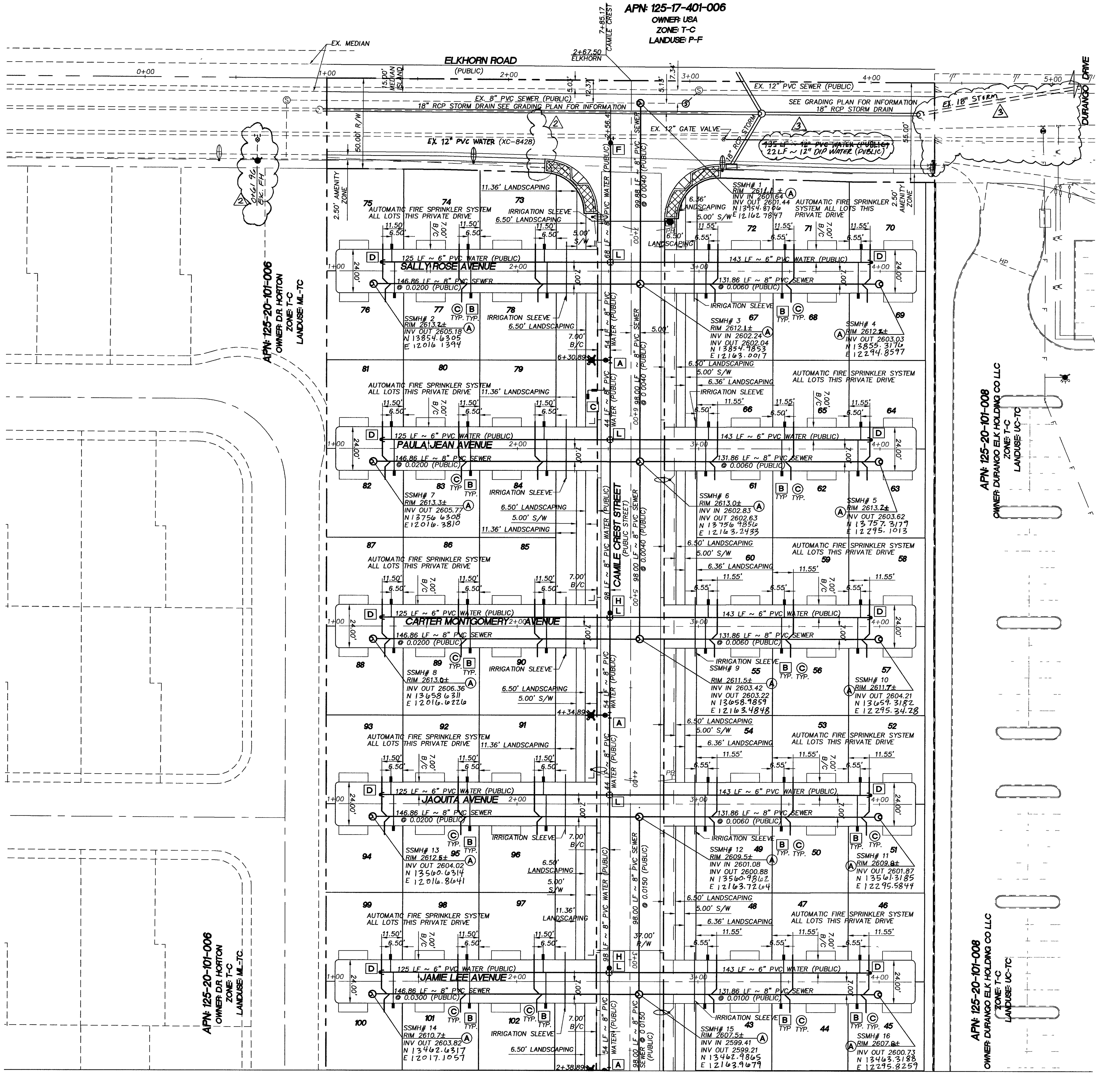


MATCHLINE SEE SHEET U2

WATER NOTES AND QUANTITIES

A	INSTALL FIRE HYDRANT ASSEMBLY PER UDACS STD. PLATE NO. 7 W/8"x6" TEE & 6" GATE VALVE	11 EA
B	1" MVR METER AND 1" TYPE K COPPER LATERAL PER UDACS STD. PLATE NO. 18	200 EA
C	1" IRRIGATION METER PER UDACS PLATE #1D 1" RPPA PER UDACS PLATE #11A	3 EA
D	6" CAP AND BLOWOFF ASSEMBLY PER UDACS STD. PLATE NO. 4A	29 EA
E	8" CAP AND BLOWOFF ASSEMBLY PER UDACS STD. PLATE NO. 4A	0 EA
F	12" X 8" MECHANICAL TAPPING TEE	1 EA
G	6" GATE VALVE PER UDACS STD. PLATE NO. 8	0 EA
H	8" GATE VALVE PER UDACS STD. PLATE NO. 8	6 EA
I	6" TEE	3 EA
J	8" TEE	1 EA
K	8"x6" REDUCER	3 EA
L	8"x6" CROSS	6 EA
M	6" 45° BEND	2 EA
N	6" 22 1/2° BEND	2 EA
O	8" 90° BEND	2 EA
P	8"x6" TEE	12 EA
Q	8"x8" CROSS	1 EA
R	10" X 8" MECHANICAL TAPPING TEE	1 EA
S	6" 90° BEND	2 EA
6" PVC WATERLINE		3,866 LF
8" PVC WATERLINE		2,147 LF
10" PVC WATERLINE		32 LF
12" PVC WATERLINE	22 LF	~~435 LF~~

SEWER NOTES AND QUANTITIES

(A)	CONSTRUCT STANDARD ECCENTRIC MANHOLE PER DCSWCS PLATE SD-1	55 EA
(B)	CONSTRUCT SPECIAL MANHOLE "B" PER DCSWCS PLATE SD-10	0 EA
(C)	INSTALL SEWER LATERAL PER DCSWCS PLATE SD-17	2,960 LF
8" PVC SEWERLINE		5,960 LF

FIRE FLOW CALCULATIONS

FIRE FLOW REQUIREMENT IS: 1500 GALLONS PER MINUTE AT 20 PSI RESIDUAL PRESSURE.

BASED ON:

SQUARE FOOTAGE: 1981 SQUARE FEET

LARGEST AREA BETWEEN 4-HOUR AREA SEPARATION WALLS: ______ SQUARE FEET

BUILDING HEIGHT: 35 FEET

NUMBER OF STORIES: 3 FLOORS

TYPE OF CONSTRUCTION: V-N

OCCUPANCY: RESIDENTIAL

FULL AUTOMATIC FIRE SPRINKLER SYSTEM: YES

REVIEWED BY: [signature]

DATE: 12/8/04

SEWER CONTRIBUTION

200 UNITS @ 1 ERU PER UNIT (90,000 GPY/ERU) = 18,000,000 GPY

365 DAYS PER YEAR

AVERAGE DAILY FLOW = 49,315 GPD

PEAK FACTOR = 3.3

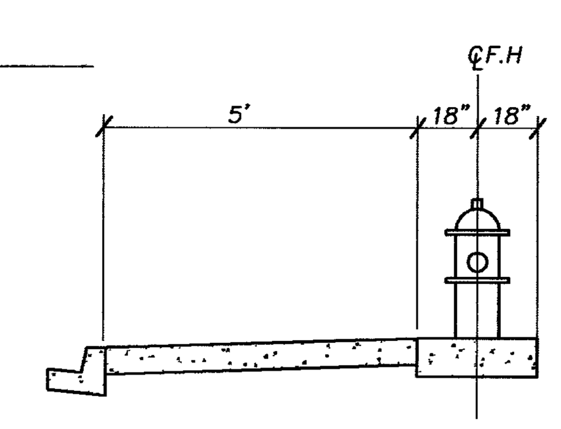
APPROXIMATE PEAK FLOW = 162,739 GPD

NOTE:

INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE NO. 27. ESN.062

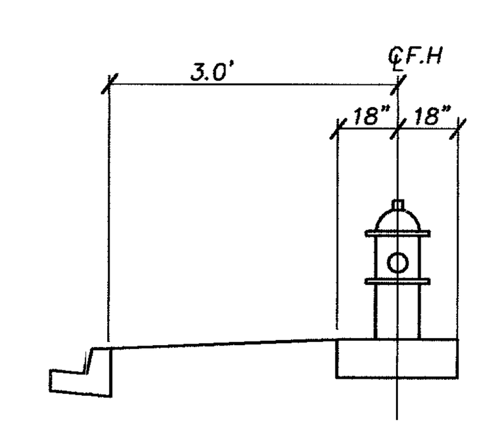
WATERMAIN JOINT DEFLECTION (PVC, 4"-24")

PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDACS 2.06.01 AND 2.06.02.



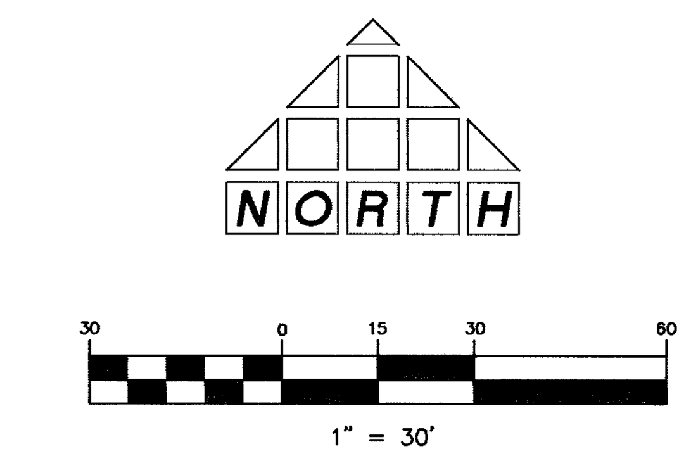
TYPICAL FIRE HYDRANT LOCATION W/SIDEWALK

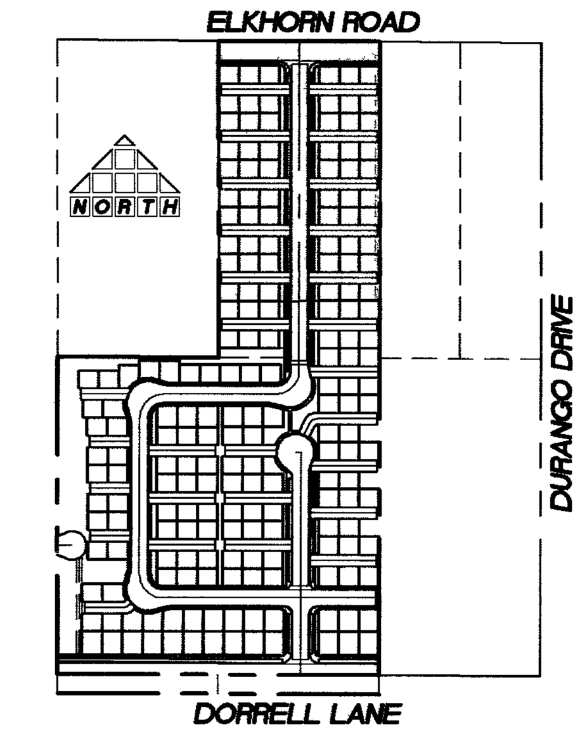
NOT TO SCALE



TYPICAL FIRE HYDRANT LOCATION W/O SIDEWALK

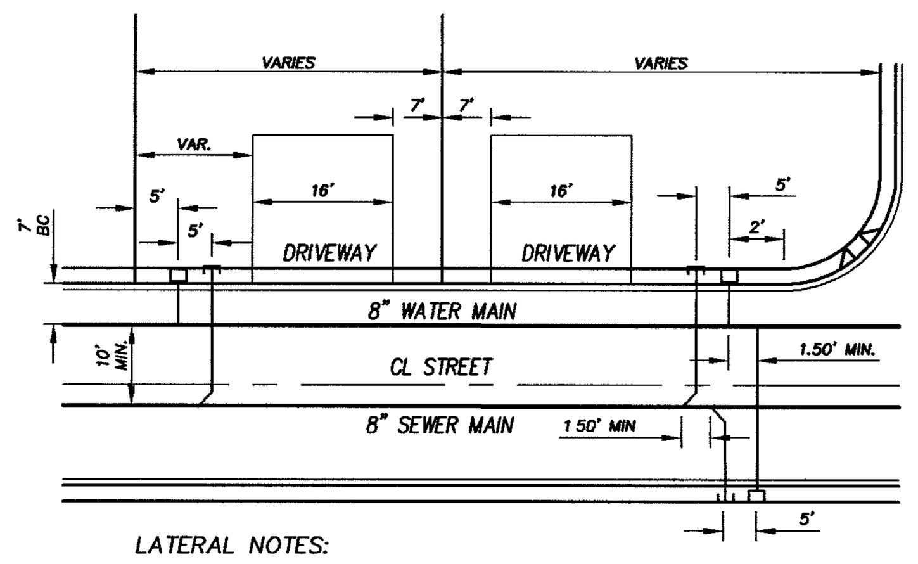
NOT TO SCALE





KEYMAP

NOT TO SCALE



LATERAL NOTES:

WATER & SEWER SERVICE LATERALS SHALL BE INSTALLED IN SEPERATE TRENCHES A MINIMUM OF 48" APART WATER LATERALS SHALL BE A MINIMUM OF 12" ABOVE THE SEWER LATERAL. (REF. UNIFORM PLUMBING CODE). WATER LATERAL SHALL BE PLACED 18" ABOVE SEWER MAINS AND LATERALS AT CROSSINGS.

TYPICAL LATERAL LOCATION

REDUCED PRESSURE PRINCIPLE ASSEMBLY: (1) 1"

APPROVED REDUCED PRESSURE PRINCIPLE ASSEMBLY(S) SHALL BE INSTALLED PER THE UDACS PLATE NO. 11A. NO WATER SHALL BE TAKEN FROM A SERVICE REQUIRING BACKFLOW PREVENTION UNTIL THE REDUCED PRESSURE PRINCIPLE ASSEMBLY HAS BEEN SUCCESSFULLY TESTED BY THE LVVWD

ANY BLOCK WALL OR OTHER FENCE MATERIAL SHALL BE DESIGNED AND CONSTRUCTED AROUND THE OUTSIDE OF THE EASEMENT(S) TO ALLOW THE DISTRICT DIRECT ACCESS FROM THE ADJACENT RIGHT-OF-WAY.

EASEMENTS SHALL BE CLEARLY MARKED OR STAKED PRIOR TO THE START OF CONSTRUCTION.

DISCLAIMER NOTE

EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISITNG UNDERGROUND AND OVERHEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NO SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATIONS.

NOTIFY ENGINEER IMMEDIATELY IF DESCREPENCIES ARE ENCOUNTERED.

UTILITY NOTES

1. NOTIFY THOMASON CONSULTING ENGINEERS IMMEDIATELY OF ANY DISCREPANCIES IN THE PLANS OR CONDITIONS IN THE FIELD.
2. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL LOCATE AND VERIFY SIZE, MATERIAL DEPTH, CONDITION, PRESSURE AND LOCATION OF ALL EXISTING UTILITY LINES WITHIN THE CONSTRUCTION AREA. THOMASON CONSULTING ENGINEERS SHALL BE CONTACTED ONCE THE UTILITY IS LOCATED.
3. PLANS MAY NOT INDICATE ALL EXISTING UTILITY LINES CONTRACTOR IS TO EXERCISE EXTREME CAUTION DURING EXCAVATION IN ORDER TO AVOID DAMAGING ANY EXISTING UTILITY LINES. IF THE UTILITY LINES ARE DAMAGED BY THE CONTRACTOR, SUCH DAMAGE SHALL BE REPAIRED TO THE SATISFACTION OF THE OWNER AT THE CONTRACTOR'S EXPENSE
4. CONTRACTOR TO SAWCUT AND REMOVE EXISTING ASPHALT AND CONCRETE AS NECESSARY FOR UTILITY TRENCHES. BACKFILL AND PATCH ALL TRENCHES ACCORDING TO CLARK COUNTY STANDARDS
5. ALL WATER FACILITIES CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE "UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR WATER DISTRIBUTION SYSTEMS" (UDACS), 2003 EDITION.
6. CONTRACTOR TO FIELD VERIFY LOCATION AND INVERT OF MANHOLE PRIOR TO CONSTRUCTION. THOMASON CONSULTING ENGINEERS SHALL BE CONTACTED ONCE THIS INFORMATION HAS BEEN OBTAINED.

APPROVALS

[signature] 2/09/05

LAS VEGAS VALLEY WATER DISTRICT DATE

PROJECT # H-109368

BASIS OF BEARING

NORTH 89°54'17" EAST, BEING THE SOUTH LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 20, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA AS SHOWN IN FILE 118 OF SURVEYS AT PAGE 89, OFFICIAL RECORDS, COUNTY OF CLARK, STATE OF NEVADA.

BENCHMARK

CITY OF LAS VEGAS VERTICAL CONTROL POINT "8LV90 18SES", BEING A RIVET PLATE IN A CONCRETE CYLINDER, NORTHWEST CORNER OF ELKHORN AND FORT APACHE.

ELEVATION: 2675.26 (FEET)
815.4214 (METERS)

CITY OF LAS VEGAS VERTICAL CONTROL BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

NOTE:

ALL 24' STUB STREETS ARE PRIVATE DRIVES AND PUBLIC UTILITY EASEMENTS

Avoid cutting underground utility lines. It's costly. Call before you Dig 1-800-227-2600

Avoid overhead power line contact. Call before you Overhead 1-702-593-6111

Call before you UnderGround 1-702-455-7511 1-702-229-6611

THOMASON CONSULTING ENGINEERS

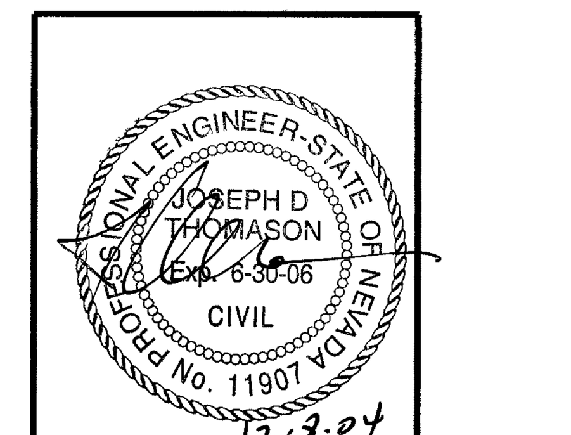
3161 E. WARM SPRINGS ROAD, SUITE 200
LAS VEGAS, NEVADA 89120
702-932-6125 FAX: 702-932-6129

RICHMOND AMERICAN HOMES
WHITNEY HEIGHTS

UTILITY PLAN
CITY OF LAS VEGAS

PROJECT NO 001.04005

SCALE 1"=30'



SHEET U1

8 OF 33

DRAWING NO 107Y4858