

Small Town, Big Solutions Inc.

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Stormwater Mitigation &
Subdivision

Manchester

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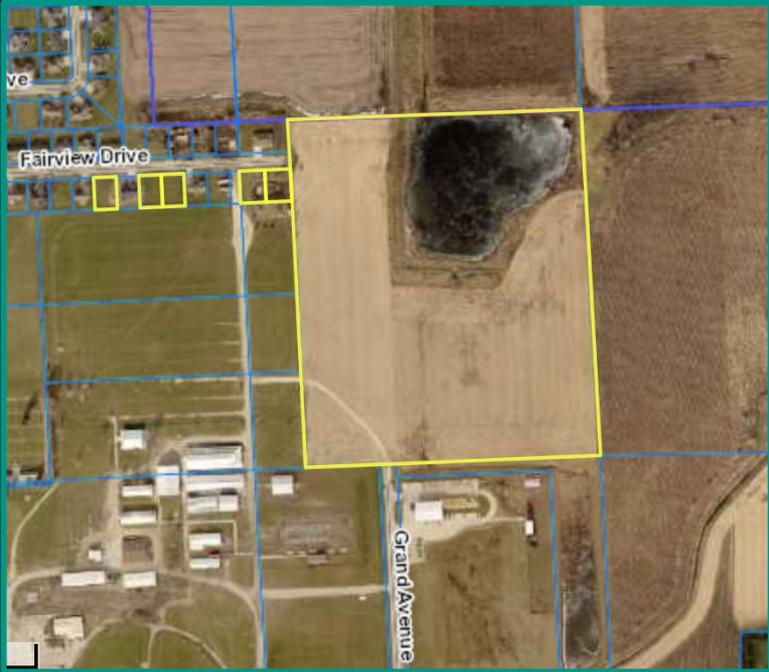
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Today's Plan

- 1 Project Description**
- 2 Roadway Extension Design**
- 3 Stormwater Sewer Design**
- 4 Water Main Design**
- 5 Channel and Culvert Design**
- 6 Stormwater Management Basin Design**
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Project Description



Project Description

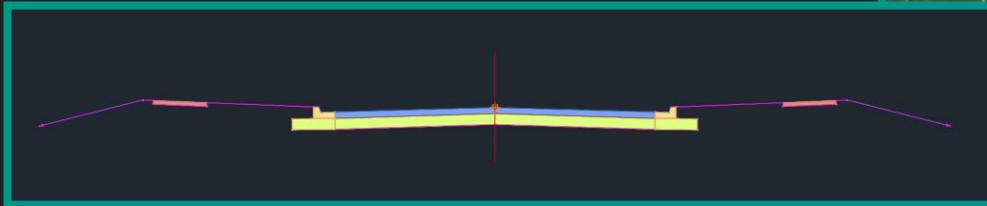
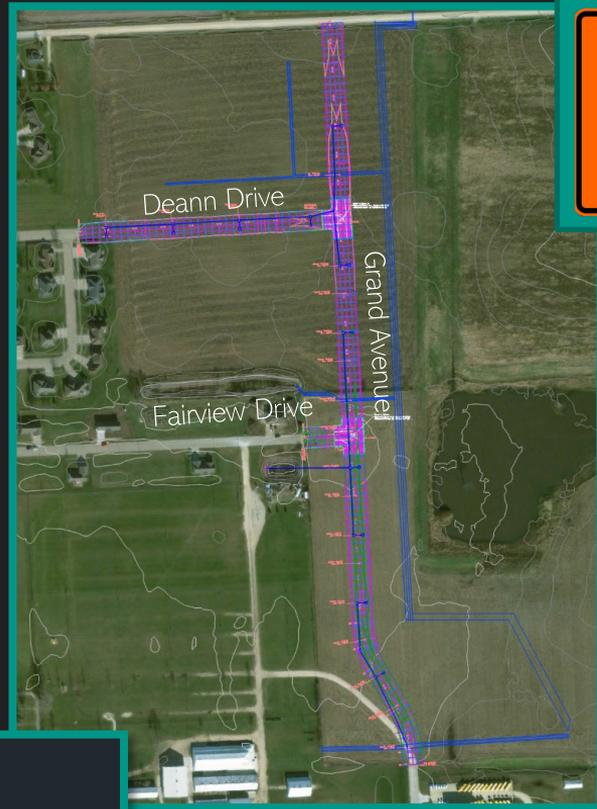


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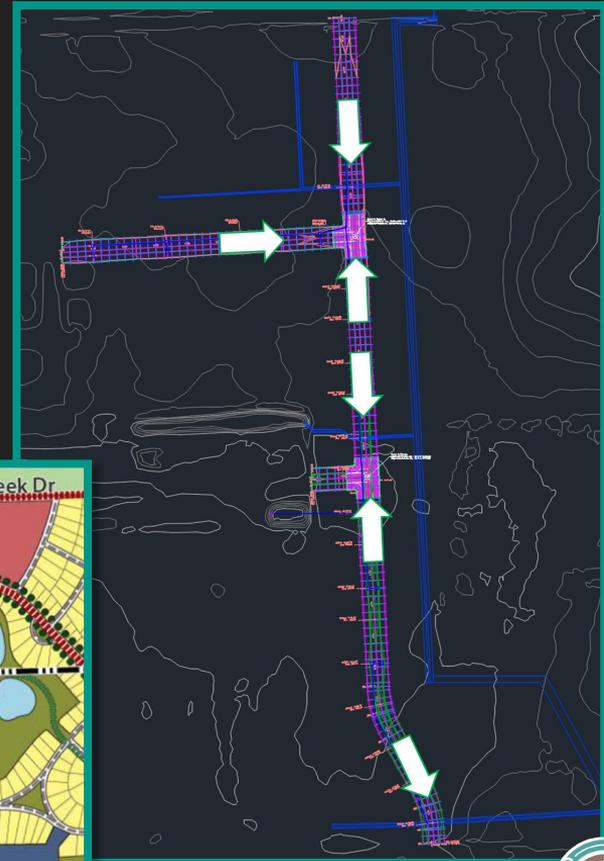
Roadway Extension Design

- SUDAS, Manchester City Code, and Iowa Army Corps of Engineers (Wetlands)
- Planned overland flow route to protect nearby developments in extreme conditions



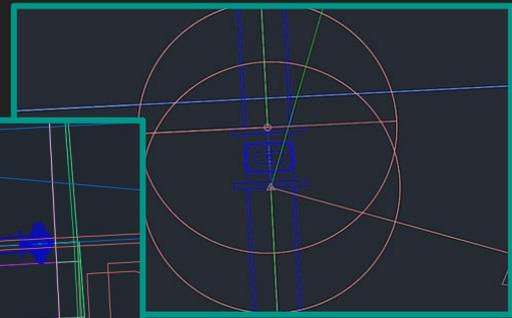
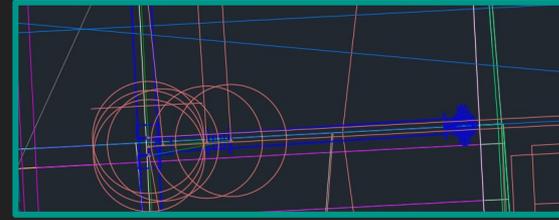
Stormwater Sewer Design

- SUDAS and rational method
- Manchester City Comprehensive Plan
- Efficient drainage of stormwater



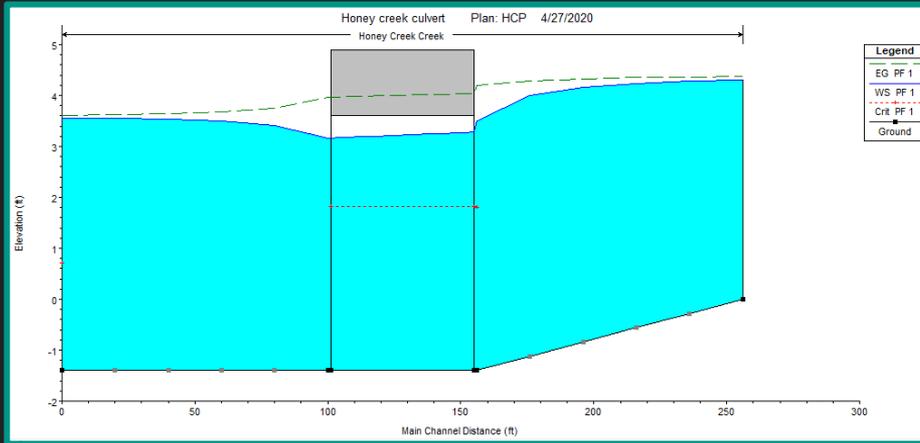
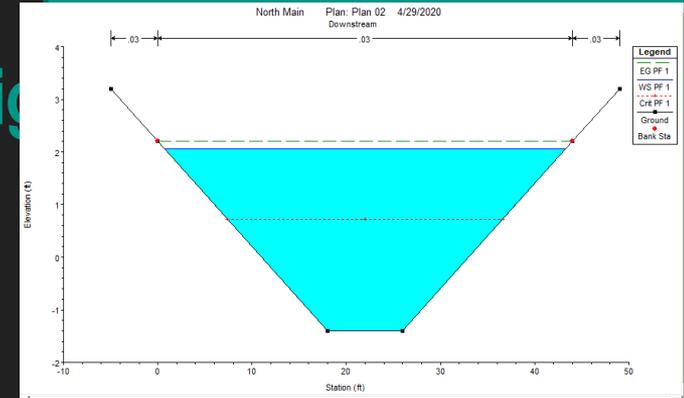
Water Main Design

- SUDAS
- Iowa DNR
- AWWA Standards



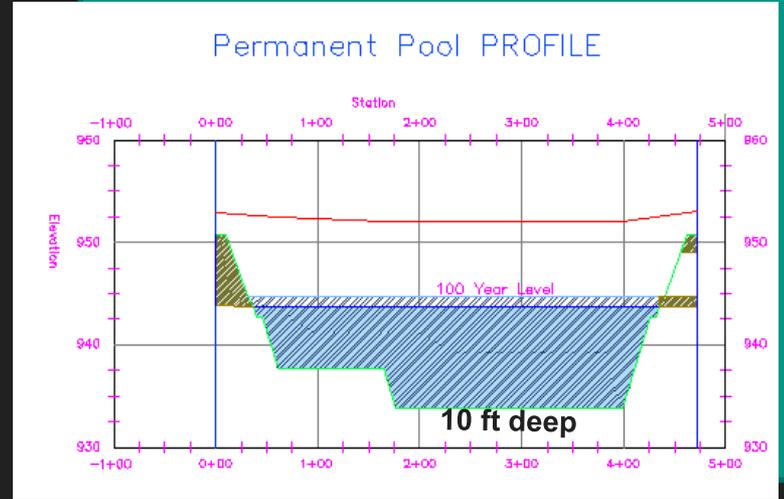
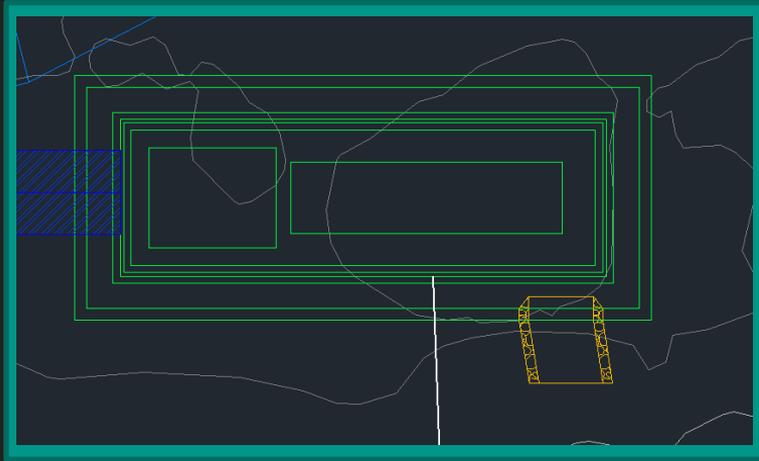
Channel System and Culvert Design

- Iowa Storm Water Management and SUDAS
- **Capacity:** 100-year storm event
- **Flow rate:** 332 cfs



Stormwater Management Basin Design

- SUDAS and Army Corps of Engineers
- 5 year pre-development flowrate comparison to the 100 year post-development flowrate



1.3 ac-ft

315 ft by 155 ft



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Subdivision's Infrastructure Design

- SUDAS and Manchester Zoning Ordinance
- Ranch-style homes, single family



19 lots on
Grand Ave.
extension



15 lots in proposed
subdivision



Budget Summary



Design Element	Cost
Public	
Roadway Extension	\$1,267,656
Stormwater Sewer	\$236,286
Water Main	\$295,057
Preliminary Sanitary Sewer	\$318,328
Channel and Culvert	\$132,695
Mobilization	\$45,000
5% Contingencies	\$112,501
10% Engineering and Administration	\$225,002
Total:	\$2,632,525
Private	
Stormwater Management Basin	\$165,552
Subdivision's Infrastructure	\$676,718
Mobilization	\$16,845
5% Contingencies	\$42,114
10% Engineering & Administration	\$84,227
Total:	\$985,456
Combined Total:	\$3,617,981

Questions?



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Roadway Extension Construction Cost

No.	Item	Quantity	Unit	Unit Price	Amount
1	EXCAVATION, CLASS 10, WASTE	5,676.44	CY	\$3	\$17,029.32
2	SPECIAL BACKFILL	1,226.24	CY	\$15	\$18,393.60
2	MODIFIED SUBBASE	4,725.71	CY	\$27	\$127,594.17
3	STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLASS C, CLASS 3 DURABILITY, 7 IN.	3712	SY	\$60	\$222,720.00
4	STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLASS C, CLASS 3 DURABILITY, 8 IN.	8882.9	SY	\$79	\$701,749.10
5	CURB AND GUTTER, P.C. CONCRETE, 2.0 FT.	3778.47	LF	\$40	\$151,138.80
6	SEEDING AND FERTILIZING (URBAN)	12.760780 99	ACRE	\$2,275	\$29,030.78
				TOTAL:	\$1,267,655.77

Sources of Bids:

Iowa Bid Tab Contract:

- 52-3806-346-A 1/16/19
- 82-4611-012 4/21/20
- 52-3806-346-A 1/16/19
- 19-0127-601 1/22/20
- 36-0291-130 4/21/20
- 82-1827-685 1/22/20
- 90-0347-141 4/21/20



Storm Sewer Construction Cost

No.	Item	Quantity	Unit	Unit Price	Amount
1	STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 15 IN.	2277.1	LF	\$34	\$77,421
2	STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 18 IN.	813.24	LF	\$40	\$32,530
3	STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 24 IN.	125.21	LF	\$49	\$6,135
4	INTAKE, SW-501	32	EACH	\$3,300	\$105,600
5	MANHOLE, STORM SEWER, SW-402 6 FT. X 6 FT.	4	EACH	3,650	\$14,600
				TOTAL:	\$236,286

Sources of Bids:

- Iowa Bid Tab Contract:
- 52-3806-346-A 1/16/19
 - 18-1272-625 10/15/19
 - 06-6962-605 1/17/18



Water Main Construction Cost

No.	Item	Quantity	Unit	Unit Price	Amount
1	8" PVC MAIN	2638.6	LF	\$39.00	\$102,905.40
2	6" PVC MAIN	1306.41	LF	\$29.25	\$38,212.49
3	TEE FITTING	19	EACH	\$450.00	\$8,550.00
4	VALVE	43	EACH	\$2,200.00	\$94,600.00
5	HYDRANT	17	EACH	\$2,500.00	\$42,500.00
7	CUT EXISTING PIPE AND CONNECT NEW PVC PIPE	1	LS	\$7,500.00	\$7,500.00
8	TRACER WIRE	3945.01	LF	\$0.20	\$789.00
				TOTAL:	\$295,056.89

Sources of Bids:

- A Lamp Concrete (located in Schaumburg, IL)
- Kirkham Michael, Inc. (located in Urbandale, IA)
- Smith Seeding, Inc. (located in Eldridge, IA)
- Iowa DNR :
 - Blue Lake Aux. Water Main – Crow River Construction (located in New Landon, MN)
- Design Guide Cabins (REBID Base) - Garling Coast, Inc. (located in Belle Plaine, IA)



Preliminary Sanitary Sewer Construction Cost

No.	Item	Quantity	Unit	Unit Price	Amount
1	48-INCH MANHOLE	12	EACH	\$3,500	\$42,000
2	12-INCH PVC GRAVITY MAIN	3837.89	LF	\$72.00	\$276,328
				TOTAL:	\$318,328



Sources of Bids:

- Iowa DNR - Graff Excavating (Toledo, IA)

Channel & Culvert System Construction Cost

No.	Item	Quantity	Unit	Unit Price	Amount
1	EXCAVATION, CLASS 10, WASTE	9,081.00	CY	\$3	\$27,243
2	REMOVAL OF SILT FENCE	1322	LF	\$0.25	\$331
3	MAINTENANCE OF SILT FENCE	132	LF	\$0.25	\$33
4	SILT FENCE	1322	LF	\$2.00	\$2,644
5	SEEDING AND FERTILIZING (URBAN)	2.4	ACRE	\$2,275	\$5,460
7	PRECAST CONCRETE BOX CULVERT, 2 FT. X 3 FT	108	LF	\$323	\$34,884
	PRECAST CONCRETE BOX CULVERT, 2 FT. X 6 FT	54	LF	\$450	\$24,300
8	PRECAST CONCRETE BOX CULVERT, 8 FT. X 5 FT	54	LF	\$700	\$37,800
				TOTAL:	\$132,695

Sources of Bids:

Iowa Bid Tab Contract:

- 52-3806-346-A 1/16/19

- 90-0347-141 4/21/20

- 82-1301-032 1/22/20

- 31-2100-669 4/21/20

- 16-C016-108 1/22/20

El Paso Bid Tab Contract:

- 2017-841 03/08/17

82-1301-032 1/22/20



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Stormwater Management Basin Construction Cost

No.	Item	Quantity	Unit	Unit Price	Amount
1	EXCAVATION, CLASS 10, WASTE	26642	CY	\$3	\$79,926
2	INTAKE, SW-512, 24 IN	1	EACH	3000	\$3,000
3	SEEDING AND FERTILIZING (URBAN)	1.05	ACRE	\$2,275	\$2,389
4	REMOVAL OF SILT FENCE	456	LF	\$0.25	\$114
5	MAINTENANCE OF SILT FENCE	45	LF	\$0.25	\$11
6	SILT FENCE	456	LF	\$2	\$912
7	STORMSEWER GRAVITY MAIN, REINFORCED CONCRETE PIPE, 12 IN.	990	LF	80	\$79,200
				TOTAL:	\$165,552

Sources of Bids:

- Iowa Bid Tab Contract:
- 52-3806-346-A 1/16/19
- 85-0155-697 2/18/20
- 90-0347-141 4/21/20
- 82-1301-032 1/22/20
- 57-C057-138 4/21/20



Subdivision's Infrastructure Construction Cost

Sources of Bids:

Iowa Bid Tab Contract: 52-3806-346-A 1/16/19
 Iowa Bid Tab Contract: 82-4611-012 4/21/20
 Iowa Bid Tab Contract: 52-3806-346-A 1/16/19
 Iowa Bid Tab Contract: 19-0127-601 1/22/20
 Iowa Bid Tab Contract: 82-1827-685 1/22/20
 Iowa Bid Tab Contract: 52-3806-346-A 1/16/19
 Iowa Bid Tab Contract: 06-6962-605 1/17/18
 Iowa Bid Tab Contract: 18-1272-625 10/15/19
 Iowa DNR



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No.	Item	Quantity	Unit	Unit Price	Amount
1	EXCAVATION, CLASS 10, WASTE	712.96	CY	\$3	\$2,138.88
2	SPECIAL BACKFILL	570.37	CY	\$15	\$8,555.55
3	MODIFIED SUBBASE	600.00	CY	\$27	\$16,200.00
4	STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLASS C, CLASS 3 DURABILITY, 7 IN.	6600	SY	\$60	\$396,000.00
5	CURB AND GUTTER, P.C. CONCRETE, 2.0 FT.	2114.16	LF	\$40	\$84,566.40
6	STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 24 IN.	620	LF	\$49	\$30,380
7	44x6x44 CONCRETE RECTANGULAR FRAME HEADWALL	2	EACH	\$3,650	\$7,300
8	INTAKE, SW-501	4	EACH	\$3,300	\$13,200
9	6" PVC MAIN	900	LF	\$29.25	\$26,325.00
10	TEE FITTING	4	EACH	\$450.00	\$1,800.00
11	VALVE	2	EACH	\$2,200.00	\$4,400.00
12	HYDRANT	4	EACH	\$2,500.00	\$10,000.00
13	TRACER WIRE	900	LF	\$0.20	\$180.00
14	48 INCH MANHOLE	4	EACH	\$3,500.00	\$14,000.00
15	12" PVC PIPE	709	LF	\$72.00	\$51,048.00
16	SEEDING AND FERTILIZING (URBAN)	4.67	ACRE	\$2,275	\$10,624.25
				TOTAL:	\$676,718.08