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# 2022 Waukesha County Stormwater Workshop

April 13, 2022

## Stormwater Quality and Flood Control in Monona's Tight Spaces

**Jon Lindert, P.E., Strand Associates, Inc.®**



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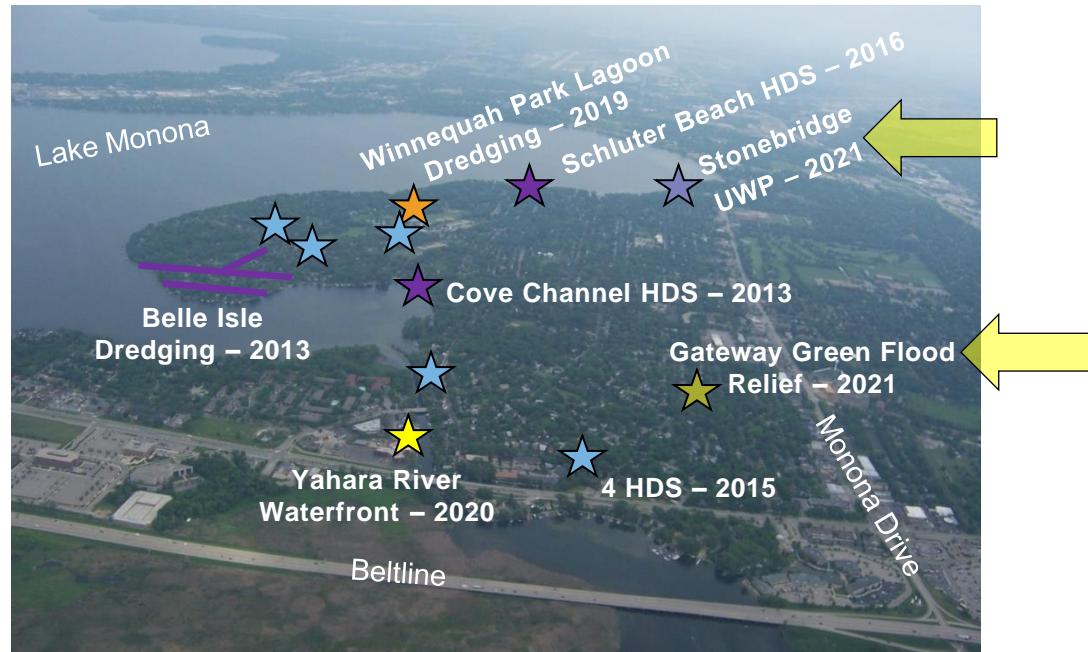
# Presentation Outline

- Timeline
- Recent Stormwater Projects
- Stormwater Quality in Monona-**Stonebridge Park Improvements**
- Flooding in Monona-**Gateway Green Flood Relief**
- 2022 CSWEA Stormwater Bike Tour around Lake Monona

# Timeline

Hydrodynamic Separators and Conveyance Upgrades – 82% Funding

Winnequah Park Lagoon Dredging Feasibility Study, Design, and Dredging/Restoration-\$75,000 Funding



# Recent Stormwater Projects

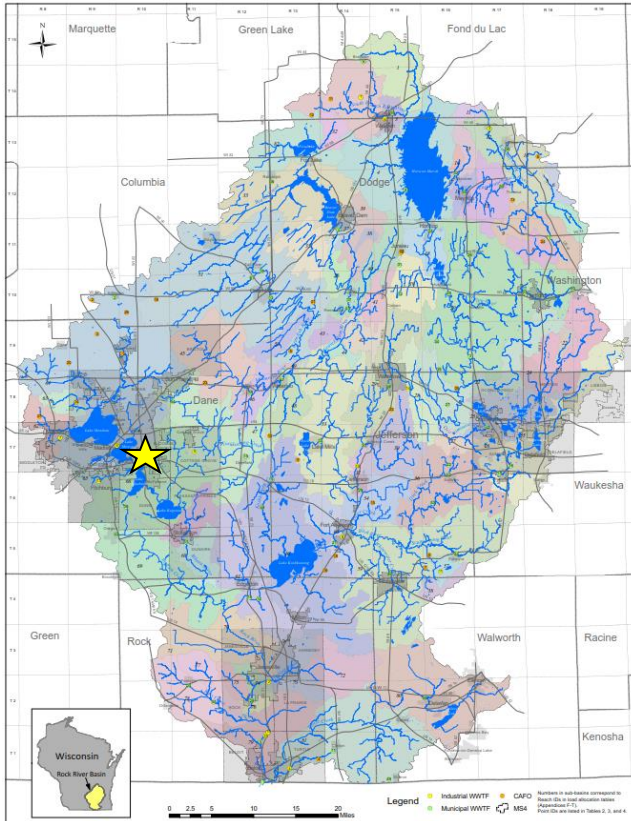


**4 Hydrodynamic Separators – 2015**

**Winnequah Park Dredging Before/After – 2019**

# Stormwater Quality in Monona

- Rock River TMDL



Approved by Environmental Protection Agency (EPA) on Sept. 28, 2011

- Yahara WINS Watershed Adaptive Management

- **Program Administrator:** Madison Metropolitan Sewerage District (MMSD)
- **Broker For Ag Best Management Practices (BMPs) with Farmers:** Dane County
- **Water Quality Monitoring:** U.S. Geological Survey
- **Goal:** Point and nonpoint sources work collaboratively in protecting and restoring local water resources to meet the **Rock River Basin TMDL TP** and TSS load reductions
- Members must achieve 40% TSS and 27% TP reductions before buy-in at **\$48.72/lb TP**



# Stormwater Quality in Monona

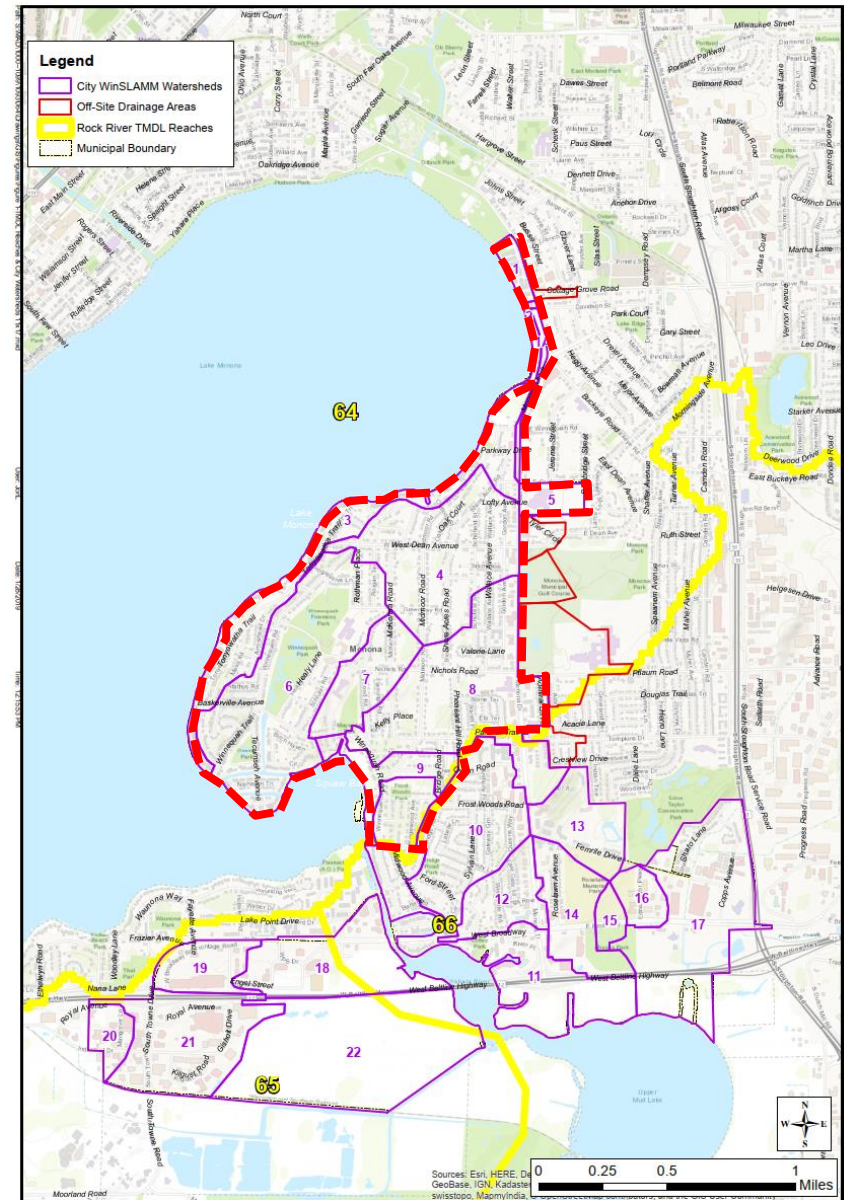
- MS4/TMDL WinSLAMM Modeling (2016)

	MS4	Rock River Basin TMDL		Yahara WINS Requirement		City Existing Conditions (2016)	
Reach	TSS Reduction (%)	TSS Reduction (%)	TP Reduction (%)	TSS Reduction (%)	TP Reduction (%)	TSS Reduction (%)	TP Reduction (%)
64	20%	73%	61%	40%	27%	<b>25.4%</b>	<b>16.5%</b>
65	20%	68%	63%	40%	27%	41.5%	30.3%
66	20%	62%	54%	40%	27%	49.4%	39.6%

Pollutant	TMDL Requirement	City's Existing Condition (2016)	TMDL Gap	Yahara WINS Requirement	Yahara WINS Gap (%)	Yahara WINS Gap (lbs)
<b>TSS</b>	73%	25.4%	47.6%	40%	14.6%	<b>27,231</b>
<b>TP</b>	61%	16.5%	44.5%	27%	10.5%	<b>83.6</b>

# Stormwater Quality in Monona

- TMDL Reaches Map





# Reach 64 Alternatives Analysis

- Considerations
  - Park space
  - Cost and cost effectiveness
  - Property/easements
- Numerous BMPs considered



Leaf collection credit (13-lb TP)



Enhanced street sweeping



Regenerative stormwater conveyance



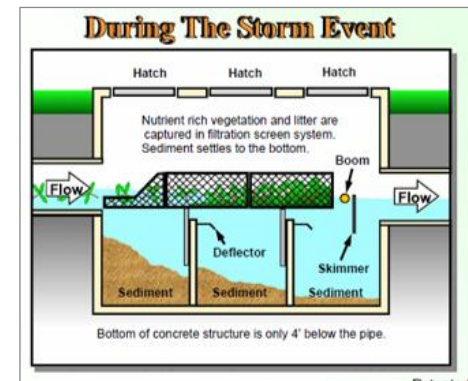
Underground wet detention basin



Lagoon expansion



Wet detention basin



Hydrodynamic separator

# Alternatives Analysis: Cost Effectiveness - CURRENT

Option	WP	UWP	HDS	RSC	<LE	>LE	SS	LCC	No Grants			With Grants		
									Construction Cost (2019)	20-Yr NPW Cost (2019)	\$/lb TP Removed (20-Yr NPW)	Construction Cost (2019)	20-Yr NPW Cost (2019)	\$/lb TP Removed (20-year NPW)
1	1		1	1			1	1	\$2,188,000	\$2,947,000	<b>\$1,554</b>	\$1,333,000	\$2,114,000	<b>\$1,115</b>
2	2		2	1		1	1	1	\$4,930,000	\$7,154,000	<b>\$4,033</b>	\$2,771,000	\$5,072,000	<b>\$2,859</b>
3	2		1	1	1		1	1	\$2,684,000	\$3,327,000	<b>\$2,122</b>	\$842,000	\$1,397,000	<b>\$891</b>
4	1	1	2	1	1		1	1	\$2,894,000	\$3,775,000	<b>\$2,868</b>	\$684,000	\$1,493,000	<b>\$1,134</b>

WP – Wet Pond

UWP – Underground Wet Pond

HDS – Hydrodynamic Separator

RSC – Regenerative Stormwater Conveyance

NPW – Net Present Worth

<LE – 1-acre Lagoon Expansion

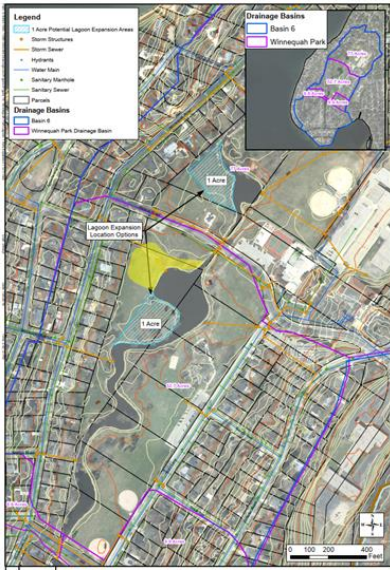
>LE – 6-acre Lagoon Expansion

SS – Enhanced Street Sweeping

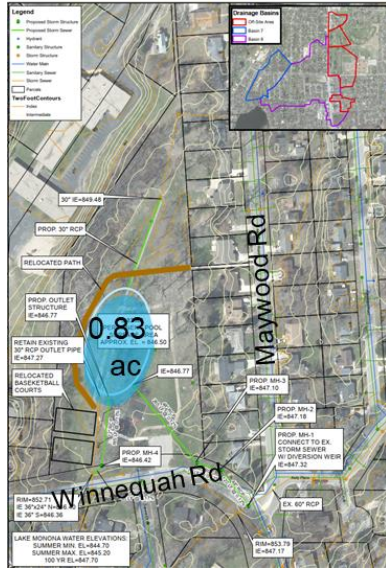
LCC – Leaf Collection Credit

- Costs include 35% contingency and technical services allowance
- Construction costs are in 2019 dollars. Adjust for inflation if construction occurs in a different year

# Option 3-Preferred Option



**Winnequah Park Lagoon  
(1-acre expansion)**  
\$657,000



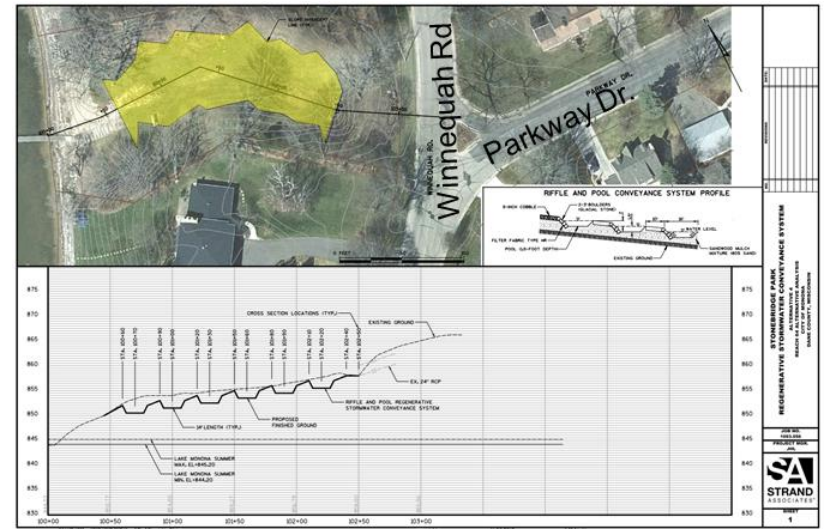
**Maywood Park Small  
Wet Pond**  
\$827,000



Leaf collection credit



Enhanced street sweeping



**Hydrodynamic Separator and RSC at Stonebridge Park**  
\$179,000



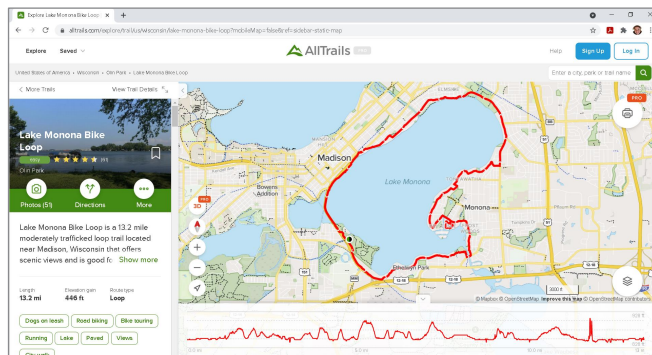
**Midmoor/McKenna Wet Pond (Layout 1)**  
\$995,000

# Stonebridge Park Location (0.78 acres)



# Stonebridge Park Design Considerations

- Untreated storm sewer outfall to Lake Monona
- Mitigate overland flooding through park
- Enhance 0.78-acre Stonebridge Park
  - Accessibility
  - Lake Monona Sailing Club
  - Lake Monona Bike Loop
  - Paddle sports launch
  - Historic pagoda preservation



# Stonebridge Park Design Considerations



Figure 5: View of the pagoda looking towards the lake, circa 1951



Figure 6: View of the pagoda looking southwest, circa 1951

**Elisha W. Keyes.**

There is no name among the Old Line Republicans of Wisconsin which is more highly respected than that of Hon. Elisha W. Keyes of Madison. Four years there was no more prominent or influential man in the party. He has held many responsible public offices, played an important part in the nomination of several presidents, did the work of organization and building up the party in many of the most important campaigns ever waged in Wisconsin, and in fact has devoted his life to the public service and the interests of the Republican party. He is in many ways a most remarkable man. He was born Jan. 22, 1828, in Northfield, Vt., and came West with the father's family in 1837, arriving in Milwaukee June 17 of that year. The family resided in a frame home built by Capt. Joseph Keyes, at the northeast corner of Broadway and Omaha streets, Milwaukee. Young Keyes attended school that summer in the old court house. Capt. Keyes remained with his family in the following September to the township of Lake Mills, where he had the year previous located a claim. Here Elisha Keyes worked upon the farm and as a sawmill hand and attended the district school of the territory as much as was practical for him to do so. During the winters of 1847 and 1848 he attended the winter of 1847 and 1848 he attended the next winter term in that institution in 1850. Late in the summer of that year the Keyes family, having the year previous removed to Monrovia, Mr. Keyes joined the family and again went to work in the saw mill. But he was not content with this employment and was determined to better himself, so in December of the same year he removed to Madison where he commenced the study of the law in the office of Collins & Smith. He was admitted to the bar Oct. 17, 1851 and at once began the practice of his profession. Even at that time young Keyes was an active worker in politics and in the following spring, under Fillmore's administration, he was appointed special agent of the post office department by Postmaster-General N. K. Hall. He held this position for several months, his duties being to collect money from postmasters in Illinois and Wisconsin, and deposit it in the sub-treasury at St. Louis. In 1853 he was admitted to the law firm of Collins & Smith, which was afterwards known as Collins, Smith & Keyes, and which upon the election of Mr. Collins to the Circuit bench in Jan. 1855, became the firm of Smith & Keyes, and had a large practice until it was dissolved in 1862.

During 1853 and 1850 Mr. Keyes was the district attorney of Dane county, and in April, 1861, President Lincoln appointed him the postmaster at Madison. In this position he served continuously for twenty-one years during which time, aside from the duties of his office, he devoted himself mainly to Republican politics. He was for many years a member of the State Central committee and for ten years was the chairman of that organization. In 1862 he was elected mayor of Madison, the first Republican to be elected to that office, and in 1868 he was re-elected without opposition;

**JUDGE E. W. KEYES IS 80 YEARS OLD**

Postmaster of Madison Enjoying Best of Health and Is Like Man of 50.

**LIVED IN STATE 70 YEARS**

—1908

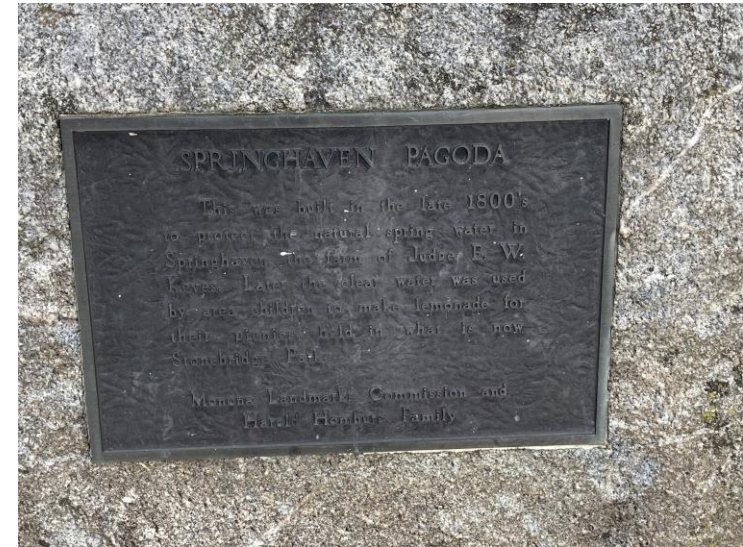
MADISON, Wis., Jan. 22 (Special)—Judge E. W. Keyes, postmaster of Madison, prominent pioneer settler and, for many years, the most conspicuous and influential figure in Wisconsin politics, will tomorrow celebrate his eightieth birthday anniversary. Enjoying the best of health, with the physical and mental energy and alertness, and the enthusiasm of the average energetic man of 50, daily at his desk attending even to the minutest details of the multitudinous duties which fall to him as postmaster, Judge Keyes is indeed a most remarkable man.

Having been for over seventy years a resident of Wisconsin and nearly sixty years a resident of Madison, and always an active participant in public affairs, Judge Keyes enjoys a most extensive acquaintance, and will on this birthday anniversary receive the congratulations of scores of friends, from every section of the state, and from many other states as well.

Gathered at the family home tomorrow, to celebrate the occasion, beside Judge and Mrs. Keyes, will be former Senator and Mrs. T. A. Willy of Appleton; former Senator and Mrs. J. C. Gaveney of Arcadia; Mr. and Mrs. H. D. Palmer of Florence, Joseph S. Keyes and E. W. Keyes, Jr., of Milwaukee, Mr. and Mrs. E. Keyes McCurdy not sons of this city. It is an interesting fact that there will be represented at this gathering four generations—Judge Keyes, his daughter, Mrs. Willy; his grandson, E. K. McCurdy; and his great grandson, Philip McCurdy and E. Keyes McCurdy, Jr.

**Sketch of Mr. Keyes.**

The story of Judge Keyes' career is so closely associated with the history of Wisconsin territory, and state that it can not fail to be of general interest.



## Springhaven Pagoda

**This was built in the late 1800s to protect natural spring water in Springhaven, the farm of Judge E.W. Keyes. Later the clear water was used by area children to make lemonade for their picnics, held in what is now Stonebridge Park.**

January 1, 1908, Newspaper Article, Wisconsin Historical Society

- Dane County DA 1859-60
- Madison Postmaster 1861-72
- Mayor of Madison 1865 and 1886

# Stonebridge Park Master Plan



**PARKITECTURE  
+ PLANNING**  
901 Dunning Way, Suite 102  
Madison WI 53717  
608.866.8808



**SA  
STRAND  
ASSOCIATES**

Project Name: **STONEBRIDGE PARK IMPROVEMENTS**  
MONONA, WI 53716  
Sheet Title: **CONCEPT PLAN**

Revisions:

Project #: 20.038  
Issued For: REVIEW  
Date: 9/8/2020

Sheet Number  
**C100**

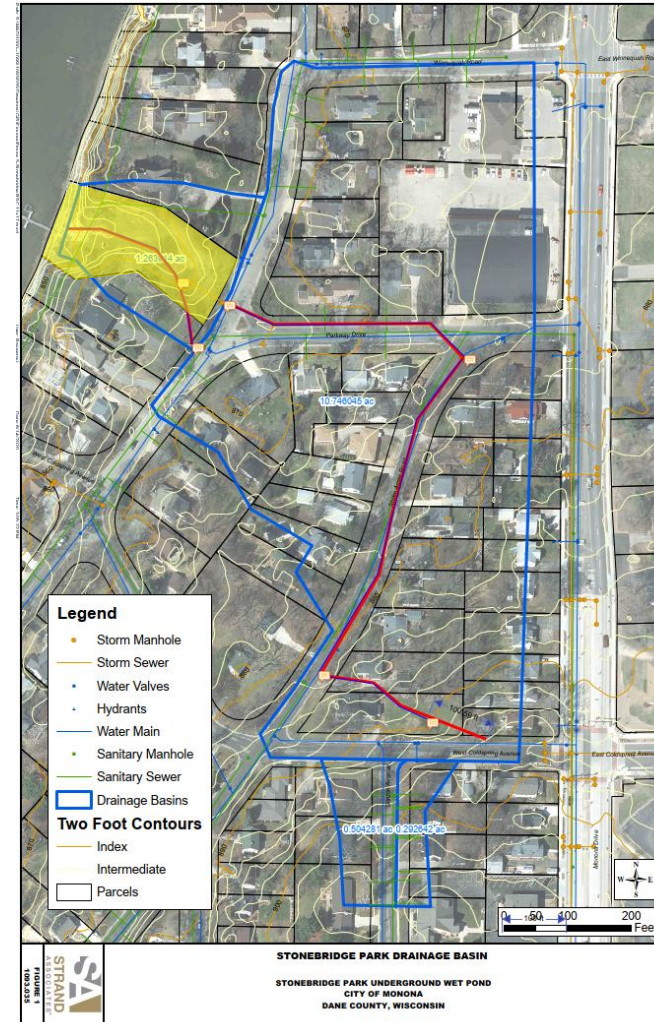
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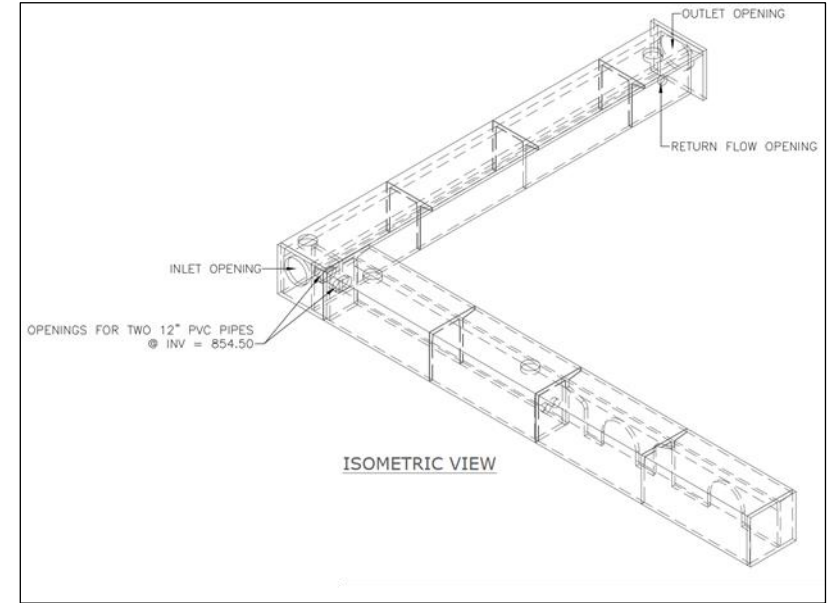
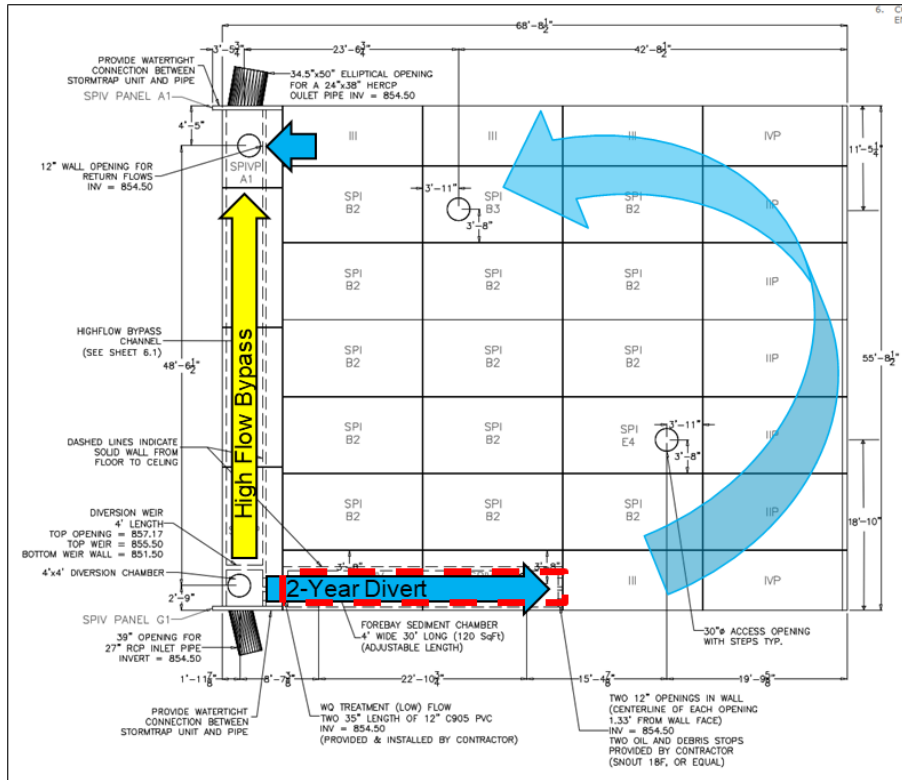


# Stonebridge Park Design: Stormwater Quality

- Drainage area = 11.5 acres
- Baseline TP load = 12 lb TP
- With controls TP load = 7.25 lb TP
- TP load reduction = 4.75 lb / 39.6%
- Underground wet detention basin and street sweeping
  - Footprint = 68'-8.5" x 55'-8.5" (3,828 sf, 0.089 ac)
  - 3-ft wet pool depth, 2.75-ft storage above
  - Diversion of 2-yr flows (4.3 cubic feet per second (cfs)) to isolation chamber with SNOUT
  - Bypass for >2-yr to 100-yr storm event flows (>4.3 cfs to 31.2 cfs internal to StormTrap system)
  - Grass pave for maintenance



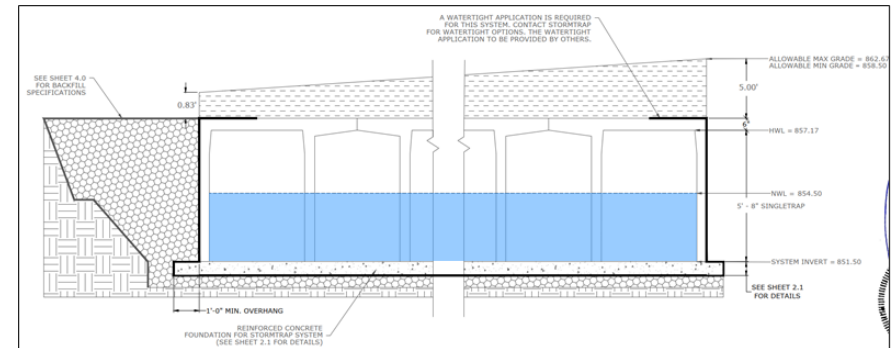
# Stonebridge Park Design: Stormwater Quality



**StormTrap**<sup>®</sup>

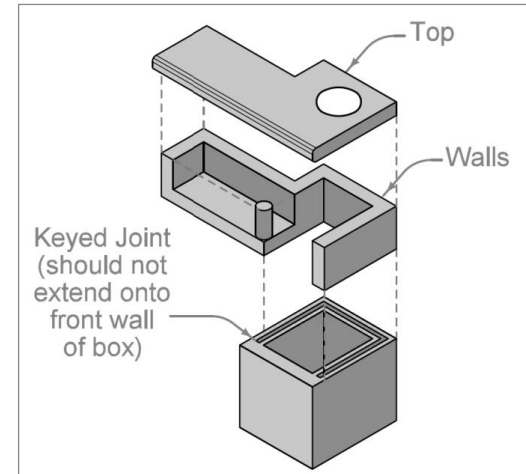
PATENTS LISTED AT: [HTTP://STORMTRAP.COM/PATENT]

1287 WINDHAM PARKWAY  
ROMEOWILLE, IL 60446  
P:815-941-4549 / F:331-318-5347



# Stonebridge Park Design: Stormwater Quantity (Flood Control)

- Drainage area = 12.8 acres (including park)
- 2-year flow = 4.3 cfs
- 10-year flow = 11.4 cfs
- 100-year flow = 31.2 cfs
- Existing conditions inlet capacity = 14.6 cfs
- Existing conditions pipe capacity = 16.1 cfs
- Proposed improvements
  - 100-year inlet capacity
    - 4 existing upstream inlets = 11.5 cfs
    - 18-foot open-throat high-capacity inlet = 17 cfs
    - In-park inlet capacity = 4.8 cfs
  - 100-year storm sewer through park
    - 27" RCP @ 6.17%
    - 24"x38" HERCP @ 6.61%
    - 24" x 38" HERCP @ 1.48%
  - High-flow bypass internal to StormTrap System



# Underground Wet Detention Basin



# Underground Wet Detention Basin



# Underground Wet Detention Basin



# Construction Photos



**Pagoda – Cut stone block and Envirolok Bags**



**Historic pagoda preservation**



**StormTrap Access – GrassPave2 System**



**Open-throat high-capacity inlet**

# Before and After





# Before and After



# Before and After



# Before and After





# Stonebridge Park Costs

Construction Cost-Park	\$273,580	
Construction Cost-Stormwater	\$427,433	
<b>Construction Total</b>	<b>\$686,013</b>	
Park Engineering and LA	\$56,295	Design and Construction Observation
Stormwater Components Engineering	\$104,900	Design and Construction Observation
Geotechnical Cost	\$3,450	Geotech Report for Design
<b>Engineering and LA Total</b>	<b>\$164,645</b>	
<b>TOTAL Project Cost</b>	<b>\$850,658</b>	
DNR UNPS Construction Grant	\$150,000	
Dane County Urban Water Quality Grant	\$206,150	<b>% of TOTAL Project Cost</b>
<b>Total Grant Share</b>	<b>\$356,150</b>	<b>41.9%</b>
<b>Local Share</b>	<b>\$494,508</b>	<b>58.1%</b>
<b>Stormwater Components Only</b>		
<b>Total Grant Share</b>	<b>\$356,150</b>	<b>66.5%</b>
<b>Local Share</b>	<b>\$71,283</b>	<b>33.5%</b>

# Flooding in Monona

Background:

## Lake Levels\*

Lake	Date	Lake Level	Summer Min	Summer Max	1% Flood
<a href="#">Mendota</a>	10/18/2021	849.94	849.60	850.10	852.8
<a href="#">Monona</a>	10/18/2021	844.99	844.70	845.20	847.7
<a href="#">Waubesa</a>	10/18/2021	844.53	844.50	845.00	847.0
<a href="#">Kegonsa</a>	10/18/2021	843.05	843.00	843.50	845.2

 Chart Lake Levels

 Tabular Data

## Current Dam Status

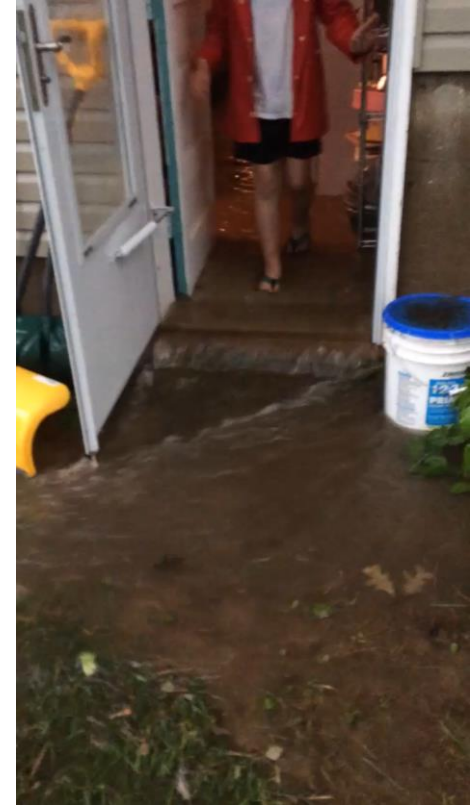
Name	Date	Percent Open
Tenney	10/15/2021	28%
Babcock	10/19/2021	20%
LaFollette	10/15/2021	25%

 Tabular Data

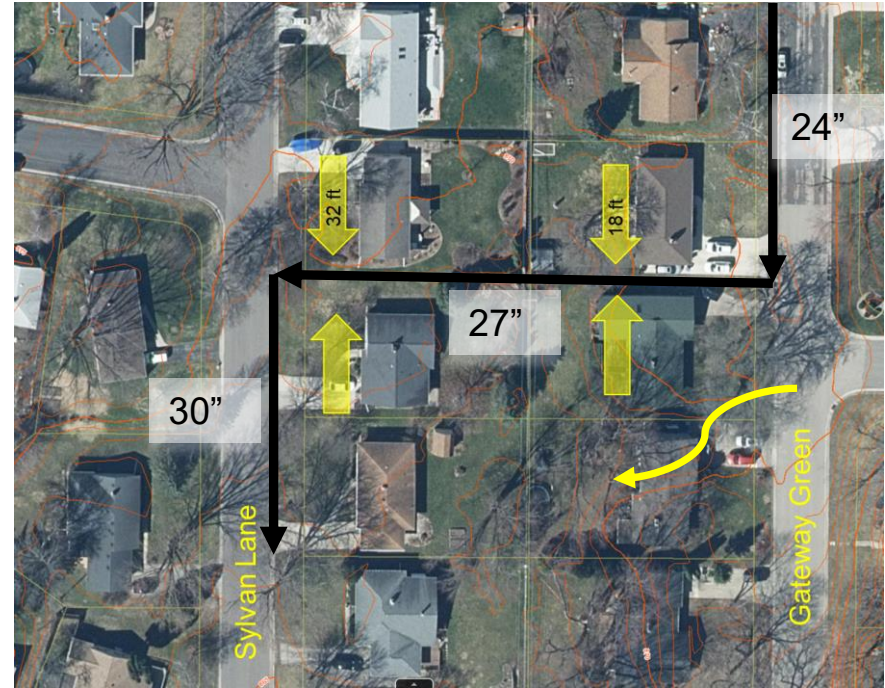
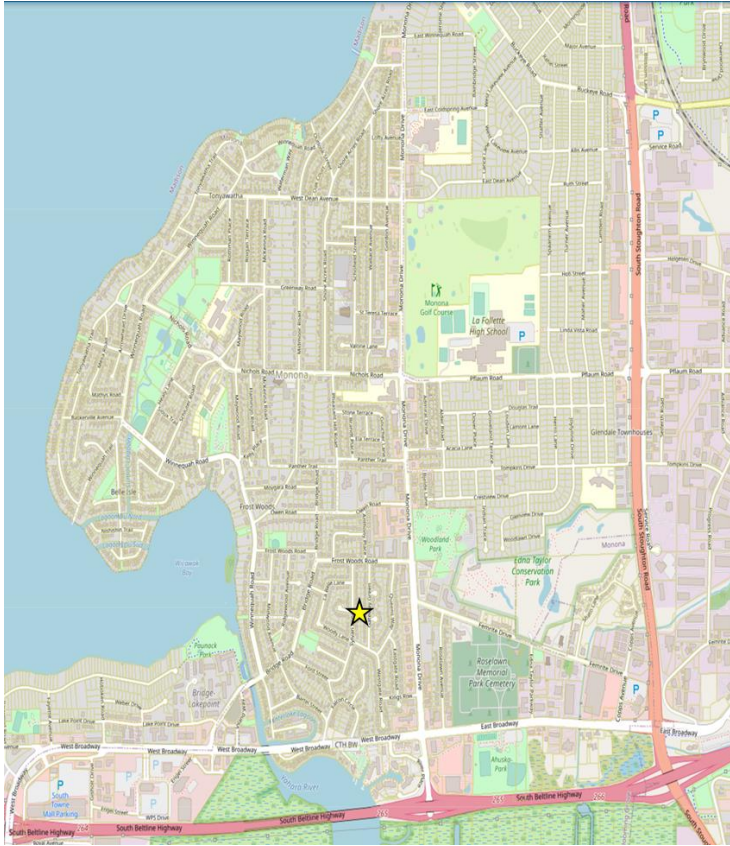


# Flooding in Monona

- Lake level-related flooding
- Localized flooding



# Gateway Green Flood Control - Location



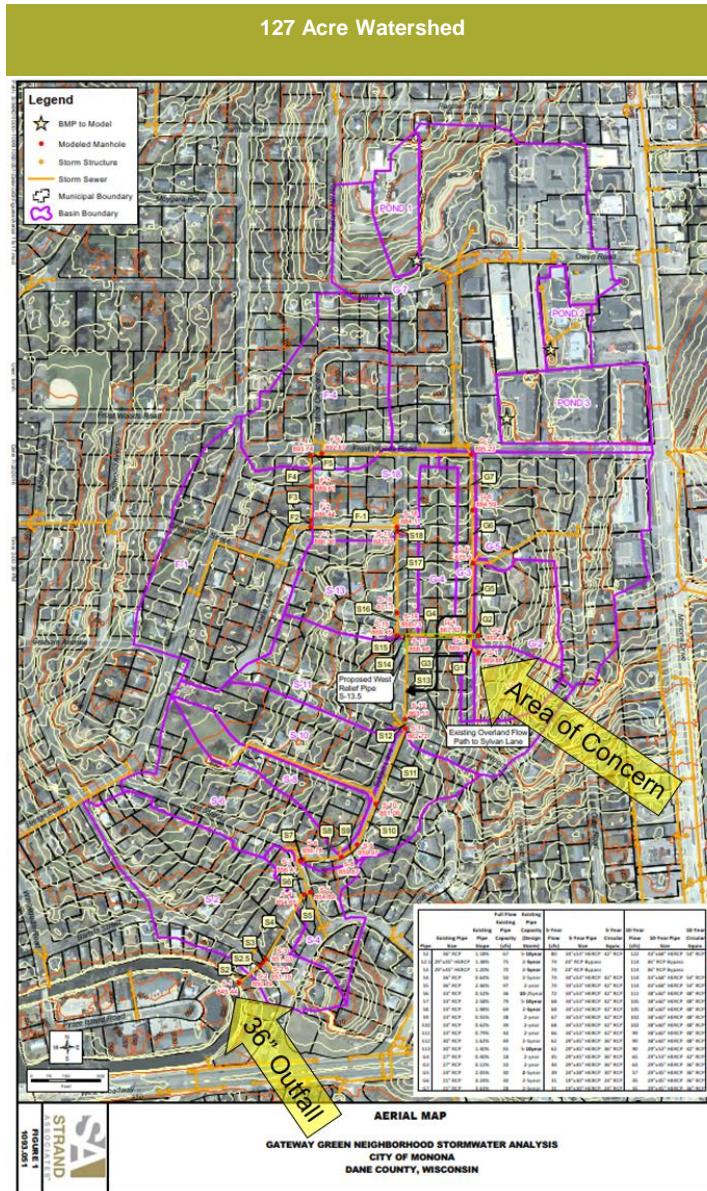


# Gateway Green Flood Control - Timeline



Analysis Component	Phase 1	Phase 2	Design
<b>Plan Cost</b>	\$20,000	\$24,900	
<b>Model</b>	XPSWMM	<b>XPSWMM 2D</b>	<b>XPSWMM 2D</b>
<b>Rainfall Amount</b>	Huff	Huff	Huff
<b>Rainfall Distribution</b>	Bulletin 71	Bulletin 71	Bulletin 71
<b>Critical Duration</b>	1-hour	1-hour	1-hour
<b>Existing System Capacity</b>	2-Year	2-Year	2-year
<b>Proposed Improvements</b>	<ul style="list-style-type: none"> <li>• <b>Flood Relief Pipe = \$728,000 (2.5' x 13' Box)</b></li> <li>• 5-year pipes = \$817,000</li> <li>• 10-year pipes = \$1,110,000</li> <li>• Overland Flow Route Analysis</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Flood Relief Pipe = \$895,000 (2.5' x 12.5' Box)</b></li> <li>• 10-year pipes = \$1,110,000</li> <li>• Overland Flow Route Analysis</li> <li>• Watershed Outlet Improvements</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Flood Relief Pipe = \$799,000 (4' x 8' Box)</b></li> <li>• High-Capacity Inlet Design</li> <li>• Watershed Outlet Pipe/Swale Design</li> </ul>
<b>Recommendations</b>	Recommend <b>Phase 2 Analysis</b> to verify: <ul style="list-style-type: none"> <li>• Adequate Downstream Overland Flow Route</li> <li>• Flood Relief Pipe Operational Dynamics</li> <li>• Allowable Ponding at Gateway Green</li> </ul>		

# Gateway Green Flood Control-Phase 1 (Storm Sewer)



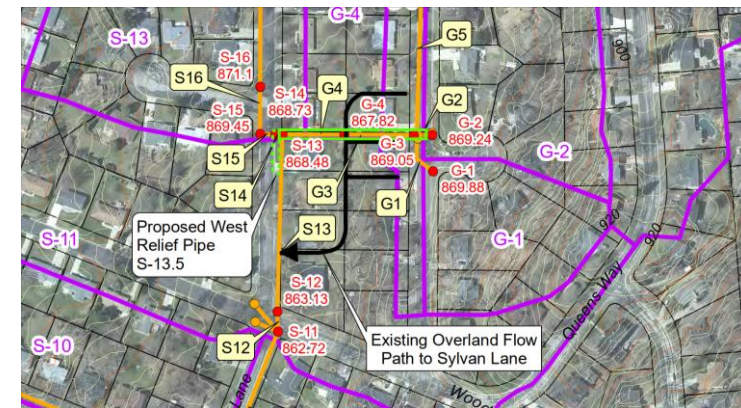
2,200 linear feet of new storm sewer (5-year or 10-year)  
----Doesn't solve flooding at Gateway Green/Kristi Circle Intersection

Pipe	Existing Pipe Size	Existing Pipe Slope	Existing Pipe Capacity (cfs)	Existing Pipe Capacity (Design Storm)	5-Year Flow	5-Year Pipe Size	5-Year Circular Equiv.	10-Year Flow (cfs)	10-Year Pipe Size	10-Year Circular Equiv.
S2	36" RCP	1.18%	67	5-10year	80	34"x53" HERCP	42" RCP	122	43"x68" HERCP	54" RCP
S2.5	29"x45" HERCP	1.38%	75	2-5year	74	24" RCP Bypass	114	36" RCP Bypass		
S3	29"x45" HERCP	1.20%	70	2-5year	74	24" RCP Bypass	114	36" RCP Bypass		
S4	36" RCP	0.64%	50	2-5year	74	34"x53" HERCP	42" RCP	114	43"x68" HERCP	54" RCP
S5	36" RCP	2.46%	97	2-year	74	34"x53" HERCP	42" RCP	114	43"x68" HERCP	54" RCP
S6	33" RCP	0.52%	36	10-25year	72	34"x53" HERCP	42" RCP	111	38"x60" HERCP	48" RCP
S7	33" RCP	2.58%	79	5-10year	68	34"x53" HERCP	42" RCP	105	38"x60" HERCP	48" RCP
S8	33" RCP	1.98%	69	2-5year	68	34"x53" HERCP	42" RCP	105	38"x60" HERCP	48" RCP
S9	33" RCP	0.55%	38	2-year	67	34"x53" HERCP	42" RCP	102	38"x60" HERCP	48" RCP
S10	33" RCP	0.62%	39	2-year	68	34"x53" HERCP	42" RCP	102	38"x60" HERCP	48" RCP
S11	33" RCP	0.79%	44	2-year	66	34"x53" HERCP	42" RCP	99	38"x60" HERCP	48" RCP
S12	30" RCP	1.62%	49	2-5year	62	29"x45" HERCP	36" RCP	90	38"x60" HERCP	48" RCP
S13	30" RCP	1.40%	45	5-10year	62	29"x45" HERCP	36" RCP	90	29"x53" HERCP	42" RCP
G4	27" RCP	0.40%	18	2-year	45	29"x45" HERCP	36" RCP	65	29"x53" HERCP	42" RCP
G3	27" RCP	0.12%	10	2-year	44	29"x45" HERCP	36" RCP	63	29"x45" HERCP	36" RCP
G5	24" RCP	2.05%	30	2-5year	39	24"x38" HERCP	30" RCP	57	29"x45" HERCP	36" RCP
G6	21" RCP	4.24%	30	2-5year	31	19"x30" HERCP	24" RCP	45	29"x45" HERCP	36" RCP
G7	21" RCP	3.63%	28	2-5year	31	19"x30" HERCP	24" RCP	45	29"x45" HERCP	36" RCP



# Gateway Green Flood Control – Phase 1 (Relief Pipe)

- Flood Relief Pipe
  - Existing pipe: 27" RCP (10 cfs capacity)
  - Proposed Pipe: 2.5 ft x 13 ft RC box
- Flow Rates
  - 10-year Q = 68 cfs
  - 100-year Q = 156 cfs
- Flood Relief Pipe Concept
  - Pressurized Flow to Move Flooding to Sylvan Lane to Adequate Downstream Overland Flow Route
  - Available head =  $869.24 - 868.48 = 0.76$  feet
  - **Solves 100-year flooding problem**

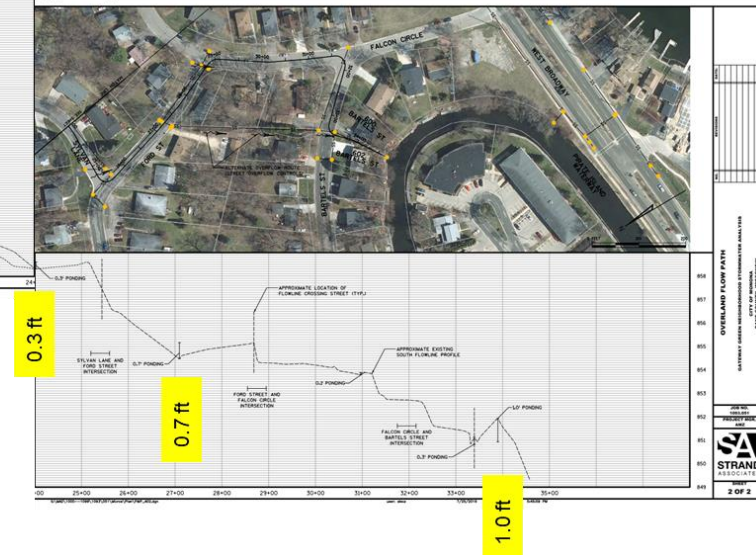


# Gateway Green Flood Control-Phase 1 (Overland Route)

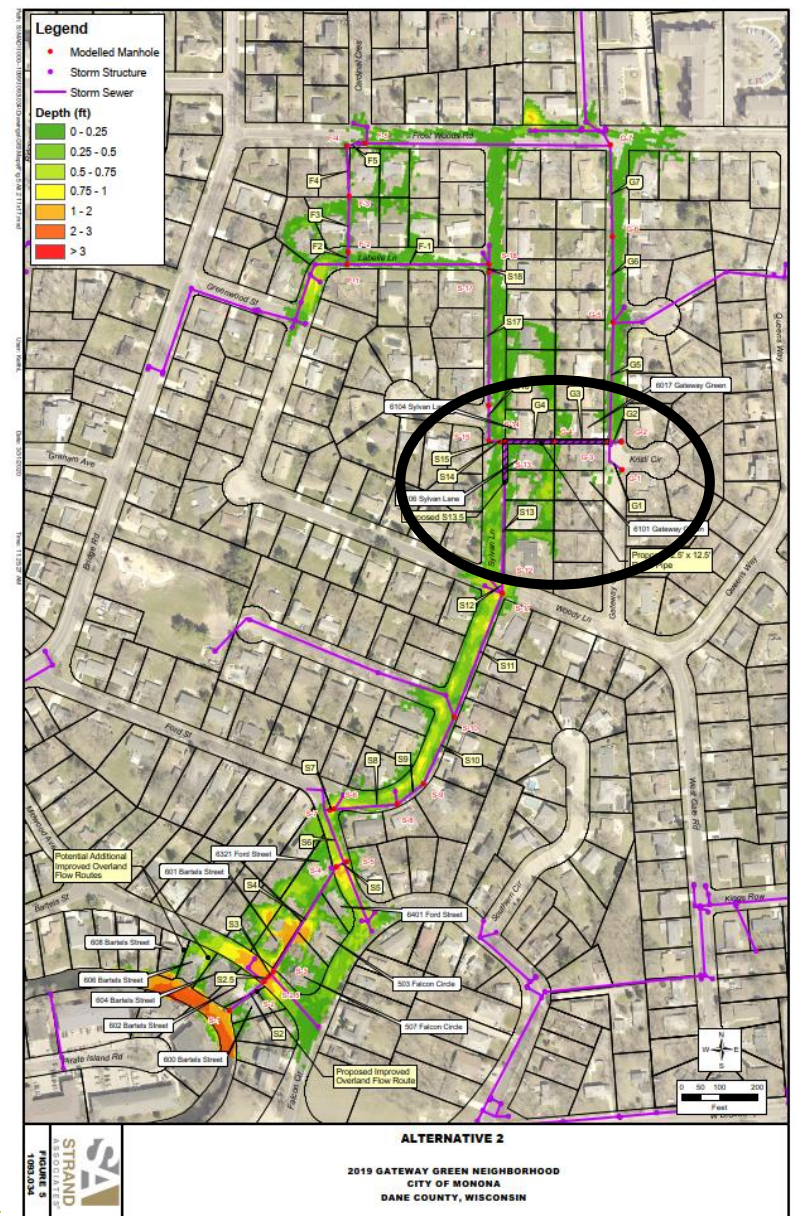
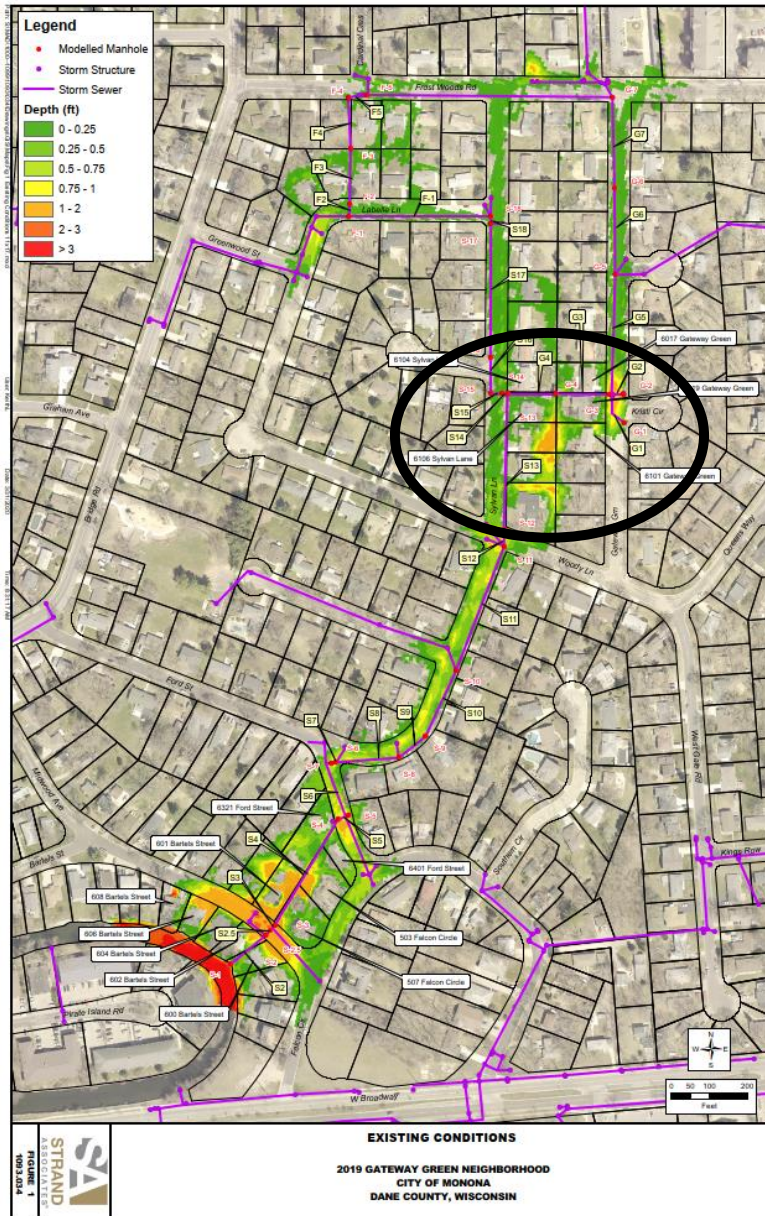
- Overland flow route analysis
  - Looks adequate with improvement at watershed outlet, but recommendation to model in XPSWMM 2d to verify



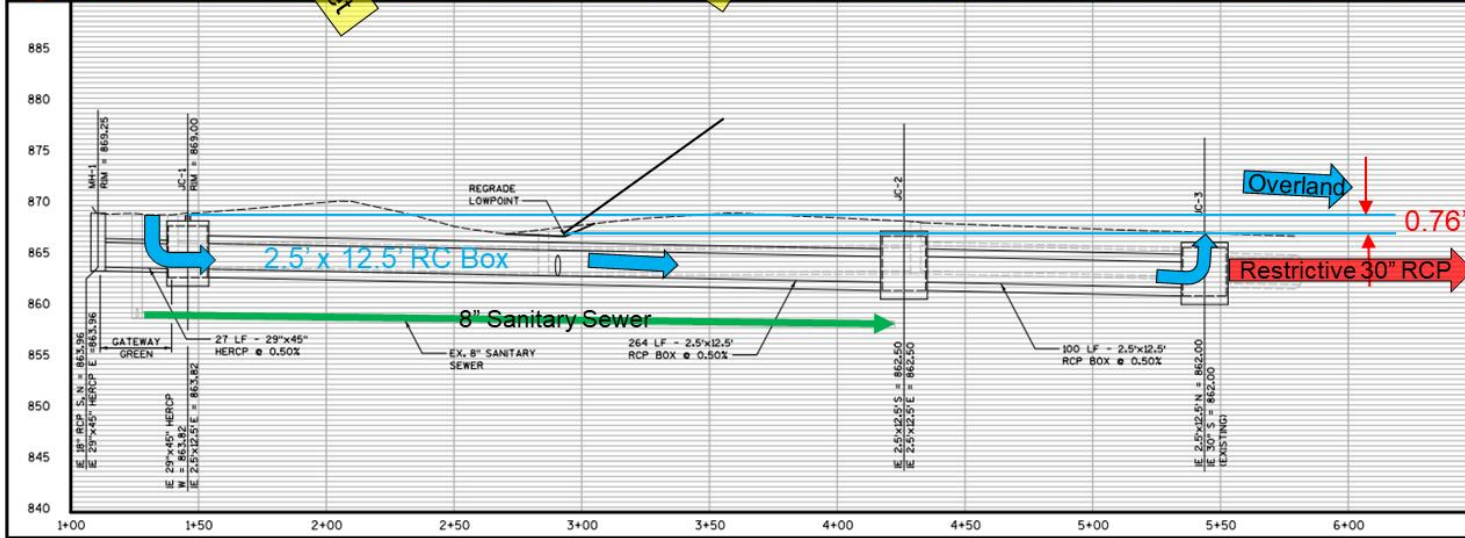
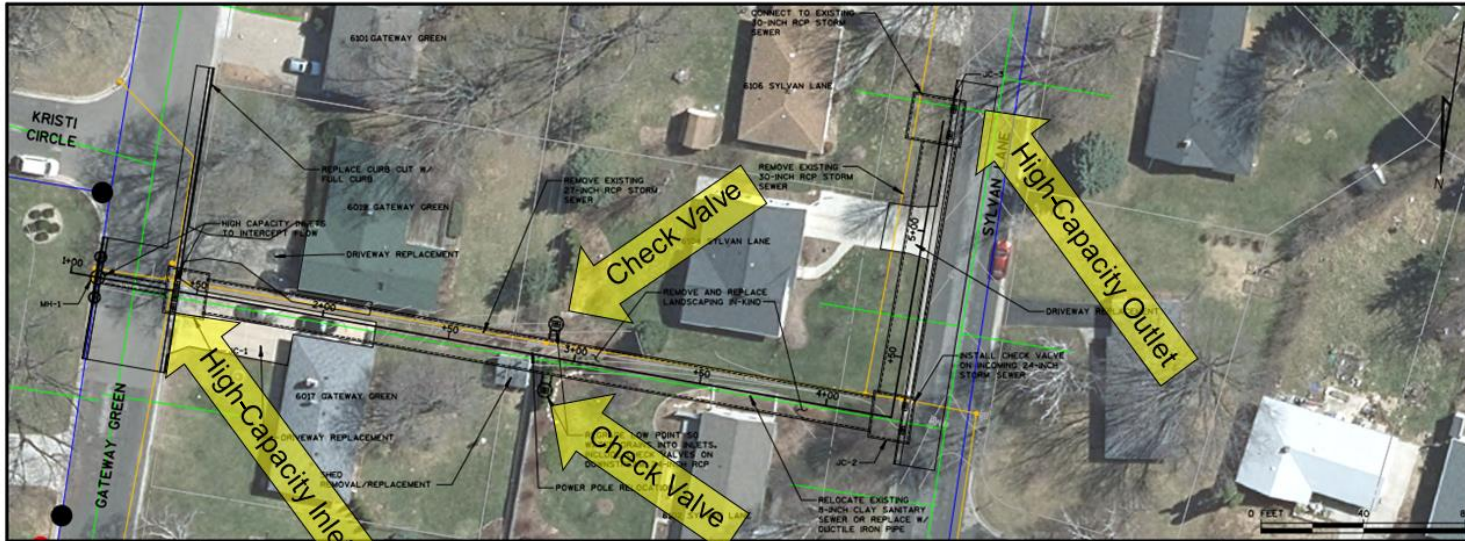
Watershed outlet



# Gateway Green Flood Control-Phase 2 (Flood Extent Maps)



# Phase 2: Preliminary Design – Relief Pipe



DATE	
REVISIONS	
NO.	
<b>100-YEAR RELIEF PIPE PLAN AND PROFILE</b> <b>GATEWAY GREEN TO SYLVAN LANE</b> ALTERNATIVE #1 CITY OF MONONA DANE COUNTY, WISCONSIN	
JOB NO.	1093.034
PROJECT MGR.	JJJ
SHEET	1

# Phase 2: Preliminary Design – Watershed Outlet Improvements

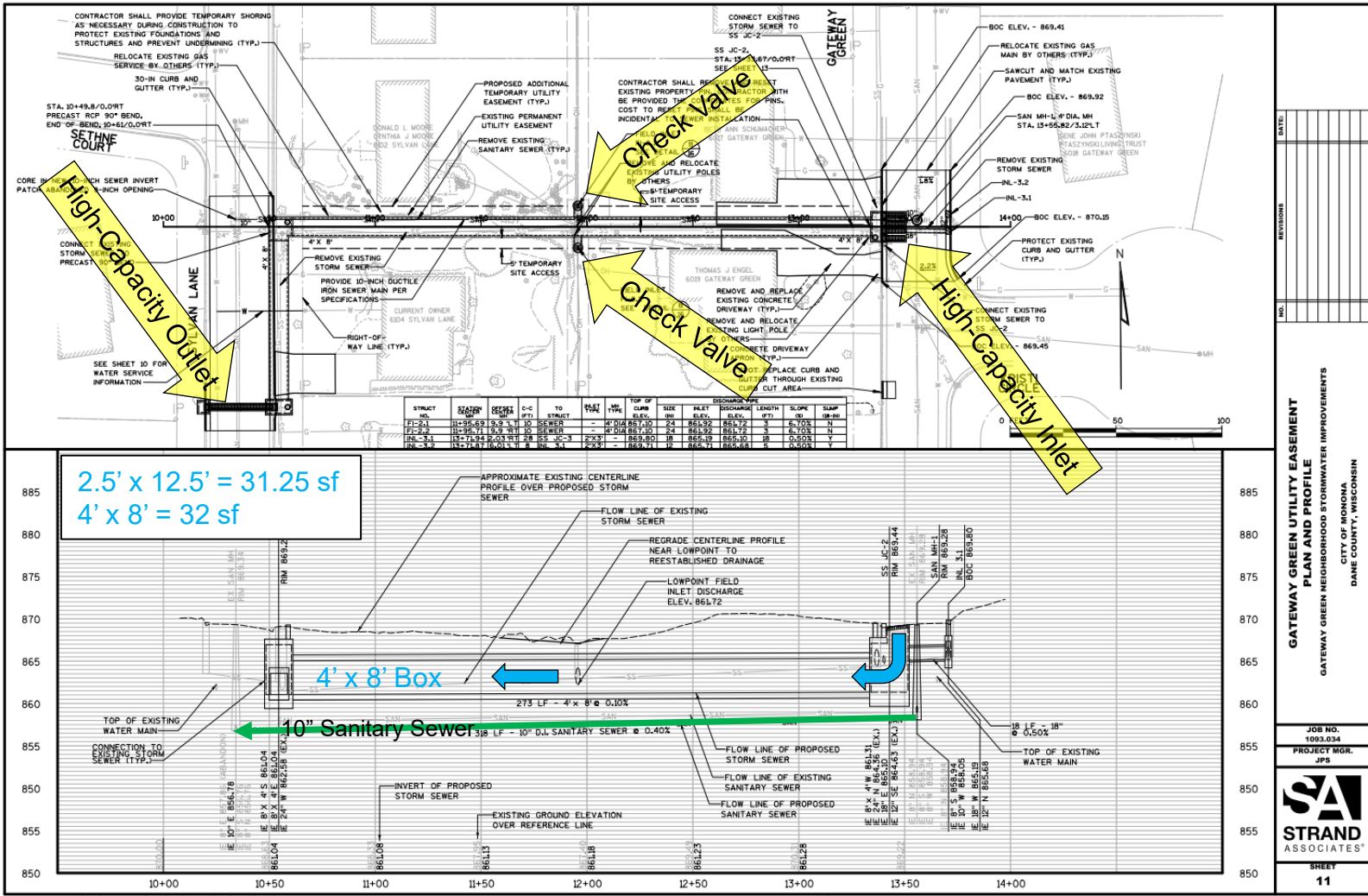


# Gateway Green Design Considerations

- Potential to reduce RC box size due to narrow corridor
- Verify storm sewer performance in XPSWMM 2d
- High-capacity inlet design



# Gateway Green Design: Plan and Profile



**GATEWAY GREEN UTILITY EASEMENT  
PLAN AND PROFILE**

GATEWAY GREEN NEIGHBORHOOD STORMWATER IMPROVEMENTS  
CITY OF MONONA  
DANE COUNTY, WISCONSIN

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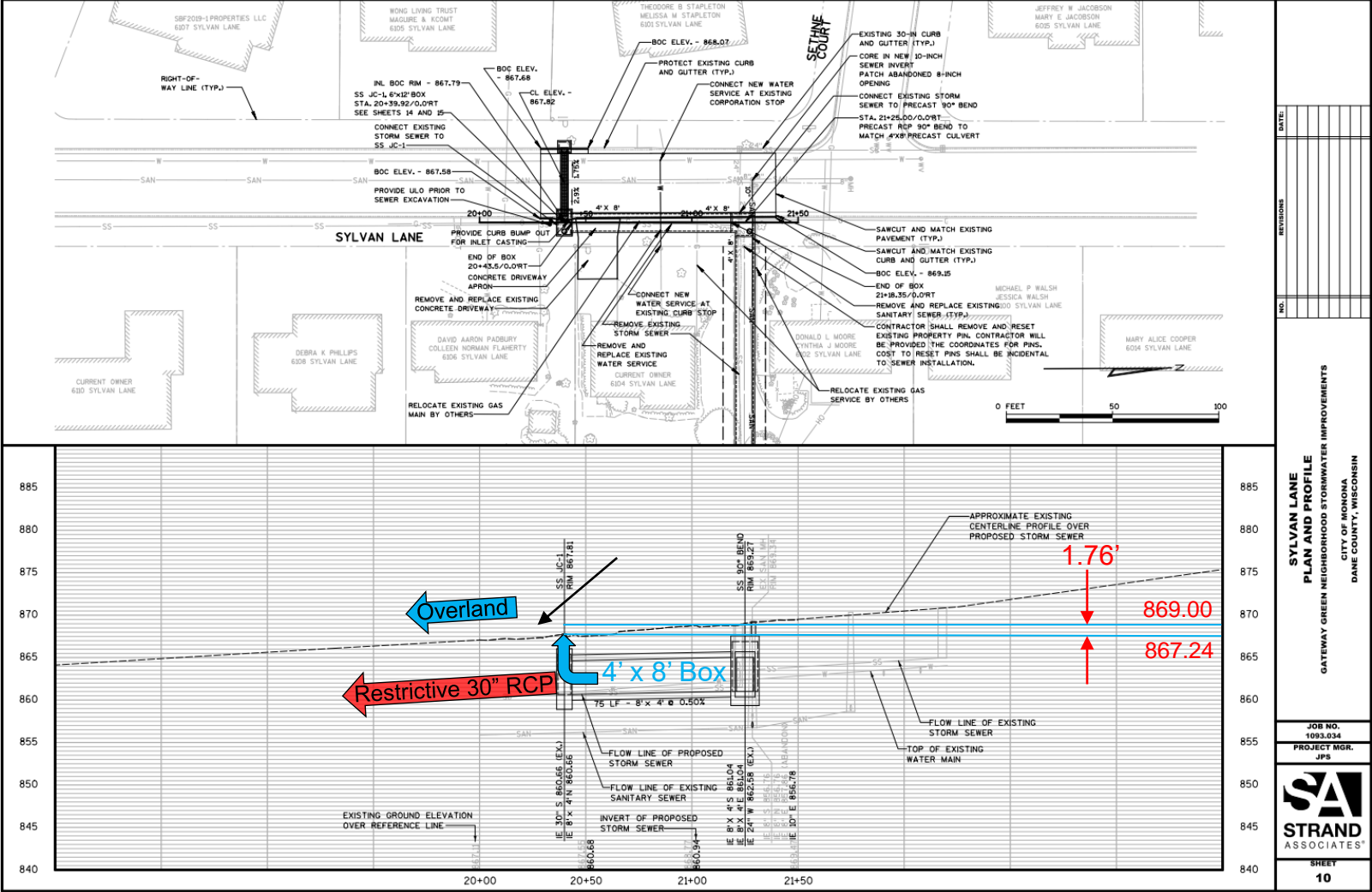
JOB NO.  
1093.034

PROJECT MGR.  
JPS

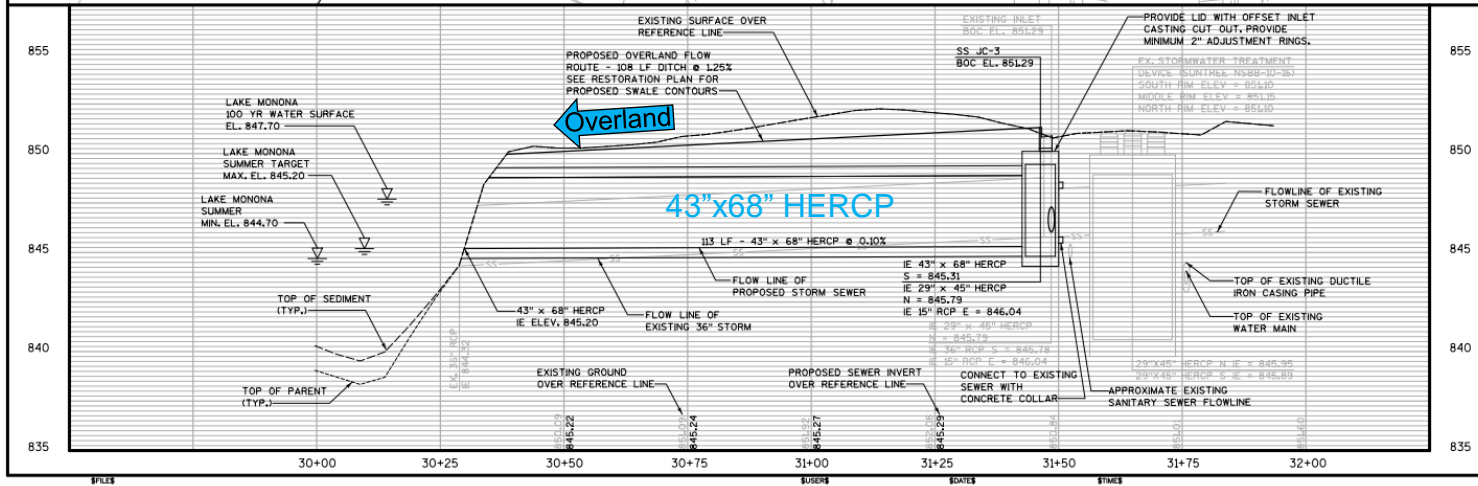
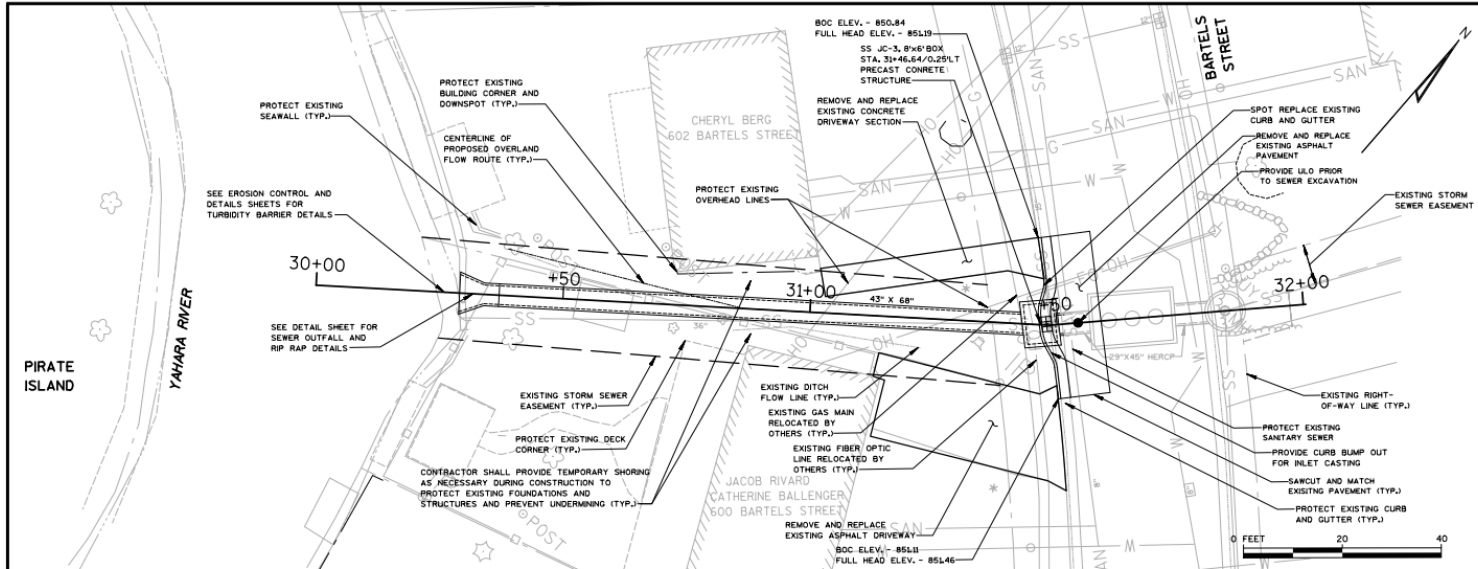


SHEET  
**11**

# Gateway Green Design: Plan and Profile



# Gateway Green Design: Plan and Profile



DATE	
REVISIONS	
NO.	

**BARTELS STREET UTILITY EASEMENT  
PLAN AND PROFILE**  
GATEWAY GREEN NEIGHBORHOOD STORMWATER IMPROVEMENTS  
CITY OF MONONA  
DANE COUNTY, WISCONSIN

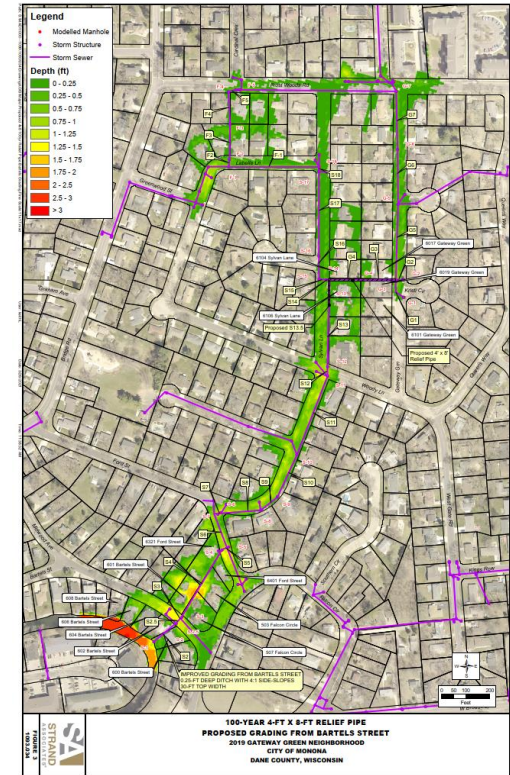
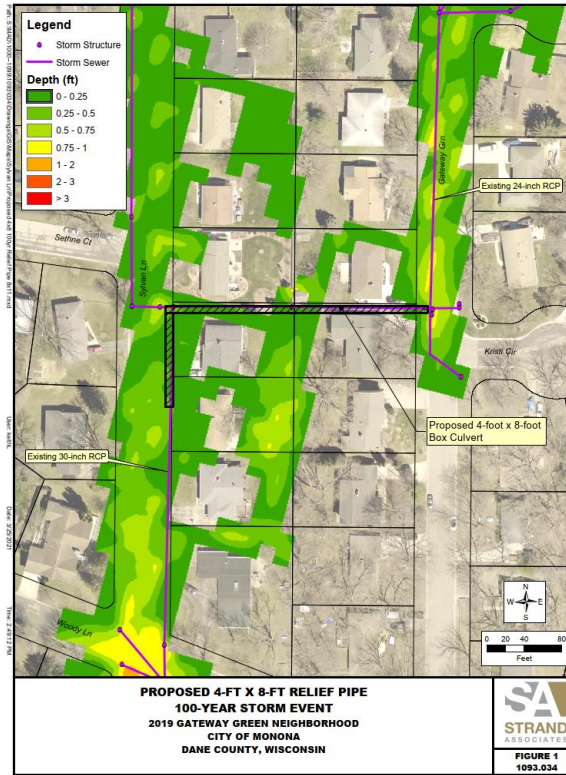
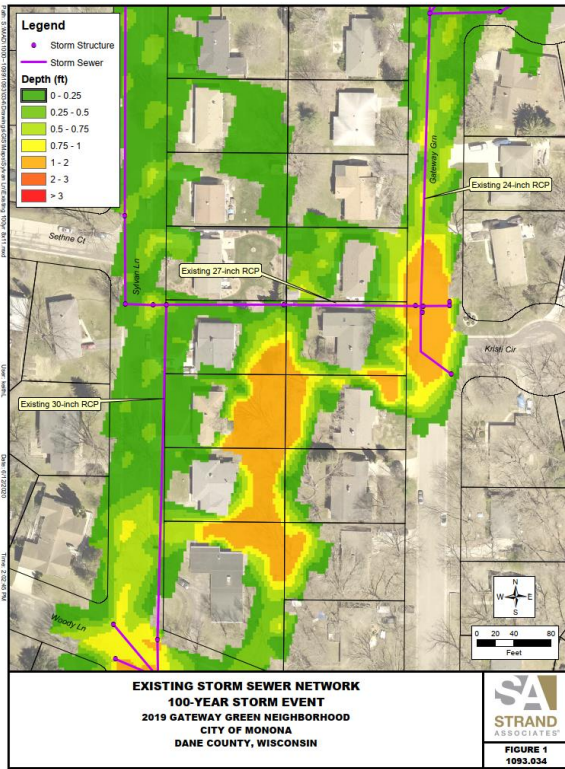
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1093.034

PROJECT MGR.  
JPS

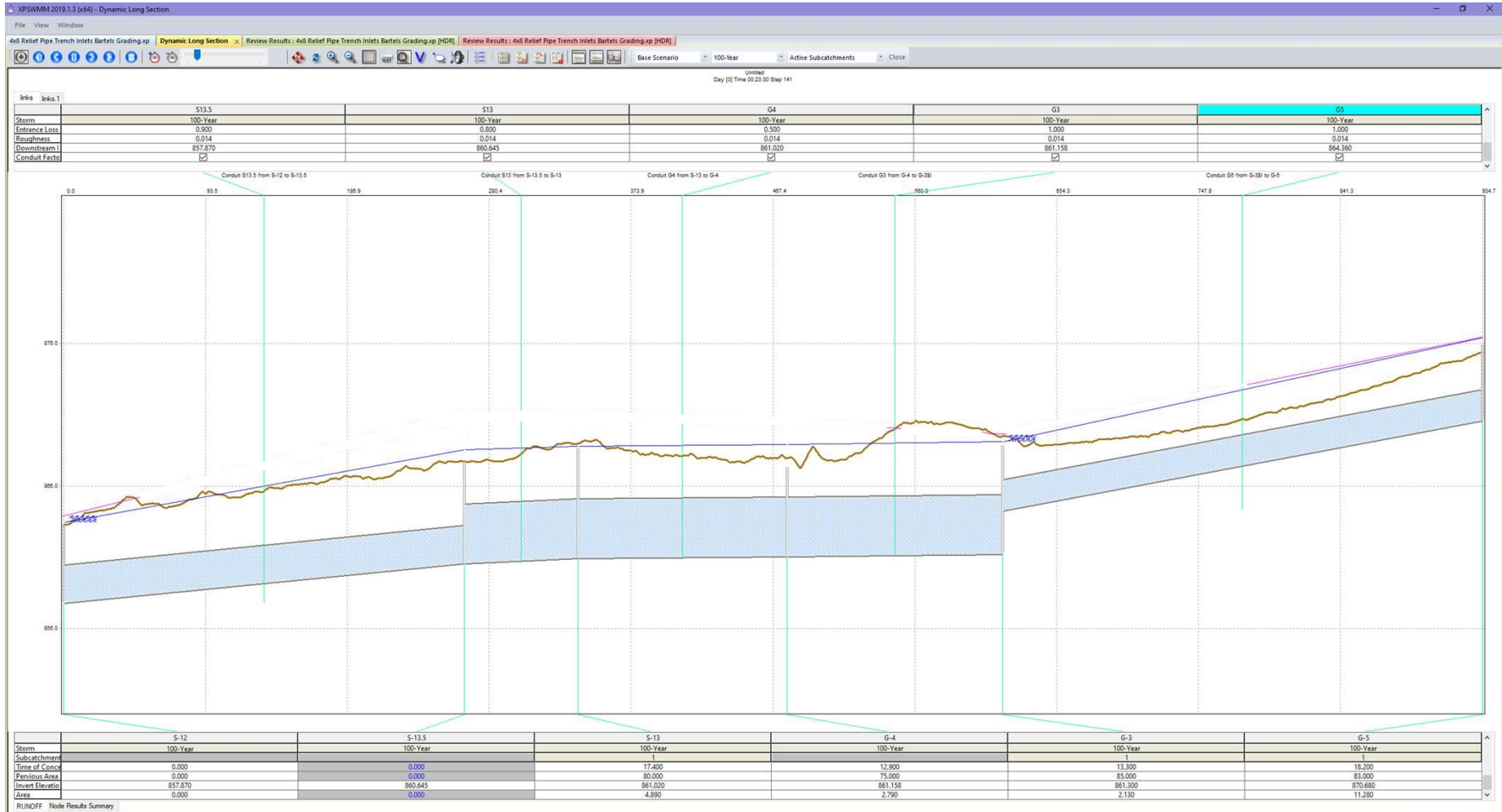
**SA STRAND ASSOCIATES**

SHEET  
**12**

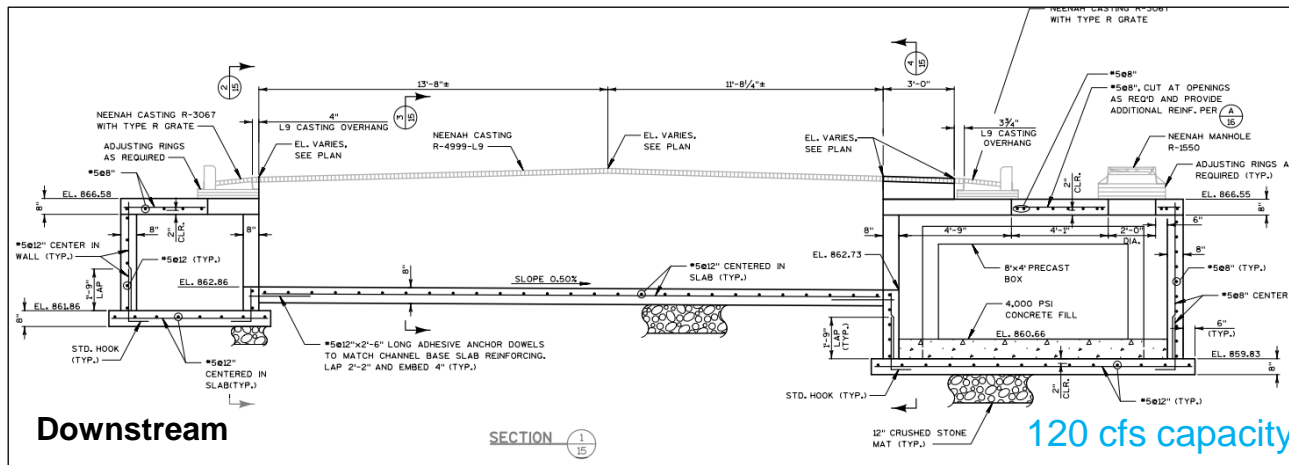
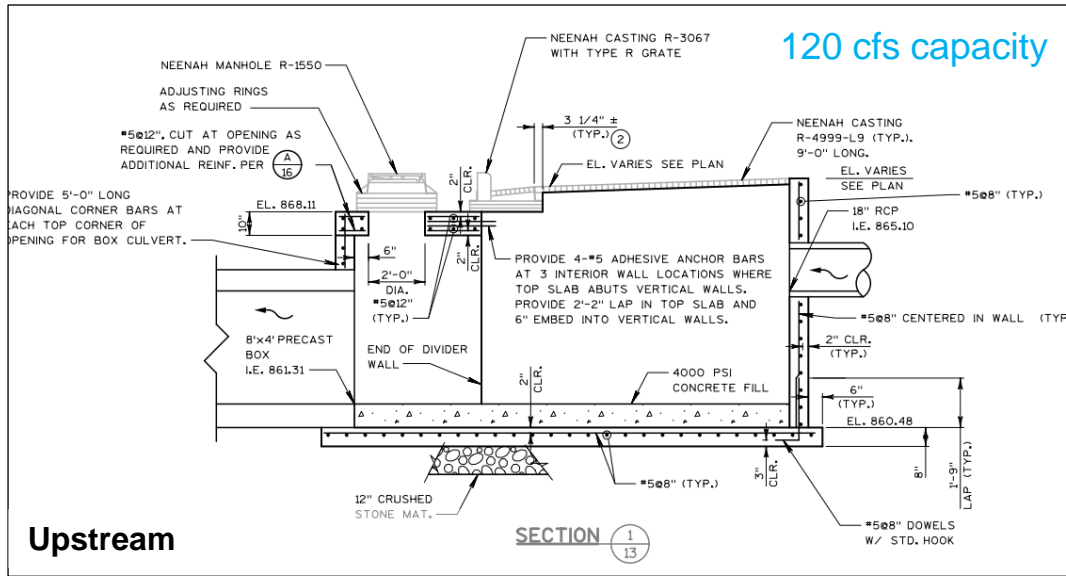
# Gateway Green Design: Hydraulics Verification



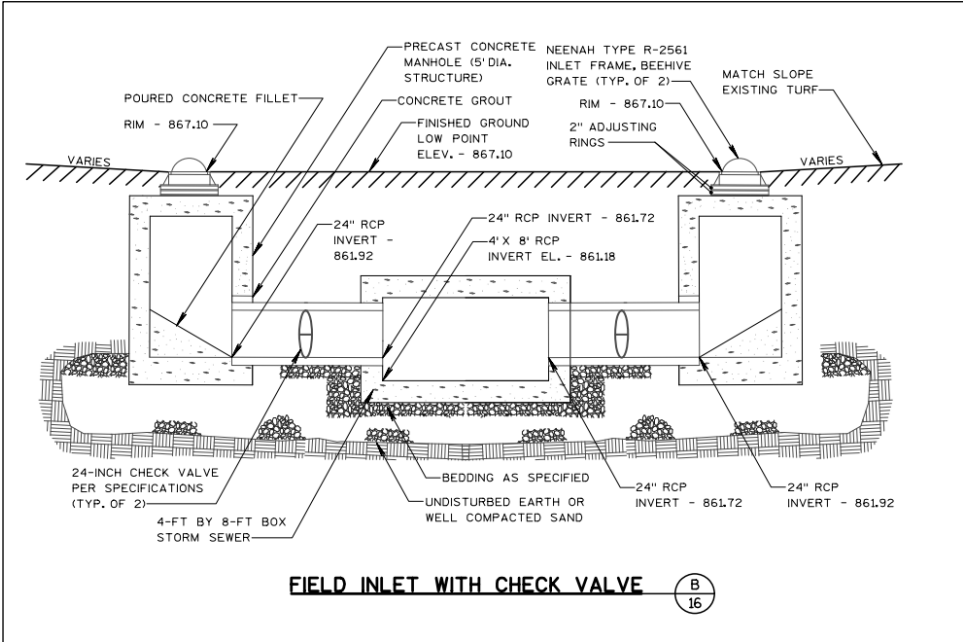
# Gateway Green Design: Hydraulics Verification



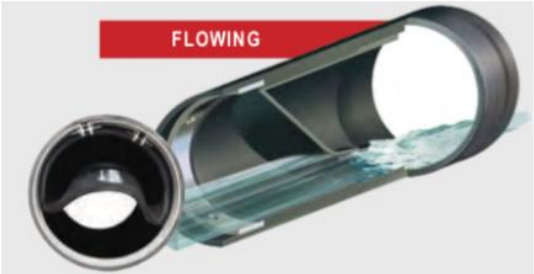
# Gateway Green Design: High-Capacity Inlet / Outlet



# Gateway Green Design: Pressurized Pipe



## HOW DO CHECKMATE VALVES WORK?



# Gateway Green Design: Construction Photos





# Gateway Green Design: Construction



# Gateway Green Design: After Photos



# Gateway Green Flood Relief Pipe Costs

Construction Cost	\$799,000	2nd Low Bid = \$973,611 OPCC (Phase 1) = \$728,000 OPCC (Phase 2) = \$895,000
Engineering (Design)	\$79,500	
Engineering (Const. Observation)	\$85,000	
Geotechnical for Design	<u>\$3,450</u>	
<b>TOTAL Project Cost</b>	<b>\$966,950</b>	

# Gateway Green Design: 9/15/21 Video and Testimonial



*“I would like to let you know that the score is Monona Engineering: 1 / Mother Nature: Zero! We sat up and watched the storm. It had a huge microburst, and the sewer didn’t appear to have any problem handling it. It was certainly the type of burst that would have caused a big problem in the past.*”

*Was very happy to see the new storm sewer handle it...We will let you know how it functions, but we could not ask for more from the City than what was done.”*

– Monona Resident, September 2021

# Project Partners

- **City of Monona**

- Dan Stephany, Public Works Director
- Brad Bruun, Project Manager/GIS Specialist
- Jake Anderson, Parks and Recreation Director
- Mary O'Connor, Mayor

- **Contractor**

- **Stonebridge Park:** Joe Daniels Construction Co., Inc.
- **Gateway Green:** Homburg Contractors, Inc.

- **Strand Associates, Inc.**

- Jon Lindert, P.E
- Zach Simpson, P.E.
- Josh Straka, P.E.
- Jon Solan, E.I.T.
- Kristine Herbert, E.I.T., Resident Project Representative
- Jim McCarthy, Ecologist
- Evan Constant, P.E.



- **Parkitecture**

- Blake Theisen, LA

- **CGC**

- Ryan Portman, P.E.
- Alex Bina, P.E.

# CSWEA Stormwater Bike Tour – May 2022

The screenshot displays the AllTrails website interface for the Lake Monona Bike Loop. The browser address bar shows the URL: `alltrails.com/explore/trail/us/wisconsin/lake-monona-bike-loop?mobileMap=false&ref=sidebar-static-map`. The page features a navigation bar with "Explore" and "Saved" options, the AllTrails logo, and "Sign Up" and "Log In" buttons. The breadcrumb trail indicates the location: "United States of America > Wisconsin > Olin Park > Lake Monona Bike Loop".

The main content area is divided into two sections. On the left is a trail overview card for "Lake Monona Bike Loop". It includes a photo of the trail, a difficulty rating of "easy" with a 5-star rating (6 reviews), and icons for "Photos (51)", "Directions", and "More". The description states: "Lake Monona Bike Loop is a 13.2 mile moderately trafficked loop trail located near Madison, Wisconsin that offers scenic views and is good for". Below the description are filters for "Dogs on leash", "Road biking", "Bike touring", "Running", "Lake", "Paved", "Views", and "City walk".

On the right is a map of the trail, which is a red line looping around Lake Monona. The map shows surrounding areas like Madison, Monona, and Ethelwyn Park. Below the map is an elevation profile graph showing the trail's elevation in feet (0 to 928 ft) over its 13.2-mile length.

# Question and Answer



## Contact:

Jon Lindert  
jon.lindert@strand.com  
(608) 251-4843



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