

To: Honorable Mayor & City Council
 From: Jon R. Branson
 Date: December 23, 2015
 Subject: Drainage & Pavement Improvements
 NE Quadrant of Old Town Site

Memo



To: Clay Pearson, City Manager
 From: Susan Polka, Director of Engineering and Projects
 CC: Trent Epperson, Assistant City Manager
 Eric Wilson, Director of Public Works
 Date: December 22, 2015
 Re: Drainage and Pavement improvement of NE Quadrant of Old Town Site

Introduction

North East Quadrant of Old Town Site is bounded by Broadway St (FM 518) to the South, Town Ditch to the North, Old Alvin Road on the east and North Main Street (SH 35) to the west. Exhibit 1 shows the general location of the area. Various projects related to drainage and pavement improvement have been identified in this area which varies from ordinary roadway maintenance such as resurfacing the asphalt pavement to widening of the roadway from 2 lane asphalt to 4 lane curb and gutter concrete pavement.

The lack of regional significance of these projects makes them highly unlikely to be successful at competing for Transportation Improvement Program (TIP) funding.

In chronological order the projects include:

Name	Limits	Scope	Start/Finish Date	Cost Estimate
1. Orange St.	SH 35 to Old Alvin	Asphalt overlay	1/2016 – 4/2016	\$491,135
2. Old Alvin Road Widening	Plum St. to McHard Rd.	4-lane undivided with curb & gutter	2016 – Design 2018 -Construction	\$12,196,089
3. Linwood Street	Orange St. to Old Alvin Rd.	Pavement and Drainage rehab.	2/2016 - unknown	\$600,000
4. Orange St.	Old Alvin to Schleider	Asphalt Overlay	2018/2019	\$360,000
5. Orange St.	SH 35 to Schleider	Conversion to concrete curb & gutter	To be determined	\$6,000,000

1. Orange Street Asphalt Overlay (SH 35 to Old Alvin):

Orange Street between Main Street (SH 35) and Old Alvin Road is going to be rehabilitated by milling of the roadway surface, base failure repairs and overlaying with 2" thick asphalt surface. The useful life of this major maintenance repair is estimated at approximately 5-7 years until such time that the reconstruction and concrete curb and gutter can be budgeted, designed, and constructed. The roadway was selected for mill and overlay based on the result of right of way assessment report performed by Infrastructure Management System (IMS). The Pavement Condition Index (PCI) score for this segment varies from 26 to 53 based on a range from 0 to 100. (Further, Geotest Engineering, Inc. performed a geotechnical

investigation by boring the roadway at six locations along Orange Street.) The results of the borings from those locations show 2"-3.25" of asphalt over 6"-7" of cement stabilized limestone. In one of the six locations there is a 4.5" shell and sand base. Based on these results, in order to lower the roadway and meet minimum pavement section standards, complete base replacement would be necessary which would double the construction cost of the project. Several areas have been identified for base repairs. In addition, ARKK Engineering has prepared a construction plan for this project in which it is stated that the Contractor shall survey the existing roadway and make sure that the proposed top of the rehabilitated asphalt pavement is not above existing pavement elevation. A construction contract was awarded in October for the paving work. Work is scheduled to start the first week of January to take 90 days to complete.

Project Name	Orange St overlay between SH 35 and Old Alvin
Thoroughfare Plan Classification	Minor Collector
Length of Roadway	2,800 LF
Roadway Type	2 Lane Asphalt
Existing ROW	60'
Proposed Roadway Cross-section	2 Lane Asphalt
Sidewalk	Existing
Proposed ROW	60'
Final Design	FY 2016
Construction	FY 2016
Total Estimated Cost	\$491,135 (based on contract award)
Funding Source and Status	Maintenance budget and contract awarded

There was a discussion about removal of existing storm sewer system to create ditches on both sides of the roadway as part of this maintenance project. Staff recommends against this based on the following reasons:

1. **Maintenance:** Due to limited right of way, it will be difficult to maintain 3:1 side slope (per Engineering Design Criteria) thus creating problems with mowing the ditch as well as the ability to maintain an adequate shoulder width which will reduce the stability of the roadway pavement.
2. **Sidewalk:** Existing sidewalk at various location would need to be removed in order to go back to ditch section.
3. **Drainage:** Ditches will not solve the existing drainage issues in accordance with the Engineering Design Criteria within the existing right-of-way. There is not enough right of way to properly size the drainage ditches. Further small, shallow ditches with milder slopes will not be able to convey the runoff as quickly as a storm sewer pipe can.

2. **Old Alvin Road Widening:** The existing 2 lane asphalt roadway between E Plum St to McHard Road measures approximately 5,500 linear feet. This roadway is identified as a major collector in the City's thoroughfare plan and will be widened to a 4-lane curb and gutter section with a back to back curb width of 44 feet with a minimum 80-foot right of way. This roadway will intersect Town Ditch within the project limit and located within Clear Creek Drainage Basin.

Project Name	Old Alvin Rd Widening
Thoroughfare Plan Classification	Major Collector
Length of Roadway	5,500 LF
Existing Roadway Type	2 Lane Asphalt with ditch
Existing ROW	60' to 100'
Proposed Roadway Cross-section	4 Lane concrete curb and gutter (44 feet back to back)
Proposed Sidewalk	6' on east side from Lakes at Highland Glen to McHard
Existing Sidewalk	East side from Orange to Lakes at Highland Glen
Proposed ROW	80' (minimum)
Final Design	FY 2016
Construction	FY 2017/2018
Total Estimated Cost	\$12.2 M
Funding Source and Status	2007 Bond Referendum; committed

3. **Linwood Street and Drainage Rehabilitation:** Linwood St is a local street connecting Old Alvin St on the East to Orange Street on the North. This approximately 1300 feet roadway consists of 20 feet wide asphalt pavement with 18" reinforced concrete pipe (RCP) storm sewer running along the both side of roadway. The majority of storm runoff drains directly into the Old Alvin storm sewer while a portion of the storm runoff drains into the Orange Street storm sewer before entering into the Old Alvin storm sewer system. This is an older subdivision where the drainage infrastructure was not properly designed in the past. Several complaints have been filed with the City primarily associated with drainage. The City is planning to make this a stand-alone project which will be designed and constructed prior to the Old Alvin Road widening project. The project includes drainage design to size the storm sewer system to Engineering standards (3-year storm frequency) and outlet to existing storm sewer in Old Alvin Road. The street will be reconstructed with an asphalt surface. Staff has requested a proposal for a preliminary engineering report (PER) from ARKK Engineers and anticipates requesting council approval on January 25th or February 8th. The PER will provide preliminary estimates for concrete curb & gutter construction. Staff anticipates that the cost would approximately double for this conversion and would be a difficult precedent to meet throughout the City when we are already facing an uphill climb to fund our annual street reinvestment budget without the upgrades to concrete.

Project Name	Linwood Street
Thoroughfare Plan Classification	Local Street
Length of Roadway	1,300 LF
Existing Roadway Type	2 Lane Asphalt
Existing ROW	60'
Proposed Roadway Cross-section	2 Lane Asphalt
Proposed ROW	60'
Final Design	FY 2016
Construction	FY 2016/2017
Total Estimated Cost	\$0.6 M (Pavement & Drainage Rehabilitation)
Funding Source and Status	General Fund Fund balance; recommended

4. Orange Street Asphalt Overlay (Old Alvin to Schleider Dr):

The Pavement Condition Index (PCI) score for the segment of Orange Street between Old Alvin Road to Schleider Dr varies from 38 to 42. Overall PCI scores range from 0 to 100. **The condition rating for this segment is poor to marginal. Based on the City's staff evaluation for prioritization, this segment of roadway is scheduled to for mill and overlay in FY 2018/FY 2019 funded through Public Works Maintenance budget.**

Project Name	Orange St overlay between Old Alvin and Schleider
Thoroughfare Classification	Minor Collector
Length of Roadway	2,800 LF
Existing Roadway Type	2 Lane Asphalt
Existing ROW	60'
Proposed Roadway Cross-section	2 Lane Asphalt
Sidewalk	None
Proposed ROW	60'
Final Design	FY 2018/19
Construction	FY 2018/19
Total Estimated Cost	\$360,000
Funding Source	Maintenance budget

5. Orange Street Conversion from Asphalt to Concrete with Curb and Gutter:

Construction cost for Orange Street between SH 35 and Schleider Rd is based on approximate quantity (pro rata of Orange between SH 35 and Hatfield Rd) assuming similar cross section with 38' back of curb to back of curb. The proposed 38' cross section is to accommodate some on-street parking due to limited driveway parking in the area. Unit costs for various items are based on recent bids for Bailey Road Construction and Kirby Drive Construction. In addition, assumptions have been made for waterline adjustment, sanitary sewer line adjustment, no additional purchase of right of way, and no need for detention. **This project is not in the current CIP and was not on the list of projects for the \$70million future bond referendum. However, it can be added to the list if it is determined to be a priority over other projects. The other option would be to include it in the proposed street reconstruction program that was included in the \$70million scenario which was identified at \$2.175million per year.**

Project Name	Orange St (SH 35 to Schleider St)
Roadway Classification	Minor Collector
Length of Roadway	4,800 LF
Existing Roadway Type	2 Lane Asphalt
Existing ROW	60'
Proposed Roadway Cross-section	2 Lane Concrete Curb and Gutter
Proposed ROW	60' (may need drainage easements)
Final Design	Not scheduled in CIP
Construction	Not scheduled in CIP
Total Estimated Cost	\$6M - \$3.5M SH35 to Old Alvin, \$2.5M Old Alvin to Schleider
Funding Source and Status	Unfunded; future Bond issue

Summary

- **The Orange Street overlay between SH 35 and Old Alvin Road has been awarded with a scheduled start date of January 11th.**
- **The engineering design for the Linwood Street Paving and Drainage Rehabilitation will begin shortly after the beginning of the year.**
- **The Old Alvin Road Widening project is in the current Capital Improvement Plan. Consultant selection for the engineering design is underway.**
- **The Orange Street overlay east of Old Alvin is scheduled for FY2018/19.**

