Clark County Department of Building & Fire Prevention

4701 West Russell Road, Las Vegas, NV 89118
(702) 455-7316 FAX (702) 455-7347

Samuel D. Palmer, Director/Building & Fire Official · Girard Page, Fire Marshal

Permit Type: 105.7.1
Control Number: I.0
Effective Date: 12/15/11

TITLE: HYDRANT TEST FOR SPRINKLER DESIGN

SCOPE: Clark County Department of Building & Fire Prevention requirements for the submittal and approval of flow tests used in sprinkler design.

PURPOSE: To standardize requirements for hydrant tests to determine water supply for sprinkler design.

DEFINITIONS:

ASSESSOR'S PARCEL NUMBER (APN): A unique number assigned to each property by the Clark County Assessor's office.

PERMIT FEES:

Permit fees shall be assessed in accordance with the Permit Fee Schedule as adopted in the Clark County Fire Code. For applications that are expedited, additional fees shall apply.

SPECIFICATIONS AND REQUIREMENTS:

An application must be completed for each submittal. A minimum of three copies of the plan must be submitted (see example) with the permit application. All submittals must be legible and readable or the plan shall be rejected for cause.

The hydrant flow test shall be conducted in accordance with the Clark County Fire Code, and NFPA 291.

Plans shall address the following:

1. Location of fire hydrants to be used in flow test must be indicated. Indicate which hydrant is to be read and which is to be flowed.
2. Indicate location of building with which the hydrant test is associated
3. Indicate distance from the test hydrants to the building. Maximum 750 feet distance allowed.
4. Indicate results to be recorded. At a minimum, the static, residual, pitot, orifice diameter and flow achieved must recorded.
5. Indicate the date the flow test will occur. Flow test information must be within 6 months of sprinkler system application date.

PERMIT REVISIONS AND RESUBMITTALS:

Revisions to approved plans are required to be submitted and approved. Revisions will be assessed additional plan review fees. A copy of the previously approved plan shall accompany the revised submittal to facilitate the review. Clearly indicate all changes to the revised plans by clouding the change with a delta number to signify the date of plan change. When several changes have been made, a detailed list of changes is required.

Re-submittals to address a Letter of Correction will require a full submittal. These plans require a copy of the red lined plan from the previous submittal to facilitate the review. Clearly indicate all changes by clouding the change with the delta number to signify the date of plan change.

PLANS CHECK STATUS INSTRUCTIONS:

The status of the review can be checked by logging on to:
www.clarkcountynv.gov/building/fire-prevention

INSPECTION SCHEDULING INSTRUCTIONS:

If approved, an inspection will need to be scheduled. To schedule an inspection, also go to:
www.clarkcountynv.gov/building/fire-prevention

A fire inspector will review your site in accordance with the approved plans and this guideline.

Inspection Procedure:

1. Contractor shall provide equipment used for the test. Gauges shall be calibrated as required by the manufacturer.
2. The gauge hydrant, as identified on the plan, shall have a gauge screwed onto one of the fire hydrant outlets.
3. The gauge hydrant shall be used to determine the static pressure and the residual pressure during flow.
4. Residual pressure must be a minimum of 10 psi lower than the static pressure.

a. **Exception:** Where all three outlets have been opened on the flow hydrant and the pressure drop is still not 10 psi, then the minimum of 10 psi pressure drop is not required.

5. The flow hydrant, as identified on the plan, shall have one or more outlets opened, starting with the 2.5 inch outlets. The flow shall be measured from all open outlets, utilizing the corrective factors in NFPA 291. Flows from multiple outlets must be added together.
6. The fire inspector will witness the test and record the results on an inspection record. A copy of the inspection record will be given to the contractor to be utilized for fire sprinkler system design. A copy of the inspection record shall be added to the fire sprinkler submittal.

The Fire Prevention (FP) may witness and accept inspection, testing and maintenance of fire and life safety systems conducted by approved individuals as required by and within the scope and authority of the Clark County Fire Code

This Guideline does not take the place of the Fire Code and does not take precedence over any Fire Code requirement or position taken by the Fire Chief. When a conflict exists between the requirements of this Guideline and the Fire Code or the opinion of the Fire Chief, the Fire Code or opinion of the Fire Chief prevails.

Technical Assistance, when required by the fire chief, will require a Technical Opinion and Report prepared by a State of Nevada licensed: qualified engineer, specialist, laboratory, or fire safety specialty organization acceptable to the Fire Chief and the owner. The Fire Chief is authorized to require design submittals to bear the Wet Stamp and Signature of a professional engineer.

Acceptance of Alternative Materials and Methods requires a Technical Opinion and Report prepared by a State of Nevada licensed: qualified engineer, specialist, laboratory, or fire safety specialty organization acceptable to the Fire Chief and the owner. The Fire Chief is authorized to require design submittals to bear the Wet Stamp and Signature of a professional engineer.

CLARK COUNTY DEPARTMENT OF BUILDING
Fire Prevention

4701 West Russell Road, Las Vegas, NV 89118
(702) 455-7316 FAX (702) 455-7347

CONTRACTOR: _____

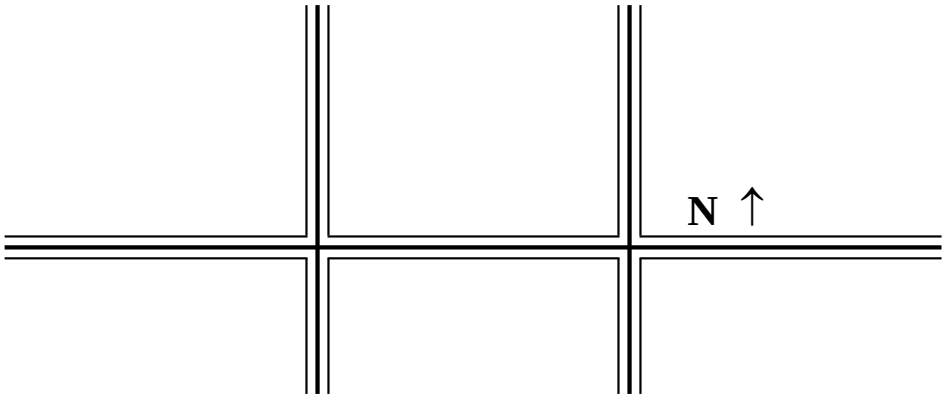
Phone No.: _____ E-Mail: _____

NAME OF PROJECT:

_____

LOCATION:

_____



Static: _____ Residual: _____ Pitot: _____

Orifice Diameter: _____ Flow Achieved: _____ Distance to Structure: _____

Pitot Pressure* (PSI)	Orifice Size (in.)	Pitot Pressure* (PSI)	Orifice Size (in.)

	2.5	4		2.5	4
1	168.3	416.4	42	1088.1	2311.2
2	237.6	589.3	44	1113.3	2365.7
3	290.7	684.8	46	1138.5	2418.8
4	335.7	765.0	48	1162.8	2471.1
5	375.3	826.6	50	1187.1	2521.9
6	411.3	883.8	52	1210.5	2571.9
7	443.7	943.5	54	1233.0	2620.5
8	475.2	1008.5	56	1256.4	2669.0
9	504.0	1069.7	58	1278.0	2716.1
10	531.0	1128.0	60	1300.5	2762.4
11	557.1	1182.5	62	1322.1	2808.0
12	581.4	1235.5	64	1342.8	2853.5
13	604.8	1285.6	66	1363.5	2897.6
14	628.2	1334.1	68	1384.2	2940.9
15	649.8	1381.2	70	1404.0	2984.3
16	671.4	1426.8	72	1424.7	3026.1
17	692.1	1470.8	74	1443.6	3067.9
18	711.9	1513.4	76	1463.4	3109.0
19	731.7	1554.5	78	1482.3	3150.1
20	750.6	1594.8	80	1501.2	3189.7
22	787.5	1672.5	82	1520.1	3229.3
24	822.6	1747.2	84	1538.1	3268.9
26	855.9	1818.2	86	1557.0	3307.7
28	888.3	1886.9	88	1575.0	3345.8
30	919.8	1953.4	90	1592.1	3383.2
32	949.5	2017.6	92	1610.1	3420.5
34	978.3	2079.6	94	1627.2	3457.9
36	1007.1	2140.2	96	1644.3	3494.5
38	1035.0	2198.4	98	1661.4	3530.3
40	1062.0	2255.9	100	1678.5	3566.2

2.5” flows: $Q=29.84cd^2\sqrt{p}$ with c = .9

4” flows: use coefficient .9 and the figures from this Table 4.8.2 from NFPA 291:

Pitot Pressure (Velocity Head)	
Psi	Coefficient
2	0.97
3	0.92
4	0.89
5	0.86
6	0.84
7 and over	0.83