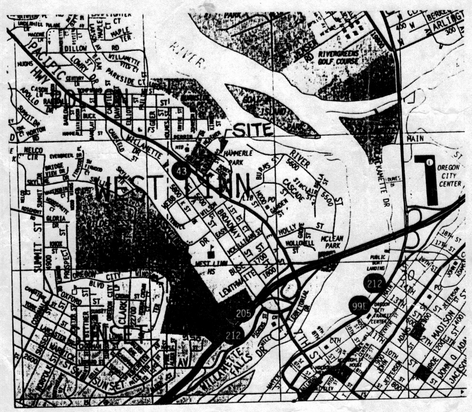
AS-Builts

BOLTON STORM DRAIN IMPROVEMENTS

CITY OF WEST LINN

AUGUST 2000



VICINITY MAP

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1	STORM LINE PLAN AND PROFILE
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3	STORM LINE PLAN AND PROFILE
4	DETAILS

REGISTERED PROFESSIONAL ENGINEER
OREGON
MAY 18, 1993
PATRICK A. SISUL
8.18.00

SISUL ENGINEERING
375 PORTLAND AVE.
GLADSTONE, OR. 97027
(503) 657-0188

CITY OF WEST LINN
GARY PARKIN, P.E.
22500 SALAMO RD #800
WEST LINN, OR. 97068
(503) 722-5518

MOST RECENT REVISION TO THIS SET OF PLANS:
9.6.00

BOLTON STORM Proje

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

GRAPHIC SCALE

0 5 10 20 40

METRIC SCALE

Storm Drains:

1. Eight inch to 24–inch storm drain pipe is preferred to be seamless ribbed PVC pipe conforming to ASTM F 794. Except under Highway 43 where pipe shall be Class 3 non–reinforced concrete pipe conforming to ASTM C14 where lack of cover prevents use of PVC pipe, ductile iron pipe conforming to AWWA C151 Class 52 is specified. Rubber joints are required for all concrete pipe. Six inch and smaller storm drain pipe shall conform to ASTM D 3034 PVC pipe.
2. Gutter inlets and catchbasins shall be poured in–place concrete with a minimum compressive strength of 3000 psi. Frame shall be fabricated of structural steel, ASTM A–7, A–36, A–373.
3. Manhole base may be poured in place concrete with a minimum compressive strength of 3000 psi or precast. Manhole risers and tops shall be precast sections with a minimum compressive strength of 4000 psi. Tops shall be eccentric cones except where insufficient headroom requires flat tops. Interior dimensions noted on the plans are minimums. Some or all of the storm drain manholes required will be oversized manholes, contractor shall check with manhole manufacturer for actual size of manhole needed for type and size of pipe to be used. Inverts shall be constructed so as to provide smooth flow–through characteristics. Pipe shall be connected to manhole by means of a flexible connection and shall have a shear joint located 18" outside of the manhole.
4. Cleanout pipe, fittings, and joints shall be the same specifications as for pipe. Castings are shown on detail and shall conform to ASTM A48 (Grade 30). Cleanout riser shall match downstream pipe diameter.
5. Granular backfill (3/4"–0) is to be compacted to 95% maximum dry density per AASHTO T–180 test method and native material shall be compacted to 95% of in–place dry density of surrounding soil. Controlled density fill shall be used as surface back fill material in place of crushed rock in open trench crossing Highway 43. A (3/4"–0) rock will be used for aggregate. The amount of concrete used shall not exceed 3% of the total mixtures weight. Maximum compressed strength must not exceed 100–150 psi.
6. Riprap where noted on the plans is to be Class 50 in accordance with Oregon State Highway Division specification 714.
7. Storm drains shall be tested for deflection in accordance with Division 601.03.11 and video inspected in accordance with Division 601.03.12 of the West Linn Standard Construction Specifications. All tests shall be witnessed by the Engineer and a representative of the City.
8. All materials, installation, tests, and inspections to be in strict accordance with the City of West Linn Standard Construction Specifications.

Bolton storm drain improvements SGL00–050 8–18–00

Utilities:

1. If not noted on the plans utility information and crossing locations will have to be obtained from the utilities.
2. Utility contacts are as follows: PGE – Cindy Manselle, 650–1411 or Joyce Shuler, 650–1483; AT & T Cable – Tanya Trujillo, 605–4914, U.S. West Communications – Lori Dorney 242–4596, Northwest Natural Gas – Scott Palmer 721–2447.

West Linn 7–11–00

Streets:

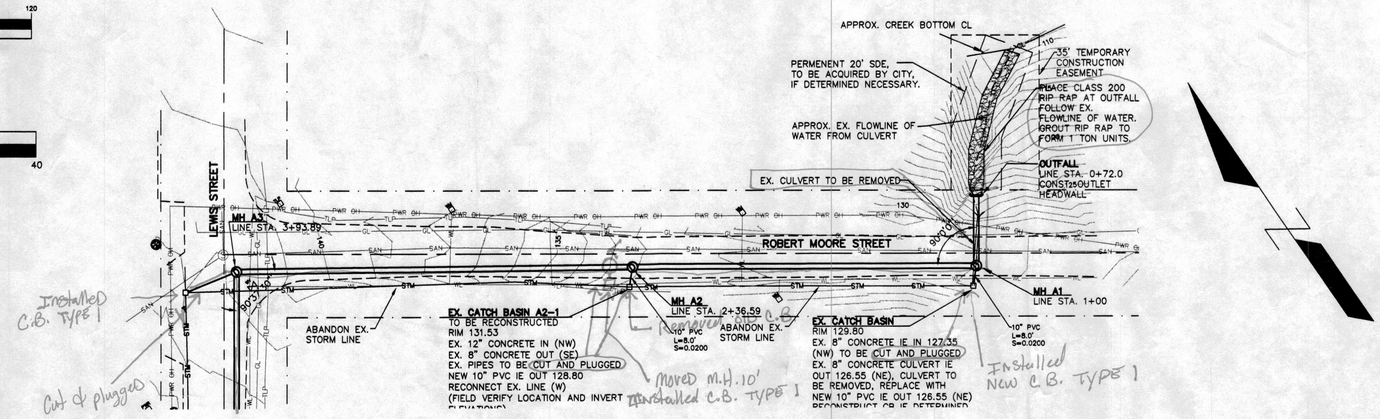
1. Asphalt concrete resurfacing shall conform to the requirements of W.L.S.C.S. Division 209. Asphalt depth in City streets shall be a minimum of 3" of hot A.C., or match existing A.C. depth, compacted in 2" or less lifts, whichever is greater. Asphalt depth in Highway 43 shall be a minimum of 6" of hot A.C., or match existing A.C. depth, compacted in 2" lifts, whichever is greater.
2. Construct curb and gutter using 3300 psi concrete meeting the specifications of W.L.S.C.S. Division 209 (after 28 days) with maximum 1½" aggregate size. Contraction joints at 15' maximum on centers.
3. All materials, installation, tests, and inspections to be in strict accordance with the City of West Linn Public Works Standard Construction Specifications, and ODOT general provisions for pipeline permits.
4. A street construction encroachment permit or similar permit may be required from the City of West Linn. A permit to occupy or perform operations upon a state highway is required by ODOT. Construction permit fees or other similar fees or bonding required of the contractor will be the contractor's responsibility to obtain.

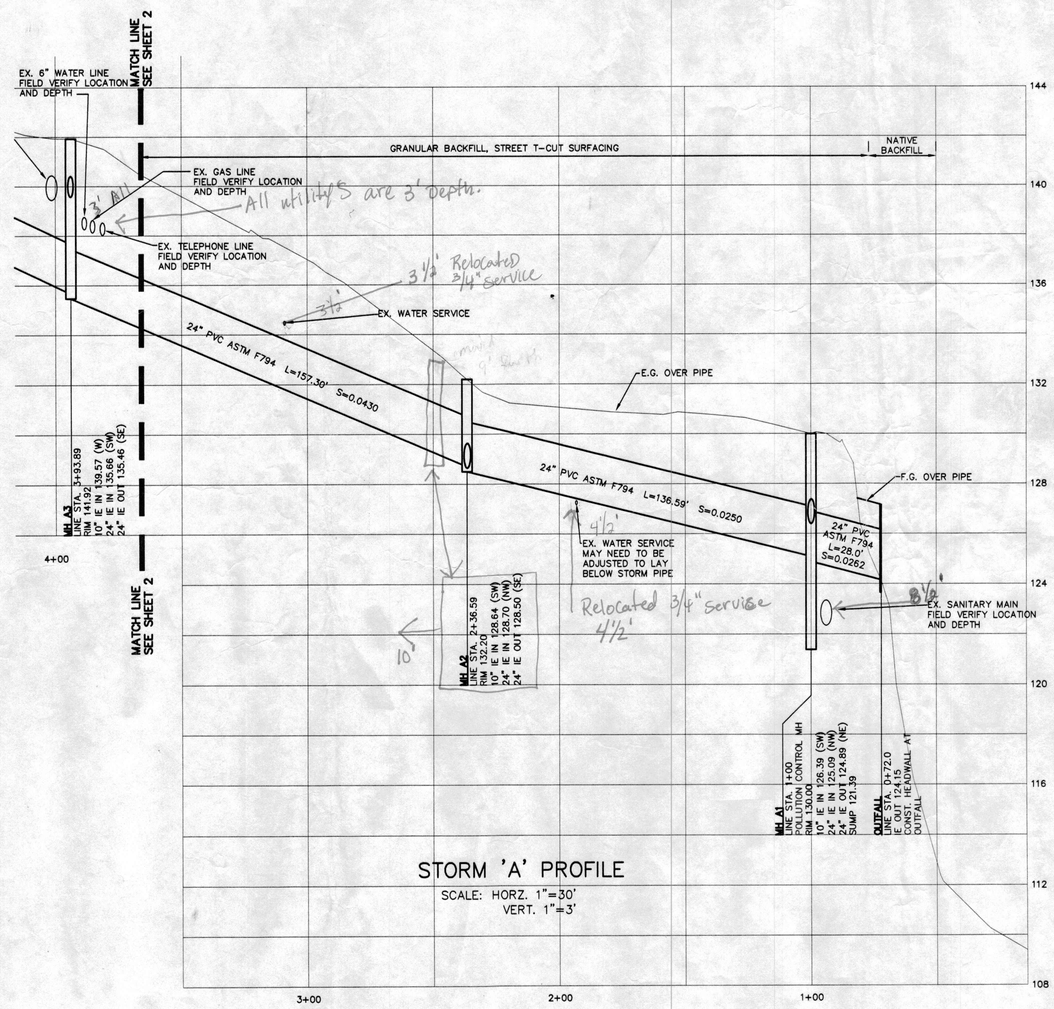
Bolton storm drain improvements SGL00–050 8–18–00

General Notes:

1. The Design Engineer will be responsible for inspection of the proposed improvements with oversight from the City's Public Works and Engineering staff, and the ODOT District Manager.
2. A work schedule will be required from the contractor so that the Engineer can have an inspector onsite at the appropriate times. If the work schedule is revised the contractor is to notify the Engineer of the changes. Additionally, the contractor is to give the Engineer at least 24 hours notice of any testing requiring the presence of the Engineer and/or City staff.
3. The contractor is to receive the approval of the Engineer and the City of any proposed changes to the plans or standard requirements.
4. A pre–construction meeting with the City of West Linn, and installation of erosion control measures are required prior to beginning construction.
5. A City representative must be present at all testing and the City shall be furnished a copy of all test results.

Bolton storm drain improvements SGL00–050 8–18–00





STORM 'A' PROFILE

SCALE: HORZ. 1"=30'
VERT. 1"=3'

REGISTERED PROFESSIONAL ENGINEER
PATRICK A. SISUL
OREGON
MAY 18, 1993
9.6.00

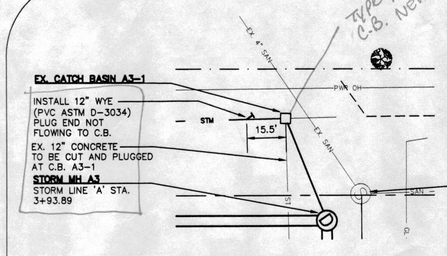
REVISIONS	BY
REVISED 8–18–00	JW
REVISED 9–6–00	JW

BOLTON STORM DRAIN IMPROVEMENTS

Storm Line Plan and Profile

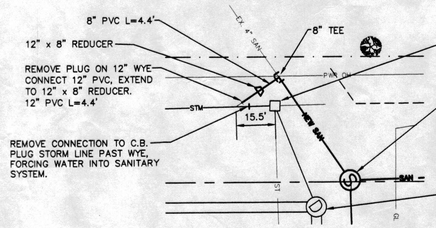
SISUL ENGINEERING
3775 PORTLAND AVENUE
GLADSTONE, OREGON 97027
(503) 657–0188
00–050.DWG

DATE JUNE 2000
SCALE 1" = 30'
DRAWN JW
JOB SGL 00–050
SHEET 1 OF 4 SHEETS



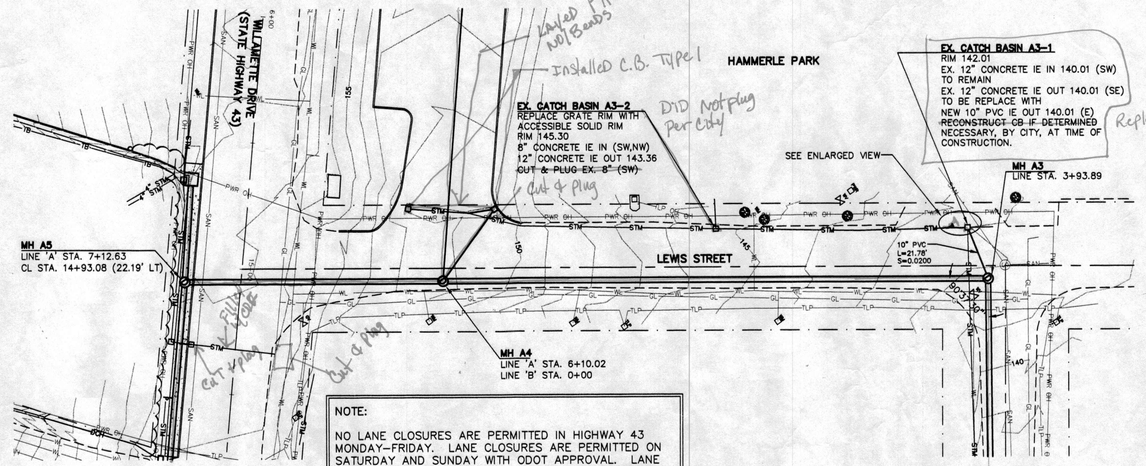
ENLARGED VIEW OF IMPROVEMENTS AT EX. CB A3-1

SCALE: 1"=15'



ENLARGED VIEW OF FUTURE IMPROVEMENTS AT EX. CB A3-1 TO BE DONE BY OTHERS

SCALE: 1"=15'



NOTE:

NO LANE CLOSURES ARE PERMITTED IN HIGHWAY 43 MONDAY-FRIDAY. LANE CLOSURES ARE PERMITTED ON SATURDAY AND SUNDAY WITH ODOT APPROVAL. LANE RESTRICTIONS SHALL BE ODOT APPROVED. CONTRACTOR SHALL PREPARE A TRAFFIC CONTROL PLAN, SHALL INSTALL PROPER SIGNAGE AND SHALL PROVIDE ADEQUATE FLAGGING.

GRAPHIC SCALE

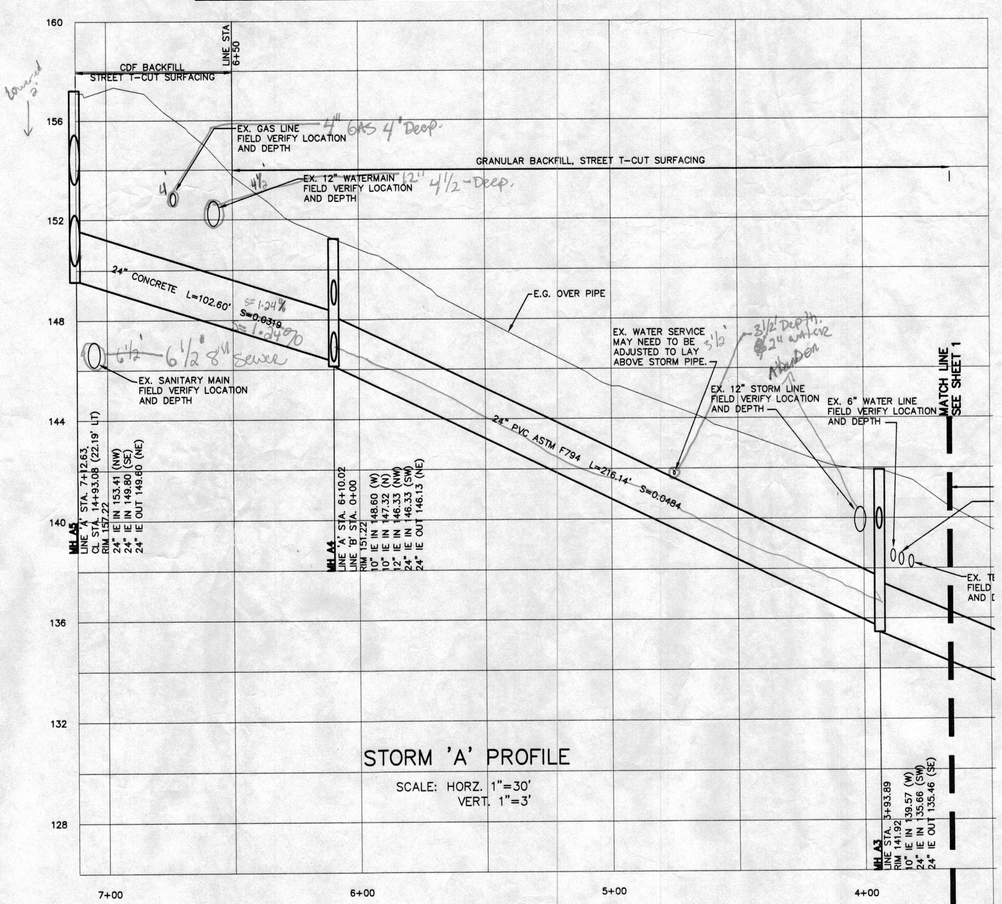
30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

GRAPHIC SCALE

0 5 10 20 40

METRIC SCALE



STORM 'A' PROFILE

SCALE: HORZ. 1"=30'
VERT. 1"=3'

REGISTERED PROFESSIONAL ENGINEER #18,551 OREGON MAY 18, 1993 PATRICK A. SISUL

9-6-00

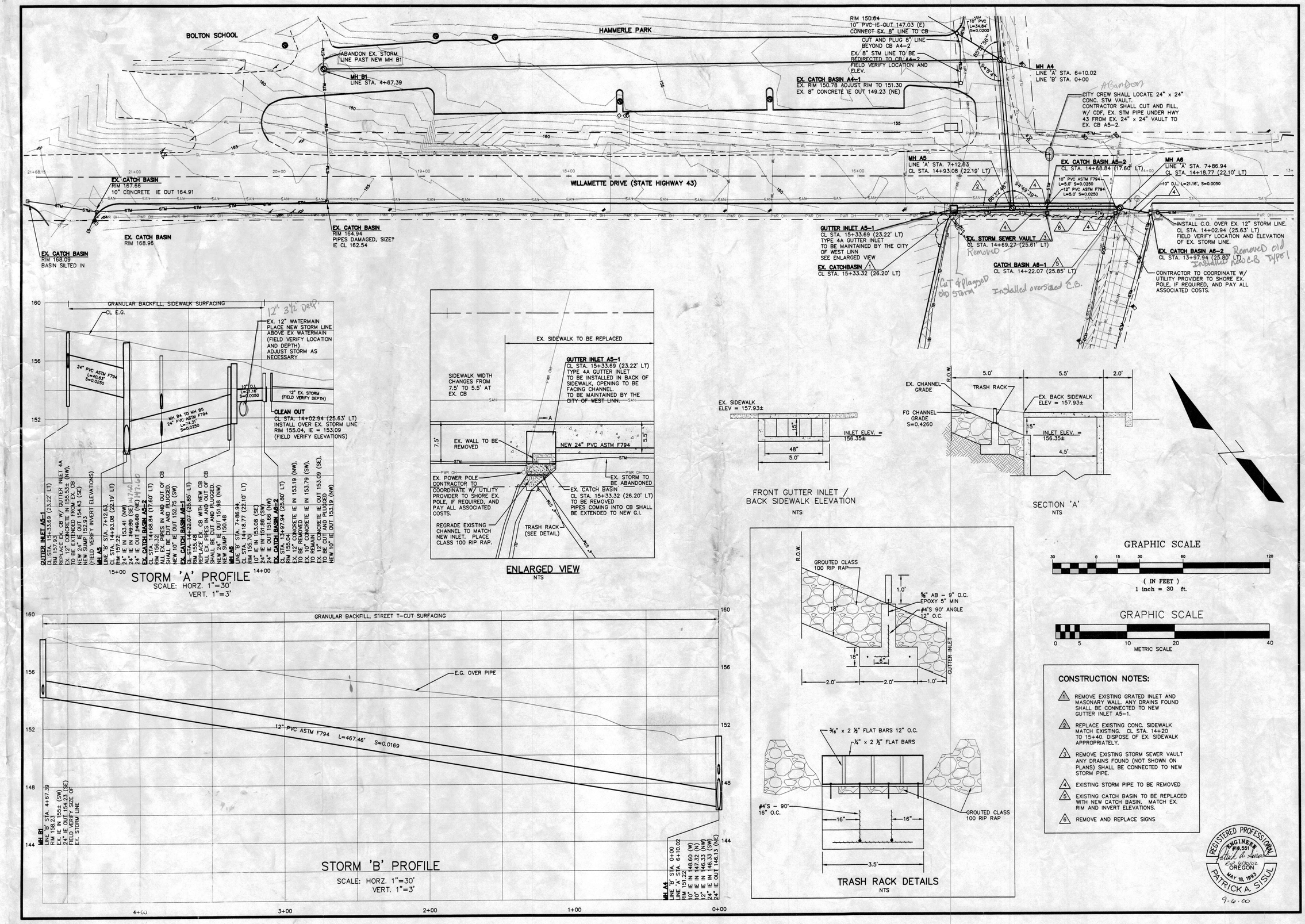
REVISIONS	BY
REVISED 9-18-00	JW
REVISED 9-6-00	JW

BOLTON STORM DRAIN IMPROVEMENTS

Storm Line Plan and Profile

SISUL ENGINEERING
375 PORTLAND AVENUE
GLADSTONE, OREGON 97027
(503) 657-0188
NAME.DWG

DATE	JUNE 2000
SCALE	1" = 30'
DRAWN	JW
JOB	SGL 00-050
SHEET	2
OF	4 SHEETS



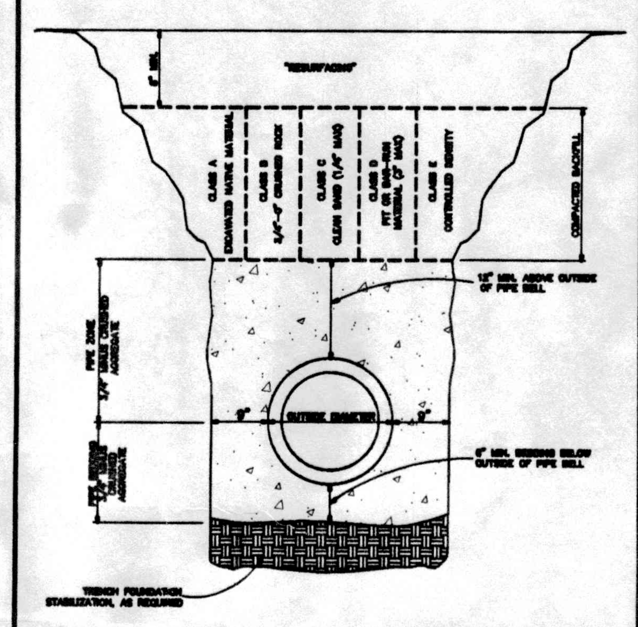
REVISIONS	BY
REVISED 8-18-00	JW
REVISED 9-6-00	JW

BOLTON STORM DRAIN IMPROVEMENTS

Storm Line Plan and Profile

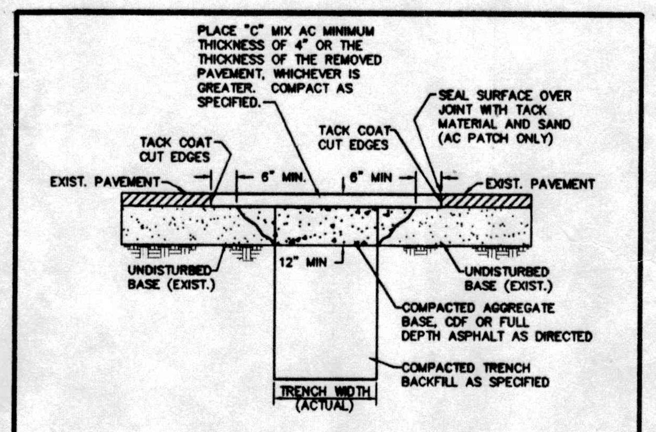
SISUL ENGINEERING
375 PORTLAND AVENUE
GLADSTONE, OREGON 97027
(503) 657-0188
00-050.DWG

DATE	JUNE 2000
SCALE	1" = 30'
DRAWN	JW
JOB	SGL 00-050
SHEET	3
OF	4 SHEETS



Trench Backfill, Bedding and Pipe Zone

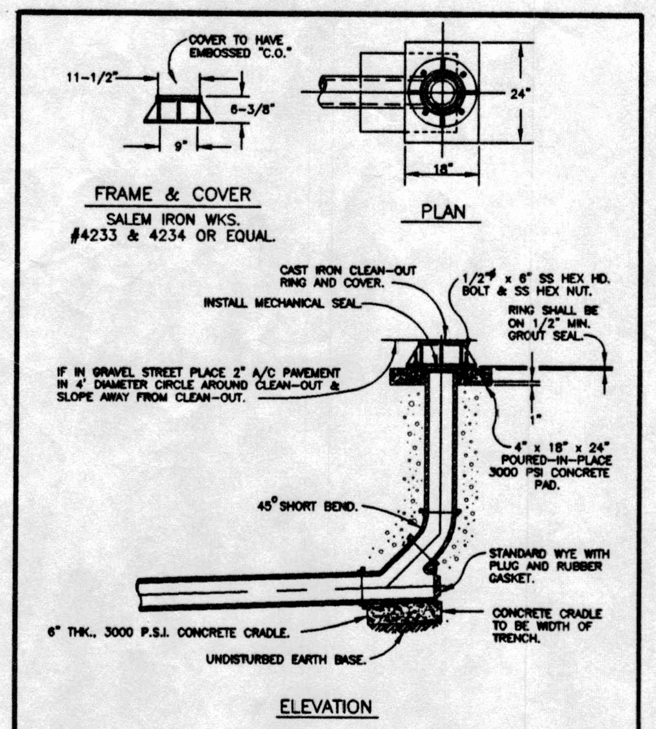
West Linn | DATE: JAN 2000 | DRAWING NO. WL-200 | FILE NO. 00-200



NOTES:
1. ALL EXISTING AC OR PCC PAVEMENT SHALL BE SAWCUT TO NEAT, STRAIGHT LINES PRIOR TO REPAVING.
2. CONCRETE PAVEMENT SHALL BE REPLACED WITH CONCRETE TO A MINIMUM THICKNESS OF REMOVED PAVEMENT, WHICHEVER IS GREATER.
3. IF EXISTING BASE MATERIAL IS CTB OR ATB, THEN REPLACEMENT BASE MATERIAL SHALL MATCH EXISTING.
4. ALL UTILITIES SHALL HAVE A MINIMUM COVER OF 36".
5. ALL TRENCH BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY PER AASHTO T-180 OR AS SPECIFIED IN THE CONTRACT DOCUMENTS.
6. ALL TRENCH BACKFILL AND PATCHING SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY OF WEST LINN.
7. BACKFILL SHALL BE PLACED AND COMPACTED IN A MAXIMUM OF 6" LIFTS.

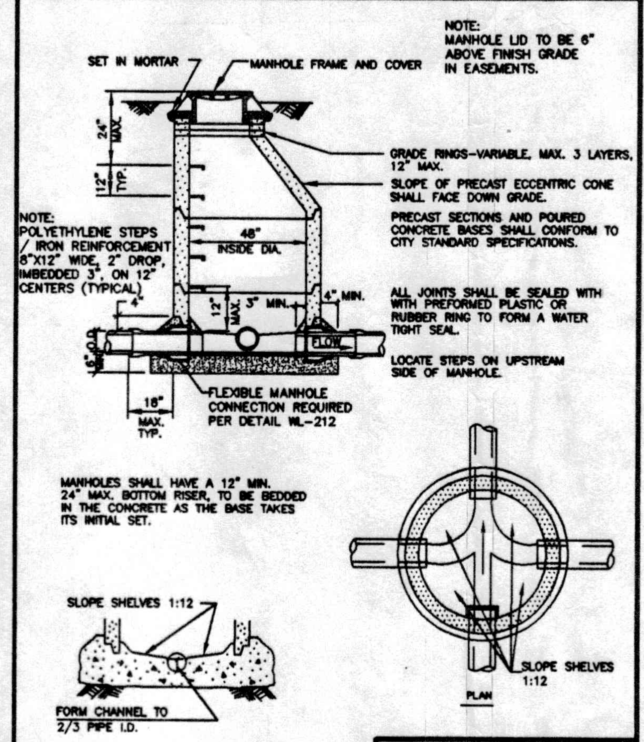
Street T-Cut

West Linn | DATE: JAN 2000 | DRAWING NO. WL-203 | FILE NO. 00-203



Standard Clean Out

West Linn | DATE: JAN 2000 | DRAWING NO. WL-206 | FILE NO. 00-206



NOTE: MANHOLE LID TO BE 6" ABOVE FINISH GRADE IN EASEMENTS.

NOTE: POLYETHYLENE STEPS / IRON REINFORCEMENT 8"X12" WIDE, 2" DROP, IMBEDDED 3", ON 12" CENTERS (TYPICAL)

GRADE RINGS-VARIABLE, MAX. 3 LAYERS, 12" MAX.

SLOPE OF PRECAST ECCENTRIC CONE SHALL FACE DOWN GRADE.

PRECAST SECTIONS AND POURED CONCRETE BASES SHALL CONFORM TO CITY STANDARD SPECIFICATIONS.

ALL JOINTS SHALL BE SEALED WITH WITH PREFORMED PLASTIC OR RUBBER RING TO FORM A WATER TIGHT SEAL.

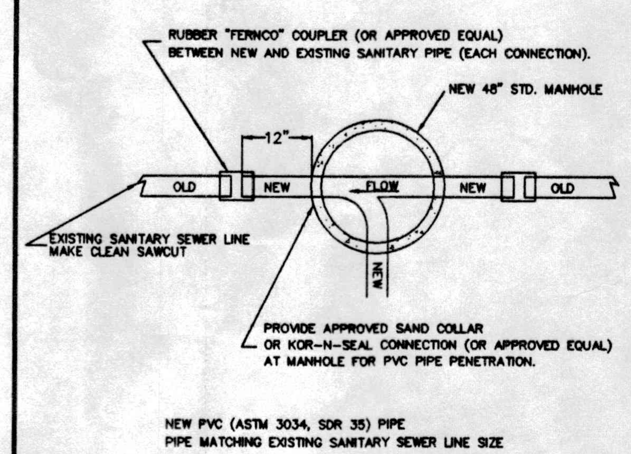
LOCATE STEPS ON UPSTREAM SIDE OF MANHOLE.

MANHOLES SHALL HAVE A 12" MIN. 24" MAX. BOTTOM RISER, TO BE BEDDED IN THE CONCRETE AS THE BASE TAKES ITS INITIAL SET.

NOTE: CHANNELS MUST BE ABLE TO PASS A 7"X30" CYLINDER INTO PIPES. SHELF SHALL NOT BE BELOW THE SPRING LINE OF THE PIPE.

Standard Manhole for Less than 36" Pipe

West Linn | DATE: JAN 2000 | DRAWING NO. WL-207 | FILE NO. 00-207

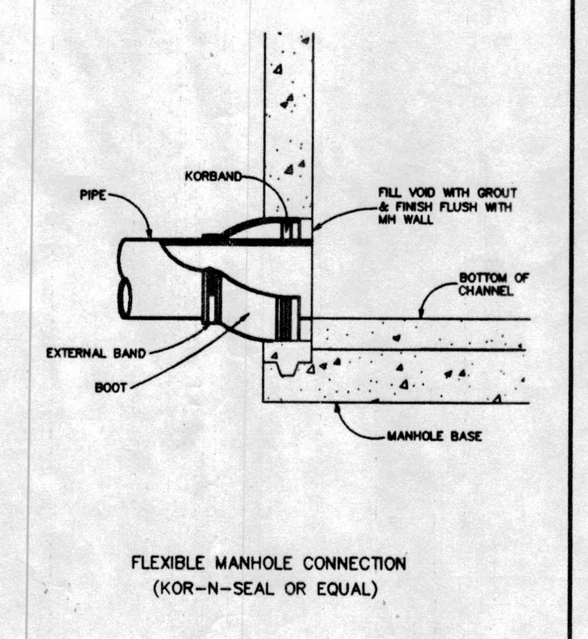


NEW PVC (ASTM 3034, SDR 35) PIPE
PIPE MATCHING EXISTING SANITARY SEWER LINE SIZE

(TYPICAL CONNECTION, MULTIPLE CONNECTIONS MAY EXIST)

Manhole Detail—Plan View New Manhole to Existing Sewer Line Connection

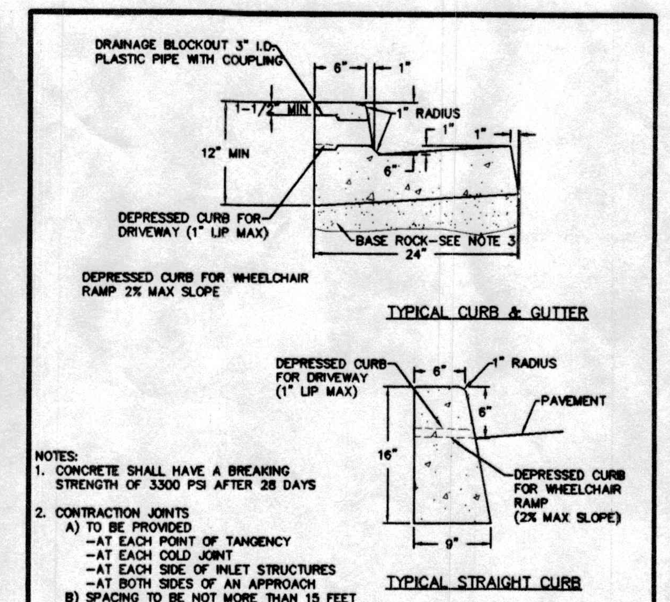
West Linn | DATE: JAN 2000 | DRAWING NO. WL-210 | FILE NO. 00-210



FLEXIBLE MANHOLE CONNECTION
(KOR-N-SEAL OR EQUAL)

Flexible Manhole Connection

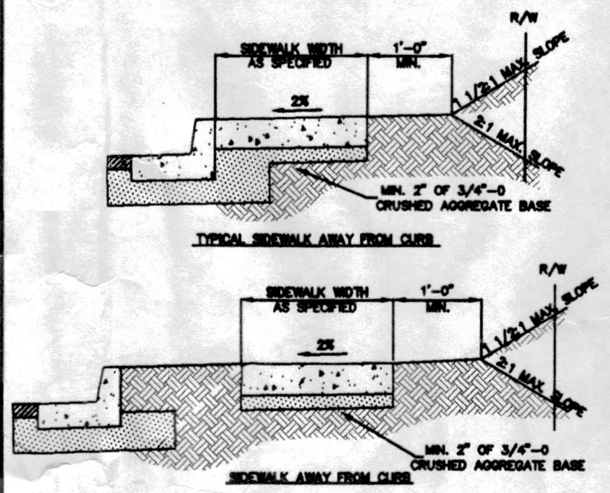
West Linn | DATE: JAN 2000 | DRAWING NO. WL-212 | FILE NO. 00-212



NOTES:
1. CONCRETE SHALL HAVE A BREAKING STRENGTH OF 3300 PSI AFTER 28 DAYS
2. CONTRACTION JOINTS
   A) TO BE PROVIDED
      -AT EACH POINT OF TANGENCY
      -AT EACH COLD JOINT
      -AT EACH SIDE OF INLET STRUCTURES
      -AT BOTH SIDES OF AN APPROACH
   B) SPACING TO BE NOT MORE THAN 15 FEET
   C) THE DEPTH OF THE JOINT SHALL BE AT LEAST 1/3 OF THE THICKNESS OF CONCRETE
   D) EXPANSION JOINTS SHALL NOT BE USED
3. BASE ROCK – 1-1/2"-0", 95% COMPACTION ROCK SHALL BE TO SUBGRADE OF THE STREET SECTION OR 4" IN DEPTH, WHICHEVER IS GREATER
4. DRAINAGE BLOCK – 3" DIA. PLASTIC PIPE
   A) DRAINAGE ACCESS THROUGH EXISTING CURBS SHALL BE DONE BY:
      -CORE DRILLING
      -VERTICAL SAWCUT OF CURB 18" EACH SIDE OF DRAIN AND RE-POURED TO FULL DEPTH OF CURB
5. STAMP TOP OF CURB WITH "W" AT WATER SERVICE CROSSING AND "S" AT SANITARY LATERAL CROSSING

Typical Curbs

West Linn | DATE: JAN 2000 | DRAWING NO. WL-501 | FILE NO. 00-501

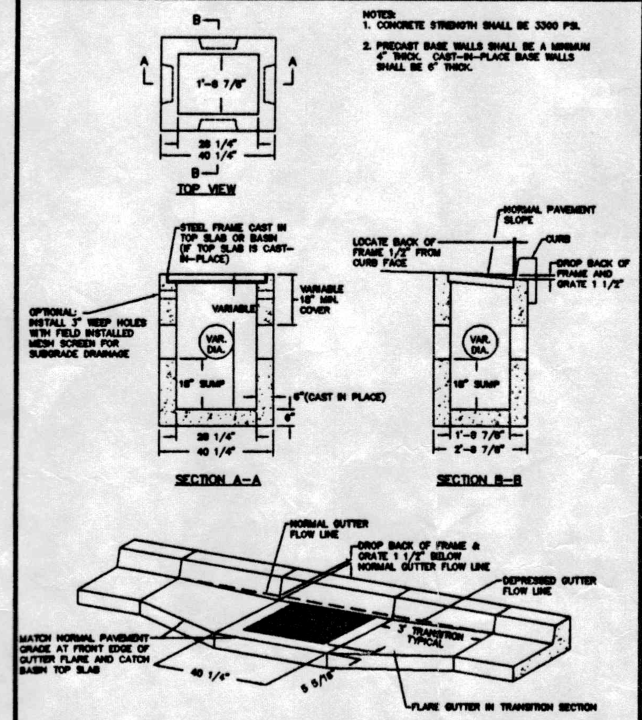


NOTES
1. CONCRETE SHALL BE 3300 PSI AT 28 DAYS, 6 SACK MIX, SLUMP RANGE OF 1 1/2" TO 3".
2. PANEL LENGTHS SHALL BE EQUAL TO THE SIDEWALK WIDTH, BUT MAY BE ADJUSTED WITH THE CITY ENGINEER'S APPROVAL.
3. CONTRACTION JOINTS (1/3RD OF THE THICKNESS OF CONCRETE) SHALL BE PLACED EVERY THIRD PANEL, WITH A MAX. SPACING OF 15 FEET. JOINTS SHALL ALSO BE PLACED AT THE SIDES OF DRIVEWAY APPROACHES, UTILITY VAULTS, AND WHEELCHAIR RAMPS.
4. A CURING COMPOUND SHALL BE USED. WHITE REFLECTIVE SHEETING SHALL BE USED IN CASE OF RAIN.
5. FOR SIDEWALKS ADJACENT TO THE CURB AND POURED AT THE SAME TIME AS THE CURB, THE JOINT BETWEEN THEM SHALL BE A TROWELED JOINT WITH A MIN. 1/2" RADIUS.
6. THE SIDEWALK SHALL HAVE A MIN. THICKNESS OF 6" IF MOUNTABLE CURB IS USED OR IF THE SIDEWALK IS INTENDED AS A PORTION OF THE DRIVEWAY. OTHERWISE, THE SIDEWALK SHALL HAVE A MIN. THICKNESS OF 4".
7. DRAIN BLOCKOUTS IN THE CURB SHALL BE EXTENDED TO THE BACK OF THE SIDEWALK WITH A 3" DIA. PLASTIC PIPE AT A 2% SLOPE. A CONTRACTION JOINT SHALL BE PLACED OVER THE PIPE.

Concrete Sidewalk Cross Section

West Linn | DATE: JAN 2000 | DRAWING NO. WL-508 | FILE NO. 00-508

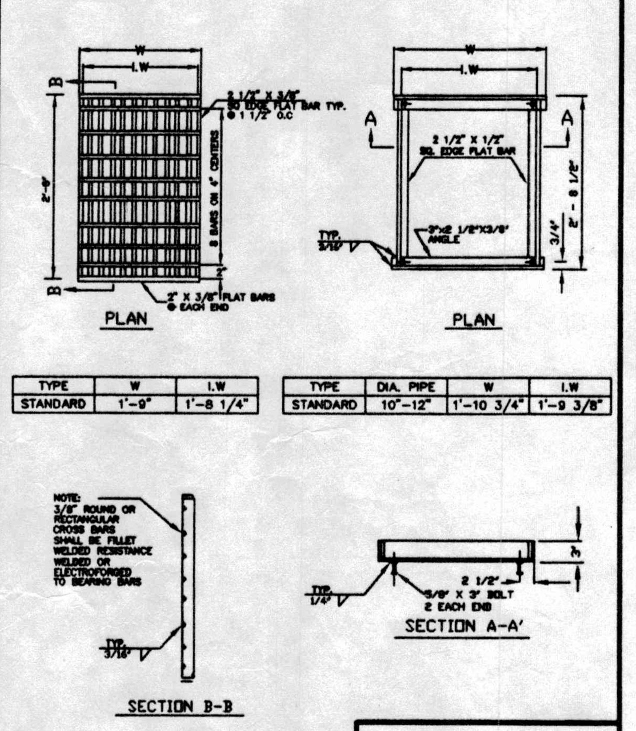
NOTES:
1. CONCRETE STRENGTH SHALL BE 3300 PSI.
2. PRECAST BASE WALLS SHALL BE A MINIMUM 4" THICK. CAST-IN-PLACE BASE WALLS SHALL BE 6" THICK.



NOTE: PRECAST TOP SLAB SHOWN WITH GUTTER TRANSITION FLARE IF THE TOP SLAB IS CAST-IN-PLACE, NO FLARE IS REQUIRED IN THE TRANSITION SECTION. MATCH THE TOP FRONT EDGE OF THE FRAME AND THE TOP FRONT EDGE OF THE CAST-IN-PLACE TOP SLAB TO THE NORMAL PAVEMENT GRADE.

Type G-1 Catch Basin with Sump

West Linn | DATE: JAN 2000 | DRAWING NO. WL-602 | FILE NO. 00-602



TYPE	W	I.W
STANDARD	1'-9"	1'-8 1/4"

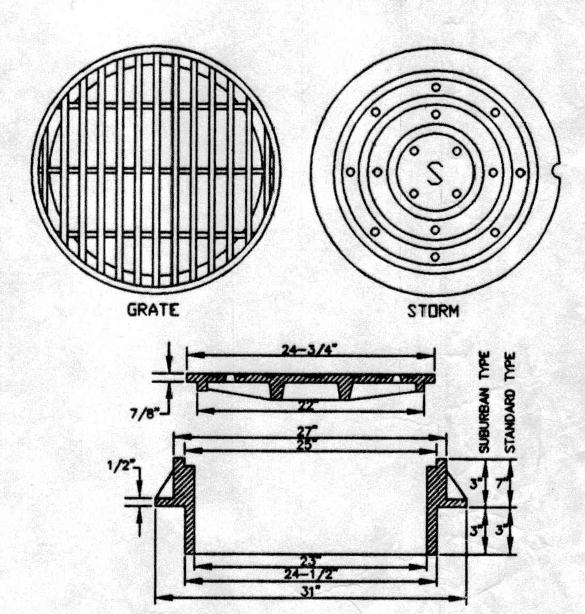
TYPE	DIA. PIPE	W	I.W
STANDARD	10"-12"	1'-10 3/4"	1'-9 3/8"

NOTE: 3/8" ROUND OR RECTANGULAR CROSS BARS SHALL BE FILLET WELDED RESISTANCE WELDED OR ELECTROFORGED TO BEARING BARS

NOTE: USE VERTICAL BEADS IN CORNERS. FILLET WELD JOINT ON BOTTOM OF FRAME. GRATE MUST REST FLAT ON FRAME SURFACE.

Frame & Grate for Gutter & Curb Inlets

West Linn | DATE: JAN 2000 | DRAWING NO. WL-602A | FILE NO. 00-602A

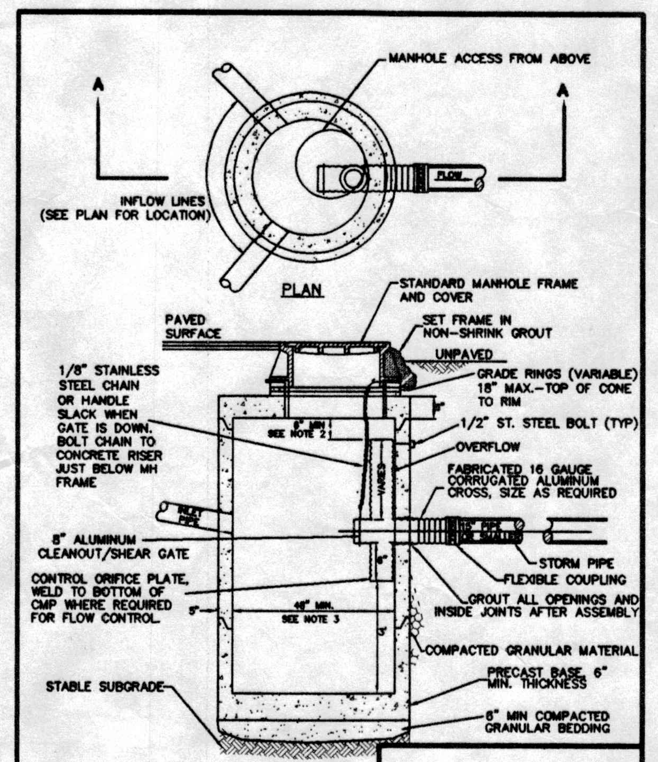


NOTES:
1. USE SUBURBAN TYPE ONLY IN NON-TRAFFIC AREAS, AND ONLY WITH APPROVAL BY THE CITY.
2. COVER AND FRAME SHALL BE GRAY CAST IRON ASTM A-48 CLASS 30.
3. COVER AND FRAME TO BE MACHINED TO A TRUE BEARING ALL AROUND.
4. NOTCH LID FOR LIFTING HOOK.
5. OPEN GRATES REQUIRE APPROVAL BY CITY, AND MUST BE BICYCLE SAFE IF USED IN TRAFFIC AREAS.

SUBURBAN AND STANDARD MANHOLE FRAME AND COVER

Manhole Covers

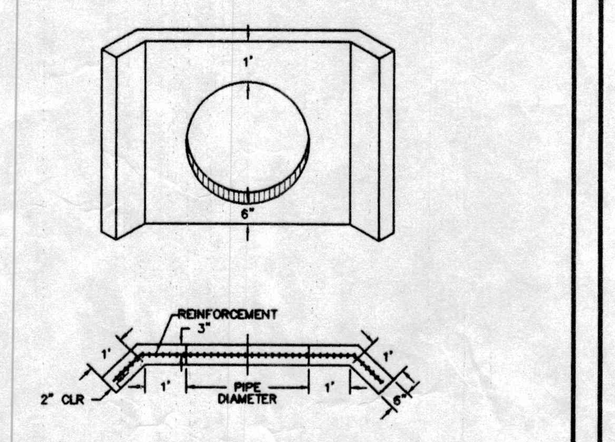
West Linn | DATE: JAN 2000 | DRAWING NO. WL-605 | FILE NO. 00-605



NOTES:
1. ALL PRECAST SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478.
2. DISTANCE FROM TOP OF OVERFLOW TO MH RIM SHALL BE BASED ON OVERFLOW CAPACITY CALC'S BY DESIGN ENGINEER. ASSUME ORIFICE CONTROL.
3. 60" MINIMUM DIA. MANHOLE REQUIRED FOR OUTLET PIPE LARGER THAN 15" OR INLET > 21".
4. NO STEPS REQUIRED

Pollution / Flow Control Manhole

West Linn | DATE: JAN 2000 | DRAWING NO. WL-607 | FILE NO. 00-607

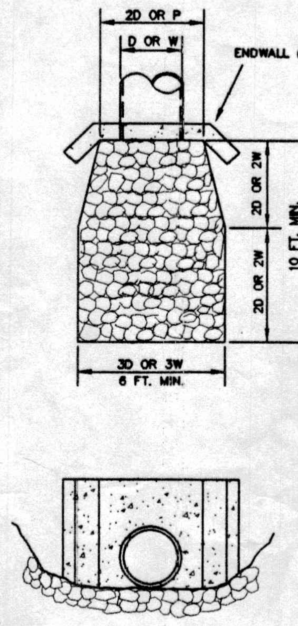


NOTES:
1. USE CONCRETE HAVING A 28 DAY DESIGN STRENGTH OF 3300 PSI.
2. OUTLET WING WALL SHALL BE USED FOR ALL OUTFALL PIPES FROM 10" TO 36".
3. THIS DETAIL REPRESENTS THE MINIMUM REQUIREMENT. THE NEED FOR ADDITIONAL STEEL, A FOOTING AND DRAINAGE BEHIND THE WALL SHALL BE INVESTIGATED BY THE DESIGN ENGINEER.
4. FOR PIPES LARGER THAN 33" OR MULTIPLE PIPE OUTLETS, USE DETAIL WL-612.
5. CONCRETE REINFORCEMENT SHALL CONSIST OF:
   A) ADDING A POLY-FIBER MESH TO THE CONCRETE MIX OR
   B) USE (2) #4 BARS ABOVE AND BELOW PIPE AND #4 BARS AT 6" O.C. VERTICALLY.

Outlet Headwall (For Outlet Pipes of 10" to 33")

West Linn | DATE: JAN 2000 | DRAWING NO. WL-613 | FILE NO. 00-613

D = PIPE DIAMETER
W = BOTTOM WIDTH OF CHANNEL
P = WETTED PERIMETER OF CHANNEL



DESIGN VELOCITY FT./SEC	ROCK CLASSIFICATION BY WEIGHT
6 – 10	200 LBS.
10 – 12	1/4 TON
12 – 14	1/2 TON
14 – 16	1 TON
16 – 18	2 TON

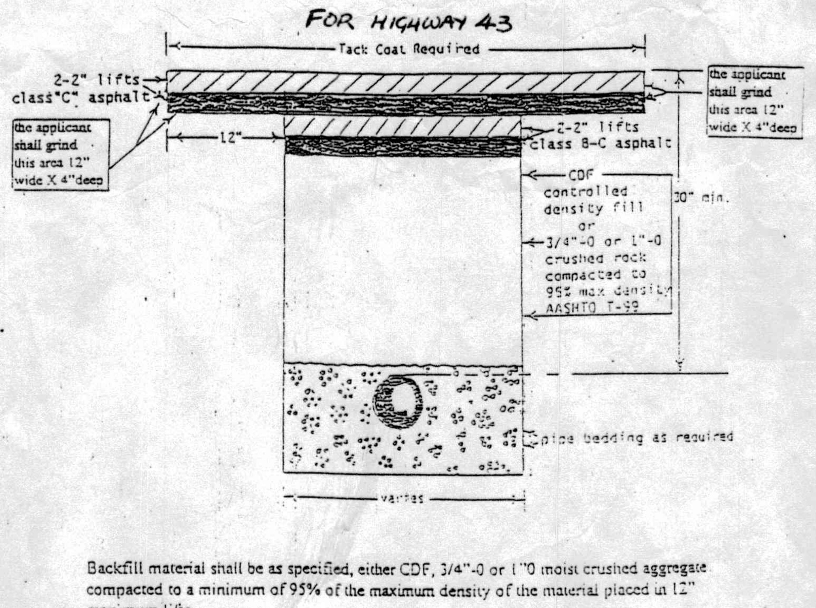
SELECTION OF RIP RAP (SEE NOTE 1)

NOTES:
1. DIMENSIONS FOR RIP RAP APPLY TO FLOWS < 2 CFS RIP RAP FOR FLOWS > 2 CFS MUST BE DESIGNED BY AN ENGINEER FLOWS > 20 FPS SHALL USE ENERGY DISSIPATOR
2. TYPE OF RIP RAP
   A. REGULAR QUARRY STONE CLASS 50-200
   B. COBBLESTONE
   C. CONCRETE (ONLY ALLOWED UPON APPROVAL OF THE DISTRICT)
3. PLACEMENT
   A. MINIMUM DEPTH = 1 1/2 TIMES AVERAGE STONE SIZE
   B. ROCKS SHALL BE PLACED TO PROVIDE A MINIMUM OF VOIDS.
   C. SURFACE ROCKS OR CONCRETE SHALL PROTRUDE AT LEAST 1/2 THEIR VERTICAL DIMENSION.
   D. RIP RAP IS TO BE PLACED OVER A NATURAL BEDDING, OR IT MAY BE GROUTED OR PLACED OVER A GRAVEL BEDDING AS REQUIRED BY THE CITY.

Storm Sewer Outfall

West Linn | DATE: JAN 2000 | DRAWING NO. WL-614 | FILE NO. 00-614

T-CUT
TYPICAL SECTION
FOR HIGHWAY 43



Backfill material shall be as specified, either CDF, 3/4"-0 or 1"0 moist crushed aggregate compacted to a minimum of 95% of the maximum density of the material placed in 12" maximum lifts.

Asphalt emulsion tack coat shall be used to seal the asphalt to the edges of the existing asphalt. All cut areas shall be sand sealed.

Asphalt wearing surface shall be placed to a minimum compacted thickness of 4" or the thickness of the removed pavement, whichever is greater (*maximum 2" lifts*), or replace in kind. The trench also must have a minimum of 4" of compacted asphalt.

Cut areas shall be cold patched at the end of the work day and the patch maintained, cold patched areas shall be hot patched within 7 days.

REGISTERED PROFESSIONAL ENGINEER #16551 OREGON MAY 18, 1993 PATRICK A. SISUL EXP. 6/30/02

8.18.00

REVISIONS	BY

BOLTON STORM IMPROVEMENTS

Details

SISUL ENGINEERING
375 PORTLAND AVENUE
GLADSTONE, OREGON 97027
(503) 657-0188
00-050details.DWG

DATE	AUGUST
SCALE	NOTED
DRAWN	JW
JOB	SGL 00-050
SHEET	4
OF 4	SHEETS