

# STREET IMPROVEMENT DISTRICT NO. 61 MANDAN, NORTH DAKOTA

CITY NO. 80-7

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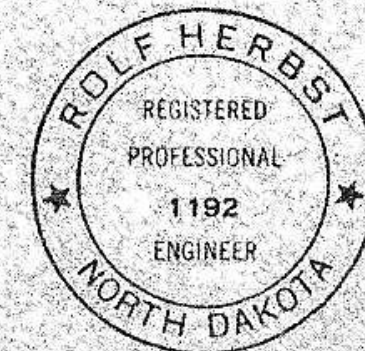
SHEET NO. 1 - PROJECT LAYOUT MAP  
SHEET NO. 2 - 2" OVERLAY  
ROUGH RIDER ESTATES  
SHEET NO. 3 - RETAINING WALL  
5TH. ST. N.W.

APPROVED:  DATE: March 9, 1981  
THOMAS LITTLE, P.E.  
CITY ENGINEER  
MANDAN, N.D.



AUGUST 5, 1980

TOMAN ENGINEERING CO.  
CONSULTING ENGINEERS  
TECO. NO. 7037



MANDAN  
NORTH DAKOTA

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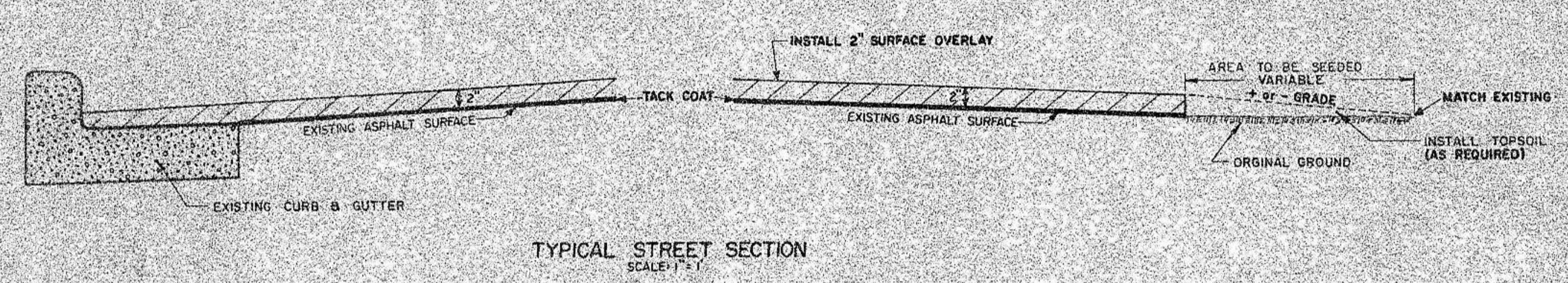
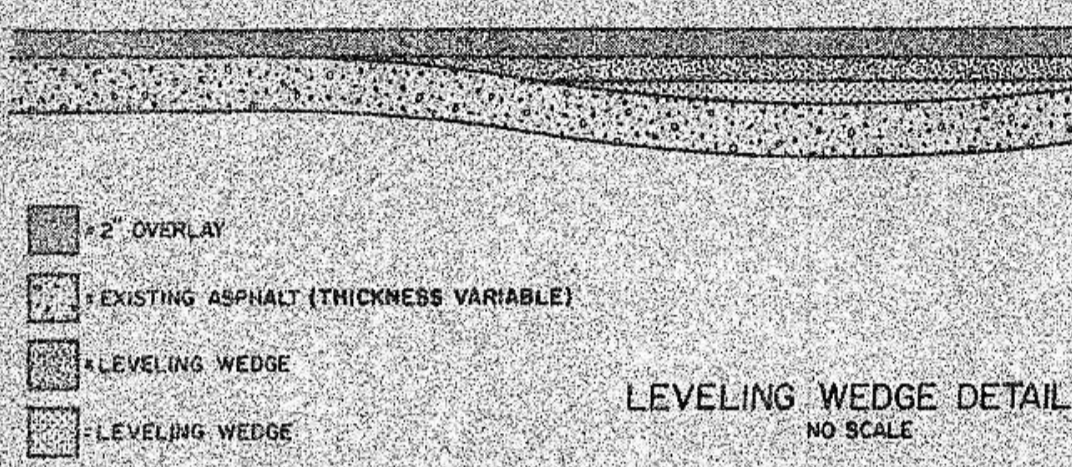
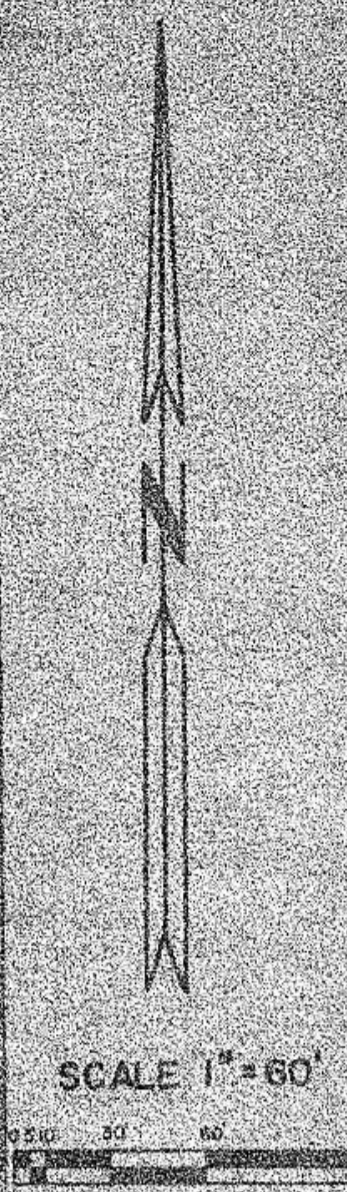
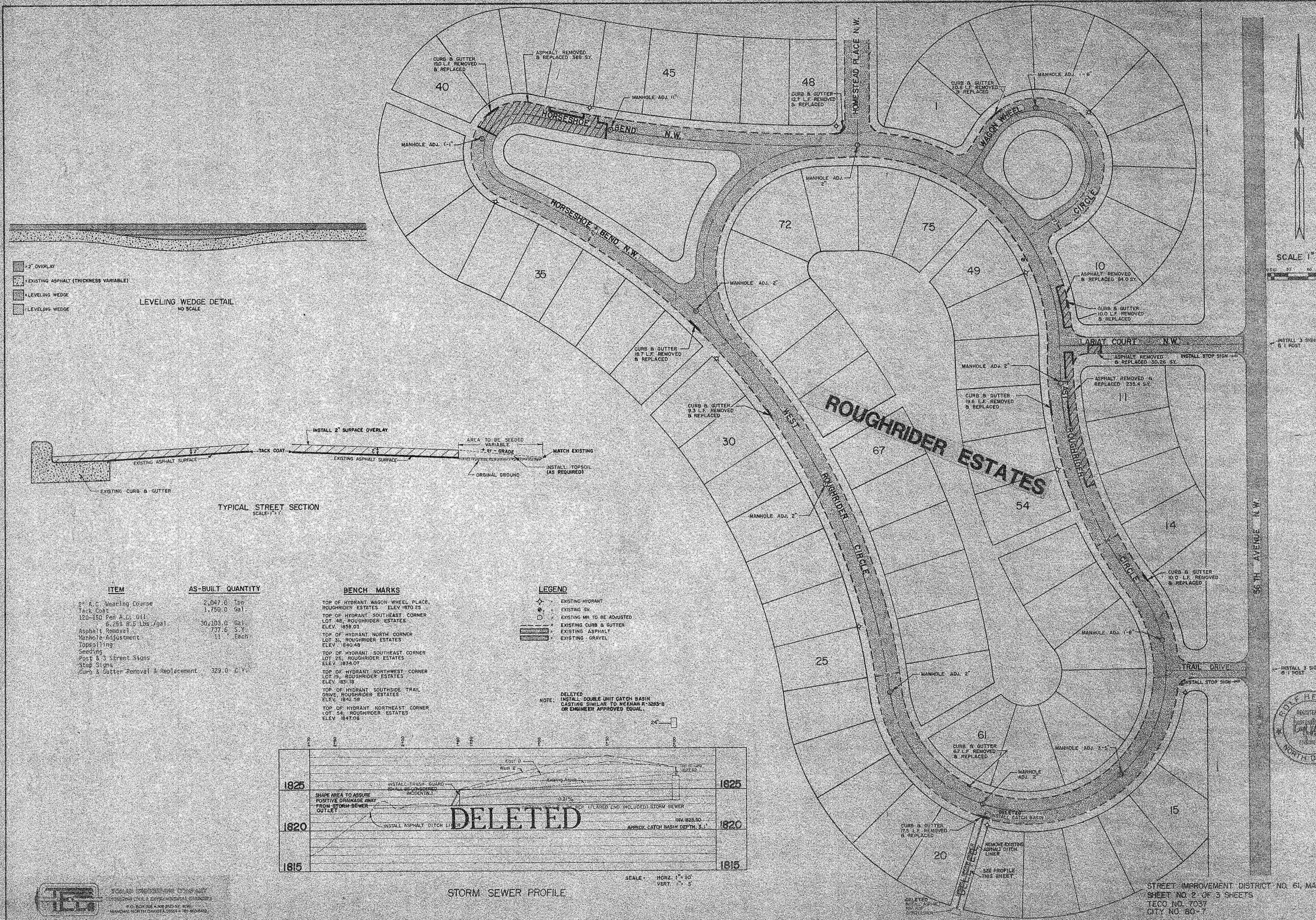
D 61  
P 80-7

UNIT 1, OVERLAY



STREET IMPROVEMENT DISTRICT NO. 61, MANDAN, N.D.  
SHEET NO. 1 OF 3 SHEETS  
TECO NO. 7037  
CITY NO. 80-7

Toman Engineering Company  
Civil & Environmental Consultants  
P.O. Box 209 Mandan, ND 58041

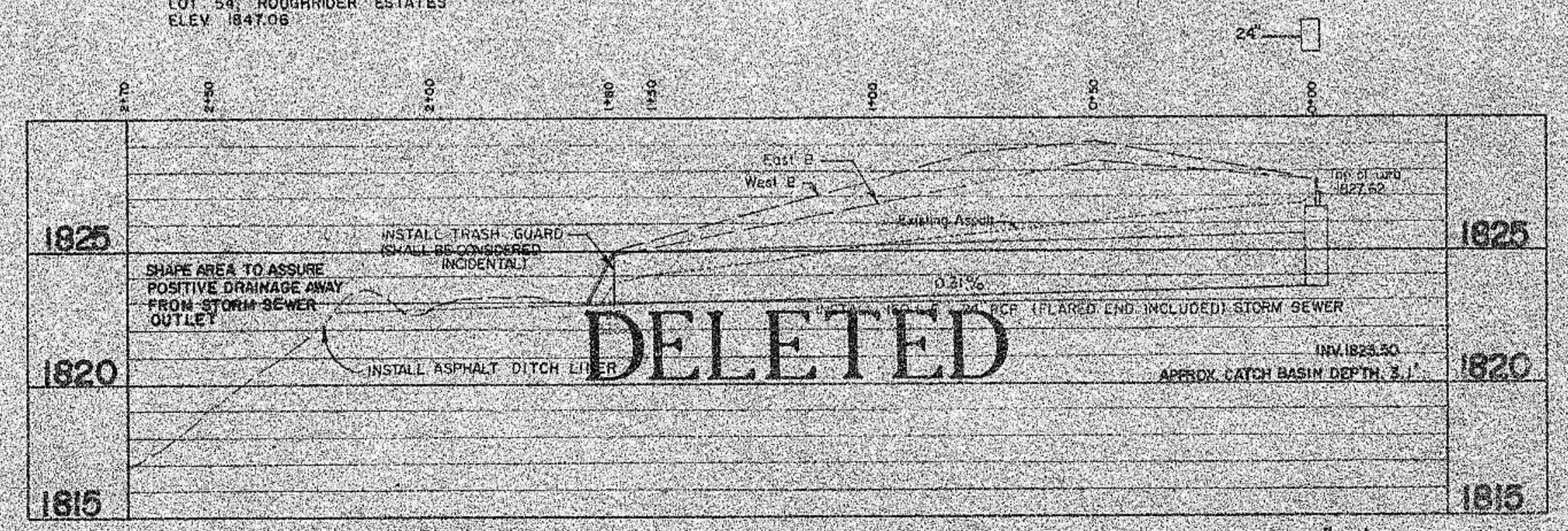


ITEM	AS-BUILT QUANTITY
2" A.C. Wearing Course	2,047.0 Lbs
Tack Coat	1,750.0 Gal
120-150 Pen A.C. Oil	6,254.8 Lbs /gal
Asphalt Removal	737.5 S.Y.
Manhole Adjustment	11 Each
Topsoiling	
Seeding	
Post & 3 Street Signs	
Stop Signs	
Curb & Gutter Removal & Replacement	329.0 S.Y.

- BENCH MARKS**
- TOP OF HYDRANT WAGON WHEEL PLACE, ROUGHRIDER ESTATES. ELEV 1870.25
  - TOP OF HYDRANT SOUTHEAST CORNER LOT 48, ROUGHRIDER ESTATES. ELEV. 1858.03
  - TOP OF HYDRANT NORTH CORNER LOT 31, ROUGHRIDER ESTATES. ELEV. 1840.48
  - TOP OF HYDRANT SOUTHWEST CORNER LOT 25, ROUGHRIDER ESTATES. ELEV. 1834.07
  - TOP OF HYDRANT NORTHWEST CORNER LOT 19, ROUGHRIDER ESTATES. ELEV. 1818
  - TOP OF HYDRANT SOUTHWEST TRAIL DRIVE, ROUGHRIDER ESTATES. ELEV. 1842.58
  - TOP OF HYDRANT NORTHEAST CORNER LOT 54, ROUGHRIDER ESTATES. ELEV. 1847.08

- LEGEND**
- EXISTING HYDRANT
  - EXISTING SW
  - EXISTING MH TO BE ADJUSTED
  - EXISTING CURB & GUTTER
  - EXISTING ASPHALT
  - EXISTING GRAVEL

DELETED  
NOTE: INSTALL DOUBLE UNIT CATCH BASIN CASTING SIMILAR TO HESAH# 3283-B OR ENGINEER APPROVED EQUAL.



STORM SEWER PROFILE

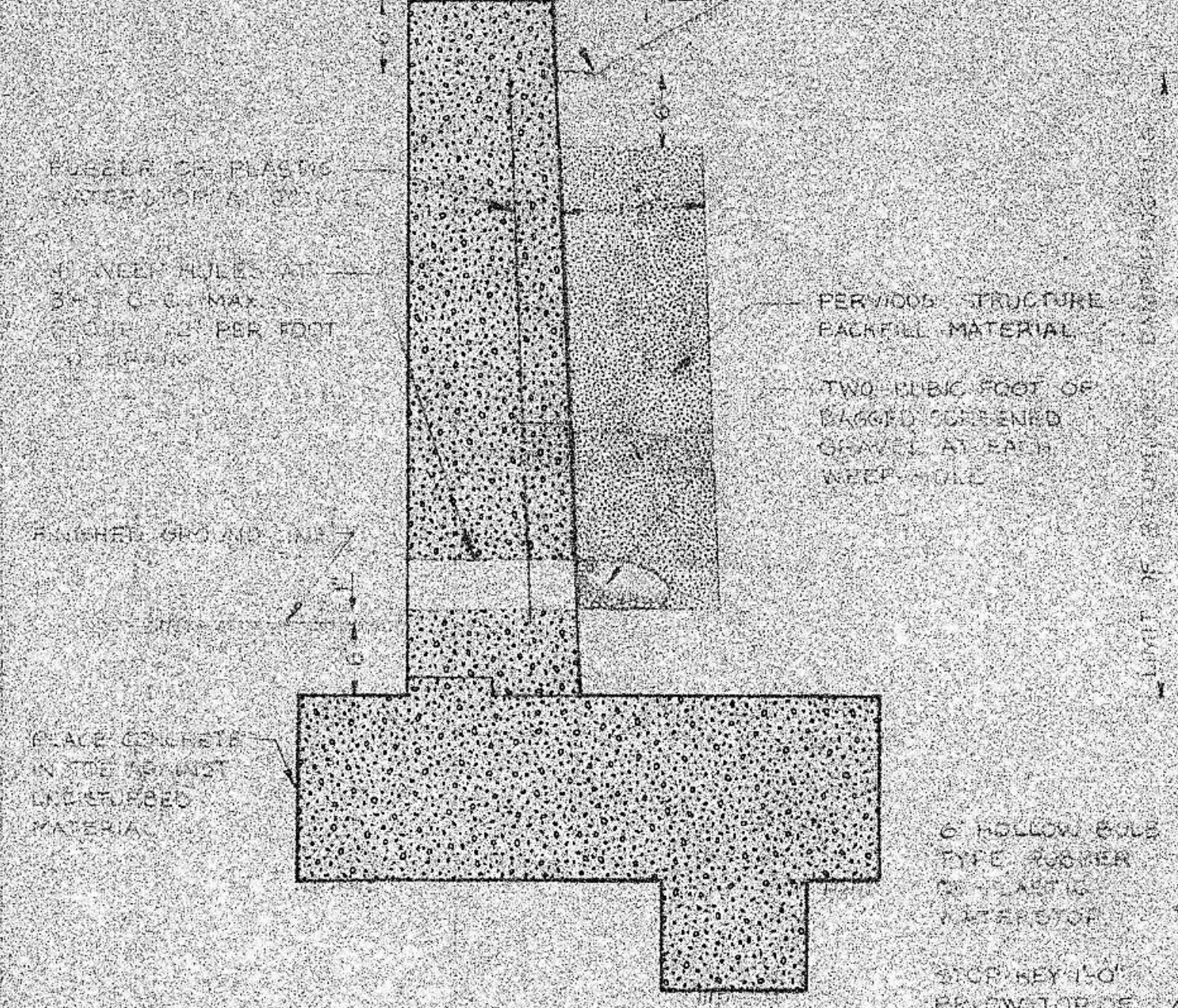


T.C. ENGINEERING & CONSTRUCTION COMPANY  
1000 W. 10TH ST. SUITE 100  
MANDAN, ND 58040  
TEL: 701-785-1111



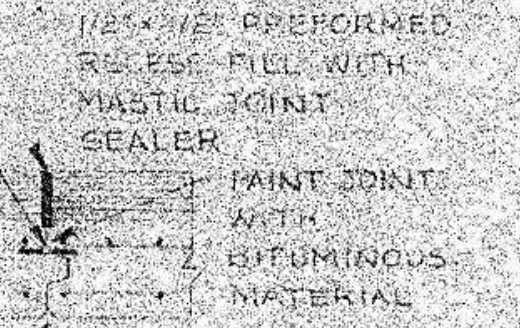
STREET IMPROVEMENT DISTRICT NO. 61, MANDAN, N.D.  
SHEET NO. 2 OF 3 SHEETS  
TECO NO. 7037  
CITY NO. 60-7

1. MAIN WALL  
2. WALL TO BE  
CONCRETE  
3. WALLS AND VERTICAL  
CURBS

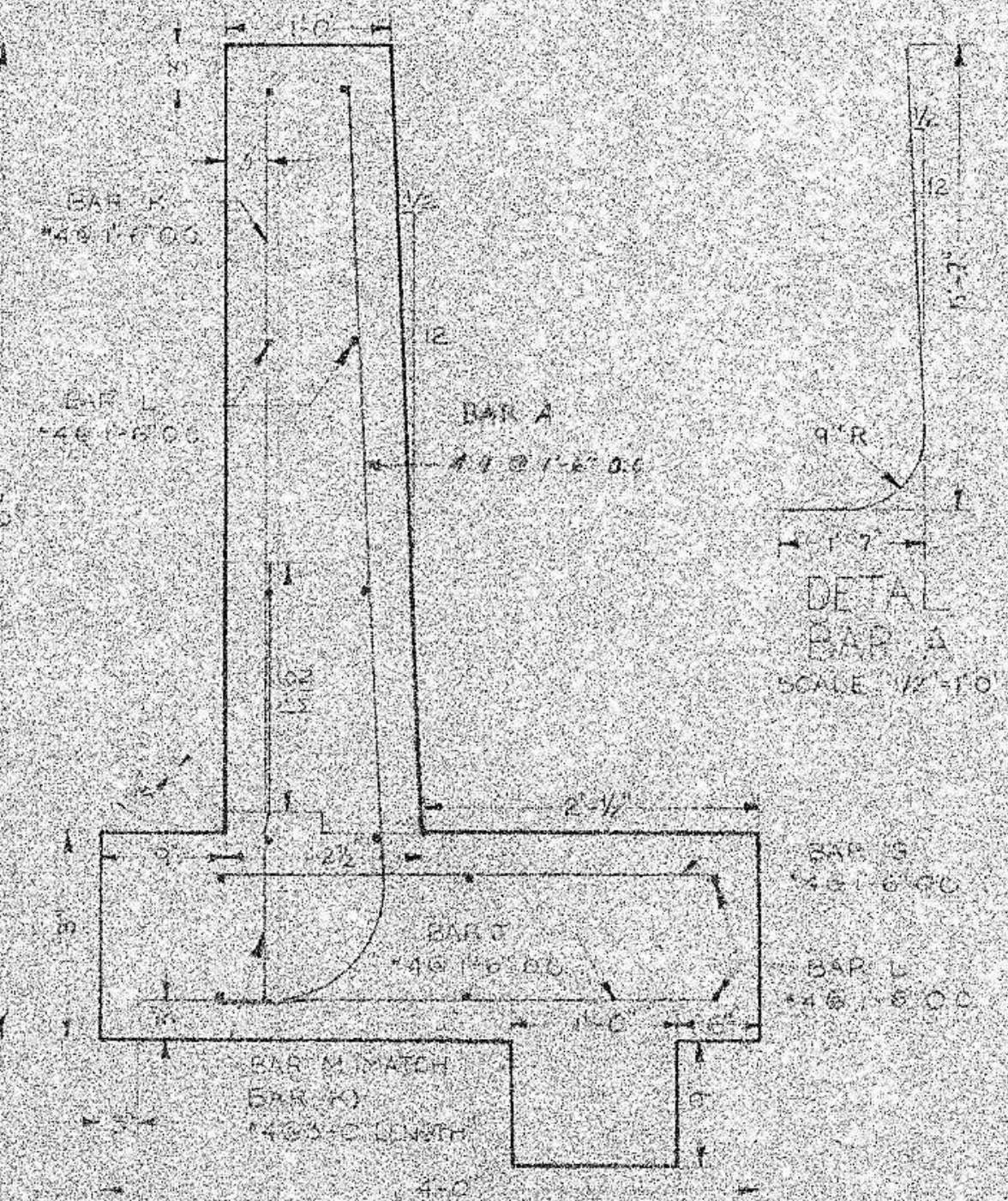


DRAINAGE DETAILS  
SCALE 1/2" = 1'-0"

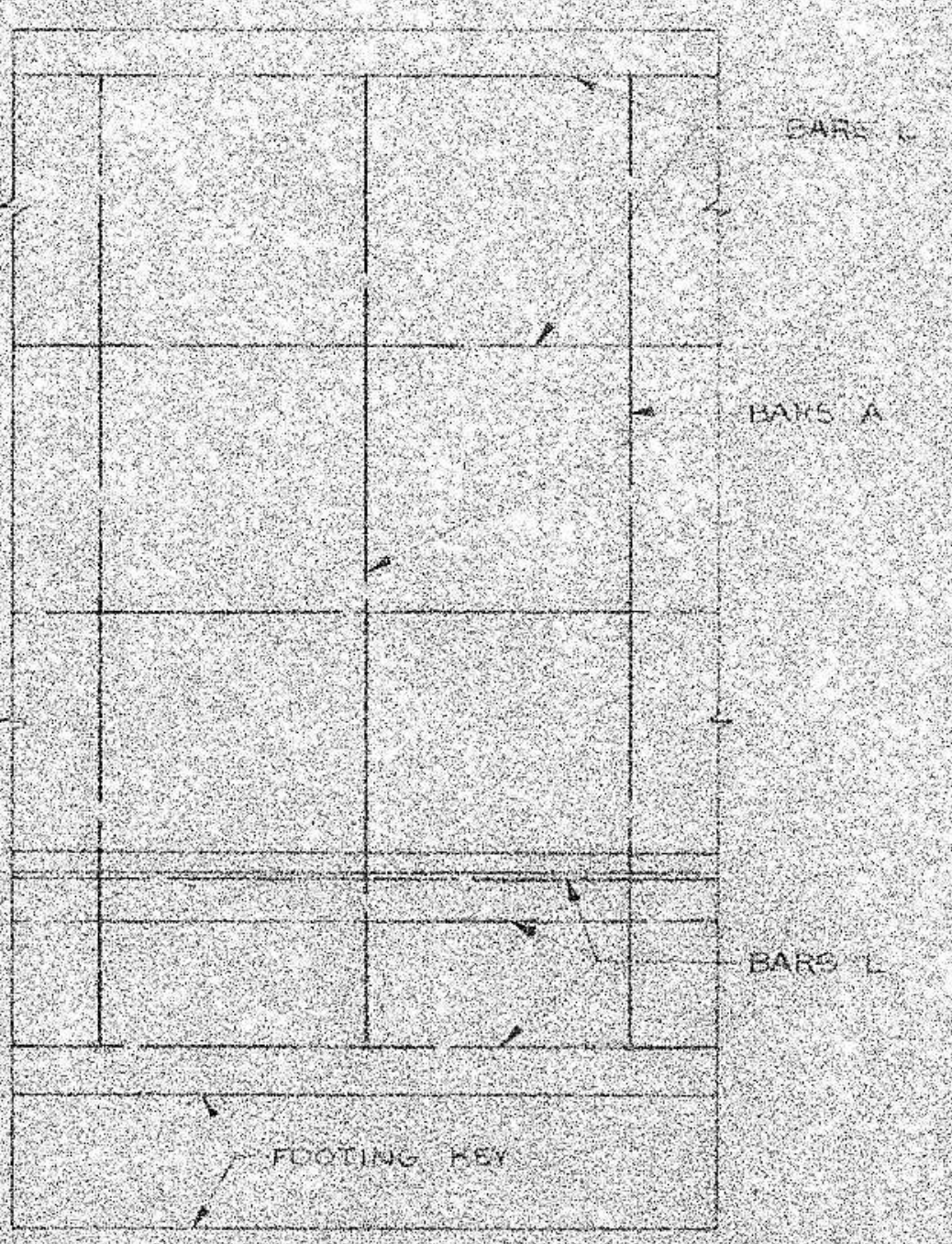
DESIGN DATA: Weight of soil 120 pcf, weight of concrete 150 pcf, Angle of internal friction 33° 41', Earth pressures Rankine's formula.  
 FOR SLIDING: The coefficient of friction between masonry and soil is taken at 0.45 with a safety factor of 1.5 by adding the footing key.  
 FOR OVERTURNING: A minimum safety factor of two is provided against overturning. Resultant of the loads is at or within the middle third of the footing.  
 CONCRETE: All concrete shall be class A with a minimum 28-day compressive strength of 3500 psi. All exposed edges of walls shall be chamfered 3/4" unless otherwise shown.  
 REINFORCING STEEL: Reinforcing steel shall be deformed bars of hard, intermediate, or rail steel grade conforming to ASTM A-15 or A-16. Dimensions relating to spacing of reinforcing steel are from center to center of bars; bending dimensions are from outside of the bars. Minimum cover for reinforcing bars shall be two inches clear unless shown otherwise. Bar laps shall be 30 diameters minimum.  
 FOOTING KEYS: Footing keys shall be placed against undisturbed soil.  
 WALL JOINTS: Expansion joints shall be placed at a maximum distance of 30 feet. Contraction joint spacing shall not be more than 30 feet.  
 WEIGHT OF STRUCTURE: The six foot retaining wall as shown hereon has a bearing pressure of 1.6 kips/sq.ft.



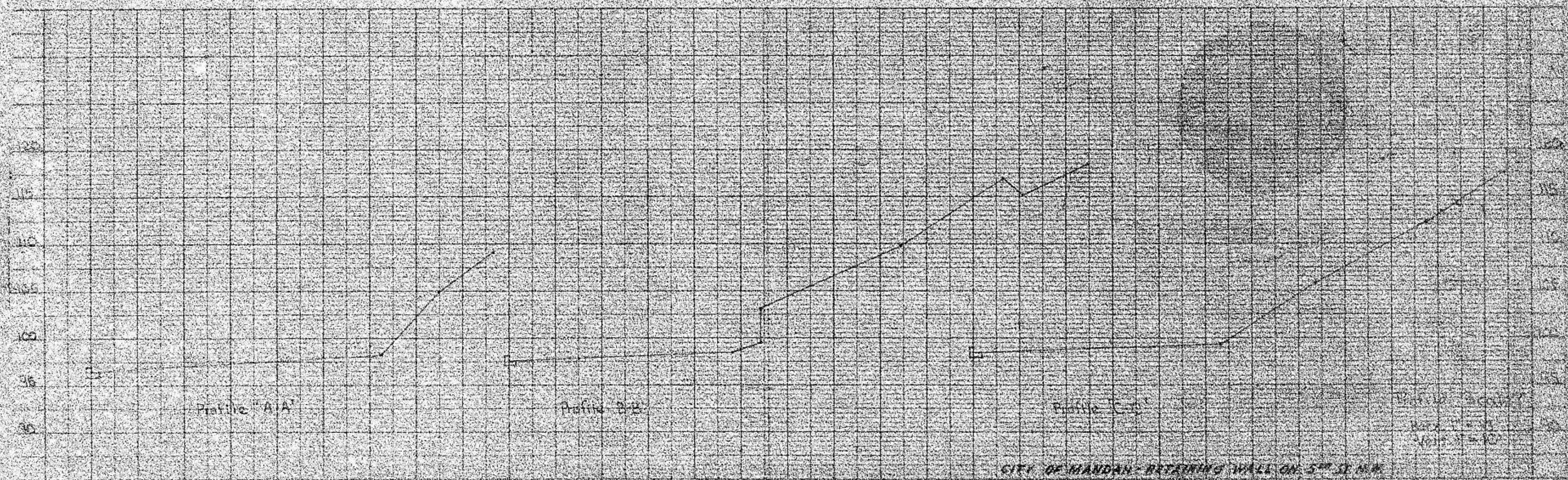
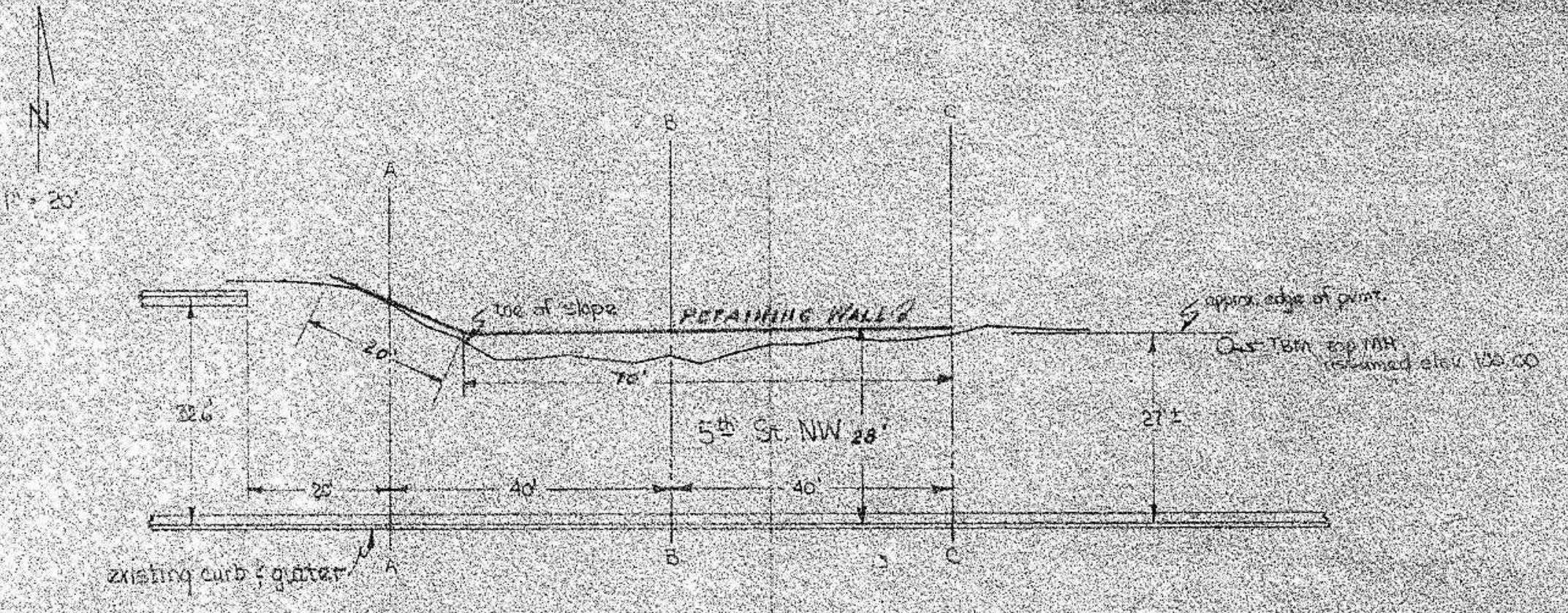
CONTRACTION JOINT DETAIL



SECTION  
SCALE 1/2" = 1'-0"



ELEVATION  
(BACK FACE)  
SCALE 1/2" = 1'-0"



BY: E.K. DATE: JAN 81 SUBJECT: RETAINING WALL  
 CHECKED BY: DATE: DEC 80  
 CITY OF MANDAN, N.D.  
 Torner Engineering Company  
 312 S. Broadway  
 Mandan, N.D. 58542  
 STREET IMPROVEMENT DISTRICT NO. 61,  
 SHEET NO. 3 OF 3 SHEETS  
 TEGO NO. 7057  
 CITY NO. 80-7