



## Drainage (LID) Report

14005 Live Oak  
Irwindale, CA

*Prepared for*

Rexford Industrial - 14005 Live Oak, LLC, a Delaware  
Limited Liability Company  
333 City Boulevard West, Suite 705  
Orange, CA 92868

*Prepared by*

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March 19, 2024



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## 2. PROJECT BACKGROUND

### Project Owner

Owner: Rexford Industrial - 14005 Live Oak, LLC, a Delaware Limited Liability Company  
Site Address: 14005 Live Oak  
City/State: Irwindale, CA  
Total Site Area: 214,315.2 s.f. (4.92 acres)  
Hillside Area: No  
APN: 8535-001-033

## 3. INTRODUCTION

### Project Owner

Owner: Rexford Industrial - 14005 Live Oak, LLC, a Delaware Limited Liability Company  
Site Address: 14005 Live Oak  
City/State: Irwindale, CA  
Total Site Area: 5.13 acres (4.86 acres net)  
Hillside Area: No  
APN: 8535-001-033

### Project Background

The site is 5.13 acres. The project is located at 14005 Live Oak, Irwindale, California. The property is bounded by Live Oak to the south, Stewart to the west, and Rivergrade to the north. To the South, North and west are existing light industrial buildings. To the east is currently vacant with a planning-approved transfer station planned for the site (by others). The site is currently occupied by a 2-story commercial building and surface parking.

The proposed development is a new verify 105,350 s.f. building with surface parking. This project is a Designated Project under the terms of the LID Standards Manual. The project is a redevelopment project which will result in the replacement of more than 5,000 s.f. of impervious surface on a site that was previously developed as a commercial/parking site.

### Purpose and Scope

This report is to document the proposed site discharge of the 10- 25- and 50-year site discharges.

**4. LOW IMPACT DEVELOPMENT (LID) FEASIBILITY SCREENING**

Structural or Treatment Control Best Management Practices (BMPs) are required for this project under the County of Los Angeles LID program. The impacts thereof are not a subject of this report and are instead discussed in the Preliminary LID. Infiltration is feasible and incorporated into the LID management

**5. METHODOLOGY**

This report uses the HydroCalc Program developed by the LACDPW to produce the peak stormwater runoff flow rates and volumes. The HydroCalc results are summarized below:

**6. PROPOSED IMPROVEMENTS**

The project will provide for onsite drains, catch basins, and the LID-required infiltration BMP. The first flush will be directed to the BMP. Additional flows directed to the BMP will be detain by the BMP's internal "Level Pool" once the first flush is captured, will experience attenuation, and will be discharged to the City's storm drain (currently stubbed to site for existing drainage) located at the northwest corner of Live Oak and Stewart. As Builts and allowable release has been requested.

**Table 6-1 HydroCalc Inputs**

Project Name	14005 Live Oak, Irwindale
Subarea ID	Entire Site
Area (ac)	5.13
Flow Path Length (ft)	658
Flow Path Slope (vft/hft)	0.0141
85 <sup>th</sup> Percentile Rainfall Depth (in)	1.1
Percent Impervious	1.0
Soil Type	8
Design Storm Frequency	85 <sup>th</sup> Percentile Storm
Fire Factor	0
<b>50-year Rainfall Depth</b>	<b>1.1</b>

**Table 6-2 HydroCalc Outputs**

	cfs	cfs/ac
10-Year Clear Runoff (cfs)	10.16	1.98
25-Year Clear Runoff (cfs)	13.2	2.57
50-Year Clear Runoff (cfs)	16.01	3.12

**7. CONCLUSIONS**

Since the site is currently developed with similar discharge rates, and considering the LID-required BMP elements, the project will comply with City’s requirements to maintain the project’s runoff to the public main.

**8. REFERENCES**

Los Angeles County Department of Public Works, *LACDPW Hydrology/Sedimentation Manual and Appendices* (LACDPW 1991, 1992, 1993, 2002, 2006).

Los Angeles County Department of Public Works, *The LACDPW TCv1.0 Manual* (TC\_calc\_cepth.xls, December 1991, June 2002)

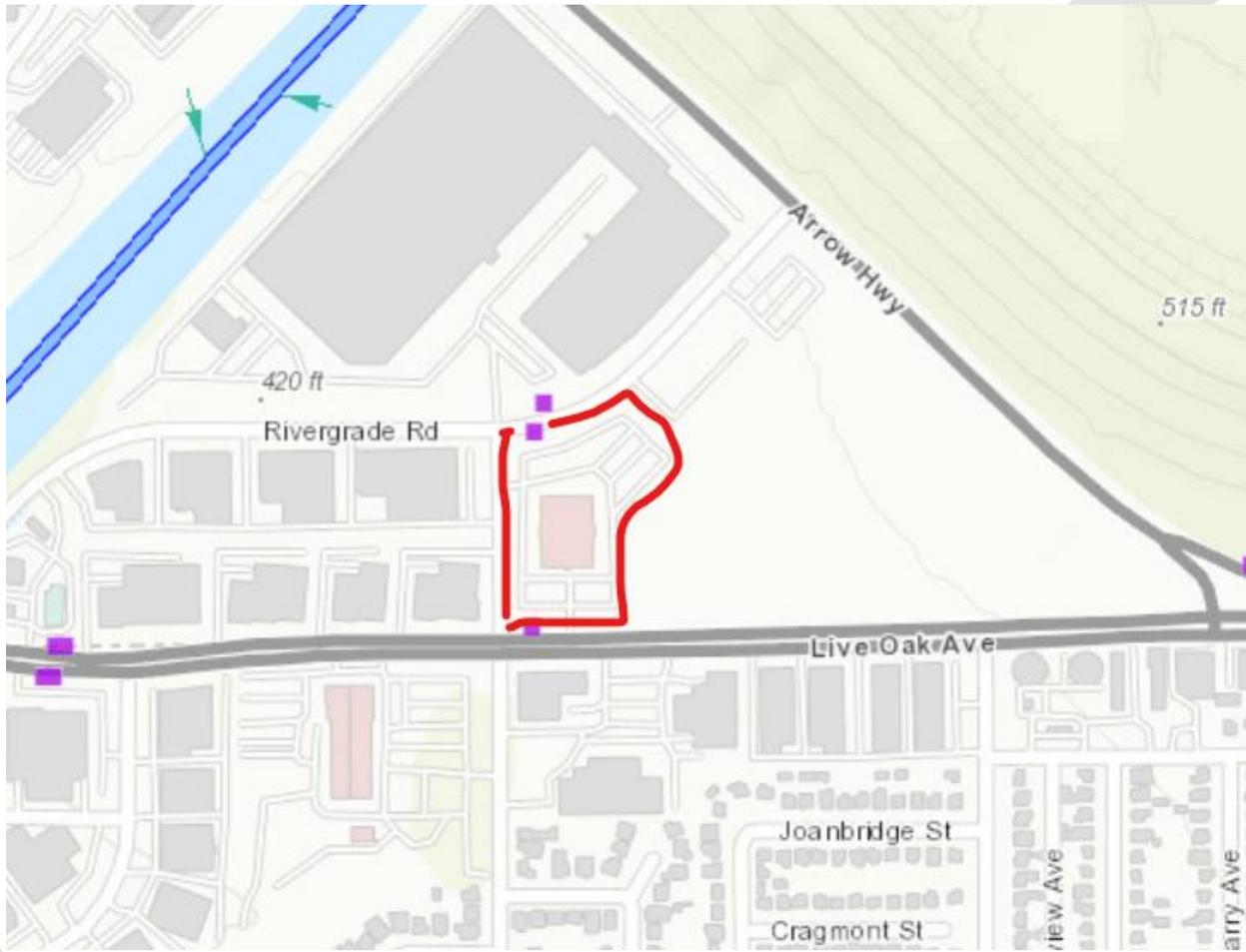
**9. List of Attachments**

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- ATTACHMENT 6. STORM DRAIN AS-BUILTS**
- ATTACHMENT 7. PROJECT DESIGN PLANS**

**Attachment 1. EXISTING SITE MAP**



**Attachment 2. EXISTING STORM DRAINS AND INLETS**



(Source: LA County DPW)

**Attachment 3. SOIL TYPE**

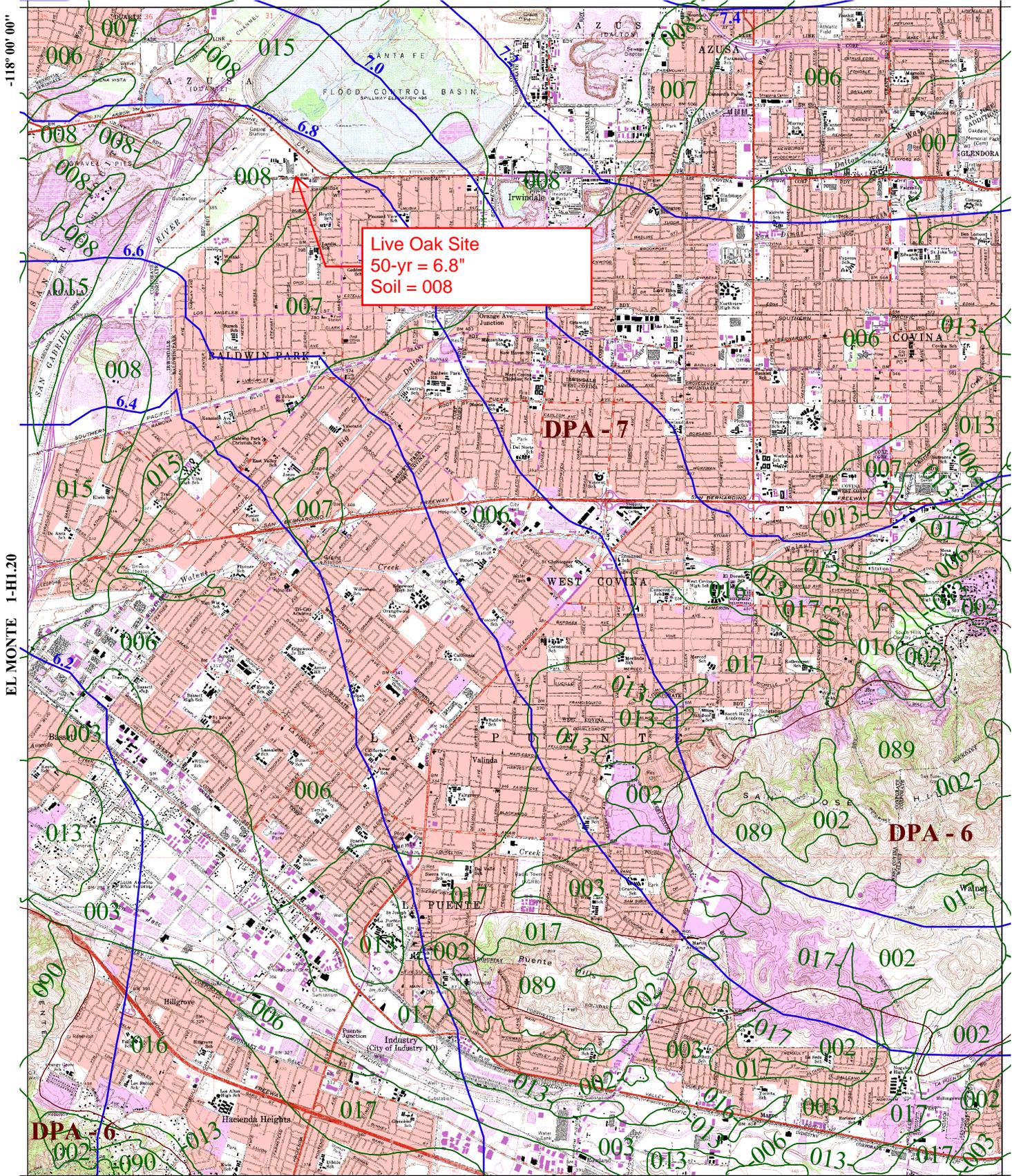
34° 07' 30"

AZUSA 1-HI.31

-118° 00' 00"

EL MONTE 1-HI.20

SAN DIMAS 1-HI.22



LA HABRA 1-HI.11

34° 00' 00"

-117° 52' 30"



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878  
 10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

# BALDWIN PARK 50-YEAR 24-HOUR ISOHYET

1-HI.21

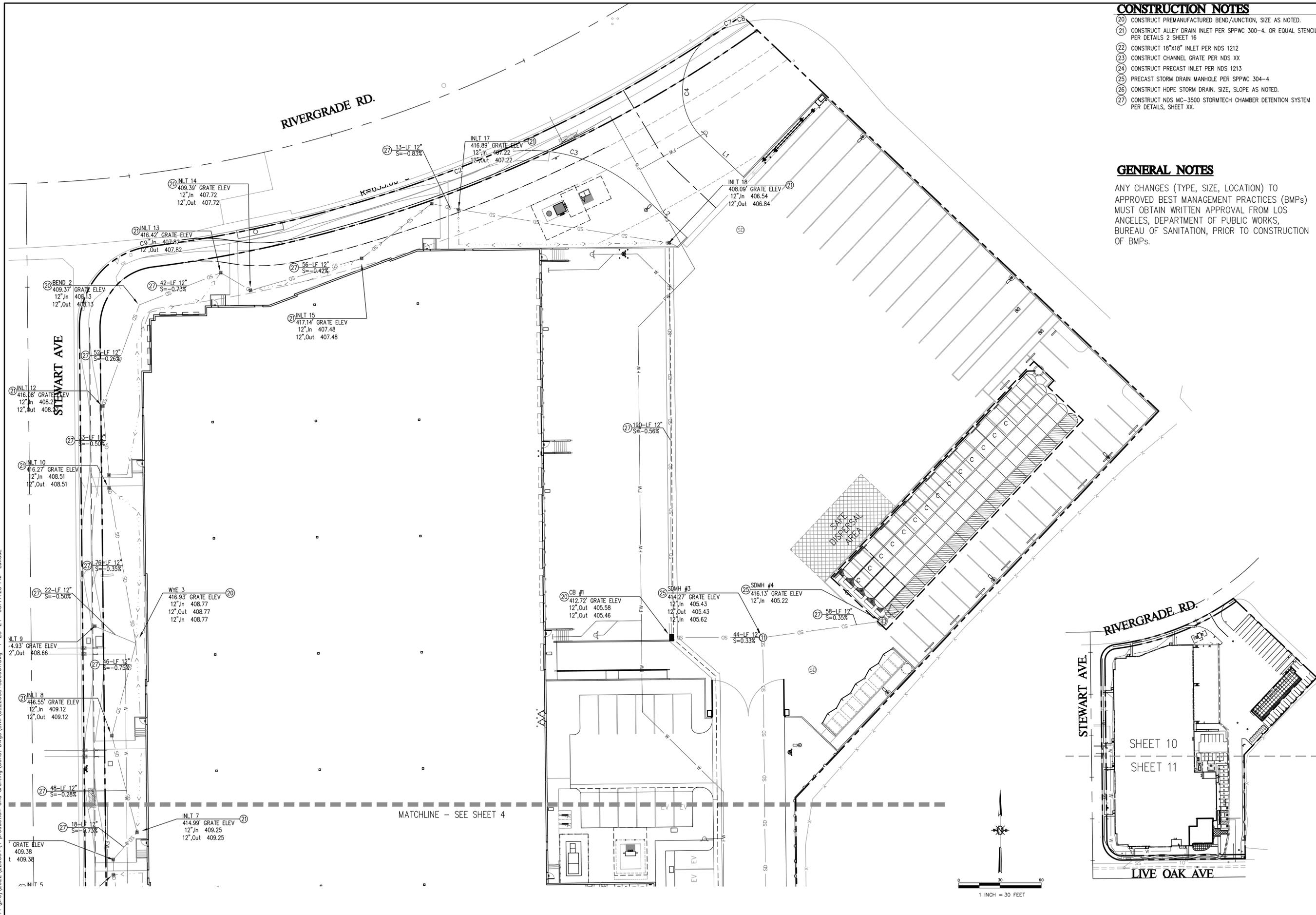


**Attachment 4. PROJECT EXHIBITS**





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- CONSTRUCTION NOTES**
- (20) CONSTRUCT PREMANUFACTURED BEND/JUNCTION, SIZE AS NOTED.
  - (21) CONSTRUCT ALLEY DRAIN INLET PER SPPWC 300-4. OR EQUAL STENCIL PER DETAILS 2 SHEET 16
  - (22) CONSTRUCT 18"x18" INLET PER NDS 1212
  - (23) CONSTRUCT CHANNEL GRATE PER NDS XX
  - (24) CONSTRUCT PRECAST INLET PER NDS 1213
  - (25) PRECAST STORM DRAIN MANHOLE PER SPPWC 304-4
  - (26) CONSTRUCT HDPE STORM DRAIN. SIZE, SLOPE AS NOTED.
  - (27) CONSTRUCT NDS MC-3500 STORMTECH CHAMBER DETENTION SYSTEM PER DETAILS, SHEET XX.

**GENERAL NOTES**

ANY CHANGES (TYPE, SIZE, LOCATION) TO APPROVED BEST MANAGEMENT PRACTICES (BMPs) MUST OBTAIN WRITTEN APPROVAL FROM LOS ANGELES, DEPARTMENT OF PUBLIC WORKS, BUREAU OF SANITATION, PRIOR TO CONSTRUCTION OF BMPs.

REV. NO.	DATE	REVISED	DESTROY ALL PRINTS BEARING EARLIER DATE	CD/APPD BY

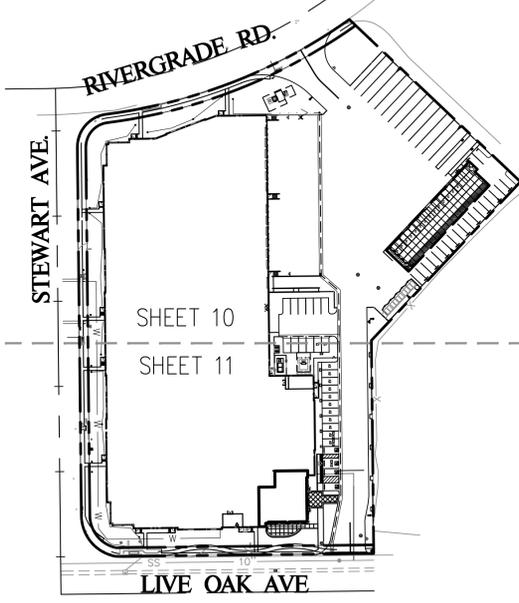
**Cannon**  
 16842 Von Kaman Avenue, Suite 150  
 Irvine, CA 92606  
 P: 949.253.8111 F: 949.253.0775

DATE	9/15/23
SCALE	AS SHOWN
CA JOB NO.	220334

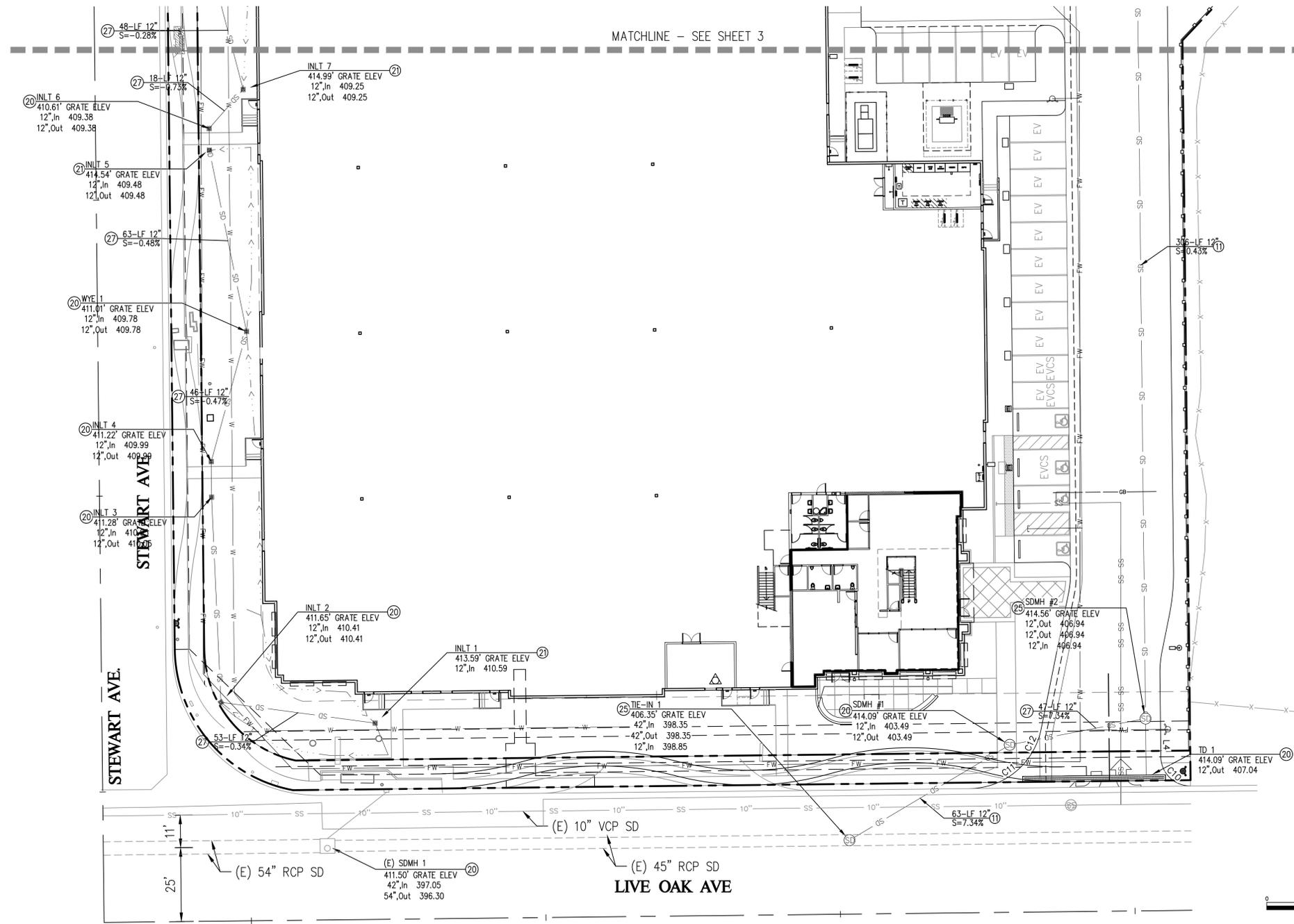
THESE DRAWINGS ARE INSTRUMENTS OF SERVICE AND INFORMATION IN THESE DRAWINGS ARE FOR THE USE OF THE CLIENT ONLY. REVISIONS WITHOUT THE EXPRESSED WRITTEN PERMISSION OF CANNON.

REGISTERED PROFESSIONAL ENGINEER  
 SAMUEL J. JACOBY  
 C74309  
 EXP. 6/30/25  
 CIVIL  
 STATE OF CALIFORNIA

REXFORD INDUSTRIAL  
 14005 LIVE OAK REDEVELOPMENT  
 STORM DRAIN PLAN  
 14005 LIVE OAK AVE  
 IRVINDALE, CALIFORNIA



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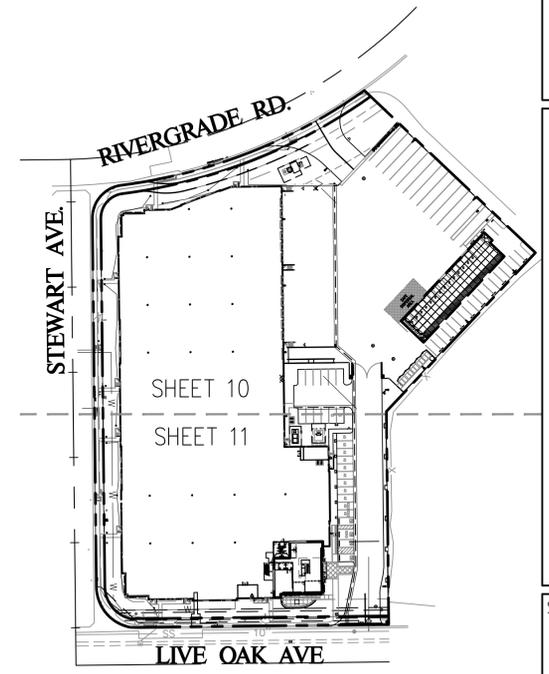


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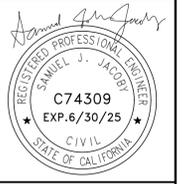


REV. NO.	DATE	REVISED	DESTROY ALL PRINTS BEARING EARLIER DATE	REV. CD/APPD BY



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REXFORD INDUSTRIAL  
14005 LIVE OAK REDEVELOPMENT  
STORM DRAIN PLAN  
14005 LIVE OAK AVE  
IRVINDALE, CALIFORNIA



PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER	
ADS SALES REP	
PROJECT NO.	



220334  
IRWINDALE, CA

**MC-3500 STORMTECH CHAMBER SPECIFICATIONS**

- CHAMBERS SHALL BE STORMTECH MC-3500.
- CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x78 DESIGNATION SS.
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
  - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
  - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
  - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 450 LBS/FT<sup>2</sup>. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418, AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
  - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
  - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
  - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

**IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-3500 CHAMBER SYSTEM**

- STORMTECH MC-3500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
  - STONESHOOTER LOCATED OFF THE CHAMBER BED.
  - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
  - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
- THE FOUNDATION STONE SHALL BE LEVELLED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
- MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
- INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
- STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
- ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

**NOTES FOR CONSTRUCTION EQUIPMENT**

- STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- THE USE OF EQUIPMENT OVER MC-3500 CHAMBERS IS LIMITED:
  - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
  - NO RUBBER Tired LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
  - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

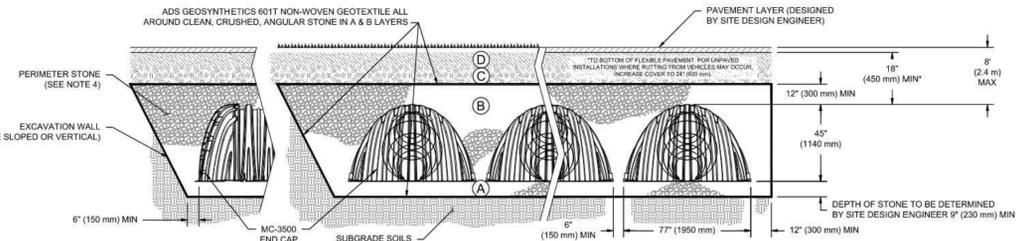
CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

**ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS**

MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. OR AASHTO M43* 3, 357, 4, 467, 5, 56, 57, 6, 47, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	AASHTO M43* 3, 4	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	AASHTO M43* 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. <sup>2,3</sup>

**PLEASE NOTE:**

- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE.
- STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 4" LAYER MATERIALS WHEN PLACED AND COMPACTED IN 2" (20 mm) MAX LIFTS USING TWO FULL COVERS WITH A VIBRATORY COMPACTOR.
- WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
- ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



**NOTES:**

- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x78 DESIGNATION SS.
- MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
  - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
  - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
  - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 450 LBS/FT<sup>2</sup>. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418, AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

ITEM	DESCRIPTION	CONCEPTUAL ELEVATIONS		PART TYPE	ITEM ON LAYOUT	DESCRIPTION	*INVERT ABOVE BASE OF CHAMBER	
		MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT UNPAVED)	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)				INVERT	MAX FLOW
06	STORMTECH MC-3500 CHAMBERS	12.33	8.20					
10	STORMTECH MC-3500 END CAPS	8.20	8.20					
12	STONE ABOVE (n)	8.00	8.00	PREFABRICATED END CAP	A	24" BOTTOM CORED END CAP, PART# MC3500EPP24BC / TYP OF ALL 24" BOTTOM CONNECTIONS AND ISOLATOR PLUS ROWS		2.06'
2	STONE BELOW (n)	8.00	8.00	PREFABRICATED END CAP	B	18" BOTTOM CORED END CAP, PART# MC3500EPP18BC / TYP OF ALL 18" BOTTOM CONNECTIONS		1.77'
40	STONE VOID	8.00	8.00	PREFABRICATED END CAP				
17357	INSTALLED SYSTEM VOLUME (CFT) (PERIMETER STONE INCLUDED) (COVER STONE INCLUDED) (BASE STONE INCLUDED)	5.50	5.50	FLAMP	C	INSTALL FLAMP ON 24" ACCESS PIPE / PART# MC350024RAMP		
5150	SYSTEM AREA (SF)	0.92	0.92	MANIFOLD	D	18" x 18" BOTTOM MANIFOLD ADS N-12		1.77'
3594	SYSTEM PERIMETER (ft)	0.90	0.90	CONCRETE STRUCTURE	E	18" x 18" BOTTOM MANIFOLD, ADS N-12		1.77'
		0.90	0.90	CONCRETE STRUCTURE	F	DCS (DESIGN BY ENGINEER / PROVIDED BY OTHERS)		8.0 CFS OUT
		0.75	0.75	WIWEIR	G	(DESIGN BY ENGINEER / PROVIDED BY OTHERS)		
		0.00	0.00	UNDERDRAIN	H	18" ADS N-12 DUAL WALL PERFORATED HDPE UNDERDRAIN		20.9 CFS IN
		0.00	0.00					



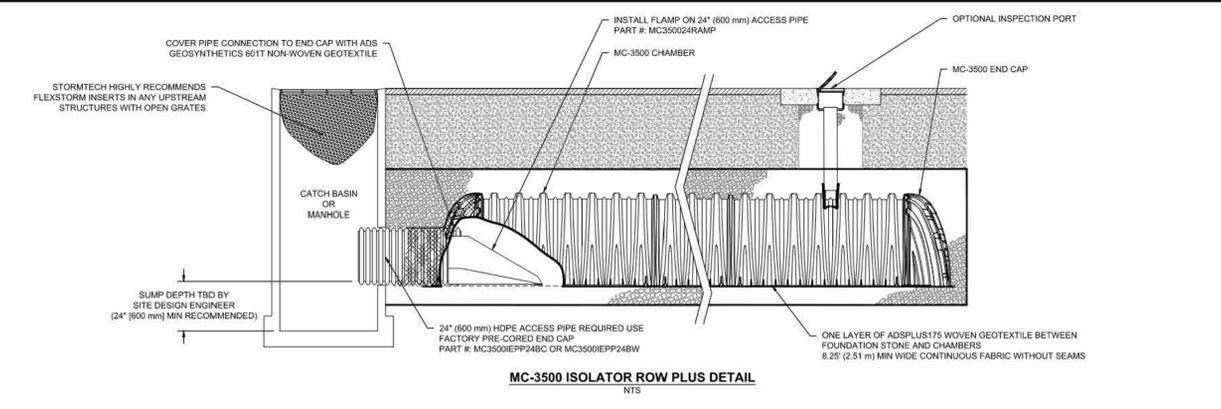
**NOTES**

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE 86.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- NOT FOR CONSTRUCTION:** THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

StormTech Chamber System  
220334 IRWINDALE, CA  
DATE: 9/15/23  
DRAWN BY: [blank]  
CHECKED BY: [blank]  
PROJECT #: 888-892-2694 | WWW.STORMTECH.COM  
DATE: [blank] DRAWN: [blank] CHECK: [blank]

4640 TREUMAN BLVD  
HILLIARD, OH 43026  
1-800-732-7473

SHEET 2 OF 5



**INSPECTION & MAINTENANCE**

- STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- INSPECTION PORTS (IF PRESENT)
    - REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
    - REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
    - USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
    - LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
      - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
  - ALL ISOLATOR PLUS ROWS
    - REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
    - USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
      - MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
      - FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
    - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A FIXED CURVE CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
  - APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
  - VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

**NOTES**

- INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION, ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
- CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

StormTech Chamber System  
220334 IRWINDALE, CA  
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HILLIARD, OH 43026  
1-800-732-7473

SHEET 4 OF 5

StormTech Chamber System  
220334 IRWINDALE, CA  
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4640 TREUMAN BLVD  
HILLIARD, OH 43026  
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SHEET 3 OF 5

StormTech Chamber System  
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SHEET 2 OF 5

StormTech Chamber System  
220334 IRWINDALE, CA  
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4640 TREUMAN BLVD  
HILLIARD, OH 43026  
1-800-732-7473

SHEET 1 OF 5

REXFORD INDUSTRIAL  
14005 LIVE OAK REDEVELOPMENT  
LID DETAIL  
14005 LIVE OAK AVE  
IRWINDALE, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER  
SAMUEL J. JACOBI  
C74309  
EXP. 6/30/25  
CIVIL  
STATE OF CALIFORNIA

DESTROY ALL PRINTS  
BEARING EARLIER DATE  
REV. NO. DATE  
REV. BY  
REV. DATE  
REV. BY

F:\proj\2022\220334\production and drafting\Const Dwg\Civil\CE220334\LD0001.dwg 1-25-24 05:18:55 PM Lukase

**Attachment 5. HYDROCALC STORM VOLUME CALCULATIONS**

## Peak Flow Hydrologic Analysis

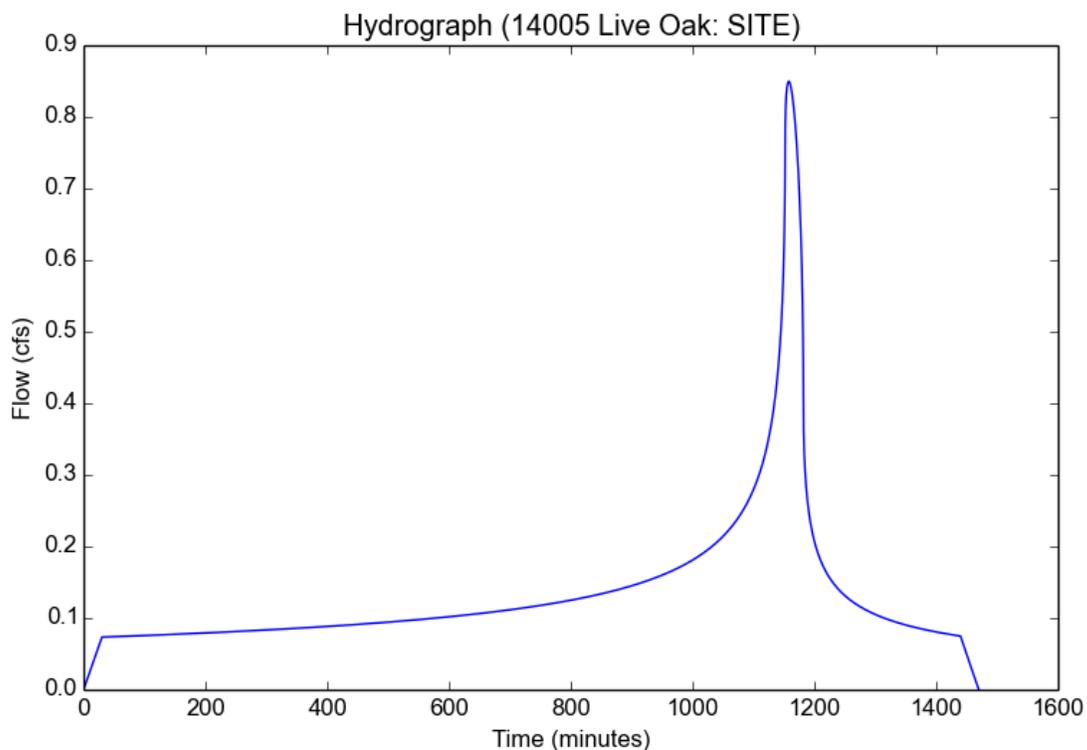
File location: F:/proj/2022/220334/3 Project Design/Civil/Design Calcs/drainage/04 Calcs/14005 Live Oak Report.pdf  
Version: HydroCalc 1.0.3

### Input Parameters

Project Name	14005 Live Oak
Subarea ID	SITE
Area (ac)	5.13
Flow Path Length (ft)	658.0
Flow Path Slope (vft/hft)	0.0141
50-yr Rainfall Depth (in)	1.1
Percent Impervious	0.9
Soil Type	8
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

### Output Results

Modeled (10-yr) Rainfall Depth (in)	0.7854
Peak Intensity (in/hr)	0.2019
Undeveloped Runoff Coefficient (Cu)	0.1063
Developed Runoff Coefficient (Cd)	0.8206
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.8498
Burned Peak Flow Rate (cfs)	0.8498
24-Hr Clear Runoff Volume (ac-ft)	0.2731
24-Hr Clear Runoff Volume (cu-ft)	11894.214



## Peak Flow Hydrologic Analysis

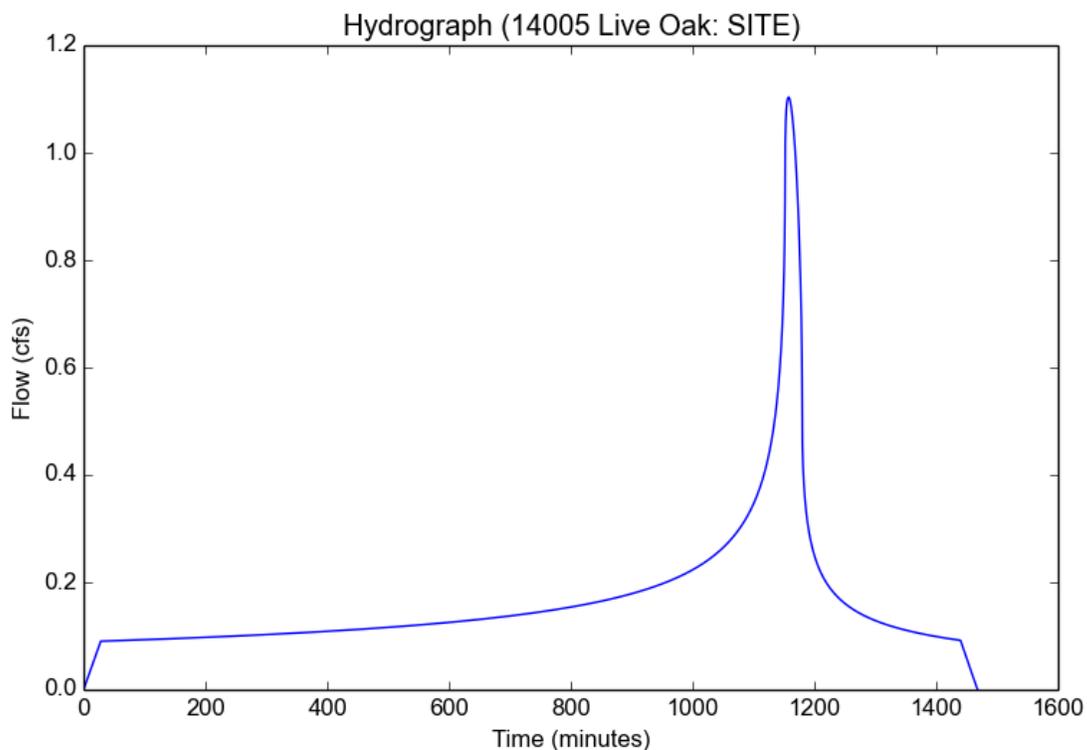
File location: F:/proj/2022/220334/3 Project Design/Civil/Design Calcs/drainage/04 Calcs/14005 Live Oak Report.pdf  
Version: HydroCalc 1.0.3

### Input Parameters

Project Name	14005 Live Oak
Subarea ID	SITE
Area (ac)	5.13
Flow Path Length (ft)	658.0
Flow Path Slope (vft/hft)	0.0141
50-yr Rainfall Depth (in)	1.1
Percent Impervious	0.9
Soil Type	8
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

### Output Results

Modeled (25-yr) Rainfall Depth (in)	0.9658
Peak Intensity (in/hr)	0.2564
Undeveloped Runoff Coefficient (Cu)	0.2895
Developed Runoff Coefficient (Cd)	0.8389
Time of Concentration (min)	28.0
Clear Peak Flow Rate (cfs)	1.1036
Burned Peak Flow Rate (cfs)	1.1036
24-Hr Clear Runoff Volume (ac-ft)	0.3363
24-Hr Clear Runoff Volume (cu-ft)	14650.5061



## Peak Flow Hydrologic Analysis

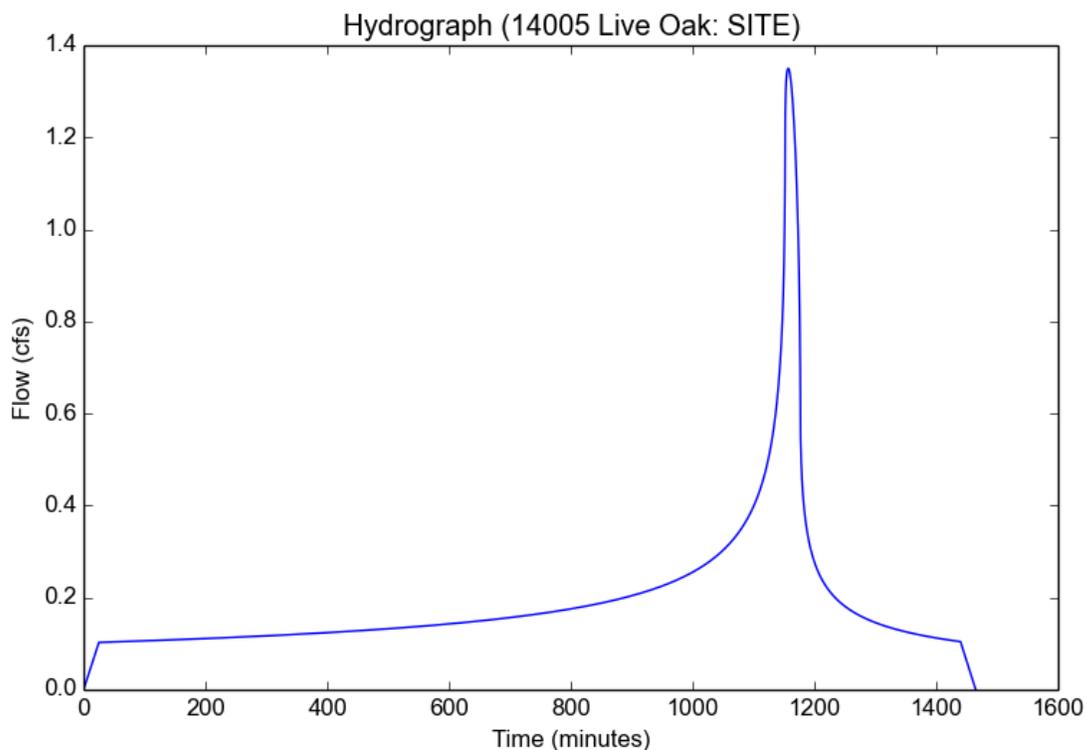
File location: F:/proj/2022/220334/3 Project Design/Civil/Design Calcs/drainage/04 Calcs/14005 Live Oak Report.pdf  
Version: HydroCalc 1.0.3

### Input Parameters

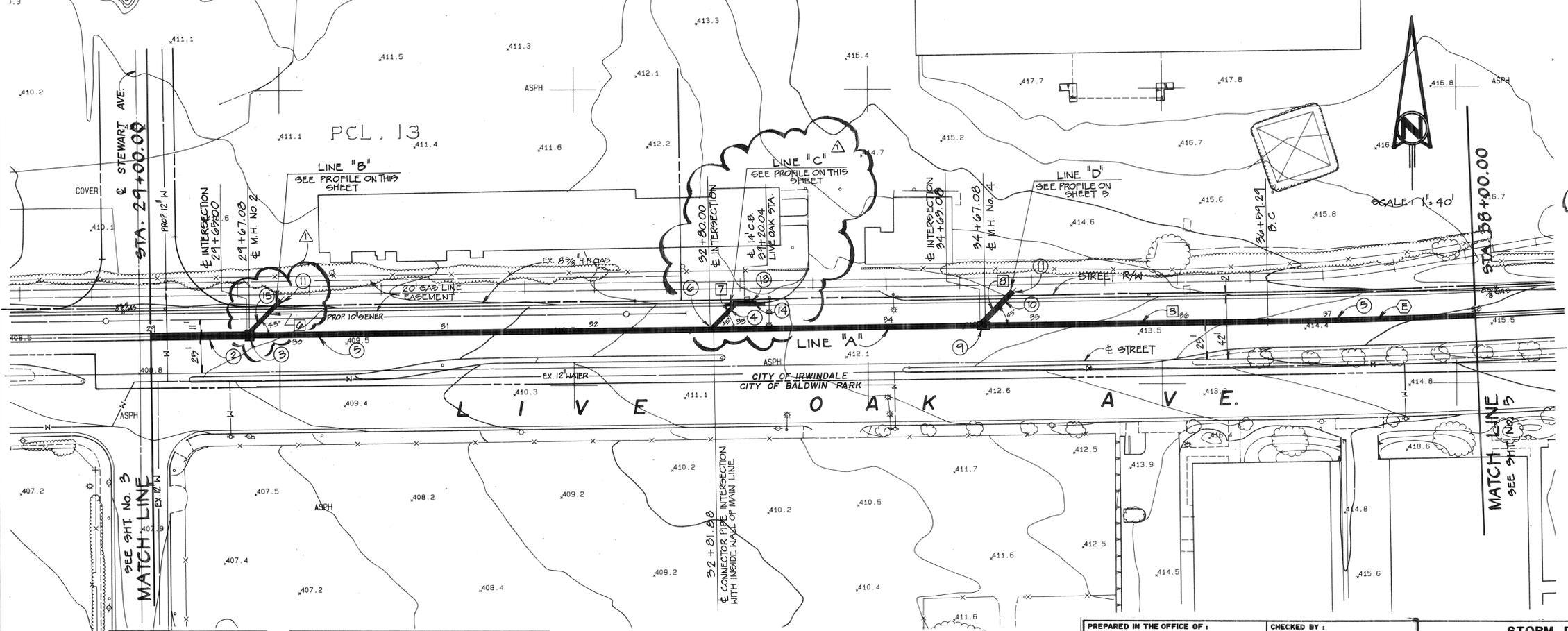
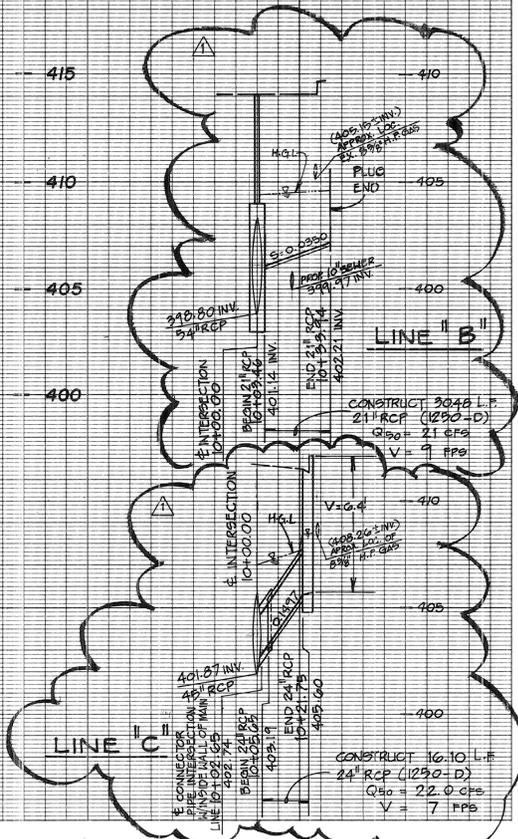
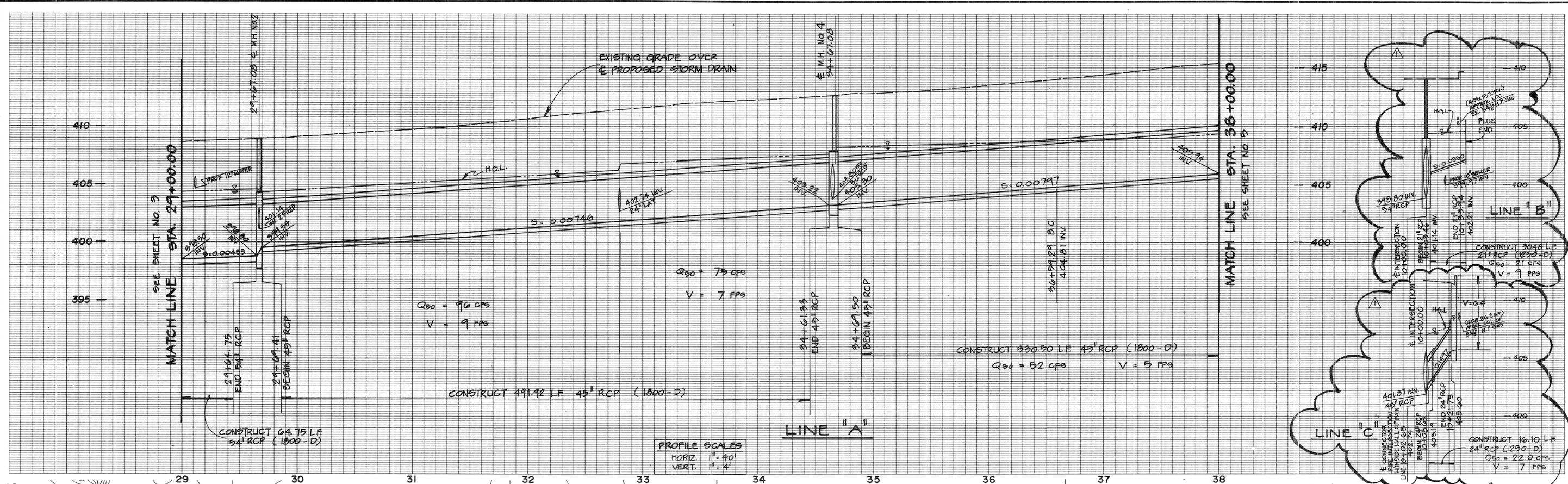
Project Name	14005 Live Oak
Subarea ID	SITE
Area (ac)	5.13
Flow Path Length (ft)	658.0
Flow Path Slope (vft/hft)	0.0141
50-yr Rainfall Depth (in)	1.1
Percent Impervious	0.9
Soil Type	8
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

### Output Results

Modeled (50-yr) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.308
Undeveloped Runoff Coefficient (Cu)	0.4438
Developed Runoff Coefficient (Cd)	0.8544
Time of Concentration (min)	25.0
Clear Peak Flow Rate (cfs)	1.3501
Burned Peak Flow Rate (cfs)	1.3501
24-Hr Clear Runoff Volume (ac-ft)	0.3838
24-Hr Clear Runoff Volume (cu-ft)	16717.0533



**Attachment 6. STORM DRAIN AS-BUILTS**



- CONSTRUCTION NOTES**
- ② CONSTRUCT 54" RCP (1800-D).
  - ③ CONSTRUCT MANHOLE NO. 2 PER L.A.C.F.C.D. STANDARD DRAWING NO. 2-D184.
  - ④ CONSTRUCT 24" RCP (1250-D).
  - ⑤ CONSTRUCT 45" RCP (1800-D).
  - ⑥ CONSTRUCT JUNCTION STRUCTURE NO. 2 PER L.A.C.F.C.D. STANDARD DRAWING NO. 2-D112 (C=3')
  - ⑭ CONSTRUCT LOCAL DEPRESSION NO. 3 PER L.A.C.F.C.D. STANDARD DRAWING NO. 2-D248.
  - ⑰ CONSTRUCT CATCH BASIN NO. 4 (W=14') PER L.A.C.F.C.D. STANDARD DRAWING NO. 2-D101 (V=6.4')
  - ⑨ CONSTRUCT MANHOLE NO. 4 PER L.A.C.F.C.D. STANDARD DRAWING NO. 2-D113.
  - ⑩ CONSTRUCT 36" RCP (1250-D).
  - ⑪ PLUG END OF PIPE WITH BRICK AND MORTAR.
  - ⑮ CONSTRUCT 21" RCP (1250-D)



SEE S.D. COURSE DATA

NO.	LENGTH	BEARING
②	1300.38'	N 89° 22' 40" E
③	33.94'	N 44° 22' 40" E
④	21.75'	N 44° 22' 40" E
⑤	33.94'	N 44° 22' 40" E

SEE STORM DRAIN CURVE DATA

NO.	Δ	R	L	T
①	2° 10' 47"	4,979.00'	200.88'	100.45'

REVISIONS

REVISION	DATE	INITIALS	DESCRIPTION	APP'D
1	4/30/91	JKP	CHANGE CATCH BASIN TYPE ON LATERAL 'C'. LOWER LATERAL 'B'. CHANGE PIPE SIZE.	C.A.

PREPARED IN THE OFFICE OF:  
**WILLIAMSON & SCHMID**  
 CONSULTING CIVIL ENGINEERS AND LAND SURVEYORS  
 15101 Red Hill Avenue • Tustin, California 92680 • 714/250-7000

CHECKED BY: \_\_\_\_\_  
 RECOMMENDED BY: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_  
 DATE: 4/15/91

DRAWN BY: SKH  
 DESIGNED BY: PDB

STORM DRAIN IMPROVEMENT PLANS FOR  
**LIVE OAK AVENUE**  
 STA. 29 + 00.00 TO STA. 38 + 00.00

**CITY OF IRWINDALE**

SHEET 4 OF 6