

FES TABLE			
Structure Name	TYPE	INV	C.Y. RIP RAP
A1	FES	928.0	
A7	FES	928.0	
B1	FES	928.0	
C1	FES	934.5	
E1	FES	928.0	
F1	FES	928.0	
G3	FES	926.0	
G4	FES	926.5	
H1	FES	942.0	
H3	FES	941.4	
I1	CB		
I2	FES	936.0	
P1	FES	918.0	

OUTLET STRUCTURE TABLE			
Structure Name	TYPE	INV	DETAIL
B9	OS	933.00 935.00	SEE STRUCTURE DETAIL
G1	OS	925.50 928.00	SEE STRUCTURE DETAIL

STORM SEWER NOTES:

- ALL STORM SEWER MUST BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF LAKE ELMO STANDARD SPECIFICATIONS AND DETAILS.
- REINFORCED CONCRETE PIPE AND FITTINGS SHALL CONFORM WITH THE REQUIREMENTS OF MNDOT SPEC 3236 (REINFORCED CONCRETE PIPE) FOR THE TYPE, SIZE, AND STRENGTH CLASS SPECIFIED.
- FURNISH AND INSTALL TRASH GUARDS ON ALL FLARED END SECTIONS.
- RIP-RAP SHALL BE PLACED OVER GEOTEXTILE FABRIC AND CONFORM TO MNDOT SPEC 3601, CLASS 3, OR SPECIFIED. (PER DETAIL PLATE 411)
- GEOTEXTILE FABRIC USED UNDER RIP-RAP SHALL EXTEND 3 FT UNDER THE APRON.
- ALL SILT SHALL BE CLEANED OUT FROM RIP-RAP AT THE END OF THE PROJECT.
- INFILTRATION & 8" WRAP REQUIRED ON ALL STRUCTURES

GENERAL NOTES:

- CONDUIT CROSSING EXHIBIT TO BE PROVIDED 1 WEEK PRIOR TO CURB CONSTRUCTION
- CONDUIT CROSSING TO BE PERPENDICULAR TO STREET & PLACED BELOW THE STREET SUB-GRADE
- DRAINILE INVERT TO BE LOCATED ABOVE TOP OF EFFLUENT STORM PIPE & EXTENDING 3 INCHES INTO CATCH BASIN STRUCTURE
- ALL STORM SEWER INSTALLED SHALL HAVE POSITIVE GRADE
- ALL CATCH BASIN CASTINGS IN CURB SHALL BE SUMPED 0.10 FEET AND MANHOLE CASTINGS IN PAVED AREAS SHALL BE SUMPED 0.05 FEET.

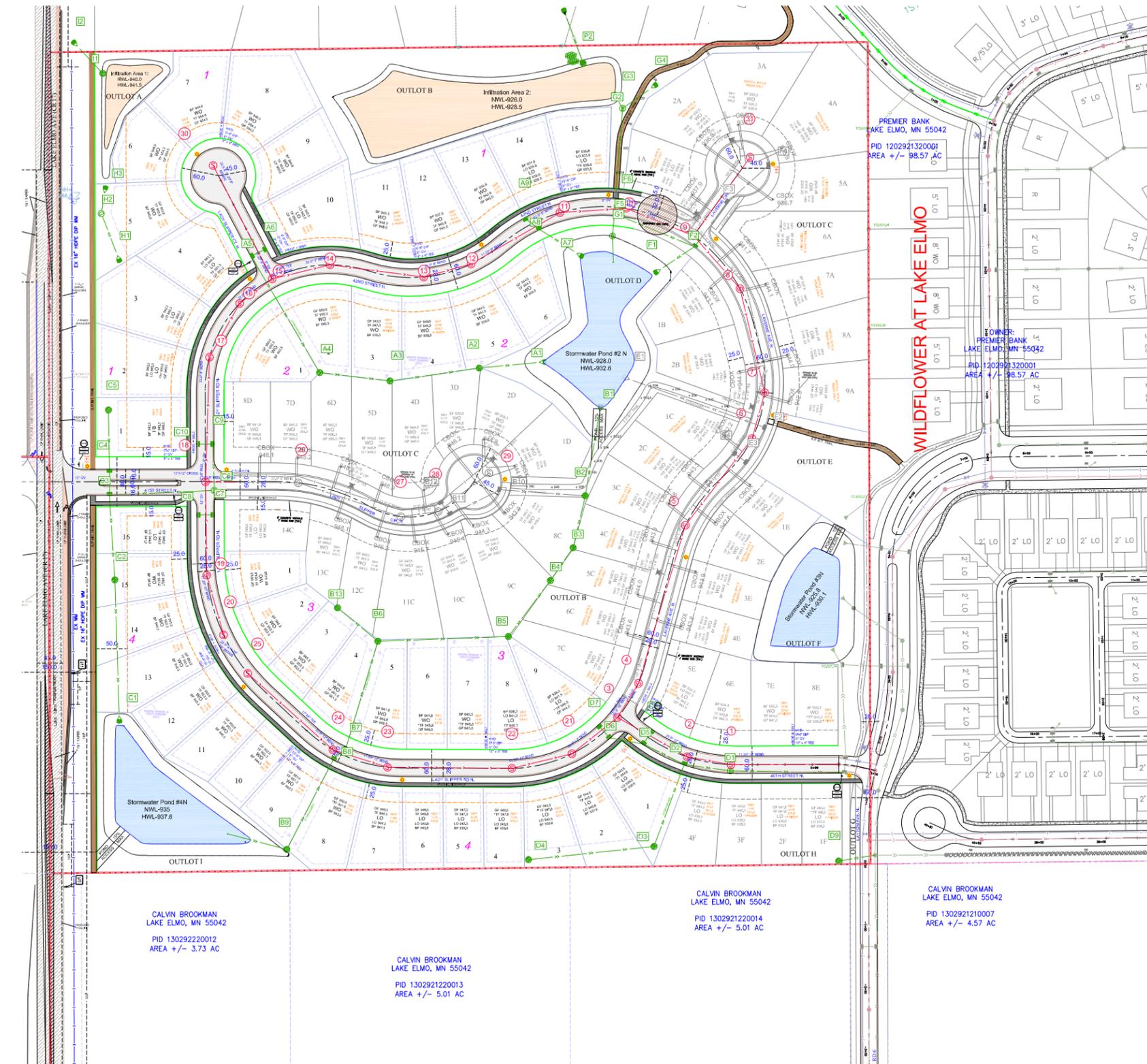
POND NOTES:

- Wet Pond Lining:**
- In-Place Permeability: 1 x 10⁻⁶ cm/sec or less.
 - Grain Size: P200 content 50 percent by weight or greater, maximum gravel content 5 percent by weight. Maximum particle size of 2.5 inch in any dimension.
 - Clay Content: 25 percent by weight or greater (0.02 mm).
 - Liquid Limit: 25 percent or greater.
 - Plasticity Index: 12 percent or greater.
 - Compaction: 95 percent Standard Proctor density or greater depending on Contractor source testing results.
 - Source Testing: The Contractor shall supply test results from an independent testing lab for a sample taken at the clay source to verify the above specifications will be met. The results shall be submitted to the Engineer at least two weeks prior to delivery to the site. The specific location of the source must be included with the submittal.
 - In-Place Testing: After placement of the clay, the Contractor shall arrange for in-place testing by an independent testing lab to verify the above specifications are met. Testing shall include compaction, grain size, Atterberg limits, and permeability using a relatively undisturbed thin wall sample (Shelby tube). The in-place testing frequency shall be one sample tested every 1,000 CY of clay placed.

INFILTRATION NOTES
After construction, the contractor must provide documentation that constructed infiltration areas perform as designed. Methods to document infiltration performance must be approved by the VBWD Engineer prior to documentation. Available options for documentation include:
A. Time and date-stamped photographs showing that the infiltration basin drains dry within 48 hours after a natural precipitation event approximately equivalent to the design storm.
B. Time and date-stamped photographs showing that the infiltration basin drains dry within 48 hours after the basin is filled with water from municipal water supply, water trucks, or stormwater ponds."

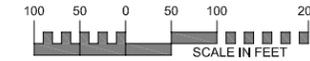
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CHECKED BY				
RSM				
DATE				
02/20/15				



STRUCTURE TABLE						
Structure Name	TYPE	DIA	RIM	HEIGHT	INV	CASTING
A2	CBMH	48"	934.8	4.9	929.9	R-4342
A3	CBMH	48"	935.9	4.8	931.1	R-4342
A4	CBMH	48"	938.7	7.1	931.6	R-4342
A5	CBMH	48"	947.3	5.1	942.2	R-3067-V
A6	CB	2'x3'	947.3	4.9	942.4	R-3067-V
A8	CBMH	48"	938.1	4.9	933.2	R-3067-V
A9	CB	2'x3'	938.6	4.9	933.7	R-3067-V
B2	CBMH	48"	935.0	6.2	928.8	R-4342
B3	CBMH	48"	934.9	5.5	929.4	R-4342
B4	CBMH	48"	934.9	5.3	929.6	R-4342
B5	CBMH	48"	935.9	5.5	930.4	R-4342
B6	CBMH	48"	937.9	6.2	931.7	R-4342
B7	CBMH	48"	947.2	14.3	932.9	R-3067-V
B8	CBMH	48"	947.4	13.9	933.5	R-3067-V
B10	CBMH	48"	942.4	7.1	935.3	R-3067-V
B11	CBMH	48"	943.3	7.9	935.4	R-3067-V
B12	CB	2'x3'	943.6	7.3	936.3	R-3067-V
B13	CB	27"	937.9	4.8	933.1	R-4342
C2	CBMH	48"	939.0	4.0	935.0	R-3067-V
C3	CBMH	48"	944.1	8.6	935.5	R-3067-V
C4	CBMH	48"	944.1	7.9	936.2	R-3067-V
C5	CB	27"	941.0	4.9	936.1	R-4342
C6	STMH	48"	945.5	6.4	939.1	R-1642 B
C7	CBMH	48"	944.7	5.2	939.5	R-3067-V
C8	CB	2'x3'	944.6	4.9	939.7	R-3067-V
C9	CBMH	48"	944.5	5.0	939.5	R-3067-V
C10	CB	2'x3'	944.5	4.8	939.7	R-3067-V
D1	STMH	48"	940.4	13.4	927.0	R-1642 B
D2	CBMH	48"	940.2	10.5	929.7	R-3067-V
D3	CBMH	48"	935.9	5.4	930.5	R-4342
D4	CB	27"	938.0	6.5	931.5	R-3067-V
D5	CBMH	48"	939.6	5.2	934.4	R-3067-V
D6	CBMH	48"	940.1	5.1	935.0	R-3067-V
D7	CB	2'x3'	940.1	4.8	935.3	R-3067-V
D8	CB	2'x3'	939.6	4.9	934.7	R-3067-V
D9	CB	27"	933.0	4.8	928.2	R-3067-V
E2	CBMH	48"	941.1	6.1	935.0	R-3067-V
E3	CBMH	48"	940.6	5.1	935.5	R-3067-V
E4	CB	2'x3'	940.5	4.8	935.7	R-3067-V
F2	CBMH	48"	938.1	11.6	926.5	R-3067-V
F3	CBMH	48"	936.2	7.4	928.8	R-3067-V
F4	CB	2'x3'	934.1	4.7	929.4	R-3067-V
F5	CBMH	48"	935.5	5.3	930.2	R-3067-V
F6	CB	2'x3'	935.4	4.7	930.7	R-3067-V
G2	CBMH	48"	931.0	4.7	926.3	R-4342
H2	CBMH	48"	947.0	5.4	941.6	R-4342
P2	CB	27"	927.5	5.1	922.4	R-3067-V

■ DENOTES FUTURE PHASE STRUCTURE



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ROBERT S. MOLSTAD, P.E.
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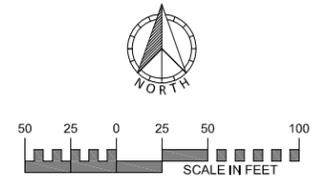
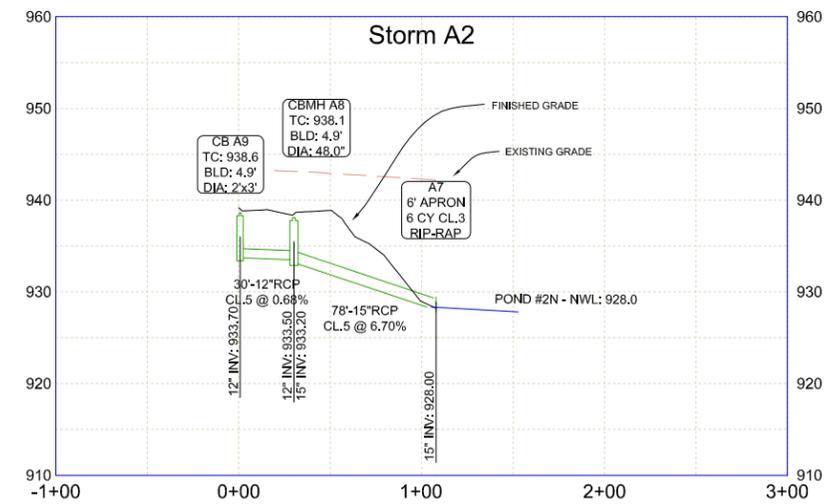
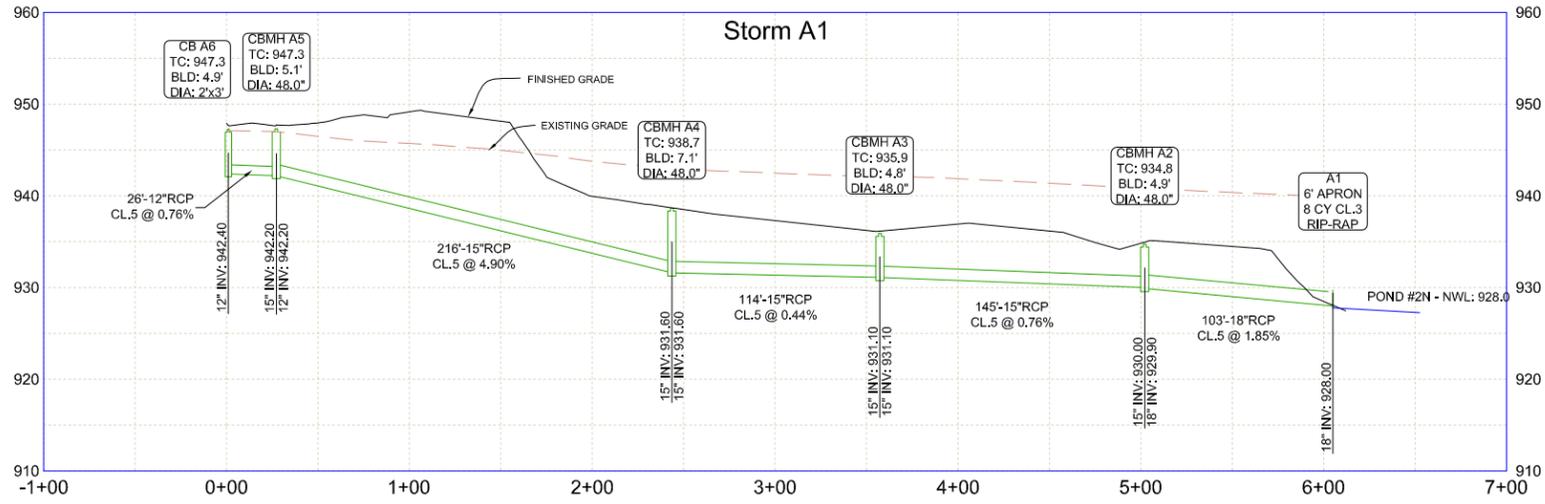
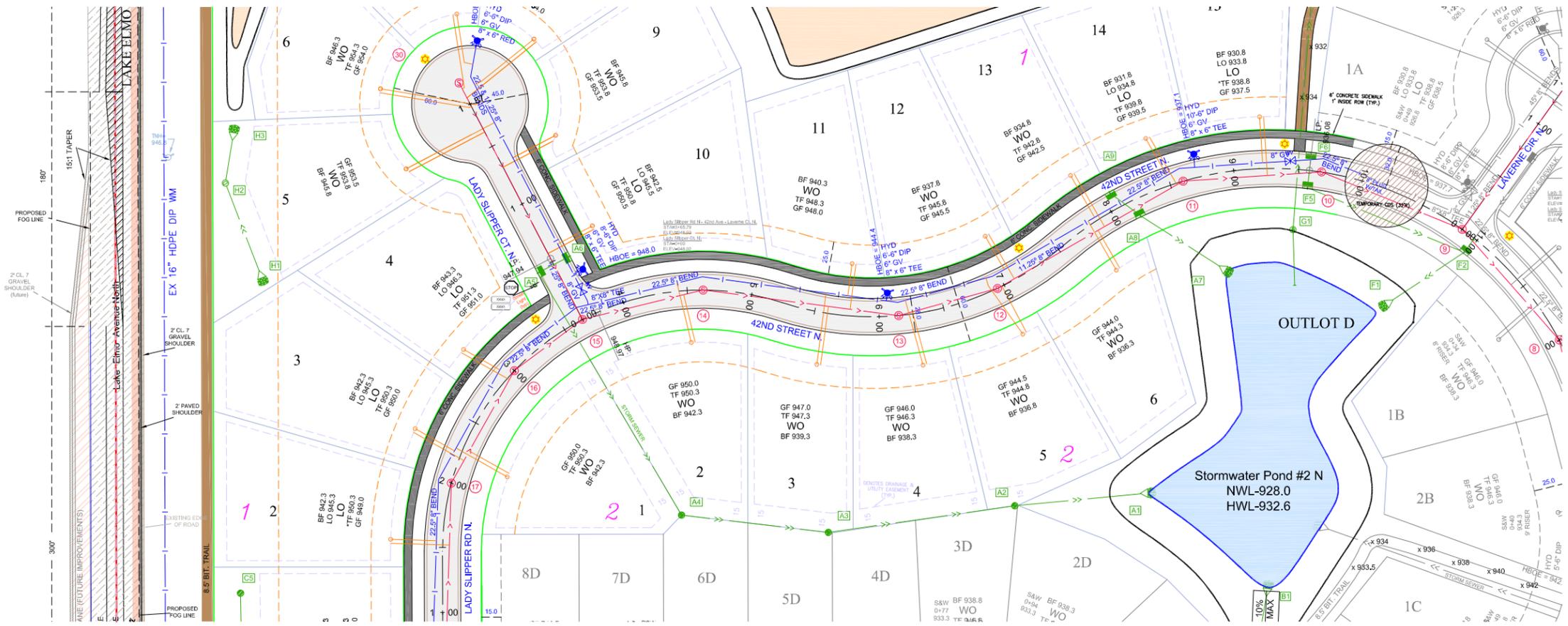
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VILLAGE PRESERVE - PHASE 1
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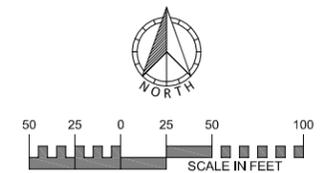
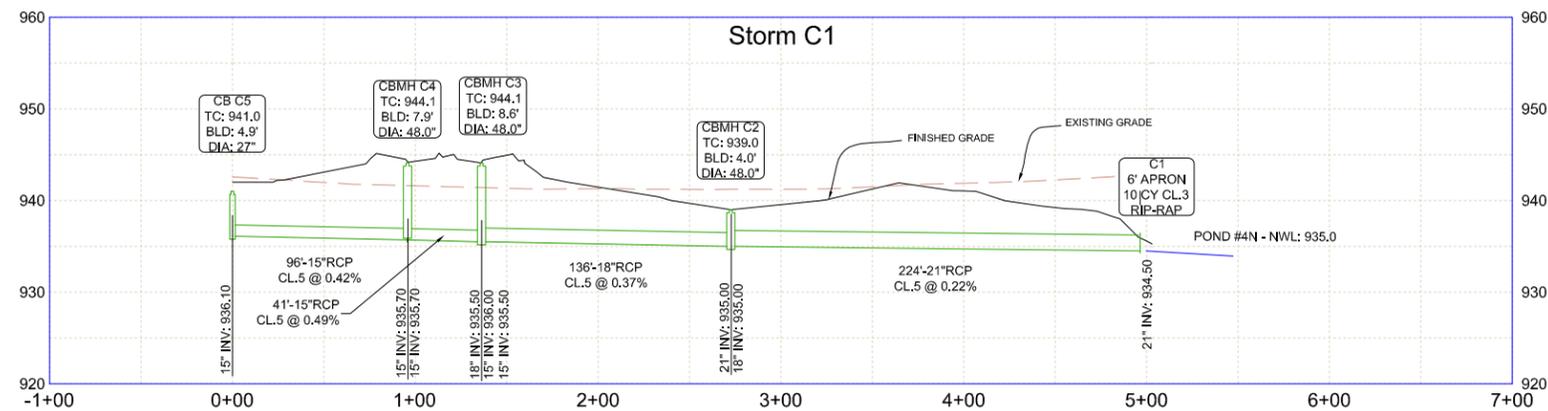
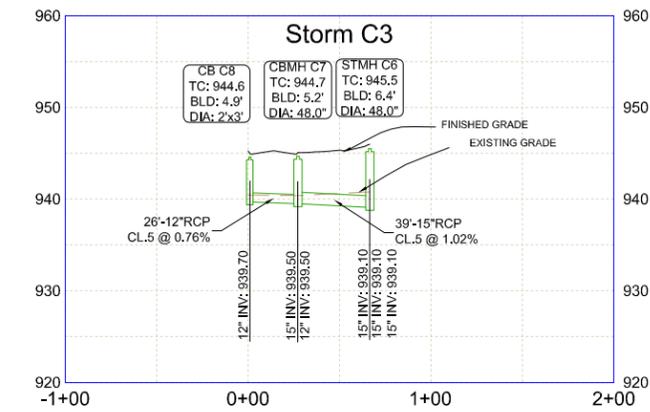
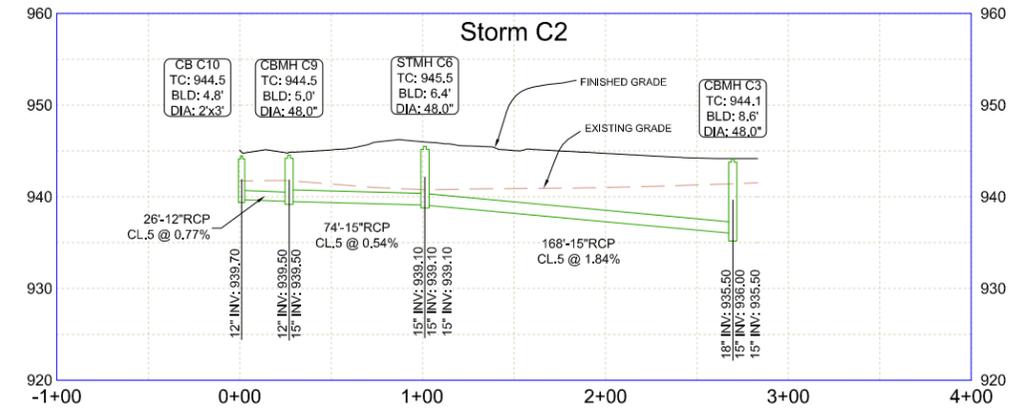
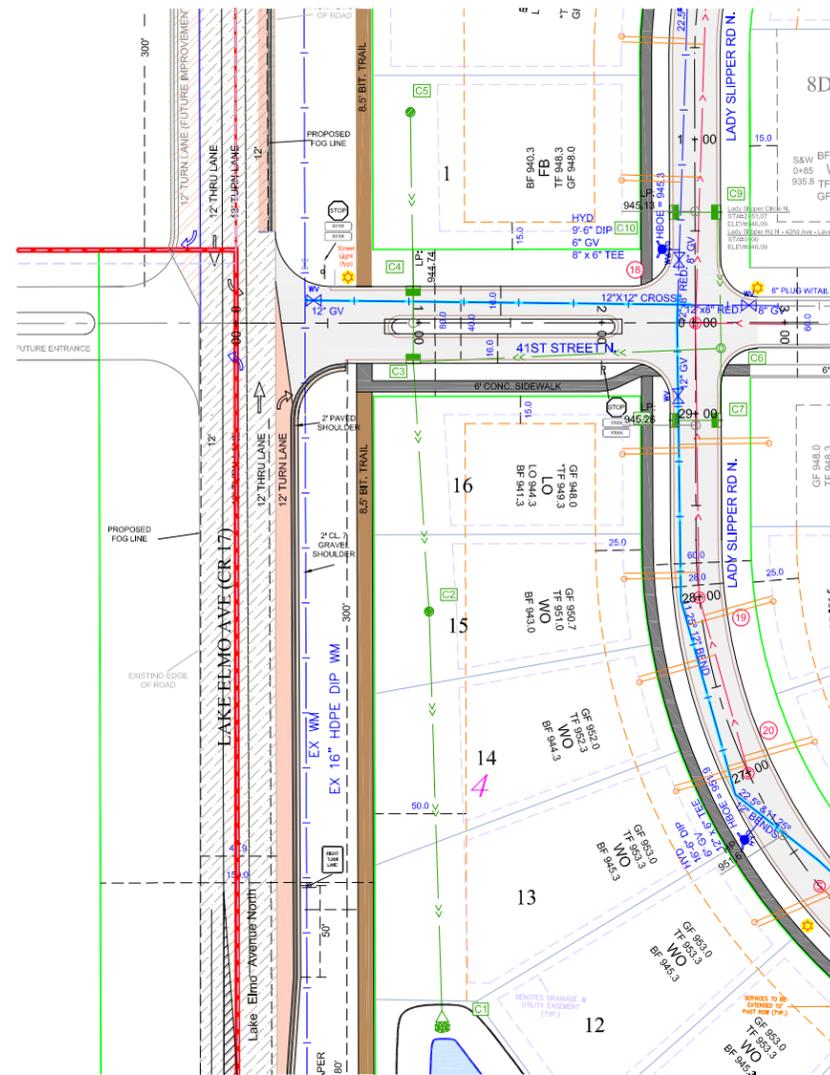
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CITY PROJECT NO. —
LAKE ELMO, MINNESOTA

FINAL STORM SEWER PLAN
VILLAGE PRESERVE - PHASE 1
GWSA LAND DEVELOPMENT, LLC.

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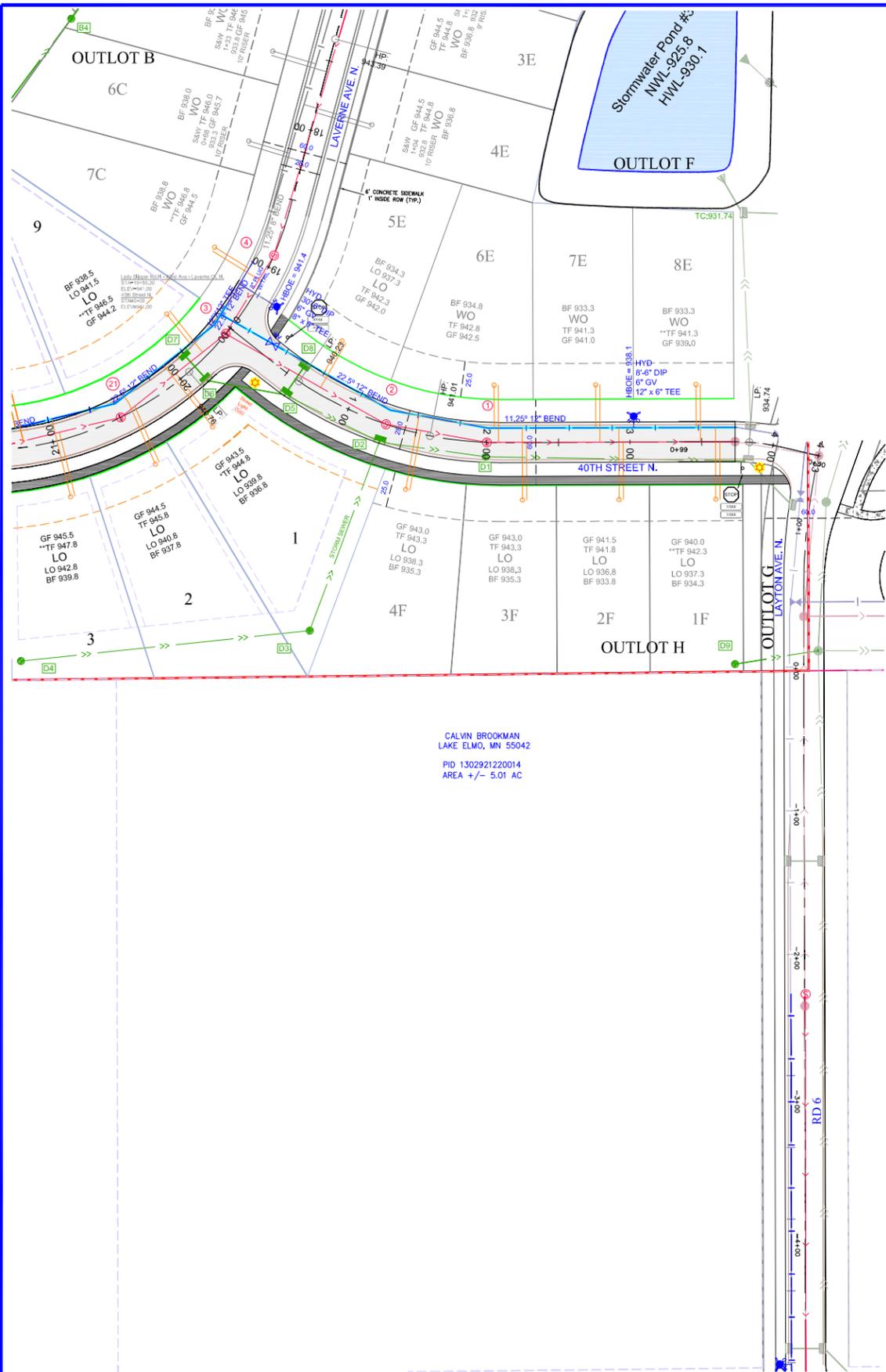
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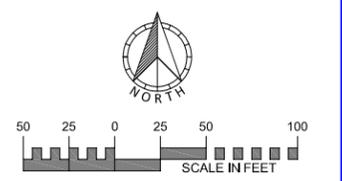
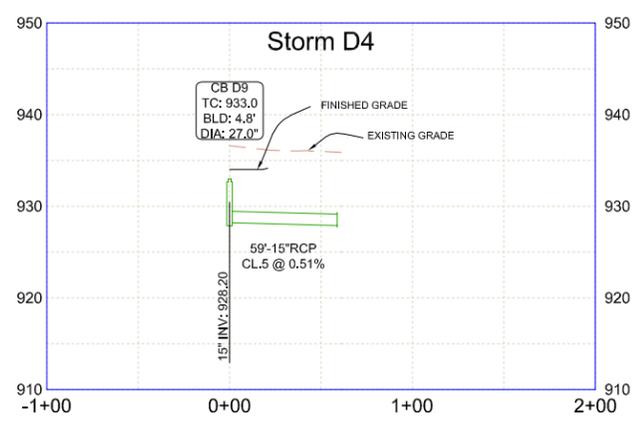
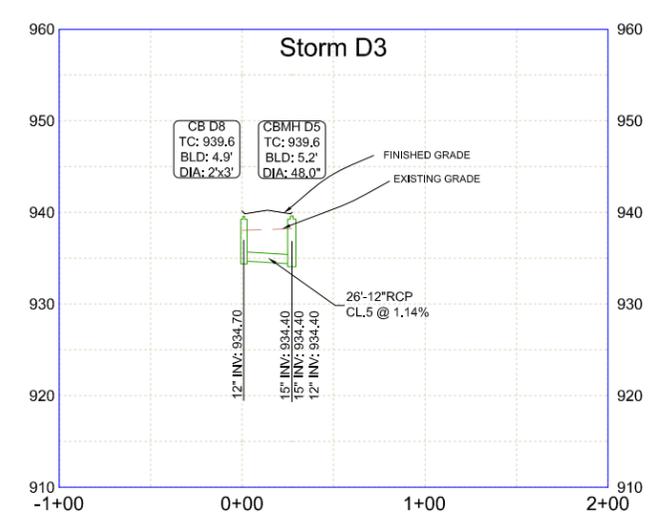
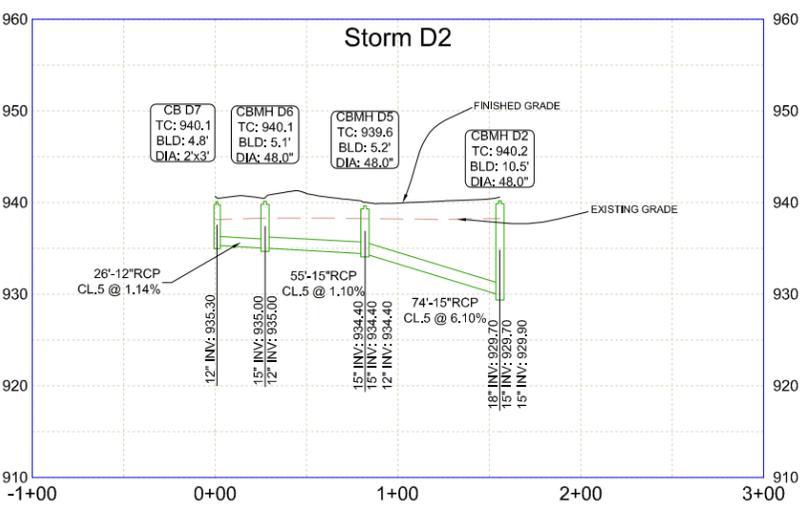
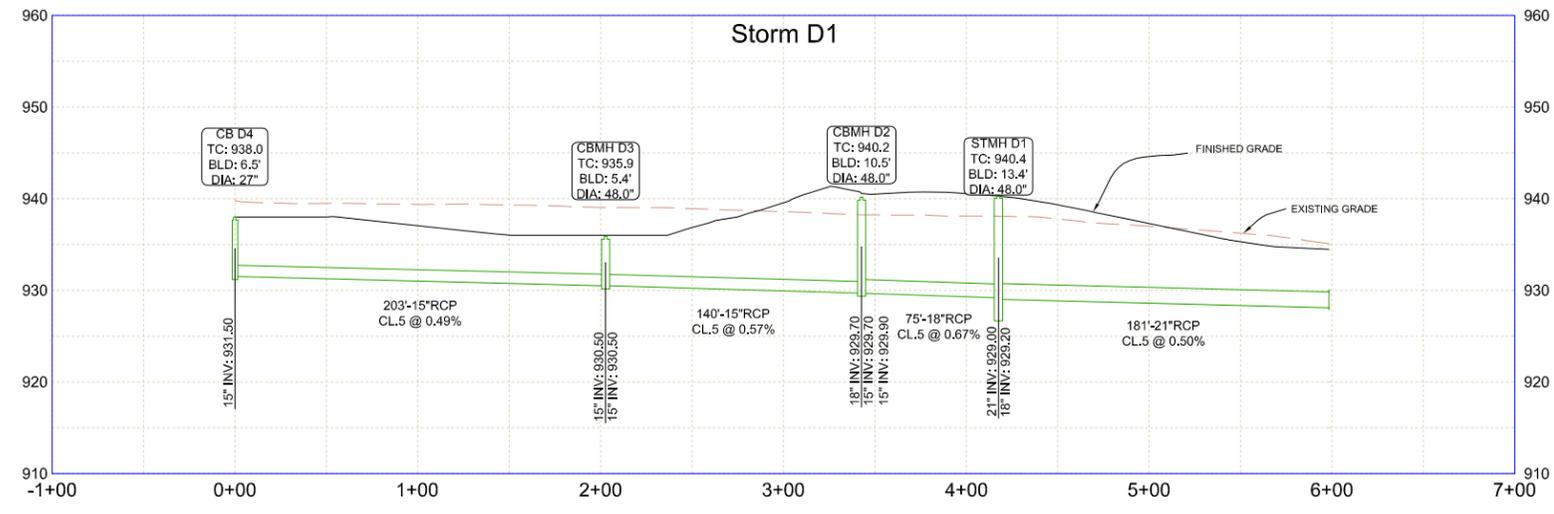
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VILLAGE PRESERVE - PHASE 1
GWSA LAND DEVELOPMENT, LLC.

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CALVIN BROOKMAN
LAKE ELMO, MN 55042
PID 1302921220014
AREA +/- 5.01 AC



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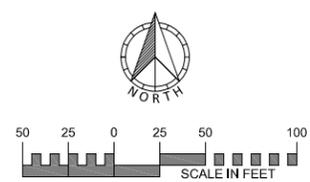
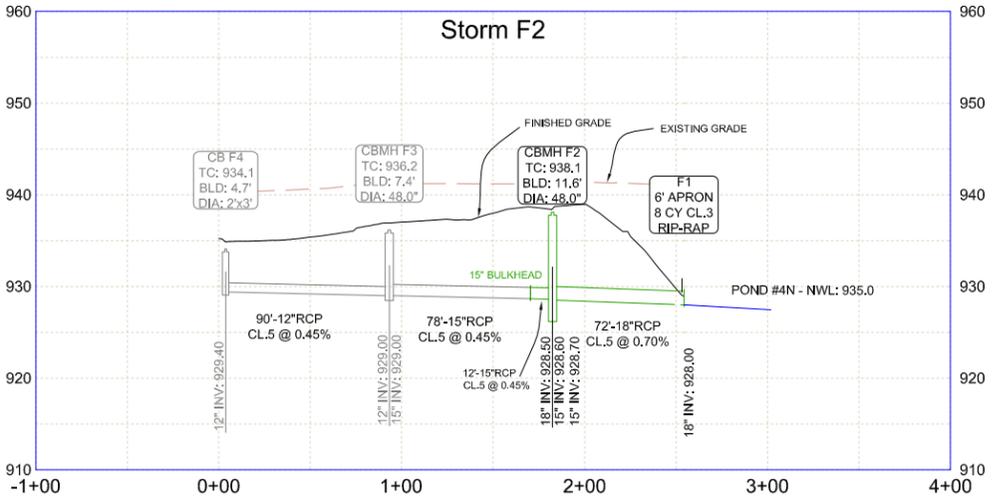
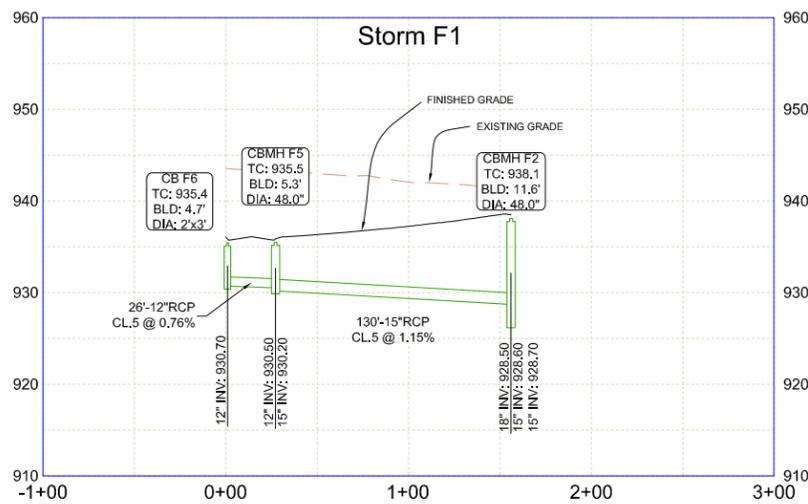
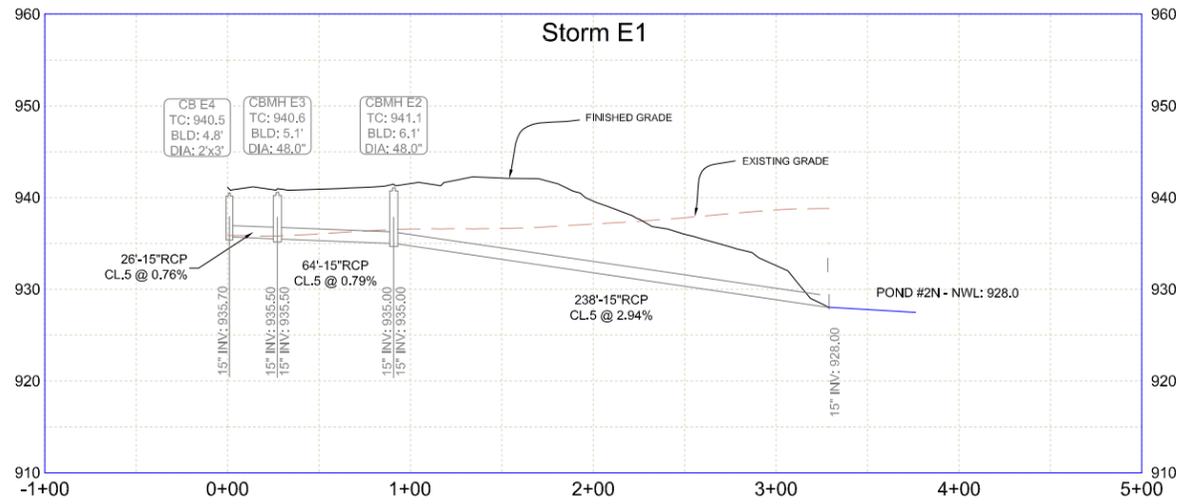
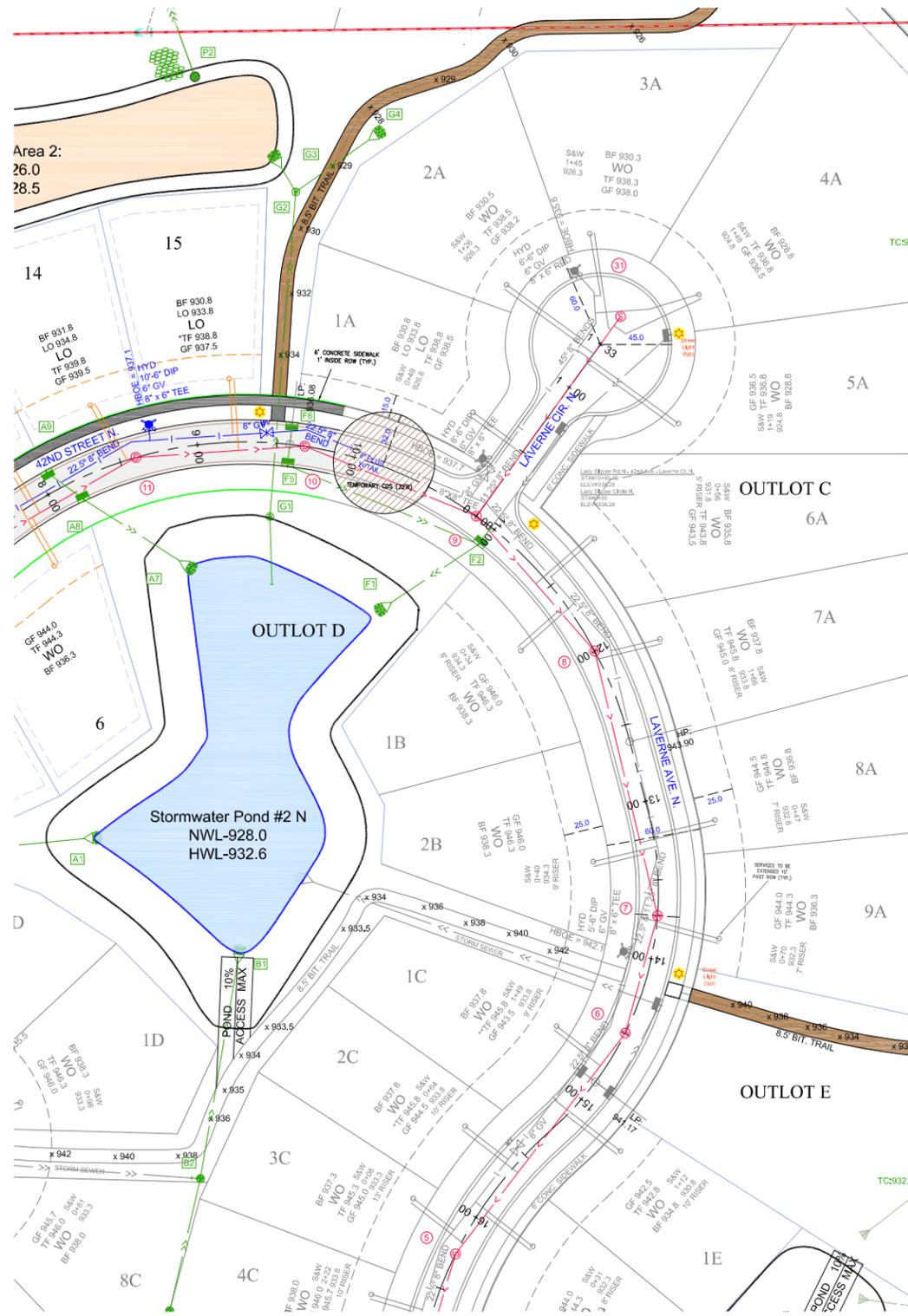
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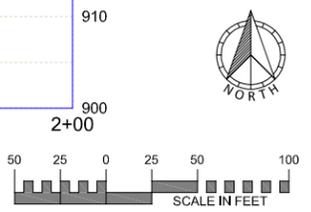
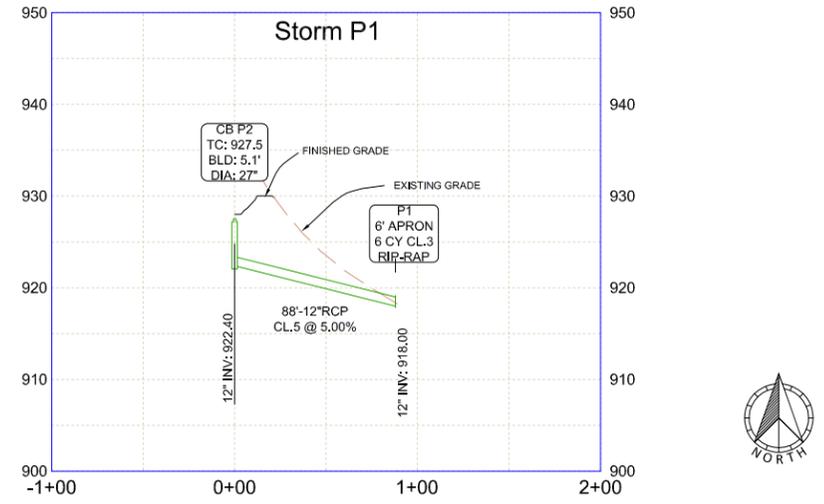
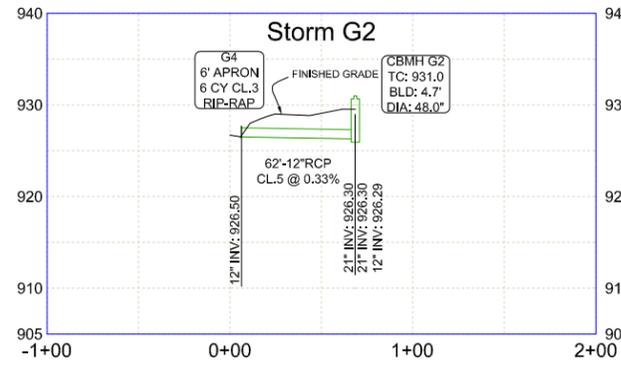
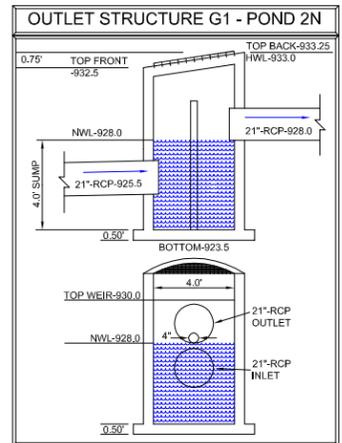
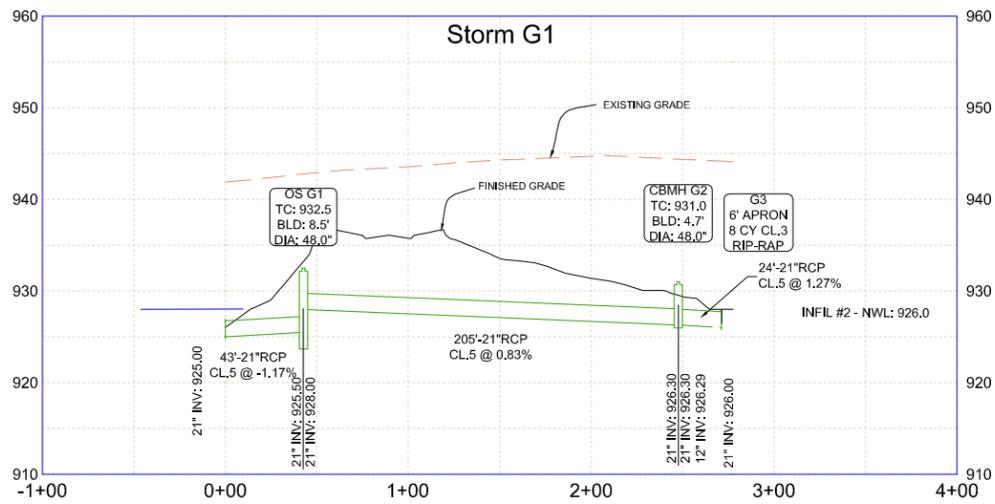
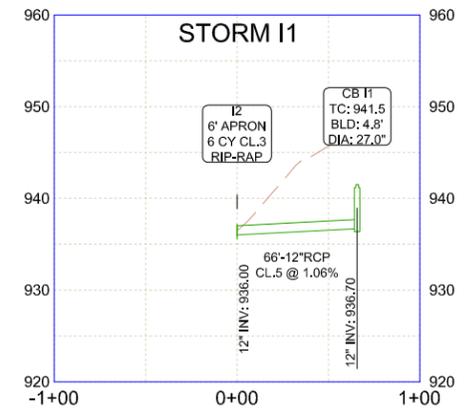
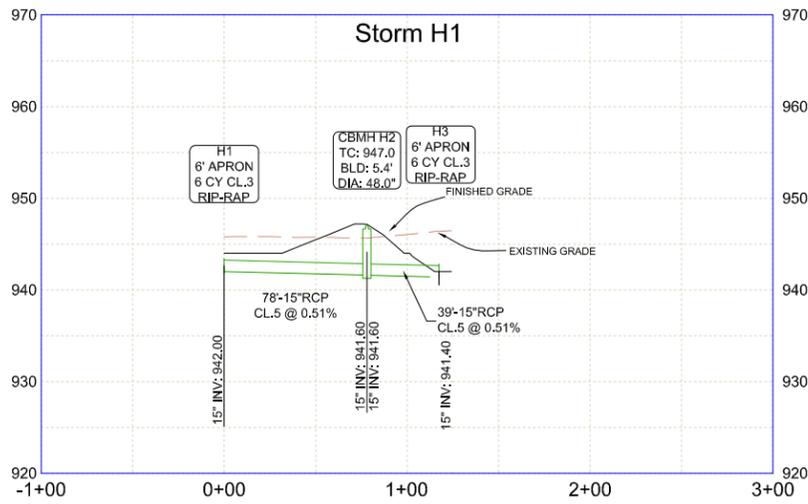
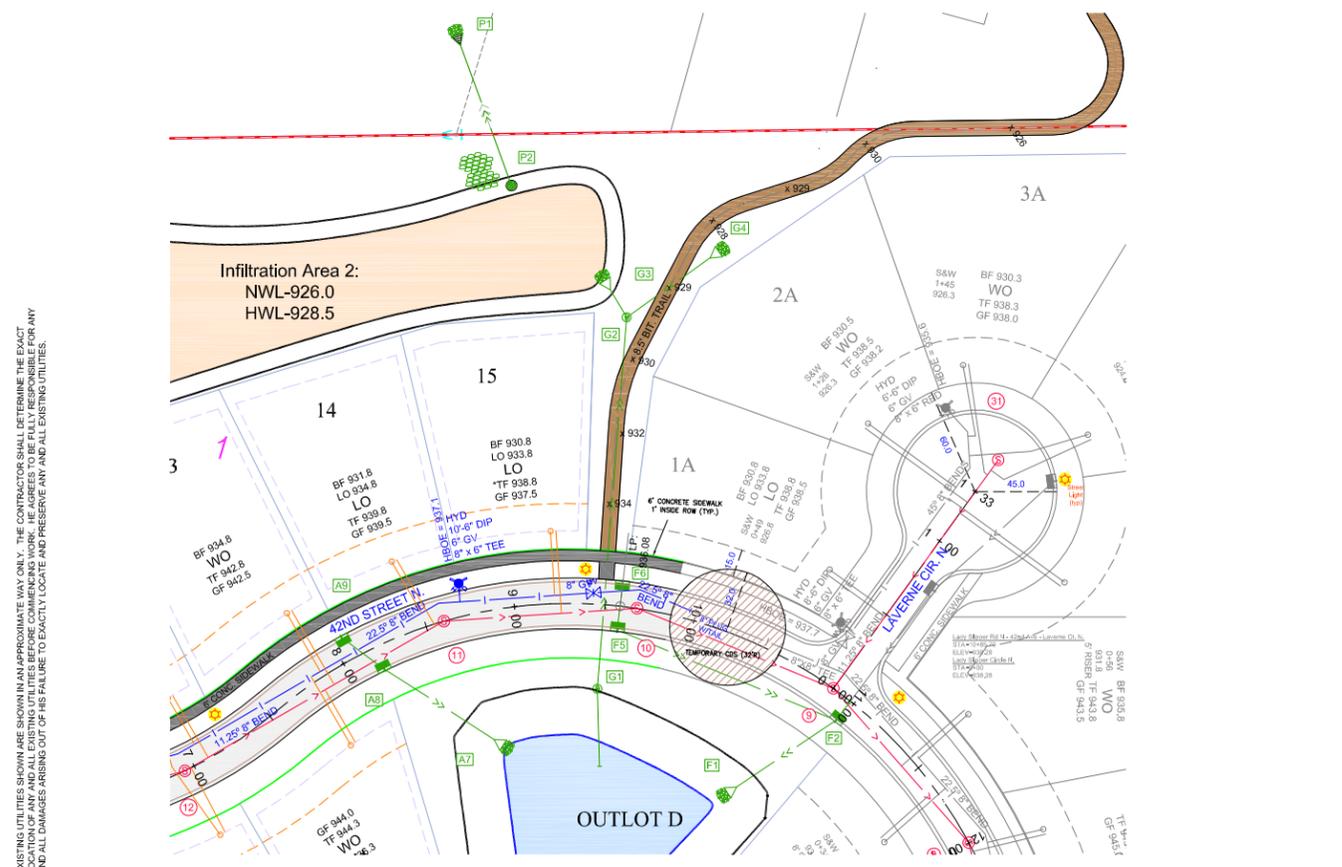
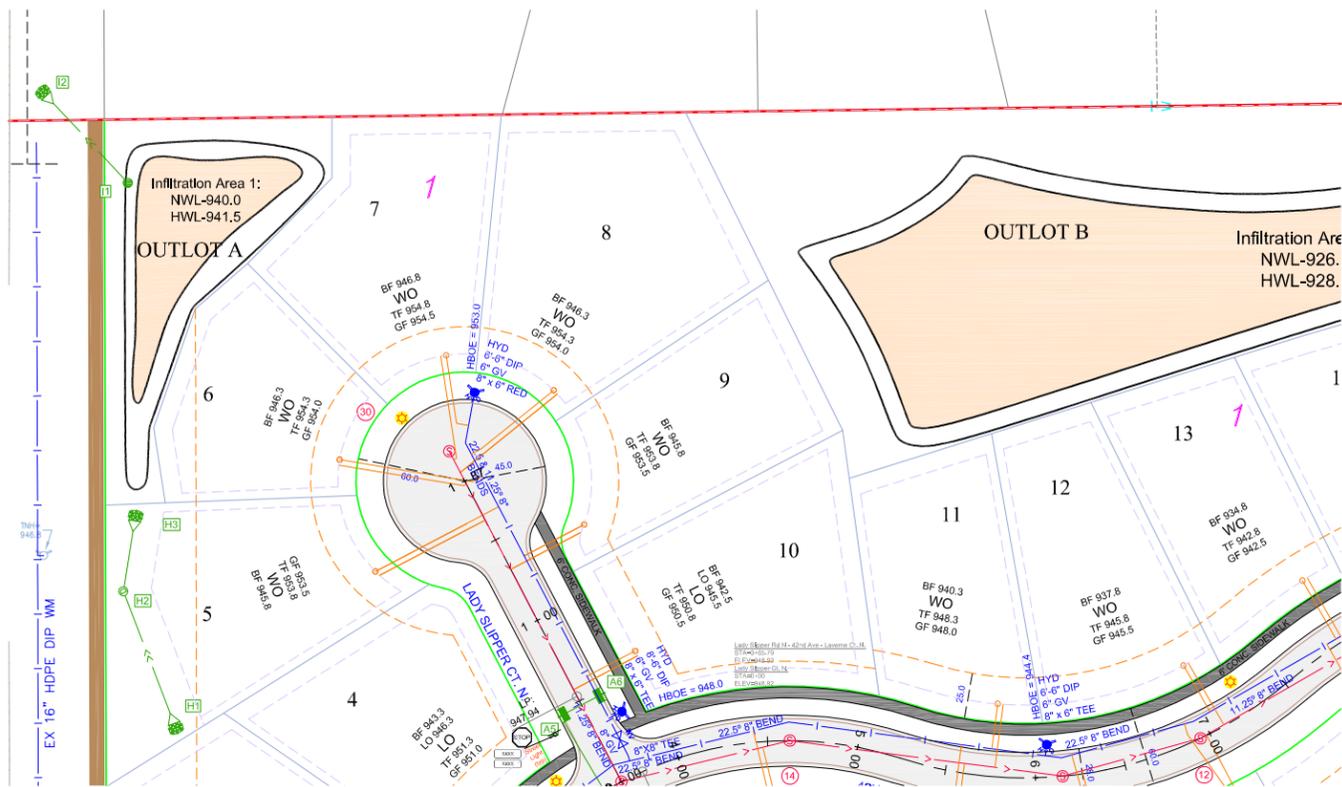


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DRAWN BY	02	ERJ	03/20/15	CITY COMMENT REVISIONS
CHECKED BY				
DATE				
02/20/15				

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Robert S. Molstad
 ROBERT S. MOLSTAD, P.E.
 Date: 02/20/15 Lic. No. 26728

SATHRE-BERGQUIST, INC.
 150 SOUTH BROADWAY WAYZATA, MN. 55391 (952) 476-6000

ENGINEERS SURVEYORS DESIGNERS PLANNERS

CITY PROJECT NO. —

LAKE ELMO, MINNESOTA

FINAL STORM SEWER PLAN
VILLAGE PRESERVE - PHASE 1
GWSA LAND DEVELOPMENT, LLC.

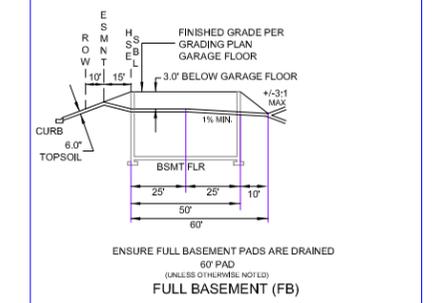
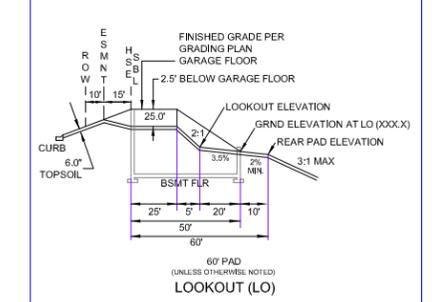
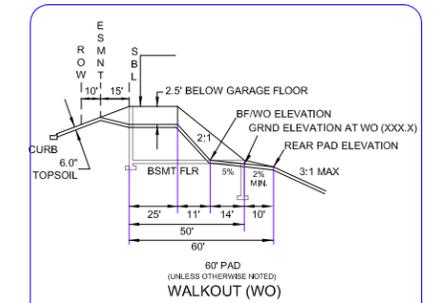
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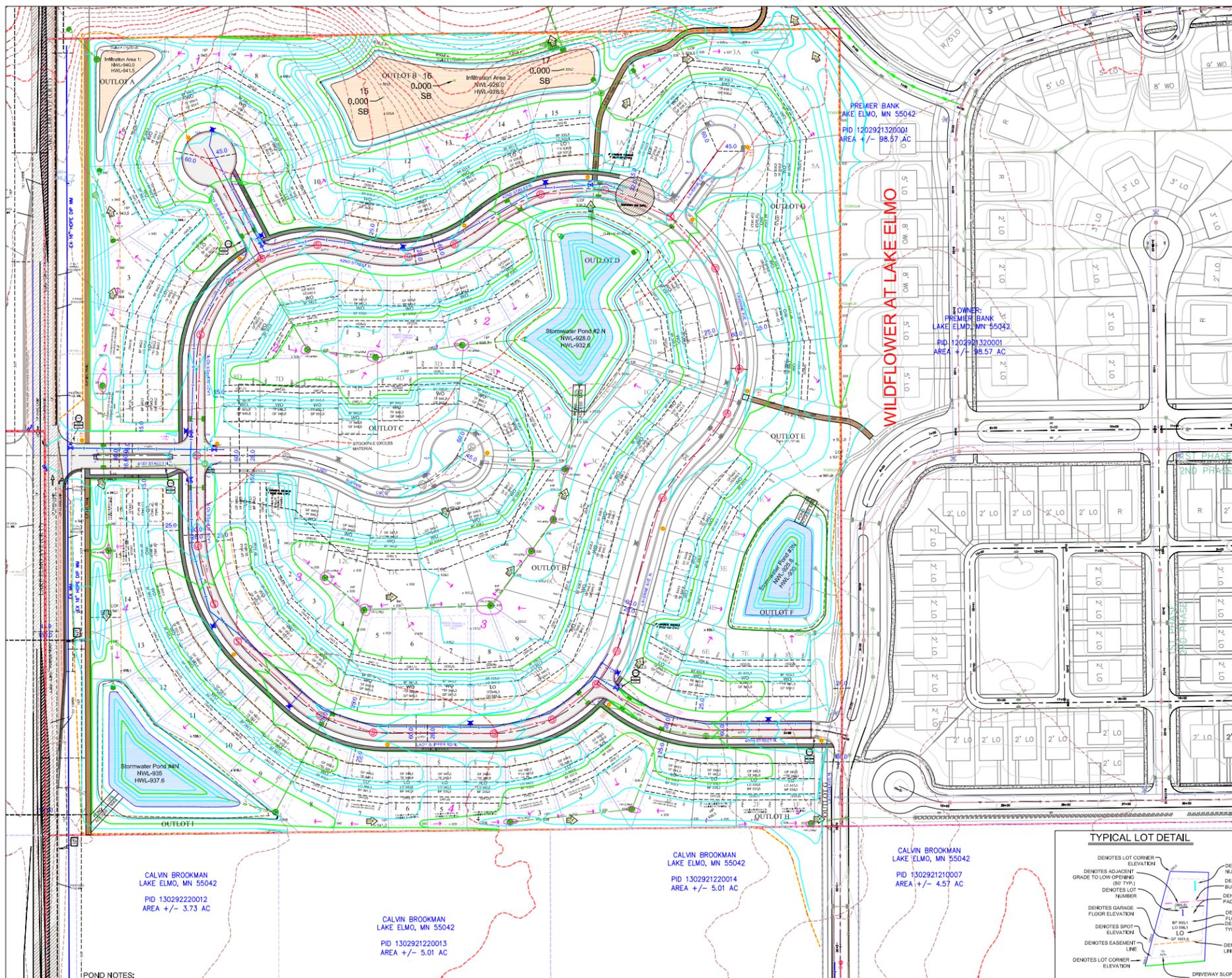
SYMBOL LEGEND

DESCRIPTION	PROPOSED	EXISTING
MINOR CONTOUR		
MAJOR CONTOUR		
LOT LINE		
WATERMAIN		
BUILDING SETBACK BOUNDARY		
PARCEL BOUNDARY LINE		
DRAINAGE AND UTILITY EASEMENTS		
CURB AND GUTTER		
RIGHT-OF-WAY		
DRAIN TILE/CLEANOUTS		
BACKYARD CATCH BASIN		
CATCH BASIN		
STORM SEWER MANHOLE		
FLARED END SECTION WRIP-RAP		
STORM STRUCTURE LABEL		
SANITARY STRUCTURE LABEL		
SANITARY SEWER MANHOLE		
HYDRANT		
GATE VALVE		
WELL		
DRAIN FLOW/RUNOFF ARROW		
EMERGENCY OVERFLOW SWALE		
SOIL BURNING LOCATION		
SILT FENCE		
TREE PRESERVATION FENCE		
BARRICADE		
SPOT ELEVATION		
TBC SPOT ELEVATION		
UTILITY POLE		
LIGHT POLE		
HANDICAP PARKING SPACE		



NOTES:
 1. GRADE (99.0) BEHIND EACH HOMESITE IS THE LOW GROUND ELEVATION AND PROPOSED TOP OF TOPSOIL. SUBGRADE SHALL BE DOWN 0.50 FEET.
 2. ESTABLISH FINISH GRADE AT ALL 10' FRONT YARD UTILITY EASEMENT LOCATIONS.
 3. THESE DETAILS REFERENCE A 8" POURED FOUNDATION WALL, AND A 0.7" DROP FROM REAR TOP FOUNDATION TO GROUND ELEVATION FOR ALL LOOKOUTS AND WALKOUTS.

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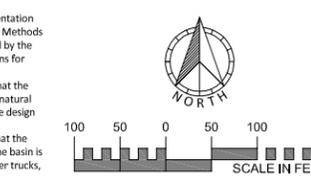
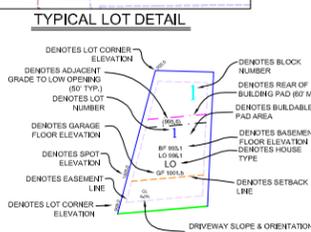
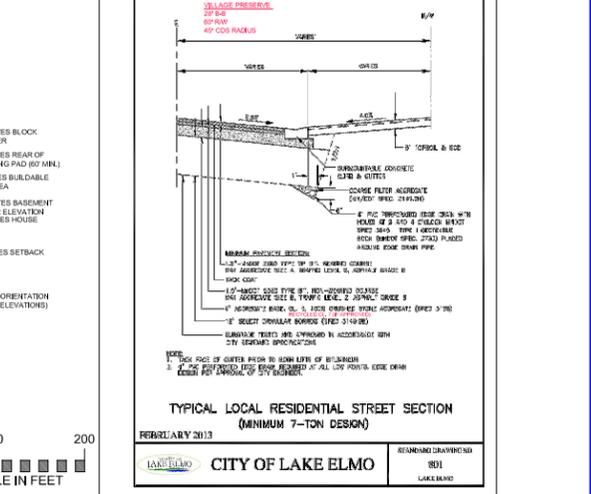
Wet Pond Linings:

- In-Place Permeability: 1 x 10⁻⁶ cm/sec or less.
- Grain Size: P200 content 50 percent by weight or greater, maximum gravel content 5 percent by weight. Maximum particle size of 2.5_inch in any dimension.
- Clay Content: 25 percent by weight or greater (0.02 mm).
- Liquid Limit: 25 percent or greater.
- Plasticity Index: 12 percent or greater.
- Compactor: 95 percent Standard Proctor density or greater depending on Contractor source testing results.
- Source Testing: The Contractor shall supply test results from an independent testing lab for a sample taken at the clay source to verify the above specifications will be met. The results shall be submitted to the Engineer at least two weeks prior to delivery to the site. The specific location of the source must be included with the submittal.
- In-Place Testing: After placement of the clay, the Contractor shall arrange for in-place testing by an independent testing lab to verify the above specifications are met. Testing shall include compaction, grain size, Atterberg limits, and permeability using a relatively undisturbed thin wall sample (Shelby tube). The in-place testing frequency shall be one sample tested every 1,000 CY of clay placed.

INFILTRATION NOTES
 After construction, the contractor must provide documentation that constructed infiltration areas perform as designed. Methods to document infiltration performance must be approved by the VBWD Engineer prior to documentation. Available options for documentation include:
 A. Time and date-stamped photographs showing that the infiltration basin drains dry within 48 hours after a natural precipitation event approximately equivalent to the design storm.
 B. Time and date-stamped photographs showing that the infiltration basin drains dry within 48 hours after the basin is filled with water from municipal water supply, water trucks, or stormwater ponds."

- CONSTRUCTION NOTES**
- INSTALL SILT FENCE AS SHOWN ON PLAN, AS REQUIRED BY THE CITY OF LAKE ELMO OR DIRECTED BY THE ENGINEER.
 - THE WATER QUALITY POND MUST BE EXCAVATED AT THE BEGINNING OF GRADING OPERATIONS TO PROVIDE TEMPORARY STORM WATER DETENTION DURING CONSTRUCTION. SAND AND SILT MUST BE REMOVED FROM THE POND AS NECESSARY DURING CONSTRUCTION AND AT THE COMPLETION OF THE PROJECT.
 - BEGIN GRADING. INSTALL PERFORATED RISER PIPE IN PONDS WHEN POND GRADING IS COMPLETE. TEMPORARY DRAINAGE PIPE SHALL BE USED FOR INTERMEDIATE DRAINAGE DURING THE CONSTRUCTION PERIOD AS NECESSARY AND DIRECTED BY THE ENGINEER. INSTALL SILT FENCE AROUND EXCAVATED PONDS.
 - INSPECT POND, SILT FENCE, AND ROCK ENTRANCE BERM AFTER ALL RAINFALL EVENTS AS REQUIRED BY THE NPDES PERMIT.
 - LINE ALL PONDS WITH A MINIMUM 3" ORGANIC SOILS & SEED SLOPES BETWEEN NWL AND 100 YR HWL WITH A WATER TOLERANT MIX. (OR AS NOTED)
 - REMOVE PERFORATED RISER PIPE WHEN STORM SEWER AND OUTLET STRUCTURE FOR PONDS ARE INSTALLED.
 - POND - 10:1 BENCH (1 FOOT) THEN 4:1 MAX
 - LO & WO PADS 3:1 MAX. ALL OTHER SLOPES 4:1 MAX (UNLESS NOTED)
 - RESTORATION - 27.0 ACRES
 A. RESTORE ALL DISTURBED AREAS WITH 4" TO 6" OF TOPSOIL, OR EXISTING ON-SITE ORGANIC MTRL.
 B. SEED SLOPES AND DETENTION AREAS WITH MN DOT 310 OR BWSR P8 SEED MIX AT A RATE OF 100 LBS./ACRE AND FERTILIZE WITH 20-0-10 AT 100 LBS./ACRE, SEED WETLAND BUFFER AREAS WITH MN DOT 350-MESIC PRAIRIE (36.5 PLS LBS/AC) OR BWSR 35-24-1 SEED MIX AND FERTILIZE WITH 20-0-10 AT 100 LBS./ACRE. (REFER TO WETLAND CREATION/BANKING PLAN FOR WETLAND SEED MIX REQUIREMENTS).
 C. SEED ALL OTHER DISTURBED AREAS WITH MN DOT 250 AT A RATE OF 100 LBS./ACRE AND FERTILIZE WITH 20-0-10 AT 100 LBS./ACRE. (UNLESS OTHERWISE NOTED)
 D. ONLY PHOSPHOROUS FREE FERTILIZER IS TO BE USED ON SITE.
 E. MULCH WITH TYPE 1 AT A RATE OF 2 TONS/ACRE AND DISC ANCHOR IMMEDIATELY AFTER PLACEMENT. USE WOODFIBER BLANKET ON ALL SLOPES 3:1 (FT) OR GREATER.
 F. PLACE APPROVED STORM SEWER INLET PROTECTION IN OR AROUND ALL STORM SEWER INLETS AND MAINTAIN UNTIL STREET CONSTRUCTION IS COMPLETED. REFER TO CITY DETAILS FOR APPROVED DEVICES.
 G. MAINTAIN ALL SILT FENCE UNTIL TURF HAS BEEN ESTABLISHED.
 H. RESTORATION WORK WILL BE COMPLETED WITHIN 72 HOURS OF GRADING COMPLETION.
 - GRADE BACK 3' FROM FACE OF ALL RETAINING WALLS
 - SILT FENCE - BEFORE GRADING - 5,000 LF, AFTER GRADING - 2,550 LF

- GENERAL NOTES:**
- THE GRADING CONTRACTOR IS RESPONSIBLE FOR ALL STORM WATER INSPECTIONS ACCORDING TO THE MPCA STORM WATER PERMIT. THIS INCLUDES BOTH WEEKLY INSPECTIONS AND INSPECTIONS DONE AFTER A 0.5" RAIN EVENT. A COPY OF THE INSPECTION REPORT MUST BE EMAILED TO THE ENGINEER AND DEVELOPER ON A WEEKLY BASIS.
 - THE CONTRACTOR SHALL PLACE INLET PROTECTION DEVICES IN ACCORDANCE WITH THE CITY OF LAKE ELMO'S DETAIL FOR ALL STORM SEWER INLETS AND MAINTAIN THEM AS AN EFFECTIVE SILT CONTROL DEVICE. INLET PROTECTION SHALL BE REMOVED WHEN RESTORATION HAS BEEN ESTABLISHED.
 - ALL RETAINING WALLS WILL REQUIRE A STRUCTURAL DESIGN, A BUILDING PERMIT & A FINAL INSPECTION REPORT.
 - A 1'-2" CRUSHED ROCK ENTRANCE BERM SHALL BE PLACED AT THE SITE ENTRANCE, TO THE EROSION AND VEHICLE WHEEL TRACKING. THE ROCK BERMS SHALL BE THE WIDTH OF THE ENTRANCE AND 2 FEET HIGH WITH 4:1 SLOPES. (SEE DETAIL)
 - THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM THE BUILDING PAD AND STREET AREAS THROUGHOUT CONSTRUCTION.
 - THE CONTRACTOR SHALL ATTEMPT TO PREVENT SOIL MATERIALS FROM LEAVING THE SITE BY EROSION AND VEHICLE WHEEL TRACKING. HE SHALL BE RESPONSIBLE FOR CLEANING OF STREET, BOULEVARD AND UTILITY FACILITIES THAT RECEIVE ANY ERODED OR TRACKED SOIL MATERIAL OR OTHER CONSTRUCTION DEBRIS OR MATERIAL.
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 - BUILDING PADS ARE 60" DEEP, UNLESS OTHERWISE NOTED. THE FRONT AND REAR BUILDING PAD LINES ARE SHOWN ON THE PLAN. THE ENGINEER SHOULD BE CONTACTED IF THE CONTRACTOR HAS ANY QUESTIONS REGARDING BUILDING PADS.
 - STREET SWEEPING REQUIRED A MINIMUM OF ONE TIME PER WEEK OR AS DIRECTED BY THE CITY ENGINEER.



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CHECKED BY				
RSM				
DATE				
02/20/15				

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 Date: 02/20/15 Lic. No. 26728

SATHRE-BERGQUIST, INC.
 150 SOUTH BROADWAY WAYZATA, MN. 55391 (952) 476-6000

LAKE ELMO, MINNESOTA

CITY PROJECT NO. _____

FINAL GRADING PLAN

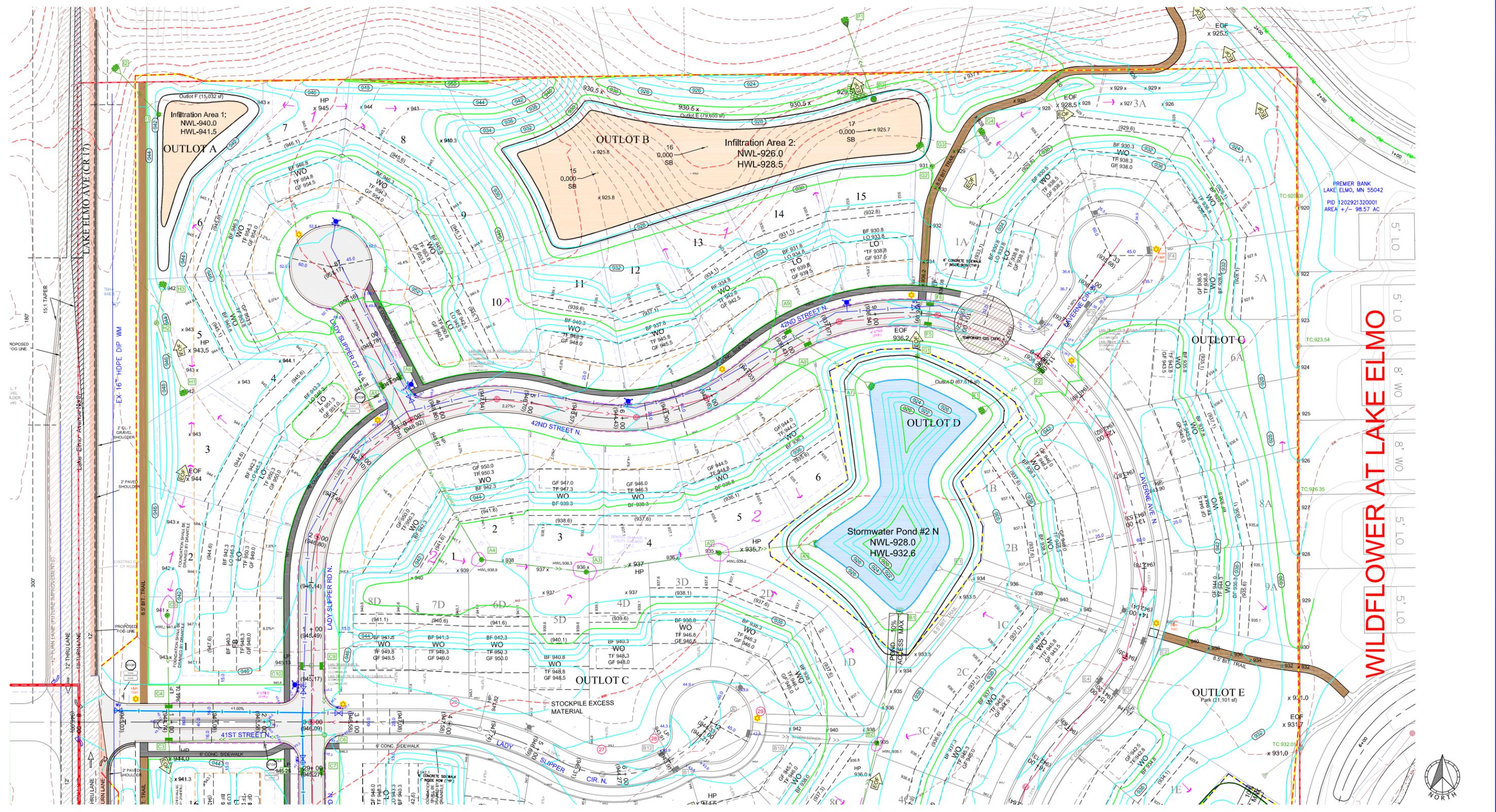
VILLAGE PRESERVE - PHASE 1

GWSA LAND DEVELOPMENT, LLC.

FILE NO. 3120-047

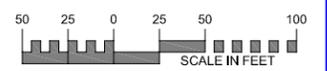
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PREMIER BANK
LAKE ELMO, MN 55042
PID 12029132001
AREA +/- 98.57 AC

WILDFLOWER AT LAKE ELMO



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BASE_PARCELS A-B	01	ERJ	03/05/15	WATERSHED COMMENT REVISIONS
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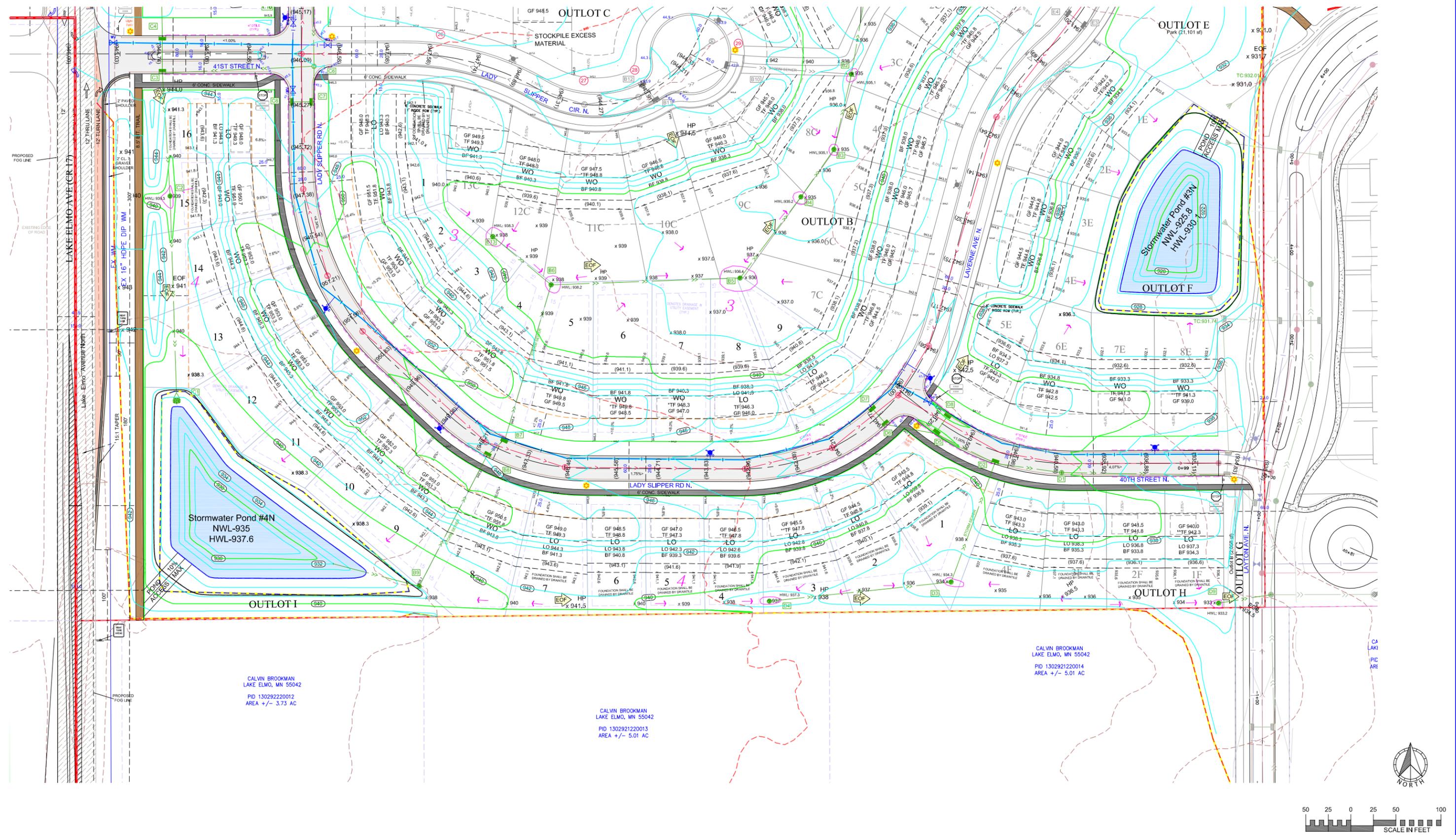
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ENGINEERS SURVEYORS
DESIGNERS PLANNERS

CITY PROJECT NO.
LAKE ELMO, MINNESOTA

FINAL GRADING PLAN
VILLAGE PRESERVE - PHASE 1
GWSA LAND DEVELOPMENT, LLC.

FILE NO.
3120-047
23
31



CALVIN BROOKMAN
LAKE ELMO, MN 55042
PID 130292220012
AREA +/- 3.73 AC

CALVIN BROOKMAN
LAKE ELMO, MN 55042
PID 130292220013
AREA +/- 5.01 AC

CALVIN BROOKMAN
LAKE ELMO, MN 55042
PID 130292220014
AREA +/- 5.01 AC

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LAKE ELMO, MINNESOTA

FINAL GRADING PLAN
VILLAGE PRESERVE - PHASE 1
GWSA LAND DEVELOPMENT, LLC.

FILE NO.
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SYMBOL LEGEND		
DESCRIPTION	PROPOSED	EXISTING
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MAJOR CONTOUR		
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WATERMAIN		
BUILDING SETBACK BOUNDARY		
PARCEL BOUNDARY LINE		
DRAINAGE AND UTILITY EASEMENTS		
CURB AND GUTTER		
RIGHT-OF-WAY		
DRAIN TILE W/CLEANOUTS		
BACKYARD CATCH BASIN		
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HANDICAP PARKING SPACE		

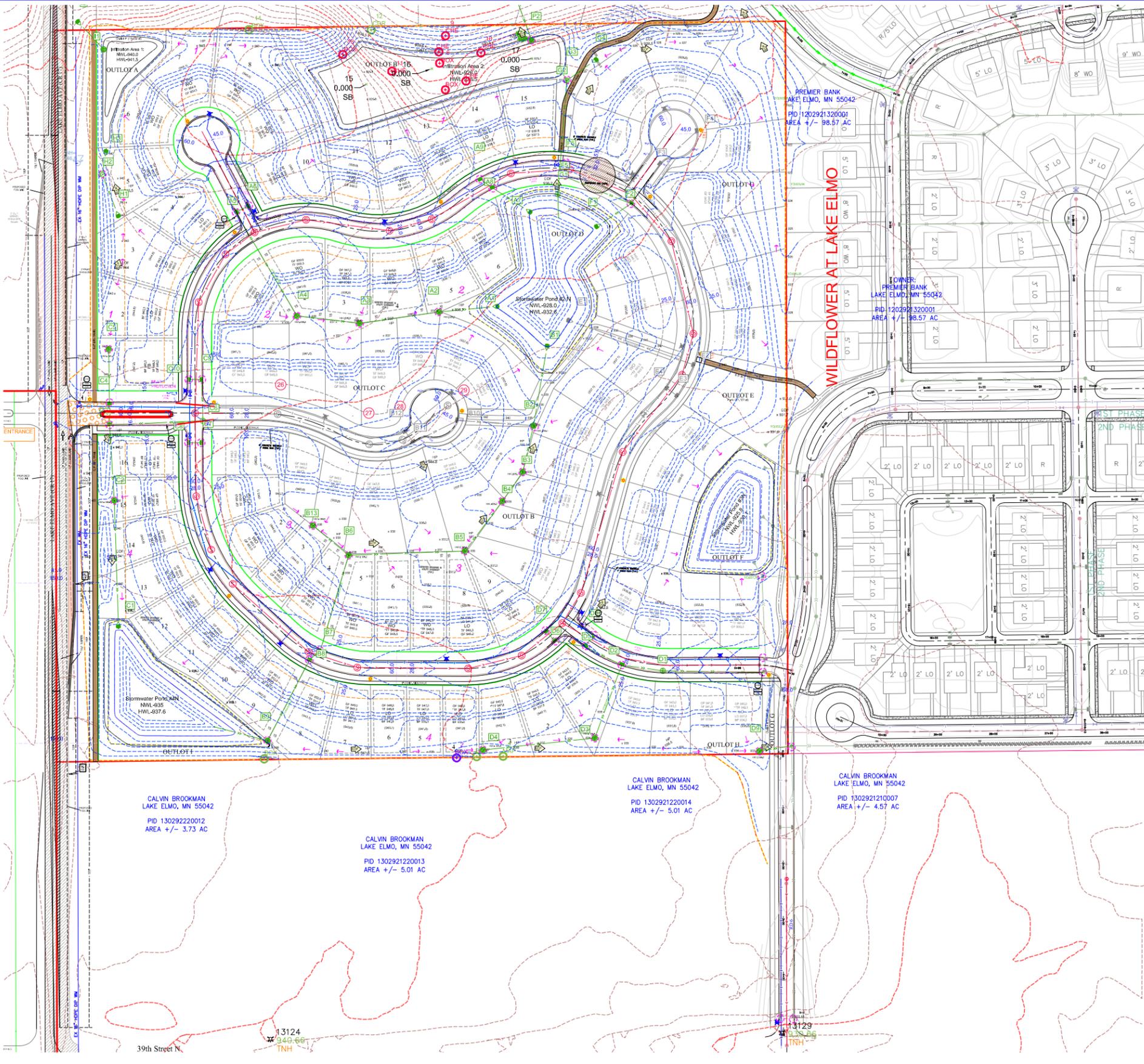
NOTES

To prevent soil compaction, the proposed infiltration area shall be staked off and marked during construction to prevent heavy equipment and traffic from traveling over it. If the infiltration facility is in place during construction activities, sediment and runoff shall be kept away from the facility, using practices such as diversion berms and vegetation around the facility's perimeter. The infiltration facility shall not be excavated to final grade until the contributing drainage area has been constructed and fully stabilized. The final phase of excavation shall remove all accumulated sediment and be done by light, tracked equipment to avoid compaction of the basin floor.

The infiltration areas shall be over-excavated to a minimum depth of 2 feet and the soils below the over-excavated area at the bottom of the infiltration area shall be loosened to a depth of at least 2 feet to a maximum compaction of 85% standard proctor density. The infiltration material specification shall be in conformance to MnDOT Specification 3877.1G, or an equivalent specification approved by the VBWD. The infiltration material shall be placed loosely on the excavation area of the infiltration basin.

- The VBWD Engineer and Inspector shall be notified at least three days prior to commencement of work.
- Erosion controls shall be installed prior to commencement of grading operations and must be maintained throughout the construction period until turf is established. Additional erosion controls may be required as directed by the VBWD Inspector or VBWD engineer.
- The following erosion controls shall be implemented on site:
 - All proposed slopes 3:1 should be covered with erosion control blanket.
 - Silt fence should follow existing contours as closely as feasible to limit the potential for gully erosion along the edges
 - Any sediment that collects in storm sewers, ponds or other water management features shall be removed.
 - Street sweeping shall be performed if sediment collects on streets.
 - If erosion occurs at the outlets of the storm sewer pipes the applicant will be responsible for correcting the problem to the satisfaction of the VBWD.
- All disturbed areas shall be vegetated within 14 days of final grading.
- The applicant is responsible for removal of all temporary erosion-control measures, including silt fence, upon establishment of permanent vegetation at the project site as determined by the VBWD engineer and/or inspector.

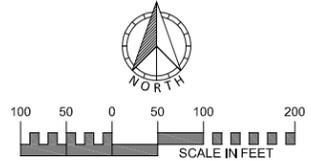
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	ROCK ENTRANCE BERM
	SILT FENCE
	POST GRADING SILT FENCE
	BIO-ROLL
	CONCRETE WASHOUT
	INLET PROTECTION
	WOODFIBER BLANKET

Tree #	Tree Species	Condition	Total Cal. in.	Exempt Cal. in.	Removed Cal. in.	Saved Cal. in.
1	Bovelder	Fair	47.0			47.0
2	Bovelder	Poor	15.0	15.0		
3	Bovelder	Fair	17.0			17.0
4	Maple, amur	Fair	25.0			25.0
5	Cherry, black	Fair	13.0			13.0
6	Bovelder	Fair	36.0			36.0
7	Bovelder	Poor	40.0		13.0	27.0
8	Cherry, black	Fair	12.0			12.0
9	Cherry, black	Good	9.0			9.0
10	Cherry, black	Good	8.0			8.0
11	Cherry, black	Good	6.0			6.0
12	Redcedar	Good	10.0			10.0
13	Bovelder	Poor	42.0		42.0	
14	Bovelder	Fair	18.0			18.0
Total Caliper Inches			318.0		15.0	303.0
Exempt Caliper Inches			15.0			
Net Caliper Inches			308.0			
Removed Caliper Inches			186.0			
Percent Removed					61.4%	
Percent Saved						38.6%

- DENOTES SAVED TREE
- DENOTES REMOVED TREE
- DENOTES EXEMPT TREE



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LAKE ELMO, MINNESOTA

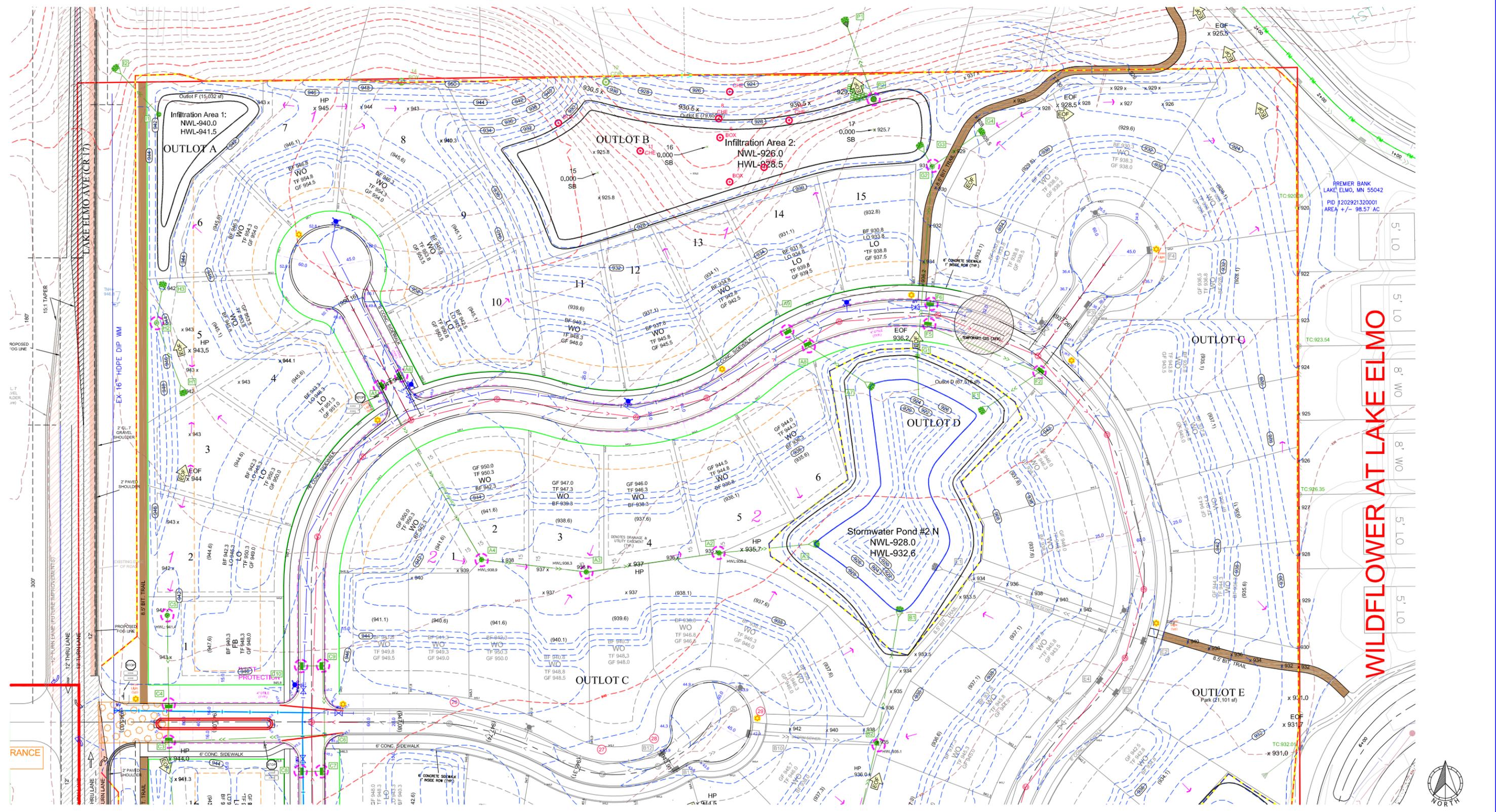
CITY PROJECT NO. _____

FINAL EROSION CONTROL PLAN

VILLAGE PRESERVE - PHASE 1

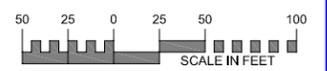
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FILE NO.
3120-047
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31



WILDFLOWER AT LAKE ELMO

PREMIER BANK
LAKE ELMO, MN 55042
PID 120292132001
AREA +/- 98.57 AC



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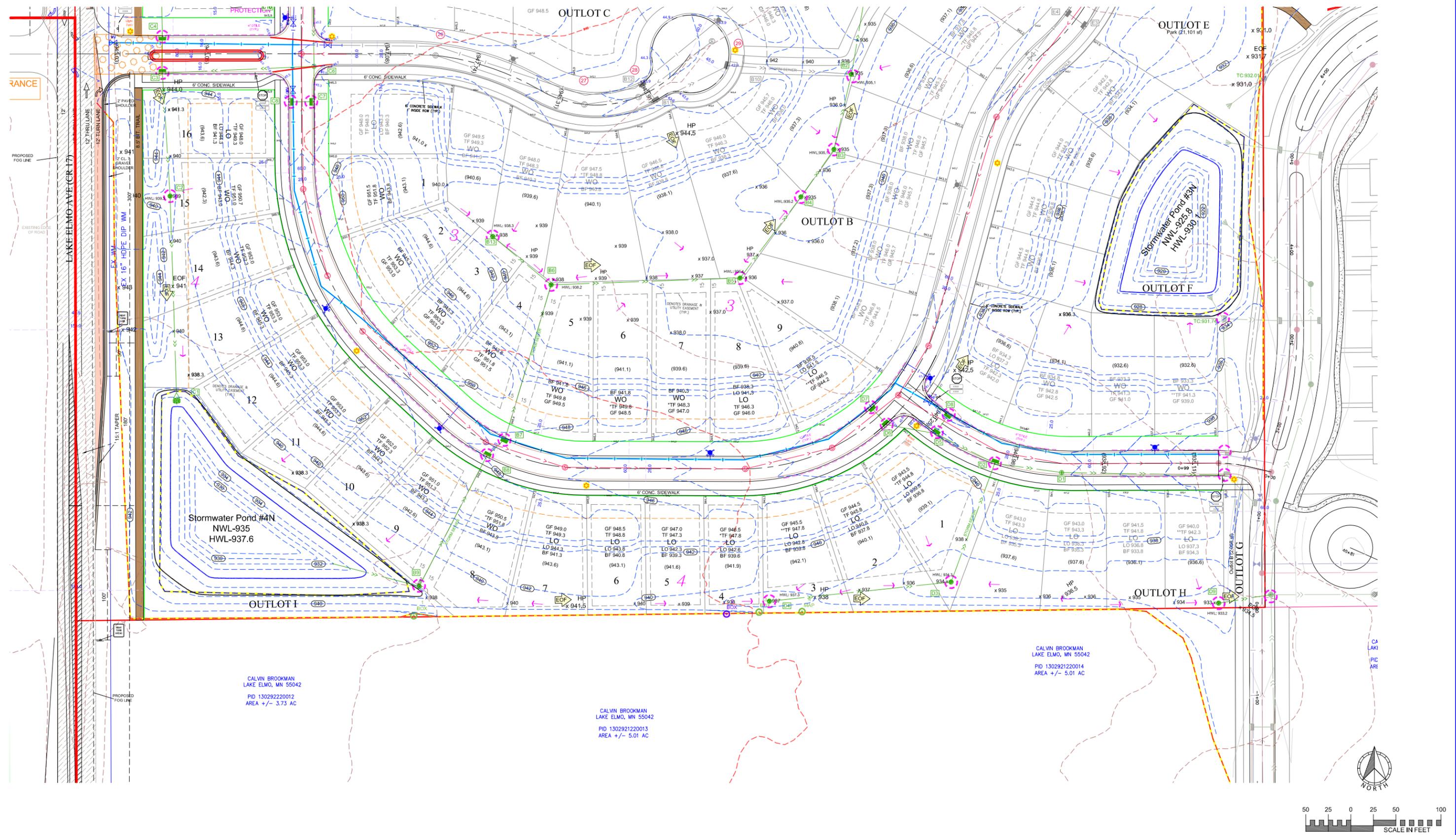
Robert S. Molstad
ROBERT S. MOLSTAD, P.E.
Date: 02/20/15 Lic. No. 24728

SATHRE-BERGQUIST, INC.
150 SOUTH BROADWAY WAYZATA, MN. 55391 (952) 476-6000

CITY PROJECT NO.
LAKE ELMO, MINNESOTA

FINAL EROSION CONTROL PLAN
VILLAGE PRESERVE - PHASE 1
GWSA LAND DEVELOPMENT, LLC.

FILE NO.
3120-047
26
31



CALVIN BROOKMAN
LAKE ELMO, MN 55042
PID 130292220012
AREA +/- 3.73 AC

CALVIN BROOKMAN
LAKE ELMO, MN 55042
PID 130292220013
AREA +/- 5.01 AC

CALVIN BROOKMAN
LAKE ELMO, MN 55042
PID 130292220014
AREA +/- 5.01 AC

EXISTING UTILITIES SHOWN ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ANY AND ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES ARISING OUT OF HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES.

DRAWING NAME	NO.	BY	DATE	REVISIONS
BASE_PARCELS A-B	01	ERJ	03/05/15	WATERSHED COMMENT REVISIONS
DRAWN BY	02	ERJ	03/20/15	CITY COMMENT REVISIONS
CHECKED BY				
RSM				
DATE				
02/20/15				

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ROBERT S. MOLSTAD, P.E.
Date: 02/20/15 Lic. No. 26728

ENGINEERS SURVEYORS DESIGNERS PLANNERS

SATHRE-BERGQUIST, INC.
150 SOUTH BROADWAY WAYZATA, MN. 55391 (952) 476-6000

CITY PROJECT NO. _____

LAKE ELMO, MINNESOTA

FINAL EROSION CONTROL PLAN

VILLAGE PRESERVE - PHASE 1

GWSA LAND DEVELOPMENT, LLC.

FILE NO.
3120-047

27

31

Upland Dry Prairie Mix

Common Name	Scientific Name	% of Mix	PLS
GRASS			
Side-Oats Gramma	<i>Bouteloua curtipendula</i>	35.0	5.25 lbs./ac.
Blue Grama	<i>Bouteloua gracilis</i>	5.0	0.75 lbs./ac.
Canda Wild Rye	<i>Elymus canadensis</i>	9.3	1.39 lbs./ac.
Junegrass	<i>Koeleria macrantha</i>	1.3	0.19 lbs./ac.
Little Bluestem	<i>Schizachyrium scoparium</i>	26.0	3.90 lbs./ac.
Prairie Dropseed	<i>Sporobolus heterolepis</i>	3.5	0.53 lbs./ac.
FORBS			
Prairie Onion	<i>Allium stellatum</i>	1.0	0.15 lbs./ac.
Leadplant	<i>Amarpha canescens</i>	0.5	0.08 lbs./ac.
Butterfly Milkweed	<i>Asclepias tuberosa</i>	0.3	0.04 lbs./ac.
Smooth Blue Aster	<i>Aster laevis</i>	0.5	0.08 lbs./ac.
Sky-Blue Aster	<i>Aster oolentangiensis</i>	0.5	0.08 lbs./ac.
Partridge Pea	<i>Chamaecrista fasciculata</i>	3.3	0.49 lbs./ac.
White Prairie Clover	<i>Dalea candida</i>	3.0	0.45 lbs./ac.
Purple Prairie Clover	<i>Dalea purpureum</i>	4.0	0.60 lbs./ac.
Wild Bergamot	<i>Monarda fistulosa</i>	0.8	0.11 lbs./ac.
Prairie Cinquefoil	<i>Potentilla arguta</i>	0.5	0.08 lbs./ac.
Long-Headed Coneflower	<i>Ratibida columnifera</i>	0.8	0.11 lbs./ac.
Black Eyed Susan	<i>Rudbeckia hirta</i>	3.0	0.45 lbs./ac.
Old Field Goldenrod	<i>Solidago nemoralis</i>	0.3	0.04 lbs./ac.
Showy Goldenrod	<i>Solidago speciosa</i>	0.5	0.08 lbs./ac.
Hoary Vervain	<i>Verbena stricta</i>	1.3	0.19 lbs./ac.
		100.0	15.00 lbs./ac.

Wet Mesic Prairie Mix

Common Name	Scientific Name	% of Mix	PLS
GRASS			
Big Bluestem	<i>Andropogon gerardii</i>	18.0	2.70 lbs./ac.
Blue-Joint Grass	<i>Calamagrostis canadensis</i>	0.5	0.08 lbs./ac.
Fox Sedge	<i>Carex vulpinoidea</i>	2.0	0.30 lbs./ac.
Virginia Wild Rye	<i>Elymus virginicus</i>	23.5	3.53 lbs./ac.
Reed Manna Grass	<i>Glyceria grandis</i>	2.0	0.30 lbs./ac.
Switchgrass	<i>Panicum virgatum</i>	5.0	0.75 lbs./ac.
Little Bluestem	<i>Schizachyrium scoparium</i>	4.0	0.60 lbs./ac.
Indian Grass	<i>Sorghastrum nutans</i>	20.0	3.00 lbs./ac.
Prairie Cord Grass	<i>Spartina pectinata</i>	5.0	0.75 lbs./ac.
FORBS			
Marsh Milkweed	<i>Asclepias incarnata</i>	2.3	0.34 lbs./ac.
New England Aster	<i>Aster novae-angliae</i>	0.5	0.08 lbs./ac.
Canada Milk Vetch	<i>Astragalus canadensis</i>	2.5	0.38 lbs./ac.
Canada Tick Trefoil	<i>Desmodium canadense</i>	0.8	0.11 lbs./ac.
Boneset	<i>Eupatorium perfoliatum</i>	0.5	0.08 lbs./ac.
Sneezeweed	<i>Helianium autumnale</i>	0.5	0.08 lbs./ac.
Common Ox-Eye	<i>Helianthus helianthoides</i>	2.5	0.38 lbs./ac.
Prairie Blazing Star	<i>Liatris pycnostachya</i>	1.3	0.19 lbs./ac.
Monkey Flower	<i>Mimulus ringens</i>	1.3	0.19 lbs./ac.
Obedient Plant	<i>Physostegia virginiana</i>	1.0	0.15 lbs./ac.
Yellow Coneflower	<i>Ratibida pinnata</i>	1.3	0.19 lbs./ac.
Black Eyed Susan	<i>Rudbeckia hirta</i>	1.3	0.19 lbs./ac.
Purple Meadow Rue	<i>Thalictrum dasycarpum</i>	0.8	0.11 lbs./ac.
Blue Vervain	<i>Verbena hastata</i>	2.3	0.34 lbs./ac.
Ironweed	<i>Vernonia fasciculata</i>	1.5	0.23 lbs./ac.
		100.0	15.00 lbs./ac.

Upland Grass Mix (Lot Coverage Only)

Common Name	Scientific Name	% of Mix	PLS
GRASS			
Side-Oats Gramma	<i>Bouteloua curtipendula</i>	30.0	3.00 lbs./ac.
Blue Grama	<i>Bouteloua gracilis</i>	10.0	1.00 lbs./ac.
Silky Wild Rye	<i>Elymus villosus</i>	10.0	1.00 lbs./ac.
Junegrass	<i>Koeleria macrantha</i>	2.0	0.20 lbs./ac.
Little Bluestem	<i>Schizachyrium scoparium</i>	43.0	4.30 lbs./ac.
Prairie Dropseed	<i>Sporobolus heterolepis</i>	5.0	0.50 lbs./ac.
		100.0	10.00 lbs./ac.

SOURCE
All seed will be purchased from Minnesota Native Landscapes.
Minnesota Native Landscapes
8740 77th St NE
Osage, MN 55362

EXECUTION
Ground Preparation
Prior to seeding, the Contractor shall spray the proposed seeding area with a non-selective glyphosate herbicide such as Round-Up. Approximately three to four weeks later the site should be cultivated using a deep-tine plow and then disked to produce a smooth firm seed bed. Allow weeds to germinate and grow. When weed seeds and roots have reached a height of 2-4 inches, the site should again be sprayed with a second herbicide application. Wait 10 days and then shallow till the soil to a depth of 1 inch. Tilling deeper will bring additional weed seeds to the surface.
Once the area to be planted has been properly prepared, the Contractor shall commence with seeding.

NATIVE SEEDING
A. Native plant community seeding can take place during two periods of the year. The first window of opportunity is from the time the site preparation work is concluded in the spring until approximately July 15. The second period is in the fall between October 1st and freeze-up. The latter is considered a dormant seeding and the seedlings do not germinate until late spring of the following growing season. It is recommended that the native seeding be conducted in June and early July.
B. All native grass seed should be applied with a Triax native seed drill, at a rate as specified according to individual specifications PLS (pure live seed) per acre. In areas too narrow or steep for equipment, grass seed may be hand broadcast. Cover crop shall be applied after Native Mix has been seeded.
C. Raking or dragging and rolling shall follow all seeding to insure good soil contact.
D. The Contractor shall mulch all seeded areas with clean straw or marsh hay at a rate of 2 tons/acre and shall be disc anchored into place.

MAINTENANCE
Year 1
During the first season, the seeded area shall be cut back approximately once each month to prevent the production of weed seeds and to reduce shade on the maturing native plantings. When the seeded area has reached a height of 8-10 inches, a flail-type mower shall be used to cut weeds and native plantings to a height of 4-6 inches. Rotary mowers and sickle bar mowers are not acceptable. In no case shall the seeded area be allowed to exceed 10 inches in height during the first season.
Pulling weeds is not recommended as this can uproot small, undeveloped native seedlings. Spot spray thistle, reed canary grass and any other problematic weeds.
Year 2
In the spring of the second season, the plantings should be mowed again. Mowing should occur approximately 3-4 times during the second season. If weeds continue to persist during the second year additional mowings may be required. Do not let weeds go to seed. Seeded areas shall not be burned during the second year.
Year 3
Spot spray perennial weeds if necessary.
Years 4-5
Continue spot treatment spray of weeds and conduct burning (3-5 year rotation) alternate spring and fall.

Invasive Species Control
Certain species of perennial weeds may need to be controlled by spot treating with a herbicide for sufficient control. Perennial weeds may be canary grass, smooth brome, quack grass, purple loosestrife and Canada thistle. Canada thistle should be spot treated as soon as clumps appear to avoid the need to spray large areas.
Grass-specific herbicides shall be used to control reed canary grass; however they are not to be used near open water.

TREE MITIGATION PLANTING LEGEND

KEY	COMMON NAME	BOTANICAL NAME	QUANTITY	SIZE	NOTES
TREES					
HAR	Hackberry	<i>Celtis occidentalis</i>	3	2.5" BB	straight single leader
HLR	Skyline Honey Locust	<i>Gleditsia tricanthos var. inermis 'Skycole'</i>	3	2.5" BB	straight single leader
ROR	Red Oak	<i>Quercus rubra</i>	4	2.5" BB	straight single leader
SMR	Green Mountain Maple	<i>Acer saccharum 'Green Mountain'</i>	4	2.5" BB	straight single leader
			Total	14	

REQUIRED SITE TREE PLANTING LEGEND - PHASE 1

KEY	COMMON NAME	BOTANICAL NAME	QUANTITY	SIZE	NOTES
TREES					
AL	Redmond Linden	<i>Tilia americana 'Redmond'</i>	9	2.5" BB	straight single leader
HA	Hackberry	<i>Celtis occidentalis</i>	13	2.5" BB	straight single leader
HL	Skyline Honey Locust	<i>Gleditsia tricanthos var. inermis 'Skycole'</i>	10	2.5" BB	straight single leader
RB	River Birch	<i>Betula nigra</i>	13	2.5" BB	muilt-stem
RM	Red Sunset Maple	<i>Acer rubrum 'Franksred'</i>	10	2.5" BB	straight single leader
RO	Red Oak	<i>Quercus rubra</i>	11	2.5" BB	straight single leader
SM	Fall Fiesta Maple	<i>Acer saccharum 'Baista'</i>	7	2.5" BB	straight single leader
WO	White Oak	<i>Quercus alba</i>	9	2.5" BB	straight single leader
EVERGREENS					
BH	Black Hills Spruce	<i>Picea glauca densata</i>	43	6" BB	
NP	Norway Pine	<i>Pinus resinosa</i>	30	6" BB	
SN	Norway Spruce	<i>Picea abies</i>	34	6" BB	
ORNAMENTALS					
CA	Adams Crabapple	<i>Malus 'Adams'</i>	25	2.5" BB	straight single leader
CS	Snowdrift Crabapple	<i>Malus 'Snowdrift'</i>	24	2.5" BB	straight single leader
			Total	238	

TREE PLANTING REQUIREMENTS = 5 TREES / ACRE DISTURBED
40 ACRES DISTURBED = 200 TREES (MINIMUM) OR 500 CALIPER INCHES
PHASE 1: 25.64 ACRES = 129 TREES
PHASE 2: 14.19 ACRES = 71 TREES

STREET FRONTAGE TREE PLANTING LEGEND - PHASE 1

KEY	COMMON NAME	BOTANICAL NAME	QUANTITY	SIZE	NOTES
TREES					
AL	Greenspire Linden	<i>Tilia cordata 'Greenspire'</i>	11	2.5" BB	Straight single leader
AM	Autumn Blaze Maple	<i>Acer x freemanii 'Jeffersred'</i>	10	2.5" BB	Straight single leader
HA	Hackberry	<i>Celtis occidentalis</i>	10	2.5" BB	Straight single leader
HL	Imperial Honey Locust	<i>Gleditsia tricanthos var. inermis 'Impcole'</i>	8	2.5" BB	Straight single leader
PE	Princeton Elm	<i>Ulmus americana 'Princeton'</i>	11	2.5" BB	Straight single leader
RM	Red Sunset Maple	<i>Acer rubrum 'Franksred'</i>	11	2.5" BB	Straight single leader
RO	Red Oak	<i>Quercus rubra</i>	13	2.5" BB	Straight single leader
SM	Fall Fiesta Maple	<i>Acer saccharum 'Baista'</i>	7	2.5" BB	Straight single leader
WO	White Oak	<i>Quercus alba</i>	9	2.5" BB	Straight single leader
			TOTAL	90	

TREE PLANTING REQUIREMENTS = 1 TREE / 50 LINEAR FT.
TOTAL SITE: 10,062 LINEAR FT. = 202 TREES (MINIMUM) OR 505 CALIPER IN.
PHASE 1: 6,918 LINEAR FT. = 139 TREES
PHASE 2: 3,144 LINEAR FT. = 63 TREES
DUE TO CONFLICTS WITH UTILITIES GOING TO EACH PROPERTY, THE EQUIVALENT OF 40 2.5 CALIPER IN. TREES HAVE BEEN RELOCATED TO THE SITE TREE PLANTING LEGEND

NOTES:
ALL TREES SHALL HAVE A MINIMUM DEPTH OF 6" HARDWOOD BARK MULCH 6" DIAMETER RING AROUND THE BASE OF THE TREE. KEEP MULCH OFF TREE TRUNK.
ALL TREES TO BE FIELD STAKED PRIOR TO INSTALLATION. LANDSCAPE CONTRACTOR TO COORDINATE FIELD REVIEW OF PROPOSED TREE LOCATIONS WITH CITY AND PROJECT LANDSCAPE ARCHITECTS PRIOR TO ANY TREE INSTALLATION.
ALL STREET FRONTAGE TREE PITS AND BACK FILL SHALL BE FREE OF CLASS V OR SIMILAR MATERIAL. TREES ARE TO BE BACKFILLED WITH NATIVE ON SITE TOPSOIL.
MINIMUM OF 2 ROWS OF SOD BEHIND CURB.
AREAS WITH SIDEWALKS SHALL BE SODDED FROM BACK OF CURB TO SIDEWALK.
ALL RESIDENTIAL LOTS SHALL BE TEMPORARILY SEEDED WITH UPLAND GRASS MIX.
ALL OUTLOTS SHALL BE PERMANENTLY SEEDED WITH UPLAND DRY PRAIRIE MIX WITH EXCEPTION TO OUTLOTS TO BE SODDED AS SHOWN IN PLAN.
TREE CALCULATIONS ARE BASED UPON CITY CODE AND ONE TREE EQUALS 2.5 CALIPER TREE INCHES. FOR TREES SMALLER THAN 2.5 CALIPER TREE INCHES MULTIPLE TREES USED TO GET EQUAL CALIPER TREE INCHES.
BERMS ALONG ENTRANCES SHALL BE MULCHED WITH DOUBLE SHREDDED HARDWOOD BARK MULCH TO A DEPTH OF 4".
TREE PROTECTION FENCE SHALL BE PLACED AROUND ALL EXISTING TREES TO BE SAVED ON THE SITE.

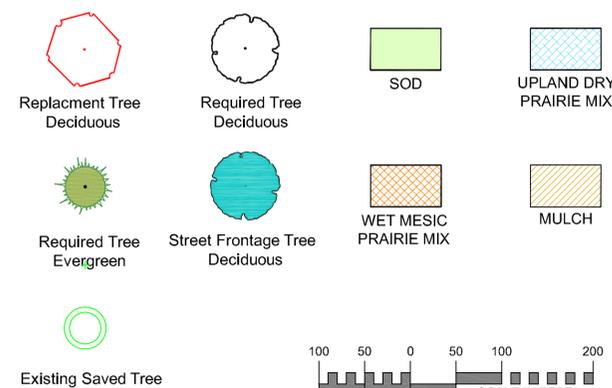
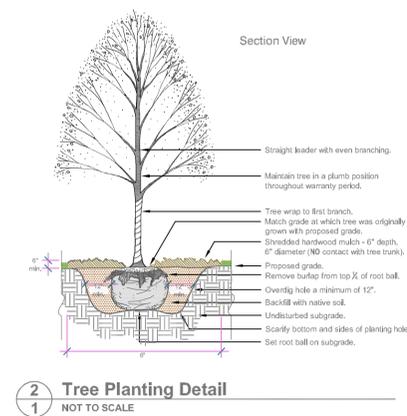
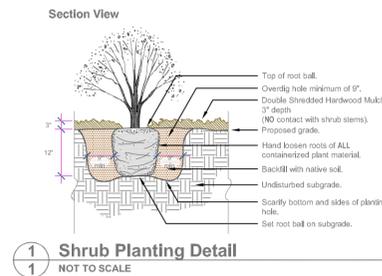
TREE MITIGATION CALCULATIONS: PHASE 1 & 2

Total Cal. In. of Significant Trees	318
30% Allowed Removal of Total In.	95.4
Total Removed Caliper Inches	186
Cal. In. of Removed Common Trees	138
Cal. In. of Removed Hardwoods	48
Common Trees Less Allowable Tree Removal Limit	42.6
Hardwood Trees Less Allowable Tree Removal Limit	48
Replacement Schedule	
Common Inches @ .25" Per 1"	10.65
Hardwood Inches @ .5" / 1"	24
Combined Inches	34.65
Number of 2.5" Replacement Trees	14

PHASING CALCULATIONS

Phase 1 Street Frontage Trees	90
Phase 2 Street Frontage Trees	72
Total	162
Phase 1 Required Site Trees	238
Phase 2 Required Site Trees	2
Total	240

ALL PHASES OF REQUIRED SITE TREES ARE SHOWN ON PHASE ONE DUE TO PLANTING LOCATIONS REQUIRING ACCESS PROVIDED DURING PHASE 1



DRAWING NAME	NO.	BY	DATE	REVISIONS
NM	1	NM	6-5-14	Tree Protection Added. Shifted trees for new base.
DRAWN BY	2	NM	6-9-14	New Base
NM	3	NM	6-11-14	New Silt Fence
CHECKED BY	4	NM	2-11-15	Revised Trees for Utilities and New Base
TDW	5	NM	2-23-15	Project Split into Phases
DATE	6	NM	2-24-15	Trees Shifted to Lots
04/25/14				

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I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly registered Landscape Architect under the laws of the State of Minnesota.
Signed: *K. J. Norby*
Date: 4-23-14 Registration #: 20144

Norby & Associates
Landscape Architects, Inc.
100 East Second Street Chaska, MN 55318 (952) 361-0644

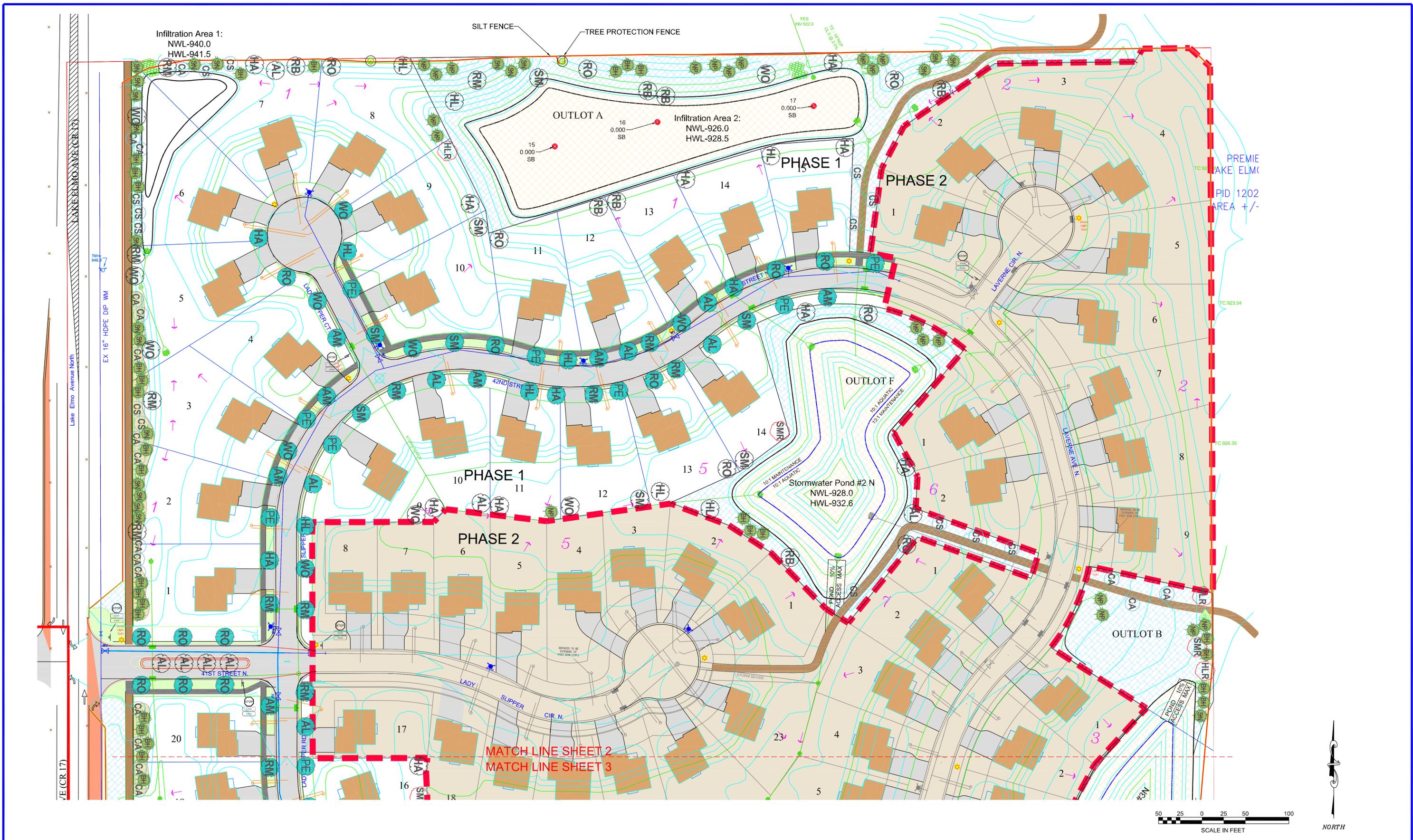
CITY PROJECT NO.
LAKE ELMO, MINNESOTA

TREE MITIGATION AND LANDSCAPE PLAN
PARCEL B - PHASE 1
SCHILTGEN FARMS
GW LAND DEVELOPMENT

FILE NO.
3120-047

LP1
LP3





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DRAWN BY	2	NM	6-9-14	New Base
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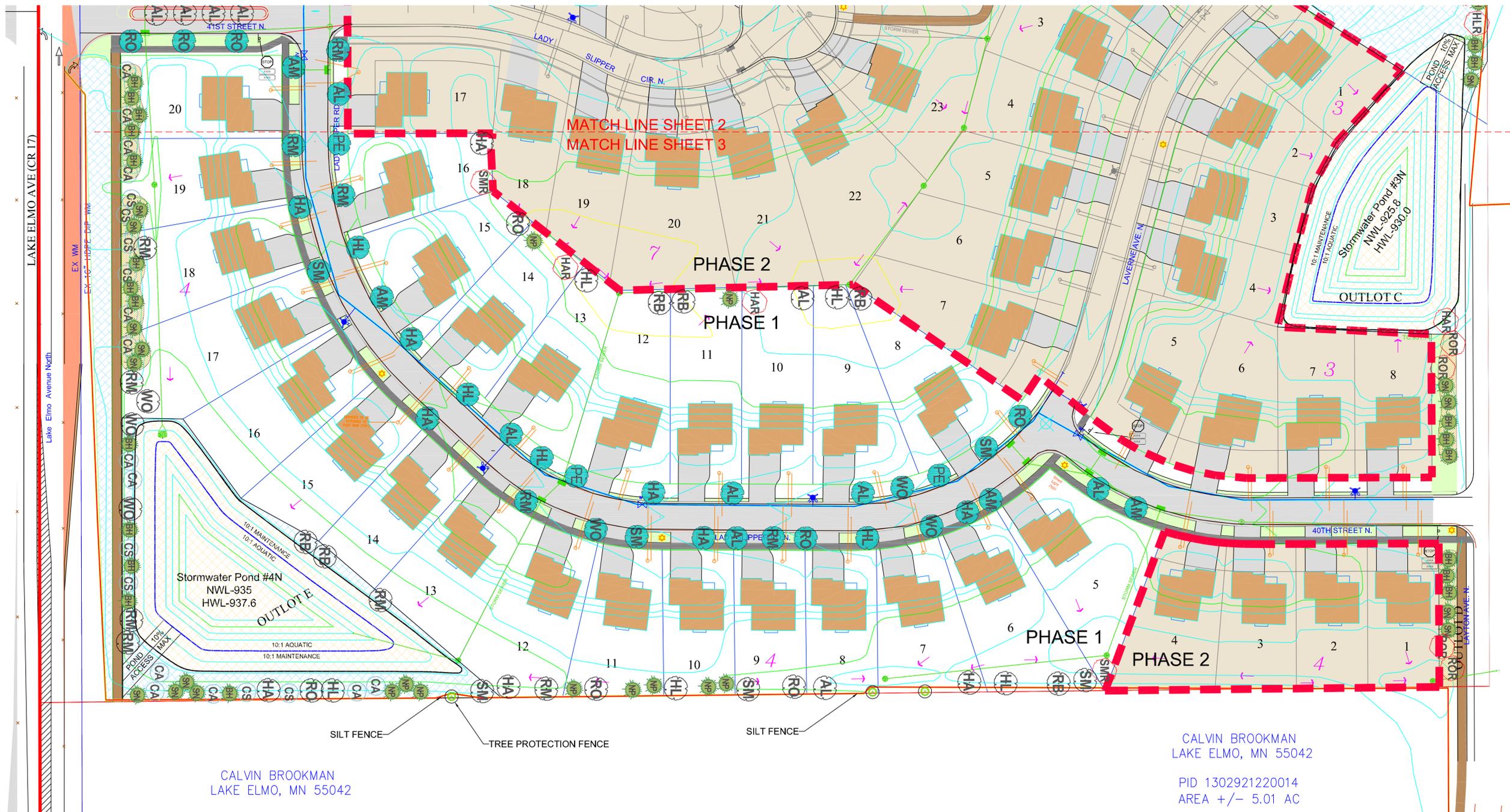
Signature: *[Signature]*
 Date: 4-25-14 Registration #: 20144

Norby & Associates
 Landscape Architects, Inc.
 100 East Second Street Chaska, MN 55318 (952) 361-0644

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TREE MITIGATION AND LANDSCAPE PLAN
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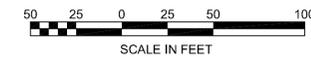
FILE NO.
 3120-047
 LP2
 LP3



CALVIN BROOKMAN
LAKE ELMO, MN 55042

CALVIN BROOKMAN
LAKE ELMO, MN 55042

PID 1302921220014
AREA +/- 5.01 AC



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TREE MITIGATION AND LANDSCAPE PLAN
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SCHILTGEN FARMS
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LP3
LP3