



*Assisting Communities
With Their ISO Rating*

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A Report From

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To

THE CITY OF SAN MARCOS

Demonstrating a Master Fire Station Location Plan

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Submitted by:

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Explanation of This Report

This report will develop an accurate fire station location plan for the City of San Marcos. This study utilizes 1.5-mile response boundaries (approximates 3 to 4-minute response times) for engine companies. This is the most accurate method of locating fire stations that exists today. These 1.5-mile engine company response boundaries are the exact methodology utilized by Insurance Services Office (ISO) when a community is rated.

The strategic placement of existing and proposed fire stations is critical to the emergency response and ISO rating for the City of San Marcos. This report will address the immediate needs of the City of San Marcos along with future needs based on the maps provided by Chief Stephens on February 20, 2014.

An additional fire station may be required when the built-upon road base (or fire hydrant count) outside 1.50-miles of an existing fire station is 50% of that within a 1.50-mile polygon of an average existing fire station. If a suitable location can be found that brings 50% or more of the built-upon road base (or fire hydrant count) within 1.50-miles of the location then an additional fire station housing an engine company is required.

The parameters placed on this report due to political and/or operational considerations are as follows: Fire Stations #1, #3, and #5 must remain at their current location and for the immediate future engine/ladder ("Quint") truck companies must be utilized in lieu of 2 company houses (fire stations) deploying an engine company and a dedicated ladder truck company.

A dedicated ladder truck company or the ladder truck credit associated with an engine/ladder ("Quint") truck company is not used to determine additional fire

Fire Station Location Study for the City of San Marcos

stations. However, once the fire stations (existing and proposed) are determined based on the methodology utilizing the 1.5-road mile polygon then the ladder truck or the ladder truck credit associated with an engine/ladder (“Quint”) truck are placed (where needed) based on a 2.5-road mile coverage. The process of requiring an additional dedicated ladder truck company or the ladder truck credit associated with an additional engine/ladder (“Quint”) truck company is exactly the same as that for additional engine companies above; except a 2.50-road mile polygon is used.

This report will demonstrate the required apparatus and staffing based on both the engine/ladder (“Quint”) truck company concept and the dedicated ladder truck company (2 company houses) concept at the fire stations which require elevated stream capability.

Throughout this report the word “company” implies both the apparatus and it’s required staffing.

The suggestions developed from this report relate only to a fire station location study for the City of San Marcos. They are not for property loss prevention or life safety purposes and no life safety or property loss prevention suggestions are made.

Executive Summary

The single most critical item when addressing newly developed areas or areas to be developed in the future is to ensure all built-upon areas are within 5-road miles of a fire station housing an engine company and a 1000-foot hose lay distance of a creditable fire hydrant. Developed areas outside a 5-road mile polygon of a fire station housing an engine company are assigned an ISO PPC 10 (no recognized fire protection) regardless of the water supply infrastructure. Currently several insurance companies are refusing to write or renew properties in class 10 areas. The property owners that do receive insurance coverage pay the maximum rate.

Developed areas within a 5-road mile polygon of a fire station housing an engine company but outside a 1000-foot hose lay distance of a creditable fire hydrant receive an ISO PPC of 9 or 8b (next to maximum allowed rate).

The proposed fire station location plan within this report satisfies the class 10 issue. Until such time as the City of San Marcos erects the fire stations suggested within this report automatic aid agreements should be signed with neighboring communities in order that newly developed areas meet the 5-road mile criteria.

This report will demonstrate that, based on the criteria within the ISO rating document, there exists an immediate need to relocate 2 fire stations. The erection of 4 additional fire stations should be considered based on proposed future development; but these 4 additional fire stations are not required at this time. The suggested locations for the 2 fire stations which should be relocated and the 4 proposed additional fire stations are within the body of this report. The apparatus and staffing requirements for the existing (and proposed relocated) fire stations will also be discussed in detail. The future fire stations should all deploy at least an engine company; however, the requirement for additional ladder truck or engine/ladder ("Quint") truck companies are based on future development and cannot be accurately determined until the area is developed.

Please note that the City of San Marcos would most likely sustain the city's ISO rating of 2 by relocating Fire Stations #2 and #4 and providing a third engine/ladder ("Quint") truck company at Fire Station #1. However, Fire Station #1 is too small to house modern fire apparatus. Until Fire Station #1 can be renovated to the extent modern fire apparatus can be deployed from this fire station the third engine/ladder ("Quint") truck company should be deployed from relocated Fire Station #2 or relocated Fire Station #4. Please note that Fire Stations #1, #3, and #5 are perfectly located to house the required engine/ladder ("Quint") truck companies or future dedicated ladder truck companies.

Fire Station Location Study for the City of San Marcos

The City of San Marcos is reaching a level of population and developed area where dedicated ladder truck companies may be a much better fit than utilizing engine/ladder (“Quint”) truck companies to provide elevated stream capability.

The City of San Marcos presently has the ISO equivalent of 5 engine companies and 0.74 of a ladder truck company available to respond to all first alarm structure fires deployed from 5 fire stations. The reason the ladder truck credit is so diminished is due to the ISO requirements within their document titled the “Total Quint Concept”; which is named incorrectly. The “Total Quint Concept” will be discussed in great detail in the paragraphs which follow. This discussion should allow the City of San Marcos to make an informed future decision on which direction, dedicated ladder truck companies or engine/ladder (“Quint”) truck companies, better protects the lives and property of the citizens the San Marcos Fire Department serves.

The City of San Marcos will receive a large point reduction based on the ISO rating document due to an extremely technical aspect of the grading schedule titled the “Total Quint Concept”. This concept (which is misnamed) requires that at least 50% (not 100%) of the existing fire stations deploy a stand alone engine/ladder (“Quint”) truck company; which on the surface sounds very simple. This would require the City of San Marcos to strategically deploy 3 engine/ladder (“Quint”) truck companies from the 3 existing and 2 relocated fire stations.

The technical issues arise when a community does not meet the “Total Quint Concept”. Obviously the San Marcos Fire Department does not presently meet the “Total Quint Concept” since it operates 2 engine/ladder (“Quint”) truck companies deployed from 2 of the 5 existing fire stations. It is due to the “Total Quint Concept” that this report will suggest an additional engine/ladder (“Quint”) truck company or dedicated ladder truck companies to solve the significant deficiency based on the ladder truck requirements within the ISO rating document.

If the City of San Marcos elects to utilize the “Total Quint Concept” Fire Stations #1, #3, and #5 should house engine/ladder (“Quint”) truck companies to sustain the ISO rating of 2. Due to the fact that Fire Station #1 is not suited to house modern fire apparatus the additional third engine/ladder (“Quint”) truck company should be deployed from relocated Fire Station #2 or #4. If the City of San Marcos decides to utilize dedicated ladder truck companies Fire stations #1 or #3 and #5 should be dual company houses deploying an engine company and a dedicated ladder truck company to sustain an ISO PPC 2.

The City of San Marcos should not attempt an ISO re-survey until the engine/ladder (“Quint”) versus dedicated ladder truck company issue is solved and Fire Stations #2 and # 4 are relocated.

Fire Station Location Study for the City of San Marcos

Irrespective of which method the City of San Marcos chooses to provide elevated stream capability 7 existing companies (the ISO equivalent of 5 engine companies and 2 ladder truck companies needed to sustain the class 2) will require 42 firefighters on-duty 24/7 for full staffing credit with 28 firefighters on-duty 24/7 to achieve the goal of “4 around staffing”. The ISO rating of 2 can be most likely be sustained with a level of “3 around staffing” which requires 21 firefighters on-duty 24/7. The staffing requirements are on-duty 24/7 as a minimum; not just assigned

Regardless of what you may hear anywhere else (especially from the manufacturers of fire apparatus) an engine/ladder (“Quint”) truck company requires 9 firefighters on-duty 24/7 for full credit if the community meets the “Total Quint Concept” and 12 firefighters on-duty 24/7 assuming the requirements of the “Total Quint Concept” are not met. Staffing level requirements within the ISO rating document are not reduced utilizing the “Total Quint Concept” versus 2 company houses deploying an engine company and a dedicated ladder truck company as many believe or try to lead you to believe.

Analysis of the Data

To aid in developing a master plan for the City of San Marcos, based on present development, 2 fire stations should be re-located and 1 fire station should be renovated to the extent it can house modern fire apparatus. When future developed occurs to the extent that additional fire stations are required 4 fire stations should be erected. The fire station locations listed below are presented in their order of priority with the appropriate apparatus and staffing deployment.

The following re-locations are offered for your consideration:

1. Relocate existing Fire Station #4 to Wonder World Rd. and State Highway 123 housing an engine company.
2. Relocate existing Fire Station #2 to Old Ranch Road #12 and Wonder World Rd. housing an engine company.

Based on possible future development 4 additional fire stations may be required as these areas develop to the extent additional fire stations are required. Please note that the exact positioning of thoroughfares and street extensions will greatly affect the location of these 4 additional fire stations. Whether an engine company and a dedicated ladder truck company, or an engine/ladder ("Quint") truck company is required cannot be determined until the development occurs.

The following future fire station locations are offered for your consideration and listed in their order of priority:

1. Erect future Fire Station #6 in the vicinity of Hopkins Rd. and State Highway 21.
2. Erect future Fire Station #7 in the vicinity of one-half way between Old Bastrop Rd. and Interstate Highway 35 on Centerpoint Rd.
3. Erect future Fire Station #8 in the vicinity of the Airport on State Highway 21.
4. Erect future Fire Station #9 in the vicinity of 3.25-miles south of the suggested location of relocated Fire Station #4.

Please note the priority order of any additional fire stations should be based on what provides the best level of fire department response to emergency calls for service; not what improves an insurance rating. In a perfect world the 4 additional locations demonstrated above will correlate with any fire department response districts deemed deficient by Chief Stephens and his staff. Hopefully the locations will be the similar; only the priority will differ. If the priorities indeed

Fire Station Location Study for the City of San Marcos

do differ I would certainly utilize the priority order as determined by Fire Chief Les Stephens and his staff.

The following deployment of apparatus and staffing is suggested to sustain an ISO PPC 2 if Fire Stations #2 and #4 are relocated with the elevated stream capability provided via the "Total Quint Concept".

1. Central Fire Station (#1): Engine/ladder ("Quint") truck company with 6 firefighters. The apparatus at Fire Station #2 could be switched with the apparatus at this fire station until such time as Fire Station #1 can be renovated in order to house modern fire apparatus.
2. Fire Station #2: Engine company with 3 firefighters.
3. Fire Station #3: Engine/ladder ("Quint") truck company with 5 firefighters.
4. Fire Station #4: Engine company with 3 firefighters.
5. Fire Station #5: Engine/ladder ("Quint") truck company with 4 firefighters.

The following deployment of apparatus and staffing is suggested to sustain an ISO PPC 2 if existing Fire Stations #2 and #4 are re-located with the elevated stream capability provided via dedicated ladder trucks.

1. Central Fire Station (#1): Engine company with 3 firefighters.
2. Fire Station #2: Engine company with 3 firefighters.
3. Fire Station #3: Engine company and a dedicated ladder truck company with 6 firefighters.
4. Fire Station #4: Engine company with 3 firefighters.
5. Fire Station #5: Engine company and dedicated ladder truck company with 6 firefighters.

Affect on the ISO Rating for the City of the City of San Marcos

At present the City of San Marcos enjoys an ISO rating of 2. The class 2 rating for the City of San Marcos is based on the fire defense infrastructure (Structural Conditions, Fire Service Communications, Fire Department, Fire Marshal, Building Official, and Water Suppliers). It is beyond the scope of the proposal for this report to analyze the ISO rating. This takes a complete grading of all factors that comprise an ISO rating as discussed in the second sentence of this paragraph. The proposal for this report only addresses a fire station master plan demonstrating the proper location of present and future stations to sustain the ISO rating of 2 along with the required apparatus and staffing at the required existing and relocated fire stations.

With the re-location of Fire Stations #2 and #4 parlayed with providing the San Marcos Fire Department with a third engine/ladder (“Quint”) truck company the coveted ISO 2 rating should be sustainable. Please remember the City of San Marcos graded 80.00 during the last ISO survey; which is right on the number (80.00 to 89.99 establishes an ISO rating of 2).

If the mission of the City of San Marcos is to achieve an ISO rating of 1; which is an extremely valuable economic development tool, the following fire defense infrastructure would most likely be required. What follows is only an educated guess based on my 40-years as an ISO Field Representative, ISO Technical Reviewer, and Consultant for the reasons discussed in the first paragraph of this section. In addition to relocating Fire Stations #2 and #4 and providing a third engine/ladder (“Quint”) truck company the level of staffing within the San Marcos Fire Department would have to be dramatically improved. The present level of 18 firefighters on-duty as an average grades in the Class 7 percentile based on the requirements of the ISO rating document; whereas the City of San Marcos as a whole grades in the Class 2 percentile. There are far more important reasons than an insurance classification to provide this increase in the level of fire department staffing. However the increase in staffing will be the key to achieving the coveted ISO rating of 1.

The ISO rating document will actually require that 8 companies be staffed to meet all the requirements of the ISO rating document (perfect). In the Executive Summary section of this report I discussed a staffing level for 7 companies to sustain the ISO rating of 2; however to attain the coveted ISO PPC 1 this section of the report will discuss staffing 8 companies. A “rule of thumb” is: 4 around staffing is required for communities that wish to attain an ISO rating of 1; with 3 around staffing required for an ISO rating of 2. To be precise will take developing an ISO grading point total to 2 decimal places; which is beyond the scope of the proposal for this study. A study of this type was performed by me in 2005 for the City of San Marcos.

Fire Station Location Study for the City of San Marcos

4 around staffing for 8 companies is 32 firefighters on-duty 24/7. This can be on-duty firefighters assigned to firefighting apparatus, EMS units, or squad type units. My “educated guess” is: A number very near 32 firefighters on-duty at all times (not assigned staffing; but on-duty after vacation, sick leave, personal days etc.) will be required to achieve an ISO rating of 1.

If the City of San Marcos improved the ISO rating of 2 to a 1 the commercial property owners within 5 road-miles of a fire station and 1000 feet of a fire hydrant would save a possible **2 per cent** (effect of lowering the PPC from a 2 to a 1) and the residential property owners within 5 road-miles of a fire station and 1000 feet of a fire hydrant would save a possible **1 per cent** (effect of lowering the PPC from a 2 to a 1).

Even though a Class 1 does not receive an appreciable reduction in insurance premiums over an ISO PPC of 2 it has been shown to be an extremely valuable economic development tool.

Many City Managers over the years have voiced to me the importance of an ISO rating of 1 as an economic development tool. The retired City Manager of Plano, Texas told me several years ago that the ISO rating was the third question normally asked by CEOs and CFOs from major companies (especially those outside of Texas). By the way the first question was tax abatements with the second being quality of life. Many times the ISO rating is used by major companies as a measure of the “quality of life” in a community. Even though ISO disclaimers using their rating document in this manner; if a community expends the resources necessary to achieve an ISO rating of 1 on their Fire Department, Water System, Fire Service Communications, Office of the Fire Marshal, and Building Department most likely they are doing the same with law enforcement, streets, parks, etc.

This has been proven over my 11-years as a consultant and most recently has been verified by the fact that during the last 2 calendar years I have been engaged to assist with sustaining the ISO rating of 1 for Frisco, Plano, El Paso, and Stafford. In addition I have attained an ISO rating of 1 for the cities of Richardson, The Woodlands, The Villages, Midland, Webster, McKinney, and Southlake. Each of these communities have spent millions to tens of millions of dollars to improve the fire defense infrastructure of their community with the ISO rating second only in importance to protecting lives and property.

Lastly, please note that I would not feel comfortable submitting a grading point total less than 93.00 to New Jersey (ISO’s Home Office) if the mission of the City of San Marcos is to achieve an ISO Public Protection Classification of 1. I edited these ratings for over 11 years as an ISO Technical Reviewer. It has been my experience that any grading point total that develops an ISO PPC must move well into the new class in order to guarantee that the rating remains in that class

Fire Station Location Study for the City of San Marcos

after the review is complete. The grading point total would need to exceed 93.00 to guarantee an ISO PPC 1 resulted from a future survey.

Conclusion

As budget constraints allow relocate the 2 fire stations as suggested within this report and provide a third engine/ladder (“Quint”) truck company deployed from Fire Station #1 (when it is renovated to the extent it can house modern fire apparatus). This should reasonably insure an ISO rating of 2 is sustained and will provide better fire department response distances for the City of San Marcos.

Make the decision of: “Total Quint Concept” versus “Dedicated Ladder Trucks” as the City of San Marcos continues to develop and prosper.

Sufficiently increase staffing levels for the Fire Department serving the City of San Marcos if attaining an ISO rating of 1 is deemed a significant economic development tool.

I would very much like to thank Fire Chief Les Stephens and his Staff for the excellent cooperation afforded me during my recent survey. Without their support and continued cooperation after my field evaluation was complete the accuracy and timeliness of this report would be seriously compromised.

I appreciate the opportunity afforded me by The City of San Marcos and look forward to working with your community in the future.

Sincerely,

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