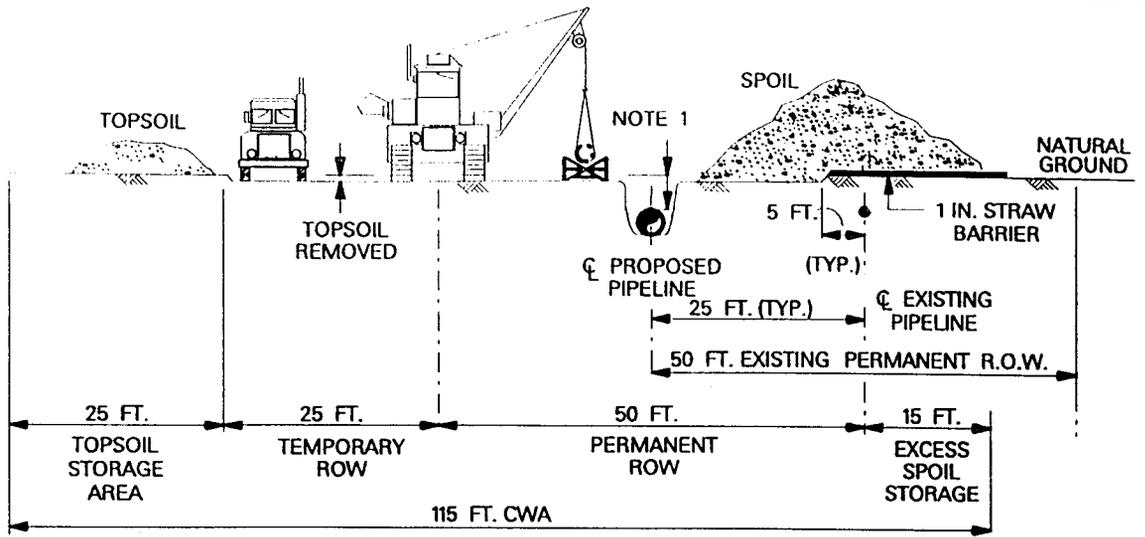
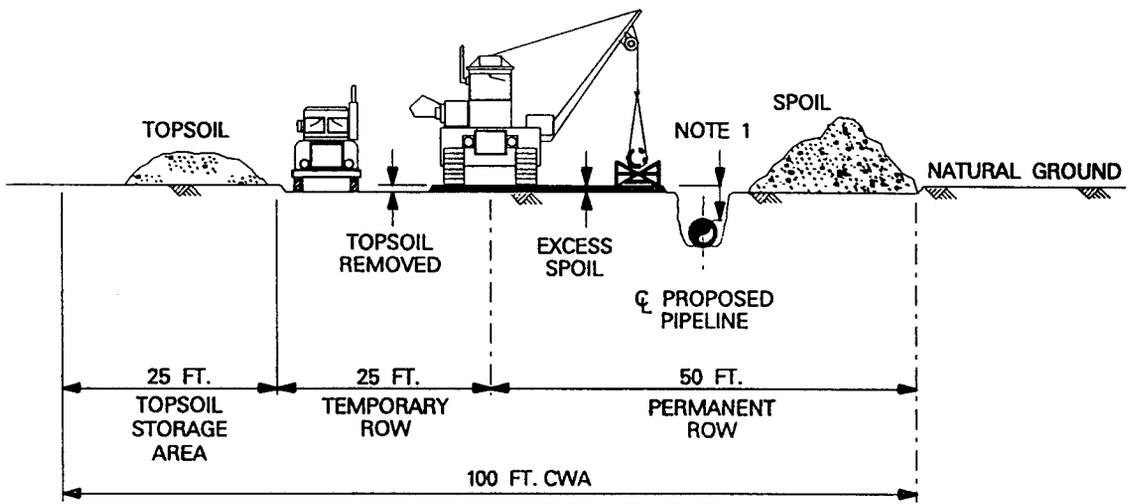


TYPICAL WETLAND AND WATERBODY CROSSING DRAWINGS



ADJACENT TO EXISTING PIPELINE WITH GRASS GROUND COVER



LIFT & LAY NEW PIPELINE OR PLOWED FIELD

NOTE:

1. DEPTH OF COVER IN CROPLAND TO BE 4 FT. OR 1 FT. BELOW EXISTING FIELD TILE, WHICH EVER IS GREATER. (FIGURE 17)
2. OTHER CONFIGURATIONS OF TOPSOIL AND SUBSOIL ARE ACCEPTABLE PROVIDED THEY ARE KEPT SEPARATE.
3. UP TO 16 INCHES OF TOPSOIL REMOVED.
4. TOPSOIL AND SUBSOIL PILES WILL BE ADEQUATELY PROTECTED FROM EROSION AND SEDIMENTATION BY USE OF SEDIMENT FILTER DEVICES OR STRAW MULCH.
5. A 1 IN. THICK STRAW VISUAL BARRIER MUST BE INSTALLED PRIOR TO SUBSOIL SPOILING OVER TOPSOIL.

NOT TO SCALE

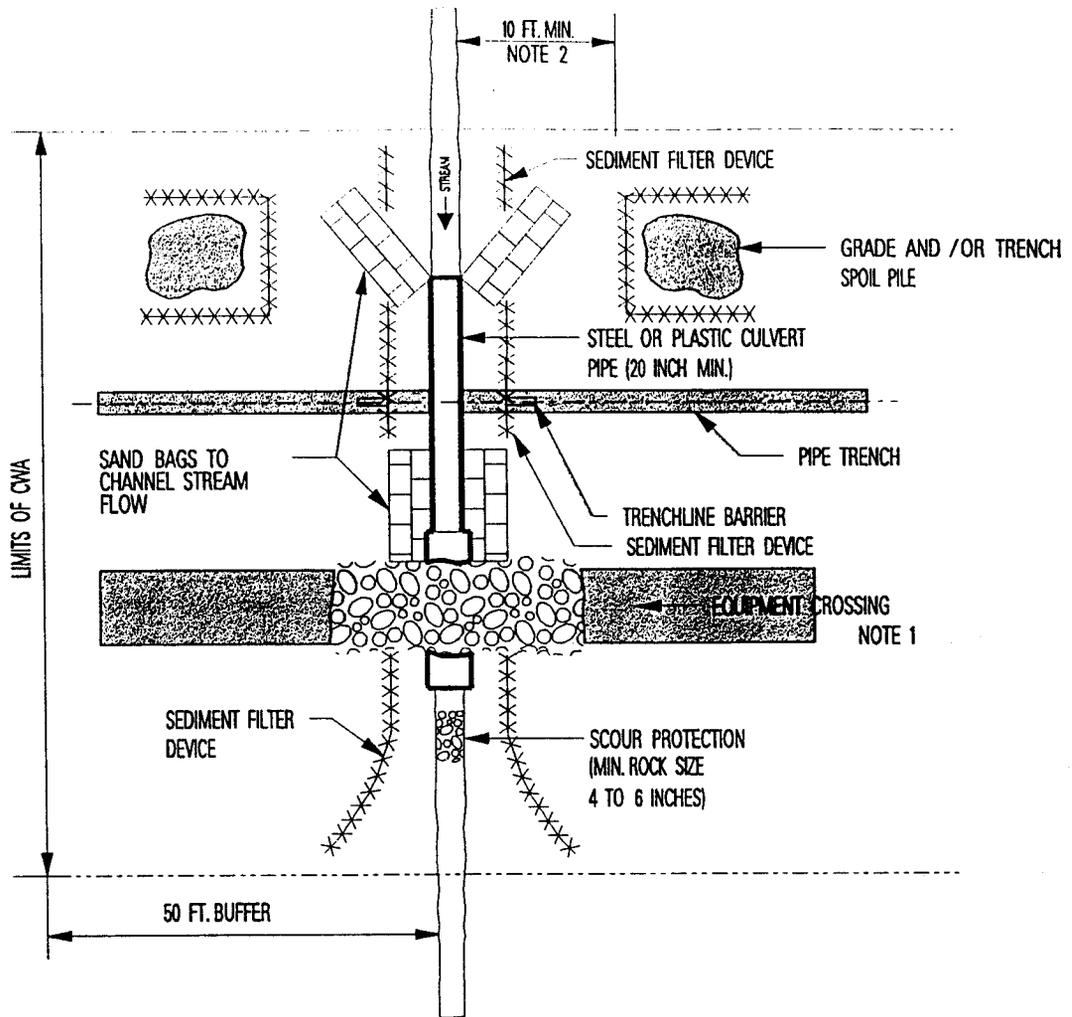


**MILLENNIUM
PIPELINESM**

ENVIRONMENTAL CONSTRUCTION STANDARDS

TYPICAL
TOPSOIL
CONSERVATION
IN AGRICULTURAL LAND

FIGURE 15



- NOTES:
1. EQUIPMENT CROSSINGS ARE TO BE PREPARED AS ILLUSTRATED IN FIGURES 22 & 23.
 2. GRADE AND TRENCH SPOIL WILL BE STOCKPILED AT LEAST 10 FEET FROM THE WATER'S EDGE, TOPOGRAPHY PERMITTING.
 3. INSTALL FLUME PIPE AFTER BLASTING, BUT BEFORE TRENCHING.
 4. USE SAND BAG OR SAND BAG AND PLASTIC SHEETING DIVERSION STRUCTURE, OR EQUIVALENT.
 5. PROPERLY ALIGN FLUME PIPE.
 6. DO NOT REMOVE FLUME PIPE DURING TRENCHING, PIPELAYING, OR BACKFILLING ACTIVITIES.
 7. REMOVE ALL FLUME PIPES AND DAMS THAT ARE NOT ALSO PART OF THE EQUIPMENT BRIDGE AFTER FINAL CLEANUP BUT BEFORE PERMANENT SEEDING.

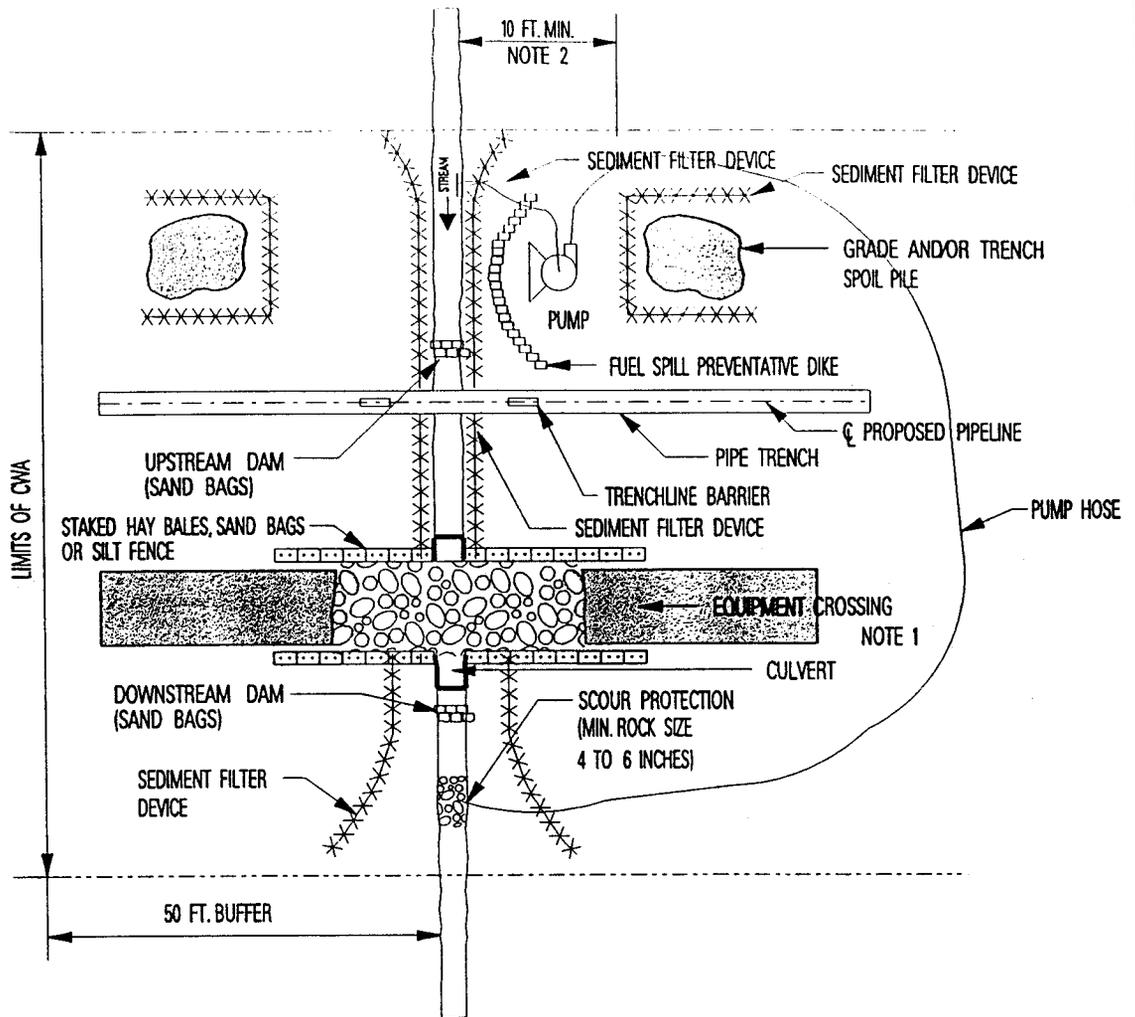
NOT TO SCALE



ENVIRONMENTAL CONSTRUCTION STANDARDS

TYPICAL
STREAM CROSSING
DRY-DITCH
(FLUME)

FIGURE 18



- NOTES:
1. EQUIPMENT CROSSINGS ARE TO BE PREPARED AS ILLUSTRATED IN FIGURES 22 & 23.
 2. GRADE AND TRENCH SPOIL WILL BE STOCKPILED AT LEAST 10 FEET FROM THE WATER'S EDGE, TOPOGRAPHY PERMITTING.
 3. SET UP PUMP AND HOSE AS SHOWN, OR USE OTHER PRACTICAL ALTERNATIVES. PUMP SHOULD HAVE TWICE THE PUMPING CAPACITY OF ANTICIPATED FLOW.
 4. CONTRACTOR TO ENSURE A SUFFICIENT NUMBER OF ACTIVE AND BACKUP PUMPS TO MAINTAIN THE CAPACITY OF THE STREAMFLOW AT ALL TIMES DURING INSTALLATION.
 5. ALL INTAKE HOSES WILL BE SCREENED.
 6. DISMANTLE DOWNSTREAM DAM, THEN UPSTREAM DAM. KEEP PUMP RUNNING TO MAINTAIN STREAM FLOW.

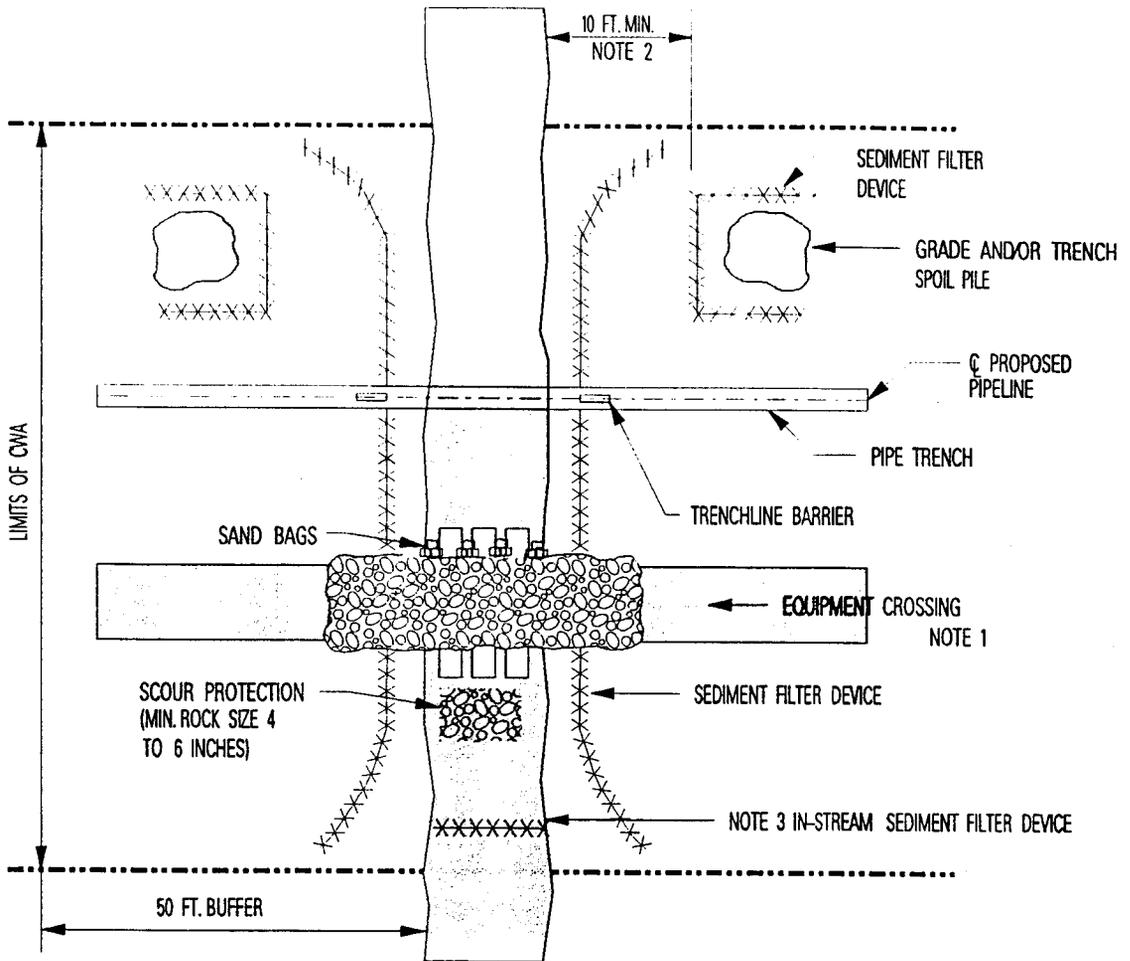
NOT TO SCALE



ENVIRONMENTAL CONSTRUCTION STANDARDS

TYPICAL
STREAM CROSSING
DRY-DITCH
(DAM AND PUMP)

FIGURE 19



- NOTES:
1. EQUIPMENT CROSSINGS ARE TO BE PREPARED AS ILLUSTRATED IN FIGURES 22 & 23.
 2. GRADE AND TRENCH SPOIL WILL BE STOCKPILED AT LEAST 10 FEET FROM THE WATERS' EDGE, TOPOGRAPHY PERMITTING.
 3. IN HIGH QUALITY STREAMS, INSTALL IN-STREAM SEDIMENT FILTER DEVICE 40 FT. AND 60 FT. DOWNSTREAM IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

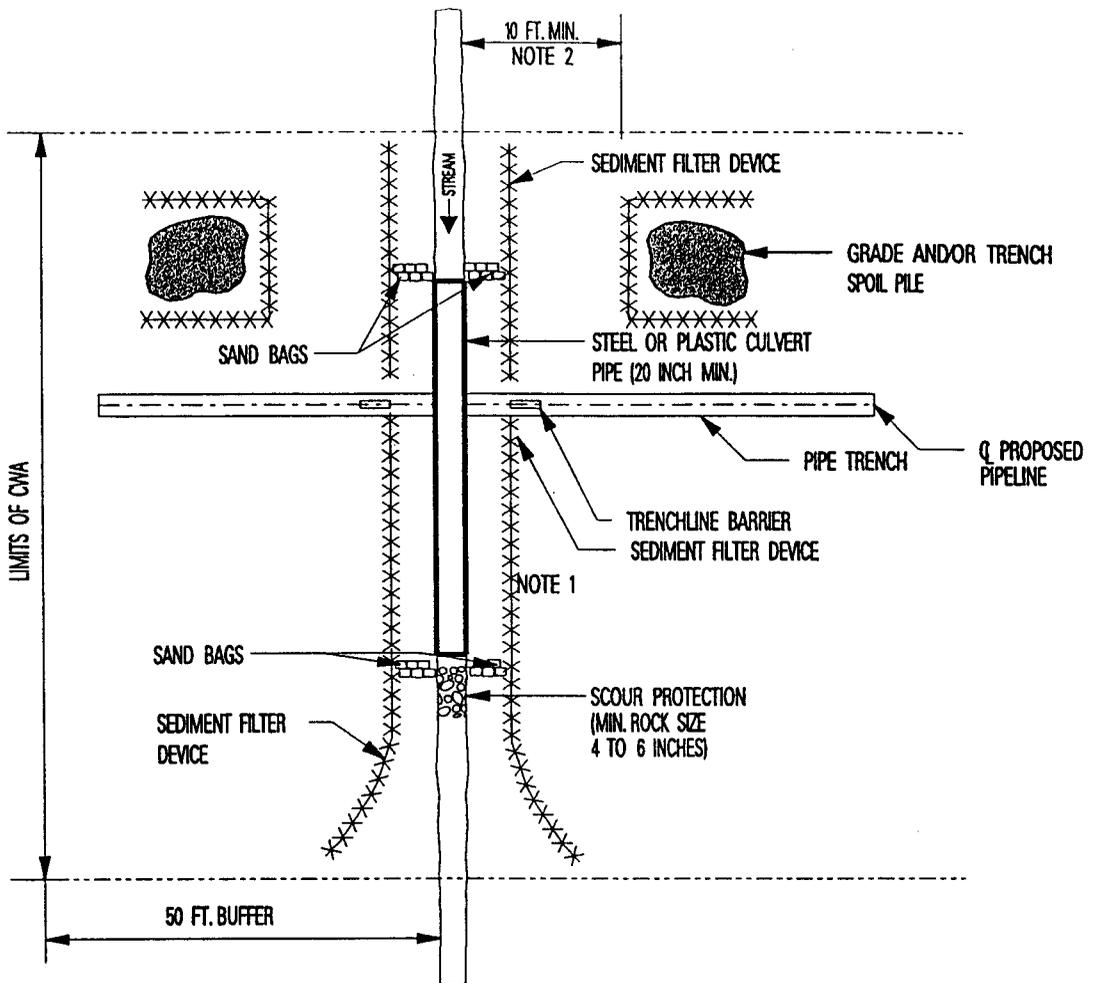
NOT TO SCALE



ENVIRONMENTAL CONSTRUCTION STANDARDS

TYPICAL
STREAM CROSSING
WET-DITCH

FIGURE 20



- NOTES:
1. EQUIPMENT CROSSINGS, IF INSTALLED, ARE TO BE PREPARED AS ILLUSTRATED IN FIGURES 22 & 23.
 2. GRADE AND TRENCH SPOIL WILL BE STOCKPILED AT LEAST 10 FEET FROM THE WATER'S EDGE, TOPOGRAPHY PERMITTING.
 3. INSTALL CULVERT IF STREAM CROSSING IS NOT PROMPTLY INSTALLED.

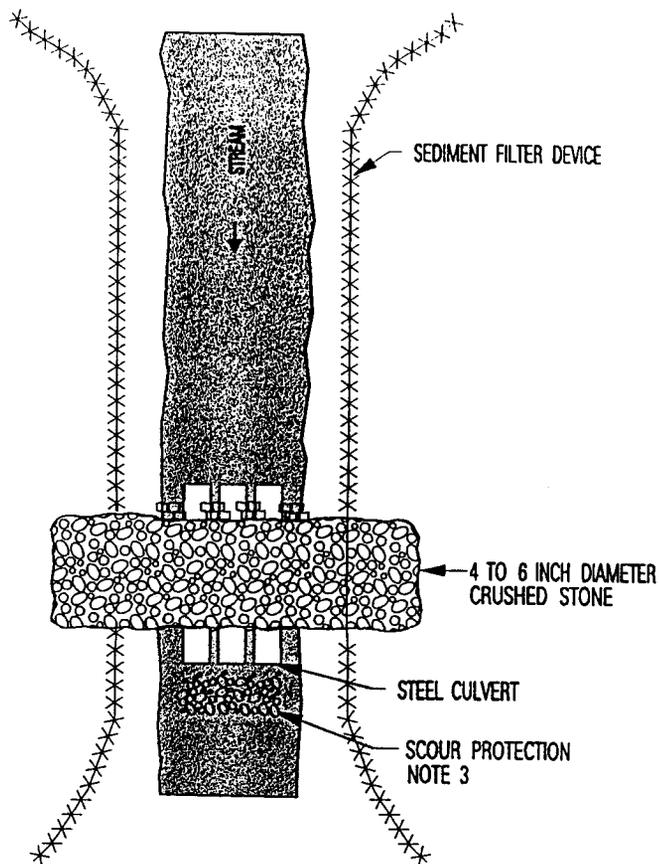
NOT TO SCALE



ENVIRONMENTAL CONSTRUCTION STANDARDS

TYPICAL
STREAM CROSSING
INTERMITTENT
STREAMS

FIGURE 21



- NOTES:
1. MINIMUM CONTOURING OF THE BOTTOM NECESSARY TO LAY THE CULVERTS LEVEL IS PERMISSIBLE.
 2. USE AS MANY CULVERTS AS REQUIRED TO SPAN ENTIRE STREAM BED.
 3. STONES WILL BE PLACED AT THE OUTLET OF ALL CULVERTS TO PROVIDE SCOUR PROTECTION IN THE EXISTING CHANNELS. MINIMUM ROCK SIZE: 4 TO 6 INCHES.
 4. MINIMUM CULVERT DIAMETER 20 INCHES .

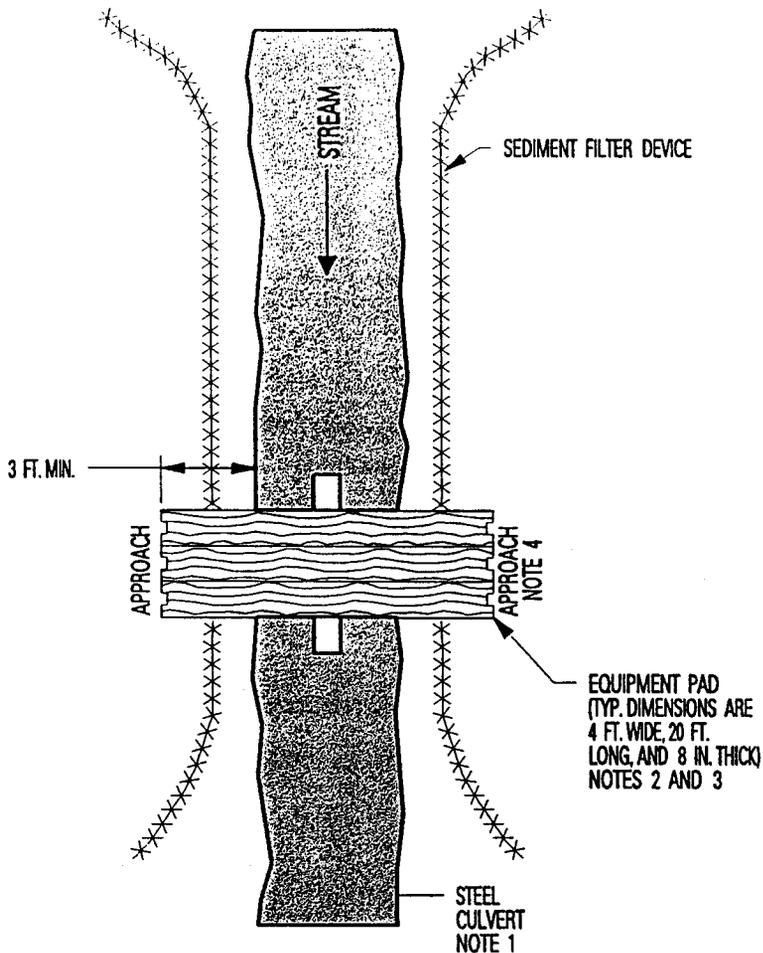
NOT TO SCALE



ENVIRONMENTAL CONSTRUCTION STANDARDS

TEMPORARY
EQUIPMENT CROSSING
CULVERT AND STONE

FIGURE 22



- NOTES:
1. CULVERT PIPE UTILIZED IF ADDITIONAL SUPPORT IS REQUIRED.
 2. ADDITIONAL PADS CAN BE PUT SIDE BY SIDE IF EXTRA WIDTH IS REQUIRED.
 3. EQUIPMENT PAD TYPICALLY CONSTRUCTED OF HARDWOOD; MUST ACCOMMODATE THE LARGEST EQUIPMENT USED.
 4. RAMP APPROACHES CAN EITHER BE GRADED OR DUG INTO GROUND. IF NECESSARY, CRUSHED STONE WILL BE USED TO RAMP UP TO THE EQUIPMENT PADS.
 5. MINIMUM CULVERT DIAMETER 20 INCHES.
 6. MAINTAIN PADS SO AS NOT TO ALLOW MUD TO ENTER THE STREAM

NOT TO SCALE

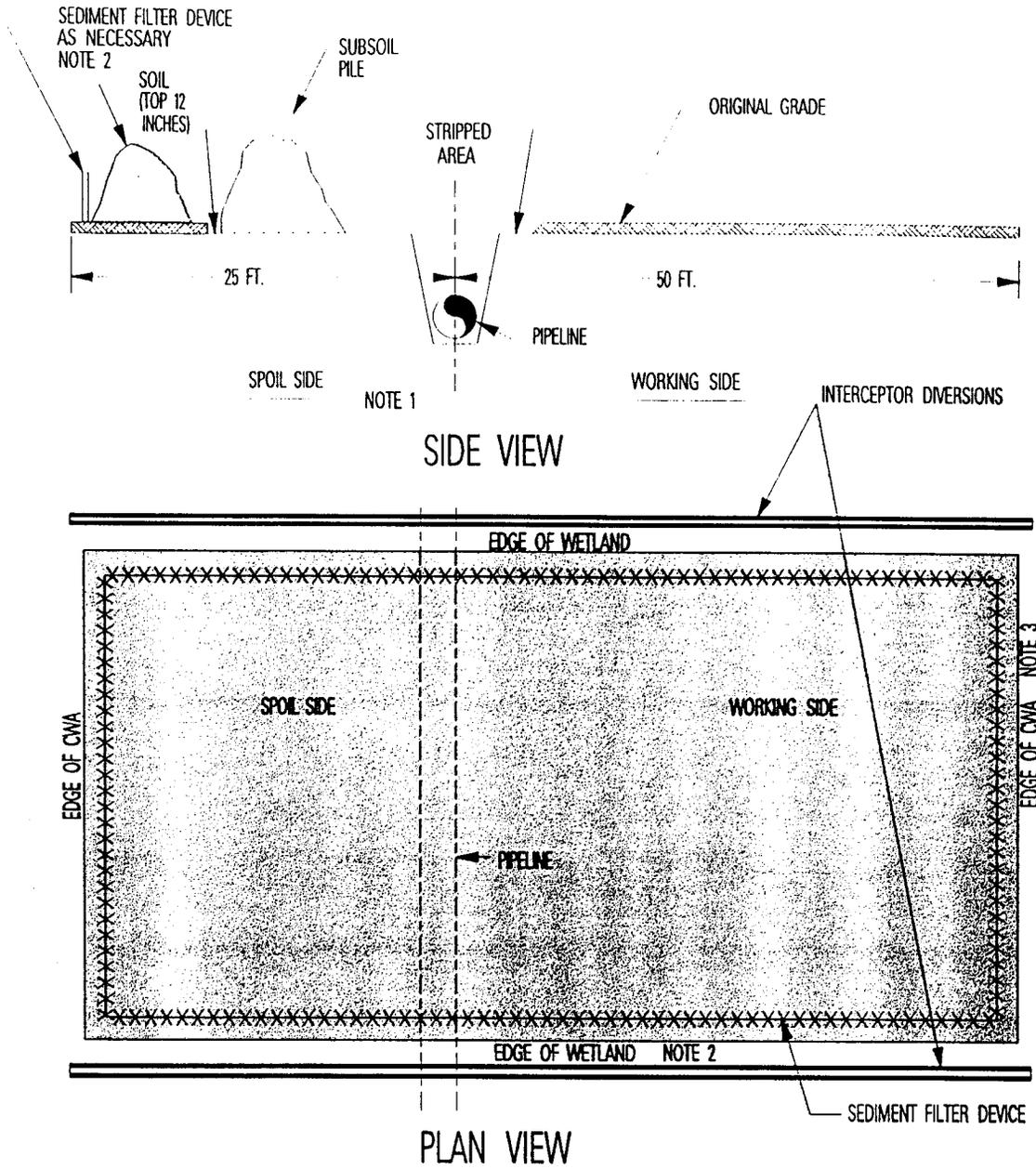


**MILLENNIUM
PIPELINE**

ENVIRONMENTAL CONSTRUCTION STANDARDS

TEMPORARY
EQUIPMENT CROSSING
EQUIPMENT PADS

FIGURE 23



- NOTES:
1. IN WETLAND AREAS WHICH CONTAIN NO STANDING WATER OR SATURATED SOILS, SOIL (TOP 12 INCHES) AND SUBSOIL WILL BE STOCKPILED SEPARATELY WITHIN THE WETLAND CWA.
 2. A SEDIMENT FILTER DEVICE WILL BE PLACED ACROSS THE CWA AT THE WETLAND'S EDGE.
 3. A SEDIMENT FILTER DEVICE WILL BE PLACED AT THE EDGE OF THE CWA AND AROUND SOIL AND SUBSOIL PILES AS NECESSARY.

NOT TO SCALE

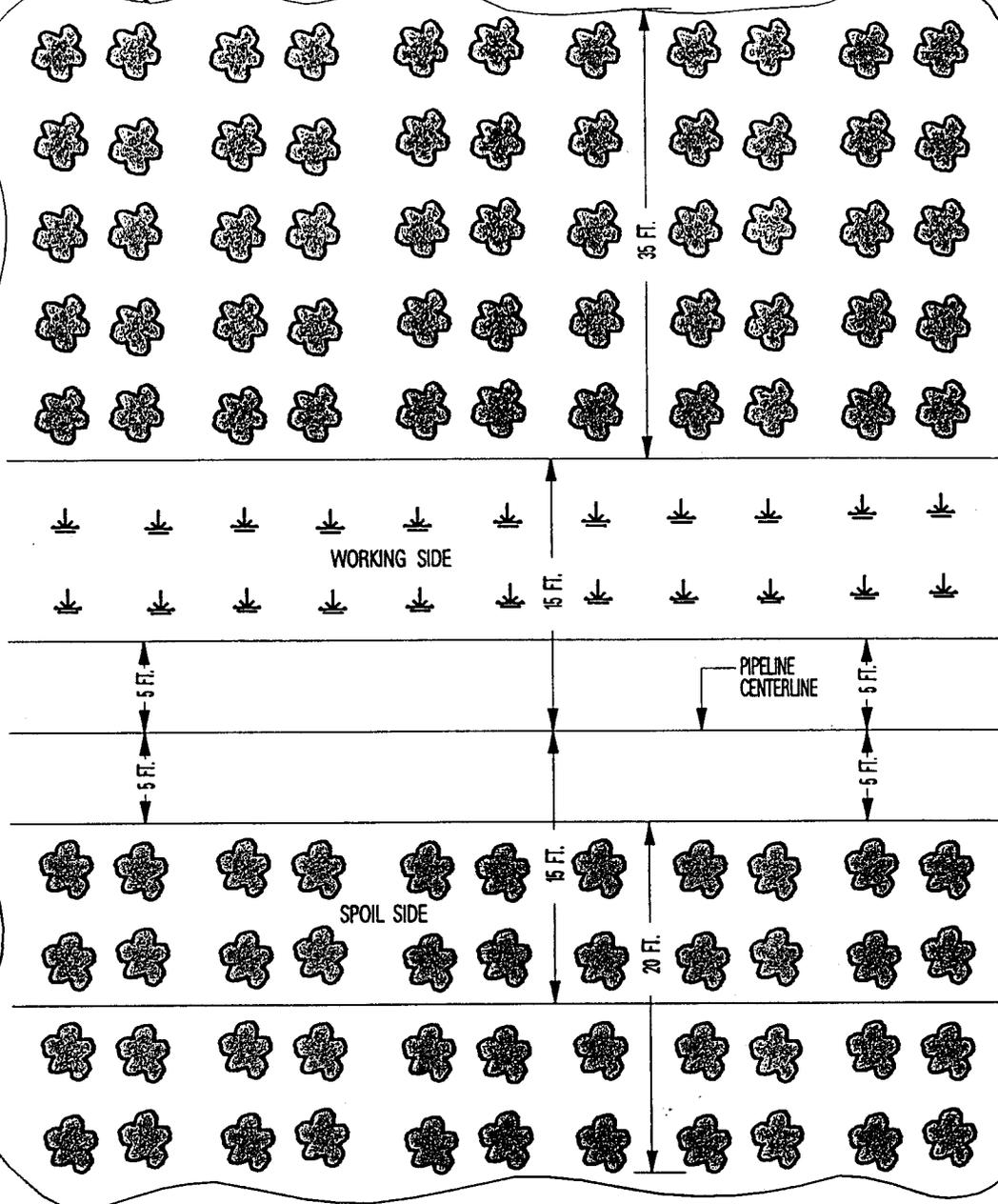


ENVIRONMENTAL CONSTRUCTION STANDARDS

TYPICAL WETLAND CROSSING

FIGURE 24

WETLAND



 = PLANTED AREA

- NOTES:
1. WHERE STUMPS HAVE BEEN REMOVED, WOODY VEGETATION ADAPTED TO WETLANDS WILL BE REPLANTED, EXCEPT WITHIN 5 FEET OF THE PIPELINE CENTERLINE OR APPURTENANCES.
 2. PLANT NATIVE TREES TO ULTIMATELY RESTORE THE CWA, EXCEPT FOR MAINTAINED PORTION OF THE PERMANENT ROW, TO ITS PRE-CONSTRUCTION STATE.

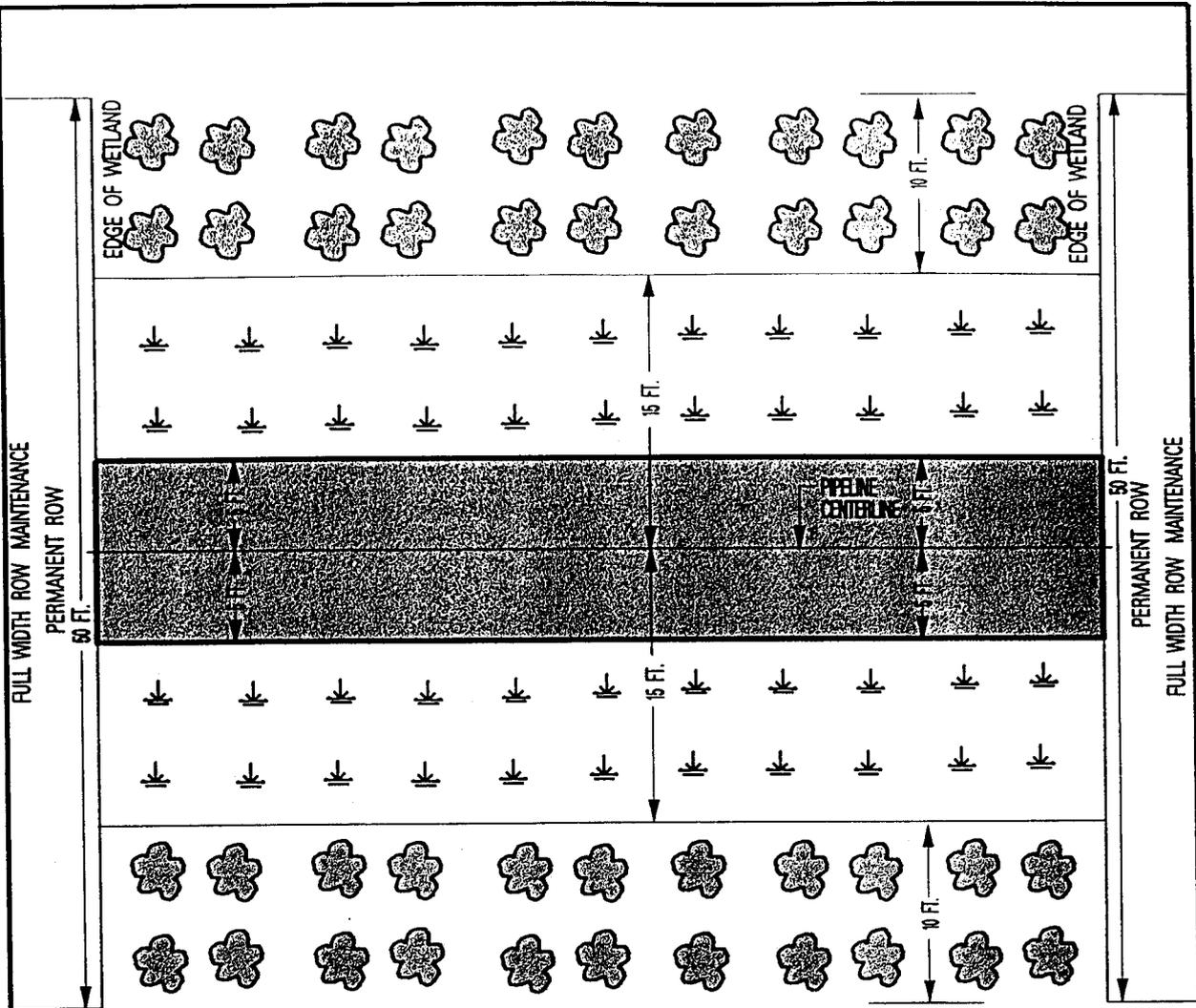
NOT TO SCALE



ENVIRONMENTAL CONSTRUCTION STANDARDS

TYPICAL FORESTED
WETLAND PLANTING

FIGURE 25



-  = HERBACEOUS PLANTS
-  = NON-MAINTAINED AREA
-  = SHRUB & HERBACEOUS PLANTS

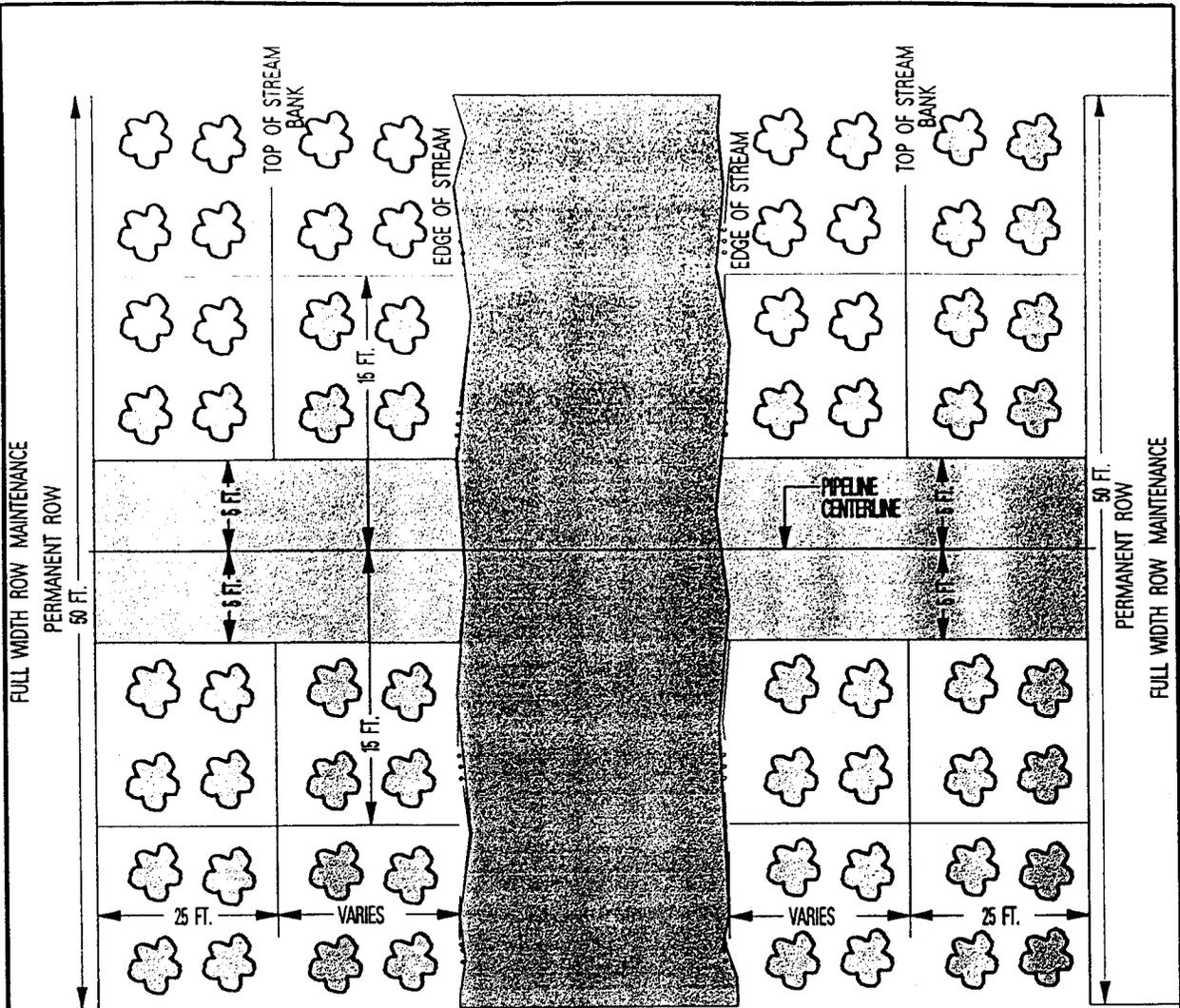
- NOTES:
1. FULL WIDTH ROW MAINTENANCE PRACTICES IN WETLANDS ARE PROHIBITED.
 2. A CORRIDOR UP TO 10 FEET WIDE CENTERED ON THE PIPELINE OR APPURTENANCES MAY BE MAINTAINED IN A HERBACEOUS STATE.
 3. TREES LOCATED WITHIN 15 FEET OF THE PIPELINE AND GREATER THAN 15 FEET TALL MAY BE SELECTIVELY CUT AND REMOVED FROM THE ROW. (SHRUB AND HERBACEOUS PLANTS)
 4. STUMPS AND ROOTS WILL BE LEFT IN PLACE.
- NOT TO SCALE



ENVIRONMENTAL CONSTRUCTION STANDARDS

ROW MAINTENANCE
WETLANDS

FIGURE 26



 = TREE

- NOTES:
1. FULL WIDTH ROW MAINTENANCE PRACTICES WITHIN 25 FEET OF WATERBODY'S MEAN HIGH WATER MARK ARE PROHIBITED.
 2. A CORRIDOR UP TO 10 FEET WIDE CENTERED ON THE PIPELINE OR APPURTENANCES MAY BE MAINTAINED IN A HERBACEOUS STATE.
 3. TREES LOCATED WITHIN 15 FEET OF THE PIPELINE AND GREATER THAN 15 FEET TALL MAY BE SELECTIVELY CUT AND REMOVED FROM THE ROW.
 4. STUMPS AND ROOTS WILL BE LEFT IN PLACE.

NOT TO SCALE



ENVIRONMENTAL CONSTRUCTION STANDARDS

ROW MAINTENANCE
PERENNIAL STREAMS

FIGURE 27