

# Handling Water

## Typical Schematics

Date: May 14, 2019

Revised: February 2, 2023

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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 - I are for use within the permit plans and are not intended to be 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 Engineering Directive ED-2019-6, which contains additional guidance on handling water. 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's webpage in the Environmental Resource Compliance section, 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.

<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 818

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

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](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

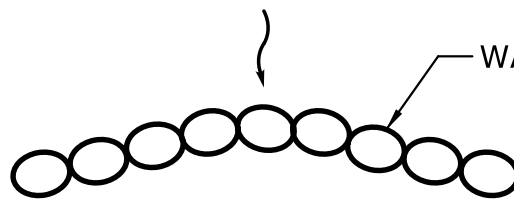
(Table to be provided on all Water Handling Plans in the  
Contract Plans and the Permit Plans)

TEMPORARY HYDRAULIC DATA *	
AVERAGE DAILY FLOW	X CFS
AVERAGE SPRING FLOW	X CFS
X YEAR FREQUENCY DISCHARGE	XX CFS
LOW FLOW PUMPING TEMPORARY DESIGN DISCHARGE = X x AVERAGE SPRING FLOW	X CFS
GRAVITY FLOW BYPASS PIPE TEMPORARY DESIGN DISCHARGE = 2-YEAR FREQUENCY	XX CFS
TEMPORARY WATER SURFACE ELEVATION UPSTREAM	247.50 FT
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM	244.08 FT

\* NOTE: VALUES AND ELEVATIONS MAY VARY SLIGHTLY  
FROM THE CONTRACT PLANS

Note to Designers:

1. Temporary hydraulic data can be obtained from CTDOT's H&D Unit of 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.



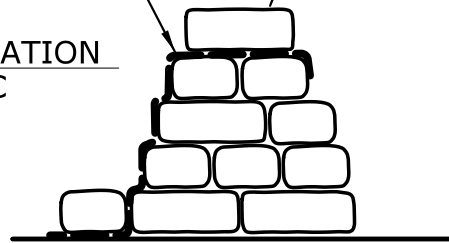
PLAN VIEW

WATER-HANDLING-COFFERDAM

PLASTIC SEAL LINER

WATER-HANDLING-COFFERDAM  
 TOP ELEV. UPSTREAM = XX.X  
 TOP ELEV. DOWNSTREAM = XX.X

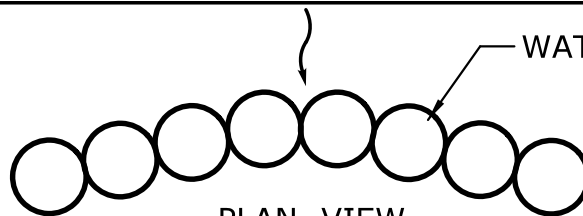
WATER SURFACE ELEVATION  
 (SEE TEMP. HYDRAULIC  
 TABLE)



SECTION VIEW

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

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



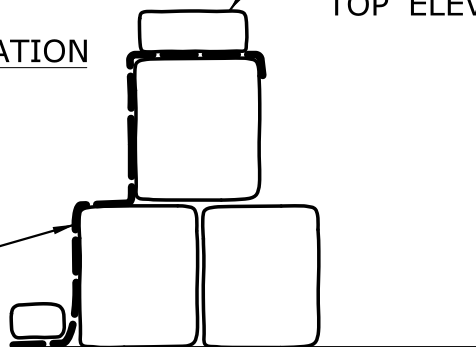
PLAN VIEW

WATER-HANDLING-COFFERDAM

WATER SURFACE ELEVATION  
 (SEE TEMP. HYDRAULIC  
 TABLE)

WATER-HANDLING-COFFERDAM  
 TOP ELEV. UPSTREAM = XX.X  
 TOP ELEV. DOWNSTREAM = XX.X

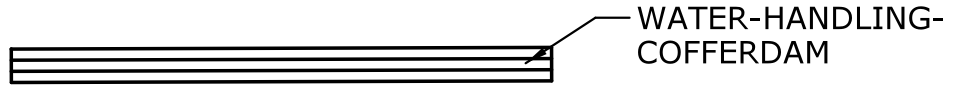
PLASTIC SEAL LINER



SECTION VIEW

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

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



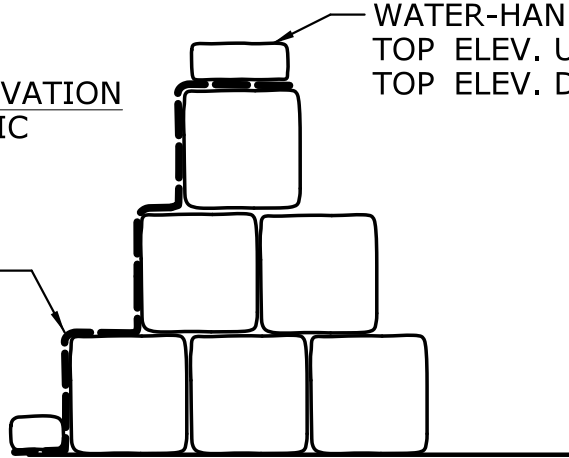
WATER-HANDLING-COFFERDAM

PLAN VIEW

WATER SURFACE ELEVATION  
(SEE TEMP. HYDRAULIC  
TABLE)

WATER-HANDLING-COFFERDAM  
TOP ELEV. UPSTREAM = XX.X  
TOP ELEV. DOWNSTREAM = XX.X

PLASTIC SEAL LINER



SECTION VIEW

**WATER-HANDLING-COFFERDAM**  
**CONCRETE BLOCKS**

(NOT TO SCALE)

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

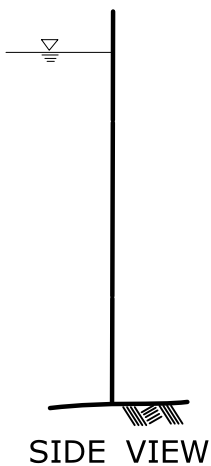


WATER-HANDLING-COFFERDAM

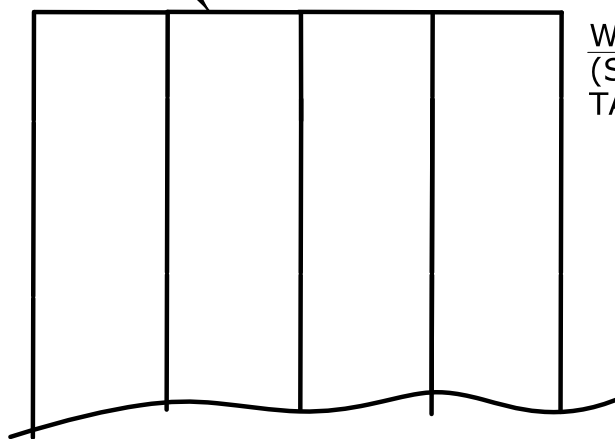
PLAN VIEW

TOP ELEV. = XX.X  
LABEL U.S./D.S AS  
APPLICABLE

WATER SURFACE ELEVATION  
(SEE TEMP. HYDRAULIC  
TABLE)



SIDE VIEW

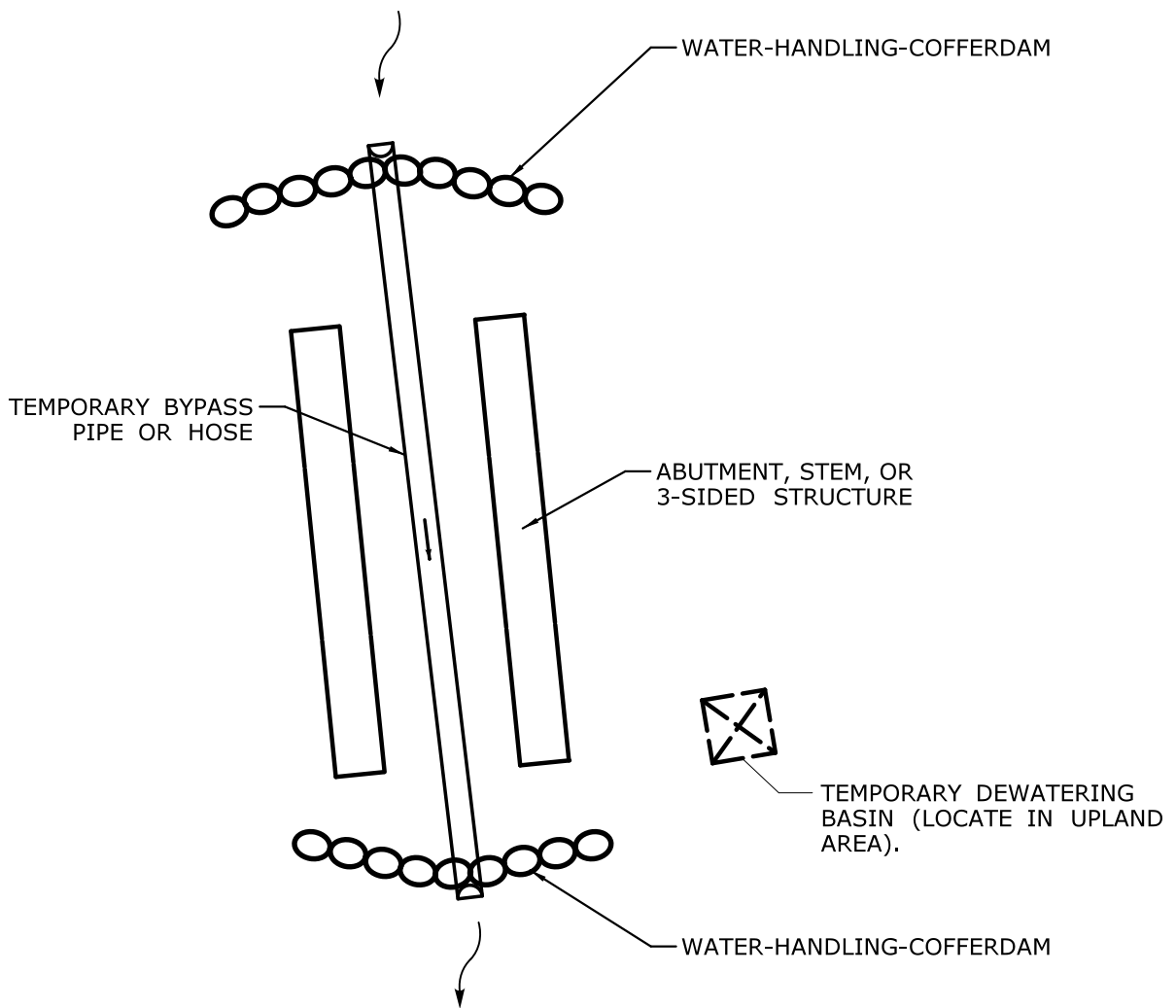


SECTION VIEW

**WATER-HANDLING-COFFERDAM**  
**SHEET PILING**

(NOT TO SCALE)

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



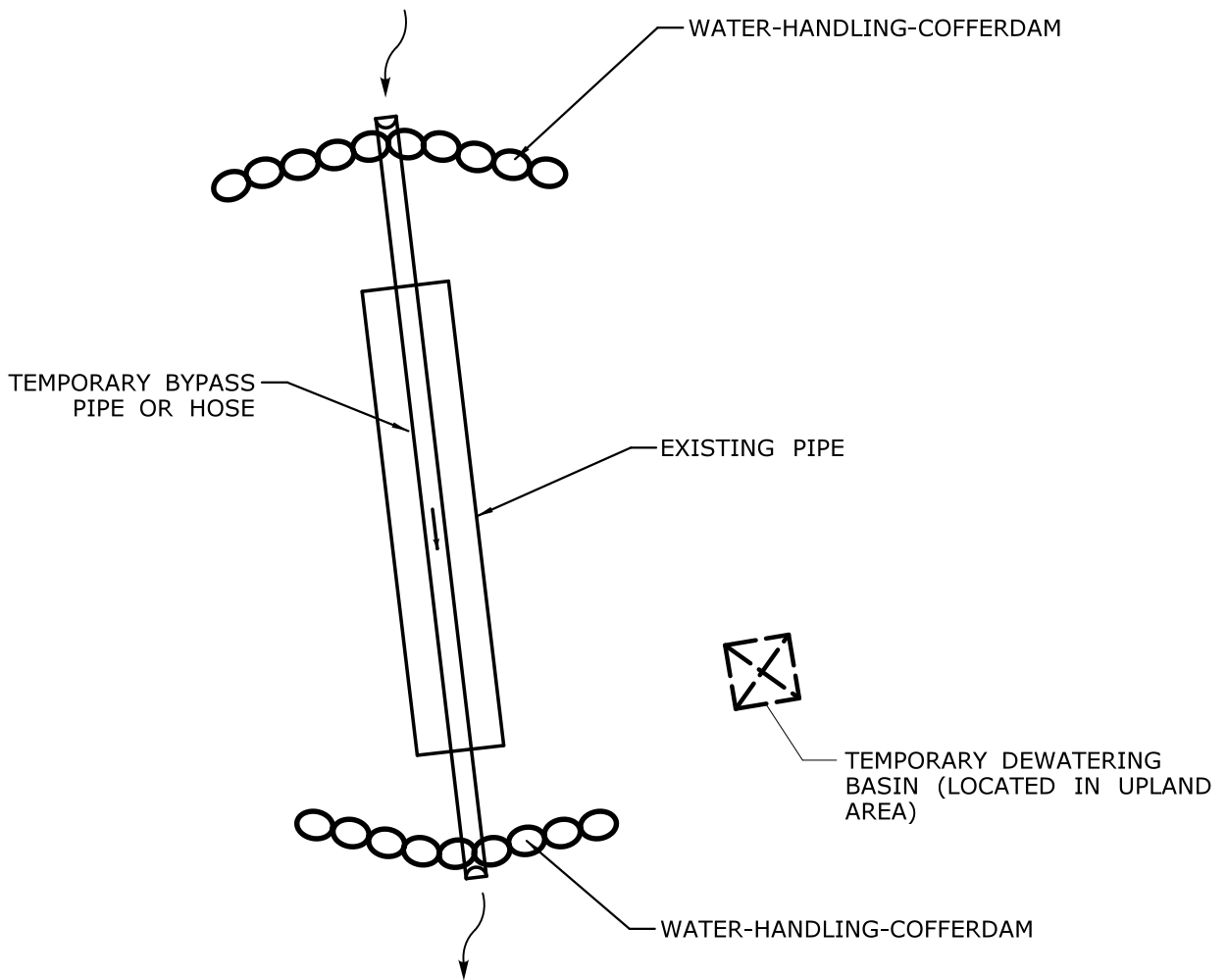
## A. TEMPORARY PIPE/HOSE THROUGH WORK AREA

### **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.

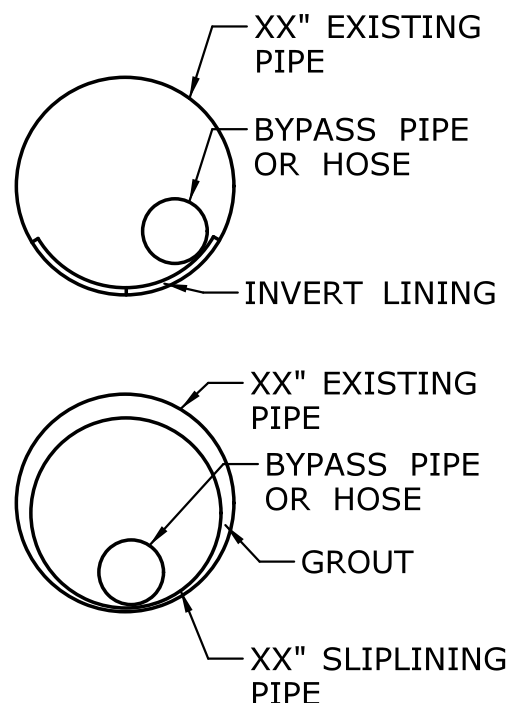


**B. TEMPORARY PIPE/HOSE  
THROUGH EXISTING PIPE**  
(NOT TO SCALE)

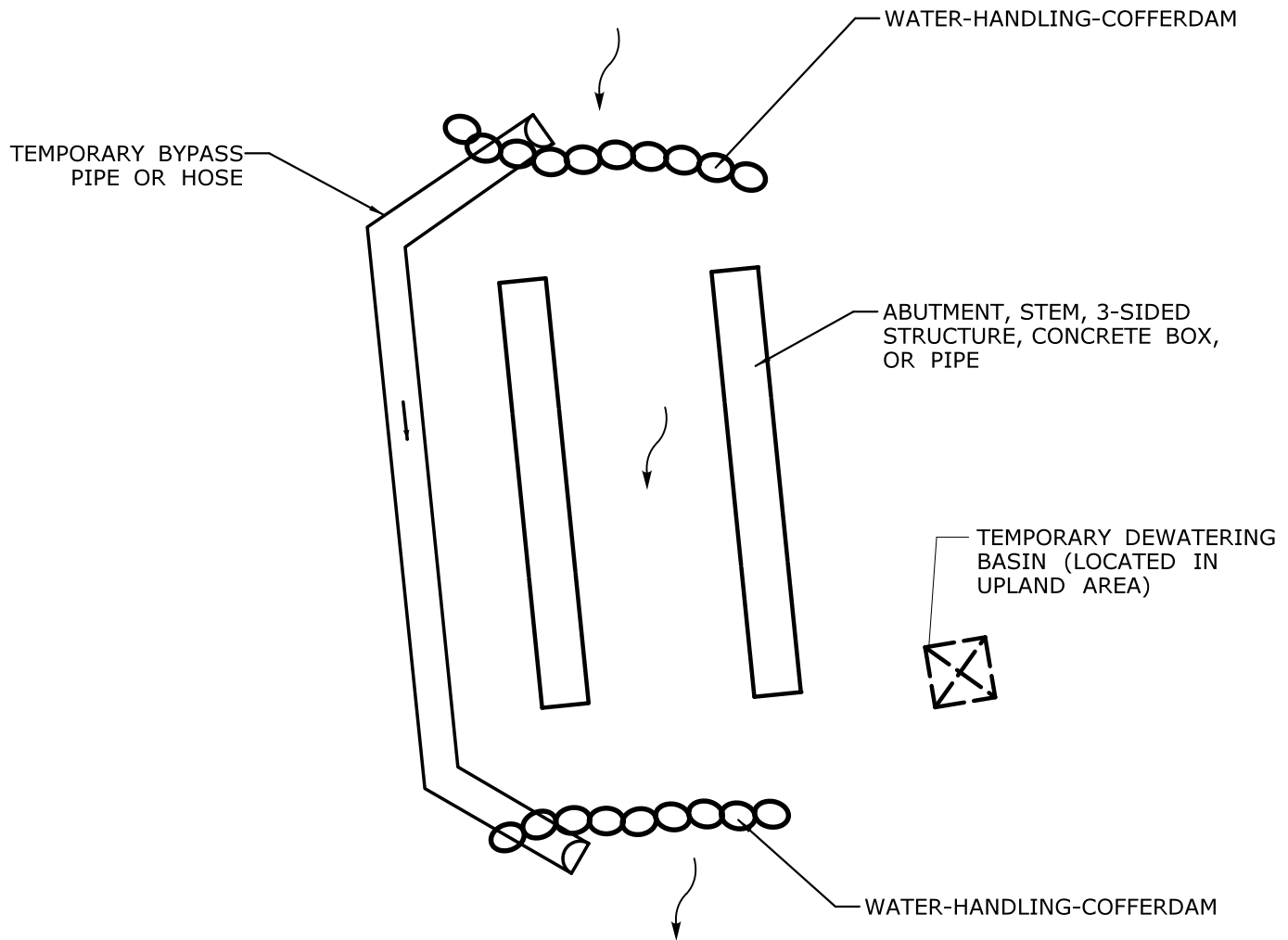
**NOTES TO DESIGNER:**

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

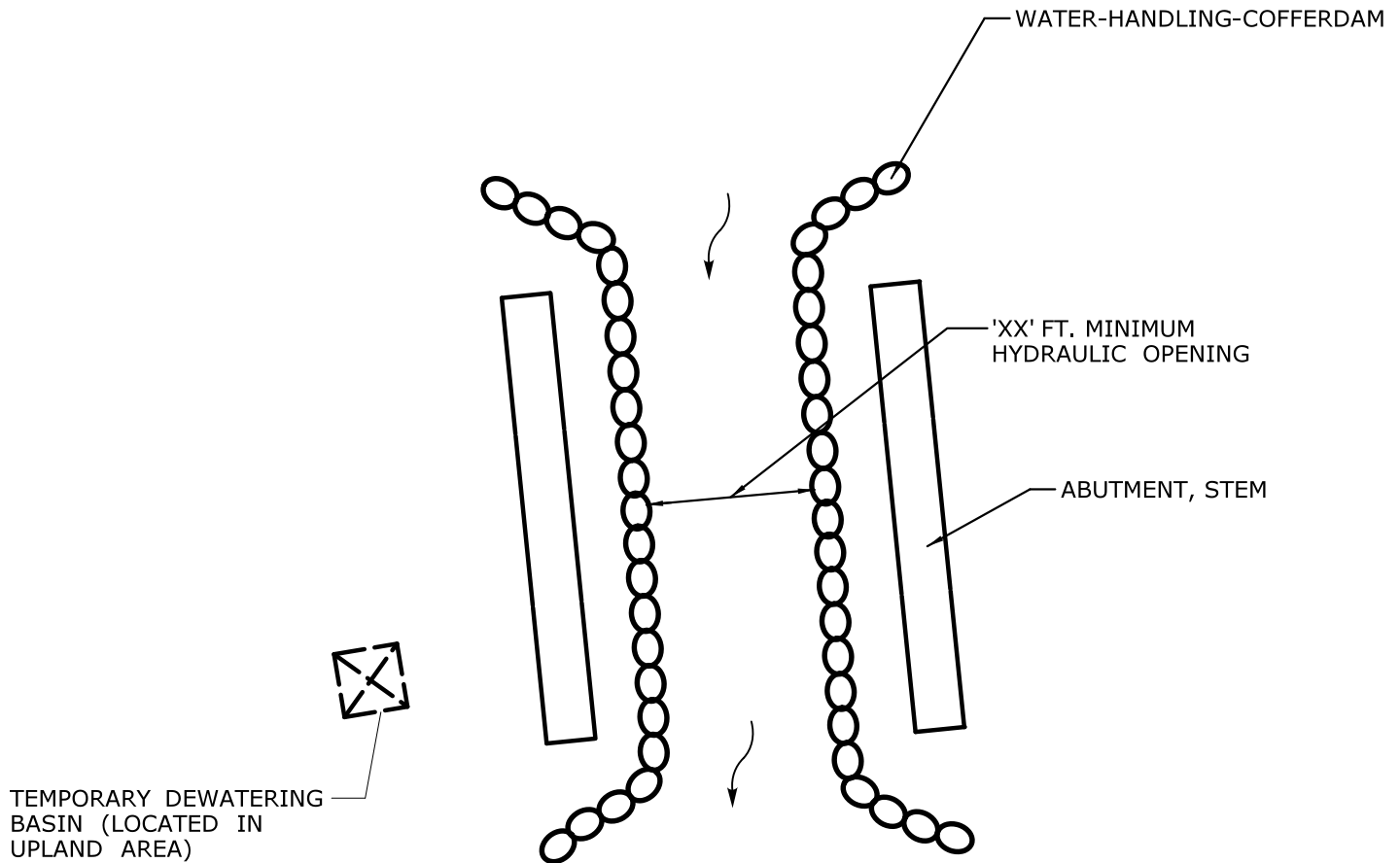
NOT TO SCALE

#### 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

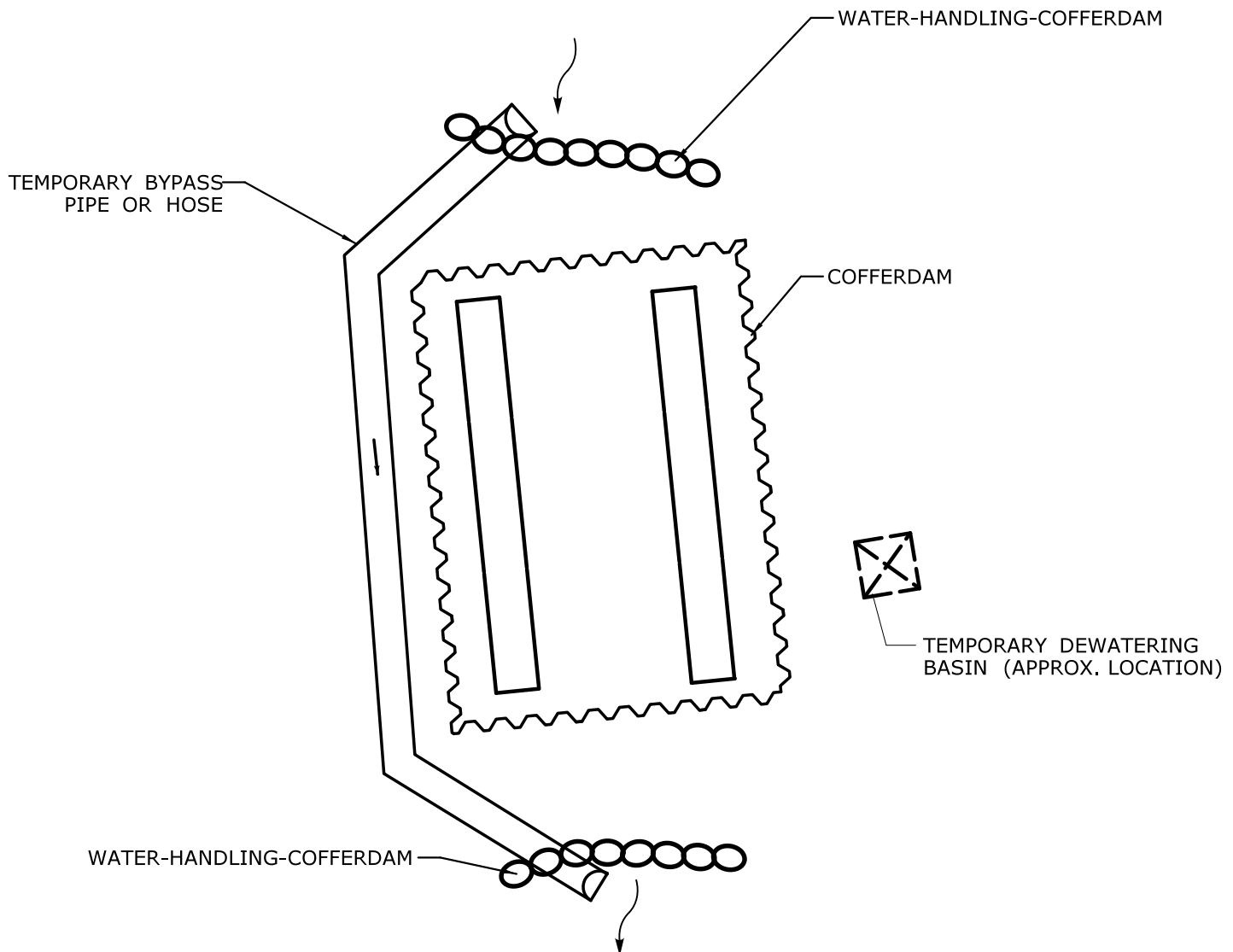
NOT TO SCALE

### 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

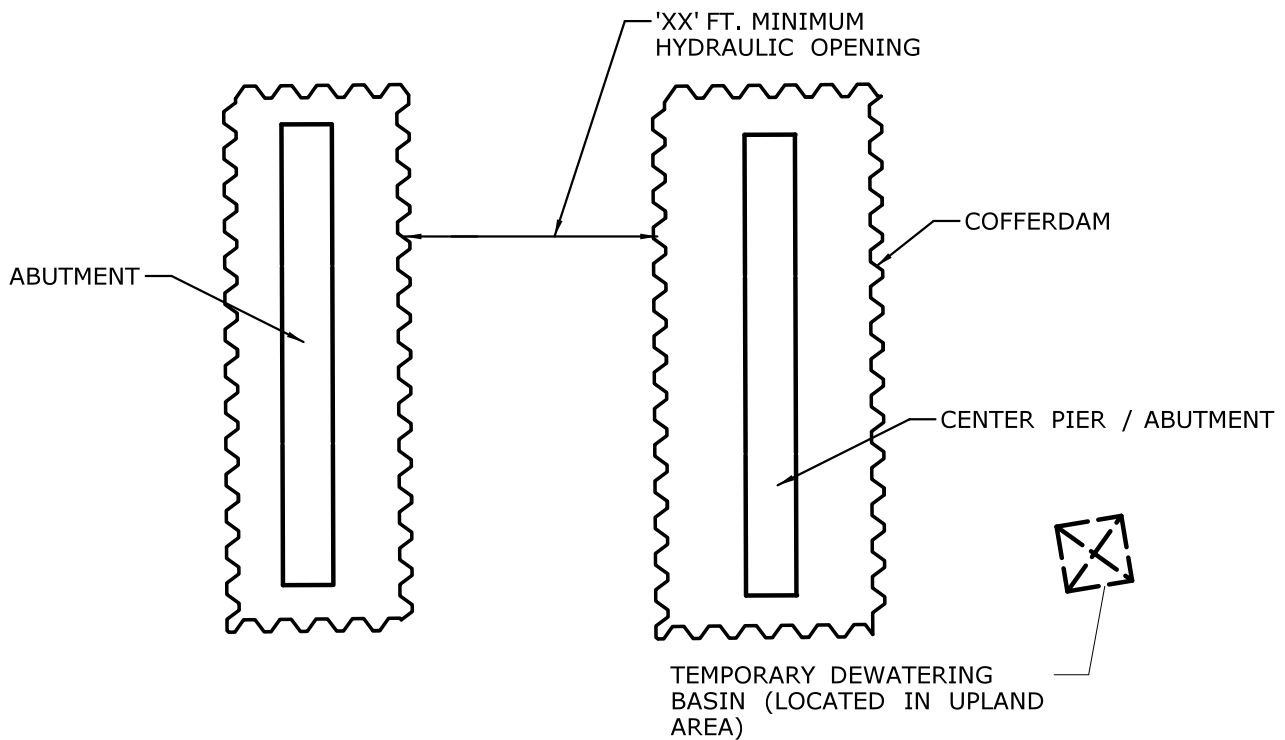
**NOTES TO DESIGNER:**

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**

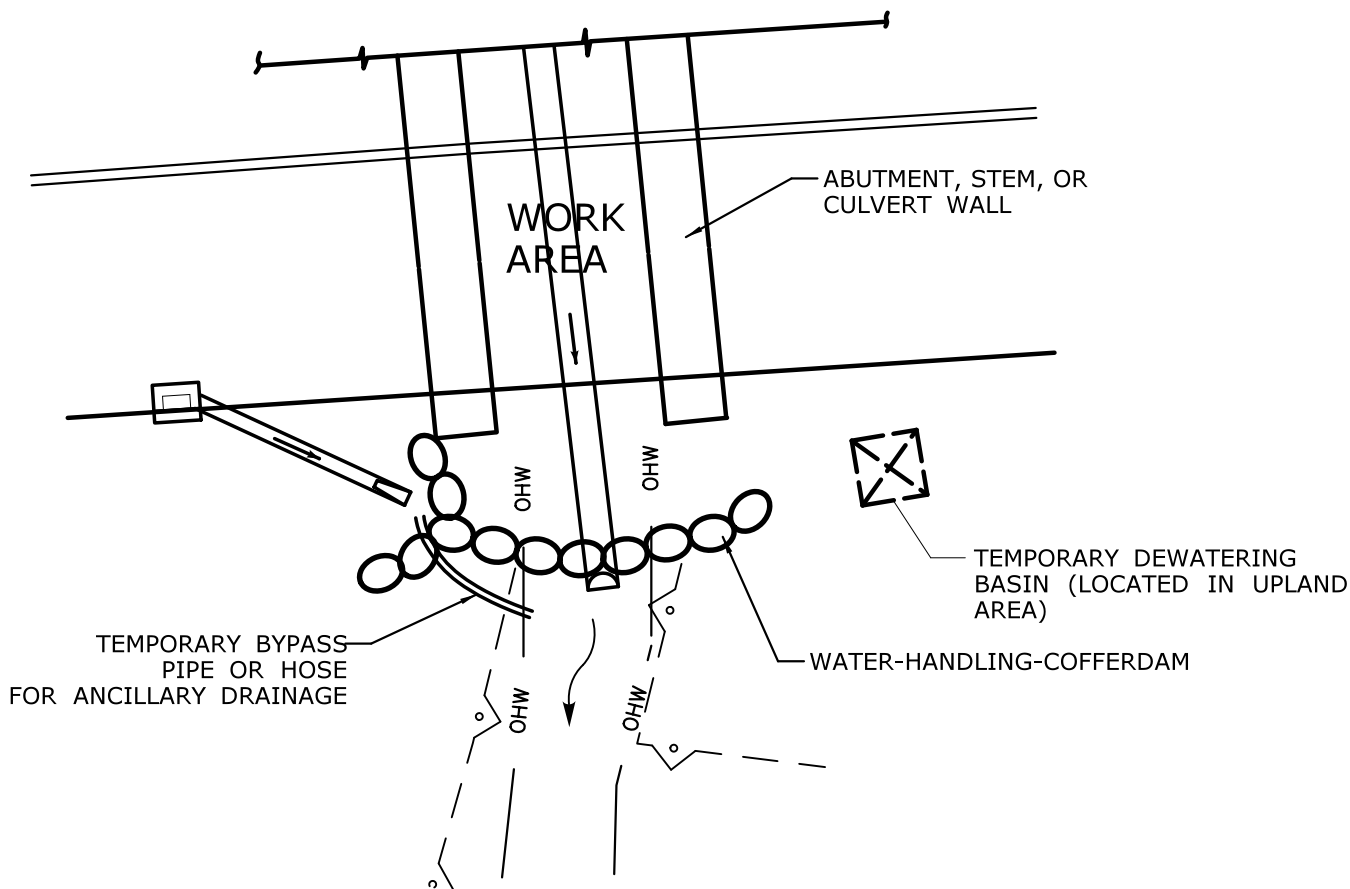
NOT TO SCALE

### **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**  

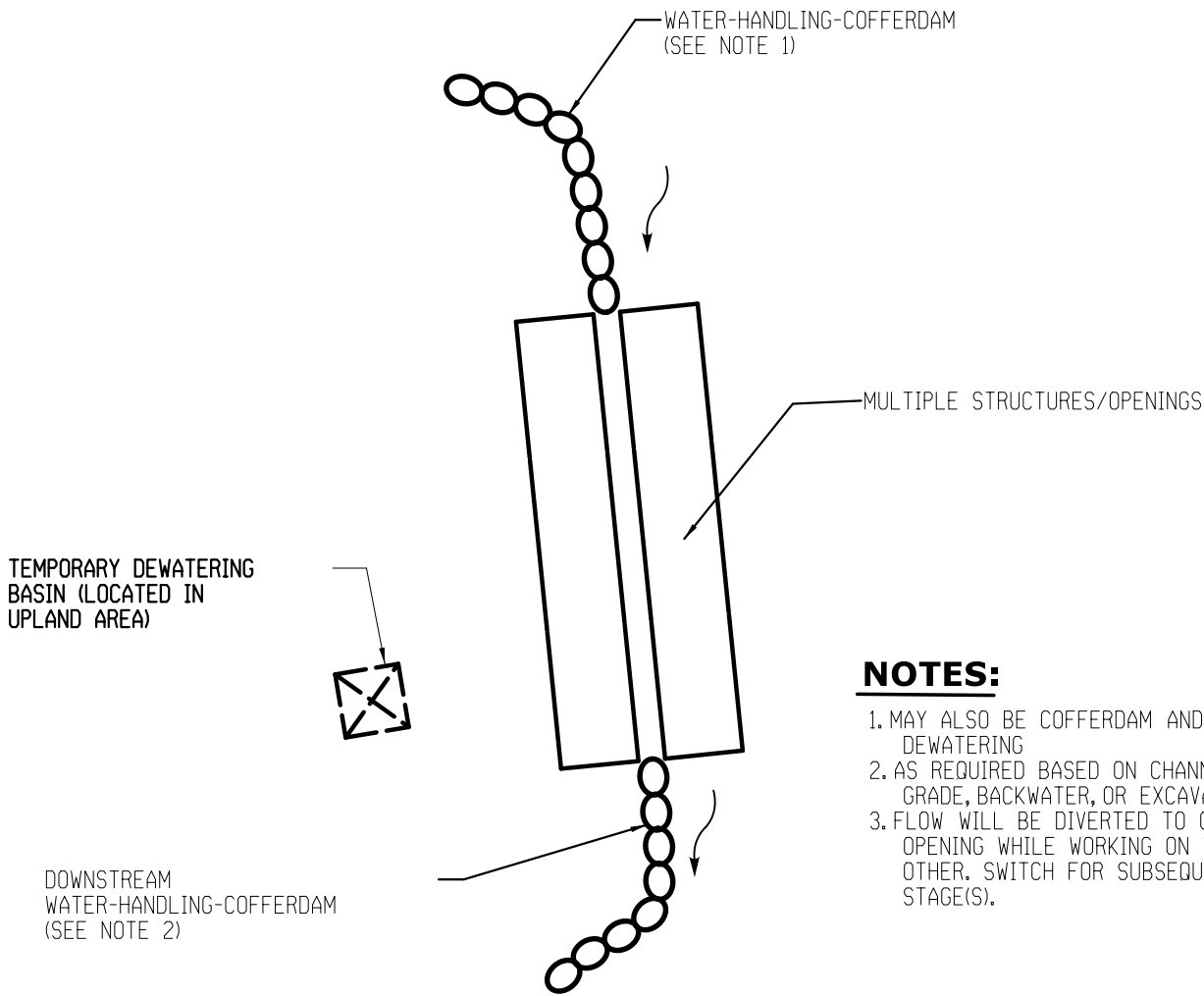

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**NEAR WORK AREA**

**NOTES FOR DESIGNER:**

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.



**NOTES:**

1. MAY ALSO BE COFFERDAM AND DEWATERING
2. AS REQUIRED BASED ON CHANNEL GRADE, BACKWATER, OR EXCAVATION.
3. FLOW WILL BE DIVERTED TO ONE OPENING WHILE WORKING ON THE OTHER. SWITCH FOR SUBSEQUENT STAGE(S).

H. HANDLING WATER MULTIPLE STRUCTURES/OPENINGS

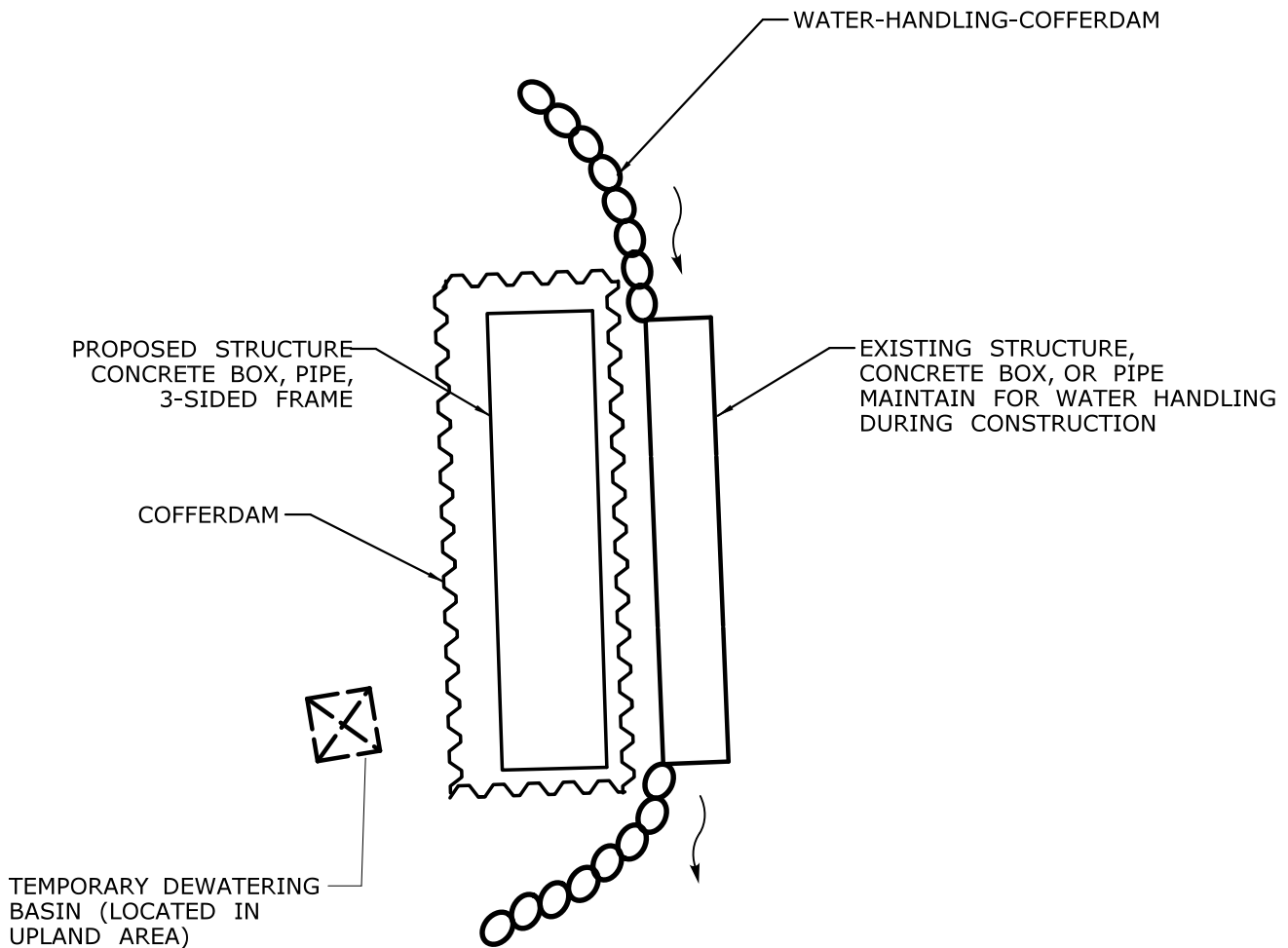
NOT TO SCALE

**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.



## I. EXISTING STRUCTURE AS BYPASS FOR HANDLING WATER

NOT TO SCALE

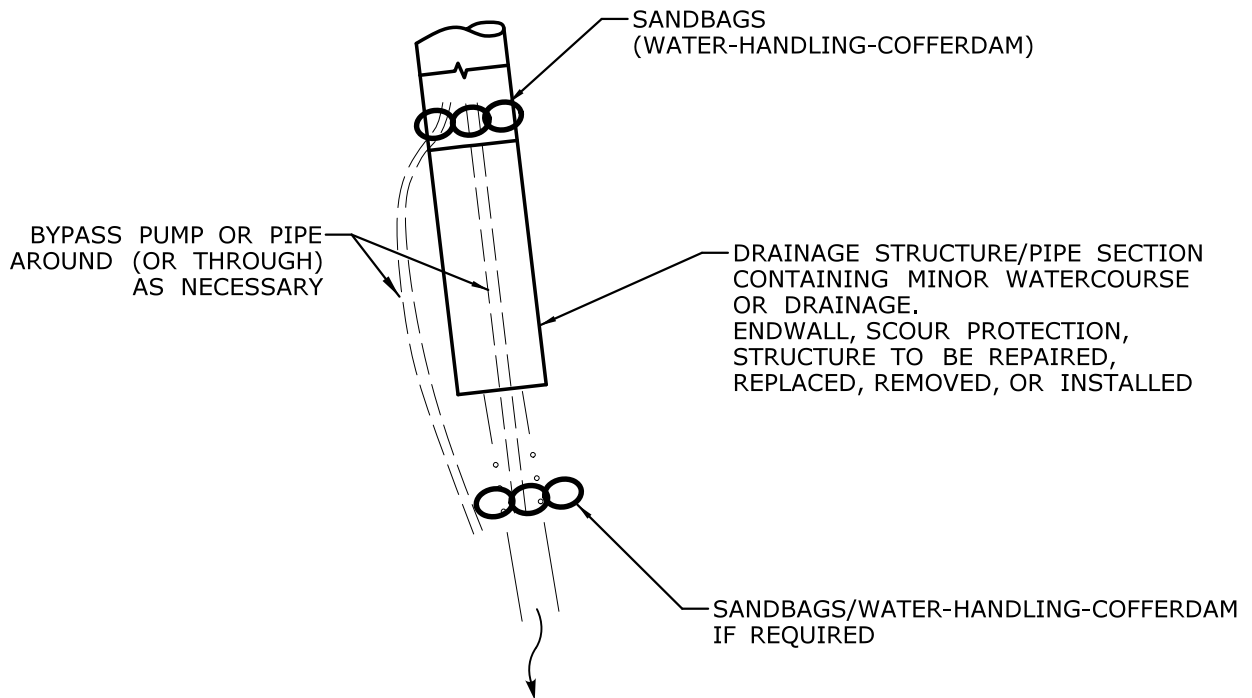
### NOTES TO DESIGNER:

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 AND COFFERDAM
4. THE OVERALL FOOTPRINT OF THE WATER-HANDLING-COFFERDAM AND COFFERDAM SHOULD BE CONSIDERED IN DETERMINING THE PROJECT'S ENVIRONMENTAL IMPACT AREAS
5. THE OVERALL FOOTPRINT AND PLACEMENT OF THE WATER-HANDLING-COFFERDAM AND COFFERDAM SHOULD BE REVIEWED FOR PROJECT CONSTRUCTABILITY AND PROXIMITY TO STRUCTURES
6. STREAM CREATION AREAS CONNECTING FROM THE NEW STRUCTURE TO THE EXISTING STREAM SHOULD BE COORDINATED WITH THE OEP AND H&D

PAY ITEM: PAYMENT FOR 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



**J. WATER HANDLING FOR MINOR  
WATERCOURSE/DRAINAGE WORK**  
(NOT TO SCALE)

SCHEMATIC COULD APPLY TO WORK AT  
INLET, OUTLET, OR WITHIN THE STRUCTURE

NOTE: THE PROPOSED WORK AND WATER HANDLING MEASURES SHALL NOT IMPACT ADDITIONAL REGULATED AREAS BEYOND THOSE DEPICTED AS TEMPORARY OR PERMANENT IMPACTS WITHIN THESE PERMIT PLANS.

**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 MINOR WORK AT THE OUTLET, INLET, OR WITHIN THE STRUCTURE
3. THE OVERALL FOOTPRINT OF THE WATER-HANDLING-COFFERDAM SHOULD BE CONSIDERED IN DETERMINING THE PROJECT'S ENVIRONMENTAL IMPACT AREAS
4. THE OVERALL FOOTPRINT AND PLACEMENT OF THE WATER-HANDLING-COFFERDAM SHOULD BE REVIEWED FOR PROJECT CONSTRUCTABILITY AND PROXIMITY TO STRUCTURES

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

PAY UNIT: LUMP SUM.