

Bellevue Stormwater Management

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Bellevue, Iowa





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OUR TEAM

Presentation Roadmap

- Project Overview
- Mitigation Strategies

Insurance

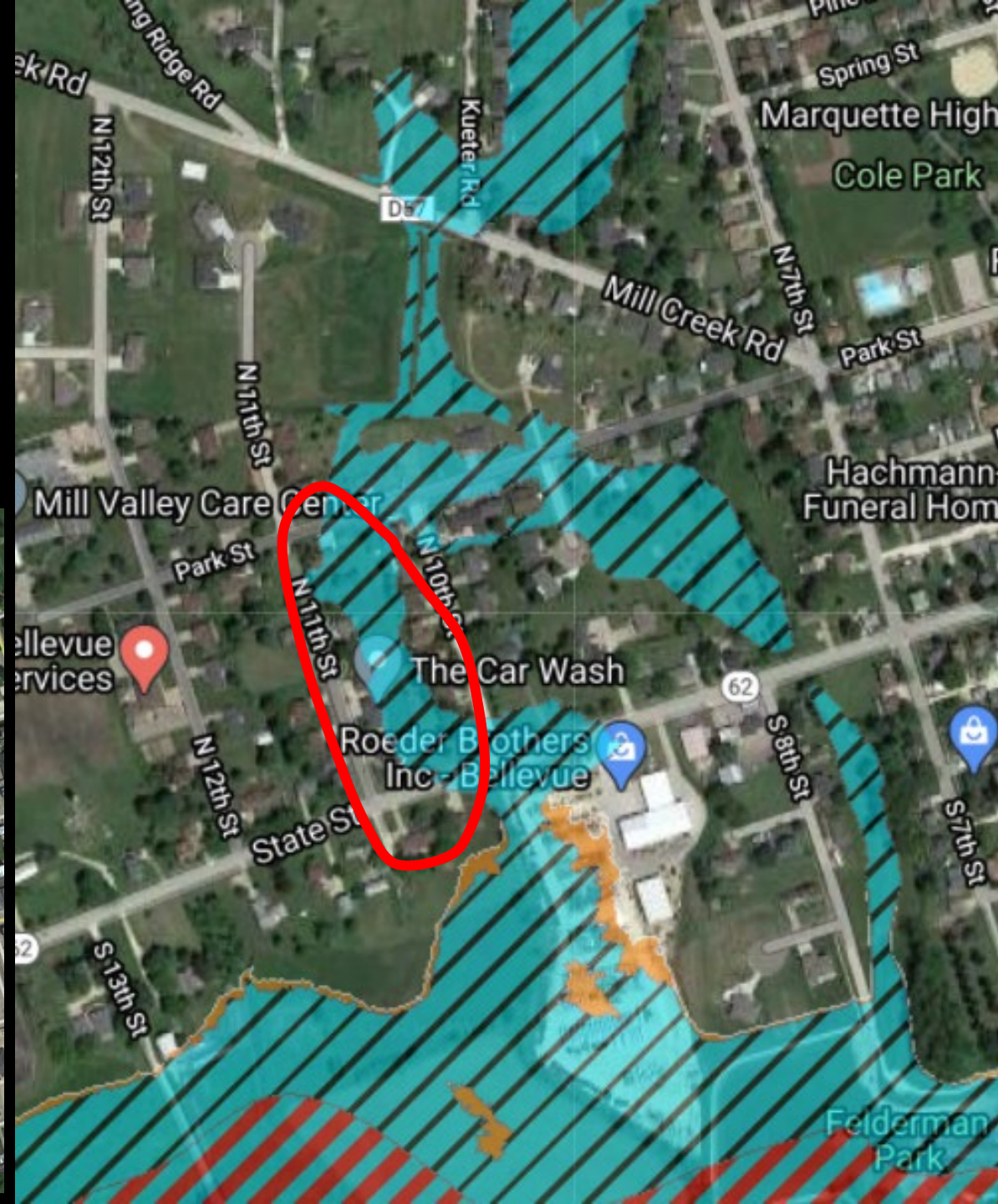
Floodwalls

Culvert Improvement

- Project Phases
- Questions

Project Overview

- FEMA is in the process of updating floodplain maps.
- The proposed map indicates 20 homes added to the flood plain.
- Explore improvements to reduce the flood risk during a 100-year flood event.





Mitigation Strategies

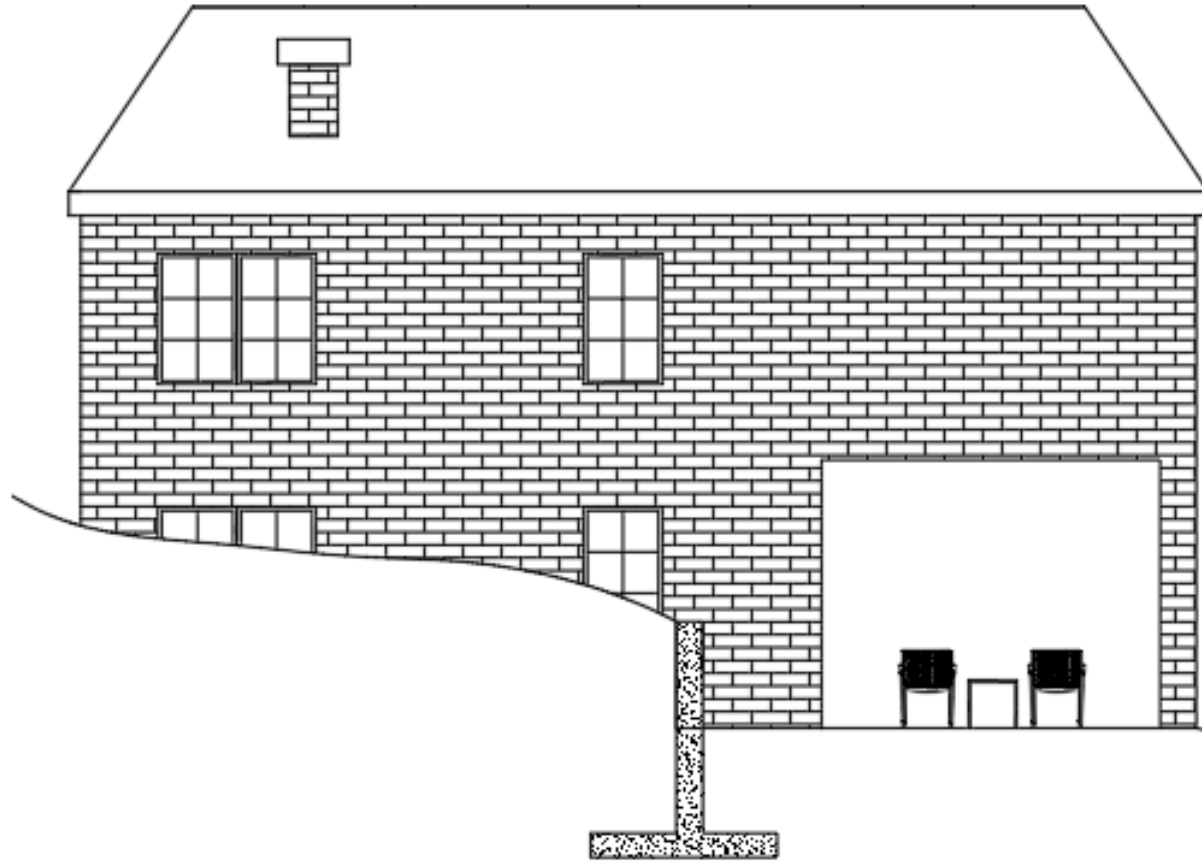
- Manage risk with Insurance
- Construction of individual flood walls
- Improve the culvert located at Highway 62 and Dutel Hollow Main Branch

Mitigate Risk with Insurance – Homeowners Purchase Flood Insurance

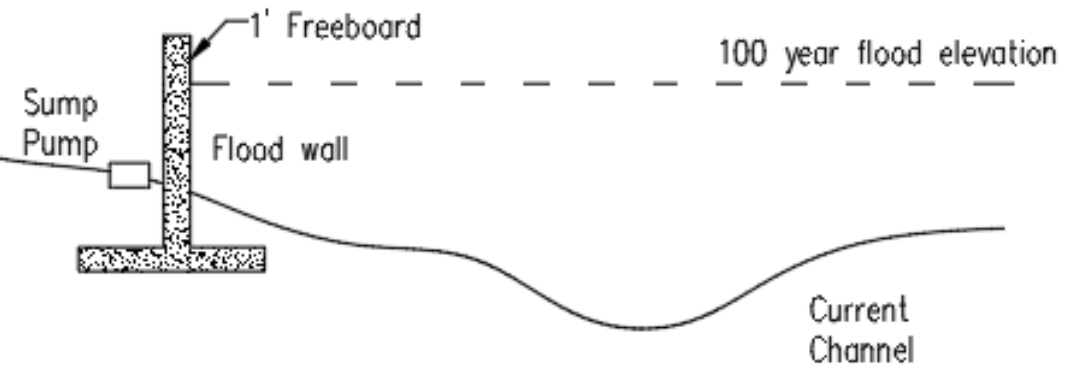
| Building coverage | Contents Coverage | Premium with basement or enclosure Per month | Premium without basement or enclosure Per month |
|-------------------|-------------------|---|--|
| \$20,000 | \$8,000 | \$144 | \$113 |
| \$30,000 | \$12,000 | \$181 | \$150 |
| \$50,000 | \$20,000 | \$242 | \$211 |
| \$75,000 | \$30,000 | \$291 | \$255 |
| \$100,000 | \$40,000 | \$322 | \$288 |
| \$125,000 | \$50,000 | \$341 | \$305 |
| \$150,000 | \$60,000 | \$362 | \$328 |
| \$200,000 | \$80,000 | \$404 | \$362 |
| \$250,000 | \$100,000 | \$436 | \$389 |

Here's how PRP rates vary based on coverage amounts:

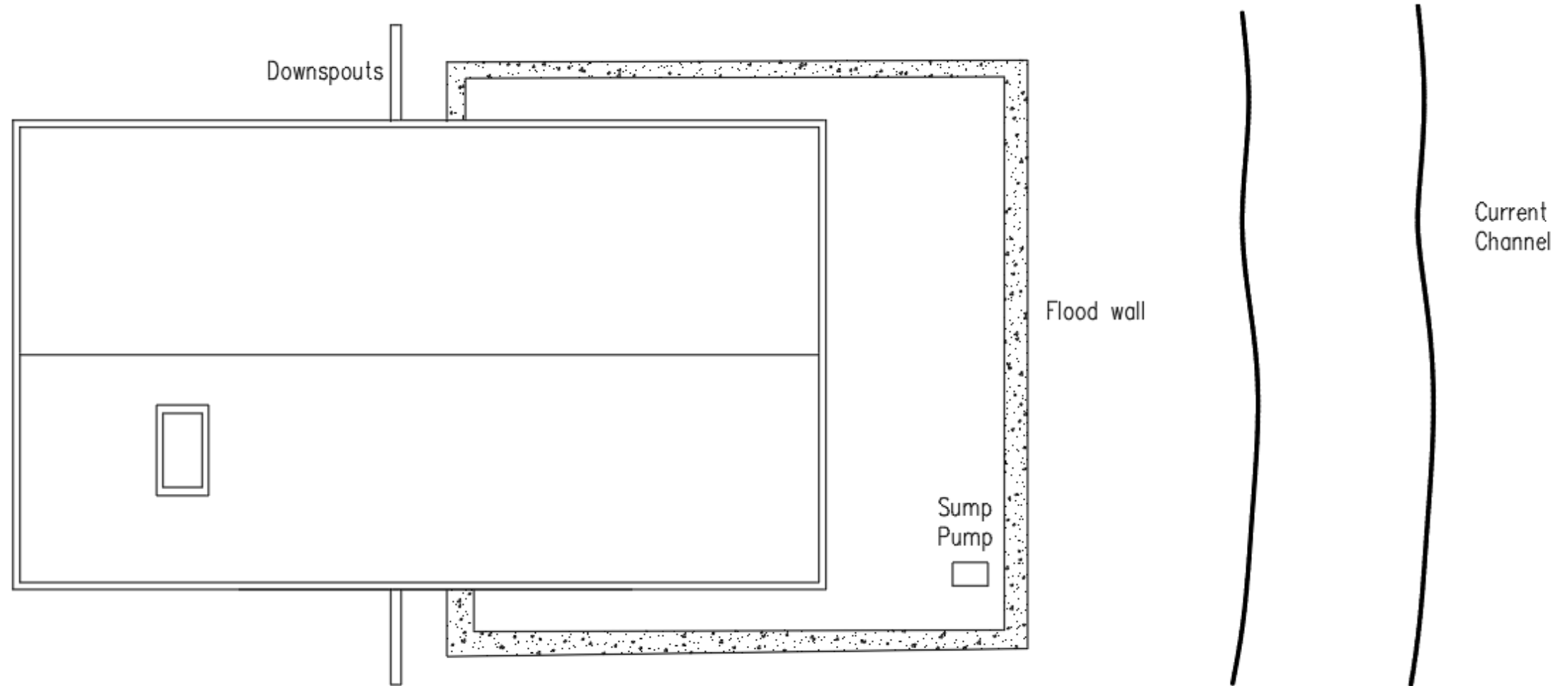
Floodproof individual homes



Flood wall side view



Floodproof individual homes



Flood wall plan view

Comparison of Flood Insurance and Floodwall Costs

Present Worth of Flood Insurance

$A := 4000$ annual cost dollars

$i := 0.03$ interest rate

$n := 30$ years

P = present worth

$$P := \frac{(1+i)^n - 1}{i \cdot (1+i)^n} \cdot A = 78402$$

$P = \$78,500$

Floodwall Construction

| Item | Quantity | Unit | Unit Price | Total |
|------------------------------------|----------|-------|------------|--------------------|
| Reinforced concrete wall 12" Thick | 360 | PSFSA | \$ 27.50 | \$ 9,900.00 |
| Foundation concrete | 480 | CF | \$ 4.10 | \$ 1,968.00 |
| Sump Pump Installation | 1 | EACH | \$ 450.00 | \$ 450.00 |
| Waterproofing | 360 | PSFSA | \$ 1.10 | \$ 396.00 |
| Aesthetic | 360 | PSFSA | \$ 8.45 | \$ 3,042.00 |
| Construction Total | | | | \$15,756.00 |
| Engineering Service | | | 20% | \$ 3,151.20 |
| Contingency | | | 20% | \$ 3,151.20 |
| Total | | | | \$22,000.00 |

HEC-RAS Modeling



FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 1



JACKSON COUNTY, IOWA AND INCORPORATED AREAS

| COMMUNITY NAME | CID | COMMUNITY NAME | CID |
|--|--------|----------------------|--------|
| CITY OF ANDREW* | 190693 | CITY OF MILES | 190779 |
| CITY OF BALDWIN | 190428 | CITY OF MONMOUTH | 190161 |
| CITY OF BELLEVUE | 190158 | CITY OF PRESTON | 190431 |
| JACKSON COUNTY (UNINCORPORATED AREAS) | 190879 | CITY OF SABULA | 190162 |
| CITY OF LA MOTTE | 190430 | CITY OF SPRAGUEVILLE | 190181 |
| CITY OF MAQUOKETA | 190160 | CITY OF SPRINGBROOK | 190047 |
| | | CITY OF ST. DONATUS | 190106 |

*No Special Flood Hazard Areas Identified



FEMA

REVISED:

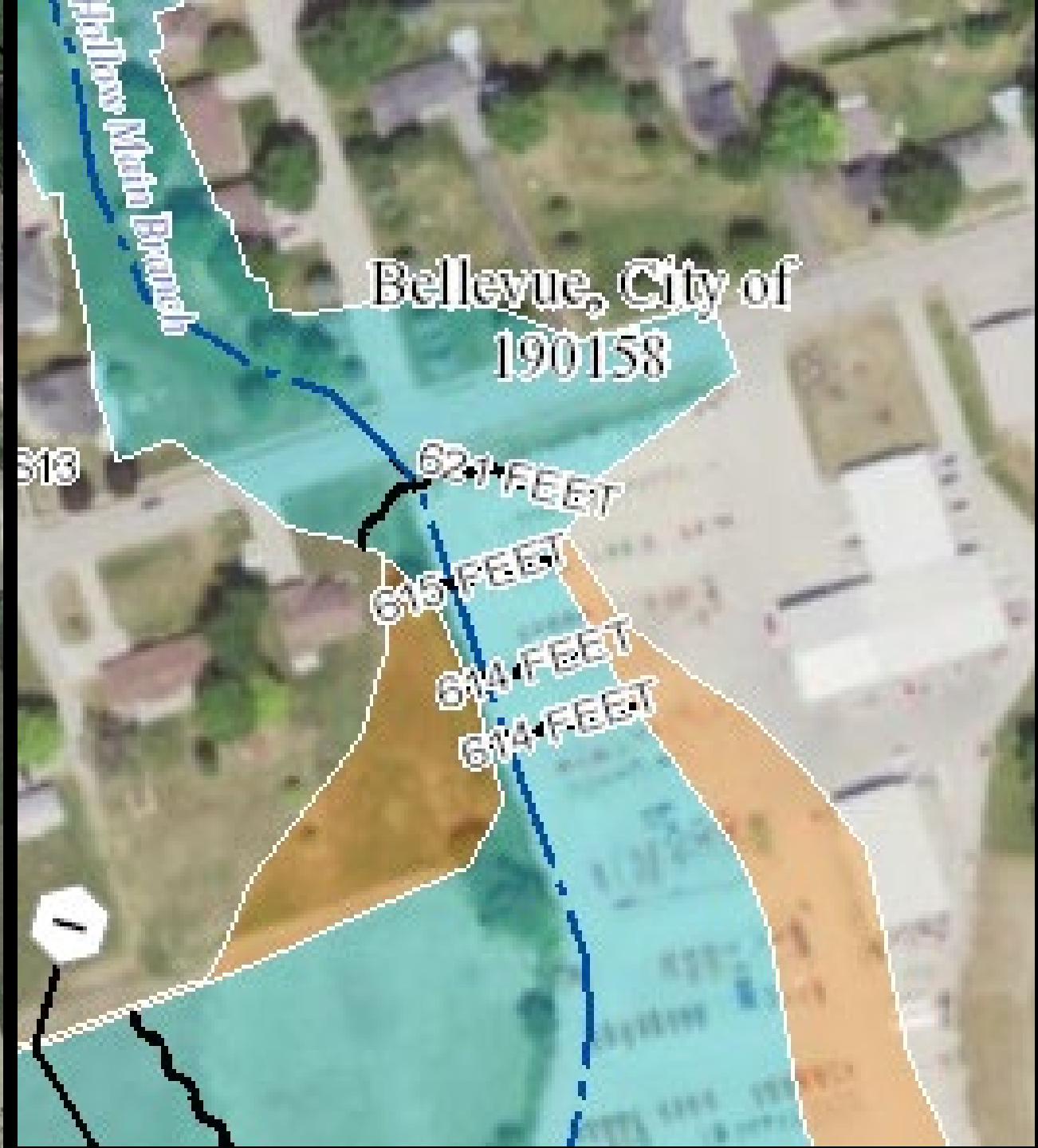
TBD

FLOOD INSURANCE STUDY NUMBER
19097CV000B

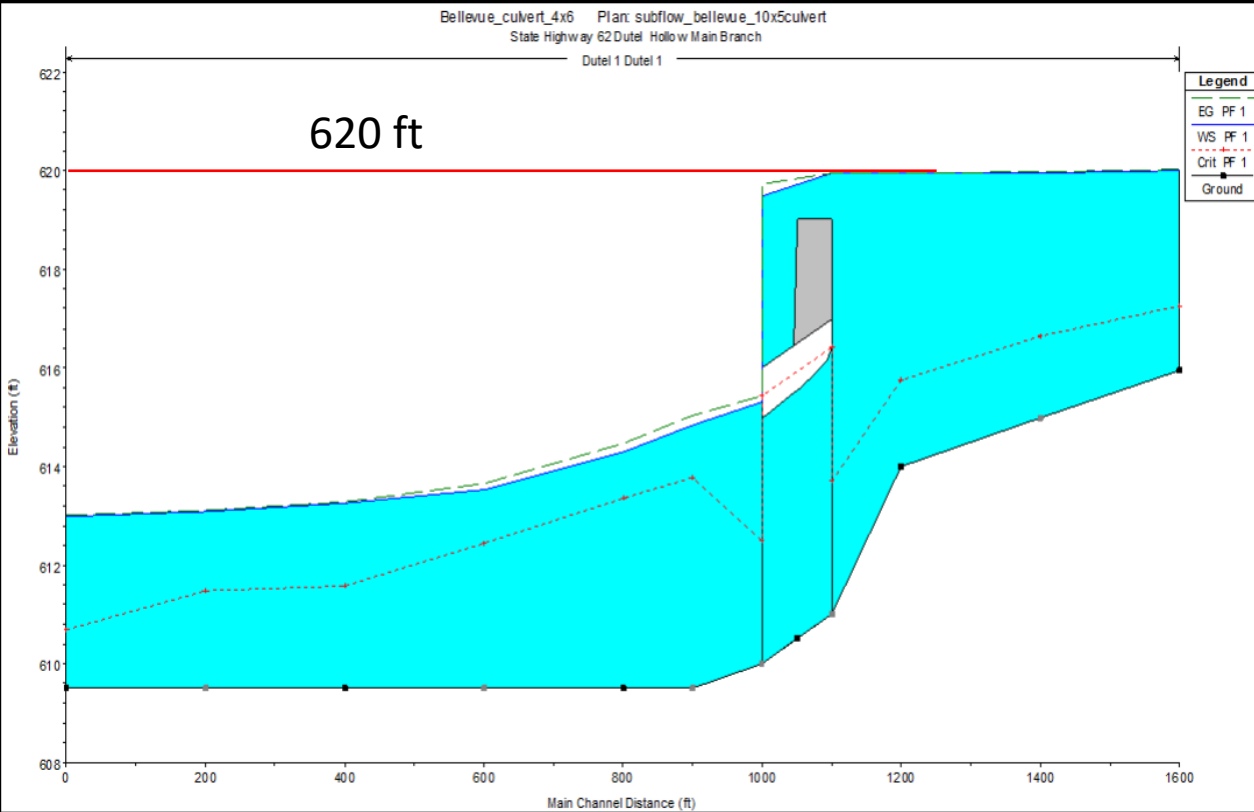
Version Number 2.4.3.0



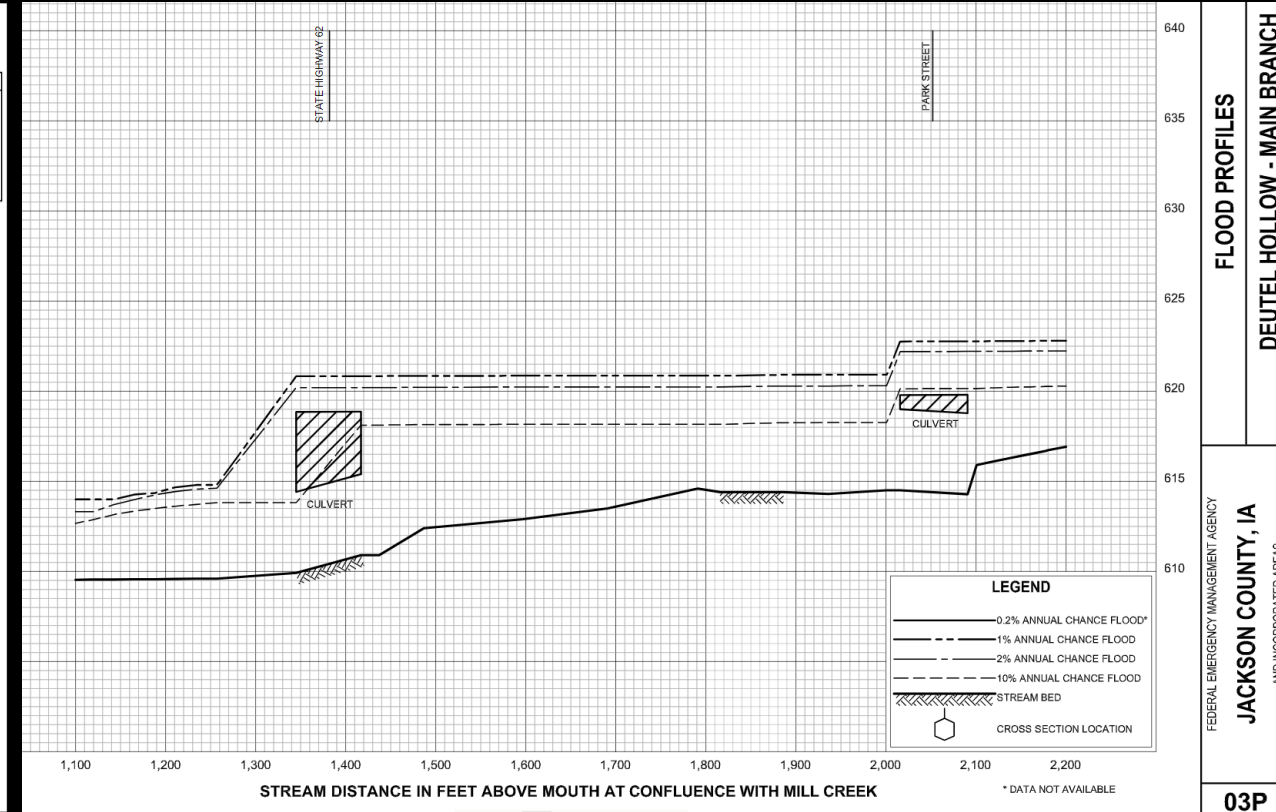




Current Culvert Capacity

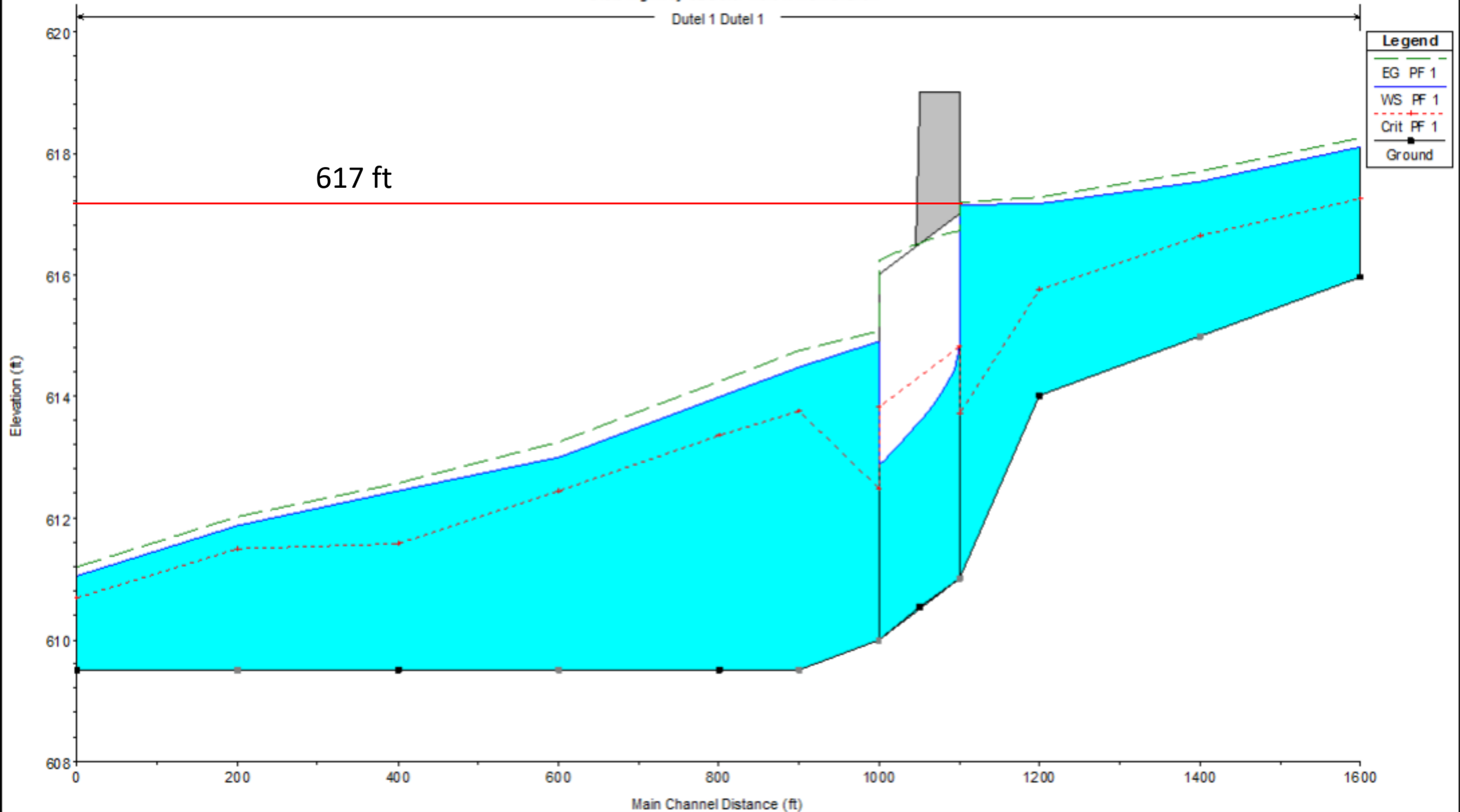


FEMA Flood Profile



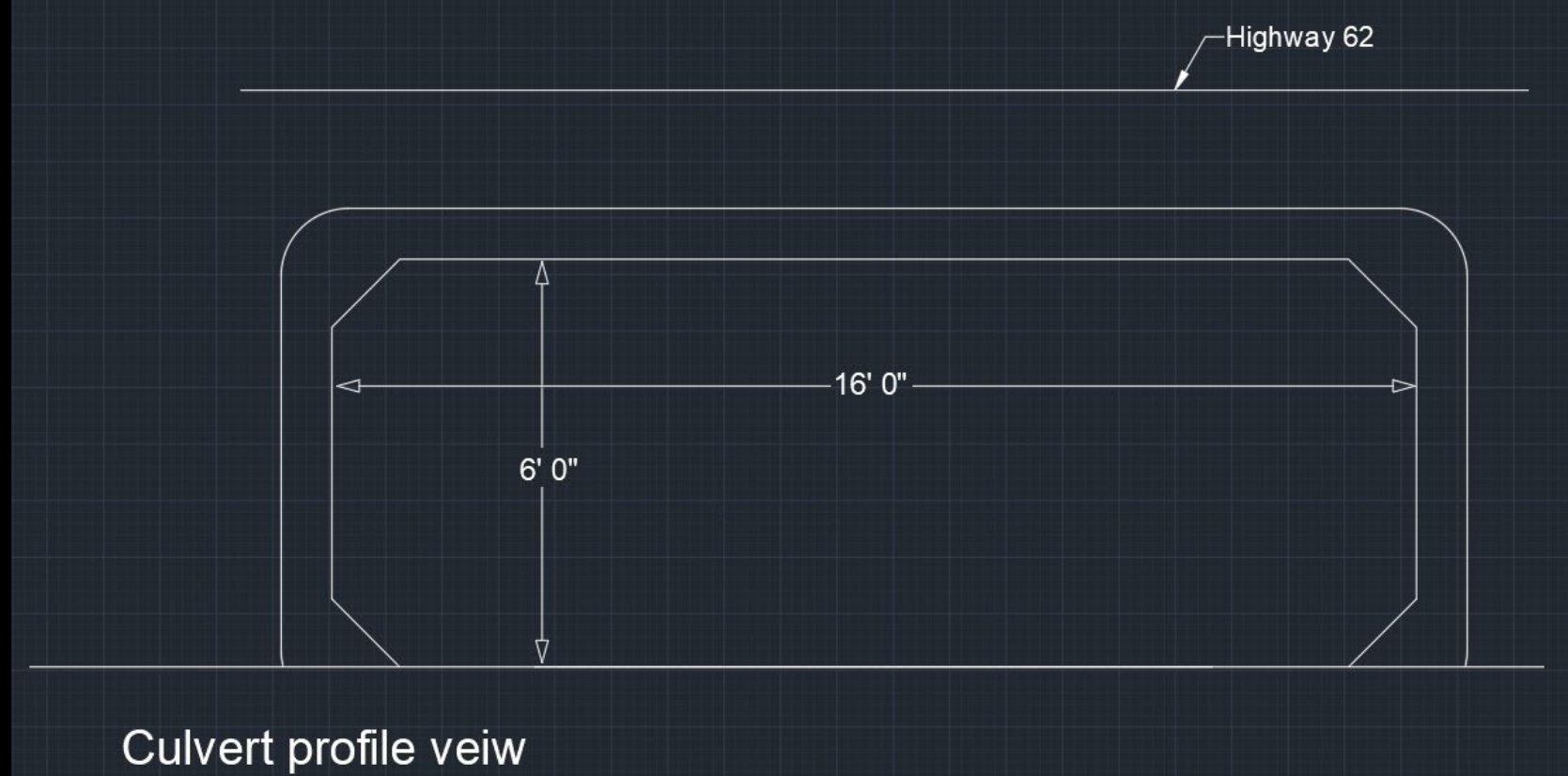
Culvert Improvement

Bellevue_culvert_14x6 Plan: subflow_bellevue_10x5culvert
State Highway 62 Dute1 Hollow Main Branch

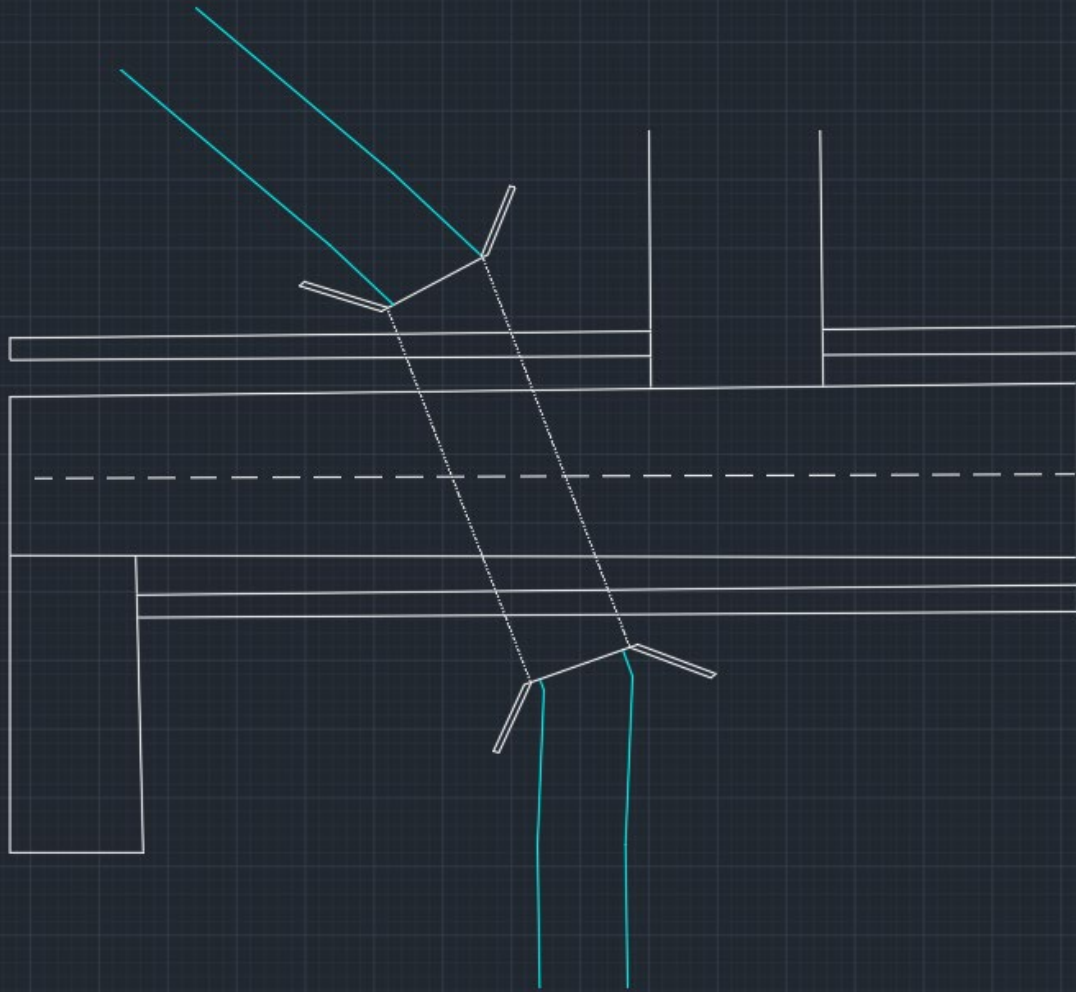




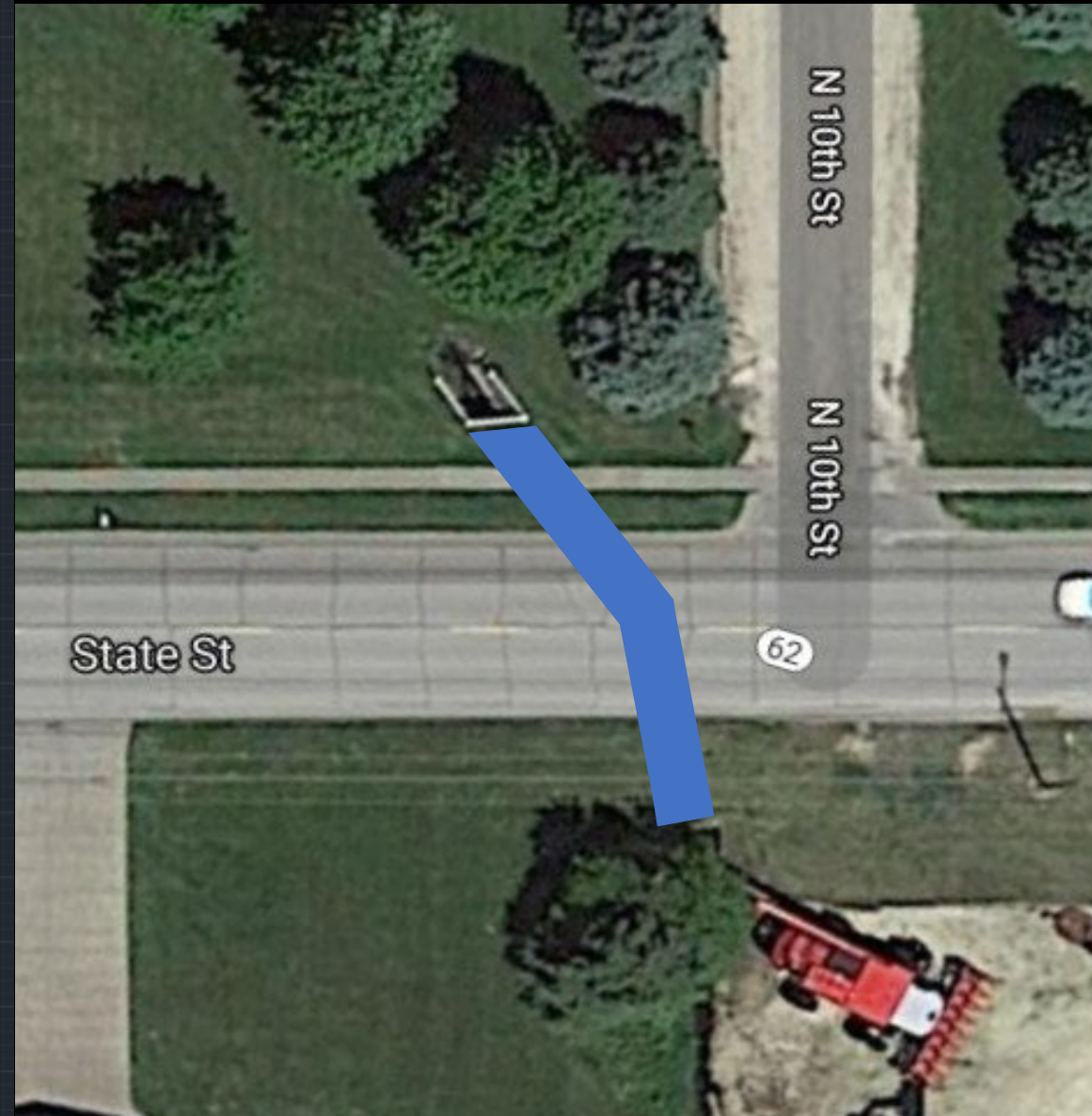
Improved Culvert



Improved Culvert

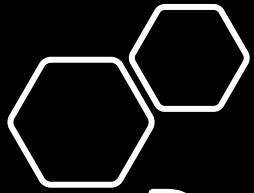


Culvert Plan View



Culvert Improvement Cost Estimate

| Item | Quantity | Unit | Unit Price | Total |
|---|----------|------|--------------|----------------------|
| Removal of pavement | 284 | SY | \$ 8.93 | \$ 2,536.12 |
| Removal of culvert | 1 | LS | \$ 18,194.47 | \$ 18,194.47 |
| Removal of sidewalk | 48 | SY | \$ 9.21 | \$ 442.08 |
| Removal of intakes | 2 | EACH | \$ 674.06 | \$ 1,348.12 |
| Precast Concrete Box Culvert, 16' X 16' | 65 | LF | \$ 2,900.00 | \$ 188,500.00 |
| Precast Concrete Box Culvert, 16' X 6' Flared End Piece | 2 | EACH | \$ 15,000.00 | \$ 30,000.00 |
| Replace Water Main, trenched, 12" DIP | 84 | LF | \$ 87.42 | \$ 7,343.28 |
| Removal and reinstall storm sewer pipe less than 36" | 84 | LF | \$ 300.00 | \$ 25,200.00 |
| Removal and reinstall of fence | 32 | LF | \$ 37.89 | \$ 1,212.48 |
| Steel beam guardrail | 64 | LF | \$ 23.58 | \$ 1,509.12 |
| Granular Backfill | 93 | CY | \$ 44.55 | \$ 4,143.15 |
| 4" concrete sidewalk | 256 | SF | \$ 6.16 | \$ 1,576.96 |
| Seeding and fertilization | 0.12 | ACRE | \$ 3,500.00 | \$ 420.00 |
| Mobilization, erosion control | 4 | EACH | \$ 500.00 | \$ 2,000.00 |
| PCC Pavement | 284 | SY | \$ 46.94 | \$ 13,330.96 |
| Construction Total | | | | \$ 297,756.74 |
| Administration & Engineering | | | 20% | \$ 59,551.35 |
| Contingency | | | 10% | \$ 29,775.67 |
| Total | | | | \$ 387,000.00 |



Downstream Channel

- Located from highway 62 to Mill Creek



Project phases for channel Improvements and related drainage structures.

Phase 1

- Clear current channel from Mill creak to highway 62
- Improve culvert located under highway 62

Phase 2

- Investigate and improve the drainage channel from highway 62 to Park Street (includes Dutel Hollow branch 2)
- Improve culvert located under Park Street

Phase 3

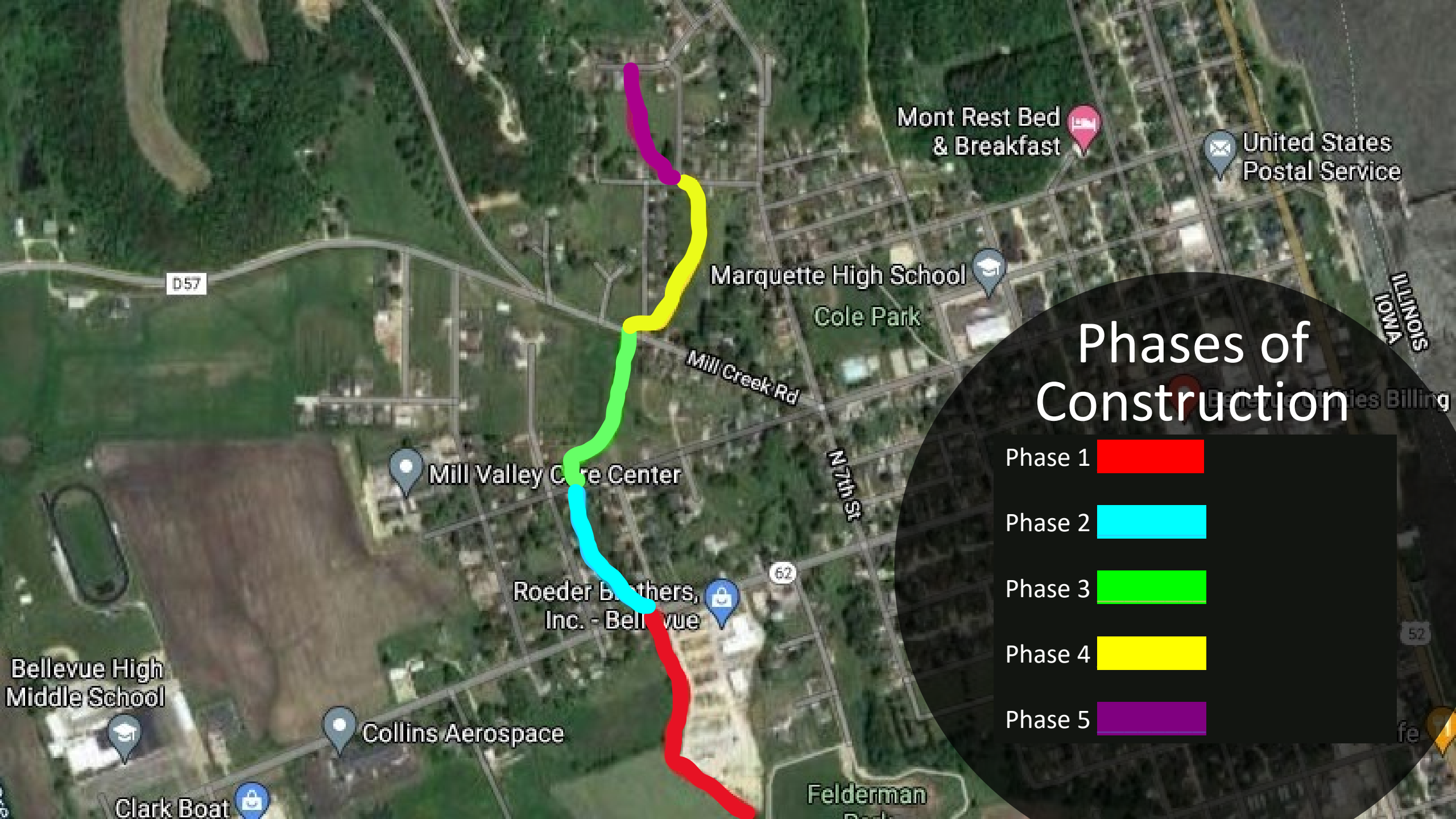
- Investigate and improve the drainage channel from Park street to Mill Creek road
- Improve culvert located under Mill Creek Road

Phase 4

- Investigate and improve the drainage channel from Mill Creek Road to Dunn Street
- Improve culvert under Dunn Street

Phase 5

- Investigate and improve the drainage channel from Dunn street to Dutel Court
- Improve culvert under Dutel Court



Phases of Construction

- Phase 1
- Phase 2
- Phase 3
- Phase 4
- Phase 5

D57

Marquette High School

Cole Park

Mill Creek Rd

Mill Valley Care Center

Roeder Brothers, Inc. - Bellevue

62

W 17th St

Collins Aerospace

Bellevue High Middle School

Clark Boat

Felderman Park

Mont Rest Bed & Breakfast

United States Postal Service

ILLINOIS IOWA

Bellevue, Illinois

52

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Conclusion

- Manage risk with insurance
- Construct individual floodwalls
- Improve Highway 62 Culvert

Questions?

