Sacramento Metropolitan Fire District

Community Risk Reduction Division **www.metrofire.ca.gov**

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SACRAMENTO METROPOLITAN FIRE DISTRICT					
FIRE PREVENTION STANDARD					
STANDARD TITLE:	**Civil Engineering Notes for Commercial Projects**				
STANDARD NUMBER:	8	EFFECTIVE DATE:	05/01/2007	REVISION DATE:	01/01/26

OBJECTIVE

To provide standard notes for Civil Drawings.

PROCEDURE

The following information shall be reproduced on all civil engineering (site) plans for commercial projects as “Sacramento Metropolitan Fire District Notes”:

1. The required fire flow for protection of the proposed project is _____ gallons per minute (GPM), at 20 pounds per square inch (psi), for a duration of _____ hours. This flow is based on a structure of Type _____ construction of not more than _____ total square feet with a 50% reduction for the installation of a full coverage automatic fire sprinkler system. This required fire flow is in addition to any domestic water demands. A change in any of these conditions may increase or decrease the required fire flow. (2025 CFC Appendix B)

2. Required fire hydrants capable of providing the required fire flow shall be installed, tested, flushed and approved prior to any construction (including foundations) or storage of any combustible materials. (2025 CFC § 3312.1)

3. Required fire hydrants shall be National Standard Thread with one 4.5 inch and two 2.5 inch outlets. (NFPA 24 § 7.1.2)

4. Required private streets and fire apparatus access roads shall be installed to the “first lift” (up to the last one inch of pavement), identified and approved prior to construction (including foundations or storage of combustible materials). Private streets and fire apparatus access roads shall be designed and maintained to support the imposed live load of 80,000 pounds, with a maximum axle load of 31,000 pounds, and meet Public Works Standards for roadways. (2025 CFC § 503.2.3)

5. Fire apparatus access roads shall be marked or identified by one of the three methods listed below and shall be present for all areas designated as such. (California Vehicle Code § 22500.1 and 2025 CFC § 503.3):

a. Posting of a sign every 50-ft. along and immediately adjacent to, and visible from, the designated fire access lane clearly stating in letters not less than one inch in height that the place is a fire lane and no parking is permitted.

b. By outlining or painting the pavement red with approved pavement paint and, in contrasting color, marking the pavement every 25-ft. with words "NO PARKING FIRE LANE" which are clearly visible from a vehicle.

c. By a red curb or red paint on the edge of the roadway upon which is clearly marked every 25-ft. with the words "NO PARKING FIRE LANE".

6. The installation of perimeter fencing, gates, or barriers, that obstructs vehicular or pedestrian ingress or egress to a project site, building, etc., shall require a separate plan submittal, review, and approval by the Fire District prior to installation. (2025 CFC § 503.6)

7. Blue reflective hydrant markers shall be installed in accordance with the following: (2025 CFC § 509.1)

   a. On unstriped roadways, blue markers shall be set in the center of the roadway.

   b. On undivided striped roadways, blue markers shall be set 6-in. to the hydrant side of the center stripe.

   c. On divided roadways, the blue marker shall be set 6-in. to the side of the median or lane striping, which is closest to the hydrant.

   d. In locations where hydrants are situated on corners, blue markers shall be installed on both approaches fronting the hydrant.

8. Underground piping shall be installed in accordance with NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances* and the approved plans prepared by a civil engineer or piping installation contractor. The underground fire service installation contractor shall submit for review and approval a schematic drawing showing the part for part installation arrangement of the underground piping and appurtenances and a parts list with listing information for all parts prior to installation. A trench cross sectional detail shall be included on the plans. A copy of the stamped APPROVED underground fire service plans shall be on site for all Sacramento Metropolitan Fire District (Fire District) inspections and acceptance testing. (NFPA 24 § 4.1)

9. Plastic piping approved for underground installations shall be PVC, C900, Class 150 or greater, and be listed for such use. (NFPA 24 § 10.1)

10. All runs of non-metallic water pipe shall have a No. 10 gauge solid soft drawn copper locator wire taped on top of the pipe to facilitate locating the pipe at a later date. The

wire shall be stubbed up inside each valve box. Continuity test shall be conducted on each splice at all locations. (NFPA 24 § 10.4.2.2)

11. Galvanized pipe is not approved for underground supply piping. (NFPA 24 § 10.1)

12. Non-metallic pipe shall not be used within 5-ft. of a building. (NFPA 24 § 10.4.3)

13. The fire sprinkler riser shall be located on the outside wall, 12-24 inches from that outside wall and at least 12 inches from any other wall. (NFPA 13 6.3.1.1.1)

14. Above grade valves for controlling the water supply for on-site fire hydrants and automatic fire sprinkler systems shall be indicating valves and electrically supervised. (NFPA 24 § 6.7.2) and (CFC § 903.6.1)

15. All piping shall be laid in a 6-in. bed of sand or natural gravel not over 1-in. in diameter and have a 12-in. fill of sand or natural gravel not over 1-in. in diameter. (NFPA 24 § 10.9.3)

16. A strand of minimum 3-in. wide non-detectable blue tape marked “CAUTION: BURRIED WATERLINE BELOW” shall be placed 12-inches above all piping. 2016 (NFPA 24 § 10.9.6)

17. All sections of ductile iron pipe or ductile iron fittings shall be encased in either 8-mil linear low density (LLD) or 4-mil high-density, cross-laminated (HDCL) polyethylene sheets or tubes in accordance with American Water Works Association Standard C105/A21.5-05, *Polyethylene Encasement for Ductile-Iron Pipe Systems.* Any fasteners shall be made of low-alloy steel. (NFPA 24 § 10.4.1.1)

18. Concrete thrust blocks or other approved retaining, shall be installed at all locations where piping changes direction. (NFPA 24 § 10.6.1)

19. A 200-PSI hydrostatic pressure test shall be performed, and witnessed by the District, for all installed piping and appurtenances for a period of 2 hours. The piping shall be center-loaded during pressure testing with all joints, fittings and appurtenances uncovered. Failure to comply with this section will result in a test failure and the uncovering of the piping for a visual inspection and retesting.(NFPA 24 § 10.10.2.2)

    A fire sprinkler underground supply piping flush, using a full pipe diameter discharge, shall be conducted and witnessed by the Fire District prior to connection to the above ground fire sprinkler system. Flushing shall be performed utilizing burlap sacks or equivalent, to strain the hose outlet(s). Piping shall be flushed until no foreign objects are located in the burlap sack(s) and the water is clear. Contractors shall have the appropriate tools and equipment on-site to complete the flush in a timely manner

including sufficient fire hose to direct the water to a safe and approved location. Adequate drainage shall be available to accept a minimum of five minutes flow per 100 feet of pipe at the required flush flow rate outlined in NFPA 24. It is the responsibility of the applicant to obtain all necessary approvals prior to release of water to the environment. (NFPA 24 § 10.10.2.1)

20. The fire department connection piping shall also be flushed if connected to the fire sprinkler supply piping below grade. Piping shall be flushed until all foreign objects have been discharged and the water is clear. (NFPA 24 § 10.10.2.1)

21. A fire hydrant flush, using the 4- ½ inch "steamer" outlet, shall be conducted at all hydrants and witnessed by the Fire District. Piping shall be flushed until all foreign objects have been discharged and the water is clear. (NFPA 24 § 10.10.2.1)

22. A Contractor's Material and Test Certificate for Underground Piping form shall be signed by the installing contractor and owners' representative. A copy of this form shall be provided to the Fire District prior to final acceptance of the underground work. (NFPA 24 §10.10.1)

23. Fire sprinkler plans will not be accepted until civil improvement plans, new building plans, and underground fire service plans are submitted and approved.

24. Underground fire service plans will not be accepted until civil improvement plans are submitted and approved.