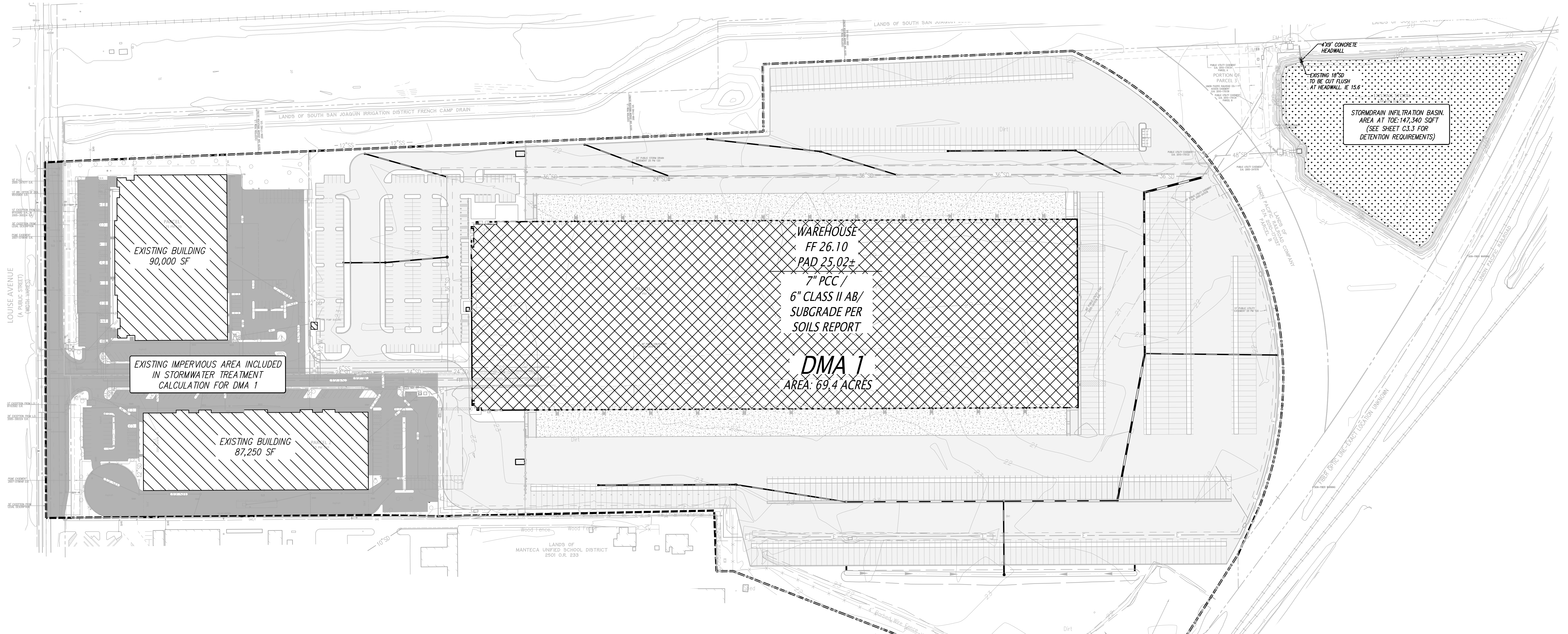


**LEGEND**

- ▬▬▬▬▬▬ TRIBUTARY AREA LIMITS
- ▬▬▬▬▬▬ NEW IMPERVIOUS PAVEMENT DRAINING TO BIO-SWALE
- ▬▬▬▬▬▬ EXISTING IMPERVIOUS PAVEMENT DRAINING TO BIO-SWALE
- ▬▬▬▬▬▬ INFILTRATION BASIN TREATMENT AREA
- ▬▬▬▬▬▬ IMPERVIOUS ROOFTOP-PROPOSED BUILDING
- ▬▬▬▬▬▬ EXISTING IMPERVIOUS ROOFTOP-EXISTING BUILDING



**MS4-MULTI AGENCY POST CONSTRUCTION STORMWATER STANDARDS SIZING CRITERIA**  
 TYPE OF STORMWATER TREATMENT CONTROL MEASURE: INFILTRATION BASIN

**INPUTS:**

|  |      |
|--|------|
| SELECT PONDING DEPTH OF INFILTRATION BASIN $d_p$ (FT):         | 1.3  |
| (*NOTE: ANYTHING DEEPER THAN 5' REQUIRES FENCE)                |      |
| $P_0$ MEAN ANNUAL RUNOFF PRODUCING RAINFALL DEPTH (TABLE 5-1): | 0.37 |
| PERCOLATION TEST RESULTS FROM SOILS REPORT (gal/sqft/day):     |      |
|  | 67   |

**DMA RESULTS:**

| DMA                                      | 1         |
|--|-----------|
| INPUT-TOTAL AREA OF DMA (SF)             | 3,023,256 |
| INPUT-DMA IMPERVIOUS AREA (SF)           | 2,730,107 |
| DMA IMPERVIOUS RATIO (I)                 | 0.90      |
| STORMWATER RUNOFF COEFFICIENT (C)        | 0.73      |
| UNIT STORMWATER VOLUME - $P_0$ (IN.)     | 0.53      |
| SDV-STORMWATER DESIGN VOLUME (CF)        | 134,441   |
| INFILTRATION RATE - $f_{DESIGN}$ (IN/HR) | 1.12      |
| DRAWDOWN TIME - 48HRS $D_{48}$ (FT)      | 4.48      |
| REGRESSION CONSTANT (A)                  | 1.963     |
| CHECK $D_{max} \geq d_p$                 | [YES]     |
| SURFACE AREA FOR INFILTRATION BASIN (SF) | 90,435    |

- NOTES:**
- REQUIRED SURFACE AREA FOR INFILTRATION BASIN AT PONDING DEPTH ( $d_p$ ) = 90,435 SF
  - EXISTING BASIN SURFACE AREA: 147,340 SF (CALCULATED FROM TOE OF SLOPE)
  - EXISTING BASIN INFILTRATION RATE = 1.12 IN/HR

**SIZING CALCULATIONS:**

- DETERMINE STORMWATER DESIGN VOLUME (SDV) PER DMA**

$$SDV = A (P_0 / 12)$$

A = TOTAL AREA OF DMA

\*NOTE: USING  $SDV_{50}$  (SEC. 5.5) WILL REDUCE VOLUME, USING SDV IS A CONSERVATIVE APPROACH TO DESIGN
    - DETERMINE "c" STORMWATER RUNOFF COEFFICIENT - UNITLESS**

$$c = 0.858 (i^2) - 0.78 (i) + 0.774 (i) + 0.04$$

i = DMA IMPERVIOUSNESS RATIO (EXPRESSED AS A DECIMAL)  
 i = AREA OF IMPERVIOUS/TOTAL AREA
    - DETERMINE "P<sub>0</sub>" UNIT STORMWATER VOLUME (IN.)**

$$P_0 = (a \times c) \times P_0$$

a = REGRESSION CONSTANT 1.963 FOR 48 HR DRAWDOWN  
 c = STORMWATER RUNOFF COEFFICIENT (SEE 1.1)  
 P<sub>0</sub> = MEAN ANNUAL RUNOFF PRODUCING RAINFALL DEPTH (TABLE 5-1)  - DETERMINE INFILTRATION RATE OF EXISTING SOILS FROM SOILS REPORT ( $f_{DESIGN}$ ) IN/HR USING A FACTOR OF SAFETY=4**

$$f_{DESIGN} = \frac{\text{INFILTRATION RATE (GAL/SQFT/DAY)} \times (12"/FT)}{(7.48 \text{ GAL/CF}) \times (24 \text{ HRS})} \times (0.25)$$

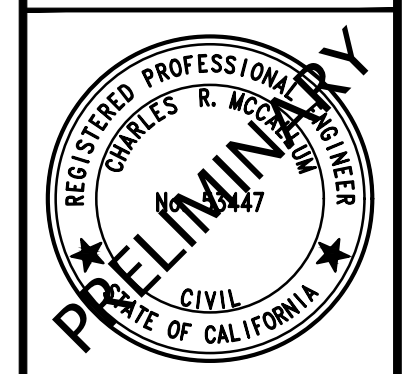
\*NOTE: IF SOILS REPORT GIVES INFILTRATION RATE IN GAL/SQFT/DAY USE EQUATION ABOVE TO CONVERT TO IN/HR
- CALCULATE SURFACE AREA OF INFILTRATION BASIN (SF)**

$$A = (SDV / (f_{DESIGN} / 12)) \times T + d_p$$

SDV = STORMWATER DESIGN VOLUME  
 $f_{DESIGN}$  = DESIGN INFILTRATION RATE USING FS=4  
 T = TIME TO FILL INFILTRATION BASIN (USE 2 HRS)  
 $d_p$  = DEPTH OF PONDING IN INFILTRATION BASIN

| NO. | BY | NO. | REVISION  |
|-----|----|-----|---|
| 1   | CH | 1   | ISSUED FOR BUILDING PERMIT SUBMITTAL 09-27-2017 |

**KIER & WRIGHT**  
 CIVIL ENGINEERS & SURVEYORS, INC.  
 2850 Collier Canyon Road  
 Livermore, California 94551  
 Phone (925) 245-8788  
 Fax (925) 245-8796



**STORM WATER QUALITY CONTROL PLAN**  
 OF  
 2325 W. LOUISE AVENUE  
 FOR  
 EXETER PROPERTY GROUP  
 CALIFORNIA  
 MANTECA, CALIFORNIA

DATE: SEPTEMBER, 2017  
 SCALE: 1" = 100'  
 DESIGNER: SS  
 JOB NO.: A10536-20  
 SHEET: C7.0  
 OF 18 SHEETS



M:\2017\A10536-20\DWG\CIVIL\A10536-20-C075-SSM.dwg 10/04/17 05:11:37 AM csh/cas