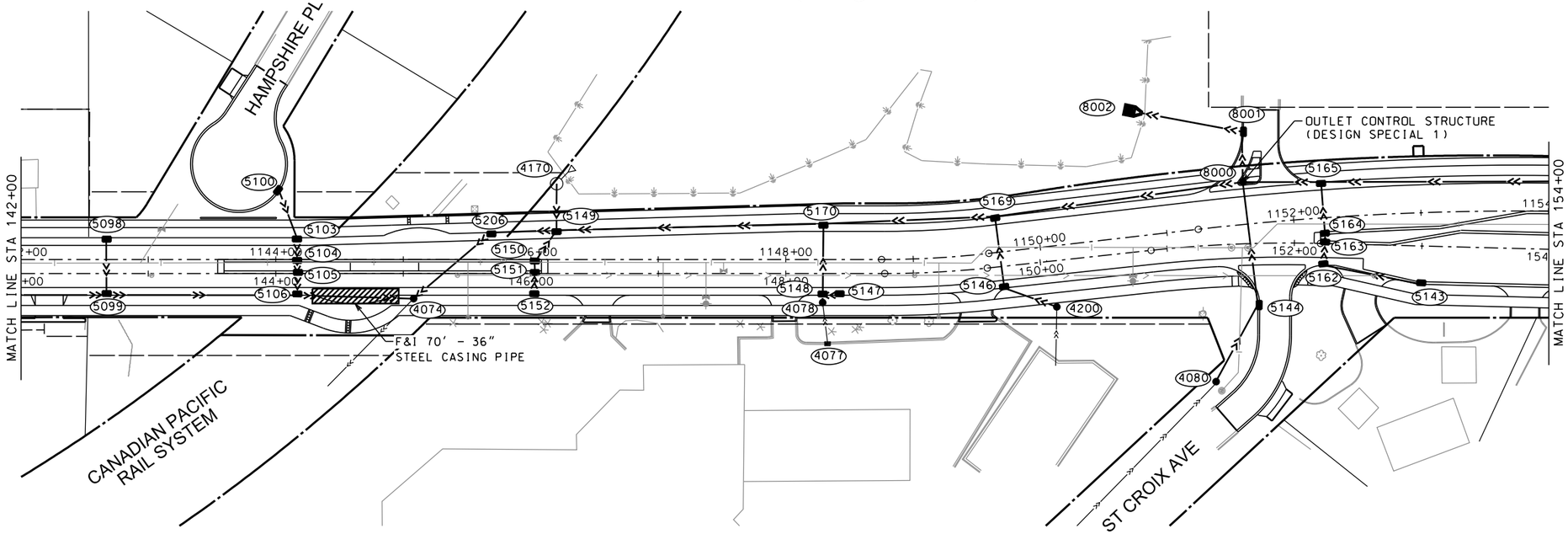
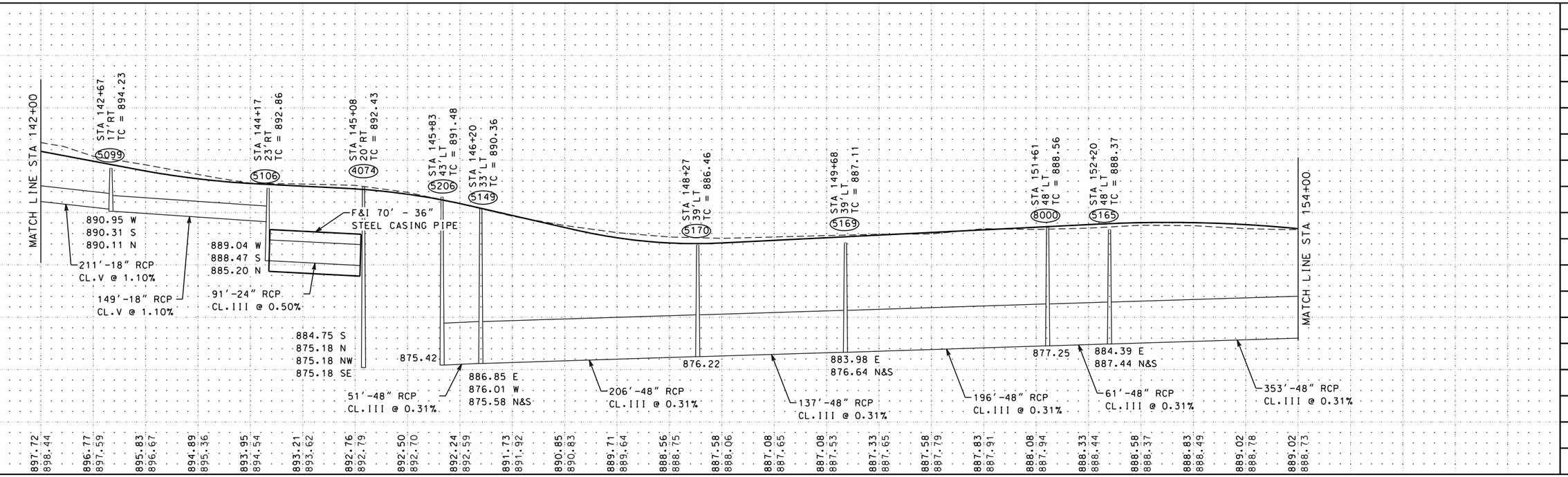
CSAH 102 (Douglas Drive)



0 50 FT 100 FT

LEGEND

- MANHOLE/STOOL GRATE
- CATCH BASIN
- PROPOSED STORM SEWER PIPE
- EXISTING STORM SEWER PIPE
- PROPOSED CONCRETE APRON W/ RIPRAP (OUTLET)
- PROPOSED CONCRETE APRON (INLET)



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Plan By: KOV
Checked By: BRS
Approved By: KOP

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CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER -- ANDREW OSEBOXAN PEPE

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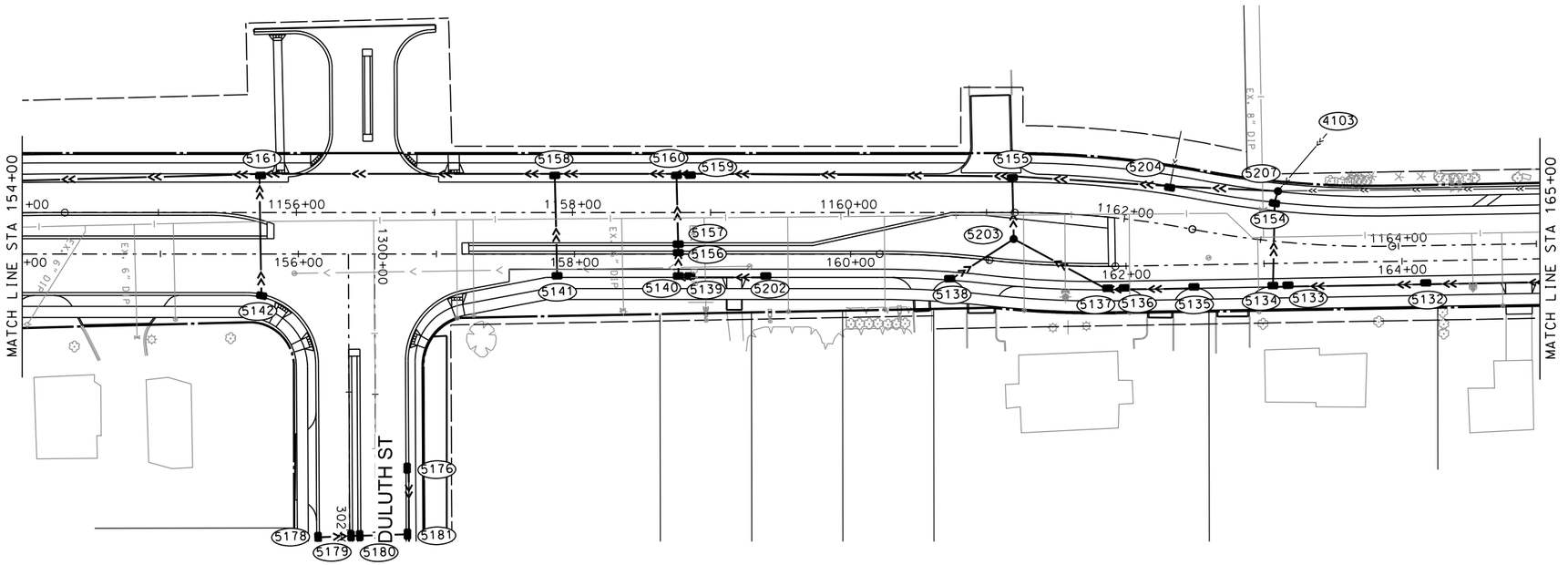
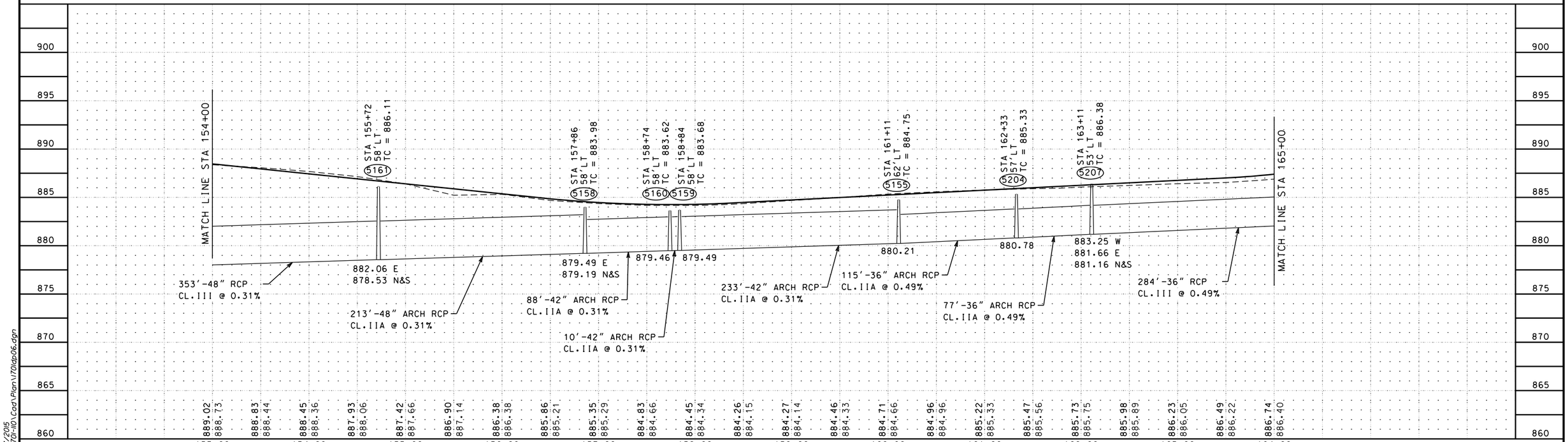
SHEET 154 OF 340 SHEETS

CSAH 102 (Douglas Drive)



LEGEND

- MANHOLE/STOOL GRATE
- CATCH BASIN
- PROPOSED STORM SEWER PIPE
- EXISTING STORM SEWER PIPE
- PROPOSED CONCRETE APRON W/ RIPRAP (OUTLET)
- PROPOSED CONCRETE APRON (INLET)



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Design By: KOP
Plan By: DOV
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SHEET 155 OF 340 SHEETS

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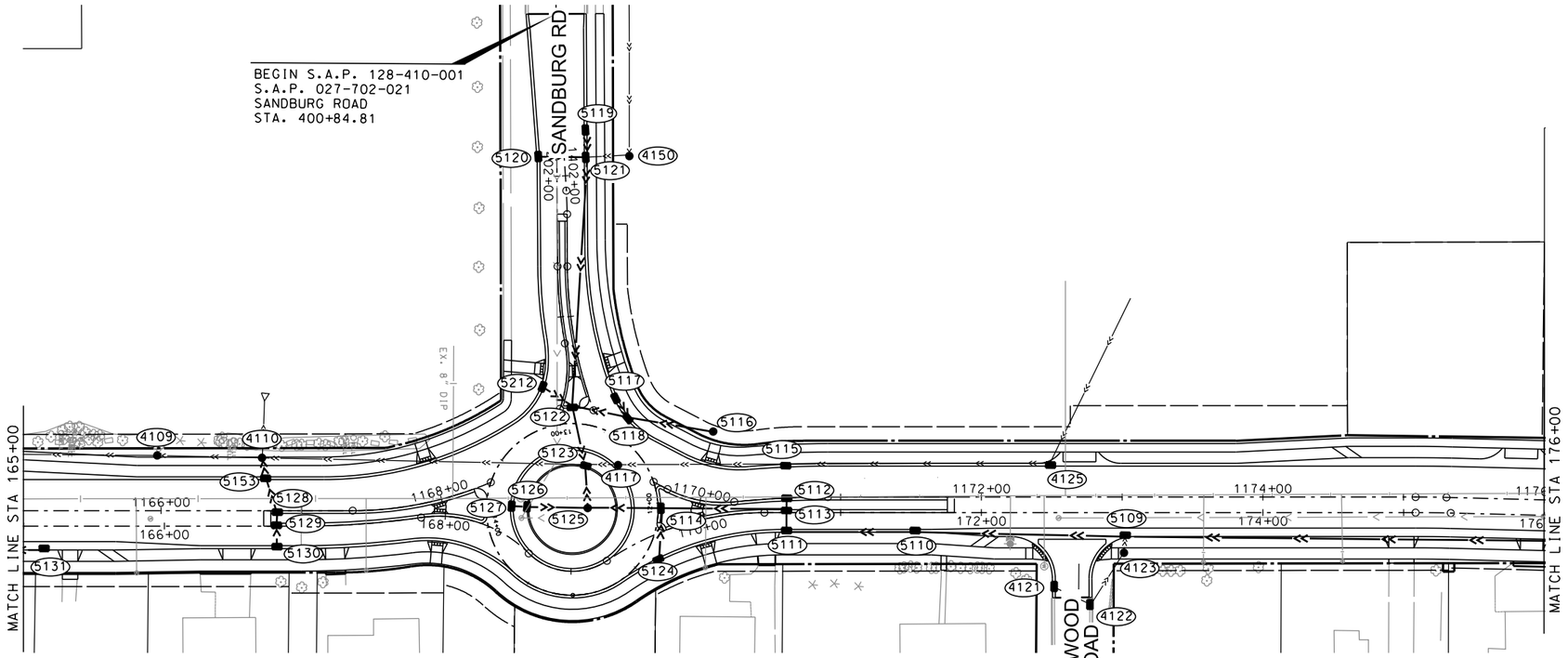

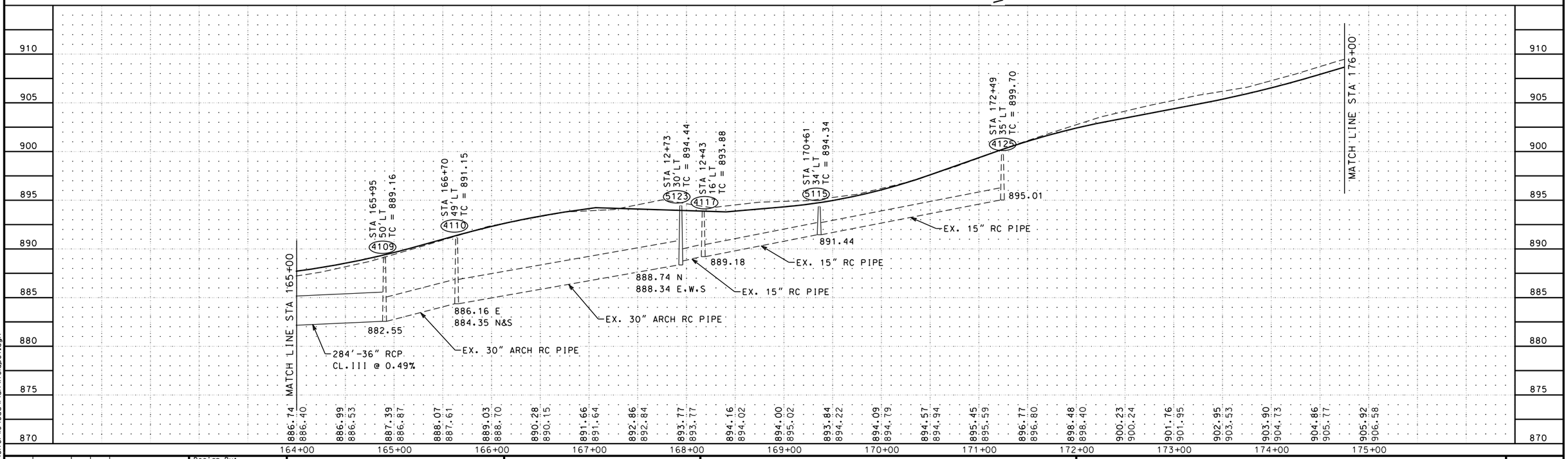

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SHEET 156 OF 340 SHEETS

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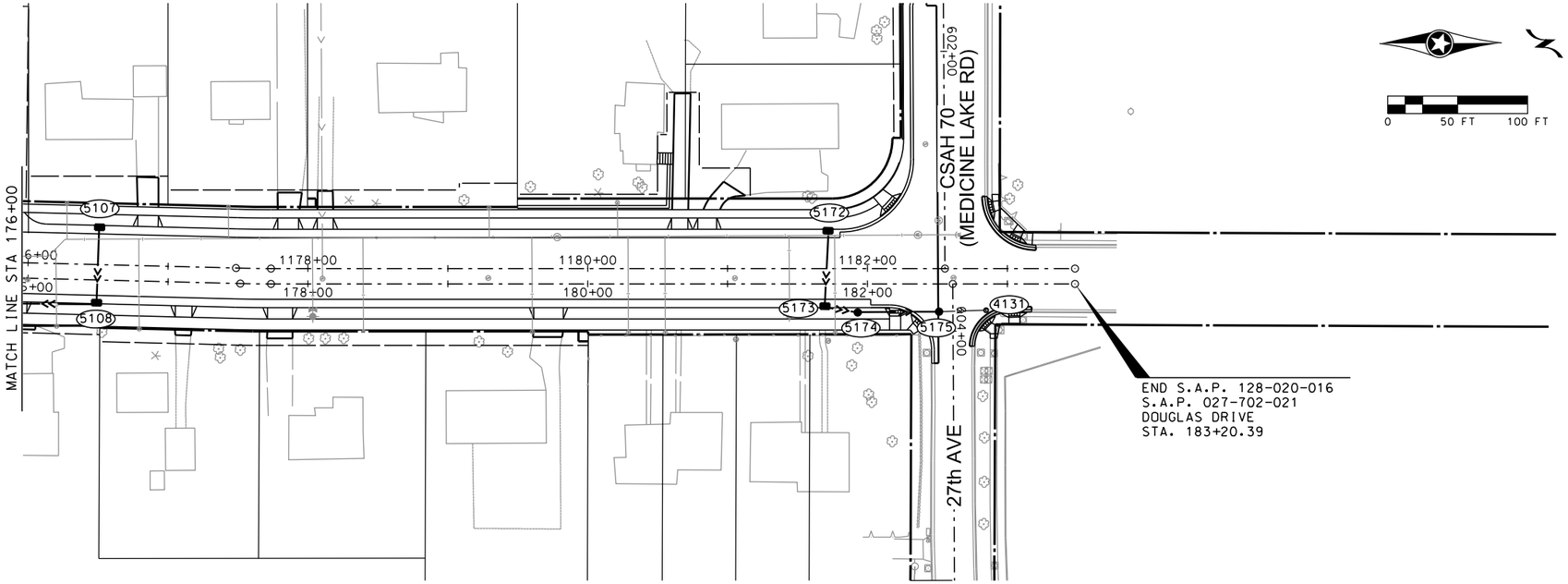
CSAH 102 (Douglas Drive)



LEGEND

- MANHOLE/STOOL GRATE
- CATCH BASIN
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- EXISTING STORM SEWER PIPE
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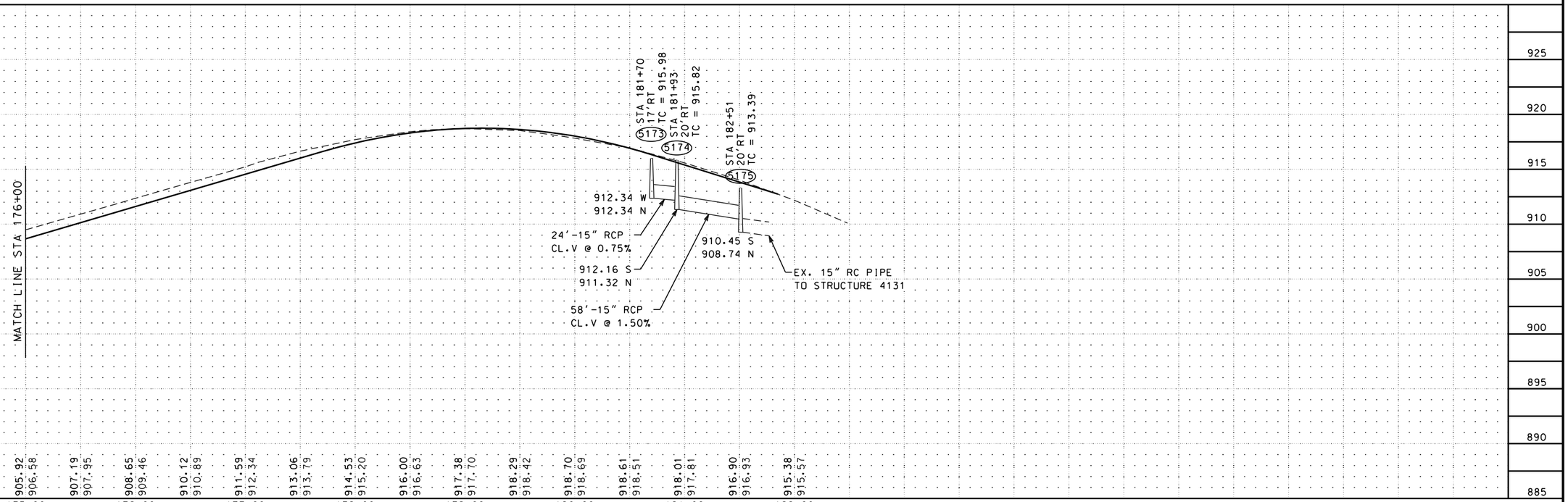

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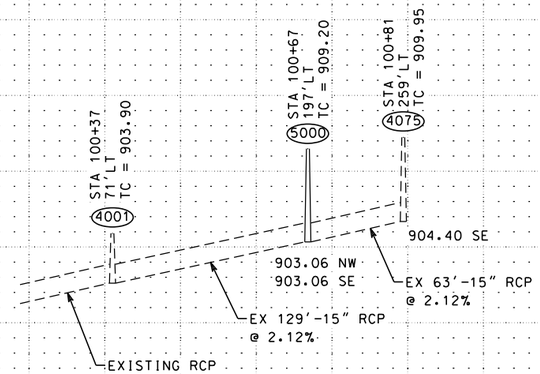

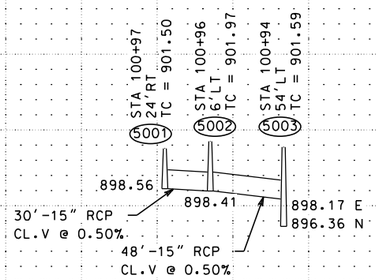

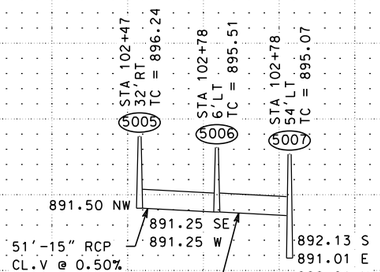

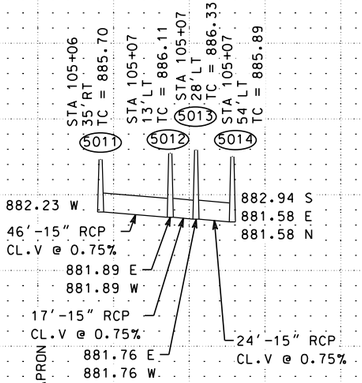

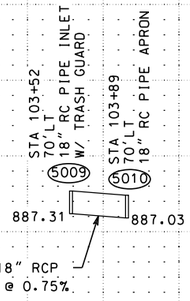

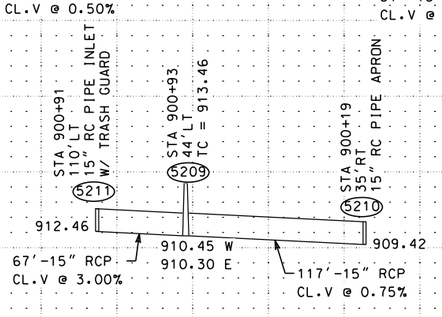

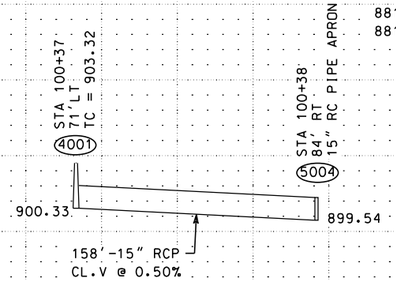

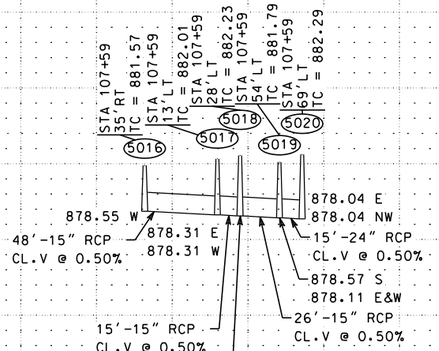

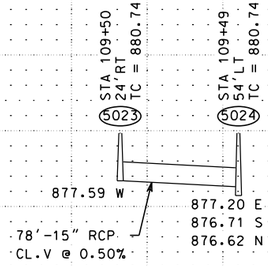

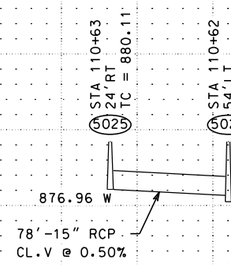

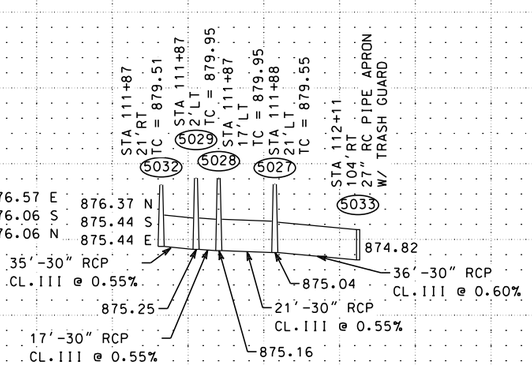

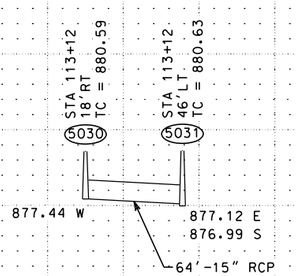

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Approved By: KOP

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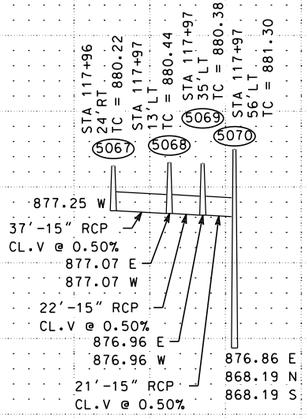
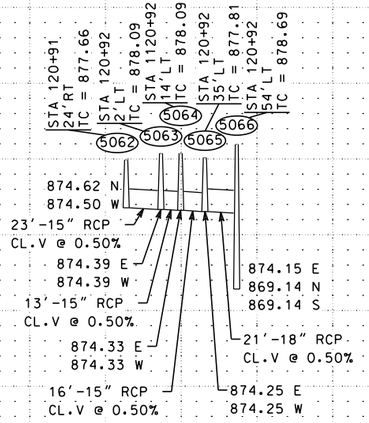
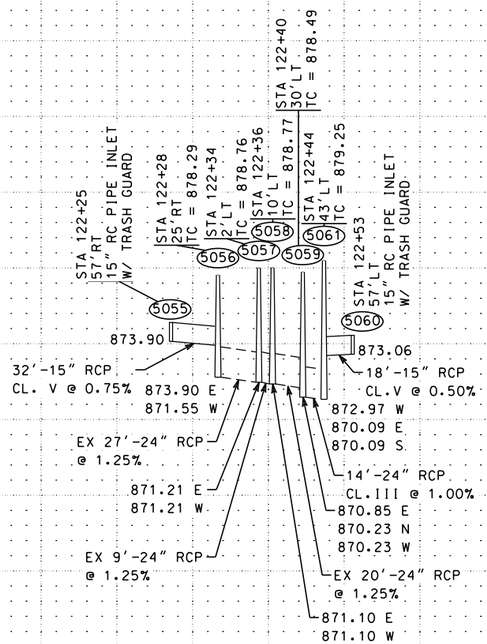
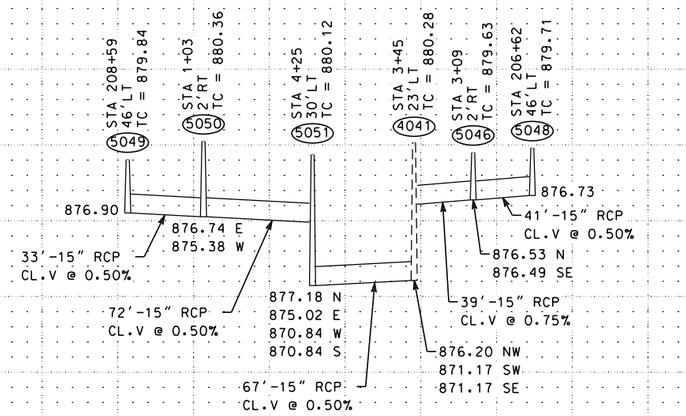
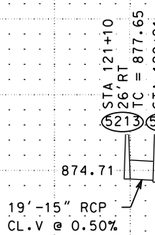
SHEET 160 OF 340 SHEETS

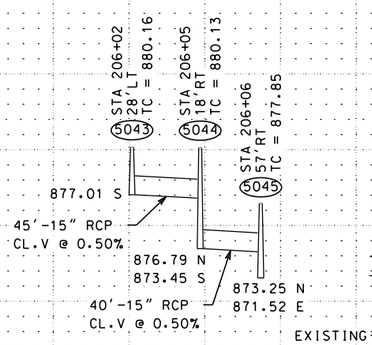


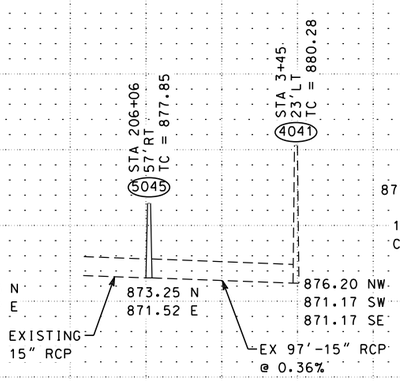


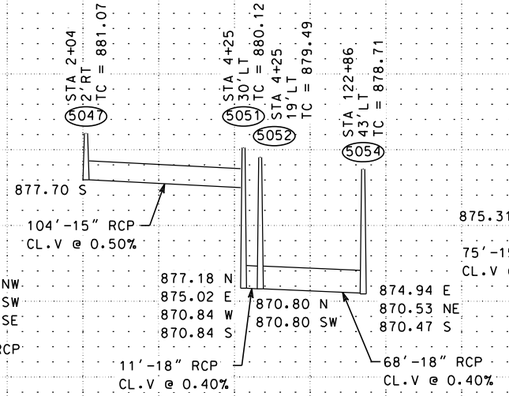


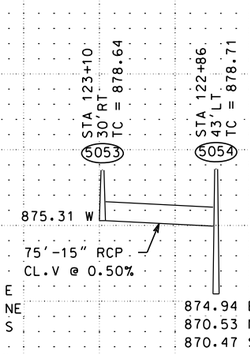


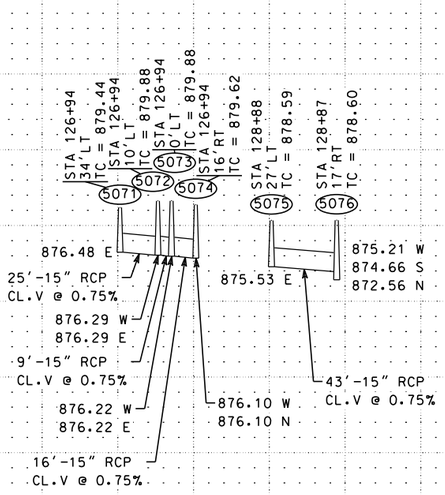












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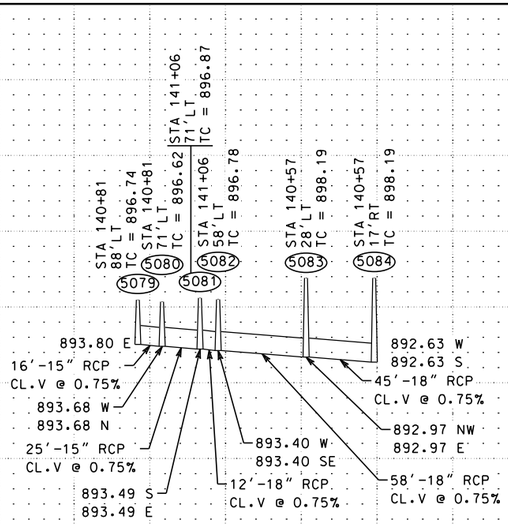

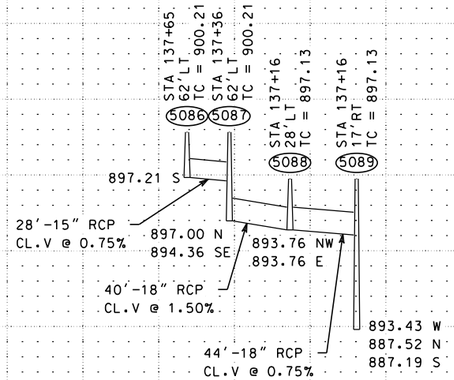

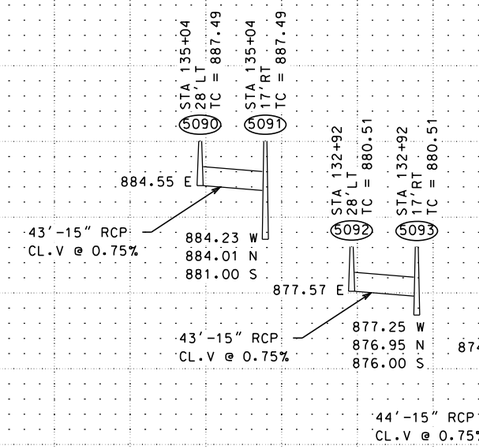

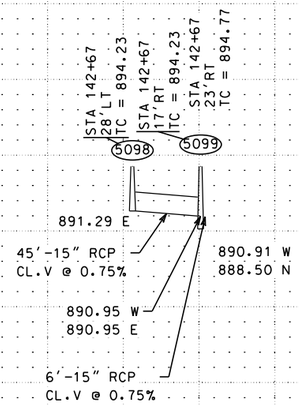

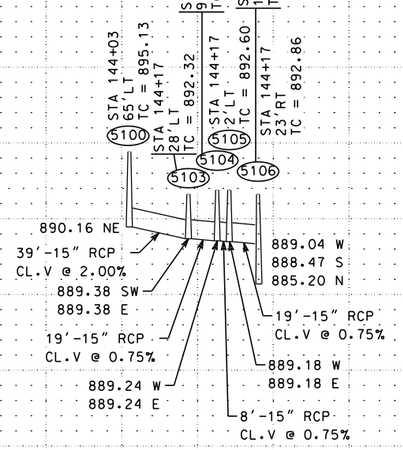

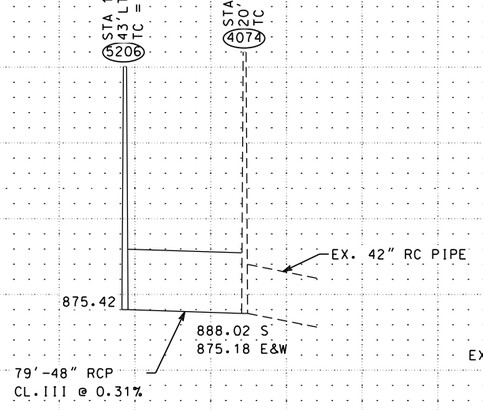

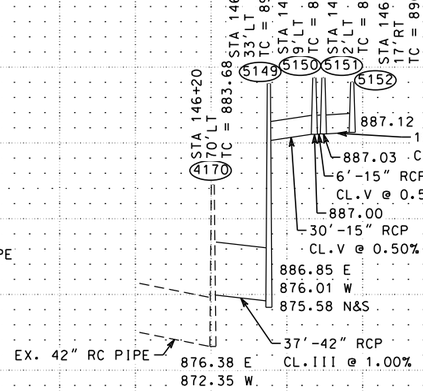

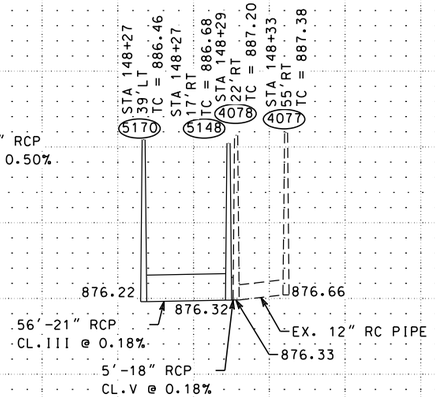

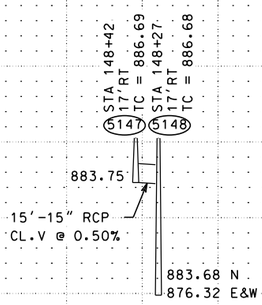

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DATE: 10/22/15 LIC. NO: 47700

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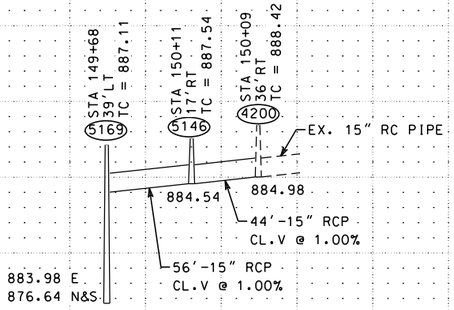
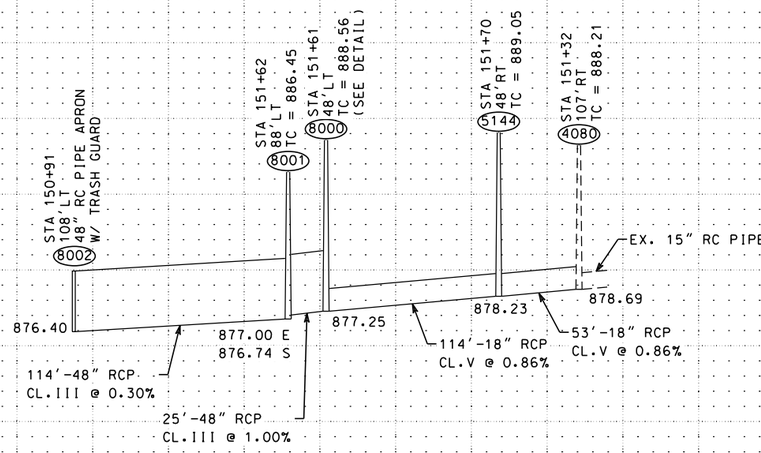
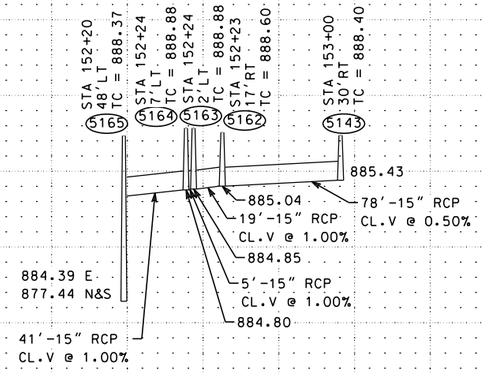
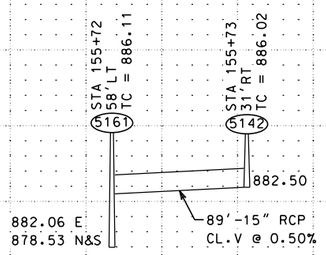
DOUGLAS DRIVE
DRAINAGE PLAN
S.P. 2723-117/C.P. 10-04/S.A.P. 027-702-021/S.A.P. 128-020-016/S.A.P. 128-020-017/
S.A.P. 128-410-001/S.A.P. 128-411-006/S.A.P. 128-420-001/S.A.P. 027-666-018

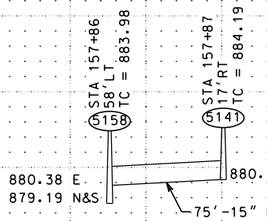
SHEET 162 OF 340 SHEETS

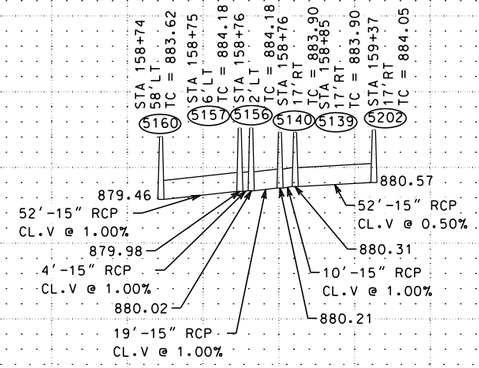


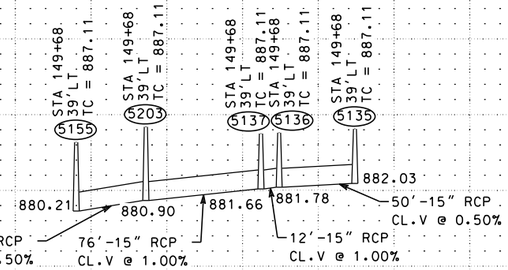


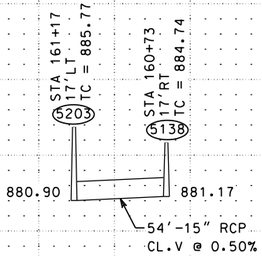


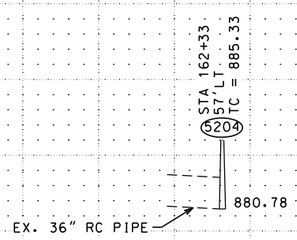


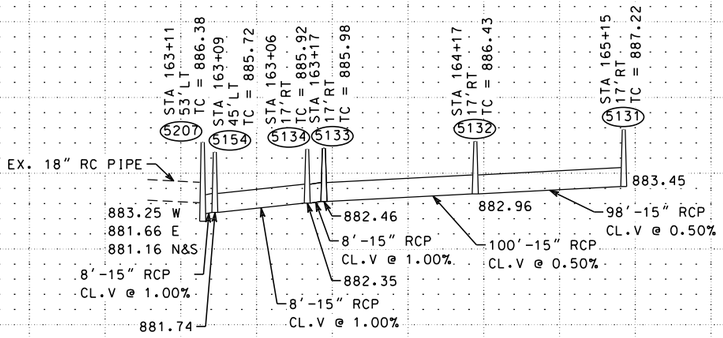












Date Printed: 10/27/2015
WSB Filename: K:\0170\-110\Cad\Plan\170ldpl4.dgn

NO.	DATE	BY	CHK	REVISIONS

Design By: KOP
Plan By: DOV
Checked By: BRS
Approved By: KOP

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

CERTIFIED BY _____ ANDREW J. PEPE

DATE: 10/22/15 LIC. NO: 42200

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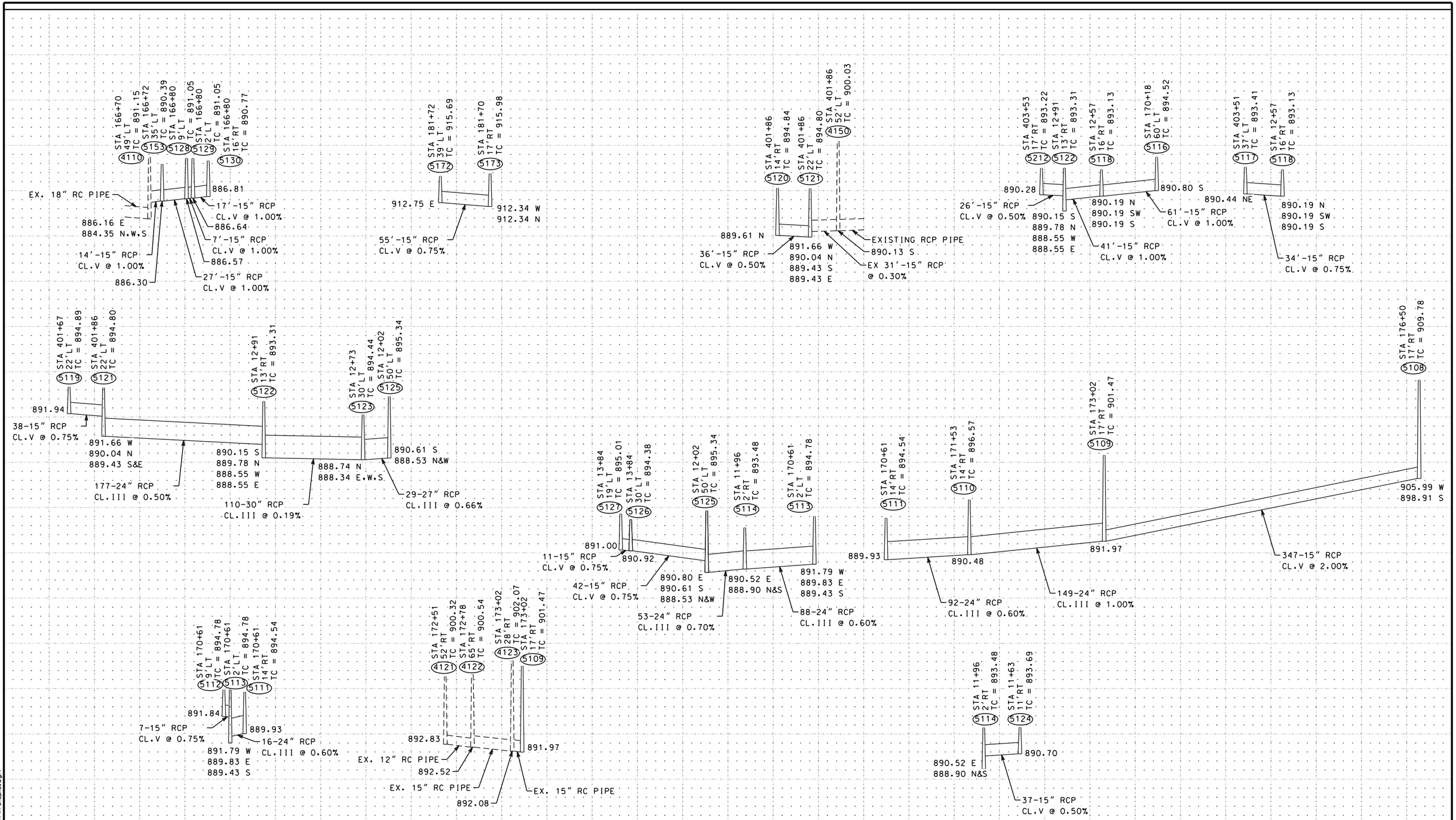
SHEET **163** OF **340** SHEETS



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NO.	DATE	BY	CHK	REVISIONS

Design By: BOP
Plan By: BOV
Checked By: BRS
Approved By: BOP

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CERTIFIED BY _____
LICENSED PROFESSIONAL ENGINEER -- ANDREW OSEID MANPEPE
DATE: 10/22/15 LIC. NO: 48200

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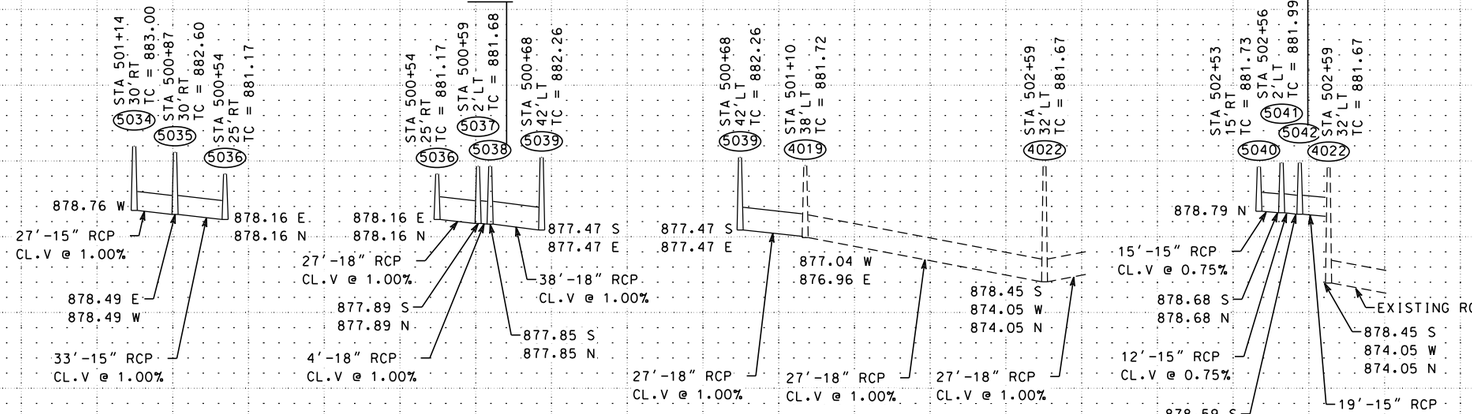
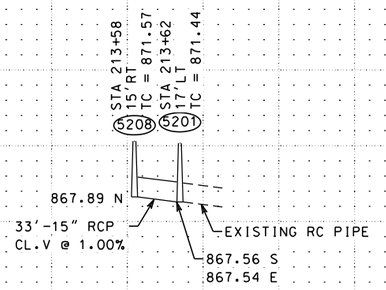
SHEET 164 OF 340 SHEETS

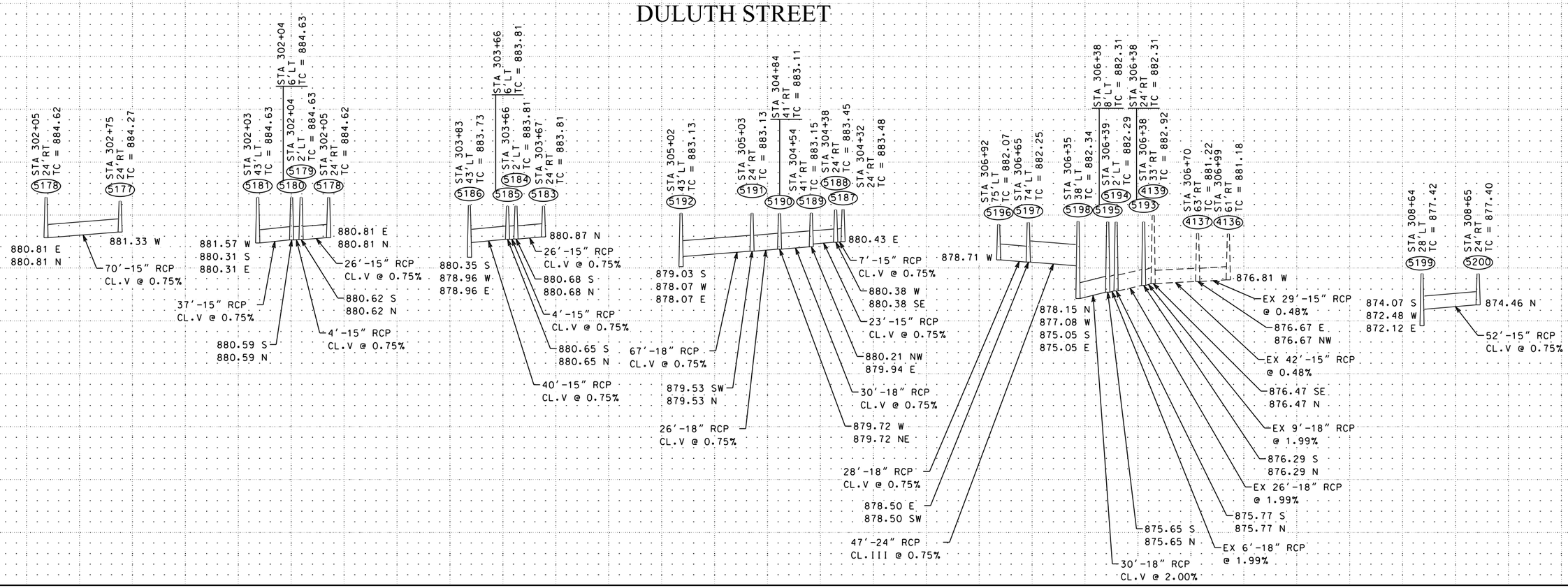
FRONTAGE ROAD



GOLDEN VALLEY ROAD



DULUTH STREET



Date Printed: 10/27/2015
WSB Filename: K:\0170-100\Cad\Plan\170ldp16.dgn

NO.	DATE	BY	CHK	REVISIONS

Design By: KOP
Plan By: MOV
Checked By: BRS
Approved By: KOP

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CERTIFIED BY _____
LICENSED PROFESSIONAL ENGINEER -- ANDREW O. PEPPE

DATE: 10/22/15 LIC. NO: 48700

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DOUGLAS DRIVE

DRAINAGE PLAN

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S.A.P. 128-410-001/S.A.P. 128-411-006/S.A.P. 128-420-001/S.A.P. 027-666-018

SHEET 165 OF 340 SHEETS

VI. HONEYWELL POND DESIGN

A. Honeywell Pond Existing Conditions

Honeywell Pond is located on the south side of Honeywell's property in Golden Valley, between St. Croix Avenue North and Hampshire Place, on the west side of Douglas Drive North. The normal water level (NWL) is 876.4 feet, surface area of the pond is approximately 1.5 acres, and the existing average pond depth is approximately 3-feet-deep. The existing dead pool storage volume is approximately 3.7 acre-feet. The current 100-year 24-hour event high water level (HWL) of the pond is 884.6 feet, which corresponds to the pond providing live pool storage of approximately 22 acre-feet of water. The approximate total drainage area of the pond is 702 acres. Runoff from Honeywell Pond is discharged south to Bassett Creek. See **Chapter XI, Section A** for more details.

The soils in the upland areas of the watershed tributary to the pond appear to be mostly in Hydrologic Soil Group B. Soil samples were taken in the pond in testing for copper, 8 RCRA metals, and polycyclic aromatic hydrocarbons (PAHs) in accordance with the Minnesota Pollution Control Agency (MPCA) gridlines. Since the pond is less than two acres at the NWL, two samples were collected near the two inlet locations of the pond. Both sample locations yielded levels lower than the Residential Soil Reference Values for copper, 8 RCRA metals, and PAHs.

Honeywell Pond currently has steep side slopes both in the pond and upland of the pond. The pond has little to no undulating edges. Vegetation within the basin is limited. Vegetation is present along the shoreline and consists of Canadian goldenrod (Solidago canadensis), Kentucky bluegrass (Poa pratensis), sandbar willow (Salix exigua), and eastern cottonwood (Populus deltoids). The herbaceous vegetation present provides little wildlife habitat or shoreline protection. The ponding area consists of a Type 4 (Deep Marsh) wetland. The north and east boundary of this wetland was delineated and approved in November 2011.

Existing Condition/Soil Sample Locations Map

Honeywell Pond Location 1

Honeywell Pond Location 2

NWL: 876.4'
HWL: 884.6'
Pond Surface Area at NWL = 1.5 acres

880

890

Legend

- SoilSampleLacations
- Wetland Boundary
- 2-foot Interval
- 10-foot Index
- Storm Sewer
- Temporary Easment
- Permanent Easement
- Parcel

N

0 60 120 Feet

city of golden valley

WSB & Associates, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

July 21, 2015

Tony Miller
WSB & Associates
477 Temperance Street
Saint Paul, MN 55101

RE: Project: Honeywell Pond
Pace Project No.: 10313677

Dear Tony Miller:
Enclosed are the analytical results for sample(s) received by the laboratory on July 08, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kabor Xiong
kabor.xiong@pacelabs.com
Project Manager

Enclosures

cc: Ms. Linnea Henkels, WSB & Associates

Pace Analytical Services, Inc.
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Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: Honeywell Pond
Pace Project No.: 10313677

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: Honeywell Pond
Pace Project No.: 10313677

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10313677001	**Honeywell Pond Location 1**	Solid	07/08/15 09:45	07/08/15 12:20
10313677002	**Honeywell Pond Location 2**	Solid	07/08/15 09:55	07/08/15 12:20

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SAMPLE ANALYTE COUNT

Project: Honeywell Pond
Pace Project No.: 10313677

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10313677001	**Honeywell Pond Location 1**	EPA 6020A	RJS	8
		EPA 7471B	DM	1
		ASTM D2974	JDL	1
		EPA 8270D by SIM	JLR	39
10313677002	**Honeywell Pond Location 2**	EPA 6020A	RJS	3
		ASTM D2974	JDL	1
		EPA 8270D by SIM	JLR	39

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ANALYTICAL RESULTS

Project: Honeywell Pond
Pace Project No.: 10313677

Sample: Honeywell Pond Location 1 **Lab ID: 10313677001** Collected: 07/08/15 09:45 Received: 07/08/15 12:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Arsenic	**1.5**	mg/kg	0.60	20	07/20/15 20:04	07/21/15 09:12	7440-38-2	
Barium	**38.1**	mg/kg	0.36	20	07/20/15 20:04	07/21/15 09:12	7440-39-3	
Cadmium	ND	mg/kg	0.096	20	07/20/15 20:04	07/21/15 09:12	7440-43-9	
Chromium	**31.5**	mg/kg	0.60	20	07/20/15 20:04	07/21/15 09:12	7440-47-3	
Copper	**13.2**	mg/kg	1.2	20	07/20/15 20:04	07/21/15 09:12	7440-50-8	
Lead	**2.4**	mg/kg	0.12	20	07/20/15 20:04	07/21/15 09:12	7439-92-1	
Selenium	**0.74**	mg/kg	0.60	20	07/20/15 20:04	07/21/15 09:12	7782-49-2	
Silver	ND	mg/kg	0.60	20	07/20/15 20:04	07/21/15 09:12	7440-22-4	
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B							
Mercury	ND	mg/kg	0.022	1	07/14/15 20:56	07/15/15 09:50	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**17.7**	%	0.10	1		07/20/15 14:16		
8270D MSSV CPAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	83-32-9	
Acenaphthylene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	208-96-8	
Anthracene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	120-12-7	
Benzo(a)anthracene	**46.7**	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	56-55-3	
Benzo(a)pyrene	**47.1**	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	50-32-8	
Benzo(e)pyrene	**66.3**	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	192-97-2	
Benzo(g,h,i)perylene	**25.1**	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	191-24-2	M1
Benzofluoranthenes (Total)	**113**	ug/kg	36.2	1	07/10/15 12:16	07/14/15 10:53		
Carbazole	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	86-74-8	
2-Chloronaphthalene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	91-58-7	
Chrysene	**79.7**	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	218-01-9	
Dibenz(a,h)acridine	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	226-36-8	
Dibenz(a,h)anthracene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	53-70-3	
Dibenz(a,j)acridine	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	224-42-0	
Dibenzo(a,e)pyrene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	192-65-4	M1
Dibenzo(a,h)pyrene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	189-64-0	M1
Dibenzo(a,i)pyrene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	189-55-9	M1
Dibenzo(a,l)pyrene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	191-30-0	M1
7H-Dibenzo(c,g)carbazole	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	194-59-2	
Dibenzofuran	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	132-64-9	
7,12-Dimethylbenz(a)anthracene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	57-97-6	
Fluoranthene	**54.6**	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	206-44-0	M1,R1
Fluorene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	193-39-5	
3-Methylcholanthrene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	56-49-5	
5-Methylchrysene	**30.3**	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	3697-24-3	
1-Methylnaphthalene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	90-12-0	
2-Methylnaphthalene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	91-57-6	
Naphthalene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	91-20-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Honeywell Pond
Pace Project No.: 10313677

Sample: Honeywell Pond Location 1 **Lab ID: 10313677001** Collected: 07/08/15 09:45 Received: 07/08/15 12:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV CPAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
5-Nitroacenaphthene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	602-57-8	
6-Nitrochrysene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	7496-02-8	M1
2-Nitrofluorene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	607-57-8	
1-Nitropyrene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	5522-43-0	M1
4-Nitropyrene	ND	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	57835-92-4	M1
Perylene	**19.0**	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	198-55-0	
Phenanthrene	**17.7**	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	85-01-8	
Pyrene	**76.6**	ug/kg	12.1	1	07/10/15 12:16	07/14/15 10:53	129-00-0	M1,R1
Surrogates								
2-Fluorobiphenyl (S)	71	%.	45-125	1	07/10/15 12:16	07/14/15 10:53	321-60-8	
p-Terphenyl-d14 (S)	86	%.	36-131	1	07/10/15 12:16	07/14/15 10:53	1718-51-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Honeywell Pond
Pace Project No.: 10313677

Sample: Honeywell Pond Location 2 **Lab ID: 10313677002** Collected: 07/08/15 09:55 Received: 07/08/15 12:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Arsenic	**2.2**	mg/kg	0.43	20	07/20/15 20:04	07/21/15 09:17	7440-38-2	
Copper	**31.3**	mg/kg	0.87	20	07/20/15 20:04	07/21/15 09:17	7440-50-8	
Selenium	**1.4**	mg/kg	0.43	20	07/20/15 20:04	07/21/15 09:17	7782-49-2	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**19.4**	%	0.10	1		07/20/15 14:16		
8270D MSSV CPAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	83-32-9	
Acenaphthylene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	208-96-8	
Anthracene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	120-12-7	
Benzo(a)anthracene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	56-55-3	
Benzo(a)pyrene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	50-32-8	
Benzo(e)pyrene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	192-97-2	
Benzo(g,h,i)perylene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	191-24-2	
Benzofluoranthenes (Total)	ND	ug/kg	37.2	1	07/10/15 12:16	07/14/15 10:24		
Carbazole	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	86-74-8	
2-Chloronaphthalene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	91-58-7	
Chrysene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	218-01-9	
Dibenz(a,h)acridine	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	226-36-8	
Dibenz(a,h)anthracene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	53-70-3	
Dibenz(a,j)acridine	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	224-42-0	
Dibenzo(a,e)pyrene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	192-65-4	
Dibenzo(a,h)pyrene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	189-64-0	
Dibenzo(a,i)pyrene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	189-55-9	
Dibenzo(a,l)pyrene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	191-30-0	
7H-Dibenzo(c,g)carbazole	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	194-59-2	
Dibenzofuran	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	132-64-9	
7,12-Dimethylbenz(a)anthracene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	57-97-6	
Fluoranthene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	206-44-0	
Fluorene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	193-39-5	
3-Methylcholanthrene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	56-49-5	
5-Methylchrysene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	3697-24-3	
1-Methylnaphthalene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	90-12-0	
2-Methylnaphthalene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	91-57-6	
Naphthalene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	91-20-3	
5-Nitroacenaphthene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	602-57-8	
6-Nitrochrysene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	7496-02-8	
2-Nitrofluorene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	607-57-8	
1-Nitropyrene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	5522-43-0	
4-Nitropyrene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	57835-92-4	
Perylene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	198-55-0	
Phenanthrene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	85-01-8	
Pyrene	ND	ug/kg	12.4	1	07/10/15 12:16	07/14/15 10:24	129-00-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Honeywell Pond
Pace Project No.: 10313677

Sample: Honeywell Pond Location 2 **Lab ID: 10313677002** Collected: 07/08/15 09:55 Received: 07/08/15 12:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV CPAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
2-Fluorobiphenyl (S)	63	%.	45-125	1	07/10/15 12:16	07/14/15 10:24	321-60-8	
p-Terphenyl-d14 (S)	79	%.	36-131	1	07/10/15 12:16	07/14/15 10:24	1718-51-0	

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

QUALITY CONTROL DATA

Project: Honeywell Pond
Pace Project No.: 10313677

QC Batch: MERP/14188
QC Batch Method: EPA 7471B
Analysis Method: EPA 7471B
Analysis Description: 7471B Mercury Solids
Associated Lab Samples: 10313677001

METHOD BLANK: 2021334 Matrix: Solid
Associated Lab Samples: 10313677001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.018	07/15/15 09:37	

LABORATORY CONTROL SAMPLE: 2021335

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.47	0.44	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2021338 2021339

Parameter	Units	10313570001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.17	.44	.45	0.60	0.58	97	90	75-125	3	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Honeywell Pond
Pace Project No.: 10313677

QC Batch: MPRP/56157
QC Batch Method: EPA 3050
Analysis Method: EPA 6020A
Analysis Description: 6020A Solids UPD4
Associated Lab Samples: 10313677001, 10313677002

METHOD BLANK: 2025192 Matrix: Solid
Associated Lab Samples: 10313677001, 10313677002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	0.49	07/21/15 09:03	
Barium	mg/kg	ND	0.29	07/21/15 09:03	
Cadmium	mg/kg	ND	0.078	07/21/15 09:03	
Chromium	mg/kg	ND	0.49	07/21/15 09:03	
Copper	mg/kg	ND	0.98	07/21/15 09:03	
Lead	mg/kg	ND	0.098	07/21/15 09:03	
Selenium	mg/kg	ND	0.49	07/21/15 09:03	
Silver	mg/kg	ND	0.49	07/21/15 09:03	

LABORATORY CONTROL SAMPLE: 2025193

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	18.2	17.7	97	80-120	
Barium	mg/kg	18.2	18.0	99	80-120	
Cadmium	mg/kg	18.2	18.1	100	80-120	
Chromium	mg/kg	18.2	18.1	100	80-120	
Copper	mg/kg	18.2	18.4	101	80-120	
Lead	mg/kg	18.2	19.1	105	80-120	
Selenium	mg/kg	18.2	17.8	98	80-120	
Silver	mg/kg	18.2	18.7	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2025194 2025195

Parameter	Units	10313384001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	3.1	18.2	19.3	25.0	25.7	121	117	75-125	2	20	
Barium	mg/kg	50.5	18.2	19.3	89.4	85.3	215	180	75-125	5	20	M6
Cadmium	mg/kg	0.12	18.2	19.3	21.8	22.7	120	117	75-125	4	20	
Chromium	mg/kg	12.2	18.2	19.3	38.6	41.4	146	151	75-125	7	20	M6
Copper	mg/kg	17.3	18.2	19.3	39.6	40.1	123	118	75-125	1	20	
Lead	mg/kg	8.7	18.2	19.3	32.6	33.9	132	130	75-125	4	20	M6
Selenium	mg/kg	0.70	18.2	19.3	21.9	22.1	117	111	75-125	1	20	
Silver	mg/kg	ND	18.2	19.3	21.9	22.8	121	118	75-125	4	20	

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REPORT OF LABORATORY ANALYSIS

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(612)607-1700

QUALITY CONTROL DATA

Project: Honeywell Pond
Pace Project No.: 10313677

QC Batch: MPRP/56225
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10313677001, 10313677002

SAMPLE DUPLICATE: 2027157

Parameter	Units	10313443005 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.2	19.0	4	30	

SAMPLE DUPLICATE: 2027158

Parameter	Units	10313918003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	15.8	15.5	2	30	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Honeywell Pond
Pace Project No.: 10313677

QC Batch: OEXT/29974
QC Batch Method: EPA 3550
Analysis Method: EPA 8270D by SIM
Analysis Description: 8270D CPAH by SIM MSSV
Associated Lab Samples: 10313677001, 10313677002

METHOD BLANK: 2019074
Matrix: Solid
Associated Lab Samples: 10313677001, 10313677002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	ND	10.0	07/13/15 16:59	
1-Nitropyrene	ug/kg	ND	10.0	07/13/15 16:59	
2-Chloronaphthalene	ug/kg	ND	10.0	07/13/15 16:59	
2-Methylnaphthalene	ug/kg	ND	10.0	07/13/15 16:59	
2-Nitrofluorene	ug/kg	ND	10.0	07/13/15 16:59	
3-Methylcholanthrene	ug/kg	ND	10.0	07/13/15 16:59	
4-Nitropyrene	ug/kg	ND	10.0	07/13/15 16:59	
5-Methylchrysene	ug/kg	ND	10.0	07/13/15 16:59	
5-Nitroacenaphthene	ug/kg	ND	10.0	07/13/15 16:59	
6-Nitrochrysene	ug/kg	ND	10.0	07/13/15 16:59	
7,12-Dimethylbenz(a)anthracene	ug/kg	ND	10.0	07/13/15 16:59	
7H-Dibenzo(c,g)carbazole	ug/kg	ND	10.0	07/13/15 16:59	
Acenaphthene	ug/kg	ND	10.0	07/13/15 16:59	
Acenaphthylene	ug/kg	ND	10.0	07/13/15 16:59	
Anthracene	ug/kg	ND	10.0	07/13/15 16:59	
Benzo(a)anthracene	ug/kg	ND	10.0	07/13/15 16:59	
Benzo(a)pyrene	ug/kg	ND	10.0	07/13/15 16:59	
Benzo(e)pyrene	ug/kg	ND	10.0	07/13/15 16:59	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	07/13/15 16:59	
Benzofluoranthenes (Total)	ug/kg	ND	30.0	07/13/15 16:59	
Carbazole	ug/kg	ND	10.0	07/13/15 16:59	
Chrysene	ug/kg	ND	10.0	07/13/15 16:59	
Dibenz(a,h)acridine	ug/kg	ND	10.0	07/13/15 16:59	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	07/13/15 16:59	
Dibenz(a,j)acridine	ug/kg	ND	10.0	07/13/15 16:59	
Dibenzo(a,e)pyrene	ug/kg	ND	10.0	07/13/15 16:59	
Dibenzo(a,h)pyrene	ug/kg	ND	10.0	07/13/15 16:59	
Dibenzo(a,i)pyrene	ug/kg	ND	10.0	07/13/15 16:59	
Dibenzo(a,l)pyrene	ug/kg	ND	10.0	07/13/15 16:59	
Dibenzofuran	ug/kg	ND	10.0	07/13/15 16:59	
Fluoranthene	ug/kg	ND	10.0	07/13/15 16:59	
Fluorene	ug/kg	ND	10.0	07/13/15 16:59	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	07/13/15 16:59	
Naphthalene	ug/kg	ND	10.0	07/13/15 16:59	
Perylene	ug/kg	ND	10.0	07/13/15 16:59	
Phenanthrene	ug/kg	ND	10.0	07/13/15 16:59	
Pyrene	ug/kg	ND	10.0	07/13/15 16:59	
2-Fluorobiphenyl (S)	%.	79	45-125	07/13/15 16:59	
p-Terphenyl-d14 (S)	%.	86	36-131	07/13/15 16:59	

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REPORT OF LABORATORY ANALYSIS

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(612)607-1700

QUALITY CONTROL DATA

Project: Honeywell Pond
Pace Project No.: 10313677

LABORATORY CONTROL SAMPLE: 2019075

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	100	63.5	64	40-125	
1-Nitropyrene	ug/kg	100	78.0	78	40-125	
2-Chloronaphthalene	ug/kg	100	64.1	64	46-125	
2-Methylnaphthalene	ug/kg	100	63.1	63	39-125	
2-Nitrofluorene	ug/kg	100	86.9	87	64-125	
3-Methylcholanthrene	ug/kg	100	78.6	79	30-125	
4-Nitropyrene	ug/kg	100	85.9	86	50-125	
5-Methylchrysene	ug/kg	100	82.5	82	68-125	
5-Nitroacenaphthene	ug/kg	100	83.0	83	64-125	
6-Nitrochrysene	ug/kg	100	82.3	82	30-125	
7,12-Dimethylbenz(a)anthracene	ug/kg	100	72.7	73	30-125	
7H-Dibenzo(c,g)carbazole	ug/kg	100	91.4	91	51-125	
Acenaphthene	ug/kg	100	64.7	65	48-125	
Acenaphthylene	ug/kg	100	65.6	66	47-125	
Anthracene	ug/kg	100	74.5	74	63-125	
Benzo(a)anthracene	ug/kg	100	79.8	80	60-125	
Benzo(a)pyrene	ug/kg	100	79.8	80	63-125	
Benzo(e)pyrene	ug/kg	100	77.5	78	60-125	
Benzo(g,h,i)perylene	ug/kg	100	80.3	80	58-125	
Benzofluoranthenes (Total)	ug/kg	300	237	79	66-125	
Carbazole	ug/kg	100	79.3	79	66-125	
Chrysene	ug/kg	100	78.4	78	62-125	
Dibenz(a,h)acridine	ug/kg	100	86.5	86	61-125	
Dibenz(a,h)anthracene	ug/kg	100	82.6	83	59-125	
Dibenz(a,j)acridine	ug/kg	100	89.5	89	30-125	
Dibenzo(a,e)pyrene	ug/kg	100	91.0	91	47-125	
Dibenzo(a,h)pyrene	ug/kg	100	82.5	82	41-128	
Dibenzo(a,i)pyrene	ug/kg	100	81.1	81	34-125	
Dibenzo(a,l)pyrene	ug/kg	100	76.2	76	30-125	
Dibenzofuran	ug/kg	100	65.5	66	50-125	
Fluoranthene	ug/kg	100	80.1	80	65-125	
Fluorene	ug/kg	100	69.0	69	57-125	
Indeno(1,2,3-cd)pyrene	ug/kg	100	82.8	83	60-125	
Naphthalene	ug/kg	100	59.8	60	38-125	
Perylene	ug/kg	100	78.0	78	64-125	
Phenanthrene	ug/kg	100	72.2	72	62-125	
Pyrene	ug/kg	100	81.0	81	62-125	
2-Fluorobiphenyl (S)	%.			61	45-125	
p-Terphenyl-d14 (S)	%.			78	36-131	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2019076 2019077

Parameter	Units	10313677001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1-Methylnaphthalene	ug/kg	ND	121	121	86.9	80.7	72	66	47-125	7	30	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: Honeywell Pond
Pace Project No.: 10313677

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2019076 2019077

Parameter	Units	10313677001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1-Nitropyrene	ug/kg	ND	121	121	19.6	17.4	16	14	30-125	12	30	M1
2-Chloronaphthalene	ug/kg	ND	121	121	84.2	78.6	70	65	51-125	7	30	
2-Methylnaphthalene	ug/kg	ND	121	121	86.8	80.6	72	66	49-125	7	30	
2-Nitrofluorene	ug/kg	ND	121	121	88.4	84.1	73	69	30-125	5	30	
3-Methylcholanthrene	ug/kg	ND	121	121	74.6	75.4	62	62	30-150	1	30	
4-Nitropyrene	ug/kg	ND	121	121	22.3	21.0	18	17	30-125	6	30	M1
5-Methylchrysene	ug/kg	30.3	121	121	93.1	88.3	52	48	40-125	5	30	
5-Nitroacenaphthene	ug/kg	ND	121	121	80.9	74.8	67	62	44-125	8	30	
6-Nitrochrysene	ug/kg	ND	121	121	ND	ND	0	0	30-125		30	M1
7,12-Dimethylbenz(a)anthracene	ug/kg	ND	121	121	119	121	98	99	30-150	2	30	
7H-Dibenzo(c,g)carbazole	ug/kg	ND	121	121	44.0	40.0	36	33	30-133	9	30	
Acenaphthene	ug/kg	ND	121	121	88.2	83.0	73	68	30-149	6	30	
Acenaphthylene	ug/kg	ND	121	121	95.6	87.1	79	72	37-125	9	30	
Anthracene	ug/kg	ND	121	121	108	97.2	89	80	33-125	11	30	
Benzo(a)anthracene	ug/kg	46.7	121	121	203	154	129	88	30-150	28	30	
Benzo(a)pyrene	ug/kg	47.1	121	121	185	181	114	110	30-150	2	30	
Benzo(e)pyrene	ug/kg	66.3	121	121	172	174	87	89	30-150	1	30	
Benzo(g,h,i)perylene	ug/kg	25.1	121	121	60.8	57.9	29	27	30-150	5	30	M1
Benzofluoranthenes (Total)	ug/kg	113	363	364	555	541	122	118	30-150	3	30	
Carbazole	ug/kg	ND	121	121	95.4	93.2	79	77	48-125	2	30	
Chrysene	ug/kg	79.7	121	121	205	168	104	73	30-150	20	30	
Dibenz(a,h)acridine	ug/kg	ND	121	121	59.5	56.3	49	46	30-129	6	30	
Dibenz(a,h)anthracene	ug/kg	ND	121	121	53.7	52.1	44	43	30-140	3	30	
Dibenz(a,j)acridine	ug/kg	ND	121	121	51.5	48.0	43	40	30-125	7	30	
Dibenzo(a,e)pyrene	ug/kg	ND	121	121	27.2	27.1	22	22	30-150	0	30	M1
Dibenzo(a,h)pyrene	ug/kg	ND	121	121	18.1	17.6	15	15	30-150	3	30	M1
Dibenzo(a,i)pyrene	ug/kg	ND	121	121	15.7	14.8	13	12	30-125	6	30	M1
Dibenzo(a,l)pyrene	ug/kg	ND	121	121	14.7	13.8	12	11	30-150	6	30	M1
Dibenzofuran	ug/kg	ND	121	121	88.1	83.7	73	69	56-125	5	30	
Fluoranthene	ug/kg	54.6	121	121	341	176	236	100	30-150	64	30	M1,R1
Fluorene	ug/kg	ND	121	121	91.4	87.1	75	72	40-125	5	30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	121	121	68.1	63.9	56	53	30-139	6	30	
Naphthalene	ug/kg	ND	121	121	78.5	71.9	65	59	42-125	9	30	
Perylene	ug/kg	19.0	121	121	113	110	77	75	38-125	3	30	
Phenanthrene	ug/kg	17.7	121	121	138	109	99	75	30-150	24	30	
Pyrene	ug/kg	76.6	121	121	303	173	187	79	30-150	55	30	M1,R1
2-Fluorobiphenyl (S)	%.						67	64	45-125			
p-Terphenyl-d14 (S)	%.						78	80	36-131			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: Honeywell Pond
Pace Project No.: 10313677

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
R1	RPD value was outside control limits.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Honeywell Pond
Pace Project No.: 10313677

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10313677001	**Honeywell Pond Location 1**	EPA 3050	MPRP/56157	EPA 6020A	ICPM/25472
10313677002	**Honeywell Pond Location 2**	EPA 3050	MPRP/56157	EPA 6020A	ICPM/25472
10313677001	**Honeywell Pond Location 1**	EPA 7471B	MERP/14188	EPA 7471B	MERC/16553
10313677001	**Honeywell Pond Location 1**	ASTM D2974	MPRP/56225		
10313677002	**Honeywell Pond Location 2**	ASTM D2974	MPRP/56225		
10313677001	**Honeywell Pond Location 1**	EPA 3550	OEXT/29974	EPA 8270D by SIM	MSSV/12729
10313677002	**Honeywell Pond Location 2**	EPA 3550	OEXT/29974	EPA 8270D by SIM	MSSV/12729

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

L031367

Page: of

1825757

Section A Required Client Information:

Company: WSB	
Address:	
Email To: Tmiller@wsbeng.com	
Phone: 651-286-8469	
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	
Copy To:	
Purchase Order No.:	
Project Name:	
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE)

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analysis Test: PAH b CPAH	RCRA Metals	Moisture	Copper	Arsenic	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1					7/8	9:45		3	X									X	X	X	X				001
2					7/8	9:55		3	X									X		X	X	X			002
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Dan O'Neill	7/8	1220	Pace	7/8/15	1220	1.1 Y N Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Dan O'Neill

SIGNATURE of SAMPLER: Dan O'Neill

DATE Signed (MM/DD/YY):

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 23Feb2015 Page 1 of 1
	Document No.: **F-MN-L-213-rev.13**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: WSB

Project #: WO# : 10313677

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other: _____ **Temp Blank?** ☑ Yes ☐ No

Thermometer Used: ☐ B88A9130516413 ☑ B88A912167504 ☐ B88A0143310098 **Type of Ice:** ☐ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 1.0 **Cooler Temp Corrected (°C):** 1.1 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** 1.01 **Date and Initials of Person Examining Contents:** KG 7/8/15

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☐ No	☑ N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Kimberly Kemp **Date:** July 10, 2015

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Summary of Stormwater Pond Sediment Testing Results (Revised 7-2-2012 "Stormwater Sediment" spreadsheet only)

Project Name:	Honeywell Pond						
Sample Date:	7/18/2015						
				Sample Locations and Depths			
		Residential SRV Values	**Industrial SRV Values**	**Honeywell Pond Core Location #1 mg/kg**		**Honeywell Pond Core Location #2 mg/kg**	
Parameters	**Insert Reporting Limit***	**mg/kg**	**mg/kg**				
Metals	**mg/kg**						
Arsenic		9	20	1.5		2.2	
Copper		100	9000	13.2		31.3	
Noncarcinogenic PAHs	**mg/kg**						
Acenapthene	0.0124	1,200	5,260	**ND**		**ND**	
Acenapthylene	0.0124	na	na	**ND**		**ND**	
Anthracene	0.0124	7,880	45,400	**ND**		**ND**	
Benzo(g,h,i)perlyene	0.0124	na	na	**0.0251**		**ND**	
Fluoranthene	0.0124	1,080	6,800	**0.0546**		**ND**	
Fluorene	0.0124	850	4,120	**ND**		**ND**	
2-Methylnapthalene	0.0124	100	369	**ND**		**ND**	
Naphthalene	0.0124	10	28	**ND**		**ND**	
Phenanthrene	0.0124	na	na	**0.0177**		**ND**	
Pyrene	0.0124	890	5,800	**0.0766**		**ND**	
Quinoline**	****	4	7	****		****	
Carcinogenic PAHs & Total B[a]P Equivalents	**Insert Reporting Limit* mg/kg**	**Potency Equiv. Factor (PEF)**		Site Conc.	BaP Equiv.	Site Conc.	BaP Equiv.
Benz[a]anthracene	0.0124	0.10		0.0467	**0.005**	**0.0005**	**0.000**
Benzo[b]fluoranthene	see total	0.10		0	**0.000**	0.0000	**0.000**
Benzo[j]flouranthene	see total	0.10		0	**0.000**	0.0000	**0.000**
Benzo[k]fluoranthene	see total	0.10		0	**0.000**	0.0000	**0.000**
Benzofluoranthenes (Total)	0.0372	0.30		0.113	**0.034**	**0.0043**	**0.001**
Benzo[a]pyrene	0.0124	1.00		0.0471	**0.047**	**0.0005**	**0.000**
Chrysene	0.0124	0.01		0.0797	**0.001**	**0.0005**	**0.000**
Dibenz[a,h]acridine	0.0124	0.10		**ND**	**#VALUE!**	**0.0004**	**0.000**
Dibenz[a,h]anthracene	0.0124	0.56		**ND**	**#VALUE!**	**0.0012**	**0.001**
7H-Dibenzo[c,g]carbazole	0.0124	1.00		**ND**	**#VALUE!**	**0.0013**	**0.001**
Dibenzo[a,e]pyrene	0.0124	1.00		**ND**	**#VALUE!**	**0.0001**	**0.000**
Dibenzo[a,h]pyrene	0.0124	10.00		**ND**	**#VALUE!**	**0.0012**	**0.012**
Dibenzo[a,i]pyrene	0.0124	10.00		**ND**	**#VALUE!**	**0.0060**	**0.060**
Dibenzo[a,l]pyrene	0.0124	10.00		**ND**	**#VALUE!**	**0.0005**	**0.005**
7,12 Dimethylbenz-anthracene	0.0124	34.00		**ND**	**#VALUE!**	**0.0011**	**0.037**
Indeno[1,2,3,-c,d]pyrene	0.0124	0.10		**ND**	**#VALUE!**	**0.0012**	**0.000**
3-Methylcholanthrene	0.0124	3.00		**ND**	**#VALUE!**	**0.0008**	**0.002**
5-Methylchrysene	0.0124	1.00		**0.030**	**0.030**	**0.0050**	**0.005**
Total B[a]P Equivalent* (mg/kg)**		2	3	0.645	#VALUE!		0.125

Residential SRV (suitable for residential land use)

Industrial SRV (suitable for industrial land use)

Level but is below Reporting Limit

SRV = soil reference value

PAHs = polycyclic aromatic hydrocarbons

na = not available, there is no SRV available for this contaminant at this time.

B[a]P = benzo[a]pyrene

*** Reporting Limits**- insert reporting limits in this column from the lab analytical results reports (converting to mg/kg if necessary)

**** Quinloine** is a carcinogenic PAH that does not have a PEF value. Therefore, it is not included in the B[a]P equivalent calculation. It is included in the noncarcinogenic PAH section and evaluated separately.

***** B[a]P Equivalent** - Each contaminant sample concentration is multiplied by it's Potency Equivalency Factor (PEF) to obtain a B[a]P equivalent concentration. All B[a]P equivalent concentrations are summed to calculate the total B[a]P equivalent concentration. For nondetect data, use the procedures outlined in Appendix B of "Managing Stormwater Sediment BMP Guidance For Municipalities".

******** Quinoline was not tested for. With all other anolites being well below the Residential SRV and Total B[a]P Equivalent*** (mg/kg), it is assumed Quinoline is also below the Residential SRV

E. Honeywell Pond Proposed Conditions

The proposed NWL of the pond will remain the same elevation as existing at 976.4 feet but will increase to approximately 2.5 acres in area. The pond with be expanded on the northwest side of the pond to increase both treatment and flood volume. The proposed flood storage will increase from approximately 22 to 24.7 acre-feet. Dredging of the pond will be increase the average depth of the pond from approximately 3 to 6 feet. This will increase the dead pool volume from approximately 3.7 to 11.2 acre-feet.

As a result of the proposed diversion, the drainage area will increase from approximately 702 to 768 acres.

All slopes will be constructed at a maximum of 3:1. The proposed pond will have a 10:1 safety bench just below the NWL, and a vegetated buffer strip just above the NWL. The 10:1 safety bench and vegetated buffer strip will completely surround the pond. An undulating edge will as be constructed as part of the proposed pond.

EX. POND INLET (RESTORE GRADE AND RIPRAP)

EX. D&U EASEMENT

R/W

R/W

T/E

EX. POND OUTLET

EOF=887.2

TOTAL EXCAVATION: 18,500 CU YD

NWL=876.4'

POND BOTTOM=870.4'

POND BOTTOM = 866.4

4:1 SLOPE FROM PUMP PAD TO POND BOTTOM

EXACT LOCATION TO BE STAKED IN THE FIELD

6'x4' CONCRETE PEDESTAL FOR CONTROLS. TOP OF PEDESTAL AT ELEVATION 888.0'

NWL: 876.4'
HWL: 884.6'

EX. POND INLET (RESTORE GRADE AND RIPRAP)

T/E

PROPOSED LOW FLOW DIVERSION STRUCTURE

EX. D&U EASEMENT

0 25 FT 50 FT

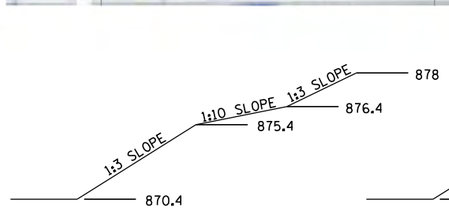
NOTES

1) CONTRACTOR RESPONSIBLE FOR THE DAMAGE TO STREETS AND CONCRETE CURB & GUTTER.
2) DAILY STREET SWEEPING REQUIRED DURING HAULING OPERATIONS.
3) CONTRACTOR IS RESPONSIBLE FOR DEWATERING AND DEICING.
4) CONTRACTOR TO GRADE AROUND EXISTING STORM SEWER STRUCTURES AS DIRECTED BY THE ENGINEER.
5) CONTRACTOR TO COORDINATE ACCESS LIMITS WITH CITY INSPECTOR IN THE FIELD.
6) CONTRACTOR TO COORDINATE WITH XCEL ENERGY TO ADDRESS POWER POLE NEEDS WITHIN POND.

LEGEND

EXISTING CONTOURS

PROPOSED CONTOURS



SECTION A-A

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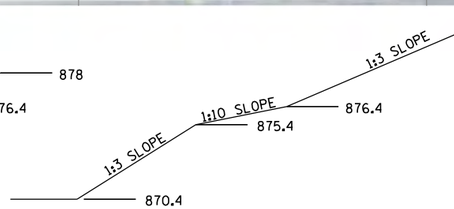

SECTION B-B

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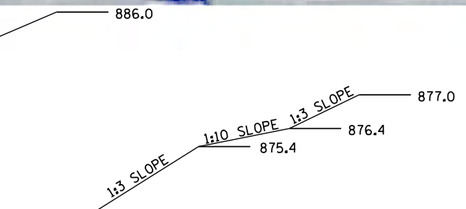

SECTION C-C

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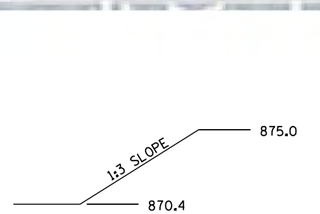

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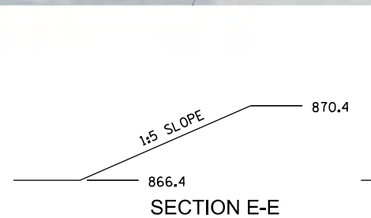

SECTION E-E

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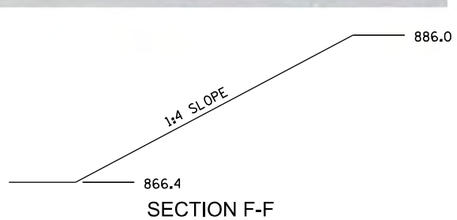

SECTION F-F

NO SCALE

NO.	DATE	BY	CHK	REVISIONS

Design By: KOP
Plan By: DOV
Checked By: BRS
Approved By: KOP

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY 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 -- ANDREW J. DEEGAN PE

DATE: 10/22/15 LIC. NO: 42200

WSB & Associates, Inc.
NO SCALE
701 Xenia Avenue South, Suite 300
Minneapolis, MN 55416
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763-541-4800 • Fax 763-541-1700
INFRASTRUCTURE • ENGINEERING • PLANNING • CONSTRUCTION

city of golden valley

Douglas Drive Improvements
Golden Valley, Minnesota

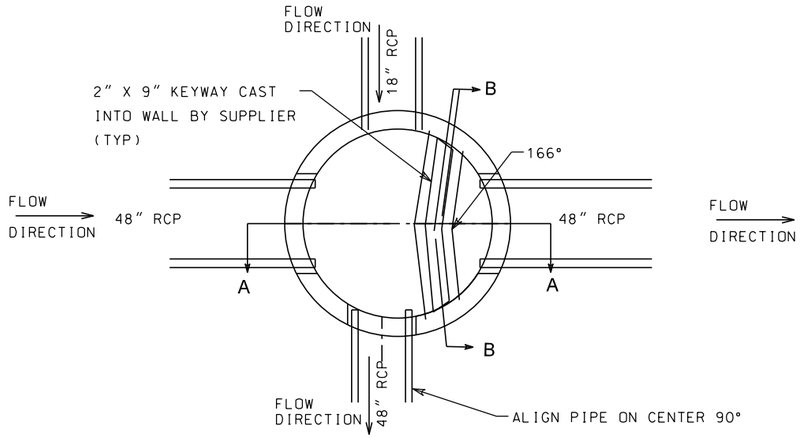
Hennepin

GOLDEN VALLEY, MINNESOTA

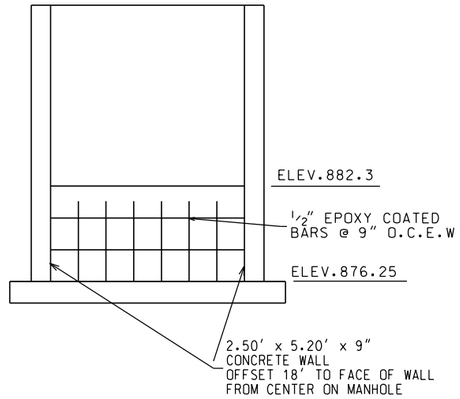
HONEYWELL POND PLAN
S.P. 2723-117/C.P. 10-04/S.A.P. 027-702-021/S.A.P. 128-020-016/S.A.P. 128-020-017/ S.A.P. 128-410-001/S.A.P. 128-411-006/S.A.P. 128-420-001/S.A.P. 027-666-018

SHEET 172 OF 340 SHEETS

Date Printed: 10/28/2015
WSB Filename: K:\0170-110\Cad\Plan\170hw0l.dgn



PLAN



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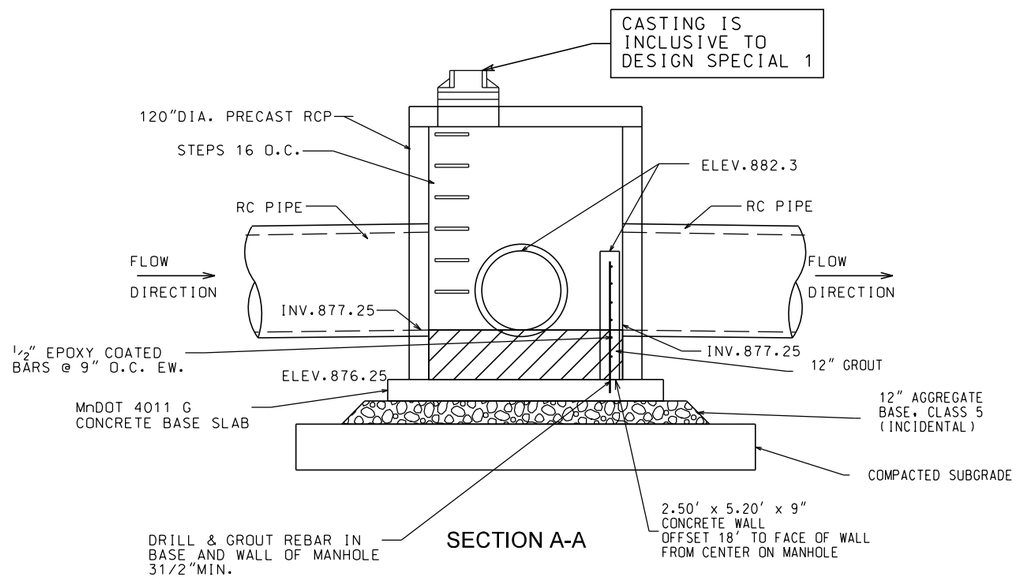

SECTION A-A

NOTE: SEE DRAINAGE PLANS FOR PIPE PROFILES

STORM SEWER DIVERSION STRUCTURE
DESIGN SPECIAL 1
STRUCTURE 8000

NOT TO SCALE

Date Printed: 10/23/2015
WSB Filename: K:\10170-110\Cad\Plan\170lhw08.dgn

NO.	DATE	BY	CHK	REVISIONS

Design By: AJP
Plan By: ACJ
Checked By: DRS
Approved By: AJP

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY 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 - ANDREW PLOWMAN, PE
DATE: 10/22/15 LIC. NO: 44200

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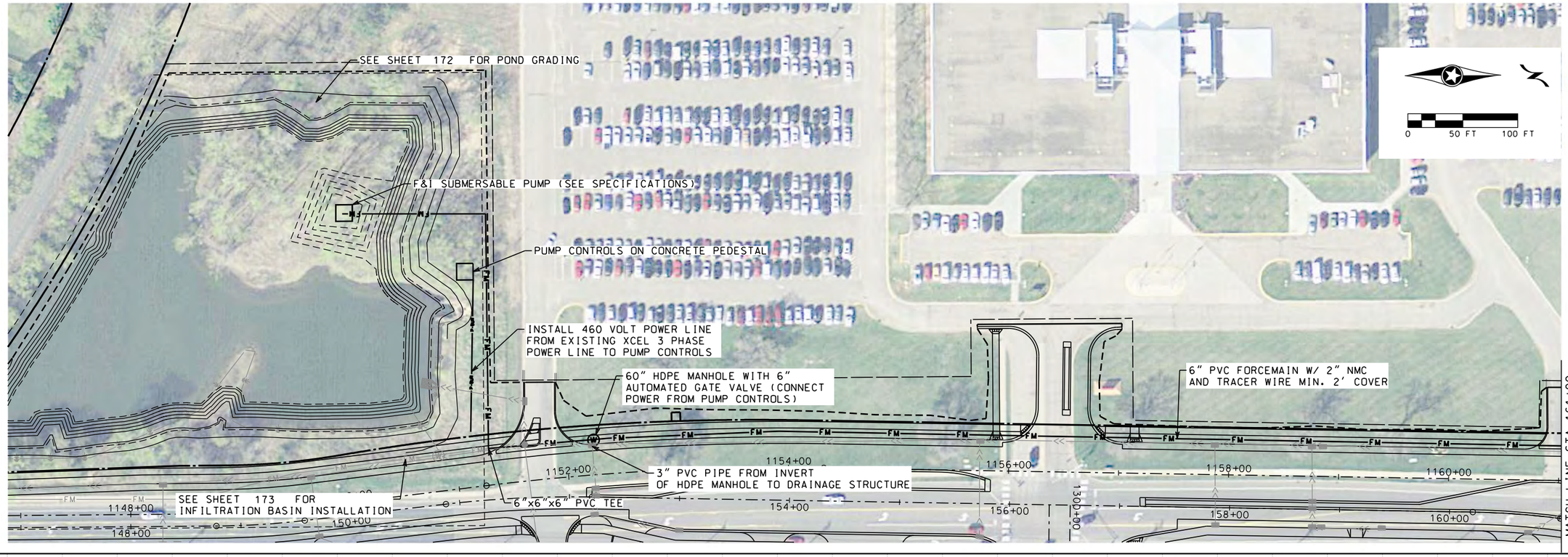
city of golden valley

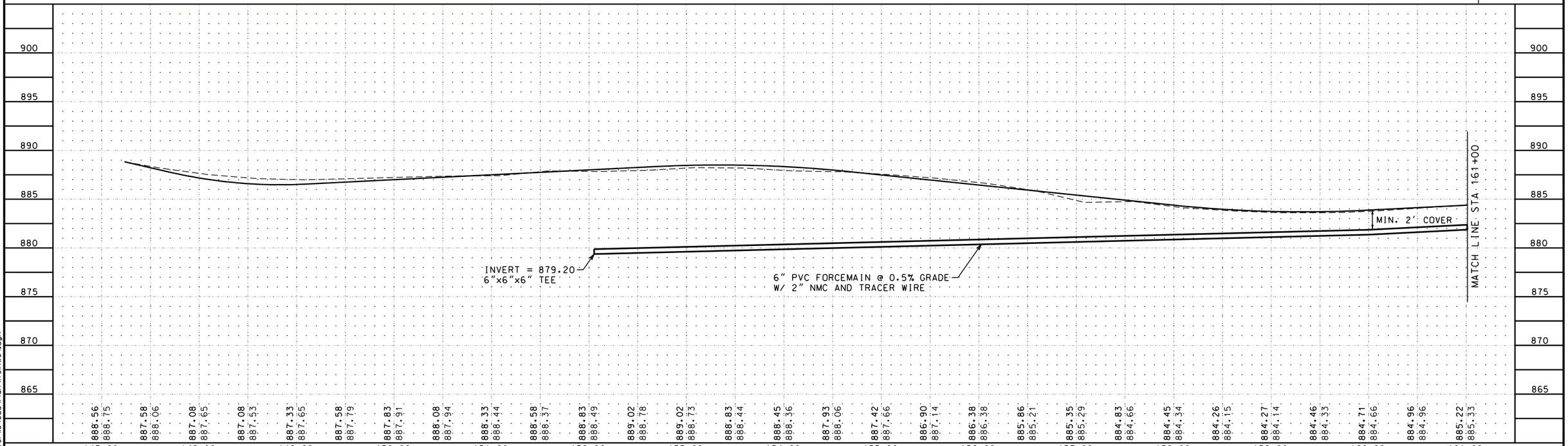
Douglas Drive Improvements
Golden Valley, Minnesota

Hennepin

GOLDEN VALLEY, MINNESOTA

DRAINAGE DETAILS
S.P. 2723-117/C.P. 10-04/S.A.P. 027-702-021/S.A.P. 128-020-016/S.A.P. 128-020-017/
S.A.P. 128-410-001/S.A.P. 128-411-006/S.A.P. 128-420-001/S.A.P. 027-666-018





NO.	DATE	BY	CHK	REVISIONS

Design By: AJP
Plan By: ACJ
Checked By: DRS
Approved By: AJP

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CERTIFIED BY _____
LICENSED PROFESSIONAL ENGINEER - ANDREW PLOMMAN, PE
DATE: 10/22/15 LIC. NO: 44200

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city of golden valley

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HONEYWELL POND PLAN
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SHEET 175 OF 340 SHEETS

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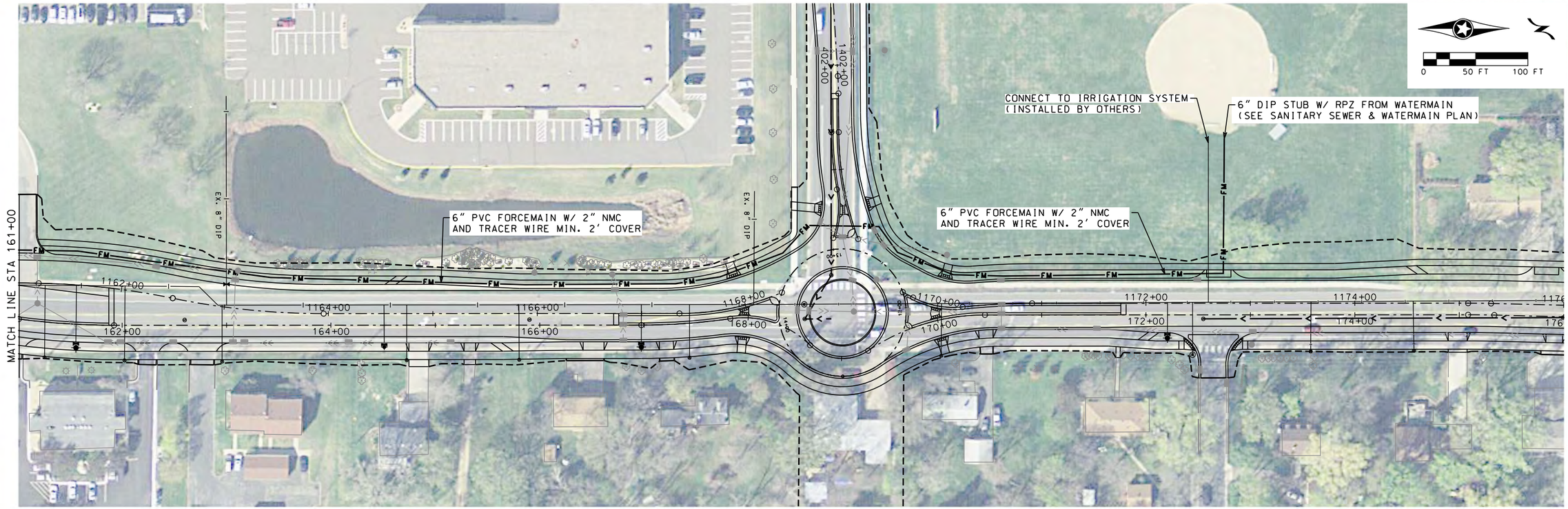

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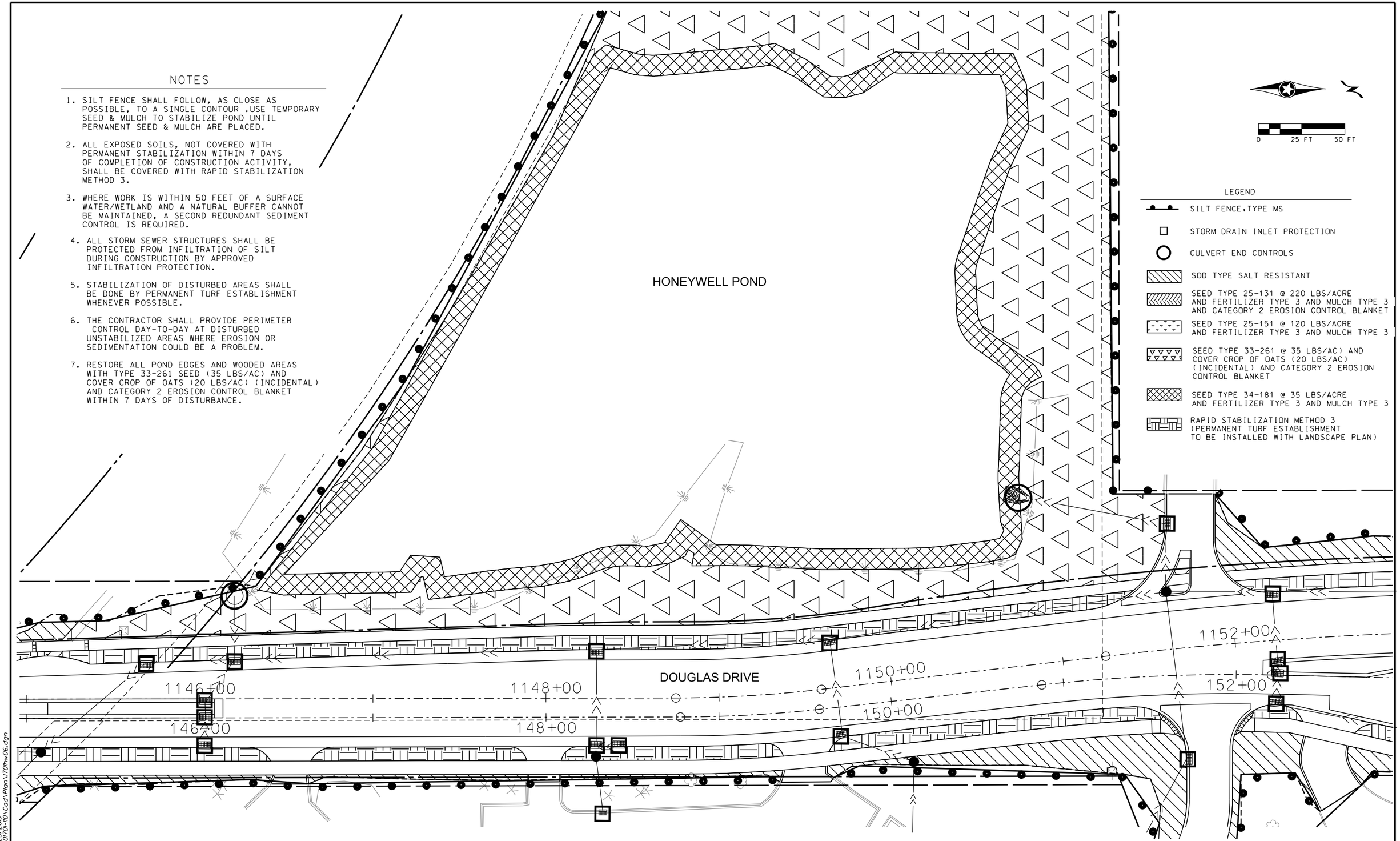
SHEET 176 OF 340 SHEETS

NOTES

1. SILT FENCE SHALL FOLLOW, AS CLOSE AS POSSIBLE, TO A SINGLE CONTOUR .USE TEMPORARY SEED & MULCH TO STABILIZE POND UNTIL PERMANENT SEED & MULCH ARE PLACED.
2. ALL EXPOSED SOILS, NOT COVERED WITH PERMANENT STABILIZATION WITHIN 7 DAYS OF COMPLETION OF CONSTRUCTION ACTIVITY, SHALL BE COVERED WITH RAPID STABILIZATION METHOD 3.
3. WHERE WORK IS WITHIN 50 FEET OF A SURFACE WATER/WETLAND AND A NATURAL BUFFER CANNOT BE MAINTAINED, A SECOND REDUNDANT SEDIMENT CONTROL IS REQUIRED.
4. ALL STORM SEWER STRUCTURES SHALL BE PROTECTED FROM INFILTRATION OF SILT DURING CONSTRUCTION BY APPROVED INFILTRATION PROTECTION.
5. STABILIZATION OF DISTURBED AREAS SHALL BE DONE BY PERMANENT TURF ESTABLISHMENT WHENEVER POSSIBLE.
6. THE CONTRACTOR SHALL PROVIDE PERIMETER CONTROL DAY-TO-DAY AT DISTURBED UNSTABILIZED AREAS WHERE EROSION OR SEDIMENTATION COULD BE A PROBLEM.
7. RESTORE ALL POND EDGES AND WOODED AREAS WITH TYPE 33-261 SEED (35 LBS/AC) AND COVER CROP OF OATS (20 LBS/AC) (INCIDENTAL) AND CATEGORY 2 EROSION CONTROL BLANKET WITHIN 7 DAYS OF DISTURBANCE.



0 25 FT 50 FT

LEGEND

- SILT FENCE,TYPE MS
- STORM DRAIN INLET PROTECTION
- CULVERT END CONTROLS
- SOD TYPE SALT RESISTANT
- SEED TYPE 25-131 @ 220 LBS/ACRE AND FERTILIZER TYPE 3 AND MULCH TYPE 3 AND CATEGORY 2 EROSION CONTROL BLANKET
- SEED TYPE 25-151 @ 120 LBS/ACRE AND FERTILIZER TYPE 3 AND MULCH TYPE 3
- SEED TYPE 33-261 @ 35 LBS/AC) AND COVER CROP OF OATS (20 LBS/AC) (INCIDENTAL) AND CATEGORY 2 EROSION CONTROL BLANKET
- SEED TYPE 34-181 @ 35 LBS/ACRE AND FERTILIZER TYPE 3 AND MULCH TYPE 3
- RAPID STABILIZATION METHOD 3 (PERMANENT TURF ESTABLISHMENT TO BE INSTALLED WITH LANDSCAPE PLAN)

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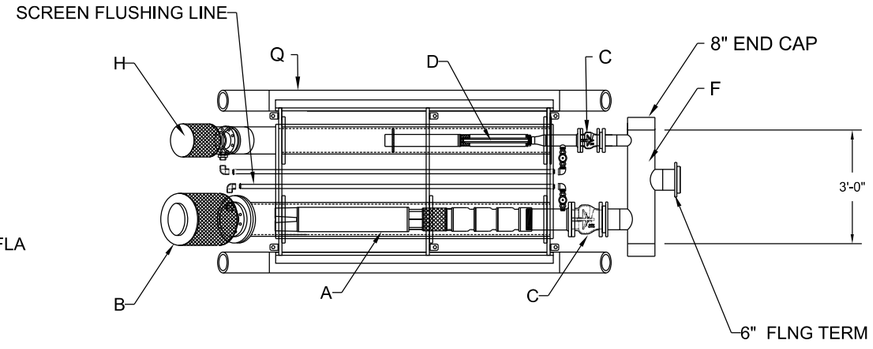
SHEET 177 OF 340 SHEETS

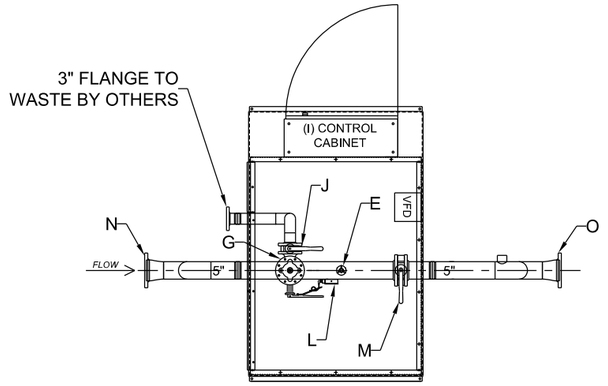
DIMENSIONS AND SIZES OF EXISTING STRUCTURES, AND/OR COMPONENTS MUST BE VERIFIED TO WATERTRONICS BEFORE STATION CONSTRUCTION BEGINS.

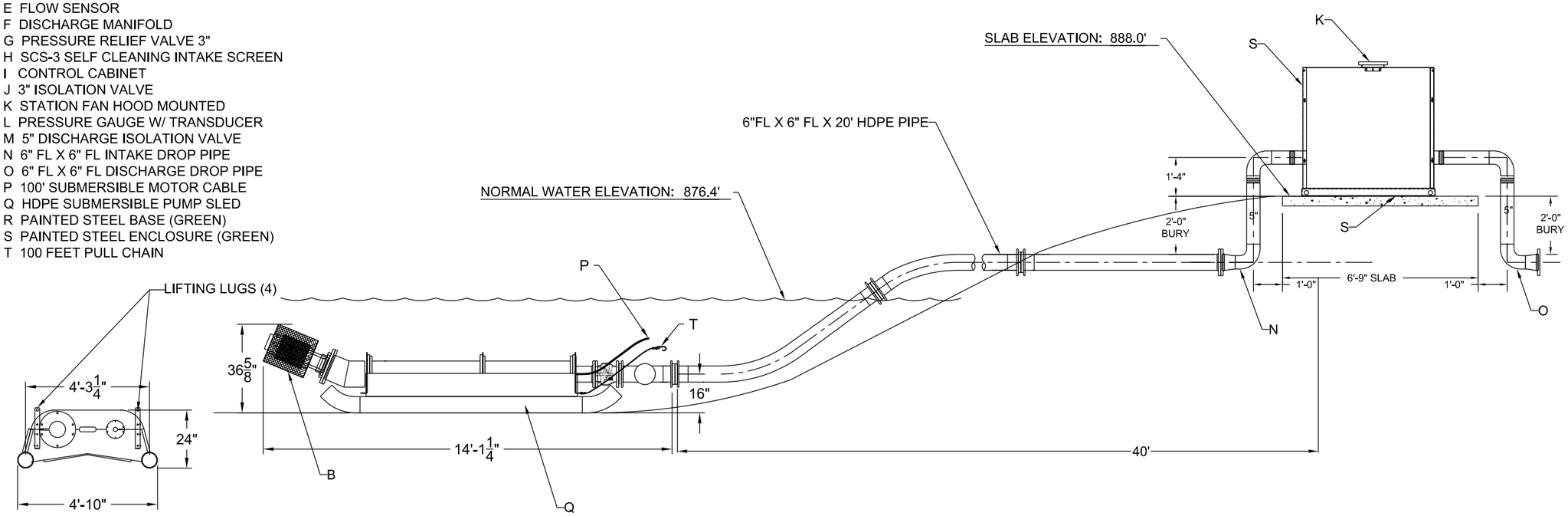
PUMP STATION SPECIFICATIONS:
NAME: HONEYWELL POND
STATION MODEL: BMXV-1-50/5ST-480-3-480-124
STATION TOTAL PERFORMANCE:
480 GPM @ 124 PSI
PUMP HORSEPOWER:
PUMP NO.1 5HP
PUMP NO.2 50HP
CHECK VALVE SIZES:
PUMP NO.1: 3"
PUMP NO.2: 6"
DISCHARGE ISOLATION VALVE SIZE: 5"
RELIEF VALVE SIZE: 3"
PUMP STATION DISCONNECT: 125 AMP
POWER REQUIREMENTS: 460 VOLTS, 60 HERTZ, 3 PHASE, 89 FLA
EXHAUST FAN REQUIREMENTS FOR BUILDING: N/A

STATION COMPONENTS:
A 50HP MAIN PUMP AND MOTOR
B SCS-6 SELF CLEANING INTAKE SCREEN
C CHECK VALVE
D 5HP PRESSURE MAINTENANCE PUMP AND MOTOR
E FLOW SENSOR
F DISCHARGE MANIFOLD
G PRESSURE RELIEF VALVE 3"
H SCS-3 SELF CLEANING INTAKE SCREEN
I CONTROL CABINET
J 3" ISOLATION VALVE
K STATION FAN HOOD MOUNTED
L PRESSURE GAUGE W/ TRANSDUCER
M 5" DISCHARGE ISOLATION VALVE
N 6" FL X 6" FL INTAKE DROP PIPE
O 6" FL X 6" FL DISCHARGE DROP PIPE
P 100' SUBMERSIBLE MOTOR CABLE
Q HDPE SUBMERSIBLE PUMP SLED
R PAINTED STEEL BASE (GREEN)
S PAINTED STEEL ENCLOSURE (GREEN)
T 100 FEET PULL CHAIN



PUMP HOUSE/CONCRETE SLAB DIMENSIONS ARE RECOMMENDED MINIMUMS FOR NEC AND SERVICE CLEARANCE, AND ARE FOR ILLUSTRATION PURPOSES ONLY. PROJECT MANAGER SHALL BE CONSULTED ON FINAL DESIGN.





CONCEPT DRAWING ONLY
DRAWING NOT TO SCALE

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Plan By: KOV
Checked By: BRS
Approved By: KOP

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GOLDEN VALLEY, MINNESOTA

PUMP DETAIL
S.P. 2723-117/C.P. 10-04/S.A.P. 027-702-021/S.A.P. 128-020-016/S.A.P. 128-020-017/ S.A.P. 128-410-001/S.A.P. 128-411-006/S.A.P. 128-420-001/S.A.P. 027-666-018

SHEET **178** OF **340** SHEETS

STORMWATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE

PROJECT LOCATION/DESCRIPTION

PROJECT/SITE NAME: DOUGLAS DRIVE IMPROVEMENTS
PROJECT NUMBERS: S.A.P. #128-020-016 WSB PROJECT # 1701-110
PROJECT LOCATION: STREET: DOUGLAS DRIVE CITY/TOWNSHIP: GOLDEN VALLEY COUNTY: HENNEPIN
STATE: MINNESOTA ZIP: 55427 LATITUDE/LONGITUDE: 45.0001/-93.3603

CONTACT INFORMATION/RESPONSIBLE PARTIES

THE CITY OF GOLDEN VALLEY OWNS THE LAND, ADJACENT ROADS, AND EASEMENT AREAS ASSOCIATED WITH THE PROJECT. THE CITY OF GOLDEN VALLEY IS THE OWNER PERMITTEE APPLYING FOR PERMIT COVERAGE AND WILL BE RESPONSIBLE FOR DEVELOPING THIS SWPPP AND THE LONG-TERM MAINTENANCE PLAN OF THE PERMANENT STORMWATER MANAGEMENT SYSTEM FOR THIS PROJECT (IF APPLICABLE). THE OWNER WILL ENSURE THAT THE DESCRIBED WORK IN THE SWPPP IS BEING COMPLETED BY THE OPERATOR PERMITTEE.

OWNER/PERMITTEE: CITY OF GOLDEN VALLEY (JEFF OLIVER, CITY ENGINEER)
7800 GOLDEN VALLEY ROAD
GOLDEN VALLEY, MN 55427
763-593-8034/JOLIVER@GOLDENVALLEYMN.GOV

THE PRIMARY CONTRACTOR WILL ENTER INTO A CONTRACT WITH THE CITY OF GOLDEN VALLEY TO COMPLETE THE REQUIRED WORK FOR THIS PROJECT. THE PRIMARY CONTRACTOR WILL BECOME (UNDER CONTRACT) THE OPERATOR CO-PERMITTEE ON THE NPDES PERMIT (THROUGH EXECUTION OF A NPDES PERMIT MODIFICATION FORM), AND THEREBY AGREE TO IMPLEMENT THIS SWPPP IN COOPERATION WITH THE OWNER. THE OPERATOR IS RESPONSIBLE FOR DEVELOPING A CHAIN OF RESPONSIBILITY PRIOR TO STARTING CONSTRUCTION (REFER TO SWPPP AMENDMENT SECTION). THE NPDES PERMIT MODIFICATION FORM SHALL BE SUBMITTED TO THE MPCA AFTER THE PROJECT IS AWARDED TO THE PRIMARY CONTRACTOR, PRIOR TO LETTING THE PROJECT.

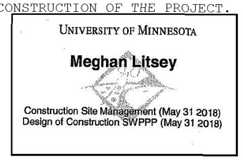
THE OPERATOR WILL INSURE THAT INDIVIDUALS OVERSEEING OR IMPLEMENTING THE SWPPP HAVE BEEN PROPERLY TRAINED AND THAT CERTIFICATIONS WILL BE MADE AVAILABLE UPON REQUEST. THIS INCLUDES ANY SUB-CONTRACTORS THAT THE OPERATOR EMPLOYS UNDER SEPARATE CONTRACT. THE EROSION CONTROL SUPERVISOR SHALL HAVE AUTHORITY OVER ALL OPERATOR OPERATIONS WHICH INFLUENCE NPDES PERMIT COMPLIANCE, INCLUDING GRADING, EXCAVATION, BRIDGE CONSTRUCTION, CULVERT INSTALLATION, UTILITY WORK, CLEARING/GRUBBING, DEWATERING, AND ANY OTHER OPERATION THAT INCREASES THE EROSION POTENTIAL ON THE PROJECT.

THE OPERATOR WILL IMPLEMENT AND MAINTAIN BMPS FOR THE DURATION OF CONSTRUCTION PROJECT. THE OPERATOR WILL COMPLETE THE REQUIRED SITE INSPECTIONS, AND IS RESPONSIBLE FOR NPDES PERMIT REQUIREMENTS PART II.B, II.C, III.B-F, IV, V, AND APPLICABLE CONSTRUCTION ACTIVITY REQUIREMENTS FOUND IN APPENDIX A, PART C TO REMAIN IN COMPLIANCE WITH NPDES PERMIT.

OPERATOR/PERMITTEE: (TO BE DETERMINED THROUGH TRANSFER OF NPDES-CSW PERMIT)

THIS SWPPP WAS PREPARED BY AN INDIVIDUAL THAT HAS BEEN PROPERLY TRAINED IN ACCORDANCE TO PART III.F OF THE NPDES PERMIT (CERTIFICATION CARDS ARE AVAILABLE UPON REQUEST). WSB & ASSOCIATES WILL OFFER GUIDANCE FOR COMPLIANCE WITH THE NPDES PERMIT BEFORE, DURING, AND AFTER CONSTRUCTION OF THE PROJECT.

SWPPP DEVELOPER:
WSB & ASSOCIATES, INC. (MEGHAN LITSEY)
701 XENIA AVE. SOUTH, SUITE 300
MINNEAPOLIS, MN 55416
763-287-7155/MLITSEY@WSBENG.COM



APPLICABLE FEDERAL, TRIBAL, STATE OR LOCAL PROGRAMS: THE MORE STRINGENT OF LOCAL VS. STATE VS. FEDERAL RULES SHALL APPLY WHERE THEY CONFLICT. THE OPERATOR IS RESPONSIBLE TO COMPLY WITH ALL APPLICABLE PERMITS, MNDOT SPECIAL PROVISION, MNDOT SPEC BOOK (2014 EDITION), AND MNDOT SPECIFICATIONS 1717.

AGENCY CONTACTS			
AGENCY	**PERMIT**	**NAME**	**PHONE NUMBER/E-MAIL**
MPCA (EMERGENCY)	N/A	STATE DUTY OFFICER	1-800-422-0798
MPCA	NPDES-CSW #**C000TBD**	DON BERGER	651-276-7235/DONALD.BERGER@STATE.MN.US
ACOE	SECTION 404	MELISSA JENNY	218-829-8402 /MELISSA.M.JENNY@USACE.ARMY.MIL
DNR	PUBLIC WATERS; WATER APPROPRIATIONS	KATE DEWRY	651-259-5753/KATE.DEWRY@STATE.MN.US
GOLDEN VALLEY	WCA	ERIC ECKMAN	763-593-8084/EECKMAN@GOLDENVALLEYMN.GOV
BASSETT CREEK WMC	PERMIT	LAURA JESTER	952-270-1990/LAURA.JESTER@KEYSTONEWATERS.COM

PROJECT DESCRIPTION & SCHEDULE

THE PROJECT INCLUDES THE RECONSTRUCTION OF DOUGLAS DRIVE FROM TH 55 TO MEDICINE LAKE ROAD IN GOLDEN VALLEY, MINNESOTA. CONSTRUCTION ACTIVITIES WILL INCLUDE RECONSTRUCTION OF THE ROAD, NEW STORM SEWER, PROPOSED INFILTRATION BASIN, EXPANSION OF AN EXISTING POND, AND BOX CULVERT REPLACEMENT IN BASSETT CREEK.

TENTATIVE CONSTRUCTION *SCHEDULE* (OPERATOR SHOULD PROVIDE ESTIMATED CONSTRUCTION SCHEDULE TO THE ENGINEER)	
CLEARING AND GRUBBING, GRADING, TEMPORARY ESC	APRIL - JUNE 2016
ROAD RECONSTRUCTION, STORM SEWER, INFILTRATION BASIN	JUNE - OCTOBER 2016
CULVERT INSTALLATION, POND EXPANSION	OCTOBER - DECEMBER 2016
CLEARING AND GRUBBING, GRADING, TEMPORARY ESC	APRIL - JUNE 2017
ROAD RECONSTRUCTION, STORM SEWER	JUNE - OCTOBER 2017
SUBSTANTIAL COMPLETION	NOVEMBER 2017

PRE-CONSTRUCTION IMPERVIOUS SURFACE AND DISTURBED AREA CALCULATIONS

TOTAL AREA TO BE DISTURBED = 32.87 ACRES
IMPERVIOUS AREA: PRE-CONSTRUCTION = 18.29 ACRES/POST-CONSTRUCTION = 20.55 ACRES
NET INCREASE OF IMPERVIOUS AREA = 2.26 ACRES

PERMANENT STORMWATER MANAGEMENT SYSTEMS

THE NPDES PERMANENT WATER QUALITY VOLUME (PART III.D) FROM THE NET NEW IMPERVIOUS SURFACES OF THE PROJECT IS PROVIDED IN THE PROPOSED INFILTRATION BASIN AT THE INTERSECTION OF OLYMPIA STREET AND DOUGLAS DRIVE. HYDROLOGIC AND WATER QUALITY MODELING DATA IS AVAILABLE UPON REQUEST.

LOCATION OF SWPPP COMPONENTS		
DESCRIPTION	**TITLE**	**LOCATION**
SWPPP NARRATIVE	SWPPP NARRATIVE	SHEET 215
SITE CONDITIONS	SWPPP NARRATIVE	SHEET 216
SITE MAP	SWPPP NARRATIVE	SHEET 217
CONSTRUCTION PHASING/STAGING, BUFFERS, & AREAS NOT TO BE DISTURBED	SWPPP NARRATIVE, CONSTRUCTION STAGING & TRAFFIC CONTROL	SHEET 215 42 - 64
DIRECTION OF FLOW (PRE-/POST-CONSTRUCTION)	DRAINAGE & SUPERELEVATION PLAN	SHEET 150 - 171
IMPERVIOUS SURFACES	CONSTRUCTION PLAN & PROFILE	SHEET 92 - 109
TEMPORARY EROSION & SEDIMENT CONTROL BMPS/STEEP SLOPES (3:1), DNR FISH EXCLUSION	EROSION CONTROL PLAN	SHEET 218 - 222
PERMANENT EROSION CONTROL BMPS	TURF ESTABLISHMENT PLAN	SHEET 218 - 222
STORM SEWER	DRAINAGE & SUPERELEVATION PLAN	SHEET 150 - 171
GRADING	CONSTRUCTION PLAN & PROFILE	SHEET 92 - 109
ESTIMATED BMP QUANTITIES	QUANTITY TABULATIONS	SHEET 7 - 9
BMP DETAILS/SPECIFICATIONS	CONSTRUCTION NOTES & STANDARD DETAILS	SHEET 10
HYDROLOGIC/WATER QUALITY MODELING	AVAILABLE UPON REQUEST	

EXISTING SITE CONDITIONS, SOILS, & WATER RESOURCES

SOILS AND NATIVE TOPSOIL: NATIVE TOPSOIL WILL BE STRIPPED AND STOCKPILED FOR FINAL GRADING OPERATIONS, WHERE INDICATED IN THE CONSTRUCTION PLANS AND SPECIFICATIONS. METHODS AND EQUIPMENT TO MINIMIZE SOIL COMPACTION (IN PROPOSED INFILTRATION AREAS, DRIP LINE OF TREES TO BE PRESERVED, ETC.)SHALL BE DETERMINED BY THE OPERATOR'S SWPPP AMENDMENT. TRACKED VEHICLES ARE PREFERRED AND WHEELED VEHICLES ARE DISCOURAGED IN THESE AREAS.

USDA-NRCS MAPPED SOIL SURVEY UNIT NO., NAME, TEXTURE, SLOPE PERCENTAGE	**% OF PROJECT AREA**	**APPROXIMATE PARTICLE SIZE RANGE *(MM)***		
		SAND (0.05-2.00+)	**SILT (0.002-0.05)**	**CLAY (<0.002)**
L2B - MALARDI-HAWICK COMPLEX, 1-6% SLOPES	5.4%	50-70%	0-50%	15-20%
L2E - MALARDI-HAWICK COMPLEX, 18-35% SLOPES	2.4%	50-70%	0-50%	15-20%
L6A - BISCAY CLAY LOAM, 0-2% SLOPES	1.8%	30-40%	15-55%	20-45%
L11B - GRAYS VERY FINE SANDY LOAM, 2-8% SLOPES	7.9%	50-70%	0-50%	15-20%
L22C2 - LESTER LOAM, 6-10% SLOPES, MODERATELY ERODED	7.3%	30-40%	15-55%	20-45%
L22D2 - LESTER LOAM, 10-16% SLOPES, MODERATELY ERODED	4.0%	30-40%	15-55%	20-45%
L52C - URBAN LAND-LESTER COMPLEX, 2-18% SLOPES	16.7%	30-40%	15-55%	20-45%
U1A - URBAN LAND-UDORTHENTS, WET SUBSTRATUM, COMPLEX, 0-2% SLOPES	26.3%	N/A	N/A	N/A
U2A - UDORTHENTS, WET SUBSTRATUM, 0-2% SLOPES	20.0%	N/A	N/A	N/A
U6B - URBAN LAND-UDORTHENTS (CUT & FILL LAND) COMPLEX, 0-6% SLOPES	8.2%	N/A	N/A	N/A

DESCRIPTION OF RECEIVING WATERS (LOCATED WITHIN 1-MILE): STORMWATER FROM THIS PROJECT WILL BE CONVEYED INTO THE EXISTING STORM SEWER SYSTEM AND A PROPOSED INFILTRATION BASIN LOCATED AT THE INTERSECTION OF OLYMPIA STREET AND DOUGLAS DRIVE. IN ADDITION, AN EXISTING POND LOCATED AT THE INTERSECTION OF HAMPSHIRE PLACE AND DOUGLAS DRIVE WILL BE EXPANDED TO PROVIDE ADDITIONAL TREATMENT. PROJECT DISCHARGE POINTS (OVERFLOWS FROM CONSTRUCTED BASINS) DISCHARGE TO BASSETT CREEK, WHICH IS IMPAIRED. ADJACENT WETLANDS MAY RECEIVE A MINIMAL AMOUNT OF STORMWATER RUNOFF FROM IMPERVIOUS AREAS. STORMWATER RUNOFF IS FILTERED THROUGH THE VEGETATED SIDE SLOPES BEFORE SHEET FLOWING INTO ADJACENT WETLANDS.

DESCRIPTION OF IMPAIRED WATERS OR WATER SUBJECT TO TMDLS: A SPECIAL AND IMPAIRED WATERS SEARCH WAS COMPLETED USING THE MPCA SEARCH ENGINE (HTTP://PCA-GIS02.PCA.STATE.MN.US/CSW/INDEX.HTML) ON 10/16/2015. BASED ON THIS REVIEW, THE FOLLOWING SPECIAL OR IMPAIRED WATERS (WITH CONSTRUCTION-RELATED IMPAIRMENTS) ARE LOCATED WITHIN ONE MILE OF, AND DOWNSTREAM OF ANY PROJECT DISCHARGE POINTS: BASSETT CREEK (AUID 07010206-538) IS IMPAIRED (CHLORIDE; FISH BIOASSESSMENT; FECAL COLIFORM). THEREFORE APPENDIX A, PART C.1 AND C.2 REQUIREMENTS APPLY TO THIS PROJECT. SWEENEY LAKE (27-0035-01) IS ALSO IMPAIRED (NUTRIENT/EUTROPHICATION BIOLOGICAL INDICATORS), AND IS WITHIN ONE MILE OF THE PROJECT; HOWEVER, THE PROJECT DOES NOT DISCHARGE TO THIS IMPAIRED WATER.

POTENTIAL FOR SEDIMENT AND/OR OTHER POLLUTANT(S) DISCHARGING FROM THE PROJECT SITE

THE TEMPORARY EROSION AND SEDIMENT CONTROL BMPS IN THIS SWPPP HAVE BEEN DESIGNED TO MINIMIZE THE POTENTIAL OF SEDIMENTS DISCHARGING OFF-SITE FROM A 0.5 INCH RAINFALL WITHIN A 24 HOUR PERIOD. THE NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATE FOR THE PROJECT LOCATION WAS REVIEWED AND USED FOR ANTICIPATED INSPECTION FREQUENCY, BMP DESIGN, AND ESTIMATING CONSTRUCTION ACTIVITIES IN THIS SWPPP. ATLAS 14 RESULTS DO NOT NECESSARILY REFLECT ANY DESIGN CRITERIA IN THE PERMANENT STORMWATER MANAGEMENT SYSTEM.

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GOLDEN VALLEY, MINNESOTA
SWPPP NOTES
TURF ESTABLISHMENT & EROSION CONTROL
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SHEET 215 OF 340 SHEETS

ROUTINE INSPECTION AND BMP MAINTENANCE BY THE OPERATOR IS CRUCIAL IN ENSURING THE FUNCTIONALITY OF EACH BMP. STEEP SLOPES AND OTHER ENVIRONMENTALLY SENSITIVE AREAS THAT ARE AT A HIGHER RISK OF SEDIMENTATION ARE DEFINED IN THE SWPPP (IF APPLICABLE).

CONSTRUCTION PHASING/STAGING, BUFFERS, & AREAS NOT TO BE DISTURBED

THE PRESERVED AREAS OF EXISTING VEGETATION WILL BE IDENTIFIED ON THE PLAN SHEETS AS "DO NOT DISTURB AREA". THE OPERATOR IS RESPONSIBLE FOR PRESERVING A 50 FOOT NATURAL BUFFER OR (IF INFEASIBLE) PROVIDE REDUNDANT SEDIMENT CONTROL BMPS, WHEN A SURFACE WATER IS LOCATED WITHIN 50 FEET AND RECEIVES DRAINAGE FROM THE PROJECT'S GRADING LIMITS. THIS REQUIREMENT DOES NOT APPLY TO ADJACENT ROAD SIDE DITCHES, JUDICIAL/COUNTY DITCHES, STORMWATER CONVEYANCES, STORM DRAIN INLETS, OR SEDIMENT BASINS.

THE PROJECT'S CONSTRUCTION PHASING AND STAGING IS DEFINED BY THE "CONSTRUCTION STAGING & TRAFFIC CONTROL PLAN" AND PROJECT SPECIFICATIONS. THE SCHEDULE FOR INSTALLING TEMPORARY BMPS SHALL BE INCORPORATED INTO THE OPERATOR'S WEEKLY SCHEDULE FOR EACH CONSTRUCTION STAGE AND PRESENTED TO THE OWNER'S REPRESENTATIVE (PER MNDOT SPEC 1717.D).

ENVIRONMENTALLY SENSITIVE AREAS

STEEP SLOPES: EXISTING AND PROPOSED SLOPES 1 IN 3 (33.33% AND STEEPER) THAT ARE PROPOSED TO BE DISTURBED ARE ILLUSTRATED ON THE PLAN SHEETS. STEEP SLOPES MAYBE TEMPORARILY CREATED DURING GRADING OPERATIONS, AT WHICH TIME TEMPORARY BMPS MUST BE IMPLEMENTED BY THE OPERATOR (THROUGH AN APPROVED SWPPP AMENDMENT) WITHIN 7 DAYS OF CEASING WORKING ON THE STEEP SLOPE.

CONTAMINATED PROPERTIES: THE MPCA'S "WHAT'S IN MY NEIGHBORHOOD" DATABASE (PCA-GIS02.PCA.STATE.MN.US/WIMN2/INDEX.HTML) WAS REVIEWED ON 10/16/2015. THE RESULTS OF THIS REVIEW SHOW TWO KNOWN LEAK SOURCES LOCATED ADJACENT TO THE PROJECT LIMITS: TANK SITE # 10963 (INACTIVE) AND TANK SITE # 12453 (INACTIVE). IF CONTAMINATED SOILS ARE ENCOUNTERED DURING THE PROJECT, THE CONTRACTOR SHALL NOTIFY THE PROJECT OWNER IMMEDIATELY AND DISPOSE OF CONTAMINATED SOILS IN ACCORDANCE WITH MPCA REGULATIONS.

STORMWATER POLLUTION MITIGATION MEASURES (AS IDENTIFIED FROM ENVIRONMENTAL REVIEW): NO FORMAL ENVIRONMENTAL REVIEW WAS REQUIRED FOR THIS PROJECT; THEREFORE, NO ADDITIONAL STORMWATER-RELATED MITIGATION MEASURES APPLY.

KARST AREAS: THERE ARE NO KNOWN KARST AREAS WITHIN OR ADJACENT TO THE PROJECT LIMITS.

SITE PLAN REQUIRED AREAS: NO AREAS OF "HIGH ENVIRONMENTAL RISKS" ARE KNOWN TO BE LOCATED WITHIN OR IMMEDIATELY ADJACENT TO THE PROJECT LIMITS.

FLOOD CONTINGENCY PLAN: PROJECT ACTIVITIES MAY OCCUR WITHIN THE 100-YEAR FLOODPLAIN OR FLOODWAY, THEREFORE, THE PROJECT ENGINEER (AT THEIR DISCRETION) MAY REQUIRE A PREVENTATIVE FLOOD CONTINGENCY PLAN FOR SPECIFIC PROJECT ACTIVITIES AND AREAS IF SEASONAL PRECIPITATION POSSES A POTENTIAL RISK OF FLOODING WORK AREAS WITHIN THE PROJECT LIMITS. THIS PLAN SHALL BE SUBMITTED BY THE OPERATOR TO THE PROJECT ENGINEER FOR APPROVAL A MINIMUM OF 72 HOURS PRIOR TO THE SCHEDULED WORK AND/OR DURING ACTIVE WORK WITHIN THE FLOODPLAIN. NO WORK WITHIN THE FLOODPLAIN CAN COMMENCE UNTIL WRITTEN APPROVAL/NOTICE TO PROCEED FROM THE PROJECT ENGINEER IS RECEIVED.

FISH EXCLUSION DATES: OPERATOR IS PROHIBITED FROM CONDUCTING IN-STREAM WORK DURING THE FISH SPAWNING AND MIGRATION DATES OF MARCH 15 TO JUNE 15 FOR NON-TROUT WATERS. IF WORK MUST BE CONDUCTING DURING THIS TIMEFRAME, CONTRACTOR SHALL CONTACT THE LOCAL DNR FISHERIES MANAGER FOR WRITTEN APPROVAL PRIOR TO CONDUCTING THE IN-STREAM WORK.

AQUATIC INVASIVE SPECIES: ALL IN-STREAM AND DEWATERING EQUIPMENT SHALL BE DECONTAMINATED OF ALL AQUATIC PLANTS AND PROHIBITED INVASIVE SPECIES PRIOR TO USING WITHIN SURFACE WATERS ON-SITE AND TRANSPORTING OFF-SITE. ALL DECONTAMINATION ACTIVITIES SHALL MEET THE CHAPTER 1 STANDARDS OF THE MINNESOTA DNR'S BEST PRACTICES MANUAL FOR MEETING DNR GENERAL PUBLIC WATERS WORK PERMIT GP 2004-0001.

WETLANDS: THERE ARE MULTIPLE WETLANDS WITHIN AND ADJACENT TO THE PROJECT AREA, AND MUST BE PROTECTED TO THE MAXIMUM EXTENT POSSIBLE. APPROXIMATELY 5,300 SQUARE FEET OF WETLAND WILL BE IMPACTED BY THE PROJECT, AND THESE ACTIVITIES HAVE BEEN PERMITTED AS ILLUSTRATED ON THE PLAN SHEETS. PERMITTED AREAS OF WETLAND IMPACT WILL BE PROTECTED WITH SILT FENCE ALONG THE PERIMETER OF THE FILL OR EXCAVATION LIMITS.

INSPECTION, SWPPP AMENDMENTS, RECORD KEEPING, & TRAINING

1. THE SWPPP CHAIN OF RESPONSIBILITY MUST BE AMENDED BY THE OPERATOR WHEN THE IDENTITY OF RESPONSIBLE SITE OPERATORS (EROSION CONTROL SUPERVISOR, SUB-CONTRACTORS, ETC.) ARE KNOWN.
2. THE OPERATOR MUST INSPECT THE ENTIRE CONSTRUCTION SITE AT LEAST ONCE EVERY SEVEN (7) DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS. THE OPERATOR SHALL PROVIDE A RAINFALL GAUGE ON-SITE, WITHIN ONE MILE OF THE SITE, OR SOURCE OF THE WEATHER REPORTING SYSTEM THAT USES SITE SPECIFIC RAINFALL DATA FROM RADAR SUMMARIES. THE LOCATION AND SOURCE OF THE RAINFALL GAUGE OR REPORTING SYSTEM MUST BE DOCUMENT IN THE FIRST SWPPP INSPECTION REPORT. THE INSPECTION FREQUENCY MAY BE REDUCED TO ONCE PER MONTH, IF SITE CONDITIONS MEET PART IV.E.3 OF THE NPDES PERMIT. ALL INSPECTIONS AND MAINTENANCE CONDUCTED MUST BE RECORDED IN WRITING BY THE OPERATOR AND RETAINED WITH THE SWPPP. RECORDS OF EACH INSPECTION AND MAINTENANCE ACTIVITY SHALL INCLUDE:
   A. DATE, TIME, AND NAME OF PERSON(S) CONDUCTING INSPECTIONS;
   B. FINDINGS OF INSPECTIONS, INCLUDING RECOMMENDATIONS FOR CORRECTIVE ACTIONS;
   C. CORRECTIVE ACTIONS TAKEN (INCLUDING DATES, TIMES, AND PARTY COMPLETING MAINTENANCE ACTIVITIES); INCLUDING DOCUMENTATION/PHOTOS OF IMPLEMENTED BMPS INTENDED TO CORRECT A PROBLEM BUT FAILED.
   D. DATE AND AMOUNT OF ALL RAINFALL EVENTS GREATER THAN 0.5 INCHES) IN 24 HOURS;
   E. DOCUMENTATION OF CHANGES MADE TO THE SWPPP.
3. SWPPP AMENDMENTS AND SITE PLANS WILL BE PREPARED BY THE OPERATOR AND SUBMITTED TO THE OWNER FOR REVIEW AND WRITTEN APPROVAL BY THE PROJECT OWNER (OR DESIGNATED REPRESENTATIVE). ALL OWNER ACCEPTED AND DENIED SWPPP AMENDMENTS AND SITE PLANS MUST BE RECORDED IN WRITING RETAINED WITH THE SWPPP.
4. THE SWPPP SHALL BE AMENDED TO INCLUDE ADDITIONAL OR MODIFIED BMPS, DESIGNED TO CORRECT IDENTIFIED PROBLEMS OR ADDRESS SITUATIONS (UNDER PART III.B OF THE NPDES PERMIT), PRIOR TO CONDUCTING SPECIFIC STAGES/PHASES OF THE PROJECT, AS REQUIRED BY THE OWNER AND DEFINED IN THIS PROJECT SWPPP.
5. THE SWPPP (ORIGINAL OR COPIES), ALL CHANGES TO THE SWPPP, PROJECT MANUAL, AND INSPECTIONS/MAINTENANCE RECORDS MUST BE KEPT AT THE SITE DURING CONSTRUCTION BY THE OPERATOR WHO HAS OPERATIONAL CONTROL OF THAT PORTION OF THE SITE. THE SWPPP CAN BE KEPT IN THE FIELD OFFICE OR ON-SITE VEHICLE DURING NORMAL WORKING HOURS.
6. THE OPERATOR MUST ASSIGN A TRAINED INDIVIDUAL(S) (PURSUANT TO PARTS III.A.3 & III.F) TO OVERSEE THE IMPLEMENTATION, MAINTENANCE, AND REPAIR OF BMPS. THIS INDIVIDUAL(S) SHALL ALSO PERFORM INSPECTIONS, REVISE/AMEND THE SWPPP (DOCUMENT IN SWPPP AS NECESSARY), AND BE AVAILABLE FOR AN ONSITE INSPECTION WITHIN 72 HOURS UPON REQUEST BY THE PERMITTED OWNER (OR ITS DESIGNEE), LOCAL GOVERNMENT UNITS, OR MPCA.

POLLUTION PREVENTION MANAGEMENT MEASURES

POTENTIAL SOURCES OF POLLUTANTS FROM CONSTRUCTION ACTIVITIES INCLUDE:

- SEDIMENT AND FUGITIVE DUST GENERATED FROM CLEARING AND GRUBBING, IMPORT/EXPORT OPERATIONS, REMOVALS/COMPACTION, MASS/FINE GRADING, EXCAVATIONS, TRENCHING, TOPSOIL STRIPING STOCKPILING, WET/DRY PAVEMENT CUTTING, STREET CONSTRUCTION.
- BASIC/ACIDIC PH LEVELS FROM CURB AND GUTTER, MANHOLE STRUCTURES, SIDEWALKS, DRIVEWAY APRONS, FOUNDATIONS, BRIDGE ABUTMENTS, WET/DRY PAVEMENT CUTTING, MASONRY WASHOUT/CLEANOUT.
- EXCESS NUTRIENTS FROM LANDSCAPING INSTALLATIONS, SOIL ADDITIVES, FERTILIZATION, MULCHING.
- HYDROCARBONS FROM STREET CONSTRUCTION, DEMOLITION/REMOVALS, WET/DRY PAVEMENT CUTTING.

OPERATOR WILL COMPLY WITH ALL OF THE POLLUTION PREVENTION AND MANAGEMENT MEASURES IDENTIFIED IN THE NPDES-CSW PERMIT, PART IV.F.1-4. OPERATOR WILL SUBMIT A SPILL PREVENTION AND RESPONSE PLAN (SPRP) TO THE ENGINEER PRIOR TO ANY CONSTRUCTION ACTIVITY. STORAGE AND DISPOSAL OF CONSTRUCTION AND HAZARDOUS WASTES MUST BE IN COMPLIANCE WITH MPCA REGULATIONS.

CONSTRUCTION ACTIVITY REQUIREMENTS (PART IV.): EROSION CONTROL, PROCEDURES, & MAINTENANCE STANDARDS

THE OPERATOR IS RESPONSIBLE FOR THE INSTALLATION, OPERATION, AND CONTINUED MAINTENANCE OF ALL TEMPORARY AND PERMANENT WATER QUALITY MANAGEMENT BMPS, AS WELL AS ALL EROSION PREVENTION AND SEDIMENT CONTROL BMPS, FOR THE DURATION OF THE CONSTRUCTION WORK AT THE SITE, UNTIL FINAL STABILIZATION IS ACHIEVED. ALL BMPS MUST BE ADEQUATELY LOCATED, DESIGNED, INSTALLED, AND MAINTAINED TO PREVENT EROSION FROM A MINIMUM 0.5 INCH TOTAL RAINFALL EVENT WITHIN 24 HOURS.

ALL NONFUNCTIONAL BMPS MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WITH FUNCTIONAL BMPS BY THE END OF THE NEXT BUSINESS DAY AFTER DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS UNLESS ANOTHER TIME FRAME IS SPECIFIED IN THE SWPPP. ALL ERODED MATERIAL THAT LEAVES THE SITE SHALL BE COLLECTED BY THE OPERATOR AND RETURNED TO THE SITE AT THE OPERATOR'S EXPENSE AND INCIDENTAL TO THE PROJECT COST.

TEMPORARY OR PERMANENT STABILIZATION SHALL BE INITIATED AS SOON AS POSSIBLE, BUT NO LATER THAN THE END OF THE NEXT WORK DAY FOLLOWING THE DAY EARTH-DISTURBING ACTIVITIES IN THAT PORTION OF THE SITE HAS TEMPORARILY OF PERMANENTLY CEASED. ALL EXPOSED SOIL AREAS SHALL BE STABILIZED WITHIN 7 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. INITIATED STABILIZATION IS DEFINED AS COMPLETING ONE (OR MORE) OF THE FOLLOWING: SOIL PREPARATION FOR VEGETATION, MULCHING (OR OTHER TEMPORARY NON-VEGETATIVE BMP), SEEDING/PLANTING, OR SCHEDULING STABILIZATION MEASURES TO BE FULLY INSTALLED AND COMPLETED WITHIN THE 7 DAY TIMEFRAME.

ALL EXPOSED SOILS WITHIN 200 FEET AND DRAINING TO A DNR PUBLIC WATERS MUST BE STABILIZED WITHIN 24 HOURS OF TEMPORARILY OR PERMANENTLY CEASING WORK DURING THE FISH SPAWNING PERIOD. TEMPORARY STOCKPILES WITHOUT SIGNIFICANT SILT, CLAY, OR ORGANIC COMPONENTS (E.G., CLEAN AGGREGATE STOCKPILES, DEMOLITION CONCRETE STOCKPILES, SAND STOCKPILES) AND THE CONSTRUCTED BASE COMPONENTS OF ROADS, PARKING LOTS AND SIMILAR SURFACES ARE EXEMPT FROM THIS REQUIREMENT.

TEMPORARY & PERMANENT EROSION CONTROL BMPS

RAPID STABILIZATION METHOD #1: THIS METHOD SHALL CONSIST OF TYPE 1 MULCH (2 TON PER ACRE) WITH DISC ANCHORING BE SPREAD IN AREAS THAT HAVE BEEN UNWORKED FOR 7 DAYS. THIS METHOD SHALL BE USED ON SLOPES OF 3:1 AND LESS. OPERATOR MUST APPLY MULCH IN A UNIFORM PATTERN OVER THE DISTURBED SOILS TO ACHIEVE A MINIMUM OF 90% GROUND COVER.

RAPID STABILIZATION METHOD #2: THIS METHOD SHALL CONSIST OF TYPE 3 MULCH (1.5 TON PER ACRE) OR 3884 TYPE HYDRAULIC MULCH (750 LBS PER ACRE) BE SPREAD IN AREAS THAT HAVE BEEN UNWORKED FOR 7 DAYS. THIS METHOD SHALL BE USED ON SLOPES GREATER THAN 3:1.

RAPID STABILIZATION METHOD #4: THIS METHOD SHALL CONSIST OF CATEGORY 3 EROSION CONTROL BLANKET (NATURAL NET ONLY) IN COMBINATION WITH MNDOT SEED MIX 22-111 (2 LBS PER 100 SQ. YD.) AND TYPE 3 SLOW RELEASE FERTILIZER (8 LBS PER 100 SQ. YD.). THIS IS AN ACCEPTABLE BMP FOR DISTURBED AREAS ADJACENT TO ENVIRONMENTALLY SENSITIVE AREAS, SURFACE WATERS, AND WITHIN THE LAST 200 FEET OF DITCH BOTTOMS.

SOD/SEED MIX: MNDOT SEED MIX AND/OR SOD WITH APPROPRIATE MNDOT FERTILIZER WILL BE USED AS PERMANENT COVER FOR ALL EXPOSED GROUND AREAS PER MANUFACTURERS SPECIFICATIONS.

EROSION CONTROL BLANKET: A MNDOT CLASSIFIED EROSION CONTROL BLANKET SHALL BE ADDED IN COMBINATION WITH SEED MIX/FERTILIZER TO ALL AREAS SLOPED AT 3:1 OR GREATER, HIGH PRIORITY AREAS, AS WELL AS IN OR NEAR DITCH BOTTOMS TO ESTABLISH PERMANENT EROSION CONTROL

HYDRO-MULCH TYPE #5: HYDRAULIC SOIL STABILIZER IN COMBINATION WITH A TACKIFIER WILL BE INSTALLED PER MANUFACTURES SPECIFICATIONS TO EXPOSED SOILS AREAS TO PROVIDE TEMPORARY LONG-TERM OR PERMANENT COVER FOR VEGETATION ESTABLISHMENT.

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I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

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GOLDEN VALLEY, MINNESOTA
SWPPP NOTES
TURF ESTABLISHMENT & EROSION CONTROL
S.P. 2723-117/C.P. 10-04/S.A.P. 027-702-021/S.A.P. 128-020-016/S.A.P. 128-020-017/ S.A.P. 128-410-001/S.A.P. 128-411-006/S.A.P. 128-420-001/S.A.P. 027-666-018

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TEMPORARY WINTER COVER: AREAS OF EXPOSED SOILS THAT ARE NOT COMPLETED BEFORE THE WINTER WILL BE STABILIZED WITH TYPE #3 (CERTIFIED AS WEED FREE) ADJACENT TO WETLAND OR STORMWATER PONDS. ALL OTHER DISTURBED AREAS SHALL BE STABILIZED WITH TYPE #1 MULCH, UNLESS ALTERNATIVE MORE PROTECTIVE BMPS ARE SPECIFIC WITHIN THE SWPPP. ALL EXPOSED SOILS SHALL BE STABILIZED BEFORE CONSTRUCTION IS COMPLETED FOR THE SEASON.

STORM SEWER OUTLETS: PIPE OUTLETS MUST HAVE TEMPORARY OR PERMANENT ENERGY DISSIPATION WITHIN 24 HOURS AFTER HYDRAULIC CONNECTION TO A RECEIVING SURFACE WATER.

CONSTRUCTION ACTIVITY REQUIREMENTS (PART IV.): SEDIMENT CONTROL, PROCEDURES, & MAINTENANCE STANDARDS

PERIMETER CONTROL BMPS SHALL BE INSTALLED ON ALL DOWN GRADIENT PERIMETERS AND UPGRADIENT OF ANY BUFFER AREAS, PRIOR TO INITIATING UPGRADIENT LAND DISTURBANCE ACTIVITIES. UPLAND PERIMETER CONTROLS BMPS SHALL BE PLACED AS CLOSE AS POSSIBLE TO FOLLOW A SINGLE CONTOUR ELEVATION. IF THE DOWN GRADIENT TREATMENT SYSTEM IS OVERLOADED, ADDITIONAL UP GRADIENT SEDIMENT CONTROL PRACTICES OR REDUNDANT BMPS MUST BE INSTALLED TO ELIMINATE THE OVERLOADING, AND THE SWPPP MUST BE AMENDED TO IDENTIFY THESE ADDITIONAL PRACTICES. ALL SILT FENCES MUST BE REPAIRED, REPLACED, OR MAINTAINED WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES 1/2 OF THE HEIGHT OF THE FENCE. ALL REPAIRS MUST BE COMPLETED BY THE END OF THE NEXT BUSINESS DAY AFTER DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS. FLOATATION SILT CURTAIN SHALL BE INSTALLED AS CLOSE TO THE SHORELINE AS POSSIBLE FOR SHORELAND/IN-WATER SHORT-TERM CONSTRUCTION ACTIVITIES. AFTER THE SHORT-TERM ACTIVITY IS COMPLETE, AN UPLAND PERIMETER CONTROL MUST BE INSTALLED IF EXPOSED SOILS CONTINUE TO DRAIN TO THE SURFACE WATER.

SURFACE WATERS INCLUDING OFF-SITE AND DOWNSTREAM DRAINAGE DITCHES, CATCH BASINS, AND CONVEYANCE SYSTEMS, MUST BE INSPECTED FOR EVIDENCE OF EROSION AND SEDIMENT DEPOSITION. THE REMOVAL AND STABILIZATION OF EXPOSED SOILS MUST TAKE PLACE WITHIN SEVEN (7) DAYS OF DISCOVERY UNLESS PRECLUDED BY LEGAL, REGULATORY, OR PHYSICAL ACCESS CONSTRAINTS. IF PRECLUDED, REMOVAL AND STABILIZATION MUST TAKE PLACE WITHIN SEVEN (7) CALENDAR DAYS OF OBTAINING ACCESS. THE PERMITTEES ARE RESPONSIBLE FOR CONTACTING ALL LOCAL, REGIONAL, STATE, AND FEDERAL AGENCIES AND RECEIVING ANY APPLICABLE PERMITS, PRIOR TO CONDUCTING ANY WORK.

TEMPORARY & PERMANENT SEDIMENT CONTROL BMPS

SEDIMENT CONTROL LOGS: BIOROLLS WILL BE STAKED IN ACCORDANCE TO THE PLAN SHEETS WHERE THE SITE SLOPES OFF OF THE PROJECT LOCATION AT A 1:3 OR LESS AS WELL AS AROUND TEMPORARY STOCKPILES. BIOROLLS WILL BE FILLED WITH A STRAW MATERIAL AND CLEANED OUT OR REPLACED WHEN THE SEDIMENT REACHES 1/2 OF THE HEIGHT OF THE ROLL.

MACHINE SLICED SILT FENCE: SILT FENCE WILL BE PLACED IN ACCORDANCE TO THE PLAN SHEETS WHERE THE SITE SLOPES OFF OF THE PROJECT LOCATION AT MORE THAN 1:3 GRADIENT AS WELL AS NEAR CRITICAL WETLAND AREAS WITH A SECONDARY REDUNDANT BMP. THE BMP WILL BE CLEANED OUT OR REPLACED WHEN THE SEDIMENT REACHES 1/2 THE HEIGHT OF THE FENCE.

FLOTATION SILT CURTAIN: FLOTATION SILT CURTAIN WILL BE IN PLACE WHERE PROJECT ACTIVITIES ARE LOCATED WITHIN OR NEAR A SURFACE WATER/WETLAND. THE CURTAIN WILL BE LOCATED AS TIGHT TO THE SHORELINE AS POSSIBLE AND NOT TO EXCEED 1/4 THE STREAM WIDTH. DOWN GRADIENT PERIMETER CONTROL MUST STILL BE INSTALLED AS WELL AS AN ADDITIONAL REDUNDANT BMP WHEN WORK IS WITHIN 50 FEET OF THE SURFACE WATER.

TEMPORARY SEDIMENTATION BASINS: WHERE 10 OR MORE ACRES OF DISTURBED SOIL DRAIN TO A COMMON LOCATION, A TEMPORARY SEDIMENT BASIN MUST BE PROVIDED PRIOR TO RUNOFF LEAVING THE CONSTRUCTION SITE OR ENTERING SURFACE WATERS. ALL TEMPORARY BASINS SHALL BE CONSTRUCTED AND OPERATIONAL PRIOR TO GRADING 10 OR MORE ACRES. BASINS MUST PROVIDE A LIVE STORAGE VOLUME FROM A 2-YEAR 24-HOUR STORM EVENT FROM EACH ACRE (DISTURBED AND UNDISTURBED) DRAINING TO THE BASIN. AT A MINIMUM, IF CALCULATIONS ARE NOT PERFORMED THE BASIN SHALL PROVIDE 3,600 CUBIC FEET OF LIVE STORAGE FROM EACH ACRE. THE BASIN INTAKE MUST BE DESIGNED TO WITHDRAW WATER FROM THE SURFACE, PREVENT SHORT CIRCUITING AND THE DISCHARGE OF FLOATING DEBRIS, INCLUDE AN EMERGENCY OVERFLOW ABOVE THE LIVE STORAGE ELEVATION, AND PROVIDE ENERGY DISSIPATION AT THE BASIN OUTLET. BASINS MUST BE DRAINED AND SEDIMENT REMOVED WHEN THE DEPTH OF COLLECTED SEDIMENT IN THE BASIN REACHES 1/2 THE LIVE STORAGE VOLUME. DRAINAGE AND REMOVAL MUST BE COMPLETED WITHIN 72 HOURS OF DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS. IF A BASIN IS INFEASIBLE WITHIN THE PROJECT LIMITS, EQUIVALENT SEDIMENT CONTROL BMPS MUST BE IMPLEMENTED AND DOCUMENTED IN THE SWPPP OR SWPPP AMENDMENT.

TEMPORARY STOCKPILES: ALL STOCKPILES MUST HAVE SILT FENCE OR EQUIVALENT PERIMETER SEDIMENT CONTROLS IMPLEMENTED AND MAINTAINED AT ALL TIMES. PILES CANNOT BE PLACED IN BUFFER AREAS OR SURFACE WATERS, INCLUDING STORMWATER CONVEYANCES SUCH AS CURB AND GUTTER SYSTEMS, OR CONDUITS AND DITCHES UNLESS THERE IS A BYPASS IN PLACE TO PREVENT STORMWATER RUN-ON INTO THE STOCKPILE.

CONSTRUCTION SITE ENTRANCE/VEHICLE TRACKING: OPERATOR MUST MINIMIZE SEDIMENT FROM LEAVING THE CONSTRUCTION SITE (OR ONTO STREETS WITHIN THE SITE) BY IMPLEMENTING BMPS SUCH AS ROCK PADS, SLASH MULCH, CONCRETE OR STEEL WASH RACKS, OR EQUIVALENT SYSTEMS. STREET SWEEPING MUST BE USED DAILY DURING CONSTRUCTION OPERATIONS IF SUCH BMPS ARE NOT ADEQUATE TO PREVENT SEDIMENT FROM BEING TRACKED ONTO THE STREET. TRACKED SEDIMENT MUST BE REMOVED FROM ALL PAVED SURFACES (ON AND OFF-SITE) WITHIN 24 HOURS OF DISCOVERY, OR SOONER AS DIRECTED BY THE PROJECT OWNER. MULTIPLE STREET SWEEPINGS AT THE OPERATOR'S EXPENSE MAY BE REQUIRED ON ALL ENTRY/EXIT POINTS TO THE SITE AT THE DISCRETION OF THE PROJECT OWNER.

INLET PROTECTION: ALL STORM DRAIN INLETS (INCLUDING DOWN GRADIENT, OFF-SITE) MUST BE PROTECTED BY APPROPRIATE BMPS DURING CONSTRUCTION UNTIL ALL SOURCES WITH POTENTIAL FOR DISCHARGING TO THE INLET HAVE BEEN STABILIZED. SILT FENCE IS NOT AN ACCEPTABLE CATCH BASIN INLET PROTECTION BMP. CONTACTOR SHALL CLEAN, REMOVE AND DISPOSE OF SEDIMENT, AND/OR REPLACE STORM DRAIN INLET PROTECTION ON A ROUTINE BASIS TO ENSURE THE DEVICE IS FULLY FUNCTIONAL PRIOR TO THE NEXT FORECASTED PRECIPITATION EVENT (30% OR GREATER). INLET PROTECTION MAY BE REMOVED FOR A PARTICULAR INLET IF A SPECIFIC SAFETY CONCERN (STREET FLOODING/FREEZING) HAS BEEN IDENTIFIED AND THE PERMITTEE(S) HAS RECEIVED WRITTEN CORRESPONDENCE FROM THE JURISDICTIONAL AUTHORITY (E.G. CITY/COUNTY/TOWNSHIP/MNDOT ENGINEER) VERIFYING THE NEED FOR REMOVAL. WRITTEN CORRESPONDENCE MUST BE DOCUMENTED IN THE SWPPP AND AVAILABLE WITHIN 72 HOURS UPON REQUEST. PERMISSION TO REMOVE INLET PROTECTION BASED ON A SPECIFIC SAFETY CONCERN MUST STILL BE OBTAINED FROM THE LOCAL JURISDICTIONAL AUTHORITY WITHIN 30 DAYS OF REMOVAL.

CHEMICAL TREATMENTS: OPERATOR MUST AMEND THE SWPPP TO INCLUDE THE INTENDED USES AND LOCATIONS OF FLOCCULANTS, POLYMERS, AND OTHER SEDIMENTATION TREATMENT CHEMICALS. CHEMICAL TREATMENTS MAY ONLY BE APPLIED IN AREAS WHERE TREATED STORMWATER IS DIRECTED TO A RECEIVING SEDIMENT CONTROL SYSTEM (NOT DIRECTLY DISCHARGED TO NATURAL WATER BODIES). THIS INCLUDES DOCUMENTING THE EXPECTED SOIL TYPES, MANUFACTURER'S RECOMMENDED DOSING, APPLICATION RATES/QUANTITIES, AND MONITORING RESULTS (TURBIDITY, PH).

TEMPORARY/PERMANENT DRAINAGE DITCHES & SWALES: THE NORMAL WETTED PERIMETER (2-YEAR, 24-HOUR PRECIPITATION EVENT) OF ANY TEMPORARY OR PERMANENT DRAINAGE DITCH, CHANNEL, OR SWALE THAT DRAINS WATER FROM ANY PORTION OF THE CONSTRUCTION SITE, OR DIVERTS WATER AROUND THE SITE, MUST BE STABILIZED WITHIN THE LAST 200 LINEAL FEET FROM THE PROPERTY EDGE, OR FROM THE POINT OF DISCHARGE INTO ANY SURFACE WATER WITHIN 24 HOURS OF CONNECTION. THE REMAINING PORTIONS OF THE CHANNEL MUST BE STABILIZED WITHIN 14 DAYS. ALL STORMWATER CONVEYANCE CHANNELS MUST USE EROSION CONTROL AND VELOCITY DISSIPATION DEVICES WITHIN AND ALONG THE LENGTH OF THE CHANNEL AND AT ANY OUTLETS. TEMPORARY OR PERMANENT DITCHES OR SWALES THAT ARE BEING USED AS A TEMPORARY SEDIMENT CONTAINMENT SYSTEM (WITH PROPERLY DESIGNED ROCK DITCH CHECKS, BIO ROLLS, SILT DIKES ETC.) DO NOT NEED TO BE STABILIZED. THESE AREAS MUST BE STABILIZED WITHIN 24 HOURS AFTER NO LONGER BEING USED AS A SEDIMENT CONTAINMENT SYSTEM. MULCH, HYDROMULCH, TACKIFIER, OR POLYARCYLAMIDE BELOW THE WETTED PERIMETER OF A DITCH, SWALE, OR OTHER SURFACE WATER CONVEYANCE ARE NOT ACCEPTABLE STABILIZATION.

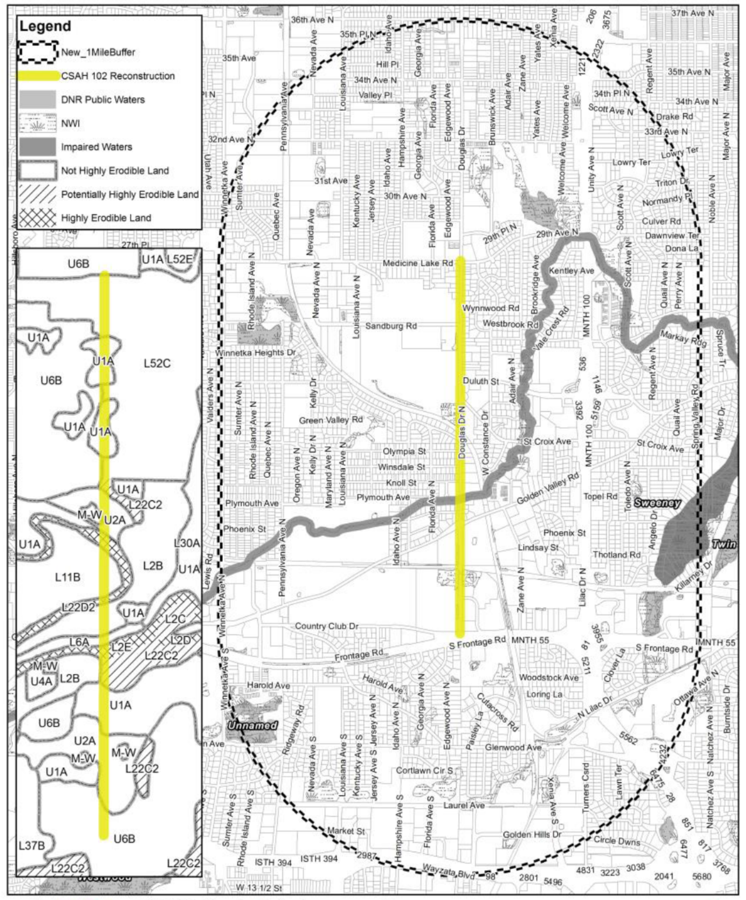
DUST CONTROL: DUST FROM THE SITE WILL BE CONTROLLED BY INCREASED STREET SWEEPING AND/OR USING A MOBILE PRESSURE-TYPE DISTRIBUTOR TRUCK TO APPLY POTABLE WATER TO DISTURBED AREAS. THE MOBILE UNIT WILL APPLY WATER AT A RATE NECESSARY TO PREVENT RUNOFF AND PONDING.

DEWATERING, STREAM DIVERSION, AND BASIN DRAINING

DEWATERING, STREAM DIVERSION, OR BASIN DRAINING IS ANTICIPATED DURING CONSTRUCTION OF THIS PROJECT. WHEN DEWATERING OR BASIN DRAINING IS REQUIRED, THE CONTRACTOR SHALL SUBMIT A DEWATERING PLAN AND NARRATIVE TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO UNDERTAKING THESE ACTIVITIES. DEWATERING PLAN MUST INCLUDE BMP'S TO PREVENT SEDIMENT TRANSPORT, EROSION, AND ADVERSE IMPACTS TO DOWNSTREAM RECEIVING WATERS. THE DEWATERING PLAN MUST ALSO INCLUDE ANY SPECIFIC CHEMICAL TREATMENTS (FLOC, POLYMERS, ETC.) THAT WILL BE USED. IF AN APPROVED TMDL WASTE LOAD ALLOCATION IS ESTABLISHED FOR CONSTRUCTION ACTIVITIES ON A RECEIVING WATERBODY, THE OPERATOR MUST IMPLEMENT ALL NECESSARY BMP'S TO MEET THE ASSIGNED WLA. THE DEWATERING PLAN AND DNR APPROPRIATIONS PERMIT WILL BECOME PART OF THE SWPPP. WATER THAT IS TURBID OR HAS SEDIMENT MUST BE DISCHARGED TO A TEMPORARY OR PERMANENT SEDIMENTATION BASIN (AND/OR OTHER APPROPRIATE BMPS) ON THE PROJECT SITE WHENEVER POSSIBLE. DISCHARGE FROM THE TEMPORARY OR PERMANENT SEDIMENTATION BASIN MUST BE VISUALLY CHECKED TO ENSURE ADEQUATE TREATMENT IS OBTAINED IN THE BASIN AND THAT NUISANCE CONDITIONS (SEE MINN. R. 7050.0210, SUBP. 2), IMPACTS TO WETLANDS, AND EROSION IN RECEIVING CHANNELS OR ON DOWNSLOPE PROPERTIES WILL NOT RESULT FROM THE DISCHARGE. THE DISCHARGE MUST BE DISPERSED OVER NATURAL ROCK RIPRAP, SAND BAGS, PLASTIC SHEETING, OR OTHER ACCEPTED ENERGY DISSIPATION MEASURES. ADEQUATE SEDIMENTATION CONTROL MEASURES AND ADDITIONAL FILTRATION BMPS ARE REQUIRED FOR DISCHARGE WATER THAT CONTAINS SUSPENDED SOLIDS, OIL, OR GREASE.

FINAL STABILIZATION

FINAL STABILIZATION IS ACHIEVED WHEN NPDES CGP PARTS IV.G.1-5. ARE COMPLETED PRIOR TO SUBMISSION OF THE NOTICE OF TERMINATION TO MPCA. SEE PERMANENT EROSION CONTROL PRACTICES FOR SPECIFIC METHODS AND APPLICATIONS.



SWPPP: Douglas Drive Improvements
City of Golden Valley, MN

0 2,000 Feet

NO.	DATE	BY	CHK	REVISIONS

Design By: AJP
Plan By: ACJ
Checked By: DRS
Approved By: AJP

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY 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 - ANDREW PLOWMAN, PE LICENSED PROFESSIONAL ENGINEER - MARK ERICHSON, PE

DATE: 10/22/15 LIC. NO: 44200 40886

WSB & Associates, Inc.
701 Xenia Avenue South, Suite 300
Minneapolis, MN 55416
www.wsbeng.com
763-541-4800 - Fax 763-541-1700
INFRASTRUCTURE | ENGINEERING | PLANNING | CONSTRUCTION

city of golden valley

Douglas Drive Improvements
Golden Valley, Minnesota

Hennepin

GOLDEN VALLEY, MINNESOTA

SWPPP NOTES
TURF ESTABLISHMENT & EROSION CONTROL
S.P. 2723-117/C.P. 10-04/S.A.P. 027-702-021/S.A.P. 128-020-016/S.A.P. 128-020-017/ S.A.P. 128-410-001/S.A.P. 128-411-006/S.A.P. 128-420-001/S.A.P. 027-666-018

Date Printed: 10/23/2015
WSB Filename: K:\01701-110\Cad\Plan\1701te00.dgn

XP-SWMM Existing Conditions

The existing XP-SWMM model is the portion of the Bassett Creek Watershed Model that drains to Honeywell Pond and outlets into Bassett Creek. The existing conditions XP-SWMM model was updated to better reflect the existing from Douglas Drive to Bassett Creek. Two 42 inch links were added to the downstream end of link PQ29-MH127. The first link is 429 feet and placed at a 1.08 percent grade while the second link is 884 feet and placed at a 0.75 percent grade. Data for these two links was gathered from record drawings of the system from Douglas Drive to Bassett Creek.

In the exiting conditions the 100-year 24-hour HWL of the pond is 884.6 feet (see **Figure 1**) and the flow rate to Bassett Creek is 85.7 cubic feet per second (see **Figure 2**).

Figure 1: Existing Honeywell Pond 10 and 100 year – 24 hour HWLs

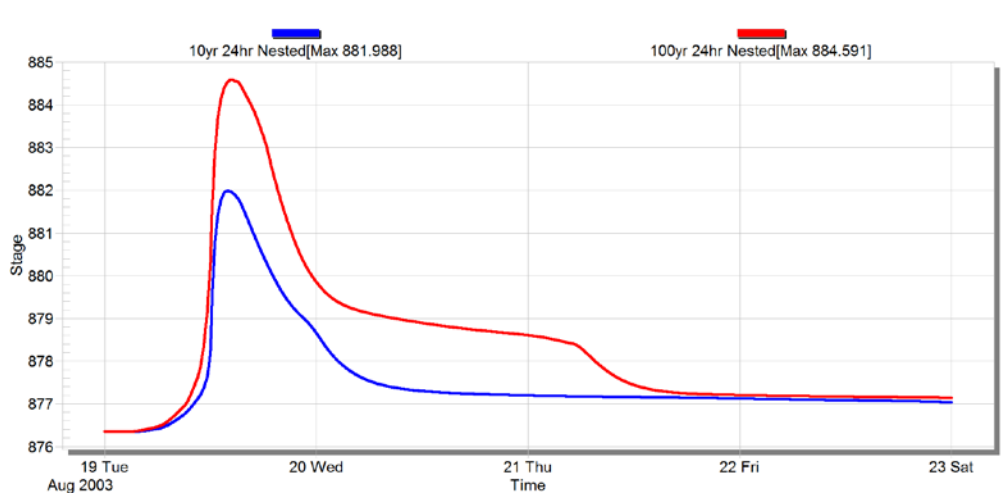
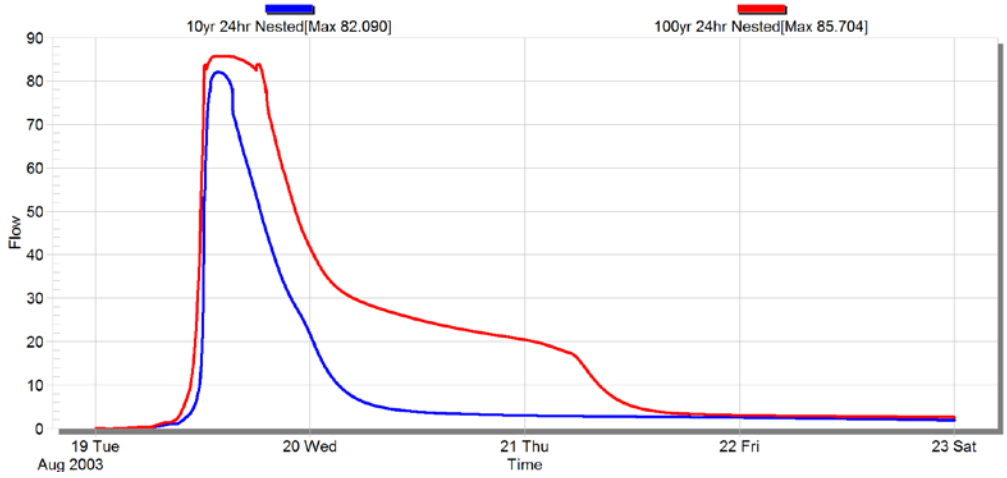
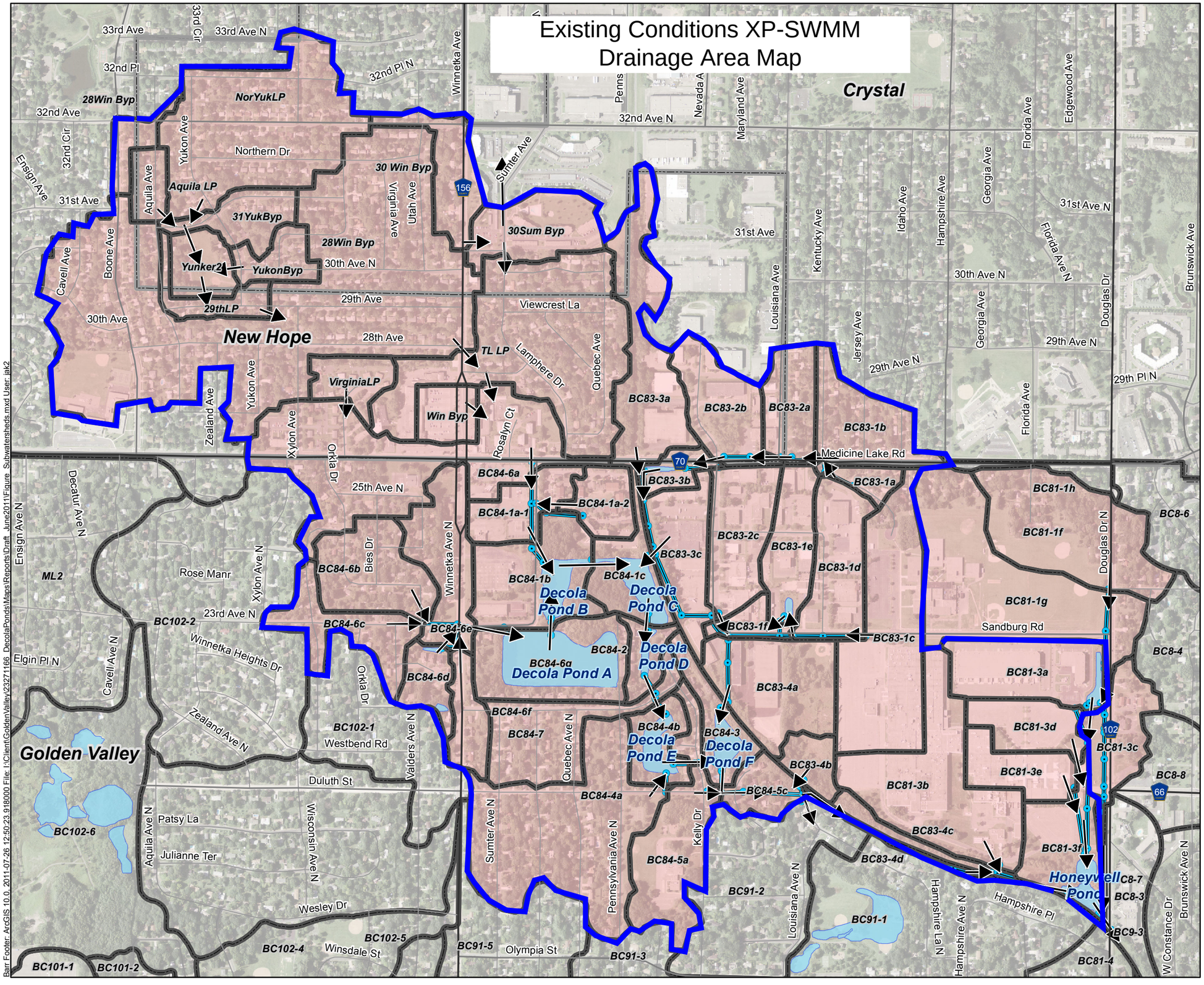


Figure 2: Existing Flow Rates (10 and 100 year – 24 hour) to Bassett Creek



Existing Conditions XP-SWMM Drainage Area Map



Flow Direction

Subwatersheds

Municipality

Modeled Storm Sewer Nodes

Modeled Storm Sewer Pipes

DeCola Ponds Study Area

Existing Drainage Areas

0 375 750 Feet

Figure 2

Subwatersheds and Flow Direction

DeCola Ponds Area
Flood Mitigation Study

XP-SWMM Proposed Conditions

The proposed model was updated to reflect the stage storage from the grading plan for Honeywell Pond. The weir and 24-inch storm sewer were also added to the model.

In the proposed conditions the 100-year 24-hour HWL of the pond is 884.6 feet (see **Figure 3**) and the flow rate to Bassett Creek is 85.4 cubic feet per second (see **Figure 4**).

Figure 3: Proposed Honeywell Pond 10 and 100-year 24-hour HWLs

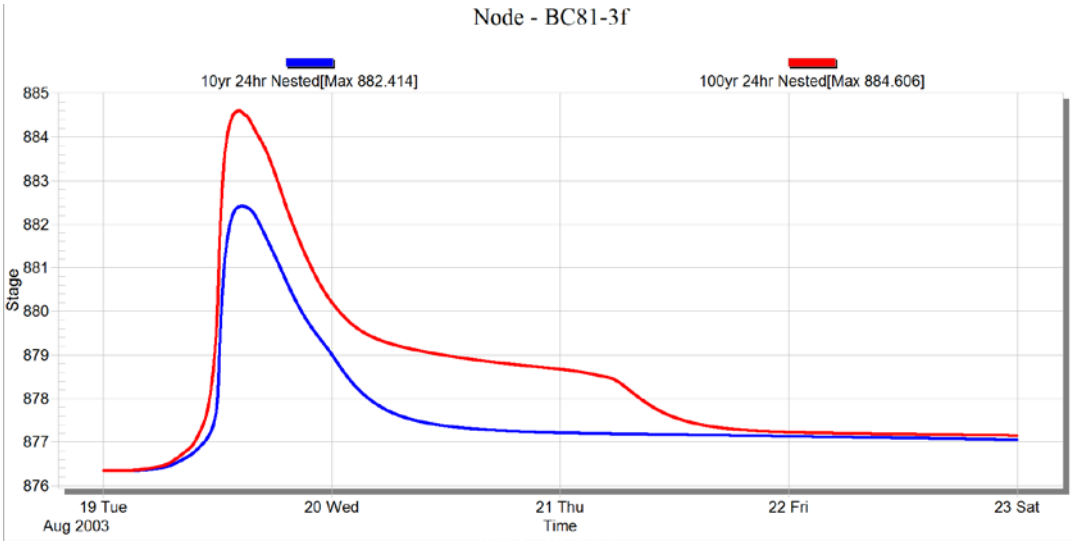
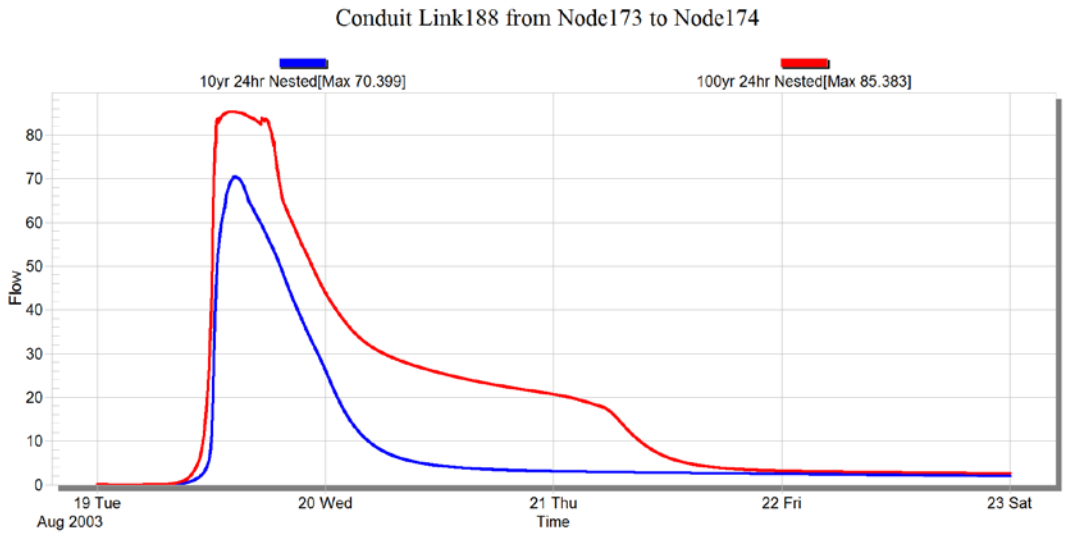
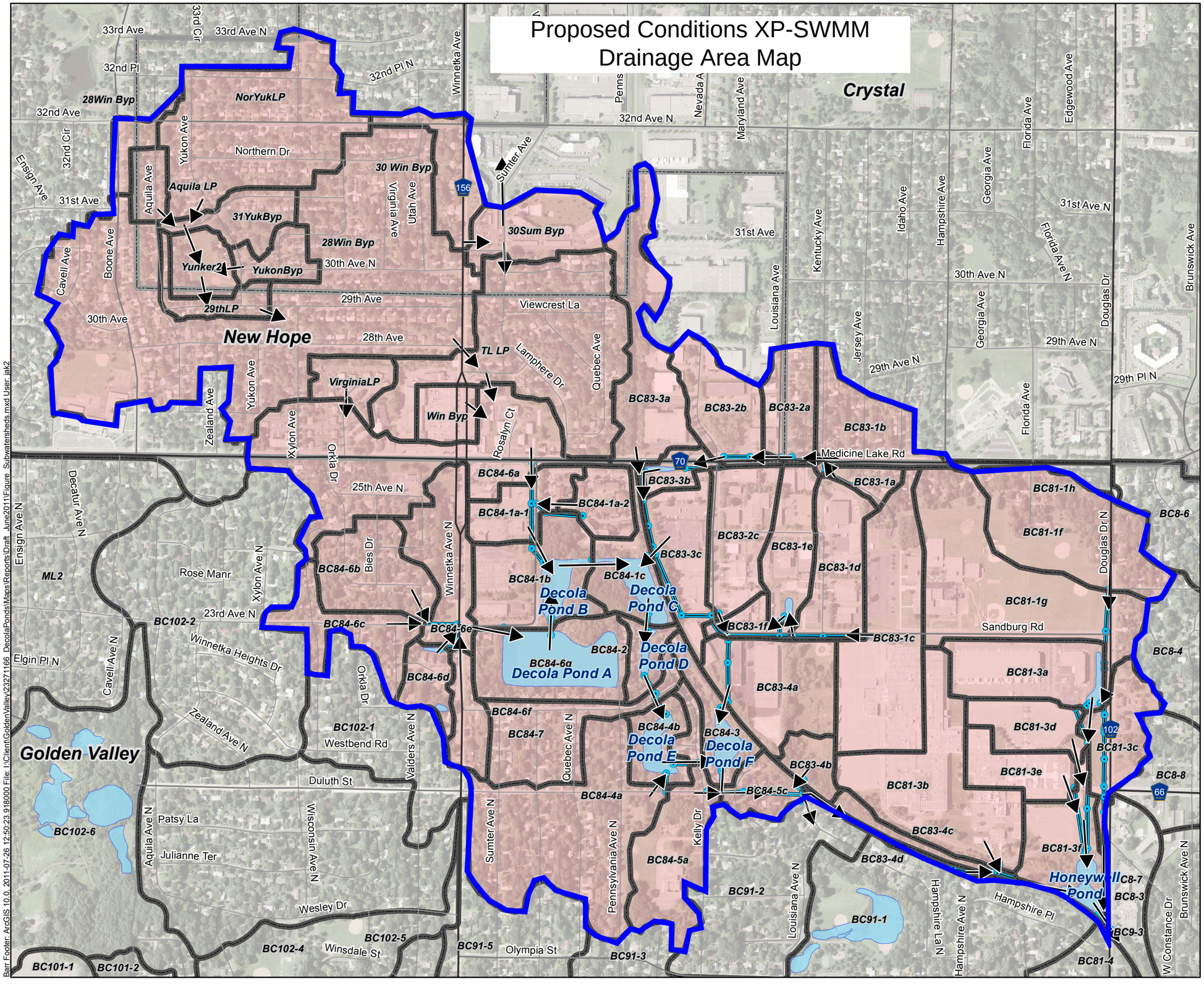


Figure 4: Proposed Flow Rates (10- and 100-year 24-hour) to Bassett Creek



Proposed Conditions XP-SWMM Drainage Area Map



Barr Footer: ArcGIS 10.0, 2011-07-26 12:50:23.918000 File: I:\Client\GoldenValley\23271166_DecolaPonds\Maps\Reports\Draft_June2011\Figure_Subwatersheds.mxd User: jak2

- Flow Direction
- Subwatersheds
- Municipality
- Modeled Storm Sewer Nodes
- Modeled Storm Sewer Pipes
- DeCola Ponds Study Area
- Proposed Drainage Areas

0 375 750 Feet

Figure 2

Subwatersheds and Flow Direction

DeCola Ponds Area
Flood Mitigation Study

XP-SWMM Results Summary

The changes to the pond from existing to proposed conditions include:

- The NWL of the pond does not change from the exiting to proposed conditions.
- The dead pool volume increases from 3.7 to 11.2 acre-feet.
- The live pool volume increases from 22 to 24.7 acre-feet.
- The total drainage area of the pond increases from 702 to 768 acres.
- The 100-year 24-hour HWL does not increase.
- The peak flow rate to Bassett Creek decreases from 85.7 to 85.4 cfs.

Table 1: XP-SWMM Results Summary

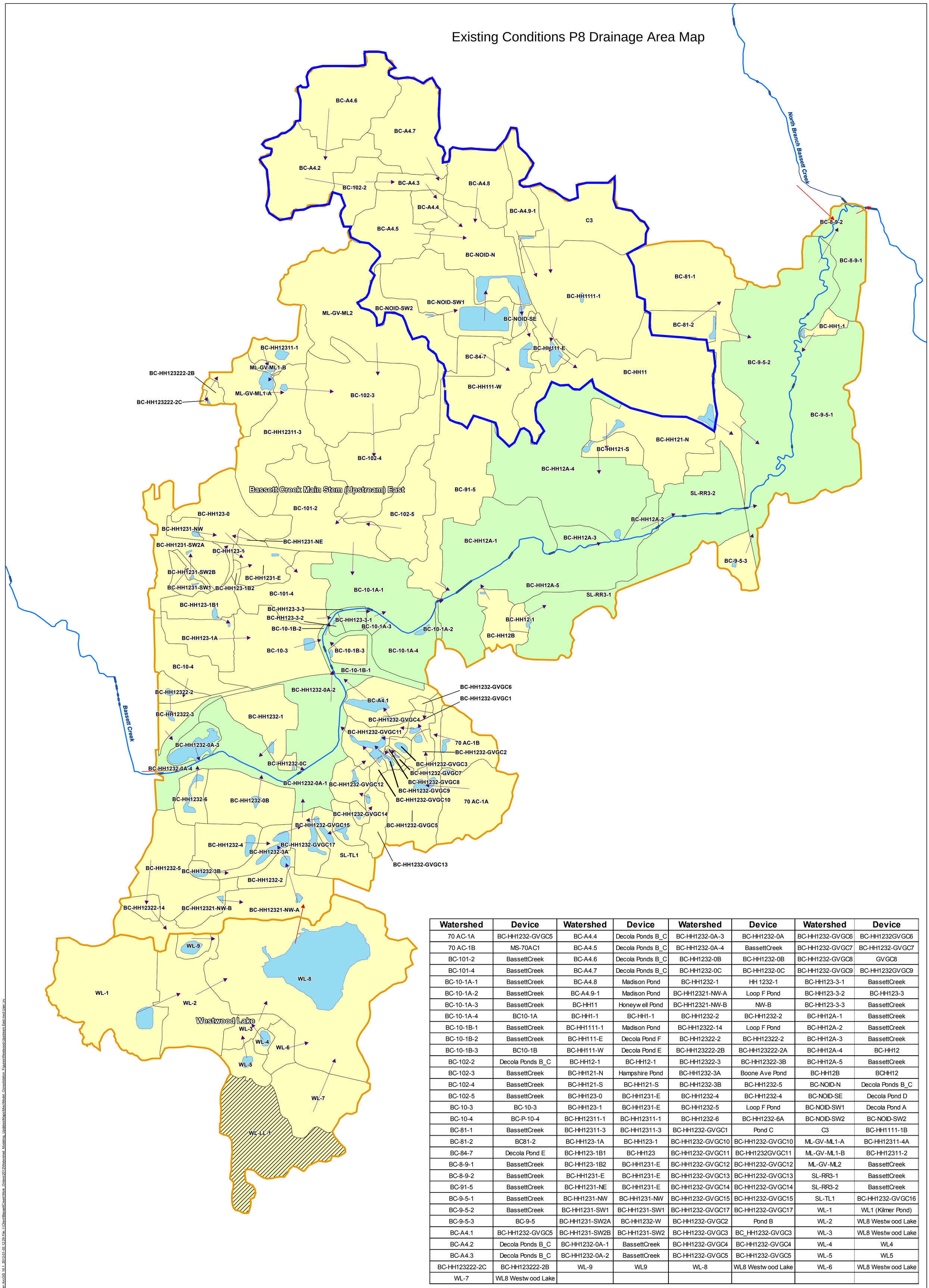
	Existing Condition	Proposed Condition
NWL (Outlet Elevation) (ft)	876.4	876.4
100 Year - 24 hour HWL (Atlas 14) (ft)	884.6	884.6
Peak Flow Rate to Basset Creek (cfs)	85.7	85.4
Pond Surface Area at HWL (ac)	3.6	3.6
Dead Pool Volume (ac-ft)	3.7	11.2
Live Pool Volume (ac-ft)	22	24.7
Honeywell Pond Drainage Area (ac)	702	768

C. P8 Results (Honeywell Pond Phosphorus Removals)

P8 Existing Conditions

The existing P8 model is the portion of the Bassett Creek Watershed Model that drains to Honeywell Pond and outlets into Bassett Creek. The existing conditions model was not altered. The existing conditions drainage area map can be found on the next page.

Existing Conditions P8 Drainage Area Map



Watershed	Device	Watershed	Device	Watershed	Device	Watershed	Device
70 AC-1A	BC-HH1232-GVGC5	BC-A4.4	Decola Ponds B_C	BC-HH1232-0A-3	BC-HH1232-0A	BC-HH1232-GVGC6	BC-HH1232GVGC6
70 AC-1B	MS-70AC1	BC-A4.5	Decola Ponds B_C	BC-HH1232-0A-4	BassettCreek	BC-HH1232-GVGC7	BC-HH1232-GVGC7
BC-101-2	BassettCreek	BC-A4.6	Decola Ponds B_C	BC-HH1232-0B	BC-HH1232-0B	BC-HH1232-GVGC8	GVGC8
BC-101-4	BassettCreek	BC-A4.7	Decola Ponds B_C	BC-HH1232-0C	BC-HH1232-0C	BC-HH1232-GVGC9	BC-HH1232GVGC9
BC-10-1A-1	BassettCreek	BC-A4.8	Madison Pond	BC-HH1232-1	HH 1232-1	BC-HH123-3-1	BassettCreek
BC-10-1A-2	BassettCreek	BC-A4.9-1	Madison Pond	BC-HH12321-NW-A	Loop F Pond	BC-HH123-3-2	BC-HH123-3
BC-10-1A-3	BassettCreek	BC-HH11	Honeyw ell Pond	BC-HH12321-NW-B	NW-B	BC-HH123-3-3	BassettCreek
BC-10-1A-4	BC10-1A	BC-HH1-1	BC-HH1-1	BC-HH1232-2	BC-HH1232-2	BC-HH12A-1	BassettCreek
BC-10-1B-1	BassettCreek	BC-HH1111-1	Madison Pond	BC-HH12322-14	Loop F Pond	BC-HH12A-2	BassettCreek
BC-10-1B-2	BassettCreek	BC-HH111-E	Decola Pond F	BC-HH12322-2	BC-HH12322-2	BC-HH12A-3	BassettCreek
BC-10-1B-3	BC10-1B	BC-HH111-W	Decola Pond E	BC-HH123222-2B	BC-HH123222-2A	BC-HH12A-4	BC-HH12
BC-102-2	Decola Ponds B_C	BC-HH12-1	BC-HH12-1	BC-HH12322-3	BC-HH12322-3B	BC-HH12A-5	BassettCreek
BC-102-3	BassettCreek	BC-HH121-N	Hampshire Pond	BC-HH1232-3A	Boone Ave Pond	BC-HH12B	BCHH12
BC-102-4	BassettCreek	BC-HH121-S	BC-HH121-S	BC-HH1232-3B	BC-HH1232-5	BC-NOID-N	Decola Ponds B_C
BC-102-5	BassettCreek	BC-HH123-0	BC-HH1231-E	BC-HH1232-4	BC-HH1232-4	BC-NOID-SE	Decola Pond D
BC-10-3	BC-10-3	BC-HH123-1	BC-HH1231-E	BC-HH1232-5	Loop F Pond	BC-NOID-SW1	Decola Pond A
BC-10-4	BC-P-10-4	BC-HH12311-1	BC-HH12311-1	BC-HH1232-6	BC-HH1232-6A	BC-NOID-SW2	BC-NOID-SW2
BC-81-1	BassettCreek	BC-HH12311-3	BC-HH12311-3	BC-HH1232-GVGC1	Pond C	C3	BC-HH1111-1B
BC-81-2	BC81-2	BC-HH123-1A	BC-HH123-1	BC-HH1232-GVGC10	BC-HH1232-GVGC10	ML-GV-ML1-A	BC-HH12311-4A
BC-84-7	Decola Pond E	BC-HH123-1B1	BC-HH123	BC-HH1232-GVGC11	BC-HH1232GVGC11	ML-GV-ML1-B	BC-HH12311-2
BC-8-9-1	BassettCreek	BC-HH123-1B2	BC-HH1231-E	BC-HH1232-GVGC12	BC-HH1232-GVGC12	ML-GV-ML2	BassettCreek
BC-8-9-2	BassettCreek	BC-HH1231-E	BC-HH1231-E	BC-HH1232-GVGC13	BC-HH1232-GVGC13	SL-RR3-1	BassettCreek
BC-91-5	BassettCreek	BC-HH1231-NE	BC-HH1231-E	BC-HH1232-GVGC14	BC-HH1232-GVGC14	SL-RR3-2	BassettCreek
BC-9-5-1	BassettCreek	BC-HH1231-NW	BC-HH1231-NW	BC-HH1232-GVGC15	BC-HH1232-GVGC15	SL-TL1	BC-HH1232-GVGC16
BC-9-5-2	BassettCreek	BC-HH1231-SW1	BC-HH1231-SW1	BC-HH1232-GVGC17	BC-HH1232-GVGC17	WL-1	WL1 (Kilmer Pond)
BC-9-5-3	BC-9-5	BC-HH1231-SW2A	BC-HH1232-W	BC-HH1232-GVGC2	Pond B	WL-2	WL8 Westw ood Lake
BC-A4.1	BC-HH1232-GVGC5	BC-HH1231-SW2B	BC-HH1231-SW2	BC-HH1232-GVGC3	BC_HH1232-GVGC3	WL-3	WL8 Westw ood Lake
BC-A4.2	Decola Ponds B_C	BC-HH1232-0A-1	BassettCreek	BC-HH1232-GVGC4	BC-HH1232-GVGC4	WL-4	WL4
BC-A4.3	Decola Ponds B_C	BC-HH1232-0A-2	BassettCreek	BC-HH1232-GVGC5	BC-HH1232-GVGC5	WL-5	WL5
BC-HH123222-2C	BC-HH123222-2B	WL-9	WL9	WL-8	WL8 Westw ood Lake	WL-6	WL8 Westw ood Lake
WL-7	WL8 Westw ood Lake						

Watershed
Landlocked Watershed
Watershed Intersected by Stream
Ponds
Existing Drainage Areas

N

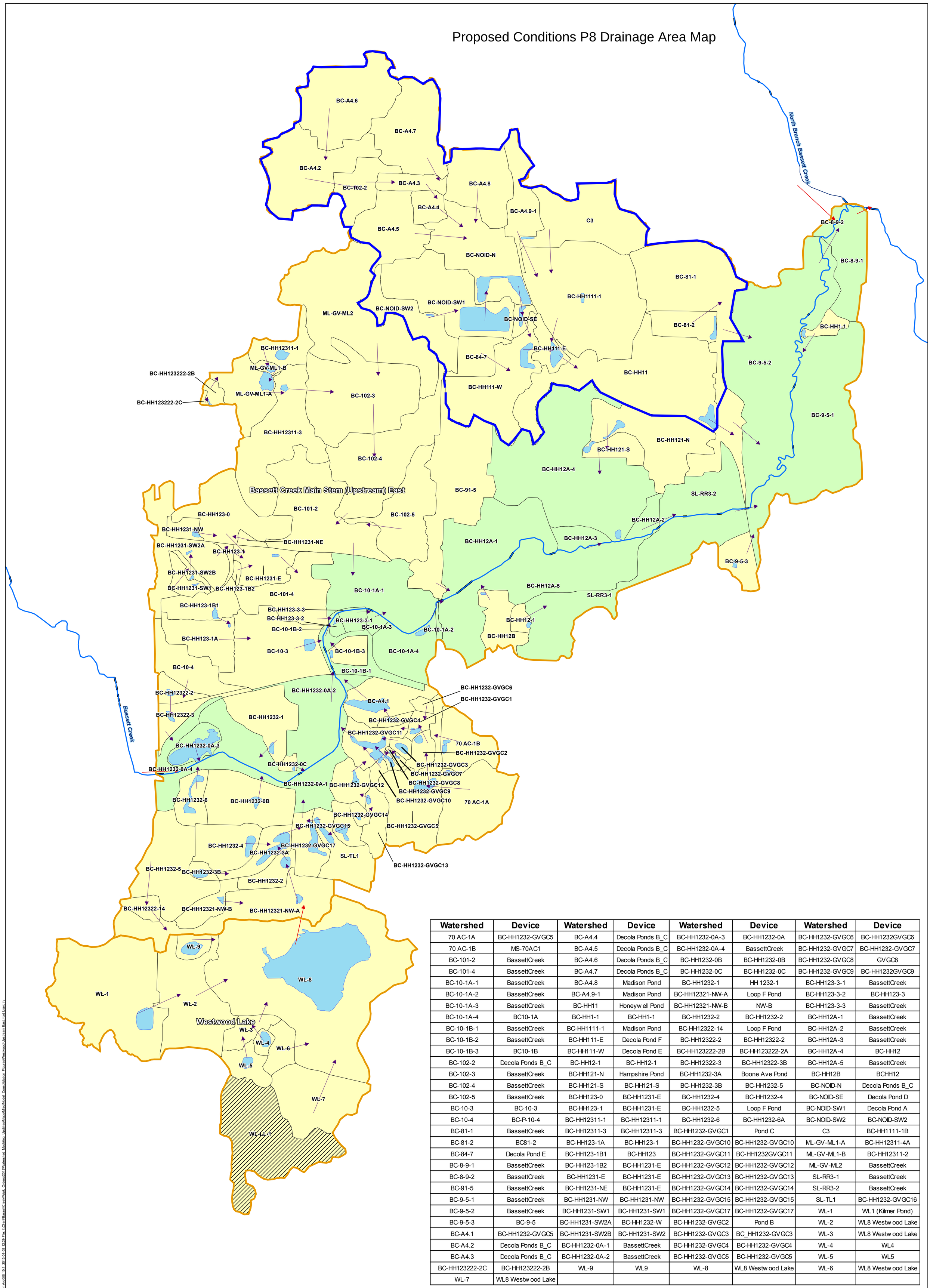
Feet
0 750 1,500 2,250 3,000

WESTWOOD-UPSTREAM EAST
Water Modeling Updates
Bassett Creek Watershed Management Commission

P8 Proposed Conditions

The proposed conditions model was updated to reflect the low flow diversion system. A general device was added with the normal flows routed to Honeywell Pond and the spillway flows routed to Bassett Creek. The stage discharge data was exported from the proposed XP-SWMM model. These stage discharge rates were imported into the general device to reflect the flows of the low flow diversion system. The proposed conditions drainage area map can be found on the next page.

Proposed Conditions P8 Drainage Area Map



Watershed	Device	Watershed	Device	Watershed	Device	Watershed	Device
70 AC-1A	BC-HH1232-GVGC5	BC-A4.4	Decola Ponds B_C	BC-HH1232-0A-3	BC-HH1232-0A	BC-HH1232-GVGC6	BC-HH1232GVGC6
70 AC-1B	MS-70AC1	BC-A4.5	Decola Ponds B_C	BC-HH1232-0A-4	BassettCreek	BC-HH1232-GVGC7	BC-HH1232-GVGC7
BC-101-2	BassettCreek	BC-A4.6	Decola Ponds B_C	BC-HH1232-0B	BC-HH1232-0B	BC-HH1232-GVGC8	GVGC8
BC-101-4	BassettCreek	BC-A4.7	Decola Ponds B_C	BC-HH1232-0C	BC-HH1232-0C	BC-HH1232-GVGC9	BC-HH1232GVGC9
BC-10-1A-1	BassettCreek	BC-A4.8	Madison Pond	BC-HH1232-1	HH 1232-1	BC-HH123-3-1	BassettCreek
BC-10-1A-2	BassettCreek	BC-A4.9-1	Madison Pond	BC-HH12321-NW-A	Loop F Pond	BC-HH123-3-2	BC-HH123-3
BC-10-1A-3	BassettCreek	BC-HH11	Honeyw ell Pond	BC-HH12321-NW-B	NW-B	BC-HH123-3-3	BassettCreek
BC-10-1A-4	BC10-1A	BC-HH1-1	BC-HH1-1	BC-HH1232-2	BC-HH1232-2	BC-HH12A-1	BassettCreek
BC-10-1B-1	BassettCreek	BC-HH1111-1	Madison Pond	BC-HH12322-14	Loop F Pond	BC-HH12A-2	BassettCreek
BC-10-1B-2	BassettCreek	BC-HH111-E	Decola Pond F	BC-HH12322-2	BC-HH12322-2	BC-HH12A-3	BassettCreek
BC-10-1B-3	BC10-1B	BC-HH111-W	Decola Pond E	BC-HH123222-2B	BC-HH123222-2A	BC-HH12A-4	BC-HH12
BC-102-2	Decola Ponds B_C	BC-HH12-1	BC-HH12-1	BC-HH12322-3	BC-HH12322-3B	BC-HH12A-5	BassettCreek
BC-102-3	BassettCreek	BC-HH121-N	Hampshire Pond	BC-HH1232-3A	Boone Ave Pond	BC-HH12B	BCHH12
BC-102-4	BassettCreek	BC-HH121-S	BC-HH121-S	BC-HH1232-3B	BC-HH1232-5	BC-NOID-N	Decola Ponds B_C
BC-102-5	BassettCreek	BC-HH123-0	BC-HH1231-E	BC-HH1232-4	BC-HH1232-4	BC-NOID-SE	Decola Pond D
BC-10-3	BC-10-3	BC-HH123-1	BC-HH1231-E	BC-HH1232-5	Loop F Pond	BC-NOID-SW1	Decola Pond A
BC-10-4	BC-P-10-4	BC-HH12311-1	BC-HH12311-1	BC-HH1232-6	BC-HH1232-6A	BC-NOID-SW2	BC-NOID-SW2
BC-81-1	BassettCreek	BC-HH12311-3	BC-HH12311-3	BC-HH1232-GVGC1	Pond C	C3	BC-HH1111-1B
BC-81-2	BC81-2	BC-HH123-1A	BC-HH123-1	BC-HH1232-GVGC10	BC-HH1232-GVGC10	ML-GV-ML1-A	BC-HH12311-4A
BC-84-7	Decola Pond E	BC-HH123-1B1	BC-HH123	BC-HH1232-GVGC11	BC-HH1232GVGC11	ML-GV-ML1-B	BC-HH12311-2
BC-8-9-1	BassettCreek	BC-HH123-1B2	BC-HH1231-E	BC-HH1232-GVGC12	BC-HH1232-GVGC12	ML-GV-ML2	BassettCreek
BC-8-9-2	BassettCreek	BC-HH1231-E	BC-HH1231-E	BC-HH1232-GVGC13	BC-HH1232-GVGC13	SL-RR3-1	BassettCreek
BC-91-5	BassettCreek	BC-HH1231-NE	BC-HH1231-E	BC-HH1232-GVGC14	BC-HH1232-GVGC14	SL-RR3-2	BassettCreek
BC-9-5-1	BassettCreek	BC-HH1231-NW	BC-HH1231-NW	BC-HH1232-GVGC15	BC-HH1232-GVGC15	SL-TL1	BC-HH1232-GVGC16
BC-9-5-2	BassettCreek	BC-HH1231-SW1	BC-HH1231-SW1	BC-HH1232-GVGC17	BC-HH1232-GVGC17	WL-1	WL1 (Kilmer Pond)
BC-9-5-3	BC-9-5	BC-HH1231-SW2A	BC-HH1232-W	BC-HH1232-GVGC2	Pond B	WL-2	WL8 Westw ood Lake
BC-A4.1	BC-HH1232-GVGC5	BC-HH1231-SW2B	BC-HH1231-SW2	BC-HH1232-GVGC3	BC_HH1232-GVGC3	WL-3	WL8 Westw ood Lake
BC-A4.2	Decola Ponds B_C	BC-HH1232-0A-1	BassettCreek	BC-HH1232-GVGC4	BC-HH1232-GVGC4	WL-4	WL4
BC-A4.3	Decola Ponds B_C	BC-HH1232-0A-2	BassettCreek	BC-HH1232-GVGC5	BC-HH1232-GVGC5	WL-5	WL5
BC-HH123222-2C	BC-HH123222-2B	WL-9	WL9	WL-8	WL8 Westw ood Lake	WL-6	WL8 Westw ood Lake
WL-7	WL8 Westw ood Lake						

Watershed
Landlocked Watershed
Watershed Intersected by Stream
Ponds
Proposed Drainage Areas

N

Feet
0 750 1,500 2,250 3,000

WESTWOOD-UPSTREAM EAST
Water Modeling Updates
Bassett Creek Watershed Management Commission

P8 Results Summary

The water quality changes from existing to proposed conditions include:

- The increase of total phosphorous removed from 36.3 to 60.9 pounds per year
- The increase of percent total phosphorus removed from 17.3 to 24.5

Table 2: P8 Results Summary

	Existing Condition	Proposed Condition
TP removed (lb/yr)	36.3	60.9
Percent TP Removed (%)	17.3	24.1

D. WATER BALANCE (IRRIGATION AND INFILTRATION CALCULATION)

A water balance was conducted, using 50 years of historical rainfall data, to verify that the volume of water 1.5 feet below the normal water level is sufficient to supply both the Sandburg Fields Irrigation System and the Douglas Drive Underground Infiltration System. The SCS methodology was used to calculate runoff volume. A Curve Number (CN) of 61 was used for the pervious area (499 acres) and a CN of 98 was used for the impervious area (269 acres).

Based on the water balance results, if both the irrigation and infiltration systems operate during the months of May to September, there will be approximately 7 days in the year where the water level in the pond will reach 1.5 feet below the NWL.

Table 3: Irrigation Pumping Demand

Sandburg Fields Irrigation System				
	Irrigation Depth (in)	Site Size (ac)	Volume (Gal)	Water Pumped* (%)
Weekly Irrigation Demand (in)	1.00	17	462,000	85%
Daily Irrigation Demand (in)	0.14	17	66,000	85%
Two Day Demand Applied every other Day (in)	0.29	17	132,000	85%

*Percentage of total water pumped from Honeywell Pond

Table 4: Infiltration Pumping Demand

Douglas Drive Underground Infiltration System				
	Infiltration Rate (in/hr)	Site Size (ac)	Volume (Gal)	Water Pumped* (%)
Weekly Volume Infiltrated	0.40	0.11	84,000	15%
Daily Volume Infiltrated	0.40	0.11	12,000	15%
Two Day Demand Applied every other Day	0.40	0.11	24,000	15%

*Percentage of total water pumped from Honeywell Pond

Based on the total volume irrigated and infiltrated, the estimated Total Phosphorus removal provided by the two systems is approximately 15 pounds per year.

Table 5: Irrigation and Infiltration Estimated Phosphorus Removal

Estimated Phosphorus Removal		
Gal/Year	Estimated Concentration (micrograms/L)	Annual TP Removed (lbs)
11,446,564	160	**15.3**

Pumping for Irrigation of Sandburg Fields

A water balance was developed using available volume in Honeywell Pond (first 1.5 feet below the NWL) and irrigation demand at Sandburg Fields. The water balance assumes 1 inch of irrigation will occur per week over 17 acres of fields. This results in an irrigation demand of 462,000 gallons per week. This allows for the following:

- Volume available to be pumped for approximately 2.5 weeks without rain.
  - The drawdown from upstream storage basins following a rainfall event will extend the timeframe where volume is available for pumping.
- The pumping volume will fully replenish (if down the full 1.5 feet) with a 0.35 inch rain event.

Table 6: Sandburg Irrigation System Design Results

Irrigate Sandburg Learning Center Fields	
	Final Design*
Pumping Below NWL (ft)	1.5
Volume of Water available to pump (ac-ft)	3.37
Acres of irrigation (ac)	17
Volume of water needed to irrigate per season (ac-ft)	28.3
TP removed (lb/yr)	12.3
Seed mix to be used in the 1.5 foot pond bounce zone	33-261

* Assumes 1 inch per week

The Sandburg Fields Irrigation System was design by SRF Consulting Group, Inc. and will be constructed in conjunction with the Honeywell Pond and Douglas Drive Projects. The Sandburg Learning Ctr. Athl. Field Improvements plan set is provided in this report and is located at the end of this section.

Pumping for Douglas Drive Infiltration

The stormwater volume reduction for the project corridor has been provided by an underground infiltration system south of the Honeywell Pond. Water from Honeywell Pond will be pumped to the infiltration system though a 6-inch force main. CenterPoint Energy is abandoning a casing under the rail road tracks. This casing will be used to

house the force main avoiding the need for drilling under the tracks. This system will infiltrate approximately 5-9 acre feet of stormwater each year. The water volume reduction required per the NPDES permit is 1 inch of runoff over the new impervious surface created by the project. The project is creating 2.26 acres of new imperious surface. Therefore, 1 inch of runoff from 2.26 acres of new impervious equates to 3.9 acre feet of water that needs to be infiltrated per year (annualizing 50 years of rainfall data).

$$(32.43\ in - 11.86\ in) * \frac{1\ ft}{12\ in} * 2.26\ ac = 3.87\ ac - ft\ of\ water\ needed\ to\ infiltrate\ per\ year$$

The Douglas Drive system is estimated to infiltrate 5 acre-feet of water each year at a minimum (removal of between 2 and 4 pounds of TP per year). Therefore the infiltration system is adequately sized to meet the volume reduction requirements needed for this project.

CITY OF GOLDEN VALLEY

HENNEPIN COUNTY, MINNESOTA
PLANS FOR:

SANDBURG LEARNING CENTER
ATHLETIC FIELD IMPROVEMENTS

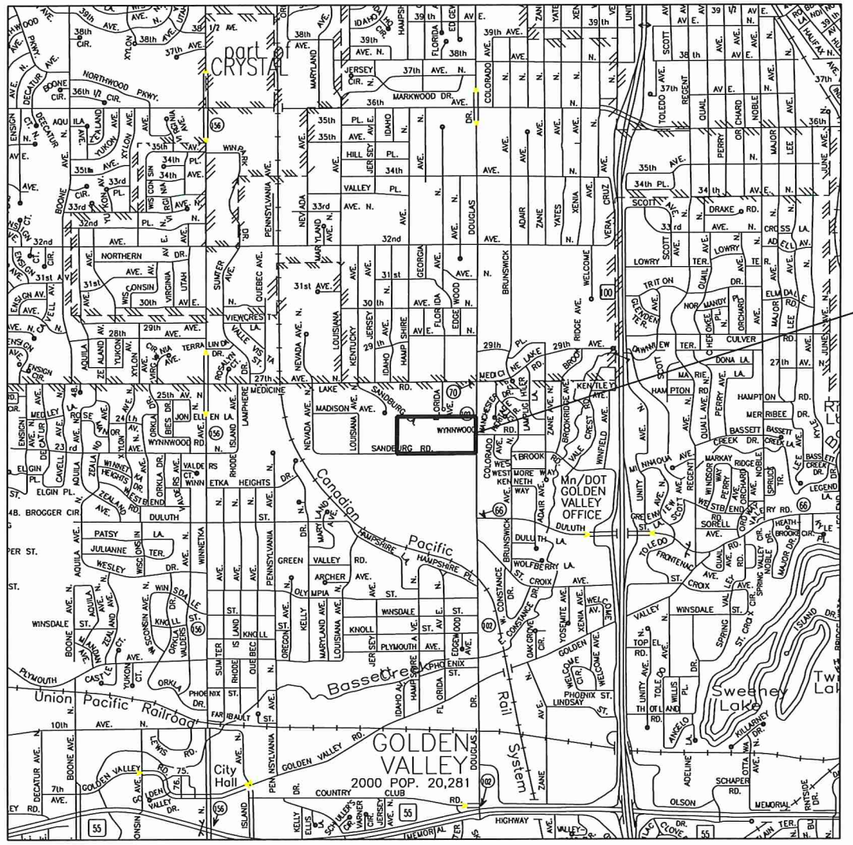
CONSTRUCTION PLANS FOR:
GRADING, CONCRETE CURB, FENCING, IRRIGATION & TURF ESTABLISHMENT

PLAN SYMBOLS

STATE LINE
COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
RIGHT-OF-WAY LINE
PRESENT RIGHT-OF-WAY LINE
CONTROL OF ACCESS LINE
PROPERTY LINE (Except Land Lines)
VACATED PLATTED PROPERTY
CORPORATE OR CITY LIMITS
TRUNK HIGHWAY CENTER LINE
CONC. RETAINING WALL
RAILROAD
RAILROAD RIGHT-OF-WAY LINE
RIVER OR CREEK (NAME)
DRY RUN
DRAINAGE DITCH (SIZE)
DRAIN TILE
CULVERT
DROP INLET
GUARD RAIL
BARBED WIRE FENCE
WOVEN WIRE FENCE
CHAIN LINK FENCE (XC)
RAILROAD SNOW FENCE
STONE WALL OR FENCE
HEDGE
RAILROAD CROSSING SIGN
RAILROAD CROSSING BELL
ELECTRIC WARNING SIGN
CROSSING GATE
MEANDER CORNER
MAIL BOX (MB)
SPRINGS
MARSH
TIMBER
ORCHARD
BRUSH
NURSERY (TIMBER)
CATCH BASIN (C.B.)
FIRE HYDRANT
CATTLE GUARD
OVERPASS (Highway Over)
UNDERPASS (Highway Under)
BRIDGE
BUILDING (One Story Frame) (F-FRAME, S-STONE, B-BRICK, C-CONCRETE, T-TILE, ST-STUCCO)
IRON PIPE OR ROD
MONUMENT (STONE, CONCRETE, OR METAL)
WOODEN HUB
GRAVEL PIT (G)
SAND PIT (S)
BORROW PIT (B)
ROCK QUARRY (Q)

UTILITY SYMBOLS

POWER POLE LINE
TELEPHONE OR TELEGRAPH POLE LINE
JOINT TELEPHONE AND POWER ON POWER POLES / ON TELEPHONE POLES
ANCHOR
STEEL TOWER
STREET LIGHT
PEDESTAL (TELEPHONE CABLE TERMINAL.)
GAS MAIN (G)
WATER MAIN (W)
CONDUIT
TELEPHONE CABLE IN CONDUIT (T)
ELECTRIC CABLE IN CONDUIT (P)
TELEPHONE MANHOLE
ELECTRIC MANHOLE
BURIED TELEPHONE CABLE (T-BUR)
BURIED ELECTRIC CABLE (P-BUR)
AERIAL TELEPHONE CABLE
SEWER, (SANITARY)
SEWER, (STORM)
SEWER MANHOLE
HANDHOLE (HH)



SANDBURG LEARNING CENTER
2400 SANDBURG LANE
GOLDEN VALLEY, MN

INDEX MAP

SCALES
1500'

PLAN REVISIONS		
DATE	SHEET NO.	APPROVED BY

PROJECT LOCATION
COUNTY : HENNEPIN
DISTRICT : METRO

GOVERNING SPECIFICATIONS

THE 2014 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION", SHALL GOVERN.

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE INSTALLED IN ACCORDANCE TO THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD) AND PART VI, "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS".

CITY OF GOLDEN VALLEY STANDARD SPECIFICATIONS FOR UTILITY AND STREET CONSTRUCTION.

INDEX

THIS PLAN CONTAINS 14 SHEETS

SRF Consulting Group, Inc. | Engineers Planners Designers

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE
DATE 05/18/2015 LIC. NO. 45681 PRINT NAME STEWART F. CROSBY

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

C.P. - SHEET NO. 1 OF 14 SHEETS

oellas
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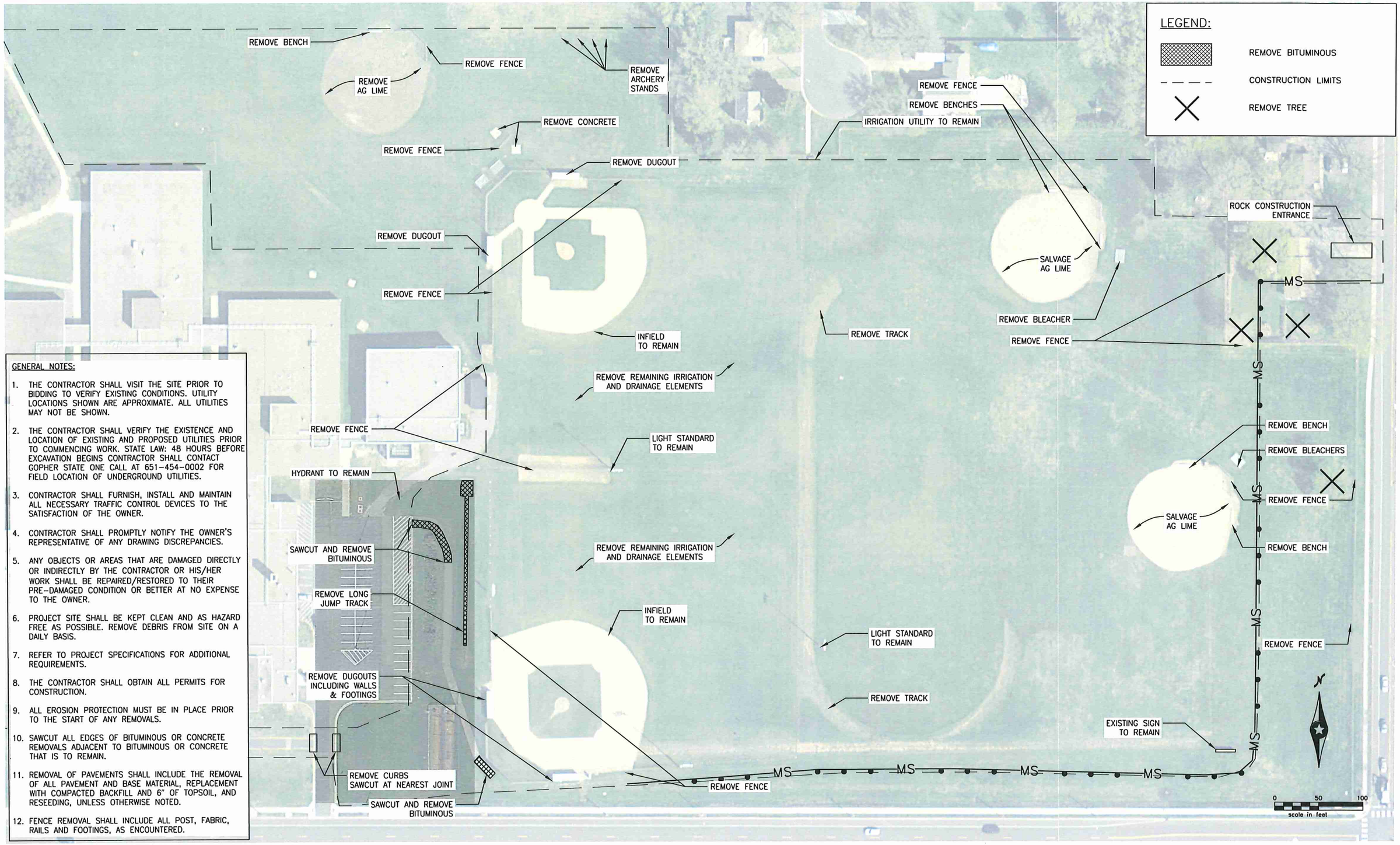
H:\Projects\8759\CAD_BIM\Plan\8759_TSH01.dwg CITY-COUNTY



GENERAL NOTES:

1. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING TO VERIFY EXISTING CONDITIONS. UTILITY LOCATIONS SHOWN ARE APPROXIMATE. ALL UTILITIES MAY NOT BE SHOWN.
2. THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF EXISTING AND PROPOSED UTILITIES PRIOR TO COMMENCING WORK. STATE LAW: 48 HOURS BEFORE EXCAVATION BEGINS CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL AT 651-454-0002 FOR FIELD LOCATION OF UNDERGROUND UTILITIES.
3. CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN ALL NECESSARY TRAFFIC CONTROL DEVICES TO THE SATISFACTION OF THE OWNER.
4. CONTRACTOR SHALL PROMPTLY NOTIFY THE OWNER'S REPRESENTATIVE OF ANY DRAWING DISCREPANCIES.
5. ANY OBJECTS OR AREAS THAT ARE DAMAGED DIRECTLY OR INDIRECTLY BY THE CONTRACTOR OR HIS/HER WORK SHALL BE REPAIRED/RESTORED TO THEIR PRE-DAMAGED CONDITION OR BETTER AT NO EXPENSE TO THE OWNER.
6. PROJECT SITE SHALL BE KEPT CLEAN AND AS HAZARD FREE AS POSSIBLE. REMOVE DEBRIS FROM SITE ON A DAILY BASIS.
7. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
8. THE CONTRACTOR SHALL OBTAIN ALL PERMITS FOR CONSTRUCTION.
9. ALL EROSION PROTECTION MUST BE IN PLACE PRIOR TO THE START OF ANY REMOVALS.
10. SAWCUT ALL EDGES OF BITUMINOUS OR CONCRETE REMOVALS ADJACENT TO BITUMINOUS OR CONCRETE THAT IS TO REMAIN.
11. REMOVAL OF PAVEMENTS SHALL INCLUDE THE REMOVAL OF ALL PAVEMENT AND BASE MATERIAL, REPLACEMENT WITH COMPACTED BACKFILL AND 6" OF TOPSOIL, AND RESEEDING, UNLESS OTHERWISE NOTED.
12. FENCE REMOVAL SHALL INCLUDE ALL POST, FABRIC, RAILS AND FOOTINGS, AS ENCOUNTERED.

NO	DATE	BY	CKD	APPR

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 Landscape Architect under the laws of the State of Minnesota.
Print Name: STEWART F. CROSBY
Date 05/18/2015 License # 45681

STATE AID PROJECT NO.	
STATE PROJECT NO.	
COUNTY PROJECT NO.	
CITY PROJECT NO.	

DRAWN BY A. ELIAS
DESIGNED BY S. CROSBY
CHECKED BY T. WOLD
COMM. NO.8759

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

CITY OF GOLDEN VALLEY
EXISTING CONDITIONS/REMOVALS
SANDBURG LEARNING CTR ATHL FIELD IMPROVEMENTS
GOLDEN VALLEY, MN

SHEET 2 OF 14

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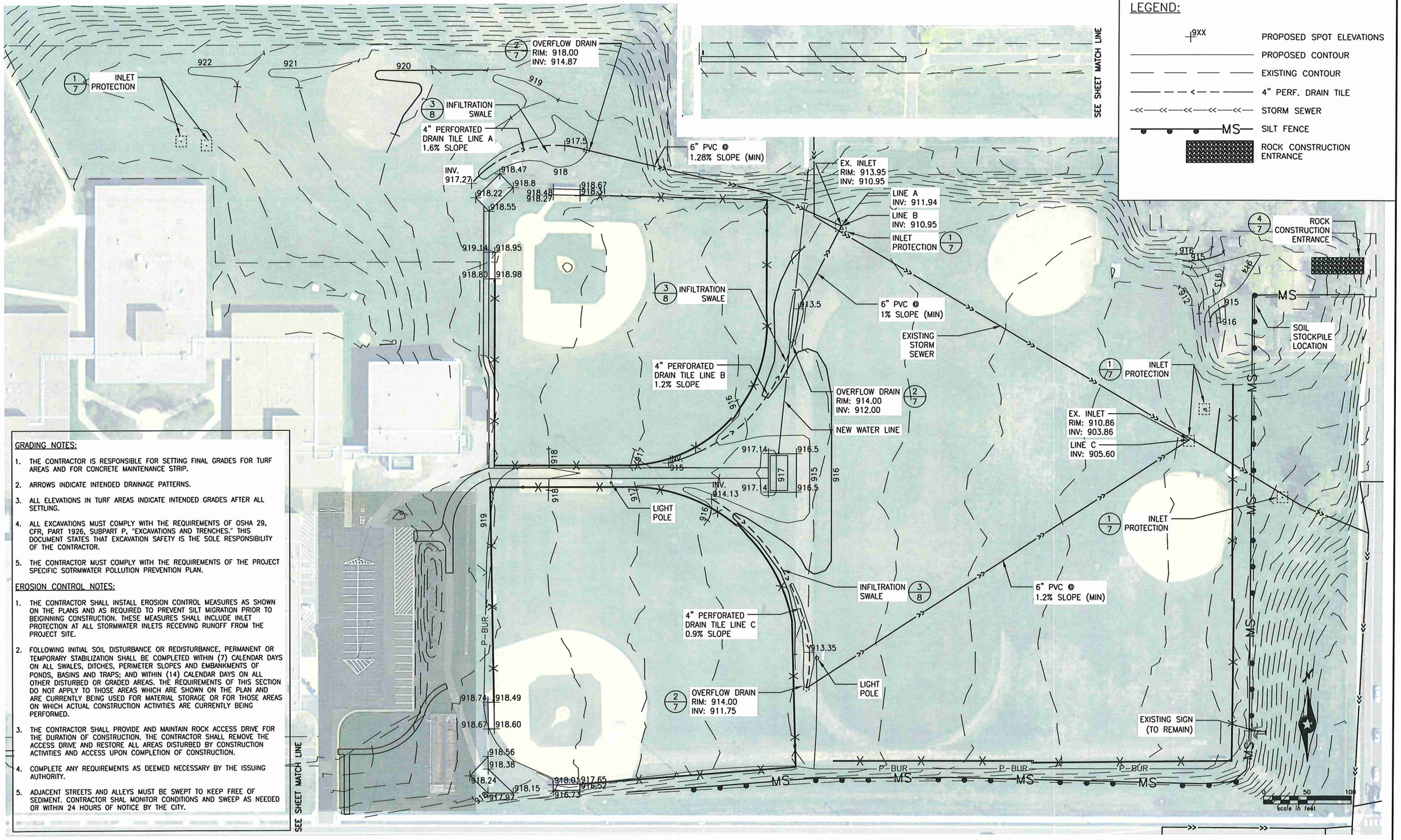

GRADING NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR SETTING FINAL GRADES FOR TURF AREAS AND FOR CONCRETE MAINTENANCE STRIP.
2. ARROWS INDICATE INTENDED DRAINAGE PATTERNS.
3. ALL ELEVATIONS IN TURF AREAS INDICATE INTENDED GRADES AFTER ALL SETTLING.
4. ALL EXCAVATIONS MUST COMPLY WITH THE REQUIREMENTS OF OSHA 29, CFR, PART 1926, SUBPART P, "EXCAVATIONS AND TRENCHES." THIS DOCUMENT STATES THAT EXCAVATION SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
5. THE CONTRACTOR MUST COMPLY WITH THE REQUIREMENTS OF THE PROJECT SPECIFIC SOTRMWATER POLLUTION PREVENTION PLAN.

EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS REQUIRED TO PREVENT SILT MIGRATION PRIOR TO BEIGINNING CONSTRUCTION. THESE MEASURES SHALL INCLUDE INLET PROTECTION AT ALL STORMWATER INLETS RECEIVING RUNOFF FROM THE PROJECT SITE.
2. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN (7) CALENDAR DAYS ON ALL SWALES, DITCHES, PERIMETER SLOPES AND EMBANKMENTS OF PONDS, BASINS AND TRAPS; AND WITHIN (14) CALENDAR DAYS ON ALL OTHER DISTURBED OR GRADED AREAS. THE REQUIREMENTS OF THIS SECTION DO NOT APPLY TO THOSE AREAS WHICH ARE SHOWN ON THE PLAN AND ARE CURRENTLY BEING USED FOR MATERIAL STORAGE OR FOR THOSE AREAS ON WHICH ACTUAL CONSTRUCTION ACTIVITIES ARE CURRENTLY BEING PERFORMED.
3. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ROCK ACCESS DRIVE FOR THE DURATION OF CONSTRUCTION. THE CONTRACTOR SHALL REMOVE THE ACCESS DRIVE AND RESTORE ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES AND ACCESS UPON COMPLETION OF CONSTRUCTION.
4. COMPLETE ANY REQUIREMENTS AS DEEMED NECESSARY BY THE ISSUING AUTHORITY.
5. ADJACENT STREETS AND ALLEYS MUST BE SWEPT TO KEEP FREE OF SEDIMENT. CONTRACTOR SHAL MONITOR CONDITIONS AND SWEEP AS NEEDED OR WITHIN 24 HOURS OF NOTICE BY THE CITY.

NO	DATE	BY	CKD	APPR

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 Landscape Architect under the laws of the State of Minnesota.
Print Name: STEWART F. CROSBY
Date 05/18/2015 License # 45681

DRAWN BY A. ELIAS
DESIGNED BY S. CROSBY
CHECKED BY T. WOLD
COMM. NO.8759

SRF Consulting Group, Inc. — ENGINEERS PLANNERS DESIGNERS

CITY OF GOLDEN VALLEY
GRADING PLAN/EROSION CONTROL
SANDBURG LEARNING CTR ATHL FIELD IMPROVEMENTS
GOLDEN VALLEY, MN

SHEET 3 OF 14

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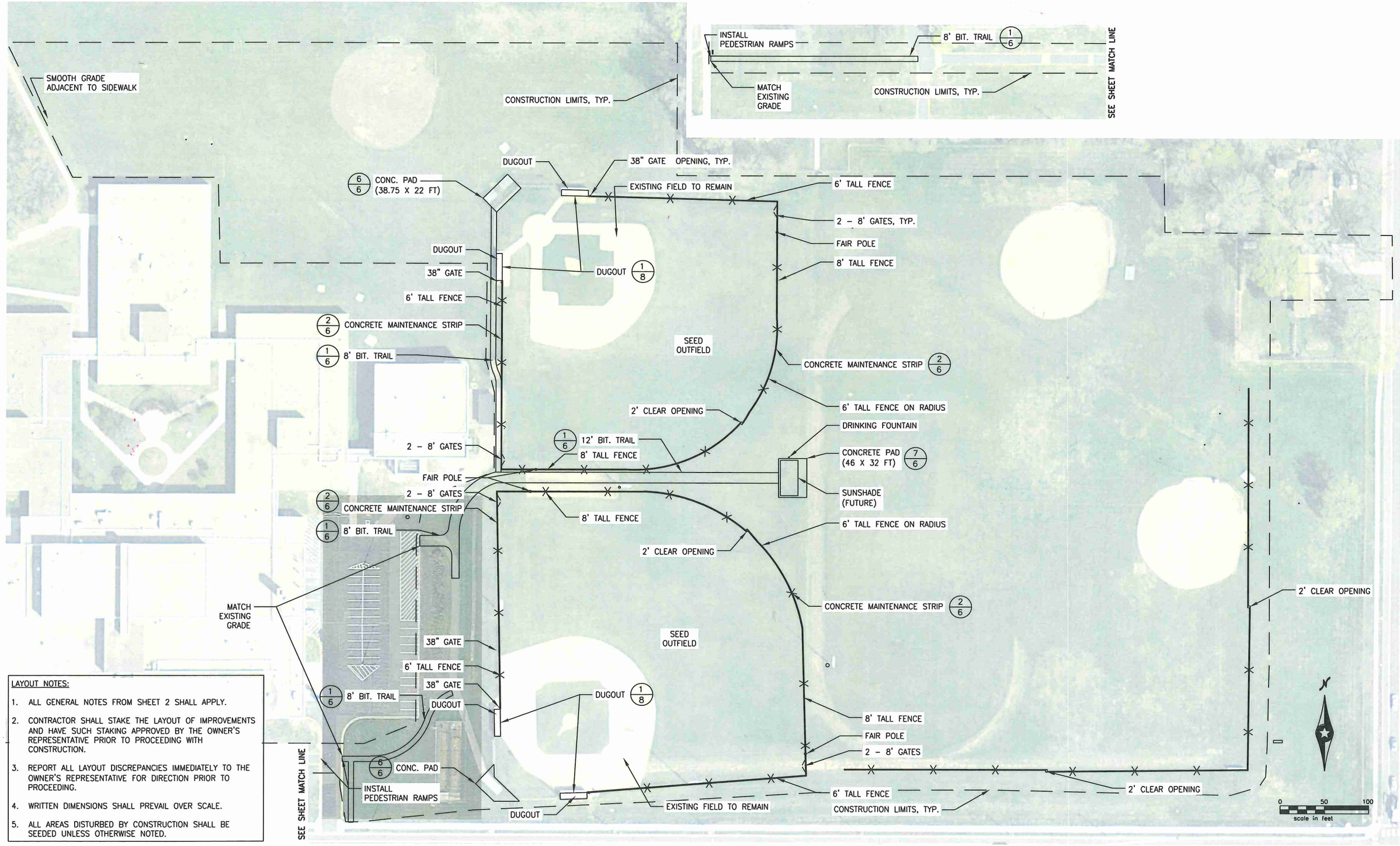

LAYOUT NOTES:

1. ALL GENERAL NOTES FROM SHEET 2 SHALL APPLY.
2. CONTRACTOR SHALL STAKE THE LAYOUT OF IMPROVEMENTS AND HAVE SUCH STAKING APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO PROCEEDING WITH CONSTRUCTION.
3. REPORT ALL LAYOUT DISCREPANCIES IMMEDIATELY TO THE OWNER'S REPRESENTATIVE FOR DIRECTION PRIOR TO PROCEEDING.
4. WRITTEN DIMENSIONS SHALL PREVAIL OVER SCALE.
5. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE SEEDED UNLESS OTHERWISE NOTED.

NO	DATE	BY	CKD	APPR

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COMM. NO.8759

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

CITY OF GOLDEN VALLEY
SITE PLAN
SANDBURG LEARNING CTR ATHL FIELD IMPROVEMENTS
GOLDEN VALLEY, MN

SHEET 4 OF 14

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LEGEND:

ATHLETIC FIELD TURF MIX

RESTORE TURF ADJACENT TO NEW SIDEWALK

SEE SHEET MATCH LINE

RESTORE TURF ADJACENT TO NEW SIDEWALK

RESTORE TURF ADJACENT TO NEW SIDEWALK

SEE SHEET MATCH LINE

LAYOUT NOTES:

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N

0 50 100
scale in feet

NO	DATE	BY	CKD	APPR

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Print Name: STEWART F. CROSBY
Date 05/18/2015 License # 45681

DRAWN BY A. ELIAS
DESIGNED BY S. CROSBY
CHECKED BY T. WOLD
COMM. NO.8759

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

CITY OF GOLDEN VALLEY
TURF ESTABLISHMENT PLAN
SANDBURG LEARNING CTR ATHL FIELD IMPROVEMENTS
GOLDEN VALLEY, MN

SHEET 5 OF 14

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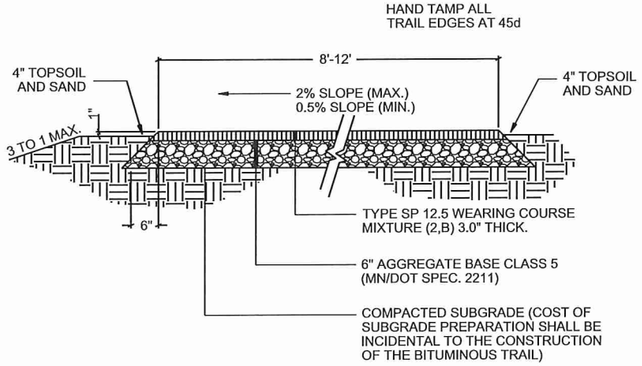
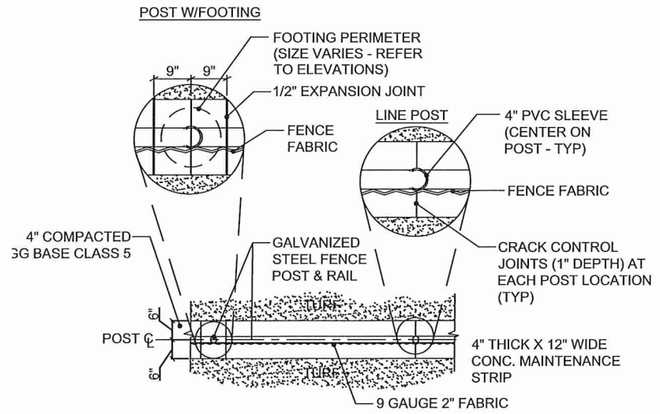


1/6 BITUMINOUS TRAIL (BY OWNER)

NOT TO SCALE



2/6 CONCRETE MAINTENANCE STRIP

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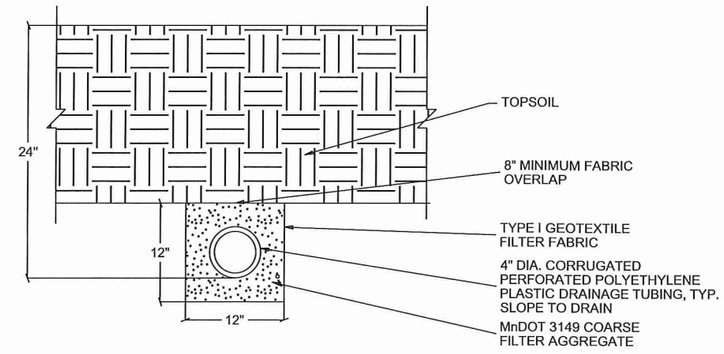
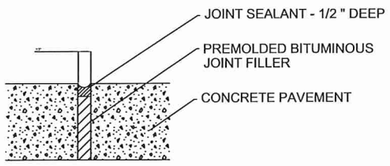


3/6 DRAIN TILE

NOT TO SCALE

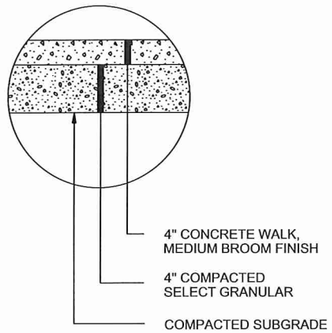


NOTE:

TYP. EXPANSION JOINT SHALL BE 30' O.C. MAXIMUM AND WHERE CONCRETE WALK OR DRIVE ABUTS ANY FIXED OBJECTS (EG. WALLS, CURBS, MANHOLES, BUILDINGS, ETC.).

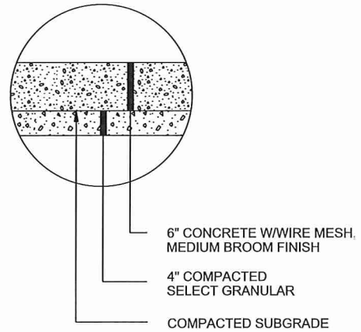
4/6 TYPICAL EXPANSION JOINT

NOT TO SCALE



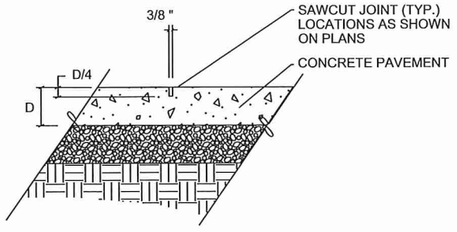
6/6 4" CONCRETE WALK & DUGOUT PAD

NOT TO SCALE



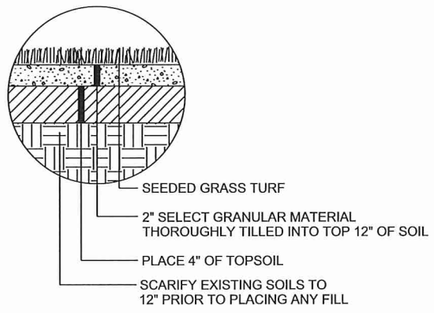
7/6 6" CONCRETE SUNSHADE PAD

NOT TO SCALE



5/6 TYPICAL SCORING JOINT

NOT TO SCALE



8/6 ATHLETIC FIELD SOILS DETAIL (BY OWNER)

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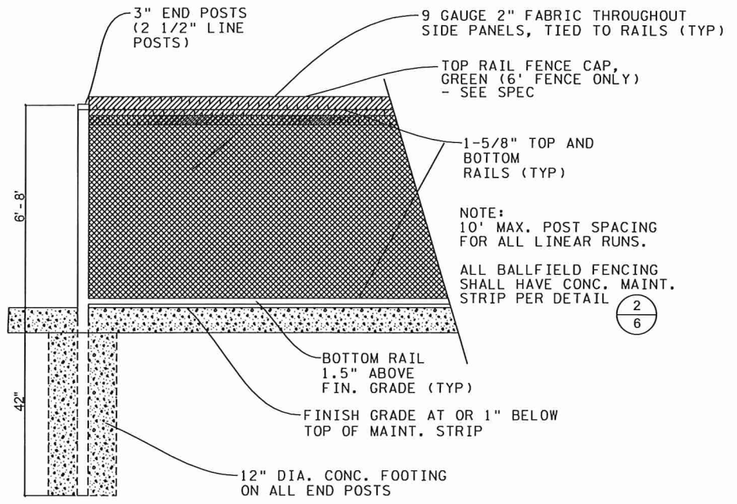

9/6 CHAIN LINK FENCING

NO SCALE

NO	DATE	BY	CKD	APPR

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Print Name: STEWART F. CROSBY

Date 05/18/2015 License # 45681

STATE AID PROJECT NO.	
STATE PROJECT NO.	
COUNTY PROJECT NO.	
CITY PROJECT NO.	

DRAWN BY	A. ELIAS
DESIGNED BY	S. CROSBY
CHECKED BY	T. WOLD
COMM. NO.	8759

SRF Consulting Group, Inc. — Engineers Planners Designers

CITY OF GOLDEN VALLEY

DETAILS

SANDBURG LEARNING CTR ATHL FIELD IMPROVEMENTS

GOLDEN VALLEY, MN

SHEET 6 OF 14

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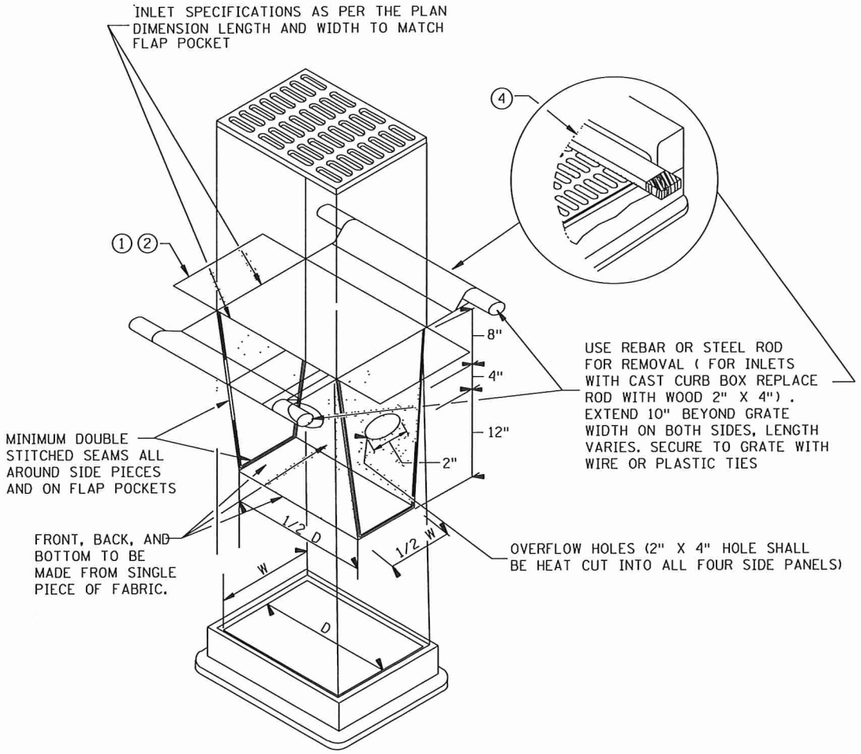


FILTER BAG INSERT ③

(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX)

NOTES:
SEE SPECS. 2573, 3137, 3886 & 3891.

MANUFACTURED ALTERNATIVES LISTED ON Mn/DOT'S APPROVED PRODUCTS LIST MAY BE SUBSTITUTED.

① ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886.

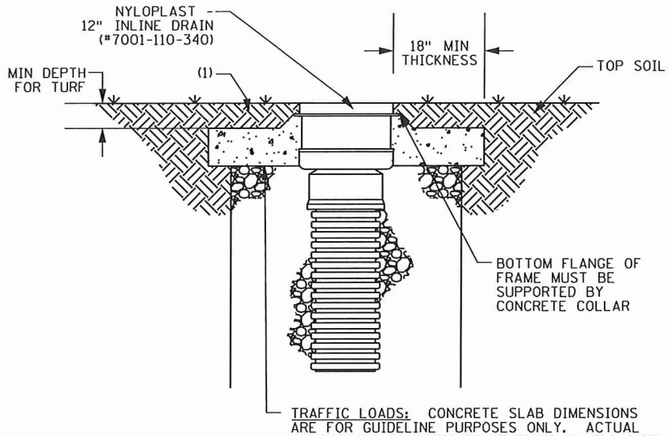
② FINISHED SIZE, INCLUDING POCKETS WHERE REQUIRED SHALL EXTEND A MINIMUM OF 10 INCHES AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.

③ INSTALLATION NOTES:
DO NOT INSTALL FILTER BAG INSERT IN INLETS SHALLOWER THAN 30 INCHES, MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE. THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE OF 3 INCHES BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES. WHERE NECESSARY THE CONTRACTOR SHALL CLINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3 INCH SIDE CLEARANCE.

④ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2 INCH X 4 INCH OR USE A ROCK SOCK OR SAND BAGS IN PLACE OF THE FLAP POCKETS.

⑥ GEOTEXTILE SOCK BETWEEN 4-10 FEET LONG AND 4-6 INCH DIAMETER. SEAM TO BE JOINED BY TWO ROWS OF STITCHING WITH A PLASTIC MESH BACKING OR PROVIDE A HEAT BONDED SEAM (OR APPROVED EQUIVALENT). FILL ROCK LOG WITH OPEN GRADED AGGREGATE CONSISTING OF SOUND DURABLE PARTICLES OF COARSE AGGREGATE CONFORMING TO SPEC. 3137 TABLE 3137-1; CA-3 GRADATION.

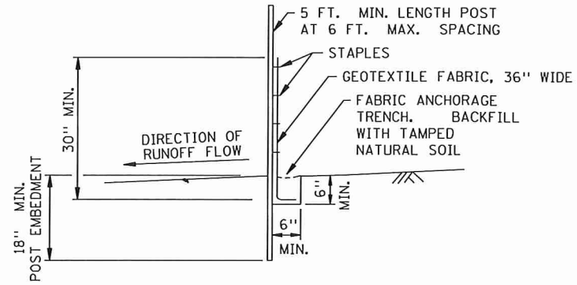
1/7 INLET PROTECTION
NO SCALE



TRAFFIC LOADS: CONCRETE SLAB DIMENSIONS ARE FOR GUIDELINE PURPOSES ONLY. ACTUAL CONCRETE SLAB MUST BE DESIGNED TAKING INTO CONSIDERATION LOCAL SOIL CONDITIONS, TRAFFIC LOADING, & OTHER APPLICABLE DESIGN FACTORS.

NOTES:
1. DESIGN SHOULD ACCOUNT FOR ROOT DEPTH TO ALLOW TURF TO GROW AND PREVENT EROSION AROUND GRATE SO THAT HAZARDS DO NOT FORM.

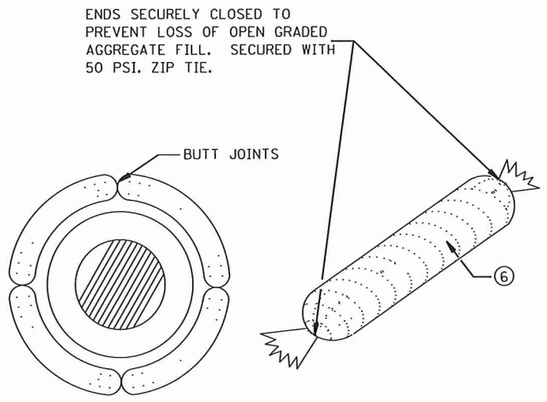
2/7 OVERFLOW DRAIN
NO SCALE



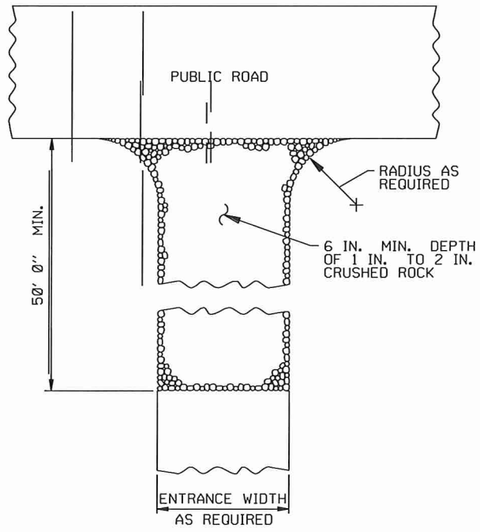
NOTES:
SEE MN/DOT SPEC. 3886

GEOTEXTILE FABRIC SHALL BE ORANGE IN COLOR.

3/7 SILT FENCE DETAIL
NO SCALE



ROCK LOG/COMPOST LOG



4/7 ROCK CONSTRUCTION ENTRANCE
NO SCALE

NO	DATE	BY	CKD	APPR

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 Landscape Architect under the laws of the State of Minnesota.
Print Name: STEWART F. CROSBY
Date 05/18/2015 License # 45681

STATE AID PROJECT NO.	
STATE PROJECT NO.	
COUNTY PROJECT NO.	
CITY PROJECT NO.	

DRAWN BY A. ELIAS
DESIGNED BY S. CROSBY
CHECKED BY T. WOLD
COMM. NO.8759

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

CITY OF GOLDEN VALLEY
DETAILS
SANDBURG LEARNING CTR ATHL FIELD IMPROVEMENTS
GOLDEN VALLEY, MN

SHEET 7 OF 14

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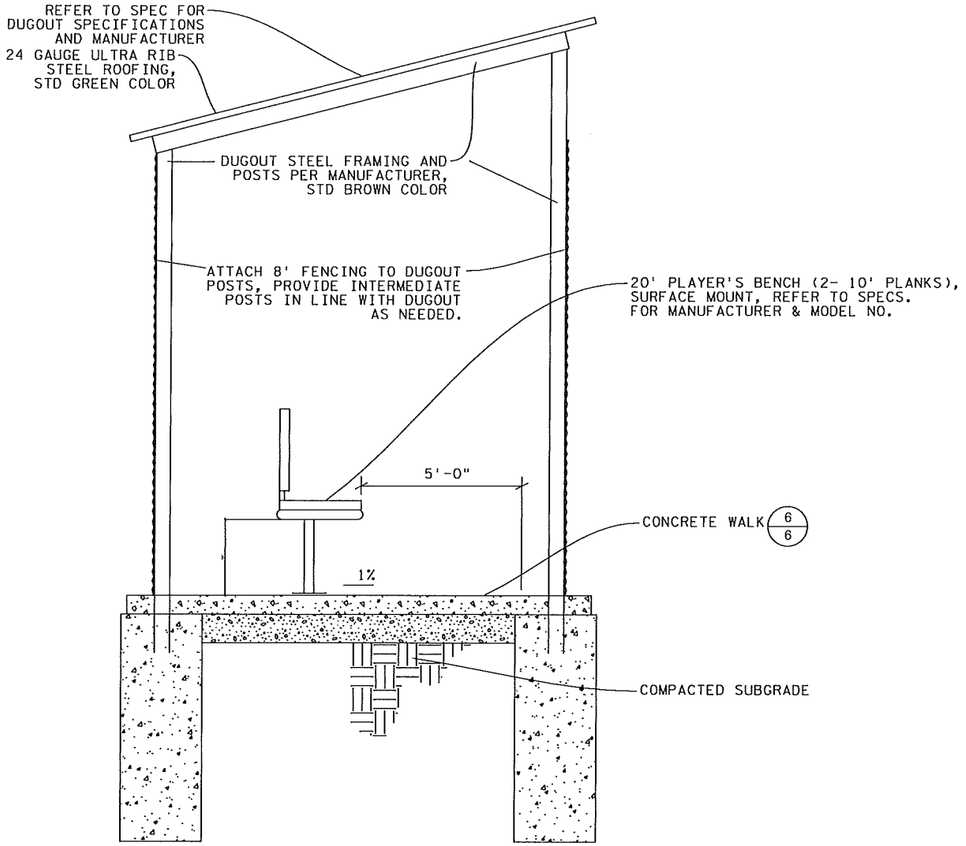

1/8 DUGOUT AND PLAYERS BENCH DETAIL

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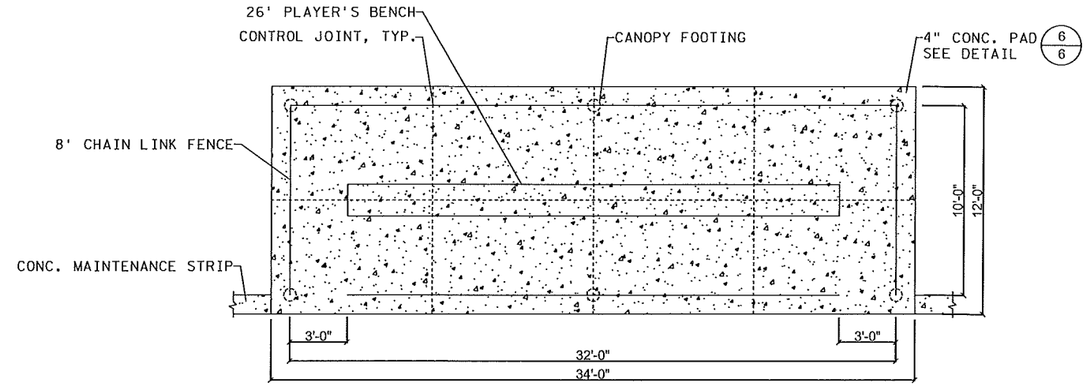

2/8 DUGOUT CONCRETE PAD DETAIL

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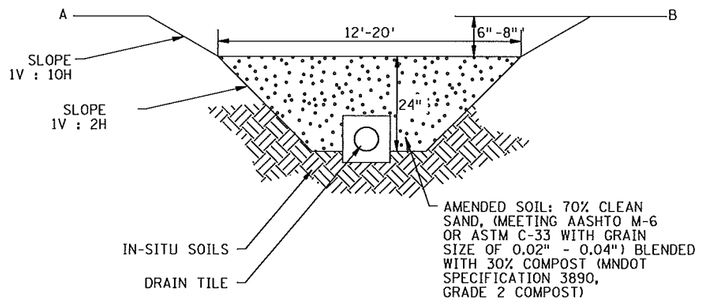

3/8 INFILTRATION BASIN TYPICAL SECTION

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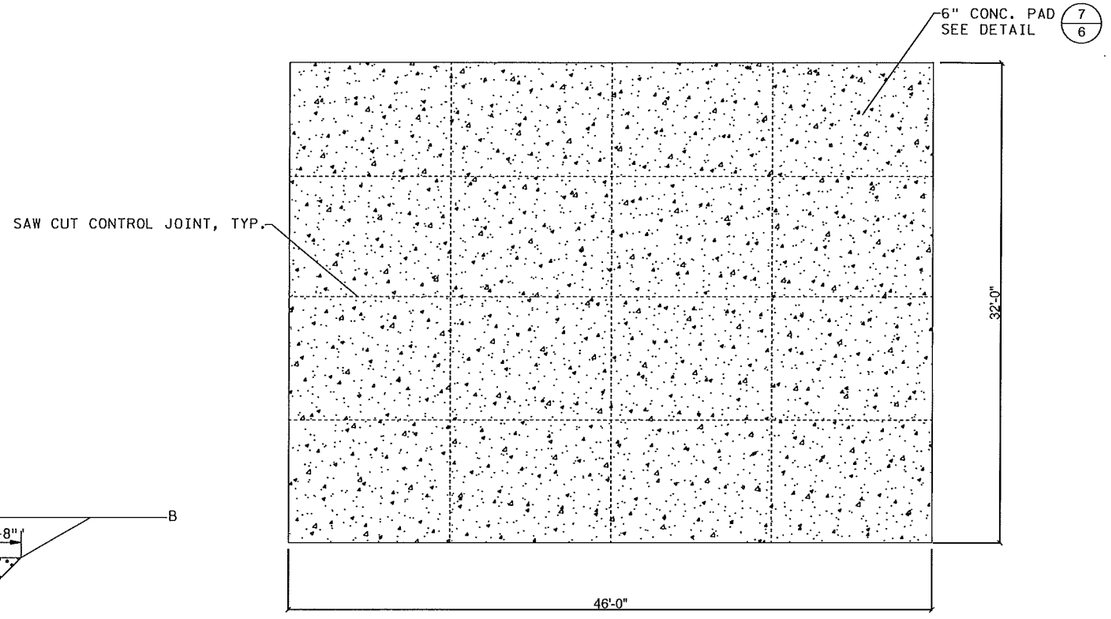

4/8 SUNSHADE CONCRETE PAD DETAIL

NO SCALE

NO	DATE	BY	CKD	APPR

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 Landscape Architect under the laws of the State of Minnesota.
Print Name: STEWART F. CROSBY
Date 05/18/2015 License # 45681

STATE AID PROJECT NO.	
STATE PROJECT NO.	
COUNTY PROJECT NO.	
CITY PROJECT NO.	

DRAWN BY A. ELIAS
DESIGNED BY S. CROSBY
CHECKED BY T. WOLD
COMM. NO.8759

SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

CITY OF GOLDEN VALLEY
DETAILS
SANDBURG LEARNING CTR ATHL FIELD IMPROVEMENTS
GOLDEN VALLEY, MN

SHEET 8 OF 14

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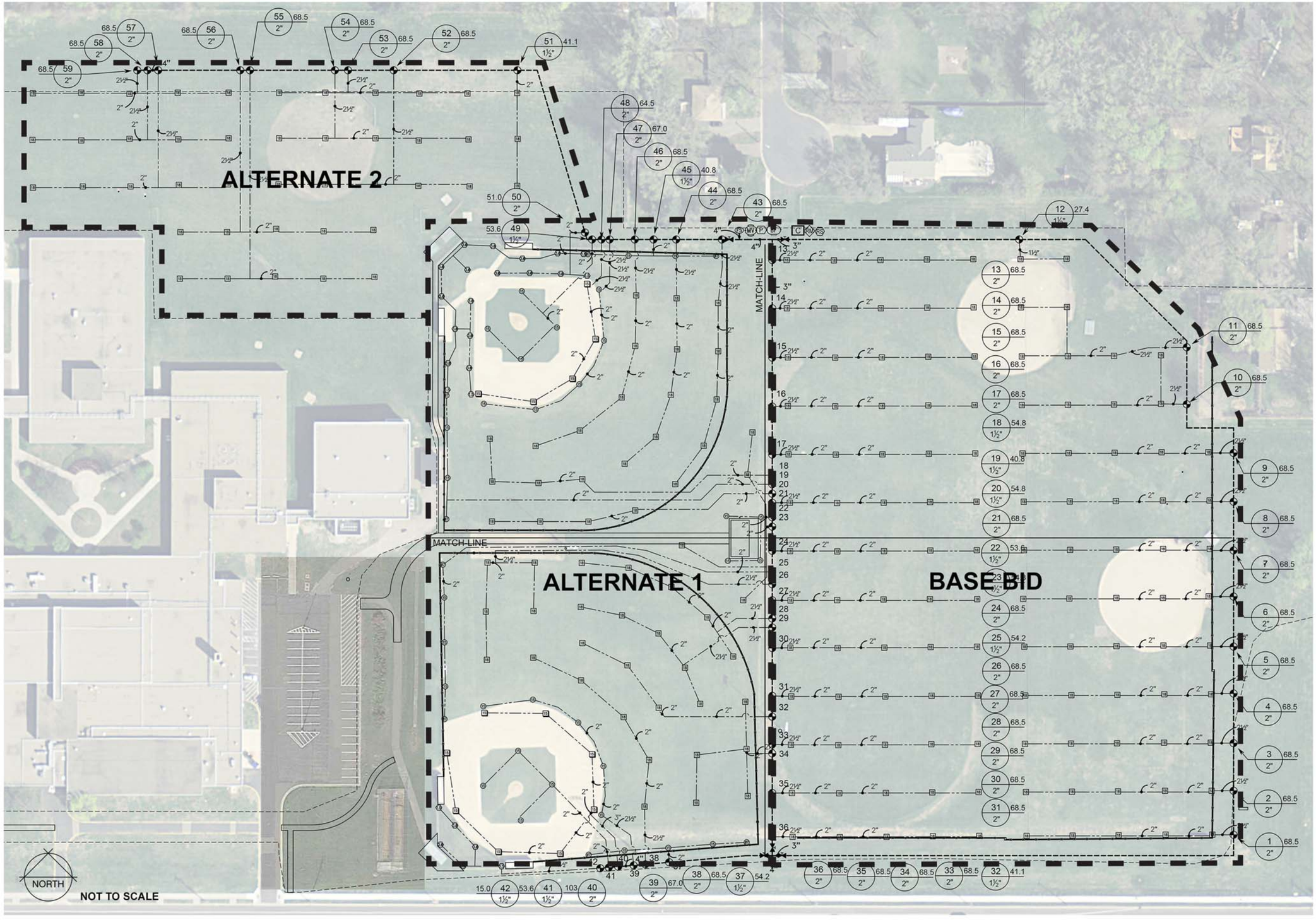

NOTES:
1. SEE SHEET 9 FOR IRRIGATION SCHEDULE.
2. THIS SHEET FOR ILLUSTRATIVE PURPOSES ONLY TO SHOW BASE BID AND ALTERNATE IRRIGATION AREAS.

NO	DATE	BY	CKD	APPR	
1	5/28/2015	SFC	SFC	MPM	SHEET 9A ADDED TO PLAN SET.

MLC IRRIGATION CONSULTANTS
Water, solved.
2620 Jennifer Lane
Minneapolis, MN 55372, 952.447.2053 www.mainlineconsulting.net

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

CITY OF GOLDEN VALLEY
BID ALTERNATE LAYOUT FOR IRRIGATION PLAN
SANDBURG LEARNING CTR ATHL FIELD IMPROVEMENTS
GOLDEN VALLEY, MN

SHEET 9A OF 14

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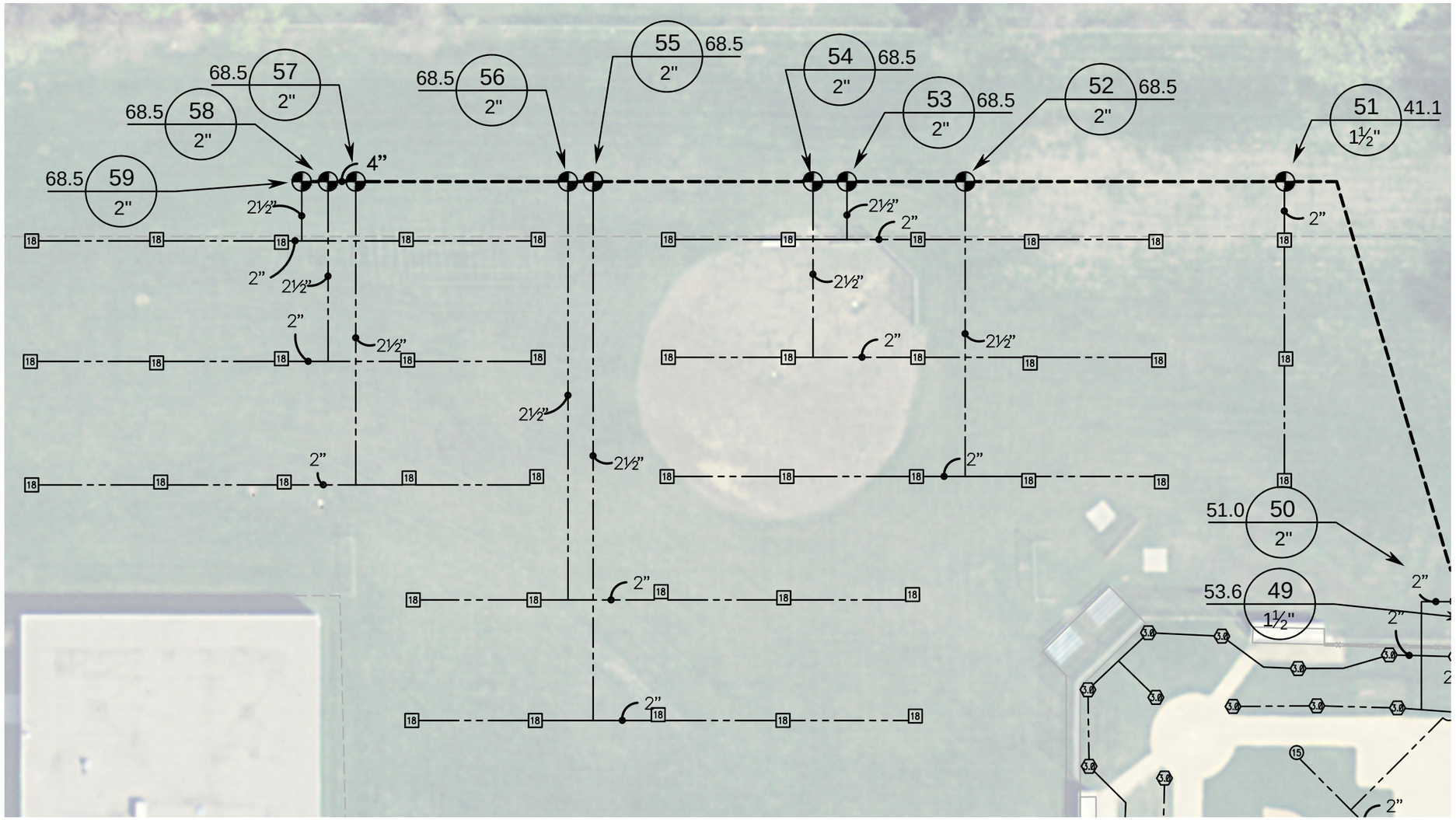

NORTH

0 50 100 150 feet

SCALE: 1" = 50'

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
1.5	HUNTER I-20-04-SS-NCV TURF ROTOR, 4.0" POP-UP. ADJUSTABLE AND FULL CIRCLE. STAINLESS STEEL RISER. STANDARD NOZZLE.
3.0	HUNTER I-20-04-SS-NCV TURF ROTOR, 4.0" POP-UP. ADJUSTABLE AND FULL CIRCLE. STAINLESS STEEL RISER. STANDARD NOZZLE.
07	HUNTER I-25-04 TURF ROTOR, 4.0" POP-UP. ADJUSTABLE AND FULL CIRCLE. PLASTIC RISER. DRAIN CHECK VALVE. STANDARD NOZZLE.
15	HUNTER I-25-04 TURF ROTOR, 4.0" POP-UP. ADJUSTABLE AND FULL CIRCLE. PLASTIC RISER. DRAIN CHECK VALVE. STANDARD NOZZLE.
18	HUNTER I-40-04-SS-ON TURF ROTOR, 4.0" POP-UP. ADJUSTABLE TO FULL CIRCLE. DRAIN CHECK VALVE, STAINLESS STEEL RISER, 1" FEMALE NPT INLET THREADS, DUAL OPPOSING NOZZLE.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	HUNTER ICV-G 1", 1-1/2", 2", AND 3" PLASTIC ELECTRIC REMOTE CONTROL VALVES, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.
	MATCO-NORCA IORT 2" TO 8" CAST IRON GATE ISOLATION VALVE. RING-TITE GASKET ENDS. RESILIENT WEDGE WITH EPOXY COATING AND OPTIONAL NUT. FOR IPS PIPE. SAME SIZE AS MAINLINE PIPE.
MV	HUNTER ICV-G 3" 1", 1-1/2", 2", AND 3" PLASTIC ELECTRIC MASTER VALVE, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.
BF	FEBCO 825YD 3" REDUCED PRESSURE BACKFLOW PREVENTER
C	HUNTER ACC-99D 2-WIRE DECODER CONTROLLER WITH 99 STATION CAPACITY, METAL CABINET.
RS	HUNTER WR-CLIK RAIN SENSOR, INSTALL WITHIN 1000 FT OF CONTROLLER, IN LINE OF SIGHT. 22-28 VAC/VDC 100 MA POWER FROM TIMER TRANSFORMER. MOUNT AS NOTED.
ROAM	HUNTER ROAMXL-KIT TRANSMITTER AND RECEIVER. ROAM REMOTE ALLOWS FOR CONTROLLER OPERATION UP TO 2 MILES. CONTRACTOR, LARGE-SCALE SITES. WORKS WITH HUNTER ACC, I-CORE, PRO-C, PCC, AND X-CORE CONTROLLERS. SMARTPORT WIRING HARNESS INCLUDED.
FS	CREATIVE SENSOR TECHNOLOGY FSI-T20-001 2" (50MM) PVC TEE TYPE FLOW SENSOR W/SOCKET ENDS, CUSTOM MOUNTING TEE AND ULTRA-LIGHTWEIGHT IMPELLER ENHANCES LOW FLOW MEASUREMENT. 2 WIRE DIGITAL OUTPUT COMPATIBLE W/ALL IRRIGATION CONTROLLERS. FLOW RANGE 2.8-170 GPM.
P	BERKELEY B2TPMS PUMP PAIRED WITH 3HP MOTOR. EXISTING
M	WATER METER 3" EXISTING METER, BACKFLOW AND PUMP
	IRRIGATION LATERAL LINE: PVC CLASS 160 SDR 26 PVC CLASS 315 FOR 1/2" PIPE, PVC CLASS 200 FOR 3/4" PIPE, PVC CLASS 160 SDR 26 FOR 1" AND ABOVE. ONLY LATERAL TRANSITION PIPE SIZES 2" AND ABOVE ARE INDICATED ON THE PLAN, WITH ALL OTHERS BEING 1 1/2" IN SIZE.
	IRRIGATION MAINLINE: PVC CLASS 200 SDR 21 PVC CLASS 200 IRRIGATION PIPE.

Valve Callout
- Valve Number
- Valve Flow
- Valve Size

NO	DATE	BY	CKD	APPR

MLC IRRIGATION CONSULTANTS
Water, solved.
7620 Jennifer Lane
Minneapolis, MN 55372, 952.447.2053 www.mainlineconsulting.net

DRAWN BY JWR
DESIGNED BY JWR
CHECKED BY JWR
COMM. NO.8759

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

CITY OF GOLDEN VALLEY
IRRIGATION PLAN
SANDBURG LEARNING CTR ATHL FIELD IMPROVEMENTS
GOLDEN VALLEY, MN

SHEET 9 OF 14

Owner
Nov 10, 2015 - 2:05:14PM
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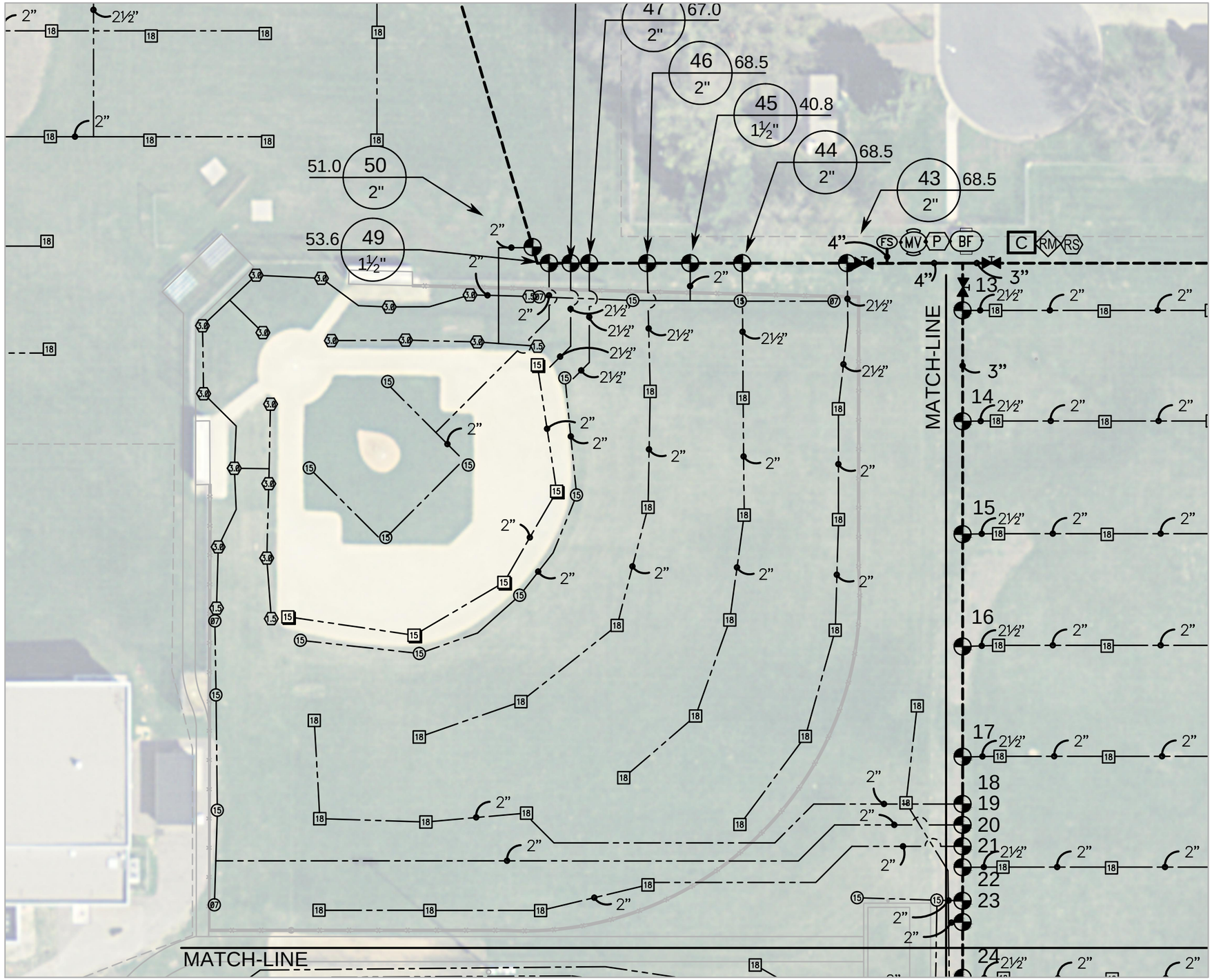


IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
1.5	HUNTER I-20-04-SS-NCV TURF ROTOR, 4.0" POP-UP. ADJUSTABLE AND FULL CIRCLE. STAINLESS STEEL RISER. STANDARD NOZZLE.
3.0	HUNTER I-20-04-SS-NCV TURF ROTOR, 4.0" POP-UP. ADJUSTABLE AND FULL CIRCLE. STAINLESS STEEL RISER. STANDARD NOZZLE.
07	HUNTER I-25-04 TURF ROTOR, 4.0" POP-UP. ADJUSTABLE AND FULL CIRCLE. PLASTIC RISER. DRAIN CHECK VALVE. STANDARD NOZZLE.
15	HUNTER I-25-04 TURF ROTOR, 4.0" POP-UP. ADJUSTABLE AND FULL CIRCLE. PLASTIC RISER. DRAIN CHECK VALVE. STANDARD NOZZLE.
18	HUNTER I-40-04-SS-ON TURF ROTOR, 4.0" POP-UP. ADJUSTABLE TO FULL CIRCLE. DRAIN CHECK VALVE, STAINLESS STEEL RISER, 1" FEMALE NPT INLET THREADS, DUAL OPPOSING NOZZLE.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	HUNTER ICV-G 1", 1-1/2", 2", AND 3" PLASTIC ELECTRIC REMOTE CONTROL VALVES, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.
	MATCO-NORCA 10RT 2" TO 8" CAST IRON GATE ISOLATION VALVE. RING-TITE GASKET ENDS. RESILIENT WEDGE WITH EPOXY COATING AND OPTIONAL NUT. FOR IPS PIPE. SAME SIZE AS MAINLINE PIPE.
MV	HUNTER ICV-G 3" 1", 1-1/2", 2", AND 3" PLASTIC ELECTRIC MASTER VALVE, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.
BF	FEBCO 825YD 3" REDUCED PRESSURE BACKFLOW PREVENTER
C	HUNTER ACC-99D 2-WIRE DECODER CONTROLLER WITH 99 STATION CAPACITY, METAL CABINET.
RS	HUNTER WR-CLIK RAIN SENSOR, INSTALL WITHIN 1000 FT OF CONTROLLER, IN LINE OF SIGHT. 22-28 VAC/VDC 100 MA POWER FROM TIMER TRANSFORMER. MOUNT AS NOTED.
RM	HUNTER ROAMXL-KIT TRANSMITTER AND RECEIVER. ROAM REMOTE ALLOWS FOR CONTROLLER OPERATION UP TO 2 MILES. CONTRACTOR, LARGE-SCALE SITES. WORKS WITH HUNTER ACC, I-CORE, PRO-C, PCC, AND X-CORE CONTROLLERS. SMARTPORT WIRING HARNESS INCLUDED.
FS	CREATIVE SENSOR TECHNOLOGY FSI-T20-001 2" (50MM) PVC TEE TYPE FLOW SENSOR W/SOCKET ENDS, CUSTOM MOUNTING TEE AND ULTRA-LIGHTWEIGHT IMPELLER ENHANCES LOW FLOW MEASUREMENT. 2 WIRE DIGITAL OUTPUT COMPATIBLE WALL IRRIGATION CONTROLLERS. FLOW RANGE 2.8-170 GPM.
P	BERKELEY B2TPM5 PUMP PAIRED WITH 5HP MOTOR. EXISTING
M	WATER METER 3" EXISTING METER, BACKFLOW AND PUMP
	IRRIGATION LATERAL LINE: PVC CLASS 160 SDR 26 PVC CLASS 315 FOR 1/2" PIPE, PVC CLASS 200 FOR 3/4" PIPE, PVC CLASS 160 SDR 26 FOR 1" AND ABOVE. ONLY LATERAL TRANSITION PIPE SIZES 2" AND ABOVE ARE INDICATED ON THE PLAN, WITH ALL OTHERS BEING 1 1/2" IN SIZE.
	IRRIGATION MAINLINE: PVC CLASS 200 SDR 21 PVC CLASS 200 IRRIGATION PIPE.

Valve Callout
- Valve Number
- Valve Flow
- Valve Size

Owner
May 10, 2015 – 2:05:16PM
C:\Users\Owner\Dropbox\Sandburg Field\Sandburg Field IRR_DSGN.dwg:IRR 2

NO	DATE	BY	CKD	APPR

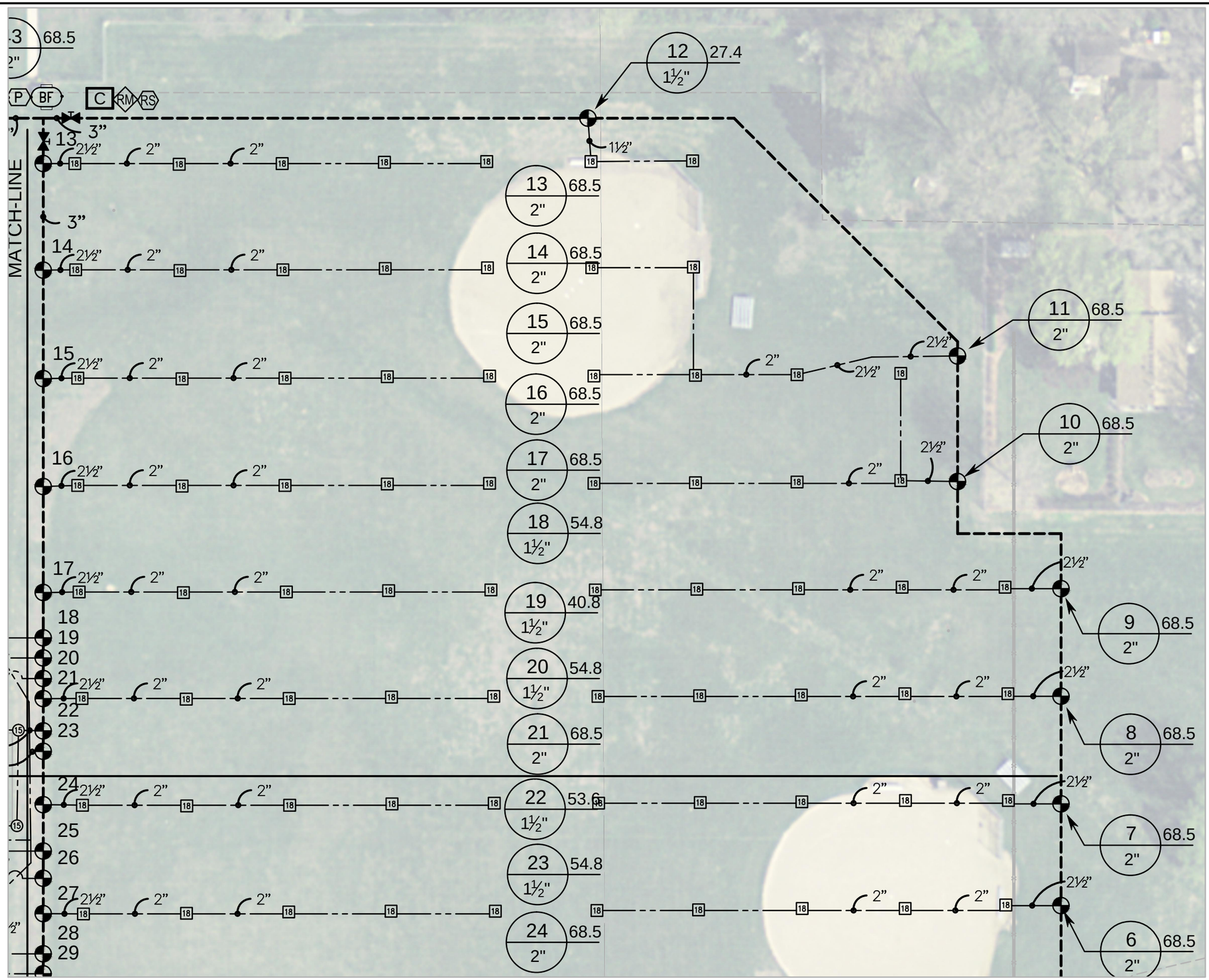
MLC IRRIGATION CONSULTANTS
Water, solved.
7620 Jennifer Lane
Minneapolis, MN 55372, 952.447.2053 www.mainlineconsulting.net

DRAWN BY JWR
DESIGNED BY JWR
CHECKED BY JWR
COMM. NO.8759

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

CITY OF GOLDEN VALLEY
IRRIGATION PLAN
SANDBURG LEARNING CTR ATHL FIELD IMPROVEMENTS
GOLDEN VALLEY, MN

SHEET 10 OF 14



IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
1.5	HUNTER I-20-04-SS-NCV TURF ROTOR, 4.0" POP-UP. ADJUSTABLE AND FULL CIRCLE. STAINLESS STEEL RISER. STANDARD NOZZLE.
3.0	HUNTER I-20-04-SS-NCV TURF ROTOR, 4.0" POP-UP. ADJUSTABLE AND FULL CIRCLE. STAINLESS STEEL RISER. STANDARD NOZZLE.
07	HUNTER I-25-04 TURF ROTOR, 4.0" POP-UP. ADJUSTABLE AND FULL CIRCLE. PLASTIC RISER. DRAIN CHECK VALVE. STANDARD NOZZLE.
15	HUNTER I-25-04 TURF ROTOR, 4.0" POP-UP. ADJUSTABLE AND FULL CIRCLE. PLASTIC RISER. DRAIN CHECK VALVE. STANDARD NOZZLE.
18	HUNTER I-40-04-SS-ON TURF ROTOR, 4.0" POP-UP. ADJUSTABLE TO FULL CIRCLE. DRAIN CHECK VALVE, STAINLESS STEEL RISER, 1" FEMALE NPT INLET THREADS, DUAL OPPOSING NOZZLE.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
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	MATCO-NORCA IORT 2" TO 8" CAST IRON GATE ISOLATION VALVE. RING-TITE GASKET ENDS. RESILIENT WEDGE WITH EPOXY COATING AND OPTIONAL NUT. FOR IPS PIPE. SAME SIZE AS MAINLINE PIPE.
MV	HUNTER ICV-G 3" 1", 1-1/2", 2", AND 3" PLASTIC ELECTRIC MASTER VALVE, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.
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RS	HUNTER MR-CLIK RAIN SENSOR, INSTALL WITHIN 1000 FT OF CONTROLLER, IN LINE OF SIGHT. 22-28 VAC/VDC 100 MA POWER FROM TIMER TRANSFORMER. MOUNT AS NOTED.
RM	HUNTER ROAMXL-KIT TRANSMITTER AND RECEIVER. ROAM REMOTE ALLOWS FOR CONTROLLER OPERATION UP TO 2 MILES. CONTRACTOR, LARGE-SCALE SITES. WORKS WITH HUNTER ACC, I-CORE, PRO-C, PCC, AND X-CORE CONTROLLERS. SMARTPORT WIRING HARNESS INCLUDED.
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P	BERKELEY B2TPMS PUMP PAIRED WITH 3HP MOTOR. EXISTING
M	WATER METER 3" EXISTING METER, BACKFLOW AND PUMP
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	IRRIGATION MAINLINE: PVC CLASS 200 SDR 21 PVC CLASS 200 IRRIGATION PIPE.

Valve Callout
Valve Number
Valve Flow
Valve Size

Owner
May 10, 2015 - 2:05:19PM
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NO	DATE	BY	CKD	APPR

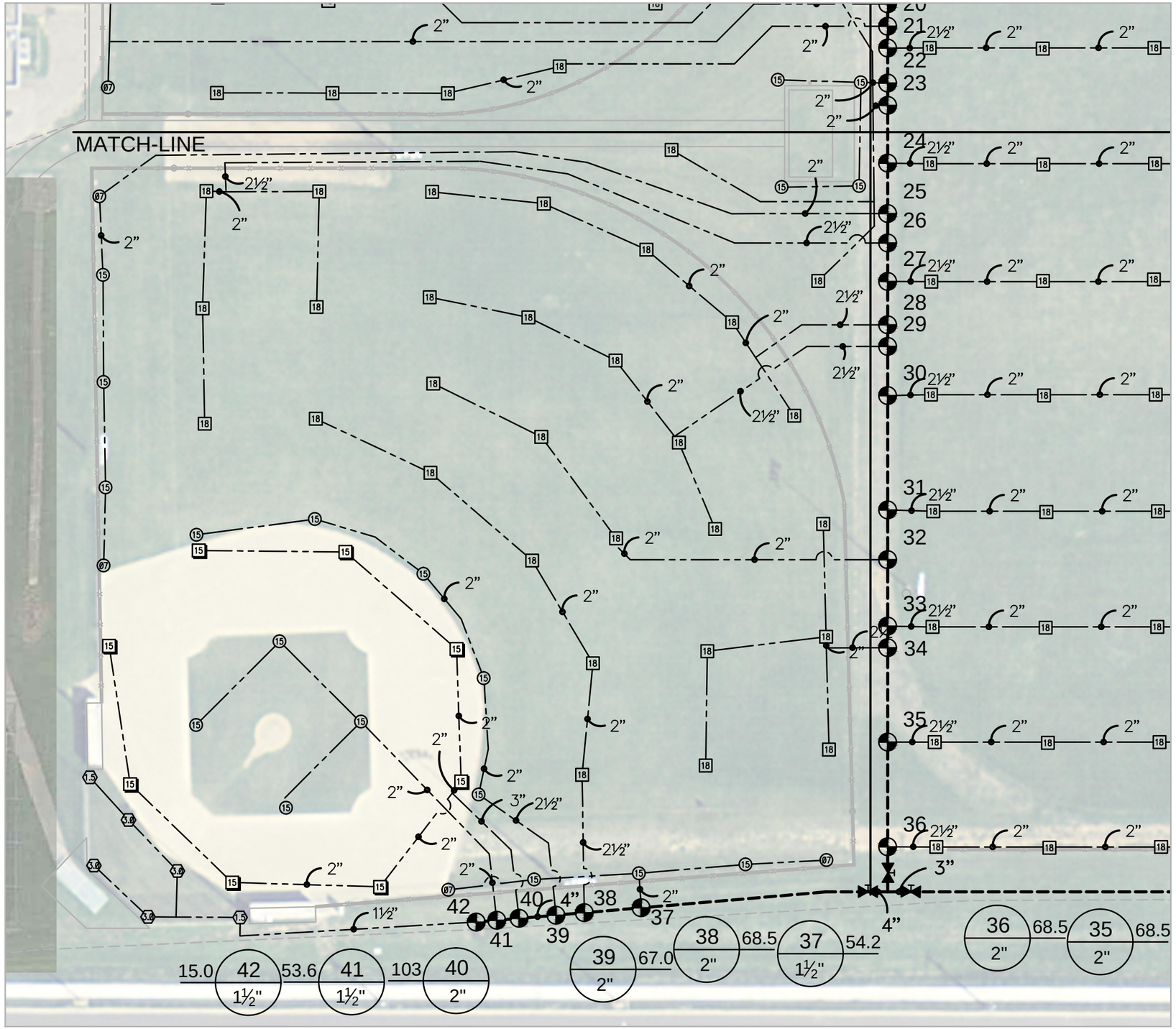
MLC IRRIGATION CONSULTANTS
Water, solved.
7620 Jennifer Lane
Minneapolis, MN 55372, 952.447.2053 www.mainlineconsulting.net

DRAWN BY JWR
DESIGNED BY JWR
CHECKED BY JWR
COMM. NO.8759

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

CITY OF GOLDEN VALLEY
IRRIGATION PLAN
SANDBURG LEARNING CTR ATHL FIELD IMPROVEMENTS
GOLDEN VALLEY, MN

SHEET 11 OF 14



IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
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P	BERKELEY B2TPMS PUMP PAIRED WITH 3HP MOTOR EXISTING
M	WATER METER 3" EXISTING METER, BACKFLOW AND PUMP
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Valve Callout
- Valve Number
- Valve Flow
- Valve Size

Owner
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NO	DATE	BY	CKD	APPR

MLC IRRIGATION CONSULTANTS
Water, solved.
7620 Jennifer Lane
Minneapolis, MN 55372, 952.447.2053 www.mainlineconsulting.net

DRAWN BY JWR
DESIGNED BY JWR
CHECKED BY JWR
COMM. NO.8759

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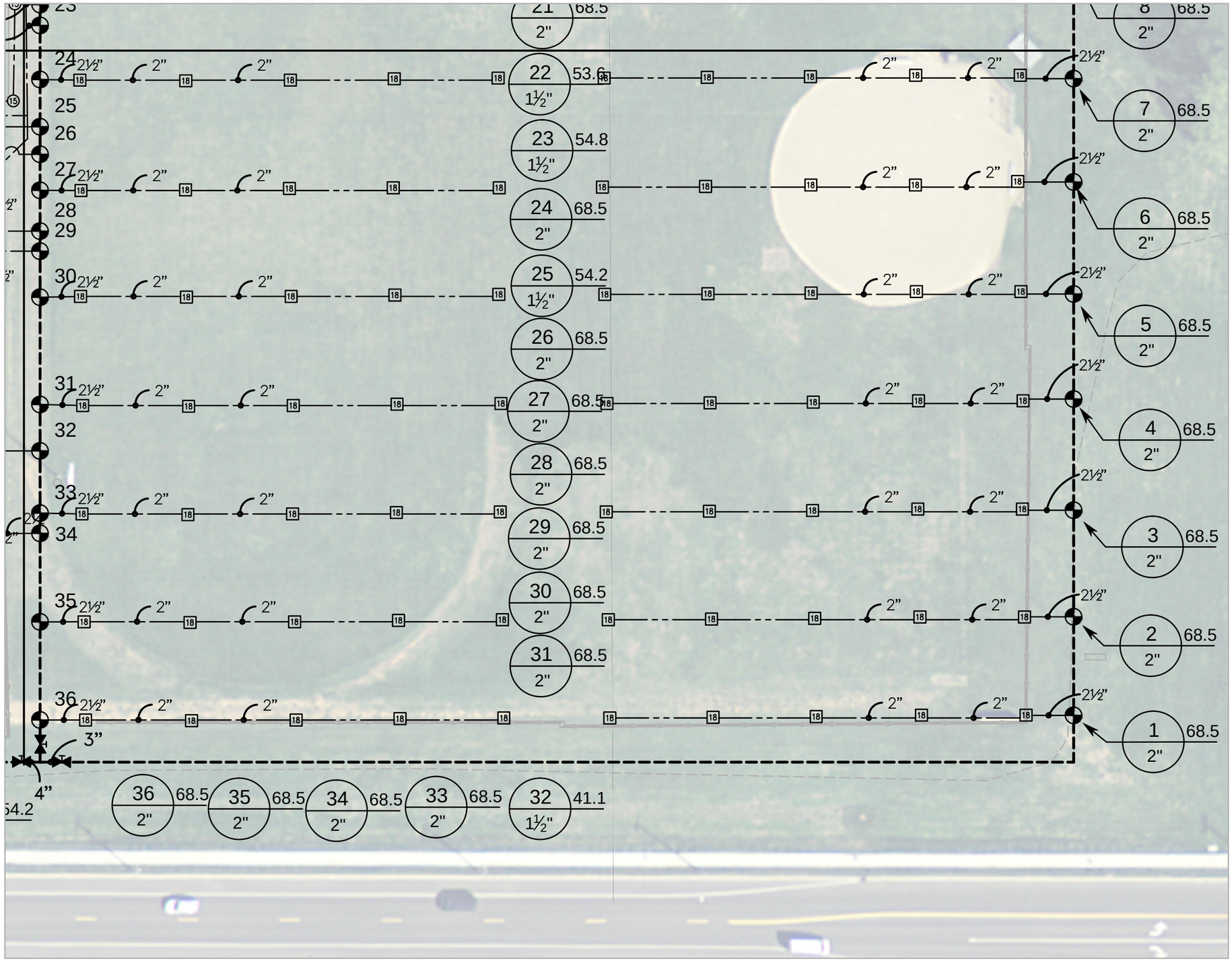
ENGINEERS PLANNERS DESIGNERS

CITY OF GOLDEN VALLEY
IRRIGATION PLAN
SANDBURG LEARNING CTR ATHL FIELD IMPROVEMENTS
GOLDEN VALLEY, MN

SHEET 12 OF 14



IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
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24	HUNTER I-20-04-SS-NCV TURF ROTOR, 4.0" POP-UP. ADJUSTABLE AND FULL CIRCLE. STAINLESS STEEL RISER. STANDARD NOZZLE.
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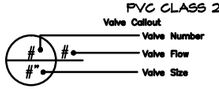
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	HUNTER ICV-G 1", 1-1/2", 2", AND 3" PLASTIC ELECTRIC REMOTE CONTROL VALVES, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.
	MATCO-NORCA 10RT 2" TO 8" CAST IRON GATE ISOLATION VALVE. RING-TITE GASKET ENDS. RESILIENT WEDGE WITH EPOXY COATING AND OPTIONAL NUT. FOR IPS PIPE. SAME SIZE AS MAINLINE PIPE.
MV	HUNTER ICV-G 3" 1", 1-1/2", 2", AND 3" PLASTIC ELECTRIC MASTER VALVE, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.
BF	FEBCO 825YD 3" REDUCED PRESSURE BACKFLOW PREVENTER
C	HUNTER ACC-99D 2-WIRE DECODER CONTROLLER WITH 99 STATION CAPACITY, METAL CABINET.
RS	HUNTER WR-CLIK RAIN SENSOR, INSTALL WITHIN 1000 FT OF CONTROLLER, IN LINE OF SIGHT. 22-28 VAC/VDC 100 MA POWER FROM TIMER TRANSFORMER. MOUNT AS NOTED.
RM	HUNTER ROAMXL-KIT TRANSMITTER AND RECEIVER. ROAM REMOTE ALLOWS FOR CONTROLLER OPERATION UP TO 2 MILES. CONTRACTOR, LARGE-SCALE SITES. WORKS WITH HUNTER ACC, I-CORE, PRO-C, PCC, AND X-CORE CONTROLLERS. SMARTPORT WIRING HARNESS INCLUDED.
FS	CREATIVE SENSOR TECHNOLOGY FSI-T20-001 2" (50MM) PVC TEE TYPE FLOW SENSOR W/SOCKET ENDS, CUSTOM MOUNTING TEE AND ULTRA-LIGHTWEIGHT IMPELLER ENHANCES LOW FLOW MEASUREMENT. 2 WIRE DIGITAL OUTPUT COMPATIBLE W/ALL IRRIGATION CONTROLLERS. FLOW RANGE 2.8-170 GPM.
P	BERKELEY B2TPM5 PUMP PAIRED WITH 3HP MOTOR. EXISTING
M	WATER METER 3" EXISTING METER, BACKFLOW AND PUMP
	IRRIGATION LATERAL LINE: PVC CLASS 160 SDR 26 PVC CLASS 315 FOR 1/2" PIPE, PVC CLASS 200 FOR 3/4" PIPE, PVC CLASS 160 SDR 26 FOR 1" AND ABOVE. ONLY LATERAL TRANSITION PIPE SIZES 2" AND ABOVE ARE INDICATED ON THE PLAN, WITH ALL OTHERS BEING 1 1/2" IN SIZE.
	IRRIGATION MAINLINE: PVC CLASS 200 SDR 21 PVC CLASS 200 IRRIGATION PIPE.



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May 01, 2015 - 2:05:25PM
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NO	DATE	BY	CKD	APPR

MLC IRRIGATION CONSULTANTS
Water, solved.
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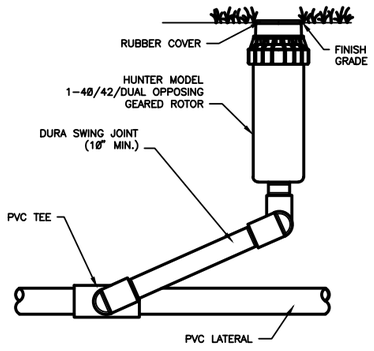
DESIGNED BY JWR
CHECKED BY JWR
COMM. NO.8759

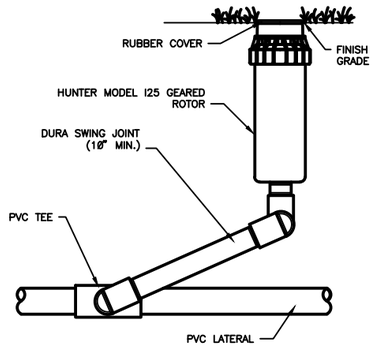
SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

CITY OF GOLDEN VALLEY
IRRIGATION PLAN
SANDBURG LEARNING CTR ATHL FIELD IMPROVEMENTS
GOLDEN VALLEY, MN

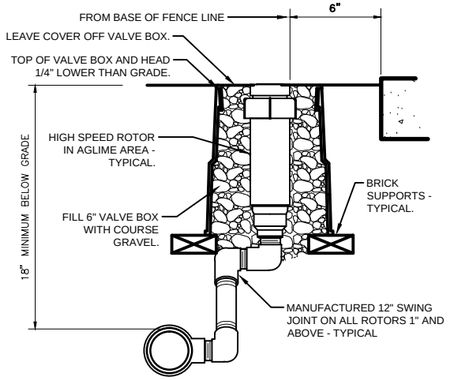
SHEET 13 OF 14



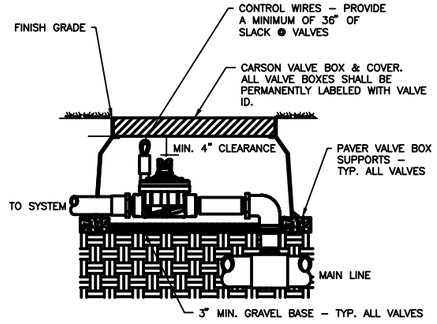
1 HUNTER I-40 ROTOR
3" = 1'-0" 328403.16-03



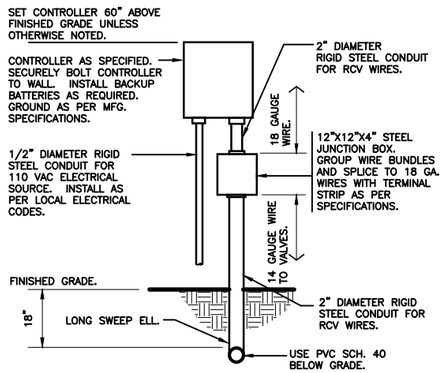
2 HUNTER I-25 ROTOR
3" = 1'-0" 328403.16-15



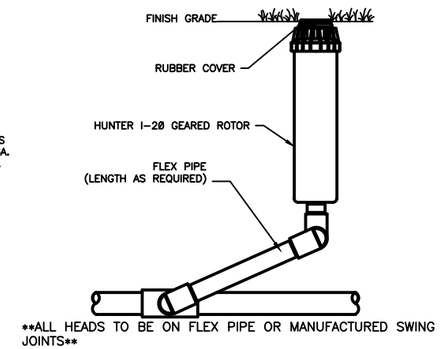
3 AGLIME HIGH SPEED ROTORS
3" = 1'-0" 328403.16-18



4 HUNTER ICV
3" = 1'-0" 328406.13-05

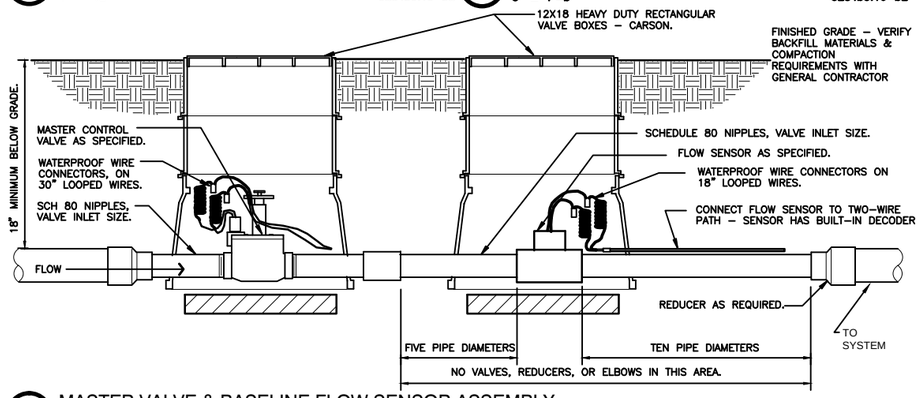


5 WALL MOUNT CONTROLLER
1" = 12" 328409.13-02



ALL HEADS TO BE ON FLEX PIPE OR MANUFACTURED SWING JOINTS

6 HUNTER I-20
3" = 1'-0" 328403.16-02



7 MASTER VALVE & BASELINE FLOW SENSOR ASSEMBLY
1 1/2" = 1'-0" 32 8406.23-18

CRITICAL ANALYSIS

Generated:	2015-04-29 19:56
P.O.C. NUMBER:01	
Water Source Information:	EXISTING METER, BACKFLOW AND PUMP
FLOW AVAILABLE	
Water Meter Size:	3"
Flow Available:	196.56 gpm
PRESSURE AVAILABLE	
Static Pressure at POC:	55.00 psi
Elevation Change:	5.00 ft
Service Line Size:	3"
Length of Service Line:	20.00 ft
Booster Pump pressure provided:	31.00 psi
Pressure Available:	89.00 psi
DESIGN ANALYSIS	
Maximum Multi-valve Flow:	160.00 gpm
Flow Available at POC:	196.56 gpm
Residual Flow Available:	36.56 gpm
Pressure Req. at Critical Station:	60.70 psi
Loss for Fittings:	0.53 psi
Loss for Main Line:	5.26 psi
Loss for POC to Valve Elevation:	0.00 psi
Loss for Backflow:	12.54 psi
Loss for Master Valve:	2.70 psi
Loss for Water Meter:	5.20 psi
Critical Station Pressure at POC:	87.33 psi
Pressure Available:	89.00 psi
Residual Pressure Available:	1.67 psi

1. DESIGN BASED ON POC ANALYSIS (downstream of meter).
2. This irrigation design is from the point of connection only. This design is based on the pressure and volume indicated in item #1, which is furnished and verified by others. Booster pump may be required if pressure and flow do not meet listed requirements.
3. Contractor shall be responsible to field verify the information in the POC Analysis.
4. This irrigation design is diagramatic. Adjustments to pipe, valve and/or head placement may be required of contractor.
5. FULL and COMPLETE coverage is required. The irrigation contractor shall make any necessary minor adjustments to the irrigation layout required to achieve FULL and COMPLETE coverage of irrigated areas at no additional cost to owner.
6. Bidding contractors shall become thoroughly familiar with all facets of the proposed irrigation systemand the central control requirements. Failure to clarify misunderstandings or the intent of this drawing and/or specifications before submittal of bid shall be the sole responsibility of the contractor.
7. This irrigation system shall be installed as per manufactures specifications.
8. This irrigaiton design shows necessary materials, but certain other materials may have to be suppliedand installed by the irrigation contractor in order to have, upon completion, a fully operational irrigation system.
9. The irrigation contractor shall locate ALL underground utilities, and they shall take every precaution not to damage or disturb such improvements. Coordinate with General Contractor as necessary.
10. The irrigation contractor shall arrange for any necessary permits and/or inspections required by local agencies or ordinances during the course of construction.
11. ALL PVC piping under continuous pressure shall be Class 200, all other PVC shall be Class 160.
12. ALL backflow devices shall be installed as per local code.
13. ALL wiring as per local code.
14. Electrical power shall be provided to within five (5) feet of controller(s) location. Coordinate with Owners Representative as to the final location of controller(s). Coordinate with Electrical Contractor as required.
15. Control wire shall be solid copper wire U.L. approved for direct burial in ground. Minimum gauge - #14 (#12 for runs over 2000') or as otherwise specified. Ground Wire (where applicable) shall be white.
16. 24VAC wire splicing material will be direct burial splice kit as manufactured by 3M, specifically DBY-6 & DBR-6.
17. Install rain sensors on vertical surfaces. Coordinate with Owners Representative as to final location of rain sensor, weather stations and any additional sensors.
18. ALL valves, quick-couplers and wire splices shall be located in valve boxes with labeled covers and buried flush with grade.
19. Winterization of the irrigation system shall be as per the manufacturers specifications.
20. Sleeving is required under ALL walks and roadways. Sleeves shall extend a minimum of 18" beyond edge of walk/roadway and be marked. Wire shall be contained in a separate, 1 $\frac{1}{2}$" min., sleeve.

8 IRRIGATION GENERAL NOTES:
32 8409-02

NO	DATE	BY	CKD	APPR

MLC IRRIGATION CONSULTANTS Water, solved.
7620 Jennifer Lane
Minneapolis, MN 55372, 952.447.2053 www.mainlineconsulting.net

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CITY OF GOLDEN VALLEY
IRRIGATION DETAILS PLAN
SANDBURG LEARNING CTR ATHL FIELD IMPROVEMENTS
GOLDEN VALLEY, MN

SHEET 14 OF 14

Owner
May 01, 2015 - 2:05:25PM
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