

APPROVAL OF CITY ENGINEER

I, TOM LITTLE, CITY ENGINEER FOR THE CITY OF MANDAN, NORTH DAKOTA, HEREBY APPROVE THIS PLAN FOR SEWER AND WATER IMPROVEMENT PROJECT 99-17 MANDAN, NORTH DAKOTA, AS SHOWN.

Thomas Little
 TOM LITTLE P.E.
 REGISTERED PROFESSIONAL ENGINEER
 CITY ENGINEER
 MANDAN, NORTH DAKOTA

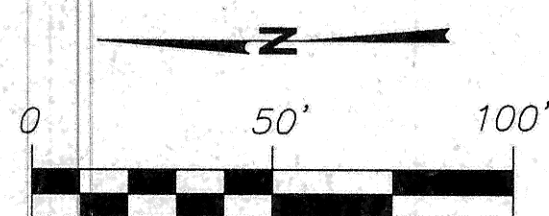
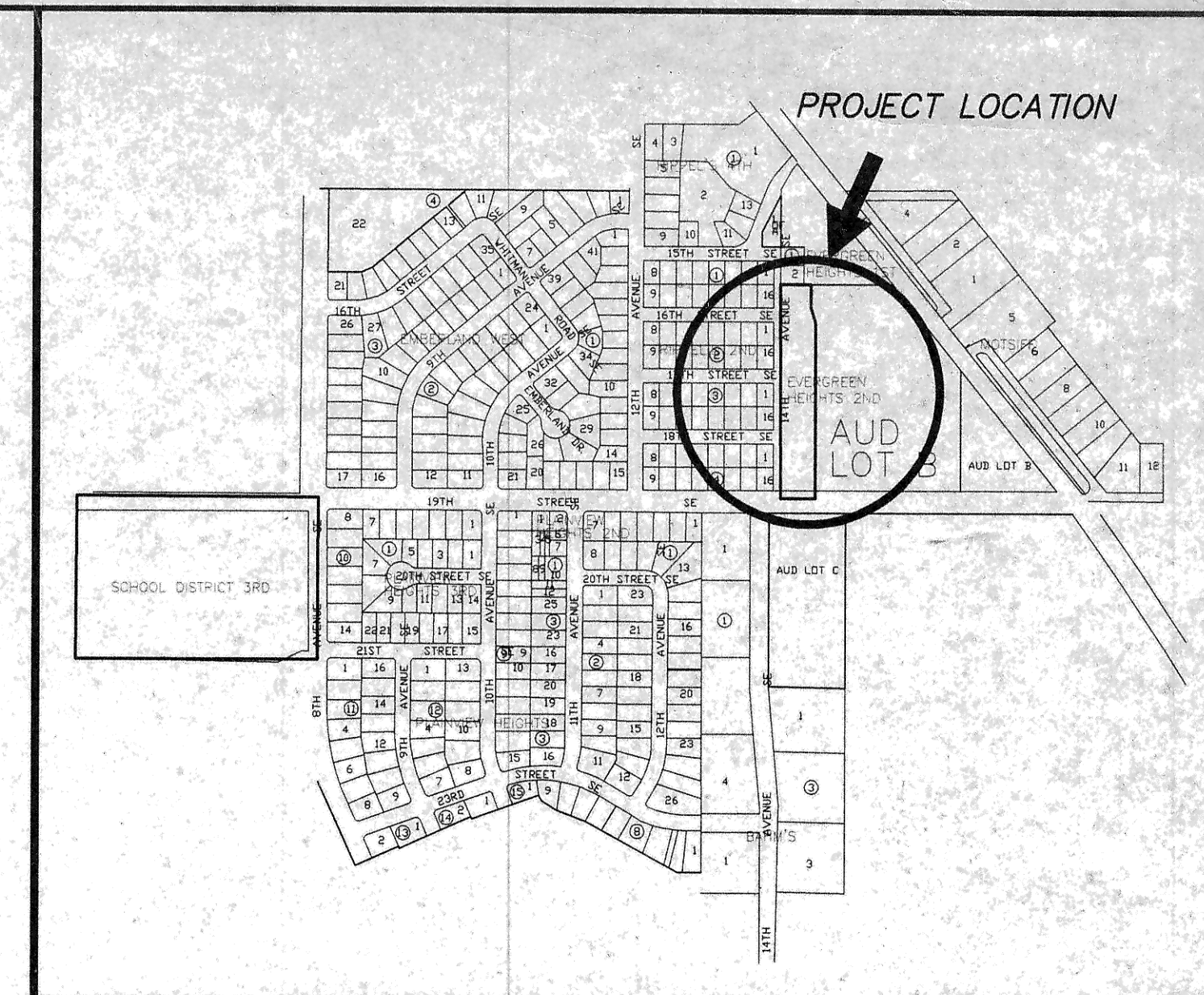
ENGINEER'S CERTIFICATE

I, MARK S. SWENSON, A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF NORTH DAKOTA, HEREBY CERTIFY THAT THE PLANS FOR SEWER AND WATER IMPROVEMENT PROJECT 99-17 MANDAN, NORTH DAKOTA WERE PREPARED UNDER MY SUPERVISION AND ARE CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

Mark S. Swenson
 MARK S. SWENSON P.E.
 REGISTERED PROFESSIONAL ENGINEER
 NORTH DAKOTA REGISTRATION NO. 3624

CONSTRUCTION NOTES

- Backfill shall be Class 'A'.
- Water service lines shall be type "K" copper. Water service lines shall be "snaked" in the trench. Service lines shall have a minimum of 7 1/2' of cover.
- Water and sewer lines shall be completed to the property lines.
- Contractor shall remove and dispose of offsite all curb & gutter, asphalt, and sidewalk as necessary to construct the water and sewer services. A trench box shall be required to minimize the removals. Said work to be considered incidental to the "Asphalt & Concrete Removal" bid item.
- The contractor shall maintain access to the driveways of the residences on the west side of 14th Ave. SE at all times.
- New watermain shall meet AWWA C900 Class 150 requirements. New sanitary sewer shall meet ASTM D3034 SDR 35 requirements.
- Contractor shall protect and preserve property located on the west side of 14th Ave. SE. Replacement of sidewalk, curb & gutter and grass shall not be a part of this project.
- Contractor shall maintain a 4" gravel patch (Class 5 or 13 per NDDOT specs.) where pavement, sidewalk or curb & gutter has been removed up to 21 days past the completion of the water and sewer improvements.
- Surveying shall be paid by the owner except where the Contractor disturbs the survey monuments, in which case the Contractor shall be required to pay a registered surveyor to reset the monuments.
- Contractor shall remove trees and fencing as necessary to construct water sewer. Trees and fencing shall be stockpiled where directed by the engineer. Tree and fence removal and stockpiling shall be considered incidental to other bid items.
- Grading of Evergreen Loop shall be performed by others prior to construction. Cover depth over the new watermain shall be approximately 7 1/2'.



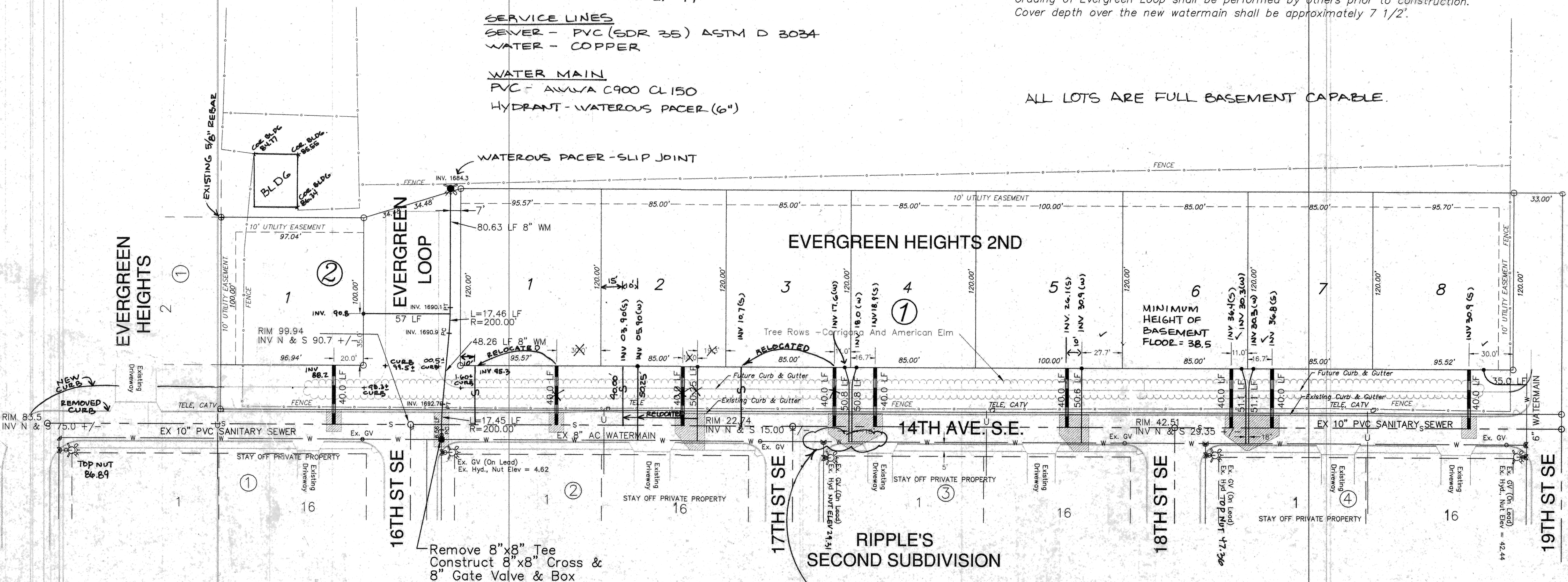
SCALE 1" = 40'

CONTRACTOR - DO MORE EXCAVATING
 CONSTRUCTED SUMMER 99

SERVICE LINES
 SEWER - PVC (SDR 35) ASTM D 3034
 WATER - COPPER

WATER MAIN
 PVC - AWWA C900 CL150
 HYDRANT - WATEROUS PACER (6")

ALL LOTS ARE FULL BASEMENT CAPABLE.



Remove 8"x8" Tee
 Construct 8"x8" Cross &
 8" Gate Valve & Box

NOTE: VERY SHALLOW WATERMAIN (3 1/2' COVER) IN THIS AREA. WATER TAPS FOR LOTS 3 AND 4 COME OFF AT A DOWNWARD 45° ANGLE FROM THE MAIN. RIGID BOARD INSULATION WAS PLACED OVER THE MAIN AND THE SERVICE LINES.

APPROXIMATE QUANTITIES

San. Sewer Items	Quantity
Pitrun Gravel	35 TON
4" Sewer Service Pipe	360 LF
10"x4" Wye Branch, Bend, & Cap	10 EA

Watermain Items	Quantity
Pitrun Gravel	150 TON
8" PVC Watermain	170 LF
6" Hydrant	1 EA
8" Gate Valve and Box	1 EA
Ductile Iron Fittings	(incidental)
1" Water Copper Serv. Pipe	397 LF
1" Water Serv. Connection	8 EA
1" Ball Valve Curb Stop	8 EA
And 1 1/4" Box	
Rock Excavation	5 CY
Asphalt & Concrete Removal	1 LS
Gravel Patch and Maintenance	1 LS

SWENSON, HAGEN & CO. P.C.
 PLANNING CIVIL ENGINEERING SURVEYING
 SITE DESIGN CONSTRUCTION MANAGEMENT
 908 BASIN AVE. P.O. BOX 1186 (701) 823-8900
 BISMARCK, N.D. 58504 FAX (701) 823-8906

**EVERGREEN HEIGHTS
 SECOND ADDITION
 14TH AVENUE SE**

SEWER & WATER IMPROVEMENT PROJECT NO. 99-17
 SHEET NO. 1 OF 1 SHEETS
 MANDAN, ND MAY-6, 1999
 Nov, 15

RECORD
 DRAWING
 11-15-99

P 99-17