City of Saginaw

Meeting Date:	6/06/2017	**Staff Contact:**	Doug Spears Fire Chief
Agenda Item:	8 (CC-0517-15)	**E-mail:**	dspears@saginawtx.org
		Phone:	817-232-4640

SUBJECT: Consideration and Action regarding Individual Project Order Number – Fire Station Exploratory Drainage Assessment for Fire Station 1 Flooding Resolution

BACKGROUND/DISCUSSION:
This item is for consideration of an exploratory drainage assessment to address flooding problems at Fire Station 1. Fire Station 1 has always experienced drainage and flooding problems. The attached report gives a brief history of the problems and various ways there have been attempts to resolve the problems. Also attached is the proposed Individual Project Order (IPO) from Kimley-Horn to perform the assessment at a cost of $15,000.

FINANCIAL IMPACT:
The financial impact will be $15,000. Funds are available in the Undesignated Surplus Funds. An adjustment will be made to the Engineering Fees Account (01-6200-02) at fiscal year end for this expenditure.

RECOMMENDATION:
Staff recommends approval of the Individual Project Order Number – Fire Station Drainage Assessment for Fire Station 1 Flooding Resolution.

Attachments
Report with IPO from Fire Chief Spears

Saginaw Fire Department

400 S. Saginaw Blvd. Saginaw, Texas 76179
Tel: 817-230-0412 Fax: 817-232-3731

DOUG SPEARS
FIRE CHIEF

TO: City Manager Nan Stanford

FROM: Fire Chief Doug Spears

DATE: May 9, 2017

RE: Fire Station 1 Flooding Resolution

In pursuit of a necessary permanent solution to the reoccurring flooding situation at fire station number one I have solicited the assistance of Kimley-Horn, the City's contracted engineering firm. At the beginning of April we conducted an on-site meeting with representatives from Kimley-Horn to discuss the issue and perform a site assessment. Present at the meeting from Kimley-Horn were City Engineer Misty Christian, our city's "go to" for drainage and floodplain issues, and Brian Lavoy, a Certified Structural Engineer. During this meeting a brief history of the building flooding occurrences was provided as well as examination of the areas where the water appears within the building and the exterior portions of the building where the water is suspected of entering.

As a result of the meeting and at our request Kimley-Horn has prepared an Individual Project Order or IPO to perform an exploratory assessment. The intent of the exploratory assessment is to ultimately determine if there is an achievable solution(s) to the building flooding. The assessment is divided into two tasks:

Task 1 – Kimley-Horn will perform detailed site investigation to determine where and how water is entering the building, recommend options for solution and provide probable costs for solution options.

Task 2 – A sub-consultant of Kimley-Horn will perform a geotechnical site investigation to determine subsurface soil conditions through four bores up to fifteen feet in depth. The bores will provide samples to identify soil and ground water conditions.

Once completed Kimley-Horn will prepare and present the results to the Council during a City Council meeting. The estimated fee for the exploratory assessment is $15,000. The IPO is attached for your review.

BRIEF HISTORY

Throughout my twenty-two year tenure with the department we have experienced varying severity levels of water entering the interior living quarters of fire station one along the northern most wall of the building. The severity level dependent on the intensity, frequency and duration of rainfall events. There have been consecutive years without issue and consecutive years with multiple fire station flooding events. Although several measures have been undertaken to fix the problem, ultimate resolution has proven to be unachievable.

PROBLEM

There are at least two suspected primary issues that cause or complicate the problem and make the ultimate resolution challenging.

1. The first being that the fire station concrete foundation appears to be slightly lower than the surrounding exterior ground elevation and adjacent roadway surface. This permits water to enter the building through even the smallest penetration at and below ground level. During milder or nonconsecutive rainfall periods the ground below the fire station is drier and can accommodate a significant rain event without flooding the building. During periods of consecutive rain events and rainfall in months with cooler temperatures, once the ground is saturated or fairly moist even moderate rainfall creates a situation of water entering the building.
2. The second issue is the lack of adequate capacity for storm water runoff. During moderate rainfall events the water runoff on Franklin Avenue directly adjacent to the north wall of fire station is slow. During significant rainfall events the runoff is obviously really slow with water standing frequently for extended duration. The water also rises to a level above the curb and stands directly against the fire station exterior wall. Franklin is constructed of asphalt and through age, patch repairs and manhole and water control valve penetrations the street is very porous permitting the water to saturate the soil that is both adjacent to and under the fire station foundation. Storm water runoff from McLeroy Boulevard traveling south on the west side of Saginaw Blvd to beyond Palomino Drive is very poor. In moderate rain events there is water standing at multiple locations. Franklin Avenue adjacent to the fire station is one of the locations where water stands. There is not enough piping capacity to move the water quickly under Saginaw Boulevard from the west side to the east side into the open drainage ditch. To compound the issue the grade of the open ditch in the TX DOT right-of-way on the east side prohibits rapid removal of storm water runoff during modest to significant rain events. The remedy to this issue would require significant cooperation and improvement to existing drainage accommodations from TX DOT.

PRIOR RESOLUTION ATTEMPTS

In approximately 2002-2003 the northern wall (adjacent to Franklin Avenue) was resealed on the interior where the building foundation and horizontal wall attach to each other to prevent water from entering the building. There was mold found within the walls due to reoccurring flooding so contaminated materials were removed. This exposed the foundation and wall joint so it could be effectively sealed. The resealing did successfully minimize the flooding for a short time period.

In 2006 the fire station underwent a major renovation. The foundation and horizontal wall joint was again resealed from the interior along with any visible penetrations. Measures were taken to ensure water from the roof was not entering the building down the interior of the wall to compound the issue. Again the sealing did appear to successfully mitigate the flooding for a short time period.

There have been a few years after resealing that the station did not flood but some of that can be attributed to drier/drought years or prolonged periods between rainfall events permitting the soil to absorb the water completely and preventing it from entering into the station.

RECENT EVENTS

In May of 2015 we experienced our most severe flooding event. Overnight while the on-duty crews were asleep water flooded all the living areas of the station. Most of the dorm rooms had from one to two inches of standing water. The on-duty personnel, unaware of

the station flooding, awoke to an emergency incident alert and stepped out of bed into the standing water. Any of their clothes on the floor were obviously soaked. The on-duty personnel were committed for approximately two hours responding to high water related assignments before returning to a flooded fire station. Due to the severity of the station flooding I had to call a 24 hour emergency response restoration company to assist with making the fire station inhabitable again rapidly. The complete drying and restoration of the station took approximately two weeks. Pictures are attached.

In August of the same year we experienced another significant flooding event in the late evening/early morning hours. Mirroring the previous event the on-duty staff was committed to water related emergency incidents for approximately two hours and having to return to a flooded fire station. Although not as severe it did require the cleanup by a professional restoration company. Pictures are attached.

In response to these two flooding events concrete was poured along with a “pony wall” down the entire length of the northern exterior wall of the fire station in another attempt to resolve the flooding issue. The concrete was from the fire station foundation to the street curb eliminating any method for water to enter the station or penetrate the soil and get under the fire station foundation. The pony wall was installed to handle the water for the occurrences when the water level rises above curb height. The concrete and pony wall were done in continuous pour to eliminate any potential penetrations or gaps. Both before the pour and after, the exterior wall and all foundation joints were again sufficiently sealed.

A few months later the last remaining area of soil on the northwest corner of the building was covered with concrete. This being the final in-house measure undertaken with the intent to further diminish or eliminate any method for water to penetrate the soil adjacent to and under the fire station.

The measures undertaken have definitely minimized both the number of times the station floods as well as the severity but unfortunately have not completely resolved the problem. The station will continue to flood when the soil under the station foundation becomes fairly saturated and there are not extended periods of drying between rain events. This is consistent with a lone significant rain event not flooding the building after the soil has been dried for an extended duration while consecutive weaker rainfall events that significantly dampen or saturate the soil will cause the station to flood.

CONCLUSION

With the fortunate circumstances of consistent annual rainfall, the station flooding has regrettably become such an anticipated regular occurrence we have purchased our own commercial wet vacs and carpet drying fans. We also only have minimal furnishings and storage along the interior north wall where the flooding occurs to help mitigate cleanup and drying after each occurrence.

In coordination with Public Works we have exhausted every measure we could undertake in-house and have been unsuccessful. While there is a possibility of the exploratory assessment not being able to determine a suitable solution, it is the next step logical step in the process. I am hopeful the assessment will identify a reasonable and achievable solution but in the event it doesn’t I will be confident that we explored every option before the inevitable and more costly solution requiring significant capital improvement planning.

It is my recommendation that we move forward with the exploratory assessment as outlined in the attached IPO submitted by Kimley-Horn and Associates.

Kimley»Horn

April 18, 2017

Mr. Doug Spears
City of Saginaw
205 Brenda Lane
Saginaw, Texas 76179

RE: ***Fire Station Exploratory Drainage Assessment***

Dear Doug:

Please find attached two originals of Individual Project Order (IPO) No. Fire Station Exploratory Drainage Assessment (reference the master agreement dated April 17, 2012).

Please contact me at (817) 339-2259 or jeff.james@kimley-horn.com should you have any questions.

Sincerely,

KIMLEY-HORN AND ASSOCIATES, INC.
TBPE No. F-928

Jeff James, P.E.
Project Manager

INDIVIDUAL PROJECT ORDER NUMBER – Fire Station Flooding Assessment

Describing a specific agreement between Kimley-Horn and Associates, Inc. (the Consultant), and The City of Saginaw, Texas (the Client) in accordance with the terms of the Master Agreement for Continuing Professional Services dated April 17, 2012, which is incorporated herein by reference.

Identification of Project: Fire Station Flooding Assessment

Project Understanding:

Kimley-Horn understands the fire station located on Business 287 has experienced flooding during and after significant rain events. Based upon conversations with fire department staff, the kitchen/rest area is inundated with water coming through the walls which are located along the southern right of way of W. Franklin Avenue. The purpose of this assessment is to determine the cause of the flooding and to develop a plan to address the flooding.

Specific Scope of Basic Services:

Task 1 – Site Investigation
The Consultant will perform the following subtasks under this Task:

- The Consultant will perform up to three (3) site visits. Field notes and photos may be taken during the site visits.
- The Consultant will review the onsite conditions of the exposed wall once Public Works staff removes the concrete located along the wall face. The Consultant will use engineering judgement, observations, and reviews of gathered information to provide potential explanations of the causes of the flooding and seepage through the wall(s).
- The Consultant will recommend up to three (3) options to address the drainage issue. The Consultant will prepare Opinion of Probable Construction Costs (OPCCs) for each option.
- The Consultant will prepare a draft memorandum that summarizes the purpose, data collected, assumptions, approach, results and recommendations to address the flooding issue. The Consultant will provide the draft memorandum to the Client for review and comment.
- The Consultant will address up to two (2) rounds of comments of the draft memorandum.
- The Consultant will prepare a final memorandum.
- The Consultant will prepare and present the results of the assessment at one public meeting/council meeting.

Deliverables:

- Five (5) copies of the draft memorandum, and pdf format
- Five (5) copies of the final memorandum, and pdf format

Meetings:

- The Consultant will meet with the Client up to three (3) times to discuss the project

Services Provided by Client:

- Remove concrete

Task 2 – Geotechnical Investigation

A geotechnical investigation, through a subconsultant, will be performed to determine the subsurface geological and soil conditions below the natural ground to a depth not to exceed 15 feet in depth. Four (4) bores will be taken to sample the soil around the fire department. It is anticipated the bores will be taken along the wall located south right of way of W. Franklin Avenue and within W. Franklin Avenue if necessary. Geotechnical testing will be performed to determine the soils and presence of ground water.

Deliverables:

- Three (3) copies of geotechnical report

Additional Services if required:

- Additional presentations to the public and/or council meeting(s)

Schedule:

- Work will begin on Notice to Proceed from Client. It is anticipated the draft report with associated recommendations/OPCCs will be prepared and provided to the Client in approximately two (2) months from the date of Notice to Proceed.

Terms of compensation:

Kimley-Horn will perform the services in Tasks 1 - 2 for the total lump sum fee below. Individual task amounts are informational only. All permitting, application, and similar project fees will be paid directly by the Client.

Task 1	Site Investigation	$ 9,000.00
Task 2	Geotechnical Investigation	$ 6,000.00
Total Lump Sum Fee		**$ 15,000.00**

Lump sum fees will be invoiced monthly based upon the overall percentage of services performed. Payment will be due within 25 days of your receipt of the invoice and should include the invoice number and Kimley-Horn project number.

ACCEPTED:

CITY OF SAGINAW, TEXAS

BY:_____
Nan Stanford
City Manager

DATE:_____

KIMLEY-HORN AND ASSOCIATES, INC.

BY:_____
Jeff James
Senior Vice President

DATE:_____