

UNIFORM DESIGN AND
CONSTRUCTION STANDARDS
FOR POTABLE WATER
DISTRIBUTION SYSTEMS

SECTION 4

TABLES & REFERENCES

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UNIFORM DESIGN STANDARDS
SECTION 4
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* Excerpt from the Clark County District Board of Health, Regulations Governing Individual Sewage Disposal Systems And Liquid Waste Management

** Excerpt from the Uniform Standard Drawings, Clark County Area, also known as the Blue Book, Drawing 501, dated 3-14-2002

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TABLE A
DOMESTIC WATER METER CHART
Characteristics

TYPE	DISPLACEMENT (1)			COMPOUND (2)			TURBINE (3)		
	GPM		PSI*	GPM		PSI*	GPM		PSI*
	MAX	CONT	@ MAX GPM	MAX	CONT	@ MAX GPM	MAX	CONT	@ MAX GPM
5/8 X 3/4"	20	10	15						
3/4"	30	15	15				30 (4)		
1"	50	25	15				50 (4)		
1-1/2"	100	50	15				100 (4)		
2"	160	80	15				160 (4)		
3"				320	160	20	350	240	7
4"				500	250	20	630	420	7
6"				1000	500	20	1400	920	7
8"				1600	800	20	2400	1600	7
10"				2300	1150	20	3800	2500	7

* Maximum pressure loss at safe maximum operating capacity.

- (1) AWWA C700 Cold-Water Meters – Displacement Type, Bronze Main Case, Table 1.
- (2) AWWA C702 Cold Water Meters – Compound Type, Table 1.
- (3) AWWA C701 Cold-Water Meters – Turbine Type For Customer Service, Table 1. Class II In-line (High Velocity Types – Pressure Losses do not include strainer).
- (4) Max flow for residential fire service - continuous flow and psi loss characteristics are similar to displacement meters.

TABLE B
FIRE SERVICE WATER METER CHART
Characteristics (1)

TYPE	TYPE I (2)			TYPE II (3)			TYPE III (4)		
	GPM **		PSI*	GPM**		PSI*	GPM**		PSI*
	MAX	CONT	@ MAX GPM	MAX	CONT	@ MAX GPM	MAX	CONT	@ MAX GPM
3"							350	250	11
4"	700	500	4	700	400	12	700	400	11
6"	1600	1150	4	1600	900	12	1600	900	11
8"	2800	2000	4	2800	1600	12	2800	1600	11
10"	4400	3100	4	4400	2200	12	4400	2200	11

* Maximum pressure loss at safe maximum operating capacity.

** Maximum flow rates may be used for fire flow requirements only. Continuous operation flow rates should be used for all other operating conditions.

- (1) AWWA C703 Cold-Water Meters – Fire Service Type, Table 1.
- (2) Type I Devices – Proportional Fire-Service Meters with Check Valve.
- (3) Type II Devices – Compound Fire-Service Meter Assembly and Strainer with Check Valve (Alternate Fire-Service Meter).
- (4) Type III Devices – Turbine Fire-Service and Strainer without Check Valve.

**TABLE C
BACKFLOW PREVENTION ASSEMBLY
CHARACTERISTICS**

ASSEMBLY SIZE	RATED FLOW (GPM)	MAX PRESSURE LOSS (PSI)		
		RPPA (1)	RPDA (2)	DCVA (3) DCDA
3/4"	30	20	22	10
1"	50	18	20	10
1 1/2"	100	16	18	10
2"	160	16	18	10
3"	320	15	17	10
4"	500	14	16	10
6"	1000	14	16	10
8"	1600	14	16	10
10"	2300	14	16	10

- (1) RPPA (Reduced Pressure Principal Assembly) -- AWWA Standard C511, "Reduced-Pressure Principle Backflow Prevention Assembly", (Table 1)
- (2) RPDA (Reduced Pressure Detector Assembly) - USC FCCCHR Manual, Section 10.2.7.1, Ninth Edition, "Design, Operational And Evaluation Specifications For Reduced Pressure Principle-Detector Backflow Prevention Assemblies"
- (3) DCVA (Double Check Valve Assembly) -- AWWA Standard C510, "Double Check Valve Backflow Prevention Assembly", (Table 1)
DCDA (Double Check Detector Assembly)

Notes:

- Detector meter for RPDA and DCDA shall comply with agency requirements.
- The use of dual assemblies may be required to accommodate meter capacity and provide continuous service during maintenance of the assemblies.

**TABLE D
DETECTOR CHECK VALVE (DCV)
FLOW CHARACTERISTICS**

ASSEMBLY SIZE	MAX RATED FLOW (GPM)	MAX PRESSURE LOSS (PSI)
3"	360	3
4"	750	3
6"	1500	3
8"	3000	3
10"	4500	3

Notes:

- Check Valves or Detector Check Valves do not meet the requirements for backflow prevention. The information included in this table is provided to assist you in the design of the retrofits or upgrades to existing services to provide backflow protection.
- It should be noted that the capacity for Check Valves or Detector Check Valves three (3) inch and larger is greater than the capacity of a similar size backflow assembly. The installation of a larger size or dual assemblies may be required when upgrading existing services.

TABLE E
BACKFLOW ASSEMBLIES - TYPE REQUIRED

<u>FACILITY TYPE</u>	<u>REQUIRED BACKFLOW PREVENTION</u>
1. Automotive repair facilities	RPPA
*** 2. Auxiliary water system	RPPA or DCVA
*** 3. Beverage bottling plants	RPPA or DCVA
4. Breweries	RPPA
5. Building with house pump and/or water storage tanks	RPPA or DCVA
6. Buildings with sewage ejectors	RPPA or A.G.
7. Car washes, self-wash and automatic	RPPA or A.G.
** 8. Centralized heating and air conditioning plants	RPPA
9. Chemical plants	RPPA or A.G.
** 10. Chemically treated potable water systems	RPPA or A.G.
11. Commercial laundries	RPPA or A.G.
*** 12. Dairies, cold storage plants, and ice manufacturers	RPPA or A.G.
13. Dye works	RPPA or A.G.
14. Film processing laboratories	RPPA or A.G.
15. Fire system (Class 1, 2 & 3)	RPDA or DCDA
16. Fire system with auxiliary supply (Class 4, 5 & 6)	RPDA
** 17. Food processing plants	RPPA
18. Hospitals, mortuaries, medical and dental bldg., sanitariums, nursing & convalescent homes and clinics, chiropractors, X-ray facilities	RPPA or A.G.
19. Irrigation systems, (Premises having separate systems, such as parks, playgrounds, cemeteries, golf courses, schools, estates, ranches, churches	RPPA or A.G.
20. Laboratories using toxic materials	RPPA or A.G.
*** 21. Manufacturing, processing and fabricating plants using toxic and/or non-toxic materials	RPPA
22. Motion picture studios	RPPA or A.G.

TABLE E
BACKFLOW ASSEMBLIES - TYPE REQUIRED
(continued)

<u>FACILITY TYPE</u>	<u>REQUIRED BACKFLOW PREVENTION</u>
*** 23. Multi-storied buildings	RPPA
24. Restricted, classified, or other closed facilities	RPPA or A.G.
25. Sand and gravel plants	RPPA or A.G.
26. Schools and colleges	RPPA or A.G.
27. RV parks	RPPA or A.G.
** 28. Solar heating systems	RPPA
29. Power plants	RPPA or A.G.
30. Veterinary clinics	RPPA or A.G.
31. Where a hemodialysis unit (Kidney Machine) is used by an individual in his/her home	RPPA or A.G.
** 32. Newspaper or printing publishing	RPPA or A.G.
** 33. Dog grooming shops / pet shops	RPPA or A.G.
34. Commercial swimming pools	RPPA or A.G.
** 35. Church baptismal fonts & irrigation	RPPA or A.G.
36. Metal manufacturing - cleaning, processing, & fabricating plants - plating and etching	RPPA or A.G.
** 37. Multiple service – without known or potential hazards	RPPA or DCVA
38. Median strip irrigation	RPPA
39. Sewage and storm drainage facilities	A.G.
40. Portable tank and/or vehicular water tankers	A.G.

NOTE: Agency reserves the option to require a higher level of protection for all facilities.

TABLE E
BACKFLOW ASSEMBLIES - TYPE REQUIRED
(continued)

DESCRIPTION OF BACKFLOW PREVENTION:

- A.G. - Air Gap Separation
- RPPA - Reduced Pressure Principle Backflow Assembly
- RPDA - Reduced Pressure Detector Assembly
- DCVA - Double Check Valve Assembly
- DCDA - Double Check Detector Check Assembly

- ** - Case by case determination
- *** - Dependent on whether the hazard is a health hazard or pollution hazard, determination to be made by the Agency.

NOTE: Any facility which requires an RPPA can also substitute an air gap separation (A.G.), when feasible.

REFERENCE:

For additional information concerning backflow requirements, refer to the State of Nevada, Nevada Administrative Code. (See "NAC 445A.67185 through NAC 445A.67255".)

For information concerning minimum types of protection for particular service connections, refer to the State of Nevada, Nevada Administrative Code. (See "NAC 445A.67195 through NAC 445A.6721".)

TABLE F
INSPECTION CHARGE
STATEMENT OF AUTHORIZATION AND RESPONSIBILITY

_____ (AGENCY NAME)

INSPECTION CHARGE AUTHORIZATION

_____	Date: _____
Agency Name	
_____	Sat./Sun: Holiday _____
Street Address	
_____	Week Day: _____
City-State-Zip Code	

JOB NO.: JOB TITLE: OVERTIME WORKED:

PERMITTEE OR CONTRACTOR

TYPE OF WORK CONSTRUCTED DURING OVERTIME

CONTRACTOR'S REASON FOR WORKING OVERTIME

_____	_____
INSPECTOR'S SIGNATURE	CONTRACTOR'S SIGNATURE

Should the Contractor desire to work outside the established normal working hours, as established by each Agency, the Contractor will be required to sign this or a similar document that constitutes approval of an overtime inspection fee. See Section 1.06 of these Standards.

FIGURE 1

MINIMUM HORIZONTAL WATER/SEPTIC TANK SEPARATION

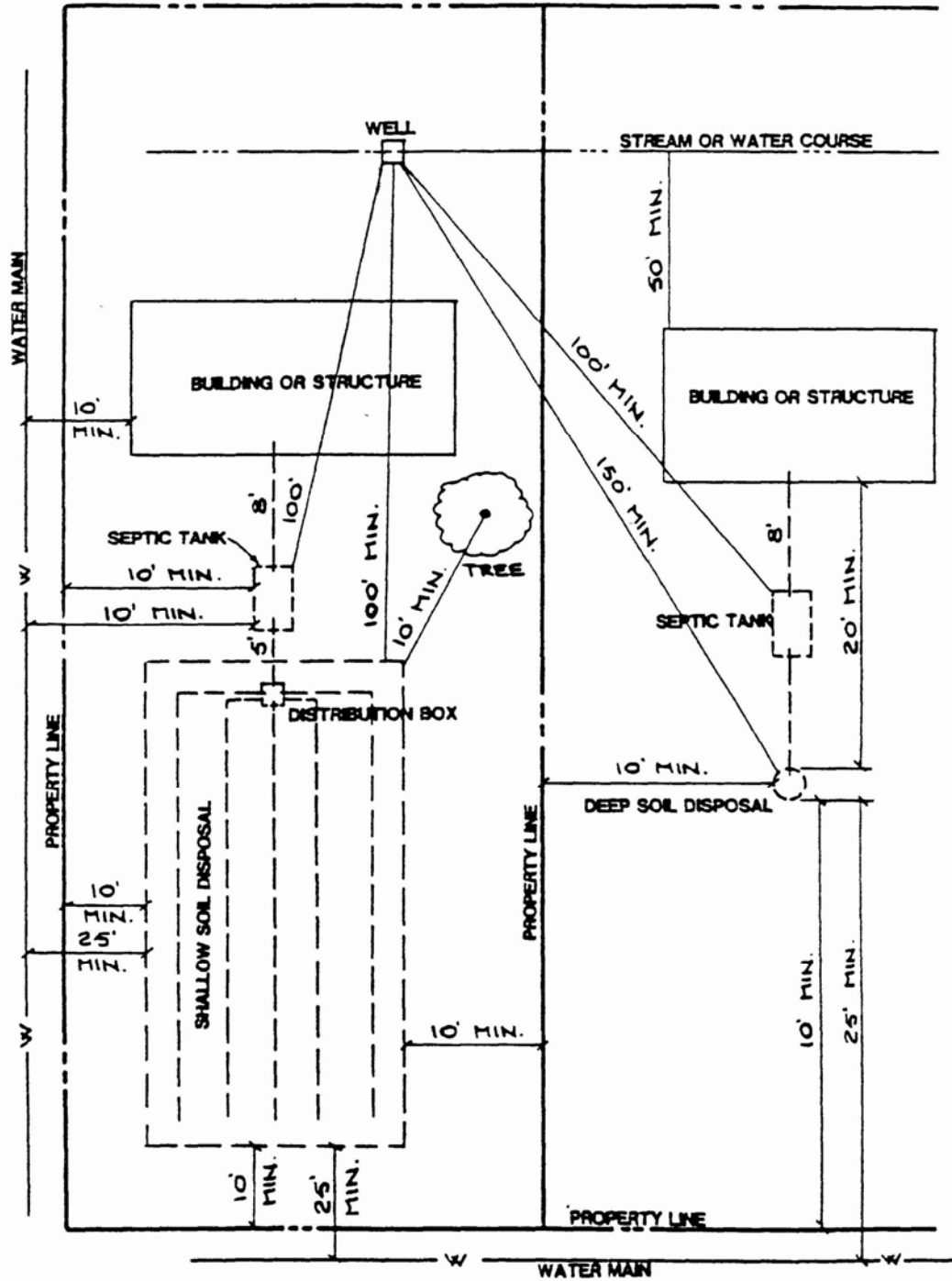
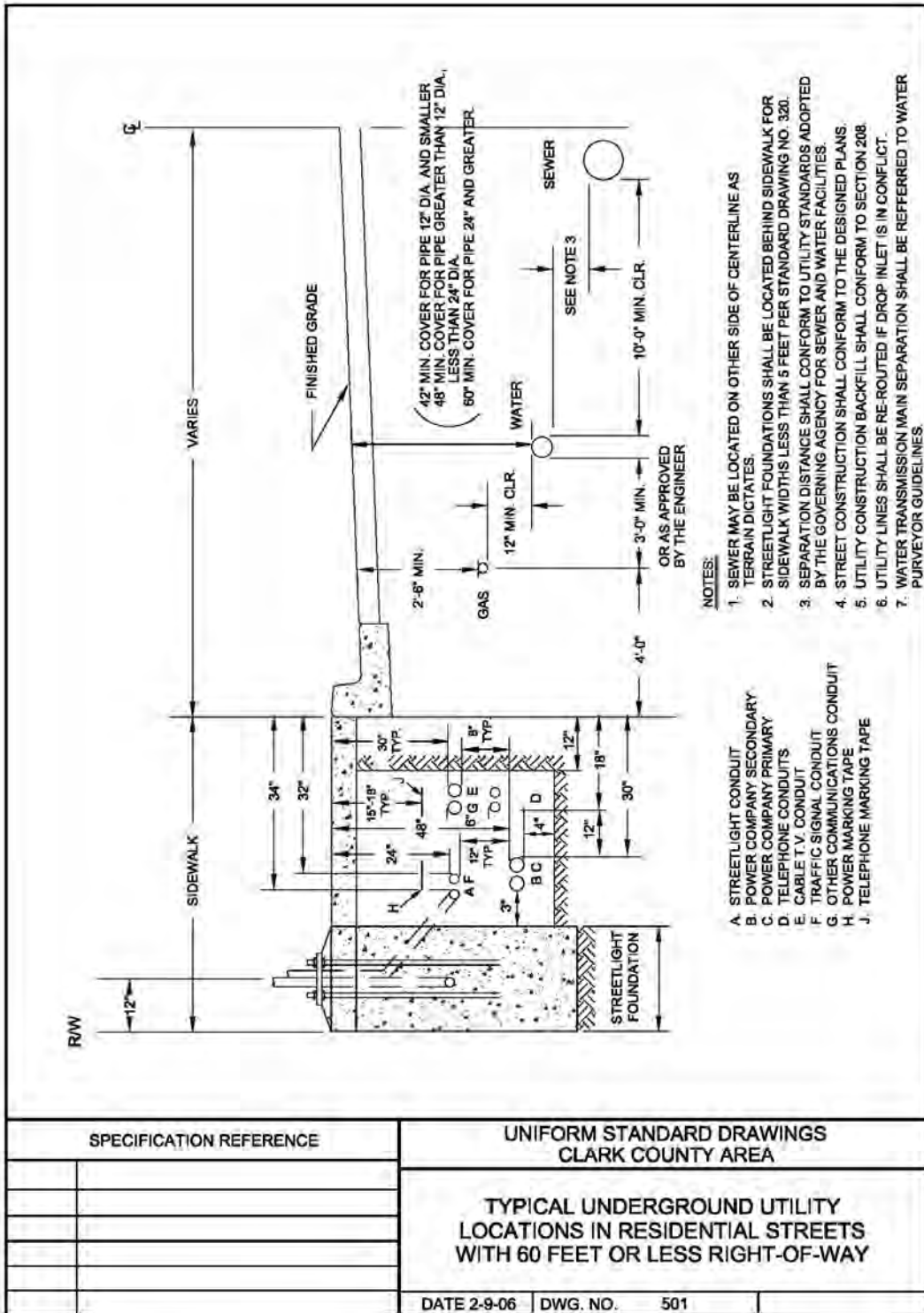


FIGURE 1

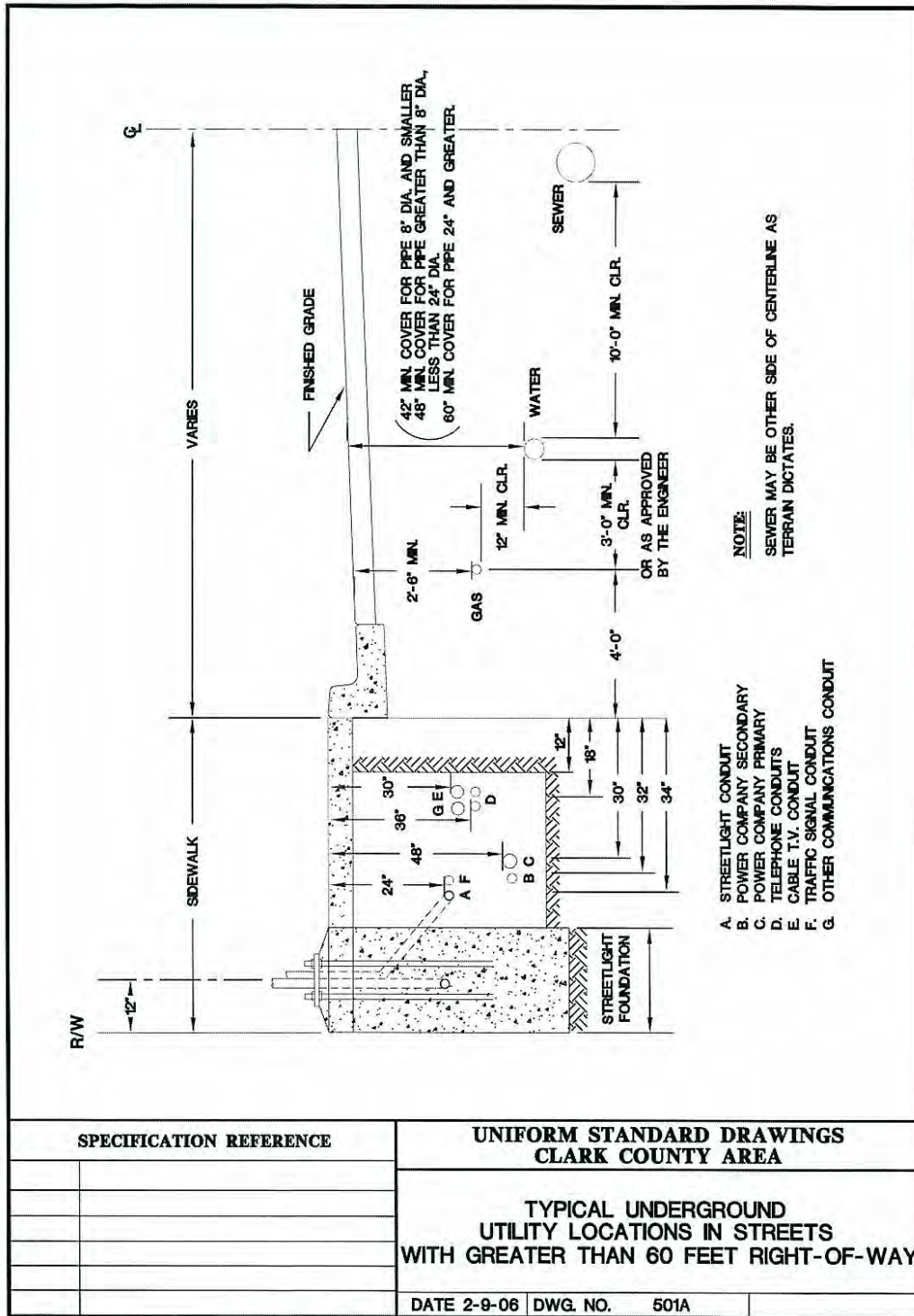
(See: http://www.southernnevadahealthdistrict.org/download/environmental_health/sewage-reggs.pdf, Page 37, for the latest edition.)

FIGURE 2



(See: http://www.rtcsonthernnevada.com/mpo/streets/streets_drawingsvol1.cfm#UTILITIES, for the latest edition.)

FIGURE 2
(Continued)



(See: http://www.rtcsonthernnevada.com/mpo/streets/streets_drawingsvol1.cfm#UTILITIES, for the latest edition.)

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