

PLAN SYMBOLS

COUNTY LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
NEW RIGHT OF WAY LINE
PRESENT RIGHT OF WAY LINE
CONTROL OF ACCESS LINE
PROPERTY LINE
VACATED PLATTED PROPERTY
CORPORATE OR CITY LIMITS
TRUNK HIGHWAY CENTER LINE
RETAINING WALL
RAILROAD

WATER LINE

WEAVER CORNER
DRAINAGE DITCH
DRAIN TILE
CULVERT
GUARD RAIL
BARBED WIRE FENCE
CHAIN LINK FENCE
STONE WALL OR FENCE
HEDGE
RAILROAD CROSSING SIGN

MARSH

TIMBER
ORCHARD
BRUSH
NURSERY

OVERPASS
UNDERPASS
BRIDGE

BUILDING
F FRAME
S STONE
B BRICK
C CONC.
T TILE
ST STUCCO

DECIDUOUS TREE
CONIFEROUS TREE
MONUMENT (STONE, CONC., OR METAL)
SMALL SIGN
SLOPE EASEMENT

UTILITY SYMBOLS

POWER POLE
TELEPHONE POLE
ANCHOR
STEEL TOWER
STREET LIGHT
PERISTAL TELEPHONE CABLE TERMINAL
SIGNAL WITH STREET LIGHT
GAS MAIN / WATER MAIN
WATER MAIN
CONDUIT
TELEPHONE CABLE IN CONDUIT
ELECTRIC CABLE IN CONDUIT
TELEPHONE MANHOLE
ELECTRIC MANHOLE
STORM MANHOLE
SANITARY MANHOLE
WATER & GAS MANHOLE
STEAM MANHOLE
HANDHOLE
INPLACE CATCH BASIN
PROPOSED CATCH BASIN
PARKING METER
FIRE HYDRANT
NEW SANITARY SEWER
NEW STORM SEWER
PVC PERFORATED PIPE
BURIED TELEPHONE CABLE
BURIED ELECTRIC CABLE
STORM SEWER
SANITARY SEWER
GAS MAIN
TELEVISION CABLE
EXTRA BRANCH
FURNISH & INSTALL
CUT OFF WATER AT MAIN
WATER & GAS MAIN JOINT
WATER & GAS BELL JOINT
WATER & GAS MECHANICAL JOINT
WATER & GAS TRANSITION COUPLING
COPPER WATER SERVICE
WATER & GAS VALVE (NEW)
WATER & GAS SHUTOFF VALVE
WATER REPLACEMENT & EXC.
FIELD CHECK

PROPOSED 4" CONCRETE WALK
PROPOSED 7" CONCRETE WALK

MANHOLE & CATCH BASIN INDEX

ICB 10 INPLACE CATCH BASIN
IMH 10 INPLACE DRAINAGE MANHOLE
TMH 10 INPLACE TELEPHONE MANHOLE
VWH 10 INPLACE WATER/GAS MANHOLE

PCB 10 PROPOSED CATCH BASIN
PMH 10 PROPOSED MANHOLE
TMH 10 PROPOSED TELEPHONE MANHOLE
VWH 10 PROPOSED WATER/GAS MANHOLE

MINNESOTA DEPARTMENT OF TRANSPORTATION

CITY OF DULUTH

DEPARTMENT OF PUBLIC WORKS AND UTILITIES

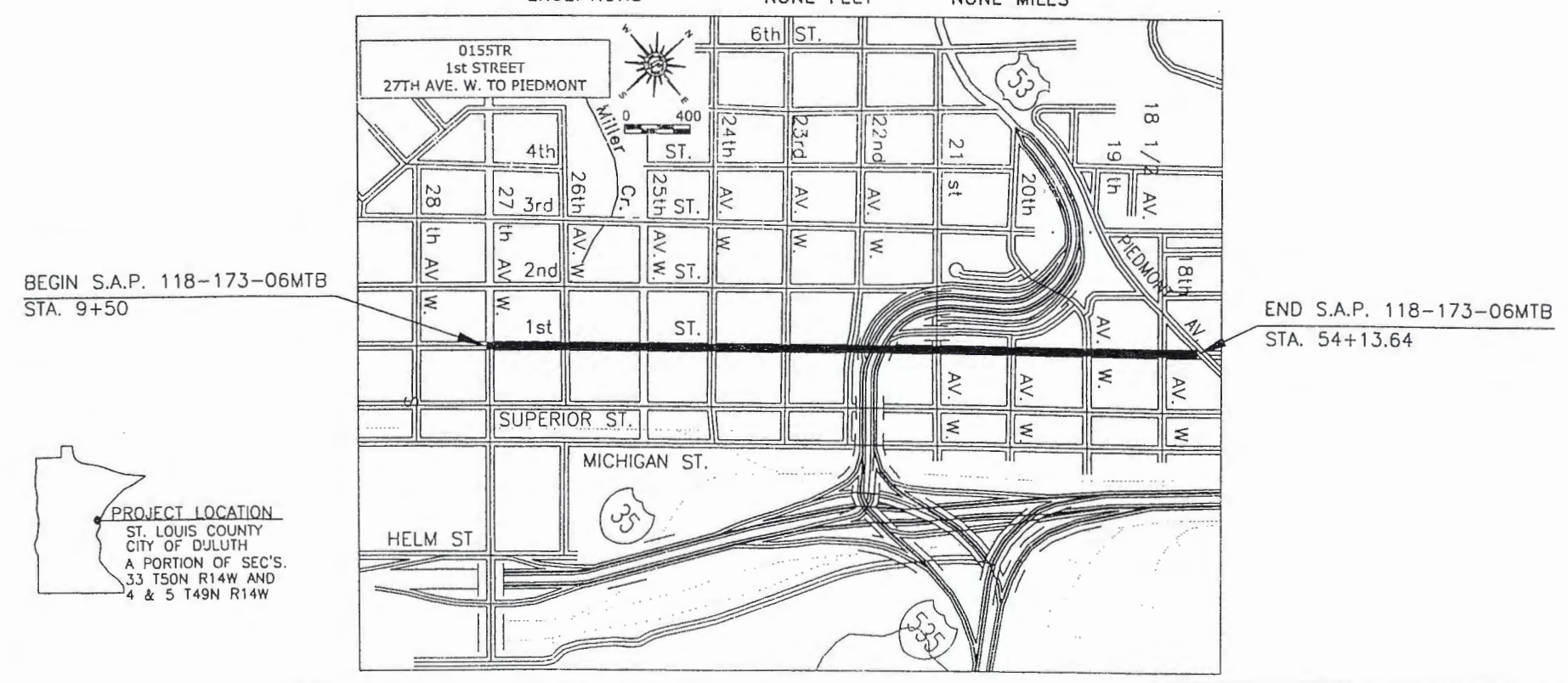
ENGINEERING DIVISION

CONSTRUCTION PLANS FOR: REMOVAL AND REPLACEMENT OF BITUMINOUS PAVEMENT
CONCRETE CURB AND GUTTER, CONCRETE SIDEWALK,
GRADING, AGGREGATE BASE, STORM SEWER, SANITARY
SEWER, WATER SERVICES AND STRIPING.

LOCATED ON: 1st STREET (MUNICIPAL STATE AID STREET NO. 173)
FROM 27th AVE W. TO PIEDMONT AVE.

STATE PROJ. NO. 118-173-06MTB CITY JOB NO. 0155TR

GROSS LENGTH 4463.64 FEET .845 MILES
NET LENGTH 4463.64 FEET .845 MILES
EXCEPTIONS NONE FEET NONE MILES



GOVERNING SPECIFICATIONS

THE 2000 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION
"STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.
(AVAILABLE AT: <http://www.dot.state.mn.us/tecsup/>)

THE CITY OF DULUTH DEPARTMENT OF WATER AND GAS 1997
SPECIFICATIONS SHALL APPLY.

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE
MN MUTCD, INCLUDING THE FIELD MANUAL DATED JANUARY 2001.
(AVAILABLE AT: <http://www.dot.state.mn.us/trafficeng/>)

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	STATEMENT OF ESTIMATED QUANTITIES
3-5	TYPICAL SECTIONS
6	DETAILS - DRIVEWAY, PERFORATED PIPE, B624
7-8	DETAILS - MISC. SEWER
9	MISC. WATER DETAILS
10-12	TABULATED QUANTITY CHARTS
13-14	SIGNAGE CHART AND DETAILS
15-16	ALIGNMENT AND LAYOUT
17-26	PLAN AND PROFILE
27-28	STRIPING PLAN
29	TRAFFIC CONTROL PLAN
30-31	SEWER RECONSTRUCTION

THIS PLAN CONTAINS 31 SHEETS

DESIGN DESIGNATION

PROJECT	
ADT (CURRENT YEAR) 2002	2300
ADT (FUTURE YEAR) 2022	3200
HCAAT (CURRENT)	120
HCAAT (FUTURE)	170
STRUCTURE DESIGN	9 TONS
SOIL FACTOR	130
DESIGN SPEED	30 MPH
BASED ON STOPPING SIGHT DISTANCE	
HEIGHT OF EYE =	3.5 FT.
HEIGHT OF OBJECT =	0.5 FT.

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED
BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED
PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

John H. Carlson
PROJECT ENGINEER (TYPED OR PRINTED NAME)
John H. Carlson 4/23/02 12726
PROJECT ENGINEER DATE REG. NO.

CITY APPROVALS:

APPROVED [Signature] 4-23-02
CHIEF ENGINEER OF TRANSPORTATION DATE

APPROVED [Signature] 4/23/02
CHIEF ENGINEER OF UTILITIES DATE

APPROVED [Signature]
CITY ENGINEER DATE

STATE AID APPROVALS:

APPROVED [Signature] 4/24/02
DISTRICT STATE AID ENGINEER/REVIEWED FOR COMPLIANCE DATE

APPROVED [Signature] 5/8/02
APPROVED FOR STATE AID FUNDING STATE AID ENGINEER DATE

NOTICE

IF EXISTING SURVEY MONUMENTS
ARE FOUND DURING CONSTRUCTION
OPERATIONS, CONTACT PROJECT
ENGINEER TO RELOCATE
AND RE-ESTABLISH.

WARNING

LOCATION OF UNDERGROUND UTILITIES
TO BE VERIFIED BY CONTRACTOR.
CALL BEFORE DIGGING.
GOPHER STATE ONE CALL
1-800-252-1166
REQUIRED BY LAW

KRECH
OJARD Consulting Engineers
& ASSOCIATES, P.A.

227 W. 1st St., Suite 200
Duluth, Minnesota 55802
Ph 218.727.3282
Fax 218.727.1216
e-mail: mail@krechojard.com

916 Hammond Ave.
Superior, Wisconsin 54880
Ph 715.392.4474
Fax 715.392.3338
www.krechojard.com

3:\SDSK\PROJ\01137\01-1137title.dwg Tue Apr 23 07:36:25 2002

NOT UPDATED

STATEMENT OF ESTIMATED QUANTITIES						TOTAL PROJECT		PARTICIPATING		STORM SEWER		LOCAL	
NOTES	CHART	PAGE	SPEC. NO.	DESCRIPTION	UNIT	QUANTITY		QUANTITY		QUANTITY		QUANTITY	
						ESTIMATE	FINAL	ESTIMATE	FINAL	ESTIMATE	FINAL	ESTIMATE	FINAL
			2021.501	MOBILIZATION	LUMP SUM	1.0		0.88		0.04		0.08	
	E	10	2101.502	CLEARING	TREE	12.0		12.0					
	E	10	2101.507	GRUBBING	TREE	12.0		12.0					
	G	11	2104.501	REMOVE CURB AND GUTTER	LIN. FT.	6700.0		6700.0					
	F	25,26,30	2104.501	REMOVE SEWER PIPE	LIN. FT.	494.0		0.0				494.0	
1	G	11	2104.503	REMOVE CONCRETE WALK	SQ. FT.	40615.0		40615.0					
	G	11	2104.505	REMOVE PAVEMENT	SQ. YD.	3858.0		3858.0					
15	L,K	12,31	2104.509	REMOVE MANHOLE OR CATCH BASIN	EACH	19.0		0.0		17.0		2.0	
	D	10	2104.513	SAWING BITUMINOUS PAVEMENT	LIN. FT.	5360.0		5360.0					
2	I	11	2105.501	COMMON EXCAVATION	CU. YD.	147.0		147.0					
	K	11	2105.604	GEOTEXTILE FABRIC "TYPE V NON-WOVEN"	SQ. YD.	2895.0		2895.0					
	O	11	2201.501	CONCRETE BASE	SQ. YD.	296.0		296.0					
	K	11	2211.503	AGGREGATE BASE (CV) CLASS 5	CU. YD.	1673.0		1673.0					
3	G	11	2232.501	MILL BITUMINOUS SURFACE	SQ. YD.	16823.0		16823.0					
	K	11	2350.501	TYPE LV4 WEARING COURSE MIXTURE B	TON	2281.0		2281.0					
	K	11	2350.502	TYPE LV3 NON-WEARING COURSE MIXTURE B	TON	926.0		926.0					
4			2451.503	GRANULAR BACKFILL (LV)	CU. YD.	222.0		0.0		168.0		54.0	
5	M	12	2502.541	4" PERFORATED (PVC) PIPE DRAIN SDR 35	LIN. FT.	4975.0		4975.0					
	P	31	2503.511	18" RC PIPE SEWER	LIN. FT.	40.0						40.0	
	P	31	2503.511	21" RC PIPE SEWER	LIN. FT.	374.0						374.0	
		25,26	2503.511	12" PVC PIPE SEWER SDR 35	LIN. FT.	80.0		0.0				80.0	
6	B	10	2504.602	ADJUST VALVE BOX	EACH	25.0		25.0					
	F	10	2504.603	WATER SERVICE REPLACEMENT	LIN. FT.	340.5		0.0				340.5	
12			2504.618	3" POLYSTYRENE INSULATION	SQ. FT.	100.0		0.0				100.0	
6	B	10	2504.602	REPLACE HYDRANT	EACH	1.0		0.0				1.0	
	B	10	2504.602	REPLACE VALVE AND BOX	EACH	3.0						3.0	
	P	31	2506.501	CONSTRUCT MANHOLE - DESIGN 84-4020	LIN. FT.	27.3						27.3	
	P	31	2506.501	CONSTRUCT MANHOLE - DESIGN A OR F	LIN. FT.	8.3						8.3	
	L	12	2506.502	CONSTRUCT DRAINAGE STRUCTURE - DESIGN C OR G	EACH	17.0		0.0		17.0			
7	H	11	2506.516	CASTING ASSEMBLY	EACH	31.0		29.0				2.0	
	H	11	2506.522	ADJUST FRAME AND RING CASTING	EACH	31.0		29.0				2.0	
16		30	2506.602	REPAIR MANHOLE	EACH	2.0						2.0	
8	J	11	2521.501	4" CONCRETE WALK	SQ. FT.	27045.0		27045.0					
9	J	11	2521.501	7" CONCRETE WALK	SQ. FT.	13570.0		13570.0					
	J	11	2531.501	CONCRETE CURB & GUTTER - DESIGN B624	LIN. FT.	6600.0		6600					
		25,26	2557.603	HAND RAILING WITH CHAIN LINK FABRIC	LIN FT.	350.0		350					
10			2563.601	TRAFFIC CONTROL	LUMP SUM	1.0		0.88		0.04		0.08	
		13	2564.602	REMOVE AND REINSTALL SIGN	EACH	72.0		72.0					
			2564.602	PAVEMENT MESSAGE POLY PRE-FORM	EACH	8.0		8.0					
		25	2564.603	4" SOLID YELLOW LINE - EPOXY	LIN. FT.	620.0		620.0					
		25	2564.603	4" DASHED WHITE LINE - EPOXY	LIN. FT.	750.0		750.0					
			2564.603	12" SOLID WHITE LINE - EPOXY	LIN. FT.	66.0		66.0					
			2564.603	24" WHITE POLY PRE-FORM LONGITUDINAL CROSSWALK	LIN. FT.	240.0		240.0					
13			2573.602	TEMPORARY EROSION CONTROL	EACH	11.0		11.0					
11	C	31	2575.505	SODDING TYPE LAWN	SQ. YD.	1273.6		1273.6					

GENERAL NOTES:

IF EXISTING SURVEY MONUMENTS ARE FOUND DURING CONSTRUCTION OPERATIONS, CONTACT PROJECT ENGINEER TO RELOCATE AND RE-ESTABLISH.

NOTES:

1. THIS ITEM SHALL INCLUDE ALL CROSSWALKS, DRIVEWAY APRONS AND MINOR BOULEVARD STEPS.

2. EXCESS MATERIAL TO BE DISPOSED OF BY THE CONTRACTOR OFF PROJECT R.O.W.

3. MILLING DEPTH TO BE 3". DISPOSAL OF MILLINGS AT 1630 RICE LAKE ROAD IS INCIDENTAL TO THE MILLING OPERATIONS.

4. ITEM 2451.503, GRANULAR BACKFILL, IS TO BE USED AS BACKFILL MATERIAL AS DIRECTED BY THE ENGINEER. DISPOSAL OF EXISTING TRENCH SPOILS SHALL BE INCIDENTAL.

5. INCLUDES FILTER FABRIC AND AGGREGATE (INCIDENTAL)

6. CONTRACTOR TO EXCAVATE AND RESTORE TRENCH FOR WATER SERVICE AND HYDRANT WORK. CONTRACTOR TO FURNISH AND INSTALL ALL MATERIALS.

7. INCLUDES 15 STORM, 12 SANITARY AND 2 WATER & GAS - CITY OF DULUTH MANHOLE RINGS AND COVERS.

8. INCLUDES PAYMENT FOR MNDOT APPROVED PEDESTRIAN RAMPS, WHERE REQUIRED, AND 4" CLASS 5 AGGREGATE BASE UNDER CONCRETE WALK (INCIDENTAL) AND 6" CLASS 5 AGGREGATE BASE UNDER PEDESTRIAN RAMPS (INCIDENTAL)

9. INCLUDES 12" CLASS 5 AGGREGATE BASE UNDER 7" CONCRETE WALK AREAS (INCIDENTAL)

10. ALL TRAFFIC CONTROL DEVICES AND SIGNAGE SHALL CONFORM TO MN/MUTCD, INCLUDING THE FIELD MANUAL DATED JANUARY 2001.

11. INCLUDES ANY NECESSARY GRADING AND 2" OF TOP SOIL.

12. AS NEEDED FOR WATER SERVICES, AS DIRECTED BY THE ENGINEER.

13. REUSEABLE P.E. SILTATION CONTROL DEVICE FOR DRAINAGE STRUCTURE OPENINGS.

15. CASTINGS SHALL BE SALVAGED AND DELIVERED TO THE CITY OF DULUTH SEWER DIVISION STORAGE FACILITY AT 40th AVENUE WEST (INCIDENTAL)

16. AFTER REMOVING EXISTING 48" SEWER, CONTRACTOR TO PATCH MANHOLE WITH BLOCK AND MORTAR.

1st. STREET: 27th AVE WEST TO PIEDMONT AVE.

STATEMENT OF ESTIMATED QUANTITIES

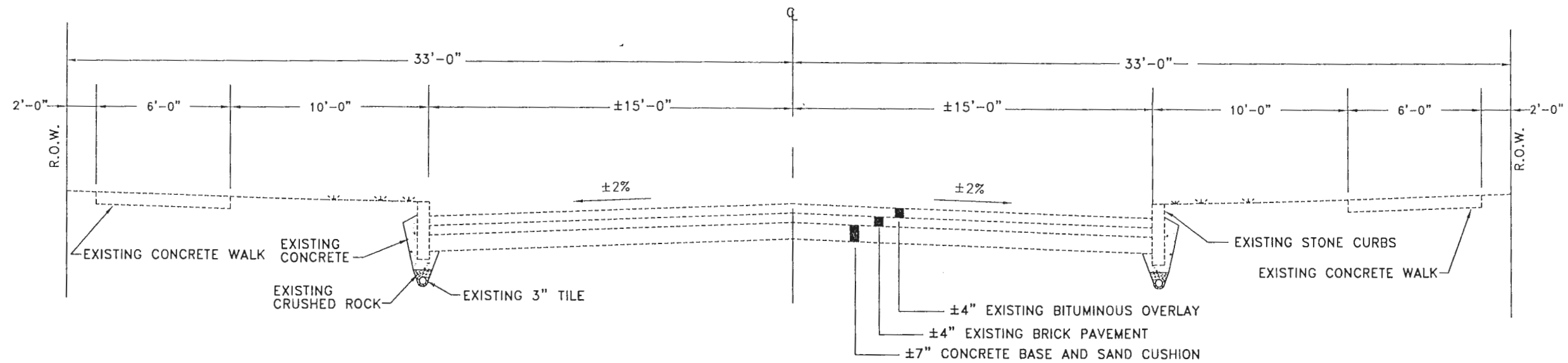
REF. NO. 12736

DATE: 4/25/02

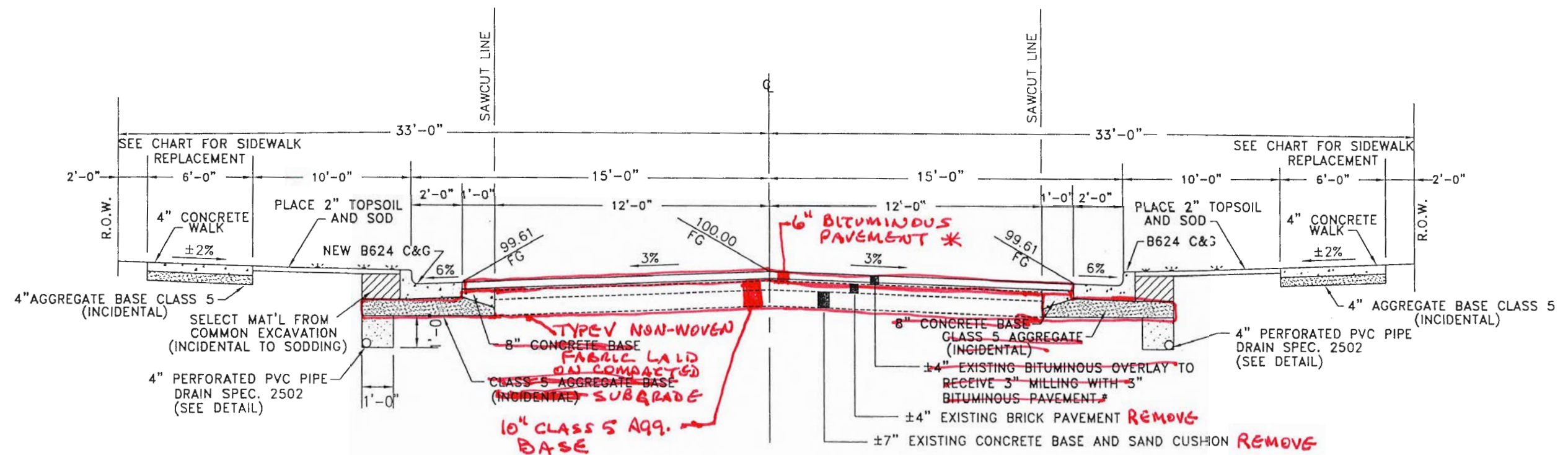
S A P NO. 118-173-06MTB

CITY PROJECT NO.: 0155TR

Sheet 2 of 31 Sheets



EXISTING TYPICAL SECTION
27th AVE WEST TO 23rd AVE WEST
NO SCALE



NOTE:
TACK COAT TO BE PLACED BETWEEN
BITUMINOUS LAYERS; SPEC 2357 (INCIDENTAL)

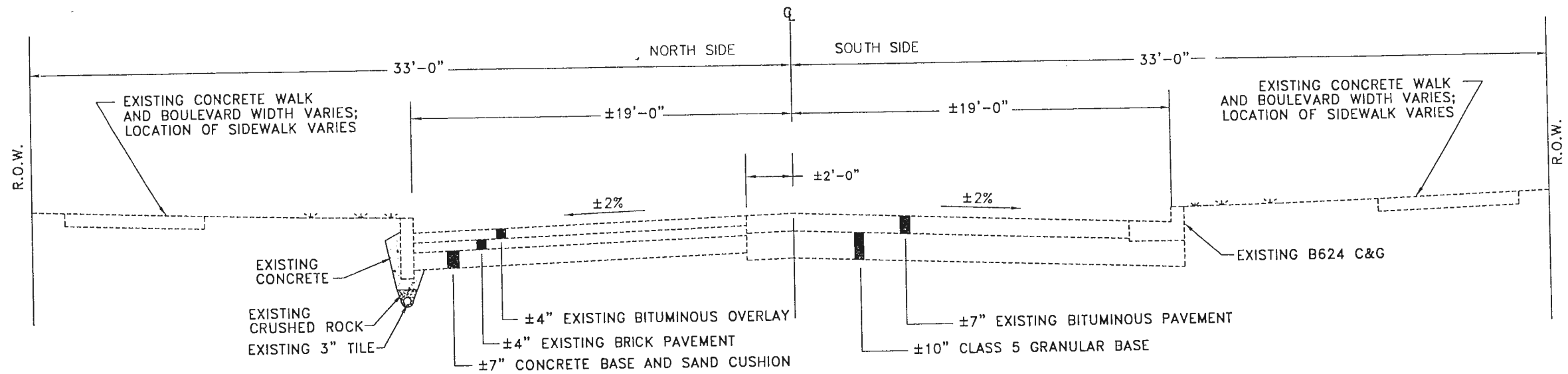
PROPOSED TYPICAL SECTION
27th AVE. WEST TO 23rd AVE. WEST
NO SCALE

* 6" BITUMINOUS PAVEMENT
3" 1 1/2" NON-WEARING COURSE LV3 (SPEC 2350)
LVNW35030B
3" 1 1/2" WEARING COURSE LV4 (SPEC 2350)
LVWE45030B

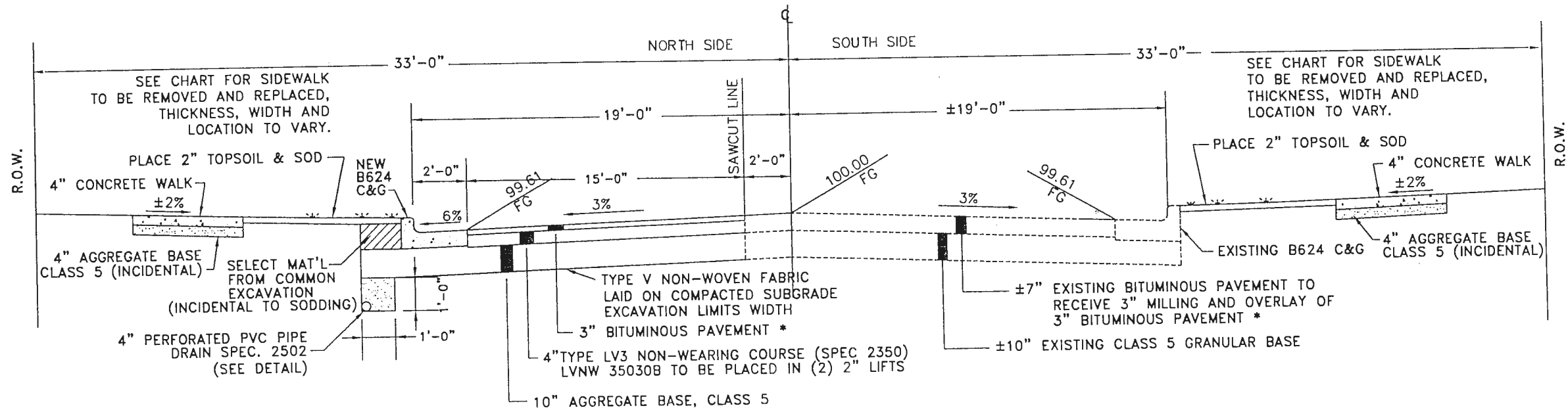
CERTIFIED BY: John H. Carlson REG. NO. 12726 DATE: 4/22/02
PROFESSIONAL ENGINEER

1st STREET: 27th AVE WEST TO PIEDMONT AVE.
S. A. P. NO.: 118-173-06MTB CITY PROJECT NO.: 0155TR
TYPICAL SECTIONS
Sheet 3 of 31 Sheets

NO SHEET CHANGES



EXISTING TYPICAL SECTION
23rd AVE WEST TO 20th AVE WEST
NO SCALE



NOTE:
TACK COAT TO BE PLACED BETWEEN
BITUMINOUS LAYERS; SPEC 2357 (INCIDENTAL)

PROPOSED TYPICAL SECTION
23rd AVE WEST TO 20th AVE WEST
NO SCALE

* 3" BITUMINOUS PAVEMENT
3" WEARING COURSE LV4 (SPEC 2350)
LVWE45030B

CERTIFIED BY: *John H. Carlson*

REG. NO. 12726

DATE: 4/22/02

1st STREET: 27th AVE WEST TO PIEDMONT AVE.

S. A. P. NO.: 118-173-06MTB

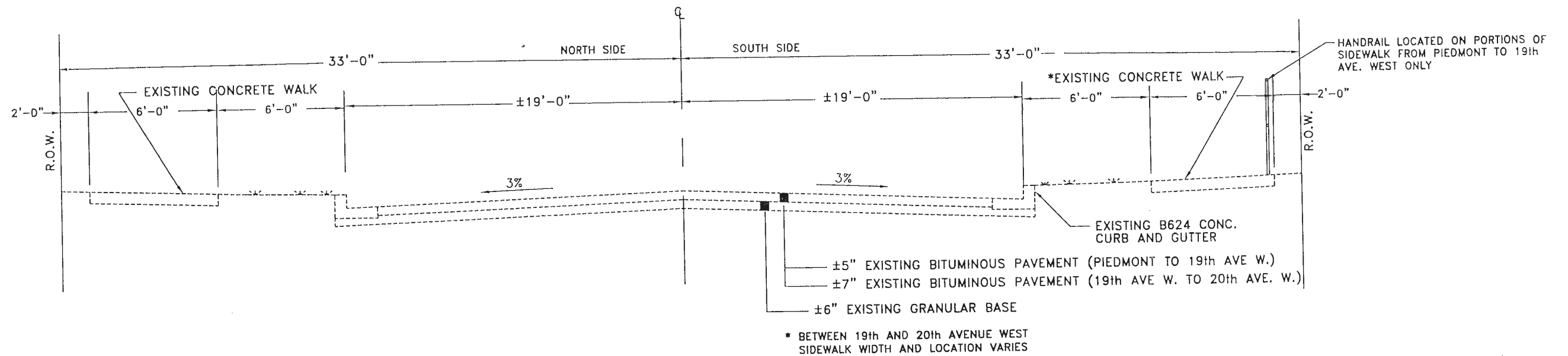
CITY PROJECT NO.: 0155TR

TYPICAL SECTIONS

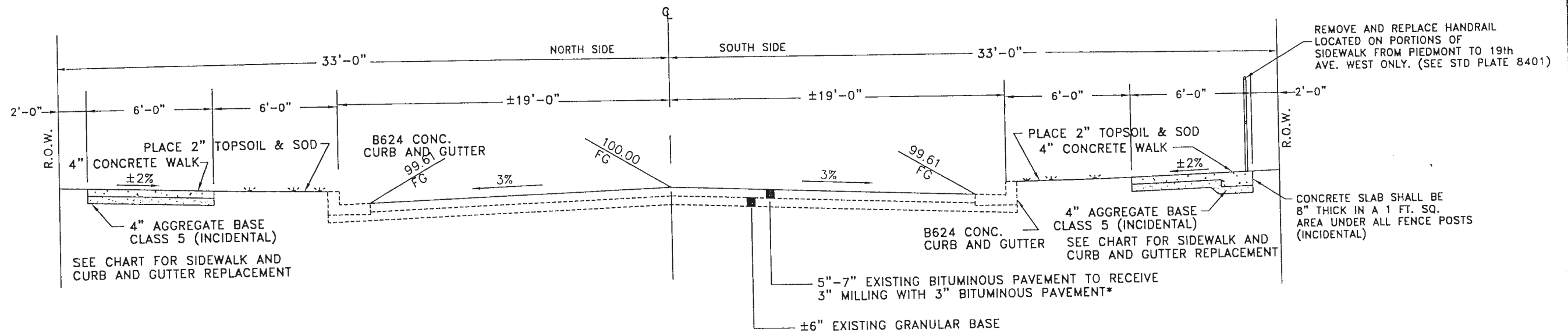
Sheet 4 of 31 Sheets

\\SPSK\PROJ\11137\01-1137TYP1-SEC.dwg Mon Apr 22 12:49:01 2002

NO SHEET CHANGES



EXISTING TYPICAL SECTION
20th AVE WEST TO PIEDMONT AVE
NO SCALE



PROPOSED TYPICAL SECTION
20th AVE WEST TO PIEDMONT AVE
NO SCALE

NOTE:
TACK COAT TO BE PLACED BETWEEN
BITUMINOUS LAYERS; SPEC 2357 (INCIDENTAL)

* 3" BITUMINOUS PAVEMENT
3" WEARING COURSE LV4 (SPEC 2350)
LVWE45030B

\\SSDK\PROJ_11137\01-1137TYP3-SEC.dwg Tue Apr 23 07:38:01 2002

CERTIFIED BY: *John H. Carlson*
PROFESSIONAL ENGINEER

REG. NO. 12726

DATE: 4/22/02

1st STREET: 27th AVE WEST TO PIEDMONT AVE.

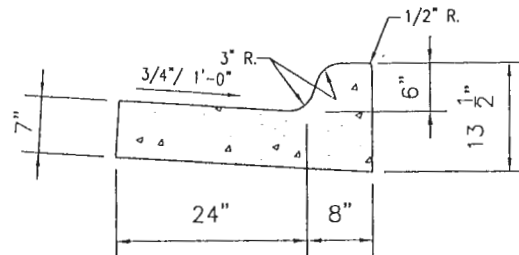
S. A. P. NO.: 118-173-06MTB

CITY PROJECT NO.: 0155TR

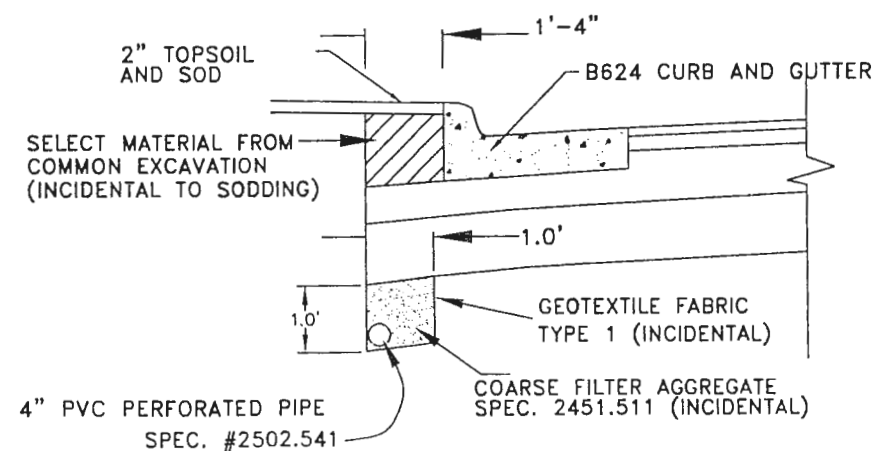
TYPICAL SECTIONS

Sheet 5 of 31 Sheets

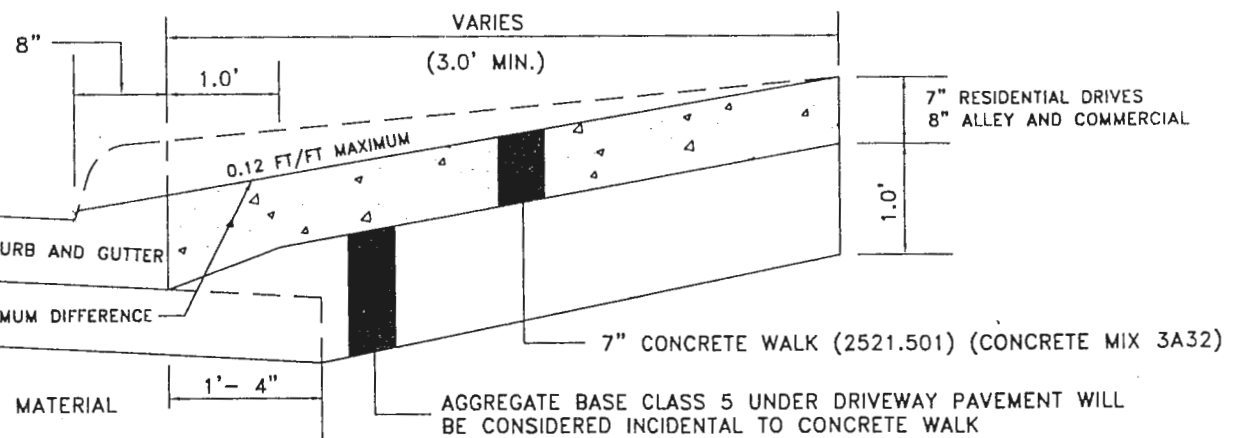
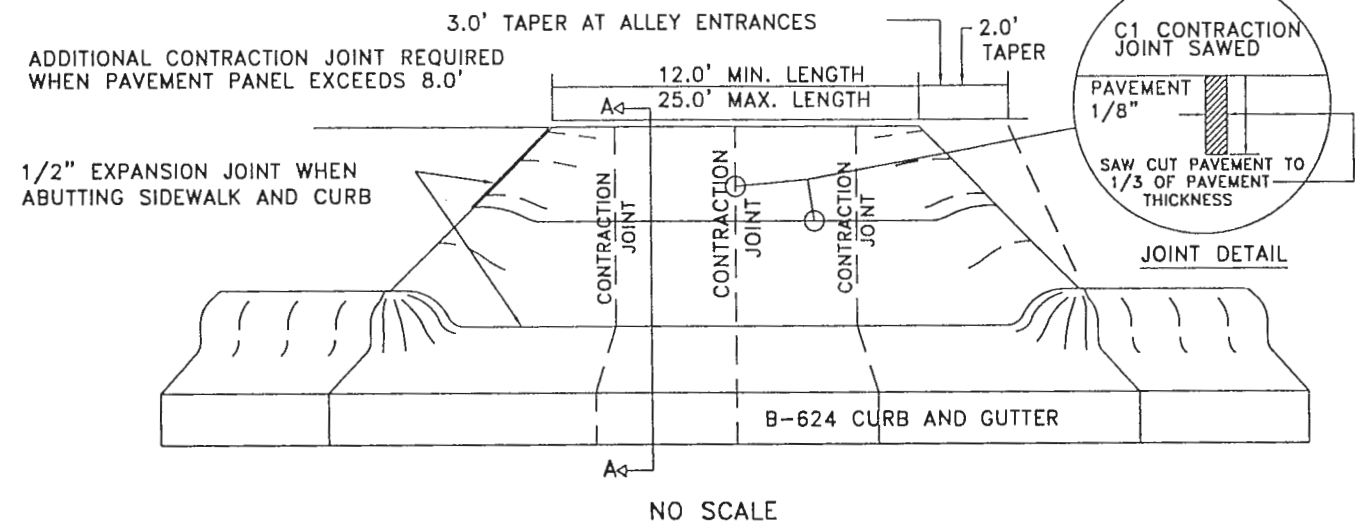
NO SHEET CHANGES



B624 CURB & GUTTER
NO SCALE



PERFORATED PIPE DETAIL
NO SCALE



NOTE: THE CREST OF THE DRIVEWAY MUST BE AT LEAST 6" ABOVE GUTTER TO CONTAIN RUNOFF.
NOTE: STATE OF MN STANDARD PLATE 7035, NOTE 5 SHALL NOT APPLY.

SECTION A-A
NO SCALE
DRIVEWAY AND ALLEY ENTRANCE DETAIL

\\SDSK\PROJ\11137\01-1137\MISC.dwg Mon Apr 22 12:49:34 2002

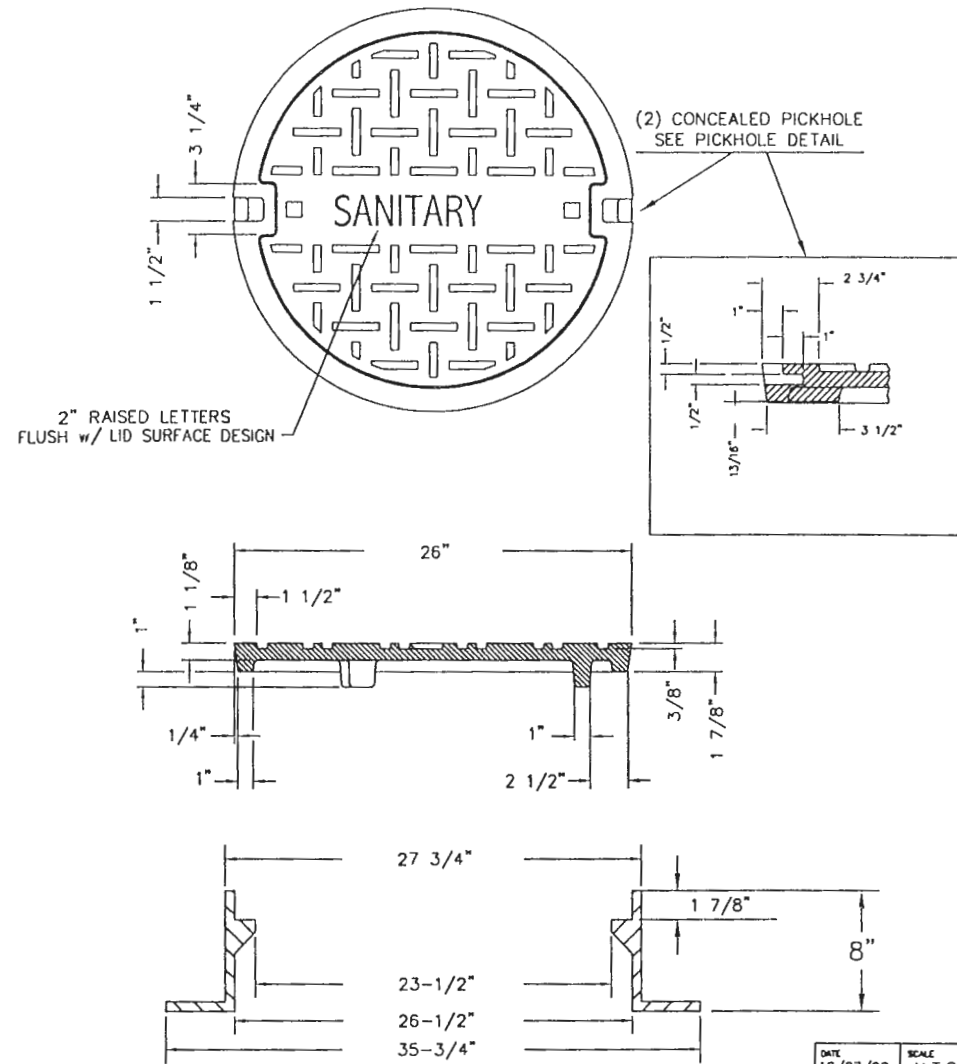
CERTIFIED BY: John H. Carlson REG. NO. 12726 DATE: 4/22/02

1st STREET: 27th AVE. WEST TO PIEDMONT AVE.
S. A. P. NO.: 118-173-06MTB CITY PROJECT NO.: 0155TR MISC. DETAILS
Sheet 6 of 31 Sheets

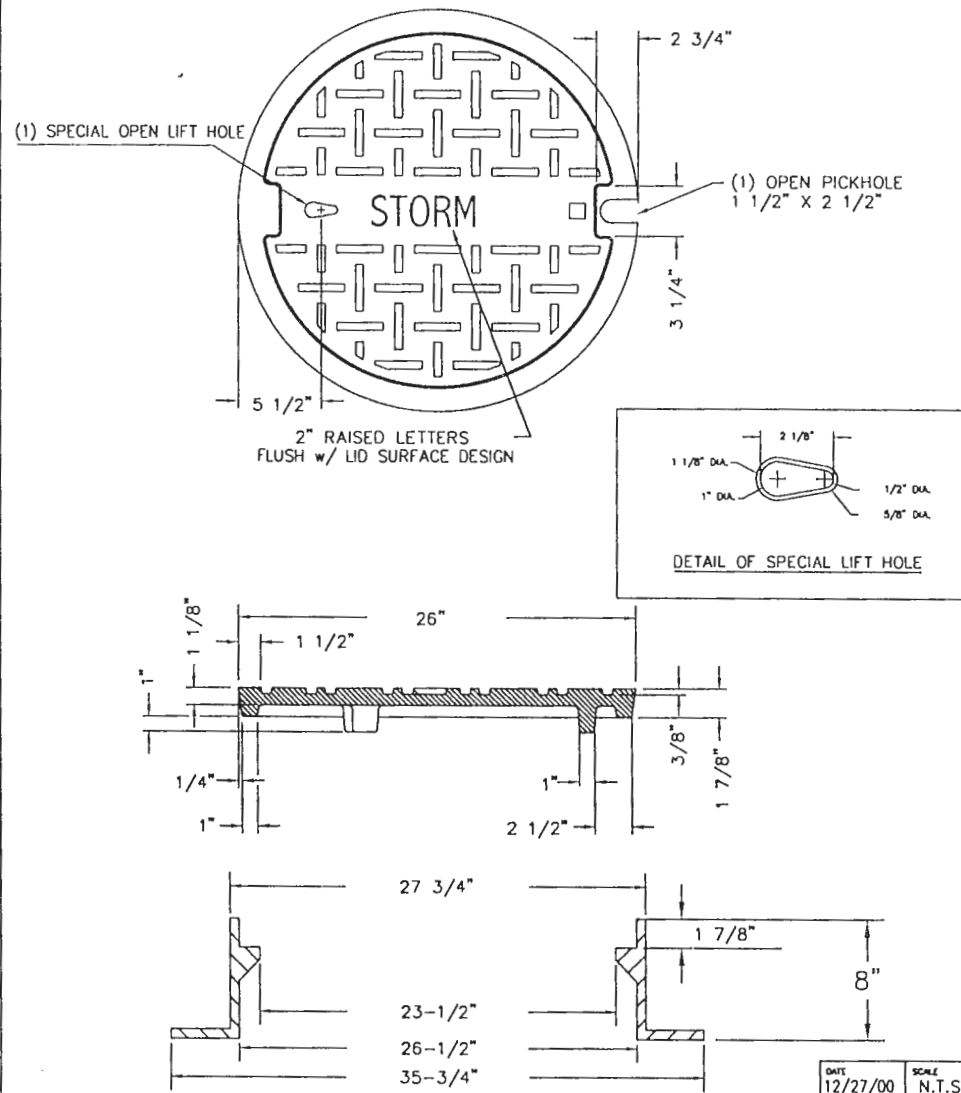
NO SHEET CHANGES

COMP. NO. 1723-5020	WGT. 298 LBS	CAT.	J:\CAD\STANDARD\SAN_5020.DWG	COMP. NO. 1723-5010	WGT. 298 LBS	CAT.	J:\CAD\STANDARD\STRM5010.DWG
COMP. NO.	WGT. 122 LBS		MATL. GRAY IRON CLASS 35B	COMP. NO.	WGT. 122 LBS		MATL. GRAY IRON CLASS 35B
COMP. NO.	TOT.WGT. 420 LBS.	PARENT NO.	SPEC. ASTM A-48-74	COMP. NO.	TOT.WGT. 420 LBS.	PARENT NO.	SPEC. ASTM A-48-74

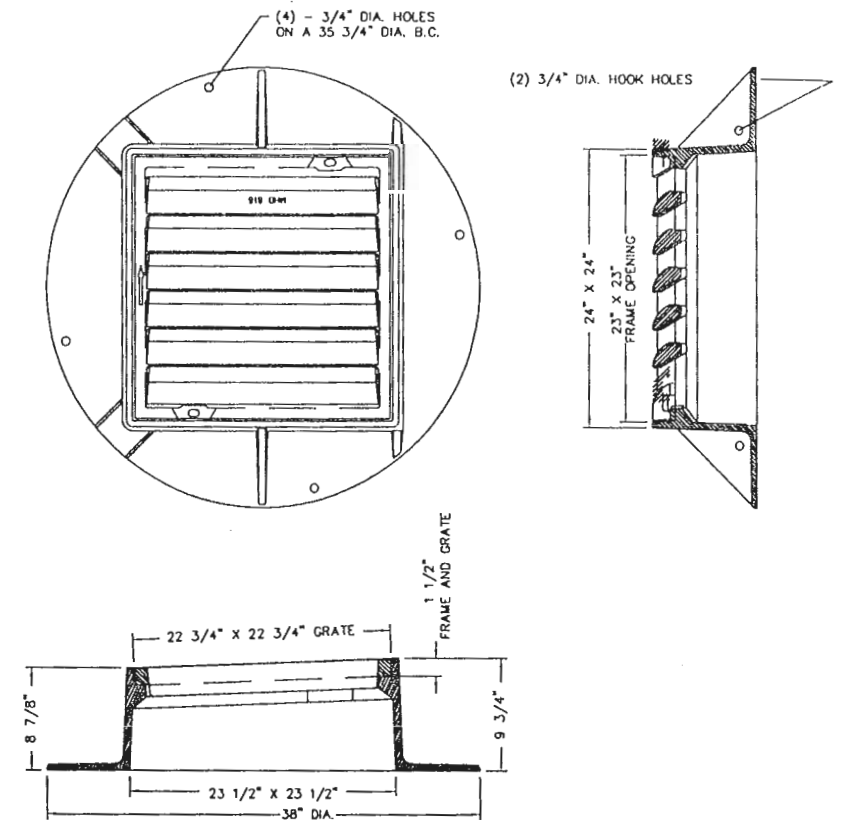
SANITARY SOLID LID AND FRAME



STORM LID AND FRAME



CATCH BASIN CASTINGS



NOTES:
COMPONENT NO'S: TOP FRAME 5005, GRATE 816 (STD PLATE 4154B).
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
WEIGHT: FRAME 262#, GRATE 131#

DETAIL NO. 5020

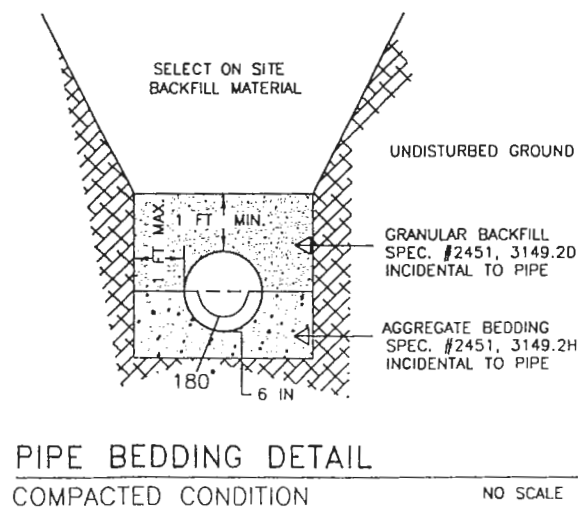
CITY OF DULUTH STANDARD

DETAIL NO. 5010

CITY OF DULUTH STANDARD

DETAIL NO. 5005

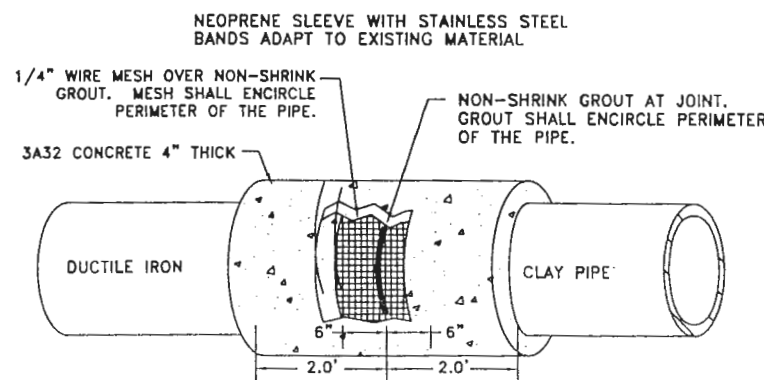
CITY OF DULUTH STANDARD



PIPE BEDDING DETAIL

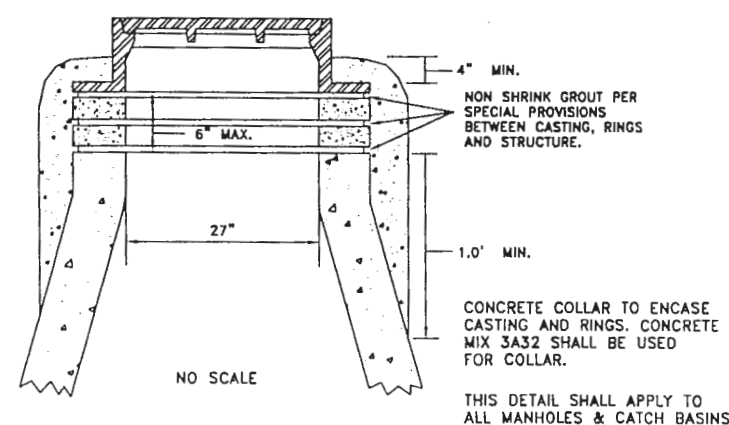
COMPACTED CONDITION

NO SCALE



PIPE CONSTRUCTION JOINT DETAIL

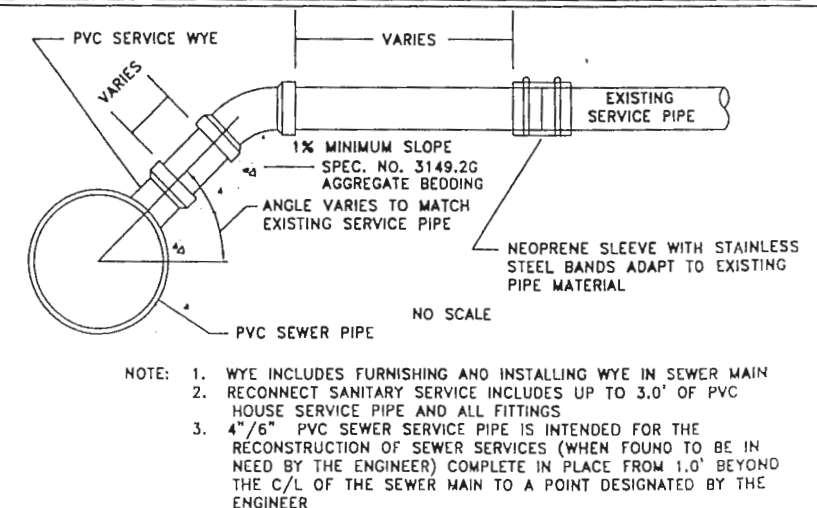
NO SCALE



CONCRETE ENCASED CASTING (INCIDENTAL)

1st STREET: 27th AVE. WEST TO PIEDMONT AVE.

S. A. P. NO.: 118-173-06MTB



NOTE: 1. WYE INCLUDES FURNISHING AND INSTALLING WYE IN SEWER MAIN
2. RECONNECT SANITARY SERVICE INCLUDES UP TO 3.0' OF PVC HOUSE SERVICE PIPE AND ALL FITTINGS
3. 4"/6" PVC SEWER SERVICE PIPE IS INTENDED FOR THE RECONSTRUCTION OF SEWER SERVICES (WHEN FOUND TO BE IN NEED BY THE ENGINEER) COMPLETE IN PLACE FROM 1.0' BEYOND THE C/L OF THE SEWER MAIN TO A POINT DESIGNATED BY THE ENGINEER

TYPICAL SEWER SERVICE CONNECTION

CERTIFIED BY: *John H. Carlson*
PROFESSIONAL ENGINEER

REG. NO. 12726

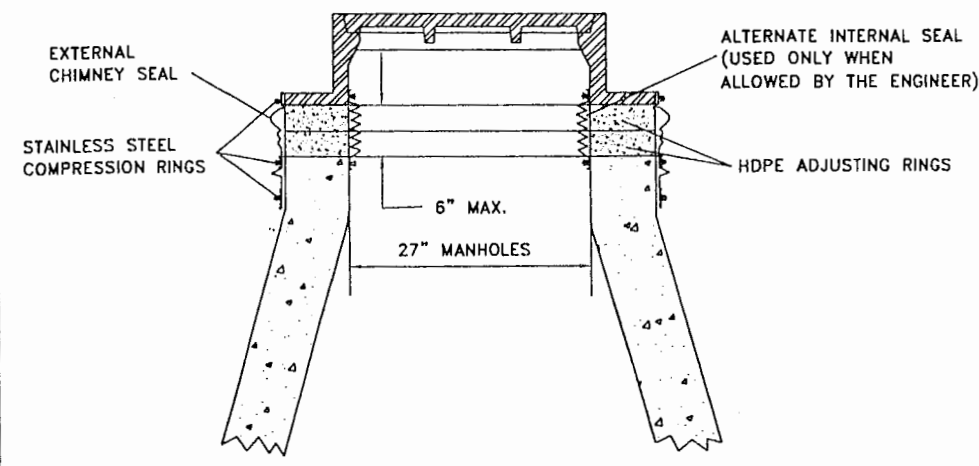
DATE: 4/22/02

CITY PROJECT NO.: 0155TR

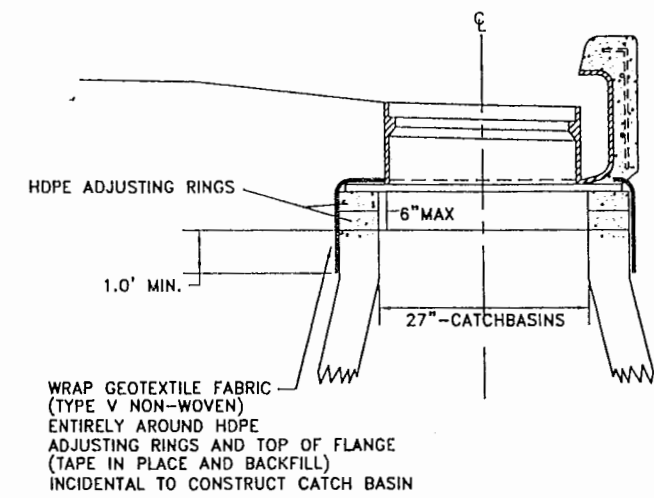
MISC. SEWER DETAILS

Sheet 7 of 31 Sheets

S:\SDSK\PROJ\11137\01-1137SEW.dwg Mon Apr 22 12:49:57 2002



MANHOLES WITH SEALS
NO SCALE

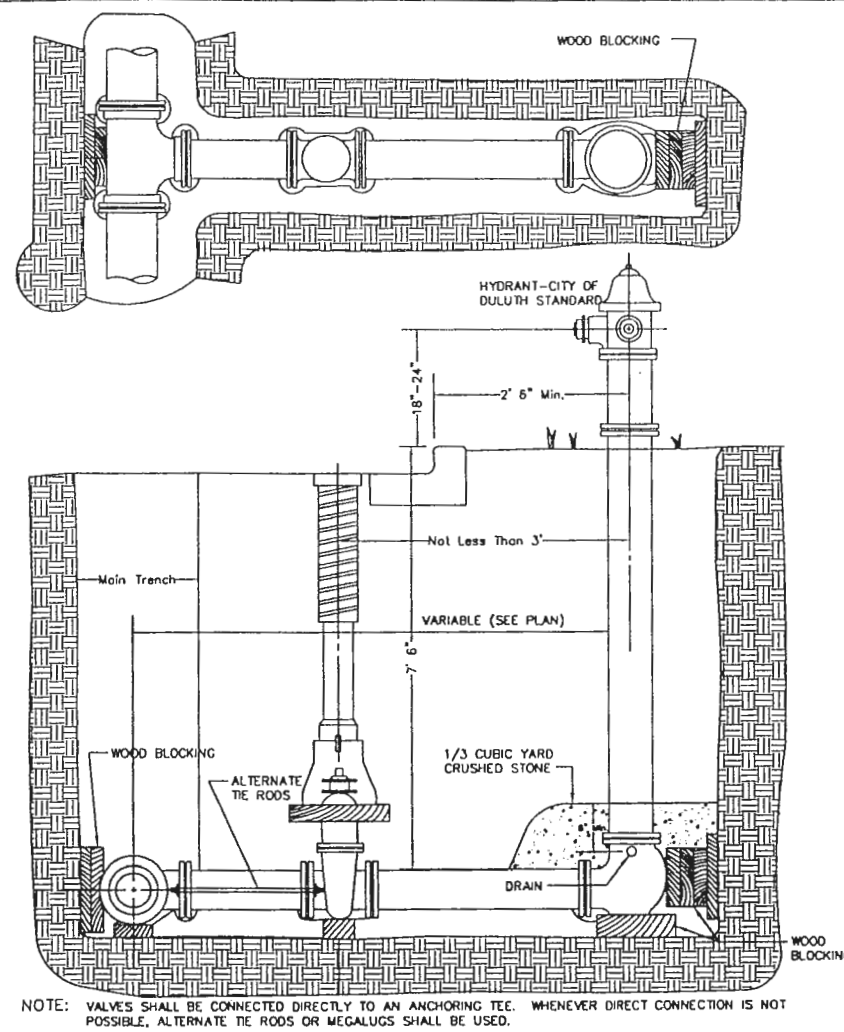


FABRIC WRAPPED CATCH BASIN CASTING
NO SCALE

\\SDSK\PROJ\11137\01-1137SEW1.dwg Mon Apr 22 12:50:42 2002

CERTIFIED BY: John H. Carlson REG. NO. 12726 DATE: 4/22/02
PROFESSIONAL ENGINEER

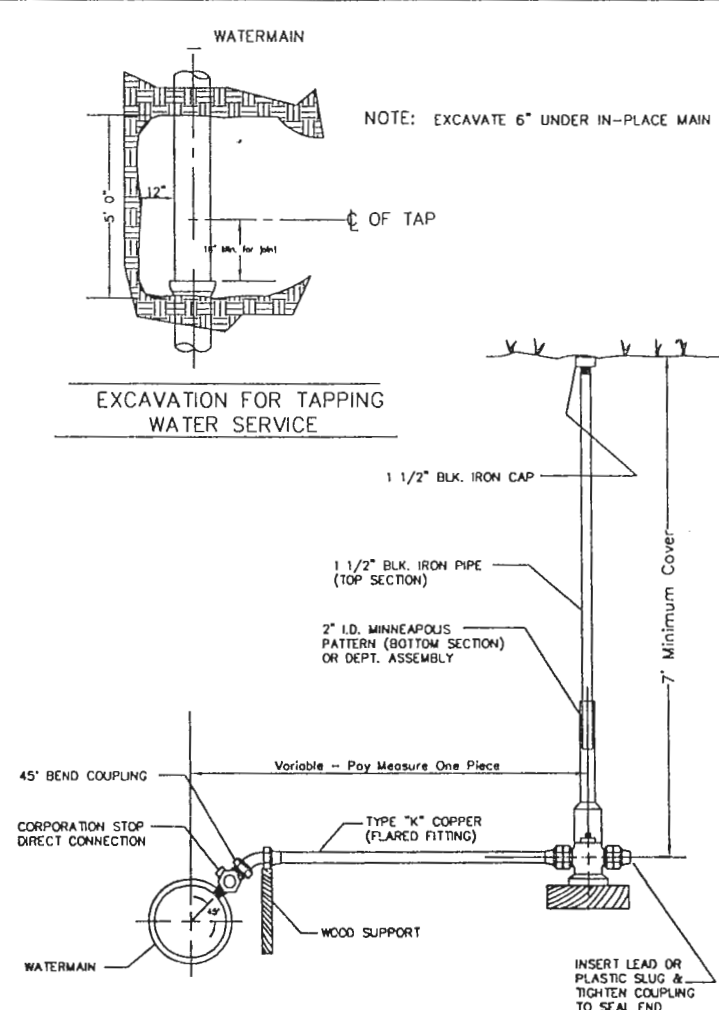
1st STREET: 27th AVE. WEST TO PIEDMONT AVE.		MISC. SEWER DETAILS
S. A. P. NO.: 118-173-06MTB	CITY PROJECT NO.: 0155TR	Sheet 8 of 31 Sheet



DEPARTMENT OF WATER AND GAS STANDARD
CITY OF DULUTH, MINNESOTA
FIRE HYDRANT SETTING DETAIL

REVISIONS	
DATE	BY
7-97	C.H.
1-97	C.H.
1-98	MC
1/22/02	

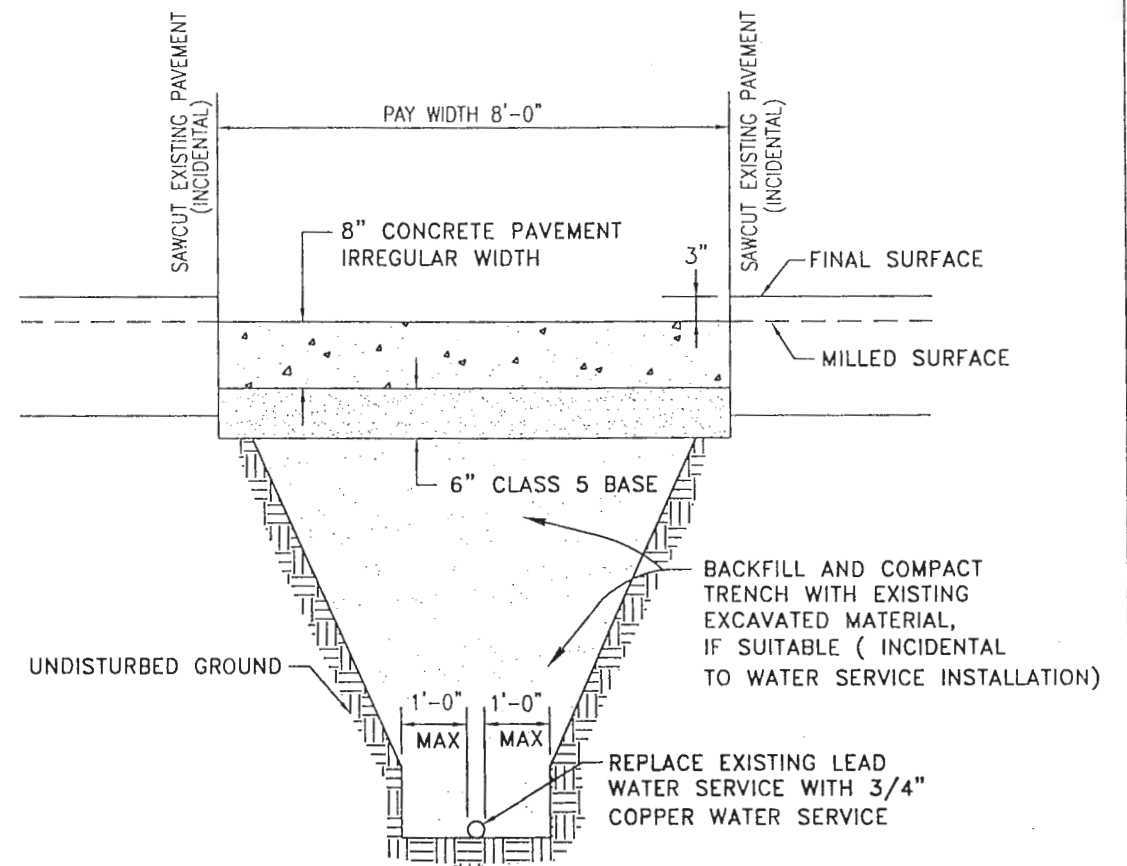
W-4



DEPARTMENT OF WATER AND GAS STANDARD
CITY OF DULUTH, MINNESOTA
TYPICAL STREET SERVICE - WATER

REVISIONS	
DATE	BY
7-98	TC
1/22/02	

W-5



WATER SERVICE TRENCH DETAIL
NO SCALE

CERTIFIED BY: Robert H. Carlson
PROFESSIONAL ENGINEER

REG. NO. 12726

DATE: 4/22/02

1st STREET: 27th AVE. WEST TO PIEDMONT AVE.

S. A. P. NO.: 118-173-06MTB

CITY PROJECT NO.: 0155TR

MISC. WATER DETAILS

Sheet 9 of 31 Sheet

NOT UPDATED

TABULATION CHART INDEX

CHART NO.	DESCRIPTION	SHEET NO.
A	STANDARD PLATES	10
B	WATER AND GAS VALVE ADJUSTMENTS	10
C	SODDING QUANTITIES	10
D	SAWING CONC. AND BIT. PAVEMENT	10
E	TREE CLEARING AND GRUBBING	10
F	WATER AND GAS UTILITY WORK	10
G	REMOVAL ITEMS	11
H	CASTING ASSEMBLIES	11
I	EARTHWORK SUMMARY	11
J	CONSTRUCTION QUANTITIES	11
K	AGGREGATE AND BITUMINOUS QUANTITIES	11
L	EXISTING STORM DRAINAGE STRUCTURES	12
M	PROPOSED STORM DRAINAGE STRUCTURES	12
N	PROPOSED PERFORATED PIPE	12
O	CONCRETE BASE	11
P	SANITARY STRUCTURES	31

D SAWING CONC. AND BIT. PAVEMENT

LOCATION	BITUMINOUS PAVEMENT	CONCRETE PAVEMENT
	2104.513 LIN. FT.	2104.511 LIN. FT.
1ST STREET		
27th AVE. W. TO 26th AVE. W.	920	
26th AVE. W. TO 25th AVE. W.	920	
25th AVE. W. TO 24th AVE. W.	830	
24th AVE. W. TO 23rd AVE. W.	970	
23rd AVE. W. TO 22nd AVE. W.	640	
22nd AVE. W. TO 21st AVE. W.	575	
21st AVE. W. TO 20th AVE. W.	505	
20th AVE. W. TO 19th AVE. W.	0	
19th AVE. W. TO 18th AVE. W.	0	
18th AVE. W. TO PIEDMONT	0	
TOTAL	5360	0

E TREE CLEARING AND GRUBBING

	STATION	LOCATION	SIZE/TYPE	CLEARING	GRUBBING	REMARKS
				2101.502 EACH	2101.507 EACH	
1st STREET						
27th - 26th Ave. W.	11+61.1	20' LT	30" MAPLE	0	0	Review with homeowner
	12+43.8	20' LT	30" MAPLE	0	0	Review with homeowner
	12+81.8	20' LT	32" MAPLE	0	0	Review with homeowner
	13+63.9	21' LT	30" MAPLE	0	0	Review with homeowner
26th - 25th Ave. W.	15+27.8	22' LT	22" MAPLE	1	1	
	15+49.3	23' RT	13" MAPLE	0	0	
	15+80.0	23' RT	18" MAPLE	0	0	
	X 16+06.7	20' LT	12" MAPLE	0	0	
	16+10.7	22' RT	18" MAPLE	0	0	
	X 16+81.9	21' LT	31" MAPLE	0	0	Review with homeowner
	X 17+22.5	21' LT	26" MAPLE	0	0	Review with homeowner
	18+02.9	20' RT	40" MAPLE	1	1	
	18+40.9	21' RT	24" MAPLE	1	1	
	X 18+79.8	20' LT	24" MAPLE	0	0	
	18+82.7	20' RT	24" MAPLE	1	1	
25th - 24th Ave. W.	19+82.0	21' LT	24" MAPLE	1	1	
	19+86.6	21' RT	34" MAPLE	0	0	
	20+28.3	21' RT	30" MAPLE	0	0	
	22+28.2	20' RT	31" MAPLE	1	1	
24th - 23rd Ave. W.	24+46.1	20' RT	30" MAPLE	0	0	
	25+33.1	20' RT	33" MAPLE	0	0	Review after Excavation
	26+53.3	20' RT	32" MAPLE	1	1	
	26+91.9	21' RT	37" MAPLE	1	1	
	27+40.4	18' LT	18" MAPLE	1	1	
	27+71.7	20' RT	18.5" MAPLE	1	1	
	28+08.2	20.7 LT	36" MAPLE	1	1	
22nd - 21st Ave. W.	35+61.4	21' RT	25" MAPLE	0	0	
	36+61.4	21' RT	29" MAPLE	0	0	
18th Ave W. intersection	51+79.6	46' LT	28.5" MAPLE	1	1	
	52+21.7	40' LT	25" MAPLE	1	1	
TOTAL				12	12	

A STANDARD PLATES

THE FOLLOWING STANDARD PLATES APPROVED BY FHWA SHALL APPLY ON THIS PROJECT	
PLATE NO.	DESCRIPTION
1150Q	CONSTRUCTION OF HEADER JOINTS
1103J	TYPICAL DOWL BAR ASSEMBLY
3000L	REINFORCED CONCRETE PIPE
3006G	GASKET JOINT FOR R.C. PIPE
4000J	MANHOLE OR CATCH BASIN
4002F	MANHOLE OR CATCH BASIN
4005L	MANHOLE OR CATCH BASIN
4006L	MANHOLE OR CATCH BASIN
4011E	PRECAST CONCRETE BASE
4020I	MANHOLE OR CATCH BASIN COVER
4154B	CATCH BASIN GRATE CASTING
7035L	CONCRETE WALK AND CURB RETURNS AT ENTRANCES
7036E	PEDESTRIAN CURB RAMPS
7100G	CONCRETE CURB AND GUTTER
7111J	INSTALLATION AND REINFORCEMENT OF CATCH BASIN CASTING
8000I	STANDARD BARRICADES
8401C	* AT GRADE PIPE RAILING WITH CHAINLINK FABRIC

CITY OF DULUTH STANDARD PLATES

PLATE NO.	DESCRIPTION
5005	CATCH BASIN CASTINGS
5010	MANHOLE FRAME AND SOLID LID CASTING (STORM)
5020	MANHOLE FRAME AND SOLID LID CASTING (SANITARY)
W-4M	FIRE HYDRANT SETTING DETAILS
W-5M	TYPICAL STREET SERVICE - WATER
W-13M	WATER SERVICE INSULATION
19788	FRAME AND SOLID LID SURVEY MONUMENT CASTING
* STANDARD PLATE CONSTRUCTION WITH 42" OVERALL HEIGHT AND 21" HEIGHT FOR MIDPOINT OF LOWER RAILING USING ALTERNATE PIPE ANCHOR	

B WATER AND GAS VALVE ADJUSTMENTS, REPLACE HYDRANT

STATION	LOCATION	ADJUST VALVE	REPLACE VALVE	REPLACE
		BOX 2504.602 EACH	AND BOX 2504.602 EACH	HYDRANT 2504.602 EACH
14+27	9' RT	1	1	
14+30	18' RT	1		
15+02	9' RT	1	1	
18+99	22' RT			1
19+01	18' RT	1		
19+41	34' RT	1	1	
19+65	9' RT	1		
19+40	35' RT	1		
28+34	9' RT	1		
28+44	9' RT	1		
28+86	9' RT	1		
32+25	15.5' RT	1		
37+55	15.5' RT	1		
38+05	15.5' RT	1		
38+05	28' LT	1		
38+11	33.6' LT	1		
38+34	28' LT	1		
42+27	14.5' RT	1		
42+76	14.5' RT	1		
43+03	14.5' RT	1		
46+81	14.5' RT	1		
51+75	9' RT	1		
52+09	33' LT	1		
52+37	9' RT	1		
52+37	17.8' RT	1		
54+10	18.4' RT	1		
TOTAL		25	3	1

C SODDING QUANTITIES

STATION	LOCATION	SODDING TYPE LAWN 2575.505 SQ. YD.
27th - 26th Ave. W.		
10+32 to 14+37	LT	131.7
10+32 to 14+37	RT	131.7
SUBTOTAL		263.4
26th - 25th Ave. W.		
14+96 to 19+03	LT	132.3
14+96 to 16+88	RT	61.1
17+28 to 18 +23	RT	30.2
18+35 to 19+03	RT	21.6
SUBTOTAL		245.2
25th - 24th Ave. W.		
19+64 to 20+71	LT	28.0
20+95 to 23+63	LT	69.0
19+64 to 20+53	RT	26.0
20+64 to 22+67	RT	53.0
22+85 to 23+63	RT	20.0
SUBTOTAL		196.0
24th - 23rd Ave. w.		
24+37 to 25+05	LT	20.0
24+37 to 26+38	RT	59.0
25+26 to 25+63	LT	11.0
25+80 to 26+92	LT	33.0
26+46 to 27+45	RT	29.0
27+24 to 27+60	LT	11.0
27+59 to 28+36	RT	39.0
27+68 to 28+36	LT	20.0
SUBTOTAL		222.0
23rd - 22nd Ave. W.		
30+91 to 31+75	LT	12.0
32+27 to 33+07	LT	12.0
VARIES	RT	12.0
SUBTOTAL		36.0
22nd - 21st Ave. W.		
33+64 TO 35+73	LT	38.0
36+09 to 37+20	LT	29.0
37+35 to 37+69	LT	9.0
VARIES	RT	15.0
SUBTOTAL		91.0
21st - 20th Ave. W.		
VARIES	RT	12.0
SUBTOTAL		12.0
20th - 19th Ave. W.		
45+73 to 47+02	LT	19.0
44+65 to 47+02	RT	35.0
SUBTOTAL		54.0
19th - 18th Ave. W.		
VARIES	LT	12.0
47+67 to 51+70	RT	60.0
SUBTOTAL		72.0
18th Ave. W. - Piedmont Ave.		
52+30 to 52+40	LT	2.0
53+22 to 53+58	LT	7.0
VARIES	LT	4.0
52+30 to 53+81	RT	28.0
SUBTOTAL		41.0
TOTAL		1273.6

F WATER AND GAS UTILITY WORK

STATION	LOCATION		ADDRESS	WATER SERVICE REPLACEMENT	REMARKS
	FROM	TO		2504.603 LIN. FT.	
			2601		FIELD CHECK BY CITY OF DULUTH
15+25	9' RT	23' LT	2531	32	3/4" COP
15+68	9' RT	23' LT	2527		FIELD CHECK BY CITY OF DULUTH
			2520		FIELD CHECK BY CITY OF DULUTH
16+60	9' RT	22' LT	2517	31	3/4" COP
			2516		FIELD CHECK BY CITY OF DULUTH
17+62	9' RT	21' RT	2512	12	3/4" COP
18_08	9' RT	23' RT	2510	14	3/4" COP
18+23	9' RT	23' LT	2507	32	3/4" COP
20+84	9' RT	19' RT	2424	10	3/4" COP
21+76	9' RT	19' RT	2416	10	3/4" COP
22+39	9' RT	12' RT	2412	3	3/4" COP
25+53	9' RT	21' LT	2321	30	3/4" COP; ALSO SERVES 2323-31
26+95	9' RT	19' RT	2312	10	3/4" COP
27+25	9' RT	19' RT	2310	10	3/4" COP
27+54	9' RT	15' RT	2308		FIELD CHECK BY CITY OF DULUTH
27+75	9' RT	15' RT	2304		FIELD CHECK BY CITY OF DULUTH
27+80	9' RT	20' RT	101 N 23rd	11	3/4" COP
27+90	9' RT	15' RT	2304?		FIELD CHECK BY CITY OF DULUTH
38+35	21' LT	24' LT	2031	3	3/4" COP
39+57	28' LT	32' LT	2021	4	3/4" COP
39+92	28' LT	33' LT	2019	5	3/4" COP
40+85	28' LT	34' LT	2011	6	DIG & CHECK FOR CUT OFF
43+57	28' LT	31' LT	1925	3	3/4" COP
43+90	28' LT	34' LT	1923	6	DIG & CHECK FOR CUT OFF
44+13	28' LT	34' LT	1921	6	DIG & CHECK FOR CUT OFF
48+01	9.5' RT	22' RT	1832	12.5	3/4" COP
50+19	9' RT	21' LT	1811	30	3/4" COP
50+93	9' RT	21' LT	1805	30	3/4" COP
52+89	9' RT	21' LT	1729	30	3/4" COP
			TOTAL	340.5	

CERTIFIED BY:

John H. Carlson

REG. NO.

12726

DATE:

4/22/02

1st STREET: 27th AVE WEST TO PIEDMONT AVE.

S. A. P. NO.: 118-173-06MTB

CITY PROJECT NO.: 0155TB

MISC. TABULATION CHARTS

Sheet 10 of 31 Sheets

G REMOVAL ITEMS					
STATION TO STATION	LOCATION	CONCRETE	CONCRETE	PAVEMENT	PAVEMENT
		CURB & GUTTER	WALK	(BIT) MILL	(BIT.)
		2104.501	2104.503	2232.501	2104.505
		LIN. FT.	SQ. FT.	SQ. YD.	SQ. YD.
1st STREET					
27th-26th Ave W.	LT	460	2850	1543	153.3
	RT	460	2580		153.3
26th-25th Ave W.	LT	460	2610	1517	153.3
	RT	460	2610		153.3
25th-24th Ave W.	LT	460	825	1310	153.3
	RT	460	1980		140
24th-23rd Ave W.	LT	420	2580	1278	162
	RT	420	780		
23rd-22nd Ave W.	LT	410	3710	2034	855
	RT	100	795		
22nd-21st Ave W.	LT	475	1380	2115	821.6
	RT	100	780		
21st-20th Ave W.	LT	405	1290	1980	833
	RT	100	1380		
20th-19th Ave W.	LT	440	4820	2091	97.8
	RT	200	4140		44.4
19th-18th Ave W.	LT	200	1425	1967	44.4
	RT	450	2580		44.4
18th-PIEDMONT Ave.	LT	100	540	988	22.2
	RT	120	960		26.7
TOTAL		6700	40615	16823	3858

H CASTING ASSEMBLIES					
TYPE OF CASTING	A	B	C	D	E
TYPE OF ASSEMBLY	STORM MH	CATCH BASIN CASTING ASSEMBLY	SANITARY MH	WATER & GAS	WATER
CASTING DESCRIPTION	FRAME & LID	FRAME	GRATE	FRAME & LID	VALVE BOX
CASTING NUMBER			816		
STANDARD PLATE NUMBER	CITY 5010	CITY 5005	4154B	CITY 5020	CITY
HEIGHT IN FEET	0.75	0.82	0.75	0.75	
NUMBER REQUIRED	15 (1)	17 (2)	17 (2)	14 (1)	20

- 1) THESE ITEMS INCLUDED IN SPEC. 2506.516, CASTING ASSEMBLY.
2) THESE ITEMS INCLUDED IN SPEC. 2506.502, CONSTRUCT DRAINAGE STRUCTURE.

I EARTHWORK SUMMARY	
LOCATION	TOTAL*
	COMMON
	EXCAVATION
	2105.501
	CU. YD.
1st STREET	
27th-26th Ave W.	0
26th-25th Ave W.	0
25th-24th Ave W.	0
24th-23rd Ave W.	0
23rd-22nd Ave W.	48
22nd-21st Ave W.	50
21st-20th Ave W.	49
20th-19th Ave W.	0
19th-18th Ave W.	0
18th-PIEDMONT Ave	0
TOTAL	147
* TO BE USED ON PROJECT	

O CONCRETE BASE	
LOCATION	8"
	CONCRETE
	BASE
	2201.501
	SQ. YD.
1st STREET	
27th-26th Ave W.	102
26th-25th Ave W.	102
25th-24th Ave W.	92
TOTAL	296

J CONSTRUCTION QUANTITIES									
LOCATION	CONC WALK				CONC. WALK		B-624		TOTAL
	LEFT		RIGHT		TOTAL		CURB & GUTTER		B-624
	4"	7"	4"	7"	4"	7"	LEFT	RIGHT	2531.501
	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.	LIN. FT.	LIN. FT.	TOT. LIN. FT.
1st STREET									
27th-26th Ave W.	2220	630	2580	0	4800	630	460.0	460.0	920.0
26th-25th Ave W.	2610	0	2340	270	4950	270	460.0	460.0	920.0
25th-24th Ave W.	585	240	1860	120	2445	360	415.0	415.0	830.0
24th-23rd Ave W.	900	1680	600	180	1500	1860	420.0	420.0	840.0
23rd-22nd Ave W.	1410	2300	555	240	1965	2540	410.0	100.0	510.0
22nd-21st Ave W.	1200	180	600	180	1800	360	475.0	100.0	575.0
21st-20th Ave W.	1170	120	1140	240	2310	360	405.0	100.0	505.0
20th-19th Ave W.	900	3920	1440	2700	2340	6620	440.0	200.0	640.0
19th-18th Ave W.	1155	270	2280	300	3435	570	200.0	440.0	640.0
18th-PIEDMONT Ave	540	0	960	0	1500	0	100.0	120.0	220.0
TOTAL	12890	9340	14355	4230	27045	13570	3785	2815	6600

K AGGREGATE AND BITUMINOUS QUANTITIES				
LOCATION	PLANT MIXED BITUMINOUS			GEOTEXTILE
	AGGREGATE BASE	LV4 WEARING	LV3 NON-WEARING	FABRIC
	(CV) CLASS 5	COURSE MIXTURE	COURSE MIXTURE	TYPE SPECIAL
	2211.503	2350.501	2350.502	2105.604
	CU. YD.	TON	TON	SQ. YD.
1st STREET				
27th-26th Ave W.	171	128	128	0
26th-25th Ave W.	168	128	128	0
25th-24th Ave W.	128	108	108	0
24th-23rd Ave W.	135	99	99	0
23rd-22nd Ave W.	295	336	187	981
22nd-21st Ave W.	271	345	146	1022
21st-20th Ave W.	328	316	130	892
20th-19th Ave W.	110	334	0	0
19th-18th Ave W.	49	322	0	0
18th-PIEDMONT Ave	18	165	0	0
TOTAL	1673	2281	926	2895
BASIS OF QUANTITY: BITUMINOUS MATERIAL FOR TACK COAT: 0.05 gal/yd2 BITUMINOUS MIXTURES: 110lb / inch / yd2				

NOT UPDATED

L EXISTING STORM DRAINAGE STRUCTURES											
STRUCTURE NUMBER	STATION	LOCATION	REMOVE MANHOLE OR CB	REMOVE SEWER PIPE	CONSTRUCT DRAINAGE STRUCT.	PROPOSED TOP OF CASTING	EXISTING TOP OF CASTING	CASTING ASSEMBLY CITY 5010	INVERT FL	DRAINS TO STRUC. NO.	REMARKS
			2104.509	2104.501	2506.502	ELEV.	ELEV.	2506.516			
			EACH	LIN. FT.	EACH			EACH			
IMH 10	9+94.8	21.2 LT				0.0	639.35			IMH 11	
ICB 10A	9+78.9	32.2 LT					638.87		635.24	IMH10	
ICB 10B	10+21.6	32.2 LT					638.92		635.14	IMH10	
IMH 11	9+94.8	00.9 LT					639.35			SOUTH	
ICB 11A	9+58.4	16.7 LT					639.58		636.17	IMH 11	
ICB 11B	9+64.2	14.7 RT					638.69		634.37	IMH 11	
ICB 12A	14+53.9	38.2 LT					636.43			MAIN	
ICB 12B	14+79.9	38.2 LT					636.38			MAIN	
ICB 12C	14+33.6	13.5 RT					636.10			MAIN	
ICB 12D	14+32.8	15.0 LT	1		1		636.53	1	633.78	MAIN	
IMH 13	19+27.4	35.6 LT								IMH14	
IMH 14	19+27.4	00.5 RT					635.07			SOUTH	
ICB 14A	19+17.2	37.7 LT								IMH14	
ICB 14B	19+49.2	37.7 LT								IMH14	
ICB 14C	18+98.0	13.7 RT	1		1		634.47	1	631.33	IMH 14	
ICB 14D	18+96.7	14.5 LT	1		1		634.76	1	630.86	IMH 14	
IMH 15	23+91.5	00.5 LT					632.99			EAST	
ICB 15A	23+84.7	47.7 LT					633.95			IMH15	
ICB 15B	24+15.1	47.7 LT					633.98			IMH15	
ICB 15C	23+51.1	14.6 RT					632.88			ICB 15D	
ICB 15D	23+51.1	14.1 LT					632.94			IMH 15	
IMH 16	28+60.8	01.1 LT					628.49			SOUTH	
ICB 16A	28+53.5	33.9 LT	1		1		627.97	1	625.57	IMH 16	
ICB 16B	28+80.7	33.9 LT	1		1		628.28	1	625.86	IMH 16	
ICB 16C	28+28.5	14.8 RT	1		1		627.90	1	625.60	IMH 16	
ICB 16D	28+29.0	14.4 LT	1		1		628.12	1	625.35	IMH 16	
IMH 17	33+27.4	61.7 LT					623.52			IMH 18	
IMH 18	33+28.2	12.4 RT					623.32			SOUTH	
ICB 18A	33+19.4	35.4 LT					622.44		617.76	IMH 18	
ICB 18B	33+47.8	35.4 LT					622.55		618.35	IMH 18	
ICB 18C	32+85.1	18.6 RT					623.02		617.97	IMH 18	
ICB 18D	33+00.5	18.1 RT	1		1		622.85	1	619.21	IMH 18	
IMH 19	37+94.3	15.5 LT					620.41			IMH 20	
IMH 20	37+94.6	00.6 LT					620.35			SOUTH	
ICB 20A	37+78.7	34.7 LT	1		1		620.67	1	618.77	IMH 20	
ICB 20B	38+41.4	16.4 RT			1		619.43		617.23	IMH 20	1
ICB 20C	37+61.4	19.3 RT					619.64		616.91	IMH 20	
ICB 20D	37+62.1	18.4 LT	1		1		619.85	1	616.90	IMH 20	
IMH 21	38+15.4	17.4 LT					620.26			IMH 20	
ICB 21A	38+22.2	36.7 LT	1		1		620.44	1	619.04	IMH 21	
ICB 21B	38+40.7	17.5 LT	1		1		619.79	1	616.79	IMH 21	
IMH 22	42+61.6	02.4 LT					621.96			SOUTH	
ICB 22A	42+45.2	57.4 LT								IMH 22	
ICB 22B	43+02.5	17.2 LT					621.78		619.18	IMH 22	
ICB 22C	43+03.4	18.3 RT	1		1		621.14	1	617.74	IMH 22	
IMH 23	47+26.6	3.8 LT					628.94			SOUTH	
ICB 23A	47+17.3	44.5 LT					629.39		625.19	IMH 23	
ICB 23B	47+50.9	33.9 LT					629.05		624.78	IMH 23	
IMH 24	47+27.3	03.6 RT					628.37			SOUTH	
ICB 24A	47+66.6	16.7 LT	1		1		629.05	1	627.37	WEST	
ICB 24B	47+68.8	18.2 RT	1		1		628.33	1	625.13	IMH 24	
IMH 25	52+14.5	18.5 RT					653.99			SOUTH	
ICB 25A	51+84.6	36.9 RT	1		1		655.93	1	651.68	IMH 25	
ICB 25B	52+15.7	35.4 LT	1		1		656.88	1	654.73	IMH 25	
ICB 25C	52+36.8	17.5 LT					656.47		653.97	IMH 25	
ICB 25D	52+40.6	18.3 RT					655.14		651.16	IMH 25	
TOTALS			17		17			17			
NOTES: 1) MINOR REPAIR WORK INCIDENTAL TO CURB AND GUTTER WORK											

PROPOSED STORM DRAINAGE STRUCTURES													
STRUCTURE NUMBER	STATION	LOCATION	CONST. MANHOLE A OR F	CONST. CB C OR G	CASTING ASSEMBLY	TOP OF CASTING ELEV.	INVERT CL/FL ELEV.	RCP CL III PIPE		DRAINS TO	%GRADE	INLET ELEV.	REMARKS
			2506.501	2506.502	2506.516	12"	24"						
			LIN. FT.	EACH	EACH/TYPE	2503.541	2503.541	LIN. FT.	LIN. FT.				
FCB 12D	14+32.8	15.0 LT		1	CITY 5005	636.53	633.78			MAIN			
FCB 14C	18+98.0	13.7 RT		1	CITY 5005	634.47	631.33			IMH 14			
PCB 14D	18+96.7	14.5 LT		1	CITY 5005	634.76	630.86			IMH 14			
PCB 16A	28+53.5	33.9 LT		1	CITY 5005	627.97	625.57			IMH 16			
PCB 16B	28+80.7	33.9 LT		1	CITY 5005	628.28	625.96			IMH 16			
PCB 16C	28+28.5	14.8 RT		1	CITY 5010	627.90	625.60			IMH 16			
PCB 16D	28+29.0	14.4 LT		1	CITY 5005	628.12	625.35			IMH 16			
PCB 18D	33+00.5	18.1 LT		1	CITY 5005	622.85	619.21			IMH 18			
PCB 20A	37+78.7	34.7 LT		1	CITY 5005	620.67	618.77			IMH 20			
PCB 20D	37+62.1	18.4 LT		1	CITY 5005	619.85	616.90			IMH 20			
PCB 21A	38+22.2	36.7 LT		1	CITY 5005	620.44	619.04			IMH 21			
PCB 21B	38+40.7	17.5 LT		1	CITY 5005	619.79	616.79			IMH 21			
PCB 22C	43+03.4	18.3 RT		1	CITY 5005	621.14	617.74			IMH 22			
PCB 24A	47+66.6	16.7 LT		1	CITY 5005	629.05	627.37			WEST			
PCB 24B	47+68.8	18.2 RT		1	CITY 5005	628.33	625.13			IMH 24			
PCB 25A	51+84.6	36.9 LT		1	CITY 5005	655.93	651.68			IMH 25			
PCB 25B	52+15.7	35.4 LT		1	CITY 5005	656.88	654.73			IMH 25			
TOTALS			0	17				0	0				

N PROPOSED PERFORATED PIPE			
STATION TO STATION	LOCATION	4" PERFORATED PIPE DRAIN 2502.541 LIN. FT.	DRAINS TO
10+23 TO 14+31	LT	418	CB 12D
14+35 TO 14+52	LT	36	CB 12D
10+23 TO 14+32	RT	419	CB 12C
14+35 TO 14+52	RT	36	CB 12C
14+81 TO 18+94	LT	425	CB 14D
18+99 TO 19+16	LT	36	CB 14D
14+81 TO 18+94	RT	425	CB 14D
18+99 TO 19+16	RT	36	CB 14D
19+51 TO 23+49	LT	408	CB15D
23+54 TO 23+84	LT	36	CB15D
19+51 TO 23+49	RT	408	CB15C
23+54 TO 23+84	RT	36	CB15C
24+16 TO 28+26	LT	420	CB16D
28+32 TO 28+52	LT	41	CB16D
24+16 TO 28+26	RT	420	CB16C
28+32 TO 28+47	RT	36	CB16C
28+82 TO 32+96	LT	424	CB18D
33+1.7 TO 33+19	LT	36	CB18D
33+48 TO 37+57	LT	419	CB20D
37+63 TO 37+77	LT	36	CB20D
38+24 TO 38+40	LT	26	CB21B
38+44 TO 42+42	LT	398	CB21B
TOTAL		4975.0	

1st STREET: 27th AVE. WEST TO PIEDMONT AVE.

STORM DRAIN TABULATION CHART

NOT UPDATED

SIGNS									
MN MUTCD NUMBER	SIGN NAME / TYPE	SIZE	LOCATION		REMOVE	REMOVE &	FURNISH &	REMARKS	
			EXISTING	NEW	2104.509	2564.602	2564.531		
			STATION	OFFSET	STATION	OFFSET	STATION	SO. FT.	
	1st STREET: 27th AVE. W. TO 26th AVE. W.								
	ONE WAY		10+38.3	16.9 RT		1			ON SAME POST
	STOP		10+38.3	16.9 RT		1			ON SAME POST
	ONE WAY		10+38.3	19.3 LT		1			ON SAME POST
	STOP		10+38.3	19.3 LT		1			ON SAME POST
	NO STOPPING OR STANDING		10+91.7	19.3 RT		1			
	SNOW EMERGENCY ROUTE		10+91.7	19.3 RT		1			ON SAME POST
	TRUCK ROUTE W/ ARROW		12+58.1	18.9 RT		1			ON SAME POST
	TRUCK ROUTE W/ ARROW		12+58.1	18.8 LT		1			
	GUIDE SIGN (TO I35)		13+11.2	20.9 RT		1			ON SAME POST
	GUIDE SIGN (TO I 35)		13+11.2	18.9 RT		1			ON SAME POST
	NEIGHBORHOOD CRIME WATCH		13+71.2	21.0 LT		1			
	SNOW EMERGENCY ROUTE		13+83.8	21.0 LT		1			ON SAME POST
	STOP AHEAD		13+83.8	21.0 LT		1			ON SAME POST
	STREET NAME		14+36.4	21.8 RT		1			
	1st STREET: 26th AVE. W. TO 25th AVE. W.								
	DO NOT ENTER		15+56.9	18.0 RT		1			ON SAME POST
	NO STOPPING OR STANDING		15+56.9	18.0 RT		1			ON SAME POST
	NO STOPPING OR STANDING		17+94.1	18.0 RT		1			
	STREET NAME		18+93.4	21.0 RT		1			
	1st STREET: 25th AVE. W. TO 24th AVE. W.								
	SNOW EMERGENCY ROUTE		20+48.5	18.7 RT		1			
	NO STOPPING OR STANDING		20+48.5	18.7 RT		1			
	NO STOPPING OR STANDING		23+17.2	18.7 RT		1			
	STREET NAME		23+76.4	37.5 RT		1			
	1st STREET: 24th AVE. W. TO 23rd AVE. W.								
	DO NOT ENTER		24+39.9	18.9 LT					ON SAME POST
	CROSS TRAFFIC DOES NOT STOP		24+39.9	18.9 LT					ON SAME POST
	STOP		24+39.9	18.9 LT					ON SAME POST
	DO NOT ENTER		24+44.3	17.7 LT		1			ON SAME POST
	CROSS TRAFFIC DOES NOT STOP		24+44.3	17.7 LT		1			ON SAME POST
	STOP		24+44.3	17.7 LT		1			ON SAME POST
	NO STOPPING OR STANDING		25+11.3	18.1 RT		1			
	END		25+93.7	19.5 LT		1			ON SAME POST
	NO PARKING LOADING ZONE 8am - 6pm		25+93.7	19.5 LT		1			ON SAME POST
	BEGIN		26+07.7	19.5 LT		1			ON SAME POST
	NO PARKING LOADING ZONE 8am - 6pm		26+07.7	19.5 LT		1			ON SAME POST
	SNOW EMERGENCY ROUTE		27+17.4	20.0 RT		1			ON SAME POST
	NO STOPPING OR STANDING		27+17.4	20.0 RT		1			ON SAME POST
	STOP AHEAD		28+20	18.6 LT		1			
	STREET NAME		28+33.9	33.6 RT		1			
	1st STREET: 23rd AVE. W. TO 22nd AVE. W.								
	NO PARKING 2am - 6am		31+37.8	23.5 LT		1			
	NO PARKING 2am - 6am		32+28.2	23.5 LT		1			
	LOADING ZONE		32+33.9	21.6 LT					
	LOADING ZONE		32+57.2	21.6 LT					
	1st STREET: 22nd AVE. W. TO 21st AVE. W.								
	STREET NAME		33+61.2	33.8 LT		1			
	ONE WAY		33+54.9	22.1 RT		1			ON SAME POST
	STOP		33+54.9	22.1 RT		1			ON SAME POST
	TRUCK ROUTE W/ ARROW		33+76.2	23.2 LT		1			
	2 HOUR PARKING		34+64.1	22.9 RT					
	NO PARKING 2am - 6am		34+75.2	21.6 LT		1			
	NO PARKING 2am - 6am		36+26.6	21.8 LT		1			
	NO PARKING FUNERAL HOME		36+47.5	22.2 RT		1			
	2 HOUR PARKING		36+93.9	22.7 RT		1			
	STREET NAME		37+64.2	32.1 LT		1			
	TOTALS					45			

SIGNS									
MN MUTCD NUMBER	SIGN NAME / TYPE	SIZE	LOCATION		REMOVE	REMOVE &	FURNISH &	REMARKS	
			EXISTING	NEW	2104.509	2564.602	2564.531		
			STATION	OFFSET	STATION	OFFSET	STATION	SO. FT.	
	1st STREET: 21st AVE. W. TO 20th AVE. W.								
	DO NOT ENTER		38+68.8	21.7 RT					
	STOP		38+68.8	21.7 RT					
	DO NOT ENTER		38+68.8	20.7 LT		1			ON SAME POST
	STOP		38+68.8	20.7 LT		1			ON SAME POST
	NO STOPPING OR STANDING		38+84.4	21.9 LT		1			ON SAME POST
	GUIDE SIGN (TO US HWY 53)		38.84.4	21.9 LT		1			ON SAME POST
	NO PARKING LOADING ZONE 8am - 6pm		39+30.8	21.7 RT					
	NO PARKING LOADING ZONE 8am - 6pm		39+64.8	21.7 RT					
	NO STOPPING OR STANDING		41+07.2	21.7 LT		1			
	TRUCK LOADING ZONE 8am - 6pm		41+73.1	22.3 RT		1			
	TRUCK LOADING ZONE 8am - 6pm		42+18.4	22.3 RT		1			
	1st STREET: 20th AVE. W. TO 19th AVE. W.								
	STREET NAME		43+01.3	32.1 LT					
	NO STOPPING OR STANDING		44+03.6	31.2 LT					
	2 HOUR PARKING		44+86.3	23.1 RT		1			
	NO STOPPING OR STANDING		45+81.7	21.9 LT		1			ON SAME POST
	TRUCK ROUTE W/ ARROW		45+81.7	21.9 LT		1			ON SAME POST
	NO PARKING LOADING ZONE 8am - 6pm		46+45.2	22.2 RT		1			
	2 HOUR PARKING		46+81.4	23.4 RT		1			ON SAME POST
	BEGIN ONE WAY		46+81.4	23.4 RT		1			ON SAME POST
	SNOW EMERGENCY ROUTE		46+84.6	21.5 LT		1			ON SAME POST
	BEGIN ONE WAY		46+84.6	21.5 LT		1			ON SAME POST
	1st STREET: 19th AVE. W. TO 18th AVE. W.								
	NO PARKING THIS SIDE		47+98.5	23.4 RT		1			ON SAME POST
	DIRECTION SIGN (2 WAY ARROWS)		47+98.5	23.4 RT		1			ON SAME POST
	GUIDE SIGN (TO I-35 W/ ARROW)		48+23.0	21.5 LT					
	NO PARKING THIS SIDE		51+21.1	22.6 RT		1			
	SPEED LIMIT 30		51+54.9	22.4 LT		1			
	STOP		51+67.6	24.9 RT		1			
	STREET NAME		51+80.2	35.9 RT		1			
	1st STREET: 18th AVE. W TO PIEDMONT AVE.								
	NO PARKING THIS SIDE		53+05.5	22.0 LT		1			ON SAME POST
	STOP SIGN AHEAD		53+05.5	22.0 LT		1			ON SAME POST
	NO PARKING HERE TO CORNER		53+27.9	21.5 LT		1			ON SAME POST
	DIRECTION SIGN (2 WAY ARROWS)		53+27.9	21.5 LT		1			ON SAME POST
	HIGHWAY 53		53+50.8	20.9 LT		1			ON SAME POST
	GUIDE SIGN (TO PIEDMONT W/ ARROW)		53+50.8	20.9 LT		1			ON SAME POST
	STOP		54+43.9	28.4 RT					
	TOTALS				0	27	0		

CERTIFIED BY: John H. Carlson REG. NO. 12726 DATE: 1/12/02
PROFESSIONAL ENGINEER

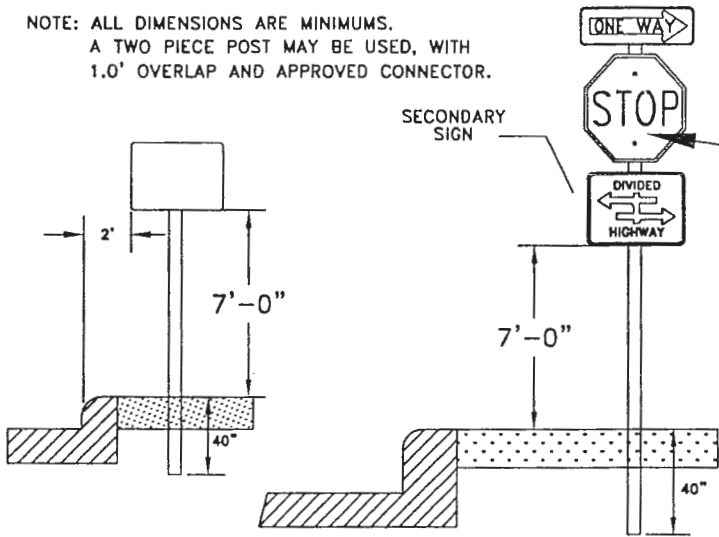
1st. STREET: . 27th AVE. WEST TO PIEDMONT AVE STA 9+50 TO 54+13.64 SIGNAGE CHART & DETAILS
S. A. P. NO.: 118-173-06MTB CITY PROJECT NO.: 0155TR Sheet 13 of 31 Sheet

NO SHEET CHANGES

SIGN INSTALLATION DETAIL

SPEC. 2564.602, REMOVE AND REINSTALL SIGN, EACH

NOTE: ALL DIMENSIONS ARE MINIMUMS.
A TWO PIECE POST MAY BE USED, WITH
1.0' OVERLAP AND APPROVED CONNECTOR.



STAINLESS STEEL WASHER &
NYLON WASHER (T=1/16" MIN.,
I.D.=3/8" MAX., O.D.=7/8" MAX.)

SIGN PANEL
POST
5/16" STAINLESS STEEL
BOLT, WITH NYLON
INSERT LOCK NUT.

NOTE: SEE SPECIAL PROVISIONS FOR SIGN AND
AND POST SPECIFICATIONS.

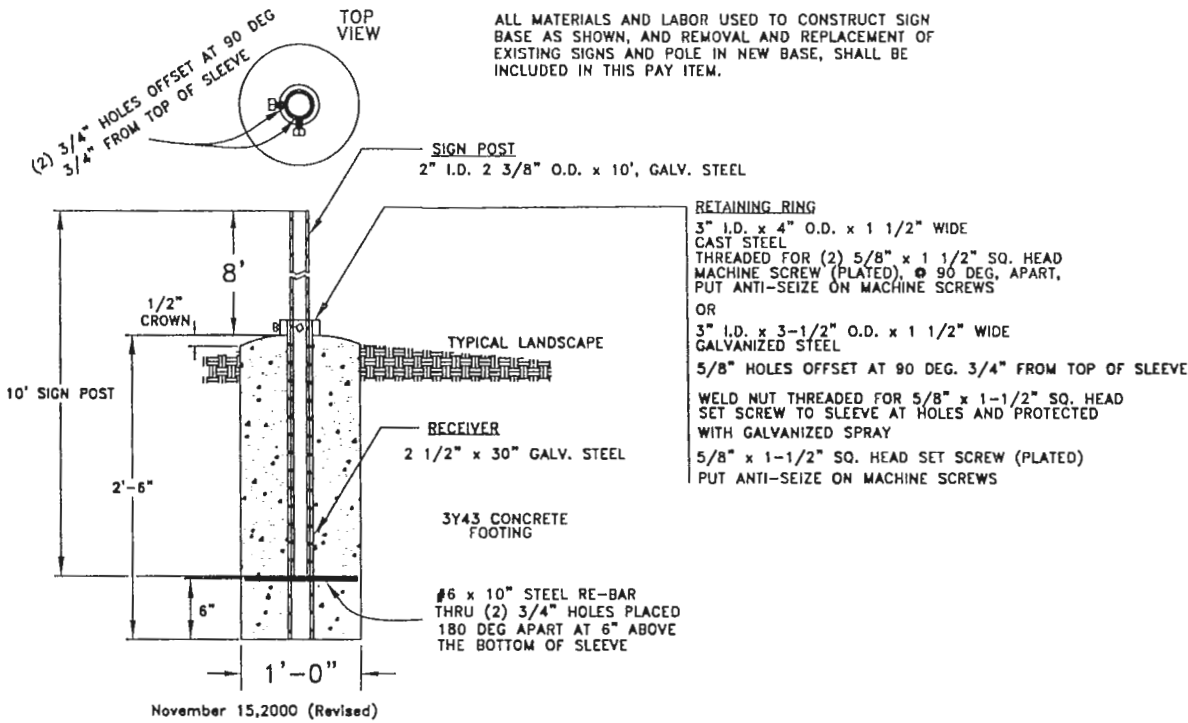
SIGN PANEL TO
POST CONNECTION

ALL MATERIALS AND LABOR USED TO RELOCATE
EXISTING SIGN AS SHOWN, SHALL BE INCLUDED
IN THIS PAY ITEM:

STREET NAME SIGN FOOTING DETAIL

SPEC. 2564.602, REMOVE AND REINSTALL SIGN, EACH

ALL MATERIALS AND LABOR USED TO CONSTRUCT SIGN
BASE AS SHOWN, AND REMOVAL AND REPLACEMENT OF
EXISTING SIGNS AND POLE IN NEW BASE, SHALL BE
INCLUDED IN THIS PAY ITEM.



RETAINING RING
3" I.D. x 4" O.D. x 1 1/2" WIDE
CAST STEEL
THREADED FOR (2) 5/8" x 1 1/2" SQ. HEAD
MACHINE SCREW (PLATED), 90 DEG. APART,
PUT ANTI-SEIZE ON MACHINE SCREWS
OR
3" I.D. x 3-1/2" O.D. x 1 1/2" WIDE
GALVANIZED STEEL
5/8" HOLES OFFSET AT 90 DEG. 3/4" FROM TOP OF SLEEVE
WELD NUT THREADED FOR 5/8" x 1-1/2" SQ. HEAD
SET SCREW TO SLEEVE AT HOLES AND PROTECTED
WITH GALVANIZED SPRAY
5/8" x 1-1/2" SQ. HEAD SET SCREW (PLATED)
PUT ANTI-SEIZE ON MACHINE SCREWS

NOTE:
CONTRACTOR TO EXERCISE CARE IN
THE REMOVAL OF EXISTING STREET
SIGNS. EXISTING STREET SIGNS SHALL
BE KEPT IN THEIR ORIGINAL CONDITION
(NOT SET ON THE GROUND) AND SHALL
REMAIN VISIBLE WHERE APPLICABLE
(STREET NAME SIGNS, STOP SIGNS, ETC.).

CERTIFIED BY: *Clark H. Carlson*

REF NO 12726

DATE: 4/22/02

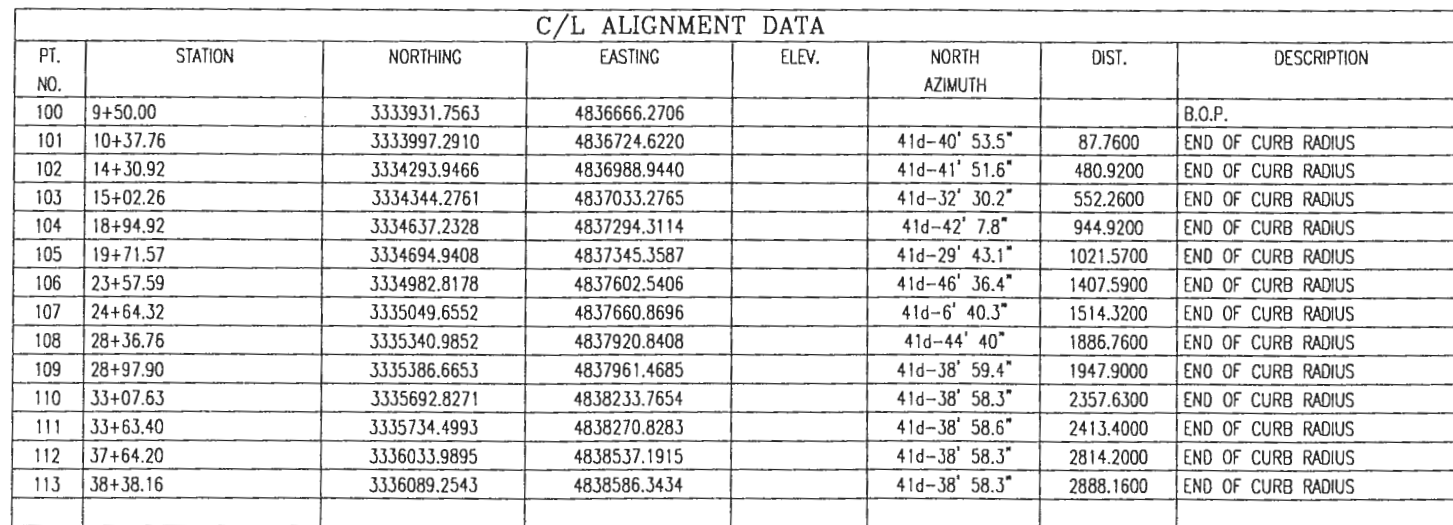
1st. STREET: 27th AVE. WEST TO PIEDMONT AVE. STA 9+50 TO 54+13.64

SIGN DETAILS

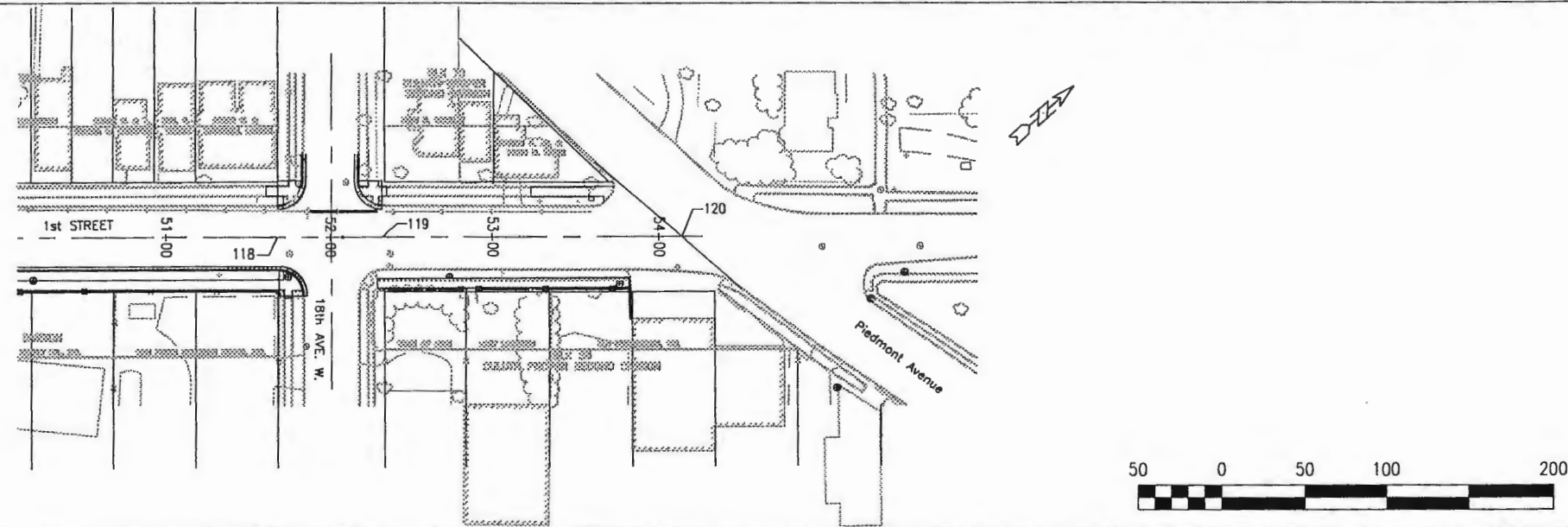
S A D NO. 118-173-06MTB

CITY PROJECT NO. 0155TP

Sheet 14 of 31 Sheets

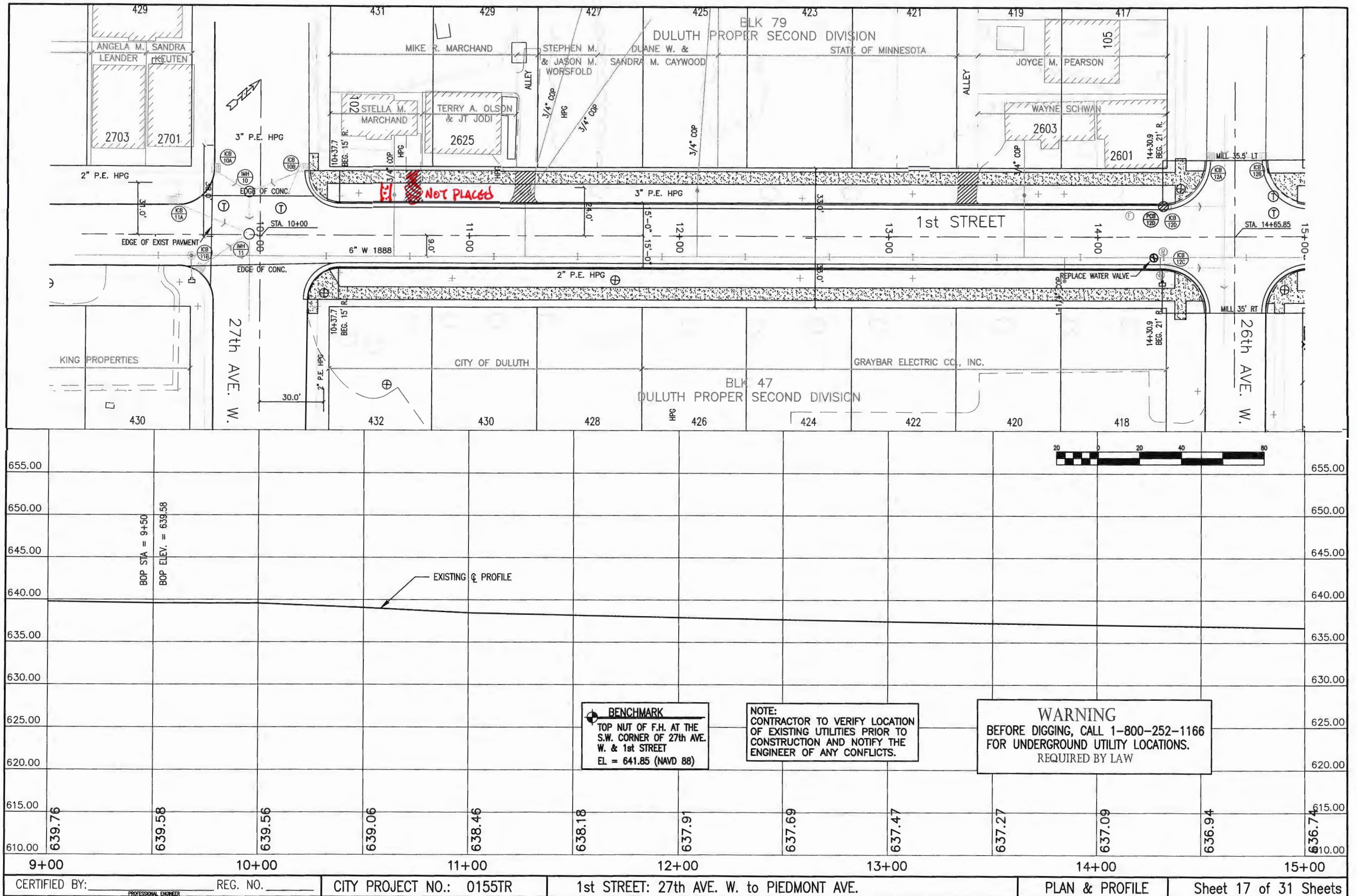


118	173	06MTP	1st STREET: 27th AVE W to PIEDMONT AVE	ALIGNMENT AND LAYOUT	Sheet 15 of 31 Sheets
-----	-----	-------	--	----------------------	-----------------------

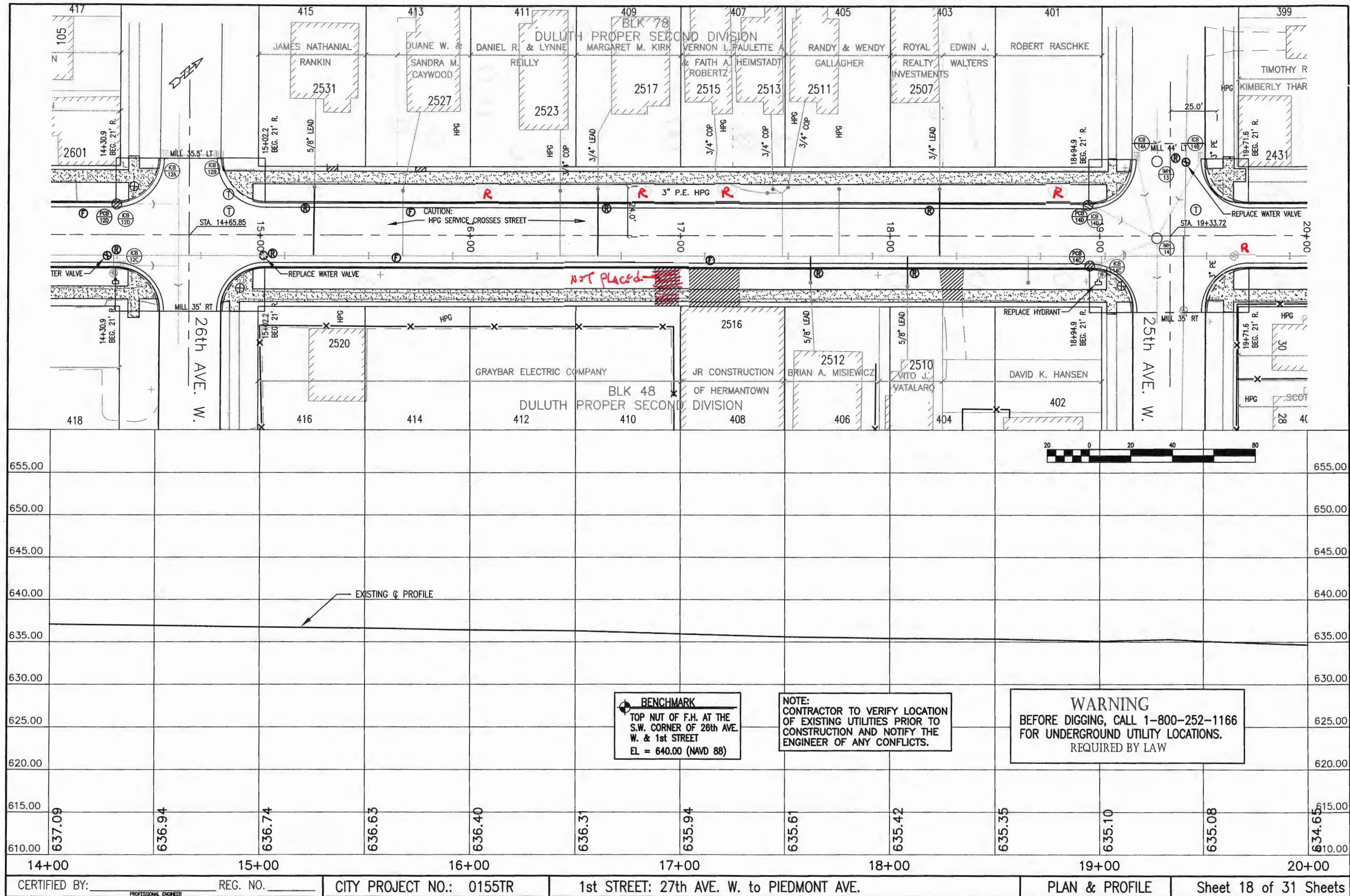


B	CENTERLINE TO CENTERLINE DISTANCES	
STATION	LOCATION	DISTANCE
10+00.00	27th AVE. W.	0
14+65.85	26th AVE. W.	465.85 FT.
19+33.72	25th AVE. W.	467.87 FT.
24+00.00	24th AVE. W.	466.28 FT.
28+56.04	23rd AVE. W.	456.04 FT.
33+26.93	22nd AVE. W.	470.89 FT.
38+00.00	21st AVE. W.	473.07 FT.
42+61.63	20th AVE. W.	461.63 FT.
47+34.06	19th AVE. W.	472.43 FT.
52+00.00	18th AVE. W.	465.94 FT.
54+13.64	PIEDMONT AVE.	213.64 FT.

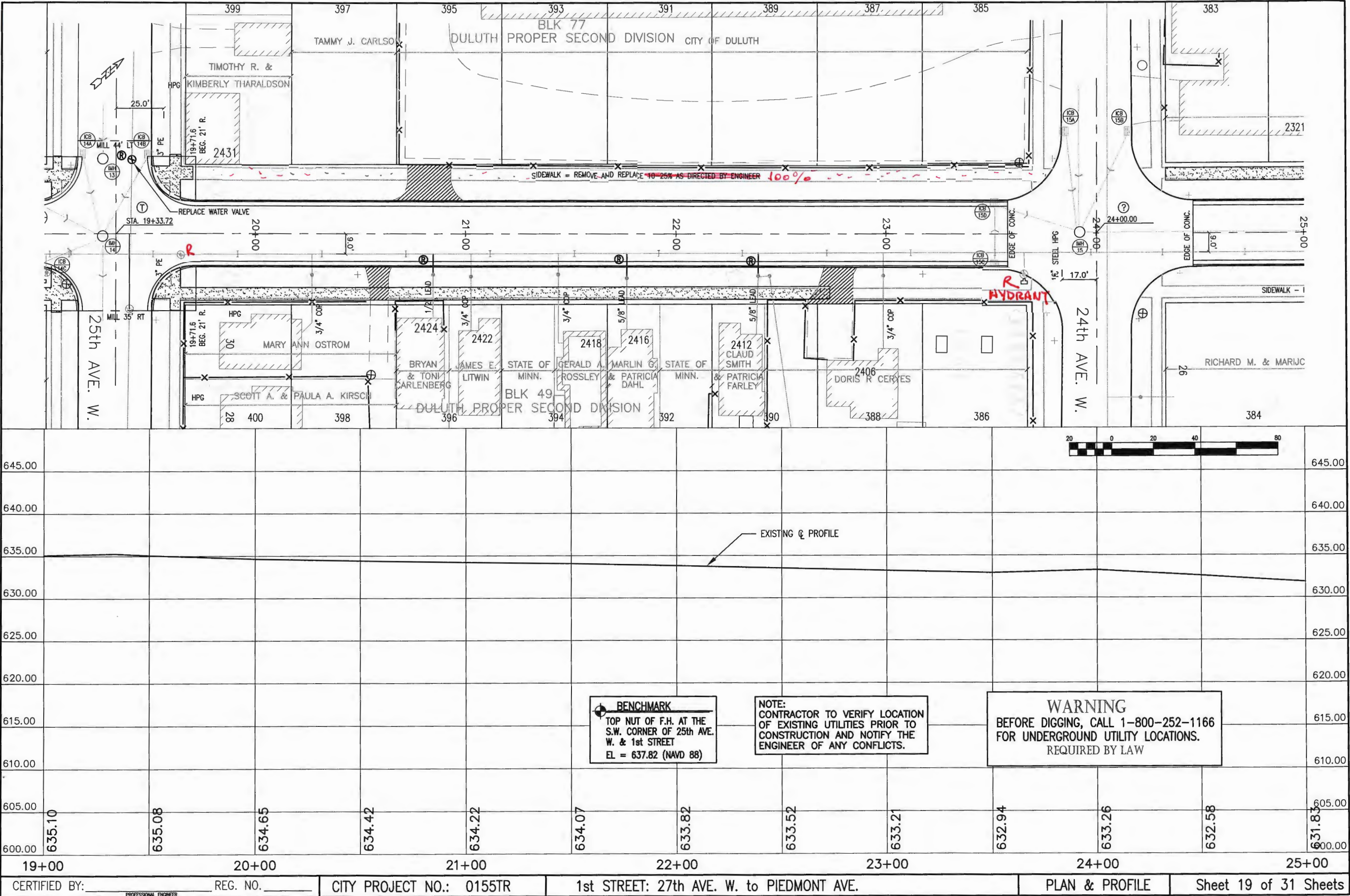
Y: 2001 Projects 01-1137 First St - Piedmont to 27th Ave West\crrwings\RCp01001.cwg, 10/23/2003 1:09:27 PM, \\PRINTSERV-CIVIL\HP5000

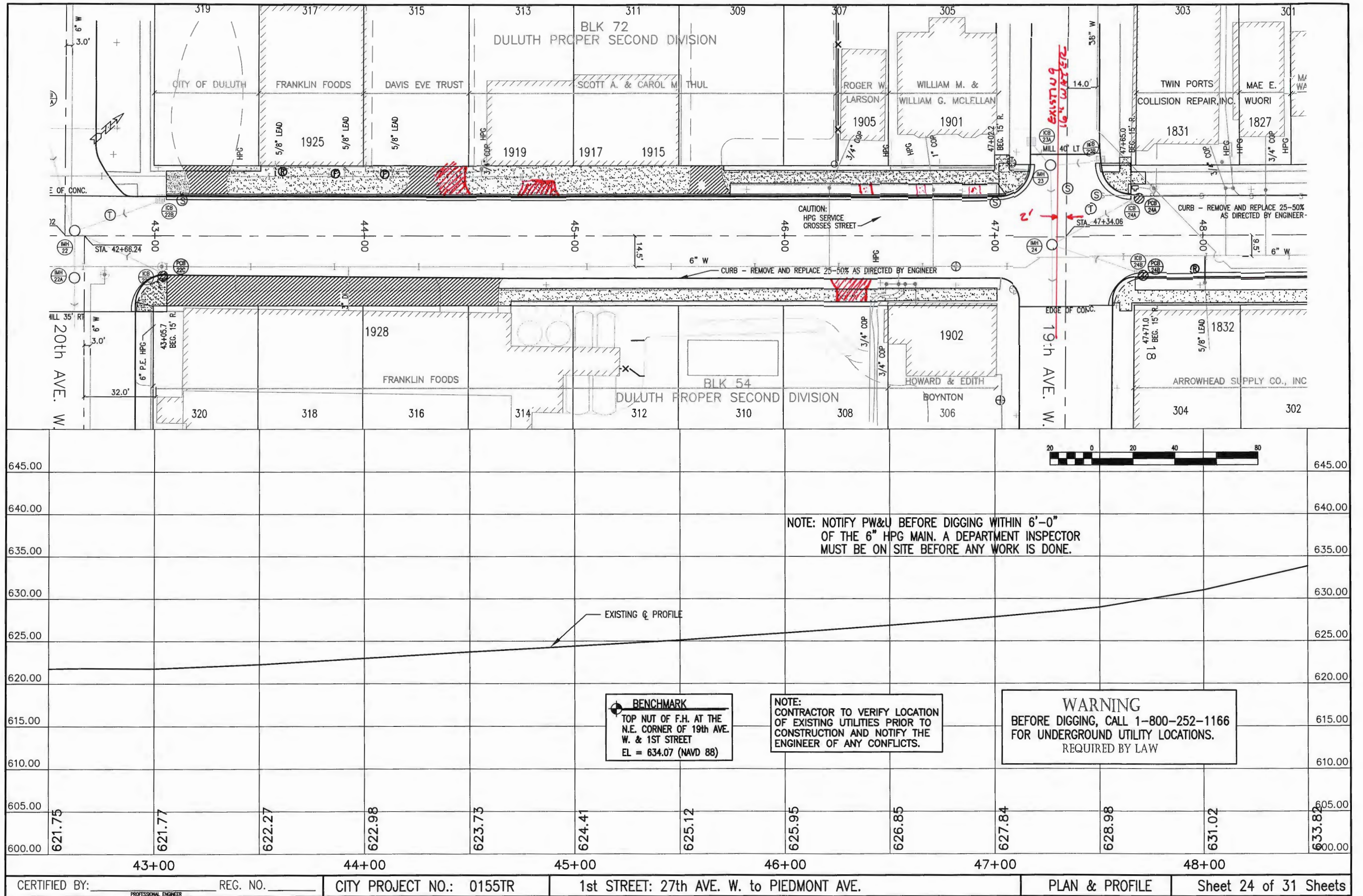


Y: 2001 Projects\01-1137 First St - Piedmont to 27th Ave West\crrwings\RCp02001.0wg, 10/23/2003 1:09:54 PM, \\PRINTSERV-CIVIL\HP5000

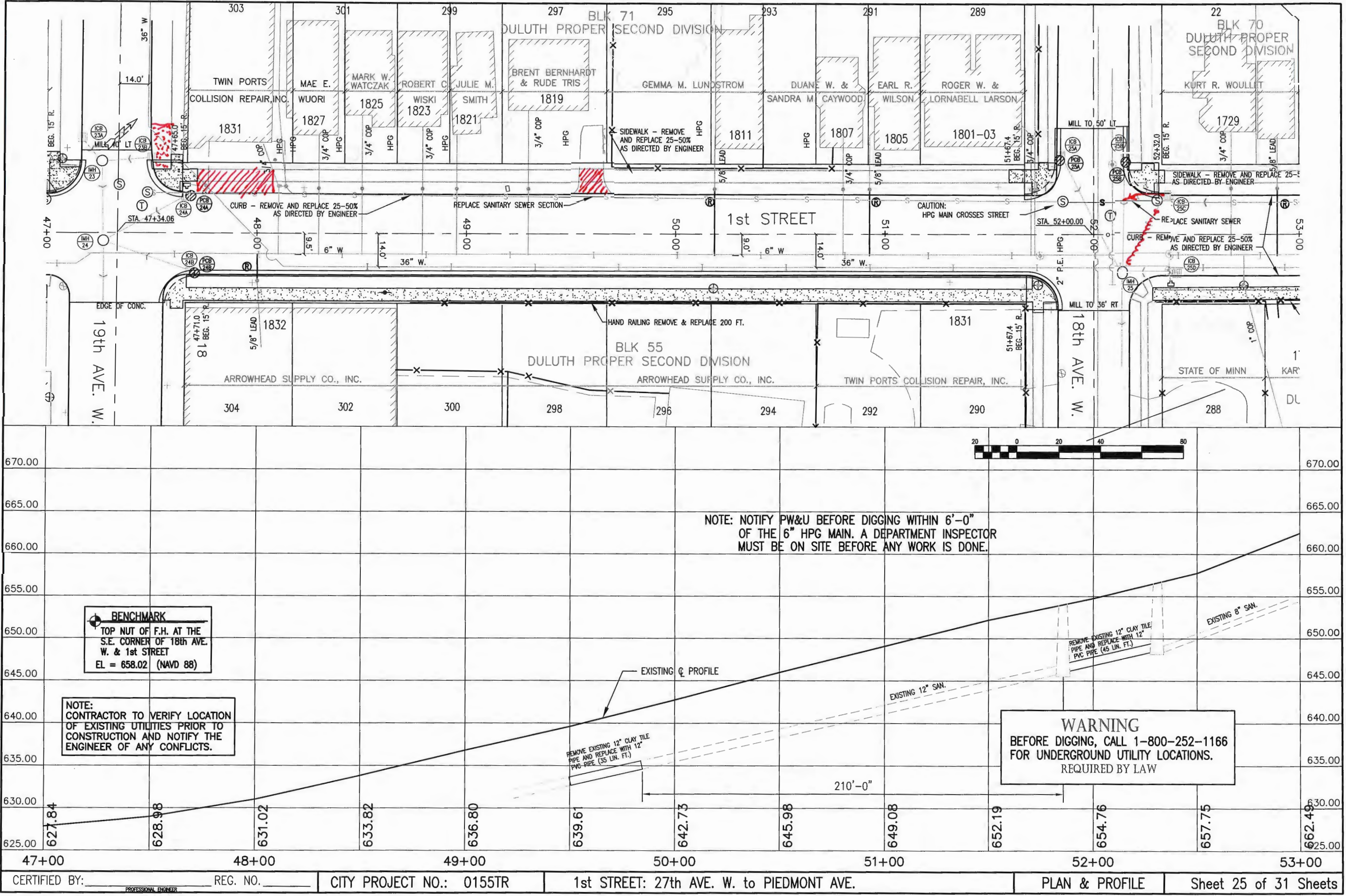


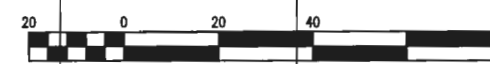
Y: 2001 Projects 01-1137 First St - Piedmont to 27th Ave West\arcwircs\RCp03001.dwg, 10/23/2003 9:55:39 AM, \\PRINTSERV-CIVIL\HP5000





Y: 2001 Projects\01-1137 First St - Piedmont to 27th Ave West\crrwings\RCp09001.cwg, 10/23/2003 2:03:56 PM, \\PRINTSERV-CIVIL\HP5000

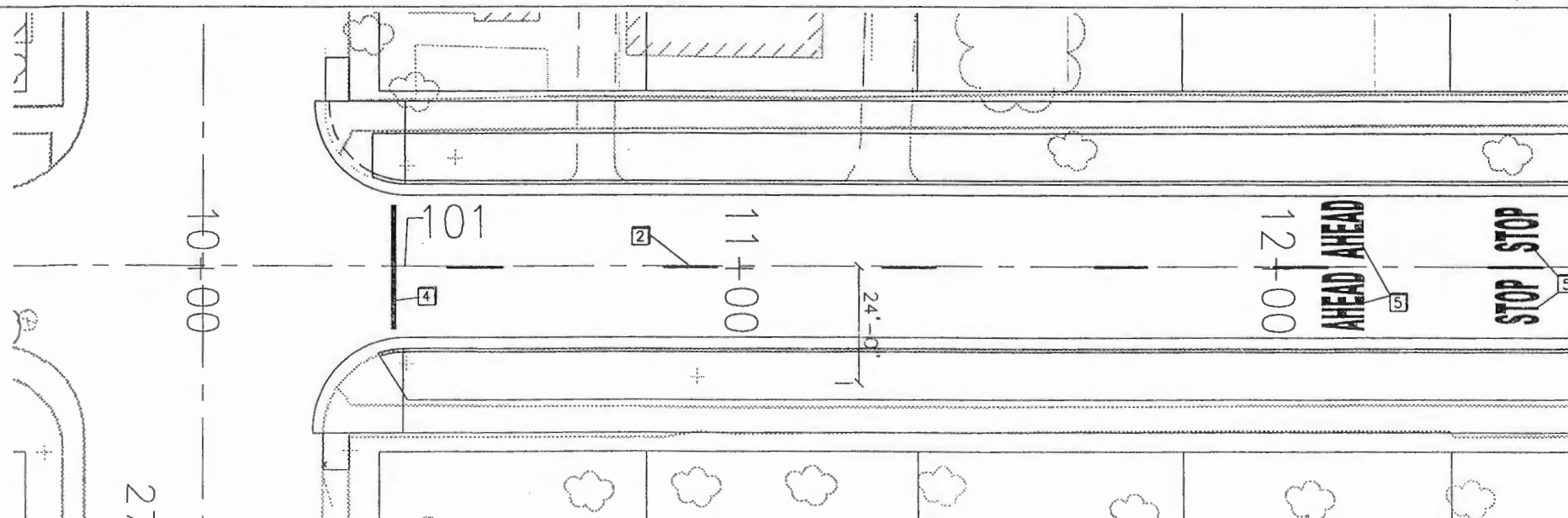
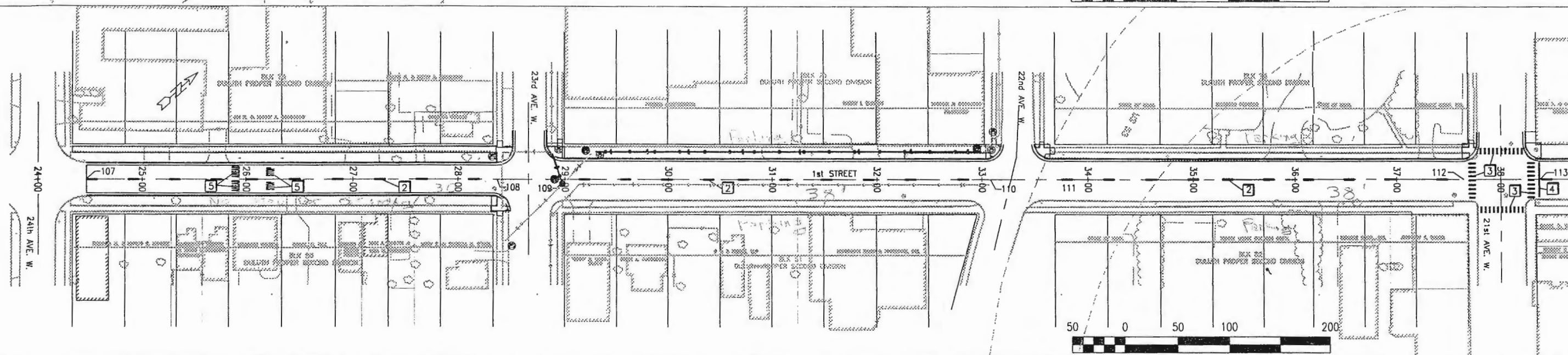
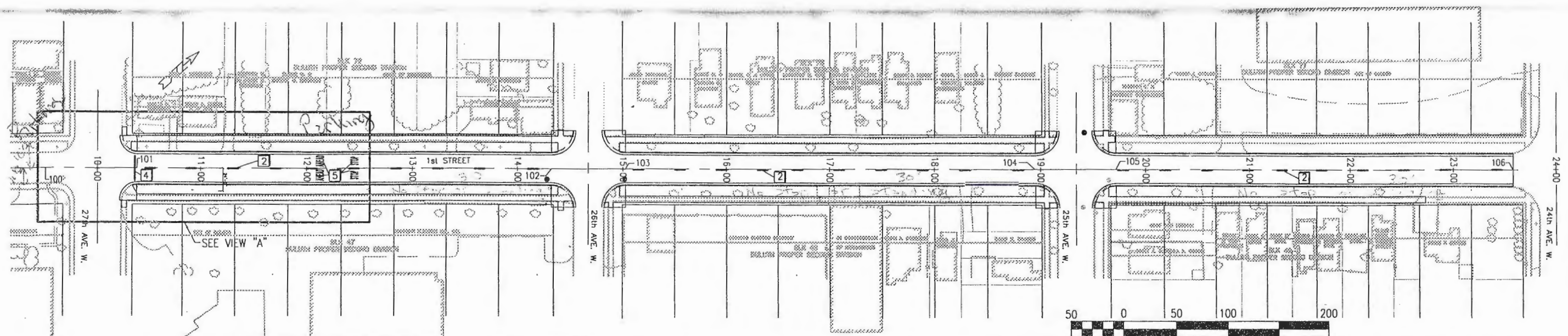




NOTE:
CONTRACTOR TO VERIFY LOCATION
OF EXISTING UTILITIES PRIOR TO
CONSTRUCTION AND NOTIFY THE
ENGINEER OF ANY CONFLICTS.

WARNING
BEFORE DIGGING, CALL 1-800-252-1166
FOR UNDERGROUND UTILITY LOCATIONS.
REQUIRED BY LAW

NO SHEET CHANGES



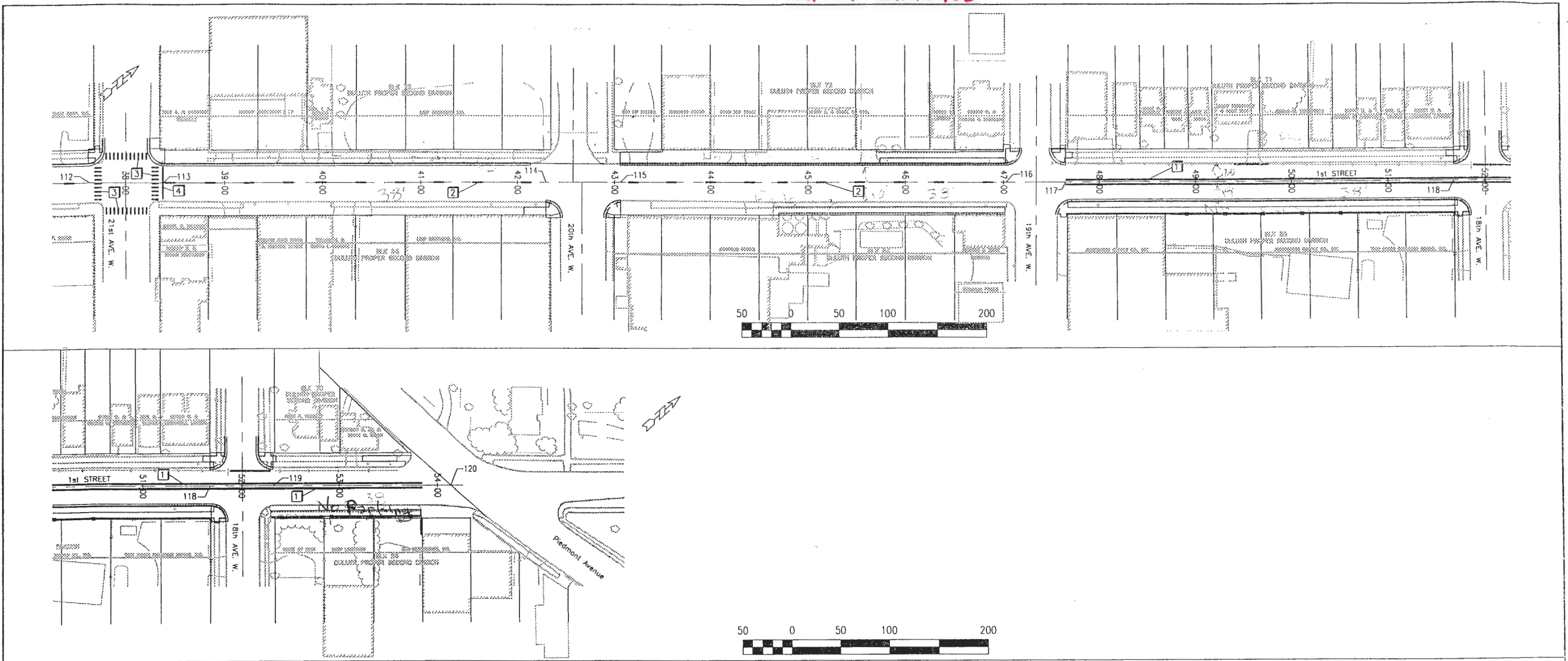
STRIPING NOTES

- [R] REMOVE EXISTING PAVEMENT MARKINGS.
- [1] INSTALL 4" WIDE EPOXY PAINTED DOUBLE YELLOW CENTERLINE PER MNMUTCD SEC. 3B-1.
- [2] INSTALL 4" WIDE EPOXY PAINTED DASHED WHITE LANE LINE PER MNMUTCD SEC. 3B-2.
- [3] INSTALL 24" WIDE POLY PREFORMED LONGITUDINAL CROSSWALK MARKINGS (48" O.C.) PER MNMUTCD SEC. 3B-18.
- [4] INSTALL 12" WIDE EPOXY PAINTED STOP BAR PER MNMUTCD SEC. 3B-17.
- [5] INSTALL POLY PREFORMED "STOP" AND "AHEAD" PAVEMENT MARKINGS PER MNMUTCD SEC. 3B-20.

4/22/02

VIEW "A"

NO SHEET CHANGES



STRIPING NOTES

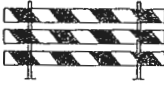
- [R] REMOVE EXISTING PAVEMENT MARKINGS.
- [1] INSTALL 4" WIDE EPOXY PAINTED DOUBLE YELLOW CENTERLINE PER MNMUTCD SEC. 3B-1.
- [2] INSTALL 4" WIDE EPOXY PAINTED SINGLE WHITE LANE LINE PER MNMUTCD SEC. 3B-2.
- [3] INSTALL 24" WIDE POLY PREFORMED LONGITUDINAL CROSSWALK MARKINGS (48" O.C.) PER MNMUTCD SEC. 3B-18.
- [4] INSTALL 12" WIDE EPOXY PAINTED STOP BAR PER MNMUTCD SEC. 3B-17.

4/22/02

NO SHEET CHANGES

TRAFFIC CONTROL PLAN

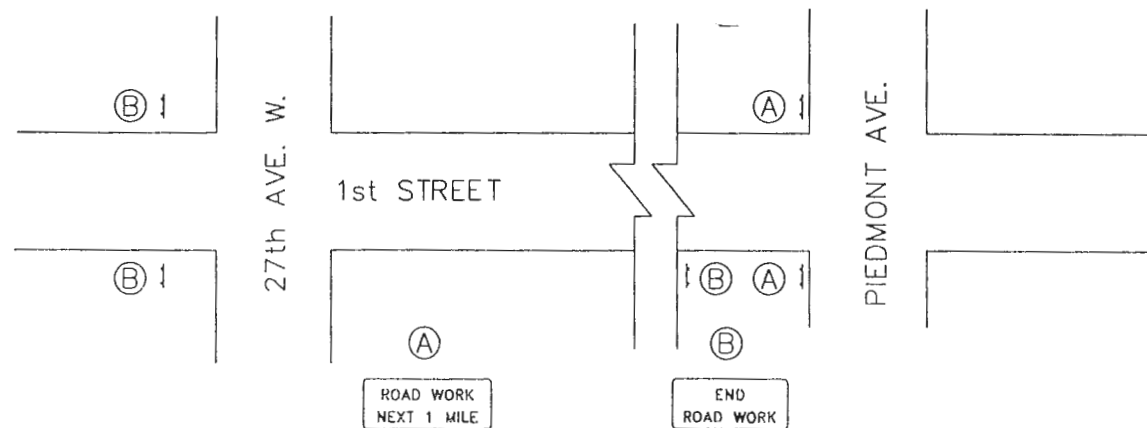
TRAFFIC - BILL OF MATERIALS

THE FOLLOWING ITEMS ARE INCLUDED AND PAID FOR UNDER SPEC. 2563.601 TRAFFIC CONTROL - LUMP SUM									
SIGN NO.	MESSAGE	SIZE	NO. REQ'D	NOTES	SIGN NO.	MESSAGE	SIZE	NO. REQ'D	NOTES
W21-4		36" X 36"		(1) (2) (4)	TYPE III BARRICADE		8'-0"		(1) (4) (6)
R4-7a		24" X 32"		(1) (4)		FLASHING AMBER WARNING LIGHTS			(1) (4) (6)
W21-X5 (R or L)		36" X 36"		(1) (4) (5)		STANDARD NO. 4 ENCAPSULATED LENS BARREL			(1) (5) (6)
G20-1		60" X 24"	2		W20-X3		48" X 48"		(1) (6) (5)
G20-2A		48" X 24"	2		W1-6		48" X 24"		(1) (4) (5)

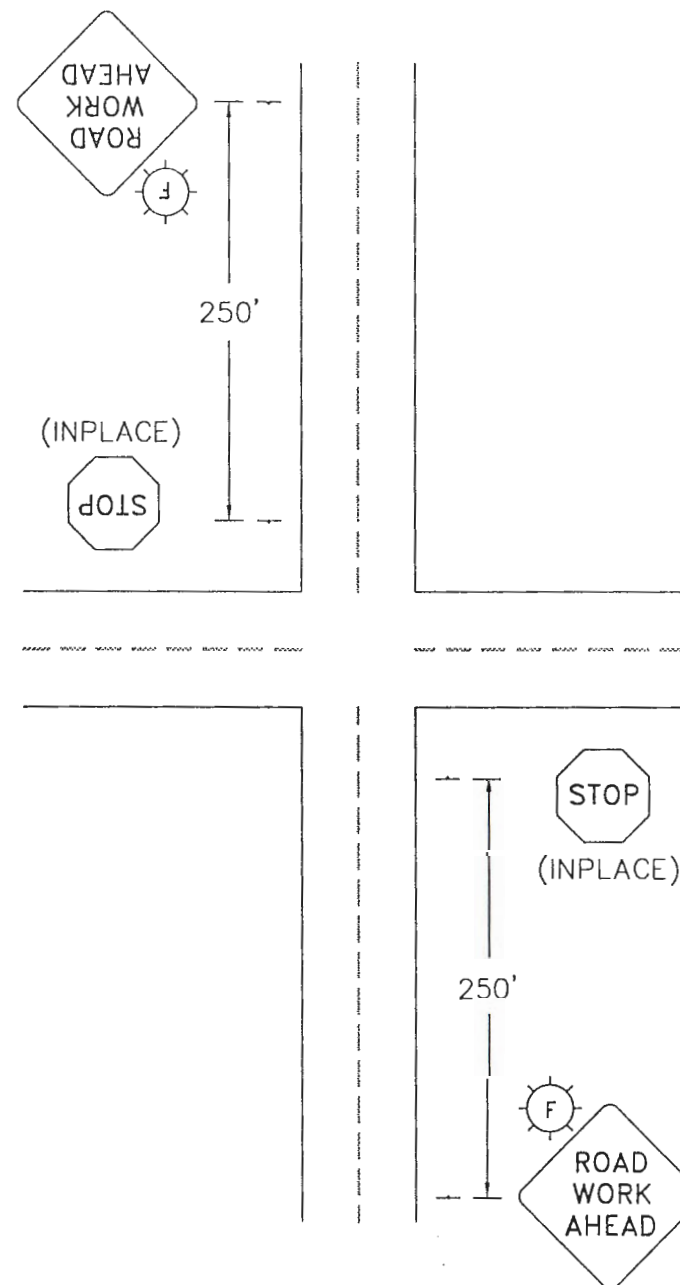
GENERAL NOTES:

- 1) THE NUMBER AND PLACEMENT OF TRAFFIC CONTROL DEVICES WILL DEPEND UPON THE SEQUENCE OF THE CONTRACTORS OPERATION.
- 2) "ROAD WORK AHEAD" SIGNS SHALL BE MOUNTED APPROX. 300' (1 BLOCK) IN ADVANCE OF THE CONSTRUCTION.
- 3) "ROAD CLOSED TO THRU TRAFFIC" SIGNS SHALL BE INSTALLED ON TYPE III BARRICADES AND SHALL BE LOCATED AT A POINT IN THE STREET AS TO PERMIT LOCAL TRAFFIC USE BUT EFFECTIVELY DISCOURAGE THRU TRAFFIC USE.
- 4) TYPE "A" LOW INTENSITY AMBER WARNING LIGHTS SHALL BE MOUNTED ON ALL ADVANCE WARNING SIGNS AND ON ALL TYPE I AND TYPE III BARRICADES WHEN USED AT NIGHT OR TO IDENTIFY HAZARDS.
- 5) ADDITIONAL SIGNING WILL BE REQUIRED FOR SEPARATE LANE CLOSURES. THE SIGNING SHALL BE IN CONFORMANCE WITH TEMPORARY TRAFFIC CONTROL ZONE LAYOUT FIELD MANUAL DATED JANUARY 2001, AND SHALL BE CONSIDERED INCIDENTAL TO "TRAFFIC CONTROL".
- 6) ANY WARNING LIGHT WHICH IS OUT OF ALIGNMENT FROM THE INTENDED DRIVER'S FIELD OF VISION, OR NOT OPERATING AT NIGHT SHALL BE "UNACCEPTABLE".

TERMINI SIGNING



TYPICAL CROSS-ROADS SIGNING



APPLIES AT ALL CROSS-ROADS

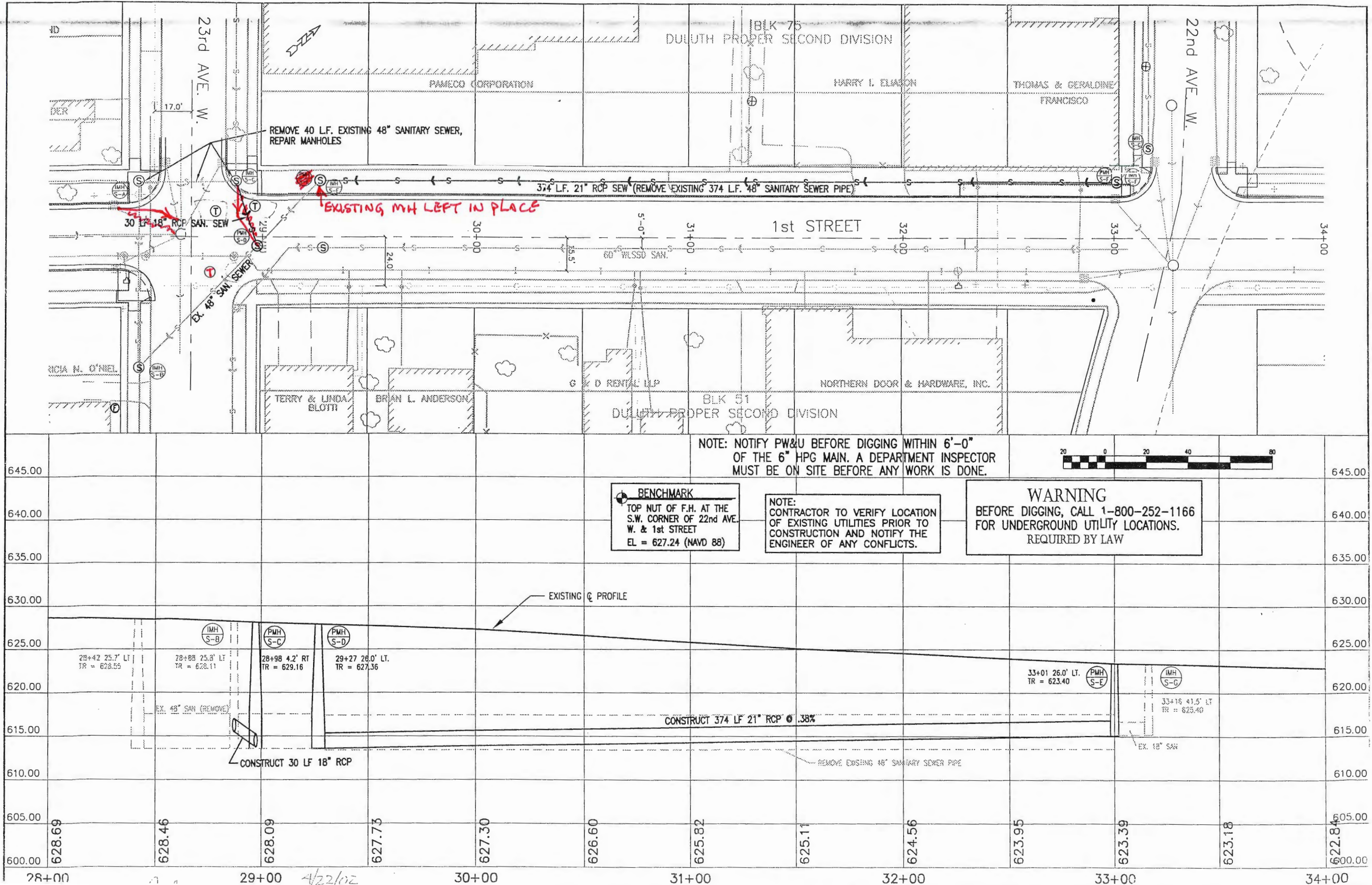
GENERAL NOTES:

- 1) ALL WARNING SIGNS TO BE 36" X 36" BLACK ON ORANGE AND CONSTRUCTED ON "DIAMOND GRADE" RETROREFLECTIVE SHEETING.
- 2) ONE DRIVING LANE IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES EXCEPT DURING UTILITY CONSTRUCTION AND MILLING AND PAVING OPERATIONS.
- 3) THE CONTRACTOR SHALL FURNISH AND INSTALL A MINIMUM OF 4 TEMPORARY "NO PARKING" SIGNS PER BLOCK AT LEAST 24 HOURS PRIOR TO DIVERTING TRAFFIC.

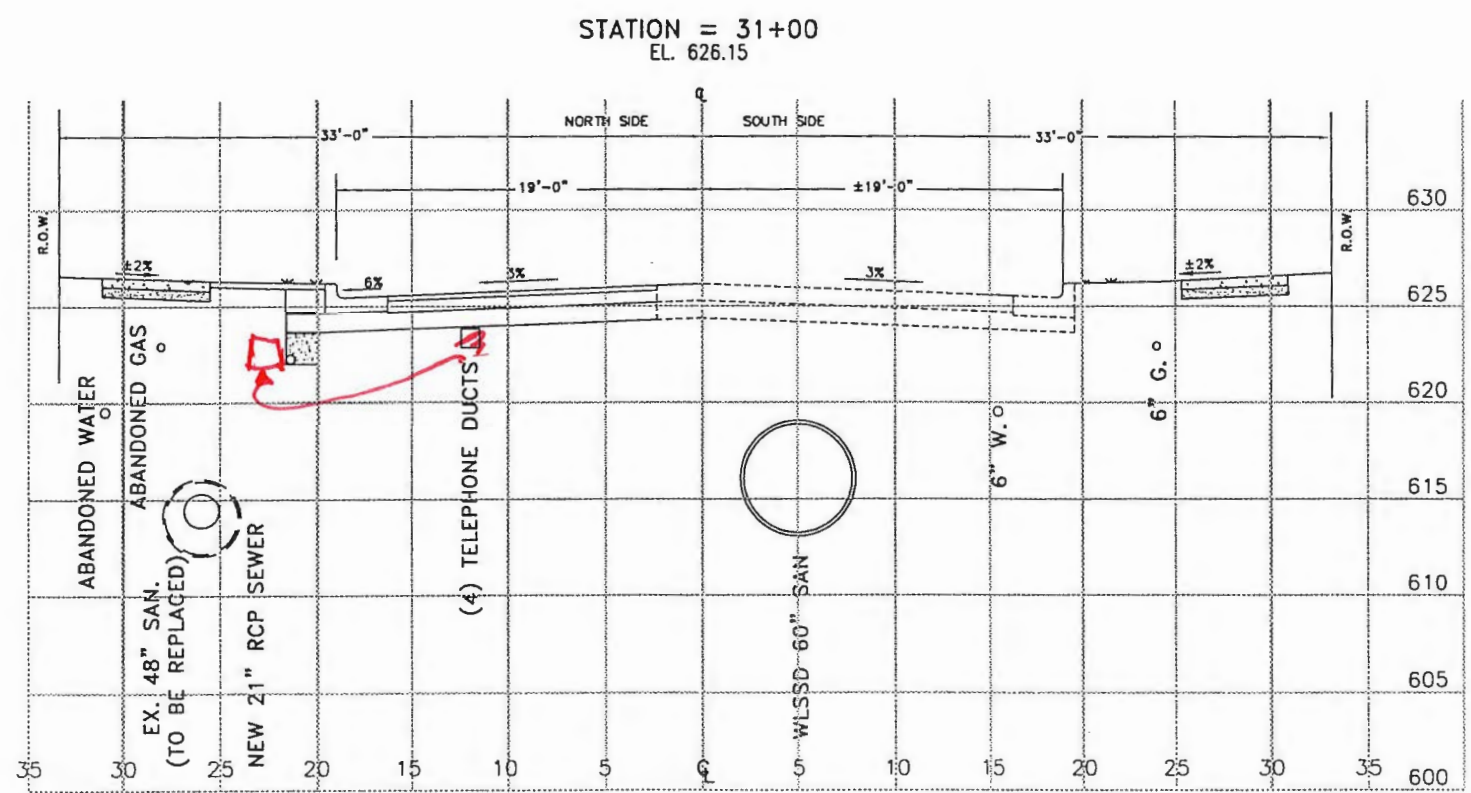
1st STREET: 27th AVE WEST TO PIEDMONT AVE.

TRAFFIC CONTROL

DSK\PROJ\1137\SEWER\ALIGN.dwg Mon Apr 22 13:05:52 2002



SANITARY STRUCTURES																
STRUCTURE NUMBER	STATION	LOCATION	REMOVE SEWER PIPE	REMOVE MANHOLE OR CB	CONST. MANHOLE DESIGN 84-4020	CONST. MANHOLE TYPE A or F	18" RCP PIPE SEWER	21" RCP PIPE SEWER	CASTING ASSEMBLY CITY 5020	ADJUST FRAME AND RING	PROPOSED TOP OF CASTING	EXISTING TOP OF CASTING	INVERT CL/FL	DRAINS TO STRUC.	%GRADE	REMARKS
			2104.501	2104.509	2506.501	2506.501	2503.511	2503.511	2506.516	2506.522						
			LIN. FT.	EACH	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH/TYPE	EACH						
EXISTING																
IMH S-A	28+41.6	25.7 LT	40.0							1.0	628.55	628.55	612.91	IMH S-B		
IMH S-B	28+41.9	60.9 RT									626.95	626.95	613.54	SE'LY		
IMH S-C	28+87.6	25.8 LT					40.0			1.0	628.11	628.11	615.48	PMH S-D		
IMH S-G	33+16.6	41.5' LT										625.4	615.24	PMH S-F		
PROPOSED																
PMH S-D	28+97.6	4.2 RT			13.8				1.0		628.16	628.16	614.67	IMH S-B		
PMH S-E	29+27	26.0 LT		1.0	13.5				1.0		627.36	627.36	613.68	PMH S-D		
PMH S-F	33+01	26.0 LT	374.0	1.0		8.3		374.0	1.0		623.40	623.40	615.10	PMH S-E	0.38%	
TOTALS			414.0	2.0	27.3	8.3	40.0	374.0	3.0	2.0						
NOTES:																
NOT UPDATED																



SDSK\PROJ :11137\rc001001.dwg Mon Apr 22 13:06:26 2002

11137

DEC NO 17776

DATE: 4/22/02

1st STREET: 27th AVE WEST TO PIEDMONT AVE.

SEWER RECONSTRUCTION

C A D NO: 118 173 06MTP

CITY PROJECT NO: 0155TP

Sheet 31 of 31 Sheets