

## CSMD PLAN REVIEW PROCESS

1. The City shall review the sewer plans, once plans are near final they can be submitted to CSMD (LA County Public Works Sewer Maintenance Division).
2. Submit Plans to CSMD
  - a. via email in PDF format to [keskridge@dpw.lacounty.gov](mailto:keskridge@dpw.lacounty.gov), or paper (3 copies required)
  - b. Include Final Tract Map, As-Builts for connecting sewer lines, Grading Plans
  - c. Include contact information for Project Manager/Engineer
3. Fees
  - a. There are no Plan Check Fees
  - b. There MAY be a Sewer Maintenance & Annexation Fee which is calculated near the end of the plan review. Fee is based on Number Manholes, Laterals, and Lots.
4. After CSMD approves the plans, the County Sanitation District also needs to review and asses fees.
5. After all 3 agencies approved the plans, Mylars can be printed and signed, first by the City, then CSMD, then County Sanitation District. Fee's must be paid before each agency will sign.
6. To have Mylars signed by the CSMD please call Kari Eskridge (626) 300-3390 to make an appointment.

## REFERENCES AND STANDARDS

### **CAD FILE**

Cities may have their own requirements for plan layouts, please follow the Cities plans with adjustments for our requirements. Below is a sample plan used for unincorporated LA County, this file can be adapted for each city.

#### **Standard CAD file**

<http://dpw.lacounty.gov/general/cad/>

### **DESIGN MANUALS**

[http://dpw.lacounty.gov/des/Design\\_Manuals/](http://dpw.lacounty.gov/des/Design_Manuals/)

#### **Private Contract Manual:**

<http://dpw.lacounty.gov/ldd/lib/fp/Sewer/Private%20Contract%20Sanitary%20Sewer%20Manual.pdf>

**Standard Plans:** [http://dpw.lacounty.gov/des/Design\\_Manuals/StandardPlan.pdf](http://dpw.lacounty.gov/des/Design_Manuals/StandardPlan.pdf)

### **CODES:**

#### **LA County**

<https://library.municode.com/HTML/16274/book.html>

#### **California State Plumbing**

<http://www.iapmo.org/Pages/2013CaliforniaPlumbingCode.aspx>

## COMMON PLAN COMMENTS

Prior to submitting plans, review the following check list for common errors.

### Index Page Comments

- Title Block on right side of page. Show:
  - Project Identification Number, tract/p.m. number, City name.
  - Engineer of record (**or PRIVATE ENGINEER**), office, and address.
  - Numbers of sheets and pages.
  - Plans signed and stamped by a Civil Engineer registered in the State of California.

### **Signature Blocks**

- Show signature blocks for the County of Los Angeles CSMD, City Engineer and Co. Sanitation District.
- Remove any Land Development/ Building and Safety signature blocks.
- Verify current LA Co. San District block with **GRACE ROBINSON HYDE** on signature line.

### **Notes**

- Notes should reflect project as City project, not County of Los Angeles.
- Verify The following Notes are included:
  - CCTV
  - House lateral/ Wye
  - Backwater valve, if necessary
  - Abandonment, if necessary
- Verify connection sewer has been accepted by City and CSMD.
- Verify plan calls for VCP pipe. Ask to change material or add note indicating higher than normal maintenance will not be paid for by CSMD.

### **Index Map**

- Existing inlet sewer(s) by dashed dot and PC No.
- Portion of proposed private sewer if applicable.
- Include Index Map of 1" = 600' scale or larger. Show:
  - A North arrow.
  - Existing outlet sewers and manholes by dashed dot and PC No.
  - Sewer to be constructed with heavy solid lines and indicate Plan page numbers in circle, show proposed and existing manhole locations.
  - Label all sewers over 8".
  - Flow directional arrows.
  - Show all street names and at least one major street.
  - Below map show: Project Identification Number, name of the City, correct TG page and SMD Map No.

## Standard Plans

- Show all applicable standard plans, see list in comments below.
- Private Contract Sanitary Sewer Procedural Manual and County of Los Angeles Standard Plans 2000 Edition are available from Cashier on Mezzanine level. Standard Plans for Public Works Construction is available from BNi Books (760) 734-1113.

## Profile

- Show all utilities crossing sewer line in Profile.
- Show reference elevation every five feet.

## Plans

- North arrow oriented up or to the left.
- Stationing should increase from downstream to upstream.
- Verify stationing is correct and matches in plan and profile.
- Where possible, locate sewer line 5 feet northerly or easterly centerline for local streets. For other road types, see standards.
- Show invert elevations and positions in Profile for all utilities crossing sewer line. If 0.5 to 1.5 feet within line, check standards for encasement or cradling.
- Show sizes for utilities, storm drains, etc. crossing sewer line.
- Locate all utilities from centerline of street.
- Check 10 foot separation of water and sewer in Plan.
- Verify all outlet and/or inlet PC nos. on existing manholes.
- Check all manhole inlets and outlets for proper labeling and elevations.
- If outside R/W, indicate easement dedicated to City.
- Check for lot nos. and pad elevations, comment if not shown.
- Verify pad elevations with contour elevation map.
- Check lot numbers and sizes with Tract Map.
- If two figures per page, label figure on right A and left B.
- Verify pipe slope is in multiples of 0.04%. Minimum slopes are:

Pipe Size (in.)	Minimum	Sub- minimum
4 & 6	2.00%	Not Allowed
8	0.40%	0.24%
10	0.32%	0.20%
12	0.24%	0.16%
15	0.16%	0.12%
18	0.14%	0.08%
21	0.12%	0.08%
24	0.10%	0.08%

## Manholes

- Verify all manholes are less than 350 feet apart.
- Distances measured from manhole centerline to centerline to one-hundredths place.
- Terminal manholes:
  - Avoid shallow terminal manhole if future expansion is possible.
  - Direct connection to terminal manhole allowed with use of stub.
- Inverts and positions of all connecting sewer lines clearly shown in Profile.  
(i.e., inlet on S, inlet on W, etc).
- Verify normal drop between all inlets and outlets per S-C5.  
**NORMAL DROP VALUES ON S-C5 ARE THE MINIMUM VALUES. ELEVATION DROP CAN BE GREATER THAN THIS SPECIFIED VALUE.**
- Verify stationing and show positions for all inlets and outlets.
- Show existing stationing for PC\_\_\_\_\_ in parenthesis.
- Show stationing in Plan and Profile. Verify all stationing in match in Plan and Profile.
- Remove all manhole numbers. Numbers will be assigned when accepted by CSMD.
- SMD does not accept deep manholes, redesign if possible.
- Cleanouts are not accepted in R/W. Install manhole within R/W.
- Verify correct PC No. and stationing shown on all existing manholes, inlets, outlets and join points. Show portion of existing sewer in Plan and Profile.
- Verify all slopes between manholes.

## Curves

- Only one curve between two manholes.
- Specify curve data and stationing for BC and EC on Plan and Profile.
- Label points on compound curve.
- Vertical curves require stationing every 10 feet.
- Curves that start and end at manholes, should start/end at center of manholes.
- For an 8" pipe, minimum radius: 120' delta angle ( $\Delta$ ) less than  $60^\circ$ .

## House Laterals

- Direct connection to terminal manhole allowed with use of stub, only when no future development will occur.
- Show stationing for all house laterals on plans and identify all stubs.
- Check all properties fronting mainline sewer for wyes for future connections.
- Only one house lateral is allowed per lot.
- Only one HL connection is allowed to a manhole.
- Use chimney if HL connection to sewer line 15 feet or deeper, per Standard Plan APWA 220-2.
- HL must be at least 5 feet apart and 5 feet from manhole structures. Include note on plans.

## **Backflow**

- Verify pad elevations with grading plan and check for need of backwater valve (pad is lower in elevation than top of upstream manhole). Show each individually on Plan.

## **Pressure Water Mains**

- Check with Pump Station Section (JEFF BOUSE). Check for Standard Plans.

## **Removal/Abandonment**

- Separate page showing sewer removal.
- Show existing lines to be removed as dashed line, show in Plan and Profile.

## **Cradling or Encasement**

- Per standard plan 2023-2, Case I cradling is required when:
  - Depth of line is over 20 feet or
  - When crossing over a structure less than 1.5 feet and greater than 0.5 feet.
- Per standard plan 2023-2, Case II encasement is required when:
  - Cover dirt is less than 4 feet or
  - Crossing under a structure less than 1.5 feet and greater than 0.5 feet.

**NORMAL DROPS STRAIGHT THROUGH MANHOLES FOR MINIMUM GRADES OR GREATER  
EXCEPT AS NOTED BELOW**

INLET		8"	10"	12"	15"	18"
OUTLET	8"	.10	.10	.10	.10	.10
	10"	.17	.10	.10	.10	.10
	12"	.33	.17	.10	.10	.10
	15"	.58	.42	.25	¢	—
	18"	.80	.71	.63	.50	¢

**NOTE:** FOR RIGHT ANGLE CONNECTIONS, ADD 0.10 OF A FOOT TO EACH OF THE ABOVE VALUES.

When  $S_a \geq 2.5\%$  WHEN PIPES ON BOTH SIDES OF THE MANHOLE ARE THE SAME SIZE AND THE AVERAGE OF THE GRADES ON BOTH SIDES EXCEEDS 2.50 %, AN AVERAGE Avg Drop DROP SHALL BE TAKEN ACROSS THE MANHOLE, NOT TO EXCEED .60, INSTEAD OF THE VALUES IN THE ABOVE TABLE.  $S_a = (s_1 + s_2)/2$   
 $= S_a * L$  L = distance across MH (Typical = 4')

**NORMAL DROPS STRAIGHT THROUGH MANHOLES FOR GRADES LESS THAN MINIMUM  
EXCEPT AS NOTED BELOW**

INLET		8"	10"	12"	15"	18"
OUTLET	8"	¢	—	—	—	—
	10"	.10	¢	—	—	—
	12"	.18	.10	¢	—	—
	15"	.31	.23	.14	¢	—
	18"	.80	.71	.63	.50	¢

**NOTE:** FOR RIGHT ANGLE CONNECTIONS ADD 0.10 OF A FOOT TO EACH OF THE ABOVE VALUES.

- NOTES:**
1. ¢ INDICATES NO DROP ACROSS M.H. AND ELEV. TO BE SHOWN AT THE CENTER OF MANHOLE.
  2. FOR TRAP M.H.'S ALL INLETS TO BE AT SAME ELEVATION. OUTLET MAY BE 0.05 OF A FOOT LOWER.
  3. PERMISSION FOR DEVIATIONS FROM THE ABOVE VALUES, OR SMALLER DROPS FOR PIPES OVER 18", TO BE APPROVED BY THE COUNTY ENGINEER.
  4. THE MINIMUM GRADES FOR VARIOUS PIPE SIZES ARE DETERMINED BY THE CHART ON COUNTY ENGINEER STANDARD S-C4

**TABLE FOR COMPUTING NORMAL DROPS THROUGH MANHOLES**

COUNTY OF LOS ANGELES  
DEPARTMENT OF PUBLIC WORKS

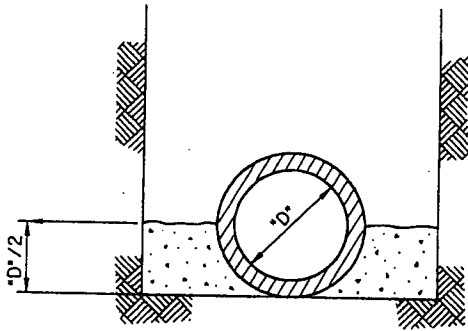
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ASSISTANT DEPUTY

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COUNTY ENGINEER

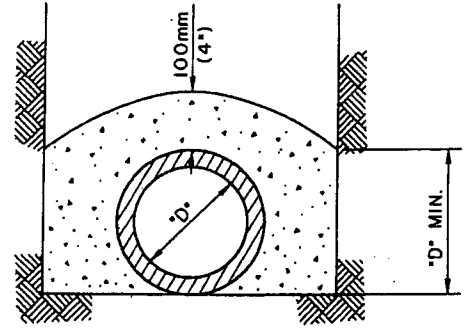
COUNTY ENGINEER  
STANDARD S-C5

DATE: 3/80

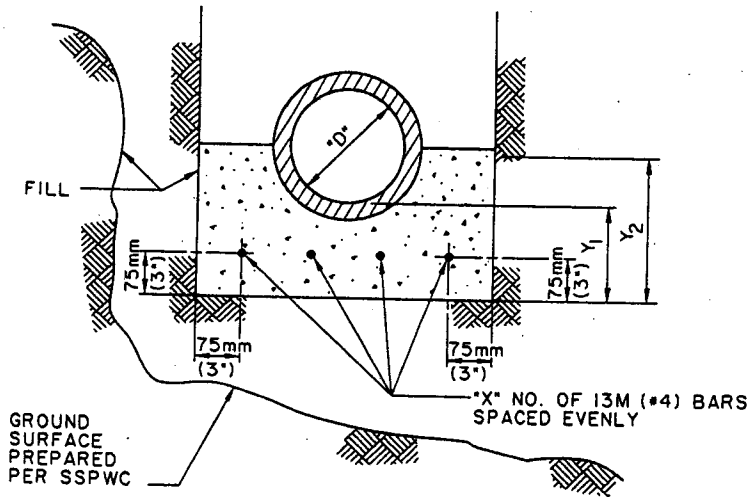
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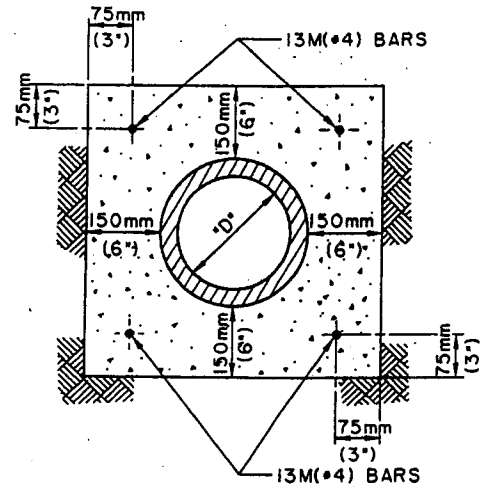
CASE I  
CONCRETE CRADLE



CASE II  
CONCRETE ENCASEMENT



CASE III  
SPECIAL CRADLE



CASE IV  
SPECIAL ENCASEMENT

SCHEDULE OF DIMENSIONS  
AND REINFORCING BARS  
FOR SPECIAL CRADLE - CASE III

"D" (DIAMETER)	"X" NO. OF 13M(#4) BARS	THICKNESS	
		Y <sub>1</sub>	Y <sub>2</sub>
150mm (6")	2	100mm (4")	200mm (8")
200mm (8")	4	130mm (5")	250mm (10")
250mm (10")	4	150mm (6")	300mm (12")
300mm (12")	4	180mm (7")	380mm (15")
380mm (15")	5	230mm (9")	480mm (19")
460mm (18")	5	250mm (10")	560mm (22")
530mm (21")	6	300mm (12")	660mm (26")
600mm (24")	6	330mm (13")	710mm (28")

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

CRADLING AND ENCASEMENT

STANDARD PLAN  
METRIC

APPROVED

*Thomas A. Gilman*  
DIRECTOR OF PUBLIC WORKS

5/31/1992  
DATE

1995, 1999

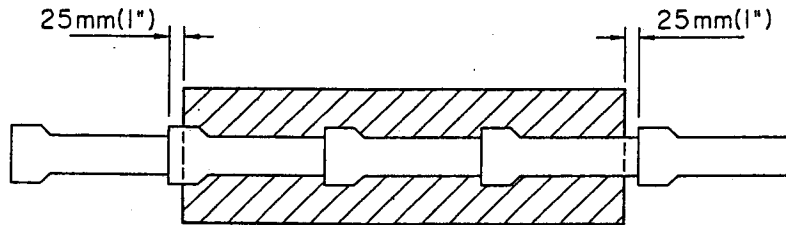
REVISIONS

2023-2

SHEET 1 OF 2

NOTES

1. EXTEND BOTH ENDS OF CRADLE OR ENCASEMENT TO A POINT 25mm(1") SHORT OF FIRST PIPE JOINT BEYOND LOCATIONS SPECIFIED ON PLANS.



PLAN VIEW

2. APPLY FORM OIL, THIN PLASTIC SHEET, OR OTHER ACCEPTABLE MATERIAL TO PIPE, TO PREVENT BOND BETWEEN PIPE AND CONCRETE.
3. USE CLASS 265-C-14(420-C-2000) CONCRETE FOR ALL CASES.
4. CONDITIONS OF REQUIRED USE:
  - a. CASE I - CONCRETE CRADLE
    1. WHEN OVERBURDEN DEPTH IS GREATER THAN 6.1m(20').
    2. AS A SUPPORT WHEN CROSSING OVER A STRUCTURE WITH A CLEARANCE LESS THAN 450mm(1.5') AND GREATER THAN 150mm(0.5').
    3. WHEN WITHIN A 45° ANGLE DOWNWARD FROM THE BOTTOM OF A FOOTING.
  - b. CASE II - CONCRETE ENCASEMENT
    1. WHEN CROSSING UNDER A STRUCTURE WITH A CLEARANCE LESS THAN 450mm(1.5') AND GREATER THAN 150mm(0.5').
    2. WHEN COVER DIRT IS LESS THAN 1.2m(4').
    3. WHEN LESS THAN 900mm(3') FROM A POWER POLE.
  - c. CASE III - SPECIAL CRADLE
    1. AS A SUPPORT WHEN CROSSING OVER A TRENCH GREATER THAN 1.2m(4') IN WIDTH SEE APWA STANDARD PLAN 224.
  - d. CASE IV - SPECIAL ENCASEMENT
    1. WHEN CROSSING UNDER A STRUCTURE WITH A WIDTH GREATER THAN 1.5m(5') AND A CLEARANCE LESS THAN 450mm(1.5') AND GREATER THAN 150mm(0.5').
    2. WHEN WITHIN 3m(10') OF A PRESSURIZED WATER MAIN, OR WITHIN 7.6m(25') OF A GRAVITY FLOW WATER MAIN.
5. DIMENSIONS SHOWN ON THE PLAN FOR METRIC AND ENGLISH UNITS ARE NOT EXACTLY EQUAL VALUES. IF METRIC UNITS ARE USED, ALL VALUES USED FOR CONSTRUCTION SHALL BE METRIC VALUES. IF ENGLISH UNITS ARE USED, ALL VALUES FOR CONSTRUCTION SHALL BE ENGLISH VALUES.

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

CRADLING AND ENCASEMENT

STANDARD PLAN  
METRIC  
2023-2  
SHEET 2 OF 2