CONSTRUCTION MATERIALS

Alyssa Moffitt
Fall 2019

LEGEND


compacted soil


concrete


aggregate


mortar


Terrazzo


Prepared top soil


Terrazzo (smaller details)


Travertine/Granite/Stone


Granite paver


undisturbed soil


D.G.

TABLE OF CONTENTS

STORMWATER MANAGEMENT
NEW YORK
BOTANICAL GARDENS

NATIVE GARDEN
WETLAND &
RETENTION BASIN

WATERSHED:

The Native Garden of the New York Botanical Gardens in the Bronx is part of the Bronx River watershed. The map at right (from the NY Parks and Recs website) shows the Botanical Garden in the context of the Bronx wetlands.

The Native Gardens wetland and water feature collects stormwater from the paths on the hills above the Native Gardens which is 3.5 acres and sits in a naturally lower elevation. The west side is hilly whereas the east side is gently sloping.

The NYBG watershed has a meandering line of surface and subsurface brooks and wetlands. A brook fed from the waters of the river emerges in the Rock garden, goes underground until emerging in the Native Garden , follows the path of the Wild Wetlands, goes below the surface at the picnic area, reemerges briefly in the children's adventure garden, and then is subsurface until resurfacing in the Thain Forest before reaching the Bronx River. The flow is towards the Bronx River which is inundated with stormwater from the industrial and developed areas of the Bronx.

NOTES: NYBG MAP
A) Peggy Rockefeller Rose Garden
B) Benenson Ornamental Conifers
C) Bronx River
D) Azalea Garden
E) Mitsubishi Wild Wetlands
F) Native Gardens
G) Picnic Area
H) Haupt Conservatory
I) Rock Garden
J) Thain Family Forest
K) Conservatory Gate
L) Leon Ivy Visitor Center
M) Mertz Library Art Gallery
N) Twin Lakes (not shown)

WETLANDS:

The 320 foot long contemporary water feature gives structure to a wild fusion of color and texture in the New York Botanical Garden's Native Garden. It was constructed in 2013 and was an ASLA Sustainable Sites project. Sheila Brady, FASLA, principal of Oehm Van Sweden in Washington DC. Hilary Oat-Judge, ASLA, designed the planting plans for the woodlands and wetland and Maris N Scalera, ASLA, designed the ridge and meadows planting: both a mesaic prairie and a wet meadow. The topography was altered only when necessary.

The water feature stands out in its harmony with the landscape and the structure it provides. The soft arc of the West side of the concrete lined retention pool is a soft edge that reflects on the soft natural embankments of the wetland from which its waters originate. The rectilinear East side with its angled edges mimics the black locust deck with its sharp angular turns that elevates the viewer above the micro watershed of the Native Gardens. The overall contemporary structure gives form and order to the naturalistic, broad brush plantings and woodlands.

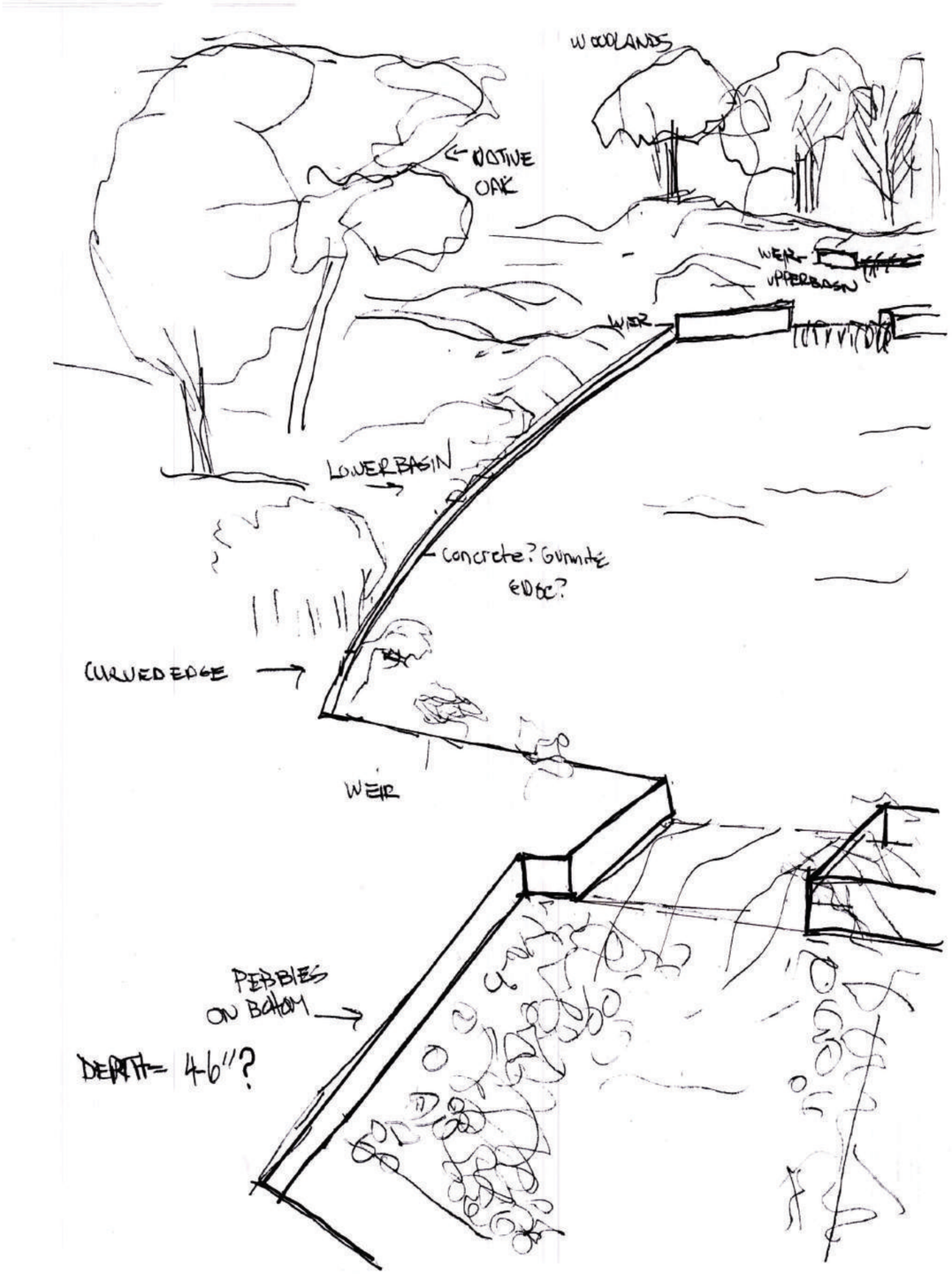
The Native Garden flow control facility bears design and function similarities to the NYBG's Twin Lakes alongside Southern Boulevard, which is the NYC Department of Environmental Protection's first Bluebelt Wetland in the Bronx. The Twin Lakes area is a restored wetland with native plantings and has a similar shape with two basins, though this first wetland is more naturalistic.

NOTES: NATIVE GARDEN MAP

A) Thain Family Forest
B) Woodland
C) Woodland Path
D) Overlook
E) Magnoia Grove
F) Azalea Way
G) Black locust Promenade
H) Wetland
I) Mid Basin
J) Lower Basin
K) Education Pavilion
L) Dry Meadow
M) Wet Meadow
N) Rock Garden
O) Entrance

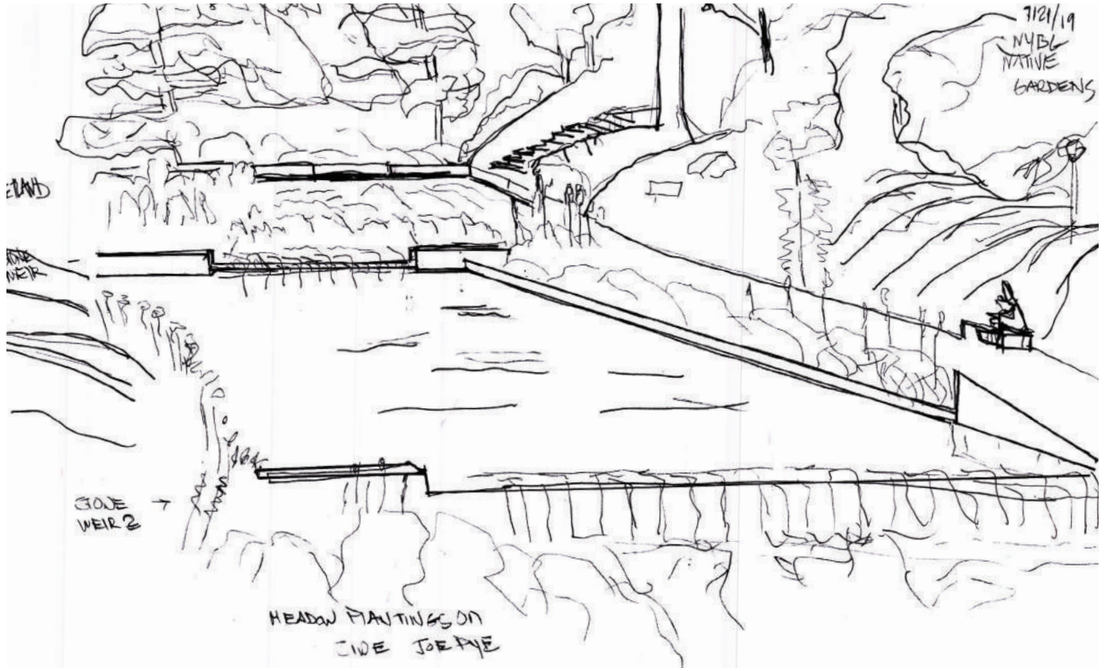
PHOTOS & SKETCHES

A cistern underneath the impermeable water feature carries a quarter acre water body. The sand and gravel pump moves 350,000 gallons of water back up to circulate before running downstream and 3 large cisterns hold stormwater overflow. The operating level of the lower water basin can be lowered to accommodate stormwater and is designed to have the capacity of on demand stormwater retention and zero runoff. (CMS Water Collaborative). The wetland was designed to contain 5 times the cleansing space for the water feature with a reserve area of clean water. (Sheila Brady, FASLA, LAM June 2014)

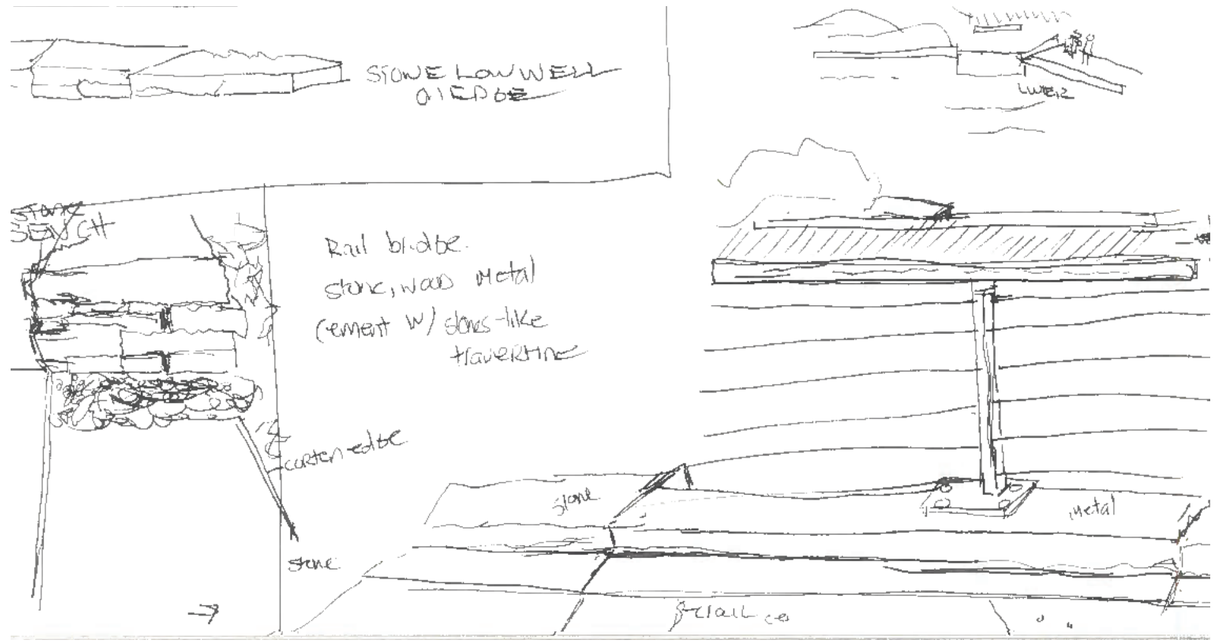


PHOTOS: left photo , close up of weir. Middle photo, railing and overpass with catch basin, right, close up of lowest basin leading to Wild Wetlands. photos by Alyssa Leal Moffitt

SKETCHES ON SITE: Early diagrams



View of water feature from lower basin.



Details of the path rock walls and railing.

Stormwater Calculations:

According to the New York State Stormwater Design Manual for Water Quality Volume (WQV) Quality Sizing Criteria 1 ,the formula uses the 90% Rule:

WQv (acre-feet) = [(P) (Rv) (A)]/12

Rv= 0.05 + 0.009) I
I= Impervious Cover (Percent)
P(inch)= 90% Rainfall Event Number
A= Site in acres

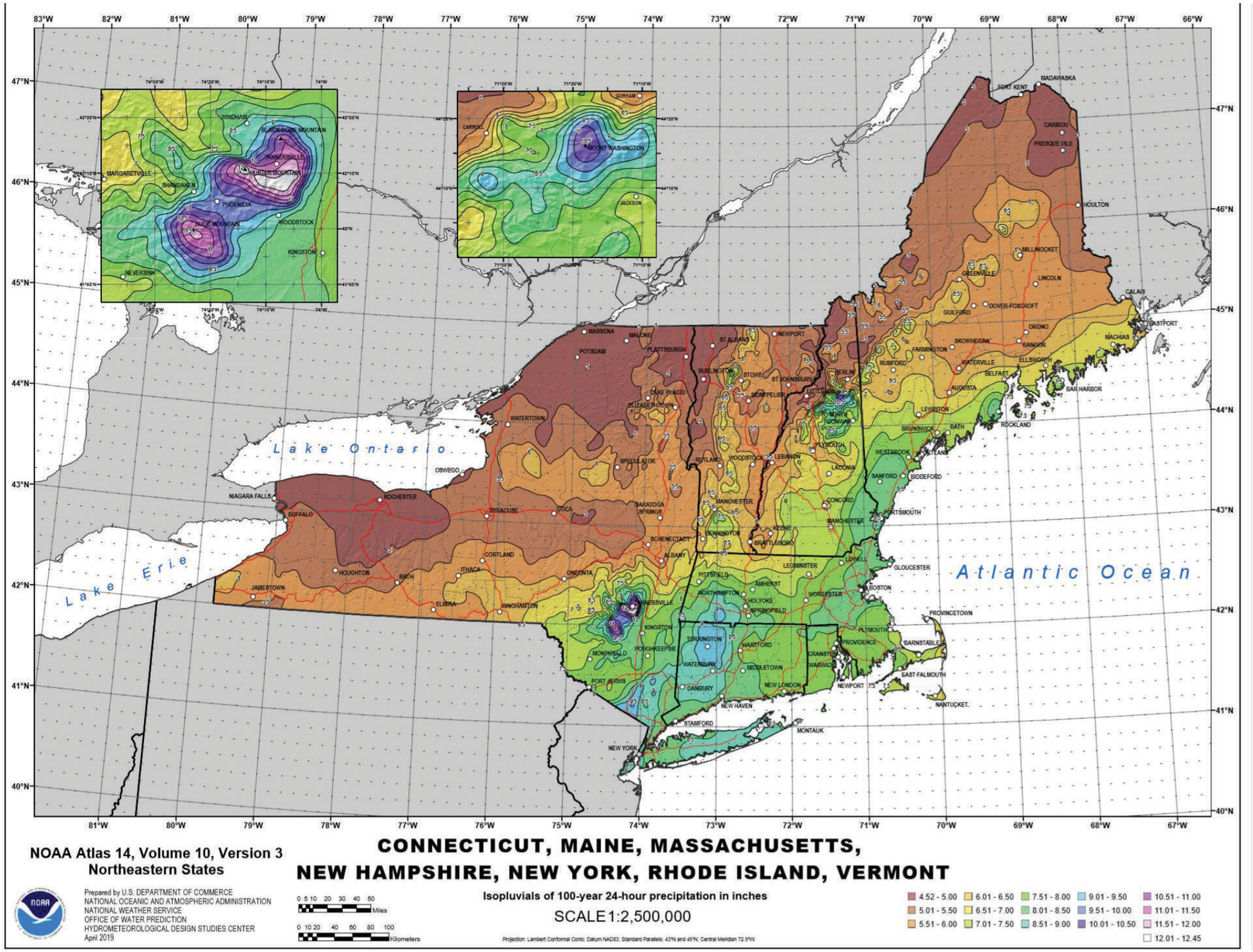
From Table 4.2.1 Land Use and Impervious Cover (source: Cappiella and Brown, 2001)
Page 4-4, Open Urban Land has a mean impervious cover coefficient of 9.

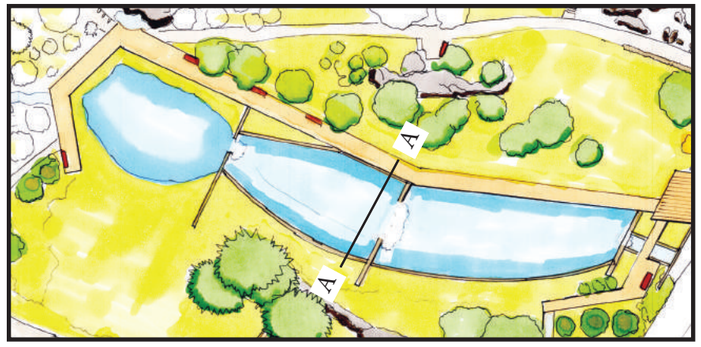
Rv= 0.05 + 0.009) 9=.131
P= 90% x 8" (see NOAA Atlas)=7.2"
A= 3.5 acres (acreage of Native Gardens)

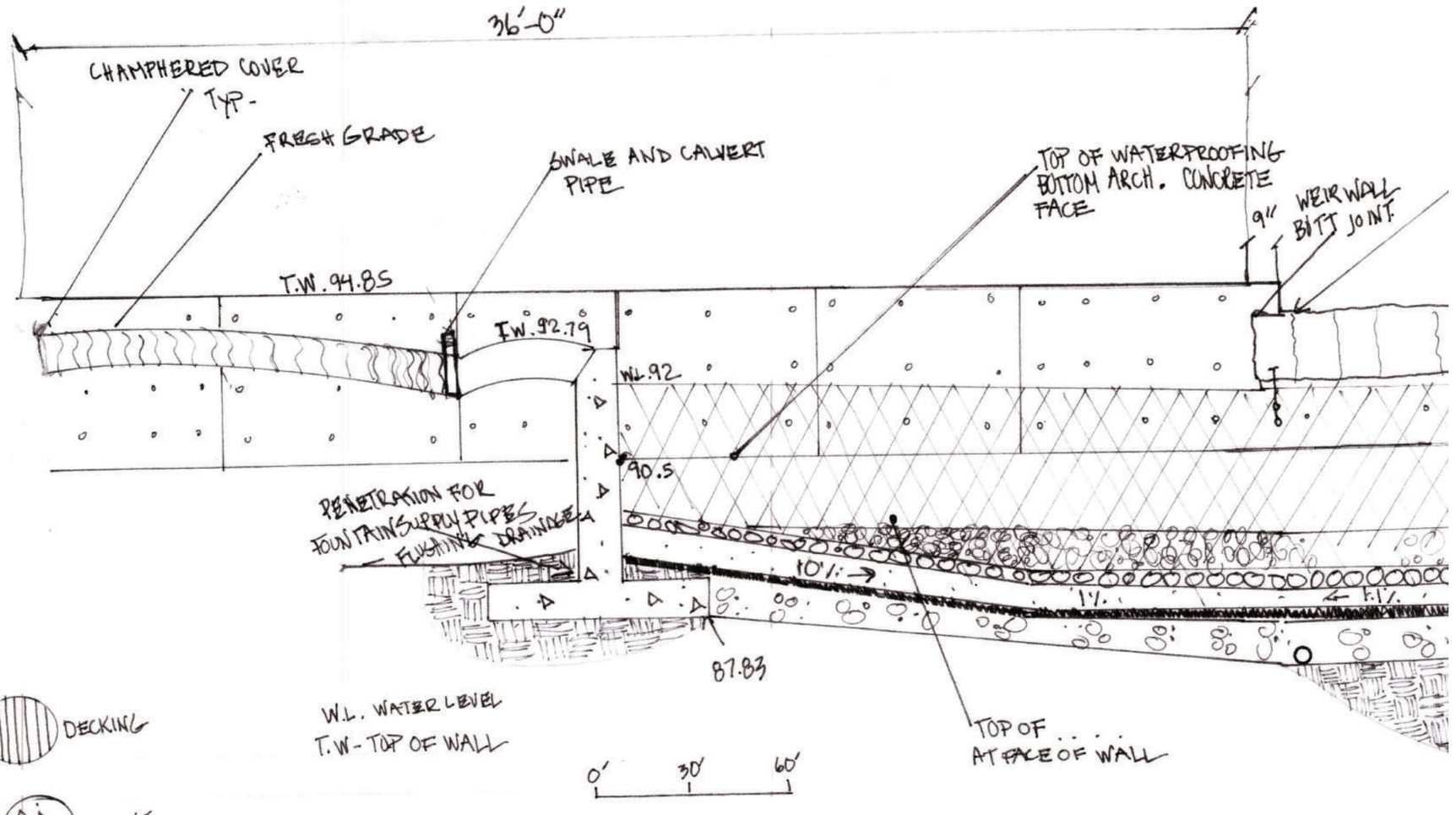
WQv (acre feet)=(.131) x (7.2) (3.5)/12
=3.3012/12=.2751 acre feet

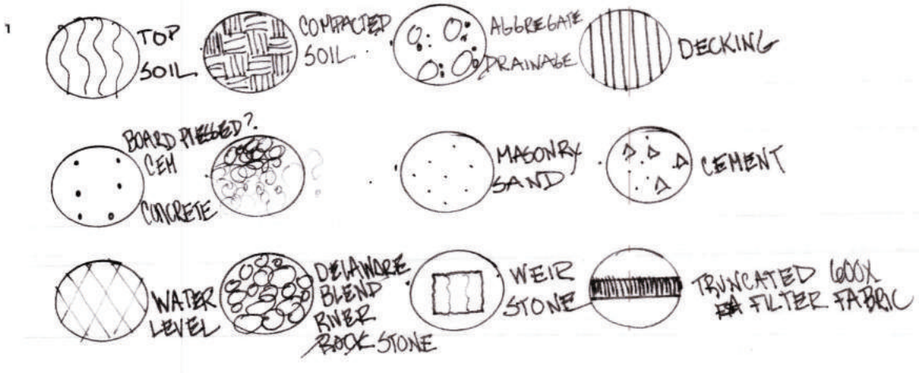
.2751 acre feet=89642 gallons

The water feature and wetlands
has a capacity of approximately 91,000 gallons.

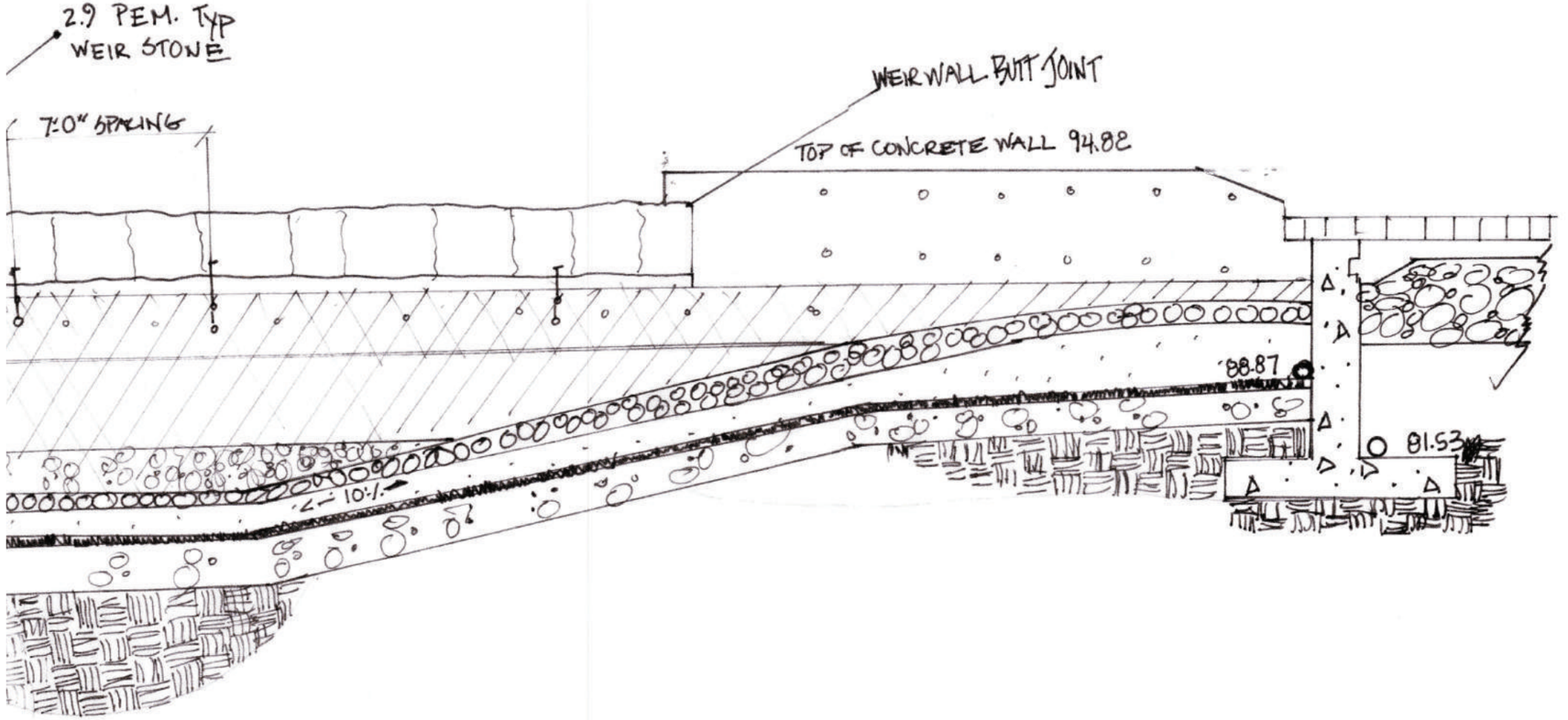



A
A

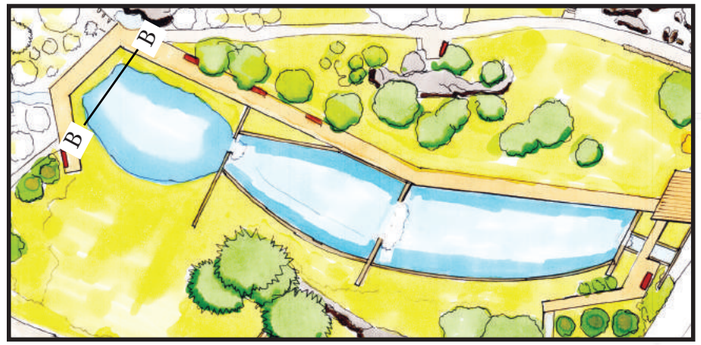

36'-0"
CHAMPHERED COVER TYP.
FRESH GRADE
SWALE AND CALVERT PIPE
TOP OF WATERPROOFING BOTTOM ARCH. CONCRETE FACE
9"
WEIR WALL BITT JOINT
T.W. 94.85
I.W. 92.79
W.L. 92
90.5
PENETRATION FOR FOUNTAIN SUPPLY PIPES
FLUSHING DRAINAGE
10'
1%
1%
87.83
W.L. WATER LEVEL
T.W - TOP OF WALL
TOP OF ... AT FACE OF WALL
0'
30'
60'

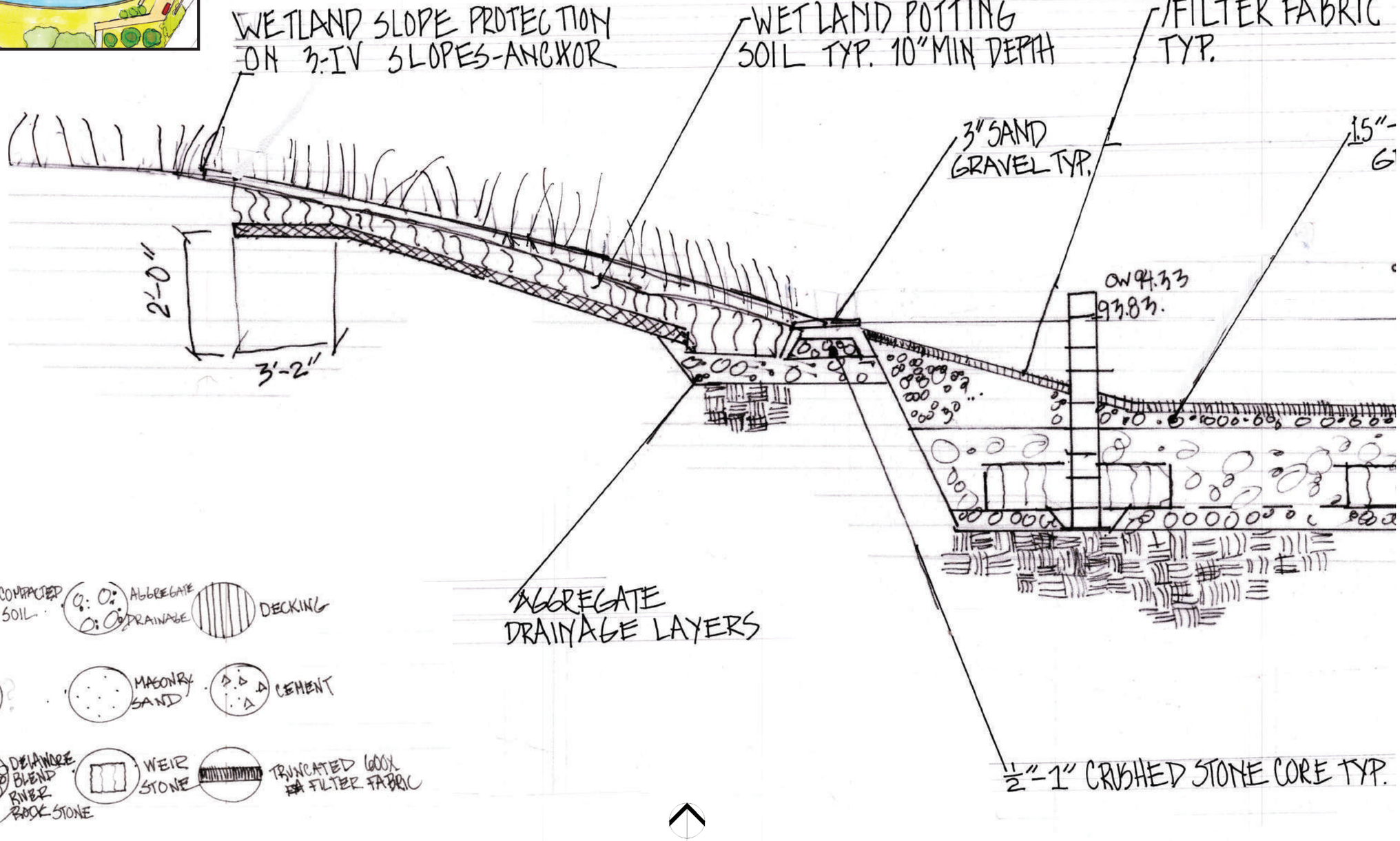

TOP SOIL
COMPACTED SOIL
AGGREGATE DRAINAGE
DECKING
BOARD PIERCED? CEH CONCRETE
MASONRY SAND
CEMENT
WATER LEVEL
DELAWARE BLEND RIVER ROCK STONE
WEIR STONE
TRUNCATED GOOX FILTER FABRIC

0’ 30’ 60’

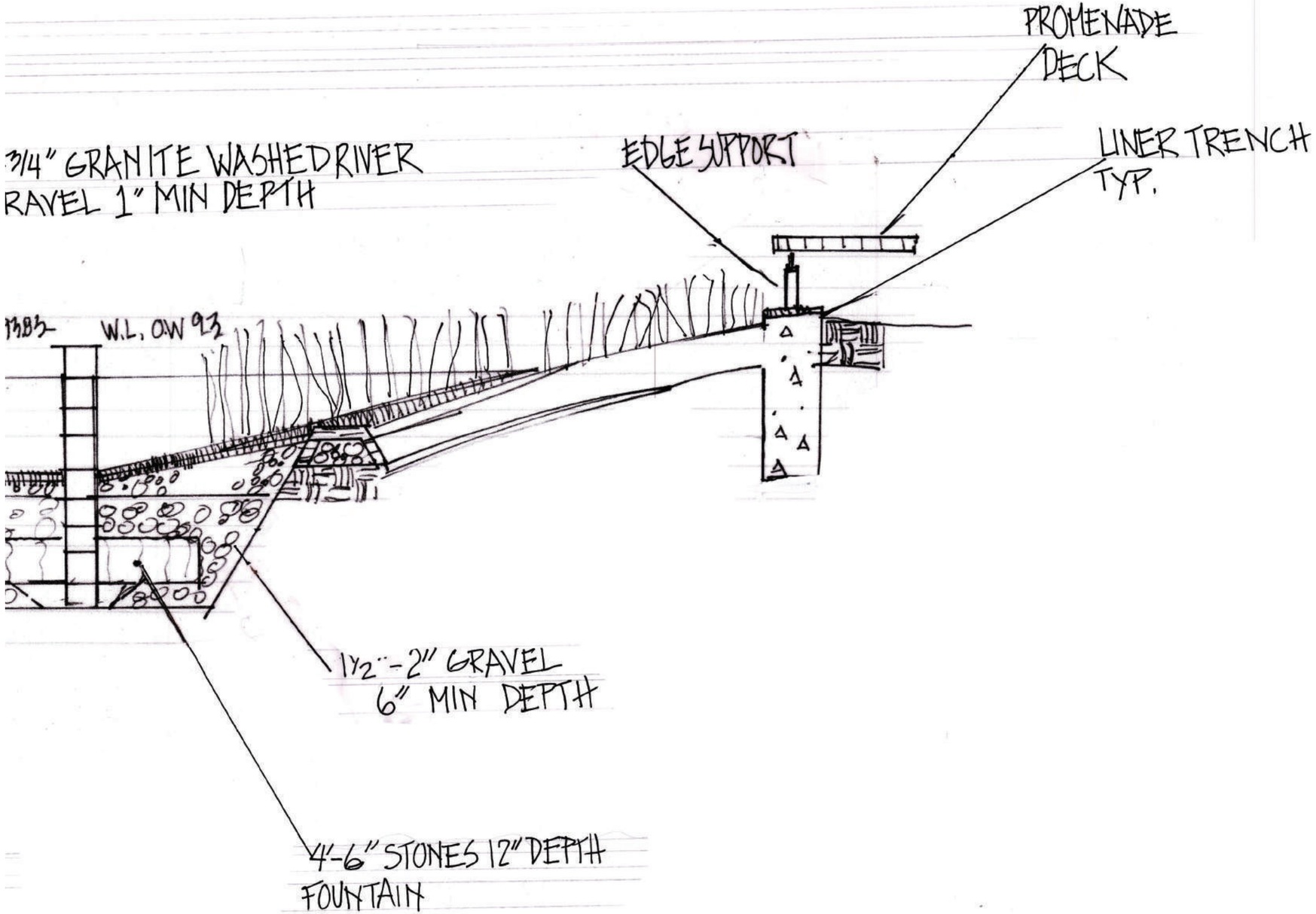


Lower Basin Section A-A


B
B


WETLAND SLOPE PROTECTION ON 3:1V SLOPES-ANCHOR
WETLAND POTTING SOIL TYP. 10" MIN DEPTH
FILTER FABRIC TYP.
3" SAND GRAVEL TYP.
1.5"-
G
OW 94.33
93.83.
2'-0"
3'-2"
AGGREGATE DRAINAGE LAYERS
½"-1" CRUSHED STONE CORE TYP.

TOP SOIL
COMPACTED SOIL
AGGREGATE DRAINAGE
DECKING
BOARD PEGGED?
CEH
CONCRETE
MASONRY SAND
CEMENT
WATER LEVEL
DELAWARE BLEND RIVER ROCK STONE
WEIR STONE
TRUNCATED GOOX
FILTER FABRIC

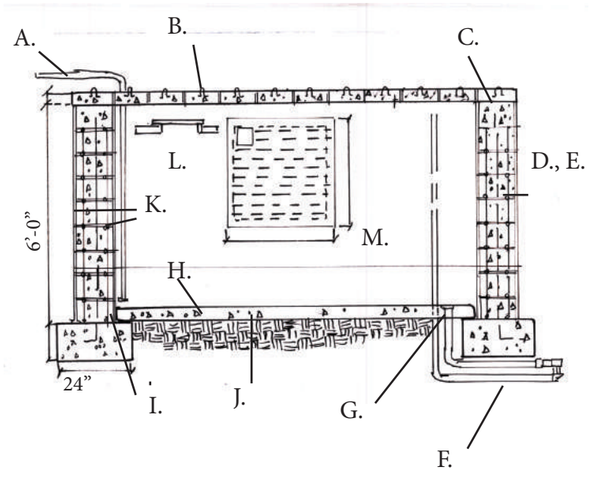


Wetland Section B-B

NTS

NOTES:PEERLESS CONCRETE NJ)
CONCRETE CISTERN

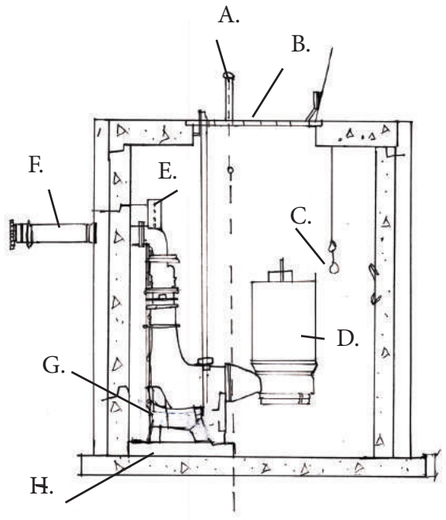
A) Pipe to pump
B) Roof Panels (2-#4 bars in each. 2-lifting hooks in each)
C) # 4 rebars 24" oc
D) All cores fill with concrete
E) 12" concrete block
F) Overflow pipe (to adjoining cisterns or donwstream)
G) Clean out drain
H) 5" Concrete floor
I) Seal with pitch
J) 1" rigid asphalt impregnated board
K) Cement plaster both sides of wall 2 coats 3/8" thick on sinde and one on outside. Plaster to be 1 part masonry cement and 3 parts sand or 1 portland cement & 1 masonry cement and 6 sand.
L) Cover Details
M)Alternate cast in place roof slab



Details: Alternate Cast in Place roof Slab: 4" thick slab, 12'x12'
#3 temp bars 2" oc
#4 bars at 12" oc
opening: 2'x2'

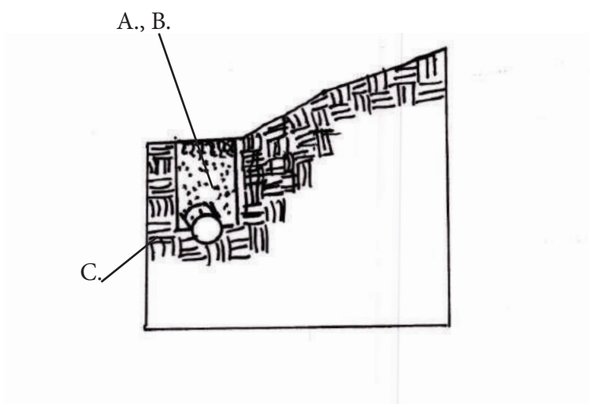
NOTES: WET WELL WITH EBARA SUBMERSIVE PUMP(S) For wet well see above)

A) 4" PVC pipe and vent with mushroom cap
B) 10" pedestrian rated top slab with hatch
C) Float 20mm
D) Oblong corosion resistant Ebarra pumps with lifting sling
E) 6: pvc perforated pipe
F) Discharge Pipe with 12"swing check valve.
G) Anchor Kit
H) Pump Shelf



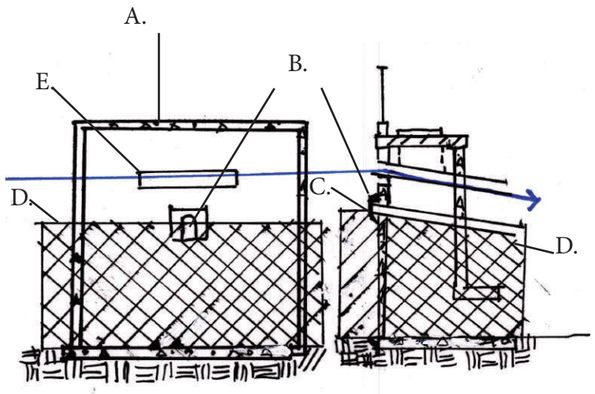
NOTES: UNDERDRAIN

A) 6: clean washed stone above and below
B) Geotextile wrap all sides
C) 24" minimum planting soil medium
D) Requires clean out and sump tramp mimimum 15" below inlet trap. (not shown)



NOTES: HOODED ORIFICE ON RISER

A) Concrete Box Riser
B) Extended Detention Orifice
C) Hood
D) Permanent Pool Level
E) Two-year orifice.



NOTES: STORMWATER DIAGRAM

A) Run off from Thain Family Forest and hill on west side is infiltrated in the vegetated meadows surrounding the wetland and basin.

B) Biofiltration meadows

C) Dry Meadow on slopes. Groundwater recharge and biofiltration.

D) Wet Meadow- Areas surrounding edge of basin and wetlands is heavily vegetated.

E) Elevated locally sourced and kiln fired black locust elevated walkway allows conveyance of stormwater through system.

F) Hooded orifice on riser (See detail). Lower orifice above slightly above permanent (design) water level conveys water to sand & gravel 2 pump system to recirculate through wetland. Two year orifice above sends stormwater through gravity pipe to cistern for use during dry season.

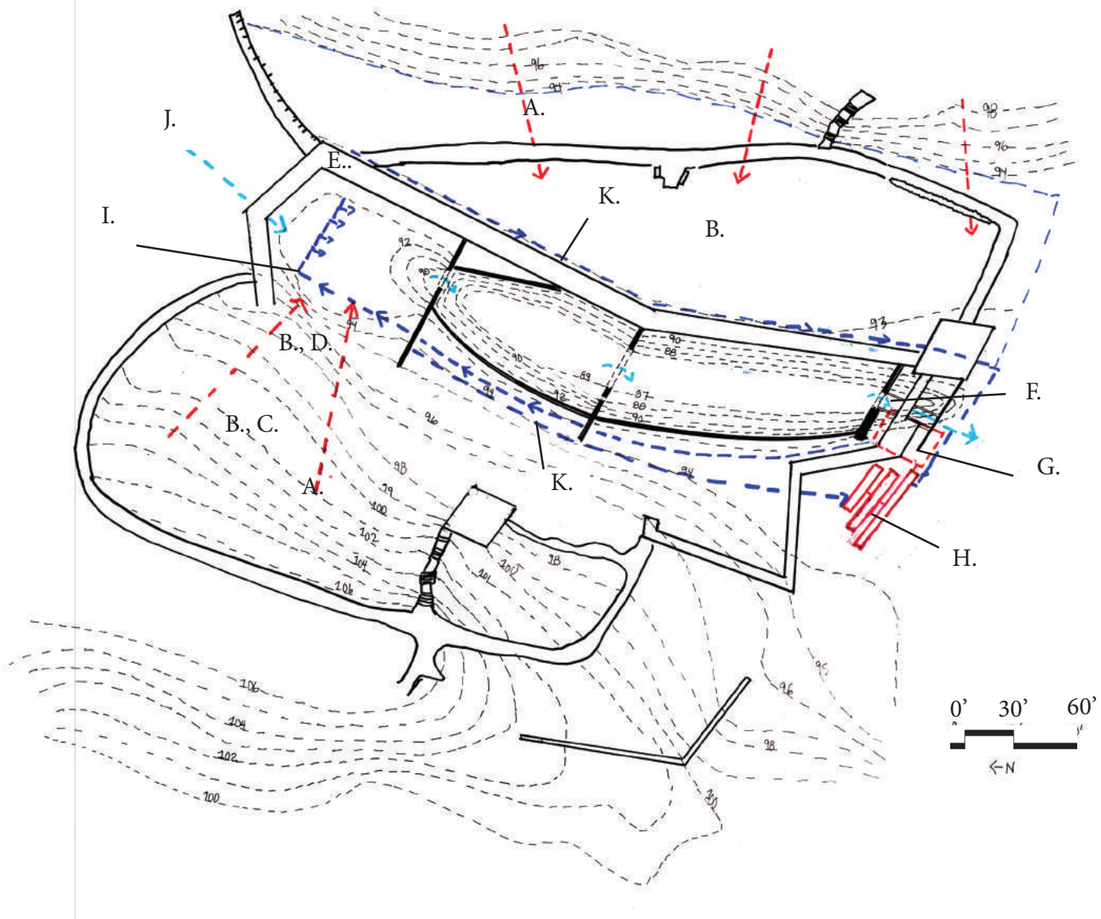
G) Sand & Gravel pump vault. (See detail)

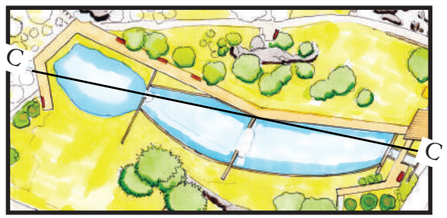
H) Concrete custom cistern (see detail) overflow is directed downstream through NYBG watercourse

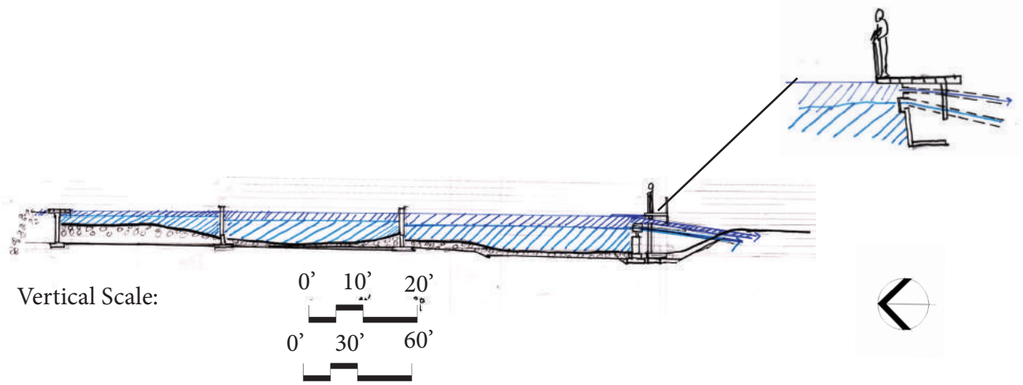
I) Pipe from pump vault to wetland distributed across width of wetland in perforated pipe at sand level for subsurface and surface biofiltration.

J) Watershed flow from Rock Garden through wetlands. Water is then aerated over weirs then recirculated via pump through wetlands before continuing on natural watercourse.

K) underdrain below walkway and along embankment to convey stormwater when soil is inundated during storm events.







NOTES: Section C. Water levels

Wetland design water level 93.83,
Top of wall 94.82

Middle Basin water level 92.83
Lower basin: 92.
Stormwater level capacity to 94.

RETAINING WALLS
FERN DELL
NATURE PATH
GRIFFITH PARK
LOS ANGELES

STACKED DRY STONE
RETAINING WALLS

BACKGROUND:

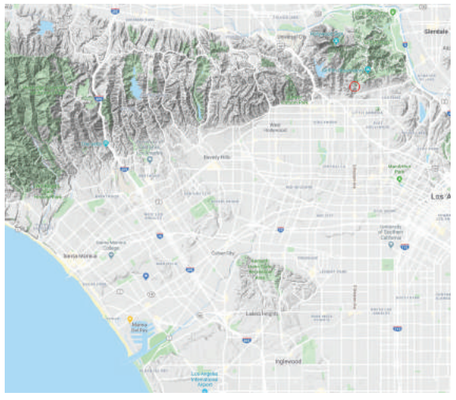
Fern Dell is a twenty acre glen lacated near the westernmost entrance of Griffith Park at Los Feliz Boulevard. A natural spring feeds the stream that runs intermittedly 100 from the peak of the adjacent Los Feliz Neighborhood to 8-12 feet below the grade of the street above the glen.

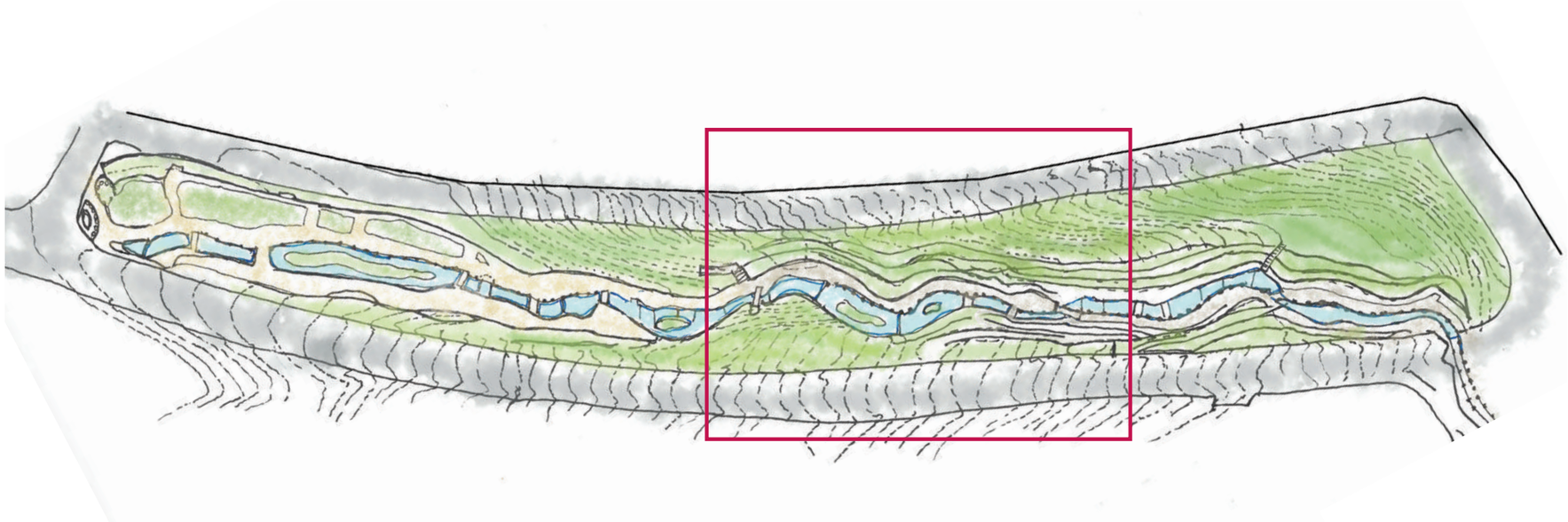
Fern Dell was a village site of the Tongva-Gabrieleno tribe which they called Mococahuenga and is now a recognized Los Angeles Historic Cultural site.

In the 1910's the Park Department began planting ferns along the ravine. In the 1920's the first of the faux bois railings, bridges and terraced pools with waterfalls were added. In the 1930's a Civilian Conservation Corps camp of unemployed young men enlisted in the WPA program built the stone terraces. These walls are of different levels of craftmanship depending on the individuals skills of the workers.

In the 1970's the park fell into disrepair and was regularly vandalized due to budget cuts and a reduction in park maintenance crews. A refurbishment was attempted in the 1980s and ferns were replanted but the ferns were quickly stolen or died. It also appears that broken concrete and mortar were added to the top of the original dry stacked stone walls, lowering the historic and aesthetic integrity of the original walls.

The Friends of Grifiith Park habe commissioned both a Cultural Landscape Assessment and a Rehabilitation Plan for Fern Dell, both completed by PGA Design. The President of FOGP, Gerry Han, kindly provided me with these documents which are the basis of much of this research. Fern Dell is considered one of the 12 most threatened landscapes in the U.S..





AESTHETICS:

The terraced retaining stone walls are an integral part of the dense, cool green naturalistic style of the dell. Faux bois railings, a popular style in the 20's and 30's are concrete railings styled to resemble tree trunks, supported by rebar on center. These railings accentuate the 1920's historical ambiance of the dell. The plantings are well established and overgrown and the dell is shaded and cool even in the heat of summer. At first glance, the walls blend in to nature and reflect on the park's history. The high walls and trees draw the visitor down the decomposed granite or paved path with its unexpected curves and turns.

The walls vary greatly in material and craftmanship. (See Enlargement page for photos). This in itself is appealing and tells the story of the New Deal era. But the addition of broken sidewalk (sometimes called urbanite) is an anacronism that appears hastily executed and poorly considered.

The PGA Design Rehabilitation Plan calls for removing this portion of the wall and gives three recommendations for stabilizing the wall or rebulding the walls, depending on their structural and aesthetic condition.

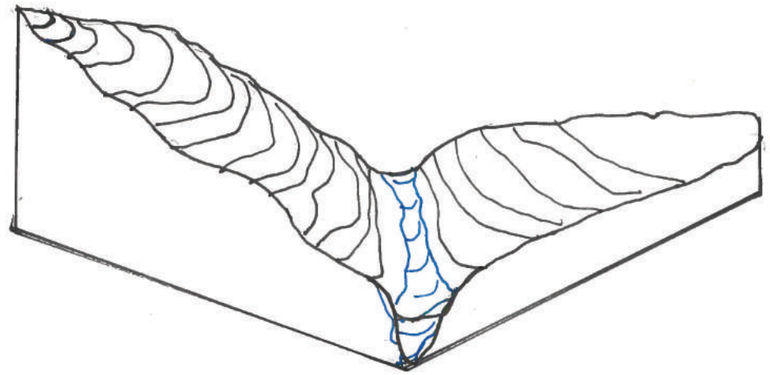
Rockery retaining walls and faux bois railings along the stream.

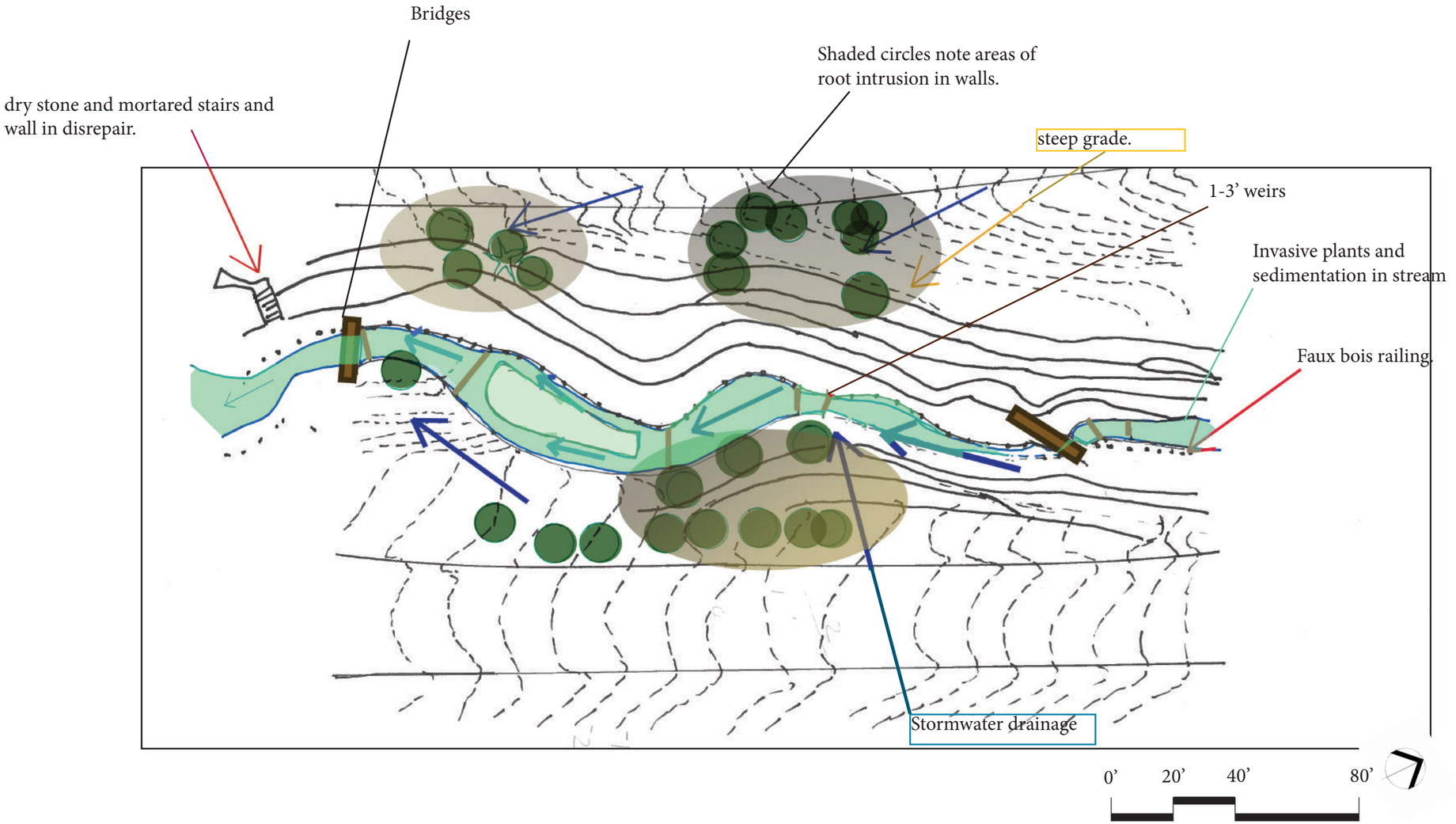
Detail of wall texture and plantings.

Walking along DG path to the south. Bench on rockery wall to the right.

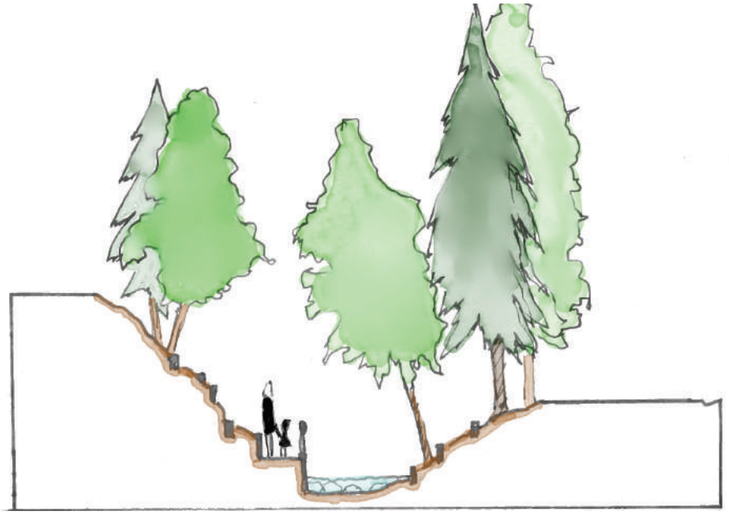
ANALYSIS:

I focused on a notably steep portion of the dell were there were several walls retaining signficant elevations. The portion of the section on the opposite page represents 20 feet of elevation. The topographic analysis at right represents the top grade at Fern Dell Place in the neighborhood above the dell to Fern Dell Drive within the park at the far right. The stream runs at the lowest point.





The section depicts a portion of Fern Dell with 8 walls at different grades. In the enlargment map below the stairs reaching the grade of Fern Dell Place overlooking the stream is at the far south. A habitat island is seen in the stream and a winding entrance is shown coming off of Fern Dell Drive, the entrance into the park.

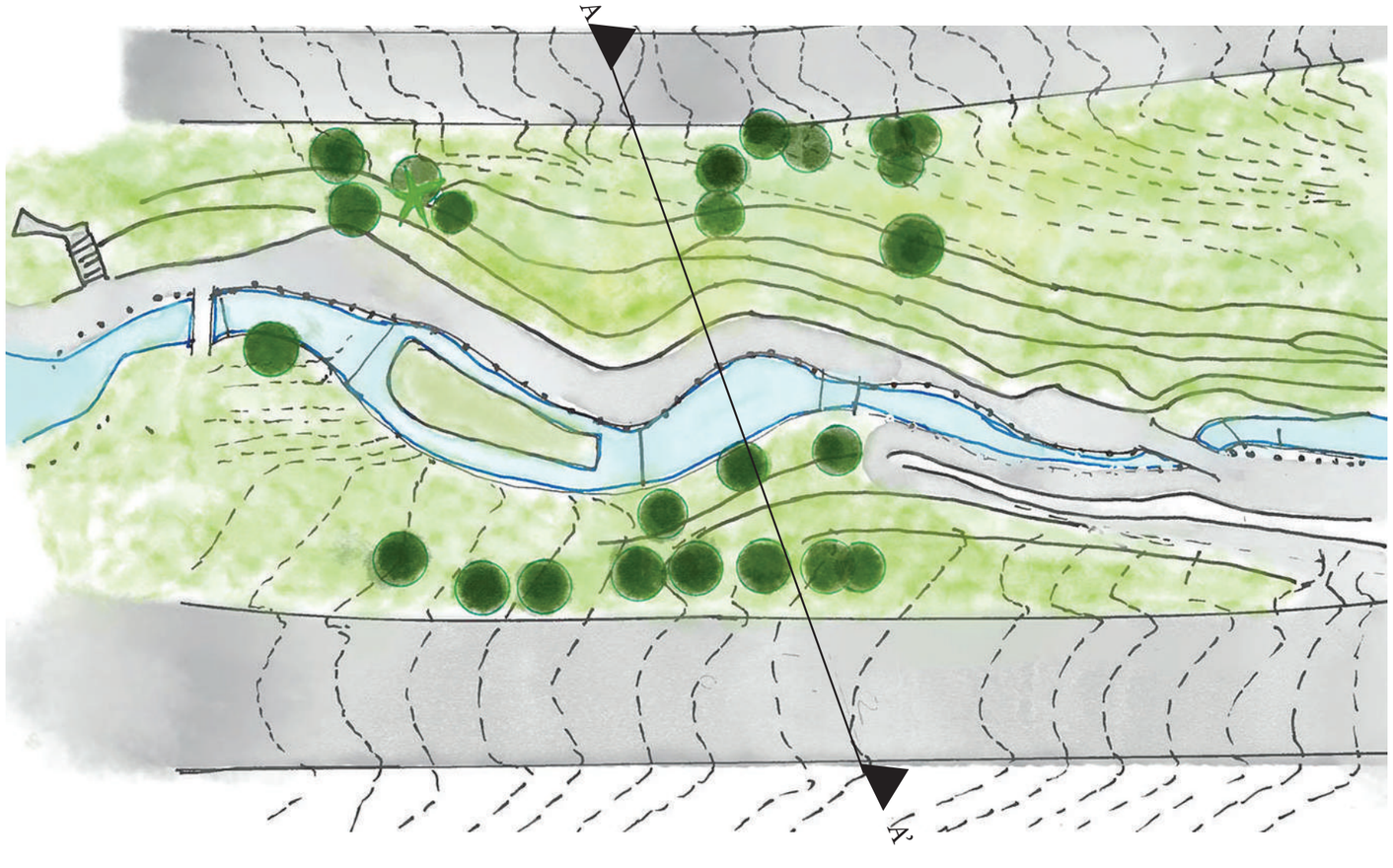


Section A-A'

Vertical Scale:

0’ 5’ 10’ 20’

0’ 20’ 40’ 80’



0’ 20’ 40’ 80’

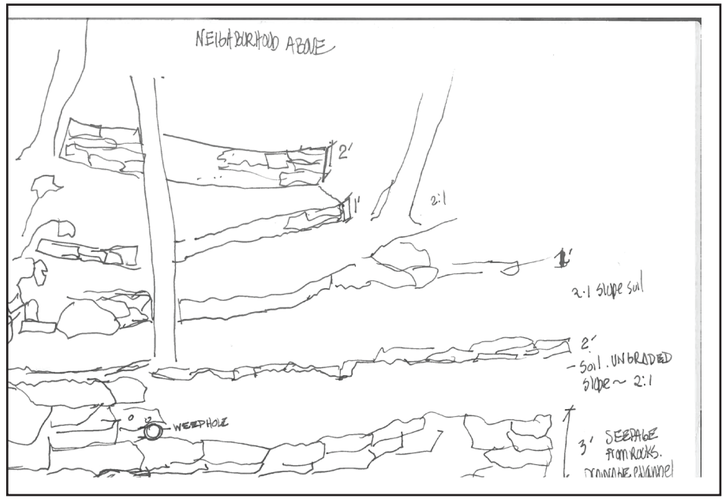
ANALYSIS-STRUCTURAL INTEGRITY:

Parts of the wall are more linear, others more irregular. Many portions of the wall show root intrusion that often winds down the slope to compromise the integrity of 3-4 tiers. The structural integrity of the steeper slopes appears to be compromised over time, with the soil of the upper finish grade eroding over the wall. Parts of the wall have eroded away and soil is visible. There appears to have been no grading of the soil and no real terracing. the walls depth into the lower grade appears to be shallow- 3" at best.

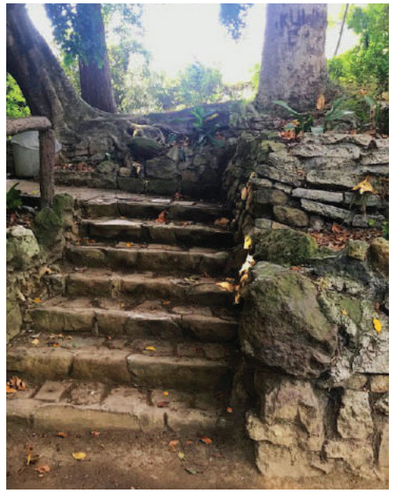
Drainage is usually not required with dry stack stone walls but parts of the wall have terra cotta weep holes that drain into an asphalt gutter system at the foot of the wall along the path. The seepage through the original 1930's walls supported the ferns that originally flourished. However the addition of broken cement and mortar impeded the seepage and I assume increased the hydrostatic pressure behind the wall. The dell is below the water table of the neighborhood above therefore with the considerable slope and hydrostatic pressure the structural integrity would not have been improved by the concrete and mortar additions of the 1980's.

The lower drawing shows a section with 11 tiers and the faux bois railing.

The photo at top right is of the stairway, the lower right photo show the wall from the drawing at lower left.

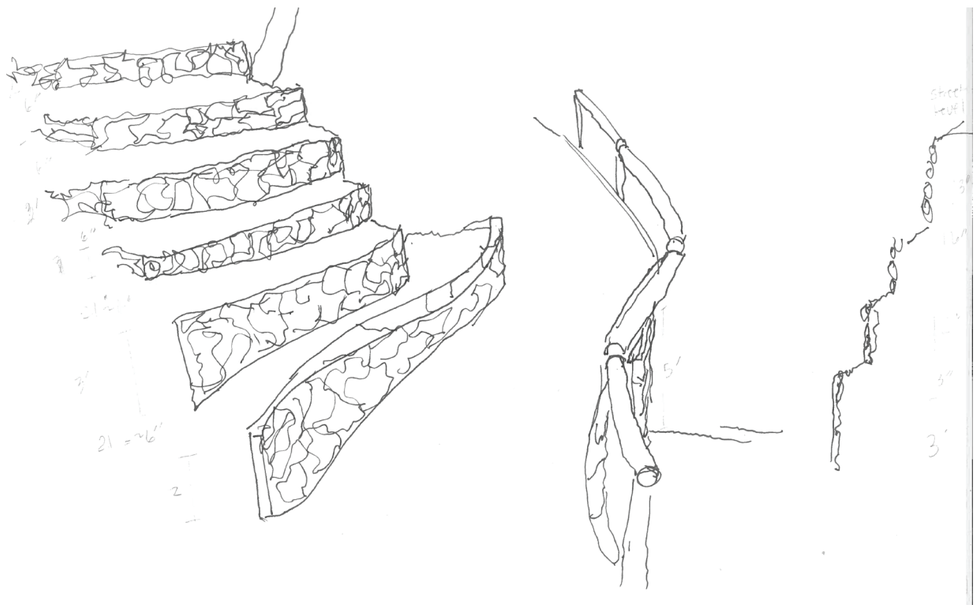


Portion of the wall with significant root intrusion.



Stone stairway

Perspective drawing of portion of wall with root instrusion.



11 tiers of retaining walls. The left wall is adjacent to upper neighborhood. The right is stream side adjacent to Fern Dell Drive into Griffith Park. The faux bois railing is depicted at center.

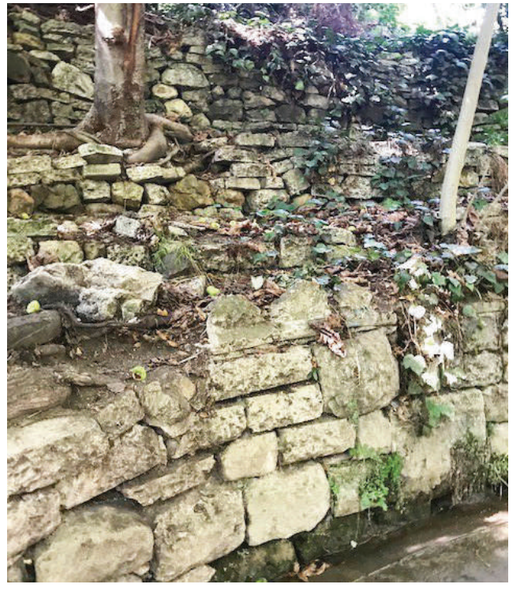
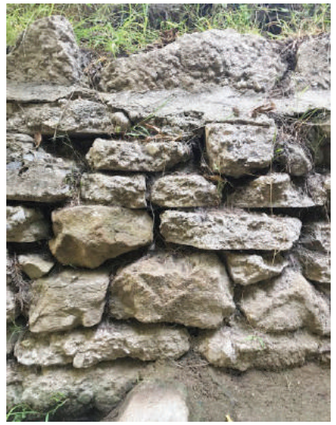
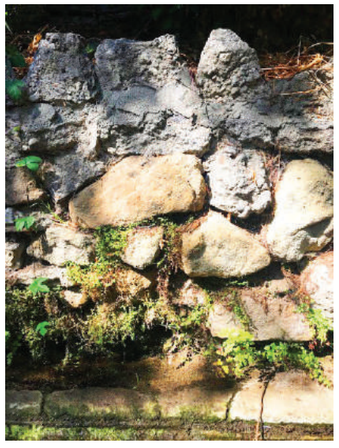


Photo of wall in drawings to left.



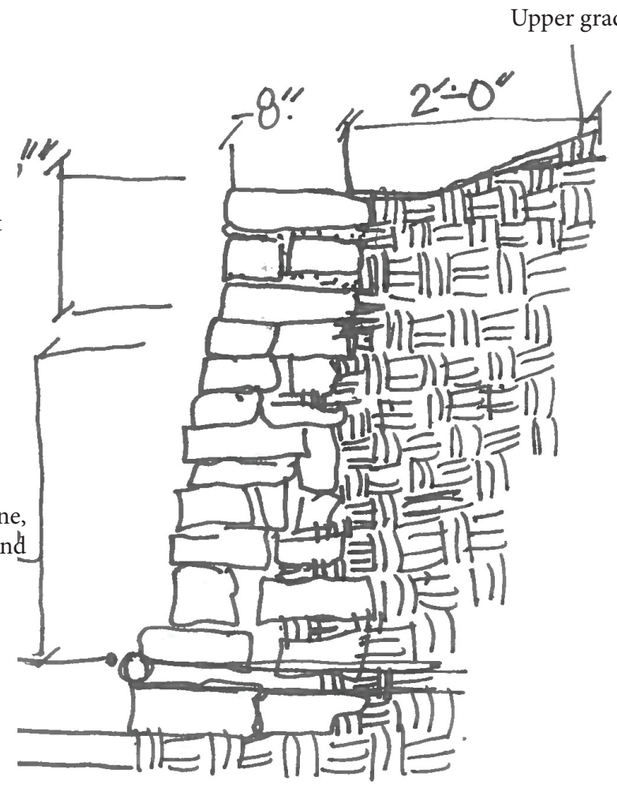
Dry stacked crumbled sidewalk with mortar above.

Original Dry stack stone wall with portions of broken sidewalk within original wall and above.



Original stone wall with maidenhair ferns. Mortar added later at top of wall.

Dry stacked stone with larger stones to right.



N.T.S.

As built of original 1930's stone wall with broken concrete and mortar above.

STRUCTURAL ISSUES:

- Upper grade slope at 2:1 or steeper is steeper than recommended 45% slope .
- Not set at angle of repose 3"-4" per every vertical foot.
- Inconsistent drainage and several broken weep holes. Seepage is draining in parts leaving mildew on surface of stone. Soil intrustion may have blocked seepage necessary for ferns.

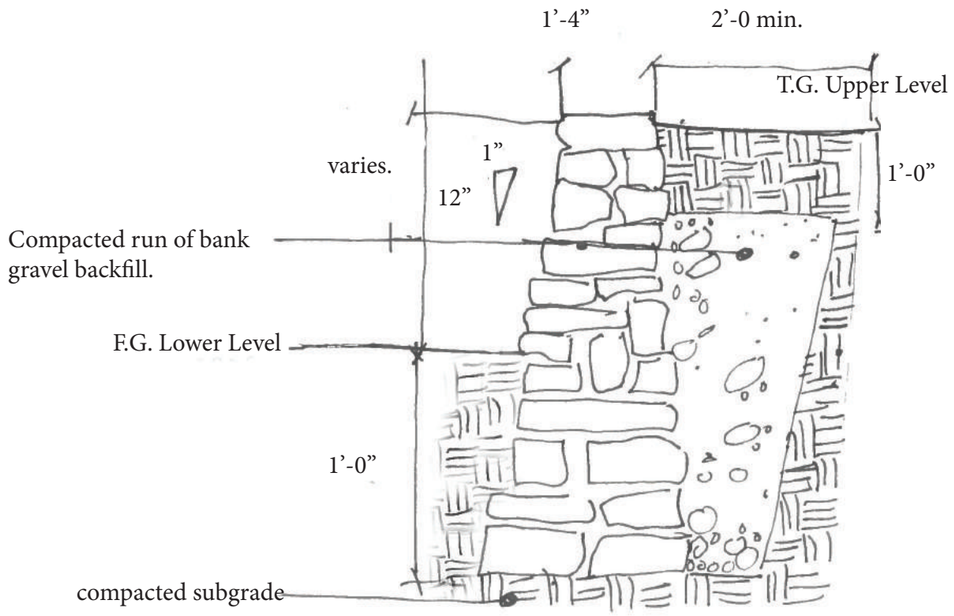
REDESIGN:

As these walls were built in the 1930's and are historic, my first thought was to find where the walls differed from design recomendations at the time. The closest examples I could find were in Site Design and Construction Detailing by Theodore D Walker 2nd edition 1986, 78. The Federal Highway Administration's 2007 publication Rookery Design and Construction Guidelines 2007, page 8 confirmed my assumptions regarding the as built of walls at this time.

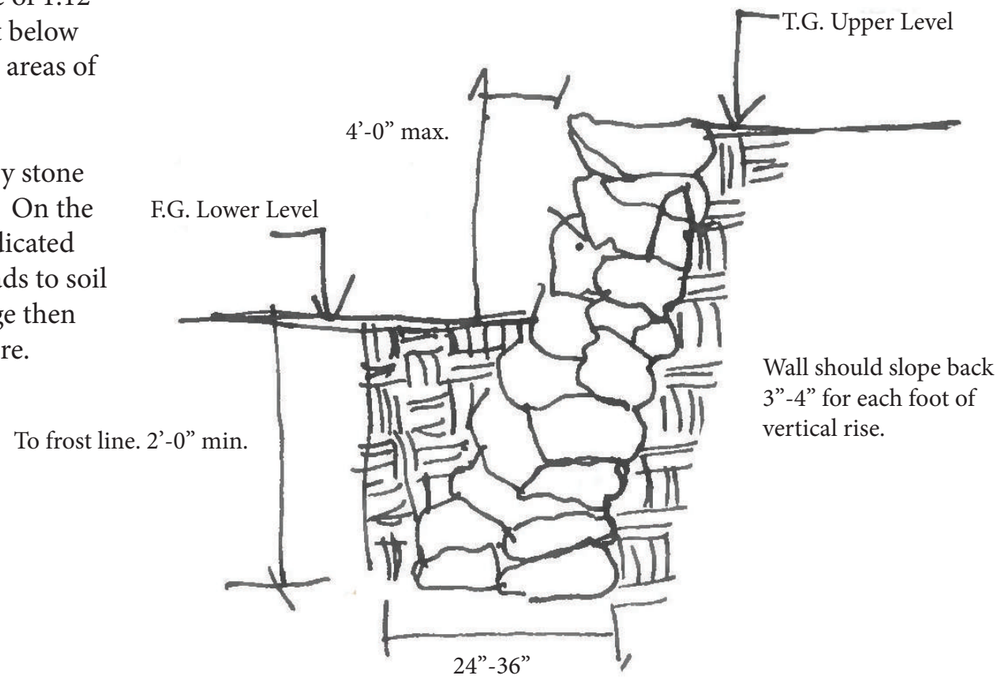
Theodore Walker's book recommends either an angle of repose (example A) for Dry Stone Wall with a minimum depth below lower grade of 2 feet in areas of frost. Depth of wall is 2-3 feet.

Or the recomendation (B) is a slope of 1:12 with a gravel backfill and wall 1 foot below grade above compacted subgrade in areas of frost.

No drainage is recommended for dry stone walls as water seeps through stones. On the example B there is no filter cloth indicated and I assume that this eventually leads to soil intrusion and compromised drainage then leading to build up hydraulic pressure.



B.) Dry Stacked Wall with gravel backfill. N.T.S.



A.) Dry Stacked Gravity Wall. N.T.S.

PGA DESIGNS RECOMMENDATIONS:

Treatment and Replacement Recommendations from Cultural Landscape Rehabilitation Ferndale Phase 2 by PGA Design.

These recommendations were based on guidance from and collaboration with Melvyn Green & Asssociates Structural Engineers.

The universal recomendation is to remove the historically inappropriate mortar and concrete and to strengthen the structural integrity internally while preserving the historic integrity on the exterior wall face and top of wall.

NOTES: Wall Reinforcing-Soil Nail.

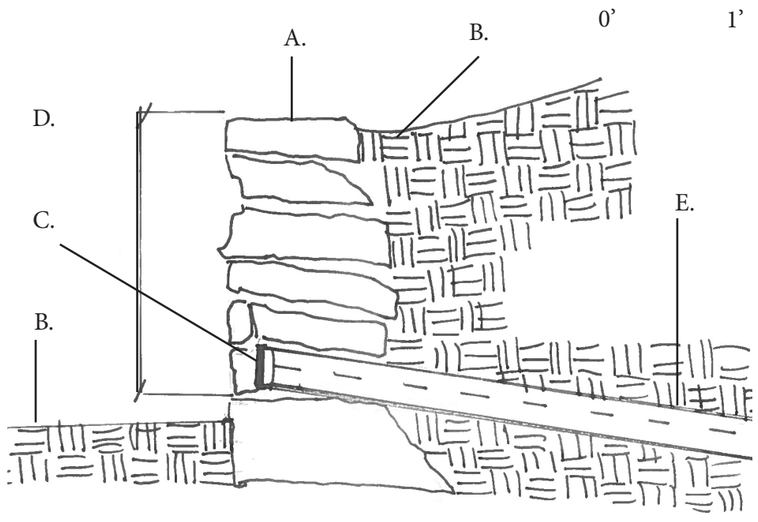
A. Existing Dry Stone Wall

B. Finish Grade

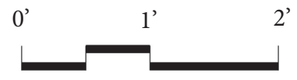
C. Steel plate at outside end of rebar

D. Veneer Stone

E. Soil Nail 3" diameter 8' long rebar. Inside fill with grout. Placed at 4" O.C.



Wall Reinforcing- Soil Nail.



NOTES: Wall Repair

A. Finish Grade

B. Capstone.

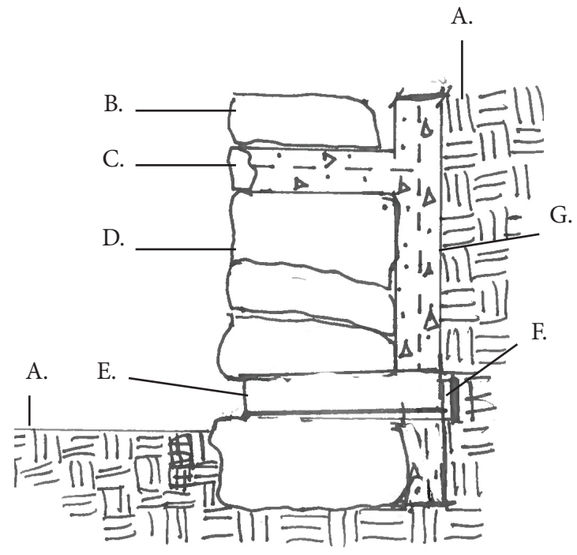
C. Veneer stone. Mortar in place

D. Existing Dry Stone Wall

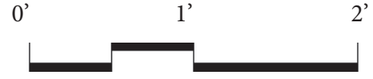
E. Weeps at 6" O.C.. 3" diameter metal pipe.

F. Filter fabric over weephole

G. Rebar- reinforced concrete support. #4 rebar



Wall Repair.



NOTES: Replacement Wall

A. Finish Grade.

B. Capstone.

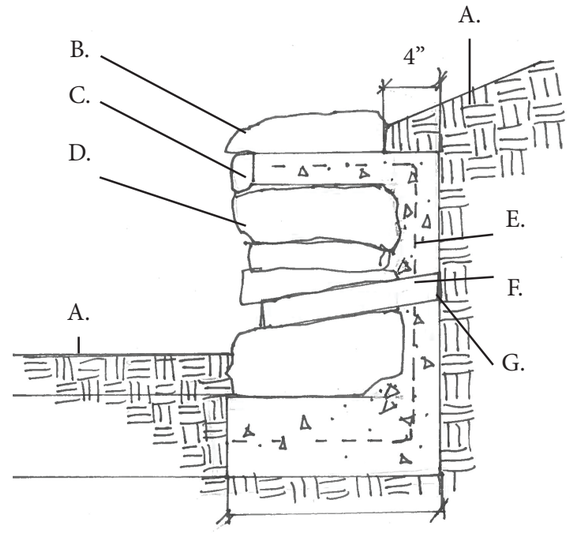
C. Veneer stone.

D. Stone with mortar. Keep joints +/- 3/8" or less on front edge. Strike joints deeply to minimize visual impact.

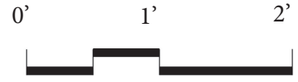
E. Reinforced concrete foothing. #4 Rebar 16" O.C.

F. Weep holes at 6" O.C. 3" Diameter metal pipe.

G. Filter fabric over weep holes



Replacement Wall



PAVING:

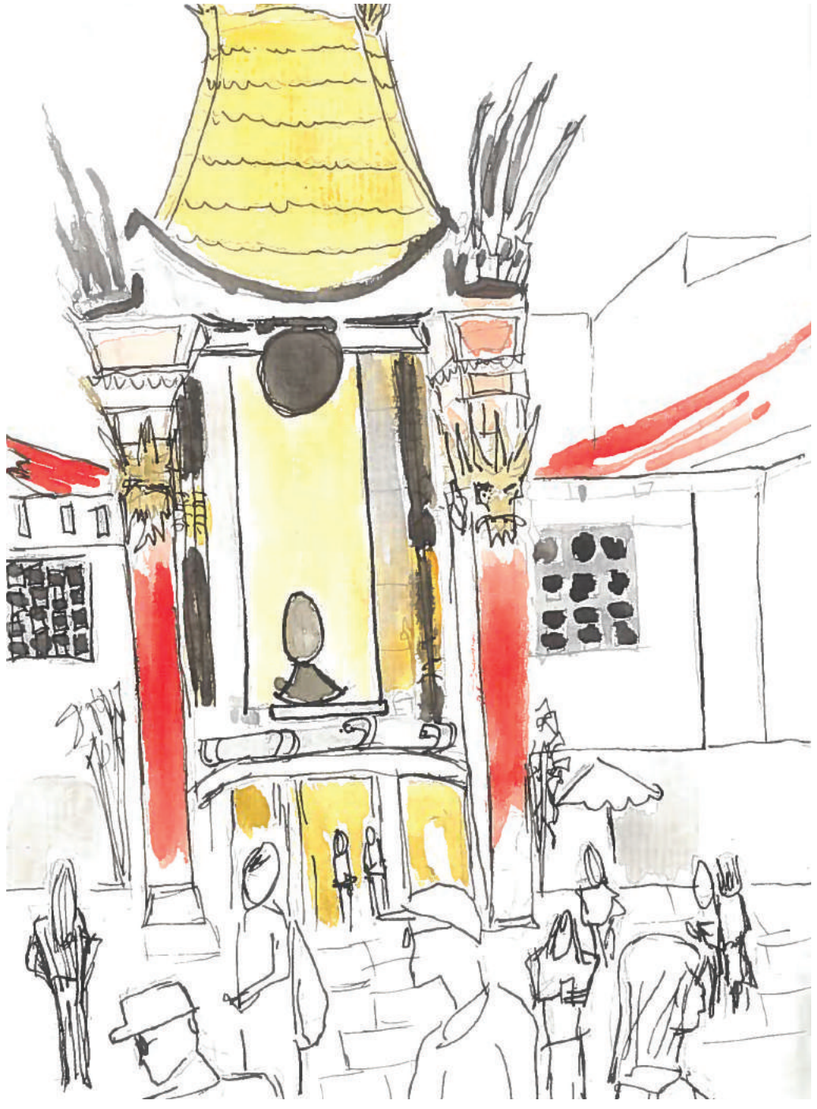
HOLLYWOOD WALK OF FAME
TERRAZZO STARS

HISTORY:

The Hollywood Walk of Fame was an initiative of Hollywood Chamber of Commerce volunteer Em Stuart in 1953 "to maintain the glory of a community whose name means glamour and excitement in the four corners of the world." In reality, after the movie studios of the 1930's relocated to downtown Los Angeles, the Hollywood area had fallen into decline.

Though it is not clear, the idea may have originated from the the Historic Hollywood Hotel which had stars with famous actors' names on the ceiling. Originally the colors were to be brown with blue stars but a local businessman, CE Tuberman, objected on the basis that these colors would clash with his new building and the colors were changed to black and coral terrazzo.

Pereria & Luckman, the architects behind the original buildings of LACMA, drew up specific proposals for the stars. The total cost was $1.25 million, or $85 per foot per business which was paid by the owners of the establishments.



The Chinese Theater

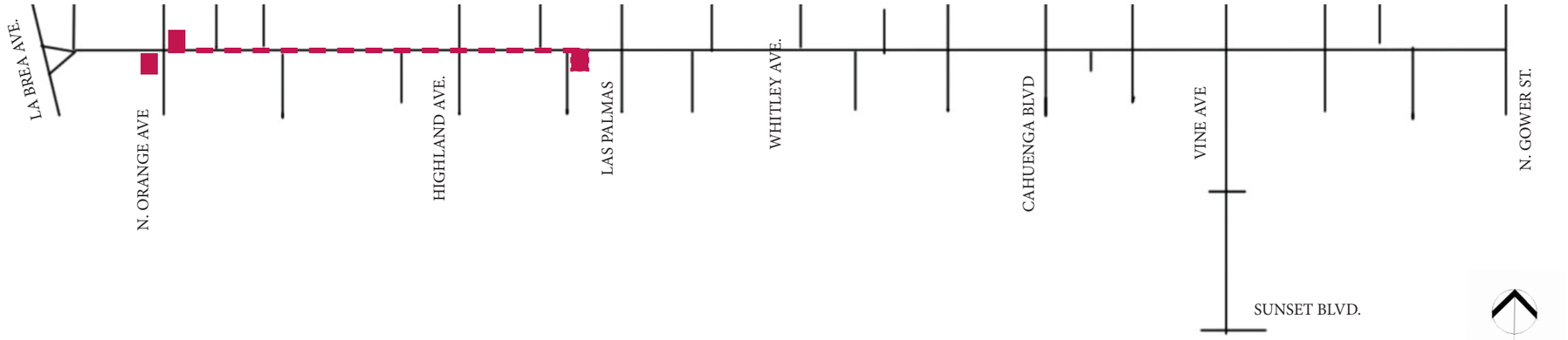
The Hollywood Roosevelt Hotel

The first eight stars were unveiled in August 15, 1958. On Feburary 8, 1960 construction began and on Feburary 1, 1994 the Walk of Fame was extended 1 block west from Sycamore to La Brea.

The Walk of Fame is scheduled to undergo a $4 million renovation. The LA Board of Public Works selected the Gensler Firm in June 2019 to create a new master plan and "update the streetscape plan.

In 2018 the Bureau of Engineering for the Department of Public Works issued specifications and details for the installation, removal and replacement of the terrrazo and black concrete paving for all areas including the stars, tree wells, utility box lids, catch basins and curbs.

The overall project has been successful in its objective, drawing considerable pedestrian traffic to an area that has remained seedy and otherwise undesirable. The new Highland and Hollywood Mall and new metro entrance marks the beginning of a renaissance for this area.



Grauman's Egyptian Theater

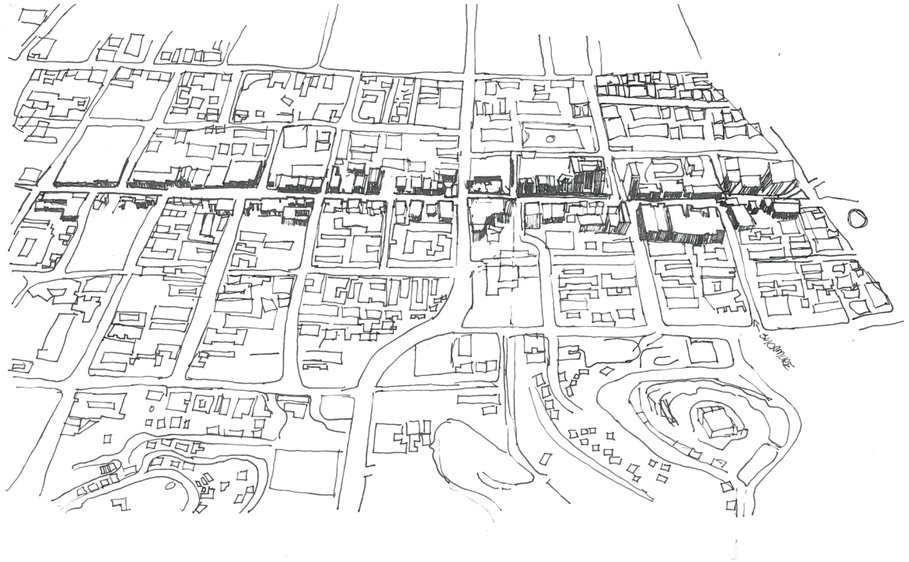
SITE ANALYSIS:

The Hollywood Boulevard neighborhood is dense and highly urbanized with little green space. The heat island affect on Hollywood Boulevard is intensified by a predominance of low profile buldings and the street tree selection of the towering Queen Palm which offers no shade.

The Walk of Fame objective to bring pedestrian traffic to increase business appears to have been achieved as the pedestrian traffic is very high in this area and nearly non-existent even on the adjoining side streets. The sidewalks on Hollywood Boulevard are considerably wider at approximately 15' as opposed to the 8-10' width of the side street sidewalks.

Quick sketchy analyses are shown here as part of a process of undertanding the areas constraints and opportunities. Opportunities are abundant in the area for creating more green space. Arguments could be made for density and higher bulidings to provide more shade in some area and open up other areas for more green space. The overall impression is that the area does have a number of urban issues but remains a highly popular area for tourists.

Drawing and note taking on Hollywood Boulevard was an impossible task not only due to normal foot traffic but also the Latin Emmys was being filmed and guards were directing pedestrians away from areas of interest.A series of photos taken in order of a clear path helped me recollect the experience later in these quick notes.



BUILDING ENVELOPES

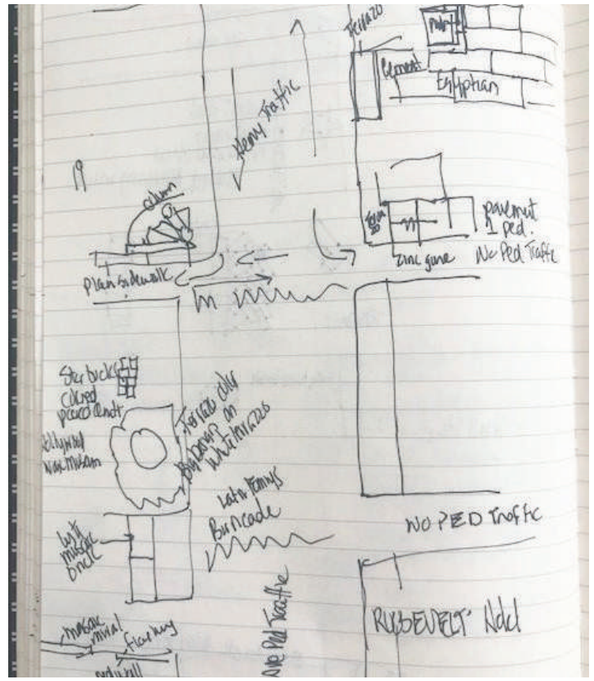
Walk of Fame from Wilcox Avenue to La Brea.

200'

FIGURE GROUND

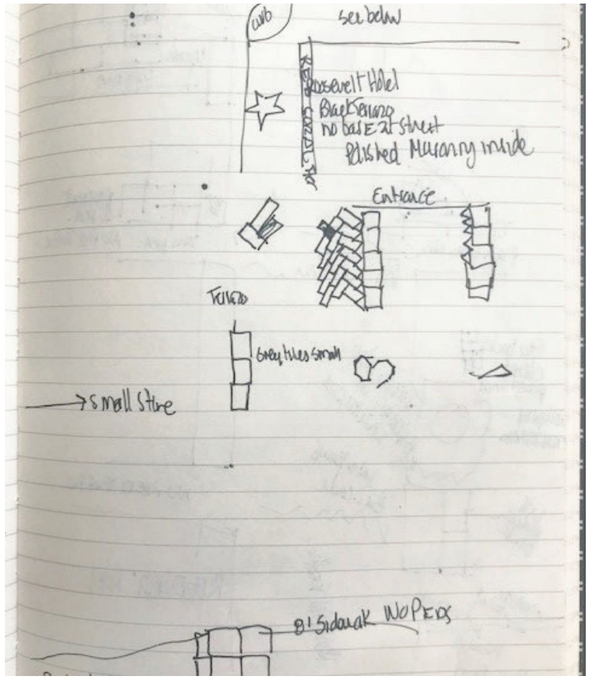
Including grey ground for pavements and green for green space.

200'



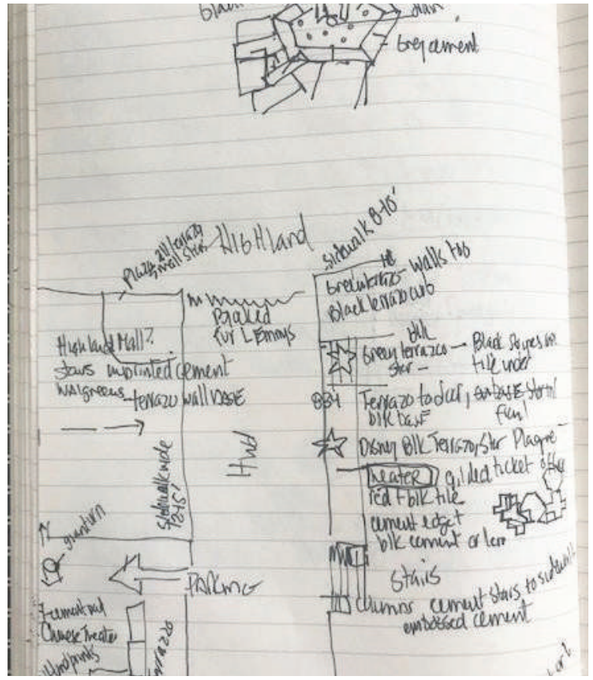
NOTES:

Entrance paving treatments



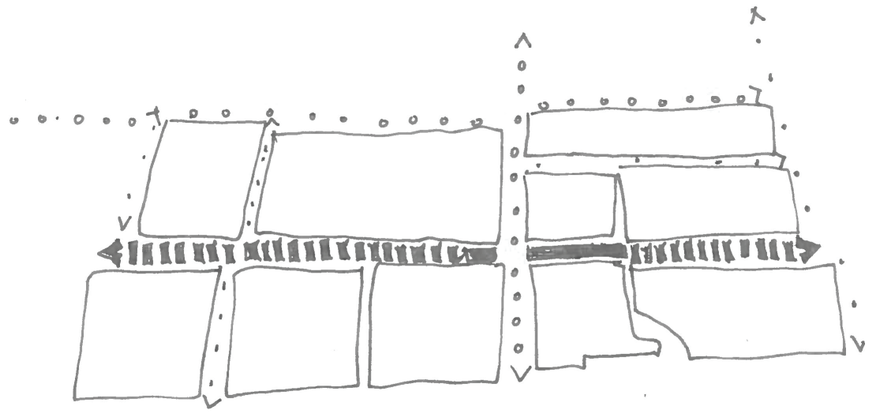
NOTES:

Brick patterns in the Roosevelt Hotel



NOTES:

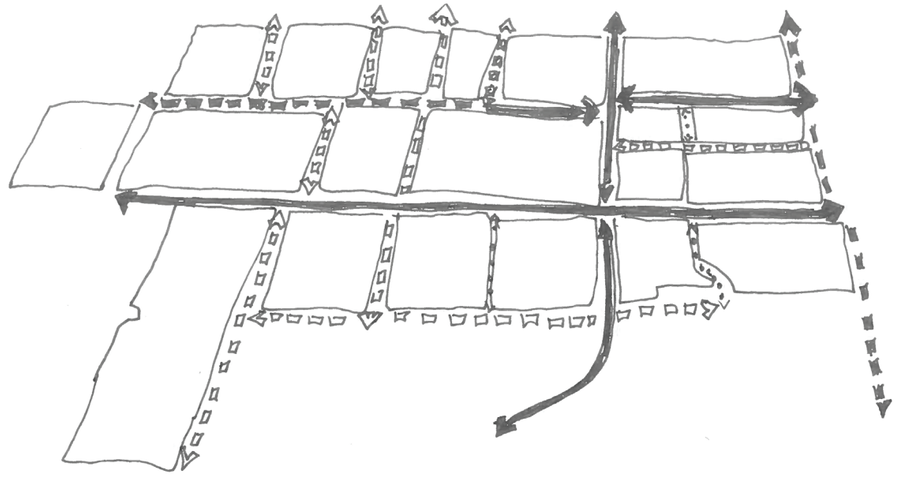
More notes on entrance paving treatments and detail note on treatment of vessel pavement at Chinese Theater.



200'

PEDESTRIAN CIRCULATION

Walk of Fame from Wilcox Avenue to La Brea.



200'

VEHICULAR CIRCULATION

Including grey ground for pavements and green space

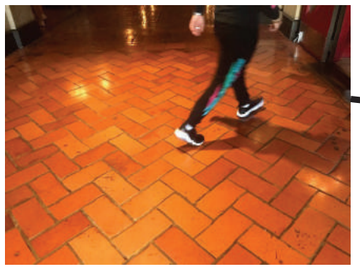
EDGE CONDITIONS

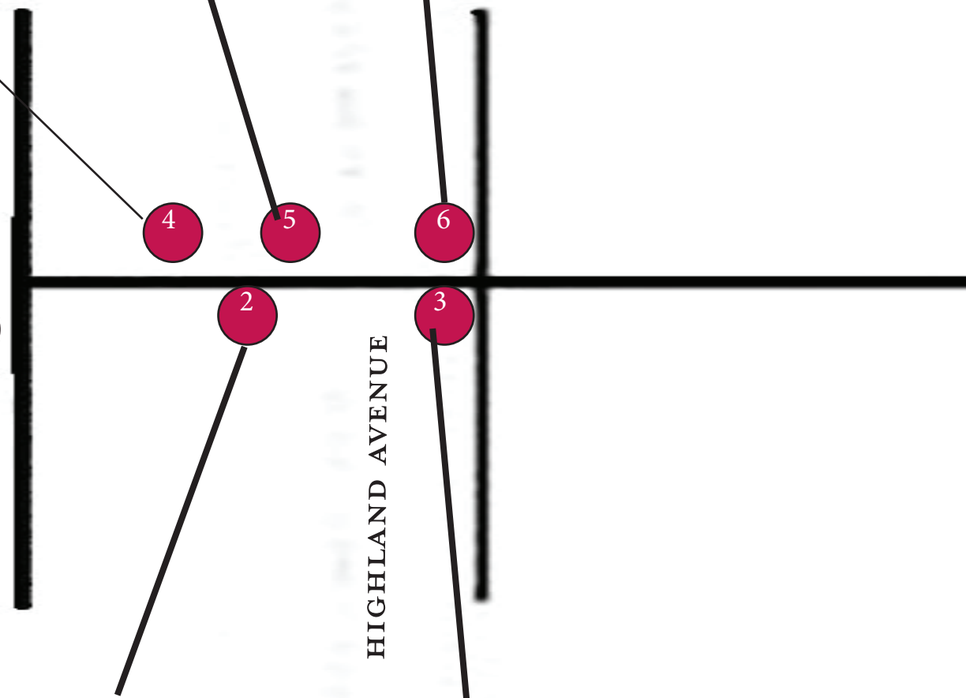
The Walk of Fame was meant to bring a sense of place to an otherwise abandoned area. The use of terrazzo stars set in black terrazzo pavement is an examplory use of paving serving as datum. Other than the paving there is no design element that ties the area together.

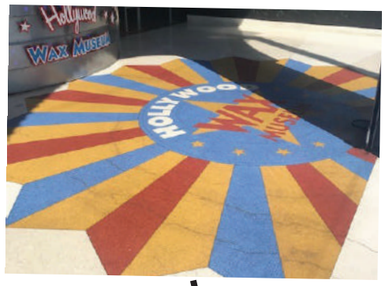
In search of something to redesign in an otherwise successful paving selection, I explored how individual businesses interfaced their entrances with the black terrazzo. Were choices made to contrast or to blend in with the public sidewalk?

On two blocks I saw that these choices varied as much as the businesses themselves. The Chinese Theater has the famous handprints in cement, the areas around the large vessels are delineated by a large green aggregate in cement surrounded by a grey green cement. The Hollywood Roosevelt had a discrete and classic entrance with the black terrazzo reaching the doors, yet upon entering there was a distinct transition with beautiful masonry patterns changing within the lobby. The Hollywood and Highland paving made clear that this was the historic core of the Walk of Fame with a wide walkway and large street names in bronze edging. Two small businesses, a bodega and a souvenir shop, had remanents of vintage terrazzo in disrepair and black terrazzo base on the walls.

The Egyptian theater was a unique historic landmark in using bland grey concrete that appears to be a dull grey concrete that does not invite the visitor in nor mark a place of distinction.







PLACE

N. MCCADDEN

LAS PALMAS AVENUE

NOTES:

1) The Hollywood Roosevelt Hotel

2) El Capitan Theater

3) Tourist shop SW corner Highland/Hollywood

4) Chinese Theater

5) Steps of Hollywood Highland Mall

6) NW Corner Highland & Hollywood

7) Egyptian Theater

8) Starbucks

9) Hollywood Wax Museum

10) Bodega on NW corner Las Palmas & Hollywood.

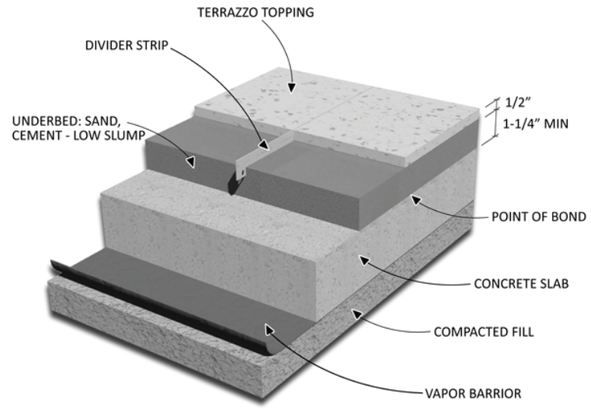
TERRAZZO: HISTORY

Terrazzo, Italian for terrace, was first invented by Venetian artisans in the 15th Century in order to utilize discarded marble chips from mosaic tile projects. It was orginally mixed with clay and proved to be very durable, lasting to this day. In the 1700's the technique was brought to the United States and in the 1960's epoxy based terrazzo was invented. Nowdays it is available both in cement based and thin set epoxy base and can now include aggregates such as glass, granite, marble and even plastic.

It is considered a sustainable material by the US Green Building Council and can contribute to LEED certification. It uses zero VOC (volatile organic compounds) materials and has litle to no off gassing, pollutants or irritants. It can be used for interiors and exteriors and is availble in any size aggregate, several materials and any color. It can be manufactured locally with local recycled materials, reducing pollution due to transporation.

It is expensive, with pour-in-place being the most costly. It is often value engineered out of projects for its price and the long installation process but it is very low maintenance and very durable.

http://veniceartterrazzo.com/



BONDED TERRAZZO

Interiors/Exteriors

For areas areas where conditions require 1.25"-1.75" of recessed depth to be filled in addition to the .5" terrazzo topping. Comprised of an underbed of low slump sand cement on top of a concrete slab. It is less dependent on concrete slab for flatness as compared to monolithic. Breathable.

TYPES OF TERRAZZO:

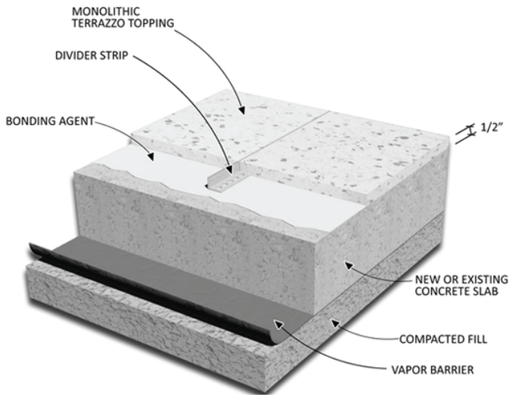
There are six types of terrazzo as well as terrazzo tiles. Epoxy is a resin base and used exclusively for interiors. Sand cushion terrazzo is also exclusively for interiors. The three cementitious terrazzo systems are bonded, monolithic and rustic. Polyacrylate, a polymer based cement, is used for both interiors and exteriors.

Dividers are used in all terrazzo applications over control joints in the control sub base and to separate colors. The dividers for cementitious terrazzo systems are zinc and brass.

When specifying terrazzo the aggregate size 0-2 indicates aggreggate sizes between 1/16" to 3/8".

Cement based terrazzo has the same limitations as cement and can only span 3-5' without a control joint. It is required to follow ACI 302.1 R. 89 Concrete Joint Placment notes. Concrete joints should occur a maximum of 3x in feet the depth of the concrete in inches. i.e.. a 4" slab should have concrete jionts at maximum spacing of 12 feet. Concrete joints sould run off all corridor *intersections and corners. They should not be spaced more than 1.5 times the width of the concrete pour. ie. a 6' wide corridor should have concrete joints at maximum of 9 feet.*

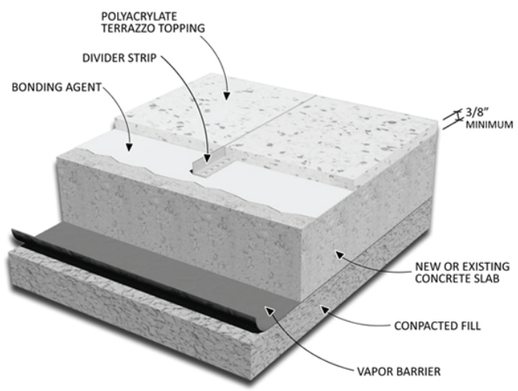
All applications require a vapor barrier between soil and concrete slab as any moisture can compromise the integrity of the terrazzo.



MONOLITHIC TERRAZZO

Exteriors.

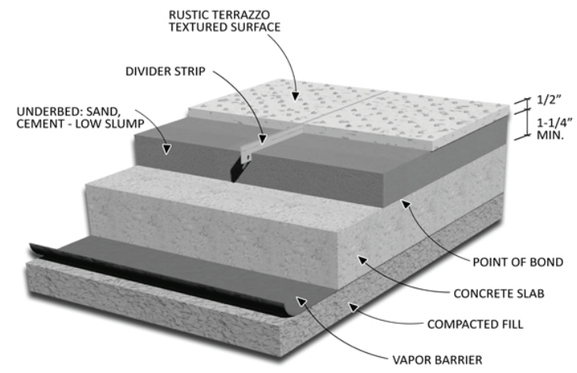
1/2" thick terrazzo depends on concrete for flatness and crack prevention. Faster process than most cementitious terrazzo systems and more economic for budget and time. On grade or below grade only.



POLYACRYLATE TERRAZZO

Interiors/Exteriors.

A polymer based cement with glass or mother of pearl chips. 3/8" minimum depth of terrazzo. Fast installation and moderate price.



RUSTIC TERRAZZO

Terrazzo with non-ground, textured use for exterior use. This system uses bonded or monolithic terrazzo systems and is a weather resistant, skid resistant surface.

Divider is slightly different in that tempoary wood strips are used then replaced by a pourable sealant inserted into the joint.

Venetian and Rustic Terrazzo are similar in the use of larger aggregate.

Source: National Terrazzo and Mosaic Association.

TERRAZZO FAILURE:

As I walked through the Walk of Fame the need for restoration was apparent. I noticed missing dividers, cracks and breakage of the terrazzo topping and layers of dirt that had not been cleaned.

Causes of terrazzo failure can be due to :

1) control joints in the concrete slab being covered and not telegraphed through the terrazzo assembly.

2) Terrazzo divider strips not fully bonded and supported by epoxy in order to leave no voids. When the epoxy moves the terrazzo cracks in these areas.

3) The original cement slab was either not completetly flat or was subjected to high levels of moisture.

4) The concrete slump was high.

From: https://ctasc.com/case-studies/investigation-of-cracked-terrazzo-flooring/

Broken curb interface with terrzaao pavement. Broken divider.

Terrazzo and curb with black concrete

Detail of broken terrazzo and warped dividers.

Utility Box covers

Detail Tree well with drainage and granite pavers.

Busy sidewalk. Note the terrazzo wall base. This was rare and seems to be a remnant from the 1960's.

CONSTRUCTION DETAILS

The construction details on this page come from the Department of Public Works Bureau of Engineering Standard Plan S-445-0, “Hollywood Walk of Fame Specifications and Details” prepared by Floresto Villanueva, from 2018. I assume this document is in response to the need for restoration and to assure that the same failures do not occur as seen on the opposite page.

NOTES: Terrazzo Paving Section

A. 4” concrete sub-floor with 2% max surface slope

B. Composite double divider strip per divider detail

C. 1-3/8” mortar underbed with addtional thickness over sloped concrete sub-floor (where occurs)

D. 5/8” thick terrazzo topping. 2% max slope.

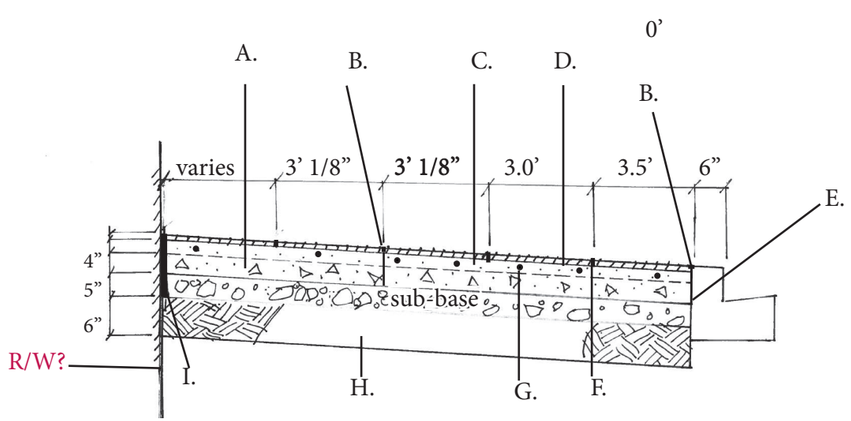
E. Expansion Joint Per SSPWC

F. 6x6x10 WWM. (welded wire mesh)

G. #4 epoxy coated dowels

H. subgrade compacted to 95% relative compaction

I. expansion joint with joint filler and sealant.



Terrazzo Paving Section

NOTES: Expansion Joint Detail

A. Composite Double divider strip with “ Sonolastic SL 2” sealant or approved equal.

B. “Dex-o-Tex Vl Primer” sealer or approved equal.

C. 5/8” Terrazzo

D. “terroxy Primer” epoxy adhesive or app’d eq.

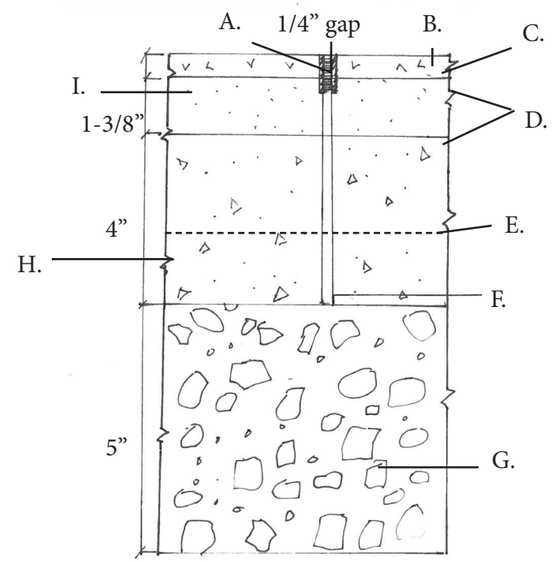
E. 6X6X6 WWM

F. 1/4” saw cut.

G. Subbase (CMB) compacted to 95% relative compaction. Thickness shall be 5” except for replaced star locations where thickness shall be reduced to 4”.

H. Concrete subfloor.

I. 1-3/8” mortar bed



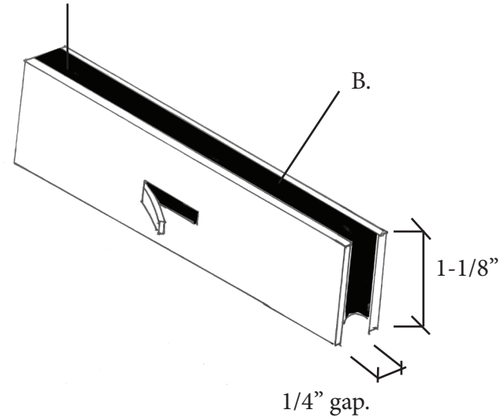
Expansion Joint Detail

A.

NOTES: Divider Strip Detail

A. 16” guage zinc divider strips

B. “Sonolastic SL2” polyurethane sealant or app’d eq.

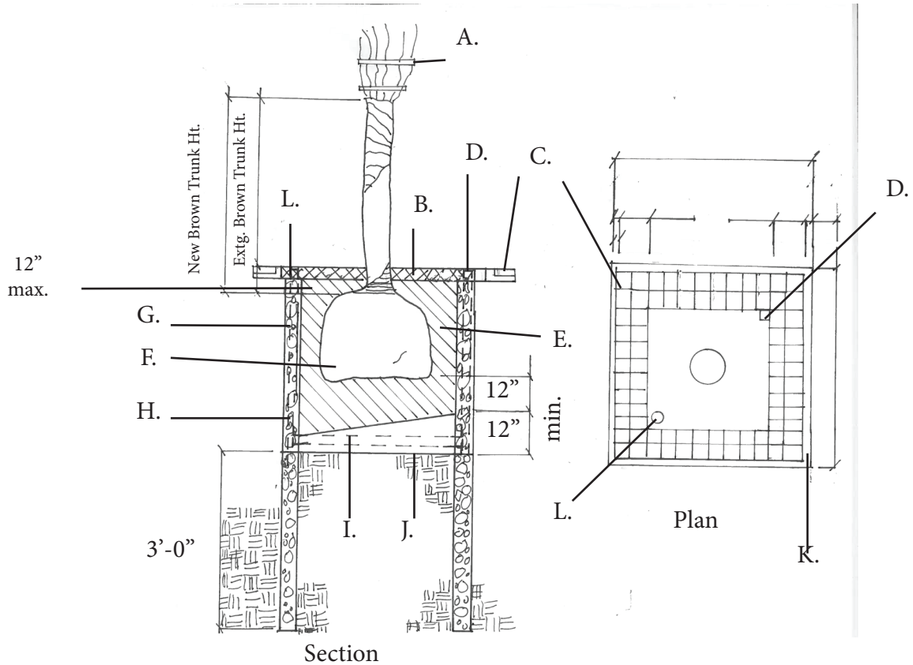


Divider Strip Detail

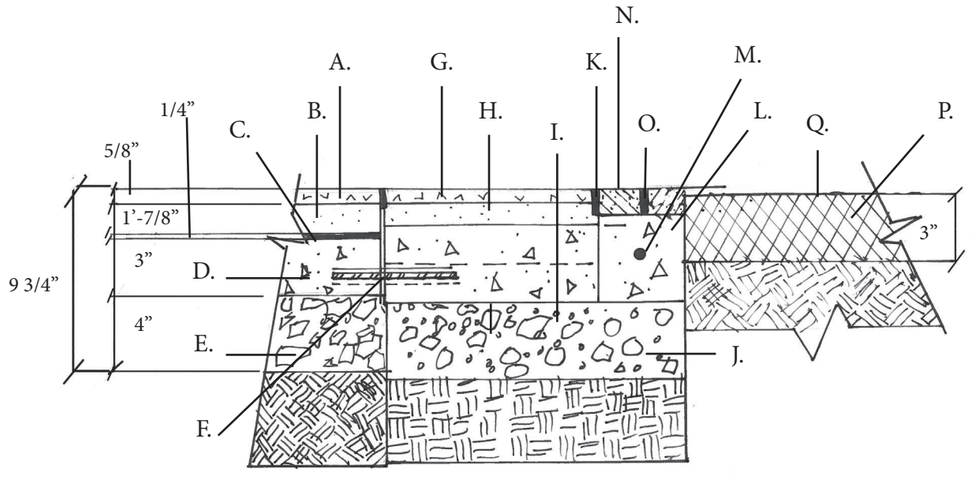
LEGEND

- Travertine
- Granite paver
- undisturbed soil
- D.G.
- compacted soil
- concrete
- aggregate
- mortar
- Terrazzo
- Prepared top soil
- Terrazzo (smaller details)

CONSTRUCTION DETAILS



Tree Well Detail



Granite Paver Installation Detail

NOTES: TREE WELL DETAIL

A. Fronds: Tie prior to delivery. All dead fronds to be removed to height of green fronds and trunk skinned clean.

B. Decomposed granite 3" min depth.

C. Granite pavers (see detail to right).

D. Grate - NDS slotted drain grate. Color gray. Capped on stand pipe. Set grate flush with finish grade (D.G.) at curb corner at lowest point opposite side of sump.

E. Plant tablet.

F. Palm Rootball. Set top of rootball min. 12" below Finish grade.

G. Jetted backfill with root growth stimulant.

H. Two augered holes per pit with perforated stand pipes system connected to sub-surface drainage system 12" below fill with crushed rock.

I. 3" dia. perf. ABS pipe wrapped around all sides and hooked to stand pipes wrapped with non-woven filter fabric within 1 cubic foot pea gravel sub-drainage.

J. 3/8" diamenter gravel envelope around pipe.

K. Curb.

L. Glue and bolt one 3" NDS Drainage emitter pop-up color black to 'T' inlet. Attach 'T' inlet to perforated standpipe.

M. Palm trunk.

NOTES: GRANITE PAVER INSTALLATION

A. Existing 5/8" thick terrazzo topping.

B. Existing mortar underbed. 1-7/8" with additional thick ness over sloped concrete sub-slab.

C. existing 1/4" sand cushion.

D. Existing 3" concrete slab with 6"x6"x10" WWM reinforcement centered in concrete subslab.

E. Existing sub-base: 4" of crushed aggregate base.

F. Anchorage: Slip dowel. 18" #4 bars coated with approved epoxy.

G. New 5/8" thick terrazzo topping.

H. New mortar underbed 1-3/8" with additional thick-ness over sloped concrete sub slab.

I. New concrete sub-slab 4" concrete subslab with 6"x6"x10" WWM reinforcement centered in concrete sub base.

J. sub-base: min 5" compacted to 95% relative compaction.

K. Composite double divider strip expansion joint.

L. Paver support: 8 1/2" x 5 3/4" concrete support.

M. concrete support reinforcement #4 bar cont. (Typ).

N. Granite pavers 4"x4"x1-1/4" academy black with thermal split edge finish.

0. Grout 1/2" width. Color to match pavers.

P. Decomposed granite: min 3" california gold.

Q. Finished grade.

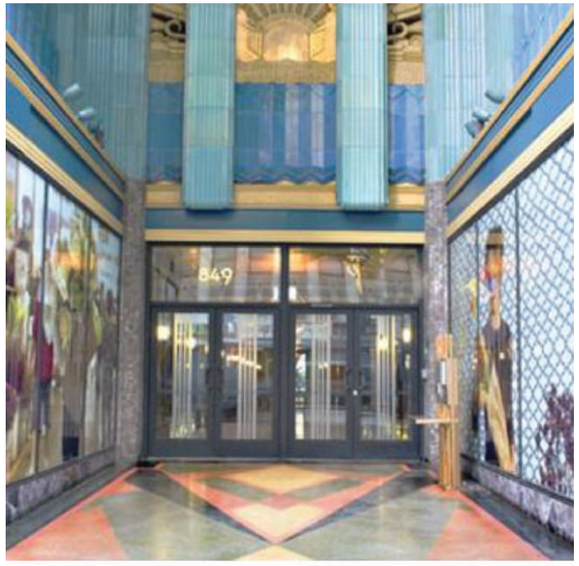
CONTEXT

Charles E Tauberman, the largest developer in 1920's Hollywood commissioned Sid Grauman to build the Egyptian Theater. It was completed in 1922. King Tutankhamen's tomb was discovered on November 26, 1922 so it appears that the Egyptian theme may have been an afterthought that was added to the Spanish style building.

Charles Tauberman was the developer behind the El Capitan Theater, The Chinese Theater and the Hollywood Roosevelt Hotel, all built in 1926. Sid Grauman, who built the Chinese Theater, the more illustrious brother to the Egyptian, also built the Million Dollar, Rialto and Metropolitan Theater downtown.

The interior of the Egyptian is spectacular with incredible recreations of Egyptian art and an ellaborate ceiling. Much like Grauman's other theaters, the beauty mostly lies inside whereas the the paving seems to be an afterthought. This disregard for the entrance paving does not seem to be in align with historic Los Angeles theater and hotel entrances. Wendy Chan of AHBE Lab on their blog wrote about her walking tour of downtown pavement art during the research stage in preparing a proposal for a pedestrian linkage project.

The Chinese theater appears to not have had a distinct pavement choice and therefore was open to having stars' footprints set in concrete. The Egyptian Theater, a little off center from the heart of the Walk of Fame, has interesting walls and giant columns but does not draw one in with its plain paving treatment and off scale queen palms that tower over the theater and emphasize its normal stature.



EASTERN COLUMBIA BUILDING

https://en.wikipedia.org/wiki/Eastern_Columbia_Building

THE GARFIELD BULIDING

https://ahbelab.com/2018/06/14/following-in-the-footsteps-of-downtown-las-past/
All Photos from Ahbe site by Wendy Chan

SIDEWALK/ CLIFTON'S CAFTETERIA

https://ahbelab.com/2018/06/14/following-in-the-footsteps-of-downtown-las-past/
All Photos from Ahbe site by Wendy Chan

THE ROXIE THEATER
1930

https://farm2.staticflickr.com/1201/1178405304_f3d25dcb9f_z.jpg?zz=1

THE LOS ANGELES THEATER

https://ahbelab.com/2018/06/14/following-in-the-footsteps-of-downtown-las-past/

CLIFTON'S CAFETERIA
1935 by Arthur D Pizzanat, Sr. 2 of 12 medallions.

https://ahbelab.com/2018/06/14/following-in-the-footsteps-of-downtown-las-past/

REDESIGN

American Cinematique bought the theater in 1996 for $1 and was provided some funds from the Community Redevelopment Agency and the City of Los Angeles to renovate the theater which had been damaged in the 1994 Northridge earthquake. The $15 million renovation was completed by 1998 and included reducing the former 1,100 seat theater to a 616 seat auditorium and a smaller 78 seat screening room.

As one can see from the 1923 postcard (top left) compared to the current entrance (middle right), the renovations to the exterior were not literal. Though much was preserved in the interior renovation, there were major alterations made to the original theater structure.

In some photos the paving appears to match the walls but in other photos it does not. If the thought is create a feeling of being at the tombs, a golden stone might be better suited. I chose a travertine stone with chambon finishing. Terrazzo might be too glossy and overpower the the matte stone appearance of the walls.

The queen palms could be exchanged for dwarf queen palms that would bring the trees to human scale and offer more of a sense of retreat from the busy boulevard. The inspiration for the human scale palms is the Beverly Hills Civic Center center terrace.

EGYPTIAN THEATER 1923 POSTCARD

http://thecoincidentaldandy.blogspot.com/2011/09/6712-holly-wood-boulevard-sid-graumans.html

PAINTED WALLS OF EGYPTIAN THEATER

GRAUMAN'S EGYPTIAN THEATER interior

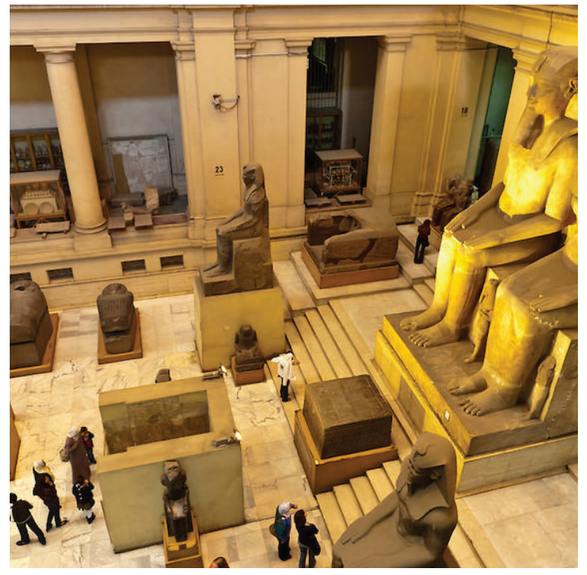
https://blog.chuckjones.com/wp-content/uploads/2013/09/DSC06925.jpg

EAST WALL

Photo by Wieland Van Dijk Sept 15, 2011

ENTRANCE WITH QUEEN PALMS

https://www.thereshegoesagain.org/a-walk-through-hollywood-boulevard/



INTERIOR EGYPTIAN MUSEUM, Cairo

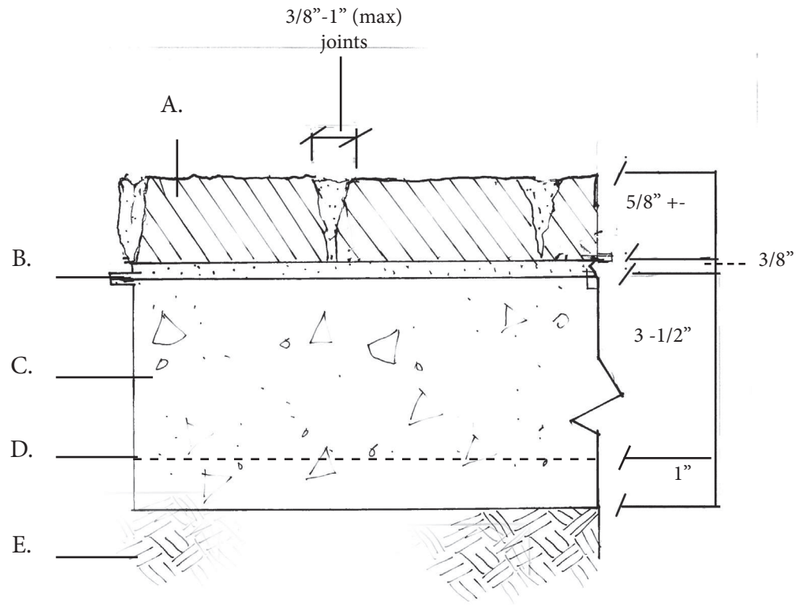
http://www.arabacademy.com/ancient-egyptian-history-egyptian-museum/

REDESIGN DETAILS

The travertine chabon tumbled stone texture compliments the texture of the Egyptian theater exterior walls without distracting. It matches the attention given to the other design elements of the theater. The existing pattern would be used with slabs sized at 24”x12 with shorter lengths to accomodate the planters.

The queen palms would be replaced with Chamaedorea plumosa which looks like a minature Syagrus romanzoffiana. It reaches a height of only10-12 feet. The smaller palm would give the plaza a more intimate feeling and a sense of entering a new space. It would also give the theater a grander feeling by not towering over the structure.

An accent of cyperus payrus by the fountain is also suggested.



TRAVERTINE INSTALLATION DETAIL

A. Travertine Chabon tumbled and unfilled slab.
Sizing varies 24”x12” x 5/8”. Dress edges where req’d to facilitate close mortar joints.

B. 3/8th epoxy mortar bed.

C. Sub-base cement with #4 bar reinforcement
O.C. Control joints every 5’.

D. 6”x6”/#10x#10 WWM (welded wire mesh) throughout.

E. Compacted sub grade.

STAIRS & RAMPS

Baldwin Hills
Scenic Overlook State Park
and Culver City Stairs

BALDWIN HILLS SCENIC OVERLOOK is a 57-acre state park 500 feet above the Los Angeles between Culver City and Baldwin Hills. In the not so distant past it was an oil well site and later a developer shaved off the top of the mountain to create a large residential development of up to 230 new houses. At this point the locals took on a decades long battle for a park. The state bought the property in 2000, for $40 million, opening the overlook to the public. In mid 2006 construction on the visitor's center and the trails began, opening in April 2009.

The state hired Safdie Rabines, an archiectural firm based in San Diego run by Ricardo Rabines and Taal Safdie, daughter of Moshe Safdie. The landscape archtecture was handled first by Pamela Burton at the early stages and later the San Diego office of Wallace Roberts and Todd and the restoration ecology firm Earthworks continued the work which is ongoing to this day. The state spent $10 million for the Visitor's Center, Culver steps and trails.

The park is presently undergoing renovations and improvements to trails, steps and creating connections to the regional trails.

In Christopher Hawthorne's LA Times article, "What should a big city park look like?" he writes, "The ensemble of architecture and reshaped topoography comes together at the park in a compellingly frank whole." The appeal of the park is not fully captured in photos as this beauty coupled with the comraderie of park visitors enjoying this unexpected retreat is beyond its physical preesence.

CULVER CITY STEPS

A perspective of the Culver City Steps leading to the Baldwin Hills Scenic Overlook. To the right is a cellular tower. The mountain is steep and sparsely vegetated, still undergoing a long restoration process

CONTEXT:

Baldwin Hills Scenic Overlook Park sits in close vicinity to the neighborhoods of Culver City to the north, Baldwin Hills directly to the south as well as Inglewood and Ladera Heights.

The area is generally park poor and the park brings much needed hiking trails as well as a connection to larger regional trails such as the Park to Playa trail that will eventually stretch from the Baldwin Hills Kenneth Hahn Park to the Pacific Ocean upon completion in 2020.

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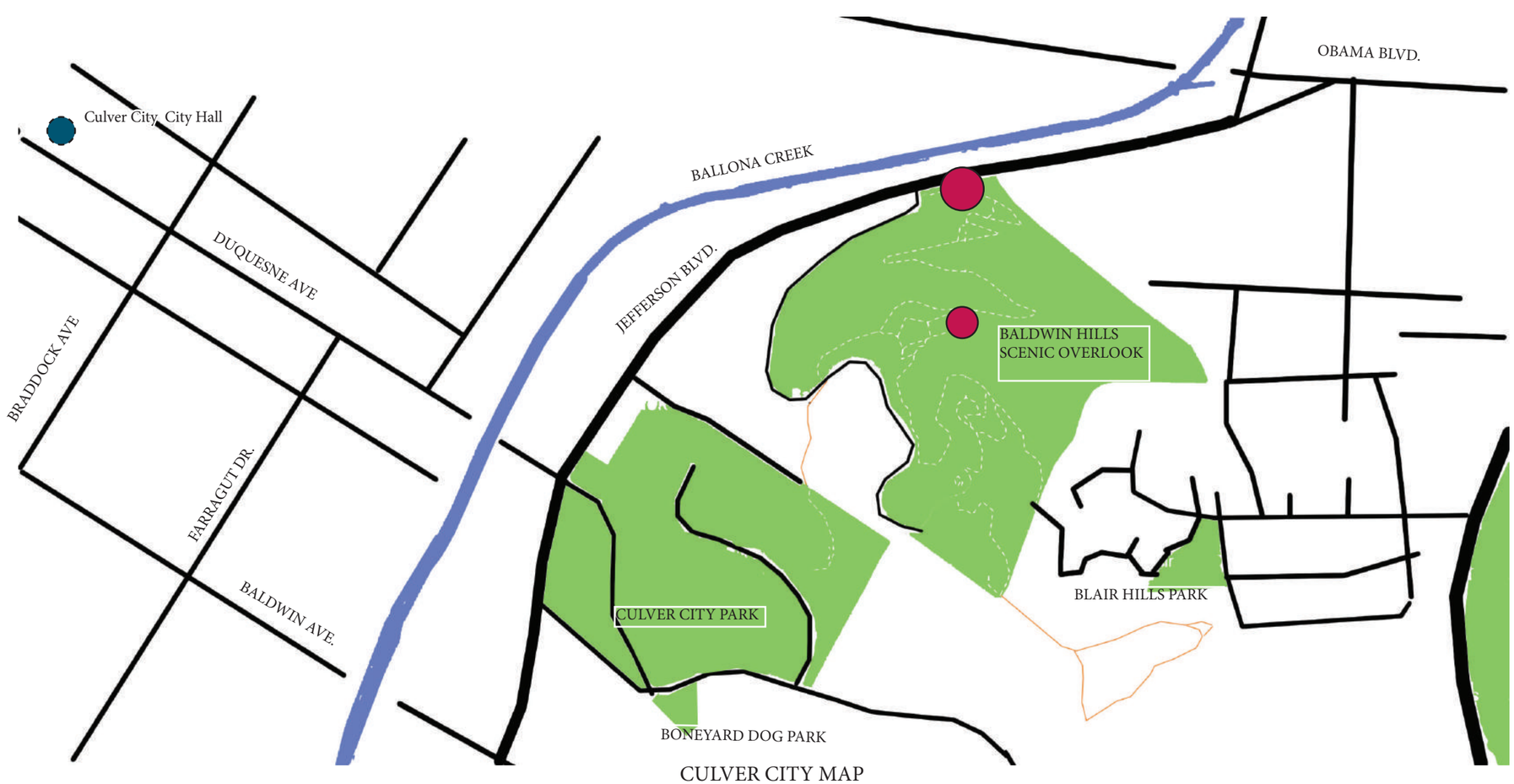


CULVER CITY MAP

BALDWIN HILLS SCENIC OVERLOOK MAP:

A. Parking Lot

B. Visitor's Center

C. Garden Path

D. DG Path

E. Overlook

F. DG Hiking Path

G. Entrance

H. Hetzler Road

I. Jefferson Boulevard

VISITOR'S CENTER MAP:

A. D.G. Path from Parking Lot

B. Amphitheater Steps

C. Ramp

D. Flat inlaid steps to garden

E. Steps to Garden

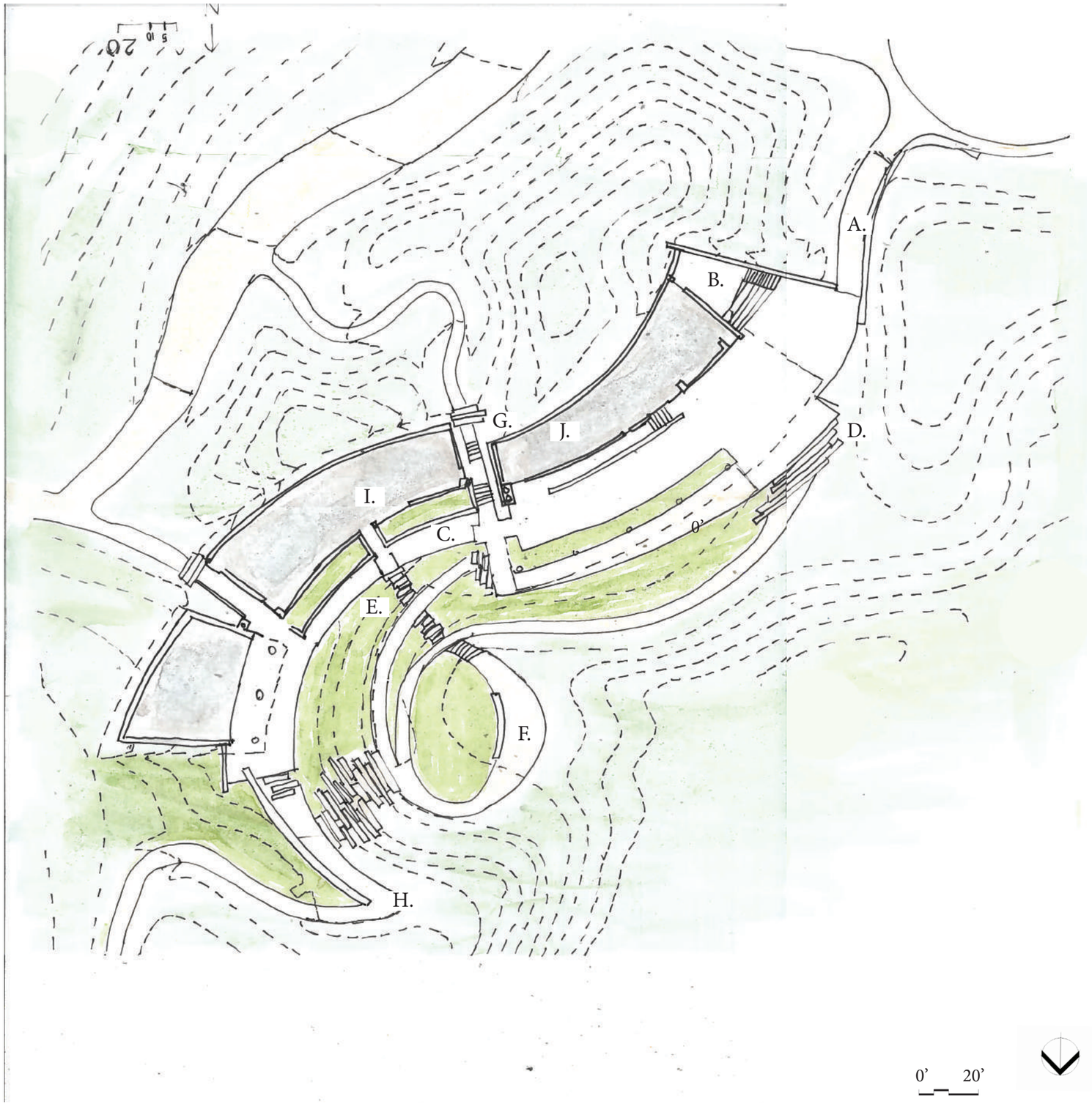
F. Garden Path

G. Stairs to upper path

H. Decomposed Granite Path to overlook

I. Bathrooms

J. Exhibit Space



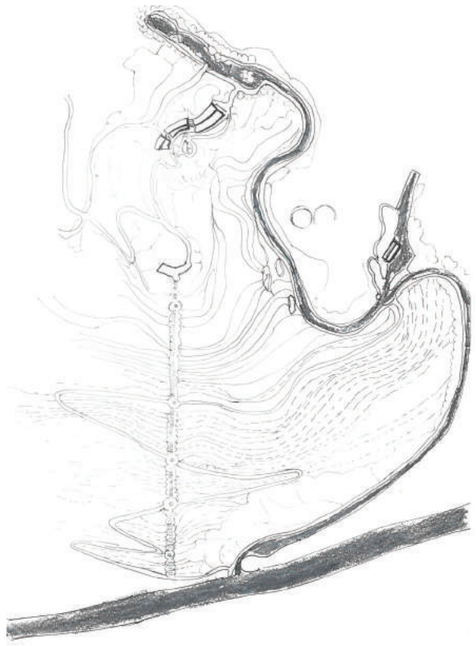
SITE ANALYSIS:

Quick site analyses demonstrate that the park consists of extreme slopes with a few switchback paths that require minimal grading in order to lay lightly on the already distressed terrain.

The Culver City Stairs is a straight line covering approximately 277 feet in elevation in 285 steps. The steps range from 3" to 20", averaging an 8" rise with an average 3' tread. The landings are very large, ranging from 8-20' and continue to rise at a grade of approximately 5% +-.

The official winding trail is approximately 1.6 miles covering 285 feet in elevation to the Visitor's Center.

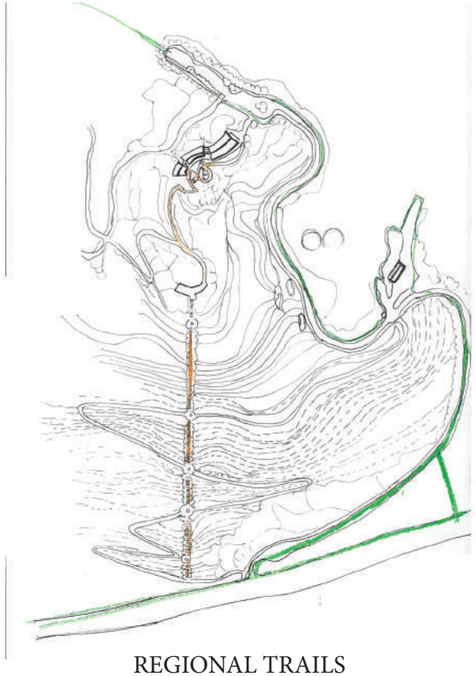
Details on the renovations are not available but signs noted that connecting paths were being developed to the Regional trails, including to Kenneth Hahn Park and the Park to Playa Trail. Railings are being installed along the steps as well as the DG paths from the overlook to the Visitor's Center and these paths are being widened to 6'. It may be possible that some of these upper DG paths are meant for or can be altered for ADA accessibility but the slopes below the overlook are too steep for accessibility, especially considering the fragility of the ecology. Drainage along the paths needs to be considered to deter erosion and proper DG installation for slopes would require 4" DG and 4" subbase with the stabilization.



VEHICULAR CIRCULATION

OFFICIAL PATHS

ADA PATHS



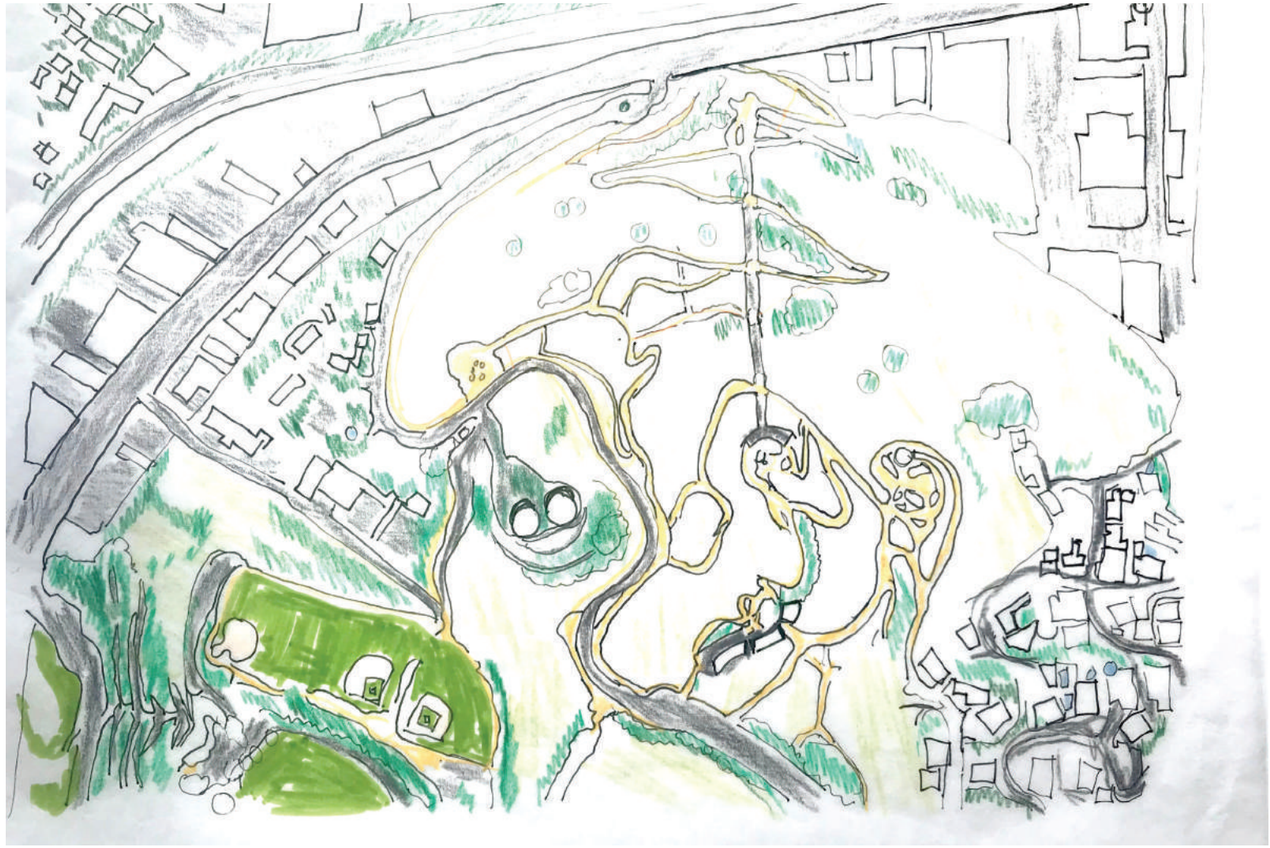
REGIONAL TRAILS

CONTEXT ANALYSIS:

A quick sketch over a Google Earth aerial reveals an area with strong connections to regional trails as well as nearby Culver City Park and Kenneth Hahn. There are numerous parking facilities on the Culver City side to the North and large industrial warehouses. Across the Ballona Creek channel is a residential area as well as to the Southeast of the Visitor's Center.

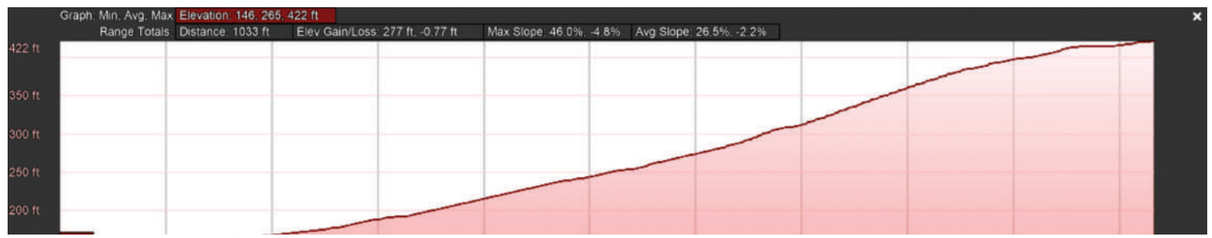
Using Google Earth path analysis one can roughly measure the elevation and distance of a path- in this case the Culver City Stairs. It is often stated that the elevation change is 715 feet covered in 285 stairs. This would be a 1:2 slope and not feasible. It appears that 715 feet may be the horizontal distance (here it is given as 1033 feet)with an elevation change of 277 feet. The slope would then be closer to 38% if the distance is 715 and 27% if it is 1033 feet.

The variation of stairs seems to be due to following the slopes with little alteration to grade. The steepness has proven very popular as a natural, plein air stairmaster.



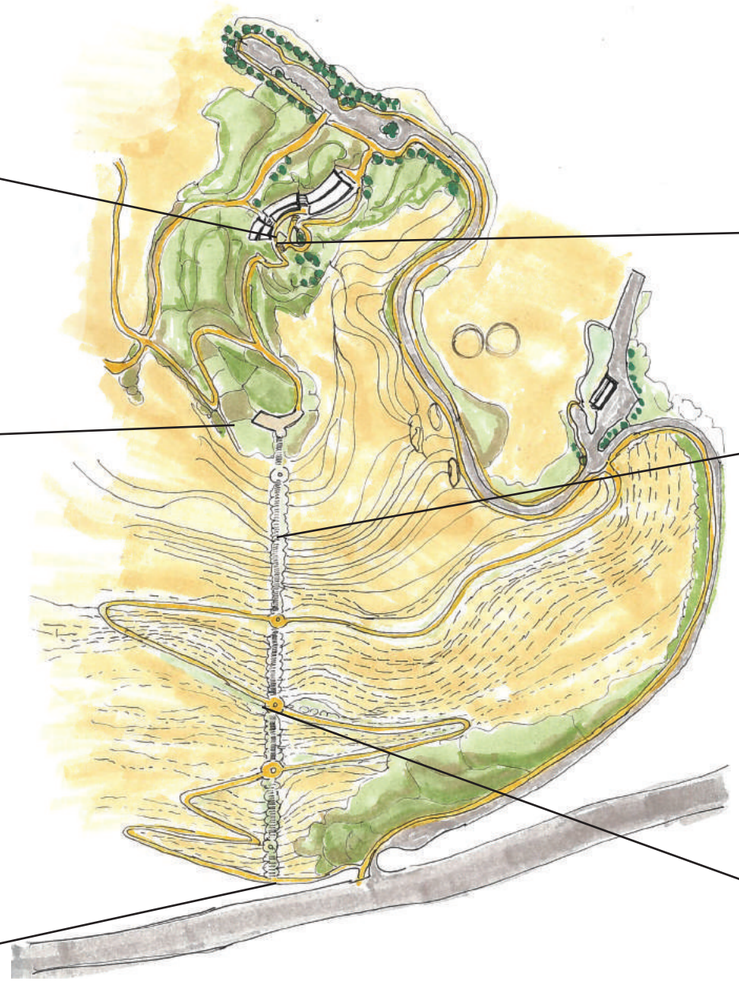
CONTEXT

200'



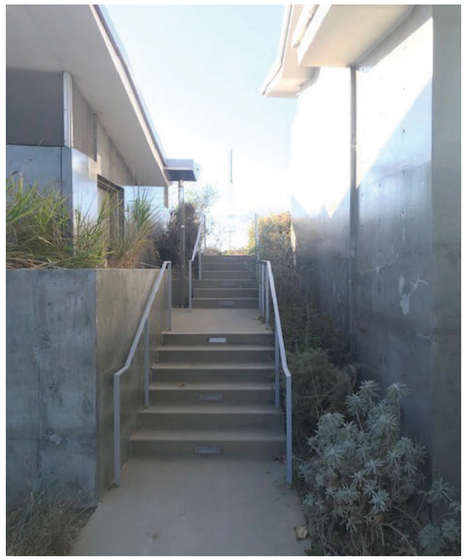
GOOGLE EARTH CURVE ANALYSIS

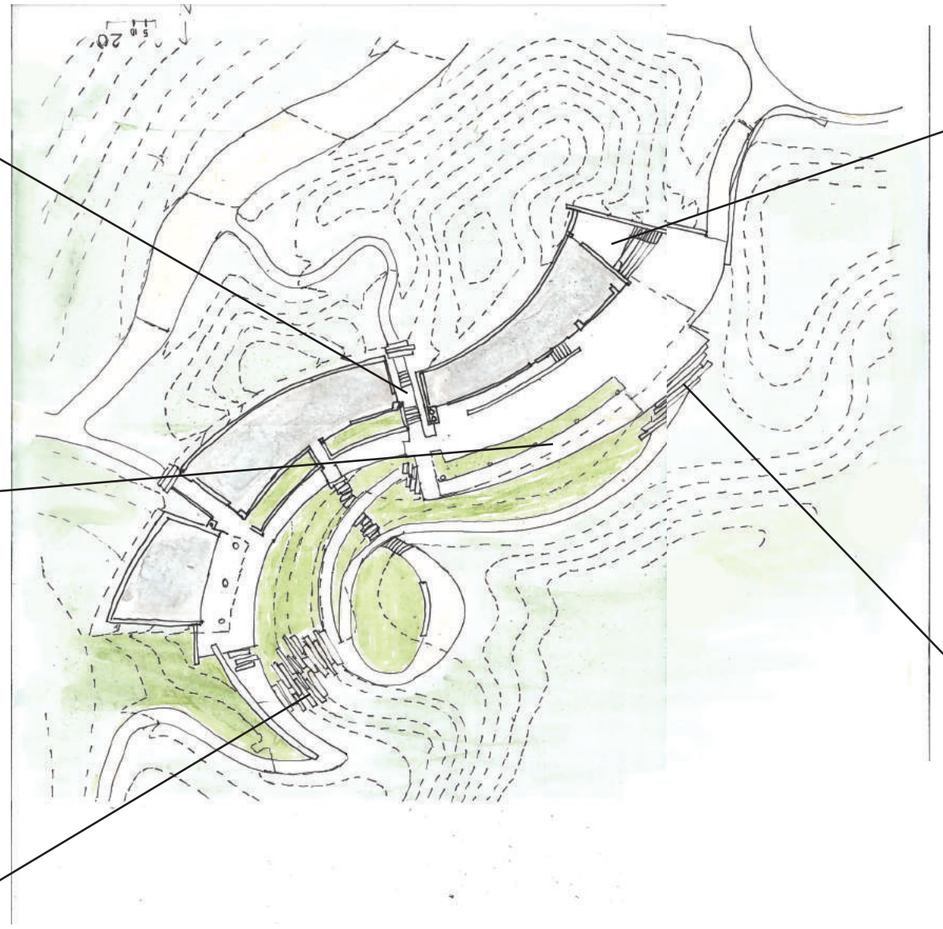
PATHS, RAMPS AND STAIRS
PARK



0’ 160’

PATHS, RAMPS AND STAIRS
VISITOR'S CENTER





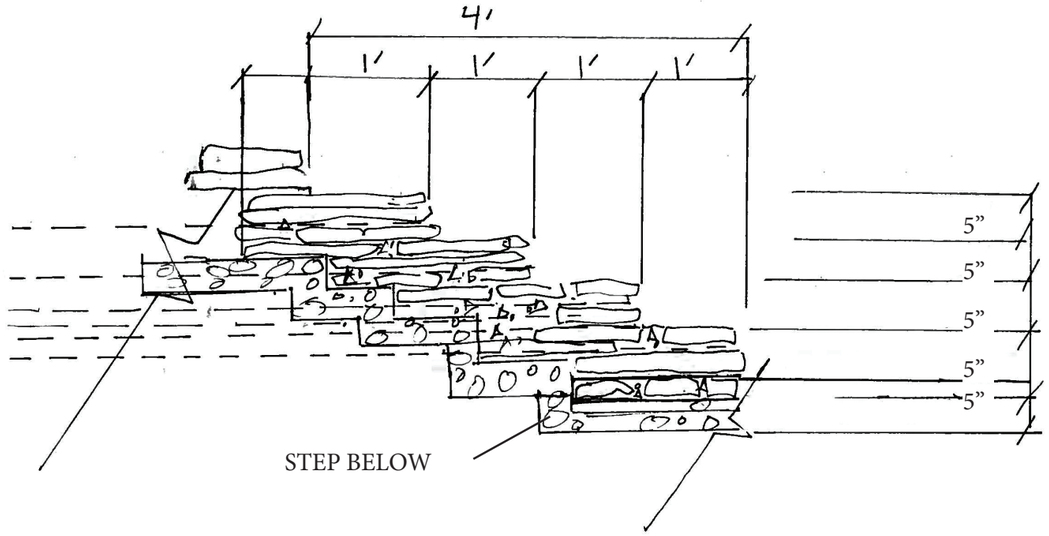
0’ 40’

CULVER CITY STAIRS:

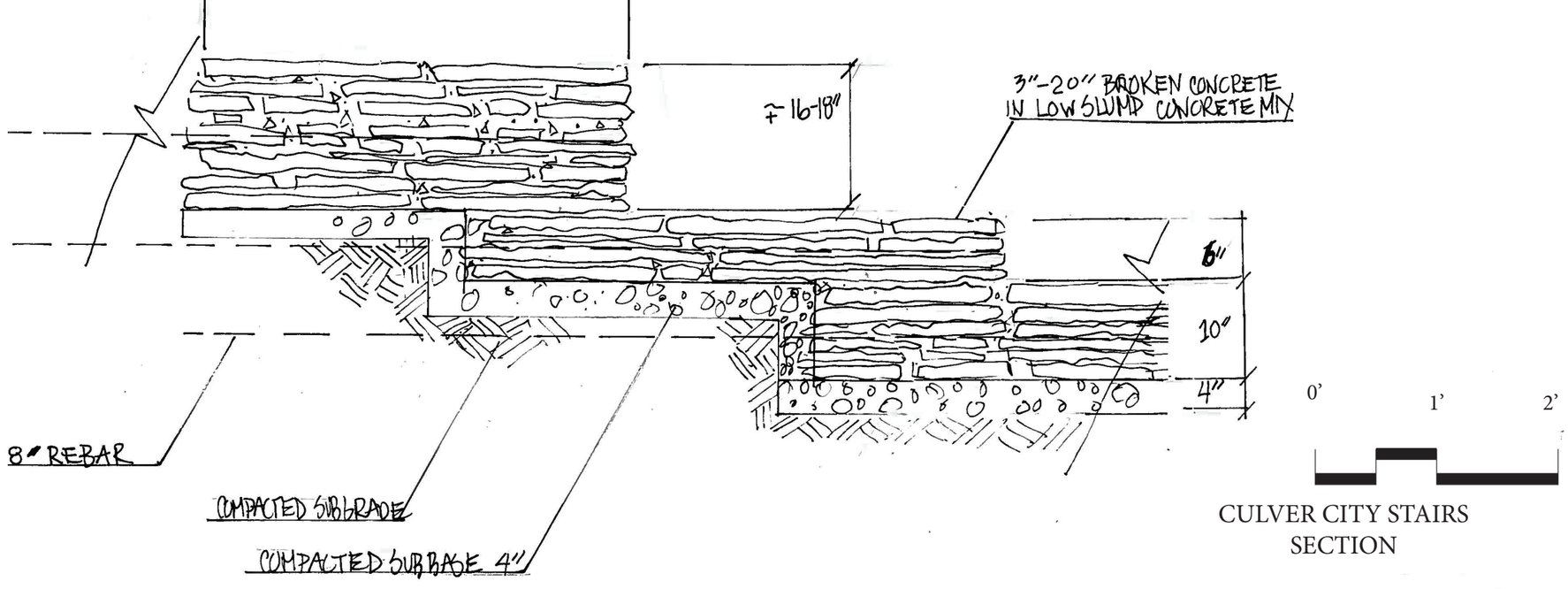
The example here is of a 20” rise, 4’ tread. Commonly on steep slopes stairs have a higher rise and a shorter tread. The treads of the Culver City Stairs are all particularly wide and must be due to avoiding any grading on a degraded site and to the material.

The stairs here and in the garden by the visitor center are made of broken concrete of which there is an abundance left by the previous developer. The depth (sidewalk depth) is approximately 2” which may be layered with a low slump concrete. I assume here that #4 rebar approximately 8’ is driven into the hillside.

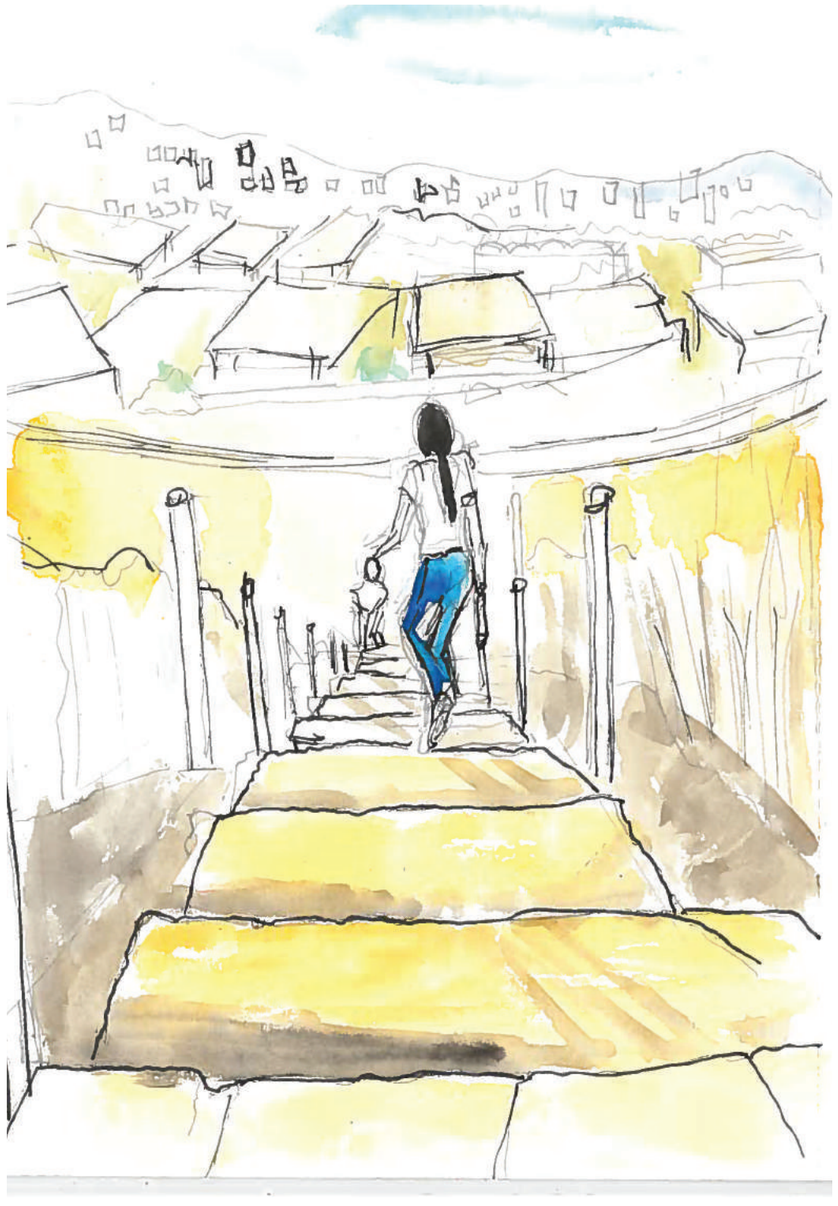
The redesign above considers an example of a 4’ tread, 20” rise step being converted into 4 steps with a 5” rise and 1’ tread. The steps are presently being improved; railings are being added and it is possible that some alterations to modify the rise and tread of specific steps may occur.



REDESIGN:
20’ Step

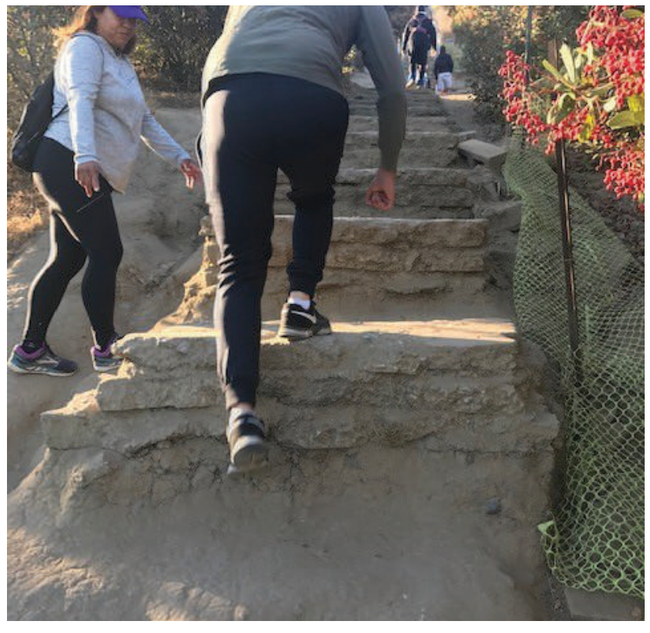


CULVER CITY STAIRS
SECTION



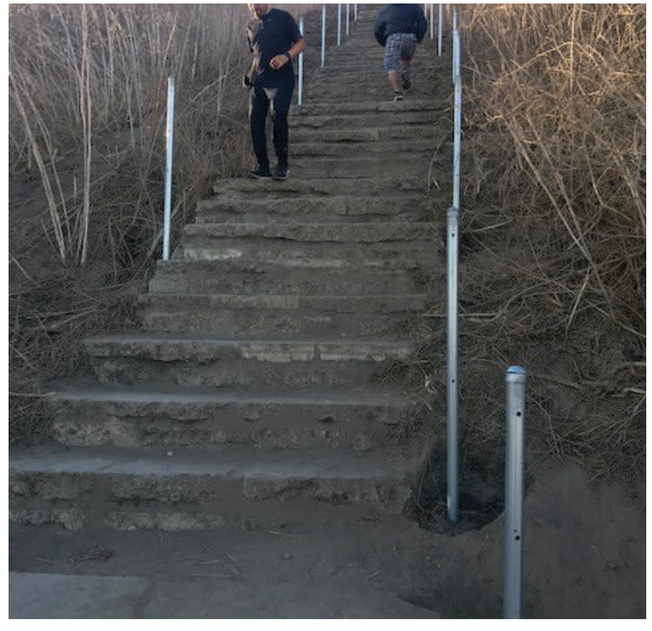
Culver City Stairs
looking towards Culver City`

Stair detail
4-6 layers of 2” broken sidewalk



Navigating steep steps

Stairs from above
Wide tread with dirt



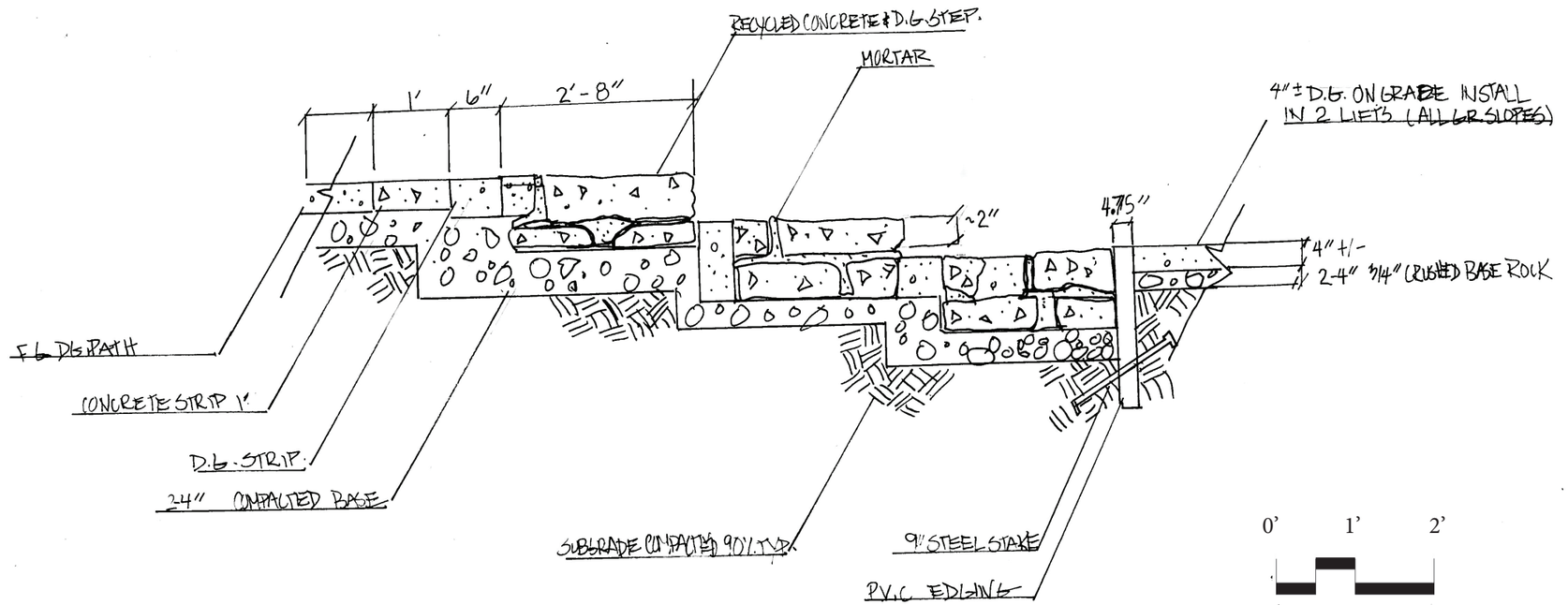
New railing being installed

GARDEN STEPS:

The steps leading from the DG paths around the Visitor Center to the small garden are also made of broken sidewalk but the pieces are organized into patterns and are inset into DG. They appear not to be mortared togther. The rise is a uniform 4" and the width varies but starts at 2'-8". The entrance from the west building DG Path has a concrete arc of 1' depth and 55'-6" length and gently transitions from the rectilinear buldings to the curvilinear paths of the garden and the nature trails. The decomposed granite is held in place with plastic edging. On the lower curve of the path there is considerable erosion and there appears to be no grading.

D.G. is ADA compliant if installed correctly. It seems that these paths are meant to be ADA accessible but will need repairs and drainage to be properly accessible. In the construction detail recommendations for decomposed granite installation on a slope is indicated. It also requires a specific mix of stabilizer to insure that the path is firm enough for ADA paths.

GARDEN STEPS
PLAN



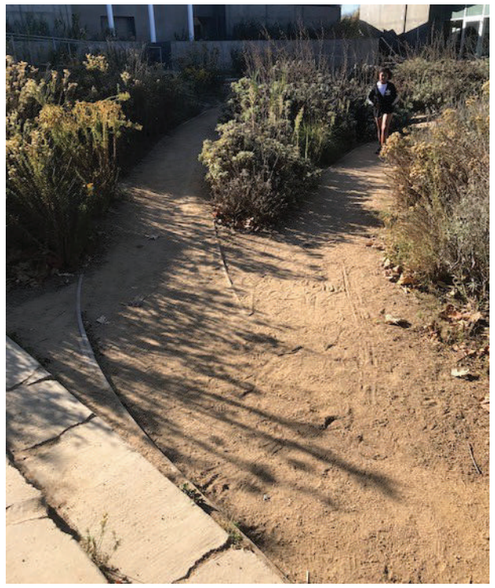
GARDEN STEPS
SECTION

Garden Stairs
looking towards the 3 buildings
with butterfly roofs.

Edging detail

Garden step detail

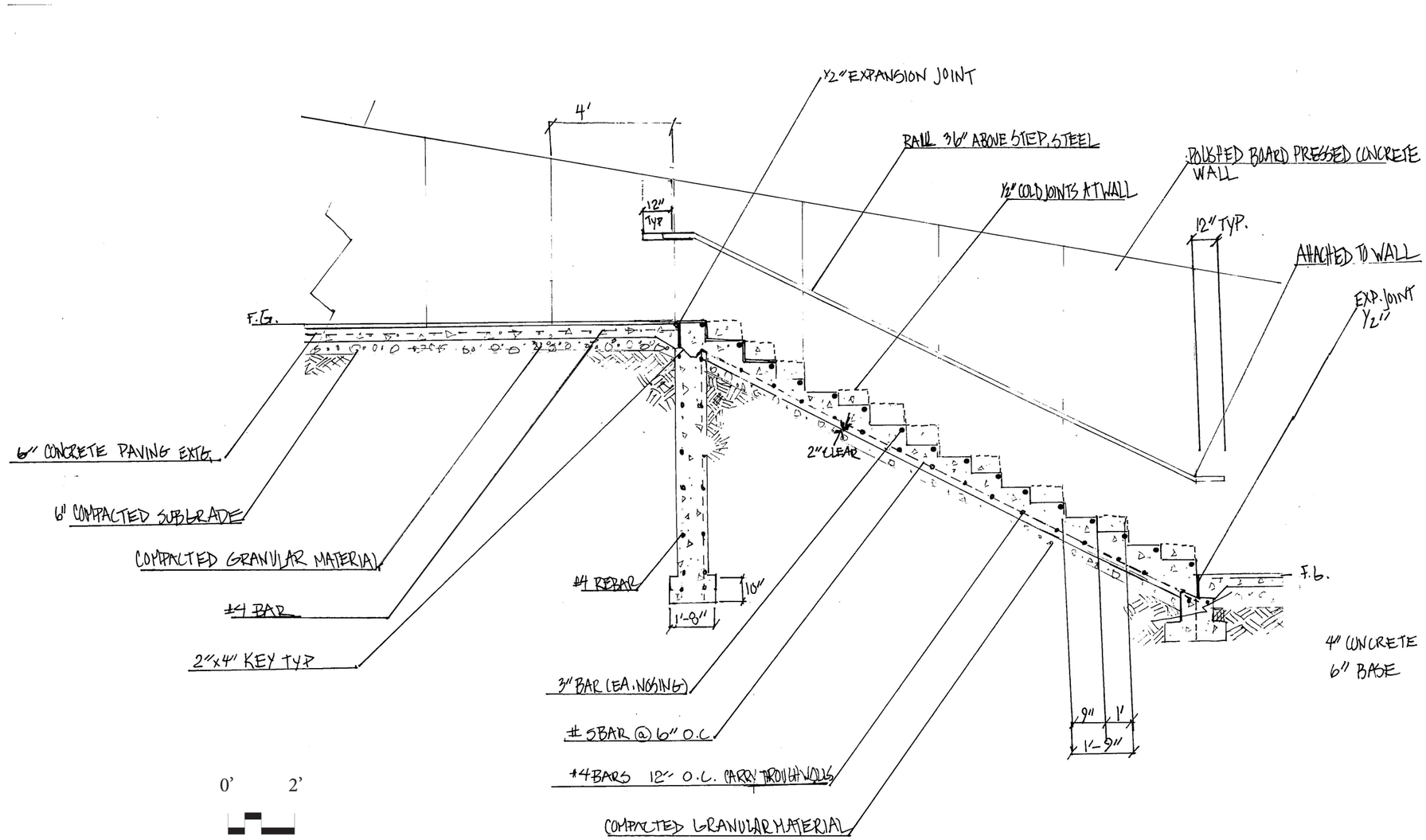
Steps seen from below



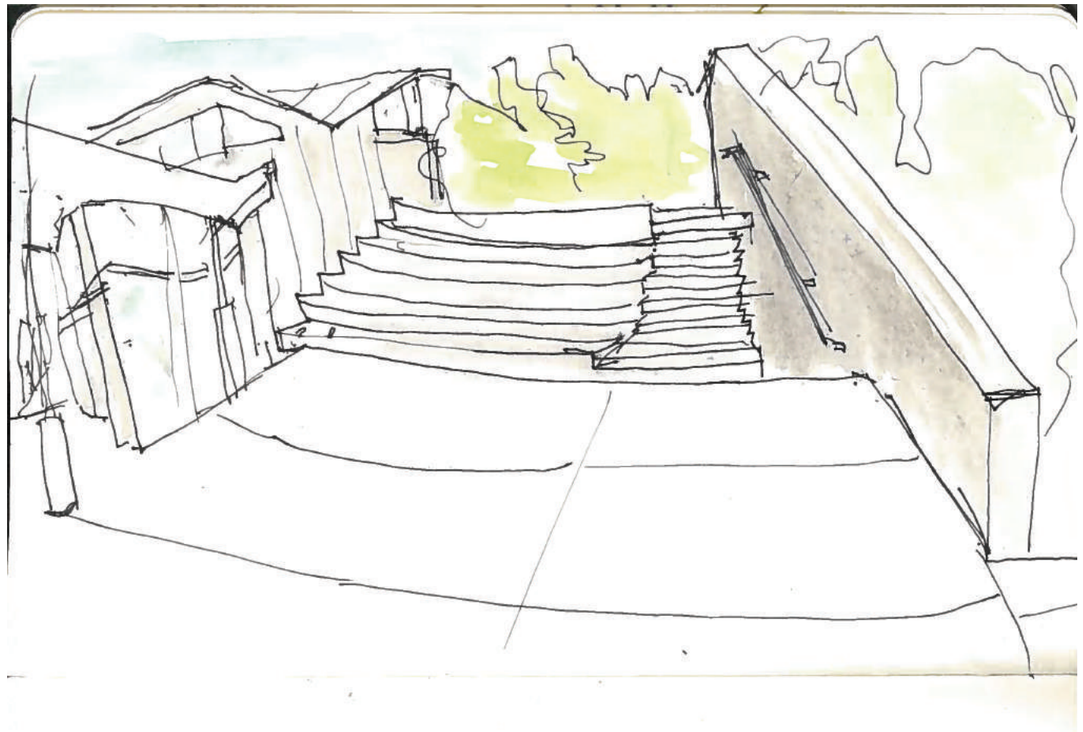
Edge of stairs and decomposed granite path

AMPHITHEATER STAIRS:

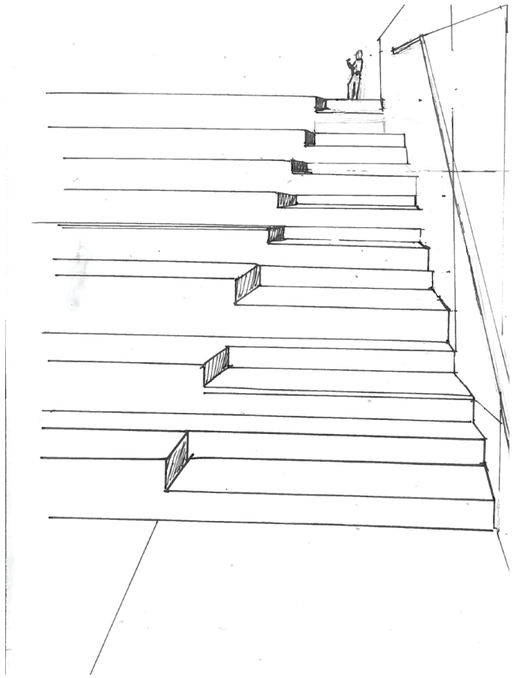
The combination of small ampitheater and stairway was handled very smoothly. The stairs have a beautiful skid protection design of 6 zinc dividers inlaid with white concrete. The walls along the stairs are polished board pressed concrete with the railing attached to the wall. There appears to be a cold joint along the wall adjacent to the stairs. The expansion joints of the pavement line up with the stairs as do the expansion joints of the wall with stairs.
The stairs have a tread of 1", rise of 6" and the amphitheater seat is 9" deep. There is a slight angle to the amphietheater level.



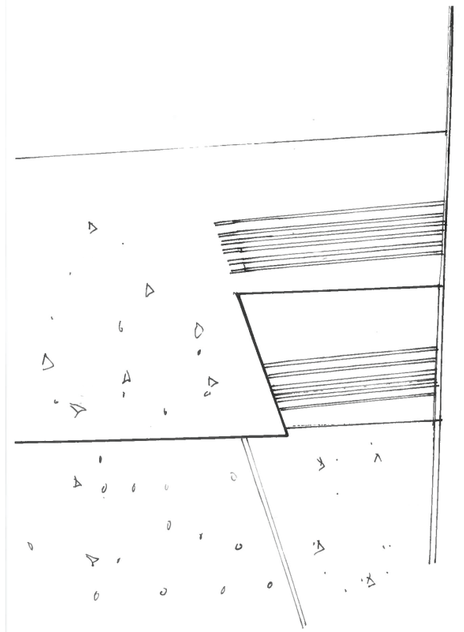
AMPHITHEATER STAIRS
SECTION



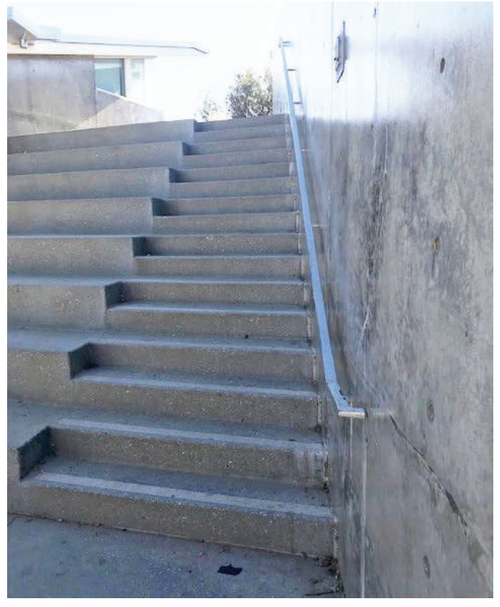
AMPHITHEATER STAIRS



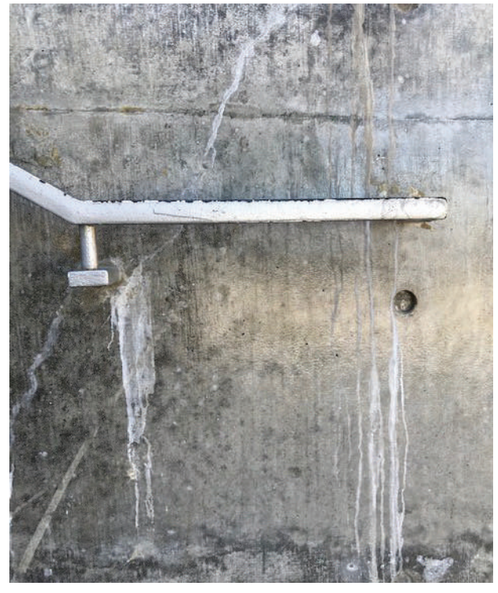
PERSPECTIVE OF STAIRS
FROM BELOW



DETAIL OF ANGLE OF STEP
AND SKID PROTECTION



STAIRS.

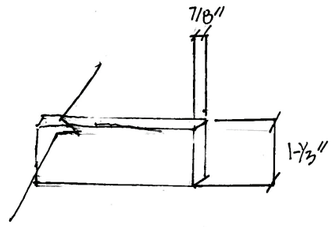


CLOSE UP
OF RAILING ATTACHMENT TO WALL

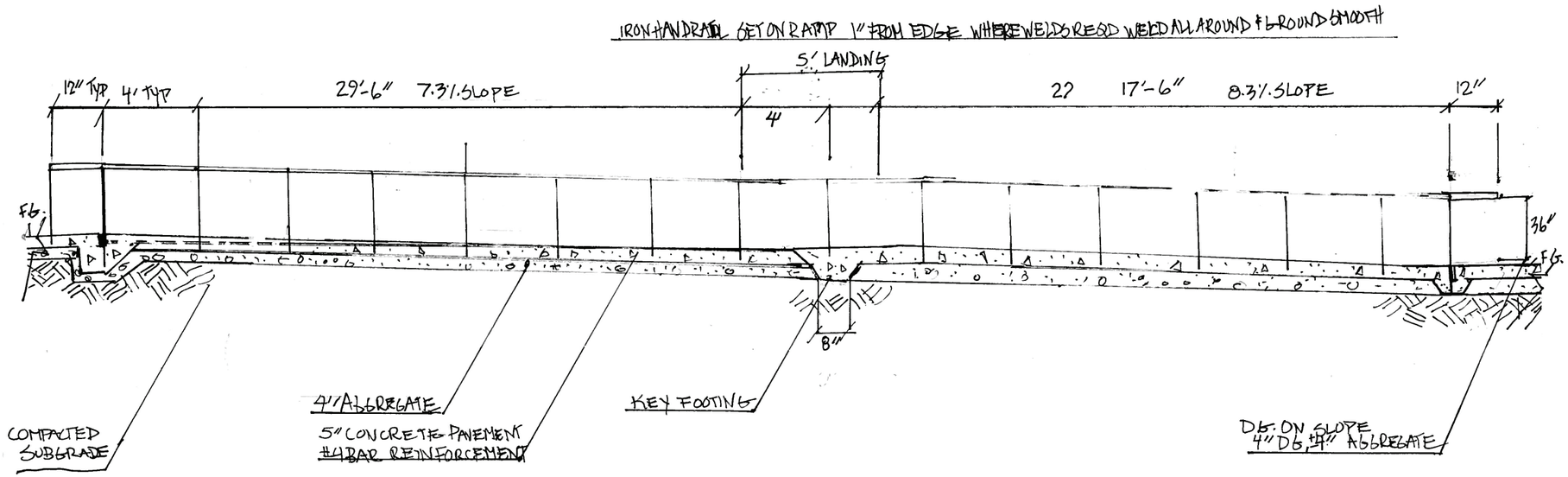
RAMP:

There are two ramps; one leading from the smaller western building to the middle building and a second ramp leading to the third building to the decomposed granite path.

The ramp is concrete and is not connected to the concrete pad surrounding the buildings. This ramp has a run of 29'-6" with a 7.3% slope, a 5' landing and a second run of 17'-6" with an 8.3% slope The ramp was a standard ADA accessible ramp.



RAILING DETAIL



RAMP
SECTION

NTS

Perspective of Ramp to Middle Building
Second ramp in background

Ramp to Garden Paths

Detail of post connection on rail

PLANTINGS

Intensive Roof Garden
Westmont College
Montecito, California

WESTMONT COLLEGE:

Westmont College is located in the chapparal foothills above Montecito, the idyllic village lying east of the City of Santa Barbara.

Westmont College is an interdonominational Christian liberal arts college that was founded in 1937.

In 2006-2008 Blackbird Architects was commissioned to create a masterplan update and a number of new buildings and athletic venues were built from 2008-2012.

The buildings are all custom fit to the sloping site, the landscaping is mostly native woodland and chapparal and the new buildings are LEED Gold certified. Two buildings, the Winter Hall for Science and Mathematics (44,000 sq ft) and the Adams Center for the Visual Arts (32,000 GSF) include intensive roof gardens. The Adams Center has walkable roof gardens that allow for one to see how they are constructed and planted.

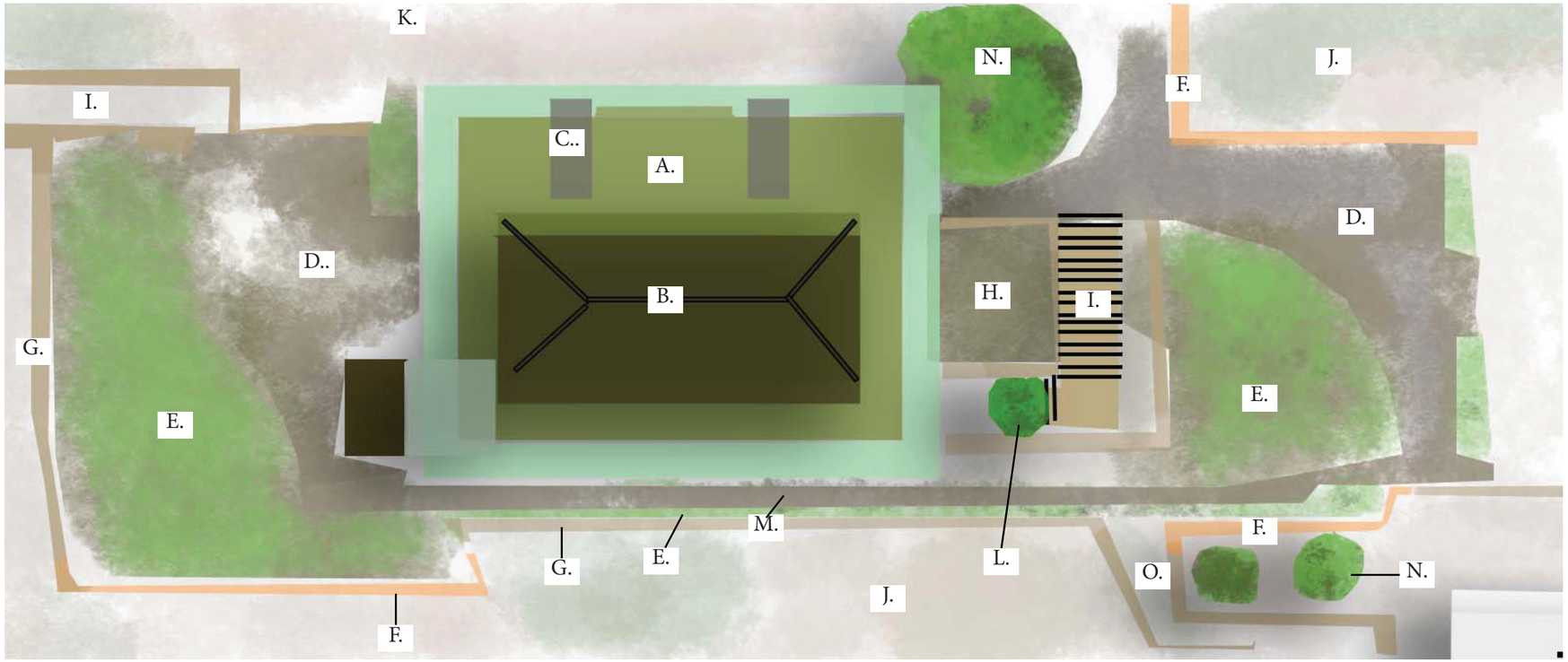
WESTMONT COLLEGE CAMPUS MAP

ADAMS CENTER FOR THE ARTS:

There are three buildings on campus with roof gardens: Winter Hall for Science and Mathematics, Adams Center for the Arts and Westmont Museum of Art.

The enlargement on this page is of the Adams Center for the Arts. There building has two levels of roof gardens; the roof of the second floor is inaccessible but the first floor intensive roof garden is accessible and has walking paths. The plantings vary from Mediterranean and native plantings alongside the edges to sedum and dyamondia plantings along the walkways by the classrooms. The second floor has clear views of the rooftop of Winter Hall. The building has remarkable oversized planters and unique exterior modern art exhibits.

The intensive garden design on the top floor load is 100 psf. HOW DO I SAY THIS????



ADAMS CENTER FOR THE ARTS

NOTES:

A) Upper Roof Garden (inaccessible)
B) 3rd floor roof
C. HC units
D) Paving on 2nd floor garden (accessible)
E) Dyamondia and sedum plantings
F) Rock wall along 2nd floor edge.
G) Railing
H) First floor planting
I) Stairs
J) Grounds
K) Hillside
L) Tree in planter
M) Pathway in roof garden.
N) Trees on ground floor
O) Bridge to adjacent building

20’

MASTER PLAN:

Blackbird Architects is an architecture firm based in Santa Barbara. The design principle behind the Master Plan is to blend the new buildings with the existing buildings and create smooth transitions between the varied elevations. There is also a strong focus on sustainability and climate change resiliance. The new buildings were designed and built with intensive roof gardens in mind for natural cooling and stormwater management. The new buildings are integrated into the topography with minimal grading by utilizing bridges, stairs and multi-levels.

Here are two Sketch Up drawings from the Blackbird website. .

UPPER ROOF GARDEN
2nd floor roof garden and rock wall
Blackbird Architects Sketch Up Drawing

ADAMS CENTER FOR THE ARTS
Sketch Up from Masterplan by Blackbird Architects

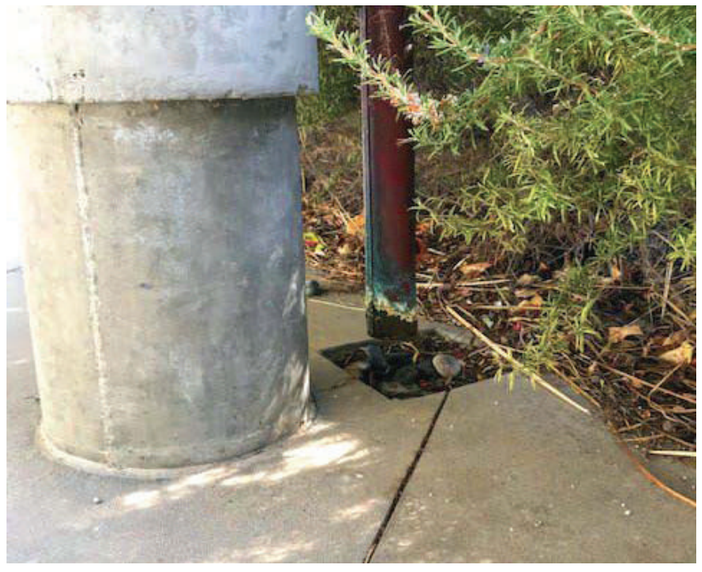
SITE VISIT PHOTOS

2nd floor roof garden and column with drain

Close up of 2nd floor roof garden edge

Close up of Winter Hall intensive garden
The draining layer is visible above the root barrier and elastomeric moisture barrier

Column close up with drainage



Close up of drainage into catch basin

Flashing detail
root barrier (black) also visible

ROOF GARDEN SECTION:

A. Planting-sedum, succulents and dymondia

B. Mineral Planting medium

C. Subsurface capilary irrigation manifold

D. Root barrier

E. Drainage board

F. Elastomeric roofing membrane.

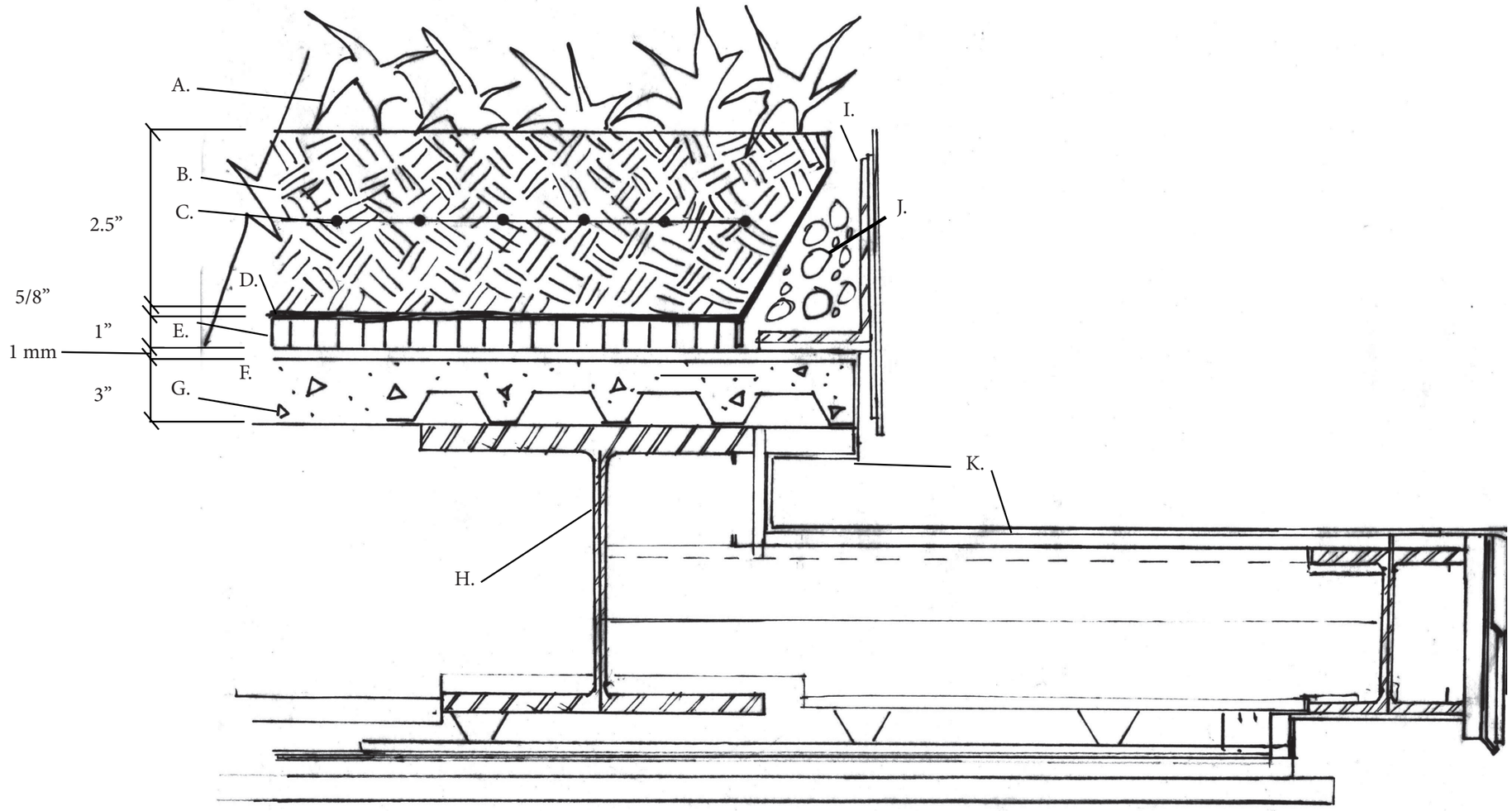
G. 3” concrete topping

H. Steel Beam

I. Flashing

J. Aggregate base.

K. Roof structure



UPPER GREEN ROOF

DRAINAGE SCHEMATIC:

A. Planting

B. Mineral Planting medium

C. Filter Sheet

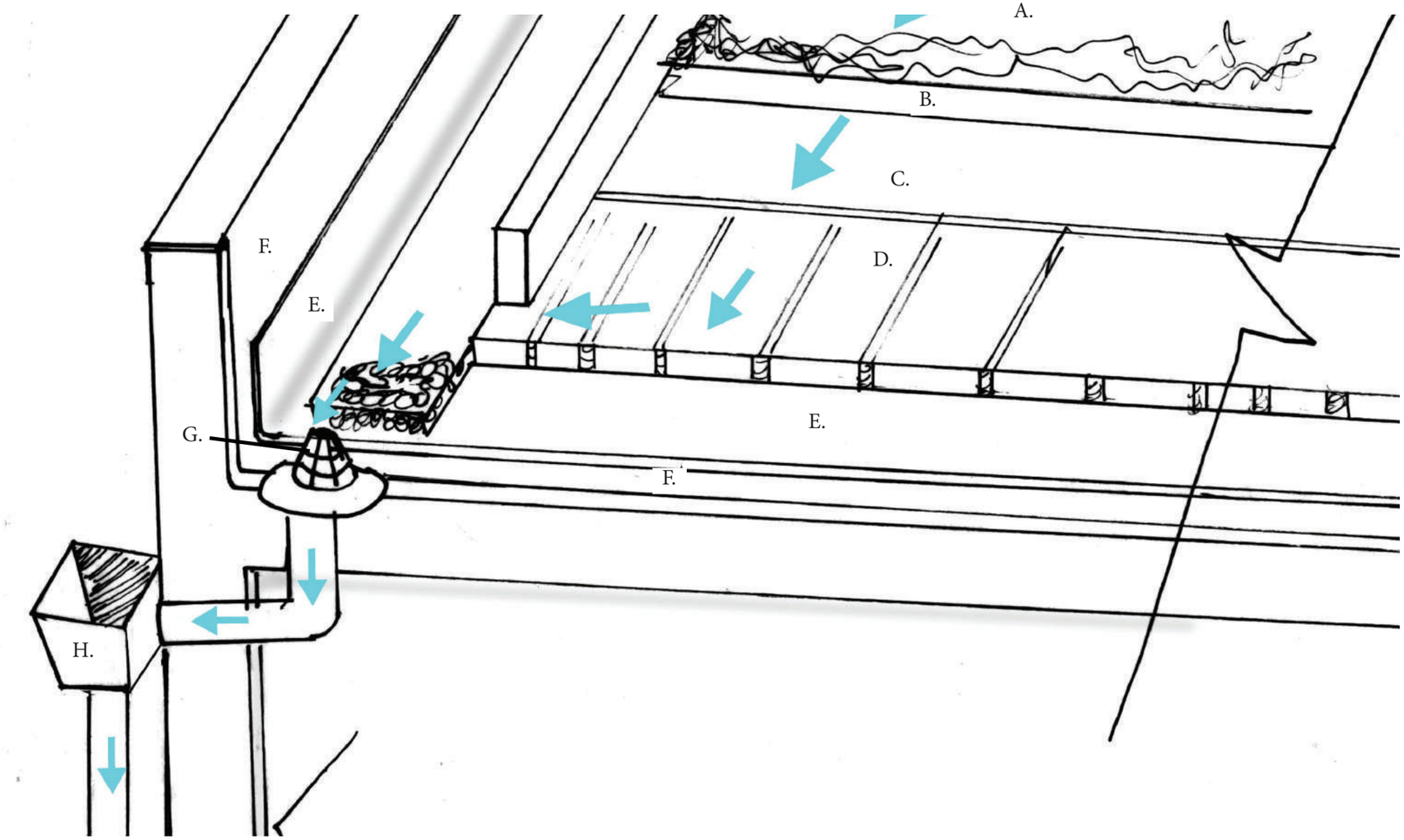
D. Drainage board

E. Protection mat

.F. Root barrier

G. Drain

H. Downspout



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