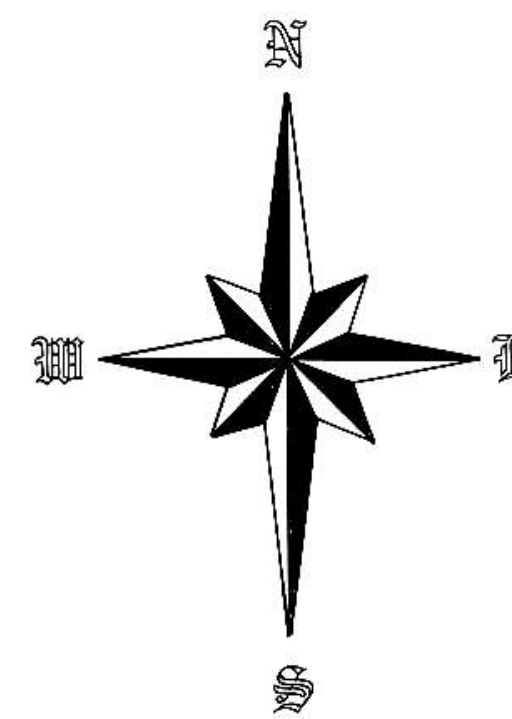
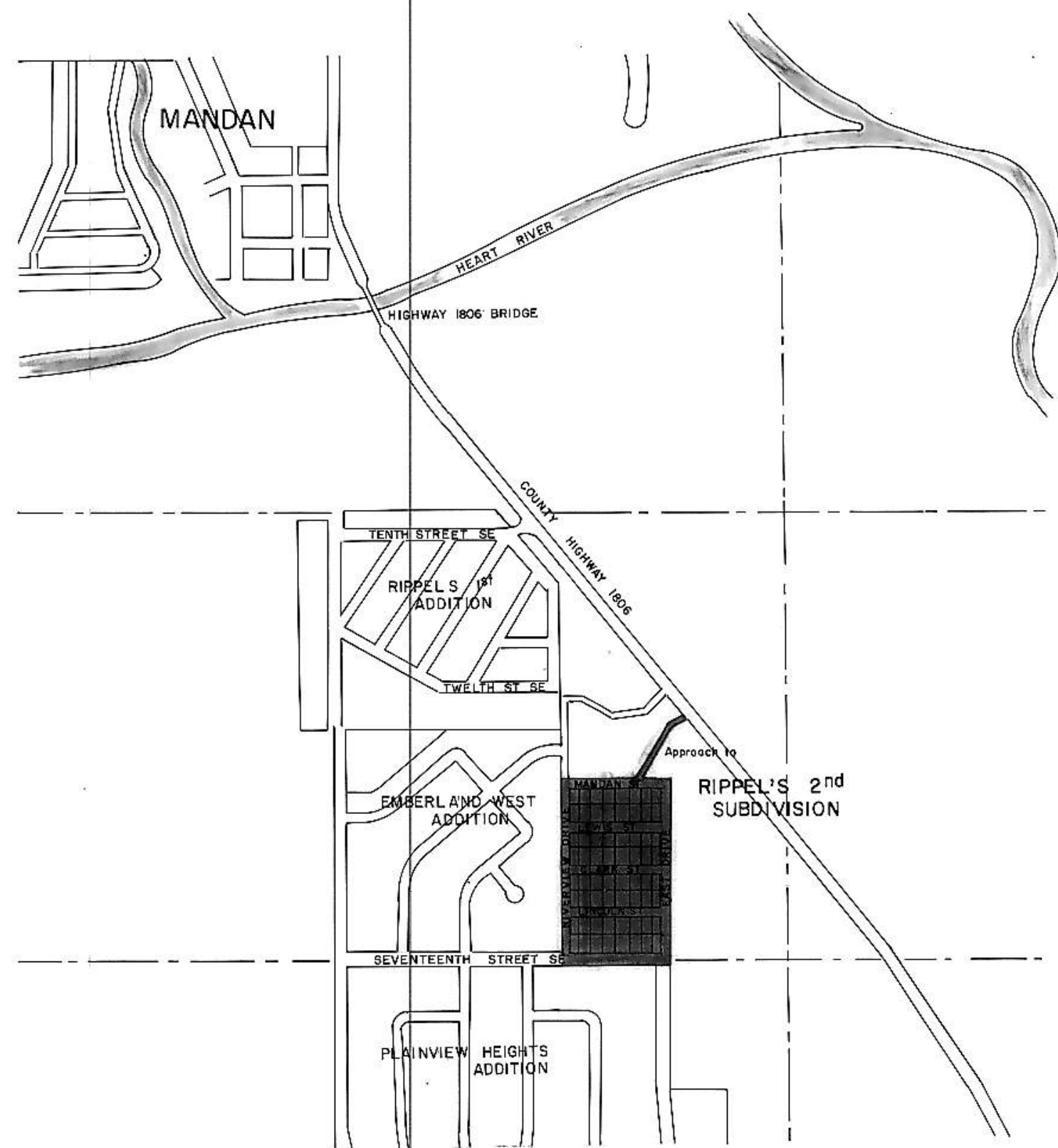


STREET IMPROVEMENT
RIPPEL'S SECOND SUBDIVISION
 PART OF THE SE 1/4 OF THE SW 1/4
 OF SEC. 35, T. 139 N., R. 81 W.



ENGINEER'S CERTIFICATE

I, HARLEY SWENSON, A REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR, HEREBY CERTIFY THAT THE PLANS FOR STREET IMPROVEMENT FOR RIPPEL'S SECOND SUBDIVISION TO THE CITY OF MANDAN, NORTH DAKOTA WERE PREPARED UNDER MY SUPERVISION AND ARE COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

Harley Swenson
 HARLEY SWENSON
 REGISTERED PROFESSIONAL ENGINEER AND
 LAND SURVEYOR # 951

FEBRUARY, 1977

INDEX

1. TOPOGRAPHY RIPPEL'S SECOND SUBDIVISION
2. DETAILS & QUANTITIES
3. RIVERVIEW DRIVE
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4. CLARK & LINCOLN STREET
 - A. CLARK STREET CROSS-SECTION
 - B. LINCOLN STREET CROSS-SECTION
5. 17TH & LEWIS STREET
 - A. 17TH STREET CROSS-SECTION
 - B. LEWIS STREET CROSS-SECTION
6. MANDAN STREET & APPROACH TO HWY 1806
 - A. MANDAN STREET CROSS-SECTION
 - B. APPROACH ROAD CROSS-SECTION
7. EAST DRIVE
 - A. EAST DRIVE CROSS-SECTION

PREPARED FOR

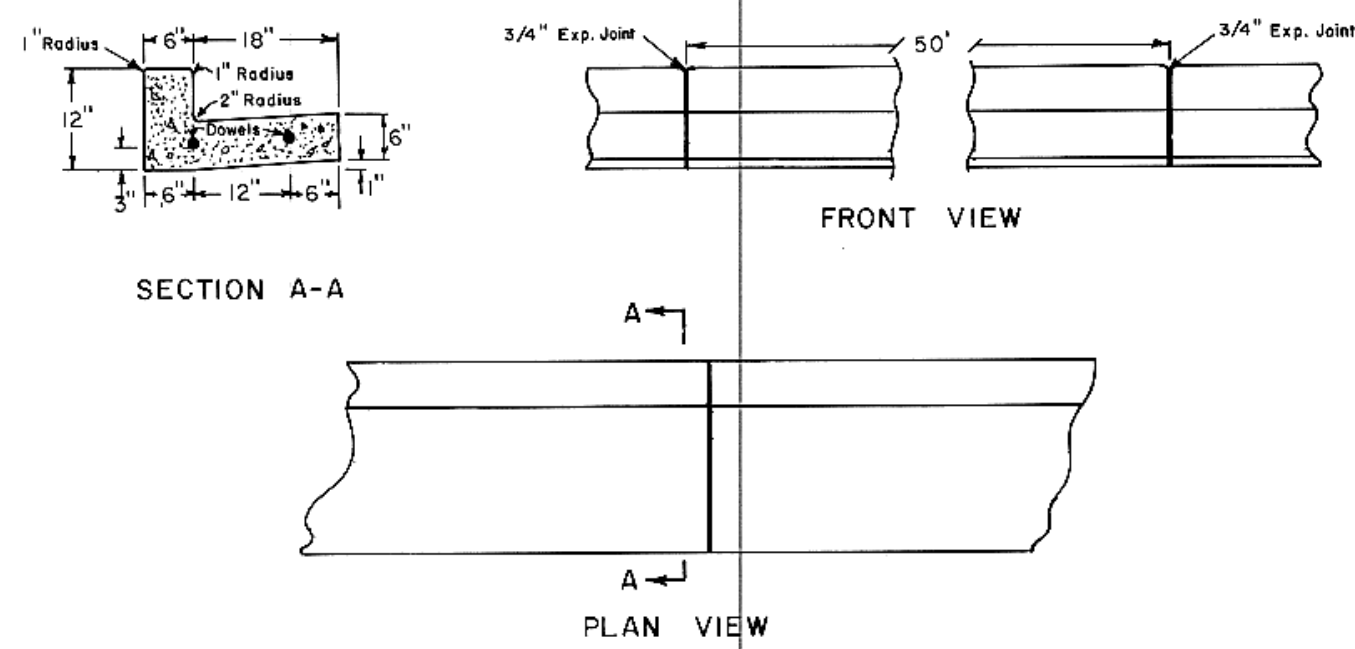
CITY OF MANDAN
 TERENCE POTTHOFF, CITY ENGINEER
 411 SIXTH AVENUE SOUTHWEST
 MANDAN, NORTH DAKOTA

PREPARED BY

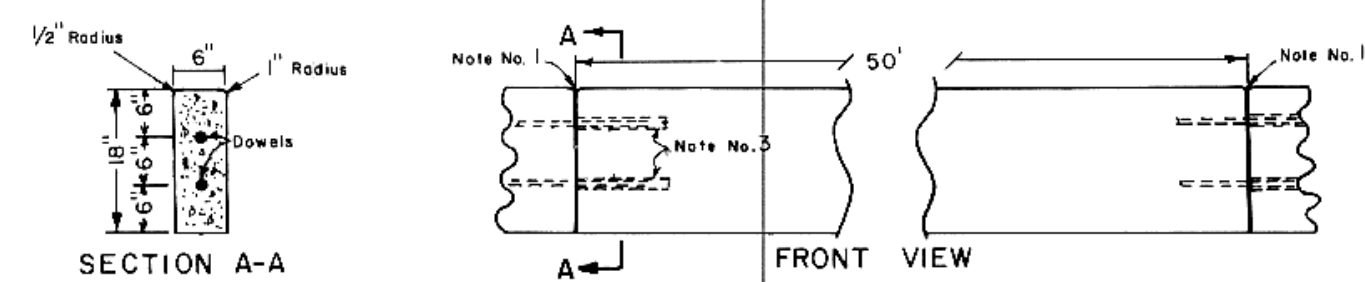
CIVIL ENGINEERING LAND PLANNING LAND SURVEYING

SWENSON, HAGEN & CO. P.C.
Consulting Engineers

PO BOX 1135, 909 BASIN AVENUE
 BISMARCK, NORTH DAKOTA 58501
 701-223-2600

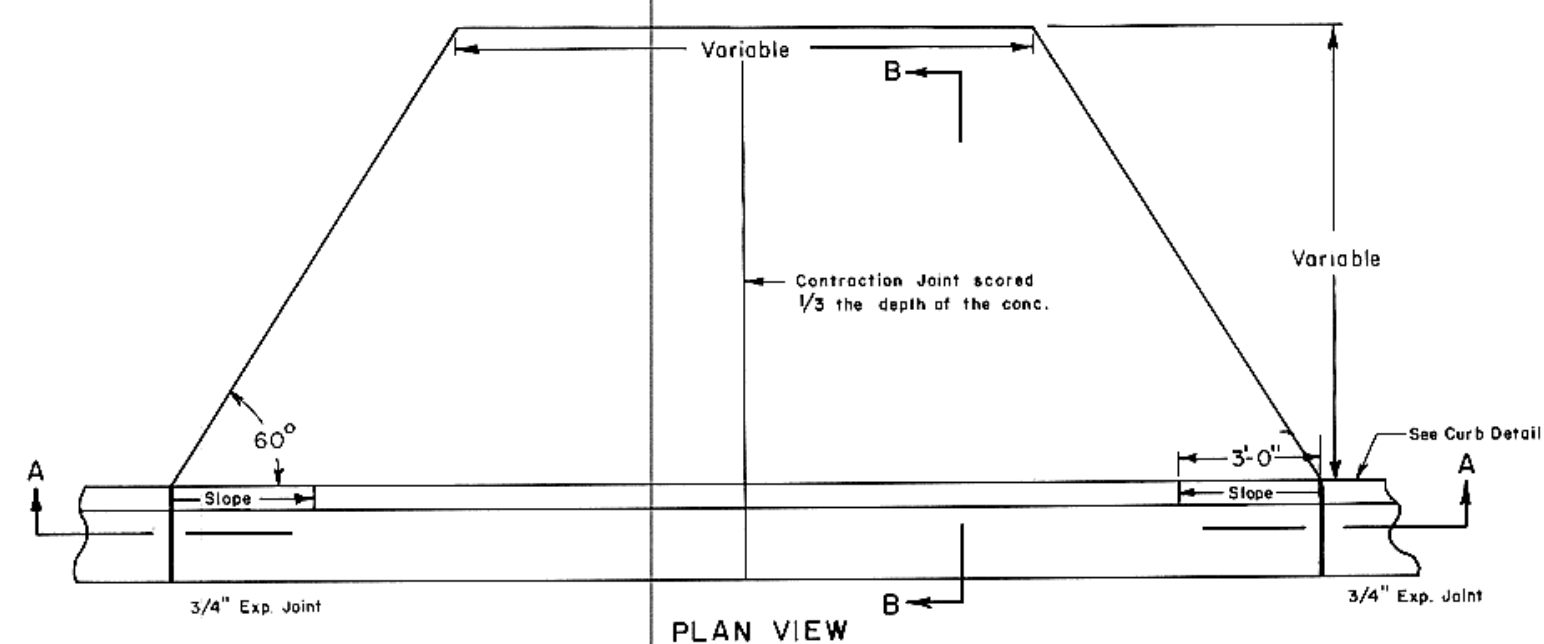


SCALE 1" = 2'-0"
TYPICAL CURB AND GUTTER DETAIL

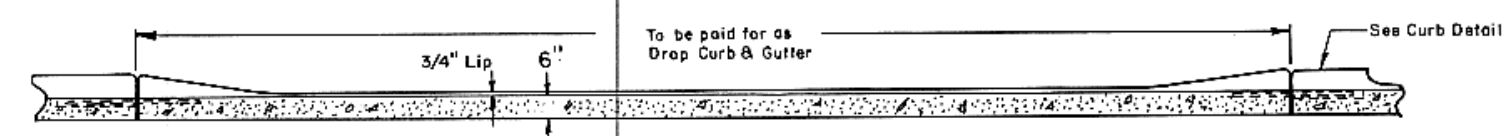


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TYPICAL HEADER CURB DETAIL

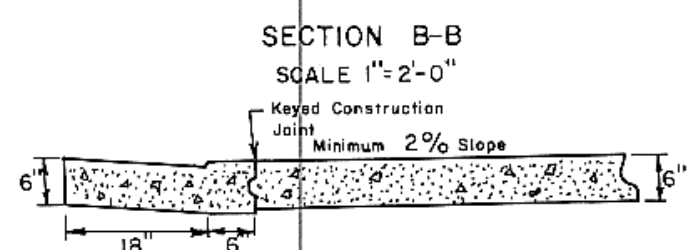
TYPICAL DROP CURB & DRIVEWAY DETAIL
SCALE 1" = 4'-0"



PLAN VIEW



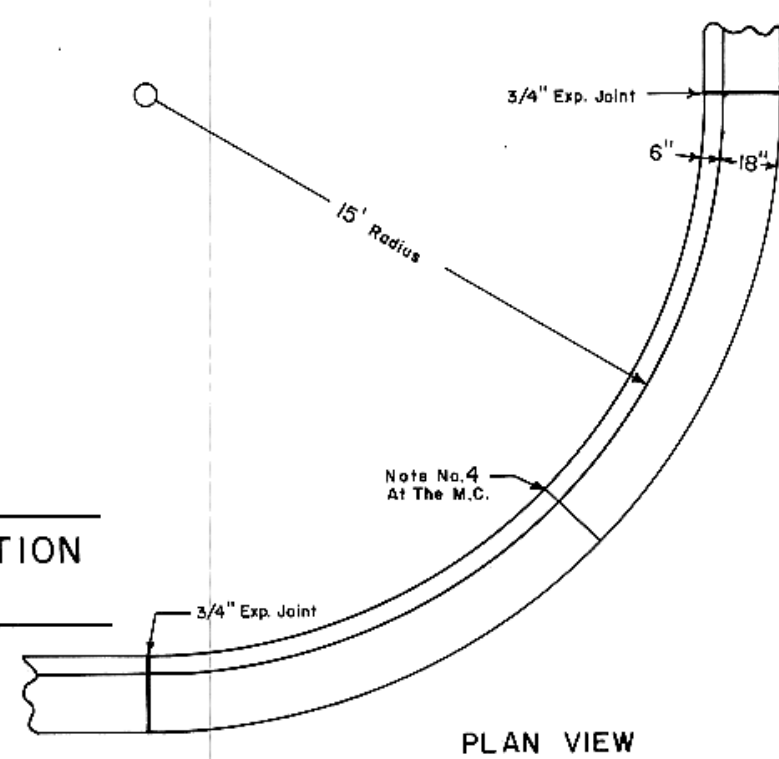
SECTION A-A



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

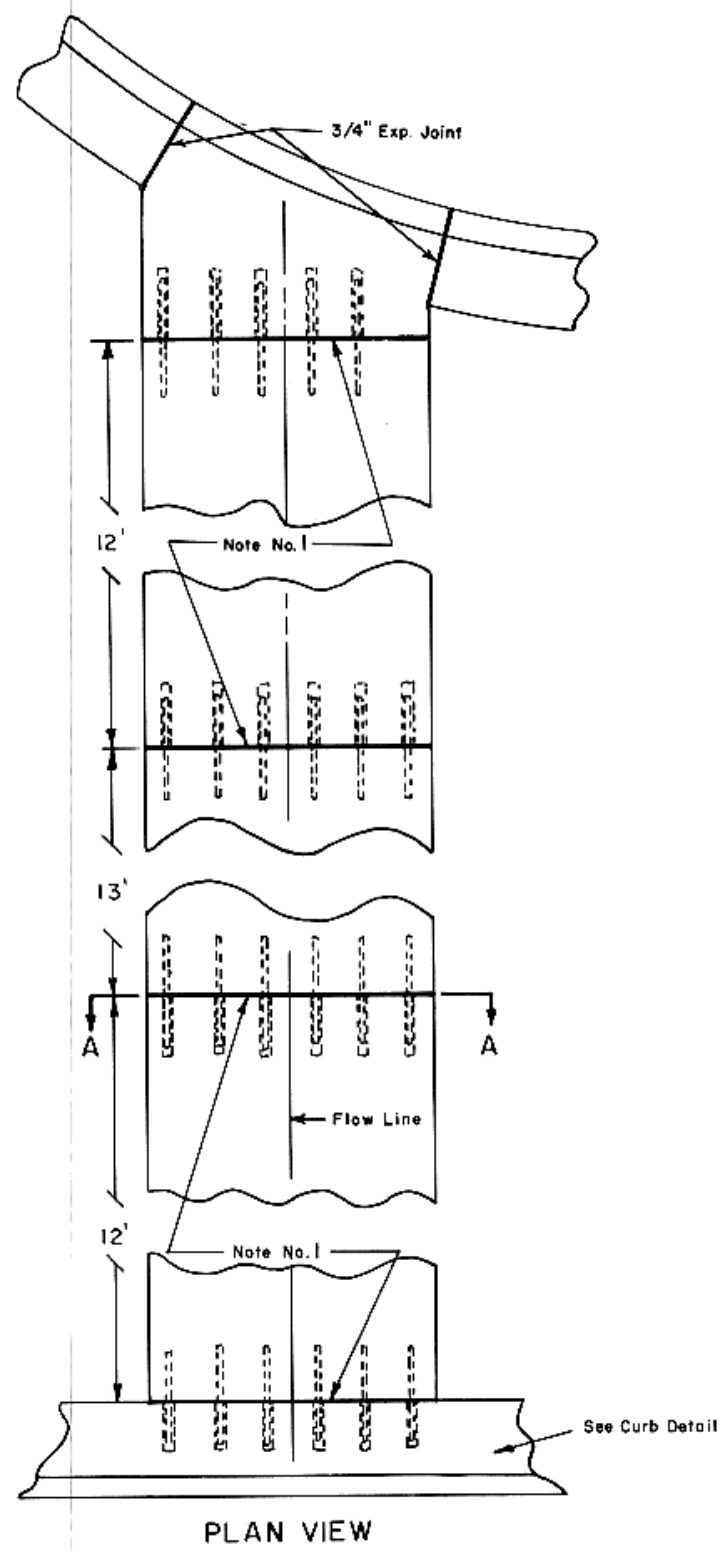
NOTES

- 3/4" expansion joint with 3/4" X 24" smooth dowels and 16" paper tubes. Dowels shall be greased the full length. All paper tubes shall be plugged or crimped on open end. All joints shall be sealed.
- Maximum distance between expansion joints shall not exceed 50'.
- Dowels shall be supported by an approved support made of No. 7 AWG wire.
- Contraction joints shall be scored to a depth of 1 1/2" and shall be placed at 5' intervals along the curb and gutter.
- Minimum separation between adjacent reinforcing shall be 1".
- Outlet detail shown is for the structure to be constructed on the south side of the approach. The structure to be constructed on the north side will have a channel width and depth of half that shown. Rebar in the channel bed shall be spaced at 18" intervals and shall be placed 3" from above channel bed in the side walls.
- Standard Two Cable Guard Rail shall be installed where shown and shall conform to North Dakota State Highway Department Specifications, Standard Detail No. D-722-10.

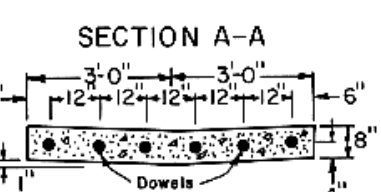


TYPICAL INTERSECTION CURVE DETAIL
SCALE 1" = 5'-0"

TYPICAL VALLEY GUTTER DETAIL
SCALE 1" = 4'-0"



PLAN VIEW

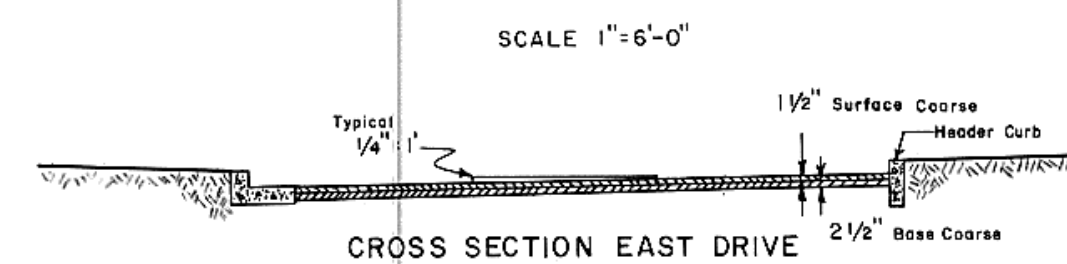


SECTION A-A

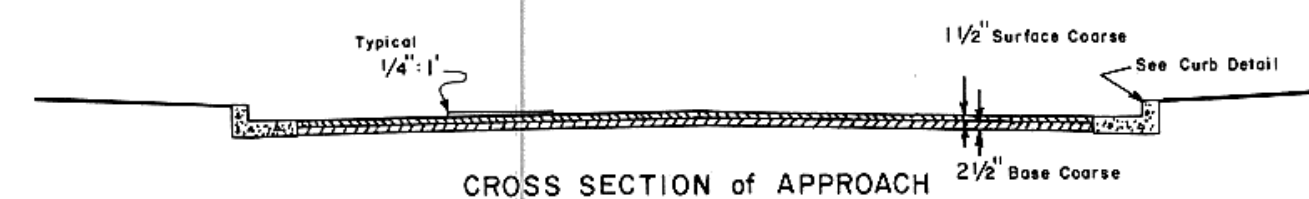
TOTAL QUANTITIES

EMBANKMENT QUANTITY	2361 cu.yd.
EXCAVATION QUANTITY	19,598 cu.yd.
CURB & GUTTER QUANTITY	9327 LF
OUTLET STRUCTURES QUANTITY	1 LUMP SUM
DROP CURB QUANTITY	216 LF
DRIVEWAY QUANTITY	2160 sq.ft.
HEADER CURB QUANTITY	1030 LF
ASPHALT	
2 1/2" BASE COARSE BITUMINOUS MIXTURE QUANTITY	2505 tons
ASPHALT CEMENT QUANTITY	30,056 gals
1/2" SURFACE COARSE BITUMINOUS MIXTURE QUANTITY	1610 tons
ASPHALT CEMENT QUANTITY	24,160 gals
TACK COAT QUANTITY	1950 gals
SEALER	
OIL QUANTITY	6433 gals
AGGREGATE QUANTITY	292 tons

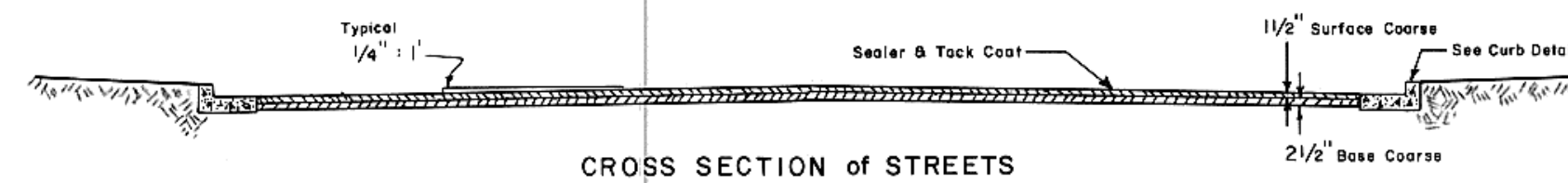
TYPICAL PAVING DETAILS



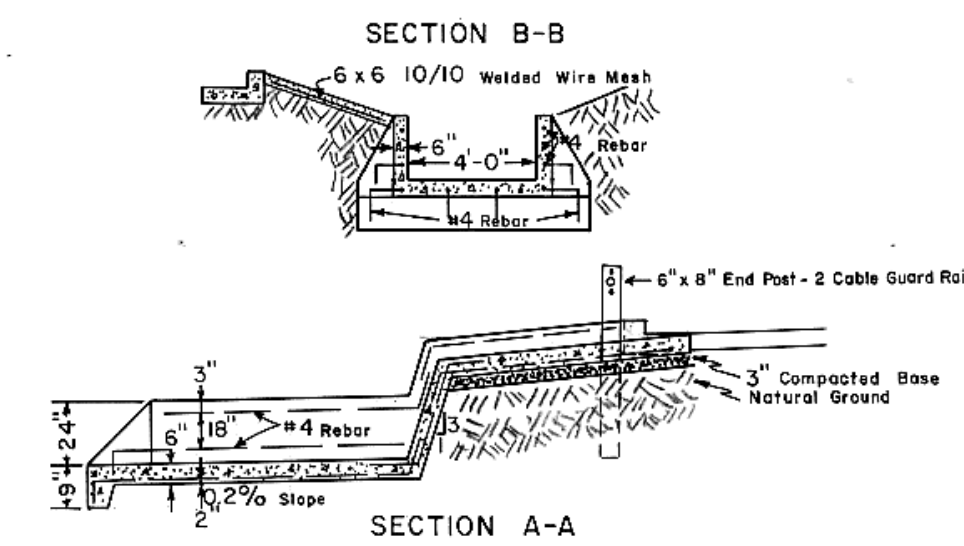
CROSS SECTION EAST DRIVE



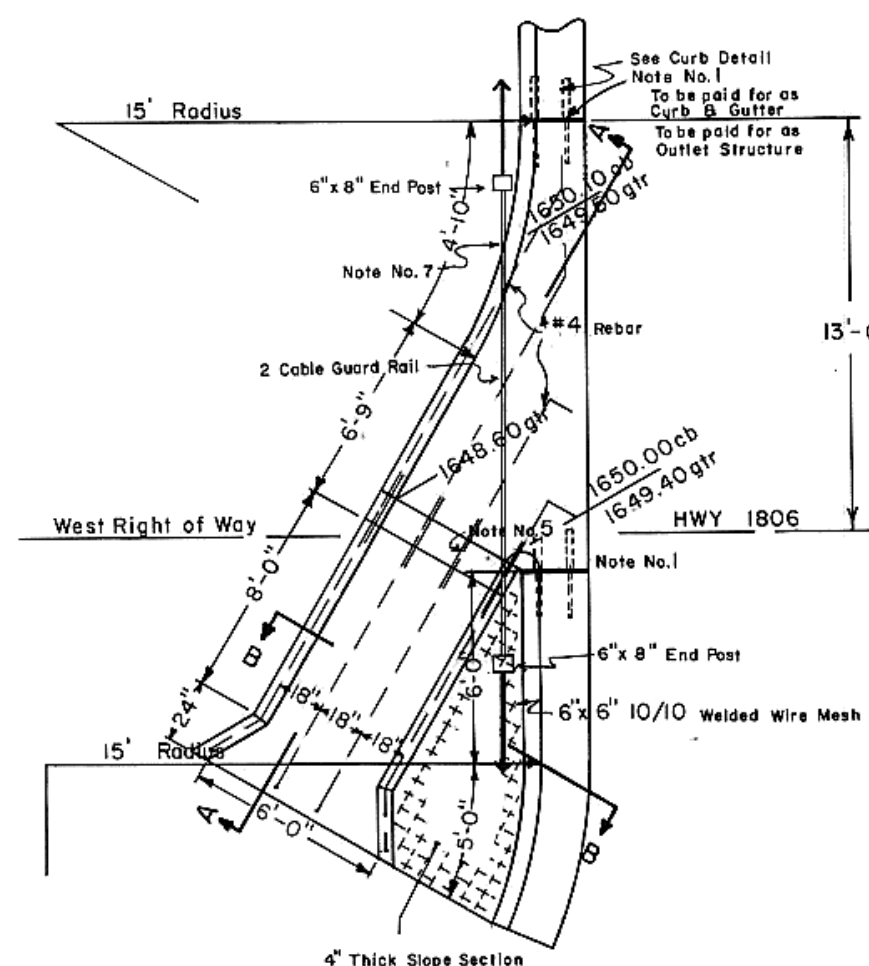
CROSS SECTION OF APPROACH



CROSS SECTION OF STREETS



SECTION A-A



TYPICAL OUTLET STRUCTURE DETAIL
SCALE 1" = 6'-0"

RIPEL'S SECOND SUBDIVISION

DETAILS & QUANTITIES
STREET IMPROVEMENT

FEBRUARY, 1977

SCALE AS SHOWN

PREPARED BY
SWENSON, HAGEN & CO.

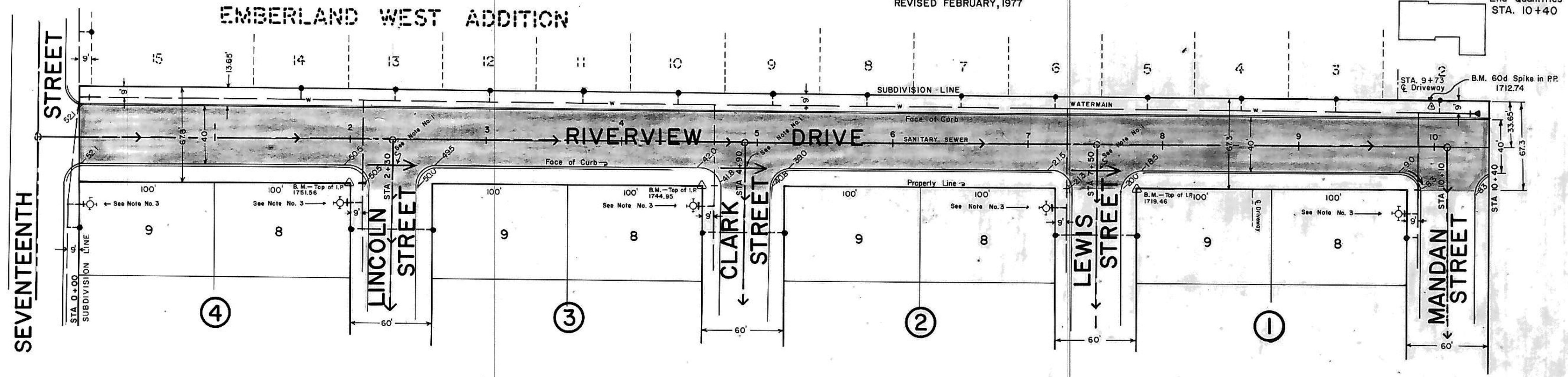
DATE: _____ BY: _____
 SURVEYED: _____ PLOTTED: _____
 NOTE BOOK: _____ ALIGNED: _____
 No. _____ RE-DRAWN: _____

DATE: _____ BY: _____
 SURVEYED: _____ PLOTTED: _____
 NOTE BOOK: _____ ALIGNED: _____
 No. _____ RE-DRAWN: _____

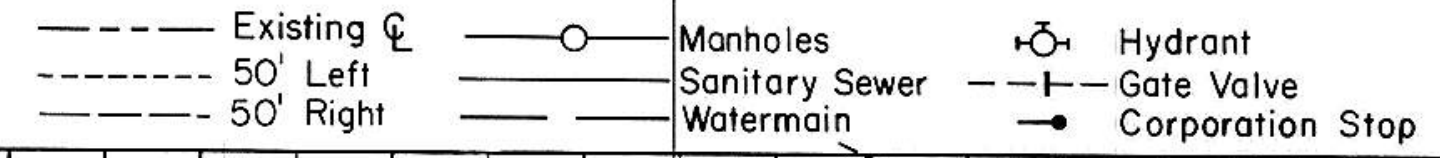
Begin Quantities
 STA. 0+02

SCALE 1" = 50'
 DATE: NOVEMBER, 1976
 REVISED FEBRUARY, 1977

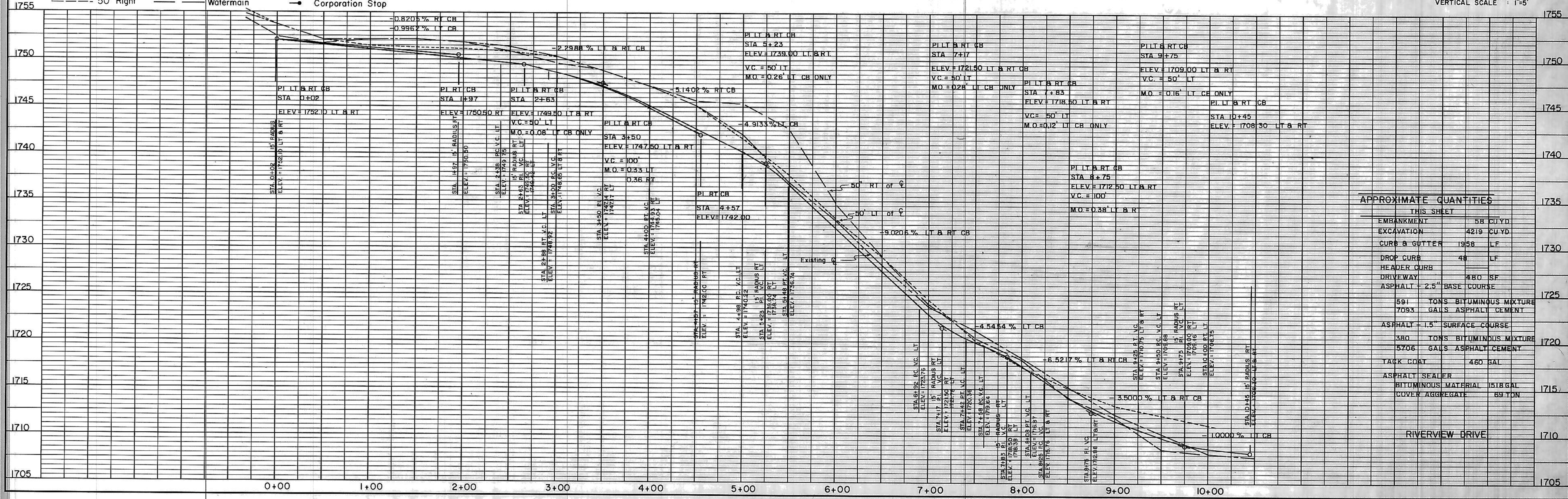
End Quantities
 STA. 10+40



- NOTES**
1. Depress crown to allow drainage to flow across intersection as indicated. Also tip gutter section to allow storm water to flow across intersection.
 2. All curb & gutter radii are 15' to face of curb unless otherwise noted.
 3. Water & Sewer as per plans by TOMAN ENG.
 4. Sanitary Sewer is existing.
 5. Watermain is proposed; not existing as per date of plans.
 6. Engineer shall verify location of drop curb prior to construction.
 7. Proposed grades are to top of curb.



HORIZONTAL SCALE: 1" = 50'
 VERTICAL SCALE: 1" = 5'

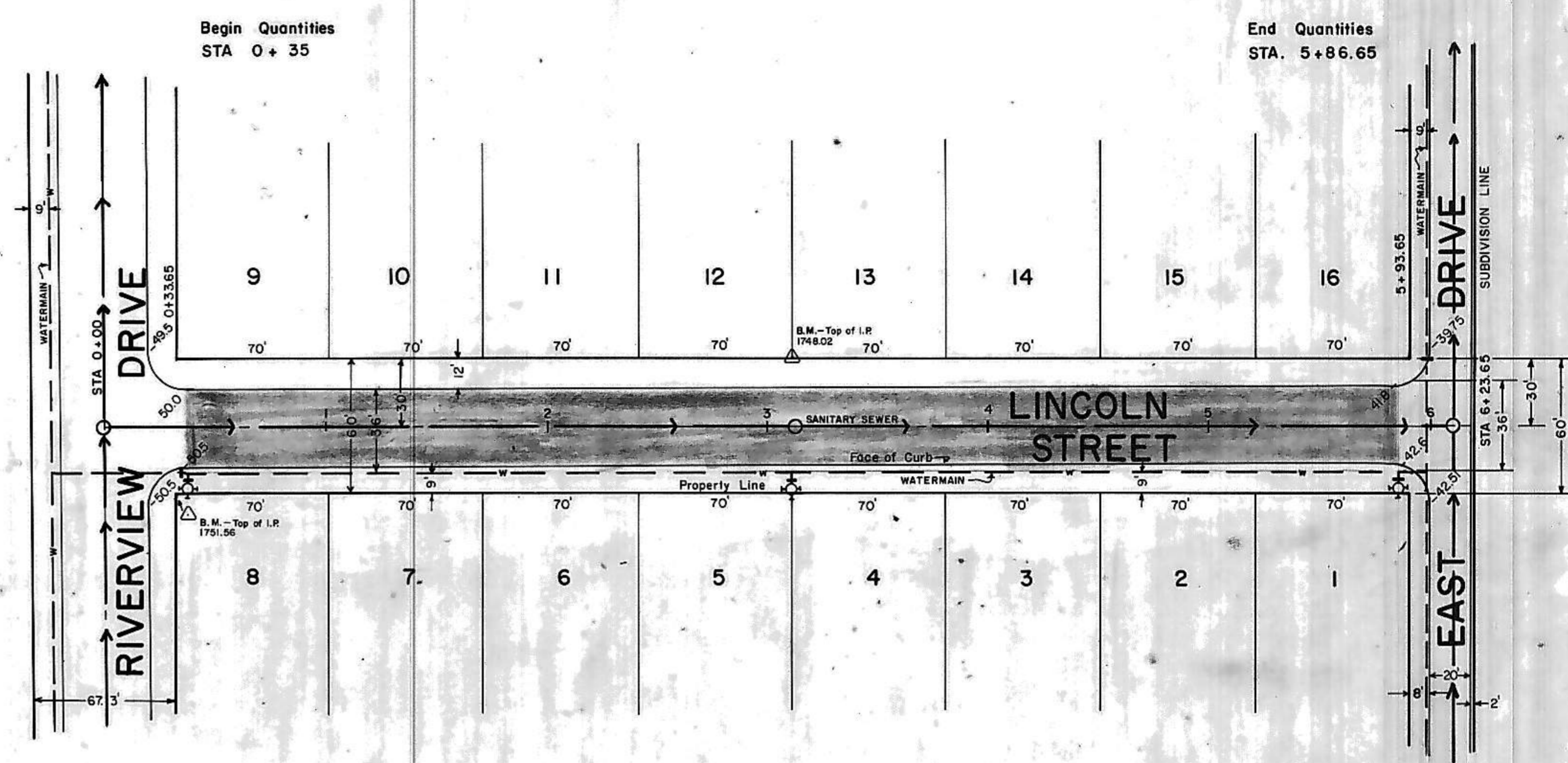
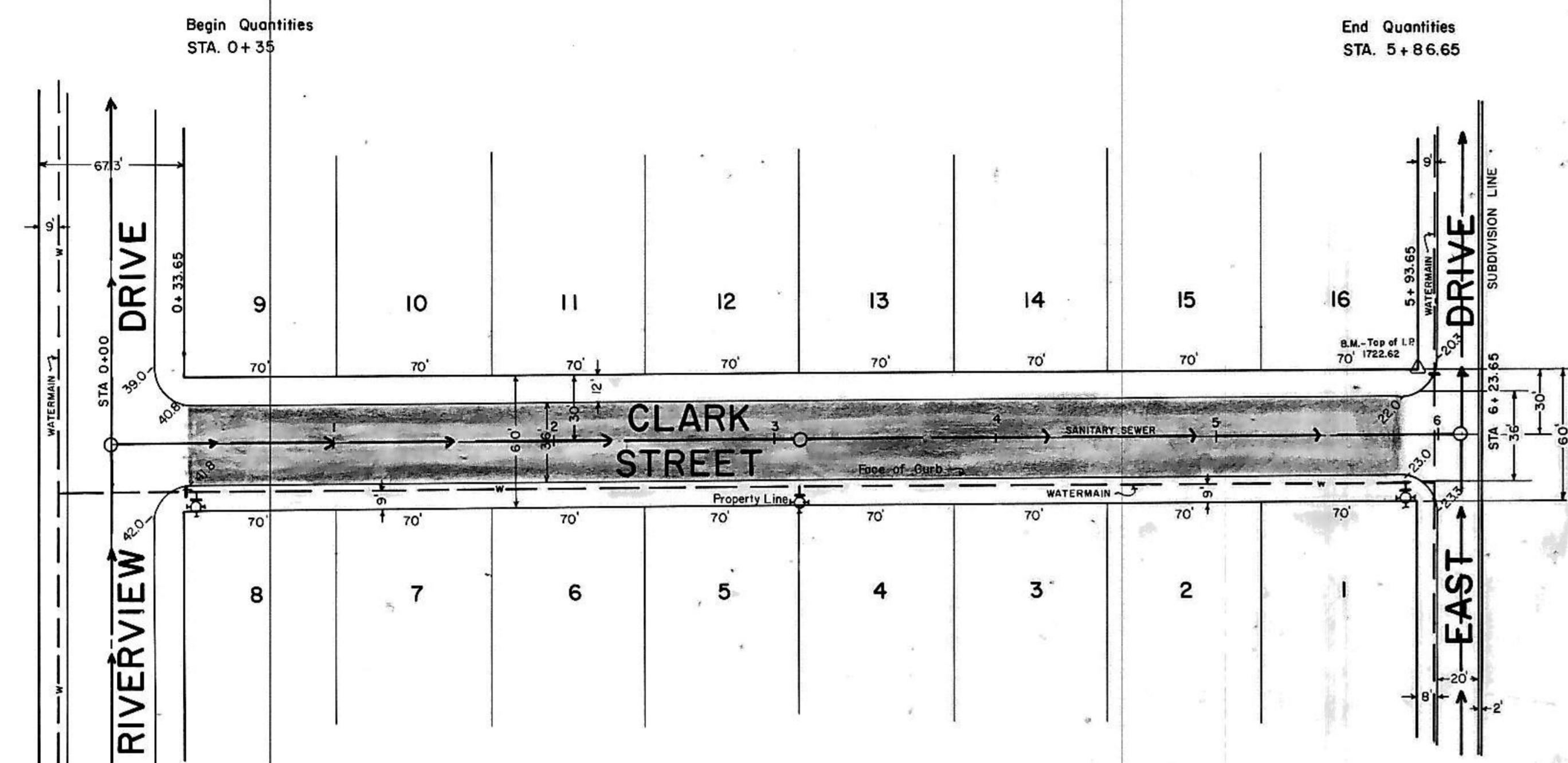


APPROXIMATE QUANTITIES
 THIS SHEET

EMPAVMENT	58 CU YD
EXCAVATION	4219 CU YD
CURB & GUTTER	1958 LF
DROP CURB	48 LF
HEADER CURB	480 SF
DRIVEWAY	480 SF
ASPHALT - 2.5" BASE COURSE	591 TONS BITUMINOUS MIXTURE 7093 GALS ASPHALT CEMENT
ASPHALT - 1.5" SURFACE COURSE	380 TONS BITUMINOUS MIXTURE 5706 GALS ASPHALT CEMENT
TACK COAT	460 GAL
ASPHALT SEALER	BITUMINOUS MATERIAL 1518 GAL COVER AGGREGATE 69 TON

DATE: _____ BY: _____
 SURVEYED: _____
 PLANNED: _____
 NOTE BOOK: _____
 NO. _____

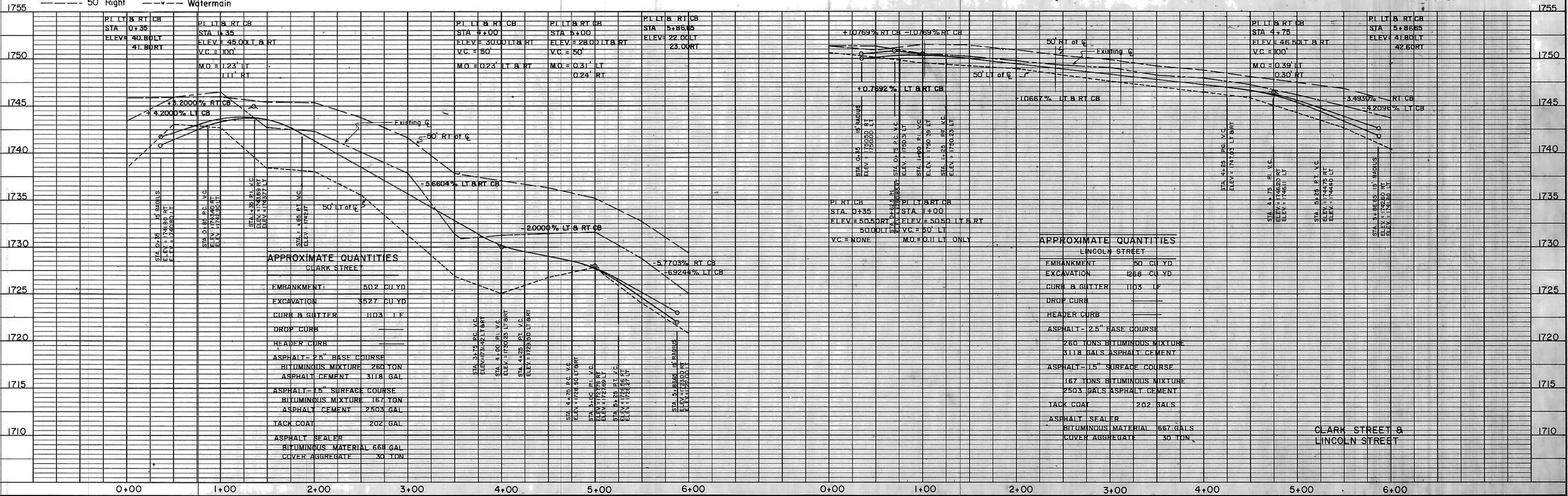
DATE: _____ BY: _____
 SURVEYED: _____
 PLANNED: _____
 NOTE BOOK: _____
 NO. _____



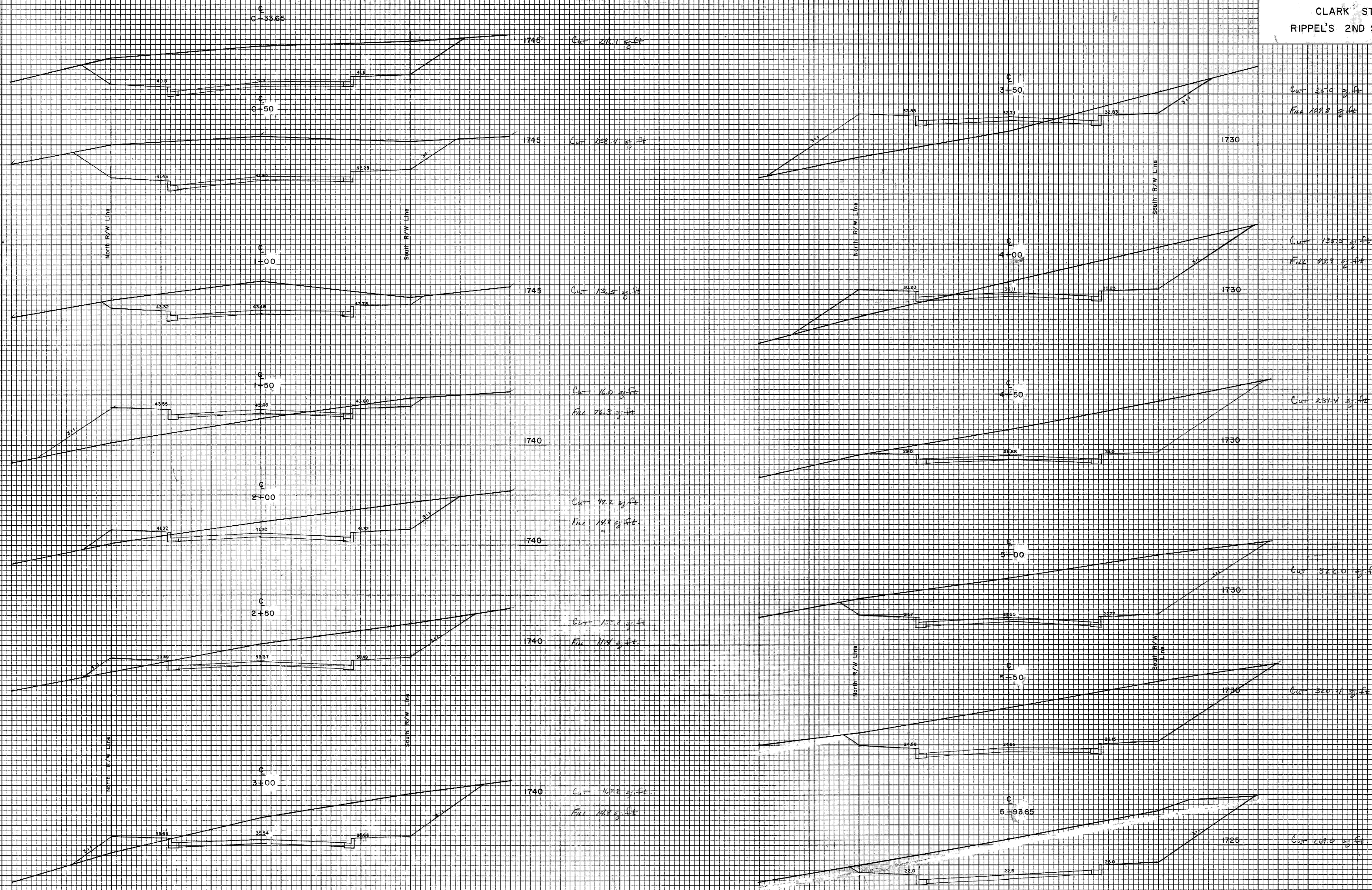
Existing ϕ ————
 50' Left ————
 50' Right ————
 Manhole \circ ————
 Sanitary sewer ————
 Watermain ————
 Hydrant \odot ————
 Gate Valve ————

NOTES
 1. All curb & gutter radii are 15' at face of curb unless otherwise noted.
 2. Water & sewer as per plans by TOMAN ENGINEERING.
 3. Sanitary sewer is existing.
 4. Watermain is proposed, not existing as of date of plans.
 5. Proposed grades are to top of curb.

HORIZONTAL SCALE: 1"=50'
 VERTICAL SCALE: 1"=5'



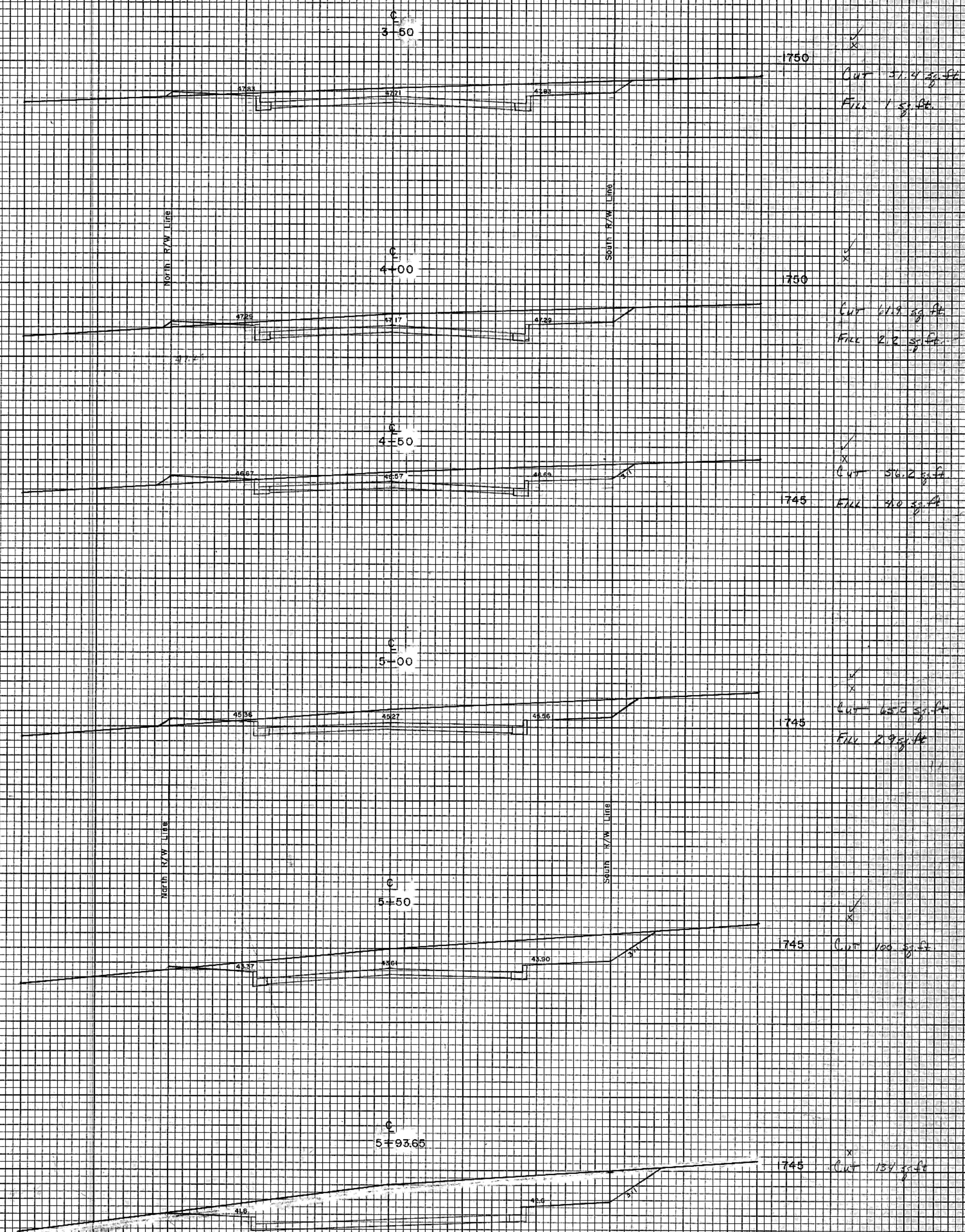
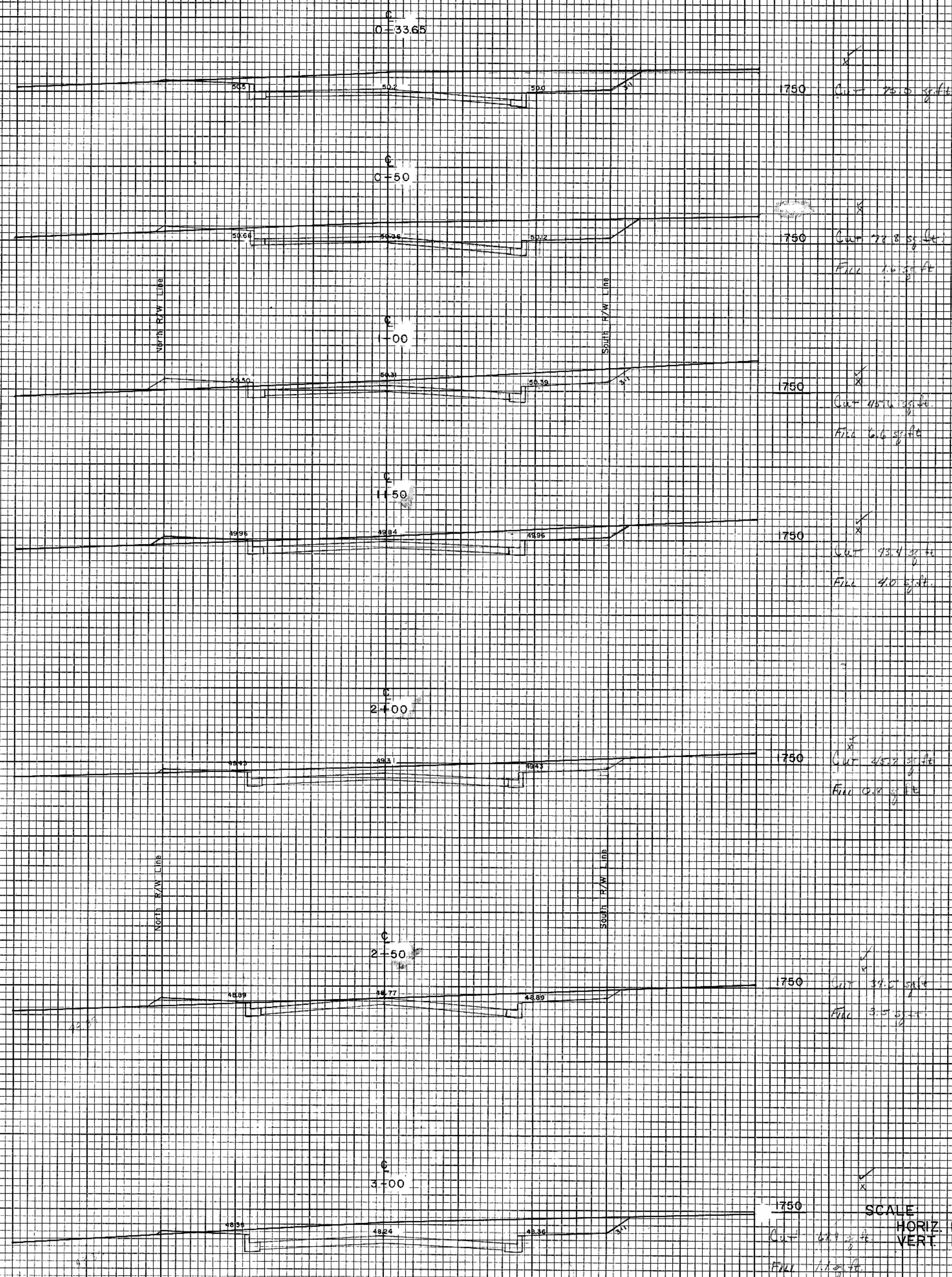
CLARK STREET
RIPPEL'S 2ND SUBDIVISION



SCALE:
HORIZ. 1" = 10'
VERT. 1" = 5'

JHR

LINCOLN STREET
RIPPEL'S 2ND SUBDIVISION

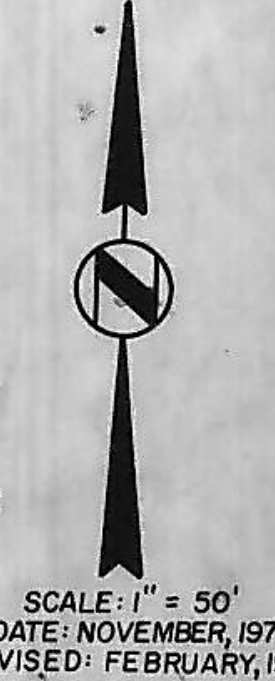
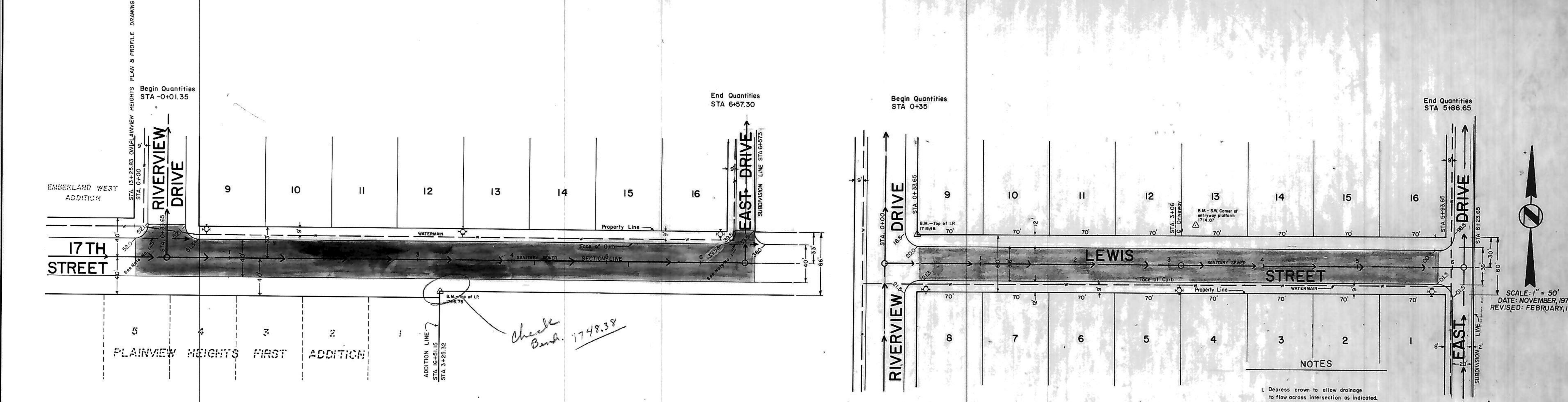


SCALE
HORIZ. 1" = 10'
VERT. 1" = 5'
1 in. = 50 ft

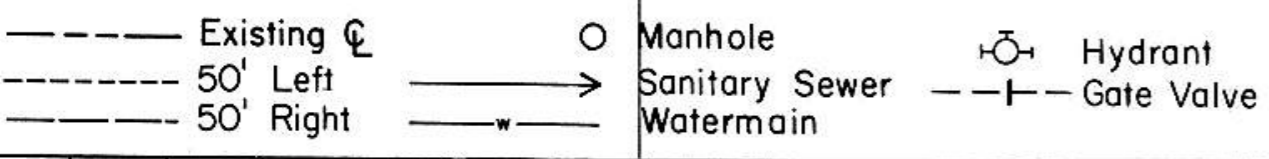
NO. AREAS CHECKED

NO. AREAS CHECKED

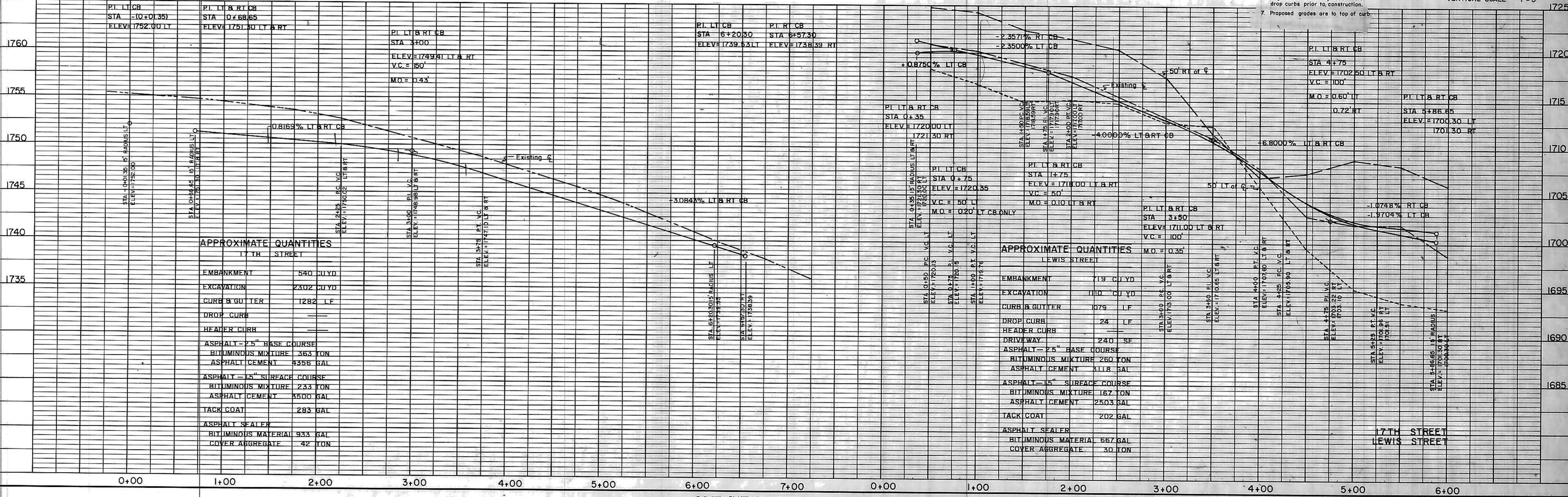
PLAN	DATE
BY	
CHECKED	
NO.	



- NOTES
1. Depress crown to allow drainage to flow across intersection as indicated. Also tip gutter section to allow storm water to flow across intersection.
 2. All curb and gutter radii are 15 feet at face of curb unless otherwise stated.
 3. Water & Sewer as per plans by TOMAN ENG.
 4. Sanitary Sewer is existing.
 5. Watermain is proposed, not existing as of date of plans.
 6. Engineer shall verify locations of drop curbs prior to construction.
 7. Proposed grades are to top of curb.

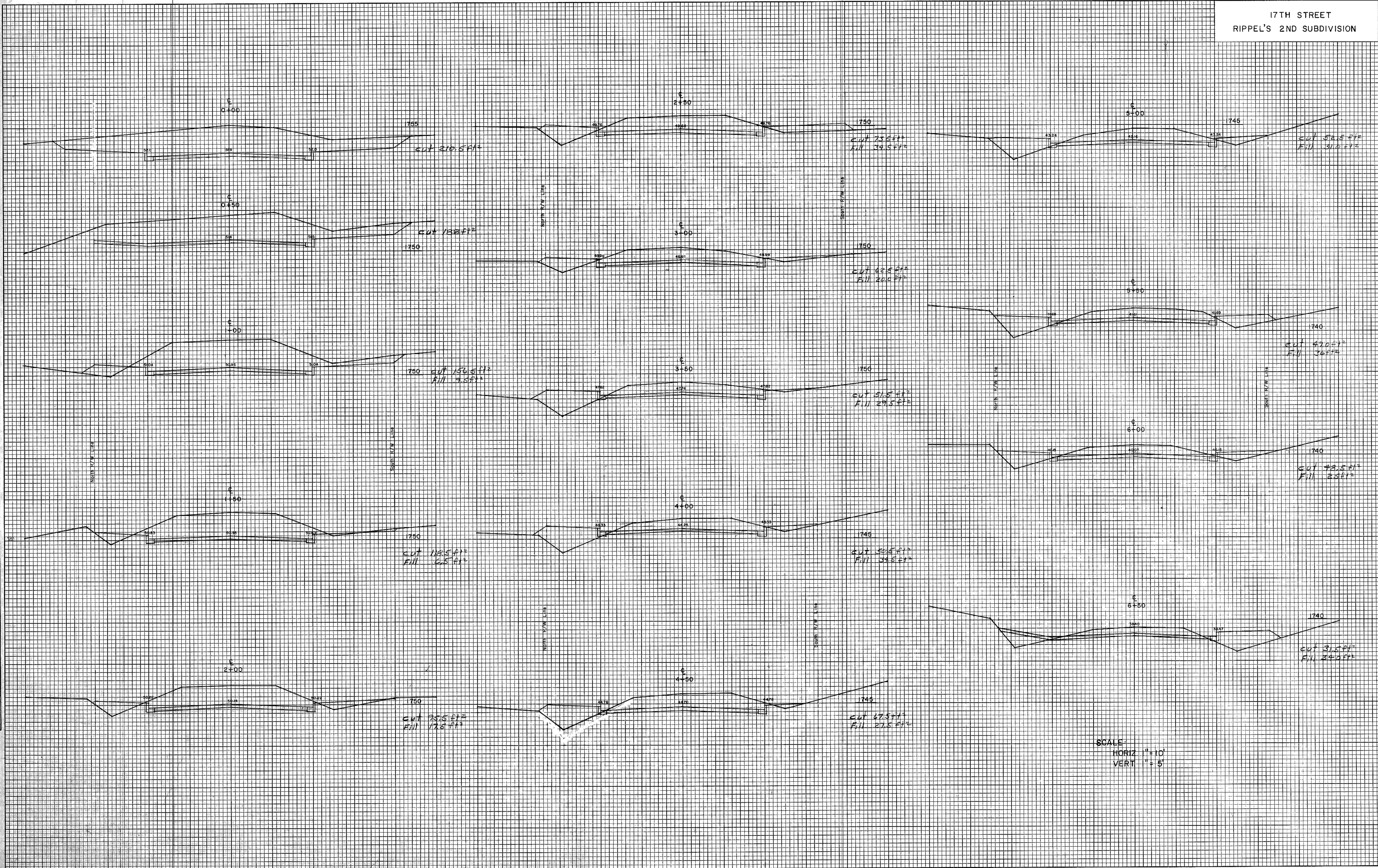


PROFILE	DATE
BY	
CHECKED	
NO.	



FINAL SURVEY
NOTE BOOK NO. _____
SURVEYED, PLOTTED, AREAS CHECKED
TEMPLATE AREAS CHECKED
BY _____ DATE _____

ORIGINAL SURVEY
NOTE BOOK NO. _____
SURVEYED, PLOTTED, AREAS CHECKED
TEMPLATE AREAS CHECKED
BY _____ DATE _____



SCALE
HORIZ. " = 10'
VERT. " = 5'

LEWIS STREET
RIPPEL'S 2ND SUBDIVISION

FINAL SURVEYED
SURVEY PLOTTED
NOTE BOOK
NO. _____

BY _____ DATE _____

SURVEYED PLOTTED
NOTE BOOK
NO. _____

BY _____ DATE _____

AREAS CHECKED

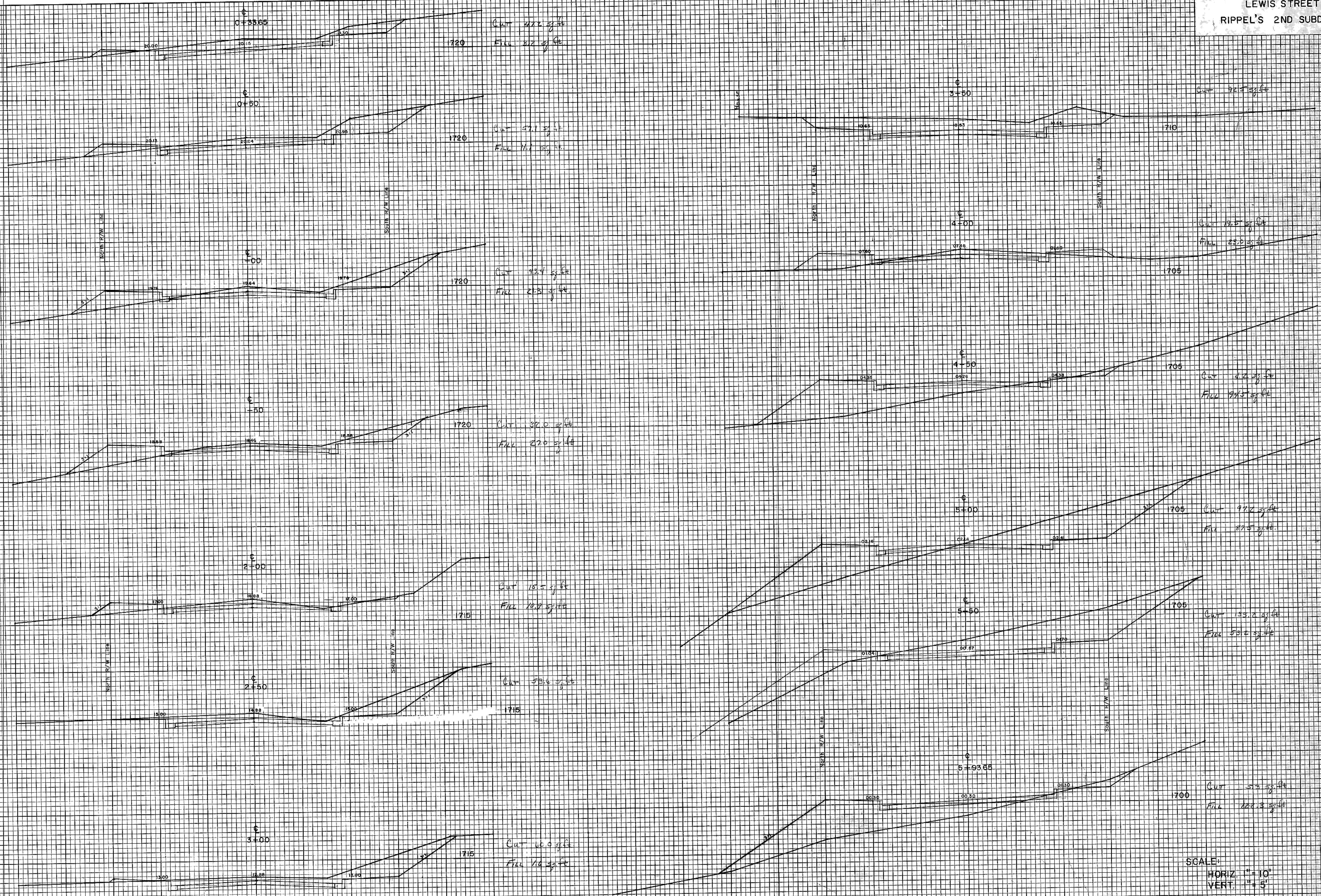
ORIGINAL SURVEY
PLOTTED
NOTE BOOK
NO. _____

BY _____ DATE _____

SURVEYED PLOTTED
NOTE BOOK
NO. _____

BY _____ DATE _____

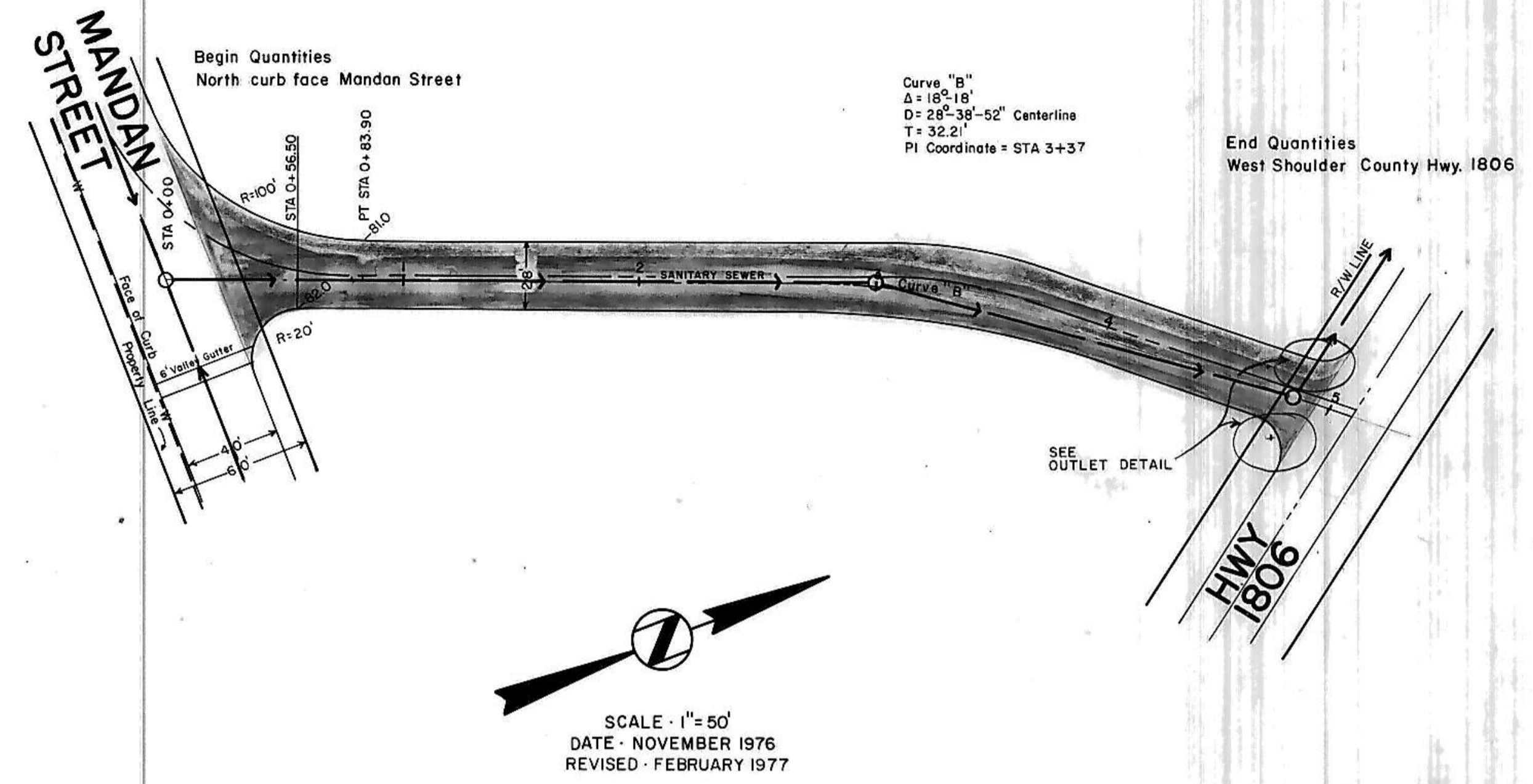
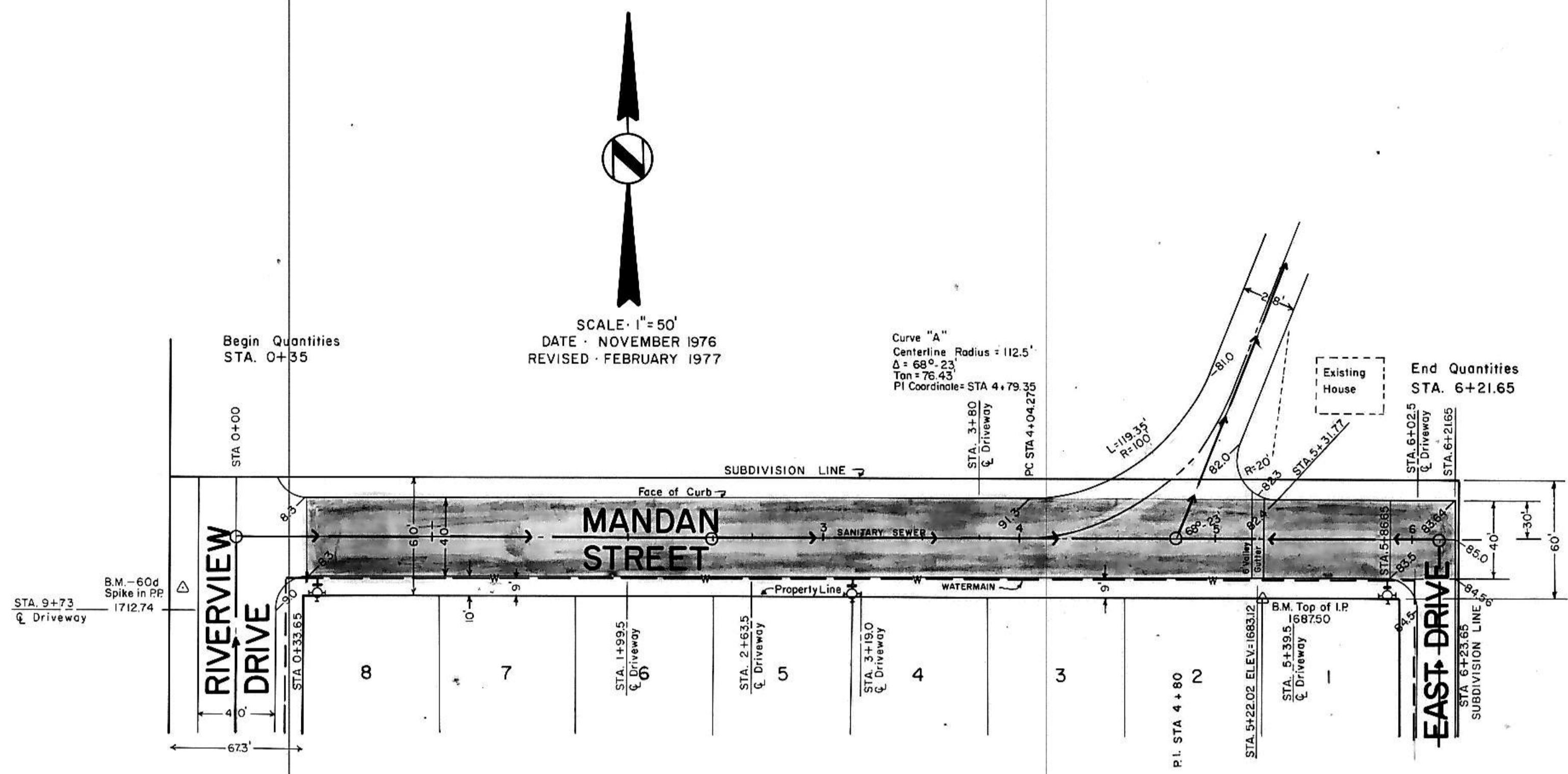
AREAS CHECKED



SCALE:
HORIZ. 1" = 10'
VERT. 1" = 5'

DATE: _____ BY: _____
 SURVISED: _____
 NOTE BOOK: _____
 NO. _____

DATE: _____ BY: _____
 SURVISED: _____
 NOTE BOOK: _____
 NO. _____

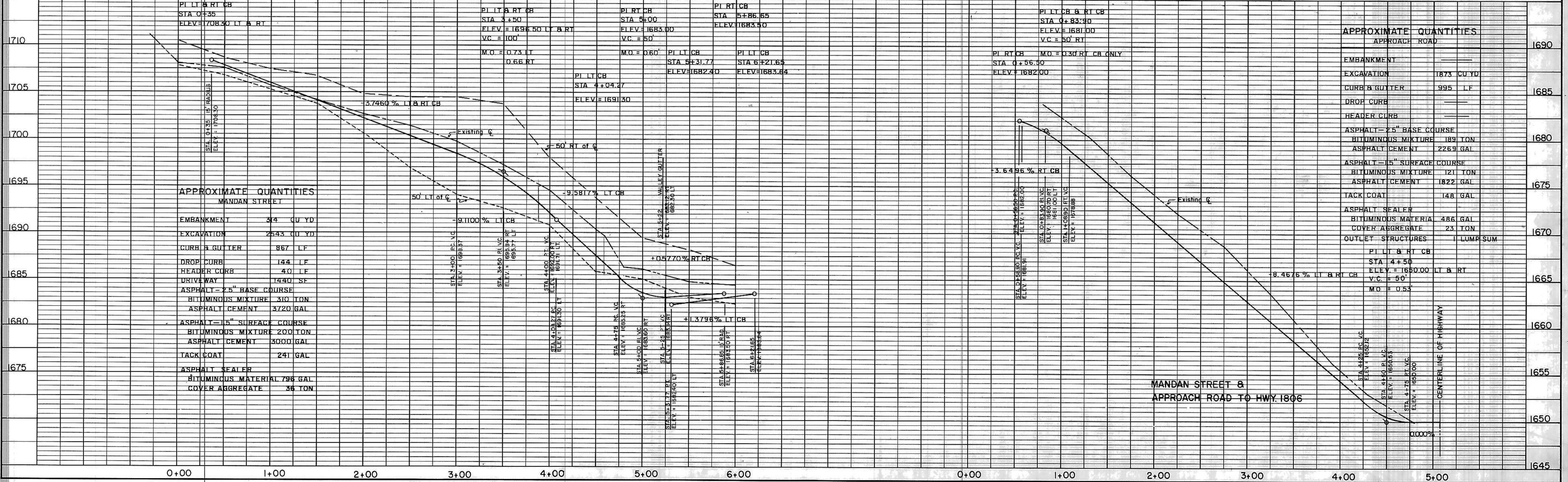


NOTES

- All curb & gutter radii are 15' at face of curb unless otherwise noted.
- Water & sewer as per plans by TOMAN ENGINEERING.
- Sanitary sewer is existing.
- Watermain is proposed, not existing as of date of plans.
- Engineer shall verify location of drop curb prior to construction.
- Proposed grades are to top of curb.

HORIZONTAL SCALE: 1" = 50'
 VERTICAL SCALE: 1" = 5'

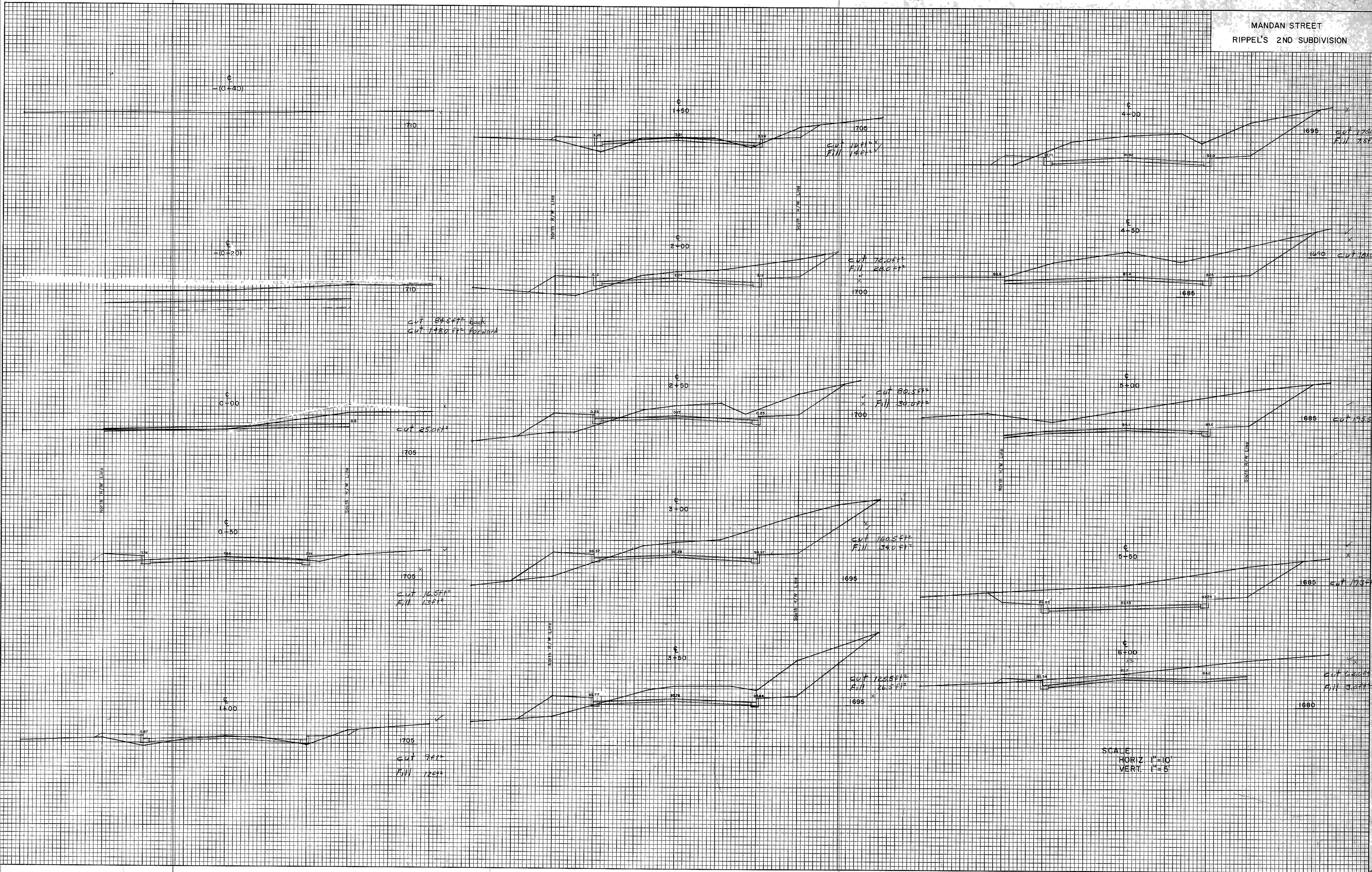
--- Existing C ○ Manhole ⊕ Hydrant
 - - - 50' Left → Sanitary Sewermain - - - Gate Valve
 - - - 50' Right - - - Watermain



MANDAN STREET
RIPPEL'S 2ND SUBDIVISION

DATE _____ BY _____
 ORIGINAL SURVEY SURVEYED _____
 PLOTTED _____
 NOTE BOOK _____
 TEMPLATE _____
 AREAS CHECKED _____
 NO. _____

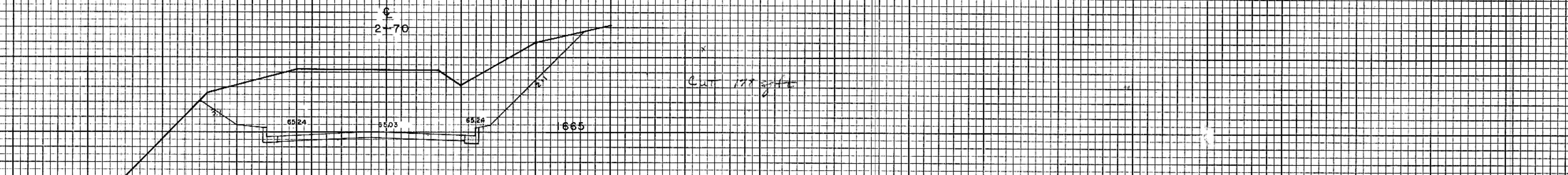
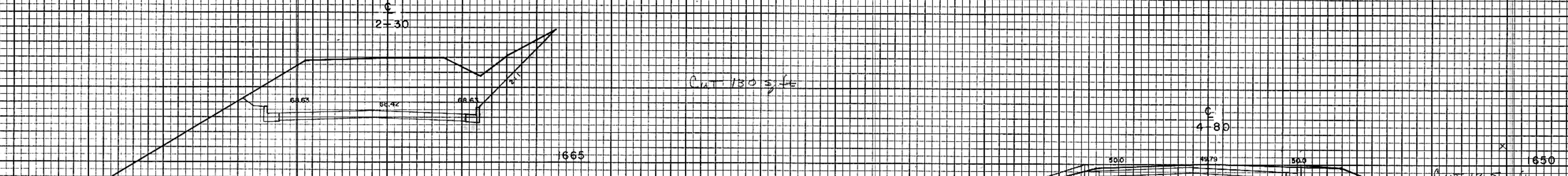
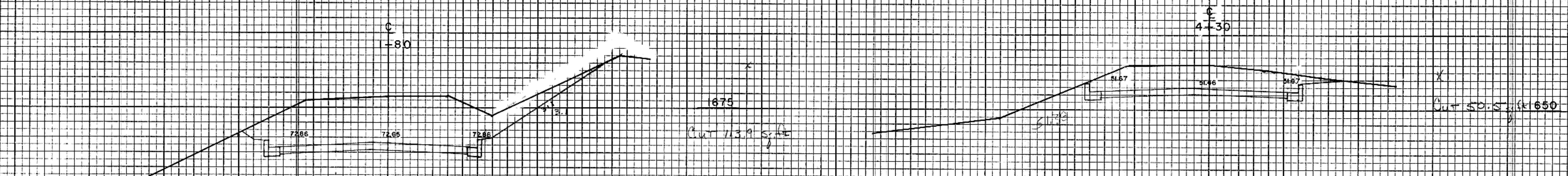
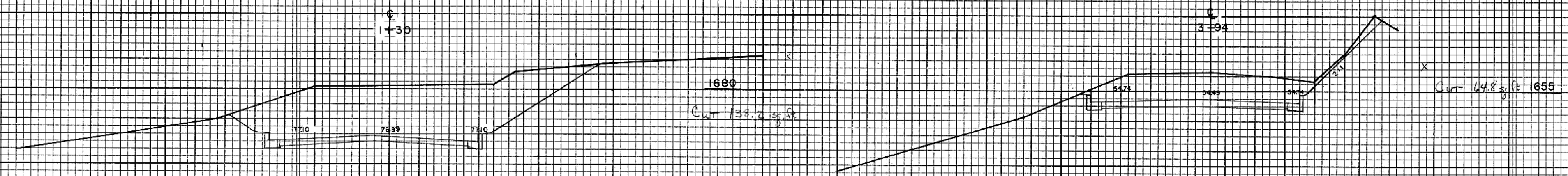
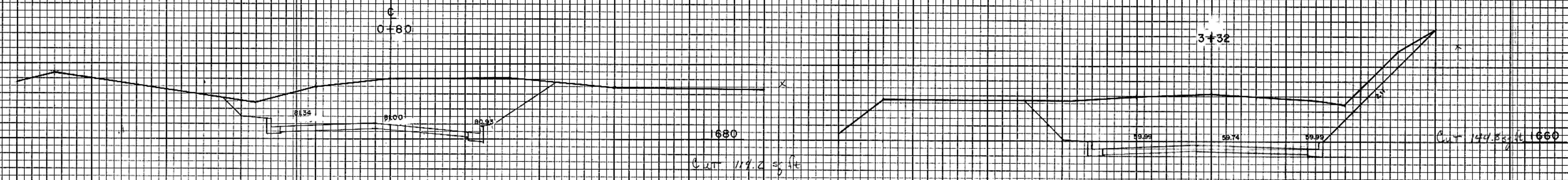
DATE _____ BY _____
 ORIGINAL SURVEY SURVEYED _____
 PLOTTED _____
 NOTE BOOK _____
 TEMPLATE _____
 AREAS CHECKED _____
 NO. _____



SCALE
 HORIZ. 1"=10'
 VERT. 1"=5'

FINAL SURVEY	DATE
NOTE BOOK NO.	BY
SURVEYED	DATE
TEMPLATE	BY
AREAS CHECKED	DATE
AREAS CHECKED	BY

ORIGINAL SURVEY	DATE
NOTE BOOK NO.	BY
SURVEYED	DATE
TEMPLATE	BY
AREAS CHECKED	DATE
AREAS CHECKED	BY



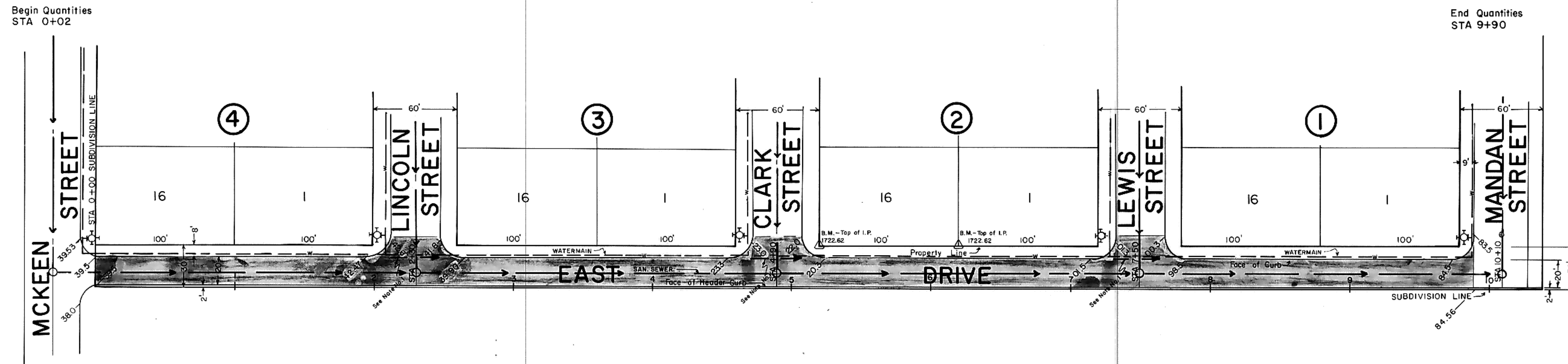
SCALE:
 HORIZ. 1" = 10'
 VERT. 1" = 5'

DATE: _____
 BY: _____
 SURVEYED: _____
 PLOTTED: _____
 NOTE BOOK: _____
 NO. _____

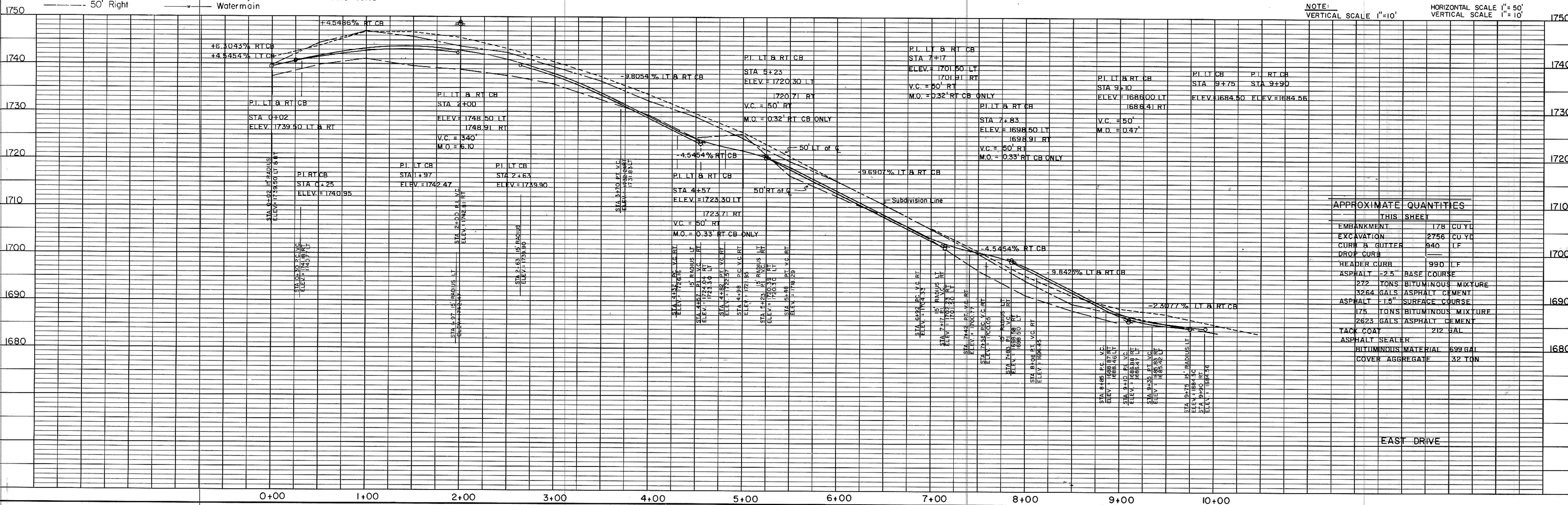
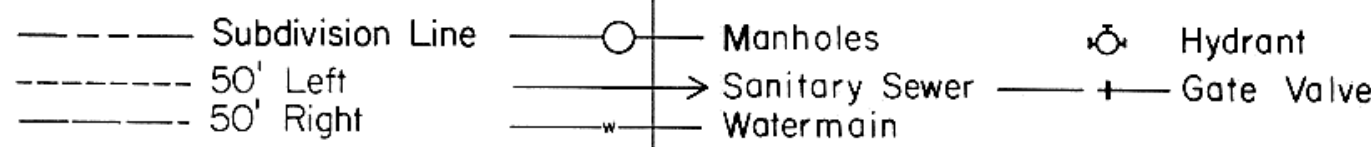
DATE: _____
 BY: _____
 SURVEYED: _____
 PLOTTED: _____
 NOTE BOOK: _____
 NO. _____



SCALE - 1" = 50'
 DATE - NOVEMBER 1976
 REVISED - FEBRUARY, 1977



- NOTES**
1. Depress crown to allow drainage to flow across intersection as indicated. Also 1/2" gutter section to allow storm water to flow across intersection.
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 5. Watermain is proposed; not existing as per date of plans.
 6. Proposed grades are to top of curb.



NOTE: VERTICAL SCALE 1"=10' HORIZONTAL SCALE 1"=50'

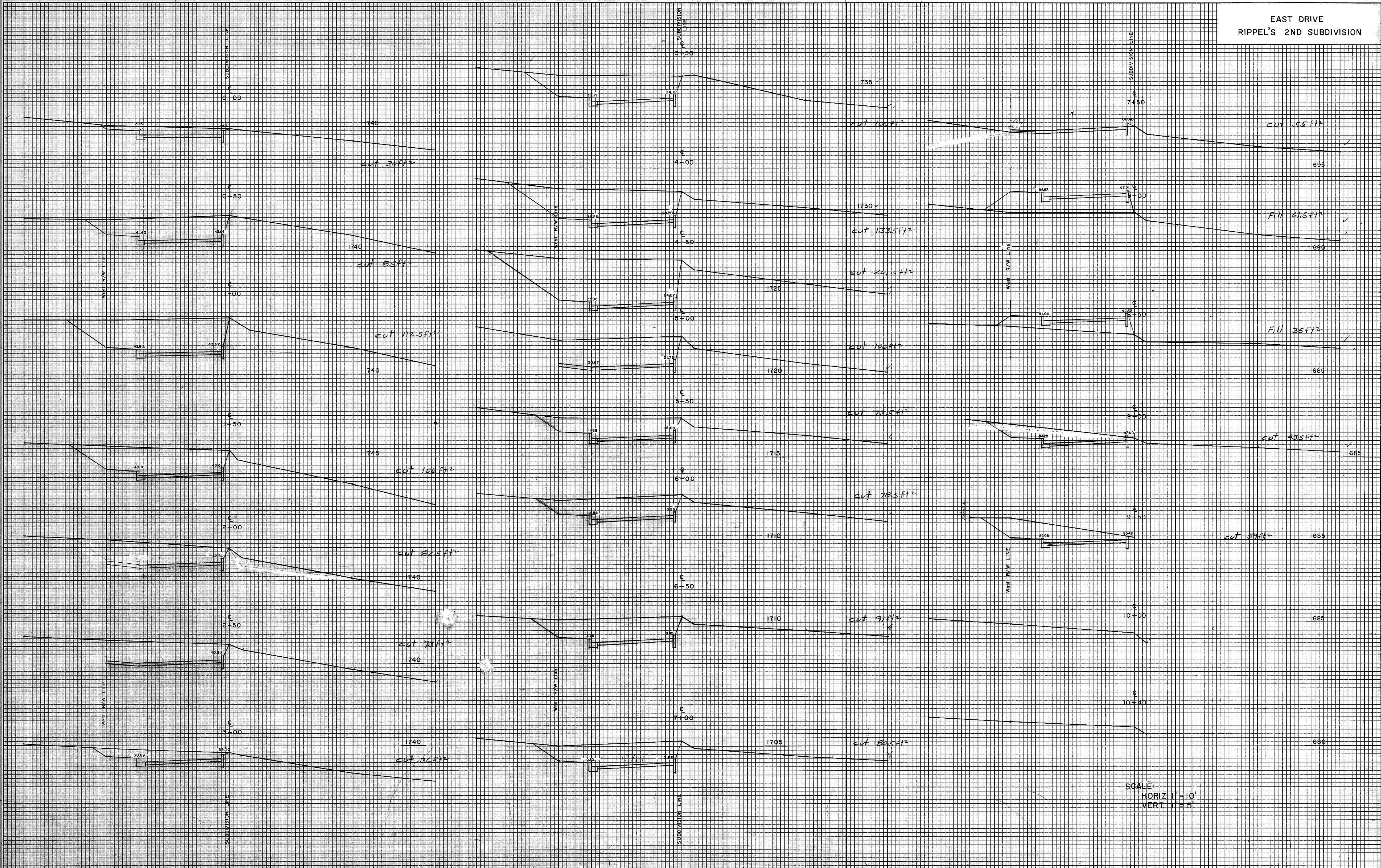
APPROXIMATE QUANTITIES

THIS SHEET	
EMBANKMENT	178 CU YD
EXCAVATION	2756 CU YD
CURB & GUTTER	940 LF
DROP CURB	
HEADER CURB	990 LF
ASPHALT - 2.5" BASE COURSE	272 TONS BITUMINOUS MIXTURE
	3264 GALS ASPHALT CEMENT
ASPHALT - 1.5" SURFACE COURSE	175 TONS BITUMINOUS MIXTURE
	2623 GALS ASPHALT CEMENT
TACK COAT	212 GAL
ASPHALT SEALER	
BITUMINOUS MATERIAL	599 GAL
COVER AGGREGATE	32 TON

EAST DRIVE
RIPPSEL'S 2ND SUBDIVISION

FINAL SURVEY
SURVEYED
NOTE BOOK
NO. _____
BY _____ DATE _____
PLOTTED
TEMPLATE
AREAS CHECKED

ORIGINAL SURVEY
SURVEYED
NOTE BOOK
NO. _____
BY _____ DATE _____
PLOTTED
TEMPLATE
AREAS CHECKED



SCALE:
HORIZ 1" = 10'
VERT 1" = 5'