OPERATION & MAINTENANCE MANUAL

Detention Vault

Manual prepared: February 2019

DFI No. D00890

Figure 1: DFI No. D00890, looking northwest

1. Identification

Drainage Facility ID (DFI):	D00890
Facility Type:	Continuous Deflective Separator Manhole
Construction Drawings:	(V-File Numbers) 33V-093
Location:	District: 2B
	Highway No.: 001
	Mile Post: 301.7, under Hwy

2. Manual Purpose

The purpose of this manual is to outline inspection needs and summarize maintenance actions.

3. Facility Location

The location map below details the facility location. The highway, mile posts, side streets, access location, and stormwater flow directions are noted on the map.

Facility location type: Parking Lot

Flow direction: southwest

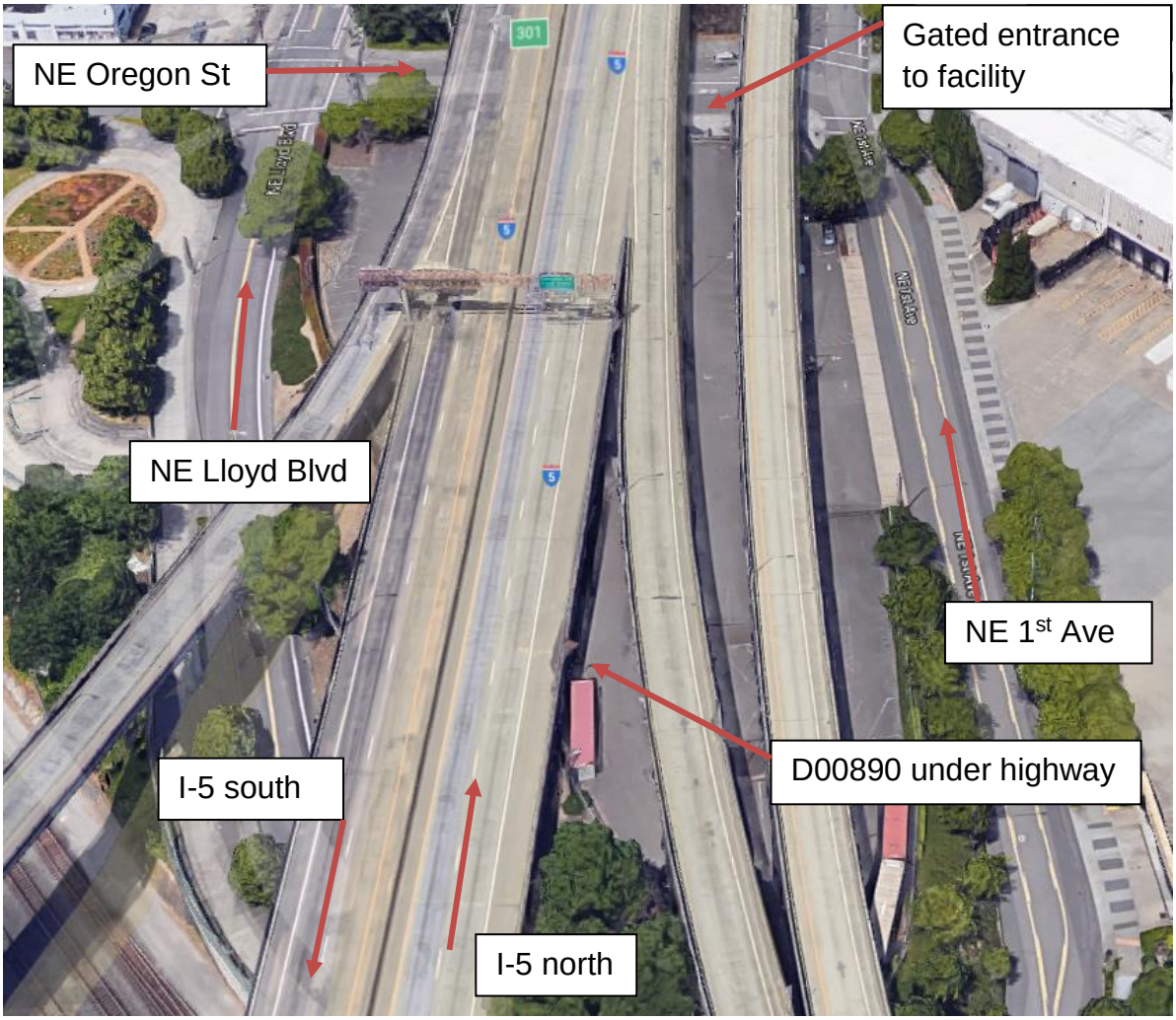


Figure 2: Facility map

4. Facility Summary

The length, width, and depth of the Continuous Deflective Separator/Detention Vault are based on the dimensions referenced in Figure 3. The depth is the vertical distance measured from the bottom of the detention vault to the rim of the access opening.

The dimensions of the detention vault are:

Length (feet)	Width (feet)	Depth (feet)
10	10	10.5

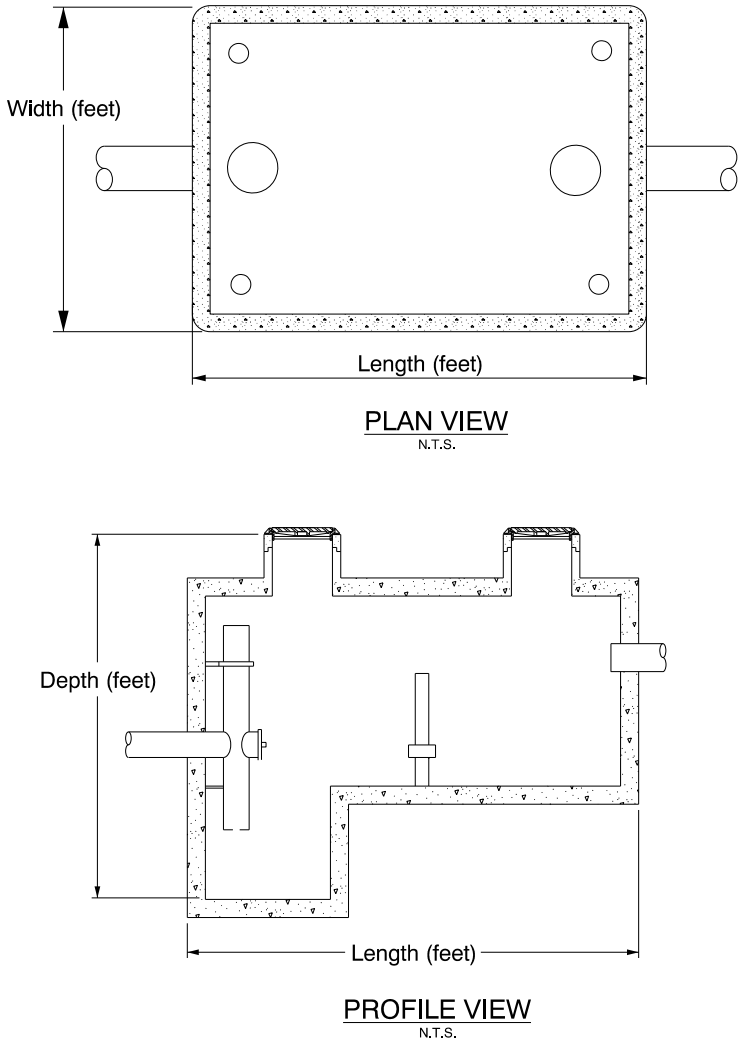


Figure 3: Reference dimensions for a detention vault

Site Specific Information: Access to the facility will require prior arrangement with parking lot operator as the space is confined and gated to vehicles. Parking is facilitated by Oregon Convention Center, (503) 235-7575. The facility was added to a large highway project and does not have plan sets dedicated to this water quality structure. There are three structures associated with the facility; one manhole for personnel access, one for equipment access, and one for access to the inlet/outlet weir-type diversion pipe. The flow at the splitter manhole is directed to the Continuous Deflective Separator/Detention Vault manhole. Flow then returns to the splitter manhole through another pipe and is directed to the outfall pipe. See Appendix A for further detail. Appendix B contains only the title sheet and one water quality plan sheet from the plan set.

5. Facility Access

Maintenance access to the facility:

☐Roadside pad	☐Roadside shoulder
☒Parking lot access with Gate	☐Access road without Gate
☒Confined Space Entry	☐Lane Closure needed

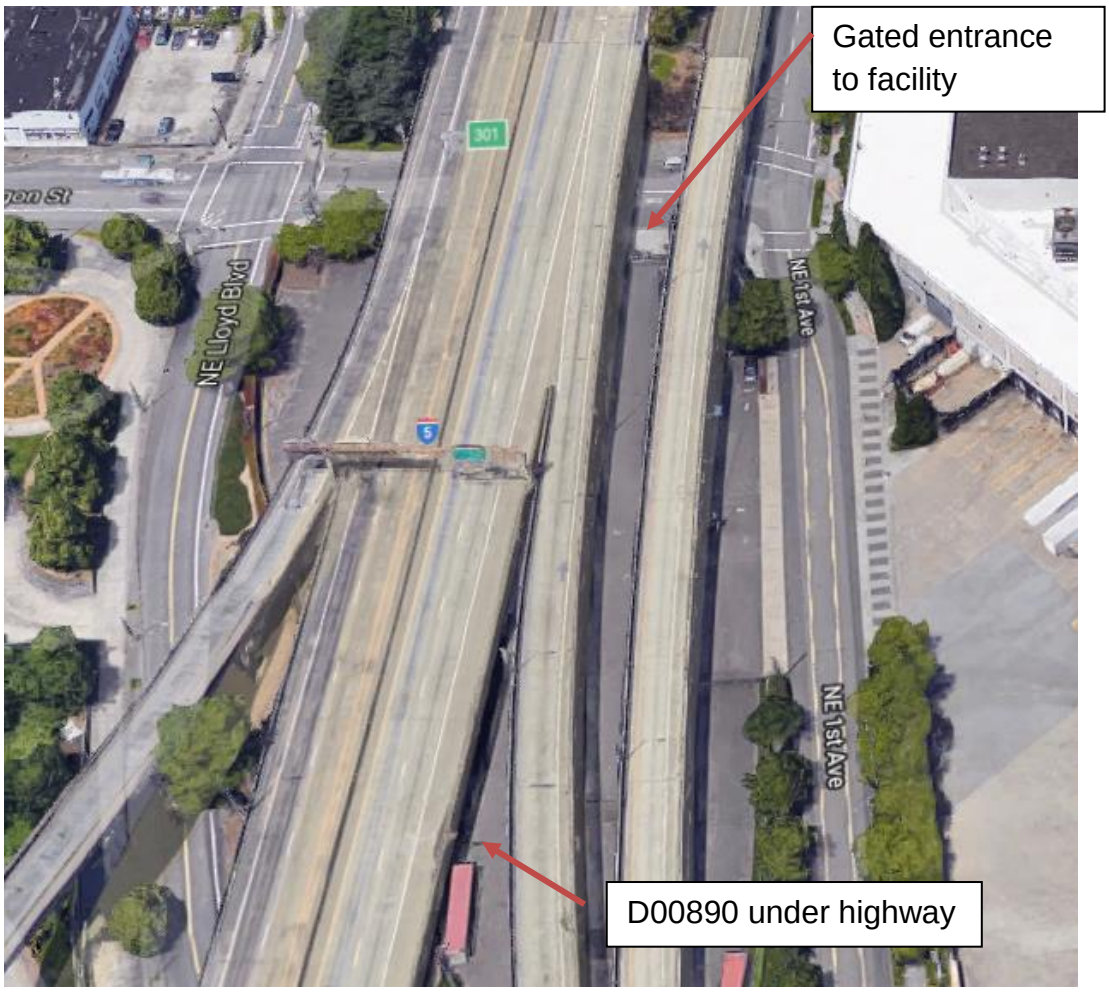


Figure 4: Facility access

6. Operational Components / Maintenance Items

Classification and Standard Operational (Op) Plan:

This facility is classified as a:

☐ **Operational Plan A** Detention Tank	☒ **Operational Plan B** Detention Vault	☐ **Operational Plan C** Manifold Detention System
A standard operational plan illustrates the general facility footprint configuration and explains the purpose of each facility component. Operational plans (A, B, C) are provided in the Standard Operation Manual.		

See Appendix A for the site specific operational plan.

Key Features/Items:

☒ This facility has a bypass component (T2). T2 is a(n):

☒ **Weir type flow splitter**	☐ **Orifice type flow splitter**	☐ **Other:**

☒ This facility has a Pre-treatment Manhole (T1). T1 is a(n):

☐ **ODOT Pollution control manhole**
☒ **CDS (Continuous Deflective Separator)**
☐ **Downstream Defender**
☐ **Stormceptor**
☐ **Bayfilter**

Include manufacturer's Operation and Maintenance manual as part of this document. Attach as Appendix C.

Operational Components

The facility components table (**Table 1**) has been provided to highlight the applicable components for this facility. The component is in use when the box contains an "x" (e.g. ☒).

The Standard Operation Manual for detention tanks/vaults, implemented October 2018, outlines facility operation, typical footprint configuration, and component definitions and details. A link to the manual is attached to the feature marker in TransGIS.

https://gis.odot.state.or.us/TransGIS/

Maintenance Items

Operational components marked in **Table 1** should be inspected and maintained according to Section 7. Each facility component is defined and detailed in the Standard Operation Manual using the associated ID number indicated below.

Table 1: Detention Tank/Vault Components		ID #
Manholes		
Pre-Treatment Manhole (CDS)	☒	**T 1**
Flow Splitter Manhole	☒	**T 2**
Flow Control Manhole	☐	**T 3**
Standard Manhole	☐	**T 4**
Sump	☐	**T 5**
Facility Inlet		
Inlet Pipe	☒	**T 6**
Facility Structures		
Main Tank/Vault	☒	**T 7**
Additional Back-Up Tank	☐	**T 8**
Manifold Pipe	☐	**T 9**
Connecting Pipe	☐	**T 10**
Access Opening	☒	**T 11**
Facility Outlet		
Outlet Flow Control	☐	**T 12**
Drainage Mechanism	☐	**T 13**
Outlet Pipe	☒	**T 14**
Outfall Type		
Outfall (Willamette River)	☒**R** ☐**L** ☐**O**	**T 15**
Ditch	☐	**T 16**
Storm Drain System	☒	**T 17**
Outfall Components		
Riprap Bank Protection	☐	**T 18**

7. Maintenance

Maintenance Frequency/Maintain Records

a. Inspect annually. Preferably prior to the rainy season.
b. Clean and maintain as necessary. Refer to Activity 125 in the Maintenance Guide for conditions when maintenance is needed.
c. Keep a record of inspections, maintenance, and repairs.

Maintenance Guide/Maintenance Actions

The Maintenance Guide outlines the standard maintenance actions for water quality facilities under Activity 125.

There are standard maintenance tables for standard ODOT designs. The maintenance tables describe the maintenance component, the defect or problem, the condition when maintenance is needed, and the recommended maintenance to correct the problem. Use the following tables to maintain ODOT detention tanks or vaults:

- Table 1 (General Maintenance): Contains general maintenance and inspection guidelines that are applicable to all ODOT water quality and detention facilities
- Table 6 (Detention Vaults): Contains maintenance information for detention vaults
- Table 7 (Detention Tanks): Contains maintenance information for detention tanks and large diameter pipe

For this facility,

☒ **Jet Rodding is allowed**	☐ **Jet rodding in NOT allowed**

The ODOT Maintenance Guide can be viewed at the following website:
http://www.oregon.gov/ODOT/HWY/OOM/pages/mguide.aspx

The Blue Book can be viewed at the following website:
http://www.oregon.gov/ODOT/Maintenance/Documents/blue_book.pdf

8. Limitations

Care should be taken when vehicles enter the facility to prevent the creation of depressions (tire ruts) and limit damage to vegetation and structural components. Maintenance vehicles should remain upon provided access areas.

9. Waste Material Handling

Material removed from the facility is defined as waste by the Department of Environmental Quality (DEQ). Refer to the road waste section of the ODOT Maintenance Yard Environmental Management System (EMS) Policy and Procedures Manual for disposal options:

http://www.oregon.gov/ODOT/HWY/OOM/pages/ems.aspx

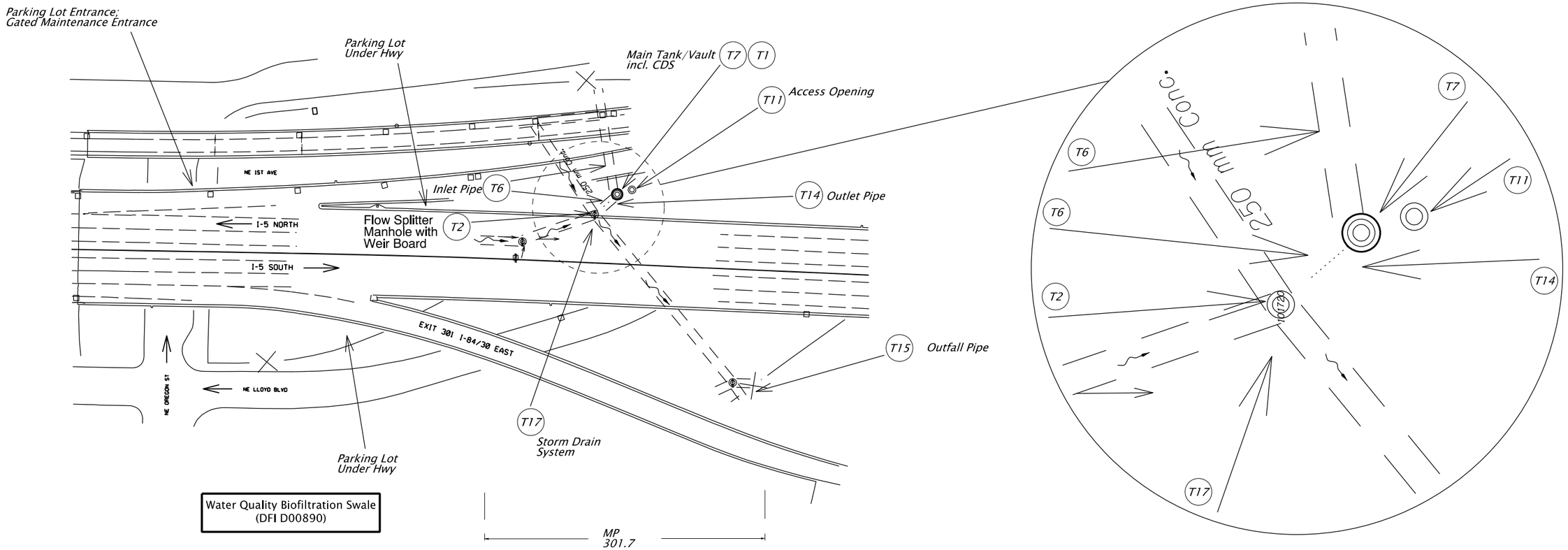
Contact any of the following for more detailed information about management of waste materials found on site:

ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 667-7442
ODOT Region 1 Hazmat Coordinator	(503) 731-8290
ODOT Region 2 Hazmat Coordinator	(503) 986-2647
ODOT Region 3 Hazmat Coordinator	(541) 957-3594
ODOT Region 4 Hazmat Coordinator	(541) 388-6186
ODOT Region 5 Hazmat Coordinator	(541) 963-1590
ODEQ Northwest Region Office	(503) 229-5263

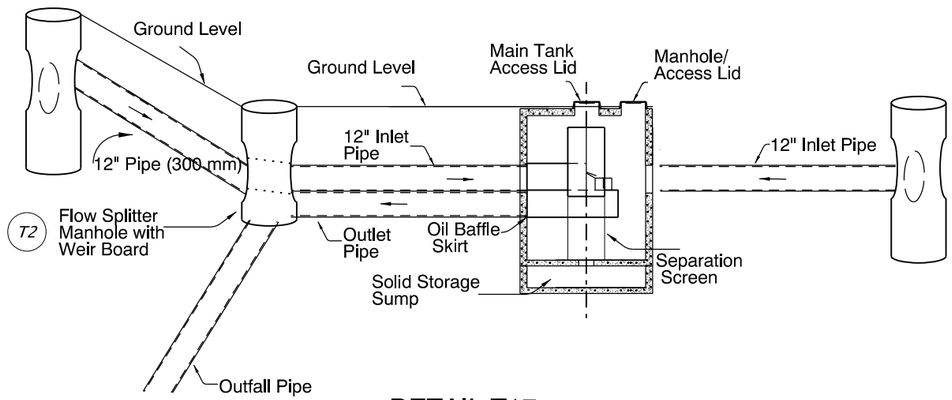
A Appendix A – Site Specific Operational Plan

Contents:

Operational Plan: DFI D00890



Plan View Callout



DETAIL T17

N.T.S.

LEGEND:

- Manhole
- Inlet (■ and/or □)
- Storm Pipe Center (Facility)
- Storm Pipe
- Conveyance Direction
- Traffic Flow Direction

N

Sht. 01 of 01

Prepared By:
Laila Bush

Drafted By:
Laila Bush

OREGON DEPARTMENT OF TRANSPORTATION

DFI D00890
MAINTENANCE DISTRICT 2B HWY 001
Detention Vault/Manhole
Pacific Highway MP 301.7
Multnomah County

H_K11070_DFI00890 21-02-2019 13:32 hwyr18z

B Appendix B – Project Contract Plans

Contents:

Site Specific Subset of Project Contract Plan 33V-093

Partial Plan Set

33V-93

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A, 1A-2	Index Of Sheets Contd.
1A-3	Standard Drawing Nos.
1B	Plan Sheet Layout
2, 2A Thru 2A-23 Incl.	Typical Sections
2B Thru 2B-22 Incl.	Details
2C-A Thru 2C-A7 Incl.	Traffic Control Details
2C-B Thru 2C-B36 Incl.	Traffic Control I-5 Weekend Detours
2C-C Thru 2C-C10 Incl.	Traffic Control Plans - Soundwalls
2C-D Thru 2C-D53 Incl.	Traffic Control Plans - Bridge Raisings
2C-E	Traffic Control - Water Quality Installation
2D Thru 2D-22 Incl.	Water Quality Plans

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

REVISED PLAN SHEETS INCORPORATED

REVISED PLAN SHEETS INCORPORATED

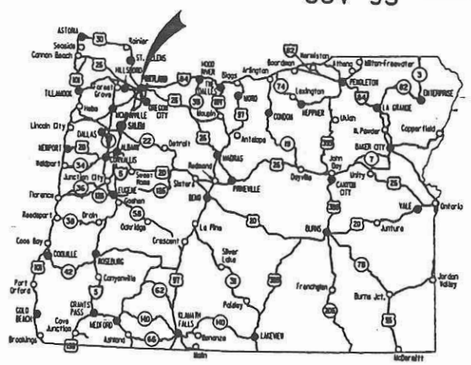
GRADING, DRAINAGE, STRUCTURES, PAVING, STRIPING, SIGNING, SIGNALS, ILLUMINATION, & ROADSIDE DEVELOPMENT

INTERSTATE BRIDGE - N.E. OREGON ST. (PORTLAND) SEC.

PACIFIC HIGHWAY

MULTNOMAH COUNTY

SEPTEMBER 2000



Overall Length Of Project - 9.771 km (6.07 Miles)

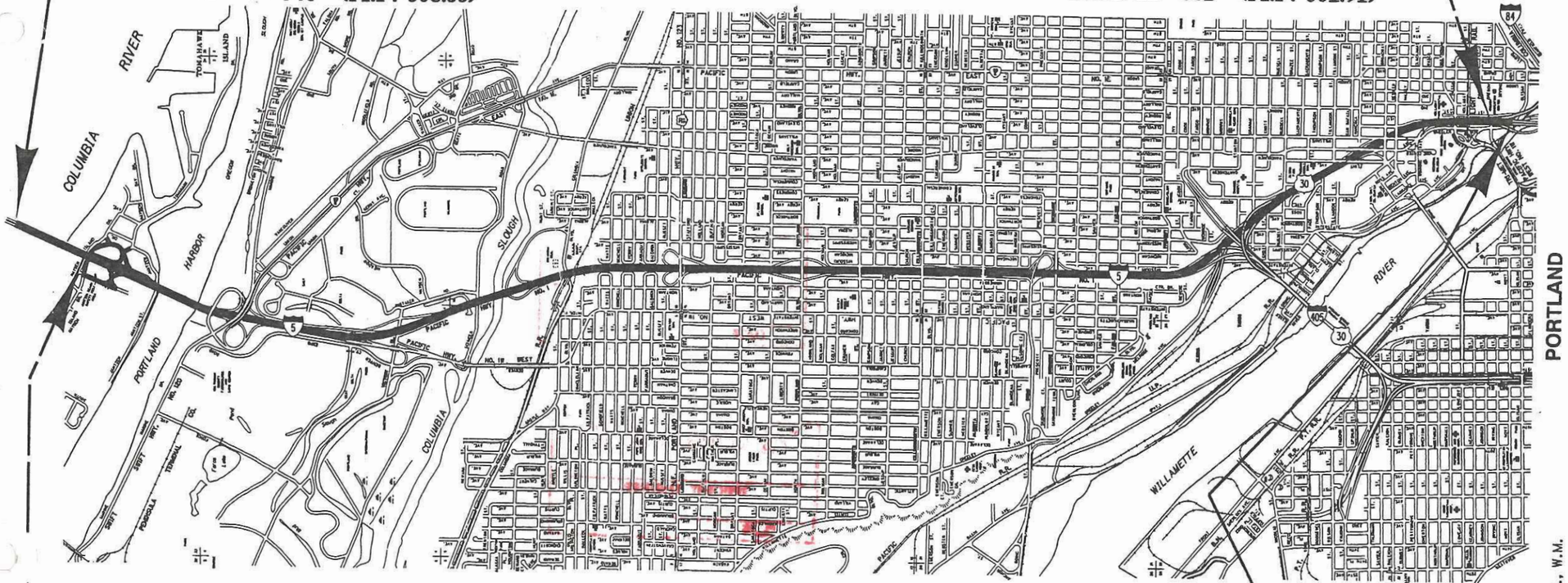
"AS CONSTRUCTED"
Earl Maybee
RESIDENT ENGINEER
2-10-03
DATE

ATTENTION :
Oregon Law Requires You To Follow Rules Adopted By The Oregon Utility Notification Center. Those Rules Are Set Forth In OAR 952-001-0010 Through OAR 952-001-0090. You May Obtain Copies Of The Rules From The Center, Or Answers To Questions About The Rules By Calling (503) 232-1987.

LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE

BEGIN. OF CONTRACT PROJECT
STA. "BS" 2+040 (M.P. 308.33)

END OF PROJECT X-IM-S001(87)
STA. 11+662 (M.P. 301.91)



BEGINNING OF PROJECT X-IM-S001(87)
STA. "BN" 2+606.900 (M.P. 307.98)

END OF CONTRACT PROJECT
STA. 11+812 (M.P. 301.82)

T. 1, 2 N., R. 1 E., W.M.

METRIC

OREGON TRANSPORTATION COMMISSION

Henry H. Hewitt	CHAIRMAN
Susan Brody	VICE CHAIRMAN
Steven H. Corey	COMMISSIONER
Stuart Foster	COMMISSIONER
John Russell	COMMISSIONER
Grace Crunican	DIRECTOR OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
18,458
OREGON
MAY 14, 1996
JEFFREY SCHEICK
Expires Jun. 30, 2002

Jeffrey Scheick

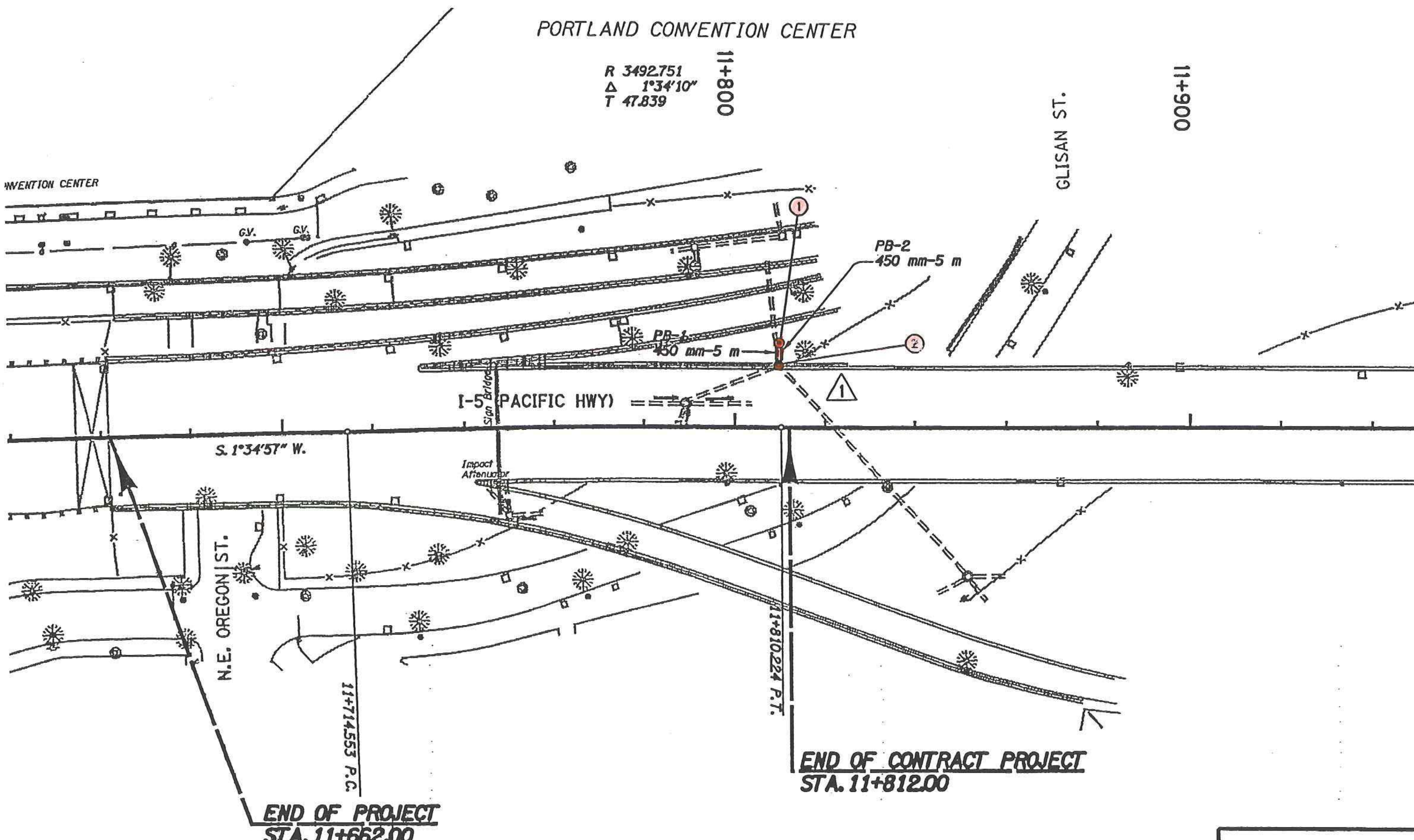
TECHNICAL SERVICES MANAGING ENGINEER

INTERSTATE BRIDGE - N.E. OREGON ST. (PORTLAND) SEC.
PACIFIC HIGHWAY
MULTNOMAH COUNTY

FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION	X-IM-S001(87)	1

24-JUL-2000 15:10
c:\usr\projects\10??
VIEW A1
C626-1432/C626-1433

Sec. 34, T. 1 N., R. 1 E., W.M.



① Sta. 11+809.87, 18.73 Lt. (11+809)
Const. Water Quality Structure, 0.00 - 0.10 cms
Inst. ~~450~~ 300 mm Pipe - ~~5.0~~ m ok
Pipe Under Pavement - ~~5~~ 3.5 m
Tr. Exc. - 25 m^3

② Sta. 11+809.87, 13.77 Lt.
Reconst. Manhole (Inst. Weir)
Inst. ~~450~~ 300 mm Pipe - 5 m
Pipe Under Pavement - ~~5m~~ 3.5
Tr. Exc. - 25 m^3
(For Details, See Sht. 2D-13)

Pipe	Upstream Invert Elev. (m)	Downstream Invert Elev. (m)
PB-1	18.935	As Dir.
PB-2	18.925	18.915

"AS CONSTRUCTED"
PROJECT MANAGER
DATE 2-12-03

No.	REVISION	DATE	BY
1	Added Pipe And Water Quality Structure	08-30-00	MGC

REGISTERED PROFESSIONAL ENGINEER 62,609
OREGON
JULY 9, 2000
HENRY MINTON ALLEN
Expires Dec. 31, 2001

OREGON DEPARTMENT OF TRANSPORTATION
GEO / HYDRO SECTION

INTERSTATE BRIDGE - N.E. OREGON ST. (PORTLAND) SEC.
PACIFIC HIGHWAY
MULTNOMAH COUNTY

Reviewed By - Bruce S. Council
Designed By - Henry M. Allen
Drafted By - Martin G. Casillas

WATER QUALITY PLAN

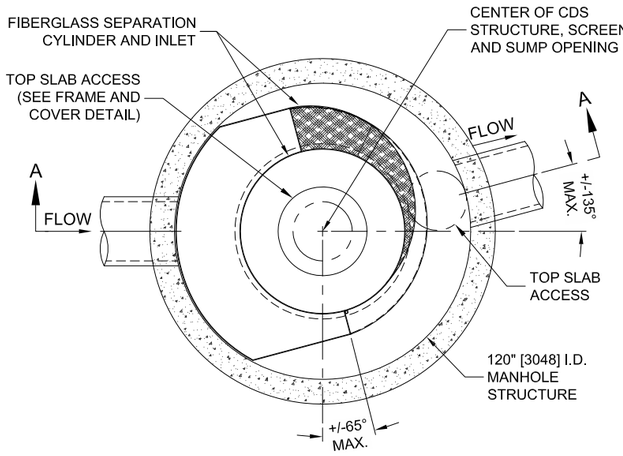
SHEET NO. 2D-6

hwye66c 30-AUG-2000 16:06

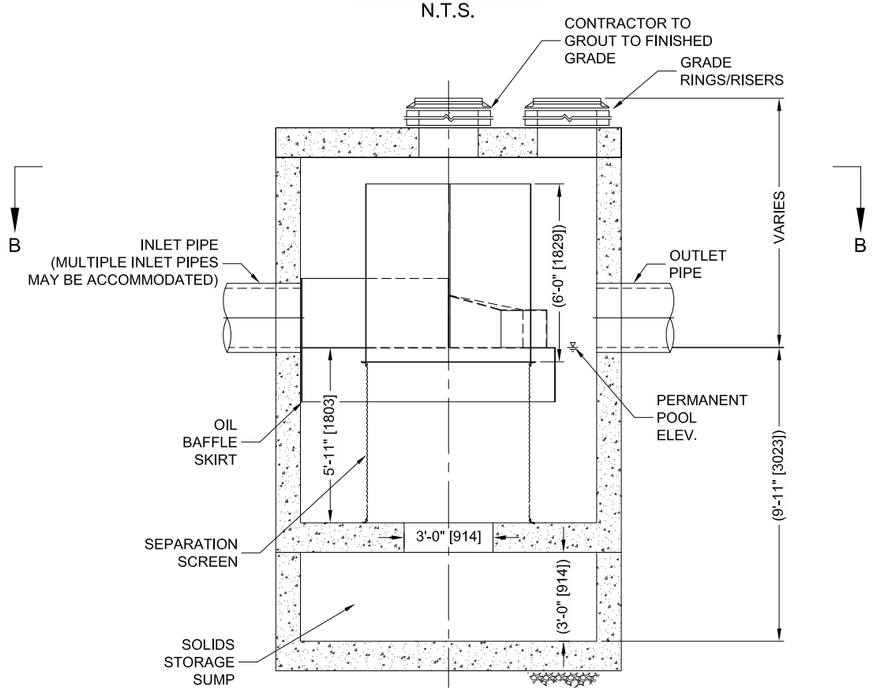
C Appendix C – Proprietary Manufacturer's O&M Manual

Contents:

Manufacturer's Operation & Maintenance Manual



PLAN VIEW B-B
N.T.S.



ELEVATION A-A
N.T.S.

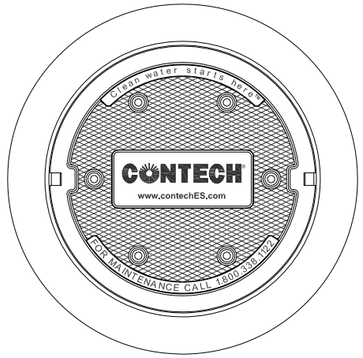
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,788,848; 6,641,720; 6,511,595; 6,581,782; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

CDS5653-10-C DESIGN NOTES

CDS5653-10-C RATED TREATMENT CAPACITY IS 14.0 CFS [396.5 L/s], OR PER LOCAL REGULATIONS. MAXIMUM HYDRAULIC INTERNAL BYPASS CAPACITY IS 50.0 CFS [1416 L/s]. IF THE SITE CONDITIONS EXCEED 50.0 CFS [1416 L/s], AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

THE STANDARD CDS5653-10-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES
SEPARATE OIL BAFFLE (SINGLE INLET PIPE REQUIRED FOR THIS CONFIGURATION)
SEDIMENT WEIR FOR NJDEP / NJCAT CONFORMING UNITS



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID			
WATER QUALITY FLOW RATE (CFS OR L/s)			*
PEAK FLOW RATE (CFS OR L/s)			*
RETURN PERIOD OF PEAK FLOW (YRS)			*
SCREEN APERTURE (2400 OR 4700)			*
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*
RIM ELEVATION			*
ANTI-FLOTATION BALLAST		WIDTH	HEIGHT
		*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechEScom
4. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET HS20 (AASHTO M 306) AND BE CAST WITH THE CONTECH LOGO.
6. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CDS5653-10-C
ONLINE CDS
STANDARD DETAIL