# THE NEW
# W. EDWARD BALMER SCHOOL
## NORTHBRIDGE, MASSACHUSETTS

## SCHOOL BUILDING COMMITTEE MEETING

## FEBRUARY 27, 2019

SMMA
Project Management

NORTHBRIDGE PUBLIC SCHOOLS

Massachusetts School Building Authority
*Funding Affordable, Sustainable, and Efficient Schools in Partnership with Local Communities*

FONTAINE BROS., INC.
CONSTRUCTION MANAGERS
GENERAL CONTRACTORS

D&W
DORE & WHITTIER
ARCHITECTS, INC.

# AGENDA

## DD Progress Report

## Development of Site and Building Design:

- Parking Plan/ Zoning Analysis
- Floor Plan developments
- Preliminary Instructional FF&E and Technology
- Elevation developments

## Interior Building Design and Color Scheme:

- Interior Design Images
- Color Scheme discussion

## LEED Scorecard, Energy Model, Daylighting Studies

## “SecureShade” Product for emergency shade deployment

# DD PROGRESS REPORT

**2/8** DD pricing drawings & specs due from consultants

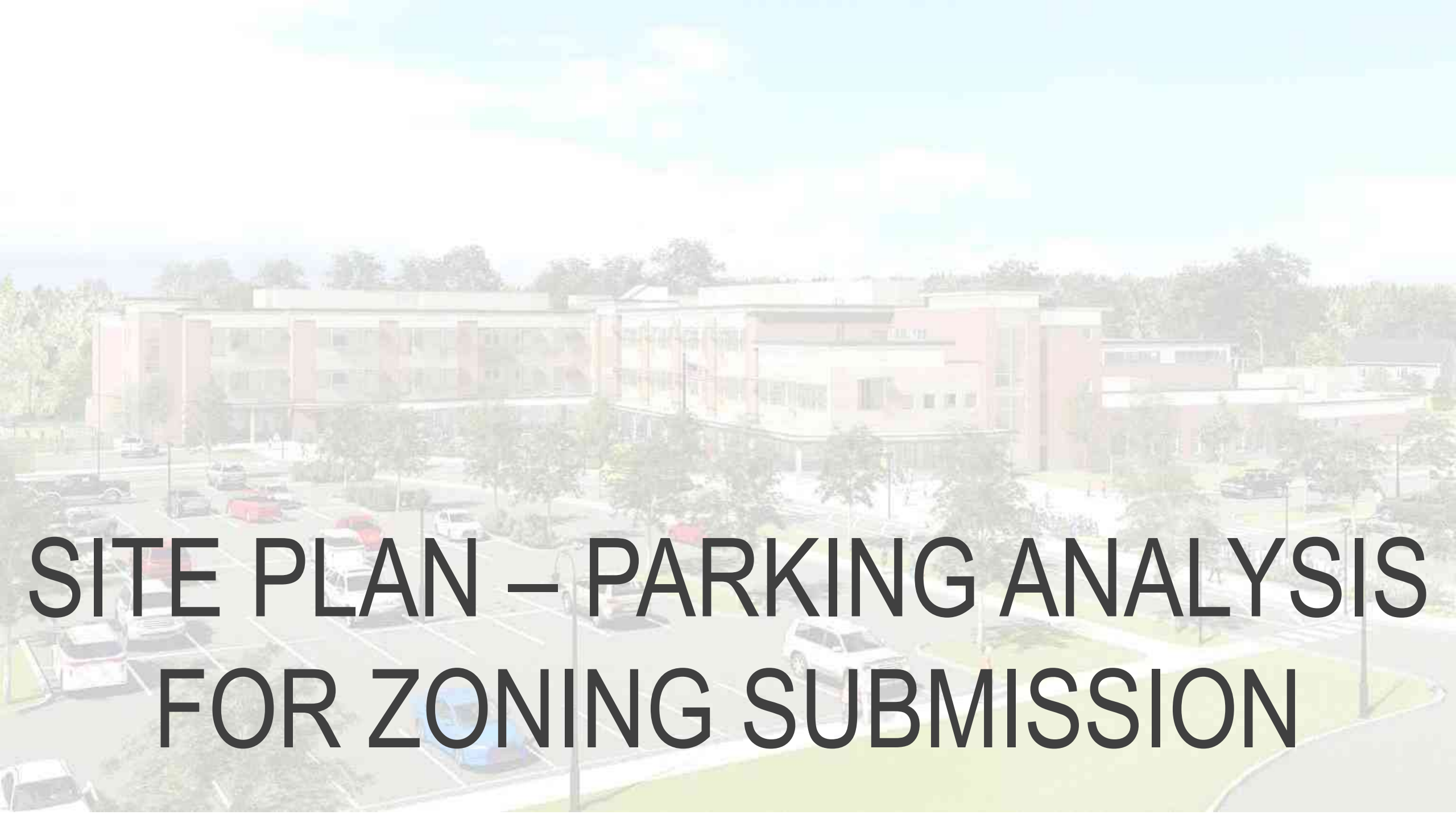
**2/11 – 2/21**

- Review, comments, and coordination for DD Pricing Set
- Review of Minutes items to ensure inclusion in project
- Continue to incorporate User Group comments in pricing documents
- Geo-Enviro Consultant performed additional soil sampling
- Environmental consultant performed additional building materials testing
- Ongoing phasing and ERP Package planning & scoping

**2/22** Issued DD Pricing Set to Estimator, CM

# DD UPCOMING SCHEDULE

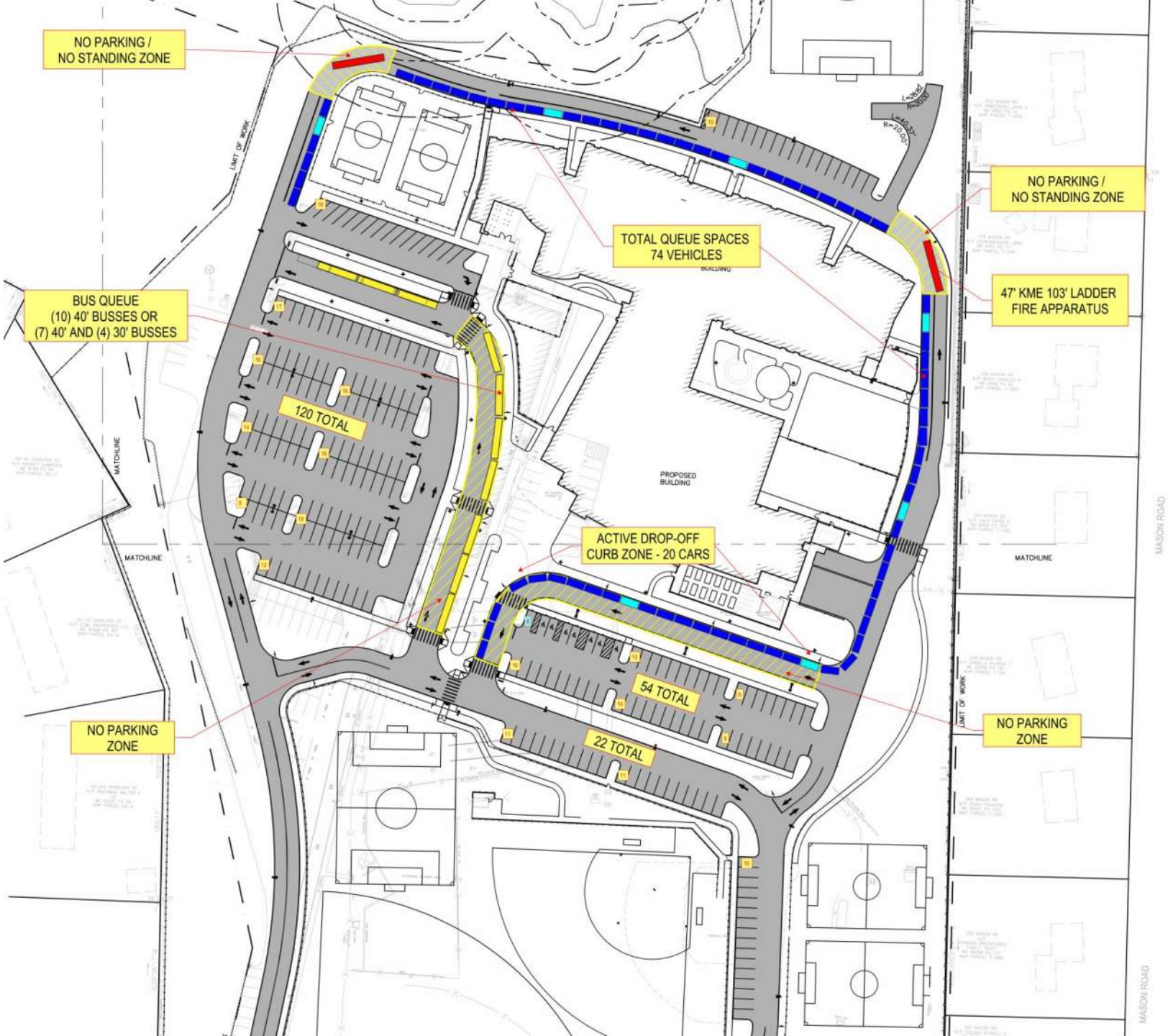
| | |
|---|---|
| **3/12** | DD Draft Estimate Due |
| **3/13-14** | Team reviews Draft Estimate |
| **3/15** | DD Draft Estimate Reconciliation |
| | *Consider VE as necessary* |
| **3/18** | DD Final Estimate Due |
| **3/19** | SBC reviews Final DD Estimate |
| | *Vote to approve, amend, etc.* |
| **3/27** | Finalized DD documents from Consultants |
| **4/2** | Review final DD documents |
| | *Vote to submit to MSBA* |
| **4/5** | Submit DD document package to MSBA |



# SITE PLAN – PARKING ANALYSIS FOR ZONING SUBMISSION

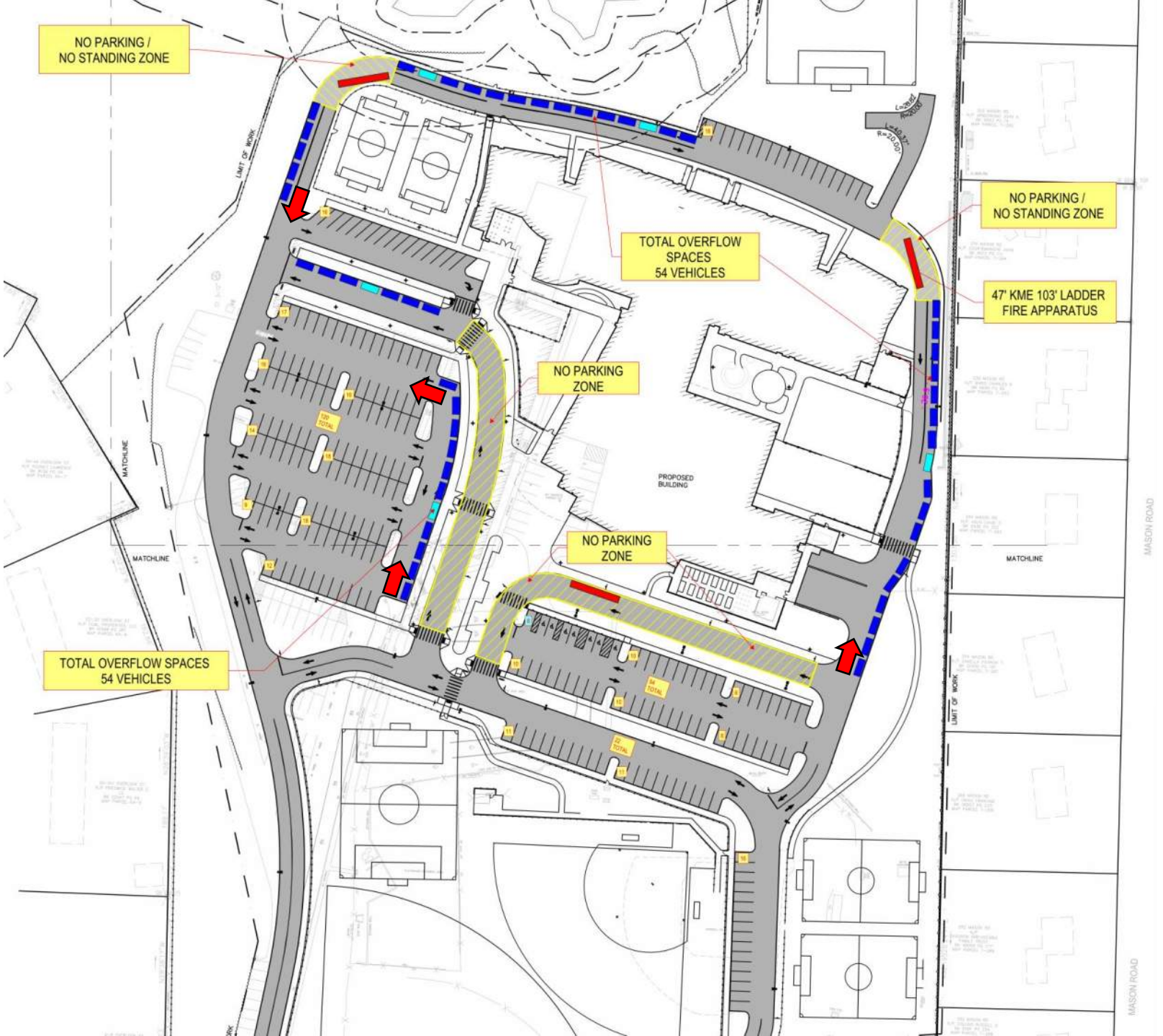
# UPDATED PARKING/ CIRCULATION PLAN

- 246 parking spaces
- 74 queue spaces
- Rear drive one-way clock-wise during drop-off, pick-up
- No parking or standing on rear drive corners
- No parking in bus lane or drop off lane



# EVENT OVERFLOW PARKING PLAN

- 246 parking spaces
- 54 overflow spaces
- **300 total spaces onsite max.**
- Rear drive becomes one-way, parallel park, inner fire lane
- Circulation lane in west parking becomes one-way, parallel park
- No parking or standing on corners
- No parking in bus lane or drop off lane – fire lanes

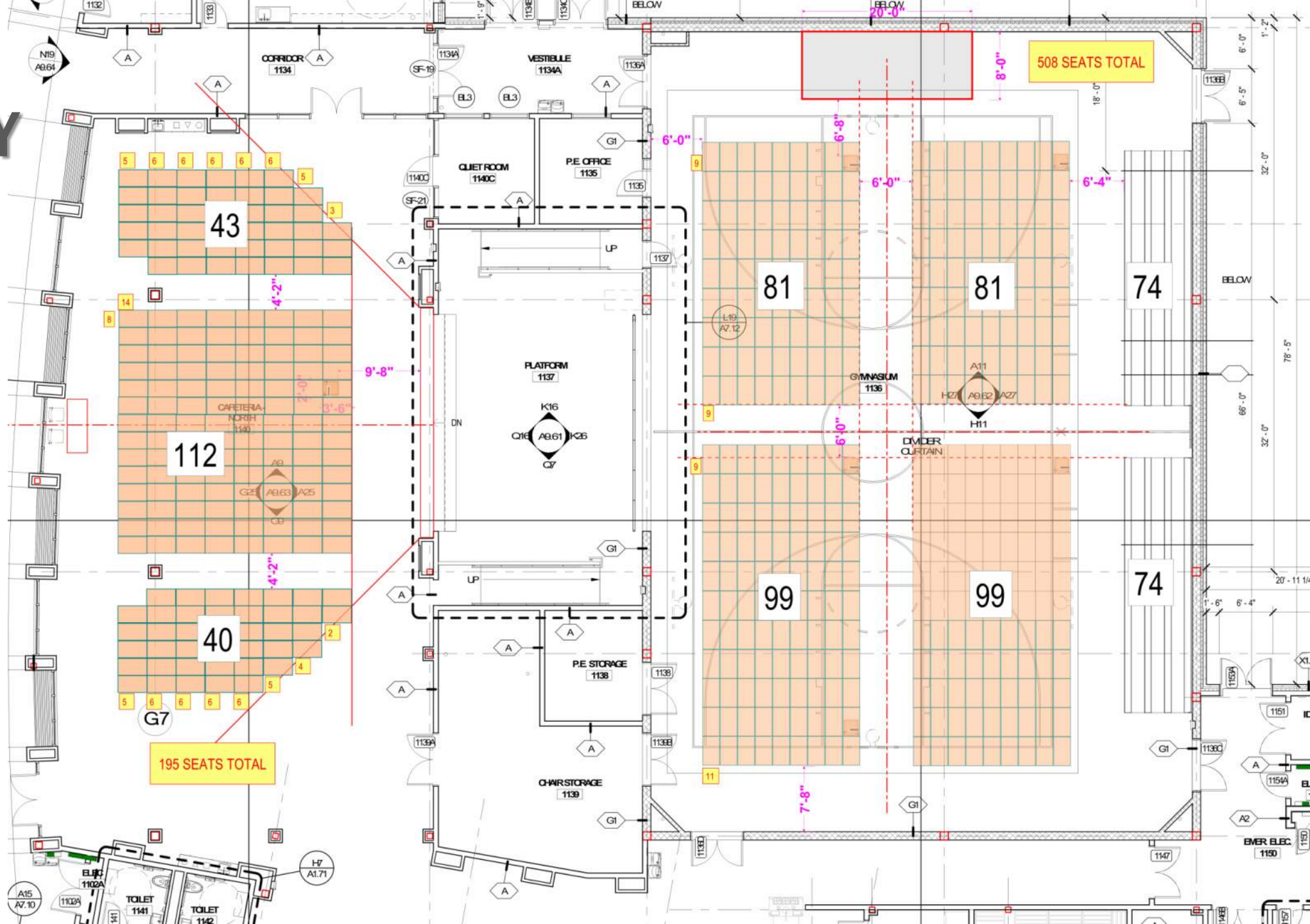


# PARKING ANALYSIS – REFER TO HANDOUT

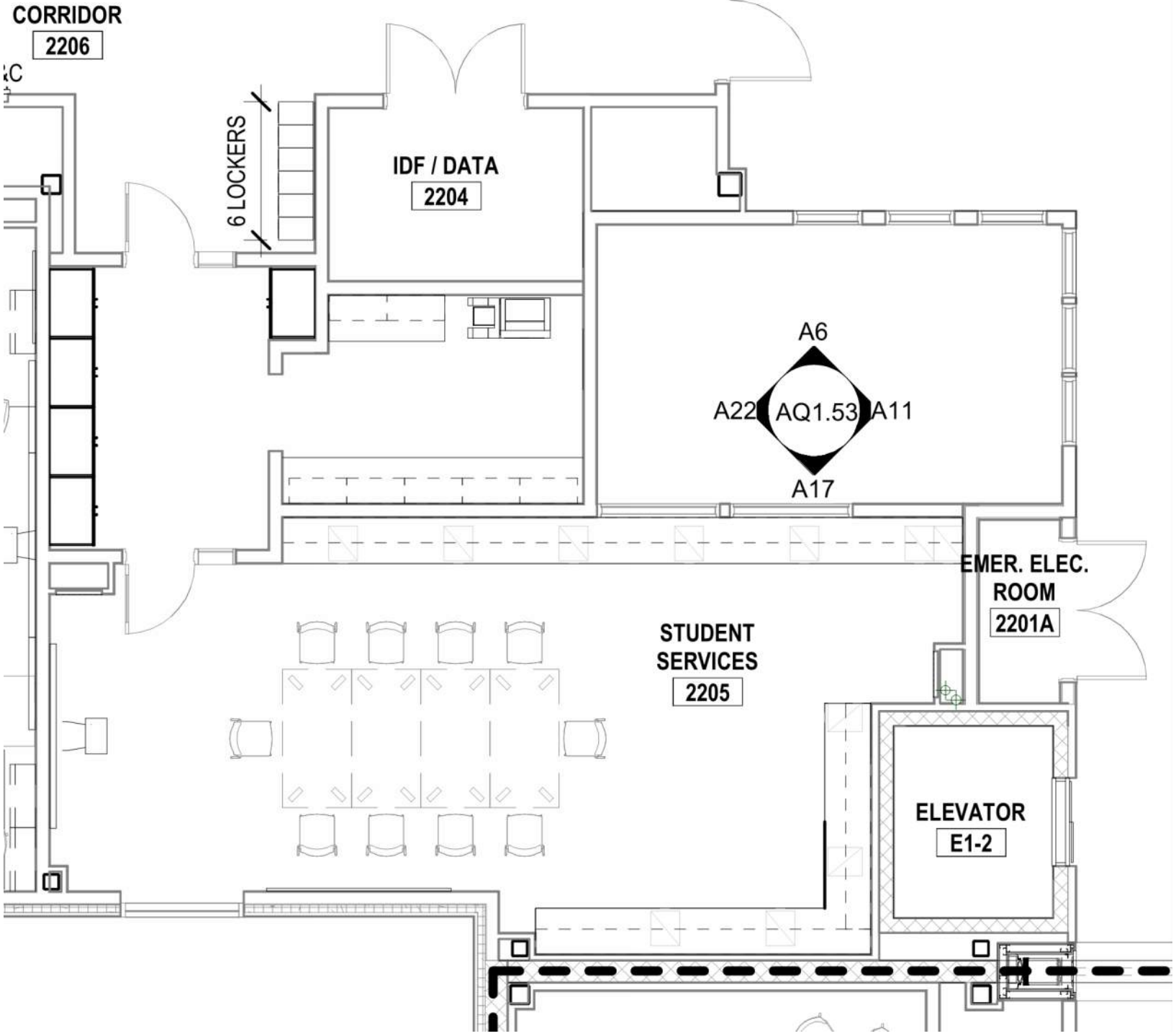
- 157 staff + visitor parking spaces required for normal school days
- 246 parking spaces provided
- 74 queue spaces provided, plus 89 open spaces in lots to handle early pick-up
- Large-draw events that will utilize the Overflow Plan (up to 300 spaces) are:
  - Parent Night – split into two nights, and three sessions each night – 260 spaces needed
  - Large Meeting in Gym – 275 spaces needed
  - Youth Soccer Practices/ Games – 264 spaces needed
  - Sport tournaments using fields – 360 spaces needed: if this is ever done, offsite parking may be required (Armory/ Whitinsville Water Co?)

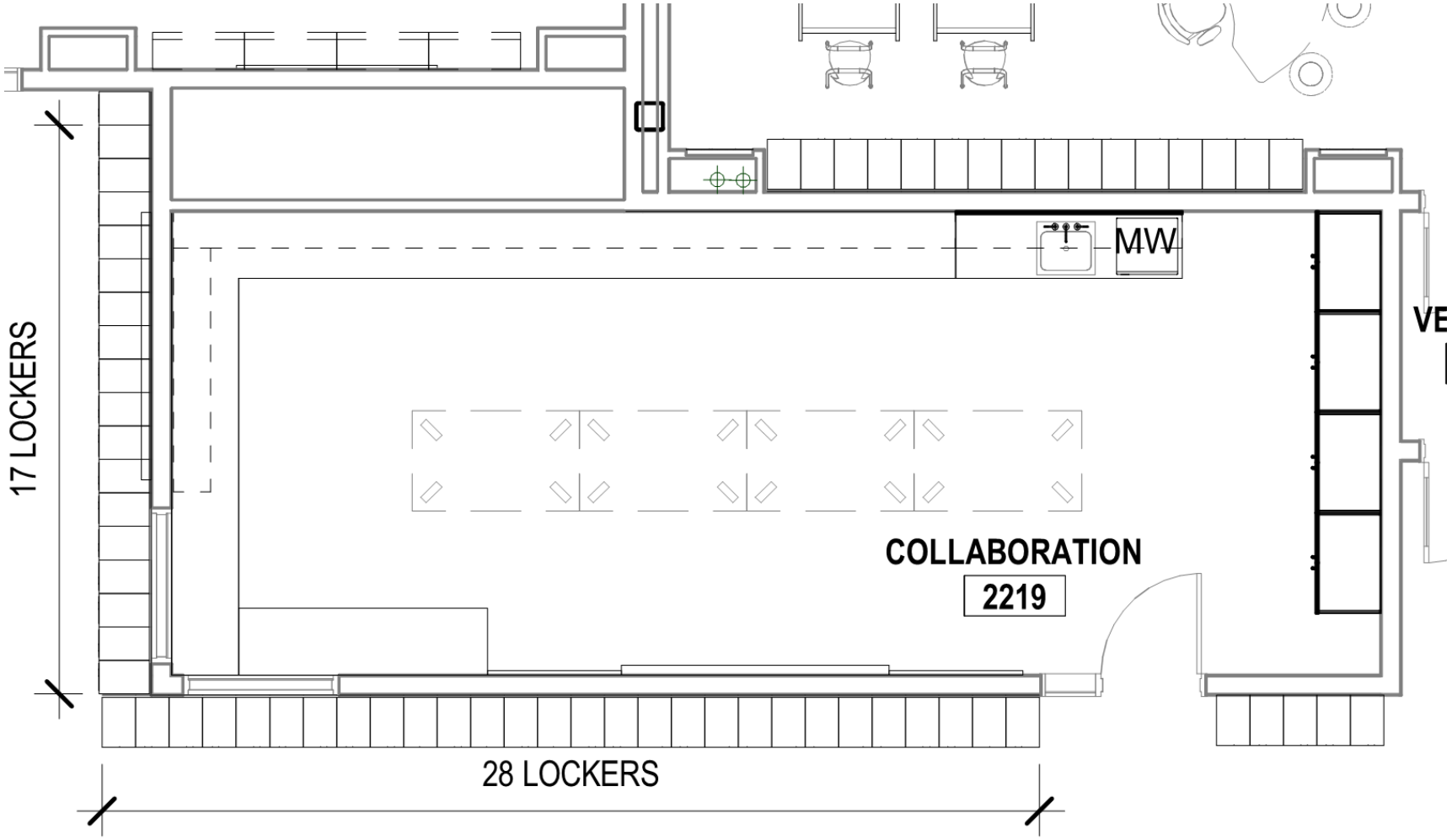
# PLAN DEVELOPMENTS

# REVISED ASSEMBLY SEATING PLAN



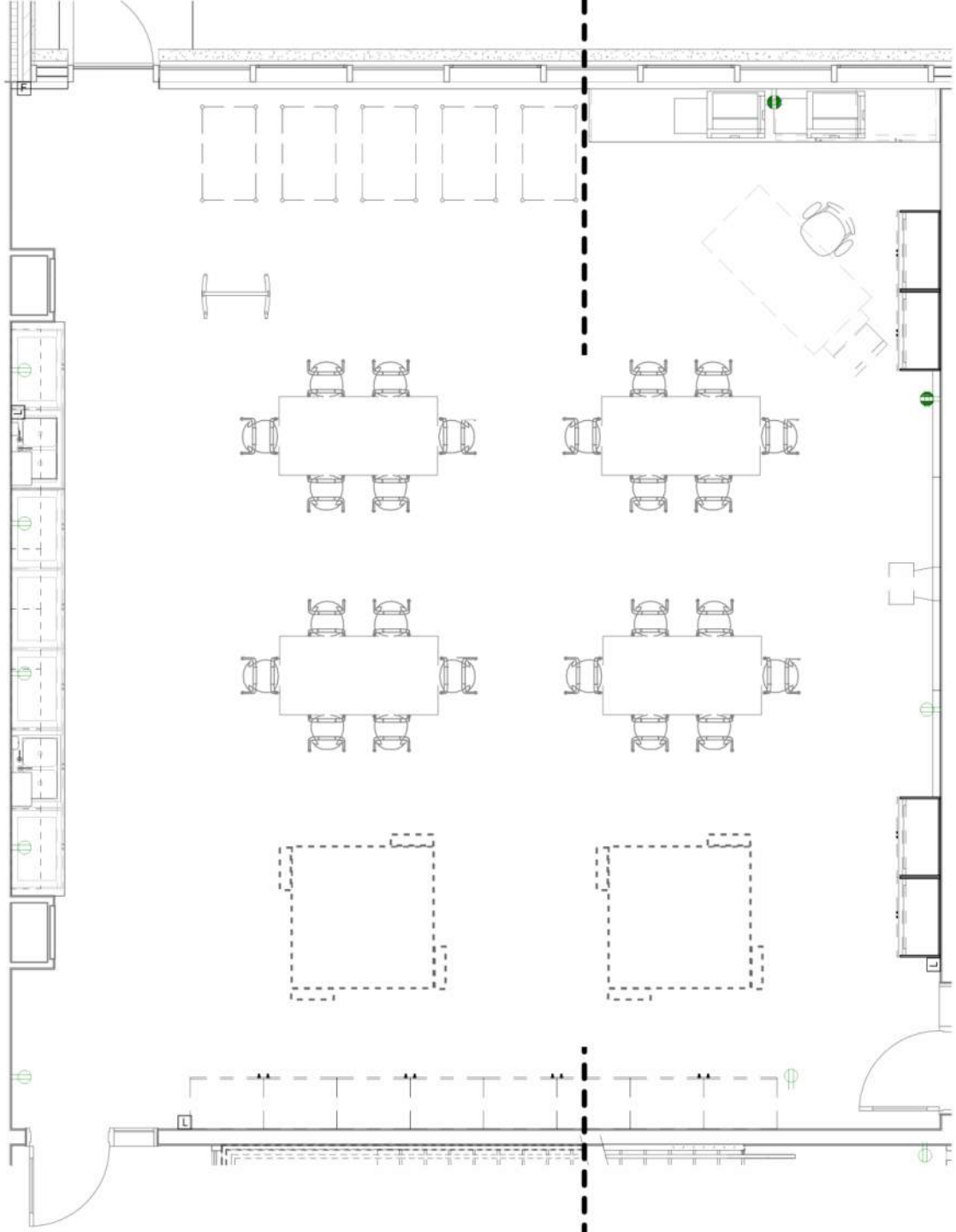
# REVISED STUDENT SERVICES SUITE



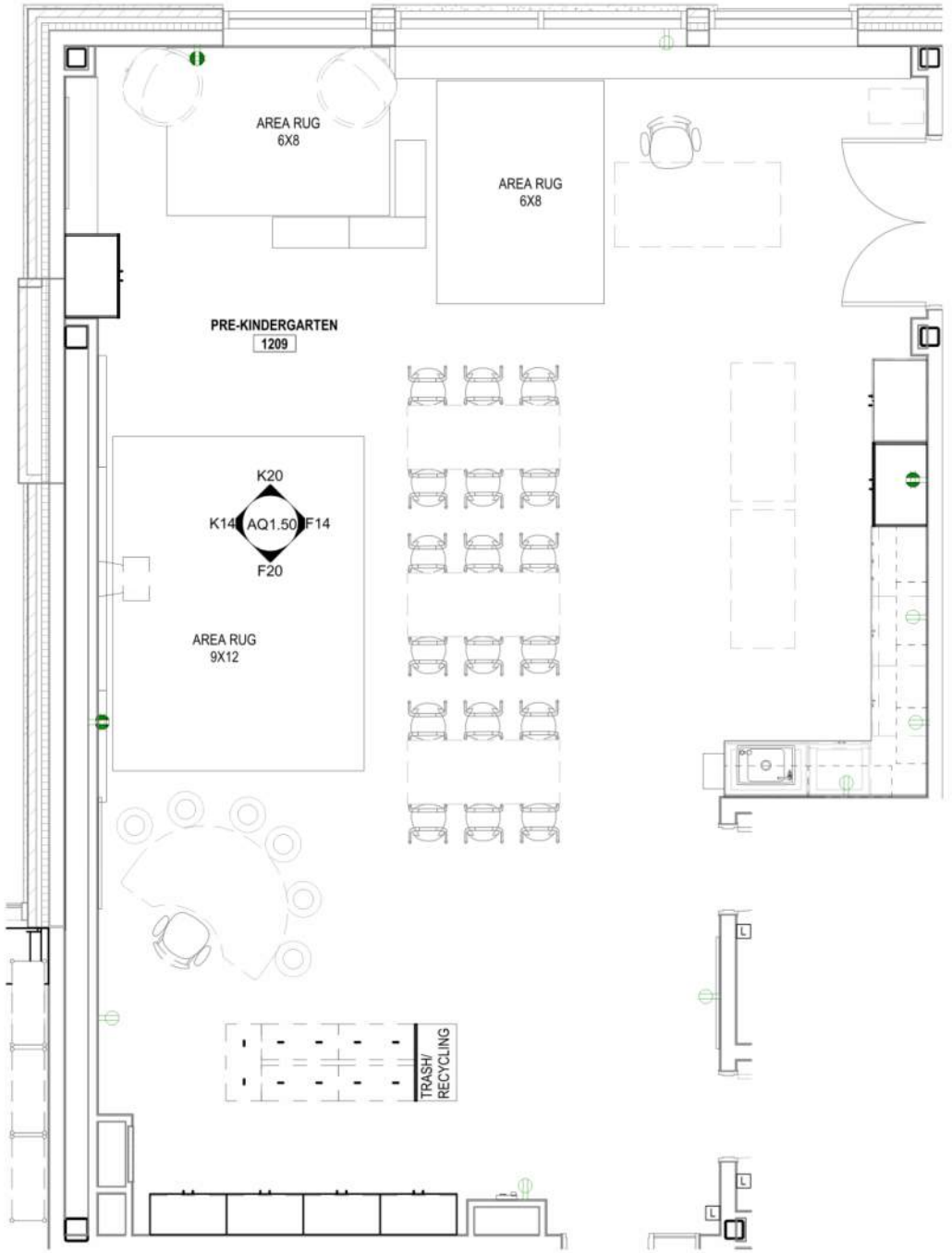



# REVISED COLLABORATION ROOM

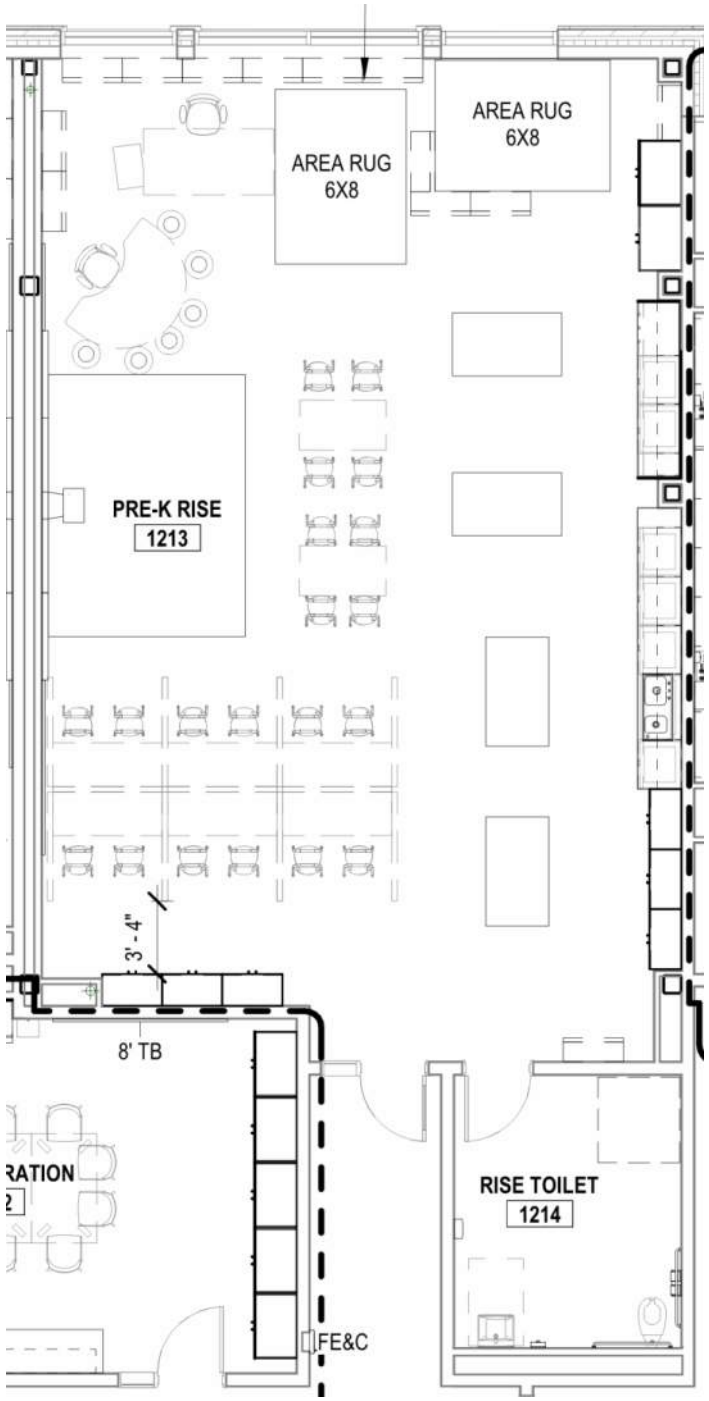
# REVISED MAKER SPACE



# REVISED PRE-K CLASSROOM



# REVISED
# PRE-K
# RISE CLASSROOM



# ELEVATION DEVELOPMENTS:

- To reduce framing, split large classroom windows.
- Light gage metal framing rather than structural steel.
- Window spacing uniform, configuration more uniform.

# INTERIOR DESIGN IMAGES

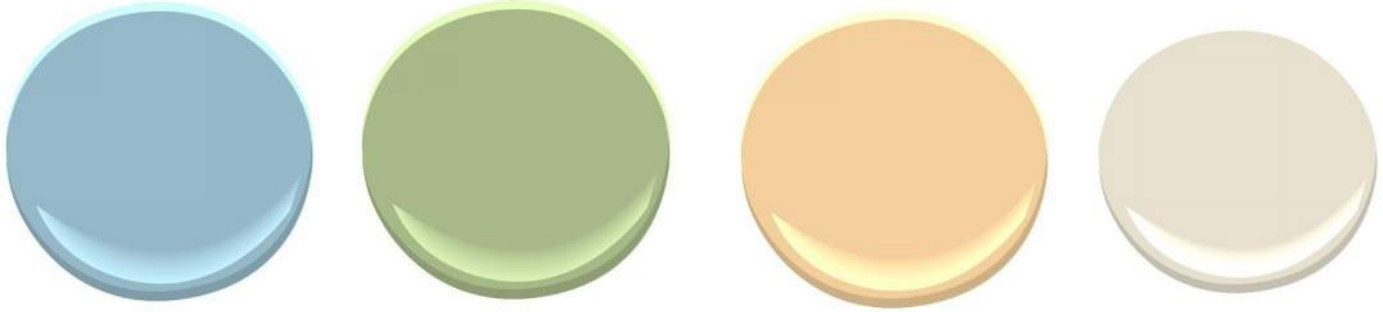
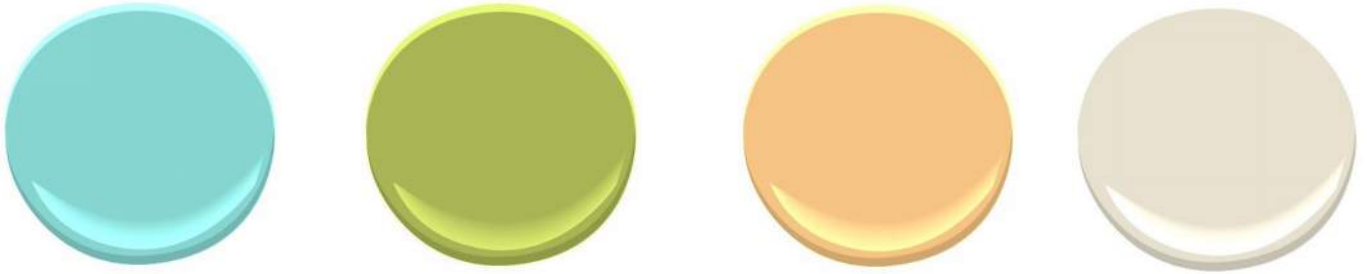

THEME:
SKY


COMMUNITY
THEME:
EARTH

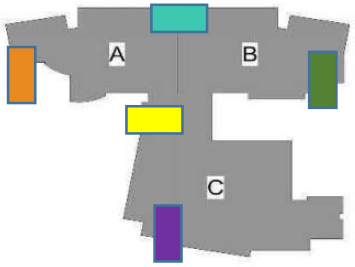

THEME:
RIVER

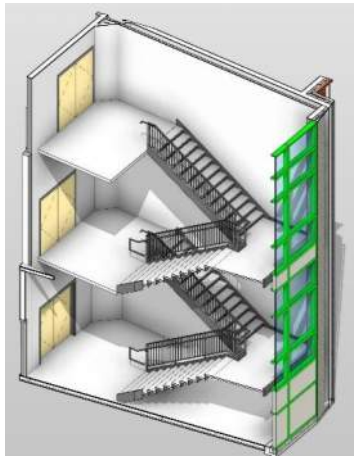

THEME:
FOREST

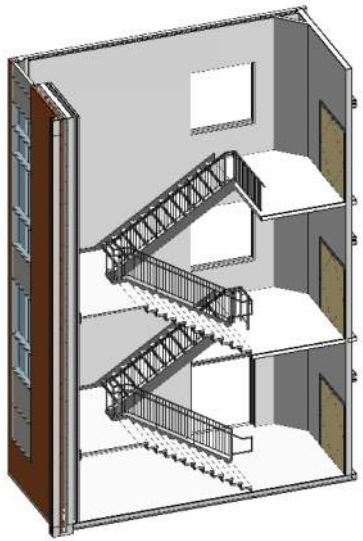
# COLOR INTENSITY SCHEME

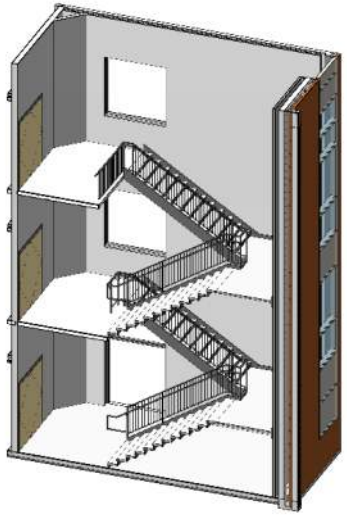
| Level 1 River | Level 2 Path | Level 3 Sky | White Throughout | |
|---|---|---|---|---|
|  | | | | **Long length of stay in space:** Classroom, Group Room, and Specialist Room |
|  | | | | **Medium length of stay space**: Cafeteria, Media/Library, Extended Learning Areas |
|  | | | | **Short length of stay in space**: Staircase, Hallway, Entries, Bathrooms |

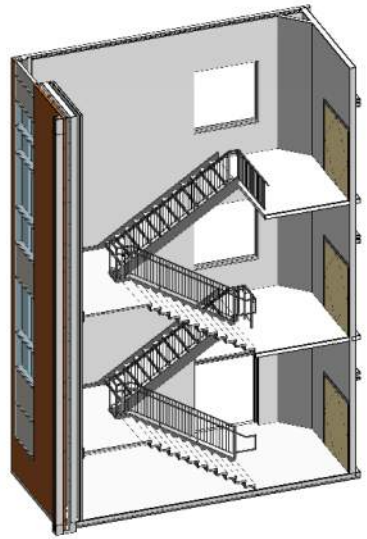
# ACCENT COLORS IN STAIRS HELP WAYFINDING

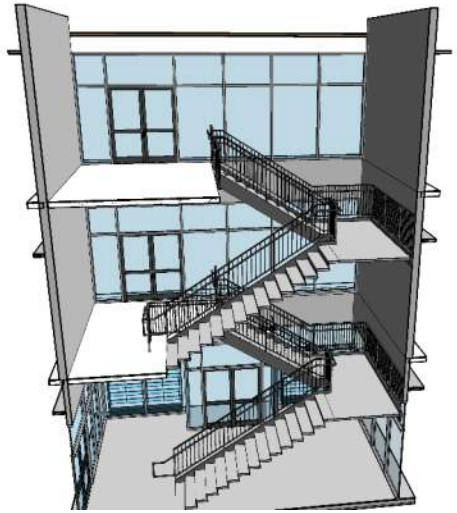










Stair 1

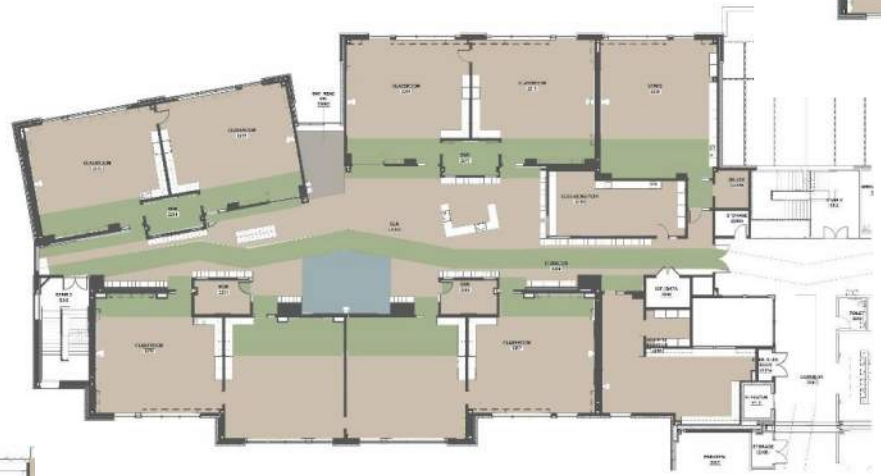
Stair 2

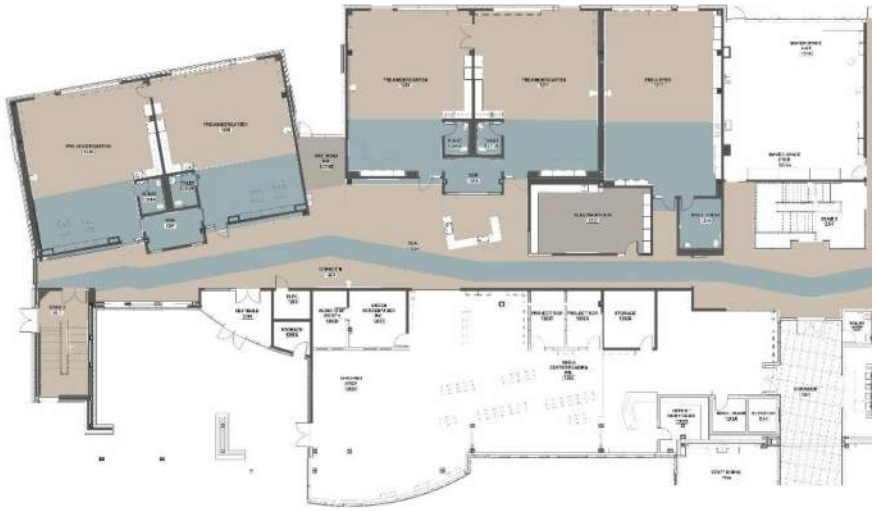
Stair 3

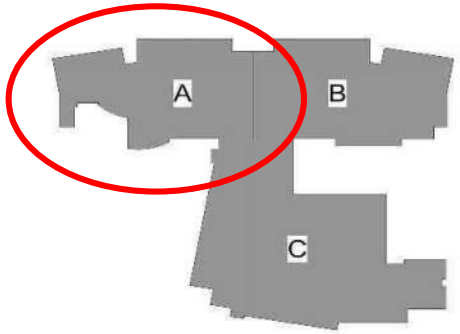
Stair 4

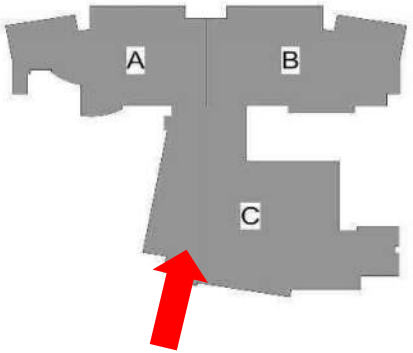
Stair 5

# ACCENT COLORS BY LEVEL
# HELP WAYFINDING

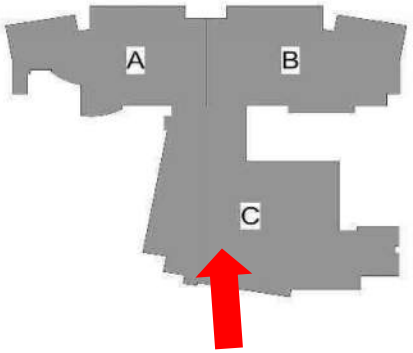




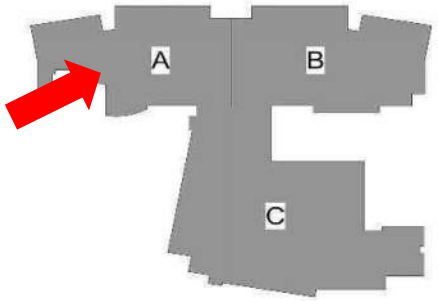




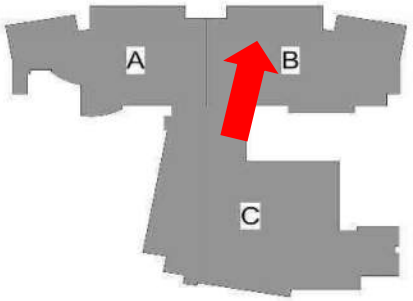

VIEW OF MAIN LOBBY



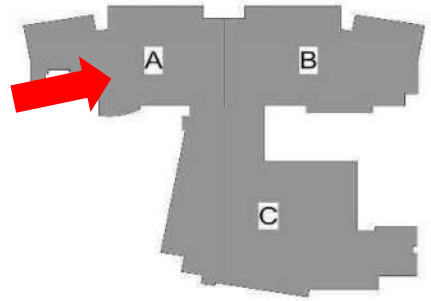

VIEW OF NORTH CAFETERIA



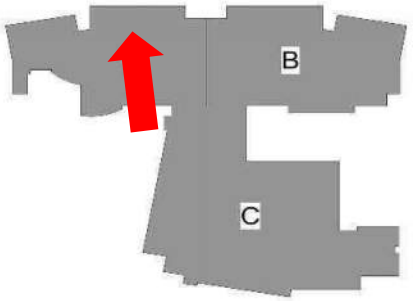

# VIEW OF TYPICAL EXTENDED LEARNING AREA (PRE-K)



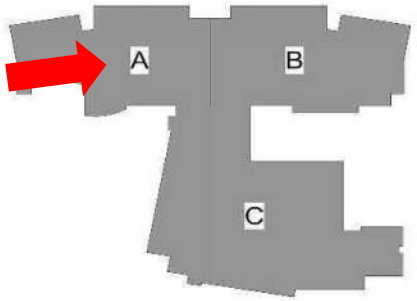

VIEW OF TYPICAL KINDERGARTEN CLASSROOM

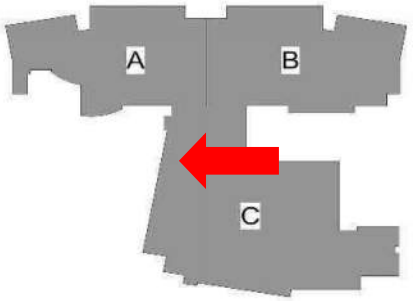

# VIEW OF TYPICAL EXTENDED LEARNING AREA (GRADE 1)




VIEW OF TYPICAL GRADE 1-2 CLASSROOM




VIEW OF TYPICAL EXTENDED LEARNING AREA (GRADE 3)




VIEW OF TYPICAL GRADE 3-5 CLASSROOM

# UPDATED LEED SCORECARD

# REVISED LEED SCORE CARD

| | Yes | Maybe | No | | | |
|---|---|---|---|---|---|---|
| D/C | 1 | 0 | 0 | | **Integrative Process** | 1 |
| D | 1 | | | IPc1 | **Integrative Process** | 1 |

| | Yes | Maybe | No | | | |
|---|---|---|---|---|---|---|
| | 0 | 2 | 13 | | **Location & Transportation** | 15 |
| D | | | N | LTc1 | **LEED for Neighborhood Development Location** | 15 |
| D | | | 1 | LTc2 | **Sensitive Land Protection** | 1 |
| D | | | 2 | LTc3 | **High Priority Site** | 2 |
| D | | | 5 | LTc4 | **Surrounding Density and Diverse Uses** | 5 |
| D | | | 4 | LTc5 | **Access to Quality Transit** | 4 |
| D | | | 1 | LTc6 | **Bicycle Facilities** | 1 |
| D | | 1 | | LTc7 | **Reduced Parking Footprint** | 1 |
| D | | 1 | | LTc8 | **Green Vehicles** | 1 |

| | Yes | Maybe | No | | | |
|---|---|---|---|---|---|---|
| | 3 | 5 | 4 | | **Sustainable Sites** | 12 |
| C | Y | | | SSpr1 | **Construction Activity Pollution Prevention** | Required |
| D | Y | | | SSpr2 | **Environmental Site Assessment** | Required |
| D | 1 | | | SSc1 | **Site Assessment** | 1 |
| D | | 2 | | SSc2 | **Site Development - Protect or Restore Habitat** | 2 |
| D | | 1 | | SSc3 | **Open Space** | 1 |
| D | | | 3 | SSc4 | **Rainwater Management** | 3 |
| D | | 2 | | SSc5 | **Heat Island Reduction** | 2 |
| D | 1 | | | SSc6 | **Light Pollution Reduction** | 1 |
| D | | | 1 | SSc7 | **Site Master Plan** | 1 |
| D | 1 | | | SSc8 | **Joint Use of Facilities** | 1 |

# REVISED LEED SCORE CARD

| | Yes | Maybe | No | | Water Efficiency | 12 |
|---|---|---|---|---|---|---|
| D | Y | | | WEpr1 | **Outdoor Water Use Reduction** | Required |
| D | Y | | | WEpr2 | **Indoor Water Use Reduction** | Required |
| D | Y | | | WEpr3 | **Building-level Water Metering** | Required |
| D | 2 | | | WEc1 | **Outdoor Water Use Reduction** | 2 |
| D | 2 | 2 | 3 | WEc2 | **Indoor Water Use Reduction** | 7 |
| D | | 2 | | WEc3 | **Cooling Tower Water Use** | 2 |
| D | 1 | | | WEc4 | **Water Metering** | 1 |

| | Yes | Maybe | No | | Energy & Atmosphere | 31 |
|---|---|---|---|---|---|---|
| C | Y | | | EApr1 | **Fundamental Commissioning and Verification** | Required |
| D | Y | | | EApr2 | **Minimum Energy Performance** | Required |
| D | Y | | | EApr3 | **Building-level Energy Metering** | Required |
| D | Y | | | EApr4 | **Fundamental Refrigerant Management** | Required |
| D | 5 | 1 | | EAc1 | **Enhanced Commissioning** | 6 |
| D | 11 | 2 | 3 | EAc2 | **Optimize Energy Performance** | 16 |
| D | | 1 | | EAc3 | **Advanced Energy Metering** | 1 |
| C | | | 2 | EA4 | **Demand Response** | 2 |
| D | | | 3 | EAc5 | **Renewable Energy Production** (1%/5%/10%) | 3 |
| D | | 1 | | EAc6 | **Enhanced Refrigerant Management** | 1 |
| C | | 2 | | EAc7 | **Green Power and Carbon Offsets** (50%/100%) | 2 |

# REVISED LEED SCORE CARD

| | Yes | Maybe | No | | Materials & Resources | 13 |
|---|---|---|---|---|---|---|
| | 4 | 1 | 8 | | | |
| D | Y | | | MRpr1 | **Storage & Collection of Recyclables** | Required |
| C | Y | | | MRpr2 | **Construction and Demolition Waste Management Planning** | Required |
| C | | | 5 | MRc1 | **Building Life-cycle Impact Reduction** | 5 |
| C | 1 | | 1 | MRc2 | **Building Product Disclosure and Optimization**-Environmental Product | 2 |
| C | | 1 | 1 | MRc3 | **Building Product Disclosure and Optimization**-Sourcing of Raw Matls. | 2 |
| C | 1 | | 1 | MRc4 | **Building Product Disclosure and Optimization**-Material Ingredients | 2 |
| C | 2 | | | MRc5 | **Construction and Demolition Waste Management** | 2 |

| | Yes | Maybe | No | | Indoor Environmental Quality | 16 |
|---|---|---|---|---|---|---|
| | 6 | 5 | 5 | | | |
| D | Y | | | EQpr1 | **Minimum IAQ Performance** | Required |
| D | Y | | | EQpr2 | **Environmental Tobacco Smoke (ETS) Control** | Required |
| D | Y | | | EQpr3 | **Minimum Acoustical Performance** | Required |
| D | 2 | | | EQc1 | **Enhanced IAQ Strategies** | 2 |
| C | 1 | 1 | 1 | EQc2 | **Low-Emitting Materials** (3/5/6) | 3 |
| C | 1 | | | EQc3 | **Construction IAQ Management Plan** | 1 |
| C | | 2 | | EQc4 | **IAQ Assessment** | 2 |
| D | | 1 | | EQc5 | **Thermal Comfort** | 1 |
| D | 1 | 1 | | EQc6 | **Interior Lighting** | 2 |
| D | | | 3 | EQc7 | **Daylight** | 3 |
| D | 1 | | | EQc8 | **Quality Views** | 1 |
| D | | | 1 | EQc9 | **Acoustic Performance** | 1 |

# REVISED LEED SCORE CARD

| | Yes | Maybe | No | | Innovation | 6 |
|---|---|---|---|---|---|---|
| D | 1 | | | INc1.1 | Innovation: Low-Mercury Lighting | 1 |
| D | 1 | | | INc1.2 | Innovation: O+M Starter Kit | 1 |
| D | | 1 | | INc1.3 | Innovation: Pending | 1 |
| C | | 1 | | INc1.4 | Innovation: Pending | 1 |
| C | 1 | | | INc1.5 | Pilot Credit: Integrative Analysis of Building Materials | 1 |
| C | 1 | | | INc2 | LEED Accredited Professional | 1 |

| | Yes | Maybe | No | | Regional Priority Credits - earn up to 4 points | 4 |
|---|---|---|---|---|---|---|
| D | 1 | | | RPc1 | Regional Priority: WEc1 (@2pts) | 1 |
| D | 1 | | | RPc2 | Regional Priority: EAc2 (@8pts) | 1 |
| C | | | 1 | RPc3 | Regional Priority | 1 |
| D | | | 1 | RPc4 | Regional Priority | 1 |

| Yes | Maybe | No | Project Totals (Certification Estimates) | 110 |
|---|---|---|---|---|
| 41 | 26 | 43 | | |

**Certified:** 40-49 points, **Silver:** 50-59 points, **Gold:** 60-79 points, **Platinum:** 80+ points

**MINIMUM: "CERTIFIED" STRETCH GOAL: "SILVER"**

# UPDATED ENERGY MODEL

# DD - UPDATED ENERGY MODEL

**THINGS THAT CHANGED:**

- MORE FLOOR AREA UNDER A/C; LESS UNDER DISPLACEMENT VENTILATION
- SLIGHTLY LESS GLAZED AREA, DUE TO EDIT IN CLASSROOM WINDOW DESIGN

**THINGS THAT STAYED THE SAME:**

- BUILDING AREA, VOLUME, LOCATION, ORIENTATION, AND EXPOSURE
- SUNSHADE DESIGN
- ENVELOPE DESIGN: R-VALUE OF WALLS (R-21) & ROOF (R-34)
- WINDOW GLAZING SYSTEMS:  CURTAIN WALL (U-0.38), STOREFRONT & WINDOWS (U-0.40); NEARLY SAME PERCENTAGES OF EACH
- LIGHTING POWER DENSITY TARGET – 0.40 WATTS/ SF

GARCIA • GALUSKA • DESOUSA
Consulting Engineers Inc.
370 Faunce Corner Road, Dartmouth, MA 02747-1217

# DD MODEL: 32.9% SAVINGS →
## 13 LEED ENERGY POINTS

UPDATED ENERGY MODEL

**Balmer Elementary School - LEED Energy Savings Summary (Design Development Update)**

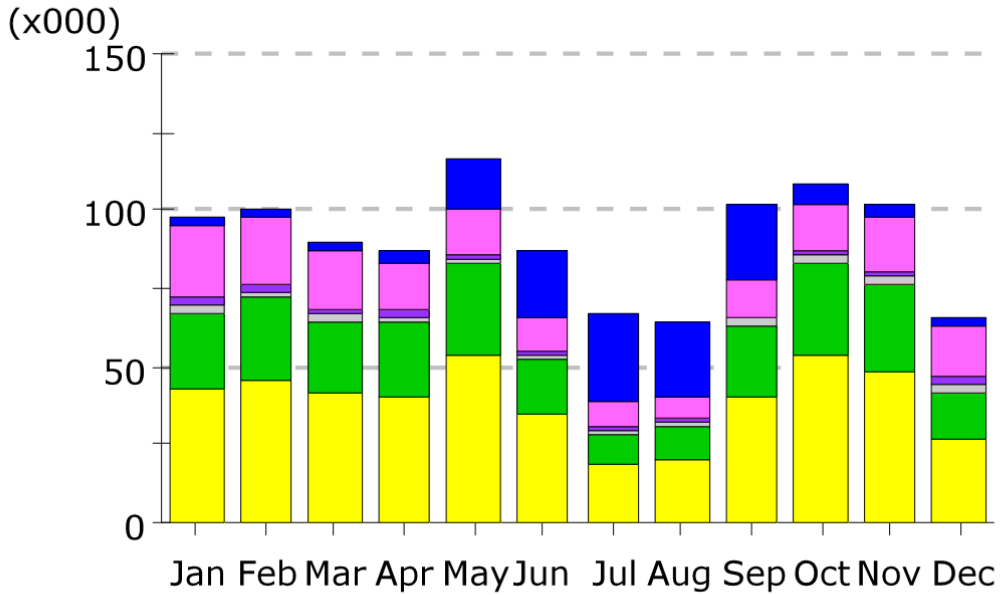
| Baseline | System | Annual Elec. Cons. (kWh) | Annual Gas Cons. (MBTU) | Annual Electric Cost | Annual Gas Cost | Combined Utility Cost | Annual Utility $/s.f. | Annual kBTU/s.f. (EUI) | Combined Expense Savings* | Energy Cost Savings Percentage |
|---|---|---|---|---|---|---|---|---|---|---|
| LEED Baseline | 1. ASHRAE Standard 90.1-2010 Envelope (Wall Insulation R-13 + R-7.5 c.i., Roof Insulation R-20 c.i., Windows 0.55 U-Value/0.40 SHGC, Curtainwall 0.45 U-Value/0.40 SHGC)<br>2. ASHRAE Standard 90.1-2010 Mechanical Systems (System 5 - Packaged VAV w/ Reheat and 82% Eff. Hot-Water Boilers)<br>3. ASHRAE Standard 90.1-2010 Lighting Systems (0.99 w/s.f.)<br>4. ASHRAE Standard 90.1-2010 Domestic Hot Water Systems (80% Eff. Hot Water Heaters) | 1,088,800 | 4,804.1 | $191,737 | $35,978 | $227,715 | $1.36 | 51.01 | - | - |

| Option | System | Annual Elec. Cons. (kWh) | Annual Gas Cons. (MBTU) | Annual Electric Cost | Annual Gas Cost | Combined Utility Cost | Annual Utility $/s.f. | Annual kBTU/s.f. (EUI) | Combined Expense Savings* | Energy Cost Savings Percentage |
|---|---|---|---|---|---|---|---|---|---|---|
| Design Building | 1. Design Envelope (Wall Insulation R-21 c.i., Roof Insulation R-34 c.i., Windows 0.40 U-Value/0.40 SHGC, Curtainwall 0.38 U-Value/0.40 SHGC)<br>2. Design Mechanical Systems (VAV Dehumidification Displacement Ventilation Systems for Classroom Full AC for Admin., Media Center, Cafe/Stage, and Gym with High-Efficiency Condensing Boilers)<br>3. Design High-Efficiency Lighting Systems (0.4 w/s.f.)<br>4. Design High-Efficiency Domestic Hot Water Systems (94% Eff. Hot Water Heaters) | 703,700 | 3,870.3 | $123,922 | $28,985 | $152,907 | $0.92 | 37.6 | $74,808 | **32.9%** |

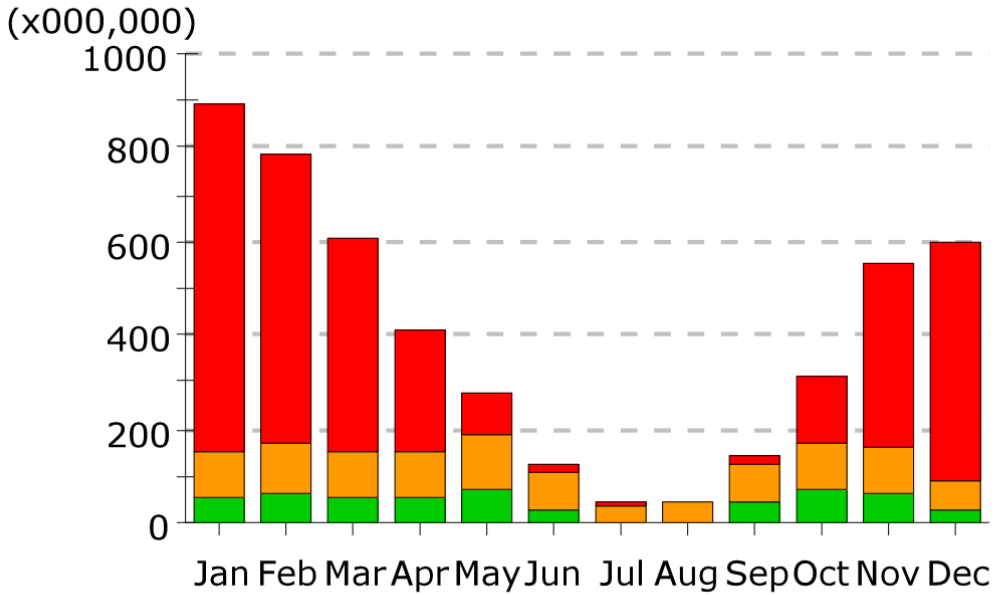
SD MODEL WAS 33.2% SAVINGS →
13 LEED ENERGY POINTS

*Combined expense savings is the difference between the combined annual expense of the baseline and building in comparison.

**Electric Consumption (kWh)**



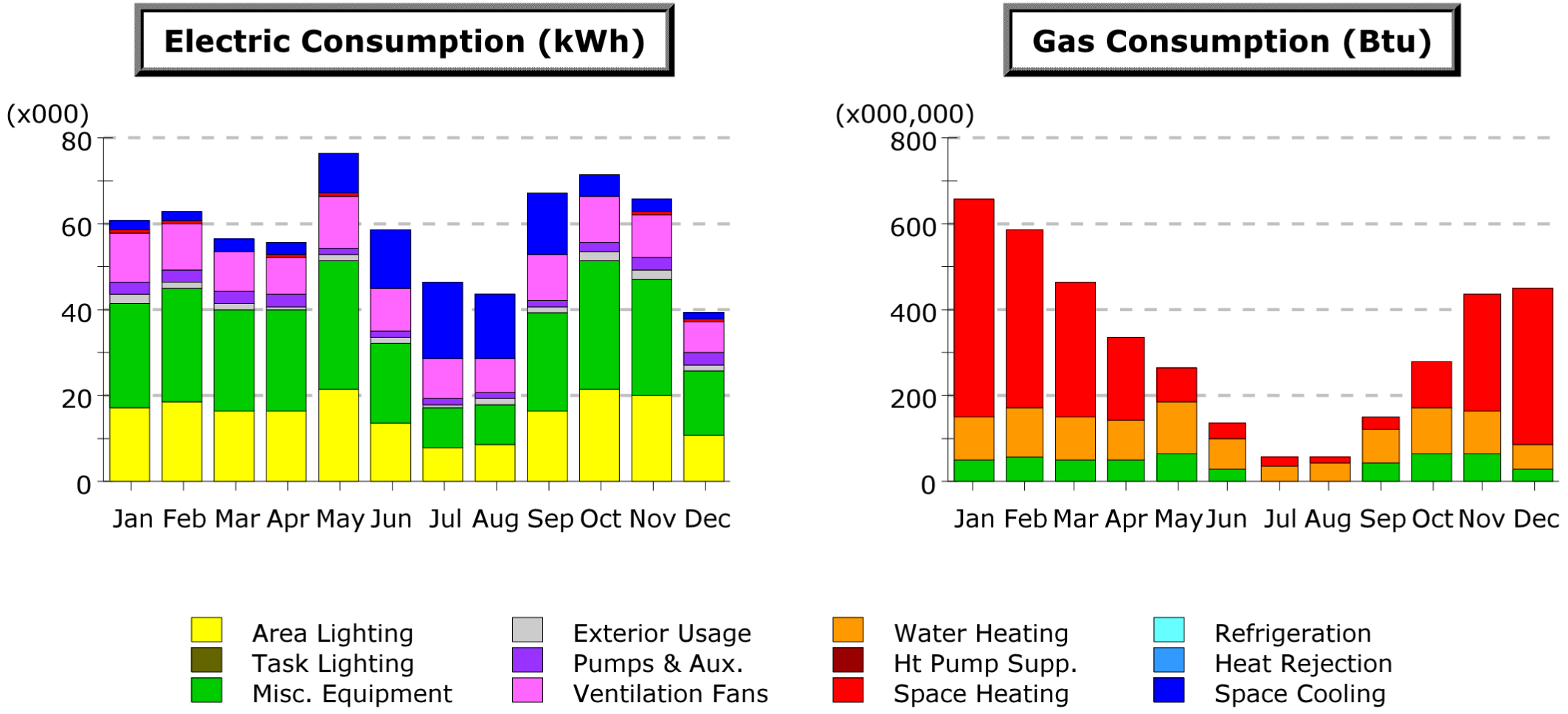

**Gas Consumption (Btu)**



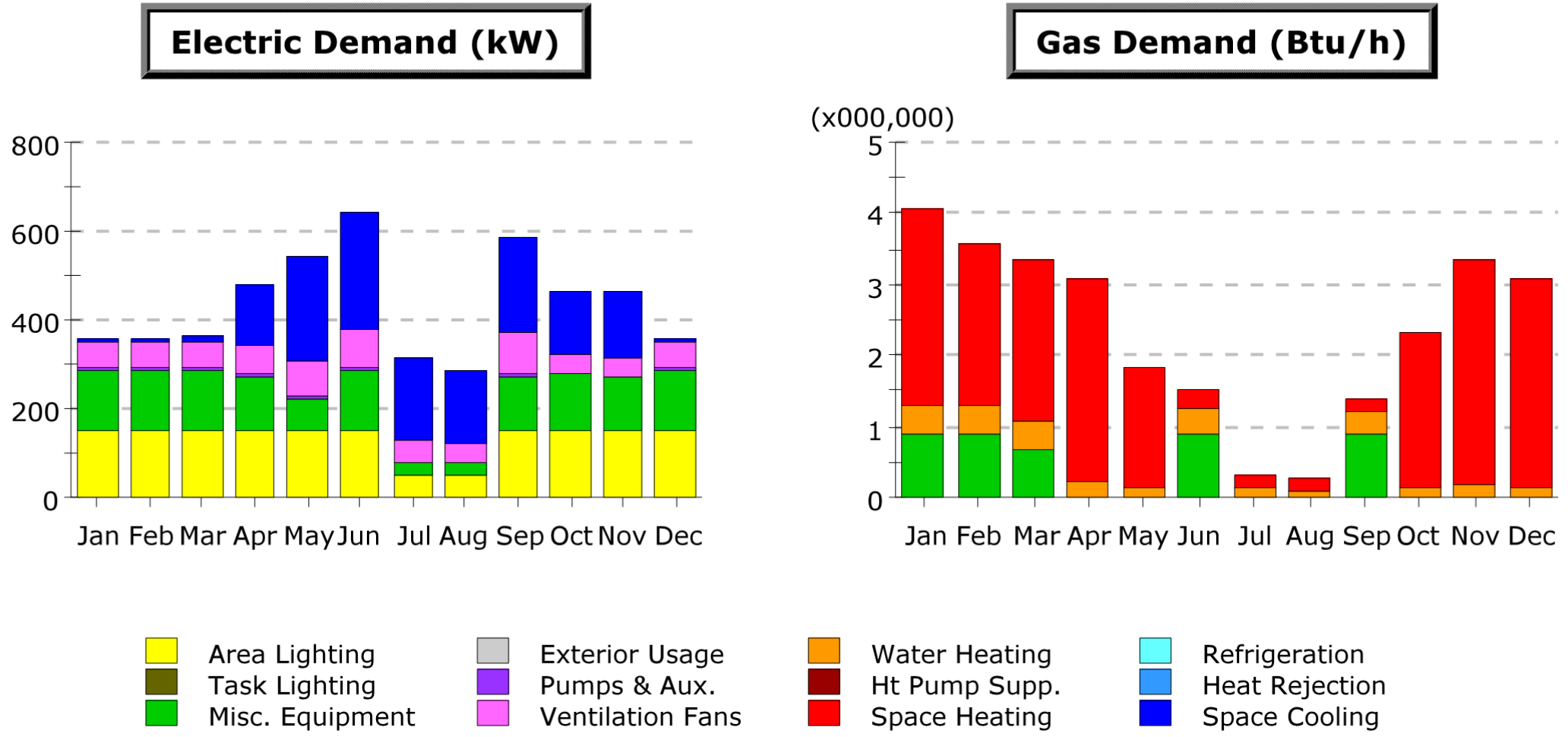

Area Lighting
Task Lighting
Misc. Equipment
Exterior Usage
Pumps & Aux.
Ventilation Fans
Water Heating
Ht Pump Supp.
Space Heating
Refrigeration
Heat Rejection
Space Cooling

# ENERGY CONSUMPTION – LEED BASE CASE

NOTE VERTICAL SCALE!!

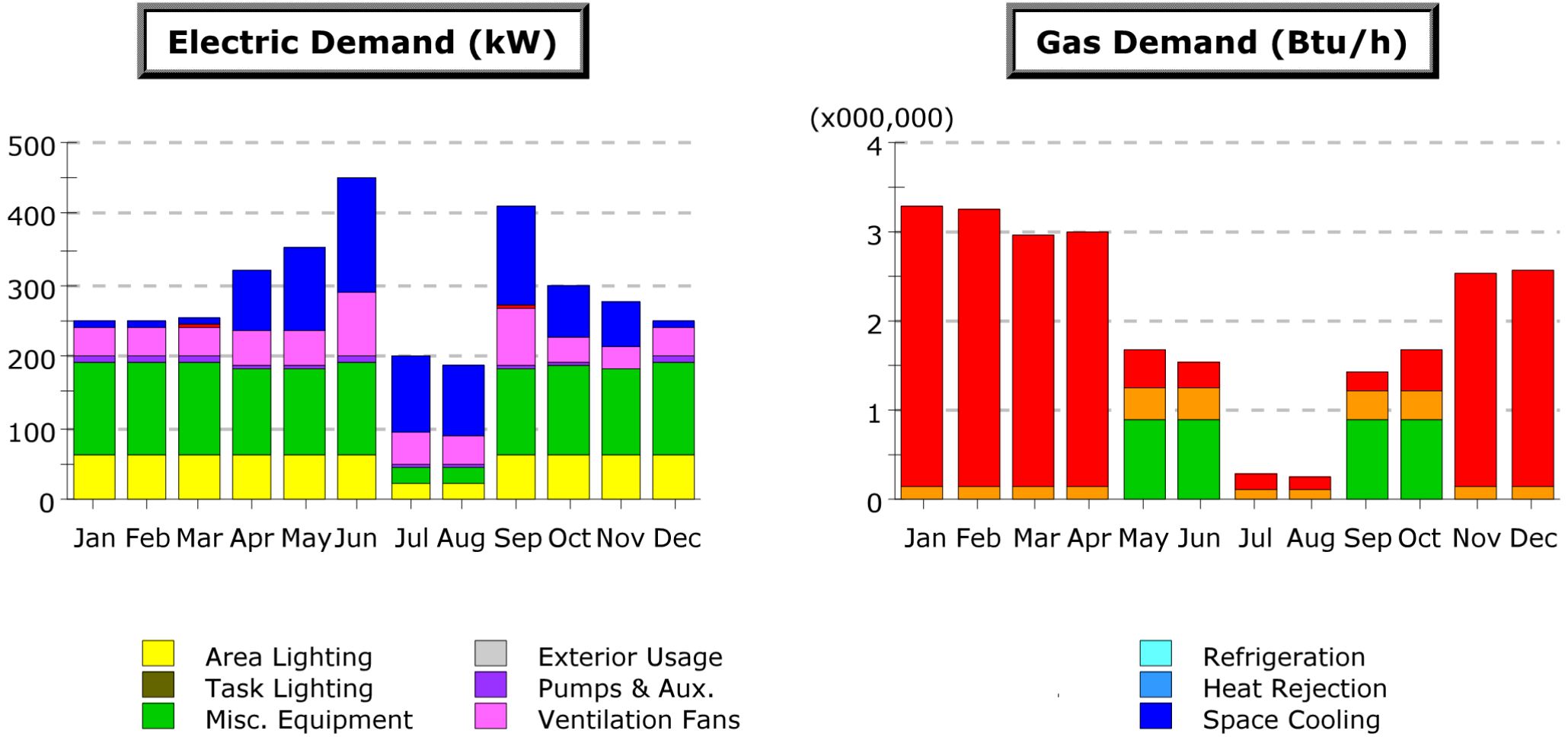



# ENERGY CONSUMPTION – DESIGN CASE



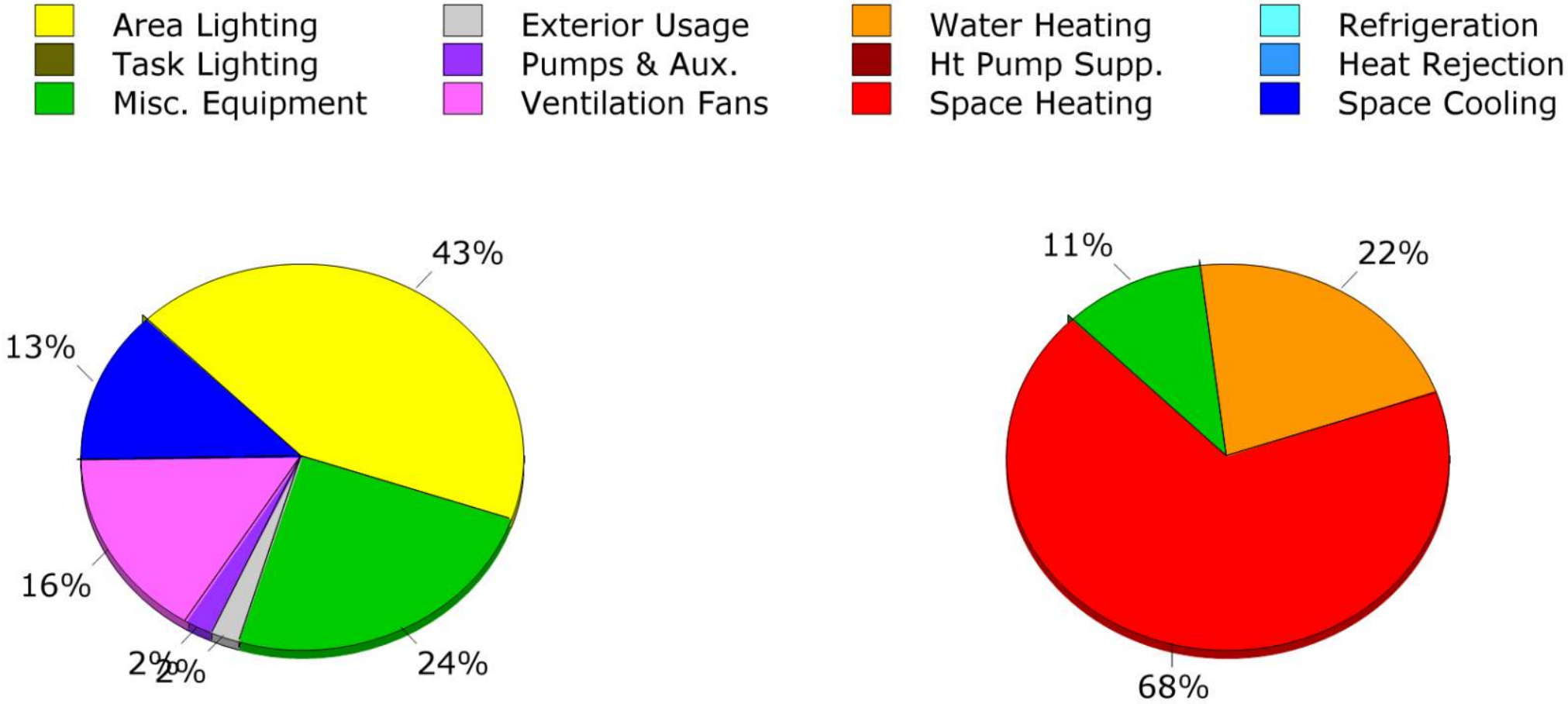

# ENERGY DEMAND (MAX.) – LEED BASE CASE

NOTE VERTICAL SCALE!!




# ENERGY DEMAND (MAX.) – DESIGN CASE

# ANNUAL ENERGY CONSUMPTION BY END USE

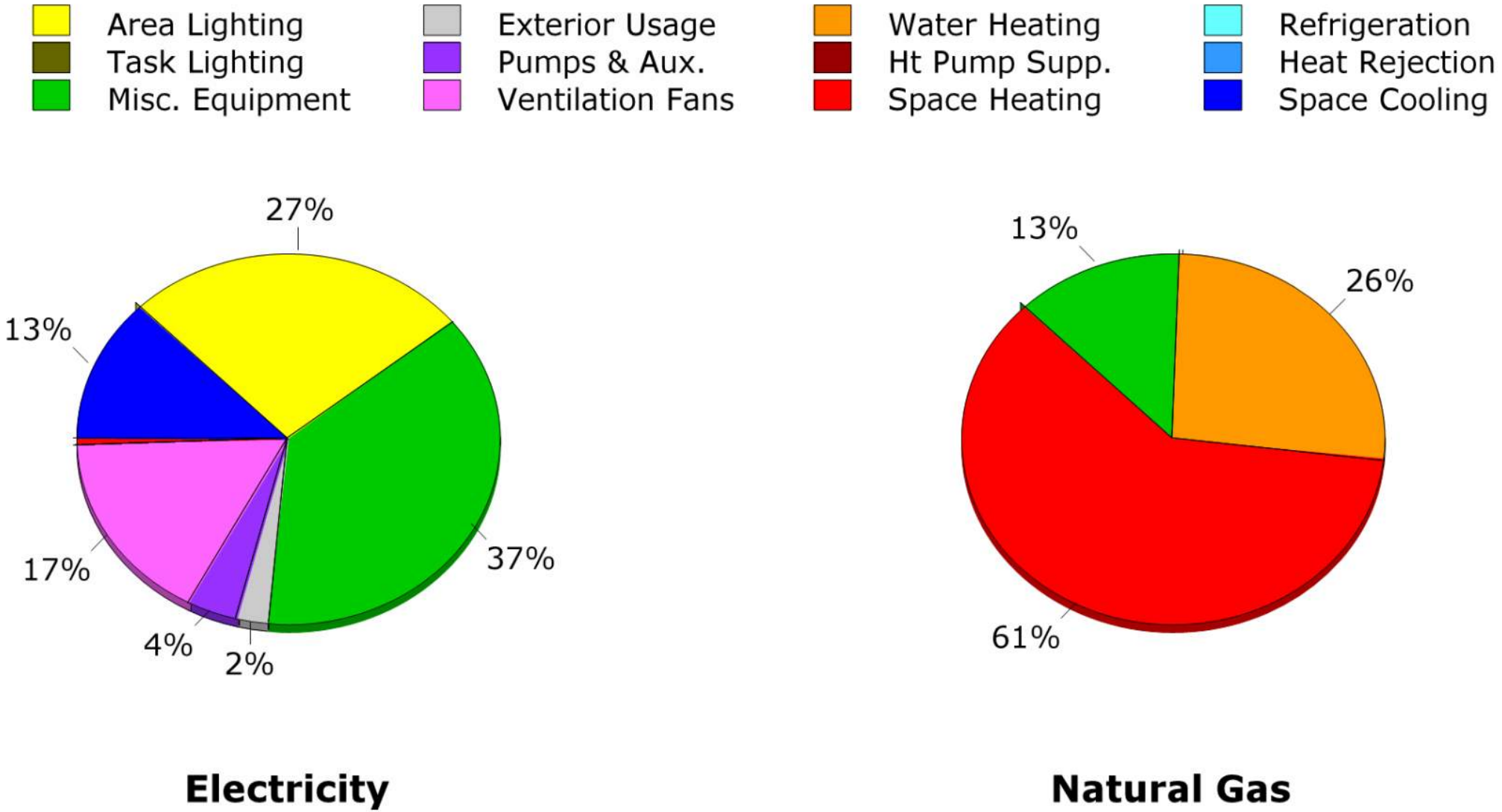



**Electricity**

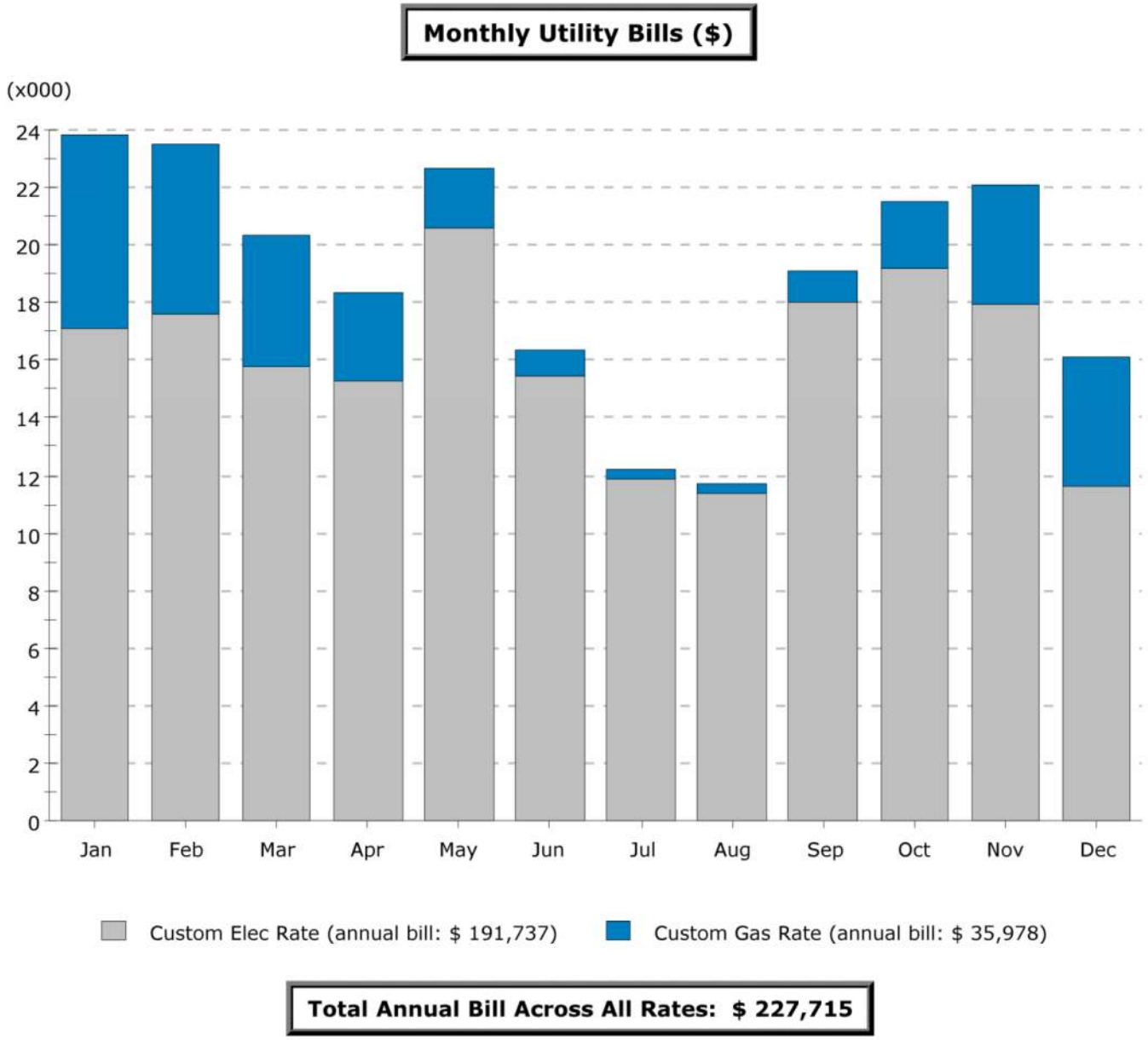
**Natural Gas**

# UPDATED ENERGY MODEL – LEED BASE CASE

# ANNUAL ENERGY CONSUMPTION BY END USE

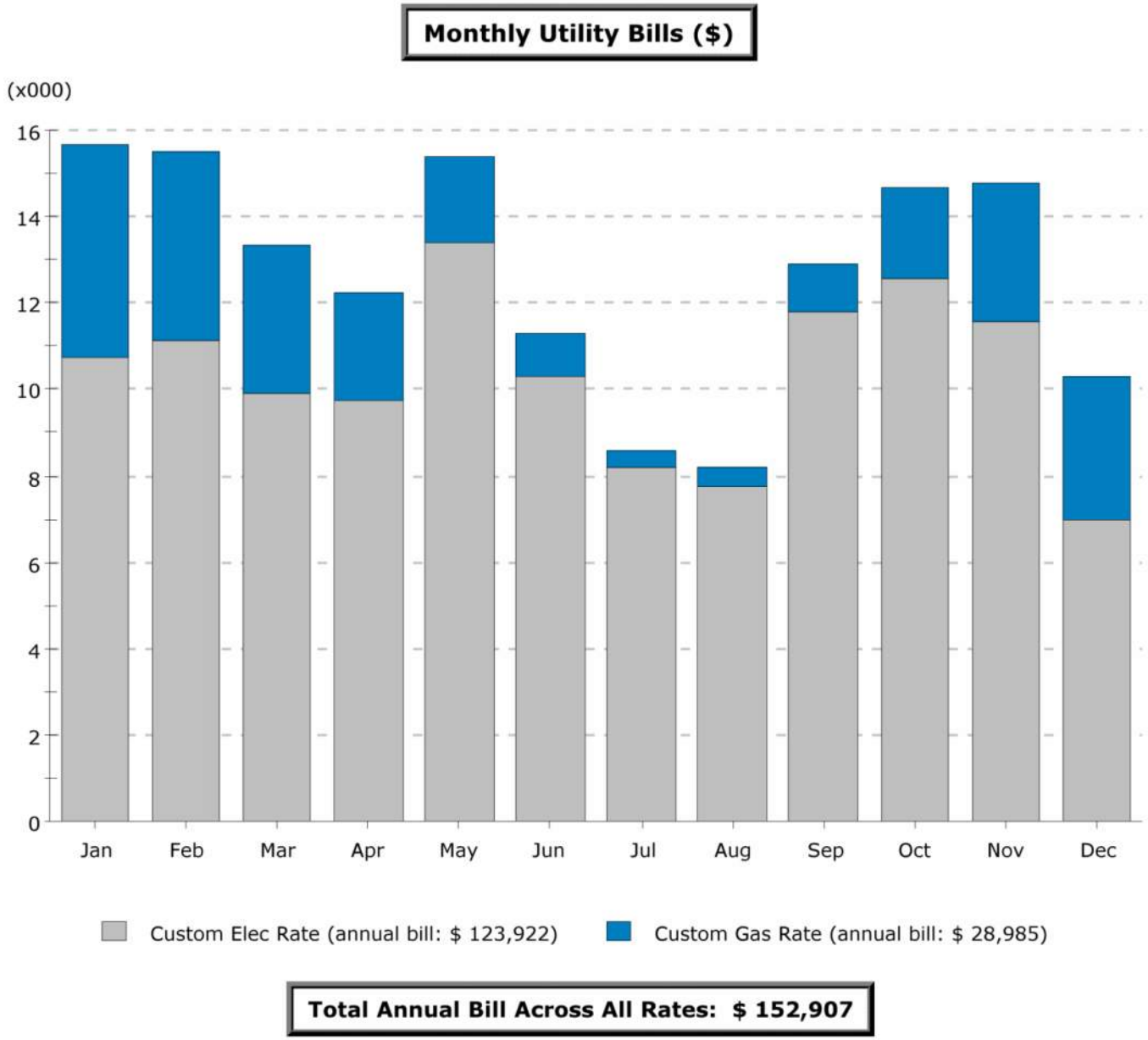



# UPDATED ENERGY MODEL – DESIGN CASE




# MONTHLY UTILITY COST – LEED BASE CASE

NOTE VERTICAL SCALE!!




**Total Annual Bill Across All Rates: $ 152,907**

# MONTHLY UTILITY COST – DESIGN CASE

# EXISTING VERSUS NEW BUILDING:

## ESTIMATED ANNUAL OPERATING COST COMPARISON

| BUILDING | AREA (GSF) | COMBINED UTILITY COST (GAS + ELECTRIC) | ESTIMATED EXPENSE INCREASE (Delta) | ESTIMATED ANNUAL MAINT. COST |
|---|---|---|---|---|
| EXISTING BALMER + NES | 128,431 GSF | $130,870 | - | $31,100 |
| PROPOSED (DESIGN) BUILDING | 167,352 GSF | ~~$197,323[1]~~ $152,907 | ~~$66,453[1]~~ $22,037 | $37,000 |

[1] SD ESTIMATED COSTS

DD MODEL RUN UPDATED 2/19/2019

# SHADING AND DAYLIGHT STUDIES

We evaluated vertical sunshades on the west elevation, compared to horizontal shades as originally designed.

Horizontal sunshade projection:
4’-8”

Vertical sunshade projection:
1’-6”

Horizontal shades, 2 PM, September

Vertical shades, 2 PM, September

Horizontal shades, 3 PM, September

Vertical shades, 3 PM, September

Horizontal shades, 4 PM, September

Vertical shades, 4 PM, September

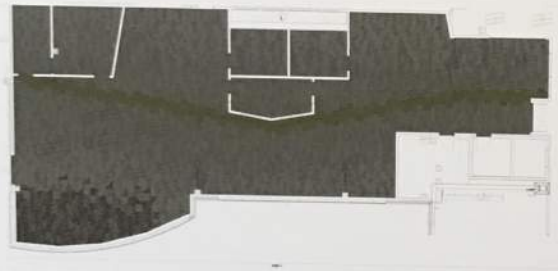
# “SECURESHADE” PRODUCT FOR WINDOW SHADES

# Video for “SecureShade” window shade control system:

https://vimeo.com/301682186


Thank You!

Color range for carpet tile at reading nook



Rendered installation pattern

Carpet tile installation "map"

Level 1 - accent carpet

Level 2 - accent carpet

Level 3 - accent carpet

W. Edward Balmer ES

February 27, 2019

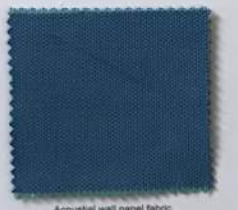
Laminate and veneer color throuhout

Countertops: Solid Surface

Proposed platform curtain fabric

OT/PT and DeEsc flooring

Stair Option A



Acoustial wall panel fabric

Acoustial wall panel fabric

Acoustial wall panel fabric

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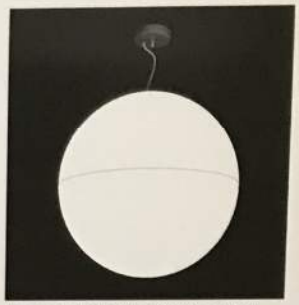
Wood ceiling in Main Corridor



White - Troughout

Doorframes

Gym and gypsum ceiling color



Proposed Pendant Lightfixture: Cafeteria and Library


Acoustical Tile - Throughout

Level 1 Main Corridor

Image: recessed linear LED light fixture

Door Color

Rubber Base

Linoleum flooring

Vestibules: Recessed entry system - Aluminum

Stair 1

Stair 2

Stair 3

Stair 4

Stair 5

Railing color

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Classroom: Grades 3-4-5

Direct/Indirect light fixture: Admin offices and Class rooms

Grades 3-4-5 classroom accen

Grades 3-4-5 ELA accent color

ELA: Grades 3-4-5

Toilet partition color

Toilet room tiles

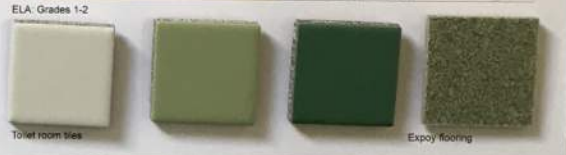
Expoy flooring

Classroom: Grades 1-2

Grades 1-2 classroom accent

Grades 1-2 ELA accent color

ELA: Grades 1-2



Toilet room tiles

Expoy flooring

Classroom: Grades PreK-K

PreK - K classroom accent

ELA accent color

ELA: Grades PreK-K

Expoy flooring

# W. Edward Balmer ES

February 27, 2019