City of Ramsey
Agenda
Public Works Committee
Tuesday, April 18, 2017
5:30 pm
Lake Itasca Room, 7550 Sunwood Drive NW

1. Call to Order

2. Citizen Input

3. Approve Agenda

4. Approve Minutes

5. Committee Business

1. Consider Preventative Maintenance for 29 year-old Well Pump and Motor at Central Park

2. A Review of SCADA System and the Need for Redundancy Upgrades

3. Review Pedestrian and Traffic Concerns on Variolite Street and Receive Petition for Pedestrian Crosswalk

4. Consider Recommending City Council Approval of Plans and Specifications for Improvement Project #17-00, Sunwood Drive Reconstruction

5. Consider Recommending City Council Approval of Plans and Specifications for Improvement Project #17-01, Alpine Drive Reconstruction

6. Consider Recommending City Council Authorization to Prepare Plans and Specifications for Improvement Project #17-09, Bunker Lake Blvd Utilities Extension

7. Consider Recommending City Council Authorization to Prepare Plans and Specifications for Flashing Yellow Arrow Improvements to Signal System at Armstrong Boulevard & Sunwood Drive

6. Committee/Staff Input

1. Large Diameter Culvert Inspection Report

2. Staff Updates on Improvement Projects and Items of Interest

3. Review Future Topics Calendar

7. Adjournment

Our Mission: To work together to responsibly grow our community, and to provide quality, cost-effective, and efficient government services

Public Works Committee **5. 1.**

Meeting Date: 04/18/2017

By: Mark Riverblood, Engineering/Public Works

Title:

Consider Preventative Maintenance for 29 year-old Well Pump and Motor at Central Park

Purpose/Background:

The purpose of this case is to recommend to City Council the authorization to perform preventive maintenance for the water supply well associated with the Park Center Building at Central Park. The 4" residential sized well was put into service in 1988, and has performed without any problems since. In approximately 2006, the concession stand or Lion's Pavilion was completed, and a 2" inch underground water supply line was routed from the Park Center building to also serve the new concession stand. Altogether, between the two buildings, there are 23 separate fixtures, including various faucets, sinks, toilets, urinals, drinking fountains and the misting station between the buildings.

These park buildings are used every day from early spring through late fall, with the Park Center Building in service year-around. While the well has not failed, this size of well and annual use (amount of water pumped) would be comparable to a residential property with irrigation. Accordingly, the average service life for the 4" submersible well pump and motor would be around 15 years.

Timeframe:

The background and overview of this case presentation may be less than 5 (five) minutes.

Observations/Alternatives:

Observations:

Water supply wells typically only fail when they are in use. If, (or when) the well that is the subject of this case fails, it is likely to cause significant inconvenience to park users—especially if it were to occur during a weekend tournament, where restrooms would be out of service, and the concession stand would need to be shut down. Another example of significant disruption would be during an election day (the Park Center Building is a Polling place).

On March 10th, 2017 the motor and pump were pulled from the well casing and tested. After 29 years of continuous use, the thrust bearing that couples the motor and pump was found to be worn, confirming that preventative maintenance—replacing the pump and motor—should be scheduled.

The following are **alternatives** to consider:

1. Do nothing at this time, and react to a potential water supply failure in the future.
2. Schedule pump and motor replacement in a future year.
3. Replace Pump
    a. Replace the pump and motor early in 2017 with a 1 1/2 hp motor and pump (same as in use today). This option is about $5,000.
    b. Replace the [existing system] with a 3 hp Variable Frequency Drive and pump (Staff's recommendation) due to the longer service life and other benefits. This option is < $9,000.

Additional information will be available at the meeting.

Funding Source:

Capital Maintenance Fund, (formerly known as the Park Maintenance Fund), in an amount not-to-exceed $9,000.

Recommendation:

Staff recommends replacing the well motor and pump with a new, 3 hp Variable Frequency Drive motor and pump, consistent with the attached quote— as soon as can be scheduled in the spring of 2017.

Action:

Motion to recommend/not recommend to City Council, preventative maintenance to the well at Central Park as discussed, at a not-to-exceed cost of $9,000 from the Capital Maintenance Fund.

Attachments

Quote

Form Review

Inbox	Reviewed By	Date
Grant Riemer	MaryJo Warner	04/13/2017 04:23 PM
Grant Riemer	MaryJo Warner	04/13/2017 04:23 PM
Kurt Ulrich	Kurt Ulrich	04/13/2017 04:29 PM
Form Started By: Mark Riverblood		Started On: 04/12/2017 01:31 PM
Final Approval Date: 04/13/2017		

* * * E S T I M A T E * * *

E.H. RENNER & SONS, INC.
15688 JARVIS STREET NW

ELK RIVER, MN 55330

ESTIMATE NO.:000068390000
CUSTOMER NO.:02173
DATE: 03/10/17

TO:
CITY OF RAMSEY
7550 SUNWOOD DRIVE NW
RAMSEY, MN 55303

SHIP TO:
CENTRAL PARK COMMUNITY BL
7925 - 161ST AVE. NW
RAMSEY, MN 55303

SALESPERSON ... 02
ORDER DATE 03/10/17

Contacts:
1. TERRY BYRON (763) 238-9823
2. John Nelson (764) 286-0296
3. John Nelson (763) 433-9861
4. CITY HALL FAX (763) 427-5543

QUANTITY	DESCRIPTION		UNIT PRICE	AMOUNT
	REPLACEMENT PUMP SYSTEM FOR THE WELL # 449174 AT CENTRAL PARK COMMUNITY BLDG.			
1	SMEAL TRIP CHARGE	/TRIP	115.00	115.00
3	SMEAL PUMP TRUCK	/HR	120.00	360.00
4	OPERATOR	/ HR	116.00	464.00
4	SERVICE TECHNICIAN	/HR	116.00	464.00
	MATERIALS			
1	PUMP FRANKLIN LEGEND 30GPM PEO		927.00	927.00
1	MOTOR FRANKLIN 3HP 230/60/3		845.00	845.00
1	SUBDRIVE 30-C FRANKLIN		1,919.50	1,919.50
42	PIPE GALV 2" T&C W/MERCH CPLGS		8.45	354.90
1	VALVE CHECK 2" MIDWEST 530		125.75	125.75
50	WIRE 12/3 W/GRD FLAT JKT SUB-CABLE		1.55	77.50
1	MSC WIRE CONNECTORS, TAPE		11.00	11.00
1	TANK FLEXLITE FL28 - 82 GALLON		1,034.047	1,034.05
1	MISC. TANK FITTINGS		250.00	250.00
1	BOE ELECTRICAL ALOTMENT ESTIMATE		800.00	800.00
1	2" COPPER ALOTMENT ESTIMATE (BUDGET NUMBER)		645.00	645.00

ESTIMATOR: ROGER E. RENNER
763-427-6100-OFFICE
rerenner@ehrenner.com

SUB-TOTAL 8,392.70

* T H A N K Y O U *

SALES TAX 0.00

TOTAL 8,392.70

VFD

E.H. Renner & Sons

WELL DRILLING FOR FOUR GENERATIONS

15688 Jarvis Street N.W., Elk River, MN. 55330, (612)427-6100

WELL LOG

MAPCODE Q2-138

Date Started 11-21 19 88 Date Completed 12-9 19 88

Owner or Contractor City of Ramsey Address 15153 Nowthen Blvd.

Job Location 7925 161st Ave NW

City Ramsey County Anoka State of Minnesota

Well: ____ Cable Tool GD1000 Rotary Driller: Dale Johnson

Cased with: 4 inch ____ PE X T&C 150 Ft. Total Depth of Well 185 Ft. from grade
Includes 1' stickup
____ inch ____ PE ____ T&C ____ Ft.
____ inch ____ PE ____ T&C ____ Ft.

Feet of Open Hole 35 Finished in Franconia Static Water Level 35 Ft.

Tested at 40+ gallons per min. Drawn down of air feet.. clean & clear
Tested at ____ gallons per min. Drawn down of air feet. 90' 60GPM

Screen:
Size NONE dia. ____ ft. Make ____ Slot ____

Leader:
Size NONE dia. ____ ft. ____ Material ____ Fittings

Pump:
Make Grundfos Model 25S15-9 HP. 1½ Volts 230 1 Phase Type Sub Tank (2) WX-302

Motor Serial No. ____ Pump Serial No. ____ Drop Pipe ____ feet

Size 1¼ Capacity of Pump 25 G.P.M. AT 180 T.D.H Date Installed December 9, 1988

Inside 2 ft. Outside 35 ft.

Pitless Adapter: Make Baker 4" Standard Offset Material CU Size 1½ inch

Kind of Formation	Color of Formation	Started Depth	Ended Depth	Total Thickness of Formation	Remarks
Sand	Brn/Tan	0	30	30	
Clay & Rock	Red	30	78	48	
Sand & Rocks (Gravel)	Tan Grn/White	78	88	10	
Clay	Tan/Brn	88	100	12	
Sandstone Gravel Drift	Tan/White Grey/Yellow	100	120	20	
Clay	Brn/Grey	120	126	6	Layered Very Tight
Shale Drift Mix	Blue Grey White	126	144	18	
Sand Rock	Turquois	144	149	5	149 Extremely hard turned soft at 155
Sandstone Jordon	White Grey	149	168	19	lost return
Sandstone Jordon	Grey	168	180	12	
Sandstone Franconia	Green	180	185	5	

E. H. Renner & Sons

INVOICE

INCORPORATED
WELL DRILLING FOR FIVE GENERATIONS
15688 JARVIS ST. N.W. • ELK RIVER, MN 55330
PHONE: (763)427-6100 • FAX: (763)427-0533
www.ehrenner.com

INVOICE NO.:000154490000
CUSTOMER NO.:02173
DATE: 03/10/17

SOLD TO:
CITY OF RAMSEY
7550 SUNWOOD DRIVE NW

RAMSEY, MN 55303

SHIP TO:
COMMUNITY CENTER WELL
7925 - 161ST AVE. NW
WELL # 449174
RAYMSEY, MN 55303

SHIP DATE	SHIPPED VIA	F.O.B.	TERMS	SALES-PERSON	ORDER DATE	P.O. NUMBER
03/10/17	RAYMOND	RAMSEY	NET 30	03	03/07/17	763-238-9823

QUANTITY	DESCRIPTION	UNIT PRICE	AMOUNT
	PUMP TEST FOR WELL # 449174 USE OWNER'S PUMP OVER THE TOP ATTAINED 30GPM/FT OF DRAW DOWN NEED SPECIFIC CAPACITY OF WELL ATTAINED DIME SIZE SAND AT 60GPM BRING GLASS JAR TO DETECT SANSTONE PUMP IS < 5% OFF CURVE AT 60PSI PICTURES NEEDED TO ESTIMATE THE MOTOR RUNS AT 11.76 AMPS OPEN FOUND BOTH PRESSURE TANK'S BLADDERS RIPPED		
1	SMEAL TRIP CHARGE /TRIP	115.00	115.00
1	SMEAL PUMP TRUCK /HR	120.00	120.00
1	OPERATOR / HR	116.00	116.00
	RAN SYSTEM TO CLEAR AND RESET PUMP, WATER LEVEL 32' AND WAS AT 35' IN 1988		
	RAYMOND T. RENNER CWI/PI 763-286-8806-CELL raymond.t.renner@ehrenner.com		

March 10th
test

	SUB-TOTAL	351.00	SHIPPING CHARGES	0.00
* THANK YOU *	SALES TAX	0.00	TOTAL	351.00

Like Us on FACEBOOK!

WHITE – CUSTOMER YELLOW – OFFICE PINK – SEND BACK WITH PAYMENT

Public Works Committee **5. 2.**

Meeting Date: 04/18/2017
Submitted For: Grant Riemer, Engineering/Public Works
By: Grant Riemer, Engineering/Public Works

Title:
A Review of SCADA System and the Need for Redundancy Upgrades

Purpose/Background:
Purpose: The PW committee requested that staff review the need for a SCADA (Supervisory Control and Data Acquisition) redundancy program and its cost. Craig LaFreniere from Total Control Inc, who does all of our SCADA system upgrades and programming will be on hand to give a quick run through on the backup features of our current program and and give options and pricing on possible system upgrades.

Timeframe:
10-15 minutes

Observations/Alternatives:
NA

Funding Source:
NA

Recommendation:
Based on committee discussion

Action:
Based on committee discussion

Attachments

SCADA Upgrades

Form Review

Inbox	Reviewed By	Date
Kurt Ulrich	Kurt Ulrich	04/13/2017 03:45 PM
Form Started By: Grant Riemer		Started On: 03/30/2017 02:49 PM
Final Approval Date: 04/13/2017		

Total Control Systems, Inc.
38841 Nyman Drive NE
PO Box 40
Stanchfield, MN 55080-0040
Phone 320-396-4442 / Fax 320-396-4443

April 6th, 2017

To: John Nelson Re: Ramsey, MN – Scada Improvements Quote.

Total Control Systems, Inc. (TCS) proposes the following equipment and services.

Item #1 – Spare Master Equipment (PLC, Radio, Power Supplies, Relays, Surge Arrestors & UPS)
Item #1 Equipment & Labor Cost - **$3,274.33 (NO Tax Included)**

Item #2 – Scada HMI Update & Software Dialer Update (Conversion of existing HMI to Rockwell Software FTView & Win911 Software Update to current version. Uses existing Scada computer)
Item #2 Equipment & Labor Cost - **$11,998,33 (No Tax Included)**

Item #3 – Scada Computer, Scada HMI Update & Software Dialer Update (New Scada Computer, Conversion of existing HMI to Rockwell Software FTView & Win911 Software Update to current version. Uses existing Scada computer)
Item #3 Equipment & Labor Cost - **$15,085.81 (No Tax Included)**

Item #4 – Redundant Scada Computer, Scada HMI Software (New Redundant Scada Computer, Rockwell Software FTView, Sonicwall Firewalls to connect Redundant computer into remote SCADA PLC)
Item #4 Equipment & Labor Cost - **$13,077.60 (No Tax Included)**
NOTE: ITEM #4 PRICING VALID IF ITEM #3 SELECTED AS WELL.

Item #5 – Verizon Wireless Broadband Connection utilizing Cradlepoint device.
Item #5 Equipment & Labor Cost - **$2,127.67 Per Site (No Tax Included)**
NOTE: ITEM #5 VALID FOR SITES WITH NETWORK BASED PLC CONTROLLERS.
****: Monthly Verizon service NOT included, this is a customer responsibility.**
TCS advises Verizon 1 GB/Month plans for EACH site at $25/month per site.

- We acknowledge receipt of Addendum No.
- Terms are Net 30 days from invoice date. No retainage allowed. A 1.5% charge per month added to any past due balance. Price may be dependent on past credit history.
- This quote/proposal valid for 60 days.
- Work to commence after receipt of an acceptable written purchase order acknowledging acceptance of our terms.
- F.O.B. job-site. Freight allowed
- Start-up service/training, documentation and equipment adjustment is included as specified.
- TCSI does not accept any liquidated damages.

- ALL PANELS FURNISHED BY TCS WILL HAVE A UL 508 SERIALIZED OR UL698A ENCLOSED INDUSTRIAL CONTROL PANEL RELATING TO HAZARDOUS LOCATIONS WITH INTRINSICALLY SAFE CIRCUIT EXTENSIONS LABEL, AS REQUIRED.

If you have any questions regarding our proposal, please contact our office. We look forward to working with you on this project.

Sincerely,
TOTAL CONTROL SYSTEMS, INC.

Kraig LaFreniere
KL/lb

Public Works Committee **5. 3.**

Meeting Date: 04/18/2017

Submitted For: Grant Riemer, Engineering/Public Works

By: Grant Riemer, Engineering/Public Works

Title:

Review Pedestrian and Traffic Concerns on Variolite Street and Receive Petition for Pedestrian Crosswalk

Purpose/Background:

At the April 11th city council meeting staff received a petition from the Sweetbay Ridge neighborhood requesting that the city provide residents with a safer crossing area at the intersection of Variolite St and 161st Ave. to allow access to Central Park. Our policy is to have staff collect information at the intersection in question, such as traffic volumes, pedestrian volumes, sight lines, accident history, posted speed, etc. After the data is collected and reviewed, staff will make its recommendation based on that data and standard engineering practices.

Staff also received a letter from a resident that lives near the intersection of 158th Ave and Variolite St and they to are concerned with traffic speed on Variolte St and pedestrian safety. Both the petition and the letter are attached to the case.

Timeframe:

5 minutes

Observations/Alternatives:

NA

Funding Source:

The traffic data collection will be performed as part of staff's regular duties.

Recommendation:

Direct staff to collect the necessary traffic data and present it's findings and recommendation for the requested crosswalk, and any other safety-related improvements in regard to Variolite Street, at the May16th Public Works Committee meeting.

Action:

Motion to approve staff recommendation to collect the necessary data and present it's findings and recommendation for the requested crosswalk, and any other safety-related improvements in regard to Variolite Street, at the May 16th Public Works Committee meeting or, reject the staff recommendation, and accept alternate recommendation based on committee discussion.

Attachments

Petition

Letter of Concern

Form Review

Inbox	Reviewed By	Date

Kurt Ulrich	Kurt Ulrich	04/13/2017 03:52 PM
Form Started By: Grant Riemer		Started On: 03/30/2017 02:54 PM
Final Approval Date: 04/13/2017		

Petition for a Safer Street Crossing

We the undersigned ask that the City of Ramsey provide residents with a safer crossing area to access Central Park at the intersection of Variolite Street and 161st Avenue. This will provide residents with access to the city park and it's resources from nearby current and future homes.

	Date	Printed Name	Signature	Address
1	4/6/17	Mary Woestehoff	Mary Woestehoff	16018 Uranimite St. NW
2	4/6/17	Jessica Foss		16061 Uranimite St NW
3	4/6/17	Kody Gilla		16037 Uranimite St NW
4	4/6/17	Noura Seabrook	Noura	16025 uranimite NW Ramsey Anoka
5	4/6/17	Dwayne Gapinski		
6	4-6-17	Ryan Hood	Ryan Hood	15982 uranimite NW Ramsey, M
7	4-6-17	Denette Moser		16030 Uranimite St NW
8	4/6/17	Lilian Ombati	Liliana	16054 Uranimite St NW
9	4/6/17	Sarah Eiden		16068 Uranimite St NW
10	4/6/17	Joe Goddu		7541 161st Ave NW

Petition for a Safer Street Crossing

We the undersigned ask that the City of Ramsey provide residents with a safer crossing area to access Central Park at the intersection of Variolite Street and 161st Avenue. This will provide residents with access to the city park and it's resources from nearby current and future homes.

	Date	Printed Name	Signature	Address
11	4/5	Beth Hulke		7530 161st Ave N.W.
12	4/6	Derrick Olson		7513 161st Ave N.W.
13	4/6	Clint Seul		7496 161st Ave NW
14	4/6	Katie Wenberg		7508 161st Ave NW
15	4/6	Jenni Taylor		7483 161st Ave NW
16	4/6	Eric Roering		7463 161st Ave NW
17	4/6	Matt Hilmoe		16096 Rhinestone St.
18	4/6	Susan Martinson		16078 Rhinestone St.
19	4/6	Amy Hauge		16071 Rhinestone St.
20	4/6/17	Ryan & Wendy Rahnstrom		16089 Rhinestone St

Petition for a Safer Street Crossing

We the undersigned ask that the City of Ramsey provide residents with a safer crossing area to access Central Park at the intersection of Variolite Street and 161st Avenue. This will provide residents with access to the city park and it's resources from nearby current and future homes.

	Date	Printed Name	Signature	Address
21	4/6	Amy Dow		16130 Rhinestone St NW Ramsey MN 55303
22	4/6	Morgan Jensen		16107 Rhinestone St NW Ramsey MN
23	4/6	Kristy Manning		16121 Rhinestone St NW, Ramsey, MN
24	4/6	Katie Anderson		16144 Rhinestone St. NW Ramsey, MN 55303
25	4/6	Blake Chifley		16145 Rhinestone St NW Ramsey MN 55303
26	4/6	Lisa Quam		7477 162nd Ave NW Ramsey, MN 55303
27	4/7	Kyle Langseth		16073 Uranium St. NW Ramsey, MN 55303
28	4/7	Lora Steiner		15977 Uranium ST NW Ramsey, MN 55303
29	4/7	Eric Hodges		7463 159th Ave NW Ramsey, MN 55303
30	4/7	Sherry Beck		7514 159th Ave NW Ramsey, MN 55303

Petition for a Safer Street Crossing

We the undersigned ask that the City of Ramsey provide residents with a safer crossing area to access Central Park at the intersection of Variolite Street and 161st Avenue. This will provide residents with access to the city park and it's resources from nearby current and future homes.

	Date	Printed Name	Signature	Address
31	4/7/17	Alem Belcum		7526 159th Ave Ramsey MN 55303
32	4/7/17	Brad Marzinsk		15972 Uranimite St NW Ramsey, MN 55303
33	4-7-17	MARIANNE COVINGTON		16132 URANIMITE ST NW RAMSEY MN 55303
34	4/7/17	JANIE TRUITVIN		16125 Uranimite St. NW RAMSEY, MN 55303
35	4/7/17	Louis LaFrenier		16168 Uranimite St Ramsey MN 55303
36	4/7/17	Sara Deforest		7540 162nd Ave Ramsey MN 55303
37	4/7/17	Michele Baffs		7553 162nd Ave NW Ramsey MN 55303
38	4/7/17	Nicki Bergeland	Nicki Bergeland	7535 162nd Ave NW Ramsey MN 55303
39	4/7/17	Azeb Akallew ELIAS Getebeb	Elias Getebeb	7514 162 Ave NW Ramsey MN 55303
40	4/7/17	Jenny Balwanz Mark Balwanz	Jenny Balwanz	7502 162nd Ave NW Ramsey MN 55303

Petition for a Safer Street Crossing

We the undersigned ask that the City of Ramsey provide residents with a safer crossing area to access Central Park at the intersection of Variolite Street and 161st Avenue. This will provide residents with access to the city park and it's resources from nearby current and future homes.

	Date	Printed Name	Signature	Address
41	4/7/17	Isaac Ludquist		7525 162nd Ave NW Ramsey MN 55303
42	4/7/17	Tray Halverson		7489 162nd Avenue Ramsey MN 55303
43	4/7/17	Kayla Fandel		7486 162nd Ave NW Ramsey MN 55303
44	4/7/17	Cindy Goodrich		16137 Rhinestone St NW Ramsey, MN 55303
45	4/7/17	Ashley McCormick		16088 Rhinestone St NW Ramsey, MN 55303
46	4/7/17	Chad Boehlke		16101 Rhinestone St NW Ramsey, MN 55303
47	4/7/17	Bill Cowette		16266 Sapphire St NW Ramsey MN 55303
48	4/7/17	Amber Cuevas		7474 163rd Ave NW Ramsey, MN 55303
49	4/7/17	CHAD MARACK		7258 163RD AVE NW RAMSEY, MN 55303
50	4/7/17	JASON SUNDEEN		7543 163RD AVE NW RAMSEY, MN 55303

Petition for a Safer Street Crossing

We the undersigned ask that the City of Ramsey provide residents with a safer crossing area to access Central Park at the intersection of Variolite Street and 161st Avenue. This will provide residents with access to the city park and it's resources from nearby current and future homes.

	Date	Printed Name	Signature	Address
51	4/7	Jeff Brown	Jeff Brown	7556 163RD AVE NW Ramsey, MN 55303
52	4/7	Rebecca Patrick	R Patrick	7588 163rd Avenue Ramsey MN 55303
53	4/7	Ryan Knix	Ry Knx	7589 163rd Ave NW Ramsey, MN 55303
54	4/7	Jeff Noyes	[illegible]	7575 163rd Ave NW Ramsey, MN 55303
55	4/7	Steve Weakly	[illegible]	7563 163rd Av NW
56	4/7	MARY CHERRICO	M H Cherrico	16094 Uraninite St NW Ramsey, MN 55303
57	04.08	Tina Meravsici	Tina Meravsici	15972 Uraninite St NW Ramsey MN 55303
58				
59				
60				

All,

I have lived on the corner of 158th and Varolite for 25+ years, have seen many changes over the years.

I walk the sounding area 4-5 times/week all year and have seen more frequent concerns these past few years. I feel the speed should be looked at on Varolite between at least 163rd and Alpine. The following is some observations in no particular order:

1. We have a hill at 161st (the road that goes to central park), that makes for poor site lines.
2. The new development to the east of Varolite between 158th and 163rd is getting built out fairly fast now making for more trips.
3. I see a fair amount of people crossing at 161st by foot/bike going to/from the park, this is where I have seen enough close calls, another one this weekend that made me want to finally write you.
4. We have a walking path that's on the road, it goes between a turn lane and Varolite at 159th. If you have not walked it yet, do yourself a favor and walk down the path when you have cars going 50-60mph on one side of you and cars on the other side of you in a turn lane as they enter going 50mph. I'm going to be honest here, I don't use that section of trail, I walk in the turn lane, at least I have an out to the ditch + it gives me some distance from the faster cars on Varolite, lessor of all evils I guess. It would appear most walkers feel the same about that section.
5. From what I can tell the new development has fair number of young families, if the current trend keeps going I can see a lot of young soccer/foot ball/baseball players making way to Central Park by foot being its so close. I hope that's case anyway.
6. It appears the Brookfield Development next addition is heading to the West, I'm going to guess many of those folks will be using Varolite.
7. If that trail/boardwalk gets done by Troutbrook that's going to put more people on the shoulders. I'm looking at you park board lets get this done, even if we don't get the grant:)
8. Deer vs car, not sure if this is a plus or minus. Its seems to be working well keeping the deer population down with the faster speeds.
9. Another kind of odd deal is the speed on Alpine is slower in the area compared to Varolite. I'm not a traffic engineer but the number of homes, access points and generally the number of people I see on foot near and around the park is much higher than Alpine.
10. Varolite is a retaliative short section of roadway at 2.25 miles. If we dropped the speed between Alpine and 163rd (1 mile) 10mph its going to cost us 18 seconds, drop the whole section of road 80 seconds in time, I can live with either one.

Its just a matter of time until someone gets clocked good or a life is taken. I'm going to guess its more apt to happen between game times during the summer months. I think a permanent speed change would be warranted if not permanent at least during game/practice times, that's when I have seen the most close calls.

Not that a speed change would help with people passing on the shoulder and or the knuckle head texting that I see while I'm walking it would at least buy me a few more seconds to get out of the way if need be if they were traveling slower.

I'm the last one to complain, I can count on one hand how many times I have contacted the city in the past 25 years. After seeing so many close calls I really do feel we have a unsafe environment in that area.

If you want to make the walk with me I'm open to that, as noted I walk it often, rain or shine.

Thanks for you time,

Jay Jagerosn

Public Works Committee **5. 4.**

Meeting Date: 04/18/2017

By: Bruce Westby, Engineering/Public Works

Title:

Consider Recommending City Council Approval of Plans and Specifications for Improvement Project #17-00, Sunwood Drive Reconstruction

Purpose/Background:

Purpose:

The purpose of this case is to consider recommending City Council approval of plans and specifications for Improvement Project #17-00, Sunwood Drive Reconstruction.

Background:

Attached are current plans for Improvement Project #17-00, Sunwood Drive Reconstruction. These plans are being reviewed by MnDOT State Aid. Approval by State Aid must be received before the City can bid the project. Staff anticipates receiving State Aid approval prior to requesting City Council approval of plans and specifications and authorization to bid the project on May 9th. This schedule would allow construction to begin in late June and to be substantially complete by September 1st.

The design represented in the attached plans is generally consistent with the design as discussed with the City Council and addressed within the Feasibility Report. The only significant difference is that instead of milling 3+ inches off the top of the existing pavement and hauling it off site, all of the existing bituminous pavement will be reclaimed and mixed with the existing aggregate base, then 4 inches of the reclaim material will be hauled off site to allow for 4 inches of new bituminous pavement to maintain existing elevations. The project also proposes to install 6 inches of stabilized reclamation material now instead of 5 inches as proposed in the Feasibility Report, thereby providing a stronger pavement section.

The Feasibility Report identified estimated costs in the amount of $607,000. The current estimated project costs per the attached plans are $571,539.48. Special assessments are proposed to pay for 25% of the total project costs.

Timeframe:

Staff estimates 10 minutes will be required to present this case and respond to questions.

Observations/Alternatives:

Observations:

Staff is working with property owners to ensure they are fully aware of the current plans and tentative schedule to reconstruct their driveway accesses.

Alternatives:

Alternative #1 – Motion recommending City Council approval of plans and specifications for Improvement Project #17-00, Sunwood Drive Reconstruction.

Alternative #2 – Motion of other.

Funding Source:

Staff proposes to fund the proposed improvements using a combination of special assessments, street reconstruction bond funds, and stormwater utility funds.

Recommendation:

Staff recommends alternative #1.

Action:

Motion to recommend City Council approval of plans and specifications for Improvement Project #17-00, Sunwood Drive Reconstruction.

Attachments

IP1700 Plans

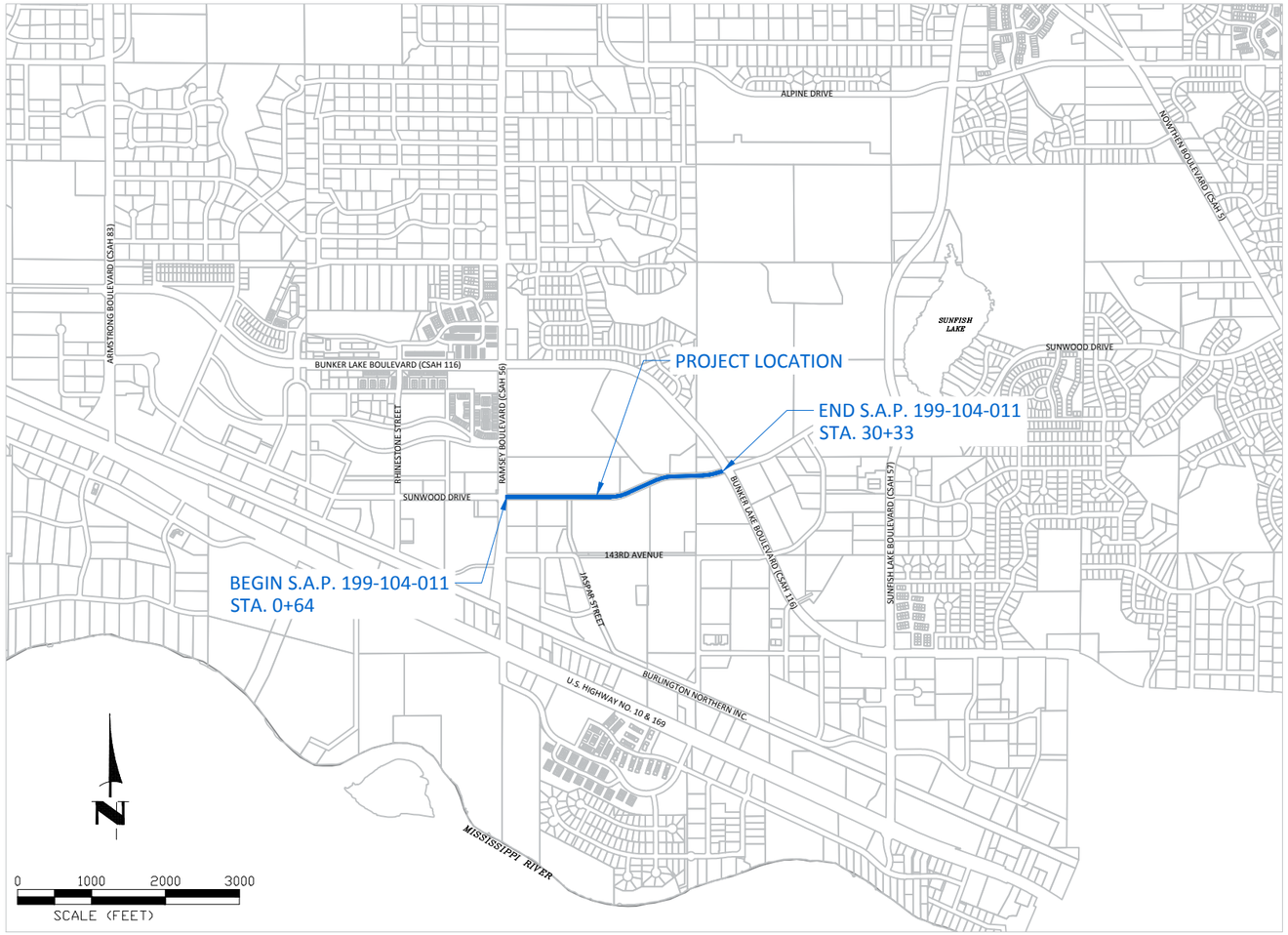
Form Review

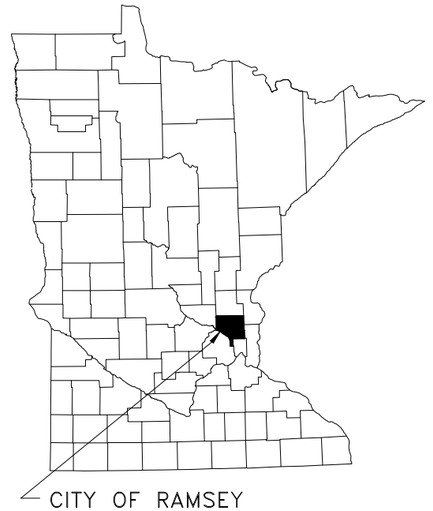
Inbox	Reviewed By	Date
Grant Riemer	Grant Riemer	04/13/2017 11:05 AM
Kurt Ulrich	Kurt Ulrich	04/13/2017 03:55 PM
Form Started By: Bruce Westby		Started On: 04/10/2017 05:25 PM
Final Approval Date: 04/13/2017		

CITY OF RAMSEY

STREET CONSTRUCTION PLANS FOR BITUMINOUS RECLAMATION AND PAVING.
S.A.P. 199–104–011

S.A.P. LOCATED ON SUNWOOD DRIVE BETWEEN RAMSEY BOULEVARD AND BUNKER LAKE BOULEVARD
FROM NW 1/4 OF THE SW 1/4 OF S27, T32, R25 TO NW 1/4 OF THE SE 1/4 OF S27, T32, R25





CITY OF RAMSEY
ANOKA COUNTY, MINNESOTA
DISTRICT: METRO

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38–02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

NOTE: EXISTING UTILITY INFORMATION SHOWN ON THIS PLAN HAS BEEN PROVIDED BY THE UTILITY OWNER. THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS PRIOR TO COMMENCING CONSTRUCTION AS REQUIRED BY STATE LAW. NOTIFY GOPHER STATE ONE CALL 1–800–252–1166 OR 651–454–0002

Call before you dig
811
651 454–0002 Metro
800 252–1166 Outstate
www.gopherstateonecall.org

NO.	PROJECT	STA. TO STA.	GROSS LENGTH	BRIDGE LENGTH	NET LENGTH	NET LENGTH (MILES)	ADT (2015)	ADT (2037)	DESIGN ESAL	R VALUE	TON DESIGN	DESIGN SPEED	NUMBER OF LANES	WIDTH OF LANES	NUMBER OF PARKING LANES	WIDTH OF PKG LANES	FUNCTIONAL CLASSIFICATION
①	S.A.P. 199–104–011 SUNWOOD DRIVE	0+64 TO 30+33	2969 FT	0 FT	2969 FT	0.56 MI.	3500	7380	499,000	50	10	40	2	EB – 12' WB – 12'	2	8'	COLLECTOR

GOVERNING SPECIFICATIONS

THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

ALL FEDERAL, STATE AND LOCAL LAWS, REGULATIONS AND ORDINANCES SHALL BE COMPLIED WITH IN THE CONSTRUCTION OF THIS PROJECT.

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

SHEET INDEX

THIS PLAN CONTAINS 18 SHEETS

LEGEND

MB	MAILBOX	— —	EASEMENT
	LIGHT POLE	———	RIGHT OF WAY
	TREE	—E—	ELECTRIC
	SHRUB	—G—	GAS
	SIGN	—T—	TELECOMMUNICATIONS
POLE	POLE	—>>—	STORM SEWER
	FLOOD LIGHT		TREE LINE
	VALVE	—XSR—	SPLIT RAIL FENCE
PED	UTILITY PEDESTAL		LANDSCAPING
HH	HAND HOLE		RETAINING WALL
	EXISTING CATCH BASIN		5' CONTOUR LINE
STM	EXISTING MANHOLE		1' CONTOUR LINE
	EXISTING FLARED END	—SF—	SILT FENCE
	REMOVE TREE		CONCRETE CURB & GUTTER
	3'X2' CATCH BASIN		
	CATCH BASIN MANHOLE		
	INLET PROTECTION		
	RECLAIM BITUMINOUS PAVEMENT		
	EDGE MILL		
	REMOVE BITUMINOUS PAVEMENT		
	REMOVE BITUMINOUS DRIVE		
	REMOVE CONCRETE VALLEY GUTTER		
	CONCRETE PAVEMENT		
	BITUMINOUS PAVEMENT		
	SOD		

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

BRUCE R WESTBY, P.E.
RAMSEY CITY ENGINEER
40116 LIC. NO.
DATE

DATE
DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY

DATE
STATE AID ENGINEER: APPROVED FOR STATE AID FUNDING

City of RAMSEY
CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

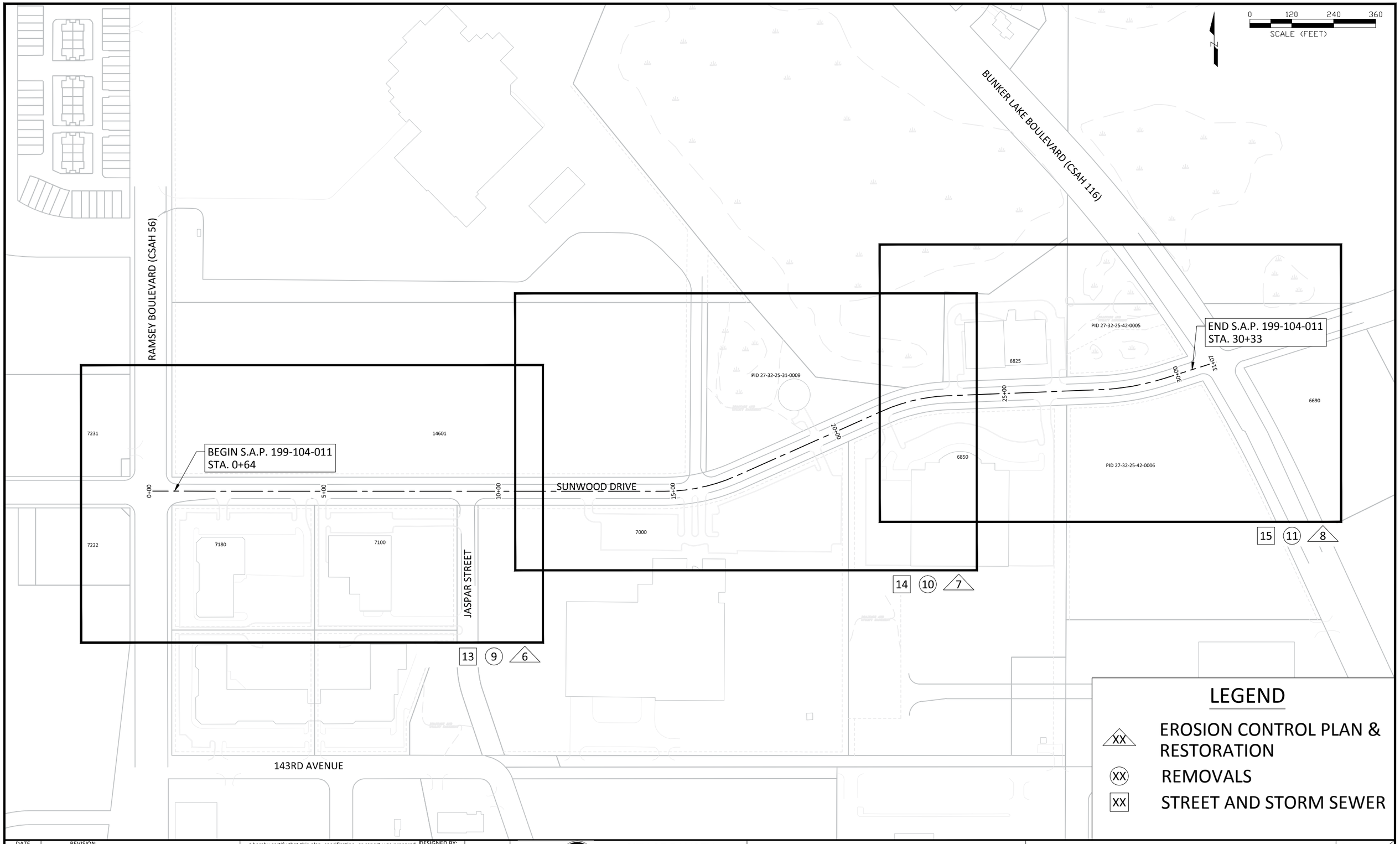
STOPPING SIGHT DISTANCE BASED ON:
3.5 FT – HEIGHT OF EYE
2.0 FT – HEIGHT OF OBJECT

DATUM:
VERTICAL: NAVD 88
HORIZONTAL: ANOKA COUNTY COORDINATES (1996 ADJUSTMENT)

S.A.P. 199–104–011

DATE	REVISION

Apr 11, 2017 – 3:10pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 – Ramsey to Bunker\Plan Drawings\Cover Sheet.dwg



LEGEND

- XX — EROSION CONTROL PLAN & RESTORATION
- (XX) — REMOVALS
- [XX] — STREET AND STORM SEWER

DATE	REVISION

Apr 11, 2017 - 3:10pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 - Ramsey to Bunker\Plan Drawings\Sheet Index.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE W. WESTBY
Date 4/11/17 Lic. No. 40116

DESIGNED BY:	JJF	
DRAWN BY:	JJF	DATE: 4/11/17
CHECKED BY:	BRW	FILE No. 17-00

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

SHEET INDEX
S.A.P. 199-104-011

SUNWOOD DRIVE 2017 OVERLAY - RAMSEY TO BUNKER
CITY PROJECT NO. 17-00
CITY OF RAMSEY, MINNESOTA

ESTIMATED QUANTITIES					NON-PARTICIPATING		
					S.A.P. 199-104-011		
					SUNWOOD DRIVE		
					STREET	*STORM SEWER*	
PAGE NO.	**NOTE**	**ITEM NO.**	**ITEM**	**UNIT**	**ESTIMATED QUANTITY**	**ESTIMATED QUANTITY**	**TOTAL ESTIMATED QUANTITY**
		2021.501	MOBILIZATION	LS	1	-	1
10 - 12	4	2104.501	REMOVE CONCRETE CURB AND GUTTER	LF	1073	-	1073
10 - 12	4	2104.505	REMOVE CONCRETE VALLEY GUTTER	SY	208	-	208
10 - 12	4	2104.505	REMOVE BITUMINOUS PAVEMENT	SY	536	-	536
10 - 12		2104.511	SAWING CONCRETE PAVEMENT - FULL DEPTH	LF	300	-	300
10 - 12		2104.513	SAWING BITUMINOUS PAVEMENT - FULL DEPTH	LF	500	-	500
10 - 12		2130.501	WATER	MGAL	75	-	75
10 - 12		2215.501	STABILIZED FULL DEPTH RECLAMATION	SY	12126	-	12126
10 - 12		2232.501	MILL BITUMINOUS PAVEMENT (2' WIDTH X 1.5" DEPTH)	SY	48	-	48
10 - 12	1, 8	2331.607	HAUL BIT PAVEMENT RECLAMATION (LV)	CY	1600	-	1600
10 - 12	7	2331.609	BITUMINOUS MATERIAL FOR MIXTURE	TON	172	-	172
14 - 16	2	2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL	883	-	883
14 - 16	3	2360.501	TYPE SP 9.5 WEARING COURSE MIXTURE (SPWEA340C) (2.0")	TON	1660	-	1660
14 - 16	3	2360.502	TYPE SP 12.5 NON-WEARING COURSE MIXTURE (SPNWB330C) (2")	TON	1664	-	1664
10 - 12		2504.602	ADJUST VALVE BOX	EA	4	-	4
14 - 16	6	2506.502	GROUT CATCH BASIN	EA	-	7	7
10 - 12		2506.522	ADJUST FRAME AND RING CASTING	EA	9	-	9
14 - 16		2506.602	ADJUST CATCH BASIN CASTING	EA	-	6	6
14 - 16	8	2531.501	CONCRETE CURB & GUTTER DESIGN B618 (HE)	LF	1073	-	1073
14 - 16	8	2531.604	7" CONCRETE VALLEY GUTTER (HE)	SY	281	-	281
10 - 12	5	2563.601	TRAFFIC CONTROL	LS	1	-	1
7 - 9		2573.530	STORM DRAIN INLET PROTECTION	EA	30	-	30
7 - 9	1	2574.525	COMMON TOPSOIL BORROW (LV)	CY	40	-	40
7 - 9		2575.505	SODDING TYPE LAWN	SY	284	-	284
17		2582.501	PAVT MSSG (LT ARROW) EPOXY	EA	2	-	2
17		2582.501	PAVT MSSG (RT-THRU ARROW) EPOXY	EA	1	-	1
17		2582.502	24" SOLID LINE YELLOW - EPOXY	LF	50	-	50
17		2582.502	4" DOUBLE SOLID LINE YELLOW - EPOXY	LF	3163	-	3163
17		2582.502	4" SOLID LINE WHITE - EPOXY	LF	5120	-	5120

STORM SEWER CASTING RESET SCHEDULE

PAGE No.	STRUCTURE	STATION	OFFSET
14	CBMH 204	5+51.72	R - 21.0'
14	CBMH 203B	8+51.54	R - 21.2'
14	CBMH 203	8+85.38	R - 20.5'
14	CB 203C	9+50.10	R - 21.1'
15	CB 305	13+45.19	R - 21.0'
15	CB 402A	17+95.69	R - 20.6'

NOTE:
SEE CITY STANDARD PLATE STO-13, SHEET 5 FOR STORM SEWER CASTING RESET.

PAY ITEM NOTES:

1. EV TO CV CONVERSION FACTOR = 1.2
2. ESTIMATED QUANTITY BASED ON APPLICATION RATE OF 0.07 GAL/SY.
3. ESTIMATED QUANTITY BASED ON APPLICATION RATE OF 110 LB/SY-IN.
4. REMOVAL LIMITS WILL BE MARKED IN THE FIELD BY CITY STAFF.
5. LUMP SUM QUANTITY SHALL INCLUDE ALL COST REQUIRED FOR MAINTAINING PEDESTRIAN ACCESS ROUTES, AND ALL FLAGGING OPERATIONS AS NECESSARY.
6. GROUT CATCH BASIN SHALL OCCUR AFTER BITUMINOUS WEARING COURSE LIFT IS APPLIED.
7. APPLICATION RATE OF 4.5% BITUMINOUS MATERIAL FOR STABILIZED FULL DEPTH RECLAMATION USED FOR ESTIMATION PURPOSES ONLY. SEE STABILIZED FULL DEPTH RECLAMATION MIX DESIGN FOR FINAL APPLICATION RATE.
8. CONTRACTOR SHALL STOCKPILE ENOUGH RECLAIM MATERIAL ON-SITE TO PLACE UNDER THE REPLACED CONCRETE CURB AND GUTTER AND CONCRETE VALLEY GUTTER. 6" OF RECLAIM MATERIAL SHALL BE PLACED UNDER CONCRETE CURB AND GUTTER TO 6" BEHIND THE BACK OF CURB. 8" OF RECLAIM MATERIAL SHALL BE PLACED UNDER CONCRETE VALLEY GUTTER. THIS SHALL BE INCIDENTAL TO THE PAY ITEMS.

GENERAL NOTES:

1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. IT IS NO GUARANTEED ANY OR ALL EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
2. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING IRRIGATION SYSTEMS WITHIN THE PROJECT CONSTRUCTION LIMITS BEFORE COMMENCING WORK. THE CONTRACTOR IS RESPONSIBLE FOR AVOIDING DAMAGE TO IRRIGATION SYSTEMS WHERE POSSIBLE.

DATE	REVISION

Apr 11, 2017 - 3:10pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 - Ramsey to Bunker\Plan Drawings\SEQ.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE W. WESTBY
Date 4/11/17 Lic. No. 40116

DESIGNED BY:	JJF	
DRAWN BY:	JJF	DATE: 4/11/17
CHECKED BY:	BRW	FILE No. 17-00

City of RAMSEY

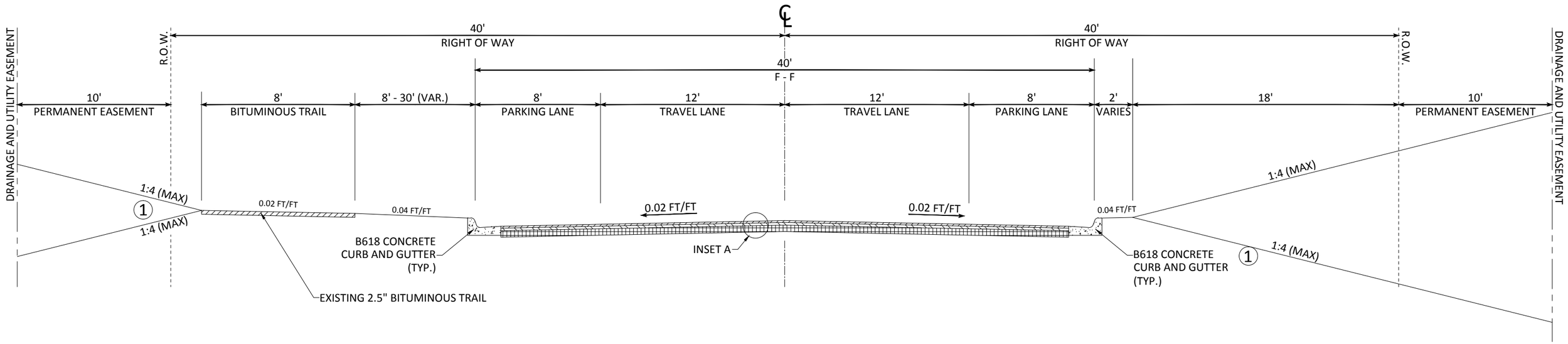
CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

STATEMENT OF ESTIMATED QUANTITIES
S.A.P. 199-104-011

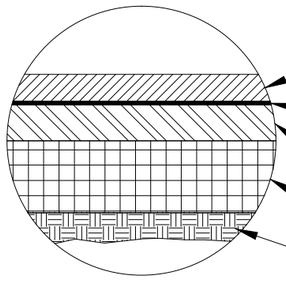
SUNWOOD DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-00
CITY OF RAMSEY, MINNESOTA

SHEET 3 OF 18 SHEETS

PROPOSED SUNWOOD DRIVE TYPICAL SECTION



INSET A:



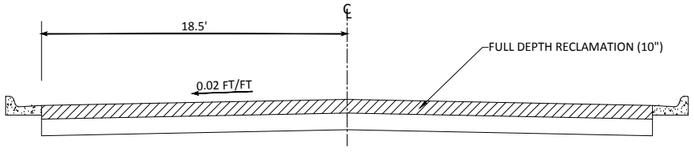
REFERENCE NOTES:

① GRADE TO MATCH EXISTING GROUND. ESTABLISH TURF USING A MINIMUM OF 4" COMMON TOPSOIL BORROW AND SODDING TYPE LAWN. SEE CITY PLATE NO. ERO-6 FOR COMMON TOPSOIL BORROW.

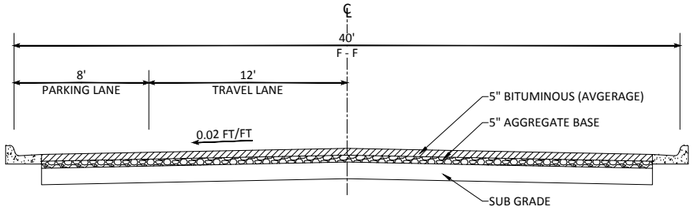
② STABILIZED FULL DEPTH RECLAMATION (SFDR), SEE THE SPECIFIED MIXTURE.
SPREADING, COMPACTION AND ROLLING PER SPECIFICATIONS

20 YR DESIGN LANE BESALS:	499,000
DESIGN R-VALUE: 40	
REQUIRED SECTION	
MINIMUM BIT (GE)	7.32
MIN. AGG. BASE (GE)	6.00
TOTAL REQUIRED GE	13.32
PROPOSED SECTION	
WEARING COURSE (2.0")	4.50
NON-WEAR COURSE (2.0")	4.50
TOTAL BIT	9.00
FDR STABILIZED (6.0")	9.00
TOTAL PROPOSED GE	18.00

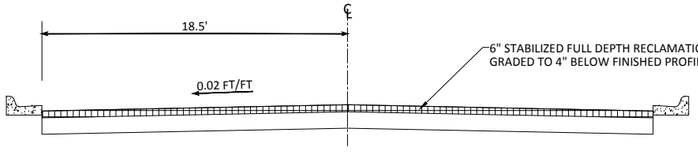
STEP 1: FULL DEPTH RECLAMATION OF EXISTING PAVEMENT SECTION (10")



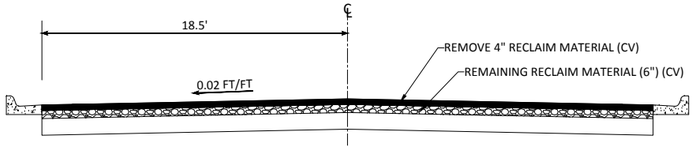
EXISTING PAVEMENT SECTION



STEP 3: STABILIZE FULL DEPTH RECLAMATION, SPREAD AND COMPACT THE MIXTURE. MAY REQUIRED AN ADDITIONAL PASS TO PROPERLY MIX.



STEP 2: REMOVE EXCESS RECLAMATION MATERIAL TO 4" BELOW FINISHED PROFILE GRADE.



NOTE: NOT TO SCALE

DATE	REVISION

Apr 11, 2017 - 3:11pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 - Ramsey to Bunker\Plan Drawings\TYPICAL SECTION.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE W. WESTBY
Date 4/11/17 Lic. No. 40116

DESIGNED BY:	JJF		
DRAWN BY:	JJF	DATE:	4/11/17
CHECKED BY:	BRW	FILE No.	17-00

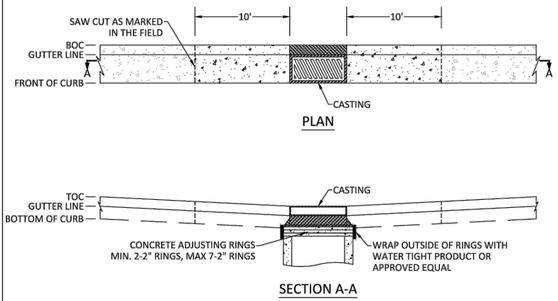
City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

TYPICAL
S.A.P. 199-104-011

SUNWOOD DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-00
CITY OF RAMSEY, MINNESOTA

SHEET 4 OF 18 SHEETS

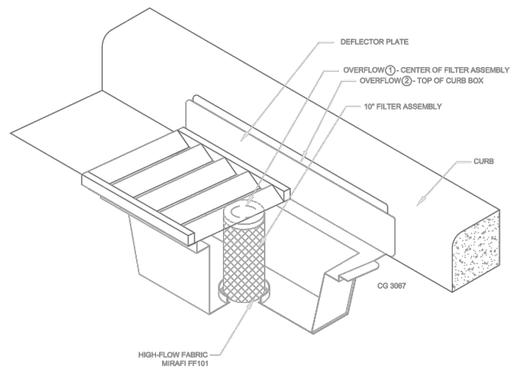


NOTE: NOT TO SCALE

NOTE:

1. CONCRETE CURB AND GUTTER TO BE REMOVED 10 FEET TO EITHER SIDE OF CATCH BASIN CASTING. CURB AND GUTTER MUST BE SAW CUT - FULL DEPTH.
2. CASTING SHALL BE BROUGHT UP TO PROPER GRADE. DAMAGED CONCRETE ADJUSTING RINGS MUST BE REPLACED. OUTSIDE OF RINGS MUST BE WRAPPED WITH APPROVED WATER TIGHT PRODUCT. INSIDE OF RINGS MUST BE GROUTED TO A SMOOTH FINISH.
3. CONCRETE CURB AND GUTTER SHALL BE REPLACED AND MATCH INTO THE RESET CASTING AND THE EXISTING CURB AND GUTTER.
4. DAMAGED BITUMINOUS PAVEMENT SHALL BE REPAIRED AND IS INCIDENTAL. FOLLOW CITY STANDARD PLATE STR-25.
5. PROPER TRAFFIC CONTROL DEVICES SHALL BE REQUIRED TO MAINTAIN A SAFE WORK ENVIRONMENT, AND IS INCLUDED IN THE TRAFFIC CONTROL LUMP SUM BIT ITEM.
6. ALL EQUIPMENT, MATERIALS, DISPOSAL, AND LABOR REQUIRED TO RESET CATCH BASIN CASTING AS DESCRIBED BY THIS DETAIL IS INCIDENTAL.
7. BOULEVARD RESTORATION BEHIND CURB IS NOT INCLUDED WITH THE RESET CATCH BASIN CASTING PAY ITEM.

APPROVED: 3 – 2017	City of RAMSEY	STANDARD DETAILS: RESET CATCH BASIN CASTING
		CITY PLATE No. STO–13



INLET PROTECTION – WIMCO OR EQUAL

N.T.S.

NOTE:
THIS INLET PROTECTION SHALL BE USED IMMEDIATELY FOLLOWING CURB & GUTTER CONSTRUCTION. INLET PROTECTION SHALL REMAIN INSTALLED AND MAINTAINTED UNTIL ALL HOME CONSTRUCTION IS COMPLETE.

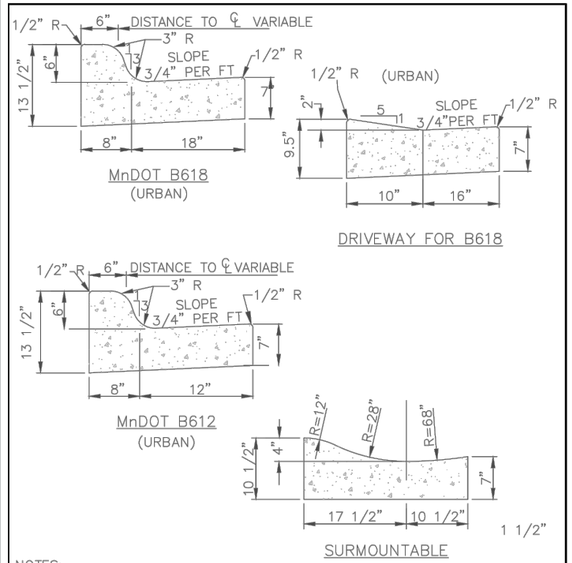
APPROVED: 1 – 2016	City of RAMSEY	STANDARD DETAILS: INLET PROTECTION
		CITY PLATE No. ERO–2

MNDOT 2016 SPEC

MNDOT 2016 SPEC TABLE 3877–1 COMMON TOPSOIL BORROW		
REQUIREMENT	RANGE	TEST METHOD
MATERIAL PASSING THE 3/4 IN [19MM]	100%	ASTM D 422
MATERIAL PASSING NO. 4 [4.75MM]	>85%	–
CLAY	5% –35%	ASTM D 422
SILT	5% – 70%	ASTM D 422
SAND	10% – 75%	ASTM D 422
ORGANIC MATTER	3% – 15%	ASTM D 2974
pH	6.1–7.8	ASTM G 51

NOTE:
1. INSTALLATION OF 4" OF TOPSOIL MEETING MNDOT SPECIFICATION 3877A COMMON TOPSOIL BORROW, MAY BE REQUIRED ACROSS ALL DISTURBED AREAS.
2. A SOIL CERTIFICATION FROM A GEOTECHNICAL FIRM MUST BE PROVIDED VERIFYING THE TOPSOIL MEETS SPECIFICATION ALONG WITH LOAD TICKETS TO VERIFY THE SOURCE OF MATERIAL AND QUANTITY.
3. TOPSOIL MUST COME FROM A CITY APPROVED SOURCE.

APPROVED: 1 – 2016	City of RAMSEY	CITY PLATE No. ERO–6	STANDARD DETAILS: TOPSOIL REQUIREMENTS



NOTES:

1. ON WEAR COURSE MILL THE EXISTING BITUMINOUS 1.5" BY 24" IN FRONT OF THE REPLACEMENT CURB.
2. ON BASE COURSE SAW CUT AND REMOVE EXISTING BITUMINOUS 18" IN FRONT OF THE REPLACEMENT CURB.

APPROVED: 1 – 2016	City of RAMSEY	STANDARD DETAILS: CURB AND GUTTER
		CITY PLATE No. STR–1

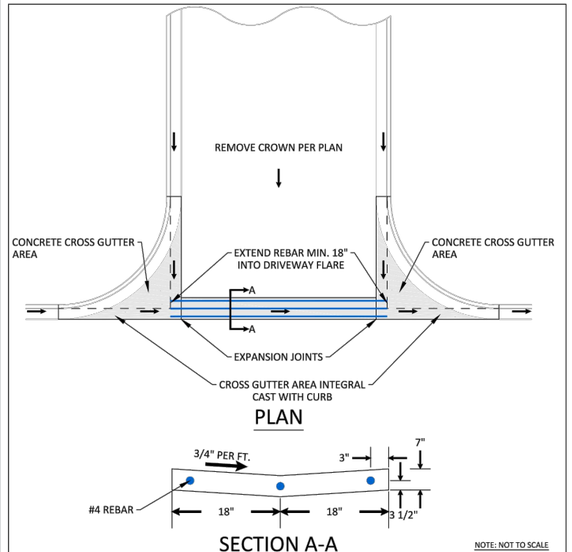
TABLE A
MODIFIED CLASS 5 SPECIFICATIONS

% PASSING

1"	100
3/4"	90 – 100
3/8"	50 – 80
No.4	35 – 70
No.10	20 – 60
No.40	10 – 35
No.200	5 – 10

NOTES:
1. THE AGGREGATE BASE CONSTRUCTION WILL BE ACCEPTED FOR PAYMENT IN ACCORDANCE WITH THE PROVISIONS IN TABLE A.
2. IF THE AGGREGATE BASE FAILS TO MEET THE REQUIREMENTS OF TABLE A THE MATERIAL CAN BE CORRECTED IN PLACE OR REMOVED AND REPLACED WITH MATERIAL THAT MEET THE REQUIREMENTS OF TABLE A.
3. IN THE EVENT THAT RECYCLED MATERIAL IS USE IT MUST MEET MNDOT REQUIREMENTS FOR RECYCLED BASE.

APPROVED: 2 – 2003	City of RAMSEY	STANDARD DETAILS: MODIFIED CLASS 5 SPECIFICATIONS
		CITY PLATE No. STR–26

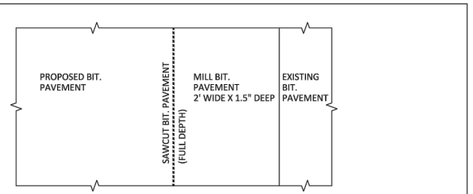


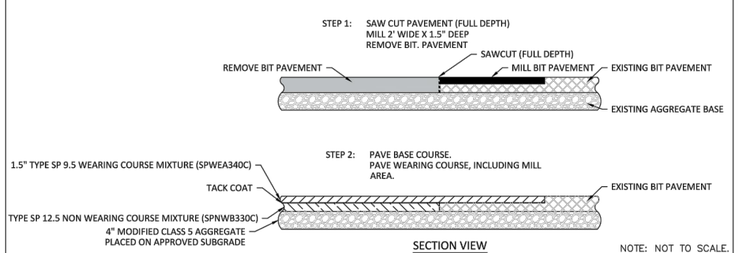
NOTE: NOT TO SCALE

NOTES:
1. WITH REMOVAL OF EXISTING CURB AT A STREET, MILL BITUMINOUS TO A DEPTH OF 1.5" AND A WIDTH OF 18" IN EXISTING STREET.
2. TO BE USED WHENEVER CROSS DRAINAGE IS < 2%.
3. CONCRETE CURB AND GUTTER SHALL BE CAST INTEGRAL WITH CONCRETE CROSS GUTTER AREA.
4. CONCRETE CURB AND GUTTER SHALL BE PAID SEPARATELY FROM CONCRETE CROSS GUTTER AREA.

APPROVED: 3 – 2017	City of RAMSEY	STANDARD DETAILS: CROSS GUTTER
		CITY PLATE No. STR–2

NOTES:
1. BITUMINOUS SHALL BE SAWCUT AND REMOVED
2. CLASS 5 AND BITUMINOUS COURSES SHALL BE MECHANICALLY COMPACTED.
3. SEE CITY PLATE STR–26 FOR MODIFIED CLASS 5 SPECIFICATIONS.





NOTE: NOT TO SCALE.

APPROVED: 3 – 2017	City of RAMSEY	CITY PLATE No. STR–31	STANDARD DETAILS: STREET TIE-IN

MNDOT STANDARD PLATES

THESE STANDARD PLATES AS APPROVED BY THE FHWA SHALL APPLY

PLATE NO.	DESCRIPTION
3007 E	SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES
3100 G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
4011 E	PRECAST CONCRETE BASE
4022 A	MANHOLE OR CATCH BASIN COVER (3FT. X 2FT. OPENING)
4026 A	CONCRETE ENCASED CONCRETE ADJUSTING RINGS
4108 F	ADJUSTING RINGS FOR CATCH BASINS AND MANHOLES
4180 J	MANHOLE OR CATCH BASIN STEP
7100 H	CONCRETE CURB AND GUTTER DESIGN B AND DESIGN V
8000 J	CHANNELIZERS (3 SHEETS)

DATE	REVISION

Apr 11, 2017 - 3:11pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 - Ramsey to Bunker\Plan Drawings\Details.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE W. WESTBY
Date 4/11/17 Lic. No. 40116

DESIGNED BY: JJF	
DRAWN BY: JJF	DATE: 4/11/17
CHECKED BY: BRW	FILE No. 17-00

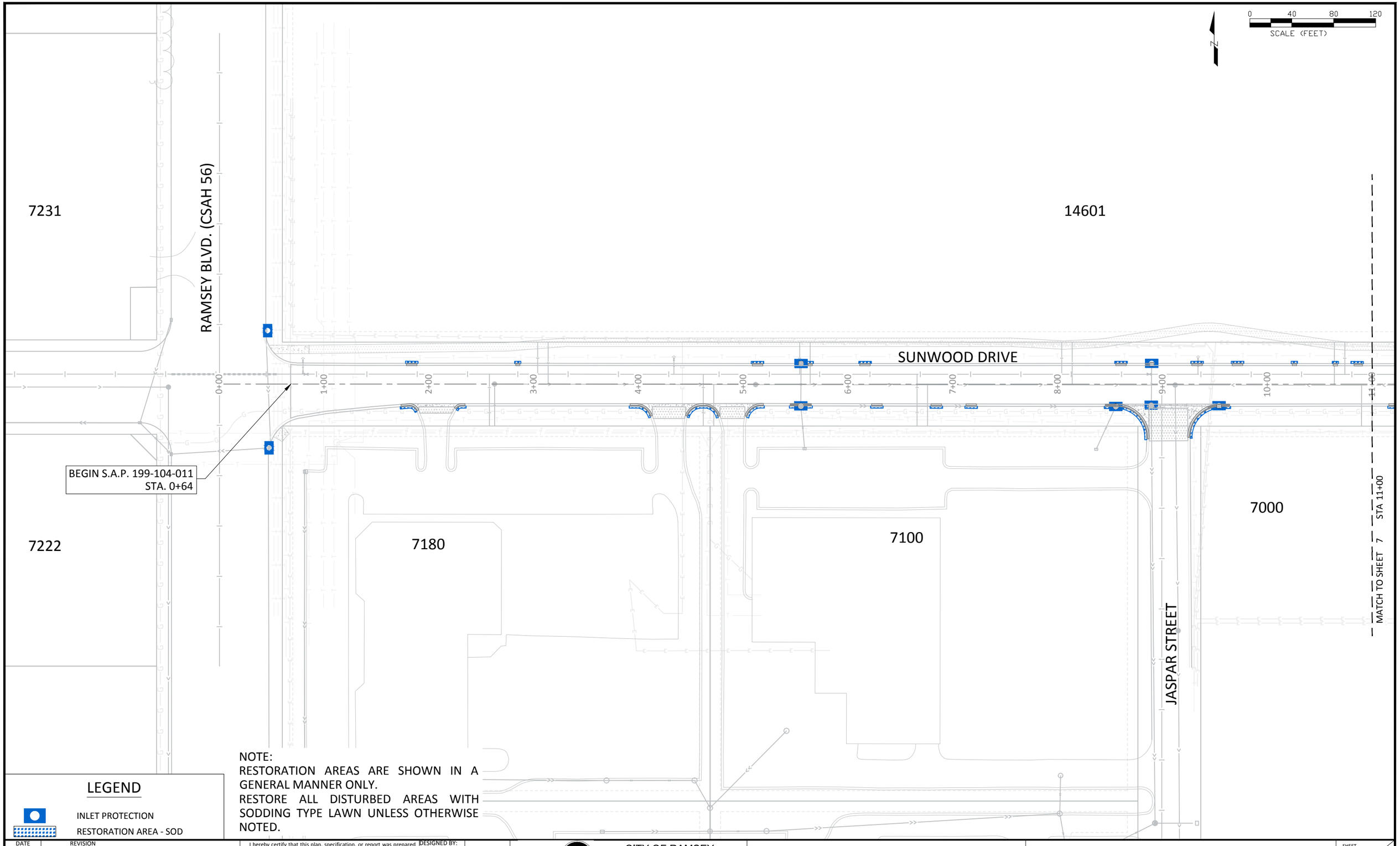
City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

DETAILS
S.A.P. 199-104-011

SUNWOOD DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-00
CITY OF RAMSEY, MINNESOTA

SHEET 5 OF 18 SHEETS



NOTE:
RESTORATION AREAS ARE SHOWN IN A GENERAL MANNER ONLY.
RESTORE ALL DISTURBED AREAS WITH SODDING TYPE LAWN UNLESS OTHERWISE NOTED.

LEGEND

INLET PROTECTION

RESTORATION AREA - SOD

DATE	REVISION

Apr 11, 2017 - 3:12pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 - Ramsey to Bunker\Plan Drawings\Erosion Control Plan.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE W. WESTBY
Date 4/11/17 Lic. No. 40116

DESIGNED BY:	JJF		
DRAWN BY:	JJF	DATE:	4/11/17
CHECKED BY:	BRW	FILE No.	17-00

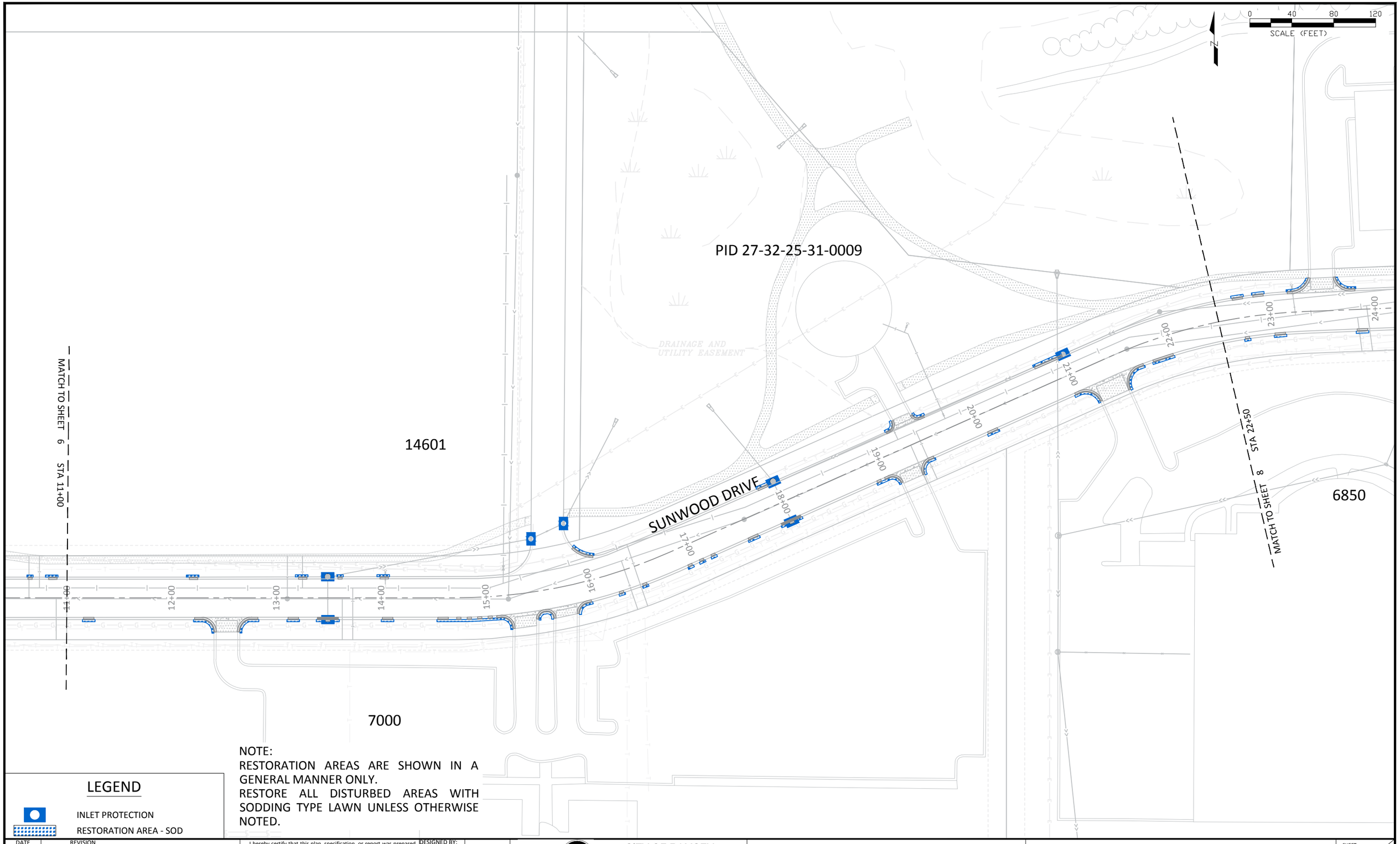
City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

EROSION CONTROL AND RESTORATION
S.A.P. 199-104-011

SUNWOOD DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-00
CITY OF RAMSEY, MINNESOTA

SHEET 6 OF 18 SHEETS



NOTE:
RESTORATION AREAS ARE SHOWN IN A GENERAL MANNER ONLY.
RESTORE ALL DISTURBED AREAS WITH SODDING TYPE LAWN UNLESS OTHERWISE NOTED.

LEGEND

INLET PROTECTION

RESTORATION AREA - SOD

DATE	REVISION

Apr 11, 2017 - 3:12pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 - Ramsey to Bunker\Plan Drawings\Erosion Control Plan.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE W. WESTBY
Date 4/11/17 Lic. No. 40116

DESIGNED BY:	JJF
DRAWN BY:	JJF
DATE:	4/11/17
CHECKED BY:	BRW
FILE No.	17-00

City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

EROSION CONTROL AND RESTORATION
S.A.P. 199-104-011

SUNWOOD DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-00
CITY OF RAMSEY, MINNESOTA

SHEET 7 OF 18 SHEETS

0 40 80 120
SCALE (FEET)

N

MATCH TO SHEET 7 STA 22+50

DRAINAGE AND UTILITY EASEMENT

PID 27-32-25-42-0005

6825

END S.A.P. 199-104-011
STA. 30+33

SUNWOOD DRIVE

22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 31+07

BUNKER LAKE BLVD (CSAH 116)

6690

6850

PID 27-32-25-42-0006

NOTE:
RESTORATION AREAS ARE SHOWN IN A GENERAL MANNER ONLY.
RESTORE ALL DISTURBED AREAS WITH SODDING TYPE LAWN UNLESS OTHERWISE NOTED.

LEGEND

INLET PROTECTION

HYDROSEED RESTORATION AREA

DATE	REVISION

Apr 11, 2017 - 3:12pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 - Ramsey to Bunker\Plan Drawings\Erosion Control Plan.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE W. WESTBY
Date 4/11/17 Lic. No. 40116

DESIGNED BY:	JJF	
DRAWN BY:	JJF	DATE: 4/11/17
CHECKED BY:	BRW	FILE No. 17-00

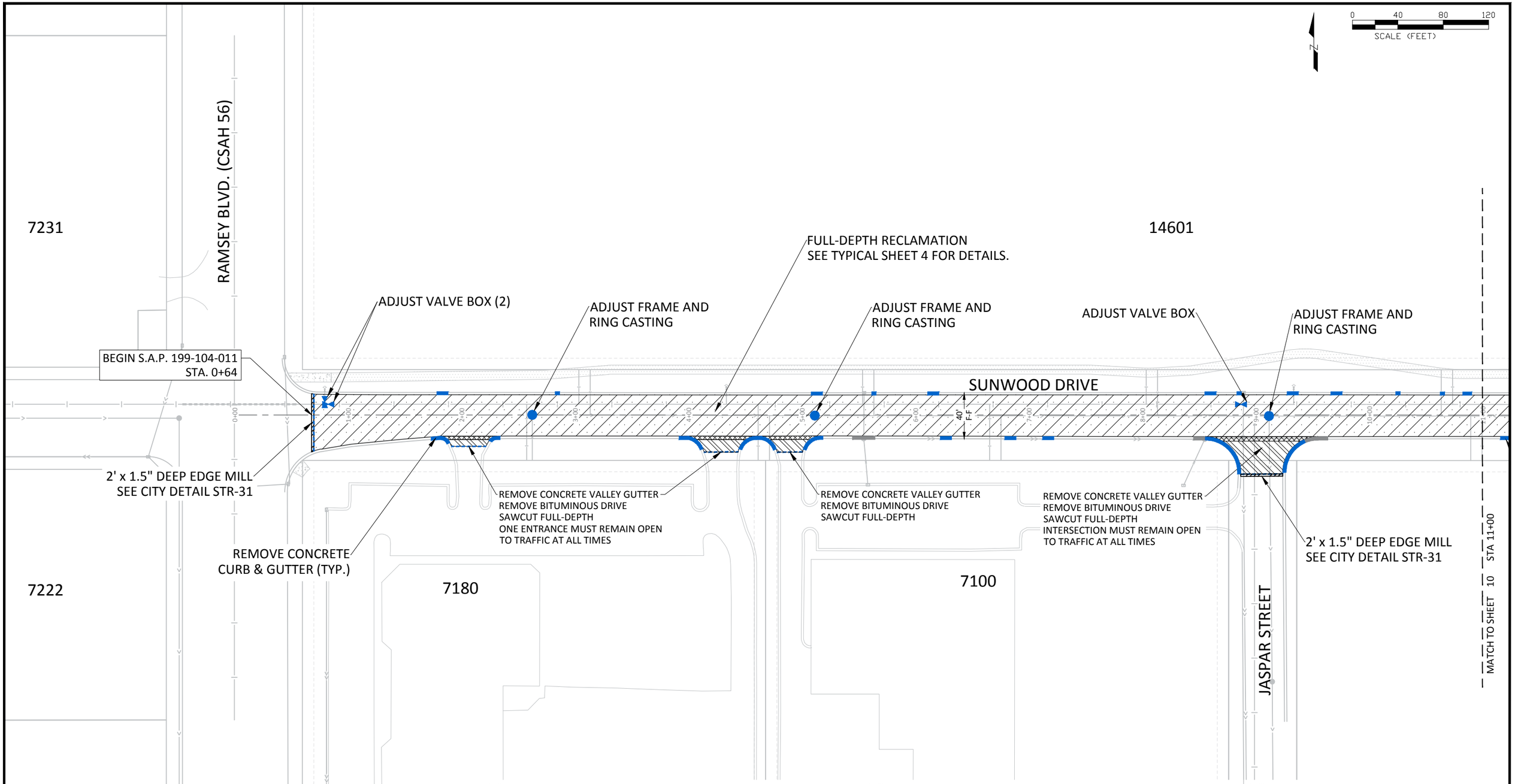
City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

EROSION CONTROL AND RESTORATION
S.A.P. 199-104-011

SUNWOOD DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-00
CITY OF RAMSEY, MINNESOTA

SHEET 8 OF 18 SHEETS



LEGEND

- ADJUST VALVE BOX
- ADJUST FRAME AND RING CASTING
- REMOVE CURB & GUTTER
- SAWCUT - FULL DEPTH
- MILL & RECLAIM PAVEMENT
- EDGE MILL BITUMINOUS PAVEMENT
- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE VALLEY GUTTER

NOTE:

1. ALL DRIVEWAY REMOVALS MUST BE SAWCUT.
2. CONCRETE CURB AND GUTTER REMOVALS ARE SHOWN IN AN APPROXIMATE WAY ONLY.
3. 4' MINIMUM CURB AND GUTTER REMOVAL LENGTH.

NOTE:

4. CONCRETE CURB AND GUTTER REMOVALS WILL BE MARKED IN THE FIELD BY CITY STAFF. ALL REMOVALS MUST BE SAWCUT.
5. PROTECT LANDSCAPING AND IRRIGATION. PROPERTY OWNERS ARE TO LOCATE AND MOVE IRRIGATION BEFORE CONSTRUCTION.

NOTE:

6. A FULL WATER TRUCK SHALL BE ON-SITE AT ALL TIMES FOR DUST CONTROL.
7. CONTRACTOR SHALL PLACE MIN 6" RECLAIM MATERIAL UNDER REPLACEMENT CURB & GUTTER AND VALLEY GUTTER.

DATE	REVISION

Apr 11, 2017 - 3:12pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 - Ramsey to Bunker\Plan Drawings\Removals.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

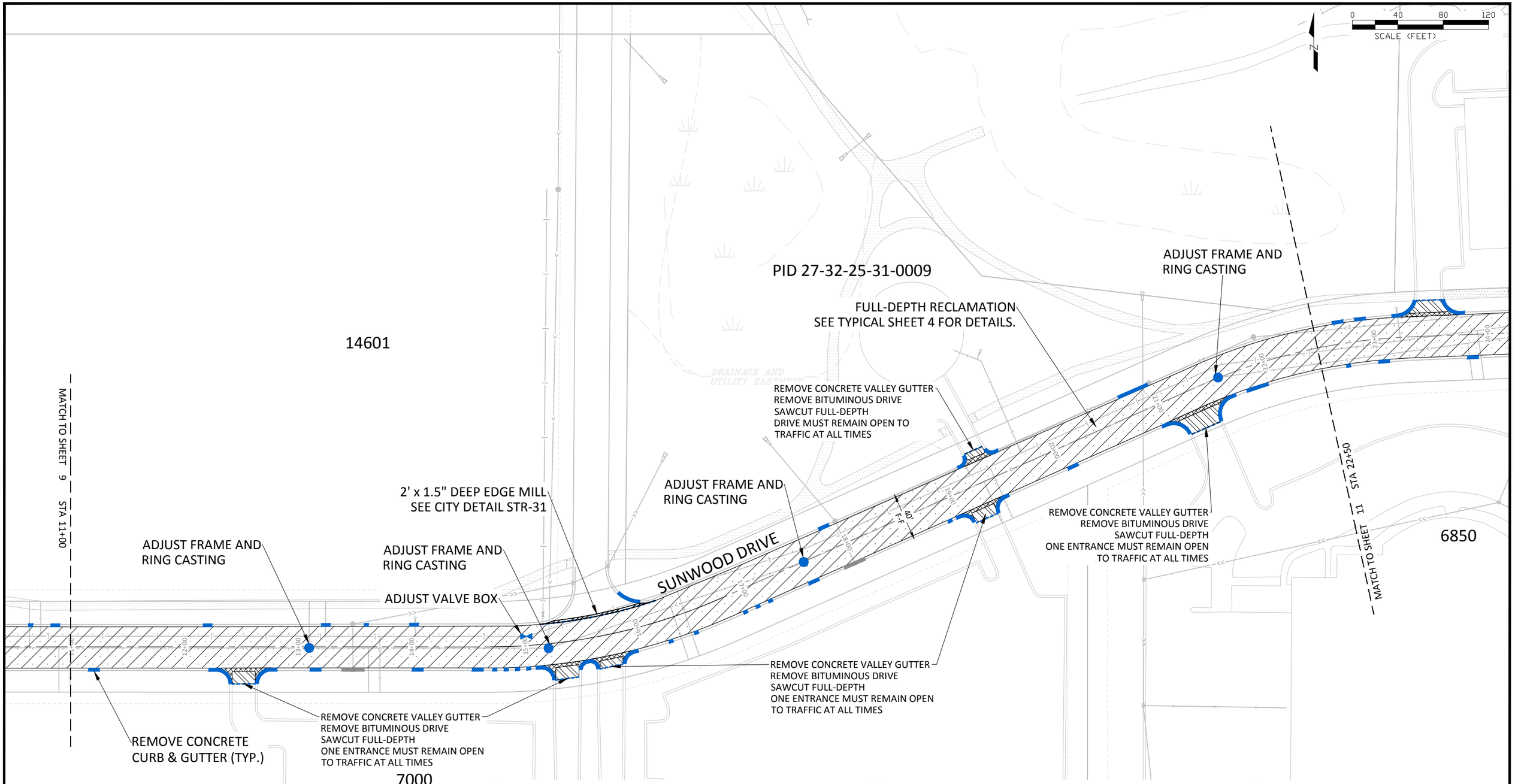
BRUCE W. WESTBY
Date 4/11/17 Lic. No. 40116

DESIGNED BY:	JJF	
DRAWN BY:	JJF	DATE: 4/11/17
CHECKED BY:	BRW	FILE No. 17-00

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

REMOVALS
S.A.P. 199-104-011

SUNWOOD DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-00
CITY OF RAMSEY, MINNESOTA



LEGEND

- ADJUST VALVE BOX
- ADJUST FRAME AND RING CASTING
- REMOVE CURB & GUTTER
- SAWCUT - FULL DEPTH
- RECLAIM BITUMINOUS PAVEMENT
- EDGE MILL BITUMINOUS PAVEMENT
- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE VALLEY GUTTER

NOTE:
1. ALL DRIVEWAY REMOVALS MUST BE SAWCUT.
2. CONCRETE CURB AND GUTTER REMOVALS ARE SHOWN IN AN APPROXIMATE WAY ONLY.
3. 4' MINIMUM CURB AND GUTTER REMOVAL LENGTH.

NOTE:
4. CONCRETE CURB AND GUTTER REMOVALS WILL BE MARKED IN THE FIELD BY CITY STAFF. ALL REMOVALS MUST BE SAWCUT.
5. PROTECT LANDSCAPING AND IRRIGATION. PROPERTY OWNER ARE TO LOCATE AND MOVE IRRIGATION BEFORE CONSTRUCTION.

NOTE:
6. A FULL WATER TRUCK SHALL BE ON-SITE AT ALL TIMES FOR DUST CONTROL.
7. CONTRACTOR SHALL PLACE MIN. 6" RECLAIM MATERIAL UNDER REPLACEMENT CURB & GUTTER AND VALLEY GUTTER.

DATE	REVISION

Apr 11, 2017 - 3:13pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 - Ramsey to Bunker\Plan Drawings\Removals.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE W. WESTBY
Date 4/11/17 Lic. No. 40116

DESIGNED BY:	JJF	
DRAWN BY:	JJF	DATE: 4/11/17
CHECKED BY:	BRW	FILE No. 17-00

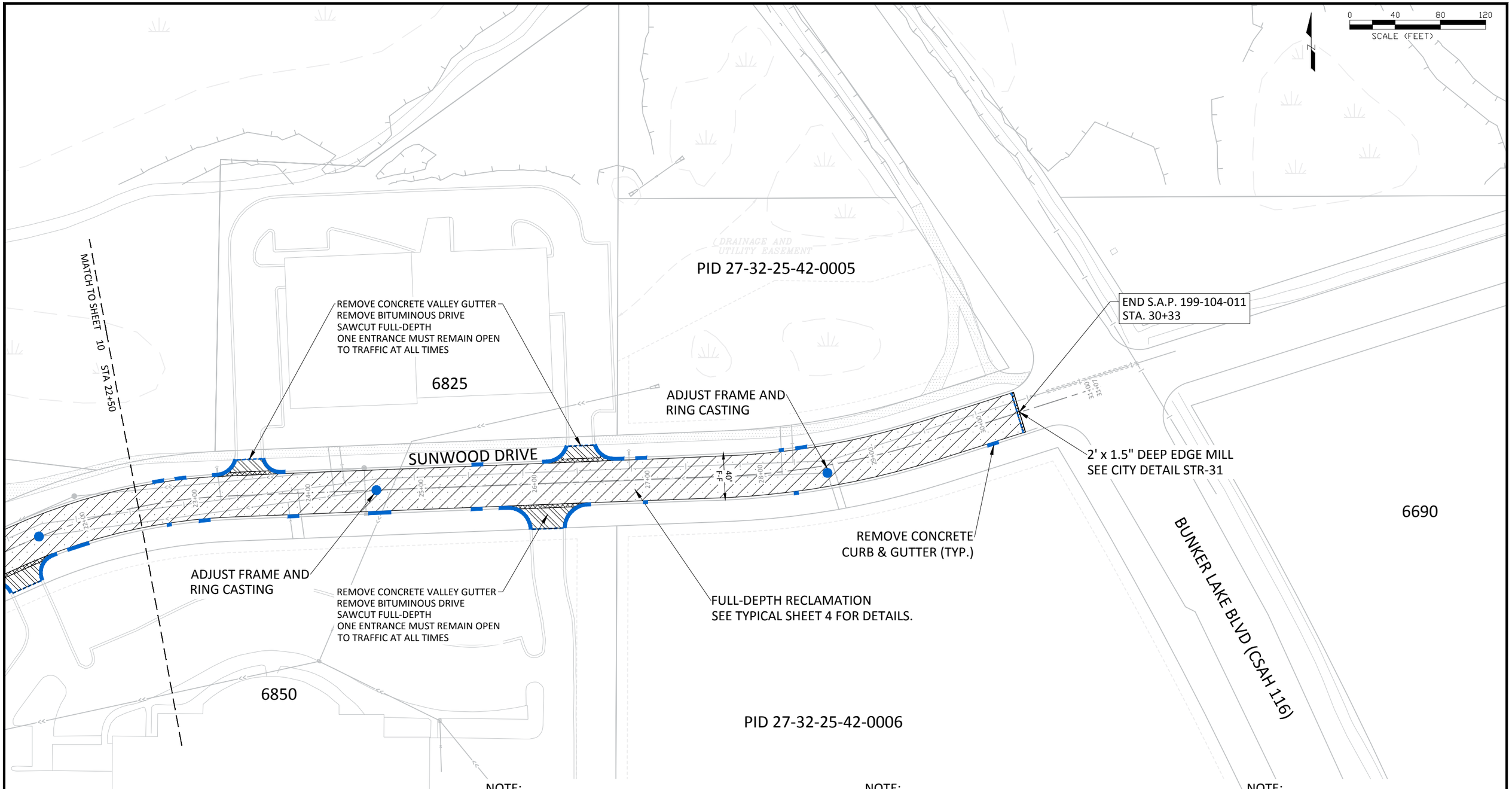
City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

REMOVALS
S.A.P. 199-104-011

SUNWOOD DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-00
CITY OF RAMSEY, MINNESOTA

SHEET 10 OF 18 SHEETS



LEGEND

- ADJUST VALVE BOX
- ADJUST FRAME AND RING CASTING
- REMOVE CURB & GUTTER
- SAWCUT - FULL DEPTH
- RECLAIM BITUMINOUS PAVEMENT
- EDGE MILL BITUMINOUS PAVEMENT
- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE VALLEY GUTTER

NOTE:
1. ALL DRIVEWAY REMOVALS MUST BE SAWCUT.
2. CONCRETE CURB AND GUTTER REMOVALS ARE SHOWN IN AN APPROXIMATE WAY ONLY.
3. 4' MINIMUM CURB AND GUTTER REMOVAL LENGTH.

NOTE:
4. CONCRETE CURB AND GUTTER REMOVALS WILL BE MARKED IN THE FIELD BY CITY STAFF. ALL REMOVALS MUST BE SAWCUT.
5. PROTECT LANDSCAPING AND IRRIGATION. PROPERTY OWNERS ARE TO LOCATE AND MOVE IRRIGATION BEFORE CONSTRUCTION.

NOTE:
6. A FULL WATER TRUCK SHALL BE ON-SITE AT ALL TIMES FOR DUST CONTROL.
7. CONTRACTOR SHALL PLACE MIN. 6" RECLAIM MATERIAL UNDER REPLACEMENT CURB & GUTTER AND VALLEY GUTTER.

DATE	REVISION

Apr 11, 2017 - 3:13pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 - Ramsey to Bunker\Plan Drawings\Removals.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

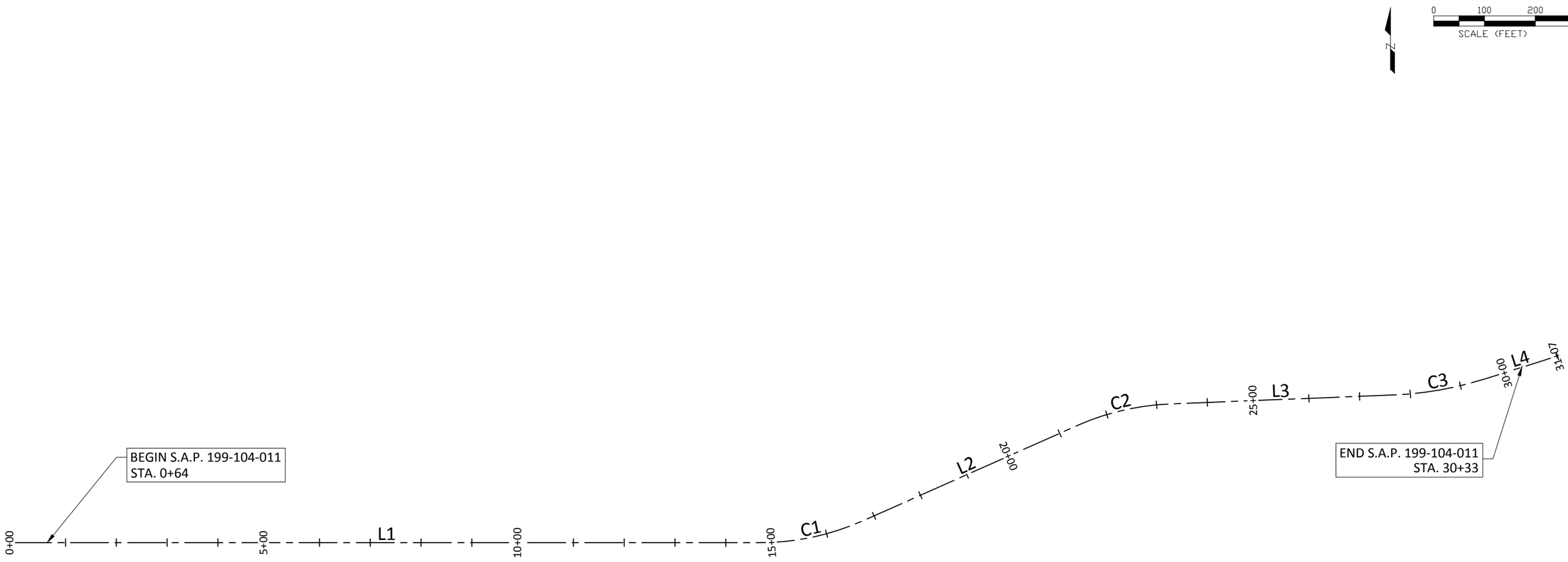
BRUCE W. WESTBY
Date 4/11/17 Lic. No. 40116

DESIGNED BY:	JJF		
DRAWN BY:	JJF	DATE:	4/11/17
CHECKED BY:	BRW	FILE No.	17-00

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

REMOVALS
S.A.P. 199-104-011

SUNWOOD DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-00
CITY OF RAMSEY, MINNESOTA



LINE TABLE: ALIGNMENTS				
LINE #	LENGTH	DIRECTION	START POINT	END POINT
L1	1466.30'	S89° 59' 39.40"E	(452839.9792,171922.0222)	(454306.2794,171921.8757)
L2	460.29'	N66° 02' 59.90"E	(454510.8018,171965.2444)	(454931.4643,172152.0960)
L3	436.52'	N87° 43' 09.94"E	(455115.6220,172195.0027)	(455551.7952,172212.3731)
L4	155.69'	N72° 29' 35.16"E	(455736.2506,172244.5449)	(455884.7268,172291.3789)

CURVE TABLE: ALIGNMENTS						HORZ. CURVE DESIGN		
CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT	DESIGN SPEED	RATE OF (e)	MIN. RADIUS
C1	503.701	210.601	N78° 01' 40.25"E	(454306.2794,171921.8757)	(454510.8018,171965.2444)	40 MPH	NORMAL CROWN	667
C2	502.961	190.222	N76° 53' 04.92"E	(454931.4643,172152.0960)	(455115.6220,172195.0027)	40 MPH	NORMAL CROWN	667
C3	706.651	187.792	N80° 06' 22.55"E	(455551.7952,172212.3731)	(455736.2506,172244.5449)	40 MPH	NORMAL CROWN	667

VERTICAL CURVE DESIGN

CREST VERTICAL CURVES DESIGN SPEED 40 MPH
MINIMUM CURVE LENGTH, (A < 4.4) - 120'

SAG VERTICAL CURVES DESIGN SPEED 40 MPH
MINIMUM CURVE LENGTH, (A < 3.0) - 120'

DATE	REVISION

Apr 11, 2017 - 3:13pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 - Ramsey to Bunker\Plan Drawings\Alignment Layout.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE W. WESTBY
Date 4/11/17 Lic. No. 40116

DESIGNED BY:	
JJF	
DRAWN BY:	DATE:
JJF	4/11/17
CHECKED BY:	FILE No.
BRW	17-00

City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

ALIGNMENT LAYOUT
S.A.P. 199-104-011

SUNWOOD DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-00
CITY OF RAMSEY, MINNESOTA

SHEET 12 OF 18 SHEETS

0 40 80 120
SCALE (FEET)

N

NOTE:
CONCRETE CURB AND GUTTER AND CONCRETE VALLEY GUTTER ARE HIGH EARLY (HE) CONCRETE.

7231

RAMSEY BLVD. (CSAH 56)

14601

MATCH TO SHEET 14 STA 11+00

BEGIN S.A.P. 199-104-011
STA. 0+64

CBMH 204A
GROUT CATCH BASIN

CBMH 203
RESET CASTING (TYP.)

CBMH 203A
GROUT CATCH BASIN

SUNWOOD DRIVE

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00

40' F-F

CONCRETE CROSS GUTTER (TYP.)
BITUMINOUS PAVEMENT (MATCH EXISTING).
ONE ENTRANCE SHALL REMAIN OPEN TO
TRAFFIC AT ALL TIMES.

CBMH 204
RESET CASTING (TYP.)

CONCRETE CROSS GUTTER (TYP.)
BITUMINOUS PAVEMENT (MATCH EXISTING).

CBMH 203B
REST CASTING (TYP.)

R 30'

R 30'

CB 203C
RESET CASTING (TYP.)

CONCRETE CROSS GUTTER (TYP.)
BITUMINOUS PAVEMENT (MATCH EXISTING).
INTERSECTION SHALL REMAIN OPEN TO
TRAFFIC AT ALL TIMES.

7222

7180

7100

JASPAR STREET

7000

LEGEND

- CONCRETE VALLEY GUTTER
- BITUMINOUS PAVEMENT
- PROPOSED CURB & GUTTER
- CATCH BASIN MANHOLE
- 2 X 3 CATCH BASIN
- WATERMAIN VALVE
- SANITARY MANHOLE

THE LOCACTIONS OF EXISTING UNDERGROUND UTILITES ARE SHOWN IN AN APPROXIMATE WAY ONLY. IT IS NOT GUARANTEED ANY OR ALL EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTE: THE FIRST 10' OF CONCRETE CURB AND GUTTER REPLACEMENT ON EACH SIDE OF THE CATCH BASIN IS INCIDENTAL TO THE RESET CATCH BASIN CASTING PAY ITEM.

NOTE: CONTRACTOR SHALL PLACE 6" OF RECLAIM MATERIAL UNDER REPLACEMENT CONCRETE CURB & GUTTER TO 6" BEHIND CURB. CONTRACTOR SHALL PLACE 8" OF RECLAIM MATERIAL UNDER CONCRETE VALLEY GUTTERS. SEE PAY ITEM NOTE No.8 SHEET 3.

DATE	REVISION

Apr 11, 2017 - 3:14pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 - Ramsey to Bunker\Plan Drawings\Street and Storm.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE W. WESTBY
Date 4/11/17 Lic. No. 40116

DESIGNED BY:	JJF	
DRAWN BY:	JJF	DATE: 4/11/17
CHECKED BY:	BRW	FILE No. 17-00

City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

STREET AND STORM SEWER
S.A.P. 199-104-011

SUNWOOD DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-00
CITY OF RAMSEY, MINNESOTA

SHEET 13 OF 18 SHEETS

0 40 80 120
SCALE (FEET)

N

MATCH TO SHEET 13 STA 11+00

14601

PID 27-32-25-31-0009

NOTE:
CONCRETE CURB AND GUTTER AND CONCRETE VALLEY GUTTER ARE HIGH EARLY (HE) CONCRETE.

CBMH 304
GROUT CATCH BASIN

ENTRANCE SHALL REMAIN OPEN TO TRAFFIC AT ALL TIMES.

CBMH 402
GROUT CATCH BASIN

CONCRETE CROSS GUTTER (TYP.)
BITUMINOUS PAVEMENT (MATCH EXISTING).
ENTRANCE SHALL REMAIN OPEN TO TRAFFIC AT ALL TIMES.

CBMH 403
GROUT CATCH BASIN

SUNWOOD DRIVE

40' F-F

11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00

CB 305
RESET CASTING (TYP.)

CB 402A
RESET CASTING (TYP.)

CONCRETE CROSS GUTTER (TYP.)
BITUMINOUS PAVEMENT (MATCH EXISTING).
ONE ENTRANCE SHALL REMAIN OPEN TO TRAFFIC AT ALL TIMES.

CONCRETE CROSS GUTTER (TYP.)
BITUMINOUS PAVEMENT (MATCH EXISTING).
ONE ENTRANCE SHALL REMAIN OPEN TO TRAFFIC AT ALL TIMES.

CONCRETE CROSS GUTTER (TYP.)
BITUMINOUS PAVEMENT (MATCH EXISTING).
ONE ENTRANCE SHALL REMAIN OPEN TO TRAFFIC AT ALL TIMES.

7000

6850

MATCH TO SHEET 15 STA 22+50

LEGEND

- CONCRETE VALLEY GUTTER
- BITUMINOUS PAVEMENT
- PROPOSED CURB & GUTTER
- CATCH BASIN MANHOLE
- 2 X 3 CATCH BASIN
- WATERMAIN VALVE
- SANITARY MANHOLE

THE LOCACTIONS OF EXISTING UNDERGROUND UTILITES ARE SHOWN IN AN APPROXIMATE WAY ONLY. IT IS NOT GUARANTEED ANY OR ALL EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTE: THE FIRST 10' OF CONCRETE CURB AND GUTTER REPLACEMENT ON EACH SIDE OF THE CATCH BASIN IS INCIDENTAL TO THE RESET CATCH BASIN CASTING PAY ITEM.

NOTE: CONTRACTOR SHALL PLACE 6" OF RECLAIM MATERIAL UNDER REPLACEMENT CONCRETE CURB & GUTTER TO 6" BEHIND CURB. CONTRACTOR SHALL PLACE 8" OF RECLAIM MATERIAL UNDER CONCRETE VALLEY GUTTERS. SEE PAY ITEM NOTE No.8 SHEET 3.

DATE	REVISION

Apr 11, 2017 - 3:14pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 - Ramsey to Bunker\Plan Drawings\Street and Storm.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE W. WESTBY
Date 4/11/17 Lic. No. 40116

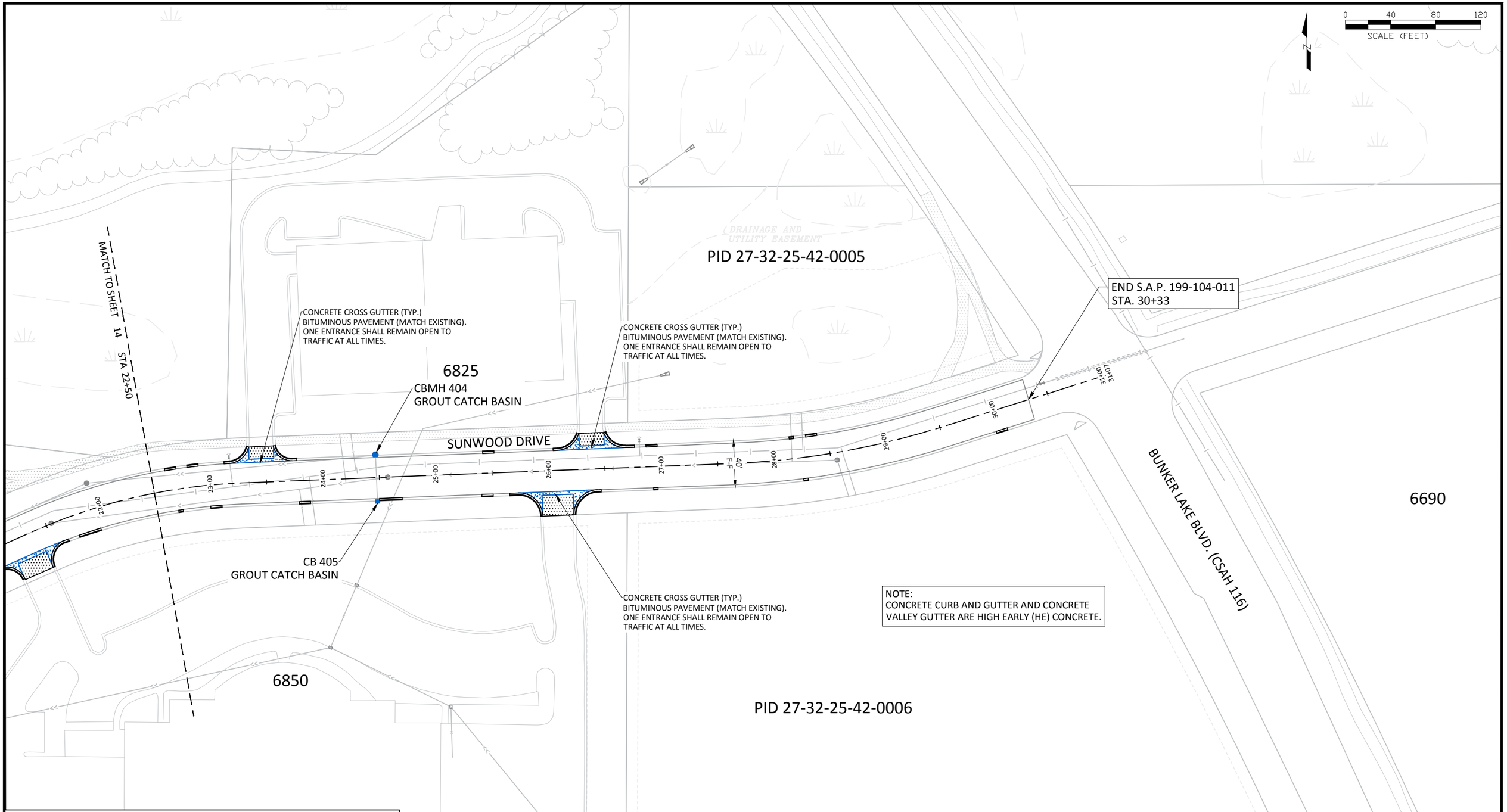
DESIGNED BY:	JJF		
DRAWN BY:	JJF	DATE:	4/11/17
CHECKED BY:	BRW	FILE No.	17-00

City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

STREET AND STORM SEWER
S.A.P. 199-104-011

SUNWOOD DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-00
CITY OF RAMSEY, MINNESOTA



LEGEND

- CONCRETE VALLEY GUTTER
- BITUMINOUS PAVEMENT
- PROPOSED CURB & GUTTER
- CATCH BASIN MANHOLE
- 2 X 3 CATCH BASIN
- WATERMAIN VALVE
- SANITARY MANHOLE

THE LOCACTIONS OF EXISTING UNDERGROUND UTILITES ARE SHOWN IN AN APPROXIMATE WAY ONLY. IT IS NOT GUARANTEED ANY OR ALL EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTE: THE FIRST 10' OF CONCRETE CURB AND GUTTER REPLACEMENT ON EACH SIDE OF THE CATCH BASIN IS INCIDENTAL TO THE RESET CATCH BASIN CASTING PAY ITEM.

NOTE: CONTRACTOR SHALL PLACE 6" OF RECLAIM MATERIAL UNDER REPLACEMENT CONCRETE CURB & GUTTER TO 6" BEHIND CURB. CONTRACTOR SHALL PLACE 8" OF RECLAIM MATERIAL UNDER CONCRETE VALLEY GUTTERS. SEE PAY ITEM NOTE No.8 SHEET 3.

DATE	REVISION

Apr 11, 2017 - 3:14pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 - Ramsey to Bunker\Plan Drawings\Street and Storm.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE W. WESTBY
Date 4/11/17 Lic. No. 40116

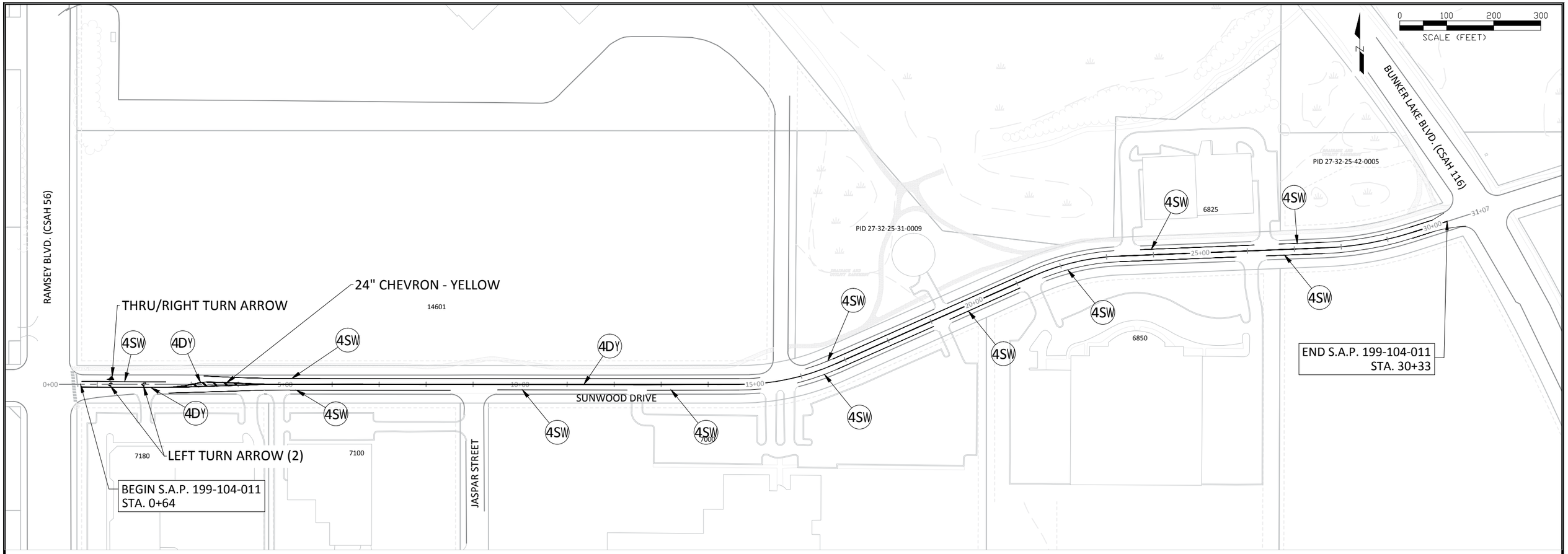
DESIGNED BY:	JJF		
DRAWN BY:	JJF	DATE:	4/11/17
CHECKED BY:	BRW	FILE No.	17-00

City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

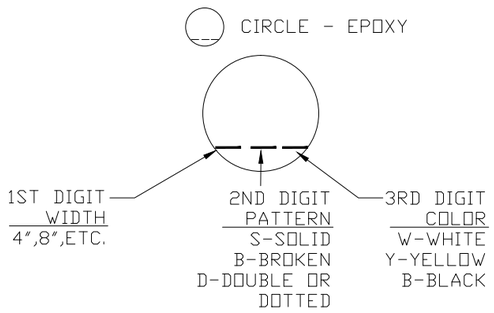
STREET AND STORM SEWER
S.A.P. 199-104-011

SUNWOOD DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-00
CITY OF RAMSEY, MINNESOTA



STRIPING SUMMARY					
LINE	SEGMENT NO.	START STATION	END STATION	LENGTH (FEET)	KEY
CENTERLINE	1. CL	0+70	4+55	389	4, D, Y
	2. CL	2+58	4+55	197	4, D, Y
	3. CL	4+55	30+64	2577	4, D, Y
ISLAND CHEVRON	1. CL CHV	2+87	4+19	50	24, S, Y
EASTBOUND FOGLINE	1. E	2+52	8+52	600	4, S, W
	2. E	9+52	12+28	275	4, S, W
	3. E	12+70	15+12	243	4, S, W
	4. E	15+89	19+01	314	4, S, W
	5. E	19+39	21+02	164	4, S, W
	6. E	21+55	25+76	417	4, S, W
	7. E	26+40	30+67	432	4, S, W
WESTBOUND FOGLINE	1. W	3+27	15+12	1184	4, S, W
	2. W	16+12	23+17	708	4, S, W
	3. W	23+72	26+15	243	4, S, W
	4. W	26+68	30+32	361	4, S, W
WESTBOUND TURNLANE	1. W TURN	0+67	2+46	179	4, S, W
		TOTALS	4, S, W	5120	LIN. FT.
			4, D, Y	3163	LIN. FT.
			24" CHEVRON	50	LIN. FT.

STRIPING KEY & LEGEND



EXAMPLE: (4SW) = 4" SOLID WHITE - EPOXY

PERMANENT PAVEMENT MARKING GENERAL NOTES AND GUIDELINES:

1. THE ENGINEER'S INVOLVEMENT IN THE APPLICATION OF THE MATERIAL SHALL BE LIMITED TO FIELD CONSULATATION AND INSPECTION. THE CONTRACTOR WILL PLACE NECESSARY "SPOTTING" AT APPROPRIATE POINTS TO PROVIDE HORIZONTAL CONTROL FOR STRIPING TO DETERMINE NECESSARY STARTING AND CUTOFF POINTS. LONGITUDINAL JOINTS, PAVEMENT EDEGES AND EXISTING MARKINGS MAY SERVE AS HORIZONTAL CONTROL WHEN SO DIRECTED.
2. EDGE LINES AND LANE LINES ARE TO BE BROKEN ONLY AT INTERSECTIONS WITH PUBLIC ROADS AND AT PRIVATE ENTRANCES IF THEY ARE CONTROLLED BY A YIELD SIGN, STOP SIGN OR TRAFFIC SIGNAL. THE BREAK POINT IS TO BE AT THE START OF THE RADIUS FOR THE INTERSECTION OR AT MARKED STOP LINES OR CROSSWALKS.
3. TOLERANCE OF $\frac{1}{4}$ INCH UNDER OR $\frac{1}{4}$ OVER THE SPECIFIED WIDTH WILL BE ALLOWED FOR STRIPING PROVIDED THE VARIATION IS GRADUAL AND DOES NOT DETRACT FROM THE GENERAL APPEARANCE. BROKEN LINE SEGMENTS MAY VARY UP TO $\frac{1}{2}$ FOOT FROM THE SPECIFIED LENGTHS PROVIDED THE OVER AND UNDER VARIATIONS ARE REASONABLY COMPENSATORY. ALIGNMENT DEVIATIONS FROM THE CONTROL GUIDE SHALL NOT EXCEED 1 INCH. MATERIAL SHALL NOT BE APPLIED OVER LONGITUDINAL JOINTS. ESTABLISHMENT OF APPLICATION TOLERANCES SHALL NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY TO COMPLY AS CLOSELY AS PRACTICABLE WITH THE PLANNED DIMENSIONS.
4. THE ROAD SURFACE SHALL BE CLEANED AT THE DIRECTION OF THE ENGINEER JUST PRIOR TO APPLICATION. PAVEMENT CLEANING SHALL CONSIST OF AT LEAST BRUSHING WITH A ROTARY BROOM (NON-METALLIC) OR AS RECOMMENDED BY THE MATERIAL MANUFACTURER AND ACCEPTABLE TO THE ENGINEER. THIS WORK SHALL BE INCIDENTAL TO PAVEMENT MARKING.
5. THE EPOXY MARKING APPLICATION SHALL IMMEDIATELY FOLLOW THE PAVEMENT CLEANING. GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE EPOXY RESIN LINE TO PROVIDE AN IMMEDIATE NO-TRACK SYSTEM.
6. FOR 15 MIL APPLICATIONS, GLASS BEADS SHALL BE APPLIED AT A RATE OF AT LEAST 25 LB/GAL. THE "NO-TRACKING" CONDITION SHALL BE DETERMINED ON AN APPLICATION OF SPECIFIED THICKNESS TO THE PAVEMENT AND COVERED WITH GLASS BEADS AT THE RATE OF AT LEAST 25 LB/GAL.
7. OPERATIONS SHALL BE CONDUCTED ONLY WHEN THE ROAD PAVEMENT SURFACE TEMPERATURES ARE 50 DEGREES °F OR GREATER.
8. PERMANENT PAVEMENT MARKINGS SHALL NOT BE PLACED OVER TEMPORARY TAPE MARKINGS.

DATE	REVISION

Apr 11, 2017 - 3:15pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 - Ramsey to Bunker\Plan Drawings\Striping Plan.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE W. WESTBY
Date 4/11/17 Lic. No. 40116

DESIGNED BY:	JJF	
DRAWN BY:	JJF	DATE: 4/11/17
CHECKED BY:	BRW	FILE No. 17-00

City of RAMSEY
CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

STRIPING PLAN
S.A.P. 199-104-011

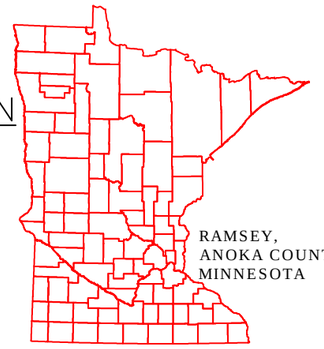
SUNWOOD DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-00
CITY OF RAMSEY, MINNESOTA

SHEET 16 OF 18 SHEETS

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

SUNWOOD DRIVE RECONSTRUCTION

CITY OF RAMSEY
ANOKA COUNTY, MINNESOTA



LEGEND

PROJECT LIMITS
SPECIAL WATER

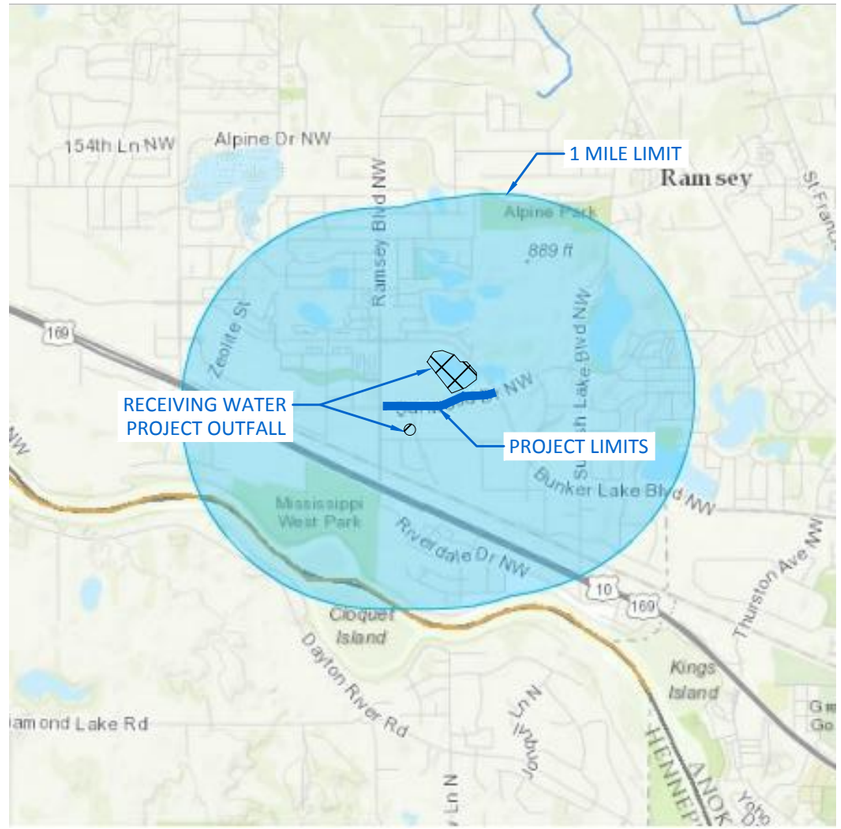
PROJECT AREAS
Total Project Size (disturbed area) = 2.72 acres
Existing area of impervious surfce = 2.66 acres
Post construction area of Impervious surface = 2.66 acres
New impervious surface area created = 0.00 acres

Planned Construction Start Date: June, 2017
Estimated Construction Completion Date: Oct, 2017

PERMANENT STORMWATER MANAGEMENT SYSTEM
Type of storm water management used if more than 1 acre of new impervious surface is created:
Wet Sedimentation Pond
Infiltration/ Filtration
Regional Pond
Permanent Stormwater Management Not Required

PROJECT LOCATION

County: ANOKA Township: 32 Range: 25 Section: 27 Latitude: 45.1357 Longitude: 93.2637



LOCATION OF SWPPP REQUIRMENETS IN PROJECT PLAN

DESCRIPTION	LOCATION
TEMPORARY EROSION CONTROL MEASURES	SHEETS NO. 6 - 8
FINAL STABILIZATION	SHEETS NO. 6 - 8
STORM SEWER TABULATION	SHEETS NO. 3
EROSION AND SEDIMENT CONTROL DETAILS	SHEETS NO. 5

RESPONSIBLE PARTIES
The Contractor and Owner must apply for coverage under the MPCA's General Storm Water Permit for Construction Activity as required by the National Pollution Discharge Elimination System (NPDES) Phase II program. Coverage under the permit will begin automatically 7 calendar days after the electronic submittal date or after the postmarked date of a complete application. (Longer time frames will apply to areas that disturb 50 acres or discharge within 1 mile of a special water)

	COMPANY	CONTACT PERSON	PHONE
OWNER:	CITY OF RAMSEY	BRUCE WESTBY, PE	763-433-9825
SWPPP DESIGNER:	CITY OF RAMSEY	LEONARD LINTON, PE	763-433-9834
CONTRACTOR:			
SITE MANAGER:			
PARTY RESPONSIBLE FOR LONG TERM O&M:	CITY OF RAMSEY	BRUCE WESTBY, PE	763-433-9825

Individuals listed above, including the SWPPP preparer, individual overseeing implementation of, revising and amending the SWPPP, individuals performing or supervising the installation, maintenance and repair of BMP's must be trained. At least one individual present on the permitted project, or available within 72 hours shall be trained in the applicable job duties. Documentation showing training commensurate with the job duties and responsibilities is required to be included in the SWPPP prior to any work beginning on the site. Copies of the SWPPP preparer information is included in the Project Manual. The contractor shall provide information for the individual(s) overseeing implementation, supervising installation, maintenance, and repair of BMP's to included in the Project Manual prior to the start of construction. This information shall be kept up to date until the project NOT is filed.

Documentation shall include:
a. Names of trained personnel associated with this project.
b. Dates of training, names of instructor(s) and entity providing training.
c. Content of training course or workshop including the number of hours trained.
d. As an alternative to a, b, and c listed above, a photocopy of the a current Erosion and Stormwater Management card issued by the University of Minnesota can be attached to the SWPPP as suitable documentation of training.

SPECIAL ENVIRONMENTAL CONSIDERATIONS:

Was an environmental review required for this project or any parr of a common plan of development or sale that includes all or any portion of this project?	NO
Does any portion of the site have the potential to affect threatened or endangered species?	NO
Does any portion of this site discharge to a Calcareous fen and the letter of approval from the DNR is located in the Project Manual?	NO
Will any portion of the site potentially affect properties listed on the National Register of Historic Places or a Known or discovered archeological site?	NO
Have any Karst features been identified in the project vicinity?	NO
Is compliance with temporary or permanent stormwater management design requirements infeasible for this project?	NO

GENERAL STORMWATER DISCHARGE REQUIREMENTS
All requirements listed in Part III of the permit for the design of permanent stormwater management system and discharge have been included in the preparation of this SWPPP. These include but are not limited to:
1. The expected amount, frequency, intensity and duration of precipitation.
2. The nature of stormwater runoff and run-on at the site.
3. Peak flow rates and stormwater volumes to minimize erosion at outlets and downstream channel and stream bank erosion.
4. The range of soil particle sizes expected to be present on the site.

CERTIFICATION:
LEONARD LINTON: DESIGN OF CONSTRUCTION SWPPP EXPIRES MAY 31, 2019
INSTRUCTOR UNIVERSITY MN EROSION & STORMWATER MANAGEMENT CERTIFICATION PROGRAM.

DESCRIPTION OF CONSTRUCTION ACTIVITIES AND STORMWATER MANAGEMENT:
Construction activities include: Site grading, storm sewer construction, temporary erosion and sediment control, roadway, and permanent stabilization.

Project description:
The project consists of rehabilitation of 0.56 miles of existing bituminous street, with the existing concrete curb and gutter remaining in-place. The drainage for the existing street flows to a storm water basin located relatively in the center of the project and another basin located south of the project. Storm water from these basins than flow through a series of ponds and storm sewer, eventually draining to the Mississippi River. There will be minor repairs to the existing storm sewer system, with no change to the outfalls. The system is designed to handle the 2.5 inch rainfall and rate control.

DOCUMENT RETENTION
The following documentation will be retained for a period of not less than 3-years from the date of submittal of the NOT in compliance with Part III.E of the permit.
1. The final SWPPP
2. Copies of all stormwater related permits required for the project
3. Records of all inspection and maintenance conducted during construction
4. Copies of all permanent operation and maintenance agreements; including all right-of-way, contracts, covenants and other binding requirements regarding perpetual maintenance, and
5. All required calculations for design of temporary and permanent BMPs.

RECEIVING WATERS
Receiving waters, including surface water, wetlands, Public Waters, and stormwater ponds, are identified on the USGS 7.5min quad map within 1 mile of the project boundary. Receiving waters that are impaired, the impairment and WLA are listed as follows. All specific BMPs relative to construction activities listed in this permit for special and impaired waters have been incorporated into this plan. All specific BMPs listed in approved TMDLs and those BMPs listed for construction related waste load allocations have also been incorporated.

NAME OF WATER BODY	TYPE (ditch, pond, wetland, lake, etc.)	APPENDIX A SPECIAL WATER?	FLOWS TO IMPAIRED WATER WITHIN 1 MILE?	USEPA APPROVED TMDL?
NONE	N/A	NO	NO	NO
N/A				

IMPLEMENTATION SCHEDULE AND PHASING
1. Furnish & install perimeter sediment control, inlet protection and construction exit.
2. Rough grade site
3. Reset and Grout storm structures
4. Furnish & install concrete curb, bituminous pavement.
5. Add additional temporary BMPs as necessary during construction based on inspection reports
6. Submit Notice of Termination NOT to MPCA within 30 days of final stabilization.

EROSION PREVENTION PRACTICES

1. The permittee(s) must plan for and implement appropriate construction phasing, vegetative buffer strips, horizontal slope grading, and other construction practices that minimize erosion, so that the inspection and maintenance requirements are complied with. The location of areas not to be disturbed must be delineated (e.G. With flags, stakes, signs, silt fence, etc.) on the development site before work begins.

2. All exposed soil areas must be stabilized as soon as possible, but in no case later than 14 days after the construction area has temorarily or permanently ceased.

DATE	REVISION

Apr 11, 2017 - 3:15pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 - Ramsey to Bunker\Plan Drawings\SWPPP Plan.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/11/17 Lic. No. 40116

DESIGNED BY:	JJF		
DRAWN BY:	JJF	DATE:	4/11/17
CHECKED BY:	BRW	FILE No.	17-00

City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

SWPPP
S.A.P. 199-104-011

SUNWOOD DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-00
CITY OF RAMSEY, MINNESOTA

SHEET 17 OF 18 SHEETS

These areas include constructed storm water management pond side slopes, and any exposed soil areas with a positive slope to a storm water conveyance system, such as a curb and gutter system, storm sewer inlet, temporary or permanent drainage ditch or other natural or man made systems that discharge to a surface water.

3. The normal wetted perimeter of any temporary or permanent drainage ditch that drains water from a construction site, or diverts water around a site, must be stabilized within 200 lineal feet from the property edge, or from the point of discharge to any surface water. Stabilization must be completed within 24 hours of connecting to a surface water.

4. Pipe outlets must be provided with temporary or permanent energy dissipation within 24 hours of connection to a surface water.

5. All disturbed areas, except roadways, building areas, parking areas, islands and sidewalk, shall be restored with minimum 6 inches topsoil, seeded and mulched within 7 days of completion of site grading. Seeding shall be in accordance with mn/dot specification 2575 (c)100 lbs/acre (or approved equal). Dormant seeding areas shall be seeded and mulched in accordance with mn/dot specifications. Straw mulching quantity shall be two tons per acre. Where slopes exceed or equal 1:3, a polypropylene netting or wood fiber blanket shall be provided and staked over the mulched area. Fertilizer (15–0–10) shall be applied at a rate of 400 pounds per acre (can be omitted in landscaped areas if landscaped seeding is done concurrently).

6. Refer to landscape plan for areas to be seeded or sodded for erosion control.

SEDIMENT CONTROL PRACTICES

1. Sediment control practices must minimize sediment from entering surface waters, including curb and gutter systems and storm sewer inlets.

A. Temporary or permanent drainage ditches and sediment basins that are designed as part of a treatment system (e.G., ditches with rock check dams) require sediment control practices only as appropriate for site conditions.

B. If the down gradient treatment system is overloaded, additional upgradient sediment control practices must be installed to eliminate the overloading, and the swppp must be amended to identify these additional practices.

C. In order to maintain sheet flow and minimize rills and/or gullies, there shall be no unbroken slope length of greater than 75 feet for slopes with a grade of 1:3 or steeper.

2. Sediment control practices must be established on all down gradient perimeters before any upgradient land disturbing activities begin. These practices shall remain in place until final stabilization has been established.

3. The timing of the installation of sediment control practices may be adjusted to accommodate short–term activities such as clearing or grubbing, or passage of vehicles. Any short–term activity must be completed as quickly as possible and the sediment control practices must be installed immediately after the activity is completed. However, sediment control practices must be installed before the next precipitation event even if the activity is not complete.

4. All storm drain inlets must be protected by appropriate bmps during construction until all sources with potential for discharging to the inlet have been stabilized.

5. Temporary soil stockpiles must have silt fence or other effective sediment controls, and cannot be placed in surface waters, including storm water conveyances such as curb and gutter systems, or conduits and ditches.

6. Stockpile areas which remain on the site for more than seven days shall be seeded, mulched, and surrounded by silt fence.

7. Vehicle tracking of sediment from the construction site must be minimized by bmps such as stone pads, concrete or steel wash racks, or equivalent systems. Street sweeping must be used if such bmps are not adequate to prevent sediment from being tracked onto the street.

8. The permittee must install temporary sedimentation basins as required.

DEWATERING AND BASIN DRAINING

1. Dewatering or basin draining (e.g., pumped discharges, trench/ditch cuts for drainage) related to the construction activity that may have turbid or sediment laden discharge water must be discharged to a temporary or permanent sedimentation basin on the project site whenever possible. If the water cannot be discharged to a sedimentation basin prior to entering the surface water, it must be treated with the appropriate bmps, such that the discharge does not adversely affect the receiving water or downstream landowners. The permittee(s) must ensure that discharge points are adequately protected from erosion and scour. The discharge must be dispersed over natural rock riprap, sand bags, plastic sheeting or other accepted energy dissipation measures. Adequate sedimentation control measures are required for discharge water that contains suspended solids.

2. All water from dewatering or basin draining activities must be discharged in a manner that does not cause nuisance conditions, erosion in receiving channels or on downslope properties, or inundation in wetlands causing significant adverse impact to the wetland.

INSPECTIONS AND MAINTENANCE

1. The permittee(s) (either the owner or operator, whoever is identified in the swppp) must routinely inspect the construction site once every seven (7) days during active construction and within 24 hours after a rainfall event greater than 0.5 inches in 24 hours. Following an inspection that occurs within 24–hours after a rainfall event, the next inspection must be conducted within 7 days.

2. All inspections and maintenance conducted during construction must be recorded in writing and these records must be retained with the SWPPP. Records of each inspection and maintenance activity shall include:

a. Date and time of inspections;

b. Name of person(s) conducting inspections;

c. Findings of inspections, including recommendations for corrective actions;

d. Corrective actions taken (including dates, times, and party completing maintenance activities);

e. Date and amount of all rainfall events greater than 1/2 inch (0.5 inches) in 24 hours; and

f. Documentation of changes made to the SWPPP as required in part iii.A.4.

3. Where parts of the construction site have undergone final stabilization, but work remains on other parts of the site, inspections of the stabilized areas may be reduced to once per month. Where work has been suspended due to frozen ground conditions, the required inspections and maintenance must take place within 24 hours after runoff occurs at the site or 24 hours prior to resuming construction, whichever comes first.

4. All erosion prevention and sediment control BMP's must be inspected to ensure integrity and effectiveness. All nonfunctional BMP's must be repaired, replaced, or supplemented with functional bmps. The permittee(s) must investigate and comply with the following inspection and maintenance requirements:

a. All silt fences must be repaired, replaced, or supplemented when they become nonfunctional or the sediment reaches 1/3 of the height of the fence. These repairs must be made within 24 hours of discovery, or as soon as field conditions allow access.

B. Temporary and permanent sedimentation basins must be drained and the sediment removed when the depth of sediment collected in the basin reaches 1/2 the storage volume. Drainage and removal must be completed within 72 hours of discovery, or as soon as field conditions allow access.

C. Surface waters, including drainage ditches and conveyance systems, must be inspected for evidence of sediment being deposited by erosion. The permittee(s) must remove all deltas and sediment deposited in surface waters, including drainage ways, catch basins, and other drainage systems, and restabilize the areas where sediment removal results in exposed soil. The removal and stabilization must take place within seven (7) days of discovery unless precluded by legal, regulatory, or physical access constraints. The permittee shall use all reasonable efforts to obtain access. If precluded, removal and stabilization must take place within seven (7) calendar days of obtaining access. The permittee is responsible for contacting all local, regional, state and federal authorities and receiving any applicable permits, prior to conducting any work.

D. Construction site vehicle exit locations must be inspected for evidence of off–site sediment tracking onto paved surfaces. Tracked sediment must be removed from all off–site paved surfaces, within 24 hours of discovery, or if applicable, within a shorter time.

E. The permittee(s) are responsible for the operation and maintenance of temporary and permanent water quality management BMP's, as well as all erosion prevention and sediment control BMP's, for the duration of the construction work at the site. The permittee(s) are responsible until another permittee has assumed control over all areas of the site that have not been finally stabilized or the site has undergone final stabilization, and a not has been submitted to the MPCA.

F. If sediment escapes the construction site, off–site accumulations of sediment must be removed in a manner and at a frequency sufficient to minimize off–site impacts (e.G., fugitive sediment in streets could be washed into storm sewers by the next rain and/or pose a safety hazard to users of public streets).

5. All infiltration areas must be inspected to ensure that no sediment from ongoing construction activities is reaching the infiltration area and these areas are protected from compaction due to construction equipment driving across the infiltration area.

6. Storm sewer pipes and structures to be inspected and cleaned out.

POLLUTION PREVENTION MANAGEMENT MEASURES

The permittee(s) shall implement the following pollution prevention management measures on the site:

1. Solid waste: collected sediment, asphalt and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other wastes must be disposed of properly and must comply with mpca disposal requirements.

2. Hazardous materials: oil, gasoline, paint and any hazardous substances must be properly stored, including secondary containment, to prevent spills, leaks or other discharge. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal of hazardous waste must be in compliance with mpca regulations.

3. External washing of trucks and other construction vehicles must be limited to a defined area of the site. Runoff must be contained and waste properly disposed of. No engine degreasing is allowed on site.

FINAL STABILIZATION

The permittee(s) must ensure final stabilization of the site. The permittee(s) must submit a not within 30 days after final stabilization is complete, or another owner/operator (permittee) has assumed control over all areas of the site that have not undergone final stabilization. Final stabilization can be achieved in one of the following ways:

1. All soil disturbing activities at the site have been completed and all soils must be stabilized by a uniform perennial vegetative cover with a density of 70 percent over the entire pervious surface area, or other equivalent means necessary to prevent soil failure under erosive conditions and;

a. All drainage ditches, constructed to drain water from the site after construction is complete, must be stabilized to preclude erosion;

b. All temporary synthetic, and structural erosion prevention and sediment control bmps (such as silt fence) must be removed as part of the site final stabilization; and

c. The permittee(s) must clean out all sediment from conveyances and from temporary sedimentation basins that are to be used as permanent water quality management basins. Sediment must be stabilized to prevent it from being washed back into the basin, conveyances or drainageways discharging off–site or to surface waters. The cleanout of permanent basins must be sufficient to return the basin to design capacity.

2. Final vegetation cover shall be in Project Specifications.

3. For residential construction only, final stabilization has been achieved when temporary erosion protection and down gradient perimeter control for individual lots has been completed and the residence has been transferred to the homeowner. Additionally, the permittee must distribute the MPCA "Homeowner fact sheet" to the homeowner to inform the homeowner of the need for, and benefits of, final stabilization.

SEQUENCE OF CONSTRUCTION

Construction shall proceed in the following sequence:

1. Contractor shall schedule and conduct a pre–construction meeting with the city.
2. Contractor shall secure all necessary permits and licenses.
3. Furnish & install erosion control measures.
4. Maintain erosion control measures, i.e., silt fence, temporary rock construction entrance.
5. Reclaim existing bituminous pavement and base. Remove excess reclamation material.
6. Remove damaged curb and gutter, reset catch basins per plan.
7. Prepare reclaim material, stabilize grade and compact reclaim material.
8. Furnish & install concrete curb, base course of bituminous pavement
9. Grout catch basins per plan.
10. Furnish & install wear course of bituminous pavement.
11. Remove erosion control after vegetation is established.

ADDITIONAL STORMWATER POLLUTION PREVENTION, GRADING PLAN ANS SCHEDULE NOTES

1. All slopes to be 1:4 unless approved by the city engineer.
2. Below grade structures shall be protected and meet drainage requirements per the city engineer.
3. Construction operation hours are from 7:00am–10:00pm Mon.–Sat.
4. Call Gopher State One Call for utility locations prior to any work at 1–800–252–1166.
5. Permittee may need to modify SWPPP if the general objectives of controlling pollutants is not being met.
6. Operator shall implement these and any other bmp's that may be required to meet the general permit requirements.
7. Site is not in karst area or pollution or remediation site.
8. Silt fence to be installed downhill from any grading activity.
9. If tracking onto adjacent streets occurs a street sweeper shall be used to clean streets within 8 hours or as directed by the engineer.
10. Dust control may be necessary during rough grading. No grading can take place if wind speed exceeds 25 mph.
11. Solid waste shall be collected and disposed of properly and must comply with MPCA disposal requirements.
12. Hazardous materials shall be stored properly to prevent spills and vandalism
13. No engine degreasing is allowed on site. External washing of vehicles shall be limited to a defined area (bone yard) on site.
14. Permitee(s) shall adhere to all SWPPP specifications on this plan and other mpca permit requirements.

DATE	REVISION

Apr 11, 2017 - 3:15pm
G:\Engineering\AutoCad Dwgs\Projects N-Z\Sunwood Drive Recon. 2017 - Ramsey to Bunker\Plan Drawings\SWPPP Plan.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/11/17 Lic. No. 40116

DESIGNED BY:	JJF	
DRAWN BY:	JJF	DATE: 4/11/17
CHECKED BY:	BRW	FILE No. 17-01

City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

SWPPP
S.A.P. 199-122-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-00
CITY OF RAMSEY, MINNESOTA

Public Works Committee **5. 5.**

Meeting Date: 04/18/2017

By: Bruce Westby, Engineering/Public Works

Title:

Consider Recommending City Council Approval of Plans and Specifications for Improvement Project #17-01, Alpine Drive Reconstruction

Purpose/Background:

Purpose:

The purpose of this case is to consider recommending City Council approval of plans and specifications for Improvement Project #17-01, Alpine Drive Reconstruction.

Background:

Attached are current plans for Improvement Project #17-01, Alpine Drive Reconstruction. These plans are being reviewed by MnDOT State Aid. Approval by State Aid must be received before the City can bid the project. Staff anticipates receiving State Aid approval prior to requesting City Council approval of plans and specifications and authorization to bid the project on May 9th. This schedule would allow construction to begin in late June and to be substantially complete by September 1st.

The design represented in the attached plans is has been modified from the design discussed with the City Council and addressed within the Feasibility Report as follows.

The primary design difference is that instead of reclaiming the existing crushed concrete base material and reusing it on site for aggregate base, all of the existing crushed concrete base material is now proposed to be removed and properly disposed of off-site. This change was made based on subsequent discoveries which indicate the crushed concrete base material has a significant amount of fines and therefore if reused on site it could result in some of the same pavement tenting issues over time. This design modification was therefore made to ensure the proposed improvements will perform adequately over time and result in a minimum pavement life of 30 years as outlined in the Feasibility Report.

Additional grading and storm sewer work was also incorporated into the plans based on findings made during final design related to a culvert under Alpine Drive that was previously buried.

The Feasibility Report identified estimated costs in the amount of $463,000. The current estimated project costs per the attached plans are $522,408.60. While the proposed project cost is $59,408.60 more than was identified in the Feasibility Report, staff feels this cost increase is justified to ensure the new pavement section will achieve a minimum pavement life of 30 years by removing and disposing of the crushed concrete base.

Timeframe:

Staff estimates 10 minutes will be required to present this case and respond to questions.

Observations/Alternatives:

Observations:

Letters were mailed to the residential property owners on the west of the project to inform them of the proposed improvements, including the proposed schedule, and of the City's plans to close this segment of Alpine Drive during construction. Again, all of these properties have their primary driveway off of Armstrong Boulevard, and garbage hauling and mail delivery services also occur on Armstrong Boulevard so closing Alpine Drive will not impact services to these properties. The proposed detour route occurs along Ramsey Boulevard/CSAH 56, Bunker

Lake Boulevard/CSAH 116, and Armstrong Boulevard/CSAH 83. Anoka County has reviewed and approved the proposed detour route.

The plans have also been submitted to Anoka County for review and approval. The estimated fee for this review is $150.

Alternatives:
Alternative #1 – Motion recommending City Council approval of plans and specifications for Improvement Project #17-01, Alpine Drive Reconstruction.

Alternative #2 – Motion of other.

Funding Source:
Staff proposes to fund the proposed improvements using a combination of street reconstruction bond funds and stormwater utility funds. No special assessments are proposed with this project.

Recommendation:
Staff recommends alternative #1.

Action:
Motion to recommend City Council approval of plans and specifications for Improvement Project #17-01, Alpine Drive Reconstruction.

Attachments

IP1701 Plans

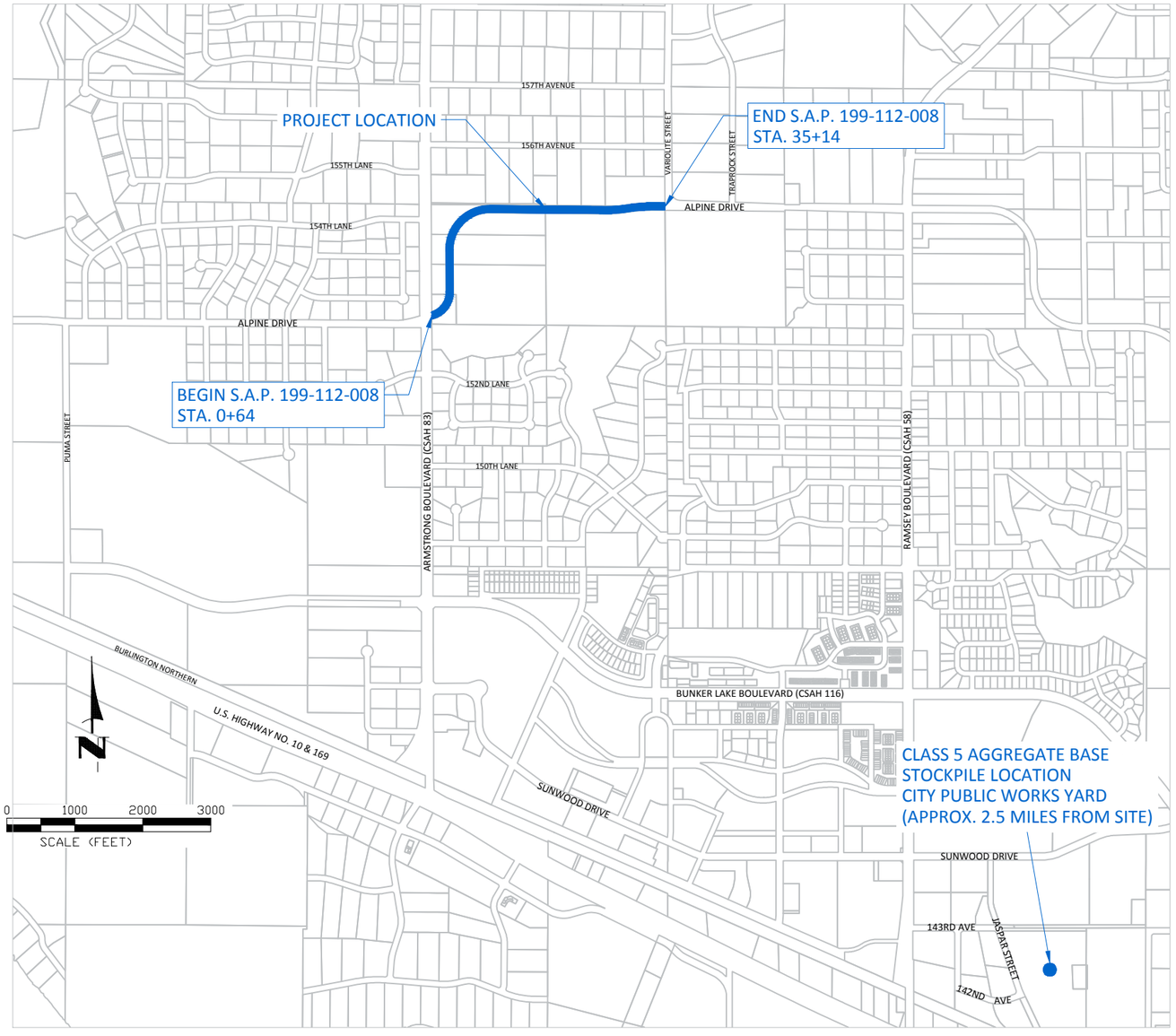
Form Review

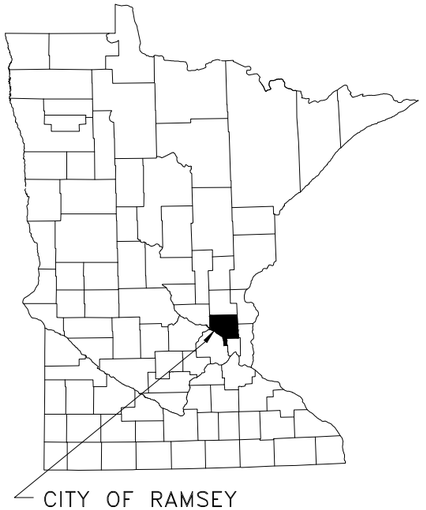
Inbox	Reviewed By	Date
Grant Riemer	Grant Riemer	04/13/2017 02:11 PM
Kurt Ulrich	Kurt Ulrich	04/13/2017 03:57 PM
Form Started By: Bruce Westby		Started On: 04/10/2017 05:25 PM
Final Approval Date: 04/13/2017		

CITY OF RAMSEY

STREET CONSTRUCTION PLANS FOR BITUMINOUS RECLAMATION AND PAVING.
S.A.P. 199-112-008

S.A.P. LOCATED ON ALPINE DRIVE BETWEEN ARMSTRONG BOULEVARD AND VARIOLITE STREET
FROM SW 1/4 OF THE NW 1/4 OF S21, T32, R25 TO NE 1/4 OF THE NW 1/4 OF S21, T32, R25





CITY OF RAMSEY
ANOKA COUNTY, MINNESOTA
DISTRICT: METRO

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

NOTE: EXISTING UTILITY INFORMATION SHOWN ON THIS PLAN HAS BEEN PROVIDED BY THE UTILITY OWNER. THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS PRIOR TO COMMENCING CONSTRUCTION AS REQUIRED BY STATE LAW. NOTIFY GOPHER STATE ONE CALL 1-800-252-1166 OR 651-454-0002

Call before you dig
811
651 454-0002 Metro
800 252-1166 Outstate
www.gopherstateonecall.org

GOVERNING SPECIFICATIONS

THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

ALL FEDERAL, STATE AND LOCAL LAWS, REGULATIONS AND ORDINANCES SHALL BE COMPLIED WITH IN THE CONSTRUCTION OF THIS PROJECT.

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

SHEET INDEX

THIS PLAN CONTAINS 21 SHEETS

LEGEND

MB	MAILBOX	— —	EASEMENT
	LIGHT POLE	———	RIGHT OF WAY
	TREE	—E—	ELECTRIC
	SIGN	—G—	GAS
POLE	POLE	—T—	TELECOMMUNICATIONS
	FLOOD LIGHT	—>>—	STORM SEWER
	VALVE		TREE LINE
PCB	UTILITY PEDESTAL	—XSR—	SPLIT RAIL FENCE
HH	HAND HOLE		LANDSCAPING
	REMOVE CATCH BASIN		RETAINING WALL
STM	EXISTING MANHOLE		5' CONTOUR LINE
	EXISTING FLARED END		1' CONTOUR LINE
	REMOVE TREE	—SF—	SILT FENCE
	REMOVE STORM CASTING		PROPOSED B618 C & G
	3'X2' CATCH BASIN		
	CATCH BASIN MANHOLE		
	INLET PROTECTION		
	MILL BITUMINOUS PAVEMENT		
	EDGE MILL		
	REMOVE BITUMINOUS PAVEMENT		
	REMOVE BITUMINOUS DRIVE		
	REMOVE CONCRETE DRIVE		
	REMOVE GRAVEL DRIVE		
	CONCRETE DRIVE		
	BITUMINOUS DRIVE		
	GRAVEL DRIVE		
	RIP RAP		
	HYDRO SEED AREA		
	EROSION CONTROL BLANKET		
	CLEARING AND GRUBBING		

NO.	PROJECT	STA. TO STA.	GROSS LENGTH	BRIDGE LENGTH	NET LENGTH	NET LENGTH (MILES)	ADT (2015)	ADT (2037)	DESIGN ESAL	R VALUE	TON DESIGN	DESIGN SPEED	NUMBER OF LANES	WIDTH OF LANES	NUMBER OF PARKING LANES	WIDTH OF LANES	FUNCTIONAL CLASSIFICATION
①	S.A.P. 199-112-008 ALPINE DRIVE	0+64 TO 35+14	3450 FT	0 FT	3450 FT	0.65 MI.	1,000	1,000	229,000	40	10	40	2	EB - 12'-14' WB - 14'	0 - 1	10'	COLLECTOR

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

BRUCE R WESTBY, P.E.
RAMSEY CITY ENGINEER

40116
LIC. NO.

DATE

DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY

DATE

STATE AID ENGINEER: APPROVED FOR STATE AID FUNDING

City of RAMSEY
CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

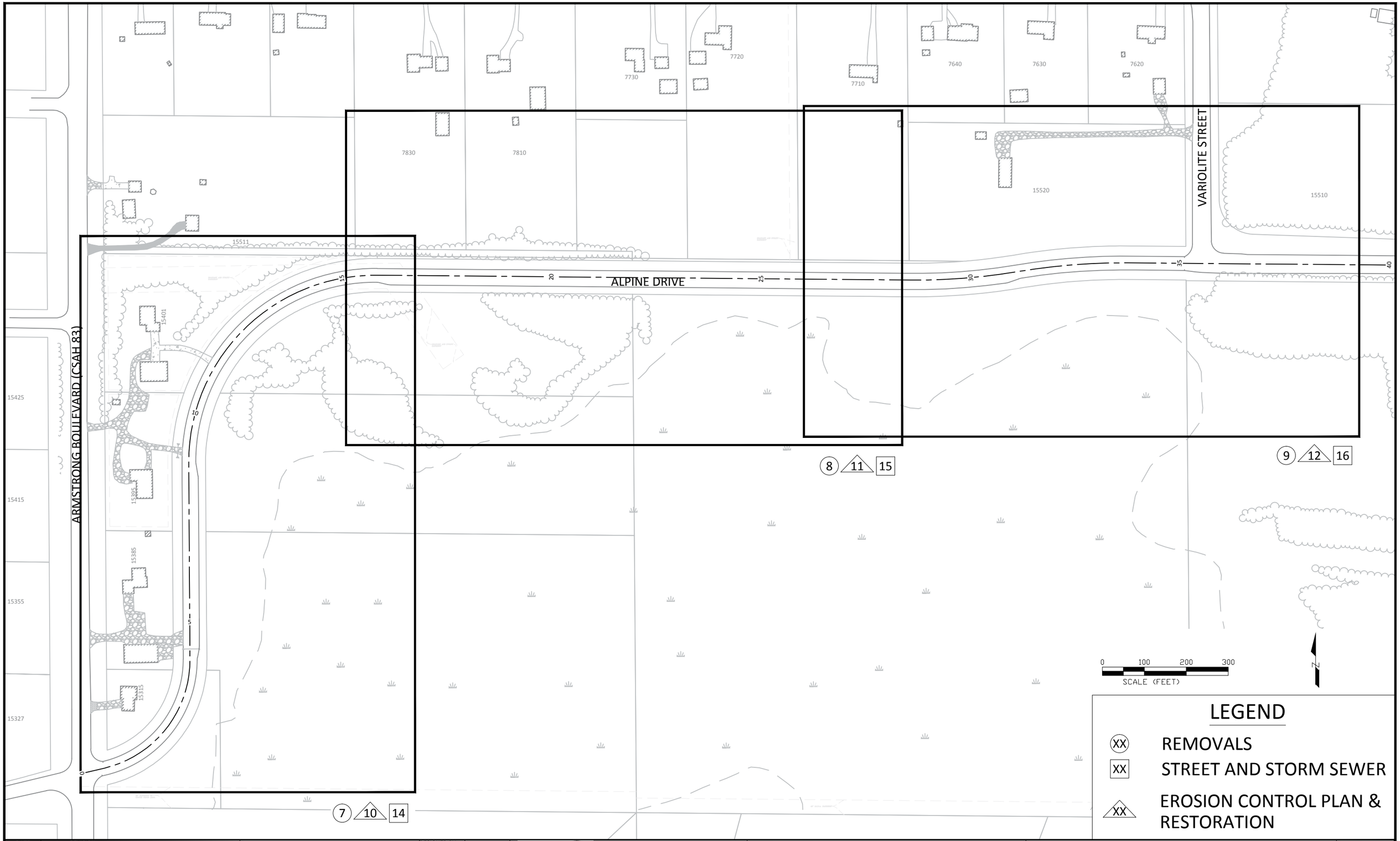
STOPPING SIGHT DISTANCE BASED ON:
3.5 FT - HEIGHT OF EYE
2.0 FT - HEIGHT OF OBJECT

DATUM:
VERTICAL: NAVD 88
HORIZONTAL: ANOKA COUNTY COORDINATES (1996 ADJUSTMENT)

S.A.P. 199-112-008

DATE	REVISION

Apr 12, 2017 - 8:26am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Cover Sheet.dwg



LEGEND

- (XX) REMOVALS
- [XX] STREET AND STORM SEWER
- △XX EROSION CONTROL PLAN & RESTORATION

DATE	REVISION

Apr 12, 2017 - 8:26am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Sheet Index.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

DESIGNED BY:	JJF		
DRAWN BY:	JJF	DATE:	4/12/17
CHECKED BY:	BRW	FILE No.	17-01

City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

SHEET INDEX
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA

SHEET 2 OF 21 SHEETS

ESTIMATED QUANTITIES					NON-PARTICIPATING		
					S.A.P. 199-112-008 ALPINE DRIVE		
					STREET	*STORM SEWER*	
PAGE NO.	**NOTE**	**ITEM NO.**	**ITEM**	**UNIT**	**ESTIMATED QUANTITY**	**ESTIMATED QUANTITY**	**TOTAL ESTIMATED QUANTITY**
		2021.501	MOBILIZATION	LS	1	-	1
8 - 10	4	2104.501	REMOVE CONCRETE CURB AND GUTTER	LF	1100	-	1100
8		2104.501	REMOVE SEWER PIPE - STORM	LF	-	10	10
8	4	2104.503	REMOVE CONCRETE DRIVEWAY PAVEMENT	SF	103	-	103
8, 10		2104.509	REMOVE MANHOLE OR CATCH BASIN	EA	-	1	1
8 , 10		2104.509	REMOVE CASTING	EA	-	2	2
8 - 10		2104.511	SAWING CONCRETE PAVEMENT - FULL DEPTH	LF	400	-	400
8, 10		2104.513	SAWING BITUMINOUS PAVEMENT - FULL DEPTH	LF	62	-	62
11 - 13, 18	1	2105.501	COMMON EXCAVATION (EV)	CY	200	-	200
	1	2105.522	SELECT GRANULAR BORROW (CV)	CY	500	-	500
		2105.601	UTILITY DEWATERING	LS	-	1	1
14		2112.501	SUBGRADE PREPARATION	RDST	36	-	36
8 - 10		2130.501	WATER	MGAL	70	-	70
8 - 10	1, 10	2211.503	AGGREGATE BASE CLASS 5 (CV)	CY	2452	-	2452
8, 10		2232.501	MILL BITUMINOUS PAVEMENT (2' WIDTH X 1.5" DEPTH)	SY	14	-	14
8, 10		2232.501	MILL BITUMINOUS PAVEMENT (9.5" DEPTH)	SY	12261	-	12261
15 - 17	2	2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL	859	-	859
15 - 17	3	2360.502	TYPE SP 9.5 WEARING COURSE MIXTURE (SPWEA340C) (1.5")	TON	1215	-	1215
15 - 17	3	2360.502	TYPE SP 12.5 NON WEARING COURSE MIXTURE (SPNWB330C) (2")	TON	1620	-	1620
15		2501.511	15" CS PIPE CULVERT	LF	-	25	25
15		2501.515	15" CS PIPE APRON	EA	-	2	2
15		2503.541	15" RC PIPE SEWER, DESIGN 3006 CLASS III	LF	-	121	121
15		2503.602	CONNECT TO EXISTING STORM SEWER	EA	-	1	1
15		2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020	LF	-	10	10
15		2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN 2X3 CATCH BASIN	EA	-	1	1
15, 16		2506.516	CASTING ASSEMBLY	EA	-	5	5
15, 16		2506.521	INSTALL CASTING	EA	-	5	5
15 - 17		2506.602	GROUT CATCH BASIN	EA	-	17	17
15, 17		2506.602	ADJUST CATCH BASIN CASTING	EA	-	5	5
15 - 17		2531.501	CONCRETE CURB & GUTTER DESIGN B618	LF	1100	-	1100
15		2531.507	6" CONCRETE DRIVEWAY PAVEMENT	SY	11	-	11
8 - 10	8	2563.601	TRAFFIC CONTROL	LS	5000	-	5000
11 - 13	5	2570.570	HYDRAULIC MATRIX TYPE MULCH	LBS	400	-	400
11 - 13		2573.503	SILT FENCE	LF	250	-	250
11 - 13		2573.530	STORM DRAIN INLET PROTECTION	EA	32	-	32
11 - 13	6	2574.508	FERTILIZER TYPE 3	LBS	40	-	40
11 - 13		2575.501	HYDROSEEDING MNDOT MIXTURE 25-131	ACRE	0.2	-	0.2
19	7	2575.502	MNDOT SEED MIXTURE 25-131	LBS	44	-	44
19	1	2575.525	COMMON TOPSOIL BORROW (LV)	CY	140	-	140
19		2582.502	4" DOUBLE SOLID LINE YELLOW - EPOXY	LF	1384	-	1384
19		2582.502	4" BROKEN LINE YELLOW - EPOXY	LF	410	-	410
19		2582.502	4" SOLID LINE YELLOW - EPOXY	LF	350	-	350
19		2582.502	4" SOLID LINE WHITE - EPOXY	LF	6777	-	6777
19		2582.503	CROSSWALK MARKINGS - EPOXY	SF	90	-	90

PAY ITEM NOTES:

1. EV TO CV CONVERSION FACTOR = 1.2.
2. ESTIMATED QUANTITY BASED ON APPLICATION RATE OF 0.07 GAL/SY.
3. ESTIMATED QUANTITY BASED ON APPLICATION 110 LB/SY-IN.
4. REMOVAL LIMITS WILL BE MARKED IN THE FIELD BY CITY STAFF.
5. ESTIMATED QUANTITY BASED ON APPLICATION RATE OF 2000 LB/ACRE.
6. ESTIMATED QUANTITY BASED ON APPLICATION RATE OF 200 LB/ACRE.
7. ESTIMATED QUANTITY BASED ON APPLICATION RATE OF 220 LB/ACRE.
8. LUMP SUM QUANTITY SHALL INCLUDE ALL COST REQUIRED FOR MAINTAINING PEDESTRIAN ACCESS ROUTES, ALL FLAGGING AND / OR DETOUR OPERATIONS AS NECESSARY.
9. GROUT CATCH BASIN SHALL OCCUR AFTER BITUMINOUS WEARING COURSE LIFT IS APPLIED.
10. CITY TO FURNISH CLASS 5 AGGREGATE BASE MATERIAL FROM STOCKPILE LOCATED AT CITY PUBLIC WORKS YARD. THE CONTRACTOR SHALL FURNISH A LOADER AND OPERATOR. CONTRACTOR SHALL LOAD AND HAUL FROM THE STOCKPILE AND PLACE, SHAPE AND COMPACT ON-SITE.

GENERAL NOTES:

1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. IT IS NOT GUARANTEED ANY OR ALL EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

2. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING IRRIGATION SYSTEMS WITHIN THE PROJECT CONSTRUCTION LIMITS BEFORE COMMENCING WORK. THE CONTRACTOR IS RESPONSIBLE FOR AVOIDING DAMAGE TO IRRIGATION SYSTEMS WHERE POSSIBLE.

STORM SEWER CASTING SCHEDULE

PAGE NO.	STRUCTURE	DESIGN	RIM	INVERT	STATION	OFFSET	CASTING
14	EX CBMH 108	48-4020	879.09	(EXISTING) INV. N 873.29	5+17.55	R - 22.8'	R-3246
				(EXISTING) INV. W 873.69			
				(CBMH 202) INV. S 873.39			
14	EX CBMH 109	48-4020	879.23		5+17.83	L - 15.9'	R-3246 (NEW)
14	CBMH 202	48-4020	879.03	(EX CBMH 108) INV. N 873.93	5+07.48	R - 22.8'	R-3246
				(CBMH 203) INV. S 874.03			
14	CBMH 203	48-4020	880.08	(CBMH 202) INV. N 875.33	4+35.39	R - 22.1'	R-3246
				(CB 204) INV. W 875.43			
14	CB 204	2' X 3'	879.97	(CBMH 203) INV. E 875.97	4+35.39	L - 16.0'	R-3246
15	EX MH 132	48-4020	877.50 (PROP.)		25+80.07	L - 26.8'	R-2560 (NEW)

STORM SEWER CASTING RESET SCHEDULE

PAGE NO.	STRUCTURE	STATION	OFFSET				
14	EX CBMH 101	16+19.08	R - 22.9				
14	EX CB 102	16+18.72	L - 15.9'				
14	EX CBMH 107	10+98.53	R - 16.9'				
16	EX CBMH 119	31+19.75	R - 16.9'				
16	EX CB 120	31+18.99	L - 16.0'				

DATE	REVISION

Apr 12, 2017 - 8:27am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\S.E.Q.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

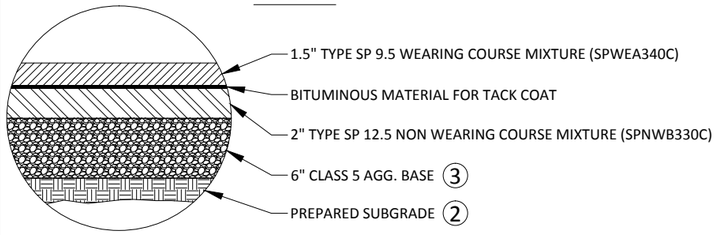
DESIGNED BY:	JJF	
DRAWN BY:	JJF	DATE: 4/12/17
CHECKED BY:	BRW	FILE No. 17-01

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

STATEMENT OF ESTIMATED QUANTITIES
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA

INSET A:



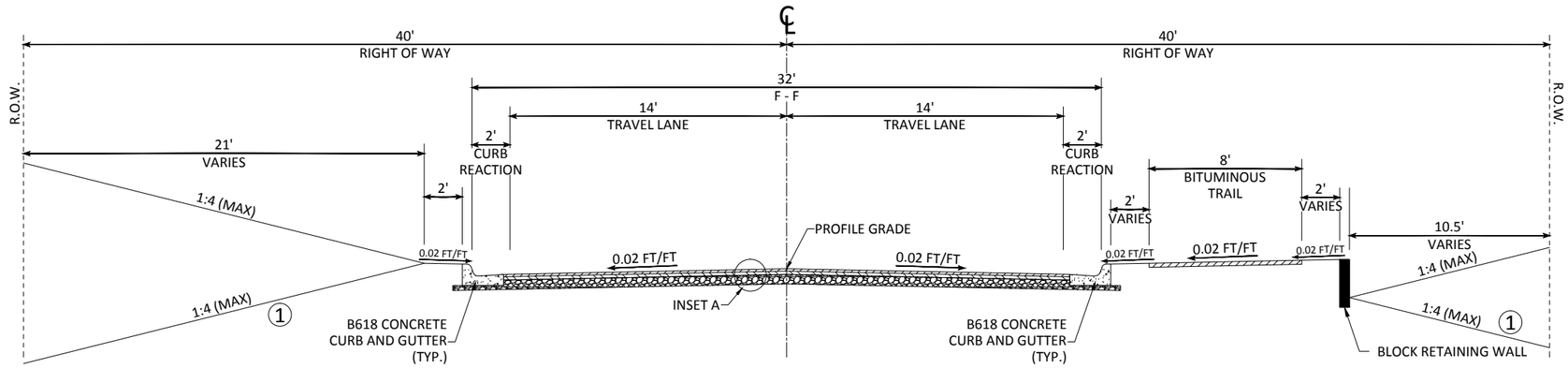
REFERENCE NOTES:

① GRADE TO MATCH EXISTING GROUND. ESTABLISH TURF USING A MINIMUM OF 4" COMMON TOPSOIL BORROW AND HYRDOSEED WITH MIXTURE PER PLAN. SEE CITY PLATE NO. ERO-6 FOR COMMON TOPSOIL BORROW.

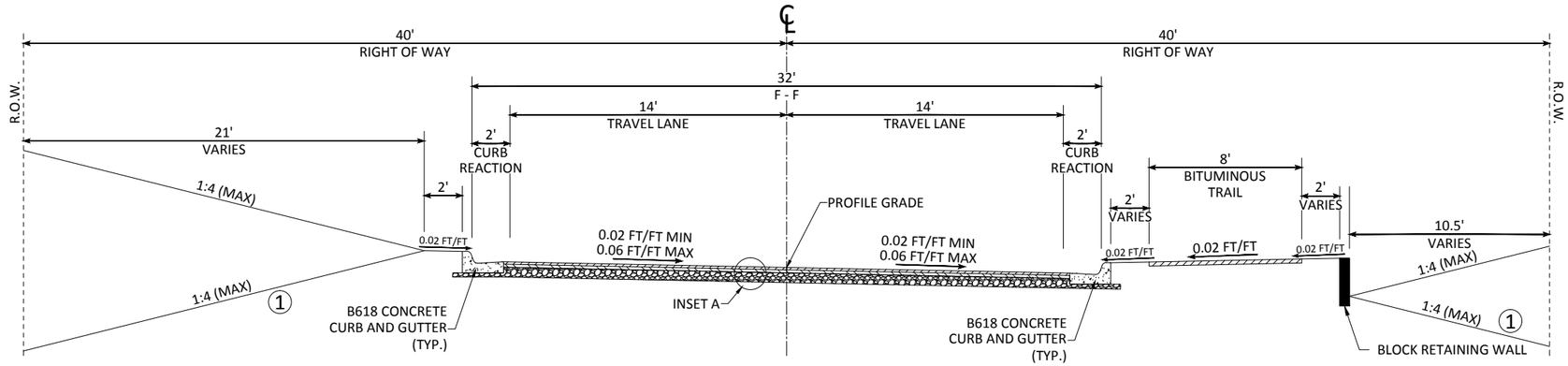
② CONTRACTOR SHALL SCARIFY AND COMPACT, ACCORDING TO THE SPECIFIED DENSITY METHOD, THE TOP 12 INCHES OF MATERIAL PRIOR TO PLACING CLASS 5 AGGREGATE BASE. THIS PROCESS SHALL BE INCIDENTAL TO THE SUBGRADE PREPARATION PAY ITEM.

③ CITY TO FURNISH CLASS 5 AGGREGATE BASE. CONTRACTOR TO LOAD AND HAUL FROM STOCKPILE AND PLACE, SHAPE AND COMPACT ON SITE.

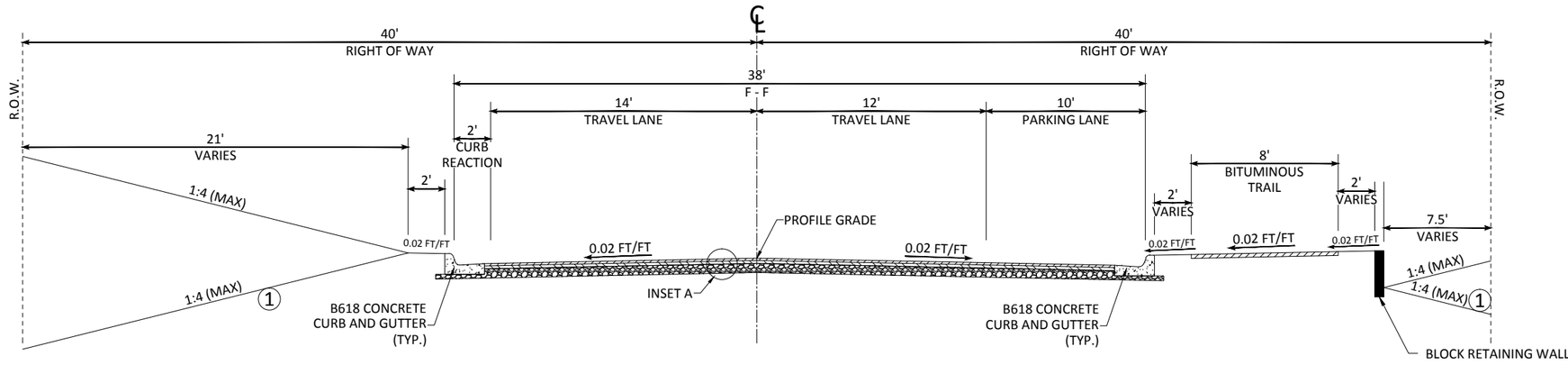
TYPICAL SECTION: NO PARKING STA. 31+20 - 35+14



TYPICAL SECTION: SUPER ELEVATED STA. 0+64 - 4+12, STA. 8+84 - 15+85



TYPICAL SECTION: PARKING ALLOWED STA. 4+12 - 8+84, STA. 15+85 - 31+20



PAVEMENT DESIGN

20 YR DESIGN LANE BESALS:	229,000
DESIGN R-VALUE:	40

MINIMUM REQUIRED

MINIMUM BIT (GE)	7.00
MIN. AGG. BASE (GE)	3.88
TOTAL REQUIRED GE	11.45

PROPOSED DESIGN

WEARING COURSE (1.5")	3.38
NON-WEAR COURSE (2.0")	4.50
CLASS 5 AGG. BASE (6.0")	6.00
TOTAL DESIGN GE	13.88

NOTE: NOT TO SCALE

DATE	REVISION

Apr 12, 2017 - 8:27am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Typical Section.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

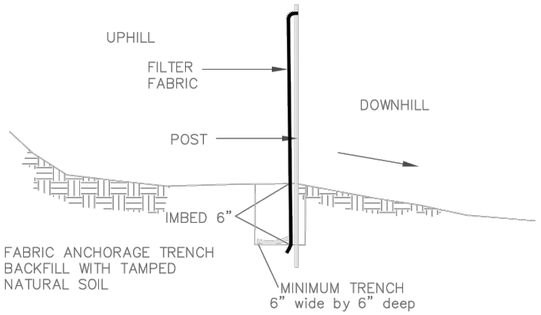
DESIGNED BY:	JJF	
DRAWN BY:	JJF	DATE: 4/12/17
CHECKED BY:	BRW	FILE No. 17-01

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

TYPICAL SECTIONS
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA

SHEET 4 OF 21 SHEETS

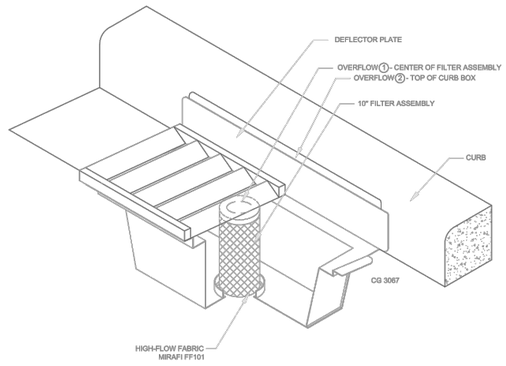


INSTALL AS PER FILTER FABRIC MANUFACTURER'S RECOMMENDATIONS

SILT FENCE DETAIL

NO SCALE

APPROVED: 1 – 2016	City of RAMSEY	STANDARD DETAILS: SILT FENCE
		CITY PLATE No. ERO–1

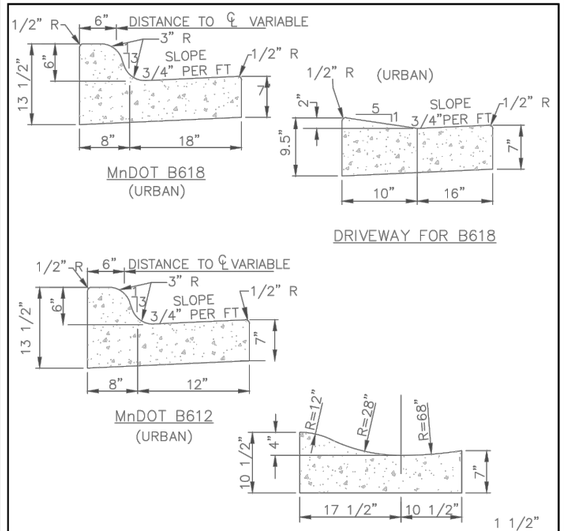


INLET PROTECTION – WIMCO OR EQUAL

N.T.S.

NOTE:
THIS INLET PROTECTION SHALL BE USED IMMEDIATELY FOLLOWING CURB & GUTTER CONSTRUCTION. INLET PROTECTION SHALL REMAIN INSTALLED AND MAINTAINTED UNTIL ALL HOME CONSTRUCTION IS COMPLETE.

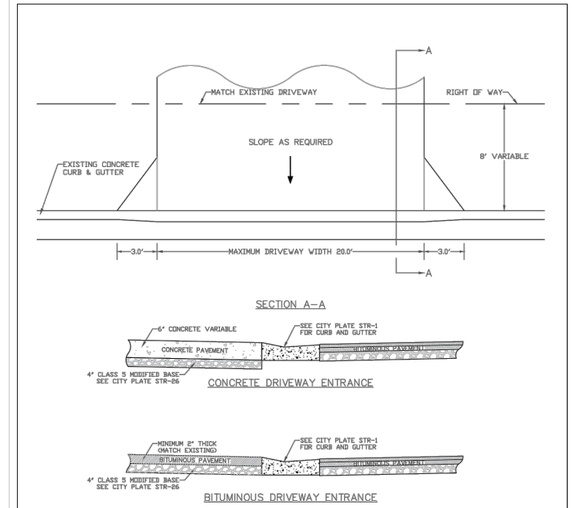
APPROVED: 1 – 2016	City of RAMSEY	STANDARD DETAILS: INLET PROTECTION
		CITY PLATE No. ERO–2



NOTES:

1. ON WEAR COURSE MILL THE EXISTING BITUMINOUS 1.5" BY 24" IN FRONT OF THE REPLACEMENT CURB.
2. ON BASE COURSE SAW CUT AND REMOVE EXISTING BITUMINOUS 18" IN FRONT OF THE REPLACEMENT CURB.

APPROVED: 1 – 2016	City of RAMSEY	STANDARD DETAILS: CURB AND GUTTER
		CITY PLATE No. STR–1



NOTES:
1. PANEL WIDTH SHALL NOT EXCEED 10 FT. WITHOUT A CENTERLINE CONSTRUCTION JOINT.
2. CONCRETE DRIVEWAY TO BE ONE COURSE CONCRETE PAVEMENT. (SEE SPECIAL PROVISIONS FOR CLASS OF CONCRETE.)
3. CONCRETE DRIVEWAYS TO BE 6" THICK.
4. ½" EXPANSION JOINT, ½" PREFORMED JOINT FILLER MATERIAL, AASHTO M 213 (REQUIRED WHEN 2 CONCRETE AREAS ARE POURED SEPERATELY.)
5. BITUMINOUS DRIVEWAYS MINIMUM 2" THICK, MATCH EXISTING BITUMINOUS PAVEMENT THICKNESS.

APPROVED: 1 – 2016	City of RAMSEY	STANDARD DETAILS: RESIDENTIAL DRIVEWAY – NO SIDEWALK
		CITY PLATE No. STR–30

MNDOT 2016 SPEC

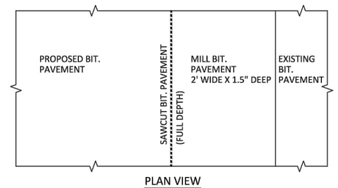
MNDOT 2016 SPEC TABLE 3877–1 COMMON TOPSOIL BORROW		
REQUIREMENT	RANGE	TEST METHOD
MATERIAL PASSING THE 3/4 IN [19MM]	100%	ASTM D 422
MATERIAL PASSING NO. 4 [4.75MM]	≥85%	–
CLAY	5% –35%	ASTM D 422
SILT	5% – 70%	ASTM D 422
SAND	10% – 75%	ASTM D 422
ORGANIC MATTER	3% – 15%	ASTM D 2974
pH	6.1–7.8	ASTM G 51

NOTE:
1. INSTALLATION OF 4" OF TOPSOIL MEETING MNDOT SPECIFICATION 3877A COMMON TOPSOIL BORROW, MAY BE REQUIRED ACROSS ALL DISTURBED AREAS.
2. A SOIL CERTIFICATION FROM A GEOTECHNICAL FIRM MUST BE PROVIDED VERIFYING THE TOPSOIL MEETS SPECIFICATION ALONG WITH LOAD TICKETS TO VERIFY THE SOURCE OF MATERIAL AND QUANTITY.
3. TOPSOIL MUST COME FROM A CITY APPROVED SOURCE.

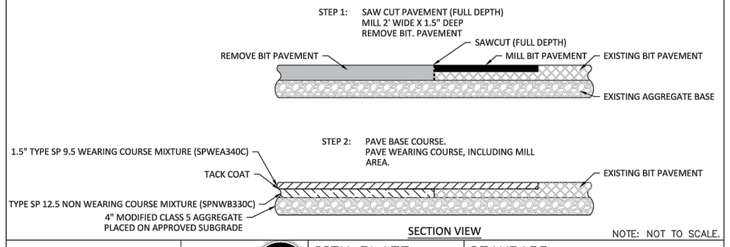
APPROVED: 1 – 2016	City of RAMSEY	CITY PLATE No. ERO–6	STANDARD DETAILS: TOPSOIL REQUIREMENTS

NOTES:

1. BITUMINOUS SHALL BE SAWCUT AND REMOVED
2. CLASS 5 AND BITUMINOUS COURSES SHALL BE MECHANICALLY COMPACTED.
3. SEE CITY PLATE STR–26 FOR MODIFIED CLASS 5 SPECIFICATIONS.



PLAN VIEW



SECTION VIEW NOTE: NOT TO SCALE.

APPROVED: 3 – 2017	City of RAMSEY	CITY PLATE No. STR–31	STANDARD DETAILS: STREET TIE–IN

MNDOT STANDARD PLATES

THESE STANDARD PLATES AS APPROVED BY THE FHWA SHALL APPLY

PLATE NO.	DESCRIPTION
3000 L	REINFORCED CONCRETE PIPE (5 SHEETS)
3006 G	GASKET JOINT FOR R.C. PIPE (2 SHEETS)
3007 E	SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES
3040 F	CORRUGATED METAL PIPE CULVERT (STANDARD 2-2/3" X ½" CORRUGATION)
3123 J	METAL APRON FOR C.S. PIPE
3221 C	CORRUGATED STEEL PIPE COUPLING BAND (3 SHEETS)
4011 E	PRECAST CONCRETE BASE
4022 A	MANHOLE OR CATCH BASIN COVER (3FT. X 2FT. OPENING)
4026 A	CONCRETE ENCASED CONCRETE ADJUSTING RINGS
4108 F	ADJUSTING RINGS FOR CATCH BASINS AND MANHOLES
4180 J	MANHOLE OR CATCH BASIN STEP
7038 A	DETECTABLE WARNING SURFACE TRUNCATED DOMES
7100 H	CONCRETE CURB AND GUTTER DESIGN B AND DESIGN V
8000 J	CHANNELIZERS (3 SHEETS)
9102 E	TURF ESTABLISHMENT AREAS (AT PIPE CULVERT ENDS)

DATE	REVISION

Apr 12, 2017 - 8:28am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Details.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

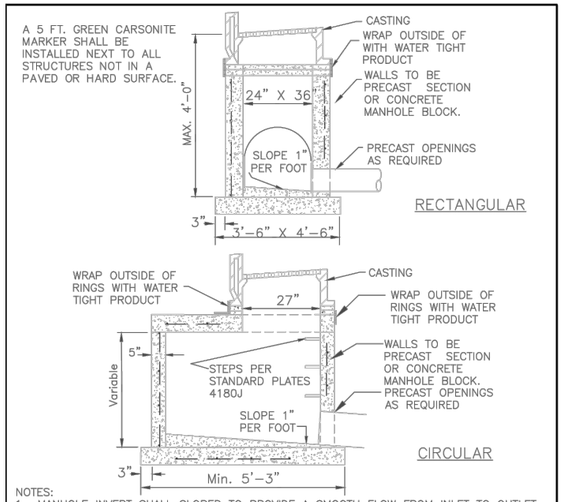
DESIGNED BY: JJF	
DRAWN BY: JJF	DATE: 4/12/17
CHECKED BY: BRW	FILE No. 17-01

City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

EROSION CONTROL AND STREET DETAILS
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA

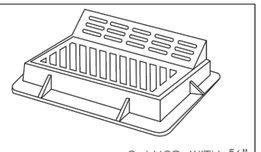


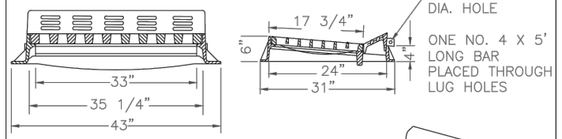
NOTES:
1. MANHOLE INVERT SHALL SLOPED TO PROVIDE A SMOOTH FLOW FROM INLET TO OUTLET
2. CONCRETE BASE SHALL BE 6" POURED IN PLACE OR 5" PRECAST SLAB.
3. CONCRETE ADJUSTING RINGS TO BE INSTALLED MAX.7–2" RINGS, MIN 2–2" RINGS
4. GROUT BETWEEN RINGS,SHIMS SHALL BE METAL, CONCRETE OR PLASTIC
5. INSPECTION OF MANHOLE REQUIRED BEFORE BACKFILLING
6. A 10 GAUGE SOLID COPPER TRACER WIRE IS REQUIRED WITH ALL STORM LINES.
7. CONDUCTIVITY IS REQUIRED ON ALL TRACER WIRE
8. STEPS ARE REQUIRED IF STRUCTURE FROM THE CASTING TO THE INVERT IS GREATER THAN 4 FEET
9. TRACER WIRES ARE TO END IN STRUCTURES, AT FINISHED GRADE ON ALL SERVICES AND STUBS

APPROVED:		STANDARD DETAILS:
4 – 2007	City of RAMSEY	CATCH BASIN
		CITY PLATE No. STO–1

NOTE: SURMOUNTABLE CURB & GUTTER

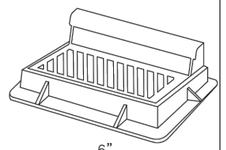
1. CATCH BASIN CASTING SHALL BE NEENAH R–3067 WITH GRATED BACK (BICYLE SAFE) OR APPROVED EQUAL.
2. FOR CATCH BASINS ADJACENT TO RADIUS, USE NEENAH R–3246R OR APPOVED EQUAL.

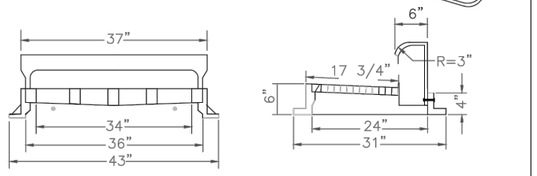




NOTE: B 618 CURB & GUTTER

1. CATCH BASIN CASTING SHALL BE NEENAH R–3246R OR APPROVED EQUAL.



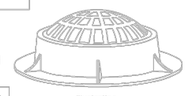


STANDARD CATCHBASIN CASTING

APPROVED:		STANDARD DETAILS:
7 – 2016	City of RAMSEY	STORMWATER CASTING
		CITY PLATE No. STO–4

R–2560 Series
Beehive Grates with Frames

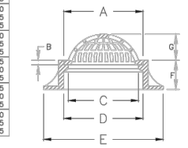
SUITABLE FOR DRAINAGE ON CIRCUMSTANCES WHERE CLOGGING OF A FLAT GRATING IS A PROBLEM. EXCELLENT FOR ROADSIDE OR EARTH DITCH CATCH BASINS.



Illustrating R–2560–E

Catalog No.	Dimensions In Inches							Wt. LBS
	A	B	C	D	E	F	G	
R–2560–A	12	1	11	12 1/2	19	4	4	80
R–2560–B	15 1/2	1 1/4	15	15	21	5	3	120
R–2560–C	18	1 1/4	16 1/2	20 1/2	30	8	4	190
R–2560–C1	22	1 1/2	20	23	28	4	4 1/2	195
R–2560–C2	22	1 1/2	20 1/2	24	28 1/4	6	4 1/2	270
R–2560–D	22	1 1/2	20	24 1/2	35	9	4 1/2	315
R–2560–D1	22	1 1/2	20	23	28 1/4	4	7	210
R–2560–D2	22	1 1/2	20 1/2	24	35	6	7	285
R–2560–D3	22	1 1/2	20	24 1/2	36	9	7	345
R–2560–E	23	1 1/2	21	25 1/2	35 1/2	9	7	340
R–2560–EA	25 3/4	7/8	24 1/8	26 1/2	35 1/2	4	6	235
R–2560–EB	25 3/4	7/8	24 1/8	26 1/2	35 1/2	4	9	255
R–2560–E1	25 3/4	7/8	24 1/8	26 1/2	35 1/2	7	6	285
R–2560–E2	25 3/4	7/8	24 1/8	26 1/2	35 1/2	7	9	300
R–2560–E5	25 3/4	7/8	24 1/8	26 1/2	35 1/2	8	6	345
R–2560–E6	25 3/4	7/8	24 1/8	26 1/2	35 1/2	8	9	365
R–2560–E7	25 3/4	7/8	24 1/8	26 1/2	35 1/2	9	6	350
R–2560–E8	25 3/4	7/8	24 1/8	26 1/2	35 1/2	9	9	365
R–2560–E9	25 3/4	7/8	24 1/8	26 1/2	35 1/2	10	6	360
R–2560–E10	25 3/4	7/8	24 1/8	26 1/2	35 1/2	10	9	385
R–2560–G	32	1 1/2	30	36	46	7	4	535

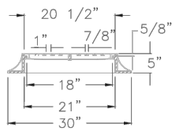
Furnished standard with ground bearing surfaces.



R–2570 Catch Basin Frame, Grate

Light Duty

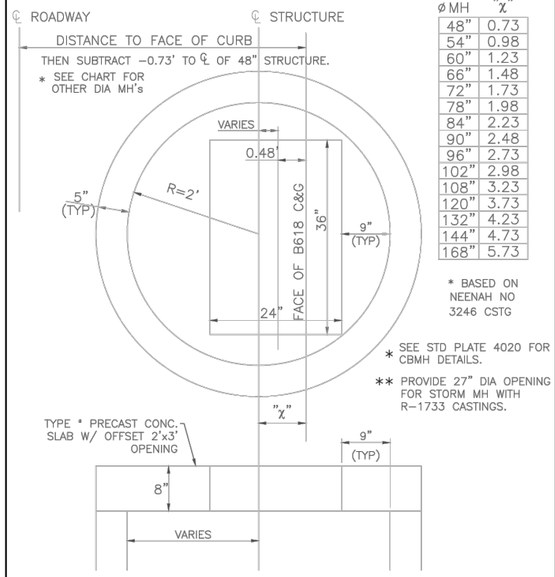
Total Weight 170 Pounds



Furnished standard with ground bearing surfaces.

STORM CASTINGS FOR NON–TRAFFIC AREAS
NTS

APPROVED:		STANDARD DETAILS:
9 – 2011	City of RAMSEY	STORM CASTING – NON TRAFFIC AREAS
		CITY PLATE No. STO–6



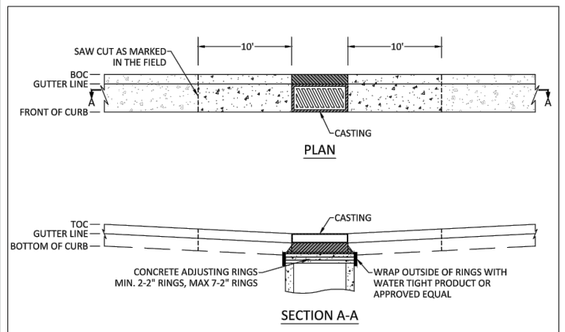
ø MH	"X"
48"	0.73
54"	0.98
60"	1.23
66"	1.48
72"	1.73
78"	1.98
84"	2.23
90"	2.48
96"	2.73
102"	2.98
108"	3.23
120"	3.73
132"	4.23
144"	4.73
168"	5.73

* BASED ON NEENAH NO 3246 CSTG

* SEE STD PLATE 4020 FOR CBMH DETAILS.

** PROVIDE 27" DIA OPENING FOR STORM MH WITH R–1733 CASTINGS.

APPROVED:		STANDARD DETAILS:
4 – 2005	City of RAMSEY	SLAB TOP MANHOLE COVER
		CITY PLATE No. STO–5



NOTE: NOT TO SCALE

NOTE:

1. CONCRETE CURB AND GUTTER TO BE REMOVED 10 FEET TO EITHER SIDE OF CATCH BASIN CASTING. CURB AND GUTTER MUST BE SAW CUT - FULL DEPTH.
2. CASTING SHALL BE BROUGHT UP TO PROPER GRADE. DAMAGED CONCRETE ADJUSTING RINGS MUST BE REPLACED. OUTSIDE OF RINGS MUST BE WRAPPED WITH APPROVED WATER TIGHT PRODUCT. INSIDE OF RINGS MUST BE GROUTED TO A SMOOTH FINISH.
3. CONCRETE CURB AND GUTTER SHALL BE REPLACED AND MATCH INTO THE RESET CASTING AND THE EXISTING CURB AND GUTTER.
4. DAMAGED BITUMINOUS PAVEMENT SHALL BE REPAIRED AND IS INCIDENTAL. FOLLOW CITY STANDARD PLATE STR-25.
5. PROPER TRAFFIC CONTROL DEVICES SHALL BE REQUIRED TO MAINTAIN A SAFE WORK ENVIRONMENT, AND IS INCLUDED IN THE TRAFFIC CONTROL LUMP SUM BIT ITEM.
6. ALL EQUIPMENT, MATERIALS, DISPOSAL, AND LABOR REQUIRED TO RESET CATCH BASIN CASTING AS DESCRIBED BY THIS DETAIL IS INCIDENTAL.
7. BOULEVARD RESTORATION BEHIND CURB IS NOT INCLUDED WITH THE RESET CATCH BASIN CASTING PAY ITEM.

APPROVED:		STANDARD DETAILS:
3 – 2017	City of RAMSEY	RESET CATCH BASIN CASTING
		CITY PLATE No. STO–13

DATE	REVISION

Apr 12, 2017 - 8:28am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Details.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

DESIGNED BY:	JJF		
DRAWN BY:	JJF	DATE:	4/12/17
CHECKED BY:	BRW	FILE No.	17-01

City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

STORM SEWER DETAILS
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA

SHEET 6 OF 21 SHEETS

ARMSTRONG BOULEVARD (CSAH 83)

0 40 80 120
SCALE (FEET)

N

BEGIN S.A.P. 199-112-008
STA. 0+64

SAWCUT BIT. PAVEMENT (FULL DEPTH)
2' EDGE MILL - 1.5" DEEP

15315

15385

15395

15401

15511

REMOVE CATCH BASIN CASTING

ALPINE DRIVE

38' F-F

33' F-F

REMOVE CONCRETE DRIVEWAY
SAWCUT CONCRETE PAVEMENT FULL-DEPTH

REMOVE CONCRETE
CURB & GUTTER (TYP.)

REMOVE CATCH BASIN

REMOVE PIPE - STORM

REMOVE CONCRETE
CURB & GUTTER

MILL BITUMINOUS PAVEMENT
9.5" DEPTH

WETLAND BOUNDARY

MATCH TO SHEET 8 STA 16+50

NOTE:

1. ALL DRIVEWAY AND PAVEMENT REMOVALS MUST BE SAWCUT.
2. CONCRETE CURB AND GUTTER REMOVALS ARE SHOWN IN AN APPROXIMATE WAY ONLY.
3. 4' MINIMUM CURB AND GUTTER REMOVAL LENGTH.
4. CONCRETE CURB AND GUTTER REMOVALS WILL BE MARKED IN THE FIELD BY CITY STAFF. ALL REMOVALS MUST BE SAWCUT.
5. PROTECT STORM SEWER.

LEGEND

	MILL BITUMINOUS PAVEMENT
REMOVE CATCH BASIN	EDGE MILL BITUMINOUS PAVEMENT
REMOVE STORM CASTING	REMOVE BITUMINOUS PAVEMENT
REMOVE PIPE - STORM	REMOVE CONCRETE DRIVE
REMOVE CURB & GUTTER	REMOVE GRAVEL DRIVE

DATE	REVISION

Apr 12, 2017 - 8:28am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Removals.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

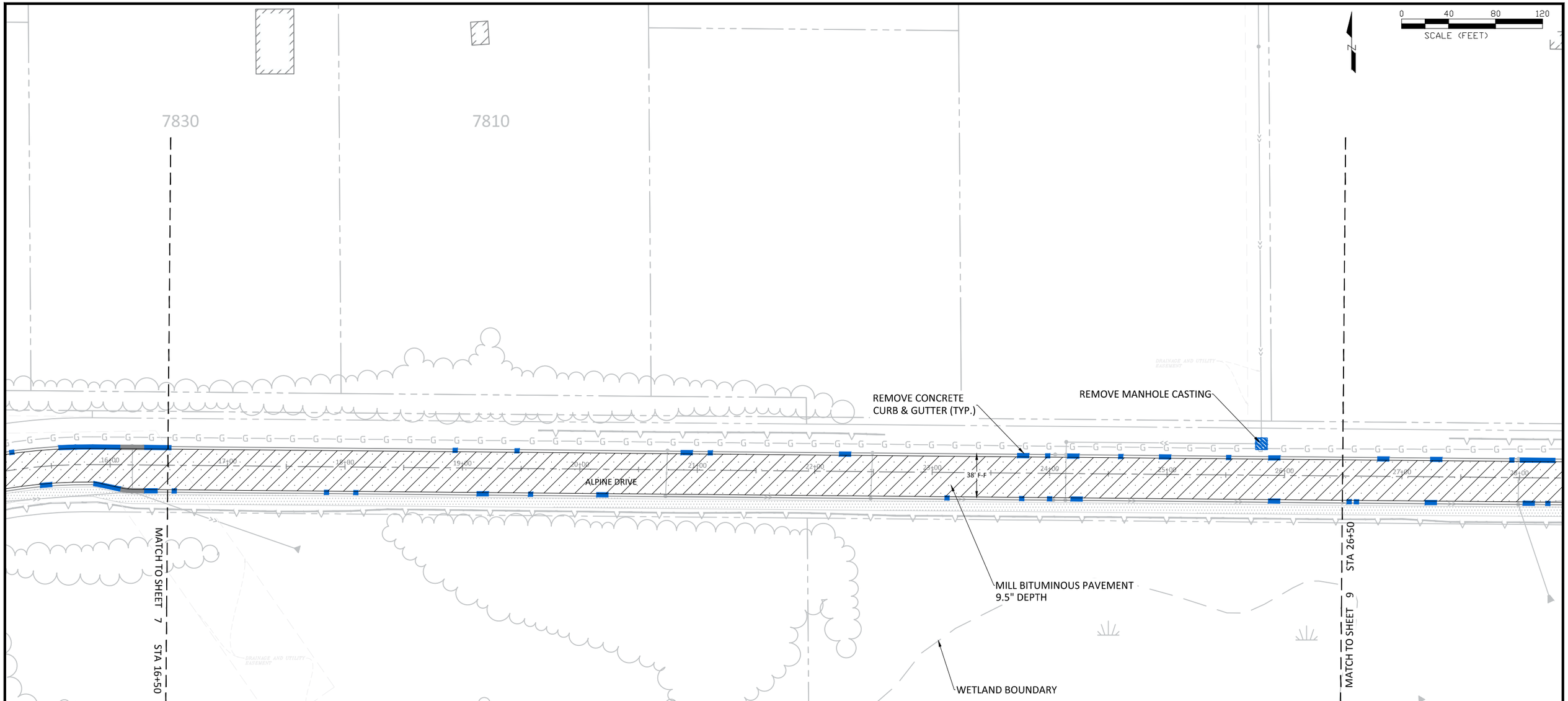
DESIGNED BY: JJF	
DRAWN BY: JJF	DATE: 4/12/17
CHECKED BY: BRW	FILE No. 17-01

City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

REMOVALS
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA



NOTE:

1. ALL DRIVEWAY AND PAVEMENT REMOVALS MUST BE SAWCUT.
2. CONCRETE CURB AND GUTTER REMOVALS ARE SHOWN IN AN APPROXIMATE WAY ONLY.
3. 4' MINIMUM CURB AND GUTTER REMOVAL LENGTH
4. CONCRETE CURB AND GUTTER REMOVALS WILL BE MARKED IN THE FIELD BY CITY STAFF. ALL REMOVALS MUST BE SAWCUT.
5. PROTECT STORM SEWER.

LEGEND

	MILL BITUMINOUS PAVEMENT
REMOVE CATCH BASIN	EDGE MILL BITUMINOUS PAVEMENT
REMOVE STORM CASTING	REMOVE BITUMINOUS PAVEMENT
REMOVE PIPE - STORM	REMOVE CONCRETE DRIVE
REMOVE CURB & GUTTER	REMOVE GRAVEL DRIVE

DATE	REVISION

Apr 12, 2017 - 8:29am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Removals.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

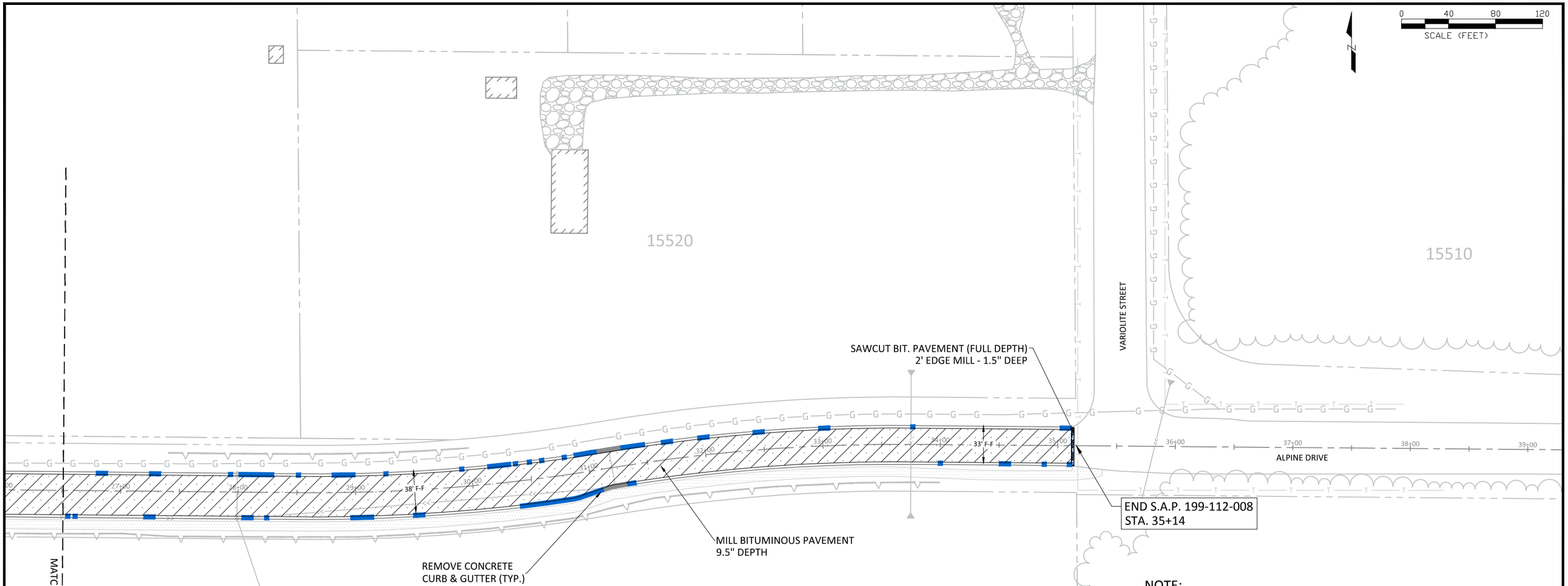
DESIGNED BY:	JJF	
DRAWN BY:	JJF	DATE: 4/12/17
CHECKED BY:	BRW	FILE No. 17-01

City of RAMSEY
CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

REMOVALS
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA

SHEET 8 OF 21 SHEETS



NOTE:
PEDESTRIAN ACCESS ROUTE MUST BE MAINTAINED AT ALL TIMES.
SEE PAY ITEM NOTE 8 ON SHEET 3.

NOTE:

1. ALL DRIVEWAY AND PAVEMENT REMOVALS MUST BE SAWCUT.
2. CONCRETE CURB AND GUTTER REMOVALS ARE SHOWN IN AN APPROXIMATE WAY ONLY.
3. 4' MINIMUM CURB AND GUTTER REMOVAL LENGTH.
4. CONCRETE CURB AND GUTTER REMOVALS WILL BE MARKED IN THE FIELD BY CITY STAFF. ALL REMOVALS MUST BE SAWCUT.
5. PROTECT STORM SEWER.

LEGEND

	MILL BITUMINOUS PAVEMENT
REMOVE CATCH BASIN	EDGE MILL BITUMINOUS PAVEMENT
REMOVE STORM CASTING	REMOVE BITUMINOUS PAVEMENT
REMOVE PIPE - STORM	REMOVE CONCRETE DRIVE
REMOVE CURB & GUTTER	REMOVE GRAVEL DRIVE

DATE	REVISION

Apr 12, 2017 - 8:29am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Removals.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

DESIGNED BY:	JJF		
DRAWN BY:	JJF	DATE:	4/12/17
CHECKED BY:	BRW	FILE No.	17-01

City of RAMSEY
CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

REMOVALS
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA

SHEET 9 OF 21 SHEETS

ARMSTRONG BOULEVARD (CSAH 83)

BEGIN S.A.P. 199-112-008
STA. 0+64

0 40 80 120
SCALE (FEET)

N

15315

15385

15395

15401

15511

SILT FENCE (TYP.)

SILT FENCE (TYP.)

SILT FENCE (TYP.)

SILT FENCE (TYP.)

WETLAND BOUNDARY

1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00 14+00 15+00 16+00

33' F-F

38' F-F

33' F-F

SF

MATCH TO SHEET 11 STA 16+50

LEGEND

SF — SILT FENCE

INLET PROTECTION

HYDROSEED RESTORATION AREA

NOTE:
RESTORATION AREAS ARE SHOWN IN A GENERAL MANNER ONLY.
RESTORE ALL DISTURBED AREAS WITH HYDROSEED MATERIAL UNLESS OTHERWISE NOTED.

DATE	REVISION

Apr 12, 2017 - 8:30am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Erosion Control.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

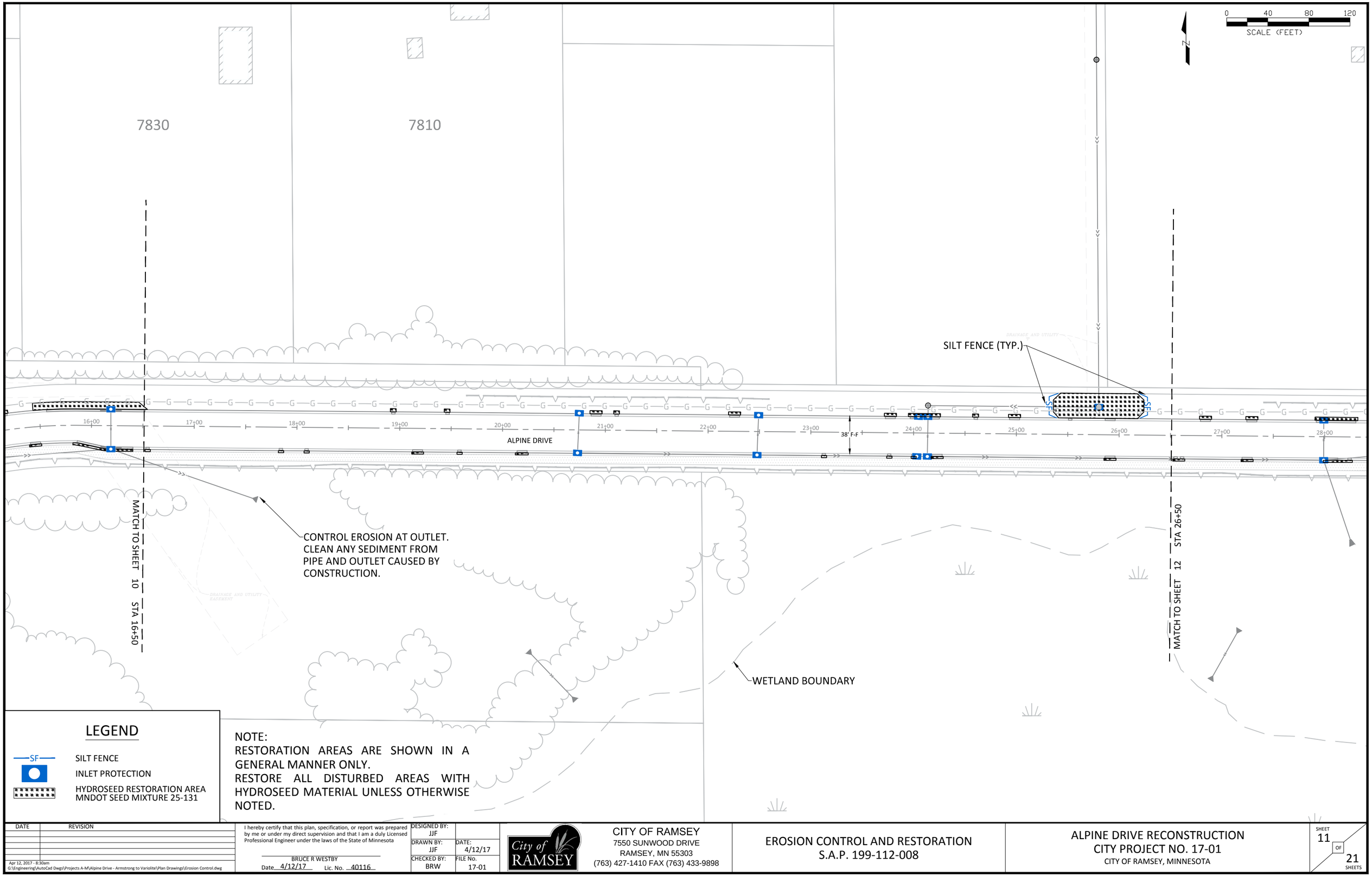
DESIGNED BY:	JJF	
DRAWN BY:	JJF	DATE: 4/12/17
CHECKED BY:	BRW	FILE No. 17-01

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

EROSION CONTROL AND RESTORATION
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA

SHEET 10 OF 21 SHEETS



LEGEND

- SF — SILT FENCE
- INLET PROTECTION
- HYDROSEED RESTORATION AREA MNDOT SEED MIXTURE 25-131

NOTE:
RESTORATION AREAS ARE SHOWN IN A GENERAL MANNER ONLY.
RESTORE ALL DISTURBED AREAS WITH HYDROSEED MATERIAL UNLESS OTHERWISE NOTED.

DATE	REVISION

Apr 12, 2017 - 8:30am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Erosion Control.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

DESIGNED BY:	JJF	
DRAWN BY:	JJF	DATE: 4/12/17
CHECKED BY:	BRW	FILE No. 17-01

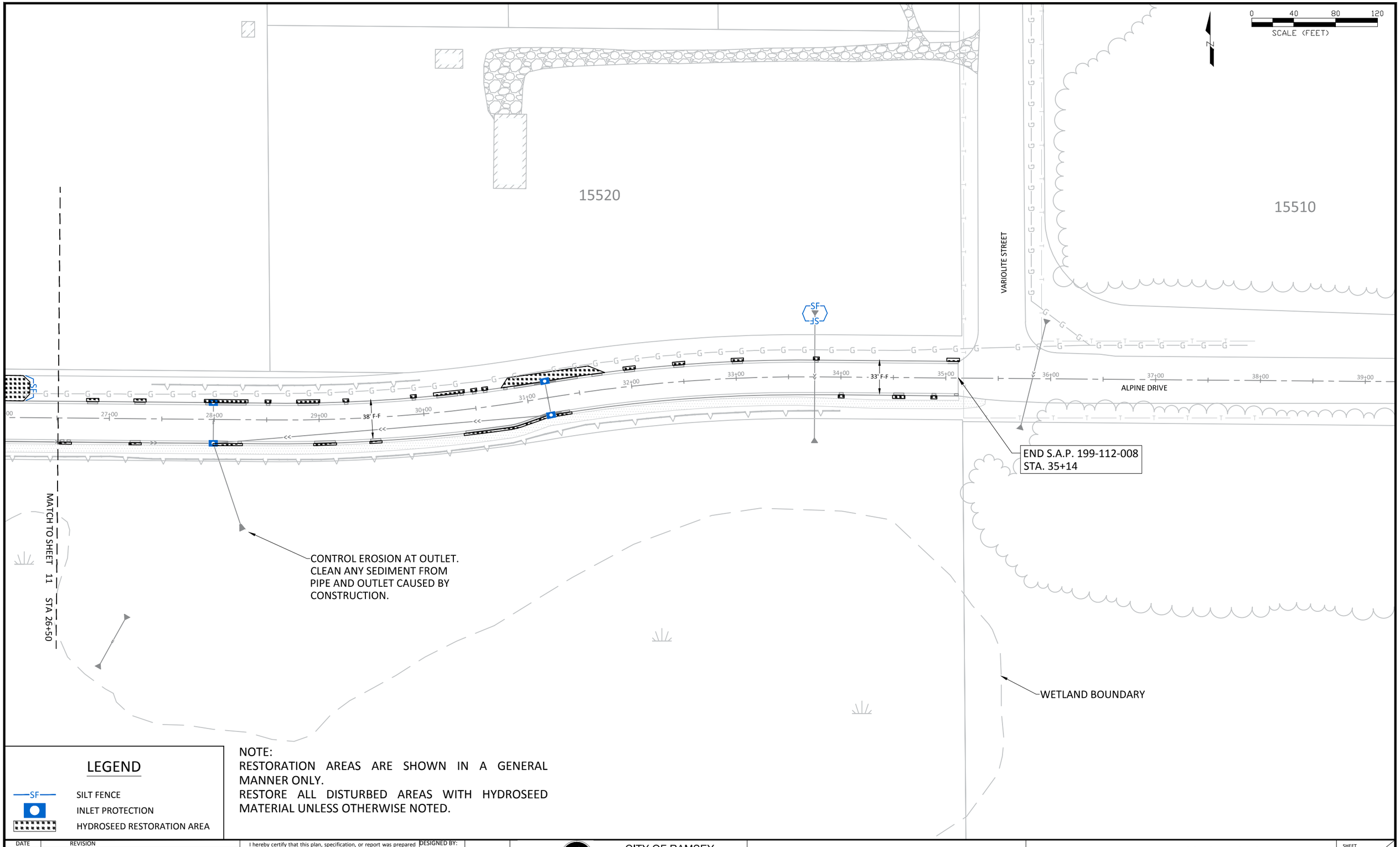
City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

EROSION CONTROL AND RESTORATION
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA

SHEET 11 OF 21 SHEETS



LEGEND

- SF — SILT FENCE
- INLET PROTECTION
- HYDROSEED RESTORATION AREA

NOTE:
RESTORATION AREAS ARE SHOWN IN A GENERAL MANNER ONLY.
RESTORE ALL DISTURBED AREAS WITH HYDROSEED MATERIAL UNLESS OTHERWISE NOTED.

DATE	REVISION

Apr 12, 2017 - 8:30am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Erosion Control.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

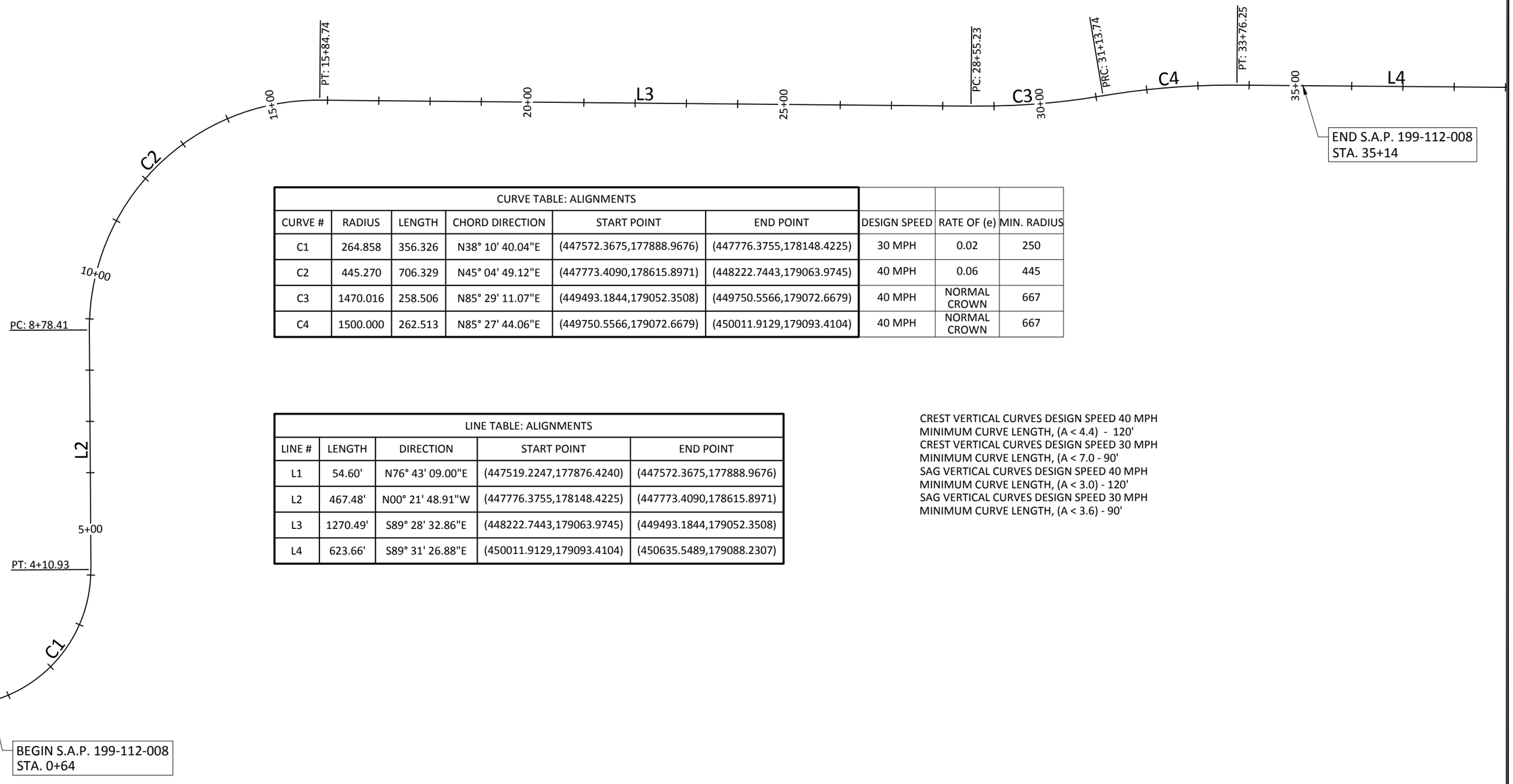
BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

DESIGNED BY:	JJF	
DRAWN BY:	JJF	DATE: 4/12/17
CHECKED BY:	BRW	FILE No. 17-01

City of RAMSEY
CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

EROSION CONTROL AND RESTORATION
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA



CURVE TABLE: ALIGNMENTS								
CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT	DESIGN SPEED	RATE OF (e)	MIN. RADIUS
C1	264.858	356.326	N38° 10' 40.04"E	(447572.3675,177888.9676)	(447776.3755,178148.4225)	30 MPH	0.02	250
C2	445.270	706.329	N45° 04' 49.12"E	(447773.4090,178615.8971)	(448222.7443,179063.9745)	40 MPH	0.06	445
C3	1470.016	258.506	N85° 29' 11.07"E	(449493.1844,179052.3508)	(449750.5566,179072.6679)	40 MPH	NORMAL CROWN	667
C4	1500.000	262.513	N85° 27' 44.06"E	(449750.5566,179072.6679)	(450011.9129,179093.4104)	40 MPH	NORMAL CROWN	667

LINE TABLE: ALIGNMENTS				
LINE #	LENGTH	DIRECTION	START POINT	END POINT
L1	54.60'	N76° 43' 09.00"E	(447519.2247,177876.4240)	(447572.3675,177888.9676)
L2	467.48'	N00° 21' 48.91"W	(447776.3755,178148.4225)	(447773.4090,178615.8971)
L3	1270.49'	S89° 28' 32.86"E	(448222.7443,179063.9745)	(449493.1844,179052.3508)
L4	623.66'	S89° 31' 26.88"E	(450011.9129,179093.4104)	(450635.5489,179088.2307)

CREST VERTICAL CURVES DESIGN SPEED 40 MPH
MINIMUM CURVE LENGTH, (A < 4.4) - 120'
CREST VERTICAL CURVES DESIGN SPEED 30 MPH
MINIMUM CURVE LENGTH, (A < 7.0 - 90'
SAG VERTICAL CURVES DESIGN SPEED 40 MPH
MINIMUM CURVE LENGTH, (A < 3.0) - 120'
SAG VERTICAL CURVES DESIGN SPEED 30 MPH
MINIMUM CURVE LENGTH, (A < 3.6) - 90'

DATE	REVISION

Apr 12, 2017 - 8:30am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Alignment Layout.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

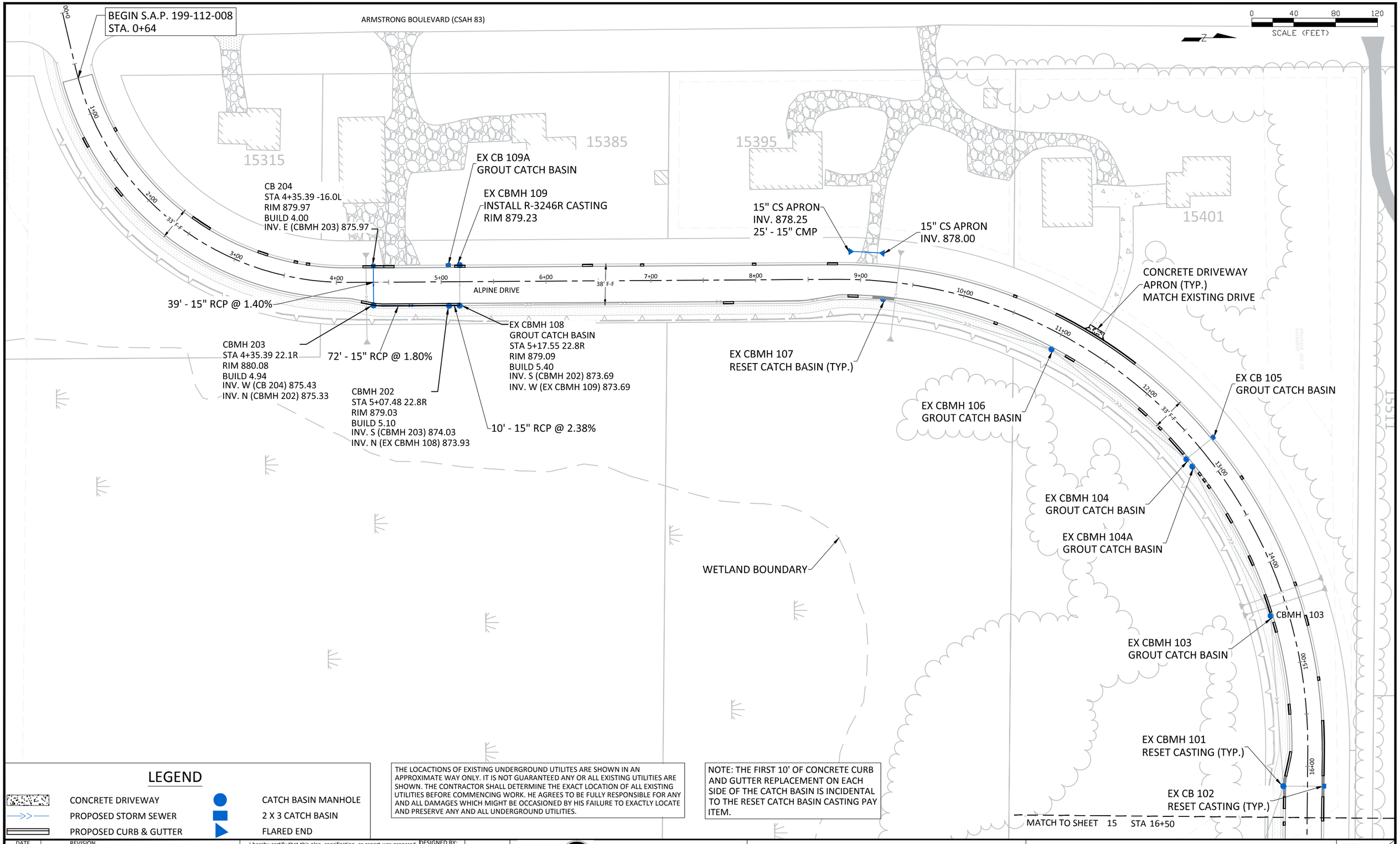
BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

DESIGNED BY:	JJF	
DRAWN BY:	JJF	DATE: 4/12/17
CHECKED BY:	BRW	FILE No. 17-01

City of RAMSEY
CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

ALIGNMENT LAYOUT
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA



LEGEND

- CONCRETE DRIVEWAY
- PROPOSED STORM SEWER
- PROPOSED CURB & GUTTER
- CATCH BASIN MANHOLE
- 2 X 3 CATCH BASIN
- FLARED END

THE LOCACTIONS OF EXISTING UNDERGROUND UTILITES ARE SHOWN IN AN APPROXIMATE WAY ONLY. IT IS NOT GUARANTEED ANY OR ALL EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTE: THE FIRST 10' OF CONCRETE CURB AND GUTTER REPLACEMENT ON EACH SIDE OF THE CATCH BASIN IS INCIDENTAL TO THE RESET CATCH BASIN CASTING PAY ITEM.

DATE	REVISION

Apr 12, 2017 - 8:31am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Street and Storm.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

DESIGNED BY:	JJF	
DRAWN BY:	JJF	DATE: 4/12/17
CHECKED BY:	BRW	FILE No. 17-01

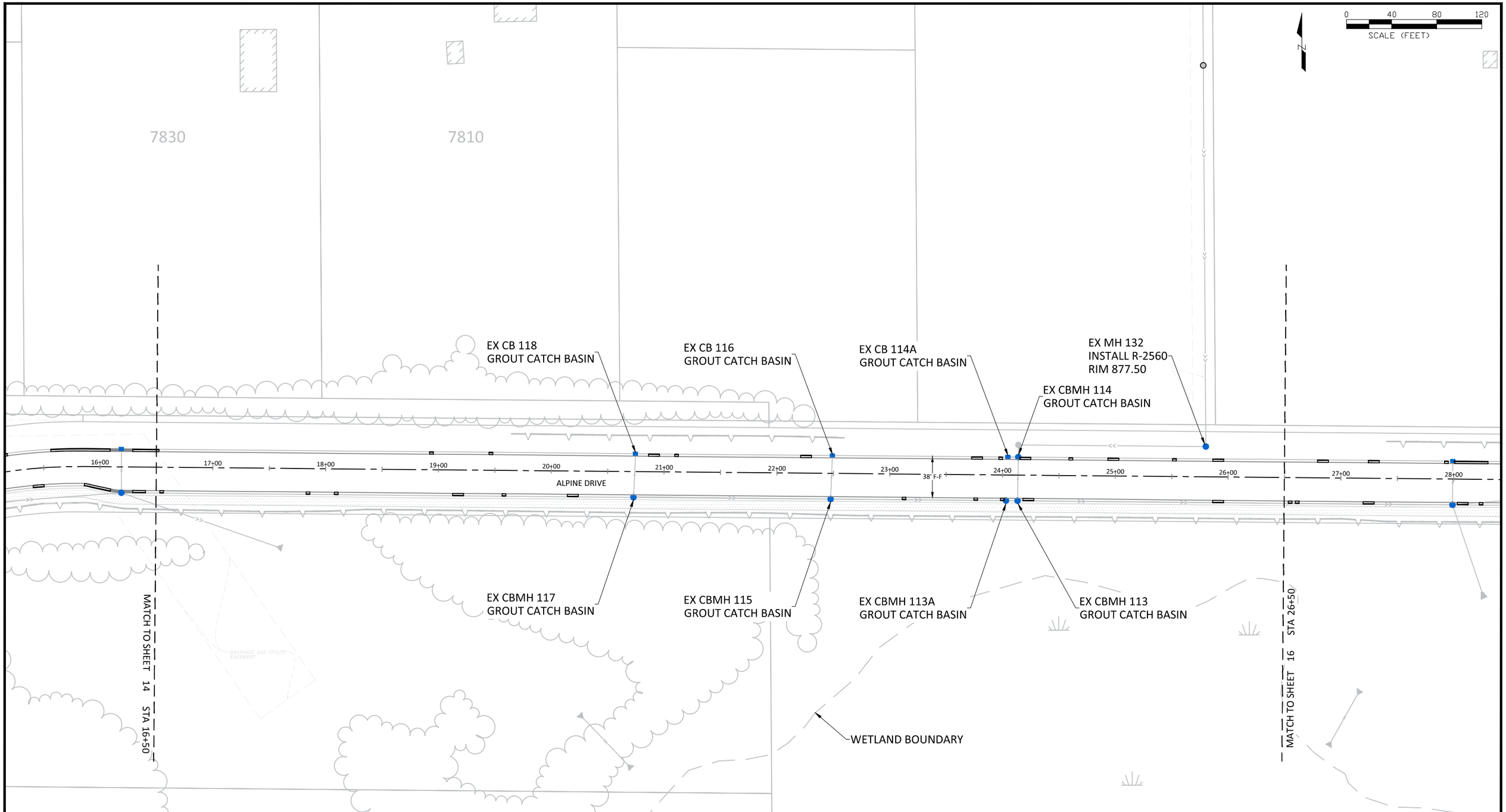
City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

STREET AND STORM SEWER
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA

SHEET 14 OF 21 SHEETS



LEGEND

- CONCRETE DRIVEWAY
- PROPOSED STORM SEWER
- PROPOSED CURB & GUTTER
- CATCH BASIN MANHOLE
- 2 X 3 CATCH BASIN
- FLARED END

THE LOCACTIONS OF EXISTING UNDERGROUND UTILITES ARE SHOWN IN AN APPROXIMATE WAY ONLY. IT IS NOT GUARANTEED ANY OR ALL EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTE: THE FIRST 10' OF CONCRETE CURB AND GUTTER REPLACEMENT ON EACH SIDE OF THE CATCH BASIN IS INCIDENTAL TO THE RESET CATCH BASIN CASTING PAY ITEM.

DATE	REVISION

Apr 12, 2017 - 8:31am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Street and Storm.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

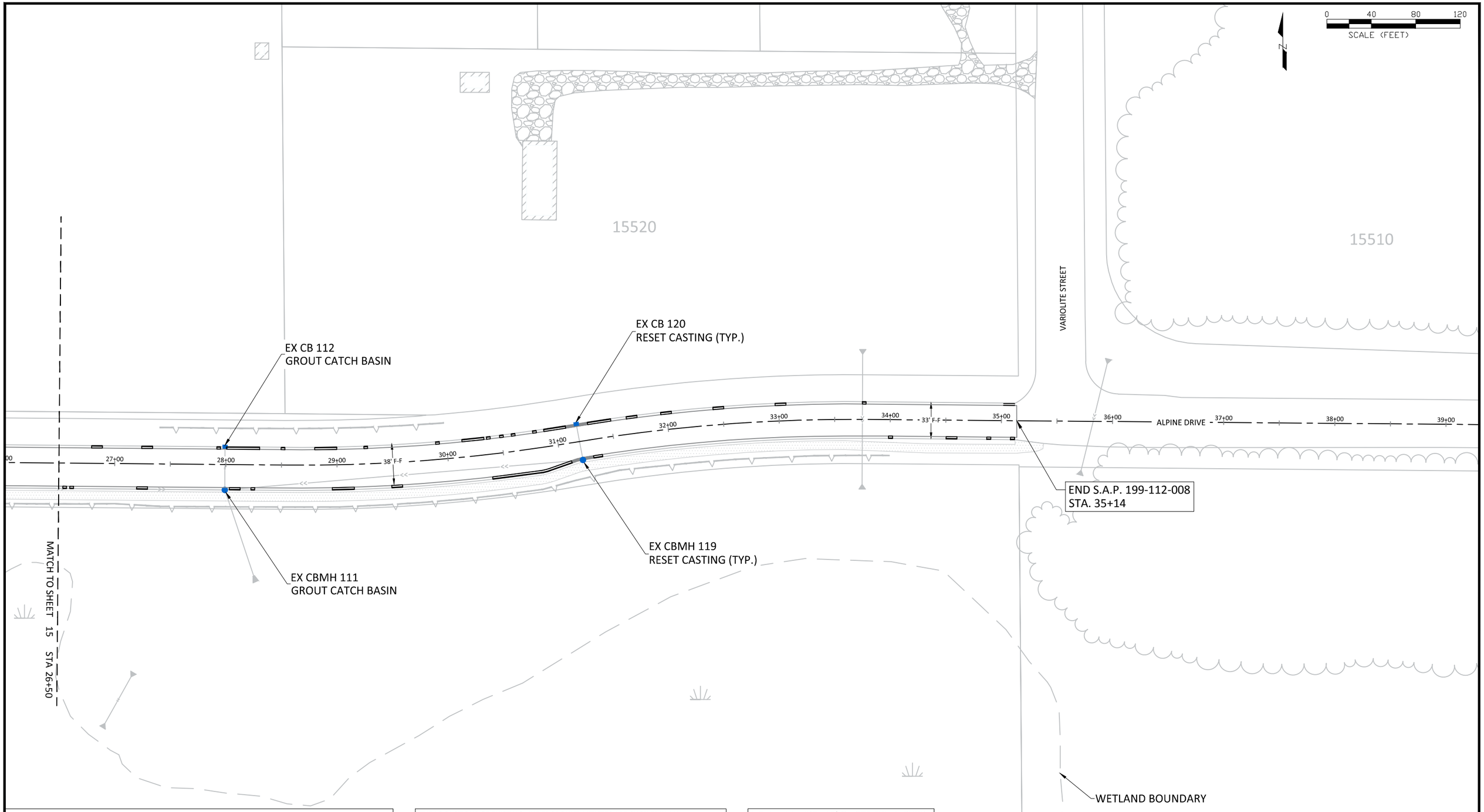
BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

DESIGNED BY:	JJF		
DRAWN BY:	JJF	DATE:	4/12/17
CHECKED BY:	BRW	FILE No.	17-01

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

STREET AND STORM SEWER
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA



LEGEND

- CONCRETE DRIVEWAY
- PROPOSED STORM SEWER
- PROPOSED CURB & GUTTER
- CATCH BASIN MANHOLE
- 2 X 3 CATCH BASIN
- FLARED END

THE LOCACTIONS OF EXISTING UNDERGROUND UTILITES ARE SHOWN IN AN APPROXIMATE WAY ONLY. IT IS NOT GUARANTEED ANY OR ALL EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTE: THE FIRST 10' OF CONCRETE CURB AND GUTTER REPLACEMENT ON EACH SIDE OF THE CATCH BASIN IS INCIDENTAL TO THE RESET CATCH BASIN CASTING PAY ITEM.

DATE	REVISION

Apr 12, 2017 - 8:31am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Street and Storm.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

DESIGNED BY: JJF	
DRAWN BY: JJF	DATE: 4/12/17
CHECKED BY: BRW	FILE No. 17-01

City of RAMSEY
CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

STREET AND STORM SEWER
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA

SHEET 16 OF 21 SHEETS

15385

SCALE (FEET) 0 6 12 18

880
879
878
877
876

EXISTING 24" RC APRON
INV. 875.69

ALPINE DRIVE

NOTE:
ONCE EXISTING 24" RC PIPE APRON IS EXPOSED, CONTRACTOR SHALL WORK WITH CITY STAFF TO CLEAN EXISTING CULVERT.

LEGEND

XXX	PROPOSED ELEVATION
XXX	EXISTING ELEVATION
	PROPOSED 1' CONTOUR
	PROPOSED 5' CONTOUR
	EXISTING 1' CONTOUR
	EXISTING 5' CONTOUR

15395

SCALE (FEET) 0 10 20 30

15" CS APRON
INV. 878.25

25' - 15" CMP

15" CS APRON
INV. 878.00

EXISTING 28" SPAN APRON
INV. 878.09

9+00

ALPINE DRIVE

LEGEND

XXX	PROPOSED ELEVATION
XXX	EXISTING ELEVATION
	PROPOSED 1' CONTOUR
	PROPOSED 5' CONTOUR
	EXISTING 1' CONTOUR
	EXISTING 5' CONTOUR

7720

7710

SCALE (FEET) 0 6 12 18

879

EX MH 132
R-2560 CASTING
RIM ELEVATION 877.5

878
878.5
879

ALPINE DRIVE

25+00

26+00

LEGEND

XXX	PROPOSED ELEVATION
XXX	EXISTING ELEVATION
	PROPOSED 1' CONTOUR
	PROPOSED 5' CONTOUR
	EXISTING 1' CONTOUR
	EXISTING 5' CONTOUR

DATE	REVISION

Apr 12, 2017 - 8:32am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Grading.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

DESIGNED BY:	JJF		
DRAWN BY:	JJF	DATE:	4/12/17
CHECKED BY:	BRW	FILE No.	17-01

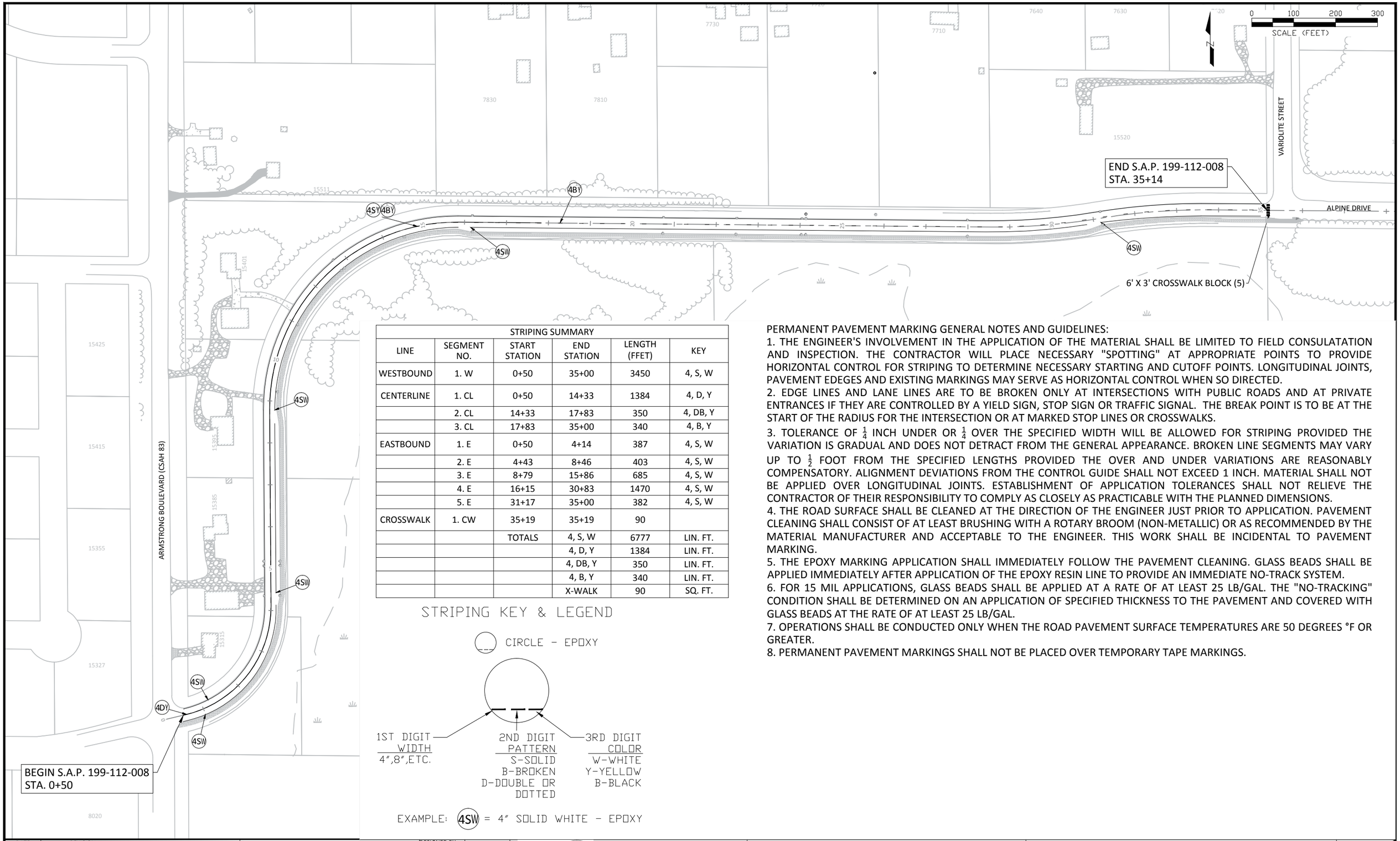
City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

GRADING
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA

SHEET 17 OF 21 SHEETS



STRIPING SUMMARY					
LINE	SEGMENT NO.	START STATION	END STATION	LENGTH (FFET)	KEY
WESTBOUND	1. W	0+50	35+00	3450	4, S, W
CENTERLINE	1. CL	0+50	14+33	1384	4, D, Y
	2. CL	14+33	17+83	350	4, DB, Y
	3. CL	17+83	35+00	340	4, B, Y
EASTBOUND	1. E	0+50	4+14	387	4, S, W
	2. E	4+43	8+46	403	4, S, W
	3. E	8+79	15+86	685	4, S, W
	4. E	16+15	30+83	1470	4, S, W
	5. E	31+17	35+00	382	4, S, W
CROSSWALK	1. CW	35+19	35+19	90	
		TOTALS	4, S, W	6777	LIN. FT.
			4, D, Y	1384	LIN. FT.
			4, DB, Y	350	LIN. FT.
			4, B, Y	340	LIN. FT.
			X-WALK	90	SQ. FT.

STRIPING KEY & LEGEND

EXAMPLE: 4SW = 4" SOLID WHITE - EPOXY

PERMANENT PAVEMENT MARKING GENERAL NOTES AND GUIDELINES:

1. THE ENGINEER'S INVOLVEMENT IN THE APPLICATION OF THE MATERIAL SHALL BE LIMITED TO FIELD CONSULATATION AND INSPECTION. THE CONTRACTOR WILL PLACE NECESSARY "SPOTTING" AT APPROPRIATE POINTS TO PROVIDE HORIZONTAL CONTROL FOR STRIPING TO DETERMINE NECESSARY STARTING AND CUTOFF POINTS. LONGITUDINAL JOINTS, PAVEMENT EDEGES AND EXISTING MARKINGS MAY SERVE AS HORIZONTAL CONTROL WHEN SO DIRECTED.
2. EDGE LINES AND LANE LINES ARE TO BE BROKEN ONLY AT INTERSECTIONS WITH PUBLIC ROADS AND AT PRIVATE ENTRANCES IF THEY ARE CONTROLLED BY A YIELD SIGN, STOP SIGN OR TRAFFIC SIGNAL. THE BREAK POINT IS TO BE AT THE START OF THE RADIUS FOR THE INTERSECTION OR AT MARKED STOP LINES OR CROSSWALKS.
3. TOLERANCE OF $\frac{1}{4}$ INCH UNDER OR $\frac{1}{4}$ OVER THE SPECIFIED WIDTH WILL BE ALLOWED FOR STRIPING PROVIDED THE VARIATION IS GRADUAL AND DOES NOT DETRACT FROM THE GENERAL APPEARANCE. BROKEN LINE SEGMENTS MAY VARY UP TO $\frac{1}{2}$ FOOT FROM THE SPECIFIED LENGTHS PROVIDED THE OVER AND UNDER VARIATIONS ARE REASONABLY COMPENSATORY. ALIGNMENT DEVIATIONS FROM THE CONTROL GUIDE SHALL NOT EXCEED 1 INCH. MATERIAL SHALL NOT BE APPLIED OVER LONGITUDINAL JOINTS. ESTABLISHMENT OF APPLICATION TOLERANCES SHALL NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY TO COMPLY AS CLOSELY AS PRACTICABLE WITH THE PLANNED DIMENSIONS.
4. THE ROAD SURFACE SHALL BE CLEANED AT THE DIRECTION OF THE ENGINEER JUST PRIOR TO APPLICATION. PAVEMENT CLEANING SHALL CONSIST OF AT LEAST BRUSHING WITH A ROTARY BROOM (NON-METALLIC) OR AS RECOMMENDED BY THE MATERIAL MANUFACTURER AND ACCEPTABLE TO THE ENGINEER. THIS WORK SHALL BE INCIDENTAL TO PAVEMENT MARKING.
5. THE EPOXY MARKING APPLICATION SHALL IMMEDIATELY FOLLOW THE PAVEMENT CLEANING. GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE EPOXY RESIN LINE TO PROVIDE AN IMMEDIATE NO-TRACK SYSTEM.
6. FOR 15 MIL APPLICATIONS, GLASS BEADS SHALL BE APPLIED AT A RATE OF AT LEAST 25 LB/GAL. THE "NO-TRACKING" CONDITION SHALL BE DETERMINED ON AN APPLICATION OF SPECIFIED THICKNESS TO THE PAVEMENT AND COVERED WITH GLASS BEADS AT THE RATE OF AT LEAST 25 LB/GAL.
7. OPERATIONS SHALL BE CONDUCTED ONLY WHEN THE ROAD PAVEMENT SURFACE TEMPERATURES ARE 50 DEGREES °F OR GREATER.
8. PERMANENT PAVEMENT MARKINGS SHALL NOT BE PLACED OVER TEMPORARY TAPE MARKINGS.

DATE	REVISION

Apr 12, 2017 - 8:33am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Striping Plan.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

DESIGNED BY:	JJF		
DRAWN BY:	JJF	DATE:	4/12/17
CHECKED BY:	BRW	FILE No.	17-01

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

STRIPING PLAN
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

ALPINE DRIVE RECONSTRUCTION

CITY OF RAMSEY
ANOKA COUNTY, MINNESOTA

LEGEND

PROJECT LIMITS
SPECIAL WATER

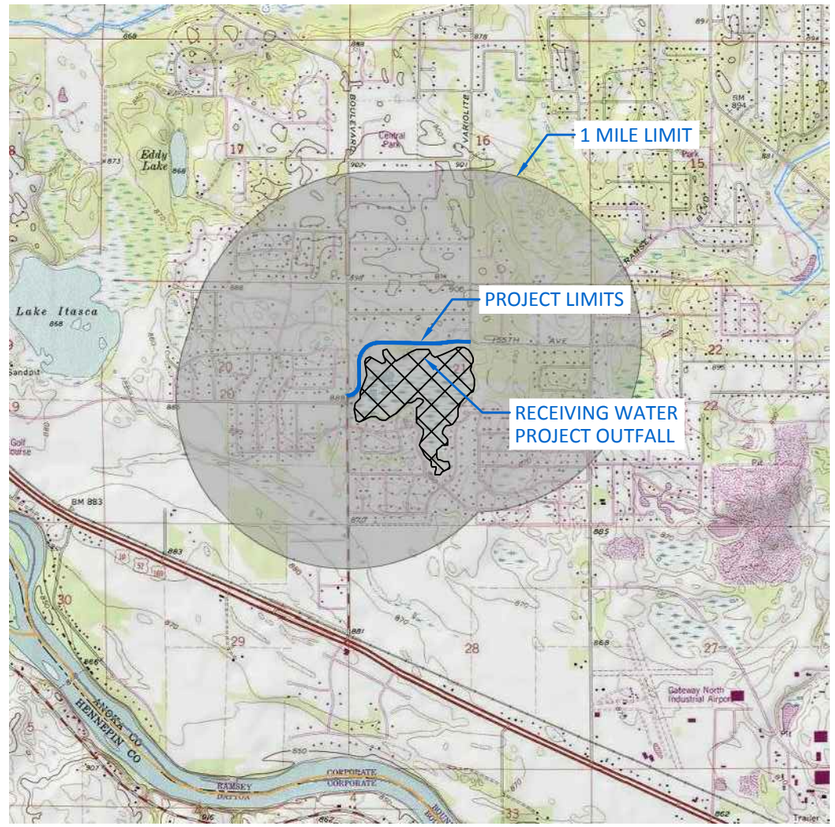
PROJECT AREAS
Total Project Size (disturbed area) = 3.18 acres
Existing area of impervious surfce = 2.98 acres
Post construction area of Impervious surface = 2.98 acres
New impervious surface area created = 0.00 acres

Planned Construction Start Date: June, 2017
Estimated Construction Completion Date: Oct, 2017

PERMANENT STORMWATER MANAGEMENT SYSTEM
Type of storm water management used if more than 1 acre of new impervious surface is created:
Wet Sedimentation Pond
Infiltration/ Filtration
Regional Pond
Permanent Stormwater Management Not Required

PROJECT LOCATION

County: ANOKA Township: 32 Range: 25 Section: 21 Latitude: 45.1507 Longitude: 93.2802



RESPONSIBLE PARTIES
The Contractor and Owner must apply for coverage under the MPCA's General Storm Water Permit for Construction Activity as required by the National Pollution Discharge Elimination System (NPDES) Phase II program. Coverage under the permit will begin automatically 7 calendar days after the electronic submittal date or after the postmarked date of a complete application. (Longer time frames will apply to areas that disturb 50 acres or discharge within 1 mile of a special water)

	COMPANY	CONTACT PERSON	PHONE
OWNER:	CITY OF RAMSEY	BRUCE WESTBY, PE	763-433-9825
SWPPP DESIGNER:	CITY OF RAMSEY	LEONARD LINTON, PE	763-433-9834
CONTRACTOR:			
SITE MANAGER:			
PARTY RESPONSIBLE FOR LONG TERM O&M:	CITY OF RAMSEY	BRUCE WESTBY, PE	763-433-9825

Individuals listed above, including the SWPPP preparer, individual overseeing implementation of, revising and amending the SWPPP, individuals performing or supervising the installation, maintenance and repair of BMP's must be trained. At least one individual present on the permitted project, or available within 72 hours shall be trained in the applicable job duties. Documentation showing training commensurate with the job duties and responsibilities is required to be included in the SWPPP prior to any work beginning on the site. Copies of the SWPPP preparer information is included in the Project Manual. The contractor shall provide information for the individual(s) overseeing implementation, supervising installation, maintenance, and repair of BMP's to included in the Project Manual prior to the start of construction. This information shall be kept up to date until the project NOT is filed.

Documentation shall include:
a. Names of trained personnel associated with this project.
b. Dates of training, names of instructor(s) and entity providing training.
c. Content of training course or workshop including the number of hours trained.
d. As an alternative to a, b, and c listed above, a photocopy of the a current Erosion and Stormwater Management card issued by the University of Minnesota can be attached to the SWPPP as suitable documentation of training.

SPECIAL ENVIRONMENTAL CONSIDERATIONS:

Was an environmental review required for this project or any parr of a common plan of development or sale that includes all or any portion of this project?	NO
Does any portion of the site have the potential to affect threatened or endangered species?	NO
Does any portion of this site discharge to a Calcareous fen and the letter of approval from the DNR is located in the Project Manual?	NO
Will any portion of the site potentially affect properties listed on the National Register of Historic Places or a Known or discovered archeological site?	NO
Have any Karst features been identified in the project vicinity?	NO
Is compliance with temporary or permanent stormwater management design requirements infeasible for this project?	NO

GENERAL STORMWATER DISCHARGE REQUIREMENTS
All requirements listed in Part III of the permit for the design of permanent stormwater management system and discharge have been included in the preparation of this SWPPP. These include but are not limited to:
1. The expected amount, frequency, intensity and duration of precipitation.
2. The nature of stormwater runoff and run-on at the site.
3. Peak flow rates and stormwater volumes to minimize erosion at outlets and downstream channel and stream bank erosion.
4. The range of soil particle sizes expected to be present on the site.

LOCATION OF SWPPP REQUIRMENETS IN PROJECT PLAN

DESCRIPTION	LOCATION
TEMPORARY EROSION CONTROL MEASURES	SHEETS NO. 10 - 12
FINAL STABILIZATION	SHEETS NO. 10 - 12
STORM SEWER PROFILE SHEETS	SHEETS NO. 14 - 16
STORM SEWER TABULATION	SHEETS NO. 3
EROSION AND SEDIMENT CONTROL DETAILS	SHEETS NO. 5

CERTIFICATION:
LEONARD LINTON: DESIGN OF CONSTRUCTION SWPPP EXPIRES MAY 31, 2019
INSTRUCTOR UNIVERSITY MN EROSION & STORMWATER MANAGEMENT CERTIFICATION PROGRAM.

DESCRIPTION OF CONSTRUCTION ACTIVITIES AND STORMWATER MANAGEMENT:
Construction activities include: Site grading, storm sewer construction, temporary erosion and sediment control, roadway, and permanent stabilization.

Project description:
The project consists of rehabilitation of 0.67 miles of existing bituminous street, with the existing concrete curb and gutter remaining in-place. The drainage for the existing street flows to 2 separate infiltration basins located relatively in the center of the project, which then flow to the wetland south of the project. There will be minor repairs and addition of 3 catch basins to the existing storm sewer system, with no change to the outfalls. The system is designed to handle the 2.5 inch rainfall and rate control.

DOCUMENT RETENTION
The following documentation will be retained for a period of not less than 3-years from the date of submittal of the NOT in compliance with Part III.E of the permit.
1. The final SWPPP
2. Copies of all stormwater related permits required for the project
3. Records of all inspection and maintenance conducted during construction
4. Copies of all permanent operation and maintenance agreements; including all right-of-way, contracts, covenants and other binding requirements regarding perpetual maintenance, and
5. All required calculations for design of temporary and permanent BMPs.

RECEIVING WATERS
Receiving waters, including surface water, wetlands, Public Waters, and stormwater ponds, are identified on the USGS 7.5min quad map within 1 mile of the project boundary. Receiving waters that are impaired, the impairment and WLA are listed as follows. All specific BMPs relative to construction activities listed in this permit for special and impaired waters have been incorporated into this plan. All specific BMPs listed in approved TMDLs and those BMPs listed for construction related waste load allocations have also been incorporated.

NAME OF WATER BODY	TYPE (ditch, pond, wetland, lake, etc.)	APPENDIX A SPECIAL WATER?	FLOWS TO IMPAIRED WATER WITHIN 1 MILE?	USEPA APPROVED TMDL?
NONE	N/A	NO	NO	NO
N/A				

IMPLEMENTATION SCHEDULE AND PHASING
1. Furnish & install perimeter sediment control, and inlet protection.
2. Remove existing bituminous pavement and spot concrete curb and gutter.
3. Rough grade site
4. Furnish & install storm structures
5. Furnish & install concrete curb, bituminous pavement.
6. Add additional temporary BMPs as necessary during construction based on inspection reports
7. Submit Notice of Termination NOT to MPCA within 30 days of final stabilization.

EROSION PREVENTION PRACTICES

1. The permittee(s) must plan for and implement appropriate construction phasing, vegetative buffer strips, horizontal slope grading, and other construction practices that minimize erosion, so that the inspection and maintenance requirements are complied with. The location of areas not to be disturbed must be delineated (e.G. With flags, stakes, signs, silt fence, etc.) on the development site before work begins.

2. All exposed soil areas must be stabilized as soon as possible, but in no case later than 14 days after the construction area has temorarily or permanently ceased.

DATE	REVISION

Apr 12, 2017 - 8:33am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\SWPPP Plan.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

DESIGNED BY:	JJF		
DRAWN BY:	JJF	DATE:	4/12/17
CHECKED BY:	BRW	FILE No.	17-01

City of RAMSEY
CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

SWPPP
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA

SHEET 19 OF 21 SHEETS

These areas include constructed storm water management pond side slopes, and any exposed soil areas with a positive slope to a storm water conveyance system, such as a curb and gutter system, storm sewer inlet, temporary or permanent drainage ditch or other natural or man made systems that discharge to a surface water.

3. The normal wetted perimeter of any temporary or permanent drainage ditch that drains water from a construction site, or diverts water around a site, must be stabilized within 200 lineal feet from the property edge, or from the point of discharge to any surface water. Stabilization must be completed within 24 hours of connecting to a surface water.

4. Pipe outlets must be provided with temporary or permanent energy dissipation within 24 hours of connection to a surface water.

5. All disturbed areas, except roadways, building areas, parking areas, islands and sidewalk, shall be restored with minimum 6 inches topsoil, seeded and mulched within 7 days of completion of site grading. Seeding shall be in accordance with mn/dot specification 2575 (c)100 lbs/acre (or approved equal). Dormant seeding areas shall be seeded and mulched in accordance with mn/dot specifications. Straw mulching quantity shall be two tons per acre. Where slopes exceed or equal 1:3, a polypropylene netting or wood fiber blanket shall be provided and staked over the mulched area. Fertilizer (15–0–10) shall be applied at a rate of 400 pounds per acre (can be omitted in landscaped areas if landscaped seeding is done concurrently).

6. Refer to landscape plan for areas to be seeded or sodded for erosion control.

SEDIMENT CONTROL PRACTICES

1. Sediment control practices must minimize sediment from entering surface waters, including curb and gutter systems and storm sewer inlets.

A. Temporary or permanent drainage ditches and sediment basins that are designed as part of a treatment system (e.G., ditches with rock check dams) require sediment control practices only as appropriate for site conditions.

B. If the down gradient treatment system is overloaded, additional upgradient sediment control practices must be installed to eliminate the overloading, and the swppp must be amended to identify these additional practices.

C. In order to maintain sheet flow and minimize rills and/or gullies, there shall be no unbroken slope length of greater than 75 feet for slopes with a grade of 1:3 or steeper.

2. Sediment control practices must be established on all down gradient perimeters before any upgradient land disturbing activities begin. These practices shall remain in place until final stabilization has been established.

3. The timing of the installation of sediment control practices may be adjusted to accommodate short–term activities such as clearing or grubbing, or passage of vehicles. Any short–term activity must be completed as quickly as possible and the sediment control practices must be installed immediately after the activity is completed. However, sediment control practices must be installed before the next precipitation event even if the activity is not complete.

4. All storm drain inlets must be protected by appropriate bmps during construction until all sources with potential for discharging to the inlet have been stabilized.

5. Temporary soil stockpiles must have silt fence or other effective sediment controls, and cannot be placed in surface waters, including storm water conveyances such as curb and gutter systems, or conduits and ditches.

6. Stockpile areas which remain on the site for more than seven days shall be seeded, mulched, and surrounded by silt fence.

7. Vehicle tracking of sediment from the construction site must be minimized by bmps such as stone pads, concrete or steel wash racks, or equivalent systems. Street sweeping must be used if such bmps are not adequate to prevent sediment from being tracked onto the street.

8. The permittee must install temporary sedimentation basins as required.

DEWATERING AND BASIN DRAINING

1. Dewatering or basin draining (e.g., pumped discharges, trench/ditch cuts for drainage) related to the construction activity that may have turbid or sediment laden discharge water must be discharged to a temporary or permanent sedimentation basin on the project site whenever possible. If the water cannot be discharged to a sedimentation basin prior to entering the surface water, it must be treated with the appropriate bmps, such that the discharge does not adversely affect the receiving water or downstream landowners. The permittee(s) must ensure that discharge points are adequately protected from erosion and scour. The discharge must be dispersed over natural rock riprap, sand bags, plastic sheeting or other accepted energy dissipation measures. Adequate sedimentation control measures are required for discharge water that contains suspended solids.

2. All water from dewatering or basin draining activities must be discharged in a manner that does not cause nuisance conditions, erosion in receiving channels or on downslope properties, or inundation in wetlands causing significant adverse impact to the wetland.

INSPECTIONS AND MAINTENANCE

1. The permittee(s) (either the owner or operator, whoever is identified in the swppp) must routinely inspect the construction site once every seven (7) days during active construction and within 24 hours after a rainfall event greater than 0.5 inches in 24 hours. Following an inspection that occurs within 24–hours after a rainfall event, the next inspection must be conducted within 7 days.

2. All inspections and maintenance conducted during construction must be recorded in writing and these records must be retained with the SWPPP. Records of each inspection and maintenance activity shall include:

a. Date and time of inspections;

b. Name of person(s) conducting inspections;

c. Findings of inspections, including recommendations for corrective actions;

d. Corrective actions taken (including dates, times, and party completing maintenance activities);

e. Date and amount of all rainfall events greater than 1/2 inch (0.5 inches) in 24 hours; and

f. Documentation of changes made to the SWPPP as required in part iii.A.4.

3. Where parts of the construction site have undergone final stabilization, but work remains on other parts of the site, inspections of the stabilized areas may be reduced to once per month. Where work has been suspended due to frozen ground conditions, the required inspections and maintenance must take place within 24 hours after runoff occurs at the site or 24 hours prior to resuming construction, whichever comes first.

4. All erosion prevention and sediment control BMP's must be inspected to ensure integrity and effectiveness. All nonfunctional BMP's must be repaired, replaced, or supplemented with functional bmps. The permittee(s) must investigate and comply with the following inspection and maintenance requirements:

a. All silt fences must be repaired, replaced, or supplemented when they become nonfunctional or the sediment reaches 1/3 of the height of the fence. These repairs must be made within 24 hours of discovery, or as soon as field conditions allow access.

B. Temporary and permanent sedimentation basins must be drained and the sediment removed when the depth of sediment collected in the basin reaches 1/2 the storage volume. Drainage and removal must be completed within 72 hours of discovery, or as soon as field conditions allow access.

C. Surface waters, including drainage ditches and conveyance systems, must be inspected for evidence of sediment being deposited by erosion. The permittee(s) must remove all deltas and sediment deposited in surface waters, including drainage ways, catch basins, and other drainage systems, and restabilize the areas where sediment removal results in exposed soil. The removal and stabilization must take place within seven (7) days of discovery unless precluded by legal, regulatory, or physical access constraints. The permittee shall use all reasonable efforts to obtain access. If precluded, removal and stabilization must take place within seven (7) calendar days of obtaining access. The permittee is responsible for contacting all local, regional, state and federal authorities and receiving any applicable permits, prior to conducting any work.

D. Construction site vehicle exit locations must be inspected for evidence of off–site sediment tracking onto paved surfaces. Tracked sediment must be removed from all off–site paved surfaces, within 24 hours of discovery, or if applicable, within a shorter time.

E. The permittee(s) are responsible for the operation and maintenance of temporary and permanent water quality management BMP's, as well as all erosion prevention and sediment control BMP's, for the duration of the construction work at the site. The permittee(s) are responsible until another permittee has assumed control over all areas of the site that have not been finally stabilized or the site has undergone final stabilization, and a not has been submitted to the MPCA.

F. If sediment escapes the construction site, off–site accumulations of sediment must be removed in a manner and at a frequency sufficient to minimize off–site impacts (e.G., fugitive sediment in streets could be washed into storm sewers by the next rain and/or pose a safety hazard to users of public streets).

5. All infiltration areas must be inspected to ensure that no sediment from ongoing construction activities is reaching the infiltration area and these areas are protected from compaction due to construction equipment driving across the infiltration area.

6. Storm sewer pipes and structures to be inspected and cleaned out.

POLLUTION PREVENTION MANAGEMENT MEASURES

The permittee(s) shall implement the following pollution prevention management measures on the site:

1. Solid waste: collected sediment, asphalt and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other wastes must be disposed of properly and must comply with mpca disposal requirements.

2. Hazardous materials: oil, gasoline, paint and any hazardous substances must be properly stored, including secondary containment, to prevent spills, leaks or other discharge. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal of hazardous waste must be in compliance with mpca regulations.

3. External washing of trucks and other construction vehicles must be limited to a defined area of the site. Runoff must be contained and waste properly disposed of. No engine degreasing is allowed on site.

FINAL STABILIZATION

The permittee(s) must ensure final stabilization of the site. The permittee(s) must submit a not within 30 days after final stabilization is complete, or another owner/operator (permittee) has assumed control over all areas of the site that have not undergone final stabilization. Final stabilization can be achieved in one of the following ways:

1. All soil disturbing activities at the site have been completed and all soils must be stabilized by a uniform perennial vegetative cover with a density of 70 percent over the entire pervious surface area, or other equivalent means necessary to prevent soil failure under erosive conditions and;

a. All drainage ditches, constructed to drain water from the site after construction is complete, must be stabilized to preclude erosion;

b. All temporary synthetic, and structural erosion prevention and sediment control bmps (such as silt fence) must be removed as part of the site final stabilization; and

c. The permittee(s) must clean out all sediment from conveyances and from temporary sedimentation basins that are to be used as permanent water quality management basins. Sediment must be stabilized to prevent it from being washed back into the basin, conveyances or drainageways discharging off–site or to surface waters. The cleanout of permanent basins must be sufficient to return the basin to design capacity.

2. Final vegetation cover shall be in Project Specifications.

3. For residential construction only, final stabilization has been achieved when temporary erosion protection and down gradient perimeter control for individual lots has been completed and the residence has been transferred to the homeowner. Additionally, the permittee must distribute the MPCA "Homeowner fact sheet" to the homeowner to inform the homeowner of the need for, and benefits of, final stabilization.

SEQUENCE OF CONSTRUCTION

Construction shall proceed in the following sequence:

1. Contractor shall schedule and conduct a pre–construction meeting with the City.
2. Contractor shall secure all necessary permits and licenses.
3. Furnish & install erosion control measures.
4. Maintain erosion control measures, i.e. silt fence, temporary rock construction entrance.
5. Construct storm sewer.
6. Remove existing bituminous pavement and base, and remove damaged curb and gutter.
7. Prepare subgrade.
8. Place and compact aggregate base material.
9. Furnish & install concrete curb, base course of bituminous pavement.
10. Furnish & install wear course of bituminous pavement.
11. Grout catch basins
12. Remove erosion control after vegetation is established.

ADDITIONAL STORMWATER POLLUTION PREVENTION, GRADING PLAN ANS SCHEDULE NOTES

1. All slopes to be 1:4 unless approved by the city engineer.
2. Below grade structures shall be protected and meet drainage requirements per the city engineer.
3. Construction operation hours are from 7:00am–10:00pm Mon.–Sat.
4. Call Gopher State One Call for utility locations prior to any work at 1–800–252–1166.
5. Permittee may need to modify SWPPP if the general objectives of controlling pollutants is not being met.
6. Operator shall implement these and any other bmp's that may be required to meet the general permit requirements.
7. Site is not in karst area or pollution or remediation site.
8. Silt fence to be installed downhill from any grading activity.
9. If tracking onto adjacent streets occurs a street sweeper shall be used to clean streets within 8 hours or as directed by the engineer.
10. Dust control may be necessary during rough grading. No grading can take place if wind speed exceeds 25 mph.
11. Solid waste shall be collected and disposed of properly and must comply with MPCA disposal requirements.
12. Hazardous materials shall be stored properly to prevent spills and vandalism
13. No engine degreasing is allowed on site. External washing of vehicles shall be limited to a defined area (bone yard) on site.
14. Permitee(s) shall adhere to all SWPPP specifications on this plan and other mpca permit requirements.

DATE	REVISION

Apr 12, 2017 - 8:33am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\SWPPP Plan.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

DESIGNED BY:	JJF	
DRAWN BY:	JJF	DATE: 4/12/17
CHECKED BY:	BRW	FILE No. 17-01

City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

SWPPP
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA

SHEET 20 OF 21 SHEETS

ALPINE DRIVE CLOSED
ARMSTRONG BLVD (CSAH 83) TO VARIOLITE STREET
PROJECTED CLOSURE: 8 WEEKS

PROPOSED DETOUR ROUTE

PROPOSED DETOUR ROUTE

SIGN LAYOUT NOTE:
FOLLOW MNDOT TEMPORARY TRAFFIC CONTROL PLAN, TYPICAL SIGNING FOR ROAD CLOSURES TEMPLATE

SCALE (FEET)
0 400 800 1200

DATE	REVISION

Apr 12, 2017 - 8:34am
G:\Engineering\AutoCad Dwgs\Projects A-M\Alpine Drive - Armstrong to Variolite\Plan Drawings\Detour Plan.dwg

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

BRUCE R WESTBY
Date 4/12/17 Lic. No. 40116

DESIGNED BY:	JJF		
DRAWN BY:	JJF	DATE:	4/12/17
CHECKED BY:	BRW	FILE No.	17-01

City of RAMSEY

CITY OF RAMSEY
7550 SUNWOOD DRIVE
RAMSEY, MN 55303
(763) 427-1410 FAX (763) 433-9898

DETOUR PLAN
S.A.P. 199-112-008

ALPINE DRIVE RECONSTRUCTION
CITY PROJECT NO. 17-01
CITY OF RAMSEY, MINNESOTA

SHEET 21 OF 21 SHEETS

Public Works Committee **5. 6.**

Meeting Date: 04/18/2017

By: Bruce Westby, Engineering/Public Works

Title:

Consider Recommending City Council Authorization to Prepare Plans and Specifications for Improvement Project #17-09, Bunker Lake Blvd Utilities Extension

Purpose/Background:

Two development proposals currently exist for the Future Business Park area.

The first development is proposed by Capstone Homes who wants to construct around 300 single family homes. This development, known as Riverstone, is proposed to be located within the area bordered by the Northfork golf course, Alpine Drive, Puma Street, and Highway 10. This development is in the City's MUSA area and as such is proposed to be served by City water and sanitary sewer.

The second development is proposed by PSD LLC who wants to construct a new business park. This concept stage proposal was presented to the City Council at their March 28th Work Session. This development is proposed to be located on 45 acres of land between Bunker Lake Boulevard and Highway 10, east of Puma Street. PSD has a letter of intent to purchase the land from Hageman Holdings. The PSD LLC proposal includes getting all building sites "pad ready" in anticipation of future construction. This work would include mass site grading, storm water pond grading, and installation of utility stubs. While this development proposal is at concept stage only at this time, PSD LLC appears to be committed to this proposal.

When Bunker Lake Boulevard and Puma Street were constructed in 2006, only a portion of Bunker Lake Boulevard was constructed to its proposed permanent condition, including utilities and the street. The remainder of Bunker Lake Boulevard, and all of Puma Street, were constructed with temporary pavement sections and no utilities. The trunk sanitary sewer and watermain utilities under Bunker Lake Boulevard were terminated approximately 1,400 feet east of Puma Street as depicted in Figure 1 (attached). The existing watermain is 16-inch DIP. The existing sanitary sewer is 18-inch PVC. These utilities were intended to be extended, and the streets constructed to their permanent condition, at the time the abutting parcels were developed. The utilities are currently located 3 or more feet south of the edge of the existing pavement section so extending the utilities can be accomplished by closing one lane of traffic on Bunker Lake Boulevard. Therefore, access to the existing home in the northeast corner of the intersection of Bunker Lake Boulevard and Puma Street will be maintained at all times.

In March 2017, Bolton Menk updated their Future Business Park report to include estimated costs for extending trunk utilities to Puma Street. Their estimated cost to extend the 16-inch trunk watermain line 1,400 feet to Puma Street, including fire hydrants and service stubs to abutting properties to the north and south, is $154,000. Their estimated cost to extend the 18-inch trunk sanitary sewer line 1,400 feet to Puma Street, including manholes and service stubs to abutting properties to the north and south, is $179,000. These costs include 30% contingency and indirect costs. All costs to extend the utilities are proposed to be paid through City sewer and water funds. The developer's share of these costs will be recovered through their trunk utility fees at the time of development.

City staff is currently working with Capstone Homes to develop an assessment agreement that will allow the City to construct the remaining public infrastructure in phases 1A (streets only) and 1B (streets and utilities) as necessary to support their development. The assessment agreement will allow the City to assess the developer for a portion of the costs. The assessment agreement will be presented to the City Council for consideration of approval at a later date.

Capstone Homes wants to begin construction of the Riverstone development this summer. Development of the lots on the south end of the development will occur first. In order to issue Certificates of Occupancy for these homes, they must be served by City sewer and water which will require the existing trunk utilities to be extended along Bunker Lake Boulevard to Puma Street. By completing this work as a City improvement project in advance of the assessment agreement being executed, Capstone Homes will be able to connect more homes to City sewer and water in the fall of 2017 due to the time that will be saved by extending the utilities to Puma Street in advance of the improvements that will be constructed through the assessment agreement.

Staff is proposing to extend the utilities along Bunker Lake Boulevard to Puma Street this summer to support these and other development proposals within the Future Business Park area.

Timeframe:

Staff estimates this case will take 15 minutes to present and respond to questions.

Observations/Alternatives:

Observations:

City Staff proposes to prepare plans and specifications in-house. City staff also proposes to administer the project and to inspect construction.

Staff will work with the property owners north and south of Bunker Lake Boulevard during development of plans and specifications to locate proposed utility service stubs.

Repairs to the existing temporary street section as a result of the utilities extension work will be evaluated during development of the plans. Staff recommends using aggregate base as a temporary surfacing since the street is proposed to be reconstructed to its permanent condition in the fall. Costs to repair or replace the street surfacing are not included in the estimated costs above. Staff estimates this cost will be about $60,000 if a portion of the City's aggregate base stockpile is used as temporary surfacing.

Alternatives:

Alternative #1 – Motion to recommend City Council authorization to prepare plans and specifications for extending trunk sanitary sewer and watermain along Bunker Lake Boulevard to Puma Street.

Alternative #2 – Motion of other.

Funding Source:

All costs required to extend the utilities are proposed to be paid through City sewer and water funds.

Recommendation:

Staff recommends providing a recommendation to the City Council to authorize preparation of plans and specifications for extending trunk sanitary sewer and watermain along Bunker Lake Boulevard to Puma Street to support current and future development of abutting parcels within the Future Business Park area.

Action:

Recommend City Council authorization to prepare plans and specifications for extending trunk sanitary sewer and watermain along Bunker Lake Boulevard to Puma Street.

Attachments

Figure 1

FBP Report Mar2017

Form Review

Inbox	Reviewed By	Date
Patrick Brama	Patrick Brama	04/13/2017 04:07 PM
Diana Lund	MaryJo Warner	04/13/2017 04:23 PM
Grant Riemer	MaryJo Warner	04/13/2017 04:23 PM
Kurt Ulrich	Kurt Ulrich	04/13/2017 04:27 PM

Form Started By: Bruce Westby Started On: 04/10/2017 05:27 PM

Final Approval Date: 04/13/2017

Bunker Lake Boulevard Utility Extensions

Print Date: April 12, 2017

0 230 460 920 1,380 1,840 Feet

FIGURE 1

BOLTON & MENK

Real People. Real Solutions.

City of Ramsey

Future Business Park

March 2017 Update

Analysis and Report

Submitted by:
Bolton & Menk, Inc.
7533 Sunwood Drive NW
Suite 206
Ramsey, MN 55303
P: 763-433-2851

Table of Contents

Appendix

EXECUTIVE SUMMARY

The City of Ramsey identified the need to prepare for the development of a new business park within the City. A large area of privately owned green-field space located on the north side of Trunk Highway 10, west of Armstrong Boulevard, was identified for a future Ramsey Business Park. A report was prepared in late 2015 and early 2016 which reviewed traffic impacts and outlined infrastructure needs related to business park area.

Development pressures have resulted in proposed land use changes for a portion of the study area. Phasing of the development activities in this area is also different than previously anticipated. As a result, the City requested an update to the previous analysis.

This update primarily includes a study of traffic impacts resulting from the revised anticipated land uses in the business park.

The updated analysis indicates the required improvements within the study area can be implemented based on the phasing plan currently proposed. Each series of improvements for Bunker Lake Boulevard and Puma Street can be implemented as the properties immediately adjacent to the roadways are developed.

Future improvements required to serve the area include:

- Expansion of Bunker Lake Boulevard (west of Armstrong Boulevard) to a four lane section,
- Expansion of the west end of Bunker Lake Boulevard and Puma Street to three lane sections,
- Construction of right turn lanes at entrances,
- Extension of an 18-inch sanitary sewer line along Bunker Lake Boulevard and Puma Street,
- North of the Puma Street/Bunker Lake Boulevard intersection, construction of a lift station,
- North of the lift station, extension of a 12-inch sanitary sewer gravity main,
- Extension of a 16-inch water main along Bunker Lake Boulevard and Puma Street,
- Use of regional rate control basins to maintaining existing flow rates into the COR,
- Installation of street lighting, trails/sidewalks, and landscaping consistent with City Policy, and
- Obtaining of ROW required for improvements during the platting process.

Total costs for all public improvements are approximately $6,819,000, assuming the project is constructed according to the phases described in this report. The costs are considered project costs and include 30% contingencies and project development costs (administrative, engineering, and fiscal).

Costs related to trunk sanitary sewer and trunk watermain were assumed to be paid from City utility funds. The City will need to develop a funding strategy for the remaining $5,419,000 in public improvement costs.

The information presented in this report is intended to allow for discussions with property owners and developers, as well as allow the City to begin considering funding options.

I. INTRODUCTION

The Ramsey City Council and Ramsey Economic Development Authority (EDA) identified the need to prepare for the development of a new business park within the City. The City identified a large area of privately owned green-field space located on the north side of Trunk Highway 10, west of Armstrong Boulevard, for a future Ramsey Business Park. A report was prepared in late 2015 and early 2016 which reviewed traffic impacts and outlined infrastructure needs related to the business park area. That report is incorporated by reference to this update.

Development pressures have resulted in proposed land use changes for a portion of the study area. Phasing of the development activities in this area is also different than previously anticipated. As a result, the City requested an update to the previous analysis.

The previous report provided a comprehensive analysis of the study area. This update focuses primarily on areas located adjacent to Puma Street, with a more cursory review of the remaining study area. Infrastructure needed and potential cost allocations related to the required improvements are included in this review.

The overall study area boundary remains unchanged from the previous study (see Figure 1).

II. LAND USE UPDATES

The primary land use changes relate to the area west of Puma Street and north of Bunker Lake Boulevard. The area west of Puma Street was previously a combination of Business Park and Medium Density Residential, and will now be all Medium Density Residential. The area north of Bunker Lake Boulevard had been Public, and will now be Business Park (see Figure 2 for updated land uses).

III. PRELIMINARY CONSIDERATIONS

The previous study described the roadway and public utility improvements required to serve the study area.

Public utility improvements are based on information contained in the City's Comprehensive Plans for sanitary sewer and water. The proposed updates in land use for this specific area are not anticipated to change the strategies contained in those Comprehensive Plans. The sanitary sewer and water system improvements, as outlined in the previous study, are still considered as base requirements for developments occurring in this area.

Roadway improvements require additional analysis based on the new land uses. Both the Average Annual Daily Traffic (AADT) and the Peak Hour turning movements are expected to change due to the updated land uses. The required roadway geometrics (number of through lanes, turns lanes, etc.) will be reviewed and compared to those described in the previous study.

Traffic patterns are expected to change as a result of the changes in land use. For example:

- For Business Park uses, traffic would be expected to enter the area in the morning (AM Peak Hour) and leave in the evening (PM Peak Hour).
- For Residential uses, traffic would be expected to leave the area during the AM Peak Hour and return during the PM Peak Hour.
- For Public, or School, uses, traffic would be expected to enter the area during the AM Peak Hour, leave during an early PM Peak Hour, and not impact the traditional PM Peak Hour. Also,

special events at School properties typically occur at off-peak times, creating congestion outside of the typical peak hours.

The updated land uses include Business Park areas being converted to residential, and also Public areas being converted to Business Park.

IV. DISCUSSION OF PHASES/IMPROVEMENTS

The previous analysis considered a phasing plan beginning a quarter of a mile west of Armstrong Boulevard and then systematically extending to the west along Bunker Lake Boulevard and then north along Puma Street. New development pressures create a revised phasing strategy for implementation of infrastructure improvements.

A Preliminary Plat is anticipated for the 87.8 acre property immediately west of Puma Street and extending from the Union Pacific Railroad tracks to Alpine Avenue. This area is anticipated to ultimately contain 351 lots and be phased from south to north.

The current phasing strategy is depicted on Figure 3. A discussion of the phasing, along with required infrastructure improvements is described below:

A. Phase 1A

The phase 1A improvements are as depicted on Figure 4. The developments will include both Residential and Business Park uses.

The public utility improvements will consist of extending the sanitary sewer and water mains to Puma Street. The utilities will need to be extended beyond the future roadway improvements to avoid the need to impact those facilities when future phases occur.

The roadway improvements will include construction of Bunker Lake Boulevard from the previously constructed west access to the former school property to Puma Street.

B. Phase 1B

See Figure 5 for the anticipated Phase 1B development area. The improvements will include both Residential and Business Park uses, extending north from the Phase 1A development area. The Phase 1B development area is anticipated to extend to the low area along Puma Street.

The public utility improvements will consist of extending the sanitary sewer and water mains north along Puma Street. The utilities will need to be extended beyond the future roadway improvements to avoid the need to impact those facilities when future phases occur.

The roadway improvements will include construction of Puma Street from Bunker Lake Boulevard to the low area along Puma Street.

C. Phase 2

See Figure 6 for the anticipated Phase 2 development area. The improvements are anticipated to consist entirely of residential uses, extending from the low area along Puma Street to Alpine Drive.

The public utility improvements will consist of extending the sanitary sewer and water mains north along Puma Street. The utilities will need to be extended to Alpine Drive, with consideration given to future extensions along Alpine Drive.

The roadway improvements will include construction of Puma Street from the low area

along Puma Street to Alpine Drive.

D. Future Phase

The future phase of development is depicted on figure 7, and includes an area east of the Phase 1A, Phase 1B and Phase 2 improvements.

The area includes Business Park uses. The north half of Bunker Lake Boulevard, along with sanitary sewer and water mains have been constructed through this area. Roadway improvements will include construction of the south half of Bunker Lake Boulevard.

E. Area of Additional Consideration

This area is depicted on Figure 8 and is comprised of the areas along the first ¼ mile of Bunker Lake Boulevard west of Armstrong Boulevard which may access Bunker Lake Boulevard in the future. There is the potential for this area to be developed as a commercial/retail center, which would be a significant traffic generator. There is also the potential for the property located south of Bunker Lake Boulevard to access Armstrong Boulevard at 147th Avenue, which would relieve stress on the Bunker Lake Boulevard and Armstrong Avenue intersection.

V. ASSUMPTIONS CARRIED FORWARD

The primary focus of this analysis is related to providing infrastructure to serve development along Puma Street in the near future. In the previous study, assumptions were made that should be considered by the City as developments are brought forward. The following is a summary of those items:

Right-of-Way Requirements

We have assumed that most of the required improvements will be development driven and Right of Way will be secured through the platting process. The City will need to review the right of way required and secure needed easements during the Preliminary Platting process.

Phased Improvements

A general understanding of the improvements required to ultimately serve the area along with an anticipated sequencing of the improvements is described above. Changes in the sequencing of the improvements could impact the facilities needed for each phase and the costs associated with those improvements.

Jurisdictional Authority/Approvals/Permits

As the project moves from the planning stages to design and construction, permits will be required from various agencies. The following agencies will be permitting entities for considered improvements:

- Minnesota Department of Transportation State Aid: Bunker Lake Boulevard and Puma Street are State Aid routes,
- Minnesota Pollution Control Agency: NPDES Storm Water Permit,
- Minnesota Pollution Control Agency: Sanitary Sewer Extension Permit,
- Minnesota Department of Health (MDH): Watermain Extension and Dewatering,
- Anoka County: Work in Right of Way, and
- Lower Rum River Watershed Management Organization: Storm Water.

Both MnDOT and Anoka County were engaged during the previous study process. Comments from both agencies are reflected in the improvements considered in this report.

Previous Improvements

Significant consideration and planning was completed prior to completion of the improvements constructed in 2011. Those improvements included street, trail, sanitary sewer and water distribution. Additionally, consideration was given to storm water management strategies and a potential 30-inch raw watermain from a future intake on the Mississippi River to the proposed site of the water treatment plant, just south of Fire Station No. 1. All previous analyses and reports are considered as a part of this analysis.

VI. ADDITIONAL ANALYSIS

In the previous analysis, we completed traffic and storm water studies and reviewed City Comprehensive Plans for sanitary sewer and water main needs for the study area. Based on the changes in proposed land use, the traffic study requires revisions. The storm water requirements, along with the sanitary sewer and water main needs, are unchanged as a result of the revised land uses. The following paragraphs relate key findings of the traffic analysis. The complete analysis is included in Appendix B of this report.

a. Traffic Analysis Update

The traffic analysis was completed to determine required lane geometry for Bunker Lake Boulevard and Puma Street, along with turn lane requirements at four intersections in the study area.

The revised land uses result in an increase of 18,100 trips per day into and out of the area at full build. This is at the low end of the range previously calculated for the area (18,500 to 23,300).

Note: Short term improvements are intended to mitigate current safety or operations problems, along with full development of the Study Area. Mid-term improvements are anticipated safety related improvements that may be required within the study area. Long-term improvements are anticipated safety improvements required as a result of growth in the region.

b. Short Term Improvements

- Armstrong Boulevard & Bunker Lake Boulevard:
    - Bunker Lake Boulevard is proposed to be reconstructed in the near future by Anoka County to a four lane divided road between Ramsey Boulevard and Armstrong Boulevard. The dual southbound left turn lanes at this intersection will be striped when Bunker Lake Boulevard is reconstructed. A southbound double left turn lane will help reduce queues entering the COR development.
    - Plan for eastbound dual-right turn lanes, two eastbound through lanes, and a 300 ft. left turn lane.
- Bunker Lake Boulevard (west of Armstrong Boulevard):
    - Expand to a four lane section for development to the first full access to the west of Armstrong Boulevard. This will be between 540 ft. to 775 ft., depending on access from the COR to Bunker Lake Boulevard.

- The eastbound approach should include a left turn lane, two through lanes, and one right turn lane.

- Bunker Lake Boulevard (west of commercial section to Puma Street):
  - Expand to a three lane section for development.
  - Right turn lanes (locations and lengths) will be determined based on development type. Right turn lanes will typically be required where development related trips are anticipated to be more than 100 per day.

- Puma Street:
  - Expand to a three lane section for development (two through lanes and one center left turn lane). Depending on what type of developments occur on the east side of Puma Street, and where those accesses are located, Puma Street could potentially remain as a two lane roadway.
  - Right turn lanes (locations and lengths) will be determined based on development type.

- Bunker Lake Boulevard & Puma Street Intersection:
  - An all-way stop or single lane roundabout will operate adequately at this intersection for the 2040 Full-Build conditions. A southbound left turn lane and westbound right turn lane are recommended for an all way stop.

c. Mid-Term Improvements

- See attached Traffic Memorandum in Appendix B.

d. Long-Term Improvements

- See attached Traffic Memorandum in Appendix B.

e. Discussion of Findings

- The required improvements within the study area can be implemented based on the phasing plan described above. Each series of improvements for Bunker Lake Boulevard and Puma Street can be implemented as the properties immediately adjacent to the roadways are developed.
- Puma Street could potentially be developed as a two lane section with right and left turn lanes at key access points. This will depend on access point locations, type of development on the east side of Puma Street, and location of accesses along the corridor. We recommend proceeding with the three lane section at this time due to the uncertainties of development in the area.
- For Phase 1A, right turn lanes will most likely be required both eastbound and westbound along Bunker Lake Boulevard and southbound along Puma Street at proposed access locations. Temporary paving will be required to transition back to the existing Bunker Lake Boulevard and the existing Puma Street.
- For Phase 1B, right turn lanes will most likely be required both northbound and southbound along Puma Street at proposed development access locations. Temporary paving will be required to transition back to the existing Puma Street.
- For Phase 2, right turn lanes will most likely be required both northbound and southbound along Puma Street at proposed development access locations.

- For the Future Phase, right turn lanes will most likely be required along Bunker Lake Boulevard in both the eastbound and westbound directions. Temporary paving will be required to transition back to the existing Bunker Lake Boulevard.
- Our analysis indicates that, while nearing capacity, the intersection of Bunker Lake Boulevard and Armstrong Boulevard will not require improvements until the Area of Additional Consideration is developed.

VII. ADDITIONAL IMPROVEMENT CONSIDERATIONS

For more detailed information of each of the following items, please reference the previous study report.

Street Lighting

The costs included for street lighting were derived from recent projects within the City of Ramsey.

Trails/Sidewalks

Project costs shown in this report include trails along the south side of Bunker Lake Boulevard and the east side of Puma Street.

Phase Transitions

Bunker Lake Boulevard and Puma Street will be constructed to wider sections than currently exist. Because the roadways will be constructed in phases, they will need to taper to meet the existing, narrower roadway widths. These taper sections will then be removed as the next phase of improvements is completed. Costs were included in each phase for these tapering roadway sections.

Right Turn Lane Additions

Right turn lanes will be required at each access off of Bunker Lake Boulevard and Puma Street. The actual access locations will be dependent upon the type of land use and internal site characteristics. We included allowances for the right turn lanes in each phase for budgeting purposes.

Landscaping

The improvements considered with this report include a very utilitarian landscaping approach to the area. Bituminous trails and lighting were included, but other features, such as trees, shrubs, decorative features and monuments are not included in the estimated project costs.

Right of Way and Easements

We assumed that required rights of way would be dedicated as a portion of the development process and no costs are included in the project costs for acquisitions.

VIII. COST CONSIDERATIONS

Costs were developed based upon phased implementation. The phasing is as depicted on the figures in Appendix A. All costs presented in the following pages are 2017 costs, with no allowance for inflation.

Phases 1A, 1B and 2

Improvement Type	Phase 1A	Phase 1B	Phase 2
Roadway	$ 795,000	$ 940,000	$ 675,000
Roadway Transitions	$ 66,000	$ 78,000	$ 56,000
Right Turn Lanes	$ 132,000	$ 156,000	$ 112,000
Trails/Sidewalks	$ 106,000	$ 125,000	$ 90,000
Storm Water Management	$ 0	$ 48,000	$ 16,000
Street Lighting	$ 76,000	$ 90,000	$ 65,000
Trunk Water	$ 154,000	$ 182,000	$ 131,000
Trunk Sanitary Sewer	$ 179,000	$ 545,000	$ 179,000
Total Costs/Phase	**$ 1,508,000**	**$ 2,164,000**	**$ 1,324,000**
Total Costs less Public Utilities	**$ 1,175,000**	**$ 1,437,000**	**$ 1,014,000**

Future Phases

Improvement Type	Future East	Additional Area
Roadway	$ 628,000	$ 580,000
Roadway Transitions	$ 62,000	$ 58,000
Right Turn Lanes	$ 52,000	$ 48,000
Trails/Sidewalks	$ 115,000	$ 106,000
Storm Water Management	$ 0	$ 0
Street Lighting	$ 75,000	$ 69,000
Trunk Water	$ 19,000	$ 0
Trunk Sanitary Sewer	$ 11,000	$ 0
Total Costs/Phase	**$ 962,000**	**$ 861,000**
Total Costs less Public Utilities	**$ 932,000**	**$ 861,000**

Total Cost all Phases	**$ 6,819,000**
Total Cost all Phases less Public Utilities	**$ 5,419,000**

The above costs are considered project costs and include 30% contingencies and project development costs. Project development costs include administrative, engineering, and fiscal related costs.

The roadway transition costs are allotments for phase transitions associated with tapering pavements sections to match in-place sections where required, and subsequent removals of the transition areas.

The right turn lane costs depicted in the tables include a 150 ft turn lane with 1:10 taper sections.

Street lighting costs are based upon recent installations within the City of Ramsey.

For storm water management, costs were included for manholes, catch basins, and pipe within the street sections and included in the roadway costs. For Phases 1B and 2, ponding costs were included for excavation related activities. We assumed a ponding area would be acquired through the platting process, and ponding within a development site would be expanded to include volume for roadway drainage.

The Phase 1A limits are based upon the area that can be served by a gravity sanitary sewer system. The Phase 1B sanitary sewer costs include a lift station and forcemain.

IX. COST ALLOCATION ALTERNATIVES

The costs, or a portion of the costs, of the improvements are typically allocated back to adjacent properties through the use of assessments, fees and other methods. The costs are typically allocated in a way that is equitable to the properties benefitting from the improvements. Public improvements that will become City owned and maintained are typically constructed through a public process, while secondary improvements are constructed by the developer. For our analysis, we assumed the following items would be constructed through the public process:

- Bunker Lake Boulevard and Puma Street, including storm water conveyance systems,
- Trunk Water Facilities,
- Trunk Sanitary Sewer Facilities,
- Trails, and
- Street Lighting.

While the street lights will most likely be installed by a private utility and the trails could potentially be constructed by the property owner, we have included these items as public improvements.

Other improvements were considered secondary and are typically the property owner's responsibility to install:

- Sanitary Sewer Service Extensions,
- Water Service Extensions,
- Natural Gas Lines to Buildings,
- Telephone Service to Buildings,
- Electric Service to Buildings,
- Site Grading,
- Site Landscaping,
- Site Storm Water Conveyance,
- Storm Water Ponding, and
- Easement Dedication.

These types of improvements are typically inspected by the City for conformity with applicable codes and standards, but are constructed by the property owner.

Figure 9 depicts the parcels considered for this report and also provides additional information related to each parcel. Similar information is presented in the following table:

Identification Number	Zoning Classification	Gross Area less NWI Area (Acres)	Adjusted Frontage (Ft)
Phase 1A			
1	B-2 Business District	20.307	1,358
2	B-2 Business District	10.843	1,002
4	R-2 Medium Density Residential	9.231	120
5	R-2 Medium Density Residential	19.691	399
Phase 1A Totals		**60.072**	**2,879**
Phase 1B			
6	B-2 Business District	27.116	1,141
7	R-2 Medium Density Residential	16.022	928
Phase 1B Totals		**43.138**	**2,069**
Phase 2			
8	R-1 Low Density Residential	28.338	683
9	R-1 Low Density Residential	4.107	419
10	R-2 Medium Density Residential	35.285	1,289
Phase 2 Totals		**67.730**	**2,391**
Future			
11	B-2 Business District	24.801	1,343
12	B-2 Business District	23.324	1,345
13	B-2 Business District	11.529	0
Future Phase Totals		**59.654**	**2,688**
Additional Area			
14	COR	7.507	1,263
15	R-1 MUSA	7.878	1,261
Additional Area Totals		**15.385**	**2,524**
Totals all Phases		**245.979**	**12,551**

Note: The table above includes a column for Gross Area – NWI Area. This represents the total area of the parcel based on GIS mapping, less the wetland area per the National Wetland Inventory (NWI) GIS mapping.

The zoning classifications listed in the table above are based on anticipated future zoning for the study area. Gross areas and frontages are based on GIS information and will most likely be refined during subsequent phases of project development.

A portion of the improvements will be paid by the City either through utility funds or other means. A list of assumptions is as follows:

- All trunk water and sanitary sewer system costs will be paid for through the City utility funds,
- Storm water management costs are related to ponding and are considered integral to roadway construction,
- Assessments will be made to benefitting properties as each phase is constructed,
- Two standard methods of assessments were analyzed including: Frontage and Area.
- The City's existing assessment policy very closely matches the Frontage method, and
- Gross acreage (less NWI Wetland acreage) was used in lieu of net developable acreage in the calculations below.
- Lot 3 was not considered in the assessments as the lot is zoned residential. The resultant assessment amounts are considered negligible related to the entire Business Park area.
- Lots 14 and 15 abut Armstrong Boulevard, a County roadway, and will access off of Bunker Lake Boulevard. Lots 1 and 4 abut a portion of the Puma Street right of way that is anticipated to be vacated. Lots 8, 9 and 10 abut Alpine Drive, but access will be limited to Puma Street.

The table below depicts a distribution based on all costs being assessed to the benefitting properties. We have assumed for this analysis the costs would be assessed to properties benefitting from each phase of construction. For instance, properties directly benefitting from Phase 1 improvements would be assessed for Phase 1 costs at the time of Phase 1 improvements.

Calculations were based on the areas and front footages, along with the costs per phase as developed earlier within this report. Trunk sanitary sewer and trunk watermain were considered City costs and were not included in the calculations. While this study focuses primarily on Phases 1 – 3, the future phase and the area of additional consideration were included for comparison. A summary of the unit costs used in the calculations is presented below:

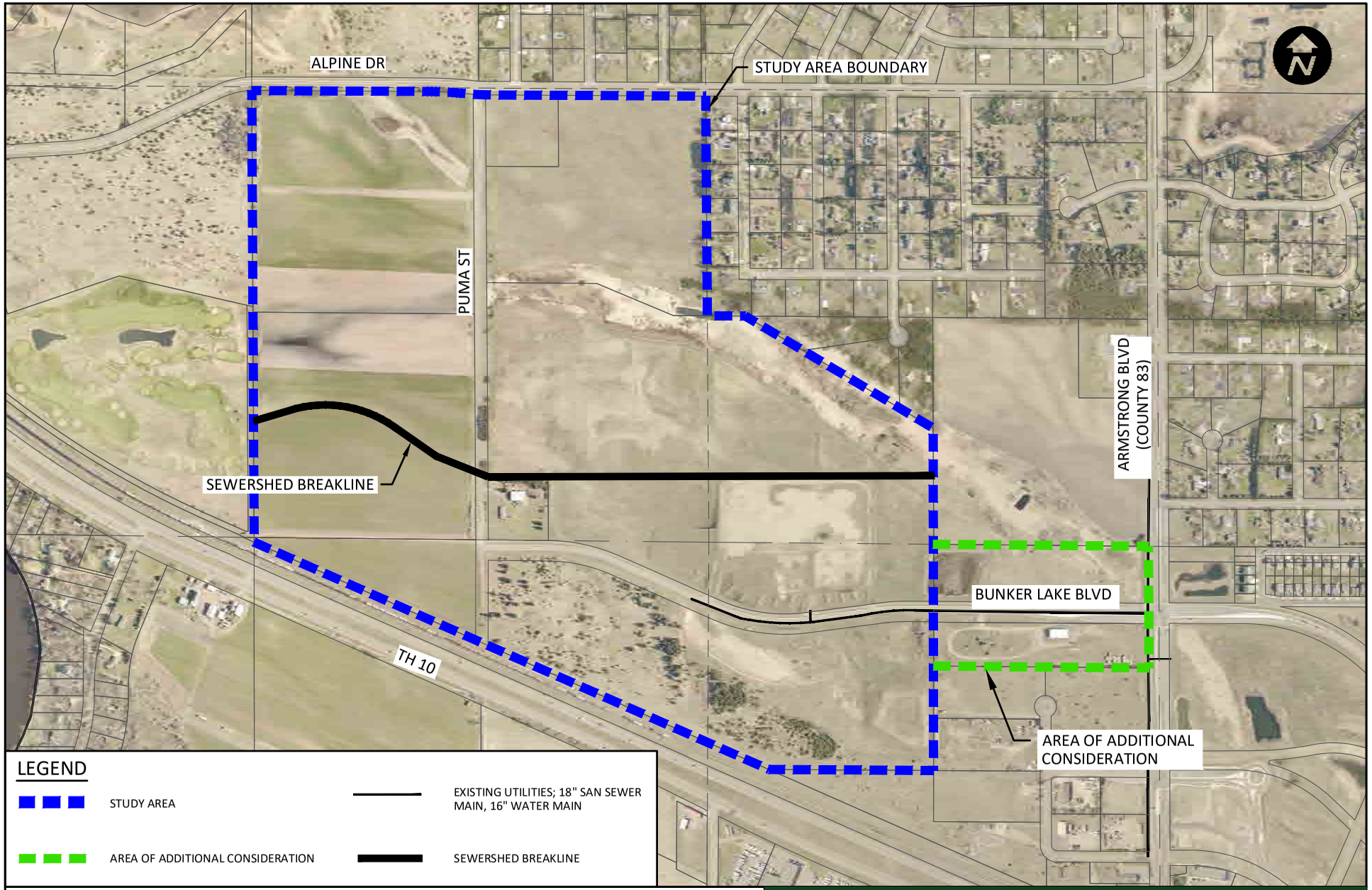
Phase	Frontage Method (Cost/FF)	Area Method (Cost/Acre)
1A	$ 408.13	$ 19,559.86
1B	$ 694.54	$ 33,311.70
2	$ 424.09	$ 14,971.21
Future	$ 346.73	$ 15,623.43
Additional Area	$ 341.13	$ 55,963.60

Based on the above cost distribution, the potential assessments per lot per phase is depicted below:

Identification Number	Frontage Method	Area Method
Phase 1A		
1	$ 554,200	$ 397,200
2	$ 409,000	$ 212,100
4	$ 49,000	$ 180,500
5	$ 162,800	$ 385,200
Phase 1A Totals	**$ 1,175,000**	**$ 1,175,000**
Phase 1B		
6	$ 792,500	$ 903,300
7	$ 644,500	$ 533,700
Phase 1B Totals	**$ 1,437,000**	**$ 1,437,000**
Phase 2		
8	$ 289,700	$ 424,300
9	$ 177,700	$ 61,500
10	$ 546,700	$ 528,300
Phase 2 Totals	**$ 1,014,000**	**$ 1,014,000**
Future Phase		
11	$ 465,700	$ 387,500
12	$ 466,400	$ 364,400
13	$ 0	$ 180,100
Future Phase Totals	**$ 932,000**	**$ 932,000**
Additional Area		
14	$ 430,800	$ 420,100
15	$ 430,200	$ 440,900
Additional Area Totals	**$ 861,000**	**$ 861,000**
Total all Phases	**$ 5,419,000**	**$ 5,419,000**

The information presented in this section of the report is intended to allow for discussions with property owners and developers to be initiated. Refinement of the amounts presented is anticipated based on those discussions.

Appendix A: Figures



BOLTON & MENK

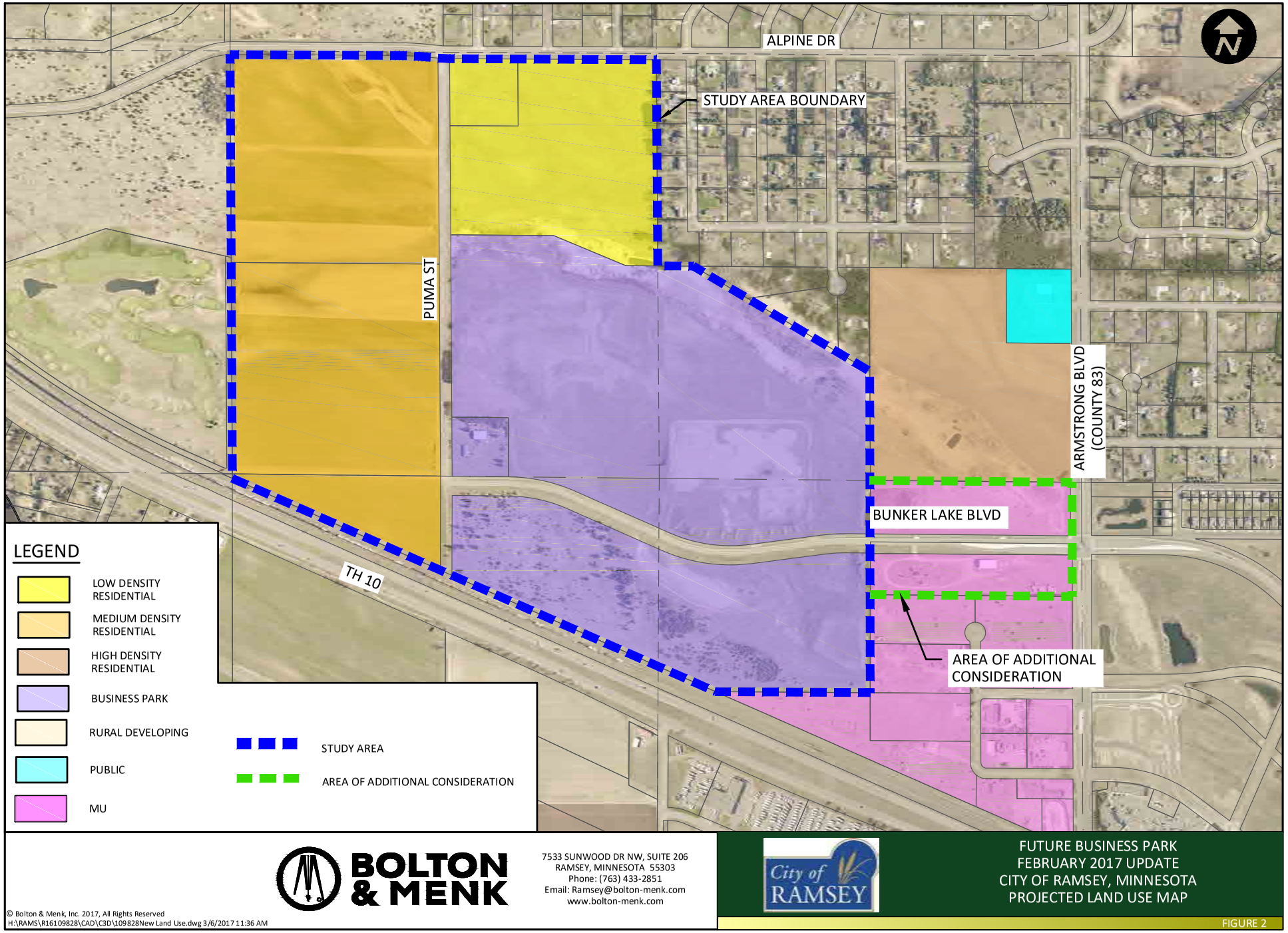
7533 SUNWOOD DR NW, SUITE 206
RAMSEY, MINNESOTA 55303
Phone: (763) 433-2851
Email: Ramsey@bolton-menk.com
www.bolton-menk.com

City of RAMSEY

FUTURE BUSINESS PARK
FEBRUARY 2017 UPDATE
CITY OF RAMSEY, MINNESOTA
LOCATION & EXISTING CONDITIONS

FIGURE 1

H:\RAMS\R16109828\CAD\C3D\109828New Land Use.dwg 3/6/2017 11:36 AM



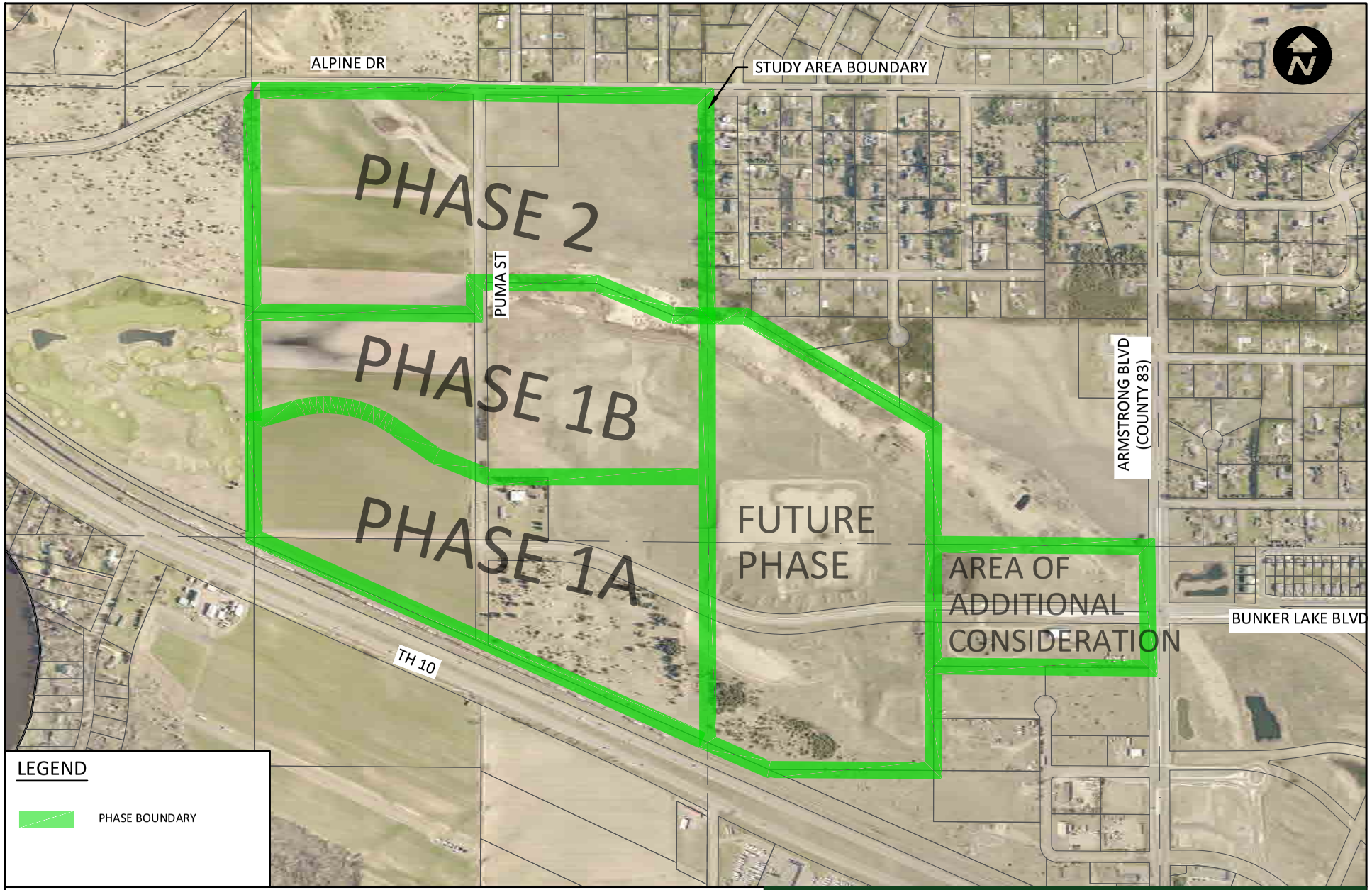
BOLTON & MENK
7533 SUNWOOD DR NW, SUITE 206
RAMSEY, MINNESOTA 55303
Phone: (763) 433-2851
Email: Ramsey@bolton-menk.com
www.bolton-menk.com

City of RAMSEY

FUTURE BUSINESS PARK
FEBRUARY 2017 UPDATE
CITY OF RAMSEY, MINNESOTA
PROJECTED LAND USE MAP

FIGURE 2

H:\RAMS\R16109828\CAD\C3D\109828New Land Use.dwg 3/6/2017 11:36 AM



BOLTON & MENK

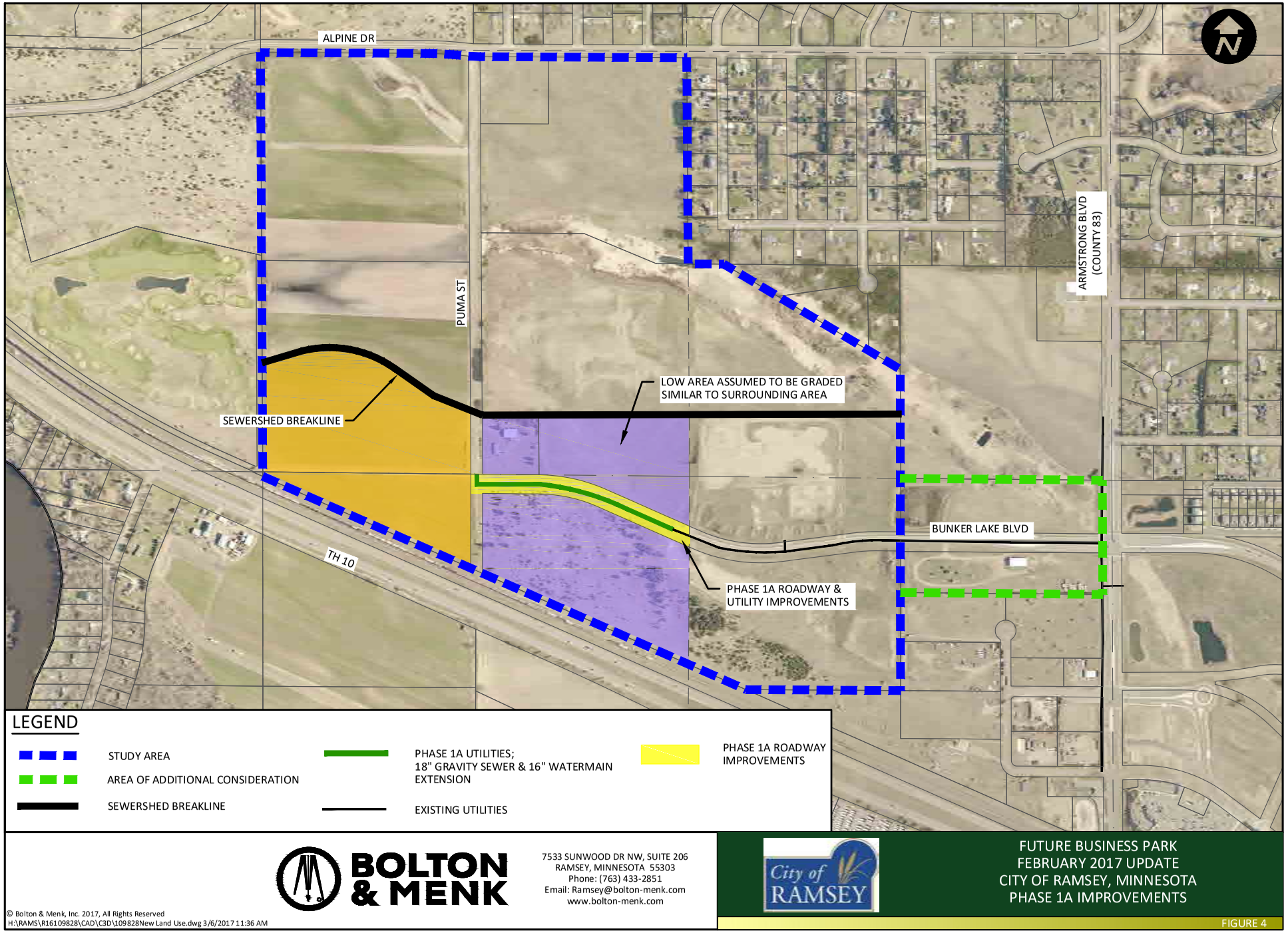
7533 SUNWOOD DR NW, SUITE 206
RAMSEY, MINNESOTA 55303
Phone: (763) 433-2851
Email: Ramsey@bolton-menk.com
www.bolton-menk.com

City of RAMSEY

FUTURE BUSINESS PARK
FEBRUARY 2017 UPDATE
CITY OF RAMSEY, MINNESOTA
PHASING MAP

FIGURE 3

H:\RAMS\R16109828\CAD\C3D\109828New Land Use.dwg 3/6/2017 11:36 AM



BOLTON & MENK

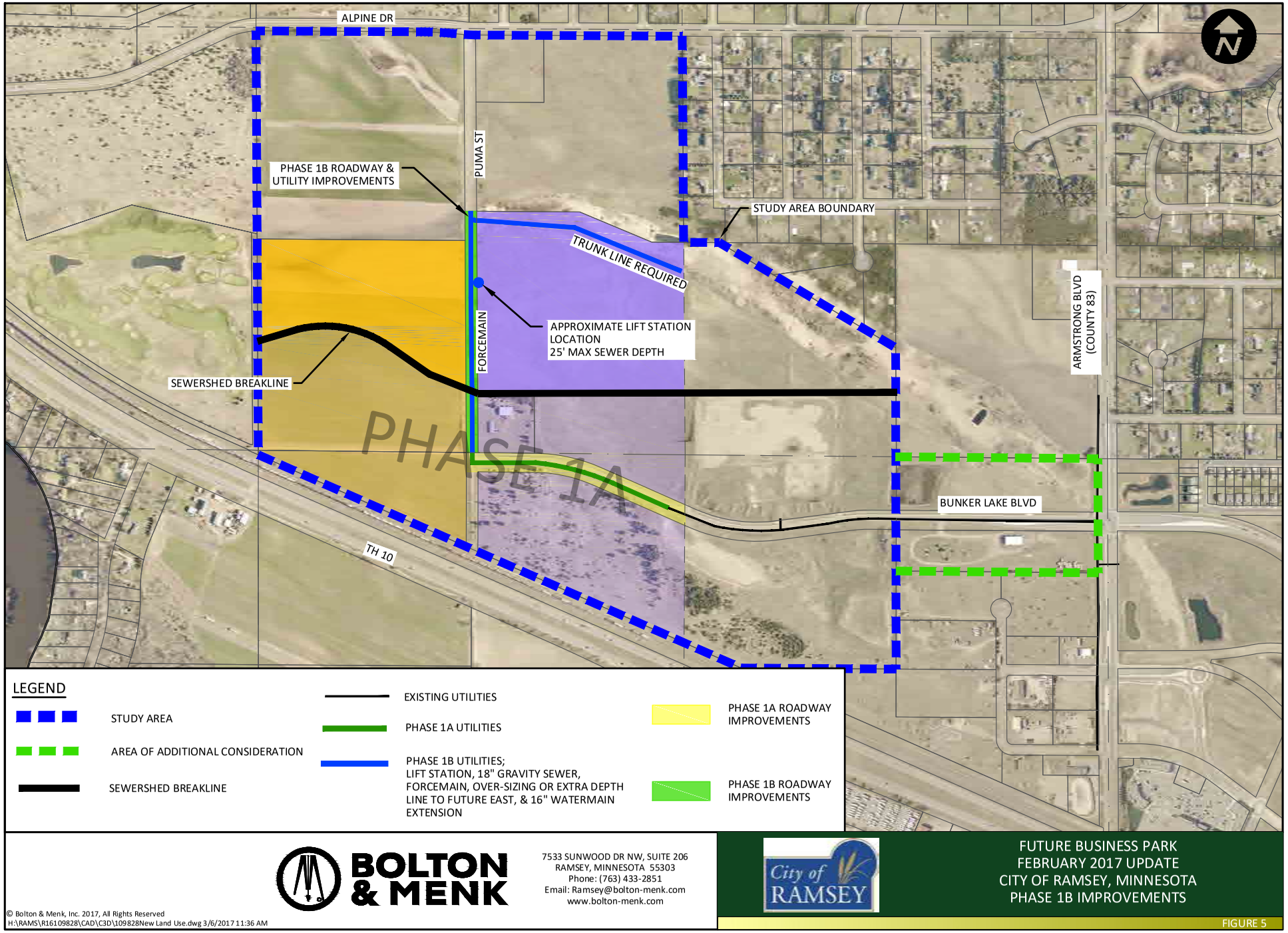
7533 SUNWOOD DR NW, SUITE 206
RAMSEY, MINNESOTA 55303
Phone: (763) 433-2851
Email: Ramsey@bolton-menk.com
www.bolton-menk.com

City of RAMSEY

FUTURE BUSINESS PARK
FEBRUARY 2017 UPDATE
CITY OF RAMSEY, MINNESOTA
PHASE 1A IMPROVEMENTS

FIGURE 4

H:\RAMS\R16109828\CAD\C3D\109828New Land Use.dwg 3/6/2017 11:36 AM



BOLTON & MENK

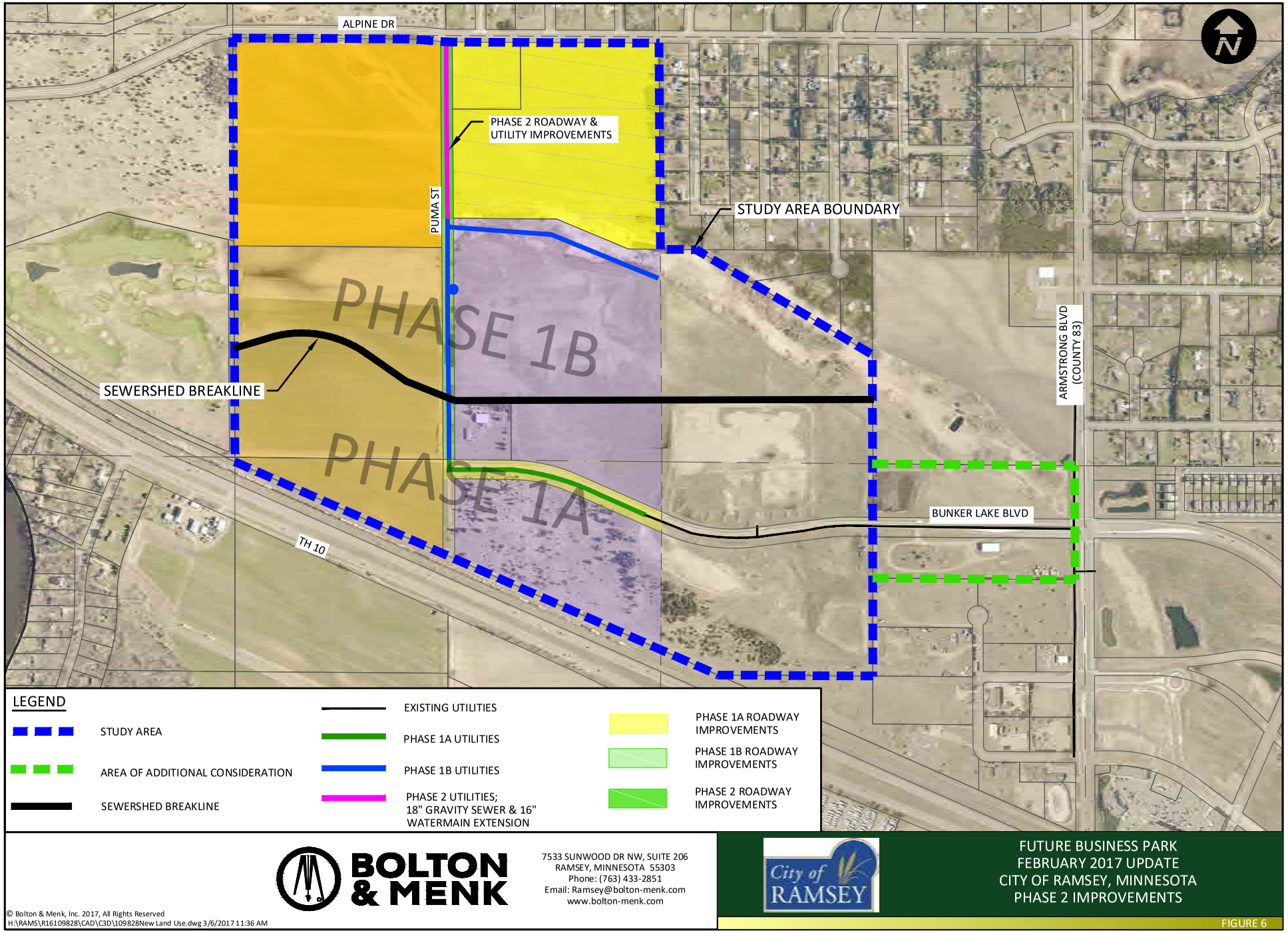
7533 SUNWOOD DR NW, SUITE 206
RAMSEY, MINNESOTA 55303
Phone: (763) 433-2851
Email: Ramsey@bolton-menk.com
www.bolton-menk.com

City of RAMSEY

FUTURE BUSINESS PARK
FEBRUARY 2017 UPDATE
CITY OF RAMSEY, MINNESOTA
PHASE 1B IMPROVEMENTS

FIGURE 5

H:\RAMS\R16109828\CAD\C3D\109828New Land Use.dwg 3/6/2017 11:36 AM



BOLTON & MENK

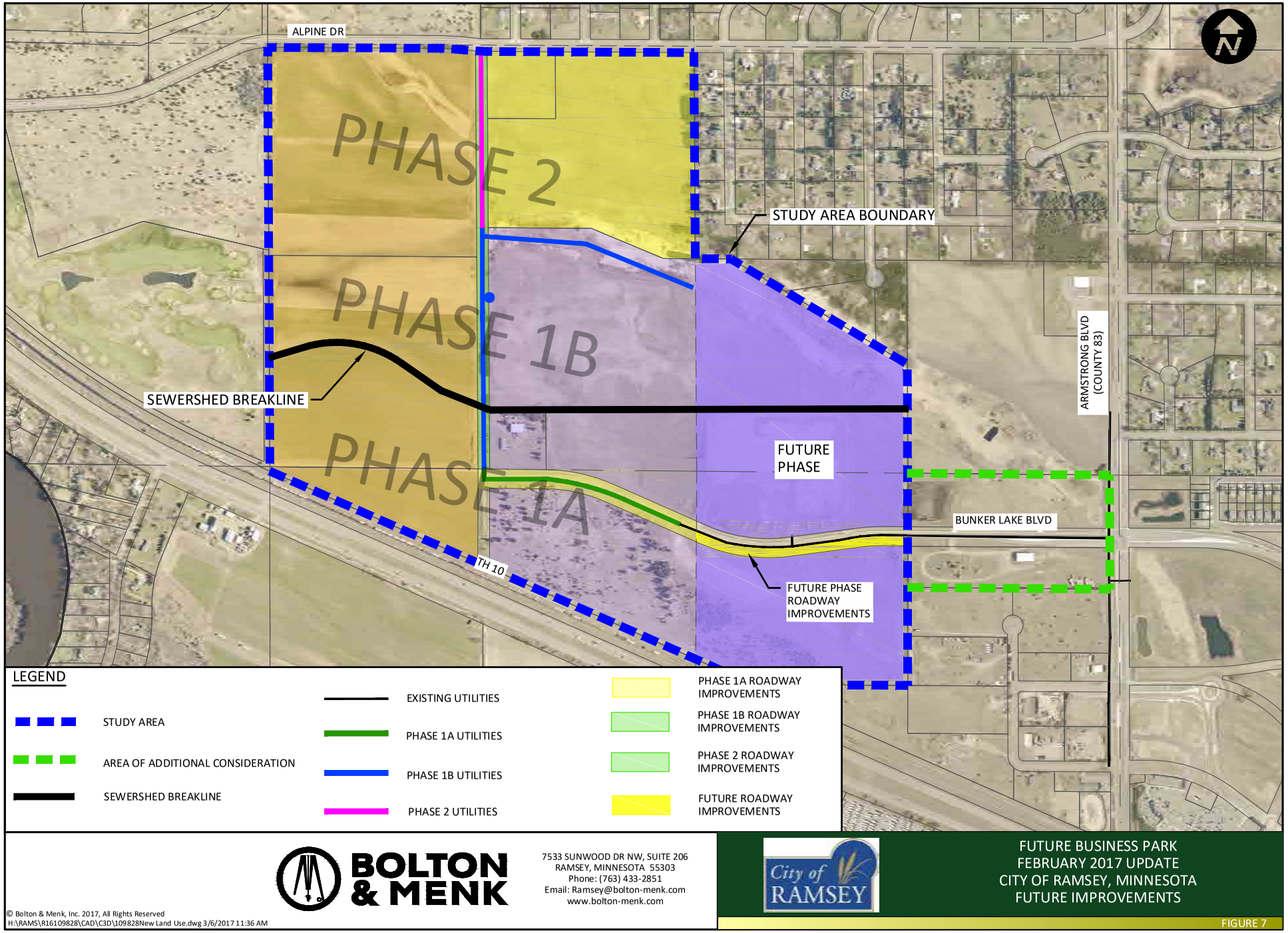
7533 SUNWOOD DR NW, SUITE 206
RAMSEY, MINNESOTA 55303
Phone: (763) 433-2851
Email: Ramsey@bolton-menk.com
www.bolton-menk.com

City of RAMSEY

FUTURE BUSINESS PARK
FEBRUARY 2017 UPDATE
CITY OF RAMSEY, MINNESOTA
PHASE 2 IMPROVEMENTS

FIGURE 6

H:\RAMS\R16109828\CAD\C3D\109828New Land Use.dwg 3/6/2017 11:36 AM



BOLTON & MENK

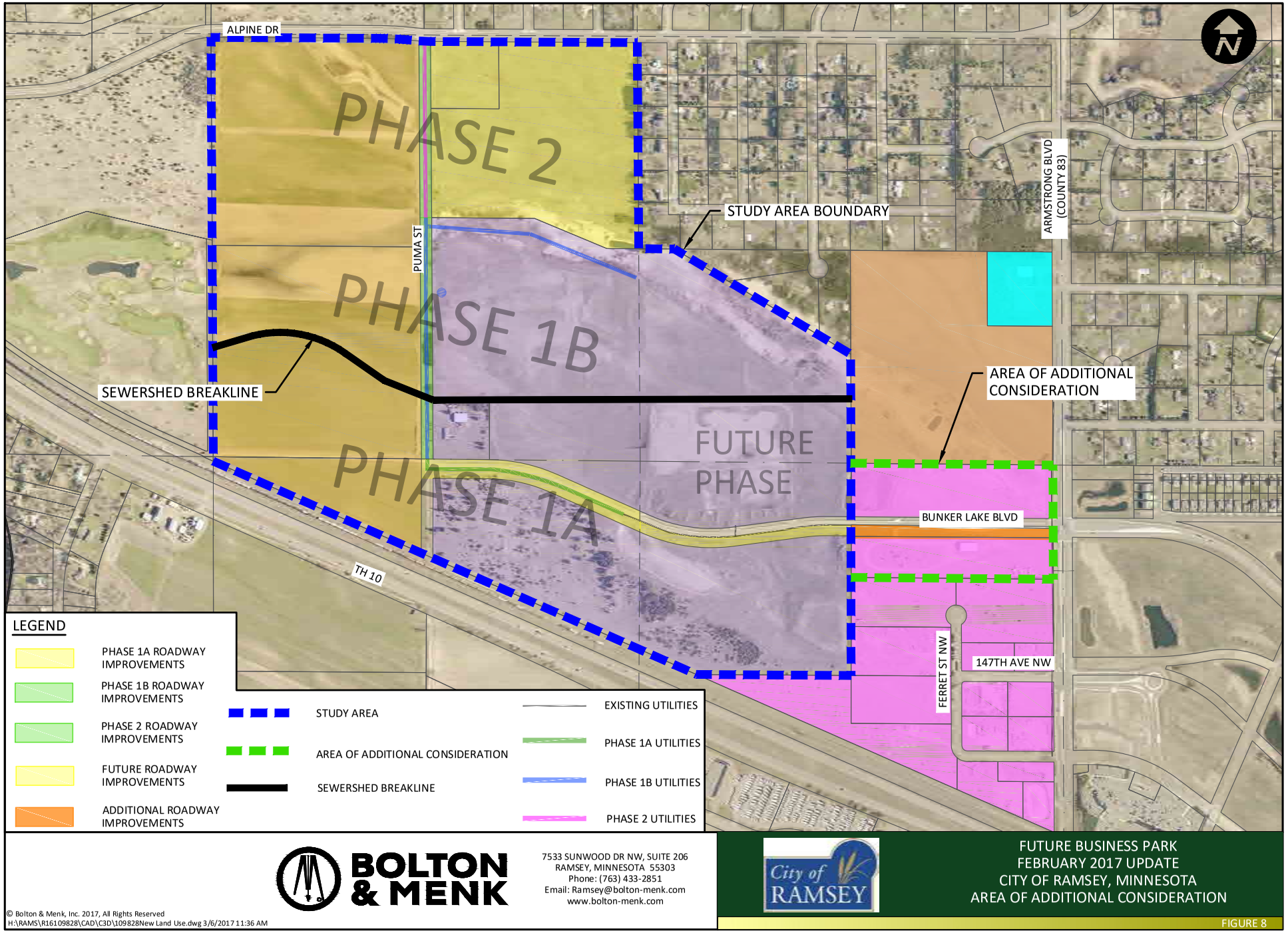
7533 SUNWOOD DR NW, SUITE 206
RAMSEY, MINNESOTA 55303
Phone: (763) 433-2851
Email: Ramsey@bolton-menk.com
www.bolton-menk.com

City of RAMSEY

FUTURE BUSINESS PARK
FEBRUARY 2017 UPDATE
CITY OF RAMSEY, MINNESOTA
FUTURE IMPROVEMENTS

FIGURE 7

H:\RAMS\R16109828\CAD\C3D\109828New Land Use.dwg 3/6/2017 11:36 AM



BOLTON & MENK

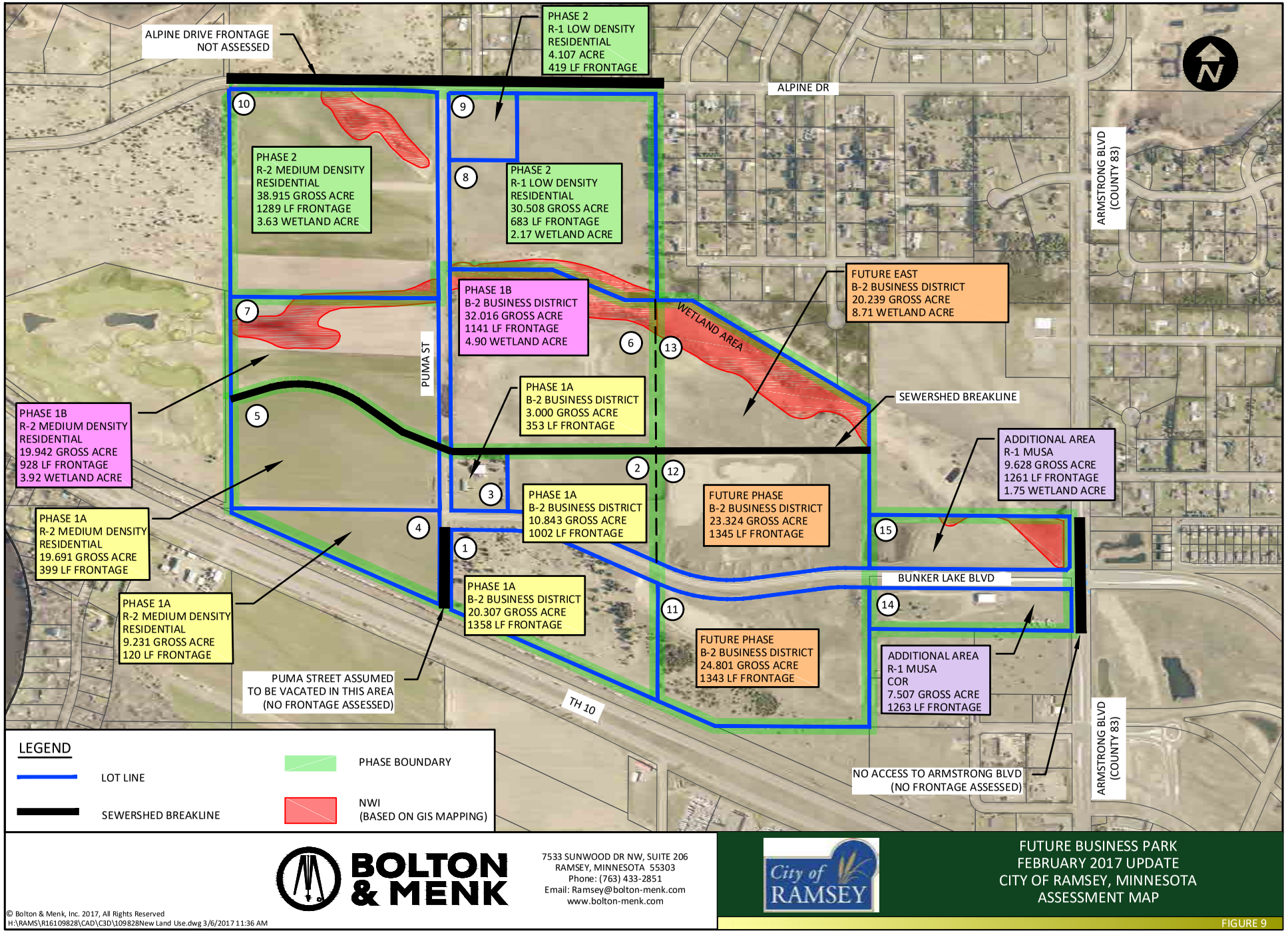
7533 SUNWOOD DR NW, SUITE 206
RAMSEY, MINNESOTA 55303
Phone: (763) 433-2851
Email: Ramsey@bolton-menk.com
www.bolton-menk.com

City of RAMSEY

FUTURE BUSINESS PARK
FEBRUARY 2017 UPDATE
CITY OF RAMSEY, MINNESOTA
AREA OF ADDITIONAL CONSIDERATION

FIGURE 8

H:\RAMS\R16109828\CAD\C3D\109828New Land Use.dwg 3/6/2017 11:36 AM



BOLTON & MENK
7533 SUNWOOD DR NW, SUITE 206
RAMSEY, MINNESOTA 55303
Phone: (763) 433-2851
Email: Ramsey@bolton-menk.com
www.bolton-menk.com

H:\RAMS\R16109828\CAD\C3D\109828New Land Use.dwg 3/6/2017 11:36 AM

City of RAMSEY

FUTURE BUSINESS PARK
FEBRUARY 2017 UPDATE
CITY OF RAMSEY, MINNESOTA
ASSESSMENT MAP

FIGURE 9

Appendix B: Traffic Study

BOLTON & MENK
Real People. Real Solutions.

12224 Nicollet Avenue
Burnsville, MN 55337-1649

Ph: (952) 890-0509
Fax: (952) 890-8065
Bolton-Menk.com

TRAFFIC MEMORANDUM

Date: January 27, 2017

To: City of Ramsey

From: Bryan Nemeth, P.E., PTOE

Subject: Supplemental Traffic Memorandum
Traffic Impact Study for Future Business Park: October 21, 2015
City of Ramsey, MN
Project No.: R16.109828

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

By: _____
Bryan T. Nemeth, P.E., PTOE
License No. 43354

Date: January 27, 2017

I. Introduction

This traffic memorandum provides an update to the Traffic Impact Study for Future Business Park, October 21, 2015, in Ramsey, MN. The update includes analysis of a revised Proposed Future Land Use plan for the area.

The revised analysis results in an increase of approximately 18,100 trips per day into and out of the area at 2040 Full Build. This is an overall reduction in trips compared to the previous land use alternatives proposed.

The analysis evaluates the mitigation needs Bunker Lake Blvd west of Armstrong Boulevard (CSAH 83) and Puma Street south of Alpine Drive. This includes the intersection of Armstrong Blvd (CSAH 83) at Bunker Lake Blvd (CSAH 116).

II. Recommendations

A. Intersection and roadway improvements along Bunker Lake Blvd (west of Armstrong Blvd) and Puma St. (south of Alpine Dr.) are revised as follows.

1. Short Term

a) Armstrong Blvd & Bunker Lake Blvd: Stripe the southbound left with dual left turn lanes. No other roadway improvements needed in the short term. Signal timing updates recommended.

(1) Plan for eastbound dual right turn lanes or free-right turn lane and two eastbound thru lanes in the future (See Long Term Recommendations).

b) Bunker Lake Blvd (west of Armstrong Blvd)

(1) COR area:

(a) With COR access to Bunker Lake Blvd: 4-lane divided roadway to full access intersection. Full access 775 ft. from Armstrong Blvd. Right-in/right-out access at least 475 ft. from Armstrong Blvd. Continuous median to full access.

(b) Without COR access to Bunker Lake Blvd: 4-lane Divided to full access intersection. Full access 540 ft. from Armstrong Blvd. Right-in/right-out access at least 475 ft. from Armstrong Blvd. Continuous median to full access.

(2) COR to Llama St. Alignment: 3-lane undivided roadway, right turn lanes into development roadways. Primary intersection spacing of 1/8 mile.

(3) Llama St. Alignment to Puma St.: 3-lane undivided roadway, right turn lanes into development roadways where development trips anticipated to be over 100 per day. Primary intersection spacing of 1/8 mile.

c) Puma St.: Potentially remain a 2-lane undivided roadway. Left turn lanes into Business Park accesses. Right turn lanes provided where development trips anticipated to be over 100 per day.

d) Bunker Lake Blvd & Puma St.: Single lane roundabout or all-way stop

control. Southbound left turn lane and westbound right turn lane recommended with all-way stop control.

2. Mid-Term

a) Armstrong Blvd & Alpine Dr.: Single lane roundabout. Intersection control evaluation study should be completed to verify.

b) Alpine Dr. & Puma St.: Add eastbound right turn lane. Add a northbound turn lane to separate left and right turns. Add a westbound left turn lane when needed. This need to be based on delay and crash experience, especially if there is trip redistribution due to congestion on Armstrong Blvd.

3. Long-Term

a) Armstrong Blvd & Bunker Lake Blvd: Dual eastbound right turn lanes or free right turn lane. Dual right turn lanes are recommended over the free right due to pedestrian accessibility crossing a heavy free-right and the bridge design of Armstrong Blvd.

b) Plan for two eastbound thru lanes in the future. The two eastbound thru lanes are not necessarily due to traffic volumes but are recommended to give more green time to conflicting movements, specifically the westbound left. Additionally, the high eastbound right turn volumes may result in trip reassignment to use Bunker Lake Blvd and access Highway 10 at Ramsey Blvd instead of Armstrong Blvd. This may also result in more trips using Alpine Dr. to access Highway 10 for trips to and from the west.

III. Analysis

The traffic analysis updates consider a change in land uses within the Future Business Park area as shown on the attached Armstrong West: Proposed Future Land Uses map.

A. Forecasts

The background trip forecasts are consistent with the previous analysis. The trip forecasts to and from each area are included at the end of this memorandum. Forecasts were developed using trip rates from the ITE Trip Generation Manual, consistent with the previous analysis. The additional trips due to the development result in the forecasted trips as shown on the attached map.

B. Traffic Analysis Results

1. 2040 Full Build with Existing Lanes

Table 1: Design Year (2040) with Existing Lanes

Traffic Control Scenario	Peak Hour	Intersection Delay*- LOS		Maximum Delay-LOS**		Limiting Movement ***	Max Approach Queue		
							Direction	Average Queue (ft)	Max Queue (ft) ****
Design Year 2040 Alternative 2									
TH 10/169 South Ramp & CSAH 83 (Armstrong Blvd)	AM	13	B	24	C	EBL	EBL	105	174
Signal	PM	12	B	22	C	EBL	EBL	98	148
TH 10/169 North Ramp & CSAH 83 (Armstrong Blvd)	AM	63	E	143	F	WBR	WBT/R	468	1152
Signal	PM	71	E	124	F	WBR	WBT/R	595	1560
CSAH 83 (Armstrong Blvd & 147th Avenue	AM	55	D	131	F	NBL	NBT	759	1327
Signal	PM	52	D	87	F	NBL	NBT	660	1252
CSAH 83 (Armstrong Blvd) & CSAH 116 (Bunker Lake Blvd)	AM	69	E	184	F	NBL	NBT	784	1086
Signal (assumed double SBL & double WBL were stripped)	PM	100	F	227	F	NBL	NBT	733	1109
CSAH 83 (Armstrong Blvd) & Alpine Drive NW	AM	5	A	20	C	EBT	EBL/T	45	114
TWSC	PM	9	A	46	E	EBL	NBL/T	68	167
Alpine Drive NW & Puma Street NW	AM	2	A	7	A	NBL	NBL/R	31	54
TWSC	PM	3	A	9	A	NBL	NBL/T	51	86
Puma Street NW & Bunker Lake Blvd	AM	3	A	9	A	NBT	SBL/T/R	50	75
Option 1: AWSC	PM	4	A	7	A	WBR	WBT/R	56	86
Puma Street NW & Bunker Lake Blvd	AM	0	A	3	A	EBR	EB L/R	4	18
Option 2: 3 Legged intersection (with curve)	PM	0	A	2	A	EBL	EBL/R	7	24
Puma Street NW & Bunker Lake Blvd	AM	2	A	5	A	NBT	SBL/T/R	16	51
Option 3: Roundabout	PM	2	A	4	A	SBT	SBL/T/R	4	23

*Delay in seconds per vehicle

**Maximum delay and LOS on any approach and/or movement

***Limiting Movement is the highest delay movement.

****Max Queue refers to the 95% Queue (Passenger car stored length = 25 ft, Heavy vehicle stored length = 45 ft)

Analysis indicates that it there are anticipated to be capacity concerns along Armstrong Blvd from Highway 10 to Bunker Lake Blvd. Mitigation is necessary at the intersection of Armstrong Blvd at Bunker Lake Blvd.

2. 2040 Full Build with Mitigation

Table 2: Design Year (2040) with Mitigation

Traffic Control Scenario	Peak Hour	Intersection Delay*- LOS		Maximum Delay-LOS**		Limiting Movement ***	Max Approach Queue		
							Direction	Average Queue (ft)	Max Queue (ft) ****
Design Year 2040 Alternative 2									
TH 10/169 South Ramp & CSAH 83 (Armstrong Blvd)	AM	11	B	22	C	EBL	EBL	95	147
Signal	PM	12	B	23	C	EBL	SBR	47	171
TH 10/169 North Ramp & CSAH 83 (Armstrong Blvd)	AM	21	C	53	D	SBT	SBT	382	727
Signal	PM	49	D	141	F	SBT	SBT	809	1272
CSAH 83 (Armstrong Blvd & 147th Avenue	AM	12	B	33	C	SBL	NBT	199	376
Signal	PM	56	E	111	F	SBT	SBT	664	1232
CSAH 83 (Armstrong Blvd) & CSAH 116 (Bunker Lake Blvd)	AM	38	D	84	F	NBL	NBT	353	868
Signal (Added double EB thru, free right)	PM	50	D	139	F	WBL	WBT	401	915
CSAH 83 (Armstrong Blvd) & Alpine Drive NW	AM	5	A	26	D	WBL	EBR	61	110
TWSC (Added EB/WB RT lane)	PM	10	B	88	F	EBT	NBL/T	77	171
Alpine Drive NW & Puma Street NW	AM	2	A	6	A	WBL	NBL/R	33	56
TWSC	PM	3	A	9	A	NBL	NBL/T	48	80
Puma Street NW & Bunker Lake Blvd	AM	3	A	9	A	WBL	SBL/T/R	50	78
Option 1: AWSC	PM	4	A	8	A	WBL	WBL/T/R	57	83
Puma Street NW & Bunker Lake Blvd	AM	0	A	3	A	EBL	EBL/R	4	18
Option 2: 3 Legged intersection (with curve)	PM	0	A	5	A	EBL	EBL/R	6	24
Puma Street NW & Bunker Lake Blvd	AM	2	A	5	A	NBT	SBL/T/R	11	37
Option 3: Roundabout	PM	2	A	4	A	EBT	SBL/T/R	3	21

*Delay in seconds per vehicle

**Maximum delay and LOS on any approach and/or movement

***Limiting Movement is the highest delay movement.

****Max Queue refers to the 95% Queue (Passenger car stored length = 25 ft, Heavy vehicle stored length = 45 ft)

Analysis indicates

Mitigation includes the lanes and traffic control indicated in the recommendations but also includes a third southbound lane along Armstrong Blvd from Bunker Lake Blvd to the Highway 10 North Ramp terminal. Additional review of the bridge design indicates that a third lane would not be feasible without substantial revisions to the bridge structure over the railroad. Based on this, two eastbound through lanes are recommended at the intersection of Armstrong Blvd and Bunker Lake Blvd to provide an alternative route if needed. The analysis below also considers an eastbound free right into the third lane. This is recommended to be a dual right turn when or if needed based on traffic redistribution in the area.

The resulting queues are shown below for each movement at the intersection of Armstrong Blvd and Bunker Lake Blvd. Dual eastbound right turn lanes would be anticipated to have similar average queues and shorter max queues. The max queues are anticipated to be less if there is traffic redistribution based on congestion.

Table 3: Design Year (2040) Armstrong Blvd & Bunker Lake with Proposed Lanes

Traffic Control Scenario	Peak Hour	Delay-LOS**		Max Approach Queue	
				Average Queue (ft)	Max Queue (ft) ****
CSAH 83 (Armstrong Blvd) & CSAH 116 (Bunker Lake Blvd)					
EBL	AM	41	D	64	122
	PM	37	D	106	191
EBR	AM	3	A		
	PM	47	D	390	916
WBL	AM	45	D	134	215
	PM	131	F	401	915
NBL	AM	84	F	305	412
	PM	52	D	207	307
SBL	AM	31	C	95	145
	PM	46	D	81	128

*Delay in seconds per vehicle

**Maximum delay and LOS on any approach and/or movement

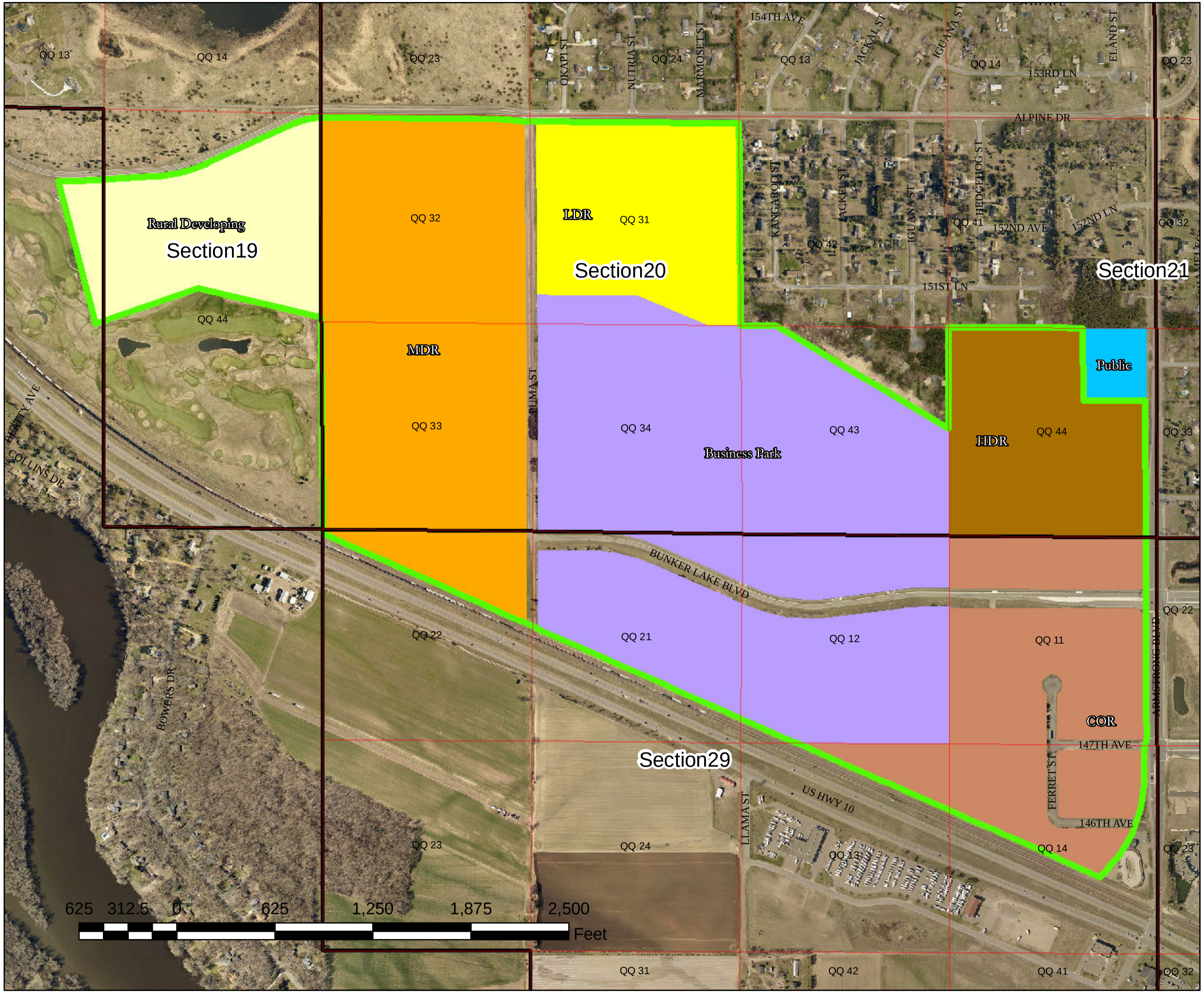
***Limiting Movement is the highest delay movement.

****Max Queue refers to the 95% Queue (Passenger car stored length = 25 ft, Heavy vehicle stored length = 45 ft)

C. Special Considerations

1. The trips from specific developments to Puma and Bunker Lake Blvd have not been analyzed. Trips to and from specific developments should be assigned to appropriate roadways based on the development roadway design. This is especially important for trip assignment at the intersection of Bunker Lake Blvd and Puma St.

2. Mitigation for intersections outside of the area due to development in the area have not been completed.



City of RAMSEY

Armstrong West
Proposed Future Land Uses

Section QQ

Section Only

AUAR Boundary

Future Land Use

- Business Park
- COR
- High Density Residential
- Low Density Residential
- Medium Density Residential
- Public/Quasi-Public
- Rural Developing

N

This is not an approved land use plan. This is a working document only, based on current feedback and concepts (both public and privately developed concepts).

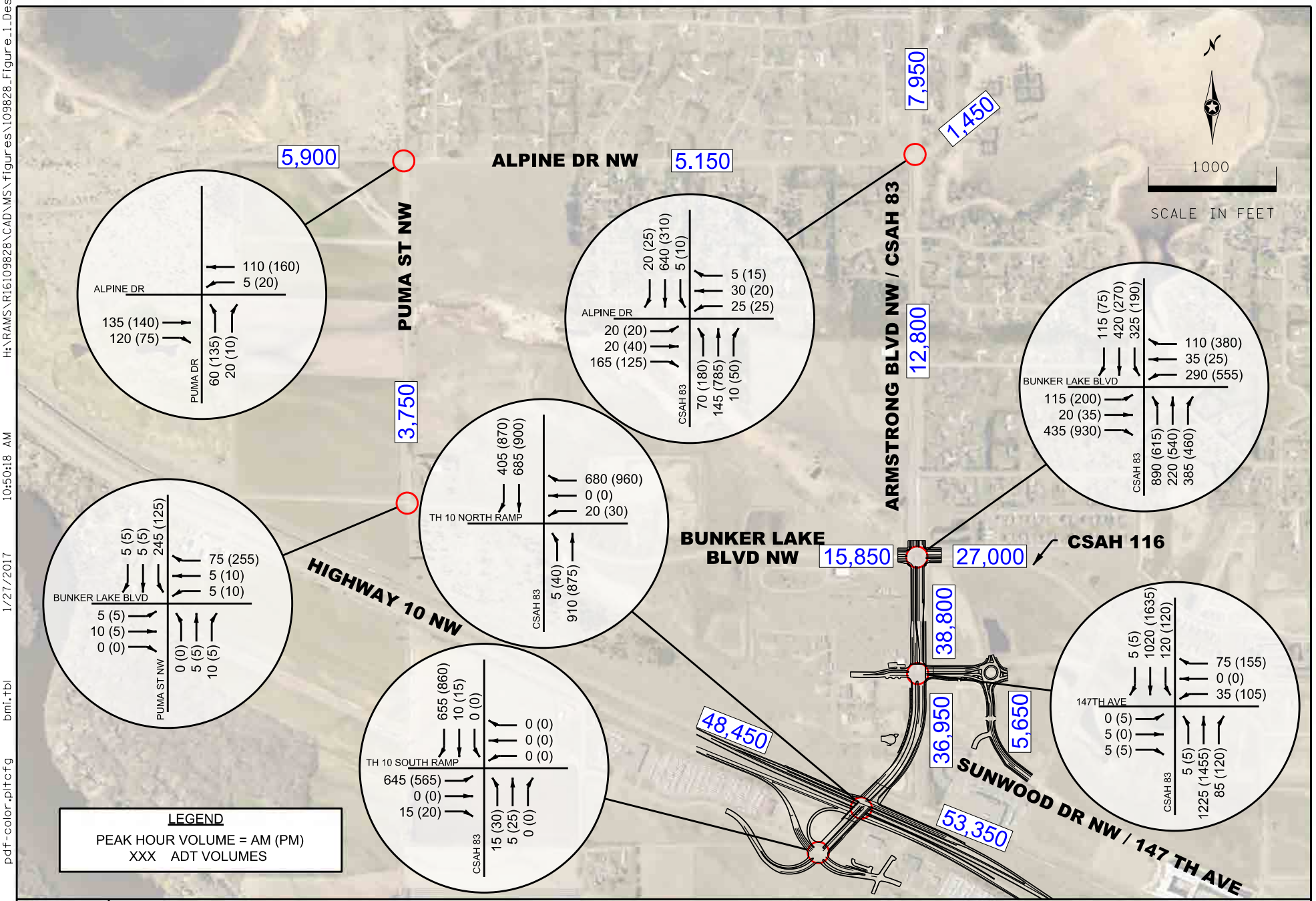


FIGURE 1: DESIGN YEAR (2040) TRAFFIC VOLUMES

FUTURE BUSINESS PARK TRAFFIC STUDY
RAMSEY, MN.

Ramsey EDA Traffic Assumptions

Alternative 2: Business Park (January 2017 Update)

B-2 **Business Park** — 134.54 Acres — ITE Code 130 — Internal-to-Internal Reduction

Based on Acres

	Average Rate	#	% enter	% exit	entering	exiting		entering	exiting		Pass-by entering	Pass-by exiting	New Trips entering	New Trips exiting
AM	8.55	1151	83	17	955	196	10%	860	177	0%	0	0	860	177
Afternoon	4.42	595	50	50	298	298	10%	268	268	0%	0	0	268	268
PM	8.84	1190	21	79	250	940	10%	225	847	0%	0	0	225	847
Weekday	63.11	8491	50	50	4246	4246	15%	3609	3609	0%	0	0	3609	3609

B-2 **Retail/Commercial** — 74.4 K ft^2 — ITE Code X — Internal-to-Internal Reduction

Based on Square Feet — 7.43 Acres

	Average Rate	#	% enter	% exit	entering	exiting		entering	exiting		Pass-by entering	Pass-by exiting	New Trips entering	New Trips exiting
AM	7.41	552	53	47	293	259	20%	235	208	46%	109	96	126	112
Afternoon	5.46	407	50	50	204	204	20%	163	163	40%	66	66	97	97
PM	10.91	813	51	49	415	398	20%	332	319	39%	130	125	202	194
Weekday	124.59	9275	50	50	4638	4638	30%	3247	3247	39%	1267	1267	1980	1980

R-1 **Single Family Detached Housing** — 104 units — ITE Code 210 — 34.62 Acres

Based on Dwelling Units — 3 Units per Acre

	rate	#	% enter	% exit	entering	exiting	New Trips entering	New Trips exiting
AM	0.75	83	25	75	21	62	21	62
Afternoon	0.51	53	31	69	16	37	16	37
PM	1.01	109	63	37	69	40	69	40
Weekday	9.57	1078	50	50	539	539	539	539

R-2 **Residential Townhouse** — 527 units — ITE Code 230 — 87.79 Acres

Based on Dwelling Units — 3 to 7 Units per Acre

	Average Rate	#	% enter	% exit	entering	exiting	Assume 6 Units per Acre	New Trips entering	New Trips exiting
AM	0.44	196	17	83	33	163		33	163
Afternoon	0.26	138	31	69	43	95		43	95
PM	0.52	235	67	33	157	78		157	78
Weekday	5.81	2732	50	50	1366	1366		1366	1366

R-3 **Low Rise Apartment** — 525 units — ITE Code 221 — 43.74 Acres

Based on Dwelling Units — 7 to 15 Units per Acre

	Average Rate	#	% enter	% exit	entering	exiting	Assume 12 Units per Acre	New Trips entering	New Trips exiting
AM	0.46	215	21	79	45	170		45	170
Afternoon	0.29	153	31	69	47	106		47	106
PM	0.58	291	65	35	189	102		189	102
Weekday	6.59	3076	50	50	1538	1538		1538	1538

Rural Developing — ITE Code x

Assumed trips

	entering	exiting
AM	5	20
Afternoon		
PM	20	5
Weekday		

Total

	Pass-by entering	Pass-by exiting	New Trips entering	New Trips exiting
AM	109	96	1090	704
Afternoon	66	66	472	602
PM	130	125	862	1266
Weekday	1267	1267	9032	9032

West of Commercial Area

	Pass-by entering	Pass-by exiting	New Trips entering	New Trips exiting
AM			919	422
Afternoon			327	400
PM			471	970
Weekday			5514	5514

Public Works Committee **5. 7.**

Meeting Date: 04/18/2017

By: Bruce Westby, Engineering/Public Works

Title:

Consider Recommending City Council Authorization to Prepare Plans and Specifications for Flashing Yellow Arrow Improvements to Signal System at Armstrong Boulevard & Sunwood Drive

Purpose/Background:

Purpose:

The purpose of this case is to review the findings of the attached flashing yellow arrow analysis recently completed by SEH, Inc. and request a recommendation for the City Council to authorize Staff to hire SEH, Inc. to prepare plans and specifications for converting the City-owned signal system at the intersection of Armstrong Boulevard/CSAH 83 & Sunwood Drive/147th Avenue to flashing yellow arrow operations. See Figure 1 (attached) for signal system location.

Background:

Flashing yellow arrows (FYA's) are gaining momentum as an alternative to a simple green ball light for left-turning motorists. They signal to the motorist that it is safe to turn left so long as they yield to oncoming vehicles, which have the right of way. These permitted left turns are unlike protected left turns, where the left-turning motorist does not need to consider opposing traffic because those vehicles have a red light. As recently discussed, the Anoka County Highway Department will construct FYA modifications to signal systems at eight different intersections across Anoka County in 2017. Three of the signal systems are located within the City of Ramsey along Bunker Lake Boulevard/CSAH 116 where it intersects with Dysprosium Street/Thurston Avenue, Sunfish Lake Boulevard/CSAH 57, and Ramsey Boulevard/CSAH 56. The FYA's will be operational during different times of the day at different intersections.

Anoka County annually budgets approximately $100,000 to convert 4 to 10 of their 200 signal systems to FYA operations each year. Typical costs to convert signal systems to incorporate FYA's run between $0 and $28,500 per signal system, with higher end costs being $50,000 or more.

Anoka County solely utilizes SEH, Inc. to study their signal systems for FYA conversions, and requested that the City also utilize SEH to study the intersection of Armstrong Boulevard/CSAH 83 & Sunwood Drive/147th Avenue for potential FYA modifications if the City was interested in doing so. This helps ensure that the evaluations are performed consistently County-wide for safety and liability purposes.

In November of 2016, the Public Works Committee authorized City staff to employ SEH to analyze the signal system at Armstrong Boulevard/CSAH 83 & Sunwood Drive/147th Avenue for potential FYA improvements. This analysis was recently completed and a copy of the report is attached. In summary, SEH's analysis shows that FYA's should be able to be considered for nearly all times of a typical weekday, as well as the entire weekend, but initially they recommend that FYA operations not be used between 6 and 9 am and between 3 and 7 pm on weekdays due to higher posted speeds and higher traffic volumes. However, in the future this can be reviewed and these operations may be able to be expanded to additional hours if there are no safety issues or significant increases in traffic volumes.

SEH currently estimates costs to convert the signal system at Armstrong Boulevard/CSAH 83 & Sunwood Drive/147th Avenue to FYA operations at $40,000. This cost will be further refined upon preparation of plans and specifications. This cost seemed high to Staff since it is a newer signal system, but according to SEH the current guidelines for FYA installations are specific on what needs to be included in the design, and these specifics were

not fully in-place when this signal was initially designed and constructed. Typically, costs to convert systems such as this one are averaging between $20,000 and $50,000.

Timeframe:

Approximately 5 minutes for presentation and discussion.

Observations/Alternatives:

Observations:

Plans and specifications will be required to allow the City to advertise for bids for construction of FYA modifications. Anoka County plans to complete FYA conversion improvements to the signal system at Armstrong Boulevard/CSAH 83 & Bunker Lake Boulevard in the late fall/early winter of 2017 and/or in early 2018. Preparing plans and specifications now for the FYA signal system modifications at Armstrong Boulevard/CSAH 83 & Sunwood Drive/147th Avenue, the City would be well positioned to coordinate the timing of our bids and construction with Anoka County's FYA improvements at Bunker Lake Boulevard, thereby allowing proper coordination of modifications to both signal systems, and to coordinate the implementation of the FYA's at both intersections to ensure consistency.

Alternatives:

Alternative #1 – Motion recommending City Council authorization to hire SEH, Inc. to prepare plans and specifications for converting the City-owned signal system at the intersection of Armstrong Boulevard/CSAH 83 & Sunwood Drive/147th Avenue to flashing yellow arrow operations.

Alternative #2 – Motion of other.

Funding Source:

The cost for SEH to study FYA modifications for the City-owned signal system at Armstrong Boulevard & Sunwood Drive/147th Avenue was estimated at $2,400. The final invoice for this work has not yet been received. These funds will be drawn from the Public Improvement Revolving fund.

SEH estimates their costs to prepare plans and specifications for the FYA conversion improvements at $6,500. These funds would also be drawn from the Public Improvement Revolving fund.

Recommendation:

Staff recommends alternative #1.

Action:

Recommend City Council authorization to hire SEH, Inc. to prepare plans and specifications for converting the City-owned signal system at the intersection of Armstrong Boulevard/CSAH 83 & Sunwood Drive/147th Avenue to flashing yellow arrow operations.

Attachments

SEH Report

Figure 1

Form Review

Inbox	Reviewed By	Date
Grant Riemer	Grant Riemer	04/13/2017 02:08 PM
Kurt Ulrich	Kurt Ulrich	04/13/2017 04:01 PM
Form Started By: Bruce Westby		Started On: 04/11/2017 07:53 AM
Final Approval Date: 04/13/2017		

SEH

Building a Better World
for All of Us®

March 21, 2017

RE: Ramsey, Minnesota
CSAH 83 at Sunwood Drive/147th Avenue NW Signal System
Flashing Yellow Arrow Considerations
SEH No. RAMSY 141224

Mr. Bruce Westby, PE
City Engineer
City of Ramsey
7550 Sunwood Drive Northwest
Ramsey, Minnesota 55303

Dear Mr. Westby:

As requested, we reviewed the intersection of CSAH 83 (Armstrong Boulevard) and Sunwood Drive/147th Avenue Northwest with regards to proposed modification of the existing intersection traffic signal left turn operations. Recently, the City has received requests to have flashing yellow arrow operation installed and activated at this intersection. In response to these requests, the City had SEH perform an analysis of the intersection to determine if flashing yellow arrow operation can be utilized here. The analysis would include review of the feasibility, cost, and safety of the intersection for flashing yellow arrow operations. Following is the results of our analysis.

This 4-legged intersection was signalized in January 2013 (prior to when the adjacent Trunk Highway 10-CSAH 83 intersection was reconstructed with an interchange), with protected left turn phasing installed for all approaches. The posted speed limit on CSAH 83 is 55 mph, while both Sunwood Drive and 147th Avenue Northwest are posted at 30 mph. The northbound and southbound CSAH 83 approaches and the eastbound 147th Avenue Northwest approaches each have a single left turn lane, while the westbound Sunwood Drive approach has a dual left turn lane. Single through lanes and separate right turn lanes exist on the side street approaches, while each CSAH 83 approach has two separate through lanes and a separate right turn lane approaching the intersection. The intersection is located approximately ¼ mile east of the Trunk Highway 10/CSAH 83 interchange area, with a significant east-to-south horizontal curve for northbound CSAH 83 traffic from the interchange area to where a full left turn lane exists for traffic approaching Sunwood Drive/147th Avenue Northwest.

SEH obtained peak hour turning movement traffic counts on September 29, 2016, several months after the Trunk Highway 10-CSAH 83 interchange area was opened and area traffic patterns were able to stabilize, in order to properly analyze existing traffic conditions. SEH

performed AM peak hour (6-9 am), mid-day (11-1 pm), and PM peak hour (3-7 pm) turning movement traffic counts to determine typical weekday traffic patterns at this intersection.

SEH also obtained crash data for the intersection for the 5 year period of 2011-2015 from the State's crash website. SEH then completed a brief field review of the signal system to confirm that the existing traffic signal plans correspond to the current installation of the signal system and take into account the current intersection geometrics. SEH also reviewed traffic signal cabinet components to determine if additional electrical equipment would be required to be provided in order to allow for flashing yellow arrow operation to be used.

As part of the signal system installation, each intersection approach was set up to operate with protected left turn phasing (3-section RLA-YLA-GLA signals). The intersection has a newer Econolite ASC-3 controller unit and Reno MMU-1600-GE conflict monitor, both of which are fully compatible with upgraded left turn (i.e. flashing yellow arrow) operations. The controller cabinet has sufficient load switch bays available to accommodate flashing yellow arrow operations. Thus, the existing controller and cabinet have the capacity and capability to accommodate future flashing yellow arrow operations for all four intersection approaches without requiring this equipment to be significantly upgraded or revised.

As part of our analysis, SEH utilized the Minnesota Department of Transportation's (MnDOT) flashing yellow arrow installation criteria from their "*Traffic Signal Timing and Coordination Manual*" to analyze extended usage of flashing yellow arrow operations for each intersection approach. A copy of this criteria is attached for your information. Based on comparison of available data with the MnDOT criteria, the following can be inferred:

> The design of this signal system included the initial recommendation of protected left turn phasing for each intersection approach due to the higher posted speed limit of 55 mph on CSAH 83 (as is typical Anoka County practice) and the presence of a dual left turn lane for the westbound Sunwood Drive approach.
>
> With regards to utilizing Flashing Yellow Arrow operations for each left turn movement, the following should be noted:
>
> - According to the current edition of the *AASHTO Geometric Design of Highways and Streets* manual, left-turning drivers "need sufficient sight distance to decide when it is safe to turn left across the lanes used by opposing traffic." This stopping sight distance along CSAH 83 for the design/posted speed of 55 mph is at least 495 feet of clear sight distance to the north and south. For both Sunwood Drive and 147th Avenue Northwest, the recommended stopping sight distance at 30 mph is as least 200 feet to the east and west. Based on a field review of intersection geometrics, the southbound, eastbound, and westbound intersection approaches are straight for several hundred feet in each direction with no impediments to the sight distance (other than possible sun issues for eastbound

traffic in the AM peak hour and for westbound traffic in the PM peak hour during fall-winter months).

For northbound CSAH 83, sight distance is somewhat limited due to a sweeping north-to-west horizontal curve that begins approximately 300 feet north of the intersection. However, there are no impediments to sight distance in the median area and no trees or other topography exist to the north on either side of the roadway that limit sight distance for northbound left turning traffic at the intersection (northbound left turning traffic can see oncoming traffic clearly for at least the minimum stopping sight distance required at the posted 55 mph speed limit).

Based on this information, **available stopping sight distance meets this criteria for each intersection approach**.

- Based on the recent crash history at this intersection, no crashes were reported on the State of Minnesota's crash web site between 2011 and 2015. **Thus, there does not appear to be a safety concern at this intersection with the presence of signalized operation**.

- One of the recommendations from the *MnDOT Traffic Signal Timing and Coordination Manual* is to utilize protected left turn phasing only either for situations where the posted speed limit exceeds 45 mph and the peak hour left turning volume is greater than 240 vehicles per hour, or for when the cross product between left turning traffic volume and opposing through traffic volume exceeds 80,000. With regards to the most recent available traffic counts:

  a. Between the hours of 4:00 pm-5:00 pm of the most recent traffic counts, westbound Sunwood Drive left turn volumes were near 130 vehicles per hour. No other intersection approach exceeded 65 left turning vehicles per hour during the PM peak period.

  b. For the midday and AM peak hour counts, no intersection approach had left turning traffic volumes that exceeded 70 vehicles per hour.

  c. The cross product between left turn traffic volumes and opposing through traffic volumes never exceeded 25,000 for any hour counted in 2016.

Following up against the flashing yellow arrow criteria from the *MnDOT Traffic Signal Timing and Coordination Manual:*

1. Left turn lanes line up well for each intersection approach with sufficient turning room in the intersection so that left turn paths were not conflicting. This was observed specifically for the westbound dual left turn lane/eastbound single left turn

movement, where protected left turn phasing was run together for these movements with no conflicts between either direction's left turn movements. Left turn movements are offset far enough such that no conflicts in left turn paths are occurring.

2. As mentioned, the westbound approach has two left turn lanes. For this approach, the MnDOT Manual suggests that protected operation be utilized during the higher volume periods of the day with Engineering judgment being used to determine if flashing yellow operation could be used for all other times of the day.

3. There are less than 3 opposing lanes of through traffic facing each intersection approach.

4. The intersection does not have a high crash rate and there is no significant history of right angle crashes involving left turning traffic.

In summary, as there is no significant crash history for left turning traffic and traffic volumes are likely lower for the entire intersection (outside of the peak traffic periods), the City should be able to consider using Flashing Yellow Arrow operations at this intersection throughout much of a typical weekday and throughout the weekend. In addition, any changes to the operation of the left turn signal phases are not anticipated to impact overall operations of the intersection in a negative way (and delays for left turning traffic will decrease with flashing yellow arrow operations which will improve the overall operation of the intersection). For peak traffic periods though (and for when sun becomes an issue for eastbound and westbound traffic), protected left turn operation is strongly recommended to be implemented.

Some modifications to the existing signal system installation will be required to revise the operation of this signal system and add flashing yellow arrows for each intersection approach. Both overhead end mounted and far left pole mounted left turn signals for each intersection approach will required having 3-section RLA-YLA-GLA signal heads replaced with 4-section RLA-YLA-FYLA-GLA signal heads. For the westbound approach (due to the dual left turn lane), a 5-foot extension will be required to be added to the mast arm facing this approach so that two 4-section overhead signals can be installed and centered on each left turn lane (requirement that each approaching left turn lane have its own flashing yellow arrow signal centered on each left turn lane). No additional through signal heads will be required to be installed facing any of the four approaches, as there are already separate through (RYG) signal heads centered on each through lane. Some additional cabling (6/c#14) will be required to be installed to operate new flashing yellow arrow signal heads on all four intersection approaches based on a review of the field wiring diagram. No new conduit will be required to be installed to accommodate installation of these new cables.

With regards to left turn lane detection, the *MnDOT Traffic Control Signal Design Manual* recommends that either four loop detectors be installed for proper detection (at 5', 20' 35' and 50' from the stop bar or crosswalk) or that two separately wired loop detectors be installed for

existing signal system retrofits at 10' and 40' from the stop bar or crosswalk. Recent County practice has been to have the four separate loop detectors installed in each left turn lane in order to be able to operate the left turn lanes on non-lock operation. For this signal system, left turn lane detection was installed at 10' and 40' from the stop bar for the northbound, southbound, and westbound approaches (each wired separately), while the eastbound approach has four loop detectors installed in the left turn lane. To meet current County practice, additional loop detectors will be required to be furnished and installed 25 feet and 55 feet from the stop bar in the northbound and southbound left turn lanes as well as in both westbound left turn lanes (for a total of 8 new loop detectors). No additional 2/c#14 cables or controller cabinet loop detector cards will be required to operate these new loop detectors since existing loop detectors are already wired separately in each left turn lane.

To allow for flashing yellow arrow operation, we estimate that these modifications (completed by an electrical signal contractor) will cost approximately $40,000. A detailed preliminary engineer's estimate of costs is attached to this letter for your information.

Overall, we do not see any issues with installation and operation of flashing yellow arrows for each intersection approach. However, should the City and County implement flashing yellow arrow modifications to this signal system, **we recommend that the signal system initially operate with protected left turns during both the AM peak period (6:00-9:00 am) and the PM peak period (3:00-7:00 pm) due to higher traffic volumes, higher posted speeds, and the presence of dual left turn lanes through this area**. For all other hours of the day and for all weekend hours, the City and County should be able to consider using flashing yellow arrow operations.

Note that any changes in the operation of this signal system should be monitored by the City and County, including annual review of crash data to ensure that crash frequency does not increase due to modified left turn signal operations.

Please review our analysis and feel free to contact me at 651.490.2073 with any questions or concerns that you may have related to our analysis.

We hope that this information provides you with insight needed to help evaluate and implement the appropriate left turn operations for this intersection.

Sincerely,
SHORT ELLIOTT HENDRICKSON INC.

John M. Gray, PE
Project Engineer

Enclosures
c: Jane Rose, Anoka County Highway Department

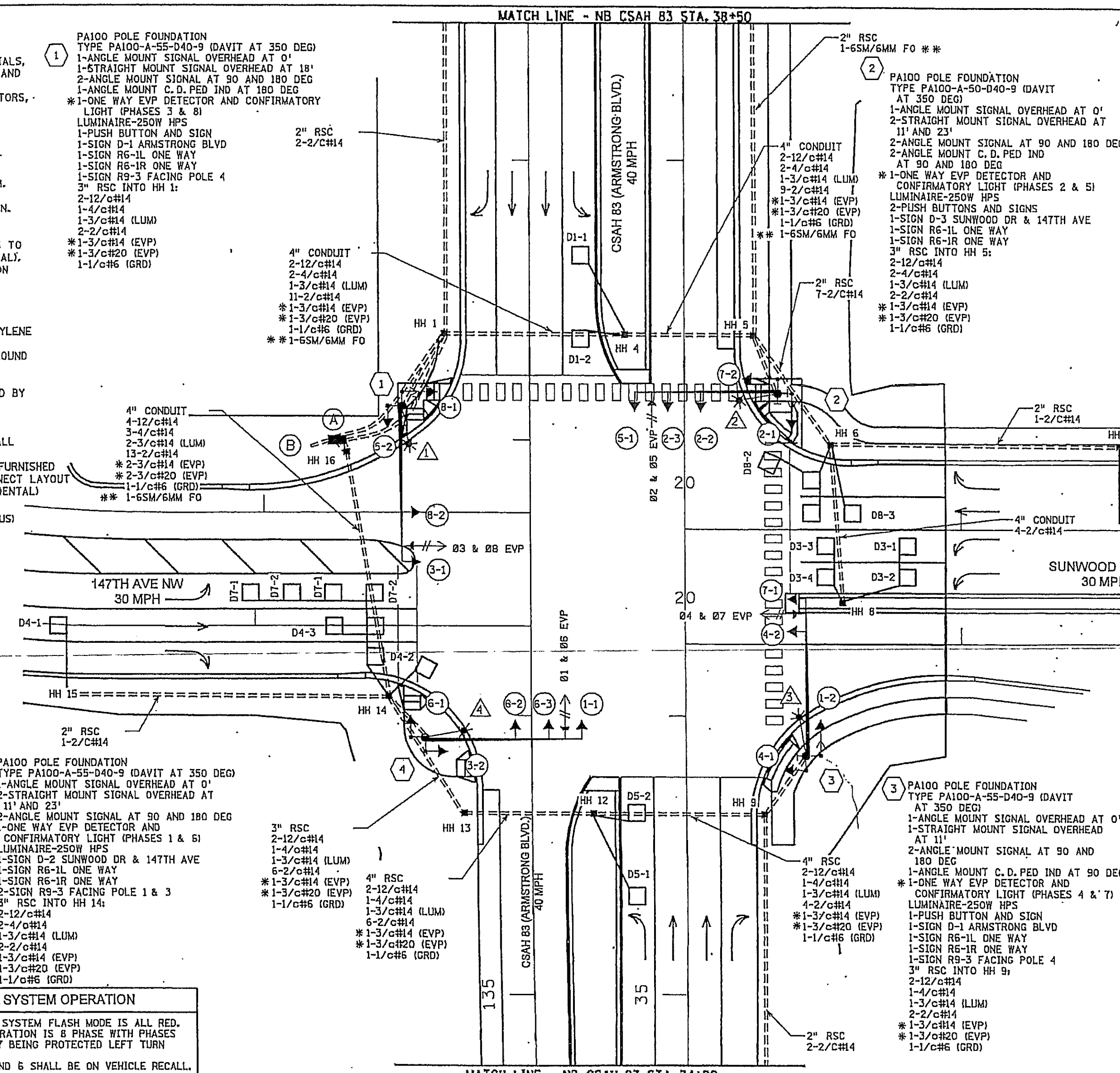
NOTES:

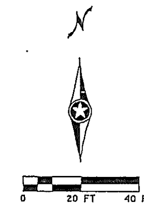
1) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS, COUNTDOWN PEDESTRIAN INDICATIONS, LED INDICATIONS, AND PAINTING OF SIGNAL SYSTEM.
2) THE EXACT LOCATION OF HANDHOLES, POLES, LOOP DETECTORS, AND EQUIPMENT PAD SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
3) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS.
4) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE AND CONDUIT OUTLET BODY FOR EMERGENCY VEHICLE PREEMPTION EQUIPMENT SHALL BE F&I 6' FROM THE END OF MAST ARM.
5) THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE POWER COMPANY TO ARRANGE FOR THE POWER CONNECTION.
6) THE CONTRACTOR SHALL LOCATE AND VERIFY INPLACE UTILITIES PRIOR TO COMMENCING WORK.
7) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCIDENTAL).
8) EACH PEDESTRIAN INDICATION SHALL BE LED, ONE SECTION "FILLED" HAND/WALKING PERSON INDICATION.
9) ALL POLE MOUNTED VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE MOUNTED USING ONE-WAY SIGNAL HEAD MOUNTS. SEE DETAILS AND SPECIAL PROVISIONS.
10) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" NMC. SEE SPECIAL PROVISIONS.
11) ALL VEHICLES AND PEDESTRIAN SIGNAL HOUSINGS, BACKGROUND SHIELD, AND VISORS SHALL BE FABRICATED USING BLACK POLYCARBONATE MATERIALS. SEE SPECIAL PROVISIONS.
12) (* EVP) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR UNDER ITEM NO. 2565 (EMERGENCY VEHICLE PREEMPTION). SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
13) DISTANCE OFF SHOULDER OR CURB FOR EVP CONDUIT SHALL BE 1-2 FEET.
14) (** FIBER OPTIC) DENOTES INTERCONNECT FIBER TO BE FURNISHED AND INSTALLED WITH THE SIGNAL SYSTEM. SEE INTERCONNECT LAYOUT AND SPECIAL PROVISIONS 2565 FOR REQUIREMENTS. (INCIDENTAL)

(A) EQUIPMENT PAD - SEE DETAIL
SERVICE CABINET
CONTROLLER AND CABINET
4" RSC TO HH 1:
4-12/c#14
3-4/c#14
*2-3/c#14 (EVP)
*2-3/c#20 (EVP)
15-2/c#14
**1-6SM/6MM FO
3" RSC STUBBED OUT (THREAD AND CAP FOR FUTURE USE)
2" RSC STUBBED OUT (THREAD AND CAP FOR FUTURE USE)
1" NMC STUBBED OUT (CAP FOR FUTURE TELEPHONE LINE)

(B) SOP-TRANSFORMER (POWER BY CONNEXUS)
4" RSC TO HH 16:
4-12/c#14
3-4/c#14
*2-3/c#14 (EVP)
*2-3/c#20 (EVP)
13-2/c#14

SIGNAL SERVICE CABINET
(SAME FOUNDATION AS CONTROLLER CABINET)
2" RSC INTO HH 1:
UNMETERED STREET LIGHT SERVICE
2-3/c#14 (LUM)
2" RSC INTO HH 16:
UNMETERED STREET LIGHT SERVICE
2-3/c#14 (LUM)
2" RSC STUBBED OUT (FOR POWER BY CONNEXUS)





SIGNAL FACE CHART

FACE	R	Y	G	Y	G
1-1, 1-2	←	←	←		
2-1, 2-2, 2-3	●	●	●		
3-1, 3-2	←	←	←		
4-1, 4-2	●	●	●		
5-1, 5-2	←	←	←		
6-1, 6-2, 6-3	●	●	●		
7-1, 7-2	←	←	←		
8-1, 8-2	●	●	●		

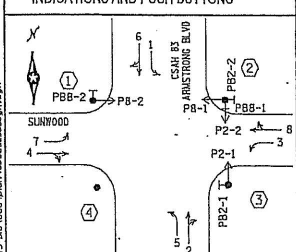
-ALL SIGNAL INDICATIONS SHALL BE 12" LED
-ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS

LOOP DETECTOR CHART

NUMBER	SIZE (FT)	LOCATION	FUNCTION
D1-1, 5-1	6x6	40	1
D1-2, D5-2	6x6	10	1
D2-1, D2-2	6x6	475	1
D3-1, 3-2	6x6	40	1
D3-3, D3-4	6x6	10	1
D4-1, D8-1	6x6	120	3, 8
D4-2	2-6x6	5 & -5	7
D4-3	2-6x6	5 & 20	1
D6-1, D6-2	6x6	475	1
D7-1	6x6	20 & 50	1
D7-2	6x6	5 & 35	1
D8-2	2-6x6	5 & -5	7
D8-3	2-6x6	5 & 20	1

-ALL LOOP DETECTORS SHALL BE PVC
-LOCATION: DISTANCE FROM CROSSWALK/STOP BAR IN FEET.
-LOOP DETECTOR FUNCTIONS:
(1) CALL AND EXTEND
(3) EXTEND ONLY
(7) DELAYED CALL, IMMEDIATE EXTEND
(8) CARRY OVER (STRETCH)

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 8 PHASE WITH PHASES 1, 3, 5 AND 7 BEING PROTECTED LEFT TURN PHASES.
- PHASES 2 AND 6 SHALL BE ON VEHICLE RECALL.

NO.	DATE	BY	CHK	REVISIONS

Design By: SD
Plan By: MAS
Checked By: NEH
Approved By: SD

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

CERTIFIED BY: LICENSED PROFESSIONAL ENGINEER - SEAN DELMORE, PE
DATE: 04/03/12 LIC. NO. 40945

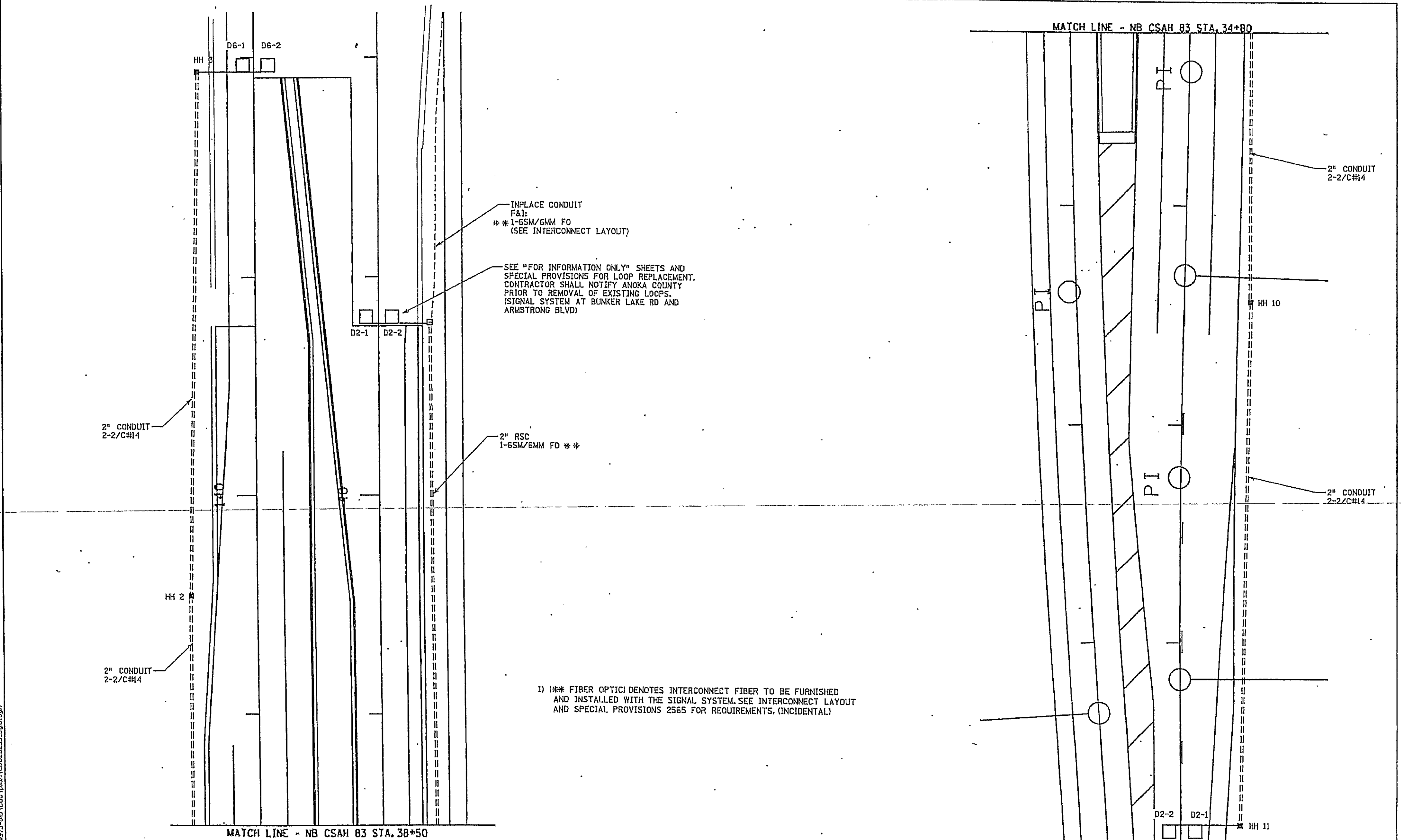
WSB & Associates, Inc.
701 Xenia Avenue South, Suite 300
Minneapolis, MN 55416
www.wsbeng.com
INFRASTRUCTURE • ENGINEERING • PLANNING • CONSTRUCTION

City of RAMSEY

Armstrong Blvd at Sunwood Drive
City of Ramsey, Minnesota

CITY OF RAMSEY, MINNESOTA
TRAFFIC CONTROL SIGNAL SYSTEM INTERSECTION LAYOUT
SIGNAL PLAN
S.A.P. 199-020-010 / C.P. 12-20

318



1) (✱✱ FIBER OPTIC) DENOTES INTERCONNECT FIBER TO BE FURNISHED AND INSTALLED WITH THE SIGNAL SYSTEM. SEE INTERCONNECT LAYOUT AND SPECIAL PROVISIONS 2565 FOR REQUIREMENTS. (INCIDENTAL)

NO.	DATE	BY	CHK	REVISIONS

Design By: SD
Plan By: MAS
Checked By: NEH
Approved By: SD

DATE: 04/03/12 LIC. NO. 40945

WSB & Associates, Inc.
701 Xenia Avenue South, Suite 300
Minneapolis, MN 55416
www.wsbeng.com

City of RAMSEY

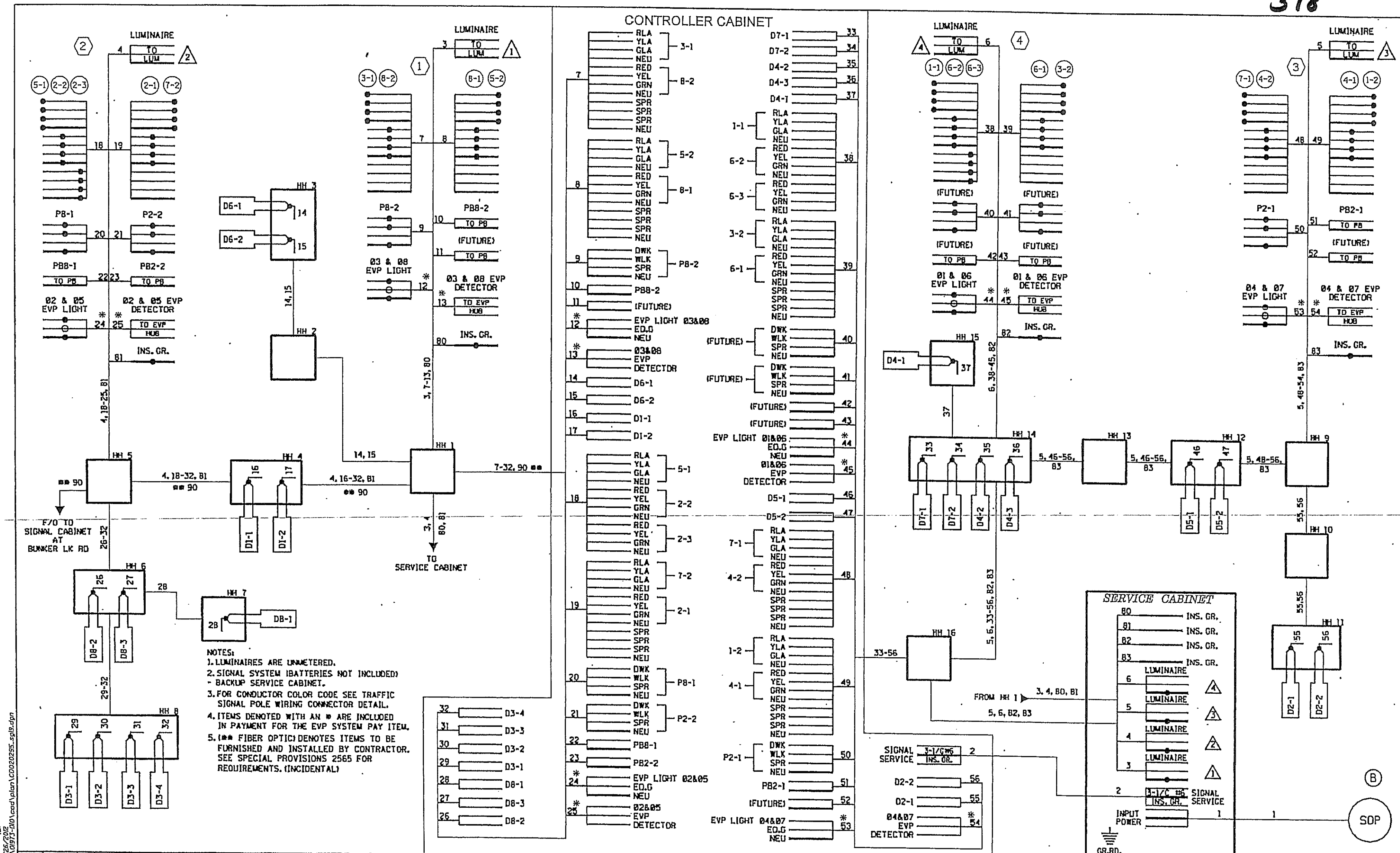
Armstrong Blvd at Sunwood Drive
City of Ramsey, Minnesota

CITY OF RAMSEY, MINNESOTA
TRAFFIC CONTROL SIGNAL SYSTEM MATCH LINE
SIGNAL PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 126 OF 153 SHEETS

Date Printed: 6/25/2012
WSB Filename: X:\01973-010\cad\plan\CD020255_sg18.dgn

318



NOTES:
1. LUMINAIRES ARE UNMETERED.
2. SIGNAL SYSTEM (BATTERIES NOT INCLUDED) - BACKUP SERVICE CABINET.
3. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL POLE WIRING CONNECTOR DETAIL.
4. ITEMS DENOTED WITH AN * ARE INCLUDED IN PAYMENT FOR THE EVP SYSTEM PAY ITEM.
5. (** FIBER OPTIC) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR. SEE SPECIAL PROVISIONS 2565 FOR REQUIREMENTS. (INCIDENTAL)

NO.	DATE	BY	CHK	REVISIONS

Design By: SD
Plan By: MAS
Checked By: NEH
Approved By: SD

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
LICENSED PROFESSIONAL ENGINEER - SEAN DELMORE, PE
DATE: 04/03/12 LIC. NO: 40945

WSB & Associates, Inc.
701 Xenia Avenue South, Suite 300
Minneapolis, MN 55416
www.wsbeng.com
INFRASTRUCTURE | ENGINEERING | PLANNING | CONSTRUCTION

City of RAMSEY
Armstrong Blvd at Sunwood Drive
City of Ramsey, Minnesota

CITY OF RAMSEY, MINNESOTA
TRAFFIC CONTROL SIGNAL SYSTEM WIRING DIAGRAM
SIGNAL PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 127 OF 153 SHEETS

Date Printed: 6/26/2012
WSB Filename: K:\01973-010\cad\plan\C0020295_sg19.dgn

Estimated Costs and Quantities
Revise Signal System (FYA Modifications)
CSAH 83 at Sunwood Drive/147th Avenue NW
Prepared by JMG (SEH) on March 21, 2017

Item	Estimated Quantity	Estimated Unit Cost	Estimated Total Cost
Remove 3-Section Signals	8	$300	$2,400
4-Section Signals (with LED)	9	$900	$8,100
5-Foot Extension	1	$2,500	$2,500
Strap-on Mid Mast Arm Mount	1	$1,000	$1,000
R10-X12 Sign Panels	4	$500	$2,000
Controller Cabinet Modifications	1	$2,000	$2,000
6 x 6 NMC Loop Detectors	8	$1,500	$12,000
6/c#14 Cable (to poles 1, 2, 3, 4)	800'	$2	$1,600
EVP detector modifications	1	$500	$500
Traffic Control	1	$2,500	$2,500
Sub Total			$34,600
Miscellaneous	approx. 15%		$5,400
Total Estimated Revise Signal System Costs			$40,000

Short Elliott Hendrickson Inc.

3535 Vadnais Center Drive
St. Paul, MN, 55110
Building a Better World for All of Us

2016 Anoka County Counts
Armstrong Blvd at Sundown Dr/147th St
AM Peak
Ramsey, MN

File Name : 1-CSAH 83 (Armstrong Blvd) at Sundown Drive_147th Avenue 6AM-9AM.ASF
Site Code :
Start Date : 9/29/2016

Groups Printed- Cars + - Trucks

	Armstrong Blvd From North						Sundown Drive From East						Armstrong Blvd From South						147th Street From West						
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Int. Total
BREAK																									
06:00 AM	0	74	10	0	0	84	3	0	7	0	0	10	10	11	0	0	0	21	0	0	0	0	0	0	115
06:15 AM	0	64	11	0	0	75	2	0	6	0	0	8	12	19	0	0	0	31	1	0	0	0	0	1	115
06:30 AM	0	77	12	0	0	89	2	1	5	0	0	8	9	21	0	0	0	30	0	0	0	0	0	0	127
06:45 AM	0	50	23	0	0	73	3	0	11	0	1	15	22	25	3	0	0	50	0	0	0	0	0	0	138
Total	0	265	56	0	0	321	10	1	29	0	1	41	53	76	3	0	0	132	1	0	0	0	0	1	495
07:00 AM	0	57	13	0	0	70	4	0	9	0	0	13	20	20	3	0	0	43	3	0	0	0	0	3	129
07:15 AM	0	65	18	0	0	83	5	0	9	0	1	15	40	24	0	0	0	64	0	0	0	0	0	0	162
07:30 AM	1	48	15	0	0	64	4	0	5	0	0	9	47	48	0	0	0	95	0	0	0	0	0	0	168
07:45 AM	1	57	18	0	0	76	3	0	11	0	0	14	38	30	1	0	0	69	0	0	1	0	0	1	160
Total	2	227	64	0	0	293	16	0	34	0	1	51	145	122	4	0	0	271	3	0	1	0	0	4	619
08:00 AM	1	32	19	0	0	52	8	0	13	0	0	21	24	18	0	0	0	42	2	0	0	0	0	2	117
08:15 AM	0	57	9	0	0	66	8	0	11	0	0	19	14	17	2	0	0	33	0	1	1	0	0	2	120
08:30 AM	0	46	15	0	0	61	7	1	12	0	1	21	18	21	1	0	0	40	0	0	0	0	0	0	122
08:45 AM	0	33	13	0	0	46	9	0	7	0	0	16	29	20	2	0	0	51	0	0	0	0	0	0	113
Total	1	168	56	0	0	225	32	1	43	0	1	77	85	76	5	0	0	166	2	1	1	0	0	4	472
Grand Total	3	660	176	0	0	839	58	2	106	0	3	169	283	274	12	0	0	569	6	1	2	0	0	9	1586
Apprch %	0.4	78.7	21	0	0		34.3	1.2	62.7	0	1.8		49.7	48.2	2.1	0	0		66.7	11.1	22.2	0	0		
Total %	0.2	41.6	11.1	0	0	52.9	3.7	0.1	6.7	0	0.2	10.7	17.8	17.3	0.8	0	0	35.9	0.4	0.1	0.1	0	0	0.6	
Cars +	2	650	172	0	0	824	57	2	101	0	2	162	271	258	12	0	0	541	5	1	1	0	0	7	1534
% Cars +	66.7	98.5	97.7	0	0	98.2	98.3	100	95.3	0	66.7	95.9	95.8	94.2	100	0	0	95.1	83.3	100	50	0	0	77.8	96.7
Trucks	1	10	4	0	0	15	1	0	5	0	1	7	12	16	0	0	0	28	1	0	1	0	0	2	52
% Trucks	33.3	1.5	2.3	0	0	1.8	1.7	0	4.7	0	33.3	4.1	4.2	5.8	0	0	0	4.9	16.7	0	50	0	0	22.2	3.3

Short Elliott Hendrickson Inc.

3535 Vadnais Center Drive
St. Paul, MN, 55110
Building a Better World for All of Us

2016 Anoka County Counts
Armstrong Blvd at Sundown Dr/147th St
Mid-Day Peak
Ramsey, MN

File Name : 2-CSAH 83 (Armstrong Blvd) at Sundown Drive_147th Avenue 11AM-1PM.ASF
Site Code :
Start Date : 9/29/2016

Groups Printed- Cars + - Trucks

	Armstrong Blvd From North						Sundown Drive From East						Armstrong Blvd From South						147th Street From West						
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Int. Total
BREAK																									
11:00 AM	1	23	8	0	0	32	14	0	11	0	0	25	19	20	0	1	0	40	1	0	0	0	0	1	98
11:15 AM	1	19	11	0	0	31	10	1	17	0	0	28	24	19	1	0	0	44	1	0	0	0	0	1	104
11:30 AM	0	22	8	0	0	30	12	0	15	0	1	28	17	28	0	0	0	45	0	1	0	0	0	1	104
11:45 AM	0	16	12	0	0	28	11	0	8	0	0	19	20	16	1	0	0	37	0	1	0	0	0	1	85
Total	2	80	39	0	0	121	47	1	51	0	1	100	80	83	2	1	0	166	2	2	0	0	0	4	391
12:00 PM	0	27	11	0	0	38	12	0	12	0	0	24	22	31	0	0	0	53	0	0	0	0	0	0	115
12:15 PM	1	17	6	0	0	24	22	2	16	0	0	40	24	34	2	0	0	60	2	1	1	0	0	4	128
12:30 PM	0	24	9	0	0	33	11	0	15	0	0	26	33	18	5	0	0	56	0	1	2	0	0	3	118
12:45 PM	1	22	11	0	0	34	15	0	12	0	0	27	22	28	0	0	0	50	2	0	0	0	0	2	113
Total	2	90	37	0	0	129	60	2	55	0	0	117	101	111	7	0	0	219	4	2	3	0	0	9	474
Grand Total	4	170	76	0	0	250	107	3	106	0	1	217	181	194	9	1	0	385	6	4	3	0	0	13	865
Apprch %	1.6	68	30.4	0	0		49.3	1.4	48.8	0	0.5		47	50.4	2.3	0.3	0		46.2	30.8	23.1	0	0		
Total %	0.5	19.7	8.8	0	0	28.9	12.4	0.3	12.3	0	0.1	25.1	20.9	22.4	1	0.1	0	44.5	0.7	0.5	0.3	0	0	1.5	
Cars +	3	161	75	0	0	239	105	3	102	0	1	211	176	186	8	1	0	371	6	4	3	0	0	13	834
% Cars +	75	94.7	98.7	0	0	95.6	98.1	100	96.2	0	100	97.2	97.2	95.9	88.9	100	0	96.4	100	100	100	0	0	100	96.4
Trucks	1	9	1	0	0	11	2	0	4	0	0	6	5	8	1	0	0	14	0	0	0	0	0	0	31
% Trucks	25	5.3	1.3	0	0	4.4	1.9	0	3.8	0	0	2.8	2.8	4.1	11.1	0	0	3.6	0	0	0	0	0	0	3.6

Short Elliott Hendrickson Inc.

3535 Vadnais Center Drive
St. Paul, MN, 55110
Building a Better World for All of Us

2016 Anoka County Counts
Armstrong Blvd at Sundown Dr/147th St
PM Peak
Ramsey, MN

File Name : 3-CSAH 83 (Armstrong Blvd) at Sundown Drive_147th Avenue 3PM-7PM.ASF
Site Code :
Start Date : 9/29/2016
Page No : 1

Groups Printed- Cars + - Trucks

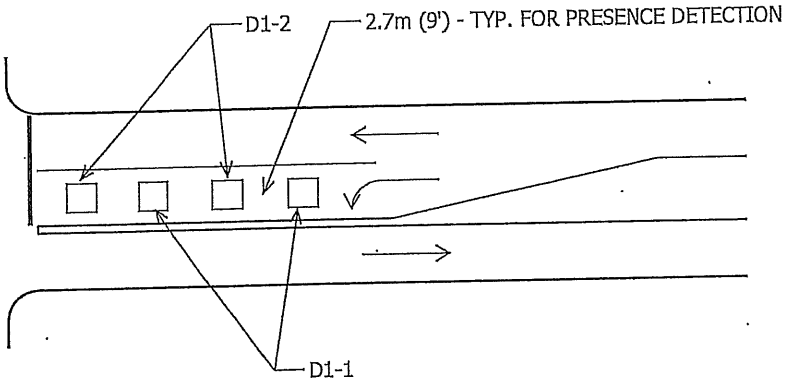
	Armstrong Blvd From North						Sundown Drive From East						Armstrong Blvd From South						147th Street From West						
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Int. Total
BREAK																									
03:00 PM	0	27	10	0	0	37	23	0	14	0	1	38	29	36	0	1	0	66	0	0	0	0	0	0	141
03:15 PM	0	26	16	0	0	42	20	0	24	0	0	44	17	49	1	0	0	67	5	0	0	0	0	5	158
03:30 PM	0	47	17	0	0	64	31	0	22	0	0	53	30	57	2	0	1	90	0	0	0	0	1	1	208
03:45 PM	0	34	19	0	0	53	26	0	10	0	0	36	41	53	0	2	0	96	1	0	1	0	0	2	187
Total	0	134	62	0	0	196	100	0	70	0	1	171	117	195	3	3	1	319	6	0	1	0	1	8	694
04:00 PM	0	46	7	0	0	53	35	0	30	0	0	65	27	54	0	0	0	81	0	0	0	0	0	0	199
04:15 PM	1	29	22	0	0	52	33	0	29	0	0	62	29	58	0	0	0	87	0	0	1	0	0	1	202
04:30 PM	0	52	10	0	0	62	45	0	41	0	0	86	31	65	0	1	1	98	1	0	0	0	0	1	247
04:45 PM	1	33	18	0	0	52	32	1	29	0	0	62	32	73	1	0	0	106	1	0	0	0	0	1	221
Total	2	160	57	0	0	219	145	1	129	0	0	275	119	250	1	1	1	372	2	0	1	0	0	3	869
05:00 PM	2	38	20	0	0	60	47	0	23	0	0	70	35	73	0	1	0	109	4	0	0	0	0	4	243
05:15 PM	0	45	9	0	0	54	37	0	22	0	0	59	36	64	0	0	0	100	0	0	0	0	0	0	213
05:30 PM	0	49	14	0	0	63	34	0	20	0	2	56	26	56	2	0	0	84	1	0	1	0	0	2	205
05:45 PM	1	38	14	0	0	53	26	0	7	0	1	34	31	68	1	2	0	102	0	0	2	0	0	2	191
Total	3	170	57	0	0	230	144	0	72	0	3	219	128	261	3	3	0	395	5	0	3	0	0	8	852
06:00 PM	0	46	15	0	0	61	41	0	17	0	1	59	32	49	1	1	0	83	0	0	1	0	0	1	204
06:15 PM	0	38	16	0	0	54	34	0	19	0	3	56	24	54	0	1	0	79	0	0	0	0	0	0	189
06:30 PM	0	41	12	0	4	57	20	0	21	0	5	46	25	47	0	0	0	72	1	0	0	0	0	1	176
06:45 PM	0	24	17	0	0	41	25	0	13	0	0	38	26	31	0	0	0	57	0	0	0	0	0	0	136
Total	0	149	60	0	4	213	120	0	70	0	9	199	107	181	1	2	0	291	1	0	1	0	0	2	705
Grand Total	5	613	236	0	4	858	509	1	341	0	13	864	471	887	8	9	2	1377	14	0	6	0	1	21	3120
Apprch %	0.6	71.4	27.5	0	0.5		58.9	0.1	39.5	0	1.5		34.2	64.4	0.6	0.7	0.1		66.7	0	28.6	0	4.8		
Total %	0.2	19.6	7.6	0	0.1	27.5	16.3	0	10.9	0	0.4	27.7	15.1	28.4	0.3	0.3	0.1	44.1	0.4	0	0.2	0	0	0.7	
Cars +	5	602	233	0	0	840	508	1	339	0	2	850	460	866	4	9	1	1340	14	0	6	0	0	20	3050
% Cars +	100	98.2	98.7	0	0	97.9	99.8	100	99.4	0	15.4	98.4	97.7	97.6	50	100	50	97.3	100	0	100	0	0	95.2	97.8
Trucks	0	11	3	0	4	18	1	0	2	0	11	14	11	21	4	0	1	37	0	0	0	0	1	1	70
% Trucks	0	1.8	1.3	0	100	2.1	0.2	0	0.6	0	84.6	1.6	2.3	2.4	50	0	50	2.7	0	0	0	0	100	4.8	2.2

Exhibit 4-6 Protected Permissive and FYA Left Turn – Separate Left Turn Lane

LOOP DETECTOR PLACEMENT

PROTECTED/PERMISSIVE AND FLASHING YELLOW LEFT TURN

SEPARATE LEFT TURN LANE



LOOP DETECTOR FUNCTIONS
1 = CALL AND EXTEND

NUMBER	FUNCTION	SIZE	LOCATION
D1-1	1	2 - 1.7 x 1.7m (6' X 6')	6m (20') & 15m (50')
D1-2	1	2 - 1.7 x 1.7m (6' X 6')	1.5m (5') & 11m (35')

LOCATION = DISTANCE FROM STOP BAR TO LOOP DETECTOR

NOTES:

1) CONTROLLER PHASE AND DETECTOR FUNCTION SHALL BE NON-LOCK MEMORY WITH NO RECALL.
2) USE BACK UP PROTECTION TO PREVENT LEFT TURN TRAP IF THERE ARE OPPOSING LEFT TURNS.
3) DESIGN SPEED IS 25 MPH.
4) EACH NUMBERED LOOP DETECTOR SHALL HAVE A SEPARATE LEAD-IN CABLE AND SEPARATE AMPLIFIER.
5) IF USING NMC LOOPS, A SINGLE LARGER LOOP CAN REPLACE THE DUALS.
6) DETECTOR CROSS SWITCHING MAY BE USED.
7) USE THIS FIGURE IF INSTALLING A FLASHING YELLOW ARROW (FYA).

FIGURE 5

Metric				US Customary			
		Intersection sight distance				Intersection sight distance	
		Passenger cars				Passenger cars	
Design speed (km/h)	Stopping sight distance (m)	Calculated (m)	Design (m)	Design speed (mph)	Stopping sight distance (ft)	Calculated (ft)	Design (ft)
20	20	30.6	35	15	80	121.3	125
30	35	45.9	50	20	115	161.7	165
40	50	61.2	65	25	155	202.1	205
50	65	76.5	80	30	200	242.6	245
60	85	91.7	95	35	250	283.0	285
70	105	107.0	110	40	305	323.4	325
80	130	122.3	125	45	360	363.8	365
90	160	137.6	140	50	425	404.3	405
100	185	152.9	155	55	495	444.7	445
110	220	168.2	170	60	570	485.1	490
120	250	183.5	185	65	645	525.5	530
130	285	198.8	200	70	730	566.0	570
				75	820	606.4	610
				80	910	646.8	650

Note: Intersection sight distance shown is for a passenger car making a left turn from an undivided highway. For other conditions and design vehicles, the time gap should be adjusted and the sight distance recalculated.

Exhibit 9-67. Intersection Sight Distance—Case F—Left Turn from Major Road

If stopping sight distance has been provided continuously along the major road and if sight distance for Case B (stop control) or Case C (yield control) has been provided for each minor-road approach, sight distance will generally be adequate for left turns from the major road. Therefore, no separate check of sight distance for Case F may be needed.

However, at three-leg intersections or driveways located on or near a horizontal curve or crest vertical curve on the major road, the availability of adequate sight distance for left turns from the major road should be checked. In addition, the availability of sight distance for left turns from divided highways should be checked because of the possibility of sight obstructions in the median.

At four-leg intersections on divided highways, opposing vehicles turning left can block a driver's view of oncoming traffic. Exhibit 9-98, presented later in this chapter, illustrates intersection designs that can be used to offset the opposing left-turn lanes and provide left-turning drivers with a better view of oncoming traffic.

Varying Between Protected, Protected/Permissive, and Permissive Operation

As discussed above, the FYA can be considered a variable operation signal indication. Consider the following items:

- ✓ All FYA signals may vary operation between protected, protected/permissive, and permissive operation at various times of the day and night.
- ✓ Each signal approach will need to be analyzed individually to determine the time-of-day FYA operation by considering the following criteria:
  a) Cross-product volumes of left turns and opposing throughs at various times of day
  b) Speed limit
  c) Sight distance limitations
  d) Number of opposing through lanes
  e) Double left turn lanes or single left turn lanes
  f) Opposing left turn lane offset
  g) Cross street or mainline approach
  h) Comprehensive left turn crash analysis of approaches with similar characteristics

Test for Protected Only Operation 24 Hours per Day

In some cases, the left turn indication should run in the most restrictive Protected-Only mode 24 hours per day. Refer to Exhibit 3-13 for the Protected Only Left Turn Operation Guidelines. If the answer to question 1 or 2 is "yes", then protected operation should be used throughout the day.

Exhibit 3-13 Part 1: Protected-Only Left Turn Operation 24 Hours per Day

Part 1: Protected Only Operation - 24 hrs/day Guidelines

Question 1: Conflicting Left Turns

Do the opposing left turn paths conflict?

○ Yes
○ No

> If the answer is Yes, then use Protected Operation 24 hours/day.
> If the answer is No, proceed to the next question.

Question 2: Limited Sight Distance

Does the left turner have very limited sight distance as defined in the current AASHTO "A Policy on Geometric Designs of Highways and Streets"?

○ Yes
○ No

> If the answer is Yes, then use Protected Operation 24 hours/day.
> If the answer is No, proceed to part 2 to check for FYA by TOD.

> If the Answer is Yes to Question 1 or 2, use Protected Operation 24 hours/day
> If the Answer is No to all of the above, proceed to Part 2.

If the answer is "yes" to any of the questions in Part 1, then Protected-Only operation is suggested throughout the day. If the answer to all of the questions is "no", then proceed to Part 2 (Exhibit 3-14) to check for permissive FYA operation by time of day.

Test for FYA Operation by Time of Day

Part 2 (Exhibit 3-14) should be performed for each time of day interval. Typically, the evaluation would be for 4 or more intervals throughout the day (AM Peak, Mid-day Peak, PM Peak and Off Peak). Other intervals can be evaluated as warranted.

For the Cross-Product (Question 6) use the highest hourly cross product during the interval evaluated.

Exhibit 3-14 Part 2: Permissive FYA Operation by Time of Day

Part 2: Time of Day Operation of FYA

_____ Start Time

_____ End Time

Question 3: Number of Left Turn Lanes

Does the left turn have two (2) or more lanes?

○ Yes
> If the answer is **Yes**, Protected Operation is **suggested** during the **high** volume times of the day (use Engineering Judgment if Decision to run FYA by TOD).

○ No
> If the answer is **No**, proceed to the next question.

Question 4: Number of Opposing Through Lanes

Does the left turn face three (3) or more opposing through lanes?

○ Yes
> If the answer is **Yes**, Protected Operation is **suggested** during the **high** volume times of the day (use Engineering Judgment if Decision to run FYA by TOD).

○ No
> If the answer is **No**, proceed to the next question.

Question 5: Crash History

Is protected/permissive operation in place and is there a high number of left turn related collisions during this time interval over a 3-year period susceptible to correction by protected only phasing?

○ Yes
> If the answer is **Yes**, Protected Operation is **suggested** for this TOD.

○ No
> If the answer is **No**, proceed to the next question.

Question 6: Speed and Cross Product

Is the Speed 45 MPH or greater and the Peak Hour left turn volume greater than 240 vph or is the peak hour cross product greater than 80,000 (100,000 if 2 opposing lanes)?

○ Yes
> If the answer is **Yes**, Protected Operation is **suggested** for this TOD.

○ No
> If the answer is **No**, FYA may be possible during this time period.

> If the answer is **Yes** to all Questions, Protected Only Operation is **Suggested** during this TOD (use Engineering Judgment if Decision to run FYA by TOD).

> If the answer is **No** to all Questions, FYA may be used during this TOD.

If the answer to all of the questions in Part 2 are "yes", protected only operation is suggested. Use engineering judgment if a decision to run FYA for the evaluated time period.

Question 6 does include a threshold volume of 240 vph for the subject left turn. However, if the opposing through volume is low, apply engineering judgment to determine if FYA operation could be used even if the left turn volume exceeds 240 vph.

If permissive FYA operation is allowed, protected/permissive operation may be investigated. The decision to use protected/permissive operation should be based on a capacity analysis.

Definitions

- ✓ **Protected only left turn operation:** signal phasing that allows left turn movements to only be made on an exclusive phase (green arrow).
- ✓ **Conflicting Left Turn Paths:** At some locations geometric constraints at the intersection cause the paths of opposing left turn vehicles to cross as overlap creating a conflict. An example is an approach that crosses a divided roadway with a wide median. In these locations, it may be necessary to operate the left turns in a lead-lag sequence or a split phase sequence, not allowing simultaneous opposing left turns. This operation will require protected left turns.
- ✓ **Opposing through lane (conflict):** The opposing through lanes are the lanes across from, and in conflict with, the left turning vehicle. Multiple lanes make it difficult for a driver to evaluate gaps in oncoming traffic. An opposing separate right turn lane will typically not be counted with opposing through lanes unless engineering judgment indicates that the lane configuration and number of right turns will cause conflicts with the left turn movement.
- ✓ **Limited Sight Distance (Requirements):** The minimum sight distance values necessary for the design vehicle volume to complete the turn movement. Distance should be calculated from the stop bar for the mainline left turning vehicle. Measurement is based on travel path, speed, and acceleration vehicle height. Both the sight distance for passenger vehicles and trucks should be checked using heights and distance requirements per the AASHTO Geometric Design Guide. The current reference at time this manual was prepared is the 2004 Guide, Chapter 9, Exhibit 9-67).
- ✓ **Dual Left Turn Lanes:** Multiple left turn lanes may consist of exclusive left turn lanes or a combination of exclusive left turn lanes and lanes that are shared by through and left turning traffic. Both the dual lane and the left turn lane opposing this operation are suggested to operate with protected phasing. Left turn lanes without opposing traffic, such as left turns off of a one- way street, does not require protected only phasing based upon this criteria. It might also be possible to run the FYA in permissive mode during low volume times of the day.
- ✓ **Protected/permissive left turn operation:** signal phasing that provides an exclusive phase (green arrow) followed by a permissive phase (flashing yellow arrow), time during the signal cycle where left turning traffic may make a left turn after yielding to oncoming traffic.
- ✓ **Left Turn Related Collisions:** These are Collisions that could be corrected by protected only phasing, such as those between those involving a left turning vehicle and an opposing through vehicle. At higher speeds the accidents collisions are likely to be more severe. Therefore, a lower number of collisions might be used as the parameter for consideration for high-speed approaches. Because of the variations in collisions overtime, an average number of collisions per year over a 3- year period should be used if the data is available.
- ✓ **Speed:** Because it can be difficult for a driver to accurately judge available gaps in traffic approaching at high speeds, the engineer must exercise discretion when considering permissive or protected permissive left turn phasing with opposing speeds of 45 MPH or above.

Use of posted speed limit is recommended. Non-arterial approaches may have lower speeds than the posted speed limit because they are often in a stop condition upon the arrival of traffic. Grades affect the acceleration rate of the left turner and the stopping distance and speed of the opposing through traffic and are therefore considered in conjunction with speeds.

✓ **Cross Product:** The left turn volume multiplied by the opposing through volume. The cross product values used are taken from the Wisconsin Department of Transportation (WisDOT) Traffic Signal Design Manual discussion on left turn conflicts analysis, Chapter 2, Section 3, Subject 4. Cross product used represents a high frequency of conflicts for left turners looking for gaps in through traffic.

FYA during Free Operation

With the variable-phasing operation of the FYA head, free operation will no longer have an assigned fixed phasing operation. Therefore, standard free operation will need to be set up in the signal controller so technicians can put signals quickly to FREE with a standard phasing operation desired at the specific time. Here is an example of the standard FREE operations that will need to be set up in the signal controller:

1. All left turns protected
2. All left turns protected/permissive
3. All left turns permissive
4. Mainline protected, cross street protected permissive
5. Mainline protected, cross street permissive
6. Mainline protected/permissive, cross street protected
7. Mainline protected/permissive, cross street permissive
8. Mainline permissive, cross street protected
9. Mainline permissive, cross street protected/permissive Minimum Green Times

Minimum Green Times

Mn/DOT currently sets the minimum green time based on the type of phasing operation where protected lefts have a 7 second minimum green and protected/permissive lefts have a 5 second minimum green. Given the FYA head is a variable phasing operation head, a decision will need to be made as to if there should be more than one minimum green value that changes with the phasing operation; or if a universal minimum green should apply to all phasing operations.

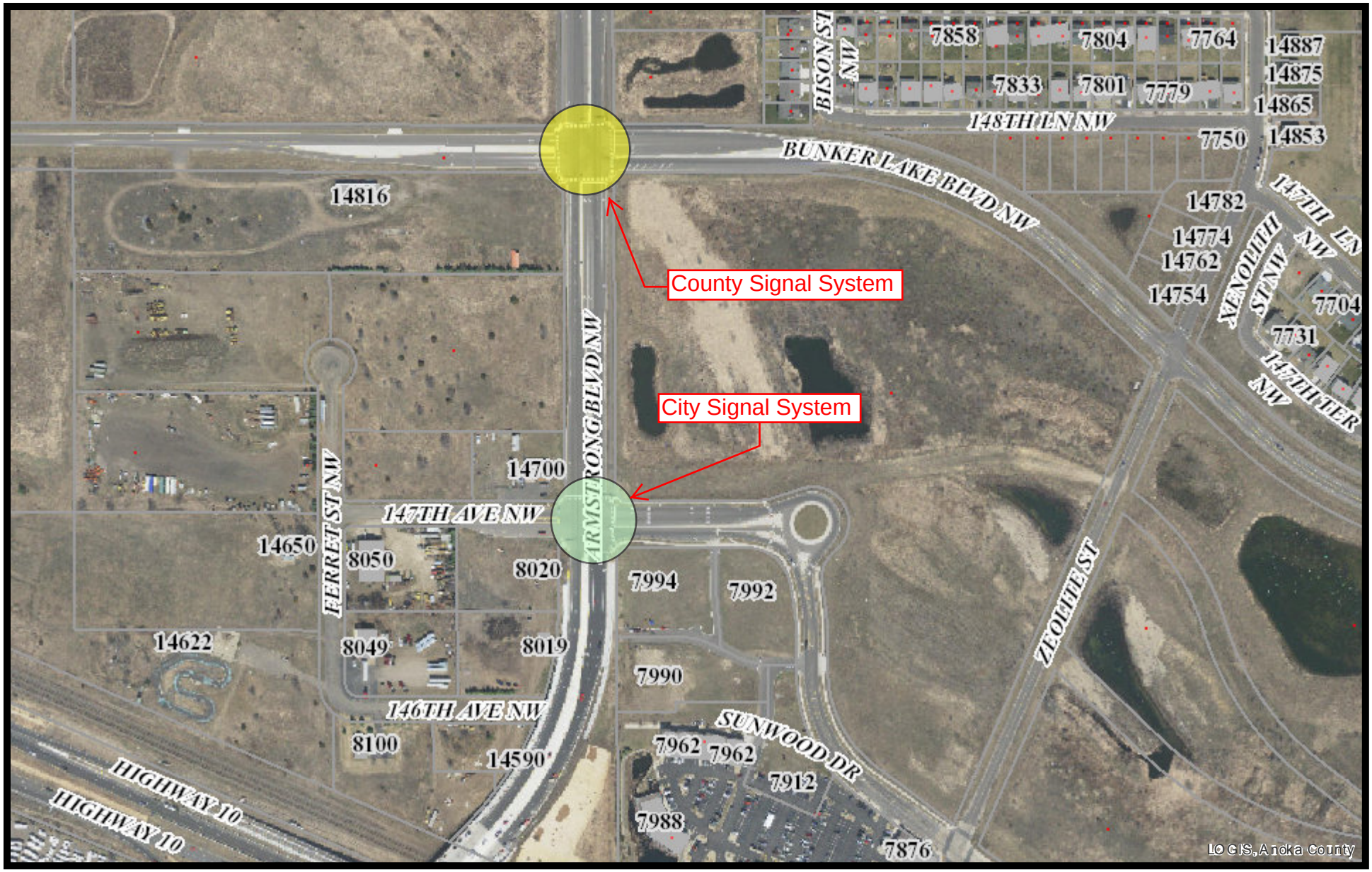
If one minimum green is used, and if a left turn phase will ever run protected, the left turn minimum green should be set at 7 seconds. If a left turn will never run protected (i.e. only run protected/permissive or permissive), then the left turn minimum green should be set at 5 seconds.

EVP Preemption Operation under FYA

A. Protected-only Operation

✓ When the FYA is not allowed (protected only), the pre-emption will bring up the protected left turn and the adjacent through phase. The opposing FYA will not be allowed during preemption (refer to Exhibit 3-15).

FIGURE 1



Print Date: April 13, 2017

0 125 250 500 750 1,000 Feet

Public Works Committee **6. 1.**

Meeting Date: 04/18/2017

Submitted For: Grant Riemer, Engineering/Public Works

By: Grant Riemer, Engineering/Public Works

Title:

Large Diameter Culvert Inspection Report

Purpose/Background:

The Public Works Committee had requested staff to perform an inspection of our larger diameter culverts, so replacement needs could be anticipated and added to our Capital Improvement Program for future funding. That list and staff recommendations are attached to this case. City staff performed an inspection of 10 culverts that, at times, carry a significant amount of water under our roadways. One of the culverts inspected staff felt, should be considered for replacement in 2017, while the others can delayed and included in street improvement projects or added to the CIP.

Timeframe:

10 minutes

Observations/Alternatives:

NA

Funding Source:

NA

Recommendation:

Informational only at this time. Projects will be brought back individually for review when warranted.

Action:

Informational only

Attachments

Culvert List

Form Review

Inbox	Reviewed By	Date
Kurt Ulrich	Kurt Ulrich	04/13/2017 03:53 PM
Form Started By: Grant Riemer		Started On: 03/30/2017 03:05 PM
Final Approval Date: 04/13/2017		

Major Culvert Inventory and Repair list

160st Lane (5801 161st Ln)	48” metal culvert, PW patched road surface over pipe due to sink holes, culvert mostly rusted away culvert needs replacement.
Xenon (15890 Xenon St)	42” x 85’ metal culvert, bad shape needs replacement.
176th Lane (8500 176th Lane)	Concrete culvert 42” x 58’, needs replacement
Ermine Boulevard (9500 Ermine Blvd)	Concrete culvert 72” x 58’, needs replacement
167th Ave (6220 167th Ave)	36” metal culvert approx. 30’ in from north end pipe is bent down at top, 6” to 8” of sediment in pipe needs cleaning
176th Avenue (8455 176th Ave)	Remove vegetation and tree along apron south end Culvert in good shape
Ermine Boulevard (9331 Ermine Blvd)	Clean vegetation at apron south end Culvert in good shape
Vanadium St Culvert (6301 Vanadium)	East end has some erosion needs repair West end minor erosion, culvert in good shape
Variolite Street (@ Trott Brook)	Concrete culvert water table too high
173rd Avenue (8500 173rd Ave)	Metal culvert, water table too high

Public Works Committee **6. 2.**

Meeting Date: 04/18/2017

By: Bruce Westby, Engineering/Public Works

Title:

Staff Updates on Improvement Projects and Items of Interest

Purpose/Background:

The purpose of this case is to update the Public Works Committee on current and proposed improvement projects within the City, and on other items of interest to the Committee.

City Improvement Projects

- **Business Park 95 Regional Stormwater Pond Improvements**
  - Work is substantially complete
  - Final payment will occur in 2017 following satisfactory completion of punch list and warranty work
- **Andrie Street & 164th Lane Reconstruction**
  - Work is substantially complete
  - Final payment will occur in 2017 following satisfactory completion of punch list and warranty work
- **Mississippi River Trail Phase 3**
  - Grading substantially completed in 2016
  - Aggregate base will be toleranced and paving will be completed spring of 2017
  - Final completion scheduled for summer 2017
- **Zeolite Street Storm Sewer Extension Improvements**
  - Work is substantially complete
  - Final payment will occur in 2017 following satisfactory completion of punch list and warranty work
- **Riverdale Drive Extension - Traprock St. to Ramsey Blvd.**
  - Plans and specifications are complete
  - Working with Anoka County Parks to acquire 5.3 acres of roadway right-of-way (appraised value $200,000)
  - Construction proposed for 2017 (pending right of way acquisition)
- **Alpine Drive Reconstruction**
  - Plans submitted for State Aid review
  - Alpine Drive closed to traffic to expedite work and improve safety
  - Letters regarding closure mailed to residents on west end Alpine Drive (mail and garbage pickup occurs on Armstrong)
  - Council approval of plans and authorization for bids proposed for May 9th
  - Construction proposed from June 26th through September 22nd (open to traffic August 26th)
- **Sunwood Drive Reconstruction**
  - Plans submitted for State Aid review
  - Council approval of plans and authorization for bids proposed for May 9th
  - Construction proposed from June 26th through September 29th

Anoka County Improvement Projects

- **Hanson Boulevard/CSAH 78 Grade Separation @ BNSF Railway Crossing (2017)**
  - Reconstruct County State Aid Highway 78 (CSAH 78) / Hanson Boulevard to a 4-lane divided section
  - Construct a grade-separated overpass for Burlington Northern Sante Fe (BNSF) railway crossing
- **Hanson Boulevard/CSAH 78 Reconstruction (2018)**
  - Expand CSAH 78 / Hanson Blvd between 139th Ave and CSAH 18 / Crosstown Blvd to 4-lane divided

section

- **Foley Boulevard/CSAH 11 Grade Separation @ BNSF Railway Crossing**
  - This project is currently unscheduled and unfunded

MnDOT Improvement Projects

- **Trunk Highway 10 Cable Median Barrier Installation (2018)**
  - Install cable median barrier along Highway 10 between Thurston Avenue and Highway 101
- **Ferry Street / Trunk Highway 47 Grade Separation @ BNSF Railway Crossing (2017)**
  - Preliminary design underway

Items of Interest

- Updating Wellhead Protection Plan
- Request for Quotes for Ground Penetrating Radar, Pavement Corings and Soil Borings on Street Maintenance Projects in 2018 & 2019 CIP

Timeframe:

Staff estimates that 5 minutes will be needed for updates and discussion.

Observations/Alternatives:

NA

Funding Source:

NA

Recommendation:

NA

Action:

No action required.

Attachments

No file(s) attached.

Form Review

Inbox	Reviewed By	Date
Grant Riemer	Grant Riemer	04/12/2017 01:39 PM
Kurt Ulrich	Kurt Ulrich	04/13/2017 04:02 PM
Form Started By: Bruce Westby		Started On: 04/11/2017 08:00 AM
Final Approval Date: 04/13/2017		

Public Works Committee **6. 3.**

Meeting Date: 04/18/2017

By: Bruce Westby, Engineering/Public Works

Title:

Review Future Topics Calendar

Purpose/Background:

Attached is a list of topics for review and discussion by the Public Works Committee. The list includes topics that were drawn from Committee requests received during meetings or are topics that have previously been discussed by the Committee but have yet to be resolved. Calendar dates have been estimated based on availability of information, staff workload, and competing objectives and are therefore subject to change.

Timeframe:

Staff estimates 5 minutes will be necessary to review the future topics calendar and address Committee questions.

Observations/Alternatives:

NA

Funding Source:

NA

Recommendation:

NA

Action:

For Committee review and discussion purposes only. No formal action is requested or necessary.

Attachments

April2017 PWC calendar

Form Review

Inbox	Reviewed By	Date
Grant Riemer	Grant Riemer	04/12/2017 03:04 PM
Kurt Ulrich	Kurt Ulrich	04/13/2017 04:03 PM
Form Started By: Bruce Westby		Started On: 04/11/2017 08:01 AM
Final Approval Date: 04/13/2017		

Public Works Committee Future Topics Calendar *

Date	Topics for Discussion – Committee Action
June 2017	Well Siting Study - Well #9
July 2017	Sunfish Lake Sedimentation Basin Improvements *(Westby)*
July 2017	Gibbon Street & 173rd Avenue Drainage Improvements *(Westby)*
Future	County Ditch Maintenance / Buffer Law *(Westby)*
Date	**Topics for Discussion – Regulatory**
Future	CR 63 / Green Valley Road Speed Study Results *(Westby)*
Future	Sunfish Lake Boulevard Speed Zone Study Results *(Westby)*
Date	**Topics for Discussion – Policy**
Future	Landscaped Median Maintenance Policy *(Riemer)*
July 2017	Draft Trail Maintenance Policy *(Westby)*
July 2017	Draft Stormwater Pond Maintenance Policy *(Westby)*
Date	**Topics for Discussion – Planning and Budget**
May 2017	Review Municipal State Aid System (MSAS) Revisions *(Westby)*
June 2017	Review 1996 and 2007 (unadopted) TH 47 Corridor Studies *(Westby)*
Future	Public Works Facility Review/Update *(Riemer/Brama)*
Future	Comprehensive Plan for Long-Term Water Supply *(Westby)*
Date	**Topics for Discussion – Staff Updates**
April 2017	Flashing Yellow Arrow Study @ Sunwood Dr & CSAH 83 *(Westby)*
Future	Water Conservation Options / Incentives

* Dates are estimated and are subject to change based on availability of information, staff workload, and competing objectives.