) | More information will be required from the mechanical engineering design team to provide a realistic number for this item. The scheduled project "chillers" are not cooling only units, they are in fact chiller-heater units and the option to go to screw compressor chillers may or may not be available. | | | | $ - | $ - | $ - | $ - |
| **#199b** | 42,000 cfm of total HV units is a huge load. Why do these units not include heat recovery? Why is Entering Air Temperature listed as 70˚F - are these HVUs not actually 100% OA as indicated in the schedule? Also, some list an EWT of 140˚F. Is this temperature water available? 140˚F water would make the heat pump chillers very inefficient. (M50-02) | These are question the mechanical design team will need to address. | | | | $ - | $ - | $ - | $ - |
| **#500** | Change 4-pipe CB units to 2-pipe CB's. Increase VAV's heating capacity & add RCP's. Feasibility to be confirmed. | | | 2 | | $ (176,250) | $ - | $ (176,250) | $ - |
| **#501** | Change one (or more?) HRU's from chilled water to DX cooling. | Proposed cost reduction is for 1-unit (approx. 18,000 cfm). | | 2 | | $ (23,500) | $ - | $ (23,500) | $ - |
| **#502** | Reduce radiant floor area by 20% (approx. 12,000 sf). | | | 1 | | $ (94,000) | $ (94,000) | $ - | $ - |
| **#503** | Change stainless steel ductwork serving the Locker Rooms to aluminum. | | | | | $ (823) | $ - | $ - | $ - |
| **#504** | Change stainless steel ductwork serving the Pool to aluminum. | | | 3 | | $ (2,350) | $ - | $ - | $ (2,350) |
| **#505** | Change stainless steel ductwork serving the Pool to galvanized-KYNAR/epoxy coated. | | | 1 | | $ (117,500) | $ (117,500) | $ - | $ - |
| **#506** | Change stainless steel ductwork serving the Pool to fabric (Ductsox). | | | 3 | | $ (235,000) | $ - | $ - | $ (235,000) |
| **#507** | Plate & frame HX's not required. | Line Item 929 & 930 | | 1 | | $ (59,219) | $ (59,219) | $ - | $ - |
| **#508** | Delete pumps & apply cost to Item 933 Pump/Mixing Stations w/enclosures. | Line Item 938 & 939 | | 1 | | $ 11,750 | $ 11,750 | $ - | $ - |

SKANSKA AEDALUS PERKINS+WILL

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| Action Item # | Description | Comments | DISCUSSIO | Priority | REVISIT | Estimated Impact | POTENTIAL SAVINGS DISTRIBUTION BY PRIORITY $ 1 Proposed Saving HIGHLY LIKELY | $ 2 Proposed Savings POSSIBLE Needs more discussion | $ 3 Proposed Savings UNLIKELY at this time |
|---|---|---|---|---|---|---|---|---|---|
| **#509** | Delete cost of air separators for P-4&5. | Line Item #953 | | 1 | | $ (4,283) | $ (4,283) | $ - | $ - |
| **#510** | Delete SCHW air separators. | Line Item #954 | | 1 | | $ (6,974) | $ (6,974) | $ - | $ - |
| **#511** | Delete cost for 2-expansion tanks. | Line Item #958 | | 1 | | $ (15,080) | $ (15,080) | $ - | $ - |
| **#512** | Delete SCHW expansion tanks. | Line Item #959 | | 1 | | $ (19,796) | $ (19,796) | $ - | $ - |
| **#513** | Delete SCHW flow meters. | Line Item #964 | | 1 | | $ (2,090) | $ (2,090) | $ - | $ - |
| **#514** | Delete Glycol Feed System & glycol 30% solution. | Line Item #987 &990 | | 1 | | $ (8,432) | $ (8,432) | $ - | $ - |
| **#515** | Delete Exhaust fan/dishwasher (& ATC). | Line Item #1019 | | 1 | | $ (6,130) | $ (6,130) | $ - | $ - |
| **#516** | Delete Stainless Steel Duct - Dishwasher exhaust | Line Item #1045 | | 1 | | $ (23,619) | $ (23,619) | $ - | $ - |
| **#517** | Delete - Sound attenuators/VAV's | Line Item #1057 | | 1 | | $ (66,308) | $ (66,308) | $ - | $ - |
| **#518** | Reduce total ATC cost to approx. $6.00/SF (reduce by $1.00/SF). | D3009.000 ATC SKA Does Not recommend taking this as the control systems for NZE will be extensive, but are yet to be defined. | | 1 | | $ (522,875) | $ (522,875) | $ - | $ - |
| **#519** | Plate & frame HX's not required. | Line Item 2280 & 2281 | | 1 | | $ (59,219) | $ (59,219) | $ - | $ - |
| **#520** | These line items are for Chemical Treatment & glycol mix (30%) for the HW & CHW piping systems. | I'm not sure what the confusion is on BALA's part. | | | | $ - | $ - | $ - | $ - |
| **#521** | Increase cost/CFM of HRU-4, 5 & 6 to $11.50/CFM. | Note: I received budget pricing from DAC on all of the major air handling equipment. It is my opinion that this cost increase is unecessary. | | 3 | | $ 193,613 | $ - | $ - | $ 193,613 |
| **#522** | Increase cost/CFM of HRU-4, 5 & 6 to $11.50/CFM. | Note: I received budget pricing from DAC on all of the major air handling equipment. It is my opinion that this cost increase is unecessary. | | 3 | | $ 203,628 | $ - | $ - | $ 203,628 |
| **#523** | Target Design Savings for Mechanical Systems | To be removed after above selections are made | | 3 | | $ (300,007) | $ - | $ - | $ (300,007) |
| | **PLUMBING / FIRE PROTECTION** | | | | | | | | |
| **#200** | Eliminate trap primer | Keep hose bibs | | 1 | | $ (55,155) | $ (55,155) | $ - | $ - |
| **#201** | Eliminate Dry system & use remote (sprinkler system) | Eliminate exterior dry systems. Change interior dry systems to wet systems. | | 3 | | $ (31,478) | $ - | $ - | $ (31,478) |
| **#202** | Propress Included | Skanska & PW to verify if Propress Premium was included | | 2 | | $ - | $ - | $ - | $ - |
| **#203** | Acid Neitralization on MS | CONFIRM LOCATION & SIZE | | 2 | | $ - | $ - | $ - | $ - |
| | **ELECTRICAL** | | | | | | | | |
| **#210** | Re-roof PV - Ready (don't carry in cost). NIC | See Item 215 | | | | $ - | $ - | $ - | $ - |
| **#211** | Simplify fixture types - Light Fixtures | Original Target Reduce by $0.50 PSF TARGET (Summary of A, B and C) REVISED PER RECONCILLLIATION ALIGNMENT | | 1 | | $ (1,320,399) | $ (1,320,399) | $ - | $ - |
| **#211A** | Revised Art Room Lighting | | | 2 | | $ (45,910) | $ - | $ (45,910) | $ - |
| **#211B** | Reduce and replace lighting at egress stairs | | | 2 | | $ (5,464) | $ - | $ (5,464) | $ - |
| **#211C** | Reduce class room light fixture type F03 by approx.30% | Deduct 4lf per classroom. | | 2 | | $ (48,419) | $ - | $ (48,419) | $ - |
| **#211D** | Reuse existing field house lighting | Lighting to remain as -is. | | 2 | | $ (59,044) | $ - | $ (59,044) | $ - |
| **#211E** | New lighting in PE Alt/Fitness | | | 2 | | $ 9,753 | $ - | $ 9,753 | $ - |
| **#211F** | Reuse existing small gym lighting | Lighting to remain as -is. | | 2 | | $ (13,219) | $ - | $ (13,219) | $ - |
| **#212** | Minimize Cable trays & conduits for J-Hooks | P&W to provide clarification | | 2 | | $ - | $ - | $ - | $ - |

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|---|---|---|---|---|---|---|---|---|---|
| **#213** | Provide aluminum feeders in lieu of copper feeders | Aluminum Requires additional Maintenance/Services | | 2 | | $ - | $ - | $ - | $ - |
| **#214** | Lighting Controls – Provide wireless networked system in place of wired network system. | | | 1 | | $ (175,075) | $ (175,075) | $ - | $ - |
| **#215** | Fund PV Outside the Construction Budget - Building PV Ready | Overwelming community support to maintain PV in project | | 3 | | $ (3,055,000) | $ - | $ - | $ (3,055,000) |
| **#216** | Electrical conduit: metal conduit in certain locations can be substituted for EMT or IMC | P&W to provide clarification | | 1 | | $ - | $ - | $ - | $ - |
| **#217** | Eliminate second primary electrical feed to building transformers | | | 2 | | $ (97,290) | $ - | $ (97,290) | $ - |
| **#218** | It appears that panelboards include electrical meters to comply with energy code mandatory requirement for energy monitoring, including by category: total electrical energy, HVAC systems, interior lighting, exterior lighting, receptacles. Consider alternate to purchase distribution panels with built-in metering system, such that all current and future panelboard loads will be metered, without having to purchase, install and integrate additional meters. (E20-00) | P&W to provide additional: Distribtuion and feeder sizes need to be provided in order to get to a level of sizing meters. | | 1 | | $ - | $ - | $ - | $ - |
| **#219** | Remove illumination from outdoor signs. | | | 2 | | $ - | $ - | $ - | $ - |
| **#423** | Reduce theatrical lighting budget | See Below | | 1 | | $ - | $ - | $ - | $ - |
| **#423.1** | Correct duplicate BB downlights to count of 22 @ $915.2 each | | | 1 | | $ (18,988) | $ (18,988) | $ - | $ - |
| **#423.2** | Eliminate 18 duplicate lights F20 on Aud Stage | VM is based on giving back for the cost of (11) type F20 fixture, not the (18) as listed | | 1 | | $ (6,527) | $ (6,527) | $ - | $ - |
| **#423.3** | Reduce quantity of Stage/BB Blue lights by 15% | | | 1 | | $ (11,050) | $ (11,050) | $ - | $ - |
| **#423.4** | Correct count of BB strip lighting to 53 | Controls portion needs verification | | 1 | | $ (52,922) | $ (52,922) | $ - | $ - |
| **#423.5** | Reduce quantity of Aud Technical lighting | P&W to provide additional information. Target reduction of $30,200 per P&W. | | 1 | | $ (35,485) | $ (35,485) | $ - | $ - |
| **#423.6** | Reduce quantity of BB Technical lighting | P&W to provide additional information. Target reduction of $24,800 per P&W | | 1 | | $ (29,140) | $ (29,140) | $ - | $ - |
| | **SECURITY** | | | | | | | | |
| **#220** | Reduce CCTV Cameras | Reduce by 20% | | 1 | | $ (57,949) | $ (57,949) | $ - | $ - |
| | | | | | | $ - | $ - | $ - | $ - |
| | **AV** | | | | | | | | |
| **#224** | AV Field House | Delete Video Projection System | | 1 | | $ (621,458) | $ (621,458) | $ - | $ - |
| **#224** | AV Small Gymnasium | Delete Video Projection System | | 1 | | $ (263,200) | $ (263,200) | $ - | $ - |
| **#225** | Reduce AV at Auditorium | Target 10% reduction | | 1 | | $ (47,000) | $ (47,000) | $ - | $ - |
| **#226** | Reduce AV at Black box | Target 10% reduction | | 1 | | $ (24,663) | $ (24,663) | $ - | $ - |
| **#227** | Reduce AV at Cafeteria/Dining Commons | Target 10% reduction | | 1 | | $ (20,950) | $ (20,950) | $ - | $ - |
| **#228** | Reduce Portable Video Displays | Carried value is $20,000 - 20% | | 1 | | $ (2,350) | $ (2,350) | $ - | $ - |
| **#229** | Reduce sound system in Classrooms (enhanced voice/audio system) | Assume mean speech reinforcement | | 1 | | $ (188,000) | $ (188,000) | $ - | $ - |
| **#229A** | Add in Speech reinforcement | DD Reconciliation changes | | 1 | | $ 188,000 | $ 188,000 | $ - | $ - |

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|---|---|---|---|---|---|---|---|---|---|
| #230 | No exterior sound system | | | 1 | | $ - | $ - | $ - | $ - |
| #231 | Reduce generator size from 2000KW to 1500KW | | | 1 | | $ (146,875) | $ (146,875) | $ - | $ - |
| #232 | Reduce PA wiring | DD Reconciliation changes | | 1 | | $ (223,250) | $ (223,250) | $ - | $ - |
| #233 | Distribution and Feeders | Reconciled changes | | 1 | | $ 1,037,699 | $ 1,037,699 | $ - | $ - |
| | | | | | | $ - | $ - | $ - | $ - |
| | | | | | | $ - | $ - | $ - | $ - |
| | **POOL/EQUIPMENT** | | | | | | | | |
| #240 | Reduce staff lounge appliances by 50% (dishwasher/fridges/etc..) | | | 1 | | $ (7,050) | $ (7,050) | $ - | $ - |
| #241 | Refine Pool equipment Scope | Already reusing some equipment; needs further discussion; Already taking into consideration | | 3 | | $ - | $ - | $ - | $ - |
| #242 | Reuse existing bleachers in Pool | Does not meet code | | 3 | | $ - | $ - | $ - | $ - |
| #243 | Consider PoolPak for pool area, rather than an HVU. Resolving these issues may result in a net savings, due to reduced geothermal system capacity required | More information on Pool Pack | | | | $ - | $ - | $ - | $ - |
| #243 | Pool Pump Room Relocation (Eliminate Basement) | | | 1 | | $ (411,250) | $ (411,250) | $ - | $ - |
| #244 | Food Service Reduction per P+W email dated 4-17-19 | | | 1 | | $ (205,625) | $ (205,625) | $ - | $ - |
| #245 | | | | | | $ - | $ - | $ - | $ - |
| | **FFE** | | | | | | | | |
| #250 | Science tables to be FFE | | | 1 | | $ 175,000 | $ 175,000 | $ - | $ - |
| #251 | Purchase the following in FFE budget Blackbox Theatre Platforms (Skanska item #1264), | Ref SK #140 & 251 | | 3 | | $ (129,250) | $ - | $ - | $ (129,250) |
| #252 | Purchase the following in FFE budget Loose Seating Auditorium (Skanska item #1273) | | | 1 | | $ (14,100) | $ (14,100) | $ - | $ - |
| #253 | Purchase the following in FFE budget Stacking Chairs Blackbox (Skanska item #1274) | To be included in FFE | | 1 | | $ (44,063) | $ (44,063) | $ - | $ - |
| #254 | Eliminate Mat hoist at Small Gym (Skanska item #1289) | Could be added Later | | 1 | | $ (29,375) | $ (29,375) | $ - | $ - |
| #255 | Purchase portable aluminum bleacher in FFE (Skanska item #2602) | Confirm in pool | | 3 | | $ (5,288) | $ - | $ - | $ (5,288) |
| #256 | Purchase portable soccer goals (Skanska item # 2603) | Possibly Re-use existing | | 1 | | $ (16,450) | $ (16,450) | $ - | $ - |
| | | | | | | $ - | $ - | $ - | $ - |
| | | | | | | $ - | $ - | $ - | $ - |
| | | | | | | $ - | $ - | $ - | $ - |
| | **ELEVATORS** | | | | | | | | |
| #260 | Less expensive alternative | Base on providing Hydraulic Elevators. P&W to provide other options. Skanska does advise that Hydraulic elevator will result in a slower travel speed. | | 2 | | $ (47,000) | $ - | $ (47,000) | $ - |
| #261 | Elevator hoistway vent is no longer required by code. Provide mechanical cooling instead of wasting heat to outdoors. This will allow winter heat recovery of elevator equipment. (M41-03) | | | 2 | | $ - | $ - | $ - | $ - |
| | **General Conditions / General Requirements** | | | | | | | | |
| | Target Savings | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|
| **TOTAL** | | | | | | **$ (50,887,633)** | **$ (24,481,492)** | **$ (2,661,059)** | **$ (23,607,578)** |
| | | | | | | $ 237,647,607 | $ 238,230,849 | | |
| | | | | | | DELTA | $ 583,242 | | |