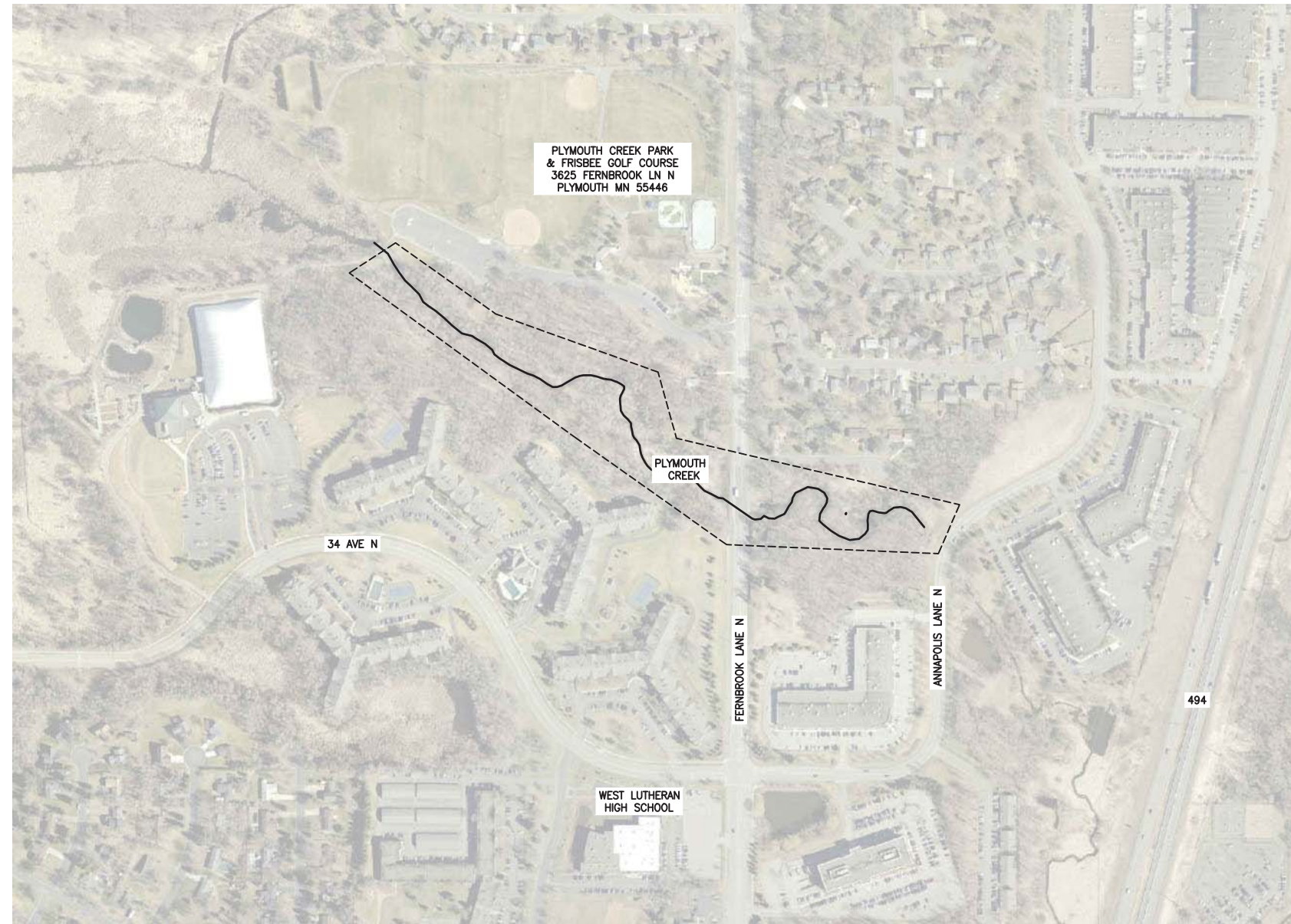


CONSTRUCTION PLANS FOR PLYMOUTH CREEK STREAM RESTORATION CITY PROJECT NO. 16007

PREPARED FOR
CITY OF PLYMOUTH, MN

APRIL 2017

Item 5A.
BCWMC 6-15-17



SHEET INDEX	
SHEET	TITLE
G-101	TITLE AND INDEX SHEET
G-102	LEGEND AND GENERAL NOTES
C-101	EXISTING CONDITIONS AND REMOVALS STA 27+18 TO 18+00
C-102	EXISTING CONDITIONS AND REMOVALS STA 18+00 TO 9+00
C-103	EXISTING CONDITIONS AND REMOVALS STA 9+00 TO 0+00
C-104	PROPOSED PLAN AND PROFILE STREAM TREATMENTS STA 27+18 TO 18+00
C-105	PROPOSED PLAN AND PROFILE STREAM TREATMENTS STA 18+00 TO 9+00
C-106	PROPOSED PLAN AND PROFILE STREAM TREATMENTS STA 9+00 TO 0+00
C-601	REFERENCE PHOTOS
C-602	REFERENCE PHOTOS
C-603	REFERENCE PHOTOS
C-604	REFERENCE PHOTOS
C-605	REFERENCE PHOTOS
EC-101	SWPPP
EC-102	EROSION & SEDIMENT CONTROL PLAN STA 27+18 TO 18+00
EC-103	EROSION & SEDIMENT CONTROL PLAN STA 18+00 TO 9+00
EC-104	EROSION & SEDIMENT CONTROL PLAN STA 9+00 TO 0+00
D-101	DETAILS
D-102	DETAILS
D-103	DETAILS
D-104	DETAILS
D-105	DETAILS
THIS PLAN CONTAINS 22 SHEETS	

WARNING:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES. THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.

THE CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL AT 651-454-0002 AT LEAST 48 HOURS IN ADVANCE FOR THE LOCATIONS OF ALL UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES OR OTHER BURIED STRUCTURES BEFORE DIGGING. THE CONTRACTOR SHALL REPAIR OR REPLACE THE ABOVE WHEN DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.

CALL BEFORE YOU DIG
GOPHER STATE ONE CALL
TWIN CITY AREA: 651-454-0002
TOLL FREE 1-800-252-1166

PROJECT VICINITY MAP

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
0	60% DESIGN	SJB	EAM	04/20/17

SEAL

NOT FOR
CONSTRUCTION

PRIME CONSULTANT



Responsive partner. Exceptional outcomes.

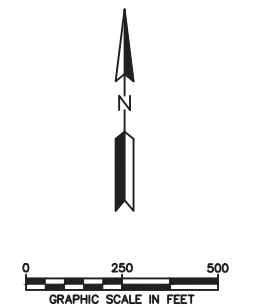
PROJECT TITLE

**PLYMOUTH CREEK
CHANNEL RECONSTRUCTION**

CITY OF PLYMOUTH

3400 PLYMOUTH BOULEVARD
PLYMOUTH, MN 55447

SHEET TITLE			
TITLE AND INDEX SHEET			
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.		SCALE	
1756-10		AS SHOWN	
SHEET NO.		REV NO.	
G-101		0	





LEGEND

DECIDUOUS TREE/REMOVAL	ACCESS ROUTE BOUNDARY	EXISTING FENCE	PROPERTY LINE	ROOTWAD WITH STONE TOE	WATER EDGE	RETAINING WALL	PROPOSED CHANNEL CENTERLINE	PROJECT AREA LIMITS	ROOTWAD WITH LOG TOE	VEGETATED RIPRAP TOE

WATER EDGE	RETAINING WALL	PROPOSED CHANNEL CENTERLINE	PROJECT AREA LIMITS	ROOTWAD WITH LOG TOE	VEGETATED RIPRAP TOE



REV	REVISION DESCRIPTION	DWN	APP	REV DATE
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PLYMOUTH, MN 55447

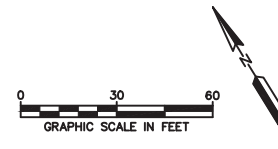
SHEET TITLE			
EXISTING CONDITIONS AND REMOVALS			
27+18 TO 18+00			
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.		SCALE	
1756-10		AS SHOWN	
SHEET NO.		REV NO.	
C-101		0	



LEGEND

○XXX	XXXX	DECIDUOUS TREE/REMOVAL
---	---	ACCESS ROUTE BOUNDARY
---	---	EXISTING FENCE
---	---	PROPERTY LINE
	---	ROOTWAD WITH STONE TOE
---	---	WATER EDGE
---	---	RETAINING WALL
---	---	PROPOSED CHANNEL CENTERLINE
---	---	PROJECT AREA LIMITS
---	---	ROOTWAD WITH LOG TOE
---	---	VEGETATED RIPRAP TOE

---	---	WATER EDGE
---	---	RETAINING WALL
---	---	PROPOSED CHANNEL CENTERLINE
---	---	PROJECT AREA LIMITS
---	---	ROOTWAD WITH LOG TOE
---	---	VEGETATED RIPRAP TOE



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PLYMOUTH, MN 55447

SHEET TITLE

EXISTING CONDITIONS AND REMOVALS 18+00 TO 9+00

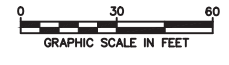
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SJB	LNJ	EAM	SCALE	AS SHOWN
PROJECT NO.	SHEET NO.	REV NO.		
1756-10	C-102	0		



LEGEND

DECIDUOUS TREE/REMOVAL	ACCESS ROUTE BOUNDARY	EXISTING FENCE	PROPERTY LINE	ROOTWAD WITH STONE TOE	RIPRAP TOE

WATER EDGE	RETAINING WALL	PROPOSED CHANNEL CENTERLINE	PROJECT AREA LIMITS	ROOTWAD WITH LOG TOE	VEGETATED RIPRAP TOE



0	60% DESIGN	SJB	EAM	04/20/17
REV	REVISION DESCRIPTION	DWN	APP	REV DATE

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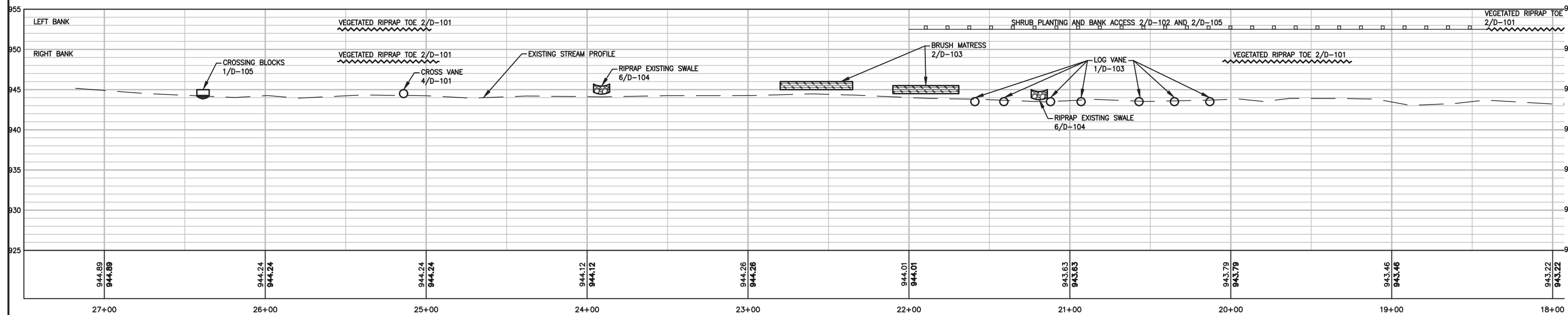
SHEET TITLE

EXISTING CONDITIONS AND REMOVALS 9+00 TO 0+00

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PROJECT NO.	SHEET NO.	REV NO.		
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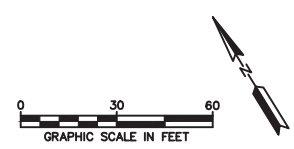


PLYMOUTH CREEK CENTERLINE STA 27+18 TO 18+00



LEGEND

	DECIDUOUS TREE		WATER EDGE
	ACCESS ROUTE BOUNDARY		RETAINING WALL
	EXISTING FENCE		PROPOSED CHANNEL CENTERLINE
	PROPERTY LINE		PROJECT AREA LIMITS
	ROOTWAD WITH STONE TOE		ROOTWAD WITH LOG TOE
	BARE ROOT SHRUB PLANTING		VEGETATED RIPRAP TOE
	SHRUB PLANTING WITH BANK ACCESS		



REV	REVISION DESCRIPTION	DWN	APP	REV DATE
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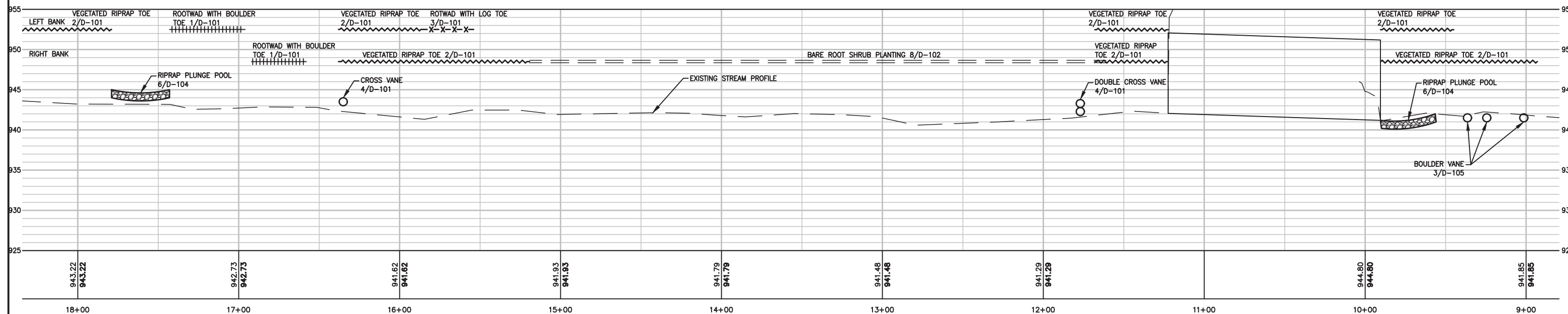
SHEET TITLE

STABILIZATION PLAN AND PROFILE 27+18 TO 18+00

DWN BY	CHK'D	APP'D	DWG DATE
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PROJECT NO.	SHEET NO.	SCALE	AS SHOWN
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	REV NO.		
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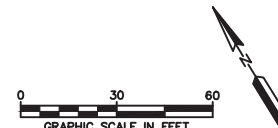


PLYMOUTH CREEK CENTERLINE STA 18+00 TO 9+00



LEGEND

	DECIDUOUS TREE		WATER EDGE
	ACCESS ROUTE BOUNDARY		RETAINING WALL
	EXISTING FENCE		PROPOSED CHANNEL CENTERLINE
	PROPERTY LINE		PROJECT AREA LIMITS
	ROOTWAD WITH STONE TOE		ROOTWAD WITH LOG TOE
	BARE ROOT SHRUB PLANTING		VEGETATED RIPRAP TOE
	SHRUB PLANTING WITH BANK ACCESS		



REV	REVISION DESCRIPTION	DWN	APP	REV DATE
0	60% DESIGN	SJB	EAM	04/20/17

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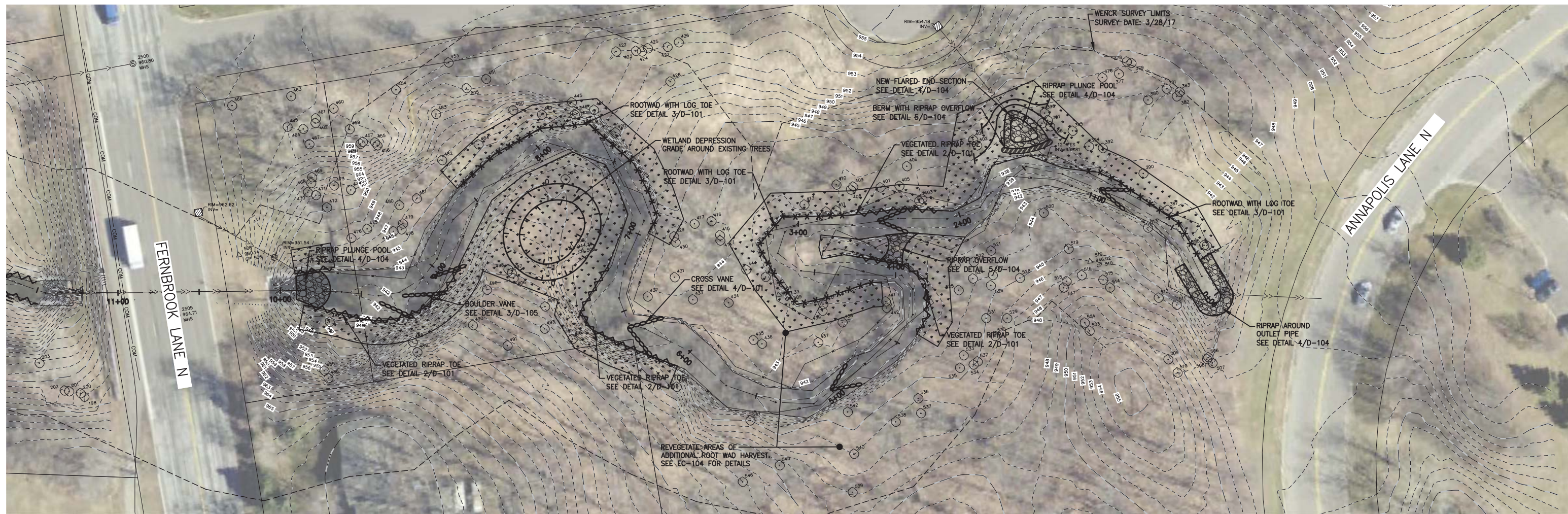
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PLYMOUTH CREEK CHANNEL RECONSTRUCTION

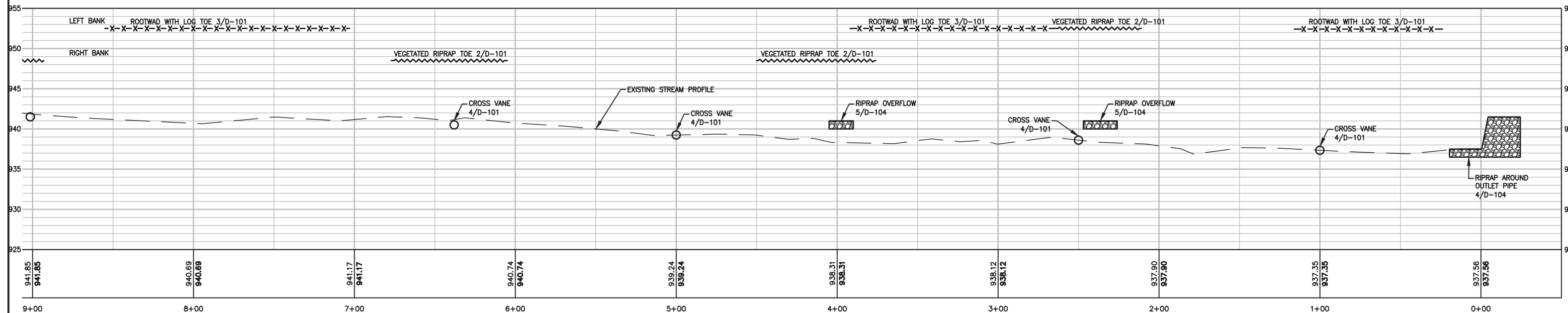
CITY OF PLYMOUTH

3400 PLYMOUTH BOULEVARD
PLYMOUTH, MN 55447

SHEET TITLE			
STABILIZATION PLAN AND PROFILE 18+00 TO 9+00			
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.		SCALE	
1756-10		AS SHOWN	
SHEET NO.		REV NO.	
C-105		0	



PLYMOUTH CREEK CENTERLINE STA 9+00 TO 0+00



LEGEND	
	DECIDUOUS TREE
	ACCESS ROUTE BOUNDARY
	EXISTING FENCE
	PROPERTY LINE
	ROOTWAD WITH STONE TOE
	BARE ROOT SHRUB PLANTING
	SHRUB PLANTING WITH BANK ACCESS
	WATER EDGE
	RETAINING WALL
	PROPOSED CHANNEL CENTERLINE
	PROJECT AREA LIMITS
	ROOTWAD WITH LOG TOE
	VEGETATED RIPRAP TOE



REV	REVISION DESCRIPTION	DWN	APP	REV DATE
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SHEET TITLE			
STABILIZATION PLAN AND PROFILE 9+00 TO 0+00			
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.		SCALE	
1756-10		AS SHOWN	
SHEET NO.		REV NO.	
C-106		0	

HOLE 1: STREAM CROSSING



SHRUB PLANTINGS



STONE STEPS



ADDITIONAL BOULDER COURSE



NATIVE GRASS PLANTINGS



GRADE 30' PUTTING AREA FLAT



30FT MULCH RING TO ELIMINATE MUD AND EROSION



GRANITE STEPPERS
60" LONG x 18" WIDE x 7" THICK

HOLE ONE CURRENTLY HAS BANK EROSION WHERE THE FAIRWAY MEETS PLYMOUTH CREEK. THE METHODS PROPOSED TO FIX THE PROBLEM ARE BY INTRODUCING A NEW LOW-FLOW CROSSING POINT WITH BANK STEPS LEADING TO STEPPERS WITHIN THE CREEK BED. INCREASING THE AMOUNT OF VEGETATION THROUGH SHRUB PLANTINGS AND NATIVE GRASSES. THE PUTTING GREEN FOR HOLE FIVE IS LOCATED CLOSE AND TO MITIGATE THE SOIL EROSION THE PROPOSED SOLUTION INCLUDES INCREASING THE HEIGHT OF THE EXISTING BOULDER WALL AND FLATTENING OUT THE "GREEN" AREA. IN ADDITION, ADDING WOOD CHIPS IN THE HIGH TRAFFIC 30 RADIUS OF THE PIN WILL REDUCE THE AMOUNT OF MUD AND IMPROVE PLAY CONDITIONS.

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
0	60% DESIGN	SJB	EAM	04/20/17

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PLYMOUTH, MN 55447

SHEET TITLE			
REFERENCE PICTURES			
DWN BY SJB	CHK'D LNJ	APP'D EAM	DWG DATE MAR 2017
PROJECT NO. 1756-10		SCALE AS SHOWN	
SHEET NO. C-601		REV NO. 0	

HOLE 8 LOOKING ACROSS TO TEE BOX OF HOLE 12: STREAM ACCESS + STABILIZATION



STONE STEPS TO CREEKS EDGE



SHRUB PLANTINGS

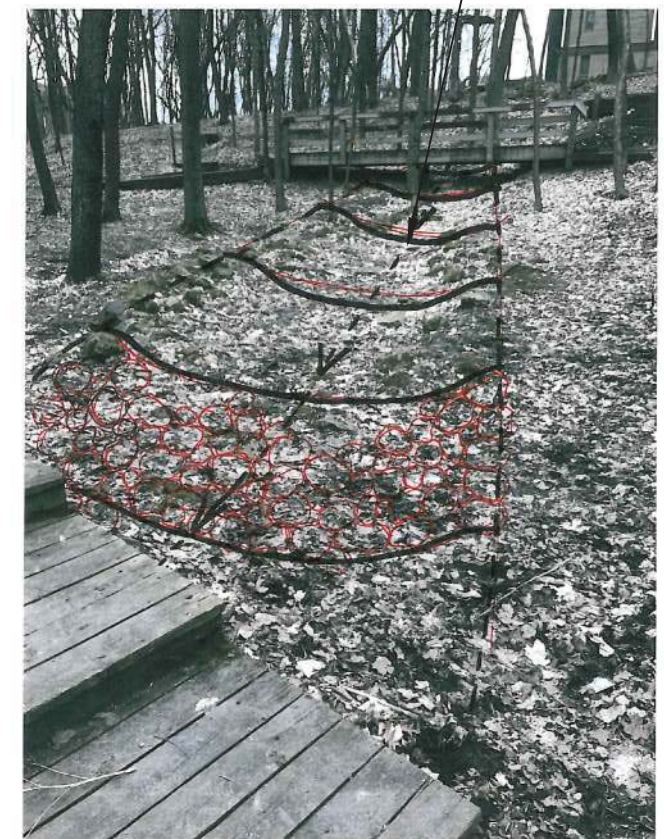


ON HOLE 8 HAS IS A HIGH POTENTIAL FOR DISC'S TO ENTER THE CREEK. THE EXISTING BANKS ARE IN NEED OF EROSION MITIGATION VEGETATION AND ARMORING. IN ORDER TO ACCOMPLISH BOTH DESIRED OUTCOMES A COMBINATION OF SHRUB PLANTINGS TO STABILIZES THE BANK WITH ACCESS STEPS LEADING TO THE CREEK EDGE FOR FISHING DISC'S OUT. THE OUTSIDE BEND WILL BE ARMORED WITH VEGETATED RIPRAP TO COMBAT FLOW VELOCITY AND PRESERVE THE VISUAL AESTHETIC WITH TALL GRASSES GROWING OVER THE ARMORING.

EXISTING SWALES



RIPRAP SWALE



MULTIPLE EXISTING DRAINAGE SWALES OCCUR WITHIN THE DISC GOLF COURSE. THE ADDITION OF RIPRAP TO STABILIZE THE SOILS WILL MITIGATE SOIL MIGRATION INTO THE CREEK. PLAYABILITY OF THE COURSE WILL NOT BE AFFECTED AND A REDUCTION OF OVERALL MUD WILL BE ACHIEVED.

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PLYMOUTH, MN 55447

SHEET TITLE

REFERENCE PICTURES

DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.	SHEET NO.	SCALE	REV NO.
1756-10	C-602	AS SHOWN	0

HOLE 8: MUDDY PATH OPTIONS



EXISTING TREES WITHIN THE FLIGHT PATH ARE SCARRED BY DISCS REPEATEDLY HITTING THE SOFT TISSUE OF YOUNG TREES. TO PROTECT THE TREES DISC STOP POLES WOULD BE PLACED BETWEEN THE TREE AND THE DIRECTION OF FLYING DISCS. WITH STAGGERED ROWS OF POLES DEFLECTION WILL SERVE TO PROTECT TREES.



SHRUB PLANTINGS



DISC STOP POLES



BOARDWALK TO MATCH EXISTING

FOR AREAS OF HEAVY FOOT TRAFFIC IN SUNNY LOCATIONS THE USE OF GRASSPAVE2 WOULD ALLOW FOR REDUCED COMPACTION AND TRAMPLING OF TURF GRASS COVER. THE SOILS IN THESE LOCATIONS WOULD THUS BE STABILIZED WHILE ALLOWING FOR CONSISTENT GOLFER TRAFFIC. IN AREAS OF HEAVILY SHADE DUE TO TREE CANOPY THE USE OF ADDITIONAL BOARDWALKS WILL SERVE TO FOCUS TRAFFIC MOVEMENTS AROUND TREE ROOTS AND BARE SOILS.



GRASS PAVE2



STEEP SLOPES CAN BE RECTIFIED THROUGH THE USE OF BOARDWALKS WHICH ALSO MINIMIZES THE FOOT TRAFFIC TRAMPLING ANY VEGETATION. THE ADDITION OF DISC STOP POLES WILL PROTECT EXISTING/NEWLY PLANTED TREES AND ADD A NEW ELEMENT OF DIFFICULTY FOR PLAYERS TO SHOOT AROUND.



REV	REVISION DESCRIPTION	DWN	APP	REV DATE
0	60% DESIGN		SJB EAM	04/20/17

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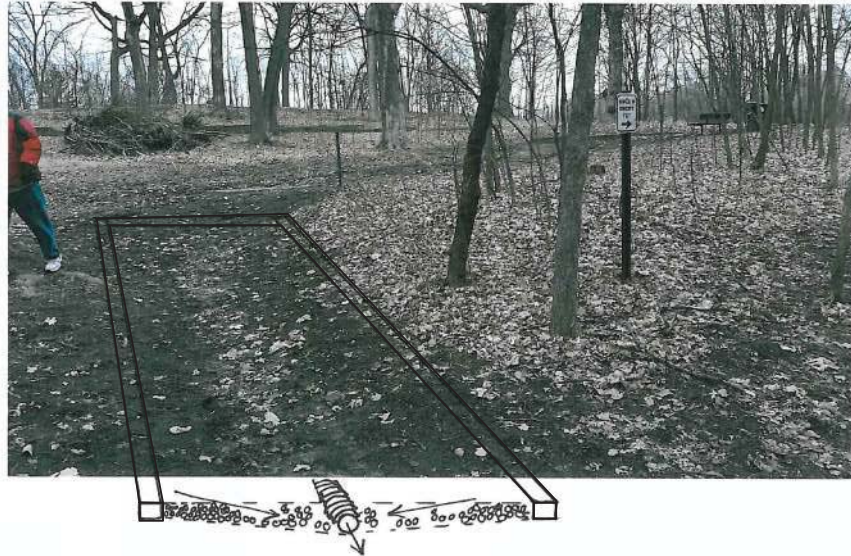
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CITY OF PLYMOUTH

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PLYMOUTH, MN 55447

REFERENCE PICTURES			
DWN BY SJB	CHK'D LNJ	APP'D EAM	DWG DATE MAR 2017
PROJECT NO. 1756-10	SHEET NO. C-603	SCALE AS SHOWN	REV NO. 0

HOLE 11: MUDDY TEE BOX OPTIONS



FOR AREAS OF HEAVY FOOT TRAFFIC IN AND AROUND SHADY TEE BOXES THE PATHWAYS CAN BE BOXED IN USING PRESSURE TREATED TIMBERS AND THE BOXES FILLED WITH EITHER WOODCHIPS OR GRAVEL. THIS WILL SERVE TO REDUCE THE AMOUNT OF MUD AND KEEP THE SOIL MIGRATION DOWN.



REV	REVISION DESCRIPTION	DWN	APP	REV DATE
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SHEET TITLE			
REFERENCE PICTURES			
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.		SCALE	
1756-10		AS SHOWN	
SHEET NO.		REV NO.	
C-604		0	

OXE-BOW: POLINATOR HABITAT + FOOD



THE RUSTY PATCHED BUMBLEBEE BECAME THE FIRST BEE SPECIES EVER LISTED UNDER THE ENDANGERED SPECIES ACT IN MARCH OF THIS YEAR; HOWEVER, POLLINATORS OF ALL KINDS (BEES, MOTHS, AND BUTTERFLIES) ARE CURRENTLY IN A DECLINING STATE ACROSS THE U.S. FOR THE ISLAND OFF THE EDGE OF THE COURSE BEHIND THE OXE-BOW A DEDICATED POLLINATOR HABITAT AND NECTAR SOURCE IS PLANNED. A COMBINATION OF SEEDING NATIVE GRASSES AND FORBS ARE PROPOSED, AS WELL AS, POTTED FORBS TO INCREASE THE DENSITY. IN ORDER TO ACHIEVE THE NECESSARY SUNLIGHT FOR THESE SPECIES THE CURRENT TREES WILL BE REMOVED.



IN ADDITION TO THE POLLINATOR SPECIFIC ISLAND, NATIVE SEED MIXES AND FLOWERING SHRUB SPECIES WILL BE USED TO STABILIZE THE BANKS OF THE CREEK. THE DENSITY OF FLOWERS WILL NOT BE AS INTENSE BUT THEY WILL SERVE AS A CONNECTIVE PATHWAY ALONG THE CREEK TO THE THE GREATER LANDSCAPE WITHIN PLYMOUTH. LIKE THE POLLINATOR ISLAND, TREES ALONG THE CORRIDOR WILL NEED TO BE REMOVED TO ALLOW NEEDED SUNLIGHT FOR THE NEW COVER TYPES. REMOVALS WILL BE LIMITED TO ONLY WHAT IS NECESSARY AS TO NOT CHANGE THE CHARACTER OF THE PARK AND THE DISC GOLF COURSE.



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SHEET TITLE			
REFERENCE PICTURES			
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SJB	LNJ	EAM	MAR 2017
PROJECT NO.		SCALE	
1756-10		AS SHOWN	
SHEET NO.		REV NO.	
C-605		0	

Construction Dates: Fall 2017 - Spring 2018

Party Responsible for Long Term Operation and Maintenance of the Site - OWNER

City of Plymouth
3400 Plymouth Boulevard
Plymouth, MN 55447-1482

Derek Asche, Water Resources Manager
763-509-5526
engineering@plymouthmn.gov

Party Responsible for Implementation of the SWPPP - CONTRACTOR

Contractor	
Contact Name	
Phone	
Email	

Surface Area Tabulation

Total Disturbed Area	1.5 acres
Existing Impervious Area	0.1 acres
Proposed Impervious Area	0.1 acres
Net Impervious Area Increase	<0.1 acres

Project Description

The project consists of riparian buffer restoration, streambank stabilization, installation of boardwalk, path improvements, and improvements to several existing disc golf holes and tee boxes.

Temporary Sediment Basin

Because the total disturbed area for this project is less than 5 acres, there are no additional temporary sedimentation basin requirements.

EROSION AND SEDIMENT CONTROL PRACTICES

All exposed soil areas must have temporary erosion protection (erosion control blanket, seed) as soon as possible or within 7 days after the construction activity in that portion of the site has temporarily or permanently ceased.

CONTRACTOR shall implement appropriate construction phasing, vegetative buffer strips, horizontal slope grading, and other construction practices that minimize erosion when practical. The normal wetted perimeter of any temporary or permanent drainage ditch that drains water from a construction site, or diverts water around a site, must be stabilized within 200 lineal feet from the property edge, or from the point of discharge to any surface water. Stabilization must be completed within 24 hours of connecting to a surface water. Pipe outlets must be provided with temporary or permanent energy dissipation within 24 hours of connection to a surface water.

The following measures will be taken as sediment control practices in order to minimize sediments from entering surface waters:
The following measures will be taken as sediment control practices in order to minimize sediments from entering surface waters:

1. Installation of floating silt curtain within the creek channel at the downgradient extents of construction activity prior to site disturbance. Floating silt curtain shall be installed in two locations upgradient of the culverts under Fernbrook Lane and Annapolis Lane as shown on Sheets EC-102 and EC-103. Install silt curtain as shown on Sheet D-104.
2. Installation of perimeter silt fence in the locations shown on Sheets EC-102 through EC-104 prior to site disturbance. Perimeter silt fence shall be installed as shown on Sheet D-104.
3. Installation of inlet protection in the locations shown on Sheets EC-102 through EC-104 prior to site disturbance. Inlet protection shall be installed as shown on Sheet D-104.
4. Installation of rock construction entrances in the locations shown on Sheet C201. Rock construction entrances shall be constructed as shown on Sheet C803 to prevent tracking of sediment offsite. Street sweeping of tracked sediment shall be performed as required.

Pollution Prevention Measures

Solid Waste

Solid waste, including but not limited to, collected asphalt and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other waste must be disposed of properly and must comply with MPCA disposal requirements.

Hazardous Materials

Hazardous materials, including but not limited to oil, gasoline, paint and any hazardous substance must be properly stored including secondary containments, to prevent spills, leaks or other discharge. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal of hazardous waste must be in compliance with MPCA regulations.

Washing of Construction Vehicles

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

Concrete Washout Area

The contractor shall provide effective containment for all liquid and solid wastes generated by washout operations to prevent runoff to surface waters. Liquid and solid wastes must be disposed of properly in compliance with MPCA rules.

Amendments

Amend the SWPPP as necessary to address any changes in design, construction, operation, maintenance, weather or seasonal conditions that have a significant effect on discharge of pollutants to surface or underground waters; or to address concerns identified during inspections or investigations by OWNER or local government entities.

Record Retention

The SWPPP, all changes to it, and inspection and maintenance records must be kept on-site during construction. The OWNER must retain a copy of the SWPPP along with the following records for three (3) years after submittal of the Notice of Termination.

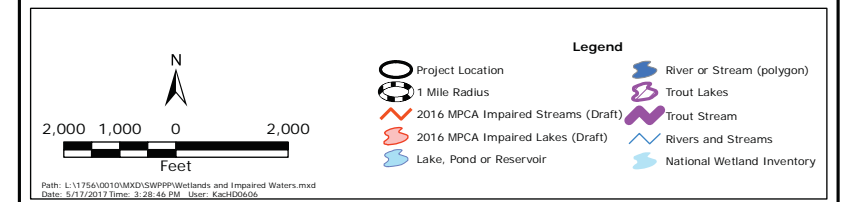
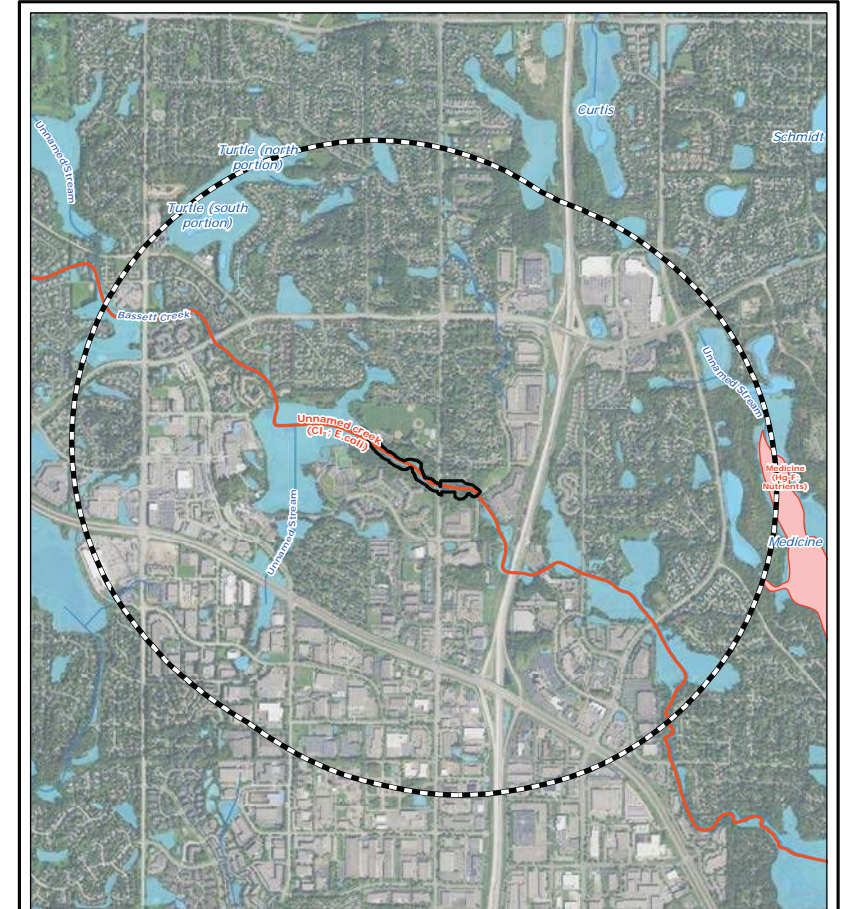
1. Any other permits required for the project;
2. Records of all inspection and maintenance conducted during construction;
3. All permanent operations and maintenance agreements that have been implemented, including all right of way, contract, covenants and other binding requirements regarding perpetual maintenance;
4. All required calculations for design of the temporary and permanent stormwater management systems.

Inspections

The inspection log will be completed by the CONTRACTOR for the construction site. Inspections at the site will be completed as follows:

- 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 individual performing inspections must be trained as required by part IV.E of the Permit. CONTRACTOR to provide OWNER with proof of training. Inspections must include stabilized areas, erosion prevention and sediment control BMPs, and infiltration areas. Corrective actions must be identified and date of correction must be noted as identified in Section IV.E. of the Permit.



IMPAIRED WATERS, SPECIAL WATERS, AND WETLANDS

This Project is not located within 1 mile of a special water.

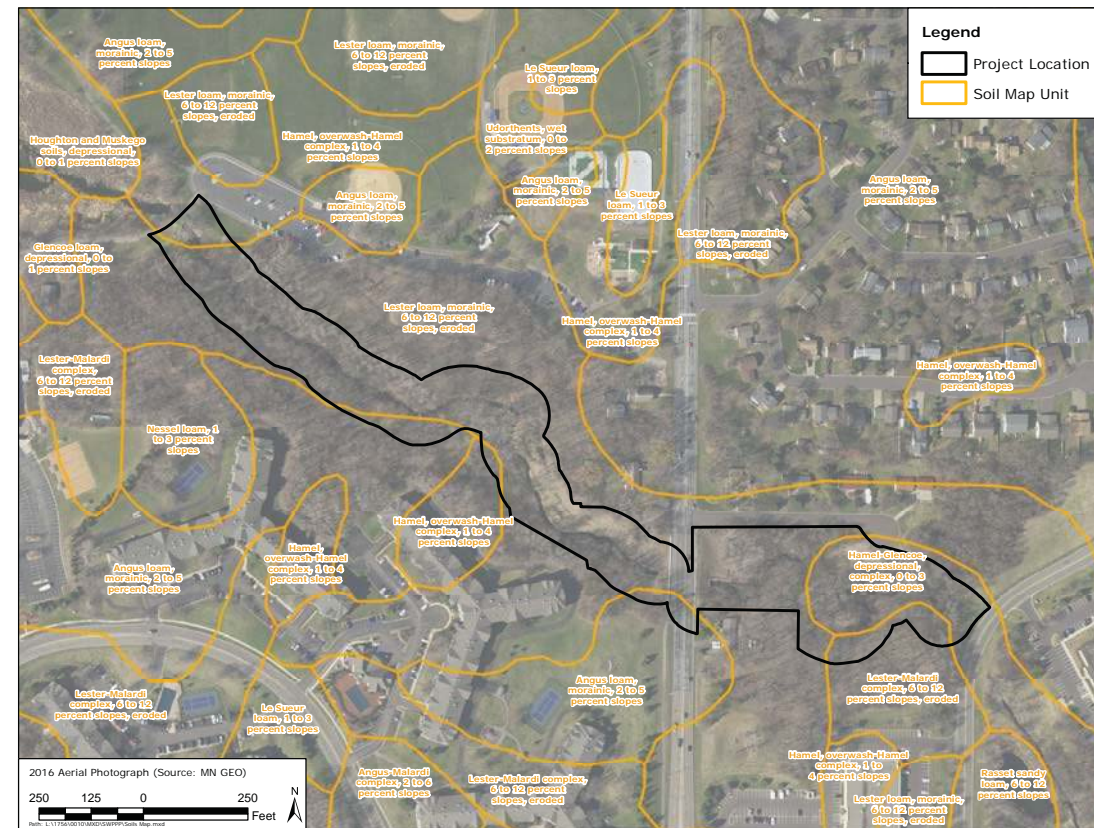
This Project is located within 1 mile of an impaired water (see figure above):

Plymouth Creek impaired for Cl-, E. coli
Because of the proximity of the project to an impaired water during construction, all exposed soil areas must be stabilized as soon as possible to limit soil erosion but in no case later than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased.

This Project will impact wetlands. A wetland delineation has been performed and wetland permits have been obtained.

EROSION CONTROL ESTIMATED QUANTITIES

Material	Quantity
MnDOT Seed Mix 34-262	14.5 lb/acre x 0.4 acres = 6 LBS
Erosion Control Blanket	1,650 SY
Inlet Protection	5 EA
Flotation Silt Curtain	50 LF
Construction Entrance	4 EA
Bioroll	200 LF
Silt Fence	400 LF



Dewatering

Turbid or sediment-laden water must be treated with the appropriate BMPs, such that discharge does not adversely affect the receiving water. Ensure that discharge points are adequately protected from erosion and scour. CONTRACTOR responsible to develop and submit dewatering plan to engineer, secure any required permits, and comply with permits.

Final Stabilization

All areas disturbed by construction will receive seed according to the plans and specifications and within the specified vegetative time schedule.

Final stabilization will occur when the site has a uniform vegetative cover with a density of 70% over the entire disturbed area. All temporary synthetic erosion prevention and sediment control BMPs (such as silt fence) must be removed as part of the site final stabilization. All sediment must be cleaned out of conveyances and temporary sedimentation basins if applicable.

Notice of Termination (NOT) must be submitted within 30 days of final stabilization. Before Termination, revegetation establishment and coverage must meet the permit requirements.

UNIVERSITY OF MINNESOTA

Louis H Sigtermans
Minneapolis, MN

Design of Construction SWPPP
(May 31, 2020)

CERTIFICATION

In accordance with Part III.A.2 of the General Permit Authorization to Discharge Stormwater Associated with Construction Activity under the NPDES, the preparer of this document was trained under the University of Minnesota Erosion and Sediment Control Certification Program. Mr. Louis Sigtermans' certification in Design of SWPPP is valid through May 31, 2020.

0	60% DESIGN	SJB	EAM	04/20/17
REV	REVISION DESCRIPTION	DWN	APP	REV DATE

SEAL

NOT FOR CONSTRUCTION

PRIME CONSULTANT



Responsive partner. Exceptional outcomes.

PROJECT TITLE

PLYMOUTH CREEK CHANNEL RECONSTRUCTION

CITY OF PLYMOUTH

3400 PLYMOUTH BOULEVARD
PLYMOUTH, MN 55447

SHEET TITLE

SWPPP

DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.		SCALE	
1756-10		AS SHOWN	

SHEET NO.		REV NO.
EC-101		0



LEGEND

- | | | | |
|--|--|--|-----------------------------|
| | DECIDUOUS TREE | | WATER EDGE |
| | ACCESS ROUTE BOUNDARY | | RETAINING WALL |
| | EXISTING FENCE | | PROPOSED CHANNEL CENTERLINE |
| | PROPERTY LINE | | PROJECT AREA LIMITS |
| | STRAW MULCH W/ DISK ANCHORING AND MN SEED MIX 34-262 | | FLOTATION SILT CURTAIN |
| | EROSION CONTROL BLANKET AND MN SEED MIX 34-262 | | INLET PROTECTION |
| | | | BIOROLL |
| | | | SILT FENCE |



REV	REVISION DESCRIPTION	DWN	APP	REV DATE
0	60% DESIGN	SJB	EAM	04/20/17

SEAL

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PROJECT TITLE
PLYMOUTH CREEK CHANNEL RECONSTRUCTION

CITY OF PLYMOUTH
 3400 PLYMOUTH BOULEVARD
 PLYMOUTH, MN 55447

SHEET TITLE			
EROSION AND SEDIMENT CONTROL PLAN			
27+18 TO 18+00			
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.		SHEET NO.	
1756-10		EC-102	
			REV NO.
			0



LEGEND

- | | | | |
|--|--|--|-----------------------------|
| | DECIDUOUS TREE | | WATER EDGE |
| | ACCESS ROUTE BOUNDARY | | RETAINING WALL |
| | EXISTING FENCE | | PROPOSED CHANNEL CENTERLINE |
| | PROPERTY LINE | | PROJECT AREA LIMITS |
| | STRAW MULCH W/ DISK ANCHORING AND MN SEED MIX 34-262 | | FLOTATION SILT CURTAIN |
| | EROSION CONTROL BLANKET AND MN SEED MIX 34-262 | | INLET PROTECTION |
| | | | BIOROLL |
| | | | SILT FENCE |



REV	REVISION DESCRIPTION	DWN	APP	REV DATE
0	60% DESIGN	SJB	EAM	04/20/17

SEAL

NOT FOR CONSTRUCTION

PRIME CONSULTANT

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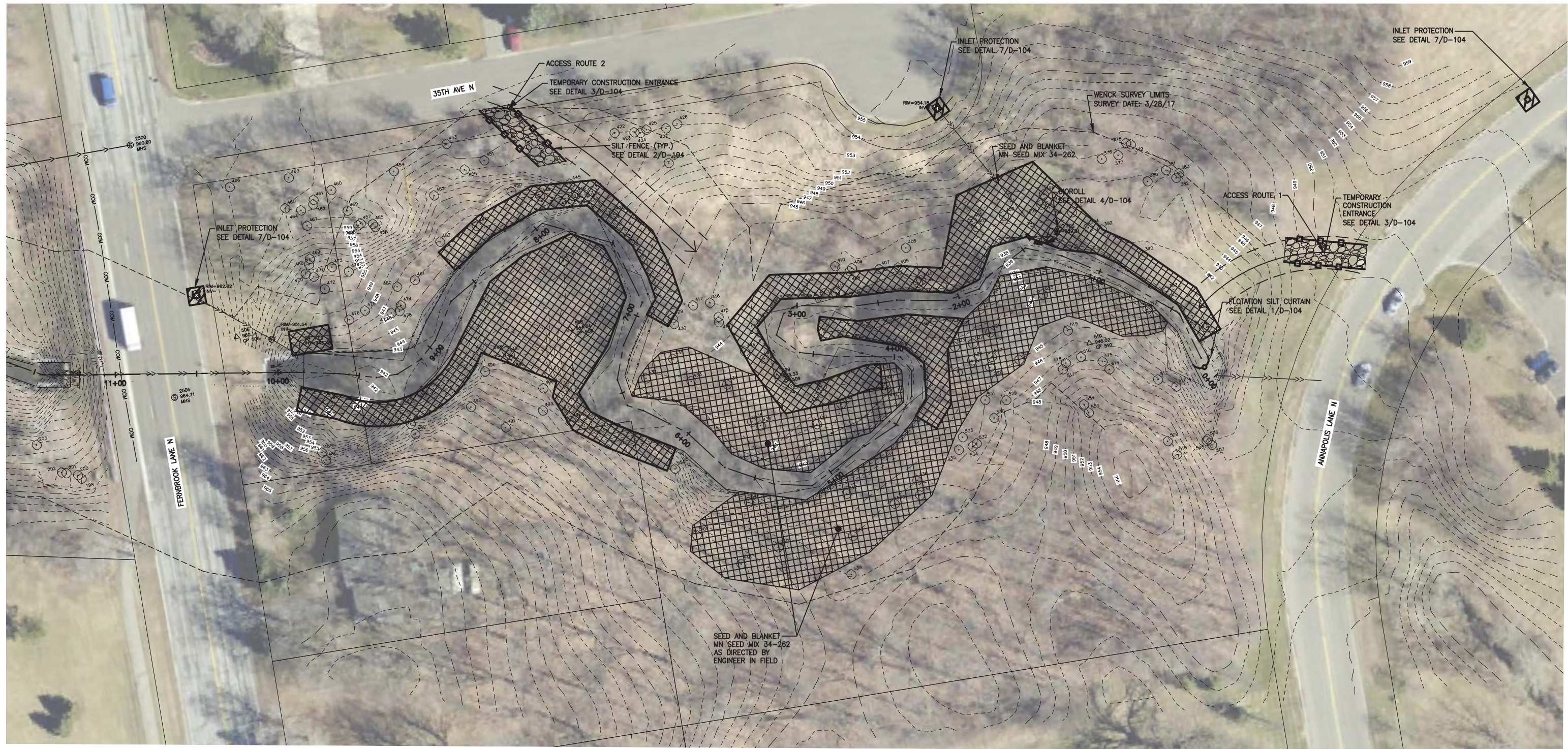
PROJECT TITLE

PLYMOUTH CREEK CHANNEL RECONSTRUCTION

CITY OF PLYMOUTH

3400 PLYMOUTH BOULEVARD
PLYMOUTH, MN 55447

SHEET TITLE			
EROSION AND SEDIMENT CONTROL PLAN			
18+00 TO 9+00			
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.		SCALE	
1756-10		AS SHOWN	
SHEET NO.		REV NO.	
EC-103		0	



LEGEND

- | | | | |
|--|--|--|-----------------------------|
| | DECIDUOUS TREE | | WATER EDGE |
| | ACCESS ROUTE BOUNDARY | | RETAINING WALL |
| | EXISTING FENCE | | PROPOSED CHANNEL CENTERLINE |
| | PROPERTY LINE | | PROJECT AREA LIMITS |
| | STRAW MULCH W/ DISK ANCHORING AND MN SEED MIX 34-262 | | FLOTATION SILT CURTAIN |
| | EROSION CONTROL BLANKET AND MN SEED MIX 34-262 | | INLET PROTECTION |
| | | | BIOROLL |
| | | | SILT FENCE |



0	60% DESIGN	SJB	EAM	04/20/17
REV	REVISION DESCRIPTION	DWN	APP	REV DATE

SEAL

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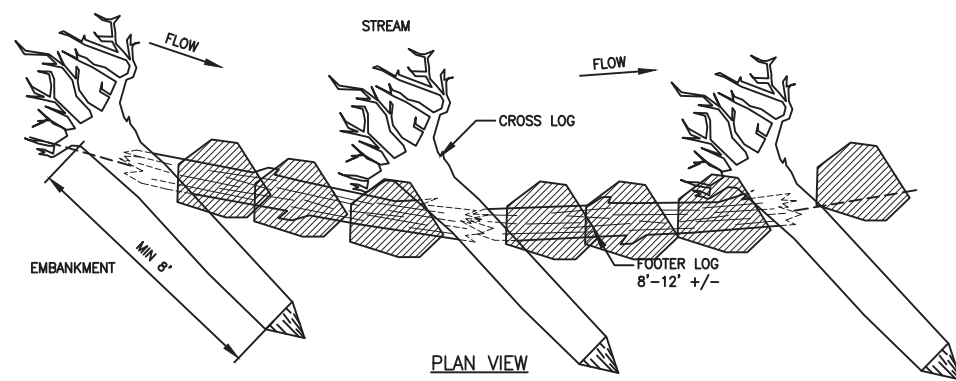
PROJECT TITLE

PLYMOUTH CREEK CHANNEL RECONSTRUCTION

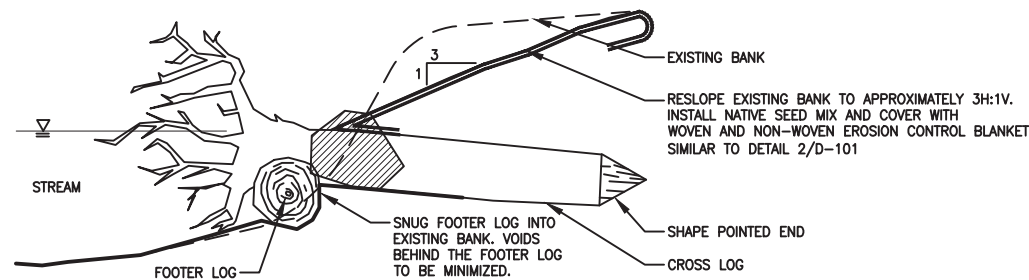
CITY OF PLYMOUTH

3400 PLYMOUTH BOULEVARD
PLYMOUTH, MN 55447

SHEET TITLE			
EROSION AND SEDIMENT CONTROL PLAN			
9+00 TO 0+00			
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.		SCALE	
1756-10		AS SHOWN	
SHEET NO.		REV NO.	
EC-104		0	



PLAN VIEW

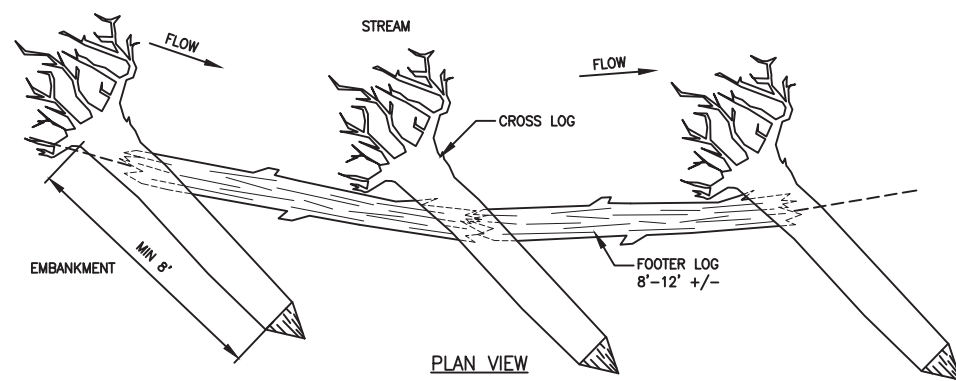


SECTION VIEW

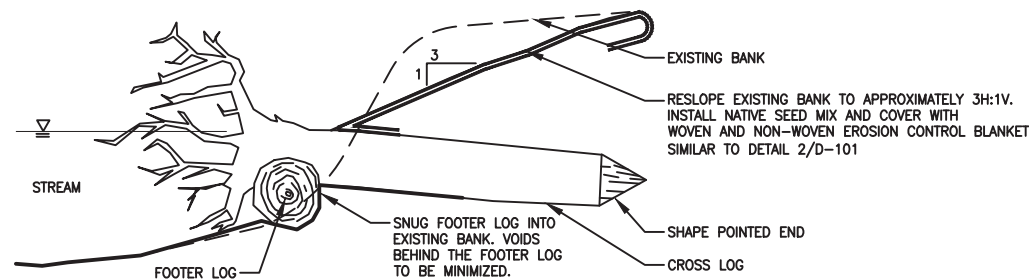
ROOTWAD WITH BOULDER TOE

NOT TO SCALE

1
D-101



PLAN VIEW



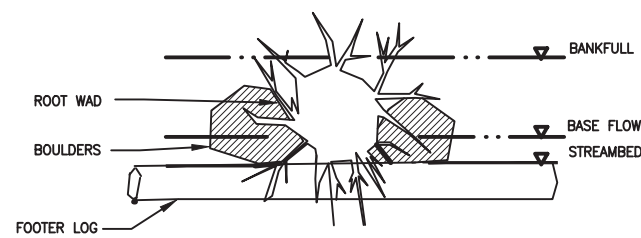
SECTION VIEW

ROOTWAD WITH LOG TOE

NOT TO SCALE

3
D-101

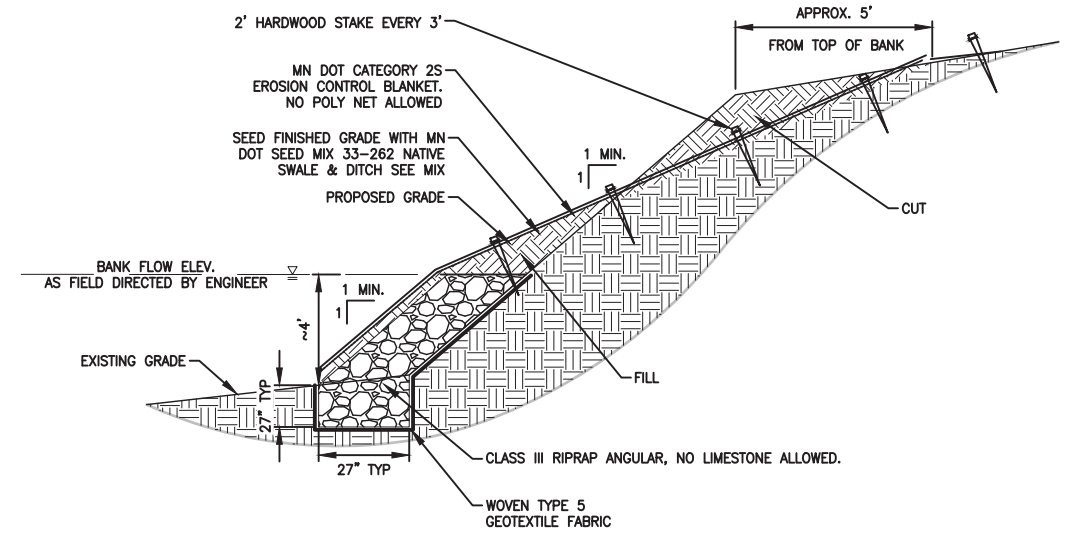
- NOTE:
1. A MINIMUM OF TWO CROSS LOGS PER FOOTER LOG IS REQUIRED TO ANCHOR FOOTER LOG.
 2. MINIMUM LOG DIAMETER IS 12" +/-



ELEVATION VIEW

GENERAL NOTES:

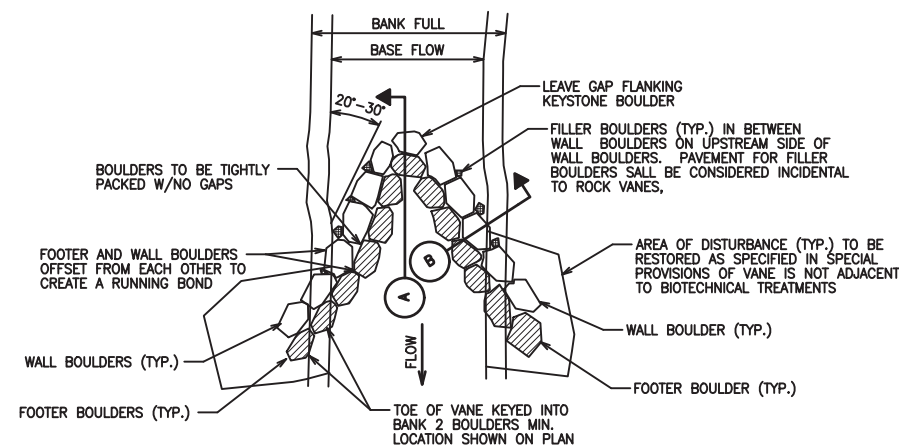
1. ENGINEER TO FIELD VERIFY ROOT WAD PLACEMENT.
2. SEE PLANS FOR SPECIFIED BIOTECHNICAL TREATMENTS.
3. FOOTER LOG MINIMUM OF 12" DIAMETER BY 8' LONG.
4. A MINIMUM OF TWO CROSS LOGS PER FOOTER LOG IS REQUIRED TO ANCHOR FOOTER LOG.
5. BOULDERS SHALL BE 24" TO 36", 350 LBS. TO 450 LBS. UN-CUT, UN-DRESSED FIELDSTONE BOULDERS TO BE FIELD LOCATED. COORDINATE WITH ENGINEER.
6. ROOTWAD SHALL BE DRIVEN OR EXCAVATED INTO BANK.
- 7.



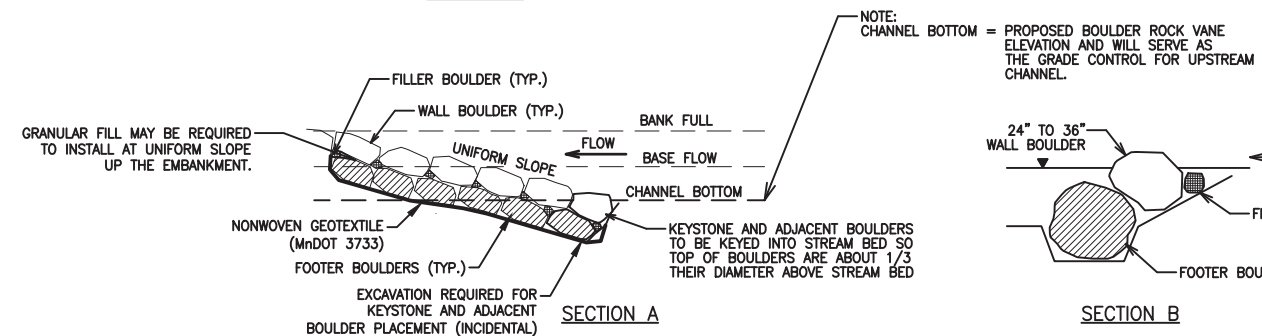
CLASS III VEGETATED RIPRAP TOE DETAIL

NOT TO SCALE

2
D-101



PLAN VIEW



CROSS VANE DETAIL

NOT TO SCALE

4
D-101

LEGEND

- SUBMERGED OR FOOTER 24" TO 30" FIELDSTONE BOULDER MEETING MnDOT 3601.2A. AT LEAST 20% OF THE BOULDERS SHALL HAVE A DIAMETER OF 24" OR LARGER.
- PROTRUDING OR WALL 30" TO 36" BOULDERS MEETING MnDOT 3601.2A. AT LEAST 20% OF THE BOULDERS SHALL HAVE A DIAMETER OF 30" OR LARGER.
- FILLER BOULDER 6" TO 12" DIA.;

NOTE:

1. FIELD STONE BOULDERS SHALL HAVE NO CUT, BLAST OR SHEAR MARKS.
2. ENOUGH WALL BOULDERS TO BE FLAT TOPPED AND SET TO CREATE A DRY CROSSING/WALKWAY ACROSS THE CREEK.
3. FINAL PLACEMENT OF ROCK VANE AND BOULDERS TO BE FIELD VERIFIED BY ENGINEER.
4. ALL VANES EXTEND UPSTREAM INTO FLOW OF CREEK.
5. CLASS V RIPRAP ACCEPTABLE ROCK ALTERNATIVE

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
0	60% DESIGN	SJB	EAM	04/20/17

SEAL

NOT FOR CONSTRUCTION

PRIME CONSULTANT



Responsive partner. Exceptional outcomes.

PROJECT TITLE

PLYMOUTH CREEK CHANNEL RECONSTRUCTION

CITY OF PLYMOUTH

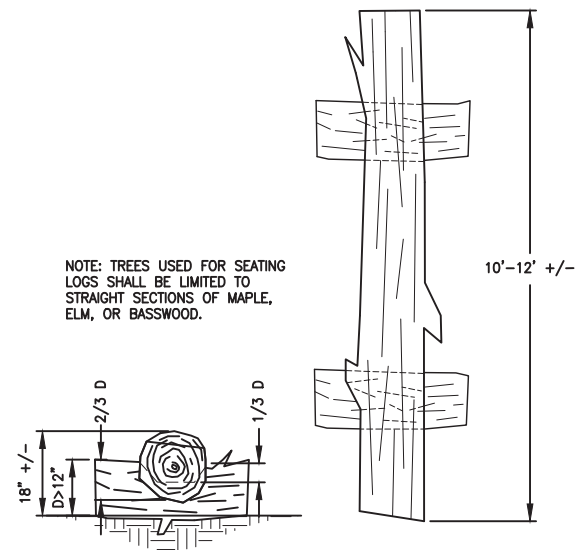
3400 PLYMOUTH BOULEVARD
PLYMOUTH, MN 55447

SHEET TITLE

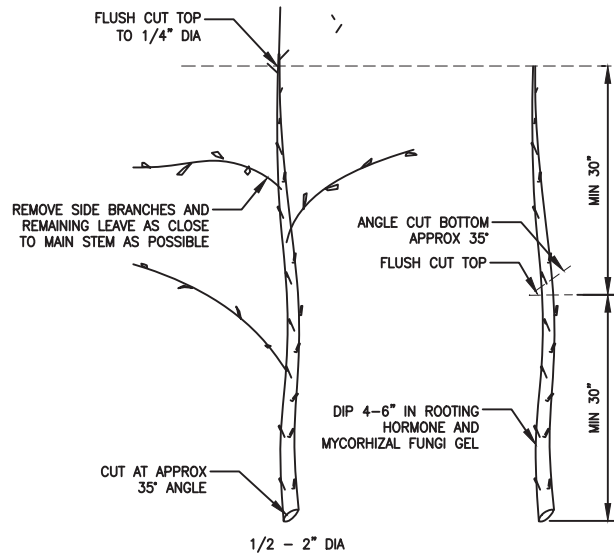
DETAILS

DWN BY SJB CHK'D LNJ APP'D EAM DWG DATE MAR 2017

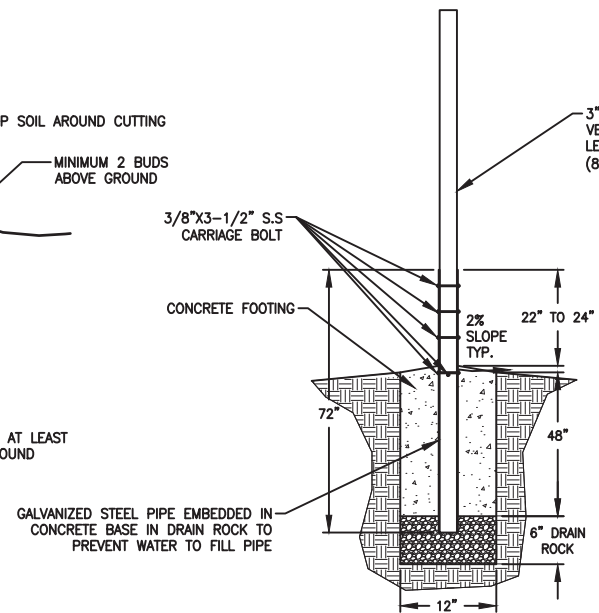
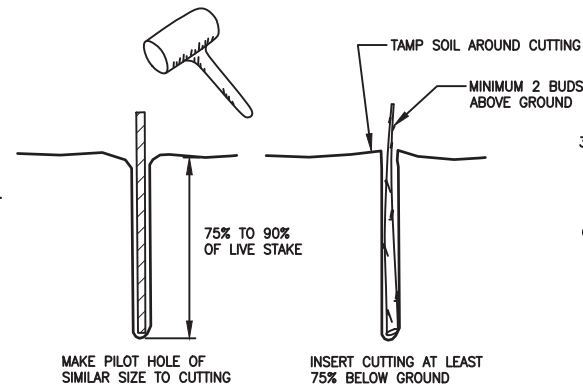
PROJECT NO. 1756-10 SHEET NO. D-101 REV NO. 0



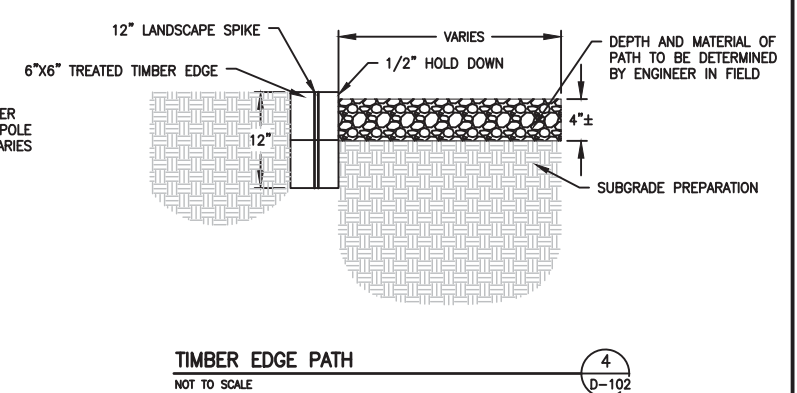
SEATING LOGS/REVEGETATION BOUNDARY
NOT TO SCALE



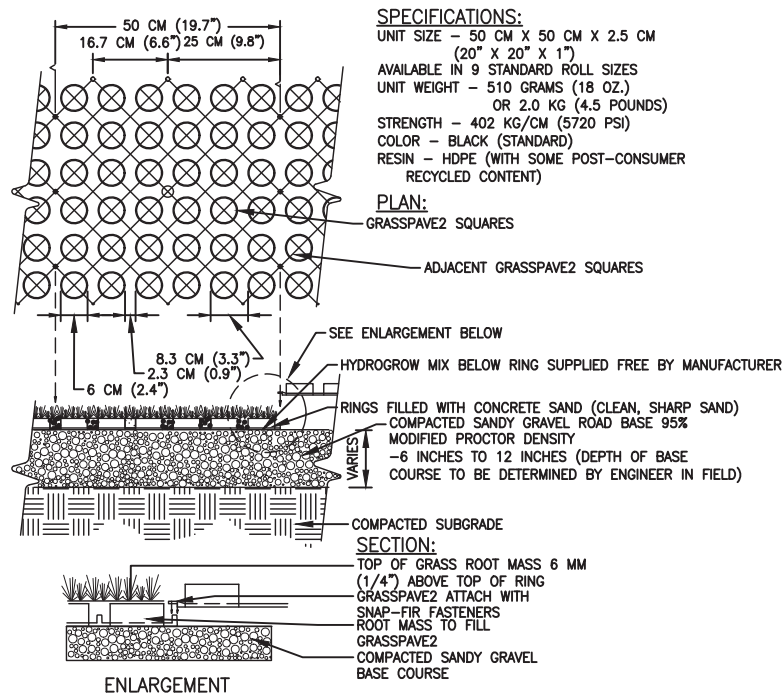
LIVE STAKE HARVEST AND INSTALLATION
NOT TO SCALE



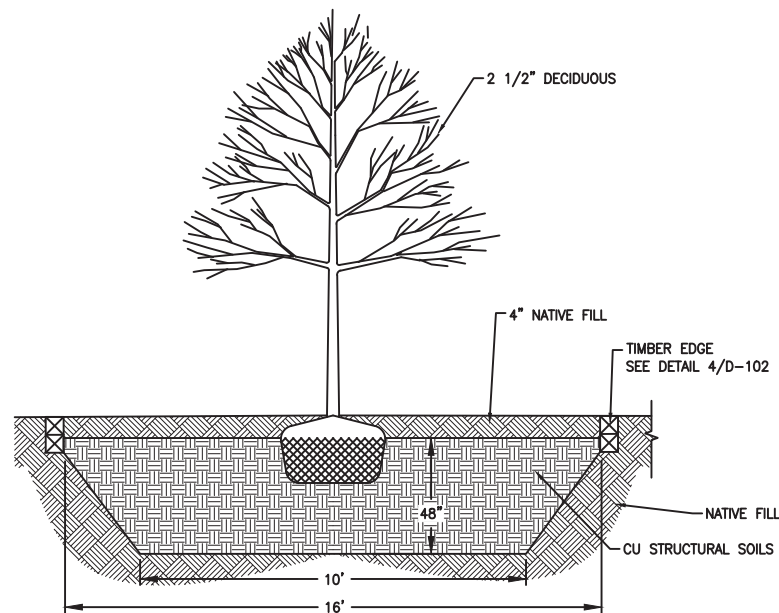
DISC STOP POLES
NOT TO SCALE



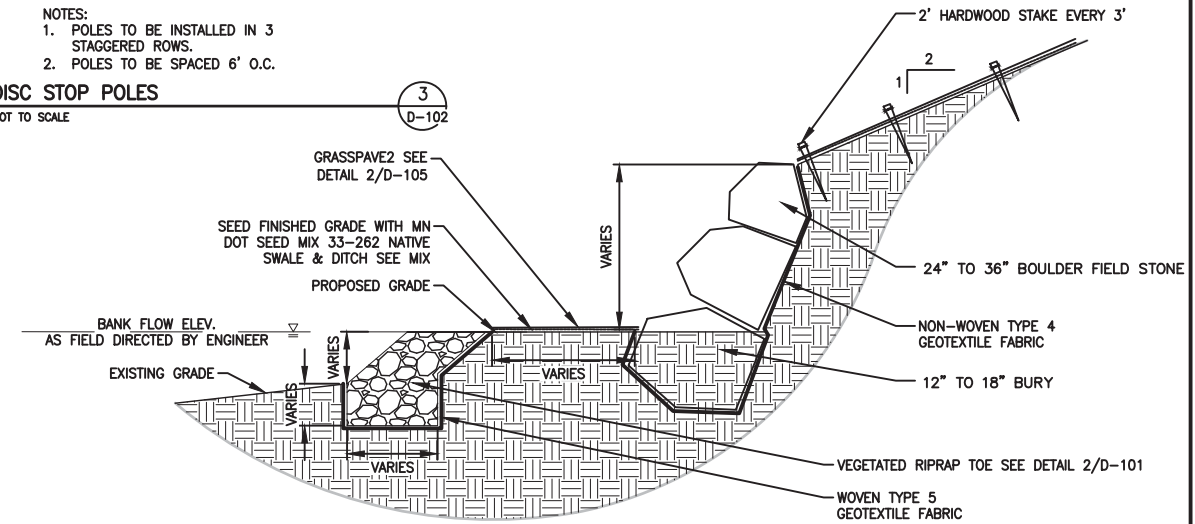
TIMBER EDGE PATH
NOT TO SCALE



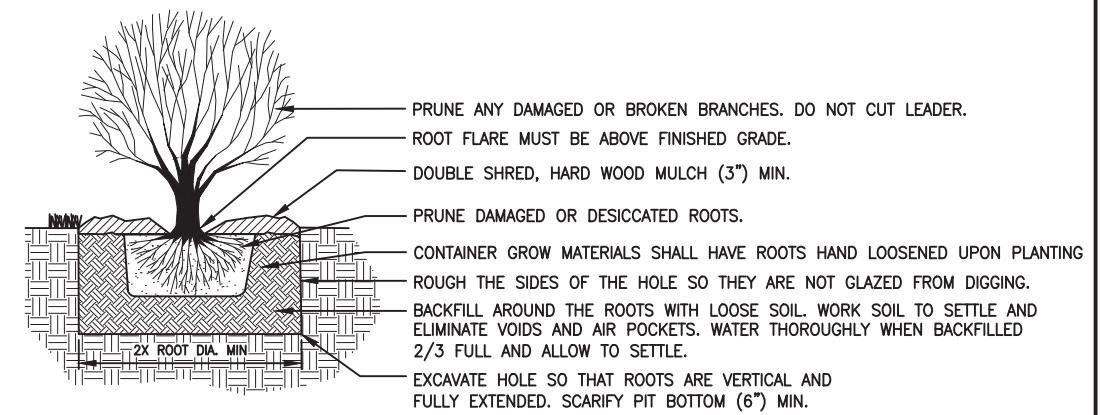
GRASSPAVE2 DETAIL
NOT TO SCALE



TREE WITH STRUCTURAL SOIL BASE
NOT TO SCALE



TWO STAGE CHANNEL CLASS II RIPRAP TOE & BOULDER DETAIL
NOT TO SCALE



SHRUB PLANTING
NOT TO SCALE

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
0	60% DESIGN	SJB	EAM	04/20/17

SEAL

NOT FOR CONSTRUCTION

PRIME CONSULTANT

Responsive partner. Exceptional outcomes.

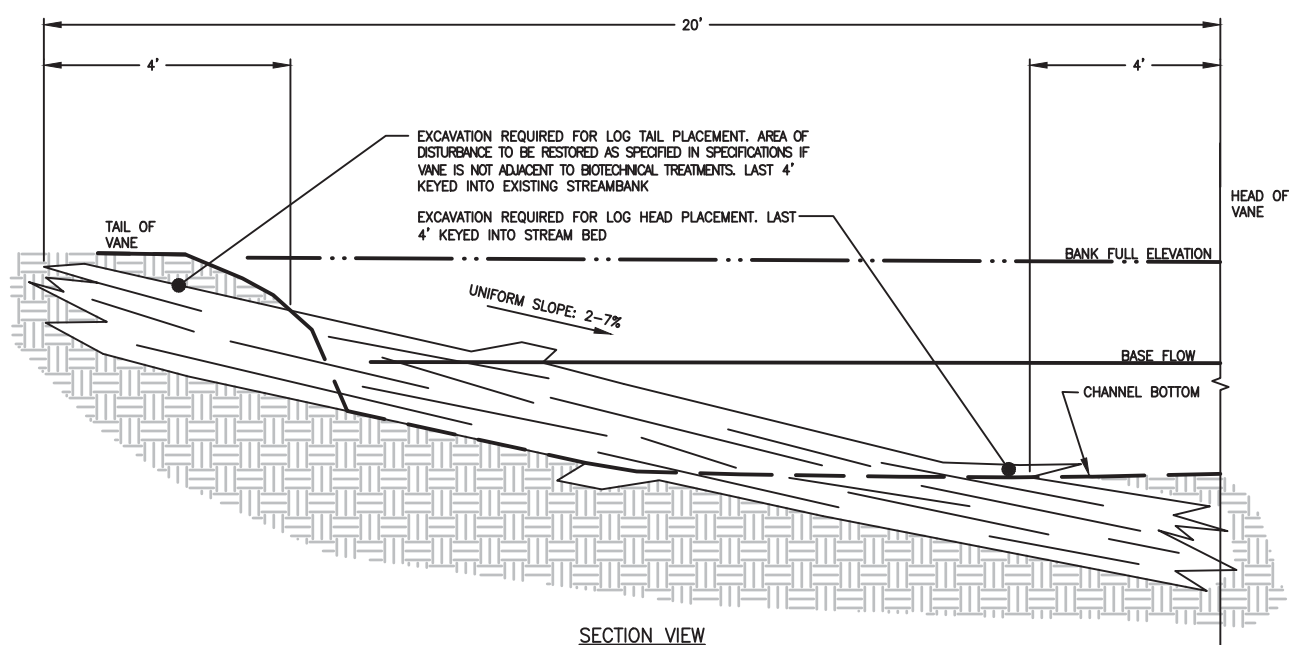
PROJECT TITLE

PLYMOUTH CREEK CHANNEL RECONSTRUCTION

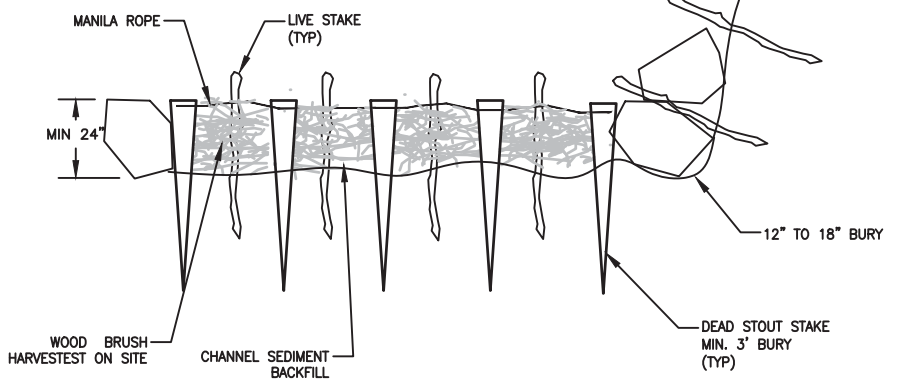
CITY OF PLYMOUTH

3400 PLYMOUTH BOULEVARD
PLYMOUTH, MN 55447

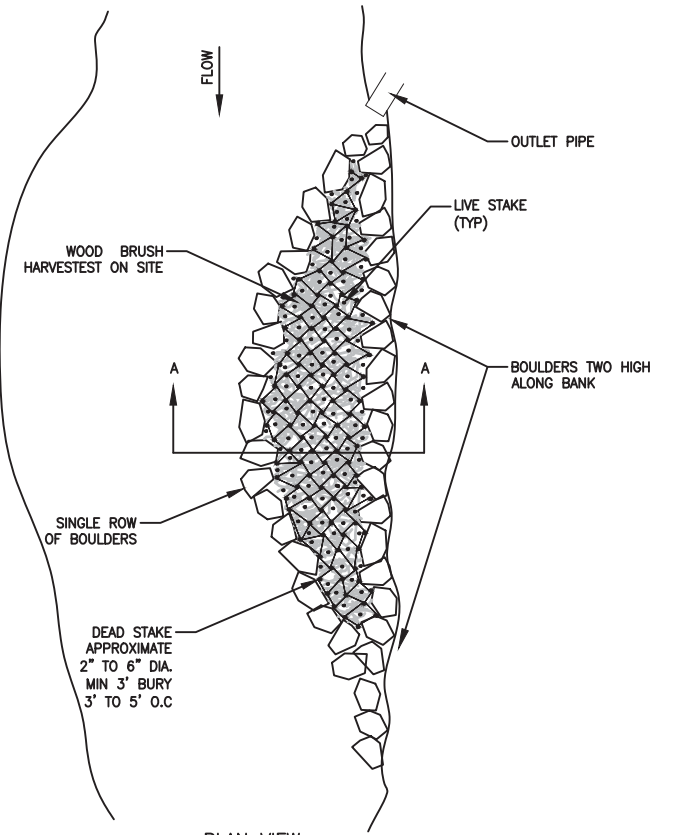
SHEET TITLE			
DETAILS			
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.	SHEET NO.	SCALE	AS SHOWN
1758-10	D-102		
			REV NO.
			0



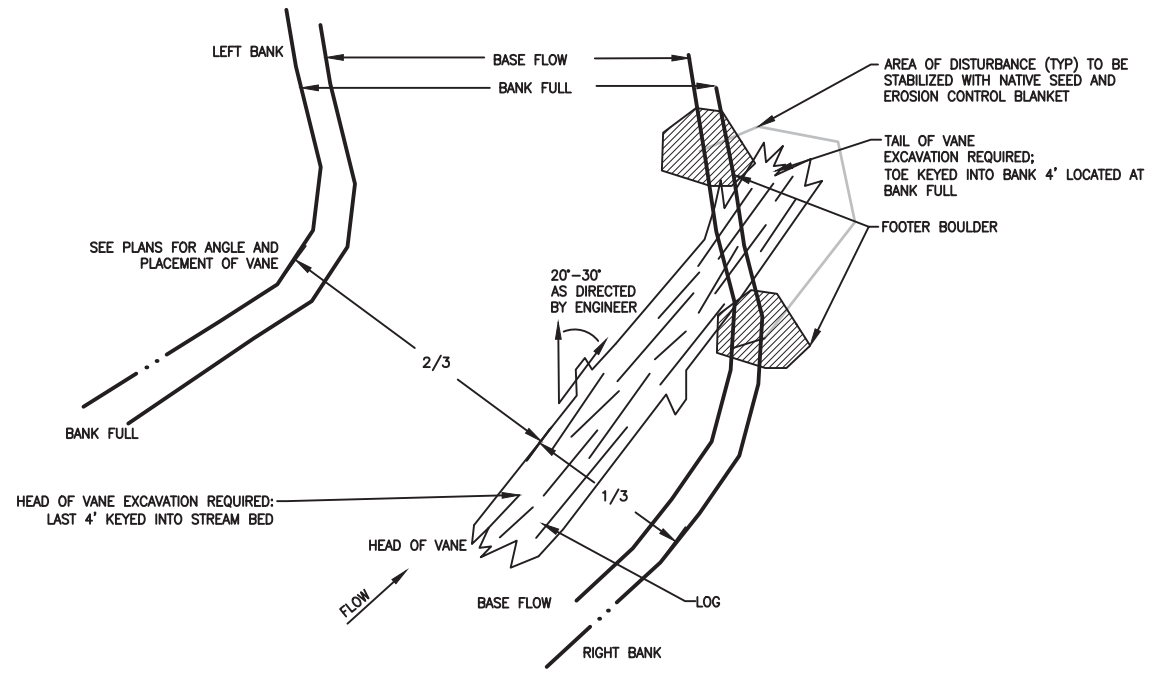
SECTION VIEW



SECTION VIEW A-A

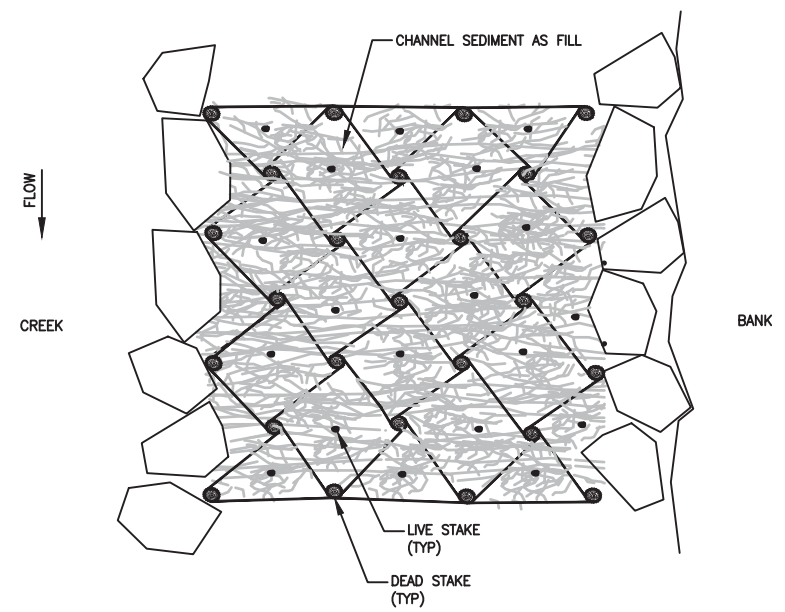


PLAN VIEW



PLAN VIEW

LOG VANE DETAIL (TYPICAL)
NOT TO SCALE



PLAN VIEW

- NOTES:
1. MANILA ROPE-- MINIMUM 3/8" NATURAL FIBER TWISTED ROPE WITH 500 LB BREAK STRENGTH.
 2. DEAD STAKES MAY BE HARVESTED ON SITE 3' TO 5' O.C. MIN 3' BURY, APPROXIMATE 2"-6" DIAMETER.
 3. OVERLAY BRANCHES
 4. LIVE STAKES 3' TO 5' O.C., MIN 2' BURY MIN 12" ABOVE MATTRESS.

BRUSH MATTRESS
NOT TO SCALE

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
0	60% DESIGN	SJB	EAM	04/20/17

SEAL

NOT FOR CONSTRUCTION

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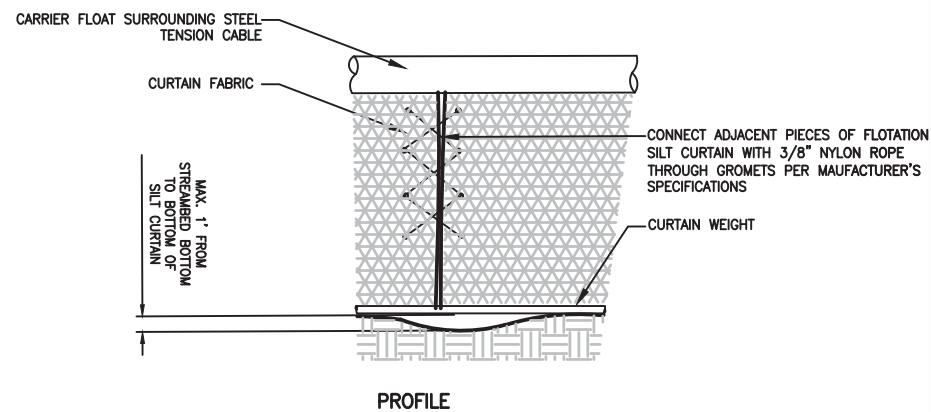
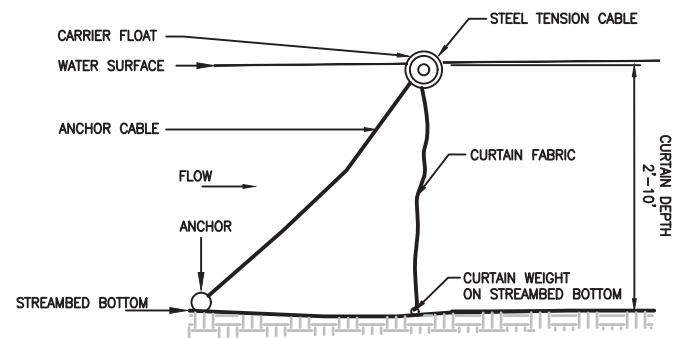
PROJECT TITLE

PLYMOUTH CREEK CHANNEL RECONSTRUCTION

CITY OF PLYMOUTH

3400 PLYMOUTH BOULEVARD
PLYMOUTH, MN 55447

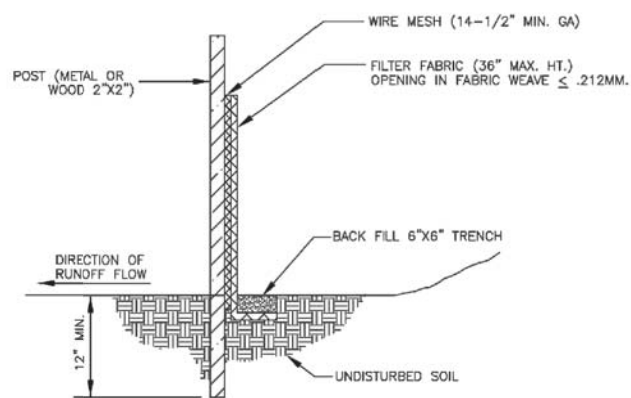
SHEET TITLE			
DETAILS			
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.	SHEET NO.	SCALE	AS SHOWN
1756-10	D-103		
			REV NO.
			0



FLOTATION SILT CURTAIN
NOT TO SCALE

1
D-104

- NOTES:**
1. DIG A 6"x6" TRENCH ALONG THE INTENDED FENCE LINE.
 2. DRIVE ALL POSTS INTO THE GROUND AT THE DOWNHILL SIDE OF THE TRENCH.
 3. WIRE FENCING PER HENNEPIN COUNTY CONSERVATION DISTRICT EROSION AND SEDIMENT CONTROL MANUAL. WIRE MESH MUST BE A MINIMUM OF 2" INTO THE GROUND AND NO MORE THAN 36" ABOVE THE ORIGINAL GROUND SURFACE.
 4. LAY OUT SILT FENCE ON THE UPHILL SIDE ALONG THE FENCE LINE, AND BACK FILL.
 5. WOOD POSTS MAY BE SPACED UP TO 4 FEET APART IF WIRE MESH IS NOT USED TO SUPPORT THE FABRIC. IF WIRE MESH IS USED TO SUPPORT THE FABRIC STEEL POSTS MAY BE SPACED UP TO 8 FEET APART.
 6. REMOVE SILT FENCE AFTER TURF IS ESTABLISHED.

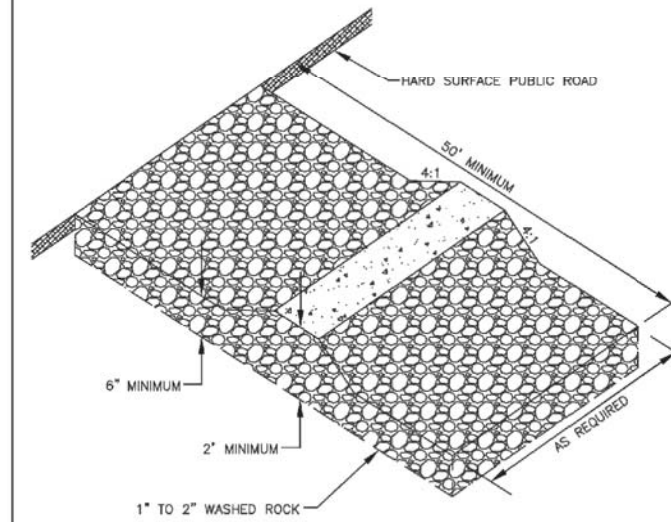


**STANDARD DETAILS
SILT FENCE DETAIL
CITY OF PLYMOUTH**

PUBLISHED 3-16
CITY PL. NO. ST-18
REVISED 3-16

SILT FENCE
NOT TO SCALE

2
D-104



- NOTES:**
- ROCK SIZE SHOULD BE 1" TO 2" IN SIZE SUCH AS MN/DOT CA-1 OR CA-2 COURSE AGGREGATE. (WASHED)
 - A GEOTEXTILE FABRIC MAY BE USED UNDER THE ROCK TO PREVENT MIGRATION OF THE UNDERLYING SOIL INTO THE STONE.

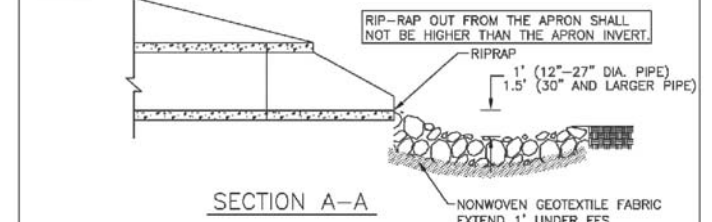
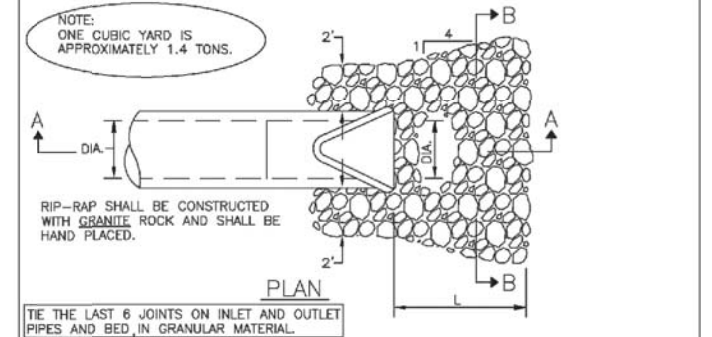
**STANDARD DETAILS
ROCK ENTRANCE TO CONSTRUCTION SITE
CITY OF PLYMOUTH**

PUBLISHED 3-16
CITY PL. NO. ST-19
REVISED 3-16

ROCK ENTRANCE TO CONSTRUCTION SITE
NOT TO SCALE

3
D-104

MINIMUM RIPRAP REQUIRED			
DIA. OF PIPE (IN.)	L (FT.)	QUANTITY (C.Y.)	CLASS
12	8	5	III
15	8	5	III
18	10	6	III
24	12	8	III
30	14	12	III
36	16	14	III
42	18	22	IV
48	20	26	IV
>48	22-28	30-40	IV

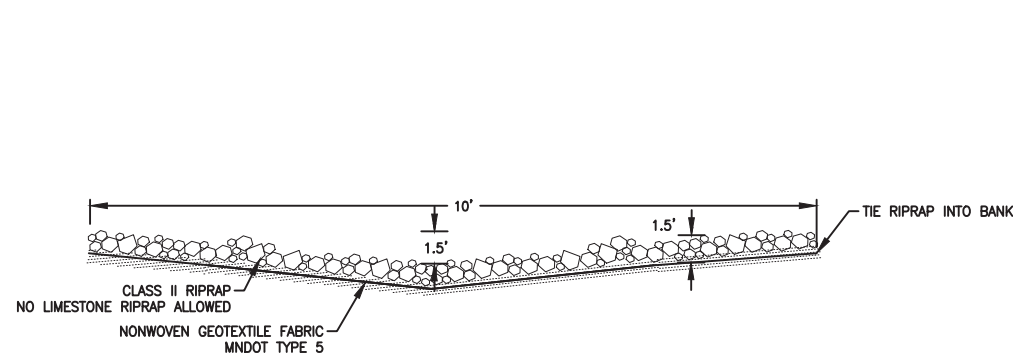


**STANDARD DETAILS
RIPRAP DETAIL FOR FLARED END SECTIONS
CITY OF PLYMOUTH**

PUBLISHED 3-16
CITY PL. NO. ST-4
REVISED 3-12

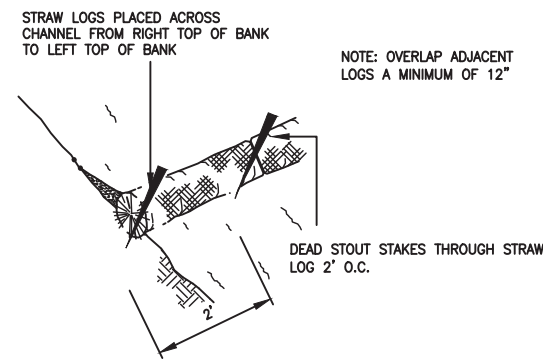
RIPRAP AT FLARED END SECTIONS DETAIL
NOT TO SCALE

4
D-104



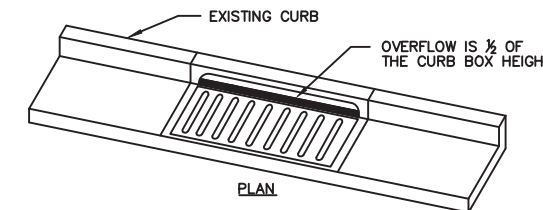
CLASS II RIPRAP OVERFLOW DETAIL
NOT TO SCALE

5
D-104



BIOROLL DETAIL
NOT TO SCALE

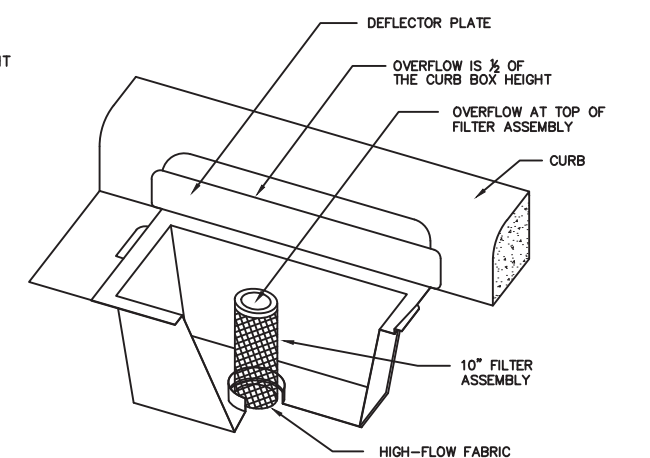
6
D-104



WIMCO ROAD DRAIN CG-3067 HIGH FLOW INLET PROTECTION CURB AND GUTTER MODEL OR CITY APPROVED EQUAL.

INLET PROTECTION DETAIL
NOT TO SCALE

7
D-104



REV	REVISION DESCRIPTION	DWN	APP	REV DATE
0	60% DESIGN	SJB	EAM	04/20/17

SEAL

NOT FOR CONSTRUCTION

PRIME CONSULTANT



PROJECT TITLE

PLYMOUTH CREEK CHANNEL RECONSTRUCTION

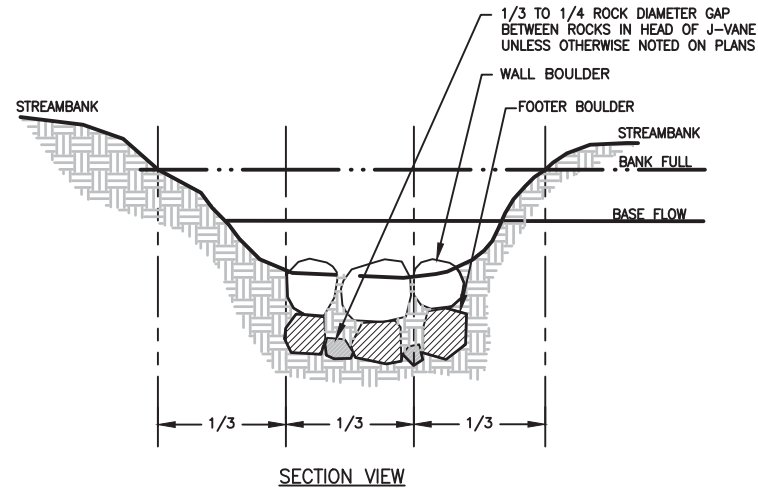
CITY OF PLYMOUTH

3400 PLYMOUTH BOULEVARD
PLYMOUTH, MN 55447

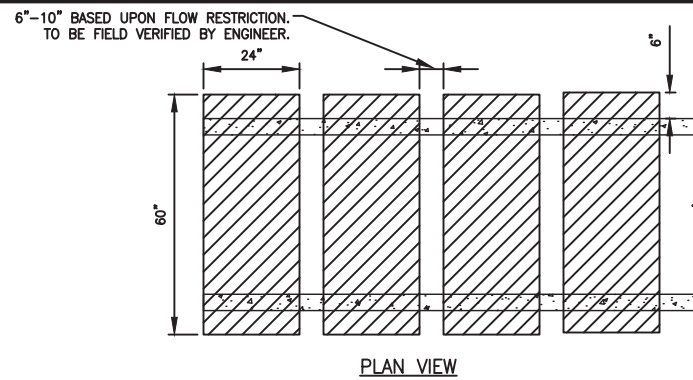
SHEET TITLE

DETAILS

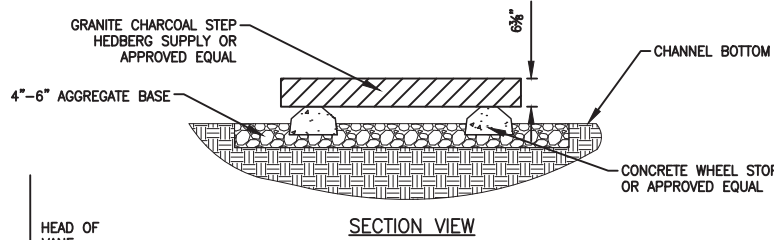
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.	SHEET NO.	SCALE	REV NO.
1756-10	D-104	AS SHOWN	0



SECTION VIEW



PLAN VIEW

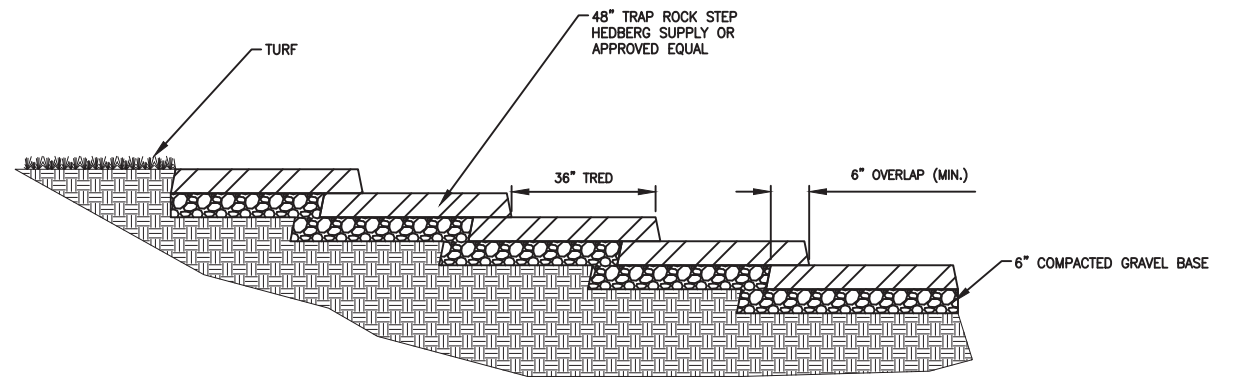


SECTION VIEW

CREEK CROSSING STEPPERS

NOT TO SCALE

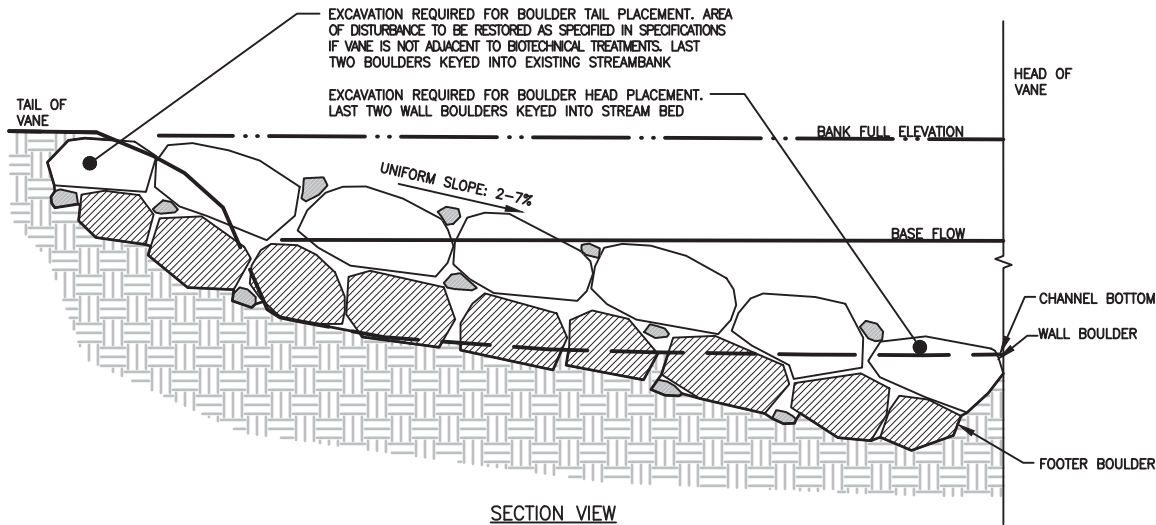
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D-105



BANK ACCESS STEPS

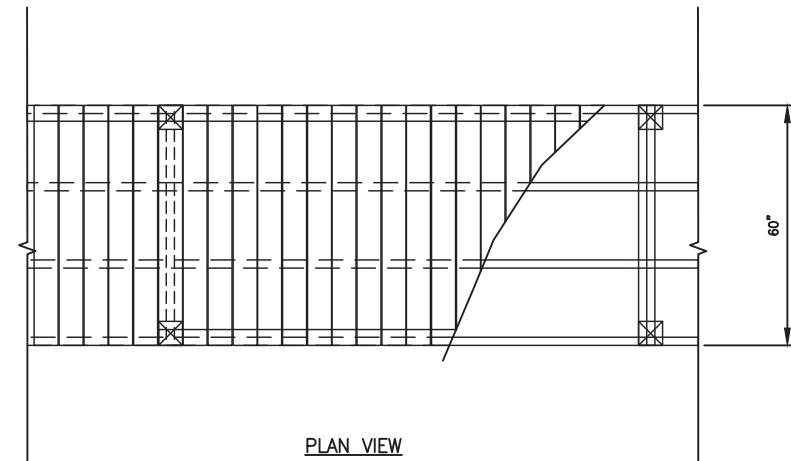
NOT TO SCALE

2
D-105

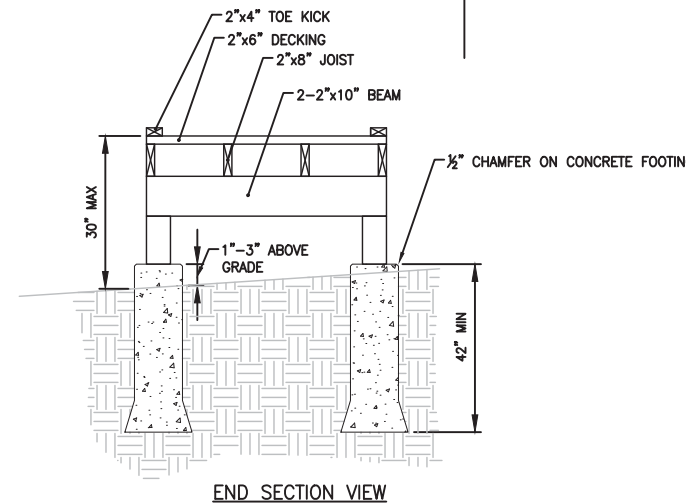


SECTION VIEW

NOTES:
10' JOIST SPAN, 10' POST SPACING
#2 SOUTHERN PINE PRESSURE TREATED
JOISTS = 2"x8" 19.33" O.C.
BEAMS = 2-2"x10"
CORNER FOOTING = 12" DIA. MIN
INTERMEDIATE FOOTING = 17" DIA MIN
DECKING = 2"x6"



PLAN VIEW



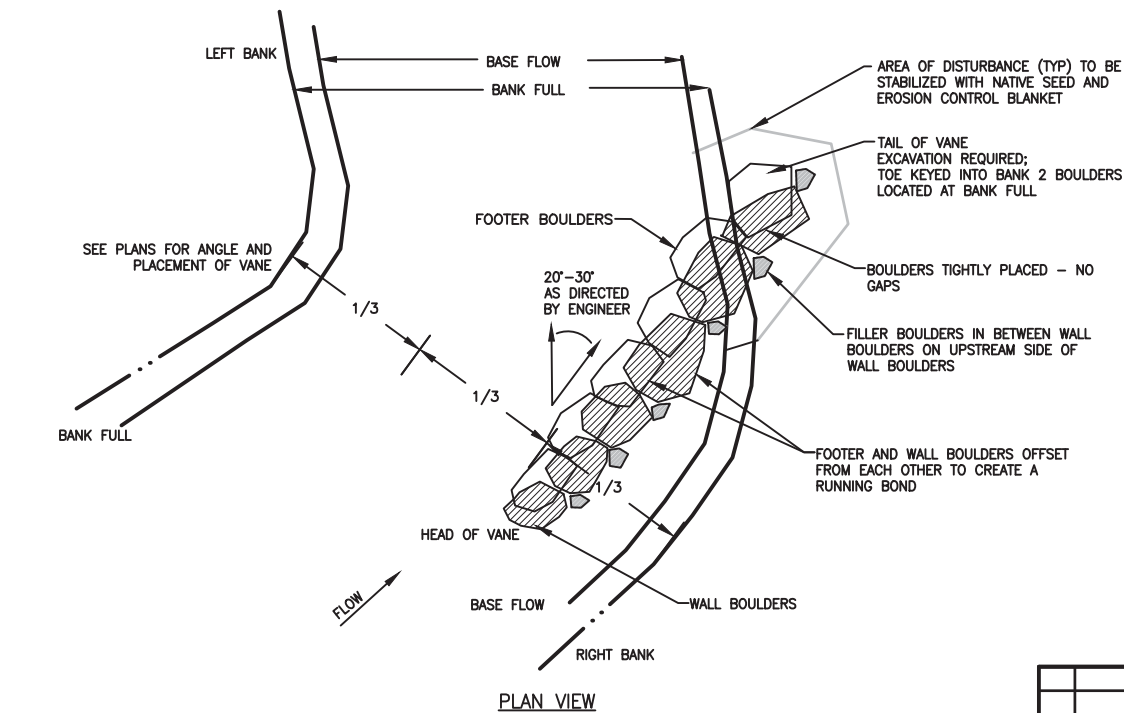
END SECTION VIEW

LONGITUDINAL SECTION VIEW

BOARDWALK

NOT TO SCALE

4
D-105



PLAN VIEW

NOTE:
1. CLASS V RIPRAP ACCEPTABLE ROCK ALTERNATIVE
2. BOULDER VANES TO BE FIELD LOCATED BY ENGINEER

BOULDER VANE DETAIL (TYPICAL)

NOT TO SCALE

3
D-105

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
0	60% DESIGN	SJB	EAM	04/20/17

SEAL

NOT FOR CONSTRUCTION

PRIME CONSULTANT



PROJECT TITLE

PLYMOUTH CREEK CHANNEL RECONSTRUCTION

CITY OF PLYMOUTH

3400 PLYMOUTH BOULEVARD
PLYMOUTH, MN 55447

SHEET TITLE

DETAILS

DWN BY	CHK'D	APP'D	DWG DATE	SCALE
SJB	LNJ	EAM	MAR 2017	AS SHOWN
PROJECT NO.	SHEET NO.	REV NO.		
1756-10	D-105	0		