

**NOTICE OF A SPECIAL MEETING
BONDURANT CITY COUNCIL
APRIL 29, 2024**

NOTICE IS HEREBY GIVEN that a Special Meeting of the City Council will be held at 6:00 PM on April 29, 2024, in the Bondurant Community Library, 104 Second Street, Northeast, Bondurant, Polk County, Iowa. Said meeting is open and the public is encouraged to attend.

AGENDA

1. Roll Call
2. Call to Order and Declaring a Quorum
3. Abstentions declared
4. Perfecting and Approval of the Agenda
5. Guests requesting to address the City Council
6. Consent Agenda:
All items listed below are considered routine by the City Council and will be enacted by one motion. There will be no separate discussion of these items unless a Council Member or citizen so requests, in which event the item will be removed from the Consent Agenda and considered separately.
 - a. Applications for Council Approval
 - b. - Resolution authorizing payment in the amount of \$41,250 to Group Creative Services for installation of the Dining Room piece at the ARTocka Trail Loop
7. Discussion Items -
 - a. Overview of past growth and discussion of growth strategy
 - b. Zoning Code Updates with discussion of impact arising from recent legislative changes
 - c. Review of Capital Plan and anticipated future Bonding
 - d. Master Streets Plan: Projects underway and Planned and Code Update/Discussion
 - e. Parks, Trails, and Greenway Master Plan
8. Adjournment

The Bondurant City Council maintains the right to waive the first and second readings of ordinances presented and may pass the third and final reading of the same ordinance within the same council meeting.

Any person with a disability who requires a modification or accommodation in order to participate in the meeting, or any person with limited English proficiency (LEP) who requires language assistance to communicate with the City Council during the meeting, should contact the City Clerk, (515) 967-2418 or shagan@cityofbondurant.com, no fewer than two business days prior to the meeting to enable the City of Bondurant to make reasonable arrangements to assure accessibility or language assistance for the meeting.

Special Event Packet



Bondurant

Special Event Permit—Guidelines and Requirements

As an individual or organization requesting use of City of Bondurant public property or right-of-way for a special event, you have basic responsibilities to fulfill in order to conduct your event with the approval of the City of Bondurant. The public property may include the use of the streets, trail system, or parkland. Receiving approval from the City of Bondurant does not preclude responsibility for any additional permits or approvals by the City or related to state and federal regulations. The City reserves the right to impose special guidelines and restrictions based on the nature of the proposed event and its attendant circumstances.

The City of Bondurant will determine whether an event is classified as a Special Event if outside of the description stated. The following general guidelines and responsibilities apply to activities such as parades, runs/walks, athletic events, street fairs, outdoor concerts, block parties, bicycling events, and/or fundraisers.

- A. Upon issuance of the Special Events Permit, the applicant must comply with insurance provisions requiring a certificate of Insurance naming the City of Bondurant and its officials, agents, employees, and board members as a co-insured in the following amounts: General Liability and Dram Shop Insurance (if serving alcohol) coverage in an amount not less than \$1,000,000 per occurrence. Please note that insurance requirements are waived for neighborhood-based block parties.
- B. The application must include a **map of the specific area** to be used or route to travel. The map must delineate the City property to be used (Streets/Sidewalks/Trails/Parks, etc.) start and finish points and direction of flow, if applicable, as well as location(s) of outdoor toilet, trash receptacles, street barricades, and liquor dispensing area(s), if any.
- C. The applicant must comply with all federal, state, county, and city laws; ordinances and regulations including all regulations adopted and established by the city.
- D. The applicant must assume extra costs, if applicable, associated with public safety and sanitation at the level of service required by the City of Bondurant. This includes the number and type of barricades, number of portable toilets and trash receptacles, and the number and hours of police/security officers or other city staff as required.
- E. If alcoholic beverages are to be sold or an entrance or admission is charged for an event at which alcoholic beverages will be served, a Liquor Permit and Dram Shop Insurance will be required. This permit, which is not included in the application for the Special Event Permit, requires consideration and approval by the Bondurant City Council and, in most instances, requires approval by the State of Iowa.
- F. If the event is held in a secured area, allowance must be made for access for fire emergencies including a minimum of two (2) exits. Events held on public streets must include an allowance for a continuous, through traffic lane for use by public safety personnel in an emergency. Council approval and type III barricades are always required for any street closure. The barricades must be sufficient as to completely close the street or roadway but yet be easily and quickly removable solely for emergency vehicle access.
- G. The use of a tent more than 200 square feet (enclosed) or canopy style (open on three sides) of more than 400 square feet require proof of the retardancy from the manufacturer or supplier as well as the proposed location and intended use of the tent.
- H. Signage for the event must adhere to the City's Sign Ordinance. Compliance may require a sign permit, issued by the Planning and Development Department.

-
- I. City Code section 53.03 for commercially zoned areas states the music end time is 12:00 midnight Sunday-Thursday and 2:00 AM Friday and Saturday. For residentially zoned areas the music end time is 10:00 PM Sunday-Thursday and 12:00 midnight Friday and Saturday. If the event will utilize amplified sound a noise permit will be needed. As indicated above, the cost of the permit, issued by the City Clerk must be included in the application fee for the Special Event Permit.
 - J. Any valid complaint of disturbance of the peace will result in a warning and if it continues, it shall be reason to terminate the event/block party.
 - K. The following number of portable toilets is required in accordance with estimated event attendance: For events with alcohol, one portable toilet for every 150 people and for events without alcohol, or one portable toilet for every 250 people.
 - L. The applicant must utilize police/security officers if recommended by the City or Polk County Sherriff Office. When alcohol is available at the event, the applicant must comply with the recommendations. In some instances off-duty officers may be hired; contact the Polk County Sherriff's office for details.
 - M. The applicant must propose a plan to address sanitation/garbage collection for the event.
 - N. If the event requires the closure of public streets, a separate page will need to list all property owners impacted by the street closure with their printed name, signature, and address. All property owners in the immediate affected area to be blocked off shall be notified in advance of the street closure.
 - O. Depending on the estimated event attendance consider contracting emergency medical services to be prepared in case of a medical emergency.

Special Event Application

Please complete this form and submit along with applicable fees to the City Clerk's Office, 200 2nd St NE, Bondurant, IA 50035 at least 30 days prior to proposed event. If you need additional space to describe your event, please attach additional pages to this application. Advertising your event prior to receiving a signed Special Event Application is discouraged.

(Please Print)

Event Name Springtime in the village Date(s) of Event 5/1/24
Location 1st street SE & Main Street
(Applicants must attach a map of the event layout that includes details like tent locations, portable restroom locations, sound stage, etc.)
Setup Time 2:00 pm Starting Time 4:30pm Ending Time 9:00pm

(Please Print)

Organization Hosting Event Polk County Sheriff's Office
Contact Person Javier Cortez Day Phone 515-443-7929
Email Javier.Cortez@polkcountyIowa.gov
Addl. Contact Austin Dagenais Day Phone 515-508-0166
Email Austin.Dagenais@polkcountyIowa.gov

Type of Event:

Check all that apply.

- | | | | | | |
|-------------------------------------|------------------------------|--------------------------|-----------------|--------------------------|----------------|
| <input type="checkbox"/> | Parade | <input type="checkbox"/> | Fundraiser | <input type="checkbox"/> | Walk/Run Event |
| <input checked="" type="checkbox"/> | Fair/Festival | <input type="checkbox"/> | Outdoor Concert | <input type="checkbox"/> | Block Party |
| <input type="checkbox"/> | Bicycle Event | | | | |
| <input type="checkbox"/> | Other (please explain) _____ | | | | |

Describe the Event (please attach additional pages if necessary): Event will have Polk County Sheriff's office displays, demonstrations and activities. Event will also partner with Farmers Market

City Properties: Trailhead/The Depot | Lake Petocka | City Park | BRSC

Event Details:

(provide estimated counts)

Estimated Attendance	<u>1,500</u>
Trash Containers	<u> </u>
Portable Toilets	<u>0</u>

(circle what applies)

Open to the general public?	<input checked="" type="radio"/> YES / <input type="radio"/> NO
Tents	<input type="radio"/> YES / <input checked="" type="radio"/> NO
Inflatable Houses/Toys	<input type="radio"/> YES / <input checked="" type="radio"/> NO
Amplified Music	<input type="radio"/> YES / <input checked="" type="radio"/> NO
Alcoholic Beverages	<input type="radio"/> YES / <input checked="" type="radio"/> NO
Banners/Signs	<input type="radio"/> YES / <input checked="" type="radio"/> NO

Vendors:

(provide estimated counts)

Individual food and beverage vendors must obtain a Temporary Event License from the Iowa Department of Inspections and Appeals. The Event organizer will be responsible for this information. Failure to do so may result in fines or closing of the vendor.

- Number of Vendors 15
- List of Vendors and/or Type of Vendor

PCSO Vendors will be informational booths. NO vendors selling items for the PCSO Springtime event.

- Permits for *Mobile Food Vendors* are required for food truck vendors per City Ordinance (Chapter 125). Current application and license must be on display in the Mobile Food Unit.
- Banners/Signs may be placed along roadways to guide people to your event, but in no way may be affixed to trees, street signs, park signs or City buildings. Signs are to be removed immediately following event. Grounds markings are allowed, however spray paint is prohibited—chalk or signage would be more appropriate. Failure to do so will result in maintenance fees and/or fines according to littering ordinances.
- Trash and debris cleanup: depending on the event attendance, a dumpster may be required. Park trash cans are for daily park users. Event attendance over 75 will required additional trash cans. Metro Waste Authority offers Event Recycling Stands that should be considered.

Special Provisions: (city provided—for example: trash containers, barricades, etc.)

Is there any special assistance that you will need the City to provide?

Yes No

Will you need to borrow barricades from the City? Yes No

(This is available for not-for-profit organizations and residents. Businesses must provide their own barricades. **If yes, indicate on your event layout map the location of the barricades.** Barricades will be dropped onsite during business hours and picked up at the same location after the event. The street shall be opened for vehicular traffic no later than the concluding time of the event. The Special Event applicant is responsible and will be billed for all damages or lost barricades. The fee for damaged or lost barricades may be up to \$300.)

Will you need to close the street for your event? Yes No

(Closure of all streets require City Council approval. **If yes,** indicate on your event layout map the location of the street closures and obtain signature from all property owner impacted by the street closure.)

Will you need portable restrooms? Yes No

(See required amount enclosed in the application guidelines on pg. 2. If yes, they are at your expense.)

Provide details about the event garbage collection plans: We will provide large cans for trash.

Will you charge admission / registration fees: Yes No

If yes, is this for profit or not for profit? _____ A special event application fee may apply.

Will there be product for sale on site? Yes No

(If yes, product liability insurance may be required for sales of food and drinks. Please contact the Polk County Health Department for details.)

Will alcohol be served or sold? Yes No

A liquor permit and Dram Shop Insurance are required for the sale of alcohol to the public during any event (required whether an admission fee is charged or not). City Council approval is required for the sale or service of alcohol. If alcohol is served, additional security may be required. Off-duty Polk County Sherriff deputies may be hired to provide additional security. Contact Polk County Sherriff Office at 515-286-3333.

Will you be using outdoor tents great than 200 square feet? Yes No

Will you be using an outdoor canopy greater than 400 square feet? Yes No

Will you be using inflatable rides or devices? Yes No

(If yes, location of the inflatable must be shown on the event layout map that must be submitted with this application.)

Will your event interfere with vehicle traffic? Yes No

(If yes, provide a map of the route and how traffic control will be administered. Contact Polk County Sherriff Office for traffic/crowd safety 515-286-3333)

Will your event require a first aid booth, fire/rescue units present during the event?

Yes No

Will you be shooting off fireworks? Yes No

(If yes, a fireworks permit is required. Contac the City Clerk's office at 515-630-6983)

Will you be posting temporary signage? Yes No

(If yes, a temporary sign permit and fee may be required. Contact the Planning and Development Department at 515-630-6985. Also, please indicate on your event layout map the location of the signs.)

Will you need access to a water source? Yes No

(Additional charges may apply. If yes, what is the water to be used for?) _____

Will you be using amplified sound? Yes No

(If yes, a \$20 fee for a day or less or \$40 for more than a day is required at the time this application is submitted in order to obtain a noise permit)

Provide a description of the sound equipment that will be used during the event: _____

Will you need access to electricity? Yes No

(If yes, please explain. Additional fees may apply) _____

Electricity is limited and in most cases will need to be provided by the applicant.

I hereby certify the included statements are true and correct, to the best of my knowledge, and that false statement(s) may be grounds for denial of this application. It is understood that activities at all times during the event shall comply with all applicable City ordinances. It is further understood the individual and the organization or association will be responsible for any and all damages arising as a result of this event, and, if this application is approved by the City, the applicant shall be required to execute a Special Event Permit—Hold Harmless Agreement waiving any and all claims which the applicant may have as a result of this event against the City of Bondurant, Iowa, its officials, agents, employees, or board members. It is further understood a certificate of public liability insurance will be required before conducting the proposed event.

An event for which a Permit has either not been obtained or which is in violation occurs will be subject to a municipal infraction up to \$750.

I have read the Special Event Application guidelines and requirement for issuance of the permit. I understand the conditions under which it is issued and agree to comply with these conditions for this event. I, or the organization I represent, have met or will meet all requirements established by the City. Further, I understand that if all requirements are not met, the Special Event Permit can be canceled by the City at any time including at the state of or during the event. If this event is sponsored by an organization, I hereby certify I have the legal authority to represent the applicant and/or the participants. It is further understood the City of Bondurant has the authority to grant or deny permission for this event.

Signature 

Date 4/23/2024

Printed Name Capt. Ryan Evers

City Official Signature _____ Date _____

The Privacy Act of 1974 requires that each individual asked or required to furnish personal information be advised of the following: Authority: 5 P.L. 93-579
 Purpose: To provide a contact in connection with permit activities.
 Routine Uses: Permit is issued under the direction of the City Administrator. The names and address of those who obtain the permit are not reported, but are kept on file at the City of Bondurant to provide point of contact in case of emergency.

Check List and Fee Table to Calculate your application fee:
 (no charge for not for profits, schools, and/or school organizations and city/county and/or city/county organizations)

<input type="checkbox"/> Noise Permit Fee	\$20/a day or less \$40/more than a day		Please make check payable to The City of Bondurant.
<input type="checkbox"/> Temporary Sign Permit Fee	\$10/ 30 days		
<input type="checkbox"/> Certificate of Insurance with City names as additional insured		n/c	
<input type="checkbox"/> Map of event area layout			
<input type="checkbox"/> List of signatures and addresses of the impacted households by a street closure			
TOTAL DUE WITH APPLICATION			



PCSO

1. Mobile Command/Drone
2. Jail
3. Jail Props
4. Ident Fingerprints
5. Animal Control
6. Patrol
7. Helmet fit station
8. Rules of the road

9. Community Relations
10. Metro Star
11. Bearcat & Door prop
12. Courthouse
13. Bondurant SRO
14. Transport
15. K9



Polk County Sheriff's Office- Field Headquarters
Community Relations
5995 NE 14th St
Des Moines, IA. 50313

www.co.polk.ia.us/departments/sheriff
Community Relations (515) 286-3015
Fax (515) 286-3399

To whom it may concern,

The Polk County Sheriff's Office is partnering with the City of Bondurant Farmers Market on May 1, 2024 to host our annual Springtime in the Village. Our Springtime in the Village aims to offer various safety topics for Bondurant community members while also show casing the Sheriff's Office and the various divisions we bring to your community.

Due to our spacing needs for this event, we are inquiring to gain approval from the residents/business owners on 1st Street SE whom would be impacted from the street closure. Per City policy, we need written approval from each residence agreeing for the street closure on May 1st, 2024 from appoximalty 1:30PM - 8:00PM. 1st Street SE would only be closed on May 1st for this event.

This agreement states the residents/business owners on 1st Street SE understand and accept the street closure for May 1st from approximately 1:30PM-8:00PM and accepts they will not have access to their parking lot on 1st Street SE for the duration of the time proposed.

The Sheriff's Office appreciates your willingness to allow us to utilize this space.

Thank you,

Community Relations Divisions, Polk County Sheriff's Office

RYAN C. LARUE

Name

I agree

I do not agree

106 1st ST SE

Address

515-967-8884

Phone Number

Ryan C. Larue

Signature

4-16-24

Date



Polk County Sheriff's Office- Field Headquarters
Community Relations
5995 NE 14th St
Des Moines, IA 50313

www.co.polk.ia.us/departments/sheriff
Community Relations (515) 286-3015
Fax (515) 286-3399

To whom it may concern,

The Polk County Sheriff's Office is partnering with the City of Bondurant Farmers Market on May 1, 2024 to host our annual Springtime in the Village. Our Springtime in the Village aims to offer various safety topics for Bondurant community members while also show casing the Sheriff's Office and the various divisions we bring to your community.

Due to our spacing needs for this event, we are inquiring to gain approval from the residents/business owners on 1st Street SE whom would be impacted from the street closure. Per City policy, we need written approval from each residence agreeing for the street closure on May 1st, 2024 from approximalty 1:30PM - 8:00PM. 1st Street SE would only be closed on May 1st for this event.

This agreement states the residents/business owners on 1st Street SE understand and accept the street closure for May 1st from approximately 1:30PM-8:00PM and accepts they will not have access to their parking lot on 1st Street SE for the duration of the time proposed.

The Sheriff's Office appreciates your willingness to allow us to utilize this space.

Thank you,

Community Relations Divisions, Polk County Sheriff's Office

Sheena Foster
Name

* I agree
 * I do not agree

102 1st St. SE Bondurant
Address

(515) 401-8398
Phone Number

Sheena Foster
Signature

4/15/24
Date



Polk County Sheriff's Office- Field Headquarters
Community Relations
5995 NE 14th St
Des Moines, IA 50313

www.co.polk.ia.us/departments/sheriff
Community Relations (515) 286-3015
Fax (515) 286-3399

To whom it may concern,

The Polk County Sheriff's Office is partnering with the City of Bondurant Farmers Market on May 1, 2024 to host our annual Springtime in the Village. Our Springtime in the Village aims to offer various safety topics for Bondurant community members while also show casing the Sheriff's Office and the various divisions we bring to your community.

Due to our spacing needs for this event, we are inquiring to gain approval from the residents/business owners on 1st Street SE whom would be impacted from the street closure. Per City policy, we need written approval from each residence agreeing for the street closure on May 1st, 2024 from appoximalty 1:30PM - 8:00PM. 1st Street SE would only be closed on May 1st for this event.

This agreement states the residents/business owners on 1st Street SE understand and accept the street closure for May 1st from approximately 1:30PM-8:00PM and accepts they will not have access to their parking lot on 1st Street SE for the duration of the time proposed.

The Sheriff's Office appreciates your willingness to allow us to utilize this space.

Thank you,

Community Relations Divisions, Polk County Sheriff's Office

Stefanie Brown

Name

* I agree

* I do not agree

Address

Phone Number

Stefanie Brown

Signature

4/15/24

Date



PCSO

- 1. Mobile Command/Drone
- 2. Jail
- 3. Jail Props
- 4. Ident Fingerprints
- 5. Animal Control
- 6. Patrol
- 7. Helmet fit station
- 8. Rules of the road

- 9. Community Relations
- 10. Metro Star
- 11. Bearcat & Door prop
- 12. Courthouse
- 13. Bondurant SRO
- 14. Transport
- 15.K9

Special Event Application

Please complete this form and submit along with applicable fees to the City Clerk's Office, 200 2nd St NE, Bondurant, IA 50035 at least 30 days prior to proposed event. If you need additional space to describe your event, please attach additional pages to this application. Advertising your event prior to receiving a signed Special Event Application is discouraged.

(Please Print)

Event Name Bondurant Farmers Market **Date(s) of Event** Wednesdays May-Oct
Location Main Street SE (between Railroad St SE and 2nd St SE) & parking lot at 113 Main St
(Applicants must attach a map of the event layout that includes details like tent locations, portable restroom locations, sound stage, etc.)
Setup Time 1530 **Starting Time** 1800 **Ending Time** 2000 (teardown by 2100)

(Please Print)

Organization Hosting Event Bondurant Farmers Market
Contact Person Amber Erickson **Day Phone** 515-451-5082
Email bondufarmersmarket@gmail.com
Addl. Contact _____ **Day Phone** _____
Email _____

Type of Event:

Check all that apply.

- | | | | | | |
|-------------------------------------|------------------------------|--------------------------|-----------------|--------------------------|----------------|
| <input type="checkbox"/> | Parade | <input type="checkbox"/> | Fundraiser | <input type="checkbox"/> | Walk/Run Event |
| <input checked="" type="checkbox"/> | Fair/Festival | <input type="checkbox"/> | Outdoor Concert | <input type="checkbox"/> | Block Party |
| <input type="checkbox"/> | Bicycle Event | | | | |
| <input type="checkbox"/> | Other (please explain) _____ | | | | |

Describe the Event (please attach additional pages if necessary): _____
50-60 market vendors & community organizations (canopies/tables and/or trailers);
food/drink trucks and/or trailers; musicians; family-friendly activities

City Properties: Trailhead/The Depot | Lake Petocka | City Park | BRSC

Event Details:

(provide estimated counts)

Estimated Attendance 150-200
Trash Containers _____
Portable Toilets _____

(circle what applies)

Open to the general public? YES / NO
Tents YES / NO 10' x 10'
Inflatable Houses/Toys YES / NO
Amplified Music YES / NO
Alcoholic Beverages occasional YES / NO
Banners/Signs YES / NO

Vendors:

(provide estimated counts)

Individual food and beverage vendors must obtain a *Temporary Event License* from the *Iowa Department of Inspections and Appeals*. The Event organizer will be responsible for this information. Failure to do so may result in fines or closing of the vendor.

• Number of Vendors 50-60
• List of Vendors and/or Type of Vendor

List varies week-to-week. Can provide if needed.

- Permits for *Mobile Food Vendors* are required for food truck vendors per City Ordinance (Chapter 125). Current application and license must be on display in the Mobile Food Unit.
- Banners/Signs may be placed along roadways to guide people to your event, but in no way may be affixed to trees, street signs, park signs or City buildings. Signs are to be removed immediately following event. Grounds markings are allowed, however spray paint is prohibited—chalk or signage would be more appropriate. Failure to do so will result in maintenance fees and/or fines according to littering ordinances.
- Trash and debris cleanup: depending on the event attendance, a dumpster may be required. Park trash cans are for daily park users. Event attendance over 75 will required additional trash cans. Metro Waste Authority offers Event Recycling Stands that should be considered.

Special Provisions: (city provided—for example: trash containers, barricades, etc.)

Is there any special assistance that you will need the City to provide?

Yes No

Will you need to borrow barricades from the City? Yes No

(This is available for not-for-profit organizations and residents. Businesses must provide their own barricades. **If yes, indicate on your event layout map the location of the barricades.** Barricades will be dropped onsite during business hours and picked up at the same location after the event. The street shall be opened for vehicular traffic no later than the concluding time of the event. The Special Event applicant is responsible and will be billed for all damages or lost barricades. The fee for damaged or lost barricades may be up to \$300.)

Will you need to close the street for your event? Yes No

(Closure of all streets require City Council approval. If yes, indicate on your event layout map the location of the street closures and obtain signature from all property owner impacted by the street closure.)

Will you need portable restrooms? Yes No

(See required amount enclosed in the application guidelines on pg. 2. If yes, they are at your expense.)

Provide details about the event garbage collection plans: _____

Will you charge admission / registration fees: Yes No

If yes, is this for profit or not for profit? _____ A special event application fee may apply.

Will there be product for sale on site? Yes No

(If yes, product liability insurance may be required for sales of food and drinks. Please contact the [Polk County Health Department](#) for details.)

Will alcohol be served or sold? Yes No

A [liquor permit](#) and [Dram Shop Insurance](#) are required for the sale of alcohol to the public during any event (required whether an admission fee is charged or not). City Council approval is required for the sale or service of alcohol. If alcohol is served, additional security may be required. Off-duty [Polk County Sherriff](#) deputies may be hired to provide additional security. Contact Polk County Sherriff Office at 515-286-3333.

Will you be using outdoor tents great than 200 square feet? Yes No

Will you be using an outdoor canopy greater than 400 square feet? Yes No

Will you be using inflatable rides or devices? Yes No

(If yes, location of the inflatable must be shown on the event layout map that must be submitted with this application.)

Will your event interfere with vehicle traffic? Yes No (*streets closed*)

(If yes, provide a map of the route and how traffic control will be administered. Contact [Polk County Sherriff Office](#) for traffic/crowd safety 515-286-3333)

Will your event require a first aid booth, fire/rescue units present during the event?

Yes No

Will you be shooting off fireworks? Yes No

(If yes, a fireworks permit is required. Contac the City Clerk's office at 515-630-6983)

Will you be posting temporary signage? Yes No

(If yes, a temporary sign permit and fee may be required. Contact the Planning and Development Department at 515-630-6985. Also, please indicate on your event layout map the location of the signs.)

Will you need access to a water source? Yes No

(Additional charges may apply. If yes, what is the water to be used for?) _____

Will you be using amplified sound? Yes No

(If yes, a \$20 fee for a day or less or \$40 for more than a day is required at the time this application is submitted in order to obtain a noise permit)

Provide a description of the sound equipment that will be used during the event: Musician -owned, small scale equipment, hosted at Little House on Main

Will you need access to electricity? Yes No

(If yes, please explain. Additional fees may apply) Uncommon, but may be needed on occasion

Electricity is limited and in most cases will need to be provided by the applicant.

I hereby certify the included statements are true and correct, to the best of my knowledge, and that false statement(s) may be grounds for denial of this application. It is understood that activities at all times during the event shall comply with all applicable City ordinances. It is further understood the individual and the organization or association will be responsible for any and all damages arising as a result of this event, and, if this application is approved by the City, the applicant shall be required to execute a Special Event Permit—Hold Harmless Agreement waiving any and all claims which the applicant may have as a result of this event against the City of Bondurant, Iowa, its officials, agents, employees, or board members. It is further understood a certificate of public liability insurance will be required before conducting the proposed event.

An event for which a Permit has either not been obtained or which is in violation occurs will be subject to a municipal infraction up to \$750.

I have read the Special Event Application guidelines and requirement for issuance of the permit. I understand the conditions under which it is issued and agree to comply with these conditions for this event. I, or the organization I represent, have met or will meet all requirements established by the City. Further, I understand that if all requirements are not met, the Special Event Permit can be canceled by the City at any time including at the state of or during the event. If this event is sponsored by an organization, I hereby certify I have the legal authority to represent the applicant and/or the participants. It is further understood the City of Bondurant has the authority to grant or deny permission for this event.

Signature *Amber Erickson*

Date 04/25/2024

Printed Name Amber Erickson

City Official Signature _____ Date _____

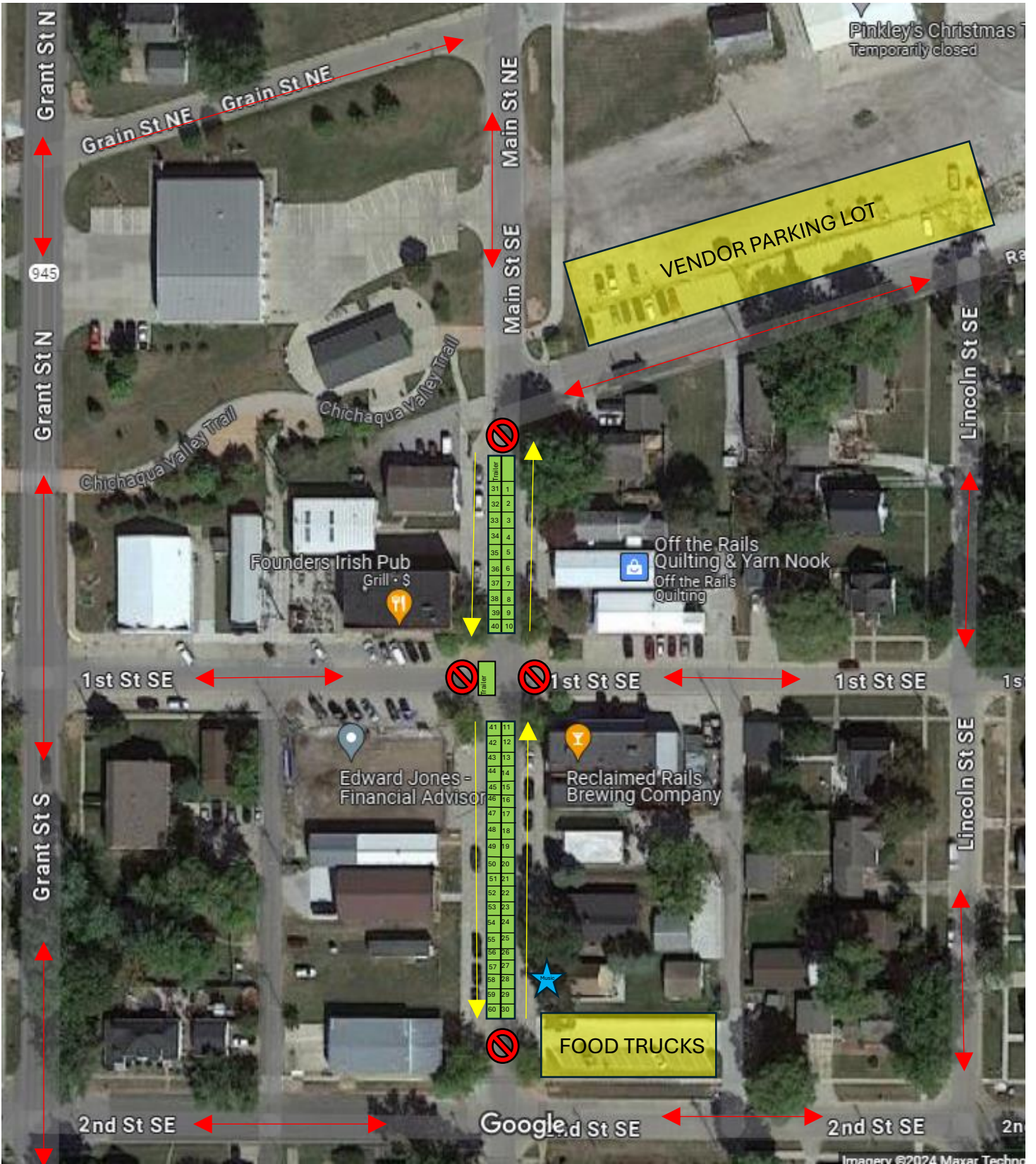
The Privacy Act of 1974 requires that each individual asked or required to furnish personal information be advised of the following: Authority: 5 P.L. 93-579

Purpose: To provide a contact in connection with permit activities.

Routine Uses: Permit is issued under the direction of the City Administrator. The names and address of those who obtain the permit are not reported, but are kept on file at the City of Bondurant to provide point of contact in case of emergency.

Check List and Fee Table to Calculate your application fee:
(no charge for not for profits, schools, and/or school organizations and city/county and/or city/county organizations)

<input type="checkbox"/> Noise Permit Fee	\$20/a day or less \$40/more than a day		Please make check payable to The City of Bondurant.
<input type="checkbox"/> Temporary Sign Permit Fee	\$10/ 30 days		
<input type="checkbox"/> Certificate of Insurance with City names as additional insured		n/c	
<input type="checkbox"/> Map of event area layout			
<input type="checkbox"/> List of signatures and addresses of the impacted households by a street closure			
TOTAL DUE WITH APPLICATION			





**BUSINESS OF THE CITY COUNCIL
BONDURANT, IOWA
AGENDA STATEMENT**

Item No. 6.b.
For Meeting of 4/29/2024
Resolution

TITLE: - Resolution authorizing payment in the amount of \$41,250 to Group Creative Services for installation of the Dining Room piece at the ARTocka Trail Loop

CONTACT PERSON:

Maggie Murray, Planning & Community Development Director

BRIEF HISTORY & ANALYSIS: In January 2024 the Bondurant City Council entered into a contract with Group Creative Services in the amount of \$55,000 to have the Dining Room installation at the ARTocka Trail Loop completed by the artist group I/Thee. The City is in receipt of the second of three invoices from Group Creative Services for this Dining Room project. The attached invoice is consistent with the terms of the approved contract. The remaining \$5,500 left in the contract will be paid after the installation is complete. It is anticipated the project will be installed by the end of August. The City must expend the funds associated with the attached invoice now to satisfy a grant requirement of the Bravo Greater Des Moines grant that is being utilized to help complete the project.

FUNDING SOURCE: Grant/LOSST

STAFF RECOMMENDATION: Approve resolution on a roll call vote.

APPROVED FOR SUBMITTAL:

ATTACHMENTS:

1. RESOLUTION NO. 240429-94
2. Invoice #2

CITY OF BONDURANT
RESOLUTION NO. 240429-94

RESOLUTION AUTHORIZING PAYMENT IN THE AMOUNT OF \$41,250
TO GROUP CREATIVE SERVICES FOR INSTALLATION OF THE
DINING ROOM PIECE AT THE ARTOCKA TRAIL LOOP

WHEREAS in January 2024 the Bondurant City Council approved a resolution selecting I/Thee's submitted preliminary ARTocka Trail Loop concept prepared as part of the Art, Culture, & Wayfinding Master Plan process, following recommendations for such selection made by the Ad hoc Artist Selection Review Committee and the Parks & Recreation Board; AND

WHEREAS in January 2024 the Bondurant City Council approved a contract for installation of I/Thee's first art piece at the ARTocka Trail Loop, titled the Dining Room; AND

WHEREAS City Council approved a refined concept of the Dining Room earlier this month; AND

WHEREAS the City is in receipt of the second of three invoices from Group Creative Services for the Dining Room project; AND

WHEREAS the City must expend the funds associated with the second invoice to satisfy a grant requirement of the BRAVO Greater Des Moines grant that is being utilized to help complete the project; AND

WHEREAS the City appreciates the BRAVO grant that makes this project possible; AND

WHEREAS upon approval of the second invoice for the Dining Room concept by City Council, I/Thee will continue with the installation phase of this project with the anticipated installation by the end of August.

NOW, THEREFORE, BE IT RESOLVED, by the City Council of the City of Bondurant, Iowa, that the payment to Group Creative Services in the amount of \$41,250 is hereby approved.

Passed this 29th day of April,

By: _____
Doug Elrod, Mayor

ATTEST: I, Shelby Hagan, City Clerk of Bondurant, hereby certify that at a meeting of the City Council held on the above date, among other proceedings the above was adopted.

IN WITNESS WHEREOF, I have hereunto set my hand the day and year above written.

Shelby Hagan, City Clerk

Name	Yay	Nay	Abstain	Absent
Cox				
Driscoll				
McKenzie				
Peffer				
Sillanpaa				

GROUP CREATIVE SERVICES

1424 48TH ST
DES MOINES, IA 50311 US
(515) 244-8590
teva@groupcreatives.com
www.groupcreatives.com



INVOICE

BILL TO
Maggie Murray
City of Bondurant
200 2nd Street NE Box 37
Bondurant, IA 50035

INVOICE 414
DATE 04/16/2024
TERMS Net 30
DUE DATE 05/16/2024

DATE	ACTIVITY	DESCRIPTION	QTY	RATE	AMOUNT
	Consulting services	The Dining Room, payment 2 of 3	1	41,250.00	41,250.00

		SUBTOTAL			41,250.00
		TAX			0.00
		TOTAL			41,250.00

		BALANCE DUE			\$41,250.00



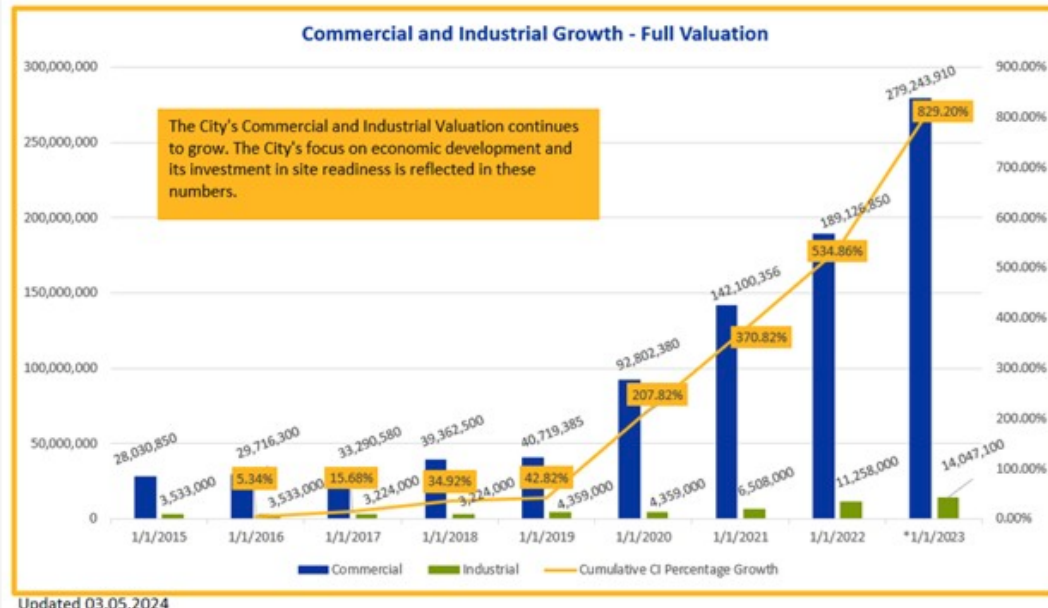
**BUSINESS OF THE CITY COUNCIL
BONDURANT, IOWA
AGENDA STATEMENT**

Item No. 7.a.
For Meeting of 4/29/2024
Discussion Item

TITLE: Overview of past growth and discussion of growth strategy

CONTACT PERSON:
Marketa Oliver, City Administrator

BRIEF HISTORY & ANALYSIS: During FY18, the City began an Economic Development Launch program, focusing on site certification as an economic development tool and on strategically investing in infrastructure in targeted locations where development was likely imminent. The results have been hugely beneficial, providing a growing foundation of commercial and industrial valuation to support the community’s needs. Below is a table showing the City’s commercial and industrial valuation growth since the inception of the Launch Program, a direct result of decisions made by the City’s elected leadership.



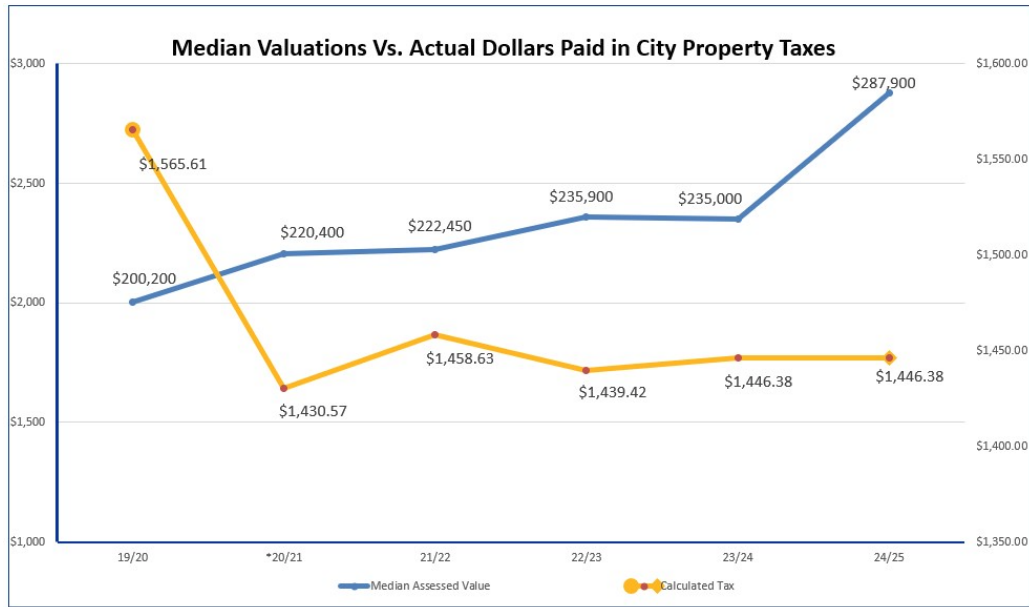
The City’s commercial and industrial valuation has grown dramatically, and the City’s overall total valuation has increased by more than 250%. It is important to note that a significant portion of this growth is related to new valuation and not revaluation. The City’s continued focus on economic development efforts has led to the City breaching a billion dollars in valuation.

Assessment Year	Payable Fiscal Year	100% Actual Valuation	% Change
2016	*2017-2018	\$310,751,709	
2017	2018-2019	\$368,215,917	18.49%
2018	2019-2020	\$409,974,881	11.34%
2109	2020-2021	\$466,183,797	13.71%
2020	2021-2022	\$548,714,456	17.70%
2021	2022-2023	\$679,466,800	23.83%
2022	2023-2024	\$798,310,036	17.49%
2023	2024-2025	\$1,090,142,147	36.56%

*City began its Economic Development Launch program, including pursuing certified sites and investing proactively in infrastructure in strategic locations.

Cumulative Change since the ED Launch Program: 250.81%

It is important to note that at the heart of the City's economic development efforts are the goals of enhancing public safety and improving quality of life for the residents of Bondurant. Last year, residents saw a dramatic increase in assessed valuation, causing a tumult of concern that taxes would rise dramatically. At the time, the City conveyed the message that an increase in valuation does not directly equate to an equivalent increase in property taxes and often does not lead to any increase in property taxes at all. The discussion of valuation plays a critical role in the discussion of property taxes because the full valuation increases lead to taxable valuation increases and the increased tax base provides the foundation for the City to lower levy rates. Addressing the issue of citizen concerns with rising property values, below is a graph showing the trajectory of median valuations in Bondurant versus what the median-valued home actually paid (or is projected to pay) in City of Bondurant property taxes since FY19/20. As you can see, while the median-value home has ascended in value by more than 43% (from \$200,200 in FY20 to \$287,900 in FY25), the dollars paid in City property taxes have decreased by more than 7%, dropping from \$1,565.61 to \$1,446.38.



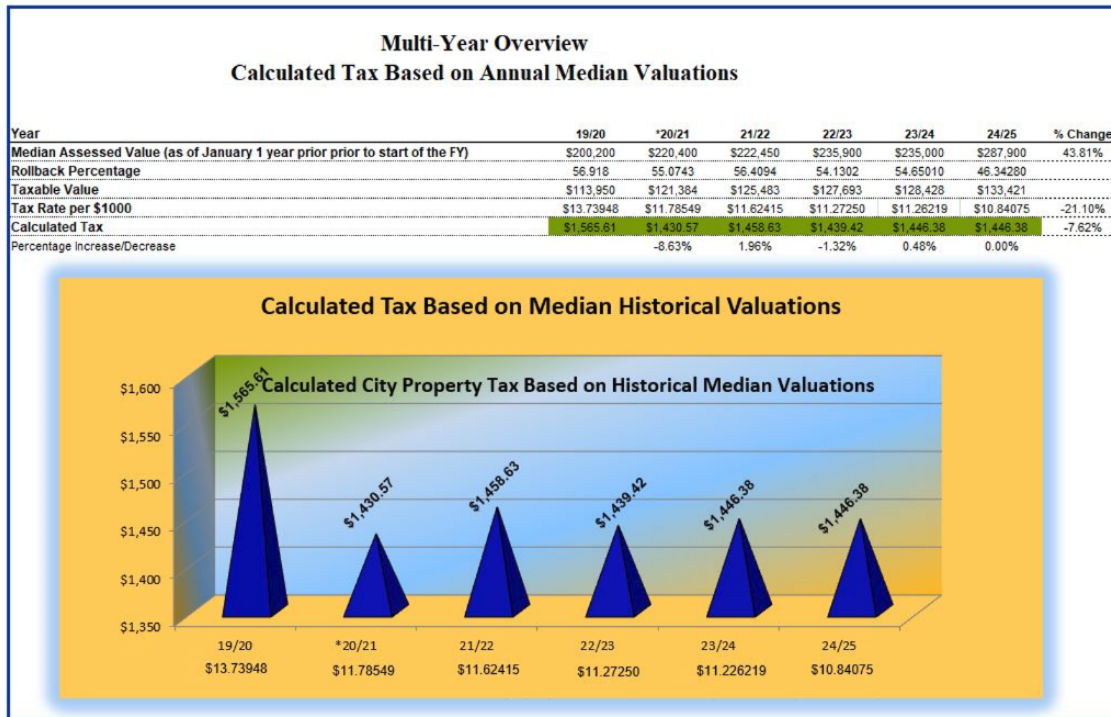
Throughout the past fiscal year and to date in the current fiscal year to date, the City has continued to achieve goals established and prioritized by the City Council. Accomplishments include:

- The City Council lowered the property tax rate for the 17th year in a row;
- A home of median valuation in Bondurant is actually paying less in property taxes to all taxing entities today than they were five years ago, even though that home has risen in value. Achieved an upgrade in the City's bond rating, meaning the cost of borrowing for infrastructure projects is lower because of excellence in financial management and economic development;
- Reached a billion dollar valuation level; Hired an Economic Development Coordinator;
- Completed a nearly 1,000 acre annexation;
- Collaborated with the Bondurant Community Foundation to achieve redesignation as an Iowa Great Place;
- Established the Rec-n-Roll Trailer program (THANK YOU Chamber, Amazon, Prairie Meadows, and Polk County for supporting that program);
- Recently completed the Underpass project;
- Constructed a new parking lot at BRSC;
- Opened Pawtocka, the dog park located on the south side of Lake Petocka;
- Selected as an Iowa Initiative for Sustainable Communities partner, meaning we work with University of Iowa graduate and law students on 15 different projects;
- Completed two additional Certified Sites for Economic Development; Finished the first phase of the Eagle Park project;
- Constructed Sankey Summit/Eagle Park Trail connection; Expanded and renovated the Bondurant Community Library;

- Purchased land for the Civic Campus and began planning and design for a new Bondurant Emergency Services Facility;
- Launched a Street Tree Program, adopting a Right-of-Way tree ordinance and planting 120+ street trees over the past few years;
- Completed Art, Culture, and Wayfinding Master Plan;
- Finalized The Grain District Downtown Redevelopment Plan;
- Launched major renovation to City Park;
- Achieved upgrade in ISO Rating (moving from a 6 to a 4) - homeowners' insurance rates are based on this rating system;
- During the last fiscal year and to date in the current fiscal year, secured a total of \$8,317,803 in outside funding to assist with City projects and programs; and
- Earned multiple awards for innovative programs and transparency, including:
 - 2022 Iowa Community of Character from the Ray Center;
 - FY24, FY23, and FY22 GFOA Distinguished Budget Presentation Award;
 - 2022 Program Excellence Award in Strategic Governance from the International City/County Management Association for the Strategic Continuous Operational Redesign and Evaluation (SCORE) Program;
 - 2022 Program Excellence Award in Community Sustainability from the International City/County Management Association for the Economic Development Launch Program;
 - 2022 Excellence in Economic Development Bronze Award from the International Economic Development Council;
 - 22 from 2022 Business People Making a Difference – Tiffany Luing, Economic Development Coordinator, Cityview Business Journal;
 - 2022 Pacesetter Award – Jene Jess and Marketa Oliver, Iowa Public Employers Labor Relations Association; 2023 and 2024 Bondurant Chamber of Commerce Organization of the Year Award - Bondurant Community Library;
 - 2023 Best Development Award (Renovated Civic) from 1,000 Friends of Iowa;
 - 2023 Program Excellence Award in Strategic Governance from the International City/County Management Association for the MARC Program (Management, Access, and Records Compliance);
 - 2023 American Planning Association - Iowa Chapter Urban Design Award for the Civic Campus Master Plan; and
 - 2023 American Planning Association - Iowa Chapter Resilience & Sustainability Award for the Central District Stormwater Improvements Master Plan.

This year, the residential rollback is 46.34280; 8.30730 less than last year's rate of 54.56010, meaning significantly less of the assessed valuation of a property is taxable. Considering these factors, under the proposed levy rate, the homeowner with the median-priced home in Bondurant will pay the same in City property taxes next year as they paid this year, at \$1,446.38, even though that median-valued home has increased in assessed value by \$52,900. For less than \$121 per month, the citizens and visitors of Bondurant receive 24-hour law enforcement and Fire protection; emergency medical services; recreational facilities and parks programming; top-notch library services, streetlights, road repair and reconstruction; capital

projects expanding and upgrading the infrastructure they use every day; and a host of other services and protections. Below is a chart showing a multi-year overview of what an individual homeowner would pay in City taxes.



Budgeting has become more challenging in the wake of several years of legislative actions taken by the State that continue to diminish or eliminate city financial resources. Last year, HF718 was passed by the State Legislature. This bill consolidated certain levies and eliminated others. The bill enshrined in State Code a formula that calculates a city's general fund levy rate, reducing revenue collections if the community is growing more than 3%. The bill also expanded homestead exemptions based on age and veteran status of the property owner and shifted the cost onto cities for those exemptions. The bill also requires cities offering commercial/industrial tax abatements to have minimum assessment agreements associated with those abatements and removes the school valuation from any residential abatements. (The City of Bondurant eliminated residential abatement several years ago and those were phased out as of July 30, 2021.) This legislation did not exempt new valuation from growth limitations, which is an aspect of the bill that is harmful to Bondurant. The bill, in general, has a disparate impact on smaller, growing communities. Using an estimation tool provided by the State Department of Management, staff developed a projection of the impact of HF718 to the City over the next four years. The legislation reduces the City's ability to collect approximately \$1.6M over the next four years. The full impact of the legislation is somewhat buffered by how staff filed the FY24 budget, which enables the City to offset approximately \$130,000 of the revenue loss each year, reducing the 4-year impact to closer to \$1.1M. A full analysis of the impact of not only HF718, but legislation over the past three years is included in the Budget Over: Priorities and Issues, subsection Legislative Issues. Overall, when tallying the impact of legislation over the past three

years, it equates to more than 14.5% of the City's general fund property taxes and state reimbursement revenues. This is critical as we plan for the future, because the General Fund is the fund that supports the bulk of our law enforcement and fire and medical protection expenses as well as library, parks, and recreation services.

A full copy of the City's budget and capital plan is available on the City's website. Below is a table of regional levy rates.

Regional Levy Rates			
City	FY25 Rate	FY24 Rate	City
Des Moines	16.61000	16.61000	Des Moines
Norwalk	14.88000	14.88000	Norwalk
Carlisle	14.99572	14.99000	Carlisle
Adel	14.23745	14.47631	Adel
Windsor Heights	14.23840	13.76541	Windsor Heights
Indianola	13.55146	13.55000	Indianola
Waukee	12.95000	13.10000	Waukee
Pleasant Hill	11.50000	11.50000	Pleasant Hill
Johnston	11.45790	11.26219	Bondurant
Polk City	11.00000	11.07000	Grimes
West Des Moines	10.86000	10.90000	West Des Moines
Grimes	10.84518	10.75369	Altoona
Bondurant	10.84075	11.04564	Johnston
Altoona	10.75000	10.14000	Clive
Urbandale	10.08000	10.01000	Urbandale
Clive	9.92000	11.00000	Polk City
Ankeny	9.90000	9.90000	Ankeny
Average	12.27158	12.29137	Average
	(1.43083)	(1.24573)	

FUNDING SOURCE: All

STAFF RECOMMENDATION: This is an update and discussion item.

APPROVED FOR SUBMITTAL:

ATTACHMENTS:

1. 20230822 Bondurant Projects Map_Page_1
2. 20230822 Bondurant Projects Map_Page_2

Residential Developments

- 1 Edgeland
- 2 Sankey Summit II
- 3 Harvest Meadows
- 4 Quail Run & Quail Run II
- 5 Park Side
- 6 Prairie Point View
- 7 Featherstone
- 8 Hawthorne Crossing
- 9 Petocka Run

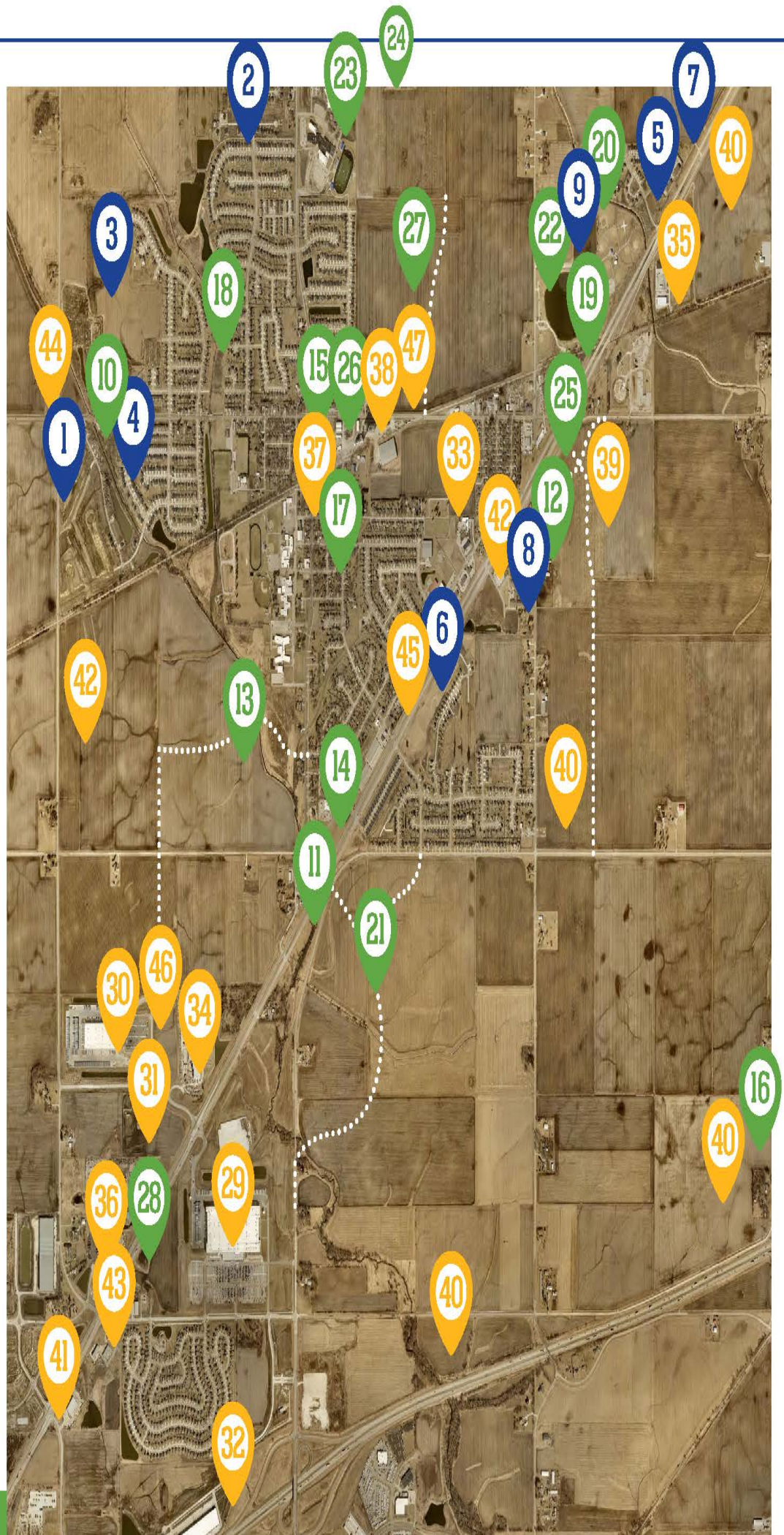
Infrastructure / Planning

- 10 Ditch 2 Streambank Stabilization & Trail
- 11 Central Park Regional Stormwater Retention (Future)
- 12 Civic Campus (Phase 1: Emergency Services Building)
- 13 10th Street Ext / Bridge Relocation / Shiloh Rose Pkwy Ext
- 14 Underpass (Gay Lea Wilson Trail Extension) / Skate Park
- 16 Library Expansion / Solar Panel Project (City Hall & Library)
- 18 Water Tower / Water Tower Public Art
- 17 City Park Improvements
- 18 Eagle Park / Water Trails Enhancements
- 19 Pawtucka Dog Park
- 20 Park Side Trail Connection
- 21 Grant Street South Realignment
- 22 Lake Petocka / BRSC Improvements
- 23 Junior High / Trail Connection
- 24 NE 86th Avenue / 16th Street NE Corridor Development
- 25 Second Street NE / HWY 65 / Campus Drive Corridor Improvements
- 26 Downtown Parking & Trail Extension
- 27 Potential Future Elementary School Site
- 28 Stormwater Improvements

Commercial / Industrial

- 29 Amazon Distribution Center
- 30 Amazon Sortation Center
- 31 JAS Concrete
- 32 Commerce Crossings
- 33 Bondurant Commercial Business Park
- 34 Midstates Precast Products Expansion
- 35 Bondurant Industrial Park
- 36 RMS (Road Machinery Supply) / Kum & Go / Midland Credit Union
- 37 Downtown Development
- 38 Downtown Expansion Opportunity (Landus Coop)
- 39 Myers 1 Certified Site
- 40 Certified Site(s) - In Process/Future
- 41 Mid Country Machinery
- 42 Dollar General
- 43 Henry Street Commercial
- 44 Harvest Meadows Commercial
- 46 Highway 65 Commercial
- 48 Shiloh Rose Industrial Flex
- 47 Commercial Zoning

Future Street Connections



Bondurant Demographic Information:

Estimated
2023
Population:

9,402

2020 US Census:
7,365

Bondurant
Resident
Median Age:
(2020)

31.3

Area Median
Household
Income:
(2021)

\$106,821

State of Iowa
\$65,429

Median Value of
Owner-Occupied
Housing Units:
(2017 - 2021)

\$235,800

Bondurant-Farrar
High School
Graduation Rate:
(2021)

95.0%

State of Iowa
90.2%

Bachelor's
Degree
or Higher:
(2017 - 2021)

47.2%

State of Iowa
29.7%

CONTACT:



Bondurant
Life Connecting

Marketa Oliver, SPHR
City Administrator

Phone: 515.967.2418
Email: moliver@cityofbondurant.com

Maggie Murray, AICP
Planning & Community
Development Director

Phone: 515.630.6985
Email: planning@cityofbondurant.com

Tiffany Luing
Economic Development
Coordinator

Phone: 515.630.6986
Email: tluing@cityofbondurant.com

Isaac Pezley
City Planner

Phone: 515.985.2813
Email: ipezley@cityofbondurant.com



**BUSINESS OF THE CITY COUNCIL
BONDURANT, IOWA
AGENDA STATEMENT**

Item No. 7.b.
For Meeting of 4/29/2024
Discussion Item

TITLE: Zoning Code Updates with discussion of impact arising from recent legislative changes

CONTACT PERSON:

Maggie Murray, Planning & Community Development Director

BRIEF HISTORY & ANALYSIS:

FUNDING SOURCE: Funds are budgeted in the Planning Department in the General Fund to update the zoning code. Some legislation that passed in the recent legislation session affects the City's zoning and development codes. Recent legislative updates/mandates include:

- SF455 was approved by the House and the Senate and signed by the Governor. SF455 preempts a local government from regulating the preservation, compaction, placement, or depth of topsoil at a construction site. It does allow cities to regulate stormwater runoff to match flow rates **before** construction, which is not very helpful. It defines construction site, topsoil, and mandates that if cities and counties provide more restrictive storm water regulations at construction sites if they pay for an engineering study and cover the additional costs to the project.
- HF2388 preempts a local government from regulating the exterior finish or cladding on residential buildings. It defines residential building in this bill as limited to structures of 12 units or less. It allows a local government to regulate cladding on historic properties, in historic districts, in HOA, and within overlay districts.

These items and potential approaches to them will be discussed at the meeting.

STAFF RECOMMENDATION: This is an update and discussion item.

APPROVED FOR SUBMITTAL:

ATTACHMENTS: None



**BUSINESS OF THE CITY COUNCIL
BONDURANT, IOWA
AGENDA STATEMENT**

Item No. 7.c.
For Meeting of 4/29/2024
Discussion Item

TITLE: Review of Capital Plan and anticipated future Bonding

CONTACT PERSON:

Marketa Oliver, City Administrator

BRIEF HISTORY & ANALYSIS: Attached is the adopted Capital Improvement Plan for FY24-FY29. The information includes information on funding sources for each project.

FUNDING SOURCE: All

STAFF RECOMMENDATION: This is an update/discussion item.

APPROVED FOR SUBMITTAL:

ATTACHMENTS:

1. Combined Capital Plan FY24-FY29
2. BES images



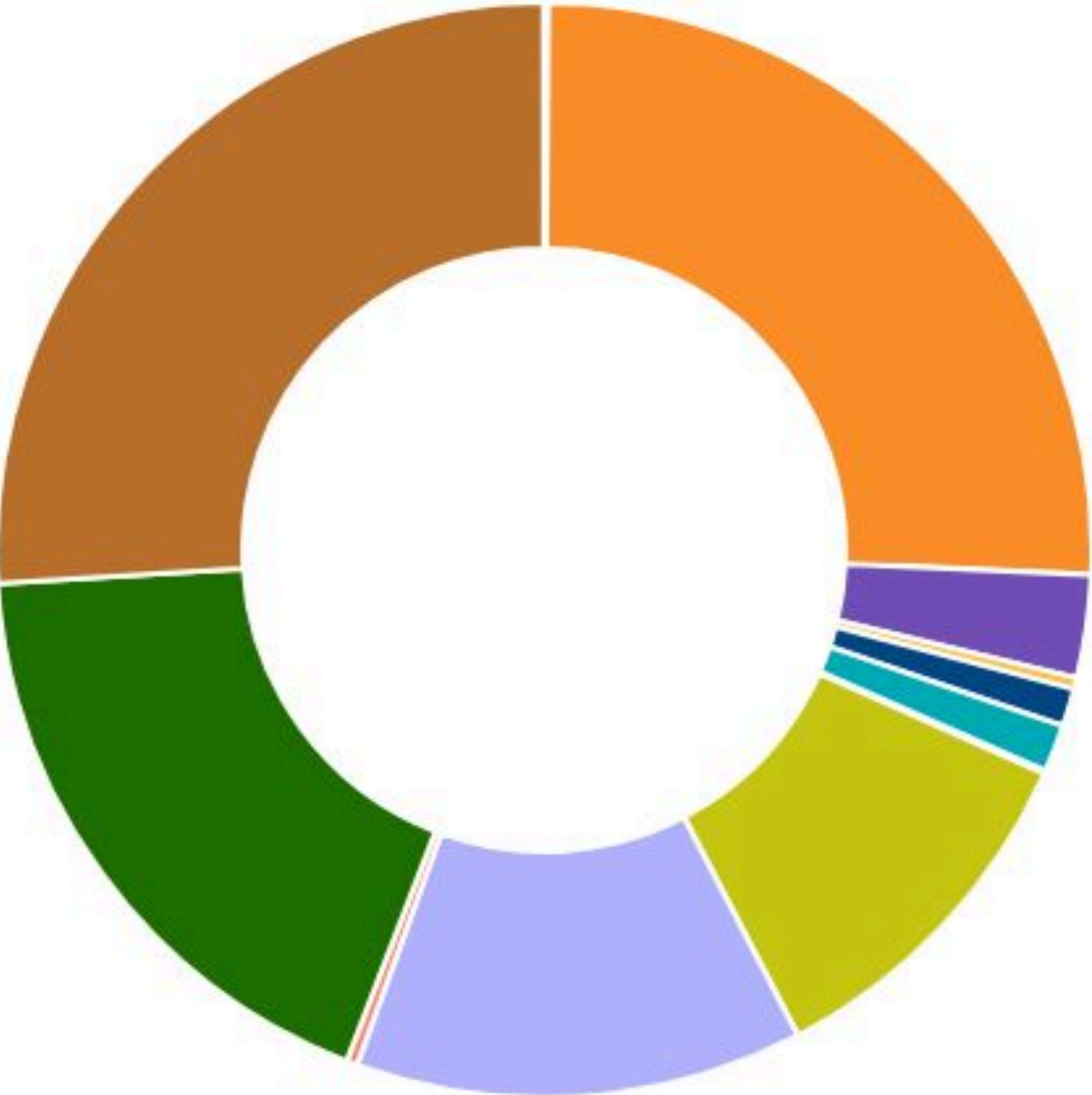
City of Bondurant, Iowa

FY 24-FY29 Capital Improvement Plan



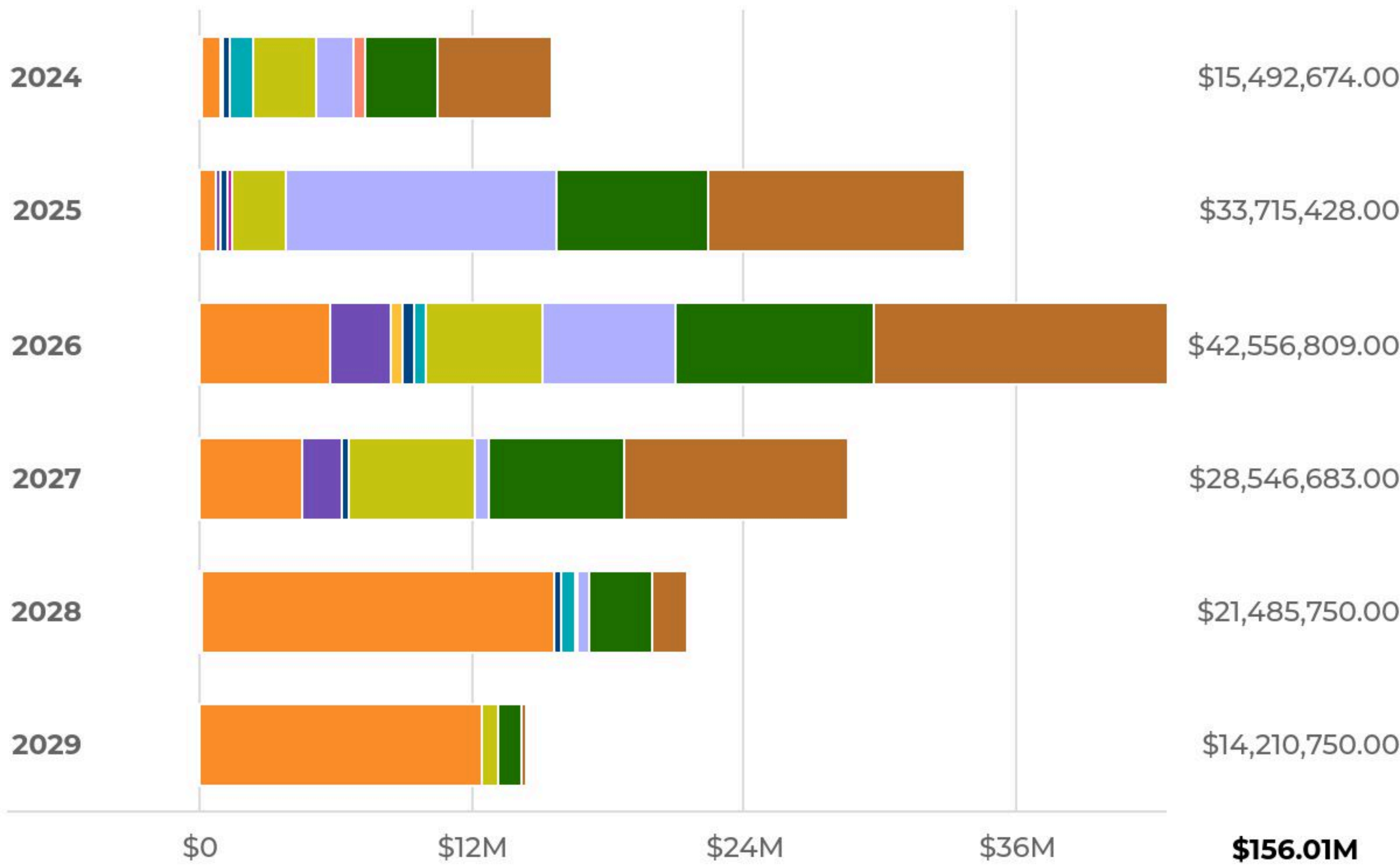
Adopted April 15, 2024

Capital Costs By Department (all years)



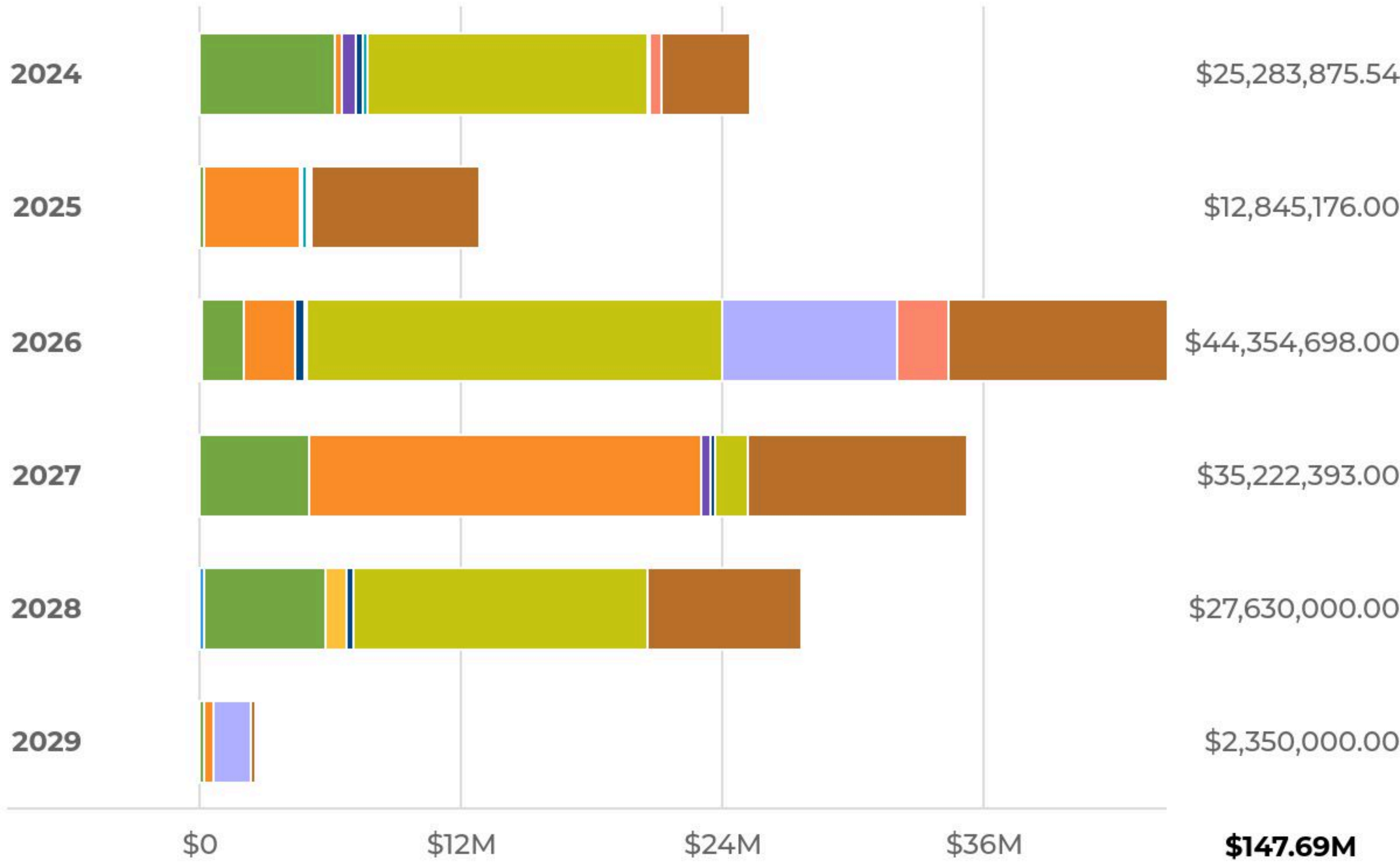
● Cemetery (0%)	\$110,000.00
● City Hall (0%)	\$85,000.00
● Drainage (26%)	\$39,931,000.00
● Economic Development (3%)	\$4,733,000.00
● EMS (0%)	\$525,000.00
● Expenditures (1%)	\$1,743,114.00
● Fire (1%)	\$2,206,280.00
● Library (0%)	\$133,000.00
● Parks (11%)	\$16,582,940.00
● Public Safety (13%)	\$20,615,555.00
● Recreation (0%)	\$509,188.00
● Streets (18%)	\$28,333,548.00
● Water Administration (26%)	\$40,500,469.00
TOTAL	\$156,008,094.00

Capital Costs By Department (per year)



- Cemetery
- City Hall
- Drainage
- Economic Development
- EMS
- Expenditures
- Fire
- Library
- Parks
- Public Safety
- Recreation
- Streets
- Water Administration

Funding Source By Year



- General Fund Operating Reserves
- Grant
- Road Use Tax Bond
- Sanitary Sewer Operating Reserves
- TIF Bond
- Trade-in/Salvage
- Water Revenue Bond
- GO Bond
- LOSST Operating Reserves
- Road Use Tax Operating Reserves
- Storm Sewer Operating Reserves
- TIF Operating Debt
- Water Operating Reserves

001/150 Fire Capital Equipment

Overview

Request Owner	Jené Jess, Finance & Employee Services Director
Department	Fire
Type	Capital Equipment
Project Number	001-150

Description

FY24: Replace rescue engine with Metro Rescue/Pumper as primary rescue truck - \$500,000.

FY24: Outfitting new truck parts \$9,000.

FY24: Replace 416/415 used pumper bought from Altoona Fire Department with a commercial class pumper tanker - \$500,000.

FY24: Replace turnout gear (8 sets at \$4K per set). Staff is pursuing a grant to offset these costs; however, the cost will be taken from the GO bond if a grant is not received.

FY25: Turnout gear - \$32,000

FY26: Replace the 2006 Brush Truck and Ultra-High Pressure equipment - \$300K.

FY26: Replace 4x4 pickup truck with Ultra High Pressure system - \$200K.

FY26: Turnout gear - \$33,280.

FY26: Replace 4x4 pickup truck with Ultra High Pressure system - \$200K.

Images



UHP Truck



Rescue Pumper



Brush truck with UHP

Details

New Purchase or Replacement	Replacement
New or Used Vehicle	New Vehicle
Useful Life	15

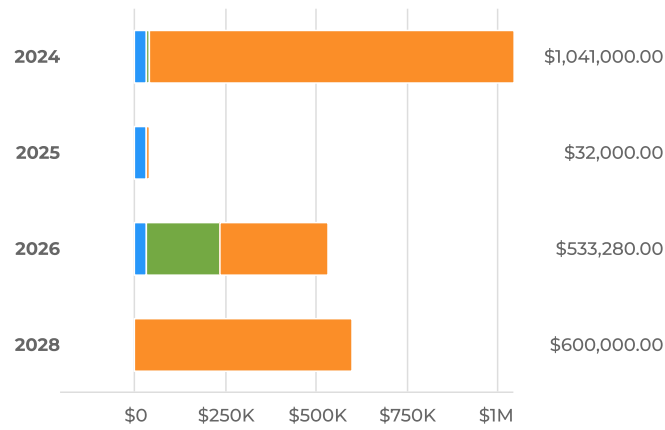
Capital Cost

FY2024 Budget
\$1,041,000

Total Budget (all years)
\$2.206M

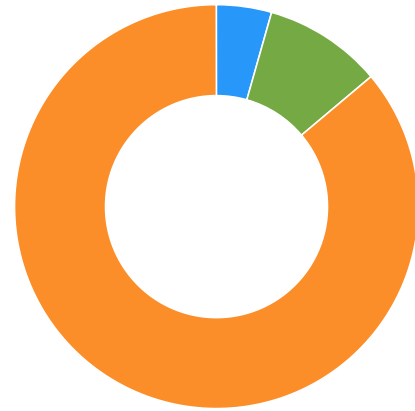
Project Total
\$2.206M

Capital Cost by Year



- Additional Equipment 2
- Additional Equipment 4
- Vehicle Cost 1

Capital Cost for Budgeted Years



- Additional Equipment 2 (4%) \$97,280.00
- Additional Equipment 4 (9%) \$209,000.00
- Vehicle Cost 1 (86%) \$1,900,000.00
- TOTAL \$2,206,280.00**

Capital Cost Breakdown

Capital Cost	FY2024	FY2025	FY2026	FY2028	Total
Vehicle Cost 1	\$1,000,000		\$300,000	\$600,000	\$1,900,000
Additional Equipment 2	\$32,000	\$32,000	\$33,280		\$97,280
Additional Equipment 4	\$9,000		\$200,000		\$209,000
Total	\$1,041,000	\$32,000	\$533,280	\$600,000	\$2,206,280

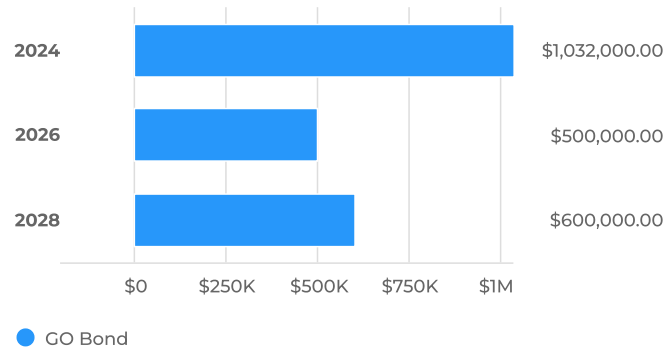
Funding Sources

FY2024 Budget
\$1,032,000

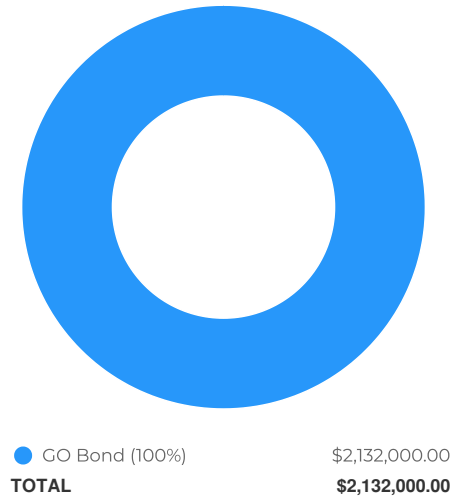
Total Budget (all years)
\$2.132M

Project Total
\$2.132M

Funding Sources by Year



Funding Sources for Budgeted Years



Funding Sources Breakdown				
Funding Sources	FY2024	FY2026	FY2028	Total
GO Bond	\$1,032,000	\$500,000	\$600,000	\$2,132,000
Total	\$1,032,000	\$500,000	\$600,000	\$2,132,000

001/160 EMS: Capital Equipment

Overview

Request Owner	Marketa Oliver, City Administrator
Department	EMS
Type	Capital Equipment
Project Number	001-160

Description

Replace 2012 Ambulance.

Images



Ambulance

Details

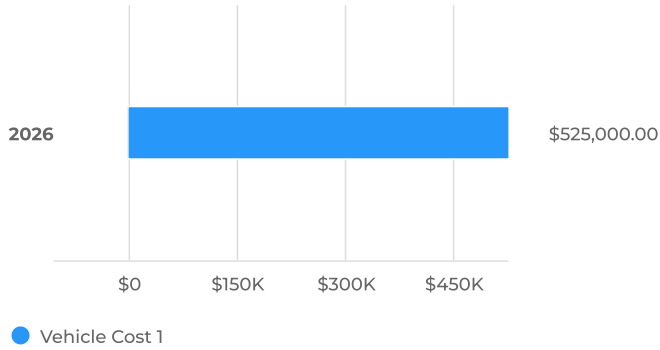
New Purchase or Replacement	Replacement
New or Used Vehicle	New Vehicle
Useful Life	10

Capital Cost

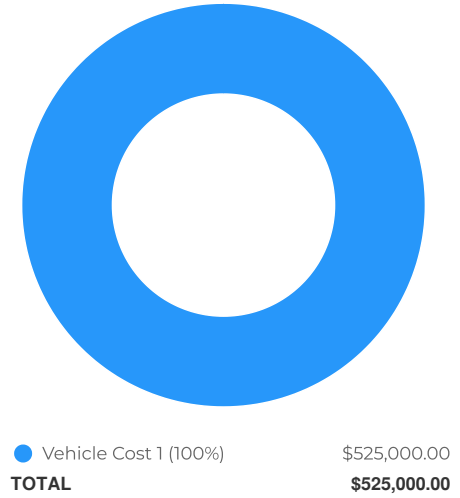
Total Budget (all years)
\$525K

Project Total
\$525K

Capital Cost by Year



Capital Cost for Budgeted Years



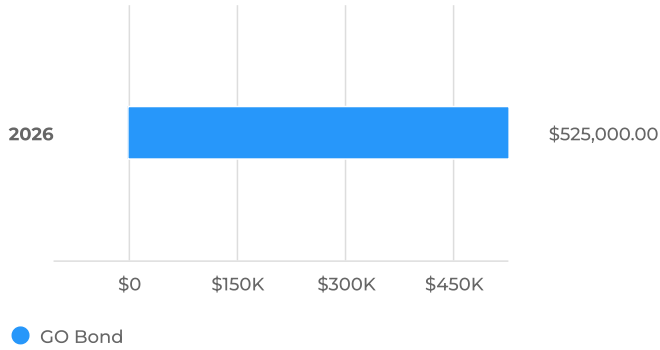
Capital Cost Breakdown		
Capital Cost	FY2026	Total
Vehicle Cost 1	\$525,000	\$525,000
Total	\$525,000	\$525,000

Funding Sources

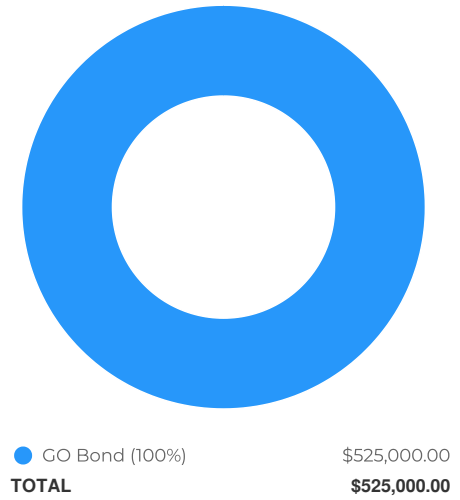
Total Budget (all years)
\$525K

Project Total
\$525K

Funding Sources by Year



Funding Sources for Budgeted Years



Funding Sources Breakdown		
Funding Sources	FY2026	Total
GO Bond	\$525,000	\$525,000
Total	\$525,000	\$525,000

001/450: Cemetery Capital

Overview

Request Owner	Jené Jess, Finance & Employee Services Director
Department	Cemetery
Type	Capital Improvement
Project Number	001-450

Description

FY 24: Create additional plots (engineering) - \$20,000/

FY28: Pave the roadway in the Bondurant Cemetery - \$90,000.

Images



Cemetery

Road to be paved



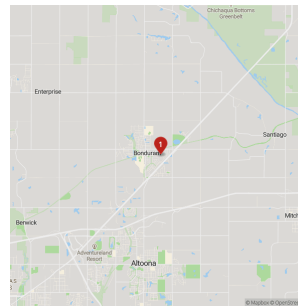
Cemetery

Road to be paved

Details

Type of Project	Resurface Current Road
Useful Life	20

Location



Benefit to Community

FY24 includes creating some additional plots in the Cemetery. The City currently has a supply of plotted land in the cemetery that is diminishing.

FY28 includes paving the roadway in the cemetery. This will provide better access to people using the cemetery.

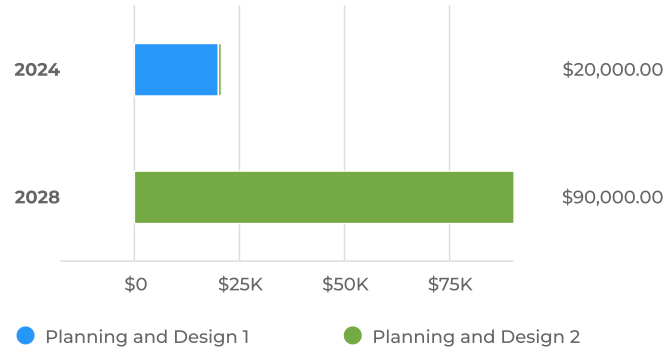
Capital Cost

FY2024 Budget
\$20,000

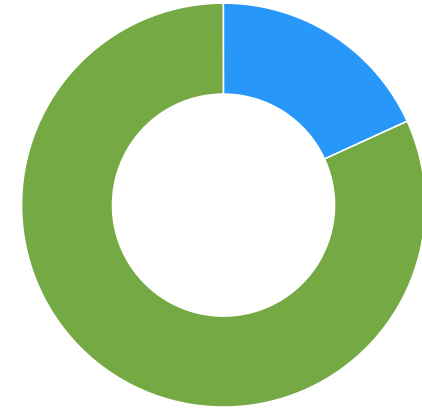
Total Budget (all years)
\$110K

Project Total
\$110K

Capital Cost by Year



Capital Cost for Budgeted Years



● Planning and Design 1 (18%)	\$20,000.00
● Planning and Design 2 (82%)	\$90,000.00
TOTAL	\$110,000.00

Capital Cost Breakdown

Capital Cost	FY2024	FY2028	Total
Planning and Design 1	\$20,000		\$20,000
Planning and Design 2		\$90,000	\$90,000
Total	\$20,000	\$90,000	\$110,000

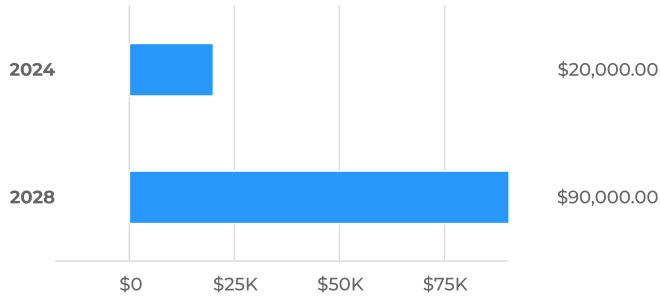
Funding Sources

FY2024 Budget
\$20,000

Total Budget (all years)
\$110K

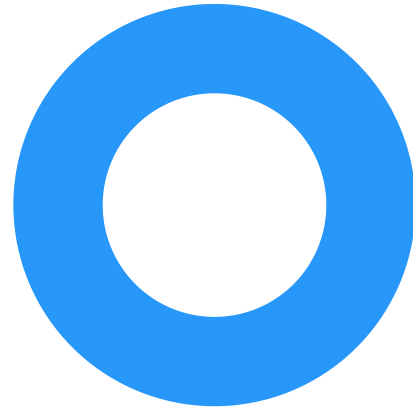
Project Total
\$110K

Funding Sources by Year



● General Fund Operating Rese...

Funding Sources for Budgeted Years



● General Fund Operating Reserves (100%) \$110,
TOTAL \$110,000.00

Funding Sources Breakdown

Funding Sources	FY2024	FY2028	Total
General Fund Operating Reserves	\$20,000	\$90,000	\$110,000
Total	\$20,000	\$90,000	\$110,000

110/001-210: Public Works Capital Equipment and Large Maintenance

Overview

Request Owner	Marketa Oliver, City Administrator
Department	Expenditures
Type	Capital Equipment
Project Number	110/001-210

Description

The FY24 year-end estimate includes:

- Replacement of signal at Hwy 65/Shiloh
- Equipment Snow Blower for Tractor
- Boom Truck
- Pedestrian Crossing Signals
- Right-of-Way Mower
- Fiber by Radio
- Skid Steer and/or attachments
- Wood Chipper (1/2 paid by Road Use Tax and 1/2 paid by General Fund for Parks)

FY25 and FY 26 include Plow Truck Purchase including radio equipment. FY25 also includes a Pickup 1 ton 4x4 Reg Cab as well as more pedestrian crossing signals.

FY26: \$178,000 for NE 78th between Eisenhower Drive to 96th Street - joint with Polk County.

FY27: includes a Plow Truck Sander.

FY28 forecasts replacement of a street sweeper.

Images



Boom truck



Snow Plow

Details

New Purchase or Replacement	Replacement
New or Used Vehicle	New Vehicle
Useful Life	7

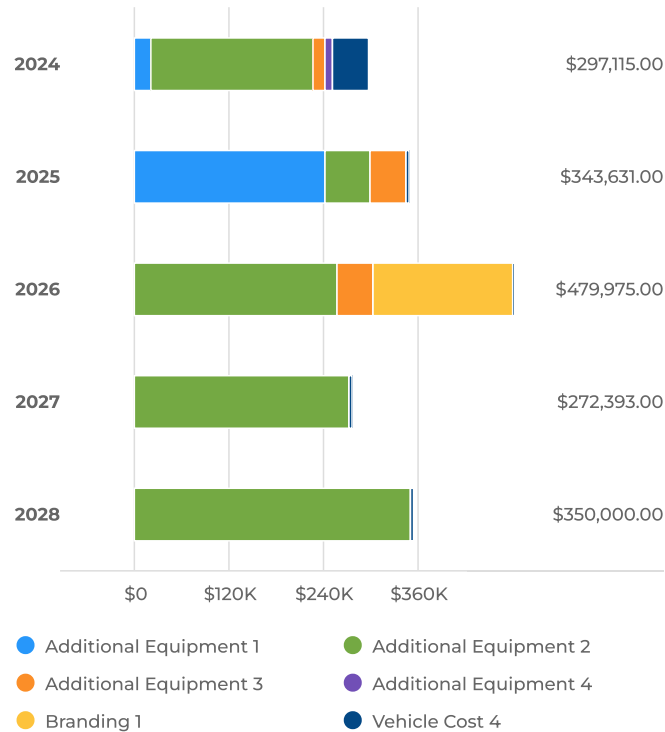
Capital Cost

FY2024 Budget
\$297,115

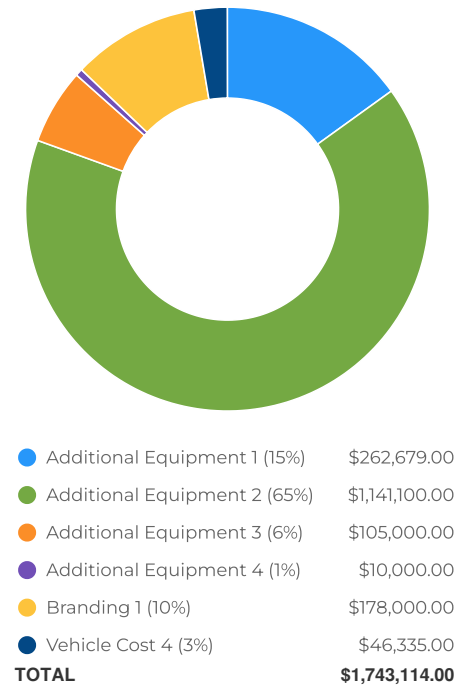
Total Budget (all years)
\$1.743M

Project Total
\$1.743M

Capital Cost by Year



Capital Cost for Budgeted Years



Capital Cost Breakdown						
Capital Cost	FY2024	FY2025	FY2026	FY2027	FY2028	Total
Additional Equipment 1	\$20,250	\$242,429				\$262,679
Additional Equipment 2	\$205,530	\$56,202	\$256,975	\$272,393	\$350,000	\$1,141,100
Additional Equipment 3	\$15,000	\$45,000	\$45,000			\$105,000
Additional Equipment 4	\$10,000					\$10,000
Branding 1			\$178,000			\$178,000
Vehicle Cost 4	\$46,335					\$46,335
Total	\$297,115	\$343,631	\$479,975	\$272,393	\$350,000	\$1,743,114

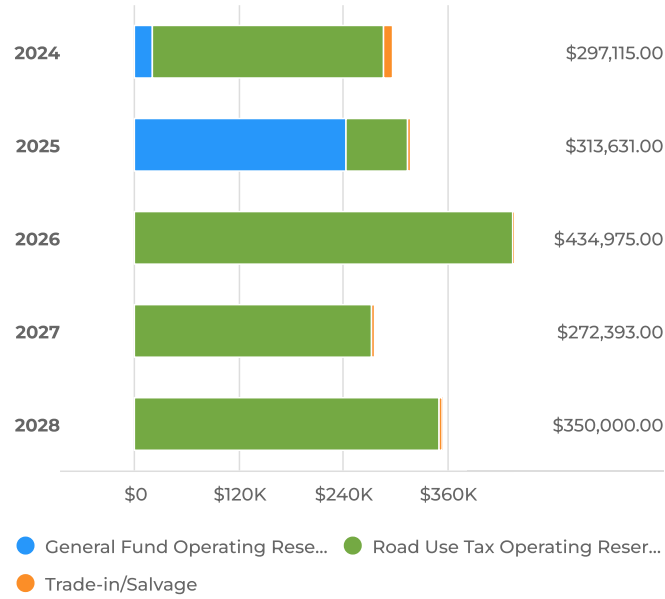
Funding Sources

FY2024 Budget
\$297,115

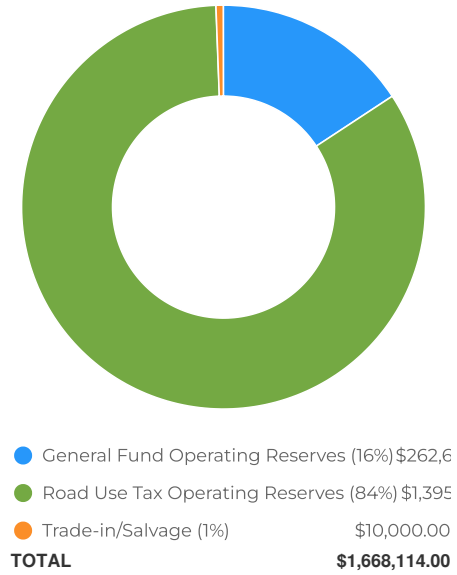
Total Budget (all years)
\$1.668M

Project Total
\$1.668M

Funding Sources by Year



Funding Sources for Budgeted Years



Funding Sources Breakdown

Funding Sources	FY2024	FY2025	FY2026	FY2027	FY2028	Total
General Fund Operating Reserves	\$20,250	\$242,429				\$262,679
Road Use Tax Operating Reserves	\$266,865	\$71,202	\$434,975	\$272,393	\$350,000	\$1,395,435
Trade-in/Salvage	\$10,000					\$10,000
Total	\$297,115	\$313,631	\$434,975	\$272,393	\$350,000	\$1,668,114

306: Civic Campus

Overview

Request Owner	Jené Jess, Finance & Employee Services Director
Est. Start Date	11/01/2021
Est. Completion Date	05/31/2024
Department	Public Safety
Type	Capital Improvement
Project Number	306

Description

The City purchased land for a "Civic Campus" and commissioned a master plan. The master plan was adopted on April 10, 2023 and can be found here: https://www.cityofbondurant.com/sites/g/files/vyhlf12841/f/uploads/final_civic_campus_master_plan.pdf.

The capital projects outlined in the master plan are split into multiple phases that include the construction of a new Bondurant Emergency Services facility and a Public Works facility. Future expansion of the campus may include the opportunity to partner on the maintenance facility. The first phase of the project is the construction of the BES facility.

The public benefit will be the ability of emergency responders to better and more quickly access main arterials for response to emergency calls. The Campus project will also provide better access for Public Works vehicles and for necessary deliveries.

The Public Works facility is slated for design and construction in FY26.

On July 17, 2023, the City Council approved a resolution authorizing the Mayor to execute an agreement with Ryan Companies for its Construction Management at Risk proposal for the Bondurant Emergency Services facility. On August 21, 2023, the City Council approved a resolution with OPN for professional design services for the Bondurant Emergency Services Facility. Design for this facility is in full swing.

The anticipated timeline for the project is:

Design and Engineering: September 2023 – April 2024

Construction: Calendar year 2024 – completion in 2025

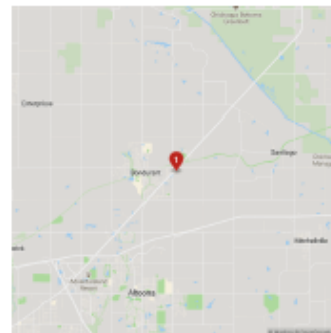
Images



Future Infrastructure



Civic Campus Area



Details

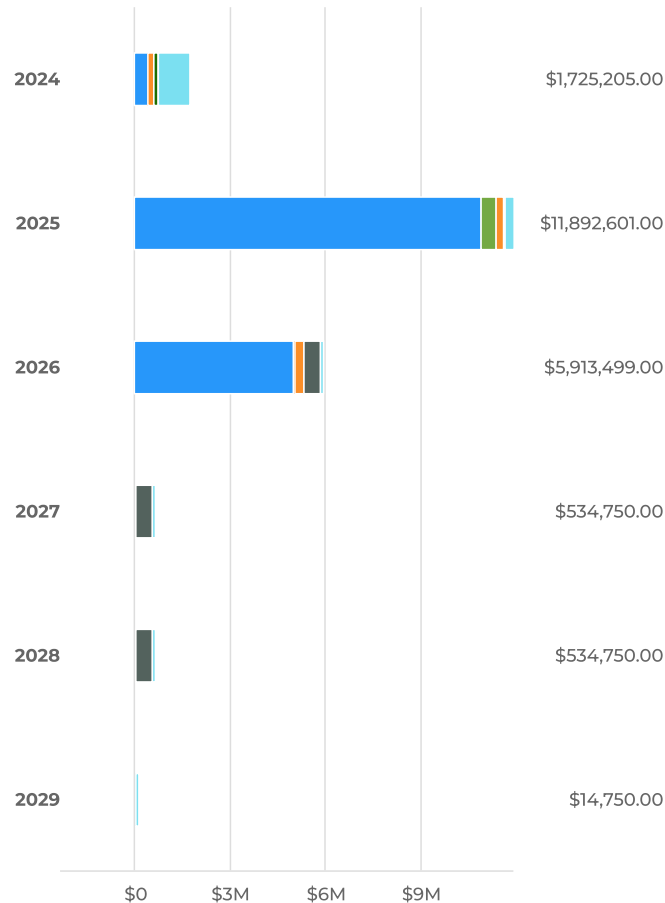
Type of Project	New Construction
Useful Life	25 or More

Location

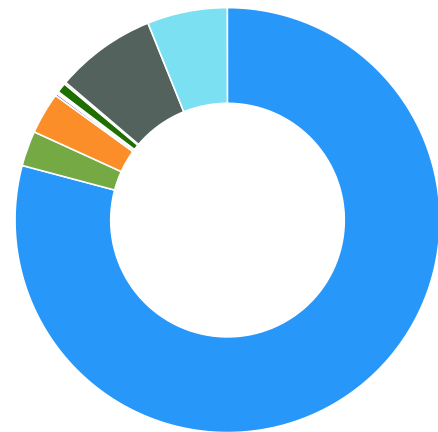
Capital Cost

Total To Date **\$2,127,721** FY2024 Budget **\$1,725,205** Total Budget (all years) **\$20.616M** Project Total **\$22.743M**

Capital Cost by Year



Capital Cost for Budgeted Years



Construction/Maintenance 1 (79%)	\$16,315,235.00
Construction/Maintenance 2 (3%)	\$553,500.00
Furniture and Fixtures 1 (3%)	\$650,000.00
Legal 1 (0%)	\$36,000.00
Legal 2 (0%)	\$15,000.00
Legal 3 (0%)	\$1,500.00
Legal 4 (0%)	\$3,400.00
Legal 5 (0%)	\$8,100.00
Other 1 (0%)	\$55.00
Other 2 (0%)	\$6,000.00
Other 3 (0%)	\$3,400.00
Planning and Design 1 (1%)	\$155,075.00
Planning and Design 2 (0%)	\$30,000.00
Planning and Design 3 (8%)	\$1,580,000.00
Planning and Design 4 (6%)	\$1,258,290.00
TOTAL	\$20,615,555.00

- Construction/Maintenance 1
- Construction/Maintenance 2
- Furniture and Fixtures 1
- Legal 1
- Legal 2
- Legal 3
- Legal 4
- Legal 5
- Other 1
- Other 2
- Other 3
- Planning and Design 1
- Planning and Design 2
- Planning and Design 3
- Planning and Design 4

Capital Cost Breakdown

Capital Cost	To Date	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	Total
Planning and Design 1	\$77,932	\$120,000	\$26,075	\$9,000				\$233,007
Planning and Design 2		\$30,000						\$30,000
Planning and Design 3				\$525,000	\$525,000	\$525,000	\$5,000	\$1,580,000
Planning and Design 4	\$2,888	\$975,000	\$221,935	\$61,355				\$1,261,178

Capital Cost	To Date	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	Total
Construction/Maintenance 1		\$430,000	\$10,878,341	\$5,006,894				\$16,3
Construction/Maintenance 2			\$503,500	\$50,000				\$553
Furniture and Fixtures 1		\$150,000	\$250,000	\$250,000				\$650
Legal 1	\$58,531	\$6,000	\$6,000	\$6,000	\$6,000	\$6,000	\$6,000	\$94,
Legal 2		\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$15,0
Legal 3	\$2	\$250	\$250	\$250	\$250	\$250	\$250	\$1,50
Legal 4		\$3,400						\$3,4
Legal 5		\$3,600	\$3,000	\$1,500				\$8,10
Land Acquisition 1	\$995,335							\$995
Land Acquisition 2	\$993,016							\$993
Other 1		\$55						\$55
Other 2	\$18	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$6,0
Other 3		\$3,400						\$3,4
Total	\$2,127,721	\$1,725,205	\$11,892,601	\$5,913,499	\$534,750	\$534,750	\$14,750	\$22,

Funding Sources

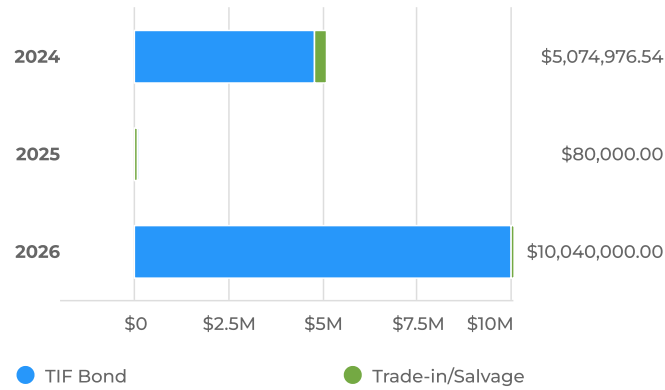
Total To Date
\$9,281,847

FY2024 Budget
\$5,074,977

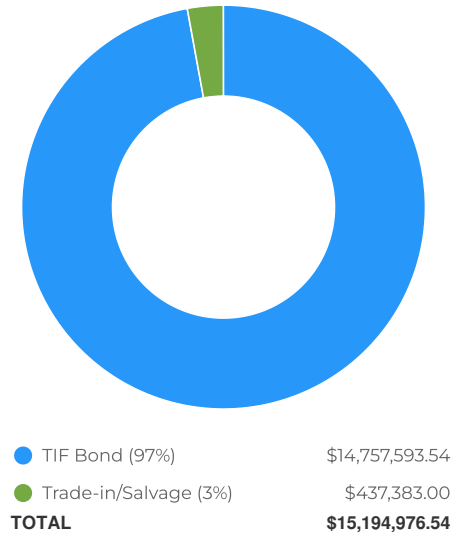
Total Budget (all years)
\$15.195M

Project Total
\$24.477M

Funding Sources by Year



Funding Sources for Budgeted Years



Funding Sources Breakdown

Funding Sources	To Date	FY2024	FY2025	FY2026	Total
GO Bond	\$9,281,847				\$9,281,847
TIF Bond		\$4,757,594		\$10,000,000	\$14,757,594
Trade-in/Salvage		\$317,383	\$80,000	\$40,000	\$437,383
Total	\$9,281,847	\$5,074,977	\$80,000	\$10,040,000	\$24,476,824

324: BRSC Improvements - Parking

Overview

Request Owner	Marketa Oliver, City Administrator
Est. Start Date	01/02/2023
Est. Completion Date	10/31/2023
Department	Recreation
Type	Capital Improvement
Project Number	324

Description

In response to the growing participation numbers in Bondurant Little League and the recent addition of soccer fields operated by the Bondurant Soccer Club at the Bondurant Recreational Sports Complex (BRSC), a significant parking expansion has been completed. Approximately 142 parking stalls, including ADA-compliant spaces, were constructed to address the congestion on the road leading to the complex and ensure the safety of participants and spectators attending games.

The initiative to expand the parking facilities received substantial support from various organizations and grants. The Mary Bump Foundation graciously agreed to be the fiscal agent for a \$75,000 grant from the Polk County Community Development Grant Program. In addition to the generous grant, Polk County also provided invaluable in-kind assistance for project inspection and bidding. Additionally, the Bondurant Little League secured a \$15,000 Prairie Meadows Grant and plans to contribute an additional \$5,000, while the Bondurant Soccer Club is also contributing \$5,000 towards the project. The remainder of the project's funding, totaling over \$500,000, comes from Local Option Sales and Services Tax dollars, which were approved by Bondurant voters in August 2019.

The newly expanded parking lot is the latest investment in the Bondurant Recreational Sports Complex. The City invested \$1,412,860 to purchase the land and develop soccer fields in 2017 and 2018. The Bondurant Soccer Club secured a \$27,035 Prairie Meadows grant for safety fencing and net backstops. In partnership with the City in 2021, Bondurant Soccer also installed a water irrigation system that utilizes water from Lake Petocka. In 2022, the Men's Club provided an \$8,000 grant for additional fencing at BRSC. Bondurant Little League and the Bondurant Soccer Club have consistently played instrumental roles in providing funding and in-kind support for various enhancements at the sports complex.

The completion of this parking expansion is expected to significantly enhance safety and convenience for those accessing the BRSC. Currently, parents and spectators are often forced to park along the road, leading to challenging navigation through traffic. The addition of ample parking spaces will alleviate this concern and improve the overall experience for everyone involved.

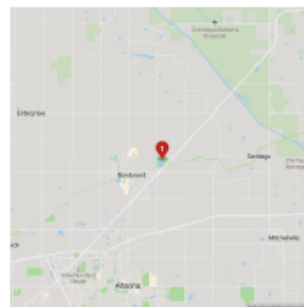
Mayor Elrod expressed his gratitude, stating, "By addressing the parking needs at the BRSC, this endeavor exemplifies our commitment to fostering safe and enjoyable recreational opportunities for the residents of Bondurant. We extend our heartfelt thanks to all those who have supported this project."

The grand opening celebration was held for Monday, October 9 at 5:15 PM. The City of Bondurant offers a big thank you to all the project funders and supporters!

Images



BRSC Parking Lot Ribbon Cutting



Details

Location

Type of Project Other
 Useful Life 30 or More

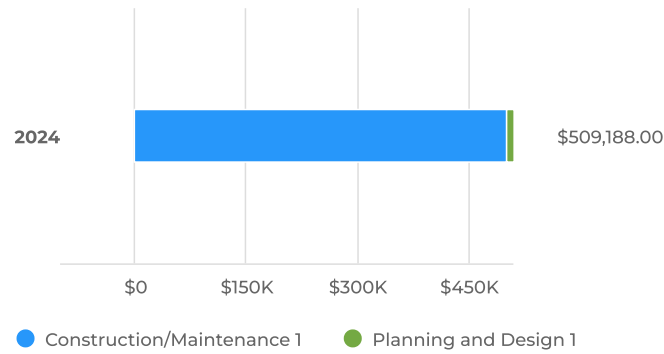
Benefit to Community

It enhances traffic safety for the users of the Bondurant Recreational Sports Complex.

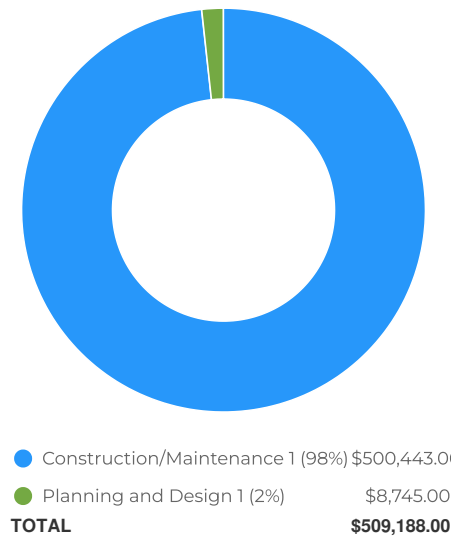
Capital Cost

Total To Date	FY2024 Budget	Total Budget (all years)	Project Total
\$1,427,402	\$509,188	\$509.188K	\$1.937M

Capital Cost by Year



Capital Cost for Budgeted Years

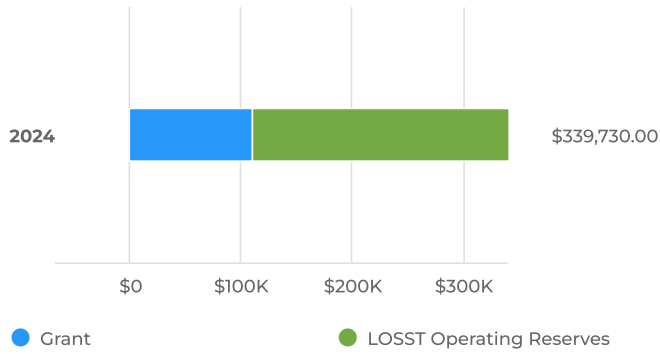


Capital Cost Breakdown			
Capital Cost	To Date	FY2024	Total
Planning and Design 1	\$14,542	\$8,745	\$23,287
Construction/Maintenance 1	\$1,412,860	\$500,443	\$1,913,303
Total	\$1,427,402	\$509,188	\$1,936,590

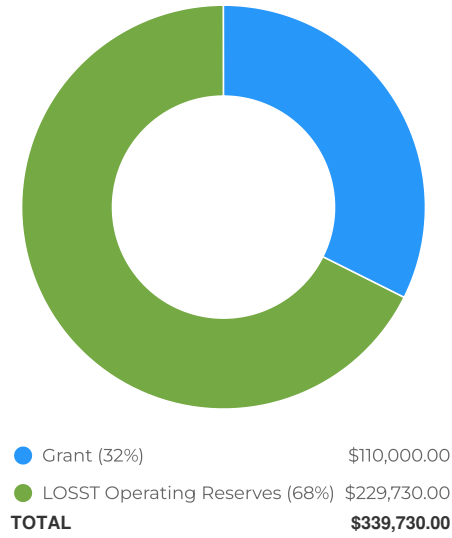
Funding Sources

Total To Date	FY2024 Budget	Total Budget (all years)	Project Total
\$84,000	\$339,730	\$339.73K	\$423.73K

Funding Sources by Year



Funding Sources for Budgeted Years



Funding Sources Breakdown			
Funding Sources	To Date	FY2024	Total
LOSST Operating Reserves	\$84,000	\$229,730	\$313,730
Grant		\$110,000	\$110,000
Total	\$84,000	\$339,730	\$423,730

325 Streets: Arterial Streets

Overview

Request Owner	Marketa Oliver, City Administrator
Est. Start Date	07/01/2024
Est. Completion Date	12/31/2027
Department	Streets
Type	Capital Improvement

Description

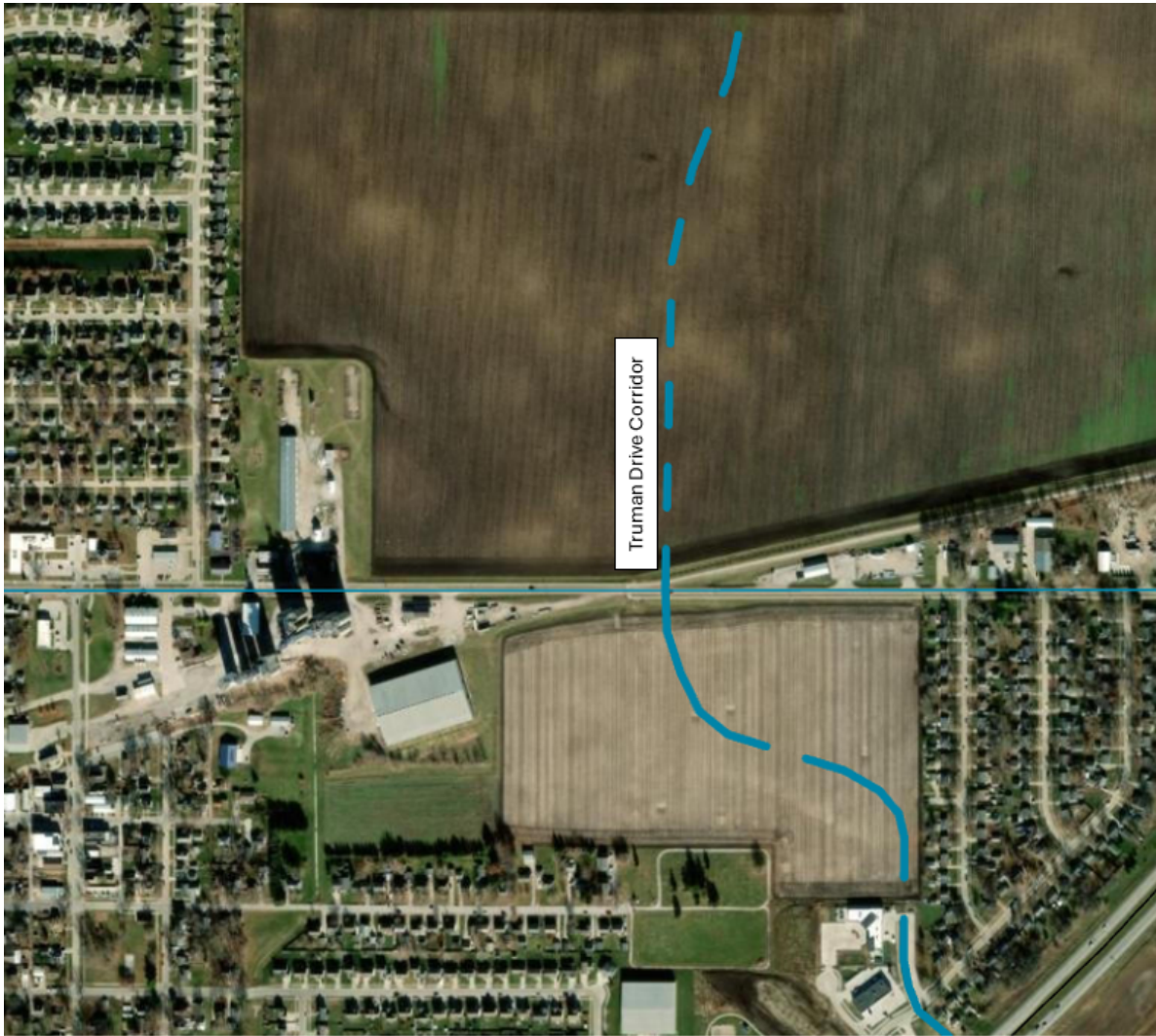
Arterial Streets projects planned include:

Fiscal Years 24 through 26: Truman Drive: This is the construction of a new street north from 2nd Street NE towards the school grounds.

FY24 and FY25 include improvements to 2nd Street NW from Fireside to Franklin.

FY25 also includes engineering to fully design the improvements outlined in the TEAP study of the Grant Street corridor that passes the elementary schools. There were several recommendations in the study to widen streets and install sidewalks in certain areas.

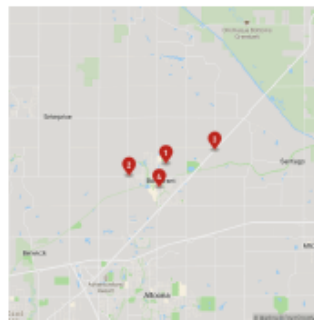
Fiscal Years 26 and 27 include design and reconstruction of 2nd Street NE from the new Truman Drive to Highway 65. This will expand 2nd Street to have turning lanes and will urbanize the street.



Images



Future Streets Plan



Location

Details

Type of Project	New Road
Useful Life	25

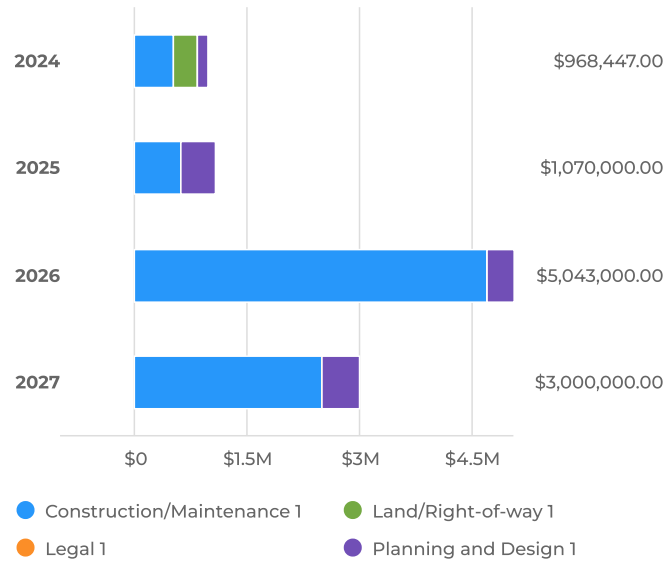
Benefit to Community

This provides access to public facilities.

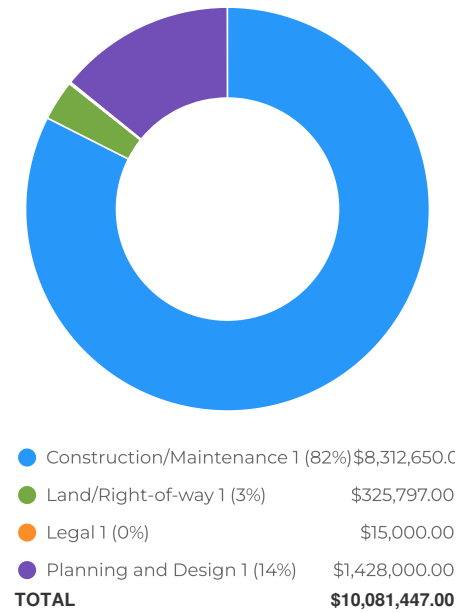
Capital Cost

Total To Date	FY2024 Budget	Total Budget (all years)	Project Total
\$28,091	\$968,447	\$10.081M	\$10.11M

Capital Cost by Year



Capital Cost for Budgeted Years

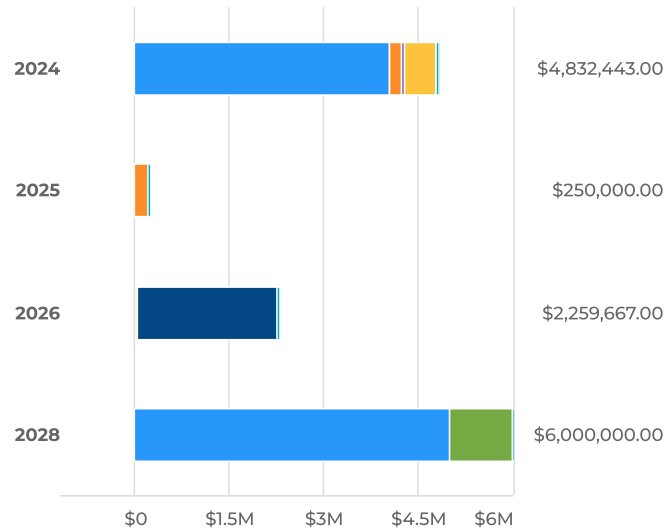


Capital Cost Breakdown						
Capital Cost	To Date	FY2024	FY2025	FY2026	FY2027	Total
Planning and Design 1	\$28,091	\$135,000	\$450,000	\$343,000	\$500,000	\$1,456,091
Land/Right-of-way 1		\$325,797				\$325,797
Construction/Maintenance 1		\$507,650	\$605,000	\$4,700,000	\$2,500,000	\$8,312,650
Legal 1			\$15,000			\$15,000
Total	\$28,091	\$968,447	\$1,070,000	\$5,043,000	\$3,000,000	\$10,109,538

Funding Sources

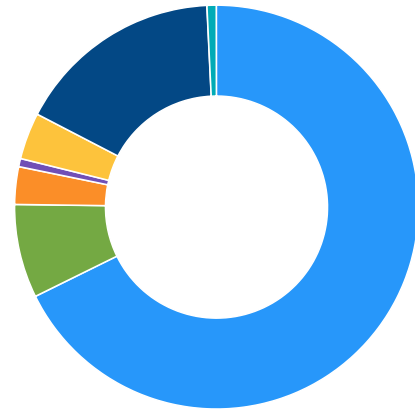
Total To Date **\$200,000** FY2024 Budget **\$4,832,443** Total Budget (all years) **\$13.342M** Project Total **\$13.542M**

Funding Sources by Year



- GO Bond
- Sanitary Sewer Operating Res...
- TIF Bond
- Water Operating Reserves
- Road Use Tax Bond
- Storm Sewer Operating Reser...
- Trade-in/Salvage

Funding Sources for Budgeted Years



- GO Bond (68%) \$9,035,957.00
- Road Use Tax Bond (7%) \$1,000,000.00
- Sanitary Sewer Operating Reserves (3%)\$400,
- Storm Sewer Operating Reserves (1%)\$87,000
- TIF Bond (4%) \$500,000.00
- Trade-in/Salvage (17%) \$2,219,153.00
- Water Operating Reserves (1%) \$100,000.00
- TOTAL** **\$13,342,110.00**

Funding Sources Breakdown

Funding Sources	To Date	FY2024	FY2025	FY2026	FY2028	Total
GO Bond		\$4,035,957			\$5,000,000	\$9,035,957
Road Use Tax Bond					\$1,000,000	\$1,000,000
TIF Bond		\$500,000				\$500,000
Water Operating Reserves		\$50,000	\$50,000			\$100,000
Sanitary Sewer Operating Reserves	\$200,000	\$200,000	\$200,000			\$600,000
Storm Sewer Operating Reserves		\$40,000		\$47,000		\$87,000
Trade-in/Salvage		\$6,486		\$2,212,667		\$2,219,153
Total	\$200,000	\$4,832,443	\$250,000	\$2,259,667	\$6,000,000	\$13,542,110

329: Chichaqua Valley Trail Extension

Overview

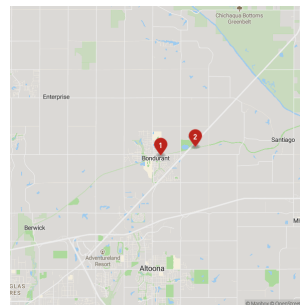
Request Owner	Marketa Oliver, City Administrator
Est. Start Date	07/01/2024
Est. Completion Date	06/30/2026
Department	Streets
Type	Capital Improvement
Project Number	329

Description

This project is the extension of the Chichaqua Valley Trail through downtown Bondurant and east of Highway 65. Currently, there are two spots where the trail deviates from a direct path. When the trail was originally built, this was the path that was available at the time to construct the trail. However, recent circumstances have changed and there is an opportunity to straighten the trail. Additionally, the segment east of Highway 65 currently runs through an industrial area that is increasingly developed and busy. Straightening the trail to avoid the industrial area will enhance safety and enjoyment for bicyclists and pedestrians.

The City also plans to collaborate with Polk County Conservation on grants for this project.

Location



Benefit to Community

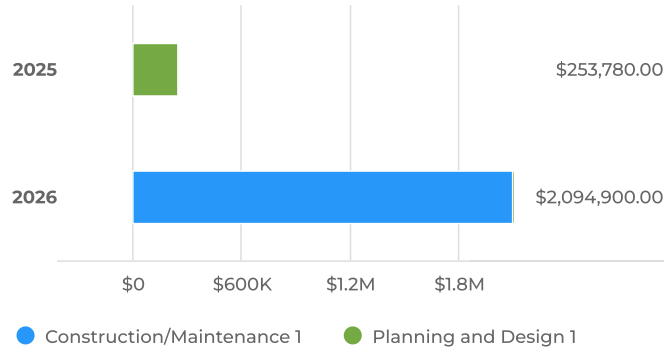
Enhanced enjoyment and safety.

Capital Cost

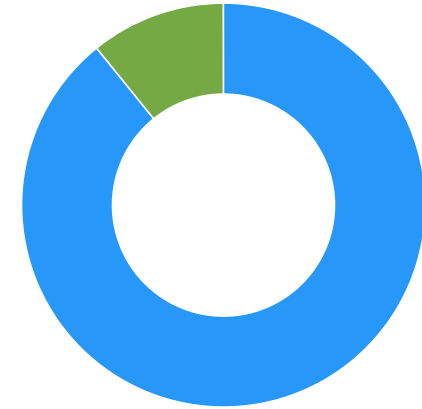
Total Budget (all years)
\$2.349M

Project Total
\$2.349M

Capital Cost by Year



Capital Cost for Budgeted Years



● Construction/Maintenance 1 (89%) \$2,094,900
● Planning and Design 1 (11%) \$253,780.00
TOTAL \$2,348,680.00

Capital Cost Breakdown

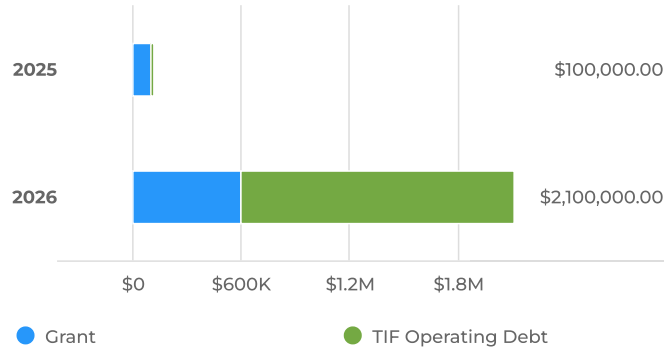
Capital Cost	FY2025	FY2026	Total
Planning and Design 1	\$253,780		\$253,780
Construction/Maintenance 1		\$2,094,900	\$2,094,900
Total	\$253,780	\$2,094,900	\$2,348,680

Funding Sources

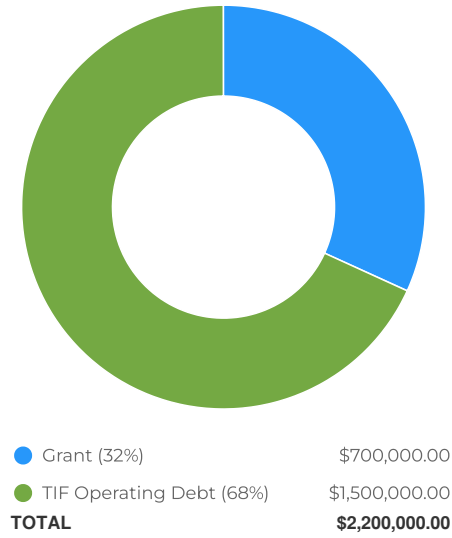
Total Budget (all years)
\$2.2M

Project Total
\$2.2M

Funding Sources by Year



Funding Sources for Budgeted Years



Funding Sources Breakdown

Funding Sources	FY2025	FY2026	Total
TIF Operating Debt		\$1,500,000	\$1,500,000
Grant	\$100,000	\$600,000	\$700,000
Total	\$100,000	\$2,100,000	\$2,200,000

335: Parks Capital Improvements

Overview

Request Owner	Marketa Oliver, City Administrator
Est. Start Date	07/08/2024
Est. Completion Date	06/30/2027
Department	Parks
Type	Capital Improvement
Project Number	335

Description

This fund encompasses multiple park improvements.

FY22 included funding for the Sankey Summit Trail as well as acquisition costs for a property adjacent to City Park.

In FY23, improvements were completed to Eagle Park, as envisioned in the Regional Water Trail Plan. Phase I included:

- Installing an 8' crushed limestone walking trail throughout Eagle Park.
- Establishing a Mud Creek access point.
- Stormwater wetlands are near the access point.
- Installing three solar-powered charging benches along the walking path.
- Establish native planting area.
- Establish a butterfly garden.
- Planting 100 trees.
- Installing wayfinding and interpretative signage.

Additionally, a trail connection through Eagle Park to link to the Sankey Summit trail was completed in 2023. Current plans include the installation of a Disc Golf Course.

FY23 expenditure included funding for the Junior High Trail and Retention.

FY24 includes the first phase of City Park, although it should be noted that this number is fluid depending on the outcome of schematic design. Here is a link to the master plan: https://www.cityofbondurant.com/sites/g/files/vyhlf2841f/uploads/2021_bondurant_city_park_-_final_master_plan_report_low_resolution.pdf FY25 includes funding for the splash pad at City Park.

FY24 includes parking on the south side of City Park.

FY24/25: includes the construction of a trail connection between the Park Side neighborhood and the BRSC.

FY25 includes adding a fishing pier at Lake Petocka (\$250K). The addition of the fishing pier will be constructed to include an artistic design. It also includes new signage for Lake Petocka.

Additionally, FY25 includes two half-court basketball courts to be constructed in existing parks. The tentatively identified locations are Wolf Creek and Bluejay Landing.

FY24 and FY25: The City is pursuing the development of tennis and pickleball courts in collaboration with the Bondurant-Farrar Community School District. The City would build the courts on school land and the school would maintain and schedule the courts, leaving them open for public use when they are not needed by the School District.

FY26 includes \$100,000 for park equipment.

FY27: includes the eastern reroute of the CVT. The City is collaborating with Polk County to continue the CVT straight east of highway 65, instead of jutting north and returning south the way the route is currently constructed. There is additional industrial development in the area and continuing the Trail straight would help bicyclists avoid areas with heavy truck traffic. The City and County will seek grants to execute this work.

FY28 forecasts paving the cemetery road.

FY29 forecasts the location of a second splashpad.

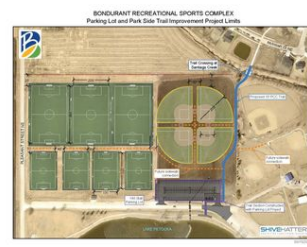
Images



Eagle Park Master Plan



City Park Master Plan Aerial



Park Side Trail Connection



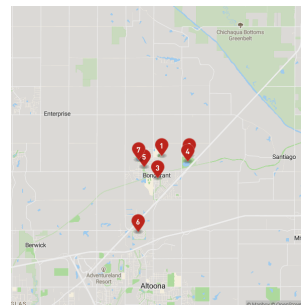
Eagle Park 2022 Schematic Design

including disc golf

Details

Type of Project	Other
Useful Life	20

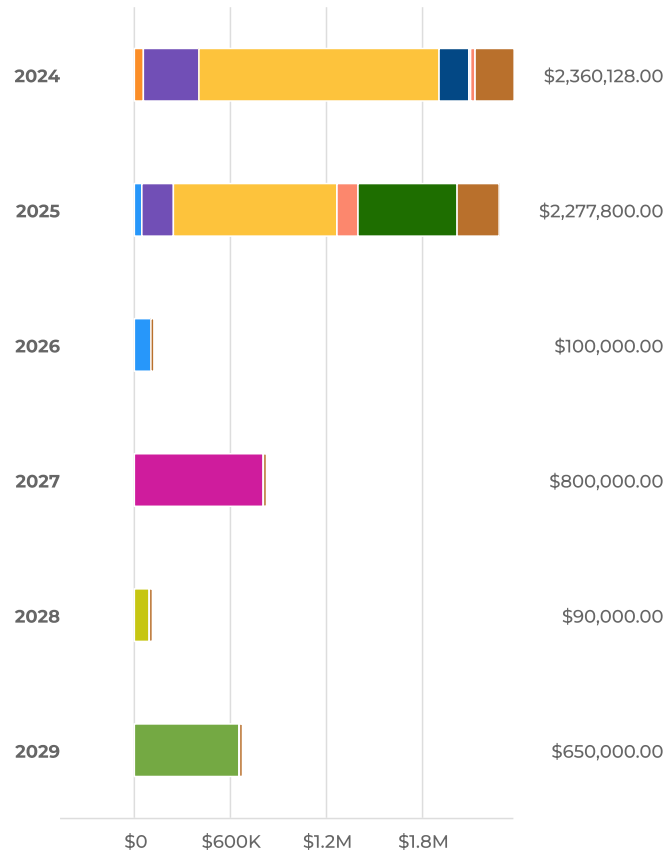
Location



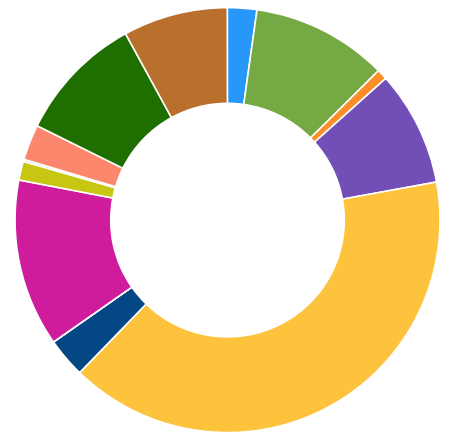
Capital Cost

Total To Date **\$840,605** FY2024 Budget **\$2,360,128** Total Budget (all years) **\$6.278M** Project Total **\$7.119M**

Capital Cost by Year



Capital Cost for Budgeted Years



Construction/Maintenance 1 (2%)	\$140,000.00
Construction/Maintenance 2 (10%)	\$650,000.00
Construction/Maintenance 3 (1%)	\$49,914.00
Construction/Maintenance 4 (9%)	\$550,000.00
Construction/Maintenance 5 (40%)	\$2,519,000.00
Furniture and Fixtures 1 (3%)	\$189,000.00
Legal 1 (0%)	\$500.00
Other 1 (13%)	\$800,000.00
Other 2 (1%)	\$90,000.00
Planning and Design 1 (0%)	\$10,000.00
Repairs/Improvements 2 (3%)	\$169,800.00
Repairs/Improvements 3 (10%)	\$610,000.00
Repairs/Improvements 4 (8%)	\$499,714.00
TOTAL	\$6,277,928.00

- Construction/Maintenance 1
- Construction/Maintenance 2
- Construction/Maintenance 3
- Construction/Maintenance 4
- Construction/Maintenance 5
- Furniture and Fixtures 1
- Legal 1
- Other 1
- Other 2
- Planning and Design 1
- Repairs/Improvements 2
- Repairs/Improvements 3
- Repairs/Improvements 4

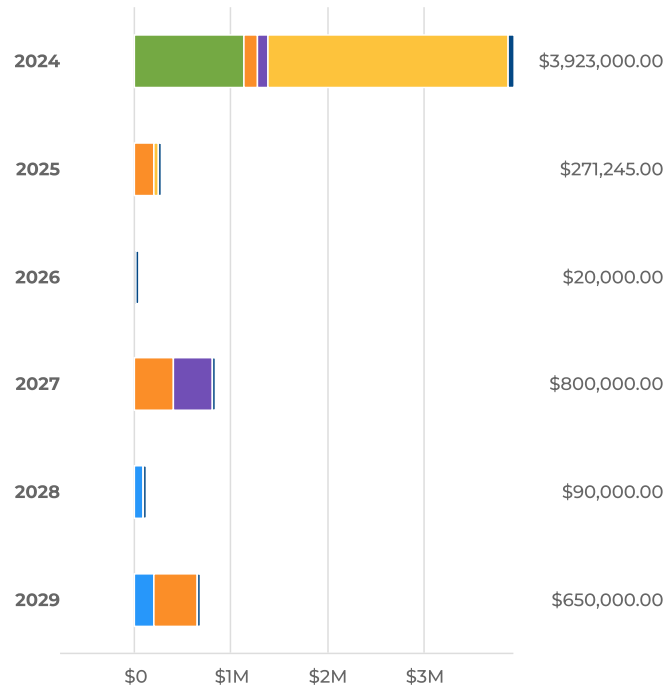
Capital Cost Breakdown								
Capital Cost	To Date	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	Total
Planning and Design 1		\$10,000						\$10,000
Repairs/Improvements 2	\$687,340	\$30,000	\$139,800					\$857,140
Repairs/Improvements 3			\$610,000					\$610,000
Repairs/Improvements 4		\$230,714	\$269,000					\$499,714
Construction/Maintenance 1			\$40,000	\$100,000				\$140,000

Capital Cost	To Date	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	Total
Construction/Maintenance 2							\$650,000	\$650,000
Construction/Maintenance 3		\$49,914						\$49,914
Construction/Maintenance 4		\$350,000	\$200,000					\$550,000
Construction/Maintenance 5	\$153,265	\$1,500,000	\$1,019,000					\$2,672,265
Furniture and Fixtures 1		\$189,000						\$189,000
Legal 1		\$500						\$500
Other 1					\$800,000			\$800,000
Other 2						\$90,000		\$90,000
Total	\$840,605	\$2,360,128	\$2,277,800	\$100,000	\$800,000	\$90,000	\$650,000	\$7,118,533

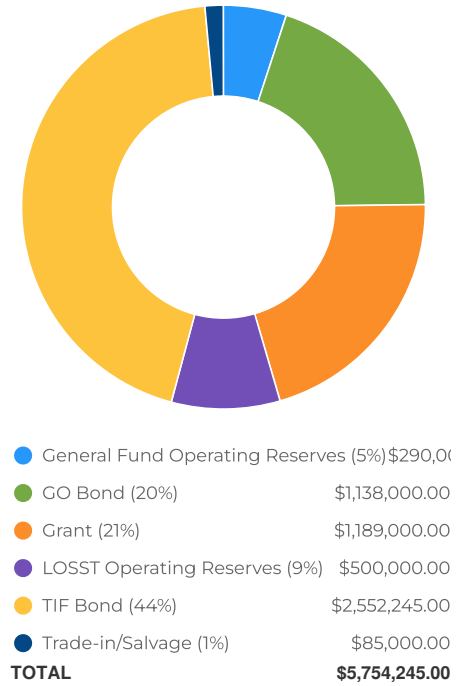
Funding Sources

Total To Date **\$939,531** FY2024 Budget **\$3,923,000** Total Budget (all years) **\$5.754M** Project Total **\$6.694M**

Funding Sources by Year



Funding Sources for Budgeted Years



- General Fund Operating Rese...
- GO Bond
- Grant
- LOSST Operating Reserves
- TIF Bond
- Trade-in/Salvage

Funding Sources Breakdown

Funding Sources	To Date	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	Total
General Fund Operating Reserves	\$300,000					\$90,000	\$200,000	\$590,000
GO Bond		\$1,138,000						\$1,138,000
LOSST Operating Reserves	\$151,500	\$100,000			\$400,000			\$651,500
TIF Bond		\$2,500,000	\$52,245					\$2,552,245
Storm Sewer Revenue Bond	\$199,066							\$199,066
Grant	\$288,450	\$140,000	\$199,000		\$400,000		\$450,000	\$1,477,450
Trade-in/Salvage	\$515	\$45,000	\$20,000	\$20,000				\$85,515
Total	\$939,531	\$3,923,000	\$271,245	\$20,000	\$800,000	\$90,000	\$650,000	\$6,693,776

337: The Grain District

Overview

Request Owner	Marketa Oliver, City Administrator
Est. Start Date	10/01/2023
Est. Completion Date	12/31/2028
Department	Parks
Type	Capital Improvement
Project Number	337

Description

The City of Bondurant approved The Grain District Downtown Redevelopment Plan on February 20, 2024.

The Grain District is the general area formerly known as the Landus Cooperative site, adjacent to downtown Bondurant. Bondurant achieved its Iowa Great Places redesignation in 2022. The 25 acres that comprise The Grain District are primed for both public and private redevelopment opportunities to help complement Bondurant's thriving downtown area. Between 2010 and 2020, Bondurant saw a 91% increase in population, which was the second-highest percent increase in population in Iowa and the highest percent increase in the Des Moines Metropolitan Area during that timeframe.

The public improvement projects identified in The Grain District Downtown Redevelopment Plan will help serve as a catalyst for private redevelopment projects, helping to realize its development potential.

The public improvement projects identified in this grant application include the following:

1. Implementing branding/wayfinding efforts along the Interstate 80 corridor to help attract area and regional visitors to The Grain District;
2. Extension of the Chichaqua Valley Trail through the Grain District;
3. Establishment of an arboretum along the trail extension;
4. Realignment and extension of Lincoln Street NE and other public street areas;
5. Construction of a public gathering space on the eastern edge of the district;
6. Implementation of public art and creative placemaking initiatives;
7. Repurposing of the soon-to-be former Bondurant Emergency Services Facility as a Parks & Recreation Center, available for programming and community use;
8. Additional public parking; and
9. Establishing public art and other creative placemaking efforts, as identified in the adopted Art Culture and Wayfinding Master Plan, along the trail corridor to help strengthen the sense of place. This public art will help to activate underutilized portions of such as vacant grain elevator structures and/or negative space along the former railroad right-of-way. It is anticipated the public art will honor Bondurant's agricultural and railroad roots as well as its trails.

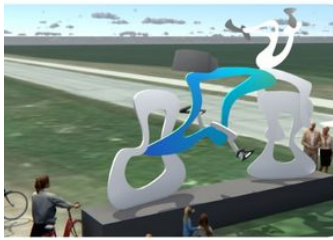
In December 2023, the City acquired land needed for some of these improvements and land necessary to facilitate roadway construction for the new Truman Drive connection to the north, that will lead to a new elementary school.

Implementation of The Crossing will help to achieve the following goals/policies/action items of the 2022 Building Bondurant Comprehensive Plan:

- **Goal:** Preserve and strengthen Bondurant's hometown feel as the community continues to evolve.
- **Goal:** Enhance the downtown through strategic public projects to attract quality private redevelopment projects.
- **Goal:** Foster a vibrant and diverse downtown so the area serves as a unique destination for residents and visitors.
- **Goal:** Support redevelopment of the Landus site.
 - **Policy:** Utilize the site's unique characteristics as an opportunity for implementing creative placemaking projects.
 - **Policy:** Ensure that future development of the Landus redevelopment area is a cohesive extension of downtown.
 - **Policy:** Promote connectivity and mobility between the Landus site and the existing developed downtown.

The Grain District will be a great addition and extension of Bondurant's downtown district. Implementation of projects identified in The Grain District Downtown Redevelopment Plan will solidify Bondurant as a regional destination for downtown shopping, regional trail usage, and public art viewing.

Images



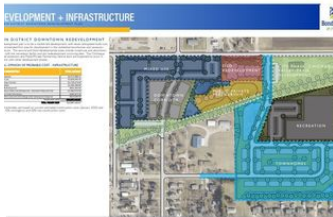
Downtown Entry Art concept



The Grain District cover



The Grain District Downtown aesthetics

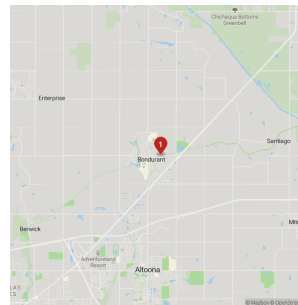


The Grain District Development and Infrastructure

Details

Type of Project	Land Development
Useful Life	25 or More

Location



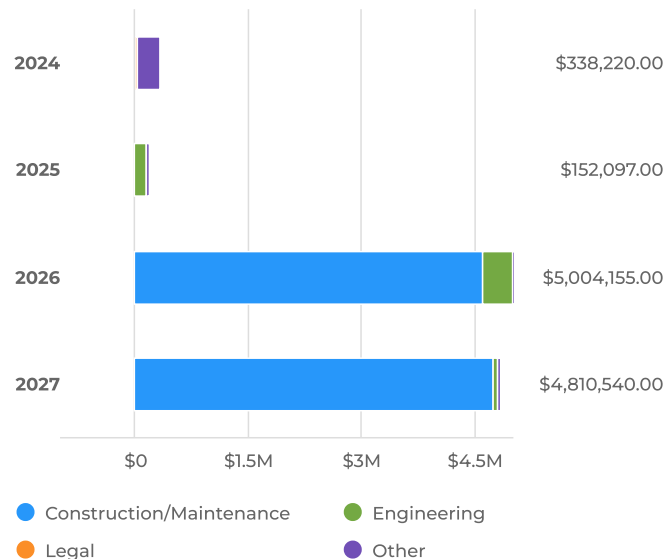
Capital Cost

FY2024 Budget
\$338,220

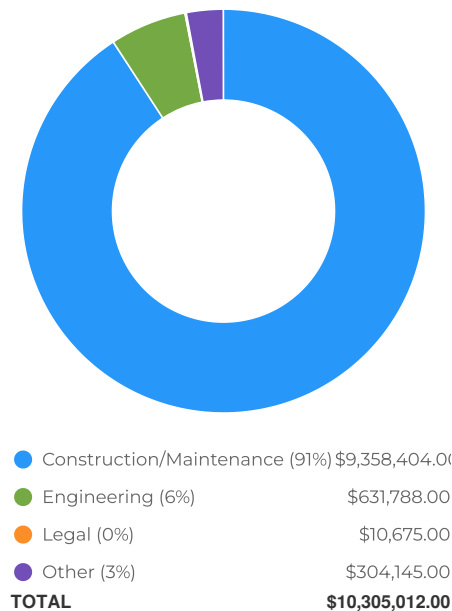
Total Budget (all years)
\$10.305M

Project Total
\$10.305M

Capital Cost by Year



Capital Cost for Budgeted Years



Capital Cost Breakdown

Capital Cost	FY2024	FY2025	FY2026	FY2027	Total
Engineering	\$23,400	\$152,097	\$395,452	\$60,839	\$631,788
Construction/Maintenance			\$4,608,703	\$4,749,701	\$9,358,404
Other	\$304,145				\$304,145
Legal	\$10,675				\$10,675
Total	\$338,220	\$152,097	\$5,004,155	\$4,810,540	\$10,305,012

Funding Sources

FY2024 Budget

\$163,400

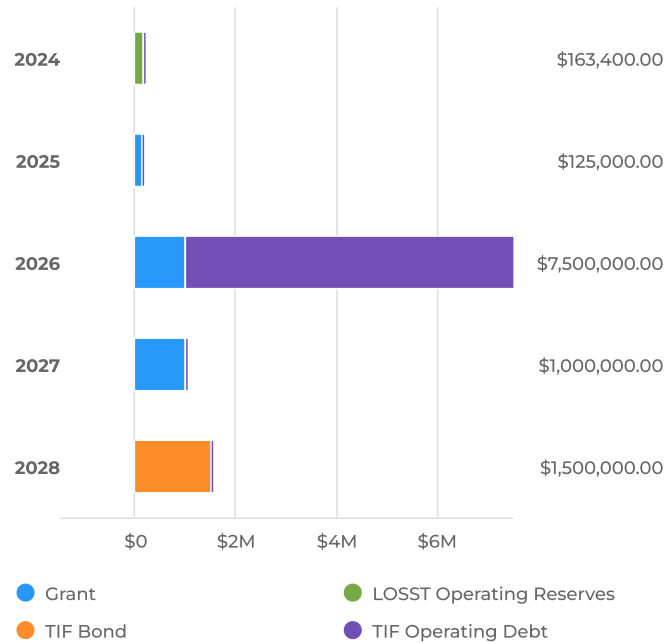
Total Budget (all years)

\$10.288M

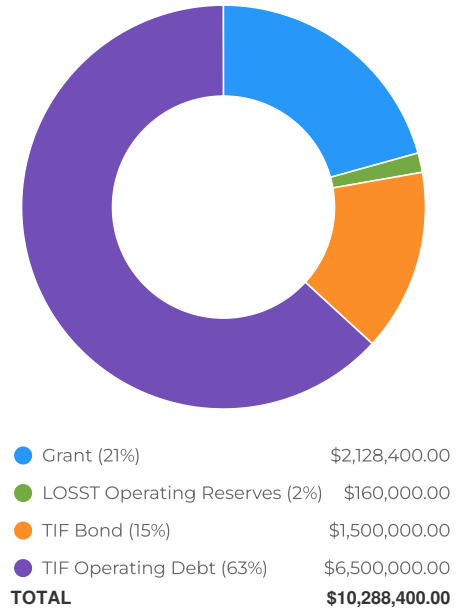
Project Total

\$10.288M

Funding Sources by Year



Funding Sources for Budgeted Years



Funding Sources Breakdown						
Funding Sources	FY2024	FY2025	FY2026	FY2027	FY2028	Total
LOSST Operating Reserves	\$160,000					\$160,000
TIF Operating Debt			\$6,500,000			\$6,500,000
TIF Bond					\$1,500,000	\$1,500,000
Grant	\$3,400	\$125,000	\$1,000,000	\$1,000,000		\$2,128,400
Total	\$163,400	\$125,000	\$7,500,000	\$1,000,000	\$1,500,000	\$10,288,400

340 Underpass - HWY 65/330

Overview

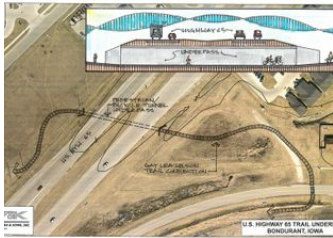
Request Owner	Jené Jess, Finance & Employee Services Director
Est. Start Date	07/01/2018
Est. Completion Date	06/30/2024
Department	Streets
Type	Capital Improvement
Project Number	340

Description

This project connects the trails on the East and West sides of HWY 65/330. It is located in the general area of Oleson Drive. Revenues for this project included a fund balance generated by a bond issuance and past grants.

The project is physically complete and paperwork should be finalized by the end of Fiscal Year 2024.

Images



Underpass - HWY 65/330
A concept drawing

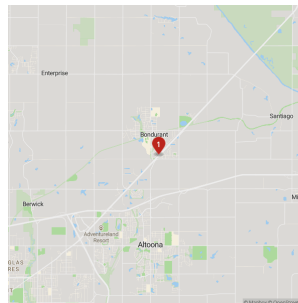


Underpass Ribbon Cutting Sept. 25, 2023

Details

Type of Project	Underpass
Useful Life	30 or More

Location



Supplemental Attachments

 [GLW Trail Underpass LIDAR 2015\(/resource/cleargov-prod/projects/documents/817a08a4d07b0f9941c5.pdf\)](/resource/cleargov-prod/projects/documents/817a08a4d07b0f9941c5.pdf)

Image


 [Resolution Grant Application\(/resource/cleargov-prod/projects/documents/7be0b37bef79cf3f7bd7.docx\)](/resource/cleargov-prod/projects/documents/7be0b37bef79cf3f7bd7.docx)

Resolution authorizing the City of Bondurant to submit an application for funding from the State of Iowa Department of Transportation for \$536,000 in funding of the construction of the Highway 65 Underpass and further approving the application which obligates the City of Bondurant to matching funds for the construction of said project

 [Resolution approving U-STEP funding agreement\(/resource/cleargov-prod/projects/documents/8a1ad32db2d0e981b425.docx\)](/resource/cleargov-prod/projects/documents/8a1ad32db2d0e981b425.docx)

Resolution approving U-STEP Funding Agreement with the Iowa Department of Transportation for the Highway 65

Pedestrian/Bicyclist Underpass Project (Agreement 1-20-USTEP-056 and Project No. UST-065-4(171)--4A-77) Attached is a resolution approving the funding agreement with the Iowa Department of Transportation for \$200,000 in Urban-State Traffic Engineering Program (U-STEP) funds for the underpass project. This project has been in development for several years and it is exciting to see it move forward. Staff also anticipates submitting additional funding agreements for some of the other grants associated with this project for council approval.

 **Resolution approving Federal-Air agreement(/resource/cleargov-prod/projects/documents/5722846ea12eee1b6d29.docx)**

Resolution approving Federal-Air Agreement for an Iowa's Transportation Alternatives Program (Iowa's TAP) Project for the Highway 65 Pedestrian/Bicyclist Underpass Project (Agreement 21-TAP-162 and Project No. TAP-T-0747(613)—8V-77) Attached is a resolution approving the funding agreement with the Iowa Department of Transportation for \$616,000 in Transportation Alternative Program funds for the underpass project. This project has been in development for several years and it is exciting to see it move forward. Staff also anticipates submitting additional funding agreements for some of the other grants associated with this project for council approval at a future date.

 **Jenco Construction Contract(/resource/cleargov-prod/projects/documents/b5cb289a9e25364b35da.pdf)**

 **Resolution Change Order(/resource/cleargov-prod/projects/documents/15fc1594ab8fbf46b182.pdf)**

RESOLUTION APPROVING CHANGE ORDER NO. 2 FOR THE HWY 65 UNDERPASS PROJECT # TAP-T-0747(613)—8V-77 IN THE AMOUNT OF \$26,800.00

 **Resolution Change Order(/resource/cleargov-prod/projects/documents/a677c06ac1f0df0650ba.pdf)**

 **Resolution Change Order(/resource/cleargov-prod/projects/documents/f41b0bf2febdc7a865b1.pdf)**

 **Resolution Change Order(/resource/cleargov-prod/projects/documents/1863bddb84a25c717dd3.pdf)**

 **Resolution Change Order ammended(/resource/cleargov-prod/projects/documents/f801d46958f83c253ccf.docx)**

RESOLUTION APPROVING CHANGE ORDER NO. 4 FOR THE HWY 65 UNDERPASS PROJECT # TAP-T-0747(613)—8V-77 IN THE AMOUNT OF \$4,257.00

 **Resolution Change Order(/resource/cleargov-prod/projects/documents/132e2bad416dfc41a5de.docx)**

RESOLUTION APPROVING CHANGE ORDER NO. 5 FOR THE HWY 65 UNDERPASS PROJECT # TAP-T-0747(613)—8V-77 IN THE AMOUNT OF \$1,619.19

 **Resolution Change Order(/resource/cleargov-prod/projects/documents/ccb81c9fe4522219a07b.docx)**

RESOLUTION APPROVING CHANGE ORDER NO. 6 FOR THE HWY 65 UNDERPASS PROJECT # TAP-T-0747(613)—8V-77 IN THE AMOUNT OF \$43,430.66

 **Resolution Change Order(/resource/cleargov-prod/projects/documents/cc17b32cdccb41c8d92.pdf)**

 **Professional Services Agreement Updated(/resource/cleargov-prod/projects/documents/cd813335423e7f5df94c.pdf)**

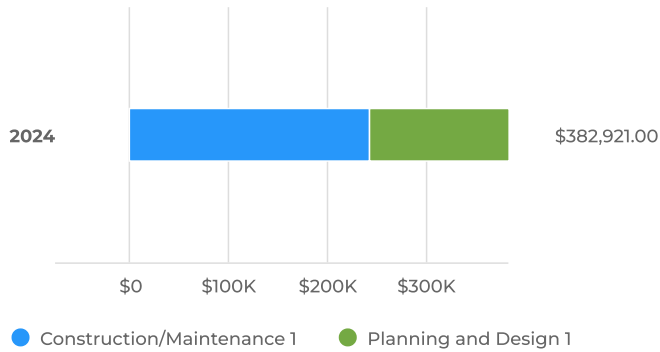
Benefit to Community

Residents and visitors will be able to traverse a busy state highway safely. Additionally, children will be able ride their bicycles safely to schools and parks.

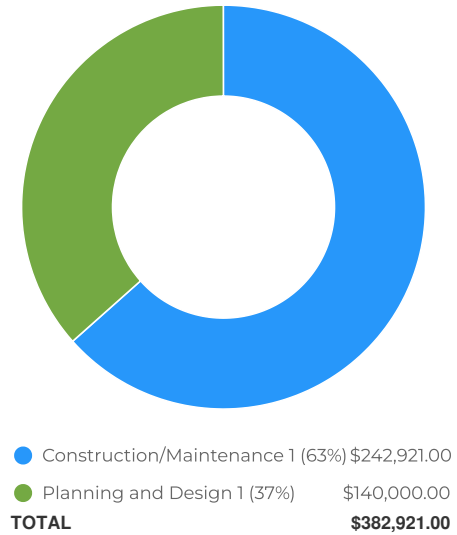
Capital Cost

Total To Date	FY2024 Budget	Total Budget (all years)	Project Total
\$3,587,519	\$382,921	\$382.921K	\$3.97M

Capital Cost by Year



Capital Cost for Budgeted Years

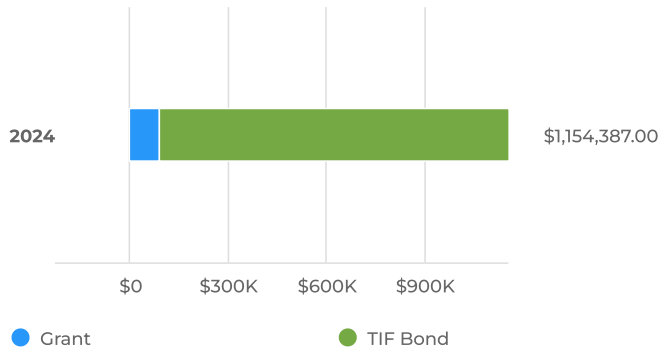


Capital Cost Breakdown			
Capital Cost	To Date	FY2024	Total
Planning and Design 1	\$250,260	\$140,000	\$390,260
Construction/Maintenance 1	\$3,329,317	\$242,921	\$3,572,238
Other 1	\$7,942		\$7,942
Total	\$3,587,519	\$382,921	\$3,970,440

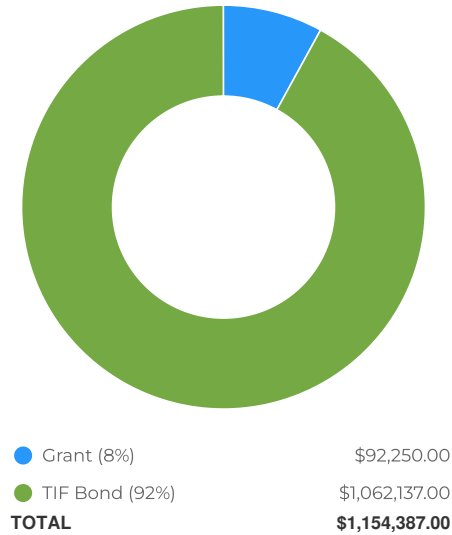
Funding Sources

Total To Date	FY2024 Budget	Total Budget (all years)	Project Total
\$1,956,596	\$1,154,387	\$1.154M	\$3.111M

Funding Sources by Year



Funding Sources for Budgeted Years



Funding Sources Breakdown			
Funding Sources	To Date	FY2024	Total
TIF Operating Debt	\$200,967		\$200,967
TIF Bond		\$1,062,137	\$1,062,137
Grant	\$1,752,750	\$92,250	\$1,845,000
Trade-in/Salvage	\$2,879		\$2,879
Total	\$1,956,596	\$1,154,387	\$3,110,983

343: Downtown Parking

Overview

Request Owner	Marketa Oliver, City Administrator
Est. Start Date	05/04/2020
Est. Completion Date	10/30/2026
Department	Economic Development
Type	Capital Improvement
Project Number	343

Description

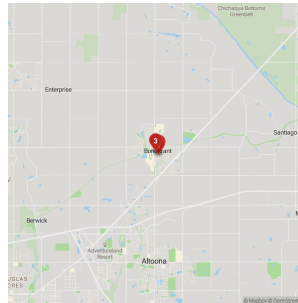
The City continues to explore ways in which parking downtown can be expanded. Previously, the City purchased land and built a parking lot north of City Park, installing a mural on the north side of the parking lot. The City has also acquired ground south of City park for additional future parking. Additionally, as part of the City Park project, the City constructed diagonal parking on the west side of City Park. Finally, the City is currently pursuing building additional parking in FY24/FY25 on the western edge of downtown, as well as the parking on the land the City purchased previously located south of City Park.

There is also considerable public parking in The Grain District Downtown Redevelopment Master Plan which was approved by the City Council on February 20, 2024 and can be found here: https://www.cityofbondurant.com/sites/g/files/vyhlif2841/f/uploads/29781_the_grain_district_02-14-2024.pdf.

Details

Type of Project New Construction

Location



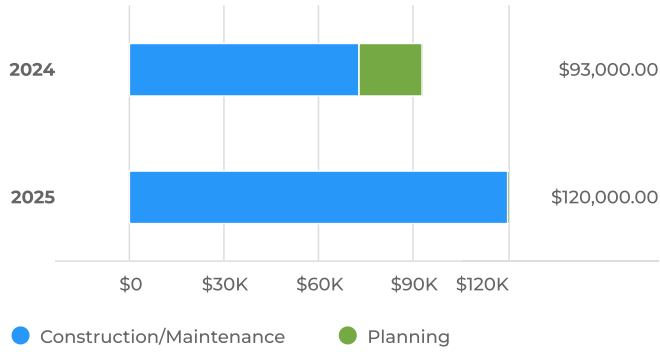
Benefit to Community

Bondurant has a thriving downtown that continues to grow. Providing this important amenity to support business growth is an essential economic development goal.

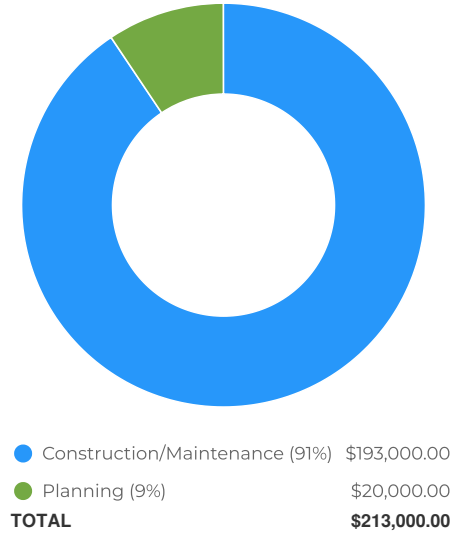
Capital Cost

Total To Date	FY2024 Budget	Total Budget (all years)	Project Total
\$167,967	\$93,000	\$213K	\$380.967K

Capital Cost by Year



Capital Cost for Budgeted Years

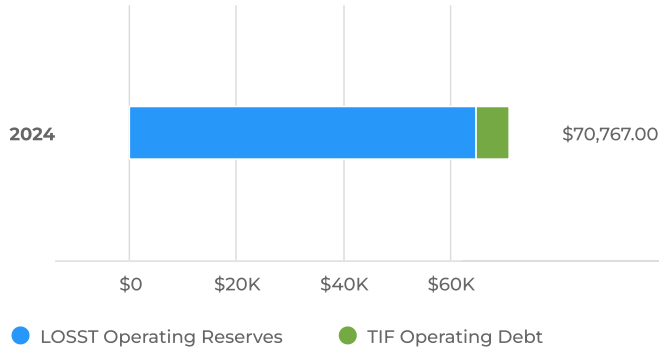


Capital Cost Breakdown				
Capital Cost	To Date	FY2024	FY2025	Total
Planning	\$1,950	\$20,000		\$21,950
Construction/Maintenance	\$166,017	\$73,000	\$120,000	\$359,017
Total	\$167,967	\$93,000	\$120,000	\$380,967

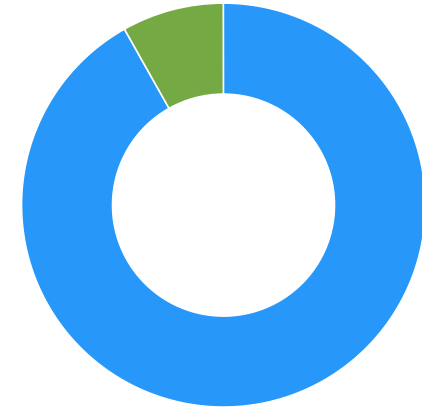
Funding Sources

Total To Date	FY2024 Budget	Total Budget (all years)	Project Total
\$95,320	\$70,767	\$70.767K	\$166.087K

Funding Sources by Year



Funding Sources for Budgeted Years



LOSST Operating Reserves (92%)	\$65,000.00
TIF Operating Debt (8%)	\$5,767.00
TOTAL	\$70,767.00

Funding Sources Breakdown

Funding Sources	To Date	FY2024	Total
LOSST Operating Reserves		\$65,000	\$65,000
TIF Operating Debt	\$75,320	\$5,767	\$81,087
Grant	\$20,000		\$20,000
Total	\$95,320	\$70,767	\$166,087

344 16th Street

Overview

Request Owner	Marketa Oliver, City Administrator
Est. Start Date	03/15/2021
Est. Completion Date	12/31/2028
Department	Streets
Type	Capital Improvement
Project Number	344

Description

The City Council approved a professional services agreement on March 15, 2021, for the design of improvements to 16th Street, NE between Grant Street, NW and Pleasant Street, NE. (This street is known as 86th Street under the County naming convention.) On March 7, 2022, the City Council approved an agreement for 16th Street design from Pleasant Street NE to Hubbell Avenue (HWY 65). On August 1, 2022, the Council further extended the scope of design along this corridor to include a conceptual design of the intersection at HWY 65/16th St NE/NE 88th Street. The agreement provides for the design of an urban section of roadway along the one-mile reach. The roadway would be designed for the initial two lanes to be constructed in phases. As development occurs, the design would contemplate future widening to either three lanes or four lanes. The design includes locating utilities along a corridor that would be consistent with the future widened section of 16th Street, NE. The project would include the design of a 12-inch water main along this reach of 16th Street, NE.

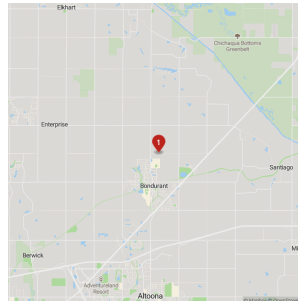
This street is identified as a priority for a major, east-west arterial. Development in the area is putting pressure on the roadway infrastructure system in this area and driving the need to develop engineered plans for future construction. The construction itself would be partially paid for by developers, in a proportion that is beneficial to the respective property.

Development along this corridor will drive construction of this street.

Details

Type of Project	New Road
Useful Life	30 or More

Location



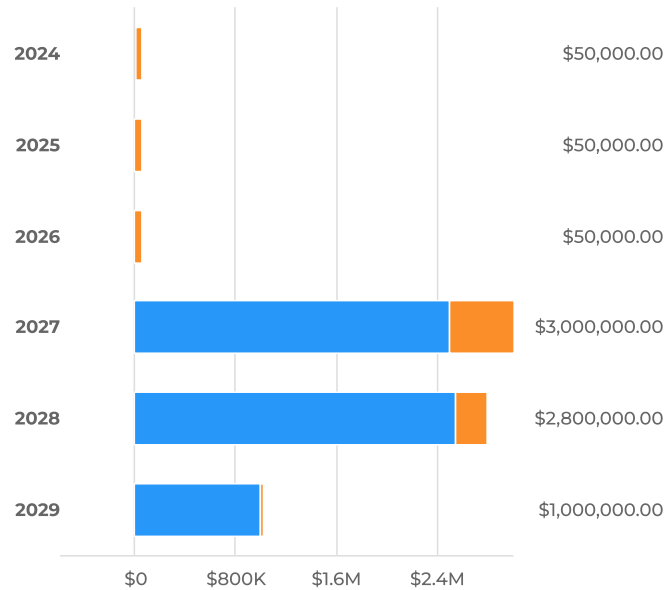
Benefit to Community

This will provide an additional east-west corridor for better connectivity throughout the community. This will also upgrade the intersection at 16th St NE and Hubbell, enhancing safety and usability.

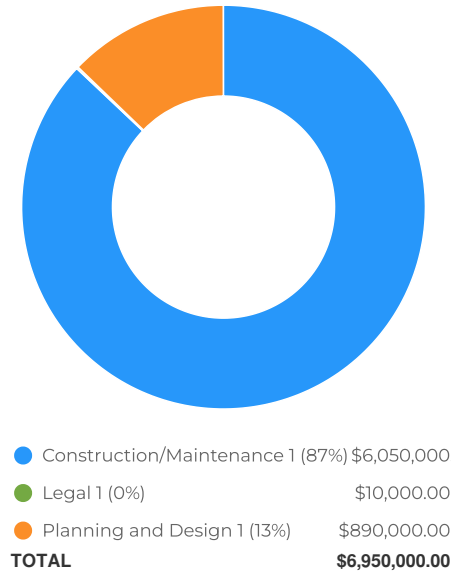
Capital Cost

Total To Date	FY2024 Budget	Total Budget (all years)	Project Total
\$36,681	\$50,000	\$6.95M	\$6.987M

Capital Cost by Year



Capital Cost for Budgeted Years



- Construction/Maintenance 1
- Legal 1
- Planning and Design 1

Capital Cost Breakdown								
Capital Cost	To Date	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	Total
Planning and Design 1	\$36,681	\$40,000	\$50,000	\$50,000	\$500,000	\$250,000		\$926,681
Construction/Maintenance 1					\$2,500,000	\$2,550,000	\$1,000,000	\$6,050,000
Legal 1		\$10,000						\$10,000
Total	\$36,681	\$50,000	\$50,000	\$50,000	\$3,000,000	\$2,800,000	\$1,000,000	\$6,986,681

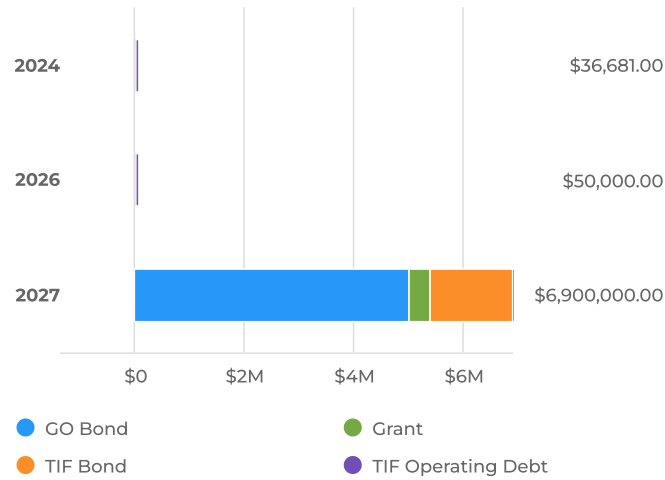
Funding Sources

FY2024 Budget
\$36,681

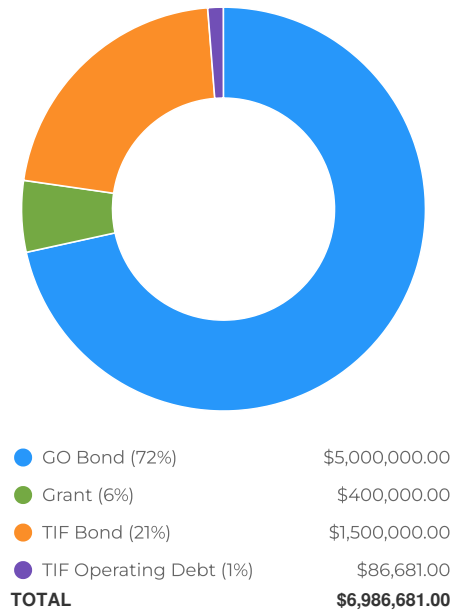
Total Budget (all years)
\$6.987M

Project Total
\$6.987M

Funding Sources by Year



Funding Sources for Budgeted Years



Funding Sources Breakdown

Funding Sources	FY2024	FY2026	FY2027	Total
GO Bond			\$5,000,000	\$5,000,000
TIF Operating Debt	\$36,681	\$50,000		\$86,681
TIF Bond			\$1,500,000	\$1,500,000
Grant			\$400,000	\$400,000
Total	\$36,681	\$50,000	\$6,900,000	\$6,986,681

346: City Hall Solar Panel Project

Overview

Request Owner	Marketa Oliver, City Administrator
Est. Start Date	12/04/2023
Est. Completion Date	06/30/2024
Department	City Hall
Type	Capital Improvement
Project Number	346

Description

This project is to equip City Hall with solar panels.

This will help reduce ongoing operational costs.

The City issued requests for proposals in February 2024. Public works staff received three proposals to install a solar array on City Hall to help offset some operational costs and lower the City's overall carbon footprint. There are several advantages to adding solar power to city facilities as it is not only better for the environment, it will also help the city realize a lower operational cost by reducing the energy usage from the overall power grid and in turn lowering our monthly utility bill.

The proposals received provided a great deal of detail and an estimation of cost savings. It is important to note that solar will not offset the city's entire electrical usage bill as we still have meter charges and peak demand usage charges as well as other miscellaneous Charges every month. Staff took all the information provided from the proposal and broke this down into an estimated annual offset amount as well as the ROI on the total investment.

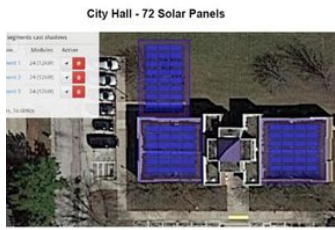
Staff researched the environmental impact of solar power. We found that there is a calculation that converts the total kWh of energy produced by solar arrays times a factor of 0.0117 trees/kWh. The proposal that staff are recommending would equate to approximately 480 trees planted per year, 1,610,400 pounds of CO2 reduced, and approximately 156 vehicles off the road. (https://knowledgecenter.solaredge.com/sites/kc/files/monitoring_platform_environmental_benefits_calculation.pdf)

Staff are also exploring the possibility of a 30% federal credit that we may be eligible for to help offset the upfront cost of the system. The bid is to include the addition of a new roof mounted solar array, and all associated equipment. Below is the Bid Tab showing bids received.

Company	Total Proposal Cost	Actual Electrical Charge for 2023	Estimated Bill Offset	Annualized offset	ROI w/o Tax Credit
1 Source Solar	\$84,170	\$4,460.90	89.5	\$3,992.51	21.08199976
Ziegler	\$124,107.00	\$4,460.90	68.6	\$3,060.18	40.55549198
QstN LLC	\$71,400.00	\$4,460.90	63.0	\$2,810.37	25.40593453

Additionally, the City qualifies for a 30% rebate through a Federal program, lowering the net out-of-pocket investment to \$54,170 and reducing the Return on Investment timeframe to 13.56 years. The equipment is guaranteed for 25 years, meaning **the City would realize 11.5 years of life on the equipment** after the investment has been redeemed, which is **estimated to be a value of \$45,914.**

Images

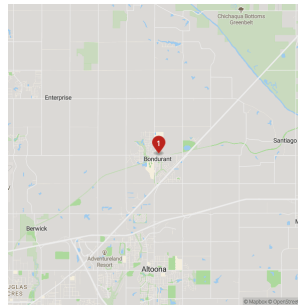


City Hall Solar Panels

Details

Type of Project	Other
Useful Life	25 or More

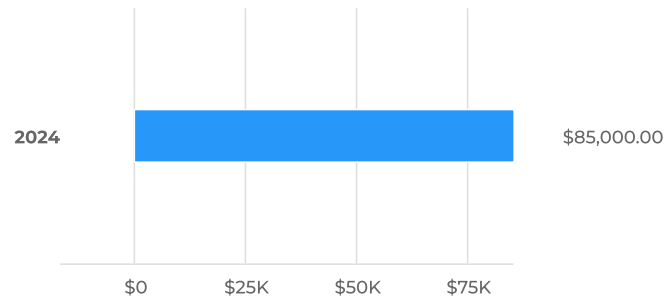
Location



Capital Cost

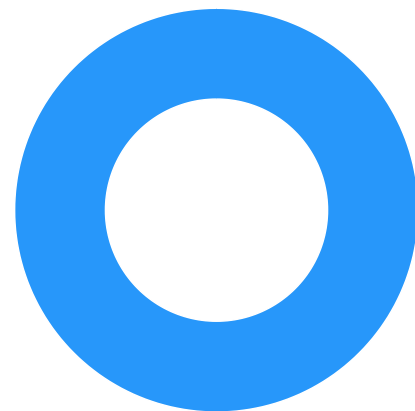
FY2024 Budget	Total Budget (all years)	Project Total
\$85,000	\$85K	\$85K

Capital Cost by Year



● Construction/Maintenance 1

Capital Cost for Budgeted Years



● Construction/Maintenance 1 (100%) \$85,000.00
TOTAL \$85,000.00

Capital Cost Breakdown		
Capital Cost	FY2024	Total
Construction/Maintenance 1	\$85,000	\$85,000
Total	\$85,000	\$85,000

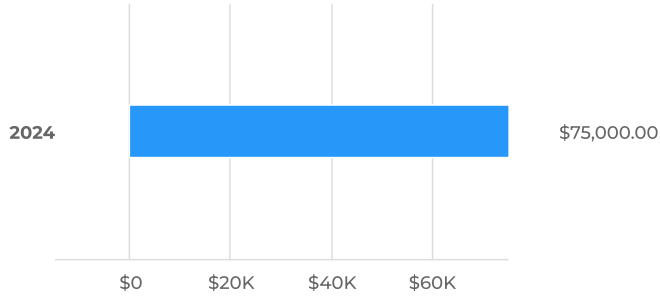
Funding Sources

FY2024 Budget
\$75,000

Total Budget (all years)
\$75K

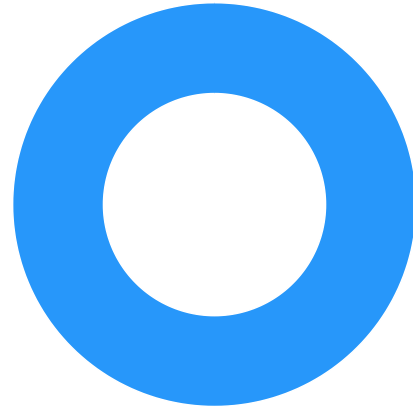
Project Total
\$75K

Funding Sources by Year



● LOSST Operating Reserves

Funding Sources for Budgeted Years



● LOSST Operating Reserves (100%) \$75,000.00
TOTAL \$75,000.00

Funding Sources Breakdown		
Funding Sources	FY2024	Total
LOSST Operating Reserves	\$75,000	\$75,000
Total	\$75,000	\$75,000

347: Garfield Street Ext/10th Street Connection/15th St SW Bridge relocation

Overview

Request Owner	Jené Jess, Finance & Employee Services Director
Est. Start Date	07/01/2019
Est. Completion Date	11/30/2024
Department	Economic Development
Type	Capital Improvement
Project Number	347

Description

This project is to extend 10th Street to the east and Garfield Street to the south, including replacing the bridge that was formerly on 15th Street. (The bridge on 15th Street was damaged in the floods of 2018 and the decision was made not to replace it in that location, but to relocate it for better connectivity and safety.) Design is underway and nearing completion. The City received funding from FEMA to help with the replacement of the bridge that was damaged during the flooding.

This project was originally slated to be constructed earlier; but had to be reprogrammed into the Capital Improvement Budget due to the addition of another critical street project (Truman Drive).

Images

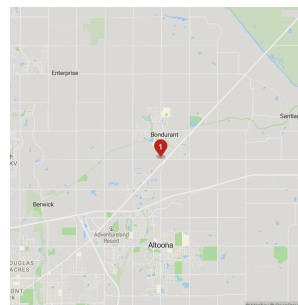


10th St extension layout

Details

Type of Project	New Bridge
Useful Life	30 or More

Location



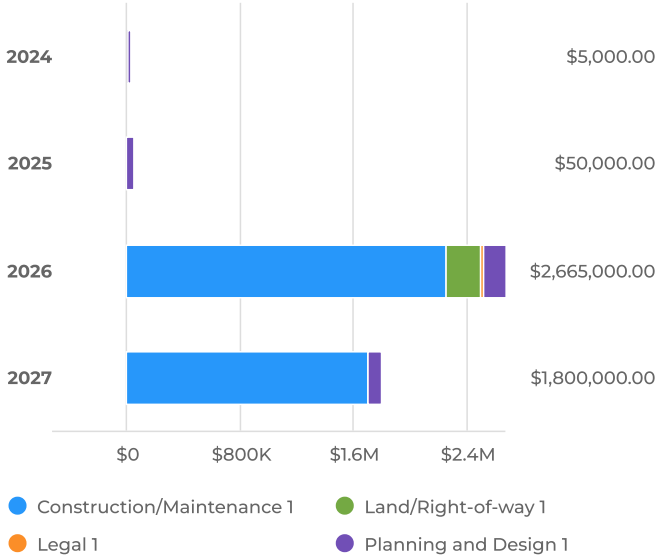
Benefit to Community

This will benefit the community by adding better connectivity and easing some of the congestion on Grant Street, particularly during school drop off and pick-up times.

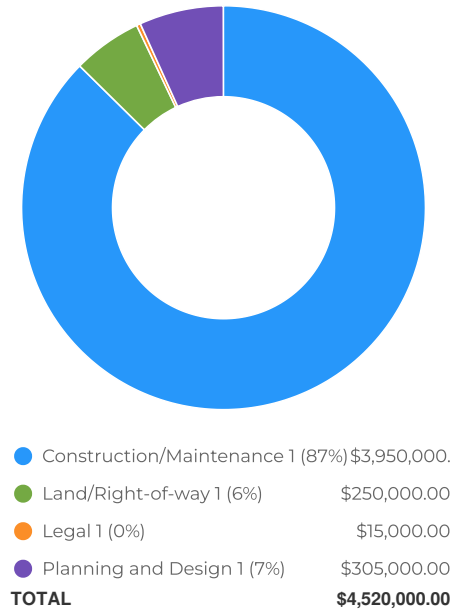
Capital Cost

Total To Date **\$111,019** FY2024 Budget **\$5,000** Total Budget (all years) **\$4.52M** Project Total **\$4.631M**

Capital Cost by Year



Capital Cost for Budgeted Years



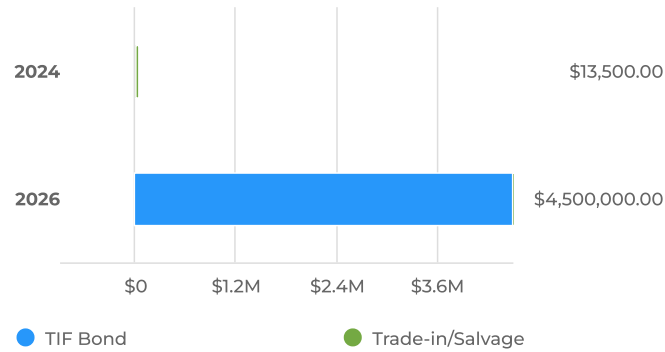
Capital Cost Breakdown

Capital Cost	To Date	FY2024	FY2025	FY2026	FY2027	Total
Planning and Design 1	\$111,019	\$5,000	\$50,000	\$150,000	\$100,000	\$416,019
Land/Right-of-way 1				\$250,000		\$250,000
Construction/Maintenance 1				\$2,250,000	\$1,700,000	\$3,950,000
Legal 1				\$15,000		\$15,000
Total	\$111,019	\$5,000	\$50,000	\$2,665,000	\$1,800,000	\$4,631,019

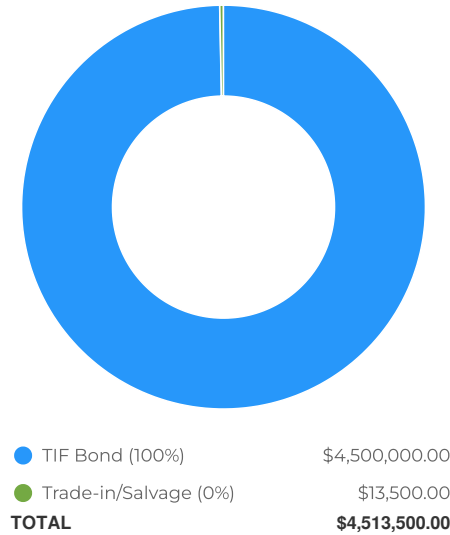
Funding Sources

Total To Date	FY2024 Budget	Total Budget (all years)	Project Total
\$374,820	\$13,500	\$4.514M	\$4.888M

Funding Sources by Year



Funding Sources for Budgeted Years



Funding Sources Breakdown

Funding Sources	To Date	FY2024	FY2026	Total
TIF Operating Debt	\$1,782			\$1,782
TIF Bond	\$368,004		\$4,500,000	\$4,868,004
Trade-in/Salvage	\$5,034	\$13,500		\$18,534
Total	\$374,820	\$13,500	\$4,500,000	\$4,888,320

351: Library Expansion and Renovation

Overview

Request Owner	Jené Jess, Finance & Employee Services Director
Est. Start Date	03/01/2021
Est. Completion Date	06/30/2025
Department	Library
Type	Capital Improvement
Project Number	351

Description

Expansion of the library building and additional equipment. This project is funded by a general obligation bond supported by the Local Option Sales and Services Tax that Bondurant residents voted to impose upon themselves for capital improvements and property tax relief. The capital project includes a fund balance that derives from bond proceeds of \$3,688,792 in FY2021 and a grant of \$60,000 from the Carver Foundation, also in FY21.

FY24 includes funding to repair a door and FY25 includes solar panels.

The main project has been completed. The capital expenditures budgeted are for solar panels to be added to the library.

Images



Library Expansion

During all phases of construction the library remained open to serve the public.



Library Expansion

One of the last phases of construction was the South Wing.



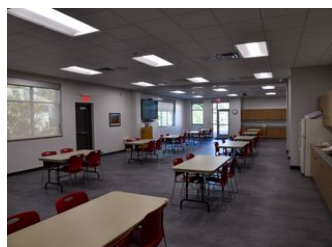
Library Expansion

Some images of the new spaces.



Library Expansion

This project could not have been possible without the support of the community.



Library Expansion

Giant conference and community room that can be split into two different rooms.



Library Expansion

Staff hard at work in their new space.



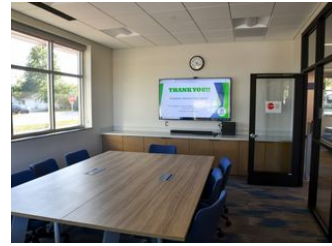
Library Expansion

Upgraded and expanded services and equipment to better serve the community's needs.



Library Expansion

New spaces for after school hanging out.



Library Expansion

A fully functional and high-tech conference room that can be used for library programs or open to the community for use.



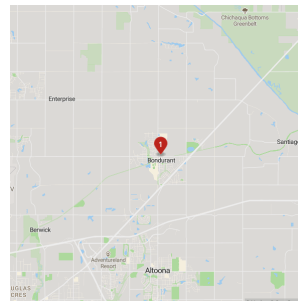
Library Expansion

The ribbon cutting event.

Details

Type of Project	Other
Useful Life	20

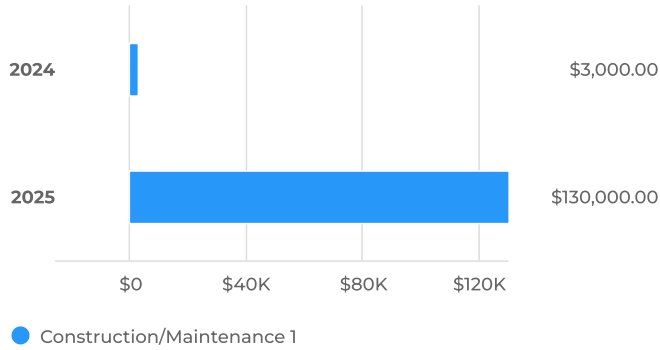
Location



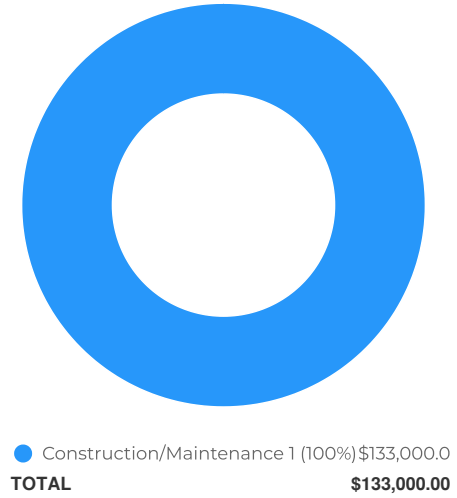
Capital Cost

Total To Date	FY2024 Budget	Total Budget (all years)	Project Total
\$3,154,224	\$3,000	\$133K	\$3.287M

Capital Cost by Year



Capital Cost for Budgeted Years

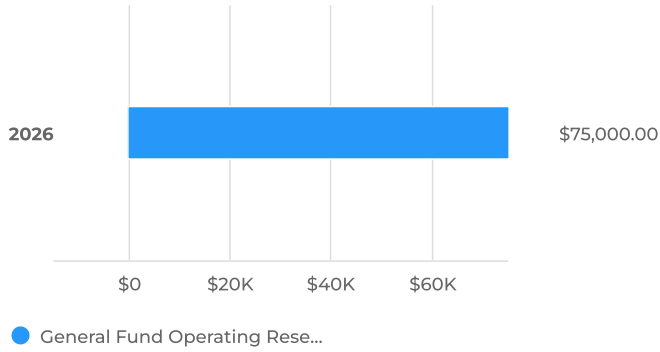


Capital Cost Breakdown				
Capital Cost	To Date	FY2024	FY2025	Total
Construction/Maintenance 1	\$3,154,224	\$3,000	\$130,000	\$3,287,224
Total	\$3,154,224	\$3,000	\$130,000	\$3,287,224

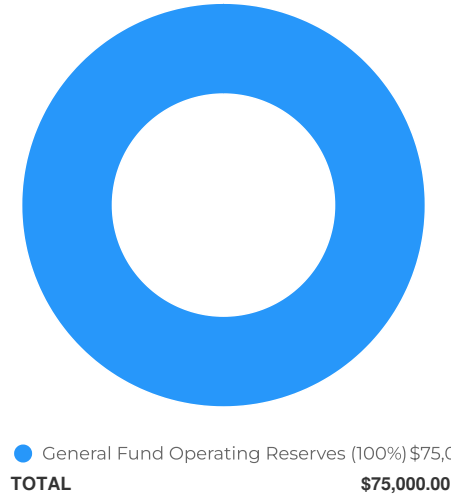
Funding Sources

Total To Date **\$130,000** Total Budget (all years) **\$75K** Project Total **\$205K**

Funding Sources by Year



Funding Sources for Budgeted Years



Funding Sources Breakdown			
Funding Sources	To Date	FY2026	Total
General Fund Operating Reserves	\$130,000	\$75,000	\$205,000
Total	\$130,000	\$75,000	\$205,000

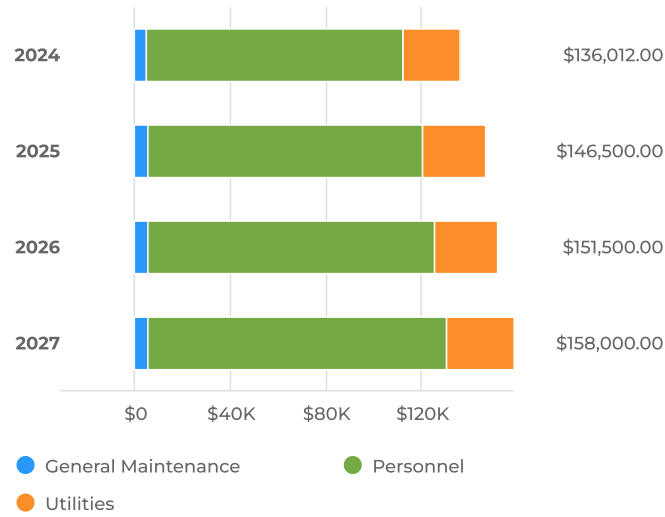
Operational Costs

FY2024 Budget
\$136,012

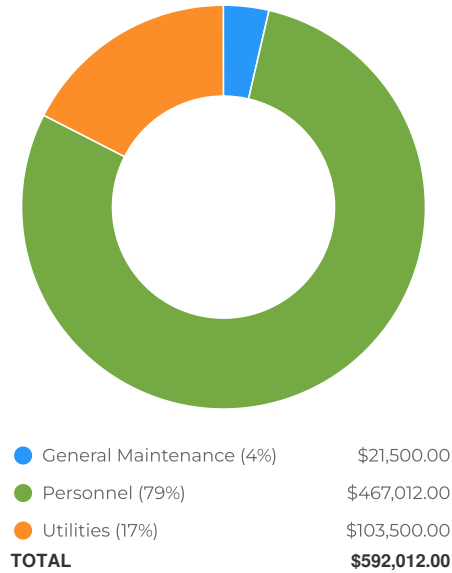
Total Budget (all years)
\$592.012K

Project Total
\$592.012K

Operational Costs by Year



Operational Costs for Budgeted Years



Operational Costs Breakdown

Operational Costs	FY2024	FY2025	FY2026	FY2027	Total
General Maintenance	\$5,000	\$5,500	\$5,500	\$5,500	\$21,500
Utilities	\$24,000	\$26,000	\$26,000	\$27,500	\$103,500
Personnel	\$107,012	\$115,000	\$120,000	\$125,000	\$467,012
Total	\$136,012	\$146,500	\$151,500	\$158,000	\$592,012

352: Water Facilities Planning/Water Facilities Construction

Overview

Request Owner	Marketa Oliver, City Administrator
Est. Start Date	08/02/2021
Est. Completion Date	06/30/2029
Department	Water Administration
Type	Capital Improvement
Project Number	352

Description

The City is pursuing engineering and planning for water distribution, including looping, storage, and production. This is a long-term project with multiple elements, including the siting and construction of a water tower (that includes a public art element), testing for wells, and construction of a treatment facility and distribution lines.

The City Council approved a design contract encompassing multiple projects on February 7, 2022. For reference, each design project and the total cost is listed below:

Well Field Exploration- \$79,100

Preliminary Engineering Report- \$7,500

Well Field- \$95,000

Water Treatment Facility-\$750,000

Raw Water Transmission Mains- \$25,000

Finished Water Transmission Main- \$45,000

32nd Street/Jorie Way/NE 88th Street Water Main for Tower- \$ 70,000

15th Street SE/NE 88th Street Transmission Main from Tower Site- \$55,000

A contract with KLC Construction LLC in the amount of \$1,995,059 was awarded by the City Council on May 22, 2023. The Council approved a resolution awarding the contract for Water Tower Construction to Gerard Tank & Steel, Inc. in the amount of \$4,851,000 on June 5, 2023.

The City of Bondurant has contracted with Des Moines Water Works for nearly two decades for wholesale water production. Des Moines Water Works has increased rates consistently over the past several years, which affects customers in Des Moines, Pleasant Hill, Windsor Heights, and a handful of other small communities that purchase water directly from the utility.

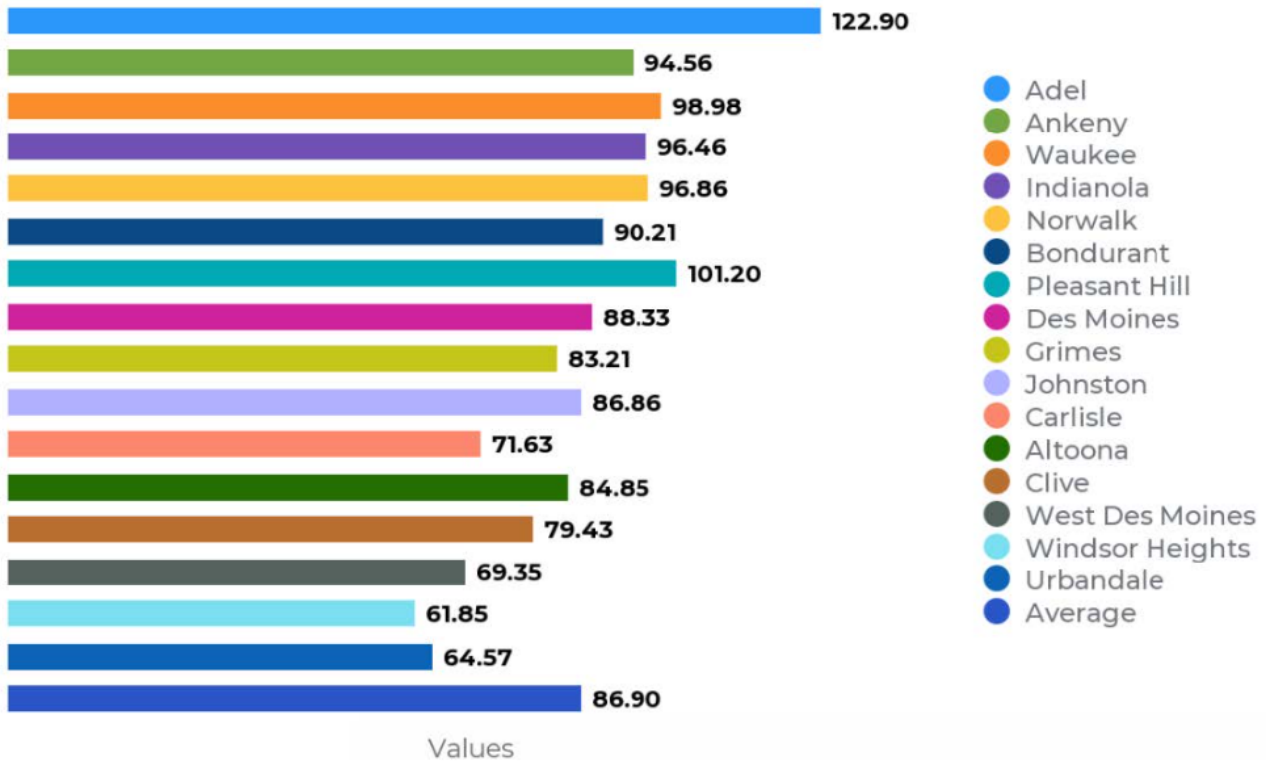
Due to the cost of infrastructure improvements and treatment and increasing demand for water supply, over the past few years there have been discussions among several cities (including Bondurant) Des Moines Water Works, and West Des Moines Water Works related to a regional water utility or regional water governance. Parallel to those discussions, the City has been exploring the possibility of producing and treating water independently again. The reason the City is pursuing a water facilities study is to determine the feasibility of producing its own water, which could give the City as much direct control over costs as possible. Preliminary results are proving to be very encouraging. The City is approaching a fork in the road where a determination will need to be made. There are major capital investments on the horizon, regardless of which path is pursued.

While conducting financial modeling and engaging in regional discussion, it became clear that the fiscally responsible thing to do would be to create a four-year rate plan to address operational and capital needs. The rate plan is needed regardless of whether the determination is made to participate in regional water production and governance or whether the City re-establishes independent water production. (Please note that the City Council passed a resolution expressing intent to move forward with independent water production and treatment on September 18, 2023.) Below is a table showing the four-year rate plan.

Rates	Rate Effective Date			
	Bills issued on and after April 1, 2023	Bills issued on and after July 1, 2024	Bills issued on and after July 1, 2025	Bills issued on and after July 1, 2026
Availability Charge	\$8.17	\$9.19	\$10.34	\$11.63
Usage Charge (per 1,000 gallons of usage)	\$8.17	\$9.19	\$10.34	\$11.63
Hydrant metered withdrawal (per 1,000 gallons)	\$11.63	\$13.09	\$14.73	\$16.58
Hydrant non-metered withdrawal (per 1,000 gallons)	\$12.75	\$14.35	\$16.15	\$18.17
Usage Surcharge - Hydrant Flushing (per 1,000 gallons)	\$18.03	\$20.29	\$22.83	\$25.69
Bulk Usage (construction water added to building permit fee)	\$637.71	\$717.43	\$807.11	\$908.00

Below is a graph showing communities' projected utility rates in the metropolitan area and including the City's future rate (the rate effective April 1, 2023). The below calculation is based on the average consumption of a residential-class customer over the past year at 3216.666667 gallons per month. The utilities that were surveyed were water, sewer, stormwater, garbage, and recycling. (Please note that Ankeny and Indianola do not provide garbage. The residents are required to set up services with a provider of their choosing and an average of \$15 per month was used for the calculation.) Additionally, some communities do not fully administer sewer services. In these cases, the area has a sewer district that levies taxes to support the sewer services. Bondurant is towards the middle of the group, with an average monthly bill of \$90.21. The average for the metropolitan area is \$86.90 per month, and the median for the metropolitan area is \$87.56. While it is difficult to make a full apples-to-apples comparison given the use of taxing authority sewer districts, it is still a reasonably close comparison.

Average Monthly Utility Bill Projected 2023



Staff continually looks for ways to maximize efficiency to keep rates as low as possible through automation and strategic operations management. The City continues to strive to keep costs low and will continue to look for ways to contain costs to reduce or delay future rate adjustments. This was a key component in the Council's determination to move forward with independent water production.

As the City of Bondurant moves forward with the construction of a water tower, the City Council determined that the location lends itself well to become a gateway branding opportunity. The Bondurant City Council hired Group Creative Services to petition the design of three artists for a water tower public art project. The artist generates only the design, as the water tower contractor will be painting the design from a large stencil. The water tower will be located along NE 88th Street. Construction of the water tower will begin in 2023.

The Bondurant Parks and Recreation reviewed three designs during their January 19, 2023 board meeting. The Bondurant Parks and Recreation Board voted and recommended to City Council the design submitted by Jennifer Leatherby with slight modifications. The Bondurant City Council approved the design on February 6, 2023 with minor changes, which showcases a swooping, geometric design, which will be visible from the interstate, incorporating the city's "B" logo and its trademark colors of blue, yellow, and green. Leatherby's design will creatively communicate Bondurant's branding to the public, including vehicles looking at the tower from the Interstate 80 corridor. The design captures the community's vibrancy and communicates the history of Bondurant as a railroad town that has grown its trail network.

Images

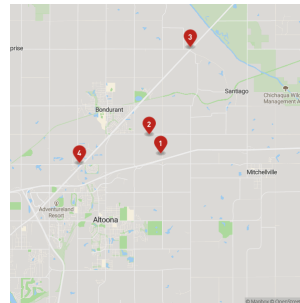


Water Tower Art

Details

Type of Project	New Construction
Useful Life	25 or More

Location



Capital Cost

Total To Date

\$464,497

FY2024 Budget

\$5,022,950

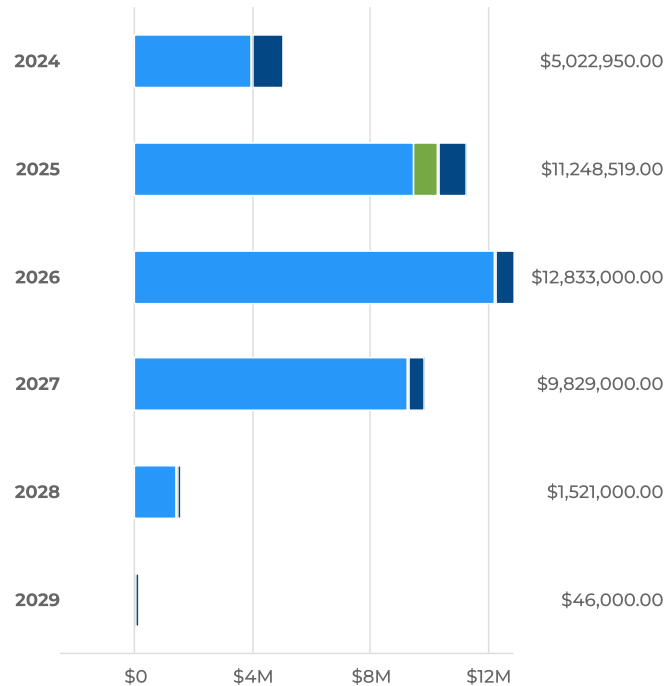
Total Budget (all years)

\$40.5M

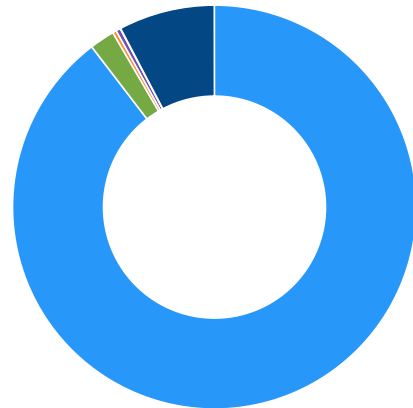
Project Total

\$40.965M

Capital Cost by Year



Capital Cost for Budgeted Years



Construction/Maintenance 1 (90%)	\$36,287,108
Land/Right-of-way 1 (2%)	\$810,680.00
Legal 1 (0%)	\$126,000.00
Other 1 (0%)	\$150,000.00
Other 2 (0%)	\$13,406.00
Planning and Design 2 (8%)	\$3,113,275.00
TOTAL	\$40,500,469.00

- Construction/Maintenance 1
- Land/Right-of-way 1
- Legal 1
- Other 1
- Other 2
- Planning and Design 2

Capital Cost Breakdown

Capital Cost	To Date	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Planning and Design 2	\$292,964	\$1,005,835	\$932,440	\$567,000	\$533,000	\$75,000	
Land/Right-of-way 1	\$148,630	\$10,000	\$800,680				
Construction/Maintenance 1		\$3,947,709	\$9,469,399	\$12,220,000	\$9,250,000	\$1,400,000	
Legal 1	\$8,549	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Other 1	\$14,354	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Other 2		\$13,406					
Total	\$464,497	\$5,022,950	\$11,248,519	\$12,833,000	\$9,829,000	\$1,521,000	\$46,000

Funding Sources

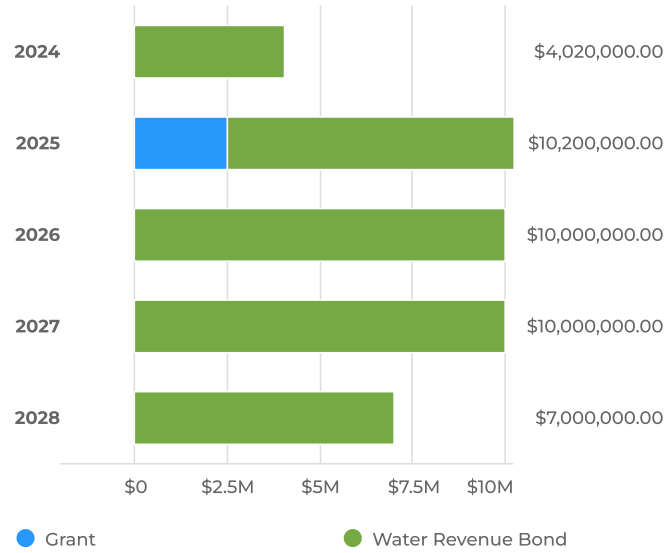
Total To Date
\$188,261

FY2024 Budget
\$4,020,000

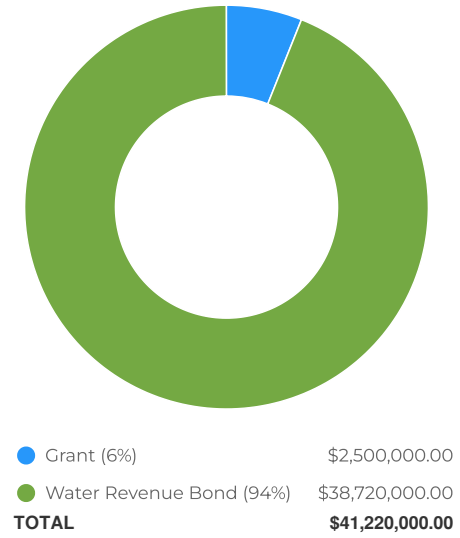
Total Budget (all years)
\$41.22M

Project Total
\$41.408M

Funding Sources by Year



Funding Sources for Budgeted Years



Funding Sources Breakdown

Funding Sources	To Date	FY2024	FY2025	FY2026	FY2027	FY2028	Total
Water Revenue Bond	\$188,261	\$4,020,000	\$7,700,000	\$10,000,000	\$10,000,000	\$7,000,000	\$38,908,261
Grant			\$2,500,000				\$2,500,000
Total	\$188,261	\$4,020,000	\$10,200,000	\$10,000,000	\$10,000,000	\$7,000,000	\$41,408,261

355 Central District Improvements (Grant Street S Realignment, Stormwater, and Park)

Overview

Request Owner	Marketa Oliver, City Administrator
Est. Start Date	05/14/2018
Est. Completion Date	11/29/2030
Department	Drainage
Type	Capital Improvement
Project Number	355

Description

Since 2018, the City has been pursuing the concept of developing a large regional retention facility located in the area of Highway 65/Grant Street S, that could also serve as an amenity in a large regional park. In July 2018, the City Council amended the 2013 Park, Trail, and Greenway Master Plan by adding a park at the southeast corner of Highway 65 and Grant Street, referred to as Central Park. The City secured Resource Enhancement and Protection funds (REAP) from the Iowa Department of Natural Resources in 2019 and acquired the first parcels of land necessary to move the project forward.

In 2020, the concept was further developed in the Bondurant Regional Commercial Master Plan.

In September 2021, the City Council approved an agreement with SmithGroup Inc. in the amount of \$97,200 plus reimbursable expenses of \$2,800 for the modeling and design of Central Park, including the regional stormwater retention facility. Design is a critical step in planning not only for Central District Stormwater Improvements including Central Park, but for the final design and location of Grant Street S. The realignment of Grant Street S is a priority identified in the 2012 Comprehensive Plan, the 2022 Building Bondurant Comprehensive Plan, and in the Capital Improvement Plan adopted by the City Council. In November 2023 the Bondurant City Council adopted the Central District Stormwater Improvements Master Plan. This planning process was necessary to determine the size and boundaries of both the retention lake and the Park. SmithGroup Inc. collaborated with Veenstra & Kimm to evaluate utility, transportation, structural, and electrical needs, as well as hydraulic modeling. The Central District Stormwater Improvements Master Plan process included pre-permitting conferences and discussions with the US Army Corps of Engineers and Iowa Department of Natural Resources to assist in determining the level of studies of the permitting the detention facility. The permitting efforts will follow in subsequent professional services agreements. V&K provided the City with HEC RAS modeling of Mud Creek from north City limits to just north of I80 to the south. The Central District Stormwater Improvements Master Plan is a critical step for implementing the City's Stormwater Master Plan.

At the end of the Central District Stormwater Improvements Master Plan process, SmithGroup Inc. delivered to the City:

- Preferred Concept Alternative plan drawing; and
- Master Plan Booklet (PDF Format) including Plans, 2-3 (two to three) 3d Renderings, Supporting Stormwater Calculations, Opinion of Probable Cost for Construction, Funding Opportunities Matrix, Phasing Recommendations, and a Summary of Public Feedback.

The City then issued RFP's for engineering services for final design of the road and retention lake. A contract with Shive Hattery was approved in May 2023. Engineers from the firm have been working on the design and as part of the agreement, will also work to assist the City in securing grants. The City has secured two separate grants and a private contribution totaling \$1,260,000 towards this project.

This is a long-term, phased project given the extensive work that needs to be done and the investment in the capital improvement.

City staff is currently working with the engineers to develop and submit grant applications, including those for street funding as well as trail funding. The City recently submitted several applications including one for Federal Recreational Trail, Statewide Transportation Alternative Set Aside, and the Federal RAISE grant.

Images



Future Land Use Exhibit from Regional Commercial Master Plan



Mixed Use Concept from 2020 RCMP



Central Park Master Plan
Adopted October 17, 2022

Details

Type of Project New Construction

Supplemental Attachments

 **Resolution No. 231106-226 applying for \$500K Statewide Set Aside Trail funding** (</resource/cleargov-prod/projects/documents/55829a67a4b22617798b.pdf>)

 **Resolution No. 230918-185 Recreational Federal Trails Grant application** (</resource/cleargov-prod/projects/documents/819ba26708282e42663b.pdf>)

 **Resolution No. 240220-52 RAISE Grant**(</resource/cleargov-prod/projects/documents/03590b6d26eb20c31632.pdf>)

Benefit to Community

This project will help improve stormwater retention and enhance water quality while providing multiple, attractive community amenities. It will also re-align a road that currently has a concerning safety issue due to the configuration of the intersection.

Capital Cost

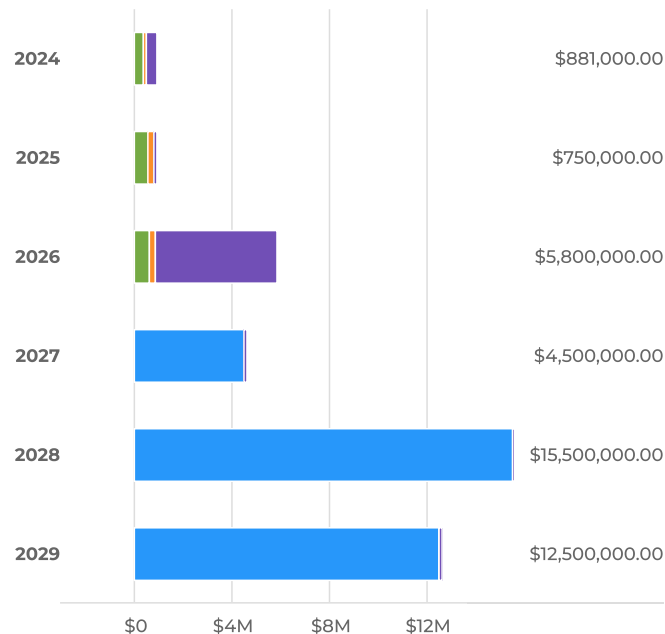
Total To Date
\$131,353

FY2024 Budget
\$881,000

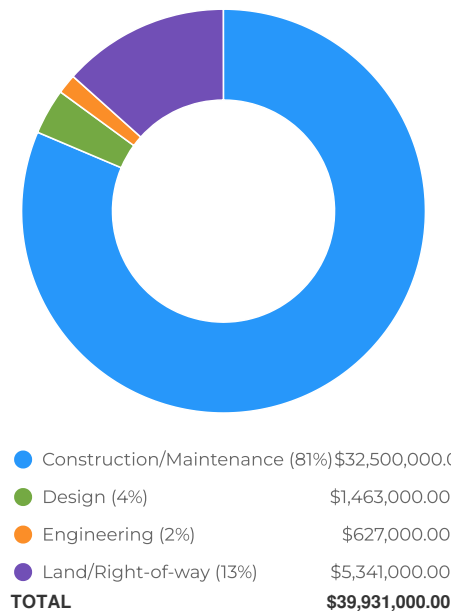
Total Budget (all years)
\$39.931M

Project Total
\$40.062M

Capital Cost by Year



Capital Cost for Budgeted Years



- Construction/Maintenance
- Design
- Engineering
- Land/Right-of-way

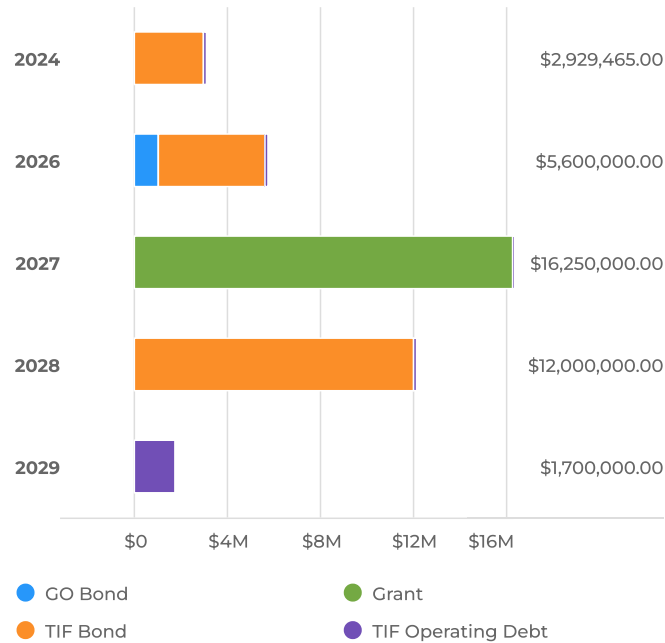
Capital Cost Breakdown

Capital Cost	To Date	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Design		\$343,000	\$525,000	\$595,000			
Engineering	\$131,353	\$147,000	\$225,000	\$255,000			
Land/Right-of-way		\$391,000		\$4,950,000			
Construction/Maintenance					\$4,500,000	\$15,500,000	\$12,500,000
Total	\$131,353	\$881,000	\$750,000	\$5,800,000	\$4,500,000	\$15,500,000	\$12,500,000

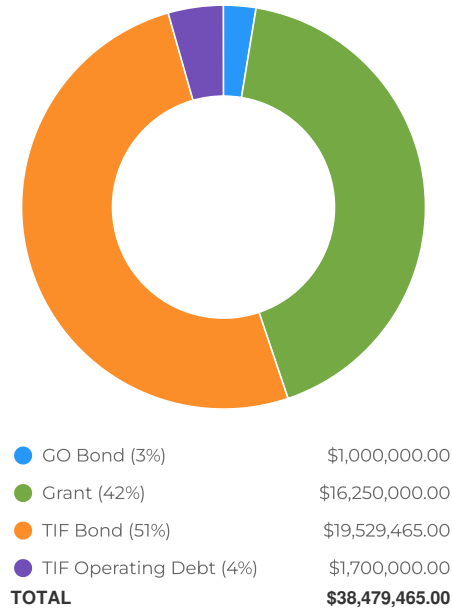
Funding Sources

Total To Date **\$249,449** FY2024 Budget **\$2,929,465** Total Budget (all years) **\$38.479M** Project Total **\$38.729M**

Funding Sources by Year



Funding Sources for Budgeted Years



Funding Sources Breakdown							
Funding Sources	To Date	FY2024	FY2026	FY2027	FY2028	FY2029	Total
GO Bond			\$1,000,000				\$1,000,000
TIF Operating Debt						\$1,700,000	\$1,700,000
TIF Bond		\$2,929,465	\$4,600,000		\$12,000,000		\$19,529,465
Storm Sewer Revenue Bond	\$239,449						\$239,449
Grant	\$10,000			\$16,250,000			\$16,260,000
Total	\$249,449	\$2,929,465	\$5,600,000	\$16,250,000	\$12,000,000	\$1,700,000	\$38,728,914

356: Certified Site Improvements

Overview

Request Owner	Marketa Oliver, City Administrator
Est. Completion Date	12/31/2025
Department	Streets
Type	Capital Improvement
Project Number	356

Description

Since August 2022, the City has been working through the Certified Site process for land located south of NE 78th Avenue and east of Highway 65. This land was recently annexed into the City and is zoned for industrial use. In December 2021, the City Council approved a Professional Services Agreement with Veenstra & Kimm is for construction design service work associated with the new street and realigned intersection out to Highway 65 near the Myers Certified Site area. The State's Certified Site Program requires that public improvements must be completed within six months of a proposed project. Due to the scope and extent of the required improvements associated with this new street and realigned intersection, it was necessary for the City to complete the design of the improvements as part of the Step 3 process in order to meet this six-month construction timeline.

The improvements include street improvements and traffic signals, as well as water main and sanitary sewer infrastructure development. This will significantly improve what is currently a challenging intersection.

Companies looking to expand or relocate conduct site searches with aggressive timelines. Site Certification helps prepare land for development by dramatically reducing the due diligence period. The Iowa Economic Development Authority (IEDA) launched the Iowa Certified Sites program in 2012 to address the lack of project-ready industrial sites in the state. It is an independent, third-party program with certification through the nationally recognized site selection firm, Quest Site Solutions. The program is designed to consider national site location standards, as well as Iowa's natural assets and the needs of the state's targeted industry sectors of advanced manufacturing, biosciences and finance and insurance.

This infrastructure will serve the industrial site (which was officially certified in June 2023) as well as the Civic Campus. The Civic Campus Master Plan was adopted by the City Council April 10, 2023 and can be found here: [final_civic_campus_master_plan.pdf](https://www.cityofbondurant.com/sites/g/files/vyhlf2841f/uploads/final_civic_campus_master_plan.pdf) (cityofbondurant.com) (https://www.cityofbondurant.com/sites/g/files/vyhlf2841f/uploads/final_civic_campus_master_plan.pdf).

The City secured a \$2,205,356 RISE grant in August 2023 from the Iowa Department of Transportation to help offset the investment in this project. The City will also seek Traffic Safety Funds and USTEP funding for the intersection investment. The City will also seek Traffic Safety Funds and USTEP funding for the intersection investment.

Images

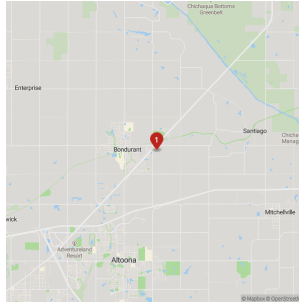


Certified Site Improvements

Details

Type of Project	New Road
Useful Life	30 or More

Location



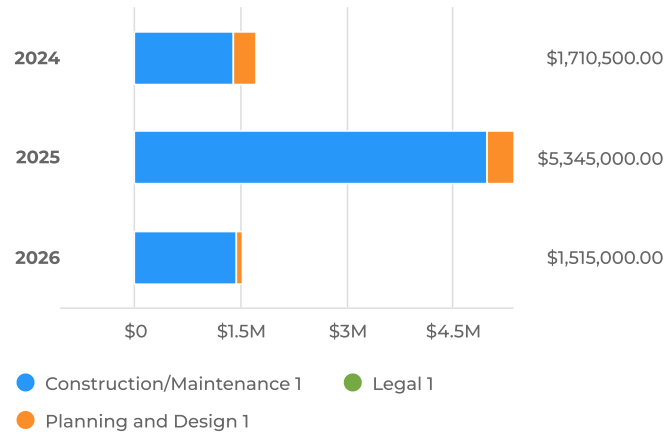
Benefit to Community

This will benefit the community by improving the intersection and expanding the community's road network.

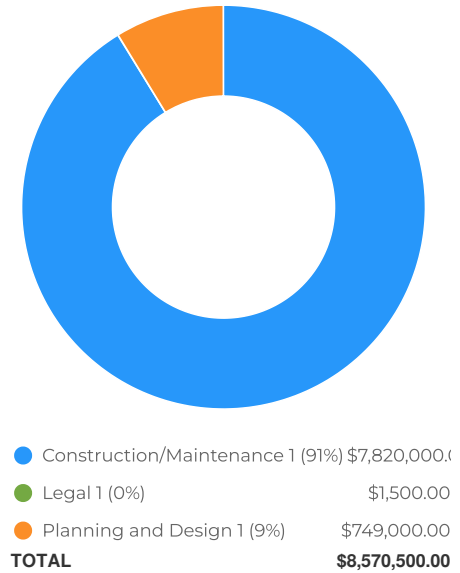
Capital Cost

Total To Date	FY2024 Budget	Total Budget (all years)	Project Total
\$302,391	\$1,710,500	\$8.571M	\$8.873M

Capital Cost by Year



Capital Cost for Budgeted Years



Capital Cost Breakdown					
Capital Cost	To Date	FY2024	FY2025	FY2026	Total
Planning and Design 1	\$261,171	\$319,000	\$355,000	\$75,000	\$1,010,171
Construction/Maintenance 1		\$1,390,000	\$4,990,000	\$1,440,000	\$7,820,000
Legal 1	\$41,221	\$1,500			\$42,721
Total	\$302,391	\$1,710,500	\$5,345,000	\$1,515,000	\$8,872,891

Funding Sources

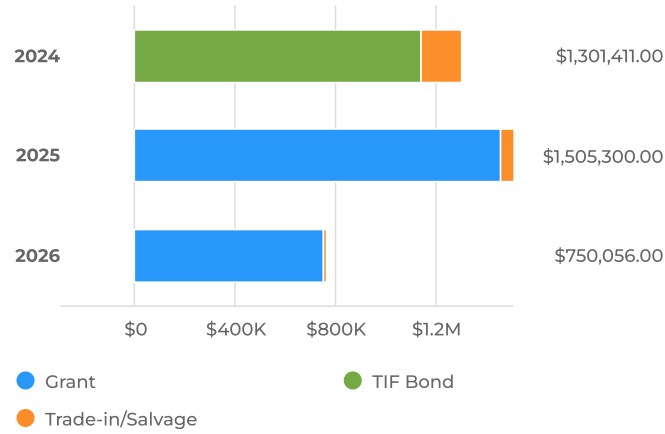
Total To Date
\$5,326,210

FY2024 Budget
\$1,301,411

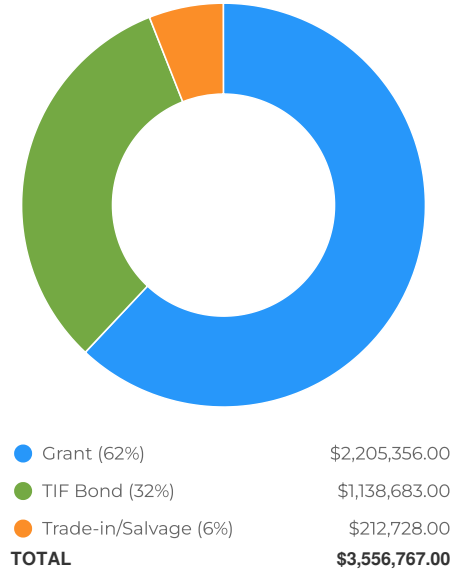
Total Budget (all years)
\$3.557M

Project Total
\$8.883M

Funding Sources by Year



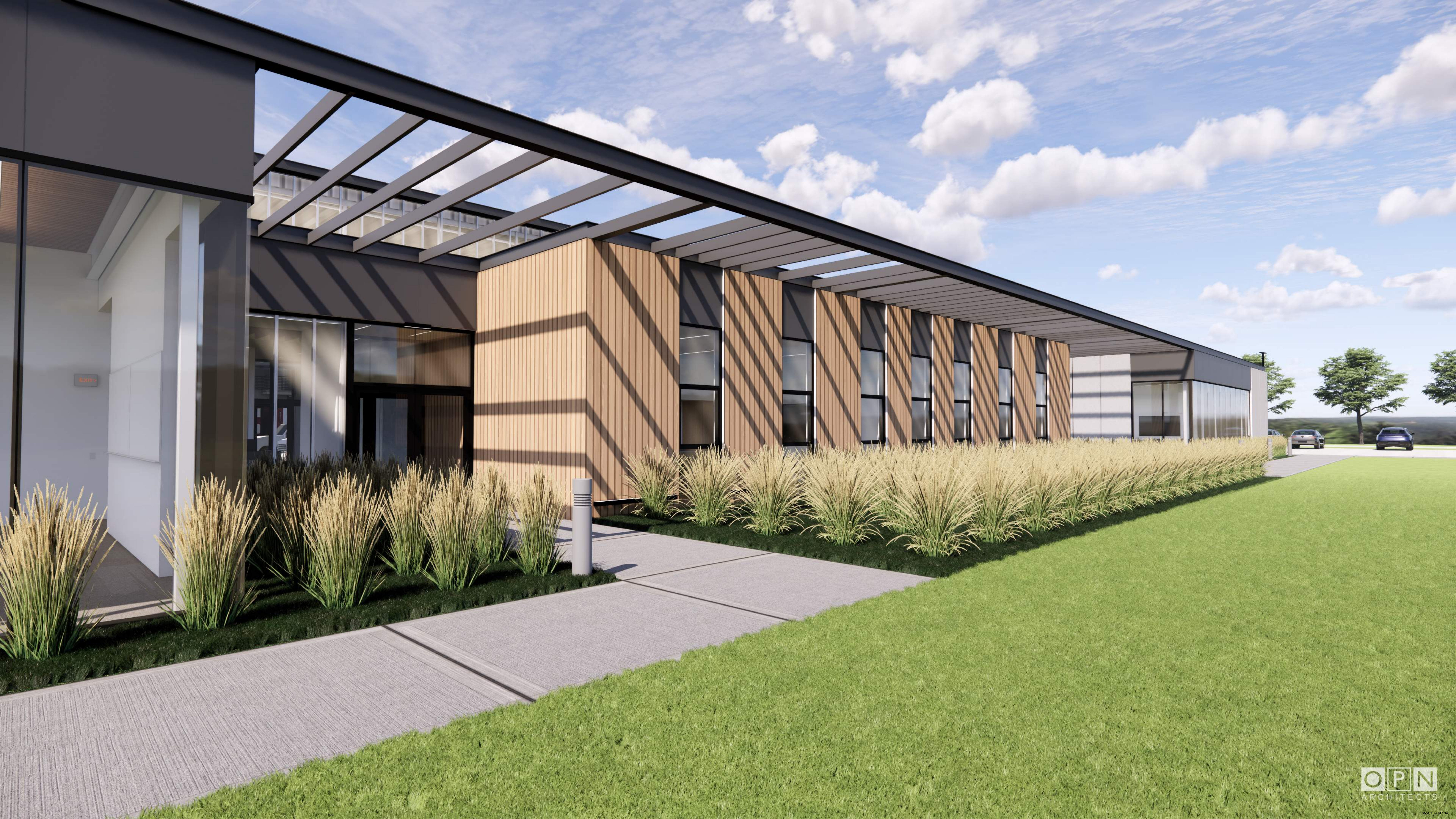
Funding Sources for Budgeted Years



Funding Sources Breakdown					
Funding Sources	To Date	FY2024	FY2025	FY2026	Total
TIF Bond	\$5,148,597	\$1,138,683			\$6,287,280
Grant			\$1,455,300	\$750,056	\$2,205,356
Trade-in/Salvage	\$177,613	\$162,728	\$50,000		\$390,341
Total	\$5,326,210	\$1,301,411	\$1,505,300	\$750,056	\$8,882,977









CITY OF BONDURANT
EMERGENCY SERVICES FACILITY















**BUSINESS OF THE CITY COUNCIL
BONDURANT, IOWA
AGENDA STATEMENT**

Item No. 7.d.
For Meeting of 4/29/2024
Discussion Item

TITLE: Master Streets Plan: Projects underway and Planned and Code Update/Discussion

CONTACT PERSON:
Marketa Oliver, City Administrator

BRIEF HISTORY & ANALYSIS: This will be an update of street network development and recent code discussions.

FUNDING SOURCE: RUT/TIF/LOSST/Utilities

STAFF RECOMMENDATION: This is a discussion item.

APPROVED FOR SUBMITTAL:

ATTACHMENTS:

1. Pres-110623-Bondurant Pvmt Design Standards
2. Pavement Design Standards Review - Updated
3. Pavement Management Study Interim Report #1
4. Pavement Management Study Design Standards



City of Bondurant
Pavement Management Program
FY 2024-2033



Pavement Design Standards Review



November 6, 2023



Bondurant Residential City Streets

- Developer constructs infrastructure
- City accepts improvements with obligation to maintain in PERPETUITY
- City provides all maintenance
- City is responsible for reconstruction, when necessary
 - Future reconstruction costs include removal of existing in addition to reconstruction costs.

What does the City do?

- Starts with creating Sustainable Infrastructure
- What is the cost to increase pavement life, and does it make economic sense?

How does the City get there?

12-Year Pavement - Current



12-Year Pavement - Proposed



Why Change?

- Why should the City make a change?
 - Longer life pavements
 - Sustainable
 - Prolonged higher service level reduces traveling public's cost of vehicle maintenance
 - Reduced disturbance to property owners due to reconstruction and maintenance
 - Reduced maintenance cost
- What's next? - Council direction on policy
- Timing – TBD

Bondurant Pavement Management Study Goals

- Review City Standards
 - Street Design and Construction
 - Street Maintenance
- Develop inventory of streets in Bondurant and their current condition, including PCI
- Determine rehabilitation and reconstruction alternatives and trigger thresholds for improvements
- Develop budget-based and performance-based scenarios
- Establish performance goals and budget
- Develop 10-Year Capital Improvement Plan

Bondurant Pavement Management Study Goals

- **Review City Standards**
 - **Street Design and Construction**
 - Street Maintenance
- Develop inventory of streets in Bondurant and their current condition, including PCI
- Determine rehabilitation and reconstruction alternatives and trigger thresholds for improvements
- Develop budget-based and performance-based scenarios
- Establish performance goals and budget
- Develop 10-Year Capital Improvement Plan

Pavement Standards Study

Analysis of the following components

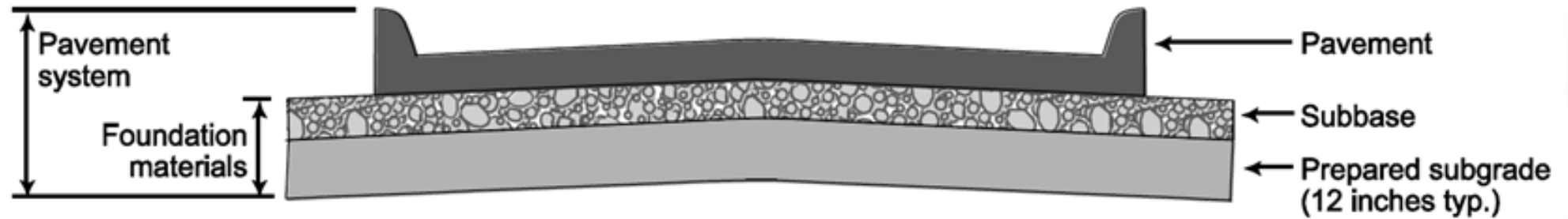
- PCC Pavement foundation – why and how
- PCC Pavement – proper design principles
- Current Bondurant design standards for pavements
- Recommended Bondurant design standards
- Cost/Benefit Comparisons

Study Sources

Appendix A: References

- ¹ Gross, J., Harrington, D., Wiegand, P., and Cackler, T. *Guidance for Improving Foundation Layers to Increase Pavement Performance on Local Roads, Iowa: Report No. TR-640*, Iowa Department of Transportation, 2014.
- ² Schaefer, V., Stevens, L., White, D., Ceylan, H. *Design Guide for Improved Quality of Roadway Subgrades and Subbases*, Iowa: Report No. TR-525, Iowa Department of Transportation, 2008.
- ³ Iowa Statewide Urban Design and Specifications Program (SUDAS), *Design Manual*, 2017.
- ⁴ Taylor, P., Zhang, J., Wang, X. *Conclusions from the Investigation of Deterioration of Joints in Concrete Pavement*, Report No. TPF-5(224), Federal Highway Administration, 2016.
- ⁵ ACPA, *Subgrades and Subbases for Concrete Pavements*, EB204P, American Concrete Pavement Association, 2007.
- ⁶ ACPA, *Design and Construction of Joints for Concrete Streets*, American Concrete Pavement Association, 1992.
- ⁷ Weiss, J., Ley, M.T., Sutter, L. Harrington, D., Gross, J. *Guide to the Prevention and Restoration of Early Joint Deterioration in Concrete Pavements*, Iowa: Report No. TR-697, Iowa Department of Transportation, 2016.

Pavement System



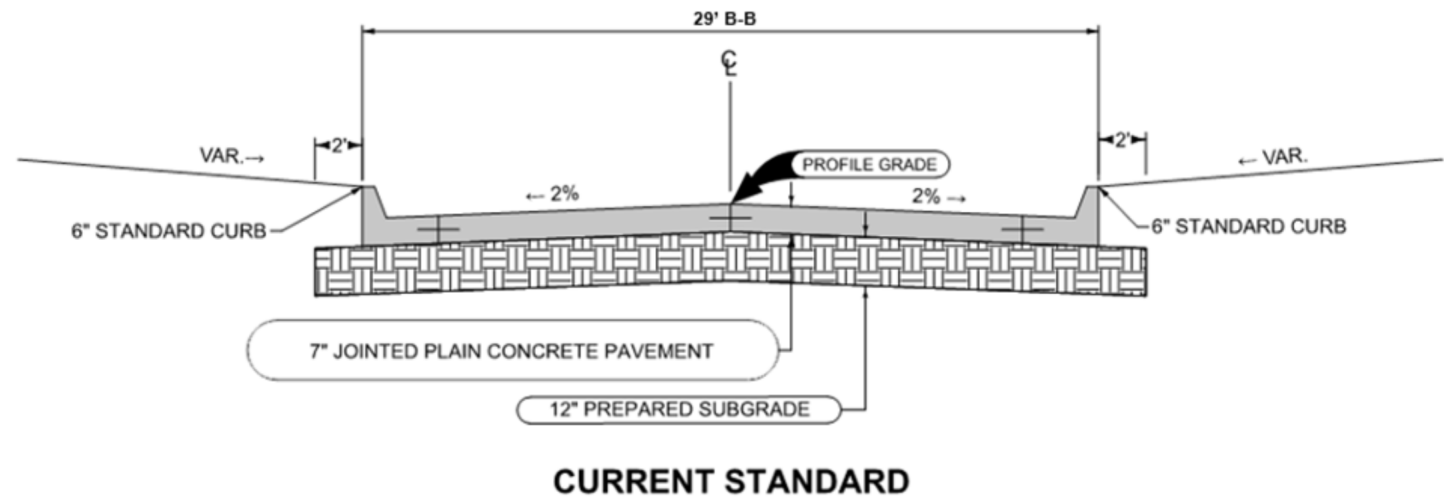
Proper design, construction, and maintenance of the various components of the pavement system are critical to the performance of long-life pavements

Current Residential Design Standard

- Pavement Foundation
 - 12" subgrade prep below pavement
 - In situ soils

- Pavement

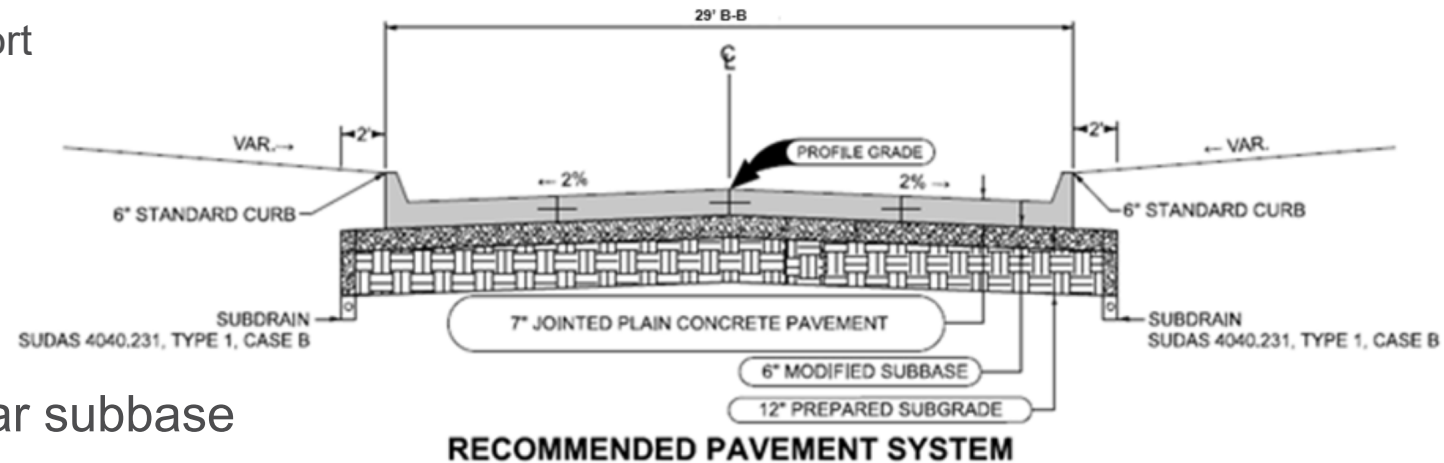
- Concrete Mix – Presume Standard Class C
- Thickness and Jointing - Varies
 - 7" Jointed Plain Concrete Pavement (JPCP)
 - Gutterline Jointing has been allowed
 - Some instances with only centerline joint



PCC Pavement Foundation

PCC Pavement Foundation Recommendations:

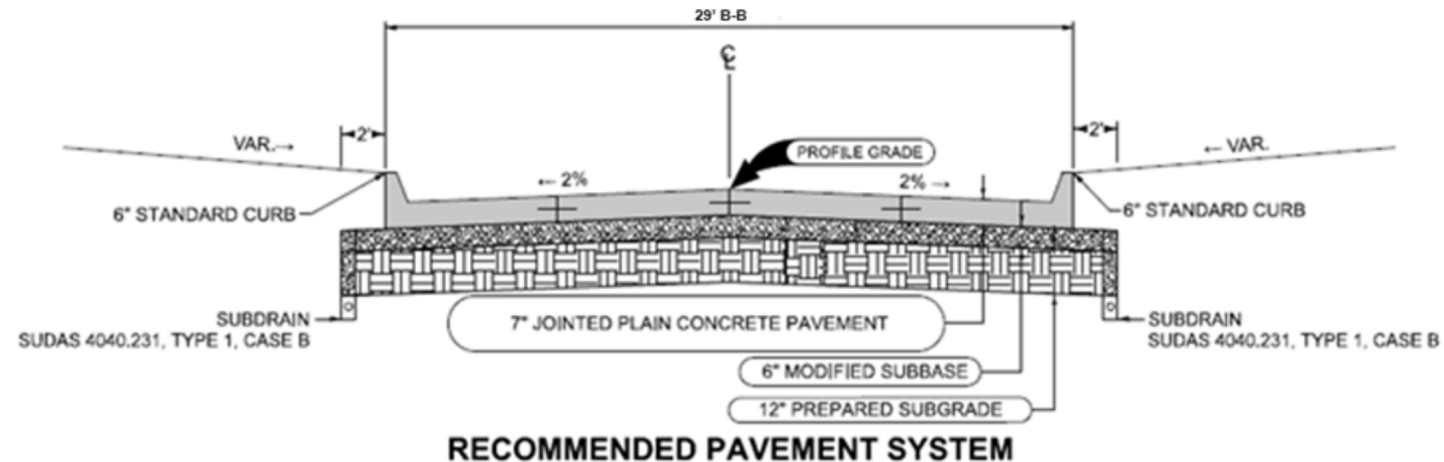
- Conduct geotechnical study
 - Typical Iowa soils have CBR of 1 to 3
 - Iowa soils generally provide poor support
- Improve pavement foundation
 - Ensure prepared subgrade has CBR of 10
 - Stabilized subgrades
 - Chemical
 - Reinforced, geosynthetics
- Construct a drainable, stable granular subbase
- Install longitudinal subdrains
 - Subsurface drainage critical in the Iowa cold/wet climate
 - Drainage helps to prevent early pavement joint failure



PCC Pavement

PCC Pavement Guidelines

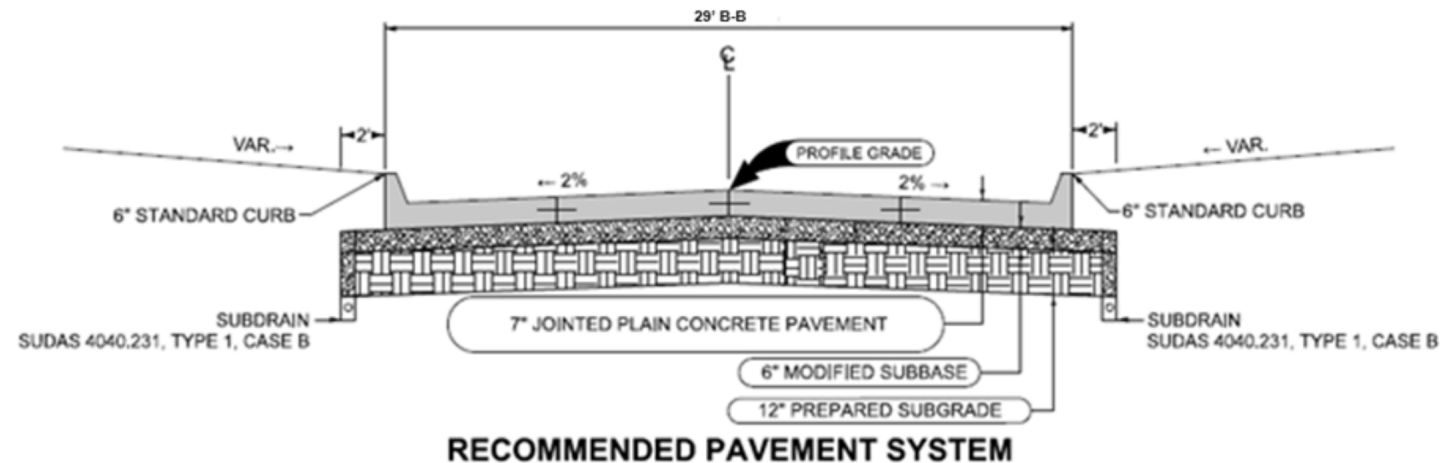
- Pavement thickness
 - Thickness design tables
 - Default thickness
 - Iowa experience – 7” for residential
- Pavement jointing
 - Proper transverse and longitudinal spacing
 - Jointed Plain Concrete Pavement (JPCP)
- Pavement mix
 - Provide durability and resistance to degradation (primarily due to de-icing)
 - C-SUD Mix



PCC Pavement

PCC Pavement Recommendations - Residential

- Pavement thickness
 - 7" Jointed Plain Concrete Pavement (JPCP)
- Pavement jointing
 - Transverse, 'C', 15' spacing
 - Longitudinal, quarter-point
- Pavement mix
 - Class C-SUD
 - 6% to 8% air content in placed concrete
 - W/C of 0.40 to 0.45
 - Replace cement with SCMs to decrease permeability



Benefit/Cost Analysis

- Two typical residential street segments analyzed
- *Average cost of pavement system increased approx. 27.5% due to higher standards*
 - \$82.35/SY to \$104.99/SY, increase of \$22.64/SY
- *Life expectancy of pavement increased by 42.8%*
 - 35 years to 50 years
- *B/C of 1.56:1*
- Average additional cost to each lot about \$3,648 for improved standards, initially



COST - BENEFIT ANALYSIS

Long Term Costs

- Average cost to each lot about \$3,648 for improved standards, initially
- Over a 100-year cycle, this additional investment reduces future reconstruction costs by over \$10,000/lot, in present day dollars
- Over that 100-yr cycle, total construction and reconstruction costs are reduced by over \$1M/mile
- Does not include other intangible benefits
 - Better/longer performance
 - Less inconvenience
 - Less maintenance



Summary

- **Why should the City make a change?**
 - Longer life pavements
 - Prolonged higher service level reduces traveling public's cost of vehicle maintenance
 - Reduced disturbance to property owners due to reconstruction and maintenance
 - Reduced cost for sustainable streets

Contact Information



Larry Stevens, PE, PWLF

Project Director, HR Green, Inc.

5525 Merle Hay Rd, Suite 200 | Johnston, IA
50131

515-657-5273

lstevens@hrgreen.com

Questions?





City of Bondurant
 Pavement Management Program
 FY 2024-2033



Pavement Design Standards Review



November 6, 2023



Bondurant Residential City Streets

- Developer constructs infrastructure
- City accepts improvements with obligation to maintain in PERPETUITY
- City provides all maintenance
- City is responsible for reconstruction, when necessary
 - Future reconstruction costs include removal of existing in addition to reconstruction costs.

What does the City do?

- Starts with creating Sustainable Infrastructure
- What is the cost to increase pavement life, and does it make economic sense?

How does the City get there?

12-Year Pavement - Current



12-Year Pavement - Proposed



Why Change?

- Why should the City make a change?
 - Longer life pavements
 - Sustainable
 - Prolonged higher service level reduces traveling public's cost of vehicle maintenance
 - Reduced disturbance to property owners due to reconstruction and maintenance
 - Reduced maintenance cost
- What's next? - Council direction on policy
- Timing – TBD

Bondurant Pavement Management Study Goals

- Review City Standards
 - Street Design and Construction
 - Street Maintenance
- Develop inventory of streets in Bondurant and their current condition, including PCI
- Determine rehabilitation and reconstruction alternatives and trigger thresholds for improvements
- Develop budget-based and performance-based scenarios
- Establish performance goals and budget
- Develop 10-Year Capital Improvement Plan

Bondurant Pavement Management Study Goals

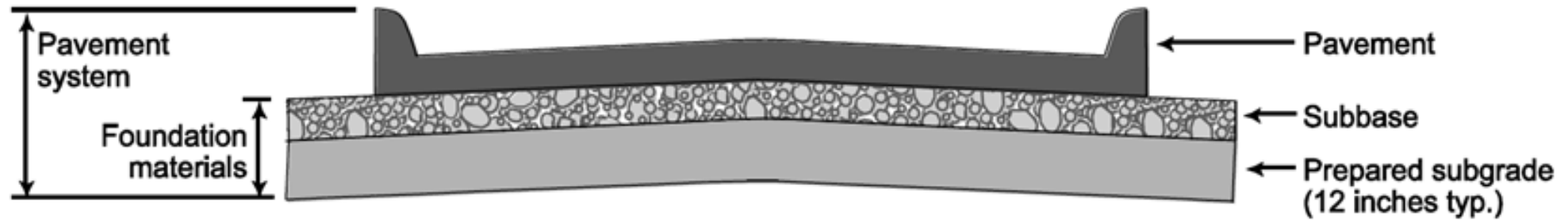
- **Review City Standards**
 - **Street Design and Construction**
 - Street Maintenance
- Develop inventory of streets in Bondurant and their current condition, including PCI
- Determine rehabilitation and reconstruction alternatives and trigger thresholds for improvements
- Develop budget-based and performance-based scenarios
- Establish performance goals and budget
- Develop 10-Year Capital Improvement Plan

Pavement Design Standards Study

Analysis of the following components

- Pavement System
 - PCC Pavement foundation – why and how
 - PCC Pavement – proper design principles
- Current Bondurant design standards for pavements
- Recommended Bondurant design standards
- Cost/Benefit Comparisons

Pavement System



Proper design, construction, and maintenance of the various components of the pavement system are critical to the performance of long-life pavements

Study Sources

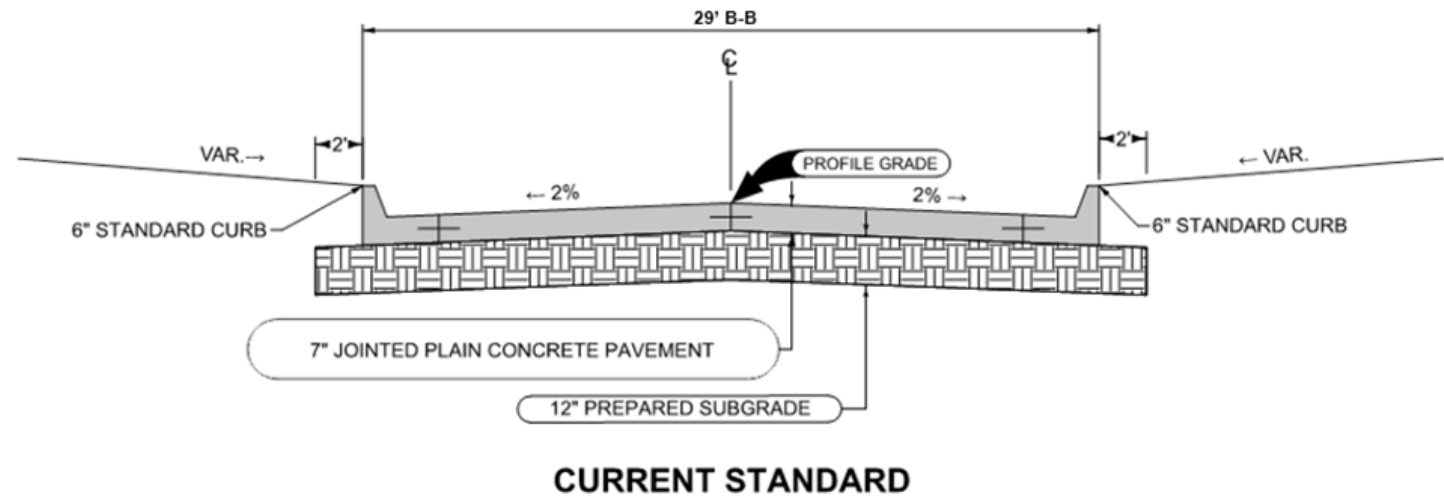
Appendix A: References

- ¹ Gross, J., Harrington, D., Wiegand, P., and Cackler, T. *Guidance for Improving Foundation Layers to Increase Pavement Performance on Local Roads, Iowa: Report No. TR-640*, Iowa Department of Transportation. 2014.
- ² Schaefer, V., Stevens, L., White, D., Ceylan, H. *Design Guide for Improved Quality of Roadway Subgrades and Subbases*, Iowa: Report No. TR-525, Iowa Department of Transportation, 2008.
- ³ Iowa Statewide Urban Design and Specifications Program (SUDAS), *Design Manual*, 2017.
- ⁴ Taylor, P., Zhang, J., Wang, X. *Conclusions from the Investigation of Deterioration of Joints in Concrete Pavement*, Report No. TPF-5(224), Federal Highway Administration, 2016.
- ⁵ ACPA, *Subgrades and Subbases for Concrete Pavements*, EB204P, American Concrete Pavement Association, 2007.
- ⁶ ACPA, *Design and Construction of Joints for Concrete Streets*, American Concrete Pavement Association, 1992.
- ⁷ Weiss, J., Ley, M.T., Sutter, L. Harrington, D., Gross, J. *Guide to the Prevention and Restoration of Early Joint Deterioration in Concrete Pavements*, Iowa: Report No. TR-697, Iowa Department of Transportation, 2016.



Current Residential Design Standard

- Pavement Foundation
 - 12" subgrade prep below pavement
 - In situ soils
- Pavement
 - Concrete Mix – Presume Standard Class C
 - Thickness and Jointing - Varies
 - 7" Jointed Plain Concrete Pavement (JPCP)
 - Gutterline Jointing has been allowed
 - Some instances with only centerline joint



Bondurant Pavement Issues

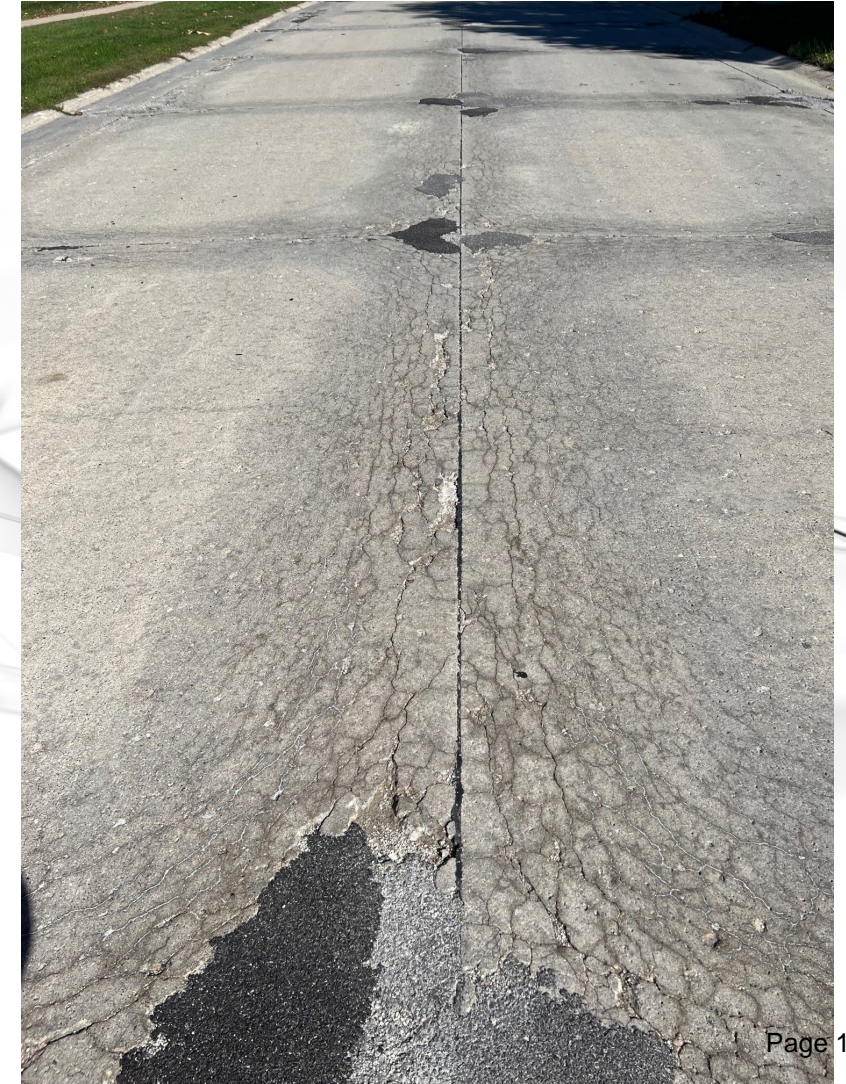


Poor jointing and early 'D' Cracking

Bondurant Pavement Issues



Poor jointing and advanced 'D' Cracking



Bondurant Pavement Issues

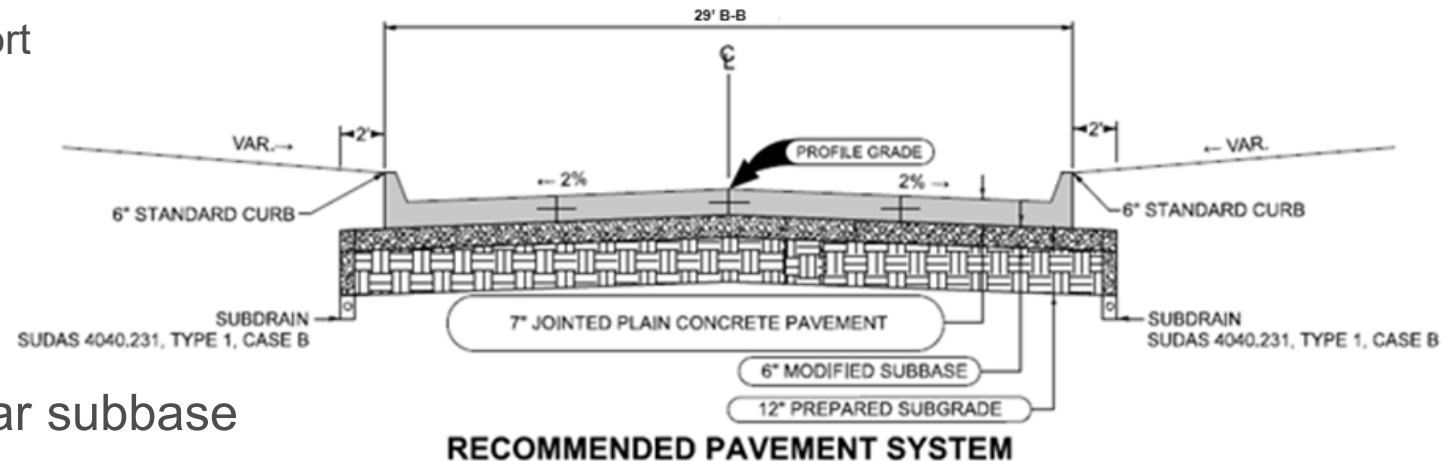


Poor jointing, unstable foundation, and 'D' Cracking/Freeze-thaw joint deterioration

PCC Pavement Foundation

PCC Pavement Foundation Recommendations:

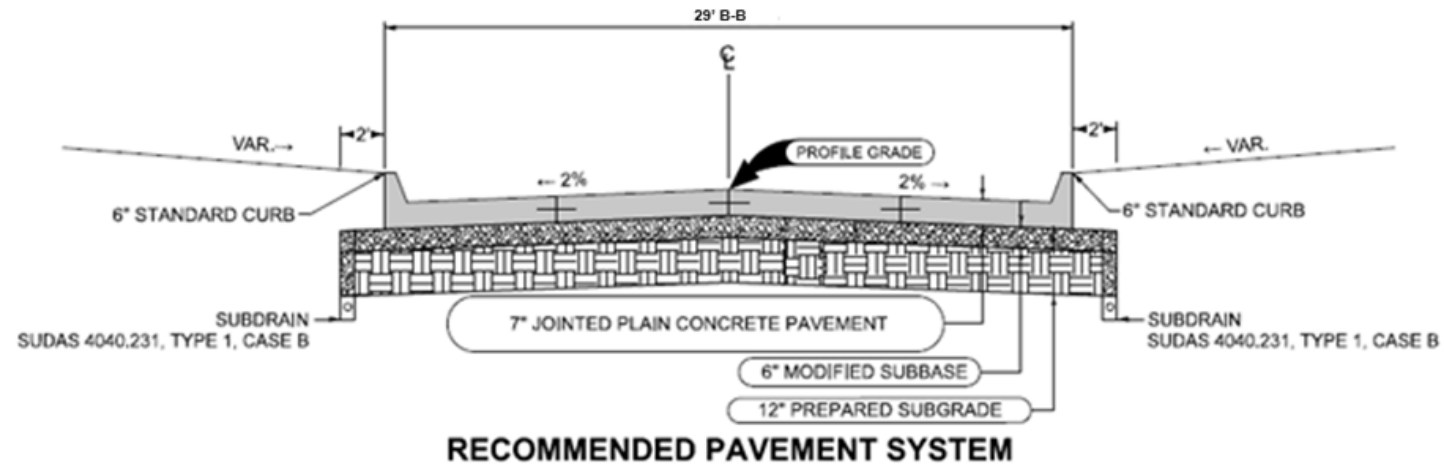
- Conduct geotechnical study
 - Typical Iowa soils have CBR of 1 to 3
 - Iowa soils generally provide poor support
- Improve pavement foundation
 - Ensure prepared subgrade has CBR of 10
 - Stabilized subgrades
 - Chemical
 - Reinforced, geosynthetics
- Construct a drainable, stable granular subbase
- Install longitudinal subdrains
 - Subsurface drainage critical in the Iowa cold/wet climate
 - Drainage helps to prevent early pavement joint failure



PCC Pavement

PCC Pavement Guidelines

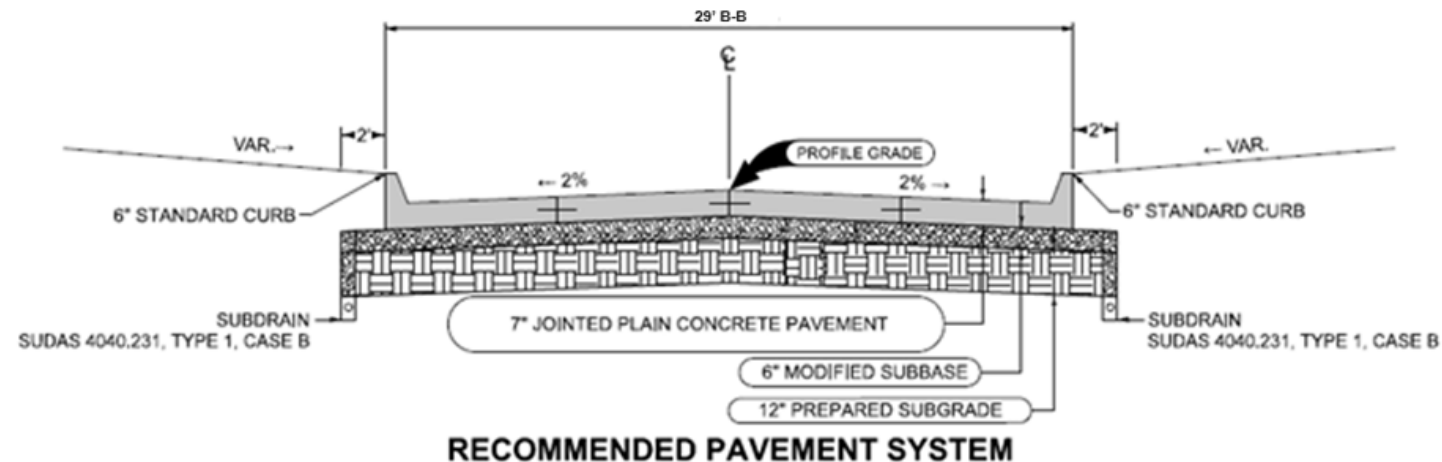
- Pavement thickness
 - Thickness design tables
 - Default thickness
 - Iowa experience – 7” for residential
- Pavement jointing
 - Proper transverse and longitudinal spacing
 - Jointed Plain Concrete Pavement (JPCP)
- Pavement mix
 - Provide durability and resistance to degradation (primarily due to de-icing)
 - C-SUD Mix



PCC Pavement

PCC Pavement Recommendations - Residential

- Pavement thickness
 - 7" Jointed Plain Concrete Pavement (JPCP)
- Pavement jointing
 - Transverse, 'C', 15' spacing
 - Longitudinal, quarter-point
- Pavement mix
 - Class C-SUD
 - 6% to 8% air content in placed concrete
 - W/C of 0.40 to 0.45
 - Replace cement with SCMs to decrease permeability



Benefit/Cost Analysis

- Two typical residential street segments analyzed
- *Average cost of pavement system increased approx. 27.5% due to higher standards*
 - \$82.35/SY to \$104.99/SY, increase of \$22.64/SY
- *Life expectancy of pavement increased by 42.8%*
 - 35 years to 50 years
- *B/C of 1.56:1*
- Average additional cost to each lot about \$3,648 for improved standards, initially



COST - BENEFIT ANALYSIS

Long Term Costs

- Average cost to each lot about \$3,648 for improved standards, initially
- Over a 100-year cycle, this additional investment reduces future reconstruction costs by over \$10,000/lot, in present day dollars
- Over that 100-yr cycle, total construction and reconstruction costs are reduced by over \$1M/mile
- Does not include other intangible benefits
 - Better/longer performance
 - Less inconvenience
 - Less maintenance



Summary

- **Why should the City make a change?**
 - Longer life pavements
 - Prolonged higher service level reduces traveling public's cost of vehicle maintenance
 - Reduced disturbance to property owners due to reconstruction and maintenance
 - Reduced cost for sustainable streets

Contact Information



Larry Stevens, PE, PWLF

Project Director, HR Green, Inc.

5525 Merle Hay Rd, Suite 200 | Johnston, IA 50131

515-657-5273

lstevens@hrgreen.com

Questions?





Pavement Management Study
City of Bondurant, Iowa

Interim Report #1

PCC Pavement Design Standards Review and Recommendations

September, 2023

HR Green Project No: 2302984


 <p>LARRY J. STEVENS 09350</p> <p>LICENSED PROFESSIONAL ENGINEER IOWA</p>	<p>I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.</p> <p>_____ Date: _____</p> <p>LARRY J. STEVENS, P.E.</p> <p>License No. 09350</p> <p>My renewal date is December 31, 2023</p> <p>Pages or sheets covered by this seal: ALL</p>
--	---



Table of Contents

Pavement and Specification Study 1

EXECUTIVE SUMMARY 1

 BACKGROUND 1

 RECOMMENDED BONDURANT PAVEMENT SYSTEM STANDARDS 1

 BENEFIT/COST ANALYSIS OF RECOMMENDED STANDARDS 2

1. PURPOSE 3

2. PCC PAVEMENT SYSTEM DESIGN FOR URBAN LOCAL STREETS 3

 2.1 PCC PAVEMENT FOUNDATION 3

 2.1.1 SUBGRADE SOILS 4

 2.2 Stabilized Subgrades 6

 2.3 Chemical Stabilized Subgrade 6

 2.4 Reinforced Stabilized Subgrade 6

 2.5 Unstabilized Aggregate Subbases 6

 2.6 Subdrains 7

 2.7 Pavement Foundation Recommendations 7

3. PCC PAVEMENT 8

 3.1 PCC Pavement Thickness 8

 3.2 PCC Pavement Jointing 9

 3.3 PCC Pavement Mix⁵ 12

4. CURRENT BONDURANT DESIGN STANDARDS FOR PCC PAVEMENT SYSTEMS 12

5. RECOMMENDED BONDURANT DESIGN STANDARDS FOR PCC PAVEMENT SYSTEMS 13

 5.1 Pavement Foundation Recommendations 13

 5.2 Pavement Recommendations 13

6. RECOMMENDED VS. CURRENT STANDARDS BENEFIT/COST COMPARISON 14

 6.1 Additional Costs Due to Recommended Pavement System Standards 14

 6.2 Cost Comparison 16

 6.3 Life Benefit of Recommended Standards 16

 6.4 Future Reconstruction 17

REFERENCES 19



List of Figures

Figure 1: Subgrade Reaction.....	6
Figure 2: 26 foot b-b pavement	11
Figure 3: 31 foot b-b pavement	11

List of Tables

Table 1: Suitability of soils for subgrade applications.....	5
Table 2: Transverse joint requirements	10
Table 3: Recommended vs. current standard cost	14

EXECUTIVE SUMMARY

This report provides research, data, and practical experience for the proper design of a pavement system, which includes the pavement foundation and the pavement. Recommendations are made to improve the City of Bondurant's design standards for local low-volume residential street pavements with little truck traffic to provide longer lasting pavements that are more sustainable and provide better service to City residents. In addition, a benefit/cost analysis was performed to compare the City's current standards with the recommended standards.

It should be noted that while these recommendations are for improvements to the City of Bondurant's residential street design standards, the need for quality pavement systems are essential for long-lasting performance of all of the City's street pavements, including arterial and collector streets. Those pavements that serve higher volumes of traffic and heavy trucks should have special designs to accommodate those conditions.

BACKGROUND

The pavement system is defined as the pavement and the foundation materials, including subbase, if required, and prepared subgrade. Proper design, construction, and maintenance of the various components of the pavement system are critical to the performance of long-life pavements.

The performance of a pavement depends on the quality of its subgrade and subbase layers. These foundational layers play a key role in mitigating the detrimental effects of climate and the static and dynamic stresses generated by traffic. Therefore, building a stable subgrade and a properly drained subbase is vital for constructing an effective and long lasting pavement system.

Key factors in the design of concrete pavements include thickness, proper jointing, concrete mixture selection, and quality control.

The City of Bondurant's current local residential street pavement design standards include a prepared (compacted) subgrade consisting of in-place soils, which are generally poor quality pavement subgrade materials and do not provide adequate subsurface drainage. Pavement is standard Portland Cement Concrete, Iowa DOT Class C mix, 7"-thick jointed plain concrete pavement (JPCP). Pavement systems with this type of foundation are frequently specified in Iowa but have a shorter expected life, about 30 to 35 years, than design standards currently recommended by the Iowa Statewide Urban Design and Specifications Program (SUDAS) and other Industry standards. SUDAS provides design standards for the pavement and the pavement foundation, which are projected to have a life of at least 50 years.

RECOMMENDED BONDURANT PAVEMENT SYSTEM STANDARDS

Based on SUDAS guidelines and other supporting research, the following pavement system design standards are recommended for local low volume residential streets in Bondurant:

Pavement Foundation:

- Conduct geotechnical investigations in all new developments to determine the suitability of soils to be used for pavement subgrade.
- Improve subgrade support to provide a CBR of 10, unless the geotechnical investigation determines subgrade soils are adequate.
- Subbase and Subdrain: Construct drainable subbases and install longitudinal subdrains, unless the geotechnical investigation determines the subgrade soil is free draining.

Pavement:

- Pavement Thickness: Require 7"-thick JPCP.
- Pavement Jointing: For JPCP paving, transverse joint spacing should not exceed 15 feet and 'C' joints, without dowels, is recommended. Quarter-point jointing is recommended for 31'-wide streets. Third point jointing is recommended for 26'-wide streets.

- **Pavement Mix:** A Class C-SUD concrete mix is recommended. To help prevent early pavement joint deterioration, special attention is given to maintaining adequate air content in the pavement after placement and low water to cement ratio (w/c). Supplementary cementitious materials (SCMs) are encouraged as a cement replacement to reduce the pavement's permeability.

BENEFIT/COST ANALYSIS OF RECOMMENDED STANDARDS

Pavement system quantities, which included excavation (for the pavement only), subgrade preparation, subbase and subdrains (for the recommended standard), and pavement, were estimated for two typical sections of residential street using the current street pavement standards and the recommended standards. One typical section consisted of two consecutive blocks of paving with an intersection in the middle, and the other was a similar length pavement without an intersecting street.

For each typical section, the additional cost of the recommended standards was calculated on the basis of square yards of pavement. Using an average cost of the two pavement examples, the pavement system cost increased by 27.5% due to the recommended design standards.

However, the life expectancy of the pavement is conservatively estimated to increase from 35 years to 50 years, an increase of 42.8%. Therefore, the benefit/cost ratio is over 1.6:1, based on the pavement system cost increase compared to the increase in pavement longevity.

In addition, an estimate was provided how this may affect the cost of a residential lot. An increase of approximately \$3,602 per lot could be expected due to the higher pavement system design standard.

Further analysis was conducted for a 100-year cycle of pavement construction and reconstruction, which includes three pavement constructions for the current design standards and two for the recommended standards. This long-term analysis indicates the total cost of pavement construction over this period reduces from \$728,458 for current design to \$546,995 with the recommended standards. Average per lot costs for the pavement are reduced from \$40,470 to \$30,388. For each residential lot, an initial investment of approximately \$3,602 more for longer lasting pavement using the recommended design standards will reduce future reconstruction costs by an estimated \$10,082 in present day dollars.

1. PURPOSE

Interim Report #1 will address a portion of the first task of the City of Bondurant’s Pavement Management Study, which includes the following work task:

- *Review of Bondurant’s design standards for street construction and maintenance practices and making recommendations for improvements to achieve long-lasting pavements*

The City wishes to implement improved long-lasting PCC pavement design standards. Interim Report #1 will address only residential street design standards identified in the first task, which includes the following scope of services to be provided by HR Green:

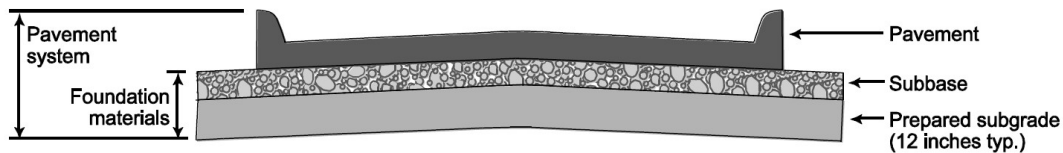
The City’s current pavement design requirements will be compared to the standards established by the Iowa Statewide Urban Design and Specifications (SUDAS) Program. Other relevant Iowa State University research, such as IHRB Project TR-640 *Optimizing Pavement Base, Subbase, and Subgrade Layers for Cost and Performance of Local Roads*, will be utilized in the comparison, in addition to a number of other sources. This will include analyzing all elements of the pavement system, including subgrade, subbase, subsurface drainage, pavement thickness, PCC mixtures, pavement jointing, and construction methods. Recommendations will be made to the City’s guidelines to help achieve a 50-year design life of the City’s pavements.

The comparison of the City’s current PCC pavement design guidelines to recommended design standards will consist of the following for Pavement System Design for Urban Local Streets:

- PCC pavement foundation
- PCC pavement
- Current Bondurant design standards for PCC pavement systems
- Recommended Bondurant design standards for PCC pavement systems
- Recommended vs. Current standards cost/benefit comparison

2. PCC PAVEMENT SYSTEM DESIGN FOR URBAN LOCAL STREETS

For the purposes of this discussion, the pavement system consists of the elements shown in the following illustration from Iowa Statewide Urban Design and Specifications (SUDAS) Design Manual Section 6A-1:



Proper design, construction, and maintenance of the various components of the pavement system are critical to the performance of long-life pavements.

2.1 PCC PAVEMENT FOUNDATION

It is common for local street and highway pavements to be constructed from PCC supported on a natural subgrade without considering or using a subgrade stabilized treatment or support layer such as an aggregate subbase. When support layers are considered, they typically serve as a construction platform and improve the level of stability and uniformity for the pavement foundation which can result in increased performance and thus increased pavement life. An aggregate subbase can also improve the drainage under the pavement, minimizing the deterioration caused by water entrapment. The question is how much do they benefit the pavement and is the benefit worth the costs, particularly if the pavement is meeting the design life.¹

The pavement design life for local roadways (not including heavily traveled arterials or trunk highways) is normally based on the pavement thickness and less concern is typically given to the support system. Unless there are material related distress failures in concrete pavement (ie. freeze-thaw damage, ASR, D-cracking) the normal mode of failure is the vertical distortions of the pavement surface from subgrade movement. The degradation is normally faulting, slab movement, joint failures, cracking, etc. and is represented by the dropping of the pavement condition index (PCI).¹

2.1.1 SUBGRADE SOILS

Concrete pavement is relied upon for its durability and strength. In order for a concrete pavement to provide long term performance, its foundation needs to have uniform support. Typically in Iowa, the foundation includes the natural subgrade and in some instances, an aggregate subbase. If the pavement is placed directly on the natural subgrade, preparation is needed to provide uniformity. At a minimum this includes topsoil removal, scarification of the underlying subgrade to a depth of one foot and compaction to a specified depth, density and moisture content. For additional information, see SUDAS Design Manual Chapter 6.¹

Typical soils found in the vicinity of Bondurant are moderate to high plasticity soils (fat clays and lean clays with liquid limits greater than 45 and/or plasticity indices greater than 23). These soil types can experience cycles of volume change as moisture contents vary, which can result in upward and downward movement of supported pavements that could cause distortion or structural damage. The soils encountered in Bondurant can be expected to have low k values of 50 to 100 psi/inch and corresponding low CBRs of 1 to 3, as shown in the following table from SUDAS Design Section 6E-1, which indicates subgrade suitability of various soils:

TABLE 1: SUITABILITY OF SOILS FOR SUBGRADE APPLICATIONS

Table 6E-1.01: Suitability of Soils for Subgrade Applications

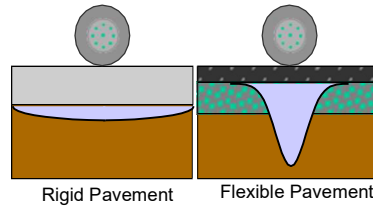
Subgrade Soils for Design	Unified Soil Classifications	Load Support and Drainage Characteristics	Modulus of Subgrade Reaction (k), psi/inch	Resilient Modulus (M _R), psi	CBR Range
Crushed Stone	GW, GP, and GU	Excellent support and drainage characteristics with no frost potential	220 to 250	Greater than 5,700	30 to 80
Gravel	GW, GP, and GU	Excellent support and drainage characteristics with very slight frost potential	200 to 220	4,500 to 5,700	30 to 80
Silty gravel	GW-GM, GP-GM, and GM	Good support and fair drainage, characteristics with moderate frost potential	150 to 200	4,000 to 5,700	20 to 60
Sand	SW, SP, GP-GM, and GM	Good support and excellent drainage characteristics with very slight frost potential	150 to 200	4,000 to 5,700	10 to 40
Silty sand	SM, non-plastic (NP), and >35% silt (minus #200)	Poor support and poor drainage with very high frost potential	100 to 150	2,700 to 4,000	5 to 30
Silty sand	SM, Plasticity Index (PI) <10, and <35 % silt	Poor support and fair to poor drainage with moderate to high frost potential	100 to 150	2,700 to 4,000	5 to 20
Silt	ML, >50% silt, liquid limit <40, and PI <10	Poor support and impervious drainage with very high frost value	50 to 100	1,000 to 2,700	1 to 15
Clay	CL, liquid limit >40 and PI >10	Very poor support and impervious drainage with high frost potential	50 to 100	1,000 to 2,700	1 to 15

Source: American Concrete Pavement Association; Asphalt Paving Association; State of Ohio; State of Iowa; Rollings and Rollings 1996.

When constructing any pavement (rigid or flexible) on natural subgrade that is subject to poor drainage and/or has poor soils, there will likely be measurable soil breakdown and movement due to freeze-thaw conditions and/or traffic loading.¹

It should be noted that variability in the soil affects both rigid and flexible pavements. Rigid concrete pavements transfer the traffic load to the aggregate subbase and subgrade foundation at a smaller value than flexible asphalt pavements because they are able to distribute the load to a larger area. For example, a 100 psi tire load typically results in less than 5 psi to the aggregate subbase for concrete pavement and is approximately 20 psi for the aggregate subbase for asphalt pavement. Therefore, asphalt pavement requires a thicker aggregate subbase and/or a thicker pavement to provide additional support and strength as compared to a concrete pavement. Although concrete pavements can perform better than asphalt pavements when subjected to poor support characteristics, they are more rigid and are subject to more tensile cracking. Figure 1 illustrates the subgrade reactions for rigid and flexible pavements.¹

FIGURE 1: SUBGRADE REACTION



2.2 Stabilized Subgrades

The need to stabilize subgrades is primarily due to excessive moisture in the subgrade itself. High moisture in soils may be encountered during construction for reasons ranging from a naturally high water table to seasonal rainfall and even to changes in drainage conditions during construction. Regardless of the cause, in situ wet soils must be addressed before constructing an aggregate subbase or placement of the pavement on the subgrade. Placing subdrains before construction or letting the soil dry out through a natural process is not normally a practical approach because of time constraints. The two most commonly used methods are chemical modification of the soils, particularly in high moisture conditions, and reinforcement/separation.¹

2.3 Chemical Stabilized Subgrade

A stabilized subgrade, such as soil cement or fly ash stabilization, will help to dry out excessive moisture soils and develop the uniformity needed to provide a construction platform and reduce delays during construction. When using chemical stabilizers, the percent of the stabilizer needs to be stipulated when the water content, soil type and freeze- thaw performance are considered.¹

Cement Modified Soils (CMS) are soils and/or manufactured aggregates mixed with a small portion of Portland cement. CMS are normally used to improve material properties in the subgrade. Also, CMS helps prevent migration of subgrade soil and water into the aggregate subbase and provides some additional strength to the subgrade. CMS are principally used to modify fine grained soils such as silts and clays having high plasticity content. Some specifications require enough cement content to reduce the Plastic Index (PI) within a range of 12 to 15. Typically a CMS amount equivalent to 3 to 5 percent of the soil's dry weight is incorporated into the mix to achieve the desired strength. This combination allows for the reduction of plasticity, minimization of moisture related volumetric changes, an increase in bearing strength and an improvement in stability. This also provides a weather resistant construction platform.

A successful chemical stabilization can be achieved by incorporating approximately 10 to 15 percent fly ash (measured by dry weight of the native soil) into the existing subgrade. Fly ash can improve the subgrade CBR from 2 to 3 to as much as 25 to 30. It can also improve the unconfined compressive strength from 50 psi to 400 psi. Fly ash stabilized subgrades can also reduce the shrink-swell potential of clay soils and upgrade the condition of marginal soils. It is also a good drying agent for wet soils and provides a working platform during construction.

2.4 Reinforced Stabilized Subgrade

Reinforced subgrade treatment is typically used when subgrades have an unstable (soft) but not extremely high moisture content. This may be accomplished through the use of geosynthetics, such as geogrids and woven geotextiles.¹

2.5 Unstabilized Aggregate Subbases

Unstabilized aggregate subbases are appropriate when a stable and uniform construction platform will benefit construction. (ACPA 2007) An aggregate subbase support layer can provide a working platform during construction as well as provide uniformity as a support layer. A granular support layer will also serve as a drainage system to help drain surface water away from the pavement as well as provide a cutoff layer from

subsurface moisture. If an aggregate subbase is used, a subdrain and outlet will be needed to complete the drainage system due to the poor drainage properties of Iowa soils.¹

Premature deterioration of PCC pavement joints may be attributed to poorly draining joints, and subsurface drainage will help alleviate the problem (Taylor et al. 2016).

Commonly used Iowa DOT and SUDAS aggregate subbase materials include modified subbase, granular subbase and special backfill. The Iowa DOT and SUDAS specifications for modified subbase and special backfill allow for crushed stone, gravels, and recycled pavement materials meeting material IM210 or uniformly blended combinations of these materials with a maximum of 50 percent RAP (Reclaimed Asphalt Pavement).¹

The target permeability of approximately 150 feet per day provides the adequate drainage necessary for a pavement foundation layer. Although materials as coarse and open-graded as ASTM No. 57 stone have been used as draining layers, they are not recommended for concrete pavements due to their lack of adequate stability for construction operations and their susceptibility to long-term settlement under heavy truck traffic. It is better to design the gradation of the unstabilized aggregate subbase to include more fines for the sake of stability than to omit the fines for the sake of drainage (ACPA 2007).¹ Therefore, modified subbase is the preferred subbase material for local roadways in Iowa.

In summary, the benefits of aggregate subbases and a drainage system include the following¹:

- Increases performance and service life
- Provides a construction platform
- Maintains uniform support
- Provides drainage from water infiltration
- Helps reduce shrink and swell of high volume-change soils
- Controls excessive or differential frost heave
- Minimizes mud-pumping of fine-grained soils
- Prevents consolidation of subgrade
- Provides capillary cut off for highwater table

2.6 Subdrains

It is known that drainage is also important to the long term performance of concrete pavement.

Drainage can be achieved with the use of an aggregate subbase with subdrain outlets. It is important to prepare the natural subgrade prior to the placement of the aggregate subbase to achieve the best performance.¹

2.7 Pavement Foundation Recommendations

The performance of a pavement depends on the quality of its subgrade and subbase layers. These foundational layers play a key role in mitigating the detrimental effects of climate and the static and dynamic stresses generated by traffic. Therefore, building a stable subgrade and a properly drained subbase is vital for constructing an effective and long lasting pavement system.²

In order to determine what soils are present and understand their characteristics, it is essential to complete a geotechnical investigation. It is very important that the conditions of the subgrade are known prior to design in order to select various treatments if necessary, and specify various materials and preparation to provide uniformity and support for the pavement section.¹

The subgrade, the layer of soil on which the subbase or pavement is built, provides support to the remainder of the pavement system. It is crucial for highway engineers to develop a subgrade with a California Bearing Ratio (CBR) value of at least 10. Research has shown that if a subgrade has a CBR value less than 10, the subbase material will deflect under traffic loadings in the same manner as the subgrade and cause pavement

deterioration.² Manipulation, and possibly stabilization, of the on-site soils will be required to achieve this level of support.

The subbase, the layer of aggregate material immediately below the pavement, provides drainage and stability to the pavement. Undrained water in the pavement supporting layers can freeze and expand, creating high internal pressures on the pavement structure. Moreover, flowing water can carry soil particles that clog drains and, in combination with traffic, pump fines from the subbase or subgrade. It is therefore crucial that highway engineers develop a stable, permeable subbase with longitudinal subdrains.² According to the MEPDG analysis for low volume roads, PCC pavement systems with aggregate subbase thickness above 5 inches, do not show a significant benefit over thicker sections. Two thickness options to consider include 1) 6" or more to accommodate migration of soil into the aggregate, or 2) 4"-5" with a separation layer of geotextile or stabilized subgrade.¹

Longitudinal subdrains are essential with subbases to provide positive subsurface drainage. Rigid or corrugated plastic pipe meeting SUDAS specifications, minimum 6" in diameter, with perforations, and sufficient outlets to storm sewer structures or daylighted are recommended. In areas, where parallel storm sewer is present, it may be possible to utilize the storm sewer piping, along with porous rock backfill and open joints covered with engineering fabric, to serve as longitudinal subdrains. Also, if sized adequately, the subdrains could also serve as a footing drain collector line for adjacent private properties.

Recommendation:

- Conduct geotechnical investigation in all new developments to determine the suitability of soils to be used for pavement subgrade
- Improve subgrade support to provide a CBR of 10, unless the geotechnical investigation determines subgrade soils are adequate
- Construct drainable subbase, using material meeting requirements of SUDAS modified subbase, and install longitudinal subdrains, unless the geotechnical investigation determines the subgrade soil is free draining

3. PCC PAVEMENT

3.1 PCC Pavement Thickness

- It is typical and current practice to use a pre-determined minimum pavement thickness for local roads. These minimum thicknesses are typically 6 or 7 inches.¹
- Some current thickness design methodologies were developed for facilities with more traffic and may not be applicable for local roads with lower traffic volumes.¹
- Because local roads do not carry significant levels of heavy traffic and because some thickness design methodologies revert to predetermined minimums, modifying the design parameters for improved foundations with geotextiles and aggregate subbases will not decrease the thickness design significantly.¹
- It is common for PCC pavements to be designed for 40 to 50 years of service based on a pavement thickness design. Some older pavements were designed for only 20 years. Although pavements are reaching the specified design life, the last 15 to 20 percent of its design life may be at a low level of service including poor rideability. On a PCI scale this may include the lower end of the fair category and possibly the poor category.¹

The SUDAS pavement thickness tables, SUDAS Design Section 5F-1, provide recommended pavement thicknesses for various calculated ESALs, subgrade conditions, roadway types, and pavement types. The calculated thicknesses are based on the AASHTO *Guide for the Design of Pavement Structures*, which is used throughout the industry for pavement thickness design. Due to established policies in many jurisdictions across the state, the minimum pavement thickness for streets on natural subgrade was set at 7 inches for rigid pavement

and 8 inches for flexible pavement. For pavements with a granular subbase, the minimum thickness was set at 6 inches for both pavement types. As noted in the thickness tables, whenever a thickness was calculated that was less than the minimum, the minimum was used.³

3.2 PCC Pavement Jointing

Proper jointing is critical to the performance of PCC pavements. A well designed jointing system will

- Control cracking
- Divide the pavement into practical construction increments
- Accommodate slab movement
- Provide load transfer

Load Transfer⁴

For jointed concrete pavements to perform adequately, traffic loadings must be transferred effectively from one side of the joint to the other. This is called load transfer. Adequate load transfer results in lower deflections, which reduces faulting, spalling, and corner breaks, thereby increasing pavement life. Load transfer across joints for street pavements is developed either by aggregate inter-lock or dowel bars.

Aggregate interlock is the interlocking action between aggregate particles at the face of the joint. It relies on the shear interaction between aggregate particles at the irregular crack faces that form below the saw cut. This form of load transfer has been found to be most effective on roadways with short spacings and low truck volumes. Studies have found that aggregate interlock load transfer provides acceptable pavement performance when truck semi-trailer volumes are fewer than 80 to 120 trucks per day per lane. Laboratory and field studies have shown that aggregate interlock load transfer is improved with subgrade strength; size, angularity, and durability of the aggregate; joint face roughness; and slab thickness. Furthermore, these studies found that shorter slabs increase aggregate interlock effectiveness by reducing the movement and opening at each joint.

Dowel Bars⁴

Dowel bars are round, smooth, steel bars placed across transverse joints to transfer loads without restricting horizontal joint movements due to thermal and moisture contractions and expansions. They also keep slabs in horizontal and vertical alignment. Dowels reduce deflections and stresses due to traffic loads. This in turn prevents or reduces faulting, pumping, and corner breaking on roadways that carry a large number of trucks and/or have longer joint spacings. The use of dowel bars for minimizing faulting and pumping should be considered when the slabs are longer than 20 ft (6.0 m), when truck semi-trailer traffic exceeds 80 to 120 per day per lane, or when the accumulated design traffic exceeds four to five million AASHTO ESAL's per lane. Typically, this truck traffic level requires an 8-in.-thick slab or greater. Since most residential city streets do not experience these truck traffic levels and recommended joint spacings are not greater than 15 ft., dowels are generally not necessary.

Transverse Contraction Joints³

Contraction joints constructed transversely across pavement lanes are spaced to control natural initial and mature cracking of the concrete pavement. The joint interval is designed so that intermediate (random) transverse cracks do not form.

Joint spacing for jointed plain (unreinforced) concrete pavements (JPCP) depends on slab thickness, concrete aggregate, subgrade/subbase support, and environmental conditions. Transverse joint spacing should be limited to 24T (T is slab thickness) for pavements on subgrades and granular subbases or 21T if the pavement is placed on stabilized subbases, existing concrete, or asphalt. Transverse joint spacing is 12 feet for pavements 6 inches thick, 15 feet for pavements 7 to 9 inches thick, and 20 feet for pavements over 9 inches thick. Longitudinal joint spacing for two lane streets, where lane delineation is not necessary, should be limited to a maximum of 10 feet. Generally, transverse joint spacing should not exceed 150% of the longitudinal joint spacing. SUDAS Table 5G-2.01 provides transverse and longitudinal joint spacings for standard two lane streets.

TABLE 2: TRANSVERSE JOINT REQUIREMENTS

Table 5G-2.01: Transverse Joint Requirements

Pavement Thickness	Transverse Joint Type	Transverse Joint Spacing
6"	C	12'
7"	C	15'
8"	CD ¹	15'
9"	CD ¹	15'
≥ 10"	CD ¹	20'

¹ No dowels within 24" of the back of curb

Source: SUDAS Specifications Figure 7010.901

Longitudinal Contraction Joints³

Longitudinal contraction joints release stresses from restrained warping and dynamic loading. A longitudinal joint is usually placed at the center of the pavement to allow the pavement to hinge due to lane loading and help delineate separation of opposing traffic. Controlling cracking and proper constructability are the primary functions of longitudinal contraction joints. Lane delineation is a secondary function.

An important consideration when establishing the distance between longitudinal joints for jointed plain concrete pavements is the prevention of random longitudinal cracking at the quarter point, which is the midpoint between the centerline and the back of the curb. Pavements less than 9 inches thick may not crack through a longitudinal joint placed close to the gutter, which could cause longitudinal cracks at the quarter point. Quarter point jointing will address this concern. Gutterline jointing, with a longitudinal joint closer than five feet from the edge of pavement, is discouraged unless widening is imminent in the future and the pavement thickness is at least 9 inches.

The following are the longitudinal jointing options provided by SUDAS Design Section 5G-2 for 26' B-B and 31' B-B standard width pavements:

FIGURE 2: 26 FOOT B-B PAVEMENT

Figure 5G-2.04: 26 Foot B-B Pavement

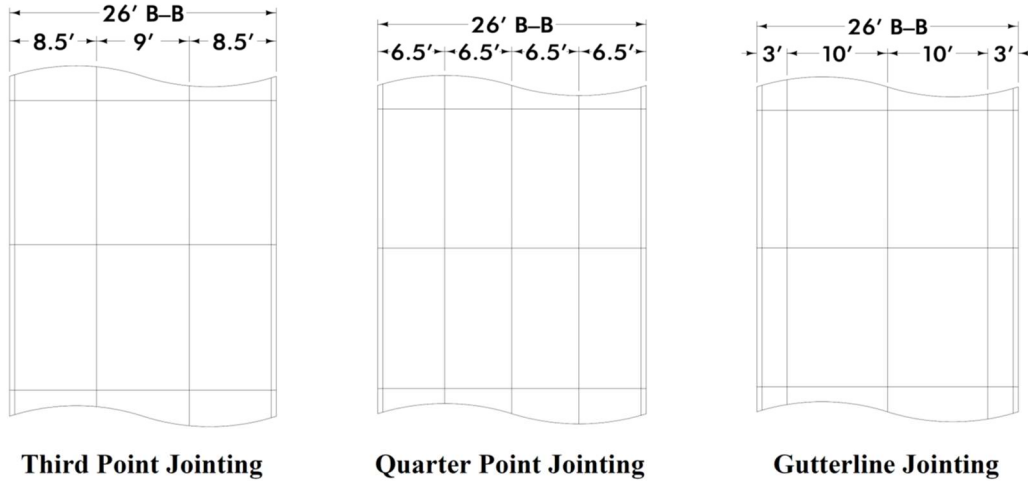
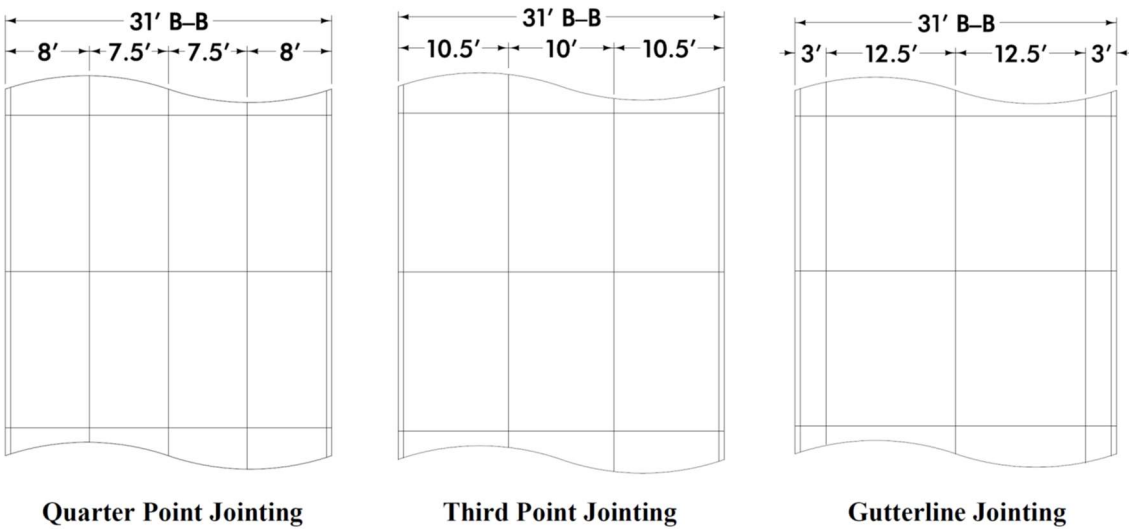


FIGURE 3: 31 FOOT B-B PAVEMENTS

Figure 5G-2.05: 31 Foot B-B Pavements



3.3 PCC Pavement Mix⁵

Municipalities in Iowa typically specify concrete mixes in the following way. If the city does not have joint deterioration concerns, then they often continue using their default Class C mix. SUDAS Section 7010 refers to Iowa DOT IM 529 and simply indicates that cities should use Iowa DOT Class C (or M) mix as described.

If the city has concerns with joint deterioration, then they should consider one of two high-durability mixes: C-SUD or CV-SUD. These mixes are identified in Iowa DOT IM 529. The C-SUD and CV-SUD mixes have the SUD designation for SUDAS. The “V” designation refers to the use of a Class V aggregate as specified in Iowa DOT Section 4117. While a conventional Class C concrete has a target w/c ratio of 0.43 and max of 0.488, the C-SUD mix has a target of 0.40 and max of 0.45. As a result, a C-SUD mix provides a more durable concrete pavement with lower permeability than conventional Class C mix due to its lower w/c ratio. With slip-form paving operations, however, the w/c ratio will typically be lower than the target w/c ratio during production with any mix design. The higher durability is desired to reduce joint deterioration due to the use of de-icing chemicals. A joint saturated with de-icing salts limits the ability to allow the joint to dry out. To maintain the lower w/c ratio, a low- or mid-range water reducer may be necessary. For even greater durability, the use of ternary mixes should also be considered. Further references for mix proportioning in C-SUD and CV-SUD can be found in the Proportion Table 4 of Iowa DOT Materials IM 529. Note that these mixtures assume a basic w/c ratio of 0.40 and a maximum w/c ratio of 0.45.

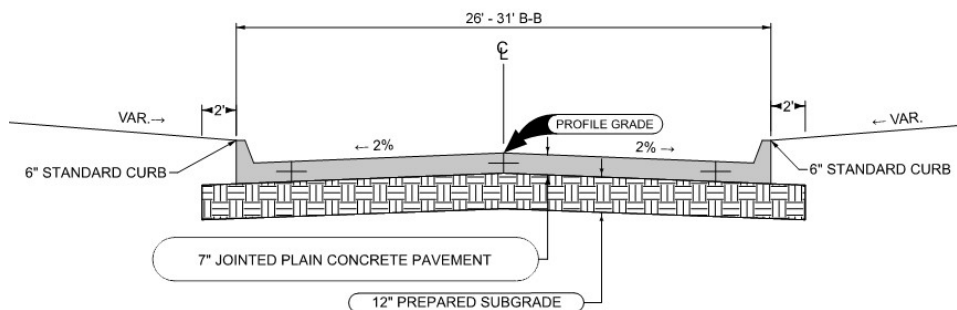
The above mixture is based on Type I or Type II cements (Sp. G. = 3.14). Mixes using blended cements (Type IP or IS) must be adjusted for cement gravities listed in IM 401. Use proportions listed above if not utilizing three aggregates. The above mixture is based on Type IP cements.

4. CURRENT BONDURANT DESIGN STANDARDS FOR PCC PAVEMENT SYSTEMS

The City of Bondurant does not have a formally adopted design standard for pavements. However, guidance provided to designers includes the following:

1. Jointed plain concrete pavement (JPCP), 7” thick
2. Standard Class C mix
3. Jointing is determined by designer
4. The required pavement foundation consists of prepared subgrade utilizing on-site soils

The typical cross-section of the current design standard is as follows:



5. RECOMMENDED BONDURANT DESIGN STANDARDS FOR PCC PAVEMENT SYSTEMS

5.1 Pavement Foundation Recommendations

Geotechnical Investigation: Conduct geotechnical investigations in all new developments to determine the suitability of soils to be used for pavement subgrade.

Subgrade: Improve subgrade support to provide a CBR of 10, unless the geotechnical investigation determines subgrade soils are adequate.

Subbase and Subdrain: Construct drainable subbases, using material meeting requirements of SUDAS modified subbase, and install longitudinal subdrains, unless the geotechnical investigation determines the subgrade soil is free draining. The depth of the subbase should be 6" on the prepared subgrade or 4" with an appropriate geotextile between the prepared subgrade and the subbase material.

5.2 Pavement Recommendations

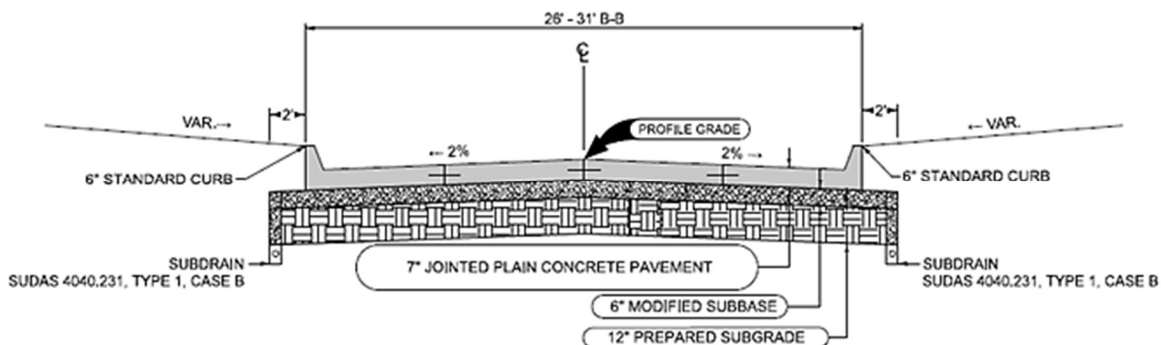
For the purposes of this discussion, the recommendations are for typical low-volume local streets, which have little truck traffic, not exceeding 85 trucks/day.

Pavement Thickness: The SUDAS pavement thickness design table for local low volume streets indicates a 6"-thick JPCP with an adequate foundation will perform satisfactorily and provide a 50-year life, according to the AASHTO design guide. However, experience across Iowa has shown 7" pavement will outperform the thinner pavement and is the standard thickness for most jurisdictions and is the recommended thickness of JPCP.

Pavement Jointing: Transverse joint spacing for 7"-thick JPCP paving should not exceed 15 feet, and 'C' joints, without dowels, is recommended because of the low truck volumes expected. Either quarter-point or third-point longitudinal jointing is recommended for 26'-wide pavements. Quarter-point jointing is recommended for 31'-wide pavements.

Pavement Mix: A Class C-SUD concrete mix is recommended. To help prevent early pavement joint deterioration, special attention should be given to maintaining adequate air content in the pavement after placement, in the range of 6% to 8%. Also, a water to cement ratio (w/c) of 0.40, with 0.45 maximum, is required. Supplementary cementitious materials (SCMs) are encouraged, and cement replacement rates of 20-25% Class F fly ash or 30-35% Class C fly ash or a combination of 20% slag and 20% Class C fly ash should be considered.

The typical cross-section of the recommended design standard is:



6. RECOMMENDED VS. CURRENT STANDARDS BENEFIT/COST COMPARISON

The following cost comparison and the benefits of the recommended higher standard of design will focus only on the costs associated with the pavement system, as previously defined, and will not include all other development infrastructure costs, such as site grading, storm sewer, water main, sanitary sewer, etc. In addition, no cost benefit has been determined for other benefits of long-lasting pavements, such as prolonged higher service level and less inconvenience to the adjoining properties and traveling public.

The additional costs from the recommendations are for the drainable subbase and the subdrain. Other recommendations, such as the geotechnical investigation, subgrade CBR of 10, and the Class C-SUD concrete mix are either required or recommended by SUDAS and should not add cost to the paving system.

6.1 Additional Costs Due to Recommended Pavement System Standards

To determine the relative costs of the pavement system using the current Bondurant pavement design standards and the recommended standards, two representative residential street segments were used.

- A two-block segment of 26'-wide street paving, 900'-long from center of intersection to center of intersection
- A one-block segment of 26'-wide street paving, 870'-long from center of intersection to center of intersection

As previously mentioned, only pavement system costs were compared, which included excavation (for the pavement only), subgrade preparation, subbase and subdrains (for the recommended standard), and pavement. The following tables determine the estimated cost per square yard of the pavement system, including pavement and pavement foundation.

TABLE 3: RECOMMENDED VS. CURRENT STANDARD COST – TWO-BLOCK 900' SEGMENT

Current Pavement Standards

Item No.	Item	Unit	Unit Price	Quantity	Total Cost
1	Excavation, Class 10	CY	\$10.00	1136	\$11,360.00
2	Subgrade Preparation	SY	\$4.00	3408	\$13,632.00
3	PCC Pavement, 7"	SY	\$74.00	3009	\$222,666.00
				Total	\$247,658.00
				Cost/SY	\$82.31

Recommended Pavement Standards

Item No.	Item	Unit	Unit Price	Quantity	Total Cost
1	Excavation, Class 10	CY	\$10.00	1704	\$17,040.00
2	Subgrade Preparation	SY	\$4.00	3408	\$13,632.00
3	Subbase, Modified, 6"	SY	\$10.00	3408	\$34,080.00
4	PCC Pavement, 7"	SY	\$74.00	3009	\$222,666.00
5	Subdrains, PVC, 6" *	LF	\$20.00	1112	\$22,240.00
6	Subdrain Cleanout	EA	\$800.00	3	\$2,400.00
7	Subdrain Outlets and Connections	EA	\$500.00	3	\$1,500.00
Total					\$313,558.00
Cost/SY					\$104.21

* Assumed 25% provided by storm sewer

TABLE 4: RECOMMENDED VS. CURRENT STANDARD COST – ONE-BLOCK 870' SEGMENT

Current Pavement Standards

Item No.	Item	Unit	Unit Price	Quantity	Total Cost
1	Excavation, Class 10	CY	\$10.00	1035	\$10,350.00
2	Subgrade Preparation	SY	\$4.00	3104	\$12,416.00
3	PCC Pavement, 7"	SY	\$74.00	2718	\$201,132.00
Total					\$223,898.00
Cost/SY					\$82.38

Recommended Pavement Standards

Item No.	Item	Unit	Unit Price	Quantity	Total Cost
1	Excavation, Class 10	CY	\$10.00	1552	\$15,520.00
2	Subgrade Preparation	SY	\$4.00	3104	\$12,416.00
3	Subbase, Modified, 6"	SY	\$10.00	3104	\$31,040.00
4	PCC Pavement, 7"	SY	\$74.00	2718	\$201,132.00
5	Subdrains, PVC, 6" *	LF	\$20.00	1187	\$23,740.00
6	Subdrain Cleanout	EA	\$800.00	2	\$1,600.00
7	Subdrain Outlets and Connections	EA	\$500.00	4	\$2,000.00
Total					\$287,448.00
Cost/SY					\$105.76

* Assumed 25% provided by storm sewer

6.2 Cost Comparison

Cost of Pavement Systems

The following is a comparison of the costs of the current design standards and the recommended design standards for two similar sections of pavement in a residential area, as previously described:

Example 1: Two-block 900' Segment

Additional pavement system cost due to recommended design standards	
$\$104.21 - \$82.31 =$	+ \$21.90/SY
Percent increase in pavement system cost due to recommended design standards	
$\$21.90 / \$82.31 =$	+26.6%

Example 2: One-block 870' Segment

Additional pavement system cost due to recommended design standards	
$\$105.76 - \$82.38 =$	+ \$23.38/SY
Percent increase in pavement cost due to recommended design standards	
$\$23.38 / \$82.38 =$	+28.4%

Averages of the two examples yield the following results due to the recommended design standards:

Additional pavement system cost	+ \$22.64
Percent increase in pavement system cost	+27.5%

Cost of Residential Lots

Another way to look at this additional cost is how it might affect the cost of each residential development lot. As an illustration, a normal residential lot is presumed to be 70'± wide and 140'± deep and corner lots are 90' wide. Using the two street pavement examples illustrated in Section 6.1, the following costs are calculated:

Example 1: Two-block 900' segment

As many as 20 lots or as few as 12 lots could front on the street segment, depending on orientation. Assuming an average of 16 lots, the additional cost per lot for the improved standards would be \$65,900 / 16 lots = \$4,118.75/lot.

Example 2: One-block 870' segment

As many as 22 lots or as few as 18 lots could front on the street segment, depending on orientation. Assuming an average of 20 lots, the additional cost per lot for the improved standards would be \$63,550 / 20 lots = \$3,177.50/lot.

An estimated per lot additional cost due to the recommended standards ranges from \$3,177.50 to \$4,118.75, or an average of \$3,648.13.

6.3 Life Benefit of Recommended Standards

As indicated in previous discussions, improved pavement foundations and subsurface drainage will substantially increase the expected life of a pavement. It is also expected that improved jointing and concrete mixtures will provide additional longevity and improved service. Properly designed and maintained PCC pavements should be expected to provide at least 50 years of good service, as opposed to the expected life of 30 to 35 years for the current design standards. Therefore, a conservative estimate of the additional pavement life for the recommended pavement system standards is 15 years.

Additional pavement life due to recommended design standards	
50 years – 35 years =	+15 years
Percent increase in pavement life due to recommended design standards	
15 years / 35 years =	+42.8%
Benefit/Cost Ratio	
Life Benefit Increase % / Additional Cost % = 42.8% / 27.5% =	1.56:1

6.4 Future Reconstruction

As would be anticipated with additional expected life, pavements constructed at the higher recommended design standards should require reconstruction less frequently. As an illustration, over a period of 100 years, it would be expected that pavement constructed with the recommended design standards would require only one pavement reconstruction to last that period of time. On the other hand, pavement constructed at the current design standard would require two reconstructions to serve for a similar length of time.

Based on present costs and the cost of removing and replacing only the pavement in the future, and not including other associated work, such as excavation, intakes, drives, design, and other associated costs, the following assumptions using an average of the two previous pavement examples of similar length are made:

- Number of residential lots: 18
- Total area of pavement: 2,864 SY
- Area of pavement per lot: 159 SY
- Initial cost of pavement with current design: \$82.35/SY
- Initial cost of pavement with recommended design: \$104.99/SY
- Cost to remove and replace pavement = \$12 + \$74 = \$86/SY

the following conservative costs could be expected:

Costs for pavement constructed with current design standards to serve for 100 years

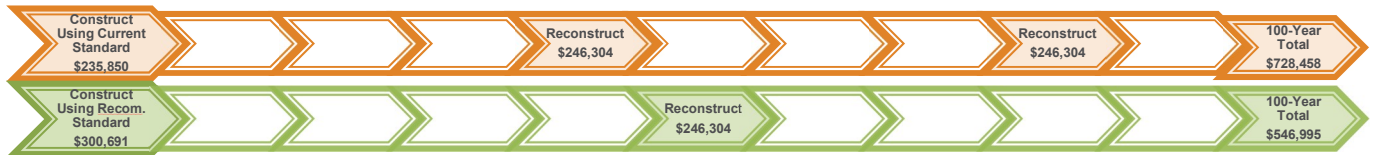
Initial pavement system cost:	
2,864 SY @ \$82.35 =	\$235,850
Initial pavement system cost per residential lot:	
\$235,850 / 18 lots =	\$13,103
Pavement reconstruction cost at 35 years:	
2,864 SY @ \$86.00 =	\$246,304
Pavement reconstruction cost per residential lot at 35 years:	
\$246,304 / 18 lots =	\$13,684
Pavement reconstruction cost at 70 years:	
2,864 SY @ \$86.00 =	\$246,304
Pavement reconstruction cost per residential lot at 70 years:	
\$246,304 / 18 lots =	\$13,684
<hr/>	
Total pavement costs with current design standards for 100 years:	
Pavement system initial cost and pavement reconstruction costs	\$728,458
Pavement system initial cost and pavement reconstruction costs per lot	\$40,470

Cost for pavement constructed with recommended design standards to serve for 100 years

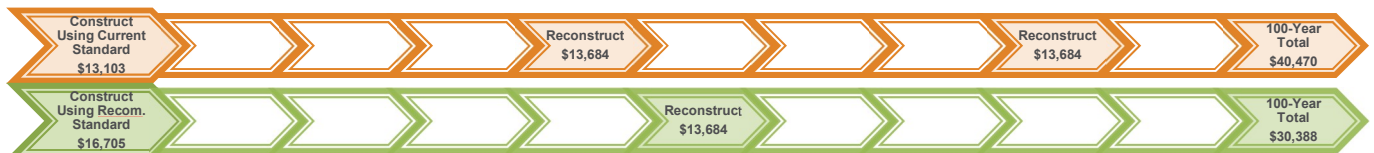
Initial pavement system cost: 2,864 SY @ \$104.99 =	\$300,691
Initial pavement system cost per residential lot: \$300,691 / 18 lots =	\$16,705
 Pavement reconstruction cost at 50 years: 2,864 SY @ \$86.00 =	 \$246,304
Pavement reconstruction cost per residential lot at 50 years: \$246,304 / 18 lots =	\$13,684
<hr/>	
Total pavement costs with recommended design standards for 100 years: Pavement system initial cost and pavement reconstruction costs	\$546,995
Pavement system initial cost and pavement reconstruction costs per lot	\$30,388

For each residential lot, an initial investment of approximately \$3,648 more for longer lasting pavement using the recommended design standards will reduce future reconstruction costs by an estimated \$10,082 in present day dollars.

Projected Pavement Construction & Reconstruction Timeline -100-Year Cycle (Average Street Segment)



PROJECTED PAVEMENT CONSTRUCTION & RECONSTRUCTION TIMELINE -100-YEAR CYCLE (PER LOT)



REFERENCES

- ¹ Gross, J., Harrington, D., Wiegand, P., and Cackler, T. *Guidance for Improving Foundation Layers to Increase Pavement Performance on Local Roads*, Iowa : Report No. TR-640, Iowa Department of Transportation, 2014.
- ² Schaefer, V., Stevens, L., White, D., Ceylan, H. *Design Guide for Improved Quality of Roadway Subgrades and Subbases*, Iowa: Report No. TR-525, Iowa Department of Transportation, 2008.
- ³ Iowa Statewide Urban Design and Specifications Program (SUDAS), *Design Manual*, 2023.
- Taylor, P., Zhang, J., Wang, X. *Conclusions from the Investigation of Deterioration of Joints in Concrete Pavement*, Report No. TPF-5(224), Federal Highway Administration, 2016.
- ACPA, *Subgrades and Subbases for Concrete Pavements*, EB204P, American Concrete Pavement Association, 2007.
- ⁴ ACPA, *Design and Construction of Joints for Concrete Streets*, American Concrete Pavement Association, 1992.
- ⁵ Weiss, J., Ley, M.T., Sutter, L. Harrington, D., Gross, J. Guide to the Prevention and Restoration of Early Joint Deterioration in Concrete Pavements, Iowa: Report No. TR-697, Iowa Department of Transportation, 2016.
- ⁶ HDR and CH2M Hill, Memo to Lucia Ramirez of Oregon department of Transportation; Discounting Recommendations for Least Cost Planning in Oregon, March 15, 2011. Retrieved from <https://www.oregon.gov/ODOT/TD/TP/docs/lcp/discount.pdf>, February 2017
- ⁷ Office of Management and Budget. (November 2016). Advisory Circular A-94. *DISCOUNT RATES FOR COST-EFFECTIVENESS, LEASE PURCHASE, AND RELATED ANALYSES Appendix C*, retrieved from https://obamawhitehouse.archives.gov/omb/circulars_a094/a94_appx-c, February 2017
- ⁸ Mack, J. W. Accounting for Inflation in Life Cycle Cost Analysis for Pavement Type Selection . Transportation Research Board, Vol. 12, No. 2686, 2011. Retrieved from <http://docs.trb.org/prp/12-2686.pdf>, February 2017



Pavement Management Study
City of Bondurant, Iowa

Interim Report #1

PCC Pavement Design Standards Review and Recommendations

September, 2023

HR Green Project No: 2302984


	<p>I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.</p>
	<p>_____ Date: _____ LARRY J. STEVENS, P.E. License No. 09350 My renewal date is December 31, 2023 Pages or sheets covered by this seal: ALL</p>



Table of Contents

Pavement and Specification Study 1

EXECUTIVE SUMMARY 1

 BACKGROUND 1

 RECOMMENDED BONDURANT PAVEMENT SYSTEM STANDARDS 1

 BENEFIT/COST ANALYSIS OF RECOMMENDED STANDARDS 2

1. PURPOSE 3

2. PCC PAVEMENT SYSTEM DESIGN FOR URBAN LOCAL STREETS 3

 2.1 PCC PAVEMENT FOUNDATION 3

 2.1.1 SUBGRADE SOILS 4

 2.2 Stabilized Subgrades 6

 2.3 Chemical Stabilized Subgrade 6

 2.4 Reinforced Stabilized Subgrade 6

 2.5 Unstabilized Aggregate Subbases 6

 2.6 Subdrains 7

 2.7 Pavement Foundation Recommendations 7

3. PCC PAVEMENT 8

 3.1 PCC Pavement Thickness 8

 3.2 PCC Pavement Jointing 9

 3.3 PCC Pavement Mix⁵ 12

4. CURRENT BONDURANT DESIGN STANDARDS FOR PCC PAVEMENT SYSTEMS 12

5. RECOMMENDED BONDURANT DESIGN STANDARDS FOR PCC PAVEMENT SYSTEMS 13

 5.1 Pavement Foundation Recommendations 13

 5.2 Pavement Recommendations 13

6. RECOMMENDED VS. CURRENT STANDARDS BENEFIT/COST COMPARISON 14

 6.1 Additional Costs Due to Recommended Pavement System Standards 14

 6.2 Cost Comparison 16

 6.3 Life Benefit of Recommended Standards 16

 6.4 Future Reconstruction 17

REFERENCES 19



List of Figures

Figure 1: Subgrade Reaction.....	6
Figure 2: 26 foot b-b pavement	11
Figure 3: 31 foot b-b pavement	11

List of Tables

Table 1: Suitability of soils for subgrade applications.....	5
Table 2: Transverse joint requirements	10
Table 3: Recommended vs. current standard cost	14

EXECUTIVE SUMMARY

This report provides research, data, and practical experience for the proper design of a pavement system, which includes the pavement foundation and the pavement. Recommendations are made to improve the City of Bondurant's design standards for local low-volume residential street pavements with little truck traffic to provide longer lasting pavements that are more sustainable and provide better service to City residents. In addition, a benefit/cost analysis was performed to compare the City's current standards with the recommended standards.

It should be noted that while these recommendations are for improvements to the City of Bondurant's residential street design standards, the need for quality pavement systems are essential for long-lasting performance of all of the City's street pavements, including arterial and collector streets. Those pavements that serve higher volumes of traffic and heavy trucks should have special designs to accommodate those conditions.

BACKGROUND

The pavement system is defined as the pavement and the foundation materials, including subbase, if required, and prepared subgrade. Proper design, construction, and maintenance of the various components of the pavement system are critical to the performance of long-life pavements.

The performance of a pavement depends on the quality of its subgrade and subbase layers. These foundational layers play a key role in mitigating the detrimental effects of climate and the static and dynamic stresses generated by traffic. Therefore, building a stable subgrade and a properly drained subbase is vital for constructing an effective and long lasting pavement system.

Key factors in the design of concrete pavements include thickness, proper jointing, concrete mixture selection, and quality control.

The City of Bondurant's current local residential street pavement design standards include a prepared (compacted) subgrade consisting of in-place soils, which are generally poor quality pavement subgrade materials and do not provide adequate subsurface drainage. Pavement is standard Portland Cement Concrete, Iowa DOT Class C mix, 7"-thick jointed plain concrete pavement (JPCP). Pavement systems with this type of foundation are frequently specified in Iowa but have a shorter expected life, about 30 to 35 years, than design standards currently recommended by the Iowa Statewide Urban Design and Specifications Program (SUDAS) and other Industry standards. SUDAS provides design standards for the pavement and the pavement foundation, which are projected to have a life of at least 50 years.

RECOMMENDED BONDURANT PAVEMENT SYSTEM STANDARDS

Based on SUDAS guidelines and other supporting research, the following pavement system design standards are recommended for local low volume residential streets in Bondurant:

Pavement Foundation:

- Conduct geotechnical investigations in all new developments to determine the suitability of soils to be used for pavement subgrade.
- Improve subgrade support to provide a CBR of 10, unless the geotechnical investigation determines subgrade soils are adequate.
- Subbase and Subdrain: Construct drainable subbases and install longitudinal subdrains, unless the geotechnical investigation determines the subgrade soil is free draining.

Pavement:

- Pavement Thickness: Require 7"-thick JPCP.
- Pavement Jointing: For JPCP paving, transverse joint spacing should not exceed 15 feet and 'C' joints, without dowels, is recommended. Quarter-point jointing is recommended for 31'-wide streets. Third point jointing is recommended for 26'-wide streets.

- **Pavement Mix:** A Class C-SUD concrete mix is recommended. To help prevent early pavement joint deterioration, special attention is given to maintaining adequate air content in the pavement after placement and low water to cement ratio (w/c). Supplementary cementitious materials (SCMs) are encouraged as a cement replacement to reduce the pavement's permeability.

BENEFIT/COST ANALYSIS OF RECOMMENDED STANDARDS

Pavement system quantities, which included excavation (for the pavement only), subgrade preparation, subbase and subdrains (for the recommended standard), and pavement, were estimated for two typical sections of residential street using the current street pavement standards and the recommended standards. One typical section consisted of two consecutive blocks of paving with an intersection in the middle, and the other was a similar length pavement without an intersecting street.

For each typical section, the additional cost of the recommended standards was calculated on the basis of square yards of pavement. Using an average cost of the two pavement examples, the pavement system cost increased by 27.5% due to the recommended design standards.

However, the life expectancy of the pavement is conservatively estimated to increase from 35 years to 50 years, an increase of 42.8%. Therefore, the benefit/cost ratio is over 1.6:1, based on the pavement system cost increase compared to the increase in pavement longevity.

In addition, an estimate was provided how this may affect the cost of a residential lot. An increase of approximately \$3,602 per lot could be expected due to the higher pavement system design standard.

Further analysis was conducted for a 100-year cycle of pavement construction and reconstruction, which includes three pavement constructions for the current design standards and two for the recommended standards. This long-term analysis indicates the total cost of pavement construction over this period reduces from \$728,458 for current design to \$546,995 with the recommended standards. Average per lot costs for the pavement are reduced from \$40,470 to \$30,388. For each residential lot, an initial investment of approximately \$3,602 more for longer lasting pavement using the recommended design standards will reduce future reconstruction costs by an estimated \$10,082 in present day dollars.

1. PURPOSE

Interim Report #1 will address a portion of the first task of the City of Bondurant’s Pavement Management Study, which includes the following work task:

- *Review of Bondurant’s design standards for street construction and maintenance practices and making recommendations for improvements to achieve long-lasting pavements*

The City wishes to implement improved long-lasting PCC pavement design standards. Interim Report #1 will address only residential street design standards identified in the first task, which includes the following scope of services to be provided by HR Green:

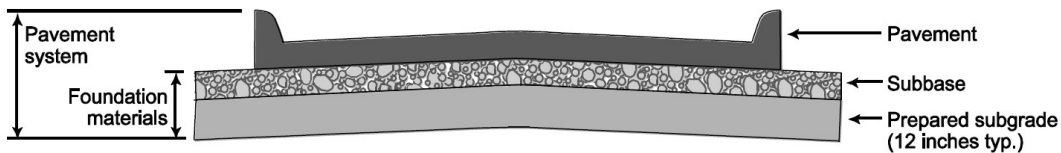
The City’s current pavement design requirements will be compared to the standards established by the Iowa Statewide Urban Design and Specifications (SUDAS) Program. Other relevant Iowa State University research, such as IHRB Project TR-640 *Optimizing Pavement Base, Subbase, and Subgrade Layers for Cost and Performance of Local Roads*, will be utilized in the comparison, in addition to a number of other sources. This will include analyzing all elements of the pavement system, including subgrade, subbase, subsurface drainage, pavement thickness, PCC mixtures, pavement jointing, and construction methods. Recommendations will be made to the City’s guidelines to help achieve a 50-year design life of the City’s pavements.

The comparison of the City’s current PCC pavement design guidelines to recommended design standards will consist of the following for Pavement System Design for Urban Local Streets:

- PCC pavement foundation
- PCC pavement
- Current Bondurant design standards for PCC pavement systems
- Recommended Bondurant design standards for PCC pavement systems
- Recommended vs. Current standards cost/benefit comparison

2. PCC PAVEMENT SYSTEM DESIGN FOR URBAN LOCAL STREETS

For the purposes of this discussion, the pavement system consists of the elements shown in the following illustration from Iowa Statewide Urban Design and Specifications (SUDAS) Design Manual Section 6A-1:



Proper design, construction, and maintenance of the various components of the pavement system are critical to the performance of long-life pavements.

2.1 PCC PAVEMENT FOUNDATION

It is common for local street and highway pavements to be constructed from PCC supported on a natural subgrade without considering or using a subgrade stabilized treatment or support layer such as an aggregate subbase. When support layers are considered, they typically serve as a construction platform and improve the level of stability and uniformity for the pavement foundation which can result in increased performance and thus increased pavement life. An aggregate subbase can also improve the drainage under the pavement, minimizing the deterioration caused by water entrapment. The question is how much do they benefit the pavement and is the benefit worth the costs, particularly if the pavement is meeting the design life.¹

The pavement design life for local roadways (not including heavily traveled arterials or trunk highways) is normally based on the pavement thickness and less concern is typically given to the support system. Unless there are material related distress failures in concrete pavement (ie. freeze-thaw damage, ASR, D-cracking) the normal mode of failure is the vertical distortions of the pavement surface from subgrade movement. The degradation is normally faulting, slab movement, joint failures, cracking, etc. and is represented by the dropping of the pavement condition index (PCI).¹

2.1.1 SUBGRADE SOILS

Concrete pavement is relied upon for its durability and strength. In order for a concrete pavement to provide long term performance, its foundation needs to have uniform support. Typically in Iowa, the foundation includes the natural subgrade and in some instances, an aggregate subbase. If the pavement is placed directly on the natural subgrade, preparation is needed to provide uniformity. At a minimum this includes topsoil removal, scarification of the underlying subgrade to a depth of one foot and compaction to a specified depth, density and moisture content. For additional information, see SUDAS Design Manual Chapter 6.¹

Typical soils found in the vicinity of Bondurant are moderate to high plasticity soils (fat clays and lean clays with liquid limits greater than 45 and/or plasticity indices greater than 23). These soil types can experience cycles of volume change as moisture contents vary, which can result in upward and downward movement of supported pavements that could cause distortion or structural damage. The soils encountered in Bondurant can be expected to have low k values of 50 to 100 psi/inch and corresponding low CBRs of 1 to 3, as shown in the following table from SUDAS Design Section 6E-1, which indicates subgrade suitability of various soils:

TABLE 1: SUITABILITY OF SOILS FOR SUBGRADE APPLICATIONS

Table 6E-1.01: Suitability of Soils for Subgrade Applications

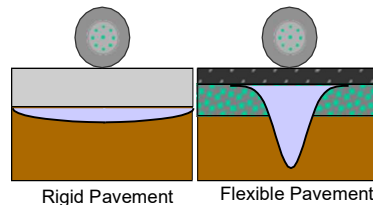
Subgrade Soils for Design	Unified Soil Classifications	Load Support and Drainage Characteristics	Modulus of Subgrade Reaction (k), psi/inch	Resilient Modulus (M _R), psi	CBR Range
Crushed Stone	GW, GP, and GU	Excellent support and drainage characteristics with no frost potential	220 to 250	Greater than 5,700	30 to 80
Gravel	GW, GP, and GU	Excellent support and drainage characteristics with very slight frost potential	200 to 220	4,500 to 5,700	30 to 80
Silty gravel	GW-GM, GP-GM, and GM	Good support and fair drainage, characteristics with moderate frost potential	150 to 200	4,000 to 5,700	20 to 60
Sand	SW, SP, GP-GM, and GM	Good support and excellent drainage characteristics with very slight frost potential	150 to 200	4,000 to 5,700	10 to 40
Silty sand	SM, non-plastic (NP), and >35% silt (minus #200)	Poor support and poor drainage with very high frost potential	100 to 150	2,700 to 4,000	5 to 30
Silty sand	SM, Plasticity Index (PI) <10, and <35 % silt	Poor support and fair to poor drainage with moderate to high frost potential	100 to 150	2,700 to 4,000	5 to 20
Silt	ML, >50% silt, liquid limit <40, and PI <10	Poor support and impervious drainage with very high frost value	50 to 100	1,000 to 2,700	1 to 15
Clay	CL, liquid limit >40 and PI >10	Very poor support and impervious drainage with high frost potential	50 to 100	1,000 to 2,700	1 to 15

Source: American Concrete Pavement Association; Asphalt Paving Association; State of Ohio; State of Iowa; Rollings and Rollings 1996.

When constructing any pavement (rigid or flexible) on natural subgrade that is subject to poor drainage and/or has poor soils, there will likely be measurable soil breakdown and movement due to freeze-thaw conditions and/or traffic loading.¹

It should be noted that variability in the soil affects both rigid and flexible pavements. Rigid concrete pavements transfer the traffic load to the aggregate subbase and subgrade foundation at a smaller value than flexible asphalt pavements because they are able to distribute the load to a larger area. For example, a 100 psi tire load typically results in less than 5 psi to the aggregate subbase for concrete pavement and is approximately 20 psi for the aggregate subbase for asphalt pavement. Therefore, asphalt pavement requires a thicker aggregate subbase and/or a thicker pavement to provide additional support and strength as compared to a concrete pavement. Although concrete pavements can perform better than asphalt pavements when subjected to poor support characteristics, they are more rigid and are subject to more tensile cracking. Figure 1 illustrates the subgrade reactions for rigid and flexible pavements.¹

FIGURE 1: SUBGRADE REACTION



2.2 Stabilized Subgrades

The need to stabilize subgrades is primarily due to excessive moisture in the subgrade itself. High moisture in soils may be encountered during construction for reasons ranging from a naturally high water table to seasonal rainfall and even to changes in drainage conditions during construction. Regardless of the cause, in situ wet soils must be addressed before constructing an aggregate subbase or placement of the pavement on the subgrade. Placing subdrains before construction or letting the soil dry out through a natural process is not normally a practical approach because of time constraints. The two most commonly used methods are chemical modification of the soils, particularly in high moisture conditions, and reinforcement/separation.¹

2.3 Chemical Stabilized Subgrade

A stabilized subgrade, such as soil cement or fly ash stabilization, will help to dry out excessive moisture soils and develop the uniformity needed to provide a construction platform and reduce delays during construction. When using chemical stabilizers, the percent of the stabilizer needs to be stipulated when the water content, soil type and freeze- thaw performance are considered.¹

Cement Modified Soils (CMS) are soils and/or manufactured aggregates mixed with a small portion of Portland cement. CMS are normally used to improve material properties in the subgrade. Also, CMS helps prevent migration of subgrade soil and water into the aggregate subbase and provides some additional strength to the subgrade. CMS are principally used to modify fine grained soils such as silts and clays having high plasticity content. Some specifications require enough cement content to reduce the Plastic Index (PI) within a range of 12 to 15. Typically a CMS amount equivalent to 3 to 5 percent of the soil's dry weight is incorporated into the mix to achieve the desired strength. This combination allows for the reduction of plasticity, minimization of moisture related volumetric changes, an increase in bearing strength and an improvement in stability. This also provides a weather resistant construction platform.

A successful chemical stabilization can be achieved by incorporating approximately 10 to 15 percent fly ash (measured by dry weight of the native soil) into the existing subgrade. Fly ash can improve the subgrade CBR from 2 to 3 to as much as 25 to 30. It can also improve the unconfined compressive strength from 50 psi to 400 psi. Fly ash stabilized subgrades can also reduce the shrink-swell potential of clay soils and upgrade the condition of marginal soils. It is also a good drying agent for wet soils and provides a working platform during construction.

2.4 Reinforced Stabilized Subgrade

Reinforced subgrade treatment is typically used when subgrades have an unstable (soft) but not extremely high moisture content. This may be accomplished through the use of geosynthetics, such as geogrids and woven geotextiles.¹

2.5 Unstabilized Aggregate Subbases

Unstabilized aggregate subbases are appropriate when a stable and uniform construction platform will benefit construction. (ACPA 2007) An aggregate subbase support layer can provide a working platform during construction as well as provide uniformity as a support layer. A granular support layer will also serve as a drainage system to help drain surface water away from the pavement as well as provide a cutoff layer from

subsurface moisture. If an aggregate subbase is used, a subdrain and outlet will be needed to complete the drainage system due to the poor drainage properties of Iowa soils.¹

Premature deterioration of PCC pavement joints may be attributed to poorly draining joints, and subsurface drainage will help alleviate the problem (Taylor et al. 2016).

Commonly used Iowa DOT and SUDAS aggregate subbase materials include modified subbase, granular subbase and special backfill. The Iowa DOT and SUDAS specifications for modified subbase and special backfill allow for crushed stone, gravels, and recycled pavement materials meeting material IM210 or uniformly blended combinations of these materials with a maximum of 50 percent RAP (Reclaimed Asphalt Pavement).¹

The target permeability of approximately 150 feet per day provides the adequate drainage necessary for a pavement foundation layer. Although materials as coarse and open-graded as ASTM No. 57 stone have been used as draining layers, they are not recommended for concrete pavements due to their lack of adequate stability for construction operations and their susceptibility to long-term settlement under heavy truck traffic. It is better to design the gradation of the unstabilized aggregate subbase to include more fines for the sake of stability than to omit the fines for the sake of drainage (ACPA 2007).¹ Therefore, modified subbase is the preferred subbase material for local roadways in Iowa.

In summary, the benefits of aggregate subbases and a drainage system include the following¹:

- Increases performance and service life
- Provides a construction platform
- Maintains uniform support
- Provides drainage from water infiltration
- Helps reduce shrink and swell of high volume-change soils
- Controls excessive or differential frost heave
- Minimizes mud-pumping of fine-grained soils
- Prevents consolidation of subgrade
- Provides capillary cut off for highwater table

2.6 Subdrains

It is known that drainage is also important to the long term performance of concrete pavement.

Drainage can be achieved with the use of an aggregate subbase with subdrain outlets. It is important to prepare the natural subgrade prior to the placement of the aggregate subbase to achieve the best performance.¹

2.7 Pavement Foundation Recommendations

The performance of a pavement depends on the quality of its subgrade and subbase layers. These foundational layers play a key role in mitigating the detrimental effects of climate and the static and dynamic stresses generated by traffic. Therefore, building a stable subgrade and a properly drained subbase is vital for constructing an effective and long lasting pavement system.²

In order to determine what soils are present and understand their characteristics, it is essential to complete a geotechnical investigation. It is very important that the conditions of the subgrade are known prior to design in order to select various treatments if necessary, and specify various materials and preparation to provide uniformity and support for the pavement section.¹

The subgrade, the layer of soil on which the subbase or pavement is built, provides support to the remainder of the pavement system. It is crucial for highway engineers to develop a subgrade with a California Bearing Ratio (CBR) value of at least 10. Research has shown that if a subgrade has a CBR value less than 10, the subbase material will deflect under traffic loadings in the same manner as the subgrade and cause pavement

deterioration.² Manipulation, and possibly stabilization, of the on-site soils will be required to achieve this level of support.

The subbase, the layer of aggregate material immediately below the pavement, provides drainage and stability to the pavement. Undrained water in the pavement supporting layers can freeze and expand, creating high internal pressures on the pavement structure. Moreover, flowing water can carry soil particles that clog drains and, in combination with traffic, pump fines from the subbase or subgrade. It is therefore crucial that highway engineers develop a stable, permeable subbase with longitudinal subdrains.² According to the MEPDG analysis for low volume roads, PCC pavement systems with aggregate subbase thickness above 5 inches, do not show a significant benefit over thicker sections. Two thickness options to consider include 1) 6" or more to accommodate migration of soil into the aggregate, or 2) 4"-5" with a separation layer of geotextile or stabilized subgrade.¹

Longitudinal subdrains are essential with subbases to provide positive subsurface drainage. Rigid or corrugated plastic pipe meeting SUDAS specifications, minimum 6" in diameter, with perforations, and sufficient outlets to storm sewer structures or daylighted are recommended. In areas, where parallel storm sewer is present, it may be possible to utilize the storm sewer piping, along with porous rock backfill and open joints covered with engineering fabric, to serve as longitudinal subdrains. Also, if sized adequately, the subdrains could also serve as a footing drain collector line for adjacent private properties.

Recommendation:

- Conduct geotechnical investigation in all new developments to determine the suitability of soils to be used for pavement subgrade
- Improve subgrade support to provide a CBR of 10, unless the geotechnical investigation determines subgrade soils are adequate
- Construct drainable subbase, using material meeting requirements of SUDAS modified subbase, and install longitudinal subdrains, unless the geotechnical investigation determines the subgrade soil is free draining

3. PCC PAVEMENT

3.1 PCC Pavement Thickness

- It is typical and current practice to use a pre-determined minimum pavement thickness for local roads. These minimum thicknesses are typically 6 or 7 inches.¹
- Some current thickness design methodologies were developed for facilities with more traffic and may not be applicable for local roads with lower traffic volumes.¹
- Because local roads do not carry significant levels of heavy traffic and because some thickness design methodologies revert to predetermined minimums, modifying the design parameters for improved foundations with geotextiles and aggregate subbases will not decrease the thickness design significantly.¹
- It is common for PCC pavements to be designed for 40 to 50 years of service based on a pavement thickness design. Some older pavements were designed for only 20 years. Although pavements are reaching the specified design life, the last 15 to 20 percent of its design life may be at a low level of service including poor rideability. On a PCI scale this may include the lower end of the fair category and possibly the poor category.¹

The SUDAS pavement thickness tables, SUDAS Design Section 5F-1, provide recommended pavement thicknesses for various calculated ESALs, subgrade conditions, roadway types, and pavement types. The calculated thicknesses are based on the AASHTO *Guide for the Design of Pavement Structures*, which is used throughout the industry for pavement thickness design. Due to established policies in many jurisdictions across the state, the minimum pavement thickness for streets on natural subgrade was set at 7 inches for rigid pavement

and 8 inches for flexible pavement. For pavements with a granular subbase, the minimum thickness was set at 6 inches for both pavement types. As noted in the thickness tables, whenever a thickness was calculated that was less than the minimum, the minimum was used.³

3.2 PCC Pavement Jointing

Proper jointing is critical to the performance of PCC pavements. A well designed jointing system will

- Control cracking
- Divide the pavement into practical construction increments
- Accommodate slab movement
- Provide load transfer

Load Transfer⁴

For jointed concrete pavements to perform adequately, traffic loadings must be transferred effectively from one side of the joint to the other. This is called load transfer. Adequate load transfer results in lower deflections, which reduces faulting, spalling, and corner breaks, thereby increasing pavement life. Load transfer across joints for street pavements is developed either by aggregate inter-lock or dowel bars.

Aggregate interlock is the interlocking action between aggregate particles at the face of the joint. It relies on the shear interaction between aggregate particles at the irregular crack faces that form below the saw cut. This form of load transfer has been found to be most effective on roadways with short spacings and low truck volumes. Studies have found that aggregate interlock load transfer provides acceptable pavement performance when truck semi-trailer volumes are fewer than 80 to 120 trucks per day per lane. Laboratory and field studies have shown that aggregate interlock load transfer is improved with subgrade strength; size, angularity, and durability of the aggregate; joint face roughness; and slab thickness. Furthermore, these studies found that shorter slabs increase aggregate interlock effectiveness by reducing the movement and opening at each joint.

Dowel Bars⁴

Dowel bars are round, smooth, steel bars placed across transverse joints to transfer loads without restricting horizontal joint movements due to thermal and moisture contractions and expansions. They also keep slabs in horizontal and vertical alignment. Dowels reduce deflections and stresses due to traffic loads. This in turn prevents or reduces faulting, pumping, and corner breaking on roadways that carry a large number of trucks and/or have longer joint spacings. The use of dowel bars for minimizing faulting and pumping should be considered when the slabs are longer than 20 ft (6.0 m), when truck semi-trailer traffic exceeds 80 to 120 per day per lane, or when the accumulated design traffic exceeds four to five million AASHTO ESAL's per lane. Typically, this truck traffic level requires an 8-in.-thick slab or greater. Since most residential city streets do not experience these truck traffic levels and recommended joint spacings are not greater than 15 ft., dowels are generally not necessary.

Transverse Contraction Joints³

Contraction joints constructed transversely across pavement lanes are spaced to control natural initial and mature cracking of the concrete pavement. The joint interval is designed so that intermediate (random) transverse cracks do not form.

Joint spacing for jointed plain (unreinforced) concrete pavements (JPCP) depends on slab thickness, concrete aggregate, subgrade/subbase support, and environmental conditions. Transverse joint spacing should be limited to 24T (T is slab thickness) for pavements on subgrades and granular subbases or 21T if the pavement is placed on stabilized subbases, existing concrete, or asphalt. Transverse joint spacing is 12 feet for pavements 6 inches thick, 15 feet for pavements 7 to 9 inches thick, and 20 feet for pavements over 9 inches thick. Longitudinal joint spacing for two lane streets, where lane delineation is not necessary, should be limited to a maximum of 10 feet. Generally, transverse joint spacing should not exceed 150% of the longitudinal joint spacing. SUDAS Table 5G-2.01 provides transverse and longitudinal joint spacings for standard two lane streets.

TABLE 2: TRANSVERSE JOINT REQUIREMENTS

Table 5G-2.01: Transverse Joint Requirements

Pavement Thickness	Transverse Joint Type	Transverse Joint Spacing
6"	C	12'
7"	C	15'
8"	CD ¹	15'
9"	CD ¹	15'
≥ 10"	CD ¹	20'

¹ No dowels within 24" of the back of curb

Source: SUDAS Specifications Figure 7010.901

Longitudinal Contraction Joints³

Longitudinal contraction joints release stresses from restrained warping and dynamic loading. A longitudinal joint is usually placed at the center of the pavement to allow the pavement to hinge due to lane loading and help delineate separation of opposing traffic. Controlling cracking and proper constructability are the primary functions of longitudinal contraction joints. Lane delineation is a secondary function.

An important consideration when establishing the distance between longitudinal joints for jointed plain concrete pavements is the prevention of random longitudinal cracking at the quarter point, which is the midpoint between the centerline and the back of the curb. Pavements less than 9 inches thick may not crack through a longitudinal joint placed close to the gutter, which could cause longitudinal cracks at the quarter point. Quarter point jointing will address this concern. Gutterline jointing, with a longitudinal joint closer than five feet from the edge of pavement, is discouraged unless widening is imminent in the future and the pavement thickness is at least 9 inches.

The following are the longitudinal jointing options provided by SUDAS Design Section 5G-2 for 26' B-B and 31' B-B standard width pavements:

FIGURE 2: 26 FOOT B-B PAVEMENT

Figure 5G-2.04: 26 Foot B-B Pavement

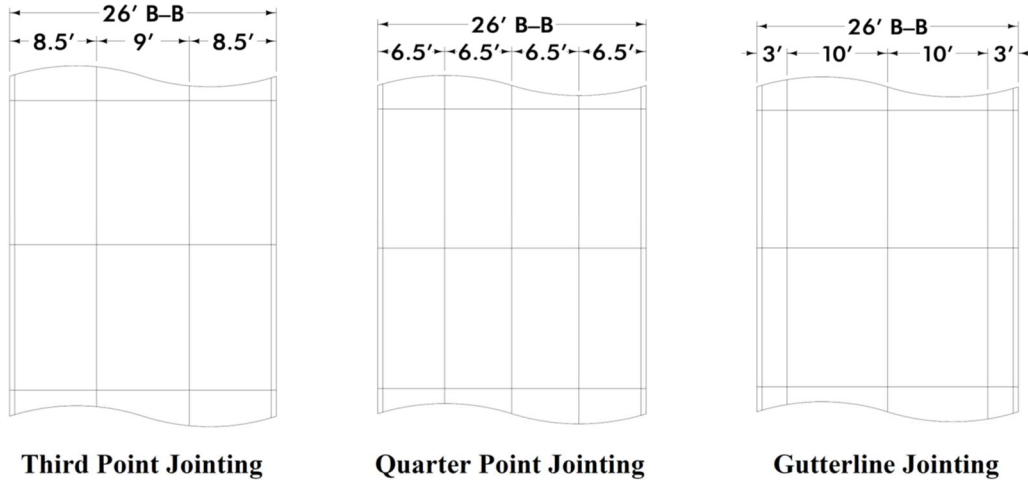
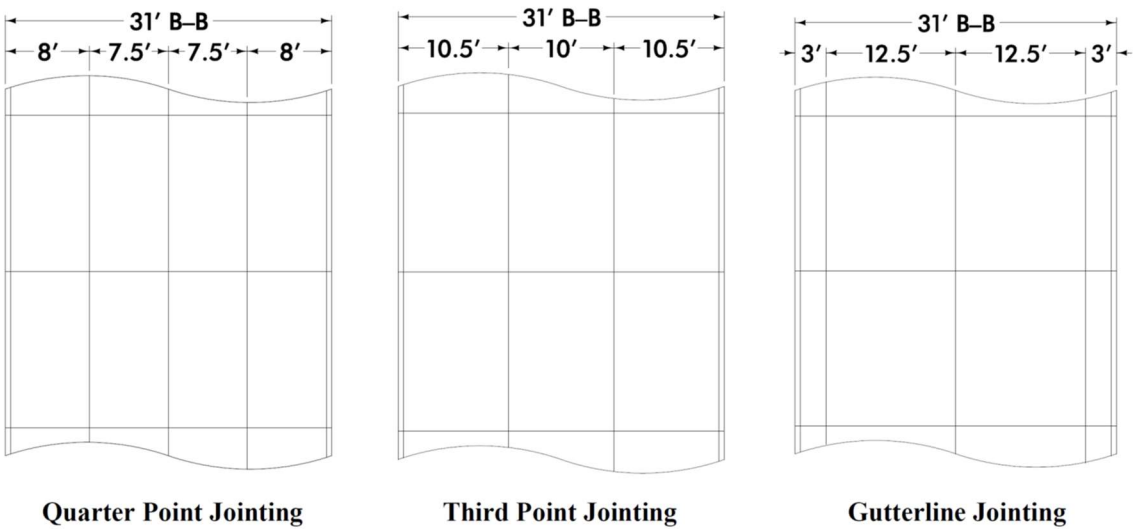


FIGURE 3: 31 FOOT B-B PAVEMENTS

Figure 5G-2.05: 31 Foot B-B Pavements



3.3 PCC Pavement Mix⁵

Municipalities in Iowa typically specify concrete mixes in the following way. If the city does not have joint deterioration concerns, then they often continue using their default Class C mix. SUDAS Section 7010 refers to Iowa DOT IM 529 and simply indicates that cities should use Iowa DOT Class C (or M) mix as described.

If the city has concerns with joint deterioration, then they should consider one of two high-durability mixes: C-SUD or CV-SUD. These mixes are identified in Iowa DOT IM 529. The C-SUD and CV-SUD mixes have the SUD designation for SUDAS. The “V” designation refers to the use of a Class V aggregate as specified in Iowa DOT Section 4117. While a conventional Class C concrete has a target w/c ratio of 0.43 and max of 0.488, the C-SUD mix has a target of 0.40 and max of 0.45. As a result, a C-SUD mix provides a more durable concrete pavement with lower permeability than conventional Class C mix due to its lower w/c ratio. With slip-form paving operations, however, the w/c ratio will typically be lower than the target w/c ratio during production with any mix design. The higher durability is desired to reduce joint deterioration due to the use of de-icing chemicals. A joint saturated with de-icing salts limits the ability to allow the joint to dry out. To maintain the lower w/c ratio, a low- or mid-range water reducer may be necessary. For even greater durability, the use of ternary mixes should also be considered. Further references for mix proportioning in C-SUD and CV-SUD can be found in the Proportion Table 4 of Iowa DOT Materials IM 529. Note that these mixtures assume a basic w/c ratio of 0.40 and a maximum w/c ratio of 0.45.

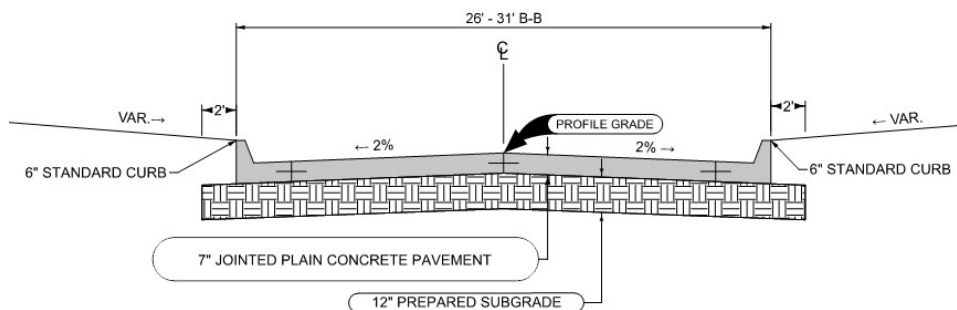
The above mixture is based on Type I or Type II cements (Sp. G. = 3.14). Mixes using blended cements (Type IP or IS) must be adjusted for cement gravities listed in IM 401. Use proportions listed above if not utilizing three aggregates. The above mixture is based on Type IP cements.

4. CURRENT BONDURANT DESIGN STANDARDS FOR PCC PAVEMENT SYSTEMS

The City of Bondurant does not have a formally adopted design standard for pavements. However, guidance provided to designers includes the following:

1. Jointed plain concrete pavement (JPCP), 7” thick
2. Standard Class C mix
3. Jointing is determined by designer
4. The required pavement foundation consists of prepared subgrade utilizing on-site soils

The typical cross-section of the current design standard is as follows:



5. RECOMMENDED BONDURANT DESIGN STANDARDS FOR PCC PAVEMENT SYSTEMS

5.1 Pavement Foundation Recommendations

Geotechnical Investigation: Conduct geotechnical investigations in all new developments to determine the suitability of soils to be used for pavement subgrade.

Subgrade: Improve subgrade support to provide a CBR of 10, unless the geotechnical investigation determines subgrade soils are adequate.

Subbase and Subdrain: Construct drainable subbases, using material meeting requirements of SUDAS modified subbase, and install longitudinal subdrains, unless the geotechnical investigation determines the subgrade soil is free draining. The depth of the subbase should be 6" on the prepared subgrade or 4" with an appropriate geotextile between the prepared subgrade and the subbase material.

5.2 Pavement Recommendations

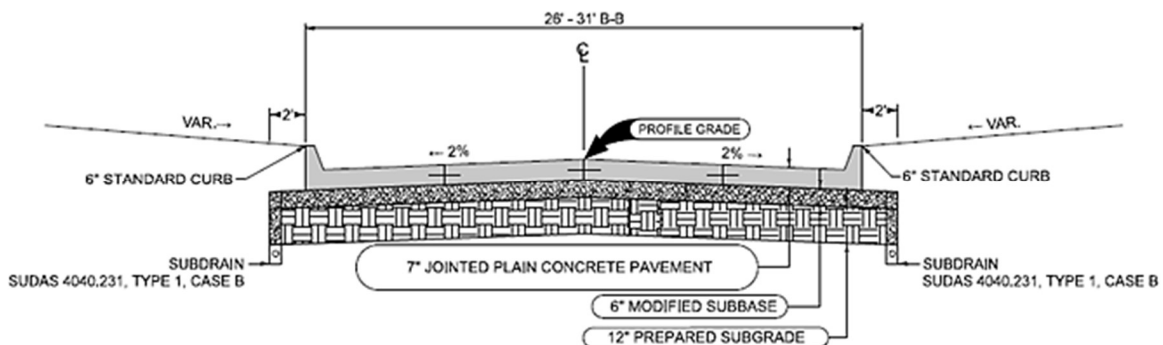
For the purposes of this discussion, the recommendations are for typical low-volume local streets, which have little truck traffic, not exceeding 85 trucks/day.

Pavement Thickness: The SUDAS pavement thickness design table for local low volume streets indicates a 6"-thick JPCP with an adequate foundation will perform satisfactorily and provide a 50-year life, according to the AASHTO design guide. However, experience across Iowa has shown 7" pavement will outperform the thinner pavement and is the standard thickness for most jurisdictions and is the recommended thickness of JPCP.

Pavement Jointing: Transverse joint spacing for 7"-thick JPCP paving should not exceed 15 feet, and 'C' joints, without dowels, is recommended because of the low truck volumes expected. Either quarter-point or third-point longitudinal jointing is recommended for 26'-wide pavements. Quarter-point jointing is recommended for 31'-wide pavements.

Pavement Mix: A Class C-SUD concrete mix is recommended. To help prevent early pavement joint deterioration, special attention should be given to maintaining adequate air content in the pavement after placement, in the range of 6% to 8%. Also, a water to cement ratio (w/c) of 0.40, with 0.45 maximum, is required. Supplementary cementitious materials (SCMs) are encouraged, and cement replacement rates of 20-25% Class F fly ash or 30-35% Class C fly ash or a combination of 20% slag and 20% Class C fly ash should be considered.

The typical cross-section of the recommended design standard is:



6. RECOMMENDED VS. CURRENT STANDARDS BENEFIT/COST COMPARISON

The following cost comparison and the benefits of the recommended higher standard of design will focus only on the costs associated with the pavement system, as previously defined, and will not include all other development infrastructure costs, such as site grading, storm sewer, water main, sanitary sewer, etc. In addition, no cost benefit has been determined for other benefits of long-lasting pavements, such as prolonged higher service level and less inconvenience to the adjoining properties and traveling public.

The additional costs from the recommendations are for the drainable subbase and the subdrain. Other recommendations, such as the geotechnical investigation, subgrade CBR of 10, and the Class C-SUD concrete mix are either required or recommended by SUDAS and should not add cost to the paving system.

6.1 Additional Costs Due to Recommended Pavement System Standards

To determine the relative costs of the pavement system using the current Bondurant pavement design standards and the recommended standards, two representative residential street segments were used.

- A two-block segment of 26'-wide street paving, 900'-long from center of intersection to center of intersection
- A one-block segment of 26'-wide street paving, 870'-long from center of intersection to center of intersection

As previously mentioned, only pavement system costs were compared, which included excavation (for the pavement only), subgrade preparation, subbase and subdrains (for the recommended standard), and pavement. The following tables determine the estimated cost per square yard of the pavement system, including pavement and pavement foundation.

TABLE 3: RECOMMENDED VS. CURRENT STANDARD COST – TWO-BLOCK 900' SEGMENT

Current Pavement Standards

Item No.	Item	Unit	Unit Price	Quantity	Total Cost
1	Excavation, Class 10	CY	\$10.00	1136	\$11,360.00
2	Subgrade Preparation	SY	\$4.00	3408	\$13,632.00
3	PCC Pavement, 7"	SY	\$74.00	3009	\$222,666.00
				Total	\$247,658.00
				Cost/SY	\$82.31



Recommended Pavement Standards

Item No.	Item	Unit	Unit Price	Quantity	Total Cost
1	Excavation, Class 10	CY	\$10.00	1704	\$17,040.00
2	Subgrade Preparation	SY	\$4.00	3408	\$13,632.00
3	Subbase, Modified, 6"	SY	\$10.00	3408	\$34,080.00
4	PCC Pavement, 7"	SY	\$74.00	3009	\$222,666.00
5	Subdrains, PVC, 6" *	LF	\$20.00	1112	\$22,240.00
6	Subdrain Cleanout	EA	\$800.00	3	\$2,400.00
7	Subdrain Outlets and Connections	EA	\$500.00	3	\$1,500.00
Total					\$313,558.00
Cost/SY					\$104.21

* Assumed 25% provided by storm sewer

TABLE 4: RECOMMENDED VS. CURRENT STANDARD COST – ONE-BLOCK 870' SEGMENT

Current Pavement Standards

Item No.	Item	Unit	Unit Price	Quantity	Total Cost
1	Excavation, Class 10	CY	\$10.00	1035	\$10,350.00
2	Subgrade Preparation	SY	\$4.00	3104	\$12,416.00
3	PCC Pavement, 7"	SY	\$74.00	2718	\$201,132.00
Total					\$223,898.00
Cost/SY					\$82.38

Recommended Pavement Standards

Item No.	Item	Unit	Unit Price	Quantity	Total Cost
1	Excavation, Class 10	CY	\$10.00	1552	\$15,520.00
2	Subgrade Preparation	SY	\$4.00	3104	\$12,416.00
3	Subbase, Modified, 6"	SY	\$10.00	3104	\$31,040.00
4	PCC Pavement, 7"	SY	\$74.00	2718	\$201,132.00
5	Subdrains, PVC, 6" *	LF	\$20.00	1187	\$23,740.00
6	Subdrain Cleanout	EA	\$800.00	2	\$1,600.00
7	Subdrain Outlets and Connections	EA	\$500.00	4	\$2,000.00
Total					\$287,448.00
Cost/SY					\$105.76

* Assumed 25% provided by storm sewer

6.2 Cost Comparison

Cost of Pavement Systems

The following is a comparison of the costs of the current design standards and the recommended design standards for two similar sections of pavement in a residential area, as previously described:

Example 1: Two-block 900' Segment

Additional pavement system cost due to recommended design standards	
$\$104.21 - \$82.31 =$	+ \$21.90/SY
Percent increase in pavement system cost due to recommended design standards	
$\$21.90 / \$82.31 =$	+26.6%

Example 2: One-block 870' Segment

Additional pavement system cost due to recommended design standards	
$\$105.76 - \$82.38 =$	+ \$23.38/SY
Percent increase in pavement cost due to recommended design standards	
$\$23.38 / \$82.38 =$	+28.4%

Averages of the two examples yield the following results due to the recommended design standards:

Additional pavement system cost	+ \$22.64
Percent increase in pavement system cost	+27.5%

Cost of Residential Lots

Another way to look at this additional cost is how it might affect the cost of each residential development lot. As an illustration, a normal residential lot is presumed to be 70'± wide and 140'± deep and corner lots are 90' wide. Using the two street pavement examples illustrated in Section 6.1, the following costs are calculated:

Example 1: Two-block 900' segment

As many as 20 lots or as few as 12 lots could front on the street segment, depending on orientation. Assuming an average of 16 lots, the additional cost per lot for the improved standards would be $\$65,900 / 16 \text{ lots} = \$4,118.75/\text{lot}$.

Example 2: One-block 870' segment

As many as 22 lots or as few as 18 lots could front on the street segment, depending on orientation. Assuming an average of 20 lots, the additional cost per lot for the improved standards would be $\$63,550 / 20 \text{ lots} = \$3,177.50/\text{lot}$.

An estimated per lot additional cost due to the recommended standards ranges from \$3,177.50 to \$4,118.75, or an average of \$3,648.13.

6.3 Life Benefit of Recommended Standards

As indicated in previous discussions, improved pavement foundations and subsurface drainage will substantially increase the expected life of a pavement. It is also expected that improved jointing and concrete mixtures will provide additional longevity and improved service. Properly designed and maintained PCC pavements should be expected to provide at least 50 years of good service, as opposed to the expected life of 30 to 35 years for the current design standards. Therefore, a conservative estimate of the additional pavement life for the recommended pavement system standards is 15 years.

Additional pavement life due to recommended design standards	
50 years – 35 years =	+15 years
Percent increase in pavement life due to recommended design standards	
15 years / 35 years =	+42.8%
 Benefit/Cost Ratio	
Life Benefit Increase % / Additional Cost % = 42.8% / 27.5% =	1.56:1

6.4 Future Reconstruction

As would be anticipated with additional expected life, pavements constructed at the higher recommended design standards should require reconstruction less frequently. As an illustration, over a period of 100 years, it would be expected that pavement constructed with the recommended design standards would require only one pavement reconstruction to last that period of time. On the other hand, pavement constructed at the current design standard would require two reconstructions to serve for a similar length of time.

Based on present costs and the cost of removing and replacing only the pavement in the future, and not including other associated work, such as excavation, intakes, drives, design, and other associated costs, the following assumptions using an average of the two previous pavement examples of similar length are made:

- Number of residential lots: 18
- Total area of pavement: 2,864 SY
- Area of pavement per lot: 159 SY
- Initial cost of pavement with current design: \$82.35/SY
- Initial cost of pavement with recommended design: \$104.99/SY
- Cost to remove and replace pavement = \$12 + \$74 = \$86/SY

the following conservative costs could be expected:

Costs for pavement constructed with current design standards to serve for 100 years

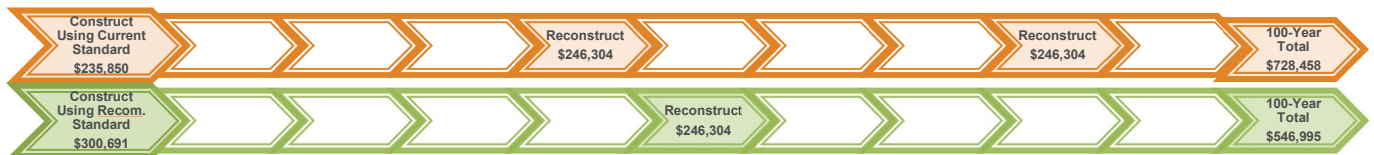
Initial pavement system cost:	
2,864 SY @ \$82.35 =	\$235,850
Initial pavement system cost per residential lot:	
\$235,850 / 18 lots =	\$13,103
 Pavement reconstruction cost at 35 years:	
2,864 SY @ \$86.00 =	\$246,304
Pavement reconstruction cost per residential lot at 35 years:	
\$246,304 / 18 lots =	\$13,684
 Pavement reconstruction cost at 70 years:	
2,864 SY @ \$86.00 =	\$246,304
Pavement reconstruction cost per residential lot at 70 years:	
\$246,304 / 18 lots =	\$13,684
<hr/>	
Total pavement costs with current design standards for 100 years:	
Pavement system initial cost and pavement reconstruction costs	\$728,458
Pavement system initial cost and pavement reconstruction costs per lot	\$40,470

Cost for pavement constructed with recommended design standards to serve for 100 years

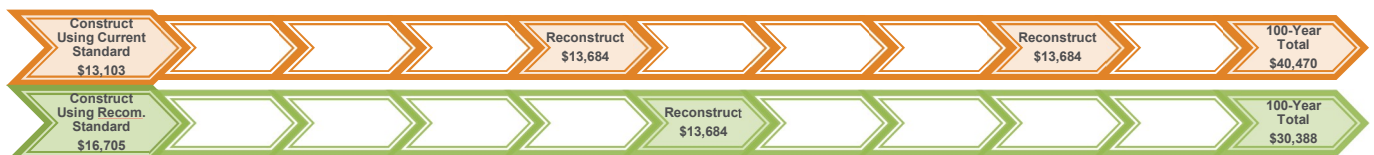
Initial pavement system cost: 2,864 SY @ \$104.99 =	\$300,691
Initial pavement system cost per residential lot: \$300,691 / 18 lots =	\$16,705
 Pavement reconstruction cost at 50 years: 2,864 SY @ \$86.00 =	 \$246,304
Pavement reconstruction cost per residential lot at 50 years: \$246,304 / 18 lots =	 \$13,684
<hr/>	
Total pavement costs with recommended design standards for 100 years: Pavement system initial cost and pavement reconstruction costs	\$546,995
Pavement system initial cost and pavement reconstruction costs per lot	\$30,388

For each residential lot, an initial investment of approximately \$3,648 more for longer lasting pavement using the recommended design standards will reduce future reconstruction costs by an estimated \$10,082 in present day dollars.

Projected Pavement Construction & Reconstruction Timeline -100-Year Cycle (Average Street Segment)



PROJECTED PAVEMENT CONSTRUCTION & RECONSTRUCTION TIMELINE -100-YEAR CYCLE (PER LOT)



REFERENCES

- ¹ Gross, J., Harrington, D., Wiegand, P., and Cackler, T. *Guidance for Improving Foundation Layers to Increase Pavement Performance on Local Roads*, Iowa : Report No. TR-640, Iowa Department of Transportation, 2014.
- ² Schaefer, V., Stevens, L., White, D., Ceylan, H. *Design Guide for Improved Quality of Roadway Subgrades and Subbases*, Iowa: Report No. TR-525, Iowa Department of Transportation, 2008.
- ³ Iowa Statewide Urban Design and Specifications Program (SUDAS), *Design Manual*, 2023.
- Taylor, P., Zhang, J., Wang, X. *Conclusions from the Investigation of Deterioration of Joints in Concrete Pavement*, Report No. TPF-5(224), Federal Highway Administration, 2016.
- ACPA, *Subgrades and Subbases for Concrete Pavements*, EB204P, American Concrete Pavement Association, 2007.
- ⁴ ACPA, *Design and Construction of Joints for Concrete Streets*, American Concrete Pavement Association, 1992.
- ⁵ Weiss, J., Ley, M.T., Sutter, L. Harrington, D., Gross, J. Guide to the Prevention and Restoration of Early Joint Deterioration in Concrete Pavements, Iowa: Report No. TR-697, Iowa Department of Transportation, 2016.
- ⁶ HDR and CH2M Hill, Memo to Lucia Ramirez of Oregon department of Transportation; Discounting Recommendations for Least Cost Planning in Oregon, March 15, 2011. Retrieved from <https://www.oregon.gov/ODOT/TD/TP/docs/lcp/discount.pdf>, February 2017
- ⁷ Office of Management and Budget. (November 2016). Advisory Circular A-94. *DISCOUNT RATES FOR COST-EFFECTIVENESS, LEASE PURCHASE, AND RELATED ANALYSES Appendix C*, retrieved from https://obamawhitehouse.archives.gov/omb/circulars_a094/a94_appx-c, February 2017
- ⁸ Mack, J. W. Accounting for Inflation in Life Cycle Cost Analysis for Pavement Type Selection . Transportation Research Board, Vol. 12, No. 2686, 2011. Retrieved from <http://docs.trb.org/prp/12-2686.pdf>, February 2017



**BUSINESS OF THE CITY COUNCIL
BONDURANT, IOWA
AGENDA STATEMENT**

Item No. 7.e.
For Meeting of 4/29/2024
Discussion Item

TITLE: Parks, Trails, and Greenway Master Plan

CONTACT PERSON:

Maggie Murray, Planning & Community Development Director

BRIEF HISTORY & ANALYSIS: This will be a presentation about the Parks, Trails, and Greenway Master Plan currently under development through the Iowa Initiative for Sustainable Communities. A draft implementation plan is attached for review. Please note that the draft implementation plan has not yet gone to the Parks & Recreation Board for review and this is the first time it has been available.

Additionally, the City is working on a plan for the parking lot located south of City Park. As such, there should be discussion about configuration of the parking lot to determine guidance on a tree that is located in a problematic location.

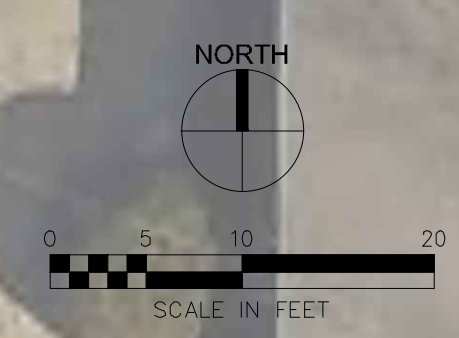
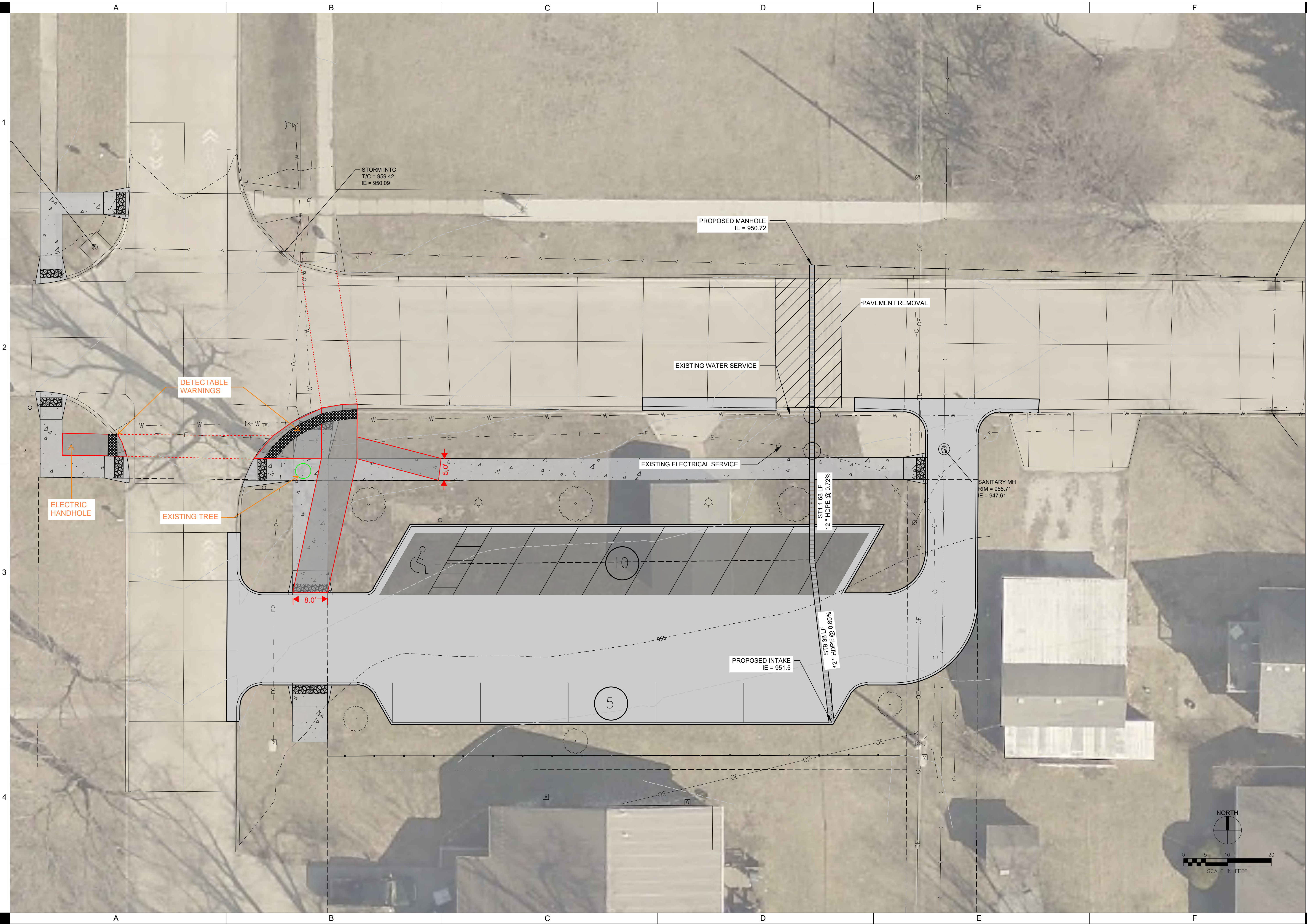
FUNDING SOURCE: NA

STAFF RECOMMENDATION: This is an update/discussion item.

APPROVED FOR SUBMITTAL:

ATTACHMENTS:

1. Sidewalk Alternate Exhibit parking lot
2. Draft Implementation Parks Trails Greenway



SHIVE-HATTERY
ARCHITECTURE+ENGINEERING
800.798.0313 | SHIVE-HATTERY.COM

3RD STREET PARKING IMPROVEMENT
CITY OF BONDURANT
201 3RD ST SE, BONDURANT, IA 50035

DRAWN BY	BDD
APPROVED BY	KAL
ISSUED FOR	REVIEW
ISSUE DATE	04/17/2024
PROJECT NUMBER	2240004020
FIELD BOOK	...

PRELIMINARY - NOT FOR CONSTRUCTION

EXHIBIT 1

EX1

DRAFT Impl

Short Term

Medium-Ter

Long-Term

ementation Section - Staff Edits

l - Projects to be Completed in 0-3 Years

Construct the BRSC to Park Side Trail Connection
Establish a Friends of the Parks non-profit organization to assist with grant seeking, donations
Construct trail connection over Mud Creek in Eagle Park
Continue involvement in the Mud Creek/Spring Creek Watershed Greenway Master Plan process
Relocate the former City Park playground set to Bluejay Landing Park
Install Phase 1 (Dining Room) of the ARTocka Trail Loop
Install Phase 2 (Garden) of the ARTocka Trail Loop
Install the Puddle Pavilions piece along Mud Creek in Eagle Park
Provide additional trainings/resources to the Parks & Recreation Board regarding their new role
Construct Phase 1 of the City Park Master Plan
Construct Phase 2 of the City Park Master Plan (splash pad)
Construct public parking lot south of City Park
Install the disc golf/multigolf course at Eagle Park, including constructing additional parking
Construct additional public parking downtown near the Depot
Revise the existing Subdivision Ordinance
Construct tennis/pickleball courts in coordination with the Bondurant-Farrar Community School
Construct a basketball court at Wolf Creek Park
Construct trails as proposed in the Civic Campus Master Plan area
Construct the Chichaqua Valley Trail extension as shown in the Grain District Downtown Redevelopment
Construct the Chichaqua Valley Trail Extension along the former railroad corridor east of Highway 65
Begin implementing wayfinding signage as proposed in the Art, Culture, & Wayfinding Master Plan
Coordinate with the Iowa DOT to promote the planting of mixed native deciduous and coniferous trees
Coordinate with the Bondurant Historical Society to implement an educational and historical site
Create an amenity inventory which highlights the types and quantities of amenities located at various sites
Establish an art piece that recognizes supporters of the Bondurant Recreational Sports Complex

m - Projects to be Completed in 3-5 Years

Construct the amphitheater at City Park
Construct Phase 1 of the Central District Stormwater Improvements Master Plan
Renovate the former Bondurant Emergency Service Facility for Parks & Recreation Center use
Complete the missing trail gap of the Gay Lea Wilson Trail so that a trail connection exists
Improve Sankey Summit Park utilizing the concept in the Parks, Trails, and Greenways Master Plan
Improve Harvest Meadows Park utilizing the concept in the Parks, Trails, and Greenways Master Plan
Construct the Downtown Entryway artist concept as shown in the Art, Culture, & Wayfinding Master Plan
Establish a community garden as suggested in the Community Garden Policy Plan Guide
Install Phase 3 (Foyer) of the ARTocka Trail Loop
Install Phase 4 (Lounge) of the ARTocka Trail Loop
Install Phase 5 (Gallery) of the ARTocka Trail Loop
Enhance the southern entrance of Lake Petocka with an entrance feature and landscaping
Add artistic lighting to the Highway 65 pedestrian underpass
Enhance and expand downtown holiday lighting
Add an art installation at the SW corner of the Bondurant Community Library's grounds

Activate vacant lots in the Civic Campus as they await development
Locate Bondurant Bluejay Sculptures throughout the community in coordination with the Bondurant
Evaluate existing neighborhood park conditions relative to ADA access and amenities and be
Pave the road within the Bondurant Cemetery

- Projects to be Completed in 5-10 Years

Construct the ice skating ribbon at City Park
Construct Phase 2 of the Central District Stormwater Improvements Master Plan
Construct the Skate Park Phase of the Central District Stormwater Improvements Master Plan
Construct Phase 3 of the Central District Stormwater Improvements Master Plan
Construct Phase 4 of the Central District Stormwater Improvements Master Plan
Create trail connections along the greenway system to the north
Create a regional attraction that generates circulating revenue back into the PTG system
Improve District Corridor Park utilizing the concept in the Parks, Trails, and Greenways Master Plan
Construct the Art Alley artist concept as shown in the Art, Culture, & Wayfinding Master Plan
Pave the remaining gravel area at BRSC/Lake Petocka Park
Add artistic lighting along the Chichaqua Valley Trail
Consider adopting a sustainability or climate action plan
Consider creating an incentive or grant program for adding green infrastructure to private property
Establish an off-street trail connection from City Park south to 5th Street SE and then west
Plan for future regional stormwater facility amenities north of Bondurant as shown in the City
Improve Featherstone Park utilizing the concept in the Parks, Trails, and Greenways Master Plan

Ongoing

Continue hosting existing large community events and add new ones as new resources allow as shown
Continue to partner with local organizations to promote a variety of events and engage residents
Continue growing the community's urban tree canopy
Continue coordinating with the Iowa DNR to have the public fishing pond areas stocked
Continue including trails as a component of upcoming street construction/reconstruction projects
Continue to install green technology when feasible with public improvement projects
Continue to be proactive in planning and budgeting for parks and recreation maintenance needs
Continue to expand trails and greenways through natural, residential, and business areas to connect
Continue marketing efforts of the community's parks, trails, and greenways as well as community
Continue implementing wayfinding signage as proposed in the Art, Culture, & Wayfinding Master Plan
Continue to grow the amount of Parks & Recreation programs offered to the community as the city

ions, and implementing projects

ole of assisting with implementing the Art, Culture, & Wayfinding Master Plan

ing

l District

elopment Plan, including establishing an arboretum and other creative placemaking e
ghway 65 and south of the Bondurant Industrial Park

lan

s trees and native grasses and wildflowers along Highway 65

signage system within the Lake Petocka Park area

t each park or trail

ex

south to Altoona

Plan as inspiration

r Plan as inspiration

ster Plan

ant-Farrar Community School District and the Bondurant Chamber of Commerce
egin making changes to increase such accessibility

ter Plan as inspiration
n

roperty
over to the existing trail at Grant Street South
ty's Stormwater Master Plan
lan as inspiration

suggested in the Art, Culture, and Wayfinding Master Plan to help retain the commun
ents of Bondurant

ects

s
decrease commute along state highways creating safe routes for bicyclists and pedes
ity events
r Plan
apacity of the Parks & Recreation Department allows over time

fforts alo

ity's stroi

strians