Appendix G

Preliminary Hydrology & Hydraulic Calculations, n.d.

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Current: OTH 2021-01365
Original: OTH2019-01232

PRELIMINARY

HYDROLOGY & HYDRAULIC CALCULATIONS

LINCOLN COLONY APARTMENTS

898, 900 & 914 WEST LINCOLN AVENUE
ANAHEIM, CA
Revised: 6/11/21
8/26/21

00025

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT SERVICES
APPROVED
WITH CONDITIONS
Cesar Morales, Associate Engineer
9/14/2021, 4:50:11 PM
ANAH-OTH2021-01365
Cesar Morales

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PREPARED UNDER THE SUPERVISION OF:

8-26-21

DAVID C. QUEYREL, RCE 42812 - EXP 3/31/22

JN 19-122

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EXHIBITS

HYDROLOGY MAP EXISTING CONDITION	A
HYDROLOGY MAP PROPOSED CONDITION	B
CARBON CREEK MASTER PLAN	C
DEMOLITION PLAN	D

PURPOSE:

The purpose of this report is to provide an analysis of the impact of the proposed redevelopment of an existing car wash and residential lot into an apartment complex based on Orange County and city of Anaheim design criteria. This report shows the proposed construction will not adversely impact the existing conditions. The project is designed to maintain existing drainage patterns and to drain to existing drainage courses for the project area.

WATERSHED DESCRIPTION:

The property is located at the southwest corner of Lincoln Avenue and Ohio street east of the 5 freeway in the city of Anaheim as part of the Carbon Creek channel watershed. The project is within the city of Anaheim master plan of drainage area 18-6 of basin 18.
The site stands at approximately 0.75 Acres with roughly 96% of the site being impervious. Proposed modifications include demolition of the existing site and removing imperviousness to be only 81% of the overall site. The site will be used as an apartment complex consisting of 41 units.

Currently the site sheet flows to the existing adjacent streets and alley. Lincoln Avenue to the north, Ohio Street to the east and an Alley to the south. Lincoln Avenue drains partially west to Illinois Street and southerly to an existing 12 feet catch basin at Broadway Street. The easterly project frontage on Lincoln Avenue drains easterly to Ohio Street and southerly to a 21-foot catch basin on Ohio Street at Broadway. The Alley in the rear of the property drains west and south and west again to Illinois Street, and south to the aforementioned catch basin at Broadway Street. The storm drain in Broadway Street is city owned and operated and drains in a 48″ RCP west to County drain B01P01 and northwest to the Crescent retarding basin and outlets southwesterly to Coyote Creek and to the San Gabriel River just inland from estuary at the Pacific Ocean. The county storm drain is able to bypass up to 140 cfs for the 10- year event. See attached Exhibit C for the master plan of drainage.

METHODOLOGY:

This report shows that the water generated by the 2, 10, 25- and 100-year storm will not adversely affect the existing conditions based on the increase of permeable surface and control of the peak runoff. For the developed condition, the site is to capture the water and infiltrate it onsite. All capture will be roof drainage that will be tied directly into our drainage system. The parking lot on the first floor is to be graded to sheet flow away from the buildings and out towards the driveway in the event water gets in from other sources.

The site is designed to successfully capture and infiltrate the 2-year storm via a dry well and additional storage pipes. Any overflow greater than the 2-year storm will be pumped towards Lincoln Ave via proposed culverts. The pumps capacity will be designed to mitigate up to the 10-year storm. Anything that goes above the 10-year storm will be captured in the 42” proposed storage pipes and out via an 8” over flow pipe which is to daylight at 145.25’ and exit through the back alley. This drainage path will mimic its original drainage path. No ponding is allowed in the parking lot area.

Both pre and post development flows are calculated and compared to address possible impacts on existing drainage. The drainage from the development will remain the same or within 5% difference. Also, the predeveloped path of drainage will not be altered in the proposed condition.

The predeveloped flow going through the alley will now only be pumped to the front of the street, but ultimately end up going the same course it originally took, towards catch basin #1. As for the second pump, that water will be pumped up towards Lincoln Ave., but will follow the course down Ohio St. and towards catch basin #2.

***NOTE: According to the "Master Plan of Storm Drainage for Carbon Creek Channel" the site has already been planned for development by creating a storm drain capable of mitigating the drainage from the 100 yr storms for this area known as Drainage Basin 18. This along with the site originally should be more than enough justification in letting our design calculations derive from the original existing impervious site as oppose to the vacant lot with minimal vegetation.

SUMMARY:

This report shows that the water generated by the 2, 10, 25- and 100-year storm will not be increased and therefore not adversely affect the existing drainage patterns. Due to the fact that the existing conditions for the car wash property are completely paved and the single-family property converted to multi-family use is also mostly paved the total impermeable surface is actually decreased for the new development. This results in less storage and less flows for the proposed development, showing that the proposed development will not have any impact to existing drainage patterns. Existing and proposed total flow is listed below.

Existing Flow:		Proposed Flow:	
	Q2= 1.5CFS TC= 4-6MIN		Q2= 1.4CFS TC= 5MIN*
	Q10= 2.9CFS TC= 4-6MIN		Q10=2.7CFS TC=5MIN*
	Q25= 3.4CFS TC= 4-6MIN		Q25=3.2CFS TC=5MIN*
	Q100= 4.3CFS TC= 4-6MIN		Q100=4.1CFS TC=5MIN*

*We are using 5 mins for the proposed condition since the run-off captured is all roof run-off that is directed directly into our storm drain system, making our time of concentration a minimum of 5 mins.

Secondary overflow elevation is provided by an 8" storm drain which daylights onto the ally at elev.= 145.25
Lowest floor elevation is 147.00' to allow for a minimum of 1' freeboard.


BUENA PARK
SITE

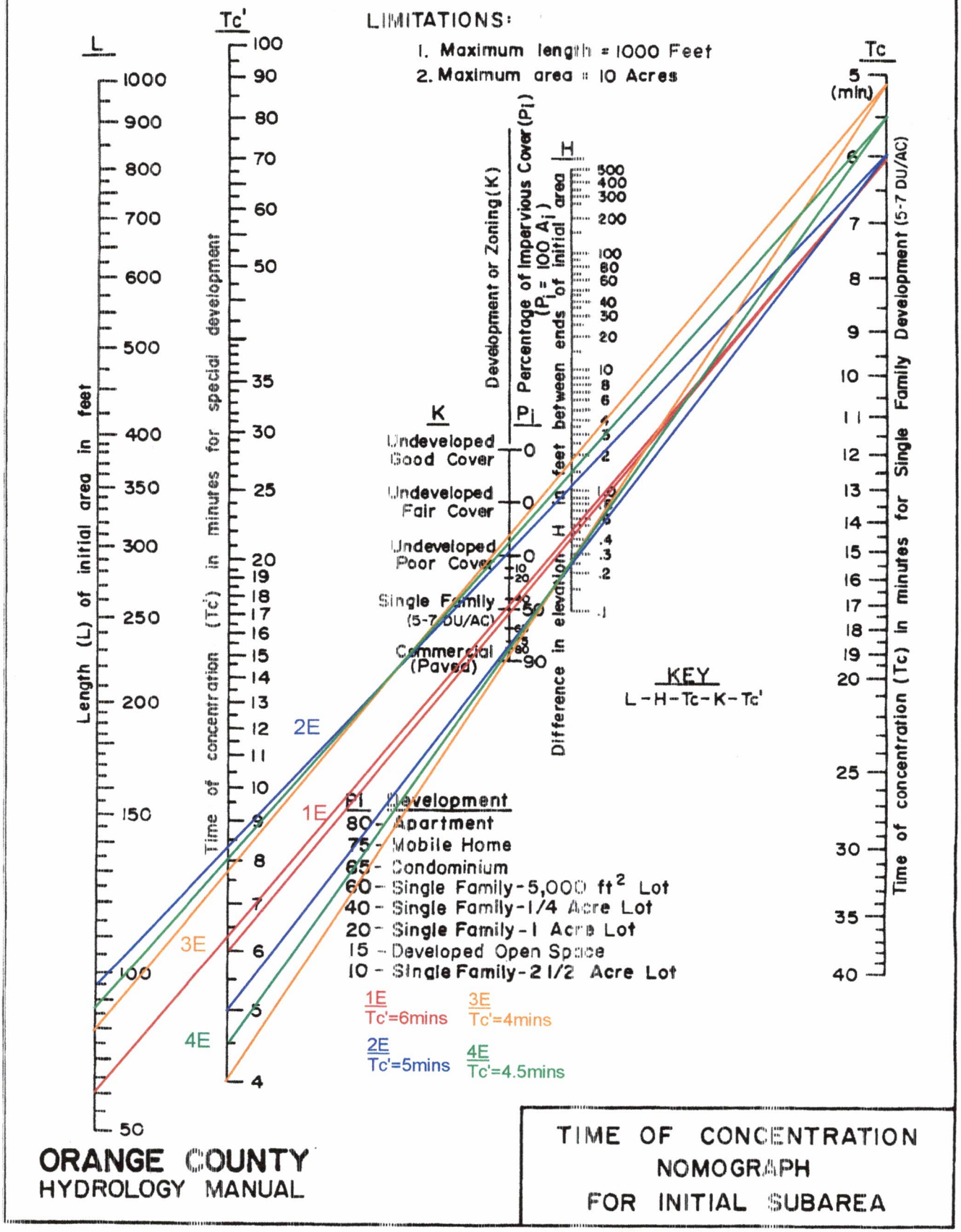
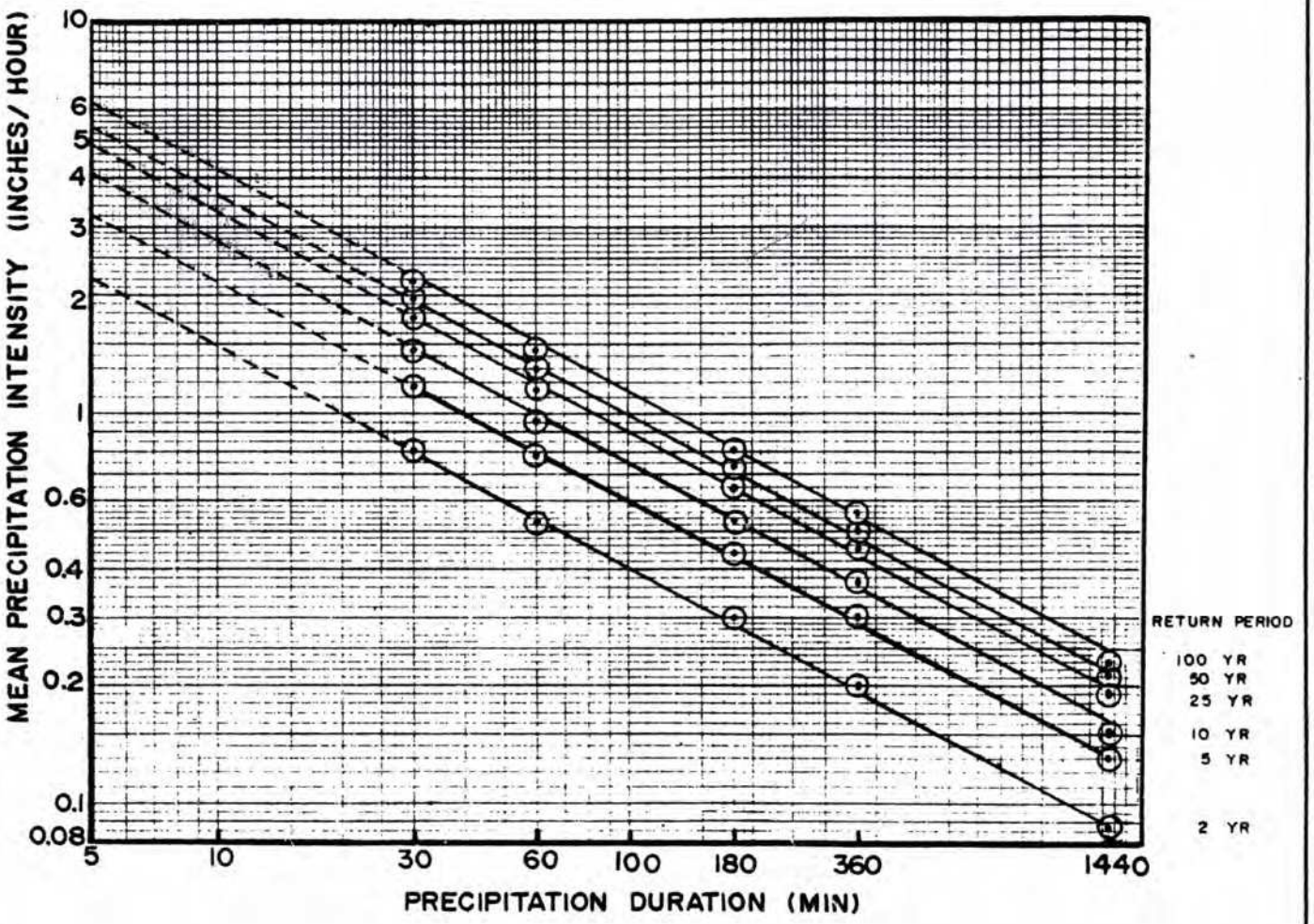

LIMITATIONS:
1. Maximum length = 1000 Feet
2. Maximum area = 10 Acres
L
Length (L) of initial area in feet
Tc'
Time of concentration (Tc') in minutes for special development
Development or Zoning (K)
Percentage of Impervious Cover (Pi)
(Pi = 100 Ai)
H
Difference in elevation H in feet between ends of initial area
K
Undeveloped Good Cover
Undeveloped Fair Cover
Undeveloped Poor Cover
Single Family (5-7 DU/AC)
Commercial (Paved)
Tc
Time of concentration (Tc) in minutes for Single Family Development (5-7 DU/AC)
KEY
L-H-Tc-K-Tc'
2E
1E
3E
4E
Pi Development
80 - Apartment
75 - Mobile Home
65 - Condominium
60 - Single Family - 5,000 ft² Lot
40 - Single Family - 1/4 Acre Lot
20 - Single Family - 1 Acre Lot
15 - Developed Open Space
10 - Single Family - 2 1/2 Acre Lot
1E Tc'=6mins
3E Tc'=4mins
2E Tc'=5mins
4E Tc'=4.5mins
ORANGE COUNTY
HYDROLOGY MANUAL
TIME OF CONCENTRATION
NOMOGRAPH
FOR INITIAL SUBAREA

Figure D-1

Regression Equations: $I(t) = at^b$

(I= Intensity in inches/hour, t= duration in minutes)

Return Frequency (years)	a	b
2	5.702	-0.574
5	7.870	-0.562
10	10.209	-0.573
25	11.995	-0.566
50	13.521	-0.566
100	15.560	-0.573



ORANGE COUNTY
HYDROLOGY MANUAL

MEAN PRECIPITATION INTENSITIES FOR NONMOUNTAINOUS AREAS

Figure B-3

ORANGE COUNTY **HYDROLOGY MANUAL**	**STUDY NAME:** Exist 898,900 AND 914 W. LINCOLN AVE. **2 - YEAR STORM RATIONAL METHOD STUDY**	Calculated by: D.C.Q. Date 6/7/2021 Checked by: D.C.Q. Date 6/7/2021

Concentration Point	Area (Acres)		Soil Type	Dev. Type	T_t min.	T_c min.	I in/hr	F_m in/hr	F_m avg.	Q total	Flow Path Length ft.	Slope ft./ft.	V ft./sec.	Hydraulics and Notes
	Subarea	Total												
1E	**0.08**	**0.08**	**B**	80% IMP		**6.0**	**2.04**	**0.06**	**0.06**	**0.1**	63	0.008		INITIAL AREA
														0.1cfs to Lincoln West
											95	0.008		INITIAL AREA
2E	**0.29**	**0.29**	**B**	90% IMP		**5.0**	**2.26**	**0.03**	**0.03**	**0.6**				0.6 cfs to Lincoln East
											80	0.024		INITIAL AREA
3E	**0.27**	**0.27**	**B**	90% IMP		**4.0**	**2.57**	**0.03**	**0.03**	**0.6**				0.6cfs to Alley West
											88	0.005		INITIAL AREA
4E	**0.11**	**0.11**	**B**	90% IMP		**4.5**	**2.40**	**0.03**	**0.03**	**0.2**				0.2cfs to Alley west

PROP. 2 YR.

ORANGE COUNTY HYDROLOGY MANUAL	STUDY NAME: PROP. 898, 900 AND 914 W. LINCOLN AVE.	Calculated by: D.C.Q.	Date 11/20/2019
	2 - YEAR STORM RATIONAL METHOD STUDY	Checked by: D.C.Q.	Date 11/20/2019

Concentration Point	Area (Acres)		Soil Type	Dev. Type	T_t min.	T_c min.	I in/hr	F_m in/hr	F_m avg.	Q total	Flow Path Length ft.	Slope ft./ft.	V ft./sec.	Hydraulics and Notes
	Subarea	Total												
1A	**0.75**	**0.75**	**B**	78%IMP		**5.0**	**2.20**	**0.08**	**0.08**	**1.4**	ROOF			INITIAL AREA
											DRAIN			1.4CFS TO LINCOLN EAST

ORANGE COUNTY **HYDROLOGY MANUAL**	**STUDY NAME:** Exist 898,900 AND 914 W. LINCOLN AVE. **10 - YEAR STORM RATIONAL METHOD STUDY**	Calculated by: D.C.Q. Date 6/7/2021 Checked by: D.C.Q. Date 6/7/2021

Concentration Point	Area (Acres)		Soil Type	Dev. Type	T_t min.	T_c min.	I in/hr	F_m in/hr	F_m avg.	Q total	Flow Path Length ft.	Slope ft./ft.	V ft./sec.	Hydraulics and Notes
	Subarea	Total												
1E	**0.08**	**0.08**	**B**	80% IMP		**6.0**	**3.66**	**0.06**	**0.06**	**0.3**	63	0.008		INITIAL AREA
														0.3cfs to Lincoln West
											95	0.008		INITIAL AREA
2E	**0.29**	**0.29**	**B**	90% IMP		**5.0**	**4.06**	**0.03**	**0.03**	**1.1**				1.1 cfs to Lincoln East
											80	0.024		INITIAL AREA
3E	**0.27**	**0.27**	**B**	90% IMP		**4.0**	**4.61**	**0.03**	**0.03**	**1.1**				1.1 cfs to Alley West
											88	0.005		INITIAL AREA
4E	**0.11**	**0.11**	**B**	90% IMP		**4.5**	**4.31**	**0.03**	**0.03**	**0.4**				0.4cfs to Alley west

PROP. 10 YR.

ORANGE COUNTY HYDROLOGY MANUAL	STUDY NAME: PROP. 898, 900 AND 914 W. LINCOLN AVE.	Calculated by: D.C.Q.	Date 11/20/2019
	10 - YEAR STORM RATIONAL METHOD STUDY	Checked by: D.C.Q.	Date 11/20/2019

Concentration Point	Area (Acres)		Soil Type	Dev. Type	T_t min.	T_c min.	I in/hr	F_m in/hr	F_m avg.	Q total	Flow Path Length ft.	Slope ft./ft.	V ft./sec.	Hydraulics and Notes
	Subarea	Total												
1A	0.75	0.75	B	78%IMP		5.0	4.10	0.08	0.08	2.7	ROOF			INITIAL AREA
											DRAIN			2.7CFS TO LINCOLN EAST

ORANGE COUNTY **HYDROLOGY MANUAL**	**STUDY NAME:** Exist 898,900 AND 914 W. LINCOLN AVE. **25 - YEAR STORM RATIONAL METHOD STUDY**	Calculated by: D.C.Q. Date 6/7/2021 Checked by: D.C.Q. Date 6/7/2021

Concentration Point	Area (Acres) Subarea	Area (Acres) Total	Soil Type	Dev. Type	T_t min.	T_c min.	I in/hr	F_m in/hr	F_m avg.	Q total	Flow Path Length ft.	Slope ft./ft.	V ft./sec.	Hydraulics and Notes
1E	**0.08**	**0.08**	**B**	80% IMP		**6.0**	**4.35**	**0.06**	**0.06**	**0.3**	63	0.008		INITIAL AREA
														0.3cfs to Lincoln West
											95	0.008		INITIAL AREA
2E	**0.29**	**0.29**	**B**	90% IMP		**5.0**	**4.82**	**0.03**	**0.03**	**1.3**				1.3 cfs to Lincoln East
											80	0.024		INITIAL AREA
3E	**0.27**	**0.27**	**B**	90% IMP		**4.0**	**5.47**	**0.03**	**0.03**	**1.3**				1.3 cfs to Alley West
											88	0.005		INITIAL AREA
4E	**0.11**	**0.11**	**B**	90% IMP		**4.5**	**5.12**	**0.03**	**0.03**	**0.5**				0.5cfs to Alley west

PROP. 25 YR.

ORANGE COUNTY HYDROLOGY MANUAL	STUDY NAME: PROP. 898, 900 AND 914 W. LINCOLN AVE.	Calculated by: D.C.Q.	Date 11/20/2019
	25 - YEAR STORM RATIONAL METHOD STUDY	Checked by: D.C.Q.	Date 11/20/2019

Concentration Point	Area (Acres)		Soil Type	Dev. Type	T_t min.	T_c min.	I in/hr	F_m in/hr	F_m avg.	Q total	Flow Path Length ft.	Slope ft./ft.	V ft./sec.	Hydraulics and Notes
	Subarea	Total												
1A	0.75	0.75	B	78%IMP		5.0	4.80	0.08	0.08	3.2	ROOF			INITIAL AREA
											DRAIN			3.2CFS TO LINCOLN EAST

ORANGE COUNTY **HYDROLOGY MANUAL**	**STUDY NAME:** Exist 898,900 AND 914 W. LINCOLN AVE. **100 - YEAR STORM RATIONAL METHOD STUDY**	Calculated by: D.C.Q. Date 6/7/2021 Checked by: D.C.Q. Date 6/7/2021

Concentration Point	Area (Acres)		Soil Type	Dev. Type	T_t min.	T_c min.	I in/hr	F_m in/hr	F_m avg.	Q total	Flow Path Length ft.	Slope ft./ft.	V ft./sec.	Hydraulics and Notes
	Subarea	Total												
1E	**0.08**	**0.08**	**B**	80% IMP		**6.0**	**5.57**	**0.06**	**0.06**	**0.4**	63	0.008		INITIAL AREA
														0.4 cfs to Lincoln West
											95	0.008		INITIAL AREA
2E	**0.29**	**0.29**	**B**	90% IMP		**5.0**	**6.19**	**0.03**	**0.03**	**1.6**				1.6 cfs to Lincoln East
											80	0.024		INITIAL AREA
3E	**0.27**	**0.27**	**B**	90% IMP		**4.0**	**7.03**	**0.03**	**0.03**	**1.7**				1.7 cfs to Alley West
											88	0.005		INITIAL AREA
4E	**0.11**	**0.11**	**B**	90% IMP		**4.5**	**6.57**	**0.03**	**0.03**	**0.6**				0.6 cfs to Alley west

PROP. 100 YR

ORANGE COUNTY HYDROLOGY MANUAL	STUDY NAME: PROP. 898, 900 AND 914 W. LINCOLN AVE.	Calculated by: D.C.Q. Date 11/20/2019
	100 - YEAR STORM RATIONAL METHOD STUDY	Checked by: D.C.Q. Date 11/20/2019

Concentration Point	Area (Acres)		Soil Type	Dev. Type	T_t min.	T_c min.	I in/hr	F_m in/hr	F_m avg.	Q total	Flow Path Length ft.	Slope ft./ft.	V ft./sec.	Hydraulics and Notes
	Subarea	Total												
1A	**0.75**	**0.75**	**B**	78%IMP		**5.0**	**6.19**	**0.08**	**0.08**	**4.1**	ROOF			INITIAL AREA
											DRAIN			4.1CFS TO LINCOLN EAST

Calculation analysis:

An analysis of the existing flow area indicates that the existing area 1E flows to Lincoln Ave. and west to Illinois St. and south to an existing catch basin at the north east Corner of Illinois St. And Broadway, hereafter referred to as catch basin #1.
Area 2E flows to Lincoln Ave. and east to Ohio St. and south on Ohio St. to an existing catch basin at the north west Corner of Ohio st. And Broadway, hereafter referred to as catch basin #2.
Areas 3E and 4E drain to the alley and continuing within the alleys west and south then west again to Illinois St. And south to catch basin 1.

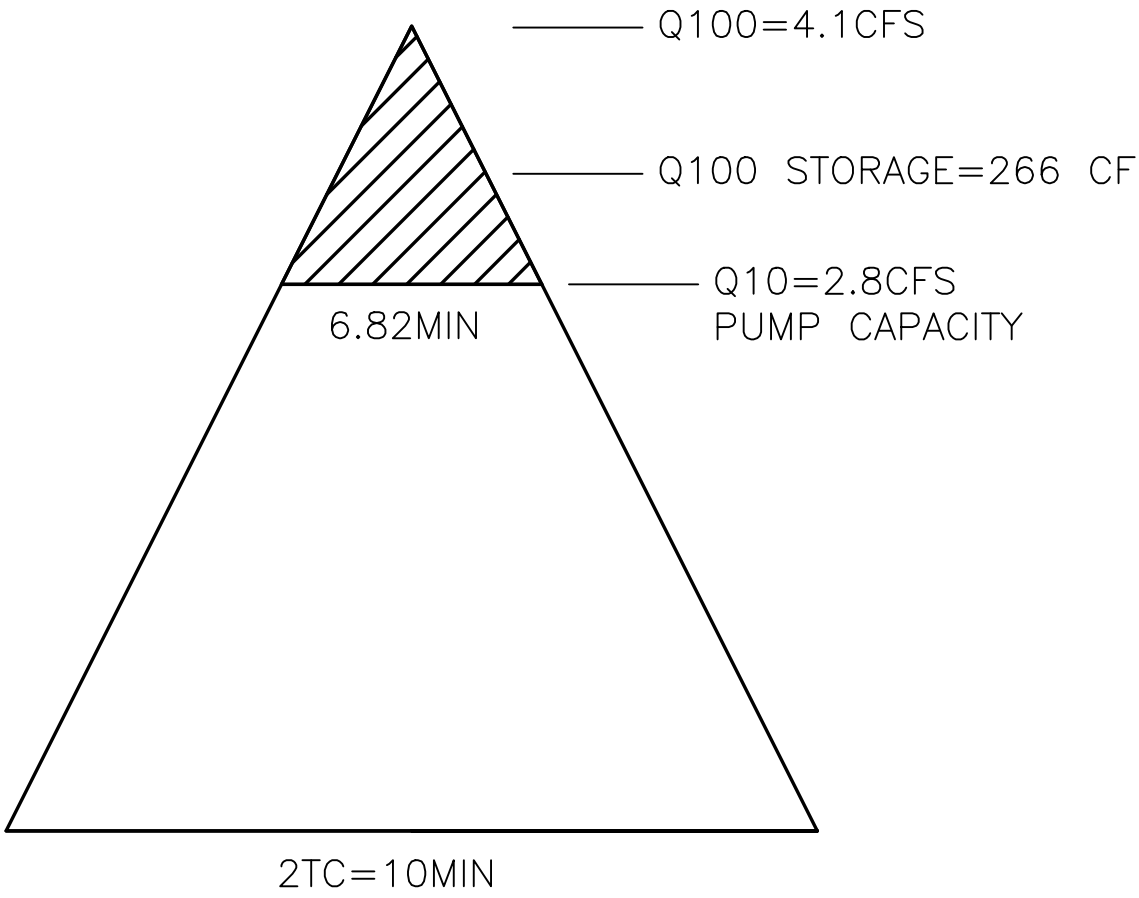
Therefor to mimic pre-project conditions pump 1 will be designed to pump the q10 equivalent to existing condition and pump 2 will be designed to pump the equivalent of the existing condition. The remainder of the 25- and 100-year storm will be designed to be detained in the proposed storage pipes and allowed to overflow out via our secondary overflow system, an 8" storm drain which outlets at grade to the alley on the south side of the project. The detention pipe is sized in accordance with the small area orange county hydrograph method.

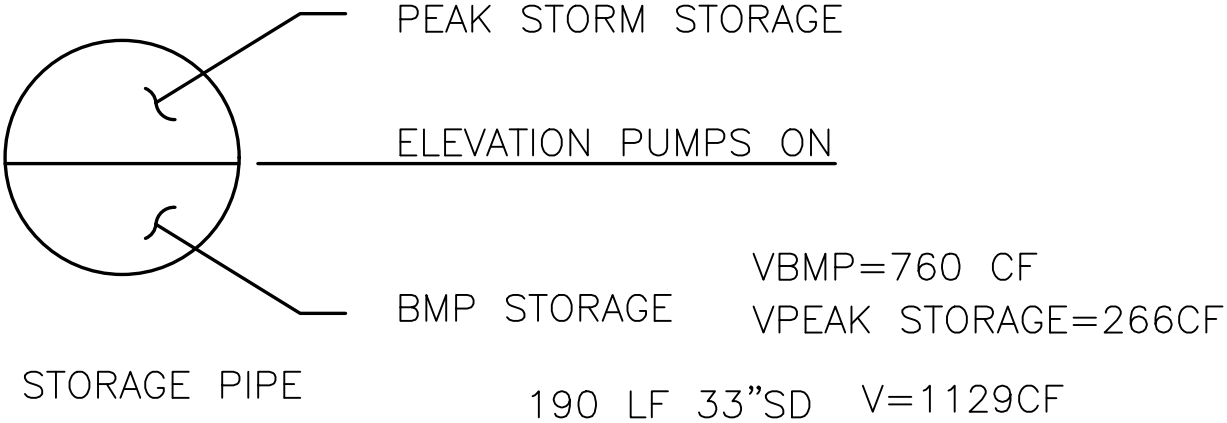
Q to catch basin 1= 1.6 cfs

Q to catch basin 2= 1.1cfs

See attached small area analysis

SMALL AREA HYDROGRAPH





BMP STORAGE

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ANACAL ENGINEERING Civil Engineering and Land Surveying Anaheim

BY: DAVID C. QUEYREL	LOCATION: LINCOLN COLONY APARTMENTS SITE ADDRESS: 898, 900 & 914 W LINCOLN AVE
DATE: 06-10-21	
SCALE: NA	OWNER:
JOB NO. 19-122	SHEET NO. 1 OF 1

Exhibit A

City of Anaheim

Hydrology Map Existing Condition

For: Lincoln Colony Apartments

APN: 036-112-03 & 036-112-32

SCALE: 1" = 20'

* INDICATES ON-SITE DETENTION OF PEAK RUNOFF

EXISTING FLOW
Q2= 0.1CFS
Q10= 0.3CFS
Q25= 0.3CFS
Q100= 0.4CFS

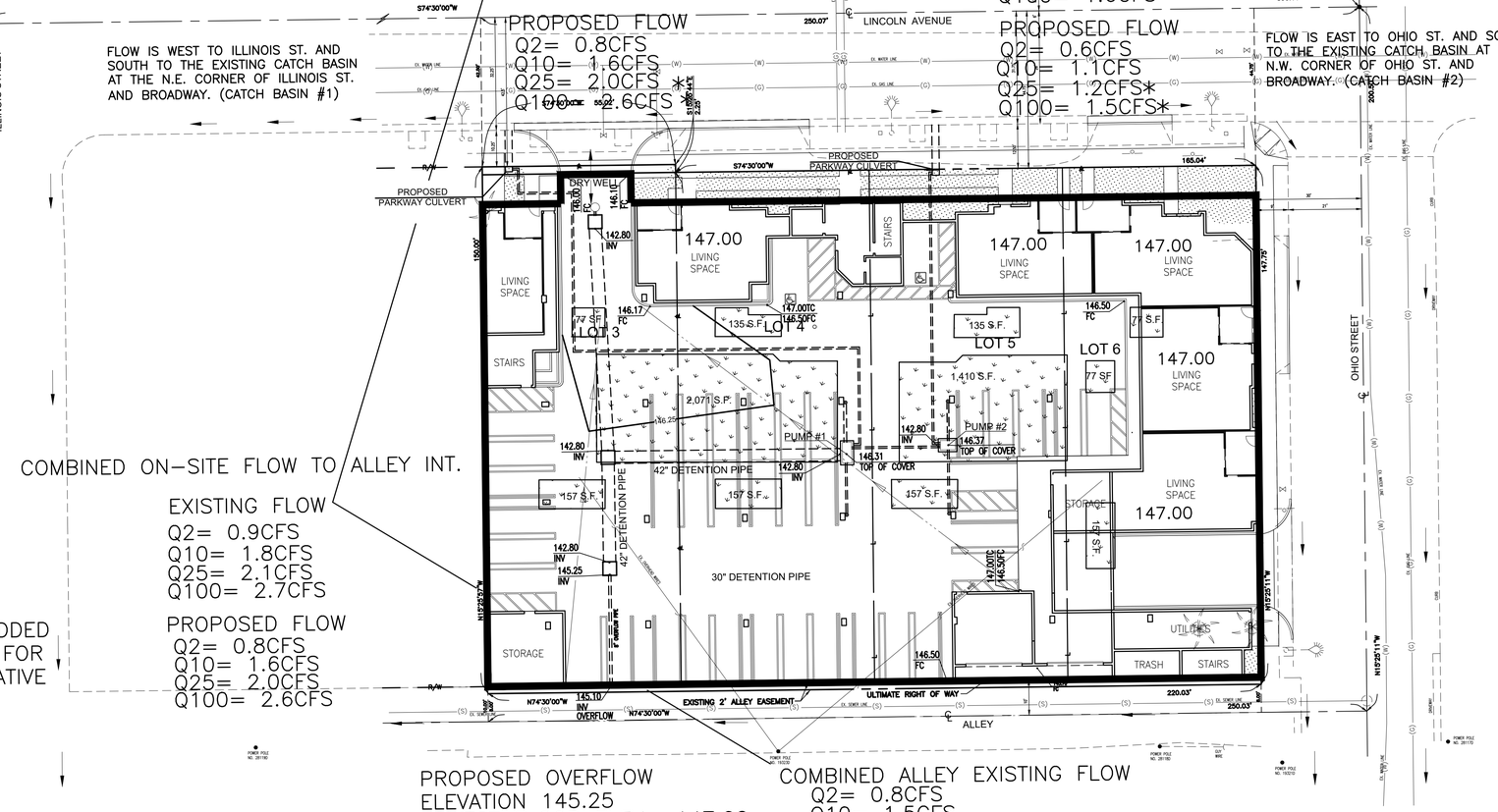
PROPOSED FLOW
Q2= 0.8CFS
Q10= 1.6CFS
Q25= 2.0CFS *
Q100= 2.6CFS *

EXISTING FLOW
Q2= 0.6CFS
Q10= 1.1CFS
Q25= 1.3CFS
Q100= 1.6CFS

PROPOSED FLOW
Q2= 0.6CFS
Q10= 1.1CFS
Q25= 1.2CFS*
Q100= 1.5CFS*

FLOW IS WEST TO ILLINOIS ST. AND SOUTH TO THE EXISTING CATCH BASIN AT THE N.E. CORNER OF ILLINOIS ST. AND BROADWAY. (CATCH BASIN #1)

FLOW IS EAST TO OHIO ST. AND SOUTH TO THE EXISTING CATCH BASIN AT THE N.W. CORNER OF OHIO ST. AND BROADWAY. (CATCH BASIN #2)



COMBINED ON-SITE FLOW TO ALLEY INT.

EXISTING FLOW
Q2= 0.9CFS
Q10= 1.8CFS
Q25= 2.1CFS
Q100= 2.7CFS

PROPOSED FLOW
Q2= 0.8CFS
Q10= 1.6CFS
Q25= 2.0CFS
Q100= 2.6CFS

NOTE:IGNORED CONFLUENCE, ADDED FLOW DIRECTLY FOR MORE CONSERVATIVE APPROACH.

PROPOSED OVERFLOW ELEVATION 145.25
LOWEST FLOOR ELEV= 147.00

COMBINED ALLEY EXISTING FLOW
Q2= 0.8CFS
Q10= 1.5CFS
Q25= 1.8CFS
Q100=2.3CFS

LEGEND

AREA DESIGNATION — A1
ACRES — 1.30

L=250'—FLOW PATH LENGTH

AREA BOUNDARY

SUB-AREA BOUNDARY

— INDICATES ABOVE GRADE GREEN ROOF AREA

— INDICATES INFILTRATION TRENCH

REVISIONS

NO.	INIT.	DATE	DESCRIPTION	APP'D	DATE

BENCH MARK:

BENCHMARK NO. 4A-27

BRASS CAP MARKED C OF A BM, IN THE TOP OF CURB AT THE NORTHEAST BEGIN OF CURB RETURN.

ELEVATION: 147.87' (NAVD88)

JOB NO. 19-122-GP

DATE 08/25/21
SCALE 1" = 20'
DRAWN V. F. L.
CHECKED D. C. Q.

PREPARED BY: AEC NO. 19-122
ANACAL ENGINEERING CO.
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DAVID C. QUEYREL 42812 3-31-22
CIVIL ENGINEER LICENSE NO. EXP. DATE

PROPOSED HYDROLOGY PLAN

SITE ADDRESS: 898, 900 & 914 W LINCOLN AVE

GRA X

SHEET 1 OF 1

SCALE: AS NOTED | DRAWN BY: V. F. L. | CHECKED BY: D. C. Q.

CITY OF ANAHEIM

FOR CITY USE ONLY

Exhibit B

City of Anaheim

Hydrology Map Proposed Condition

For: Lincoln Colony Apartments

APN: 036-112-03 & 036-112-32

SCALE: 1" = 20'

* INDICATES ON-SITE DETENTION OF PEAK RUNOFF

EXISTING FLOW
Q2= 0.1CFS
Q10= 0.3CFS
Q25= 0.3CFS
Q100= 0.4CFS

PROPOSED FLOW
Q2= 0.8CFS
Q10= 1.6CFS
Q25= 2.0CFS *
Q100= 2.6CFS *

FLOW IS WEST TO ILLINOIS ST. AND SOUTH TO THE EXISTING CATCH BASIN AT THE N.E. CORNER OF ILLINOIS ST. AND BROADWAY. (CATCH BASIN #1)

EXISTING FLOW
Q2= 0.6CFS
Q10= 1.1CFS
Q25= 1.3CFS
Q100= 1.6CFS

PROPOSED FLOW
Q2= 0.6CFS
Q10= 1.1CFS
Q25= 1.2CFS*
Q100= 1.5CFS*

FLOW IS EAST TO OHIO ST. AND SOUTH TO THE EXISTING CATCH BASIN AT THE N.W. CORNER OF OHIO ST. AND BROADWAY. (CATCH BASIN #2)

COMBINED ON-SITE FLOW TO ALLEY INT.

EXISTING FLOW
Q2= 0.9CFS
Q10= 1.8CFS
Q25= 2.1CFS
Q100= 2.7CFS

PROPOSED FLOW
Q2= 0.8CFS
Q10= 1.6CFS
Q25= 2.0CFS
Q100= 2.6CFS

NOTE:IGNORED CONFLUENCE, ADDED FLOW DIRECTLY FOR MORE CONSERVATIVE APPROACH.

PROPOSED OVERFLOW ELEVATION 145.25
LOWEST FLOOR ELEV= 147.00

COMBINED ALLEY EXISTING FLOW
Q2= 0.8CFS
Q10= 1.5CFS
Q25= 1.8CFS
Q100=2.3CFS

LEGEND

AREA DESIGNATION — A1
ACRES — 1.30

L=250'—FLOW PATH LENGTH

AREA BOUNDARY

SUB-AREA BOUNDARY

— INDICATES ABOVE GRADE GREEN ROOF AREA

— INDICATES INFILTRATION TRENCH

REVISIONS					
NO.	INIT.	DATE	DESCRIPTION	APP'D	DATE

BENCH MARK:

BENCHMARK NO. 4A-27

BRASS CAP MARKED C OF A BM, IN THE TOP OF CURB AT THE NORTHEAST BEGIN OF CURB RETURN.

ELEVATION: 147.87' (NAVD88)

JOB NO. 19-122-GP

DATE 06-10-21
SCALE 1" = 20'
DRAWN V. F. L.
CHECKED D. C. Q.

PREPARED BY: AEC NO. 19-122
ANACAL ENGINEERING CO.
CIVIL ENGINEERING & LAND SURVEYING
1211 NORTH TUSTIN AVENUE
ANAHEIM, CALIFORNIA 92807
PHONE: 714-774-1763 FAX: 714-774-4690
E-MAIL ADDRESS: ANACAL@ANACALENGINEERING.COM

DAVID C. QUEYREL 42812 3-31-22
CIVIL ENGINEER LICENSE NO. EXP. DATE

PROPOSED HYDROLOGY PLAN

SITE ADDRESS: 898, 900 & 914 W LINCOLN AVE

GRA X

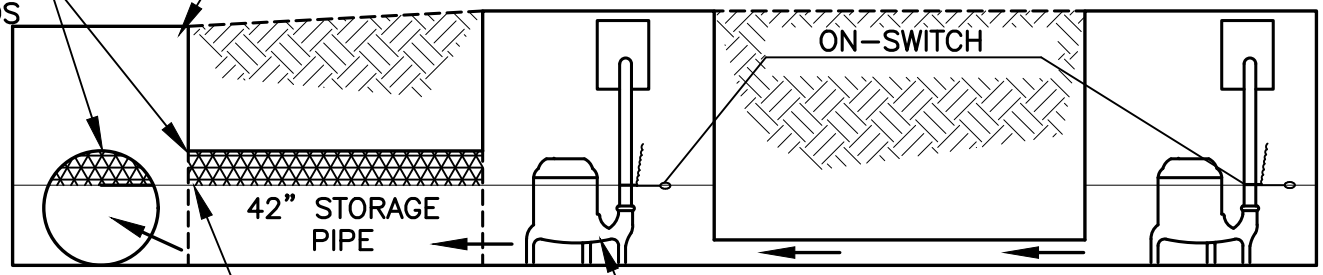
SHEET 1 OF 1

SCALE: AS NOTED | DRAWN BY: V. F. L. | CHECKED BY: D. C. Q.

CITY OF ANAHEIM

FOR CITY USE ONLY

CROSS SECTION OF
PUMP SYSTEM AND STORAGE PIPES



DCV =1,338CF.

MAXWELL DRY-WELL STORAGE	=302 CF
DCV NEEDED TO CAPTURE	=1,036 CF
ADDITIONAL STORAGE PROVIDE BY PIPES	=1,500 CF
REMAINING STORAGE AFTER DCV CAPTURE	=464 CF
100 YR STORAGE NEEDED TO CAPTURE	=266 CF

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E-MAIL ADDRESS:
anacal@anacalengineering.com

ANACAL ENGINEERING Civil Engineering and Land Surveying Anaheim

BY: DAVID C. QUEYREL	LOCATION: LINCOLN COLONY APARTMENTS SITE ADDRESS: 898, 900 & 914 W LINCOLN AVE
DATE: 06-10-21	
SCALE: NA	OWNER:
JOB NO. 19-122	SHEET NO. 1 OF 1

Exhibit C

City of Anaheim

Carbon Creek Master Plan

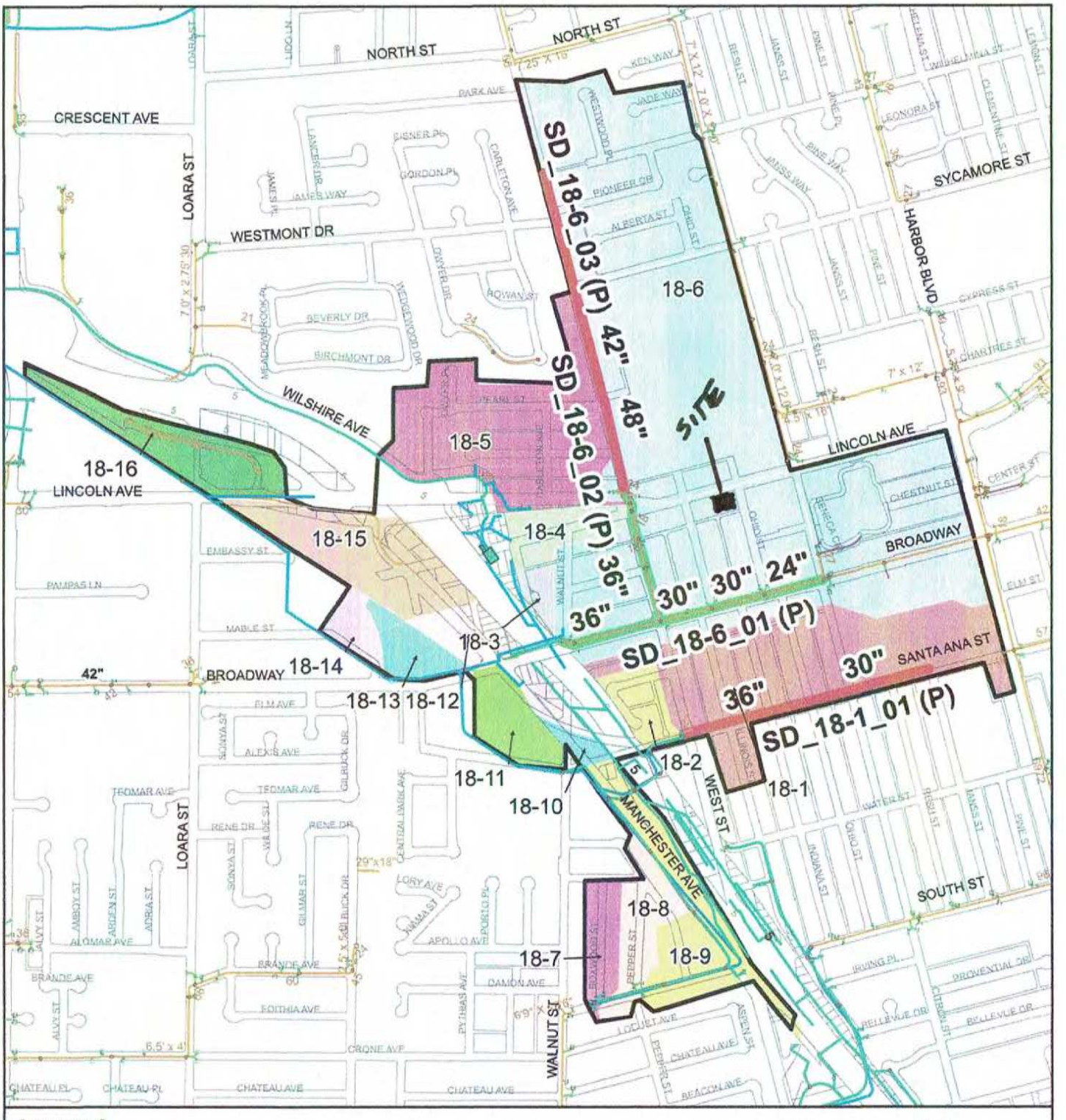
For: Lincoln Colony Apartments

APN: 036-112-03 & 036-112-32

CITY OF ANAHEIM

Master Plan of Storm Drainage for Carbon Creek Channel Tributary Area

SEPTEMBER 2010
VOLUME 1



Legend

- Anaheim City Limits
- Street Right of Way
- 5-1 Drainage Area

Proposed Storm Drains

- Priority 1
- Priority 2
- Priority 3

Existing Storm Drains

- 30 Anaheim (Pipe size in inches)
- County
- Caltrans
- Private
- Lateral

SD 1-1_01 (P) Proposed Pipeline ID
Drainage Area_Line No. (Proposed)

Note: Priority 2 proposed improvements will parallel existing storm drains unless otherwise noted

N

0 500 1,000 Feet

1 inch equals 1,000 feet

Figure 15
Drainage Basin 18

Master Plan of Storm Drainage for Carbon Creek Channel Tributary Area

CH2MHILL

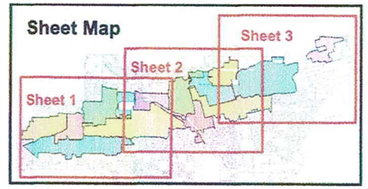
Legend

- Drainage Basin
- 1-1 Drainage Area
- Anaheim City Limits
- Street Right of Way

Existing Storm Drains

- 30 Anaheim (Pipe size in inches)
- County
- Caltrans
- Private
- Lateral

Sheet Map



N

0 1,000 2,000 Feet

1 inch equals 2,000 feet

Figure 2
Drainage Areas

Master Plan of Storm Drainage for
Carbon Creek Channel Tributary Area

Sheet 2 of 3

CH2MHILL

15. Drainage Basin 18

Drainage Basin 18 drains approximately 310 acres, and is generally bounded by North Street on the north, Harbor Boulevard on the east, South Street on the south, and the I-5 freeway on the west. As shown in Figure 15, drainage basins are further divided into drainage areas depending on the existing flow patterns and storm drain outlets. Basin 18 consists of 16 Areas, 18-1 through 18-16. Area 18-6 has existing storm drain which outlets to a Caltrans facility at the I-5 Freeway. Areas 18-1 through 18-5 and 18-7 through 18-16 are small areas which drain directly into Caltrans and County facilities.

15.1 Hydrologic Analysis

The hydrologic analysis for Basin 18 was performed in accordance with the hydrologic criteria outlined in Chapter 3 and is included in Appendix C. The hydrology map for Basin 18 is included in Appendix B. The following table highlights the flow rates at key drainage nodes for Areas within Basin 18 that have street flow and/or existing storm drains. The table shows associated drainage areas and flows for 10-, 25-, and 100-year storm events.

Table 23 – Basin 18 Summary of Hydrology

Drainage Area	Node	Location	Drainage Area (ac)	10-Year Flow (cfs)	25-Year Flow (cfs)	100-Year Flow (cfs)
18-1	18004	Santa Ana St and West St	38	55	65	85
18-6	18503	Broadway and Citron St	30	55	70	90
18-6	18506	Broadway and West St	137	125	155	210
18-6	18507	Broadway and the I-5 freeway	149	140	175	235

15.2 Analysis of Existing Improvements

Storm water within Basin 18 is conveyed through a combination of existing storm drains and street flow. One area, Area 18-6, has an existing storm drain. The storm drain begins at Broadway and Harbor Boulevard and drains west to the I-5 freeway. This drain varies in size from a 42-inch to 48-inch RCP and has a capacity of 90 cfs which is equivalent to 65 percent of a 10-year storm.

15.3 Proposed Improvements

In order to satisfy the City's requirement of conveying the 10-year storm event in the storm drains, and also to satisfy the flooded width criteria, the following improvements are recommended. To satisfy the City's flooded width criteria in Area 18-1, 1805 feet of 30-inch to 36-inch RCP is recommended in Santa Ana Street.

For Area 18-6, 1,880 feet of 24-inch to 36-inch parallel RCP is recommended in Broadway Avenue. . In West Street, 870 feet of 36-inch parallel RCP is recommended. Additionally, an extension of the existing storm drain in West Street is proposed consisting of 2,395 feet of 42-inch to 48-inch RCP. The proposed improvements for Basin 18 are shown in Figure 15, the hydraulic calculations are included in Appendix E and the street flow calculations in Appendix F.

15.4 Cost Estimates

The estimated costs summarized in Table 24 include costs for construction, engineering, design, surveying, and construction management. Pipe costs are per linear foot of pipe and have been increased to include excavation, shoring, bedding, backfill, compaction, removal of excess material, and trench resurfacing. The detailed cost estimates for Basin 18 are included in Appendix A.

Since the construction of the recommended facilities will be spread out over a number of years, the total cost of master plan implementation will be subject to future construction cost increases. Therefore, it is recommended that the funding programs established for implementation of the Master Plan of Storm Drainage make provisions for the increased cost of deferred construction. Inflation factors should be applied to reflect a specific year's total cost over the 2010 total costs. Summarized in Table 24 are the construction cost estimates by project location for Areas 18-1 and 18-6 in Basin 18.

Table 24 – Basin 18 Cost Estimate

Area	Storm Drain ID	Street	Type of Facility	Length (feet)	Estimated Cost (2010 Dollars)	Area Total
18-1	SD 18-1_01 (P)	Santa Ana St.	New 30-inch/36-inch RCP	1,805	$1,818,000	$1,818,000
18-6	SD 18-6_01 (P)	Broadway St.	Parallel 24-inch/30-inch/36-inch RCP	1,885	$1,770,000	
18-6	SD 18-6_02 (P)	West St.	Parallel 36-inch RCP	870	$ 920,000	
18-6	SD 18-6_03 (P)	West St.	New 42-inch/48-inch RCP	2,395	$3,109,000	$5,799,000
TOTAL FOR BASIN 18					$7,617,000	$7,617,000

Exhibit D

City of Anaheim

Demolition Plan

Site: Lincoln Colony Apartments

APN: 036-112-03 & 036-112-32

GENERAL DEMOLITION NOTES

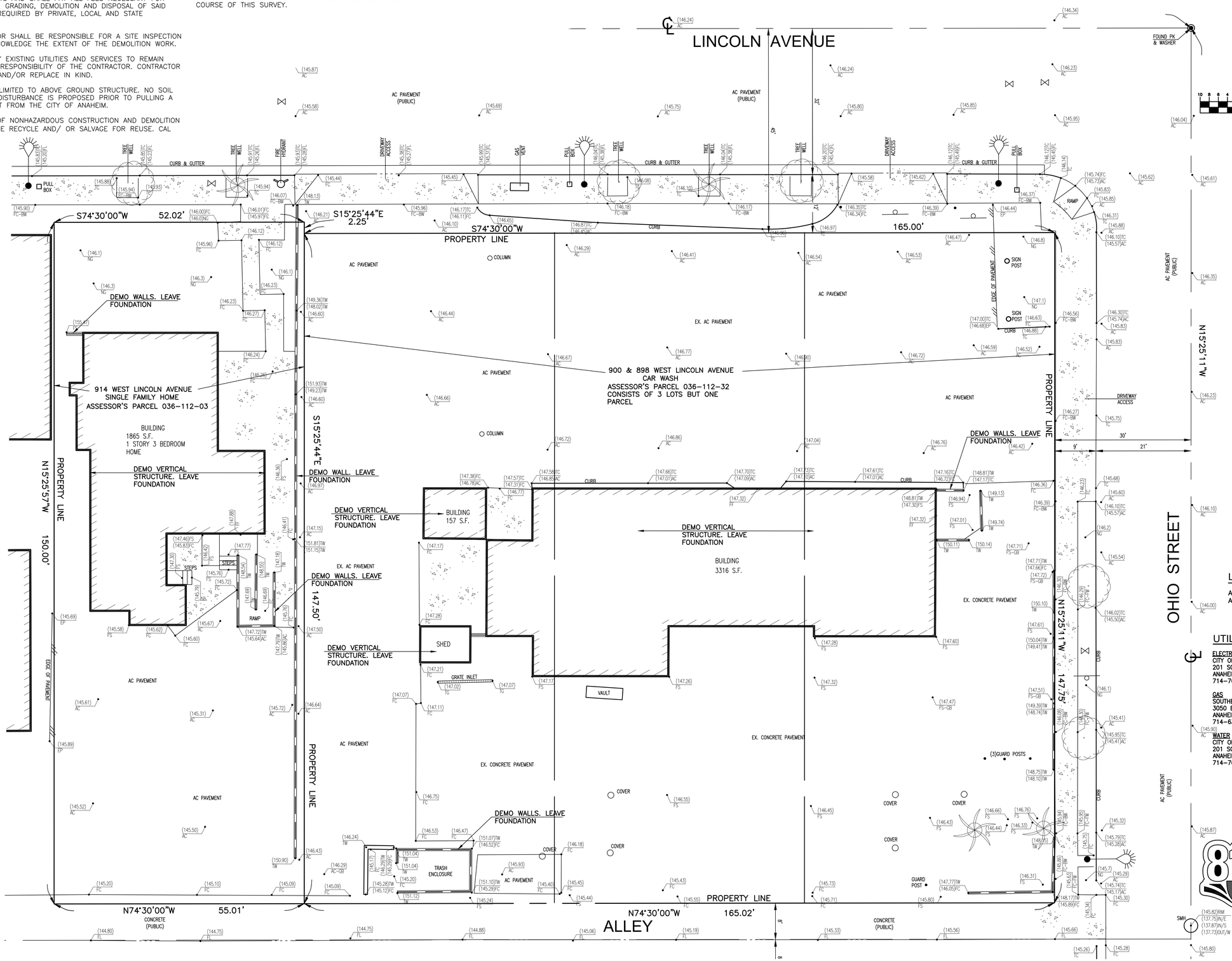
1. CONTRACTOR TO CLEAR PROJECT SITE AREA WITHIN THE CONFINES OF THE DEMOLITION LIMIT LINE. THE CONTRACTOR SHALL DEMOLISH AND REMOVE FROM THE SITE ALL VERTICAL STRUCTURES AND ABOVE GROUND UTILITIES AS NOTED ON THE PLAN.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY AND ALL PERMITS AND SHALL PAY ALL FEES NECESSARY FOR ENCROACHMENT, GRADING, DEMOLITION AND DISPOSAL OF SAID MATERIALS AS REQUIRED BY PRIVATE, LOCAL AND STATE JURISDICTIONS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR A SITE INSPECTION TO FULLY ACKNOWLEDGE THE EXTENT OF THE DEMOLITION WORK.
4. DAMAGE TO ANY EXISTING UTILITIES AND SERVICES TO REMAIN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL REPAIR AND/OR REPLACE IN KIND.
5. DEMOLITION IS LIMITED TO ABOVE GROUND STRUCTURE. NO SOIL REMOVALS OR DISTURBANCE IS PROPOSED PRIOR TO PULLING A GRADING PERMIT FROM THE CITY OF ANAHEIM.
6. 65% MIMINUM OF NONHAZARDOUS CONSTRUCTION AND DEMOLITION WASTE SHALL BE RECYCLE AND/ OR SALVAGE FOR REUSE. CAL GREEN 4.408.1
7. ALL UTILITY LINES SHALL BE PROTECTED IN PLACE OR CAPPED AS REQUIRED FOR DEMOLITION OF THE ABOVE GROUND STRUCTURE.
8. CONTACT UTILITY PROVIDER FOR INFORMATION REGARDING CAPPING AND REMOVAL OF ANY EXISTING UTILITY SERVICES AS REQUIRED BEFORE DEMOLITION.
9. UTILITY SERVICES WERE NOT VISIBLE TO SURVEYOR DURING THE COURSE OF THIS SURVEY.

JOB SITE CONDITIONS

CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL.

PURPOSE STATEMENT

THE PURPOSE OF THIS PLAN IS TO PERMIT THE DEMOLITION OF ABOVE GROUND VERTICAL STRUCTURES IN ACCORDANCE WITH THE CITY OF ANAHEIM AND STATE ORDINANCES. NO SOIL DISTURBANCE IS PROPOSED.



GRAPHIC SCALE

10 8 6 4 2 0 5 10 20 30

(IN FEET)

1 INCH = 10 FT.

LEGEND

FH	FIRE HYDRANT
EP	EDGE PAVEMENT
WV	WATER VALVE
PB	METER, PULL BOX
SIGN	SIGN
CONC	CONCRETE
BW	BLOCK WALL
SL	STREET LIGHT
AC	ASPHALT PAVEMENT
BW	BACK OF WALK
EP	EDGE OF PAVEMENT
FC	FINISHED CONCRETE
FF	FINISHED FLOOR
FL	FLOW LINE
FS	FINISHED SURFACE
FW	FRONT OF WALK
GB	GRADE BREAK
L	LOT LINE
NG	NATURAL GROUND
PL	PROPERTY LINE
RAD	RADIAL
R/W	RIGHT OF WAY
SMH	SEWER MANHOLE
TC	TOP OF CURB
TG	TOP OF GRATE
TW	TOP OF WALL

LEGAL DESCRIPTION

ASSESSOR'S PARCELS 036-112-03
AND 036-112-32

UTILITY STATEMENT

ELECTRIC
CITY OF ANAHEIM
201 SOUTH ANAHEIM BLVD.
ANAHEIM, CA. 92805
714-765-5156

GAS
SOUTHERN CALIFORNIA GAS CO
3050 EAST LA JOLLA
ANAHEIM, CA. 92866
714-634-3065

WATER
CITY OF ANAHEIM
201 SOUTH ANAHEIM BLVD.
ANAHEIM, CA. 92805
714-765-4231

SEWER
CITY OF ANAHEIM
201 SOUTH ANAHEIM BLVD.
ANAHEIM, CA. 92805
714-765-5176

TELEPHONE
AT&T
3939 EAST CORONADO
ANAHEIM, CA. 92807
714-666-5406

STORM DRAIN
CITY OF ANAHEIM
201 SOUTH ANAHEIM BLVD.
ANAHEIM, CA. 92805
714-765-5176

811 Know what's below. Call before you dig.

PROJECT ENGINEER
ANACAL ENGINEERING COMPANY
CIVIL ENGINEERING & LAND SURVEYING
1211 NORTH TUSTIN AVENUE ~ ANAHEIM, CALIFORNIA 92807
PHONE: (714) 774-1763 FAX: (714) 774-4690
E-MAIL ADDRESS: anacal@anacalengineering.com
WEB SITE: anacalengineering.com

DATE 10/24/19
SCALE 1" = 10'
DRAWN M. L.
CHECKED D. C. Q.

SHEET TITLE: DEMOLITION PLAN

PROJECT: 898, 900 & 914 WEST LINCOLN AVENUE
ANAHEIM, CALIFORNIA

JOB NO. 19-122T

SHEET NO. 1 OF 1