

TECHNICAL MEMORANDUM

DATE: October 1, 2015 Project No.: 309-12-15-04
SENT VIA: EMAIL

TO: Paul Meuser, Wood Rodgers, Inc.

CC: Henry Louie, City of Hayward
Karrie Mosca, Wood Rodgers, Inc.

FROM: Roberto Vera, R.C.E. #83500
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REVIEWED BY: Polly Boissevain, R.C.E. #36164

SUBJECT: Hydraulic Evaluation of Maple and Main Mixed Use Development

This Technical Memorandum (TM) summarizes the findings and conclusions of West Yost Associates' (West Yost) technical evaluation of the ability of the City of Hayward's (City) existing water distribution system to meet the required minimum pressures and flows for the proposed Maple and Main Mixed Use Development Project (Project). Figure 1 shows the location of the proposed Project. The following sections summarize the hydraulic evaluation:

- Project Description
- Estimated Water Demand for the Project
- Planning and Modeling Criteria
- Evaluation Findings and Conclusions

PROJECT DESCRIPTION

The Project is located on approximately 4 acres between Maple Court and Main Street within the existing City Limits. The majority of the project area is currently a parking lot. The Project consists of mostly multi-family residential units and a moderate amount of commercial and common open spaces. The residential development is contained within a 5-story building, which contains a total of 235 dwelling units and a total gross building area of about 232,000 square feet. A total gross building area of about 7,400 square feet is devoted to commercial office and retail spaces along Main Street. The commercial office space includes a clubhouse/fitness center and a leasing office. The common open space area consists of 34,000 square feet of courtyards and perimeter open space. Attachment A includes development information and additional details of the proposed development.

The Project is located in the northern corner of the City’s 250 Pressure Zone and has existing infrastructure available to serve the development. The development plan indicates that water service connections are planned on Maple Court and Maple Street. Existing infrastructure along Maple Court and Main Street consists of 6-inch and 8-inch diameter water mains, respectively. To evaluate the adequacy of the existing infrastructure, the estimated water demands for the Project were added to existing demands and were assumed to be served along Maple Court and Main Street water mains.

ESTIMATED WATER DEMAND FOR THE PROJECT

As part of the hydraulic analysis, water demands were estimated for the Project. Water demands were calculated using the unit water demand factors adopted in the City’s 2014 Water System Master Plan (Master Plan).

Table 1 summarizes the Project’s gross area, dwelling units, water use factors, and projected potable water use for the different land use designations. The 235 dwelling units contained in the residential development are classified as multi-family residential units. It should be noted that water demand for common open spaces is included in the unit use factor for the multi-family residential units, and is thus not calculated separately. In addition, water demands for commercial land uses are based on number of employees as described in the City’s Master Plan. Since these statistics are currently not known, unit use factors determined by the Pacific Institute were used to determine water demand estimates for commercial land uses. As shown on Table 1, the multi-family residential units account for the majority of the water demand, roughly 90 percent, and commercial land uses are not expected to generate a significant water demand.

Table 1. Water Demands Estimated for the Project^(a)					
Land Use Designation	Total Gross Area, sf	No. Units	Unit Potable Water Use Factors		Potable Water Use, gpd
			gpd/DU	gpd/sf ^(b)	
Multi-Family Residential ^(c)	231,661	235	202	-	47,470
Commercial Office ^(d)	5,250	-	-	0.13	683
Commercial Retail	2,183	-	-	0.19	415
Common Open Space ^(e)	33,860	-	-	-	-
UAFW ^(f)	-	-	-	-	4,803
Total	272,954	235	-	-	53,371

^(a) Based on land use data received from Humphrey & Partners Architects L.P.
^(b) Based on Pacific Institute, 2003. *Waste Not, Want Not: The Potential for Urban Water Conservation in California*
^(c) Includes S1, A1, A2, A3, B1, B2, B2-A, B3, B4, B5, B6, C1, and C1-A unit types.
^(d) Includes clubhouse/fitness and leasing office.
^(e) Demand for common open space is included in the unit use factor for multi-family residential.
^(f) Unaccounted-for water (UAFW) is assumed to be 9 percent, per 2014 Hayward Water System Master Plan.

Table 2 tabulates the projected average day, maximum day, and peak hour water demands for the Project. As shown in Table 2, the projected average day demand for the Project is approximately 37 gallons per minute (gpm). Maximum day demands and peak hour demands were calculated using the City’s adopted peaking factors (from the Master Plan) of 1.6 and 2.24 times the average day demand, respectively, resulting in a maximum day demand of about 59 gpm and a peak hour demand of about 83 gpm.

Table 2. Summary of Average Day, Maximum Day and Peak Hour Water Demands					
Average Day Demand		Maximum Day Demand ^(a)		Peak Hour Demand ^(b)	
gpm	Mgd	gpm	mgd	gpm	mgd
37.1	0.05	59.3	0.09	83.0	0.12

^(a) Maximum Day Demand is assumed to be 1.6 times average day demand, per 2014 Hayward Water System Master Plan.
^(b) Peak hour (Zone 250) is assumed to be 2.24 times average day demand, per 2014 Hayward Water System Master Plan.

PLANNING AND MODELING CRITERIA

The planning and modeling criteria used to evaluate the proposed project and the adequacy of existing infrastructure to meet the required pressures and fire flows are based on the performance and operational criteria developed in the Master Plan. The criteria used to evaluate the existing water system and proposed pipelines for the project consist of the following:

- Residual pressure at the flowing hydrant (during a maximum day demand plus fire flow condition) and at service locations throughout 250 Pressure Zone must be equal to or greater than 20 pounds per square inch (psi).
- A minimum allowable service pressure is 30 psi during a peak hour demand condition.
- Maximum allowable distribution pipeline velocity is 12 feet per second (fps) during the simulated fire condition.
- Maximum allowable distribution pipeline velocity 8 fps during a non-fire demand condition.
- Any new, required pipelines, will be modeled with a roughness coefficient (C-factor) of 140.
- Available fire flow demand must meet a minimum flow of 3,000 gpm (Multi-Family Residential, assuming sprinklered) and 4,000 gpm (Commercial, assuming sprinklered) along Maple Court and Main Street, respectively. Fire flows are modeled at current hydrant locations.

The hydraulic model developed as part of the City’s recent Master Plan, completed by West Yost, was used to evaluate the adequacy of existing distribution system to serve the proposed development.

EVALUATION FINDINGS AND CONCLUSIONS

The City's existing water distribution model was first modified to include the water demands for the Project. The hydraulic model was then used to simulate both existing peak hour demands and existing maximum day demand plus fire flow conditions to determine the impacts of the Project to the existing water system. Results from this hydraulic evaluation are discussed below.

Findings from Peak Hour Demand Evaluation

Based on West Yost's analysis, the existing pipelines serving the Project are adequate to meet the required minimum pressure and maximum pipeline velocity during a peak hour demand condition. Figure 2 shows that system pressures in the Project area during a peak hour demand condition are above the required minimum pressure of 30 psi and all pipelines in the Project area have velocities that are less than the maximum pipeline velocity of 8 fps.

Findings from Maximum Day Demand plus Fire Flow Evaluation

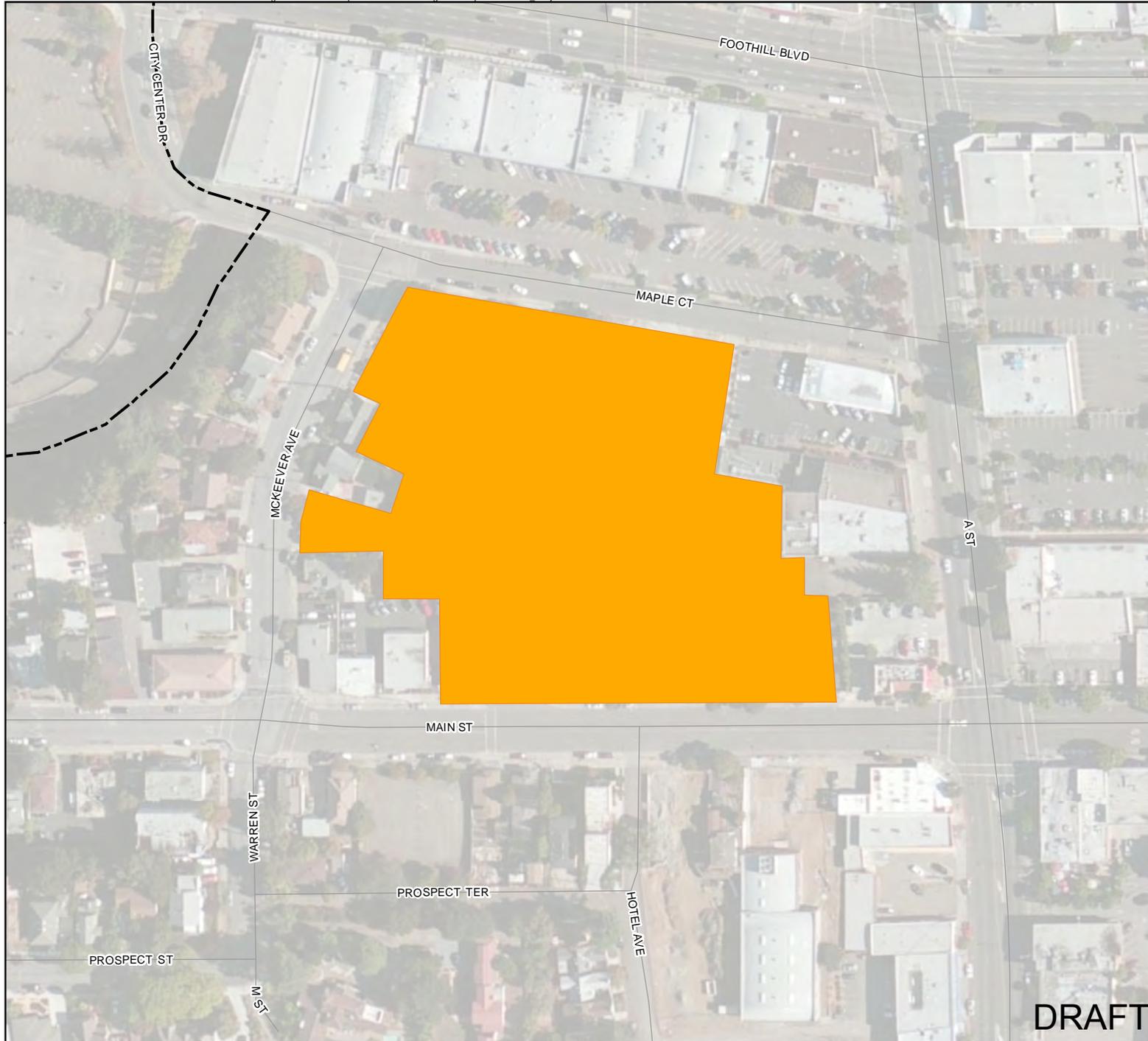
The existing pipelines serving the Project during a maximum day plus fire flow demand condition do not meet the required minimum available fire flow of 3,000 gpm and 4,000 gpm at all evaluated junctions along Maple Court and Main Street, respectively. Figure 3 shows the available fire flows in the Project area under the minimum residual pressure and maximum allowable pipeline velocity constraints.

To meet the required minimum available fire flow, the existing 6-inch and 8-inch diameter mains along Maple Court and Main Street will need to be replaced with 12-inch diameter water mains. Figure 4 shows the available fire flows in the Project area during the maximum day plus fire flow demand condition with 12-inch water mains on Maple Court and Main Street. As a result of the proposed 12-inch pipelines, the available fire flow at all evaluated locations is greater than 4,000 gpm.

Summary of Analysis

The increased water demands as a result of the Project do not significantly impact the overall water demands in the City's 250 Pressure Zone. Therefore, an analysis of the required pumping supply and storage capacities caused by the Project is not needed. The existing distribution system is capable of serving the Project during an existing Peak Hour demand condition. However, available fire flows during an existing maximum day demand are not sufficient to serve the development, based on the Operational and Performance Criteria established as part of the 2014 Water System Master Plan. In order to meet all planning and design criteria, the pipelines along Maple Court and Main Street are required to be upsized to 12-inch diameter pipelines.

It should be noted that the hydraulic evaluation performed for the proposed Project is based on the assumptions listed above. If any of these items are changed or modified in any way, other than described in this TM, modification of this hydraulic evaluation will be required.



Symbology

-  Maple & Main Development
-  City Limit
-  Street

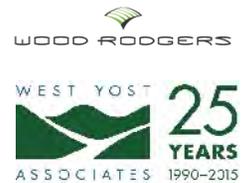
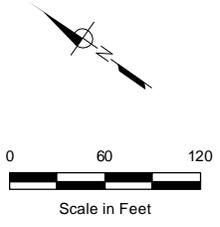
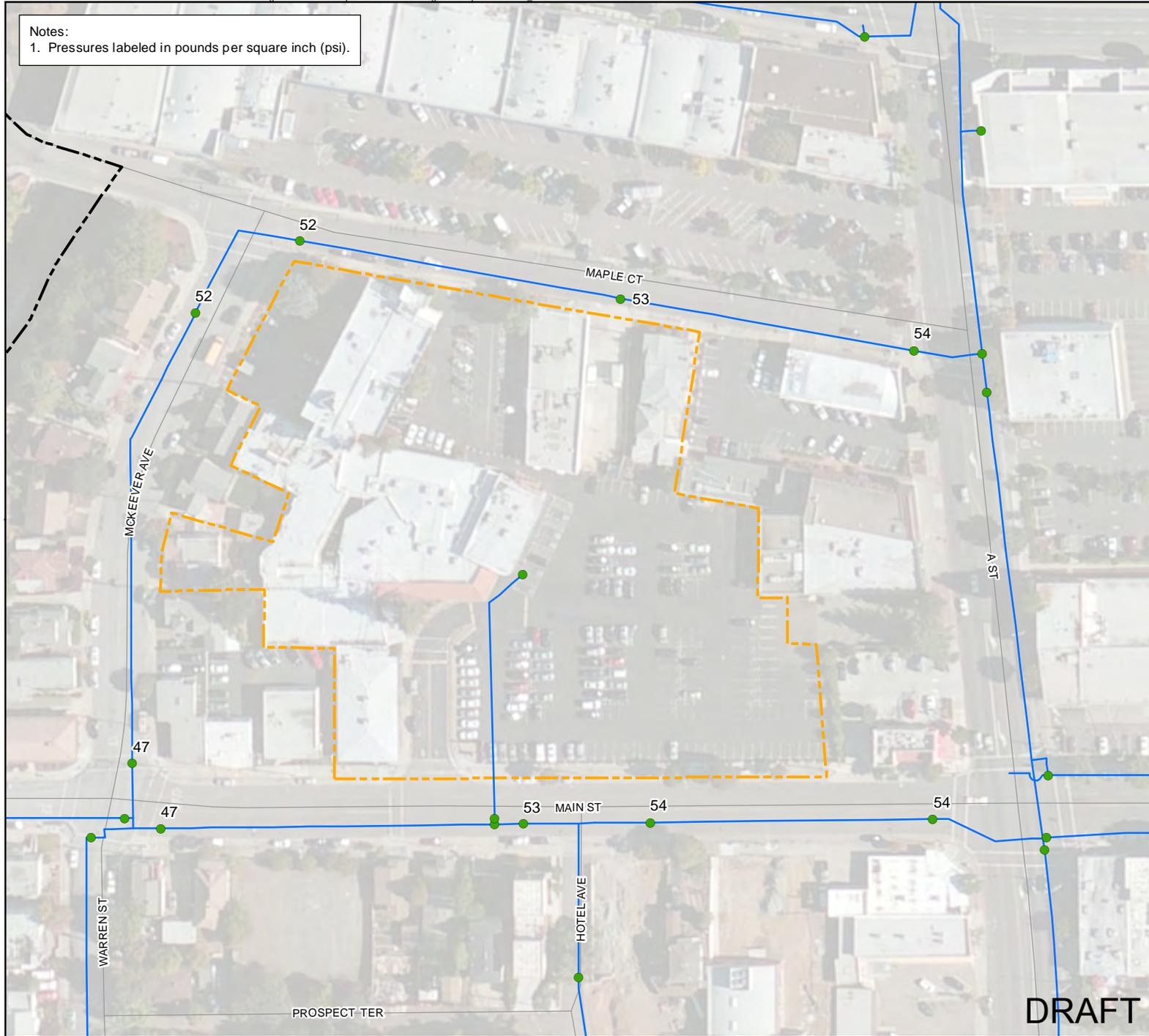


Figure 1
Project Location

Wood Rogers Inc.
Hydraulic Evaluation of
Maple & Main
Mixed Use Development

DRAFT

Notes:
1. Pressures labeled in pounds per square inch (psi).



- Symbology**
- Pipeline Velocities**
- Less than or equal to 8 fps
 - Greater than 8 fps
- Junction Pressures**
- Less than 30 psi
 - Greater than or equal to 30 psi
- Maple & Main Development
- City Limit

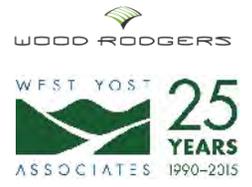


Figure 2
Pressures and Velocities at Existing Peak Hour Demand

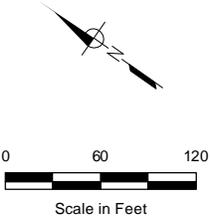
Wood Rogers Inc.
Hydraulic Evaluation of
Maple & Main
Mixed Use Development

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Notes:
1. The flow shown at each junction is the maximum flow available while maintaining 20 psi residual system pressure and limiting maximum pipeline velocities to 12 feet per second.
2. Values adjacent to tested fire nodes represent available flow, in gallons per minute (gpm).

Available fire flow demand must meet a minimum flow of 3,000 gpm required for multi-family residential development

Available fire flow demand must meet a minimum flow of 4,000 gpm required for commercial development



- Symbology**
- Available Fire Flow (see Note 1)**
- Less than 3,000 gpm
 - Less than 4,000 gpm
 - Greater than or equal to 4,000 gpm
- 4-inch Diameter
 - 6-inch Diameter
 - 8-inch Diameter
 - 12-inch Diameter
- ▭ Maple & Main Development
 - ▭ City Limit

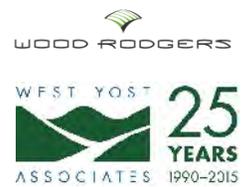
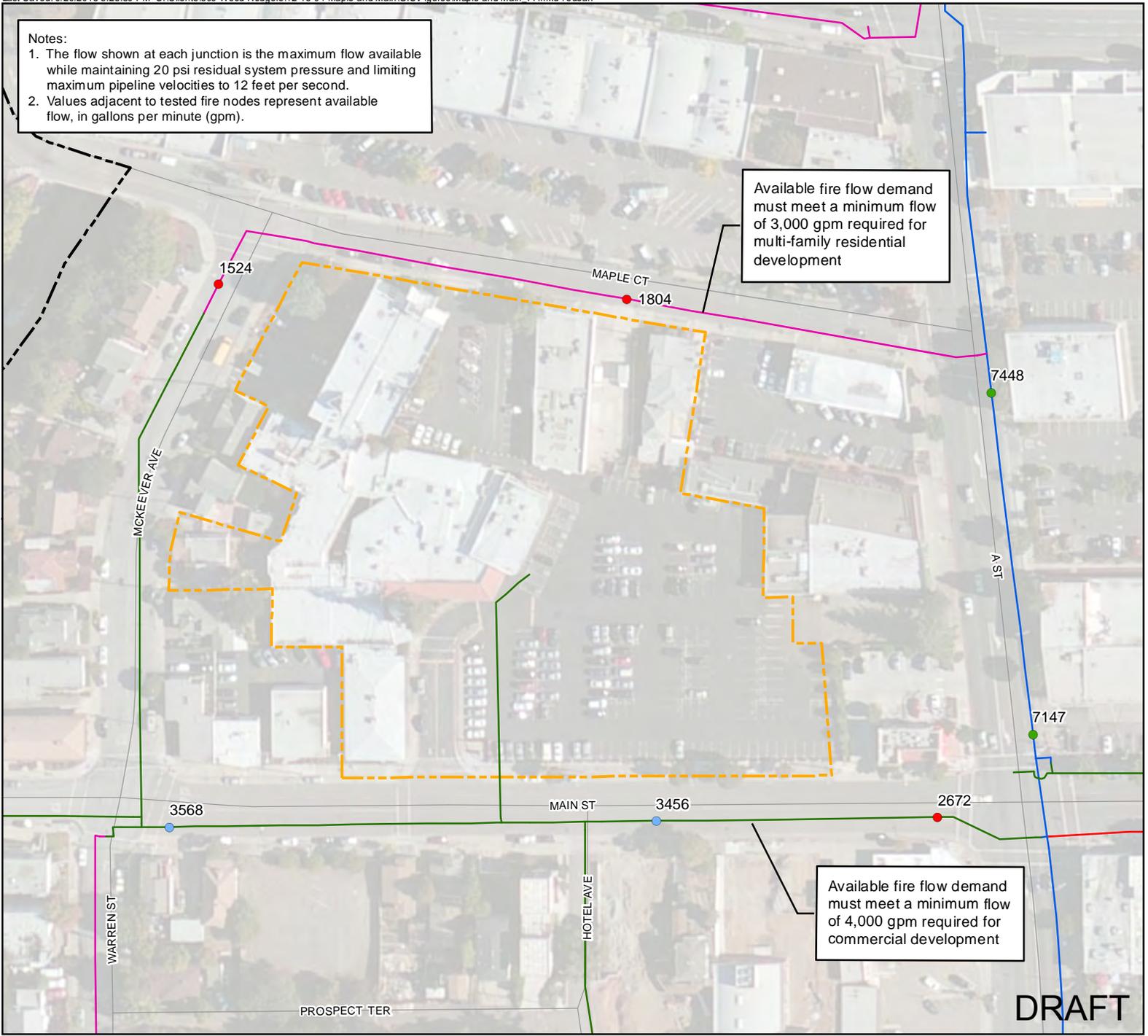


Figure 3
Available Fire Flow at Existing Maximum Day Demand

Wood Rogers Inc.
Hydraulic Evaluation of
Maple & Main
Mixed Use Development

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Notes:
 1. The flow shown at each junction is the maximum flow available while maintaining 20 psi residual system pressure and limiting maximum pipeline velocities to 12 feet per second.
 2. Values adjacent to tested fire nodes represent available flow, in gallons per minute (gpm).

Available fire flow demand must meet a minimum flow of 3,000 gpm required for multi-family residential development

Available fire flow demand must meet a minimum flow of 4,000 gpm required for commercial development



Symbology

Available Fire Flow (see Note 1)

- Less than 3,000 gpm
- Less than 4,000 gpm
- Greater than or equal to 4,000 gpm
- Proposed 12-inch Diameter
- 4-inch Diameter
- 6-inch Diameter
- 8-inch Diameter
- 12-inch Diameter
- ▭ Maple & Main Development
- ▭ City Limit

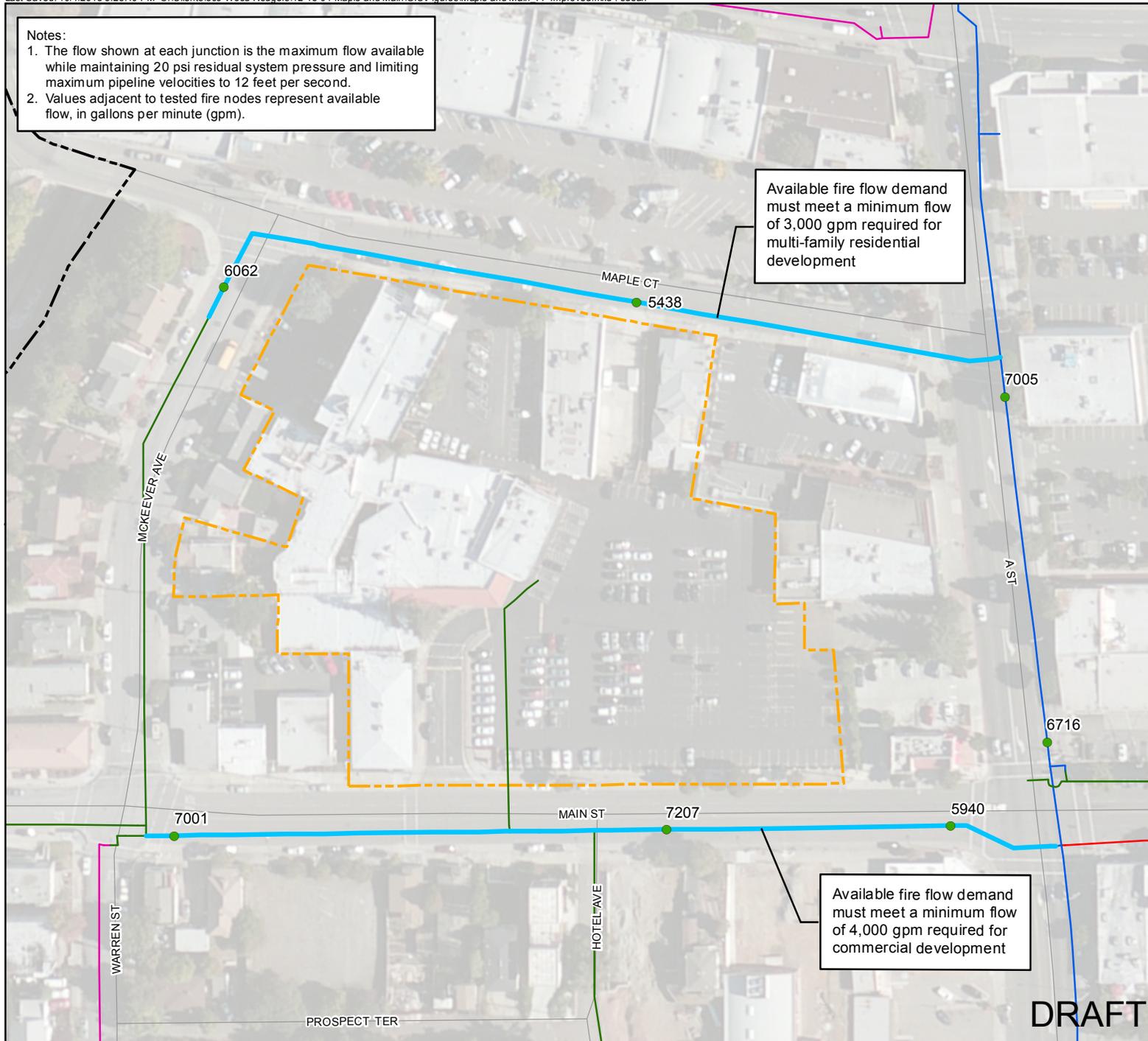


Figure 4

Available Fire Flow at Existing Maximum Day Demand with Proposed Pipelines

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 Hydraulic Evaluation of
 Maple & Main
 Mixed Use Development

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ATTACHMENT A

Maple and Main Mixed Use Development Information (September 2015),
Bay Area Developers

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MAPLE AND MAIN MIXED USE

BAY AREA PROPERTY DEVELOPERS

SHEET INDEX:

- A-0 TABULATIONS
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MAPLE & MAIN MIXED USE

BAY AREA PROPERTY DEVELOPERS

September 2015

HAYWARD CA

HPA#14746



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MAPLE & MAIN MIXED USE

GROSS LAND AREA: 3.93 (+/-ACRES) 171,061 sq.ft.
 TOTAL UNITS: 235 UNITS
 GROSS DENSITY: 59.8 DU/AC

(1) 5-STORY WRAP										
JOB # 14746										
UNIT	UNIT TYPE	NET SF	BALC/PATIO	GROSS UNIT	NO.	TL. NET	TL. GROSS	%	% CAT	REQUIRED PARKING
S1	1BR/1BA	567	0	567	41	23,247	23,247	17.4%	17.4%	1.50 62
A1	1BR/1BA	698	60	758	18	12,564	13,644	7.7%	22.6%	1.50 27
A2	1BR/1BA	688	91	779	30	20,640	23,370	12.8%		1.50 45
A3	1BR/1BA	756	91	847	5	3,780	4,235	2.1%		1.50 8
B1	2BR/2BA	1,108	92	1,200	81	89,748	97,200	34.5%		1.50 122
B2	2BR/2BA	1,037	40	1,077	15	15,555	16,155	6.4%		1.50 23
B2-A	2BR/2BA	1,037	40	1,077	5	5,185	5,385	2.1%		1.50 8
B3	1BR+DEN/2BA	939	91	1,030	10	9,390	10,300	4.3%		1.50 15
B4	2BR/2BA	1,097	143	1,240	5	5,485	6,200	2.1%		1.50 8
B5	2BR/2BA	1,150	140	1,290	5	5,750	6,450	2.1%		1.50 8
B6	2BR/2BA	1,020	122	1,142	5	5,100	5,710	2.1%		53.6%
C1	3BR/2BA	1,230	90	1,320	10	12,300	13,200	4.3%	6.4%	1.50 15
C1-A	3BR/2BA	1,230	83	1,313	5	6,150	6,565	2.1%		1.50 8
TOTAL					235	214,894	231,661	100%	100.0%	RES. 353

AVERAGE NET UNIT SIZE : 914 S.F.
 AVERAGE GROSS UNIT SIZE : 986 S.F.
 CLUBHOUSE/FITNESS: 3,600 S.F.
 LEASING OFFICE: 1,650 S.F.
 RETAIL: 2,183 S.F.

COMMON OPEN SPACE ANALYSIS:

COURTYARD 1 3,720 S.F.
 COURTYARD 2 11,460 S.F.
 COURTYARD 3 6,200 S.F.
 PERIMETER OPEN SPACE 12,480 S.F.
TOTAL: 33,860 S.F.
 144 S.F. / UNIT
 PRIVATE OPEN SPACE 71 S.F. / UNIT (AVERAGE)

R E Q U I R E D	TOTAL RESIDENTIAL REQUIRED (includes 10% guest)	353	1.50 STALLS/UNIT; 30% COMPACT ALLOWED
	RETAIL	7	(1 per 315 sq.ft.)
	COMMERCIAL BUILDING	190	(1 per 315 sq.ft.; 60,000 sq.ft.)
	TOTAL REQUIRED	550	
	COVERED PARKING FOR RESIDENTIAL	235	(1 per unit)

P R O V I D E D	TOTAL RESIDENTIAL PROVIDED (includes 10% guest)	362	1.54 STALLS/UNIT; 30% COMPACT
	STANDARD STALLS	334	
	MOTORCYCLE PARKING (14 stalls)	7	(2 motorcycles = 1 stall)
	BICYCLE PARKING (60 bikes)	15	(4 bikes = 1 stall)
	ELECTRIC VEHICLE STALLS	6	
	RETAIL	7	(1 per 315 sq.ft.)
	COMMERCIAL BUILDING (including surface parking)	191	(1 per 315 sq.ft.; 60,000 sq.ft.)
	TOTAL PROVIDED	560	

WASTE COLLECTION CALCULATION:

REQUIRED:

GARBAGE= 235 DWELLING UNITS x 1.2 (MOVE IN/OUT FACTOR) x 32 (GALLONS PER UNIT) / 200 = 46 CY/WEEK
 RECYCLABLE = GARBAGE = 46 CY/WEEK
 ORGANIC= 235 DWELLING UNITS x 5 (GALLONS PER UNIT) / 200 = 6 CY/WEEK

PROVIDED:

GARBAGE= 3 TRASH COMPACTORS - MARATHON MINI-MAC APARTMENT COMPACTOR (150 UNCOMPACTED CY/WEEK), ONE ON EACH TRASH ROOM
 RECYCLABLE = 3 TRASH COMPACTORS - MARATHON MINI-MAC APARTMENT COMPACTOR (150 UNCOMPACTED CY/WEEK), ONE ON EACH TRASH ROOM
 ORGANIC= 3 2 CY BINS, ONE ON EACH TRASH ROOM

A-0

MAPLE & MAIN MIXED USE BAY AREA PROPERTY DEVELOPERS

September 2015

HAYWARD CA

HPA#14746

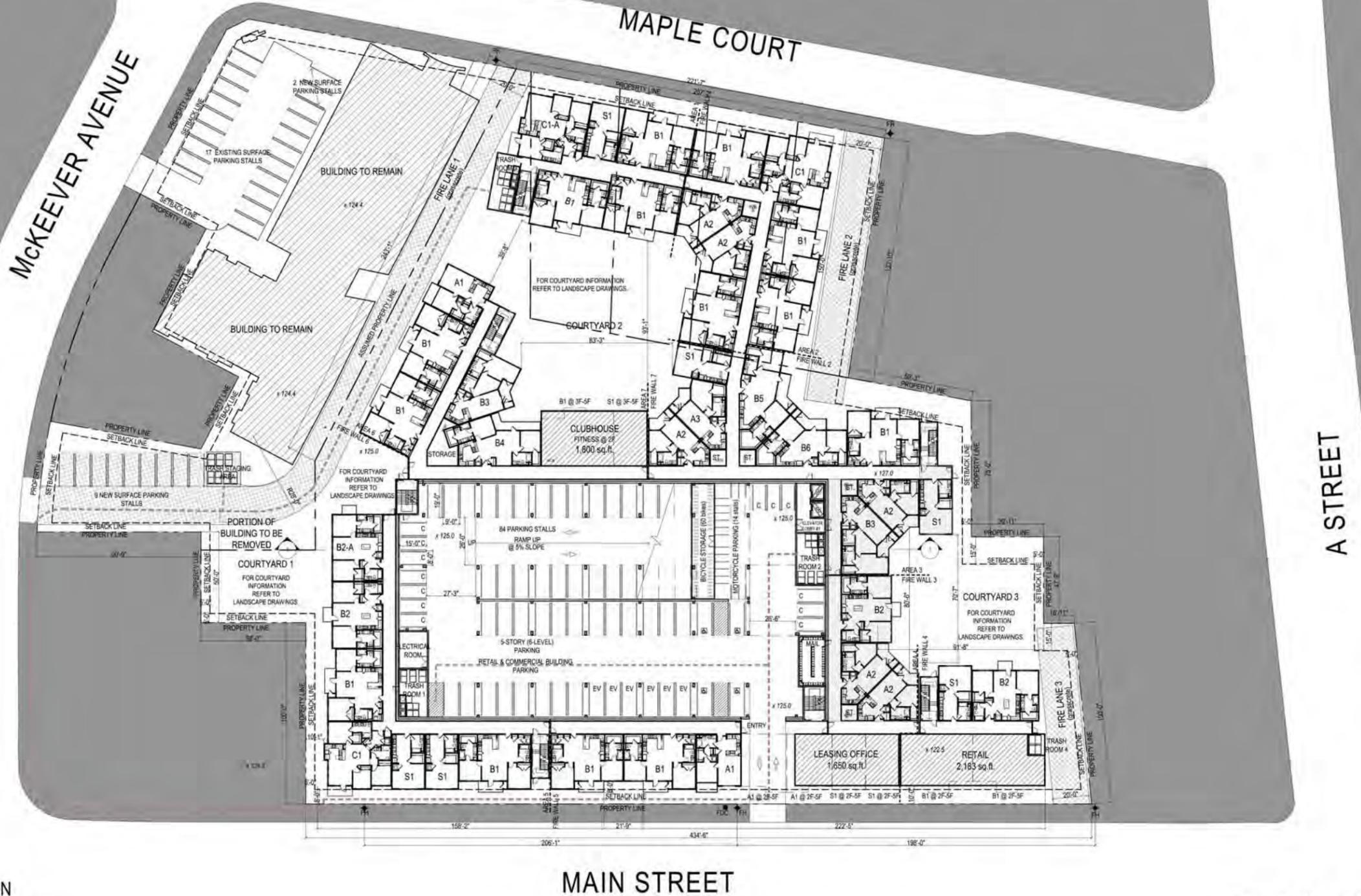


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-  PROPOSED FIRE DEPARTMENT CONNECTION
-  PROPOSED FIRE HYDRANT
-  POSSIBLE ROOFTOP TERRACE
-  COLLECTION VEHICLE ROUTE OF TRAVEL


SITE PLAN & GROUND LEVEL PLAN
 SCALE: 1" = 30'-0" (ON 24"x36" SHEET)


A-1

MAPLE & MAIN MIXED USE

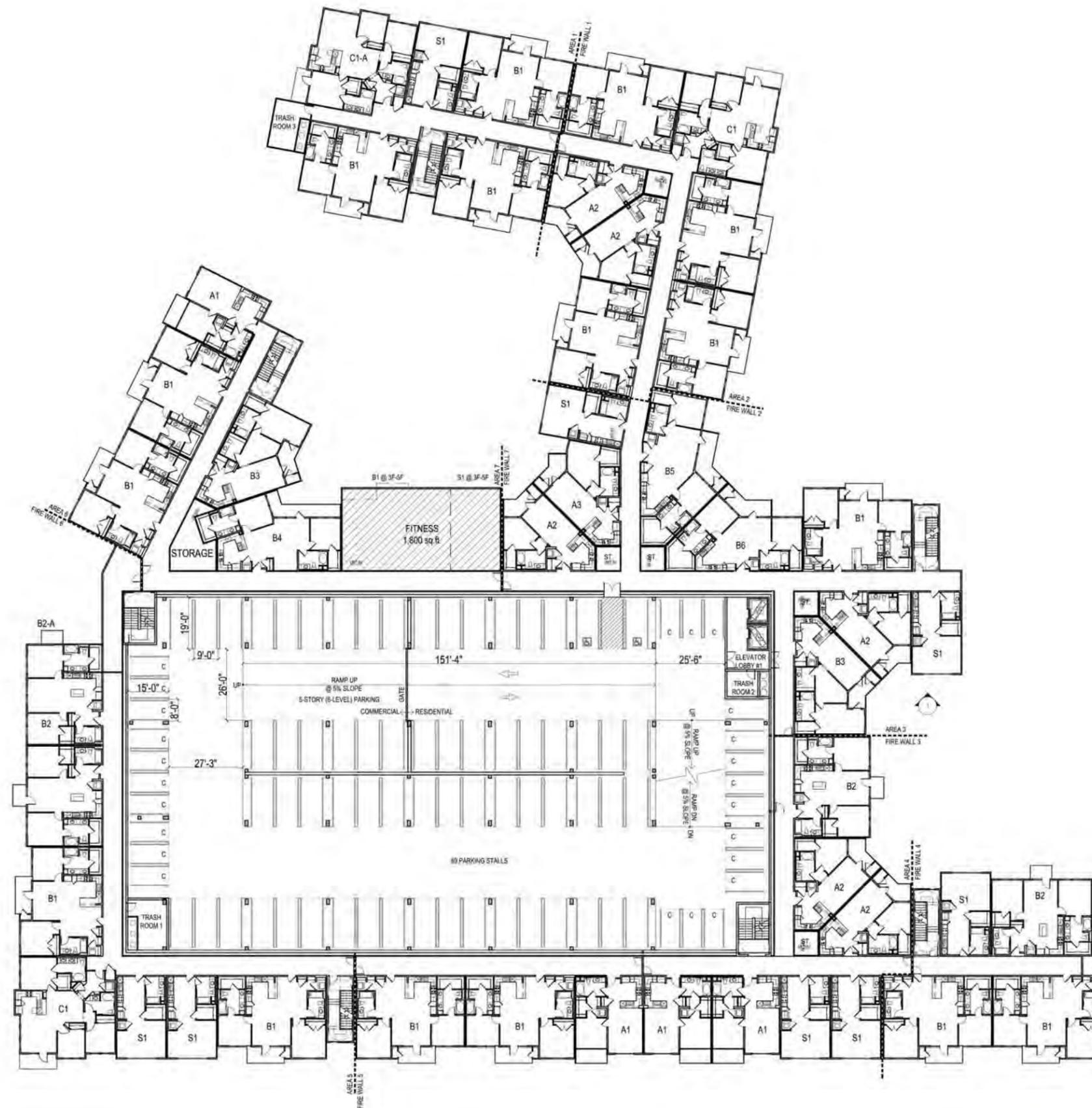
BAY AREA PROPERTY DEVELOPERS

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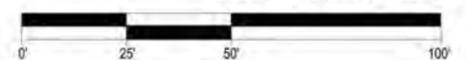


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SECOND LEVEL PLAN
SCALE: 1" = 20'-0" (ON 24"X36" SHEET)



A-2

MAPLE & MAIN MIXED USE
BAY AREA PROPERTY DEVELOPERS

September 2015

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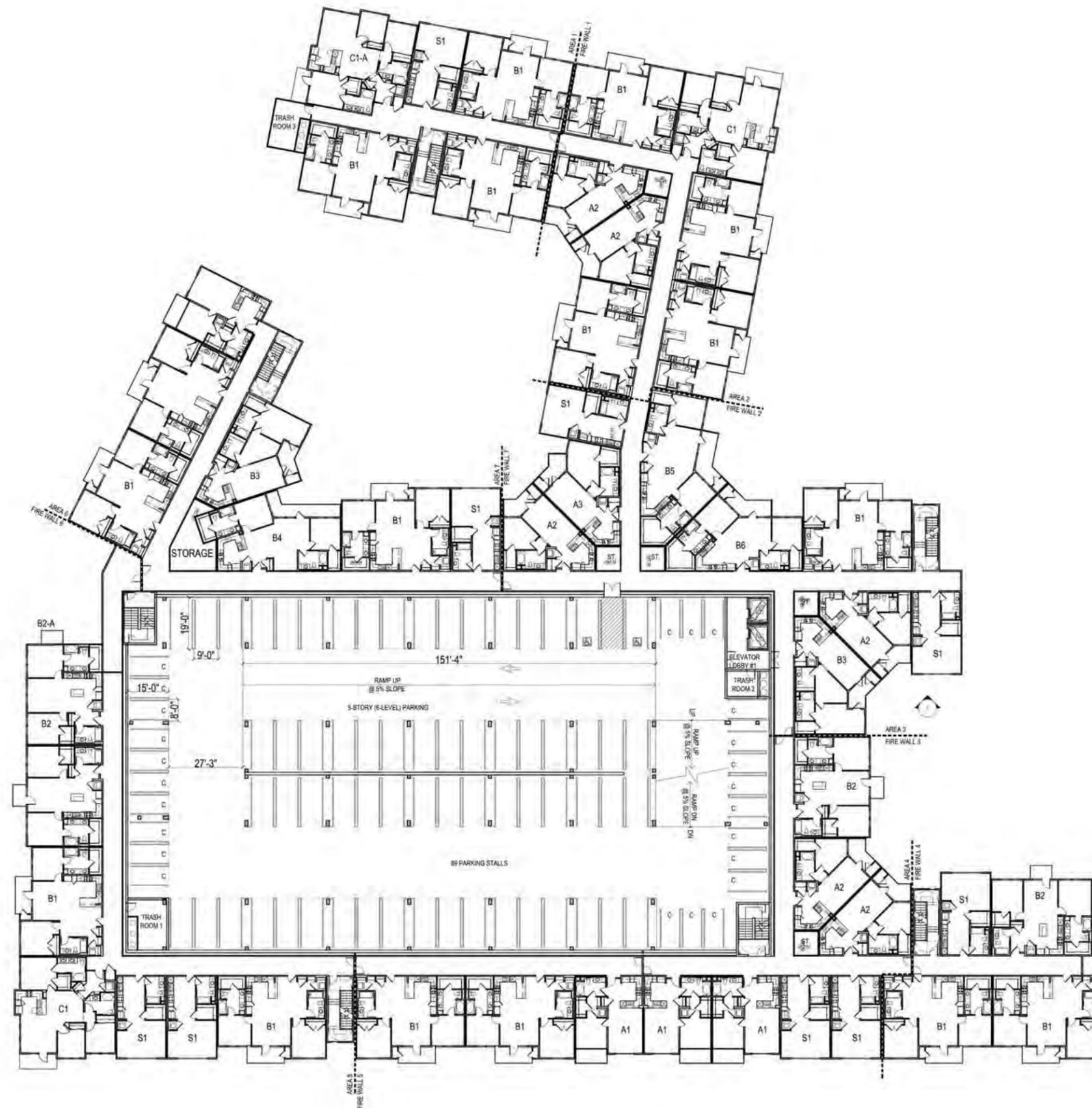
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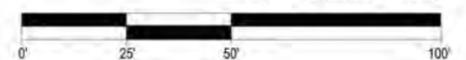
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THIRD THRU FIFTH LEVEL PLAN
SCALE: 1" = 20'-0" (ON 24"X36" SHEET)



A-3

MAPLE & MAIN MIXED USE
BAY AREA PROPERTY DEVELOPERS

September 2015

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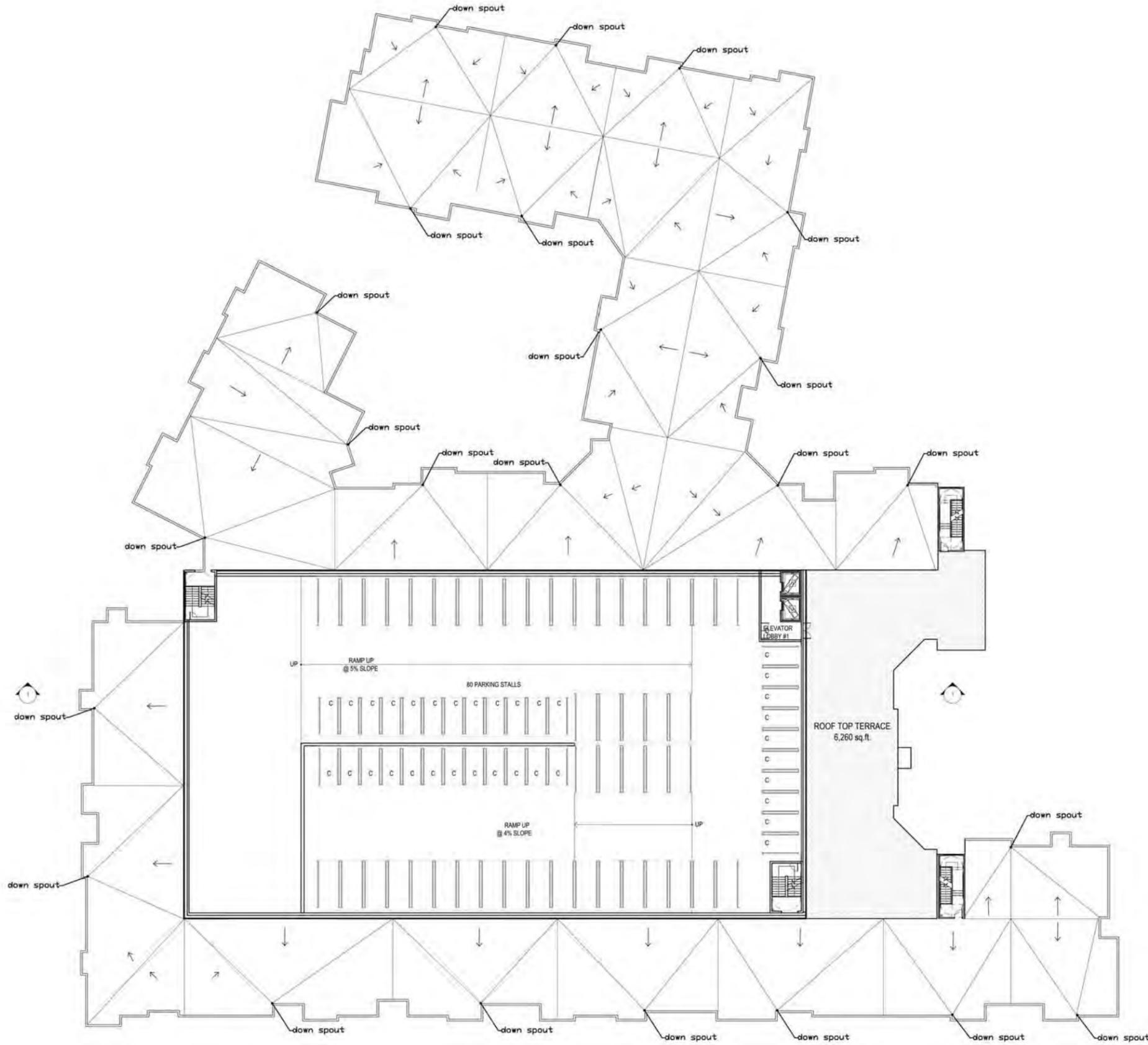
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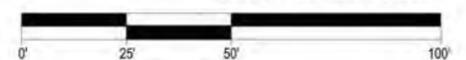
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ROOFTOP PLAN
 SCALE: 1" = 20'-0" (ON 24"X36" SHEET)



A-4

MAPLE & MAIN MIXED USE
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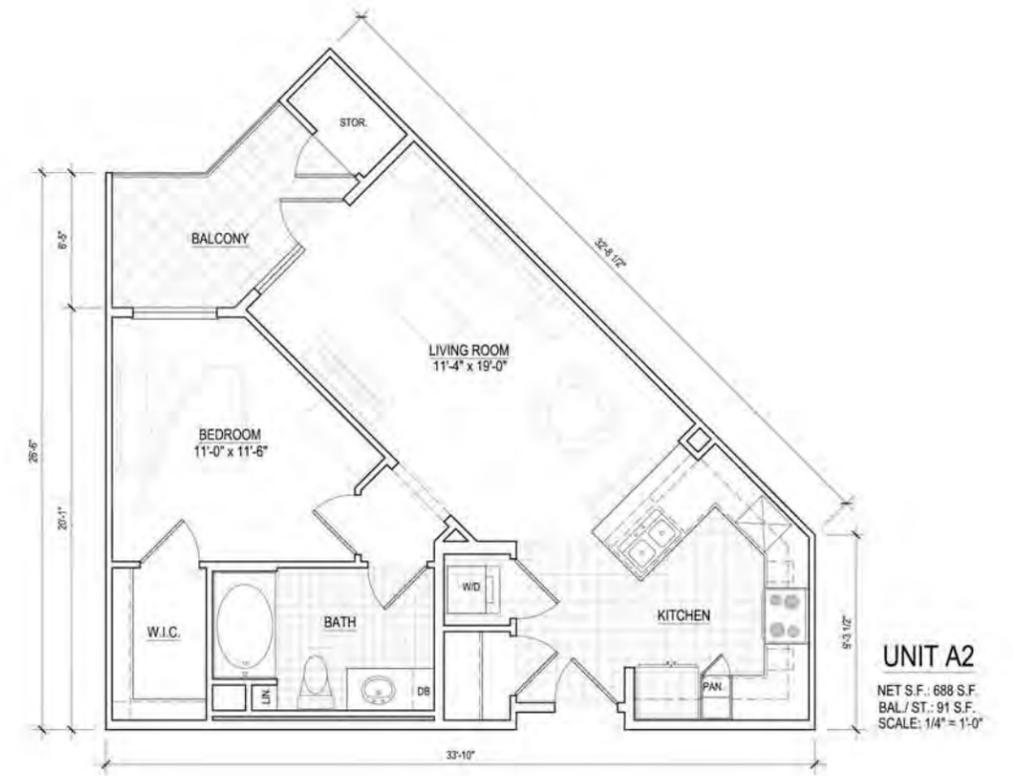
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UNIT S1
NET: 567 S.F.
SCALE: 1/4"=1'-0"



UNIT A1
NET: 698 S.F.
BALCONY: 60 S.F.
SCALE: 1/4"=1'-0"



UNIT A2
NET S.F.: 688 S.F.
BAL / ST.: 91 S.F.
SCALE: 1/4"=1'-0"



UNIT A3
NET S.F.: 756 S.F.
BAL / ST.: 91 S.F.
SCALE: 1/4"=1'-0"



UNIT B1
NET: 1,108 S.F.
BALCONY / STOR.: 92 S.F.
SCALE: 1/4"=1'-0"

UNIT PLANS
A-5

MAPLE & MAIN MIXED USE
BAY AREA PROPERTY DEVELOPERS

September 2015

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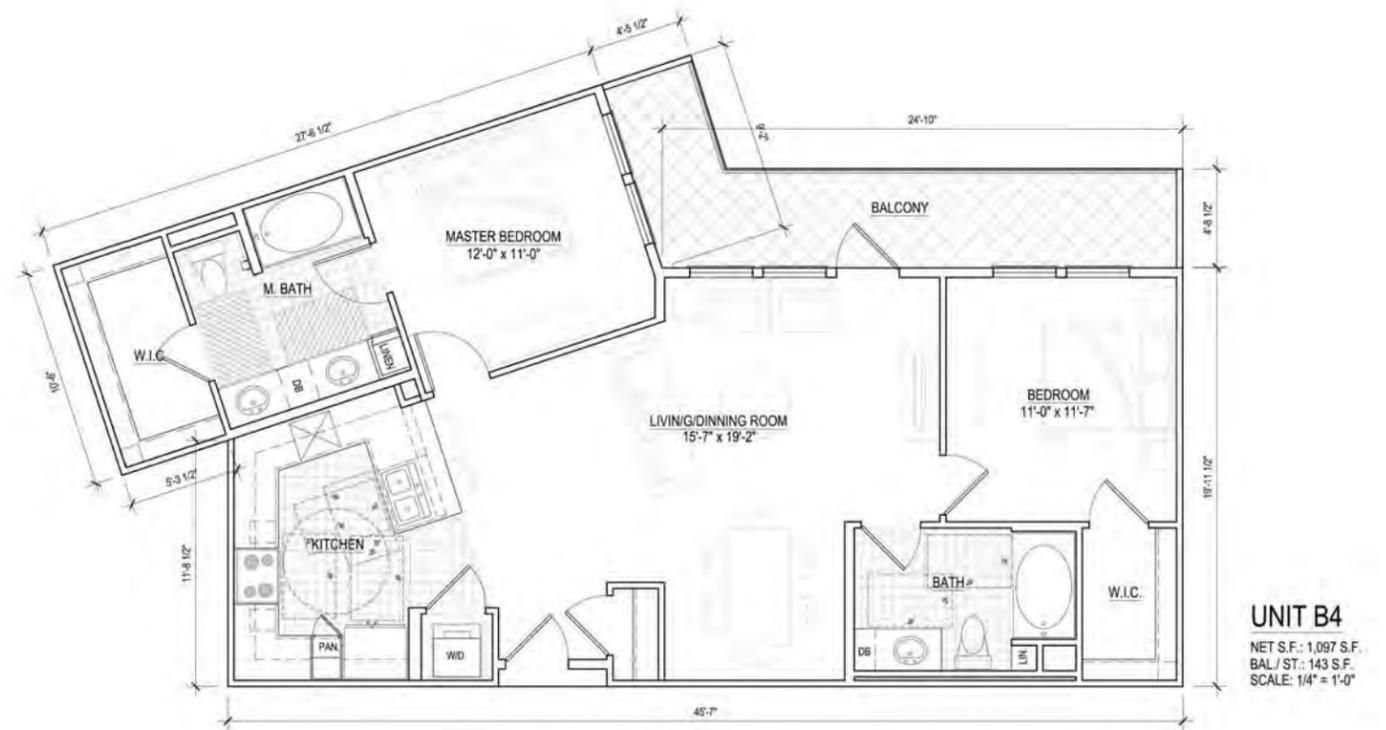
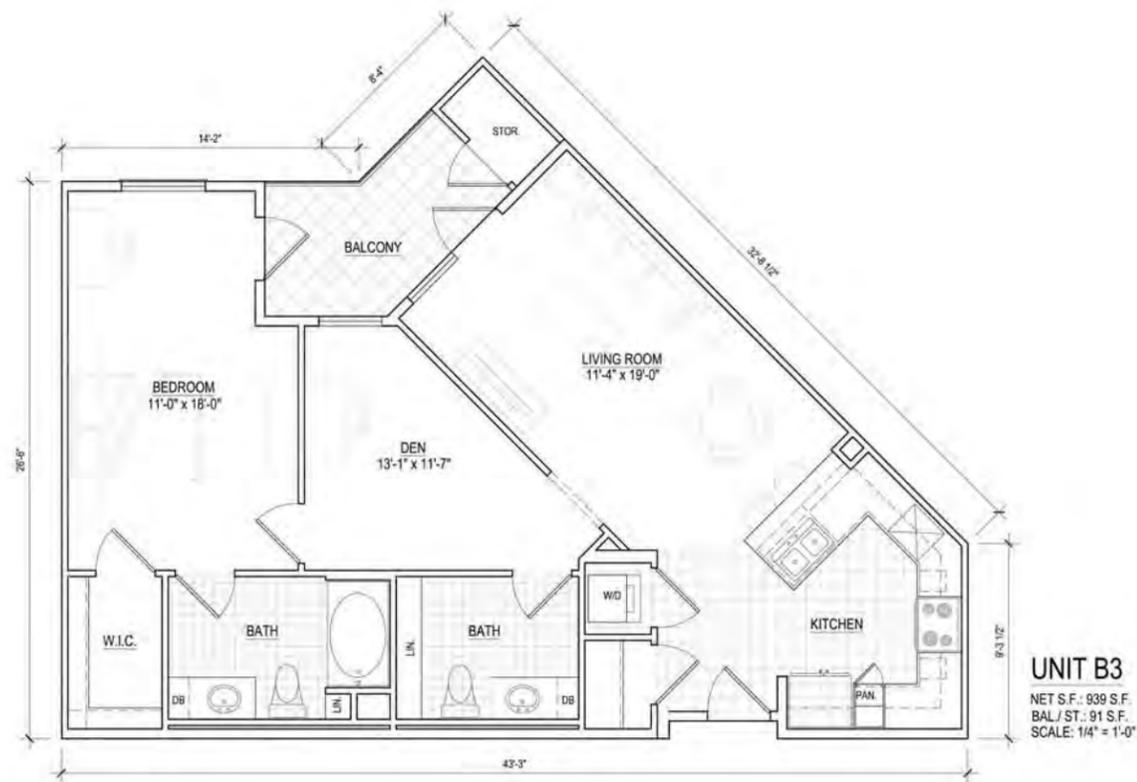
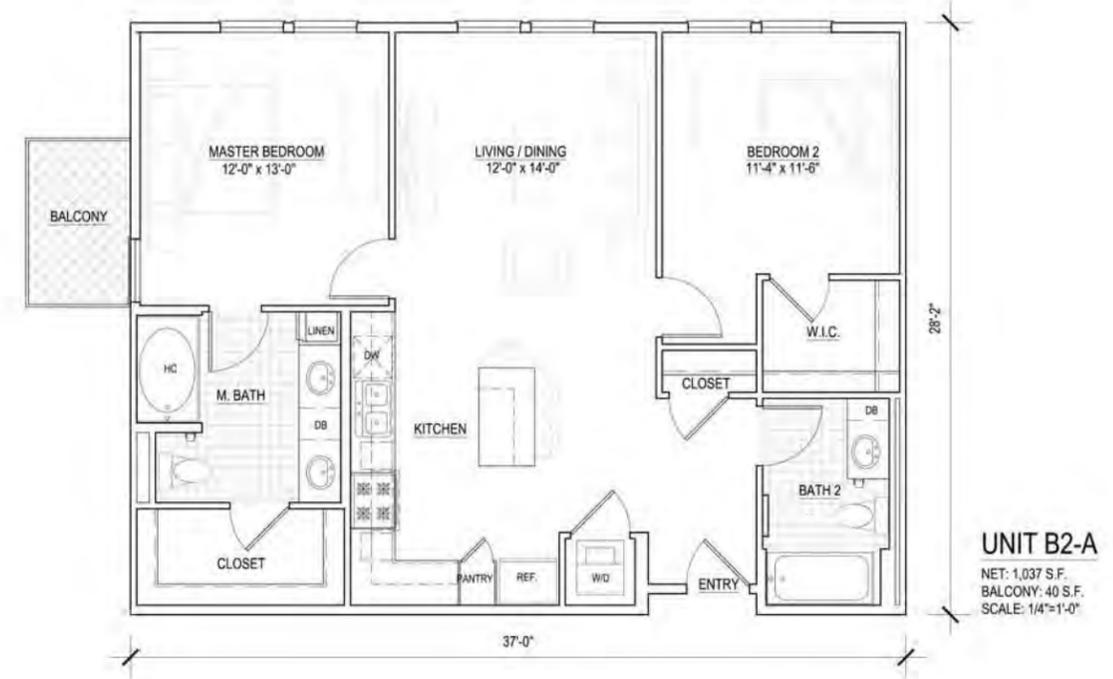
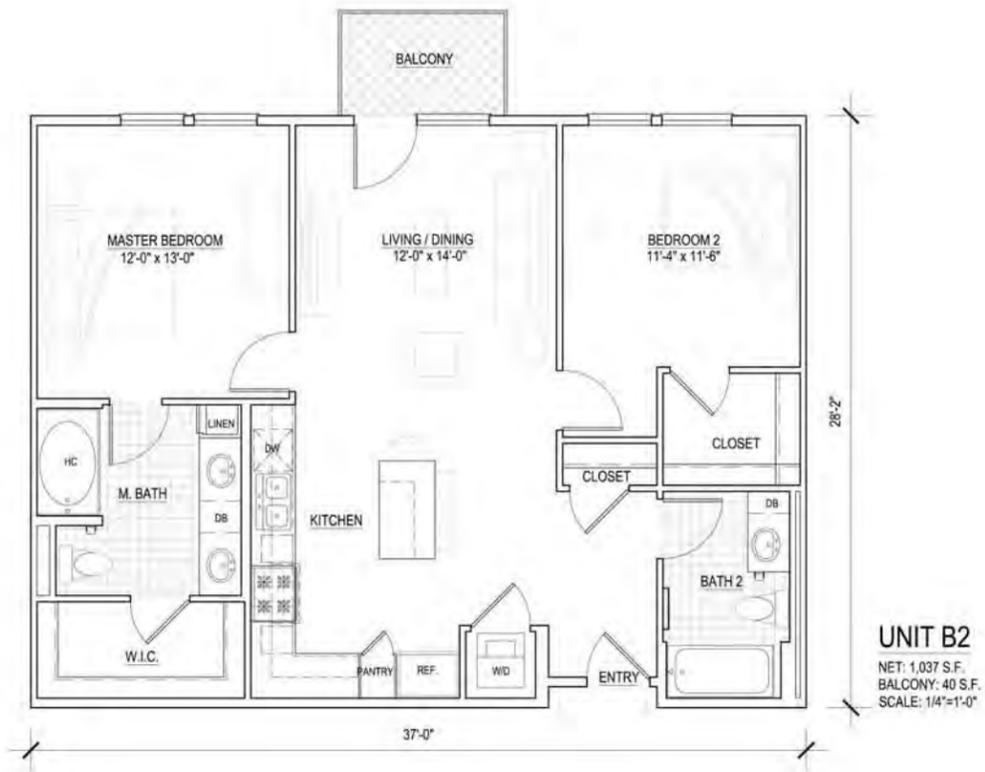
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UNIT PLANS
A-6

MAPLE & MAIN MIXED USE
BAY AREA PROPERTY DEVELOPERS

September 2015

HAYWARD CA

HPA#14746

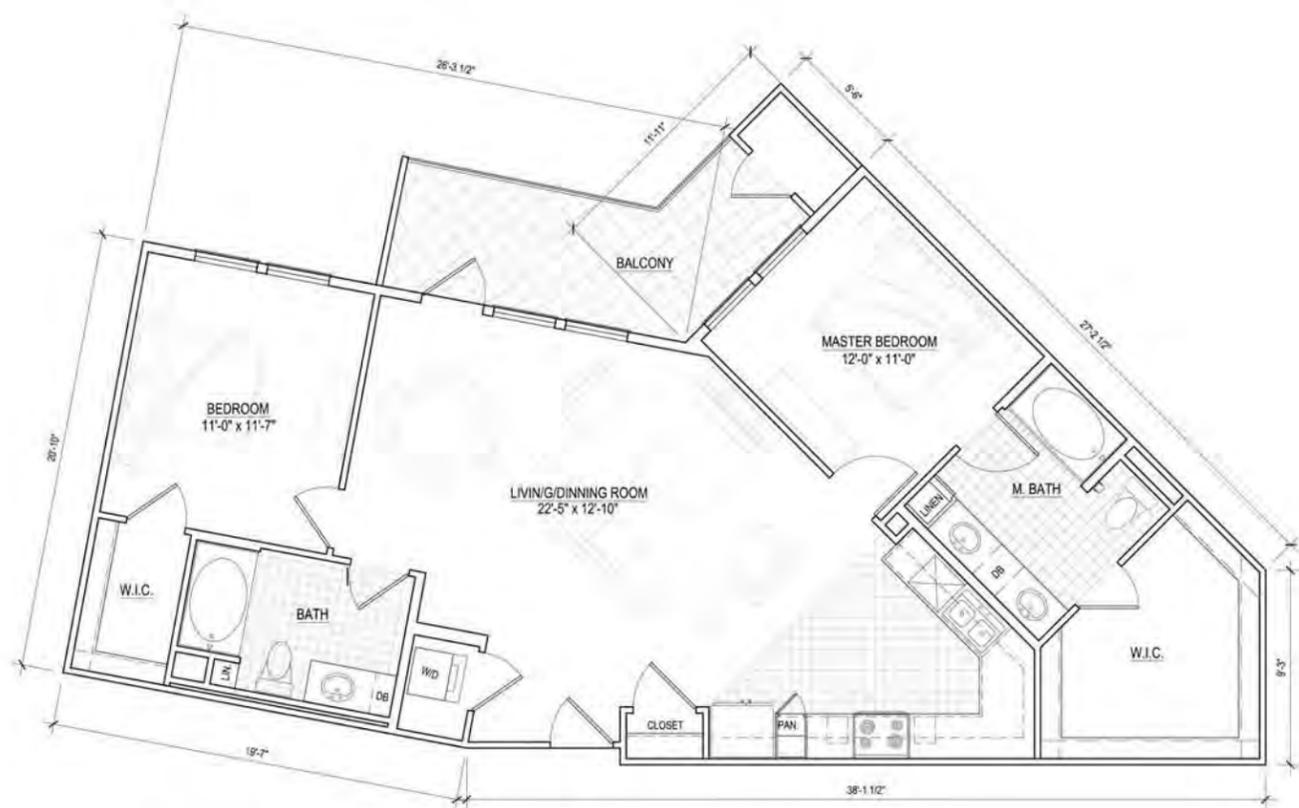


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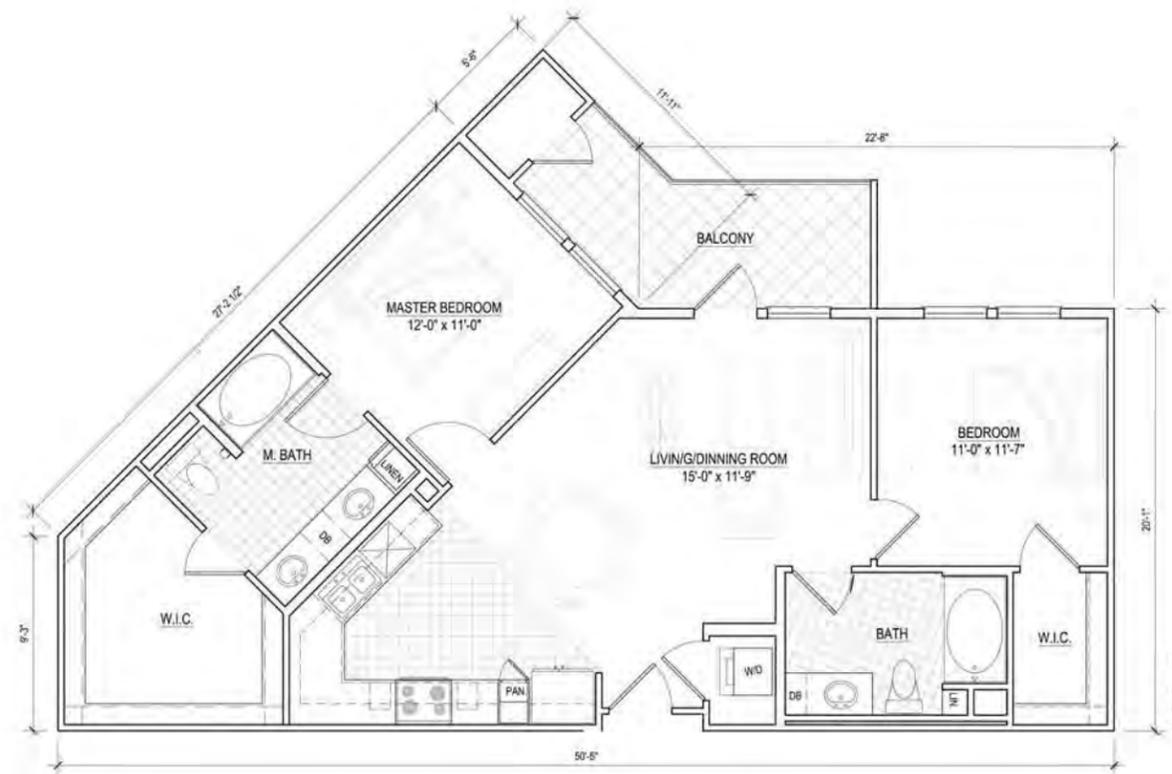
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UNIT B5
 NET S.F.: 1,150 S.F.
 BAL / ST.: 140 S.F.
 SCALE: 1/4" = 1'-0"



UNIT B6
 NET S.F.: 1,020 S.F.
 BAL / ST.: 122 S.F.
 SCALE: 1/4" = 1'-0"



UNIT C1
 NET: 1,230 S.F.
 BALCONY/ST.: 90 S.F.
 SCALE: 1/4"=1'-0"



UNIT C1-A
 NET: 1,230 S.F.
 BALCONY/ST.: 83 S.F.
 SCALE: 1/4"=1'-0"

**UNIT PLANS
 A-7**

**MAPLE & MAIN MIXED USE
 BAY AREA PROPERTY DEVELOPERS**

September 2015

HAYWARD CA

HPA#14746



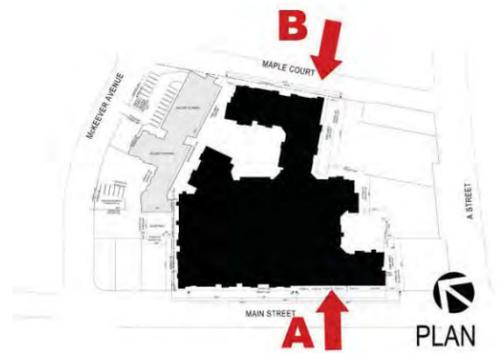
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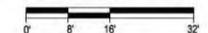
A. MAIN STREET ELEVATION

SCALE: 1/16" = 1'-0" (ON 24"X36" SHEET)



B. MAPLE COURT ELEVATION

SCALE: 1/16" = 1'-0" (ON 24"X36" SHEET)



PROPOSED NEW BUILDING

FIRELANE

EXISTING MEDICAL BUILDING TO BE RENOVATED

MAPLE & MAIN MIXED USE
BAY AREA PROPERTY DEVELOPERS

September 2015

HAYWARD CA

HPA#14746



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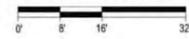
5339 Alpha Road, Suite 300 Dallas, TX 75240 (972) 701-9636 (972) 701-9639

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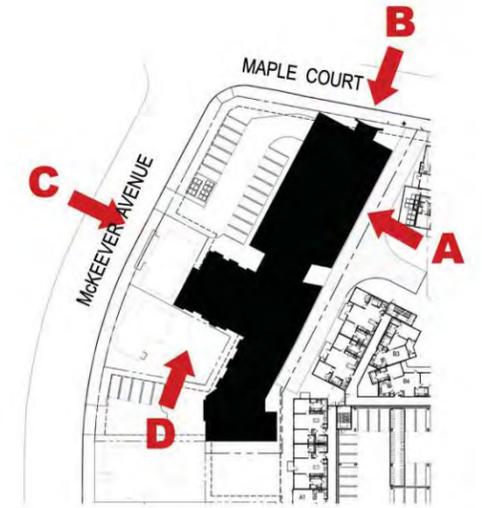
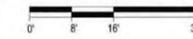
DALLAS CHARLOTTE NEWPORT BEACH LAS VEGAS NEW ORLEANS NORFOLK ORLANDO PHOENIX



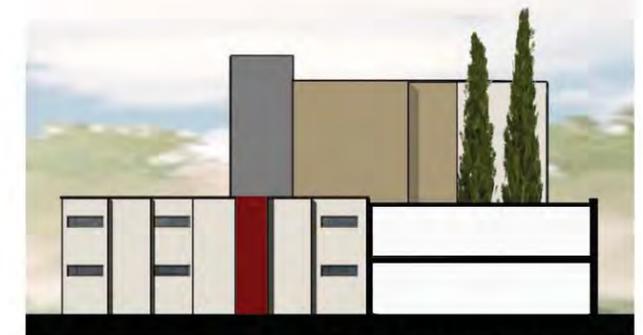
A. SOUTH ELEVATION
SCALE: 1/16" = 1'-0" (ON 24"X36" SHEET)



B. EAST ELEVATION ALONG MAPLE COURT
SCALE: 1/16" = 1'-0" (ON 24"X36" SHEET)



C. NORTH ELEVATION ALONG McKEEVER AVENUE, MEDICAL BUILDING AND NEW BUILDING BEYOND
SCALE: 1/16" = 1'-0" (ON 24"X36" SHEET)



D. WEST ELEVATION /SECTION
SCALE: 1/16" = 1'-0" (ON 24"X36" SHEET)



MEDICAL BUILDING ELEVATIONS

A-9

MAPLE & MAIN MIXED USE
BAY AREA PROPERTY DEVELOPERS

September 2015

HAYWARD CA

HPA#14746



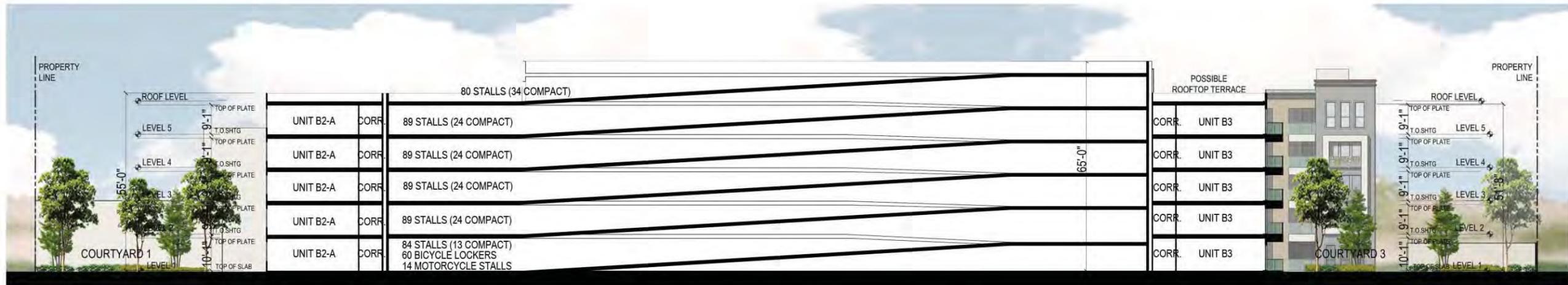
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SECTION

SCALE: 1/16" = 1'-0" (ON 24"X36" SHEET)



MAPLE & MAIN MIXED USE
BAY AREA PROPERTY DEVELOPERS

September 2015

HAYWARD CA

HPA#14746



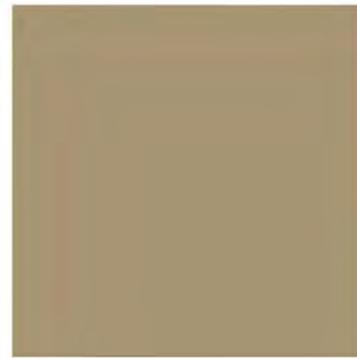
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- P1. SHERWIN WILLIAMS - BRAMBLE BUSH (SW2923)
- P2. SHERWIN WILLIAMS - ROYCROFT SUEDE (SW2842)
- P3. SHERWIN WILLIAMS - EVERYDAY WHITE (SW6077)
- P4. SHERWIN WILLIAMS - CHANTICLEER (SW2912)
- P5. SHERWIN WILLIAMS - CITYSCAPE (SW7067)
- P6. SHERWIN WILLIAMS - IRON ORE (SW7069)

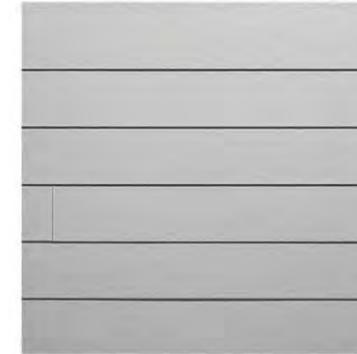
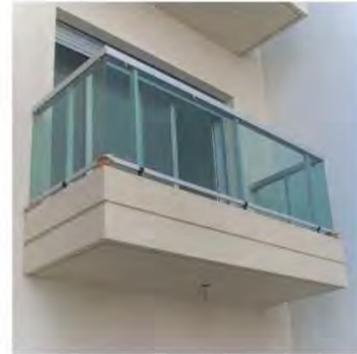
P1

P2

P3

P4

P5



- A. GLASS RAILING
- B. METAL RAILING
- C. ENVIROMENTAL STONEWORKS Pro Stack-Cedar Mesa
- D. HARDIE PLANK SIDING
- E. METAL ROOF
- F. METAL AWNING
- G. VINYL WINDOW

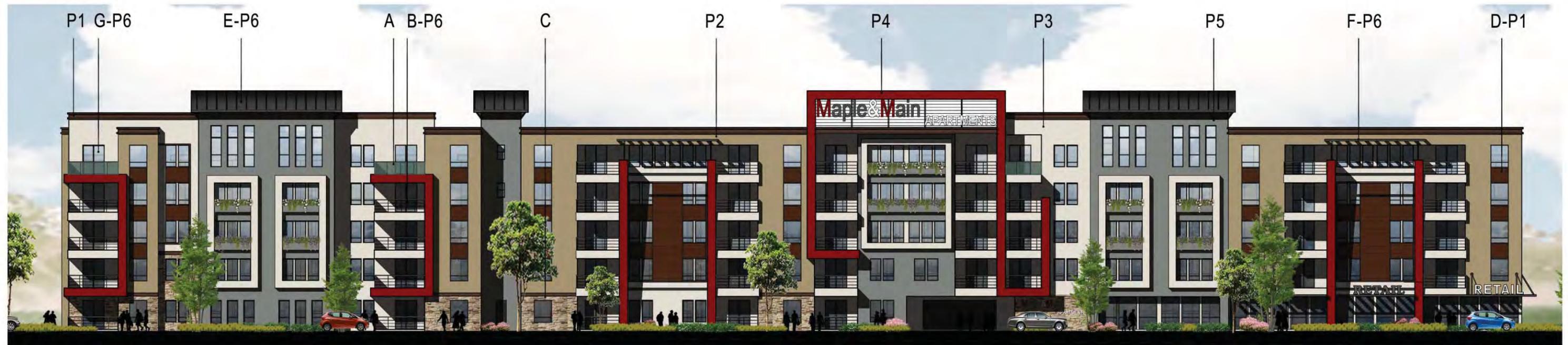
P6

A

B

C

D



MATERIAL & COLOR BOARD
A-11

MAPLE & MAIN MIXED USE
BAY AREA PROPERTY DEVELOPERS

September 2015

HAYWARD CA

HPA#14746



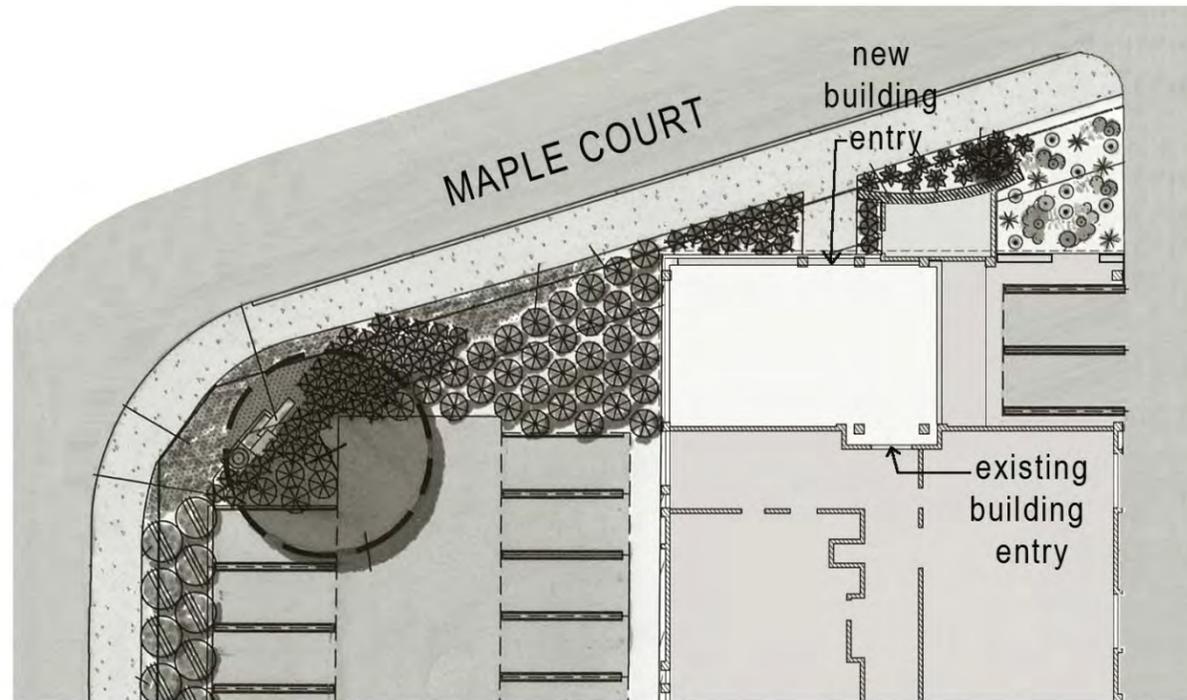
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Conceptual Entry Lobby Renovation



Conceptual colors and material palette for interior redesign



Medical Building from Maple Court: BEFORE



Medical Building from Maple Court: AFTER

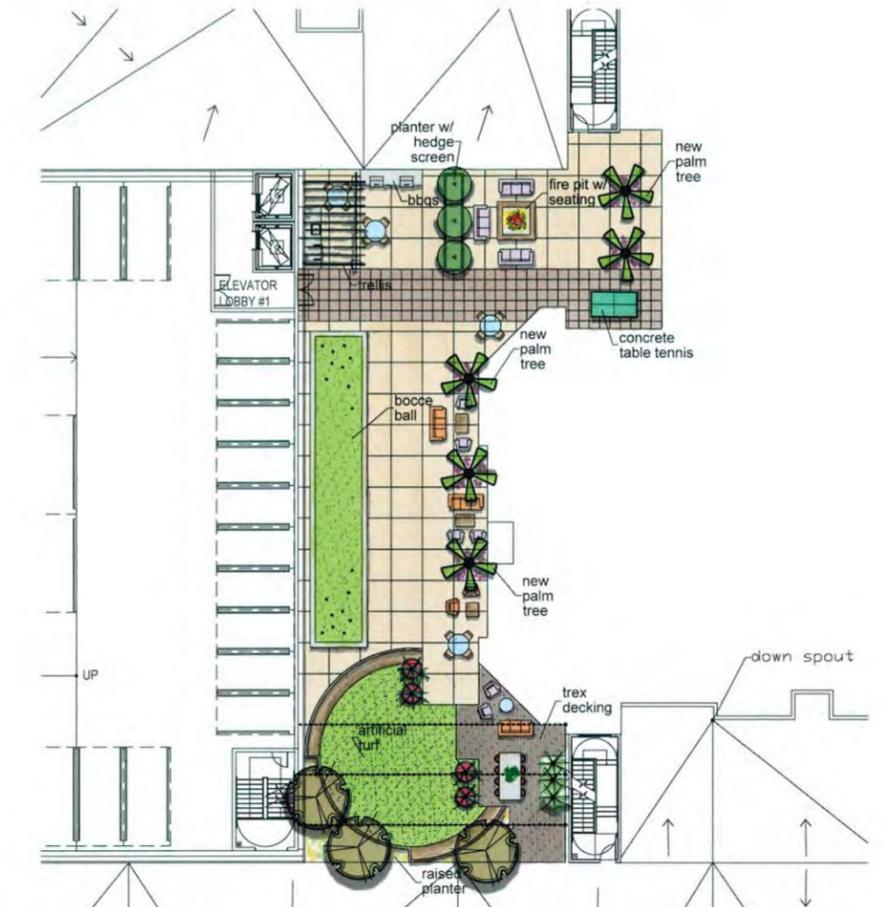


Conceptual colors and material palette for interior redesign





LANDSCAPE PLAN - GROUND LEVEL NTS



LANDSCAPE PLAN - ROOF LEVEL

L-1



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September 2015

MAPLE AND MAIN MIXED USE BAY AREA PROPERTY DEVELOPERS

HAYWARD CA

HPA#14746



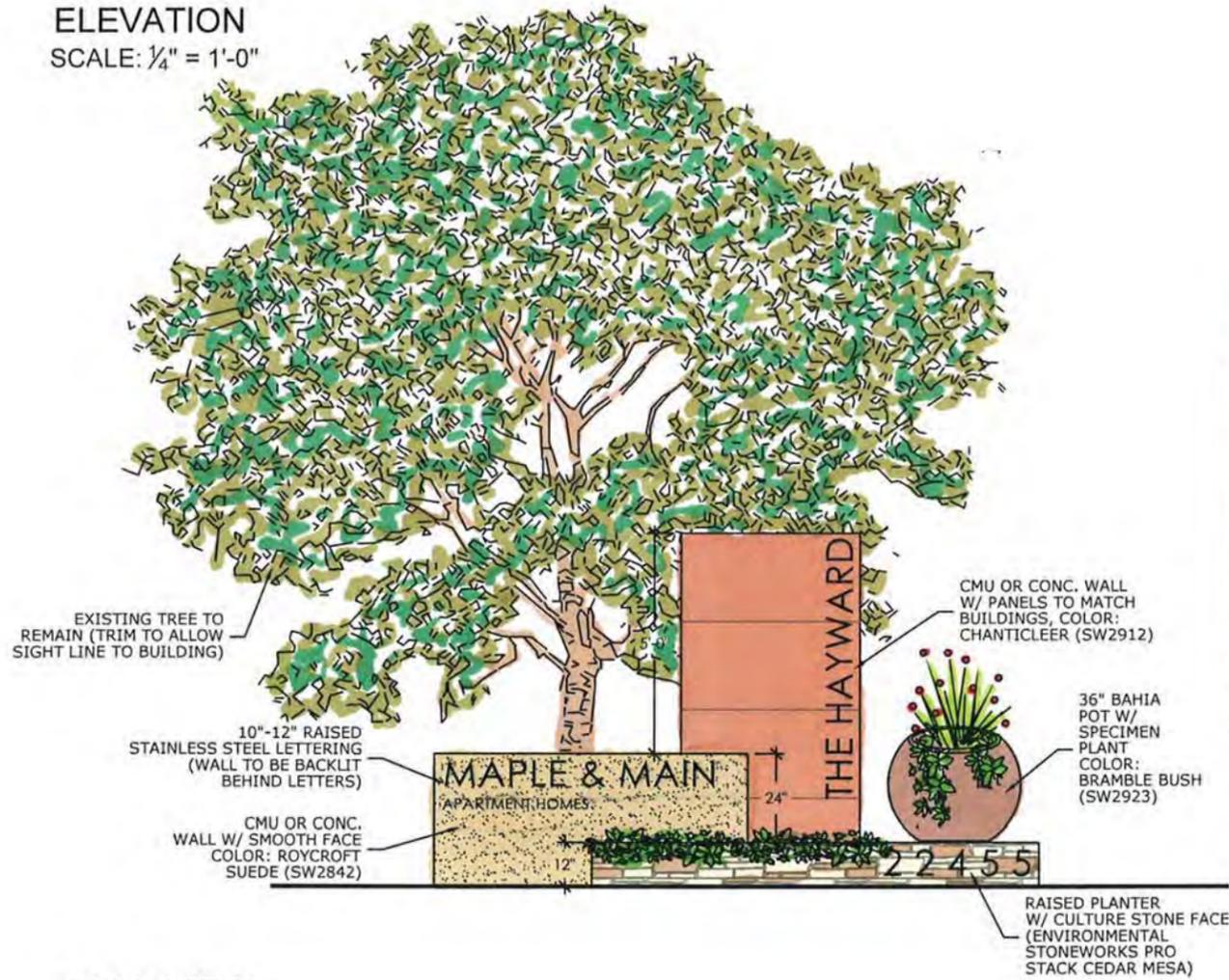
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DALLAS CHARLOTTE NEWPORT BEACH LAS VEGAS NEW ORLEANS NORFOLK ORLANDO PHOENIX

ELEVATION
SCALE: 1/4" = 1'-0"



PLAN VIEW
SCALE: 1/4" = 1'-0"

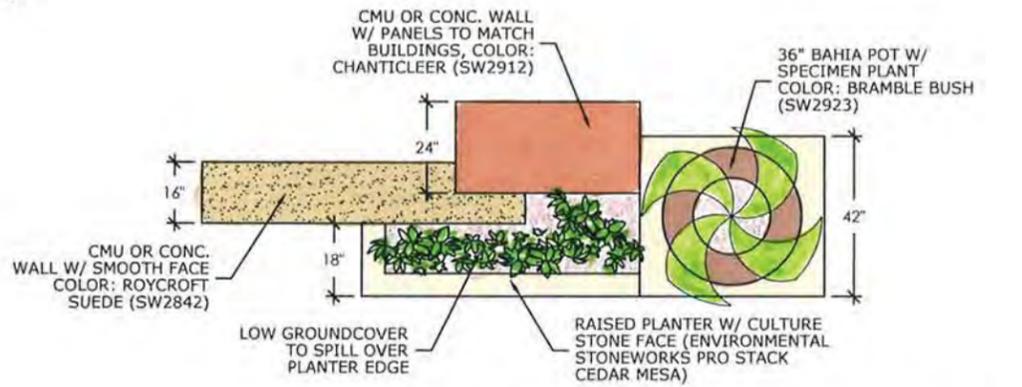
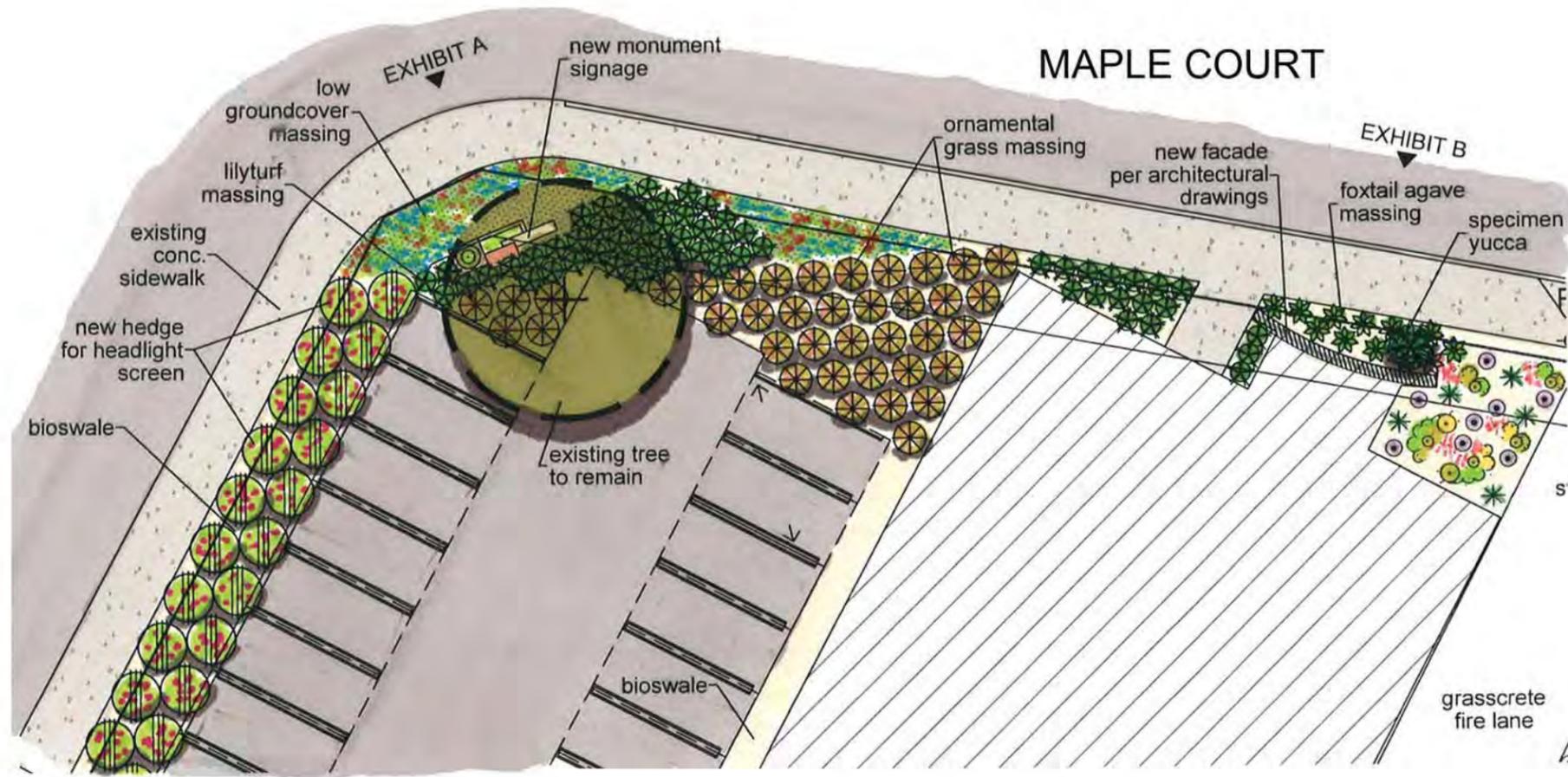


EXHIBIT A - CORNER MONUMENT



PLAN VIEW
SCALE: NTS



ELEVATION
SCALE: NTS

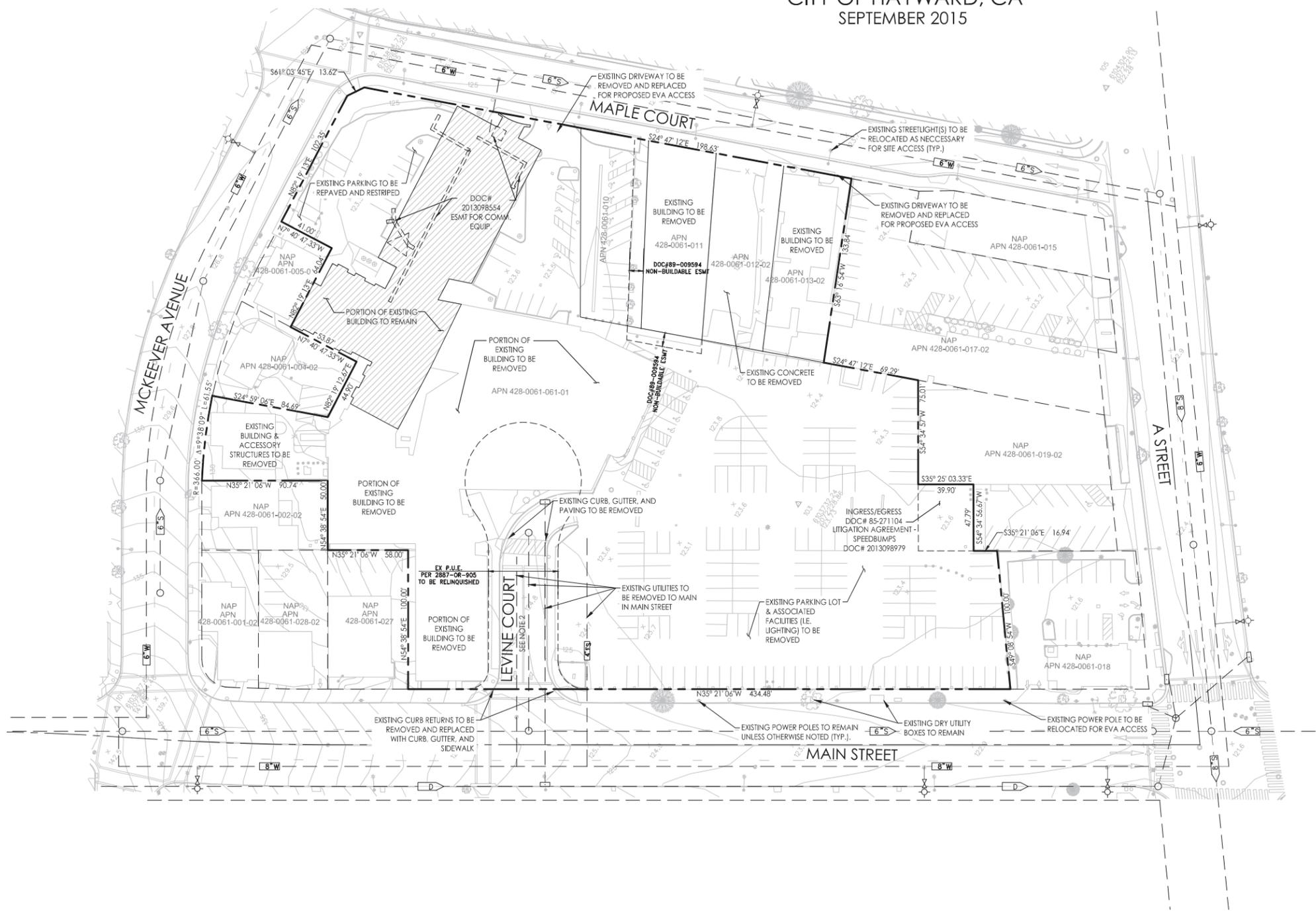
EXHIBIT B - BUILDING ENTRY AT MAPLE COURT



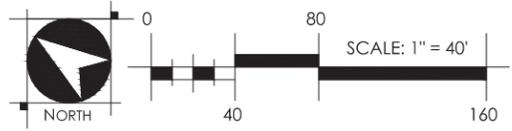
EXISTING CONDITIONS & DEMOLITION PLAN

MAPLE & MAIN APARTMENTS

CITY OF HAYWARD, CA
SEPTEMBER 2015



- NOTES**
1. ALL EXISTING IMPROVEMENTS (STRUCTURES, CONCRETE, ASPHALT) TO BE DEMOLISHED UNLESS OTHERWISE NOTED.
 2. LOCATION AND SIZE OF EXISTING SANITARY SEWER, POTABLE WATER, AND STORM DRAIN TO BE DETERMINED, NOT CLEAR FROM AVAILABLE BASEMAPS



WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

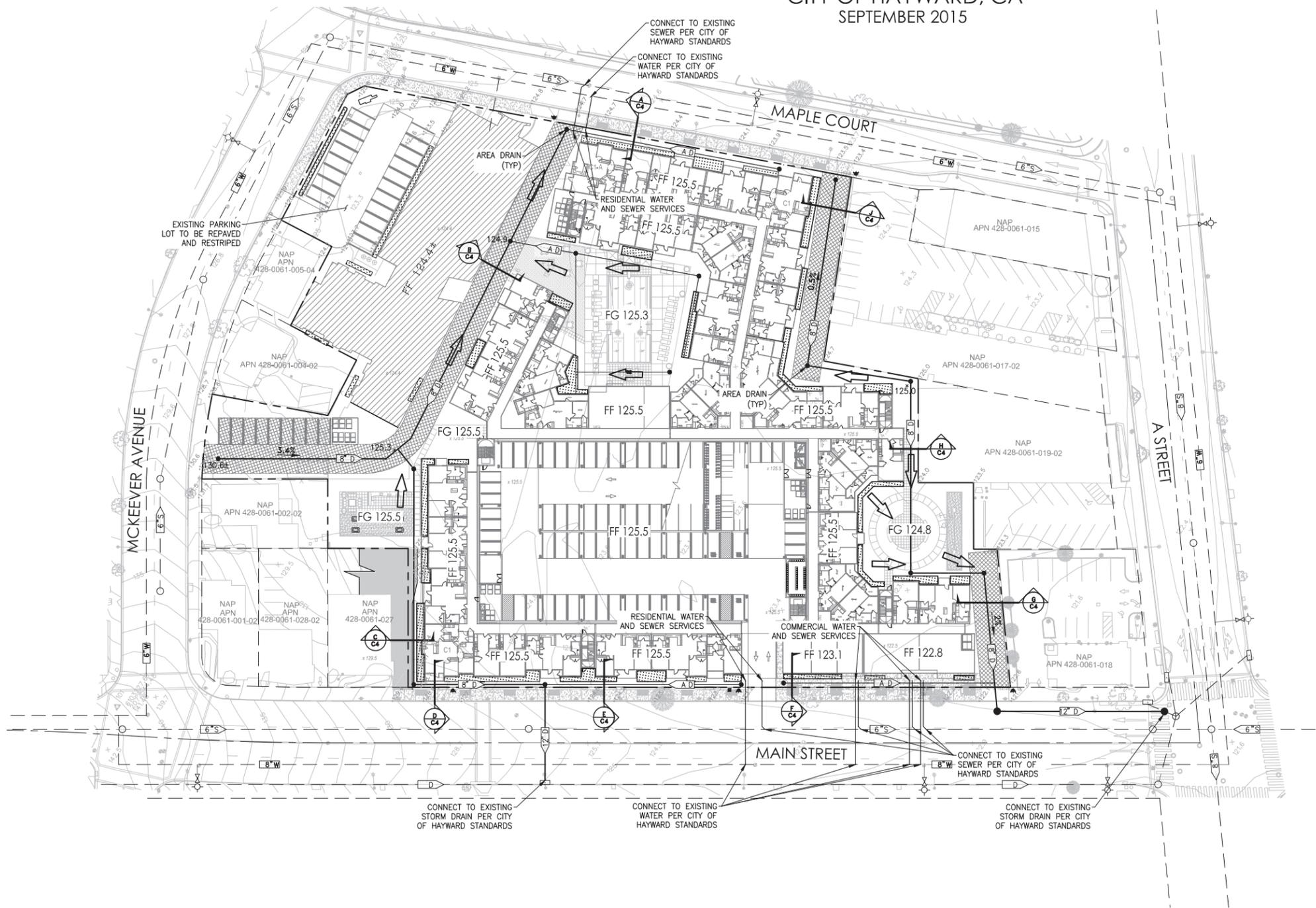
4301 Hacienda Drive, Suite 100 Tel 925.847.1556
Pleasanton, CA. 94588 Fax 925.847.1557

J:\Area\3240-Main_Maple_Jayward\Main-Maple_Hayward-CA\Planning\Exhibits\Temporary Map\C1-EX COND.dwg 9/8/2015 10:06 AM Matt Machi

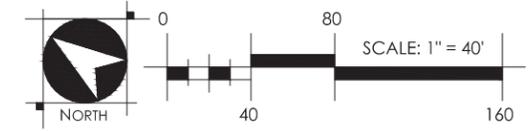
CONCEPTUAL GRADING & UTILITY PLAN

MAPLE & MAIN APARTMENTS

CITY OF HAYWARD, CA
SEPTEMBER 2015



NOTE:
WATER AND SEWER SERVICE LOCATIONS ARE PRELIMINARY AND SUBJECT TO CHANGE
PER THE MECHANICAL, ELECTRICAL, AND PLUMBING ENGINEERS RECOMMENDATIONS.



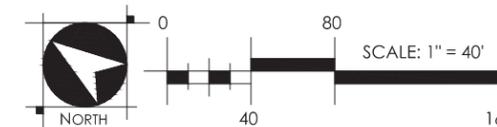
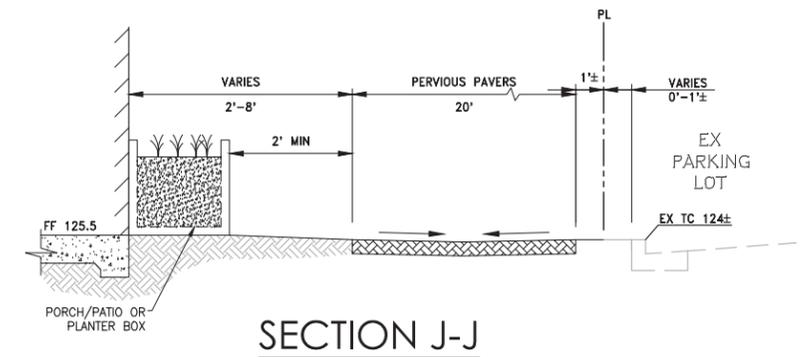
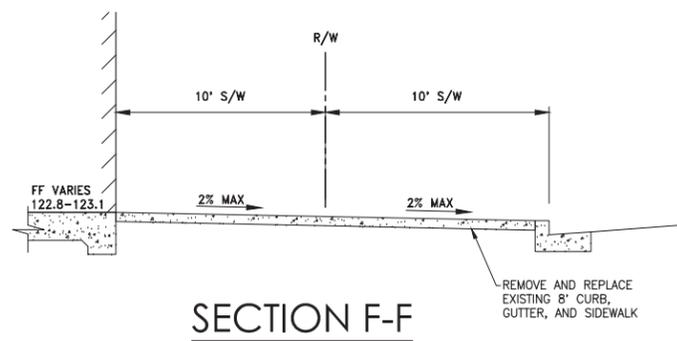
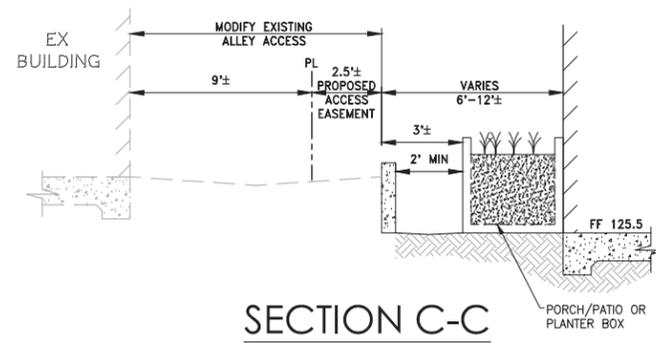
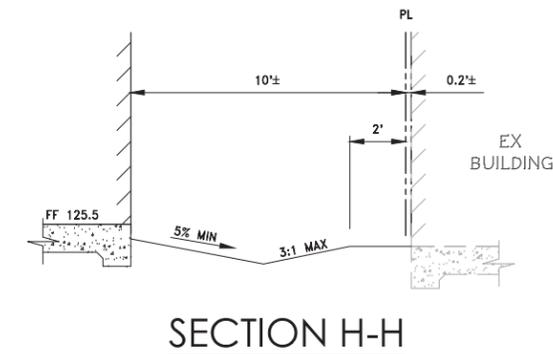
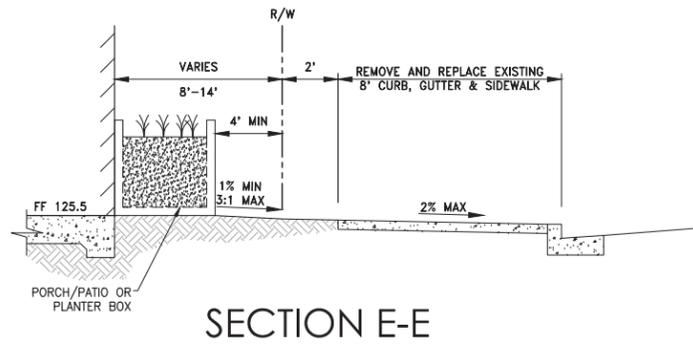
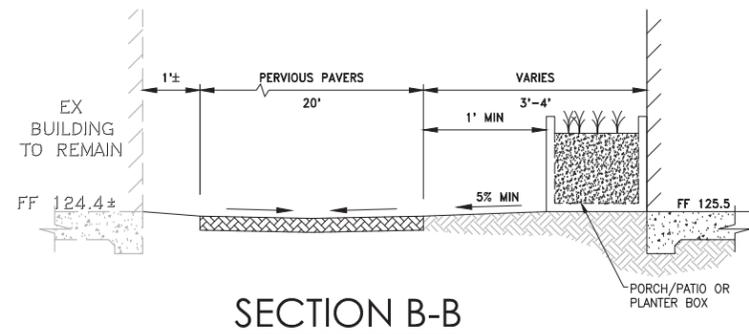
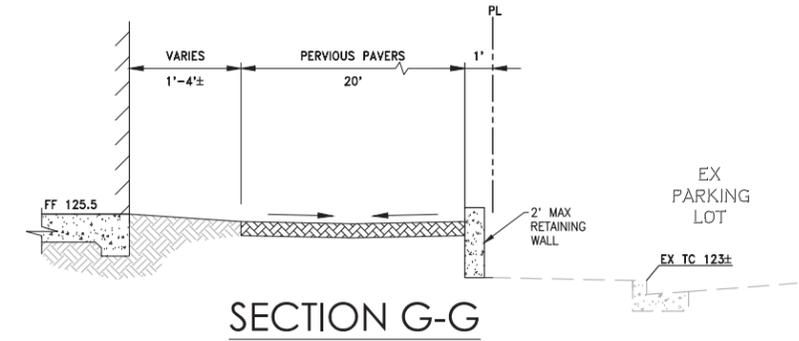
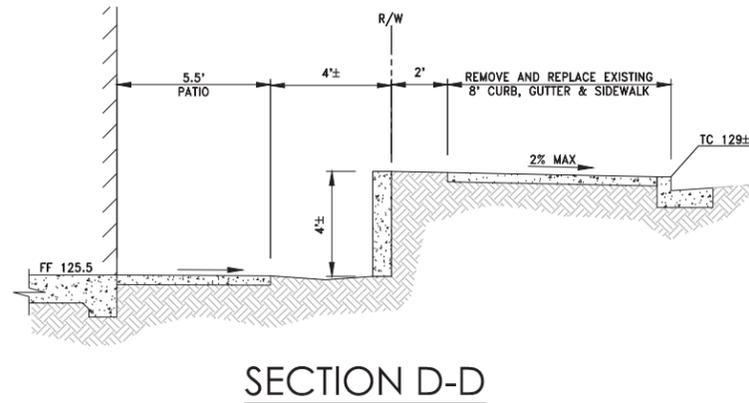
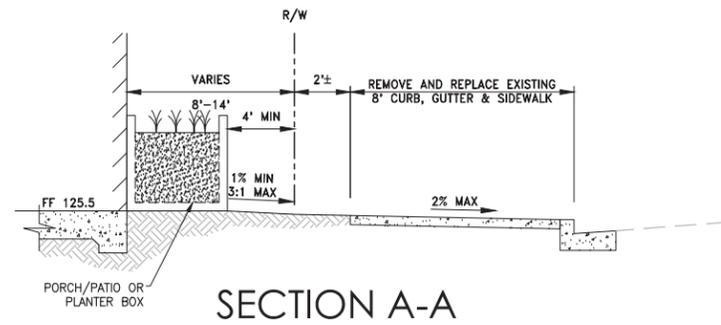
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Pleasanton, CA. 94588 Fax 925.847.1557

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SECTIONS

MAPLE & MAIN APARTMENTS

CITY OF HAYWARD, CA
SEPTEMBER 2015



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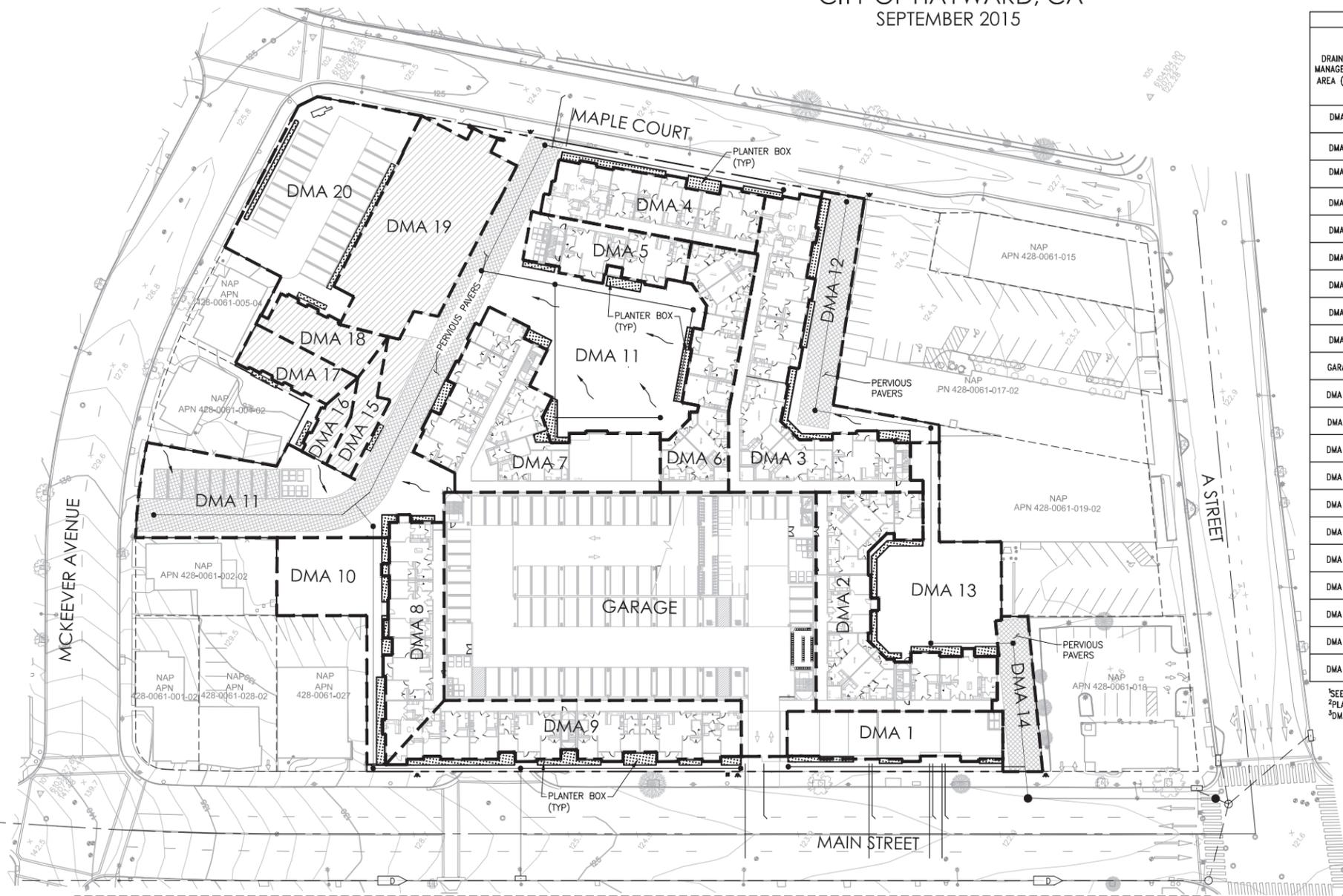
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CONCEPTUAL STORMWATER MANAGEMENT PLAN

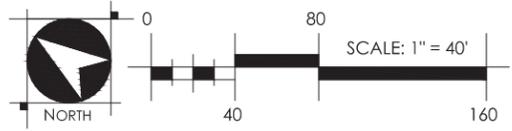
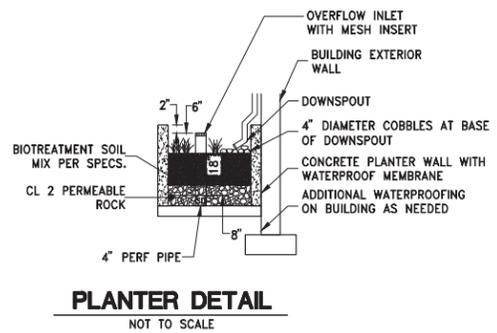
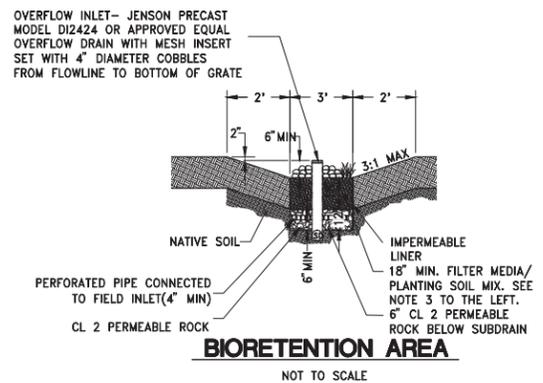
MAPLE & MAIN APARTMENTS

CITY OF HAYWARD, CA
SEPTEMBER 2015



DRAINAGE MANAGEMENT AREA (DMA)	IMPERVIOUS AREA			PERVIOUS AREA			TOTAL DRAINAGE AREA (SF)	REQUIRED TREATMENT AREA (SF) ¹	TREATMENT TYPE	DEPTH OF STORAGE
	PAVEMENT (SF)	ROOF (SF)	TOTAL IMPERVIOUS (SF)	PERVIOUS PAVERS (SF)	LANDSCAPE (SF)	TOTAL PERVIOUS (SF)				
DMA 1	-	4,240	4,240	-	-	-	4,240	126	PLANTER	6.0"
DMA 2	-	8,876	8,876	-	-	-	8,876	264	PLANTER	6.0"
DMA 3	-	9,876	9,876	-	-	-	9,876	294	PLANTER	6.0"
DMA 4	-	5,078	5,078	-	-	-	5,078	151	PLANTER	6.0"
DMA 5	-	3,059	3,059	-	-	-	3,059	91	PLANTER	6.0"
DMA 6	-	5,501	5,501	-	-	-	5,501	164	PLANTER	6.0"
DMA 7	-	8,791	8,791	-	-	-	8,791	262	PLANTER	6.0"
DMA 8	-	5,863	5,863	-	-	-	5,863	175	PLANTER	6.0"
DMA 9	-	7,699	7,699	-	-	-	7,699	229	PLANTER	6.0"
GARAGE	-	33,192	33,192	-	-	-	33,192	987	PLANTER ²	6.0"
DMA 10	1,174	-	1,174	-	4,113	4,113	5,287	-	SELF-TREATING	-
DMA 11	4,314	-	4,314	6,118	8,053	14,171	18,485	-	SELF-RETAINING ³	-
DMA 12	-	-	-	2,993	2,412	5,405	5,405	-	SELF-RETAINING ³	-
DMA 13	1,742	-	1,742	-	5,188	5,188	6,930	-	SELF-TREATING	-
DMA 14	-	-	-	1,961	347	2,308	2,308	-	SELF-RETAINING ³	-
DMA 15	-	1,770	1,770	-	-	-	1,770	55	PLANTER	6.0"
DMA 16	-	1,620	1,620	-	-	-	1,620	50	PLANTER	6.0"
DMA 17	-	1,790	1,790	-	-	-	1,790	55	PLANTER	6.0"
DMA 18	-	1,940	1,940	-	-	-	1,940	60	PLANTER	6.0"
DMA 19	-	9,000	9,000	-	-	-	9,000	270	PLANTER	6.0"
DMA 20	6,560	-	6,560	-	-	-	6,560	206	BIORETENTION	6.0"

¹SEE CALCULATIONS FOR FLOW-VOLUME BASED SIZING
²PLANTERS FOR GARAGE DRAINAGE TO BE PLACED IN ADJACENT DMAS (ARCHITECT TO INCORPORATE WITH GARAGE ROOF DESIGN)
³DMA IS SELF-RETAINING VIA PERVIOUS PAVERS



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