

Handling Water

Typical Schematics

Date: May 14, 2019

Revised: _____

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Introduction

The purpose of this document is to provide generic examples for water handling scenarios that designers can use as options to fit their project needs. The schematic drawing examples A - G are not intended to be simply copied into the Contract plans. The designer must show a viable water handling option specifically designed for the Project in the Contract plans.

This document is referenced within the “Special Provision and Standard Specifications Guidance Document for Designers,” issued as a Directive in May 2019. The following is a link to the Directives.

<https://www.ct.gov/dot/cwp/view.asp?a=4800&Q=558390>

The Handling Water Typical Schematics can also be found on the Office of Environmental Planning Water & Noise Compliance webpage which may contain any recent updates to the schematic document.

The following is a link to the Owned Special Provision webpage where the Handling Water item can be found.

<https://www.ct.gov/dot/cwp/view.asp?a=3886&q=457352>

Standard Specification Section 2.04 – Cofferdam and Dewatering, Cofferdam Material Left in Place has been updated in the Supplemental Standard Specifications.

The following is a link to the Supplemental Forms.

<https://www.ct.gov/dot/cwp/view.asp?a=3609&q=430362>

Reference is also made to Section 1.10 - Environmental Compliance found in the Standard Specifications for Roads, Bridges, Facilities and Incidental Construction Form 817

https://www.ct.gov/dot/lib/dot/documents/dpublications/817/_form_817_orig_rev_purchase_info.pdf

and the 2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control.

https://www.ct.gov/deep/cwp/view.asp?a=2720&q=325660&deepNav_GID=1654

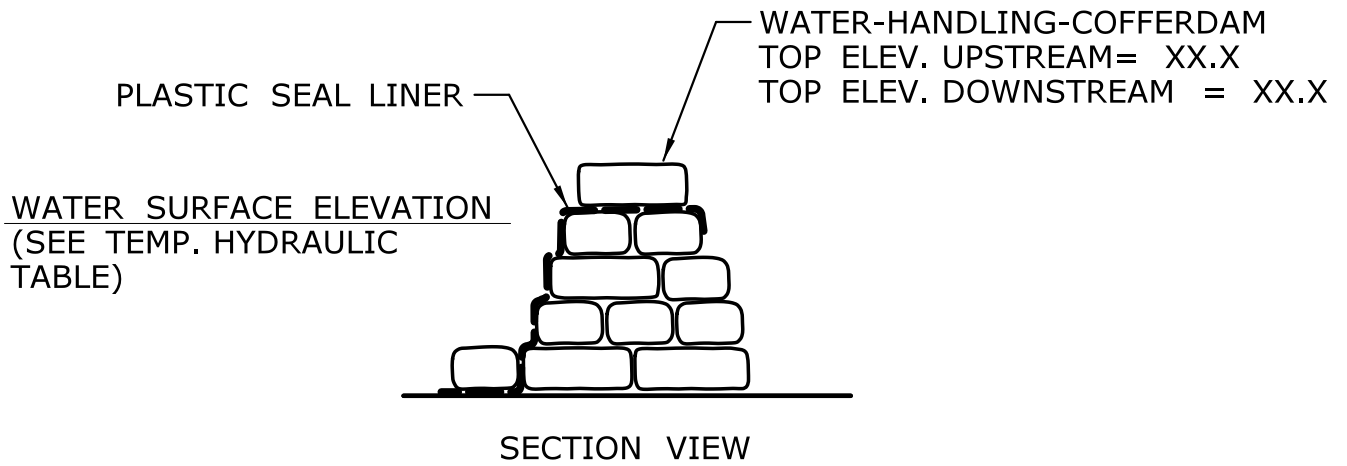
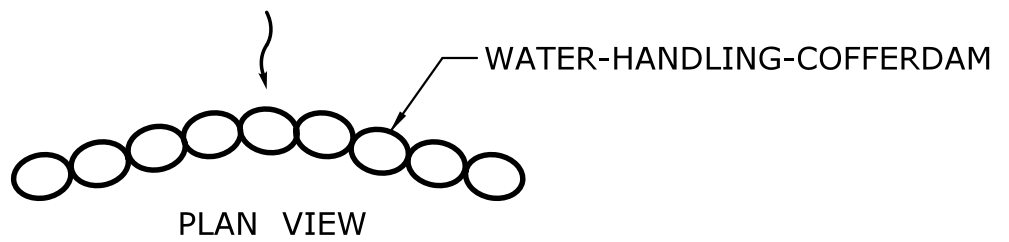
**TEMPORARY HYDRAULIC TABLE
FOR DESIGNERS TO ADD TO THE
PROJECT'S WATER-HANDLING PLAN SHEET**

(TABLE TO BE PROVIDED ON ALL WATER HANDLING PLANS
IN THE CONTRACT AND PERMIT)

TEMPORARY HYDRAULIC DATA	
AVERAGE DAILY FLOW	X CFS
AVERAGE SPRING FLOW	X CFS
X-YEAR FREQUENCY DISCHARGE	XX CFS
SHORT-TERM, LOW FLOW PUMPING TEMPORARY DESIGN DISCHARGE = X x AVG DAILY	X CFS
GRAVITY FLOW BYPASS PIPE TEMPORARY DESIGN DISCHARGE = X-YEAR FREQUENCY	XX CFS
X-YEAR WATER SURFACE ELEVATION UPSTREAM	XX.X FT
X-YEAR WATER SURFACE ELEVATION DOWNSTREAM	XX.X FT

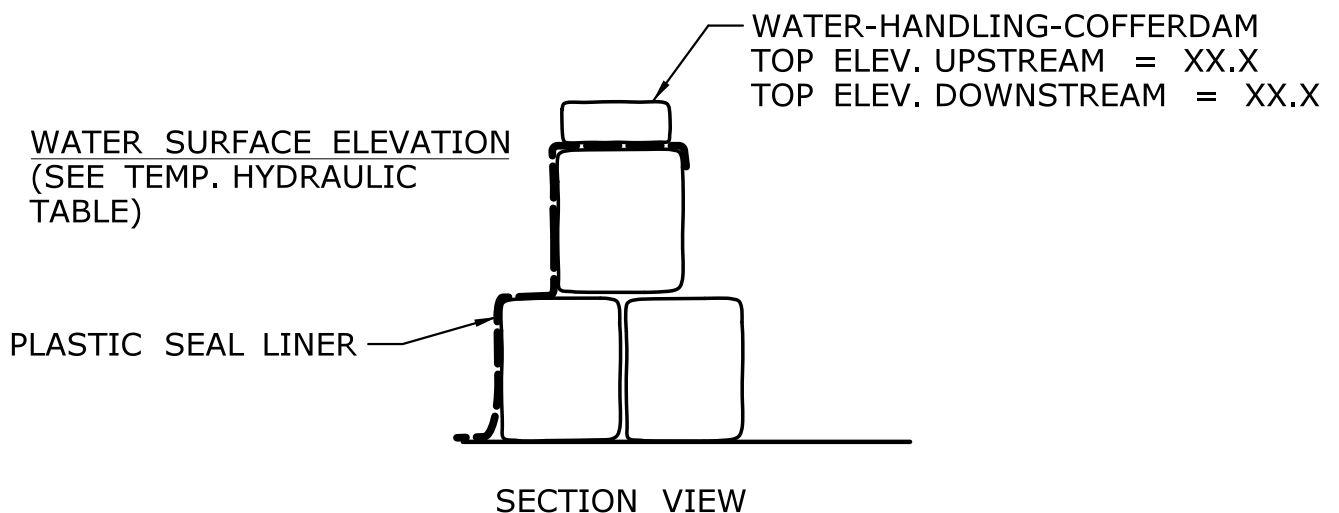
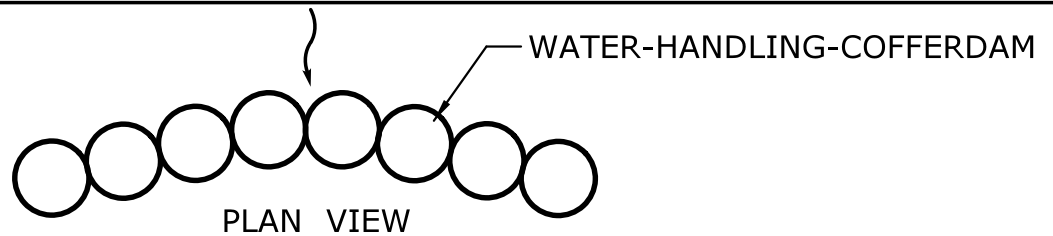
NOTE TO DESIGNERS:

1. TEMPORARY HYDRAULIC DATA CAN BE OBTAINED FROM CTDOT'S H&D UNIT OR CONSULTANT. VALUES AND DESIGN FREQUENCY VARY PER PROJECT
2. FOR TIDAL PROJECTS, THE WATER-HANDLING-COFFERDAM OR COFFERDAM ELEVATION SHALL BE SET AT THE HIGH TIDE ELEVATION (HTL) PLUS 1 FT.



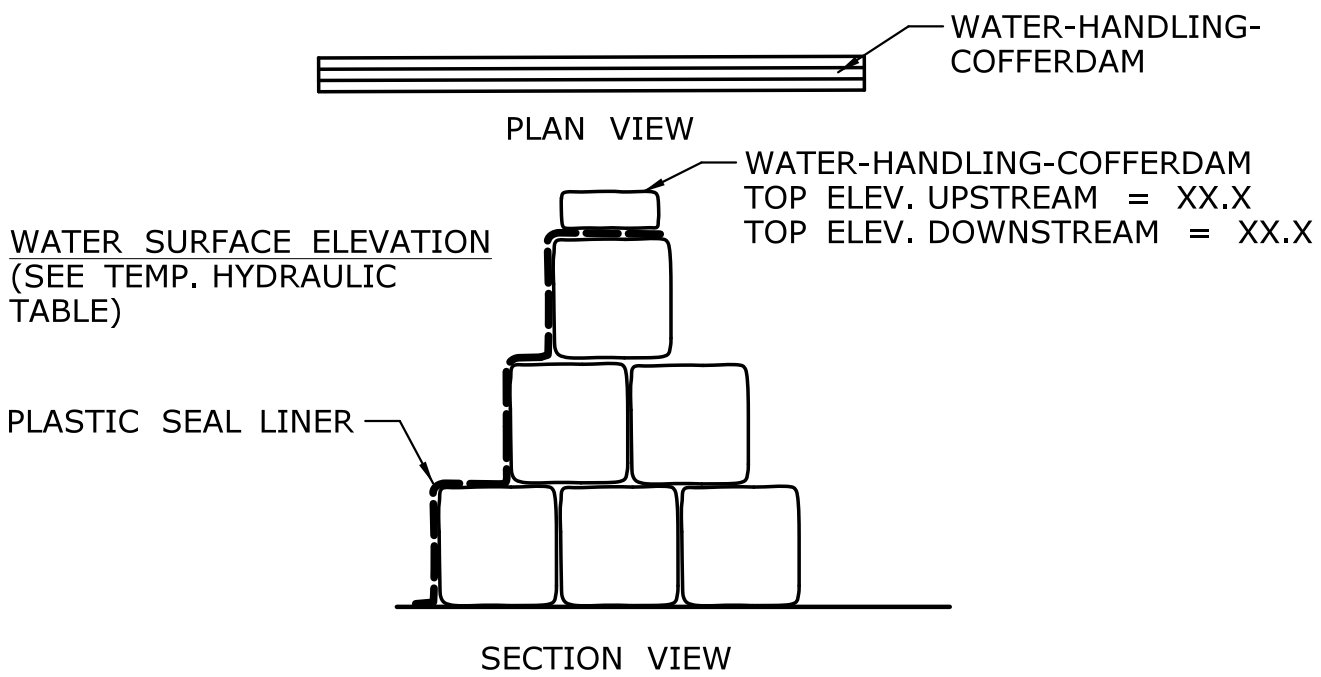
WATER-HANDLING-COFFERDAM
SANDBAGS
 (NOT TO SCALE)

PAY ITEM # 0204151A - HANDLING WATER
 PAY UNIT - LUMP SUM



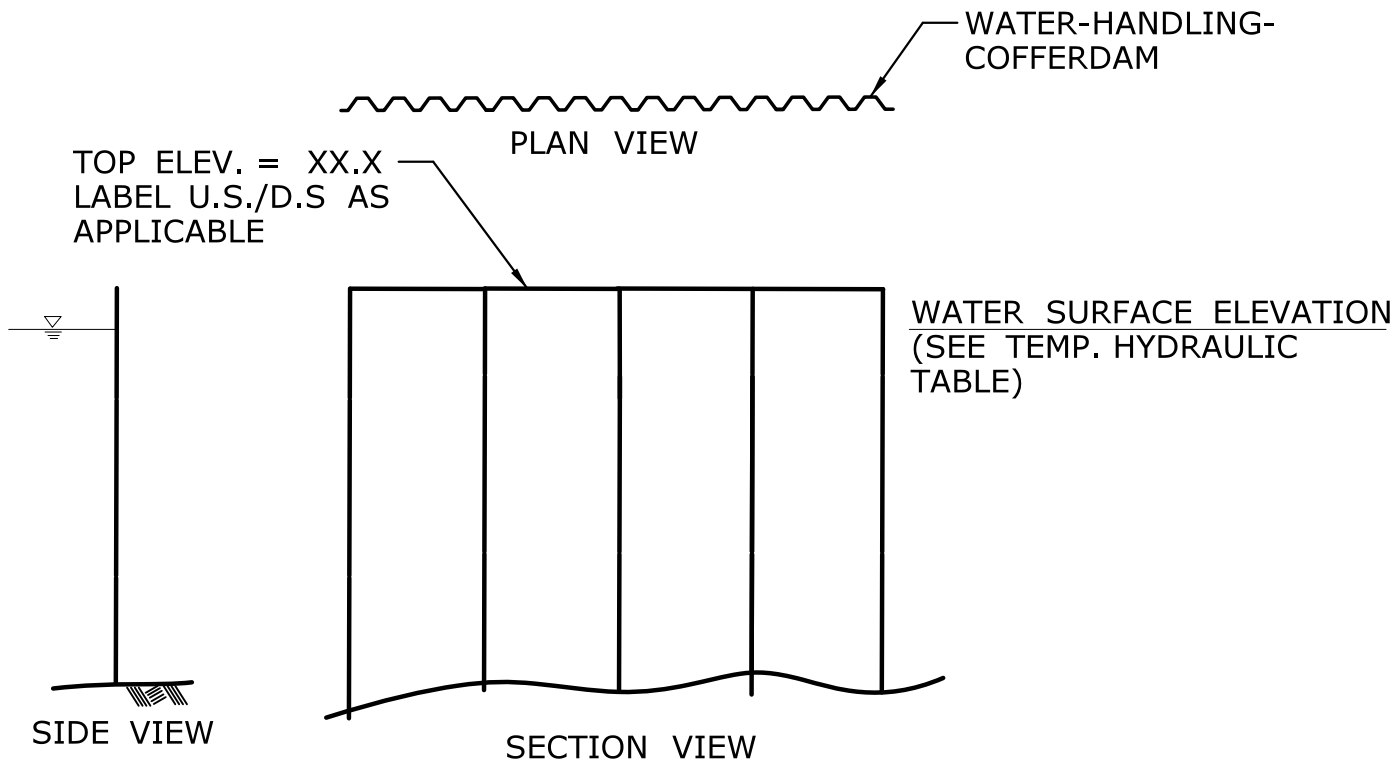
WATER-HANDLING-COFFERDAM
LARGE SANDBAGS
 (NOT TO SCALE)

PAY ITEM # 0204151A - HANDLING WATER
 PAY UNIT - LUMP SUM



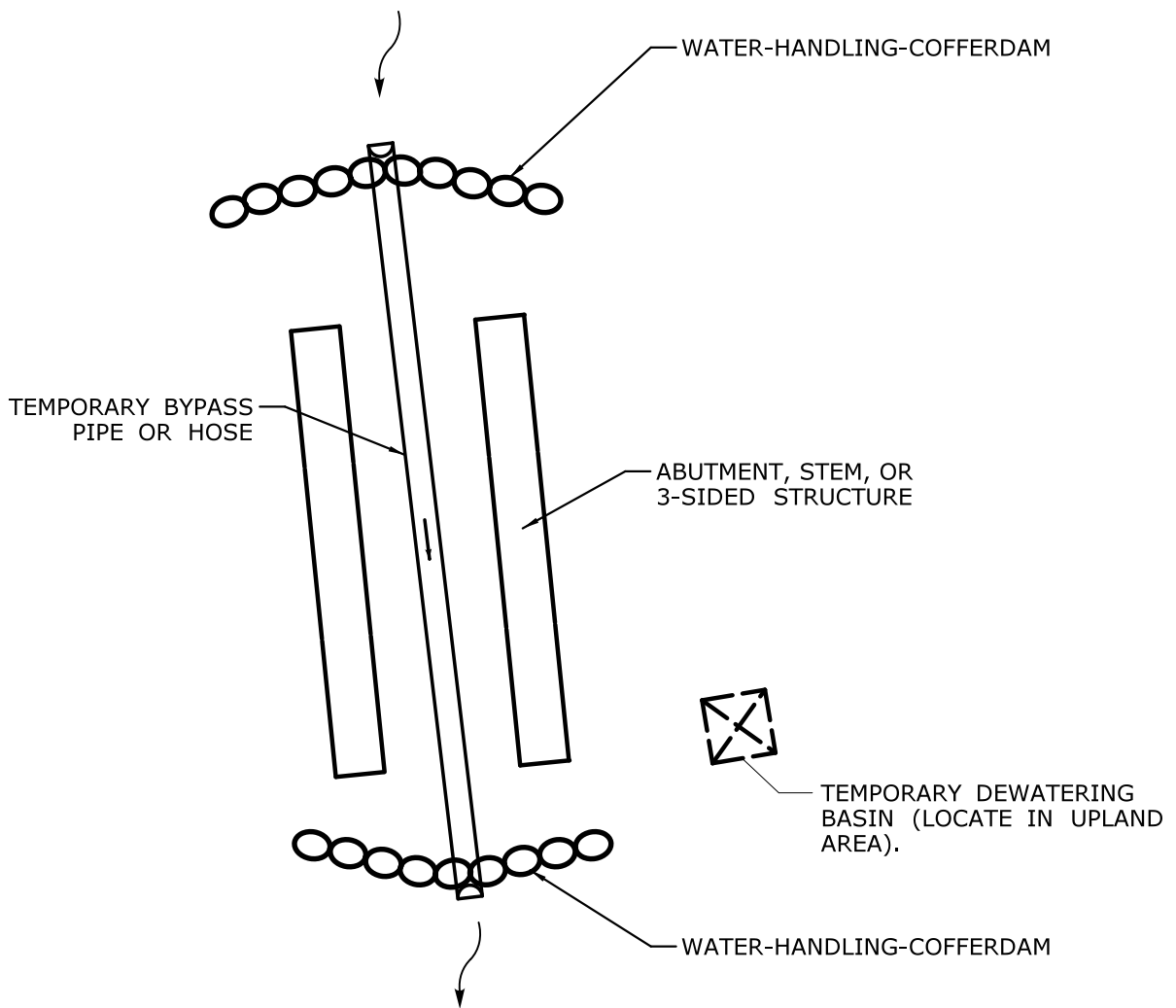
WATER-HANDLING-COFFERDAM
CONCRETE BLOCKS
(NOT TO SCALE)

PAY ITEM # 0204151A - HANDLING WATER
PAY UNIT - LUMP SUM



WATER-HANDLING-COFFERDAM
SHEET PILING
(NOT TO SCALE)

PAY ITEM # 0204151A - HANDLING WATER
PAY UNIT - LUMP SUM



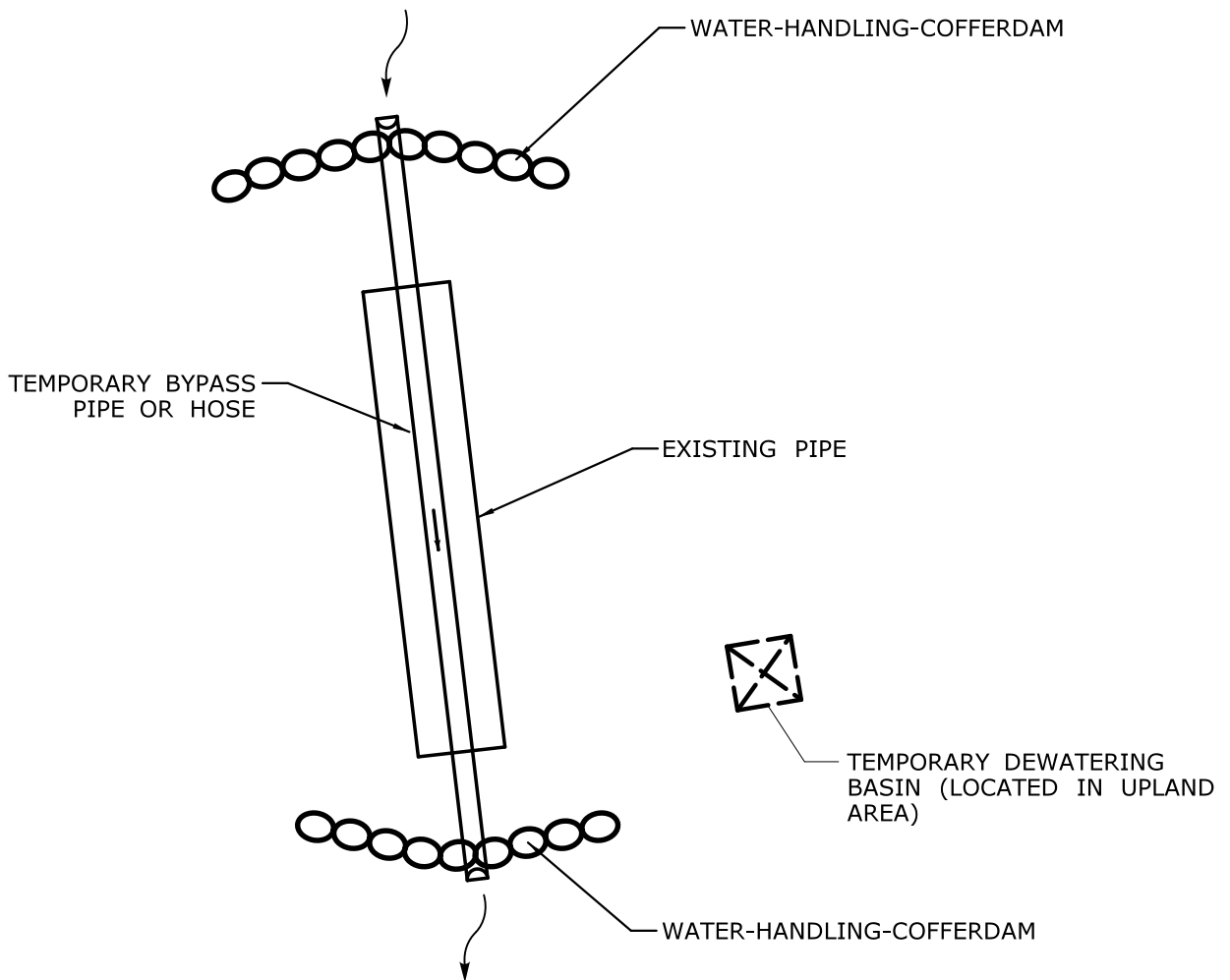
A. TEMPORARY PIPE/HOSE THROUGH WORK AREA

NOTES TO DESIGNER:

1. THIS EXAMPLE IS A SCHEMATIC DEPICTION OF A FORM OF WATER HANDLING SYSTEM THAT COULD BE USED. PROJECT SPECIFICS WILL DICTATE VIABLE METHOD(S).
2. THIS EXAMPLE CAN BE USED FOR A FULL DETOUR OR ALTERNATING ONE-WAY TRAFFIC
3. UPSTREAM AND DOWNSTREAM TEMPORARY WATER SURFACE ELEVATION AND TOP ELEVATIONS MUST BE PROVIDED FOR THE WATER-HANDLING-COFFERDAM
4. THE OVERALL FOOTPRINT OF THE WATER-HANDLING-COFFERDAM SHOULD BE CONSIDERED IN DETERMINING THE PROJECT'S ENVIRONMENTAL IMPACT AREAS
5. THE OVERALL FOOTPRINT AND PLACEMENT OF THE WATER-HANDLING-COFFERDAM SHOULD BE REVIEWED FOR PROJECT CONSTRUCTABILITY AND PROXIMITY TO STRUCTURES
6. PROVIDE A MINIMUM DIAMETER FOR THE BYPASS PIPE BASED ON THE TEMPORARY DESIGN FLOW

PAY ITEM: PAYMENT FOR WATER-HANDLING-COFFERDAM SHALL BE INCLUDED IN ITEM #0204151A - HANDLING WATER.

PAY UNIT: LUMP SUM.

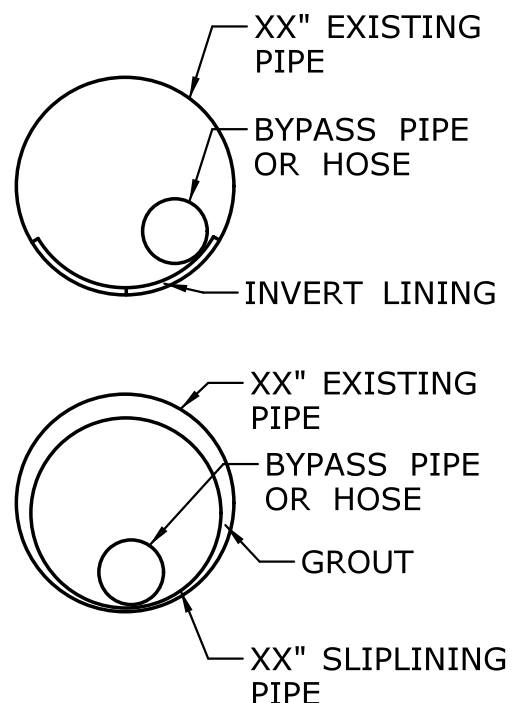


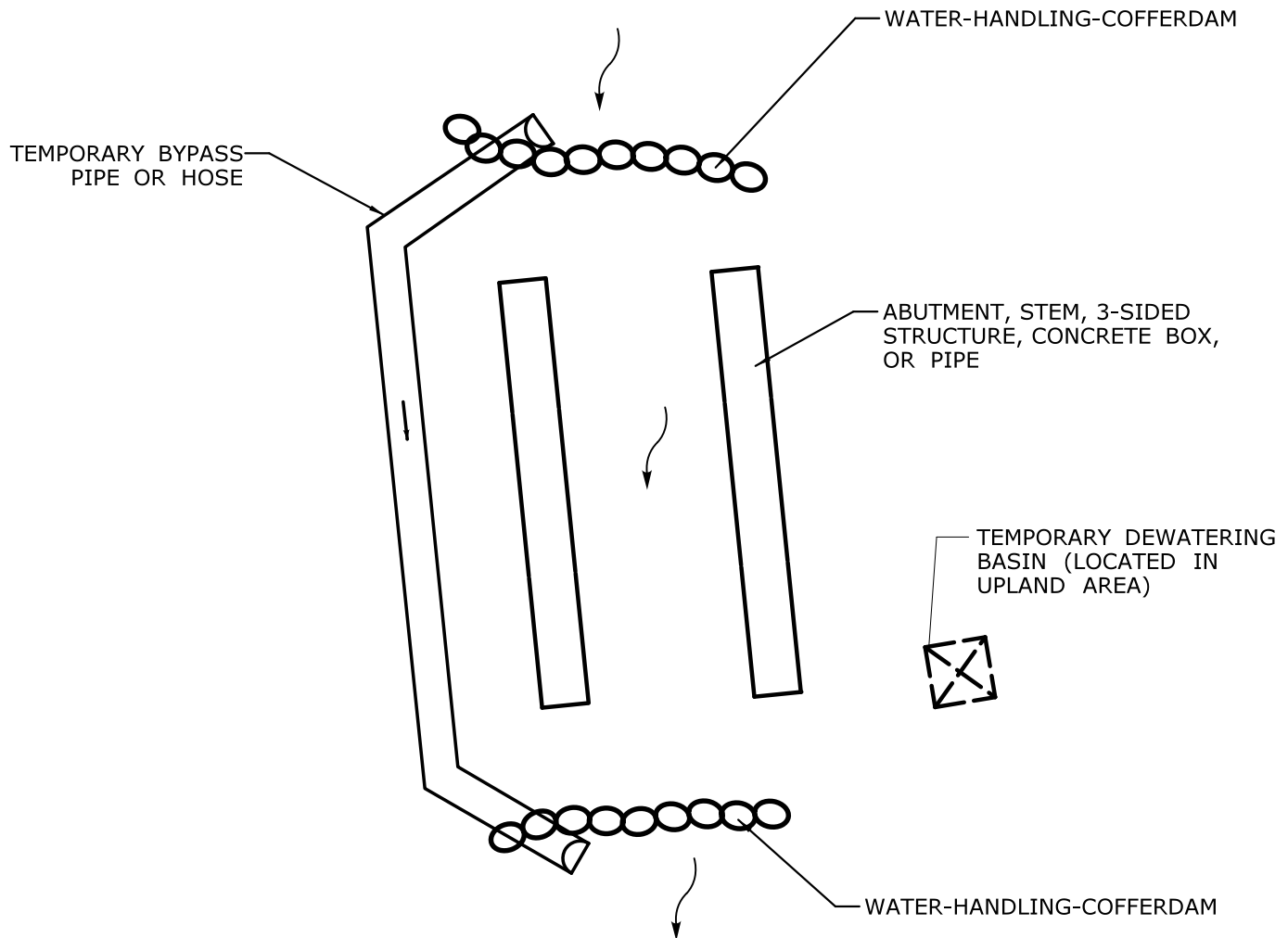
**B. TEMPORARY PIPE/HOSE
THROUGH EXISTING PIPE**
(NOT TO SCALE)

NOTES TO DESIGNER:

1. THIS EXAMPLE IS A SCHEMATIC DEPICTION OF A FORM OF WATER HANDLING SYSTEM THAT COULD BE USED. PROJECT SPECIFICS WILL DICTATE VIABLE METHOD(S).
2. THIS EXAMPLE COULD BE USED FOR LINING OR GROUTING
3. UPSTREAM AND DOWNSTREAM TEMPORARY WATER SURFACE ELEVATION AND TOP ELEVATIONS MUST BE PROVIDED FOR THE WATER-HANDLING-COFFERDAM
4. THE OVERALL FOOTPRINT OF THE WATER-HANDLING-COFFERDAM SHOULD BE CONSIDERED IN DETERMINING THE PROJECT'S ENVIRONMENTAL IMPACT AREAS
5. THE OVERALL FOOTPRINT AND PLACEMENT OF THE WATER-HANDLING-COFFERDAM SHOULD BE REVIEWED FOR PROJECT CONSTRUCTABILITY AND PROXIMITY TO STRUCTURES
6. PROVIDE A MINIMUM DIAMETER FOR THE BYPASS PIPE BASED ON THE TEMPORARY DESIGN FLOW

PAY ITEM: PAYMENT FOR WATER-HANDLING-COFFERDAM SHALL BE INCLUDED IN ITEM #0204151A - HANDLING WATER.
PAY UNIT: LUMP SUM.





C. TEMPORARY BYPASS PIPE/HOSE

AROUND WORK AREA

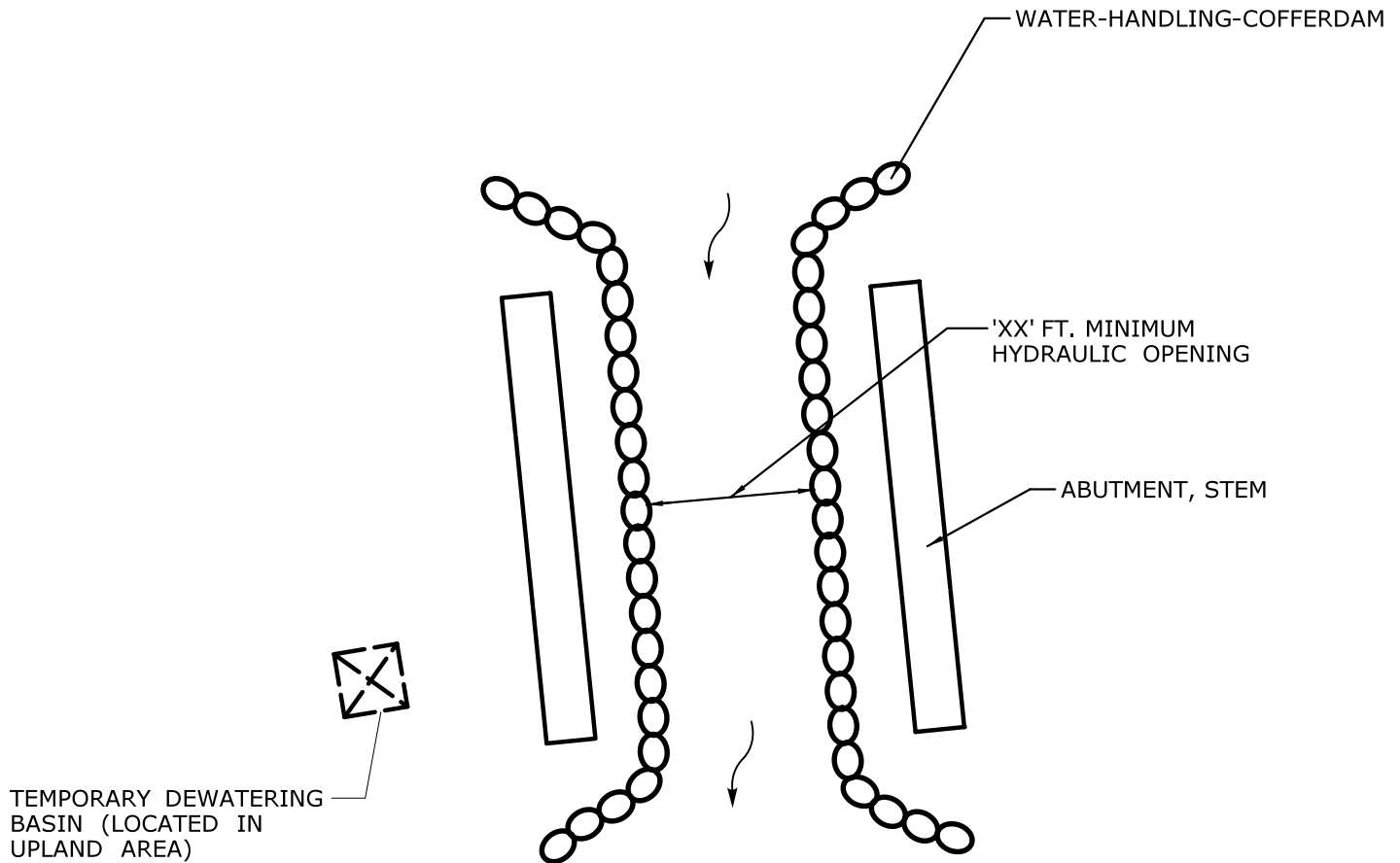
NOT TO SCALE

NOTES TO DESIGNER:

1. THIS EXAMPLE IS A SCHEMATIC DEPICTION OF A FORM OF WATER HANDLING SYSTEM THAT COULD BE USED. PROJECT SPECIFICS WILL DICTATE VIABLE METHOD(S).
2. THIS EXAMPLE COULD BE USED FOR A FULL DETOUR OR ALTERNATING ONE-WAY TRAFFIC
3. UPSTREAM AND DOWNSTREAM TEMPORARY WATER SURFACE ELEVATION AND TOP ELEVATIONS MUST BE PROVIDED FOR THE WATER-HANDLING-COFFERDAM
4. THE OVERALL FOOTPRINT OF THE WATER-HANDLING-COFFERDAM SHOULD BE CONSIDERED IN DETERMINING THE PROJECT'S ENVIRONMENTAL IMPACT AREAS
5. THE OVERALL FOOTPRINT AND PLACEMENT OF THE WATER-HANDLING-COFFERDAM SHOULD BE REVIEWED FOR PROJECT CONSTRUCTABILITY AND PROXIMITY TO STRUCTURES
6. PROVIDE A MINIMUM DIAMETER FOR THE BYPASS PIPE BASED ON THE TEMPORARY DESIGN FLOW

PAY ITEM: PAYMENT FOR WATER-HANDLING-COFFERDAM SHALL BE INCLUDED IN ITEM #0204151A - HANDLING WATER.

PAY UNIT: LUMP SUM.



D. HANDLING WATER AROUND ABUTMENTS

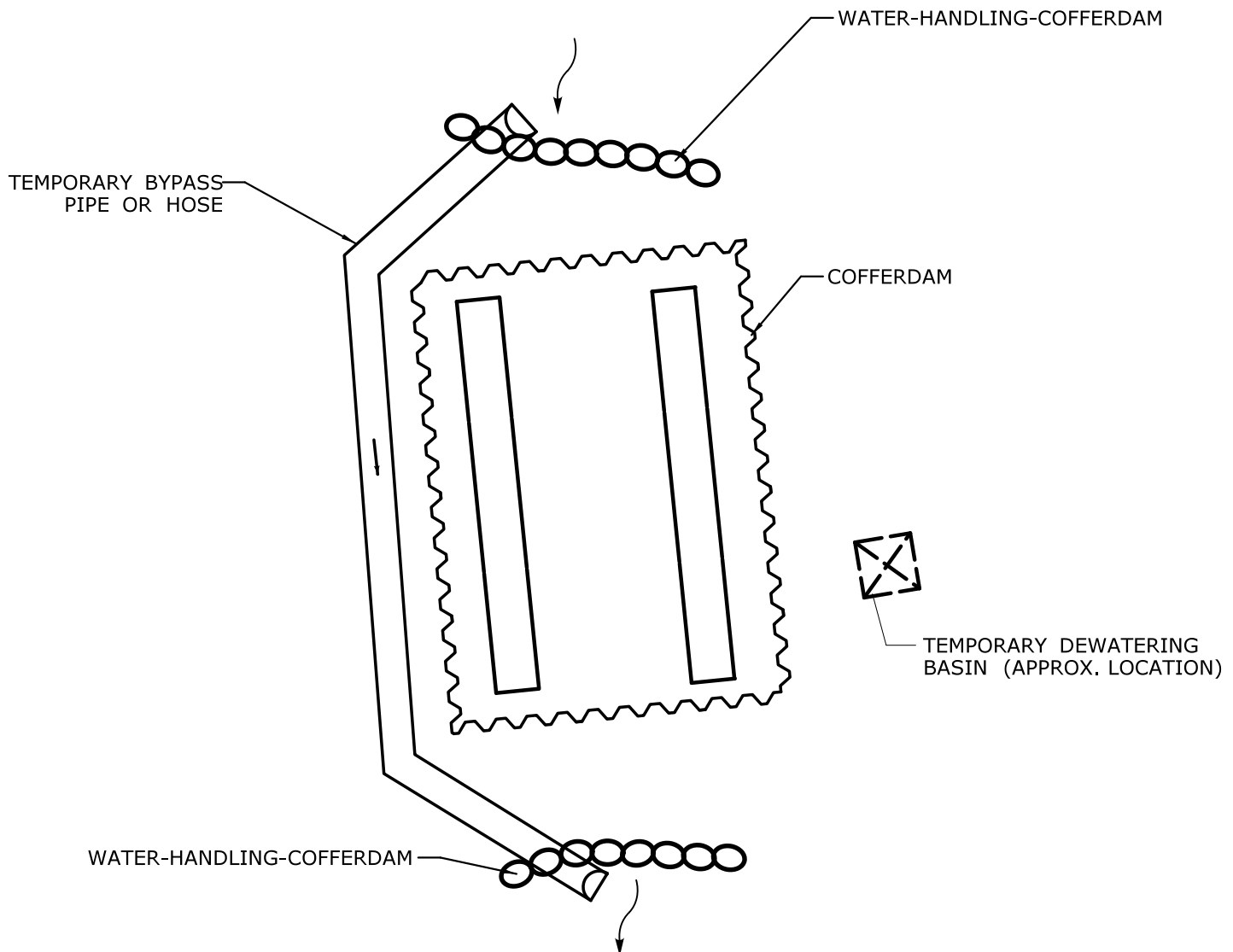
NOT TO SCALE

NOTES TO DESIGNER:

1. THIS EXAMPLE IS A SCHEMATIC DEPICTION OF A FORM OF WATER HANDLING THAT COULD BE USED. PROJECT SPECIFICS WILL DICTATE VIABLE METHOD(S).
2. THIS EXAMPLE CAN BE USED FOR A FULL DETOUR OR ALTERNATING ONE-WAY TRAFFIC
3. THIS SCHEME COULD BE USED FOR REPOINTING, RIPRAP PLACEMENT/TOE-IN, ETC. NOT SUITABLE FOR SUBSURFACE/STRUCTURAL WORK.
4. TEMPORARY WATER SURFACE ELEVATION AND TOP ELEVATION MUST BE PROVIDED FOR THE WATER-HANDLING-COFFERDAM
5. THE OVERALL FOOTPRINT OF THE WATER-HANDLING-COFFERDAM SHOULD BE CONSIDERED IN DETERMINING THE PROJECT'S ENVIRONMENTAL IMPACT AREAS
6. THE OVERALL FOOTPRINT AND PLACEMENT OF THE WATER-HANDLING-COFFERDAM SHOULD BE REVIEW FOR PROJECT CONSTRUCTABILITY AND PROXIMITY TO STRUCTURES
7. MINIMUM HYDRAULIC OPENING PROVIDED BY DOT'S H&D UNIT OR BY CONSULTANT

PAY ITEM: PAYMENT FOR WATER-HANDLING-COFFERDAM SHALL BE INCLUDED IN ITEM #0204151A - HANDLING WATER.

PAY UNIT: LUMP SUM.



**E. TEMPORARY BYPASS PIPE/HOSE AROUND
WORK AREA WITH ENCLOSED COFFERDAM**

NOT TO SCALE

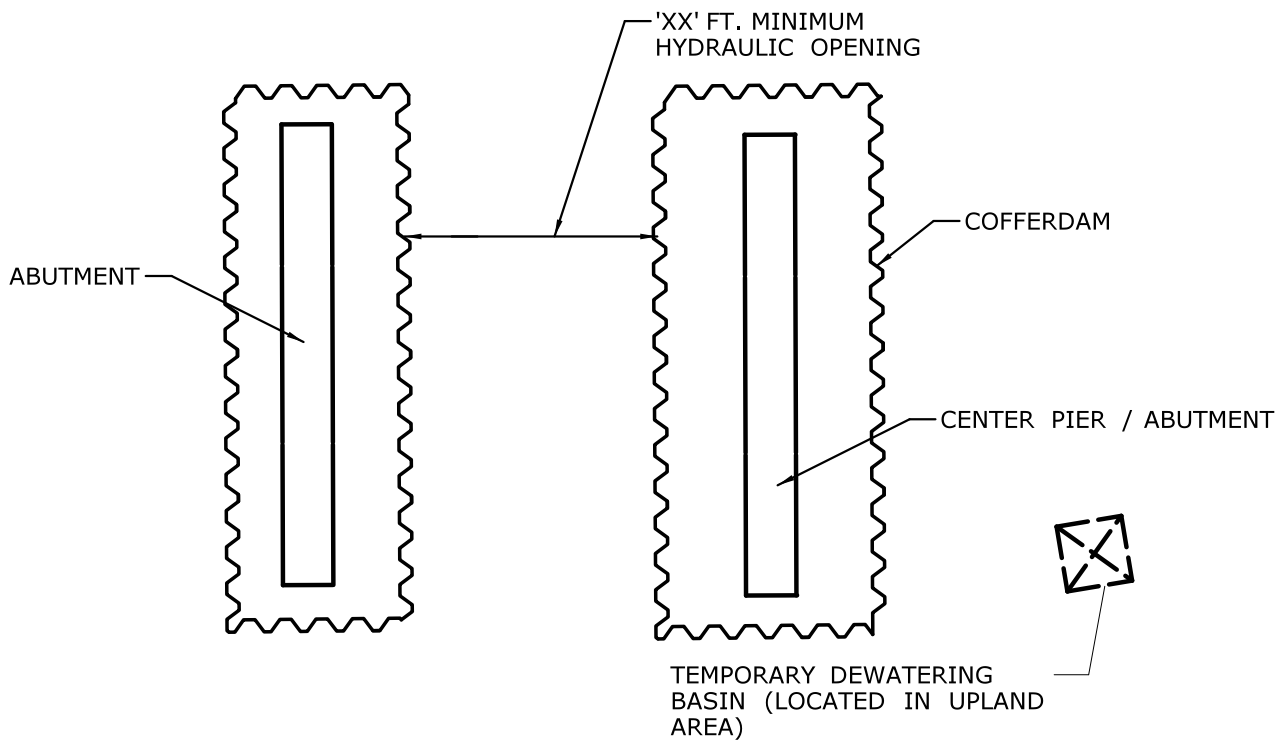
NOTES TO DESIGNER:

1. THIS EXAMPLE IS A SCHEMATIC DEPICTION OF A FORM OF WATER HANDLING THAT COULD BE USED. PROJECT SPECIFICS WILL DICTATE VIABLE METHOD(S).
2. TEMPORARY WATER SURFACE ELEVATIONS AND TOP ELEVATIONS MUST BE PROVIDED FOR THE WATER-HANDLING-COFFERDAM AND COFFERDAM
3. THE OVERALL FOOTPRINT OF THE WATER-HANDLING-COFFERDAM AND COFFERDAM SHOULD BE CONSIDERED IN DETERMINING THE PROJECT'S ENVIRONMENTAL IMPACT AREAS
4. THE OVERALL FOOTPRINT AND PLACEMENT OF THE WATER-HANDLING-COFFERDAM AND COFFERDAM SHOULD BE REVIEWED FOR PROJECT CONSTRUCTABILITY AND PROXIMITY TO STRUCTURES
5. PROVIDE A MINIMUM DIAMETER FOR THE BYPASS PIPE BASED ON THE TEMPORARY DESIGN FLOW
6. IF IT IS DETERMINED DURING DESIGN THAT A PORTION OF THE COFFERDAM WILL NOT BE REMOVED, THE DESIGNER SHALL IDENTIFY ON THE PLANS "COFFERDAM MATERIAL LEFT-IN-PLACE AND CUT X FEET BELOW GRADE."

PAY ITEM: WATER-HANDLING-COFFERDAM SHALL BE INCLUDED IN ITEM #0204151A - HANDLING WATER.
PAY UNIT: LUMP SUM.

PAY ITEM: COFFERDAM SHALL BE INCLUDED IN ITEM - #0204001 - COFFERDAM AND DEWATERING.
PAY UNIT: LINEAR FOOT

PAY ITEM: COFFERDAM MATERIAL LEFT-IN-PLACE #0204139 - COFFERDAM MATERIAL LEFT-IN-PLACE
PAY UNIT: LINEAR FOOT



F. ENCLOSED COFFERDAM AROUND PIER(S) OR ABUTMENT

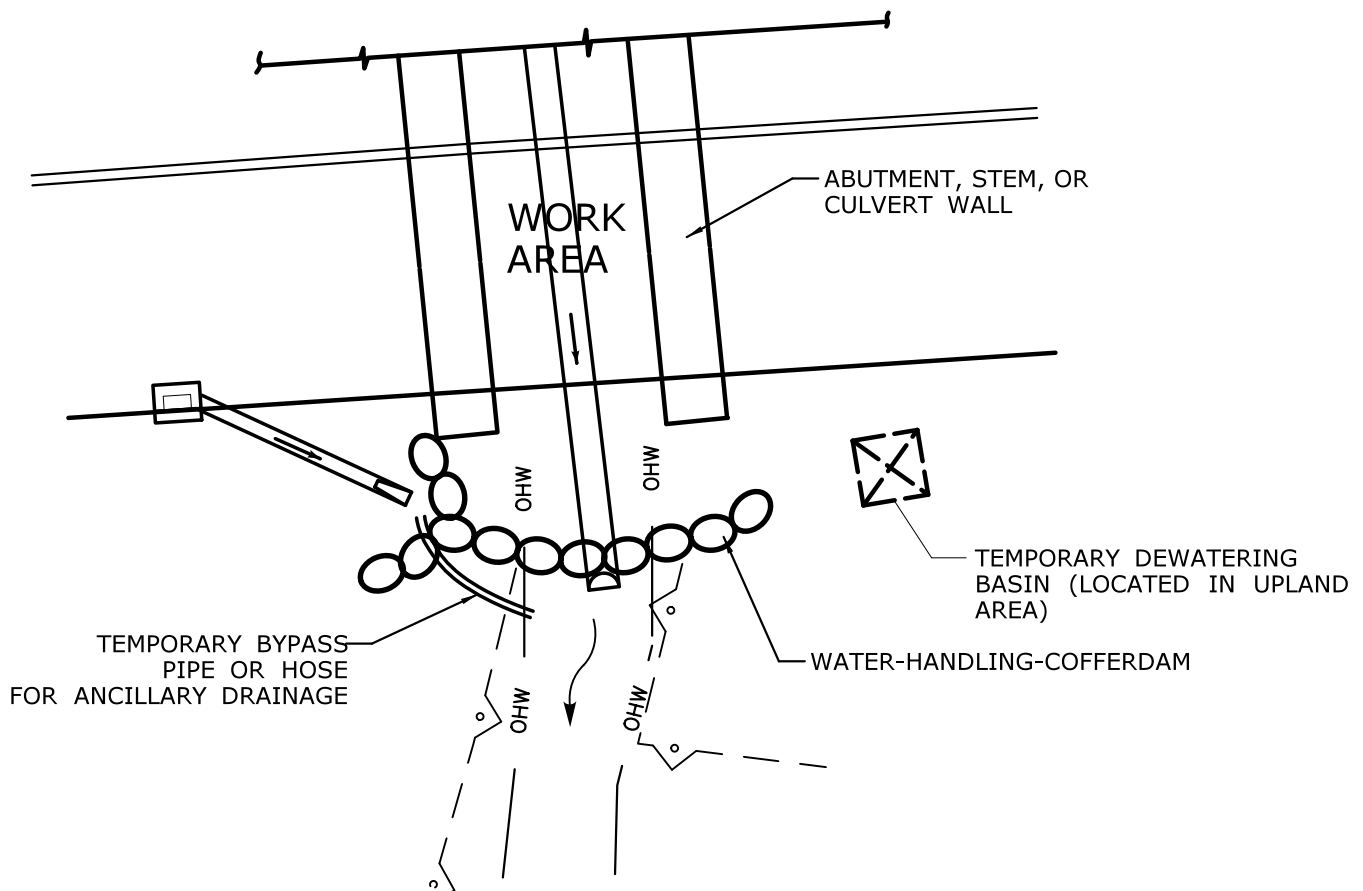
NOT TO SCALE

NOTES TO DESIGNER:

1. THIS EXAMPLE IS A SCHEMATIC DEPICTION WHERE COFFERDAMS USED FOR SUPPORT AND DEWATERING OF AN EXCAVATION CAN ALSO BE INCORPORATED INTO A WATER HANDLING PLAN. PROJECT SPECIFICS WILL DICTATE VIABLE METHOD(S).
2. TEMPORARY WATER SURFACE ELEVATION AND TOP ELEVATION MUST BE PROVIDED FOR THE COFFERDAM. FOR TIDAL PROJECTS, THE TOP OF COFFERDAM SHALL BE THE HTL ELEV. + 1
3. MINIMUM HYDRAULIC OPENING PROVIDED BY DOT'S H&D UNIT OR BY CONSULTANT
4. THE OVERALL FOOTPRINT OF THE COFFERDAM SHOULD BE CONSIDERED IN DETERMINING THE PROJECT'S ENVIRONMENTAL IMPACT AREAS.
5. THE OVERALL FOOTPRINT AND PLACEMENT OF THE COFFERDAM SHOULD BE REVIEWED FOR PROJECT CONSTRUCTABILITY AND PROXIMITY TO STRUCTURES
6. IF IT IS DETERMINED DURING DESIGN THAT A PORTION OF THE COFFERDAM WILL NOT BE REMOVED, THE DESIGNER SHALL IDENTIFY ON THE PLANS "COFFERDAM MATERIAL LEFT-IN-PLACE AND CUT X FEET BELOW GRADE."

PAY ITEM: COFFERDAM SHALL BE INCLUDED IN ITEM
#0204001 - COFFERDAM AND DEWATERING.
PAY UNIT: LINEAR FOOT

PAY ITEM: COFFERDAM MATERIAL LEFT-IN-PLACE
#0204139 - COFFERDAM MATERIAL LEFT-IN-PLACE
PAY UNIT: LINEAR FOOT



G. ANCILLARY STORM DRAINAGE NEAR WORK AREA

NOTES FOR ANCILLARY STORM DRAINAGE:

1. THIS EXAMPLE IS A SCHEMATIC DEPICTION OF A FORM OF WATER HANDLING SYSTEM THAT COULD BE USED FOR ANCILLARY STORM DRAINAGE. PROJECT SPECIFICS WILL DICTATE VIABLE METHODS FOR HANDLING WATER.
2. a. IF EXPECTED ANCILLARY FLOWS ARE SIGNIFICANT (LARGE PIPE/VOLUMES, REGULAR BASE FLOW), THE METHOD OF WATER HANDLING TO GET THE FLOW OUT OF THE WORK AREA SHOULD BE SHOWN ON THE PLANS. THE NEED FOR TEMPORARY ENERGY DISSIPATION AT THE OUTLET SHOULD BE EXAMINED.
 b. IF EXPECTED FLOWS ARE MINIMAL, THE FOLLOWING NOTE SHOULD BE ADDED TO THE WATER HANDLING PLAN:
 "ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING OR PROPOSED STORM DRAINAGE SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREAS. THE CONTRACTOR SHALL SUBMIT THE MEANS AND METHODS OF HANDLING STORM DRAINAGE TO THE ENGINEER FOR APPROVAL."

PAY ITEM: HANDLING WATER FOR ANCILLARY STORM DRAINAGE SHALL BE INCLUDED IN ITEM #0204151A - HANDLING WATER.
 PAY UNIT: LUMP SUM.