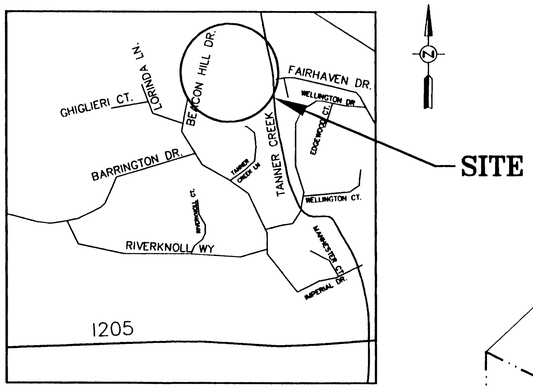
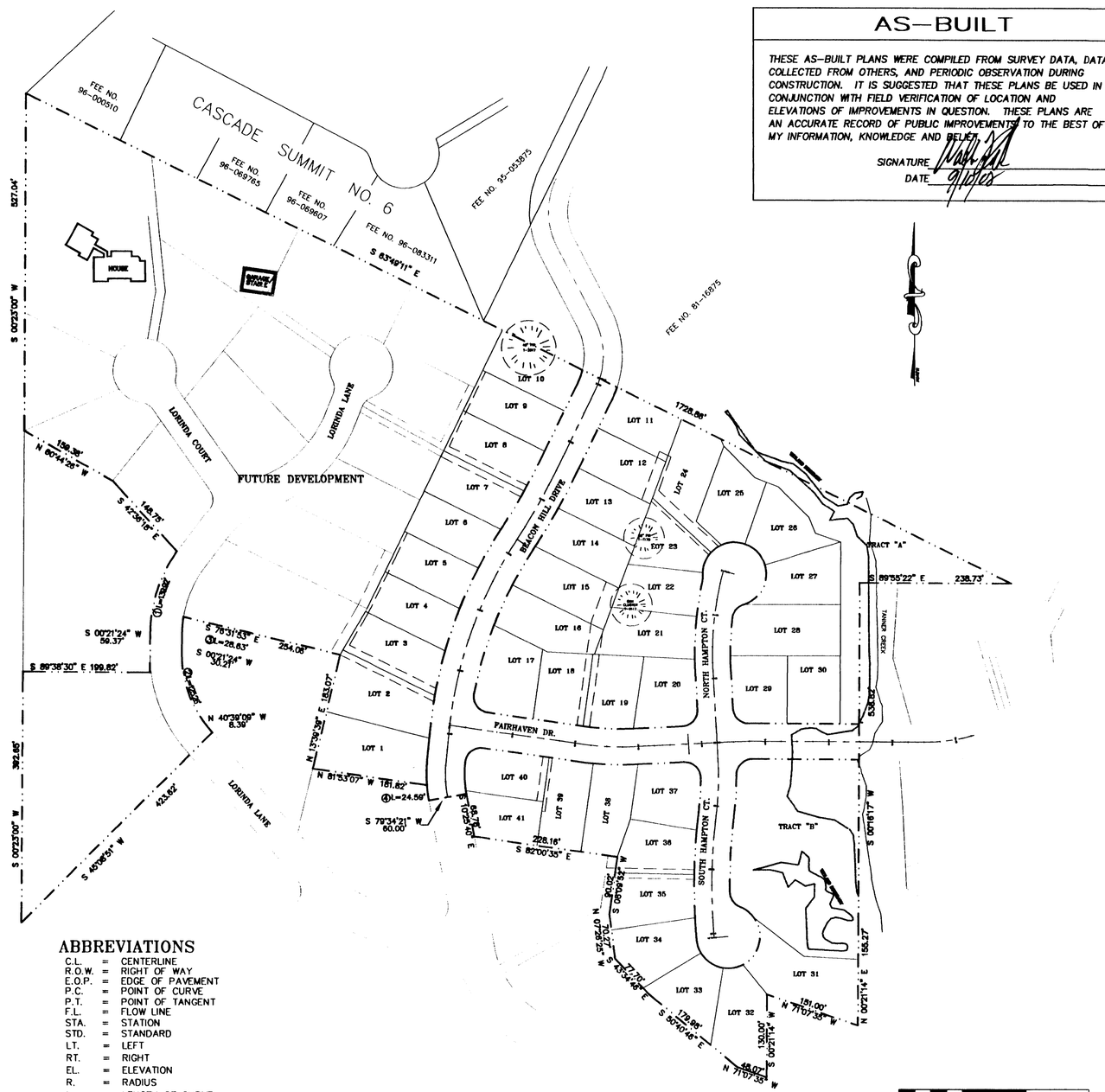
Engineering Design for BARRINGTON HEIGHTS #10



VICINITY MAP

SCALE: N.T.S.



AS-BUILT

THESE AS-BUILT PLANS WERE COMPILED FROM SURVEY DATA, DATA COLLECTED FROM OTHERS, AND PERIODIC OBSERVATION DURING CONSTRUCTION. IT IS SUGGESTED THAT THESE PLANS BE USED IN CONJUNCTION WITH FIELD VERIFICATION OF LOCATION AND ELEVATIONS OF IMPROVEMENTS IN QUESTION. THESE PLANS ARE AN ACCURATE RECORD OF PUBLIC IMPROVEMENTS TO THE BEST OF MY INFORMATION, KNOWLEDGE AND BELIEF.

SIGNATURE _____

DATE 9/15/03

GENERAL NOTES:

1. PRIOR TO THE COMMENCEMENT OF WORK, THE CONTRACTOR AND ALL SUBCONTRACTORS ARE TO HAVE ALL NECESSARY CURRENT LICENSES, PERMITS AND A COPY OF THE GENERAL CONTRACTOR'S LIABILITY INSURENCE THAT CAN BE PROVIDED TO THE CITY.
2. PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE CITY OF WEST LINN AND CSA CONSULTING ENGINEERS WITH A SCHEDULE SHOWING SEQUENCE OF MAJOR CONSTRUCTION PHASES AND ESTIMATED DURATION.
3. THE CONTRACTOR AND/OR SUBCONTRACTOR SHALL HAVE A MINIMUM OF ONE COMPLETE SET OF APPROVED CONSTRUCTION PLANS ON THE JOB SITE AT ALL TIMES DURING CONSTRUCTION.
4. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THESE PLANS AND THE APPLICABLE REQUIREMENTS OF THE CITY OF WEST LINN.
5. THE CONTRACTOR SHALL KEEP CSA CONSULTING ENGINEERS AND CITY OF WEST LINN ADVISED OF PROGRESS AND GIVE 72 HOUR NOTIFICATION FOR INSPECTION, TESTING, AND TO OBSERVE ALL NECESSARY WORK PRIOR TO COVERING IT UP. CONTRACTOR WILL UNCOVER AT HIS/HER OWN EXPENSE ALL WORK THAT WAS BACKFILLED OR COVERED PRIOR TO OBSERVATION AND INSPECTION.
6. THE CONTRACTOR SHALL PERFORM ALL WORK AS SHOWN ON THESE DRAWINGS AND ALL INCIDENTAL WORK AS NECESSARY TO COMPLETE THE PROJECT IN AN ACCEPTABLE MANNER AS DETERMINED BY THE ENGINEER.
7. ALL MATERIAL USED IS SPECIFIED ON THE APPROVED PLANS OR SPECIFICATIONS. ANY ALTERNATIVES ARE TO BE APPROVED BY CSA CONSULTING ENGINEERS AND THE CITY OF WEST LINN.
8. ANY PROPOSED CHANGES ARE TO BE SUBMITTED TO THE ENGINEER AND APPROVED BY CSA CONSULTING ENGINEERS AND THE CITY OF WEST LINN PRIOR TO ANY WORK BEING DONE ON THE PROPOSED CHANGE. NO PAYMENT WILL BE MADE FOR UNAPPROVED CHANGES.
9. EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE. THE CONTRACTOR IS TO VERIFY THE LOCATIONS AND ELEVATIONS OF ALL UTILITIES PRIOR TO CONSTRUCTION. IN CASES WHERE THE ACTUAL LOCATION AND/OR ELEVATION VARIES FROM PLAN, CONTRACTOR SHALL NOTIFY THE ENGINEERS BEFORE PROCEEDING WITH CONSTRUCTION.
10. IF CONTRACTOR ENCOUNTERS ANY INCONSISTENCES OR PROBLEMS BETWEEN THESE PLANS & SPECIFICATIONS AND ACTUAL FIELD CONDITIONS. THE CONTRACTOR IS TO STOP WORK IMMEDIATELY AND SHALL NOTIFY CSA BEFORE PROCEEDING WITH CONSTRUCTION.
11. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL UTILITY SERVICES TO THE SITE.
12. THE CONTRACTOR IS RESPONSIBLE FOR MANAGING CONSTRUCTION ACTIVITIES TO INSURE ADJACENT PUBLIC STREETS AND PRIVATE PROPERTIES ARE KEPT CLEAN AND CLEAR OF DEBRIS, DUST, ALL NUISANCES AND DISTURBANCES OF CONSTRUCTION. THE CONTRACTOR SHALL LEAVE ALL AREAS OF THE PROJECT FREE OF DEBRIS AND UNUSED CONSTRUCTION MATERIALS.
13. TRAFFIC CONTROL DURING CONSTRUCTION SHALL BE IN ACCORDANCE WITH STATE, COUNTY AND LOCAL OFFICIALS.
14. THE CONTRACTOR IS TO NOTIFY ALL UTILITY COMPANIES FOR UNDER-GROUND LOCATIONS PRIOR TO ANY WORK AND/OR EXCAVATION. "ONE CALL" UTILITY NOTIFICATION CENTER, (503) 246-6699.
15. EXCAVATORS MUST COMPLY WITH ALL PROVISIONS OF O.R.S. 757.541 TO 757.571 INCLUDING NOTIFICATION OF ALL OWNERS OF UNDERGROUND FACILITIES AT LEAST (48) BUSINESS DAY HOURS, BUT NOT MORE THAN (10) BUSINESS DAYS BEFORE COMMENCING AN EXCAVATION.
16. ELEVATIONS ARE BASED ON FOUND BENCHMARK, CITY OF WEST LINN, AT INTERSECTION OF FAIRHAVEN DRIVE AND FAIRHAVEN COURT, ELEV.= 386.99
17. AN EROSION/SEDIMENTATION CONTROL (ESC) PLAN IS REQUIRED ON THIS PROJECT. THE IMPLEMENTATION OF THE ESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE PERMITEE/CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND THE VEGETATION/LANDSCAPING IS ESTABLISHED.
18. PRIOR TO BEGINNING WORK THE EROSION CONTROL PLAN APPROVED BY THE CITY OF WEST LINN MUST BE INSTALLED.

DEVELOPER:

MIKE NEDELISKY
SHOW TIMBER CO.
2525 FLORINDA LANE
WEST LINN, OR 97068
(503) 658-2767

ENGINEER:

CSA CONSULTING ENGINEERS
321 S.W. 4TH, 4TH FLOOR
PORTLAND, OR 97204
(503) 228-3848

LEGEND

	PROPERTY LINES
	CENTERLINE
	EDGE OF PAVEMENT
	LOT LINES
	1' CONTOURS
	5' CONTOURS
	EXISTING CURB
	PROPOSED CURB
	EXISTING SANITARY SEWER
	PROPOSED SANITARY SEWER
	EXISTING STORM SEWER
	PROPOSED STORM SEWER
	EXISTING WATER LINE
	PROPOSED WATER LINE
LOT 1	LOT NUMBER
	EXISTING MANHOLE
	PROPOSED MANHOLE
	EXISTING POWER POLE
	PROPOSED CATCH BASIN
	EXISTING CATCH BASIN
	FIRE HYDRANT

ABBREVIATIONS

C.L.	=	CENTERLINE
R.O.W.	=	RIGHT OF WAY
E.O.P.	=	EDGE OF PAVEMENT
P.C.	=	POINT OF CURVE
P.T.	=	POINT OF TANGENT
F.L.	=	FLOW LINE
STA.	=	STATION
STD.	=	STANDARD
LT.	=	LEFT
RT.	=	RIGHT
EL.	=	ELEVATION
R.	=	RADIUS
L.	=	LENGTH OF CURVE
A.C.	=	ASPHALT CONCRETE
WCHR.	=	WHEEL CHAIR RAMP
H.C.	=	HORIZONTAL CURVE
C.B.	=	CATCH BASIN
EX.	=	EXISTING
C.O.	=	CLEAN OUT

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8	FAIRHAVEN DR. STREET & STORM PLAN
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25	CREEK CROSSING

DATE	NO.	REVISION	BY

SHEET 1 OF 25

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

REGISTERED PROFESSIONAL ENGINEER — WALTER L. COOK — OREGON — EXPIRES: 12-31-2003

SCALE VERT: N/A HORIZ: 1" = 100'
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP 2S-1E-36
TAX LOTS 608 & 609

PROJECT NAME: BARRINGTON HEIGHTS 10

COVER SHEET

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848

THE HEARING OFFICER HEREBY APPROVES FILES NO. SUB 97-01 (BARRINGTON HEIGHTS 10) SUBJECT TO THE CONDITIONS CONTAINED IN THE APRIL 15, 1998 STAFF REPORT WITH MODIFICATIONS (MAY 11, 1998)

1. Regarding tree preservation:
   a. All significant trees to be preserved which are not located with proposed Open Space Tracts "A" and "B" shall be preserved with easements consisting of the tree dripline plus 10 feet.
   b. Significant trees #1170 (a 10-inch fir) and #2017 (a 40-inch fir) shall be preserved and protected with easements consisting of the tree dripline plus 10 feet.
   c. Lot lines in the vicinity of Lot 23 shall be adjusted so that significant tree #2117 (a cluster of two oaks 14-inch and 12-inch respectively) shall be located within 10 feet of a side lot line. The adjustment shall not cause any perimeter lot to fall below a minimum parcel size of 7500 square feet.
   d. Snow fencing or equivalent shall be installed at the drip line of all trees to be retained, including off-site trees whose foliage extend onto or over this site, within areas of any site work or near any construction area. "Site work area" and "near any construction area" shall be defined as any area that could receive dirt or debris or have the ground traversed with equipment or have the natural grade modified.
   e. Only if such fence placement at the dripline is infeasible, snow fencing may be installed out of the root zone and in a manner that prohibits any contact with the tree trunk.
   f. The City Arborist shall inspect and approve all on-site tree protection measures, and tree pruning, including placement of protection fences prior to the start of site work. It is the applicant's responsibility to contact the City Arborist and arrange for this approval to take place. No permits from Engineering, Planning or Building Departments shall be issued without approval from the City Arborist regarding tree protection measures, and regarding proposed tree pruning of "trees to remain" on the site.
   g. All tree protection measures shall remain in place and fully functional for the entire time that site work and construction is taking place.
   h. To mitigate for the loss of signiglcant trees due to road construction, the applicant shall plant up to ten Oregon White Oaks within proposed Tracts A and B in a location to be approved by the City Arborist, and with protection measures approved by the City Arborist.
2. All lots have minimum five-foot wide utility easements established on their front and rear lot lines.
3. Erosion control measures shall be in placed on site prior to any site work, and shall meet all applicable provisions of erosion control found in Chapter 85 of the Community Development Code. These erosion control measures shall be inspected prior to site work commencing, and shall remain in proper functioning condition throughout the life of the project. Grading of the site shall be limited to the amount necessary to accommodate driveways, street improvements, and a single-family residences. It is the applicant's responsibility to arrange for the inspection and approval of erosion control measures on site.
4. The applicant shall conform to all federal, state, and local policies and codes unless granted a written waiver, modification, and/or variance by the appropriate deciding body.
5. Regarding streets, the applicant shall: (1) design Beacon Hill Drive to (a) reduce the future construction impacts to the natural drainage way to the north, (b) meet City street horizontal and vertical construction standards, and (c) connect to the existing Beacon Hill Drive right-of-way to the north; (2) construct the proposed temporary fire turn-around at the end of Beacon Hill Drive; (3) design and construct Fairhaven Drive natural drainage way crossing to minimize (24 foot width, four-foot sidewalks collapsed to curb, locate street section to northern portion of right-of-way, extend retaining walls to minimize grading in wetland/drainage way, maximize vertical curve, etc.) the drainageway/wetlnd impacts and meet all related agency rquirements; (4) grant the City a public pedestrian access easement along Lorinda Lane (location to be determined by the City Engineer and Planning Director); and (6) provide new street names for N. Reed Court and S. Reed Court, to be approved by the City Engineer.
6. Regarding storm drainage, the applicant shall: (1) design and construct a drainageway/wetland enhancement plan to mitigate for Fairhaven Drive drainageway transition/wetland areas that are disturbed and/or eliminated by the development of his site; and (2) design and construct the detention tanks and bio-filter strip to meet the City's 10 year pre/post run-off rate and water quality requirements; and (3) design the major storm drainage out-fall to be located near the bridge box culvert out-fall.
7. Regarding water, the applicant shall: (1) finance the review of the development's fire and domestic water system demands with the City's new Water Master Plan consultant (Montegomery-Watson) to establish all necessary off-site (Willamette Falls Drive water transmission main Phase II) and on-site water improvements for the development, (2) perform actual fire flow tests on the highest new fire hydrant (during an induced high water demand day) that will provide proof that the fire flow is adequate, and (3) obain written approval from the City Engineer and the City Fire Marshall that the necessary hydrant fire flow is available prior to any building related construction with combustible materials.
8. Regarding public improvements schedule, the applicants shall complete all required public improvements for this development, other than the Tanner Creek crossing, prior to more than 30 percent of the building permits being issued and prior to any final building inspections an/or occupancy being granted.
   a. Prior to any builing permits being issued the applicant shall submit the City engineer a credible and conservative cost estimate for construction of the Tanner Creek bridge and provide the City with a cash deposit in the amount of 125 percent of the approved estimate.
   b. The applicant shall complete construction of the Tanner Creek crossing prior to more than 70 percent of the building permits being issued and prior to any final building inspections an/or occupany being granted.
9. The Fairhaven Drive road-crossing shall be an open-bottom arched culvert or bridge.
10. The applicant's surveyor shall place temporary stakes along transition zone boundaries at 30 to 50 foot intervals and at all boundary direction changes. A fee of $25 shall be paid by the applicant to the City for each permanent "Protection Zone" stake that is required. The applicant is responsible for placing the temporary stakes and paying the fee for the permanent "Protection Zone" stakes prior to any clearing and grading of the site.
11. Tracts A and B shall be dedicated to the City of West Linn. Tract B shall be expanded to include at a minimum the wetlands and buffer zone areas found on proposed Lots 31, 32 and 33. The remainder of these proposed lots may be either added to Tract B, or incorporated into proposed Lot 34.
12. The wetland and riparian area mitigation plan from Pacific Habitat Services dated December 10, 1997 and February 20, 1998 shall be implemented.
13. Approval by U.S. Army Corps of Engineers and the Oregon Division of State Lands is required for the road-crossing prior to construction of the road crossing.
14. The mitigation for realigned portion of Tanner Creek shall occur prior to completion of the road-crossing (i.e. placement of small boulders and lining of the creek bank with seeded erosion control blanket, or other suitable material to prevent erosion of the creek bank).
15. An erosion control detail shall be submitted that includes the erosion control measures that will be implemented for construction of the road-crossing prior to construction of the road-crossing.
16. The water quality requirements of the City of West Linn Municipal Code Ordinance 1305 shall be met.
17. The required 15 foot "no structure" setback from the edge of the transition area boundary for Tanner Creek and wetland area shall be shown on the plat.

This decision shall become effective 14 days from the date of mailing of this final order as identified below. Those parties with standing(e.g., those persons who submitted written testimony or who given oral testimony during the course of the hearing) may appeal this decision to the West Linn City Council pursuant to Chapter 99 of the Community Development Code. To be accepted, an apeal must be filed with the planning director within 14 days of the mailing of this decision and must include a completed appeal form listing the specific grounds for review and a fee of $400.

Mailed this 11th day of May, 1998.

Appeal filing deadline: 5 PM, May 25, 1998.

STREET NOTES:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS OF THE CITY OF WEST LINN, OREGON, AND THE 1991 A.P.W.A STANDARD SPECIFCATIONS AND DETAILS WITH A.P.W.A. AMENDMENTS.
2. STATIONING IS BASED UPON CENTERLINE UNLESS OTHERWISE NOTED.
3. ADJUST ALL MANHOLE LIDS AND VALVES TO FINISHED GRADE.
4. SIDEWALKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH APWA STD. DWG. 205
5. ALL CURBS SHALL BE CONSTRUCTED IN ACCORDANCE WITH APWA STD. DWG. 203
6. CUT STRAIGHT MATCHLINES TO MEET EXISTING PAVEMENT WITH NEW PAVEMENT. SKIN PATCH WITH CLASS "C" ASPHALT AS DIRECTED BY CITY INSPECTOR. SAND SEAL ALL NEW PAVEMENT JOINTS.
7. TREE ROOT INSPECTION REQUIRED PRIOR TO ANY EXCAVATION ADJACENT TO TREES. A TREE INPECTION MUST BE MADE BEFORE CUTTING ANY ROOTS.
8. STREET BARRICADES TO BE INSTALLED PER DETAIL (19/26)
9. ALL CURB INLETS TO BE CITY OF WEST LINN MODEL 2-1/2 A UNLESS STATED OTHERWISE.
10. DRIVEWAYS AND SIDEWALKS IN FRONT OF PRIVATE LOTS WILL BE CONSTRUCTED UNDER SEPERATE BUILDING PERMIT.
11. THE CONTRACTOR SHALL SUPPLY COMPACTION TESTS FOR SUBGRADE, BASE ROCK AND ASPHALT THROUGH AN INDEPENDENT TESTING LAB. COMPACTION WILL BE BASED ON AASHTO T-180. A PROOF ROLL IS REQUIRED ON ALL ROAD SUBGRADE AND BASEROCK PRIOR TO PAVING.
12. ALL CONCRETE SHOULD HAVE A COMPRESSIVE STRENGTH OF 3300 PSI AT 28 DAYS.

SANITARY NOTES:

1. ALL SANITARY SEWER LINE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE GRAVITY SEWER SPECIFICATIONS OF THE PROJECT PLANS AND CITY SPECIFICATIONS.
2. SEWER LINES SHALL BE TESTED WITH AIR AND A MANDREL. MANHOLES SHALL BE VACUUM TESTED FOR TIGHTNESS. ALSO ALL SEWER LINES MUST BE TV TESTED.
3. ALL SANITARY PIPE TO BE PVC ASTM D3034 SDR 35 AND 6" OF 3/4"-0 BEDDING.
4. UTILITY BACKFILL IN R.O.W. AREAS TO BE SELECTED GRANULAR COMPACTED TO 95% FOR THE FULL DEPTH OF THE TRENCH.
5. UTILITY BACKFILL OUTSIDE R.O.W. AREAS TO BE CLASS "A" NATIVE BACKFILL TO 95% RELATIVE DENSITY OF AASHTO T-180; 90% BELOW THREE FEET.
6. THE CONTRACTOR SHALL NOT EXCAVATE OVER FOUR FEET IN DEPTH WITHOUT USING ADEQUATE SAFETY MEASURES. THE CONTRACTOR IS REFERRED TO TITLE 296 WAC, PART N FOR EXCAVATION, TRENCHING AND SHORING REQUIREMENTS.
7. ALL SANITARY LATERALS TO BE A TYPICAL CONNECTION FOR ONE LOT.
8. MARK ENDS OF ALL STUB OUTS AND LATERALS WITH CONTINUOUS PRESSURE TREATED 2" x 4" BURIED TO THEIR INVERT ELEVATION. TOP 12" PAINTED GREEN AND STENCILED WITH BLACK "SS", PIPE SIZE, TYPE AND DEPTH.
9. CONTRACTOR TO VERIFY DEPTH IN FIELD BEFORE CONSTRUCTION.

STORM SEWER NOTES:

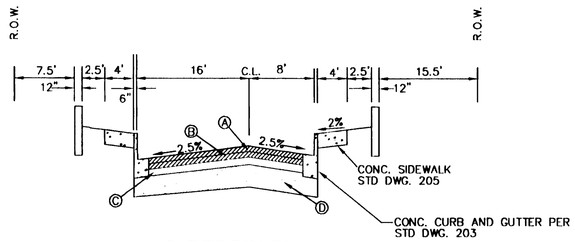
1. ALL STORM MAINS AND LATERALS SHALL BE CONSTRUCTED OF SMOTH WALL HDPE N-12 OR OTHER APPROVED AND EQUIVALENT MATERIAL. ALL PIPE IS TO BE BACKFILLED WITH APPROVED GRANULAR BACKFILL AND BEDDING.
2. CONTRACTOR TO VERIFY DEPTH OF ALL EXISTING STORM WATER LINES BEFORE CONTRUCTION.
3. THE CONTRACTOR SHALL NOT EXCAVATE OVER FOUR FEETIN DEPTH WITHOUT USING ADEQUATE SAFETY MEASURES. THE CONTRACTOR IS REFERRED TO TITLE 296 WAC, PART N FOR EXCAVATION, TRENCHING AND SHORING REQUIREMENTS.
4. ALL COMPACTION ABOVE PIPE ZONE TO BE 95% RELATIVE DENSITY OF AASHTO T-180; 95% FOR FULL DEPTH OF TRENCH.
5. ALL CURB INLETS TO BE CITY OF WEST LINN TYPE 2-1/2 A. UNLESS STATED OTHERWISE.
6. ALL STORM WATER MANHOLES TO BE CONSTRUCTED PER APWA STD. DWG. 315.
7. ALL FLOW CONTROL MANHOLES TO BE 60". FLOW CONTROL DEVICES SHALL BE CONSTRUCTED PER DETAILS (20/26)
8. POLLUTION CONTROL MANHOLE SHALL BE CONSTRUCTED ACCORDING TO DETAIL (20/26)
9. ALL LATERAL TO LOT SERVICE LATERALS TO BE IN ACCORDANCE WITH APWA STD. 309.
10. MARK ENDS OF ALL STUB OUTS AND LATERALS WITH CONTINUOUS PRESSURE TREATED 2" x 4" BURIED TO THEIR INVERT ELEVATION. TOP 12" PAINTED BLUE AND STENCILED WITH BLACK "ST" , PIPE SIZE, TYPE AND DEPTH.
11. ALL STORM SEWERS SHALL BE BOTH TESTED WITH A MANDREL AND TV.

AS-BUILT

THESE AS-BUILT PLANS WERE COMPILED FROM SURVEY DATA, DATA COLLECTED FROM OTHERS, AND PERIODIC OBSERVATION DURING CONSTRUCTION. IT IS SUGGESTED THAT THESE PLANS BE USED IN CONJUNCTION WITH FIELD VERIFICATION OF LOCATION AND ELEVATIONS OF IMPROVEMENTS IN QUESTION. THESE PLANS ARE AN ACCURATE RECORD OF PUBLIC IMPROVEMENTS TO THE BEST OF MY INFORMATION, KNOWLEDGE AND BELIEF.

SIGNATURE

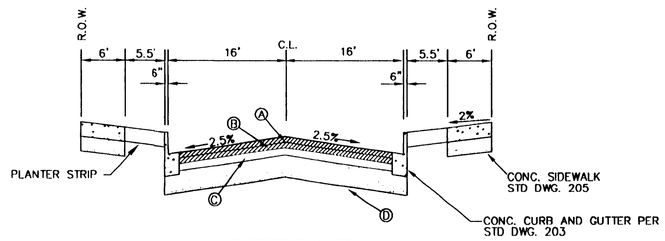
DATE 9/10/01



PAVEMENT THICKNESS:

Ⓐ 1 1/2" LIFT OF CLASS "C" ASPHALT ON
Ⓑ 1 1/2" LIFT OF CLASS "B" ASPHALT ON
Ⓒ 2" LIFT OF 3/4"-0 FOR LEVELING COARSE ON
Ⓓ 6" (1 1/2"-0) CROSSED ROCK BASE

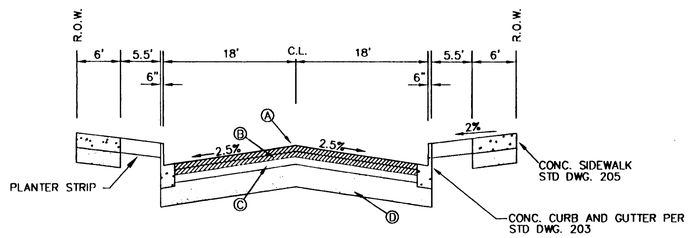
CROSS SECTION BRIDGE



PAVEMENT THICKNESS:

Ⓐ 1 1/2" LIFT OF CLASS "C" ASPHALT ON
Ⓑ 1 1/2" LIFT OF CLASS "B" ASPHALT ON
Ⓒ 2" LIFT OF 3/4"-0 FOR LEVELING COARSE ON
Ⓓ 6" (1 1/2"-0) CROSSED ROCK BASE

CROSS SECTION FAIRHAVEN DRIVE AND N. & S. HAMPTON CT.



PAVEMENT THICKNESS:

Ⓐ 1 1/2" LIFT OF CLASS "C" ASPHALT ON
Ⓑ 1 1/2" LIFT OF CLASS "B" ASPHALT ON
Ⓒ 2" LIFT OF 3/4"-0 FOR LEVELING COARSE ON
Ⓓ 6" (1 1/2"-0) CROSSED ROCK BASE

CROSS SECTION BEACON HILL DRIVE

DATE	NO.	REVISION	BY

SHEET 2 OF 25

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: JSS

REGISTERED PROFESSIONAL ENGINEER — OREGON — DECEMBER 15, 1970 — WALTER L. COOK

EXPIRES: 12-31-2003

SCALE VERT: N/A HORIZ: N/A
DATE: 9/9/02
FILE:SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP 2S-1E-36
TAX LOTS 608 & 609

PROJECT NAME: BARRINGTON HEIGHTS 10

SPECIFICATIONS

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848

TREE PRESERVATION EASEMENT AT ALL SIGNIFICANT TREES DRIP LINE PLUS 10'

WETLAND BOUNDARY

TRACT "A"

TANNER CREEK

BEACON HILL DR.

NORTH HAMPTON CT.

SOUTH HAMPTON CT.

FAIRHAVEN DR.

BEACON HILL DRIVE

TRACT "B"

LOT 1 AREA= 14,267 S.F.
LOT 2 AREA= 13,552 S.F.
LOT 3 AREA= 10,497 S.F.
LOT 4 AREA= 9,435 S.F.
LOT 5 AREA= 9,066 S.F.
LOT 6 AREA= 9,189 S.F.
LOT 7 AREA= 9,675 S.F.
LOT 8 AREA= 9,971 S.F.
LOT 9 AREA= 10,010 S.F.
LOT 10 AREA= 9,996 S.F.
LOT 11 AREA= 8,092 S.F.
LOT 12 AREA= 8,563 S.F.
LOT 13 AREA= 9,079 S.F.
LOT 14 AREA= 9,838 S.F.
LOT 15 AREA= 10,807 S.F.
LOT 16 AREA= 10,362 S.F.
LOT 17 AREA= 11,388 S.F.
LOT 18 AREA= 8,822 S.F.
LOT 19 AREA= 9,112 S.F.
LOT 20 AREA= 9,681 S.F.
LOT 21 AREA= 10,263 S.F.
LOT 22 AREA= 9,033 S.F.
LOT 23 AREA= 8,285 S.F.
LOT 24 AREA= 10,881 S.F.
LOT 25 AREA=9,778 S.F.
LOT 26 AREA=9,320 S.F.
LOT 27 AREA=9,903 S.F.
LOT 28 AREA=13,702 S.F.
LOT 29 AREA= 9,095 S.F.
LOT 30 AREA= 8,816 S.F.
LOT 31 AREA=15,183 S.F.
LOT 32 AREA= 11,552 S.F.
LOT 33 AREA= 9,378 S.F.
LOT 34 AREA= 9,989 S.F.
LOT 35 AREA= 10,203 S.F.
LOT 36 AREA= 9,093 S.F.
LOT 37 AREA= 9,964 S.F.
LOT 38 AREA= 9,719 S.F.
LOT 39 AREA= 9,907 S.F.
LOT 40 AREA= 8,883 S.F.
LOT 41 AREA= 7,816 S.F.

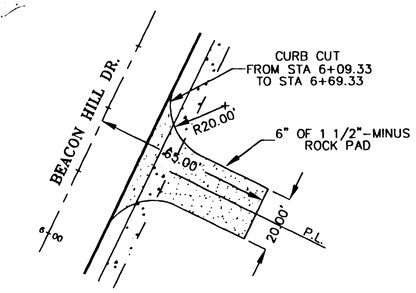
20' PRIVATE SEWER EASEMENT
20' PUBLIC SEWER EASEMENT
22.50' PUBLIC SEWER EASEMENT
15' PUBLIC STORM SEWER EASEMENT
20' FIR T-2017
20' FIR T-1170
OAK CLUSTER T-2117
40" FIR T-2017
WATER VALVE
STREET LIGHT
ELEC. INSTR.
BTV. INSTR.
STREET INSTR.

AS-BUILT

THESE AS-BUILT PLANS WERE COMPILED FROM SURVEY DATA, DATA COLLECTED FROM OTHERS, AND PERIODIC OBSERVATION DURING CONSTRUCTION. IT IS SUGGESTED THAT THESE PLANS BE USED IN CONJUNCTION WITH FIELD VERIFICATION OF LOCATION AND ELEVATIONS OF IMPROVEMENTS IN QUESTION. THESE PLANS ARE AN ACCURATE RECORD OF PUBLIC IMPROVEMENTS TO THE BEST OF MY INFORMATION, KNOWLEDGE AND BELIEF.

SIGNATURE _____

DATE 9/10/02



TEMPORARY FIRE TRUCK TURNAROUND

SCALE: 1"= 30'

40 20 0 40 80

SCALES:

1" = 40' HOR

DATE	NO.	REVISION	BY

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 3 OF 25

REGISTERED PROFESSIONAL ENGINEER — OREGON — DECEMBER 15, 1992 — WALTER L. COOK — EXPIRES: 12-31-2003

SCALE VERT: N/A HORIZ: 1" = 40'

DATE: 9/9/02

FILE: SUN-97-09/ZC-97-07

MISC-97-08

ASSESSOR'S MAP 2S-1E-36

TAX LOTS 608 & 609

PROJECT NAME:

BARRINGTON HEIGHTS 10

COMPOSITIVE PLAN

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848

AS-BUILT

THESE AS-BUILT PLANS WERE COMPILED FROM SURVEY DATA, DATA COLLECTED FROM OTHERS, AND PERIODIC OBSERVATION DURING CONSTRUCTION. IT IS SUGGESTED THAT THESE PLANS BE USED IN CONJUNCTION WITH FIELD VERIFICATION OF LOCATION AND ELEVATIONS OF IMPROVEMENTS IN QUESTION. THESE PLANS ARE AN ACCURATE RECORD OF PUBLIC IMPROVEMENTS TO THE BEST OF MY INFORMATION, KNOWLEDGE AND BELIEF.

SIGNATURE _____

DATE 9/10/03

DATE	NO.	REVISION	BY

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 4 OF 25

REGISTERED PROFESSIONAL ENGINEER
OREGON
DECEMBER 15, 1970
WALTER L. COOK
EXPIRES: 12-31-2003

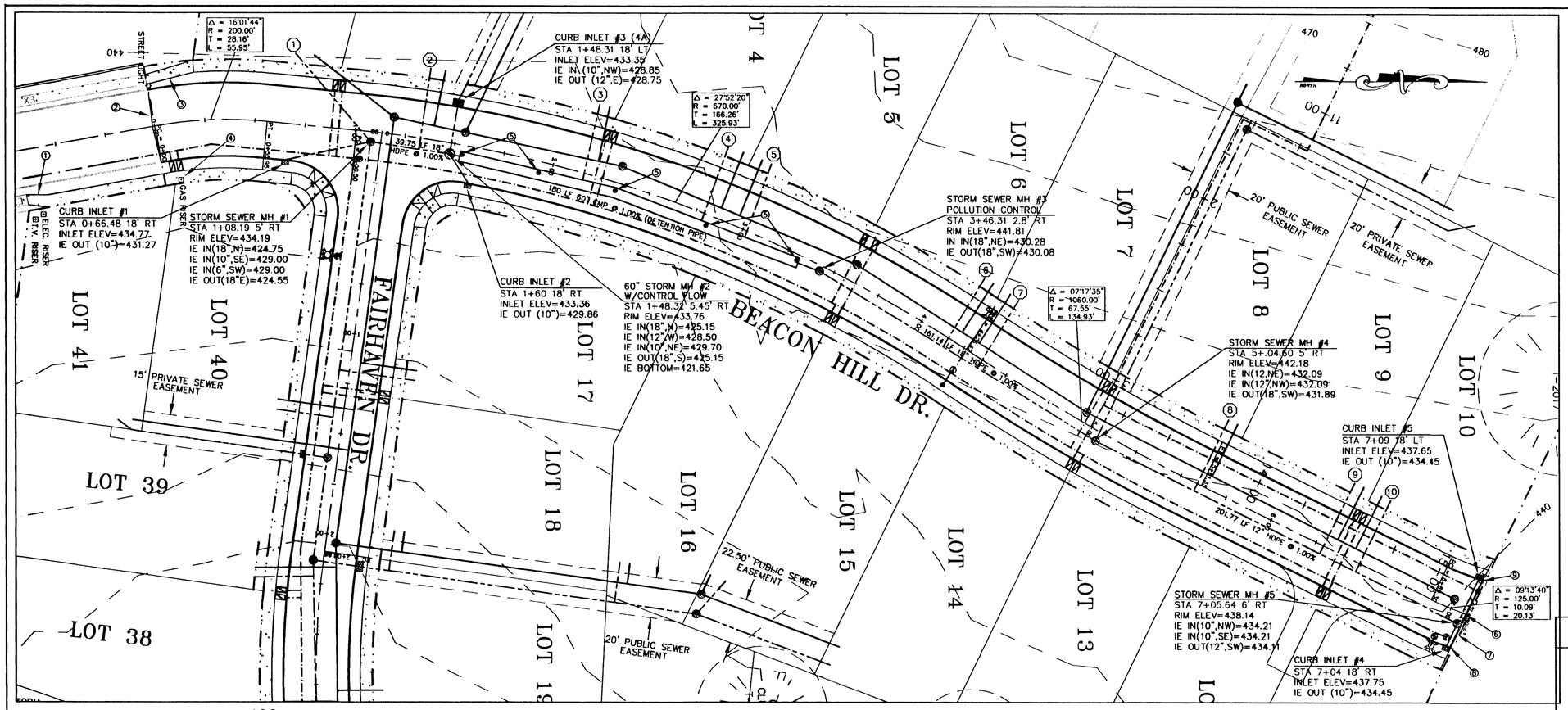
SCALE	VERT: N/A HORZ: 1" = 40'
DATE: 9/9/02	
FILE: SUN-97-09/ZC-97-07	
MISC-97-08	
ASSESSOR'S MAP	TAX LOTS
2S-1E-36	608 & 609

PROJECT NAME:

BARRINGTON HEIGHTS 10

GRADING PLAN

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848



STORM SEWER LATERALS (MIN 2% SLOPE)

ALL STATIONING IS BASED OF CENTERLINE

LATERAL	STATION	SIZE	TYPE	LENGTH	I.E. @ MAIN
1	1+08.19 5.00' RT	6"	PVC	57.48'	429.00
2	1+32.67 5.56' RT	6"	PVC	40.56'	424.99
3	2+13.23 10.81' RT	6"	PVC	45.84'	429.29
4	2+84.67 9.52' RT	6"	PVC	44.63'	430.00
5	3+07.80 7.79' RT	6"	PVC	42.99'	430.20
6	4+15.89 5.24' RT	6"	PVC	40.25'	431.00
7	4+35.93 4.64' RT	6"	PVC	39.65'	431.20
8	5+59.11 3.87' RT	6"	PVC	34.76'	433.04
9	6+29.06 4.37' RT	6"	PVC	39.37'	433.74
10	6+49.06 4.51' RT	6"	PVC	39.51'	433.94

1. 10' TRANSITION SIDEWALK TO MATCH EXISTING.
2. SAWCUT STRAIGHT LINE 6" INSIDE EXISTING ASPHALT AND MATCH NEW ASPHALT TO IT.
3. 24' TRANSITION SIDEWALK TO MATCH EXISTING.
4. RELOCATE GAS RISER BY GAS CO.
5. 24" PIPE ACCESS AT:
   STA 1+54.40 4.81' RT, RIM EL=433.91
   STA 1+93.84 5.57' RT, RIM EL=434.44
   STA 2+33.24 4.00' RT, RIM EL=435.66
   STA 2+82.00 5.27' RT, RIM EL=438.42
   STA 3+30.67 2.98' RT, RIM EL=441.22
6. END PAVEMENT @ STA 7+08.43, 1' FROM THE PROPERTY LINE & CONSTRUCT A 6" ASPHALT BERM.
7. INSTALL A STREET BARRICATE PER DETAIL (SHEET 19/25)
8. END CURB @ STA 7+06 16' RT. EL= 437.88 F.L.
9. END CURB @ STA 7+11.67 16' LT. EL= 437.77 F.L.

*PER CURB RETURN INFORMATION SEE SHEET 14/25

AS-BUILT

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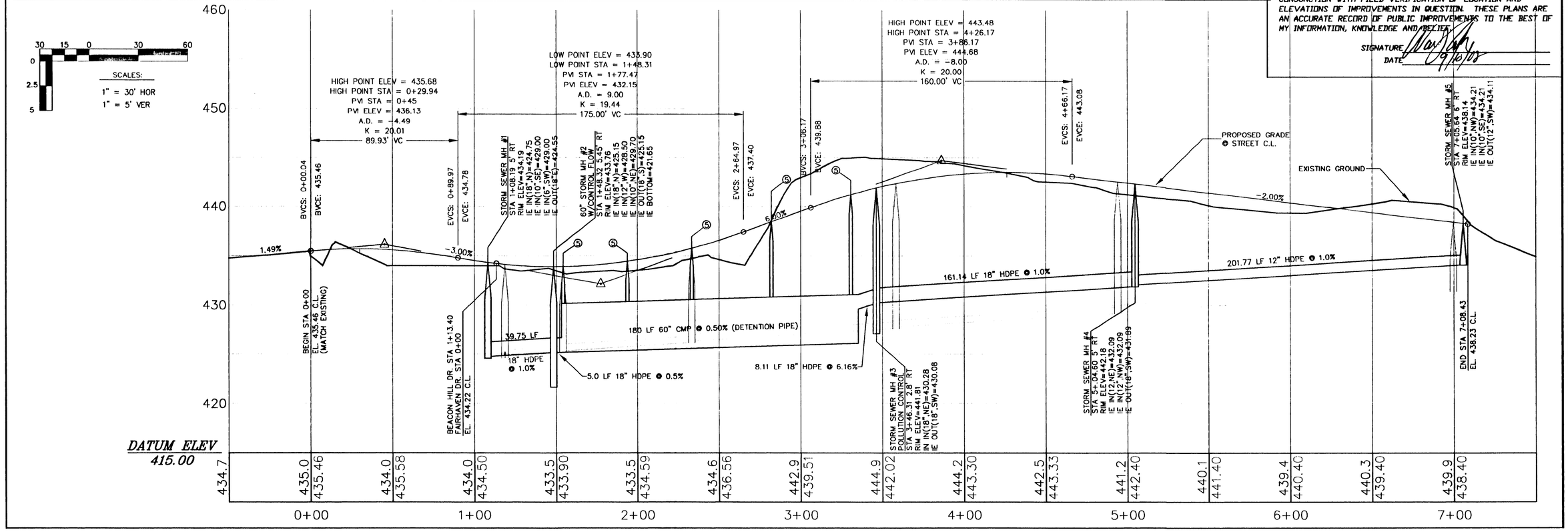
SIGNATURE

DATE 9/10/03



DATE	NO.	REVISION	BY

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 5 OF 25

EXPIRES: 12-31-2003

SCALE VERT: 1"= 5' HORIZ: 1"= 30'
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP 25-1E-36
TAX LOTS 608 & 609

PROJECT NAME:

BARRINGTON HEIGHTS 10

STREET & STORM SEWER PLAN
BEACON HILL DRIVE

GSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848

AS—BUILT

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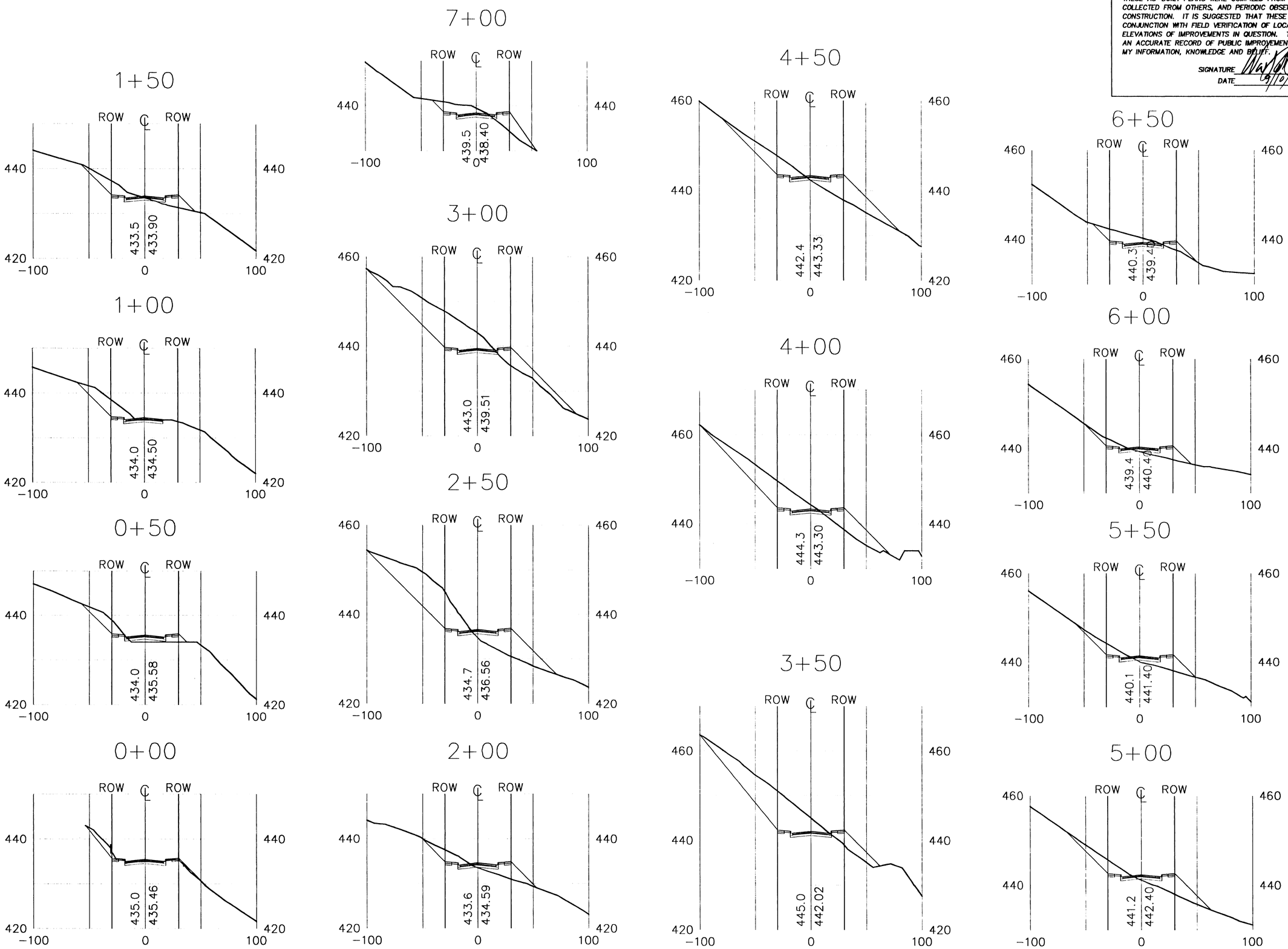
SIGNATURE _____

DATE 9/10/03



DATE	NO.	REVISION	BY

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 6 OF 25

REGISTERED PROFESSIONAL ENGINEER — OREGON — WALTER L. COOK — EXPIRES: 12-31-2003

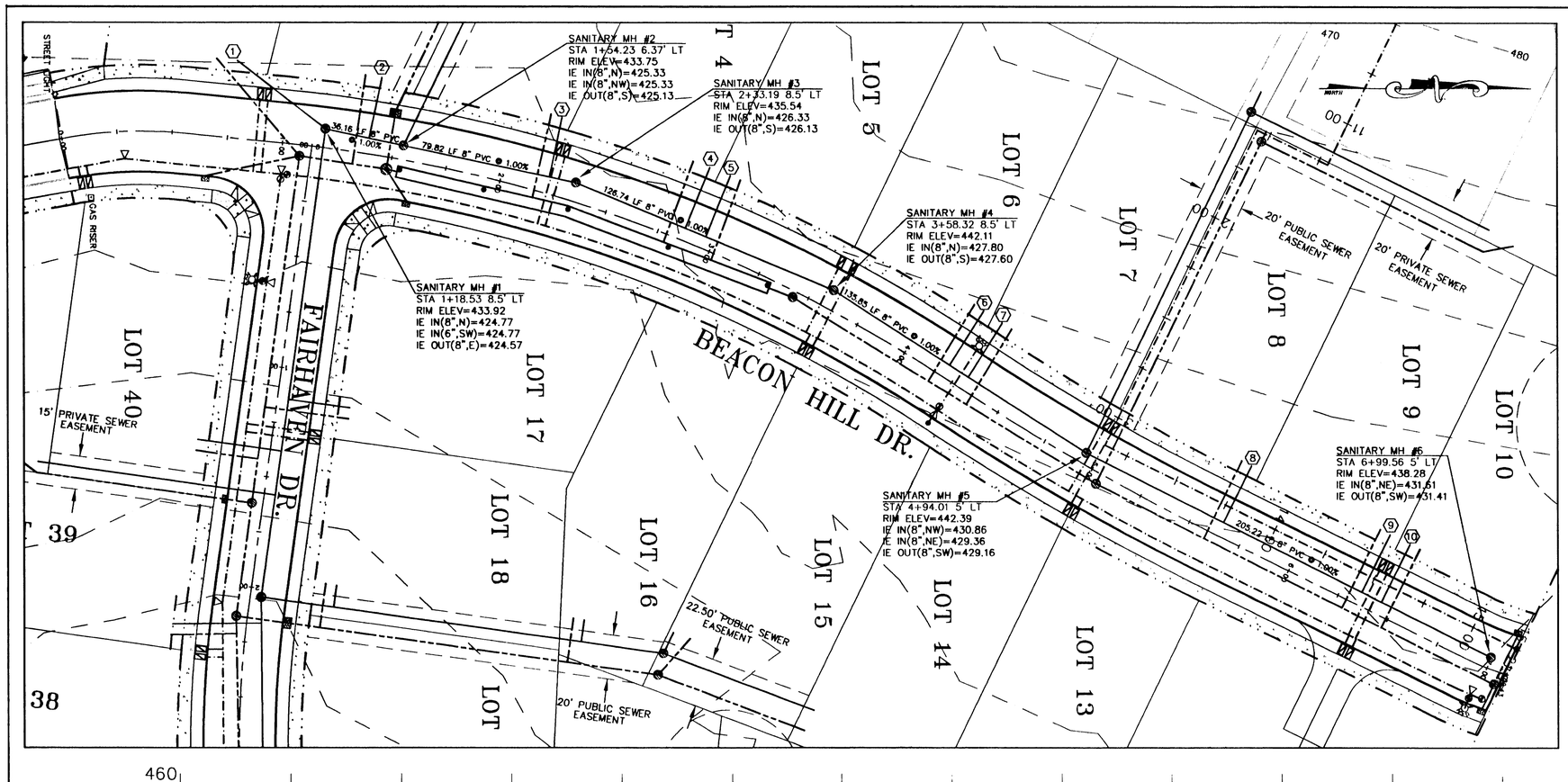
SCALE: VERT. 1" = 10' HORIZ. 1" = 40'
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP: 2S-1E-36
TAX LOTS: 608 & 609

PROJECT NAME:

BARRINGTON HEIGHTS 10

CROSS SECTIONS
BEACON HILL DRIVE

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848



AS-BUILT

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SIGNATURE _____

DATE 9/10/03

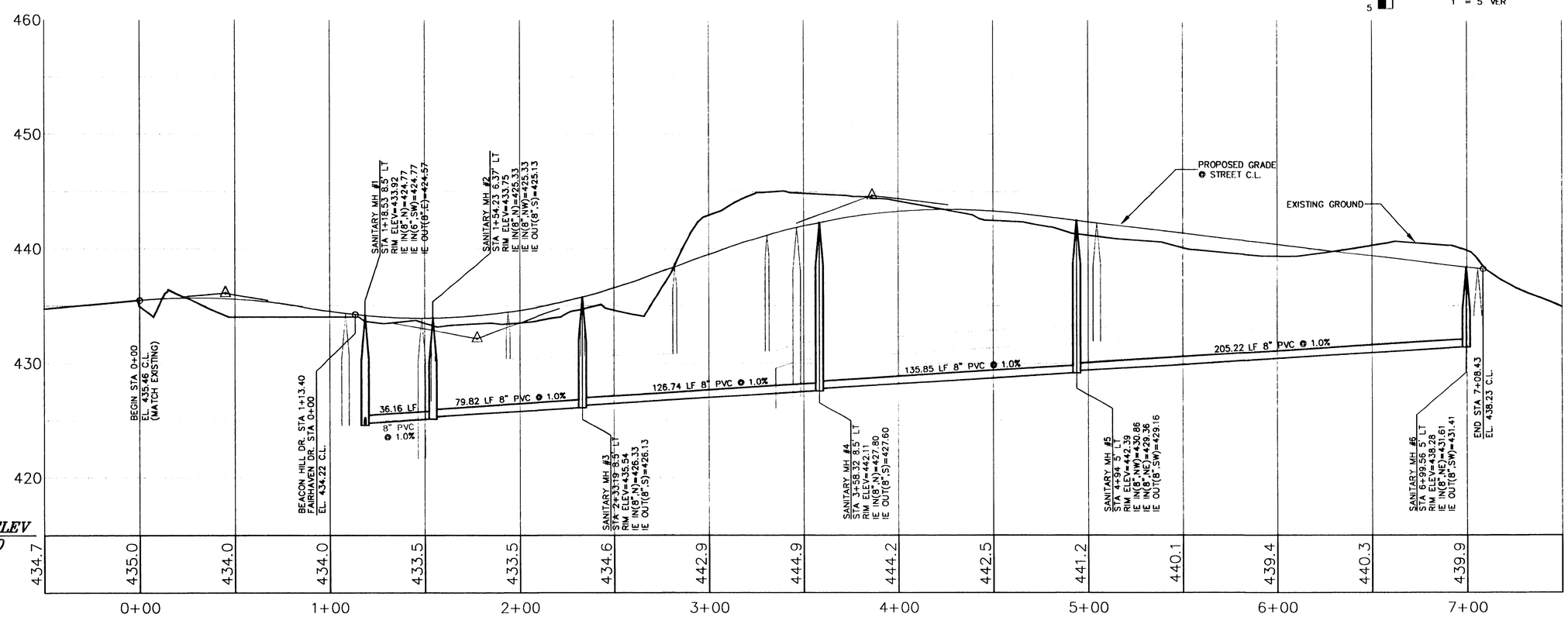
SANITARY SEWER LATERALS (MIN 2% SLOPE)

ALL STATIONING IS BASED OF CENTERLINE
I.E. OF LATERALS @ CURB LINE SHALL
BE 6' MIN. DEPTH UNLESS OTHERWISE NOTED .

LATERAL	STATION	SIZE	TYPE	LENGTH	I.E. @ MAIN
1	1+18.53 8.5' LT	6"	PVC	50.16'	424.77
2	1+38.46 7.07' LT	6"	PVC	27.97'	424.97
3	2+21.13 7.57' LT	6"	PVC	27.49'	426.00
4	2+86.22 5.61' LT	6"	PVC	29.40'	426.89
5	2+96.04 5.53' LT	6"	PVC	29.47'	426.99
6	4+18.98 6.02' LT	6"	PVC	28.98'	428.42
7	4+30.02 6.14' LT	6"	PVC	28.86'	428.52
8	5+64.04 6.56' LT	6"	PVC	28.45'	430.06
9	6+34.10 5.98' LT	6"	PVC	29.02'	430.76
10	6+44.10 5.90' LT	6"	PVC	29.10'	430.86

30 15 0 30 60
0 2.5 5

SCALES:
1" = 30' HOR
1" = 5' VER



DATE	NO.	REVISION	BY

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 7 OF 25

EXPIRES: 12-31-2003

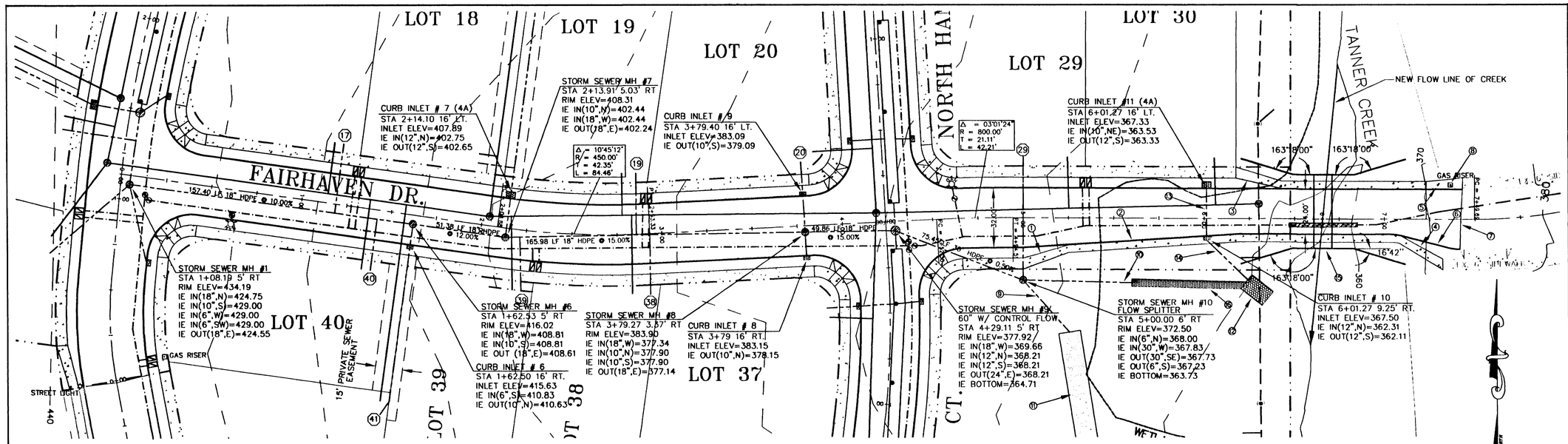
SCALE VERT: 1" = 5'
HORIZ: 1" = 30'
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP 25-1E-36
TAX LOTS 608 & 609

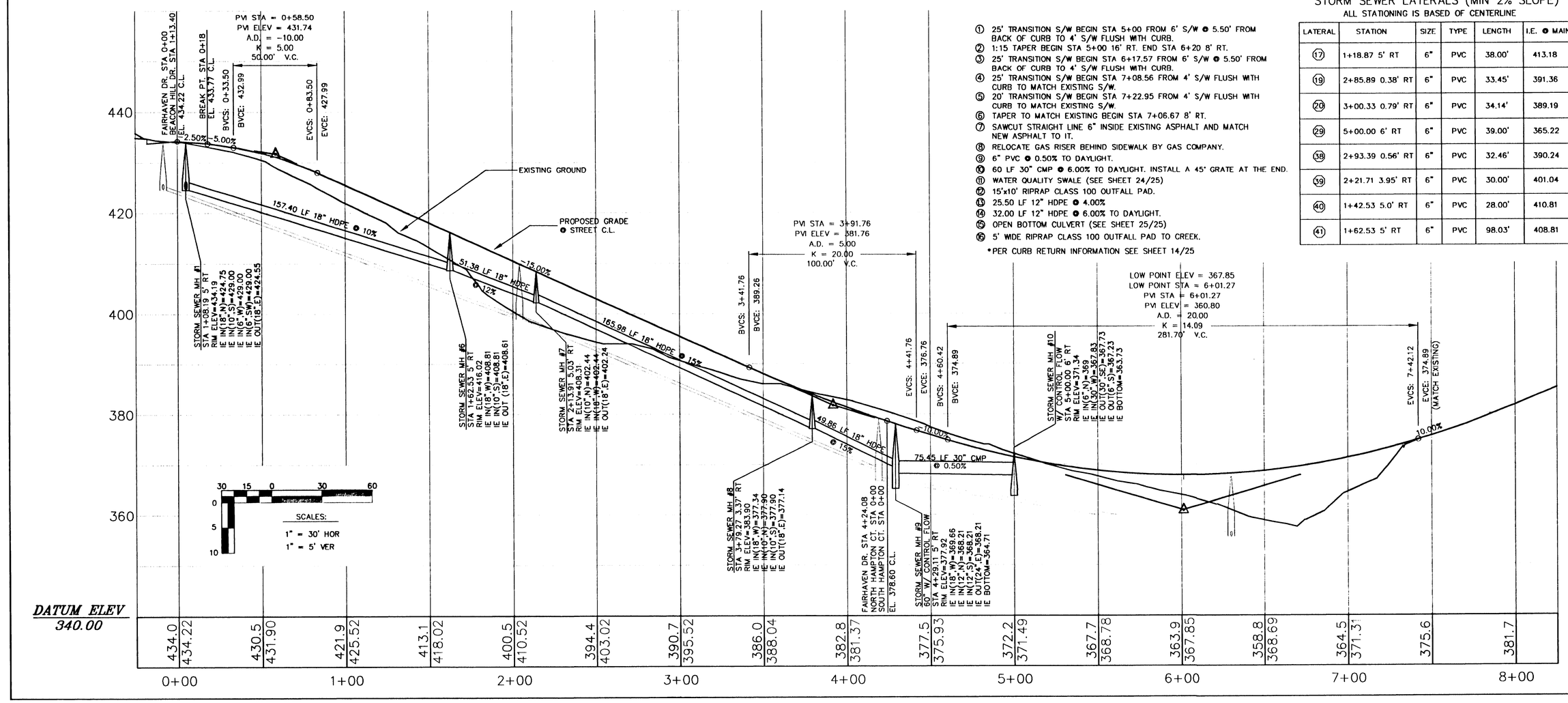
PROJECT NAME:

BARRINGTON HEIGHTS 10

SANITARY SEWER PLAN
BEACON HILL DRIVE

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848





① 25' TRANSITION S/W BEGIN STA 5+00 FROM 6' S/W @ 5.50' FROM BACK OF CURB TO 4' S/W FLUSH WITH CURB.
② 1:15 TAPER BEGIN STA 5+00 16' RT. END STA 6+20 8' RT.
③ 25' TRANSITION S/W BEGIN STA 6+17.57 FROM 6' S/W @ 5.50' FROM BACK OF CURB TO 4' S/W FLUSH WITH CURB.
④ 25' TRANSITION S/W BEGIN STA 7+08.56 FROM 4' S/W FLUSH WITH CURB TO MATCH EXISTING S/W.
⑤ 20' TRANSITION S/W BEGIN STA 7+22.95 FROM 4' S/W FLUSH WITH CURB TO MATCH EXISTING S/W.
⑥ TAPER TO MATCH EXISTING BEGIN STA 7+06.67 8' RT.
⑦ SAWCUT STRAIGHT LINE 6" INSIDE EXISTING ASPHALT AND MATCH NEW ASPHALT TO IT.
⑧ RELOCATE GAS RISER BEHIND SIDEWALK BY GAS COMPANY.
⑨ 6" PVC @ 0.50% TO DAYLIGHT.
⑩ 60 LF 30" CMP @ 6.00% TO DAYLIGHT. INSTALL A 45° GRATE AT THE END.
⑪ WATER QUALITY SWALE (SEE SHEET 24/25)
⑫ 15'x10' RIPRAP CLASS 100 OUTFALL PAD.
⑬ 25.50 LF 12" HDPE @ 4.00%
⑭ 32.00 LF 12" HDPE @ 6.00% TO DAYLIGHT.
⑮ OPEN BOTTOM CULVERT (SEE SHEET 25/25)
⑯ 5' WIDE RIPRAP CLASS 100 OUTFALL PAD TO CREEK.

*PER CURB RETURN INFORMATION SEE SHEET 14/25

STORM SEWER LATERALS (MIN 2% SLOPE)

ALL STATIONING IS BASED OF CENTERLINE

LATERAL	STATION	SIZE	TYPE	LENGTH	I.E. @ MAIN
17	1+18.87 5' RT	6"	PVC	38.00'	413.18
19	2+85.89 0.38' RT	6"	PVC	33.45'	391.36
20	3+00.33 0.79' RT	6"	PVC	34.14'	389.19
29	5+00.00 6' RT	6"	PVC	39.00'	365.22
38	2+93.39 0.56' RT	6"	PVC	32.46'	390.24
39	2+21.71 3.95' RT	6"	PVC	30.00'	401.04
40	1+42.53 5.0' RT	6"	PVC	28.00'	410.81
41	1+62.53 5' RT	6"	PVC	98.03'	408.81

AS-BUILT

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SIGNATURE
DATE

DATE	NO.	REVISION	BY

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 8 OF 25

REGISTERED PROFESSIONAL ENGINEER
OREGON
WALTER L. COOK
EXPIRES: 12-31-2003

SCALE VERT: 1" = 5'
HORIZ: 1" = 30'
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP: 2S-1E-36
TAX LOTS: 608 & 609

PROJECT NAME:

BARRINGTON HEIGHTS 10

STREET & STORM SEWER PLAN
FAIRHAVEN DRIVE

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848

AS-BUILT

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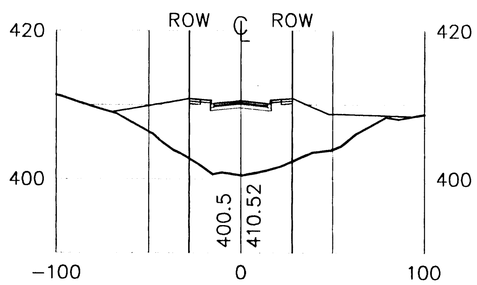
SIGNATURE _____

DATE 9/10/03

2+00



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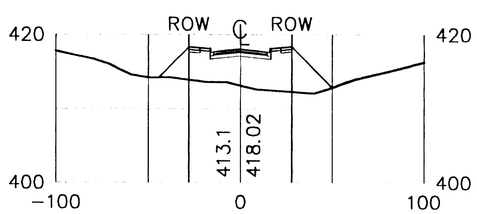

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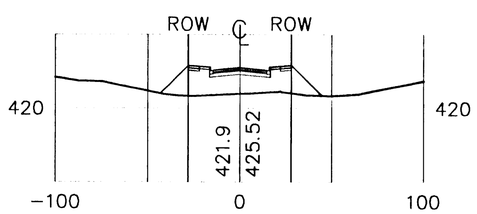

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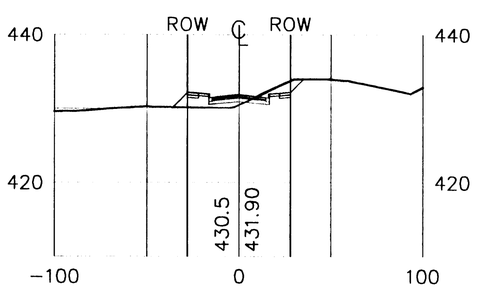
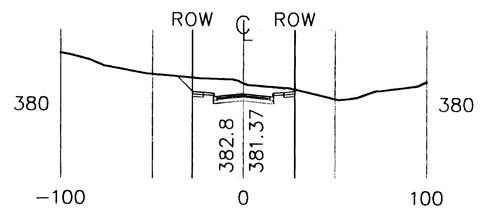


4+00



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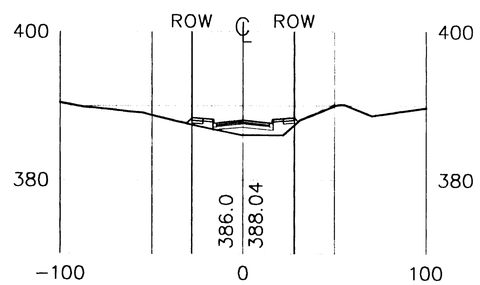

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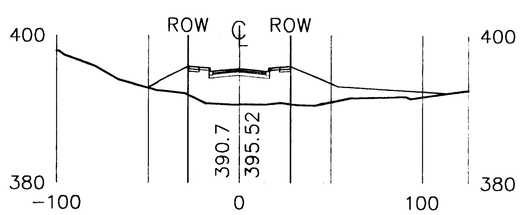

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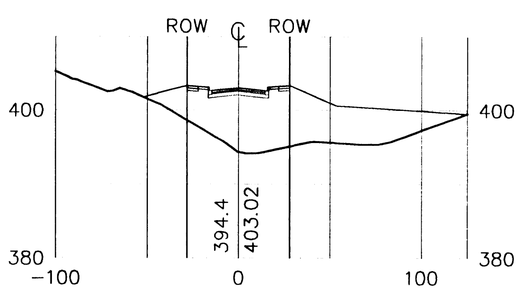

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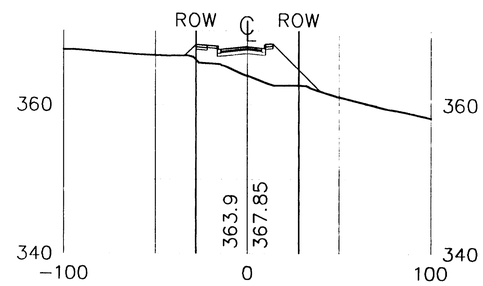

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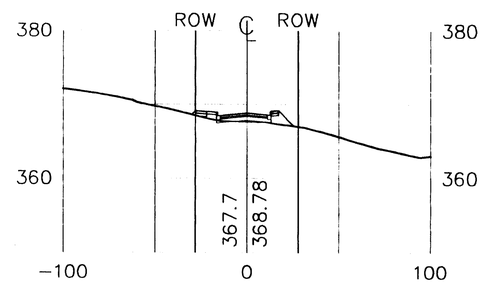

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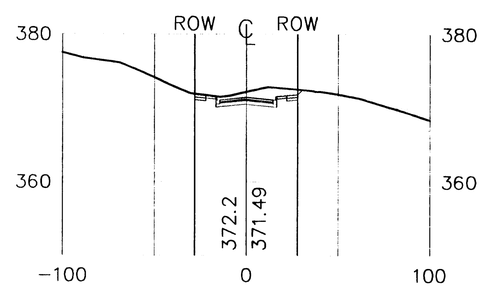

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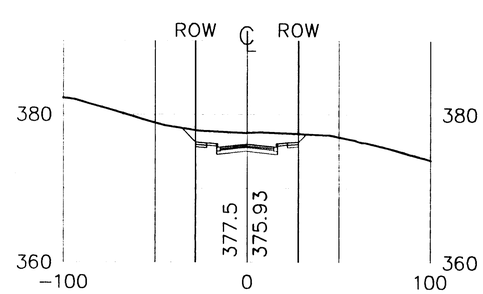

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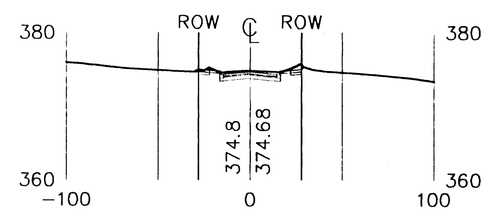

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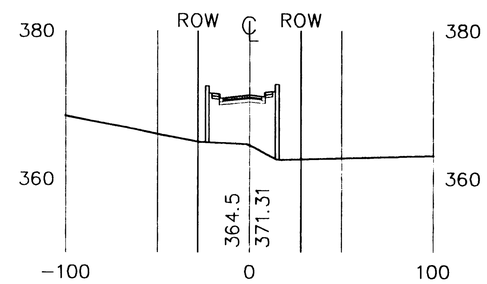

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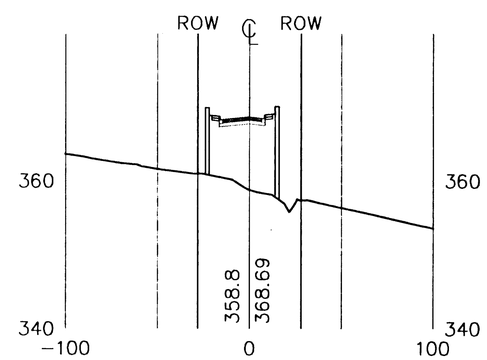


DATE	NO.	REVISION	BY

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 9 OF 25

REGISTERED PROFESSIONAL ENGINEER — OREGON — WALTER L. COOK — EXPIRES: 12-31-2003

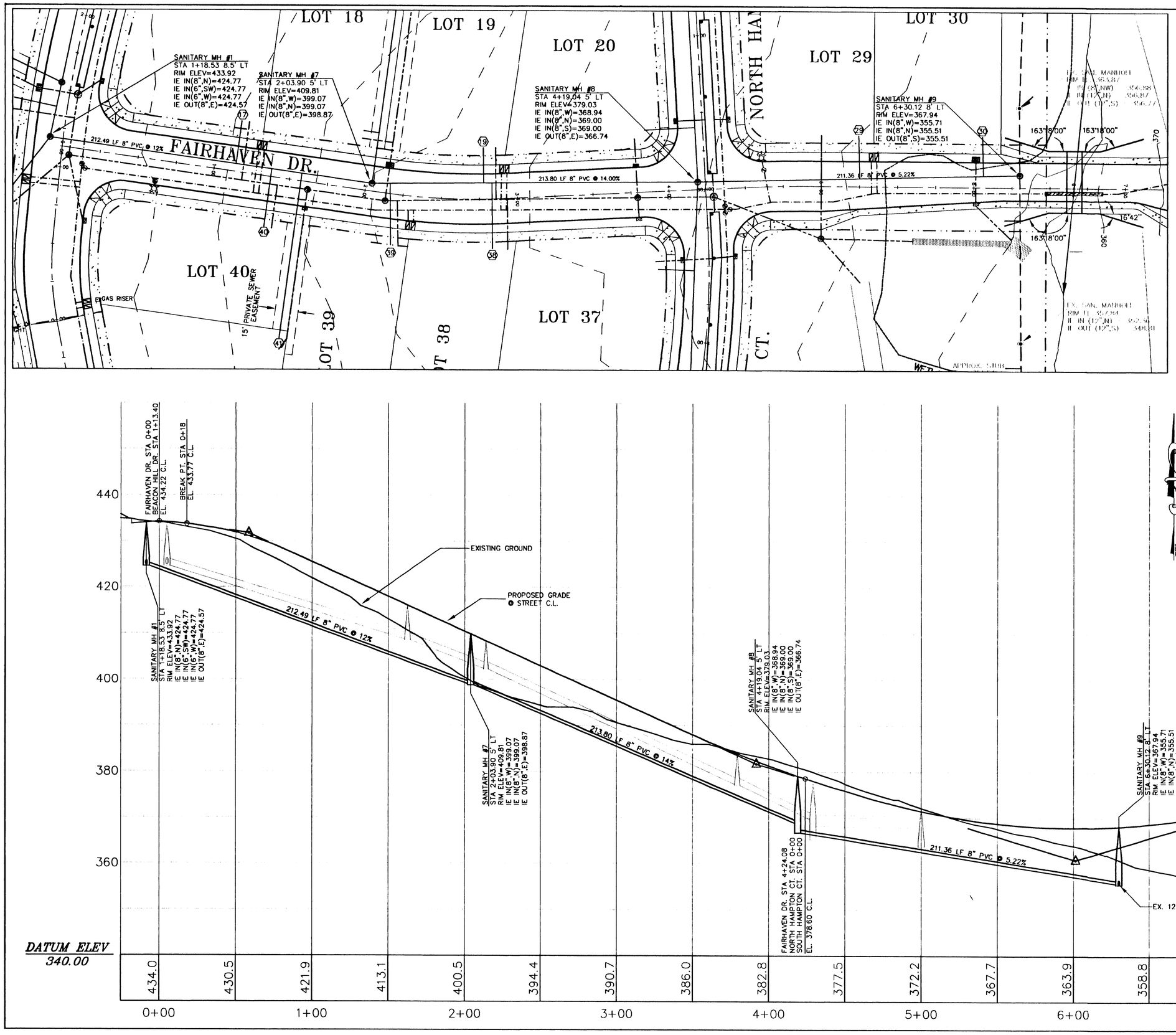
SCALE VERT: 1" = 10' HORIZ: 1" = 40'
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP 2S-1E-36
TAX LOTS 608 & 609

PROJECT NAME:

BARRINGTON HEIGHTS 10

CROSS SECTIONS FAIRHAVEN DRIVE

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848



AS-BUILT

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SIGNATURE: Walter Cook

DATE: 9/10/03

SANITARY SEWER LATERALS (MIN 2% SLOPE)

ALL STATIONING IS BASED OF CENTERLINE
I.E. OF LATERALS @ CURB LINE SHALL
BE 6' MIN. DEPTH UNLESS OTHERWISE NOTED.

LATERAL	STATION	SIZE	TYPE	LENGTH	I.E. @ MAIN
17	1+13.87 5' LT	6"	PVC	28.00'	409.87
19	2+77.89 10.5' LT	6"	PVC	22.70'	388.66
29	5+25.19 5.22' LT	6"	PVC	27.80'	362.19
30	6+6.29 7.34 LT	6"	PVC	25.50'	356.95
38	2+83.36 10.43' LT	6"	PVC	42.75'	387.89
39	2+15.72 6.68' LT	6"	PVC	40.00'	397.21
40	1+37.53 5' LT	6"	PVC	38.00'	407.03
41	1+57.53 5' LT	6"	PVC	108.00'	404.63

DATE NO.	REVISION	BY

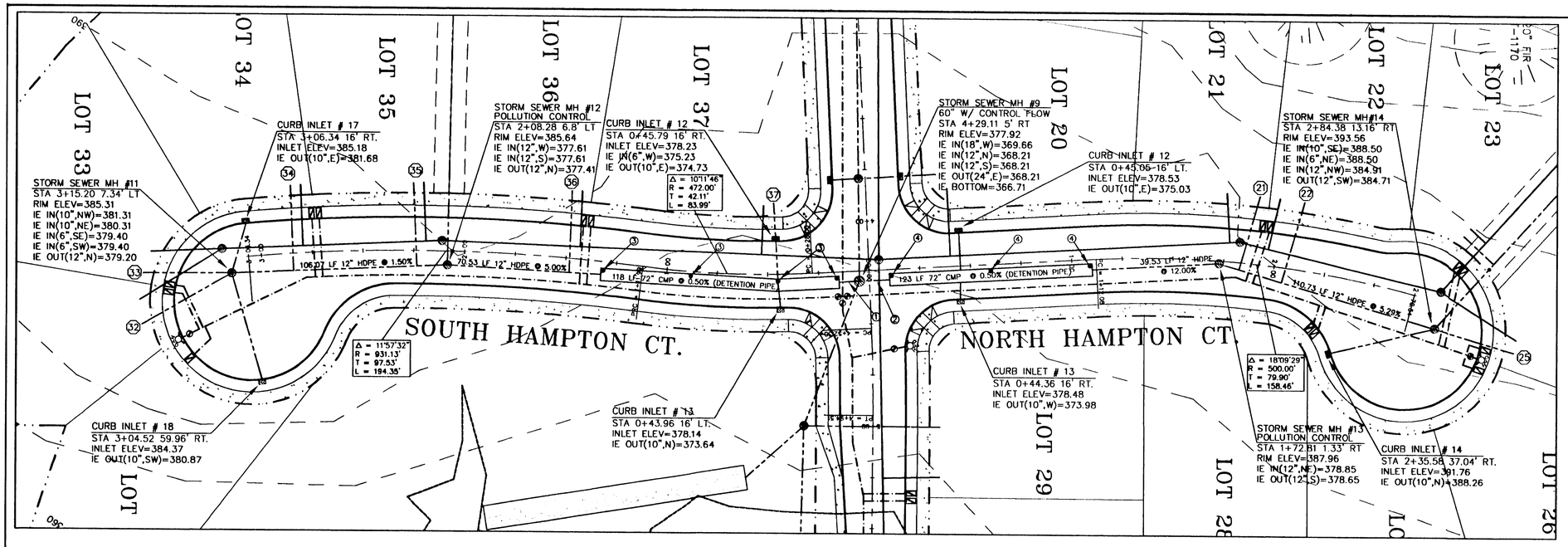
DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC
SHEET 10 OF 25

REGISTERED PROFESSIONAL ENGINEER
WALTER L. COOK
OREGON
OCTOBER 15, 1971
EXPIRES: 12-31-2003

SCALE VERT: 1" = 10'
HORIZ: 1" = 30'
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP: 2S-1E-36
TAX LOTS: 608 & 609

PROJECT NAME:
BARRINGTON HEIGHTS 10
SANITARY SEWER LINE
FAIRHAVEN DRIVE

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848

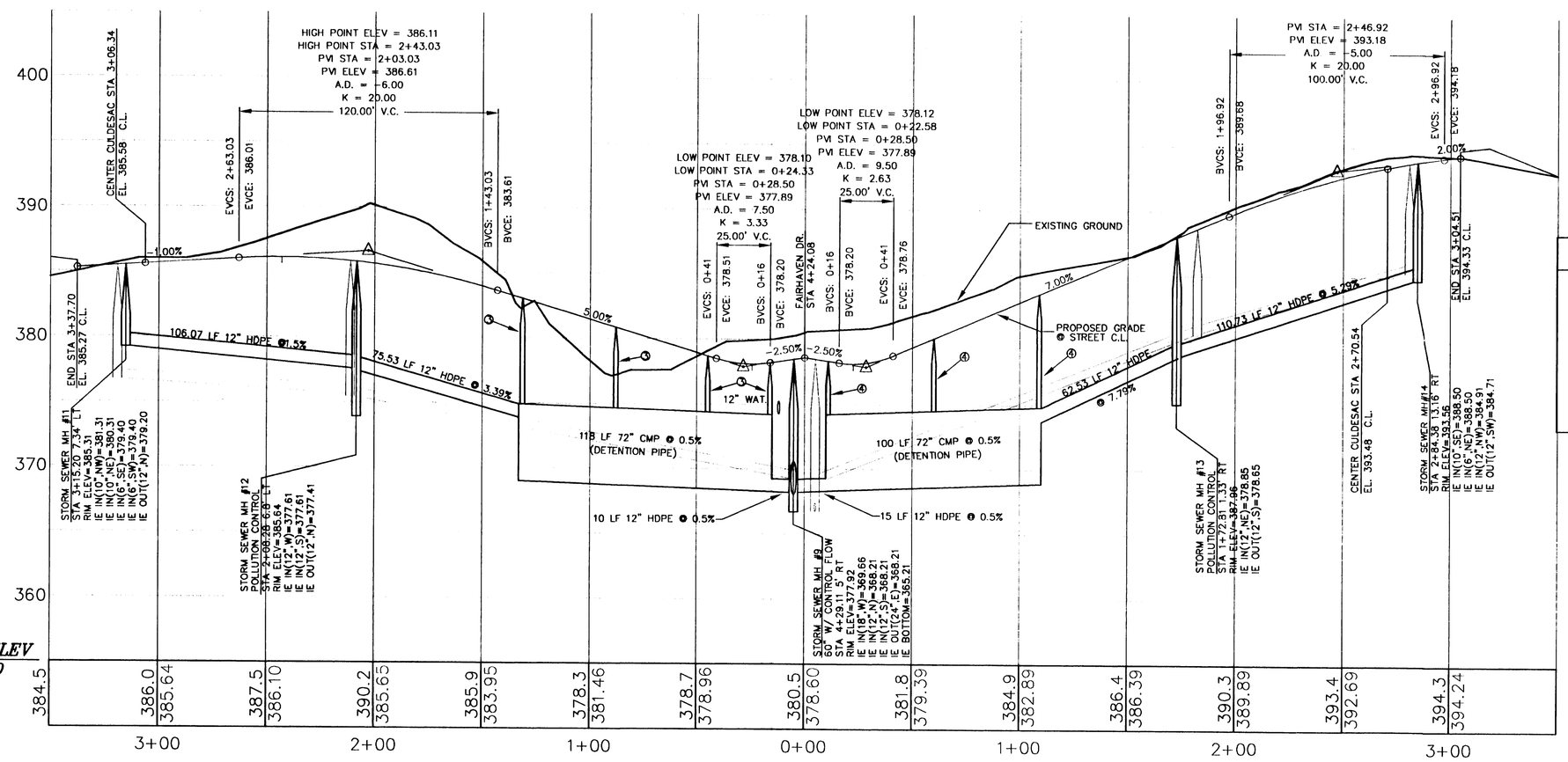


STORM SEWER LATERALS (MIN 2% SLOPE)

ALL STATIONING IS BASED OF CENTERLINE

LATERAL	STATION	SIZE	TYPE	LENGTH	I.E. @ MAIN
21	1+82.89 3.45' RT	6"	PVC	37.00'	378.85
22	2+04.46 7.27' RT	6"	PVC	41.00'	380.54
25	2+84.38 13.16' RT	6"	PVC	41.00'	387.91
32	3+15.20 7.34' LT	6"	PVC	51.00'	379.40
33	3+15.20 7.34' LT	6"	PVC	38.00'	379.40
34	2+84.61 8.43' LT	6"	PVC	42.00'	378.75
35	2+23.44 7.61' LT	6"	PVC	41.00'	377.83
36	1+47.91 6.92' LT	6"	PVC	40.00'	374.41
37	1+22.53 2.81' LT	6"	PVC	36.00'	374.06

① 10 LF 12" HDPE @ 0.50%
② 15 LF 12" HDPE @ 0.50%
③ 24" PIPE ACCESS AT:
STA 0+16.04 3.00' LT. RIM EL=378.12
STA 0+44.90 3.29' LT. RIM EL=378.63
STA 0+88.04 2.10' LT. RIM EL=380.81
STA 1+31.35 4.28' LT. RIM EL=384.44
④ 24" PIPE ACCESS AT:
STA 0+10.96 3.00' RT. RIM EL=378.25
STA 0+59.96 3.00' RT. RIM EL=380.01
STA 1+08.96 3.00' RT. RIM EL=383.44



AS-BUILT

THESE AS-BUILT PLANS WERE COMPILED FROM SURVEY DATA, DATA COLLECTED FROM OTHERS, AND PERIODIC OBSERVATION DURING CONSTRUCTION. IT IS SUGGESTED THAT THESE PLANS BE USED IN CONJUNCTION WITH FIELD VERIFICATION OF LOCATION AND ELEVATIONS OF IMPROVEMENTS IN QUESTION. THESE PLANS ARE AN ACCURATE RECORD OF PUBLIC IMPROVEMENTS TO THE BEST OF MY INFORMATION, KNOWLEDGE AND BELIEF.

SIGNATURE

DATE 9/10/03

SCALES:
1" = 30' HOR
1" = 5' VER

DATE	NO.	REVISION	BY

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 11 OF 25

REGISTERED PROFESSIONAL ENGINEER
WALTER L. COOK
OREGON
EXPIRES: 12-31-2003

SCALE VERT: 1" = 5'
HORIZ: 1" = 30'
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP
TAX LOTS
2S-1E-36
608 & 609

PROJECT NAME:

BARRINGTON HEIGHTS 10

STREET & STORM SEWER PLAN
NORTH & SOUTH HAMPTON CT.

GSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848

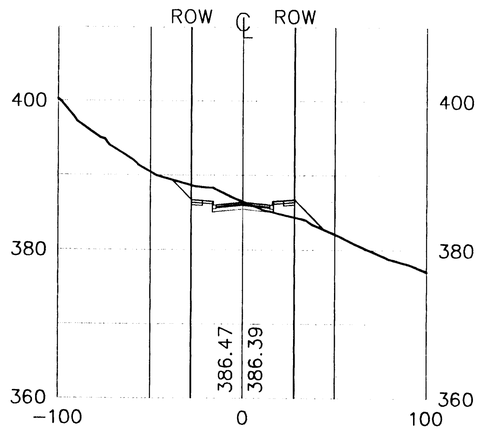
AS—BUILT

THESE AS—BUILT PLANS WERE COMPILED FROM SURVEY DATA, DATA COLLECTED FROM OTHERS, AND PERIODIC OBSERVATION DURING CONSTRUCTION. IT IS SUGGESTED THAT THESE PLANS BE USED IN CONJUNCTION WITH FIELD VERIFICATION OF LOCATION AND ELEVATIONS OF IMPROVEMENTS IN QUESTION. THESE PLANS ARE AN ACCURATE RECORD OF PUBLIC IMPROVEMENTS TO THE BEST OF MY INFORMATION, KNOWLEDGE AND BELIEF.

SIGNATURE

DATE 9/10/02

1+50



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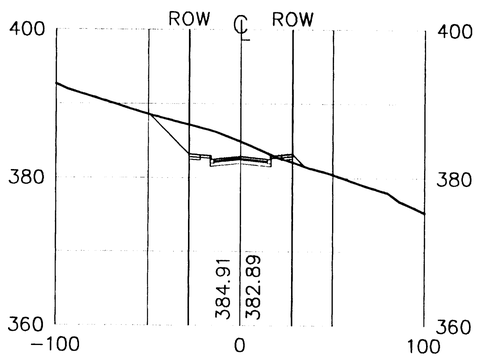

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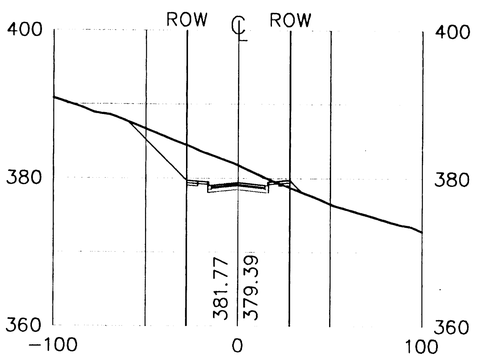

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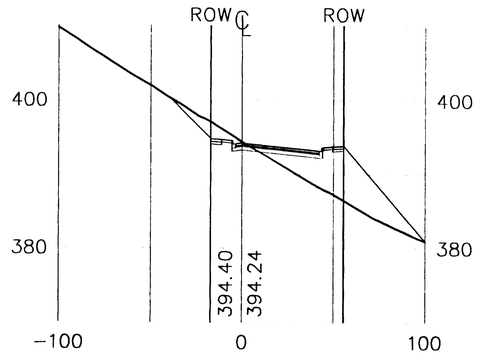

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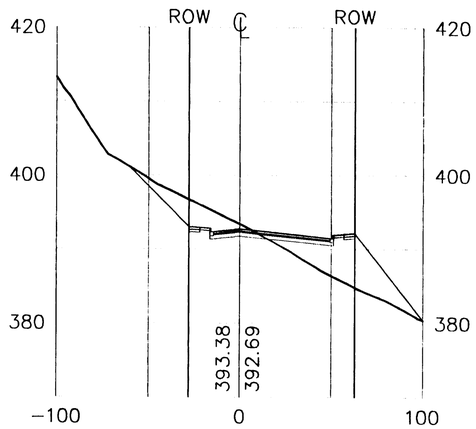

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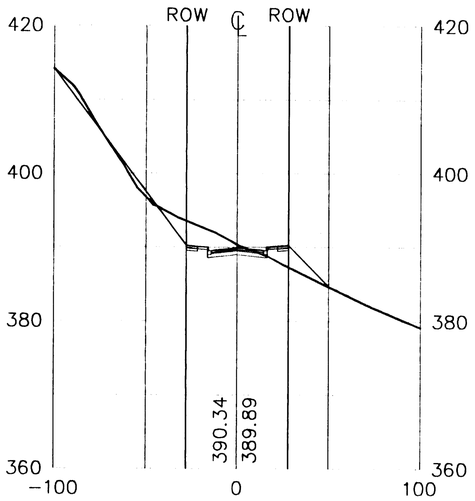
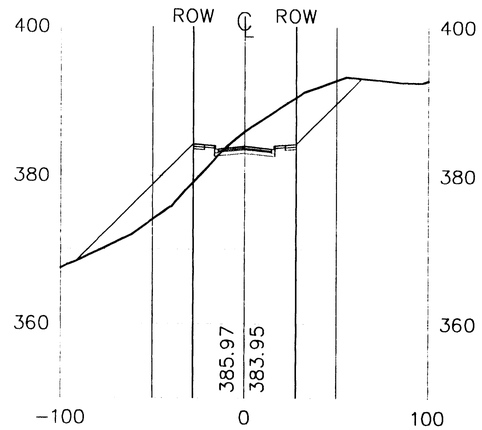


NORTH HAMPTON CT.

1+50



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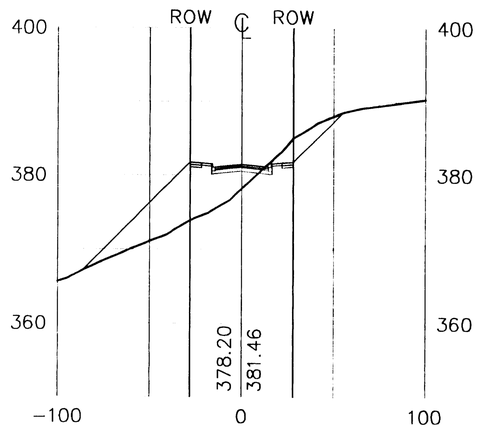

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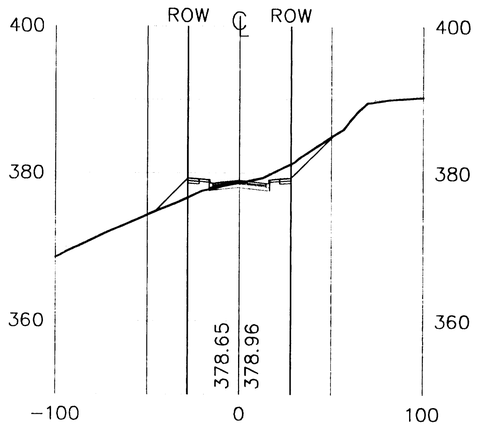

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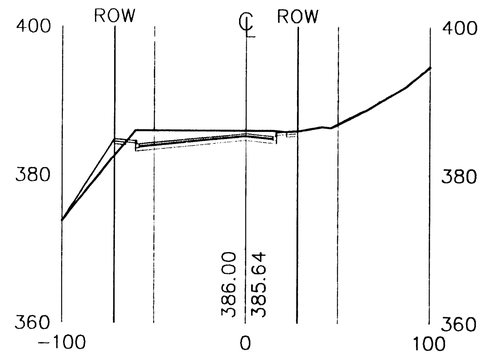

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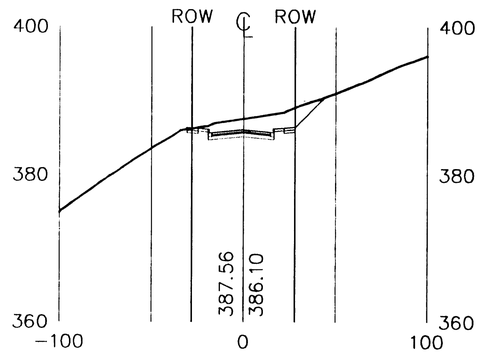

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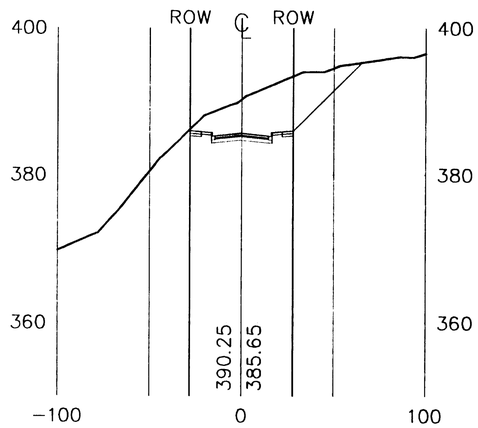


SOUTH HAMPTON CT.

DATE	NO.	REVISION	BY

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 12 OF 25

REGISTERED PROFESSIONAL ENGINEER — OREGON — WALTER L. COOK — EXPIRES: 12-31-2003

SCALE VERT: 1" = 10'
HORIZ: 1" = 40'

DATE: 9/9/02

FILE: SUN-97-09/ZC-97-07
MISC-97-08

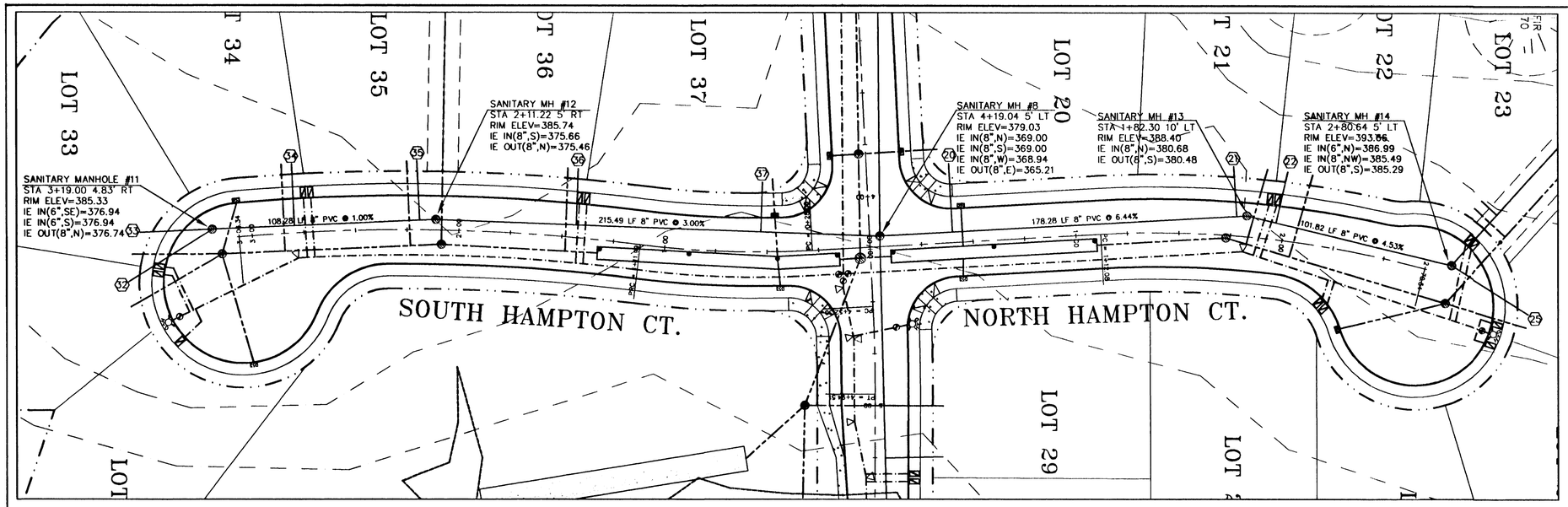
ASSESSOR'S MAP 2S-1E-36
TAX LOTS 608 & 609

PROJECT NAME:

BARRINGTON HEIGHTS 10

CROSS SECTIONS
NORTH & SOUTH HAMPTON COURT

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848



SANITARY SEWER LATERALS (MIN 2% SLOPE)

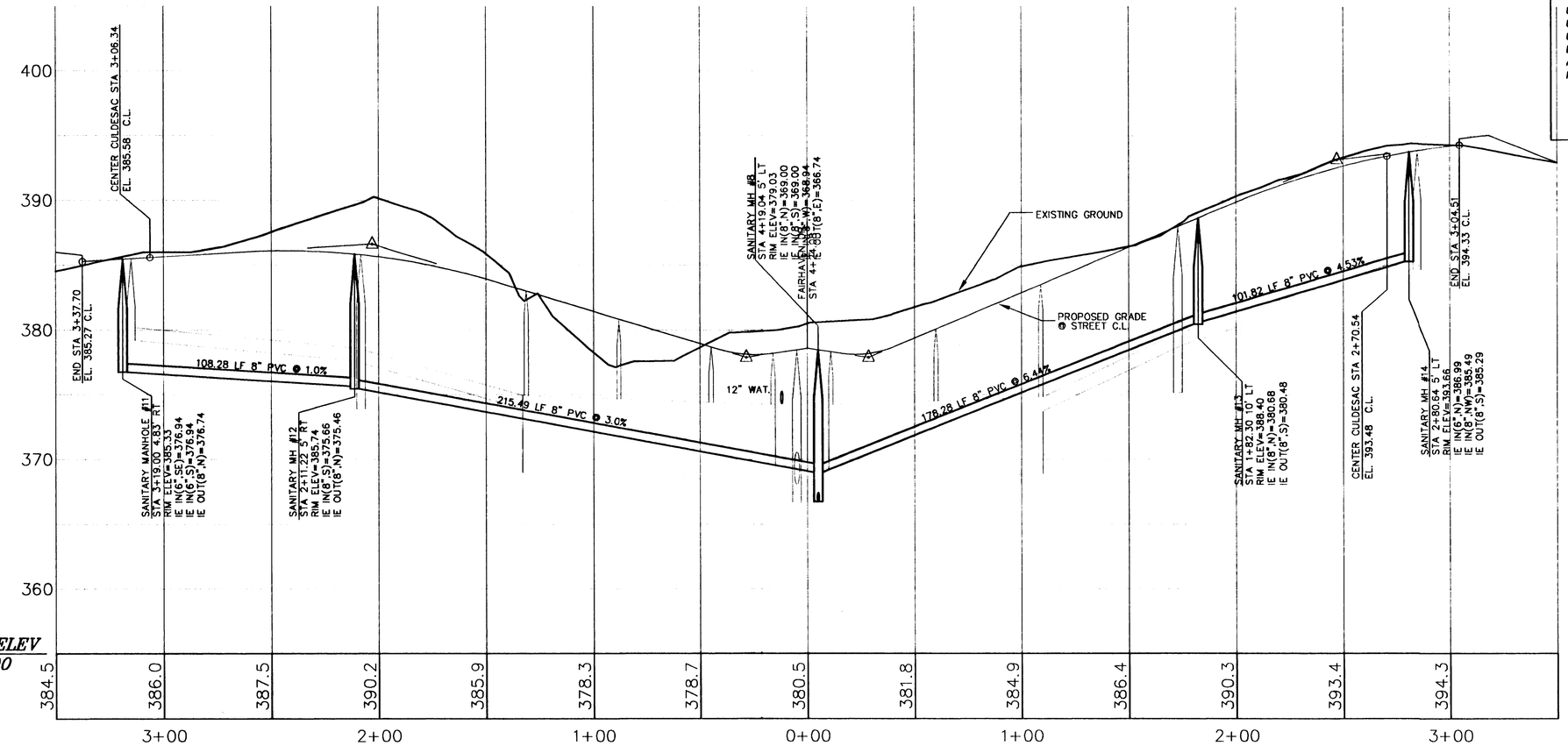
ALL STATIONING IS BASED OF CENTERLINE
I.E. OF LATERALS @ CURB LINE SHALL
BE 6' MIN. DEPTH UNLESS OTHERWISE NOTED.

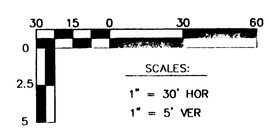
LATERAL	STATION	SIZE	TYPE	LENGTH	I.E. @ MAIN
20	0+40.30 5' LT.	6"	PVC	33.00'	371.27
21	1+77.29 9.33' LT	6"	PVC	24.00'	380.16
22	1+96.12 8.06' LT	6"	PVC	25.20'	381.33
25	2+80.64 5' LT	6"	PVC	44.00'	386.99
32	3+19.00 4.83' RT	6"	PVC	47.15'	376.94
33	3+19.00 4.83' RT	6"	PVC	34.60'	376.94
34	2+79.50 3.44' RT	6"	PVC	30.00'	376.34
35	2+18.984.56' RT	6"	PVC	28.50'	375.74
36	1+43.49 6.08' RT	6"	PVC	27.00'	373.42
37	0+53 9.65 RT.	6"	PVC	23.70'	370.73

AS-BUILT

THESE AS-BUILT PLANS WERE COMPILED FROM SURVEY DATA, DATA COLLECTED FROM OTHERS, AND PERIODIC OBSERVATION DURING CONSTRUCTION. IT IS SUGGESTED THAT THESE PLANS BE USED IN CONJUNCTION WITH FIELD VERIFICATION OF LOCATION AND ELEVATIONS OF IMPROVEMENTS IN QUESTION. THESE PLANS ARE AN ACCURATE RECORD OF PUBLIC IMPROVEMENTS TO THE BEST OF MY INFORMATION, KNOWLEDGE AND BELIEF.

SIGNATURE Walt Cook
DATE 9/10/03





DATE	NO.	REVISION	BY

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 13 OF 25

REGISTERED PROFESSIONAL ENGINEER — OREGON — WALTER L. COOK — EXPIRES: 12-31-2003

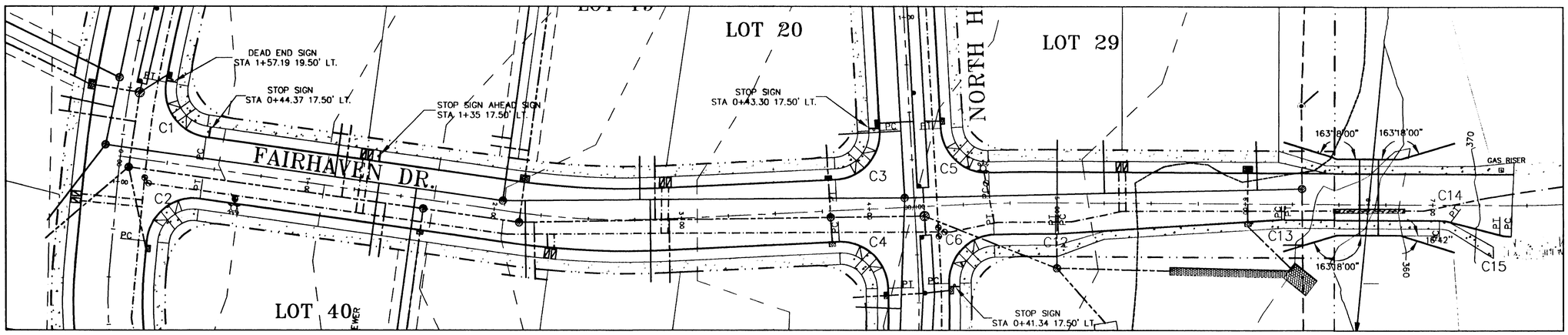
SCALE VERT: 1" = 5' HORIZ: 1" = 30'
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP 2S-1E-36
TAX LOTS 608 & 609

PROJECT NAME:

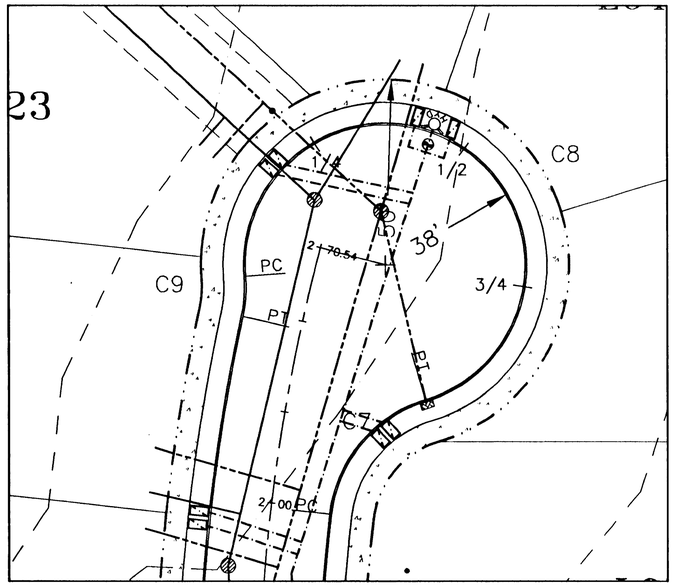
BARRINGTON HEIGHTS 10

SANITARY SEWER LINE
NORTH & SOUTH HAMPTON CT.

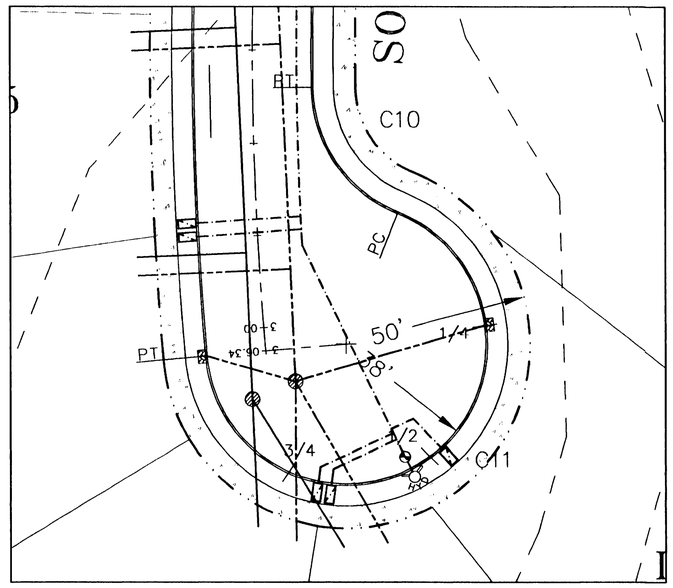
CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848



FAIRHAVEN DR.



NORTH HAMPTON CT.



SOUTH HAMPTON CT.

AS-BUILT

THESE AS-BUILT PLANS WERE COMPILED FROM SURVEY DATA, DATA COLLECTED FROM OTHERS, AND PERIODIC OBSERVATION DURING CONSTRUCTION. IT IS SUGGESTED THAT THESE PLANS BE USED IN CONJUNCTION WITH FIELD VERIFICATION OF LOCATION AND ELEVATIONS OF IMPROVEMENTS IN QUESTION. THESE PLANS ARE AN ACCURATE RECORD OF PUBLIC IMPROVEMENTS TO THE BEST OF MY INFORMATION, KNOWLEDGE AND BELIEF.

SIGNATURE _____

DATE 9/10/03

20 10 0 20 40

SCALES:
1" = 20' HOR

30 15 0 30 60

SCALES:
1" = 30' HOR

20 10 0 20 40

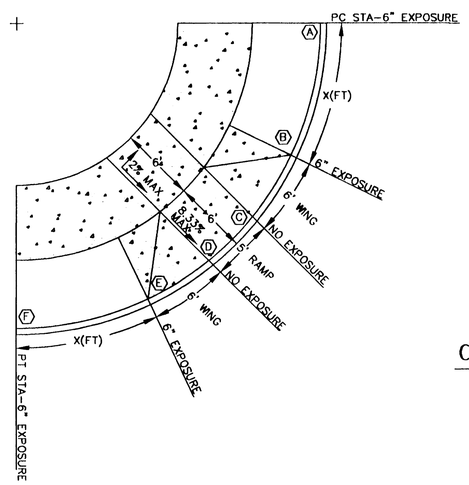
SCALES:
1" = 20' HOR

CURB RETURN DATA

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15
Δ	92°22'12"	92°23'13"	90°24'59"	91°16'23"	88°43'59"	89°53'33"	66°33'45"	257°56'40"	16°59'12"	67°47'41"	243°24'52"	3°48'49"	3°48'49"	14°2'11"	14°2'11"
R	25.00'	25.00'	25.00'	25.00'	25.00'	25.00'	37.00'	38.00'	37.00'	37.00'	38.00'	25.00'	25.00'	25.00'	25.00'
L	40.31'	40.31'	39.45'	39.83'	38.72'	39.22'	42.98'	171.08'	10.97'	43.78'	161.44'	1.66'	1.66'	6.12'	6.12'
PC STA	0+43.37 FAIRHAVEN	0+70.57 BEACON	0+41.30 N. HAMPTON	3+83.18 FAIRHAVEN	4+64.17 FAIRHAVEN	0+40.34 S. HAMPTON	1+98.88 N. HAMPTON	2+58.23 N. HAMPTON	2+58.23 N. HAMPTON	2+70.89 S. HAMPTON	2+70.89 S. HAMPTON	5+00.83 FAIRHAVEN	6+19.18 FAIRHAVEN	7+03.59 FAIRHAVEN	7+41.74 FAIRHAVEN
PC OFF	16.0' LT	18.0' RT	16.0' LT	16.0' RT	16.0' LT	16.0' LT	16.0' RT	17.73' LT	17.73' LT	38.38' LT	38.38' LT	15.94' RT	8.06' RT	8.00' RT	16.00' RT
PC EL.	432.40	434.82	378.38	383.07	374.12	378.08	389.41	392.59	392.59	384.98	384.98	371.03	367.76	371.37	374.49
PT STA	1+56.19 BEACON	0+44.62 FAIRHAVEN	3+82.78 FAIRHAVEN	0+41.91 CDS (S)	0+40.61 CDS (N)	4+65.90 FAIRHAVEN	2+35.58 CDS (N)	2+35.58 CDS (N)	2+47.79 CDS (N)	2+35.15 CDS (S)	3+06.34 CDS (S)	4+99.17 FAIRHAVEN	6+20.84 FAIRHAVEN	7+09.65 FAIRHAVEN	7+35.68 FAIRHAVEN
PT OFF	18' RT	16.0' RT	16.0' LT	16.0' RT	16.0' RT	16.0' RT	37.04' RT	37.04' RT	16.0' LT	16.0' LT	16.0' RT	16.0' RT	8.0' RT	8.75' RT	15.25' RT
PT EL.	433.47	431.92	383.12	378.16	378.34	373.95	391.76	391.76	392.19	385.70	385.18	371.15	367.86	371.85	373.88

NOTE: ALL ELEVATIONS ARE AT FLOW LINE

1/4	N/A	393.84	N/A	N/A	384.37
1/2	390.59	395.30	N/A	385.35	384.52
3/4	N/A	393.53	N/A	N/A	385.27



	C1	C2	C3	C4	C5	C6
Ⓐ	432.40	434.82	378.38	383.07	374.12	378.08
Ⓑ	432.71	433.98	379.73	381.67	375.30	376.91
Ⓒ	432.87	433.55	380.45	380.94	375.96	376.28
Ⓓ	433.00	433.19	381.05	380.32	376.50	375.75
Ⓔ	433.16	432.76	381.77	379.59	377.16	375.12
Ⓕ	433.47	431.92	383.12	378.19	378.34	373.95
X(FT)	11.66	11.66	11.23	11.42	10.86	11.11

NOTES:
1. ALL ELEVATIONS ARE AT FLOW LINE
2. ALL LETTERING IS FROM PC OF CURVE TO PT OF CURVE

CURB RETURN DATA

SCALE: N.T.S.

DATE	NO.	REVISION	BY

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 14 OF 25

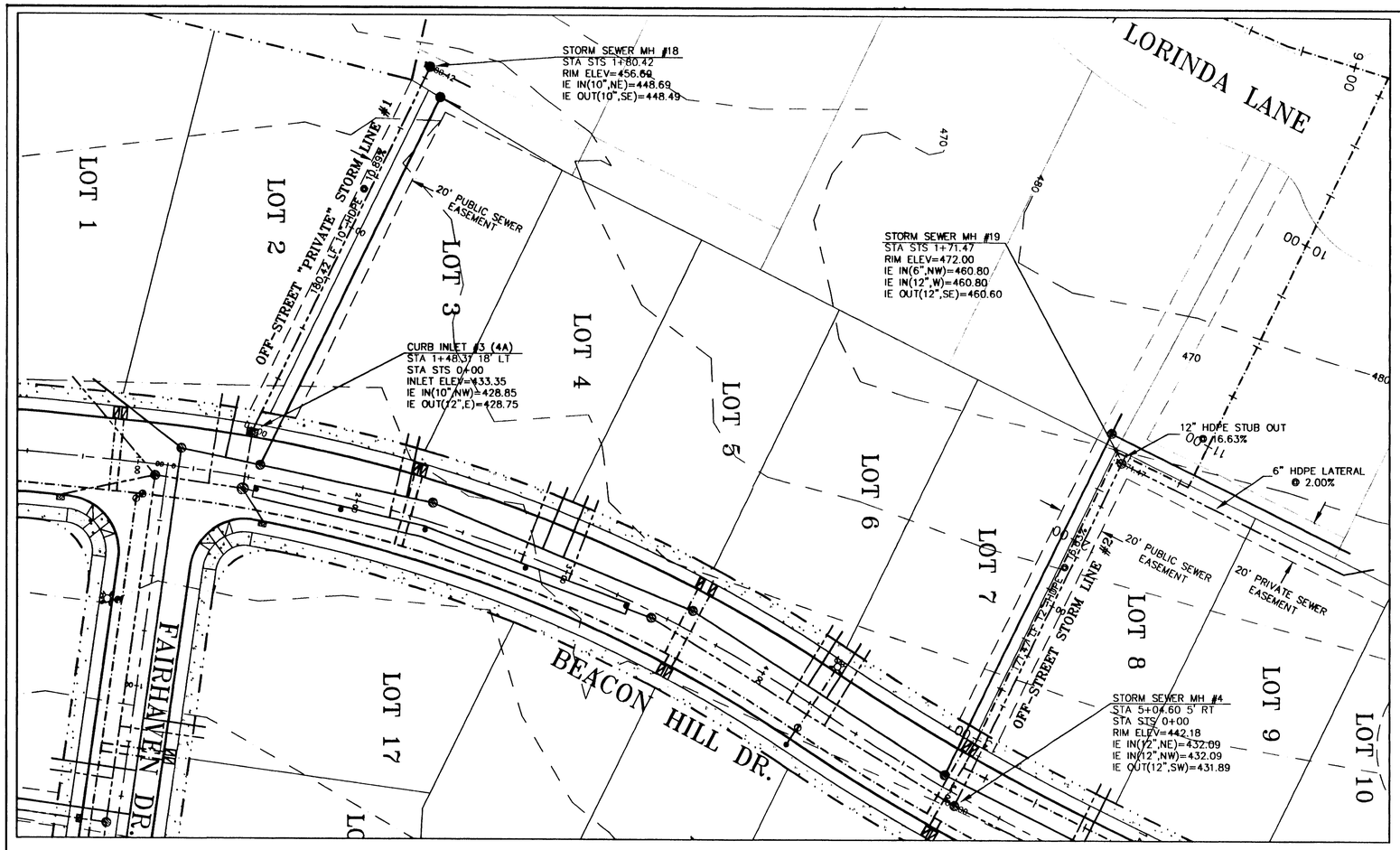
REGISTERED PROFESSIONAL ENGINEER
OREGON
WALTER L. COOK
EXPIRES: 12-31-2003

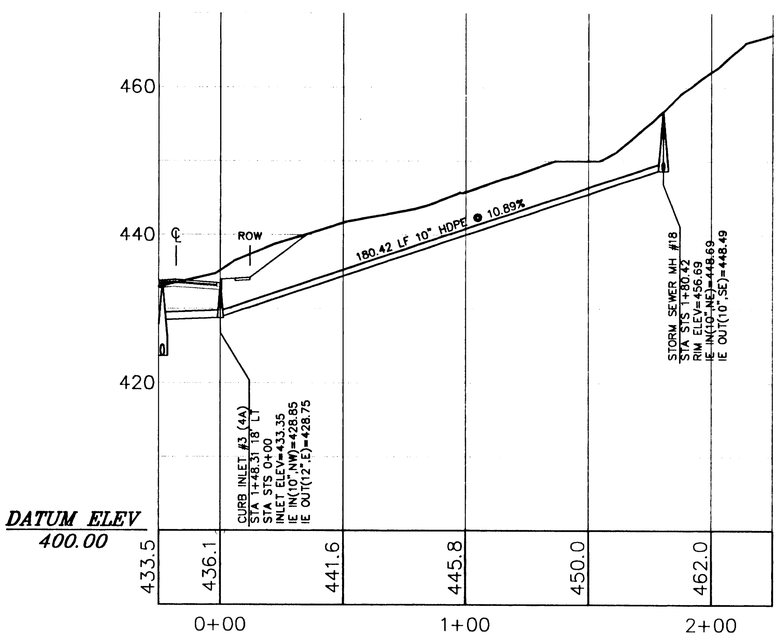
SCALE VERT: N/A HORIZ: N/A
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP 2S-1E-36
TAX LOTS 608 & 609

PROJECT NAME:
BARRINGTON HEIGHTS 10

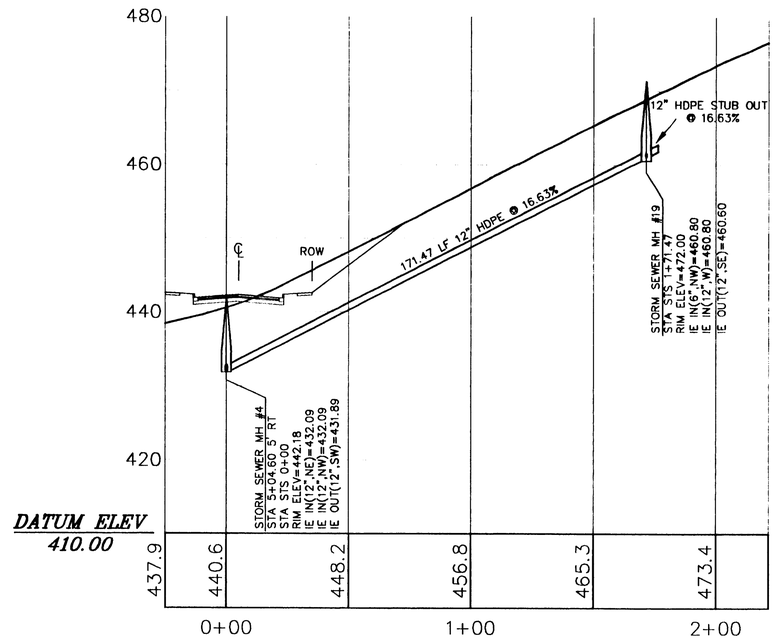
CURB RETURN DATA

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848





OFF-STREET "PRIVATE" STORM LINE #1



OFF-STREET STORM LINE #2

AS-BUILT

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SIGNATURE Walt Cook

DATE 9/10/02

DATE	NO.	REVISION	BY

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 15 OF 25

REGISTERED PROFESSIONAL ENGINEER — OREGON — WALTER L. COOK — EXPIRES: 12-31-2003

SCALE: VERT. 1" = 10' HORIZ. 1" = 30'
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP: TAX LOTS
2S-1E-36: 608 & 609

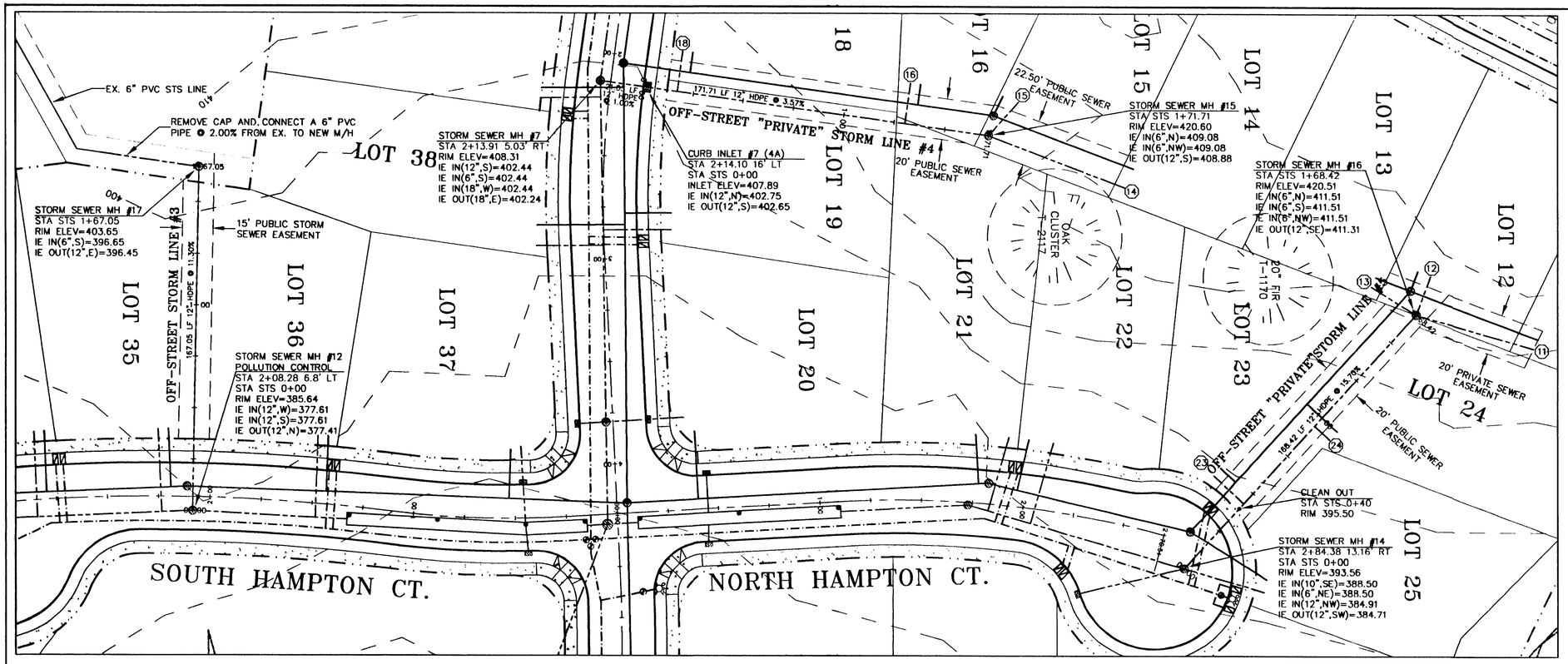
PROJECT NAME:

BARRINGTON HEIGHTS 10

OFF-STREET STORM SEWER LINES

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848

30 15 0 30 60
0 5 10
SCALES:
1" = 30' HOR
1" = 10' VER



AS-BUILT

THESE AS-BUILT PLANS WERE COMPILED FROM SURVEY DATA, DATA COLLECTED FROM OTHERS, AND PERIODIC OBSERVATION DURING CONSTRUCTION. IT IS SUGGESTED THAT THESE PLANS BE USED IN CONJUNCTION WITH FIELD VERIFICATION OF LOCATION AND ELEVATIONS OF IMPROVEMENTS IN QUESTION. THESE PLANS ARE AN ACCURATE RECORD OF PUBLIC IMPROVEMENTS TO THE BEST OF MY INFORMATION, KNOWLEDGE AND BELIEF.

SIGNATURE _____

DATE 9/10/02

STORM SEWER LATERALS (MIN 2% SLOPE)

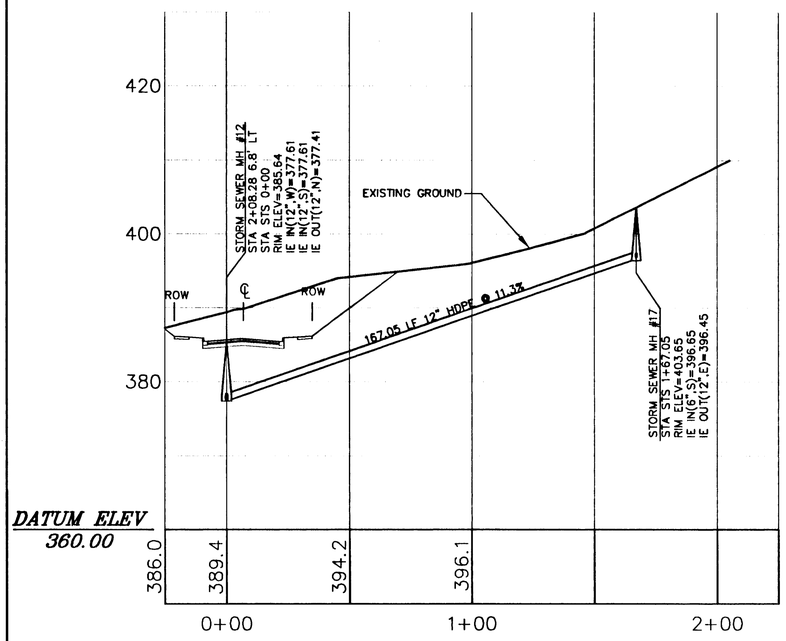
ALL STATIONING IS BASED OF CENTERLINE

LATERAL	STATION	SIZE	TYPE	LENGTH	I.E. @ MAIN
11	1+68.42	6"	PVC	60.20'	411.51
12	1+68.42	6"	PVC	20.00'	411.51
13	1+68.42	6"	PVC	25.90'	411.51
14	1+71.71	6"	PVC	71.26'	409.08
15	1+71.71	6"	PVC	21.88'	409.08
16	1+30.27	6"	PVC	20.00'	407.40
18	0+07.00	6"	PVC	20.00'	403.00
23	0+72.70	6"	PVC	20.00'	396.23
24	0+94.79	6"	PVC	10.00'	399.77

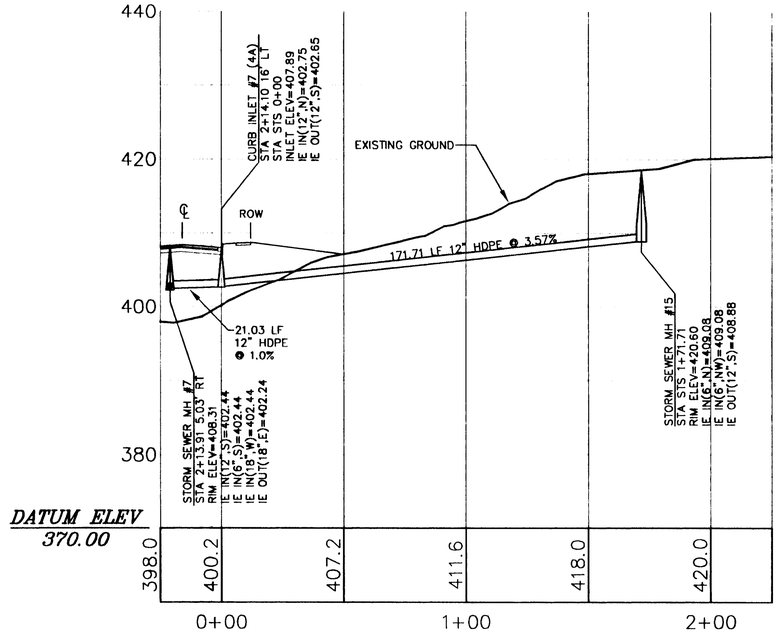
30 15 0 30 60

0 5 10

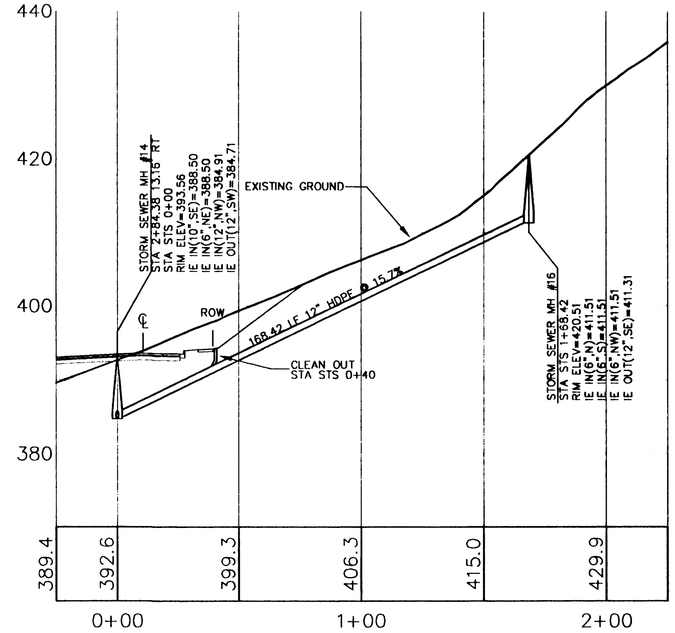
SCALES:
1" = 30' HOR
1" = 10' VER



OFF-STREET STORM LINE #3



OFF-STREET "PRIVATE" STORM LINE #4



OFF-STREET "PRIVATE" STORM LINE #5

DATE	NO.	REVISION	BY

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 16 OF 25

EXPIRES: 12-31-2003

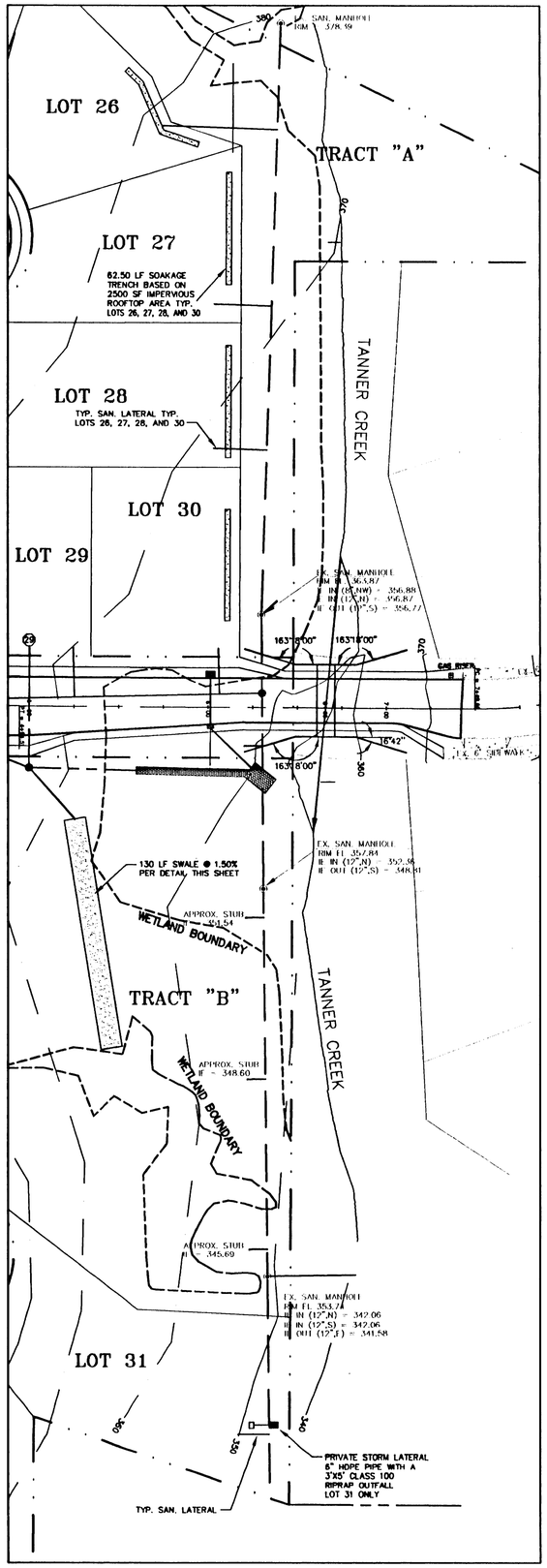
SCALE VERT: 1"= 10' HORIZ: 1"= 30'
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP 2S-1E-36
TAX LOTS 608 & 609

PROJECT NAME:

BARRINGTON HEIGHTS 10

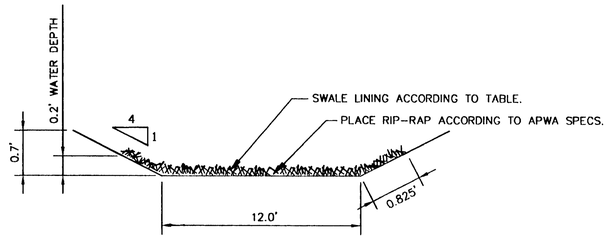
OFF-STREET STORM SEWER LINES (2)

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848



PERMANENT SEEDING SPECIFICATIONS
(KING COUNTY SEC. 5.5.4)

RURAL APPLICATION	PROPORTIONS BY WEIGHT	PERCENT PURITY	PERCENT GERMINATION
KENTUCKY BLUEGRASS (POA PRATENSIS) (BIIKA, MAJESTIC OF SYDSPORT)	15%	85%	80
TALL FESCUE (FESTUCA ARUNDINCEA) (ARID, JAQUAR, OR REBEL)	40%	95%	90
PERENNIAL RYE (LOLIUM PERENNE) (DERBY OR PENNANT)	30%	95%	90
CHEWINGS FESQUE (BANNER)	15%	95%	90



TYPICAL SWALE DETAILS
NTS

SANITARY SEWER NOTE:

6" PVC SANITARY LATERALS FOR LOTS 26,27,28 & 31 TO TIE INTO EXISTING 12" PVC SANITARY LINE, LOCATION PER DRAWING (MIN. 2% SLOPE)

40 20 0 40 80

SCALES:
1" = 40' HOR

AS-BUILT

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SIGNATURE
DATE 9/10/03

DATE	NO.	REVISION	BY

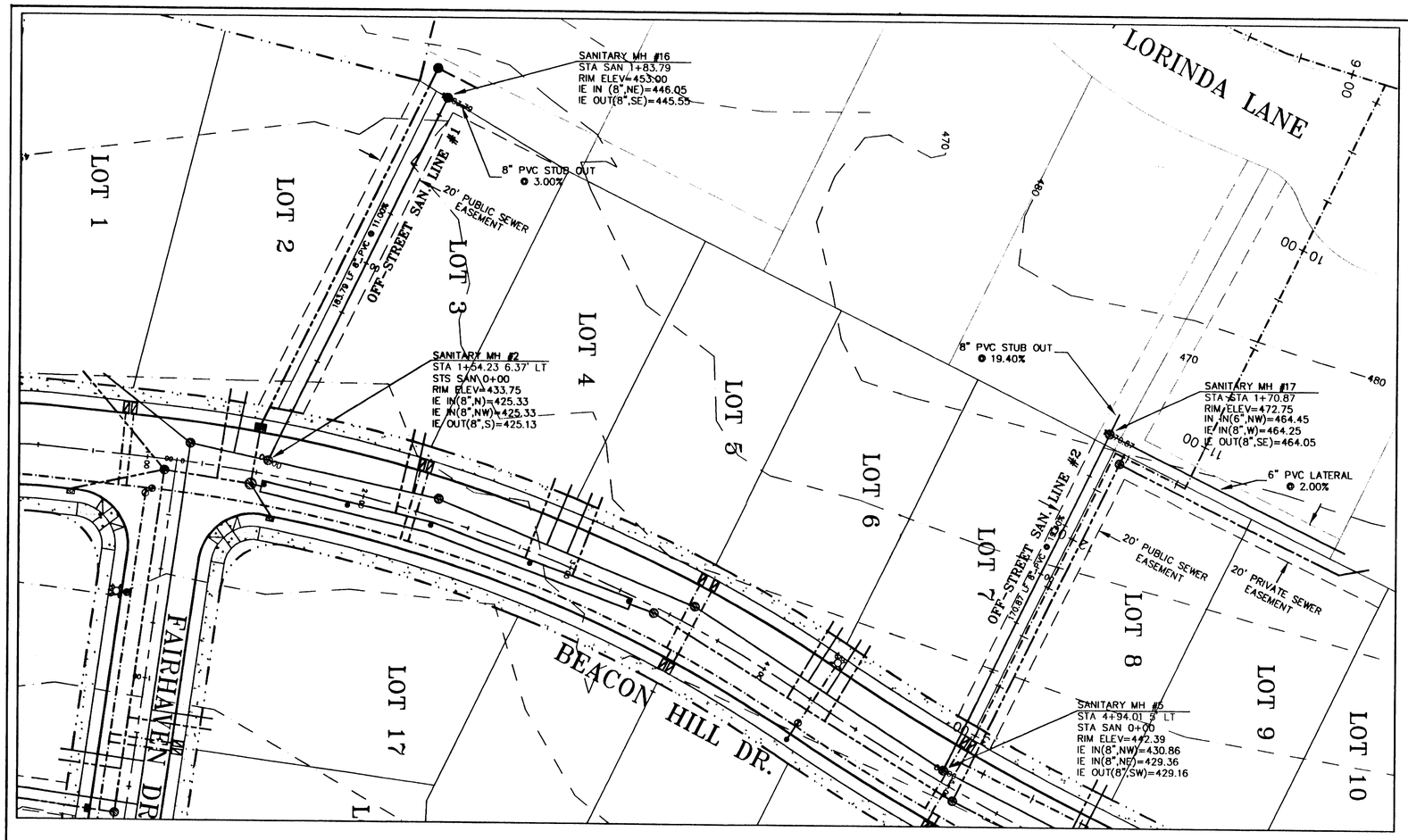
DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC
SHEET 17 OF 25

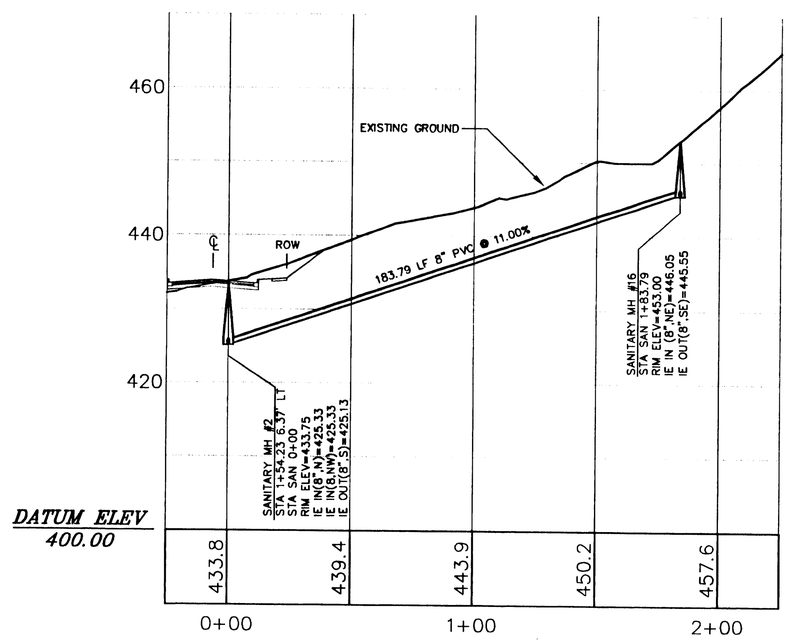
PROFESSIONAL ENGINEER WALTER L. COOK OREGON OCTOBER 15, 1987
EXPIRES: 12-31-2003

SCALE VERT: 1"= 10' HORIZ: VARIES
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP 25-1E-36
TAX LOTS 608 & 609

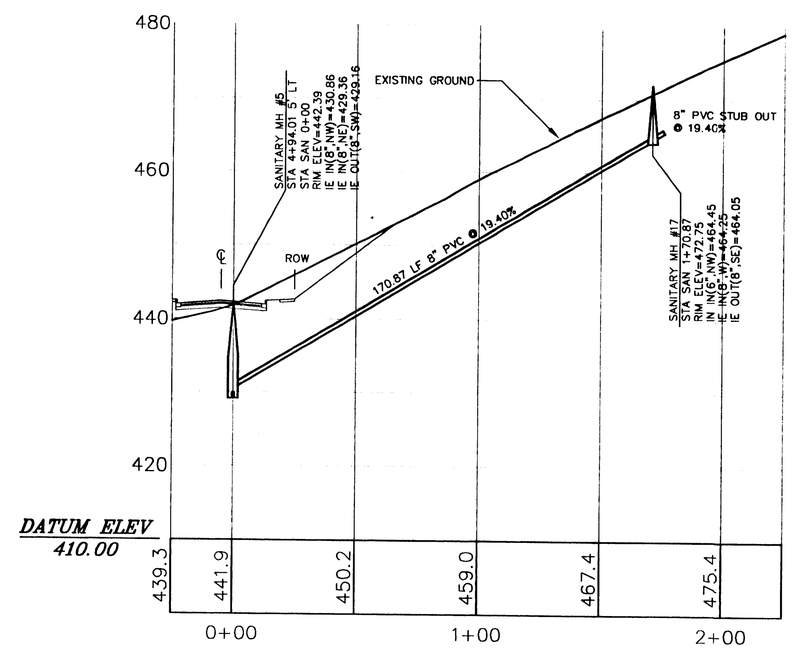
PROJECT NAME:
BARRINGTON HEIGHTS 10
OFF-STREE STORM SEWER LINE & SWALE

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848

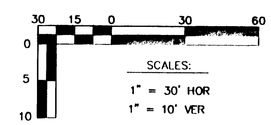




OFF-STREET SANITARY LINE #1



OFF-STREET SANITARY LINE #2



AS-BUILT

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SIGNATURE Walter Cook

DATE 9/16/03

DATE	NO.	REVISION	BY

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 18 OF 25

REGISTERED PROFESSIONAL ENGINEER
OREGON
WALTER L. COOK
EXPIRES: 12-31-2003

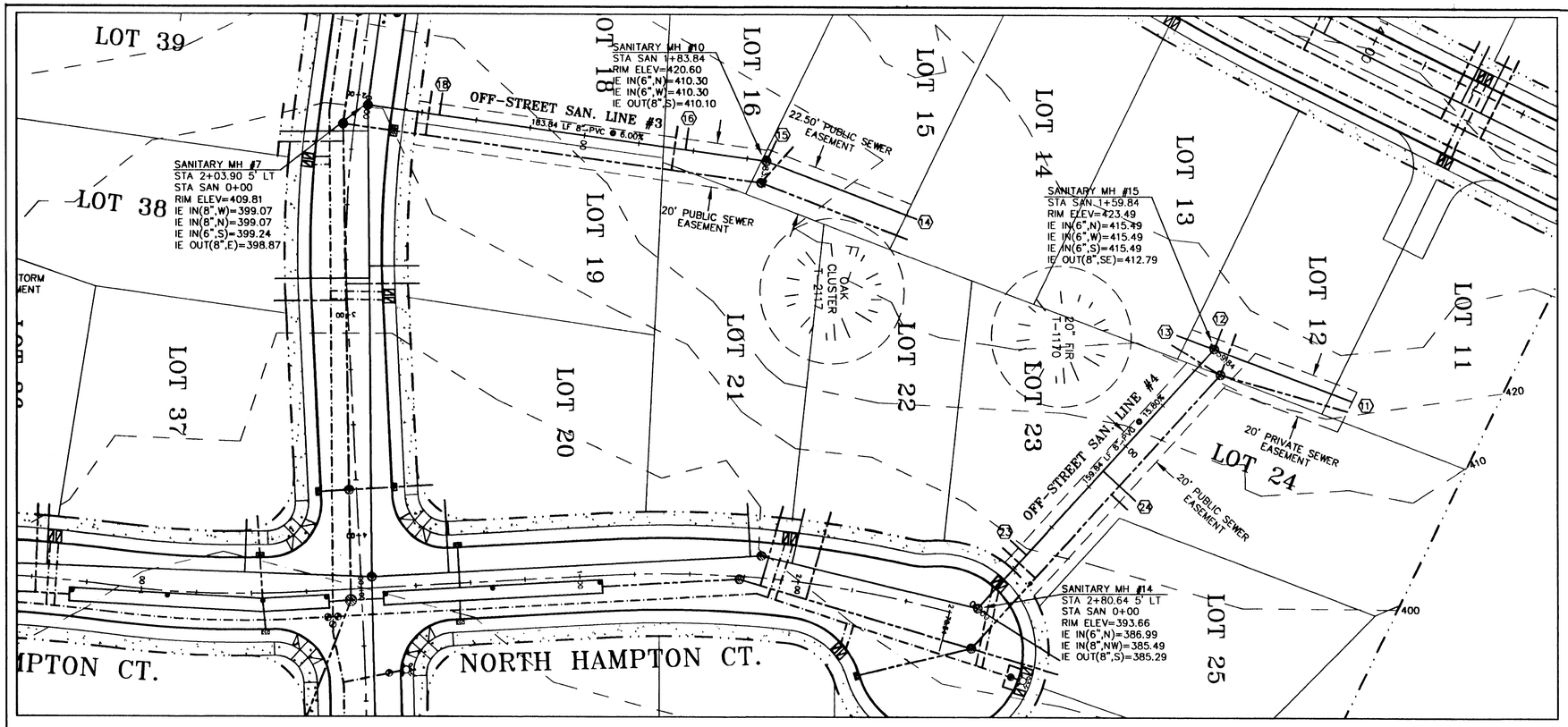
SCALE	VERT: 1"= 10' HORIZ: 1"= 30'
DATE: 9/9/02	
FILE: SUN-97-09/ZC-97-07	
MISC-97-08	
ASSESSOR'S MAP	TAX LOTS
2S-1E-36	608 & 609

PROJECT NAME:

BARRINGTON HEIGHTS 10

OFF-STREET SANITARY SEWER LINES

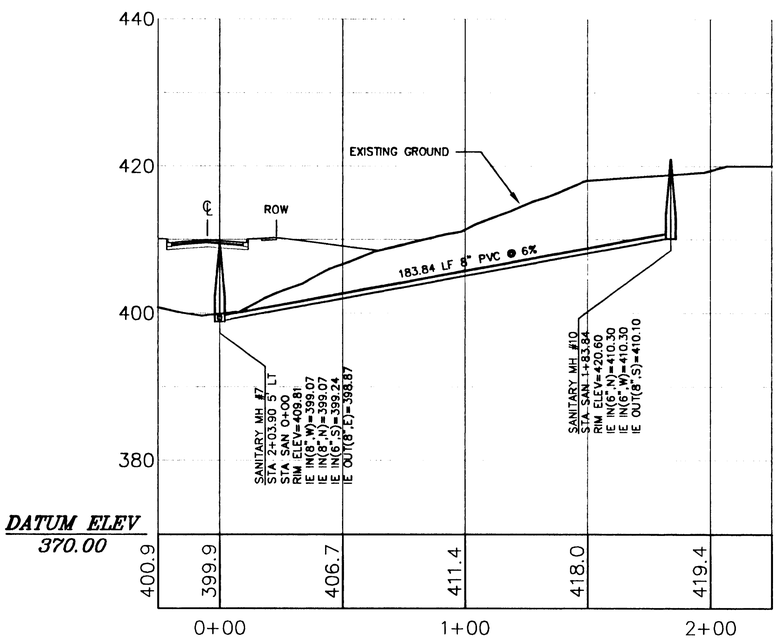
CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848



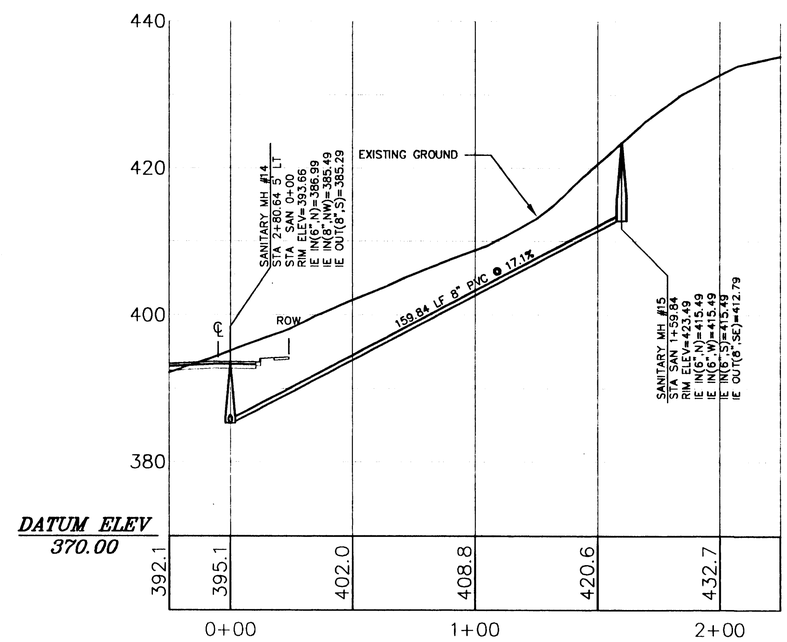
SANITARY SEWER LATERALS (MIN 2% SLOPE)

ALL STATIONING IS BASED OF CENTERLINE
I.E. OF LATERALS @ CURB LINE SHALL
BE 6' MIN. DEPTH UNLESS OTHERWISE NOTED.

LATERAL	STATION	SIZE	TYPE	LENGTH	I.E. @ MAIN
11	1+59.84	6"	PVC	67.22'	415.49
12	1+59.84	6"	PVC	10.00'	415.49
13	1+59.84	6"	PVC	18.19'	415.49
14	1+83.84	6"	PVC	73.35'	410.30
15	1+83.84	6"	PVC	10.42'	410.30
16	1+46.29	6"	PVC	10.00'	407.85
18	0+33.02	6"	PVC	10.00'	401.05
23	0+49.88	6"	PVC	29.56'	394.01
24	0+84.66	6"	PVC	28.47'	399.95



OFF-STREET SANITARY LINE #3



OFF-STREET SANITARY LINE #4

AS-BUILT

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SIGNATURE _____
DATE 9/8/08

30 15 0 30 60
0 5 10
SCALES:
1" = 30' HOR
1" = 10' VER

DATE	NO.	REVISION	BY

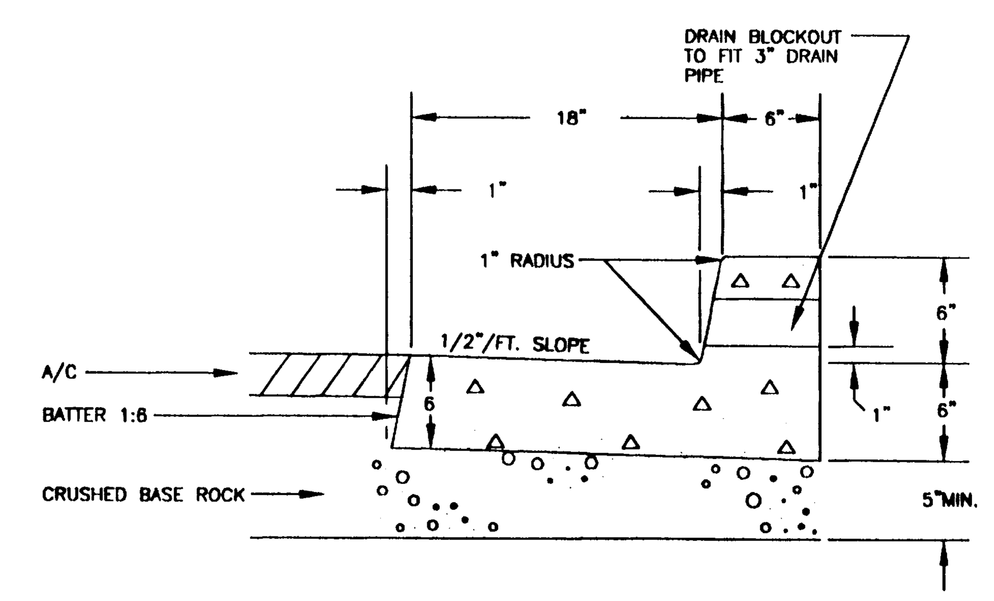
DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC
SHEET 19 OF 25

REGISTERED PROFESSIONAL ENGINEER
OREGON
DECEMBER 15, 1970
WALTER L. COOK
EXPIRES: 12-31-2003

SCALE VERT: 1"= 10'
HORIZ: 1"= 30'
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP 2S-1E-36
TAX LOTS 608 & 609

PROJECT NAME:
BARRINGTON HEIGHTS 10
OFF-STREET SANITARY SEWER LINES (2)

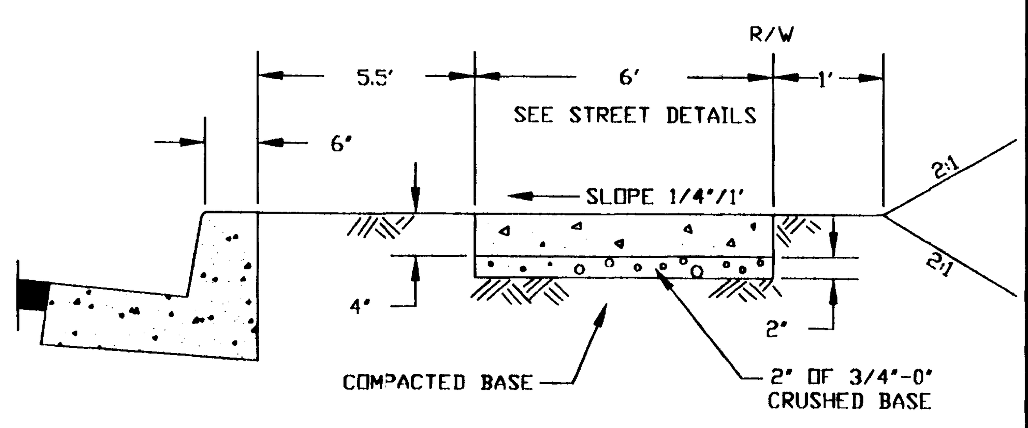
CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848



1. PCC SHALL BE 3300 PSI STRENGTH AT 28 DAYS.
2. CONTRACTION JOINTS SHALL BE PLACED AT 15' MAX. SPACING.
3. EXPANSION JOINTS SHALL BE PLACED AT 45' MAX. SPACING AND AT ALL DRIVEWAYS AND CURB RETURNS.
4. CRUSHED BASE ROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
5. ALL RADII SHALL BE 3/4" EXCEPT AS OTHERWISE SHOWN.

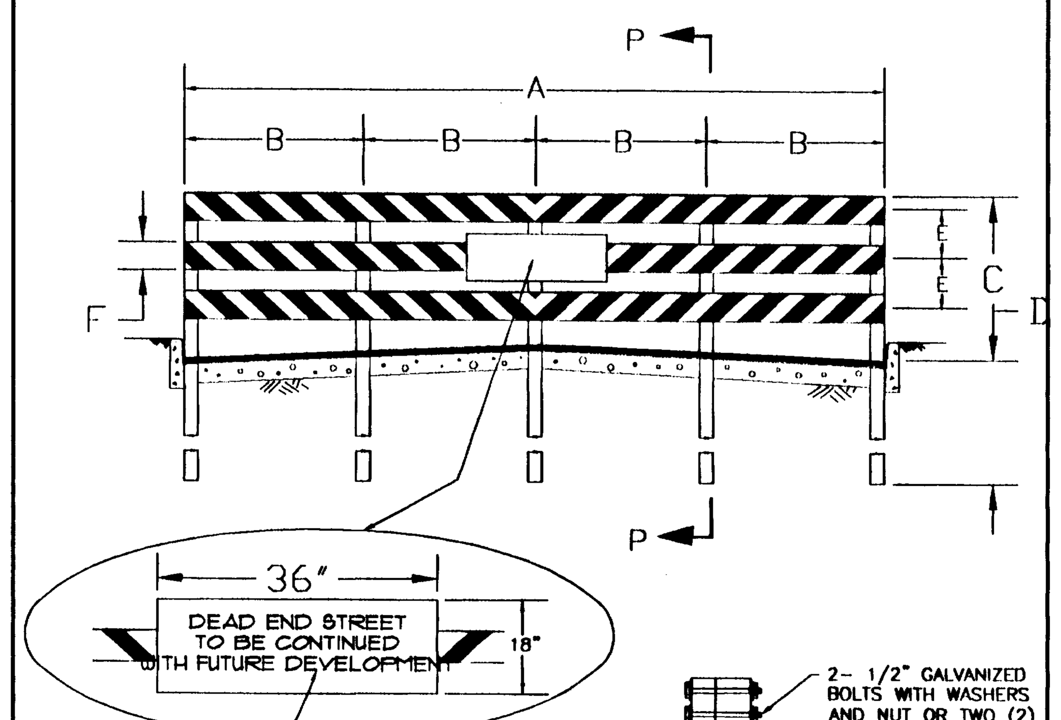
DRAWN	DRAWN		A.P.W.A. OREGON CHAPTER	SCALE N.T.S.
DIV.				DATE JULY, 1993
REV.	DATE	APPR.	MONOLITHIC CURB AND GUTTER	APPR.
				DWG. NO. DWG

TYPICAL SIDEWALK DETAIL
(FOR LOCAL STREET)

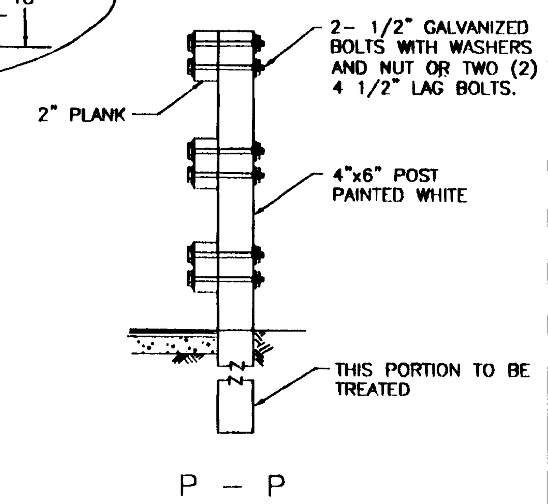


1. LOCATION AND WIDTH OF SIDEWALK WILL VARY DEPENDING UPON FUNCTIONAL CLASSIFICATION OF THE STREET. SEE TYPICAL STREET SECTION DRAWINGS ST-500,ST-501,ST-502.
2. PCC SHALL BE 3300 PSI STRENGTH AT 28 DAYS.
3. EXPANSION JOINTS SHALL BE PLACED AT DRIVEWAY APPROACHES, ANY FIXED OBJECT WITHIN THE SIDEWALK AREA AND AT 45' (MAX) INTERVALS (SHOULD LINE UP WITH CONTRACTION JOINTS). JOINTING MATERIAL AT DRIVEWAYS SHALL CONSIST OF AN APPROVED FILLER AND SHALL NOT BE LESS THAN 1/2" WIDE.
4. CONTRACTION JOINTS SHALL BE PLACED AT ALL CHANGES OF DIRECTION, POINTS OF CURVATURE AND AT 15' (MAX) INTERVALS. JOINTS SHALL BE 1/8" TO 1/4" WIDE AND A MINIMUM DEPTH OF 1/3 THE THICKNESS OF THE CONCRETE.
5. ALL SURFACES SHALL BE TROWELLED AND BROOMED IN A WORKMANLIKE MANNER. ALL CONTRACTION JOINTS SHALL BE STEEL TROWELLED (3 IN. TYP.)
6. CONCRETE DEPTH FOR STANDARD SIDEWALKS SHALL BE NOMINAL 4" MIN.; THICKNESS IN DRIVEWAY SHALL MATCH EXISTING DRIVEWAY.
7. INSTALL 3" PVC WEEPHOLE PIPES IN SIDEWALKS IN LOCATIONS AS DIRECTED BY THE ENGINEERS. PLACE CONTRACTION JOINTS OVER THE TOP OF THE PIPE.

DRAWN	DRAWN		A.P.W.A. OREGON CHAPTER	SCALE N.T.S.
DIV.				DATE JULY, 1993
REV.	DATE	APPR.	TYPICAL SIDEWALK DETAIL	APPR.
				DWG. NO. DWG



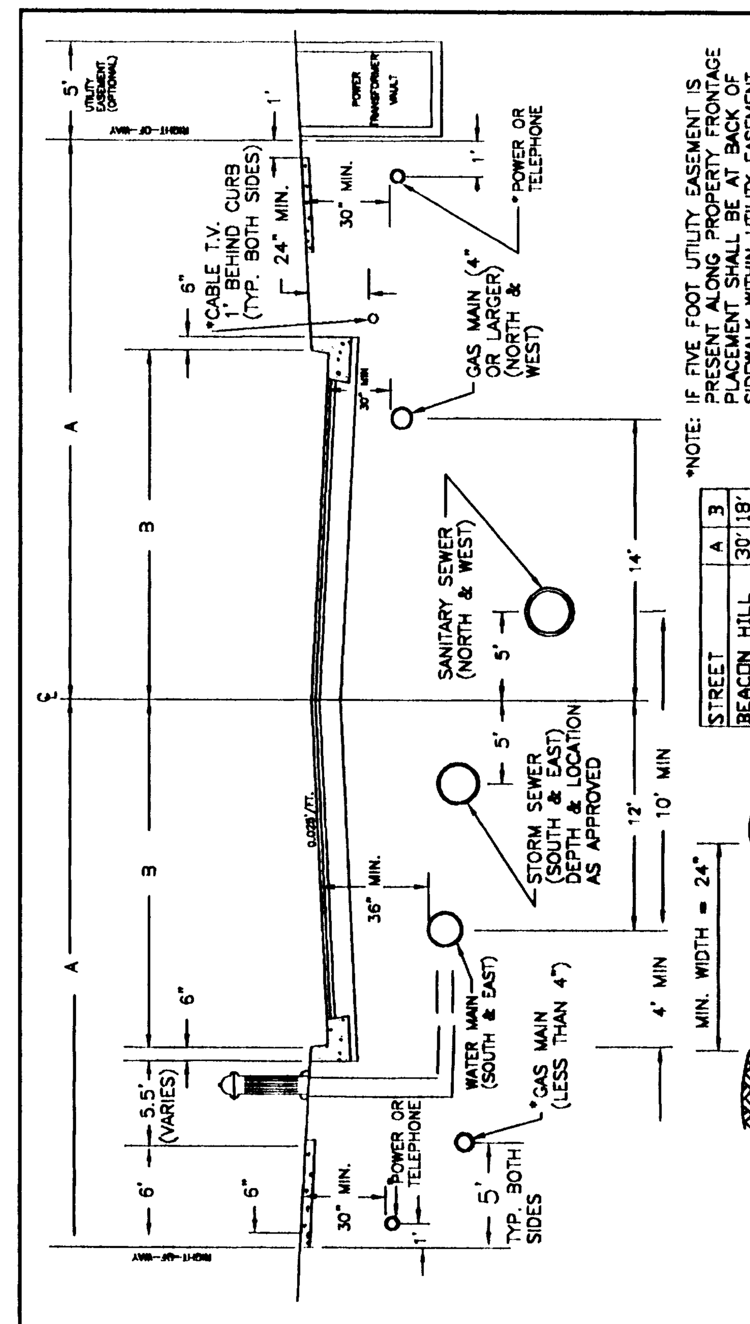
A	B	C	D	E	F
40'	10'	5'MIN.	4'MIN	20"	8"-12"
36'	9'	5'MIN.	4'MIN	20"	8"-12"
32'	8'	5'MIN.	4'MIN	20"	8"-12"



NOTES:

1. STRIPING SHALL BE ALTERNATING RED (RODDA #1249 OR EQUAL) AND WHITE STRIPES 6" IN WIDTH AT A 45 DEGREE ANGLE AND SHALL BE EITHER RETRO-REFLECTIVE TAPE OR PAINTED WITH A SEALED RETRO-REFLECTIVE SURFACE.
2. THIS BARRICADE SHALL CONFORM TO SECTION 3F-1, UNIFORM MANUAL ON TRAFFIC CONTROL DEVICES-FHWA.

DRAWN	DRAWN		A.P.W.A. OREGON CHAPTER	SCALE N.T.S.
DIV.				DATE JULY, 1993
REV.	DATE	APPR.	STREET BARRICADE	APPR.
B11	7-7-95			DWG. NO. DWG



STREET	A	B
BEACON HILL	30'	18'
FAIRHAVEN	28'	16'
N. HAMPTON CT.	28'	16'
S. HAMPTON CT.	28'	16'

*NOTE: IF FIVE FOOT UTILITY EASEMENT IS PRESENT ALONG PROPERTY FRONTAGE PLACEMENT SHALL BE AT BACK OF SIDEWALK WITHIN UTILITY EASEMENT.

1. WATER LINES ON ALL STREETS OTHER THAN LOCAL STREETS WITH A STREET WIDTH LESS 16' SHALL HAVE A MINIMUM DISTANCE 10' FROM THE SAN. SEWER & 4' FROM F.O.C.
2. STORM DRAINAGE LINES ON ALL STREETS SHALL BE 5' SOUTH & EAST OF CENTER LINE. WHERE DESIIGN CONSTRAINTS WILL NOT ALLOW PLACEMENT OF STORM LINE SURFACE DRAINAGE IS RECOMMENDED.

DRAWN	DRAWN		A.P.W.A. OREGON CHAPTER	SCALE N.T.S.
DIV.				DATE JULY, 1993
REV.	DATE	APPR.	TYPICAL UTILITY PLACEMENT	APPR.
MRM	7-7-95			DWG. NO. DWG

AS-BUILT

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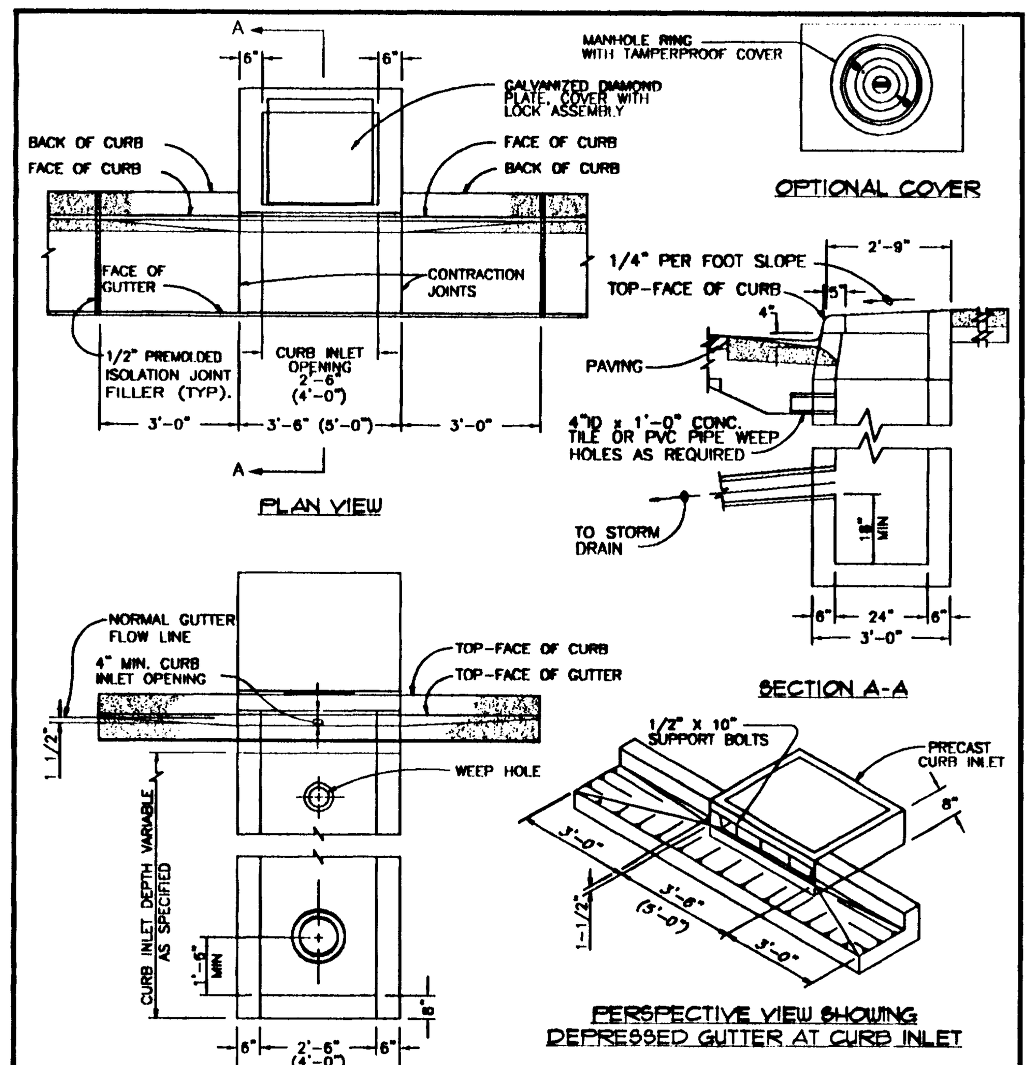
SIGNATURE ____

DATE ____



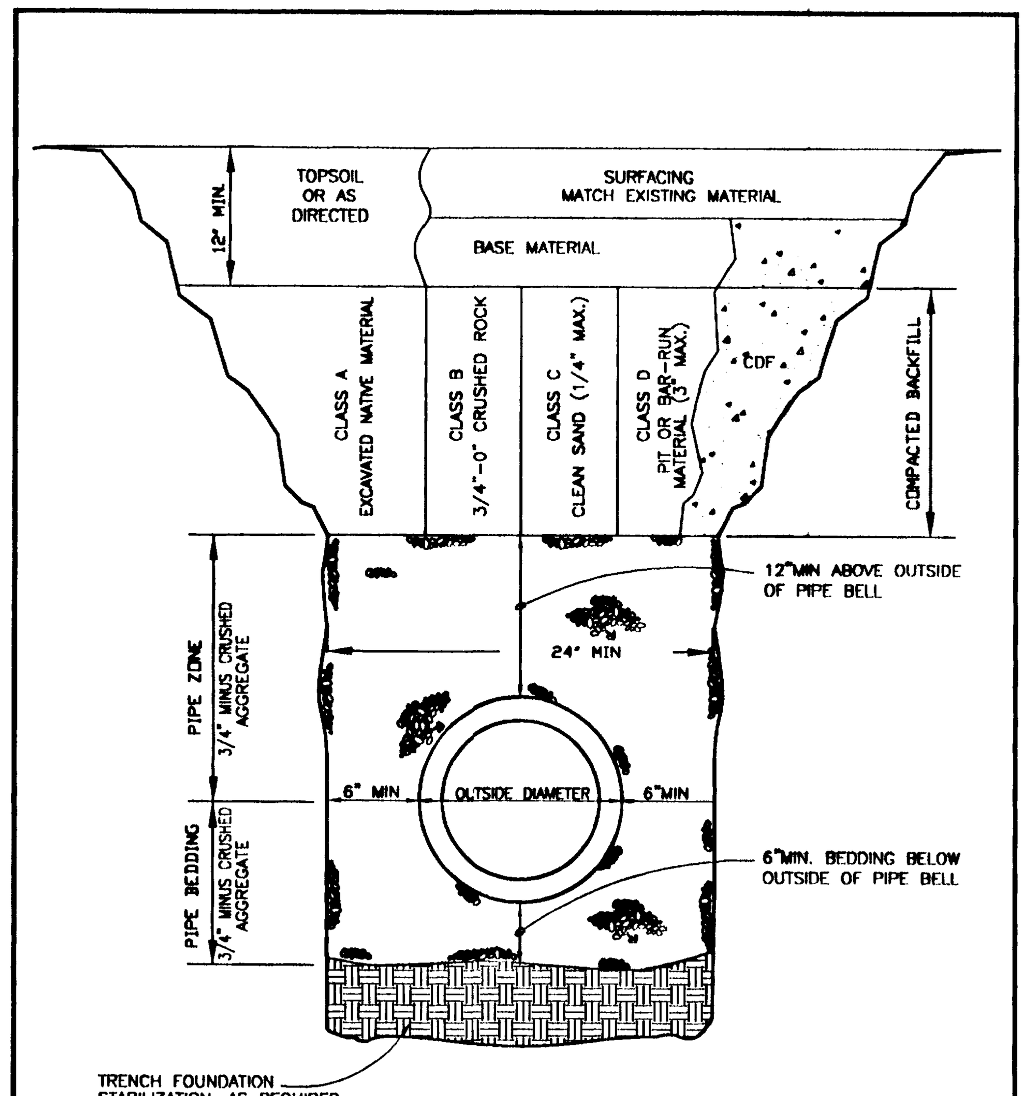
NOTES:

1. CURB INLET TOP AND BASE SHALL MEET H20 LOADING
2. CONCRETE STRENGTH SHALL BE 3000 PSI.
3. ALL FABRICATED METAL PARTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
4. FOR STEEP GRADES USE STD. PRECAST INLET WITH 4'-0" OPENING OR TWO 2'-6" OPENING INLETS.
5. CURB INLET BASE MAY BE PRECAST OR CAST-IN-PLACE.
6. DIMENSIONS SHOWN ABOVE IN PARENTHESIES ARE FOR 4A INLETS. A 1 1/2 A INLET SHALL HAVE A CURB INLET OPENING WIDTH OF 1'6" AND AN OUTSIDE WIDTH OF 2'6"; ALL OTHER DIMENSIONS AND DETAILS SHALL BE AS SHOWN.
7. ALL TYPE 4A INLETS ARE REQUIRED TO HAVE A 36" SUMP

PRECAST CURB INLET
1 1/2 A, 2 1/2 A, 4 A

DATE:	DRAWING NO.
AUG 1996	3Ø4

FILENAME: APWA0018.DWG

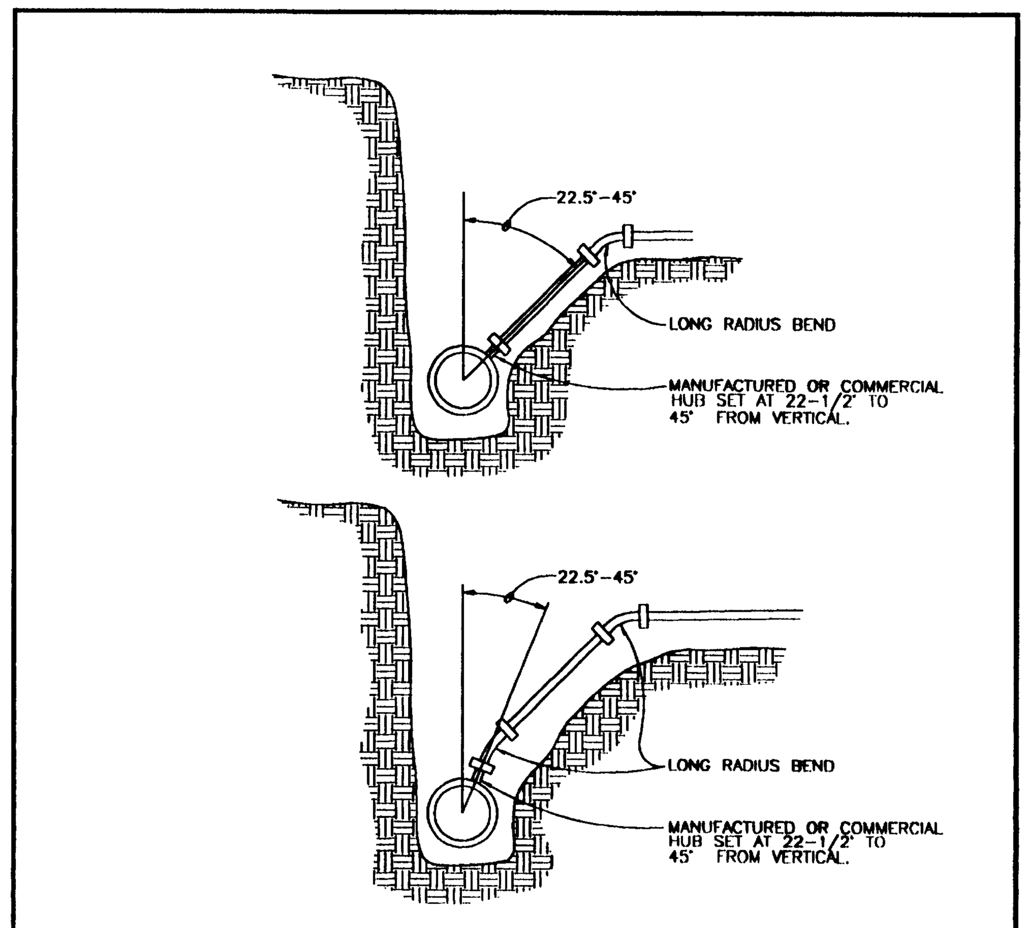


NOTE:
SURFACING OF PAVED AREAS SHALL COMPLY WITH STREET CUT STANDARD DRAWING.

TRENCH BACKFILL, BEDDING, AND PIPEZONE

DATE:	DRAWING NO.
AUG 1996	3Ø1

FILENAME: APWA0015.DWG



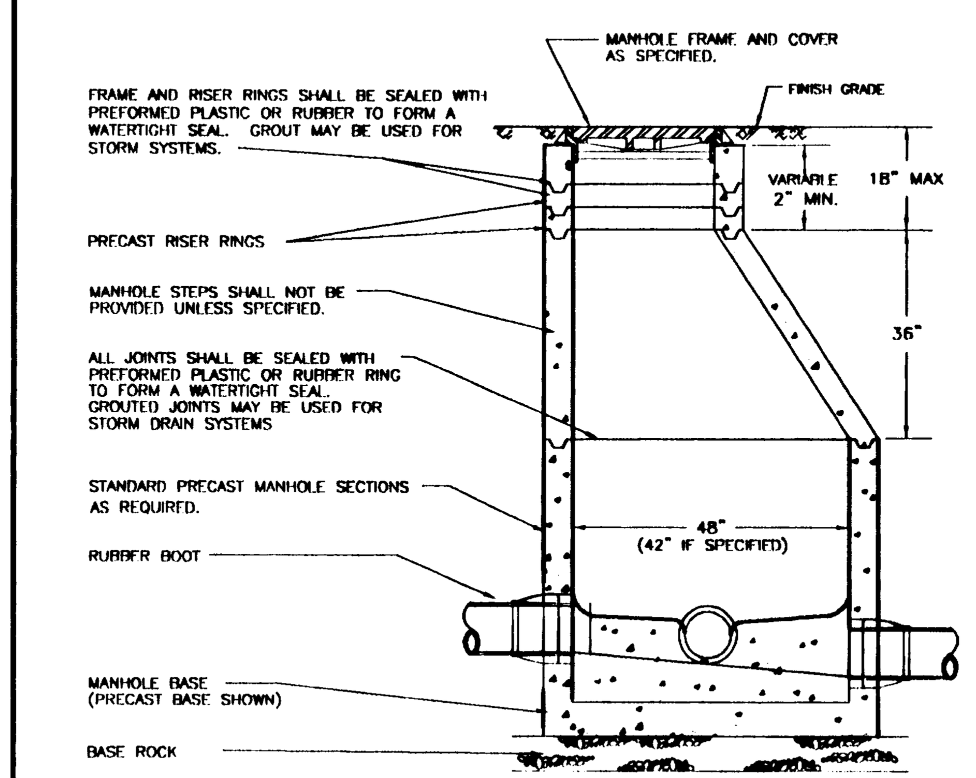
NOTES:

1. PIPE AND FITTINGS SHALL BE COMPATIBLE. ONLY MANUFACTURED FITTINGS SHALL BE USED.
2. MINIMUM DEPTH AT RIGHT OF WAY OR EASEMENT LINE SHALL BE 4 FEET.
3. PLUGGING, BLOCKING, AND MARKING OF UNCONNECTED SERVICES SHALL CONFORM TO SHALLOW TRENCH SERVICE CONNECTION DRAWING.
4. VERTICAL TRENCH WALLS ARE REQUIRED. IF IT IS NOT POSSIBLE TO MAINTAIN VERTICAL TRENCH WALLS, USE ALTERNATE CONNECTION METHOD TO MAINTAIN 6" MAXIMUM DISTANCE BETWEEN RISER PIPE AND TRENCH WALLS. REPLACE ALL EXCAVATED OR DISTURBED MATERIAL WITH FULL DEPTH GRANULAR BACKFILL COMPACTED TO 95% RELATIVE DENSITY.
5. WHERE DEEP CONNECTION IS AT AN ANGLE LESS THAN 45° FROM VERTICAL, DUCTILE IRON PIPE AND FITTINGS SHOULD BE USED.

TYPICAL DEEP TRENCH SERVICE CONNECTION

DATE:	DRAWING NO.
MAY 1992	3Ø9

FILENAME: APWA0024.DWG



NOTES:

1. STANDARD PRECAST MANHOLE SECTION DIAMETER SHALL BE 48". USE 42" IF SPECIFIED BY THE ENGINEER.
2. ALL CONNECTING PIPES SHALL HAVE A FLEXIBLE JOINT WITHIN 18" OF MANHOLE WALL.
3. SEE MANHOLE BASE SECTION DRAWING FOR BASE DETAILS.

MANHOLE

DATE:	DRAWING NO.
MAR 1992	315

FILENAME: APWA0028.DWG

DATE	NO.	REVISION	BY

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: JSS

SHEET 20 OF 25

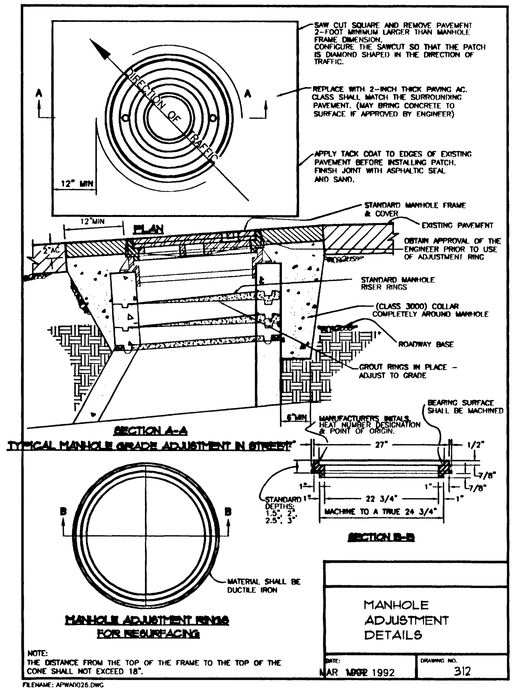
REGISTERED PROFESSIONAL LAND SURVEYOR — OREGON — WALTER L. COOK — EXPIRES 12-31-2003

SCALE VERT: N/A HORIZ: N/A
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08

ASSESSOR'S MAP	TAX LOTS
2S-1E-36	608 & 609

PROJECT NAME:
BARRINGTON HEIGHTS 10
STANDARD DETAIL SHEET

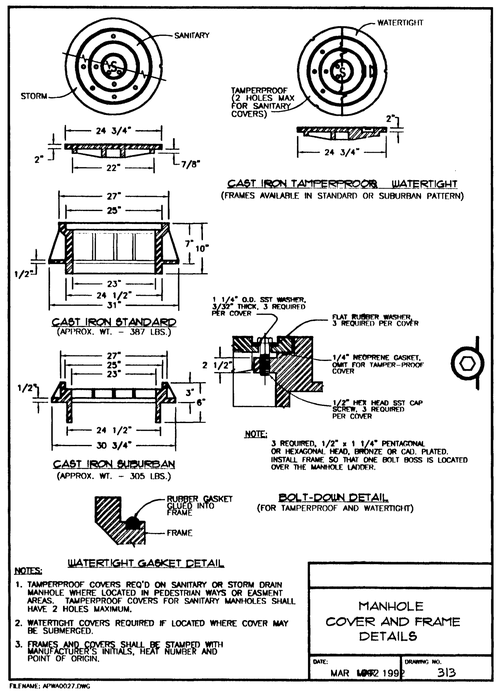
CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848



MANHOLE ADJUSTMENT DETAILS

DATE: MAR 1992 DRAWING NO. 312

FILENAME: APWA0026.DWG



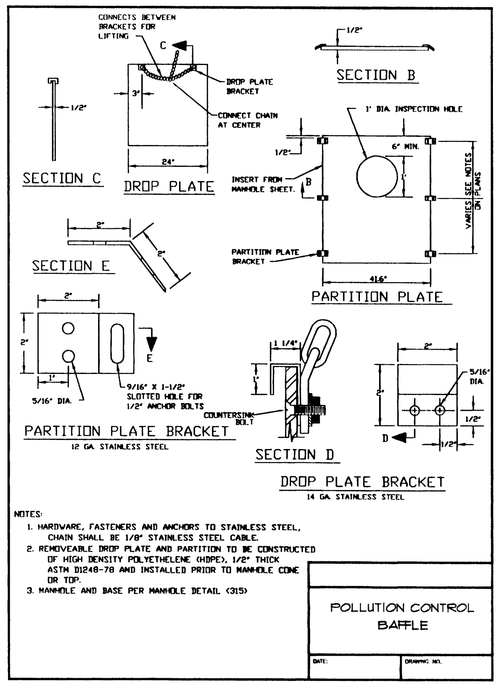
NOTES:

1. TAMPERPROOF COVERS REQ'D ON SANITARY OR STORM DRAIN MANHOLE WHERE LOCATED IN PEDESTRIAN WAYS OR EASMENT AREAS. TAMPERPROOF COVERS FOR SANITARY MANHOLES SHALL HAVE 2 HOLES MAXIMUM.
2. WATERTIGHT COVERS REQUIRED IF LOCATED WHERE COVER MAY BE SUBMERGED.
3. FRAMES AND COVERS SHALL BE STAMPED WITH MANUFACTURER'S INITIALS, HEAT NUMBER AND POINT OF ORIGIN.

MANHOLE COVER AND FRAME DETAILS

DATE: MAR 1992 DRAWING NO. 313

FILENAME: APWA0027.DWG

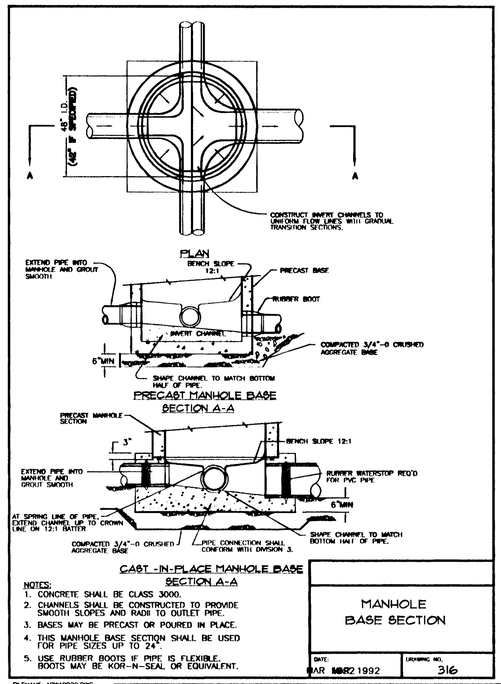


NOTES:

1. HARDWARE, FASTENERS AND ANCHORS TO STAINLESS STEEL, CHAIN SHALL BE 1/8" STAINLESS STEEL CABLE.
2. REMOVEABLE DROP PLATE AND PARTITION TO BE CONSTRUCTED OF HIGH DENSITY POLYETHELENE (HDPE), 1/2" THICK ASTM D1248-78 AND INSTALLED PRIOR TO MANHOLE CONE OR TOP.
3. MANHOLE AND BASE PER MANHOLE DETAIL (315)

POLLUTION CONTROL BAFFLE

DATE: DRAWING NO.



NOTES:

1. CONCRETE SHALL BE CLASS 3000.
2. CHANNELS SHALL BE CONSTRUCTED TO PROVIDE SMOOTH SLOPES AND RADII TO OUTLET PIPE.
3. BASES MAY BE PRECAST OR POURED IN PLACE.
4. THIS MANHOLE BASE SECTION SHALL BE USED FOR PIPE SIZES UP TO 24".
5. USE RUBBER BOOTS IF PIPE IS FLEXIBLE. BOOTS MAY BE KOR-N-SEAL OR EQUIVALENT.

MANHOLE BASE SECTION

DATE: MAR 1992 DRAWING NO. 316

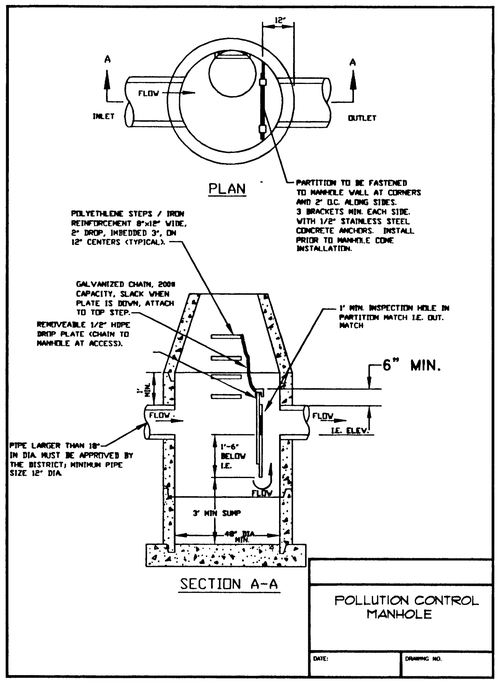
FILENAME: APWA0029.DWG

AS-BUILT

THESE AS-BUILT PLANS WERE COMPILED FROM SURVEY DATA, DATA COLLECTED FROM OTHERS, AND PERIODIC OBSERVATION DURING CONSTRUCTION. IT IS SUGGESTED THAT THESE PLANS BE USED IN CONJUNCTION WITH FIELD VERIFICATION OF LOCATION AND ELEVATIONS OF IMPROVEMENTS IN QUESTION. THESE PLANS ARE AN ACCURATE RECORD OF PUBLIC IMPROVEMENTS TO THE BEST OF MY INFORMATION, KNOWLEDGE AND BELIEF.

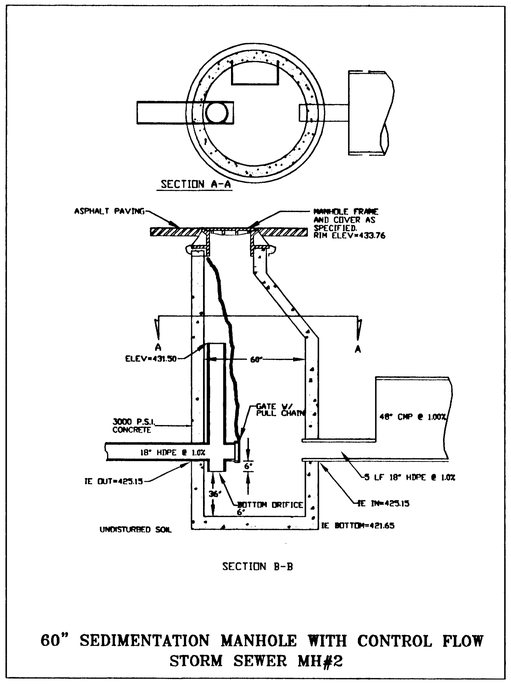
SIGNATURE

DATE 7/16/03

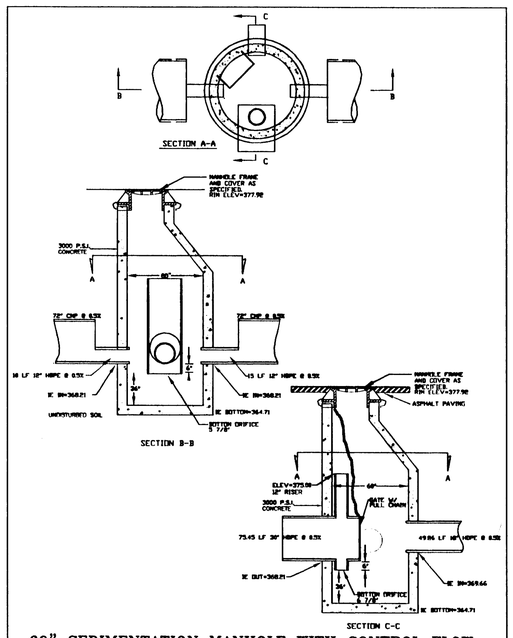


POLLUTION CONTROL MANHOLE

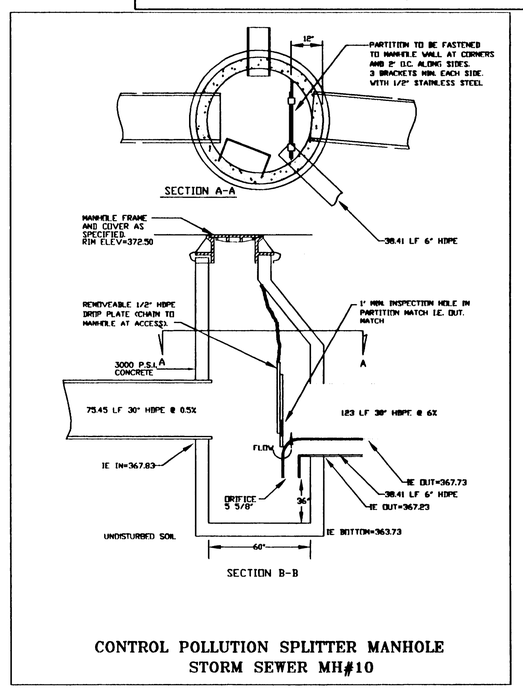
DATE: DRAWING NO.



60" SEDIMENTATION MANHOLE WITH CONTROL FLOW STORM SEWER MH#2



60" SEDIMENTATION MANHOLE WITH CONTROL FLOW STORM SEWER MH#9



CONTROL POLLUTION SPLITTER MANHOLE STORM SEWER MH#10

DATE	NO.	REVISION	BY

REGISTERED PROFESSIONAL ENGINEER — OREGON — DECEMBER 15, 1992 — WALTER L. COOK — EXPIRES: 12-31-2003

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 21 OF 25

SCALE: VERT: 1"= 10' HORIZ: 1"= 30'
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP: TAX LOTS
2S-1E-36
608 & 609

PROJECT NAME: BARRINGTON HEIGHTS 10

STANDARD DETAIL SHEET (2)

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848

WATER NOTES:

1. ALL TIE-INS TO EXISTING WATER MAINS SHALL BE MADE AFTER THE PIPE HAS BEEN TESTED, DISINFECTED, AND THE INSTALLATION ACCEPTED BY THE CITY. THE CONTRACTOR SHALL ASSURE CORRECT ALIGNMENT OF PIPE, BOTH VERTICALLY AND HORIZONTALLY AT THE POINTS OF CONNECTION. ALL BULKHEADING, RESTRAINTS, PLUGS, AND TEMPORARY TEST PIPING SHALL REMAIN IN PLACE PRIOR TO THE CONNECTION TO EXISTING MAIN, AND SHALL THEN BE REMOVED BY CONTRACTOR AFTER THE CONNECTION.
2. PIPE SHALL HAVE A MINIMUM OF 36" COVER FROM FINISH GRADE.
3. FURNISH CLASS 52 DUCTILE IRON PIPE CONFORMING TO ANSI/AWWA C151/A21.51. PIPE SHALL HAVE DOUBLE THICKNESS CEMENT MORTAR LINING CONFORMING TO ANSI/AWWA C104/A21.4-90, SEC. 4-8.2.
4. ALL PIPING AND VALVES TO HAVE NSF APPROVAL, DOMESTIC FITTINGS ONLY.
5. MAXIMUM DEFLECTION AT JOINTS SHALL NOT EXCEED AWWA STANDARD.
6. RESTRAIN ALL VALVES, TEES, BENDS AND FITTINGS.
7. POUR THRUST BLOCKS AGAINST UNDISTURBED SOIL IN LOCATIONS SHOWN ON THE PLANS. WRAP PIPE WITH TWO LAYERS OF PLASTIC, 4 MIL THICKNESS EACH, AT ALL FITTINGS BEARING AGAINST THRUST BLOCKS.
8. ALL CONCRETE SHALL BE A MINIMUM OF 3000 PSI STRENGTH.
9. COMPACTION SHALL BE 95% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT PER ASTM D-698. A MODIFIED ASTM D-698 UTILIZING A ROCK CORRECTION FACTOR AS ESTABLISHED BY THE CALIFORNIA DEPARTMENT OF TRANSPORTATION SHALL BE USED FOR CERTAIN NON-COHESIVE SOILS AS DETERMINED BY THE ENGINEER.
10. HYDROSTATIC TEST PRESSURE SHALL BE 180 P.S.I. AT THE POINT OF THE HIGHEST ELEVATION OF PIPE BEING TESTED.
11. TEST WILL BE PERFORMED BY AWWA STANDARDS.
12. DISINFECT ALL PIPING PRIOR TO CONNECTION TO EXISTING MAINS. CLOSE ISOLATION COCKS TO PILOT VALVES ON ALL REGULATORS BEFORE CHLORINATION.
13. STATIONING IS BASED UPON STREET CENTERLINE UNLESS OTHERWISE SPECIFIED.
14. TRACER WIRE:
    INSTALL A 12-GAUGE COPPER TRACER WIRE ON TOP OF OR ALONGSIDE THE WATER PIPELINE, FOR THE ENTIRE LENGTH OF THE PROJECT. WIRE SHALL BE INSULATION COATED. WHERE WIRE IS BROUGHT INTO METER BOX, 1 FT. OF WIRE SHALL BE LEFT IN BOX WITH THE LAST 1 INCH OF WIRE LEFT UNCOATED WHERE WIRE IS BROUGHT INTO A VALVE BOX, A 1/4" GALVANIZED BOLT AND NUT SHALL BE INSTALLED IN A 3/8" HOLE DRILLED IN THE VALVE BOX. THE TRACER WIRE SHALL BE LOOPED TWICE AROUND THE BOLT AND THE LAST 1 INCH OF COPPER SHALL BE LEFT UNCOATED. SPLICING OF WIRE SHALL BE DONE USING 3M, ETCON OR APPROVED EQUAL SPLICE KIT.

WATER LEGEND:

- WATER METER
- FIRE HYDRANT
- WATER VALVE
- THRUSTBLOCK

AS-BUILT

THESE AS-BUILT PLANS WERE COMPILED FROM SURVEY DATA, DATA COLLECTED FROM OTHERS, AND PERIODIC OBSERVATION DURING CONSTRUCTION. IT IS SUGGESTED THAT THESE PLANS BE USED IN CONJUNCTION WITH FIELD VERIFICATION OF LOCATION AND ELEVATIONS OF IMPROVEMENTS IN QUESTION. THESE PLANS ARE AN ACCURATE RECORD OF PUBLIC IMPROVEMENTS TO THE BEST OF MY INFORMATION, KNOWLEDGE AND BELIEF.

SIGNATURE _____

DATE 2/10/02

DATE	NO.	REVISION	BY

DESIGNED: JSS
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 22 OF 25

REGISTERED PROFESSIONAL ENGINEER — OREGON — DECEMBER 18, 1979 — WALTER L. COOK

EXPIRES: 12-31-2003

SCALE: VERT: N/A HORIZ: 1" = 40'
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP: 2S-1E-36
TAX LOTS: 608 & 609

PROJECT NAME:

BARRINGTON HEIGHTS 10

WATER PLAN

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848

THRUST BLOCKING

FITTING SIZE	(HORIZONTAL) BEARING AREA OF THRUST BLOCKS IN SQUARE FEET: 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	(VERTICAL) VOLUME OF THRUST BLOCK IN CUBIC YARDS: 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	---	---	---	---

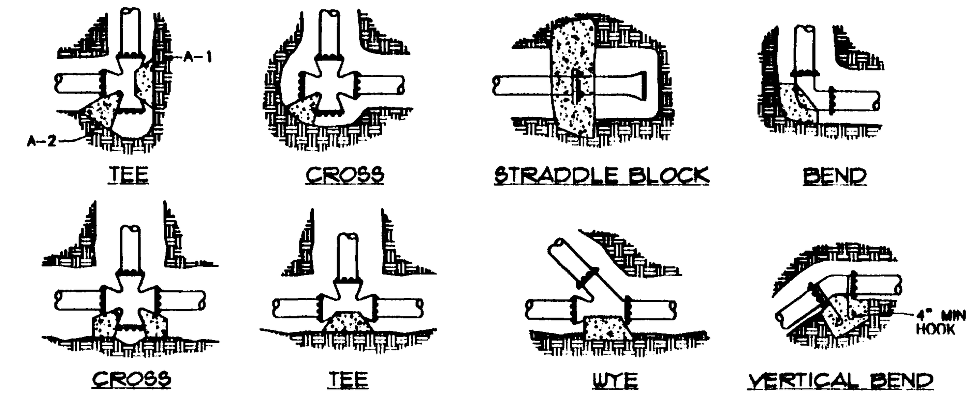
NOTES:

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:

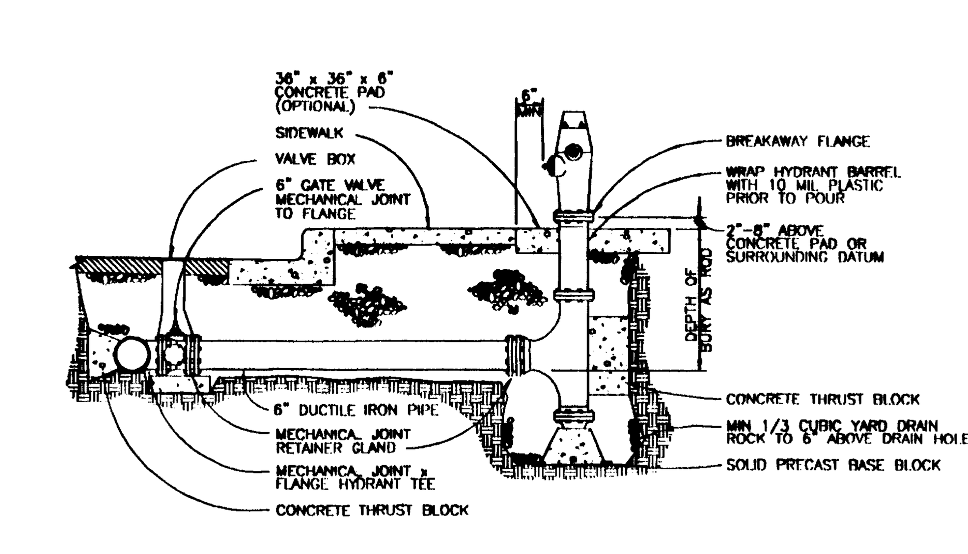
1. CONCRETE BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
2. ALL CONCRETE TO BE CLASS 2400 MINIMUM.
3. INSTALL ISOLATION MATERIAL BETWEEN PIPE AND/OR FITTINGS BEFORE POURING CONCRETE BLOCKING.
4. CONCRETE SHALL BE KEPT CLEAR OF ALL JOINTS AND ACCESSORIES.
5. TIE RODS SHALL BE DEFORMED GALVANIZED COLD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

THRUST BLOCKING

DATE: MAY 1992 | DRAWING NO. 401

FILENAME: APWA0036.DWG

HYDRANT INSTALLATION



NOTES

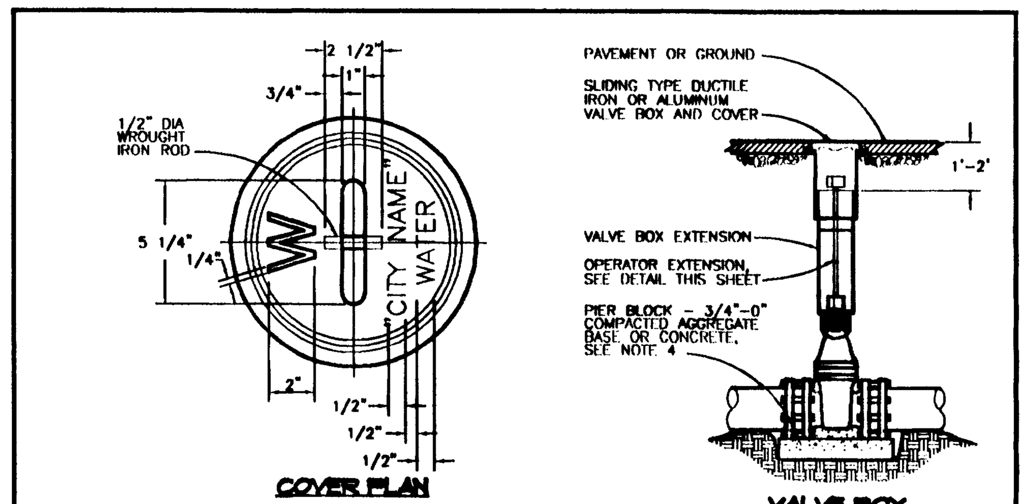
1. WHEN PIPE IS SHORTER THAN 18', NO JOINTS ALLOWED. USE MECHANICAL JOINT RETAINER GLANDS. TWO 3/4" GALVANIZED TIE RODS MAY BE USED IN LIEU OF THRUST BLOCKS FOR INSTALLATIONS LESS THAN 18' LONG. TIE RODS SHALL BE COATED WITH TWO COATS OF BITUMASTIC.
2. WHEN PIPE IS LONGER THAN 18', RETAINER GLANDS NOT REQUIRED.
3. THERE SHALL BE A MINIMUM OF 18" HORIZONTAL CLEARANCE AROUND HYDRANT.
4. WHEN PLACED ADJACENT TO CURB, HYDRANT PORT SHALL BE 24" FROM FACE OF CURB.
5. CONCRETE THRUST BLOCKS SHALL BE CONSTRUCTED AS PER THRUST BLOCK STANDARD DRAWING. DO NOT BLOCK DRAIN HOLES.
6. EXTENSIONS REQUIRED FOR HYDRANT SYSTEMS SHALL BE INSTALLED TO THE MANUFACTURER'S SPECIFICATIONS.
7. FIRE HYDRANTS SHALL BE PLACED TO PROVIDE A MINIMUM OF 5' CLEARANCE FROM DRIVEWAYS, POLES, AND OTHER OBSTRUCTIONS.
8. HYDRANT PUMPER PORT SHALL FACE DIRECTION OF ACCESS.

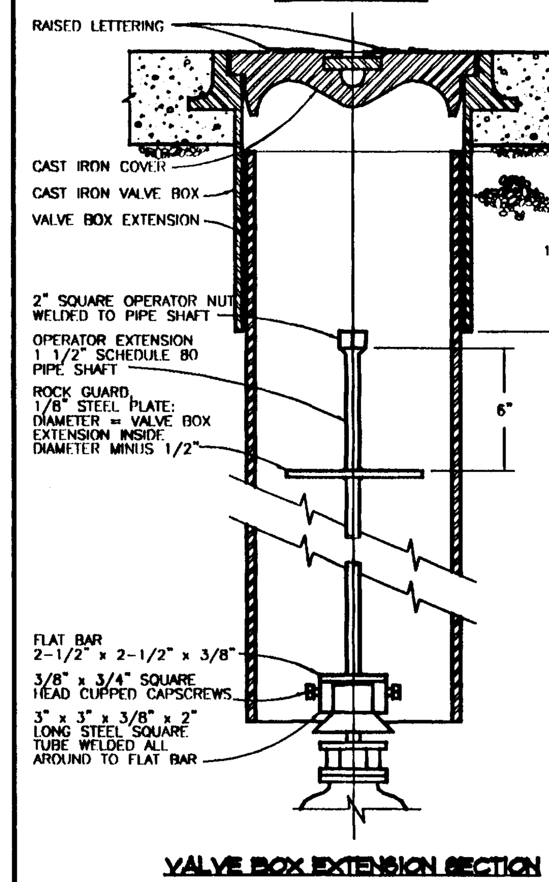
HYDRANT INSTALLATION

DATE: MAY 1992 | DRAWING NO. 402

FILENAME: APWA0037.DWG

VALVE BOX AND OPERATOR EXTENSION ASSEMBLY





NOTES:

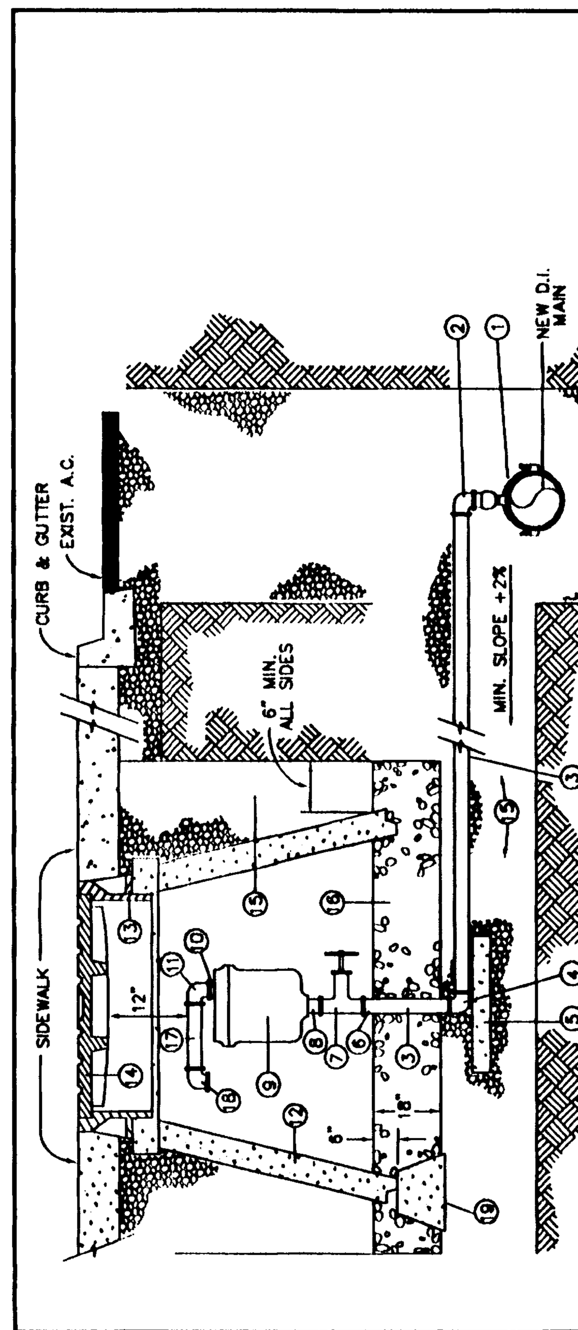
1. VALVE BOX NOT TO REST ON OPERATING ASSEMBLY.
2. OPERATOR EXTENSION REQUIRED WHEN VALVE NUT IS DEEPER THAN 4 FEET FROM FINISH GRADE.
3. CENTER VALVE BOX ON AXIS OF OPERATOR NUT.
4. VALVES 12" AND SMALLER SHALL BE PROVIDED WITH CLASS B BASE ON UNDISTURBED GROUND. VALVES GREATER THAN 12" SHALL BE INSTALLED ON PRECAST CONCRETE PIER BLOCK.
5. VALVE BOX EXTENSION SHALL BE CAST IRON OR PVC (ASTM D 3034).

VALVE BOX AND OPERATOR EXTENSION ASSEMBLY

DATE: MAY 1992 | DRAWING NO. 403

FILENAME: APWA0038.DWG

STANDARD AIR RELEASE VALVE UNIT



MATERIALS:

1. ROCKWELL NO. 317 SERVICE SADDLE
2. MUELLER NO. H15045 2" CORPORATION STOP WITH 1/4 BEND ADAPT. (I.P.T. x COP.FL. OR MUELLER 110 CTS)
3. 2" ASTM B-88, ANNEALED COPPER
4. 2" BRASS 90° ELL (COP. FL. x COP. FL. OR MUELLER 110 CTS)
5. 12"x12"x4" CONCRETE BLOCK
6. 2"x3" COP. FL. x M I.P.T. ADAPT.
7. NIBCO NO. 113 2" BRASS GATE VALVE
8. 2"x3" BRASS I.P.T. NIPPLE
9. 2" AIR RELEASE VALVE (VAL-MATIC #38 OR APCO #145C-2)
10. 1/2"x 1 1/2" or 2"x 1 1/2" BRASS I.P.T. NIPPLE
11. 1/2" or 2" BRASS 90° ELL (F.M. I.P.T. X F.M. I.P.T.)
12. STD. 48" CONCRETE MANHOLE CONE
13. VALLEY IRON & STEEL FRAME #106, 108 OR APPD. EQUAL
14. VALLEY IRON & STEEL FRAME #105, 107 OR APPD. EQUAL
15. 3/4" MINUS CRUSHED AGG.
16. 1 1/2" - 3/4" CLEAN DRAIN ROCK.
17. 1/2"x 6" or 2"x 6" BRASS NIPPLE, I.P.T.
18. 1/2" or 2" BRASS 90° ELL WITH SCREEN ON OUTLET.
19. 3 EA. 12" CONCRETE PIER BLOCKS

NOTES:

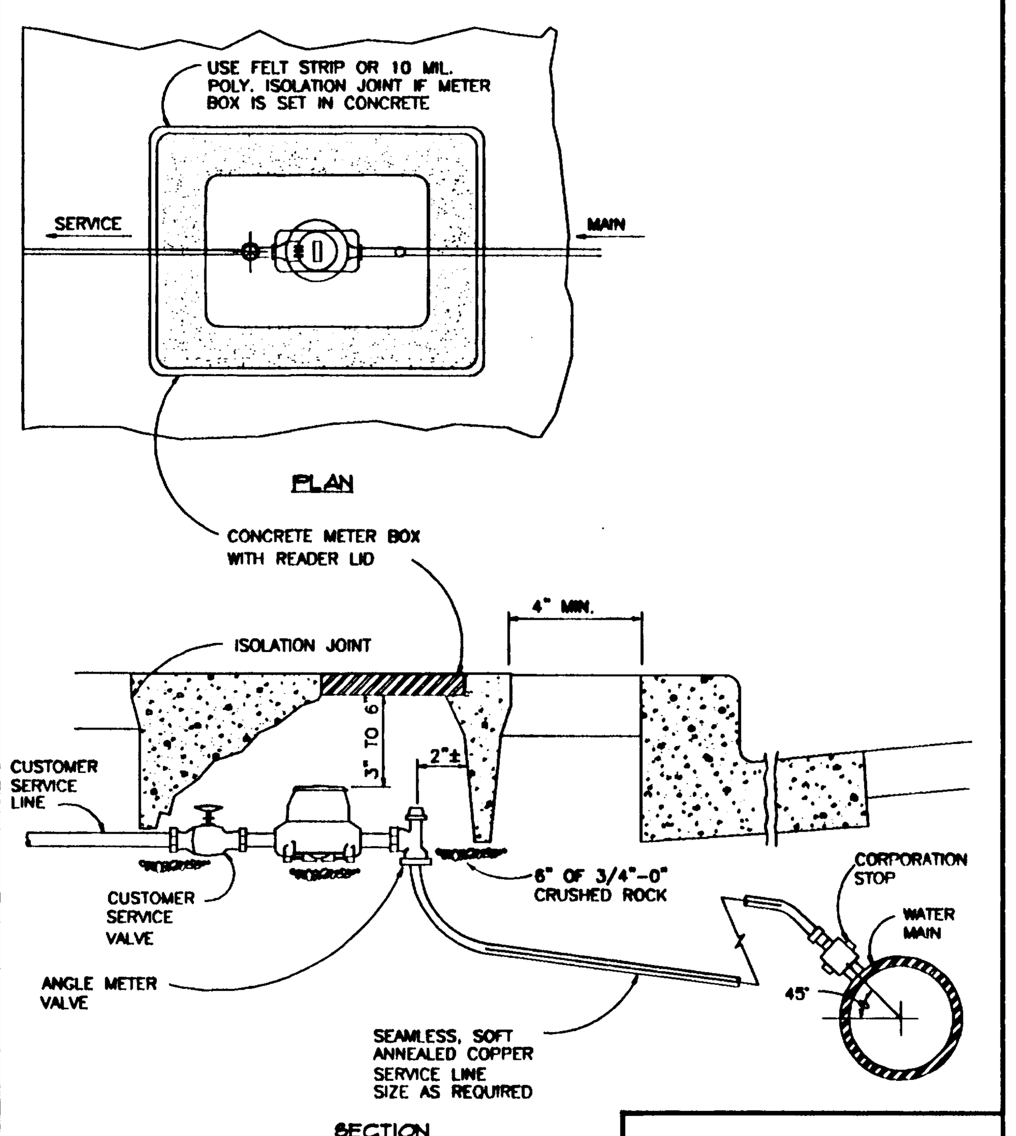
1. INSTALLATION LOCATED AT HIGH POINT OF MAIN.
2. 48" MANHOLE BARREL SECTIONS SHALL BE USED TO INCREASE DEPTH IF NECESSARY.
3. ALL PIPE AND STRUCTURE ZONES SHALL BE COMPACTED TO 95% OF MAX. DENSITY AS DETERMINED BY AASHTO T-180 OR AS SPECIFIED IN THE CONTRACT DOCUMENTS.
4. STD. DETAIL NOT FOR SHALLOW INSTALLATIONS SEE CITY FOR ADDITIONAL DETAILS

CITY OF WEST LINN

STANDARD AIR RELEASE VALVE UNIT

SCALE N.T.S. | DATE JULY, 1993 | APPR. | DWG. NO. DWG

3/4" TO 2" WATER METER SETTING DETAIL



NOTES:

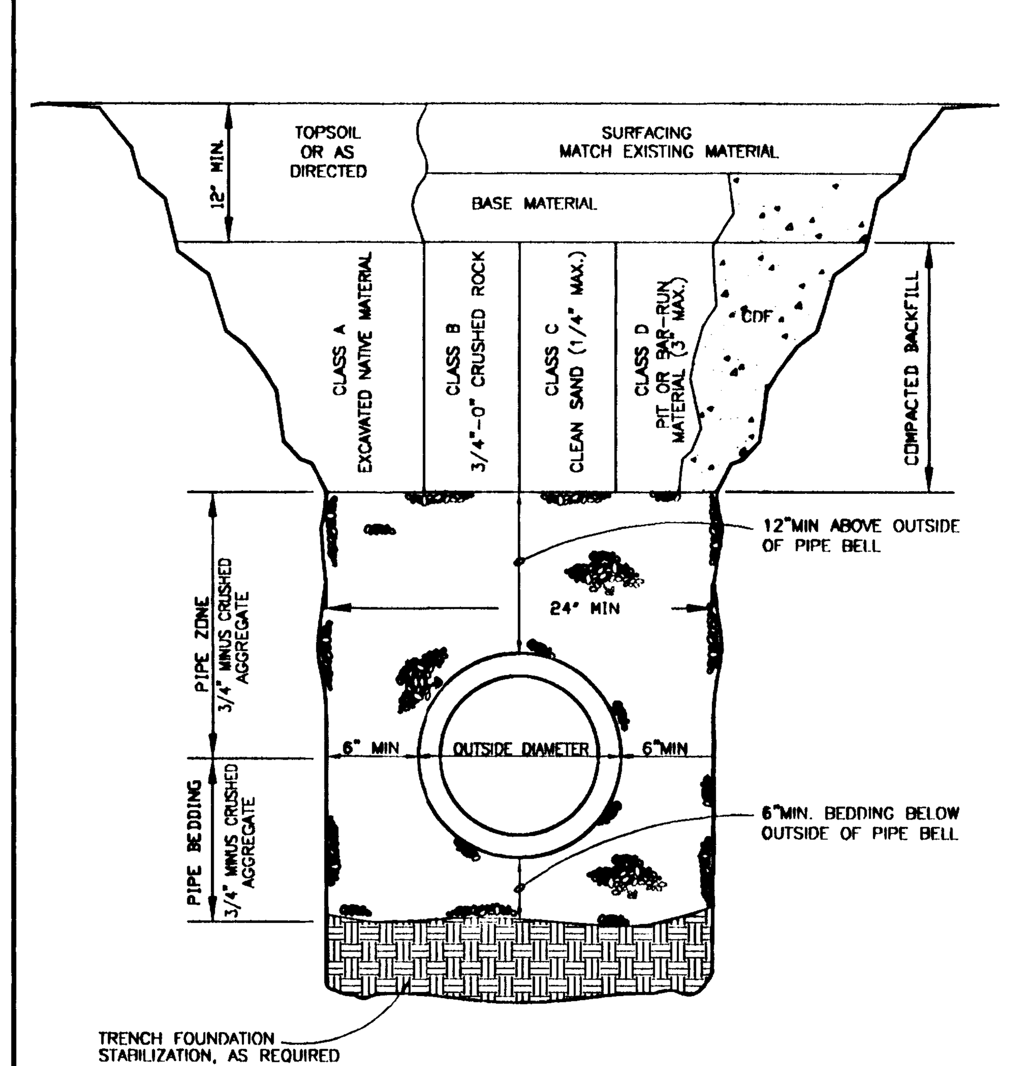
1. METER TO BE CENTERED AND SET PLUMB INSIDE METER BOX.
2. MANUFACTURED METER SETTER MAY BE USED FOR 3/4" TO 2" SERVICES.
3. SET METER BOX 4" MINIMUM BEHIND CURB OR SIDEWALK.
4. METER BOXES SET IN DRIVEWAYS SHALL HAVE TRAFFIC LIDS.

3/4" TO 2" WATER METER SETTING DETAIL

DATE: MAY 1992 | DRAWING NO. 408

FILENAME: APWA0043.DWG

TRENCH BACKFILL, BEDDING, AND PIPE ZONE



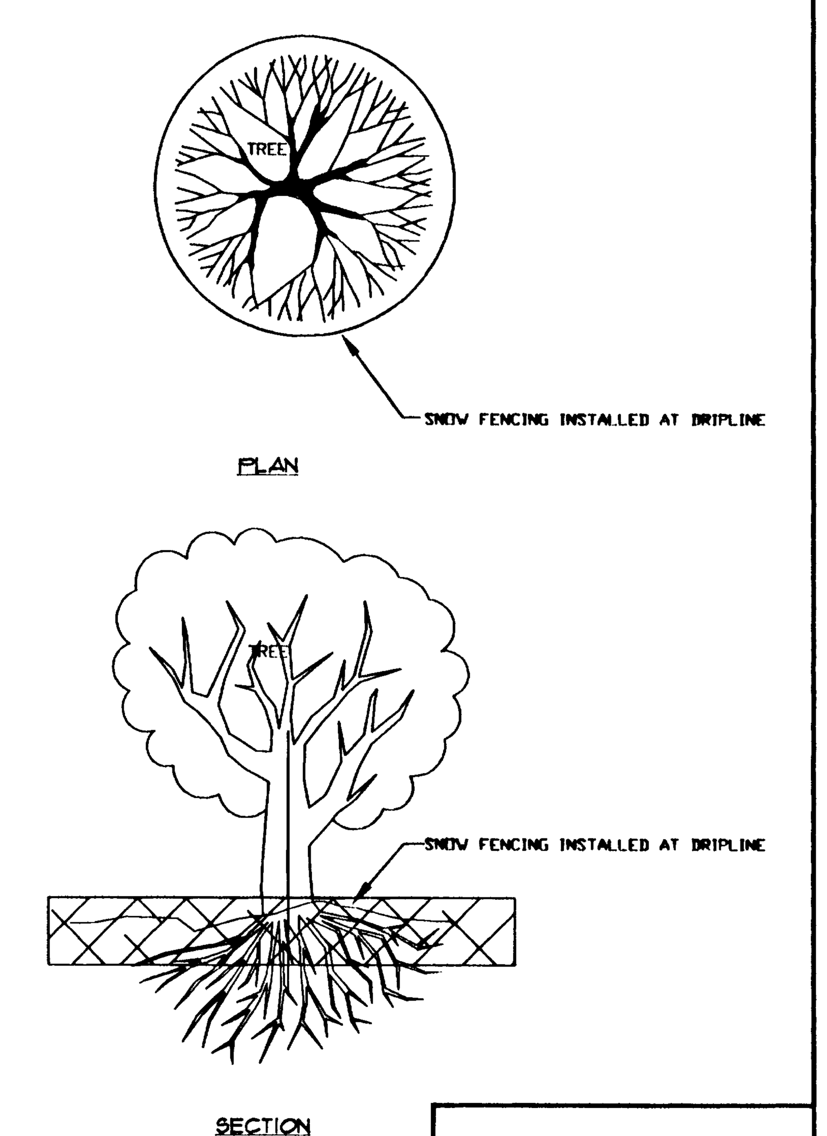
NOTE:
SURFACING OF PAVED AREAS SHALL COMPLY WITH STREET CUT STANDARD DRAWING.

TRENCH BACKFILL, BEDDING, AND PIPE ZONE

DATE: AUG 1996 | DRAWING NO. 301

FILENAME: APWA0015.DWG

SNOW FENCING



SNOW FENCING

DATE: MAY 1992 | DRAWING NO. 000

FILENAME: APWA0000.DWG

AS-BUILT

THESE AS-BUILT PLANS WERE COMPILED FROM SURVEY DATA, DATA COLLECTED FROM OTHERS, AND PERIODIC OBSERVATION DURING CONSTRUCTION. IT IS SUGGESTED THAT THESE PLANS BE USED IN CONJUNCTION WITH FIELD VERIFICATION OF LOCATION AND ELEVATIONS OF IMPROVEMENTS IN QUESTION. THESE PLANS ARE AN ACCURATE RECORD OF PUBLIC IMPROVEMENTS TO THE BEST OF MY INFORMATION, KNOWLEDGE AND BELIEF.

SIGNATURE [signature]

DATE 9/10/02

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848

PROJECT NAME: BARRINGTON HEIGHTS 10

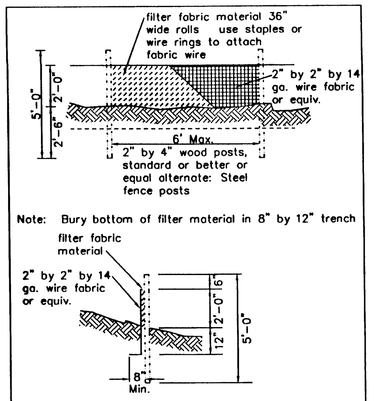
WATER DETAIL SHEET

SCALE	VERT: 1"= 10' / HORIZ: 1"= 30'
DATE:	9/9/02
FILE:	SUN-97-09/ZC-97-07
	MISC-97-08
ASSESSOR'S MAP	2S-1E-36
TAX LOTS	608 & 609

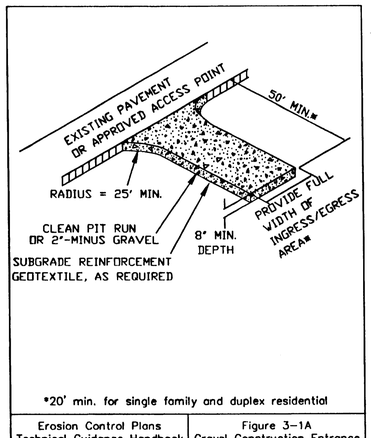
REGISTERED PROFESSIONAL ENGINEER — OREGON — DECEMBER 15, 1978 — WALTER L. COOK — EXPIRES: 12-31-2003

DATE	NO.	REVISION	BY

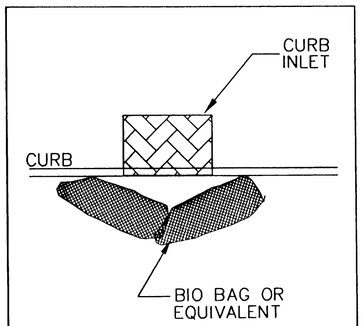
DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC



Erosion Control Plans Technical Guidance Handbook	Figure 3-2 Sediment Fence



Erosion Control Plans Technical Guidance Handbook	Figure 3-1A Gravel Construction Entrance



INLET PROTECTION DETAIL

SILT FENCE

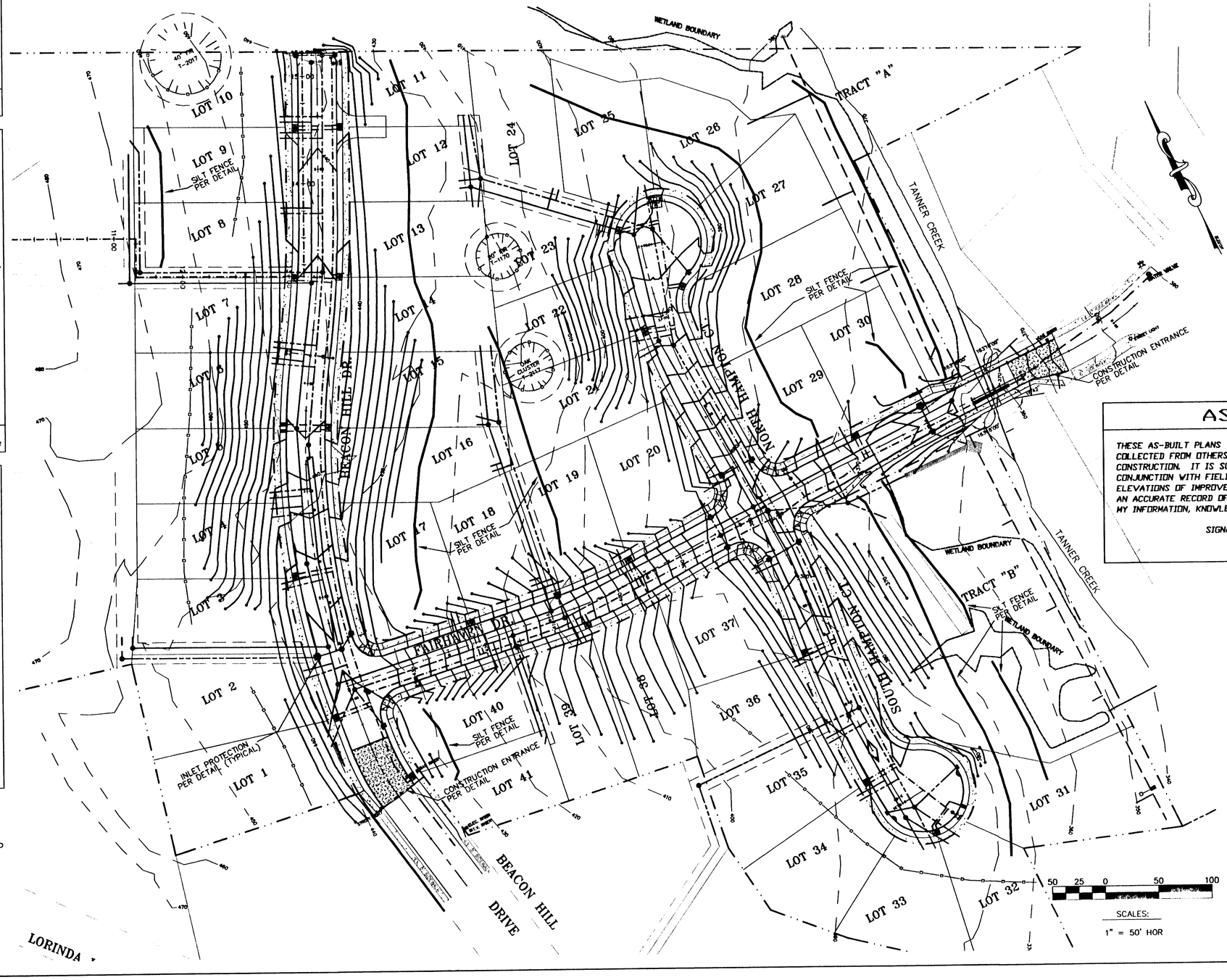
SNOW FENCING: INSTALL AT THE DRIP LINE OF ALL TREES TO BE RETAINED; AND TO DELINEATE "OFF WORK AREAS" SEE HEARING OFFICER CONDITIONS 1.d,e,f & g. (PAGE 2/26)

NOTES FOR EROSION CONTROL PLANS

1. Approval of this erosion/sedimentation control (ESC) plan does not constitute an approval of permanent road or drainage design (e.g., size and location of roads, pipes, restrictors, channels, retention facilities, utilities, etc.).
2. The implementation of these ESC plans and the construction, maintenance, replacement, and upgrading of these ESC facilities is the responsibility of the applicant/contractor until all construction is completed and approved and vegetation/landscaping is established.
3. The boundaries of the clearing limits shown on this plan shall be clearly flagged in the field prior to construction. During the construction period, no disturbance beyond the flagged clearing limits shall be permitted. The flagging shall be maintained by the applicant/contractor for the duration of construction.
4. The ESC facilities shown on this plan must be constructed in conjunction with all clearing and grading activities, and in such a manner as to insure that sediment and sediment laden water do not enter the drainage system, roadways, or violate applicable water standards.
5. The ESC facilities shown on this plan are the minimum requirements for anticipated site conditions. During the construction period, these ESC facilities shall be upgraded as needed for unexpected storm events and to insure that sediment and sediment laden water do not leave the site.
6. The ESC facilities shall be inspected daily by the applicant/contractor and maintained as necessary to insure their continued functioning.
7. The ESC facilities on inactive sites shall be inspected and maintained a minimum of once a month or within the 24 hours following a storm event.
8. At no time shall more than one foot of sediment be allowed to accumulate within a trapped catch basin. All catch basins and conveyance lines shall be cleaned prior to paving. The cleaning operation shall not flush sediment laden water into the down stream system.
9. Stabilized construction entrances shall be installed at the beginning of construction and maintained for the duration of the project. Additional measures may be required to insure that all paved areas are kept clean for the duration of the project.
10. Use Bio Bag or equivalent inlet protection per Erosion Control Plans Technical Guidance Handbook.

NOTES FOR SEDIMENT FENCES

1. The filter fabric shall be purchased in a continuous roll cut to length of the barrier to avoid use of joints. When joints are necessary, filter cloth shall be spliced together only at a support post, with a minimum 6-inch overlap, and both ends securely fastened to the post, or overlap 2" x 2" posts and attached as shown on detail 3-2.
2. The filter fabric fence shall be installed to follow the contours where feasible. The fence posts shall be spaced a maximum of 6 feet apart and driven securely into the ground a minimum of 24 inches.
3. The filter fabric shall have a minimum vertical burial of 6 inches. All excavated material from filter fabric fence installation, shall be backfilled and compacted along the entire disturbed area.
4. Standard or heavy duty filter fabric fence shall have manufactured stitched loops for 2" x 2" post installation. Stitched loops shall be installed on the uphill side of the sloped area.
5. Filter fabric fences shall be removed when they have served their useful purpose, but not before the upslope area has been permanently protected and stabilized.
6. Filter fabric fences shall be inspected by applicant/contractor immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately.



AS-BUILT

THESE AS-BUILT PLANS WERE COMPILED FROM SURVEY DATA, DATA COLLECTED FROM OTHERS, AND PERIODIC OBSERVATION DURING CONSTRUCTION. IT IS SUGGESTED THAT THESE PLANS BE USED IN CONJUNCTION WITH FIELD VERIFICATION OF LOCATION AND ELEVATIONS OF IMPROVEMENTS IN QUESTION. THESE PLANS ARE AN ACCURATE RECORD OF PUBLIC IMPROVEMENTS TO THE BEST OF MY INFORMATION, KNOWLEDGE AND BELIEF.

SIGNATURE _____

DATE 7/10/03

DATE	NO.	REVISION	BY

REGISTERED PROFESSIONAL ENGINEER — OREGON — DECEMBER 15, 1970 — WALTER L. COOK

DESIGNED: JSS
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 24 OF 25

EXPIRES: 12-31-2003

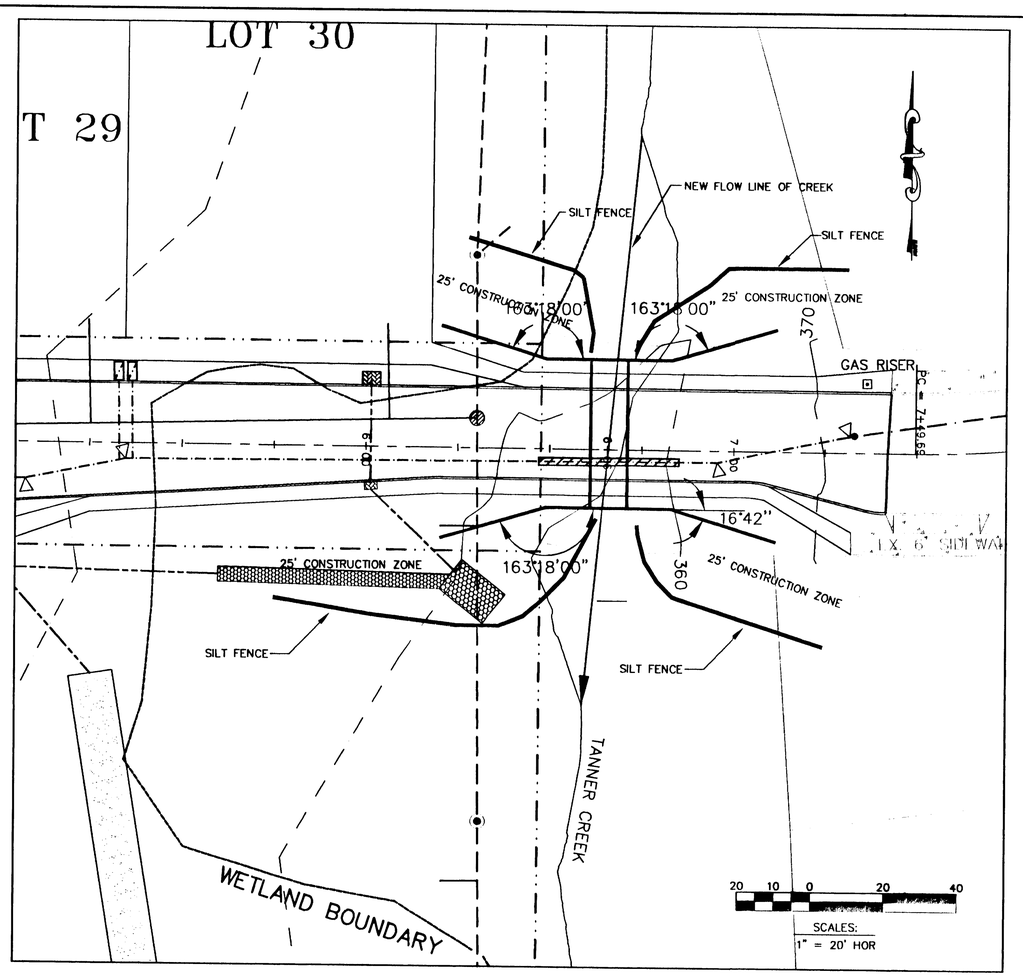
SCALE VERT: N/A HORIZ: 1" = 50'
DATE: 9/9/02
FILE: SUN-97-09/ZC-97-07
MISC-97-08
ASSESSOR'S MAP 2S-1E-36
TAX LOTS 608 & 609

PROJECT NAME:

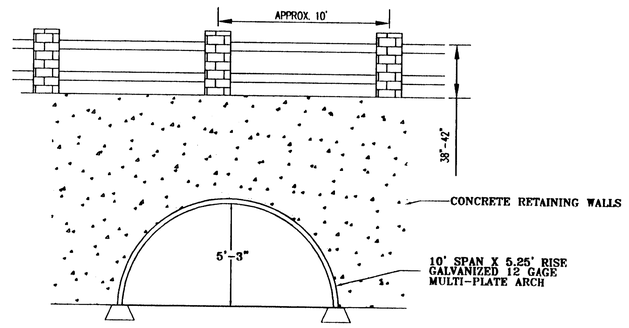
BARRINGTON HEIGHTS 10

EROSION CONTROL PLAN

CSA Consulting Engineers
321 SW 4th AVE.
4th Floor
PORTLAND, OREGON 97204
(503) 228-3848



BRIDGE NOTES:
1. ALL CONSTRUCTION EQUIPMENT MUST NOT DISTURB ANY EXISTING VEGETATION OUTSIDE THE 25' "WORKING ZONE" AROUND THE STRUCTURE OF THE BRIDGE.
2. LIGHTING, GAURD/HANDRAIL & BRIDGE FINISH TO BE DETERMINED BY OWNER/ARCHITECT.
3. FOR RETAINING WALLS SEE: BRIDGE – STRUCTURAL DRAWINGS.



BRIDGE DETAIL
NTS

AS-BUILT

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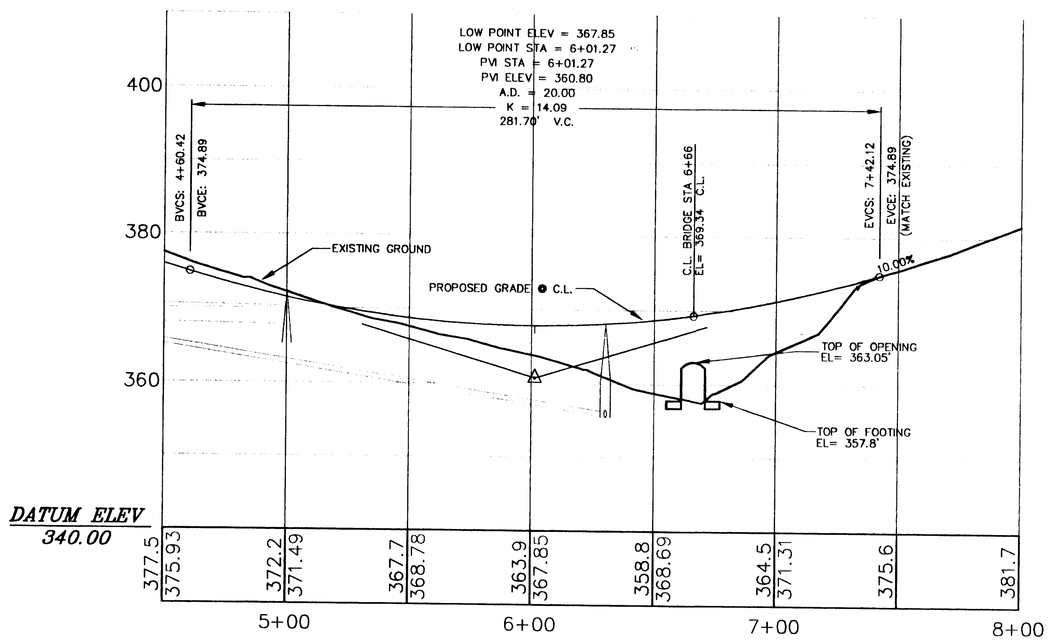
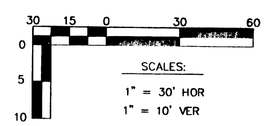
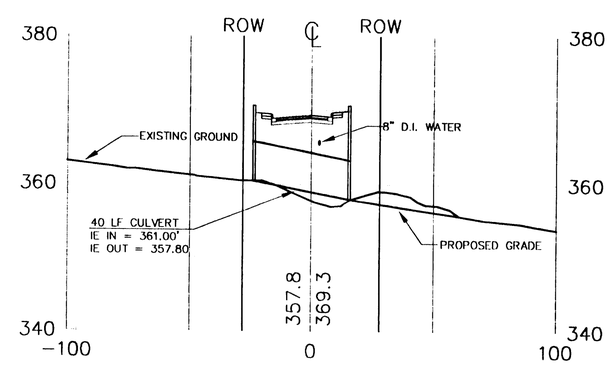
SIGNATURE
DATE 9/10/03





STA 6+66



DATE	NO.	REVISION	BY

DESIGNED: AC
DRAWN: AC
CHECKED: JSS
APPROVED: HLC

SHEET 25 OF 25

REGISTERED PROFESSIONAL ENGINEER
OREGON
WALTER L. COOK
EXPIRES: 12-31-2003

SCALE VERT: 1" = 10' HORIZ: VARIES
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WETLAND CROSSING & OUTFALLS

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(503) 228-3848