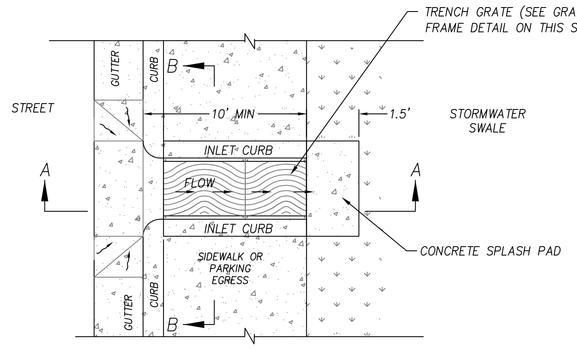
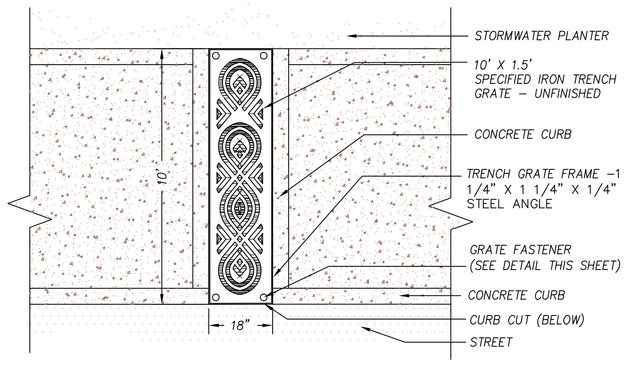
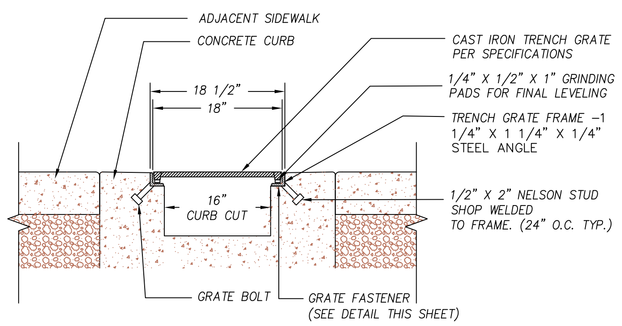


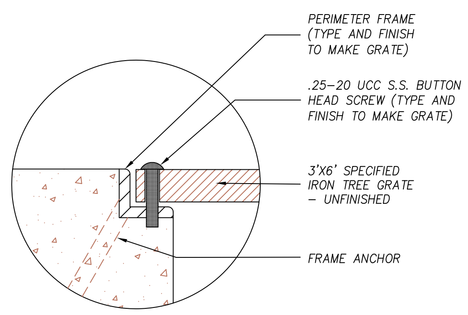


TRENCH GRATE – PLAN



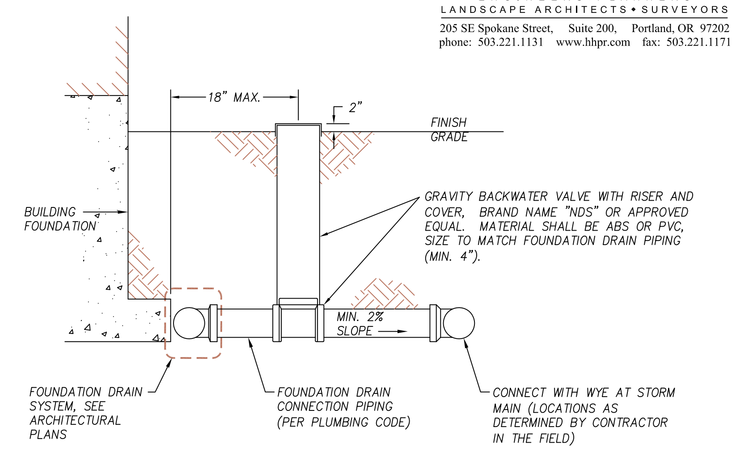
TRENCH GRATE – SECTION

TRENCH GRATE DETAIL
N.T.S.

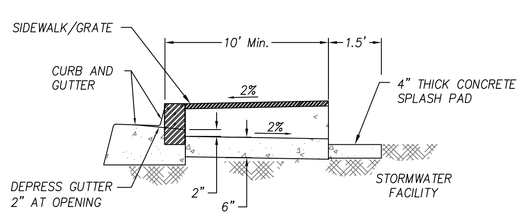


GRATE FASTENER DETAIL
N.T.S.

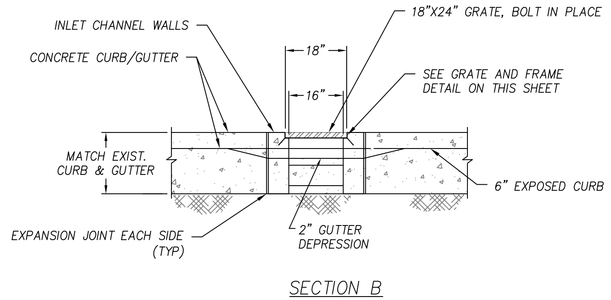
HHPR Harper Houf Peterson Righellis Inc.
ENGINEERS • PLANNERS
LANDSCAPE ARCHITECTS • SURVEYORS
205 SE Spokane Street, Suite 200, Portland, OR 97202
phone: 503.221.1131 www.hhpr.com fax: 503.221.1171



FOUNDATION DRAIN CONNECTION WITH BACKWATER VALVE
N.T.S.



SECTION A

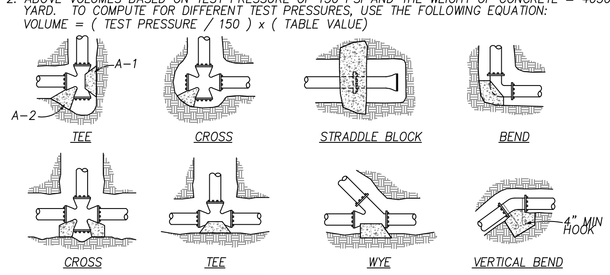


SECTION B

CHANNEL & GRATE DETAIL
N.T.S.

(HORIZONTAL) BEARING AREA OF THRUST BLOCKS IN SQUARE FEET									(VERTICAL) VOLUME OF THRUST BLOCK IN CUBIC YARDS			
FITTING SIZE	TEE, WYE, DEAD END AND HYDRANT	STRADDLE BLOCK	90° BEND PLUGGED CROSS	TEE PLUGGED ON RUN A–1	TEE PLUGGED ON RUN A–2	45° BEND	22–1/2° BEND	11–1/4° BEND	90° BEND	45° BEND	22–1/2° BEND	11–1/4° BEND
4	1.0	1.6	1.4	1.9	1.4	1.0	---	---	---	---	---	---
6	2.1	3.7	3.0	4.3	3.0	1.6	1.0	---	1.3	---	---	---
8	3.8	6.5	5.3	7.6	5.4	2.9	1.5	1.0	2.3	1.1	---	---
10	5.9	10.2	8.4	11.8	8.4	4.6	2.4	1.2	3.7	1.8	---	---
12	8.5	14.7	12.0	17.0	12.0	6.6	3.4	1.7	5.5	2.8	1.2	---
14	11.5	---	16.3	23.0	16.3	8.9	4.6	2.3	7.6	3.9	1.7	---
16	15.0	26.1	21.3	30.0	21.3	11.6	6.0	3.0	9.9	5.1	2.3	0.9
18	19.0	---	27.0	38.0	27.0	14.6	7.6	3.8	---	---	---	---
20	23.5	40.8	33.3	47.0	33.3	18.1	9.4	4.7	---	---	---	---
24	34.0	58.8	48.0	68.0	48.0	26.2	13.6	6.8	---	---	---	---

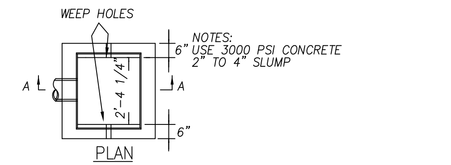
NOTES:
1. ABOVE BEARING AREAS BASED ON TEST PRESSURE OF 150 PSI AND AN ALLOWABLE SOIL BEARING STRESS OF 2000 POUNDS PER SQUARE FOOT. TO COMPUTE BEARING AREAS FOR DIFFERENT TEST PRESSURES AND SOIL BEARING STRESSES, USE THE FOLLOWING EQUATION:
BEARING AREA = (TEST PRESSURE / 150) x (2000 / SOIL BEARING STRESS) x (TABLE VALUE)
2. ABOVE VOLUMES BASED ON TEST PRESSURE OF 150 PSI AND THE WEIGHT OF CONCRETE = 4050 POUNDS PER CUBIC YARD. TO COMPUTE FOR DIFFERENT TEST PRESSURES, USE THE FOLLOWING EQUATION:
VOLUME = (TEST PRESSURE / 150) x (TABLE VALUE)



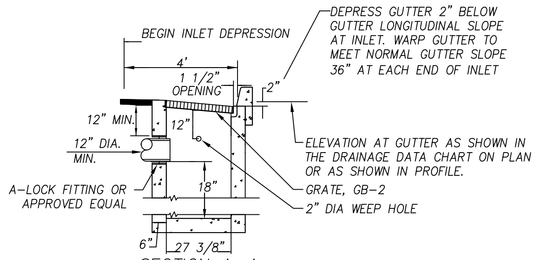
RODS FOR VERTICAL BENDS		
FITTING SIZE	ROD SIZE	EMBEDMENT
12" AND LESS	#6	30"
14"–16"	#8	36"

NOTES:
1. CONCRETE BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
2. ALL CONCRETE TO BE CLASS 2400 MINIMUM.
3. INSTALL ISOLATION MATERIAL BETWEEN PIPE AND/OR FITTINGS BEFORE POURING CONCRETE BLOCKING.
4. CONCRETE SHALL BE KEPT CLEAR OF ALL JOINTS AND ACCESSORIES.
5. TIE RODS SHALL BE DEFORMED GALVANIZED COLD ROLLED STEEL. 40000 PSI TENSILE STRENGTH.

TYPICAL THRUST BLOCK FOR 4", 6", 8" AND 12" PIPE
N.T.S.



PLAN

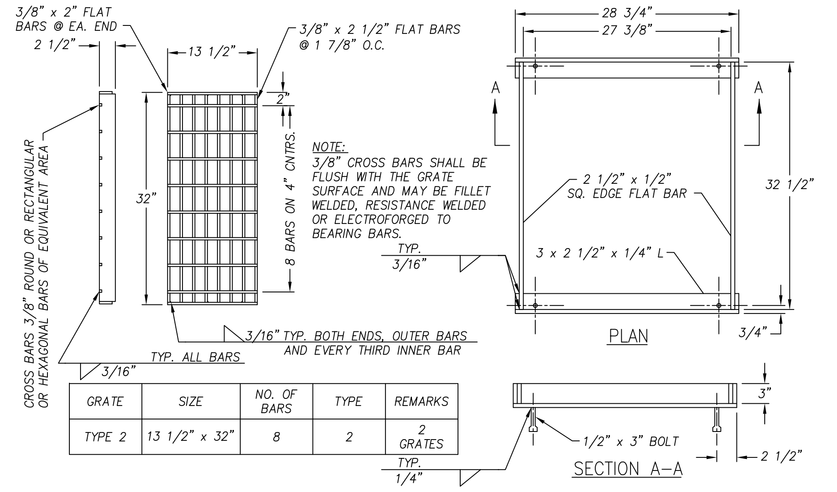


SECTION A–A

NOTE: GB–2 CATCH BASIN REQUIRED.

NOTES:
1. STEPS SHALL BE INSTALLED IN CATCH BASINS OVER 4' IN DEPTH.

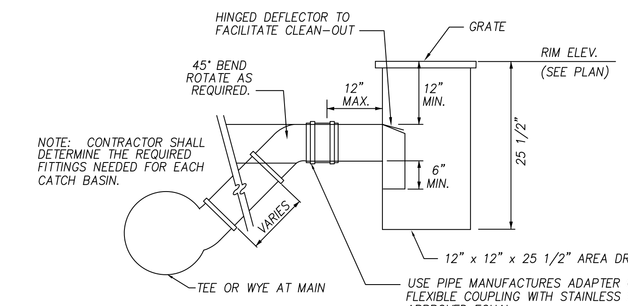
CONCRETE CATCH BASIN GB–2
N.T.S.



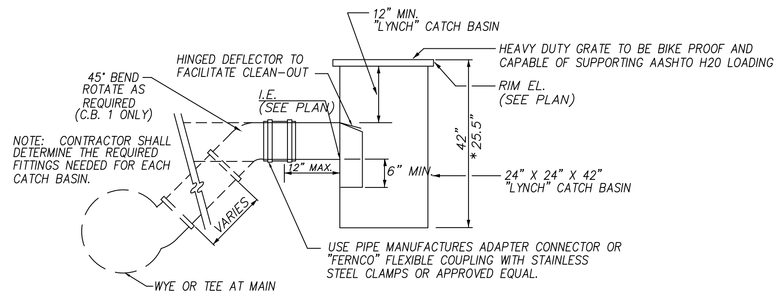
GRATE	SIZE	NO. OF BARS	TYPE	REMARKS
TYPE 2	13 1/2" x 32"	8	2	2 GRATES

GRATE
FOR CONC. CATCH BASIN GB–2
N.T.S.

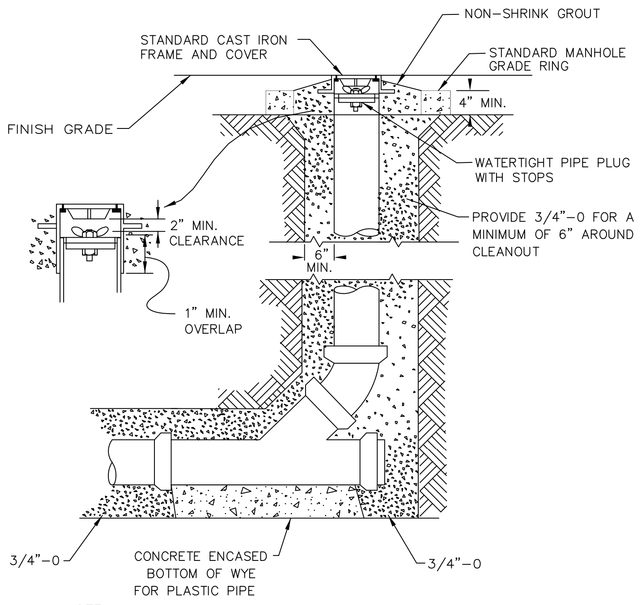
GRATE FRAME
FOR CONC. CATCH BASIN GB–2
N.T.S.



AREA DRAIN
N.T.S.

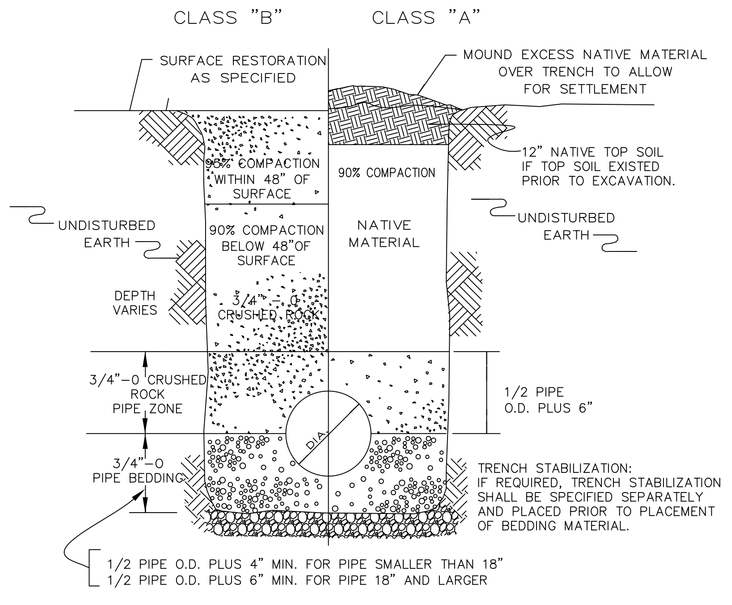


LYNCH CATCH BASIN
N.T.S.



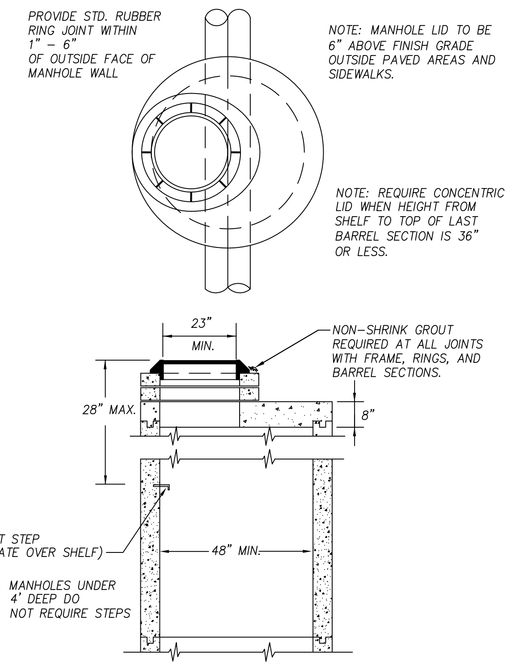
NOTE:
1. CONCRETE ENCASE ENTIRE WYE SECTION AND 45 BEND IF CONCRETE PIPE
2. STAND PIPE TO BE SAME SIZE AS MAINLINE UP TO AND INCLUDING 8" PIPE. MAINLINE GREATER THAN 8" SHALL HAVE A 8" STANDPIPE.

CLEANOUT DETAIL
N.T.S.



NOTE:
ALL COMPACTION REQUIREMENTS PER AASHTO T-99 AND ODOT/APWA SPEC 00405.

TRENCH BACKFILL
N.T.S.



NOTE:
1. FLAT–TOP IS REQUIRED WHEN HEIGHT FROM SHELF TO TOP OF LAST BARREL SECTION IS 4' OR LESS.
2. ROTATE LID SO THAT MANHOLE FRAME AND COVER IS NOT IN THE WHEEL LINE.

TYPICAL FLAT–TOP LID
N.T.S.

PKA-16

Revisions	Date
1	

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www.pkaarchitects.com

REGISTERED PROFESSIONAL ENGINEER 19,138 OREGON JULY 15, 1987 CHRIS A. BEATTY
EXPIRES: 12/31/2015

DEPARTMENT OF VETERANS AFFAIRS
SOUTHERN OREGON REHABILITATION CENTER & CLINICS
8495 CRATER LAKE HWY, WHITE CITY, OREGON 97503–3012

Drawing Title: SITE UTILITY DETAILS Final Set

SPECIALTY CARE BUILDING - 201B

Approved: Proj Eng	Approved: Infect Cont	Approved: Chief P&O	Approved: Chief M&R	Approved: Safety Mgr.

Approved: Service Chief	Approved: Chief Facilities Mgmt	Approved: VAMC Director

Building No.	Chkd By/Proj. Mgr	Drawn By
Specialty Care Building	CAB	HHPR TEAM

Location: JACKSON COUNTY, OREGON

Date: 27 November 2015
Project No.: 131207
Drawing No.: C-402
Dwg. of

PRELIMINARY NOT FOR CONSTRUCTION