

PROJECT - Belmont High School
 CLIENT - Town of Belmont
 LOCATION - Belmont, MA
 4/22/2019
 Design Development VE List

Current Project Estimate \$ 262,712,341

| Action Item # | Description | Comments | Priority | Estimated Impact | PRIORITY | | | Sketch received |
|-----------------------|--|---|----------|------------------|-------------------------------|---|--|-----------------|
| | | | | | 1 | 2 | 3 | |
| | | | | | Proposed Saving HIGHLY LIKELY | Proposed Savings POSSIBLE Needs more discussion | 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 | | \$ (998,346) | \$ - | \$ - | \$ - | VE001 - A30-01 |
| #001A | Building Shift Modification | | | \$ - | \$ - | \$ - | \$ - | VE004 - A11-04D |
| #002 | Remove trailer (do not use for equipment) | | | \$ (35,250) | \$ - | \$ - | \$ - | VE005 - A11-04D |
| #003 | Reduce Mock-ups | Reduce Budget by 20% | | \$ (52,875) | \$ - | \$ - | \$ - | |
| #004 | Eliminate Green roof | Delete Hot Fluid Applied Membrane & Green Roof/ Add TPO | | \$ (217,348) | \$ - | \$ - | \$ - | |
| #005 | Eliminate Roof Terrace | Delete Roof Pavers, CW Doors, Planters, Railings & Bench | | \$ (332,537) | \$ - | \$ - | \$ - | |
| #006 | Target Logistics/phasing cost reductions | | | \$ - | \$ - | \$ - | \$ - | |
| #006a | Eliminate groundbreaking allowance | | | \$ (11,750) | \$ - | \$ - | \$ - | |
| #006b | Reduce trailer budget and trailers by 25 percent | Remove (1) OPM Trailer and (1) CM Trailer | | \$ (176,250) | \$ - | \$ - | \$ - | |
| #006c | Reduce allowances in BP#2 | | | \$ - | \$ - | \$ - | \$ - | |
| MASONRY | | | | | | | | |
| #007 | Replace CMU backup wall by cavity wall (if cheaper) | | | \$ (257,472) | \$ - | \$ - | \$ - | |
| #008 | | | | \$ - | \$ - | \$ - | \$ - | |
| #009 | | | | \$ - | \$ - | \$ - | \$ - | |
| #010 | | | | \$ - | \$ - | \$ - | \$ - | |
| GEOHERMAL | | | | | | | | |
| #011 | Reduce geothermal wells (320 wells based on 50 year bldg) reduce to 300 | | | \$ (364,250) | \$ - | \$ - | \$ - | |
| #012 | Changing loops from 1.5" to 1.25" | Clarify w/CDMSmith | | \$ - | \$ - | \$ - | \$ - | |
| #013 | Reduce vaults from 7 to 2 | Clarify w/CDMSmith | | \$ (88,125) | \$ - | \$ - | \$ - | |
| #014 | | | | \$ - | \$ - | \$ - | \$ - | |
| #015 | | | | \$ - | \$ - | \$ - | \$ - | |
| SITE/LANDSCAPE | | | | | | | | |
| #016 | Clarify traffic mitigation to reduce cost | Move to different funding source, (Underwood previously deleted from DD estimate) | | \$ (1,692,000) | \$ - | \$ - | \$ - | |
| #017 | Elimination of the ornamental grasses and groundcover at the upper and lower school arrival areas. Substitute with seeded lawn | Need area; Target \$200K. Review w/planning board | | \$ (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 | | \$ (146,875) | \$ - | \$ - | \$ - | |
| #019 | Reduce planting by 30% | Review Based on SK | | \$ - | \$ - | \$ - | \$ - | VE019 |
| #020 | Eliminate the bollards at the upper and lower school. | | | \$ (118,910) | \$ - | \$ - | \$ - | |
| #021 | Elimination of the (2) bike shelters near the rugby field | Review Based on SK | | \$ (78,302) | \$ - | \$ - | \$ - | VE021 |
| #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. | | \$ (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 | | \$ (5,875) | \$ - | \$ - | \$ - | |

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| | | | | | Proposed Saving HIGHLY LIKELY | Proposed Savings POSSIBLE Needs more discussion | Proposed Savings UNLIKELY at this time | |
| #024 | Eliminate the granite cladding on the terrace walls and the two free-standing seatwalls at the outdoor classrooms. Substitute with CIP concrete walls | | | \$ (62,275) | \$ - | \$ - | \$ - | |
| #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 | | | \$ (93,971) | \$ - | \$ - | \$ - | |
| #026a | Eliminate the concrete unit pavers at the dining terrace and outdoor classrooms. Substitute with special concrete paving | | | \$ (109,275) | \$ - | \$ - | \$ - | |
| #026b | Eliminate the Special Concrete Paving at the dining terrace and outdoor classrooms. Substitute with standard pedestrian concrete | | | \$ - | | | | |
| #027 | Maximize the amount of porous asphalt vs vehicular concrete paving | Took 100% of vehicular concrete | | \$ (137,828) | \$ - | \$ - | \$ - | |
| #028 | Reduce parking count by 36 spaces (from current count) | | | \$ (9,400) | \$ - | \$ - | \$ - | |
| #029 | Eliminate the two free-standing seatwalls at the outdoor classrooms | | | \$ (135,125) | \$ - | \$ - | \$ - | |
| #030 | Increase site lighting pole heights throughout the project, thereby reducing the number of poles and fixtures | Reduced by (5) | | \$ (17,625) | \$ - | \$ - | \$ - | |
| #031 | Eliminate synthetic turf | Change to grass | | \$ (740,250) | \$ - | \$ - | \$ - | |
| #032 | Reduce Aluminum benches | Target 50% | | \$ (58,750) | \$ - | \$ - | \$ - | |
| #033 | Reduce concrete benches by 50% | | | \$ (8,813) | \$ - | \$ - | \$ - | |
| #034 | Keep MBTA fencing, replace only at retaining wall | | | \$ - | \$ - | \$ - | \$ - | |
| #035 | Reuse batting cages | Reuse/relocate existing | | \$ - | \$ - | \$ - | \$ - | |
| #036 | Reuse (2) score boards | | | \$ - | \$ - | \$ - | \$ - | |
| #037 | Eliminate flag poles: (2) at middle school & (2) at high school. Keep (1) at HS & (1) at MS | | | \$ - | \$ - | \$ - | \$ - | |
| #038 | Replace 100% granite curbs w/asphalt | | | \$ (217,375) | \$ - | \$ - | \$ - | VE038 |
| #039 | Eliminate anchored furnishing at exterior terrace | | | \$ - | \$ - | \$ - | \$ - | |
| #040 | Waterline coordination at the culvert & taping on existing line | | | \$ - | \$ - | \$ - | \$ - | |
| #041 | Eliminate curb edgers (Skanska Item #1384, 1385) | | | \$ (49,174) | \$ - | \$ - | \$ - | |
| #042 | Reduce extent of fencing around play fields (Skanska item #2578, 2579, 2580) | | | \$ - | \$ - | \$ - | \$ - | |
| #043 | Eliminate irrigation at multi-sport field (Skanska item #2622) | May have been mislabeled in Estimate - to Verify | | \$ (322,538) | \$ - | \$ - | \$ - | |
| #044 | Reduce plantings to less expensive alternatives (that are still on the town list) | | | \$ - | \$ - | \$ - | \$ - | |
| #045 | Reduce South Plaza hardscape area | | | \$ - | \$ - | \$ - | \$ - | |
| #046 | Eliminate Concord Ave raised bicycle path westbound and match reconfiguration on eastbound side | | | \$ - | \$ - | \$ - | \$ - | |
| #047 | | | | \$ - | \$ - | \$ - | \$ - | |
| #048 | | | | \$ - | \$ - | \$ - | \$ - | |
| 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 | | \$ - | \$ - | \$ - | \$ - | |

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| #052 | Reduce piles | | | \$ (58,750) | \$ - | \$ - | \$ - | |
| #053 | Auditorium Structure: add columns at ramp | Reference SK 70 | | \$ - | \$ - | \$ - | \$ - | VE070; |
| #054 | Remove PV & supporting structure at mechanical well | Includes removing PV's above auditorium - SK Received | | \$ (470,000) | \$ - | \$ - | \$ - | VE054 - A10-05 |
| #055 | Revise wall fin/cantilevered at exterior stairs | Redundant - To be Included in #157 | | \$ - | \$ - | \$ - | \$ - | |
| #056 | Move the south side canopy columns forward to reduce the cantilevered structure. | Sketch Provided by PW | | \$ - | \$ - | \$ - | \$ - | VE056 |
| #057 | Reduce number of columns at Middle School entrance | if it's structurally possible, | | \$ - | \$ - | \$ - | \$ - | |
| #058 | Replace _____ sf of framed slab at west arcade with sidewalk slab | | | \$ - | \$ - | \$ - | \$ - | |
| #059 | Revise beam sizes for typical purlins and reduce steel tonnage by _____ tons | | | \$ - | \$ - | \$ - | \$ - | |
| #434 | Reduce HSS bracing and connections by _____ tons | | | \$ - | \$ - | \$ - | \$ - | |
| #435 | Reduce level 2 framing area B by _____ tons and _____ sf of concrete slab and deck | | | \$ - | \$ - | \$ - | \$ - | |
| #436 | Eliminate _____ moment connections at area B west cantilever overhang | | | \$ - | \$ - | \$ - | \$ - | |
| #437 | Eliminate _____ moment connections at perimeter girts | | | \$ - | \$ - | \$ - | \$ - | |
| #438 | Reduce _____ tonnage of HSS columns and add _____ tonnage of WF columns | | | \$ - | \$ - | \$ - | \$ - | |
| #439 | Reduce cantilever framing for support of Maker spaces and reduce _____ tons of steel framing | | | \$ - | \$ - | \$ - | \$ - | |
| #440 | Reframe the area over the pool roof by introducing story deep trusses which decreases steel framing by _____ tons and eliminates _____ mini piles and adds _____ PC piles | | | \$ - | \$ - | \$ - | \$ - | |
| #442 | 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 | | | \$ - | \$ - | \$ - | \$ - | |
| #443 | Change auditorium flat structural slab and geofoam infill with stepped topping slab to sloped structural slab with steps | | | \$ - | \$ - | \$ - | \$ - | |
| 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. | | \$ (599,250) | \$ - | \$ - | \$ - | VE060 |
| #061 | Reduce Qty of Operable Partitions | Reduce by 50% | | \$ (206,565) | \$ - | \$ - | \$ - | VE061 |
| #062 | Art Room exterior doors: Reduce to single glazed door | | | \$ - | \$ - | \$ - | \$ - | VE062 - A11-01D |
| #063 | Reduce amount of glass guardrail | | | \$ - | \$ - | \$ - | \$ - | |
| #064 | Eliminate door film on FG designated doors (Skanska items #312, 1861) | | | \$ (52,875) | \$ - | \$ - | \$ - | |
| #065 | Reduce number of entry doors | reduce by (2)? | | \$ (19,975) | \$ - | \$ - | \$ - | |
| #066 | Eliminate typical classroom door hold-opens on automatic closures | | | \$ - | \$ - | \$ - | \$ - | |

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| #067 | | | | \$ - | \$ - | \$ - | \$ - | |
| #068 | | | | \$ - | \$ - | \$ - | \$ - | |
| #069 | | | | \$ - | \$ - | \$ - | \$ - | |
| INTERIORS | | | | | | | | |
| #70a | Finish ceiling simplified to be flat (curved panels eliminated) and to be 80% open wire mesh. | Sketch Provided by PW | | \$ (70,500) | \$ - | \$ - | \$ - | Sketch received |
| #70b | Overhead reflectors simplified to flat painted GWB panels (hung above finish ceiling, shaded purple) | | | | | | | VE070 |
| #70c | Acoustic shell ceiling panels simplified to flat painted GWB panels faced with metal mesh (shaded pink) | | | | | | | VE070 |
| #071 | Simplify Ceilings: reduce GWB ceiling | Sketch Provided by PW | | \$ (202,898) | \$ - | \$ - | \$ - | VE071; A10-11, A10-12, A10-13, A10-14 |
| #072 | Remove GWB ceilings at bathrooms, replace with 2x2 ACT & anchoring clips | Reference SK 71 | | \$ - | \$ - | \$ - | \$ - | |
| #073 | Remove GWB ceilings at bathrooms, leave open ceiling | Reference SK 71 | | \$ - | \$ - | \$ - | \$ - | |
| #074 | Reduce scope of AC-1 Arktura Ceiling Baffle @ Maker/Innovation (Skanska items #682, 2082) | Reference SK 71 - PW Recommends exploring alternative products | | \$ (294,925) | \$ - | \$ - | \$ - | |
| #075 | Floor mounted bathroom partitions in lieu of ceiling mounted | Skanska already carried Floor mounted partitions in estimate | | \$ - | \$ - | \$ - | \$ - | |
| #076 | Simplify Ceilings: reduce metal perforated panels | Reduce 50% and use 2x2 ACT ceiling | | \$ (577,326) | \$ - | \$ - | \$ - | |
| #077 | Simplify Ceilings: reduce decorative acoustic ceilings (corridors) | Reduced costs by 25% and use 2x2 ACT ceiling | | \$ (555,386) | \$ - | \$ - | \$ - | |
| #078 | Rubber tiles (RF-1 thru 4) to Marmolium floor | PW to provide pros & cons of products | | \$ (1,410,264) | \$ - | \$ - | \$ - | VE078; |
| #079 | OPTION A: Terrazzo (liquid product) to Marmolium | | | \$ (1,143,431) | \$ - | \$ - | \$ - | |
| #080 | 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 | | \$ (401,204) | \$ - | \$ - | \$ - | VE080 |
| #081 | No glass railing at auditorium | PW to look at alternate options | | \$ (52,875) | \$ - | \$ - | \$ - | VE070; |
| #082 | Reduce interior glazing - rail & full height | Target 30% reduction | | \$ (903,026) | \$ - | \$ - | \$ - | VE082: Need more info |
| #083 | Interior glazing: Replace all 1/2" tempered glazing to 3/8" tempered except at C290 Media Center | | | \$ - | \$ - | \$ - | \$ - | |
| #084 | Change glazing to woven wire mesh panels at Orchestra/balcony level | Durable options preferred | | \$ (26,438) | \$ - | \$ - | \$ - | |
| #085 | Reduce back painted glass by 50% | | | \$ (204,671) | \$ - | \$ - | \$ - | VE085; A10-01, A10-02, A10-03, A10-04 |
| #086 | Reduce storefront glazing at Mezzanine | | | \$ - | \$ - | \$ - | \$ - | |
| #087 | Manual or no shades v/s motorized at Skylights | | | \$ - | \$ - | \$ - | \$ - | |
| #088 | Eliminate sidelight shades | Target | | \$ (58,750) | \$ - | \$ - | \$ - | |
| #089 | Reduce electric Shades (at curtain wall) by 50% | | | \$ (153,496) | \$ - | \$ - | \$ - | |
| #090 | Reduce tackable wall surfaces by 50% | | | \$ (74,383) | \$ - | \$ - | \$ - | |
| #091 | Reduce interior wood panels (general areas) | Reduced costs by 25% | | \$ (197,400) | \$ - | \$ - | \$ - | VE070; VE091 |
| #092 | Reduce Casework (see options by PW) High School. OPTION A: Remove (2) wardrobes, plastic lam panels | | | \$ (728,500) | \$ - | \$ - | \$ - | |

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| #093 | Reduce Casework (see options by PW) High School. OPTION B: Remove (2) wardrobes, plastic lam panels; remove open shelving base cabinets | | | \$ - | \$ - | \$ - | \$ - | |
| #094 | Simplify fixed wood plywood at classroom (at soffit) | Target \$20 PSF savings. Painted drywall w/access panels. | | \$ (287,734) | \$ - | \$ - | \$ - | |
| #095 | Reduce Casework (see options by PW?) Middle School. OPTION A: Remove upper cabs, plam panels & countertop, remove (2) tall casework cabs | | | \$ - | \$ - | \$ - | \$ - | |
| #096 | Reduce Casework (see options by PW?) Middle School. OPTION C: Remove upper cabs, plam panels, remove (2) single wardrobes, base cabinets under countertop | | | \$ - | \$ - | \$ - | \$ - | |
| #097 | Reduce perforated wood panels WD-1 | | | \$ - | \$ - | \$ - | \$ - | |
| #098 | Remove K-13 insulation at Small Gym & Field house | | | \$ (293,750) | \$ - | \$ - | \$ - | |
| #099 | Simplify/reduce monumental stairs | | | \$ - | \$ - | \$ - | \$ - | VE099; |
| #100 | Change auditorium base from architectural concrete to large format porcelaine tiles. | | | \$ - | \$ - | \$ - | \$ - | VE070 |
| #101 | Reduce height of interior porcelain tile | Target 20% reduction (reduce from 10ft to 8ft, child reach) | | \$ 514,407 | \$ - | \$ - | \$ - | |
| #102 | Reduce Acoustic panels: Wall? | | | \$ 422,530 | \$ - | \$ - | \$ - | |
| #103 | Eliminate AWP-11 Acoustic Fabric Panel at Office, Admin (Skanska line #617, 2045) | Skanska to review (need to deduct paint) | | \$ 308,015 | \$ - | \$ - | \$ - | |
| #104 | Change ACT-6 ceilings to ACT-2 | | | \$ 400,330 | \$ - | \$ - | \$ - | |
| #105 | Eliminate Bio wall WC-1 coverings to painted walls, keep level 5 finish | PW to review locations | | \$ - | \$ - | \$ - | \$ - | |
| #106 | Reduce stair finishes | target | | \$ (58,750) | \$ - | \$ - | \$ - | |
| #107 | Catwalk only at Physics not other maker spaces | Revise size? | | \$ (47,000) | \$ - | \$ - | \$ - | VE107; A11-04C |
| #108 | MS Maker Space: Ceiling & lights double counted | PW to advise which lights to retain (| | \$ - | \$ - | \$ - | \$ - | |
| #109 | Add columns to media and maker space to reduce long span beams at lvl 3. See line #00X | Need more info | | \$ - | \$ - | \$ - | \$ - | |
| #110 | IT closets; shorten utility runs by rethinking the locations of these spaces floor to floor | Target | | \$ (23,500) | \$ - | \$ - | \$ - | |
| #111 | Music room HVAC units; Move them to the Auditorium roof, eliminate the 2nd level slab; (add Acoustical panels) | | | \$ (58,750) | \$ - | \$ - | \$ - | VE111; |
| #112 | Change exterior base trim; Change stainless steel trim to cheaper alternative | | | \$ (23,500) | \$ - | \$ - | \$ - | |
| #113 | Provide alternate finish to W1D Flush GFRC Panels – standard at Gym (Skanska line #148) | Target saving | | \$ (352,500) | \$ - | \$ - | \$ - | |
| #114 | Paint HSS in lieu of GFRC columns at Outdoor Terrace (Skanska line #151) | | | \$ - | \$ - | \$ - | \$ - | |
| #115 | Eliminate area of impact resistant GWB – use regular gyp (Skanska line #253, 270, 274, 279, 282, 1831,1834, 1837, 1843, 1849) | | | \$ - | \$ - | \$ - | \$ - | VE115; A11-01A, A11-01B, A11-01C, A11-01D, A11-01E, A11-01E.1, A11- |
| #116 | Reduce height/extent of FRP in Janitor Closets (Skanska items #547, 587, 2016, 2038) | 4' height | | \$ - | \$ - | \$ - | \$ - | |
| #117 | Eliminate GWB and paint to underside of stairs – leave underside of stair pan exposed (Skanska line items #246, 563, 1820, 2027) | | | \$ - | \$ - | \$ - | \$ - | |

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| #118 | Reduce Magnetic Marker Boards. (Teaching Wall only in Classrooms). | | | \$ - | \$ - | \$ - | \$ - | VE118 |
| #119 | Eliminate the "kiosk" in main hs entry. | | | \$ - | \$ - | \$ - | \$ - | |
| #120 | Auditorium Lobby & Corridor finishes: Reduce finish cost approach | | | \$ - | \$ - | \$ - | \$ - | VE120 |
| #121 | Eliminate classroom door sidelights | | | \$ - | \$ - | \$ - | \$ - | |
| #122 | | | | \$ - | \$ - | \$ - | \$ - | |
| N/A | | | | \$ - | \$ - | \$ - | \$ - | |
| AUDITORIUM: | | | | | | | | |
| #130 | Remove balcony at level 3; resolve storage and maker space at level 2 | | | \$ - | \$ - | \$ - | \$ - | |
| #131a | Simplify auditorium catwalks A; Integrate ramps into catwalks + eliminate extra slab; replace stage stair w.caged ladder | | | \$ (23,500) | \$ - | \$ - | \$ - | VE131a |
| #132 | Auditorium structure; add columns at ramps | Need more info | | \$ - | \$ - | \$ - | \$ - | |
| #133 | 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) | | | \$ (29,375) | \$ - | \$ - | \$ - | VE133 |
| #134 | Simplify auditorium catwalks C;Add lift to Follow/Spot room; only 1 ramp; replace stair w. caged ladder | | | \$ (11,750) | \$ - | \$ - | \$ - | |
| #135 | Reduce physical space and equipment required for mech and elec rooms by combining them | Target 200 SF reduction | | \$ (35,250) | \$ - | \$ - | \$ - | |
| #136 | Remove grid iron platform at stage | Not recommended by Theater Designer | | \$ (223,250) | \$ - | \$ - | \$ - | |
| #137 | Refine scope at auditorium/blackbox: Option1: DDSK-01 removes the wires grid but retains the perimeter catwalk | | | \$ (164,500) | \$ - | \$ - | \$ - | VE137 |
| #138 | Refine scope at auditorium/blackbox: Option2: DDSK-02 removes both the wires grid & the perimeter catwalk | | | \$ (152,750) | \$ - | \$ - | \$ - | VE138 |
| #139 | Refine scope at auditorium/blackbox: Option2: simplify grid iron walking surface | | | \$ (23,500) | \$ - | \$ - | \$ - | VE139 |
| #140 | Refine scope at auditorium/blackbox: Option2: correct seating platform quantity | | | \$ (64,625) | \$ - | \$ - | \$ - | |
| #141 | No acoustical shell in base (at stage) | | | \$ (235,000) | \$ - | \$ - | \$ - | |
| #142 | Grid at Auditorium stage - Eliminate | | | \$ - | \$ - | \$ - | \$ - | |
| #143 | Proscenium wall AWP-12 reduced. Top of proscenium wall to be painted GWB. | | | \$ - | \$ - | \$ - | \$ - | VE143 |
| ARCHITECTURAL EXTERIORS: | | | | | | | | |
| #150 | Reduce 10'-0" wide granite dimensions at baseto 5' Wide | | | \$ (70,021) | \$ - | \$ - | \$ - | |
| #151 | Keep granite in specific locations per sketch; use precast concrete at remaining base locations. Finish precast concrete to resemble granite | | | \$ (145,876) | \$ - | \$ - | \$ - | VE151; |
| #152 | Simplify detail and change material from TAKTL to fiber cement. Remove lap detail. Option A | | | \$ (1,516,255) | \$ - | \$ - | \$ - | |

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| #152A | Provide Equitone or Equal FRC Panel ilo GFRC Panels | | | \$ (789,295) | \$ - | \$ - | \$ - | |
| #152B | Provide Standard Straight Equitone or Equal FRC Panel ilo GFRC Panels | | | \$ (947,391) | \$ - | \$ - | \$ - | |
| #153 | Simplify detail and change material from TAKTL to 4"x16" Ground Face Silica block. OPTION B | | | \$ (1,900,692) | \$ - | \$ - | \$ - | |
| #154 | Simplify detail and change material from TAKTL to reinforced porcelain rainscreen | | | \$ (568,148) | \$ - | \$ - | \$ - | |
| #155 | Overflow roof drains: substitute perimeter roof scuppers for overflow roof drains | NEED MORE INFORMATION FROM PW | | \$ - | \$ - | \$ - | \$ - | |
| #156 | Roofing: EPDM in lieu of TPO roofing | Not recommended and may not be a real cost savings. Based on a 60Mil EPDM. . | | \$ (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 | | | \$ (56,459) | \$ - | \$ - | \$ - | VE157 |
| #157B | Remove exterior cantilevered brick fins at stair ends. (Areas A,B,D,F). | | | \$ (112,918) | \$ - | \$ - | \$ - | |
| #158 | Change operable Nana glazing wall to standard fixed curtainwall (inside at keyboarding & music areas) | Excluded Doors at these locations - Not in DD Estimate | | \$ (10,575) | \$ - | \$ - | \$ - | VE158 |
| #159 | Pond canopy Structure ALT A; Shift col. south to reduce cantilever, add single story col. at 2nd floor balcony | NEED MORE INFORMATION FROM PW | | \$ - | \$ - | \$ - | \$ - | |
| #160 | Pond canopy Structure ALT B; Either option above or introduce another sets of columns to reduce the span | NEED MORE INFORMATION FROM PW | | \$ - | \$ - | \$ - | \$ - | |
| #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) | See Item 170 | | \$ - | \$ - | \$ - | \$ - | |
| #302 | Replace W1A GFRC at Auditorium with W2A Brick | See detail 6/A20-11 | | \$ (243,082) | \$ - | \$ - | \$ - | |
| #424 | Eliminate operable windows | | | \$ - | \$ - | \$ - | \$ - | |
| ARCHITECTURAL CW: | | | | | | | | |
| #170 | Carry TPO and Rubber pavers at Canopies ILO Metal Panel | | | \$ (347,875) | \$ - | \$ - | \$ - | VE170; A10-04 |
| #170A | Carry TPO Roofing at all Canopies (Withour Rubber Pavers) | | | \$ (456,586) | \$ - | \$ - | \$ - | |
| #171 | Simplify fins panel at CW/Stairs | Reduce by 50% | | \$ (100,956) | \$ - | \$ - | \$ - | VE171 |
| #171a | Eliminate vertical fins on curtainwall | | | \$ (348,711) | \$ - | \$ - | \$ - | |
| #172 | Sunscreen part of windows (Design assist) | Need to validate based on SK | | \$ - | \$ - | \$ - | \$ - | VE172; A32-A1 |
| #173 | Soffits at Canopies (building overhang Alucobond/metal panels MCM at canopies) | Need to validate based on SK | | \$ - | \$ - | \$ - | \$ - | VE173; A10-13 |
| #174 | CW to window system. Reduce complexity; | Need to validate based on SK | | \$ - | \$ - | \$ - | \$ - | VE74; A33-A4 |

PROJECT - Belmont High School
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 4/22/2019
 Design Development VE List

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|---------------|--|--|----------|------------------|----------|------|------|-----------------|
| | | | | | \$ 1 | \$ 2 | \$ 3 | |
| #175 | Eliminate band room clerestory windows not located on line A | Need to validate based on SK | | \$ (48,359) | \$ - | \$ - | \$ - | VE175 |
| #176 | Eliminate Design Assist | | | \$ (205,625) | \$ - | \$ - | \$ - | |
| #177 | Change soffit panel from Alucobond to flat seam panels | Need to validate based on SK | | \$ (507,506) | \$ - | \$ - | \$ - | VE177 |
| #178 | Wood Benches to be removed from all classroom fenestrations | Need to validate based on SK | | \$ (380,700) | \$ - | \$ - | \$ - | VE178; A43-08 |
| #179 | Reduce Skylights by 50% | Need to validate based on SK | | \$ (139,335) | \$ - | \$ - | \$ - | VE179; A10-05 |
| #180 | Remove all skylights | | | \$ (278,669) | \$ - | \$ - | \$ - | |
| #181 | Simplify CW at corner stairs (width adjustment, mullions) | PW Does not Recommend. Skanska req's more info to price | | \$ - | \$ - | \$ - | \$ - | |
| #182 | Simplify coping at parapet | Sketches need (P&W already Rejected, Noted testing the assemble is required) | | \$ - | \$ - | \$ - | \$ - | |
| #183 | B5 "triple glazing system" keep at music room only. (acoustic). GL1D only at North facade | This Item was removed during Reconciliation- no cost adjustment | | \$ - | \$ - | \$ - | \$ - | VE183 |
| #184 | Modify length (height) of Curtain Wall glass panels (less than 14') | NEED MORE INFORMATION FROM PW | | \$ - | \$ - | \$ - | \$ - | |
| #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 reconciled DD estimate. | | \$ (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 reconciled DD estimate. | | \$ 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 reconciled DD estimate. | | \$ 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 reconciled DD estimate. | | \$ - | \$ - | \$ - | \$ - | VE186; A20-13 |
| #187 | Interior CW? Remove interior glass curtain wall system (~30ft height) at Middle school / ADD steel to support storefront system at mid height | NEED MORE INFORMATION FROM PW | | \$ - | \$ - | \$ - | \$ - | |
| #188 | Substitute the current classroom curtainwall windows with Fiberglass frame triple glazed punched windows (alternatively consider windows with an interstitial heat-mirror film or surface 4 low-e coated double-glazed windows) with reduced SHGC, reduced window area and no exterior shading device. Use HVAC load modeling software to confirm the design for both options results in essentially the same peak cooling load (by reducing the SHGC and window area of the 2nd alternative). | Possible manufacturers: Alpen, Accurate Dorwin, Comfort Line Ltd, Commercial Fiberglass, Inline, Fibertec, Thermo-Tech NEED MORE INFORMATION FROM PW | | \$ - | \$ - | \$ - | \$ - | VE188 |
| #189 | Delete classroom window seat and align windows in single plane | CANNOT BE ACCEPTED WITH ITEM #178. Include GWB Sills | | \$ (132,305) | \$ - | \$ - | \$ - | |
| #189 | Middle School Entry Reduction | | | | \$ - | \$ - | \$ - | VE189 |
| #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) | NEED MORE INFORMATION FROM PW | | \$ - | \$ - | \$ - | \$ - | |
| #300 | Eliminate the Slant at the Ground Floor CW | | | \$ (19,023) | \$ - | \$ - | \$ - | |

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| | | | | | 1 | 2 | 3 | |
| #301 | Provide Storefront ilo Curtain Wall at all Ground Level Glazing | | | \$ (125,878) | \$ - | \$ - | \$ - | |
| #302 | Provide Intermediate Floor Transition Steel at all Structured Curtainwall ILO 10" Mullions & Nest Steel | PW To Evaluate | | \$ - | \$ - | \$ - | \$ - | |
| #304 | Eliminate Vertical fins at the Roof Terrace Curtain Wall | | | \$ (16,009) | \$ - | \$ - | \$ - | |
| #305 | Delete 1 of the 2 High School Entrance Canopies | PW To Evaluate and Provide SK | | \$ - | \$ - | \$ - | \$ - | |
| #425 | Reduce south canopy roof overhang | | | \$ - | \$ - | \$ - | \$ - | |
| #428 | Eliminate exterior classroom sunshades and consider pull shades, different window product or resize windows to achieve same net energy performance | | | \$ - | \$ - | \$ - | \$ - | |
| 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. | reduce by 50% | | \$ (189,763) | \$ - | \$ - | \$ - | |
| #191 | Delete the central (Aircuity) carbon dioxide monitoring and control system. Provide local combined room temperature / carbon dioxide sensors integrated directly with the BMS. | Ramificatiosn to LEED | | \$ (587,500) | \$ - | \$ - | \$ - | |
| #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 | | \$ (23,500) | \$ - | \$ - | \$ - | |
| #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 | | \$ (176,250) | \$ - | \$ - | \$ - | |
| #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 | | \$ (117,500) | \$ - | \$ - | \$ - | |
| #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 | | \$ - | \$ - | \$ - | \$ - | |
| #196 | Remove 4 pipe system on VAV boxes and replace with 2 pipe heating only | | | \$ - | \$ - | \$ - | \$ - | |

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| | | | | | \$ 1 | \$ 2 | \$ 3 | |
| #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 | | \$ - | \$ - | \$ - | \$ - | |
| #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. | | | \$ - | \$ - | \$ - | \$ - | |
| #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) | | | \$ - | \$ - | \$ - | \$ - | |
| #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) | | | \$ - | \$ - | \$ - | \$ - | |
| #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) | | | \$ - | \$ - | \$ - | \$ - | |
| PLUMBING | | | | | | | | |
| #200 | Eliminate trap primer | Keep hose bibs | | \$ - | \$ - | \$ - | \$ - | |
| #201 | Eliminate Dry system & use remote (sprinkler system) | | | \$ - | \$ - | \$ - | \$ - | |
| | | | | \$ - | \$ - | \$ - | \$ - | |
| | | | | \$ - | \$ - | \$ - | \$ - | |
| ELECTRICAL | | | | | | | | |
| #210 | Re-roof PV - Ready (don't carry in cost). NIC | See Item 215 | | \$ - | \$ - | \$ - | \$ - | |
| #211 | Simplify fixture types - Light | Reduce by \$0.50 PSF | | \$ (270,250) | \$ - | \$ - | \$ - | |
| #212 | Minimize Cable trays & conduits for J-Hooks | | | \$ - | \$ - | \$ - | \$ - | |
| #213 | Provide aluminum feeders in lieu of copper feeders | | | \$ (135,125) | \$ - | \$ - | \$ - | |
| #214 | Lighting Controls – Provide wireless networked system in place of wired network system. | | | \$ (175,075) | \$ - | \$ - | \$ - | |
| #215 | Fund PV Outside the Construction Budget - Building PV Ready | | | \$ (3,055,000) | \$ - | \$ - | \$ - | |



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| | | | | | 1 | 2 | 3 | |
| | | | | | Proposed Saving HIGHLY LIKELY | Proposed Savings POSSIBLE Needs more discussion | Proposed Savings UNLIKELY at this time | |
| #216 | Electrical conduit: metal conduit in certain locations can be substituted for EMT or IMC | | | \$ - | \$ - | \$ - | \$ - | |
| #217 | Eliminate second primary electrical feed to building transformers | | | \$ - | \$ - | \$ - | \$ - | |
| #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) | | | \$ - | \$ - | \$ - | \$ - | Sketch received |
| #219 | Remove illumination from outdoor signs. | | | \$ - | \$ - | \$ - | \$ - | |
| #423 | Reduce theater lighting budget | | | \$ - | \$ - | \$ - | \$ - | |
| SECURITY | | | | | | | | |
| #220 | Reduce CCTV Cameras | Reduce by 20% | | \$ (18,965) | \$ - | \$ - | \$ - | |
| AV | | | | | | | | |
| #225 | Reduce AV at Auditorium | | | \$ (47,000) | \$ - | \$ - | \$ - | |
| #226 | Reduce AV at Blackbox | | | \$ (28,200) | \$ - | \$ - | \$ - | |
| #227 | Reduce AV at Cafeteria/Dining Commons | | | \$ (47,000) | \$ - | \$ - | \$ - | |
| #228 | Reduce Portable Video Displays | | | \$ (23,500) | \$ - | \$ - | \$ - | |
| #229 | Reduce sound system in Classrooms (enhanced voice/audio system) | Assume mean speech reinforcement | | \$ (275,876) | \$ - | \$ - | \$ - | |
| #230 | No exterior sound system | | | \$ (88,125) | \$ - | \$ - | \$ - | |
| POOL/EQUIPMENT | | | | | | | | |
| #240 | Reduce staff lounge appliances by 50% (dishwasher/fridges/etc..) | | | \$ - | \$ - | \$ - | \$ - | |
| #241 | Refine Pool equipment Scope | Already reusing some equipment; needs further discussion | | \$ - | \$ - | \$ - | \$ - | |
| #242 | Reuse existing bleachers in Fieldhouse | Does not meet code | | \$ - | \$ - | \$ - | \$ - | |
| #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 | | | \$ - | \$ - | \$ - | \$ - | |
| #243 | Pool Pump Room Relocation | | | \$ - | \$ - | \$ - | \$ - | VE243 |
| #244 | | | | \$ - | \$ - | \$ - | \$ - | |
| #245 | | | | \$ - | \$ - | \$ - | \$ - | |
| FFE | | | | | | | | |
| #250 | Science tables to be FFE | | | \$ (705,000) | \$ - | \$ - | \$ - | |
| #251 | Purchase the following in FFE budget Blackbox Theatre Platforms (Skanska item #1264), | | | \$ (129,250) | \$ - | \$ - | \$ - | |
| #252 | Purchase the following in FFE budget Loose Seating Auditorium (Skanska item #1273) | | | \$ (14,100) | \$ - | \$ - | \$ - | |

