

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

Item 5B.
BCWMC 8-17-17

PREPARED FOR
CITY OF PLYMOUTH, MN

APRIL 2017



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	STABILIZATION PLAN AND PROFILE STREAM TREATMENTS STA 27+18 TO 18+00
C-105	STABILIZATION PLAN AND PROFILE STREAM TREATMENTS STA 18+00 TO 9+00
C-106	STABILIZATION PLAN AND PROFILE STREAM TREATMENTS STA 9+00 TO 0+00
C-601	REFERENCE PICTURES
C-602	REFERENCE PICTURES
C-603	REFERENCE PICTURES
C-604	REFERENCE PICTURES
C-605	REFERENCE PICTURES
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
D-106	DETAILS
THIS PLAN CONTAINS 23 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

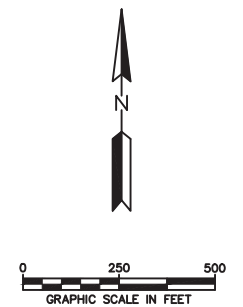
PROJECT VICINITY MAP

2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
0	60% DESIGN	SJB	EAM	04/20/17
REV	REVISION DESCRIPTION	DWN	APP	REV DATE

SEAL
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
ED MATTHIESEN
DATE 08/01/17 REG. NO. 16800

PRIME CONSULTANT
WENCK ASSOCIATES
Responsive partner. Exceptional outcomes.

PROJECT TITLE PLYMOUTH CREEK CHANNEL RECONSTRUCTION	SHEET TITLE TITLE AND INDEX SHEET
CITY OF PLYMOUTH	DWN BY: SJB, CHK'D: LNJ, APP'D: EAM, DWG DATE: MAR 2017, SCALE: AS SHOWN
3400 PLYMOUTH BOULEVARD PLYMOUTH, MN 55447	PROJECT NO. 1756-10, SHEET NO. G-101, REV NO. 2



Plot Date & Time: 1 August 2017 11:58 AM
M:\1756\10\GAD\CA\G-101.TITLE AND INDEX.dwg



NOTE: TREE AND BRUSH CLEARING SHALL BE LIMITED AS MUCH AS POSSIBLE AND ONLY AS DIRECTED BY ENGINEER.

CLEAR ALL BRUSH <8", PROTECT SPECIMEN TREES (MAY BE <8") AS MARKED BY ENGINEER (TYP.)

CLEAR ALL BRUSH <8", PROTECT SPECIMEN TREES (MAY BE <8") AS MARKED BY ENGINEER (TYP.)

CLEAR ALL BRUSH

LEGEND

○xxx	✕xxx	DECIDUOUS TREE/REMOVAL	—	WATER EDGE	---	CITY OF PLYMOUTH DRAINAGE & UTILITY EASEMENT
---	---	ACCESS ROUTE BOUNDARY	-----	RETAINING WALL	---	CLEARING LIMITS
---	---	EXISTING FENCE	-----	PROPOSED CHANNEL CENTERLINE	---	
---	---	PROPERTY LINE	-----	PROJECT AREA LIMITS	---	
	---	ROOTWAD WITH STONE TOE	-X-X-X-X-X-	ROOTWAD WITH LOG TOE	---	
	---		~~~~~	VEGETATED RIPRAP TOE		

---	---	WATER EDGE
-----	-----	RETAINING WALL
-----	-----	PROPOSED CHANNEL CENTERLINE
---	---	PROJECT AREA LIMITS
-X-X-X-X-X-	-X-X-X-X-X-	ROOTWAD WITH LOG TOE
~~~~~	~~~~~	VEGETATED RIPRAP TOE
---	---	CITY OF PLYMOUTH DRAINAGE & UTILITY EASEMENT
---	---	CLEARING LIMITS

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
0	60% DESIGN	SJB	EAM	04/20/17

SEAL  
 I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 ED MATTHIESEN  
 DATE 08/01/17 REG. NO. 16800

PRIME CONSULTANT

Responsive partner. Exceptional outcomes.

PROJECT TITLE  
**PLYMOUTH CREEK CHANNEL RECONSTRUCTION**  
 CITY OF PLYMOUTH  
 3400 PLYMOUTH BOULEVARD  
 PLYMOUTH, MN 55447

SHEET TITLE			
<b>EXISTING CONDITIONS AND REMOVALS 27+18 TO 18+00</b>			
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.		SHEET NO.	
1756-10		C-101	
			REV NO.
			2






**LEGEND**

○xxx	✕xxx	DECIDUOUS TREE/REMOVAL	———	WATER EDGE	---	CITY OF PLYMOUTH
---	---	ACCESS ROUTE BOUNDARY	-----	RETAINING WALL	---	DRAINAGE & UTILITY
---	---	EXISTING FENCE	-----	PROPOSED CHANNEL CENTERLINE	---	EASEMENT
---	---	PROPERTY LINE	-----	PROJECT AREA LIMITS	---	CLEARING LIMITS
	---	ROOTWAD WITH STONE TOE	-X-X-X-X-X-	ROOTWAD WITH LOG TOE	---	
	---		~~~~~	VEGETATED RIPRAP TOE		

2	FOR BID	SJB	EAM	08/01/17					
1	90% DESIGN	SJB	EAM	06/30/17					
0	60% DESIGN	SJB	EAM	04/20/17					
REV	REVISION DESCRIPTION	DWN	APP	REV DATE					

SEAL			
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.			
ED MATTHIESEN			
DATE 08/01/17 REG. NO. 16800			

PRIME CONSULTANT



Responsive partner. Exceptional outcomes.

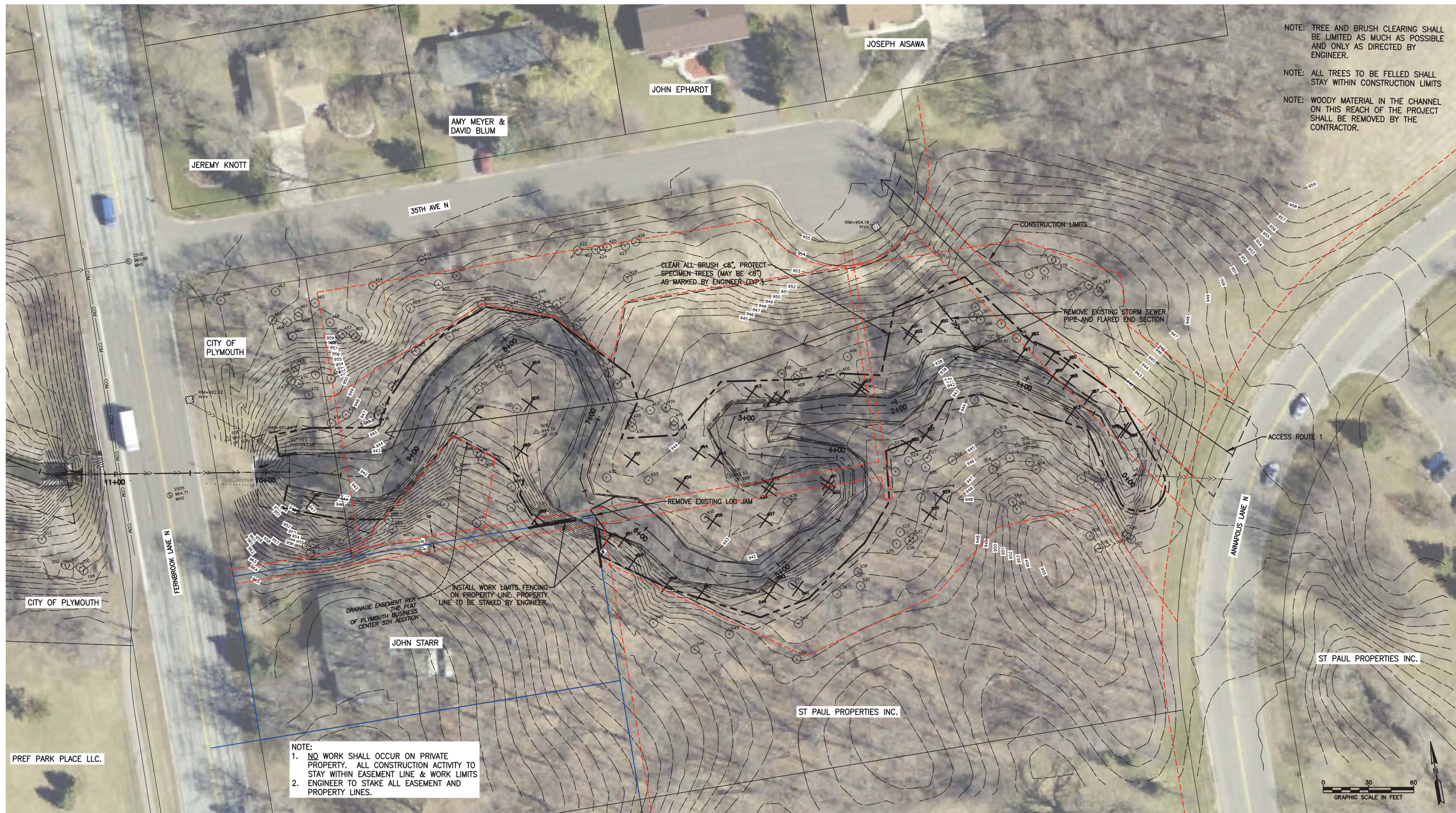
PROJECT TITLE  
**PLYMOUTH CREEK CHANNEL RECONSTRUCTION**  
 CITY OF PLYMOUTH  
 3400 PLYMOUTH BOULEVARD  
 PLYMOUTH, MN 55447

SHEET TITLE  
**EXISTING CONDITIONS AND REMOVALS 18+00 TO 9+00**

DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.	SHEET NO.	SCALE	AS SHOWN
1756-10	C-102		

REV NO.	2
---------	---





NOTE: TREE AND BRUSH CLEARING SHALL BE LIMITED AS MUCH AS POSSIBLE AND ONLY AS DIRECTED BY ENGINEER.

NOTE: ALL TREES TO BE FELLED SHALL STAY WITHIN CONSTRUCTION LIMITS

NOTE: WOODY MATERIAL IN THE CHANNEL ON THIS REACH OF THE PROJECT SHALL BE REMOVED BY THE CONTRACTOR.

NOTE:  
 1. NO WORK SHALL OCCUR ON PRIVATE PROPERTY. ALL CONSTRUCTION ACTIVITY TO STAY WITHIN EASEMENT LINE & WORK LIMITS  
 2. ENGINEER TO STAKE ALL EASEMENT AND PROPERTY LINES.

**LEGEND**

	DECIDUOUS TREE/REMOVAL		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
	RIPRAP TOE		VEGETATED RIPRAP TOE

	CITY OF PLYMOUTH DRAINAGE & UTILITY EASEMENT
	CLEARING LIMITS

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
0	60% DESIGN	SJB	EAM	04/20/17

SEAL

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

ED MATTHIASEN

DATE 08/01/17 REG. NO. 16800

PRIME CONSULTANT

Responsive partner. Exceptional outcomes.

PROJECT TITLE  
**PLYMOUTH CREEK CHANNEL RECONSTRUCTION**

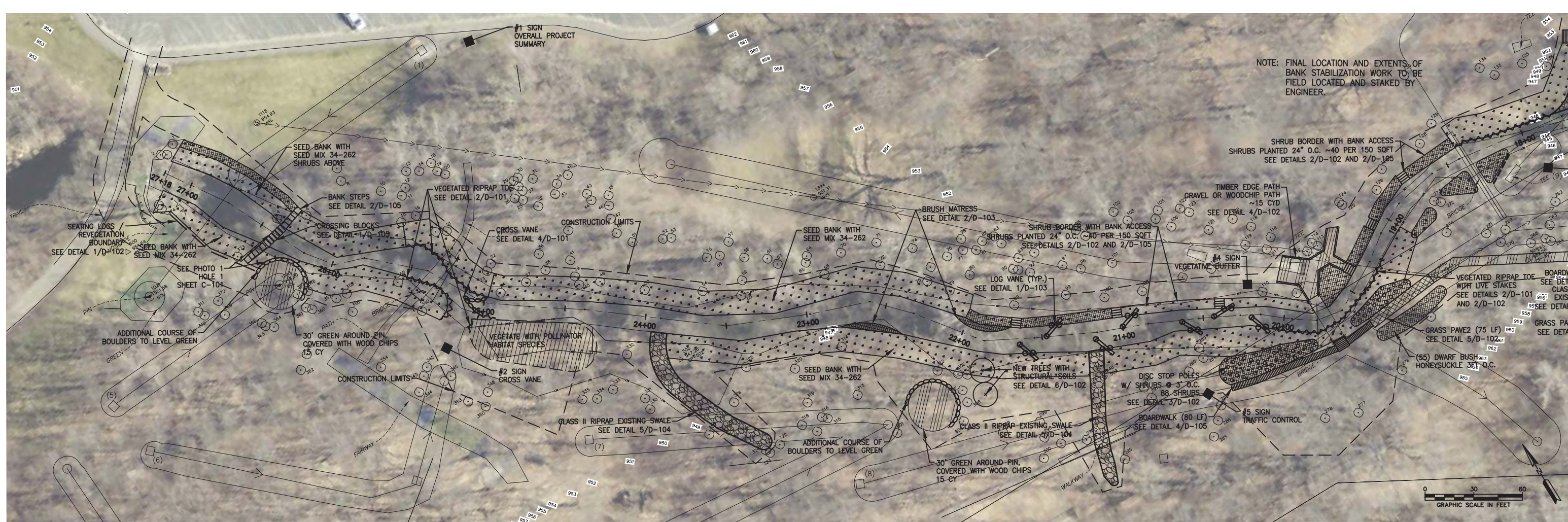
CITY OF PLYMOUTH

3400 PLYMOUTH BOULEVARD  
 PLYMOUTH, MN 55447

SHEET TITLE  
**EXISTING CONDITIONS AND REMOVALS 9+00 TO 0+00**

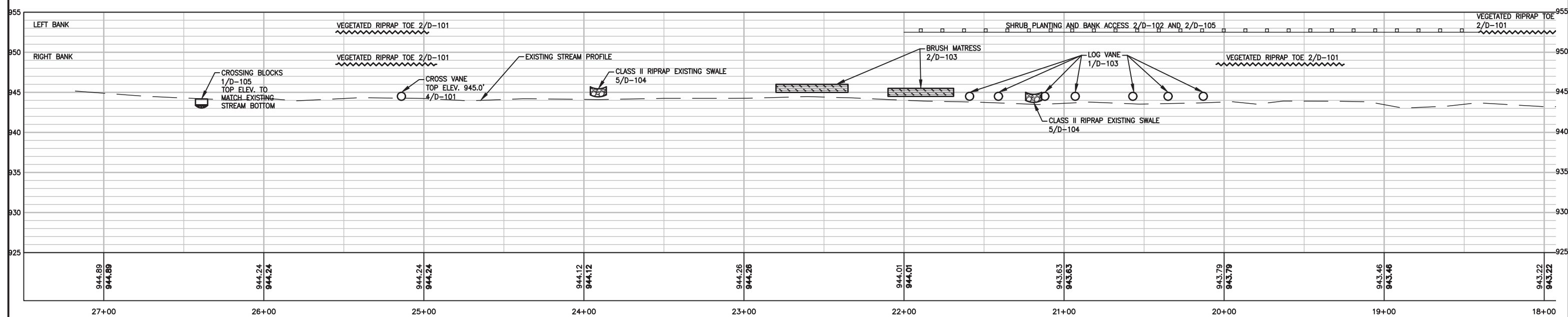
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.	SHEET NO.	SCALE	AS SHOWN
1756-10	C-103		
			REV NO.
			2





NOTE: FINAL LOCATION AND EXTENTS OF BANK STABILIZATION WORK TO BE FIELD LOCATED AND STAKED BY ENGINEER.

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		

	CITY OF PLYMOUTH DRAINAGE & UTILITY EASEMENT
--	----------------------------------------------

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
0	60% DESIGN	SJB	EAM	04/20/17

SEAL  
 I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 ED MATTHIESEN  
 DATE 08/01/17 REG. NO. 16800

PRIME CONSULTANT

Responsive partner. Exceptional outcomes.

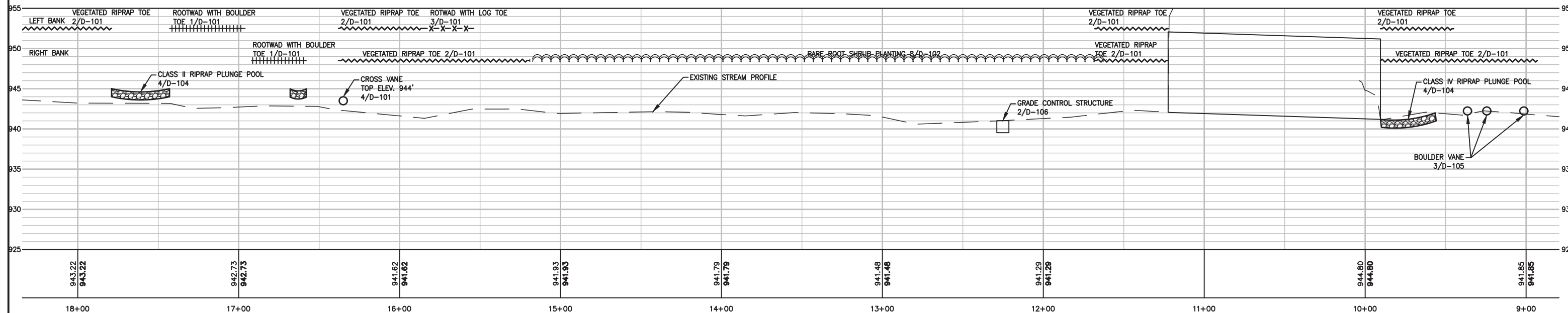
PROJECT TITLE  
**PLYMOUTH CREEK CHANNEL RECONSTRUCTION**  
 CITY OF PLYMOUTH  
 3400 PLYMOUTH BOULEVARD  
 PLYMOUTH, MN 55447

SHEET TITLE <b>STABILIZATION PLAN AND PROFILE 27+18 TO 18+00</b>			
DWN BY SJB	CHK'D LNJ	APP'D EAM	DWG DATE MAR 2017
PROJECT NO. 1756-10	SHEET NO. C-104	SCALE AS SHOWN	REV NO. 2





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		

	CITY OF PLYMOUTH DRAINAGE & UTILITY EASEMENT
--	----------------------------------------------------

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
0	60% DESIGN	SJB	EAM	04/20/17

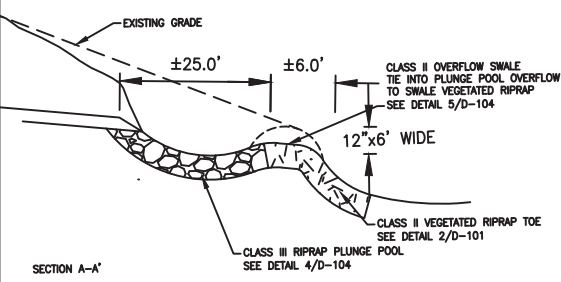
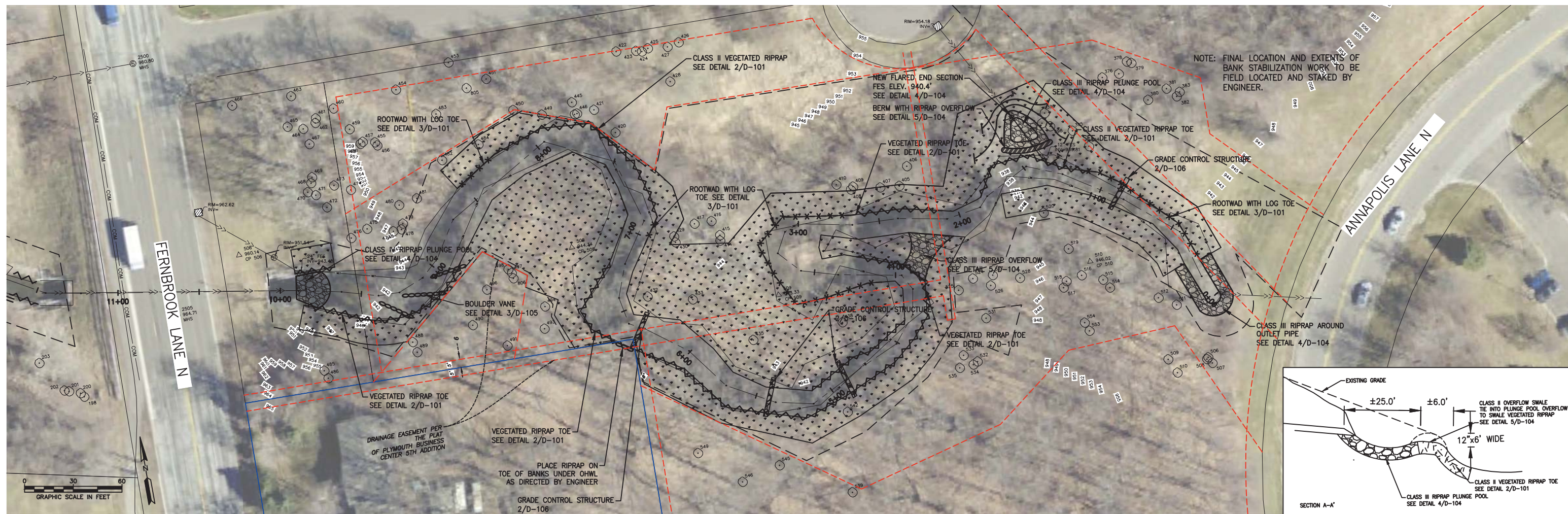
SEAL  
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
ED MATTHIENSEN  
DATE 08/01/17 REG. NO. 16800

PRIME CONSULTANT  
**WENCK ASSOCIATES**  
Responsive partner. Exceptional outcomes.

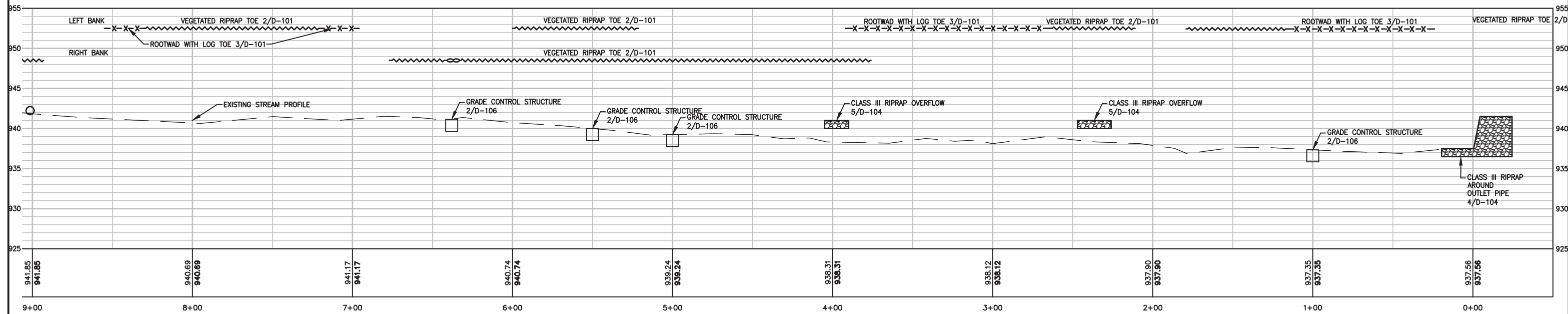
PROJECT TITLE  
**PLYMOUTH CREEK CHANNEL RECONSTRUCTION**  
CITY OF PLYMOUTH  
3400 PLYMOUTH BOULEVARD  
PLYMOUTH, MN 55447

SHEET TITLE <b>STABILIZATION PLAN AND PROFILE 18+00 TO 9+00</b>			
DWN BY SJB	CHK'D LNJ	APP'D EAM	DWG DATE MAR 2017
PROJECT NO. 1756-10	SHEET NO. C-105	SCALE AS SHOWN	REV NO. 2





PLYMOUTH CREEK CENTERLINE STA 9+00 TO 0+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		

	CITY OF PLYMOUTH DRAINAGE & UTILITY EASEMENT
--	----------------------------------------------

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
0	60% DESIGN	SJB	EAM	04/20/17

SEAL  
 I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 ED MATTHIESEN  
 DATE 08/01/17 REG. NO. 16800

PRIME CONSULTANT  
  
 Responsive partner. Exceptional outcomes.

PROJECT TITLE  
**PLYMOUTH CREEK CHANNEL RECONSTRUCTION**  
 CITY OF PLYMOUTH  
 3400 PLYMOUTH BOULEVARD  
 PLYMOUTH, MN 55447

SHEET TITLE <b>STABILIZATION PLAN AND PROFILE 9+00 TO 0+00</b>			
DWN BY SJB	CHK'D LNJ	APP'D EAM	DWG DATE MAR 2017
PROJECT NO. 1756-10	SHEET NO. C-106	SCALE AS SHOWN	REV NO. 2



# HOLE 1: STREAM CROSSING



SHRUB PLANTINGS



STONE STEPS



ADDITIONAL BOULDER COURSE



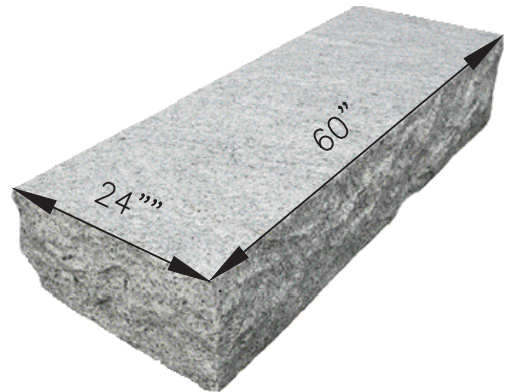
NATIVE GRASS PLANTINGS



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
2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
0	60% DESIGN	SJB	EAM	04/20/17

SEAL  
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
*[Signature]*  
ED MATTHIESEN  
DATE 08/01/17 REG. NO. 16800

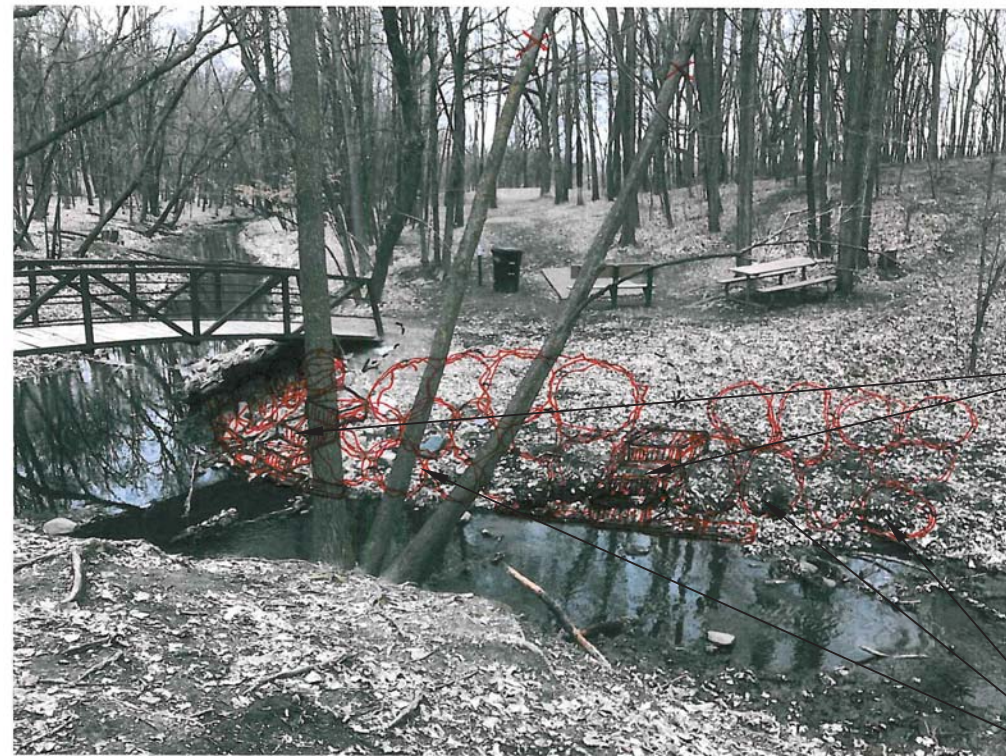
PRIME CONSULTANT  
**WENCK ASSOCIATES**  
Responsive partner. Exceptional outcomes.

PROJECT TITLE  
**PLYMOUTH CREEK CHANNEL RECONSTRUCTION**  
CITY OF PLYMOUTH  
3400 PLYMOUTH BOULEVARD  
PLYMOUTH, MN 55447

SHEET TITLE				
REFERENCE PICTURES				
DWN BY	CHK'D	APP'D	DWG DATE	MAR 2017
PROJECT NO.	SHEET NO.	SCALE	AS SHOWN	
SJB	LNJ	EAM	SCALE	AS SHOWN
1756-10	C-601			2



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



STONE STEPS TO CREEK'S EDGE



SHRUB PLANTINGS

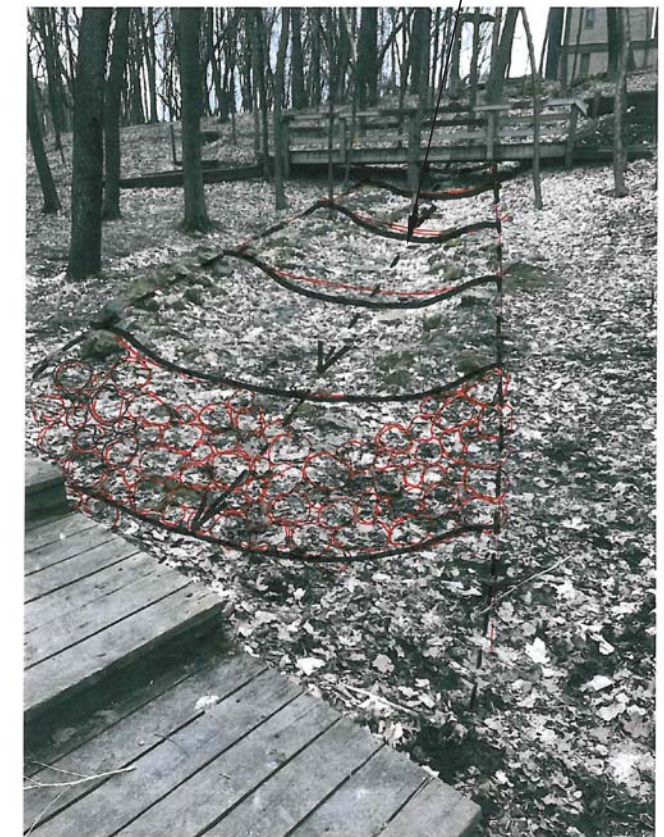


ON HOLE 8 HAS IS A HIGH POTENTIAL FOR DISC'S TO ENTER THE CREEK. THE EXISTING BANKS ARE IN NEED OF EROSION MITIGATION VEGETATION AND ARMORING. IN ORDER TO ACCOMPLISH BOTH DESIRED OUTCOMES A COMBINATION OF SHRUB PLANTINGS TO STABILIZES THE BANK WITH ACCESS STEPS LEADING TO THE CREEK EDGE FOR FISHING DISC'S 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.

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
0	60% DESIGN	SJB	EAM	04/20/17

SEAL  
 I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 ED MATTHIESEN  
 DATE 08/01/17 REG. NO. 16800

PRIME CONSULTANT  
  
 Responsive partner. Exceptional outcomes.

PROJECT TITLE  
**PLYMOUTH CREEK CHANNEL RECONSTRUCTION**  
 CITY OF PLYMOUTH  
 3400 PLYMOUTH BOULEVARD  
 PLYMOUTH, MN 55447

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-602		2	



# 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
2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
0	60% DESIGN	SJB	EAM	04/20/17

SEAL  
 I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
  
 ED MATTHESEN  
 DATE 08/01/17 REG. NO. 16800

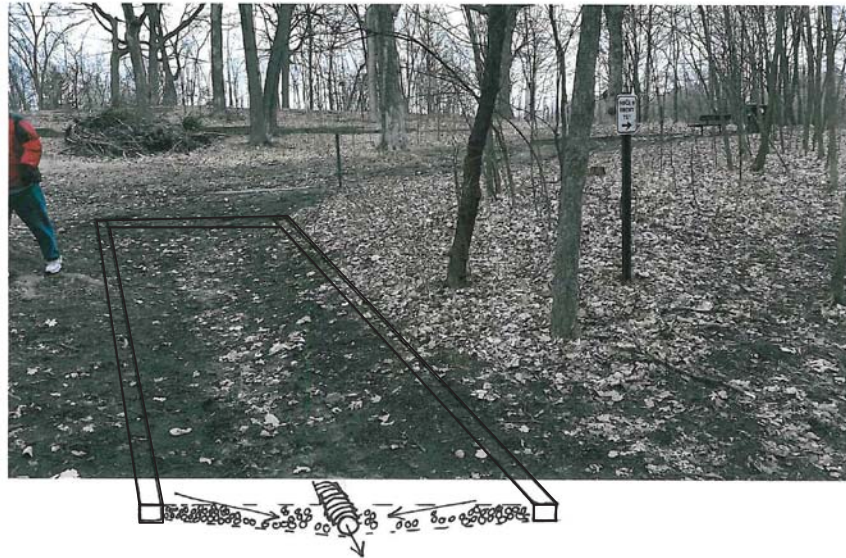
PRIME CONSULTANT  
  
 Responsive partner. Exceptional outcomes.

PROJECT TITLE  
 PLYMOUTH CREEK CHANNEL RECONSTRUCTION  
 CITY OF PLYMOUTH  
 3400 PLYMOUTH BOULEVARD  
 PLYMOUTH, MN 55447

SHEET TITLE				
REFERENCE PICTURES				
DWN BY	CHK'D	APP'D	DWG DATE	MAR 2017
SJB	LNJ	EAM	SCALE	AS SHOWN
PROJECT NO.	SHEET NO.			REV NO.
1756-10	C-603			2



# 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.



				SEAL	PRIME CONSULTANT		PROJECT TITLE		SHEET TITLE		
				I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  ED MATTHIESEN	 Responsive partner. Exceptional outcomes.		PLYMOUTH CREEK CHANNEL RECONSTRUCTION  CITY OF PLYMOUTH 3400 PLYMOUTH BOULEVARD PLYMOUTH, MN 55447		REFERENCE PICTURES		
2	FOR BID	SJB	EAM						08/01/17	DWN BY	CHK'D
1	90% DESIGN	SJB	EAM	06/30/17	SCALE	AS SHOWN					
0	60% DESIGN	SJB	EAM	04/20/17	PROJECT NO.	SHEET NO.		REV NO.			
REV	REVISION DESCRIPTION	DWN	APP	REV DATE	DATE 08/01/17	REG. NO. 16800		1756-10	C-604	2	



## 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.



REV	REVISION DESCRIPTION	DWN	APP	REV DATE	DATE	REG. NO.
2	FOR BID		SJB	EAM	08/01/17	
1	90% DESIGN		SJB	EAM	06/30/17	
0	60% DESIGN		SJB	EAM	04/20/17	

SEAL	
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.	
	ED MATTHESEN
DATE 08/01/17	REG. NO. 16800

PRIME CONSULTANT



Responsive partner. Exceptional outcomes.

PROJECT TITLE

**PLYMOUTH CREEK CHANNEL RECONSTRUCTION**

CITY OF PLYMOUTH

3400 PLYMOUTH BOULEVARD  
PLYMOUTH, MN 55447

SHEET TITLE					
<b>REFERENCE PICTURES</b>					
DWN BY	CHK'D	APP'D	DWG DATE	MAR 2017	
SJB	LNJ	EAM	SCALE	AS SHOWN	
PROJECT NO.		SHEET NO.		REV NO.	
1756-10		C-605		2	



**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.

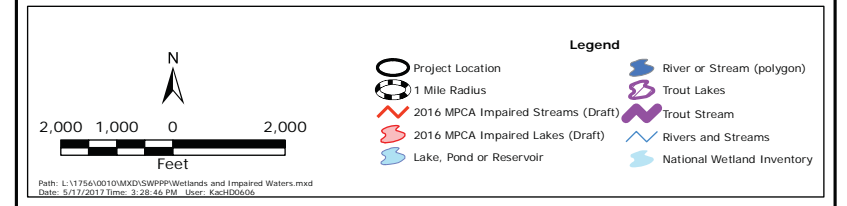
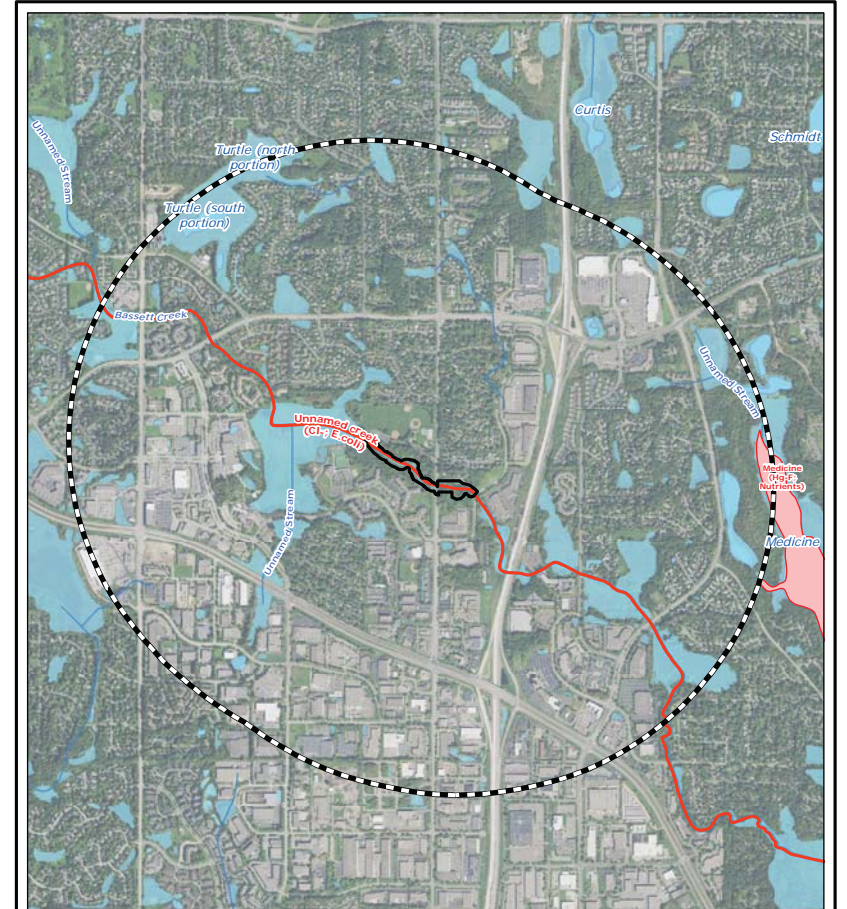
1. Any other permits required for the project;
2. Records of all inspection and maintenance conducted during construction;
3. All permanent operations and maintenance agreements that have been implemented, including all right of way, contract, covenants and other binding requirements regarding perpetual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

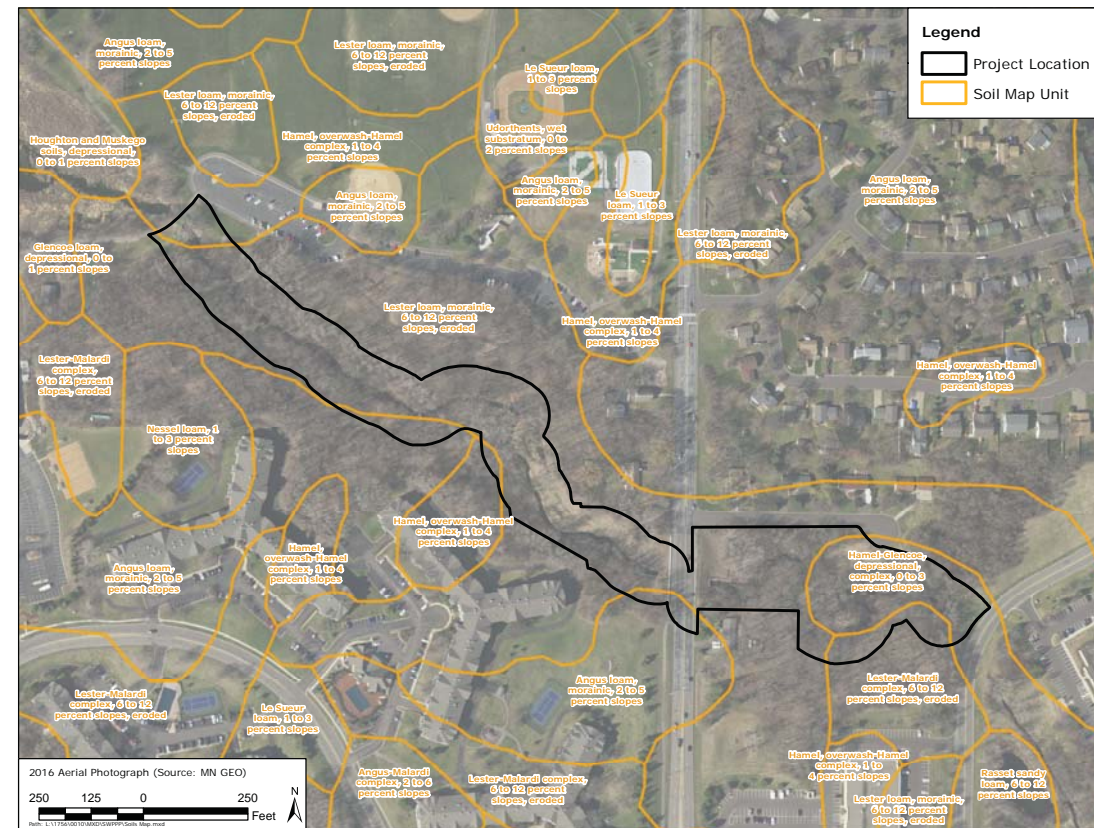
This Project is located within 1 mile of an impaired water (see figure above):

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 1.5 = 22 LBS
Erosion Control Blanket	3385 SY
Inlet Protection	5 EA
Floatation Silt Curtain	50 LF
Construction Entrance	4 EA
Bioroll	4000 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.

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
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

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		2





**LEGEND**

	DECIDUOUS TREE		WATER EDGE
	ACCESS ROUTE BOUNDARY		RETAINING WALL
	EXISTING FENCE		PROPOSED CHANNEL CENTERLINE
	PROPERTY LINE		PROJECT AREA LIMITS
	EROSION CONTROL BLANKET AND MN SEED MIX 34-262		FLOTATION SILT CURTAIN
	HYDROMULCH AND MN SEED MIX 34-262		INLET PROTECTION
			BIOROLL
			SILT FENCE
			CITY OF PLYMOUTH DRAINAGE & UTILITY EASEMENT

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
0	60% DESIGN	SJB	EAM	04/20/17

SEAL  
 I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 ED MATTHIESEN  
 DATE 08/01/17 REG. NO. 16800

PRIME CONSULTANT  
  
 Responsive partner. Exceptional outcomes.

PROJECT TITLE  
**PLYMOUTH CREEK CHANNEL RECONSTRUCTION**  
 CITY OF PLYMOUTH  
 3400 PLYMOUTH BOULEVARD  
 PLYMOUTH, MN 55447

SHEET TITLE			
<b>EROSION AND SEDIMENT CONTROL PLAN</b>			
<b>27+18 TO 18+00</b>			
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.		SHEET NO.	
1756-10		EC-102	
REV NO.			2





NOTE: ALL DISTURBANCE DURING CONSTRUCTION OF BANKS STABILIZATION PRACTICES SHALL BE STABILIZED WITH TEMPORARY VEGETATIVE COVER SPREAD AT 1.5 TIMES THE USUAL RATE PER ACRE. IF TEMPORARY COVER IS TO REMAIN IN PLACE BEYOND THE PRESENT GROWING SEASON, TWO-THIRDS OF THE SEED MIX SHALL BE COMPOSED OF PERENNIAL GRASSES.

NOTE: IF CONSTRUCTION OCCURS WHEN GROUND IS NOT FROZEN, EROSION CONTROL LOGS SHALL BE INSTALLED ALONG STREAM SIDE OF ACCESS ROUTES TO PROVIDE ADDITIONAL EROSION CONTROL PRIOR TO FINAL STABILIZATION.

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

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
0	60% DESIGN	SJB	EAM	04/20/17

SEAL  
 I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 ED MATTHIESEN  
 DATE 08/01/17 REG. NO. 16800

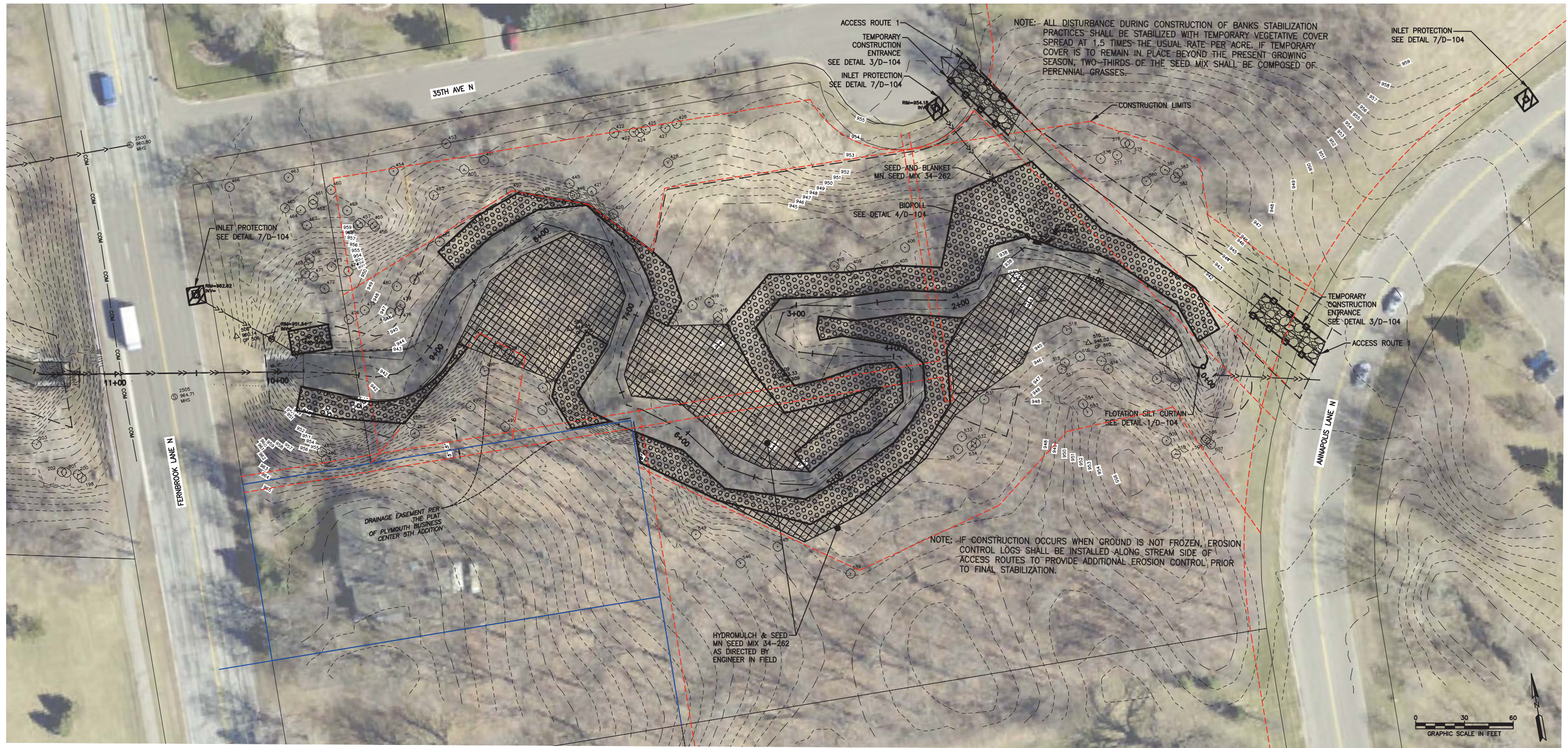
PRIME CONSULTANT

Responsive partner. Exceptional outcomes.

PROJECT TITLE  
**PLYMOUTH CREEK CHANNEL RECONSTRUCTION**  
 CITY OF PLYMOUTH  
 3400 PLYMOUTH BOULEVARD  
 PLYMOUTH, MN 55447

SHEET TITLE			
<b>EROSION AND SEDIMENT CONTROL PLAN</b>			
<b>18+00 TO 9+00</b>			
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.		SHEET NO.	
1756-10		EC-103	
REV NO.			2





**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
			BIOPOLL
			SILT FENCE
			CITY OF PLYMOUTH DRAINAGE & UTILITY EASEMENT

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
0	60% DESIGN	SJB	EAM	04/20/17

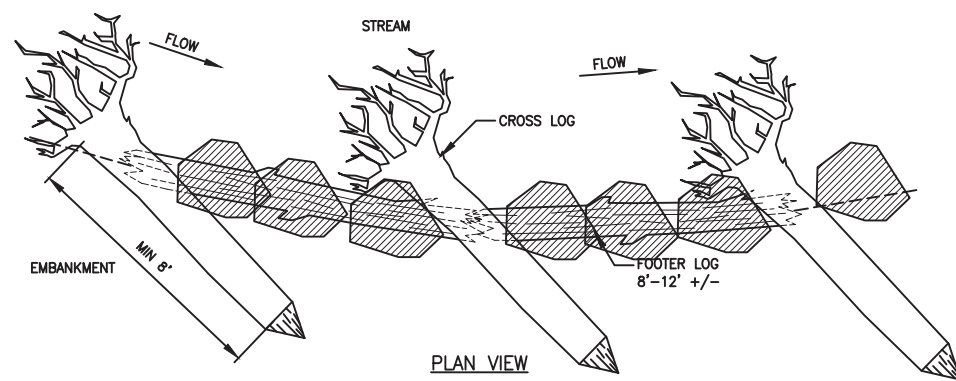
SEAL  
 I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 ED MATTHIESEN  
 DATE 08/01/17 REG. NO. 16800

PRIME CONSULTANT  
  
 Responsive partner. Exceptional outcomes.

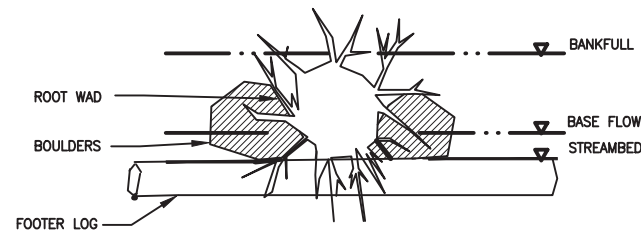
PROJECT TITLE  
**PLYMOUTH CREEK CHANNEL RECONSTRUCTION**  
 CITY OF PLYMOUTH  
 3400 PLYMOUTH BOULEVARD  
 PLYMOUTH, MN 55447

SHEET TITLE			
<b>EROSION AND SEDIMENT CONTROL PLAN</b>			
<b>9+00 TO 0+00</b>			
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		2	

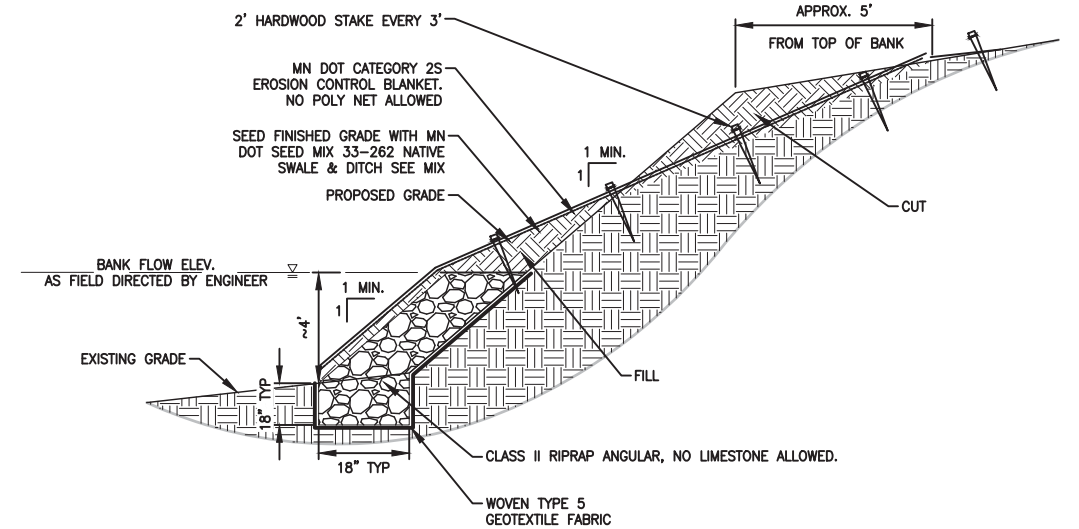




PLAN VIEW



ELEVATION VIEW



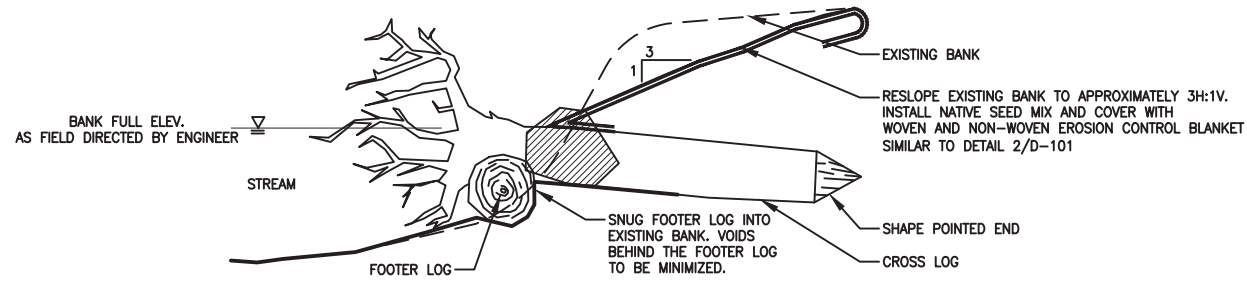
CLASS II VEGETATED RIPRAP TOE DETAIL

NOT TO SCALE

2  
D-101

**GENERAL NOTES:**

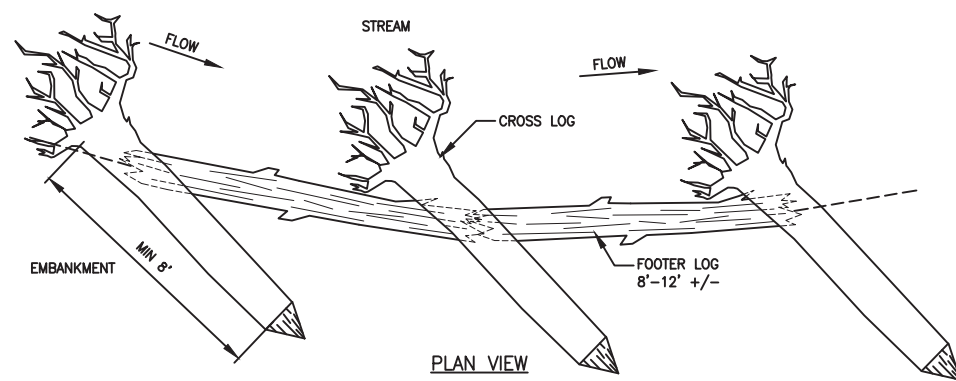
- ENGINEER TO FIELD VERIFY ROOT WAD PLACEMENT.
- SEE PLANS FOR SPECIFIED BIOTECHNICAL TREATMENTS.
- FOOTER LOG MINIMUM OF 12" DIAMETER BY 8' LONG.
- A MINIMUM OF TWO CROSS LOGS PER FOOTER LOG IS REQUIRED TO ANCHOR FOOTER LOG.
- BOULDERS SHALL BE 24" TO 36", 350 LBS. TO 450 LBS. UNCURT, UNDRESSED FIELDSTONE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



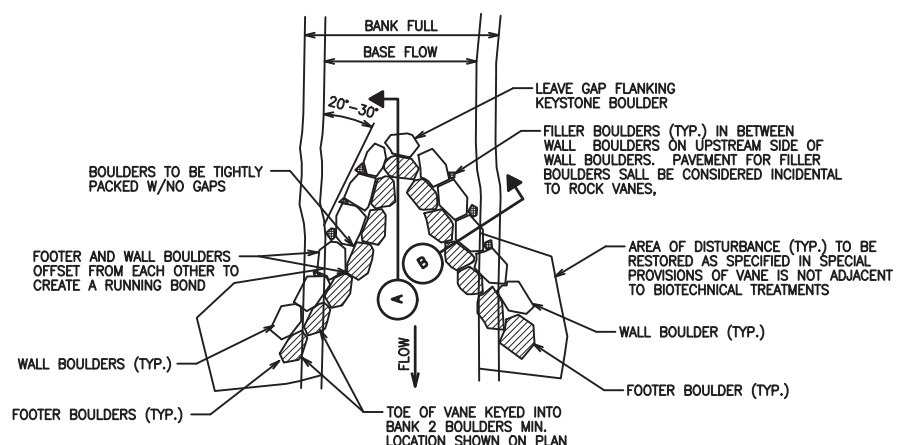
ROOTWAD WITH BOULDER TOE

NOT TO SCALE

1  
D-101



PLAN VIEW



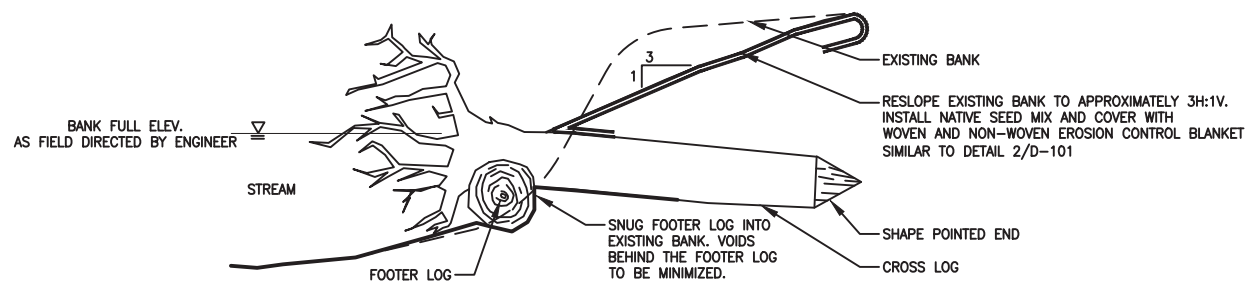
PLAN VIEW

**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:**

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



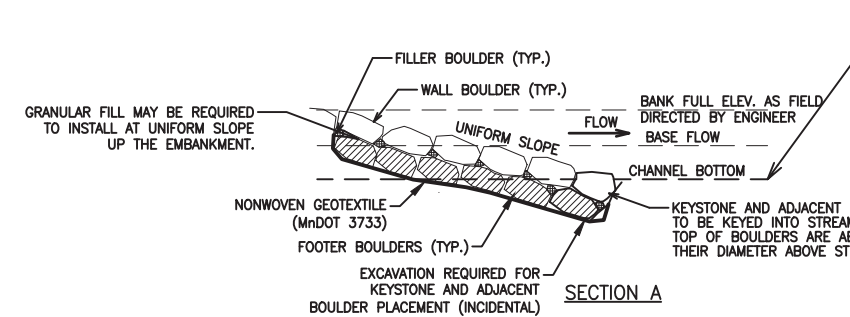
SECTION VIEW

ROOTWAD WITH LOG TOE

NOT TO SCALE

3  
D-101

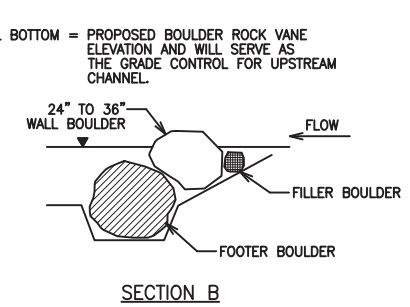
- NOTE:**
- A MINIMUM OF TWO CROSS LOGS PER FOOTER LOG IS REQUIRED TO ANCHOR FOOTER LOG.
  - MINIMUM LOG DIAMETER IS 12" +/-



CROSS VANE DETAIL

NOT TO SCALE

4  
D-101



SECTION B

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
0	60% DESIGN	SJB	EAM	04/20/17

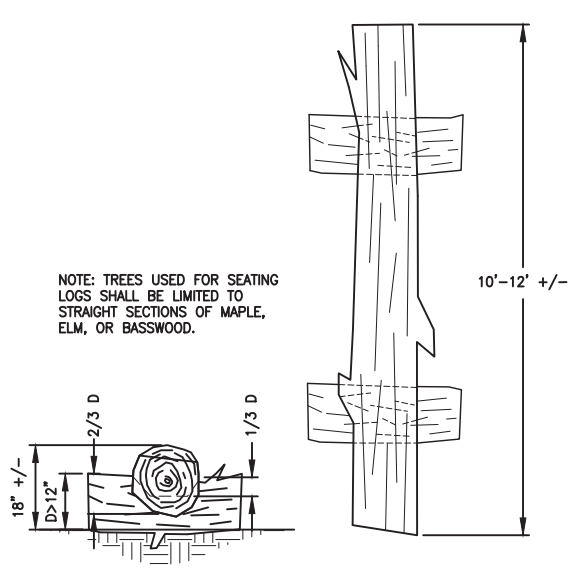
SEAL  
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
ED MATTHIESEN  
DATE 08/01/17 REG. NO. 16800

PRIME CONSULTANT  
**WENCK ASSOCIATES**  
Responsive partner. Exceptional outcomes.

PROJECT TITLE  
**PLYMOUTH CREEK CHANNEL RECONSTRUCTION**  
CITY OF PLYMOUTH  
3400 PLYMOUTH BOULEVARD  
PLYMOUTH, MN 55447

SHEET TITLE			
<b>DETAILS</b>			
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.		SCALE	
1756-10		AS SHOWN	
SHEET NO.		REV NO.	
D-101		2	

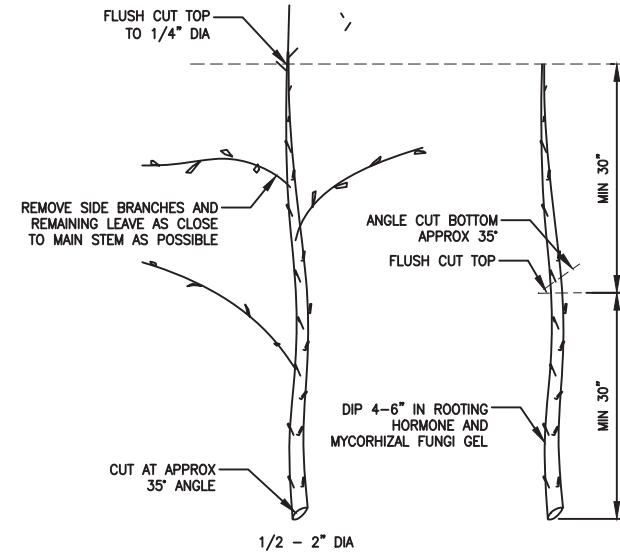




NOTE: TREES USED FOR SEATING LOGS SHALL BE LIMITED TO STRAIGHT SECTIONS OF MAPLE, ELM, OR BASSWOOD.

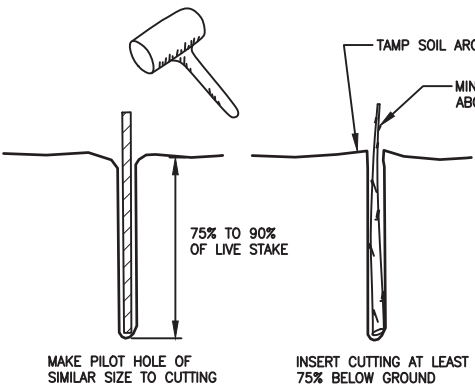
ELEVATION VIEW PLAN VIEW

SEATING LOGS/REVEGETATION BOUNDARY 1 D-102 NOT TO SCALE



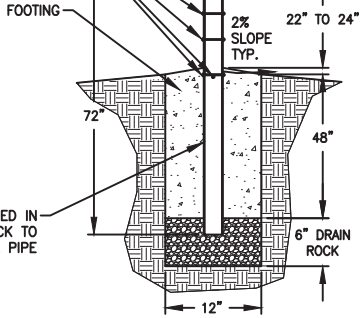
- NOTES:
- HARVEST AND PLANT STAKES DURING THE DORMANT SEASON
  - USE HEALTHY, STRAIGHT, LIVE WOOD AT LEAST 1 YEAR OLD
  - MAKE CLEAN CUTS AND DO NOT DAMAGE STAKES OR SPLIT THE ENDS DURING INSTALLATION. USE A PILOT AIR IN FOIRM SOILS
  - SOAK CUTTING FOR 24 HOURS (MINIMUM) PRIOR TO INSTALLATION
  - DIP BOTTOM 4-6 INCHES IN ROOTING HORMONE
  - INSTALL THE CUTTING AND TAMP THE SOIL AROUND THE STAKE

LIVE STAKE HARVEST AND INSTALLATION 2 D-102 NOT TO SCALE



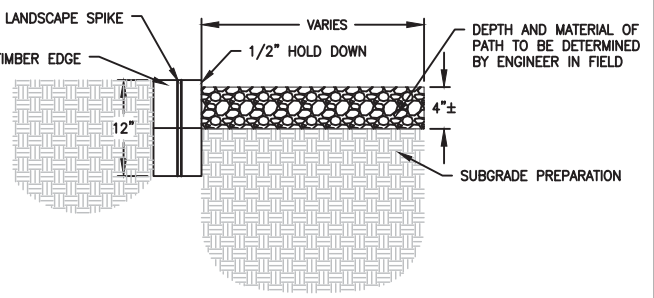
TAMP SOIL AROUND CUTTING

3/8"x3-1/2" S.S. CARRIAGE BOLT

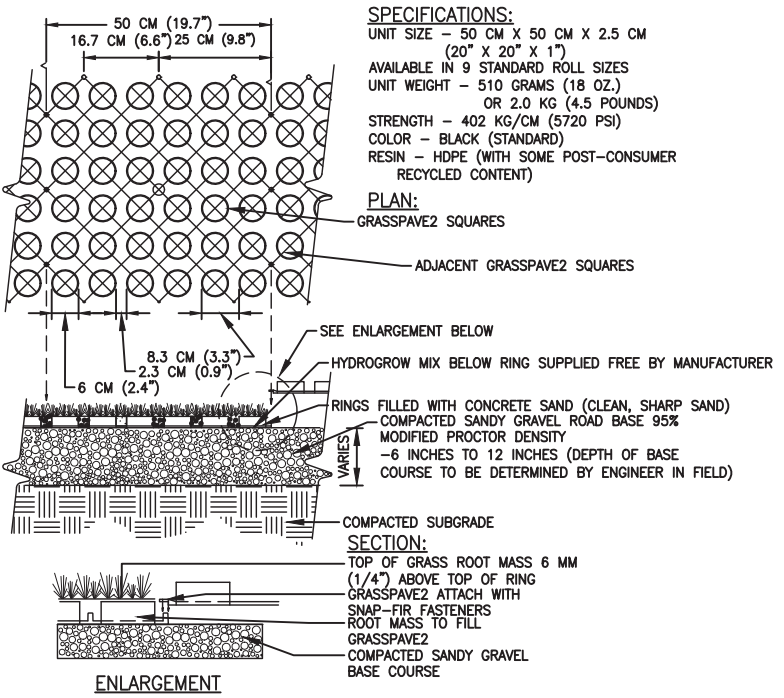


- NOTES:
- POLES TO BE INSTALLED IN 3 STAGGERED ROWS.
  - POLES TO BE SPACED 6' O.C.

DISC STOP POLES 3 D-102 NOT TO SCALE



TIMBER EDGE PATH 4 D-102 NOT TO SCALE



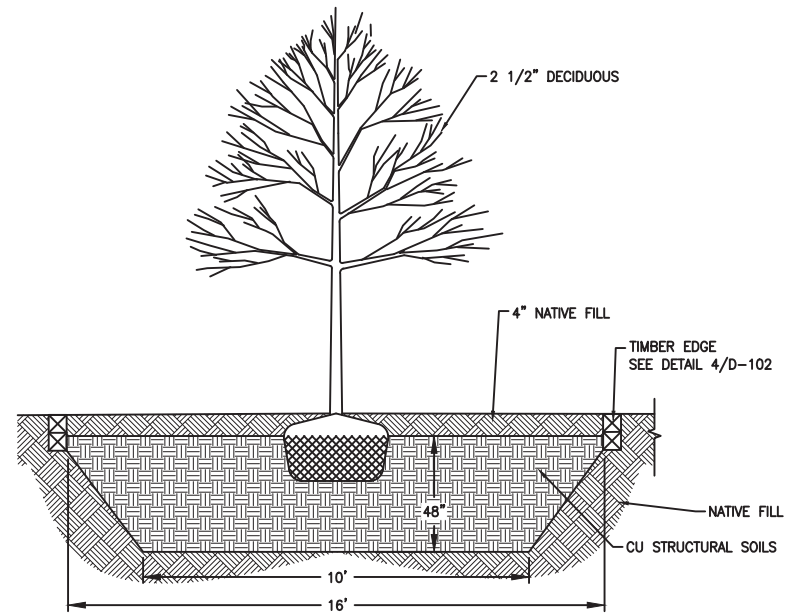
- SPECIFICATIONS:
- UNIT SIZE - 50 CM X 50 CM X 2.5 CM (20" X 20" X 1")
  - AVAILABLE IN 9 STANDARD ROLL SIZES
  - UNIT WEIGHT - 510 GRAMS (18 OZ.) OR 2.0 KG (4.5 POUNDS)
  - STRENGTH - 402 KG/CM (5720 PSI)
  - COLOR - BLACK (STANDARD)
  - RESIN - HDPE (WITH SOME POST-CONSUMER RECYCLED CONTENT)

PLAN: GRASSPAVE2 SQUARES

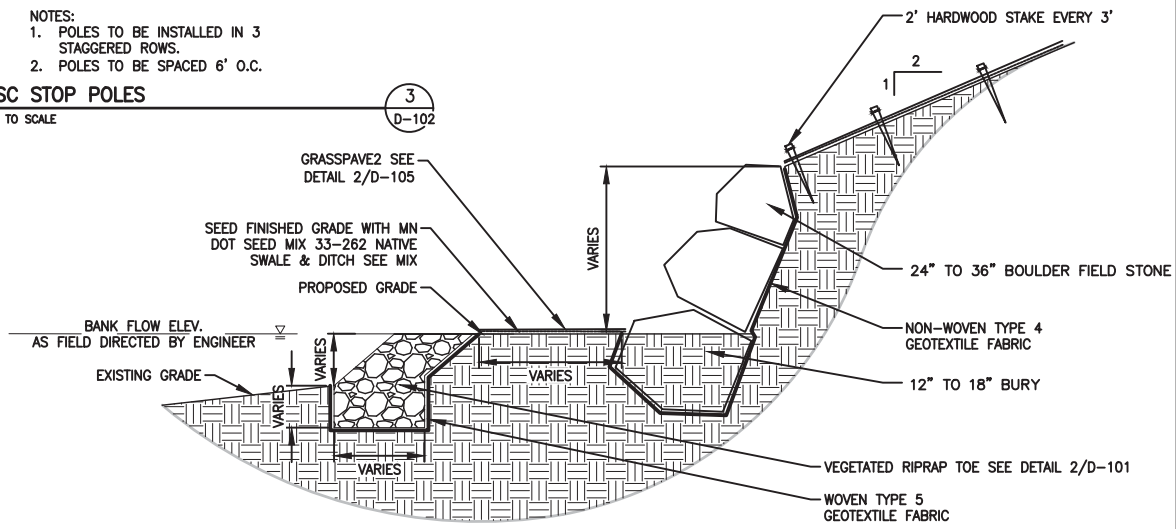
SECTION: TOP OF GRASS ROOT MASS 6 MM (1/4") ABOVE TOP OF RING

- NOTES:
- GRASS/PLANT TYPES SHALL BE SPECIFIED BY A LANDSCAPE ARCHITECT OR LANDSCAPE DESIGNER.
  - STANDARD WIDTH OF 4 UNITS ≈ 80"

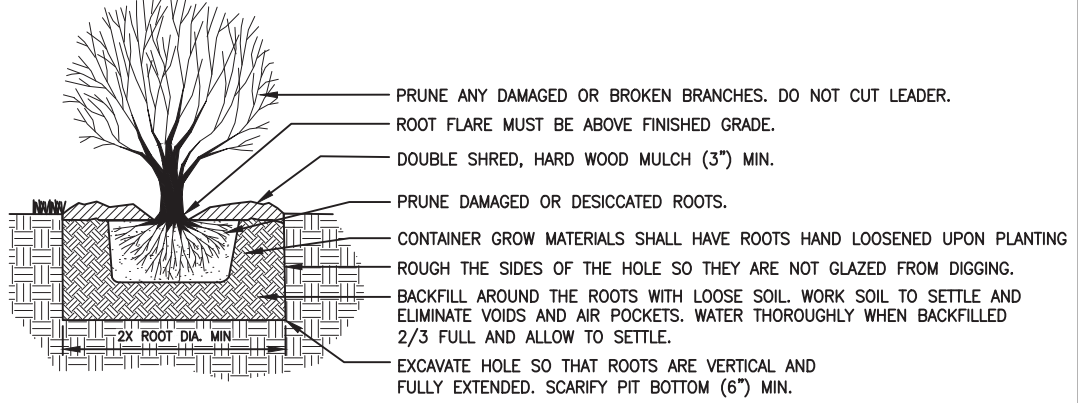
GRASSPAVE2 DETAIL 5 D-102 NOT TO SCALE



TREE WITH STRUCTURAL SOIL BASE 6 D-102 NOT TO SCALE



TWO STAGE CHANNEL CLASS II RIPRAP TOE & BOULDER DETAIL 7 D-102 NOT TO SCALE



SHRUB PLANTING 8 D-102 NOT TO SCALE

REV	REVISION DESCRIPTION	DWN	APP	REV DATE	DATE	REG. NO.
2	FOR BID	SJB	EAM	08/01/17		
1	90% DESIGN	SJB	EAM	06/30/17		
0	60% DESIGN	SJB	EAM	04/20/17		

PRIME CONSULTANT

Responsive partner. Exceptional outcomes.

PROJECT TITLE

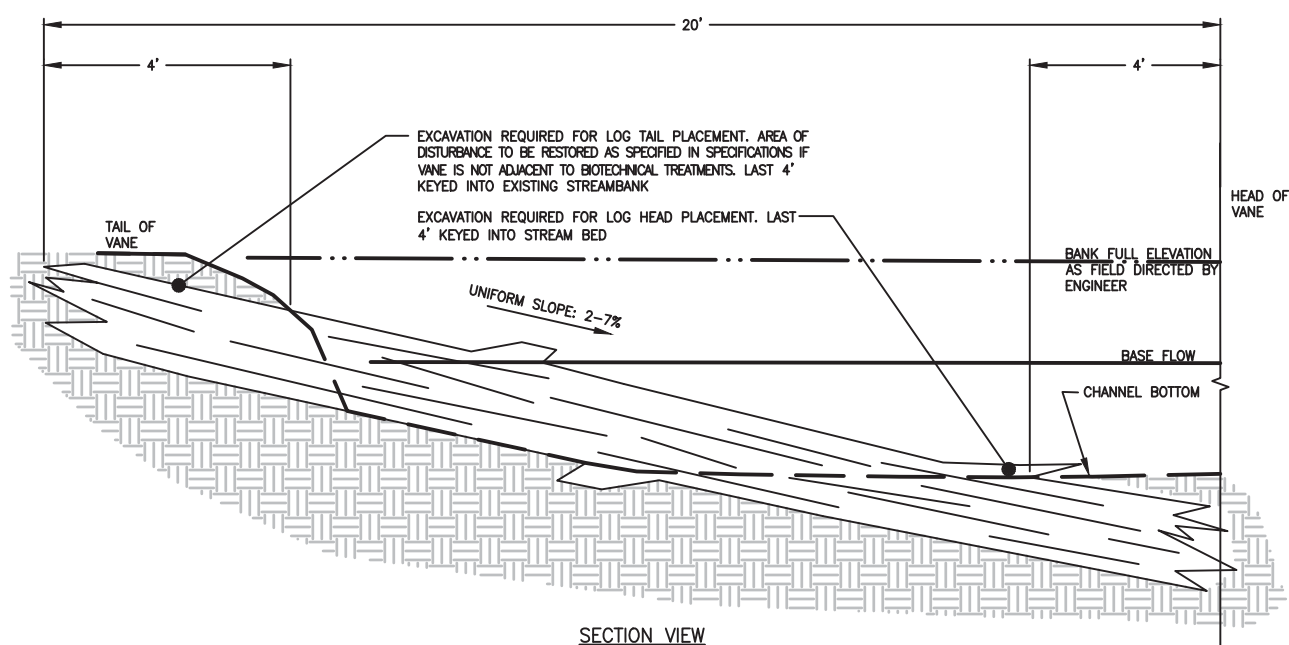
PLYMOUTH CREEK CHANNEL RECONSTRUCTION

CITY OF PLYMOUTH

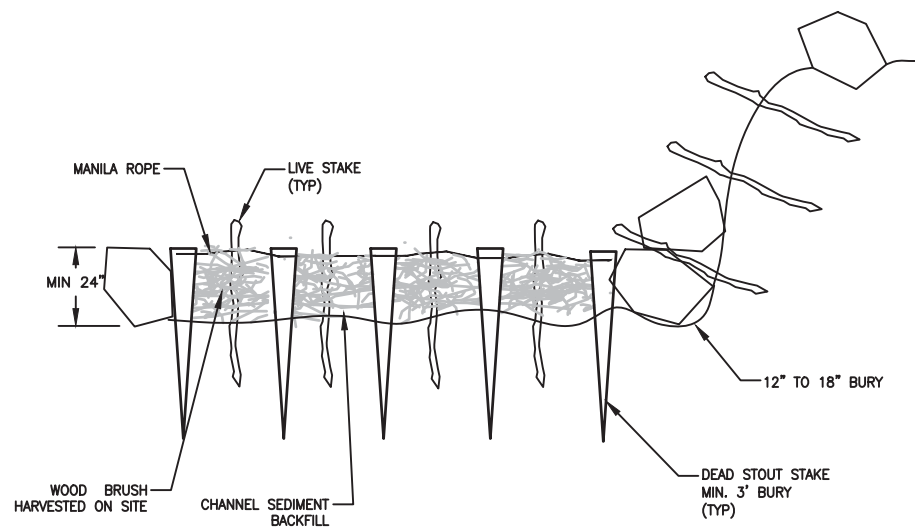
3400 PLYMOUTH BOULEVARD PLYMOUTH, MN 55447

SHEET TITLE			
DETAILS			
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.	SHEET NO.	SCALE	AS SHOWN
1756-10	D-102		
			REV NO.
			2

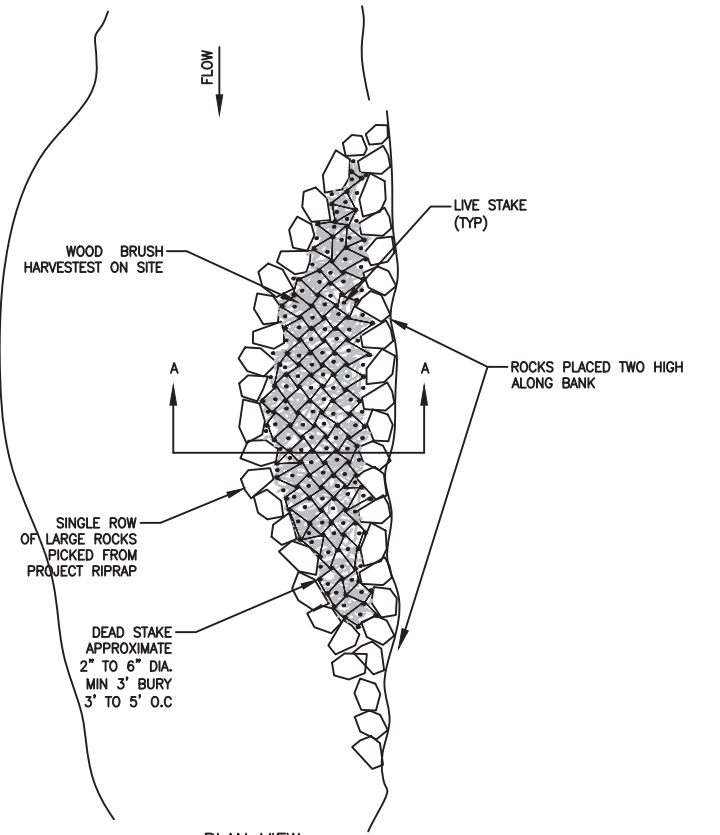




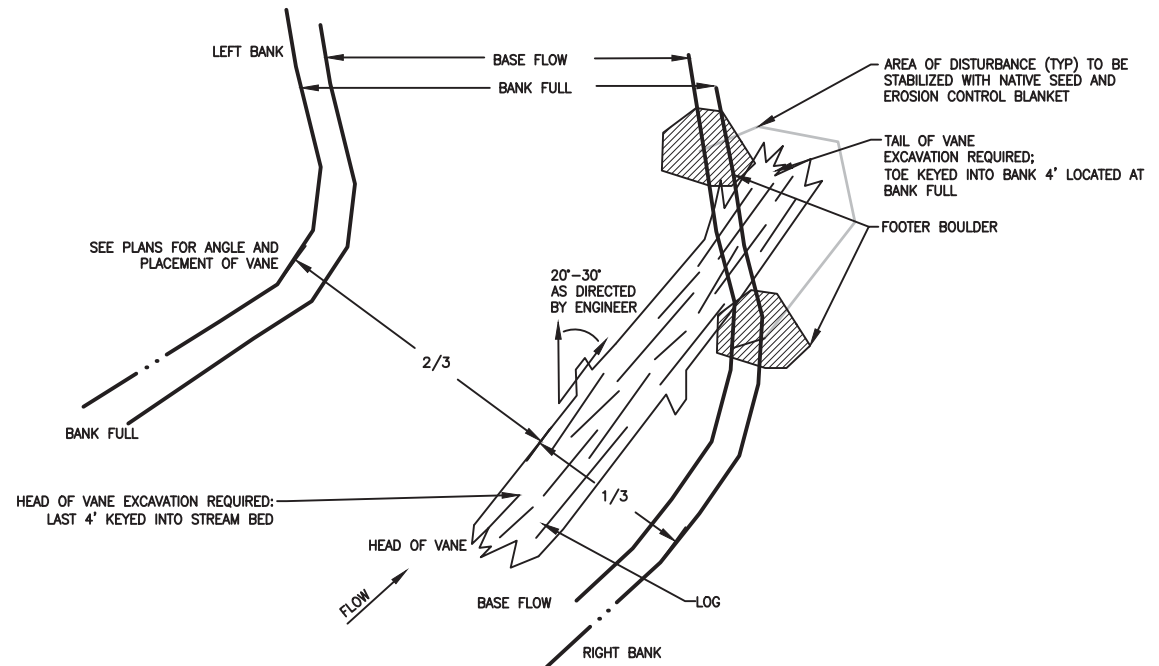
SECTION VIEW



SECTION VIEW A-A

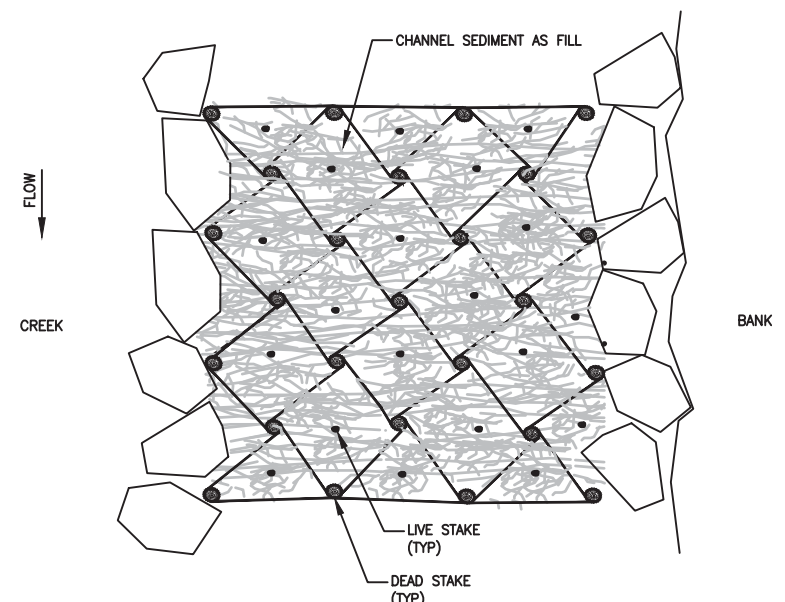


PLAN VIEW



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
2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
0	60% DESIGN	SJB	EAM	04/20/17

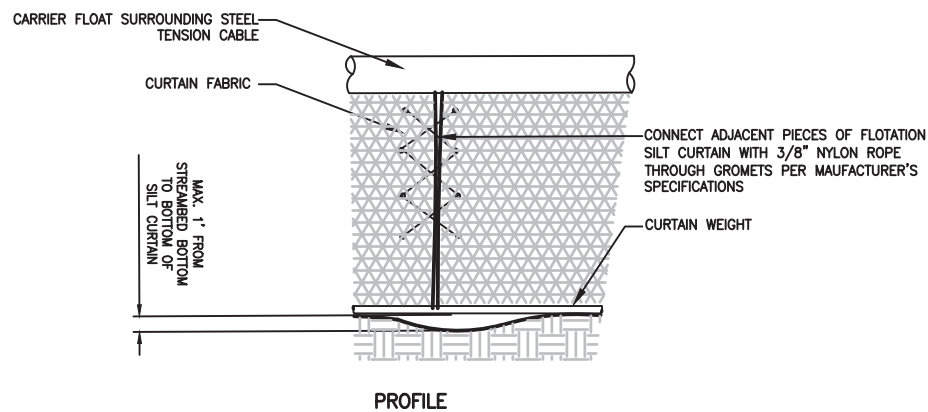
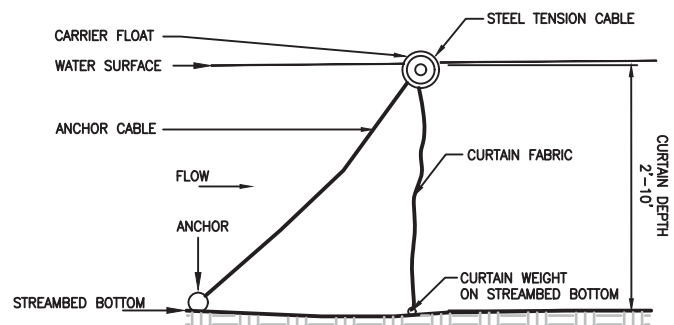
SEAL  
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
ED MATTHIESEN  
DATE 08/01/17 REG. NO. 16800

PRIME CONSULTANT  
**WENCK ASSOCIATES**  
Responsive partner. Exceptional outcomes.

PROJECT TITLE  
**PLYMOUTH CREEK CHANNEL RECONSTRUCTION**  
CITY OF PLYMOUTH  
3400 PLYMOUTH BOULEVARD  
PLYMOUTH, MN 55447

SHEET TITLE			
<b>DETAILS</b>			
DWN BY SJB	CHK'D LNJ	APP'D EAM	DWG DATE MAR 2017
PROJECT NO. 1758-10	SHEET NO. D-103	SCALE AS SHOWN	REV NO. 2



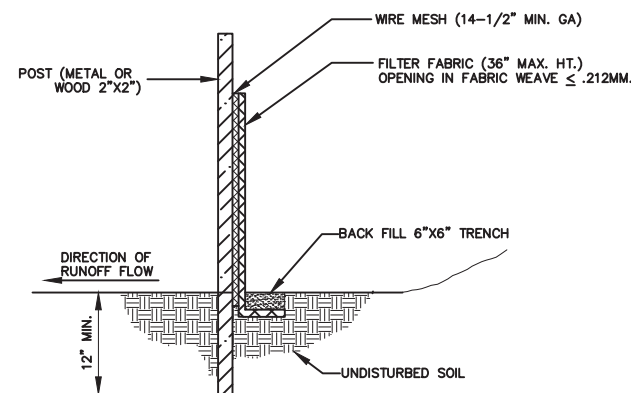


**FLOTATION SILT CURTAIN**  
NOT TO SCALE

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.

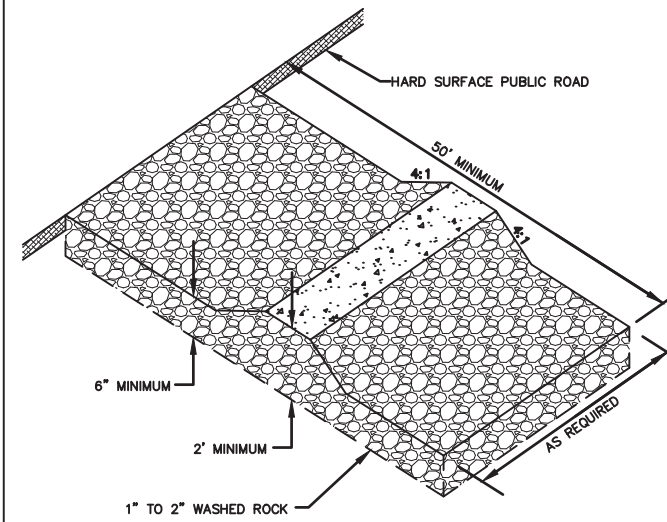


**STANDARD DETAILS  
SILT FENCE DETAIL  
CITY OF PLYMOUTH**

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.

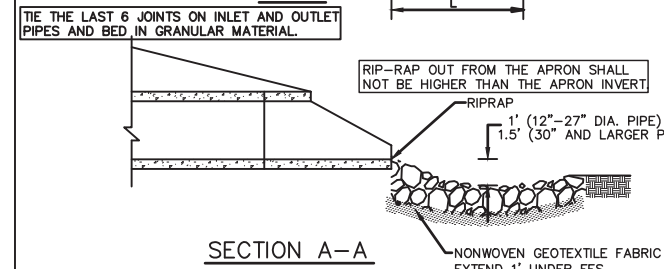
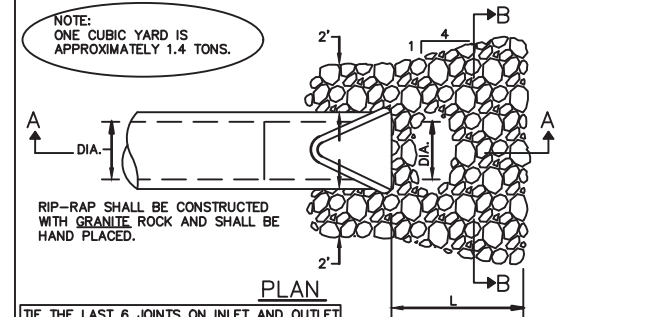
**STANDARD DETAILS  
ROCK ENTRANCE TO CONSTRUCTION SITE  
CITY OF PLYMOUTH**

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

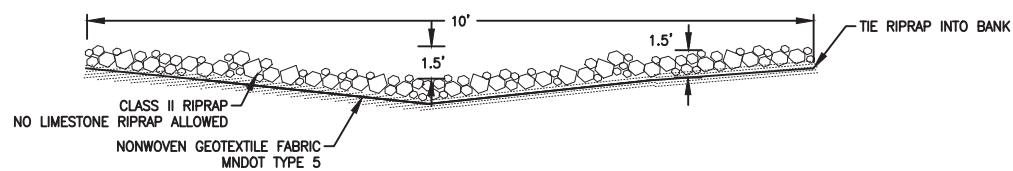


**STANDARD DETAILS  
RIPRAP DETAIL FOR FLARED END SECTIONS  
CITY OF PLYMOUTH**

PUBLISHED 3-14  
CITY PL. NO. ST-4  
REVISED 3-12

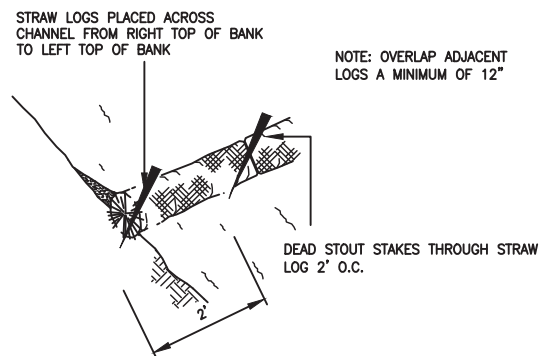
**RIPRAP AT FLARED END SECTIONS DETAIL**  
NOT TO SCALE

4  
D-104



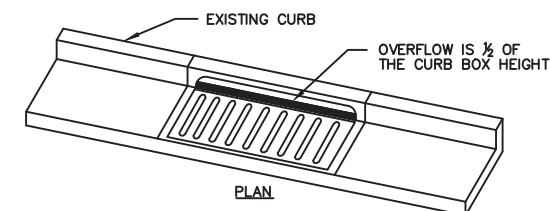
**CLASS II RIPRAP SWALE**  
NOT TO SCALE

5  
D-104



**BIOROLL DETAIL**  
NOT TO SCALE

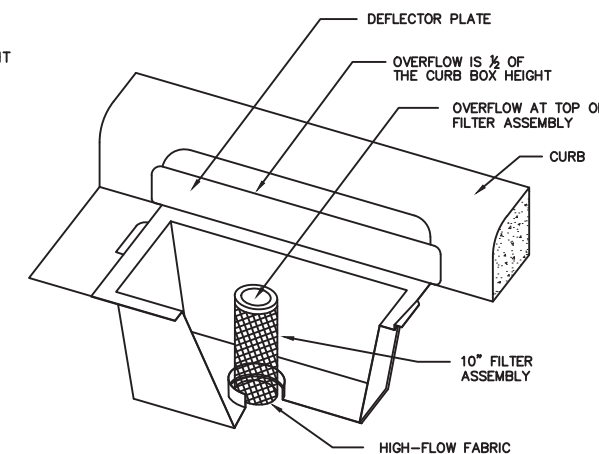
6  
D-104



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
2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
0	60% DESIGN	SJB	EAM	04/20/17

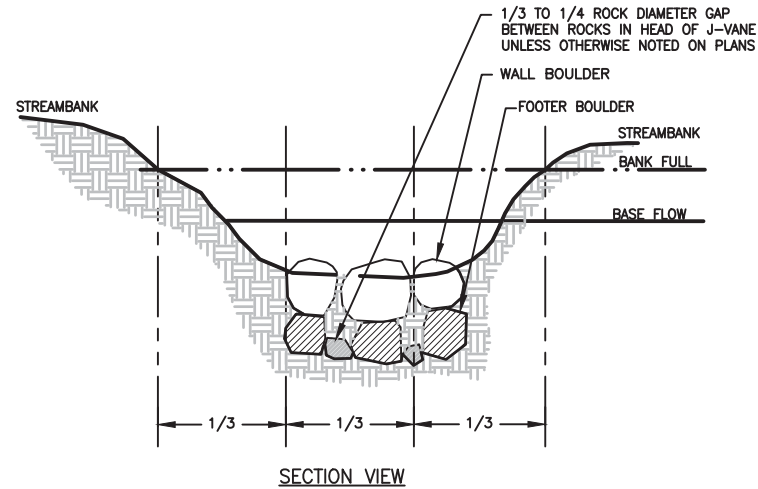
SEAL  
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
ED MATTHIASEN  
DATE 08/01/17 REG. NO. 16800

PRIME CONSULTANT  
**WENCK ASSOCIATES**  
Responsive partner. Exceptional outcomes.

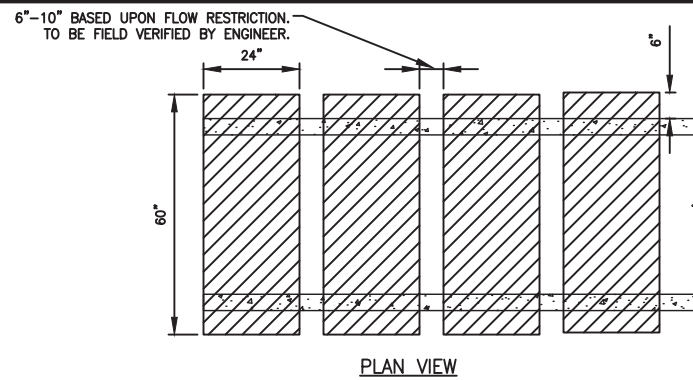
PROJECT TITLE  
**PLYMOUTH CREEK CHANNEL RECONSTRUCTION**  
CITY OF PLYMOUTH  
3400 PLYMOUTH BOULEVARD  
PLYMOUTH, MN 55447

SHEET TITLE			
DETAILS			
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.		SCALE	
1756-10		AS SHOWN	
SHEET NO.		REV NO.	
D-104		2	

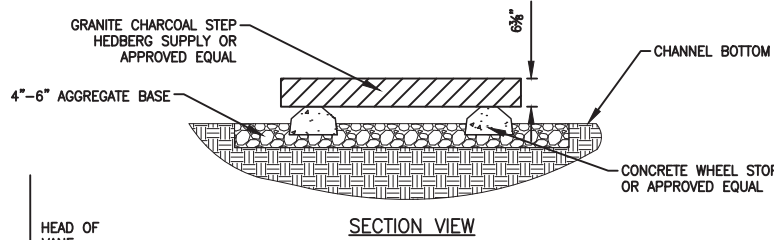




SECTION VIEW

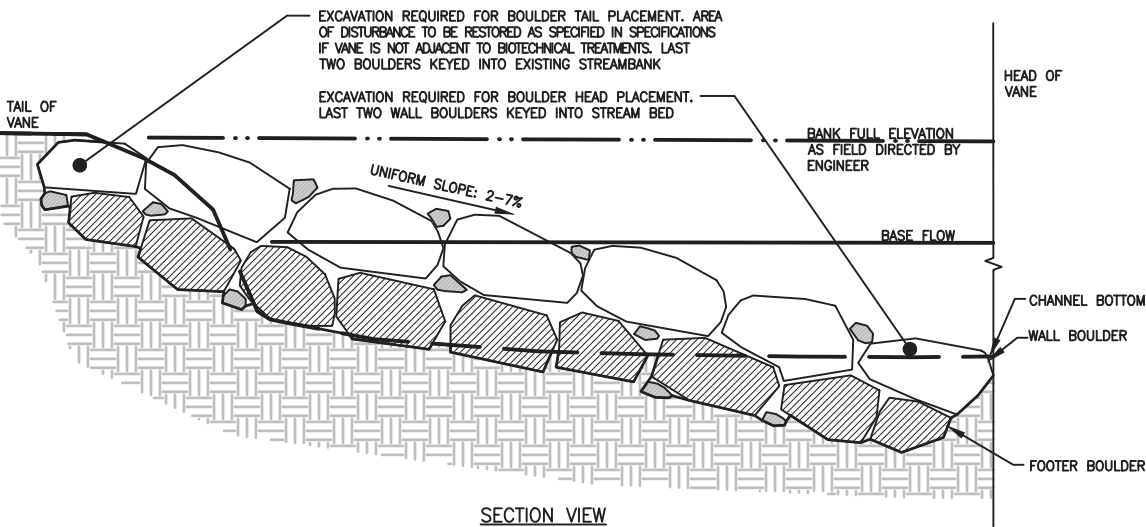


PLAN VIEW

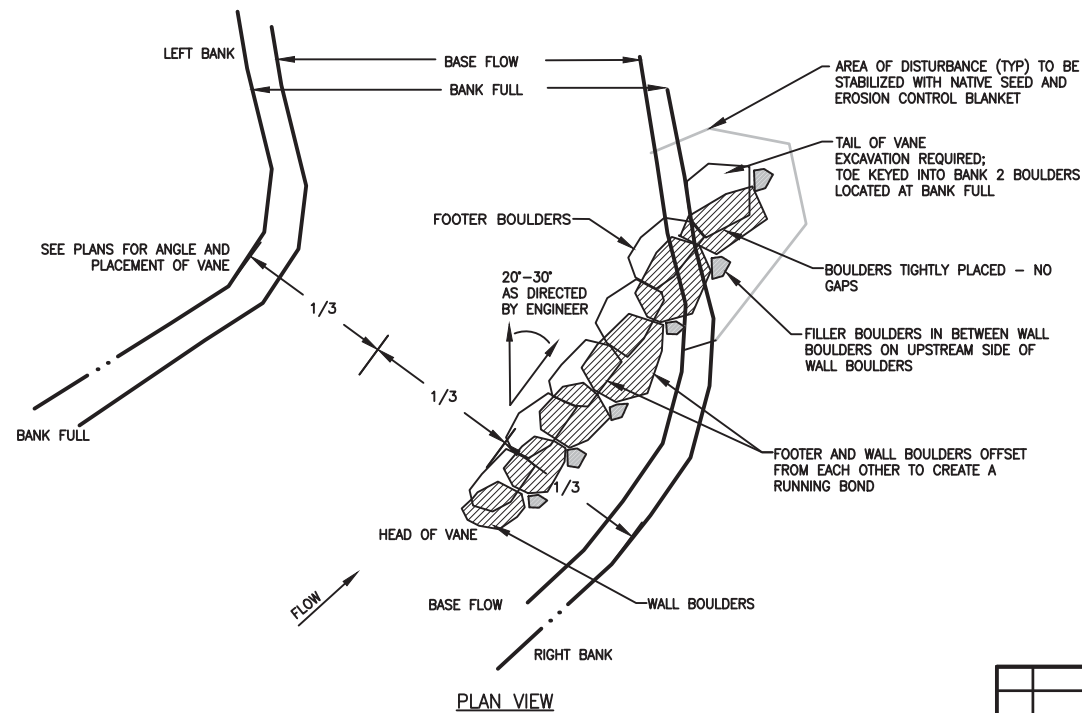


SECTION VIEW

CREEK CROSSING STEPPERS  
NOT TO SCALE



SECTION VIEW



PLAN VIEW

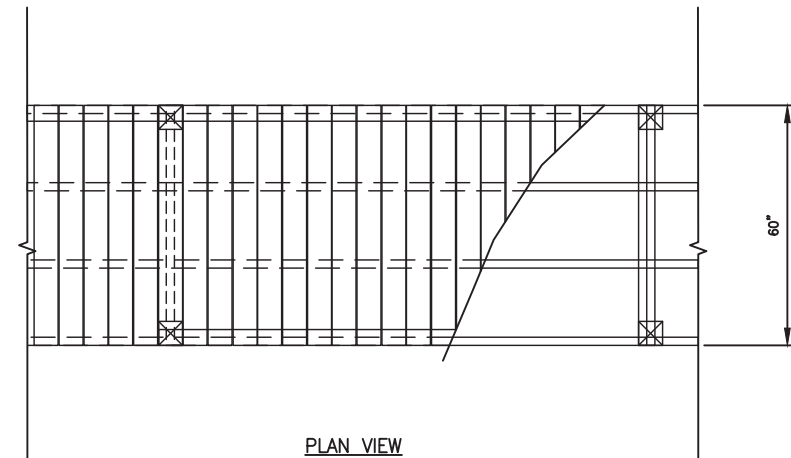
- NOTE:  
 1. CLASS V RIPRAP ACCEPTABLE ROCK ALTERNATIVE  
 2. BOULDER VANES TO BE FIELD LOCATED BY ENGINEER

BOULDER VANE DETAIL (TYPICAL)

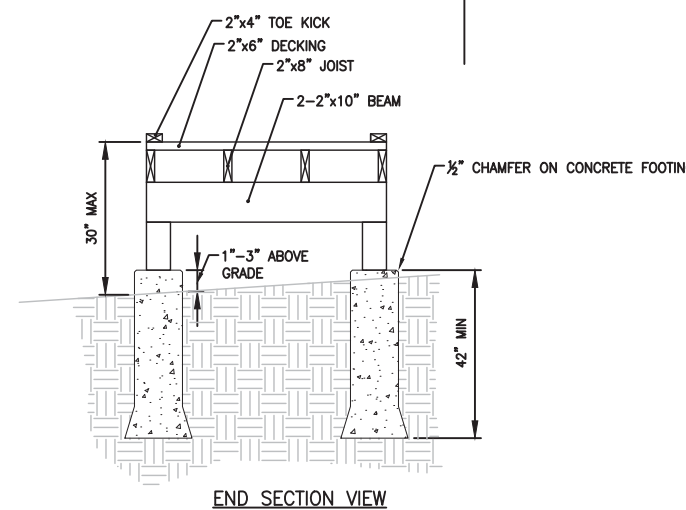
NOT TO SCALE

3  
D-105

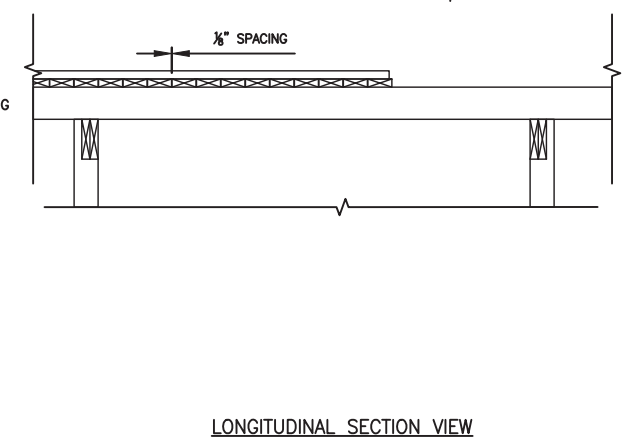
BANK ACCESS STEPS  
NOT TO SCALE



PLAN VIEW



END SECTION VIEW



LONGITUDINAL SECTION VIEW

BOARDWALK  
NOT TO SCALE

4  
D-105

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
0	60% DESIGN	SJB	EAM	04/20/17

SEAL  
 I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 ED MATTHIASEN  
 DATE 08/01/17 REG. NO. 16800

PRIME CONSULTANT  
  
 Responsive partner. Exceptional outcomes.

PROJECT TITLE  
 PLYMOUTH CREEK CHANNEL RECONSTRUCTION  
 CITY OF PLYMOUTH  
 3400 PLYMOUTH BOULEVARD  
 PLYMOUTH, MN 55447

DETAILS			
DWN BY	CHK'D	APP'D	DWG DATE
SJB	LNJ	EAM	MAR 2017
PROJECT NO.	SHEET NO.	SCALE	AS SHOWN
1756-10	D-105		
			REV NO. 2



RIP-RAP REQUIRED FOR ALL APRONS: SEE STD. PLATE ST-4

PLACE GRANITE RIP-RAP AROUND SIDES AND OVER THE TOP OF THE F.E.S.

DON'T PLACE RIP-RAP HIGHER THAN THE INVERT OF THE F.E.S.

INSTALL CHANNEL POST AND "FE" MARKER PLATE NEXT TO ALL APRONS

OFF ROAD MARKER (INCIDENTAL)

TIE THE LAST 6 JOINTS ON INLET AND OUTLET PIPES AND BED IN GRANULAR MATERIAL.

USE 2 TIE BOLT FASTENERS PER JOINT INSTALLED AT 60 DEG FROM TOP OR BOTTOM OF PIPE.

USE 5/8" TIE FOR PIPE SIZES 12" TO 27".  
USE 3/4" TIE FOR PIPE SIZES 30" TO 66".  
USE 1" TIE FOR PIPE SIZES OVER 72".  
NUTS AND WASHERS ARE NOT REQUIRED ON PIPE SIZE LESS THAN 24".

TRASH GUARDS WILL BE REQUIRED ON ALL 24" OR LARGER APRONS UNLESS APPROVED BY THE CITY ENGINEER.

SIZE OF PIPE	BARS	BOLTS	MIN. "L"
21" TO 42"	1"	3/4"	6"
48" TO 72"	1-1/4"	1"	12"

INSTALL 3 HOT DIP GALVANIZED CLIPS TO FASTEN TRASH GUARD TO F.E.S.

PLACE NONWOVEN GEOTEXTILE FABRIC UNDER RIP-RAP AND EXTENDING 1' UNDER FES

HAND PLACED GRANITE RIPRAP

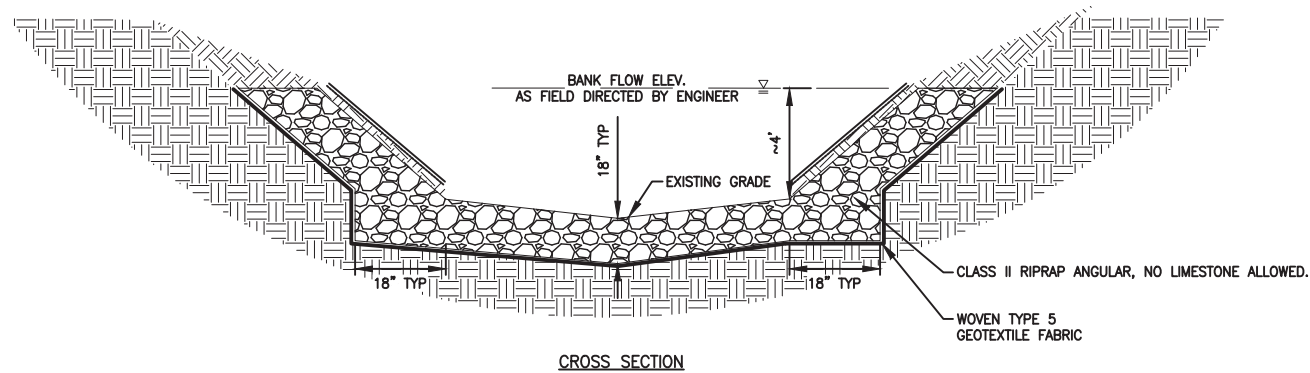
INDIVIDUAL STONES SHALL NOT WEIGH LESS THAN 50 POUNDS EACH EXCEPT THOSE USED FOR CHINKING.

SEE STD. PL. ST-4 FOR RIPRAP DETAIL

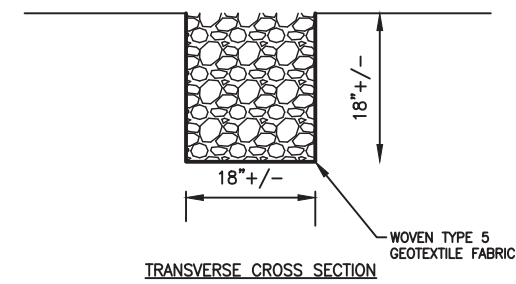
STANDARD DETAILS  
INLET & OUTLET F.E.S. WITH TRASH GUARD  
CITY OF PLYMOUTH

PUBLISHED 1-17  
CITY PL. NO. ST-3  
REVISED 1-17

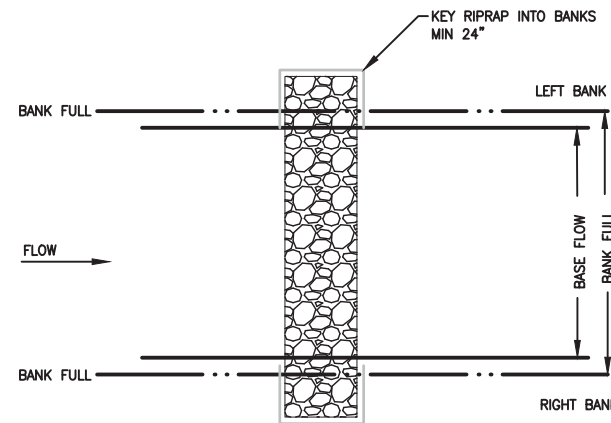
FLARED END SECTIONS DETAIL  
NOT TO SCALE



CROSS SECTION



TRANSVERSE CROSS SECTION



PLAN VIEW

- NOTES:
- EXCAVATE TRENCH AND PLACE CLASS II RIPRAP PER MNDOT SPEC 3601.2A INTO TRENCH APPROX. 18" DEEP
  - EXTEND CLASS II ROCK TRENCH BOTH WAYS FROM CENTER LINE TO CREATE A 18" DEPRESSION
  - CONTRACTOR TO MAINTAIN EXISTING CHANNEL GRADE BY PLACING CLASS II RIPRAP FLUSH WITH SURROUNDING CREEK BED
  - CLASS II RIPRAP SHALL NOT INCREASE THE FLOOD ELEVATION OF THE CREEK

ROCK GRADE CONTROL STRUCTURE  
NOT TO SCALE



REV	REVISION DESCRIPTION	DWN	APP	REV DATE
2	FOR BID	SJB	EAM	08/01/17
1	90% DESIGN	SJB	EAM	06/30/17
0	60% DESIGN	SJB	EAM	04/20/17

SEAL

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

ED MATTHIESEN

DATE 08/01/17 REG. NO. 16800

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.		SCALE	
1756-10		AS SHOWN	
SHEET NO.		REV NO.	
D-106		2	