

SEWER FLOW CALCULATIONS

AVERAGE FLOW: 1 ERU = 180 GPD
PEAK FACTOR = 2.9
WILLOW BEND NO. 3 AVERAGE FLOW = 50 LOTS = 50 ERU = 9,000 GPD = 0.009 MGD
WILLOW BEND (TOTAL) AVERAGE FLOW = 205 LOTS = 205 ERU = 36,900 GPD = 0.037 MGD
WILLOW BEND NO. 3 PEAK FLOW = 0.026 MGD
WILLOW BEND (TOTAL) PEAK FLOW = 0.107 MGD
THE WILLOW BEND PROJECT IS TO BE SEWERED TO THE EXISTING 15" SEWER LINE
LOCATED IN HILLS CENTER DRIVE. EXISTING SEWER ALIGNMENT SHOWN ON THIS SHEET.

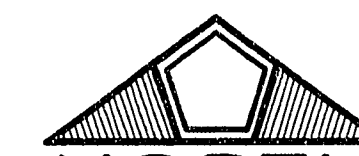
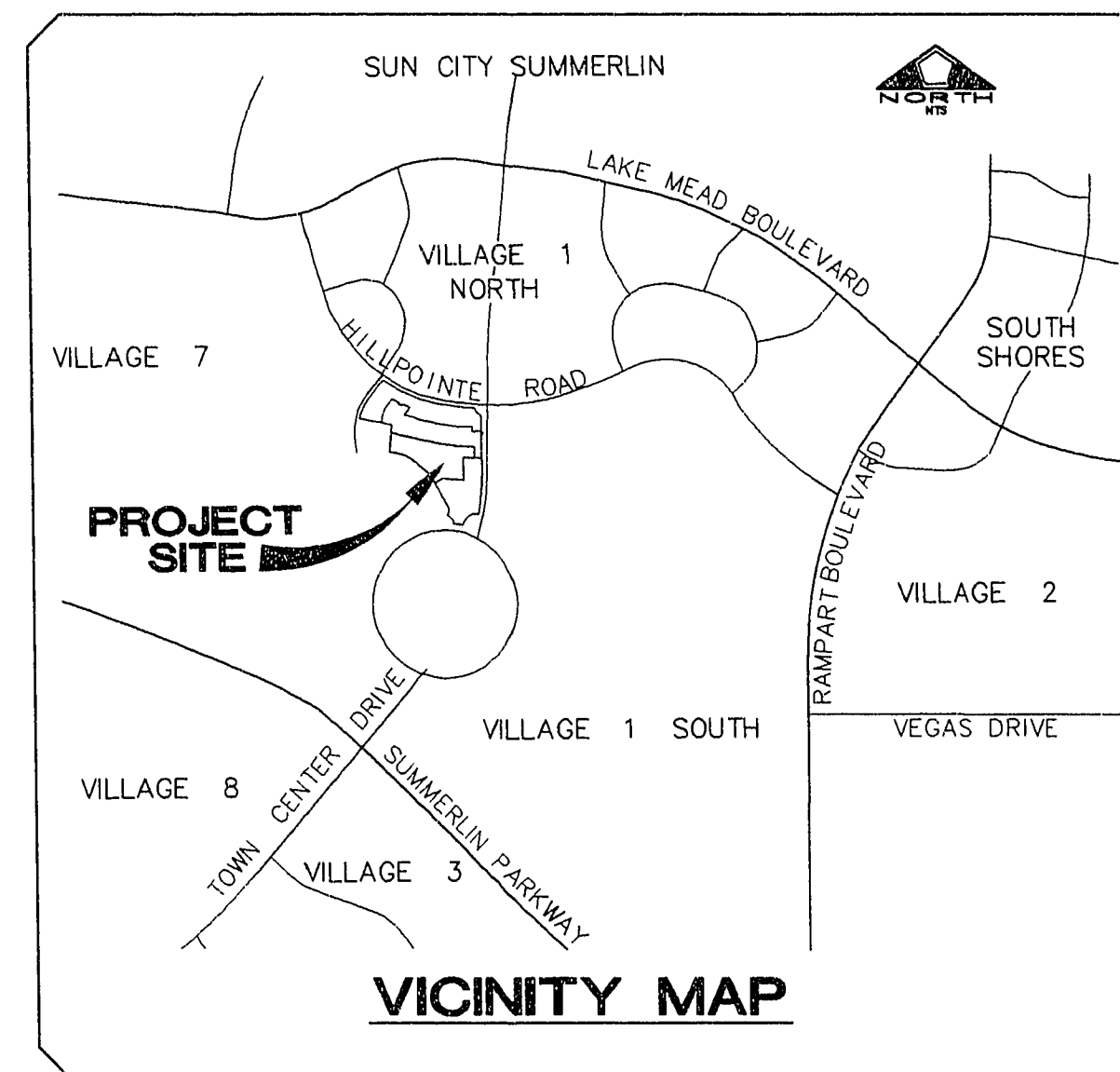
FITTINGS LEGEND

- 1 8" GATE VALVE
- 2 8" 45° BEND
- 3 8" 90° BEND
- 4 6" 45° BEND
- 5 8"x8"x6" TEE
- 6 STD. FIRE HYDRANT ASSEMBLY
- 7 2" BLOW-OFF ASSEMBLY W/CAP
- 8 8" 22½° BEND
- 9 12" X 8" TAPPING TEE

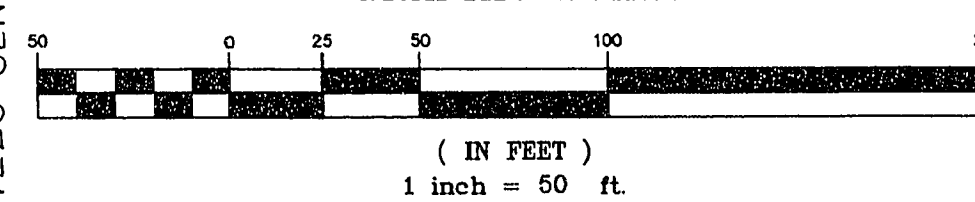
ESTIMATE OF WATER QUANTITIES

8" WATER LINE	1105 LF.
¾" 5/8" WATER SERVICE	50 EA.
¾" 5/8" WATER METER (BY LVVWD)	50 EA.
METER BOX	50 EA.
8" GATE VALVE	0 EA.
8" X 6" TEE	4 EA.
6" 45° BEND	1 EA.
STD. FIRE HYDRANT ASSEMBLY	2 EA.
8" 45° BEND	2 EA.
6" WATER	485 LF.
2" BLOW-OFF ASSEMBLY W/CAP	2 EA.

NOTE: QUANTITIES ARE APPROXIMATE ONLY-
CONTRACTOR TO VERIFY.



GRAPHIC SCALE

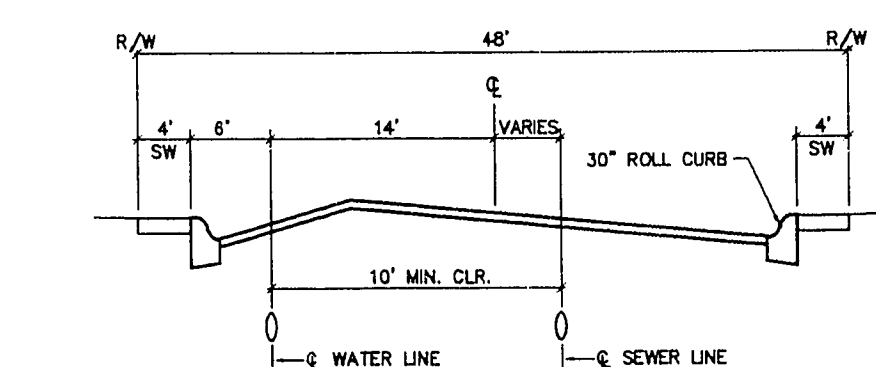


Avoid cutting underground
utility lines. It's costly.

**Call
before you
Dig.**

1-800-227-2600

UNDERGROUND SERVICE ALERT (USA)



TYPICAL UTILITY LOCATION
(NOT TO SCALE)

APPROVALS

[Signature] 12/10/94
LAS VEGAS VALLEY WATER DISTRICT DATE

[Signature] 9-7-94
LAS VEGAS - FIRE MARSHALL DATE

[Signature] 9/6/94
NEVADA POWER COMPANY DATE

NOTE:
THIS APPROVAL IS FOR THE PLACEMENT AND CLEARANCE
OF STREET LIGHT AND SIGNAL LIGHT INSTALLATIONS ONLY.

TRAFFIC SIGN LEGEND & QUANTITIES

6" D-3 STREET NAME SIGN 4 EA

CITY OF LAS VEGAS
FIRE DEPARTMENT NOTES

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE CITY OF LAS VEGAS FIRE DEPARTMENT "HYDRANT SPECIFICATIONS", "HYDRANT INSTALLATION SPECIFICATIONS," AND ORDINANCE #3677.
2. AUTHORIZED HYDRANTS FOR THIS PROJECT ARE:
A - KENNEDY GUARDIAN
B - MUELLER A-423 CENTURIAN
C - CLOW MODEL 2546 MEDALLION
3. ON ANY NEW HOME OR BUILDING INSTALLATION, ACCESSIBLE FIRE HYDRANTS SHALL BE INSTALLED BEFORE COMBUSTIBLE CONSTRUCTION COMMENCES AND SAID FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER WITH AN ADEQUATE WATER SUPPLY.
4. CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT CENTERLINE OF STREET ADJACENT TO FIRE HYDRANT AS REQUIRED IN ORDINANCE #3677 TO IDENTIFY FIRE HYDRANT LOCATIONS.
5. CALL THE LAS VEGAS BUILDING DEPARTMENT AT 299-2071 FOR UNDERGROUND INSPECTION, PRESSURE AND FLUSH VERIFICATION OF ALL FIRE HYDRANTS AND FIRE LINES BEFORE COVERING.
6. PAINTING OF THE CURBS AND HYDRANT AND ANY WORK NECESSARY FOR PROTECTION OF HYDRANTS FROM PHYSICAL DAMAGE PER ORDINANCE #3677 SHALL BE COMPLETED BEFORE APPROVAL BY THE CITY OF LAS VEGAS FIRE DEPARTMENT.
7. A PERMIT IS REQUIRED FROM THE FIRE DEPARTMENT FOR ON-SITE WATER LINE AND FIRE HYDRANT. THE PERMIT AND CONTRACTORS MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER PRIOR TO ANY WORK BEGINNING.
8. A FLOW TEST MUST BE WITNESSED BY THE FIRE DEPARTMENT PRIOR TO OCCUPANCY FOR VERIFICATION OF REQUIRED ON-SITE WATER SUPPLY.
9. ALL ON-SITE FIRE MAIN MATERIALS MUST BE U.L. LISTED AND A.W.W.A. APPROVED.
10. FIRE HYDRANT SPACING:
RESIDENTIAL - 500 FEET UNSPRINKLERED, 600 FEET SPRINKLERED
COMMERCIAL, INCLUDING MULTI-FAMILY - 300 FEET UNSPRINKLERED, 400 FEET SPRINKLERED
11. NO FIRE HYDRANT SHALL BE LOCATED WITHIN THE REQUIRED RADIUS OF A CUL-DE-SAC OR WITHIN 20' OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.
12. NO FIRE HYDRANT SHALL BE LOCATED WITHIN 6' OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT, OR ANY OTHER OBSTRUCTION.
13. NOT MORE THAN 2 HYDRANTS CAN BE OUT OF SERVICE DUE TO A SINGLE MAIN BREAK.
14. THE TURNING RADIUS FOR ANY FIRE APPARATUS ACCESS ROAD AND/OR FIRE LANE, PUBLIC OR PRIVATE, SHALL BE NOT LESS THAN 45 FEET OUTSIDE RADIUS AND 22 FEET INSIDE RADIUS.
15. A FIRE APPARATUS ROAD SHALL BE REQUIRED WHEN ANY PORTION OF AN EXTERIOR WALL OF THE FIRST STORY IS LOCATED MORE THAN 150 FEET FROM A FIRE DEPARTMENT VEHICLE ACCESS. (SEE EXCEPTIONS IN UFC 88, SECTION 10.207).
16. ALL DEAD END FIRE APPARATUS ACCESS ROADS AND/OR FIRE LANES PUBLIC OR PRIVATE IN EXCESS OF 150 FEET IN LENGTH SHALL BE PROVIDED WITH AN APPROVED TURNAROUND AREA. SEE ORDINANCE #3677.
17. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM. SAID SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF LAS VEGAS GUIDELINES FOR AUTOMATIC EMERGENCY VEHICLE ACCESS GATES.

UTILITY NOTE

EXISTING STUBS NOT UTILIZED BY THIS DEVELOPER
MUST BE ABANDONED BY THIS DEVELOPER IN
ACCORDANCE WITH THE APPROPRIATE AGENCY'S
REGULATIONS.

WATER DISTRICT STANDARD NOTES

1. No work shall begin until the water plans have been released for construction by the LVVWD. Following water plan approval, 48 hour notice shall be given to the LVVWD Customer Service Center (258-7111) prior to the start of construction. Notice must be given by 2:00 p.m. the business day prior to a LVVWD inspection.
2. All work shall conform to LVVWD Std. Plates, Drawings, and Specifications, latest edition.
3. All work, except as modified by these plans or by Note 2, shall be done in accordance with the most current draft or edition of the Uniform Standard Specifications for Public Works Construction Offset Improvement, Clark County Area.
4. A single pipe material shall be used throughout the project unless otherwise approved by the LVVWD.
5. All service laterals two (2) inches in diameter and smaller shall be copper tubing with LVVWD approved service saddles.
6. All water meter boxes shall be located outside of driveway areas.
7. All valves shall be located outside of driveways, valley and curb gutters.
8. The following requirements must be met in the event a water line and sanitary or storm sewer line cross:
A minimum eighteen (18) inch vertical separation (outside to outside) must be maintained when the water line is installed over the sanitary or storm sewer line. If the vertical separation cannot be maintained or the water line must be placed under the sanitary or storm sewer line, the sanitary or storm sewer line must be constructed with one of the following or, as shown on these plans:
a. Potable Water supply quality material.
b. Encasement, with four (4) inch concrete (minimum)
c. Sleeving with potable water supply quality pipe.
9. Warning tape shall be required over all mains, all six (6) inch diameter and larger service laterals, and any service lateral not installed perpendicular to the main in accordance with Standard Plate No. 27.
10. All water facilities shall be filled, disinfected, pressure tested, flushed, filled and an acceptable water sample obtained, prior to connection to the LVVWD's distribution system.
11. The contractor must obtain all meters two (2) inches and smaller from LVVWD Central Stores. Telephone 258-3152 forty-eight (48) hours prior to pickup.
12. Construction may interrupt service, with LVVWD approval and proper notification, between the hours of 10 PM and 6 AM, Sunday through Thursday. Circumstances may require temporary service leads be installed, without LVVWD reimbursement. Any temporary service feed must have prior LVVWD approval.
13. All water facility construction materials used must be as listed on the LVVWD's Pre-Approved Materials and Manufacturers Listing for New Facilities, latest revision, or specifically approved on these plans.

Revised: June 20, 1994

LAS VEGAS FIRE DEPARTMENT

FIRE FLOW REQUIREMENT IS 1500 GALLONS
PER MINUTE AT 20 POUNDS PER SQUARE
INCH RESIDUAL.

BASED ON:

SQUARE FOOTAGE 2985
LARGEST AREA BETWEEN
AREA SEPARATION WALLS N/A
HEIGHT TWO-STORY
TYPE OF CONSTRUCTION TYPE 5
EXPOSURES 10'
SPRINKLER SYSTEM NONE
OCCUPANCY SINGLE FAMILY
ROOF CONSTRUCTION TILE

UTILITY LEGEND

- | | | |
|--------------------------------------|---|--------------------------|
| — W — EXISTING WATER LINE | — S — EXISTING SEWER LINE | — EXISTING SEWER MANHOLE |
| — W — PROPOSED WATER LINE | — S — PROPOSED SEWER LINE | — PROPOSED SEWER MANHOLE |
| — EXISTING FIRE HYDRANT | — EXIST. ST.L.T. CONDUIT | |
| — PROPOSED FIRE HYDRANT
W/6" G.V. | — PROPOSED 1-1/4" PVC | |
| — GATE VALVE | — STREET LIGHT | |
| — REDUCER | — PROPOSED NO. 3-1/2
CONCRETE PULL BOX
W/ METAL COVER | |
| — EXISTING SEWER LINE | — CONCRETE DRIVEWAY | |
| — PROPOSED SEWER LINE | — PROPOSED SEWER LATERAL
CONNECT TO EXIST SEWER
WYE | |
| — PROPOSED SEWER LATERAL | | |
| — WATER METER FOR LANDSCAPING | | |