



To: City Council Infrastructure Committee
From: Doug Wilson, Paving for Progress Program Manager
Subject: Update – Paving for Progress
Date: December 1, 2016

Background:

Monthly update intended to provide status of the Paving for Progress Program.

Project Description:

Final summary of projects completed during the 2016 construction season.

Update:

The 2016 Paving for Progress season is nearing completion, with approximately 10 linear miles of pavement improvements wrapped up before the end of November. This year marked the third construction season of the program, which will include an estimated \$18.4 million investment and a completion of 29 streets.

Highlights for this year include improvements on 42nd Street NE, which included pavement reconstruction as well as improvements to traffic flow and pedestrian safety. Other projects of note this year: Oakland Road NE, which included pavement rehabilitation, bike and pedestrian improvements, and intersection reconstruction; Edgewood Road NW, which included complete rehabilitation; 7th Street SE, which includes transitioning to two-way traffic, and West Post Road NW, which included pavement reconstruction and drainage improvements.

Program impacts to date include:

- Linear miles of roadway improved: 24
- Investment in roadways as of October 1, 2016: \$40.8 million
- Projects completed to date: 78

Complete list of 2016 improvements include:

Northeast

- 34th Street from C Avenue to F Avenue
- 42nd Street from I-380 to Wenig Road
- 42nd Street from Edgewood Road to Iowa Northern Railway
- 74th Street from White Ivy Place to C Avenue
- F Avenue from Estroy Drive to Old Marion Road
- Hazel Drive North Intersection
- Oakland Road from H Avenue to J Avenue
- Park Place from Council Street to North Park Place Lane
- Seminole Valley Road from Fords Crossing Road to 42nd Street (Phase 1)

Northwest

- B Avenue from Highland Drive to 8th Street



- Burch Avenue from 24th Street to 19th Street
- Edgewood Road from E Avenue to F Avenue
- F Ave from 2nd Street to 5th Street
- West Post Rd from Plainview to E Avenue

Southeast

- 7th Street from 4th Avenue to 12th Avenue
- 7th Street from 10th Avenue to 12th Avenue
- McCarthy Road from 19th Street to Memorial Drive
- Mansfield Avenue from 30th Street to 31st Street

Southwest

- 3rd Street from 16th Avenue to 19th Avenue
- 8th Avenue from L Street to 7th Street
- Leroy Street and Spencer Drive from Johnson Avenue to 1st Avenue
- Bramble Road from 29th Avenue to 33rd Avenue
- Cameo Lane from Pebble to 33rd Avenue
- Carriage Drive from Bramble to Chapel
- Chapel Drive from 29th Avenue to Bayberry Drive
- Coral Lane from Cameo to Eden Lane
- Eden Ln from Bayberry to 33rd Avenue
- Pebble Drive from Chapel to Bramble

Requested time on agenda: 5 min

Construction / Paving for Progress



CIP Improvements

- C Avenue NE
- 18th Street SW
- 1st Avenue East



Paving for Progress

2016 Impacts:

- \$18.4M investment
- 26 projects completed
- 10 linear miles improved

PROGRAM TO DATE

- 24.3 miles improved
- \$40.8M invested
- 78 projects completed



City Forces

16 projects and 2.5 miles completed in 2016



42nd Street - Before



42nd Street – After



Oakland Road – Before



Oakland Road – After



Before and After's



Before and After's



Expanding Our Tactics

- Staff researching additional preservation methods
 - Micro Surfacing
 - Slurry Seal
- Extends surface life of asphalt roads
- Liquid asphalt blended with crushed aggregate – cures and seals surface





To: City Council Infrastructure Committee
From: Michael Duffy, Street Operations Manager
Subject: Update – Street Maintenance Projects
Date: December 1, 2016

Project Description:

Monthly update to provide information regarding Street Maintenance projects.

Update:

Paving for Progress complete for 2016

16 of the 26 projects completed by City Forces

2.5 miles of reconstruction, panel replacement, and overlay

Approximately 1 million dollars in Materials

Paint a Plow – 7 Schools have participated to date

Flood Recovery – inventory and maintenance of flood related equipment

Winter Prep – operating 3 shifts

12,000 tons of salt available under contract

Curb repairs

Patching

Requested time on agenda: 5 min



To: City Council Infrastructure Committee
From: Matt Myers, Traffic Engineering Manager
Subject: Update – Traffic Control
Date: December 2, 2016

Background:

Maintaining and improving traffic control to improve traffic operations and improve safety.

Project Description:

Pavement Marking, Signing, Signals

Update:

Pavement marking

Traffic operations crews completed striping 1.5 million linear feet of long line throughout the city. This is the largest amount of striping over the past 5 years, and was 10% more stripe than last year. This includes on-street bicycle lanes.

Signing

Installed new, customized street name signs with the Medical Quarter logo.

Signals

Traffic is migrating new centralized software to control the city's network of signalized intersection. This also includes replacing the field controllers at the signalized intersections. The city has installed 15 new field controllers at the intersections and the staff completed training on the software system. The software improves real-time monitoring, notification of malfunctions, and allows remote changes of the city's 210 signalized intersections from the Central Services Building. The software coupled with the Traffic Operations Center improves the staff's ability to respond to malfunctions or changes in the system, and update day to day signal timing.

Requested time on agenda: 5 min

Stormwater, Sanitary Sewer

2016

- \$34 million investment
- \$30 million of 2008 flood recovery (last round of projects)

Projects of Note:

- Prairie Creek trunk sewer: \$12.5 million
- East Side Interceptor: \$7.5 million



Prairie Creek Trunk Sewer



East Side Interceptor



Sewer

2016

- 46 miles of sewer pipe inspected
- 100 miles of sewer pipe cleaned



Upcoming Utilities Department Projects Anticipated To Have Plans
and Specifications Filed – January, February, March
Report for Council Infrastructure Committee on 12-13-2016

Filing Plans and Specifications

Water and WPC Plant Projects

Filing January – Kirkwood Elevated Tank (6250040). The project will include a new 1.5 million gallon composite elevated storage tank to replace the existing standpipe. The Engineer's opinion of probable cost was \$3,800,000 at the 60% design stage.

Filing February 14 – Water Administration Building Roof Replacement (6250064). The project will include replacement of the flat rooftops above the Water Administration Building, 60th Booster Station, and J Avenue Reclaim Pump Station. The engineer's opinion of probable cost is \$300,000 at the preliminary design stage.

Filing January 10 – WPCF Electric Grid Improvements (615197). The existing plant electrical Main Switchgear, Capacitor Banks, and medium voltage cable are approaching the end of their predicted life and are in need of replacement. The project will also add several pad-mount isolation switches to allow for greater flexibility in powering the plant during maintenance outages. The Engineer's opinion of probable cost is \$2,400,000 at the 90% design stage.

Filing February 14 – WPCF Sewer Inspection & Repairs (615123). The project will include cleaning and televising of the Anaerobic Gravity Sewer Main (from the Indian Creek Lift Station to International Paper, cleaning and televising of the Return Sewer Main at the Water Pollution Control Facility, and lining of seven manholes in the Anaerobic Pretreatment Facility. The engineer's opinion of probable cost has not yet been developed.

Water Main Projects

The following water main work has been planned in conjunction with Paving for Progress (PfP) projects or other Public Works projects. Bid Dates:

Jan 4 – 3012115-03 Northwood Dr NE (Ph-2) from Glass Rd to north of Brookland (PfP)
Estimated Project Cost \$1.073M (Water #2061068 Budget \$390,000)

Jan 18 – 3012008-02 C Ave NE from 40th St NE to Old Marion Rd (PfP)
Estimated Project Cost \$ 3.20 M (Water # 2015044 Budget \$640,000)

Feb 1 – 3012116-03 Seminole Valley Rd (Ph-2) (PfP)
Estimated Project Cost \$3.574M (Water #2016029 Budget \$583,000)

Feb 15 – 3012121-02 O Ave NW from 16th to Ellis Rd (Ph-1) (PfP)
Estimated Project Cost \$4.378M) (Water #2015017 Budget \$1.20M)

Feb 15 – 3012131-03 12th Ave SE from 7th St to 19th St SE (PfP)
Estimated Project Cost \$3.91 M (Water # 2016057 Budget \$540,000)

Feb 22 – 3012174-02 E Ave NE (Ph-1) from 19th St to 20th St NE (PfP)
Estimated Project Cost \$1.511M (Water # 2016060 Budget \$320,000)

Feb 22 – 3012176-02 17th St NE from F Ave to J Ave NE (PfP)
Estimated Project Cost \$637,000 (Water #2016088 Budget \$ 80,000)

March 15 – 3012116-03 Seminole Valley Road from Ford's Crossing to 42nd St NE
Estimated Project Cost \$ 3.66 M (Water #2016029 Budget \$ 580,000)

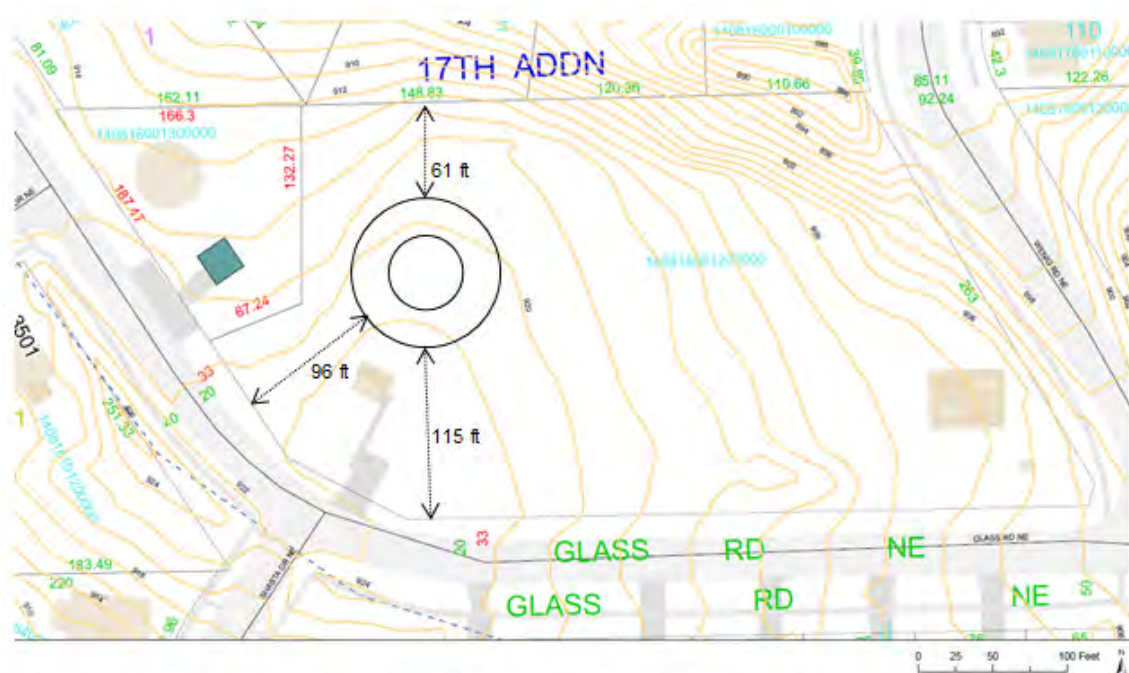
March 22 – 3012153-02 Memorial Drive SE from Mt. Vernon Rd. to McCarthy Rd SE
Estimated Project Cost \$ TBD (Water 2016038 Budget \$ 706,000 Approx. 2,900-ft 16-inch Water Main)

Upcoming Public Hearings

- January or February – Kirkwood Elevated Storage Tank
- January 24 – WPC Electric Grid Improvements
- February 28 – Water Administration Building Roof Replacement
- February 28 – WPCF Sewer Inspection & Repair

Update: Glass Road Tank Replacement (Proposed)

With the acquisition of the property at the intersection of Glass and Wenig Roads, planning for the replacement of the Glass Road Standpipe will begin in earnest. The proposed budget plan will include funding of the effort in FY20 through FY22.



Proposed future 2 million gallon Glass Road elevated tank. Conceptual plan, subject to detailed study and design. Edge of elevated tank bowl is drawn with diameter of 100 feet.



To: City Council Infrastructure Committee
From: Bruce Jacobs and Steve Hershner
Subject: **Source Water Supply and Nitrate Removal Study**
Date: December 13, 2016

Background:

The City of Cedar Rapids obtains its drinking water from wells along the Cedar River. The water is a combination of groundwater and surface water induced from the Cedar River. The wells are typically referred to as riverbank filtration wells because the alluvial material filters the water as it passes from the river to the wells. Cedar Rapids has 45 vertical and 5 horizontal collector riverbank filtration wells (sixth horizontal well under construction) that supply two water treatment plants.

The riverbank filtration water supply system has been adequate and provides good quality water. However, during prolonged droughts the capacity of the aquifer can be limited.

The Cedar Rapids water supply has elevated nitrate levels, but the current levels are below drinking water regulations. The U.S. Environmental Protection Agency (EPA) has set a maximum contaminant level (MCL) of 10 milligrams per liter (mg/L) as nitrogen (N) for nitrate and 1 mg/L for nitrite.

Occasionally, nitrate levels have exceeded 8 mg/L in some water supply wells, and have been over 10 mg/L in the Cedar River. As river water passes through the ground to the wells, some nitrate is converted to ammonia by biological processes. Water plant operators manage well operations to minimize nitrate in the water pumped to the treatment plants.

Project Description:

The purpose of this study was to determine feasible alternatives for future drinking water supplies and for nitrate mitigation, if necessary. This study was conducted to reflect a proactive approach to future water supply needs and drinking water nitrate regulations.

Update:

The update will consist of a PowerPoint presentation describing the study and its conclusions and recommendations.

Requested time on agenda: 10 min

Source Water Supply and Nitrate Removal Study

Presentation to Infrastructure Committee
December 13, 2016

Cedar Rapids Utilities Department - Water Division;
CH2M, Inc.

Purpose

- Determine feasible alternatives for future drinking water supplies.
- Determine feasible alternatives for nitrate mitigation.
- Reflect a proactive, prudent approach to future water supply needs and drinking water nitrate regulations.

Alternatives Considered

Additional 20 mgd of water supply

- Expanded riverbank filtration capacity
 - Assume NWTP expansion
 - Assume additional riverbank filtration capacity is available (USGS study will inform this)
- Use of the Cedar River as a surface water source
 - Assume a new surface water treatment plant equipped with zebra mussel control, coagulation/sedimentation, lime softening, re-carbonation, ozone, biologically active filters, UV disinfection, ion exchange, chemical disinfection

Alternatives Considered

Nitrate Mitigation

- Ion Exchange
- Wetlands (biological treatment)
- Reverse Osmosis or Nanofiltration
- Electrodialysis Reversal
- Biological Contactors
- Riverbank filtration (biological treatment)

Water Supply and Treatment Alternatives

Alternative	Source Water	Nitrate Treatment	Additional Supply Capacity	Additional Treatment Capacity
1A	Riverbank Filtration	<ul style="list-style-type: none"> IX at J Avenue IX at Northwest 	Riverbank Filtration	Expand Northwest Plant
1B	Riverbank Filtration	<ul style="list-style-type: none"> Wetlands at J Avenue Wetlands at Northwest 	Riverbank Filtration	Expand Northwest Plant
2A	Riverbank Filtration and Cedar River	<ul style="list-style-type: none"> IX at J Avenue IX at Northwest New surface water plant with IX for Cedar River 	Cedar River	New surface water plant
2B	Riverbank Filtration and Cedar River	<ul style="list-style-type: none"> Wetlands at J Avenue Wetlands at Northwest New Surface water plant with Wetlands for Cedar River 	Cedar River	New surface water plant
3A	Riverbank Filtration and Cedar River blended supply	<ul style="list-style-type: none"> IX, ozone, biological active carbon (BAC) at J Avenue IX, ozone, BAC at Northwest 	Cedar River	Expand Northwest Plant
3B	Riverbank Filtration and Cedar River blended supply	<ul style="list-style-type: none"> Wetlands, ozone, BAC at J Avenue Wetlands, ozone, BAC at Northwest 	Cedar River	Expand Northwest Plant

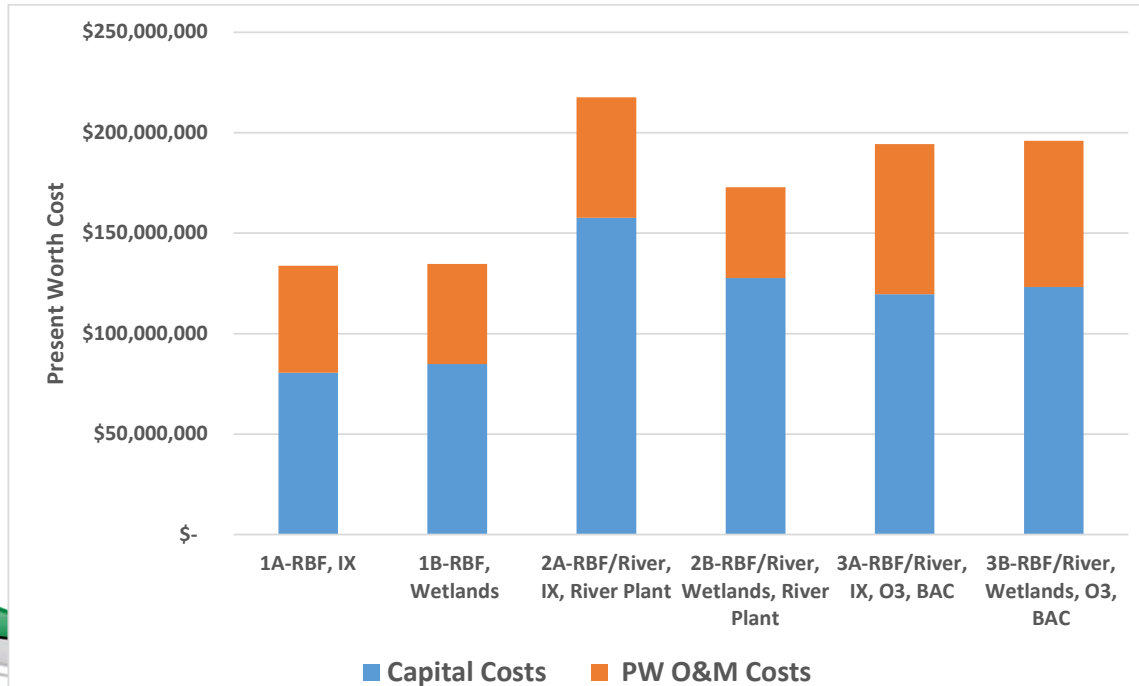
Alternatives Capital and O&M Cost Estimates (\$millions)

Overall water supply and treatment capacity in each alternative is 80 mgd

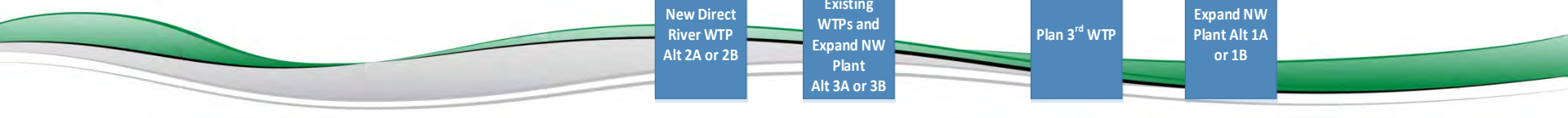
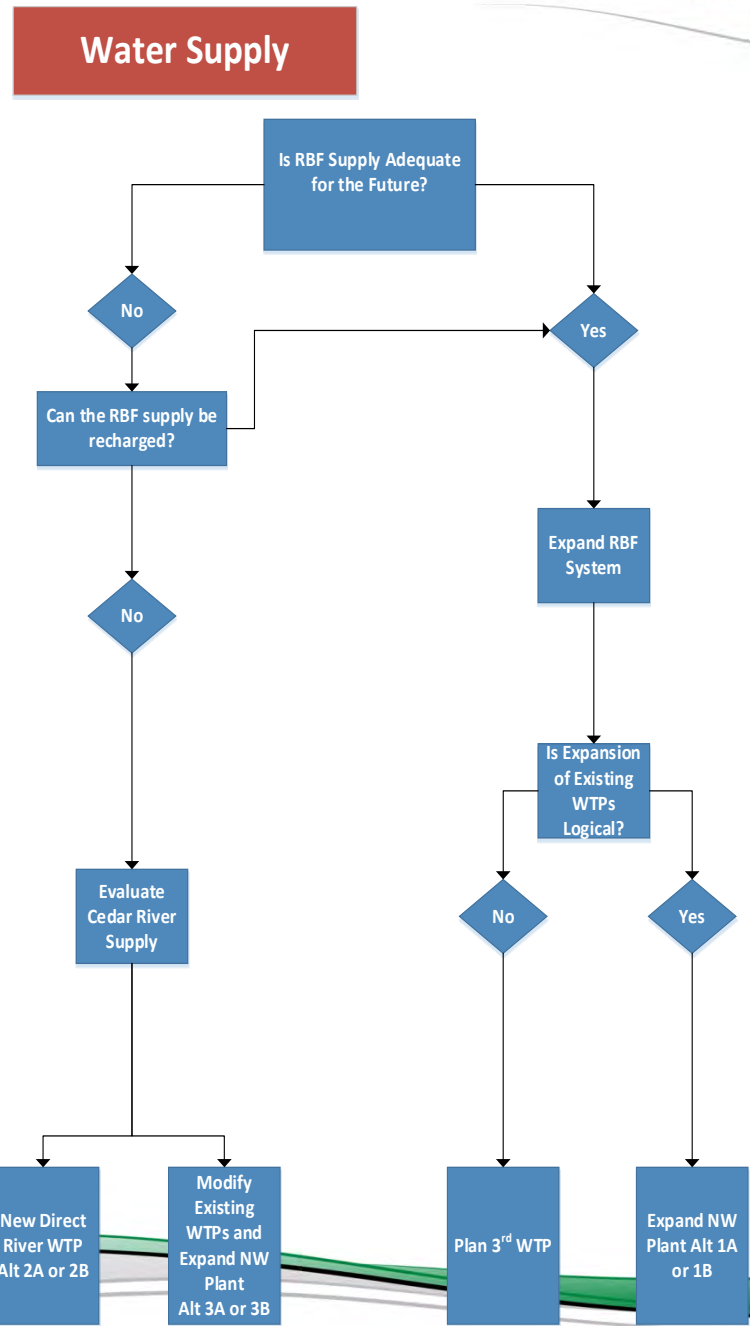
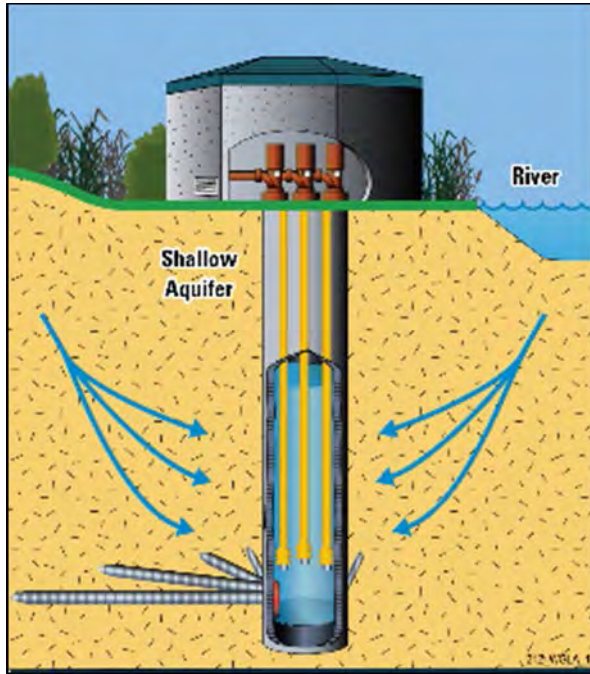
Exhibit ES-8. Alternatives Capital and O&M Cost Estimates (\$millions)

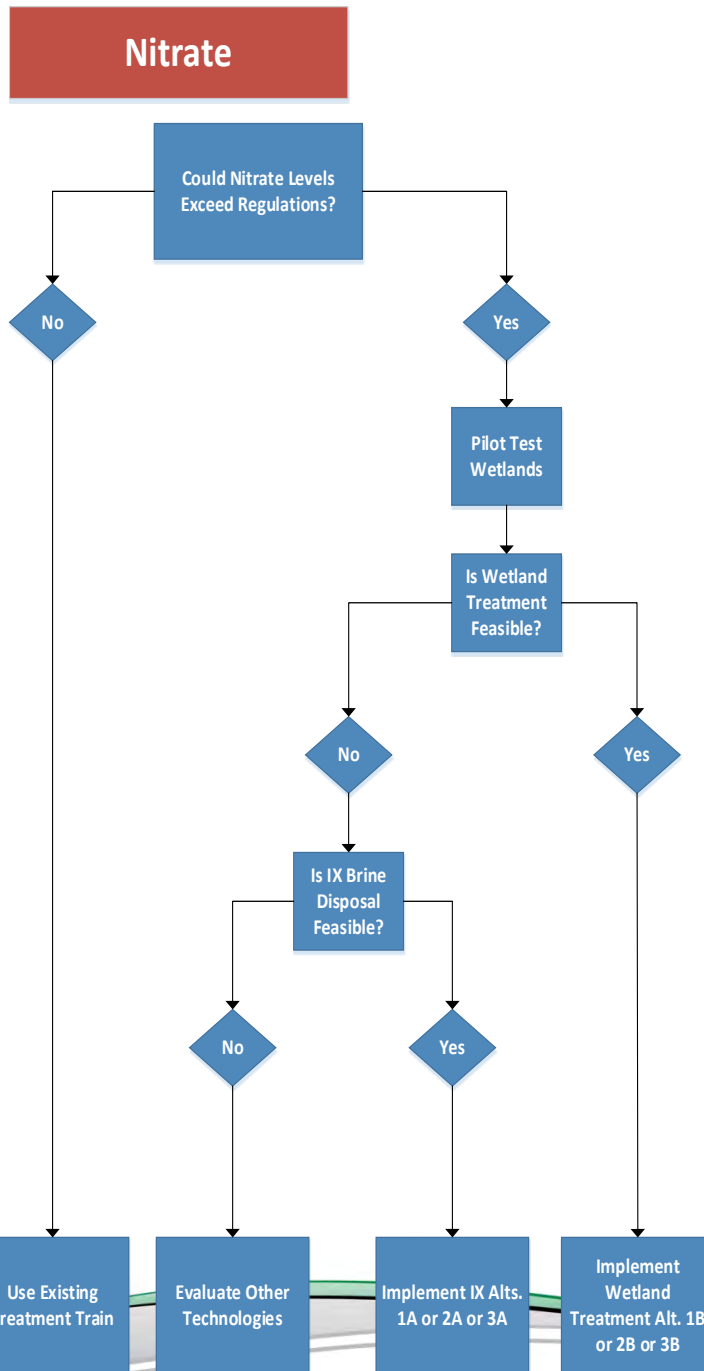
	1A— RBF, IX	1B—RBF, Wetlands	2A— RBF/River, IX, River Plant	2B— RBF/River, Wetlands, River Plant	3A— RBF/River, IX, O3, BAC	3B— RBF/River, Wetlands, O3, BAC
Capital Costs	\$80.6	\$84.9	\$157.7	\$127.6	\$119.6	\$123.2
Present Worth O&M Costs (20 yrs., 5%)	\$ 53.2	\$ 49.8	\$ 59.9	\$ 45.2	\$ 74.8	\$ 72.7
Total Present Worth Costs (20 yrs., 5%)	\$ 133.8	\$ 134.7	\$ 217.6	\$ 172.8	\$ 194.4	\$ 195.9

Exhibit ES-9. Alternatives Present Worth Costs



RBF=riverbank filtration
IX=ion exchange
O3=ozone
BAC=biological active carbon
O&M=operations and maintenance





Current Efforts Concerning Water Supply and Nitrates

- **Water supply options:** The current USGS study on riverbank filtration aquifer modeling, and re-evaluation of future riverbank filtration capacity. Includes AEM survey in 2017.
- **Nitrate mitigation:** Continue efforts to reduce nutrients and contaminants, including nitrate, in the watershed (e.g., the Middle Cedar River Partnership Program). Ongoing.
- **Nitrate mitigation:** Continued monitoring for nitrate and other water quality parameters in the riverbank filtration and Cedar River waters. Ongoing.

Future Efforts Concerning Water Supply and Nitrates

- **Nitrate mitigation:** Investigate wetland treatment for nitrate removal, and how/if wetlands might be incorporated into current treatment system.
- **Nitrate mitigation:** Investigate IX waste disposal requirements for the future.
- **Water supply options:** Investigate the feasibility of riverbank filtration recharge and optimization of yield from existing wells.
- **Water supply options:** Explore future withdrawal rates from the Cedar River and permitting requirements.
- **Water supply options and Nitrate mitigation:** Explore land availability for future well field water supply, wetlands, and water plant sites.



To: City Council Infrastructure Committee

From: Nate Kampman – Public Works Department

Subject: Update – Collins Road from East of Northland Avenue NE to Twixt Town Road

Date: December 13, 2016

Background:

The Public Works department has been working on the design of a project on Collins Road NE from East of Northland Ave NE to Twixt Town Road. The purpose of this project is to improve traffic operations and incorporate safe pedestrian and bicycle accommodations along the corridor. This project is one of several potential improvements that were identified during the Collins Road corridor study. A timeline of studies and projects completed along the Collins Road corridor is shown below:

- 1997 – City initiated Corridor Study
- 1999 – City Council resolution adopting Corridor Study
- 1999-2009 – Applied for funding
- 2001-2006 – Received Traffic Safety grant, ICAAP grants, Safetea-Lu grants
- 2002 – Completed project at 1st Ave and Home Depot
- 2005 – Completed project at Collins Rd and Twixt Town Rd
- 12/17/09 – FONSI signed for overall limits of improvements (E/O tri-level interchange to 1st Ave
- 2009 – Phase 1 project at 1st Ave and Collins Rd
- 2010 – Phase 2 project at Northland Ave bid
- 2011 – Continued applications for grants
- 2016 – Pulled project from the February 2016 Iowa DOT Letting
- October 25, 2016 – Supplemental agreement for professional services to design re-scoped project approved by City Council

Project Description:

The City has contracted with Anderson-Bogert Engineers and Surveyors and HR Green to develop proposed plans and specifications for the project on Collins Road NE from East of Northland Ave to Twixt Town Road. The project was initially scheduled to be bid on the February 2016 Iowa DOT letting. The proposed improvements included upgrading Collins Rd to three (3) through lanes in each direction, intersection improvements, pedestrian accommodations, and an underpass for the extension of Lindale Drive to cross underneath Collins Rd. The estimated construction cost for this project was \$11M with a construction timeline of three years.

In January 2016 Public Works staff made the decision to pull the initial project from the



February 2016 Iowa DOT letting to re-evaluate the project and look at alternative design options. Concerns about proceeding with the initial project included: high overall estimated construction costs, long term maintenance costs of the Lindale Drive undercrossing, long term maintenance costs of the mechanically stabilized earth retaining walls, and an estimated construction timeline of three years.

Staff has been proceeding with developing an alternative design that would reduce overall construction costs and timeline as well as reduce the long term maintenance obligations of the City. The preferred alternative is an at-grade improvement of Collins Road that does not include an undercrossing at Lindale Drive.

Update:

On April 12, 2016, the City Council approved a resolution of support for re-scoping of the Collins Road (IA100) Phase 1 Complete Streets Project from East of Northland Avenue NE to Twixt Town Road NE. This began the process of entering into discussions with the Iowa Department of Transportation to re-scope the project within the context of the improvements contained in the approved Collins Road Environmental Assessment.

These discussions resulted in Supplemental Agreement No. 4 to the Contract for Professional Services with HR Green, Inc. which was authorized by City Council resolution on October 25, 2016. The supplemental agreement authorizes professional design services to revise the design of the project to an at-grade alternative that does not include an undercrossing at Lindale Drive or a pedestrian undercrossing under the Collins Crossing entrance on the north side of Collins Road.

The current anticipated schedule for the re-scoped project is to have private utilities relocate their facilities along the corridor during the 2017 construction season. The project would then be bid in late fall or early winter of 2017/2018 with construction beginning in the spring of 2018. A construction timeline of 1–2 years is anticipated to complete the improvements. This schedule is contingent upon Iowa DOT funding being programmed in their 5-year plan.

On October 11, 2016 a contingent of representatives from the City of Cedar Rapids attended an Iowa DOT Commission meeting to request the funding for the Collins Road project be included in their upcoming 5-year budget plan. Attendees included Mayor Ron Corbett, Councilman Ralph Russell, City Manager Jeff Pomerantz and City Engineer Nate Kampman. Presenters to the Iowa DOT Commission were Mayor Rob Corbett and Councilman Ralph Russell. Public Works staff has also been working closely with Iowa DOT District 6 staff in order to provide them the required information to make a budget request for the Collins Road project.

Requested time on agenda: 10 min

Collins Road

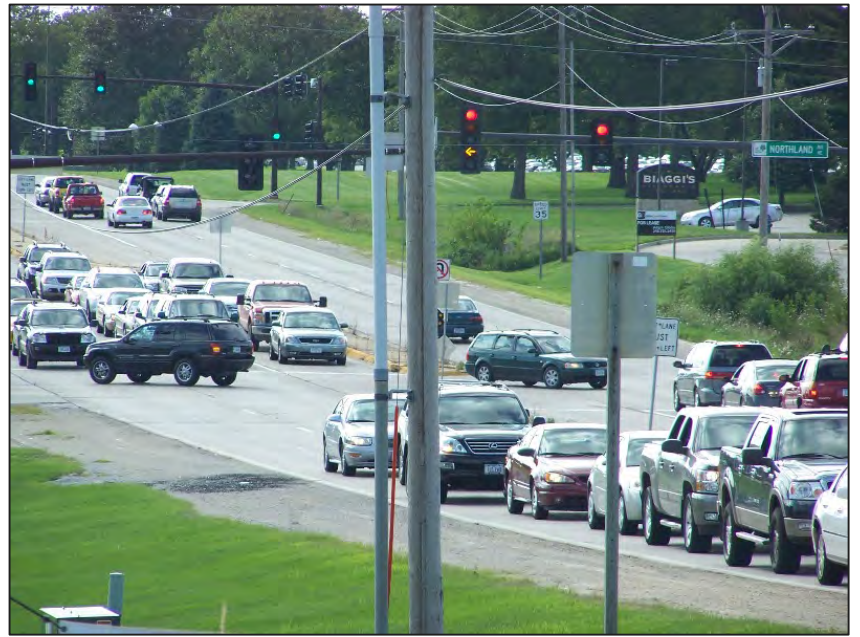


COLLINSROAD

Description of Need

- Routine delays (23,000 – 38,000 vehicles per day)
- Already approaching the projected 2030 traffic volumes
- Signal timing improvements only not improve traffic operations
- Alternate routes will continue to deteriorate if capacity is not addressed on Collins Road
- Pedestrian safety and connectivity is lacking
- Collins Road is home to three intersections that are above statewide average crash rates





Timeline

- January 2016: Pulled project from Iowa DOT letting
- April 2016: Reso of support for re-scoping project
- July 2016: Open house and public outreach
- October 2016: Contract for Professional Services
- October 2016: DOT Commission Presentation



Scope of New Project

Collins Road: East of Northland Ave to Twixt Town Rd

Original concept:



Revised concept:

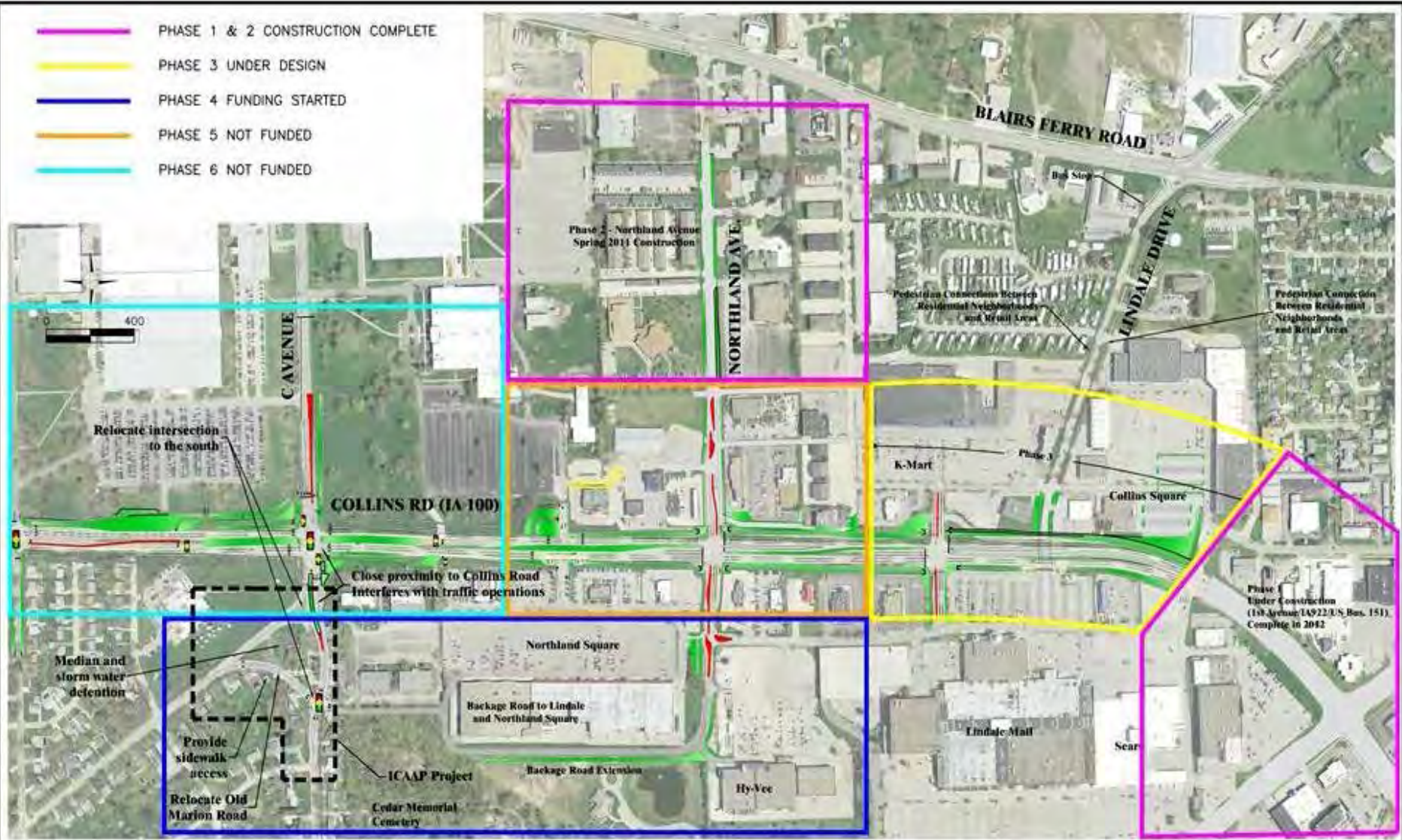
- 3+ years of construction
- Long-term maintenance
- \$12.5 million estimate

- 1 – 2 years of construction
- \$7.5 – 8.5 million estimate



Overall Improvements

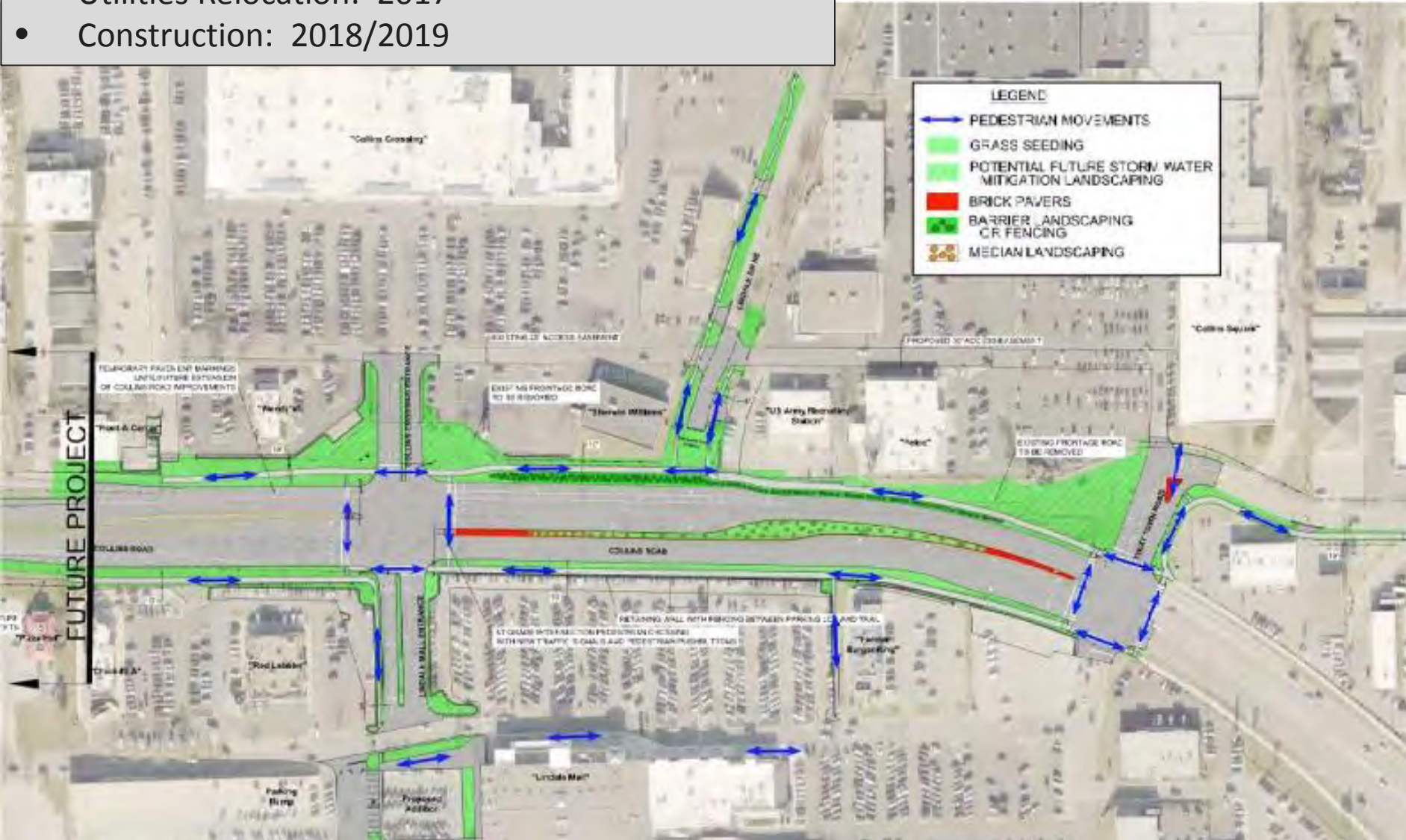
- PHASE 1 & 2 CONSTRUCTION COMPLETE
- PHASE 3 UNDER DESIGN
- PHASE 4 FUNDING STARTED
- PHASE 5 NOT FUNDED
- PHASE 6 NOT FUNDED



COLLINS ROAD OVERALL PROJECT

Moving Forward:

- Design Underway: 2016/2017
- Utilities Relocation: 2017
- Construction: 2018/2019



**\$88 million in unaddressed needs
still exist on Collins Road**



COLLINS ROAD

Thank You



COLLINS ROAD