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March 1, 2016

Tony Olmos
Public Works Director
City of Manhattan Beach

RE: ANALYSIS OF FIRE STATION NO. 2 SITE OPTIONS FOR THE CITY OF MANHATTAN BEACH

Dear Mr. Olmos:

The City of Manhattan Beach retained Citygate Associates, LLC to evaluate the site options of retaining or relocating Fire Station #2 primarily from a response time perspective. We obtained data from the Fire Department as well as our previous study for the Manhattan Beach and Hermosa Beach Fire Departments. We worked with City staff to identify feasible sites given the City's zoning and existing development in areas that a fire station would be needed. Once several sites were identified, Citygate used Geographic Information System (GIS) mapping to measure response coverage from tentative sites.

BASIC DEPLOYMENT BEST PRACTICES

Response times are important to critical-status medical patients and serious emerging fires, so a deployment system with finite resources should position fire stations and apparatus to provide the most effective response for the most people. This follows the basic principle of medical triage: to do the most good for the most people served. As such, the general principles for effective deployment are:

- ◆ Stations should be located to cover a 360-degree response zone. They should not be located against a natural barrier such as an open space, a mountain, a canyon, or in the case of Manhattan Beach, have both stations too close to the ocean.
- ◆ Stations should serve the greatest quantity of population (risks to be protected) within the *fewest* minutes of travel. This allows stations to provide the most effective response for the most people. This means stations need to be placed at effective crossroads so that they can quickly move in any direction into neighborhoods that are farther away.

- ◆ Fire engines (pumpers) and specialty units, such as paramedics and ladders, must not be spread so far apart that if one unit is committed to an incident, the next-due unit comes from so far away it is ineffective. Thus, the ability for units to backfill each other in areas with expected simultaneous or multiple-unit incident needs is critical.

FIRE STATION LOCATION AND PARCEL SIZE NEEDS

Siting fire stations in developed urban areas is difficult for multiple reasons:

- ◆ Zoning land uses.
- ◆ City setback, landscaping, and/or height requirements.
- ◆ Safe traffic egress and ingress for large fire trucks; thus for emergency response departures, traffic engineering needs sufficient distance from intersections and center medians to meet design requirements. Stations should be located to allow fire trucks space to turn left and cross the frontage street when departing the station in an emergency.
- ◆ Neighborhood acceptance, both for the visual appearance of the station and the noise it causes.

Then the parcel has to be internally large enough to accommodate:

- ◆ Off-street fire crew personal vehicle parking, both at shift change and for the remainder of the shift.
- ◆ Space for “driving through” the fire apparatus bay via a side or rear driveway so that apparatus does not have to stop traffic on a busy street to back into the apparatus bay.
- ◆ Perimeter security fencing for both station and employee vehicle needs.
- ◆ A small aboveground fueling tank for apparatus and emergency generator.
- ◆ An outdoor emergency generator location.
- ◆ Apparatus bay apron ramps at least on one side, so the apparatus can be fully pulled outside and be operated to test its key systems and small tools daily.

Finally, there are many internal space needs to meet health and safety code requirements in addition to normal living quarters needs:

- ◆ A workshop near the apparatus bay with a tool maintenance area with shop storage and an air compressor.

- ◆ Protective firefighting clothing storage separate from office and living areas.
- ◆ Specialty protective clothing washing machine for gear decontamination.
- ◆ Separate gender sleeping and restroom facilities.
- ◆ Office spaces.
- ◆ Telecommunication and computer equipment space.
- ◆ Kitchen and break room space.
- ◆ Physical fitness equipment space.

Depending on City specific setback and design requirements, a one-story fire station can easily be 5,000-6,000 square feet and require a parcel that is at least one-half acre. Two-story fire stations are not desirable as they require additional time for the crew to get to the apparatus for emergency response.

MANHATTAN BEACH ANALYSIS

Currently, given the City's overall geographic shape, the street design, and types of risks to be protected by its Fire Department, the City has appropriately located two fire stations. These stations lay in an east-west line with Station #1 being located nearer to the coastline to best serve the most road and traffic congested areas of the western City. To serve the eastern half of the City, Station #2 was located on Manhattan Beach Boulevard at the intersection of North Rowell Avenue. This location at a major intersection gave Station #2 several advantages for response time:

- ◆ The station's units can quickly access the City from four directions.
- ◆ The station can provide timely back up to Station #1 when its units are busy on another emergency or need a multiple-unit response.
- ◆ The station is not located too close to the City limits, thus its coverage is used inside the City, not east of the City.

For response time assessment, we used two best practice measures:

- ◆ Four (4) minutes travel time for severe situations. When 1 minute is added for 9-1-1 dispatch processing; and up to 2 minutes for crew alerting, donning protective garments, and starting to move the unit, then a 4-minute travel time is actually a 7-minute total response time from 9-1-1 call receipt, which meets national best practice advice for urban areas.

- ◆ The Insurance Service Office (ISO) recommendation that fire stations in urban/suburban areas cover a 1.5-mile driving distance area. The maps used in our study used this 1.5-mile distance measure as a straightforward method to evaluate differences on coverage between sites.

In many communities, traffic congestion is an issue at certain hours of the day, and in a beach or tourism community, even on the weekend. Thus, conservative spacing of the stations is very important to provide adequate response times during traffic congestion periods. In this study, Citygate used the ISO-recommended 1.5-mile driving *distance* measure over the street network. Our maps (see Attachment A) show in a green color the street segments that are within 1.5 miles driving distance of a fire station or test site location. Typically, over most road networks, the 1.5-mile distance is a little less than a 4-minute driving time for a fire apparatus in average traffic conditions.

For the above fire station location principles, City staff, using input from Citygate based on our fire services experience, identified three other sites in addition to the current location, for testing of response time coverage. The four sites are:

1. Current location
2. 1560 Manhattan Beach Boulevard
3. 1600 Manhattan Beach Boulevard
4. 1340 11th Street (just southwest of and close to the existing station).

The following maps can be found in Attachment A.

Map 1 – Base Station Location

This map is a base image displaying the City's street network, the location of existing Stations #1 and #2, with only Station #2's coverage at a 1.5-mile driving distance shown in green. It is apparent that most of the central and eastern road network in the City is of a traditional grid, right-angle design which is more efficient to serve from a small number of fire stations.

As can be observed from this map, Station #2 covers the bulk of the City, except for a large section of the northwest corner as well as very small areas in the southwest and northeast. The northeast area is difficult to serve from any location tested, given the few roads that feed the area that is bisected by open space and more curvilinear designed streets.

Map 2 – 1560 Manhattan Beach Boulevard

Map #2 shows that moving the station to this location does not change western City coverage, but does very slightly increase coverage shown in beige, in the northeast and southeast corners of the City.

Mr. Tony Olmos

March 1, 2016

Page 5

Map 3 – 1600 Manhattan Beach Boulevard

Map #3 shows that this site improves coverage almost the same amount in the two eastern corners of the City. The differences in coverage between this site and 1560 Manhattan Beach Boulevard are insignificant.

Map 4 – 1340 11th Street

Map #4 shows the coverage from this site improves coverage almost the same amount in the two eastern corners of the City. However, given the slight move off Manhattan Beach Boulevard and how the streets run to the southwest City, there is an improvement in coverage in the southwest corner of the City.

CITYGATE'S ANALYSIS AND RECOMMENDATION

The three sites tested do *not* have material differences in response time coverage. They do have very different cost of parcel and design impacts. The overall takeaway is that the City is well served from a central location along Manhattan Beach Boulevard. The final decision should come down to safe traffic egress from the station, parcel size for Fire Department uses, cost of land, and neighborhood acceptance.

Based on our geographic coverage analysis and what we know about the City and its fire services needs, Citygate would **recommend** the City **retain** Station #2 at its present site. While this site does need to be made larger with a land acquisition and reshaping cost, this site best meets traffic safety and neighborhood acceptance issues. Doing so will allow the City to build a safe, modern station, meeting fire service, neighborhood, and traffic safety issues.

Sincerely,



Stewart W. Gary
Public Safety Principal

Attachment: A. Manhattan Beach Fire Station #2 Potential Locations

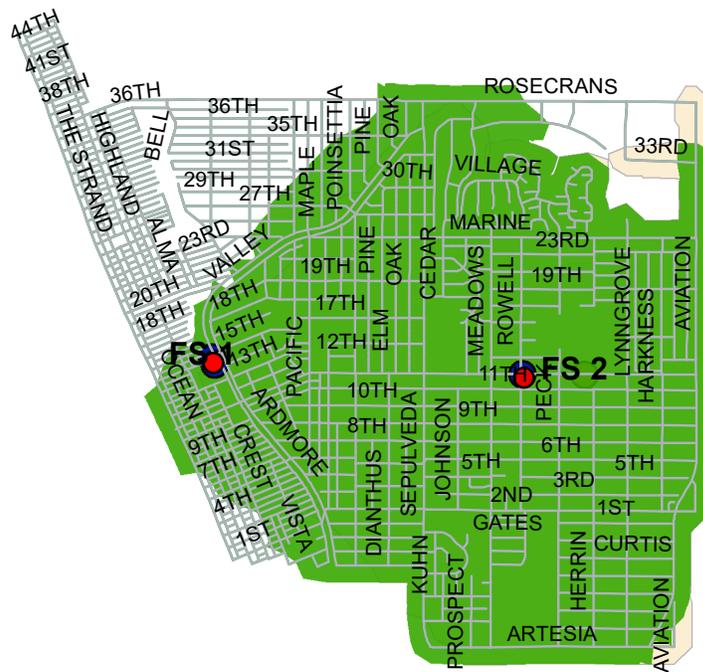
ATTACHMENT A

MANHATTAN BEACH FIRE STATION #2
POTENTIAL LOCATIONS

MAP 2: Manhattan Beach Fire Station 2 Location Study

Conducted by Citygate Associates: January 8, 2016

Current Station and 1560 Manhattan Beach Boulevard Location



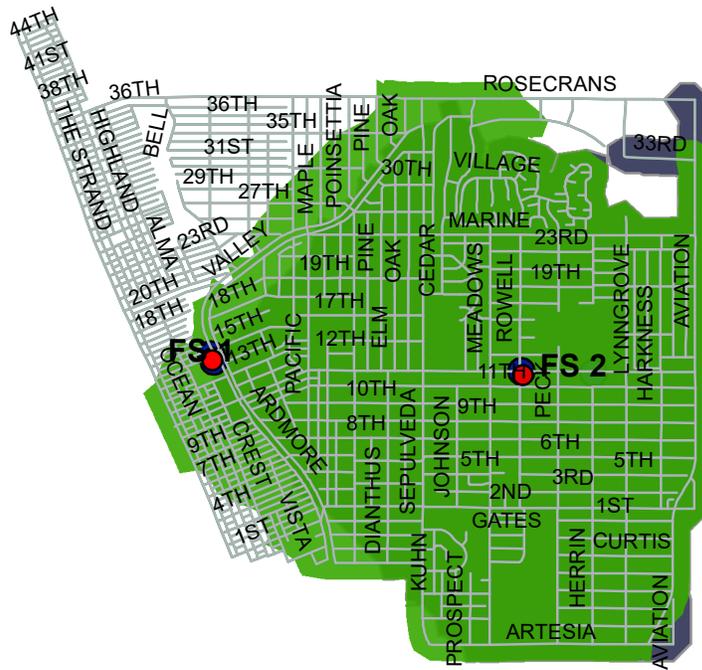
Potential Station Locations

- City Streets
- Current FS 2 Location
- 1560 Manhattan Beach Boulevard

MAP 3: Manhattan Beach Fire Station 2 Location Study

Conducted by Citygate Associates: January 8, 2016

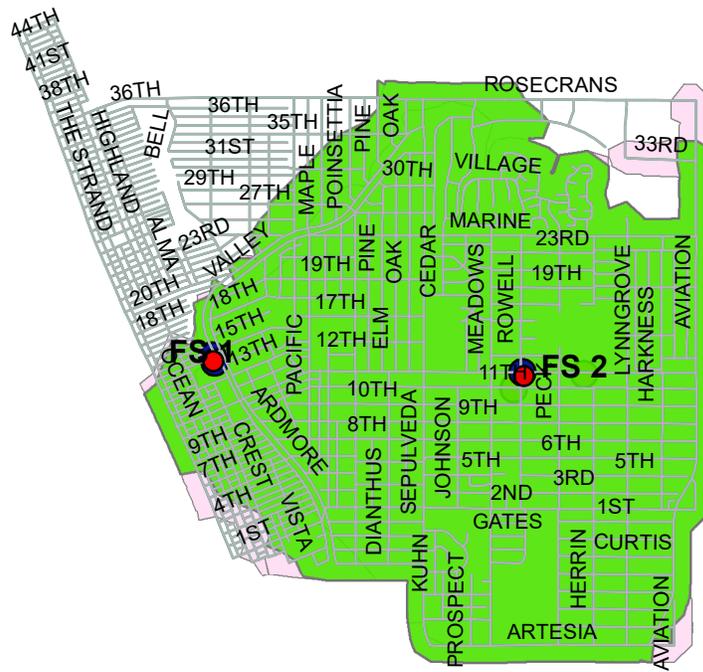
Current Station and 1600 Manhattan Beach Boulevard Location



Potential Station Locations

- City Streets
- Current FS 2 Location
- 1600 Manhattan Beach Boulevard

MAP 4: Manhattan Beach Fire Station 2 Location Study
Conducted by Citygate Associates: January 8, 2016
Current Station and 1340 11th Street Location



Potential Station Locations

- City Streets
- Current Station 2 Location
- 1340 11th St