FEASIBILITY REPORT

FOR IMPROVEMENT OF 27TH STREET, ROSE AVENUE, AND 29TH STREET

INTRODUCTION

The purpose of this report is to determine the feasibility of improving the following described streets by grading, base construction, curb and gutter construction, and bituminous surfacing, and by extension of the storm water collection and management system:

27th Street - *Trunk Highway 59 to 675 feet east*

Rose Avenue - *27th Street to 29th Street*

29th Street - *Trunk Highway 59 to Rose Avenue*

The segment description for 27th Street commences from the east right-of-way line of Trunk Highway 59 south of 27th Street. The T.H. 59 right-of-way north of 27th Street is five feet closer to the highways centerline yielding a nominal segment length of 680 feet. See Maps A and B.

The improvement of the street was petitioned for by owners of more than 35% of the property abutting the improvement, therefore allowing the project to be considered as petition initiated. This report has been prepared pursuant to Council resolution of August 11, 2008.

PROJECT NEED

As previously indicated, the proposed improvement has been petitioned for. The subject street segments are all gravel roads included within the City as a result of 1972 and 2000 annexations. All properties abutting the street segments are currently residential except those abutting the easterly portion of 27th Street. The Prairie Justice Center (PJC) site abuts the north side of the east 159 feet of the petitioned 27th Street improvement. Undeveloped city property abuts the south side of the easterly 350 feet of the subject segment of 27th Street. Dust from traffic and wind in dry weather is a common concern of those living or conducting business along gravel streets or roads. Ambient dust, however, is not the only condition associated with gravel streets that may be found to be unacceptable. Softening of the roadbed together with localized ponding due to the lack of proper drainage are also deficiencies exhibited in and along the subject street segments. The proposed pavement improvement will provide a durable all season roadway to support the existing development. The proposed drainage improvement will establish an urban drainage system mitigating most ponding along the street segments and allow for construction of the proposed street improvements.

EXISTING CONDITIONS

All of the properties abutting the subject street segments, except the PJC, are zoned Transitional. The Transition Zone District is established primarily for those annexed unplatted areas within the city that have not been zoned for development and are undergoing a transition from, in most cases, agricultural to urban uses. The City's Comprehensive Plan (Plan) is to identify planned future urban uses. The future land use of those properties abutting the north side of 27th Street west of the PJC site, Rose Avenue, and 29th Street is identified as Low Density Residential, however, those properties are also included in a Business Flex Overlay District. Although the combination of the underlying and overlay districts yields the potential for somewhat diverse uses, the Plan does allow for the potential for the existing land uses in this area to remain indefinitely. The PJC is currently zoned for General Business and is identified in the Plan to be within a Public/Semi-Public land use area which is consistent with the current use. The properties abutting the south side of 27th are shown in the Plan to be within a Business Park land use area and in the Business Flex Overlay District. The potential development of these properties tends to be limited to small site uses due to the County Ditch 12 floodway and planned development south of the ditch. Potential flood mitigation improvements may further limit the potential for development of the properties lying south of 27th Street.

Based on current measurements of the roadway east of the residential properties, 27th Street was constructed as a rural section roadway with approximately 20 feet of aggregate (gravel) surfacing and road ditches graded with 3 to 1 slopes. As frequently occurs with rural section roads abutting housing, the portion of the road ditches abutting the residential properties along 27th Street have been filled. The road ditch section along the PJC and the undeveloped city property remain as intended. The gravel surface of 27th Street abutting the residential properties has also widened to about 25 feet.

Rose Avenue and 29th Street have a gravel surface of about 25 feet and no defined road ditches. The surface of Rose Avenue meanders to some extent and tends to be shifted slightly east within the street's right-of-way. The surface of 29th Street is shifted significantly to the south within the right-of-way and is skewed from the southwest to northeast to the extent that the southerly edge of the existing surface extends slightly south of the right-of-way near T.H. 59.

With the exception of where road ditches remain essentially intact, roadway drainage is poorly defined. Drainage of the area is generally south to County Ditch 12 via surface flow as terrain dictates.

DESIGN

STREET

The City's Assessment Ordinance (Ordinance) provides that concrete curbing or curb and gutter shall be installed at the same time as street surfacing, except that where a permanent "rural street" (road or roadway) design is approved by the City Council, curbs will not be required. Curb and gutter provides the advantages of vehicle control, delineation of the edge of pavement, elimination of pavement edge break-up, presentation of a finished urban street appearance, and perhaps most importantly, drainage control without road ditches. The alternate rural road design includes the road

ditches to provide for reliable surface drainage of the roadbed and adjacent property rather than the integrated street/storm sewer drainage inherent in the urban street design. A permanent rural road design should only be implemented in those locations where road ditches are suitable and can be sustained, where driveways constitute an insignificant length of frontage, and where there is no demand for parking along the roadway.

The Ordinance provides that residential streets "shall be of "5 ton " design, 36 feet in width, measured between faces of curbs." The Ordinance further establishes that collector streets (including commercial and industrial access streets) shall be of "9 ton" design, and shall normally be 44 feet in width measured between faces of curbs. The residential street width of 36 feet is intended to support on street parking but does not allow for two unrestricted through traffic lanes. The width of 44 feet reflects a street providing two 10 foot wide parking lanes and two 12 foot wide through lanes. Although providing parking on both sides of a street is common throughout the community it may not be warranted in all locations. Although the terminology "5 ton" and "9 ton" design reflects what may be considered outdated pavement design methodology, the intent is to provide a pavement adequate to support the adjacent land use and that traffic which may collect on through routes.

Roadway Type

The size of the lots used for residential purposes along the subject street segments generally vary from approximately 14,000 square feet to slightly over one acre, although one lot is less than 7,000 square feet. Principal structures on these lots are set back from the street right-of-way from as little as 10 feet to slightly over 50 feet. The residential developments along the subject street segments do not tend have the characteristics of a rural acreage where a rural road section may be found to be suitable and sustainable. The lack of road ditches along the residential properties further indicates that a rural road section is unlikely to be compatible with the residential land uses. Construction of an urban street section along the residential properties is consistent with the adjacent land development, the Ordinance, and the improvement petition.

While establishing an urban street is advantageous along the residential properties, construction of a rural road section along the frontage of the city property and the PJC site should be evaluated. Provided that road ditches are perpetuated, the rural road section provides a low cost serviceable roadway that is less susceptible to weakening from subsurface water and to blockage from drifting snow. The ability to maintain the road ditches is essential in preserving the viability and benefits of the rural road section. As 27th Street extends east, the existence of the airport (north side) and County Ditch 12 and Municipal Wastewater Treatment Plant (south side) limits the potential development for a significant reach of 27th Street well into the future. The advantages of a rural section road in such a location is likely to lead to perpetuation of such a roadway type should that segment of 27th Street be surfaced in the future. The appropriate location to transition from an urban street section to a rural road section may lay within the reach of the proposed improvement. Beginning at the east lines of the most easterly residential properties on each side of 27th Street, the adjacent property remains consistently 2 or more feet below the surface of 27th Street. This discernable change in topography would result in an urban section being elevated above the adjacent property although not offering the snow blow by benefits of a rural road section. Any drainage towards an urban street will not reach the curb and will continue to run along the back slope from the street. Given that the benefits of the urban street section begin to diminish at the change in land use, and in consideration of the benefit in an elevated rural road in regard to minimizing snow

accumulation commences at the same general location, it is recommended that a rural road section begin at the easterly edge of the residential properties. The locations of the roadway change are further defined as follows:

South Side	North Side
350 feet east of T.H. 59	525 feet east of T.H. 59

Roadway Width

The City's Comprehensive Plan (Plan) indicates that the current residential uses along 29th Street and Rose Avenue may continue to be a compatible use into the future. The proposed width for Rose Avenue and 29th Street is the standard residential street width of 36 feet. Should commercial uses evolve as may be allowed in a Business Flex Overlay, parking may be eliminated on these streets to accommodate traffic as may be needed.

At the current time, 27th Street is not part of a through route. The street ends at the north-south township road lying one mile east of T.H. 59. This township road ends at I-90 one-half mile south of 27th Street and just north of 27th Street. The subject street serves the residential area at T.H. 59, the wastewater facility, farmsteads/acreages along the township road, and may serve as a secondary entrance to the PJC. The Plan does identify 27th Street as ultimately being part of a through route from T.H. 59 to T.H. 60. The potential for 27th Street to serve as part of such a through route is dependant upon the development of the property lying in the northwest quadrant of the T.H. 60 and I-90 intersection. It is difficult to conclusively identify the function that 27th Street will serve throughout the useful life of the proposed improvement.

The street width for the urban section of 27th Street could be based on having an ultimate function as a through route and providing access to commercial and industrial property. Under this scenario, providing parking on one, both or neither side of the street could be options. If parking is to be provided on both sides, the street width would be 44 feet as previously noted. A through street allowing for no parking should have a minimum width of 32 feet (two through lanes and two 4 foot curb reaction lanes). Whereas the current land use is residential, it is recommended that the street width be not less than the residential standard of 36 feet. Similar to Rose Avenue and 29th Street, it is proposed that 27th Street be constructed at the residential street width of 36 feet at this time and be adapted to serve a higher traffic function should such a demand develop in the future by elimination of parking. No turn lanes are proposed to be constructed at this time. In order to ensure that two lanes are available for traffic entering and leaving T.H. 59, parking should be restricted to one side on 27th Street within 100 feet of the intersection.

It is proposed that the rural section surface on 27th Street be based on 32 feet which provides two 12 foot driving lanes, 4 foot shoulders, and no parking lanes. This width is also consistent with the face of gutter to face of gutter width of the recommended urban street section. Within the segment that the rural road section exists only on the south side of 27th Street, the edge of pavement would be 16 feet south of the center line. The rural roadway inslopes are to be 4 to 1 (horizontal to vertical) with a 2 foot ditch bottom at not less than 2 feet below the final roadway surface.

Pavement Design

Rose Avenue and 29th Street will be subject to primarily residential traffic in the foreseeable future. A residential street design would account for traffic consisting of predominately automobiles but should also accommodate small trucks together with minor quantities of trucks and buses to reflect normal residential services such as garbage hauling, school busing, and deliveries. Such a residential street could also accommodate traffic for light commercial uses that do not rely on regular truck traffic. Traffic on 27th Street will be subject to traffic not associated with residential uses. This traffic includes, but may not be limited to, agricultural equipment, and truck transports and sludge hauling/application equipment relating to the wastewater facility. It is proposed that the 27th Street pavement be based on that typically assumed for residential streets plus the equivalent of 5 additional tractor trailers per lane per day.

The recommended pavement section for Rose Avenue and 29th Street consists of 3" of bituminous surfacing and 9" of aggregate base. The 27th Street pavement should be constructed with 4.5" of bituminous surfacing and 9" of aggregate base. It is recommended that the 9" aggregate base in both locations include a layer of an open graded aggregate (drainable) base material. Use of the drainable base material as the bottom 4" of the base together with proper edge drain tiles will allow for free drainage of that base material, intercept free water rising from below that layer, allow for more rapid drainage of any excess moisture in the material above the drainable base, and provide a base layer that is less susceptible to loss of strength due to the presence of excess moisture. Geotextile reinforcement fabric would also be installed in conjunction with the aggregate base. The geotextile fabric will reduce the migration of the subgrade clay into the drainable base material and reinforce the subgrade material (clay) during the spring transitional period when frost is melting out of the soil and the subgrade's bearing strength is the weakest.

Project Phasing

It is proposed that the recommended improvements be completed in 2009 except placement of the final 1.5" of surfacing. It is recommended that the final 1.5" of surfacing on all the street segments be completed in 2010 to allow for correction of surface irregularities that may occur as a result of any storm sewer trench stabilization.

Additional Considerations

To reduce tracking of gravel onto and prevent damage to the improved segment of 27th Street, it is proposed to include a 45 foot transitional surface section east of the end of the 27th Street improvement. This transitional section will be constructed without full regrading of the existing roadway and is considered a maintenance reduction feature rather than part of the assessable improvement.

Many of the existing residents have hard surfaced driveways extending from their garages or other parking areas to varying distances from the edge of the existing gravel roadway. The road side edge of these driveways range from being within the proposed street to being several feet outside the street

right-of-way. The City's restoration practice is to replace driveways to the same dimensions that exist prior to being disturbed by public improvements. Owners may make arrangements with the project contractors or another contractor to increase the size of a driveway provided driveway standards are met. To maintain equity between owners, it is proposed that the city's standard restoration practice be applied in the proposed street improvement project. The hard surfaced portion of some driveways may be replaced to the back of curb, others will be replaced to with only a few feet of the back of curb, while others will be several feet from the curb.

DRAINAGE

The proposed storm sewer piping improvements are shown on Map B. The system design is based on the properties north of 27th Street, east of PJC being light commercial and the properties south of 27th Street being commercial.

National Pollution Discharge Elimination System (NPDES) permitting standards include the requirement to provide permanent storm water treatment when one or more acres of impervious surface will be created as a result of a project or planned development. The proposed street improvement will result in the creation of less than one-half of an acre of additional impervious surface. Construction of the storm water retention basin shown on the map is therefore not directly mandated but does provide a practical means of reducing storm water pollution as generally required under the NPDES permit applicable to the City's entire storm sewer system. Inclusion of the storm water retention basin will not affect the assessment rate which, as presented in the following section, will be established by the storm water assessment limit outlined in the City's Assessment Ordinance. The proposed improvement includes the retention basin. Deletion of the basin will reduce the total project cost and city share by an estimated $22,300.

The location of the proposed retention basin allows for approximately 2.3 acres at the intersection of T.H. 59 and 27th Street to be redeveloped into a commercial site while allowing runoff from such a site to drain into the retention area. The location also allows for possible improvements of County Ditch 12 to increase its capacity.

PROJECT COST AND FINANCE

Total project cost for the improvements as recommended in the preceding is estimated to be $699,300, including engineering and contingencies. The distribution of assessable costs of each of the improvement types is proposed as outlined in the City's Assessment Ordinance (Ordinance).

Street

The total estimated cost of the street improvement is $500,500. In general, the Ordinance defines that the assessment rate for a street improvement is to equal the cost of the improvement divided by the sum of adjusted frontages abutting the improvement. The width of intersections and similar distances are added to the summation of adjusted frontages to yield assessment rates that are equitable, relatively consistent between similar projects, and best reflect benefit. The assessment as to any property is to be equal to the assessment rate multiplied by the adjusted frontage of that property. An

adjusted frontage is defined to be the average width of the lot as it abuts the improvement. Certain lot allowances, which become a city share of the project, are provided for in the Ordinance. The Ordinance also provides that "... in a residential area, the "city cost" shall be equal to the increased cost for constructing a street to arterial or collector design standards in lieu of to residential design standards". To meet the intent of this provision, the assessment rate for the residential properties abutting 27th Street is proposed to be based on the equivalent costs for constructing the street to strictly a residential type pavement section rather than to the thickened section providing for the additional truck traffic. The difference in assessments receivable due to adjusted rate would also be a city share of the project.

The following provides the estimated costs, city share, assessments receivable, and assessment rates for the street improvement:

City share for non-assessable costs[1]	$115,412.72	
City share of assessable costs [2]	$45,173.42	
Total city share	$160,586.14	*(32.1%)*
Assessments receivable	$340,521.69	*(67.9%)*
Total Cost	$500,500.00	

The estimated assessment rates are:

Urban Section	**$154.67/ft**
Rural Section	**$126.67/ft**

[1] Includes $25,500 for additional pavement depth on 27th Street, $1,380 for salvaging aggregate, $11,120 for roadway transition, and $77,412.72 for non-assessable frontages and rounding.

[2] Costs for City property south of 27th Street

Storm Water System

The Ordinance establishes that the costs for storm sewer improvements are to be assessed to the properties within the drainage district including those of the city. Map B illustrates the drainage area of the storm water collection system. The assessment rate is to be the project cost divided by the adjusted drainage area provided such a rate does not exceed a storm sewer assessment limit defined by a 1975 base rate of $0.03 per square foot as brought forward to current value by use of a Construction Cost (ENR) Index. The base assessment rate limit projected to be applicable for this project is estimated at $.1156 / square foot. The factors for adjusting the area of various parcels of land in determining the base rate and correspondingly used in determining the assessment rate for a given parcel are based on land use or potential land use. These factors are, 0.75 for Open Space, 1.0 for Residential, 1.25 for Multi Family and Institutional, and 1.5 for Commercial. The assessment limit is proportional to these factors. It is proposed that the residential rate (land use factor of 1.0) be applicable to all properties currently zoned transitional. Additional benefit may be assessed if warranted should these properties be developed for commercial purposes.

Because the cost of the improvement divided by the rate determining area ($0.996) exceeds the assessment limit, the assessment limit will establish the assessment rate for the improvement. The

following table outlines project costs and assessments.

With Retention Basin

City Share:	
Above assessment limit and rounding	$175,727.39
Of assessable costs[1]	$11,582.19
Total City Share	$187,309.58 (94.2%)
Assessments Receivable:	$11,490.42 (5.8%)
Total Project	$198,800.00

Without Retention Basin

City Share:	
Above assessment limit and rounding	$153,427.39
Of assessable costs[1]	$11,582.19
Total City Share	$165,009.58 (93.5%)
Assessments Receivable:	$11,490.42 (6.5%)
Total Project	$176,500.00

[1] Costs for city property south of 27th Street and Public Right-of-Ways

Total Improvement

Assessments	$351,404.28	*(50.3%)*
City Share	$347,895.72	*(49.7%)*
TOTAL	$699,300.00	

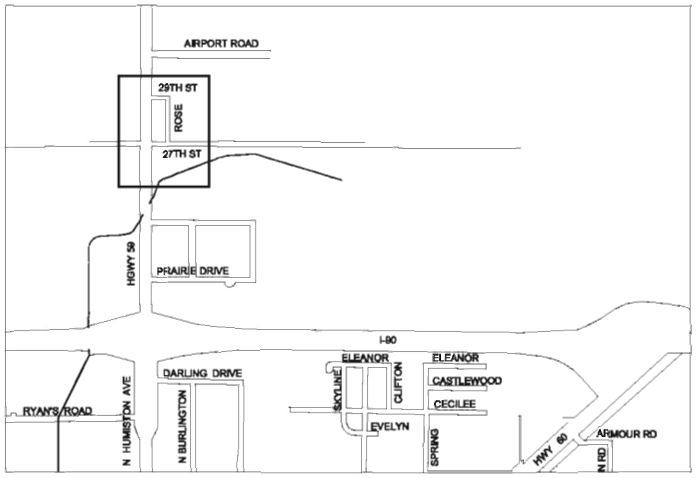
It is proposed that the project be initially financed by PIR bonding. Revenues from special assessments levied as a result of the project along with the annual special tax levy required to recover the city share of the project will be utilized for bond repayment.

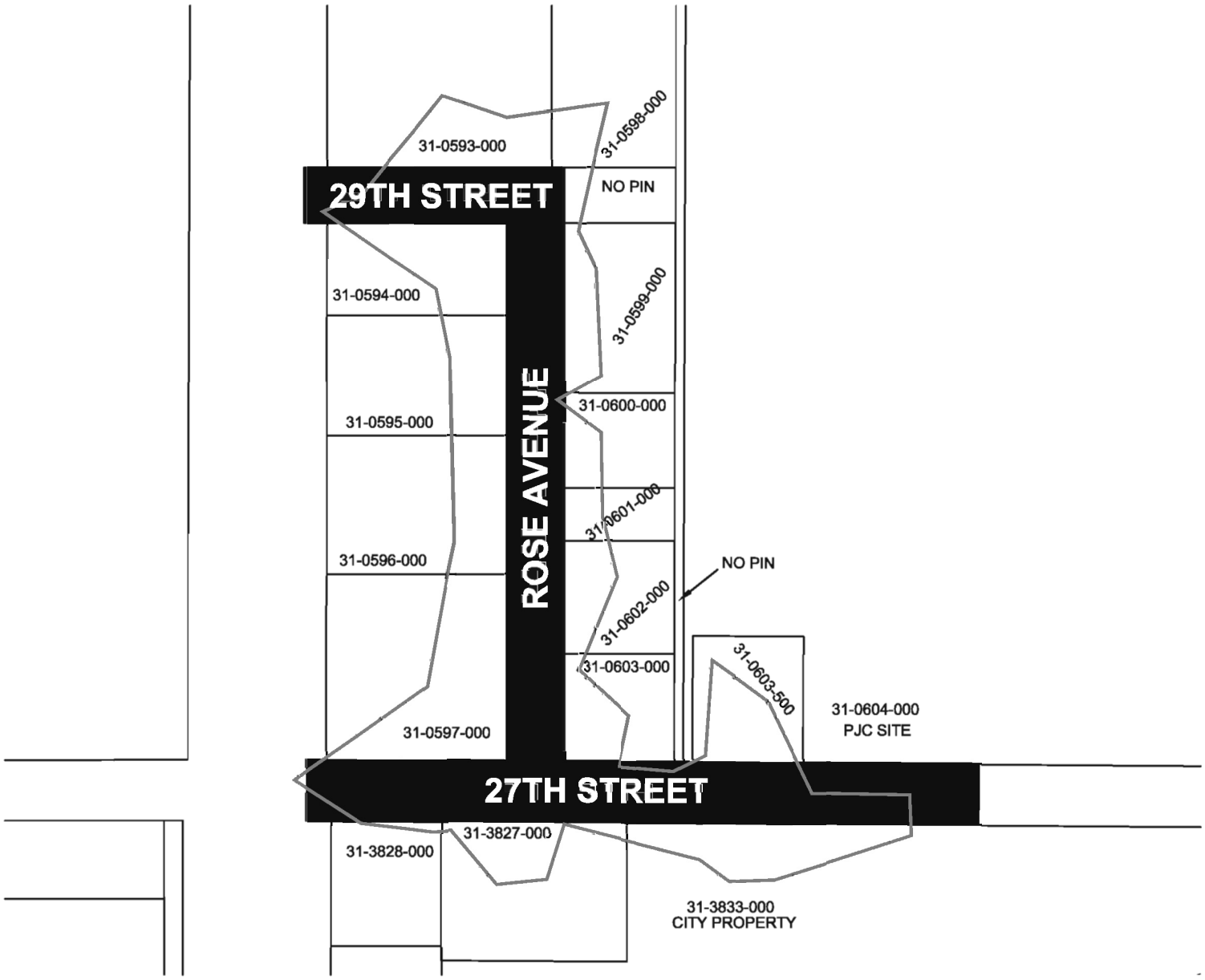
CONTRACT COMBINATION WITH OTHER IMPROVEMENTS

It is recommended that the proposed storm water system improvements and the initial street construction be in separate contracts for bidding purposes. The storm water system improvements should be combined with similar types of work and the initial street construction should be accomplished as part of a 2009 bituminous improvements contract. The final surfacing should be included in a 2010 bituminous improvement contract unless another bidding opportunity involving similar work evolves.

CONCLUSION

The proposed street and storm water collection and management system improvements are feasible, and a cost effective means of improving the subject street segments as petitioned for.

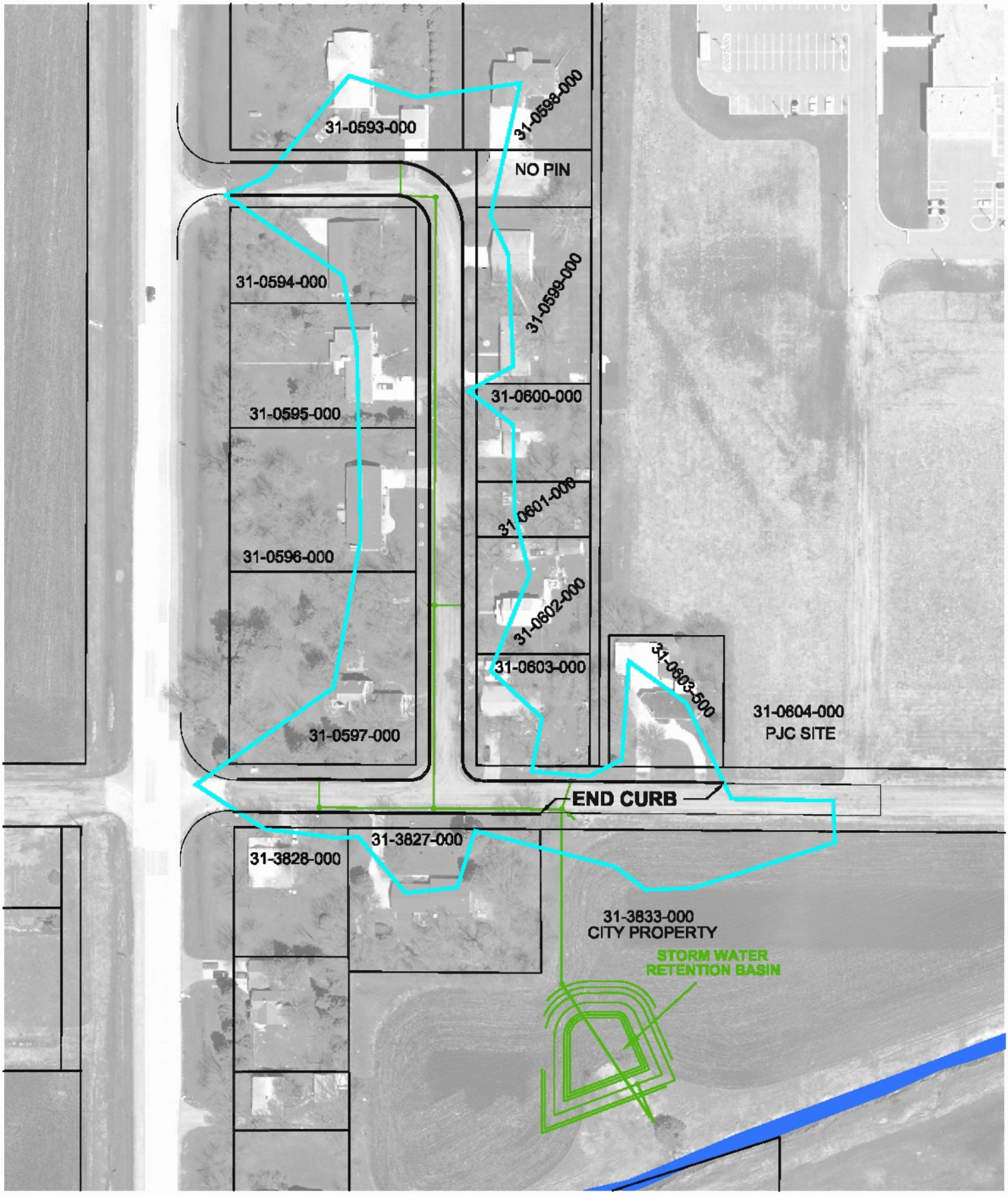




STREETS TO BE IMPROVED ■

STORM WATER DISTRICT BOUNDARY ——

MAP A



STORM WATER SYSTEM
CURB AND GUTTER
STORM WATER DISTRICT BOUNDARY

MAP B