

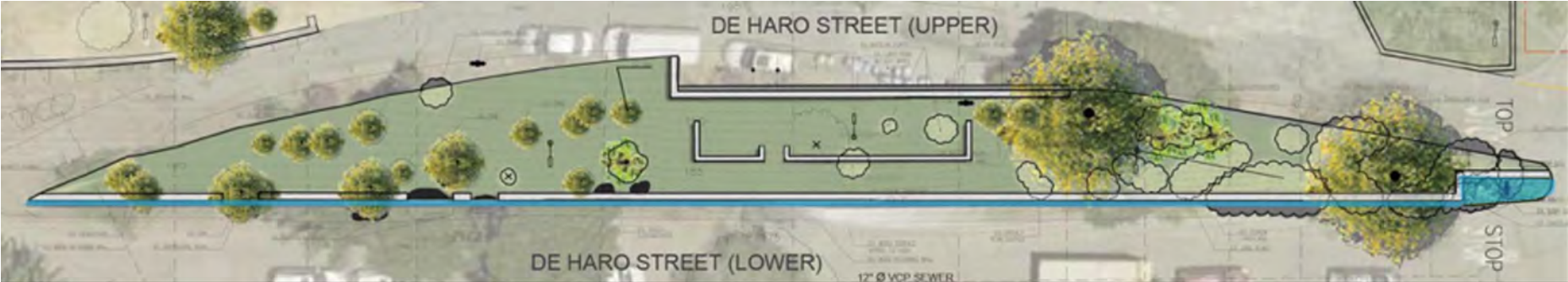
DE HARO STREET



Community Project

Community Outreach

1-15-2023



Tonight's Agenda

1. Results of Surveys
 1. How the surveys affects our plans
 - a. Accepted street
1. Options Moving Forward
 - a. Street Width
 - b. Gabions and Flex MSE
1. Community Input

Surveys

- Soil /Geotechnical Engineering
- Topographical



HOURS: 2

Ninyo & Moore

Geotechnical & Environmental Sciences Consultants

SITE PLAN
 PHASE I DE HARO STREET COMMUNITY PROJECT
 DE HARO AND 25th STREETS
 SAN FRANCISCO, CALIFORNIA
 404384001 | 10/22

DEPTH (Feet)	B.L. LEVEL	SAMPLES	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED 9/29/2022 BORING NO. B-1	GROUND ELEVATION 1975 (MSL) SHEET 1 OF 1	METHOD OF DRILLING Hand Auger	DRIVE WEIGHT DROP	SAMPLED BY COS/TBO LOGGED BY TBO REVIEWED BY TBO
0						QC	QC	DESCRIPTION/INTERPRETATION				
0							QC	SURFICIAL SOIL: Blows, moist, loose, clayey GRAVEL with sand.				
0								Total Depth: 1.3 feet stopped on refusal.				
0								Backfilled with soil shortly after boring on 9/29/2022.				
0								Notes: Groundwater was not encountered in boring at time of augering. It may rise higher due to relatively slow rate of seepage in clay and several other factors, as discussed in the report. Ground elevation shown above is an estimation only. It is based on our interpretation of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents (Google, 2022).				
5												
10												
15												
20												
25												
30												

KEY INFORMATION

- 1 8 BORINGS WERE TAKEN
- 2 TOPSOIL DEPTH VARIES FROM 5" TO 30"
- 3 SEPENTINE ROCK SUBSTRATE BELOW TOPSOIL

FIGURE A-1

Ninyo & Moore

Geotechnical & Environmental Sciences Consultants

PHASE I DE HARO STREET COMMUNITY PROJECT
 DE HARO AND 25th STREET, SAN FRANCISCO, CA
 404384001 | 10/22

Geotechnical Investigation terrain

Summary: Survey Results

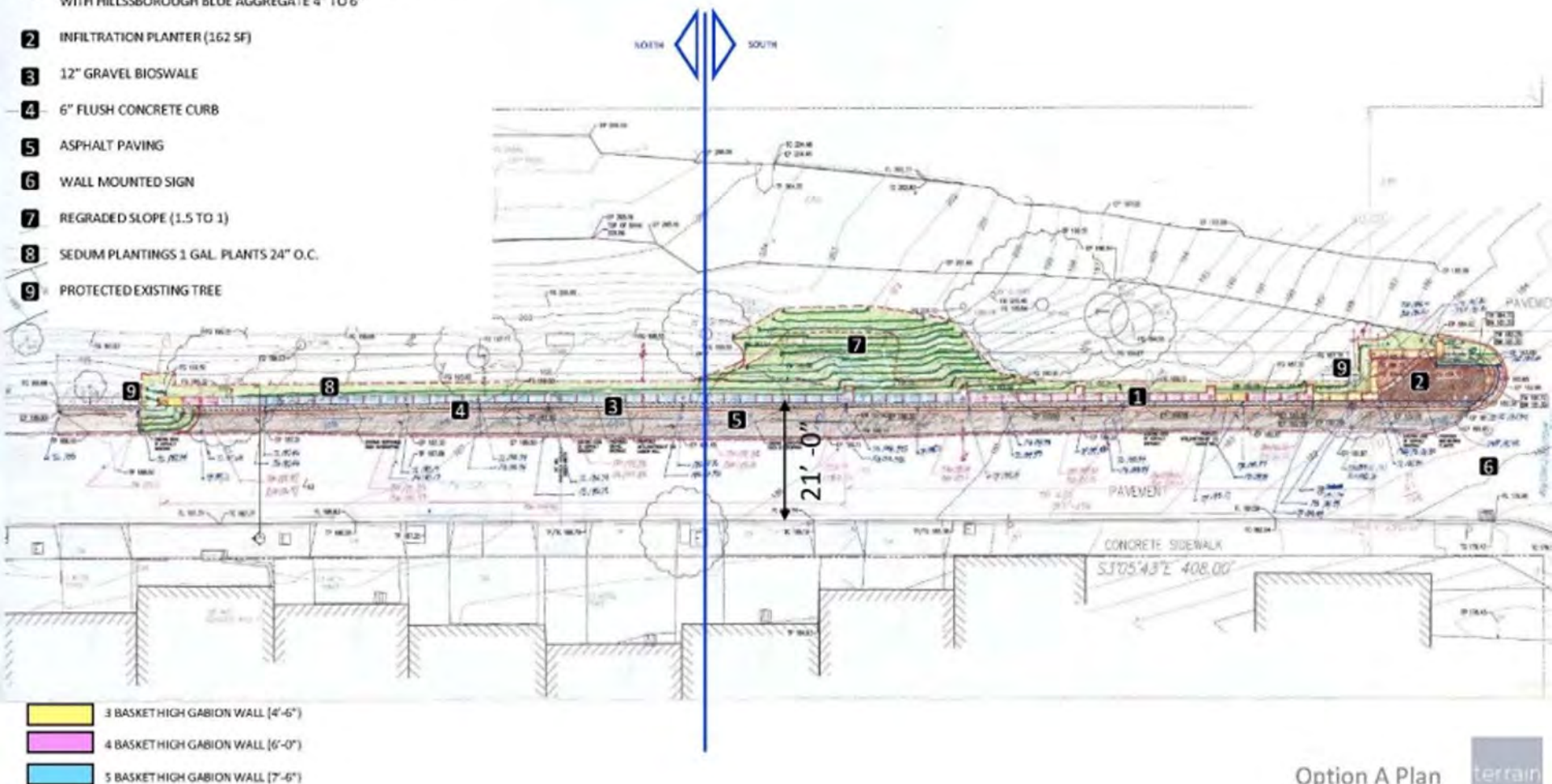
KEY INFORMATION

- Roadway 15' wide at narrowest point
- Slopes are +/- 1.5 TO 1
- 8 borings were taken
- Topsoil depth varies from 6" TO 30"
- Serpentine rock substrate below topsoil

How the Surveys Affect Our Plans

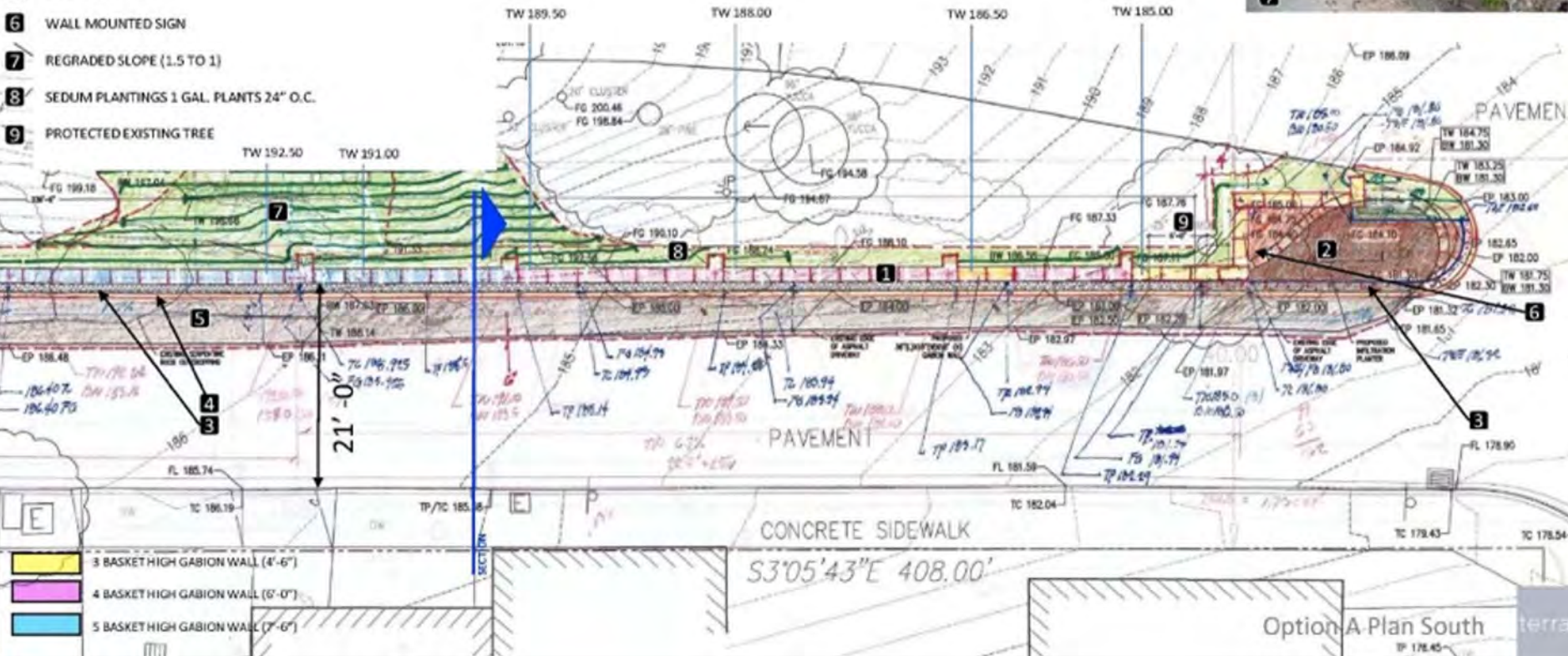
LEGEND

- 1 GABION WALL OF 18" X 18" X 36" ARCHITECTURAL BASKETS FILLED WITH HILLSBOROUGH BLUE AGGREGATE 4" TO 6"
- 2 INFILTRATION PLANTER (162 SF)
- 3 12" GRAVEL BIOSWALE
- 4 6" FLUSH CONCRETE CURB
- 5 ASPHALT PAVING
- 6 WALL MOUNTED SIGN
- 7 REGRADED SLOPE (1.5 TO 1)
- 8 SEDUM PLANTINGS 1 GAL. PLANTS 24" O.C.
- 9 PROTECTED EXISTING TREE






LEGEND

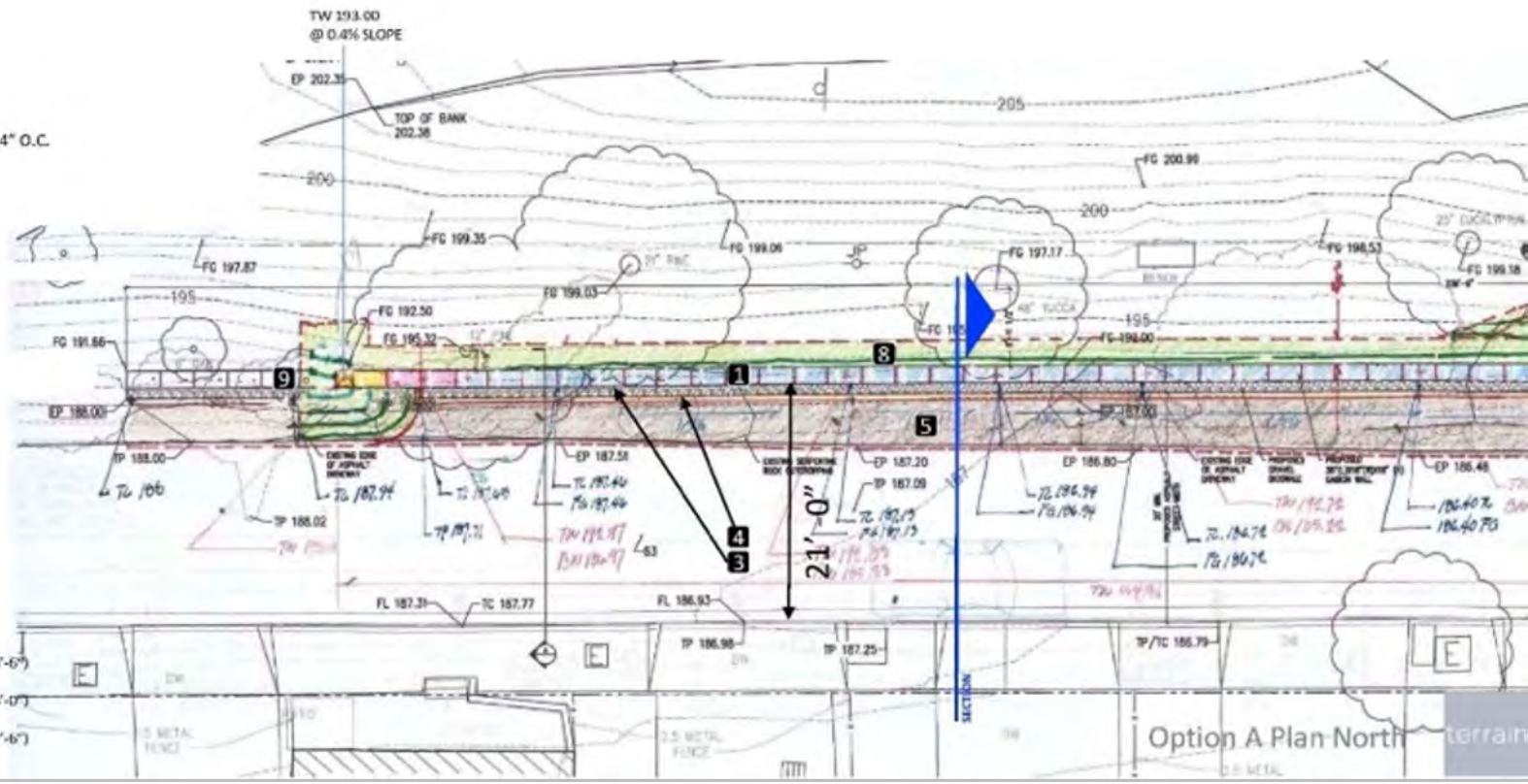
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- 9** PROTECTED EXISTING TREE

-  3 BASKET HIGH GABION WALL (4'-6")
-  4 BASKET HIGH GABION WALL (6'-0")
-  5 BASKET HIGH GABION WALL (7'-6")



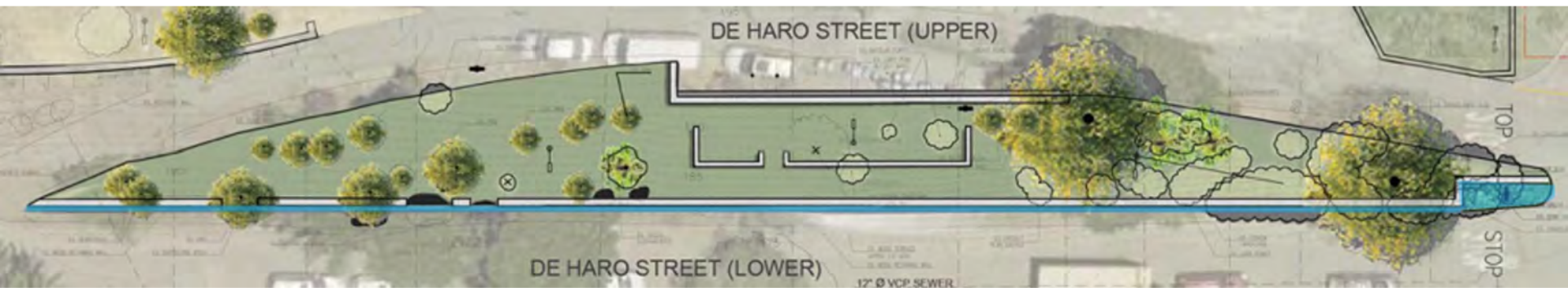
MEETS ACCEPTED STREET CRITERIA	
ESTIMATED CONSTRUCTION COST	\$280,264
GRANT CONSTRUCTION BUDGET	\$101,742
OVER BUDGET	(\$178,522)

Emergency Pivot

- Let's use an alternative method to get Street Acceptance?
- Even if Lower De Haro was made to the required width, upper De Haro never would be, and the ramp disqualifies our street from acceptance through this method.

Options Moving Forward

- a. Street Width
- b. Gabions and Flex MSE





- 1 EXISTING TREES
- 2 EXISTING EDGE OF PAVEMENT

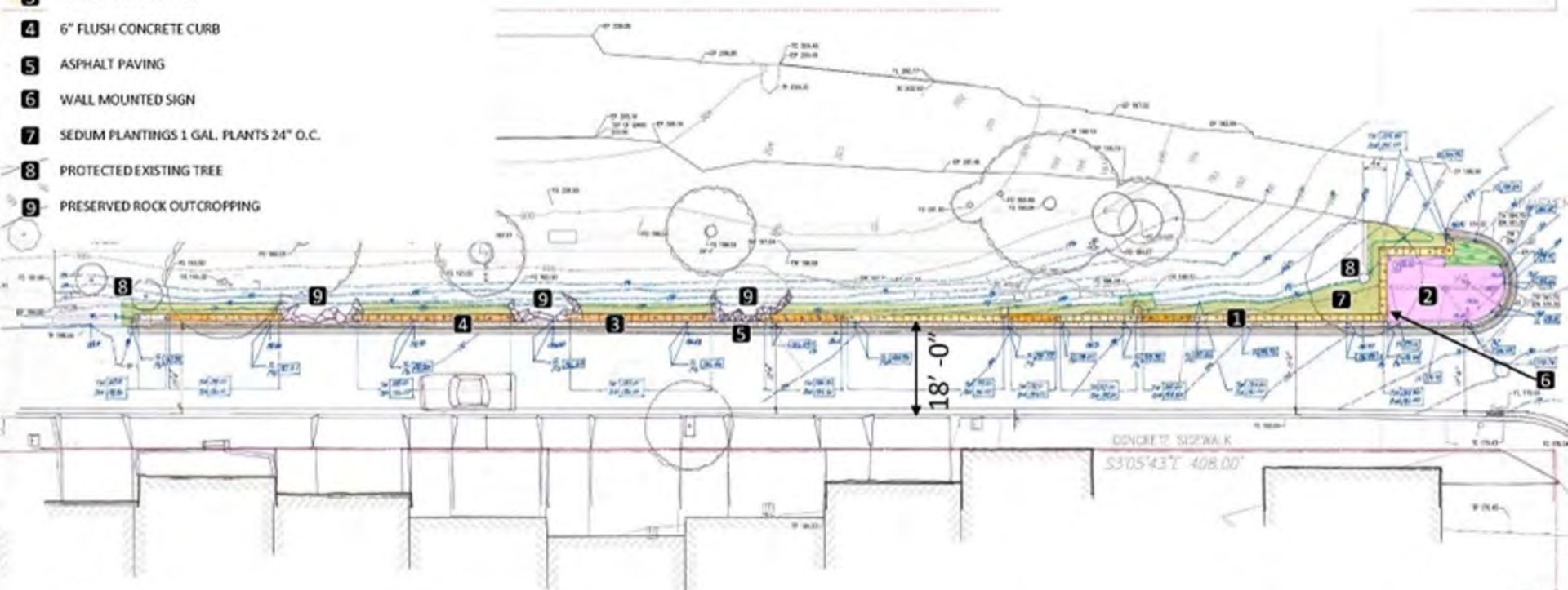
Widening the Street is a Safety Necessity



18' Street Width
with Gabion Wall

LEGEND

- 1 GABION WALL OF 18" X 18" X 36" ARCHITECTURAL BASKETS FILLED WITH HILLSBOROUGH BLUE AGGREGATE 4" TO 6"
- 2 INFILTRATION PLANTER (224 SF)
- 3 12" GRAVEL BIOSWALE
- 4 6" FLUSH CONCRETE CURB
- 5 ASPHALT PAVING
- 6 WALL MOUNTED SIGN
- 7 SEDUM PLANTINGS 1 GAL. PLANTS 24" O.C.
- 8 PROTECTED EXISTING TREE
- 9 PRESERVED ROCK OUTCROPPING



- 2 BASKET HIGH GABION WALL (3'-0")
- 3 BASKET HIGH GABION WALL (4'-6")
- 4 BASKET HIGH GABION WALL (6'-0")



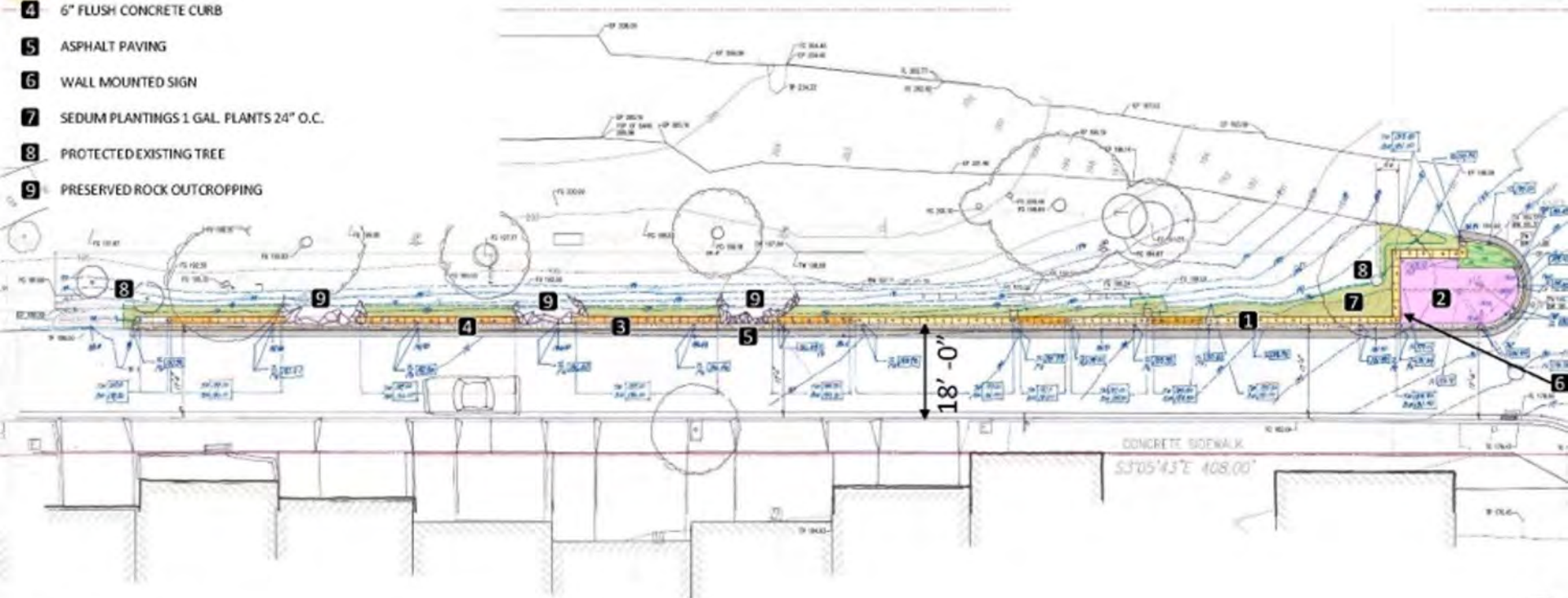
- 1** GABION WALL OF 18" X 18" X 36" ARCHITECTURAL BASKETS FILLED WITH HILLSBOROUGH BLUE AGGREGATE 4" TO 5"
- 2** GRAVEL BIOSWALE
- 3** 6" FLUSH CONCRETE CURB
- 4** ASPHALT PAVING +/- 4'-6"
- 5** REGRADED SLOPE (1.5 TO 1)
- 6** SEDUM PLANTINGS 1 GAL. PLANTS 24" O.C. +/- 2' BEHIND WALL
- 7** PRESERVED EXISTING TREES
- 8** EXISTING ROCK OUTCROPPINGS
- 9** EXISTING EDGE OF PAVEMENT

Gabion Wall 18' Wide Street Perspective

18' Street Width
With Flex MSE Wall

LEGEND

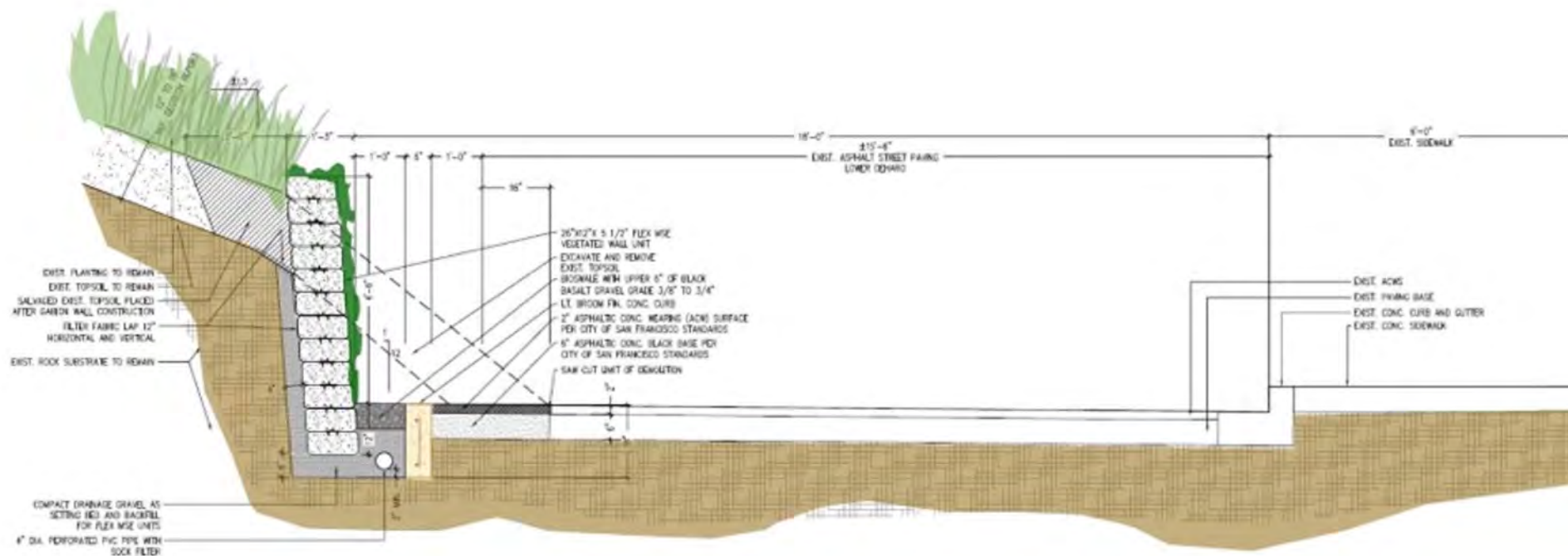
- 1** FLEXMSE WALL
- 2** INFILTRATION PLANTER (224 SF)
- 3** GRAVEL BIOSWALE
- 4** 6" FLUSH CONCRETE CURB
- 5** ASPHALT PAVING
- 6** WALL MOUNTED SIGN
- 7** SEDUM PLANTINGS 1 GAL. PLANTS 24" O.C.
- 8** PROTECTED EXISTING TREE
- 9** PRESERVED ROCK OUTCROPPING



-  FlexMSE Wall (2'-6")
-  FlexMSE Wall (4'-0")
-  FlexMSE Wall (5'-6")

FlexMSE Wall 18' Wide Street Plan







- 1 FLEXMSE WALL
- 2 HYDROSEEDED NATIVE NO MOW NATIVE GRASSES, 80% OF WALL SURFACE
- 3 PLUG PLANTED SUCCULENTS 20% OF WALL SURFACE
- 4 6" FLUSH CONCRETE CURB
- 5 GRAVEL BIOSWALE
- 6 ASPHALT PAVING +/- 4'-6"
- 7 SEDUM PLANTINGS 1 GAL. PLANTS 24" O.C. +/- 2' BEHIND WALL
- 8 PRESERVED EXISTING TREES
- 9 EXISTING ROCK OUTCROPPINGS
- 10 EXISTING EDGE OF PAVEMENT

FlexMSE Wall 18' Wide Street Perspective-After Installation



- 1 FLEXMSE WALL
- 2 HYDROSEEDED NATIVE NO MOW NATIVE GRASSES, 80% OF WALL SURFACE
- 3 PLUG PLANTED SUCCULENTS 20% OF WALL SURFACE
- 4 6" FLUSH CONCRETE CURB
- 5 GRAVEL BIOSWALE
- 6 ASPHALT PAVING +/- 4'-6"
- 7 SEDUM PLANTINGS 1 GAL. PLANTS 24" O.C. +/- 2' BEHIND WALL
- 8 PRESERVED EXISTING TREES
- 9 EXISTING ROCK OUTCROPPINGS
- 10 EXISTING EDGE OF PAVEMENT

FlexMSE Wall 18' Wide Street Perspective-After Plants Establishment

GABION WALL/ 18' WIDE STREET

ESTIMATED CONSTRUCTION COST

\$190,505

GRANT CONSTRUCTION BUDGET \$101,742

DELTA

(\$88, 763)



FLEX MSE WALL/ 18' WIDE STREET

ESTIMATED CONSTRUCTION COST

\$136,688.

GRANT CONSTRUCTION BUDGET \$101,742

DELTA

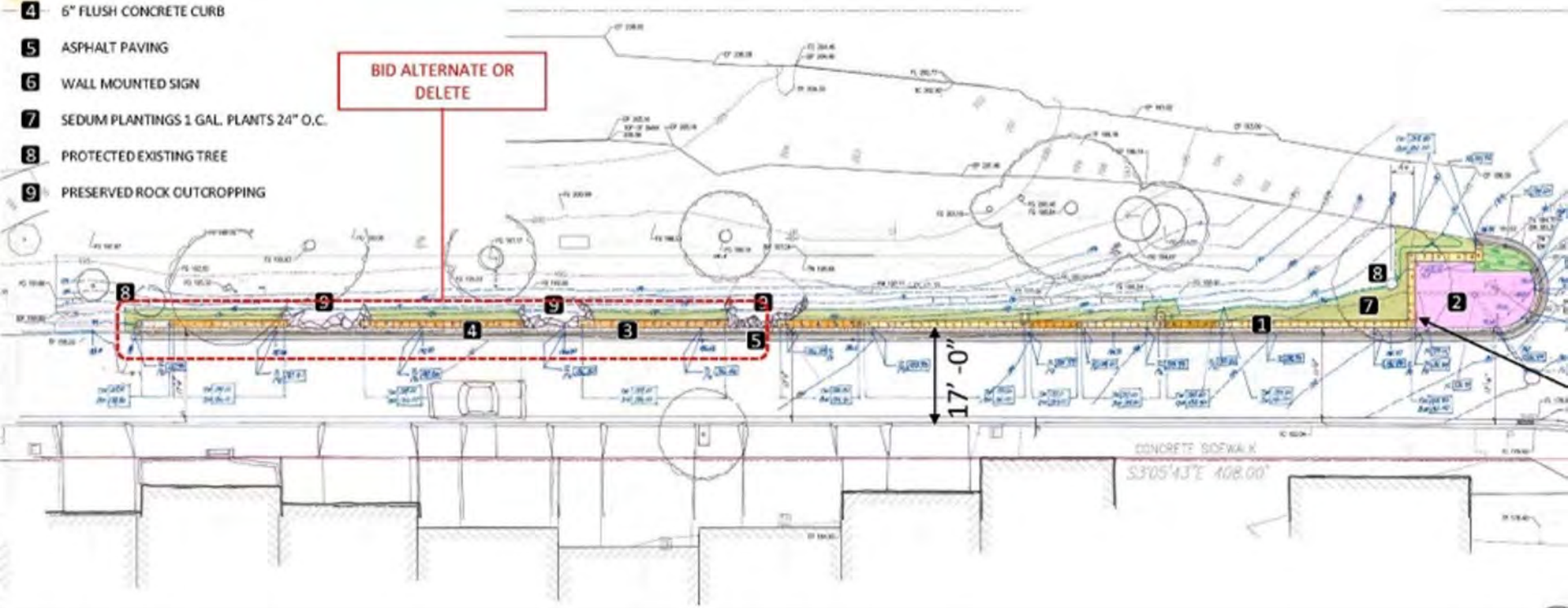
(\$34,946)



LEGEND

- 1** FLEXMSE WALL/ GABION WALL
- 2** INFILTRATION PLANTER (224 SF)
- 3** GRAVEL BIOSWALE
- 4** 6" FLUSH CONCRETE CURB
- 5** ASPHALT PAVING
- 6** WALL MOUNTED SIGN
- 7** SEDUM PLANTINGS 1 GAL. PLANTS 24" O.C.
- 8** PROTECTED EXISTING TREE
- 9** PRESERVED ROCK OUTCROPPING

BID ALTERNATE OR DELETE



Gabions vs Flex MSE



GABION AGGREGATE BACKFILL SUPPLIER;

MARTIN BROTHERS SUPPLY INC.

232 SHORELINE HWY

MILL VALLEY, 94941

(415) 388-2025

martinbros1950@gmail.com

<https://www.martinbrotherssupply.com/copy-of-decorative-flagstone>

MATERIAL:

HILLSBOROUGH BLUE GRAVEL 4" TO 6"

QUOTE DECEMBER '22

MATERIAL COST DELIVERED TO THE SITE IS \$109.00 PER TON. 1 CUBIC YARD EQUALS 0.66 TONS, EACH BASKET REQUIRES 0.25 CUBIC YARDS, AGGREGATE COST PER BASKET EQUALS **\$18.00** EACH. AGGREGATE TO BE FILLED INTO ASSEMBLED BASKETS ON-SITE

Gabions Pros

These structures have a very distinctive look that is minimalist, deconstructed, high-end, and modern.



It may appear harsh and austere but they are surprisingly versatile and blend seamlessly into any style of garden.



Gabions are sustainable. Woven metal fabric is a sustainable building material that reduces environmental strain.

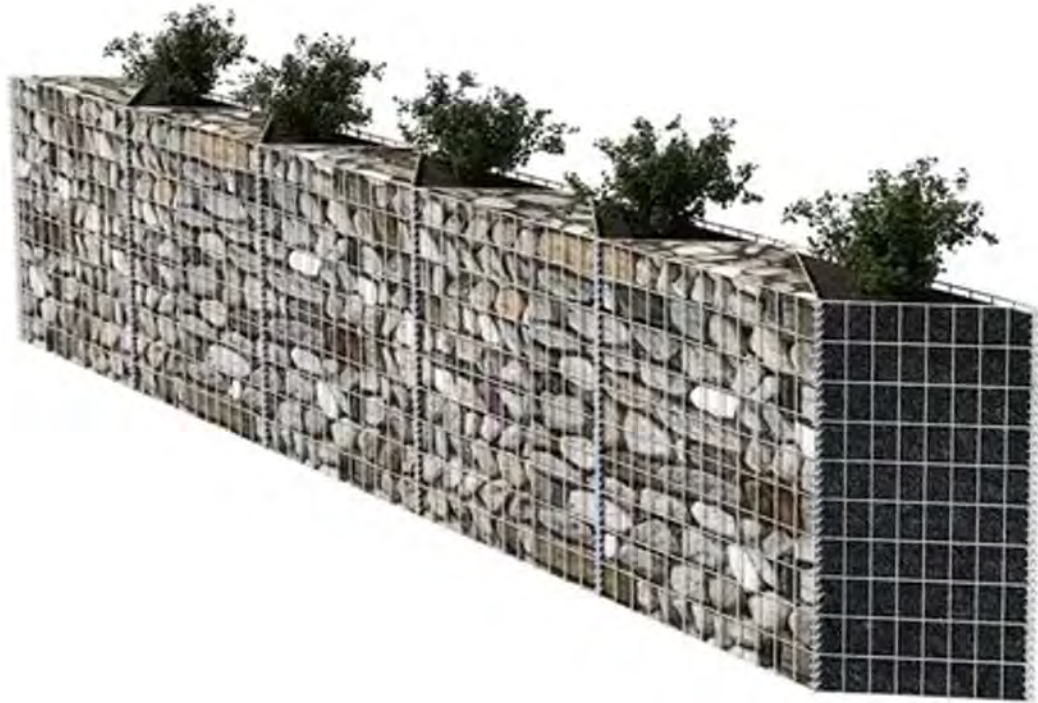


Gabions are not affixed to the ground; rather, the individual cages are instead affixed to each other. This modular style of construction allows them to be incredibly sturdy yet flexible at the same time.



Gabion walls may become stronger when debris, sand, and other organic matter are allowed to collect within the spaces between the rocks.





Possible to
incorporate
plantings into wall

Gabions Cons

If not maintained, these structures have been known to share their space with naturally-growing organic matter such as moss, weeds, and grass. This can be a pro or a con.



Possible animal habitats: The nooks and crannies in gabion walls make them an appealing nesting site for all sorts of burrowing critters. That can be a positive if you enjoy sharing your space with local wildlife, but not everyone is looking to invite a new neighbor into their yard.



They are granitic surfaces.



Gabions are more expensive than either vegetated slopes or riprap. The wire baskets used for gabions may be subject to heavy wear and tear. Difficult to install, requiring large equipment. Difficult and expensive to repair when damaged.



What is Flex MSE?

Flex MSE is a Cost Effective, Sustainable and Permanent – Engineered Solution.

The Flex MSE Vegetated Wall System uses the same globally accepted principles of Mechanically Stabilized Earth (MSE) that builders rely on for making massive retaining walls.

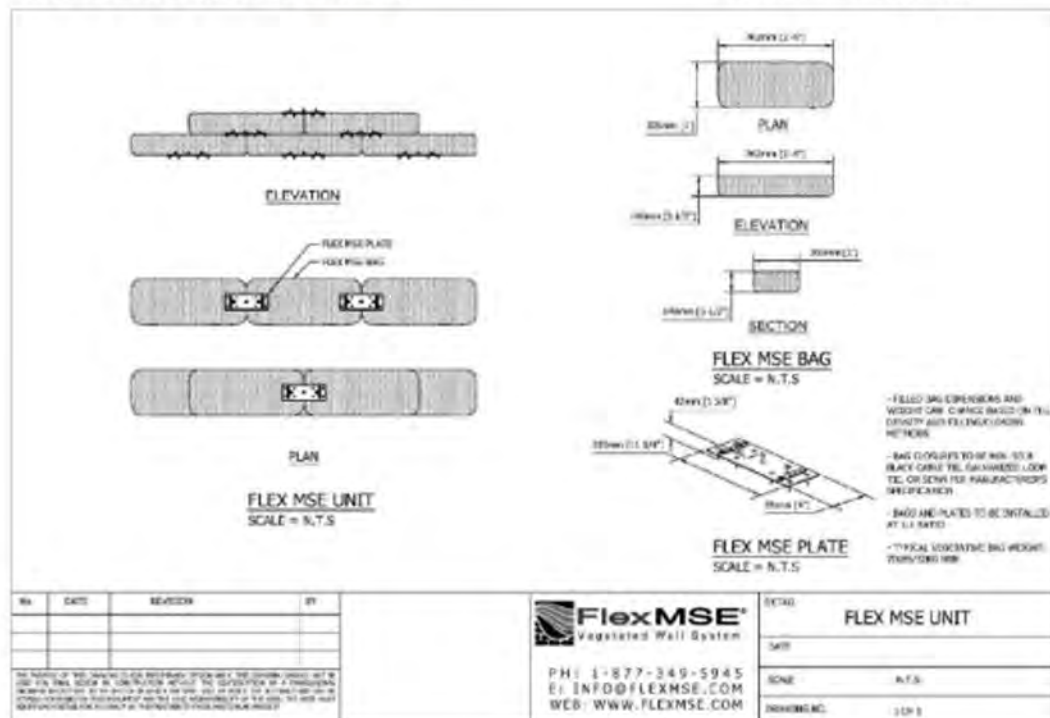
Geobag walls have been built as high as 75ft, with great success. Our Interlocking Plate is a 100% recycled, recyclable component which adds increased geogrid compatibility and friction strength over its precursors.

Flex MSE is a unique soft building material that exhibits hard material qualities. It weathers events that would ruin other systems, and only gets stronger and greener as time goes on.



FLEX MSE BAGS 30"(L) X 12"(W) X 5 1/2"(H)

HDPE INTERLOCKING PLATES



FLEXMSE WALL BAGS AND PLATES;

LOCAL DISTRIBUTOR:

Reed & Graham - San Jose

550 Sunol St

San Jose CA 95126

USA

(888) 381 0800

<https://www.flexmse.com/>

MATERIALS:

- FLEXMSE BAGS PRE-FILLED WITH SAND AND COMPOST DELIVERED TO THE SITE ON PALETS READY TO SET OF FILLED ON-SITE BY CONTRACTOR
- HDPE INTERLOCKING PLATES PROVIDED BY FLEXMSE

QUOTE DECEMBER '22

MATERIAL COST IS \$7.7 EACH BAG WITH INTERLOCKING PLATES AND GEOGRID. SAND AND COMPOST MATERIAL AND FILL LABOR IS ABOUT \$2.73 EACH BAG. EACH FLEXMSE WALL BAG RUN ABOUT **\$10.43**.

Flex MSE System Components



Flex MSE GTX BAG



Flex MSE INTERLOCKING PLATE



- Can be installed from horizontal to 90° (1:1 ~ 1:10 typ.)
- Able to withstand almost unlimited differential settlement
- ASTM rated 120 year design life with a 75 year warranty
- Qualifies for up to 21 LEED Credits in Four Categories
- Uses 97% less GHG than concrete, 98.5% less than steel
- 50% recycled content, 100% recyclable
- Installs in 2/3 the time

Vegetation Options



Plant directly or hydrospray seeds



What can be hydroseeded?

Not all plant varieties and ground covers can be Hydroseeded. The reason for this is that some plants do not reliably start well from seeds. We can typically hydroseed native plants, native flowers, perennial ground covers, such as Gazania and Alyssum, wildflower mixes, and many types of grasses.









LEXMSE WALL AFTER SUCCULENT ESTABLISHMENT

Flex MSE Pros

LEED & GREEN BUILDING



Potential LEED credits - 21 Credits

Sustainable Sites 5 Points

<input type="checkbox"/>	Credit 5.1	Reduced Site Disturbance: Protect or Restore Open Space Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.	1
<input type="checkbox"/>	Credit 5.2	Reduced Site Disturbance: Development Footprint Conserve existing natural areas to provide habitat and promote biodiversity.	1
<input type="checkbox"/>	Credit 6.1	Storm water Management: Rate and Quality Limit disruption and pollution of natural water by managing runoff.	1
<input type="checkbox"/>	Credit 6.2	Storm water Management: Treatment Limit disruption of water flows by eliminating storm water runoff, increasing filtration and eliminating contaminants.	1
<input type="checkbox"/>	Credit 7.1	Heat Island Effect: Non-Roof Reduce heat islands to minimize impact on microclimate and human and wildlife habitat.	1

Water Efficiency 3 Points

<input type="checkbox"/>	Credit 1	Water Efficient Landscaping Limit or eliminate the use of potable water or other natural surface or subsurface water resources for landscape irrigation.	1-2
<input type="checkbox"/>	Credit 3	Innovative Wastewater Technologies Reduce wastewater recharge and potable water demand while increasing local aquifer recharge.	1



Potential LEED credits - 21 Credits

Materials & Resources 9 Points

<input type="checkbox"/>	Credit 2	Construction Waste Management Divert construction, demolition, and land clearing debris from landfill disposal.	1-2
<input type="checkbox"/>	Credit 3	Resource Reuse Reuse building materials and products to reduce demand for virgin material and reduce waste.	1-2
<input type="checkbox"/>	Credit 4	Recycled Content Increase demand for building materials that incorporate recycled content materials.	1-2
<input type="checkbox"/>	Credit 5	Regional Materials Increase demand for regional building materials/products, reducing impact for transportation.	1-2
<input type="checkbox"/>	Credit 6	Rapidly Renewable Materials Reduce the depletion of finite raw materials and long cycle renewable materials.	1

Innovation & Design 4 Points

<input type="checkbox"/>	Credit 1	Innovation in Design Up to four bonus credit for exceptional performance above the LEED Green Building Rating System.	4
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A Living Wall



Flex MSE Cons

What happens when they do not get watered?



What happens if they don't get maintained



If not hydroseeded it will take longer for plants to grow to cover the bags. The bags will be visible longer.



Example use of Flex MSE Bags



What about a mixture?

A synthesis of Gabion and Flex MSE



Public Comment

Please share your input with us so we can make a decision that makes everyone proud to live on De Haro Street.

DE HARO STREET



Community Project

Thank you!!

