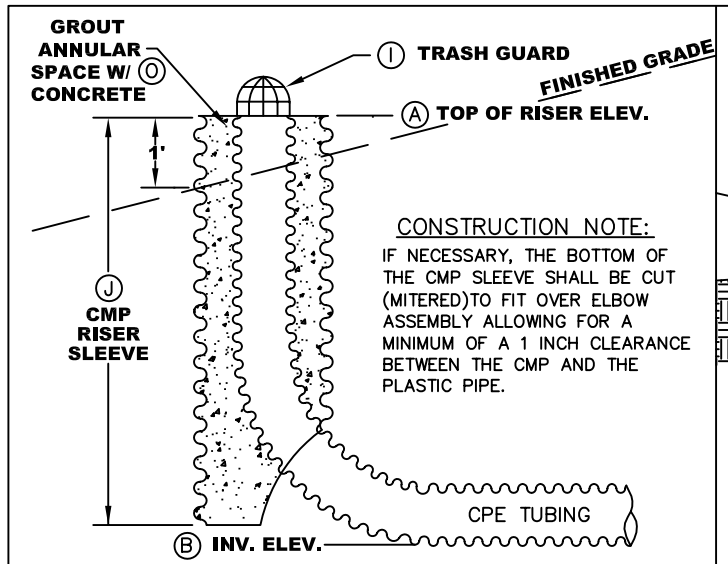
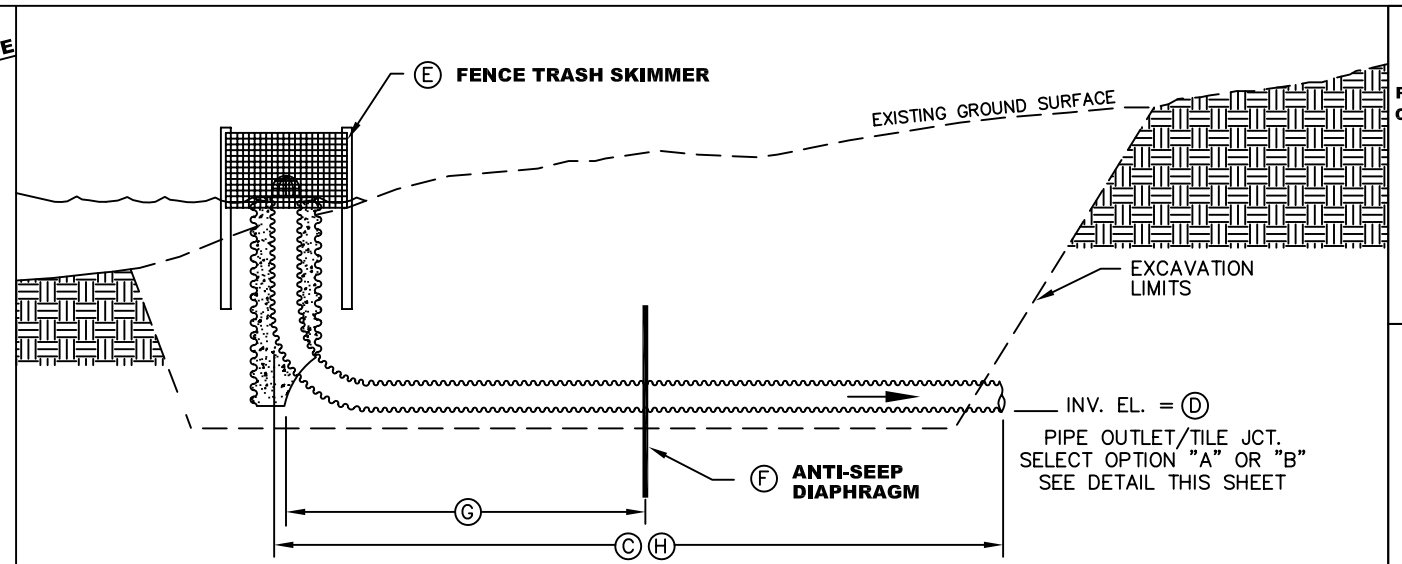


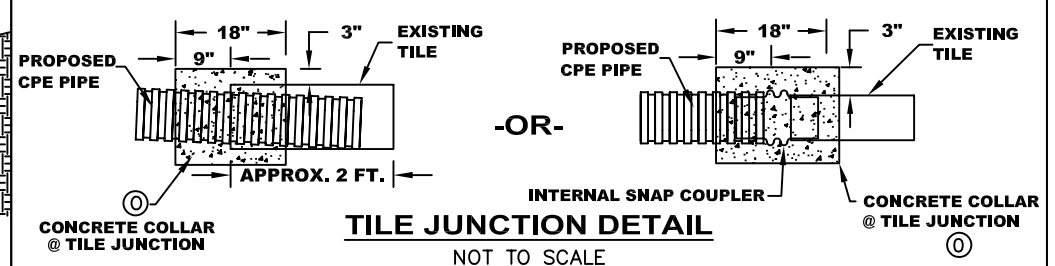
DETAIL OF RISER STRUCTURE

NOT TO SCALE



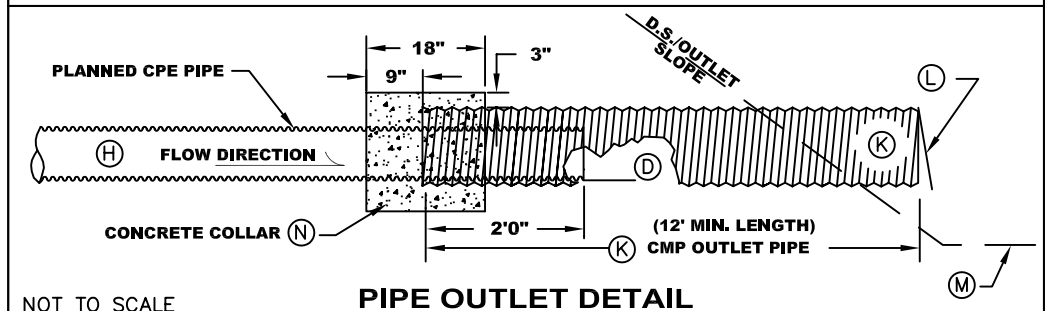
PROFILE ALONG CENTERLINE OF RISER STRUCTURE

NOT TO SCALE



TILE JUNCTION DETAIL

NOT TO SCALE



NOT TO SCALE

PIPE OUTLET DETAIL

DESIGN DATA

STRUCTURE/WETLAND BASIN # _____

DRAINAGE AREA = _____ ACRES POOL AREA = _____ ACRES

DRAINAGE AREA TO POOL AREA RATIO = _____ DESIGN ZONE: _____

(A) TOP OF RISER ELEV. = _____ FT.

(B) INV. ELEV. OF RISER = _____ FT. OR ☐ TO BE FIELD DETERMINED.

(C) GRADE OF BARREL = _____ % OR ☐ TO BE FIELD DETERMINED.

(D) INV. ELEV. AT PIPE OUTLET/TILE JUNCTION = _____ FT. OR ☐ TO BE FIELD DETERMINED.

OUTLET TYPE: (Select One) ☐ TILE JNCT. ☐ PIPE OUTLET

(E) FENCE TRASH SKIMMER ☐ IS REQUIRED ☐ IS NOT REQUIRED

(F) ANTI-SEEP DIAPHRAGM ☐ IS REQUIRED ☐ IS NOT REQUIRED

(G) DISTANCE FROM RISER TO ANTI-SEEP DIAPHRAGM = _____ FT.

(SEE DWG# MN-ENG-206 FOR FENCE TRASH SKIMMER DETAILS, IF REQUIRED)

BILL OF MATERIALS

SIZE	UNIT	ITEM DESCRIPTION	UNIT	QTY.
		(E) FENCE SKIMMER (If required) See Sheet # _____ for details)	EACH	
X	FT. (H) x FT. (W)	(F) HDPE ANTI-SEEP DIAPHRAGM (If required)	EACH	
	DIA. INCHES	(H) CPE PIPE LENGTH	LIN. FT.	
	DIA. INCHES	(I) BEEHIVE TYPE TRASH GUARD	EACH	
	DIA. INCHES	(J) RISER SLEEVE LENGTH (5 ft., Annular CMP – 16 ga.)	LIN. FT.	
	DIA. INCHES	(K) CMP OUTLET PIPE (16 ga. Annular or Helical) (If required)	LIN. FT.	
		(L) HINGED TYPE RODENT GUARD FOR CMP OUTLET PIPE	EACH	
		(M) EXCAVATE AREA FOR PIPE OUTLET (As directed)		
		(N) GROUTED JUNCTION AT PIPE OUTLET	EACH	
		(O) GROUTED TILE JUNCTION (May Require Coupler)	EACH	

CONSTRUCTION SPECIFICATIONS (PIPE OUTLETS):

DESCRIPTION

The work shall include all labor, materials, and equipment required to assemble the pipe sections, excavate and prepare the bed for the pipe, and place and compact the backfill to the lines and grades shown on the drawings.

MATERIALS (GENERAL)

All materials must be handled and stored in a careful and workmanlike manner. All pipes and fittings must be of the length, size and type specified. All materials with physical imperfections or that are damaged, lost, broken or deemed unsuitable due to the Contractor's method of installation, handling, or negligence must be replaced at the Contractor's expense.

MATERIALS (CPE PIPE)

Corrugated Polyethylene (CPE) pipe and fittings, as appropriate for the type and size specified, shall meet the requirements of:

ASTM-F-405 for 3-6 inch diameter pipe and fittings
ASTM-F-667 for 8-10 inch diameter pipe and fittings

Fabrication of appurtenant sections shall be done as shown on the drawings and as recommended by the manufacturer. Unless otherwise specified, these appurtenant sections shall be made from materials identical to those from which the attached pipe is fabricated. Fabrication shall be of a quality and finished workmanship equal to that required for the pipe. Joints shall not be used. Pipe shall be one continuous length unless otherwise approved by the Project Technician.

MATERIALS (CORRUGATED METAL PIPE)

All corrugated steel pipe (CMP) shall be metallic zinc-coated unless otherwise specified. The pipe shall conform to the requirements of ASTM-A-760, A 762, A-885, for the specified type, class, and fabrication of pipe and coating.

To avoid exposure to ultraviolet radiation, the pipe shall be covered with an opaque material when stored outdoors for a period of fifteen days or longer.

MATERIALS (TRASH RACK)

Unless otherwise specified, trash racks shall be of the "beehive type" with bar spacings at the base of the trash rack no smaller than 2.0" and with a bar diameter of no less than ¼". Trash racks to be constructed of steel and finished in accordance with the manufacturers specifications.

MATERIALS (ANTI-SEEP DIAPHRAGM)

When required, the anti-seep diaphragm shall be manufactured from high density polyethylene (HDPE), unless otherwise stated. It shall be a two piece collar that conforms to the pipe material specified. The HDPE material shall be no less than 1/4 inch in thickness. The two portions of the anti-seep diaphragm shall overlap 1.5 inches prior to being bolted together. 3/8 inch holes shall be spaced 6 inches on center to allow for bolting of two portions together. 1/4 inch stainless steel bolts and hardware shall be supplied and used to connect the sheets together. Stainless steel bands shall also be supplied and used to clamp the collar to the pipe. Unless otherwise specified by the manufacturer, the inside yoke of the collar shall be coated with Trumbull 5X mastic sealer or other acceptable polymer caulking material prior to securing the pipe. All other installation requirements/instructions shall be in accordance with the recommendation of the manufacturer. The anti-seep diaphragm shall be located as staked or determined in the field by the Project Technician. Approved manufacturer: Scheib Drainage Products #660-446-2343 or equivalent.
observed.

HANDLING THE PIPE

The Contractor shall furnish all equipment necessary to transport and place the pipe without damaging it.

All special handling requirements of the manufacturer shall be strictly observed. Special care shall be taken to avoid impact when the pipe must be handled at temperatures of 40° F or less.

INSTALLATION AND ASSEMBLY OF PIPE

The trench or excavation for the placement of the conduit shall be constructed to the elevations and grades as shown or as staked. Trench shields, shoring and bracing, or other methods necessary to safeguard the workers and the work, and to prevent damage to existing improvements, shall be furnished, placed, and subsequently removed by the Contractor.

Unless otherwise specified, no filter or envelope is required. The bottom of the trench shall be shaped to form a semicircular groove in its center. The conduit shall be firmly and uniformly bedded throughout its entire length to the elevation and grade. The minimum trench width at the top of the conduit should be adequate to permit installation and provide bedding conditions suitable to support the load on the conduit.

Unless otherwise specified, the pipe shall be assembled and installed in accordance with the manufacturer's recommendations. The pipe shall be laid to the elevations and grades shown on the drawings or as staked. Unless otherwise specified, excavation and subsequent installation of conduit sections shall begin at the outlet end and progress upstream. All field cut pipe ends shall have all burrs removed prior to assembling the joints. All pipelines shall be free of foreign material and joints shall be made in accordance with the recommendation of the pipe manufacturer.

BACKFILLING

The initial backfill shall be manually compacted around the pipe and to a depth of 2 feet over the pipe to provide adequate lateral support to the pipe. The initial backfill material shall be selected friable soil free from rocks or stones larger than 1 inch in diameter and earth clods greater than 2 inches in diameter. The moisture content of the backfill material shall be maintained within the limits required to: a) allow the soil to form a ball that does not readily separate when kneaded in the hand; b) prevent adherence of the fill material to the equipment treads or tracks; c) prevent rutting by equipment, and; d) ensure that blending of the soil results in a reasonably homogenous mass. Compaction shall be by hand tamping or manually directed power tampers. The initial backfill shall be placed in layers no thicker than 4 inches and compacted to a density greater than or equal to that of the surrounding undisturbed soil. Special care shall be taken to obtain compaction under the lower half of the pipe. The pipe shall be loaded sufficiently during backfilling around the sides to prevent it from being lifted from the bedding or subgrade.

Final backfill material shall be free of large rocks, frozen soil, and other debris larger than 4 inches in diameter. The material shall be placed and spread in approximately uniform layers with a maximum thickness of 9 inches in such a manner that there will be no unfilled spaces in the backfill and the backfill will be level with the natural ground or the design grade. Rolling equipment shall not be used to compact the final backfill until at least a 2-foot depth of cover has been placed over the pipe. The use of compaction equipment or methods that produce horizontal or vertical earth pressures which may cause excessive displacements or which may damage the installed pipe will nor be permitted.

Place backfill to the lines and grades shown on the plans or as staked.

OTHER:

DESIGN NOTES:
THE MAXIMUM SIZE OF CPE PIPE TO BE USED WITH THIS STANDARD DRAWING IS 10 INCHES.

Project Name:

CPE TRICKLE TUBE

Approved By Date

Title

BWSR
NRCS
USFWS

Easement OR Project No. Plan Sheet of

DWG# MN-ENG-204

Prepared by MInnesota Board of Water & Soil Resources-Rev 09/17/02