

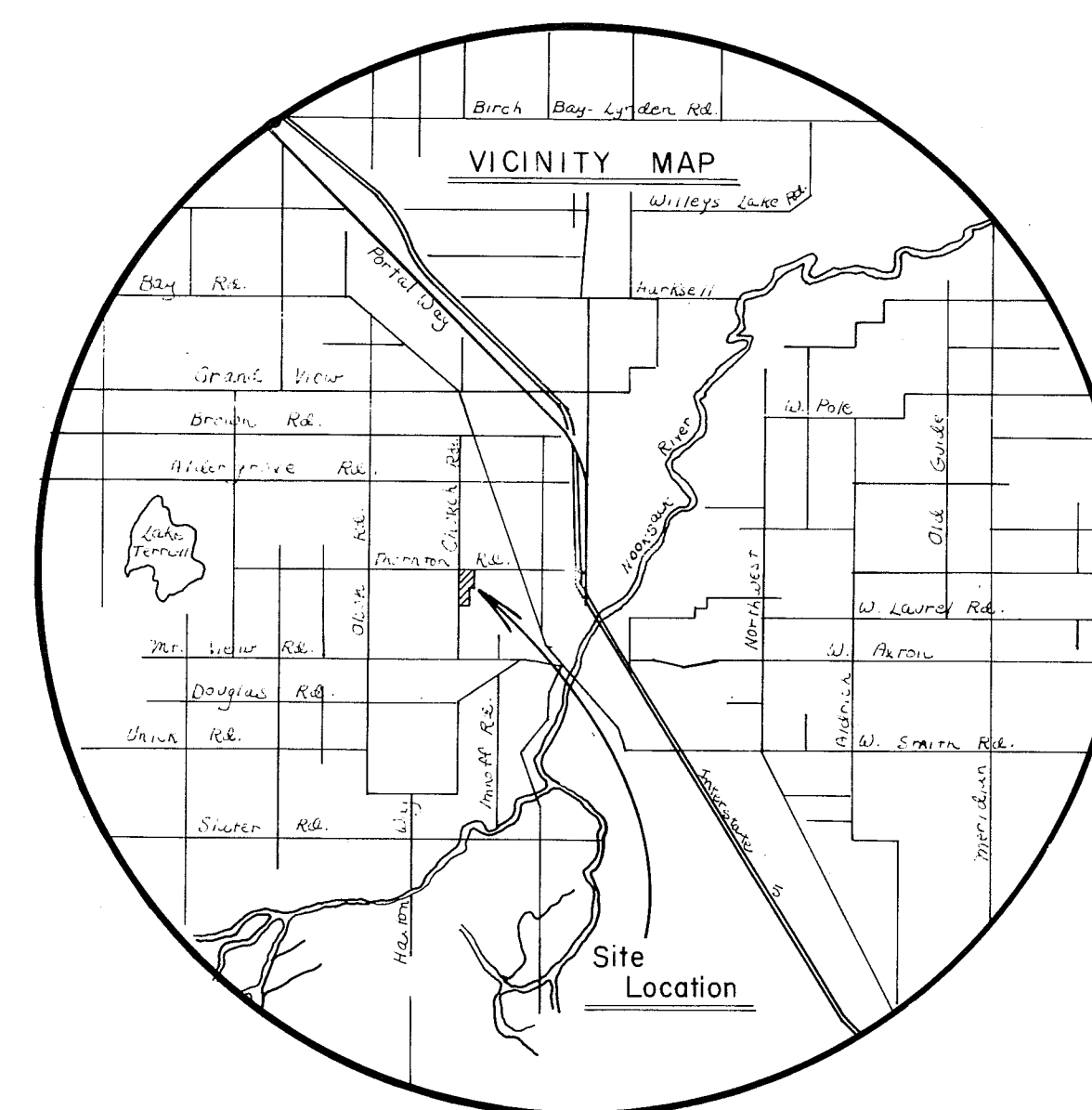
CONSTRUCTION PLANS & SPECIFICATIONS

ROYAL VIEW ESTATES #2

DIVISION NO. 2

a development by:

OTTO HOLDINGS
20785 FRASER HWY.
LANGELY, B.C.



INDEX OF SHEETS

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- 5- CURB CONTROL PLAN
- 6- SPECIFICATIONS

NORTHWEST CONSULTANTS

1310 Broadway, Suite 2-C, Bellingham, Washington 98225 (206-676-9058)

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Scale	Date
Drawn By	
Checked By	
Approved	

Revisions

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Sheet of

00461.001 CL 6/19/12

THORNTON RD.

CHURCH RD.

C.B. IIC
Sta: 7+06.50
Top: Field Adjust
Inv: 303.54

C.B. IIC
Sta: 1+15
Top: Field Adjust
Inv: 298.47

Existing M.H. 711-48
Elev: Field Adjusted
12" Inv: 270.95
18" E. Inv: 270.02
18" W. Sub Inv: 270.02

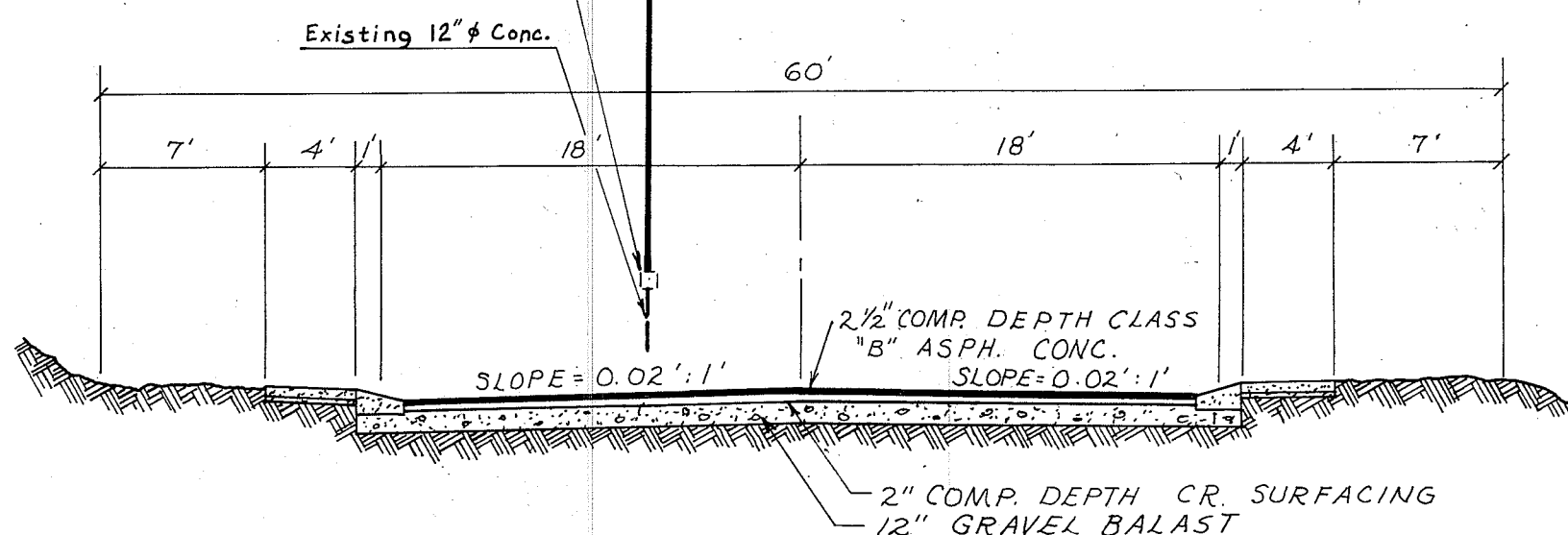
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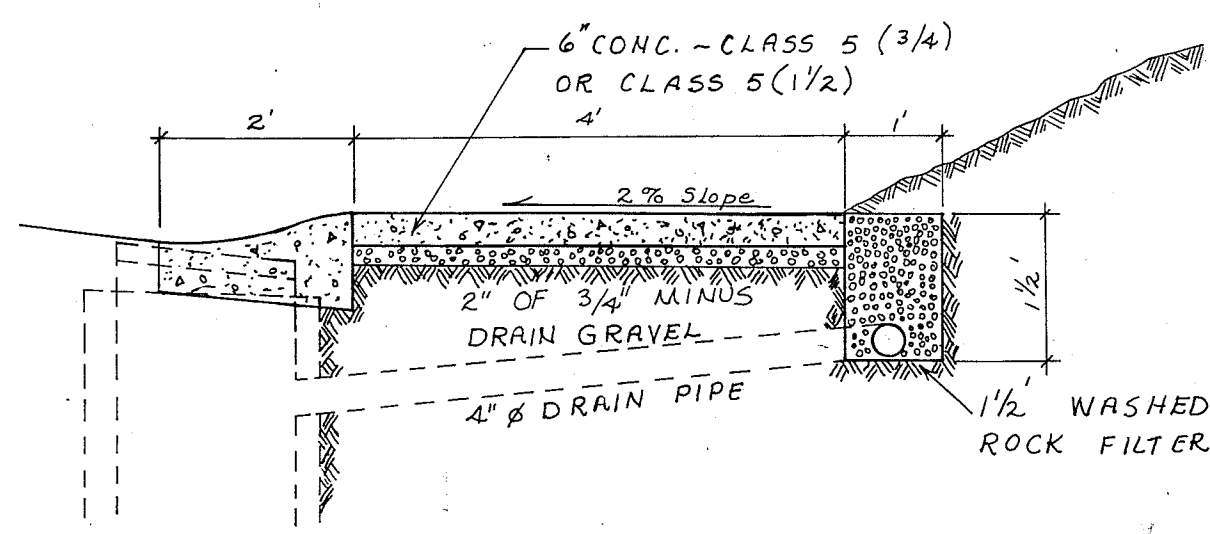
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4" Inv: 281.45
W. 12" Sub Inv: 281.78

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Inv: 311.00

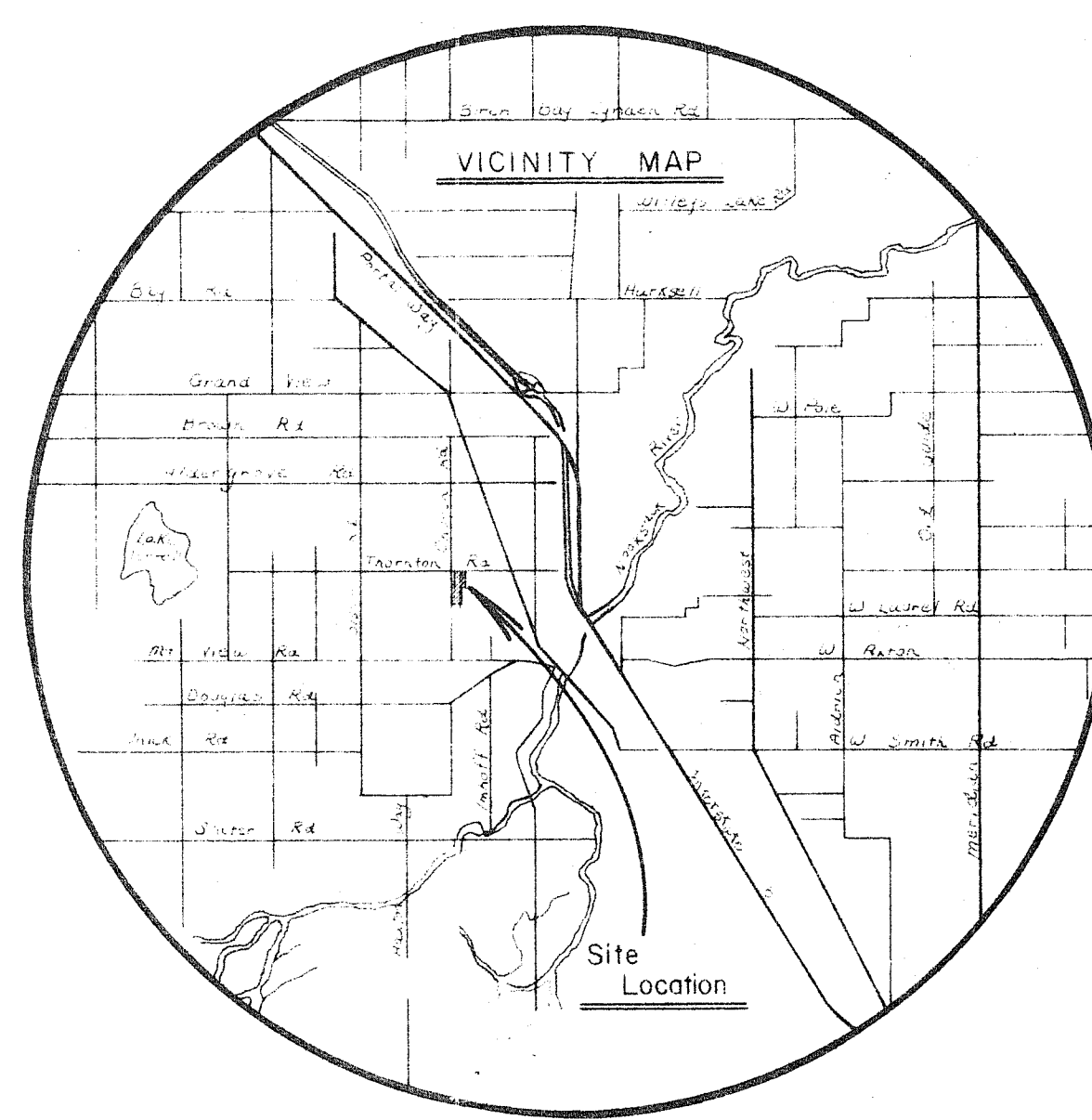
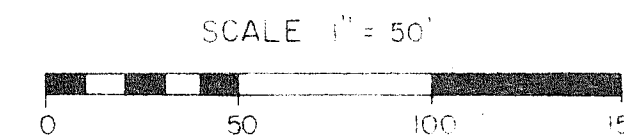
C.B. IIC
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Inv: 318.63



ROADWAY SECTION

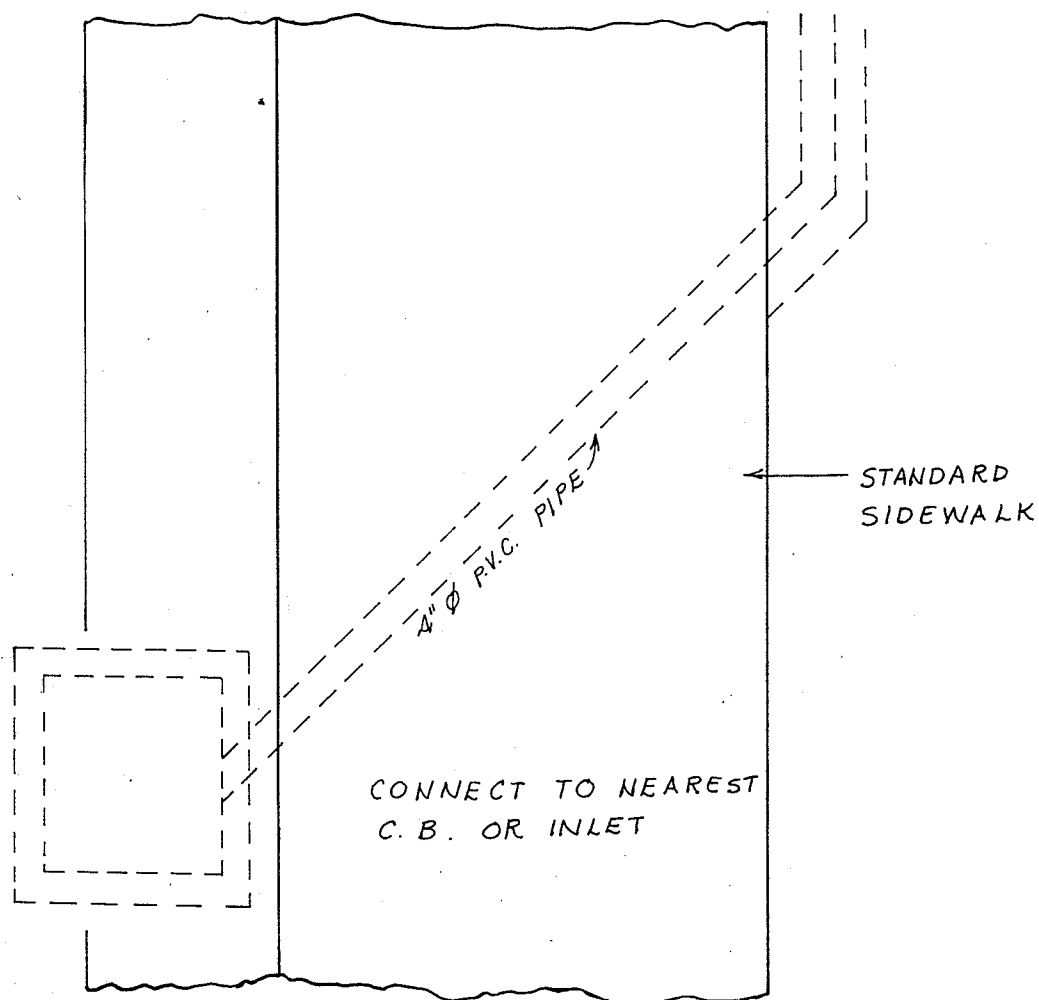


SIDEWALK DRAIN



GENERAL NOTES

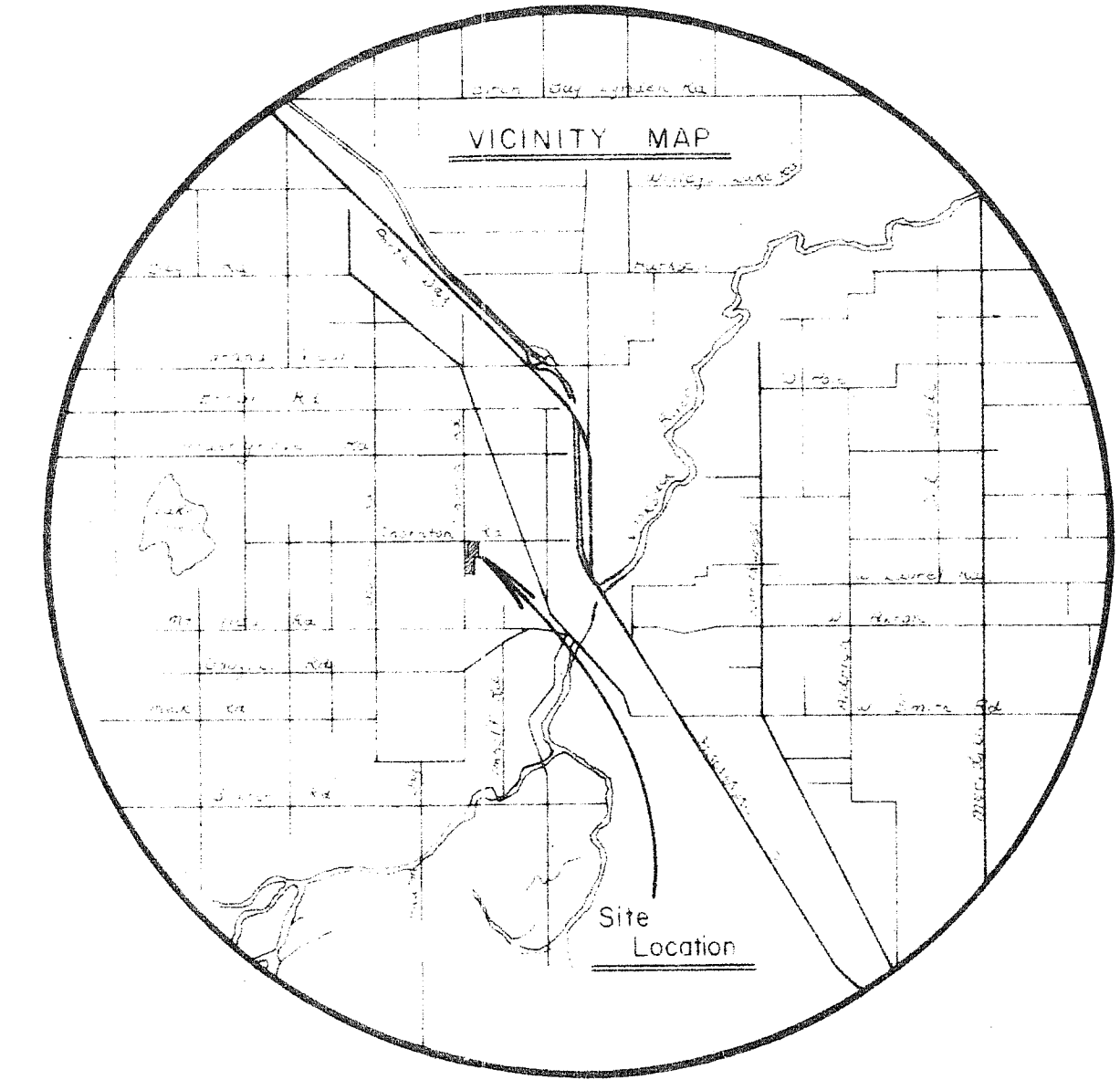
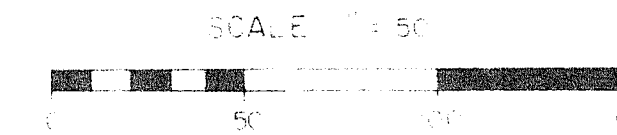
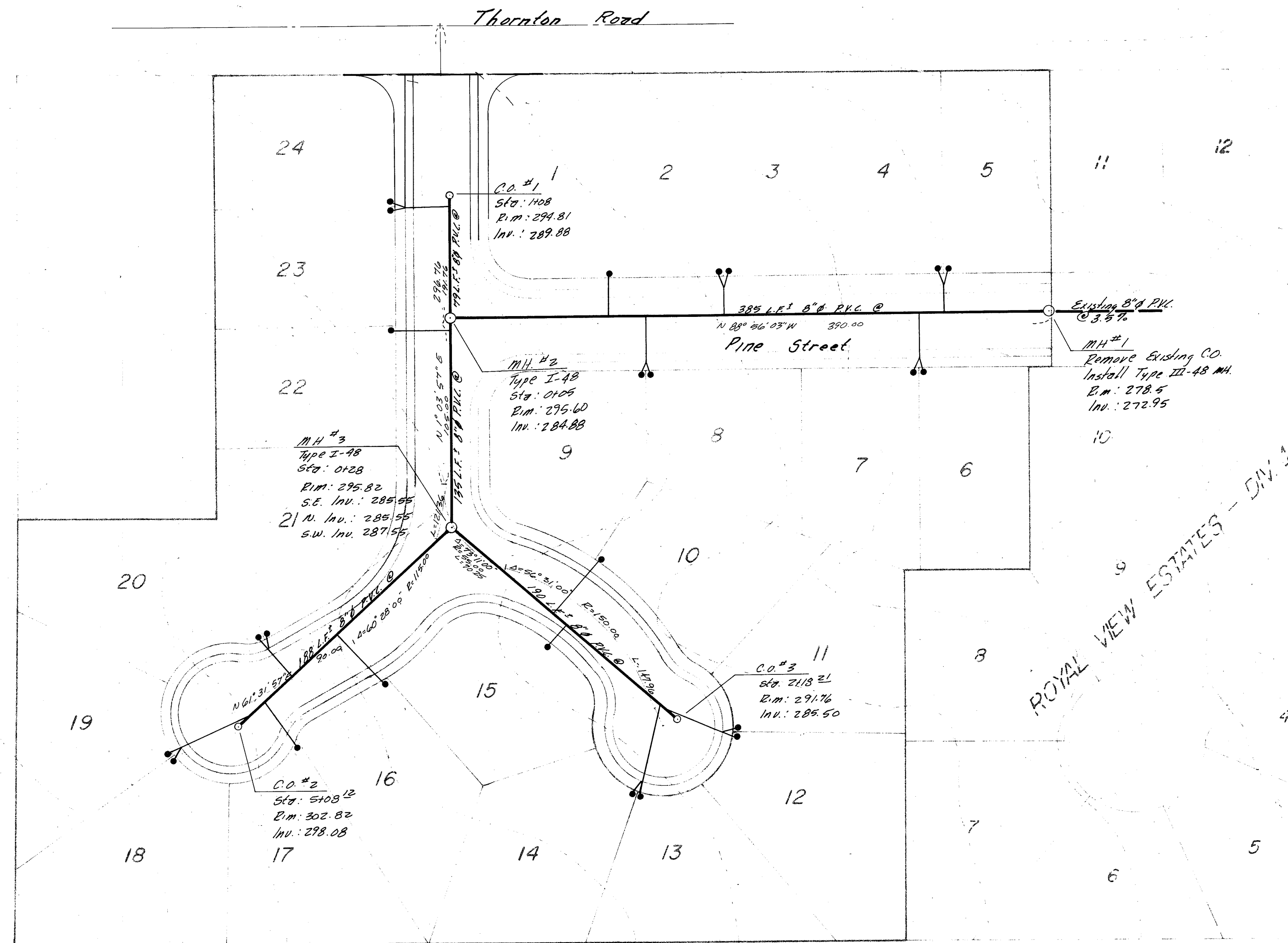
1. All materials and workmanship shall conform to A.P.W.A. Standard Specifications, 1977 edition, and in accordance with the standards and specifications of the City of Ferndale.
2. Vertical Datum is City of Ferndale Power Pole No. 38973 R.R. spike, Elevation 254.42.
3. This work shall include all excavation and embankment for streets, the preparation of subgrade, and installation of base and paving.
4. Excavation shall include the clearing of the site, loosening, loading and transporting of all materials, wet or dry, necessary to construct all work to the lines, grades, and locations shown on the plans.
5. The contractor must assume the risk of meeting quicksand, hardpan, boulders, clay, rubbish, existing utility lines, masonry structures and other unforeseen obstacles.
6. All testing as required shall be conducted under the supervision of the Town Engineer's office.
7. The Engineer will submit the plans to the City of Ferndale for approval. Construction is prohibited until such approval is received.
8. All locations of existing utilities shown are approximate, and it shall be the responsibility of the Contractor to verify true and correct locations.
9. Extent of 4" sidewalk drain to be determined by Engineer after roadway is excavated to subgrade.



SIDEWALK DRAIN - PLAN VIEW

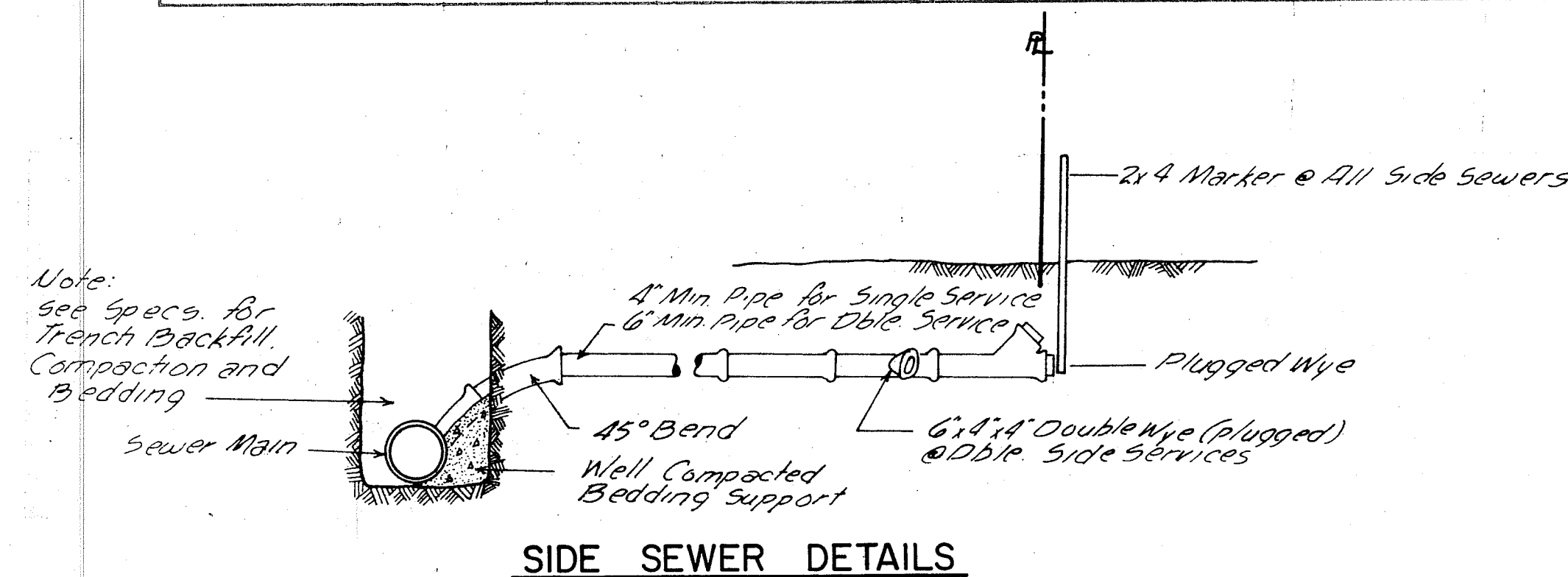
CHURCH RD.

THORNTON RD.



GENERAL NOTES

1. Vertical Datum is City of Ferndale Power Pole No. 38773 R.R. Spike, Elevation 234.42.
2. All pipe grades and inverts are computed from 4' of manhole to 4' of manhole.
3. All gravity sewer pipe unplasticized polyvinylchloride (PVC) with integral wall bell and spigot joints. Pipe and fittings shall meet extra strength minimum of SDR = 35 of the requirements of ASTM Spec. D 3034-74.
4. All work shall be done to the satisfaction of the City of Ferndale Engineer and the State Department of Health.
5. The Engineer will submit the plans to the City of Ferndale for approval. Construction is prohibited until such approval is received.
6. All testing, as required, shall be conducted under the supervision of the Town Engineer's office.
7. All locations of existing utilities shown are approximate. It shall be the responsibility of the Contractor to verify true and correct locations so as to connect services and avoid damage or disturbance.
8. Rim elevations given are approximate. Tops shall be adjusted to fit final road grade elevations after paving.



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Scale: 1" = 50'
Drawn By: [Signature]
Checked By: [Signature]
Approved: [Signature]

Revisions

ROYAL VIEW ESTATES - DIV. 2

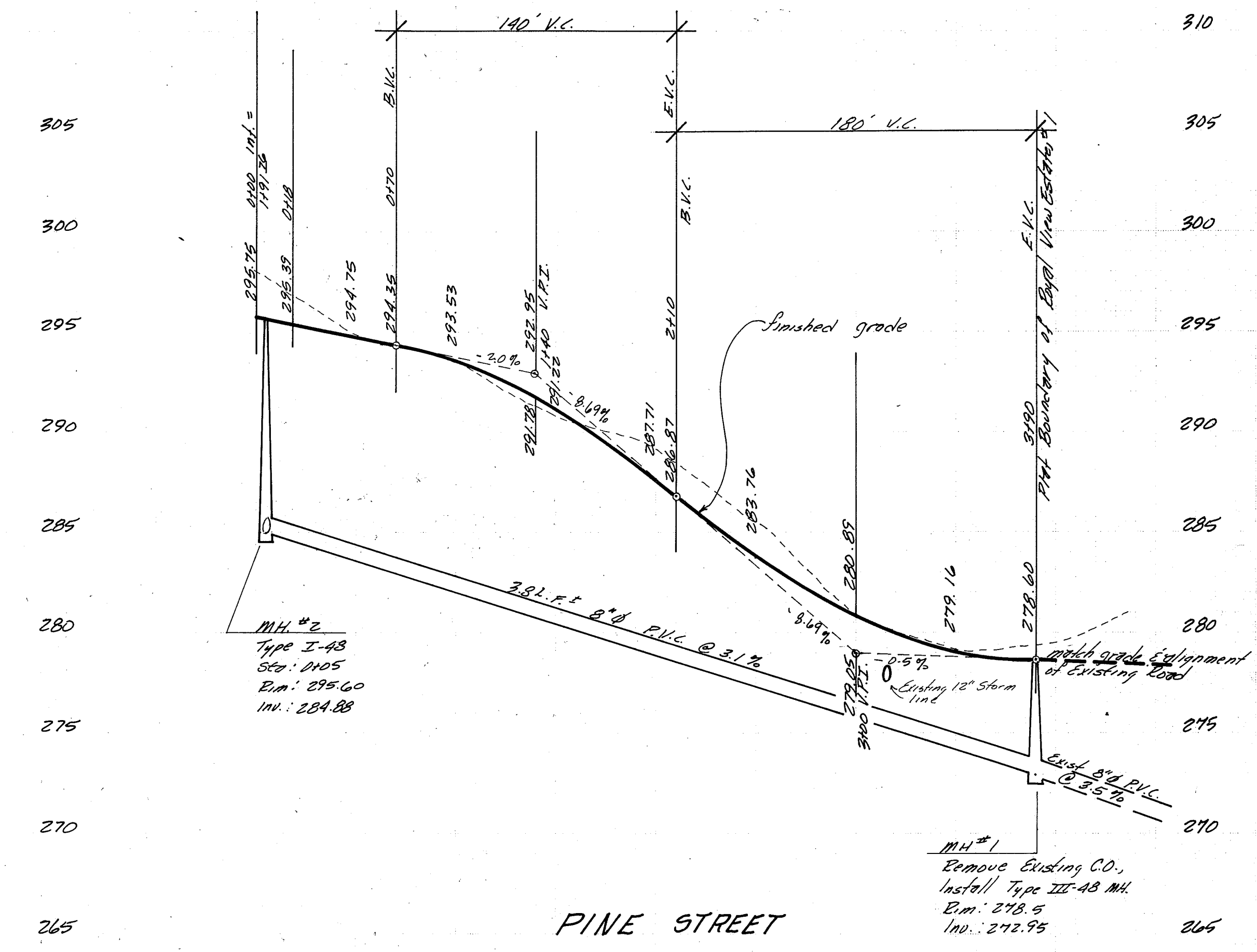
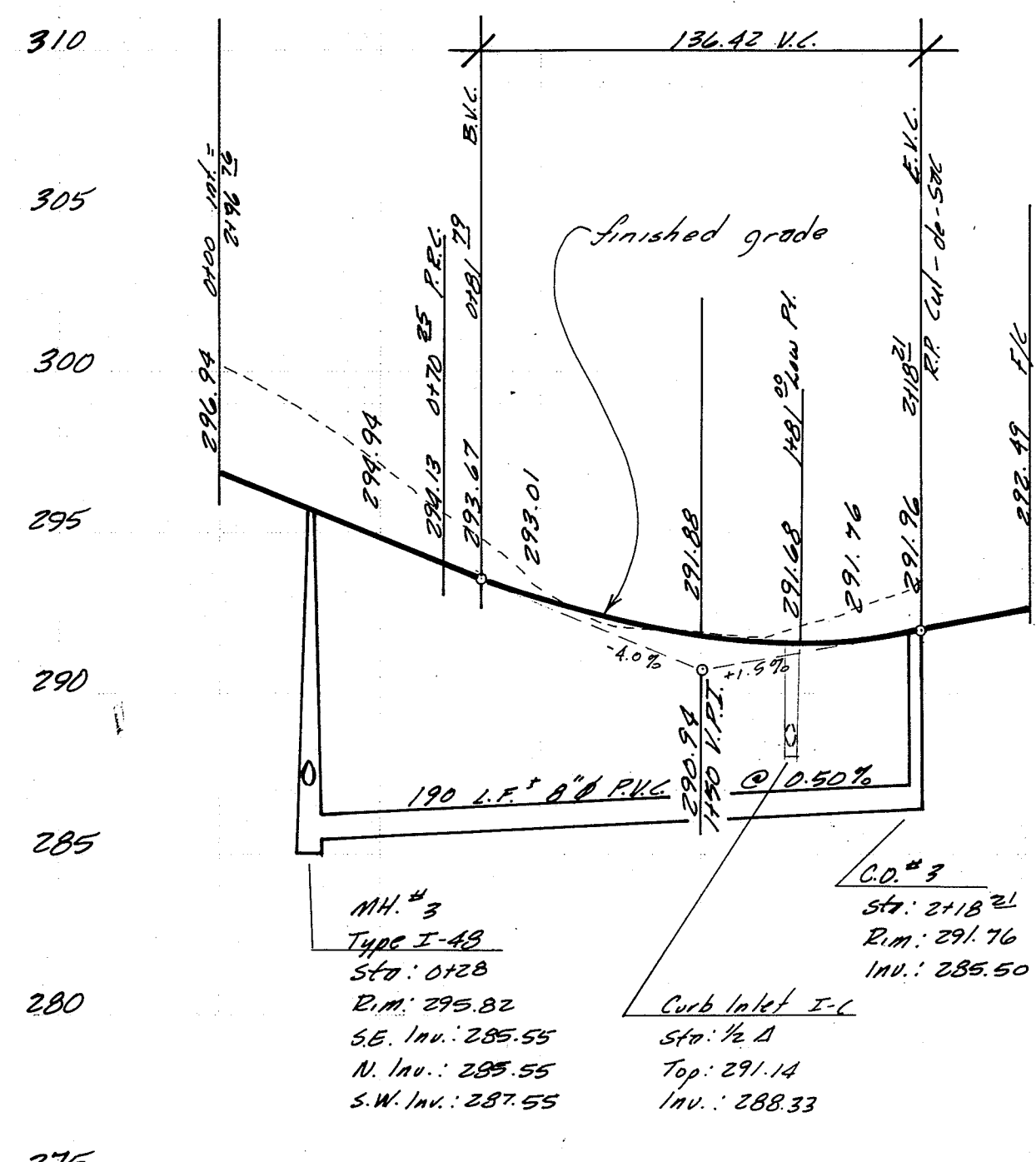
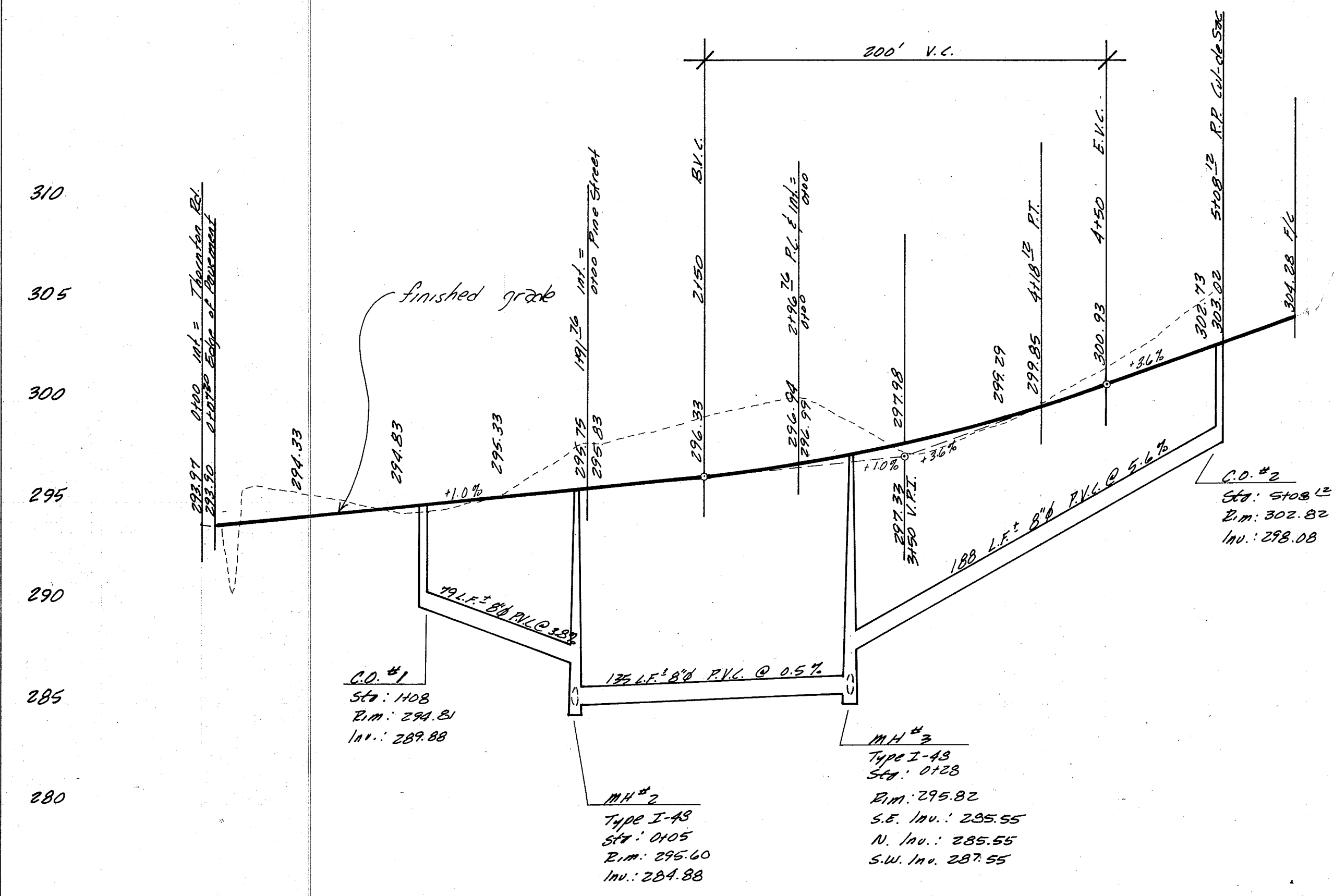
SANITARY SEWER PLAN

Sheet
2 of 9

JOB NO. 77-515

00461.003 CL 6/19/12

00461.004 CL 6/19/12



00461.005 CL 6/19/12

CHURCH RD.

THORNTON RD.

SCALE: 1" = 50'

VICINITY MAP

Site Location

Typ. Single Service

Typ. Double Service

GENERAL NOTES

1. All construction and materials shall be in accordance with the standards and specifications of the City of Ferndale as approved by the Washington State Department of Social & Health Services and Department of Ecology.
2. Blowoff assemblies shall be as shown on typical details or as approved by the City of Ferndale.
3. Concrete thrust blocks shall be as shown on typical details or as required and shall be constructed of concrete with $f'_c = 2000$ psi min. at 28 days.
4. The Engineer will submit the plans to the City of Ferndale for approval. Construction is prohibited until such approval is received.
5. All locations of existing utilities shown are approximate and it shall be the responsibility of the Contractor to verify true and correct location.
6. Typical side services to be 200 psi (3/4" single and 1" double service).
7. THE EXISTING 600 FEET OF THE 14" Ø WATER MAIN SHALL BE LAID WITH A MINIMUM COVER OF 5 1/2 FEET.

LEGEND

	WATER MAIN
	EXIST'G WATER MAIN
	FIRE HYDRANT ASSEMBLY
	BLOWOFF
	GATE VALVE
	TEE W/ BLOCKING
	WATER SERVICE (SINGLE & DBLE.)

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Approved: J. L. Langley

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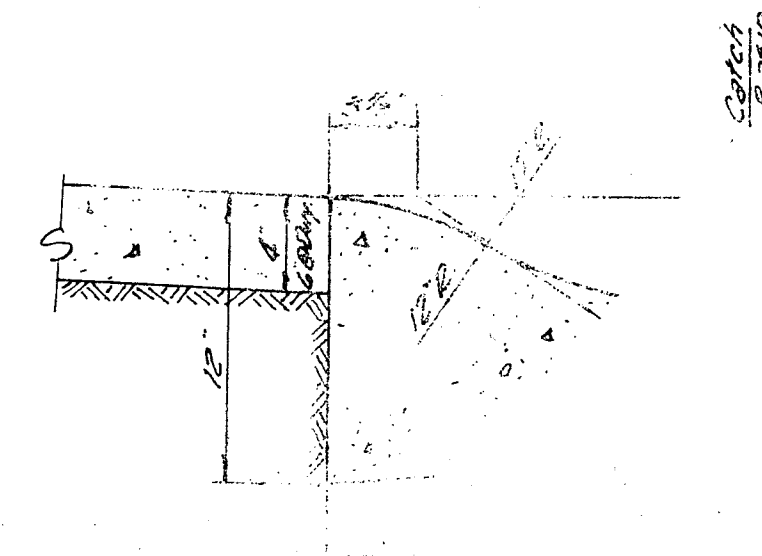
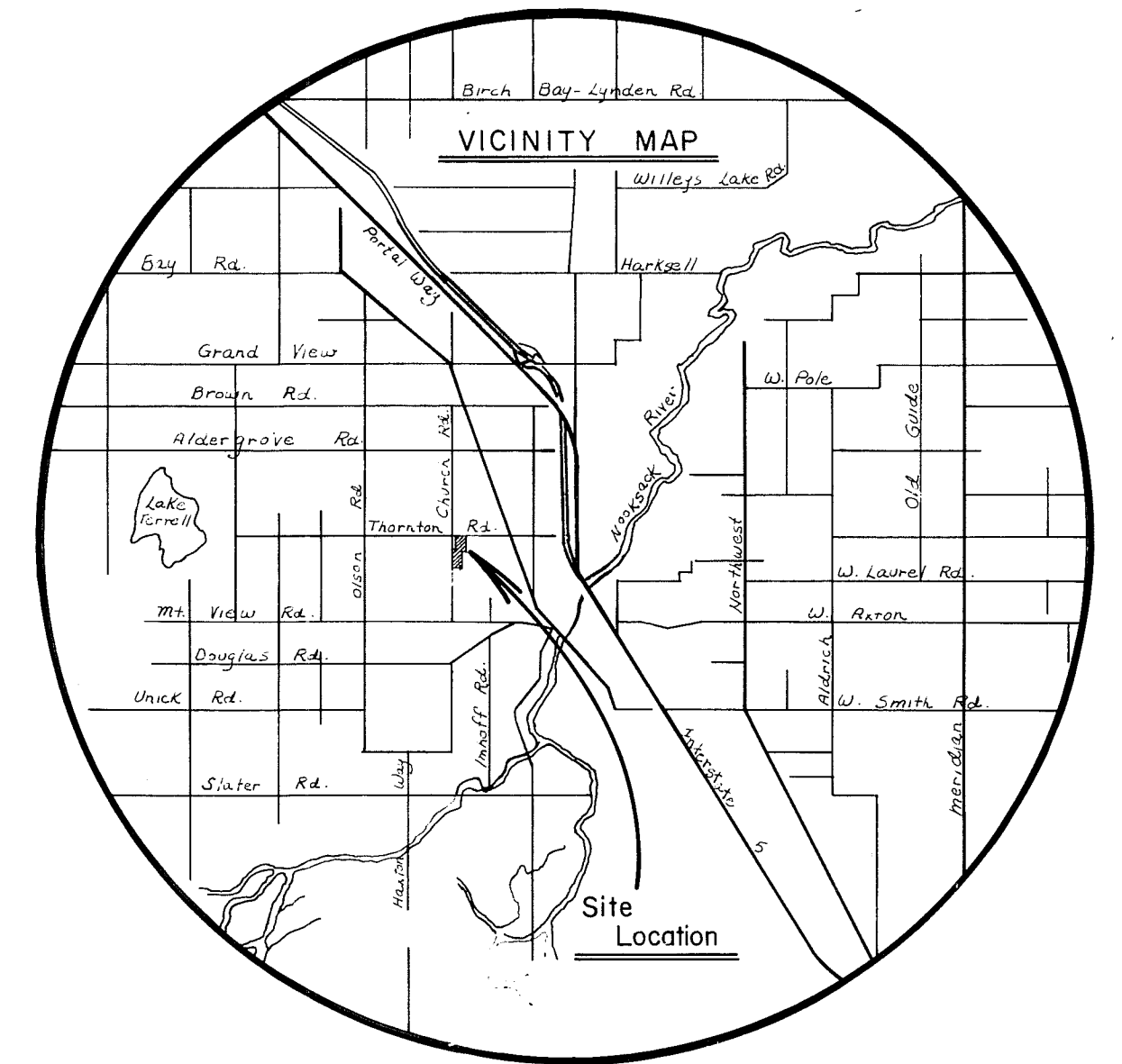
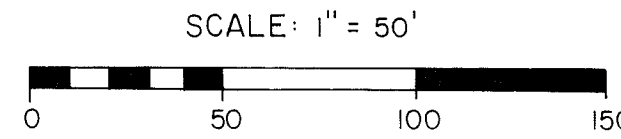
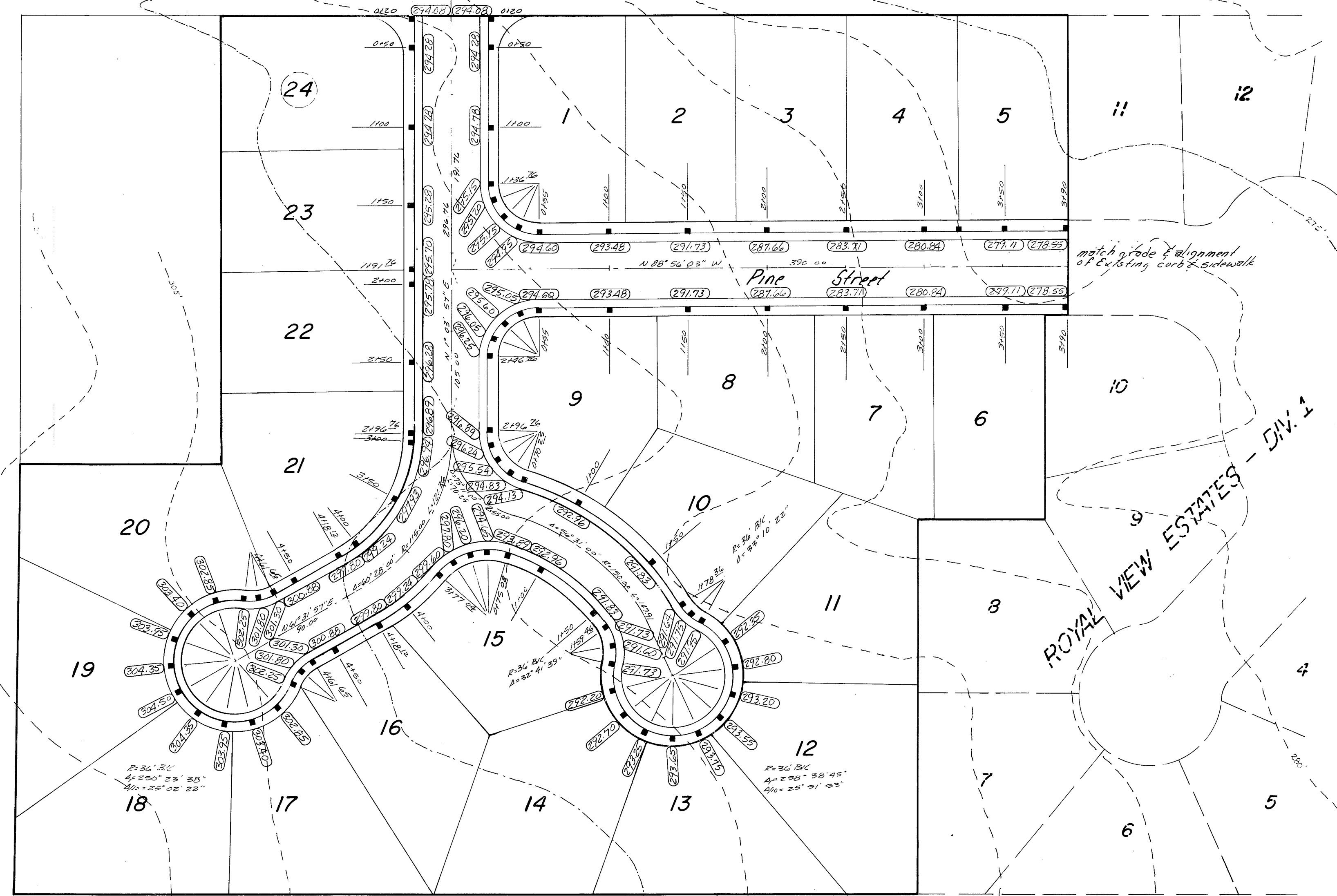
ROYAL VIEW ESTATES - DIV. 2

WATER DISTRIBUTION PLAN

Sheet
4
of
6

CHURCH RD.

THORNTON RD.



NOTE:
All chords computed on a 3' offset to back of curb. All elevations are to top back of curb.
Top back of curb is 0.05 below center line grade
Center line catch basin is 0.51 below center line grade, catch basin is 0.46 below top back of curb

DATUM:
City of Ferndale, Power Pole, No. 38973, R.R. Spike, Elevation 234.42

SPECIFICATIONS FOR WATER DISTRIBUTION SYSTEMS

GENERAL:

The following specifications are to be read in conjunction with the Standard Specifications and these detailed specifications are hereby made a part of this contract.

"Standard Specifications" referred to herein refer to the Standard Specifications for Municipal Public Works Construction as prepared by the Washington State Chapter, A.P.W.A., 1977 Edition; all material and construction shall comply with and be done in accordance with said Standard Specifications, or as shown on the plans.

WATER DISTRIBUTION SYSTEM

- Water mains, service lines, valves, hydrants and fittings shall be constructed as shown on the plans, as required by the State Department of Public Health, the City of Ferndale, and specified herein.
- Water pipe shall be ductile iron pipe, Class 50, and shall comply with Sec. 72-2.03 of the Standard Specifications.
- Fittings shall be cast iron conforming to ANSI A-21.40 for short body fittings; bells, flanges or grooves shall be as required for the type of pipe and jointing method used. Flanges where required, shall conform to ANSI B-1.1 for Class 125 flanges unless otherwise indicated or specified.
- Buried gate valves shall meet the material and installation requirements as outlined in Section 73 of the Standard Specifications. They shall have a non-rising stem and shall open counterclockwise and sufficient wrenches to operate all valves shall be provided.
- Pipe hydrants shall be minimum 5" main valve opening for 42" trench unless otherwise designated, flanged at ground line, 6" MJ connection; two 2 1/2" hose connection ANSI (National) Standard Thread; pumper connection and operating nut to match existing hydrants. Hydrant so constructed that direction of facing of pumper connection may be rotated to face roadway. Hydrant shall be of traffic type with designed replaceable break points.
- Valve boxes shall be cast iron, 2-piece, screw type extension, equal to Atlas Foundry Company or Olympic Foundry Company, and shall conform to Section 75-2.01 and 76-3.06 of the Standard Specifications.
- Concrete blocking shall be 1:3:6 mix with 6" maximum slump, and must be formed before pouring.
- All backfill in trenches will be bank run gravel and in accordance with Sec. 73-2.07 and 73-2.08 of the A.P.W.A. Standard Specifications or as approved by the Public Works Department.
- The water distribution system and fittings shall be excavated, installed, and backfilled in accordance with these specifications, the manufacturer's recommendations, and as outlined in Section 73 and 74 of the Standard Specifications.
- The pipe shall be laid to the alignment and grades furnished by the engineer. Deflections from a straight line or grade as required by vertical curves, horizontal curves or offsets, shall not exceed the maximum deflections recommended by the pipe manufacturer. Where the alignment or grade requires deflections in excess of recommended limits with standard pipe lengths, a sufficient number of short lengths shall be used.
- Trench depth shall be as required to provide a minimum of 36" cover from finished grade.
- No pipe shall be covered until it has been inspected and permission to backfill has been obtained. Backfilling and surface restoration shall follow closely the installation and testing of the pipe. Backfill shall be Class "B" bank run gravel, and shall be placed and compacted in accordance with Sec. 73-2.07 of the Standard Specifications.
- Where governmental agencies, other than the owner, have jurisdiction over roadways, the backfill and compaction shall be done to the satisfaction of the agency having the jurisdiction.
- In clay soils, compaction shall be by mechanical tamping, as outlined in Sec. 73-2.07, and in sand and gravel may be by water settlement. If suitable backfill material is not available from trenching operations, the engineer may order the placing of bedding sand or gravel around the water main.
- Concrete blocking shall be placed at all abrupt bends, both horizontal and vertical, and at tees and dead ends. No blocking shall be required at hydrant tees if hydrant is secured to water main by flanged pipe, restraining joints or by rods and shackles.
- Prior to acceptance of the work, all sections of pipe shall be subjected to a hydrostatic test as outlined in Section 74-2.12 of the Standard Specifications.
- Sterilization of water mains shall be accomplished by the Contractor in accordance with the requirements of the State Health Department, in a manner satisfactory to the Engineer; and as outlined in Section 74-2.3 of the Standard Specifications.

SPECIFICATIONS FOR ROADS AND STORM SEWERS

GENERAL:

The following specifications are to be read in conjunction with the Standard Specifications and these detailed specifications are hereby made a part of this contract.

"Standard Specifications" referred to herein refer to the Standard Specifications for Municipal Public Works Construction as prepared by the Washington State Chapter, A.P.W.A., 1977 Edition; and all material and construction shall comply with and be done in accordance with said Standard Specifications, or as shown on the plans.

State of Washington, Standard Specifications for Road and Bridge Construction refers to the 1977 Edition of the same.

GRAVITY STORM SEWER SYSTEM

- Sewers shall be constructed as shown on the plans and as specified herein.
- Non-reinforced concrete sewer pipe with bell and spigot ends shall conform to ASTM Designation C-400 extra strength. All pipe shall be coupled with a "Standard O-Ring" type of rubber gasket.
- Pipe installation at locations, lines and grades as shown on the plans, shall be in conformance with provisions of Sections 60, 61, and 62 of the Standard Specifications.
- Bedding shall be Class C and conform to Section 61-3.03C3 of the Standard Specifications.
- All backfill in trenches shall be Class B bank run gravel and in accordance with Sections 61-3.06, 61-3.07, and 61-3.08 of the Standard Specifications.
- In clay soils, compaction shall be by mechanical tamping as outlined in Section 61-3.06B, and in sand or gravel may be by water settlement.

PAVING AND GRADING

- Stripping: All topsoil shall be stripped from areas to be paved and shall be stored in stock piles as designated by the Engineer.

Embankment: Fill material shall be free from frost, stumps, roots, and sods. Only approved material shall be used.

- Preparation of Subgrade: The work shall consist of bringing the bottom of excavation and top of embankments of the roadway to a surface conforming to the grade lines, and cross sections shown on the plans between lines two (2) feet out from the edges of the proposed paving.

All soft or yielding material and other portions of the subgrade which will not compact readily shall be removed and replaced with suitable material and the whole subgrade brought to a line and grade and to a foundation of uniform compaction and supporting ability. Where the subgrade is of a compacted nature as determined by the Engineer, it shall be panned to a depth of not less than six (6) inches for the full width of the subgrade. The loose material then shall be spread and manipulated so as to bring all the material to a uniform density.

The top six (6) inches of the subgrade, in both cut and fill sections, shall be compacted to a density of not less than ninety-five (95) percent of the maximum density as determined by the AASHTO Method T-99 or T-990 or by the modified proctor method ASTM Standard D-1557.

After the subgrade has been prepared and immediately before any base or paving course is laid, the subgrade shall be tested as to crown elevation. If the subgrade is found not to be at the proper elevation at all points, material shall be removed or added as the condition necessitates and compacted to bring all portions of the subgrade to the correct elevation and to the specified density.

- Paving section shall be as follows:

12" minimum, compacted depth of gravel base Class B
2" minimum, compacted depth of crushed surfacing topcourse (5/8" minus)
2 1/2" minimum, compacted depth of asphalt concrete Class B

- Gravel base shall meet all requirements of Section 4-02 of State of Washington, Standard Specifications for Road and Bridge Construction.
- Crushed surfacing top course shall meet all requirements of Section 4-04 of State of Washington, Standard Specifications for Road and Bridge Construction.
- Asphalt concrete pavement Class B shall meet all requirements of Section 5-04 of State of Washington, Standard Specifications for Road and Bridge Construction.

CURBS AND SIDEWALKS

- Cement concrete curb and gutter shall be constructed as shown on the plans and in accordance with Section 4-0 of the Standard Specifications.
- Curbs shall be backfilled after concrete has attained design strength if sidewalks are not immediately constructed. Backfill shall be carefully placed and compacted to give lateral support to the curb and to insure that drainage will flow over the top of curb to the gutter.
- Cement concrete sidewalk shall be constructed as shown on the plans in accordance with Section 4-0 of the Standard Specifications. A 2" depth of 3/4" minus drain gravel shall be used for sidewalk bedding.
- Cement concrete driveways, six (6) inches thick, shall be constructed at such locations as shown on the plans or as designated by the developer or his representative. A 2" layer of 3/4" minus drain gravel shall be used for driveway bedding. Concrete shall be Class B concrete (3/4" maximum aggregate size with 5% air entrainment) as specified in Section 39-3 of the Standard Specifications.

SPECIFICATIONS FOR SANITARY SEWERS

GENERAL:

The following specifications are to be read in conjunction with the Standard Specifications and these detailed specifications are hereby made a part of this contract.

"Standard Specifications" referred to herein refer to the Standard Specifications for Municipal Public Works Construction as prepared by the Washington State Chapter, A.P.W.A., 1977 Edition; and all materials and construction shall comply with and be done in accordance with said Standard Specifications, or as shown on the plans.

GRAVITY SEWER

- Non-reinforced concrete sewer pipe with bell and spigot ends shall conform to ASTM Designation C-400 extra strength. All pipe shall be coupled with a "Standard O-Ring" type of rubber gasket.
- PVC pipe and fittings shall conform to ASTM Specification D3033 latest issue. "Type FGP Poly(vinylchloride) (PVC) Sewer Pipe and Fittings." All pipe and fittings shall be made from PVC compounds as defined and described in ASTM D 754. Joints made with pipe and fittings of with bell-end pipe shall use elastomeric gasket joints.
- Fittings, unless otherwise indicated, for various pipe shall be the same as the pipe material.
- Manhole installation and testing shall conform to the requirements of Section 53 of the Standard Specifications and shall be constructed at such locations and to such dimensions as shown on plans and standard detail. Manholes, Type 148 shall be used for depths greater than 9'-0".
- A standard cleanout shall be constructed here shown on the plans and shall be made of eight (8) inch sewer pipe with a cast iron top bedded in concrete as shown on the Standard Plan No. 43 of the Standard Specifications. Cleanouts on service lines shall be constructed as shown in side sewer details.
- Drop connections shall be as shown on Standard Plan No. 43 of the Standard Specifications.

CONSTRUCTION SPECIFICATIONS

- Pipe joints shall be made in strict conformance with the manufacturers recommendations and directions.
- Pipe installation and testing at locations, lines and grades as shown on the plans, shall be in conformance with provisions of Sections 60, 61, and 62 of the Standard Specifications (rechanneling of existing manholes will be considered incidental to this item).
- Bedding shall be in accordance with Section 61-3.03 of the Standard Specifications for flexible conduit, Class C bedding will be utilized for concrete pipe.
- In solid rock excavation, all ledge rock, boulders, or stones shall be removed to provide a minimum clearance of six (6) inches under the pipe. All materials thus removed shall be replaced with Class C bedding material. Bedding material shall consist of clean, angular, uncoated pea gravel of which 100% will pass the U.S. Standard 3/4 inch opening; not more than 3% will pass the U.S. No. 200 (test sieve); 0-3% will pass the U.S. No. 2 sieve and 97-100% will pass the U.S. Standard 3/8 inch opening. The material shall have a minimum sand equivalent of 70.
- All backfill in trenches will be bank run gravel and in accordance with Sections 61-3.06, 61-3.07 and 61-3.08 of the Standard Specifications.
- In clay soils, compaction shall be by mechanical tamping as outlined in Section 61-3.06B, and in sand or gravel may be by water settlement.