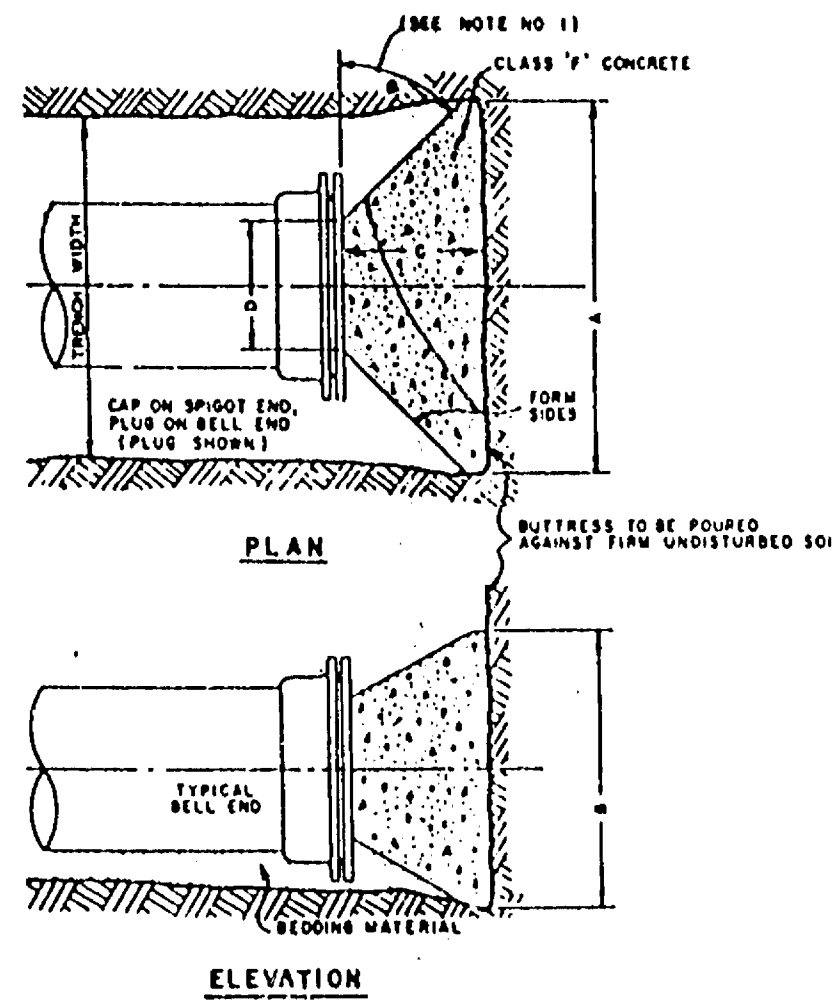
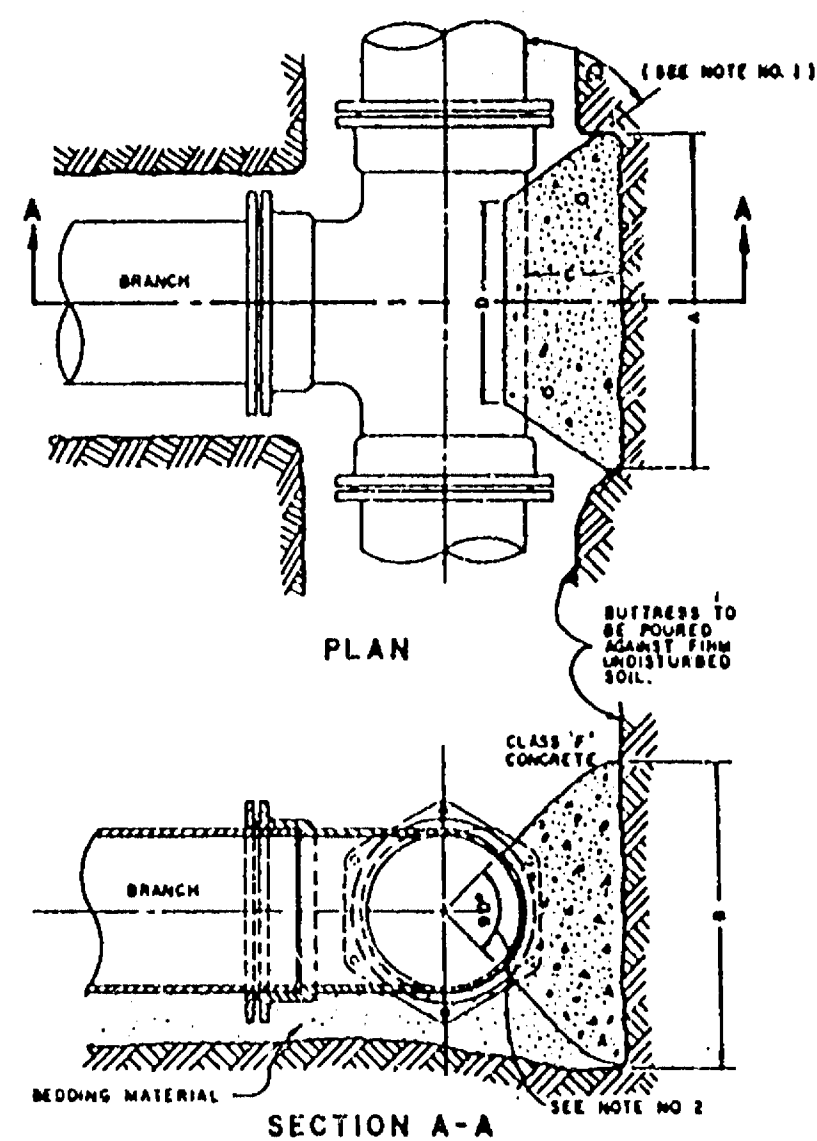


BUTTRESS DIMENSIONS					
B.D.	A	B	C	D	
6"	1'-3"	1'-0"			
8"	1'-6"	1'-4"	SEE NOTE	SEE NOTE	
12"	2'-3"	2'-0"	1	3	
16"	3'-2"	2'-8"			
20"	4'-0"	3'-0"			
24"	5'-3"	3'-4"			
30"	6'-6"	4'-3"			

B.D. = BRANCH DIAMETER

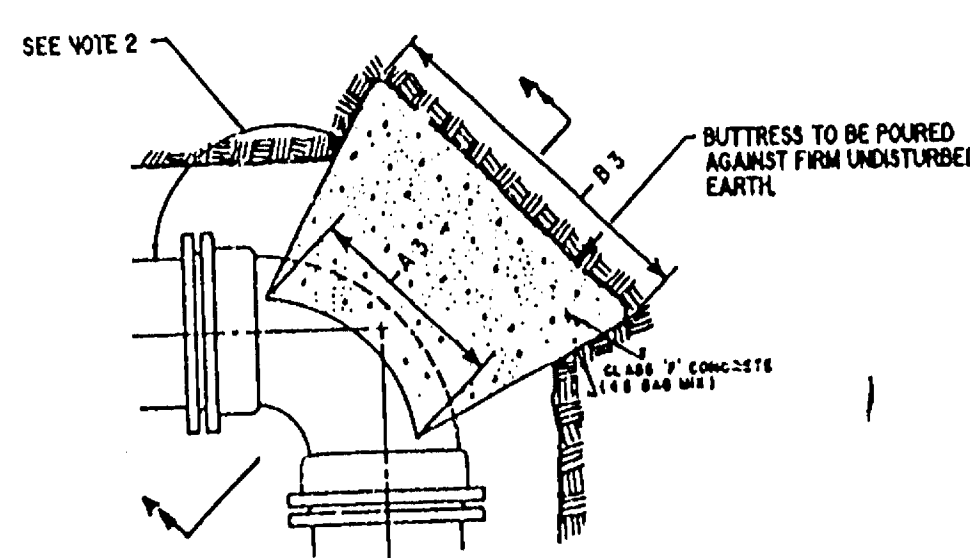
1. DIMENSION 'C' SHOULD BE LARGE ENOUGH TO MAKE ANGLE C EQUAL TO OR LARGER THAN 45°.
2. DIMENSION 'D' EQUALS APPROX. 1 D OF PIPE LESS 2". AN EFFORT SHOULD BE MADE TO PREVENT THE CONCRETE FROM COVERING THE M.J. BOLTS.
3. WHERE BUTTRESSES ARE NOT POSSIBLE BECAUSE OF POOR SOIL CONDITIONS OR LACK OF ROOM, STRAPPING SHALL BE PERMITTED.
4. BUTTRESS DIMENSIONS ARE BASED ON A SOIL RESISTANCE OF TWO TONS PER SQ. FT. AND A WATER PRESSURE OF 150 PSI.



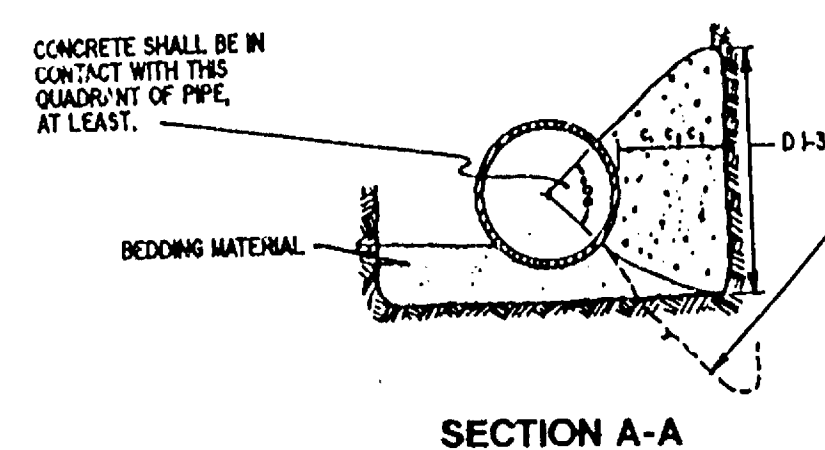
PLUG AND BLOCK DETAIL

- NOTES:
1. DIMENSIONS IN TABLE ARE BASED ON A WATER PRESSURE OF 150 P.S.I. AND ON EARTH RESISTANCE OF 2 TONS PER SQ. FT.
 2. DIMENSION C 1 TO C 3 SHOULD BE LARGE ENOUGH TO MAKE ANGLE EQUAL TO OR LARGER THAN 45°.
 3. DIMENSION A 1 TO A 3 SHOULD BE AS LARGE AS POSSIBLE WITHOUT INTERFERING WITH M. J. BOLTS.
 4. SHAPE OF BACK OF BUTTRESS MAY VARY AS LONG AS POUR IS AGAINST FIRM UNDISTURBED EARTH.
 5. ALL IRON PIPE AND FITTINGS SHALL BE WRAPPED IN POLYETHYLENE.

BUTTRESS DIMENSIONS					
DIA.	A	B	C	D	
6"	1'-6"	1'-2"			
8"	2'-0"	1'-4"	SEE NOTE	SEE NOTE	
12"	2'-5"	1'-10"	1	2	
16"	3'-4"	2'-4"			
20"	4'-3"	2'-10"			
24"	5'-2"	3'-4"			
30"	6'-9"	4'-0"			



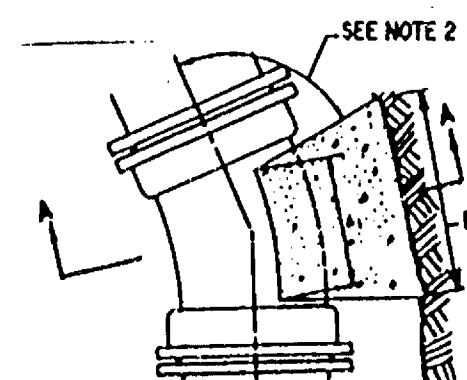
PLAN - 90° BEND



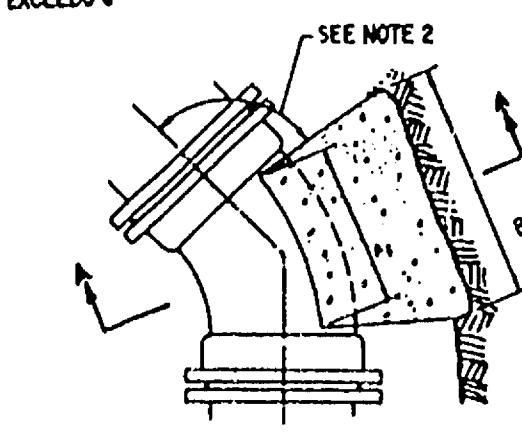
SECTION A-A

NOTES:

1. DIMENSIONS IN TABLE ARE BASED ON A WATER PRESSURE OF 150 P.S.I. AND ON EARTH RESISTANCE OF 2 TONS PER SQ. FT.
2. DIMENSION C 1 - 3 SHOULD BE LARGE ENOUGH TO MAKE ANGLE EQUAL TO OR LARGER THAN 45°.
3. DIMENSION A 1 - 3 SHOULD BE AS LARGE AS POSSIBLE WITHOUT INTERFERING WITH M.J. BOLTS.
4. SHAPE OF BACK OF BUTTRESS MAY VARY AS LONG AS POUR IS AGAINST FIRM UNDISTURBED EARTH.
5. ALL IRON PIPE AND FITTINGS SHALL BE WRAPPED IN POLYETHYLENE.

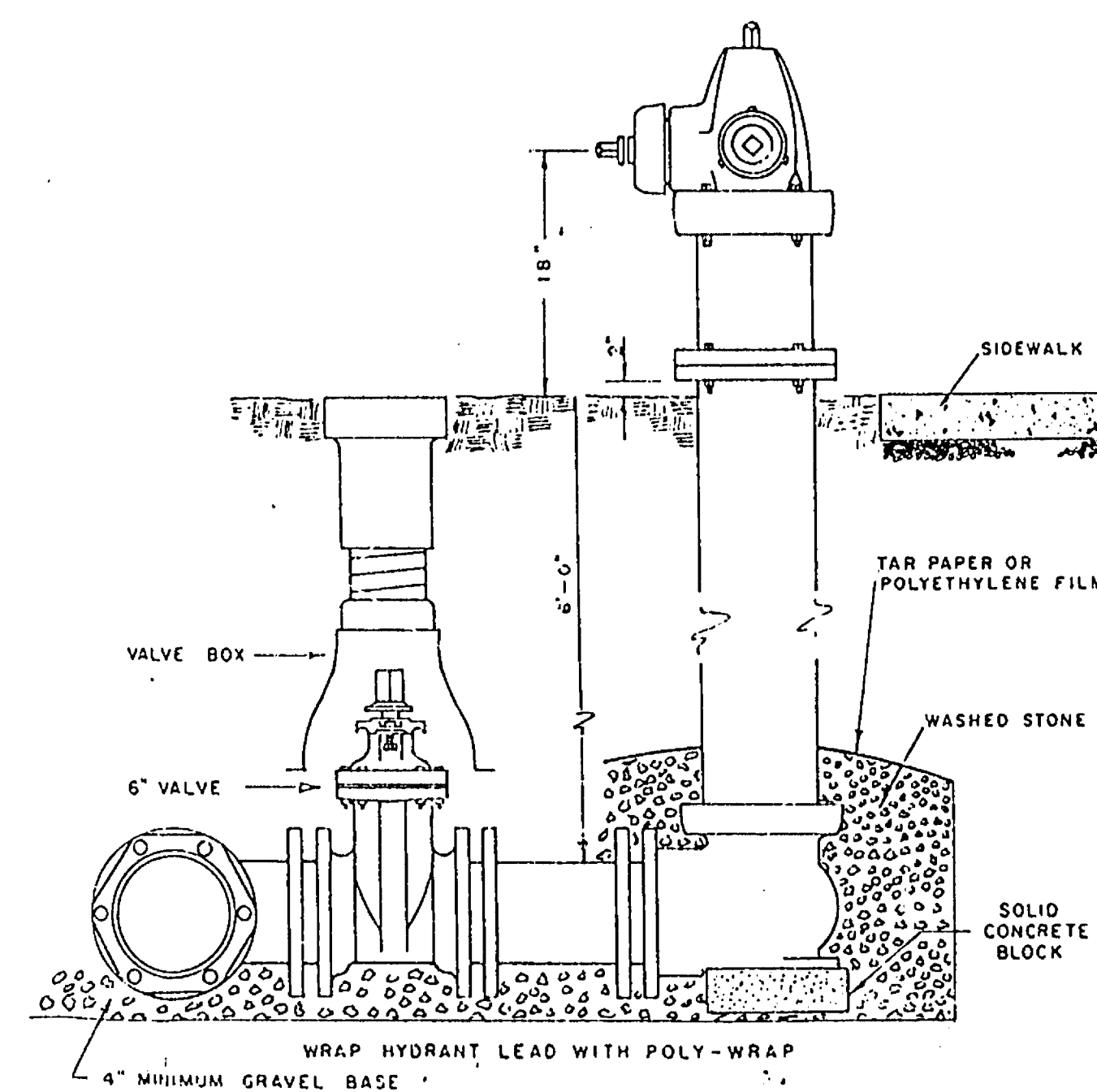


PLAN - 22 1/2° BEND

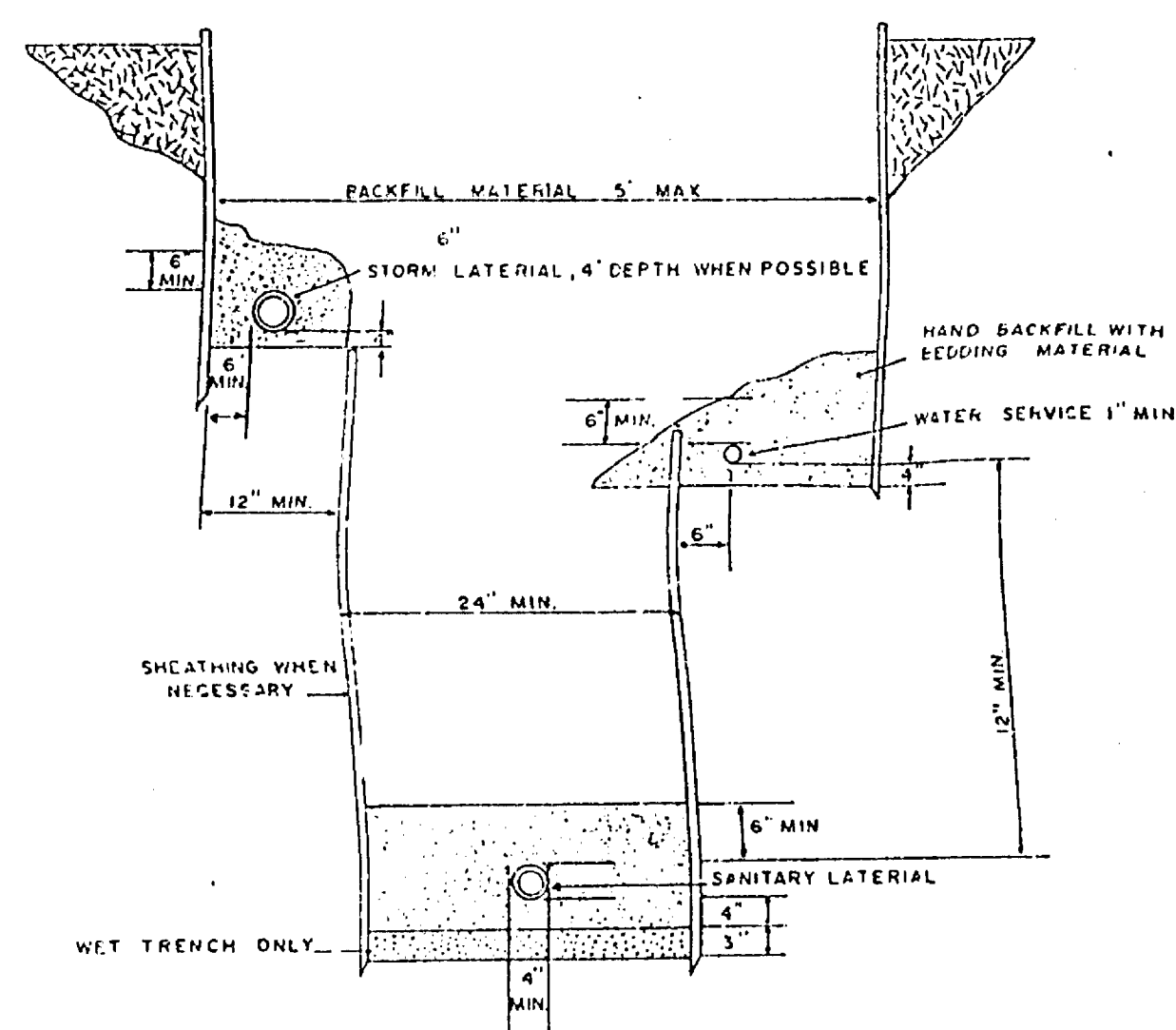


PLAN - 45° BEND

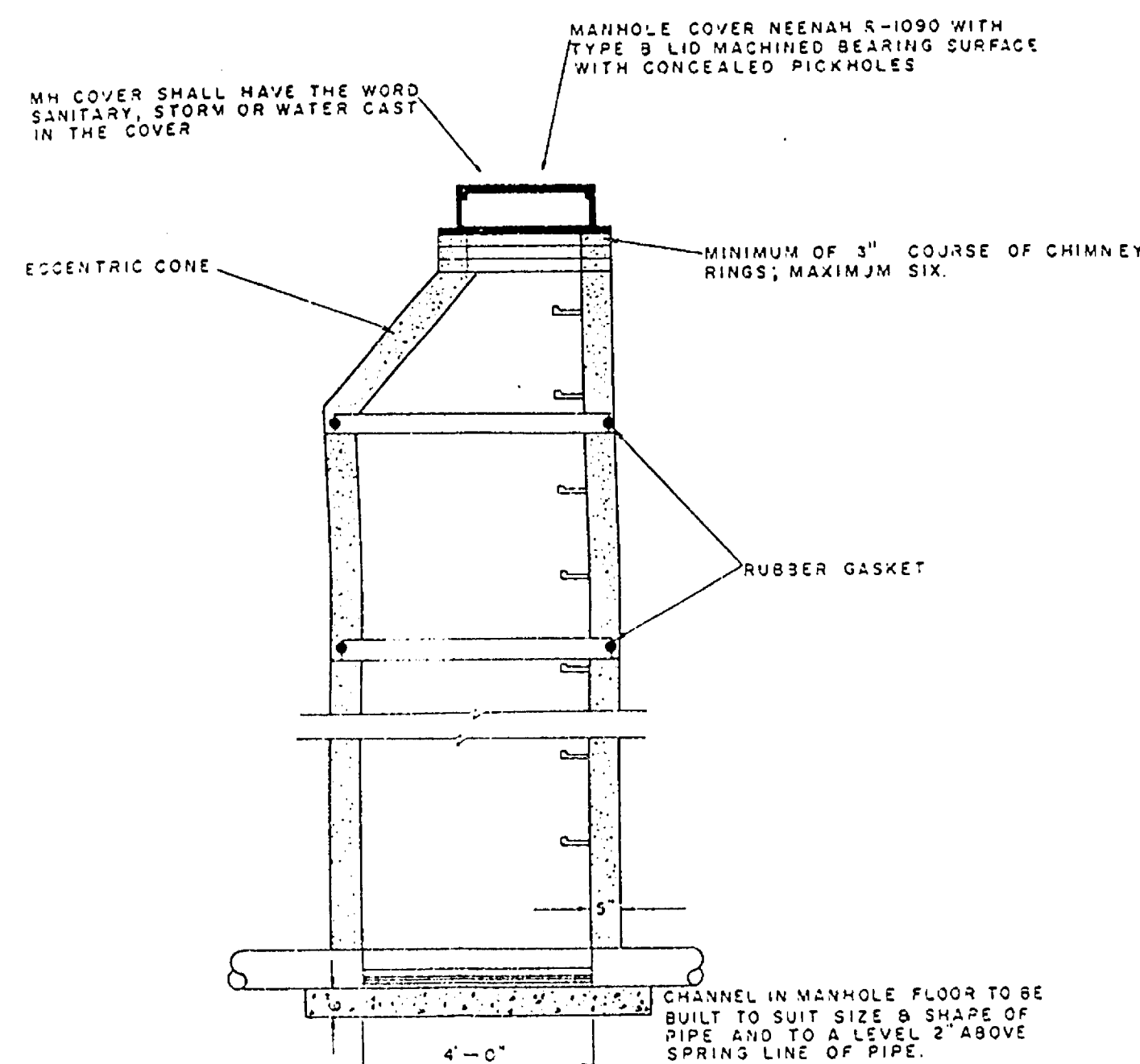
BUTTRESS DIMENSIONS						
PIPE SIZE	22-1/2° BENDS		45° BENDS		90° BENDS	
	B1	D1	B2	D2	B3	D3
6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-4"	1'-2"
8"	1'-0"	1'-0"	1'-4"	1'-2"	1'-10"	1'-6"
12"	1'-4"	1'-4"	1'-10"	1'-10"	2'-0"	2'-3"
16"	1'-10"	1'-8"	2'-6"	2'-4"	3'-10"	2'-10"
20"	2'-4"	2'-0"	3'-3"	2'-10"	3'-0"	3'-4"
24"	2'-10"	2'-4"	4'-0"	3'-3"	6'-4"	3'-10"
30"	3'-6"	3'-0"	5'-4"	3'-10"	8'-0"	4'-8"



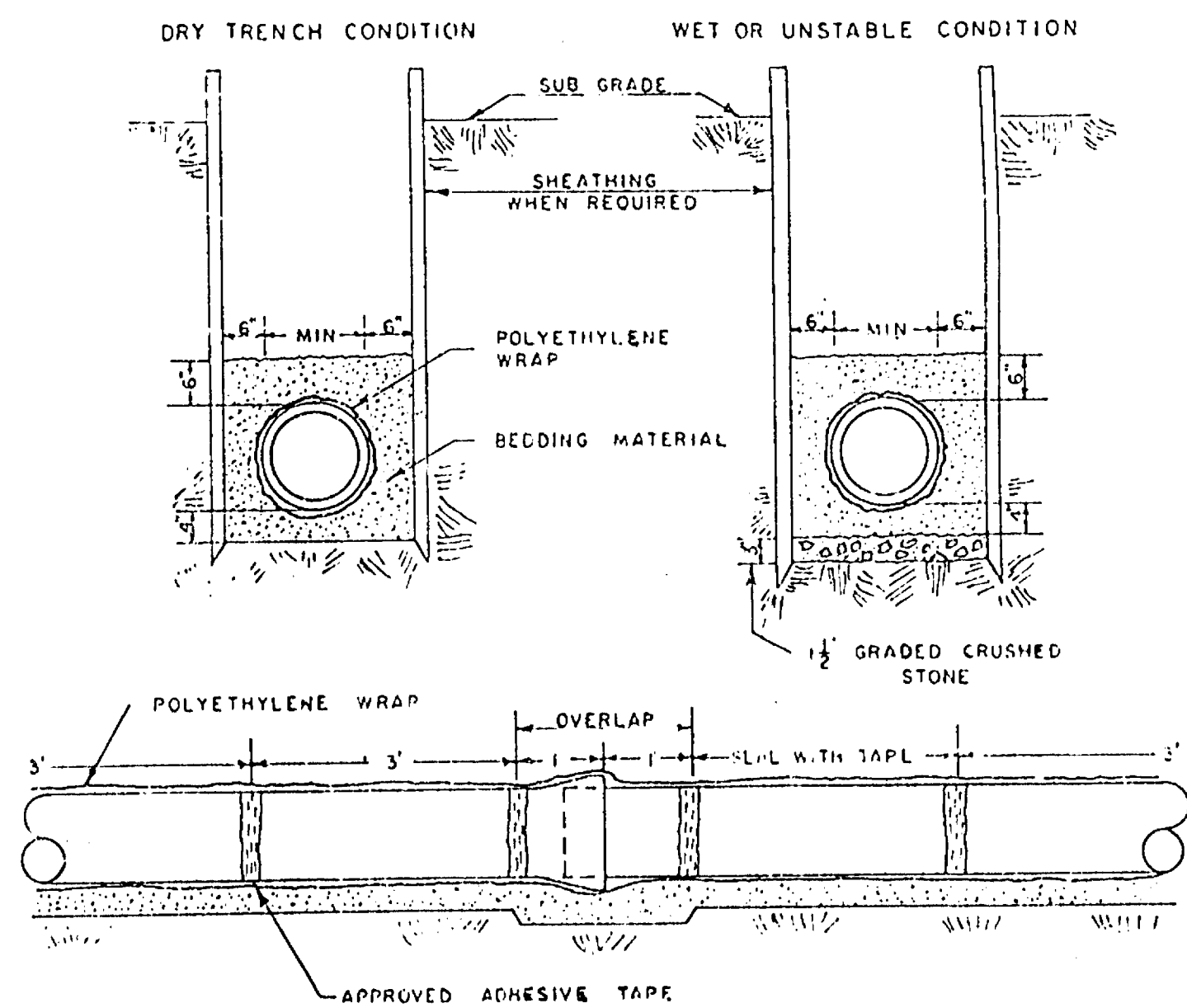
TYPICAL HYDRANT INSTALLATION
MECHANICAL JOINT



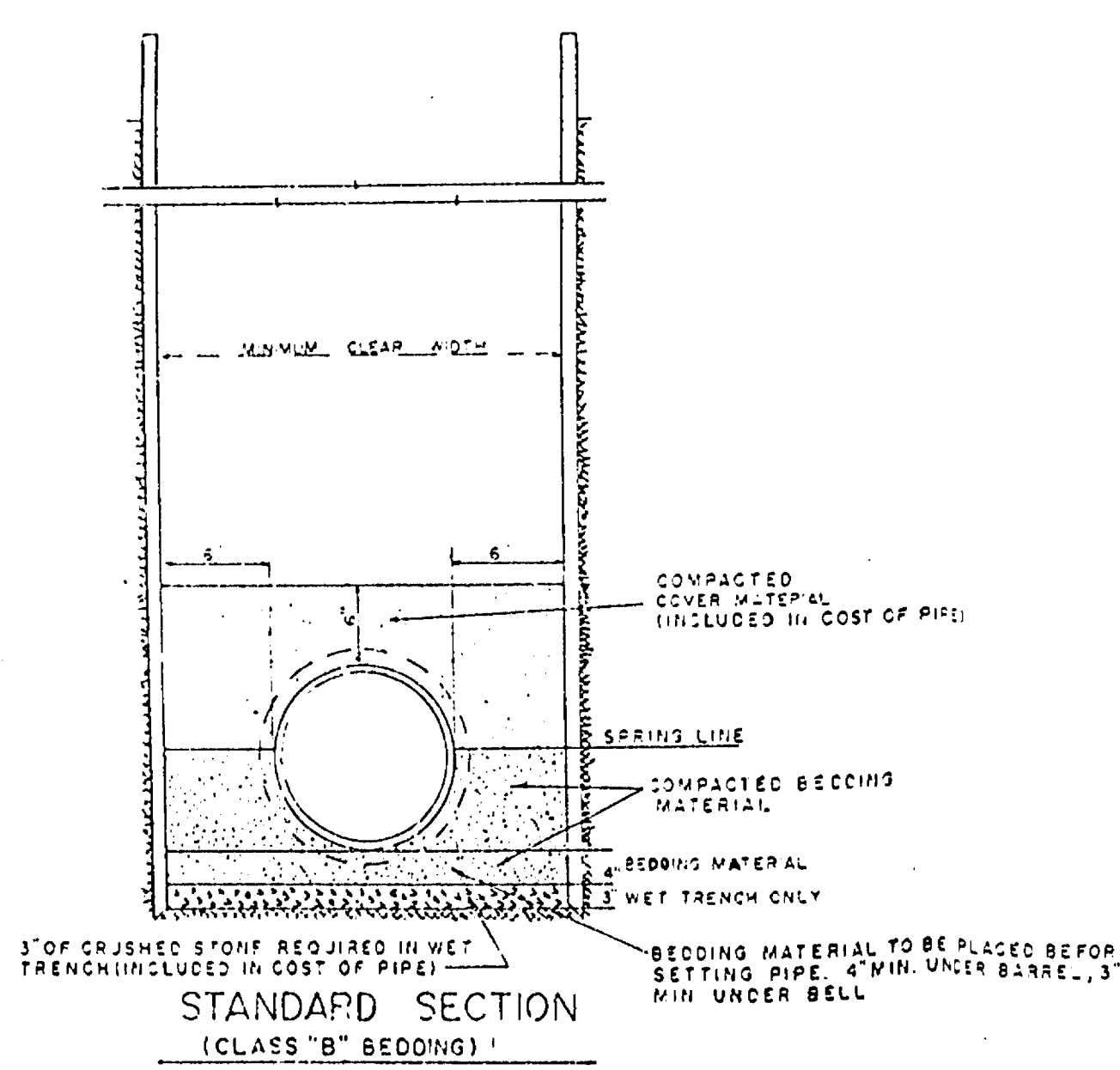
STANDARD SECTION FOR STORM
SANITARY & WATER SERVICES



STANDARD PRECAST MANHOLE



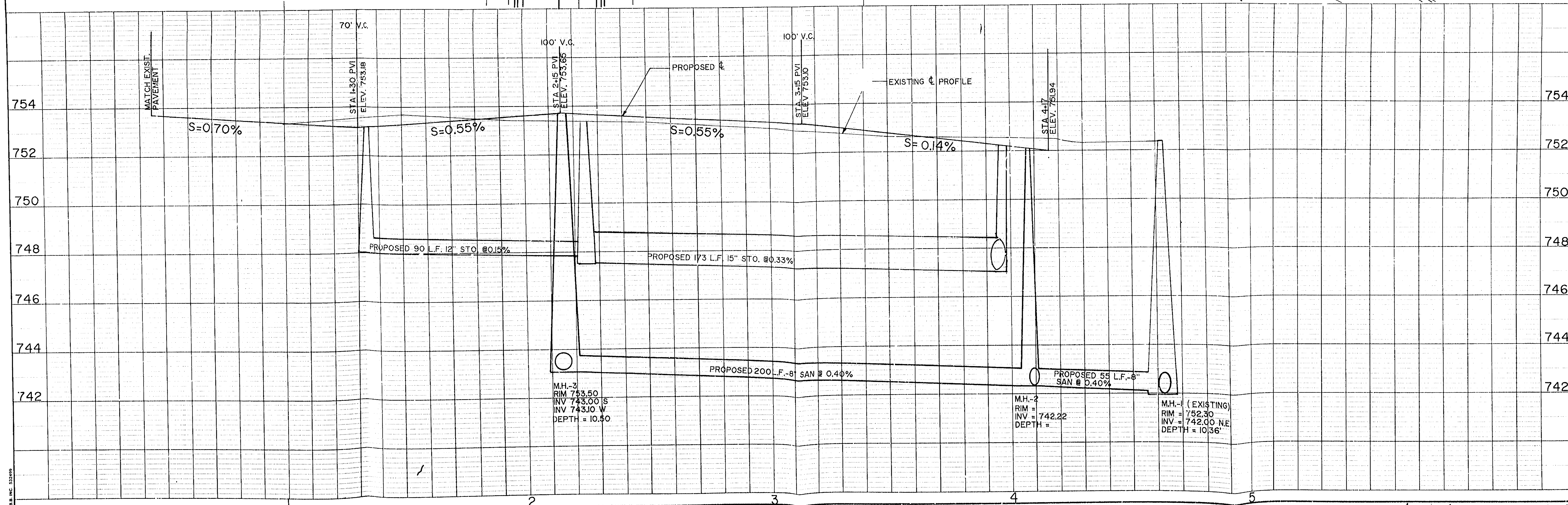
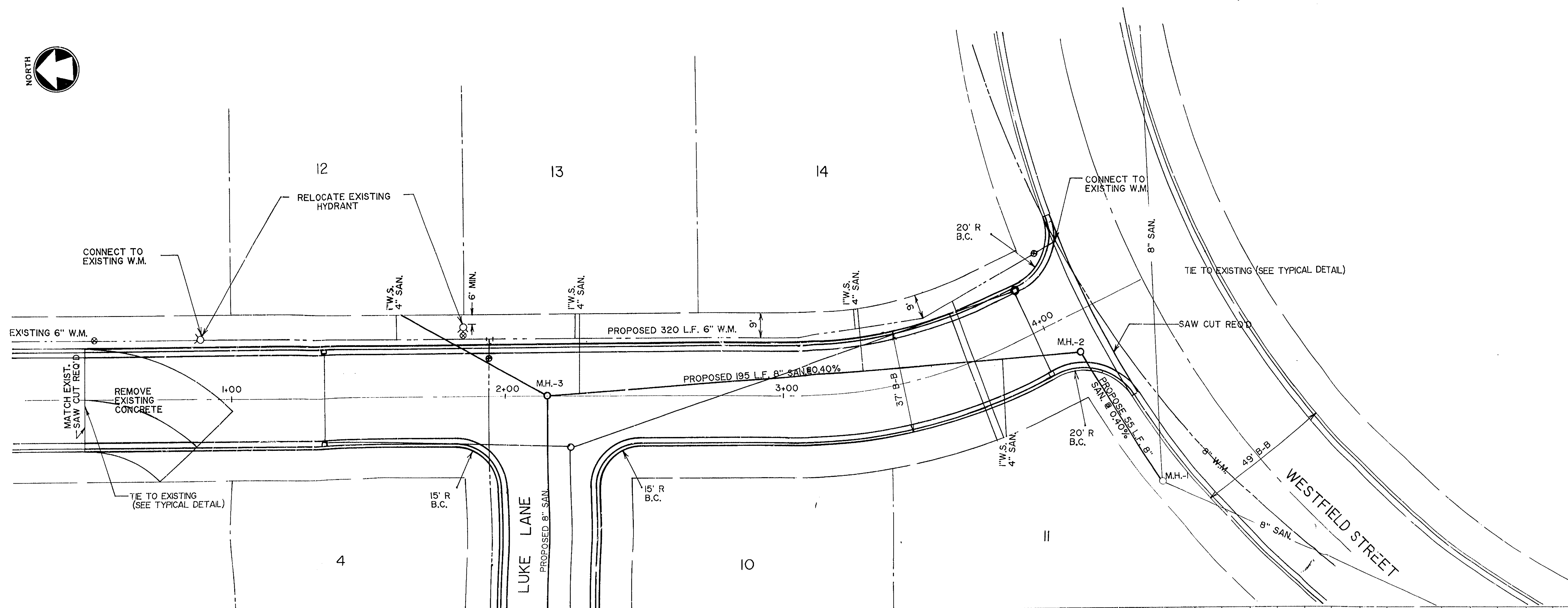
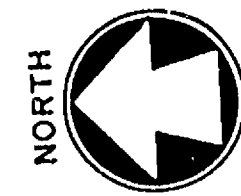
STANDARD WATER MAIN TRENCH SECTION



STANDARD SECTION
(CLASS "B" BEDDING)

DESIGNED	DRAWN	CHECKED
McMAHON ASSOCIATES, INC. ENGINEERS • ARCHITECTS PLANNERS • SURVEYORS 1377 MIDWAY ROAD, MEMPHIS, TN 38117 PHONE 414/759-0351 FAX 414/759-5034		
MISCELLANEOUS DETAILS		
SCALE	DATE	PROJECT NO.
SHEET NO.		
FILE NO.		

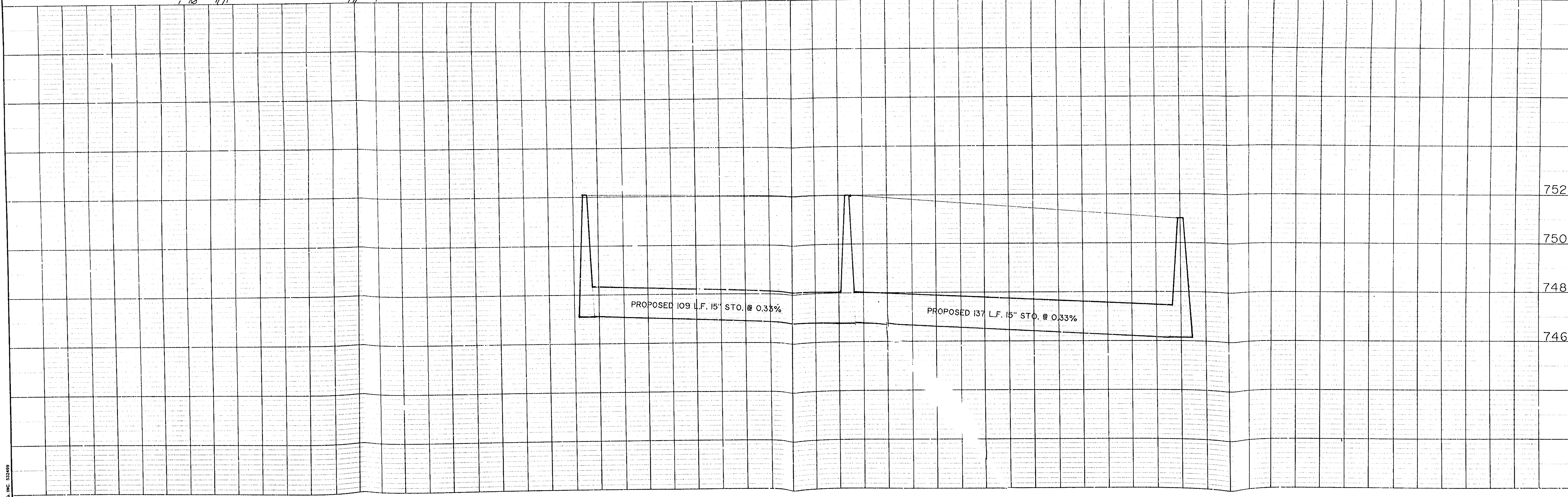
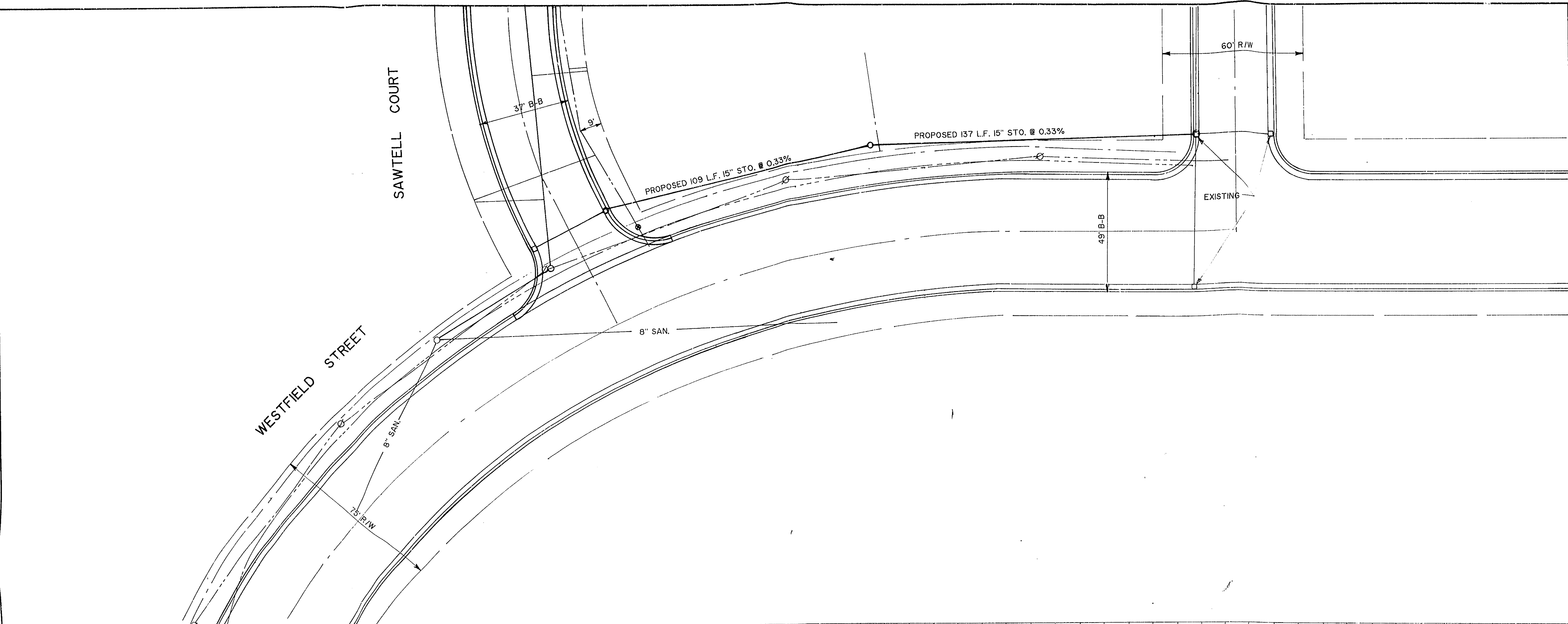
Subdiv. City of Carroll Westfield Heights



G.B.B. INC. 532498

Subdiv. City of Oakbrook Westfield Heights

REVISION		DATE		NO.	
MCM					
McMAHON ASSOCIATES, INC. ENGINEERS • ARCHITECTS PLANNERS • SURVEYORS 1377 MIDWAY ROAD, MEMPHIS, TN 38117 PHONE: 901/739-0351 FAX: 901/739-0324					
DESIGNED	DRAWN	CHECKED	SAWTELL COURT		
SCALE	DATE	PROJECT NO.	SHEET NO.		
			FILE NO.		



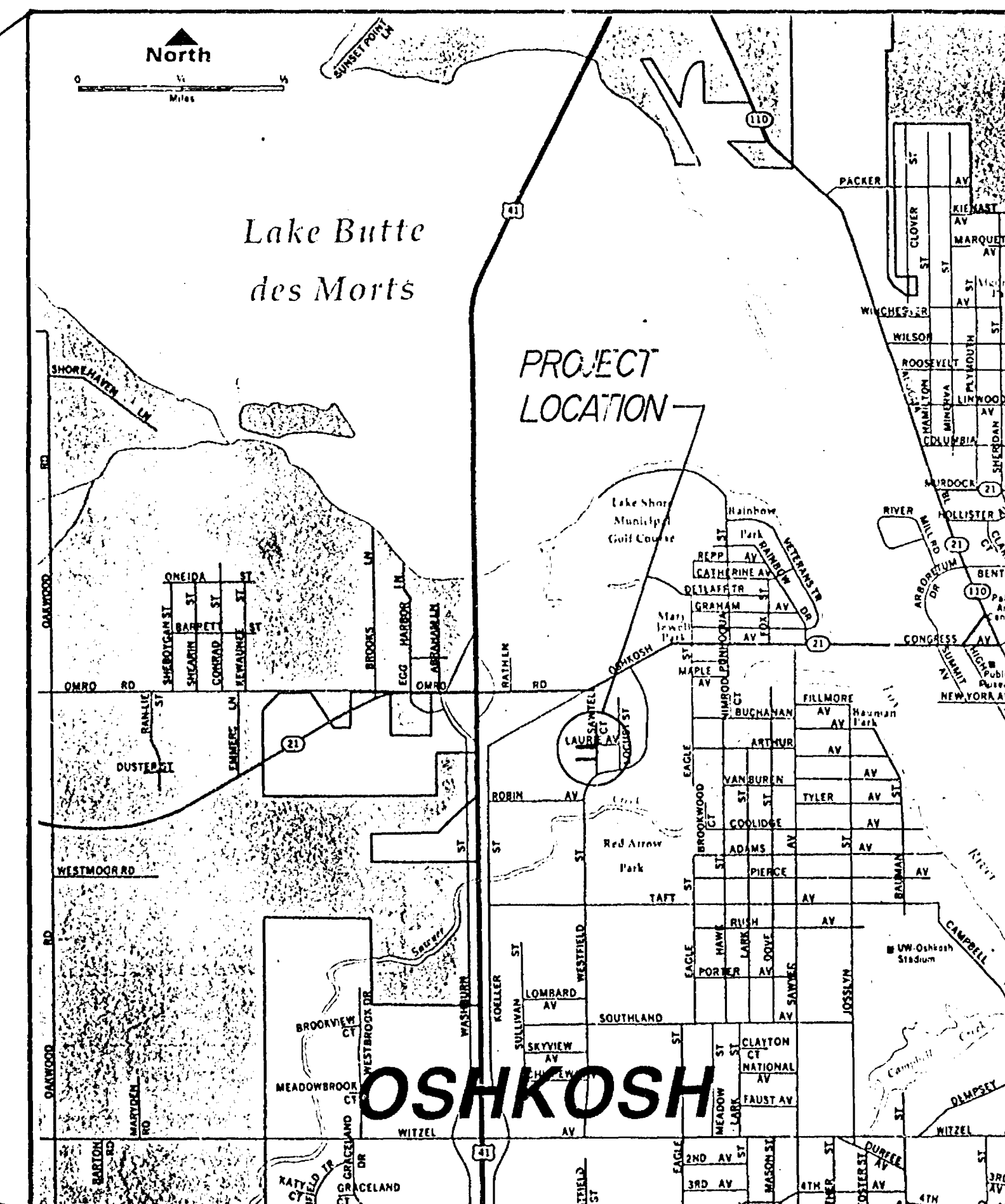
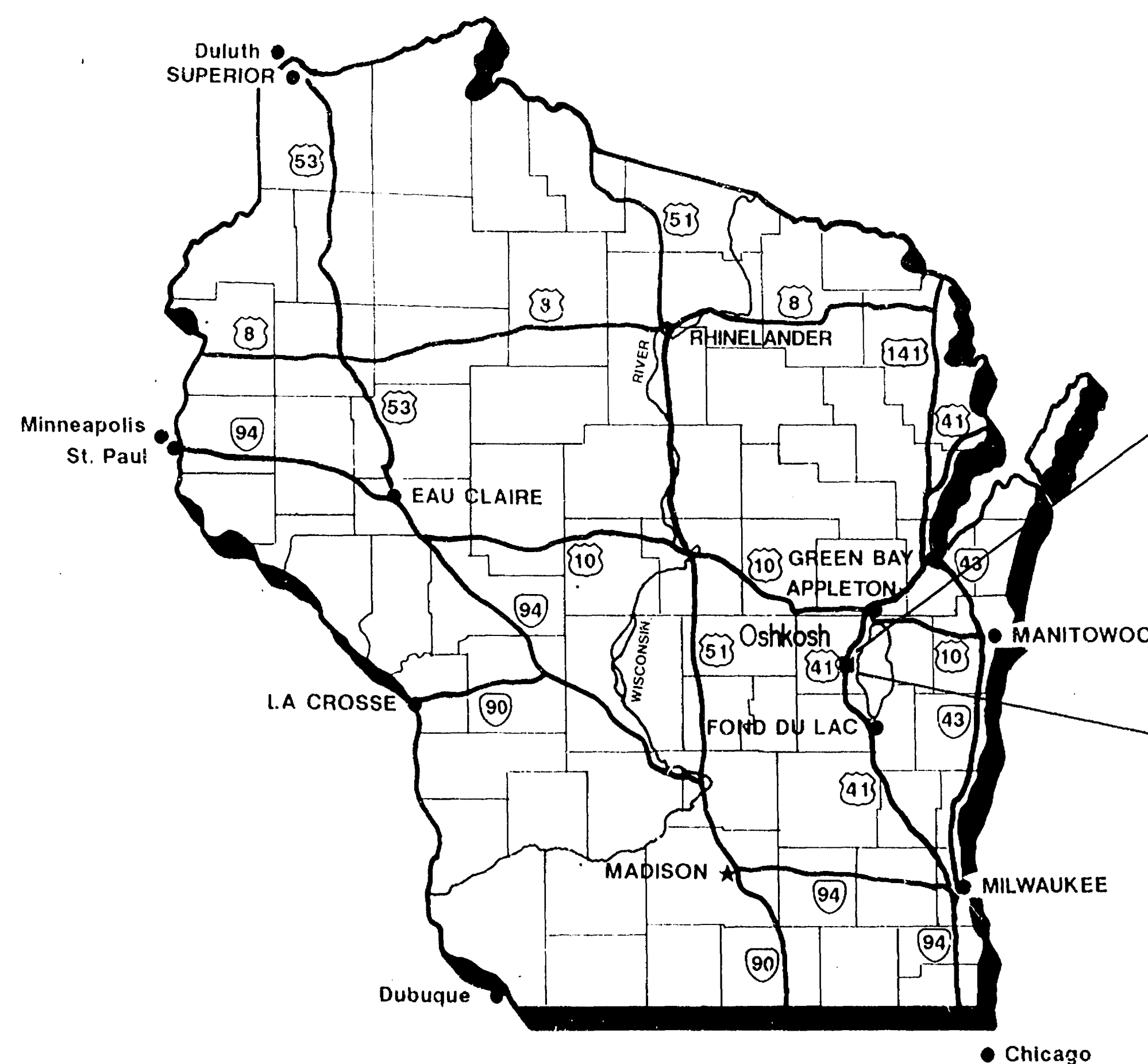
DESIGNER DRAWN CHECKED		NO. DATE REVISION	
PROJECT NO. SHEET NO.		FILE NO.	
WESTFIELD STREET			
McMAHON ASSOCIATES, INC. ENGINEERS • ARCHITECTS PLANNERS • SURVEYORS 1377 MONROE ROAD, MECHANICVILLE, NY 12110 PHONE: 518/739-0351 FAX: 518/739-0334			

G.S.R. INC. 322899

Subdiv. City of Cortland Westfield Heights

SAWTELL COURT, LUKE LANE, LAURIE AVENUE SEWER, WATER AND STREET CONSTRUCTION

FOR
SECURITY COMPANIES
OSHKOSH, WISCONSIN



MCM

McMAHON
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ENGINEERS • ARCHITECTS

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MENASHA, WI 54952

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