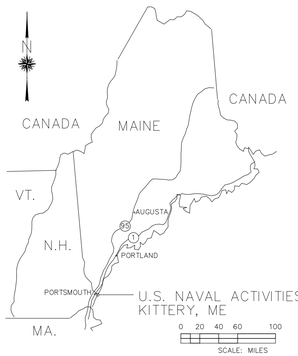
PORTSMOUTH NAVAL SHIPYARD
KITTERY, ME

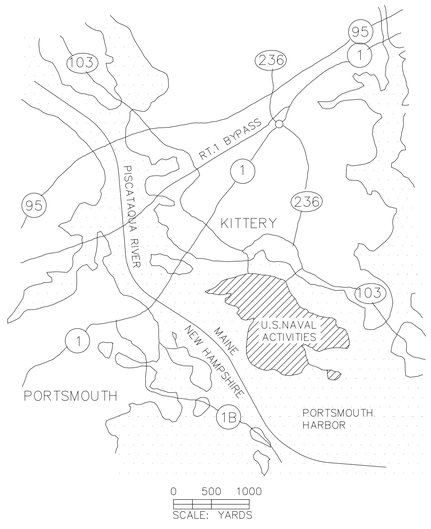
OIL / WATER SEPARATOR
OPERATION AND MAINTENANCE DRAWINGS
CONTRACT NO. N40085-XX-X-XXXX

LIST OF DRAWINGS

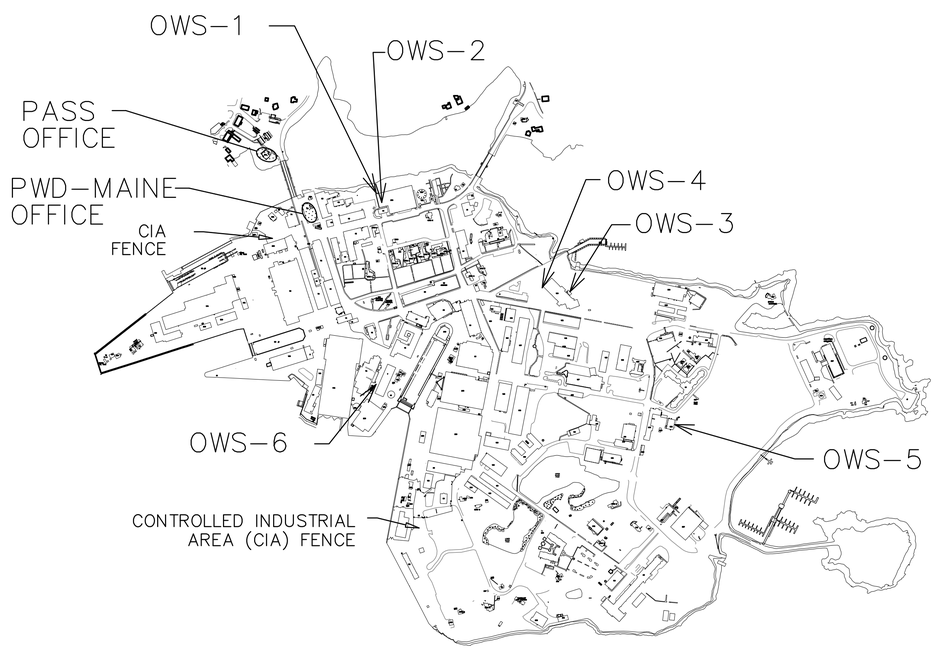
SHEET	SHEET NO.	PWD-ME DWG. NO.	NAVFAC DWG. NO.	DRAWING TITLE
1 OF 8	G001	MC-11-1205		TITLE SHEET
2 OF 8	C101	MC-11-1206		OWS 1 NEAR BUILDING 376 DETAILS AND NOTES SHEET
3 OF 8	C102	MC-11-1207		OWS 2 IN BUILDING 376 DETAILS AND NOTES SHEET
4 OF 8	C103	MC-11-1208		OWS 3 NEAR BUILDING 154 DETAILS AND NOTES SHEET
5 OF 8	C104	MC-11-1209		OWS 4 NEAR BUILDING 154 DETAILS AND NOTES SHEET
6 OF 8	C105	MC-11-1210		OWS 5 IN BUILDING 320 DETAILS AND NOTES SHEET
7 OF 8	C106	MC-11-1211		OWS 6 NEAR BUILDING 72 DETAILS SHEET
8 OF 8	C107	MC-11-1212		OWS 6 NEAR BUILDING 72 NOTES SHEET



AREA MAP

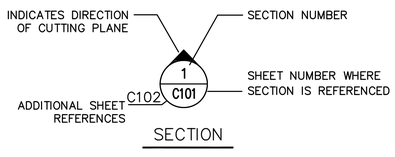


VICINITY MAP

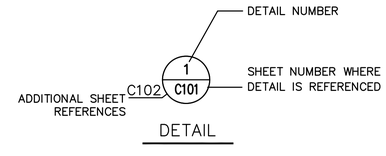


SITE PLAN
SCALE: 1" = 600'

SECTION AND DETAIL SYMBOLS



SECTION



DETAIL

NO.	DESCRIPTION	DATE	APPR
0	INITIAL SUBMISSION	2/11/2011	JFH

SEAL

PWD-MAINE
IN HOUSE DESIGN

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

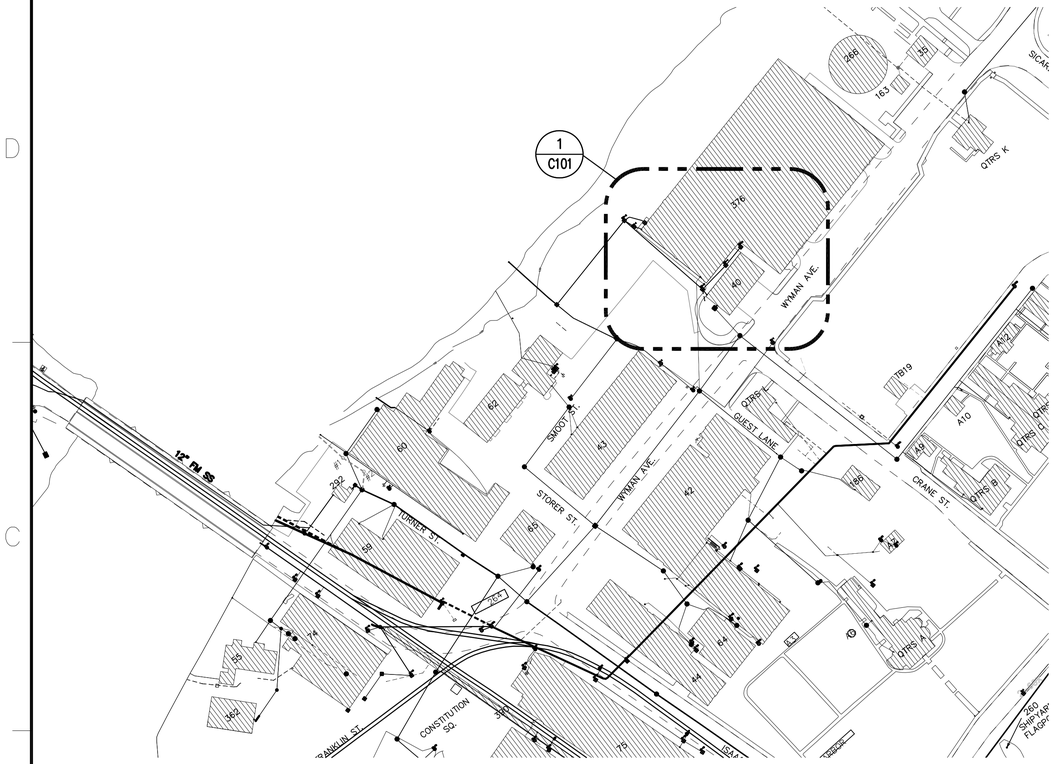
DES	DRW	CHK
PM/DM	JFH/RHR	
BRANCH MANAGER	JEFF HOYT	
CHIEF ENG/ARCH	AMIN BAHROUR	
FIRE PROTECTION	N/A	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, ME
OIL / WATER SEPARATOR OPERATION AND MAINTENANCE DRAWINGS
TITLE SHEET

MAXIMO No.:	MAX NUM
EPROJECT NO.:	N/A
CONSTR. CONTR. NO.	N40085-10-R-9445
NAVFAC DRAWING NO.	######
SHEET	1 OF 8
	G001 | MC-11-1205

DRAWFORM REVISION: 10 MARCH 2009

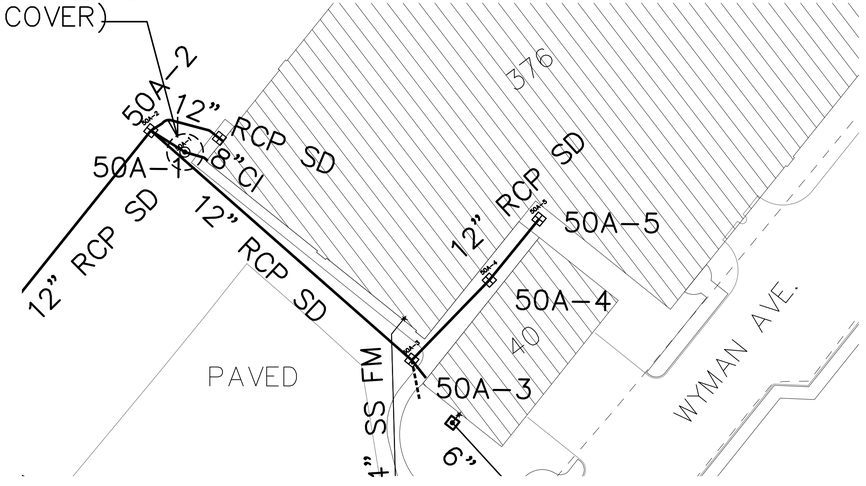
FILE NAME: P:\01 PRN2 FEAD\02 PRN21 PM&E\03 PRN-212 Civil\913 DATA CENTER\UTILITY SYSTEMS DATA\STORM DRAIN SYSTEM\Oil Water Separator O & MStorm Water Quality Structures.dwg LAYOUT NAME: Title PLOTTED: Tuesday, February 15, 2011 - 8:12am USER: rosa.hills



GENERAL SITE PLAN

SCALE: 1" = 100'

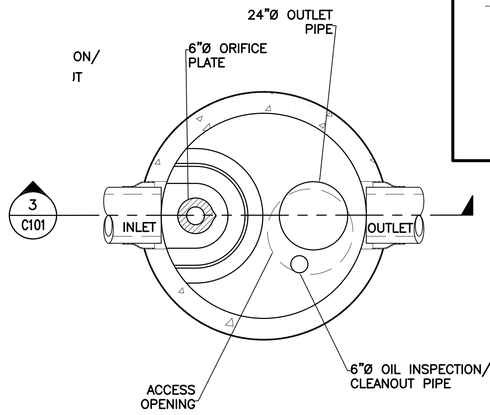
OWS-1
CB 50A-1
(STORMCEPTOR
ON COVER)



ENLARGED SITE PLAN

SCALE: 1" = 30'

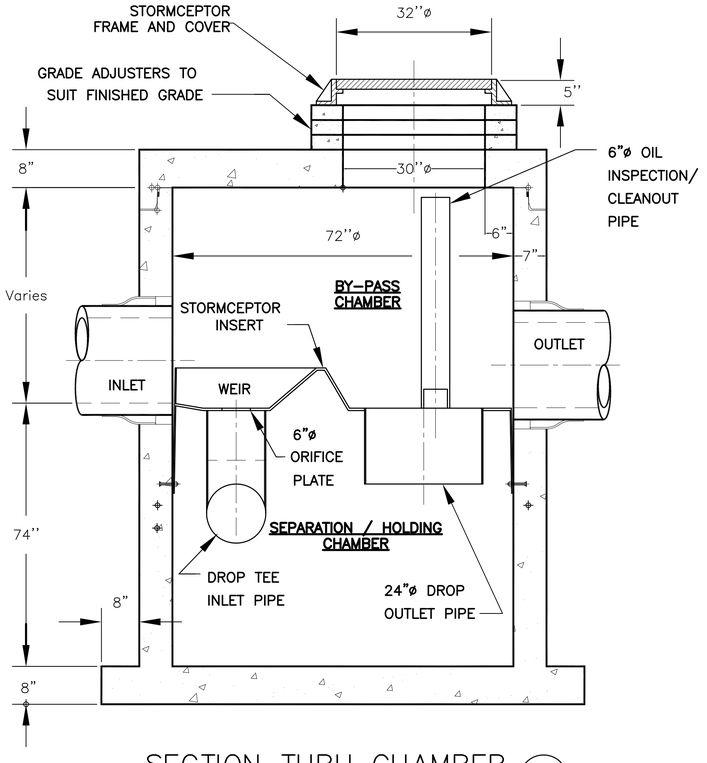
C101 1



PLAN SECTION

NOT TO SCALE

C101 2



SECTION THRU CHAMBER

SCALE: 1/16":1'-0"

C101 3

LEGEND

- STORM DRAIN LINE
- SANITARY SEWER LINE
- 4" VIT SD — ABANDONED STORM DRAIN LINE
- 4" VIT SD — ABANDONED SANITARY SEWER
- CATCH BASIN
- SEWER MANHOLE
- ABANDONED CATCH BASIN
- ABANDONED SEWER MANHOLE

SPECIFICATIONS

SYSTEM: INLINE STORMCEPTOR
MODEL: STORMCEPTOR STC 900
HEIGHT: 153 INCHES
COVER/GRATE: 32 INCH DIAMETER
SEDIMENT CAPACITY: 565 US GALLONS
OIL CAPACITY: 280 US GALLONS
TOTAL HOLDING CAPACITY: 950 US GALLONS
INSTALLATION DATE: 2004

BASIC OPERATIONS

EACH UNIT IS CONSTRUCTED FROM PRECAST COMPONENTS AND PATENTED FIBERGLASS INSERT THAT SEPARATES THE UPPER (BY-PASS) AND LOWER (SEPARATION/HOLDING) CHAMBERS.

DURING NORMAL OPERATING CONDITIONS:

STORM WATER FLOWS INTO WATER SEPARATOR INTO THE UPPER BY-PASS CHAMBER AND IS DIVERTED BY U-SHAPED WEIR, DOWN AN ORIFICE OF PIPE, INTO THE SEPARATION/HOLDING CHAMBER. THIS DOWNWARD FLOW IS DIRECTED BY RIGHT-ANGLE OUTLETS, AROUND THE CIRCULAR WALLS OF THE CHAMBER. FLOW CONTINUES HORIZONTALLY TO THE OUTLET PIPE. FINE AND COARSE SEDIMENT SETTLE TO THE FLOOR OF THE CHAMBER WHILE THE PETROLEUM PRODUCTS RISE AND BECOME TRAPPED BENEATH THE FIBERGLASS INSERT.

DURING HIGH FLOW OPERATING CONDITIONS:

STORM WATER ENTERING SEPARATOR WILL PASS OVER THE DIVERTING WEIR AND CONTINUE THROUGH THE BY-PASS CHAMBER INTO THE DOWN STREAM STORMWATER SYSTEM. THIS BY-PASS ACTIVITY CREATES PRESSURE EQUALIZATION ACROSS THE BY-PASS CHAMBER, PREVENTING SCOURING. A PORTION OF INCOMING SEDIMENT CONTINUES TO BE DIVERTED BY THE WEIR INTO THE LOWER CHAMBER WHERE IT IS STORED, ALONG WITH PREVIOUSLY COLLECTED SEDIMENT AND HYDROCARBONS.

MAINTENANCE REQUIREMENTS

MAINTENANCE FREQUENCY: ANNUALLY

PERFORM THE FOLLOWING INSPECTION AND MAINTENANCE TASKS:

1. MEASURE AND RECORD THE DEPTH OF OIL. THE DEPTH OF OIL IN THE INTERCEPTOR CAN BE DETERMINED BY INSERTING A DIPSTICK TUBE IN THE 6" OIL INSPECTION/CLEANOUT PIPE.
2. MEASURE AND RECORD THE DEPTH OF THE SEDIMENT. THE DEPTH OF SEDIMENT CAN BE MEASURED FROM THE SURFACE WITHOUT ENTRY INTO THE STORMCEPTOR VIA A DIPSTICK TUBE EQUIPPED WITH A BALL VALVE (SLUDGE JUDGE). THIS TUBE WOULD BE INSERTED IN THE 24" OPENING.
3. REMOVE LIQUID (WATER & OIL) AND TRANSPORT TO PNS HAZARDOUS WASTE FACILITY (BLDG 357).
4. WASH DOWN THE INTERIOR WALLS OF THE INTERCEPTOR AND REMOVE SEDIMENT/SLUDGE FROM THE BOTTOM OF THE UNIT AND TRANSPORT TO BLDG 357.
5. CONTRACTOR SHALL CONFIRM AND COORDINATE DISPOSAL REQUIREMENTS WITH PWD-ME CONTRACTING OFFICER NOT LESS THAN 96 HOURS PRIOR TO TRANSPORT TO BLDG 357.
6. INSPECT THE STORMCEPTOR UNIT. DOCUMENT FINDINGS AND REPORT DEFICIENCIES. INCLUDE REPRESENTATIVE PHOTOGRAPHS WITH INSPECTION REPORT.
7. REFILL THE STORMCEPTOR UNIT WITH CLEAN WATER.

GRAPHIC SCALE

1/16" = 1' — 16 8 0 16 32 48 — scale — feet

1" = 30' — 30 15 0 30 60 90 — scale — feet

1" = 100' — 100 50 0 100 200 300 — scale — feet

NO.	DESCRIPTION	DATE	APPR
0	INITIAL SUBMISSION	2/11/2011	JFH

NAVFAC

SEAL

PWD-MAINE
IN HOUSE DESIGN

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	DRW	CHK
PM/DM	JFH/RHR	
BRANCH MANAGER	JEFF HOYT	
CHIEF ENG/ARCH	AMIN BAHROUR	
FIRE PROTECTION	N/A	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH

PORTSMOUTH NAVAL SHIPYARD — KITTERY, ME

OIL / WATER SEPARATOR
OPERATION AND MAINTENANCE DRAWINGS

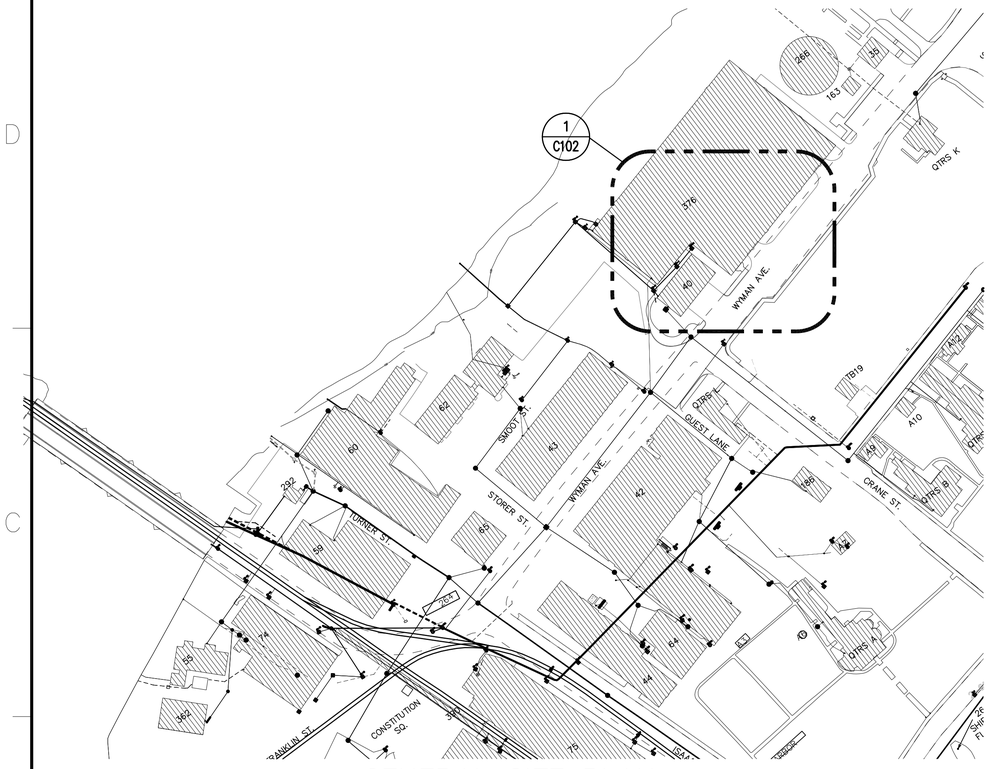
OWS-1 NEAR BUILDING 376
DETAILS AND NOTES SHEET

MAXIMO No.: N/A
EPROJECT NO.: N/A
CONSTR. CONTR. NO.: N40085-10-R-9445
NAVFAC DRAWING NO.: #######
SHEET 2 OF 8

C101 | MC-11-1206

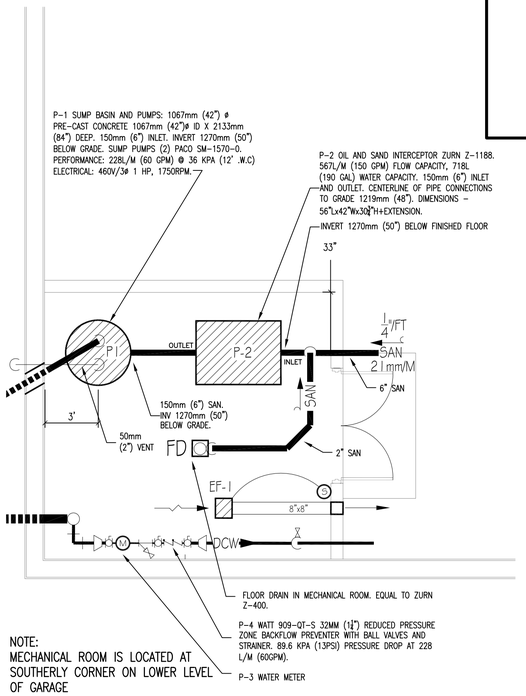
DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: P:\01 PRN2 FEAD\02 PRN21 PM&E\03 PRN-212 Civil\913 DATA CENTER\UTILITY SYSTEMS DATA\STORM DRAIN SYSTEM\Oil Water Separator O & MStorm Water Quality Structures.dwg LAYOUT NAME: OWS-1 BLDG 376 PLOTTED: Tuesday, February 15, 2011 - 8:14am USER: rosa.hills



GENERAL SITE PLAN

SCALE: 1" = 100'

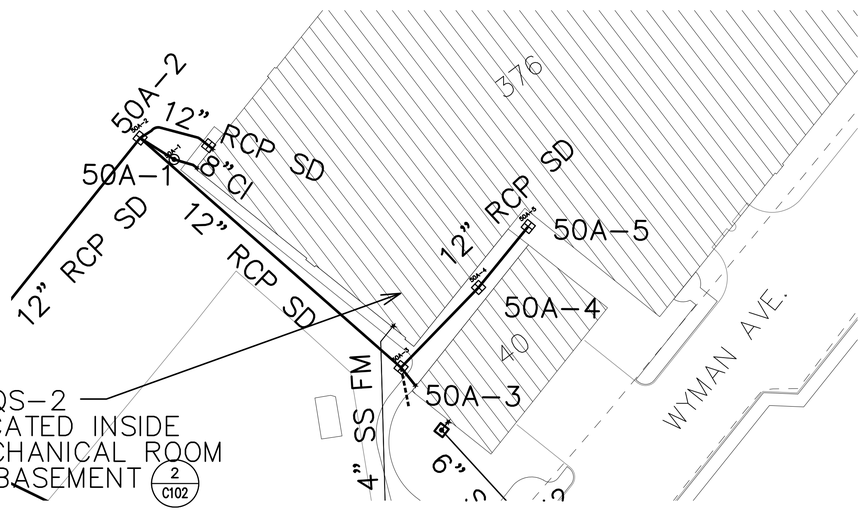


NOTE:
MECHANICAL ROOM IS LOCATED AT SOUTHERLY CORNER ON LOWER LEVEL OF GARAGE

MECHANICAL ROOM PLAN

NOT TO SCALE

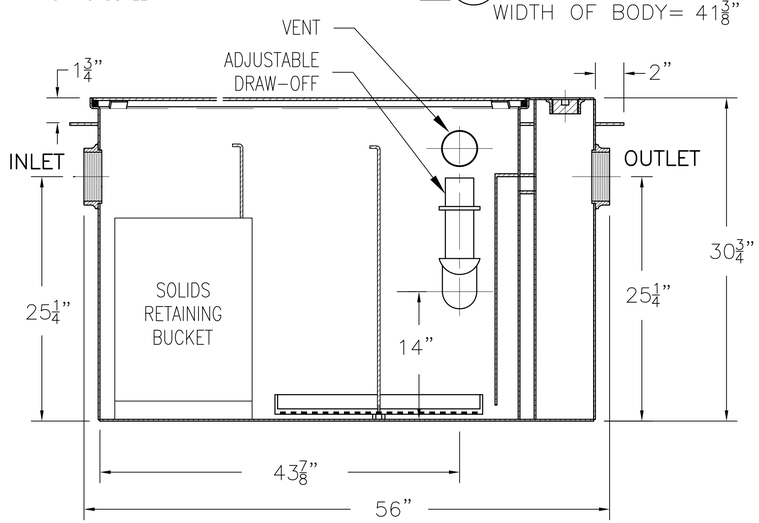
C102 2



ENLARGED SITE PLAN

SCALE: 1" = 30'

C102 1



CROSS SECTION VIEW

SCALE: 3/16":1'-0"

C102 4

LEGEND

- STORM DRAIN LINE
- SANITARY SEWER LINE
- 4" VIT SD — ABANDONED STORM DRAIN LINE
- 4" VIT SD — ABANDONED SANITARY SEWER
- 45-01 45-01 — CATCH BASIN
- SEWER MANHOLE
- 1440 — ABANDONED CATCH BASIN
- #2 — ABANDONED SEWER MANHOLE

SPECIFICATIONS

SYSTEM: ZURN LARGE CAPACITY OIL INTERCEPTOR
MODEL: Z-1188-K
HEIGHT: 30 INCHES
LENGTH: 56 INCHES
WIDTH: 41 INCHES
CAPACITY: 190 US GALLONS
OUTLET SIZE: 4"
COVER/GRATE: 2 COVERS
INSTALLATION DATE: 2004

BASIC OPERATIONS

THE SOLID BAFFLE PLATE OPPOSITE THE INLET TO THE OIL INTERCEPTOR DIFFUSES THE FLOW INTO THE INTERCEPTOR AND LESSENS THE TURBULENCE OF THE OIL–LADEN WATER AS IT ENTERS THE INTERCEPTING CHAMBER. SOLIDS AND SLUDGE CARRIED IN THE WATER ARE STOPPED BY THE BAFFLE AND COLLECTED IN THE SOLIDS RETAINING BUCKET BETWEEN THE INLET AND THE FLOW–RETARDING BAFFLE. SUCH ACCUMULATION CAN THEN BE REMOVED. THE RESULTING QUIET, EVEN FLOW OF WATER THROUGH THE INTERCEPTOR PERMITS THE OILS AND OTHER LIGHT DENSITY SUBSTANCES TO RISE TO THE SURFACE BY THE "FLOTATION" PRINCIPLE OF SEPARATION. MAXIMUM SEPARATION AND INTERCEPTION IS AFFECTED IN PROPORTION TO THE ELIMINATION OF TURBULENCE OF WASTEWATER WITHIN THE INTERCEPTOR. THE UNIQUE ZURN BAFFLE/ BUCKET DESIGN PERMITS ALMOST 90 PERCENT OF THE INTERIOR OF THE INTERCEPTOR TO BE USED FOR THE FUNCTION OF OIL SEPARATION.

MAINTENANCE REQUIREMENTS

MAINTENANCE FREQUENCY: ANNUALLY

PERFORM THE FOLLOWING INSPECTION AND MAINTENANCE TASKS:

1. MEASURE AND RECORD THE DEPTH OF OIL.
2. MEASURE AND RECORD THE DEPTH OF THE SEDIMENT.
3. JET AND FLUSH THE PARKING GARAGE FLOOR SLAB DRAINAGE SYSTEM. CONSULT RECCORD DRAWINGS AT PWD-ME, BLDG 59, VAULT FOR DRAINAGE LAYOUT. SEE FOLLOWING PAGES FOR DRAINAGE LAYOUT - BLDG 376
4. REMOVE LIQUID (WATER & OIL) AND TRANSPORT TO PNS HAZARDOUS WASTE FACILITY (BLDG 357).
5. WASH DOWN THE INTERIOR WALLS OF THE UNIT AND REMOVE SEDIMENT/SLUDGE FROM THE BOTTOM OF THE UNIT AND TRANSPORT TO BLDG 357.
6. CONTRACTOR SHALL CONFIRM AND COORDINATE DISPOSAL REQUIREMENTS WITH PWD–ME CONTRACTING OFFICER NOT LESS THAN 96 HOURS PRIOR TO TRANSPORT TO BLDG 357.
7. INSPECT THE UNIT. DOCUMENT FINDINGS AND REPORT DEFICIENCIES. INCLUDE REPRESENTATIVE PHOTOGRAPHS WITH INSPECTION REPORT.
8. REFILL THE UNIT WITH CLEAN WATER.

GRAPHIC SCALE

3/16" = 1' — 48 24 0 48 96 144 scale feet

1" = 30' — 30 15 0 30 60 90 scale feet

1" = 100' — 100 50 0 100 200 300 scale feet

0	INITIAL SUBMISSION	2/11/2011	JFH
SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

PWD-MAINE
IN HOUSE DESIGN

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	DRW	CHK
PM/DM	JFH/RHR	
BRANCH MANAGER	JEFF HOYT	
CHIEF ENG/ARCH	AMIN BAHROUR	
FIRE PROTECTION	N/A	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH

PORTSMOUTH NAVAL SHIPYARD
KITTERY, ME

OIL / WATER SEPARATOR OPERATION AND MAINTENANCE DRAWINGS

OWS-2 IN BUILDING 376
DETAILS AND NOTES SHEET

MAXIMO No.: N/A
EPROJECT NO.: N/A
CONSTR. CONTR. NO. N40085-10-R-9445
NAVFAC DRAWING NO. #######
SHEET 3 OF 8

C102 | MC-11-1207

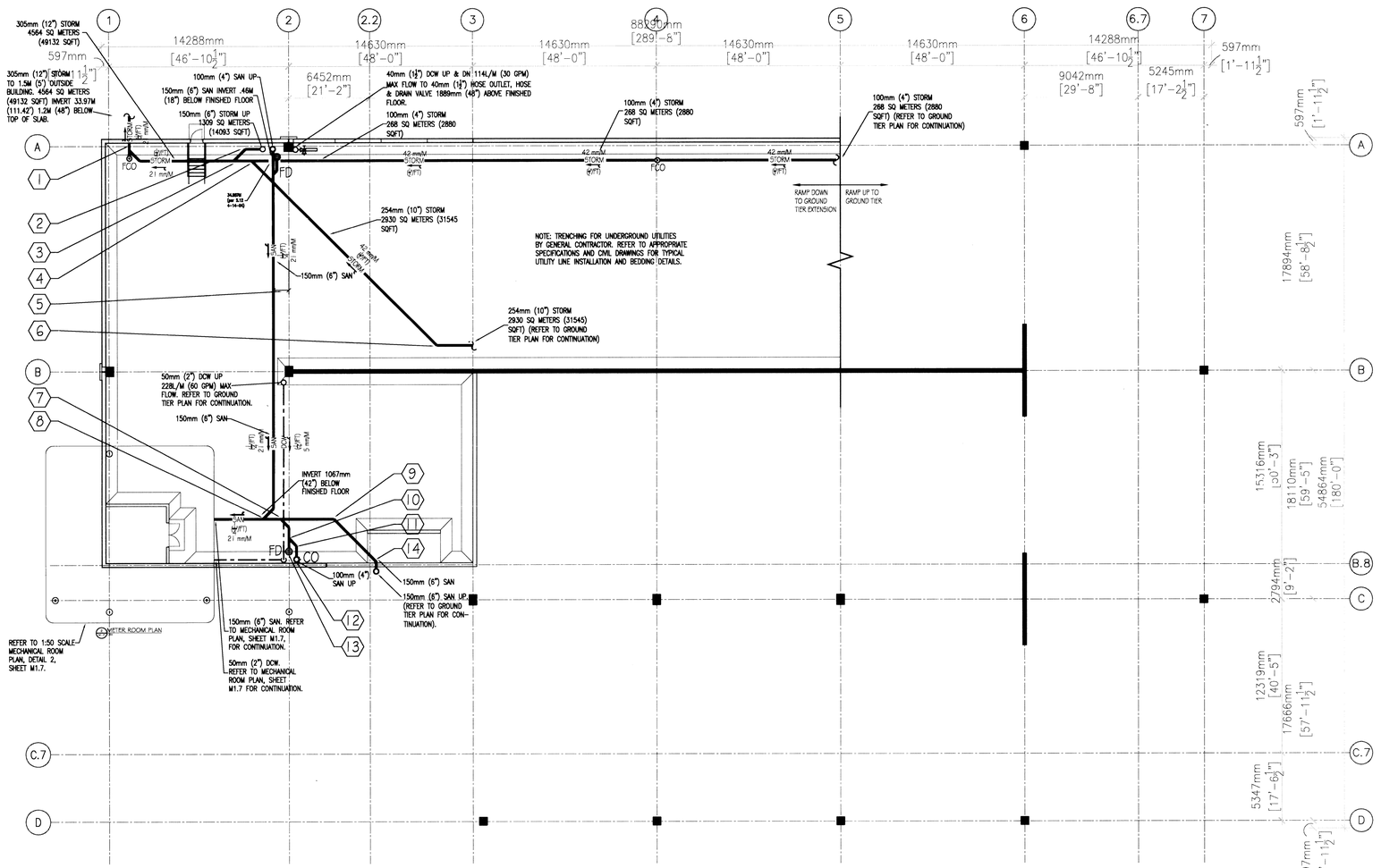
DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: P:\01 PRN2 FEAD\02 PRN21 FM&E\03 PRN-212 Civil\913 DATA CENTER\UTILITY SYSTEMS DATA\STORM DRAIN SYSTEM\Oil Water Separator O & MStorm Water Quality Structures.dwg LAYOUT NAME: OWS-2 BLDG 376 PLOTTED: Tuesday, February 15, 2011 - 8:14am USER: rosa.hills

RFI 67
CORING
FOR RISERS

AS BUILT NOTES:

1. N.- 28044.862
   E.- 105785.087
   INV.- 33.85
2. N.- 28164.7
   E.- 105880.6
   INV.- 34.5398
3. EASTING 105880
   NORTHING 28164.091
4. INVERT EL 34.447
   NORTHING 28164.091
   EASTING 105880.516
5. 5.1816 M
6. INVERT EL 34.317
   NORTHING 28161.611
   EASTING 105884.147
7. INVERT EL 34.10498
   NORTHING 28016.900
   EASTING 105780.543
8. INVERT EL 34.09298
   NORTHING 28016.389
   EASTING 105778.537
9. INVERT EL 34.27598
   NORTHING 28018.376
   EASTING 105776.833
10. INVERT EL 34.15798
    NORTHING 28015.576
    EASTING 105782.770
11. INVERT EL 34.53878
    NORTHING 28014.720
    EASTING 105784.804
12. INVERT EL 34.55078
    NORTHING 28014.590
    EASTING 105784.766
13. INVERT EL 34.19578
    NORTHING 28014.685
    EASTING 105784.187
14. INVERT EL 34.56098
    NORTHING 28016.965
    EASTING 105789.456



GROUND TIER EXT. PLAN
1:200

APPR	DATE	DESCRIPTION
	2/10/04	PROJECT RECORD DOCUMENTS
	2/10/04	REV. 0 ISSUE FOR CONSTRUCTION
	2/11/04	FINAL ELECTRONIC DESIGN SUBMISSION
	1/5/04	FINAL DESIGN RE-SUBMISSION
	9/12	DD SUBMISSION
		STYL

MORTENSON
DESIGN BUILD
FEDERAL SERVICES GROUP
700 Meadow Lane North
P.O. Box 710
Minneapolis, MN 55440
WALKER PARKING CONSULTANTS
ATKINS

SEAL

APPROVED
ACTIVITY - SATISFACTORY TO
DATE
APPROVED
FOR EFA FOR COMMANDER NAVFAC
DATE

A/E	EFD
	DESIGN
VM	DRAWN
RJK	REVIEW
	QC
RJK	CHIEF ARCH./ ENGR.
	DESIGN MANAGER
	FIRE PROTECTION
	BRANCH MANAGER
	DESIGN DIRECTOR

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY NORTHEAST
LESTER PENNSYLVANIA
NAVAL FACILITIES ENGINEERING COMMAND KITTERY, MAINE
PORTSMOUTH NAVAL SHIPYARD
PARKING FACILITY
GROUND TIER EXTENSION MECHANICAL PLAN

CODE ID. NO. 80091	SIZE D
SCALE: AS NOTED	
EFD NO.	
STA. PROJ. NO.	
SPEC. NO.	
CONSTR. CONTR. NO.	
N62472-01-D-0077	
NAVFAC DRAWING NO.	
2221387	
SHEET 78 OF 103	

M1.1

DRAWFORM REVISION FEBRUARY 2001

326-06-079

AS BUILT NOTES:

1. INVERT EL 34.2013
N.- 28034.090
E.- 105792.004

2. INVERT EL 34.7553
N.- 28033.627
E.- 105795.611

3. INVERT EL 35.7073
N.- 28033.887
E.- 105796.695

4. INVERT EL 35.986
NORTHING 28032.244
EASTING 105797.040

RFI 00006 REFER TO DRAWING C1.9 FOR SANITARY SEWER INVERTS ACROSS B-LINE AND DRAWING C1.8 FOR STORM SEWER.

5. RFI 00011 WHERE SEWER CROSSES B NEAR LINE 6, 125.1' (38130MM) WHERE STORM WATER PIPING CROSSES B NEAR LINE 3, 120.5' (36728MM).
RFI # 11 INVERT 38130.

6. INVERT EL 38.2598
NORTHING 28052.337
EASTING 105836.220

7. RFI # 11
INVERT EL 38.05298
NORTHING 28045.220
EASTING 105832.265

8. INVERT EL 35.956
RFI 00024
1. LOWER THE INVERT OF THE 10" UNDERGROUND STORM AT COLUMN LINES B AND 3, 2'-8" (32") THIS WILL LOWER THE ELEVATION 10" INVERT FROM 120'-6" TO 117'-10".)

2. PITCH UNDERGROUND STORM PIPING AS INDICATED ON PLANS. (THIS IS ¼" PER FOOT FOR THE STORM PIPING IN QUESTION THAT RUNS FROM LINE C AND 6 TO B AND 3.

3. REPLACE THE EXPOSED 90 ELBOW DOWN AND DANDY CLEANOUT THAT IS INDICATED ON THE PLANS AT COLUMN LINE B AND 3 TO A TEE-WYE WITH A CLEANOUT PLUG.

9. INVERT EL 37.10998
NORTHING 28022.784
EASTING 105812.214

10. INVERT EL 37.05398
NORTHING 28022.782
EASTING 105812.605

11. INVERT EL 37.53778
NORTHING 28022.584
EASTING 105812.604

12. INVERT EL 38.283878
NORTHING 28018.463
EASTING 105813.931

13. INVERT EL 38.26098
NORTHING 28018.141
EASTING 105812.811

14. INVERT EL 37.45598
NORTHING 28024.331
EASTING 105811.465

15. INVERT EL 36.89298
NORTHING 28024.296
EASTING 105811.174

16. INVERT EL 36.2513

17. LONG RADIUS 90
INVERT EL 37.83778
NORTHING 28030.448
EASTING 105842.416

18. INVERT EL 38.34878
NORTHING 28023.849
EASTING 105840.198

19. INVERT EL 37.96178
NORTHING 28025.714
EASTING 105843.637

20. INVERT EL 38.43098
NORTHING 28026.124
EASTING 105843.567

21. 6"X4" Y
INVERT EL 37.66398
NORTHING 28029.017
EASTING 105836.186

22. INVERT EL 37.90998
NORTHING 28028.354
EASTING 105834.334

23. INVERT EL 37.46898
NORTHING 28107.015
EASTING 105837.396

24. INVERT EL 38.38878
NORTHING 28024.111
EASTING 105841.568

25. INVERT EL 38.22298
NORTHING 28023.220
EASTING 105839.362

26. 90° CO
INVERT EL 37.4463

27. FD INVERT EL 36.65634
INLET ELEV 38.644

28. 45° INVERT EL 36.4185

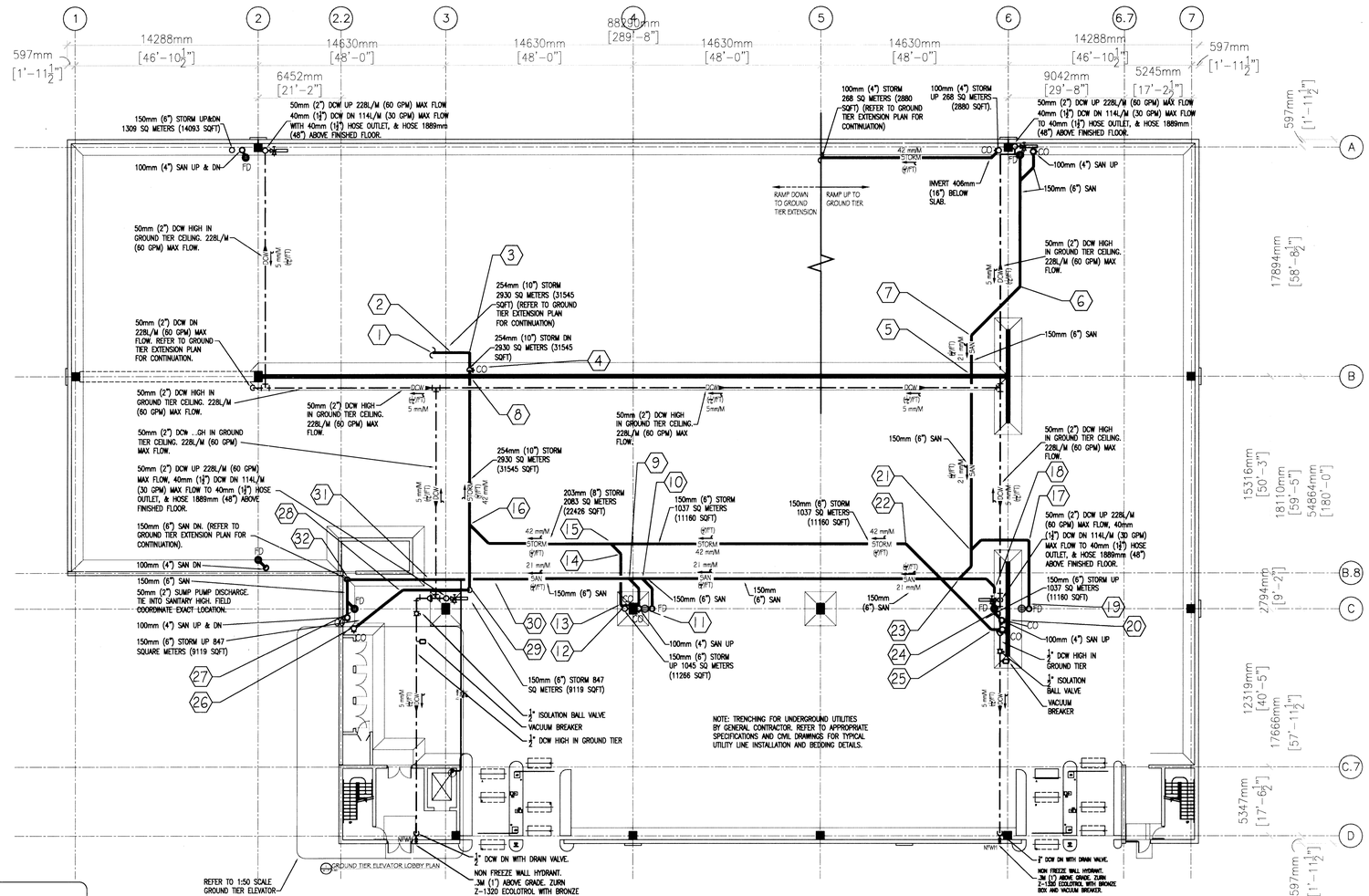
29. INVERT EL 36.2185

31. 45 SAN INVERT EL 36.74168

32. SAN DN COMB WYE
INVERT EL 36.61468

30. 45 SAN INVERT EL 36.94568

RFI 67
CORING
FOR RISERS



GROUND TIER PLAN
1:200

APPR	DATE	DESCRIPTION	STAT.
	9/12	DD SUBMISSION	
	1/5/04	FINAL DESIGN RE-SUBMISSION	
	2/11/04	FINAL ELECTRONIC DESIGN SUBMISSION	
	2/16/04	REV. 0 ISSUE FOR CONSTRUCTION	
	2/16/04	PROJECT RECORD DOCUMENTS	

MORTENSON
DESIGN BUILD
FEDERAL SERVICES GROUP
700 Meadow Lane North
P.O. Box 710
Minneapolis, MN 55440
WALKER PARKING CONSULTANTS
ATKINS

SEAL
APPROVED
ACTIVITY - SATISFACTORY TO
DATE
APPROVED
FOR EFA FOR COMMANDER NAVFAC
DATE

A/E	EFD
	DESIGN
VM	DRAWN
RJK	REVIEW
	QC
RJK	CHIEF ARCH./ ENGR.
	DESIGN MANAGER
	FIRE PROTECTION
	BRANCH MANAGER
	DESIGN DIRECTOR

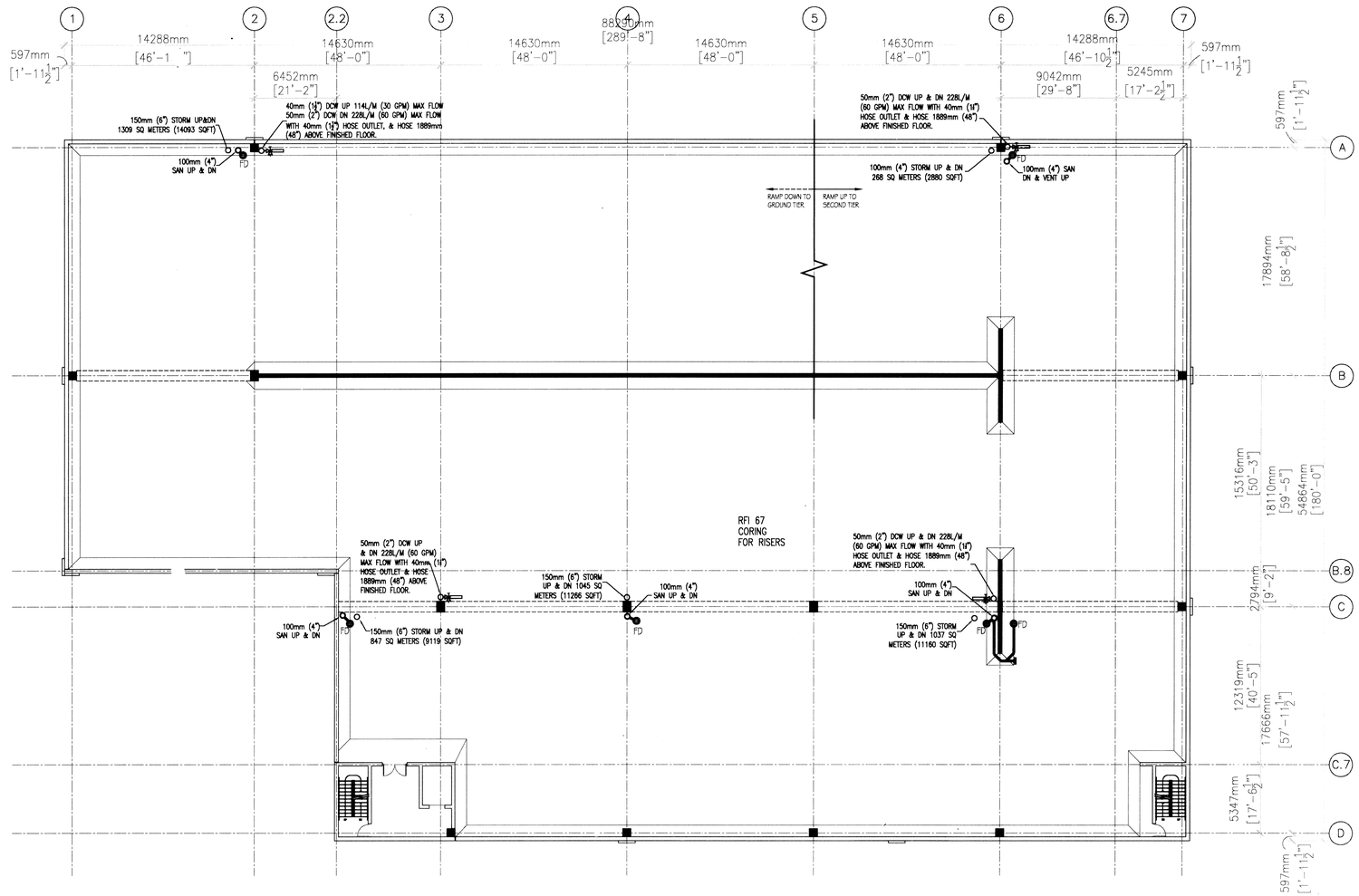
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
LESTER ENGINEERING FIELD ACTIVITY NORTHEAST PENNSYLVANIA
NAVAL FACILITIES ENGINEERING COMMAND KITTERY, MAINE
PORTSMOUTH NAVAL SHIPYARD
PARKING FACILITY
GROUND TIER MECHANICAL PLAN

CODE ID. NO. 80091	SIZE D
SCALE: AS NOTED	
EFD NO.	
STA. PROJ. NO.	
SPEC. NO.	
CONSTR. CONTR. NO.	
N62472-01-D-0077	
NAVFAC DRAWING NO.	
2221388	
SHEET 79 OF 103	

M1.2

DRAWFORM REVISION FEBRUARY 2001

376.06.080



SECOND TIER PLAN

1:200

	DATE	APPR
PROJECT RECORD DOCUMENTS	7/15/08	
REV. 0 ISSUE FOR CONSTRUCTION	2/18/04	
FINAL ELECTRONIC DESIGN SUBMISSION	2/11/04	
FINAL DESIGN RE-SUBMISSION	7/3/04	
00 SUBMISSION	9/12	
DESCRIPTION		
SYM.		

MORTENSON
DESIGN BUILD
FEDERAL SERVICES GROUP
700 Meadow Lane North
P.O. Box 710
Minneapolis, MN 55440
WALKER PARKING CONSULTANTS
ATKINS

SEAL

APPROVED

ACTIVITY – SATISFACTORY TO

DATE

APPROVED

FOR EFA FOR COMMANDER NAVFAC

DATE

A/E	EFD
	DESIGN
VM	DRAWN
RJK	REVIEW
	QC
RJK	CHIEF ARCH./ ENGR.

DESIGN MANAGER
FIRE PROTECTION
BRANCH MANAGER
DESIGN DIRECTOR

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY NORTHEAST
LESTER PENNSYLVANIA

NAVAL FACILITIES ENGINEERING COMMAND KITTERY, MAINE
PORTSMOUTH NAVAL SHIPYARD
PARKING FACILITY

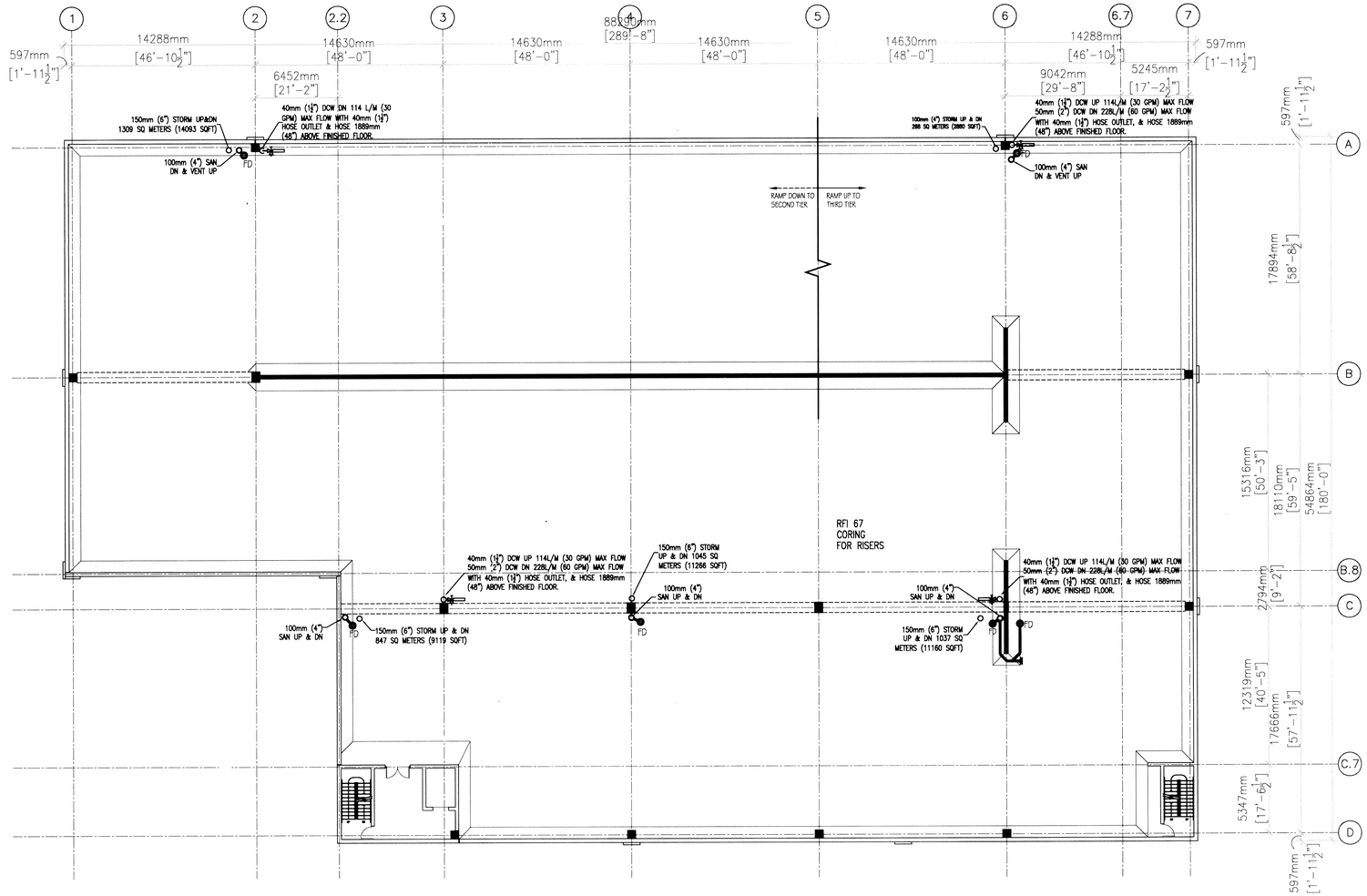
SECOND TIER MECHANICAL PLAN

CODE ID. NO. 80091	SIZE D
SCALE: AS NOTED	
EFD NO.	
STA. PROJ. NO.	
SPEC. NO.	
CONSTR. CONTR. NO.	
N62472-01-D-0077	
NAVFAC DRAWING NO.	
2221389	
SHEET 80 OF 103	

M1.3

DRAWFORM REVISION FEBRUARY 2001

376.06-081



THIRD TIER PLAN
1:200

APPR	DATE	DESCRIPTION:	SYM.
	9/12	DD SUBMISSION	
	1/5/04	FINAL DESIGN RE-SUBMISSION	
	12/11/04	FINAL ELECTRONIC DESIGN SUBMISSION	
	2/10/04	REV. 0 ISSUE FOR CONSTRUCTION	
	2/10/04	PROJECT RECORD DOCUMENTS	

MORTENSON
DESIGN BUILD
FEDERAL SERVICES GROUP
700 Meadow Lane North
P.O. Box 710
Minneapolis, MN 55440
WALKER PARKING CONSULTANTS
ATKINS

SEAL

APPROVED

ACTIVITY – SATISFACTORY TO

DATE

APPROVED

FOR EFA FOR COMMANDER NAVFAC

DATE

A/E	EFD
	DESIGN
VM	DRAWN
RJK	REVIEW
	QC
RJK	CHIEF ARCH./ ENGR.

DESIGN MANAGER
FIRE PROTECTION
BRANCH MANAGER
DESIGN DIRECTOR

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY NORTHEAST
LESTER PENNSYLVANIA

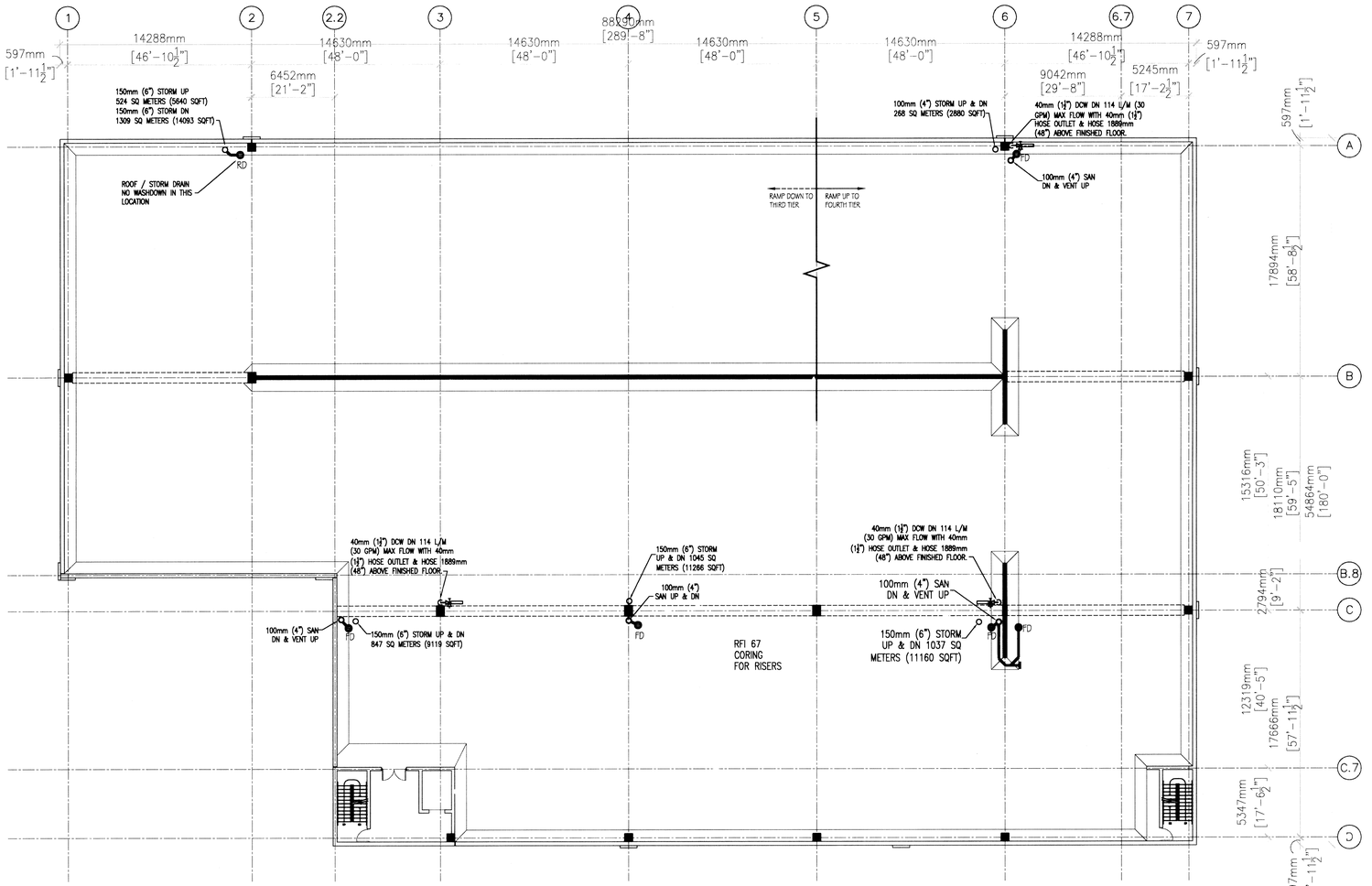
NAVAL FACILITIES ENGINEERING COMMAND KITTERY, MAINE
PORTSMOUTH NAVAL SHIPYARD
PARKING FACILITY

THIRD TIER MECHANICAL PLAN

CODE ID. NO. 80091	SIZE D
SCALE: AS NOTED	
EFD NO.	
STA. PROJ. NO.	
SPEC. NO.	
CONSTR. CONTR. NO.	
N62472-01-D-0077	
NAVFAC DRAWING NO.	
2221390	
SHEET 81 OF 103	
M1.4	

DRAWFORM REVISION FEBRUARY 2001

376-66-082



FOURTH TIER PLAN

1:200

NO.	DESCRIPTION	DATE	APPR
	PROJECT RECORD DOCUMENTS	2/10/06	
	REV. 0 ISSUE FOR CONSTRUCTION	2/10/04	
	FINAL ELECTRONIC DESIGN SUBMISSION	2/11/04	
	FINAL DESIGN RE-SUBMISSION	1/5/04	
	DD SUBMISSION	9/12	

MORTENSON
DESIGN BUILD
FEDERAL SERVICES GROUP
700 Meadow Lane North
P.O. Box 710
Minneapolis, MN 55440

WALKER PARKING CONSULTANTS

ATKINS

SEAL

APPROVED

ACTIVITY – SATISFACTORY TO

DATE

APPROVED

FOR EFA FOR COMMANDER NAVFAC

DATE

A/E	EFD
	DESIGN
VM	DRAWN
RJK	REVIEW
	QC
RJK	CHIEF ARCH./ ENGR.
	DESIGN MANAGER
	FIRE PROTECTION
	BRANCH MANAGER
	DESIGN DIRECTOR

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY NORTHEAST
LESTER PENNSYLVANIA

NAVAL FACILITIES ENGINEERING COMMAND KITTERY, MAINE
PORTSMOUTH NAVAL SHIPYARD
PARKING FACILITY

FOURTH TIER MECHANICAL PLAN

CODE ID. NO. 80091 | SIZE D

SCALE: AS NOTED

EFD NO.

STA. PROJ. NO.

SPEC. NO.

CONSTR. CONTR. NO.
N62472-01-D-0077

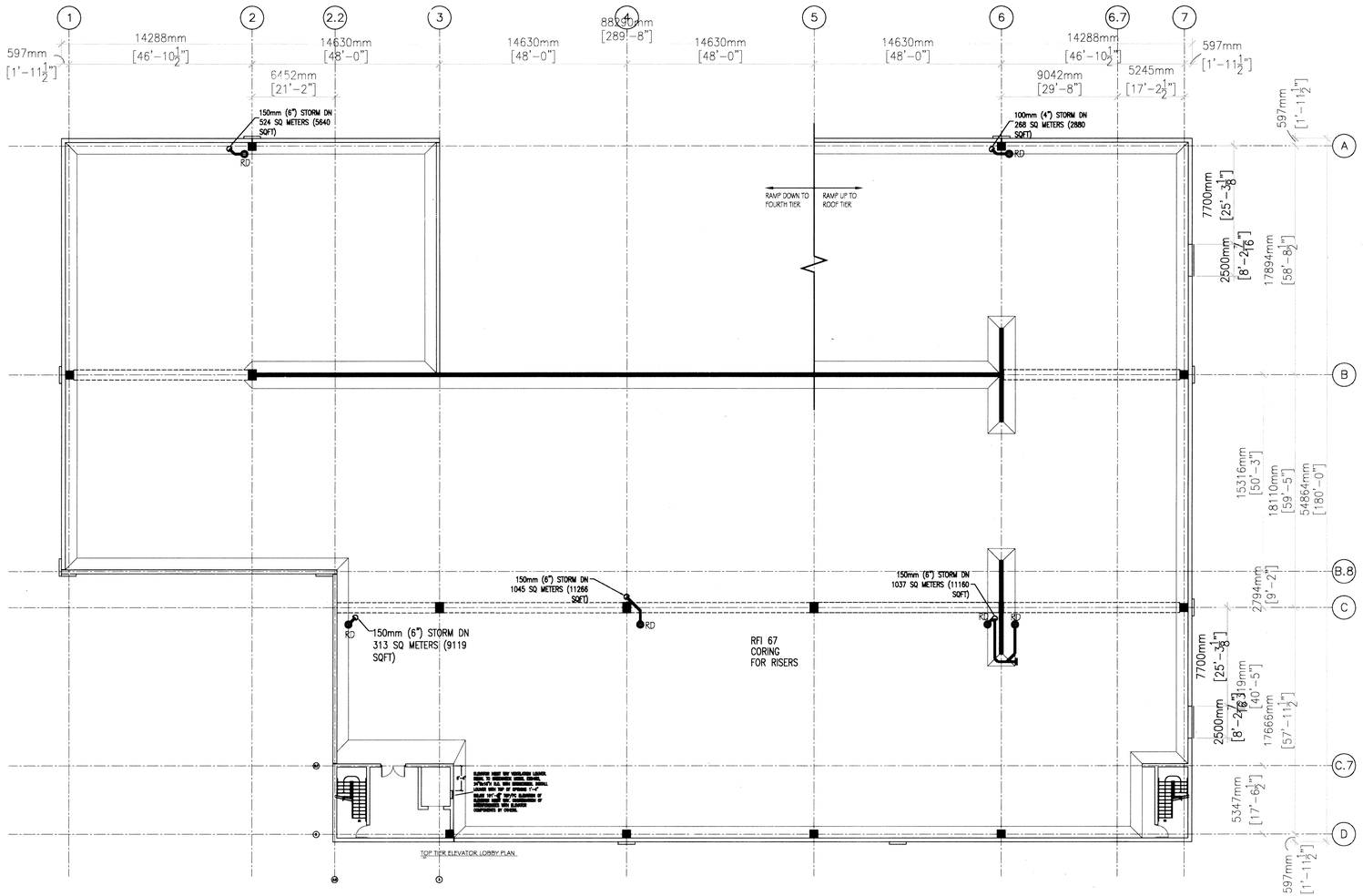
NAVFAC DRAWING NO.
2221391

SHEET 82 OF 103

M1.5

DRAWFORM REVISION FEBRUARY 2001

37C-06-083



TOP TIER PLAN
1:200

PROJECT RECORD DOCUMENTS	2/10/04	
REV. 0 ISSUE FOR CONSTRUCTION	2/19/04	
FINAL ELECTRONIC DESIGN SUBMISSION	2/11/04	
FINAL DESIGN RE-SUBMISSION	1/5/04	
DD SUBMISSION	9/12	
SYM. DESCRIPTION	DATE	APPR

MORTENSON
DESIGN BUILD
FEDERAL SERVICES GROUP
700 Meadow Lane North
P.O. Box 710
Minneapolis, MN 55440

WALKER PARKING CONSULTANTS

ATKINS

SEAL

APPROVED

ACTIVITY - SATISFACTORY TO

DATE

APPROVED

FOR EFA FOR COMMANDER NAVFAC

DATE

A/E		EFD
	DESIGN	
VM	DRAWN	
RJK	REVIEW	
	QC	
RJK	CHIEF ARCH./ ENGR.	

DESIGN MANAGER
FIRE PROTECTION
BRANCH MANAGER
DESIGN DIRECTOR

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY NORTHEAST
LESTER PENNSYLVANIA

NAVAL FACILITIES ENGINEERING COMMAND KITTERY, MAINE
PORTSMOUTH NAVAL SHIPYARD
PARKING FACILITY

TOP TIER MECHANICAL PLAN

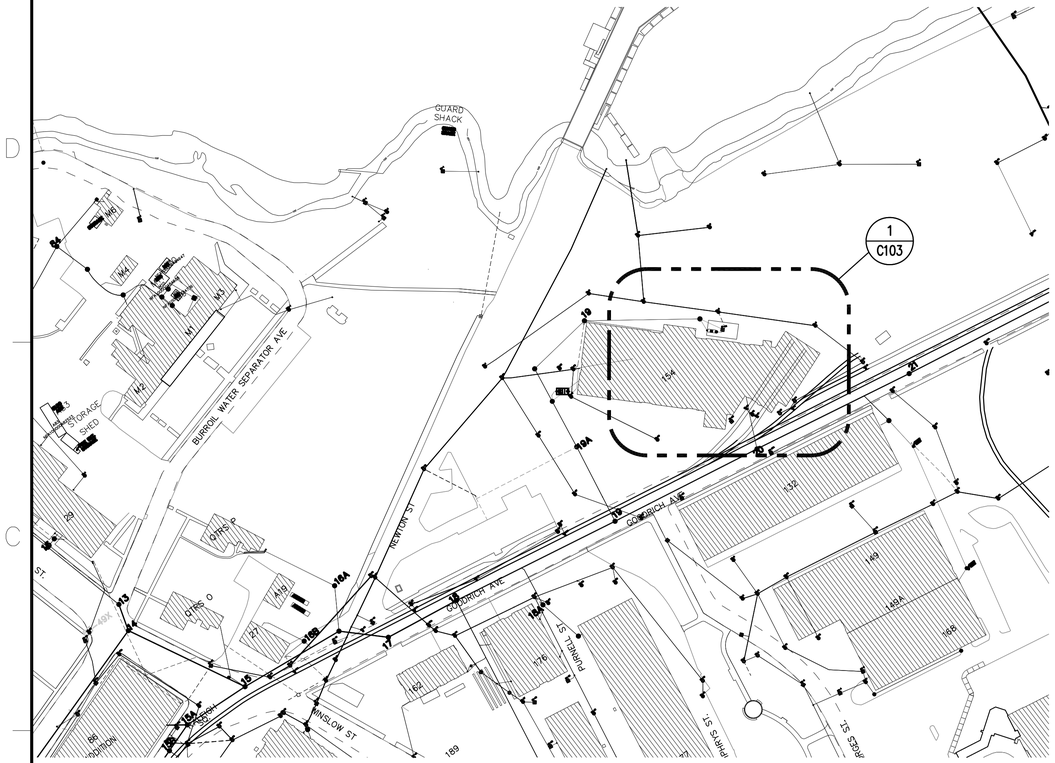
CODE ID. NO. 80091 | SIZE D
SCALE: AS NOTED
EFD NO.
STA. PROJ. NO.
SPEC. NO.
CONSTR. CONTR. NO.
N62472-01-D-0077
NAVFAC DRAWING NO.
2221392
SHEET 83 OF 103

M1.6

DRAWFORM REVISION FEBRUARY 2001

376-06-084

FILE NAME: P:\01 PRN2 FEAD\02 PRN21 PM&E\03 PRN-212 Civil\913 DATA CENTER\UTILITY SYSTEMS DATA\STORM DRAIN SYSTEM\Oil Water Separator O & MStorm Water Quality Structures.dwg LAYOUT NAME: OWS-3 BLDG 154 PLOTTED: Tuesday, February 15, 2011 - 8:15am USER: rosa.hills



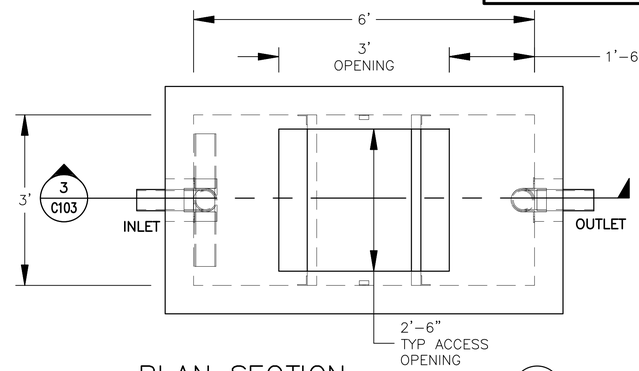
GENERAL SITE PLAN

SCALE: 1" = 100'

ENLARGED SITE PLAN

SCALE: 1" = 30'

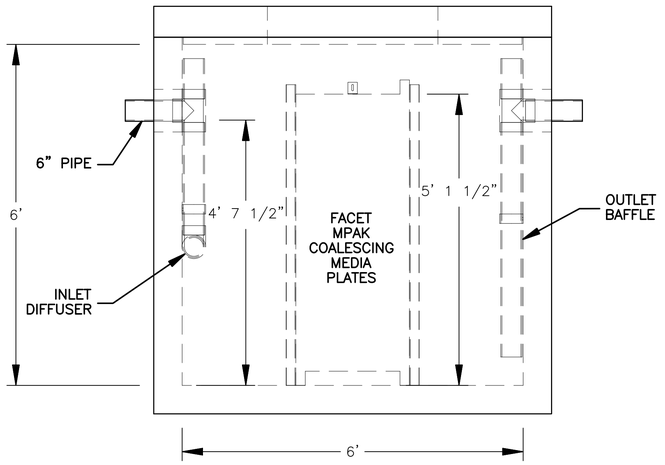
C103 (1)



PLAN SECTION

SCALE: 1/16":1'-0"

C103 (2)



SECTION THRU CHAMBER

SCALE: 1/16":1'-0"

C103 (3)

LEGEND

- STORM DRAIN LINE
- SANITARY SEWER LINE
- 4" VIT SD — ABANDONED STORM DRAIN LINE
- 4" VIT SD — ABANDONED SANITARY SEWER
- 45-01 / 45-01 — CATCH BASIN
- 10 — SEWER MANHOLE
- 1440 — ABANDONED CATCH BASIN
- #2 — ABANDONED SEWER MANHOLE

SPECIFICATIONS

SYSTEM: CONTECH VORTCLAREX COALESCING UNIT
MODEL: VCL-30
PIPE INLET SIZE: 6 INCHES
DIMENSION: 6 FEET X 3 FEET (INTERIOR)
SUMP: 4' 7 ½"
LIQUID CAPACITY: 625 U.S. GALLONS
INSTALLATION DATE: DECEMBER 2007

BASIC OPERATIONS

FLOW ENTERS THE VORTCLAREX SYSTEM VIA A NON-CLOG DIFFUSER. THE INFLUENT PASSES OVER A SOLIDS BAFFLE WALL WHERE SETTLEABLE SOLIDS DROP OUT. THE FLOW THEN PASSES THROUGH THE CALCIUM FILLED POLYPROPYLENE COALESCING MEDIA. OIL DROPLETS ARE THEN ABLE TO COMBINE, FORMING LARGER DROPLETS THAT RISE THROUGH THE MEDIA TO THE SURFACE AND RELEASED NEAR THE WATER SURFACE. THE OIL IS TRAPPED BEHIND THE OUTLET BAFFLE. VORTCLAREX SYSTEM WILL PROVIDE AN EFFLUENT QUALITY OF 10 PART PER MILLION.

MAINTENANCE REQUIREMENTS

MAINTENANCE FREQUENCY: ANNUALLY

PERFORM THE FOLLOWING INSPECTION AND MAINTENANCE TASKS:

A. <u>INLET AREA:</u>

1. REMOVE SEPARATOR COVER.
2. MEASURE AND RECORD THE DEPTH OF THE SOLIDS. USE THIS MEASUREMENT AS THE BASIS FOR THE NEXT SOLIDS INSPECTION AND CLEAN OUT. NOTIFY PWD-ME CONTRACTING OFFICER IF SEDIMENT DEPTH EXCEEDS 6 INCHES.
3. REMOVE LIQUID (OIL & WATER) AND TRANSPORT TO PNS HAZARDOUS WASTE FACILITY (BUILDING 357).
4. CLEAN THE VAULT BY FLUSHING WITH A HOSE AND EXAMINE THE PLATES FOR BLOCKAGE.
5. REMOVE ACCUMULATED SEDIMENT WITH A VACUUM TRUCK OR POSITIVE DISPLACEMENT PUMP SUCH AS AN AIR OPERATED DIAPHRAGM PUMP. NOTE: THE SEDIMENT WILL CONTAIN HYDROCARBONS.
6. TRANSPORT WATER, SEDIMENTS, AND SLUDGE TO BUILDING 357.

B. <u>COALESCING MEDIA:</u>
THE VORTCLAREX COALESCING MEDIA CAN BE CLEANED EITHER WHILE IN THE SYSTEM OR AFTER REMOVAL FROM THE SYSTEM.

CLEANING IN PLACE:

1. USING A WATER HOSE, DIRECT SPRAY (10-15 PSI) INTO PLATE SPACING ON TOP OF THE PLATE PACKS.
2. USING A VACUUM SUCTION HOSE, REMOVE ANY SEDIMENT OR OILY CONTAMINANTS THAT ARE FLUSHED OUT OF THE COALESCING MEDIA AND TRANSPORT TO BUILDING 357.

CLEANING AFTER REMOVAL:

1. PUMP ALL WATER AND OILY CONTAMINANTS FROM THE VORTCLAREX SYSTEM.
2. REMOVE COALESCING MEDIA PLATES.
3. PLACE MEDIA ON AN IMPERVIOUS SURFACE LINED WITH 6 MIL PLASTIC SHEETING SURROUNDED BY A BERM TO PREVENT DISCHARGE OF CONTAMINATED WATER INTO SURFACE OR GROUNDWATER.
4. FLUSH MEDIA WITH WATER HOSE (10-15 PSI) TO REMOVE HEAVY OIL COATING OR SLUDGE FROM BETWEEN THE CORRUGATED PLATES.
5. TRANSPORT WATER, SEDIMENTS, AND SLUDGE TO BUILDING 357.
6. EXAMINE TANK INTERIOR FOR DAMAGE AND REPAIR ANY DAMAGE TO INTERNAL COATING.
7. RE-INSTALL PLATE PACKS ONE AT A TIME, ON ROW IN LENGHT AND ONE ROW IN WIDTH, BEING SURE THE OTUER PACKS ARE ADDEQUATELY SEALED AGAINST THE VAULT WALL IN THE SAME MANNER AS BEFORE THEY WERE REMOVED.
8. AFTER ALL PACKS ARE INSTALLED, CHECK TO ENSURE THAT THE PACKS ARE EVEN AND TOUCHING, FORMING ONE (OR TWO IF PROVIDED) ROWS OF PACKS ACROSS THE CHANNEL AND THAT THEY ARE SECURELY BUTTED AGAINS THE BACKING ANGLE AT THE BOTTOM OF THE SEPARATOR. INSTALL THE UPPER CHANNEL TO ENSURE THE PLATES ARE SECURED IN PLACE.
9. SECURE HOLD DOWN CHANNEL ENSURING IT IS SNUGLY IN PLACE.
10. CHECK TO SEE THAT THERE IS NO POSSIBILITY OF FLUID BYPASSING AROUND THE PLATES AND THE SIDE WALL OF THE VAULT, AS WELL AS BETWEEN PLATE PACK ASSEMBLIES, SINCE THIS COULD ADVERSELY AFFECT THE EFFICIENCY OF THE SEPARATOR.

C. <u>OTHER REQUIREMENTS:</u>

1. CONTRACTOR SHALL CONFIRM AND COORDINATE DISPOSAL REQUIREMENTS WITH PWD-ME CONTRACTING OFFICER NOT LESS THAN 96 HOURS PRIOR TO TRANSPORT TO BUILDING 357.
2. REFILL THE UNIT WITH CLEAN WATER.

GRAPHIC SCALE

1/16" = 1' — 16 8 0 16 32 48 — scale — feet

1" = 30' — 30 15 0 30 60 90 — scale — feet

1" = 100' — 100 50 0 100 200 300 — scale — feet

NO.	DESCRIPTION	DATE	APPR
0	INITIAL SUBMISSION	2/11/2011	JFH

NAVFAC

PWD-MAINE IN HOUSE DESIGN

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	DRW	CHK
PM/DM	JFH/RHR	
BRANCH MANAGER	JEFF HOYT	
CHIEF ENG/ARCH	AMIN BAHROUR	
FIRE PROTECTION	N/A	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE

NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH

PORTSMOUTH NAVAL SHIPYARD
KITTERY, ME

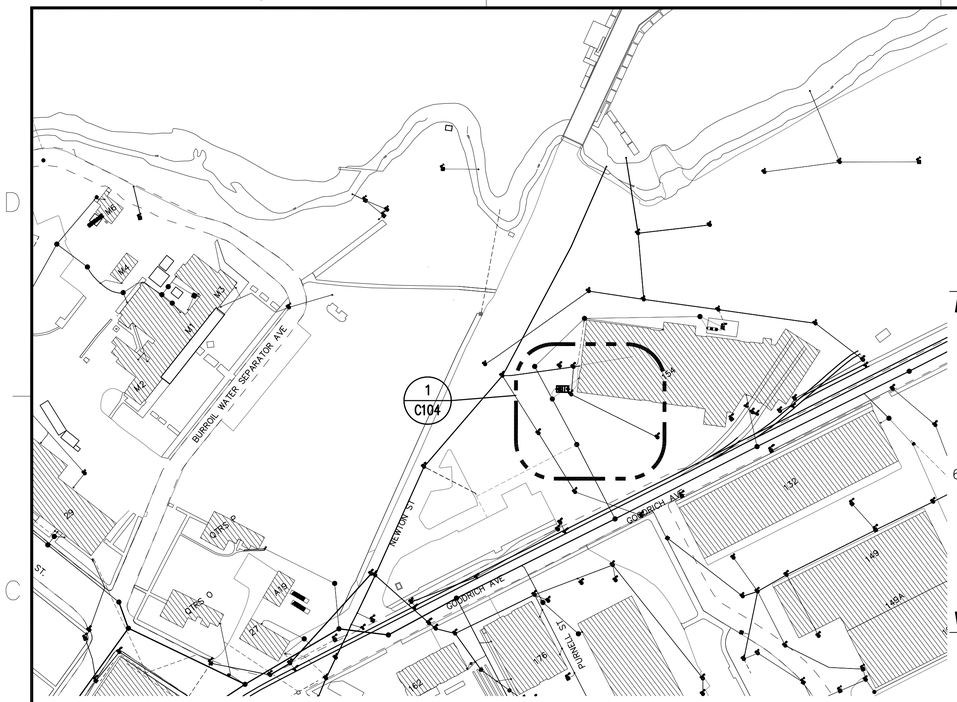
OIL / WATER SEPARATOR OPERATION AND MAINTENANCE DRAWINGS

OWS-3 NEAR BUILDING 154
DETAILS AND NOTES SHEET

MAXIMO No.: N/A
EPROJECT NO.: N/A
CONSTR. CONTR. NO.: N40085-10-R-9445
NAVFAC DRAWING NO.: N/A
SHEET 4 OF 8

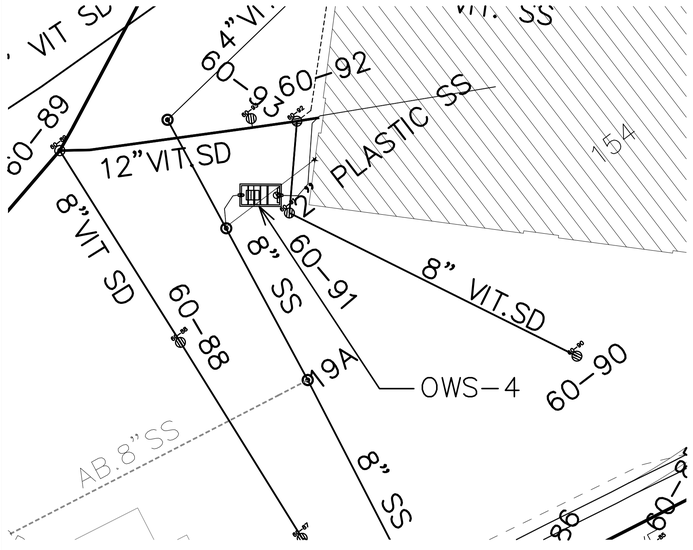
C103 | MC-11-1208

DRAWFORM REVISION: 10 MARCH 2009



GENERAL SITE PLAN

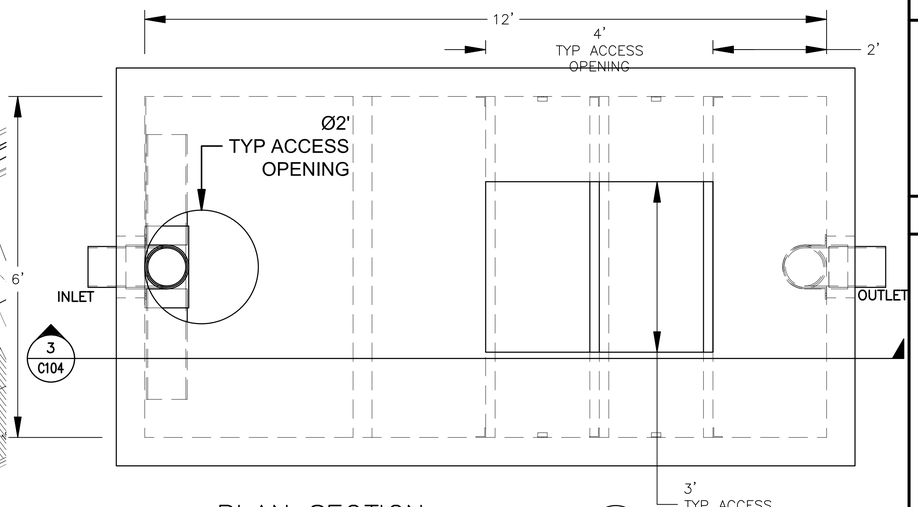
SCALE: 1" = 100'



ENLARGED SITE PLAN

SCALE: 1" = 30'

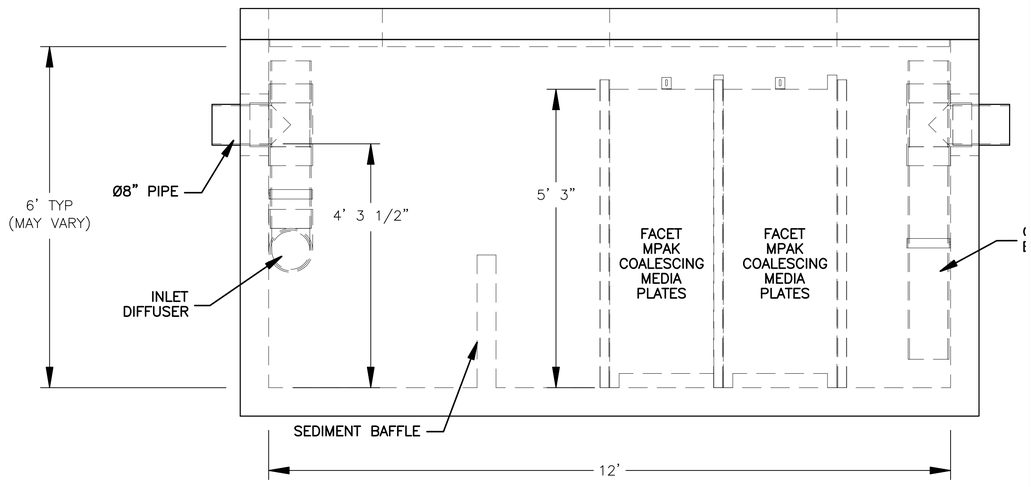
C104 (1)



PLAN SECTION

SCALE: 1/16":1'-0"

C104 (2)



SECTION THRU CHAMBER

SCALE: 1/16":1'-0"

C104 (3)

GRAPHIC SCALE

1/16" = 1' 16 8 0 16 32 48 scale feet

1" = 30' 30 15 0 30 60 90 scale feet

1" = 100' 100 50 0 100 200 300 scale feet

LEGEND

- STORM DRAIN LINE
- SANITARY SEWER LINE
- 4" VIT SD — ABANDONED STORM DRAIN LINE
- 4" VIT SD — ABANDONED SANITARY SEWER
- 45-01 45-01 CATCH BASIN
- SEWER MANHOLE
- 1440 ABANDONED CATCH BASIN
- #2 ABANDONED SEWER MANHOLE

SPECIFICATIONS

SYSTEM: CONTECH VORTCLAREX
MODEL: VCL-60-2
PIPE INLET SIZE: 10 INCHES
DIMENSIONS: 12 FEET X 6 FEET (INTERIOR)
SUMP: 4' 3 ½"
LIQUID CAPACITY: 2,300 US GALLONS
INSTALLATION DATE: DECEMBER 2007

BASIC OPERATIONS

FLOW ENTERS THE VORTCLAREX SYSTEM VIA A NON-CLOG DIFFUSER. THE INFLUENT PASSES OVER A SOLIDS BAFFLE WALL WHERE SETTLEABLE SOLIDS DROP OUT. THE FLOW THEN PASSES THROUGH THE CALCIUM FILLED POLYPROPYLENE COALESCING MEDIA. OIL DROPLETS ARE THEN ABLE TO COMBINE, FORMING LARGER DROPLETS THAT RISE THROUGH THE MEDIA TO THE SURFACE AND RELEASED NEAR THE WATER SURFACE. THE OIL IS TRAPPED BEHIND THE OUTLET BAFFLE. VORTCLAREX SYSTEM WILL PROVIDE AN EFFLUENT QUALITY OF 10 PART PER MILLION.

MAINTENANCE REQUIREMENTS

MAINTENANCE FREQQUENCY: ANNUALLY

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2. MEASURE AND RECORD THE DEPTH OF THE SOLIDS. USE THIS MEASUREMENT AS THE BASIS FOR THE NEXT SOLIDS INSPECTION AND CLEAN OUT. NOTIFY PWD-ME CONTRACTING OFFICER IF SEDIMENT DEPTH EXCEEDS 6 INCHES.
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4. CLEAN THE VAULT BY FLUSHING WITH A HOSE AND EXAMINE THE PLATES FOR BLOCKAGE.
5. REMOVE ACCUMULATED SEDIMENT WITH A VACUUM TRUCK OR POSITIVE DISPLACEMENT PUMP SUCH AS AN AIR OPERATED DIAPHRAGM PUMP. NOTE: THE SEDIMENT WILL CONTAIN HYDROCARBONS.
6. TRANSPORT WATER, SEDIMENTS, AND SLUDGE TO BUILDING 357.

B. <u>COALESCING MEDIA:</u>
THE VORTCLAREX COALESCING MEDIA CAN BE CLEANED EITHER WHILE IN THE SYSTEM OR AFTER REMOVAL FROM THE SYSTEM.

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CLEANING AFTER REMOVAL:

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C. <u>OTHER REQUIREMENTS:</u>

1. CONTRACTOR SHALL CONFIRM AND COORDINATE DISPOSAL REQUIREMENTS WITH PWD-ME CONTRACTING OFFICER NOT LESS THAN 96 HOURS PRIOR TO TRANSPORT TO BUILDING 357.
2. REFILL THE UNIT WITH CLEAN WATER.

0	INITIAL SUBMISSION	2/11/2011	JFH
SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

PWD-MAINE
IN HOUSE DESIGN INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	DRW	CHK
PM/DM	JFH/RHR	
BRANCH MANAGER	JEFF HOYT	
CHIEF ENG/ARCH	AMIN BAHROUR	
FIRE PROTECTION	N/A	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE

NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH

PORTSMOUTH NAVAL SHIPYARD — KITTERY, ME

OIL / WATER SEPARATOR OPERATION AND MAINTENANCE DRAWINGS

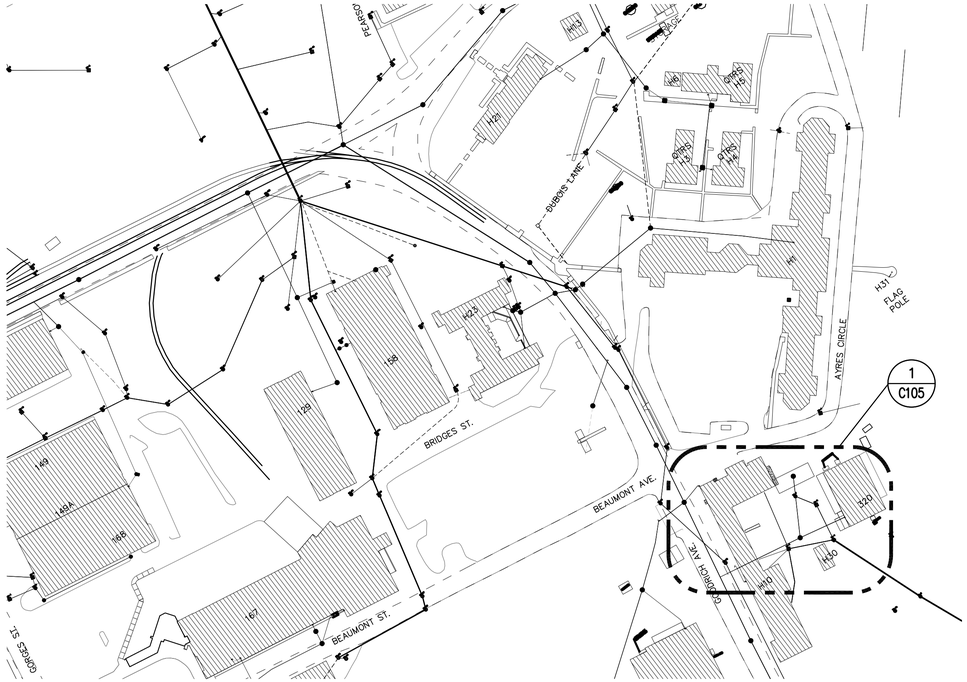
OWS-4 NEAR BUILDING 154
DETAILS AND NOTES SHEET

MAXIMO No.: N/A
EPROJECT NO.: N/A
CONSTR. CONTR. NO.: N40085-10-R-9445
NAVFAC DRAWING NO.: N/A
SHEET 5 OF 8

C104 | MC-11-1209

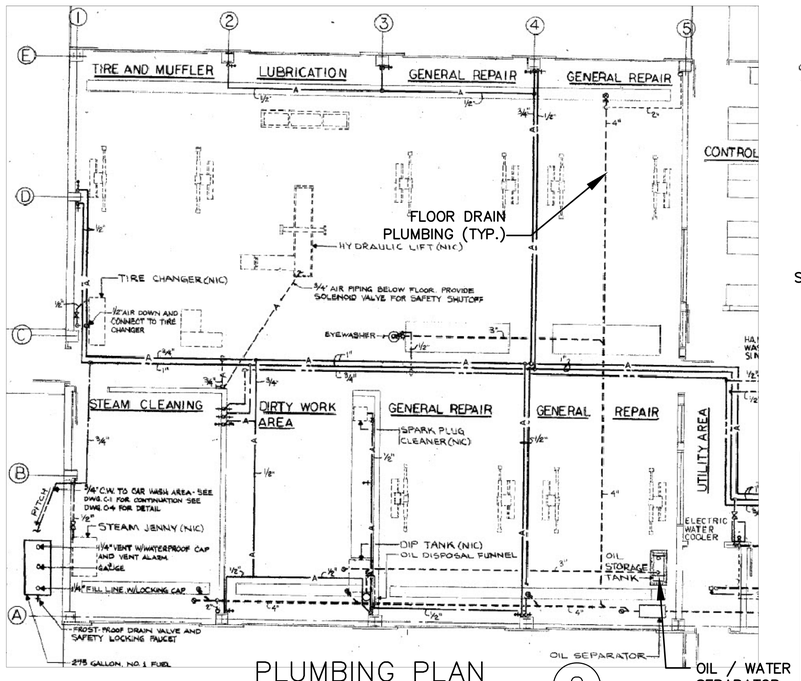
DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: P:\01 PRN2 FEAD\02 PRN21 PM&E\03 PRN-212 Civil\913 DATA CENTER\UTILITY SYSTEMS DATA\STORM DRAIN SYSTEM\Oil Water Separator 0 & MStorm Water Quality Structures.dwg LAYOUT NAME: OWS-4 BLDG 154 PLOTTED: Tuesday, February 15, 2011 - 8:16am USER: rosa.hills



GENERAL SITE PLAN

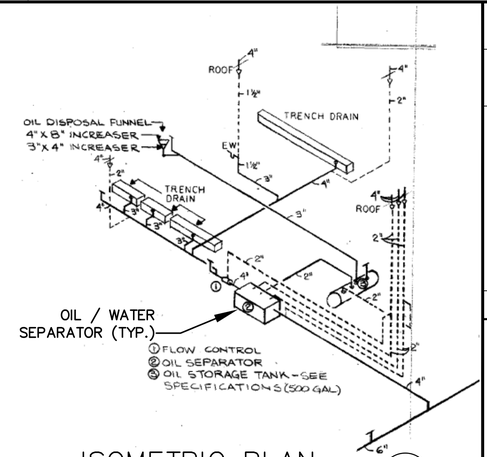
SCALE: 1" = 100'



PLUMBING PLAN

NOT TO SCALE

C105 2



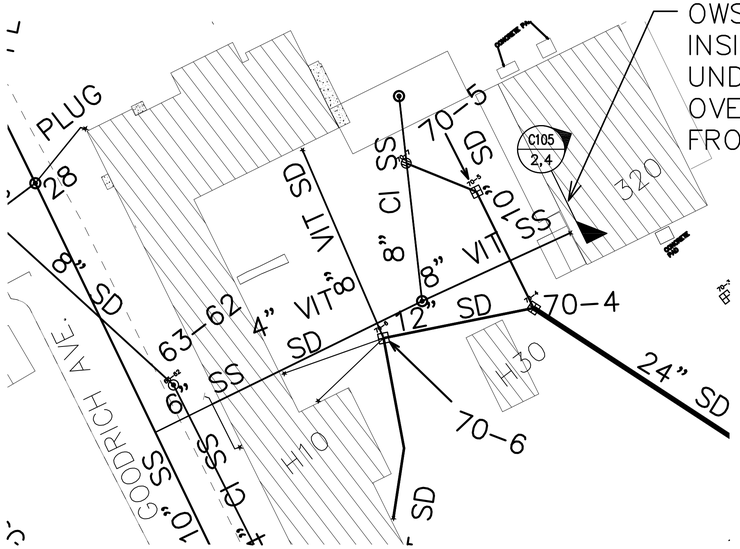
ISOMETRIC PLAN

NOT TO SCALE

C105 3

LEGEND

	STORM DRAIN LINE
	SANITARY SEWER LINE
4" VIT SD	ABANDONED STORM DRAIN LINE
4" VIT SD	ABANDONED SANITARY SEWER
45-01 45-01	CATCH BASIN
19	SEWER MANHOLE
1440	ABANDONED CATCH BASIN
#2	ABANDONED SEWER MANHOLE

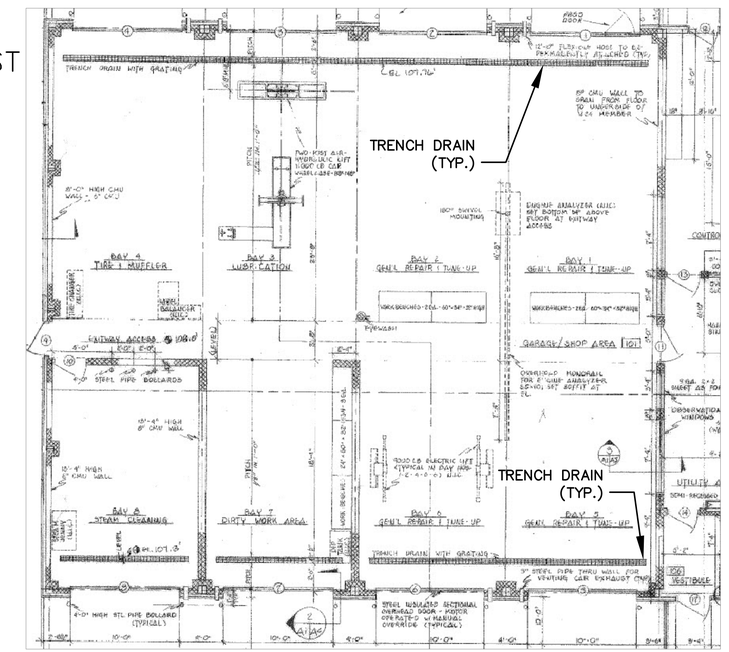


OWS-5 LOCATED INSIDE BUILDING UNDERNEATH FIRST OVERHEAD DOOR FROM THE RIGHT

ENLARGED SITE PLAN

SCALE: 1" = 30'

C105 1



FLOOR PLAN

NOT TO SCALE

C105 4

SPECIFICATIONS

SYSTEM: OIL WATER SEPARATOR
CAPACITY: 210 US GALLONS WITH OIL DRAW-OFF
CONTENTS: ¼" STEEL BOX
REMOVABLE FILTER SCREEN
NON-REMOVABLE SEPARATOR SCREEN
HEAVY DUTY ⅜" NON-SKID TREAD PLATE COVER WITH STAINLESS STEEL BOLTS AND LEAK PROOF GASKET
EPOXY COATING INSIDE AND OUTSIDE
INSTALLATION DATE: JANUARY 1981

MAINTENANCE REQUIREMENTS

YEARLY INSPECTIONS AND CLEANING OF THE OIL WATER SEPARATOR STORAGE COMPARTMENT SHALL BE COMPLETED AS FOLLOWS:

1. MEASURE AND RECORD THE DEPTH OF OIL.
2. MEASURE AND RECORD THE DEPTH OF THE SEDIMENT.
3. REMOVE LIQUID (WATER & OIL) AND TRANSPORT TO PNS HAZARDOUS WASTE FACILITY (BLDG 357).
4. WASH DOWN THE INTERIOR WALLS OF THE UNIT AND REMOVE SEDIMENT/SLUDGE FROM THE BOTTOM OF THE UNIT AND TRANSPORT TO BLDG 357.
5. CONTRACTOR SHALL CONFIRM AND COORDINATE DISPOSAL REQUIREMENTS WITH PWD-ME CONTRACTING OFFICER NOT LESS THAN 96 HOURS PRIOR TO TRANSPORT TO BLDG 357.
6. INSPECT THE UNIT. DOCUMENT FINDINGS AND REPORT DEFICIENCIES. INCLUDE REPRESENTATIVE PHOTOGRAPHS WITH INSPECTION REPORT.
7. WORK SHALL INCLUDE CLEANING AND FLUSHING THE FLOOR TRENCHES AND ASSOCIATED PLUMBING FROM THE TRENCHES TO THE O.W.S. UNIT.
8. REFILL THE UNIT WITH CLEAN WATER.

GRAPHIC SCALE

1" = 100' — 100 50 0 100 200 300 — scale — feet

1" = 30' — 30 15 0 30 60 90 — scale — feet

NO	DESCRIPTION	DATE	APPR
0	INITIAL SUBMISSION	2/11/2011	JFH

NAVFAC

SEAL

PWD-MAINE IN HOUSE DESIGN

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	DRW	CHK

PM/DM JFH/RHR
BRANCH MANAGER JEFF HOYT
CHIEF ENG/ARCH AMIN BAHROUR
FIRE PROTECTION N/A

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, ME

OIL / WATER SEPARATOR OPERATION AND MAINTENANCE DRAWINGS

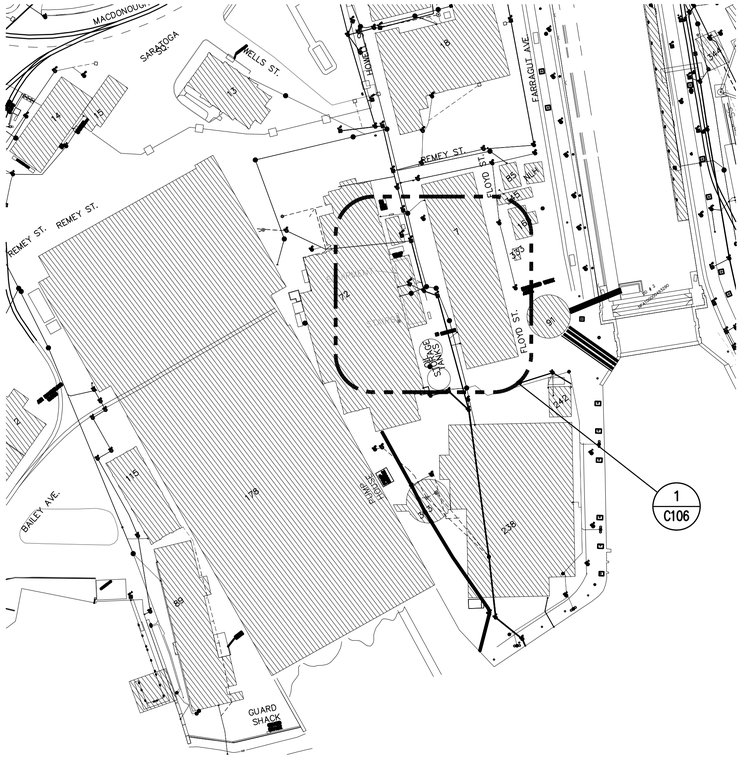
OWS-5 IN BUILDING 320
DETAILS AND NOTES SHEET

MAXIMO No.: N/A
EPROJECT NO.: N/A
CONSTR. CONTR. NO. N40085-10-R-9445
NAVFAC DRAWING NO. N/A
SHEET 6 OF 8

C105 | MC-11-1210

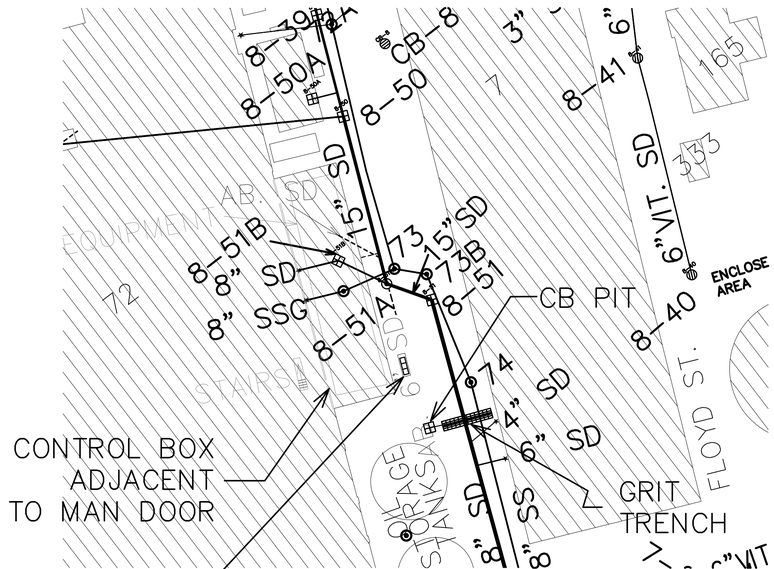
DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: P:\01 PRN2 FEAD\02 PRN21 PMAE\03 PRN-212 Civil\913 DATA CENTER\UTILITY SYSTEMS DATA\STORM DRAIN SYSTEM\Oil Water Separator O & MStorm Water Quality Structures.dwg LAYOUT NAME: OWS-5 BLDG 320 PLOTTED: Tuesday, February 15, 2011 - 8:17am USER: rosa.hills



GENERAL SITE PLAN

SCALE: 1" = 100'



ENLARGED SITE PLAN

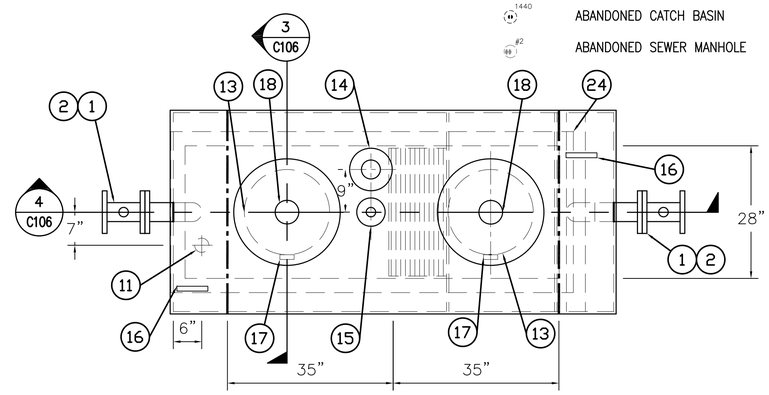
SCALE: 1" = 30'

C106 1

1. 150# R.F.S.O. FLANGE
2. ISOLATION SPOOL PIECE W/ INSULATION KIT & 2" NPT (VENT)
3. VELOCITY HEAD DIFFUSION BAFFLE
4. WEAR PLATE
5. SEDIMENT CHAMBER
6. UNDERFLOW BAFFLE (REMOVABLE)
7. SLUDGE BAFFLE
8. STRIKER PLATES
9. PARALLEL CORRUGATED PLATE COALESCER (GALVANIZED)
10. OIL/WATER SEPARATOR CHAMBER
11. 3"øFTG. W/ 3"øX2"ø NYLON BUSHING FTG. FOR LEAK DETECTION
12. OUTLET DOWNCOMER
13. 18"ø MANWAY WITH BOLT-ON EXTENSION SHIPPED LOOSE
14. 4"ø 150 # R.F.S.O. FLANGE W/ ISOLATION SPOOL FTG.FOR OIL PUMPOUT WITH INTERNAL PIPE INSTALLED & RISER PIPE SHIPPED LOOSE
15. 2"ø 150 # R.F.S.O. FLANGE W/ ISOLATION SPOOL FTG. FOR LEVEL SENSOR WITH RISER PIPE SHIPPED LOOSE
16. LIFTING LUG
17. 3"øFTG. W/ 3"øX2"ø NYLON BUSHING FTG. FOR VENT TYP. BOTH MANWAYS
18. 5"øFTG. W/ 5"øX4"ø NYLON BUSHING FTG. FOR GAUGE WITH PLUG- TYP. BOTH MANWAYS
19. 42"ø POLYESTER HOLD DOWN STRAPS W/GALVANIZED TB WIRE ROPE & CLAMPS
20. NEMA 4X HT-ALD ALARM PANEL/CONTROL BOX (1PH-60HZ-120V) (LOCATED IN BLUDING 72 AS SHOWN)
21. TWO FLOAT INTERFACE LEVEL SENSOR
22. HTLP 1 1/2 - 1 1/2" LIQUID LEAK SENSOR
23. HTSC-2A PVC CAP FOR LEAK DETECTION.
24. APPROX. 3 FEET OVER GRADE MAN WAY 3485R/3

LEGEND

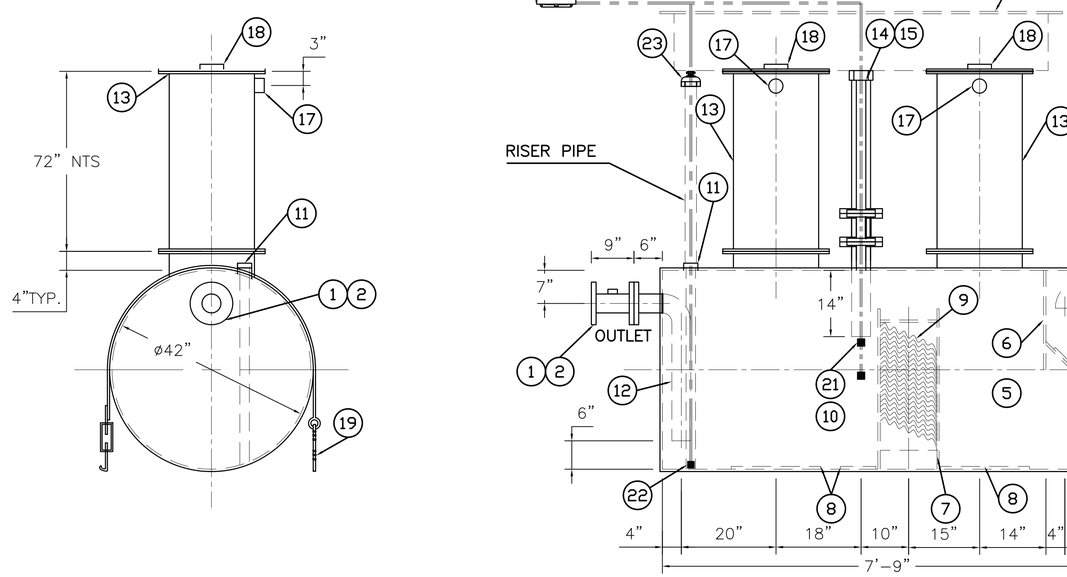
- STORM DRAIN LINE
- SANITARY SEWER LINE
- 4" VIT SD — ABANDONED STORM DRAIN LINE
- 4" VIT SD — ABANDONED SANITARY SEWER
- CATCH BASIN
- SEWER MANHOLE
- 1440 — ABANDONED CATCH BASIN
- 42 — ABANDONED SEWER MANHOLE



PLAN SECTION

SCALE: 1/16":1'-0"

C106 2



END VIEW

SCALE: 1/16":1'-0"

C106 3

SECTION THRU CHAMBER

SCALE: 1/16":1'-0"

C106 4

GRAPHIC SCALE

1/16" = 1' 16 8 0 16 32 48 scale feet

1" = 30' 30 15 0 30 60 90 scale feet

1" = 100' 100 50 0 100 200 300 scale feet

0	INITIAL SUBMISSION	2/11/2011	JFH
SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

PWD-MAINE IN HOUSE DESIGN INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	DRW	CHK
PM/DM	JFH/RHR	
BRANCH MANAGER	JEFF HOYT	
CHIEF ENG/ARCH	DWG	
FIRE PROTECTION	AMIN BAHROUR	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE

NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH

PORTSMOUTH NAVAL SHIPYARD
KITTERY, ME

OIL / WATER SEPARATOR OPERATION AND MAINTENANCE DRAWINGS

OWS-6 NEAR BUILDING 72
DETAILS SHEET

MAXIMO No.:	N/A
EPROJECT NO.:	N/A
CONSTR. CONTR. NO.	N40085-10-R-9445
NAVFAC DRAWING NO.	N/A
SHEET	7 OF 8
C106	MC-11-1211

DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: P:\01 PRN2 FEAD\02 PRN21 PM&E\03 PRN-212 Civil\913 DATA CENTER\UTILITY SYSTEMS DATA\STORM DRAIN SYSTEM\Oil Water Separator O & MStorm Water Quality Structures.dwg LAYOUT NAME: OWS-6 BLDG 72 PLOTTED: Tuesday, February 15, 2011 - 8:18am USER: rosa.hills

SPECIFICATIONS

SYSTEM: HIGHLAND TANK OIL WATER SEPARATOR
MODEL: HT 550 ACT-100U PROTECTED OIL WATER SEPARATOR
TYPE: DOUBLE WALL TYPE I 360
MATERIAL: MILD CARBON STEEL
DIAMETER: 3'6"
LENGTH: 7'9"
CAPACITY: 550 US GALLONS
INSTALLATION DATE: JUNE 2003

BASIC OPERATIONS

THE HIGHLAND TANK OWS IS DESIGNED SPECIFICALLY FOR THE REMOVAL OF FREE FLOATING OIL, RAW PETROLEUM HYDROCARBONS, GREASE, AND SETTLEABLE OILY COATED SOLIDS FROM PETROLEUM AND INDUSTRIAL WASTE WATER. THE OWS INTERCEPTS AND COLLECTS THESE POLLUTANTS DIRECTLY FROM THE FACILITY'S WASTE WATER DRAINAGE SYSTEM AND PREVENTS THEIR DISCHARGE INTO THE ENVIRONMENT.

FOR PROPER OPERATION, THE OWS MUST BE FILLED WITH WATER AT ALL TIMES.

THE OWS IS A STATIONARY, WASTEWATER TREATMENT TANK, FILLED WITH WATER. INTERNAL BAFFLES AND COALESCERS ACCELERATE THE OIL/WATER SEPARATION PROCESS. WASTE ACCUMULATES WITHIN THE SEPARATOR WHILE EFFLUENT IS DISCHARGED BY GRAVITY.

DURING OPERATION, THE WASTEWATER ENTERS THE TOP OF THE OWS THROUGH THE INLET NOZZLE AND IS DIRECTED OVER THE VELOCITY HEAD DIFFUSION BAFFLE, A HEAVY METAL PLATE, INCLINED AT A 45? ANGLE. THE VELOCITY HEAD DIFFUSION BAFFLE SERVES FOUR BASIC FUNCTIONS:

1. DISSIPATES THE VELOCITY OF THE INCOMING WATER, THEREBY IMPROVING THE OVERALL HYDRAULIC CHARACTERISTICS OF THE SEPARATOR.
2. DIRECTS THE FLOW DOWNWARD AND OUTWARD MAXIMIZING THE USE OF THE SEPARATOR VOLUME.
3. REDUCES FLOW TURBULENCE AND DISTRIBUTES THE FLOW EVENLY OVER THE SEPARATOR'S CROSS-SECTIONAL AREA.
4. ISOLATES THE INLET TURBULENCE FROM THE REST OF THE SEPARATOR.

IN THE SEDIMENT CHAMBER, HEAVY SOLIDS SETTLE OUT AND ARE COLLECTED BEHIND THE SLUDGE BAFFLE. CONCENTRATED OIL SLUGS RISE IMMEDIATELY TO THE SURFACE. AS THE OILY WATER PASSES THROUGH THE PARALLEL CORRUGATED PLATE COALESCER (AN INCLINED ARRANGEMENT OF PARALLEL CORRUGATED PLATES), THE OIL RISES AND COALESCES INTO SHEETS ON THE UNDERSIDE OF EACH PLATE. THE OIL THEN CREEPS UP THE PLATE SURFACE AND BREAKS LOOSE AT THE TOP IN THE FORM OF LARGE GLOBULES. THESE GLOBULES THEN RISE RAPIDLY TO THE SURFACE OF THE SEPARATION CHAMBER, WHERE THE SEPARATED OIL ACCUMULATES.

THE EFFICIENCY OF OIL/WATER SEPARATION IS REMARKABLY IMPROVED BY INCREASING THE EFFECTIVE SEPARATION SURFACE AREA THROUGH THE USE OF MULTIPLE, STACKED PARALLEL CORRUGATED PLATES. THE MAXIMUM DISTANCE THAT AN OIL PARTICLE HAS TO RISE FOR EFFECTIVE REMOVAL IS THE DISTANCE BETWEEN THE CORRUGATED PLATES. THE CORRUGATED PLATES ARE INCLINED AT AN UPWARD ANGLE AND SPACED 3/4" TO 3" APART (DEPENDING ON THE APPLICATION) TO PREVENT FOULING BY DEBRIS AND GUMMY SOLIDS. EFFLUENT FLOWS DOWNWARD TO THE OUTLET DOWNCOMER, WHERE IT IS DISCHARGED BY GRAVITY DISPLACEMENT.

FREE-FLOATING OILS AND GREASY SOLIDS ACCUMULATE UNTIL THEY ARE PUMPED OUT OF THE OWS.

MAINTENANCE REQUIREMENTS

MAINTENANCE FREQUENCY: ANNUAL

THE SEDIMENT CHAMBER AND OIL WATER SEPARATOR CHAMBER SHOULD BE INSPECTED AND CLEANED YEARLY AS FOLLOWS:

A. GENERAL REQUIREMENTS:

1. THE TANK SHALL BE FILLED WITH CLEAN WATER IMMEDIATELY FOLLOWING THE DRAINING, CLEANING, AND INSPECTIONS IN ACCORDANCE WITH "FILLING THE TANK" INSTRUCTION INCLUDED HEREIN.
2. MEASURE AND RECORD THE LOCATION OF THE OIL / WATER INTERFACE AND DEPTH OF SLUDGE/SEDIMENT.
3. BE CAREFULL NOT TO DAMAGE GASKETS WHEN REMOVING MANWAY COVERS.
4. WORK SHALL INCLUDE CLEANING AND JETTING OF THE GRIT TRENCH AND CB PIT LOCATED IN THE TRAVELED WAY AND THE TROUGH LOCATED IN THE VICINITY OF THE OIL STORAGE TANKS.
5. CONTRACTOR SHALL CONFIRM AND COORDINATE DISPOSAL REQUIREMENTS WITH PWD-ME CONTRACTING OFFICER NOT LESS THAN 96 HOURS PRIOR TO TRANSPORT TO BLDG 357.

B. MIXED OIL AND WATER REMOVAL PROCEDURES:

1. PLACE A 3" OR SMALLER SUCTION HOSE INSIDE THE OIL WATER SEPARATOR THROUGH EITHER THE 4" DIAMETER GAUGE PORT OR THROUGH THE SEDIMENT CHAMBER MANWAY. THE SUCTION HOSE NOZZLE SHOULD BE 12" OR HIGHER ABOVE THE OIL WATER SEPARATOR BOTTOM. IF NOZZLE EXTENDS CLOSER TO THE BOTTOM, SLUDGE MAY BE INADVERTENTLY REMOVED.
2. SUCTION OUT OIL WATER SEPARATOR LIQUID CONTENTS AND TRANSPORT TO PNS HAZARDOUS WASTE FACILITY (BLDG 357).

C. SLUDGE REMOVAL PROCEDURES:

1. SUCTION OUT SLUDGE AND DEBRIS. USE CAUTION TO AVOID INTERNAL COATING DAMAGE.
2. CONDUCT INITIAL CLEANING USING A STANDARD GARDEN HOSE AT NORMAL PRESSURE (40-70 PSIG), WITH OR WITHOUT A SPRAY NOZZLE,
3. LOOSEN ANY CAKED OILY SOLIDS. USE OF HOT WATER CAN BE HELPFUL.
4. DIRECT THE WATER STREAM TO THE OIL WATER SEPARATOR WALL SIDE AND BOTTOM.
5. SUCTION OUT THE RESULTANT SLURRY AND TRANSPORT TO BLDG 357..

D. SEDIMENT CHAMBER:

1. DIRECT A HIGH PRESSURE HOSE DOWNWARD TO LOOSEN ANY CAKED OILY SOLIDS ON OIL WATER SEPARATOR SIDES AND BOTTOM. NOTE: USE OF HIGH-TEMPERATURE, HIGH-PRESSURE WASHING EQUIPMENT ALONG WITH HIGHLAND CLEANER CAN BE HELPFUL IN OIL WATER SEPARATOR CLEANING. HIGHLAND CLEANER IS VERY EFFECTIVE AND IS 100% BIODEGRADABLE, NON-EMULSIFYING, AND CONTAINS NO LINEAR ACTIVATED SOLVENTS (LAS), PHOSPHATES, AMMONIA, OR ACIDS. ATTACH SPRAY NOZZLE WAND EXTENSION TO THE HIGH PRESSURE HOSE. DIRECT SPRAY DOWNWARD AND TOWARD THE VELOCITY HEAD DIFFUSION BAFFLE TO LOOSEN UP ANY CAKED OILY SOLIDS THAT MAY HAVE ACCUMULATED ON INLET HEAD. DIRECT THE SPRAY TO THE OIL WATER SEPARATOR WALL SIDES, TOP AND BOTTOM.
2. REMOVE THE SLURRY WITH THE SUCTION HOSE AND TRANSPORT TO BLDG 357.

E. OIL WATER SEPARATOR CHAMBER:

1. DISCONNECT ALL NON-VOLTAGE CARRYING SENSOR LINES TO THE OIL LEVEL SENSOR.
2. CAREFULLY REMOVE THE OIL LEVEL SENSOR. CAREFULLY CHECK THE OIL LEVEL SENSOR FLOATS. IF THE FLOATS DO NOT SLIDE EASILY ON THE STEM OR HAVE SLUDGE ON THEM, CLEAN THE OIL LEVEL SENSOR. USE A PARTS WASHER AND MINERAL SPIRITS TO REMOVE ACCUMULATED OIL, GREASE, OR SLUDGE. CHECK THE OIL LEVEL SENSOR WITH AN OHM METER TO ASSURE PROPER OPERATION. PLACE THE OIL LEVEL SENSOR IN A SAFE AREA TO PREVENT DAMAGE.
3. DIRECT A HIGH PRESSURE HOSE DOWNWARD AND AROUND TO LOOSEN CAKED OILY SOLIDS ON OIL WATER SEPARATOR SIDES, TOP AND BOTTOM. ATTACH SPRAY NOZZLE WAND EXTENSION TO THE HIGH PRESSURE HOSE. DIRECT SPRAY DOWNWARD AND TOWARD THE PARALLEL CORRUGATED PLATE COALESCER TO LOOSEN UP CAKED OILY SOLIDS THAT MAY HAVE ACCUMULATED ON TOP OF PLATES.
4. FLUSH THE PARALLEL CORRUGATED PLATE COALESCER FROM THE OUTLET SIDE TO DIRECT DEBRIS TO SEDIMENT CHAMBER. NOTE: THE COALESCER PACKS MUST BE CLEANED OF ALL SLUDGE TO OPERATE PROPERLY. DIRECT THE SPRAY TO THE OIL WATER SEPARATOR WALL SIDES, TOP AND BOTTOM. ROTATE THE NOZZLE SUFFICIENTLY AND OFTEN SO THAT ALL AREAS ARE REACHED WITH THE SPRAY.
5. TRANSPORT ACCUMULATED WASTE TO BLDG 357.

CONTINUED:

F. FILLING THE TANK:

1. OPEN THE OIL WATER SEPARATOR INLET AND OUTLET PIPE VALVES.
2. FILL THE OIL WATER SEPARATOR WITH CLEAN, FRESH WATER.
3. THE OIL WATER SEPARATOR CAN BE FILLED THROUGH THE FACILITY'S DRAIN LEADING TO THE OIL WATER SEPARATOR INLET OR THROUGH A MANWAY.
4. IF FILLING BY MANWAY, PLACE THE HOSE THROUGH THE 4" DIAMETER GAUGE PORT IN THE MANWAY COVER OR IN THE 24" DIAMETER MANWAY SO THAT HOSE OUTLET RESTS INSIDE THE OIL WATER SEPARATOR.
5. RESETTING THE PANEL:
   - 5.1. AS OWS FILLS WITH WATER, BOTH FLOATS WILL BE IN LOW POSITION (DRY CONDITION) AND BOTH ALARMS WILL BE ACTIVATED.
   - 5.2. IF ALARMS ARE NOT ACTIVATED, CHECK THE WIRING CONNECTIONS.
   - 5.3. WHILE THE OWS IS FILLING WITH WATER, THE HIGH-HIGH OIL LEVEL WARNING ALARM SHOULD DEACTIVATE, AND SOON THEREAFTER THE HIGH OIL LEVEL WARNING ALARM SHOULD DEACTIVATE.
   - 5.4. IF THE ALARMS DO NOT DEACTIVATE UPON FILLING, REMOVE THE SENSOR AND CHECK FOR FLOAT BINDING OR POOR ELECTRICAL CONNECTIONS.
6. THE OIL WATER SEPARATOR IS FULL WHEN WATER DRAINS OUT OF THE OUTLET. CHECK THE WATER LEVEL USING A GAUGE STICK.
7. THE OIL WATER SEPARATOR IS FULL WHEN THE LEVEL ON THE GAUGE STICK EQUALS THE INVERT OF THE OUTLET PIPE AS MEASURED FROM THE OIL WATER SEPARATOR BOTTOM.
8. TO ENSURE THAT NO BLOCKAGE EXISTS, ALLOW WATER TO FLOW THROUGH THE FACILITY DRAIN WHICH LEADS TO THE OIL WATER SEPARATOR INLET. CHECK THE OUTLET PIPE TO MAKE SURE THAT WATER IS FLOWING THROUGH THE OIL WATER SEPARATOR. CHECK THE INLET PIPE AND FACILITY'S DRAIN FOR WATER BACKUP.

G. MAJOR OIL SPIL RESPONSE PROCEDURES:
(NOT IN CONTRACT, UNLESS NOTED OTHERWISE)

1. MEAUSRE AND RECORD THE OIL DEPTH (OIL/WATER INTERFACE) LOCATION AND DEPTH OF SLUDGE THROUGH EITHER THE 4" DIA. GAUGE PORT OR MANWAY.
2. PLACE A 3" DIAMETER OR SMALLER SUCTION HOSE INSIDE THE OWS THROUGH EITHER THE 4" DIAMETER GAUGE PORT OR THROUGH THE MANWAY. SUCTION OUT THE OIL, WATER, AND SLUDGE/SEDIMENT IN ACCORANCE WITH "MIXED OIL AND WATER REMOAVL PROCEDURES" AND "SLUDGE REMOVAL PROCEDURES". REFILL WITH CLEAN WATER IN ACCORDANCE WITH "FILLING THE TANK" PROCEDURES.
3. IF OIL IS STILL VISIBLE ON THE SURFACE OF THE OWS OR THE ALARMS REMAIN ON, SUCTION OUT THE OIL AND REFILL WITH CLEAN WATER. CONTINUE THIS SEQUENCE UNTIL ONLY A SHEEN OF OIL IS VISIBLE ON THE SURFACE OF THE OWS OR THE ALARMS DEACTIVATE.

SYM	DESCRIPTION	DATE	APPR
0	INITIAL SUBMISSION	02/11/2011	JFH

NAVFAC

SEAL

PWD-MAINE
IN HOUSE DESIGN INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	DRW	CHK
PM/DM	JFH/RHR	
BRANCH MANAGER	JEFF HOYT	
CHIEF ENG/ARCH	AMIN BAHROUR	
FIRE PROTECTION	N/A	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE

NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH

PORTSMOUTH NAVAL SHIPYARD
KITTERY, ME

OIL / WATER SEPARATOR OPERATION AND MAINTENANCE DRAWINGS

OWS-6 NEAR BUILDING 72
NOTES SHEET

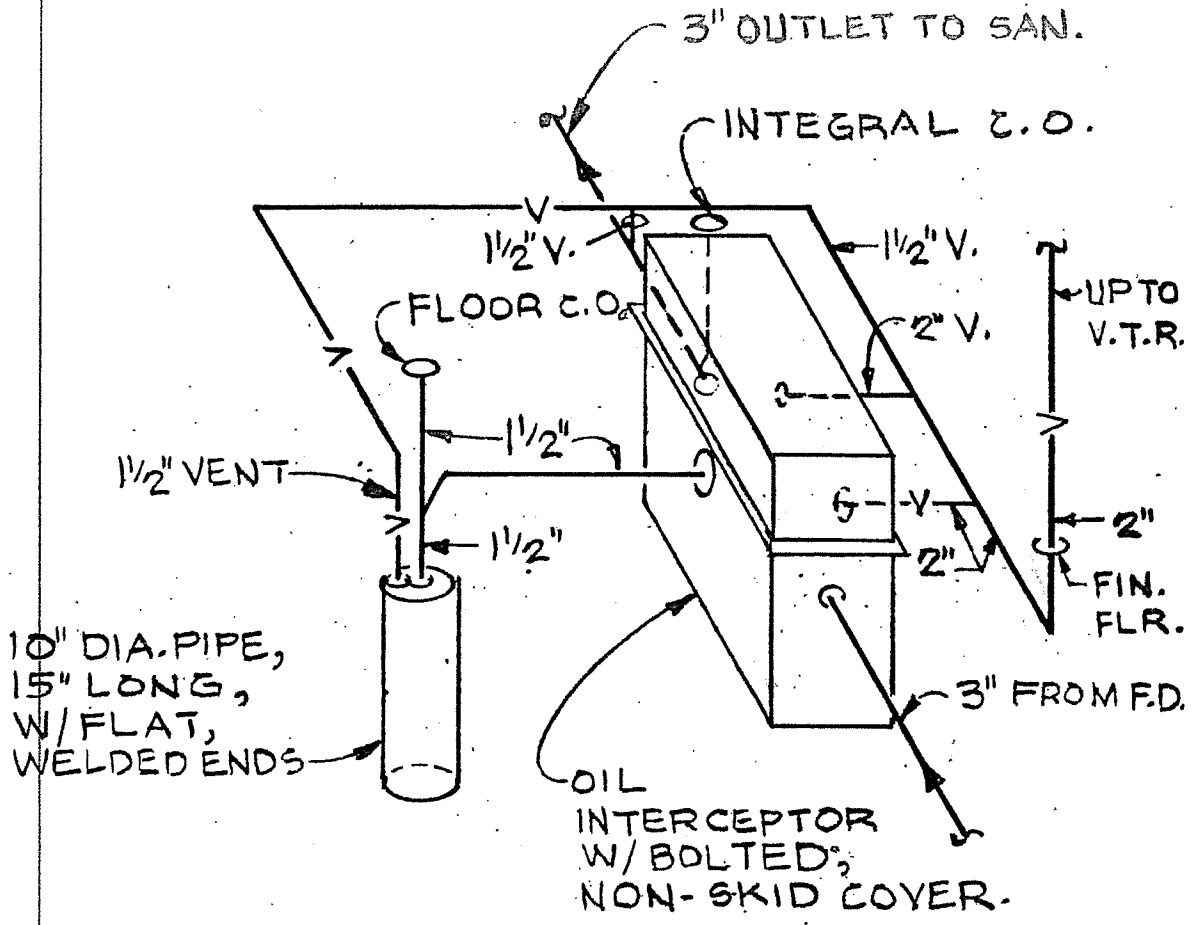
MAXIMO No.: N/A
EPROJECT NO.: N/A
CONSTR. CONTR. NO.: N40085-10-R-9445
NAVFAC DRAWING NO.: N/A
SHEET 8 OF 8

C107 | MC-11-1212

DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: P:\01 PRN2 FEAD\02 PRN21 PM&E\03 PRN-212 Civil\913 DATA CENTER\UTILITY SYSTEMS DATA\STORM DRAIN SYSTEM\Oil Water Separator 0 & MStorm Water Quality Structures.dwg LAYOUT NAME: OWS-6 BLDG 72-2 PLOTTED: Tuesday, February 15, 2011 - 8:21am USER: rosa.hills

Building 299



OIL INTERCEPTOR DETAIL — 4 / M-1

SCALE: 1" = 1'-0"

NOTES:

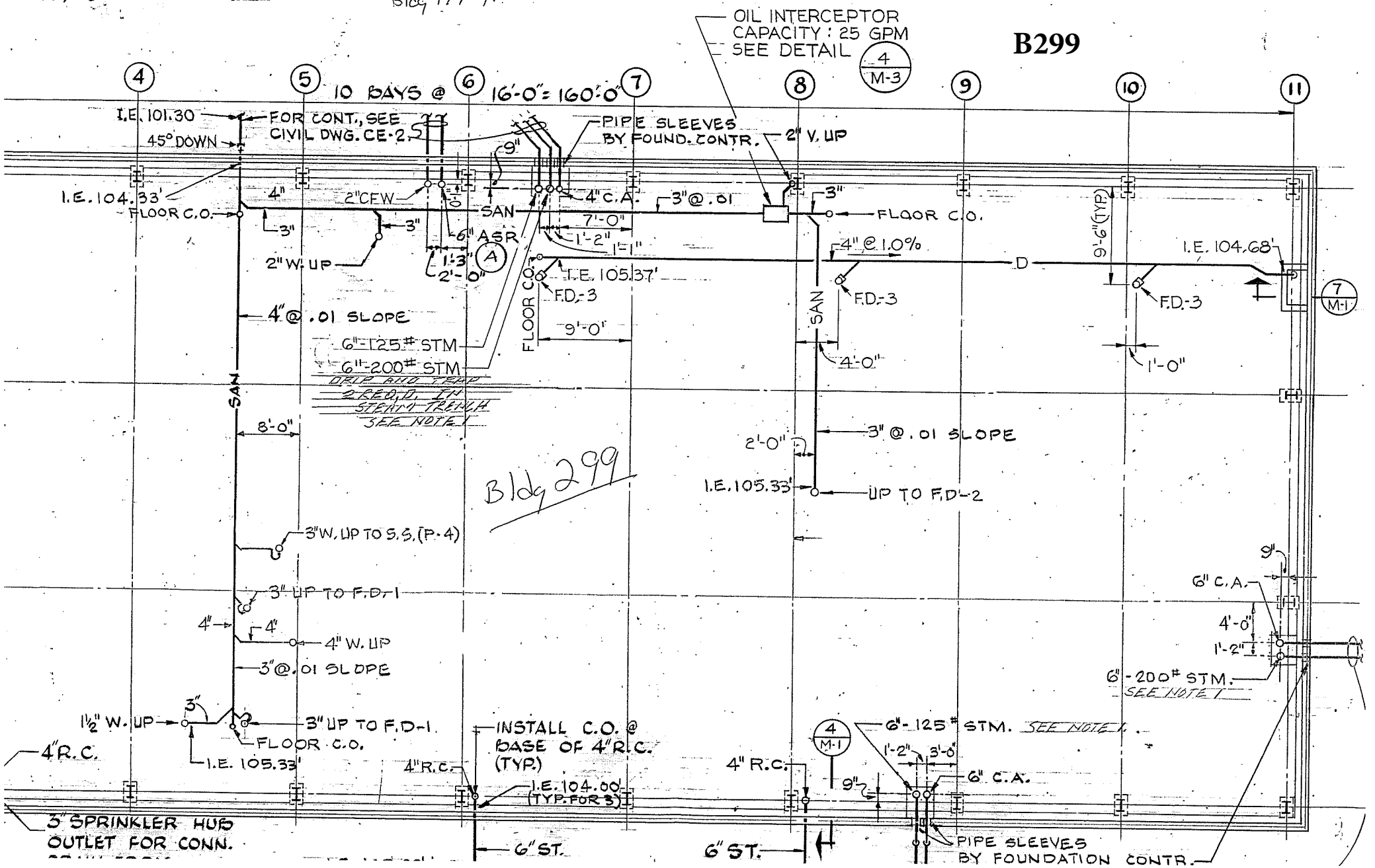
1. THE TOP OF THE INTERCEPTOR IS TO BE INSTALLED FLUSH WITH THE TOP OF THE FLR. SLAB.
2. ALL OTHER PIPING IS INSTALLED BELOW FLOOR SLAB.

2019675 NG2472-77-C-0256 299-77-24

ON M-3

Bldg 174 /1

B299



B29 OWS (new bay)

13570

Oil Sand Water Separator

NEW

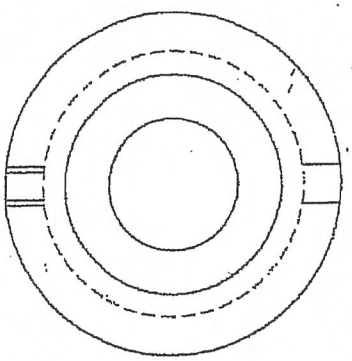
FMSY, BLDG 29
7/22/13

General Notes

Concrete Specifications:
1) 4000 psi after 28 days with 4%–6% air
2) Reinforcing is grade 60

OSW Specifications
1) Heavy duty frame & cover or frame & grate can be used
2) Pipe openings cast in as required, piping to be provided by others
3) Largr diometer structures can be utilized

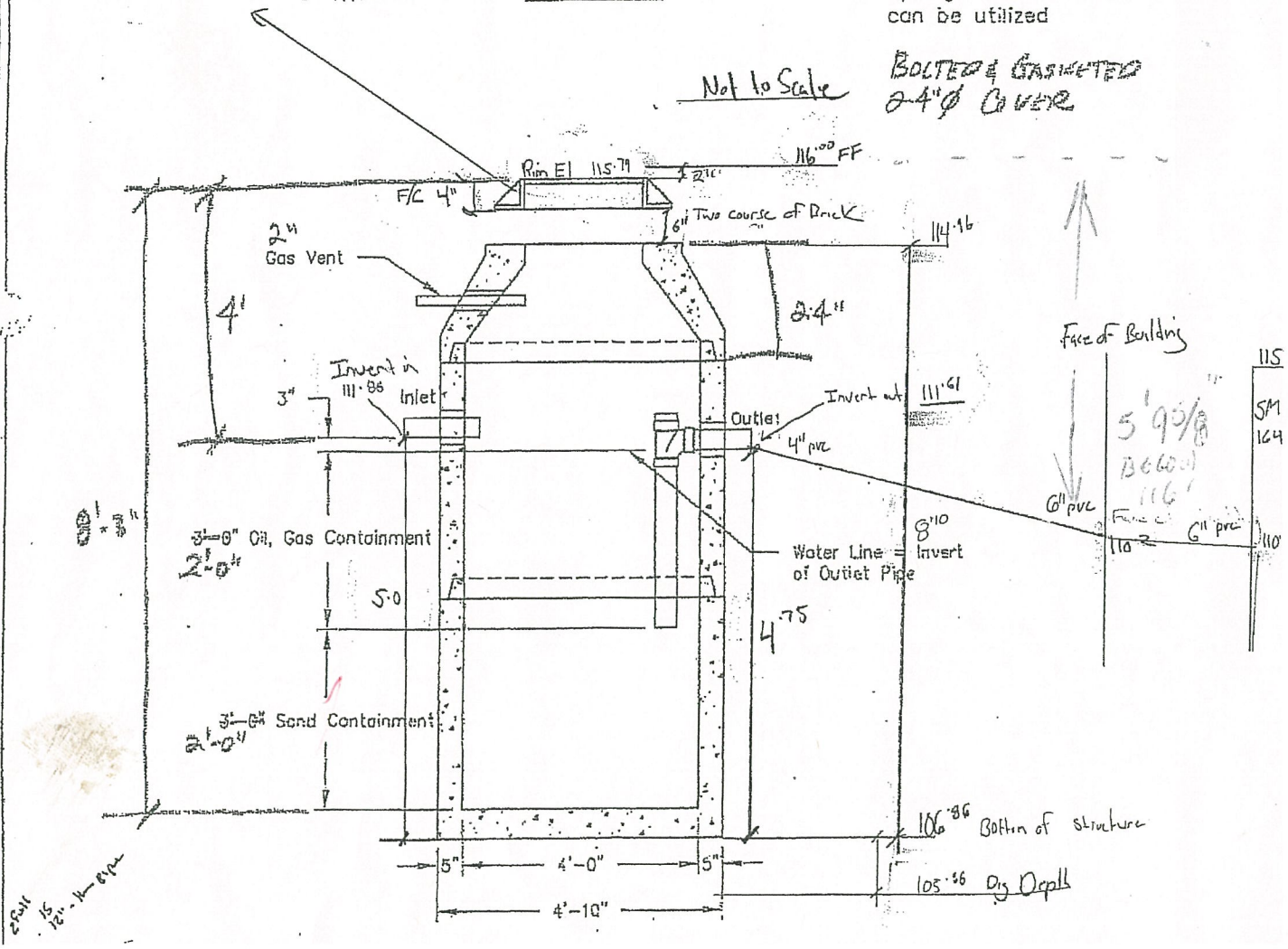
BOLTED & GASKETED 24"Ø COVER

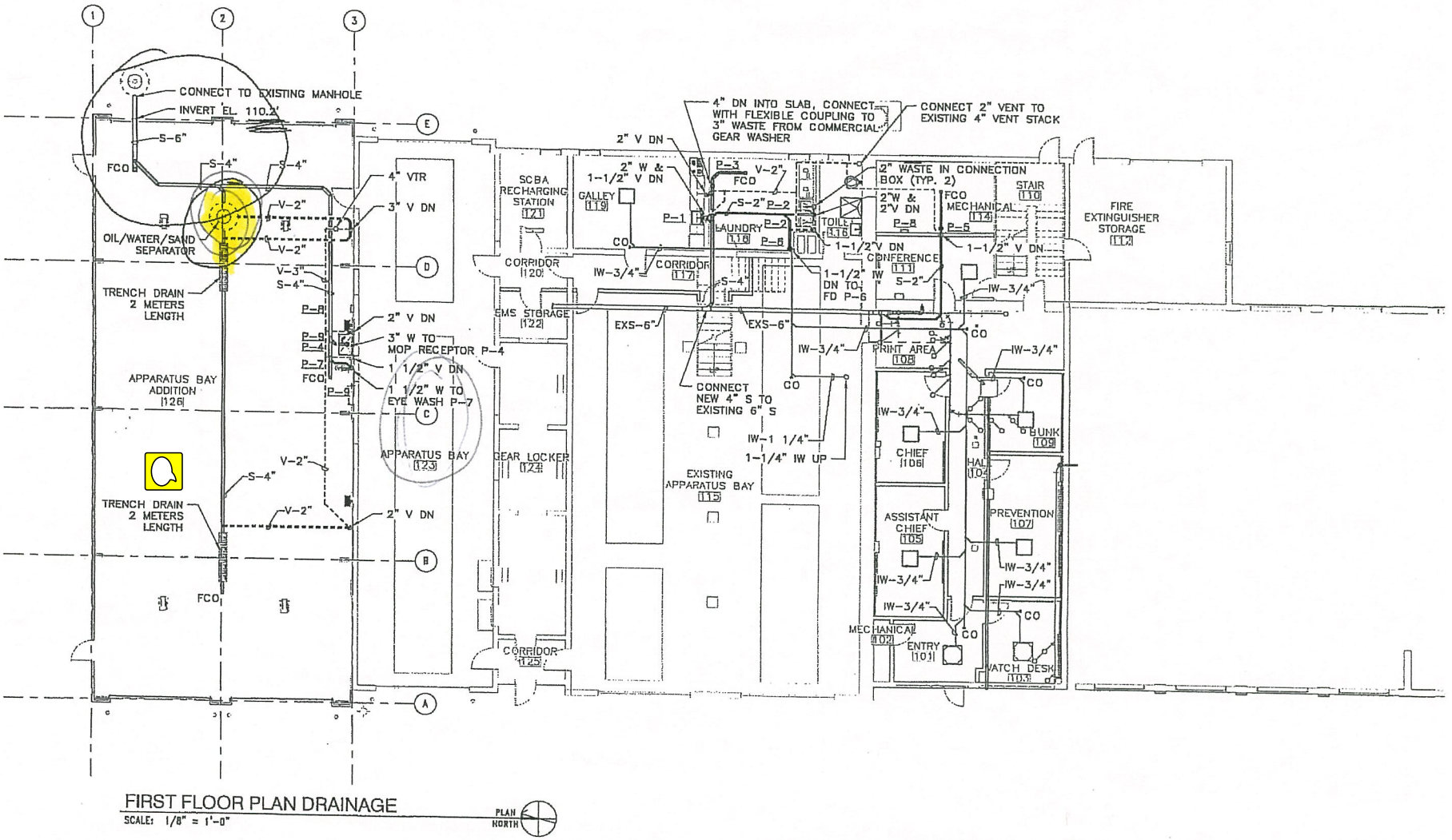


Please confirm 4'11" H20 Frame/cover Bl acceptable
See Attached

Plan View

Not to Scale





FIRST FLOOR PLAN DRAINAGE

SCALE: 1/8" = 1'-0"

PLAN NORTH

GRA

CertainTeed

PAM

Access Covers and Gratings

PAMTIGHT Manhole Covers

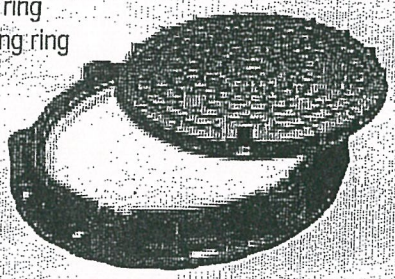
PAMTIGHT Manhole Covers

PAMTIGHT manhole covers are the optimum choice for applications where air- and watertightness are required. Made from ductile iron — an engineered material that offers many advantages over traditional cast iron — PAMTIGHT covers deliver all the benefits of pressure tightness, resistance to traffic shock and enhanced ergonomics, providing advanced solutions for today's public works departments, engineers and maintenance personnel.

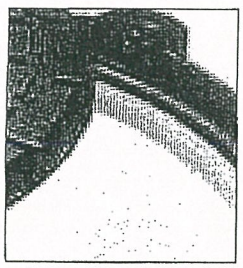
There are over 6 million PAM units in the ground around the world utilizing technically advanced materials and engineering. Our focus on the needs of the end-user — rather than developing products merely to meet a minimum performance standard — led us to ductile iron, a superior alternative to cast iron in terms of weight, strength and designability.

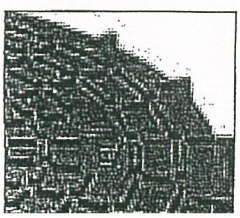
Highlights

- Available in 24" opening
- Two rings:
  - Elastomer sealing ring
  - Polyethylene seating ring
- Fastened by 6 bolts and clamping claws
- Ductile iron
- Class D 400 EN 124
- Exceeds H20 AASHTO loading
- Closed handling box



Pressure Tight Design





PAMTIGHT manhole covers are designed to prevent the infiltration or escape of air and water to a 14-psi (1-bar) positive or negative pressure rating.

- Elastomer sealing ring ensures watertightness (confirmed during seven-day trial in hydraulic laboratory).
- Design incorporating both stainless steel bolts (6) and clamping claws allows higher performance sealing.
- After opening, cover can be put back in any orientation and remain pressure tight.

Safety

PAMTIGHT manhole covers are designed for safe use by installers and maintenance personnel.

- Ductile iron:
  - Product weighs 50% less than typical cast-iron covers, reducing risks of manual material handling (MMH).
  - Safe mode of failure — even in unlikely event that cover dishes and/or cracks, it remains strong and therefore protects the public from accidents.

Strength and Durability

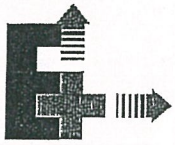
PAMTIGHT manhole covers are designed to be highly durable, a benefit that is made possible by the excellent mechanical performance of ductile iron.

- Three times the load strength of typical cast-iron covers.
- Exceeds the AASHTO (American Association of State Highway and Transportation Officials) H20 heavy duty load resistance requirement and is

- Polyethylene seating ring ensures perfect seating, resistance to traffic shock.
- Bolts are in an enclosed pocket, and thus are not exposed to hydrogen sulfide attack and corrosion through sewer gases. This feature ensures that bolts won't rust to the frame and have to be drilled out.

Ergonomics

- Clamping device can be rotated and the cover opened simply by loosening the bolts.
- Handling is facilitated by the relatively low cover weight (116 lbs.) and the presence of a closed handling box.

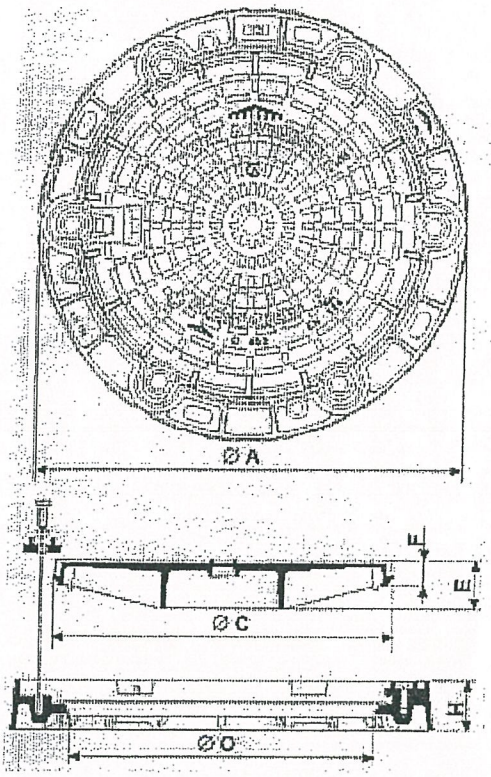


- Bolts do not need to be fully removed to gain access, lessening the chance they'll be misplaced.

Quality Assurance

The PAMTIGHT manhole cover unit has been designed and manufactured within a certified ISO 9000 quality management system, certified by an independent, internationally recognized third party.

- Extensive field testing, including heavy traffic situations.



The PAMTIGHT Range

TYPE	FRAME	REFERENCE	MASS (LBS.)		DIMENSIONS (INCHES)					
			TOTAL	COVER	A	C	E	F	H	O
Pressure	Round	CDPE70AF	225	116	33-1/2	26-7/9	3-5/7	2	4	24

Installation Notes:

- Care shall be taken that frame is properly secured to concrete or brickwork shafts.
- Use of anchoring devices is highly recommended.

Specification

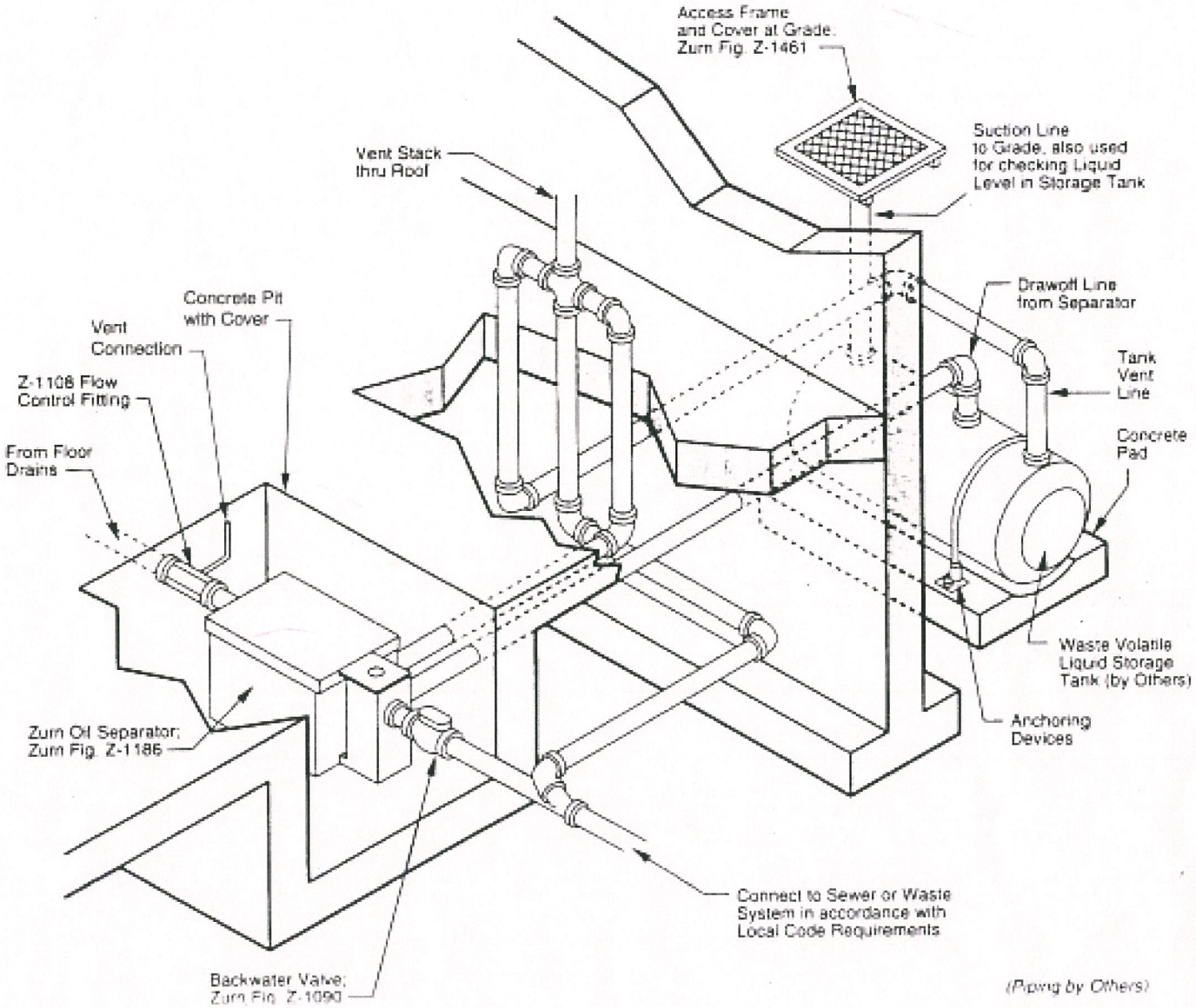
- PAMTIGHT or similar approved Manhole Cover and Frame.
- Covers and Frames shall be manufactured from Ductile Iron in accordance with ISO 1083.
- Covers shall be one-man operable using standard
- Cover shall withstand pressure of 14-psi positive or negative rating.
- The flange shall incorporate bedding slots and bolt holes.
- Cover shall be held in place by six clamping

Z1186 AND Z1188 OIL INTERCEPTORS

TYPICAL INSTALLATION

Z1186 OIL INTERCEPTOR

Pictured is a Z1186 installed in a pit with a vent connection and oil storage tank. It is installed with a Z1108 flow control and a Z1090 backwater valve.



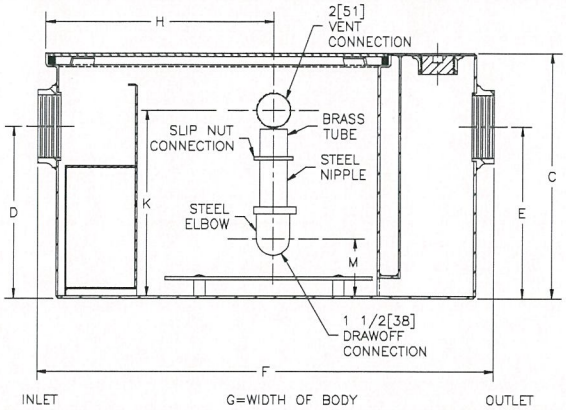
ZURN INDUSTRIES, INC. ♦ SPECIFICATION DRAINAGE OPERATION ♦ 1801 Pittsburgh Ave. ♦ Erie, PA 16514
Phone: 814/455-0921 ♦ Fax: 814/454-7929 ♦ World Wide Web: www.zurn.com
In Canada: ZURN INDUSTRIES LIMITED ♦ 3544 Nashua Drive ♦ Mississauga, Ontario L4V1L2 ♦ Phone: 905/405-8272 Fax: 905/405-1292

Z1186 AND Z1188 OIL INTERCEPTORS

Z1186

OIL INTERCEPTOR

Dimensional Data (inches and [mm]) are Subject to Manufacturing Tolerances and Change Without Notice

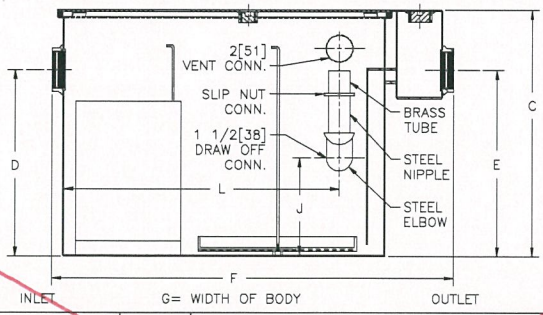


Size	Inlet/ Outlet Size **	Flow Rate GPM [L]	Water Cap. Gal. [L]	Approx. Wt.Lbs. [kg]	Dimensions In Inches						
					C	D/E	F	G	H	K	M
300	2 [50]	10 [38]	7 [26]	56 [25]	13 5/8 [346]	8 1/8 [206]	25 1/8 [638]	14 [356]	11 5/8 [295]	10 5/8 [270]	4 5/16 [110]
400	2 [50]	15 [57]	9 [34]	77 [35]	14 [356]	8 1/4 [210]	25 1/4 [641]	14 1/8 [359]	11 5/8 [295]	11 [279]	4 7/16 [113]
500	3 [75]	20 [76]	10 [38]	106 [48	15 1/2 [394]	9 3/8 [238]	27 1/8 [689]	16 3/4 [425]	13 1/4 [336]	12 1/2 [318]	5 9/16 [141]
600	3 [75]	25 [94]	16 [60]	116 [53]	18 1/4 [464]	11 3/4 [298]	30 [762]	17 1/4 [438]	16 [406]	15 1/4 [387]	6 1/4 [159]
700	3 [75]	35 [132]	21 [79]	140 [64]	19 3/4 [502]	12 1/2 [318]	32 1/4 [819]	19 7/8 [505]	16 3/8 [416]	16 3/4 [425]	6 7/16 [164]
800	3 [75]	50 [189]	30 [113]	171 [78]	24 1/4 [616]	14 1/4 [362]	34 1/8 [867]	22 1/2 [572]	17 1/4 [438]	21 1/4 [540]	8 3/16 [208]

Z1188

OIL INTERCEPTOR

Dimensional Data (inches and [mm]) are Subject to Manufacturing Tolerances and Change Without Notice



Flow Rate GPM [L] Min	Inlet/Outlet Size**	Water Capacity Gal. [L]	App. Wt. Lbs. [Kg]	No. of Covers	Dimensions In Inches					
					C	D/E	F	G	J	L
75 [284]	3 [75]	65 [246]	332 [151]	1	22 3/4 [578]	18 1/2 [470]	36 [914]	28 5/8 [727]	8 [203]	25 3/4 [654]
100 [379]	3 [75]	110 [306]	432 [196]	1	27 [686]	23 [584]	42 3/4 [1086]	33 5/8 [854]	10 [254]	30 1/8 [765]
125 [473]	3 [75]	150 [568]	780 [354]	2	30 1/8 [765]	24 1/2 [622]	49 1/4 [1251]	40 [1016]	14 1/4 [362]	36 5/8 [916]
150 [568]	4 [100]	190 [719]	888 [403]	2	30 3/4 [781]	25 1/4 [641]	56 [1422]	41 3/8 [1051]	14 [356]	43 7/8 [1114]
200 [757]	4 [100]	265 [1003]	1055 [478]	2	35 1/2 [901]	29 7/8 [759]	61 [1549]	43 5/8 [2286]	18 [457]	46 5/8[1184]
250 [946]	5 [125]	460 [1741]	1438 [625]	2	41 [1041]	36 [914]	71 [1803]]	51 3/8 [1305]	20 [508]	56 5/8 [1438]
300 [1136]	5 [125]	660 [2498]	1840 [835]	2	46 1/4 [1175]	39 5/8 [1006]	80 [2032]	58 3/8 [1483]	20 5/8 [524]	65 5/8 [1667]
350 [1325]	6 [150]	860 [3255]	2180 [989]	2	50 1/2 [1283]	43 7/8 [1114]	87 [2210]	63 5/8 [1616]	20 1/4 [514]	74 1/8 [1882]
400 [1514]	6 [150]	1090 [4126]	2536 [1150]	3	54 1/4 [1378]	47 5/8 [1210]	94 [2388]	67 [1702]	20 1/2 [521]	79 1/8 [2009]
450 [1703]	6 [150]	1275 [4826]	2816 [1277]	3	55 1/4 [1403]	48 5/8 [1235]	100 [2540]	72 [1829]	22 1/4 [565]	85 3/8 [2168]
500 [1893]	6 [150]	1435 [5431]	2970 [1347]	3	57 1/4 [1454]	51 5/8 [1311]	104 [2642]	74 [1880]	23 1/4 [591]	88 3/8 [2245]

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Z1186 AND Z1188 OIL INTERCEPTORS

PURPOSE

For nearly fifty years, Zurn oil interceptors have been used in plumbing waste systems to help protect property and the environment against explosion, fire, and pollution. Zurn oil interceptors are designed similar to the grease interceptors. Both work on the principle that oils are lighter than water and thus gravity causes the oil to rise to the surface of the water. Zurn oil interceptors come equipped with a removable combination pressure equalizing/flow diffusing baffle and sediment bucket on the inlet to trap stones, grit, and other substances. Their solid flow-diffusing baffle eliminates turbulence and allows for high efficiency of separation.

All Zurn Z1186 and Z1188 oil interceptors are supplied with an adjustable oil draw-off assembly and vent connection. The interceptors are constructed of 100% steel, coated with a blue acid resistant epoxy. All Zurn oil interceptors are listed by IAPMO. If you require an oil interceptor not listed call 814/455-0921, or fax 814/871-6141 your requirements to the Zurn Engineering Department for assistance.

HOW THE ZURN OIL INTERCEPTOR OPERATES

The solid baffle plate opposite the inlet to the oil interceptor diffuses the flow into the interceptor and lessens the turbulence of the oil-laden water as it enters the intercepting chamber. Solids and sludge carried in the water are stopped by the baffle and collected in the solids retaining bucket between the inlet and the flow-retarding baffle. Such accumulation can then be removed. The resulting quiet, even flow of water through the interceptor permits the oils and other light density substances to rise to the surface by the "flotation" principle of separation. Maximum separation and interception is affected in proportion to the elimination of turbulence of wastewater within the interceptor. The unique Zurn baffle/bucket design permits almost 90 percent of the interior of the interceptor to be used for the function of oil separation.

INSTALLATION CONSIDERATIONS

Install interceptor in the building sewer line. The interceptor may be set on the floor, partially recessed in the floor, top flush with the floor, or fully recessed below the floor to suit piping and structural conditions.

Anticipate sufficient clearance for removal of interceptor cover for cleaning. Also, take into consideration the placement of flow control fitting, vent requirements, and draw-off piping.

Recommended Installations

Commercial Uses	**Industrial Uses**
Filling and Service Stations	Machine Shops
Maintenance Garages	Refineries
Airport Hangars	Fabrication and Welding Plants
Laundries and Cleaning Establishments	Foundries
Parking Facilities	

SIZING

The gallons-per-minute rate of flow through the drainage line into the interceptor is the main consideration in selecting the proper size oil interceptor. In addition, the viscosity characteristics and probable amounts of oils and other light density substances to be separated should be taken into consideration since the volume involved may influence the intercepting chamber size. The larger the interceptor, the higher the flow rate it will handle efficiently and the larger quantity of oil it will separate. If the oil interceptor is too small, an overload condition will develop and some of the oil will be carried through the oil interceptor in the wastewater and pass into the drainage system. Overload conditions may also cause water levels in the trap to rise, thus water will be drawn off through the oil draw off.

VENTING

All Zurn oil interceptors are furnished with 1-1/2" IPS vent and drawoff connections on both the right and left hand sides of the interceptor with plugs in one side. If necessary, the vent and drawoff connections can be changed from one side to the other at the time of installation, by switching the plugs.

The vent connections are located above the adjustable gravity oil draw-off standpipe in the intercepting chamber. Thus, the volatile gases rising from the intercepted substances are carried from the interceptor to the atmosphere.

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FLOW CONTROL

The Zurn flow control fitting must be installed properly in every installation. An oil interceptor correctly designed to separate oil and light density substances from wastewater, will not by itself govern or regulate the flow of water through it at all times to sufficiently assure the flotation separation of the entrained substances which are to be intercepted at maximum efficiency.

The flow control fitting, designed with an integral orifice, gives a pre-determined optimum flow rate and thus assures the elimination of turbulence in the oil interceptor, which could otherwise occur from sudden surges through the drainage line.

The orifice openings are related to the size and gallons per minute rating of the oil interceptor. It should also be noted that standard orifice sizing is for gravity flow conditions where no pressure build-up is considered. If an interceptor is operating at maximum flow levels, a head may develop, in which case overload conditions may still exist.

ADJUSTABLE DRAW-OFF

The Zurn oil interceptor is furnished with a 1-1/2" IPS adjustable oil draw-off assembly. This draw-off can be furnished on either the right or left hand side of the interceptor. The oil draw-off consists of an adjustable pipe combination on the inside of the intercepting chamber, and a pipe connection from the internal adjustable standpipe on the side of the oil interceptor body to connect to an oil drain line from the oil interceptor to an oil storage tank. The adjustable standpipe can be raised or lowered inside the interceptor chamber to the proper height for draining off the separated oils and similar light density substances that have separated and floated to the surface of the interceptor chamber.

Thus, after the oils and other substances have been accumulated in the interceptor, they can be drained from the interceptor chamber by gravity flow through the internal standpipe. The standpipe is adjusted so that the opening is located at 1/8" above the top of the water flow level in the interceptor chamber. There is no need to manually skim or dip out the oil, since the oil will drain off by gravity flow through the adjustable draw-off standpipe after it has been properly adjusted and tightened.

HOW TO SET ADJUSTABLE DRAW-OFF

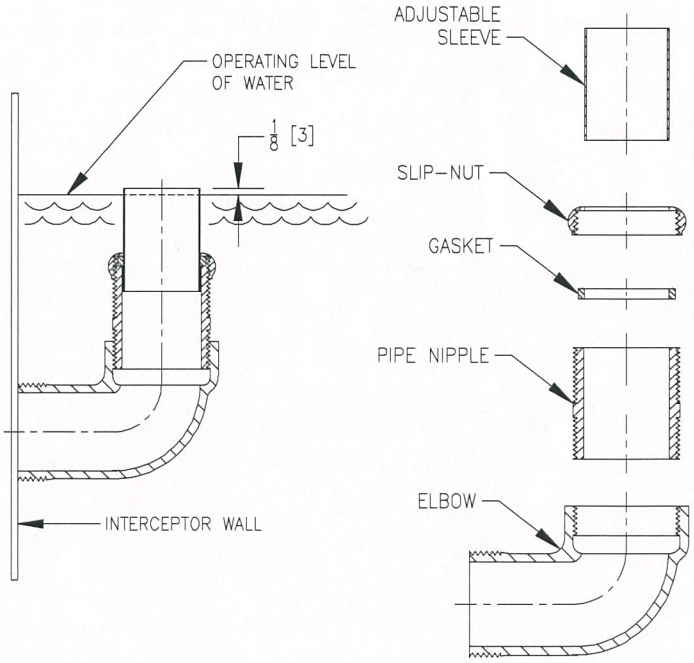
The Zurn oil interceptor should be completely installed and all connections made, including the adjustable draw-off.

Clean water is then run through the oil interceptor at the gallons per minute rate of flow of the size of the interceptor. This establishes the operating water level. This water level is marked on the inside of the intercepting chamber.

The marking of the operating water line must be done while the flow is going through the interceptor. If the mark is established at the static water line, excess amounts of water will enter the gravity draw-off sleeve when the flow rate through the interceptor increases to its rated capacity, in which case the draw-off sleeve would become submerged.

The adjustable sleeve in the draw-off standpipe should be set so that the top of the sleeve is 1/8" above the operating water level mark.

After the oil interceptor is put in operation and oil and low density substances will accumulate at the surface to a depth of 2" to 2-1/2" before the adjustable draw-off will start. Draw-off setting should be checked by taking samples while the oil interceptor is in operation. If the sleeve is properly set, no water will drain off with the oil.



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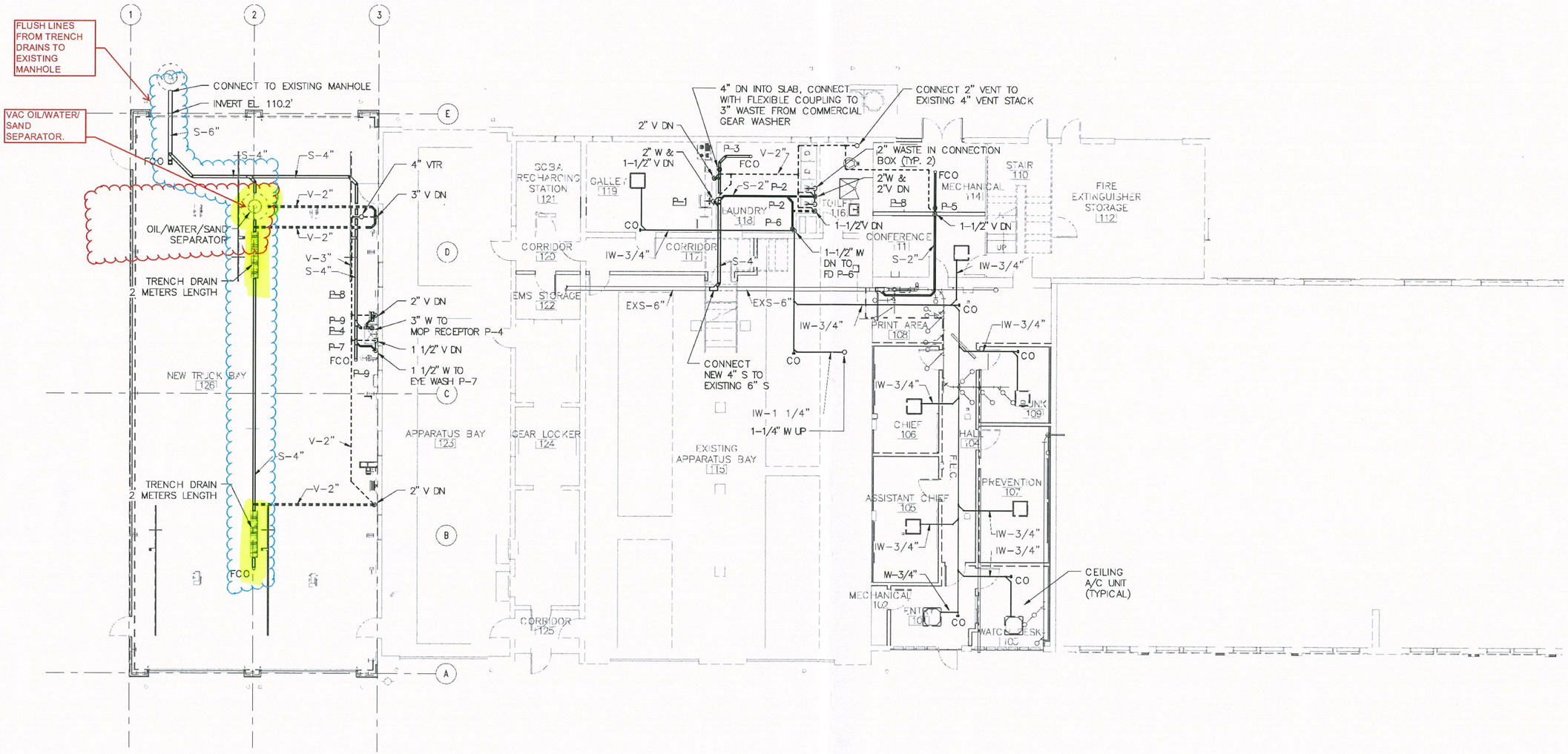


FIRST FLOOR PLAN DRAINAGE

SCALE: 1/8" = 1'-0"

PLAN NORTH

GRAPHIC SCALE

0 4' 8' 12'

1/8" = 1'-0"

NO.	DESCRIPTION	DATE
---	READY FOR CONSTRUCTION	11-22-13
--	100% DESIGN DEVELOPMENT	09-26-13
-	35% DESIGN DEVELOPMENT	07-31-13

NAVFAC

STATE OF MAINE
DAVID B. REINHEIMER
No. 5251
LICENSED
PROFESSIONAL ENGINEER

HARRIMAN
AUBURN PORTLAND MANCHESTER
ALNU

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES ROM | DRW ROM | CHK DBR
PM/CM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE

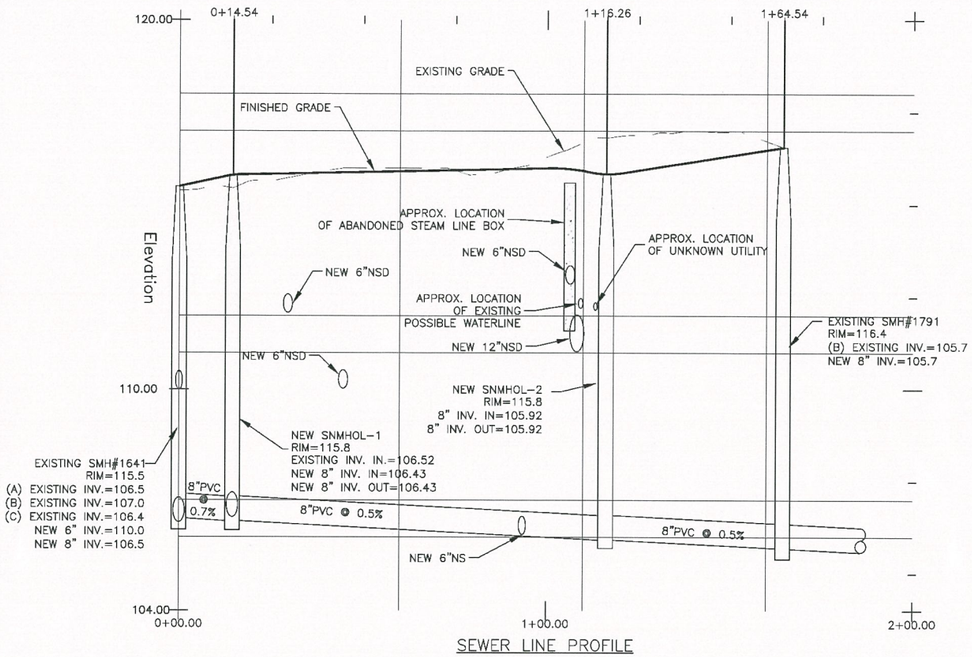
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH

PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

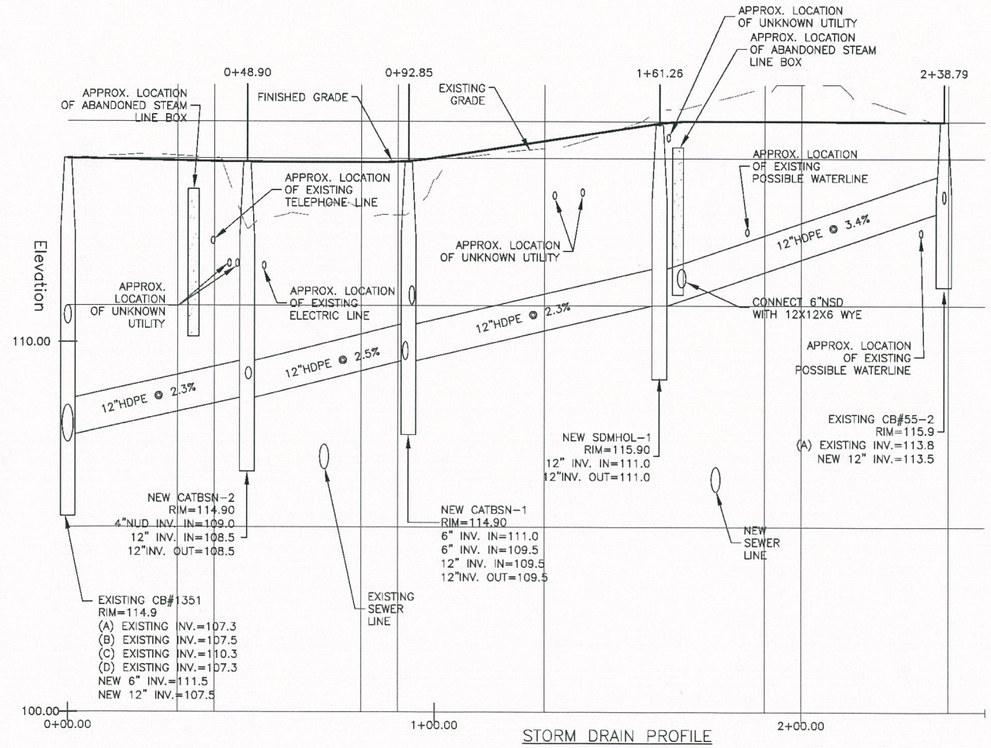
B29 ENERGY PROJECT
FIRE STATION REPAIRS

FIRST FLOOR DRAINAGE

MAS/MO No.	4670237
PROJECT NO.	1142493
CONSTR. CONTR. NO.	N40085 13 D 8006
NAVFAC DRAWING NO.	12659725
SHEET	64 OF 90
P-101	29-13-371



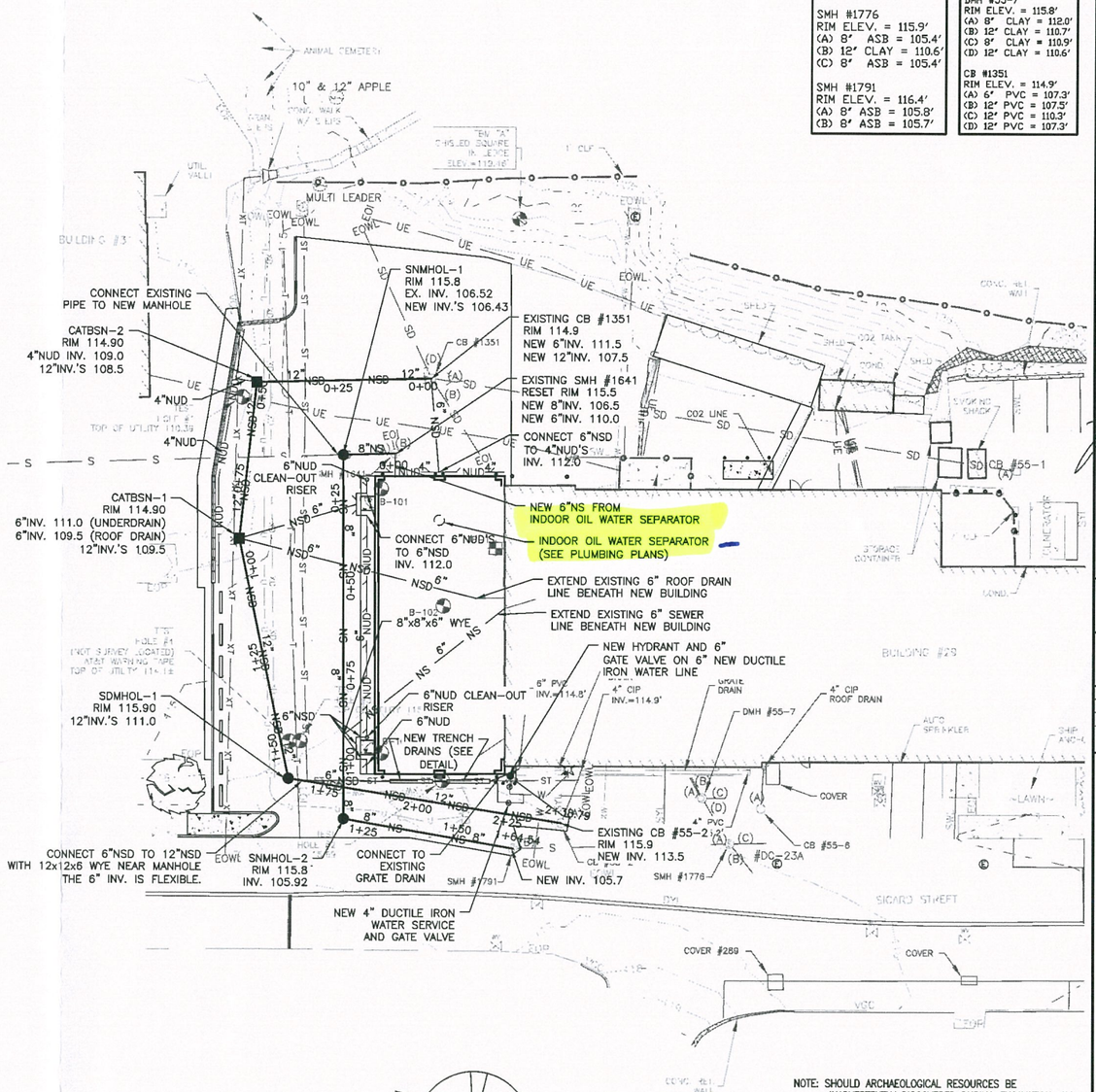
SEWER LINE PROFILE



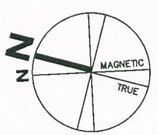
STORM DRAIN PROFILE

SMH #1641
RIM ELEV. = 115.5'
(A) 8" PVC = 106.5'
(B) 8" PVC = 107.0'
(C) 8" PVC = 106.4'
SMH #1650
RIM ELEV. = 113.1'
(A) 8" ASB = 106.7'
(B) 8" ASB = 106.7'
(C) 8" ASB = 106.8'
SMH #1776
RIM ELEV. = 115.9'
(A) 8" ASB = 105.4'
(B) 12" CLAY = 110.6'
(C) 8" ASB = 105.4'
SMH #1791
RIM ELEV. = 116.4'
(A) 8" ASB = 105.8'
(B) 8" ASB = 105.7'

CB #55-1
RIM ELEV. = 115.3'
(A) 6" PVC = 112.6'
CBR #55-2
RIM ELEV. = 115.9'
(A) 4" CI = 113.8'
(B) 8" PVC = 113.2'
CB #55-6
RIM ELEV. = 115.4'
(A) 6" CI = 111.7'
DMH #55-7
RIM ELEV. = 115.8'
(A) 8" CLAY = 112.0'
(B) 12" CLAY = 110.7'
(C) 8" CLAY = 110.9'
(D) 12" CLAY = 110.6'
CB #1351
RIM ELEV. = 114.9'
(A) 6" PVC = 107.3'
(B) 12" PVC = 107.5'
(C) 12" PVC = 110.3'
(D) 12" PVC = 107.3'



NOTE: SHOULD ARCHAEOLOGICAL RESOURCES BE INADVERTENTLY DISCOVERED DURING EXCAVATION, ALL WORK IN THE IMMEDIATE AREA SHALL CEASE AND THE CONTRACTING OFFICER SHALL BE NOTIFIED. WORK MAY NOT RESUME UNTIL DIRECTED BY THE CONTRACTING OFFICER



GRAPHIC SCALE

GRAPHIC SCALE

0 10 20 40 80

(IN FEET)

APPR	DATE	DESCRIPTION
	11-22-13	READY FOR CONSTRUCTION
	10-31-13	ADDED UTILITY PROFILE SECTION
	09-26-13	100% DESIGN DEVELOPMENT
	07-31-13	35% DESIGN DEVELOPMENT
	07-19-13	DEP SUBMISSION

NAVFAC

STATE OF MAINE
FRANK L CRABTREE
No. 3993
LICENSED PROFESSIONAL ENGINEER

HARRIMAN
AUBURN PORTLAND MANCHESTER

ATTACHED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DATE FLC EFW CO K FLC

NAME

BRANCH MANAGER

CIVIL ENG/ATCH

CIVIL PROJECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

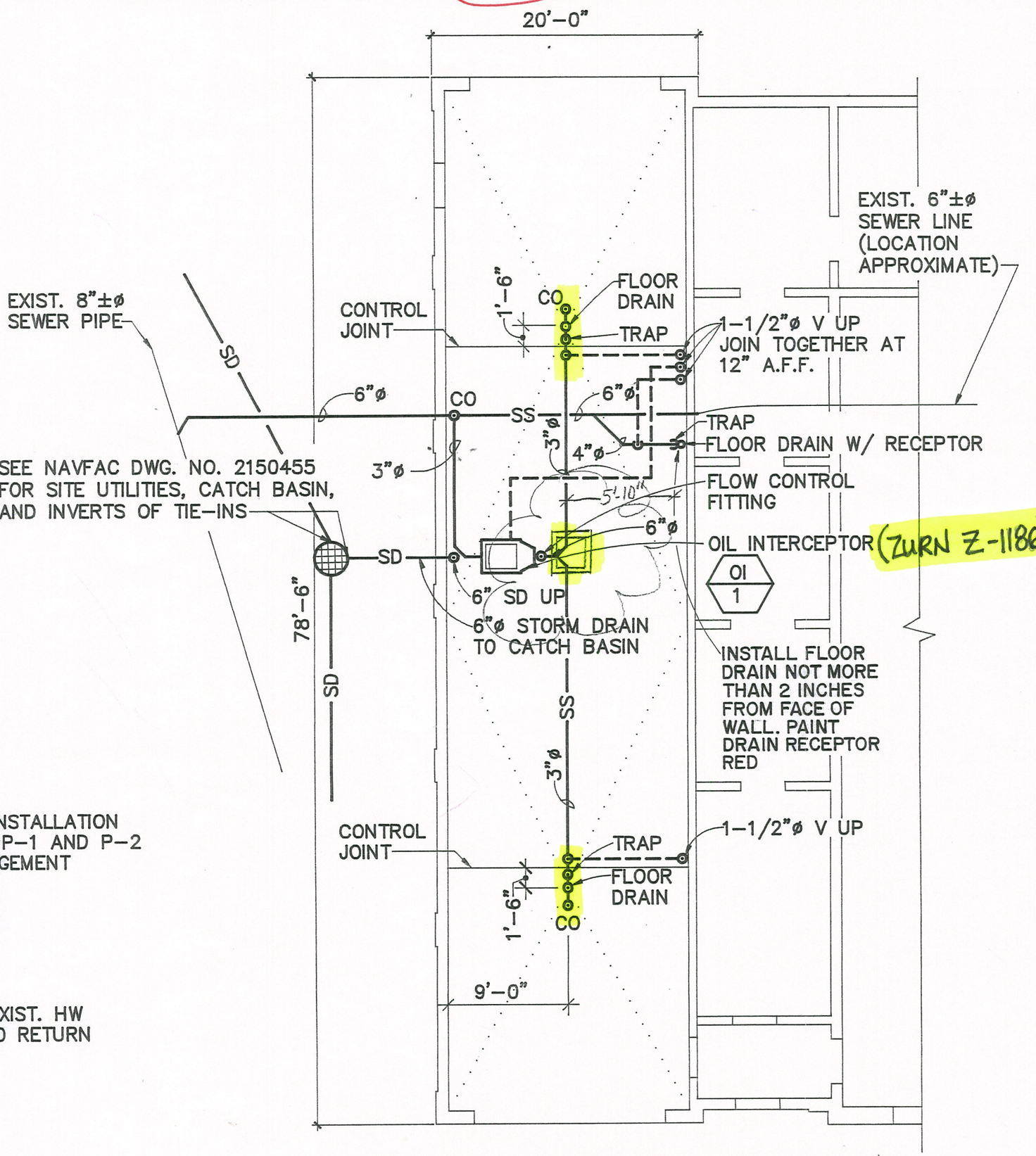
B29 ENERGY PROJECT
FIRE STATION REPAIRS

SITE UTILITIES PLAN AND PROFILE

NAVFAC No.:	4670237
E/PROJECT NO.:	1142493
CONTR. CONTR. NO.:	N40085-13-D-8005
NAVFAC DRAWING NO.:	12659670
SHEET	9 OF 90
	C-401 29-13-316

DRAWFORM REVISION: 10 MARCH 2008

B29



PLAN - PIPING BELOW SLAB

SCALE: 1/8'=1'-0"

NOTE

1. SEE
2. SEE
3. SEE
4. SEE
5. MAI A M CON
6. COC CON OVE
7. MOU BOT

INSTALLATION
P-1 AND P-2
NGEMENT

EXIST. HW
ND RETURN

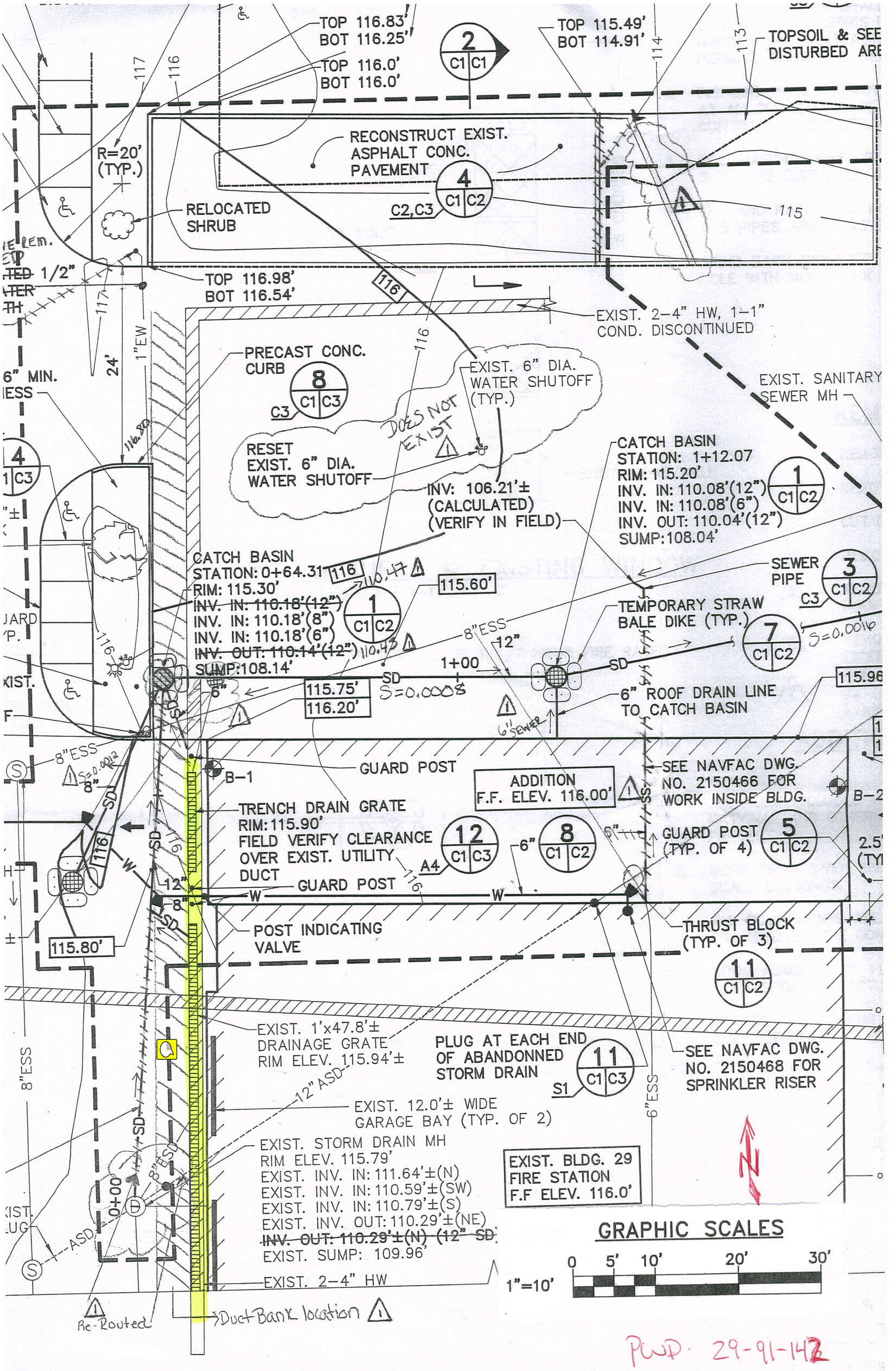
5'-3"

GRAPHIC SCALES

1/8"=1'-0"

0 4' 8' 16' 24'

PWD 29-91-153


TOP 116.83'
BOT 116.25'
TOP 116.0'
BOT 116.0'
TOP 115.49'
BOT 114.91'
TOPSOIL & SEE
DISTURBED ARE
RECONSTRUCT EXIST.
ASPHALT CONC.
PAVEMENT
C2,C3
R=20'
(TYP.)
RELOCATED
SHRUB
TOP 116.98'
BOT 116.54'
EXIST. 2-4" HW, 1-1"
COND. DISCONTINUED
PRECAST CONC.
CURB
EXIST. 6" DIA.
WATER SHUTOFF
(TYP.)
DOES NOT
EXIST
RESET
EXIST. 6" DIA.
WATER SHUTOFF
EXIST. SANITARY
SEWER MH
CATCH BASIN
STATION: 1+12.07
RIM: 115.20'
INV. IN: 110.08'(12")
INV. IN: 110.08'(6")
INV. OUT: 110.04'(12")
SUMP: 108.04'
INV: 106.21'±
(CALCULATED)
(VERIFY IN FIELD)
CATCH BASIN
STATION: 0+64.31
RIM: 115.30'
INV. IN: 110.18'(12")
INV. IN: 110.18'(8")
INV. IN: 110.18'(6")
INV. OUT: 110.14'(12")
SUMP: 108.14'
SEWER
PIPE
TEMPORARY STRAW
BALE DIKE (TYP.)
S=0.0016
8"ESS
12"
SD
1+00
S=0.0008
115.75'
116.20'
115.60'
6" ROOF DRAIN LINE
TO CATCH BASIN
6" MIN.
24'
1"EW
GUARD POST
B-1
TRENCH DRAIN GRATE
RIM: 115.90'
FIELD VERIFY CLEARANCE
OVER EXIST. UTILITY
DUCT
ADDITION
F.F. ELEV. 116.00'
SEE NAVFAC DWG.
NO. 2150466 FOR
WORK INSIDE BLDG.
GUARD POST
(TYP. OF 4)
POST INDICATING
VALVE
THRUST BLOCK
(TYP. OF 3)
115.80'
EXIST. 1'x47.8'±
DRAINAGE GRATE
RIM ELEV. 115.94'±
PLUG AT EACH END
OF ABANDONNED
STORM DRAIN
SEE NAVFAC DWG.
NO. 2150468 FOR
SPRINKLER RISER
12" ASD
EXIST. 12.0'± WIDE
GARAGE BAY (TYP. OF 2)
EXIST. STORM DRAIN MH
RIM ELEV. 115.79'
EXIST. INV. IN: 111.64'±(N)
EXIST. INV. IN: 110.59'±(SW)
EXIST. INV. IN: 110.79'±(S)
EXIST. INV. OUT: 110.29'±(NE)
~~INV. OUT: 110.29'±(N) (12" SD~~
EXIST. SUMP: 109.96'
EXIST. BLDG. 29
FIRE STATION
F.F ELEV. 116.0'
EXIST. 2-4" HW
Re-Routed
Duct Bank location
GRAPHIC SCALES
1"=10'
0 5' 10' 20' 30'
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