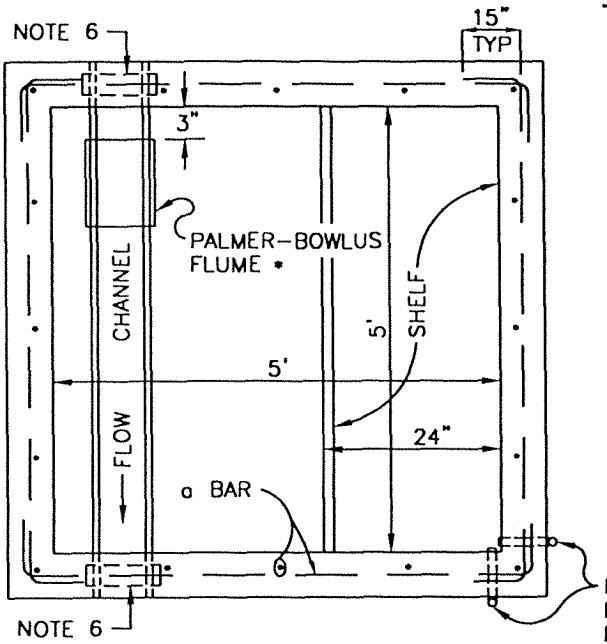
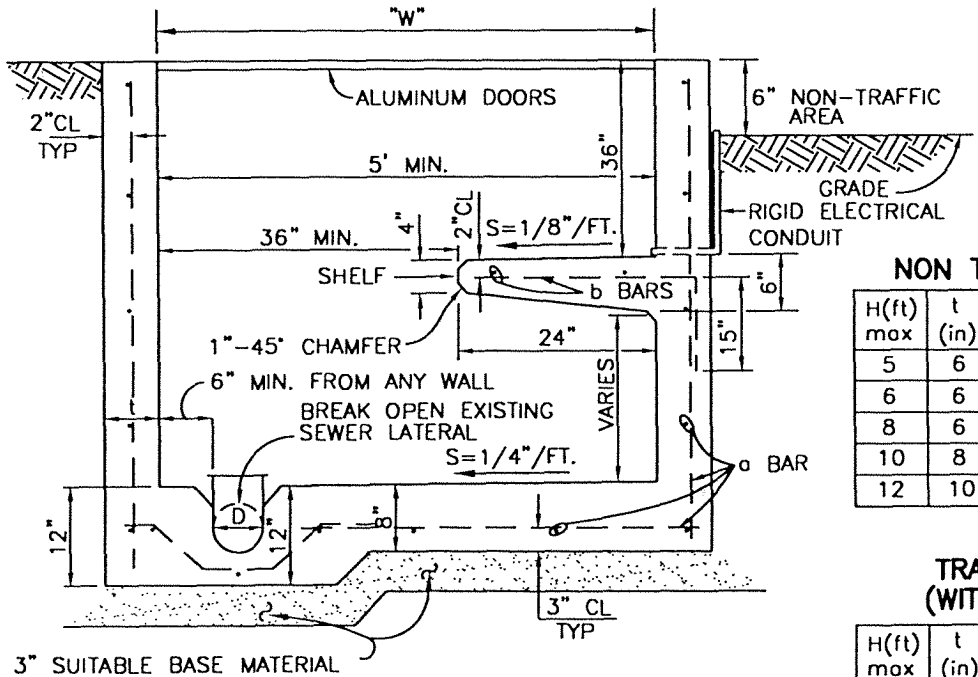
NOTES:

1. SHELVES TO HAVE A NON-SKID SURFACE.
2. "D"-DIAMETER OF SEWER LINE AND MEASURING FLUME.
3. SEE TABLE FOR "t", AND "a" AND "b" BARS.
4. ALL ELECTRICAL WIRING WITHIN THE VAULT SHALL BE ENCASED IN RIGID CONDUIT.
5. LOCATION MUST BE APPROVED BY THE SOURCE CONTROL PROGRAM OF THE WASTWATER DIVISION.
6. TIGHT-FITTING RUBBER O-RING FOR SEALING PLASTIC PIPE TO THE CONCRETE WALL.
7. PROTECTIVE COATING PER PLATE 400.



PLAN VIEW

* PLASTI-FAB PALMER-BOWLUS FLUME OR APPROVED EQUAL



SECTION

NON TRAFFIC AREA VAULT

H(ft) max	t (in)	REINFORCEMENT	
		a BARS	b BARS
5	6	#3 @ 18"	#3 @ 14"
6	6	#3 @ 14"	#3 @ 14"
8	6	#4 @ 12"	#3 @ 14"
10	8	#4 @ 10"	#3 @ 14"
12	10	#4 @ 8"	#3 @ 14"

TRAFFIC AREA VAULT (WITH H-20 LOADING)

H(ft) max	t (in)	REINFORCEMENT	
		a BARS	b BARS
5	6	#4 @ 10"	#3 @ 14"
6	6	#4 @ 8"	#3 @ 14"
8	8	#4 @ 6"	#3 @ 14"
10	9	#4 @ 6"	#3 @ 14"
12	10	#5 @ 6"	#3 @ 14"

REV. APPR. BY DATE

REV. APPR. BY DATE

CITY OF Oxnard
Department of Public Works

INDUSTRIAL WASTE FLOW MONITORING VAULT

DRAWN: STAFF CKD.: STAFF

APPR. Granville M. Bowman

STANDARD PLAN 2002

PLATE 410

SHEET 1 OF 2

FLOW MONITORING VAULT

VAULT DIMENSIONS:

1. MINIMUM VAULT SIZE TO BE 5'-0"X 5'-0"
2. FOR SEWER LATERALS DEEPER THAN 5', VAULT SIZE TO BE MIN. 6'-0"X 6'-0".
3. VAULT SIZES TO BE DETERMINED ACCORDING TO THE FOLLOWING FORMULA:
   WIDTH = D+4' MIN. WIDTH = 5'-0"
   LENGTH = 3D+2' MIN. LENGTH = 5'-0"

VAULT LOCATION:

1. CONTACT "ENVIRONMENTAL CONTROL SUPERVISOR" PRIOR TO CONSTRUCTION FOR APPROVAL OF VAULT LOCATION. PHONE 488-3517. CONFIRM THAT THE STANDARD DRAWING CONTAINS THE LATEST REVISIONS.
2. VAULTS TO BE LOCATED AWAY FROM TRAFFIC AREAS IF POSSIBLE. HOWEVER, IF INSTALLED IN TRAFFIC AREA, MUST BE CAPABLE OF CARRYING H-20 LOADING. RECESSED LOCKABLE HASP REQUIRED FOR TRAFFIC AREAS.
3. VAULTS USING PALMER-BOWLUS FLUMES TO BE LOCATED ACCORDING TO CRITERIA IN TABLE A AND OTHER SPECIAL PROVISIONS.

TABLE "A"
MIN. AND MAX. RECOMMENDED FLOW RATES FOR FOR FREE FLOW THROUGH PLASTI-FAB PALMER-BOWLUS FLUMES

UPSTREAM PIPE DIAMETER	MAXIMUM SLOPE ALLOWABLE FOR UPSTREAM PIPE	MIN. HEAD FT.	MIN. FLOW RATE		MAX. HEAD FT.	MAX. FLOW RATE	
			M.G.D.	C.F.S.		M.G.D.	C.F.S.
6"	0.022	0.11	0.023	0.035	0.36	0.203	0.315
8"	0.020	0.15	0.048	0.074	0.49	0.433	0.670
10"	0.018	0.18	0.079	0.122	0.61	0.752	1.160
12"	0.016	0.22	0.128	0.198	0.73	1.180	1.830
15"	0.015	0.27	0.216	0.334	0.91	2.060	3.180
18"	0.014	0.33	0.355	0.549	1.09	3.240	5.010
21"	0.014	0.38	0.504	0.780	1.28	4.810	7.440
24"	0.013	0.44	0.721	1.120	1.46	6.700	10.400
27"	0.013	0.49	0.945	1.460	1.64	8.950	13.800
30"	0.013	0.55	1.260	1.950	1.82	11.600	18.000

OTHER SPECIAL PROVISIONS:

1. THE MAXIMUM UPSTREAM DEPTH SHALL NOT EXCEED 0.90D (D IS THE UPSTREAM PIPE DIAMETER).
2. THE MAXIMUM UPSTREAM SUBMERGENCE SHALL NOT EXCEED 85% OF THE MAXIMUM UPSTREAM DEPTH. THUS, THE DEPTH OF FLOW IN THE UPSTREAM CHANNEL BEFORE INSTALLING THE FLUME (NORMAL DEPTH) SHALL NOT EXCEED 0.75D.
3. THE FLUME WILL FUNCTION PROPERLY IF THE VELOCITY HEAD AT DEPTH FOR MAXIMUM FLOW IS NOT GREATER THAN 1.5X THE NORMAL DEPTH.
4. THE DOWNSTREAM OUTLET PIPE SLOPE SHALL NOT BE LESS THAN THE UPSTREAM PIPE SLOPE BUT MAY BE GREATER IF DESIRED.
5. THE DOWMSTREAM OUTLET PIPE SHALL BE FREE OF OBSTRUCTIONS.
6. UPSTREAM TURBULENCE SHALL BE AVOIDED. NO BENOS, DROP MANHOLES, FLOW JUNCTIONS, ETC., ARE PERMITTED WITHIN 25 PIPE DIAMETERS (D) OF THE METERING STRUCTURE.
7. FOR PLASTIC SEWER PIPE, PLACE TIGHT-FITTING RUBBER RING OVER THE PIPE AT THE MIDPOINT WHERE THE PIPE PASSES THROUGH THE CONCRETE WALL.

VAULT DOORS:

1. DOORS TO BE "BILCO", MODEL "KD" ALUMINUM DOORS OR EQUIVALENT. LOCKABLE HASP TO BE PROVIDED.
2. DOORS TO OPEN PARALLEL TO FLOW.

VAULT SHELF:

1. CONSTRUCT SHELF FULL LENGTH OF VAULT
2. SHELF TO BE CAPABLE OF SUPPORTING 150 P.S.F.
3. SHELF SURFACE TO HAVE NON-SKID ADHESIVE APPLIED
4. OPTIONAL PRECAST SHELF IS TO BE MONOLITHICALLY CAST WITH VAULT.

VAULT DIMENSIONS:

1. OWNER TO FURNISH AND INSTALL APPLICABLE SIZE CALIBRATED FLUME, WEIR, FLOW METER OR SIMILAR CITY-APPROVED OEVICESUITABLE FOR MEASUREMENT OF FLOW RATE AND TOTAL VOLUME. A "CERTIFICATE OF CALIBRATION" MUST BE FURNISHED BY THE MANUFACTURER. THE FLOW MEASURING DEVICE WILL HAVE TO BE RECALIBRATED AT 6 MO. INTERVALS BY THE MANUFACTURER OR APPROVED TESTING LAB WITH A "CERTIFICATE OF CALIBRATION" FURNISHED TO THE CITY.
2. INSTALLATION TO BE DONE ACCORDING TO THE MANUFACTURING SPECIFICATIONS.
3. FLOW SAMPLER TO BE LOCATED DOWNSTREAM OF THE FLUME.

REV. APPR. BY DATE

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INDUSTRIAL WASTE FLOW MONITORING VAULT

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SHEET 2 OF 2