APPENDIX C

2020 Drainage Report

ENGINEERS . SURVEYORS . PLANNERS

San Jose
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DRAINAGE ANALYSIS REPORT

Midway Village Project

Daly City, California
BKF Job No: 20181024

January 2020

Prepared for:

Mid-Peninsula Housing
303 Vintage Park Drive, Suite 250
Foster City, CA 944404
650.356.2900

Prepared By:

Lily Peng, PE
Senior Project Engineer
BKF Engineers

TABLE OF CONTENTS

1.0 INTRODUCTION

The following presents BKF Engineers (BKF) analysis of storm drainage improvements for the proposed redevelopment of Midway Village in Daly City, California (City). The project will replace the existing 150 affordable housing units into a master planned community that will have a mix of high quality townhomes and apartments totaling approximately 555 residential units, a new community center and a new expanded daycare facility. The project will also work with the City on exchanging land with the current city park in order to move that park to the front of the community on a new 3.8 acre parcel to be more present in the community and not hidden away.

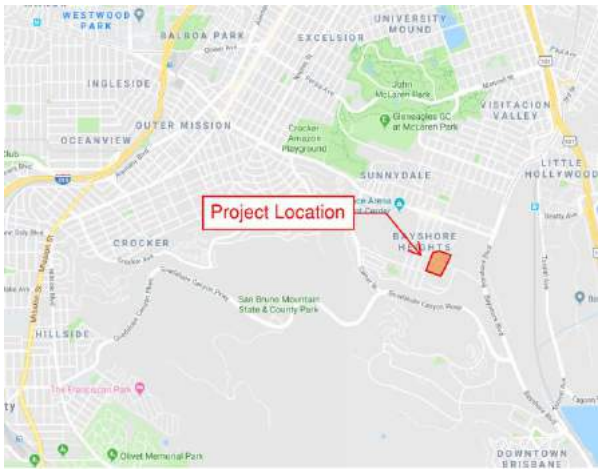


Figure 1. Project Vicinity

The proposed plan connects the new Midway Village community to its surroundings via Partridge Street. By transforming this previous dead-end street into a newly connected main street for Midway Village, the entire site regains access to the larger surrounding neighborhood. The Project further increases ease of travel through the site by creating and connecting new and existing roadways to provide through streets that simplify and manage traffic flow. Several of the streets will have calming devices, such as raised and differentiated pavement that will serve to slow down traffic and create visible pedestrian crossings.

The Project creates a variety of green spaces and open areas for residents to play, walk, and enjoy an active lifestyle. These green spaces are linked via pedestrian connections throughout the site, improving the safety and the quality of the walkable network, which also connects residents to both Schwerin and Martin Streets and to the public transit options along them.

To preserve active, open space and provide secure parking areas, the plan forgoes surface parking lots in favor of two embedded multi-level parking garages reserved for specific users. The four-level garage, within Building A in Phase 1, will provide dedicated spaces for all residents of Phases 1 and 2 as well as dedicated parking for staff of the child care center. A smaller two-level garage in Building C will serve all other residents not assigned street parking. This garage will be lined on all street and resident park edges with residential uses, prioritizing active streetscapes. This strategy allows for a 1.3 to 1 parking ratio for the new Midway neighborhood, which exceeds the City's parking requirements for affordable housing.

Loading zones will also be provided throughout the site plan to give residents easy access to their front doors and families direct access to the childcare center.

1.1 Proposed Land Use – Impervious Pervious Surface Areas

The proposed project will replace and/or create more than 10,000 square feet of impervious area.

Since the Project is in its master planning phase, the programming for the entire site is conceptual. It is assumed on average that 75% of the site (not including the park area) is covered with impervious surfaces (roof, hardscape, asphalt, etc) while the remaining 25% coverage is pervious surfaces (landscaping, pervious pavement, etc).

Site Information	
Total Site Area	710,805 sf
Existing Impervious Area	374,980 sf
Proposed Impervious Area	429,530 sf
Difference	54,550 sf

1.2 Existing Drainage Patterns

The project surface cover is comprised of asphalt concrete (AC), concrete, landscaping, and buildings. The existing topography of the project site slopes from southwest to northeast. Runoff is conveyed as surface flow and collected in various drain inlets throughout the project site. In addition to the existing site's runoff, the existing system also carries the runon from the Sunnydale Watershed which empties at the northeast edge of the site via 60-inch storm main. The 60-inch storm main ultimately outfalls into the Bayshore Channel in a siphon condition as shown per the City's storm block maps in Appendix 2.

There will need to be careful coordination for grading the site and storm water management. The site falls approximately 60 feet from the south west corner at Martin Street and Schwerin Street to the north east corner of the existing park. The project site slopes steepest from Martin Street to Partridge Avenue.

1.3 Proposed Drainage Patterns

The proposed Project drainage is similar to the existing. The proposed surface will be comprised of AC, concrete, landscaping, and buildings. The proposed grade of the project site is similar to the existing topography of the site. There will be a general sloping from the southwest corner to the northeast corner. Runoff is conveyed as surface flow and collected in various drain inlets throughout the project site where it will be treated by LID features before discharge into the local system which will connect to the existing 60-inch main.

It is important to take into account that this is a multi-phase project. There will be four phases to the redevelopment of Midway Village:

1. First Phase: Building A, Building A2
2. Second Phase: Building B and Building B 2

3. Third Phase: Community Center, town homes in Parcel 3, Building D, townhomes in Parcel 5
4. Fourth Phase: Building E, Buildings F, and the for sale units

As the Project progresses, the utilities will be carefully analyzed and reconstructed to suit the needs of each phase.

2.0 DESIGN CRITERIA & ASSUMPTIONS

Calculations included in this report are based on the follow design criteria and assumptions:

1. **Design runoff** for the site are calculated using the Rational Method:

$$Q = CxixA$$

Where:
Q=Peak Flow (cfs)
C=Runoff Coefficient Factor
i = Design Storm Intensity (in/hr)
A =Area (acres)

Assumptions:

Storm event is based on a 10 year – 2 hour storm which was provided by the City.
Runoff Coefficient:
C=0.3 for pervious areas (landscape, etc)
C=0.9 for impervious areas (sidewalk, roof, street, etc)
Rainfall Intensity is derived from NOAA Atlas 14, Volume 6, Version 2

2. **Pipe Capacity** for a pipe was determined using Manning's Equation:

$$Q = VA = \left(\frac{1.49}{n}\right) AR^{\frac{2}{3}}\sqrt{S} \quad [U.S.]$$

Where:

Q=Flow Rate (cfs)
A=Cross Sectional Area of Flow (sf)
R=Hydraulic Radius (ft)
S=Slope (ft/ft)
n=Manning's Roughness Coefficient.

3. It is assumed a manning's roughness coefficient of 0.013 is used for all storm drain lines.

4. Since the project is in its master planning phase, it is assumed that 75% of the proposed site will be impervious and 25% of the site is pervious.

5. **Time of Concentration (Kirpich's Equation)** used is 10 minutes. A 10 minute time-of-concentration is also used where only streets are contributing flow to the inlet. Additional time-of-concentration for sheet flow across hillside and from gutter to the inlet is calculated using Kirpich's equation provided below.

$$T_c = 0.0078 \left(\frac{L^{3/2}}{H^{1/2}} \right)^{0.77}$$

Where:
L = the maximum length of travel, in feet.
H = the difference in elevation along the effective slope line, in feet.
Tc = the additional time of concentration from gutter to inlet, in minutes

Note: This is a conservative approach as the time it takes for the stormwater to flow through the treatment measures are not accounted for.

3.0 EXISTING DRAINAGE FACILITIES

Midway Village is located at the downstream end of the Sunnydale Watershed. All site drainage flows into a 60" reinforced concrete pipe (RCP) that outfalls into the Bayshore Channel.

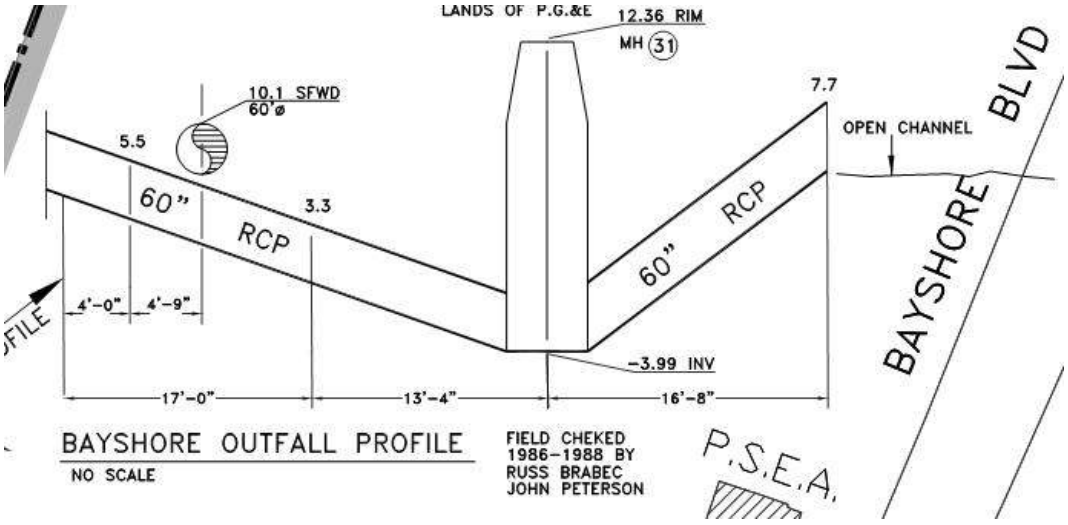


Figure 2 – Existing 60" RCP Profile

4.0 PROPOSED IMPROVEMENTS

The proposed drainage facilities are shown in Appendix 4 Conceptual Utility Plan.

A majority of existing drainage facilities will be removed or abandoned accordingly in conjunction with new improvements.

During Phase 1 of the Project, the 30 inch main in Bayshore Park will be relocated outside of the proposed Building A into Midway Drive. The existing drainage facilities will be removed and abandoned accordingly in preparation for the new building.

The 60-inch storm main in Phase 2 of the Project will be relocated into New Street B. Per the request of the City, the existing 60-inch main under Building B will be slurry filled as part of the abandonment. Segments of the main will be removed accordingly in preparation for the new improvements.

For Phases 3-4, all storm drainage facilities will be removed within the proposed building footprints and reconstructed within the new private streets. Facilities that are not located within the proposed building footprints will be abandoned in place.

5.0 RUN-OFF ANALYSIS

Based on existing conditions, Appendix 5, the existing site is approximately 374,980 sf of impervious surface and 343,350 sf of pervious surface. The Project is conceptually adding 54,550 sf of additional impervious surface. Despite increasing the impervious surfaces, the Project is improving the run off rate by increasing the time of concentration through implementation of flow through planters, bioretention basins, longer pipe runs and other means of low impact development (LID). Based on preliminary calculations shown in Appendix 7, the existing time of concentration is 16.4 minutes while proposed conditions shows a time concentration of 17.4 minutes. As a result, the Project will only create 0.43 cubic feet per second (cfs) of excess run off based on a 10 year – 2 hour storm, see Appendix 7 for calculations.

The City requires that the Project does not increase runoff above the pre-development condition. The Project Team will determine retention methods as each Design Phase develops to mimic pre-development conditions.

6.0 CONCLUSIONS

Based on the current Master Plan, the project is anticipated to increase the impervious square footage by 54,550 sf. As the Project Team develops each phase of the design, the impervious surface will be minimized. However, should the runoff exceed predevelopment conditions, the Project Team will evaluate different detention methods and implement such methods on a Phase by Phase basis taking into account future phases as much as possible. It is assumed that the Project will only implement detention methods and not retention methods, because the existing site contains contaminated soils per the geotechnical report. Since the Project is required to not exceed predevelopment runoff

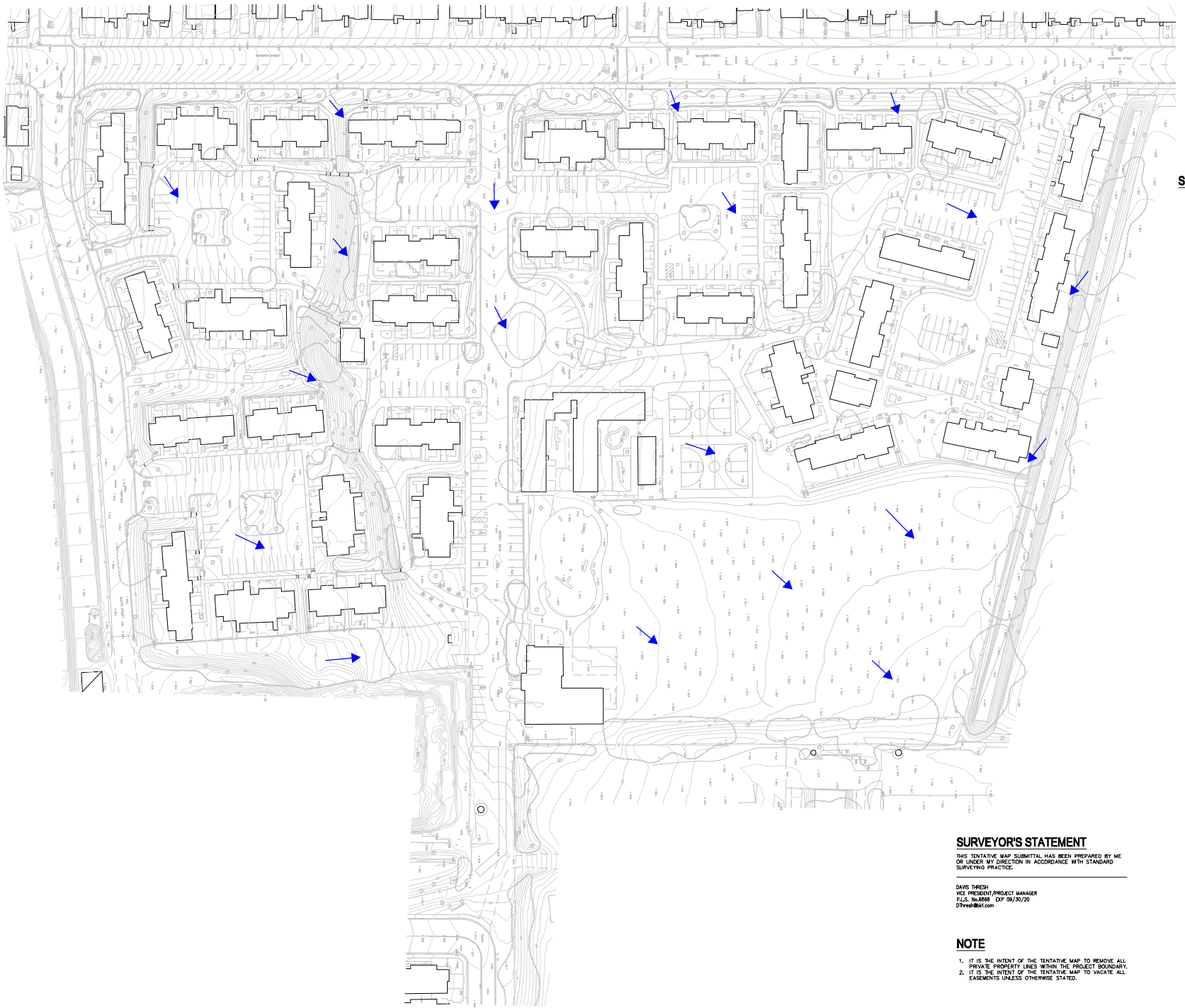
conditions, the Project will have negligible impact to the existing 60-inch outfall into Bayshore Channel will have capacity for the new development.

7.0 APPENDICES

Appendix 1 Existing Drainage Conditions Sheet
Appendix 2 Drainage As-Builts
Appendix 3 Project Phasing Map
Appendix 4 Existing Conditions & Conceptual Utility Plan
Appendix 5 Impervious Area Exhibit – Existing & Proposed Conditions
Appendix 6 NOAA Atlas 14, volume 6, Version 2
Appendix 7 Hydrology and Hydraulic Calculations – Existing and Proposed Conditions
Appendix 8 Letter- Storm Runoff to Not Exceed Predevelopment Conditions

APPENDIX 1

Existing Drainage Conditions Sheet



LEGEND

BUILDING LINE
BUILDING OVERHANG
CENTERLINE
CURB LINE
EASEMENT LINE
FENCE LINE
PROPERTY LINE
UGE UNDERGROUND ELECTRIC LINE
OHE OVERHEAD ELECTRIC LINE
W WATER LINE
SS SANITARY SEWER LINE
SD STORM DRAIN LINE

POINT, ELEVATION AND DESCRIPTION

CONTOURS (1-FT INTERVALS)

TREE (DIAMETER SIZE IN INCHES)

Drainage Pattern

SYMBOLS & ABBREVIATIONS

ACR	ACCESSIBLE CURB RAMP
AD	AREA DRAIN
ANODE	ANODE PULLBOX
BFP	BACK FLOW PREVENTOR
BLDC	BUILDING CORNER
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DAVIS THRESH
VICE PRESIDENT/PROJECT MANAGER
P.L.S. No.6568 EXP 09/30/20
DThresh@bkf.com

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30 0 30 60

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MIDWAY – BAYSHORE
EXISTING CONDITIONS PLAN

SAN MATEO COUNTY
CALIFORNIA
DALY CITY

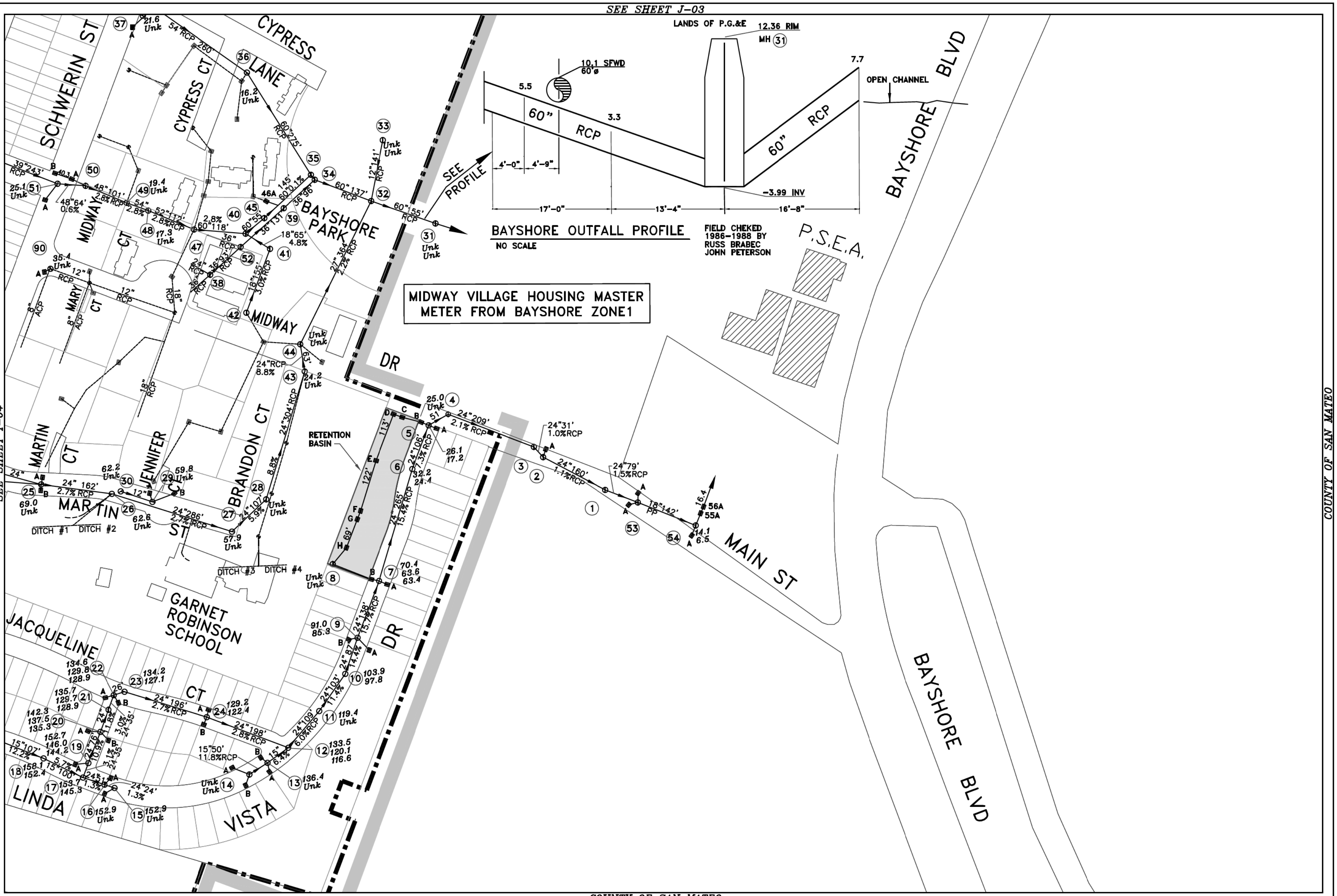
No.	Revisions

Date:
Scale: NONE
Design:
Drawn:
Checked:
Job No: 20161024

Drawing Number:
EX1
1 OF 1

APPENDIX 2

Drainage As-Builts



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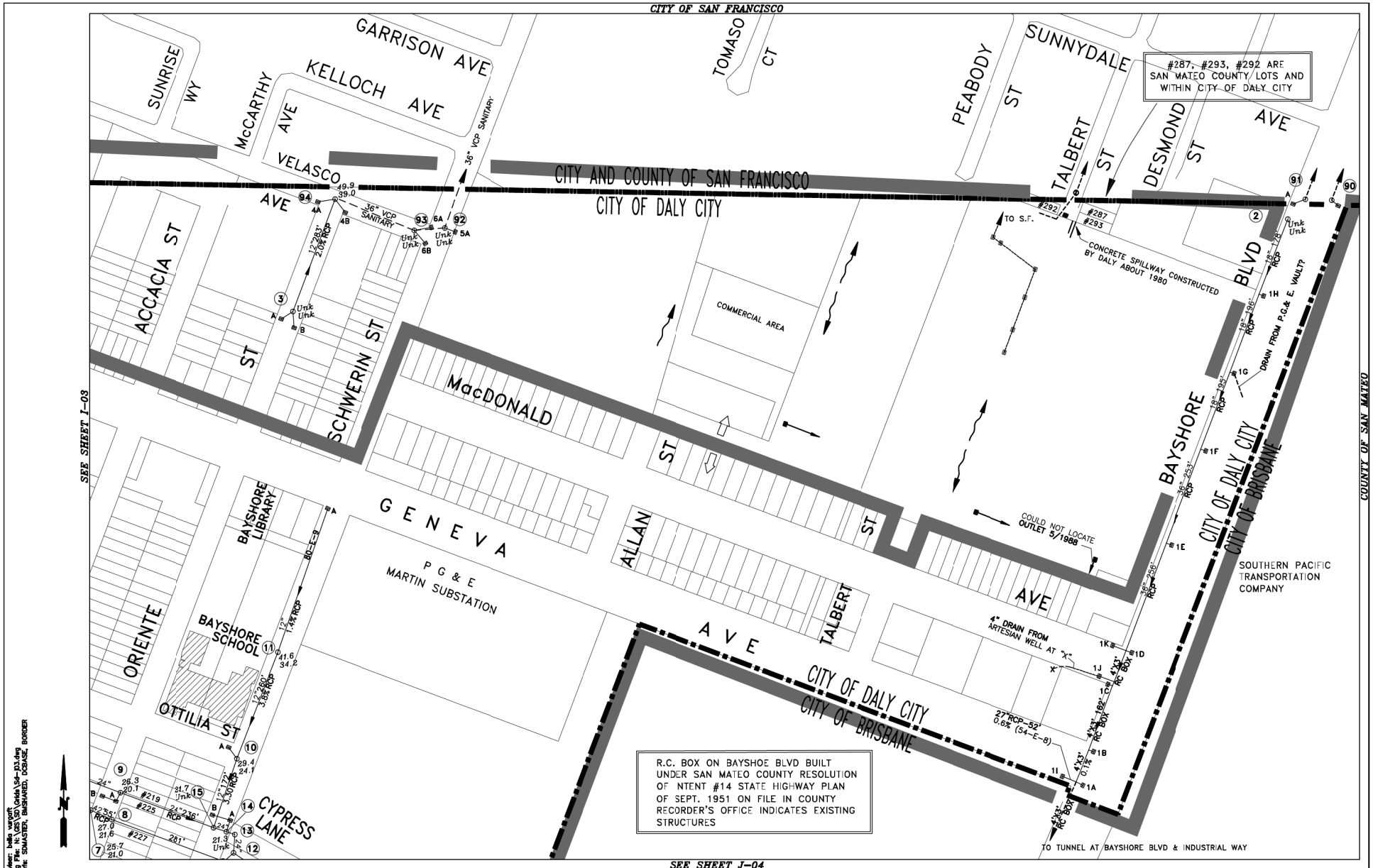

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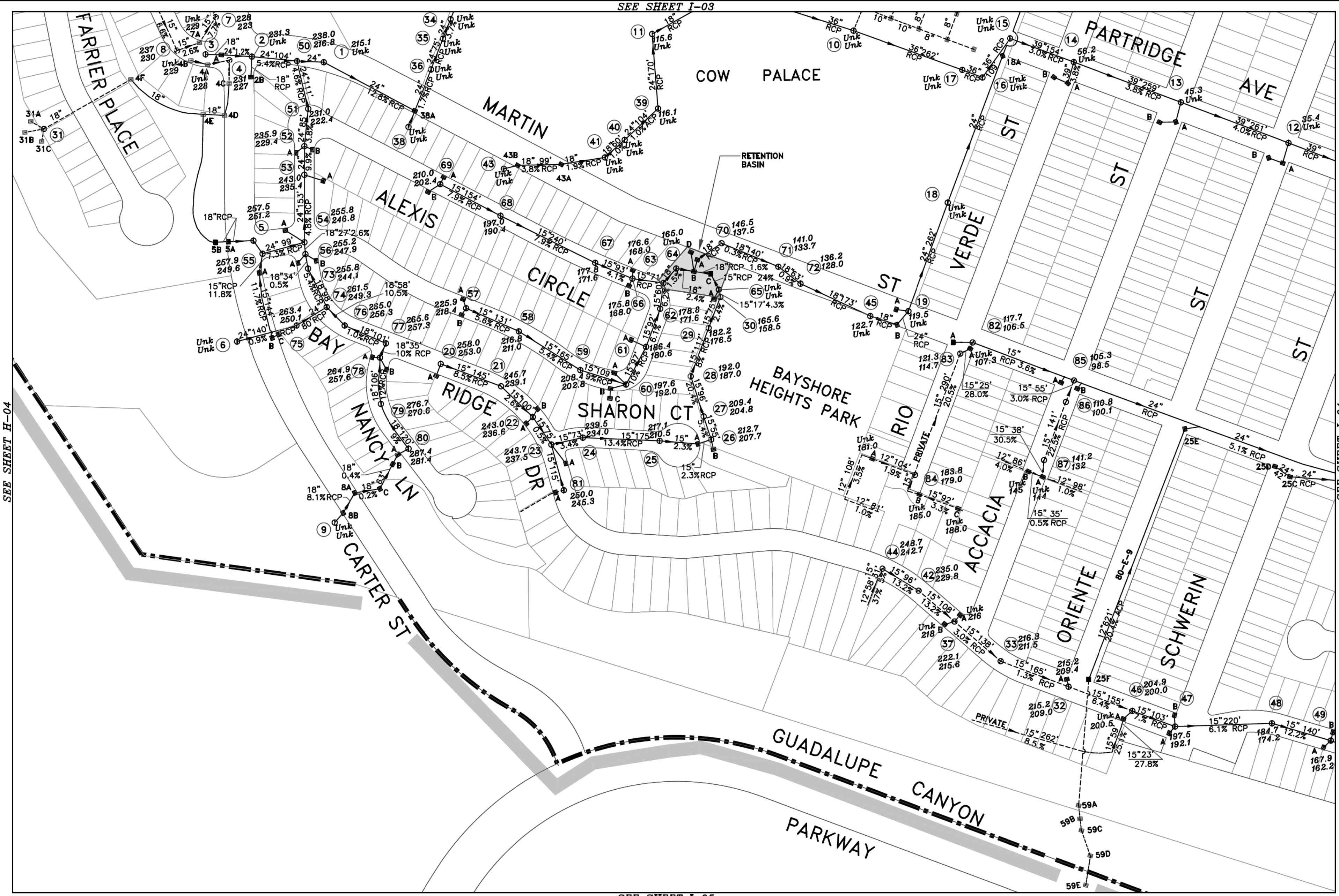
SEE SHEET H-04



SEE SHEET J-04

SEE SHEET I-05

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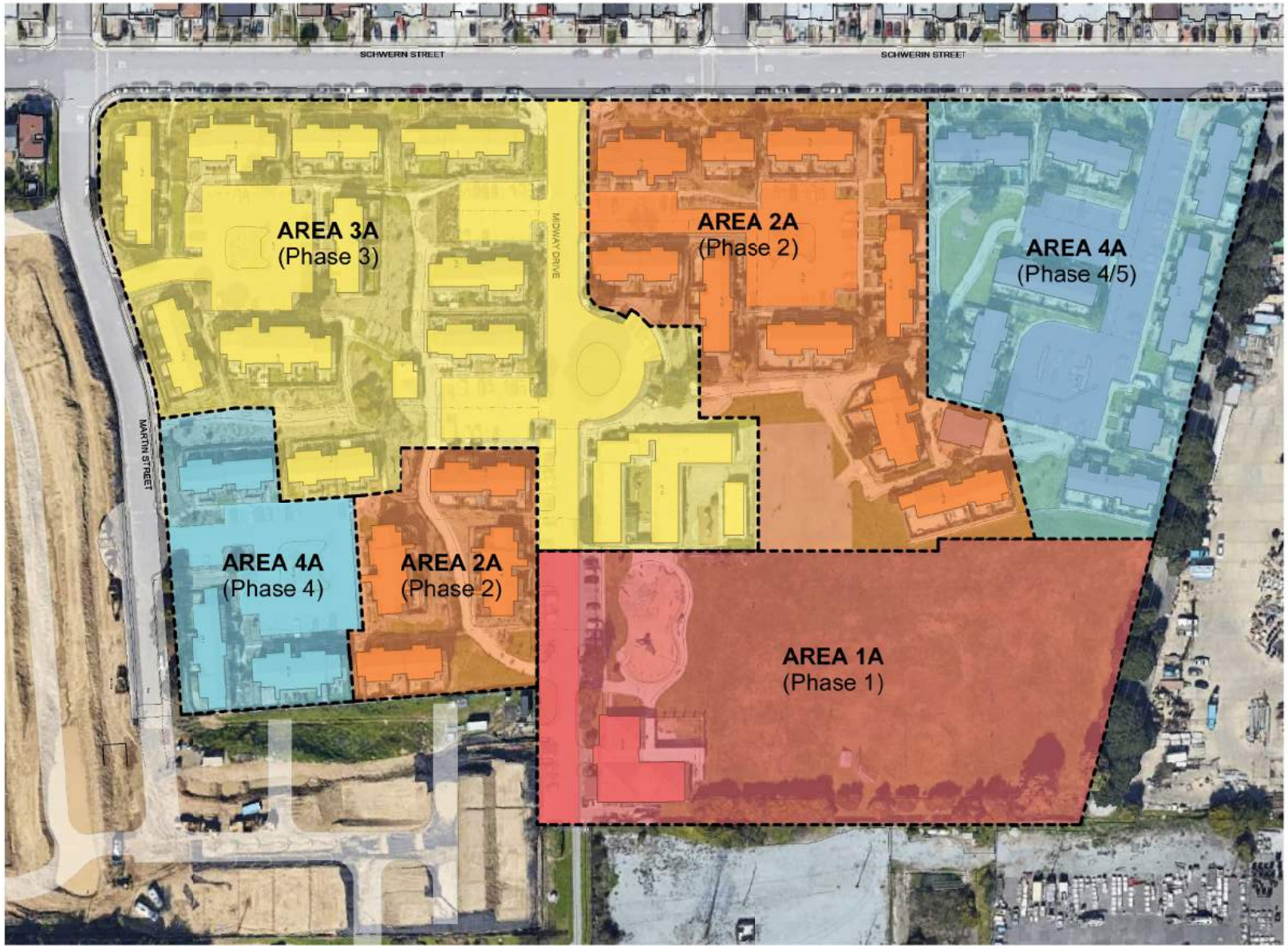
APPENDIX 3

Project Phasing Map



DEMOLITION

Non-Res.	Unit Count	Demo Phase
Prop Mgmt		Phase 1
	60	Phase 2
	46	Phase 3
	14	Phase 4
	30	Phase 5
	150	

- Demo Phase 1
- Demo Phase 2
- Demo Phase 3
- Demo Phase 4
- Demo Phase 5

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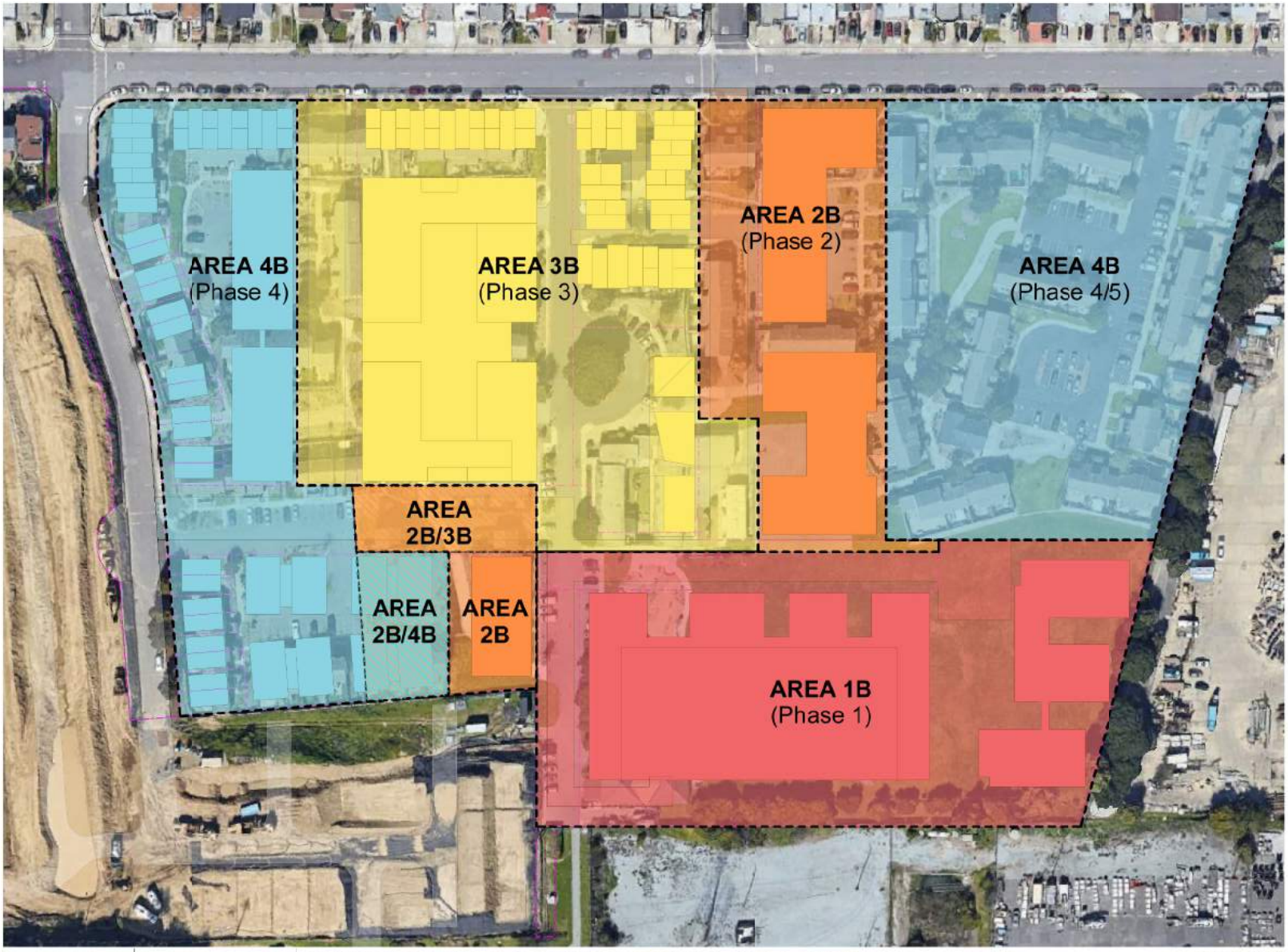
PHASING - DEMOLITION -HRA MAP

Midway Village Redevelopment

project number: 21803
scale when printed 22 x 34: 1" = 50'-0"
date: 11.25.2019

SK10



NEW CONSTRUCTION

- New Construction Phase 1
- New Construction Phase 2
- New Construction Phase 3
- New Construction Phase 4
- Park Returned to City

Residential Units Total	
Construction Phase	Unit Count
Phase 1	147
Phase 2	128
Phase 3	140
Phase 4	140
Grand total	555

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PHASING - NEW CONSTRUCTION - HRA MAP

Midway Village Redevelopment

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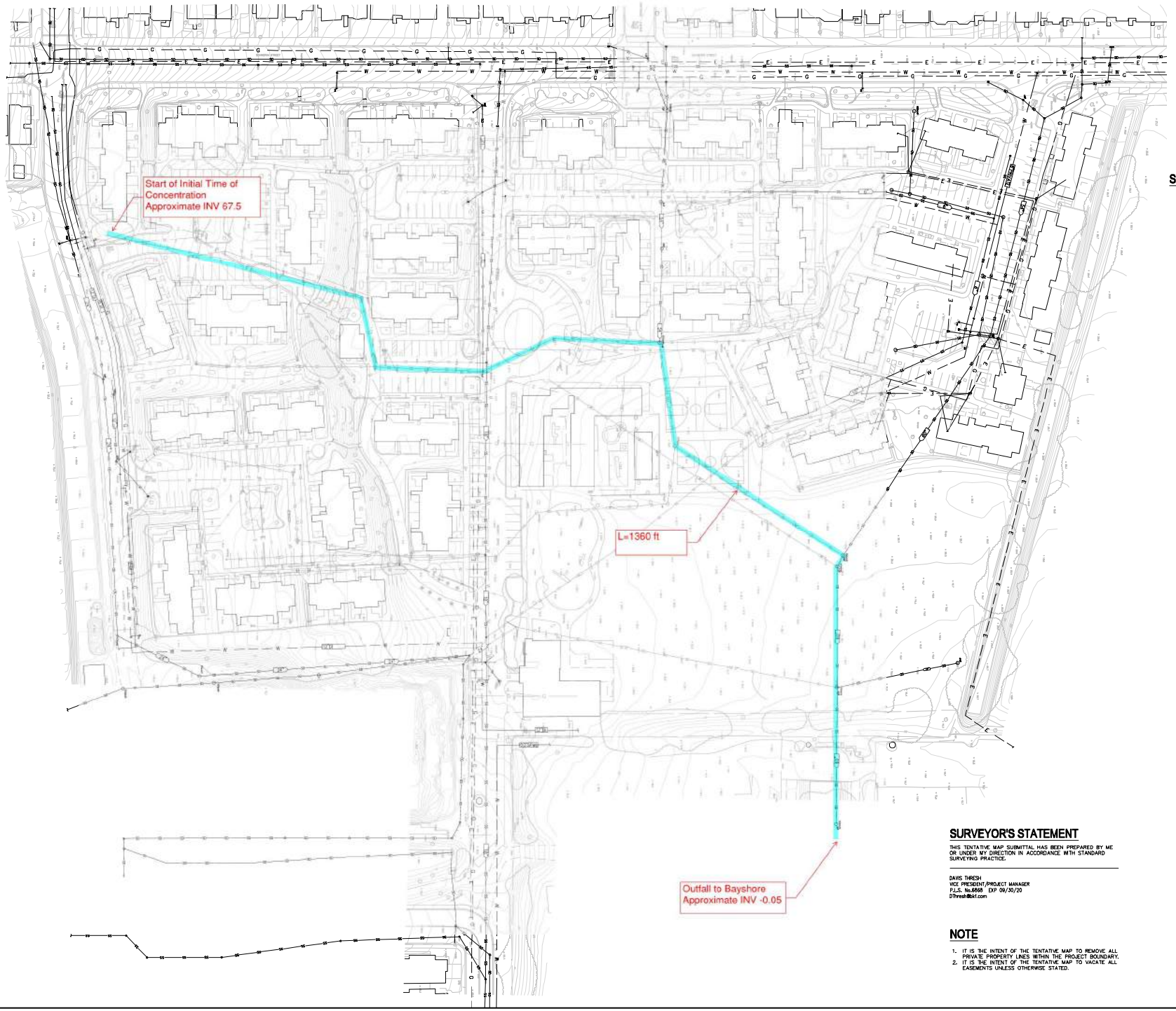
SK11

APPENDIX 4

Existing Conditions & Conceptual Utility Plan



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123.45 DESC — POINT, ELEVATION AND DESCRIPTION

123 — CONTOURS (1-FT INTERVALS)

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NORTH

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30 0 30 60

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SAN JOSE, CA 95112
408-467-9100
408-467-9199 (FAX)

TENTATIVE TRACT MAP NO. XXXX
MIDWAY – BAYSHORE
EXISTING CONDITIONS PLAN

SAN MATEO COUNTY, CALIFORNIA
DALY CITY

No.	Revisions
	XX/XX/XX City Submittal #XX

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Job No: 20161024

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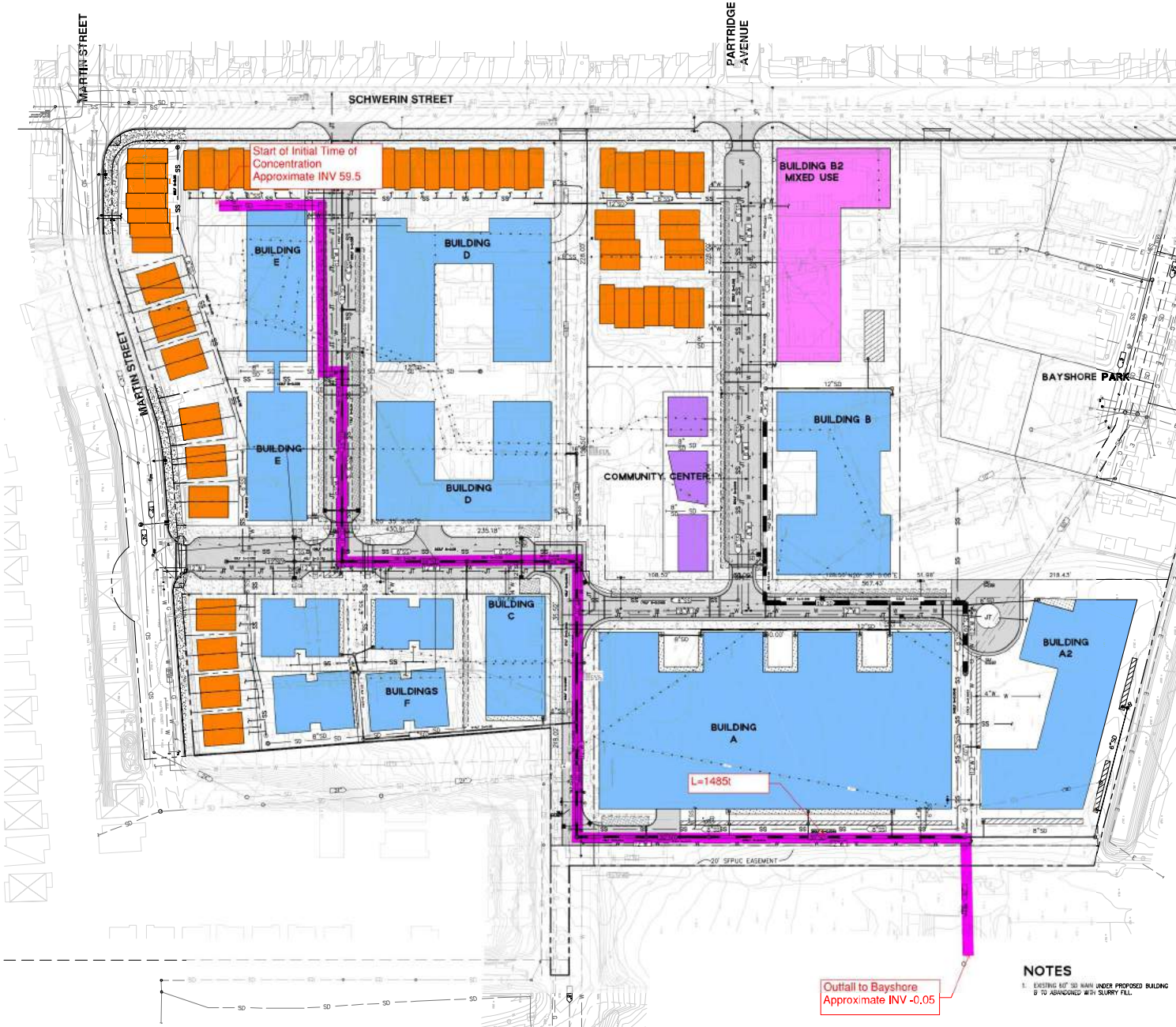

LEGEND

- PROPOSED BOUNDARY LINE
- PROPOSED LOT LINE
- SD — PROPOSED STORM DRAIN LINE
- PROPOSED TREATED STORM DRAIN LINE
- SS — PROPOSED SANITARY SEWER LINE
- W — PROPOSED DOMESTIC WATER LINE
- FW — PROPOSED FIRE WATER LINE
- W — EXISTING (TYPICAL) UTILITY TO REMAIN
- EXISTING (TYPICAL) UTILITY TO BE REMOVED
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED STORM MANHOLE
- PROPOSED AREA DRAIN
- PROPOSED WATER VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED STORM CLEAN OUT
- PROPOSED OVER FLOW DRAIN

ABBREVIATIONS

(TYP.)	TYPICAL
AD	AREA DRAIN
CB	CATCH BASIN
CI	CURB INLET
DW	DOMESTIC WATER
DS	DOWNSPOUT
FH	FIRE HYDRANT
FW	FIRE WATER
HDPE	HIGH DENSITY POLYETHYLENE
I.D.	INSIDE DIAMETER
INV	INVERT ELEVATION
JT	JOINT TRENCH
LF	LINEAR FEET
OFD	OVERFLOW DRAIN
RIM	RIM ELEVATION OF STRUCTURE
RPPBPD	REDUCED PRESSURE PRINCIPLE BACK FLOW DEVICE
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SS	SANITARY SEWER
SSCO	SANITARY SEWER CLEAN OUT
TD	TRENCH DRAIN
W	WATER
WM	WATER METER
WV	WATER VALVE

NOTES

1. EXISTING 84" SD MAIN UNDER PROPOSED BUILDING B TO ABANDONED WITH SLURRY FILL.

NORTH

(True for 30x40)

GRAPHIC SCALE: 1" = 40'

40 0 40 80

TENTATIVE TRACT MAP NO. XXXX
MIDWAY – BAYSHORE
CONCEPTUAL UTILITY PLAN

SAN MATEO COUNTY

DALY CITY

CALIFORNIA

BKF 100+ YEARS
ENGINEERS · SURVEYORS · PLANNERS
1730 N. FIRST STREET
SUITE 600
SAN JOSE, CA 95112
408-467-9100
408-467-9199 (FAX)

No.	Revisions
	XX/XX/XX City Submittal #XX

Date: 09/04/24
Scale: 1"=40'
Design: LP
Drawn: LP
Checked: DTG
Job No: 20161024

Drawing Number:

TM4.0

4 OF 6

APPENDIX 5

Impervious Area Exhibit – Existing Conditions

TOTAL AREA 710,805 SF

ROOF – 102,780 SF
PAVEMENT – 125,350 SF
CONCRETE WALK – 146,850 SF
PERVIOUS 335,825 SF

LEGEND

BUILDING LINE
BUILDING OVERHANG
CENTERLINE
CURB LINE
EASEMENT LINE
FENCE LINE
PROPERTY LINE
UNDERGROUND ELECTRIC LINE
OVERHEAD ELECTRIC LINE
WATER LINE
SANITARY SEWER LINE
STORM DRAIN LINE

POINT, ELEVATION AND DESCRIPTION
CONTOURS (1-FT INTERVALS)
TREE (DIAMETER SIZE IN INCHES)

SYMBOLS & ABBREVIATIONS

ACCESSIBLE CURB RAMP
AREA DRAIN
ANODE PULLBOX
BACK FLOW PREVENTOR
BUILDING CORNER
BUILDING LINE
BENCH
BOLLARD
BOTTOM OF WALL
BLUE PAINT MARK
BRICK
BOTTOM OF STAIRS
BACK OF WALK
CABLE TV PULLBOX
CABLE TV MANHOLE
CATCH BASIN
CEDAR TREE
CHAINLINK FENCE
COLUMN CENTERLINE
COMMUNICATION MANHOLE
COMMUNICATION PULLBOX
CONCRETE
DRAIN INLET
DRIVEWAY
ELECTRIC MANHOLE
EDGE OF PAVEMENT
ELECTRIC PULLBOX
EDGE OF TRAVELED WAY
FIRE DEPARTMENT CONNECTION
BUILDING FINISHED FLOOR
FINISHED GRADE AT DOOR
FIRE HYDRANT
FLOW LINE
FENCE
WIRE FENCE
GROUND
GATE POLE
GRADE BREAK
GAS METER
GREEN PAINT MARK SEWER
GREEN PAINT MARK STORM
GRATE CORNER
GUY WIRE OR POLE
GAS VALVE
HARDSCAPE ELEC LIGHT
HIGH POINT
ACCESSIBLE SYMBOL
IRON FENCE
IRRIGATION CONTROL VALVE
JUNCTION BOX
JOINT POLE
MISCELLANEOUS LINE
LIP OF GUTTER
LANDSCAPE
MISCELLANEOUS CLEANOUT
MISCELLANEOUS MANHOLE
MISCELLANEOUS PULLBOX
MISCELLANEOUS STORM
MISCELLANEOUS VALVE
MISCELLANEOUS VAULT
MAILBOX
OVERHANG
OVERHEAD ELECTRIC
ORANGE PAINT MARK
PAVEMENT
PAVERS
PEDESTAL
POST INDICATOR VALVE
PARKING METER
ELEC PANEL ON TO WALL
POWER POLE
PINK PAINT MARK
PURPLE PAINT MARK
RAILING HAND OR GUARD
RED PAINT MARK
STORM DRAIN CLEANOUT
STORM DRAIN MANHOLE
SIGNS
SPRINKLER VALVE
SANITARY CLEANOUT
SANITARY MANHOLE
STREET LIGHT LAMP NO ARM
STREET LIGHT DOUBLE ARM
STREET LIGHT SINGLE ARM
STREET LIGHT PULLBOX
STRIPING
SIDEWALK
TOP OF CURB
TRENCH DRAIN
THRESHOLD
CURB TOP OF AC BERM
TOE OF SLOPE
TOP OF SLOPE
TOP OF WALL
TRANSFORMER
TREE SYMBOL
TOP OF STAIRS
FLOWLINE VALLEYGUTTER
ELEC VAULT
WOOD FENCE
WATER METER
WHITE PAINT MARK
WATER PULLBOX
WATER VALVE
YELLOW PAINT MARK

NORTH

GRAPHIC SCALE: 1" = 30' (True for 30x40)
30 0 30 60

Date: 09/04/19	No.	Revisions	
Scale: NONE		XX/XX/XX City Submittal #XX	
Design: LP			
Drawn: LP			
Approved: CFG			
Job No: 20181024			

Drawing Number: C2.0
2 of 6

TENTATIVE TRACT MAP NO. XXXX
MIDWAY – BAYSHORE
EXISTING CONDITIONS PLAN

DALY CITY SAN MATEO COUNTY CALIFORNIA

BKF 100+ YEARS
ENGINEERS. SURVEYORS. PLANNERS
1730 N. FIRST STREET
SUITE 600
SAN JOSE, CA 95112
408-467-9100
408-467-9199 (FAX)

APPENDIX 6

NOAA Atlas 14, Volume 6, Version 2

NOAA Atlas 14, Volume 6, Version 2
Location name: Daly City, California, USA*
Latitude: 37.701°, Longitude: -122.4133°
Elevation: 54.45 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**1.68** (1.50-1.91)	**2.03** (1.81-2.30)	**2.51** (2.22-2.86)	**2.90** (2.56-3.35)	**3.47** (2.93-4.16)	**3.92** (3.23-4.82)	**4.39** (3.50-5.57)	**4.90** (3.77-6.42)	**5.60** (4.10-7.73)	**6.18** (4.34-8.87)
10-min	**1.21** (1.07-1.37)	**1.46** (1.30-1.65)	**1.80** (1.60-2.05)	**2.08** (1.83-2.40)	**2.49** (2.10-2.98)	**2.81** (2.31-3.46)	**3.15** (2.51-3.99)	**3.51** (2.71-4.60)	**4.01** (2.94-5.54)	**4.43** (3.11-6.36)
15-min	**0.972** (0.868-1.10)	**1.18** (1.04-1.33)	**1.45** (1.28-1.65)	**1.68** (1.48-1.93)	**2.01** (1.69-2.40)	**2.27** (1.86-2.79)	**2.54** (2.02-3.22)	**2.83** (2.18-3.71)	**3.24** (2.37-4.46)	**3.57** (2.51-5.13)
30-min	**0.668** (0.596-0.758)	**0.808** (0.720-0.916)	**0.998** (0.884-1.14)	**1.16** (1.02-1.33)	**1.38** (1.16-1.66)	**1.56** (1.28-1.92)	**1.75** (1.39-2.21)	**1.95** (1.50-2.55)	**2.23** (1.63-3.07)	**2.46** (1.73-3.53)
60-min	**0.472** (0.421-0.535)	**0.570** (0.508-0.647)	**0.704** (0.625-0.801)	**0.816** (0.717-0.939)	**0.975** (0.822-1.17)	**1.10** (0.904-1.35)	**1.23** (0.983-1.56)	**1.38** (1.06-1.80)	**1.57** (1.15-2.17)	**1.73** (1.22-2.49)
2-hr	**0.343** (0.306-0.388)	**0.412** (0.366-0.467)	**0.504** (0.448-0.574)	**0.582** (0.511-0.669)	**0.690** (0.582-0.827)	**0.776** (0.637-0.954)	**0.865** (0.690-1.10)	**0.960** (0.740-1.26)	**1.09** (0.800-1.51)	**1.20** (0.842-1.72)
3-hr	**0.284** (0.254-0.322)	**0.341** (0.304-0.387)	**0.418** (0.371-0.476)	**0.482** (0.424-0.554)	**0.571** (0.482-0.685)	**0.642** (0.527-0.790)	**0.716** (0.570-0.907)	**0.793** (0.611-1.04)	**0.901** (0.660-1.24)	**0.988** (0.694-1.42)
6-hr	**0.199** (0.177-0.225)	**0.240** (0.214-0.273)	**0.296** (0.263-0.337)	**0.343** (0.301-0.394)	**0.408** (0.344-0.488)	**0.459** (0.377-0.564)	**0.512** (0.408-0.648)	**0.567** (0.437-0.744)	**0.645** (0.472-0.889)	**0.707** (0.497-1.02)
12-hr	**0.127** (0.114-0.144)	**0.158** (0.141-0.179)	**0.199** (0.177-0.227)	**0.233** (0.205-0.269)	**0.281** (0.237-0.337)	**0.319** (0.262-0.392)	**0.358** (0.285-0.454)	**0.399** (0.308-0.524)	**0.457** (0.335-0.630)	**0.503** (0.353-0.722)
24-hr	**0.083** (0.074-0.093)	**0.105** (0.094-0.119)	**0.135** (0.121-0.153)	**0.159** (0.142-0.182)	**0.194** (0.168-0.229)	**0.221** (0.187-0.266)	**0.249** (0.207-0.307)	**0.279** (0.225-0.353)	**0.321** (0.249-0.422)	**0.354** (0.266-0.481)
2-day	**0.053** (0.047-0.060)	**0.066** (0.060-0.075)	**0.084** (0.076-0.096)	**0.100** (0.089-0.114)	**0.120** (0.104-0.142)	**0.137** (0.116-0.165)	**0.154** (0.127-0.189)	**0.171** (0.138-0.217)	**0.196** (0.152-0.257)	**0.215** (0.162-0.292)
3-day	**0.040** (0.036-0.045)	**0.050** (0.045-0.057)	**0.063** (0.057-0.072)	**0.074** (0.066-0.085)	**0.089** (0.077-0.106)	**0.101** (0.086-0.122)	**0.113** (0.094-0.140)	**0.126** (0.102-0.159)	**0.144** (0.111-0.189)	**0.157** (0.118-0.214)
4-day	**0.033** (0.030-0.038)	**0.042** (0.037-0.047)	**0.052** (0.047-0.060)	**0.061** (0.055-0.070)	**0.074** (0.064-0.087)	**0.083** (0.071-0.100)	**0.093** (0.077-0.114)	**0.103** (0.083-0.130)	**0.117** (0.091-0.154)	**0.128** (0.096-0.174)
7-day	**0.024** (0.022-0.027)	**0.030** (0.027-0.034)	**0.038** (0.034-0.043)	**0.044** (0.039-0.050)	**0.052** (0.045-0.062)	**0.059** (0.050-0.071)	**0.065** (0.054-0.081)	**0.072** (0.058-0.091)	**0.081** (0.063-0.107)	**0.089** (0.067-0.120)
10-day	**0.019** (0.017-0.021)	**0.024** (0.021-0.027)	**0.030** (0.027-0.034)	**0.035** (0.031-0.040)	**0.041** (0.036-0.049)	**0.046** (0.039-0.056)	**0.051** (0.043-0.063)	**0.056** (0.046-0.071)	**0.063** (0.049-0.083)	**0.069** (0.052-0.093)
20-day	**0.012** (0.011-0.014)	**0.016** (0.014-0.018)	**0.020** (0.018-0.022)	**0.023** (0.020-0.026)	**0.027** (0.023-0.032)	**0.030** (0.025-0.036)	**0.033** (0.027-0.041)	**0.036** (0.029-0.046)	**0.040** (0.031-0.052)	**0.043** (0.032-0.058)
30-day	**0.010** (0.009-0.011)	**0.013** (0.011-0.014)	**0.016** (0.014-0.018)	**0.019** (0.017-0.021)	**0.022** (0.019-0.026)	**0.024** (0.020-0.029)	**0.026** (0.022-0.032)	**0.029** (0.023-0.036)	**0.031** (0.024-0.041)	**0.033** (0.025-0.045)
45-day	**0.008** (0.007-0.009)	**0.010** (0.009-0.012)	**0.013** (0.012-0.015)	**0.015** (0.013-0.017)	**0.018** (0.015-0.021)	**0.019** (0.016-0.023)	**0.021** (0.017-0.026)	**0.023** (0.018-0.029)	**0.025** (0.019-0.032)	**0.026** (0.020-0.036)
60-day	**0.007** (0.007-0.008)	**0.009** (0.008-0.011)	**0.012** (0.011-0.013)	**0.013** (0.012-0.015)	**0.016** (0.014-0.018)	**0.017** (0.015-0.021)	**0.019** (0.015-0.023)	**0.020** (0.016-0.025)	**0.021** (0.017-0.028)	**0.023** (0.017-0.031)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

APPENDIX 7

Hydrology and Hydraulic Calculations – Existing and Proposed Conditions

BKF ENGINEERS
1730 N. First Street, Suite 600
San Jose, CA 95112

TABLE 1
HYDROLOGY AND HYDRAULICS CALCULATIONS

Design Runoff - Rational Method

Existing Conditions - Time of Concentration = 16.4 minutes

Surface	Coeff.	Area (sf_1)	C*A (sf)
Existed Building Roof	0.90	102,780	92,502
Sidewalk and Other Hardscape	0.90	146,850	132,165
Uncovered Parking	0.90	125,350	112,815
Landscape Area	0.30	335,825	100,748
	0.62	***710,805***	***438,230***
		C*A (acres) =	**10.06**
		I (in/hr) =	**0.58**
		Q_{Design} (cfs_2)= C*I*A =	**5.84**

Proposed Conditions - Time of Concentration = 17.4 minutes

Surface	Coeff.	Area (sf)	C*A (sf)
Proposed Building Roof	0.90	236,655	212,990
Sidewalk	0.90	192,875	173,588
Uncovered Parking	0.90	0	0
Landscape Area	0.30	281,275	84,383
	0.66	***710,805***	***470,960***
		C*A (acres) =	**10.81**
		I (in/hr)=	**0.58**
		Q_{Design}(cfs)= C*I*A =	**6.27**

Time of Concentration - Kirpich's Equation

Existing Conditions

Tc	**6.4** minutes
L	1360 feet
H	67.55 feet

Time of Concentration for site is 6.4 minutes for existing conditions
Time of Concentration will be a total of 16.4 minutes including the initial 10 minutes.

Proposed Conditions

Tc	**7.4** minutes
L	1485 feet
H	59.55 feet

Time of Concentration for site is 7.4 minutes for proposed conditions
Time of Concentration will be a total of 17.4 minutes including the initial 10 minutes.

APPENDIX 8

Letter - Storm Runoff to Not Exceed Predevelopment Conditions

BKF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

1730 North First Street, Suite 600
San Jose, CA 95112
408/467-9100, Fax 408/467-9199

TECHNICAL MEMORANDUM

Date: January 9, 2020 **BKF Job Number:** 20181024-10

Deliver To: City of Daly City
ATTN: Roland Yip
333 90th Street
Daily City, CA 94015

From: Lily Peng, BKF Engineers
Subject: Midway Village Redevelopment, Daily City, CA
Storm Runoff to Not Exceed Predevelopment Conditions

To whom it may concern,

The Midway Village Redevelopment (Project) will not increase the storm runoff from predevelopment conditions. Project will analyze the overall project as a whole to determine the amount of storm runoff to detain. As the Project develops each phase, the storm water management will be carefully designed to consider the overall project storm runoff.

Respectfully yours,

BKF Engineers

Lily Peng, P.E, QSD/P

Senior Project Engineer