

# Donald Lum Elementary School

## Repair & Replacement Study

23 January 2018

ALAMEDA UNIFIED SCHOOL DISTRICT



QUATTROCCHI KWOK  
ARCHITECTS

1495.05

# PROJECT BACKGROUND

---

- Overview of Engineering Studies

- Miller Pacific Geotechnical Report - March 17, 2017
- High risk of liquefaction with potential earthquake induced settlement of 5 to 10 inches due to soil liquefaction
- ZFA Structural Engineers
  - Existing shallow footings not designed for such a loss of bearing

*... buildings will sustain more damage than they would otherwise be expected to during a large seismic event including partial building collapse and inoperable doors, thus severely limiting emergency exiting from the buildings. Both of these impacts are potential life-safety concerns.*

- May 2017 Board Relocated Lum Students to Other Schools
- September 2017, District Request Study to Repair & Replace

# EXISTING CAMPUS

- 5-Buildings & Portables
  - 483 Students in 25-Classrooms
  - 40,840 SF
  - Wood, Steel & Masonry
- Site/ Building Accessibility
- Undersized Spaces
  - Classrooms
  - Adm./ Multi-Us
  - Other Education Specifications Shortcomings
- Modernization & Safety/ Security Needs





# OPTION ONE – Seismic Upgrade to Existing Campus

- Seismic Upgrade
  - Maintains Campus Size
  - Significant & Invasive Work
  - Difficult Working Conditions
- Minimum DSA Requirements
  - Lengthy DSA Review Prior to Design
  - Include Access/ Fire-Life Safety
  - Existing Material Testing
- Seismic Upgrade Overview
  - Demolish Portions of Roofs, Walls & Covered Walks. Demo All Slabs
  - Deep Driven Concrete Piles – 90'
  - Large Concrete Grade Beams
  - New Slabs of 8 to 12-inches



# OPTION ONE – Seismic Upgrade to Existing Campus

**ZFA STRUCTURAL ENGINEERS**

Donald Lum ES - Foundation Exercise

(E) Classroom Building - Foundation Retrofit

SCH/CSW

17135.01

12/6/17

S2

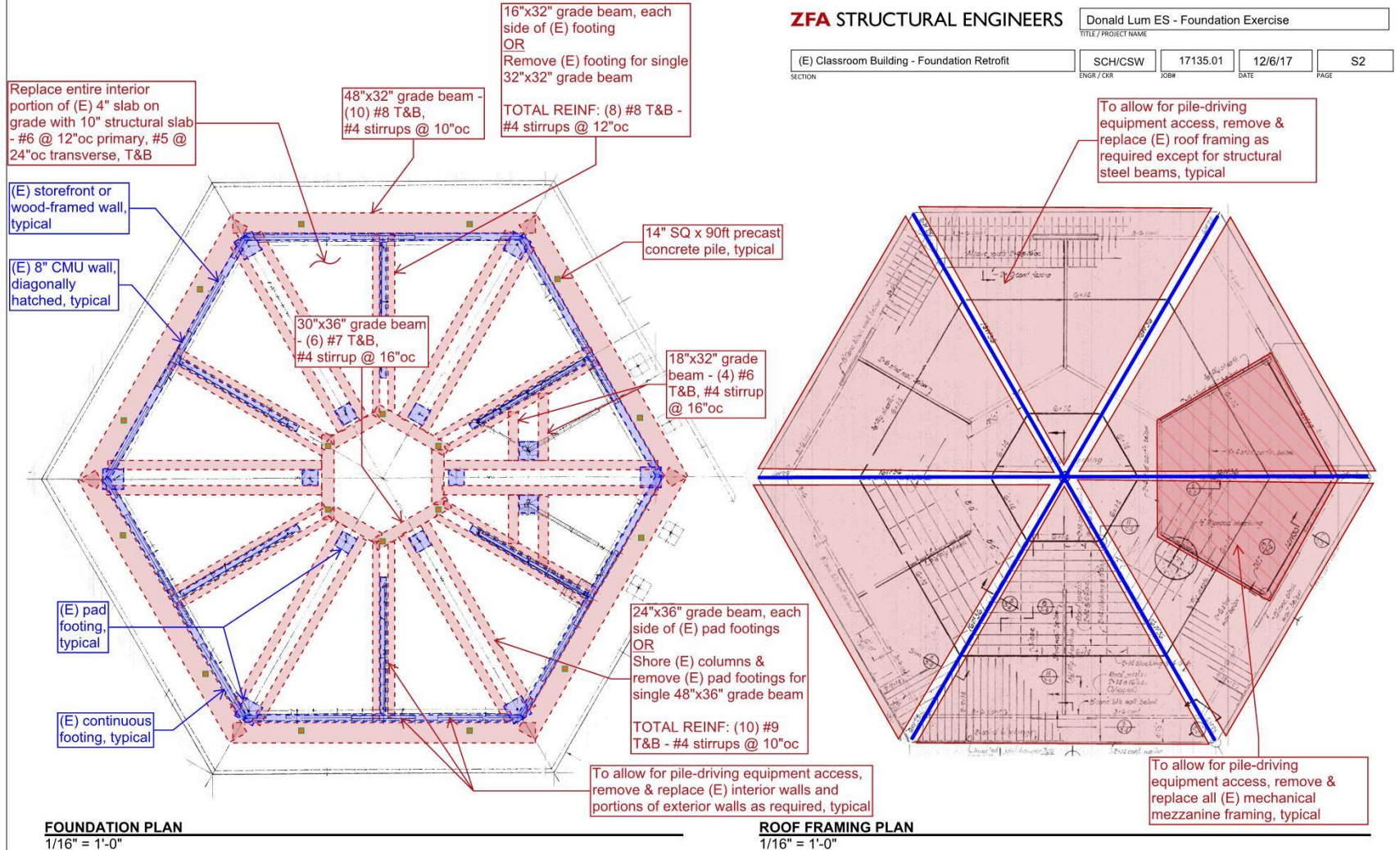
SECTION

ENGR / CR

JOBN

DATE

PAGE





# OPTION ONE – Seismic Upgrade to Existing Campus

**ZFA STRUCTURAL ENGINEERS**

Donald Lum ES - Foundation Exercise

(E) Double-Sized Classroom Bldg - Foundation Retrofit

SCH/CSW

17135.01

12/6/17

S3

SECTION

ENGR / CR

JOB#

DATE

PAGE

Replace entirety of interior 5" concrete slab on grade with 12" structural slab - #7 @ 12"oc primary, #5 @ 24"oc transverse, T&B

14" SQ x 90ft precast concrete pile, typical

30"x24" grade beam each side of (E) pad footing - (5) #9 T&B, #4 stirrup @ 12"oc

(E) pad footing, typical

(E) storefront or wood-framed wall, typical

(E) continuous footing, typical

24"x24" grade beam - (4) #9 T&B, #4 stirrup @ 10"oc, typical unless noted otherwise

To allow for pile-driving equipment access, remove & replace (E) interior walls and exterior walls as required, typical

**FOUNDATION PLAN**

1/16" = 1'-0"

To allow for pile-driving equipment access, remove & replace (E) roof framing, typical (3) shaded areas

**ROOF FRAMING PLAN**

1/16" = 1'-0"

# OPTION ONE – Seismic Upgrade to Existing Campus

**ZFA STRUCTURAL ENGINEERS**

Donald Lum ES - Foundation Exercise

(E) Admin & Multi-Purpose Building - Foundation Retrofit

SCH/CSW

17135.01

12/6/17

S4

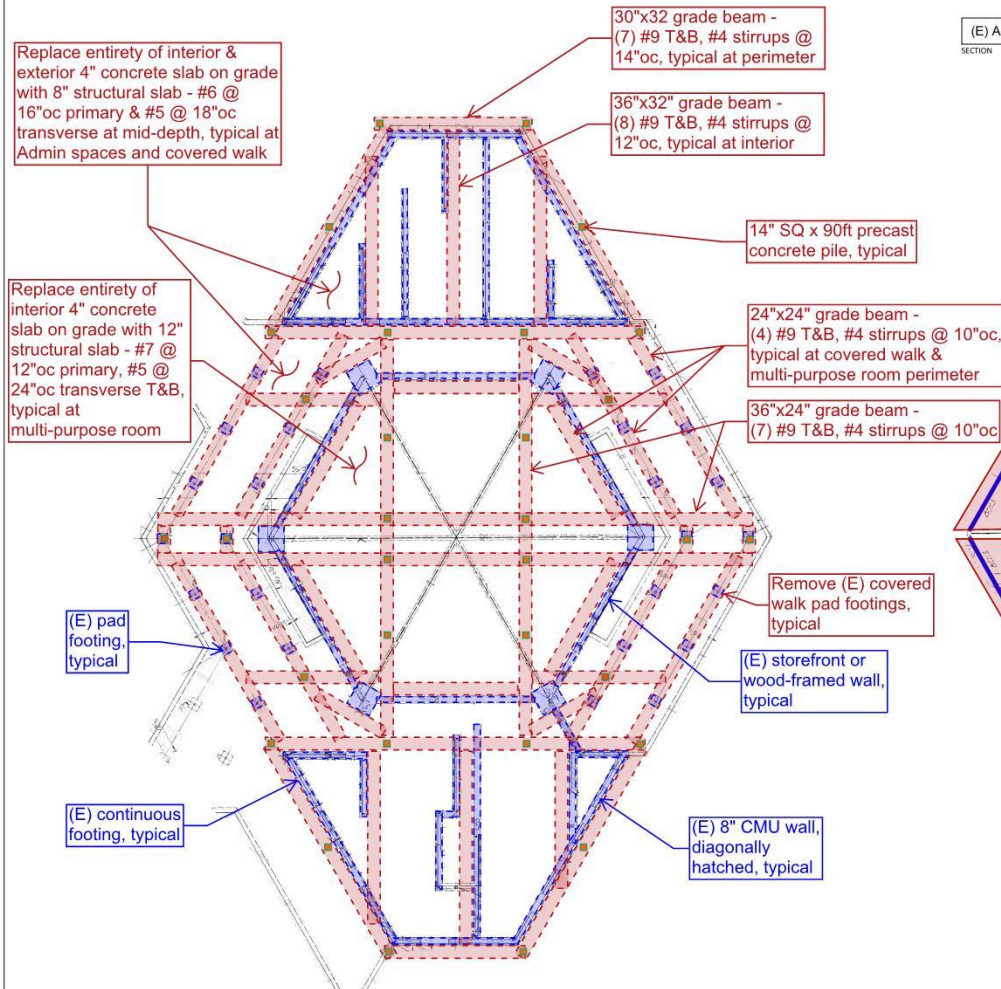
SECTION

ENGR / CR

JOBN

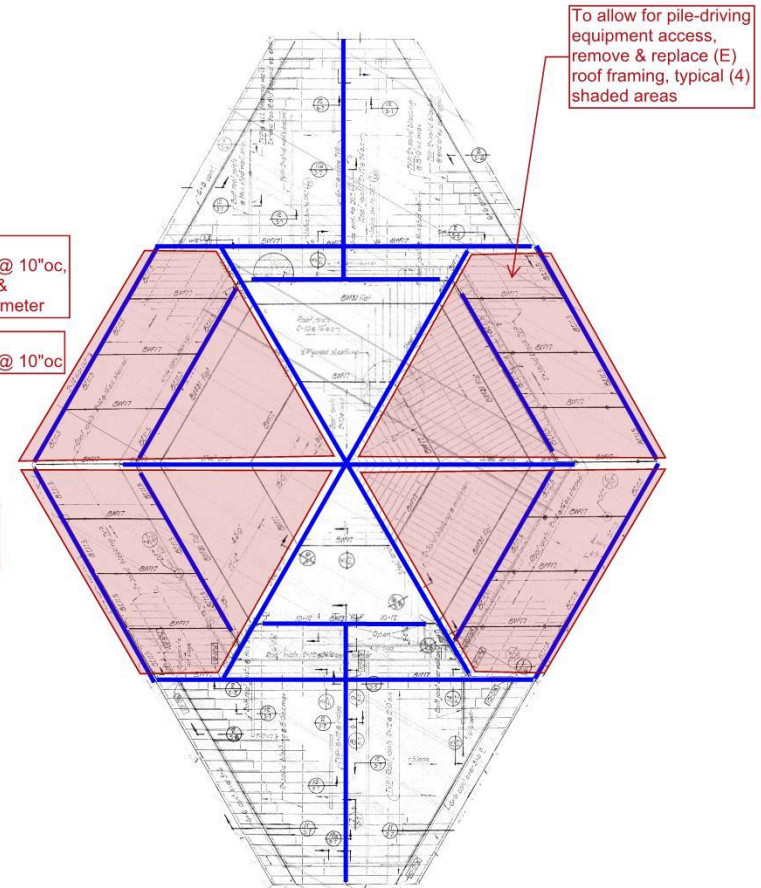
DATE

PAGE



**FOUNDATION PLAN**

0.05" = 1'-0"



**ROOF FRAMING PLAN**

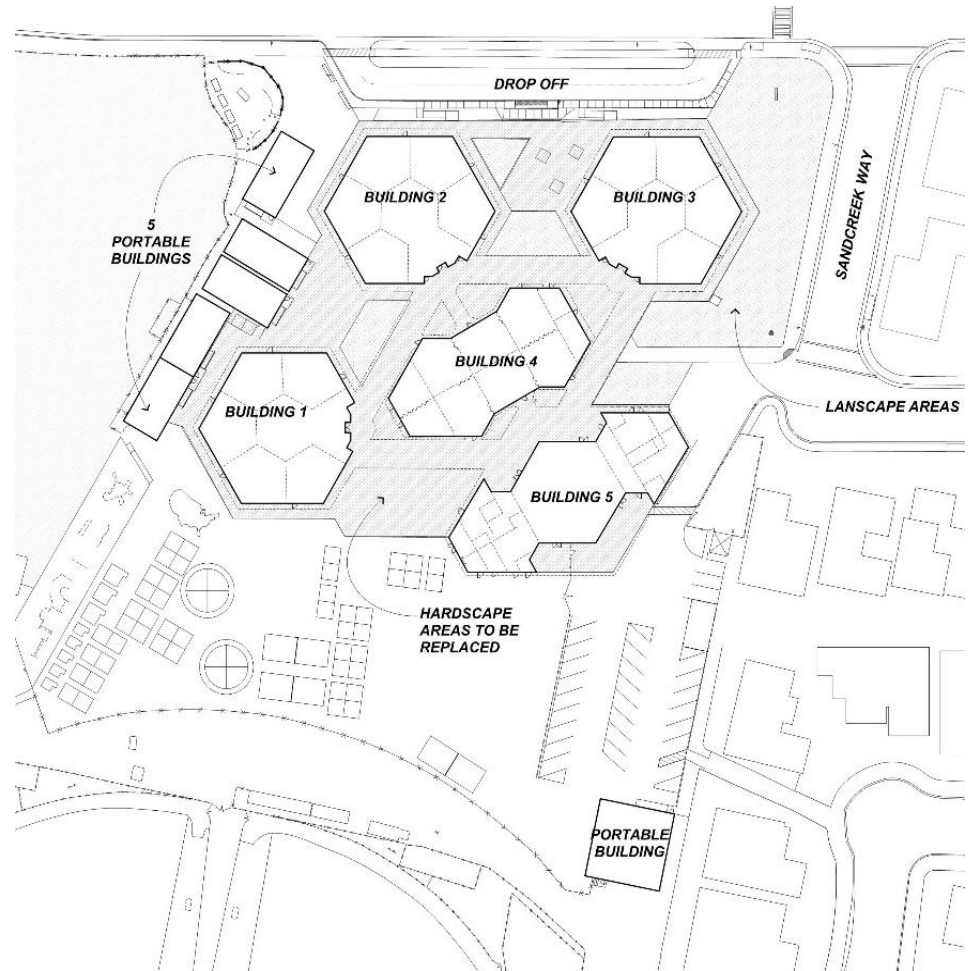
0.05" = 1'-0"



# OPTION ONE – Seismic Upgrade to Existing Campus

- Other Required Upgrades

- Replace Demolished Covered Walks and Wall/ Roof Framing
- All New Finishes
- Mech/ Electrical Systems
- Reconfigure Toilet Rooms
- Site Paving & Landscape Replaced (Blacktop reused)





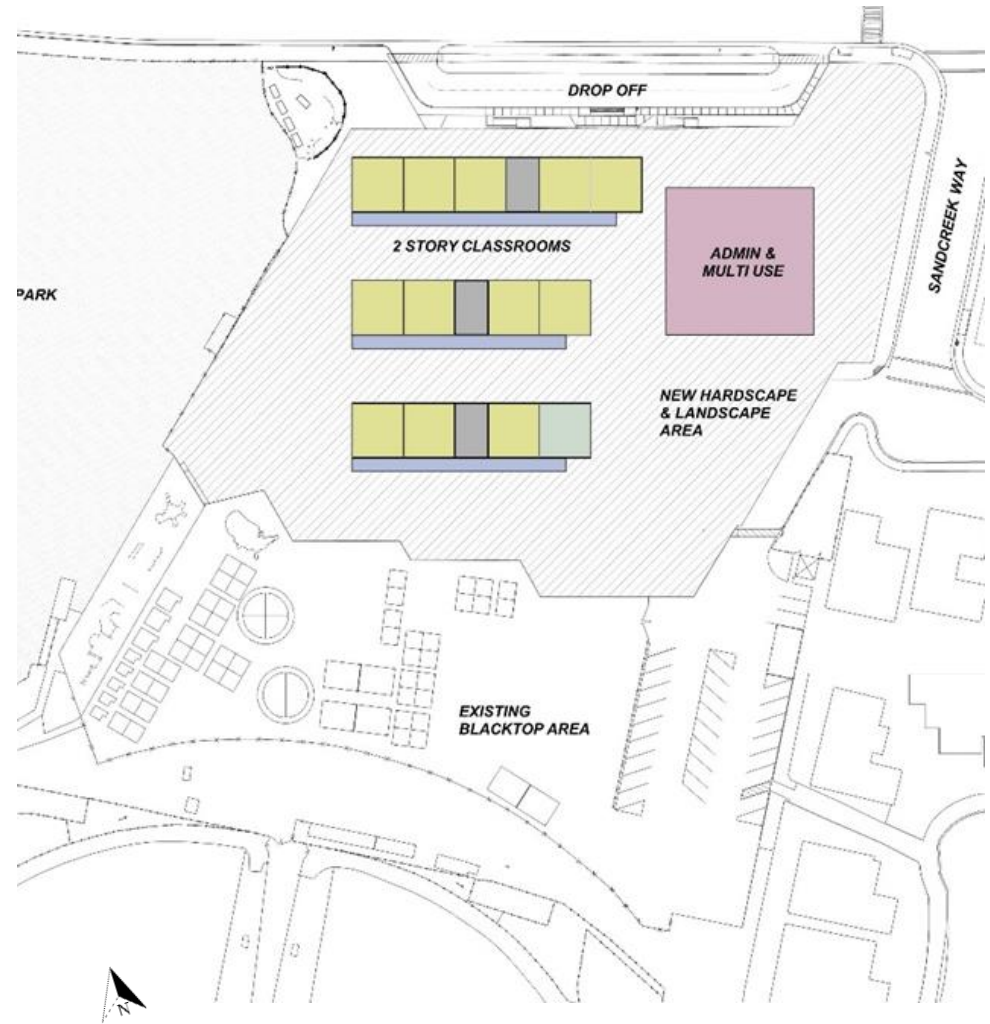
# OPTION ONE – Seismic Upgrade to Existing Campus

Building	Area		\$/SF	Cost
Classroom Building 1	6,880	SF	592.93	\$4,079,361
Classroom Building 2	6,880	SF	592.93	4,079,361
Classroom Building 3	6,880	SF	592.93	4,079,361
Classroom Building 4	7,050	SF	592.93	4,180,159
Administration & Multi-Use Building 5	7,550	SF	592.93	4,476,624
Portable Buildings	5,600	SF	221.62	1,241,085
Subtotal Buildings	40,840	SF		\$22,135,949
Covered Walkway	10,070	SF	303.28	3,054,032
Sitework	46,450	SF	27.52	1,278,498
Subtotal Sitework				<u>\$4,332,530</u>
				\$26,468,479
Non-Construction Costs	30%			<u>\$7,940,544</u>
<b>TOTAL OPTION ONE</b>				
Seismic Upgrade to Existing Campus - January 2018				\$34,409,023

Today's Cost Excluding Escalation to Future Years of Construction

# OPTION TWO – Replacement Campus

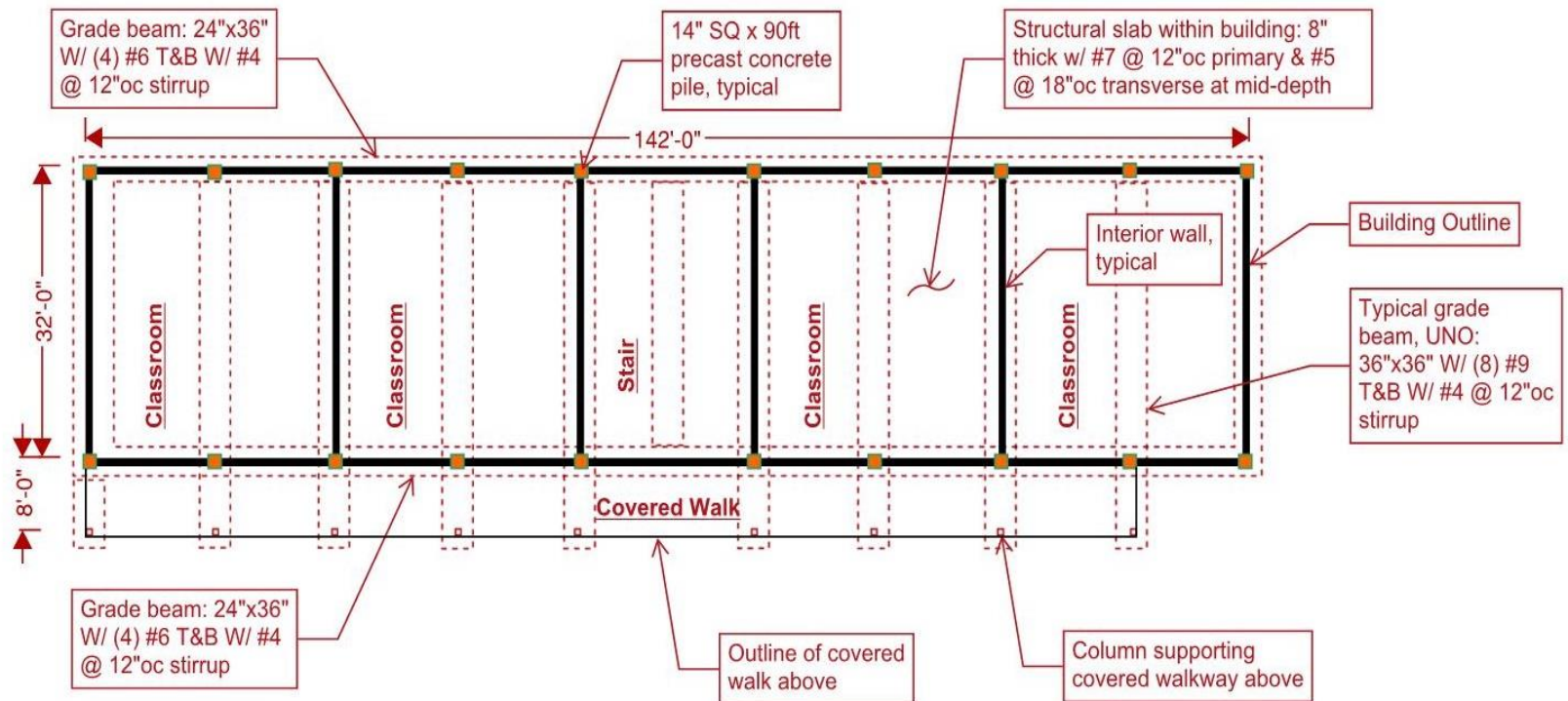
- Similar Size to Existing
  - Concept Sketch Only
  - 483 Students in 25-Classrooms
    - Meets State Size Standards
  - 44,385 SF
  - Replace Site Paving & Landscape (Blacktop reused)
- Two-Story Classroom Buildings
- Administration and Multi-Use Building
  - Remain as Undersized Spaces for Comparison Purposes





## OPTION TWO – Replacement Campus

- New Construction allows opportunity to maximize foundation efficiency, which can save construction cost



**FOUNDATION PLAN**

1/16" = 1'-0"

## OPTION TWO – Replacement Campus

---

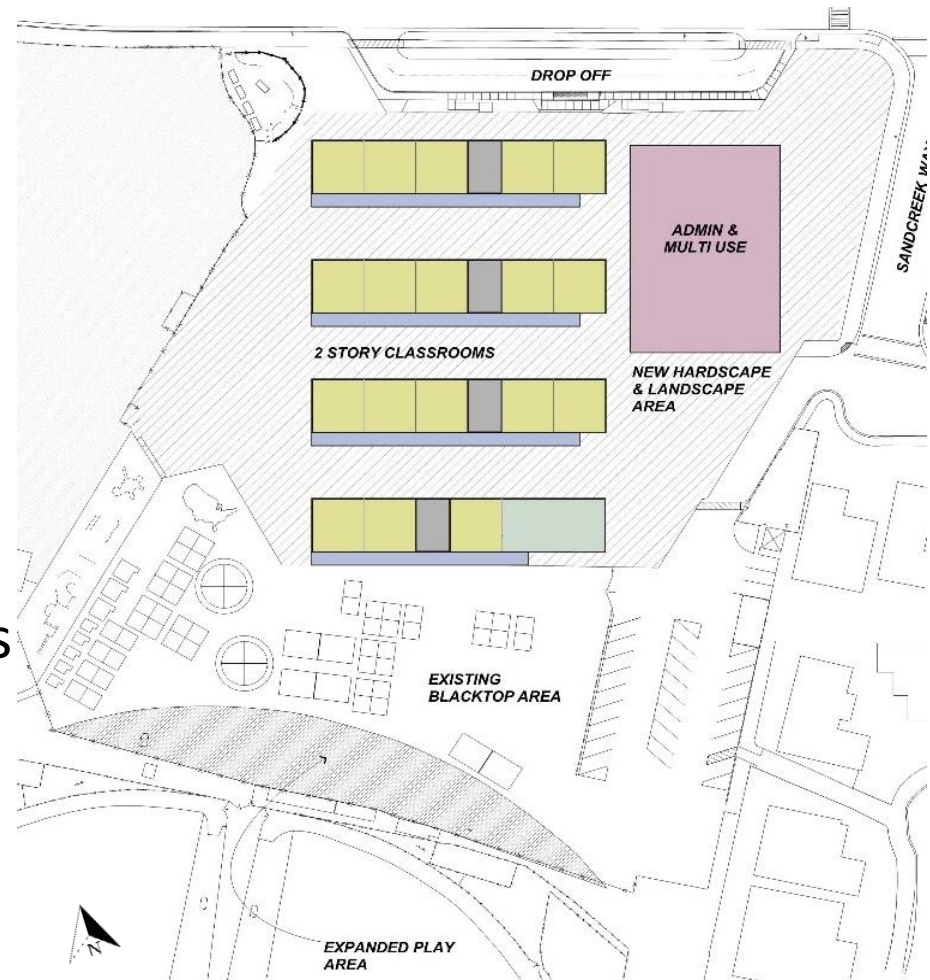
Building	Area		\$/SF	Cost
Two Story Classroom Buildings	36,835	SF	468.00	\$17,238,780
Admin & Multi-Use	7,550	SF	650.00	4,907,500
Subtotal Buildings	44,385	SF		\$22,146,280
Sitework	68,280	SF	45.29	3,092,685
Subtotal Sitework				\$3,092,685
				\$25,238,965
Non-Construction Costs	30%			\$7,571,689
TOTAL OPTION TWO - Campus Replacement January 2018				\$32,810,654

Today's Cost Excluding Escalation to Future Years of Construction



# OPTION THREE – Enlarged Replacement Campus

- Enlarged Campus Size
  - Concept Sketch Only
  - Up to 750 Students in 38-Classrooms
    - Meets State Size Standards
  - 67,110 SF
  - Replace Site Paving & Landscape (Blacktop reused)
  - Increase Playground Area
- Two-Story Classroom Buildings
- Enlarged Administration, Library & Multi-Use



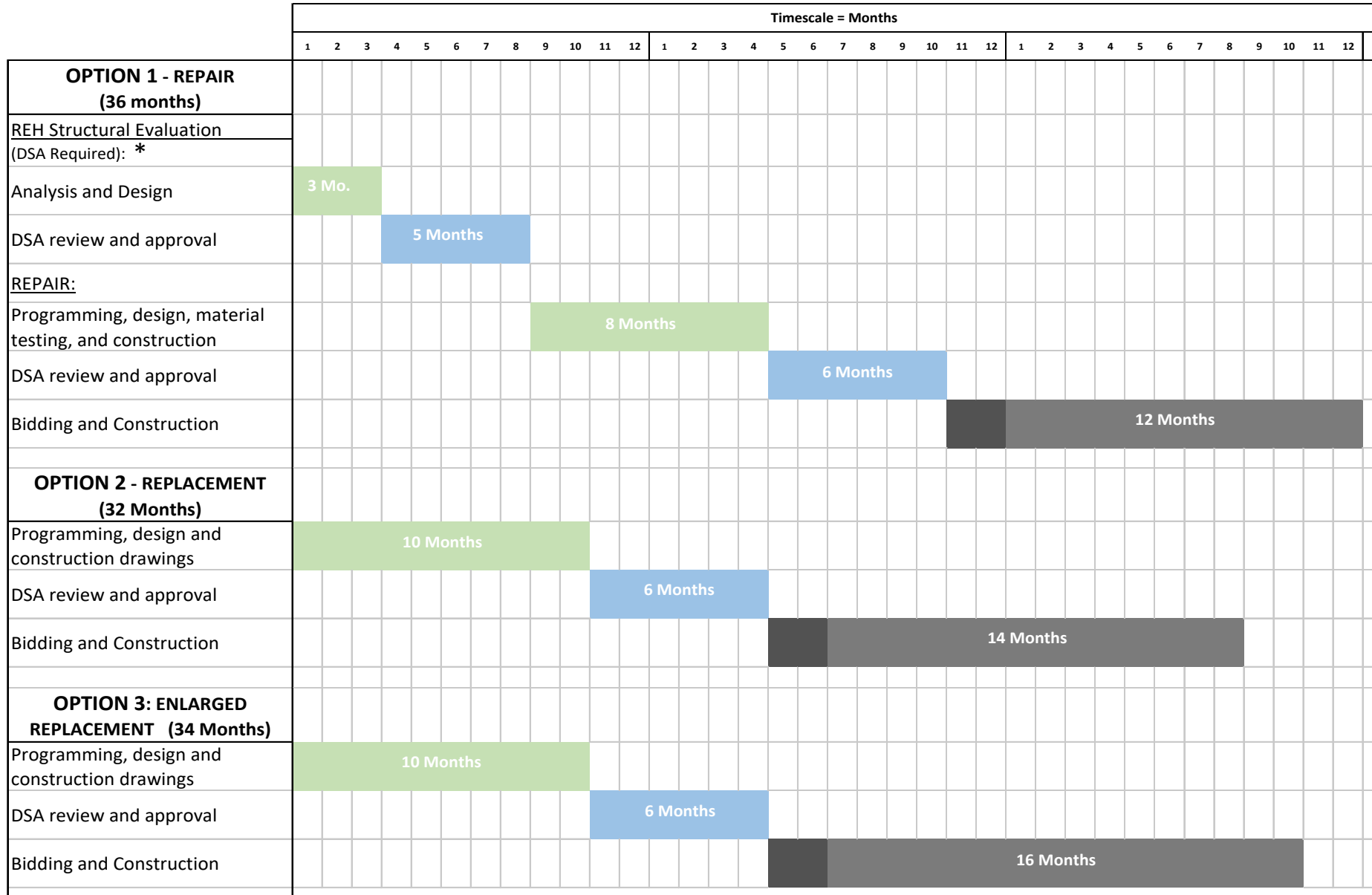
## OPTION THREE – Enlarged Replacement Campus

Building	Area		\$/SF	Cost
Two Story Classroom Buildings	55,785	SF	468.00	\$26,107,380
Admin & Multi-Use	11,325	SF	650.00	7,361,250
Subtotal Buildings	67,110	SF		\$33,468,630
Sitework	60,000	SF	49.99	2,999,236
Subtotal Sitework				\$2,999,236
				\$36,467,866
Non-Construction Costs	30%			\$10,940,360
<b>TOTAL OPTION THREE</b>				
<b>Enlarged Campus Replacement - January 2018</b>				<b>\$47,408,226</b>

Today's Cost Excluding Escalation to Future Years of Construction



## SCHEDULE COMPARISON



\* REH is a DSA review process required for the approval of a seismic rehabilitation/ repair project prior to commencing design

# SUMMARY FINDINGS

---

Option	Gross Bld. Area (SF)	Number of Classrooms	Number of Students	Budget Projection (Const. & Soft Costs)
ONE – Seismic Upgrade of Existing Campus	40,840	25	483	\$34.4 million
TWO – Campus Replacement	44,385	25	483	\$32.8 million
THREE – Enlarged Campus Replacement	67,110	38	up to 750	\$47.4 million

- Seismic Upgrade More Costly Than New Campus
  - Exceeds “50% Replacement Cost” Threshold by over 210%
- Option One:
  - Longest Schedule
  - Susceptible to Increased Costs for Unforeseen Condition
  - Does not Correct Undersized Classrooms, Administration & Multi-Use
- If Rehousing Students at Lum, Recommend Options Two or Three

## NEXT STEPS

---

- If the direction from the Board is to pursue replacement or remediation of the Lum Elementary building:
  - Which of the three options?
  - Further Board action would be required during future open session meetings
  - Bond funds may have to be repurposed to provide funding for replacement or remediation
- If the direction from the Board is not to pursue replacement or remediation of the Lum Elementary building at this time
  - The matter may be referred to the District Advisory Committee (7-11) to review and analyze and to determine if the Lum Elementary property could be designated as “excess” or “surplus” because it will not be needed for school purposes



# Donald Lum Elementary School

## Repair & Replacement Study

### QUESTIONS?

ALAMEDA UNIFIED SCHOOL DISTRICT



QUATTROCCHI KWOK  
ARCHITECTS