

CITY OF DETROIT DEPARTMENT OF PUBLIC WORKS

IN CO-OPERATION WITH MICHIGAN DEPARTMENT OF TRANSPORTATION

THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 1984 STANDARD SPECIFICATIONS AND SUPPLEMENTAL SPECIFICATIONS.

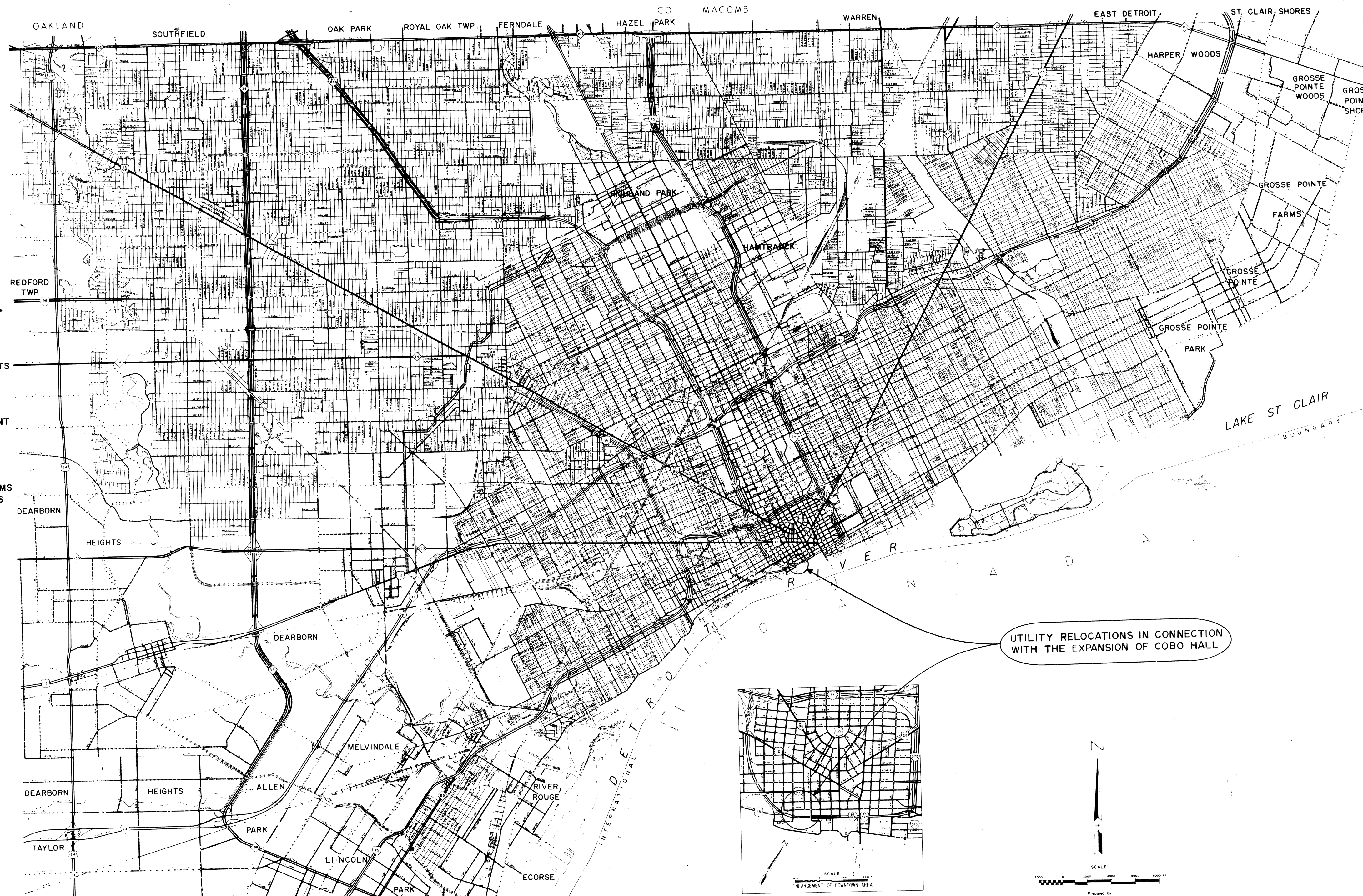
F.H.W.A. REGION	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MICH.				
STREET	CITY	COUNTY	TWP.	SHEET NO.	TOTAL SHEETS
	DETROIT	WAYNE			

LEGEND

	EXISTING GAS
	EXISTING WATER
	EXISTING SANITARY & STORM SEWER
	EXISTING AT&T
	EXISTING EDISON (U.G. CONDUIT)
	EXISTING EDISON (U.G. STEAM)
	EXISTING PLD
	EXISTING MBT
	EXISTING WESTERN UNION
	EXISTING UTILITIES TO BE ABANDONED
	PROPOSED SEWER
	PROPOSED WATER
	PROPOSED PLD
	PROPOSED MBT & MICH. CON. GAS

CONTROL SECTION BM 82111

JOB NO. 25199A



M.D.O.T. STANDARD PLANS

- II-286 SIDEWALK RAMP DETAILS
- II-29D DRIVEWAY OPENINGS & APPROACHES & CONCRETE SIDEWALK
- II-39H TRANSVERSE PAVEMENT JOINTS
- II-41D LONGITUDINAL PAVEMENT JOINTS
- II-42E TYPICAL JOINT LAYOUT
- II-43D LOCATION OF TRANSVERSE JOINTS IN CONCRETE PAVEMENT
- II-44F CONCRETE PAVEMENT REPAIR
- II-45E CONVENTIONAL PAVEMENT REINFORCEMENT
- IX-84D UTILITY TRENCHES (CITY OF DETROIT)
- XI-124C DRUM GUIDE RAILS AND DRUMS
- XI-125F TYPES II & III BARRICADES & LIGHTED ARROWS
- II-52E(S.D.) TEMPORARY CONCRETE BARRIER
- XI-126D(S.D.) END TREATMENT FOR TEMPORARY CONCRETE BARRIER

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5	Second St. Plan & Profile (Water Main)
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10	Washington Blvd. Plan & Profile (Water Main)
11	Public Alley N. of Larned St. Plan & Profile (Sewer)
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13	Washington Blvd. Water Main Profile
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CONTRACT FOR UTILITY RELOCATIONS

LOCAL AUTHORITY APPROVAL
CITY OF DETROIT
CITY ENGINEERING DEPARTMENT

APPROVED 2/21/86
DEPUTY DIRECTOR

APPROVED BY 2-21-86
DIRECTOR

PREPARED UNDER SUPERVISION OF

REGISTERED PROFESSIONAL ENGINEER 14065
REGISTRATION NO.

JOINT VENTURE OF:
MADISON & MADISON INTERNATIONAL
615 GRISWOLD, SUITE 210
DETROIT, MICHIGAN 48226

AND
HOWARD NEEDLES, TAMMEN & BERGENDOFF
9200 WARD PARKWAY
KANSAS CITY, MISSOURI 64114

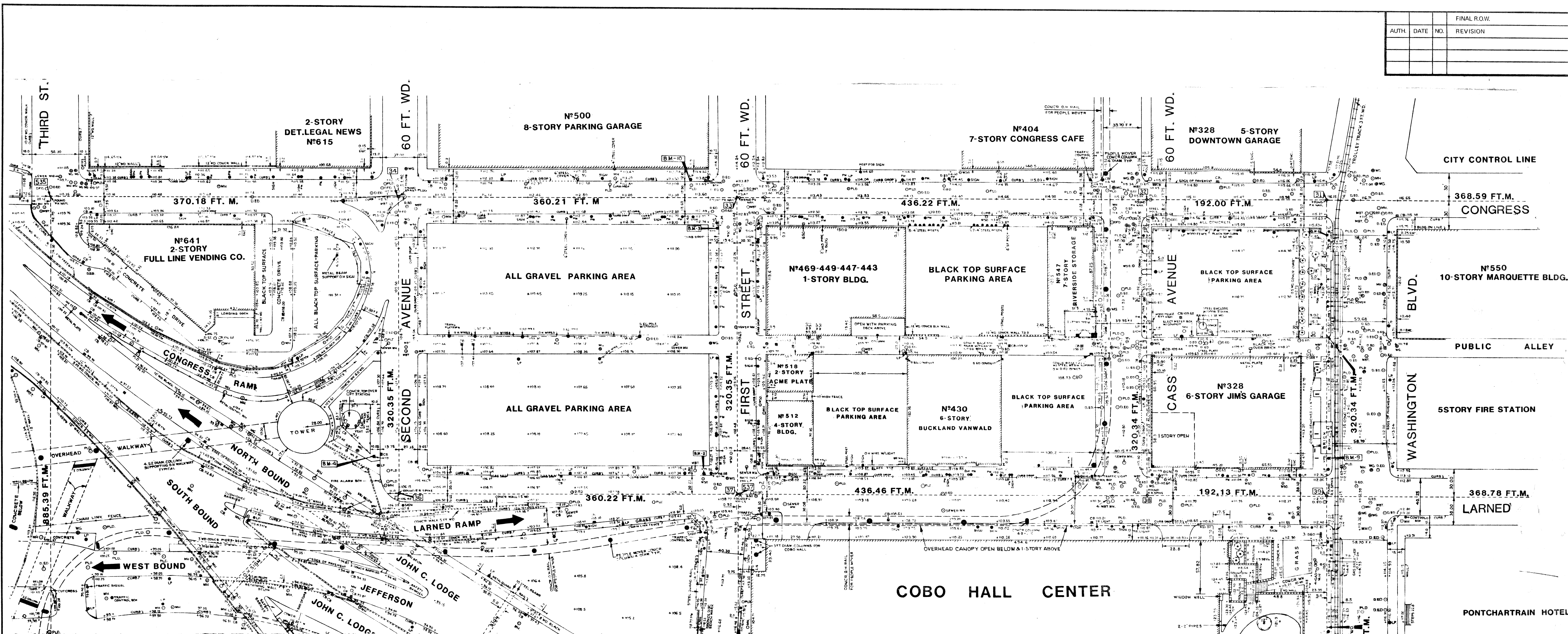
ENGINEERING PRINT UNIT
MAR 13 1986
DEPT. OF TRANSPORTATION

(SEAL)

CONT. SEC. BM 82111	JOB NO. 25199A	STATE PROJECT	FEDERAL PROJECT	SHEET NO. 1
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CONTROL SECTION BM 82111 JOB NO. 25199A

FINAL R.O.W.		
AUTH.	DATE	NO. REVISION



SITE BENCH MARKS

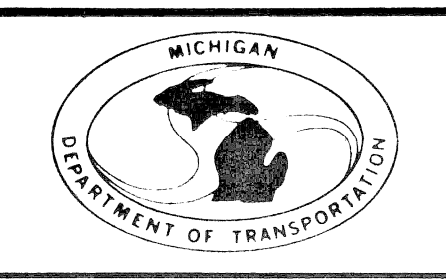
- №1 ARROW ON HYDRANT LOCATED AT S.W. CORNER OF CONGRESS ST. & WASHINGTON BLVD.
ELEVATION = 118.13
- №2 ARROW ON HYDRANT LOCATED AT N.W. CORNER OF LARNED ST. & FIRST ST.
ELEVATION = 110.83
- №3 ARROW ON HYDRANT LOCATED AT S.W. CORNER OF CONGRESS ST. & FIRST ST.
ELEVATION = 115.23
- №4 ARROW ON HYDRANT LOCATED AT N.W. CORNER OF LARNED ST. & SECOND AVE.
ELEVATION = 109.74
- №5 ARROW ON HYDRANT LOCATED AT UPPER LEVEL PARKING AREA
ELEVATION = 125.24
- №6 ARROW ON HYDRANT LOCATED ON S. SIDE OF CIVIC CENTER DR.
ELEVATION = 101.37
- №7 ARROW ON HYDRANT LOCATED ON NORTH SIDE OF CIVIC CENTER DR.
ELEVATION = 102.55
- №8 ARROW ON HYDRANT LOCATED ON SOUTH SIDE OF E. BOUND JEFFERSON AVE.
ELEVATION = 108.22
- №9 ARROW ON HYDRANT LOCATED AT N.W. CORNER OF LARNED ST. & WASHINGTON BLVD.
ELEVATION = 115.87
- №10 TOP OF CONCR. BASE FOR LIGHT POLE LOCATED AT N.W. COR. OF CONGRESS & FIRST
ELEVATION = 114.13
- №11 ARROW ON HYDRANT LOCATED AT S.E. CORNER OF THIRD ST. & CIVIC CENTER DR.
ELEVATION = 102.38
- №12 CHISELED SQUARE ON TOP OF WALL LOCATED AS SHOWN ON THE PLAN
ELEVATION = 126.26
- №13 ARROW ON HYDRANT LOCATED AS SHOWN ON THE PLAN
ELEVATION = 106.43
- №14 ARROW ON HYDRANT LOCATED ON E. LINE OF THIRD ST. & JOE LOUIS ARENA
ELEVATION = 102.87

LEGEND

- ⊕ WG..... WATER GATE VALVE AND WELL
- PLD..... PUBLIC LIGHTING DEPT. MAN HOLE
- MBT..... MICH. BELL TEL. MAN HOLE
- D. ED..... DETROIT EDISON MAN HOLE
- D.F.D..... DETROIT FIRE DEPT. MAN HOLE
- DWS..... DET. WATER & SEWER MAN HOLE
- MH..... MAN HOLE
- LP..... LIGHT POLE
- D. ED..... DET. EDISON POLE
- MBT..... MICH. BELL TEL. POLE
- PM..... PARKING METER
- SL..... TRAFFIC SIGNAL LIGHT
- ▲ HYD..... FIRE HYDRANT
- WSO..... WATER SHUT OFF
- GSO..... GAS SHUT OFF
- CB..... CATCH BASIN

MASON L. BROWN & SON, INC.
CIVIL ENGINEERS & SURVEYORS
110 MADISON AVENUE
DETROIT, MICHIGAN 48226

SITE TOPOGRAPHY
COBO HALL EXPANSION
CITY OF DETROIT, WAYNE CO., MICHIGAN

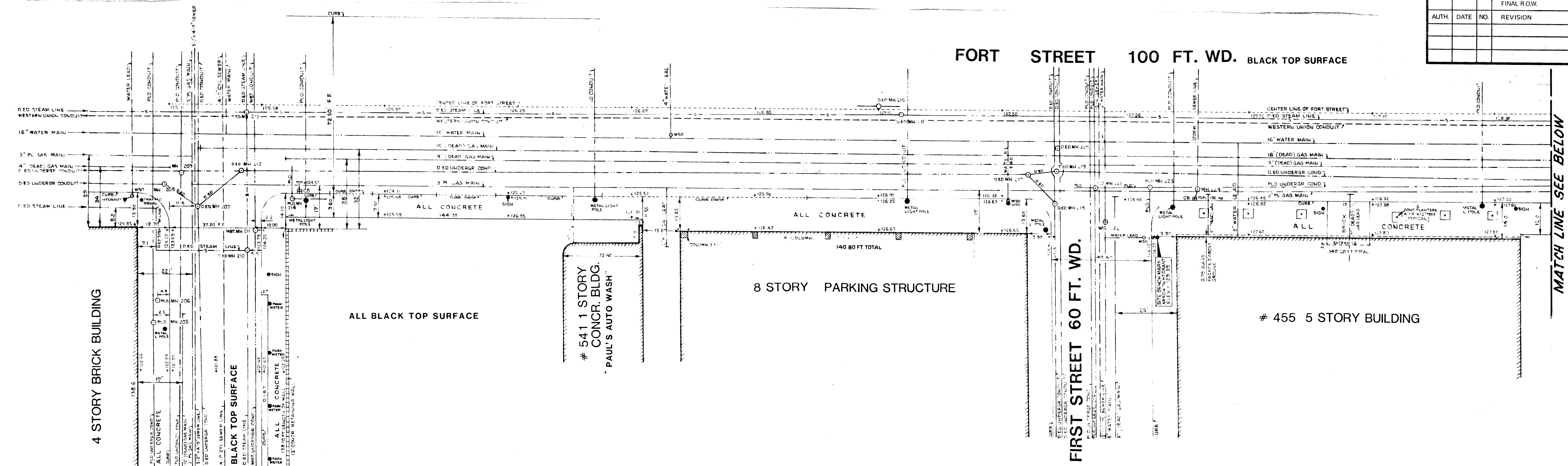


UTILITY RELOCATIONS

DATE: FEB. 4, 1986	DRAWN:	CONT. SEC.	JOB NO.	CHECKED:	SHEET NO.
SCALE: 1" = 50'	DESIGNED:	BM 82111	25199A	APPROVED:	1A OF 65

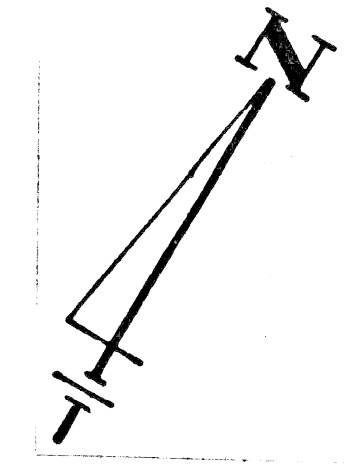
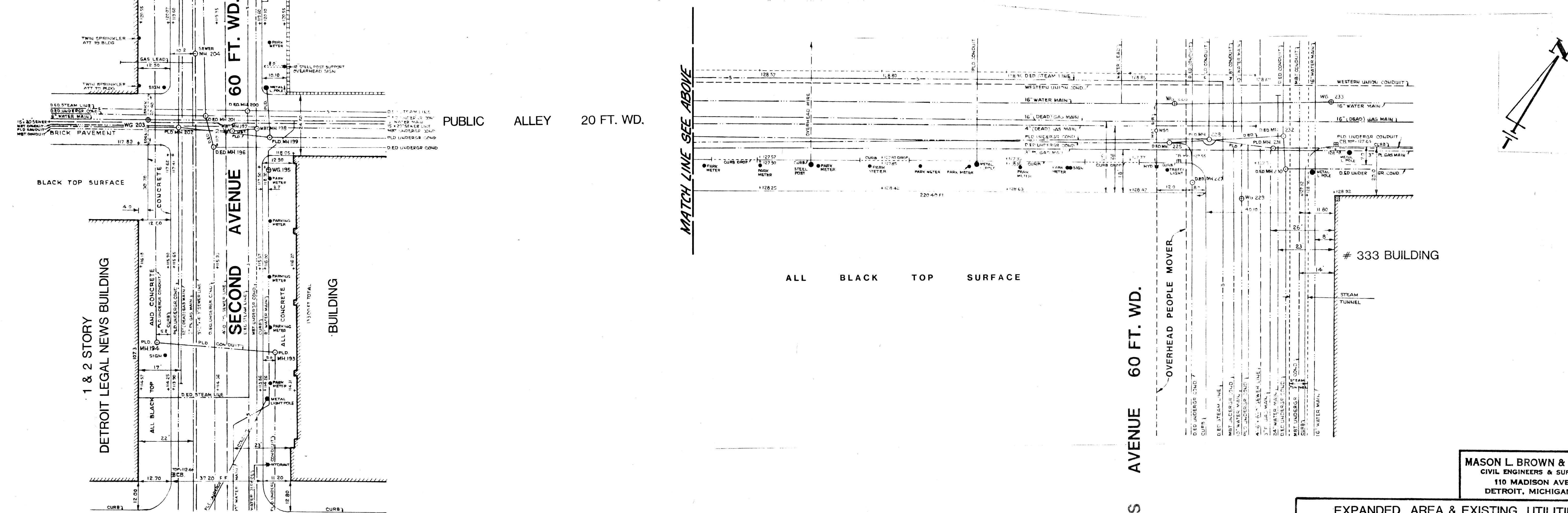
FINAL R.O.W.			
AUTH.	DATE	NO.	REVISION

FORT STREET 100 FT. WD. BLACK TOP SURFACE



MATCH LINE SEE BELOW

MATCH LINE SEE ABOVE



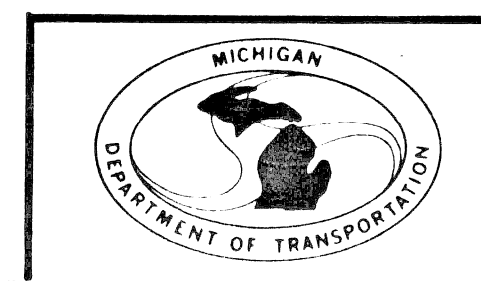
CONGRESS STREET 60 FT. WD.

MASON L. BROWN & SON, INC.
CIVIL ENGINEERS & SURVEYORS
110 MADISON AVENUE
DETROIT, MICHIGAN 48226

EXPANDED AREA & EXISTING UTILITIES

COBO HALL EXPANSION

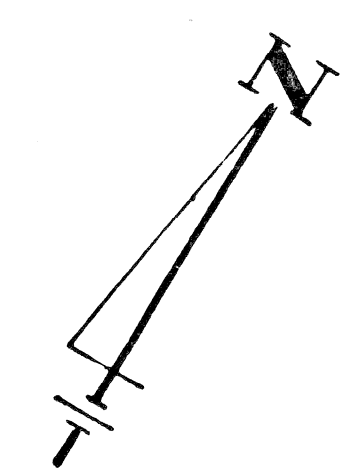
CITY OF DETROIT, WAYNE CO., MICHIGAN



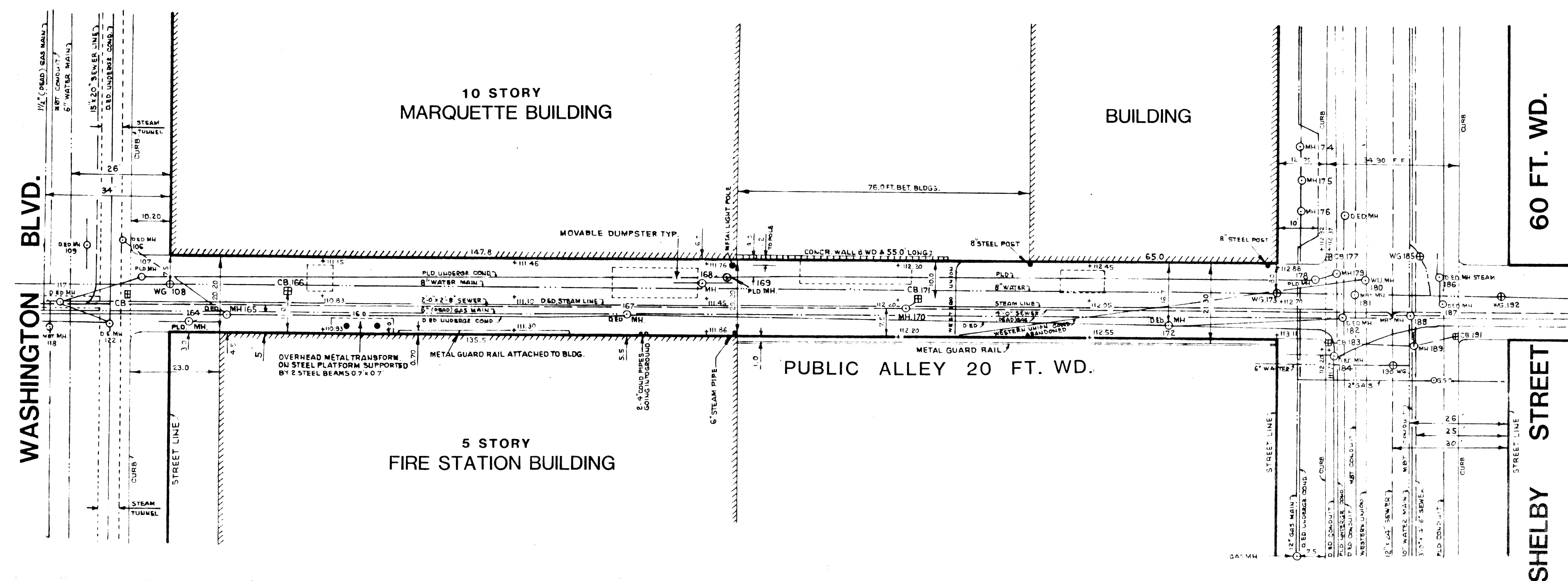
UTILITY RELOCATIONS

DATE: FEB. 4, 1986	DRAWN:	CONT. SEC.	JOB NO.	CHECKED:	SHEET NO.
SCALE: 1" = 20'	DESIGNED:	BM 82111	25199A	APPROVED:	2 OF 65

			FINAL R.O.W.
AUTH.	DATE	NO.	REVISION



SURVEY OF ALLEY BET. LARNED ST. & CONGRESS ST.

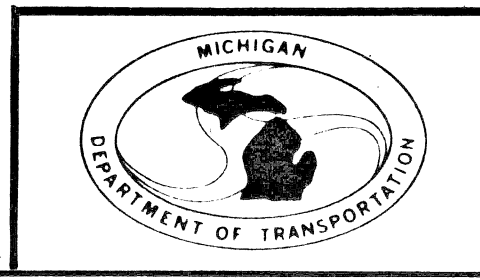


MASON L. BROWN & SON, INC.
 CIVIL ENGINEERS & SURVEYORS
 110 MADISON AVENUE
 DETROIT, MICHIGAN 48226

EXPANDED AREA & EXISTING UTILITIES

COBO HALL EXPANSION

CITY OF DETROIT, WAYNE CO., MICHIGAN



UTILITY RELOCATIONS					
DATE: FEB. 4, 1986	DRAWN:	CONT. SEC.	JOB NO.	CHECKED:	SHEET NO.
SCALE: 1" = 20'	DESIGNED:	BM 82111	25199A	APPROVED:	2A OF 65

GENERAL NOTES

All Water Main construction shall be performed with materials and workmanship of the highest quality for the particular purpose and shall strictly conform to the current standards and specifications of the Detroit Water and Sewerage Department.

Pavement removal and replacement, excavation and backfilling for the entire work shall be done by the contractor, including that for work to be done by the D.W.S.D.

The contractor shall furnish all waterworks material required for the entire work, including materials for work indicated on the drawings to be done by the D.W.S.D.

After the newly constructed Water Mains have been satisfactorily pressure tested, flushed and chlorinated, the contractor shall make all connections to existing Water Mains, unless otherwise noted or shown on the drawings.

Service connections, 2-inch in diameter or smaller and their relocations shall be made by the Contractor. Abandoned water services 2-inch in diameter or smaller on Existing Water Mains to remain in service shall be abandoned at the Existing Water Mains by Contractor Services to be abandoned at the Existing Water Main or to be reconnected to the New Water Mains are not all shown on the plans.

Existing Water Mains, as shown, indicate approximate locations only as shown by D.W.S.D. records and no guarantee is made as to completeness or accuracy.

Elevations of Existing Water Mains are not known. Approximate elevations shown on the profiles are based on the assumption of 5 feet average depth. The grades of the Proposed Water Mains are subject to change to suit actual elevations of Existing Water Mains.

The locations and elevations of existing utilities are shown in accordance with available data. The Contractor shall expose these utilities, where required, to determine actual locations.

Other utilities may be making alterations to their existing systems in the vicinity of the Water Main construction shown on the plans. These utilities should be consulted for the latest information regarding the location of their facilities.

A minimum clearance of one foot vertically and three and one half feet horizontally shall be maintained between the Water Main and other utilities, unless otherwise shown on the plans or approved by D.W.S.D. If a conflict is indicated between the Water Main and any other utility, that utility should be consulted.

The location of Fire Hydrants, as shown, are approximate. D.F.D. will give exact location of New or Relocated Fire Hydrants prior to installation.

Elevation Datum is City of Detroit Datum.

Pipe shall have Bell and Spigot Joints designed for sealing with a Rubber Gasket such as "Tyton" Super Bell Tight, or approved equal except that Line Valves, Hydrant Connections and Hydrant Valves shall have leaded joints. (See Specifications)

The Drawings indicate the arrangement, general design and extent of the Water Main alterations. The Mains and connections are shown, more or less, in diagram and in their general locations, except where in certain cases the Drawings may include details giving the exact location and arrangement. Due to the small scale of the Drawings, it is not possible to indicate all offsets, fittings, valves and accessories that are required. The Contractor shall carefully investigate the structural and other conditions affecting all the work and shall arrange and perform his work under this Contract accordingly, furnishing and installing such items of material as may be required to meet such conditions.

In compliance with Public Act 53 of the State of Michigan (Effective Aug. 1, 1974), the Contractor shall notify in advance of construction all public and private owners having existing facilities in or near the immediate working area. For convenience the known utility owners are listed on this sheet. This listing does not, however, relieve the Contractor of the responsibility of verifying utility locations and notifying all utility owners and Miss Dig (Phone 482-7171 in Area Code 800)

The Detroit Edison Co.
2000 Second Ave.
Detroit, Mich. 48226
Overhead 644-3040
Underground 962-2100

Mich. Consolidated Gas Co.
500 Griswold Street
Distribution Dept.-Noble Bldg.
Detroit Mich. 48226
Phone 577-7398

Mich. Bell Telephone Co.
Right of Way - Metro
Room 1510, 660 Plaza Drive
Detroit Mich. 48226
Phone

Public Lighting Dept.
9449 Grinnell
Detroit, Mich. 48213
Phone: 267-7255

CONSTRUCTION NOTES

All Water Main work performed by the Contractor shall require inspection by the D.W.S.D. or their designated representatives

Encasements and Thrust Blocks shall be poured against undisturbed earth. Bottom 3" of Encasement may be poured separate from Encasement and used as a sub-footing.

All Encasements and Thrust Blocks shall terminate at the face of pipe bells.

Removal of abandoned Water Mains as required for clearance to construct the proposed Water Mains shall be done by the contractor.

The Contractor shall expose existing Water Mains at points of connection and verify their location prior to pipe laying, so that minimum work will be required.

Thrust Blocks will be required at all bends greater than 1 1/4" for 12" C.I. or D.I. Water Mains. Vertical Thrust Blocks for all top bends will require reinforcing steel, except for the 16" D.I.P. which will be encased at all bends. Contractor shall construct all Concrete Thrust Blocks and Gate Wells.

The Contractor shall perform the work required to connect or disconnect water mains at junctions with the existing system which is to remain in service, except as otherwise shown. Valve operations, connection to existing, or new Water Mains, shall be included in the Contractor's Work. Flushing and chlorination will be included in D.W.S.D. work. The Contractor shall perform all other work in conjunction with D.W.S.D. work. Contractor's work includes Earth Excavation, Disposal, Backfill, Sheet piling, Bracing, Pumping and Drainage required for maintenance of trench and for disposal of waste water; Barricades, Traffic Control, Material handling and Standby assistance (including crane work required), Pavement Removal and Replacement; Thrust Blocks Encasements and Gate Wells.

The Contractor shall cut and cap or plug existing Water Mains to remain in service where required.

All 4" C.I. Blow-off Assemblies, C.I. Plugs and Caps to be installed and/or removed by Contractor have not been shown on the drawings.

The Contractor shall remove all temporary C.I. Plugs, Tees and Blow-off Assemblies at points of water main connections unless otherwise specified.

The Contractor shall install all Pipe and Fittings necessary to complete the connections shown.

Proposed construction work by other Utility Companies, as shown on these drawings, is in accordance with information supplied by the Utility Company. The D.W.S.D. does not guarantee the completeness or accuracy of Locations of Proposed Utility Work by others. The Contractor shall make his own investigation regarding such work.

Outline of demolished building substructures as shown on the drawings are based on the best available information. We do not guarantee that these or other underground substructures are or are not present.

Existing Water Mains to be cut and abandoned for new Water Main construction shall be bulkheaded with a minimum 8" thickness of concrete or brick mortared in place.

Exist gate Wells on Water Mains to be Abandoned shall be broken down to an elevation of 2 feet below pavement surfaces and elsewhere to an elevation of 1 foot below the existing grade or as directed by the Engineer and/or Jurisdiction Authority. This includes the removal of frame and cover which shall become the property of the Contractor.

The gate Well shall then be backfilled in the same manner as Specified for the Water Main trench. The surface shall be restored in kind to the surrounding area to the satisfaction of the Engineer and Jurisdiction Area.

CERTAIN UNDERGROUND STRUCTURES AND UTILITIES HAVE BEEN SHOWN ON THE CONSTRUCTION DRAWINGS AS AN AID TO THE CONTRACTOR. THESE ARE SHOWN ON THE DRAWINGS IN THE LOCATION CONSIDERED MOST PROBABLE FROM BEST AVAILABLE INFORMATION. NO GUARANTEE IS GIVEN OR IMPLIED THAT THE LOCATIONS AND DEPTHS AS SHOWN, ARE ABSOLUTELY CORRECT, OR THAT OTHER FACILITIES, IN ADDITION TO THOSE SHOWN ARE NOT PRESENT. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR PRIOR TO BEGINNING CONSTRUCTION, TO VERIFY THE ACCURACY OF THE INFORMATION PROVIDED REGARDING LOCATIONS AND DEPTHS OF EXISTING UTILITIES. PAYMENT FOR WORK DONE UNDER THIS EXPLORATORY EXCAVATION PROCESS WILL BE MADE IN ACCORDANCE WITH THE SECTION TITLED "EXPLORATORY TRENCH WORK" OF THE CONTRACT DOCUMENTS.

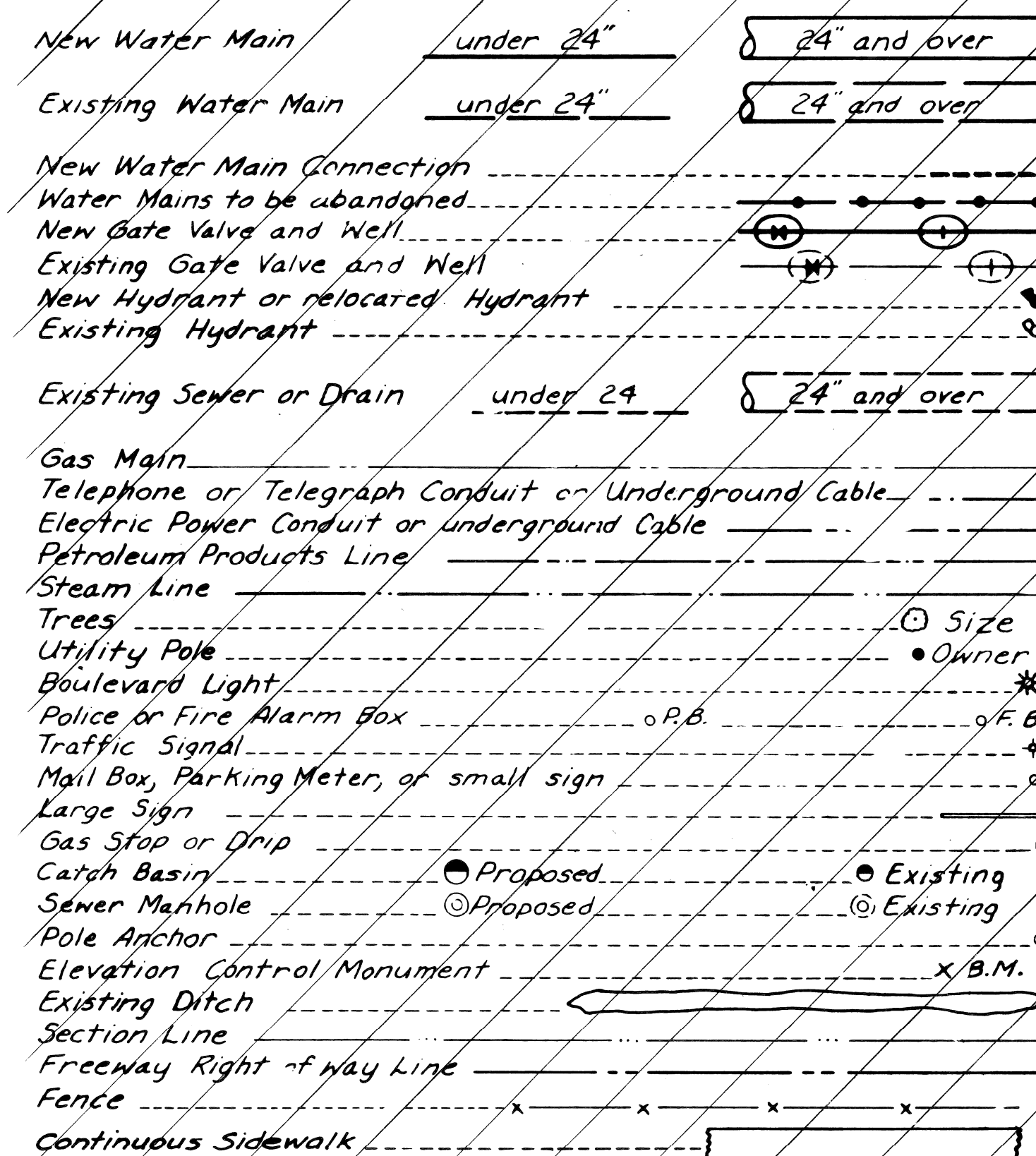
THRUST BLOCK & ENCASEMENT WILL HAVE TO BE POURED AGAINST DISTURBED EARTH IN JACKING PIT AREA. BACKFILL BELOW ENCASEMENT IN THE JACKING PIT SHOULD BE 100% COMPACTION.

INSTALL CAP FOR ABANDONMENT, WHERE CALLED FOR ON THE PLANS, WILL BE INCIDENTAL TO THE CONSTRUCTION WORK THAT IS BEING CONDUCTED AT THE TIME THE CAP IS INSTALLED. IN ADDITION, ANY UTILITY THAT IS UNCOVERED WHICH IS NOT SHOWN ON THE PLANS SHALL BE CAPPED UPON APPROVAL FROM THE ENGINEER. CAPS INSTALLED ON UNCOVERED UTILITIES SHALL BE INCIDENTAL TO THE ONGOING CONSTRUCTION WORK.

DETROIT FIRE DEPARTMENT TO DETERMINE FINAL LOCATION OF ALL FIRE HYDRANTS.

PLD DUCT RUNS AND CONDUITS IN CASS, FIRST AND SECOND AVENUES SOUTH OF CONGRESS AVENUE WILL BE ABANDONED, WITH THE EXCEPTION OF THE 24 KV DUCT RUN IN SECOND AVENUE. THE 24 KV LINE IS TO REMAIN IN SERVICE. ALL OTHER PLD LINES WILL BE ABANDONED, HOWEVER THESE LINES WILL BE ABANDONED DURING SEPTEMBER OF 1986. THEREFORE, CONTRACTOR SHALL NOT DISTURB EXISTING PLD LINES IN CASS, FIRST AND SECOND AVENUES SOUTH OF CONGRESS AVENUE UNTIL THOSE PLD LINES ARE ABANDONED.

LEGEND



DESIGNED BY		APPROVED		CITY OF DETROIT WATER AND SEWERAGE DEPARTMENT ENGINEERING DIVISION				CONT. SEC. BM 82111
DRAWN BY		DIRECTOR OF ENGINEERING		JOB NO. 25199A				DATE FEB. 4, 1986
CHECKED BY		DIRECTOR		DRAWING NO. SHEET 2B OF 65				
CO-OR.		REVISIONS		SCALE		DATE		

			FINAL R.O.W.
AUTH.	DATE	NO.	REVISION

QUANTITIES

GENERAL		
ITEM	ESTIMATED QUANTITIES	UNIT USED
REMOVING STREET GAS MAIN AND FOUNDATIONS (SPECIAL)	250	CYD
CONCRETE BASE COURSE 10" MIN. REINFORCED WITH INTEGRAL CURB (SPECIAL)	100	SYD
CEMENT	250	TON
PREFORMED WHITE (OR YELLOW) THERMOPLASTIC PAVEMENT MARKINGS - 4" (SPECIAL)	200	LFT
PREFORMED WHITE (OR YELLOW) THERMOPLASTIC PAVEMENT MARKINGS - 6" (SPECIAL)	200	LFT
PREFORMED WHITE THERMOPLASTIC PAVEMENT MARKING SYMBOL (SPECIAL)	15	EACH
PREFORMED WHITE THERMOPLASTIC PAVEMENT MARKING LETTER (SPECIAL)	15	EACH
HAY OR STRAW BALES	50	EACH
TEMPORARY CONCRETE PAVEMENT NON-REINFORCED 3"	750	SYD
TEMPORARY FENCE	1000	LFT
MAINTENANCE AGGREGATE (SPECIAL)	150	TON
EARTH EXCAVATION (SPECIAL)	150	CYD
FIELD OFFICE	14	MOS
CONCRETE BASE COURSE 10" MIN. NON-REINFORCED WITH INTEGRAL CURB (SPECIAL)	100	SYD
MOBILIZATION	1	L SUM

QUANTITIES

SEWER		
ITEM	ESTIMATED QUANTITIES	UNIT USED
RECONSTRUCTING DRAINAGE STRUCTURES	10	EACH
REMOVING DRAINAGE STRUCTURES (SPECIAL)	6	EACH
ADJUSTING STRUCTURE COVERS (SPECIAL)	6	EACH
FURNISHING GAS TESTING METERS AND RELATED EQUIPMENT (SPECIAL)	6	EACH
BITUMINOUS APPROACHES	50	TON
CONCRETE PAVEMENT 10" MIN. REINFORCED (SPECIAL)	900	SYD
BITUMINOUS SHOULDERS 3" THICK (SPECIAL)	250	TON
CONCRETE PAVEMENT 10" MIN. NON-REINFORCED (SPECIAL)	900	SYD
REMOVING BRICK PAVEMENT (SPECIAL)	200	SYD
BRICK PAVEMENT (SPECIAL)	200	SYD
SEWER CLEANOUT (SPECIAL)	500	LFT

QUANTITIES

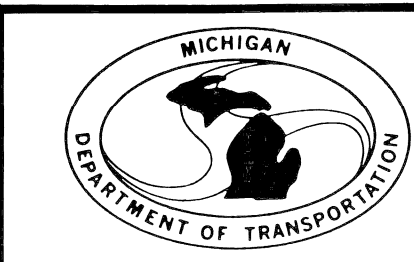
UTILITY RELOCATION		
ITEM	ESTIMATED QUANTITIES	UNIT USED
RELOCATE HYDRANT - METHOD I	1	EACH
RELOCATE HYDRANT - METHOD II	1	EACH
REMOVE HYDRANT - METHOD I	1	EACH
REMOVE HYDRANT - METHOD II	1	EACH
16" x 16" x 16" TEE (SPECIAL)	1	EACH
RECONSTRUCT GATE WELL	1	EACH

QUANTITIES

P.D. RELOCATIONS & UNFORSEEN CONFLICTS, DAMAGES ECT.		
ITEM	ESTIMATED QUANTITIES	UNIT USED
CATCH BASIN (SPECIAL)	6	EACH
EXPLORATORY TRENCHING (SPECIAL)	260	LFT
BITUMINOUS APPROACHES	50	TON
BITUMINOUS SHOULDERS 3" THICK (SPECIAL)	200	TON
CONCRETE PAVEMENT 10" MIN. NON-REINFORCED (SPECIAL)	400	SYD
REMOVING BRICK PAVEMENT (SPECIAL)	200	SYD
BRICK PAVEMENT (SPECIAL)	200	SYD
REMOVING INTEGRAL CURB & WALK (SPECIAL)	300	LFT
INTEGRAL CURB & WALK (SPECIAL)	300	LFT
SIDEWALK RAMP TYPE I	100	SFT
1-4" ENCASED CONDUIT	100	LFT
2-4" ENCASED CONDUIT	100	LFT
REMOVE HANDHOLE - ELECTRICAL	4	EACH
STREET TYPE "D" HANDHOLE	4	EACH
REMOVE 7500V 2-1/2" #8 L.C. STREET LIGHTING CABLE (SPECIAL)	240	LFT
REMOVE U.G. FED STREET LIGHTING UNIT	8	EACH
REMOVE FOUNDATION	8	EACH
UNDERGROUND FED STREET LIGHTING STANDARD ON NEW FOUNDATION CODE 003-00 (SPECIAL)	8	EACH
REMOVE 2KV, 2-1/2" #6 STREET LIGHTING CABLE & NEUTRAL (SPECIAL)	240	LFT
INSTALL 2KV, 2-1/2" #6 STREET LIGHTING CABLE & NEUTRAL (SPECIAL)	240	LFT
CONDUIT REPAIR IN STREET (SPECIAL)	2	EACH
CONDUIT REPAIR BACK OF CURB (SPECIAL)	2	EACH
REMOVE TRAFFIC SIGNAL PEDESTAL (SPECIAL)	4	EACH
REMOVE 1-MULTICONDUCTOR T.S. OR COMM. CABLE IN CONDUIT (SPECIAL)	500	LFT
INSTALL 1-MULTICONDUCTOR T.S. OR COMM. CABLE IN CONDUIT (SPECIAL)	500	LFT
REMOVE 2-MULTICONDUCTOR T.S. OR COMM. CABLE IN CONDUIT (SPECIAL)	500	LFT
INSTALL 2-MULTICONDUCTOR T.S. OR COMM. CABLE IN CONDUIT (SPECIAL)	500	LFT
CLEANING EXISTING STORM DRAIN STRUCTURES (SPECIAL)	12	EACH
SEWER CLEAN-OUT (SPECIAL)	500	LFT
CONCRETE PAVEMENT 10" MIN. REINFORCED WITH INTEGRAL CURB (SPECIAL)	150	SYD
CONCRETE PAVEMENT 10" MIN. NON-REINFORCED WITH INTEGRAL CURB (SPECIAL)	150	SYD
REMOVAL AND REPLACEMENT OF TROLLEY OVERHEAD LINE ON WASHINGTON (SPECIAL)	550	LFT
RECONSTRUCTING 3-WAY M.H.	1	EACH
CABLE SPICE (MULTICONDUCTOR T.S. OR COMMUNICATION) (SPECIAL)	20	EACH
CABLE SPICE 7500V, 1/2" #8 L.C. STREET LIGHTING (SPECIAL)	24	EACH
CABLE SPICE 2KV, 1/2" #6 STREET LIGHTING (SPECIAL)	36	EACH

NOTE:

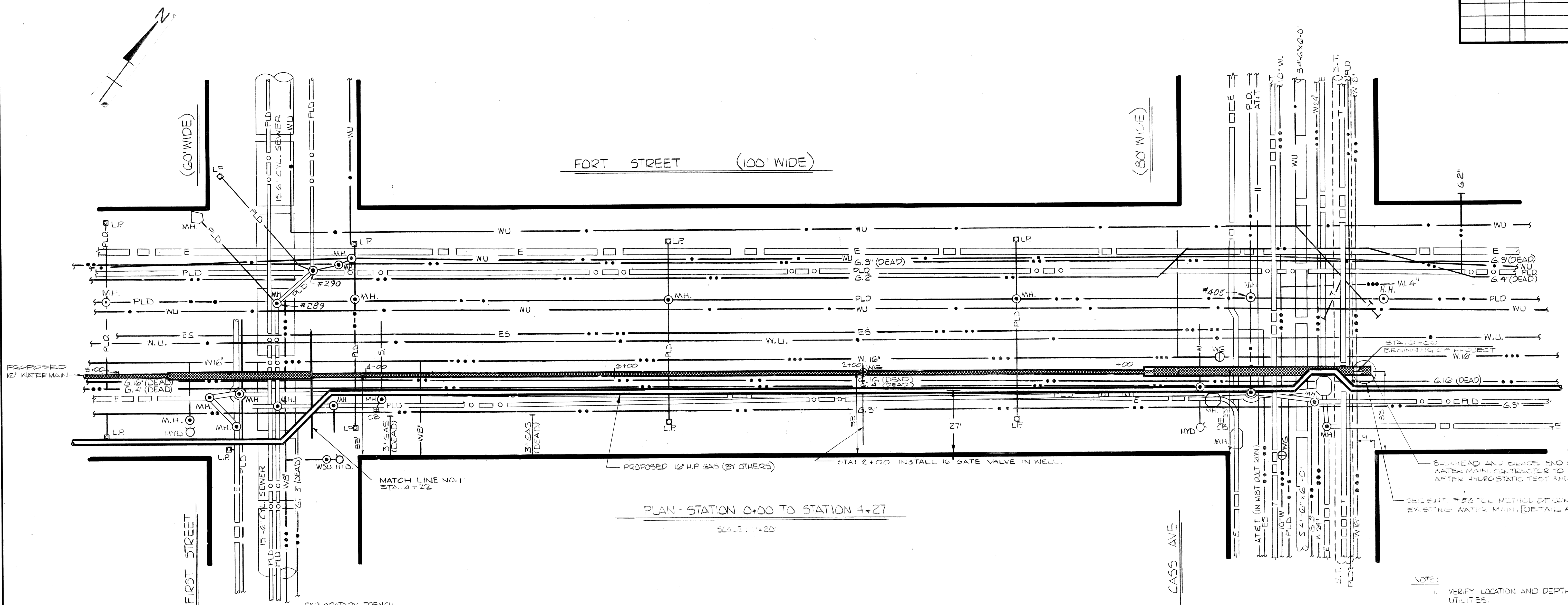
THE ITEMS OF WORK SHOWN ON THIS SHEET SHALL BE DONE AS THEY APPLY THROUGHOUT THE PROJECT AND AS DIRECTED BY THE ENGINEER.



MISCELLANEOUS ESTIMATES

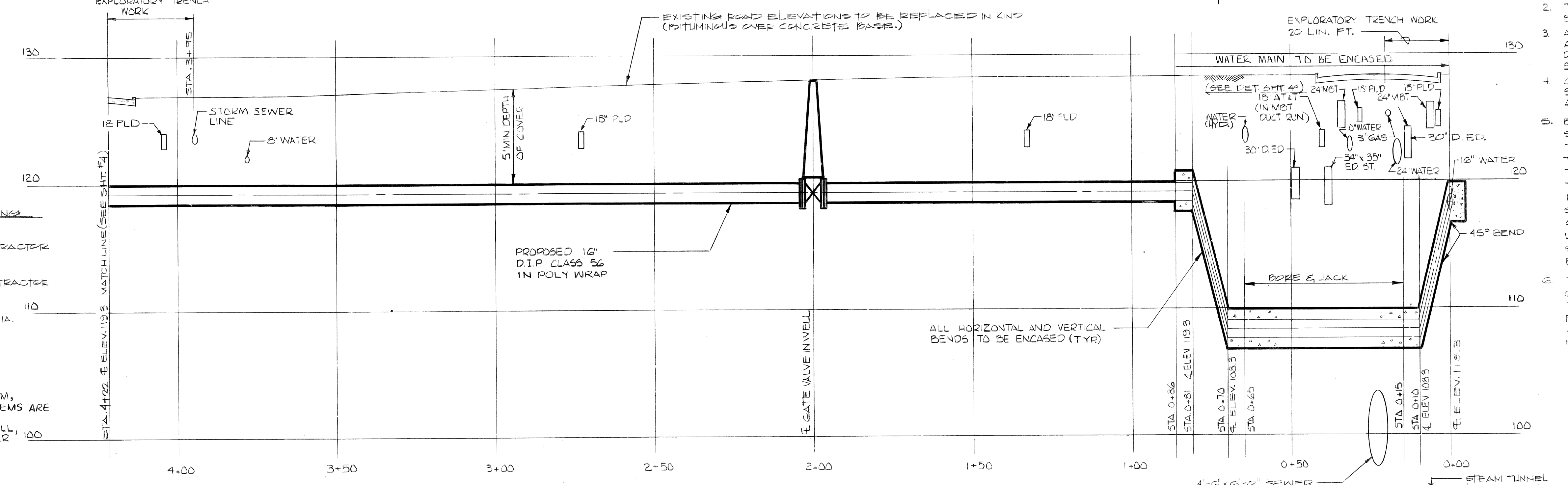
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FEB. 4, 1986	ORN BY: F.G.	BM 82111	25199A		R. O. W. CONST. 2 C OF 65

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PLAN - STATION 0+00 TO STATION 4+27
SCALE: 1"=20'

- NOTE:
1. VERIFY LOCATION AND DEPTHS OF ALL EXISTING UTILITIES.
 2. TOP OF WATER LINE TO BE A MINIMUM OF 5' BELOW FINISH.
 3. ALL WATER LINE WORK TO BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF DETROIT WATER AND SEWERAGE DEPARTMENT SPECIFICATION FOR WATER LINE OPERATION.
 4. CONTRACTOR TO MAINTAIN WATER MAIN SERVICE UNTIL WATER MAINS ARE INSTALLED AND CONNECTED.
 5. BOTH PLANS AND SPECIFICATIONS ARE CONSIDERED AS ESSENTIAL PARTS OF THIS CONTRACT AND ARE INTENDED TO BE CO-OPERATIVE. THEY SHALL BE CONSIDERED AS SUPPLEMENTARY TO EACH OTHER AND ANY WORK CALLED FOR IN THE PLANS AND NOT PARTICULARLY MENTIONED IN THE SPECIFICATIONS OR DESCRIBED IN THE SPECIFICATIONS AND NOT SHOWN SPECIALLY ON THE PLANS IS TO BE REGARDED AS INCLUDED UNDER THIS CONTRACT THE SAME AS IF FULLY SET FORTH IN THE SPECIFICATIONS AND EXHIBITED ON THE PLANS.
 6. THE CONTRACTOR SHALL NOT MAKE ANY CONNECTION TO EXISTING WATER MAIN UNTIL THE NEW WATER MAIN HAS BEEN TESTED, FLUSHED AND CHLORINATED, AND WRAS APPROVAL HAS BEEN GIVEN BY THE ENGINEER.



PROFILE - STATION 0+00 TO STATION 4+27
SCALE: HORIZ. - 1"=20'
VERT. - 1"=5'

METHODS TO BE USED ON RESTRAINING THE 12" S.D. WATER MAIN

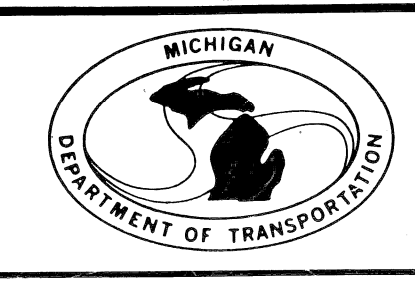
1. HORIZONTAL BENDS (12" S.D. & GREATER): CONTRACTOR TO USE CONCRETE THRUST BLOCKS.
2. VERTICAL BENDS (12" S.D. & GREATER): CONTRACTOR TO USE CONCRETE ENCASUREMENT.
3. JACK BORING AREAS: CARRIER PIPE - 12" DIA. FOR 12" S.D. P. R. 3" DIA. FOR 12" S.D. I. R.

NOTICE TO CONTRACTORS:
UNLESS COVERED BY A SPECIFIC PAY ITEM, THE FOLLOWING PROJECT RELATED WORK ITEMS ARE TO BE CONSIDERED INCIDENTAL. THEY INCLUDE BUT ARE NOT LIMITED TO EXCAVATION, BACKFILL, 100 SHEETING, BRACING, DEWATERING, TUNNEL LINER SHAFT VENTILATION, STEEL REINFORCEMENT, RESTORATION, CAPPING, DISPOSAL OF WASTE, GAPPING, THRUST BLOCKS ETC.

FORT ST. (WATER MAIN)

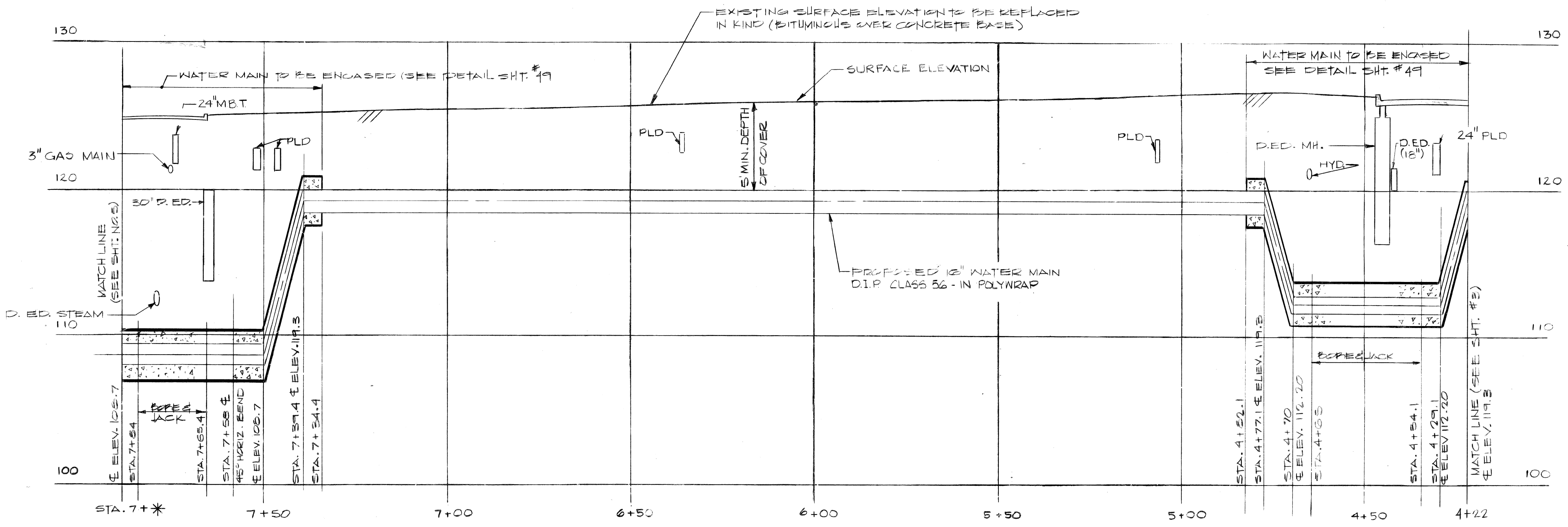
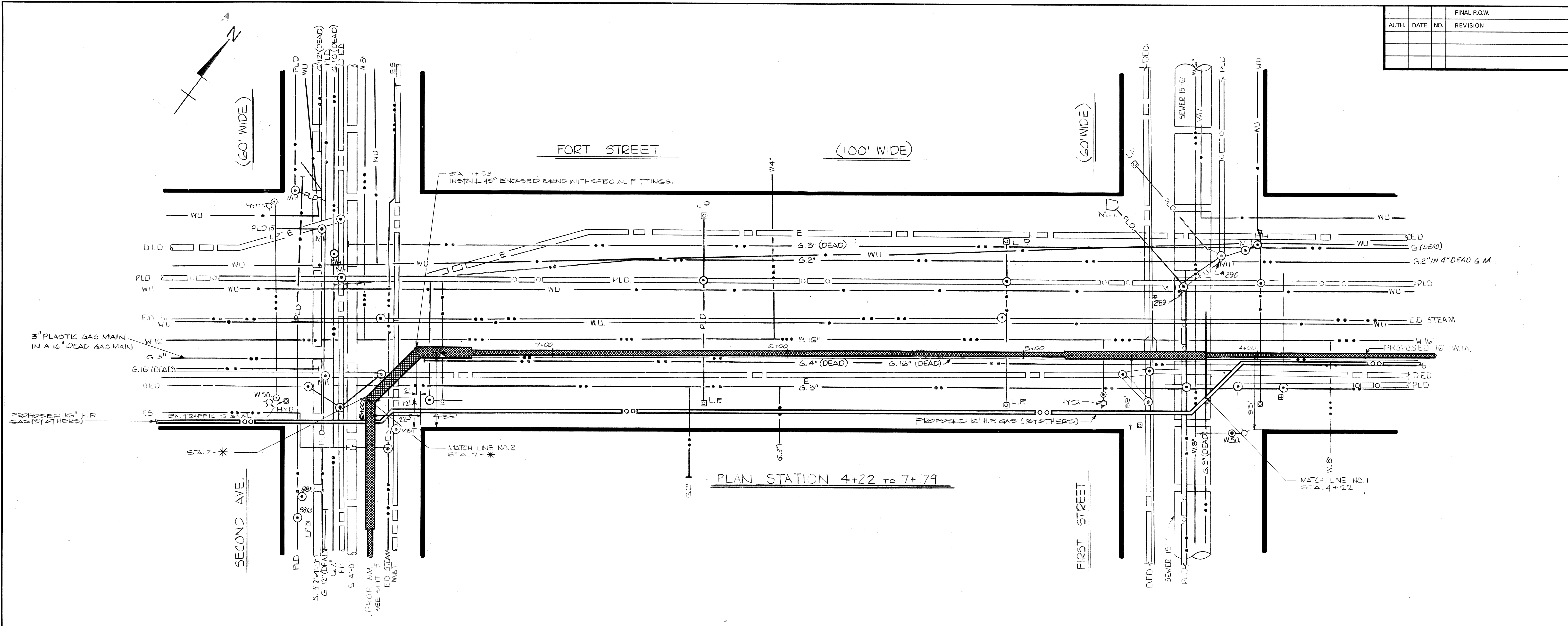
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U.S. 10-LODGE FREEWAY AT COBO HALL EXPANSION
Prepared By
MADISON/MADISON INTERNATIONAL
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SHEET NO. 3 OF 65			

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AUTH.	DATE	NO.	REVISION



NOTE:
 THE CONTRACTOR SHALL NOT MAKE ANY CONNECTION TO EXISTING WATER MAIN UNTIL THE NEW WATER MAIN HAS BEEN TESTED, FLUSHED AND CHLORINATED, AND D.W.S.D. APPROVAL HAS BEEN GIVEN BY THE ENGINEER.

* PLAN & PROFILE EQUATION
 STA. 7+68 BACK = 7+99 FORWARD

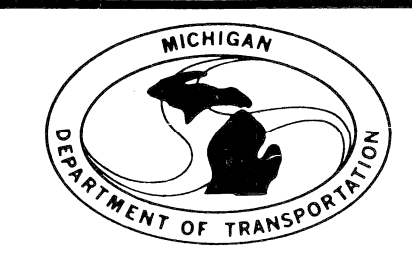
PROFILE - STATION 4+27 TO STA. 7+79
 SCALE: HORIZ. 1" = 20'
 VERT. 1" = 5'

FORT ST. (WATER MAIN)

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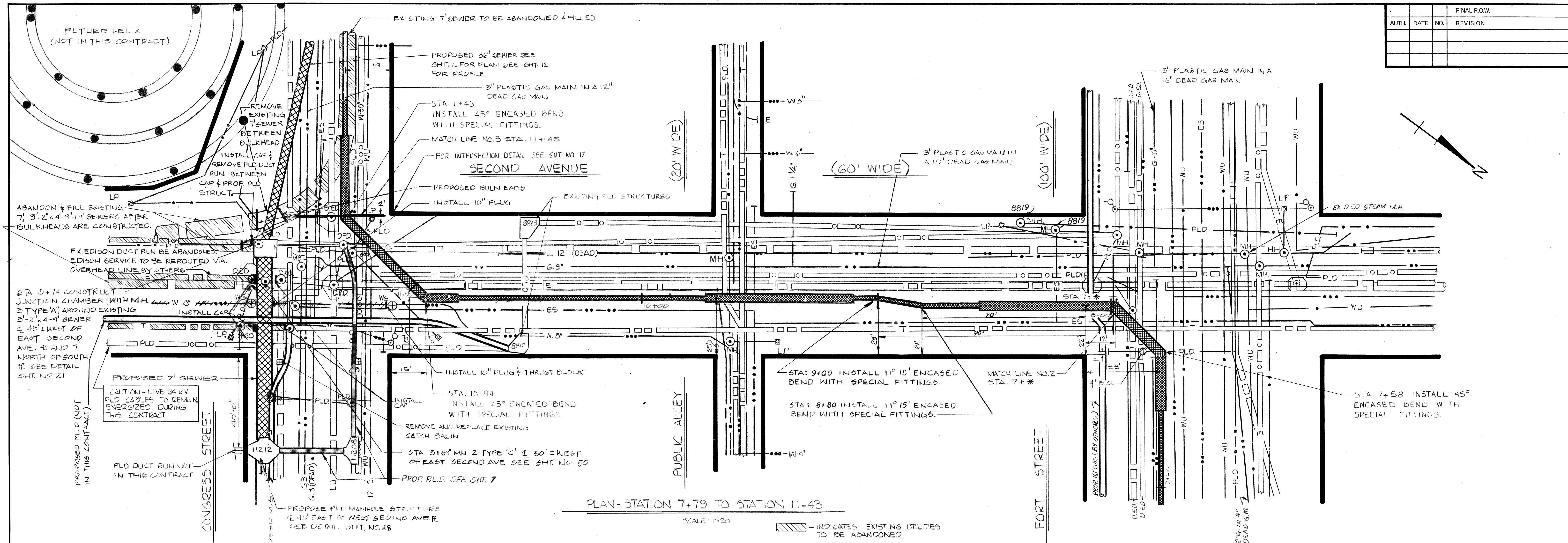
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				4 OF 65

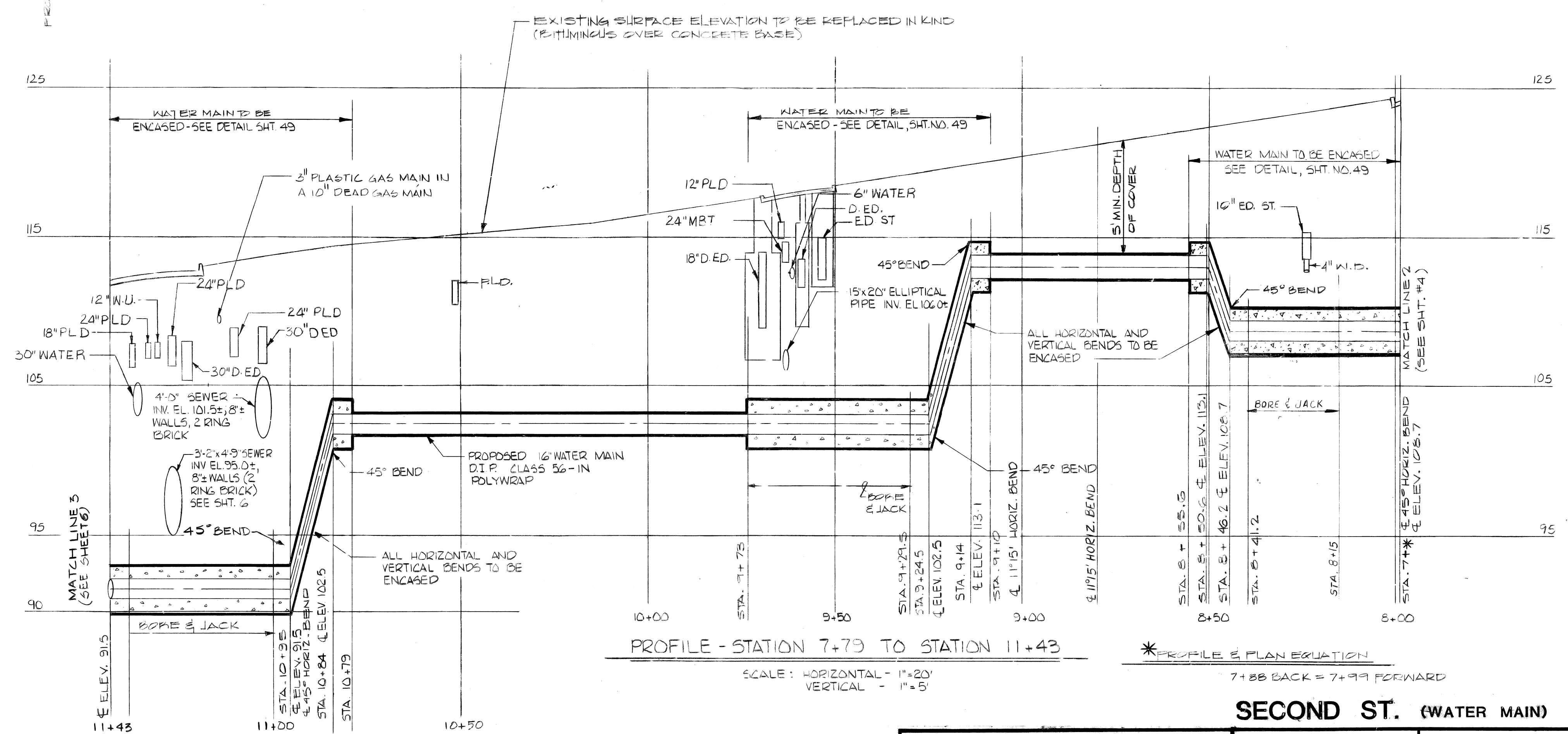
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PLAN - STATION 7+79 TO STATION 11+43

SCALE: 1"=20'

--- INDICATES EXISTING UTILITIES TO BE ABANDONED



PROFILE - STATION 7+79 TO STATION 11+43

SCALE: HORIZONTAL - 1"=20'
VERTICAL - 1"=5'

*PROFILE & PLAN EQUATION
7+88 BACK = 7+99 FORWARD

SECOND ST. (WATER MAIN)

NOTE:
THE CONTRACTOR SHALL NOT MAKE ANY CONNECTION TO EXISTING WATER MAIN HAS BEEN TESTED, FLUSHED AND CHLORINATED; AND D.W.S.D. APPROVAL HAS BEEN GIVEN BY THE ENGINEER.

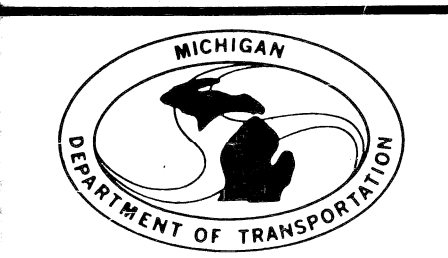
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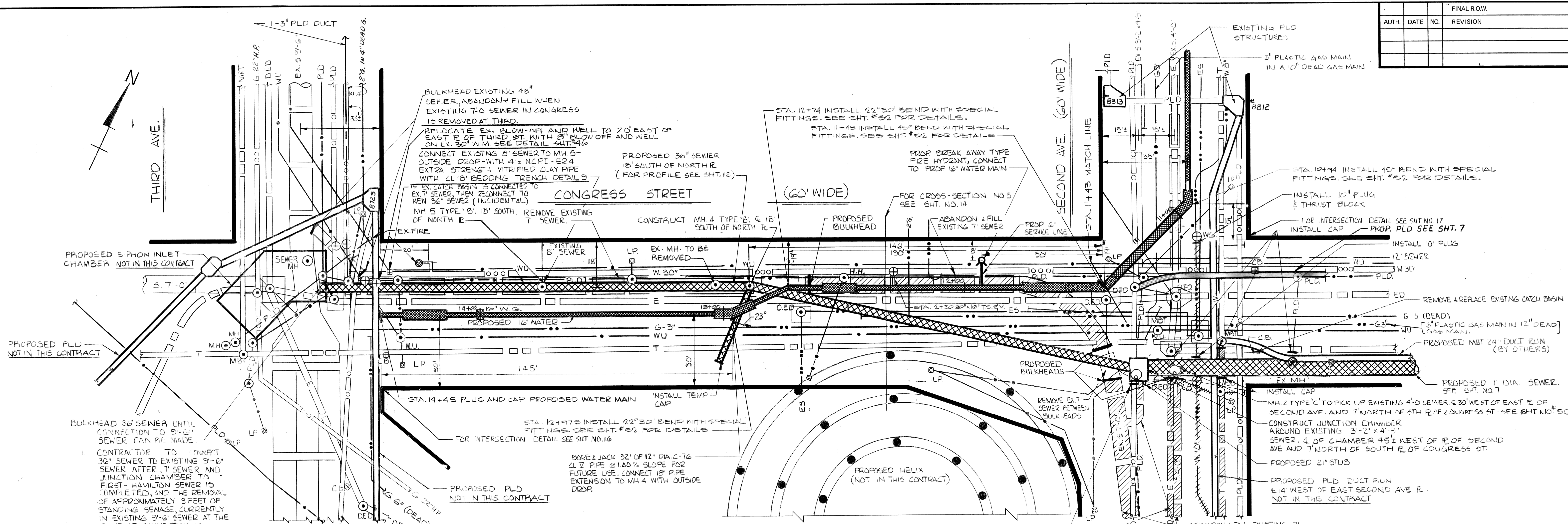
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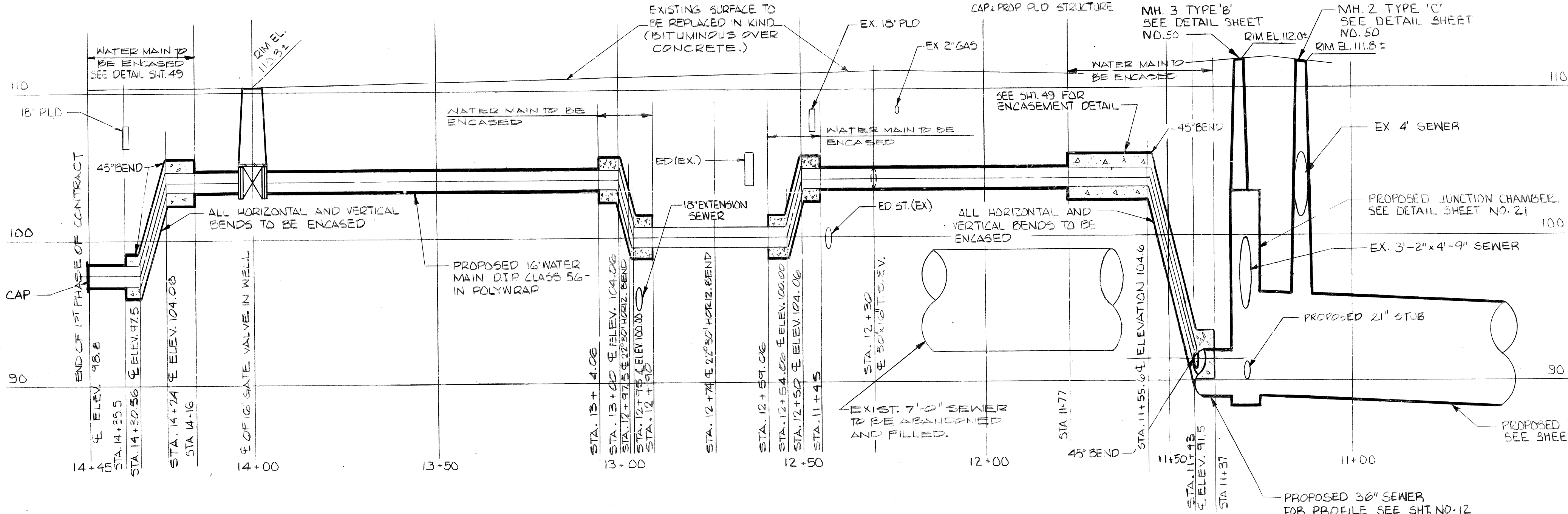
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AUTH.	DATE	NO.	REVISION



- CONTRACTOR TO CONNECT 36\"/>
- EXACT LOCATION + DEPTH OF EXISTING 30\"/>

PLAN-STATION 11+43 TO STATION 14+45
SCALE: 1\"/>



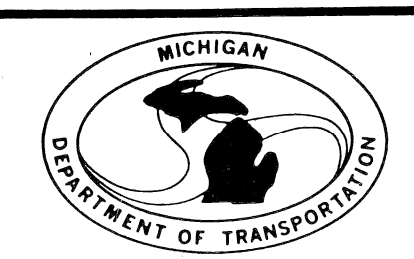
PROFILE - STATION 11+43 TO STATION 14+45
SCALE: HORIZ - 1\"/>

NOTE:
THE CONTRACTOR SHALL NOT MAKE ANY CONNECTION TO EXISTING WATER MAIN UNTIL THE NEW WATER MAIN HAS BEEN TESTED, FLUSHED, CHLORINATED AND DWS/D APPROVAL HAS BEEN GIVEN BY THE ENGINEER.

QUANTITIES		
ITEM	ESTIMATED QUANTITIES	UNIT USED
36\"/>	166	LFT
36\"/>	179	LFT
36\"/>	1	EACH
36\"/>	1	EACH
8\"/>	4	LFT
5\"/>	2	EACH
EXPLORATORY TRENCHING (SPECIAL)	30	LFT
12\"/>	32	LFT
48\"/>	2	EACH

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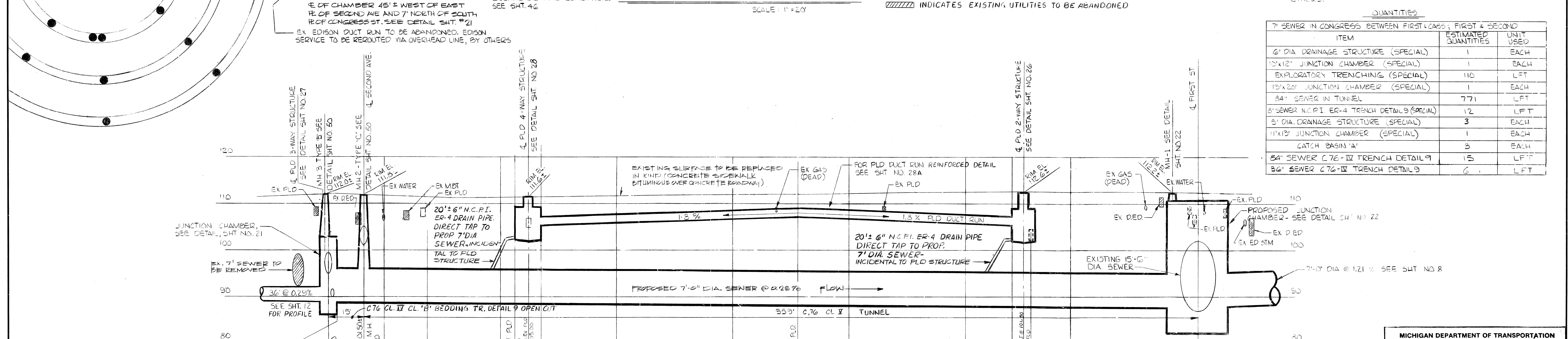
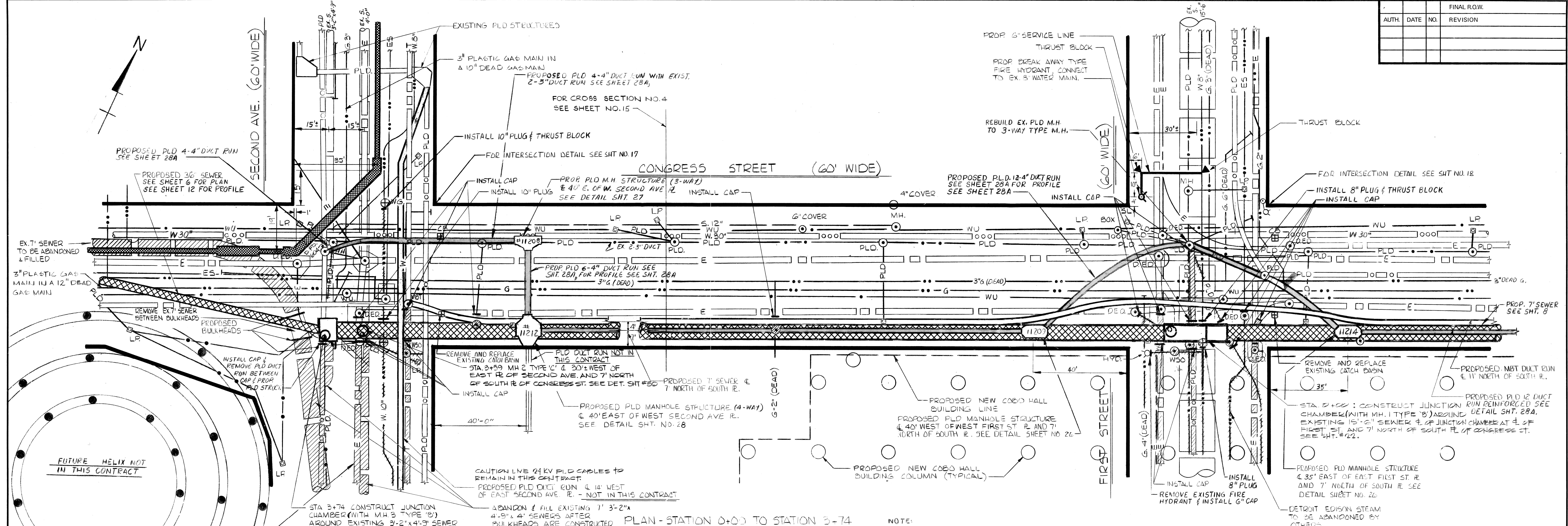
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QUANTITIES

ITEM	ESTIMATED QUANTITIES	UNIT USED
7" SEWER IN CONGRESS BETWEEN FIRST & SECOND		
6' DIA DRAINAGE STRUCTURE (SPECIAL)	1	EACH
15'x12' JUNCTION CHAMBER (SPECIAL)	1	EACH
EXPLORATORY TRENCHING (SPECIAL)	110	LFT
15'x20' JUNCTION CHAMBER (SPECIAL)	1	EACH
36" SEWER IN TUNNEL	771	LFT
8" SEWER N.C.P.I. EG-4 TRENCH DETAIL 9 (SPECIAL)	12	LFT
8" DIA DRAINAGE STRUCTURE (SPECIAL)	3	EACH
11'x15' JUNCTION CHAMBER (SPECIAL)	1	EACH
CATCH BASIN 'A'	3	EACH
36" SEWER C76-III TRENCH DETAIL 9	15	LFT
36" SEWER C76-IV TRENCH DETAIL 9	6	LFT

NOTES:
 CONTRACTOR SHALL MAINTAIN ALL FLOWS IN EXISTING SEWERS DURING CONSTRUCTION OF JUNCTION CHAMBERS, 7" AND 36" SEWERS AND MH 2'. BYPASS PUMPS, IF REQUIRED, SHALL BE INCIDENTAL TO THE CONSTRUCTION OF THE SEWER.

CONGRESS ST. (SEWER & P.L.D.)

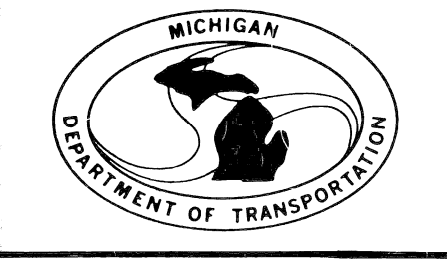
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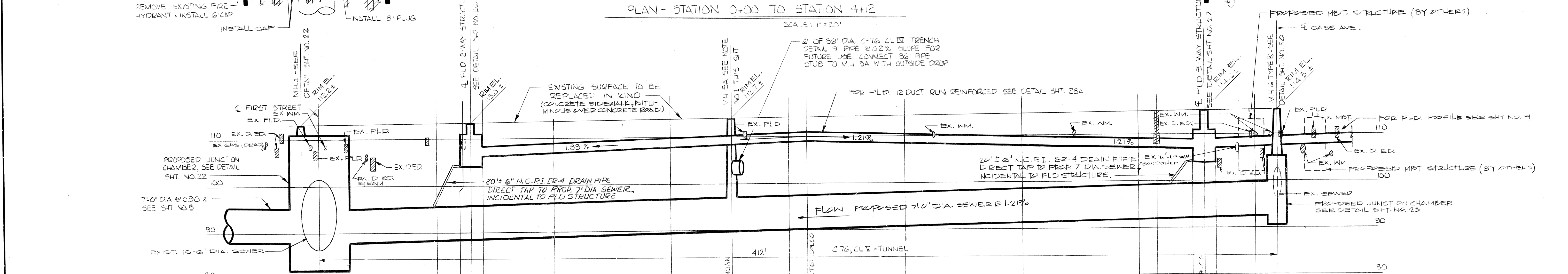
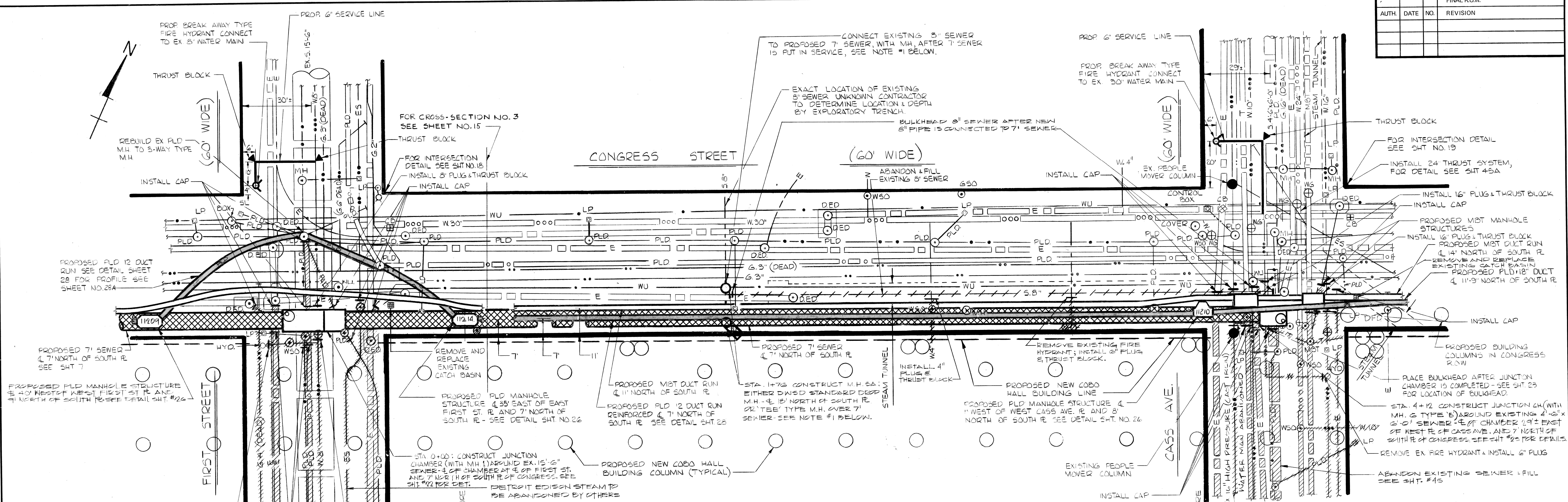
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				SHEET NO.
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- NOTE:
1. A) IF CONTRACTOR CONSTRUCTS PROPOSED 7" SEWER FROM A SHAFT LOCATED WHERE THE 3" SEWER RUNS NORTH-SOUTH, THEN THE 3" SEWER CAN BE CONNECTED TO THE 7" SEWER BY A TEE TYPE M.H. LOCATED OVER THE 7" SEWER; SEE DETAIL SHT. NO. 50 (CIRCULAR SECTION M.H.)
 - B) IF CONTRACTOR CONSTRUCTS PROPOSED 7" SEWER FROM A SHAFT LOCATED ELSEWHERE, THEN THE 3" SEWER WILL CONNECT TO THE 7" SEWER BY DWSO STANDARD DROP-M.H.; SEE DETAIL SHT. NO. 55
 - C) SEWER TO BE USED TO MAKE CONNECTION SHALL BE N.P.I. ER4 EXTRA STRENGTH VITRIFIED CLAY PIPE WITH 2" BEDDING; TR DETAIL 3. LENGTH OF 3" SEWER WILL VARY FROM 9' TO 12' DEPENDING ON LOCATION OF M.H.
 2. CONTRACTOR SHALL OBTAIN APPROVAL FROM DWSO REGARDING M.H. TYPE AND LOCATION BEFORE 3" SEWER IS CONNECTED TO THE 7" SEWER.
 3. CONTRACTOR SHALL MAINTAIN ALL FLOWS IN EXISTING SEWERS DURING CONSTRUCTION OF JUNCTION CHAMBERS AND 7" SEWER. BY-PASS PUMPING IF REQUIRED, SHALL BE INCIDENTAL TO THE SEWER CONSTRUCTION.

NOTE: - INDICATES EXISTING UTILITIES TO BE ABANDONED

CONGRESS ST. (SEWER & P.D.)

MICHIGAN DEPARTMENT OF TRANSPORTATION

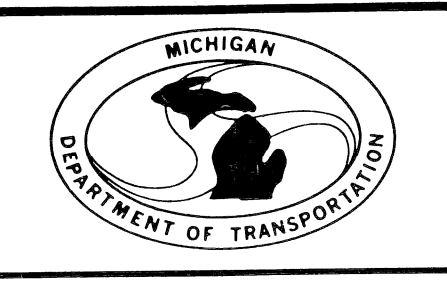
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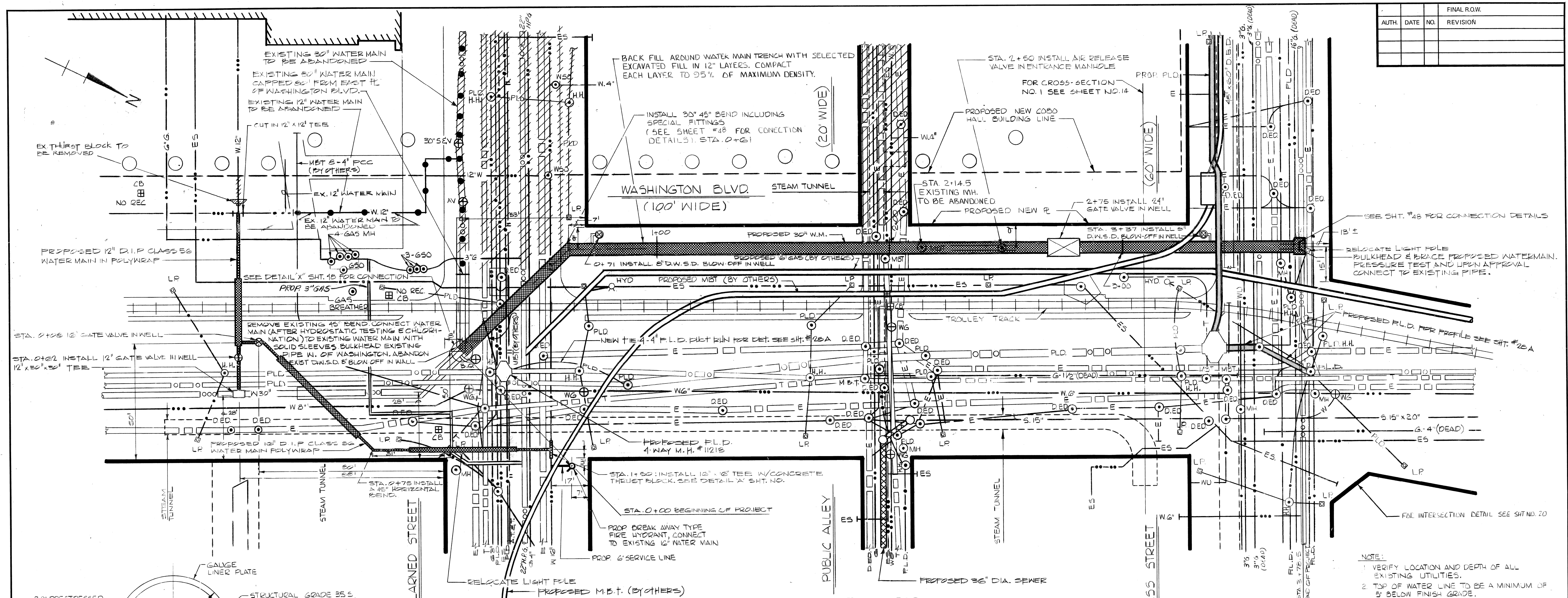
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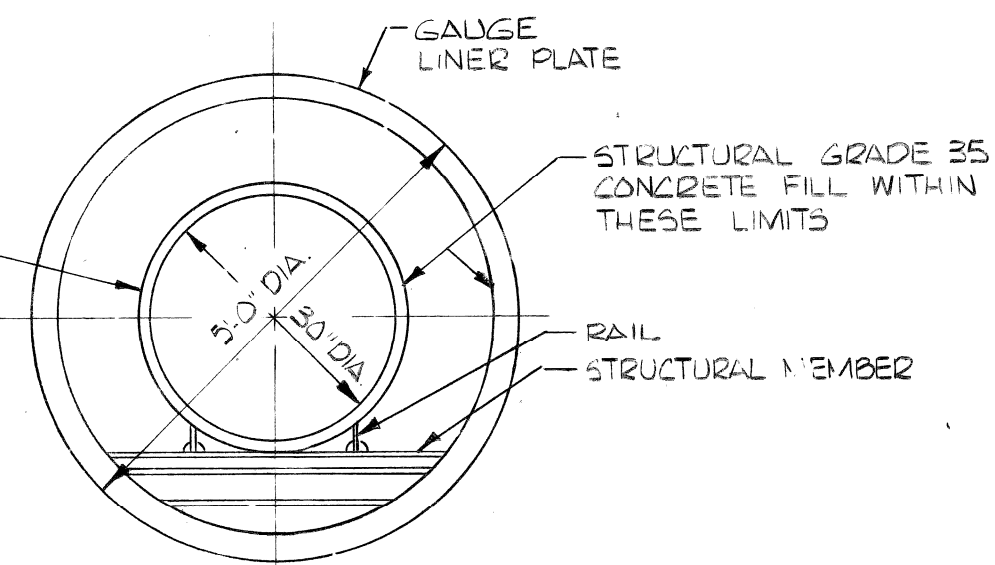
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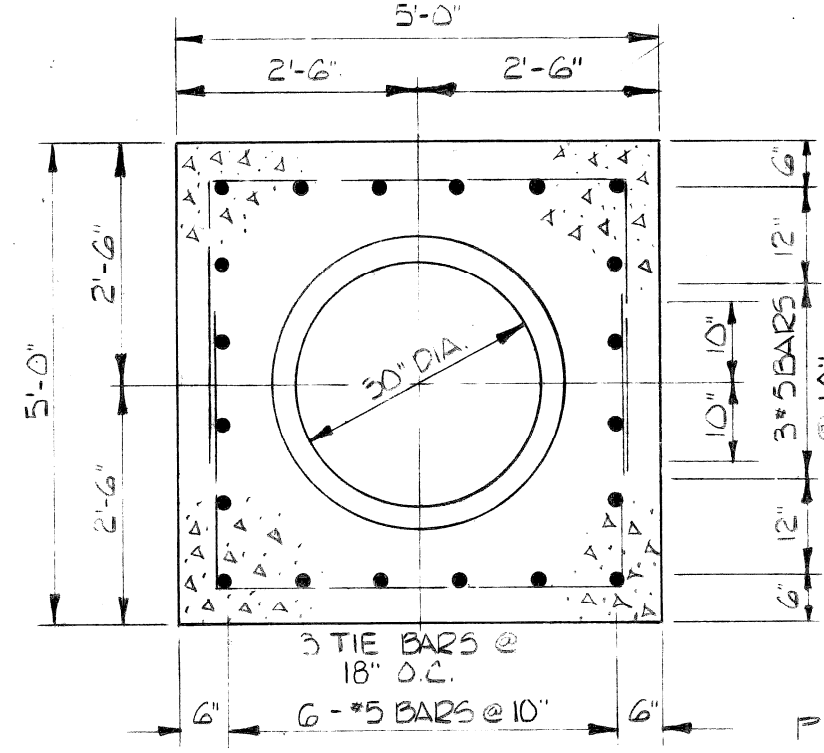
PLAN - STATION 0+00 TO STATION 3+78.5
SCALE: 1"=20'

- NOTE:
- VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES.
 - TOP OF WATER LINE TO BE A MINIMUM OF 5' BELOW FINISH GRADE.
 - ALL WATER LINE WORK TO BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF DETROIT WATER AND SEWERAGE DEPARTMENT SPECIFICATION FOR WATER LINE OPERATION.
 - THE CONTRACTOR SHALL NOT MAKE ANY CONNECTION TO EXISTING WATER MAIN UNTIL THE NEW WATER MAIN HAS BEEN TESTED, FLUSH AND CHLORINATED AND D.W.S.D. APPROVAL GIVEN BY THE ENGINEER.

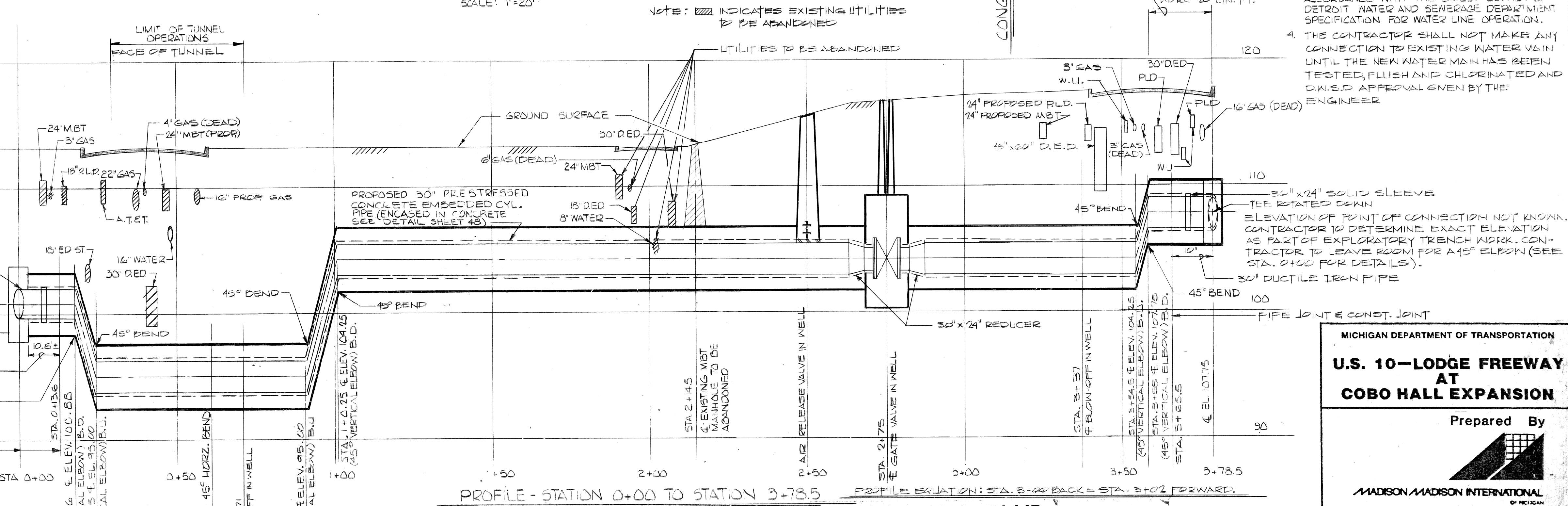


SECTION B-B

- NOTES:
- FIELD BOTH SIDES OF RAILS TO STRUCTURAL MEMBERS; STRUCTURAL MEMBERS ARE WELDED TO LINER PLATE.
 - CONSTRUCTION PLANS FOR TUNNEL SUBJECT TO APPROVAL BY THE ENGINEER AND AUTHORITIES HAVING JURISDICTION.
 - CONTRACTOR'S ATTENTION IS DIRECTED TO "TUNNELS" OF THIS DRAWING TO SPECIFICATING SECTION OF THE CONTRACT DOCUMENTS FOR ADDITIONAL REQUIREMENTS.



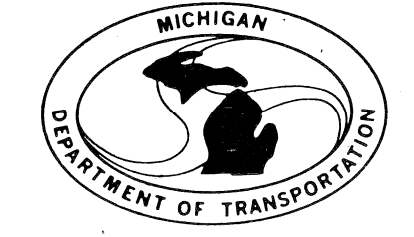
SECTION A-A (SEE SHT. 48 FOR PLAN)



PROFILE - STATION 0+00 TO STATION 3+78.5
SCALE: HORIZ. 1"=20' VERT. 1"=5'

* CONTRACTOR TO VERIFY LOCATION AND DEPTH OF EXISTING 30" W.M. AT STA. 0+00 AND STA. 3+78.5 BEFORE ORDERING WATER MAIN.

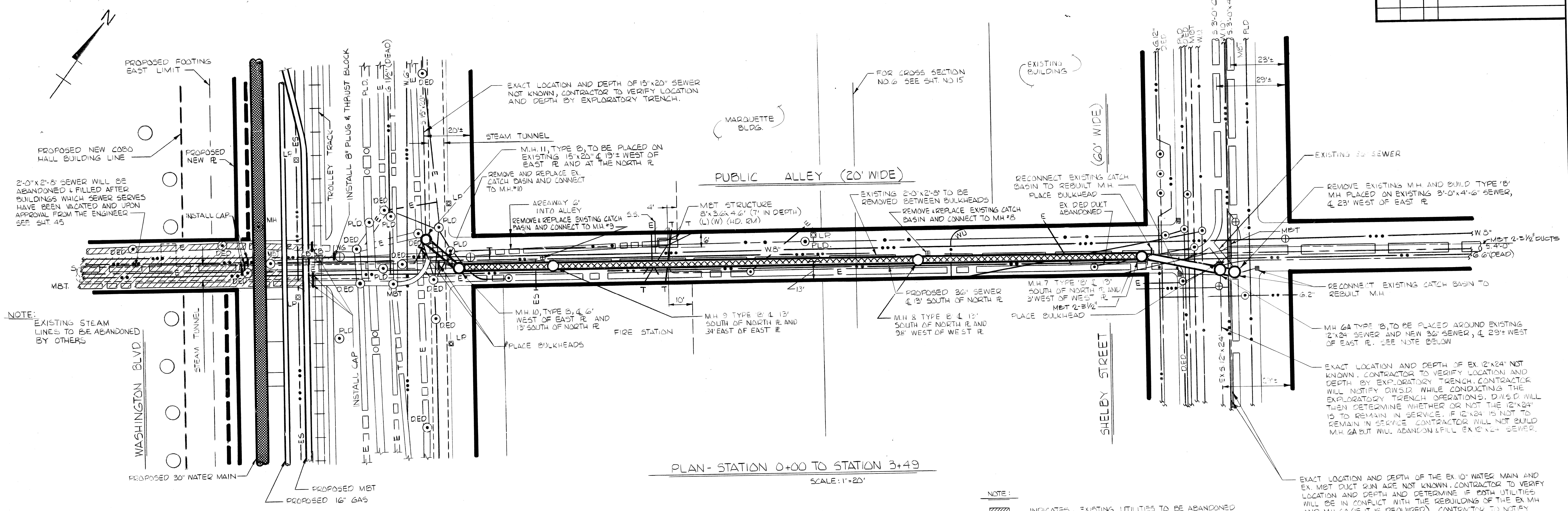
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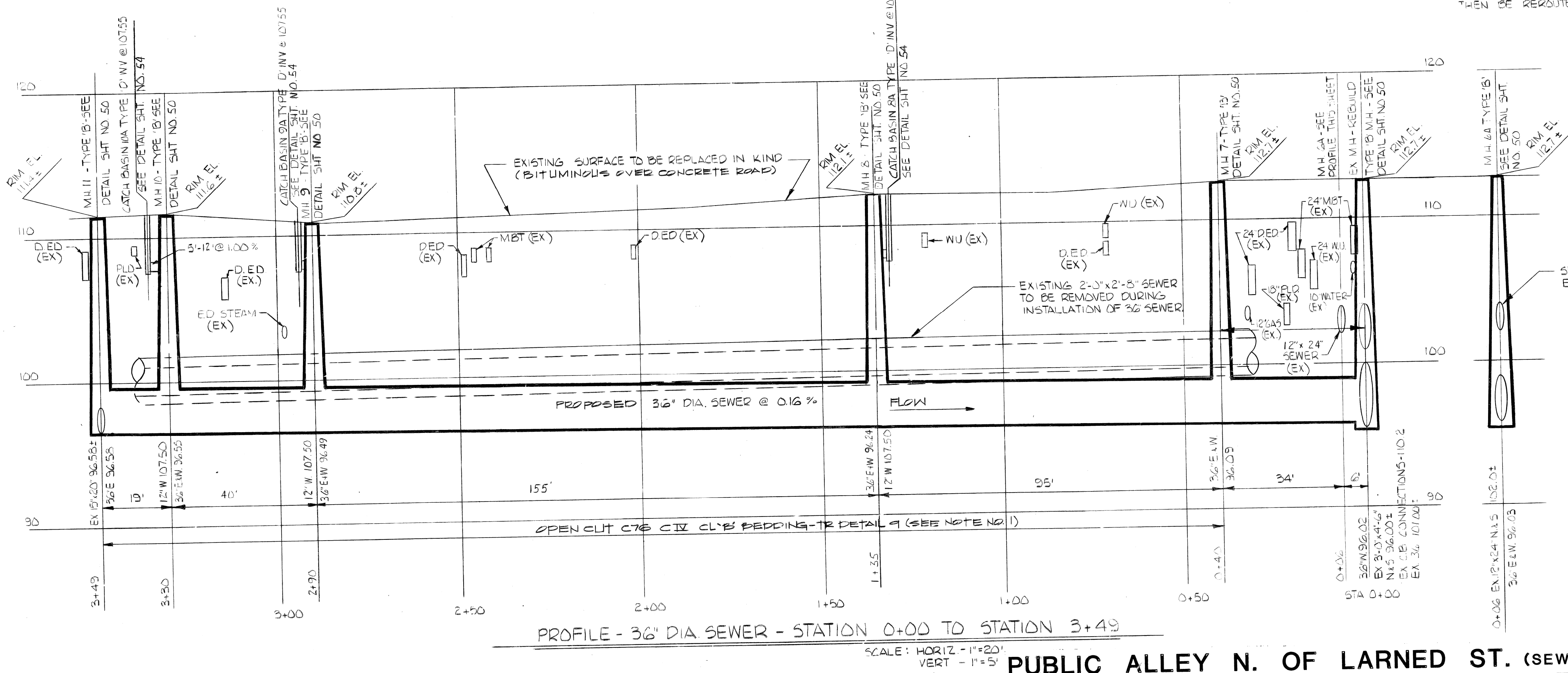
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PLAN - STATION 0+00 TO STATION 3+49
SCALE: 1"=20'

NOTE: INDICATES EXISTING UTILITIES TO BE ABANDONED

- NOTES:
- CONTRACTOR TO PERFORM EXPLORATORY TRENCH IN ALLEY TO DETERMINE EXACT LOCATION & DEPTH OF EXISTING UTILITIES. WHEN EXISTING UTILITIES ARE LOCATED SUCH THAT OPEN CUT CONSTRUCTION CAN NOT BE USED TO INSTALL PROPOSED 36" SEWER, THEN PROPOSED SEWER SHALL BE TUNNELED. FOR BOX TUNNEL DETAIL SEE SHT. 50. IF TUNNEL CONST. IS REQUIRED, THEN SEWER SHALL BE 27 1/2" CLASS I.
 - CONSTRUCTION OF 36" SEWER WILL BEGIN IN SHELBY STREET WITH THE CONNECTION TO THE EXISTING 3'-0" X 4'-6" SEWER. CONSTRUCTION WILL PROCEED WESTERLY WITH BUILDING SERVICES AND CATCH BASINS BEING CONNECTED TO THE 36" SEWER AS THEY ARE ENCOUNTERED.
 - CONTRACTOR TO SUPPORT AND MAINTAIN ANY EXISTING UTILITIES WHICH CROSS THE TRENCHING AND PIPE LAYING ACTIVITIES.
 - CONTRACTOR WILL NOTIFY ENGINEER OF THE RESULTS WHEN EXACT LOCATION AND DEPTH OF THE 15" X 20" AND THE 12" X 24" SEWERS ARE DETERMINED.
 - IF REQUIRED, CONTRACTOR WILL PROVIDE BYPASS PUMPING FOR THE 3'-0" X 4'-6" SEWER DURING REPLACEMENT OF EXISTING M.H. IN SHELBY ST.



PROFILE - 36" DIA SEWER - STATION 0+00 TO STATION 3+49
SCALE: HORIZ - 1"=20'
VERT - 1"=5'

QUANTITIES

36" SEWER - ALLEY NORTH OF LARNED		
ITEM	ESTIMATED QUANTITIES	UNIT USED
EXPLORATORY TRENCHING (SPECIAL)	110	LFT
36" SEWER 27 1/2" IN TRENCH DETAIL 9	309	LFT
5' DIAMETER DRAINAGE STRUCTURE (SPECIAL)	7	EACH
12' X 24" SEWER BULKHEAD (SPECIAL)	1	EACH
CATCH BASIN "D" (SPECIAL)	3	EACH
12" SEWER 27 1/2" CL II TR DET 2 CL 'B' BEDDING	15	LFT
36" SEWER IN TUNNEL (JACKED-IN-PLACE)	40	LFT
24" X 30" SEWER BULKHEAD (SPECIAL)	1	EACH
36" SEWER IN TUNNEL (BOX) (IF OPEN CUT IS NOT POSSIBLE)	309	LFT

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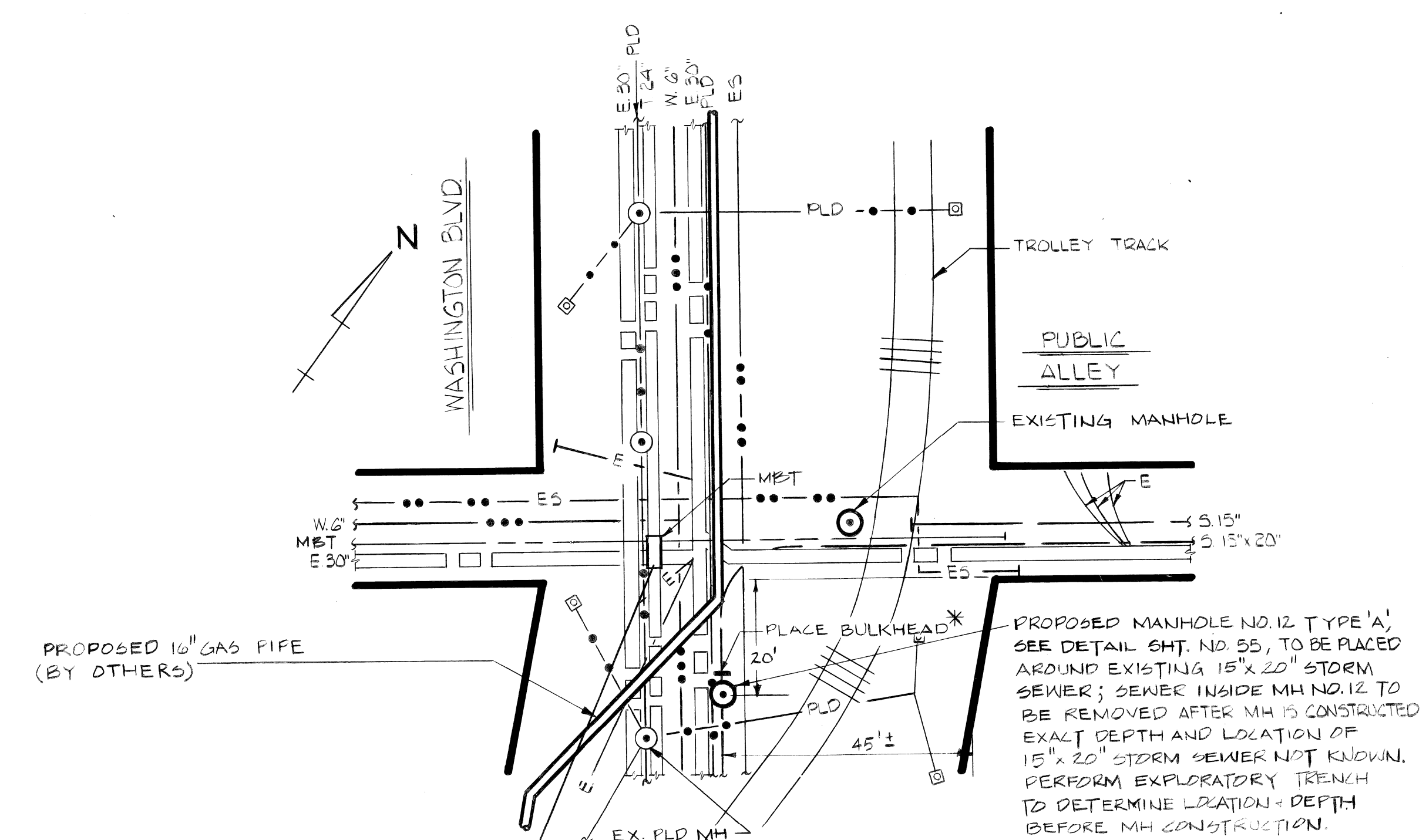
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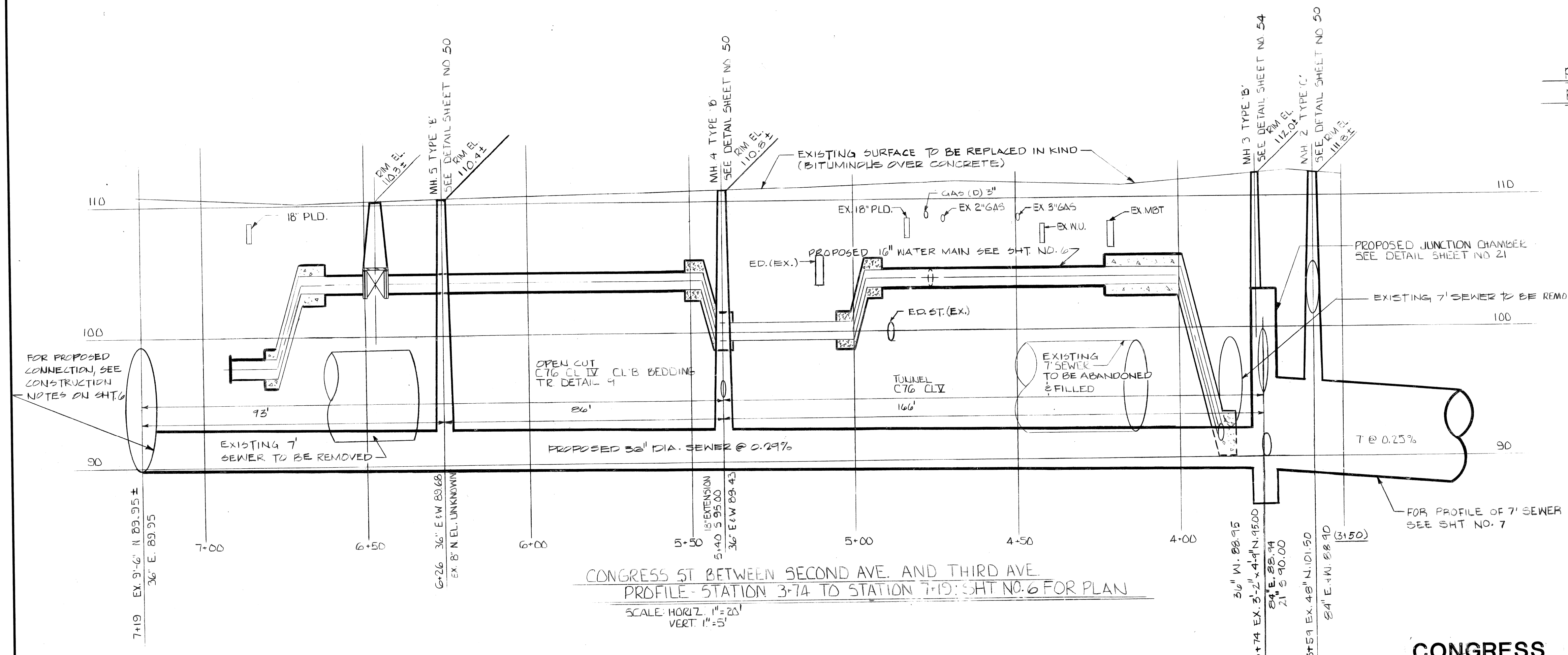
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QUANTITIES

MANHOLE NO 12		
ITEM	ESTIMATED QUANTITIES	UNIT USED
4' DIA DRAINAGE STRUCTURE (SPECIAL)	1	EACH
CONCRETE BASE COURSE 12" MIN. REINFORCED (SPECIAL)	80	SYD
REMOVING PAVEMENT (SPECIAL)	80	SYD
CONCRETE BASE COURSE 10" MIN. NON-REINFORCED (SPECIAL)	80	SYD
EXPLORATORY TRENCHING (SPECIAL)	10	LFT



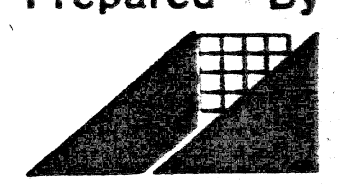
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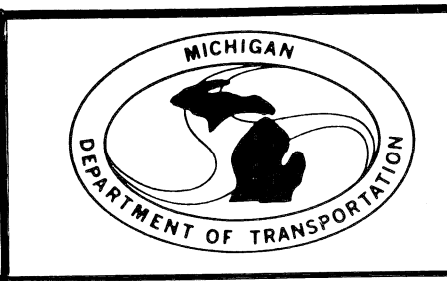
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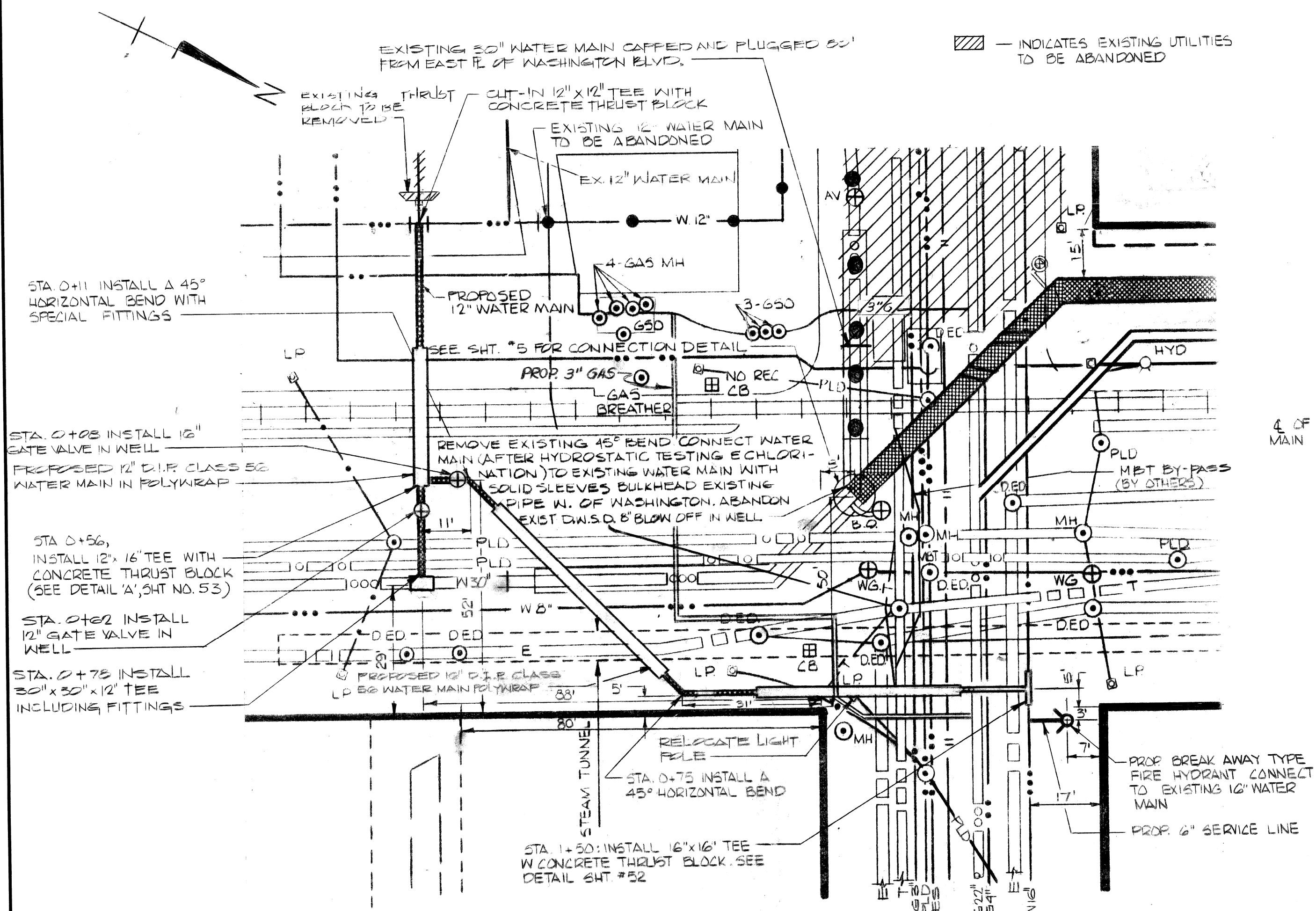
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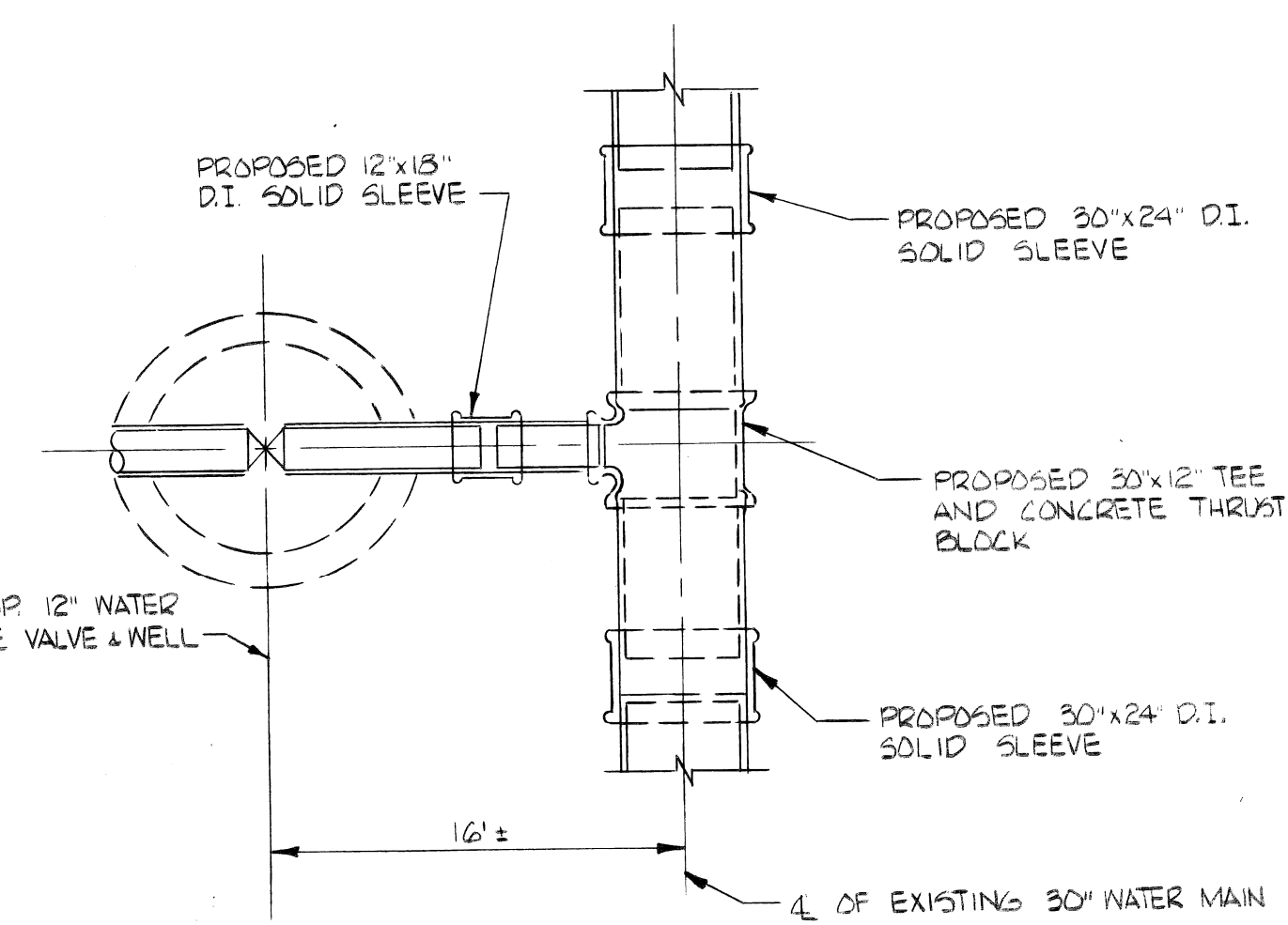


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				SHEET NO. 12 OF 65

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AUTH.	DATE	NO.	REVISION



PLAN - 12" SERVICE CONNECTIONS - WASHINGTON BLVD. AT LARNED ST.
SCALE: 1" = 20'

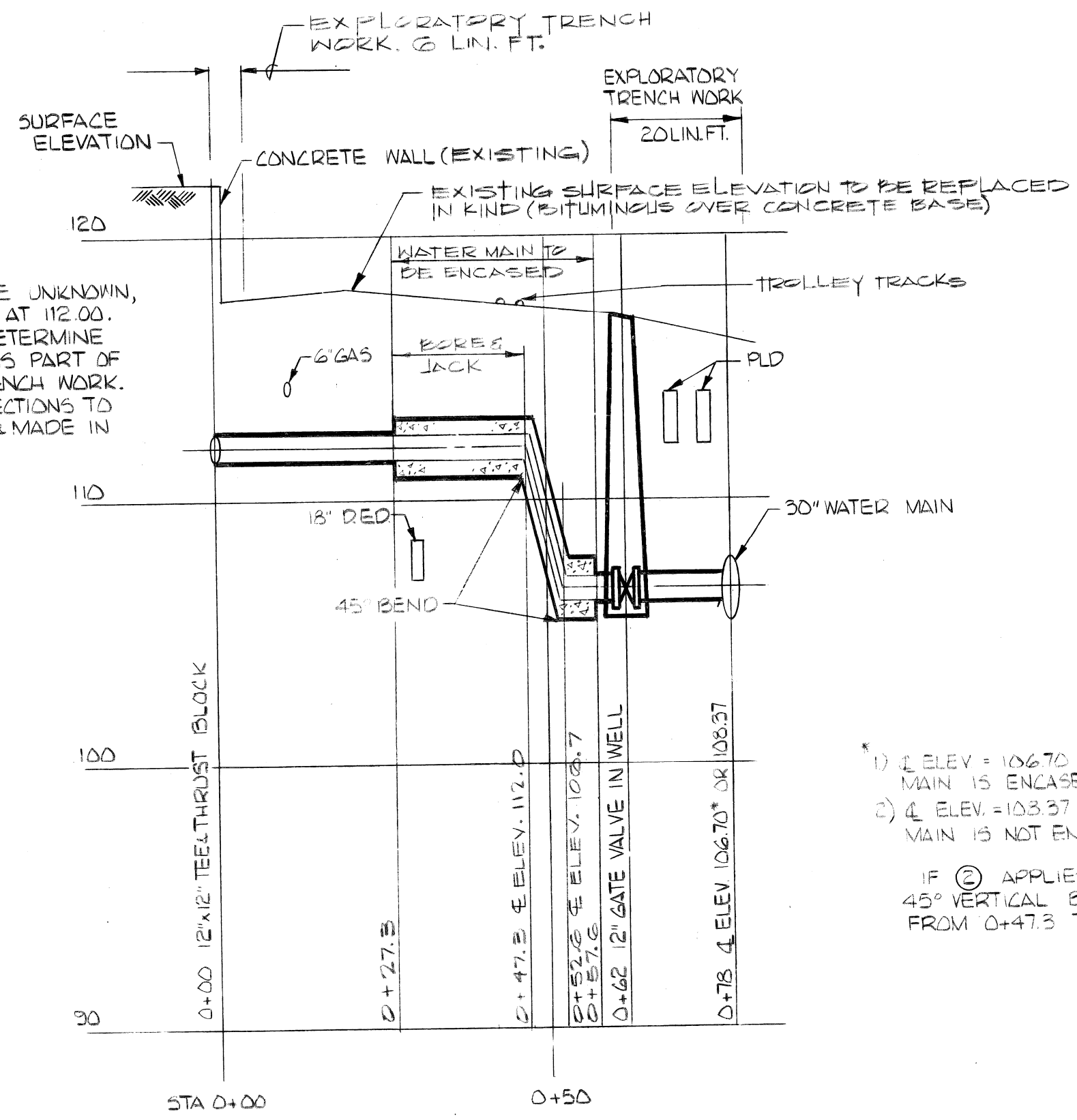


DETAIL OF 12" WATER MAIN SERVICE CONNECTION
AT WASHINGTON BLVD SOUTH OF LARNED STREET

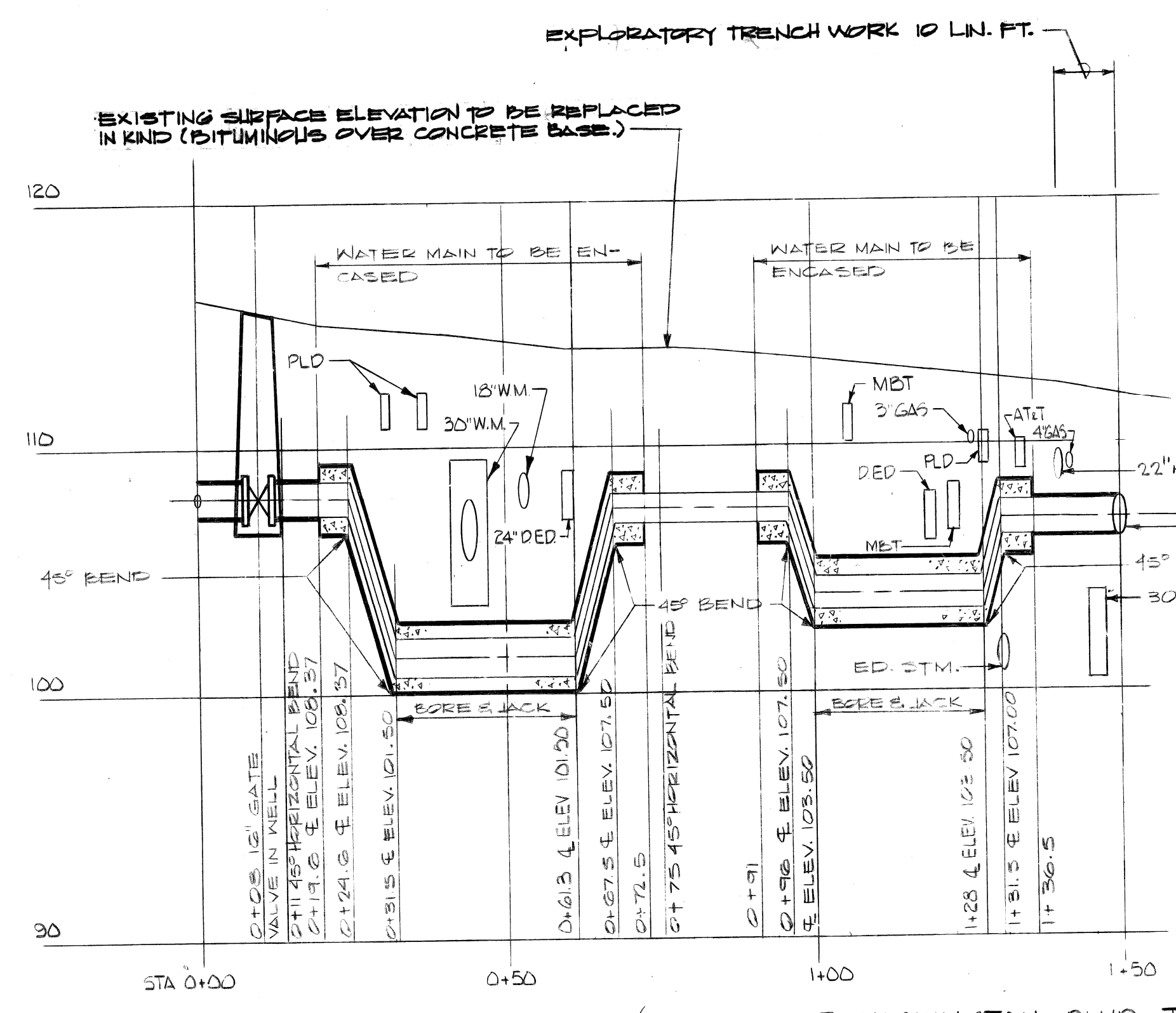
QUANTITIES		
SUMMARY SHEET	ESTIMATED QUANTITIES	UNIT USED
WATER MAIN RELOCATION		
EXPLORATORY TRENCHING (SPECIAL)	116	L.F.T.
REMOVING PAVEMENT (SPECIAL)	1710	S.Y.R.
REMOVING CURB (SPECIAL)	29	L.F.T.
REMOVING SIDEWALK	570	S.Y.R.
REMOVING HEAVY FOUNDATION (SPECIAL)	250	C.Y.D.
REMOVING BRICK PAVEMENT (SPECIAL)	40	S.Y.R.
CONCRETE BASE COURSE 10" MIN. NON-REINF. (SPECIAL)	1140	S.Y.D.
BRICK PAVEMENT (SPECIAL)	40	S.Y.R.
CONCRETE GRADE 5.5 S.W.M. STRUCTURE	640	C.Y.D.
CONCRETE CURB DETAIL 00 (SPECIAL)	29	L.F.T.
4" CONCRETE SIDEWALK	1900	S.F.T.
6" CONCRETE SIDEWALK	180	S.F.T.
12" D.I. WATER MAIN TRENCH DET. 12	58	L.F.T.
12" D.I. WATER MAIN TRENCH DET. 12	1299	L.F.T.
AIR RELEASE VALVE	1	EACH
12" GATE VALVE	1	EACH
12" GATE VALVE	3	EACH
24" GATE VALVE	1	EACH
12" GATE WELL	1	EACH
12" GATE WELL	3	EACH
6" BLOW-OFF VALVE	3	EACH
6" BLOW-OFF IN WELL	3	EACH
12" CAST IRON PLUG IN CONC. THRUST BLOCK	1	EACH
30" PRESTRESSED CONC. EMB. CYL. PIPE MAIN TRENCH DET. 12	307.5	L.F.T.
12x12" TEE INCLUDING FITTINGS (SPECIAL)	2	EACH
6x6x6" TEE INCLUDING FITTINGS (SPECIAL)	1	EACH
50" x 12" T.S.E.V. IN WELL (SPECIAL)	1	EACH
50" x 50" x 50" TEE INCLUDING FITTINGS (SPECIAL)	1	EACH
12" 45° VERTICAL & HORIZONTAL ELBOW (SPECIAL)	37	EACH
12" 22° VERTICAL & HORIZONTAL ELBOW (SPECIAL)	2	EACH
12" 11° 15' VERTICAL & HORIZONTAL ELBOW (SPECIAL)	2	EACH
FIRE HYDRANT	4	SUM.
30" 45° VERTICAL & HORIZONTAL ELBOW (SPECIAL)	7	EACH
ABANDON 6" D.W.S.D. BLOW-OFF IN WELL (SPECIAL)	1	EACH
30" x 50" x 12" TEE INCLUDING FITTINGS (SPECIAL)	1	EACH
CONCRETE BASE COURSE 10" MIN. REINF. (SPECIAL)	570	S.Y.D.
6" TEMPORARY BLOW-OFF (SPECIAL)	2	EACH
20" STEEL CASING PIPE; JACK-IN-PLACE (SPECIAL)	20	L.F.T.
12" D.I. WATER MAIN; JACK-IN-PLACE (SPECIAL)	20	L.F.T.
30" PRESTRESSED CONC. EMB. CYL. PIPE IN TUNNEL (SPECIAL)	50	L.F.T.
30" D.I. OR C.I. PIPE TRENCH DETAIL 12 (SPECIAL)	24	L.F.T.
24" GATE VALVE WELL (SPECIAL)	1	EACH
30" x 24" REDUCERS (SPECIAL)	2	EACH
ENTRANCE MANHOLE WELL	1	EACH
26" STEEL CASING PIPE; JACK-IN-PLACE (SPECIAL)	285	L.F.T.
12" 45° VERTICAL & HORIZONTAL BEND (SPECIAL)	2	EACH
12" D.I. WATER MAIN; JACK-IN-PLACE (SPECIAL)	285	L.F.T.
ABANDON EXIST. MANHOLE (M.P.T.) (SPECIAL)	1	EACH
RELOCATE HYDRANT METHOD III	2	EACH
6" WATER MAIN CUT & PLUG	3	EACH
12" WATER MAIN CUT & PLUG	2	EACH
12" WATER MAIN CUT & PLUG	2	EACH
12" WATER MAIN CUT & PLUG	1	EACH
24" WATER MAIN CUT & PLUG	1	EACH
30" WATER MAIN CUT & PLUG (SPECIAL)	1	EACH
12x12x12" TEE (SPECIAL)	1	EACH
4" TEMPORARY BLOW-OFF (SPECIAL)	4	EACH
BITUMINOUS MIXTURE NO. 1500 T 20AAA	140	TONS
BITUMINOUS MIXTURE NO. 1500 L 20AAA	140	TONS
RELOCATE 6" D.W.S.D. B.O. IN WELL (SPECIAL)	1	EACH
ABANDON GATE WELL	1	EACH
REMOVING & REPLACING PORTION OF PLASTER WALL (SPECIAL)	1	EACH
CLOSE & SEAL GATE VALVE (SPECIAL)	1	EACH

ELEVATION AT POINT OF 12" WATER TAP-IN UNKNOWN. CONTRACTOR TO DETERMINE EXACT ELEVATIONS OF SERVICE CONNECTION AS A PART OF EXPLORATORY TRENCH WORK (METHOD OF CONNECTION TO BE DETERMINED IN THE FIELD).

NOTE: THE CONTRACTOR SHALL NOT MAKE ANY CONNECTION TO EXISTING WATER MAIN UNTIL THE NEW WATER MAIN HAS BEEN TESTED, PLUGGED AND CHLORINATED AND D.W.S.D. APPROVAL HAS BEEN GIVEN BY THE ENGINEER.



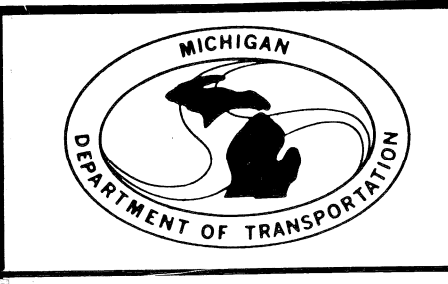
PROFILE - 12" SERVICE CONNECTION TO COBO HALL - (FROM COBO HALL TO E. OF WASHINGTON BLVD.)
SCALE: HORIZ. - 1" = 20'
VERT. - 1" = 5'



PROFILE - 16" SERVICE CONNECTION - (FROM S OF WASHINGTON BLVD TO N.E. CORNER OF LARNED & WASHINGTON BLVD.)
SCALE: HORIZ. - 1" = 20'
VERT. - 1" = 5'

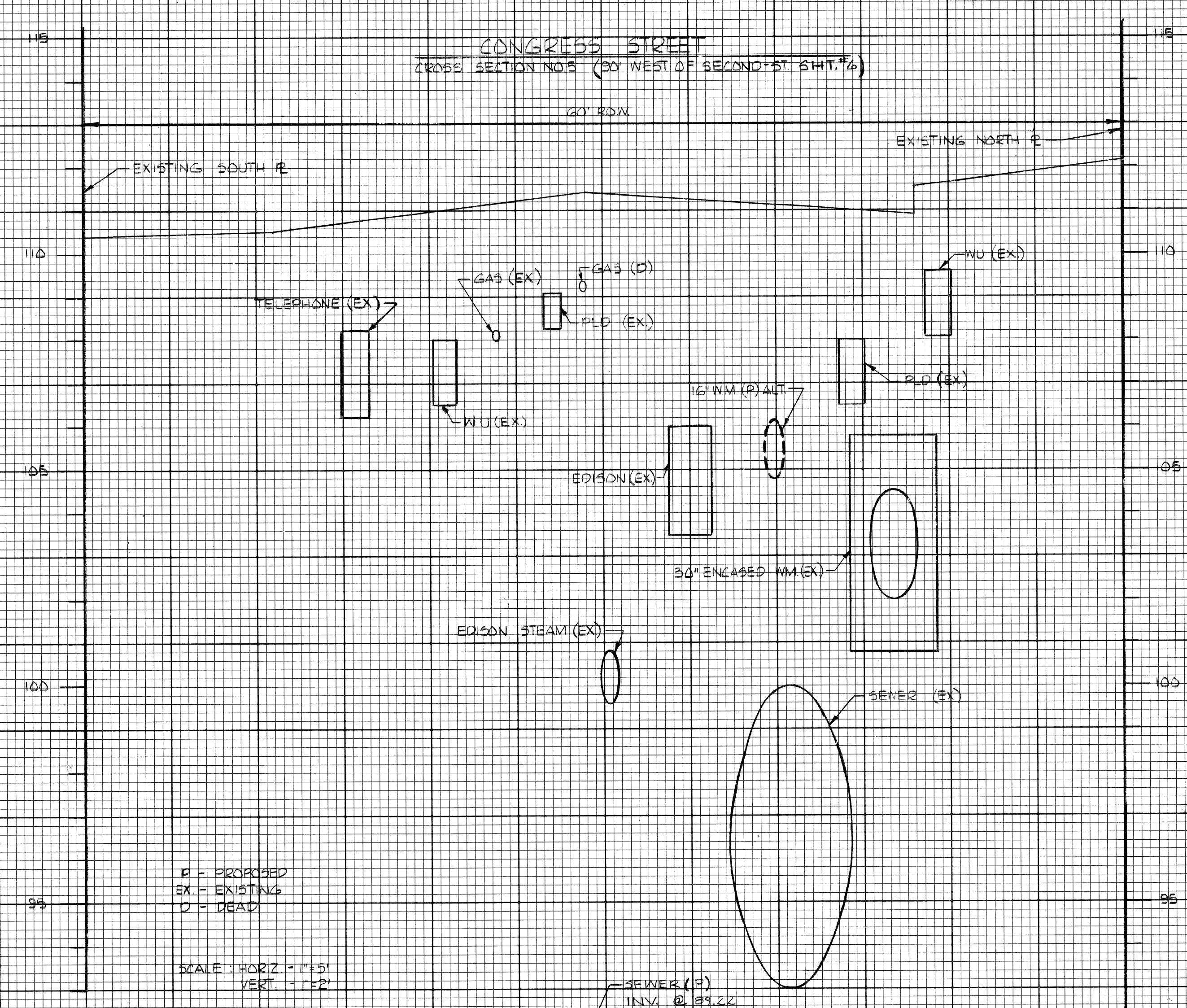
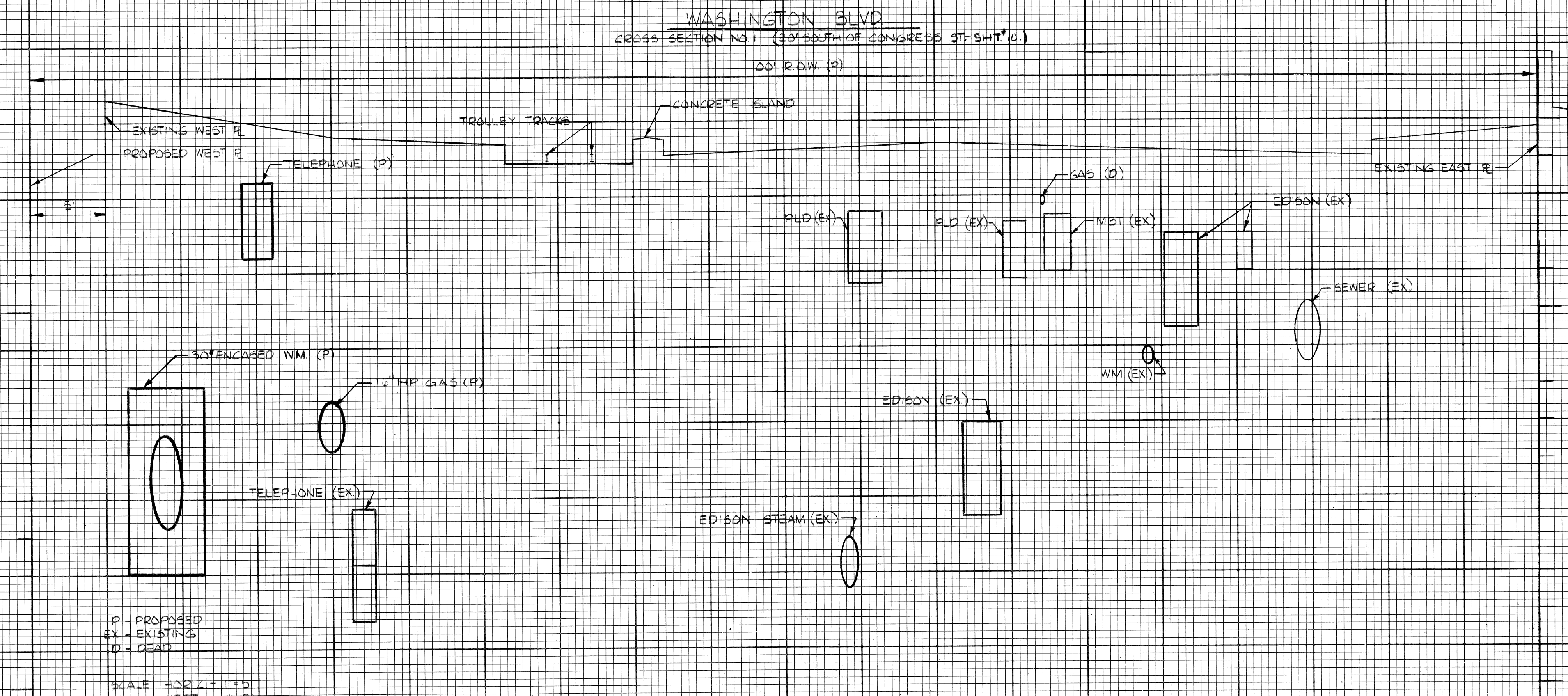
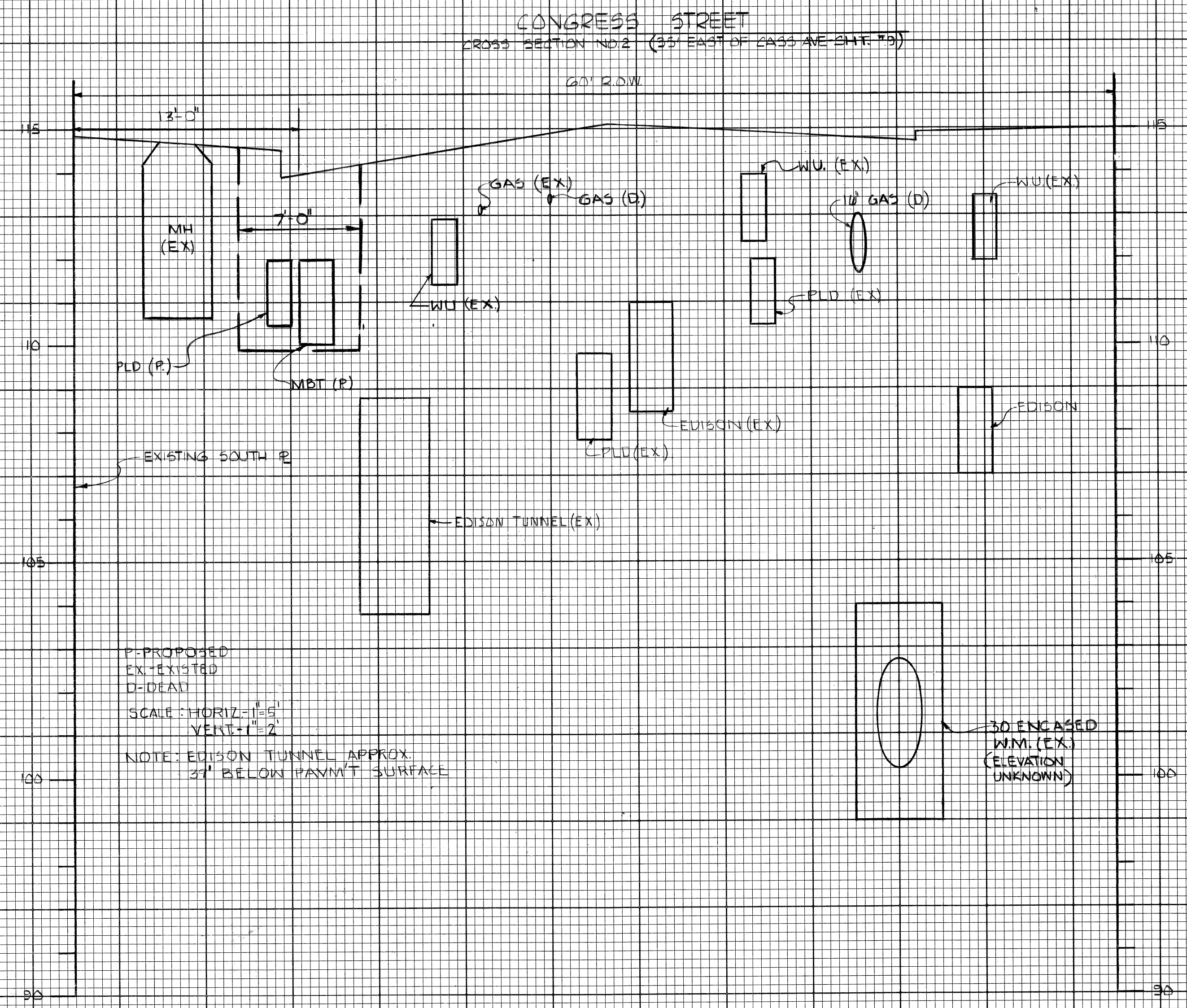
WASHINGTON BLVD. (WATER MAIN PROFILE)

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HOWARD NEEDLES TAMMEN & BERGENDOFF
in association with
MADISON MADISON INTERNATIONAL OF MICHIGAN
ZIMMER-HOWELL ENGINEERING, LTD.



UTILITY RELOCATIONS					
DATE:	DRAWN:	CONT. SEC.	JOB NO.	CHECKED:	SHEET NO.
DATE: FEB. 4, 1986	DRAWN: J.E., F.G.	CONT. SEC. BM 82111	JOB NO. 25199A	CHECKED: B.P.	SHEET NO. 13 OF 65
SCALE: NOTED	DESIGNED: V.A.			APPROVED: J.C.M.	

MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10 - LODGE FREEWAY AT COBO HALL EXPANSION
Prepared By
MADISON MADISON INTERNATIONAL OF MICHIGAN
Engineers Architects Planners, 313-963-6110



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ZIMMER-HOWELL ENGINEERING, LTD.

CHECKED: B.P.
APPROVED: J.C.M.

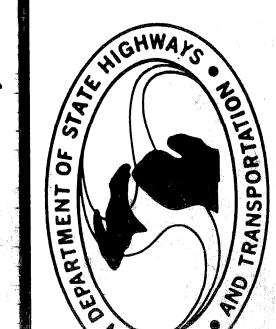
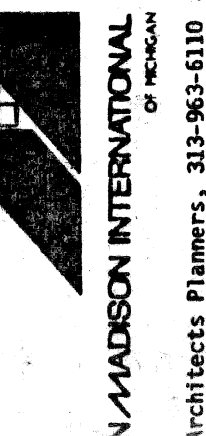
UTILITY RELOCATIONS
JOB NO. 25199A
CONT. SEC. BM 82111

DATE: FEB. 4, 1986
DRAWN: M.C./J.G.
SCALE: NOTED
DESIGNED: M.L.

CROSS SECTIONS

DEPARTMENT OF TRANSPORTATION
- LODGE FREEWAY AT HALL EXPANSION

Prepared By

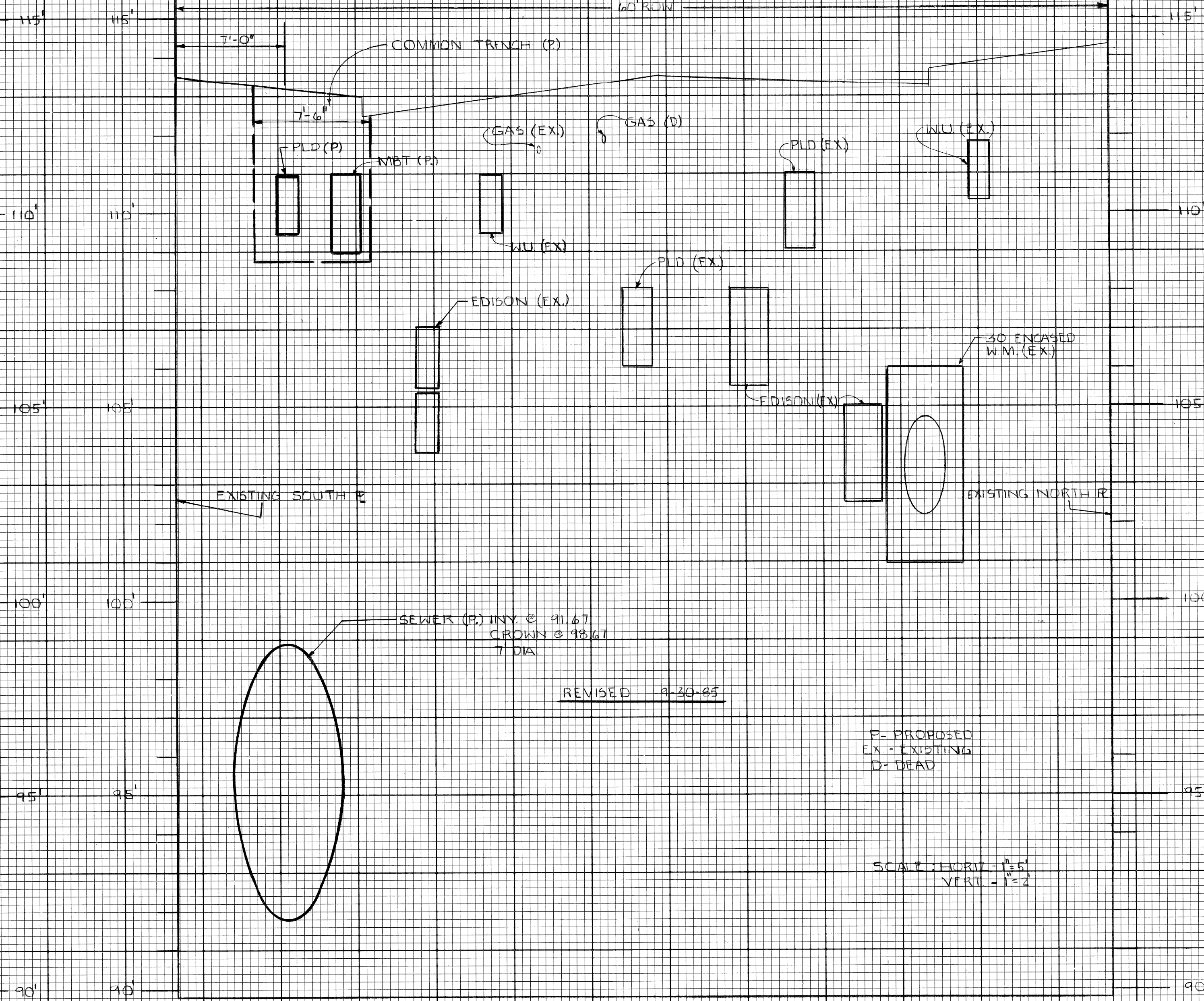
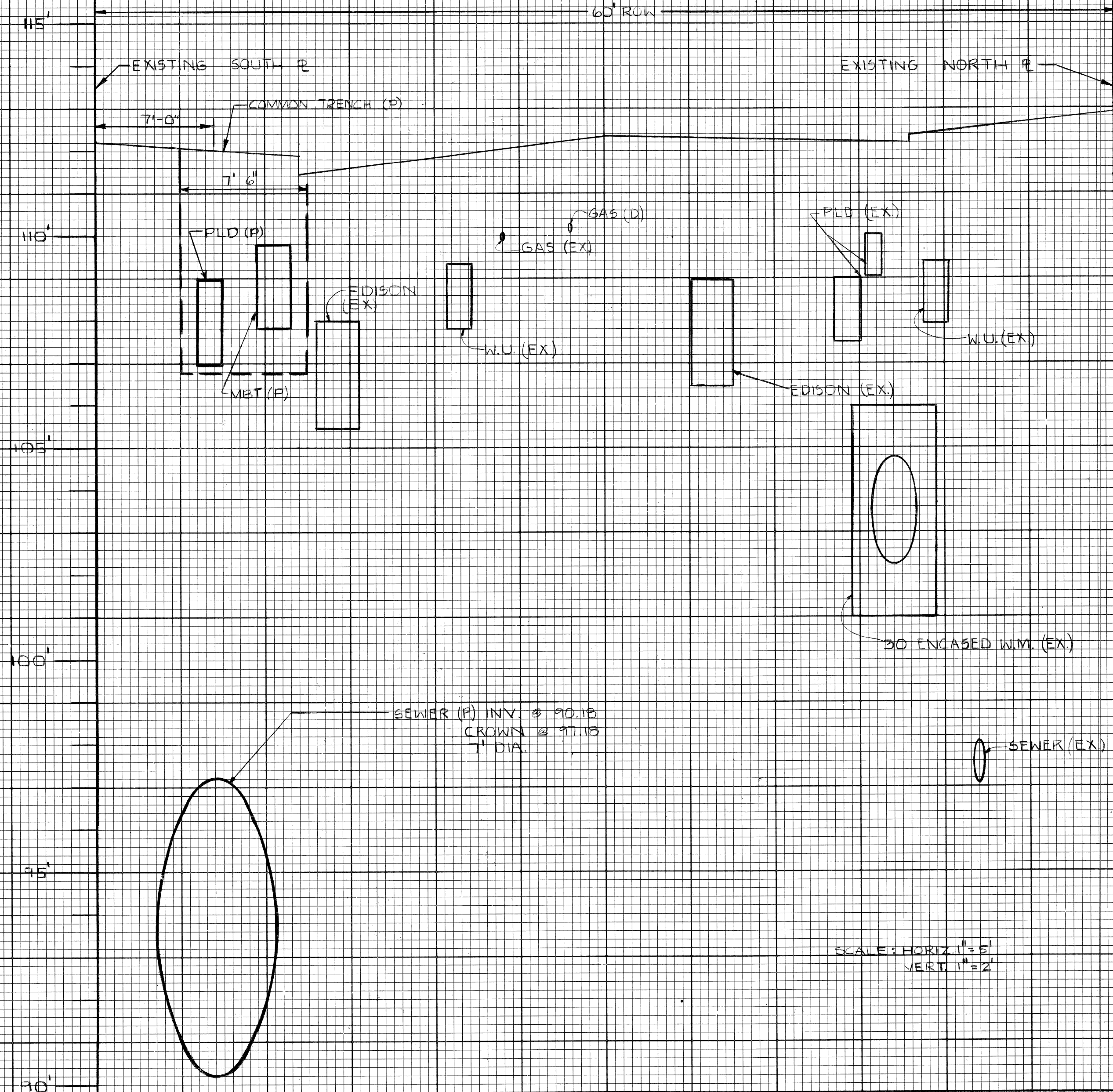


CONGRESS STREET

CROSS SECTION NO. 4 (100' EAST OF SECOND ST-SHT. #7)
60' ROW

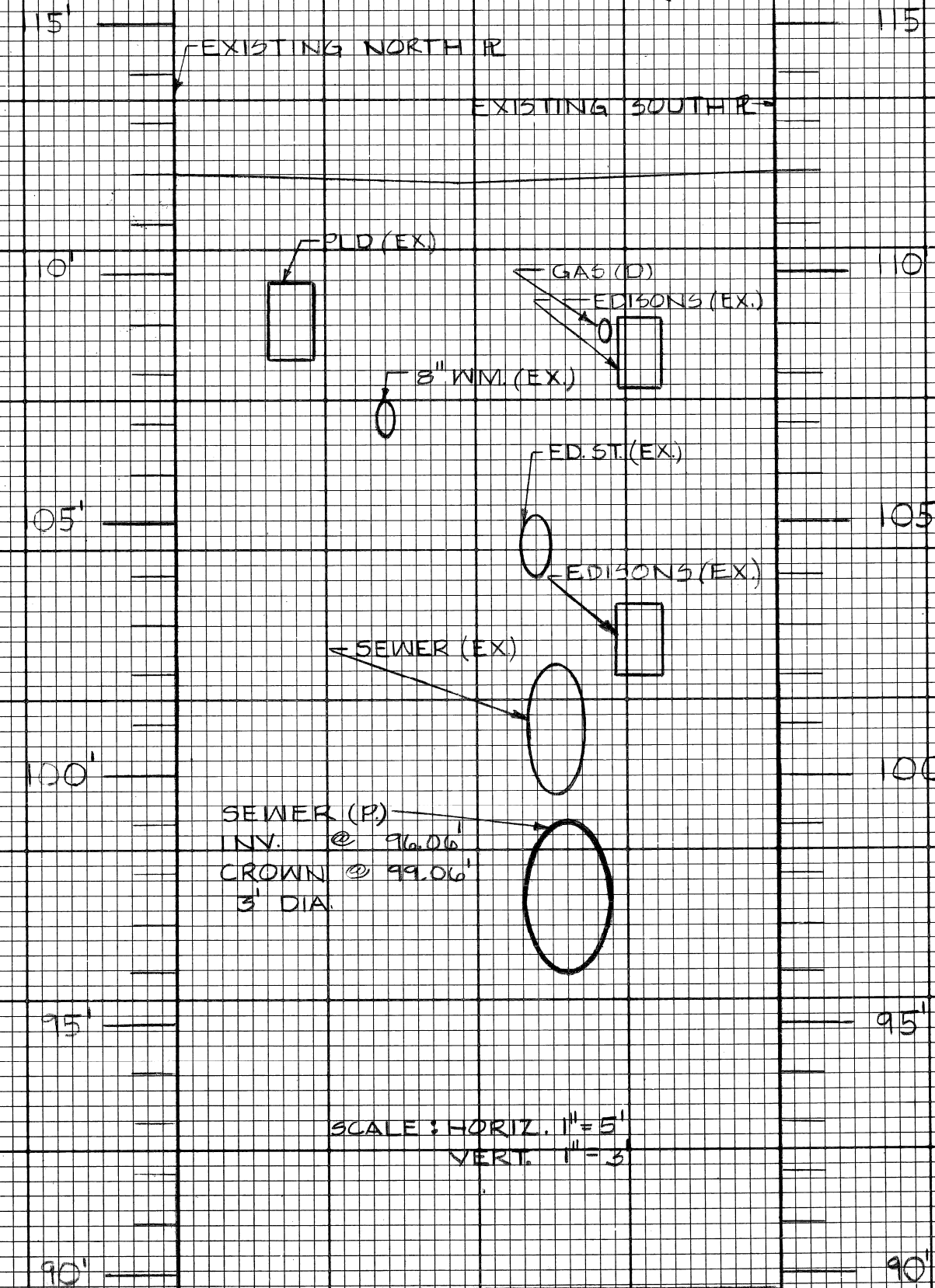
CONGRESS STREET

CROSS SECTION NO. 3 (45' EAST OF FIRST ST-SHT. #2)
60' ROW



ALLEY NORTH OF LARNED STREET

CROSS SECTION NO. 2 (163' EAST OF WASHINGTON BLVD-SHT. #11)



FINAL ROW	
REVISION	
DATE	
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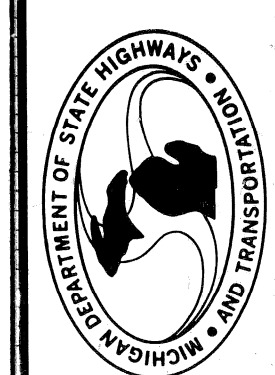
CHECKED: B.F.
 APPROVED: J.C.M.

JOB NO.
 25199A

CONT. SEC.
 BM 82111

DATE: FEB. 4, 1986
 DRAWN: M.C./F.G.
 DESIGNED: M.L.

SCALE: NOTED



SHEET NO.
 15 OF 65

MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10 - LODGE FREEWAY AT COBO HALL EXPANSION
 Prepared By
MADISON/MADISON INTERNATIONAL
 Engineers, Architects, Planners, 312-983-6110

CROSS SECTIONS

UTILITY RELOCATIONS

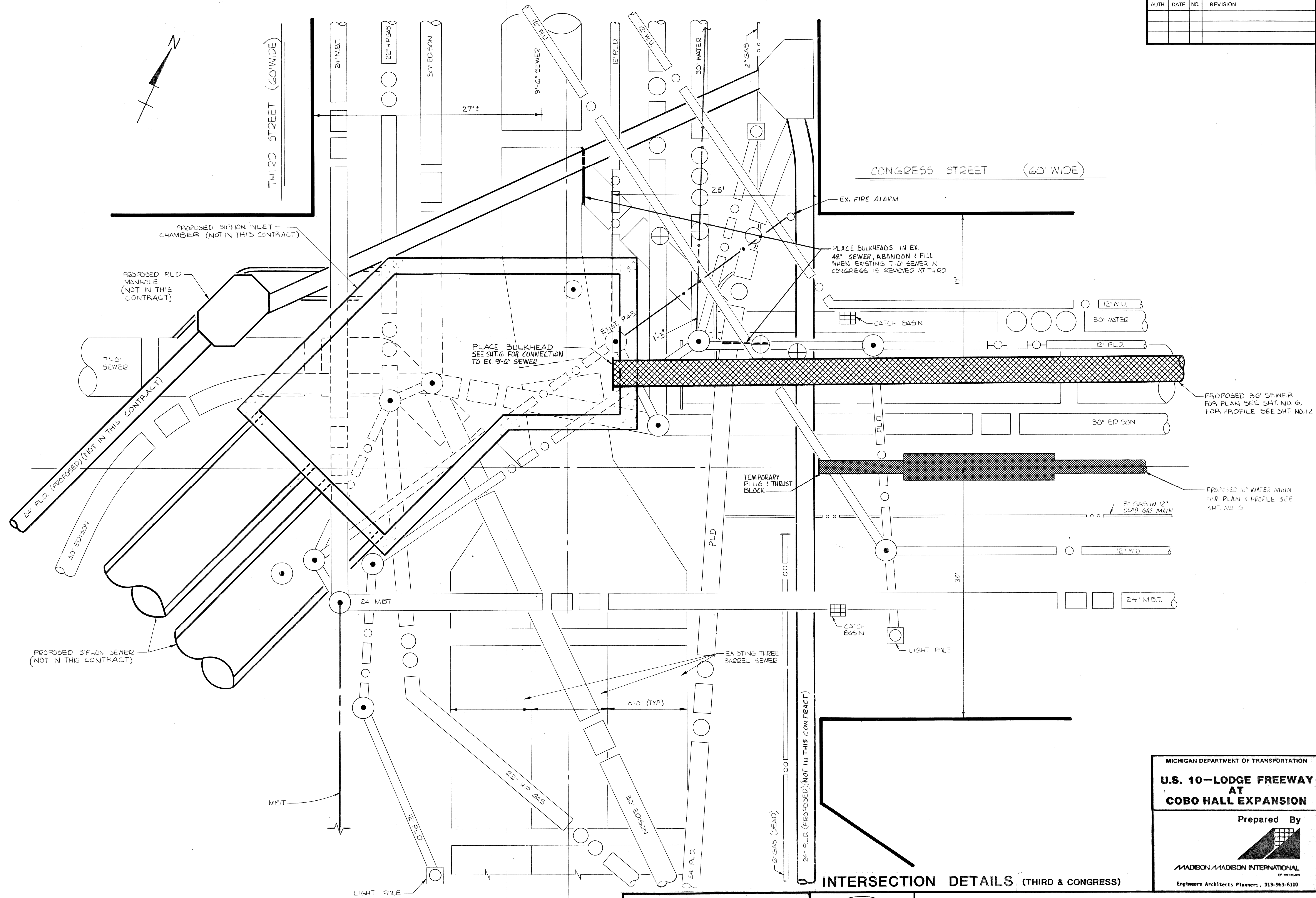
REVISED 8-30-85

SCALE: HORIZ. 1"=5'
VERT. 1"=2'

SCALE: HORIZ. 1"=5'
VERT. 1"=2'

SCALE: HORIZ. 1"=5'
VERT. 1"=2'

FINAL R.O.W.			
AUTH.	DATE	NO.	REVISION



MICHIGAN DEPARTMENT OF TRANSPORTATION

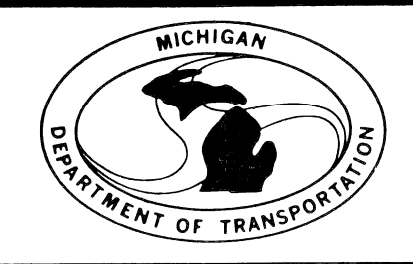
U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION

Prepared By

MADISON/MADISON INTERNATIONAL OF MICHIGAN

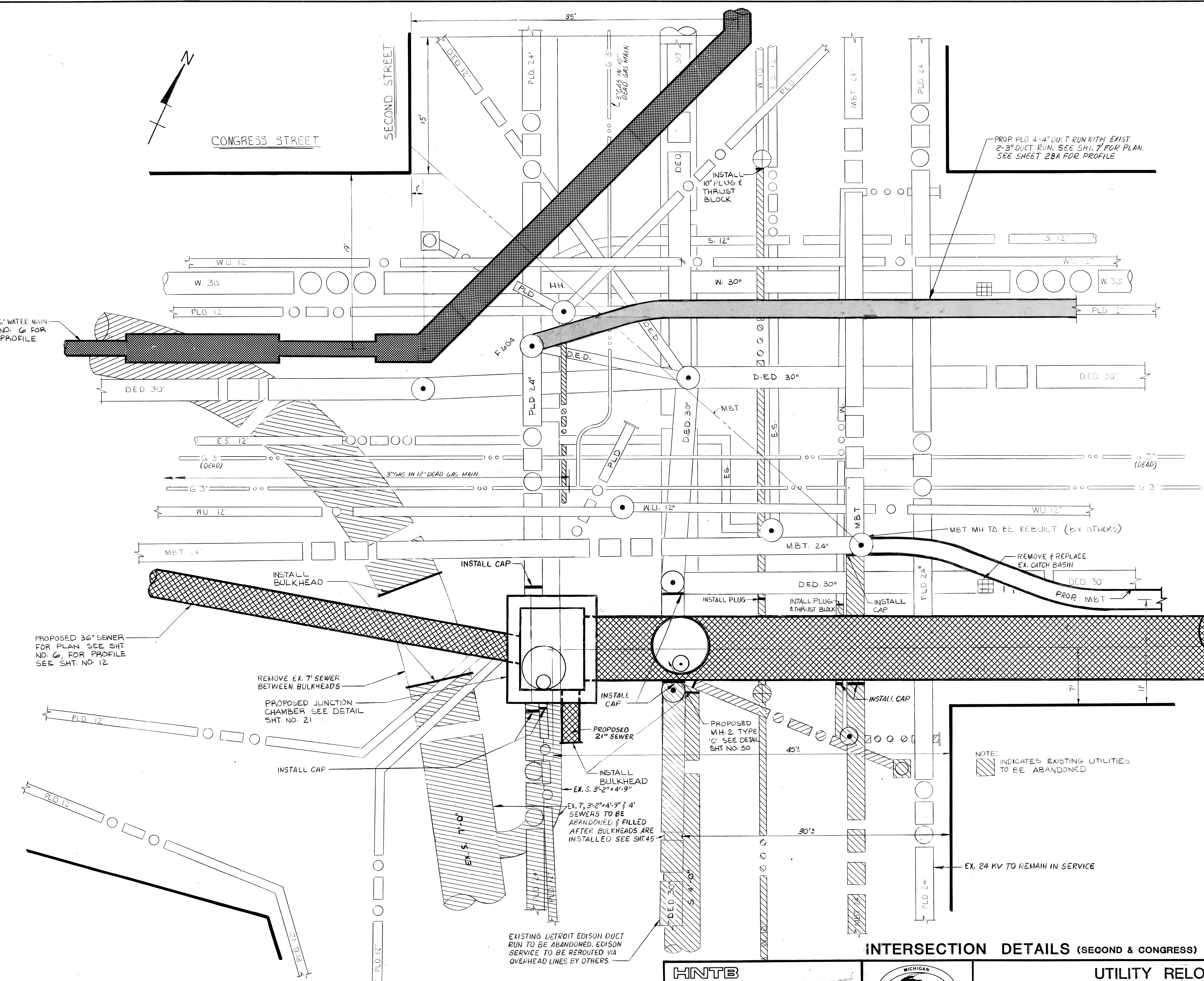
Engineers Architects Planners, 313-963-6110

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DATE: FEB. 4, 1986		DRAWN: R.M./L.S.		CONT. SEC.		JOB NO.		CHECKED: B.P.		SHEET NO.	
SCALE: 1" = 5'		DESIGNED: M.L.		BM 82111		25199A		APPROVED: J.C.M.		16 OF 65	

FINAL R.O.W.			
AUTH.	DATE	NO.	REVISION



PROP PLD 4-4" DUCT RUN WITH EXIST. 2-3" DUCT RUN. SEE SH. 7 FOR PLAN. SEE SHEET 28A FOR PROFILE

PROPOSED 12" WATER MAIN SEE SHT. NO. 6 FOR PLAN & PROFILE

PROPOSED 36" SEWER FOR PLAN SEE SHT. NO. 6 FOR PROFILE SEE SHT. NO. 12

REMOVE EX. 7" SEWER BETWEEN BULKHEADS
PROPOSED JUNCTION CHAMBER SEE DETAIL SHT. NO. 21

PROPOSED 21" SEWER
INSTALL BULKHEAD
EX. S. 3'-2" x 4'-9"

EX. 7, 3'-2" x 4'-9" & 4' SEWERS TO BE ABANDONED & FILLED AFTER BULKHEADS ARE INSTALLED SEE SHT. 45

EXISTING DETROIT EDISON DUCT RUN TO BE ABANDONED. EDISON SERVICE TO BE REROUTED VIA OVERHEAD LINES BY OTHERS.

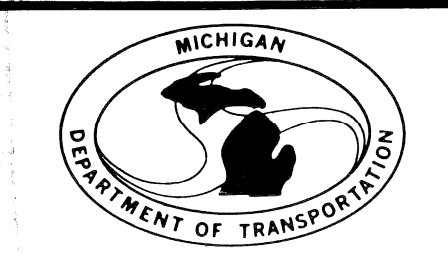
NOTE:
INDICATES EXISTING UTILITIES TO BE ABANDONED

PROPOSED 7'-0" SEWER SEE SHT. NO. 7 FOR PLAN & PROFILE

INTERSECTION DETAILS (SECOND & CONGRESS)

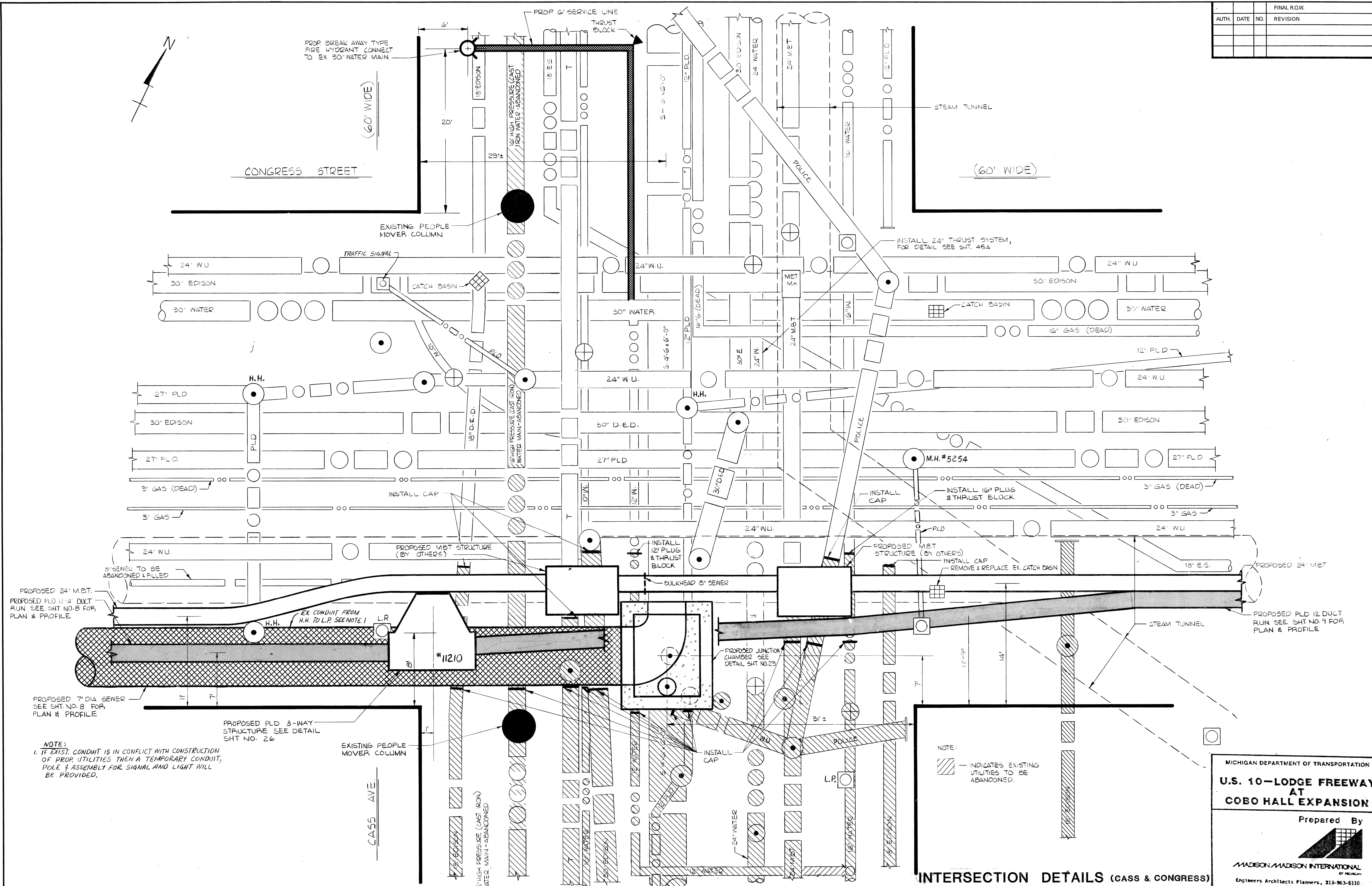
MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10-LODGE FREEWAY AT COBO HALL EXPANSION
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MADISON/MADISON INTERNATIONAL
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UTILITY RELOCATIONS				
DATE: FEB. 4, 1986	DRAWN: R.M.L.S.	CONT. SEC.	JOB NO.	CHECKED: B.P.
SCALE: 1" = 5'	DESIGNED: M.L.	BM 82111	25199A	APPROVED: J.C.M.
				SHEET NO. 17 OF 65

FINAL R.O.W.			
AUTH.	DATE	NO.	REVISION



NOTE:
 1. IF EXIST. CONDUIT IS IN CONFLICT WITH CONSTRUCTION OF PROP. UTILITIES THEN A TEMPORARY CONDUIT, POLE & ASSEMBLY FOR SIGNAL AND LIGHT WILL BE PROVIDED.

NOTE:
 [Hatched pattern] INDICATES EXISTING UTILITIES TO BE ABANDONED.

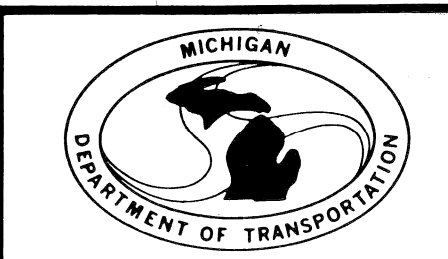
MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION
 Prepared By

 MADISON MADISON INTERNATIONAL
 OF MICHIGAN
 Engineers Architects Planners, 313-963-8110

INTERSECTION DETAILS (CASS & CONGRESS)

UTILITY RELOCATIONS

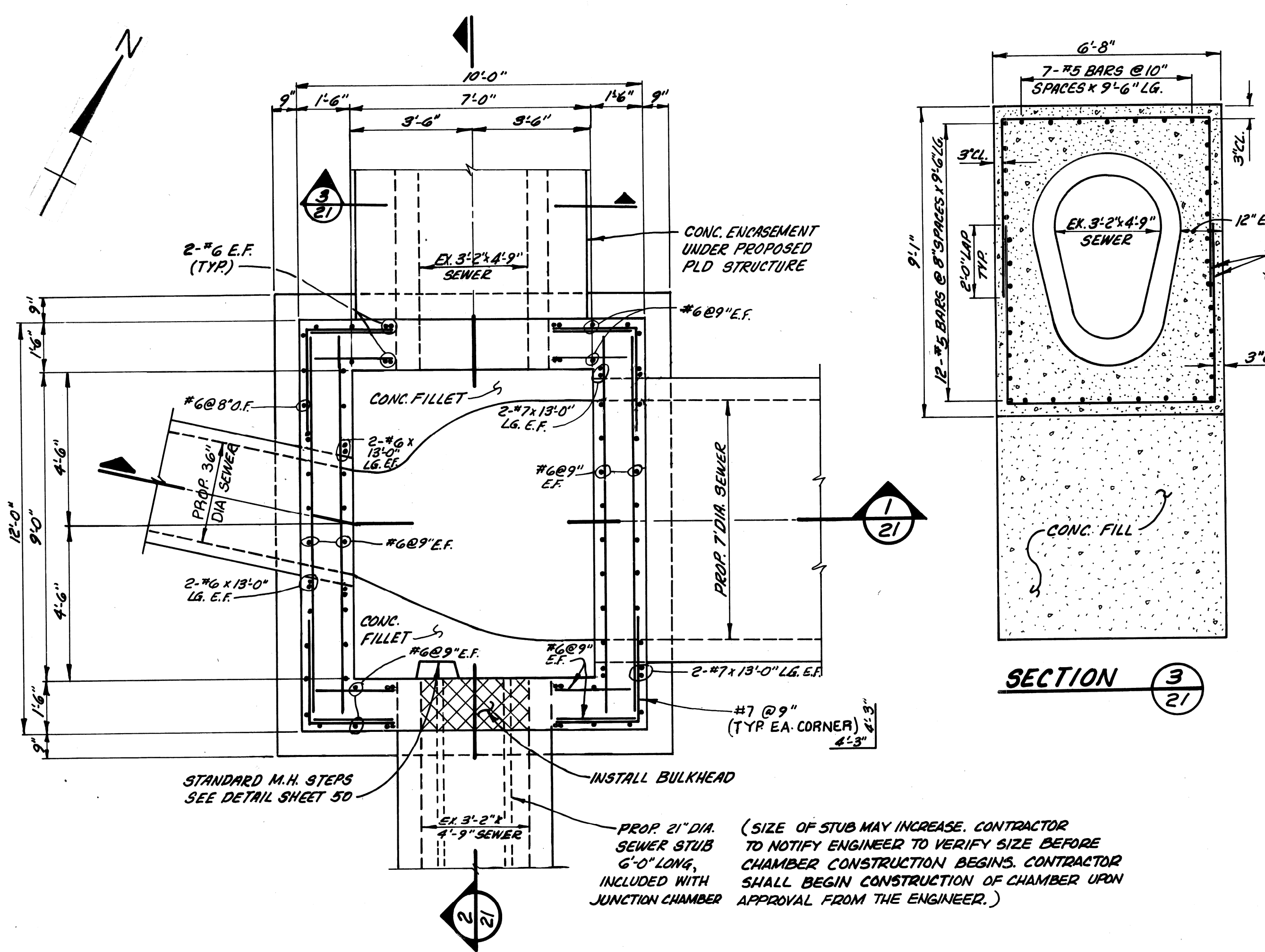
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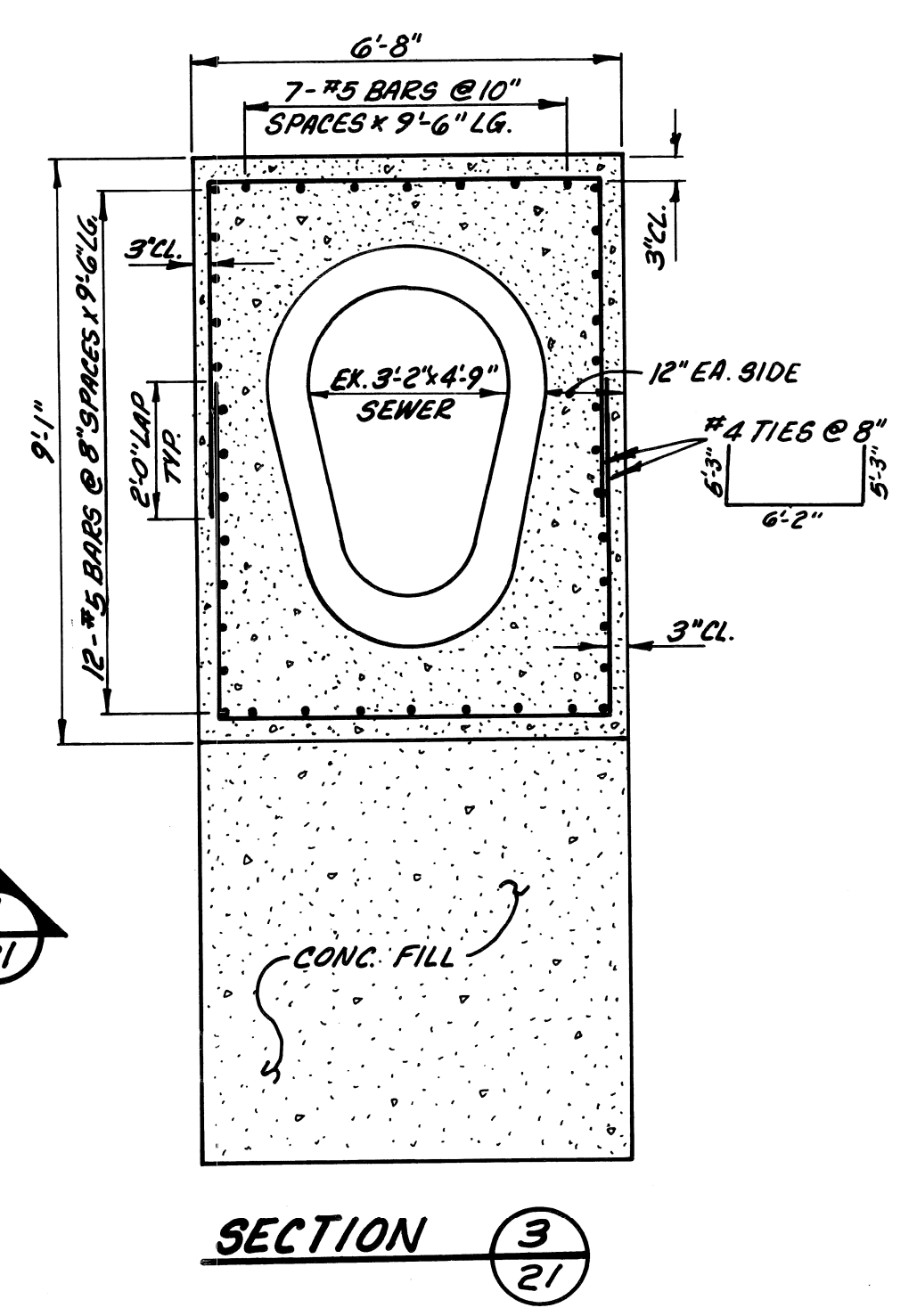
DATE: FEB. 4, 1986	DRAWN: R.M.F.G.	CONT. SEC.	JOB NO.	CHECKED: B.P.	SHEET NO.
SCALE: 1" = 5'	DESIGNED: M.L.	BM 82111	25199A	APPROVED: J.C.M.	19 OF 65

FINAL R.O.W.			
AUTH.	DATE	NO.	REVISION

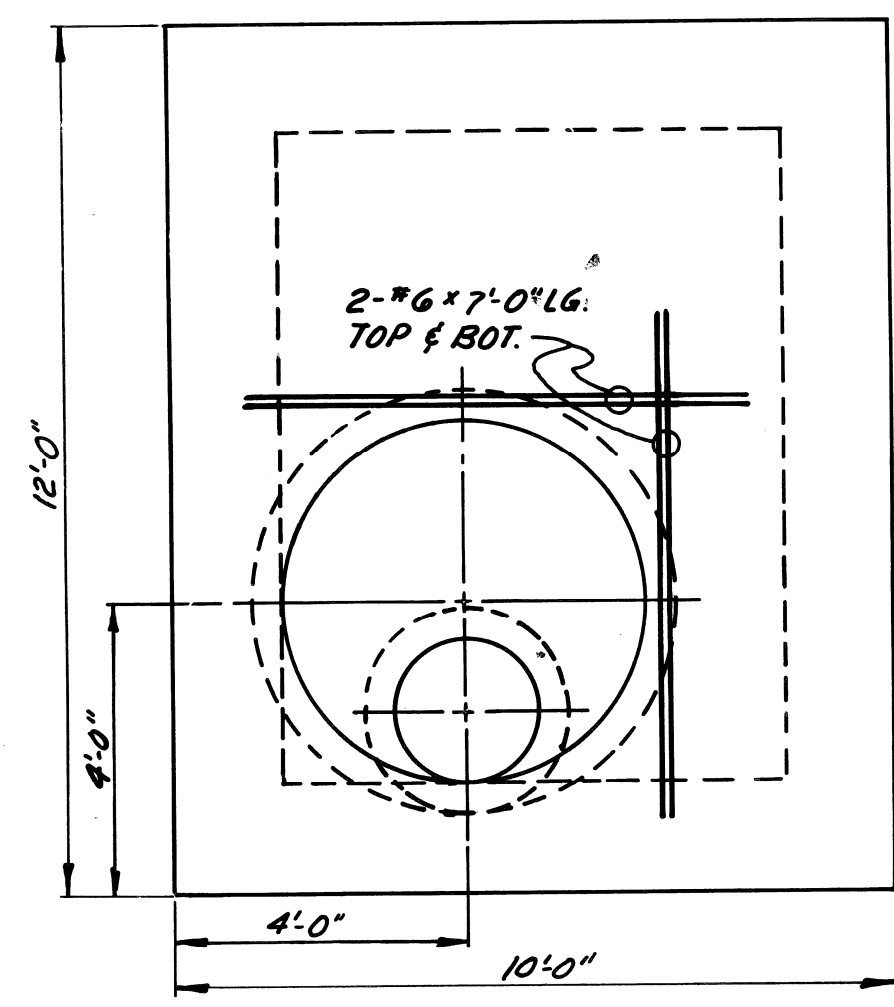
- NOTES:**
1. CONCRETE SHALL BE GRADE 3500 WITH A 28 DAY COMPRESSIVE STRENGTH OF 3500 P.S.I.
 2. REINFORCING STEEL SHALL BE DEFORMED, NEW BILLET STEEL CONFORMING TO A.S.T.M. A-615 GRADE 60.
 3. PROVIDE ADDITIONAL REBARS AROUND OPENING FOR PROPOSED 7" DIA. SEWER.
 4. GRANULAR BACKFILL CLASS III SHALL BE USED IN BACKFILLING AROUND ALL STRUCTURES THAT FALL WITHIN 1 ON 1 INFLUENCE LINES FROM THE EDGE OF PAVEMENT OR BACK OF CURB.
 5. PROVIDE 6" UNREINFORCED MUD MATT UNDER ENTIRE BOTTOM SLAB.
 6. A MASTIC COATING SHALL BE APPLIED TO ALL JOINTS.



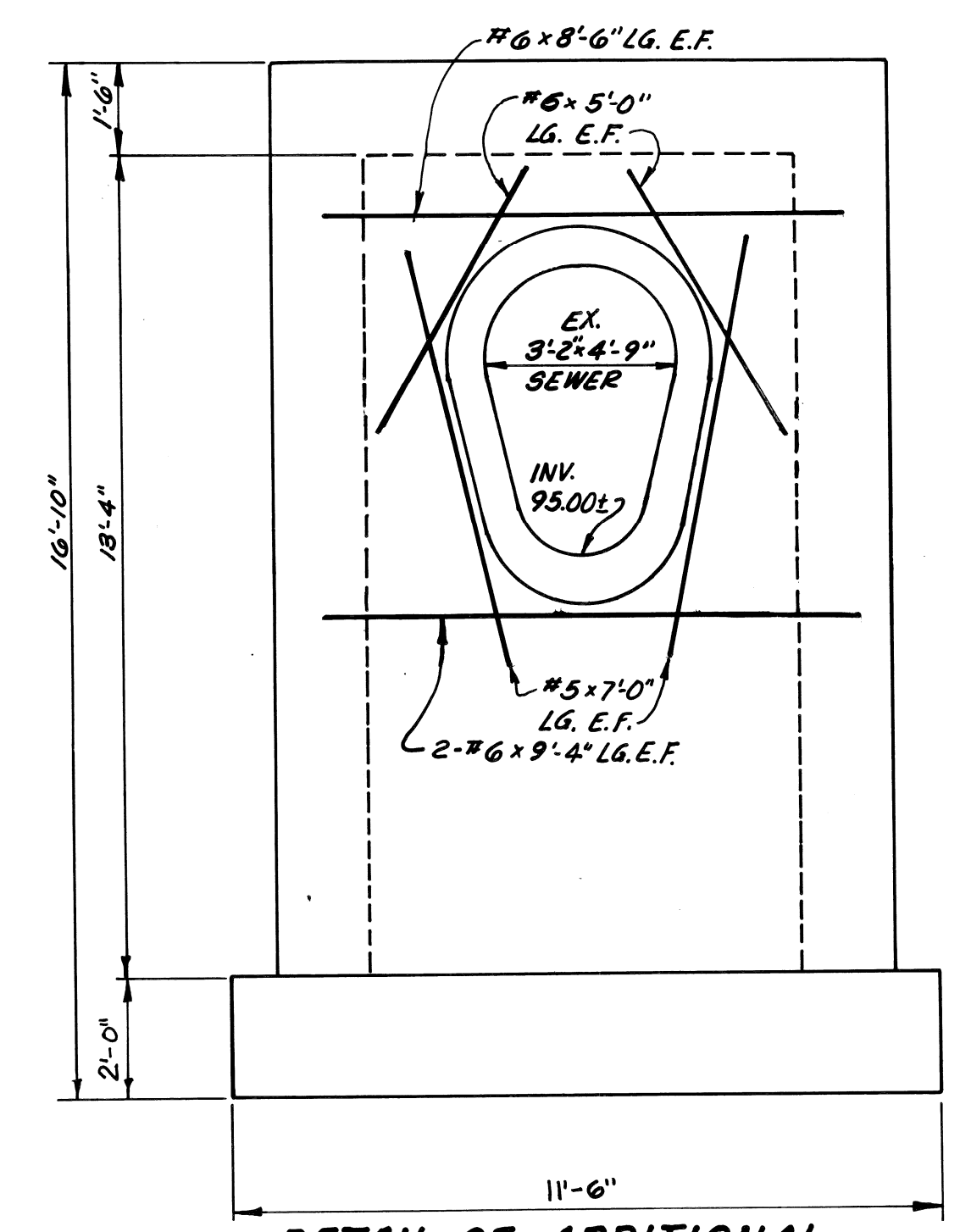
PLAN W/TOP SLAB REMOVED



SECTION 3/21



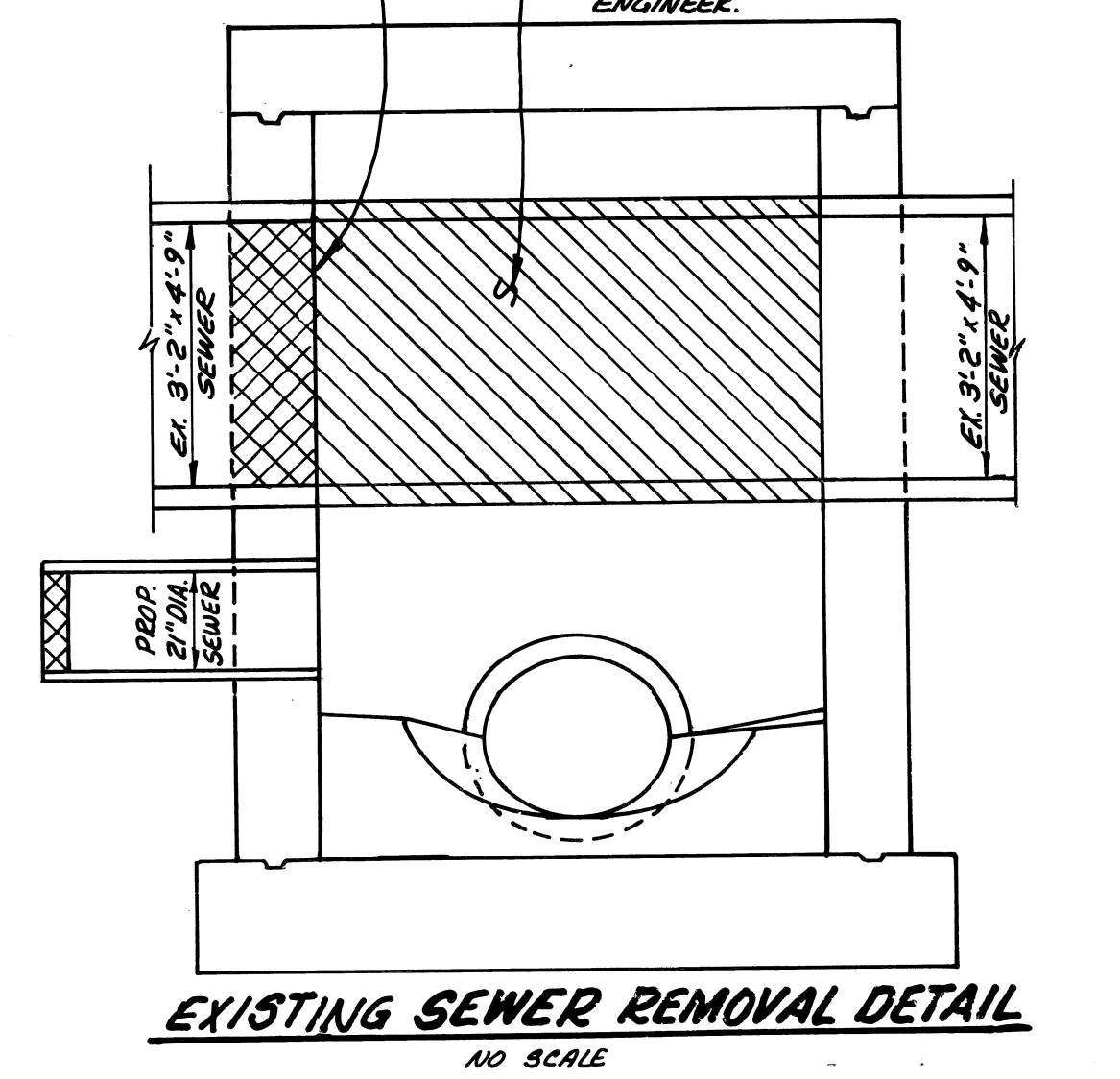
PLAN OF TOP SLAB



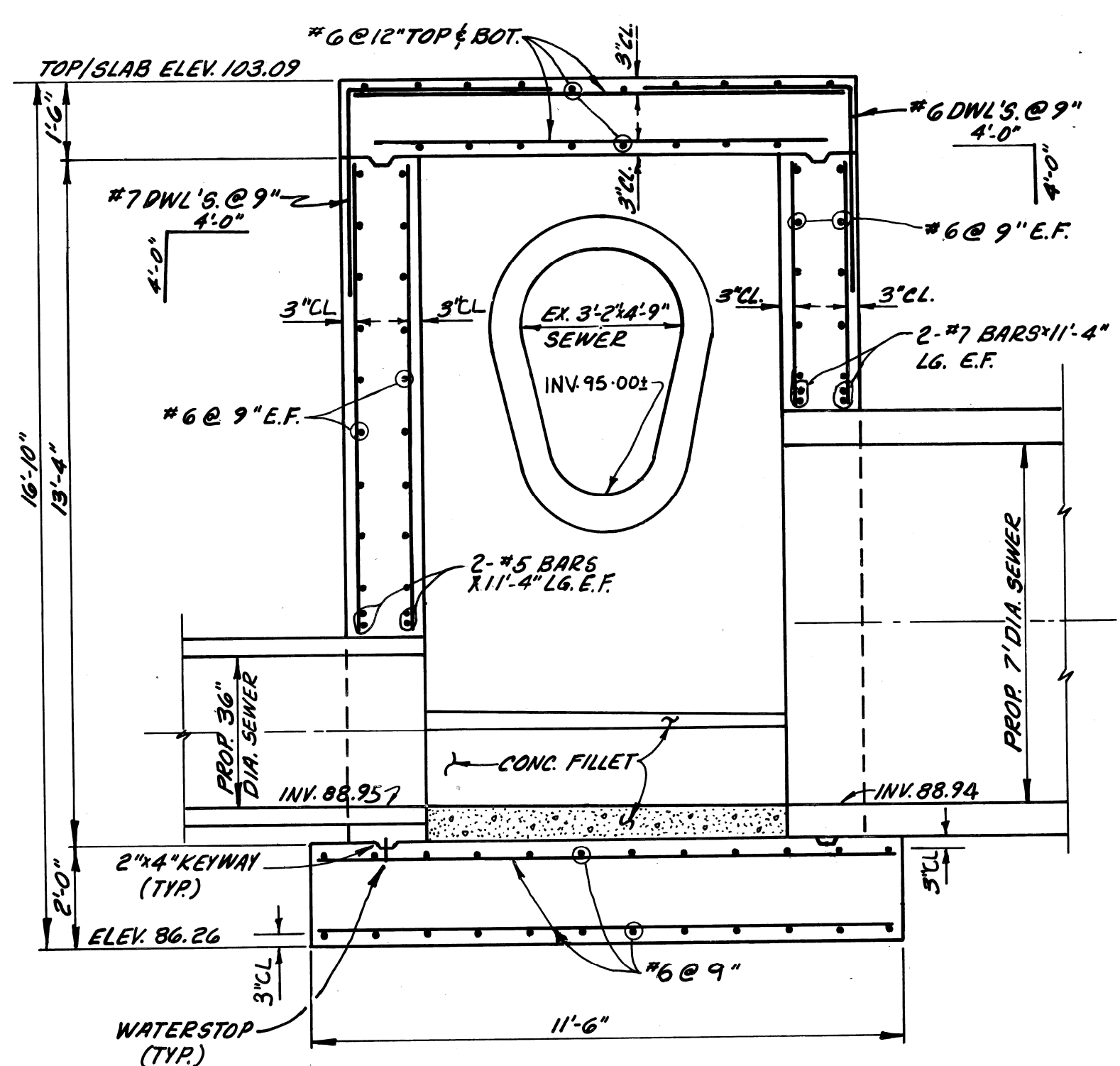
DETAIL OF ADDITIONAL REINFORCING STEEL AROUND EXISTING SEWER

CUT EXISTING PIPE LEAVING A CLEAN EDGE FLUSH WITH CHAMBER WALL AND INSTALL BULKHEAD THE THICKNESS OF THE WALL.

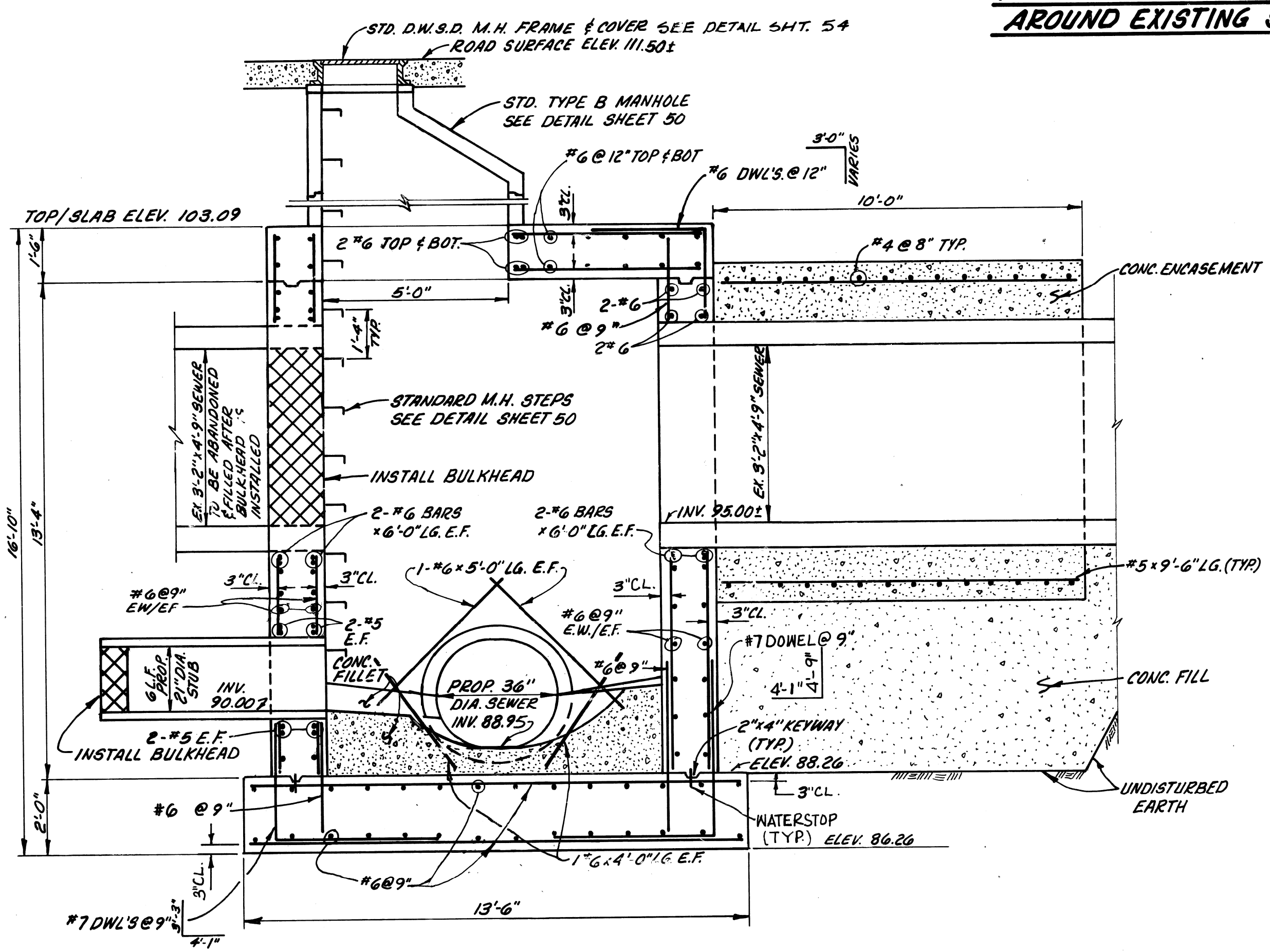
REMOVE EXISTING SEWER WITHIN THE INSIDE LIMITS OF THE JUNCTION CHAMBER UPON APPROVAL BY THE ENGINEER.



EXISTING SEWER REMOVAL DETAIL
NO SCALE



SECTION 1/21



SECTION 2/21

JUNCTION CHAMBER: SECOND & CONGRESS

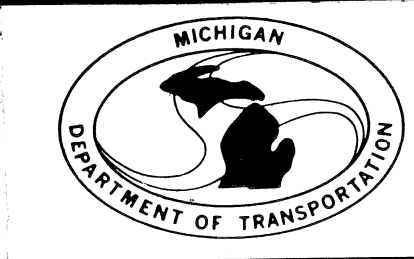
MICHIGAN DEPARTMENT OF TRANSPORTATION

U.S. 10-LODGE FREEWAY AT COBO HALL EXPANSION

Prepared By

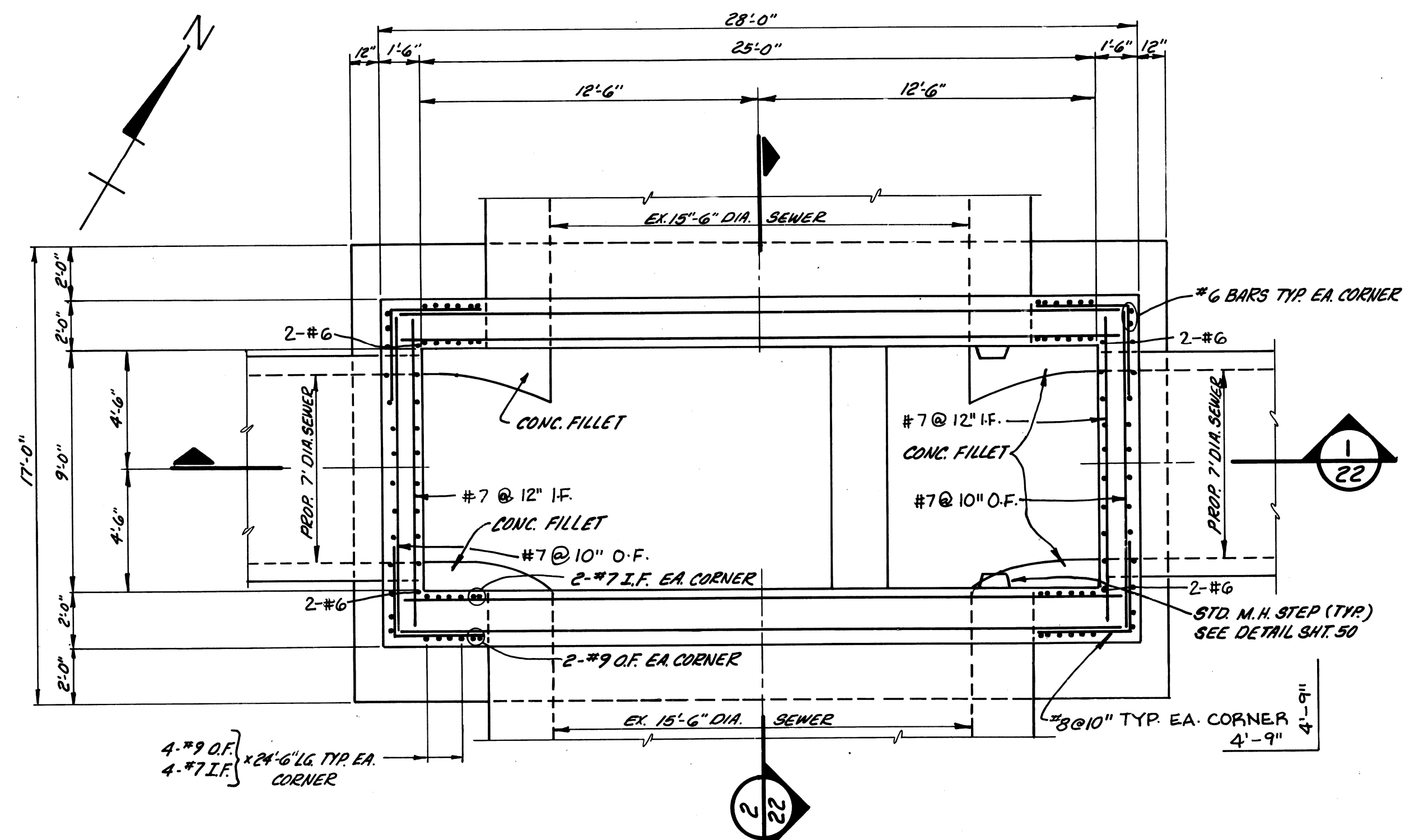
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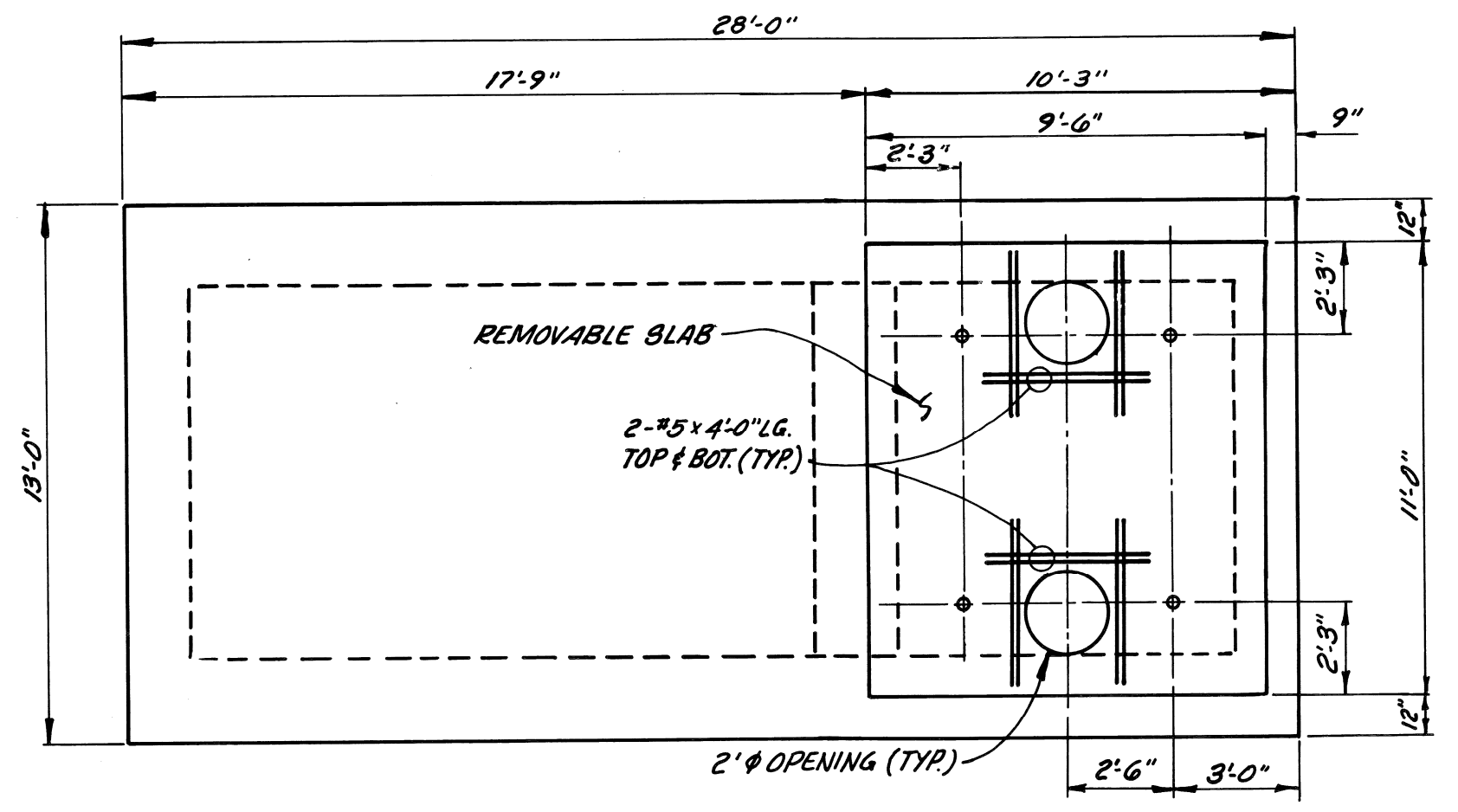


UTILITY RELOCATIONS		DATE: FEB. 4, 1986	DRAWN: L.S.	CONT. SEC.	JOB NO.	CHECKED: B.P.	SHEET NO.
		SCALE: 3/8" = 1'-0"	DESIGNED: M.L.S.O.	BM 82111	25199A	APPROVED: J.C.M.	21 OF 65

FINAL R.O.W.			
AUTH.	DATE	NO.	REVISION

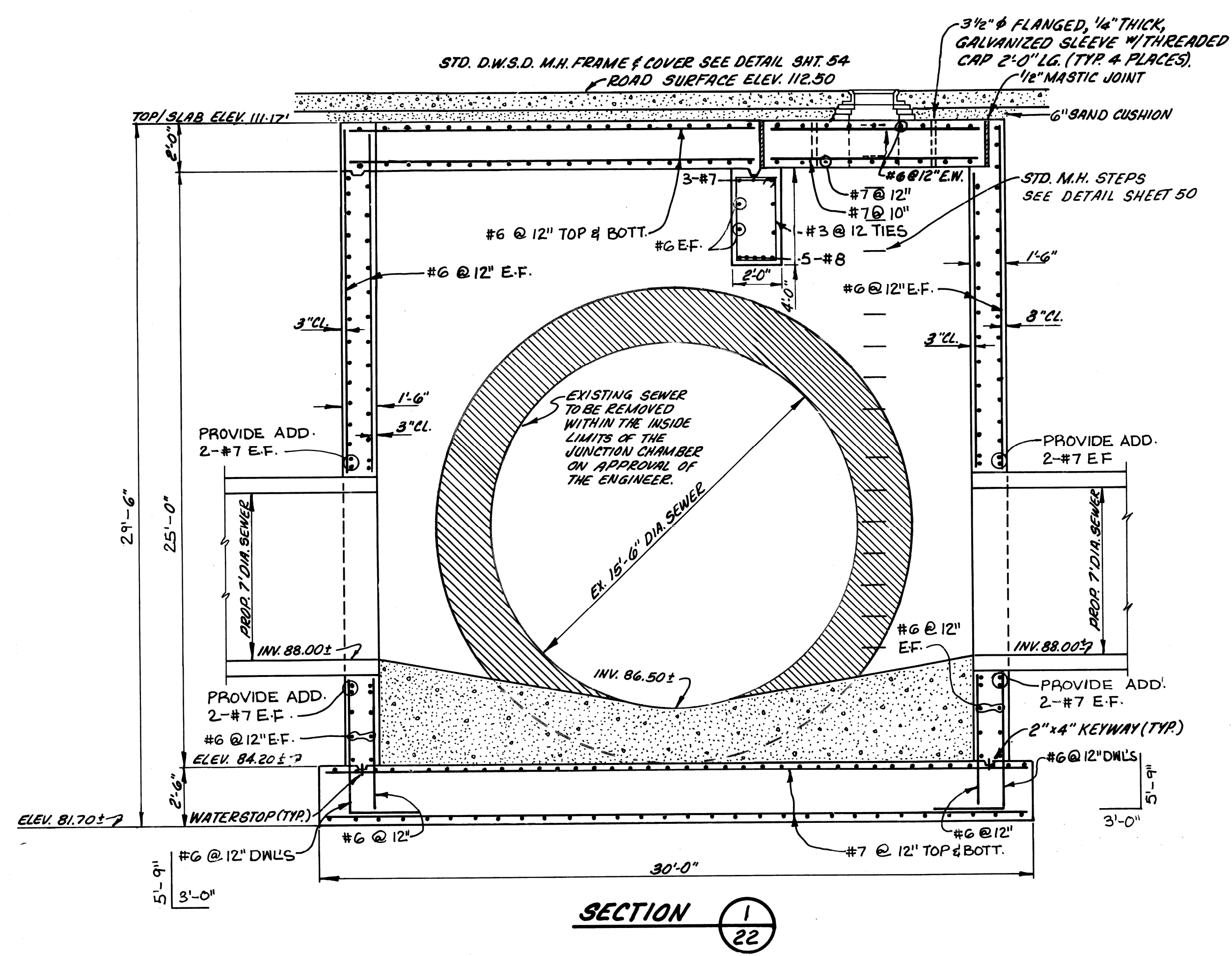


PLAN W/ TOP SLAB REMOVED

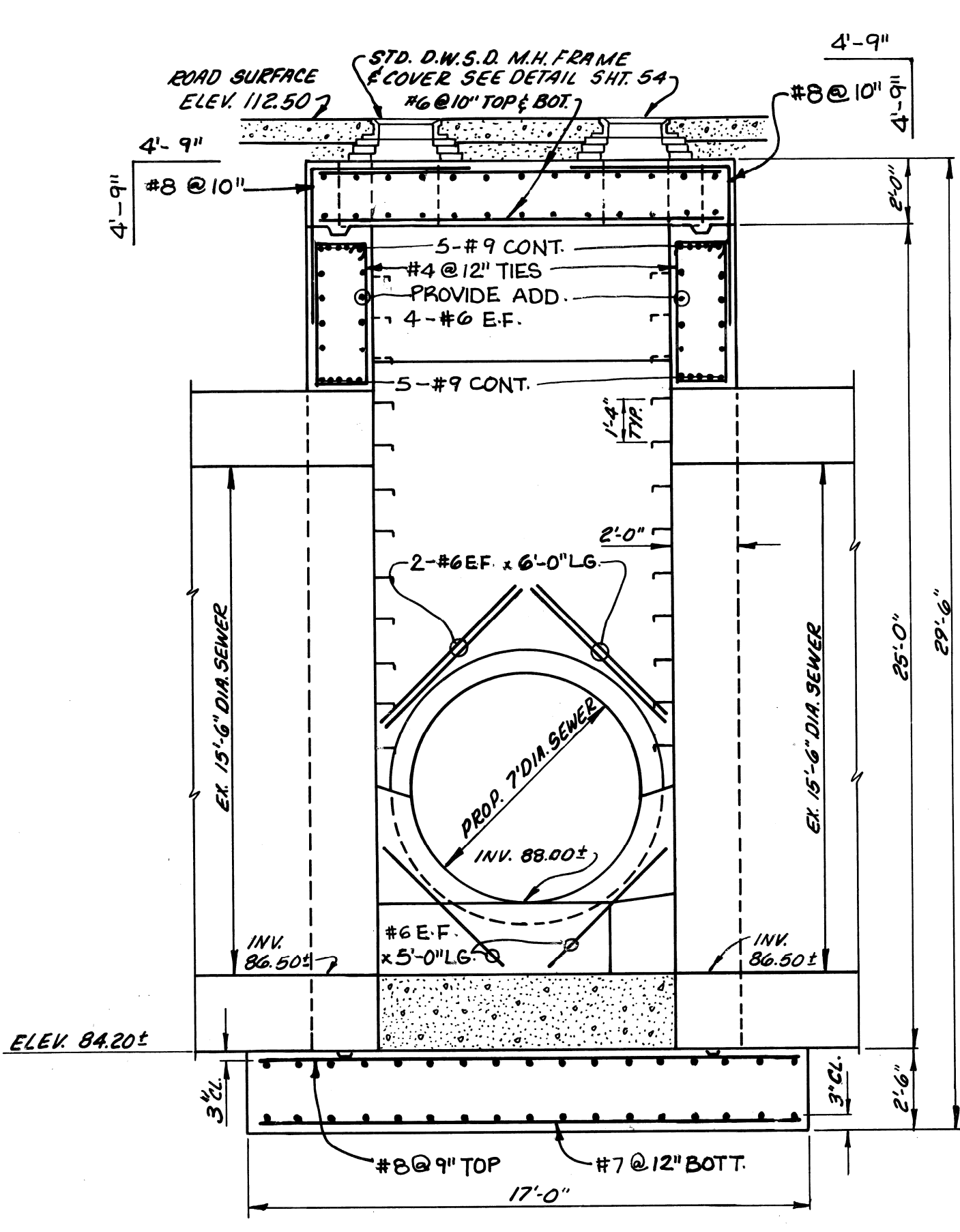


PLAN OF TOP SLAB

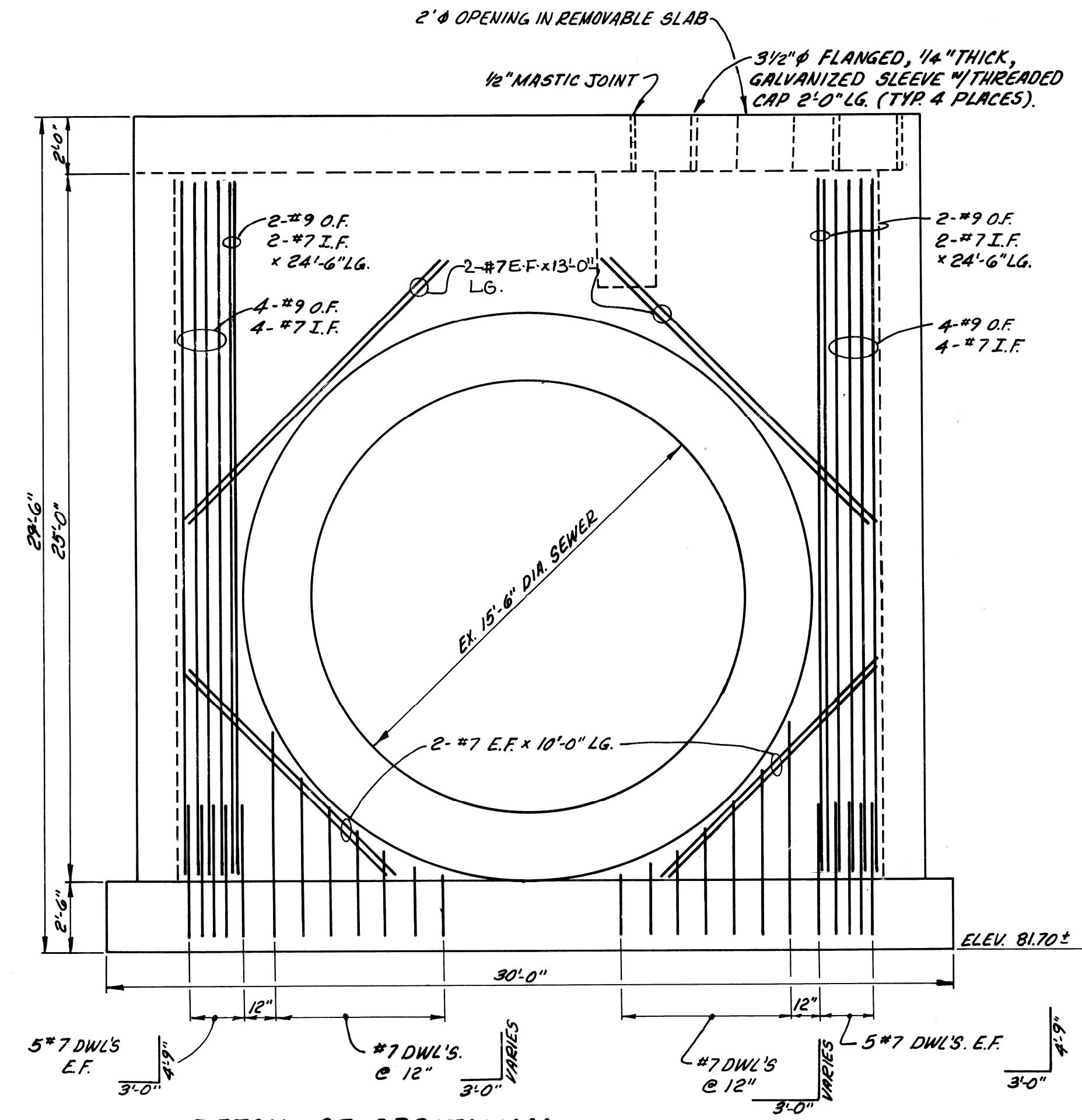
- NOTES:**
1. CONCRETE SHALL BE GRADE 353 WITH A 28 DAY COMPRESSIVE STRENGTH OF 3500 P.S.I.
 2. REINFORCING STEEL SHALL BE DEFORMED, NEW BILLET STEEL CONFORMING TO A.S.T.M. A-615 GRADE 60.
 3. GRANULAR MATERIAL CLASS III SHALL BE USED IN BACKFILLING AROUND ALL STRUCTURES THAT FALL WITHIN 10' INFLUENCE LINES FROM THE EDGE OF PAVEMENT OR BACK OF CURB.
 4. PROVIDE 6" UNREINFORCED MUD MATT UNDER ENTIRE BOTTOM SLAB.
 5. A MASTIC COATING SHALL BE APPLIED TO ALL JOINTS.



SECTION 1



SECTION 2



DETAIL OF ADDITIONAL REINFORCING STEEL AROUND EXISTING SEWER

JUNCTION CHAMBER: FIRST & CONGRESS

MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION
 Prepared By
 MADISON MADISON INTERNATIONAL OF MICHIGAN
 Engineers Architects Planners, 313-963-6110

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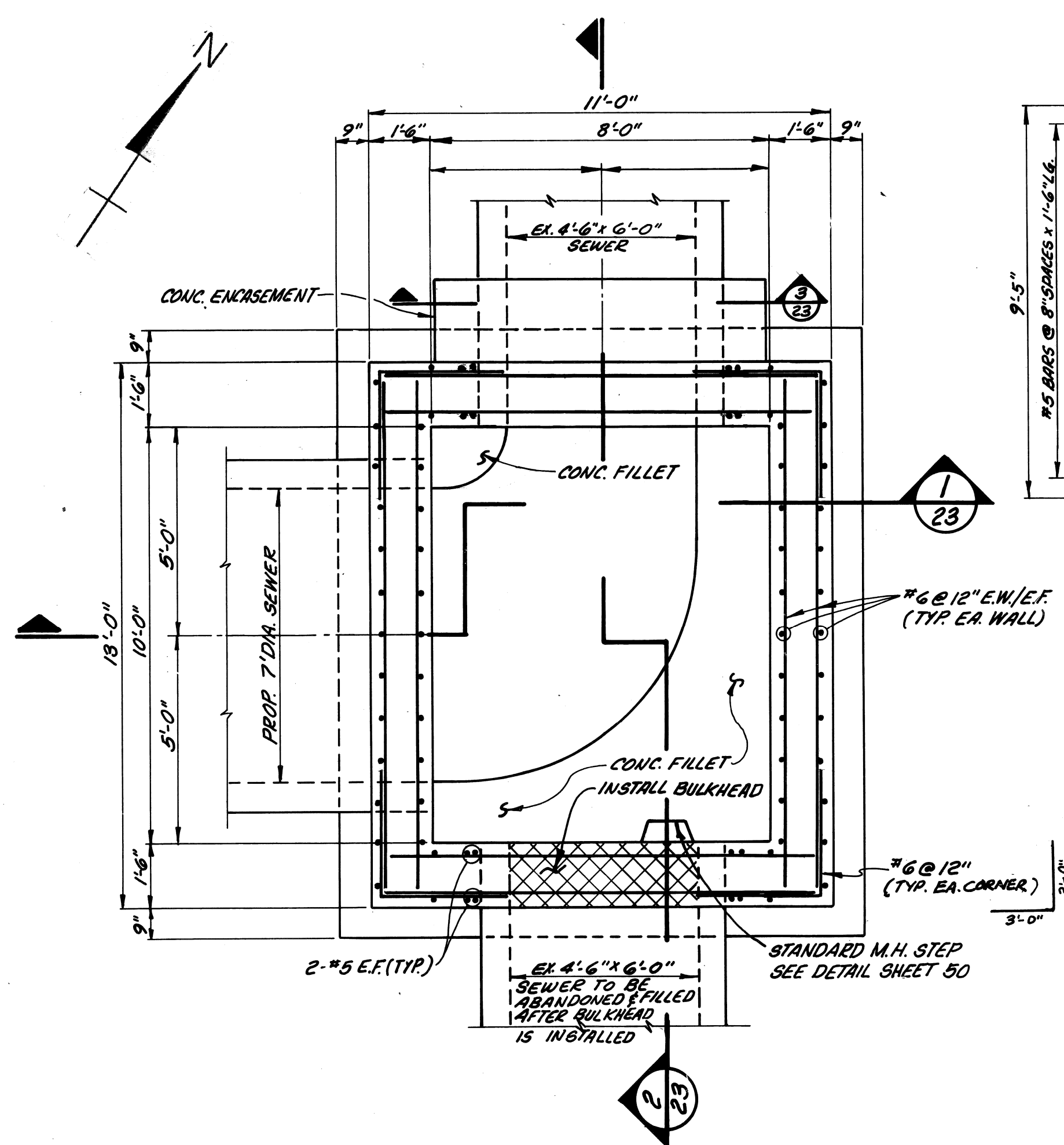


DATE: FEB. 4, 1986		DRAWN: L.S.P.A.		CONT. SEC.		JOB NO.		CHECKED: B.P.		SHEET NO.	
SCALE: 1/4" = 1'-0"		DESIGNED: M.L.S.O.		BM 82111		25199A		APPROVED: J.C.M.		22 OF 65	

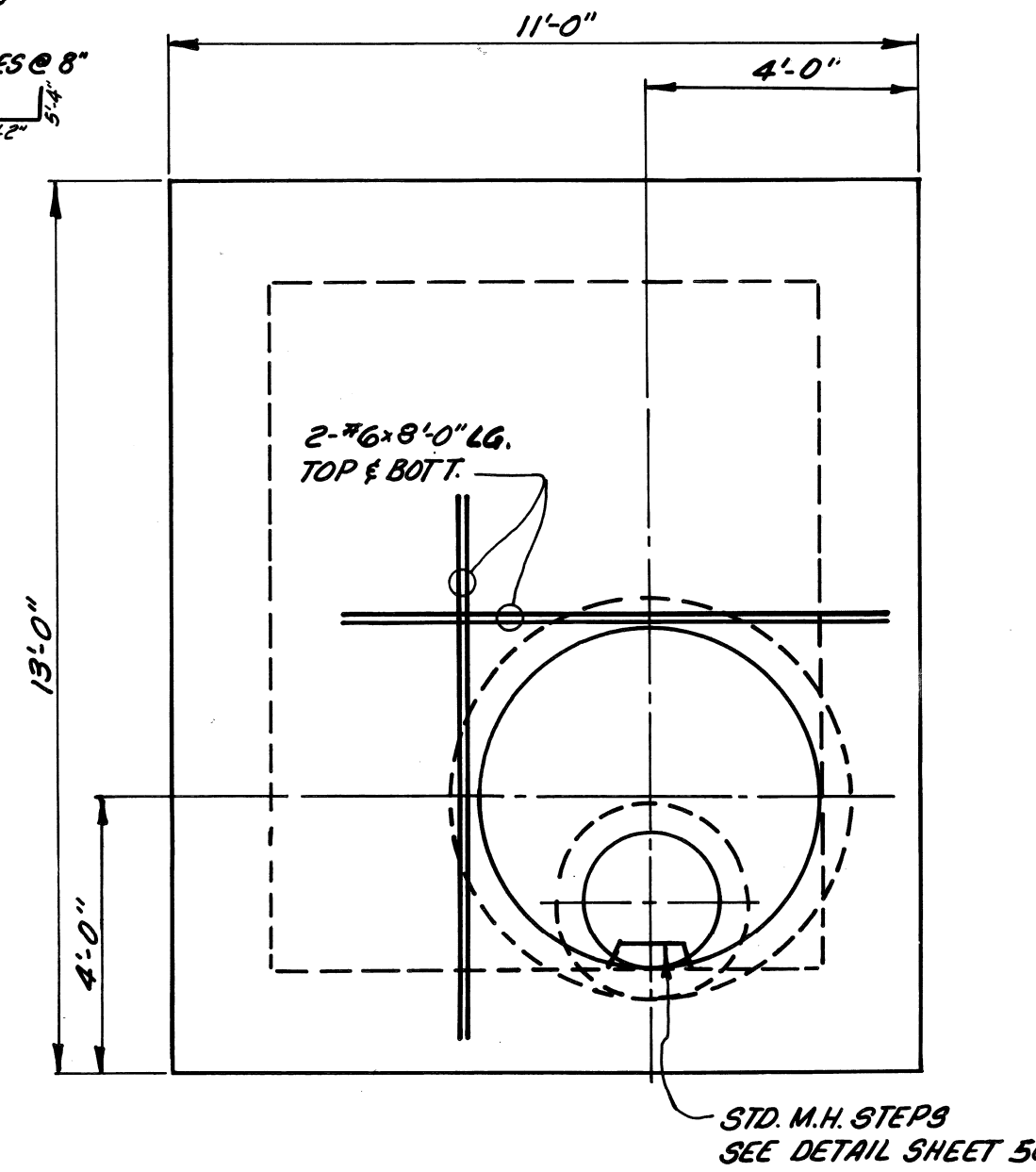
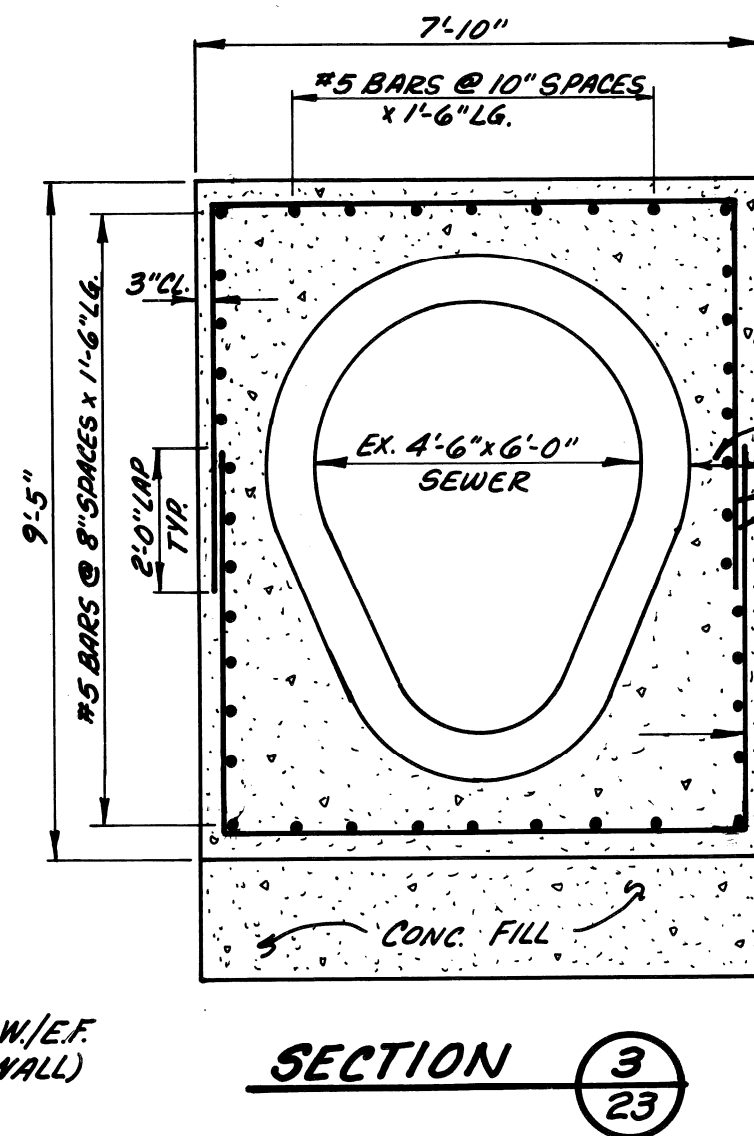
FINAL R.O.W.			
AUTH.	DATE	NO.	REVISION

NOTES:

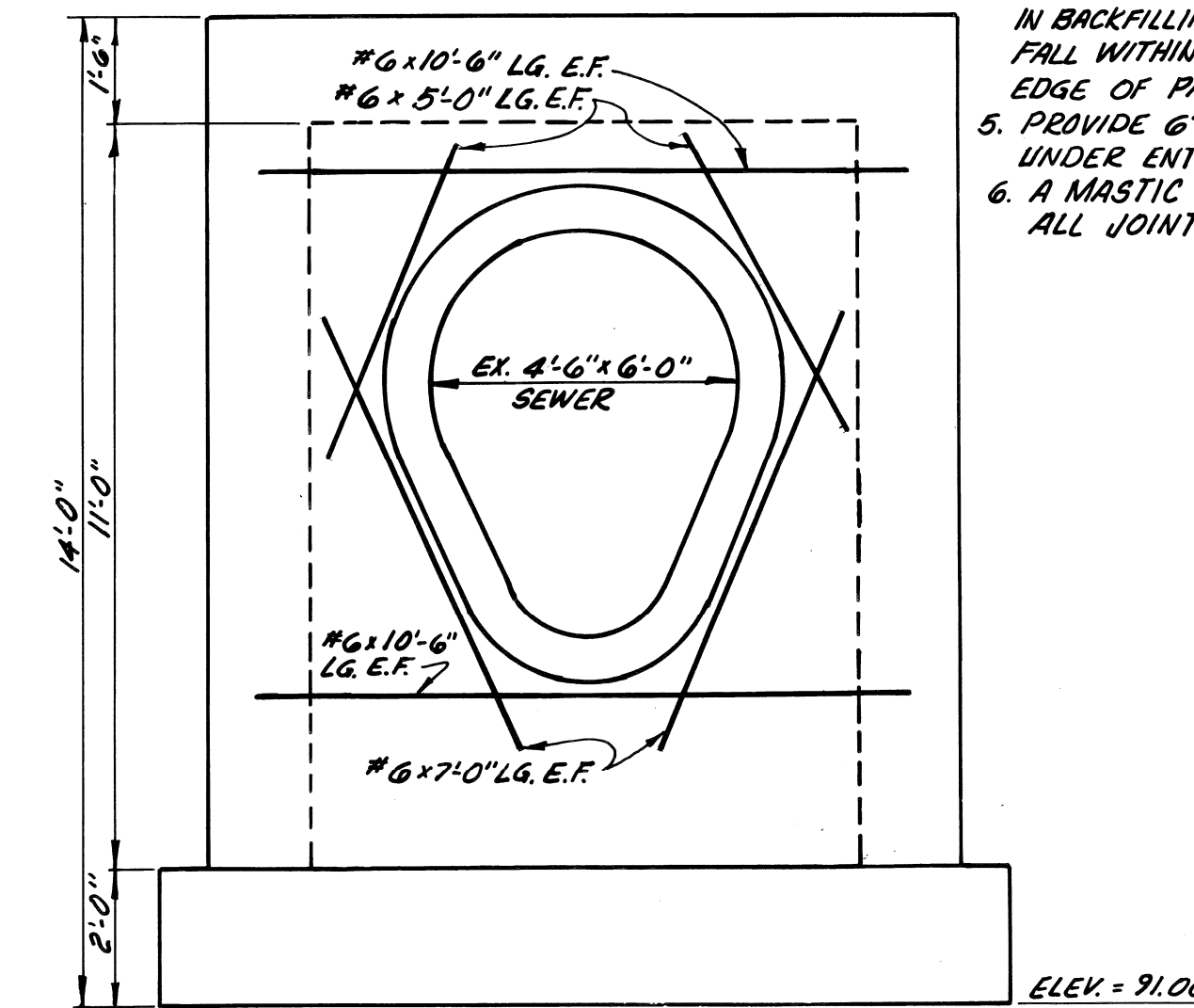
1. CONCRETE SHALL BE GRADE 355 WITH A 28 DAY COMPRESSIVE STRENGTH OF 3500 P.S.I.
2. REINFORCING STEEL SHALL BE DEFORMED, NEW, BILLET STEEL CONFORMING TO A.S.T.M. A-615 GRADE 60.
3. PROVIDE ADDITIONAL REBARS AROUND OPENING FOR PROPOSED 7" DIA. SEWER.
4. GRANULAR BACKFILL CLASS III SHALL BE USED IN BACKFILLING AROUND ALL STRUCTURES THAT FALL WITHIN 10' INFLUENCE LINES FROM THE EDGE OF PAVEMENT OR BACK OF CURB.
5. PROVIDE 6" UNREINFORCED MUD MATT UNDER ENTIRE BOTTOM SLAB.
6. A MASTIC COATING SHALL BE APPLIED TO ALL JOINTS.



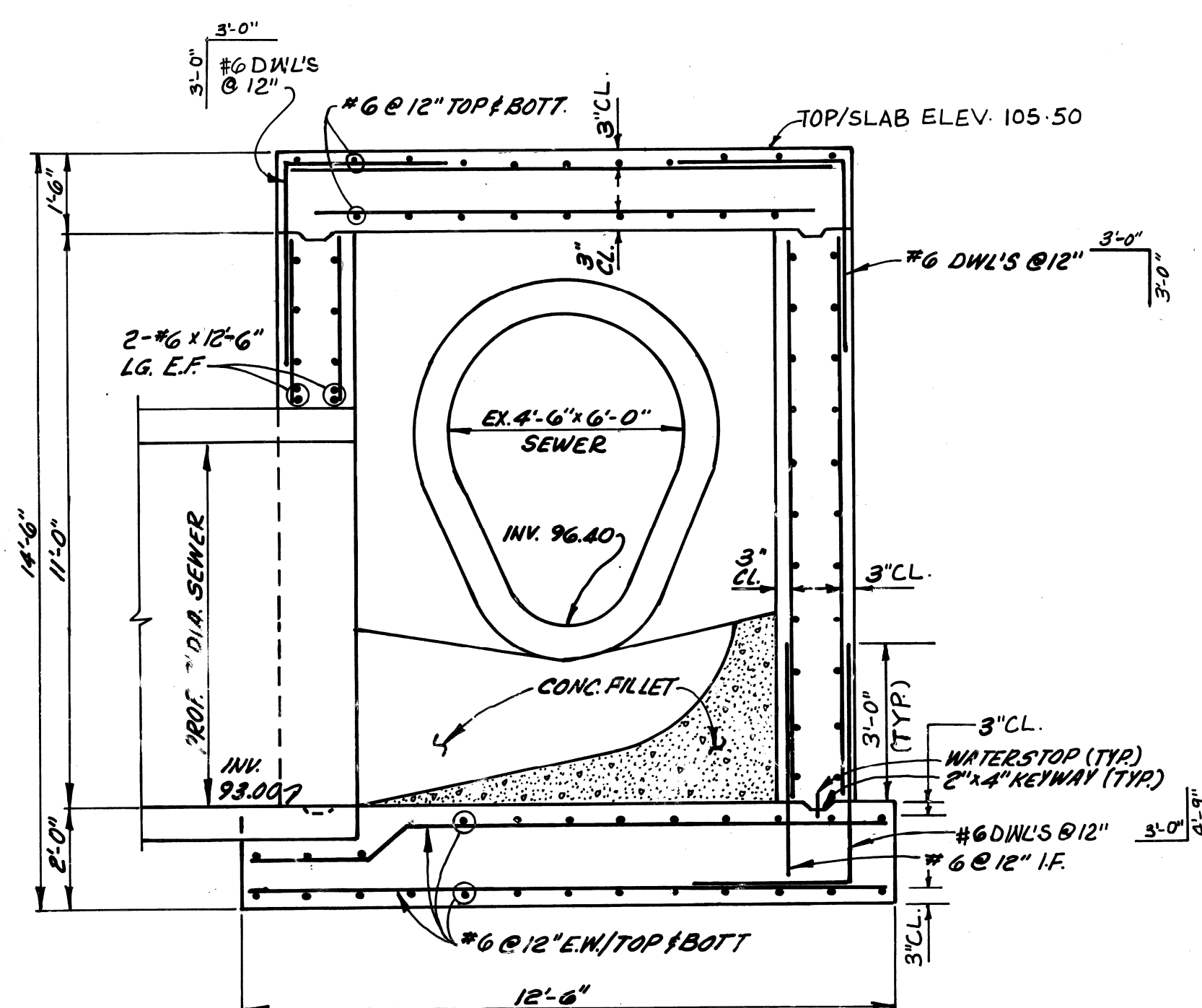
PLAN W/ TOP SLAB REMOVED



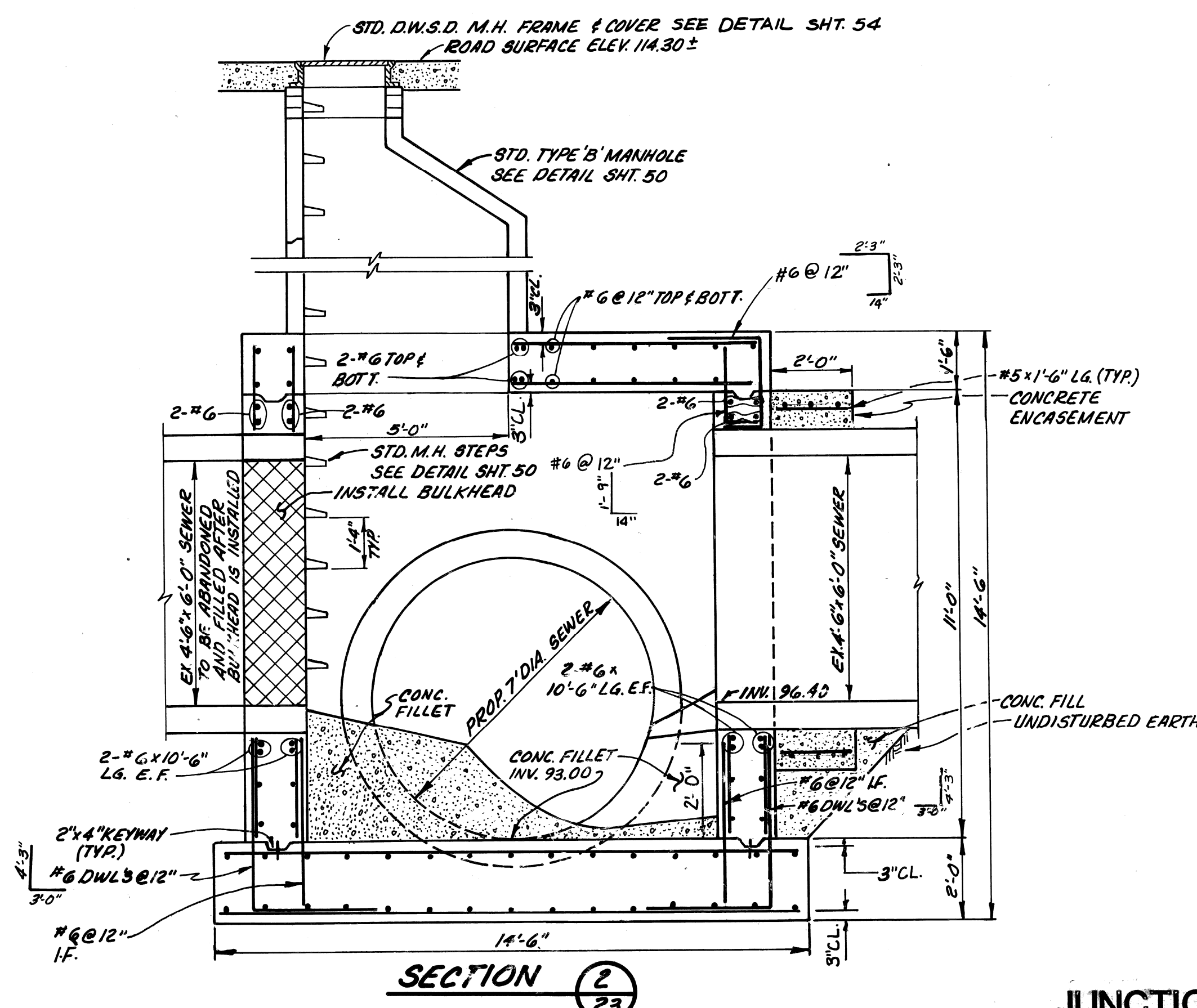
PLAN OF TOP SLAB



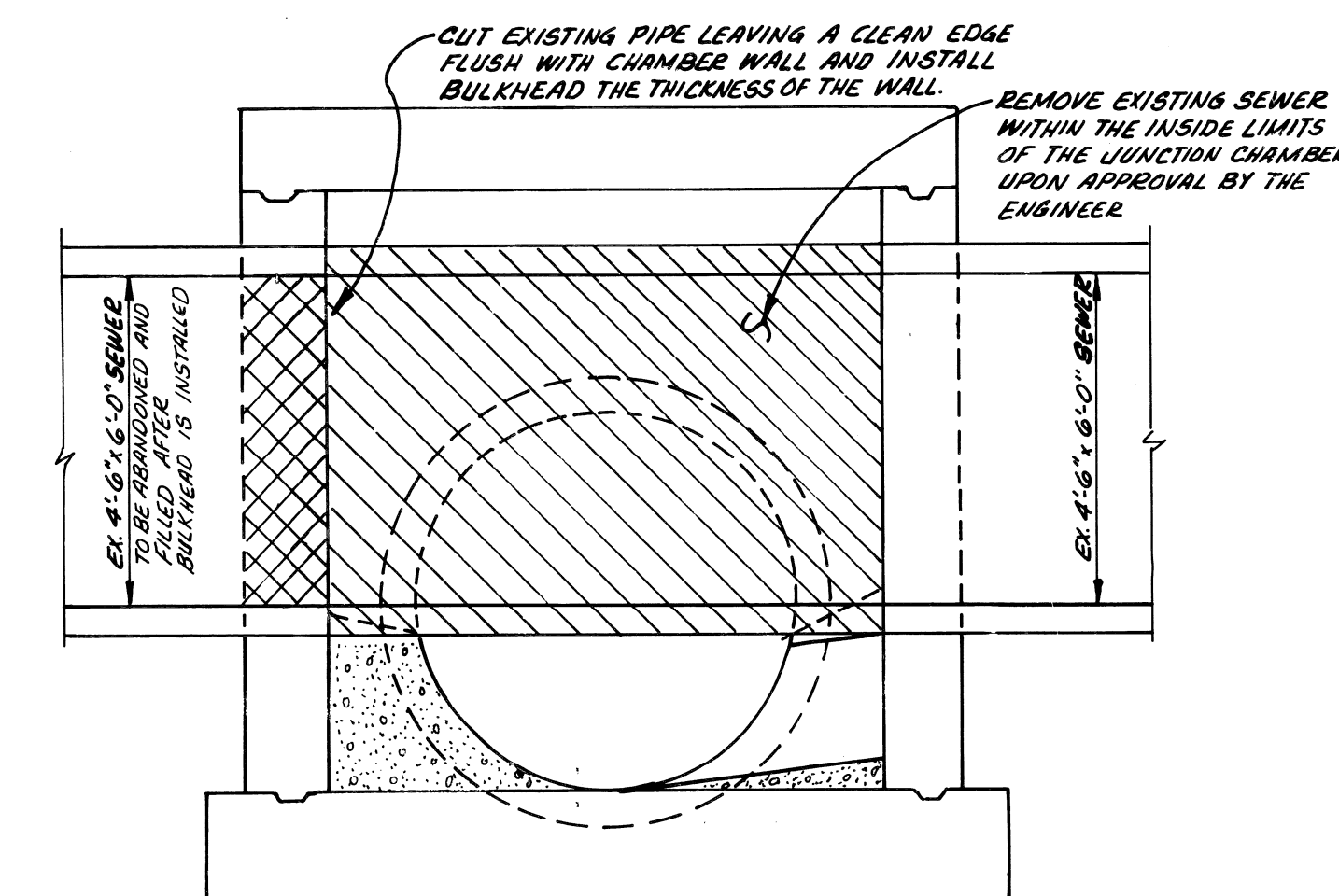
DETAIL OF ADDITIONAL REINFORCING STEEL AROUND EXISTING SEWER



SECTION 1



SECTION 2



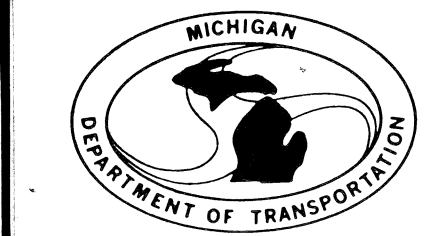
EXISTING SEWER REMOVAL DETAIL

JUNCTION CHAMBER: CASS & CONGRESS

MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10-LODGE FREEWAY AT COBO HALL EXPANSION
 Prepared By

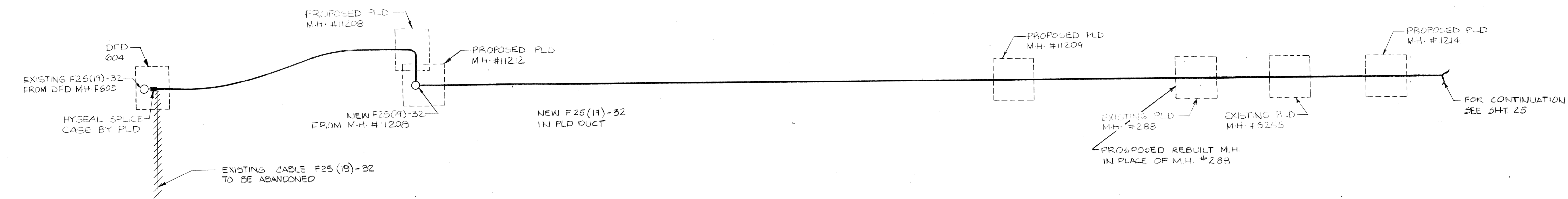
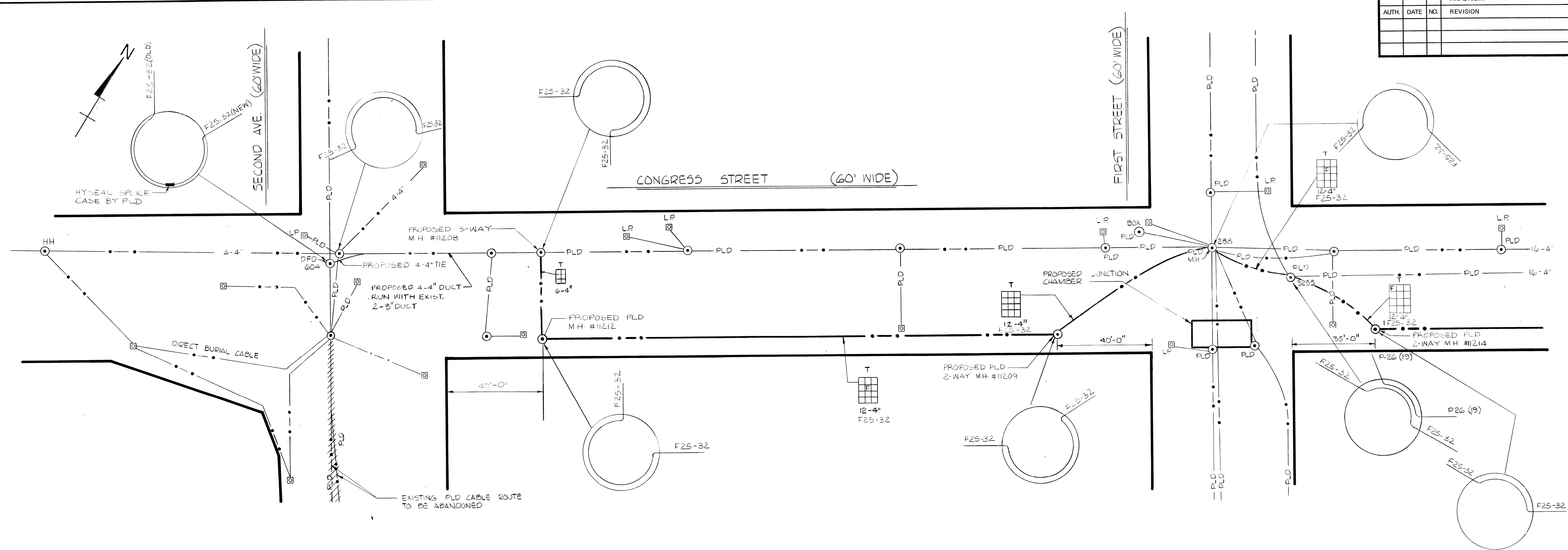
 MADISON/MADISON INTERNATIONAL
 ENGINEERS ARCHITECTS PLANNERS, 313-963-6110

HNTB
 HOWARD NEEDLES TAMMEN & BERGENDOFF
 in association with
 MADISON/MADISON INTERNATIONAL OF MICHIGAN
 ZIMMER-HOWELL ENGINEERING, LTD.



DATE: FEB. 4, 1986		DRAWN: L.S.		CONT. SEC.		JOB NO.		CHECKED: B.P.		SHEET NO.	
SCALE: 3/8" = 1'-0"		DESIGNED: M.L./S.O.		BM 82111		25199A		APPROVED: J.C.M.		23 OF 65	

FINAL R.O.W.		
AUTH.	DATE	REVISION



MICHIGAN DEPARTMENT OF TRANSPORTATION

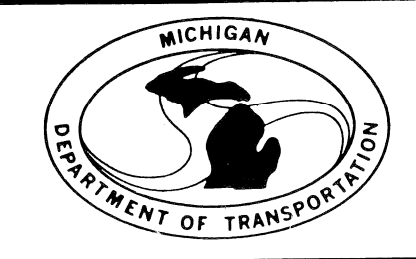
U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION

Prepared By

MADISON & MADISON INTERNATIONAL OF MICHIGAN
Engineers Architects Planners, 313-963-6110

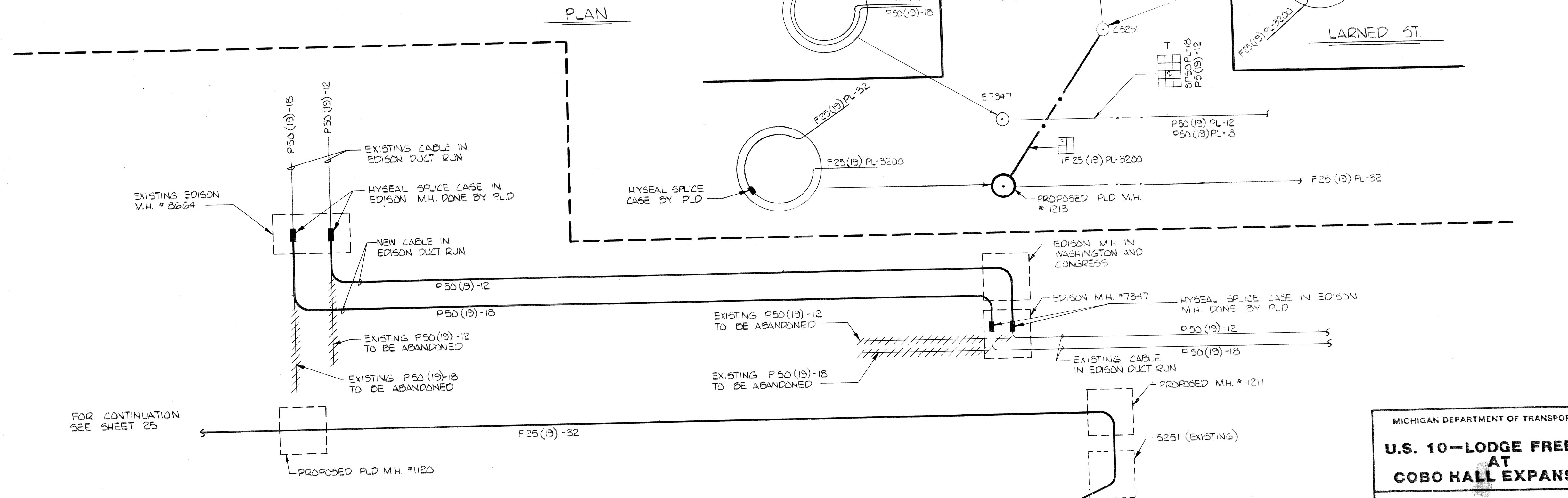
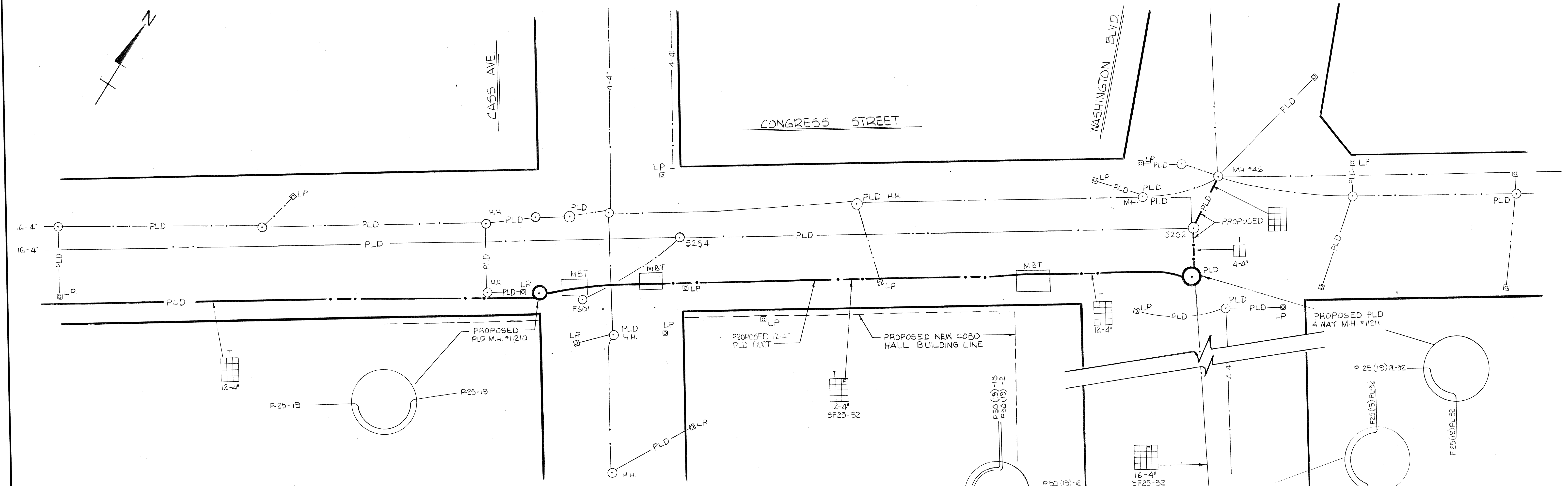
SCHEMATICS (P.L.D.)

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ZIMMER-HOWELL ENGINEERING, LTD.



UTILITY RELOCATIONS		CONT. SEC.	JOB NO.	CHECKED: B.P.	SHEET NO.
DATE: FEB. 4, 1986	DRAWN: P.A.F.G./M.C.	BM 82111	25199A	APPROVED: J.C.M.	24 OF 65
SCALE: 1" = 20'	DESIGNED: E.B.				

FINAL R.O.W.		
AUTH.	DATE	REVISION

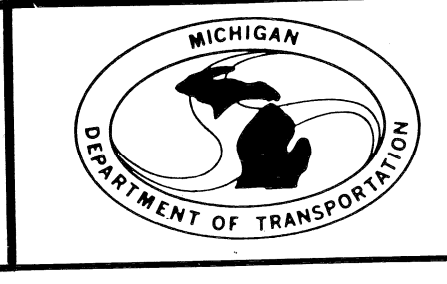


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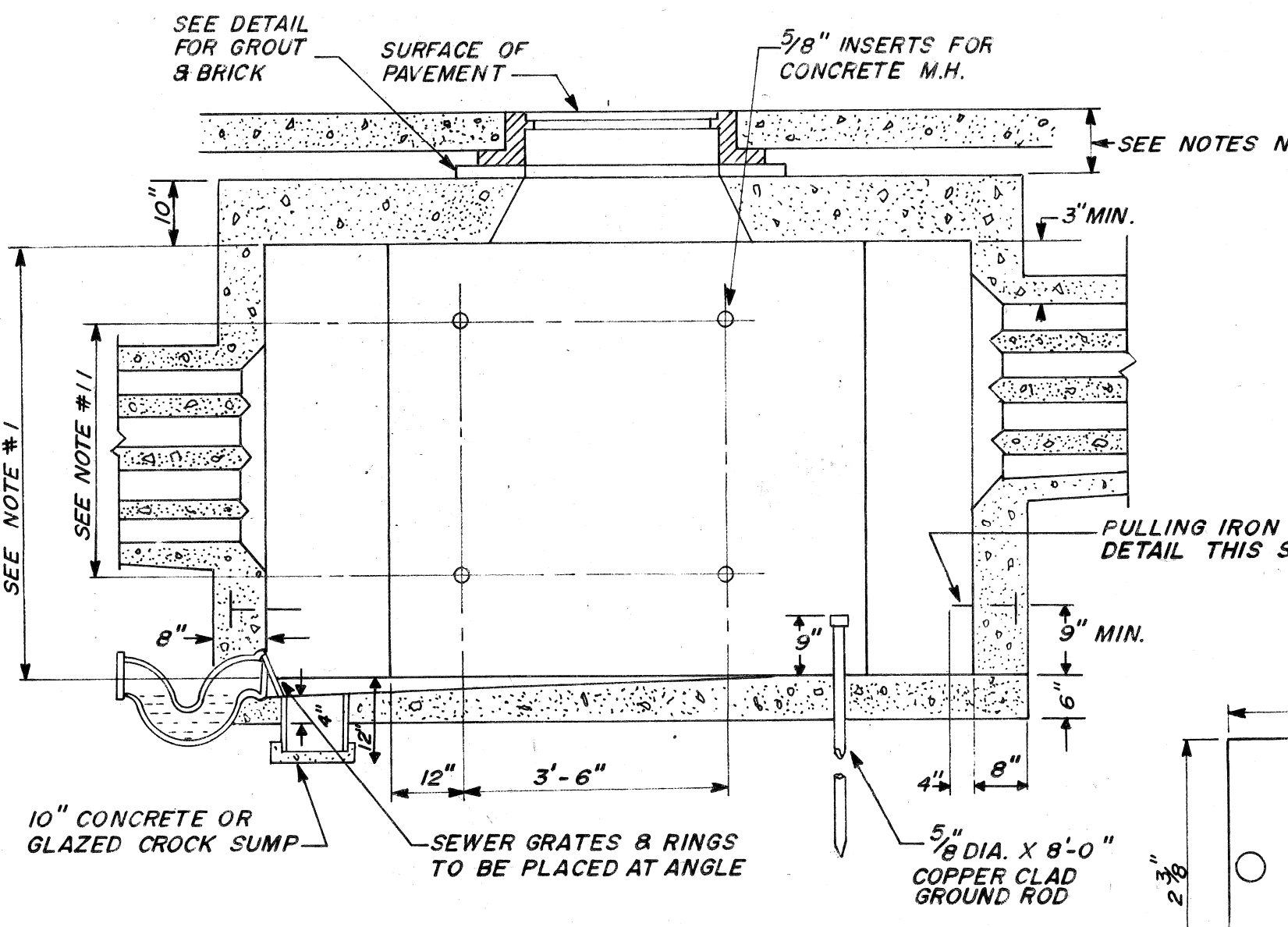
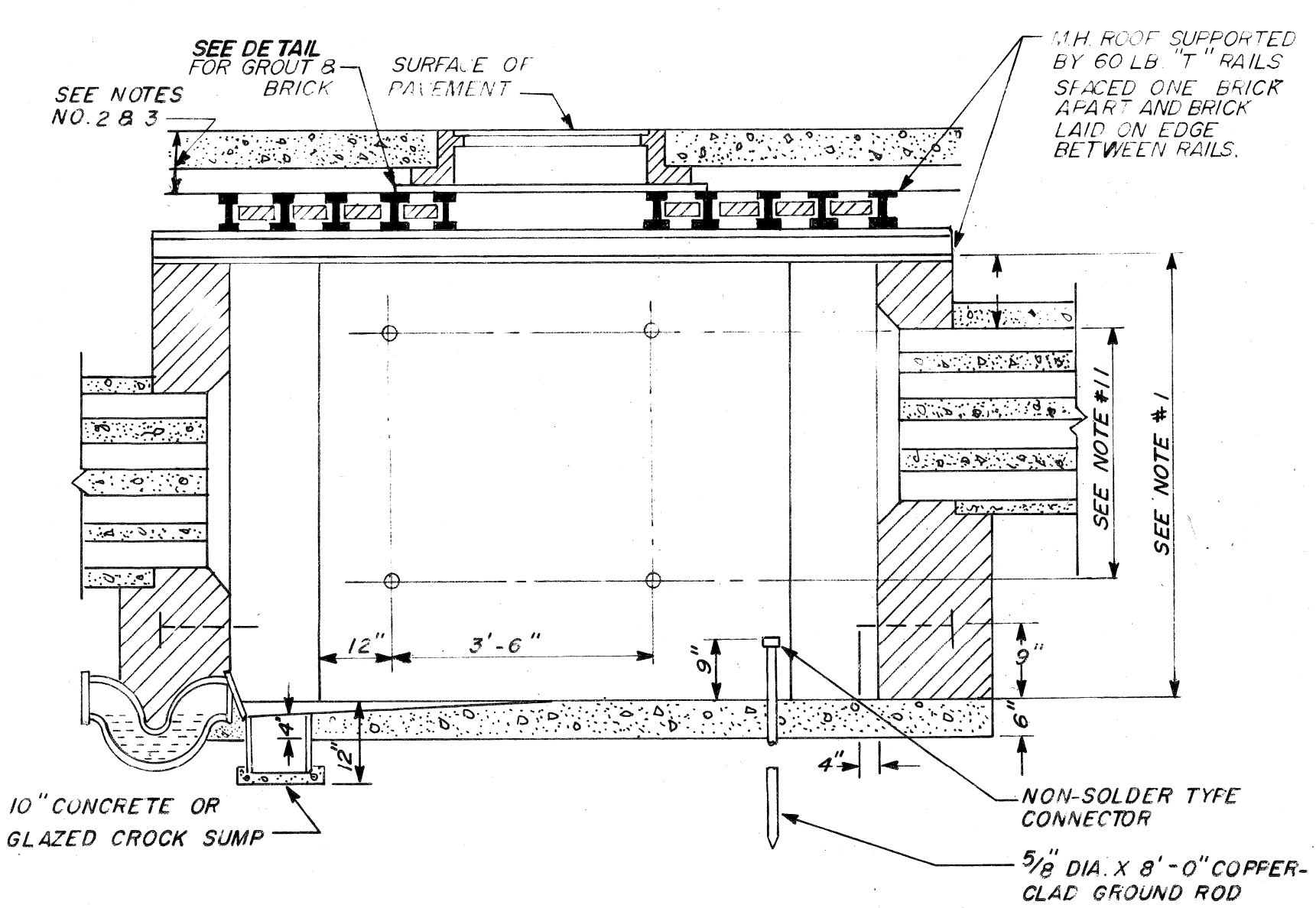
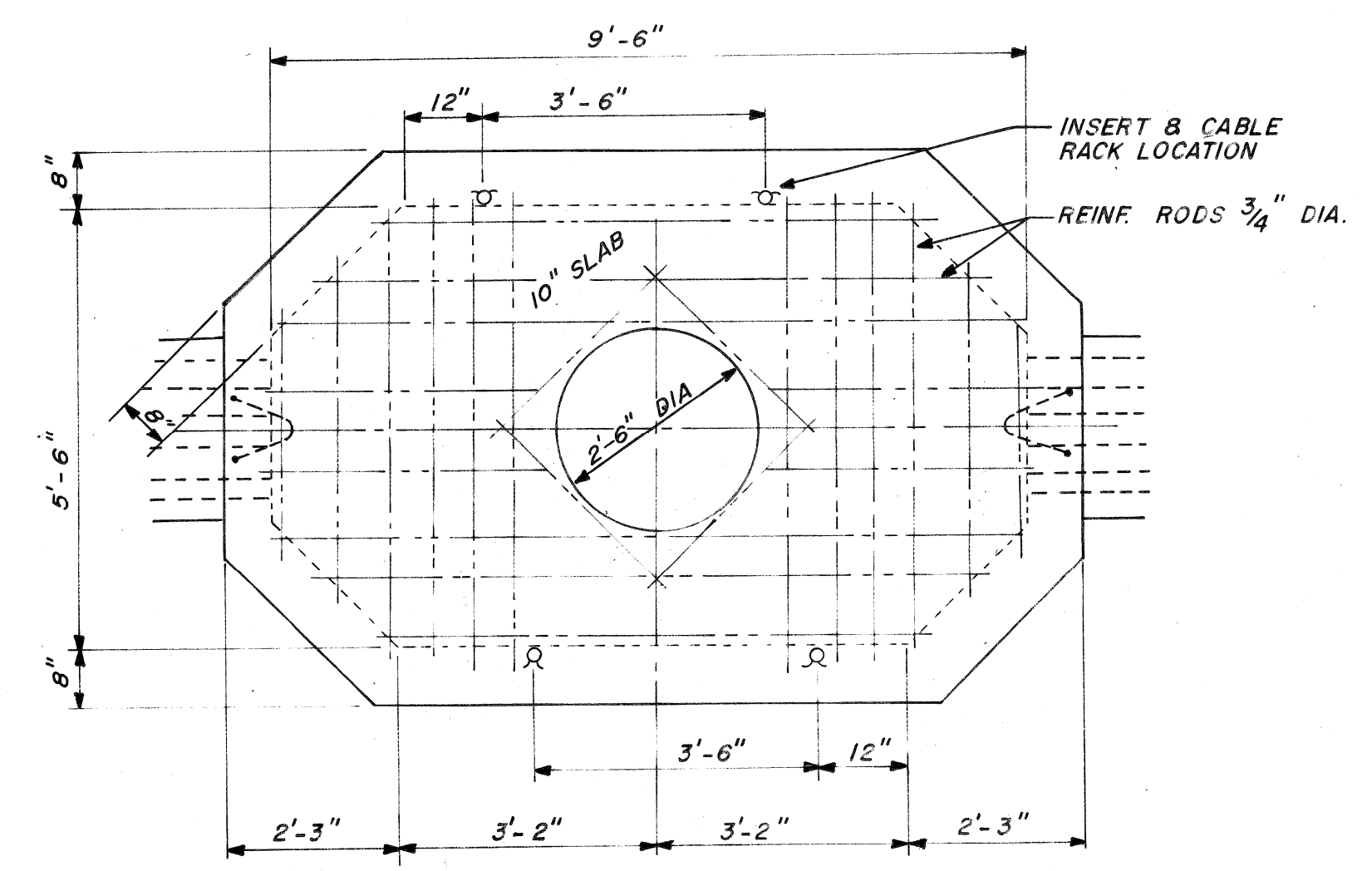
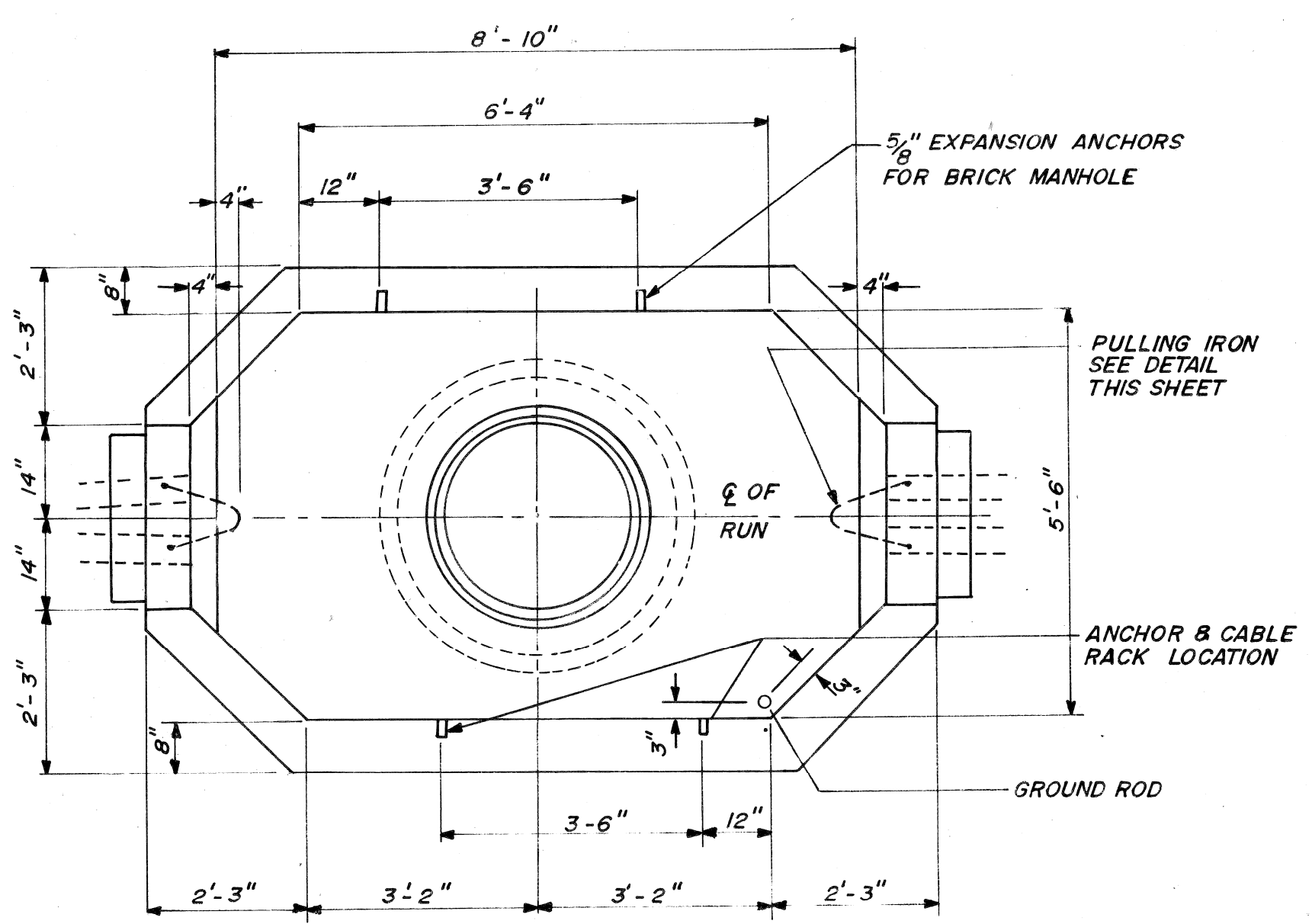
MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION
 Prepared By

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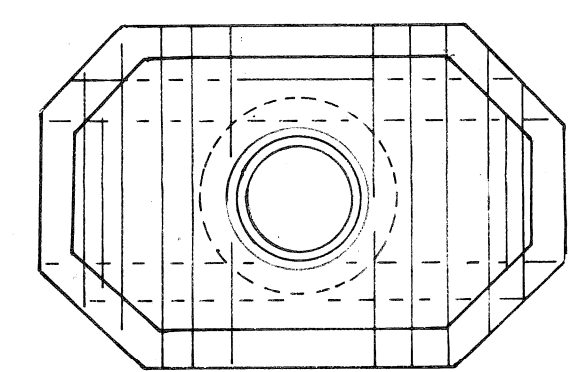


DATE: FEB. 4, 1986		DRAWN: F.G.		CONT. SEC.		JOB NO.		CHECKED: B.P.		SHEET NO.	
SCALE: 1" = 20'		DESIGNED: E.B.		BM 82111		25199A		APPROVED: J.C.M.		25 OF 65	

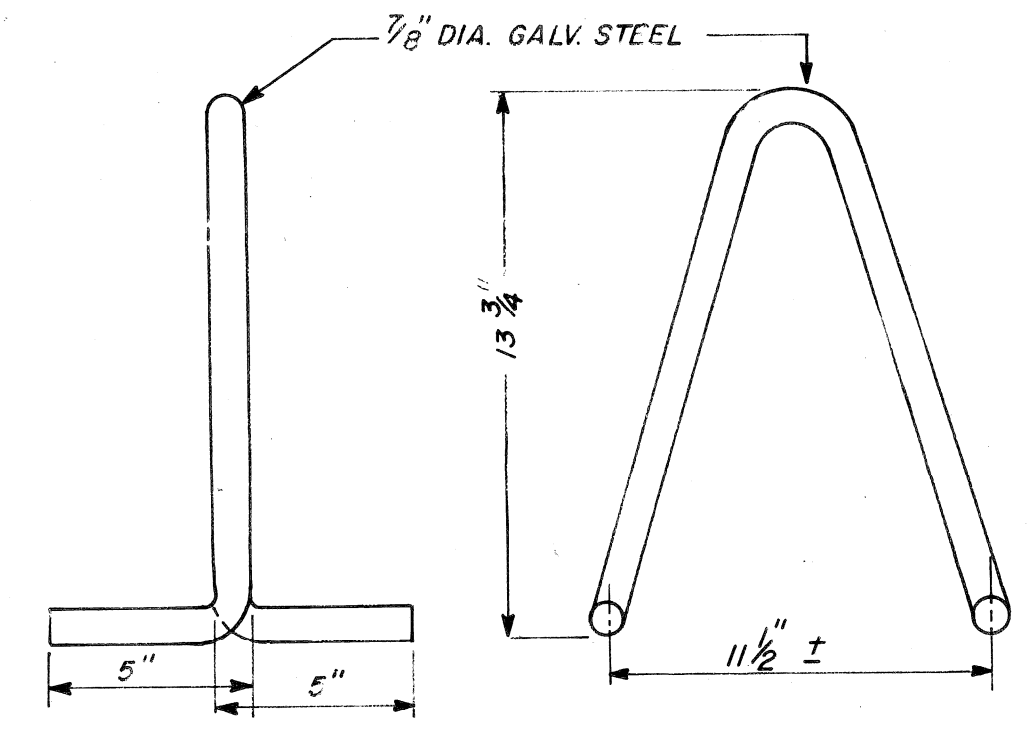


BRICK-TWO WAY MANHOLE
N.T.S.

CONCRETE-TWO WAY MANHOLE
N.T.S.



- 60 LB. "T" RAILS**
- 2 PIECES 4'-6" LONG
 - 2 PIECES 6'-0" LONG
 - 6 PIECES 6'-10" LONG
 - 2 PIECES 9'-3" LONG
 - 2 PIECES 10'-8" LONG
 - TOTAL WEIGHT 2040 LB.

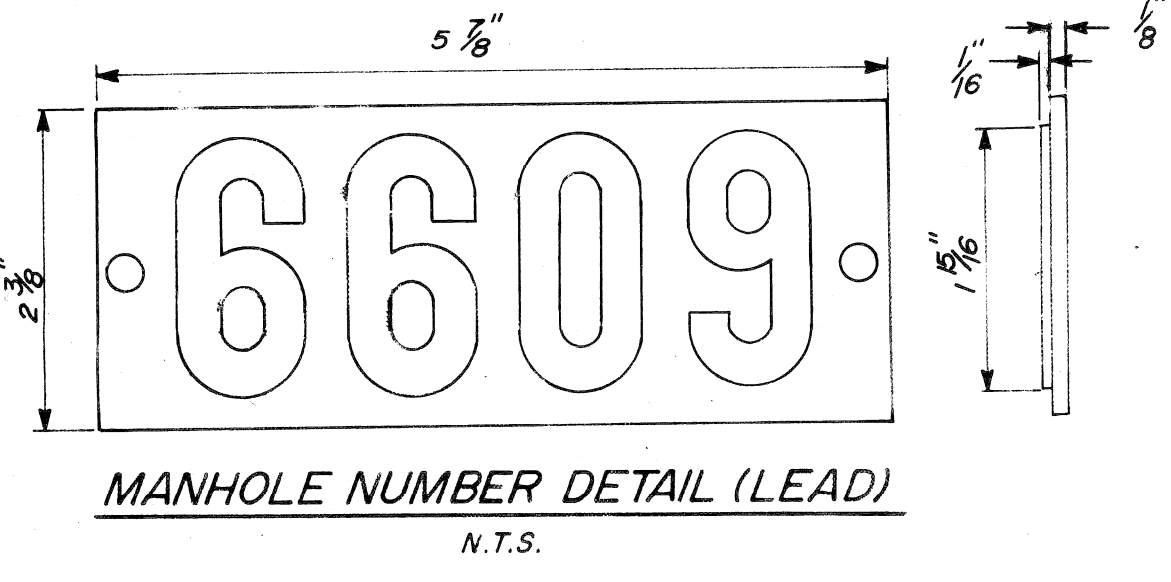


PULLING IRON
N.T.S.

NOTES:

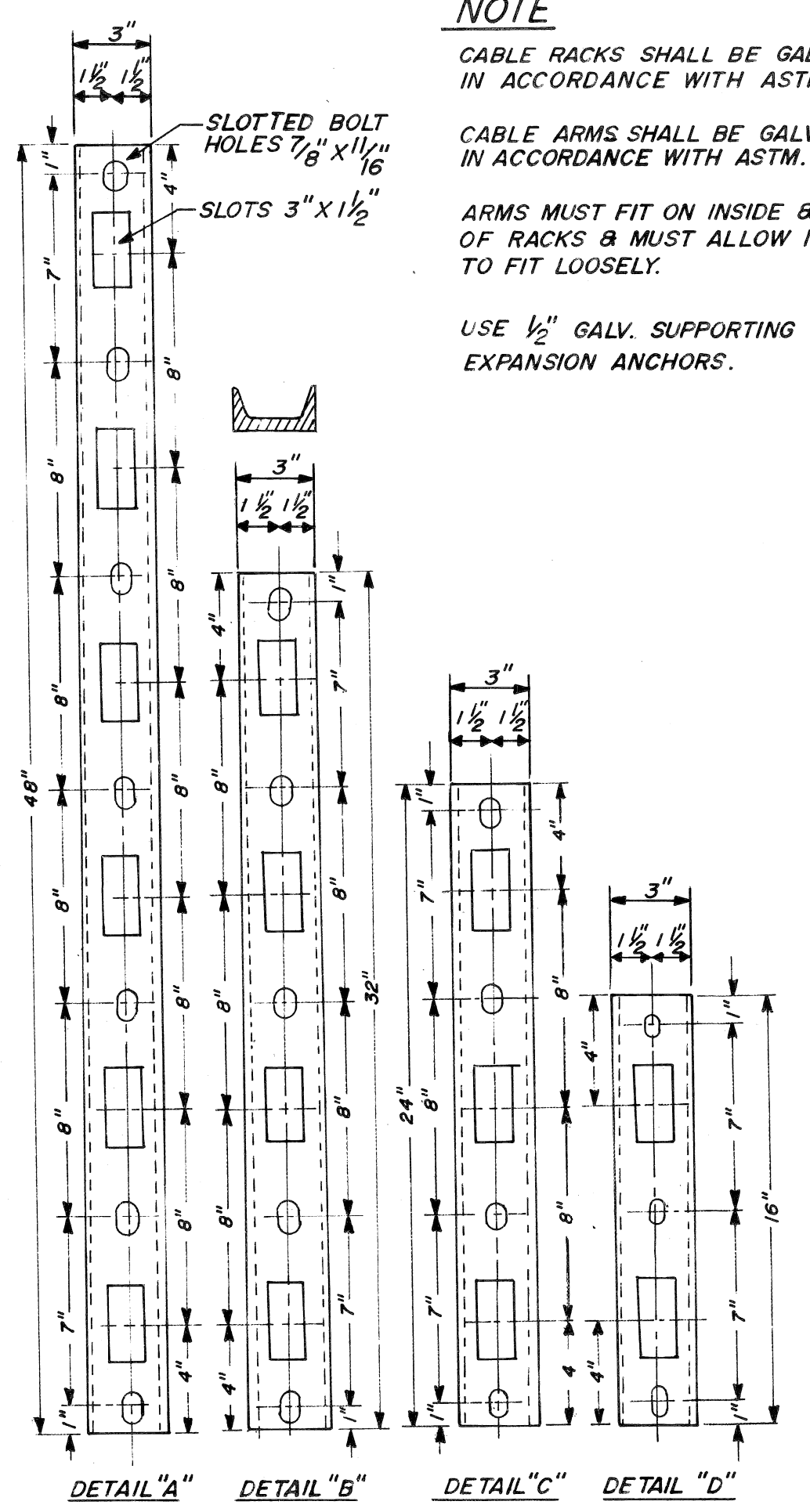
1. THIS DIMENSION NORMALLY 6'-0". SEE SPECIFICATIONS FOR UNUSUAL CONDITIONS.
2. WHERE M.H.'S ARE LOCATED BACK OF CURBS, TOP OF M.H. ROOF MUST BE BUILT 26" BELOW CURB GRADE TO PROVIDE FOR FUTURE PAVEMENT.
3. IN EXISTING PAVEMENT, PROVIDE AT LEAST 8" BETWEEN TOP OF ROOF AND BASE OF PAVEMENT.
4. BOLTS, RACKS & PULLING IRONS TO BE HOT-DIP GALV.
5. 6" OF RAILS UNDER M.H. FRAME FLANGE TO BE APPROX. 18" FROM E'S OF FRAMES.
6. M.H. NUMBER TO BE INSTALLED ON MANHOLE WALL IN CONSPICUOUS PLACE.
7. MOUNTING HEIGHT FOR LOWER BOLTS OF CABLE RACK SHALL BE THE AVERAGE HEIGHT OF THE BOTTOM OF THE LOWEST DUCTS IN MAIN CONDUITS. INSTALL RACKS ON ALL WALLS.
8. 8" THICK BRICK CHIMNEYS WHERE SPECIFIED SHALL BE INCIDENTAL TO APPLICABLE M.H. ITEM.
9. EXCAVATION LIMITS FOR PUBLIC LIGHTING DEPARTMENT MANHOLES SHALL BE ON VERTICAL PLANES ON THE FOOTING OUTLINE.
10. 1/2" PLASTER OUTSIDE WALLS OF BRICK MANHOLES.
11. SPACING OF INSERTS AS REQUIRED TO ACCOMMODATE CABLE RACK.

- 3/4" DIA. REINFORCING STEEL RODS REQ'D. FOR 2-WAY M.H.
- 10 PIECES 3'-6" LONG
 - 2 PIECES 5'-0" LONG
 - 8 PIECES 6'-6" LONG
 - 2 PIECES 8'-0" LONG
 - 4 PIECES 10'-0" LONG

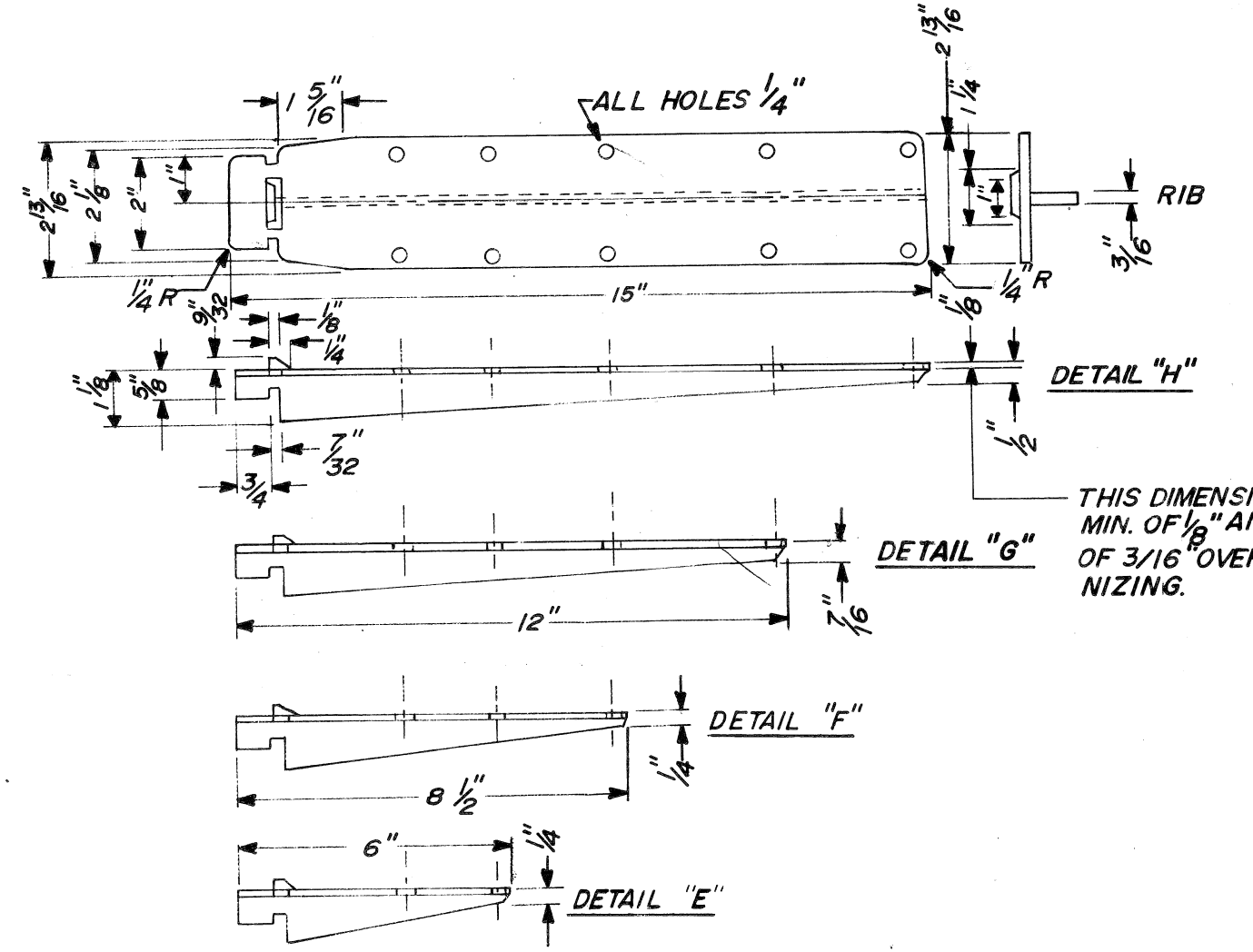
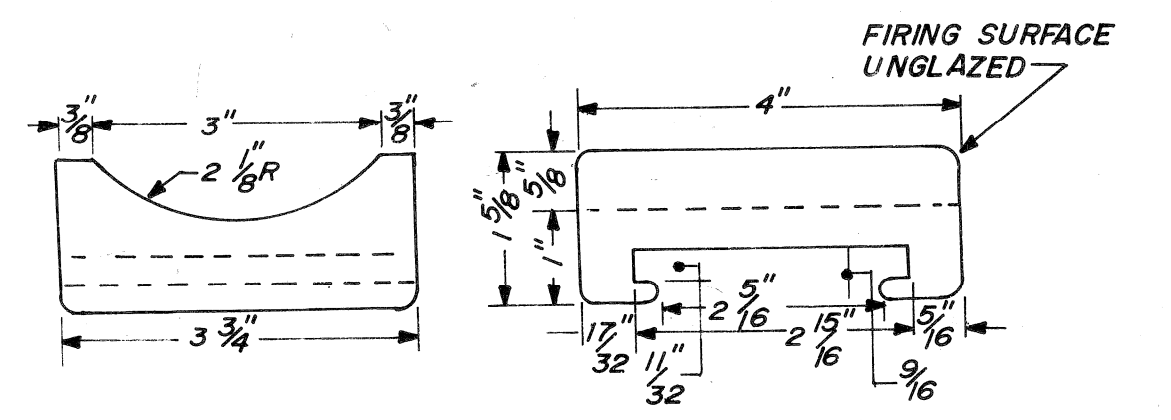


NOTE

CABLE RACKS SHALL BE GALV. AFTER FAB. IN ACCORDANCE WITH ASTM. A-123.
CABLE ARMS SHALL BE GALV. AFTER FAB. IN ACCORDANCE WITH ASTM. A-153 53.
ARMS MUST FIT ON INSIDE & OUTSIDE OF RACKS & MUST ALLOW INSULATOR TO FIT LOOSELY.
USE 1/2" GALV. SUPPORTING BOLTS AND EXPANSION ANCHORS.

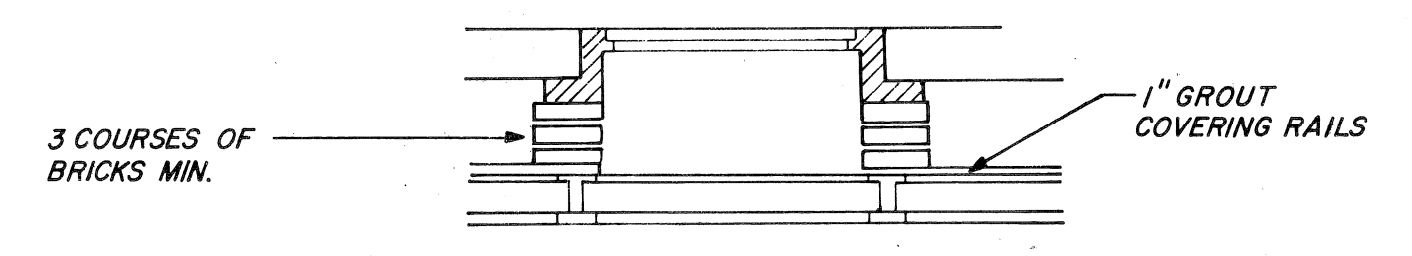


CABLE RACKS
3" STD. 4.1# CHANNEL
N.T.S.



CABLE ARMS
MALLEABLE CAST IRON
N.T.S.

CABLE RACKS, CABLE ARMS, AND CABLE ARM INSULATORS



GROUT & BRICK DETAIL

P.L.D. DETAILS

DATE	DESCRIPTION	CHKD BY
		15

TWO-WAY MANHOLE

UTILITY RELOCATIONS

DRAWN BY CEA CHECKED BY APPROVED BY DATE FEB. 4, 1986	PLAN PREPARED BY CONSULTING ENGINEERING ASSOCIATES INC. ENGINEERING CONSULTANTS 16580 WYOMING DETROIT, MICH. 48221 CONT. SEC. BM 82111	DRAWN BY CHECKED BY APPROVED BY JOB NO. 25199A	PUBLIC LIGHTING COMMISSION CITY OF DETROIT	FILE NO. SHEET NO. 26 OF 65 DATE
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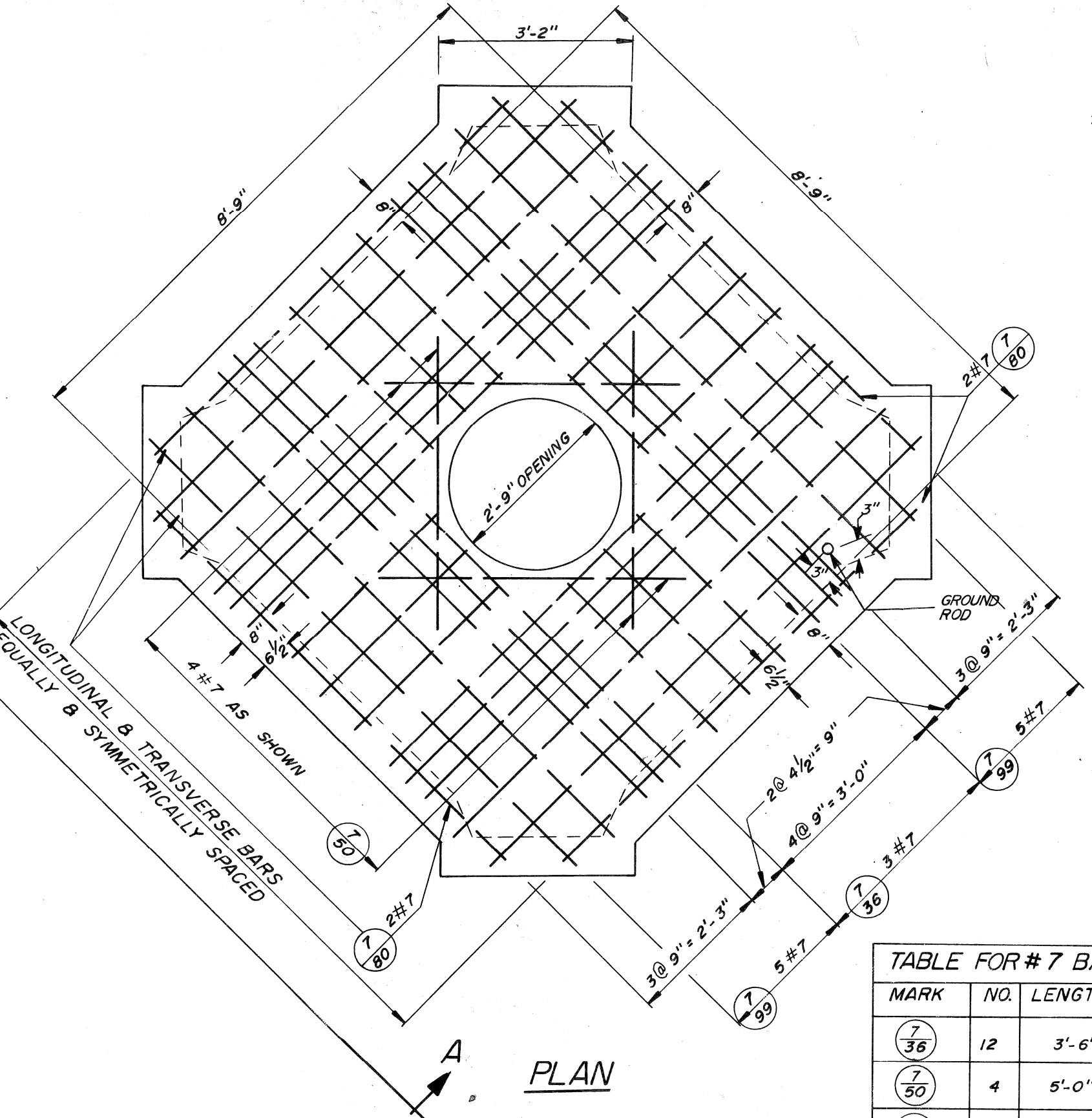
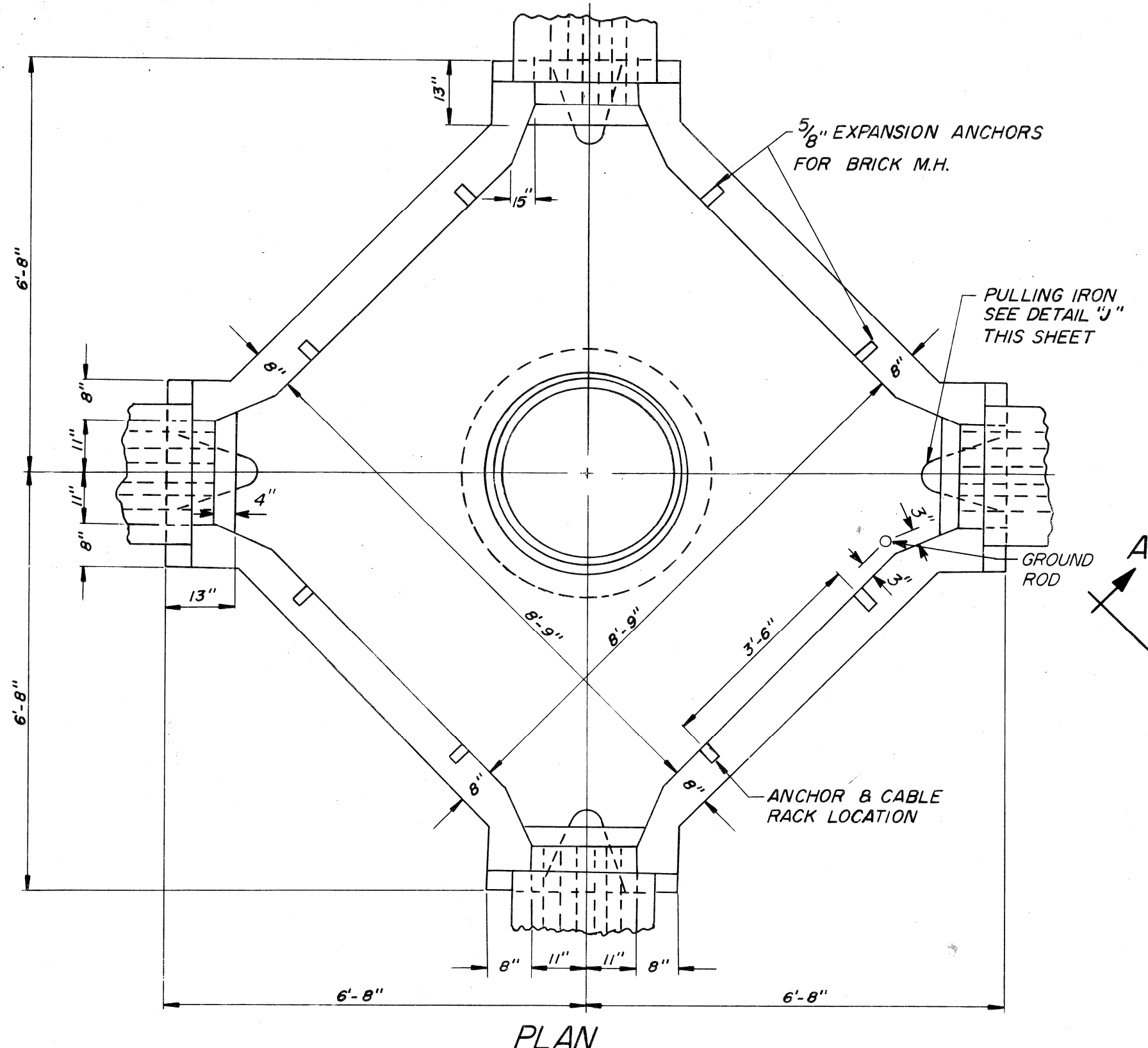
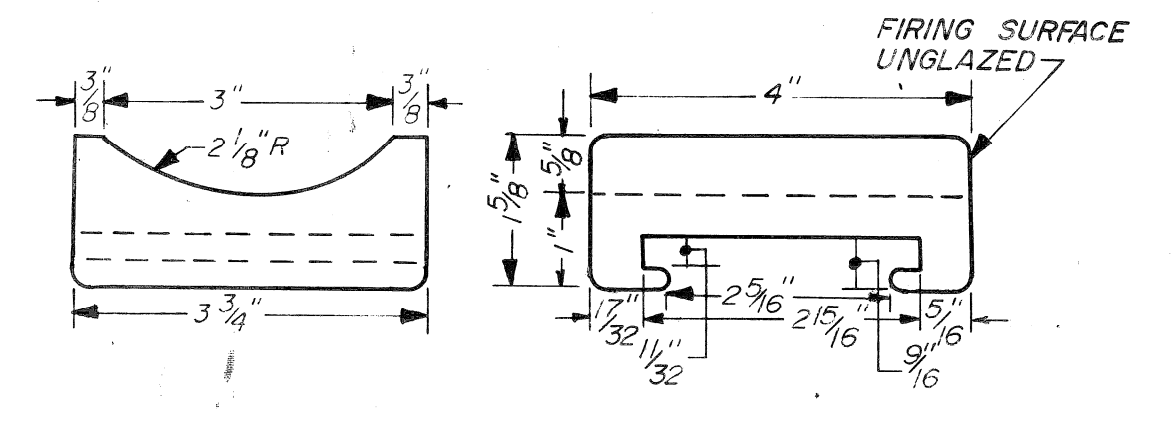


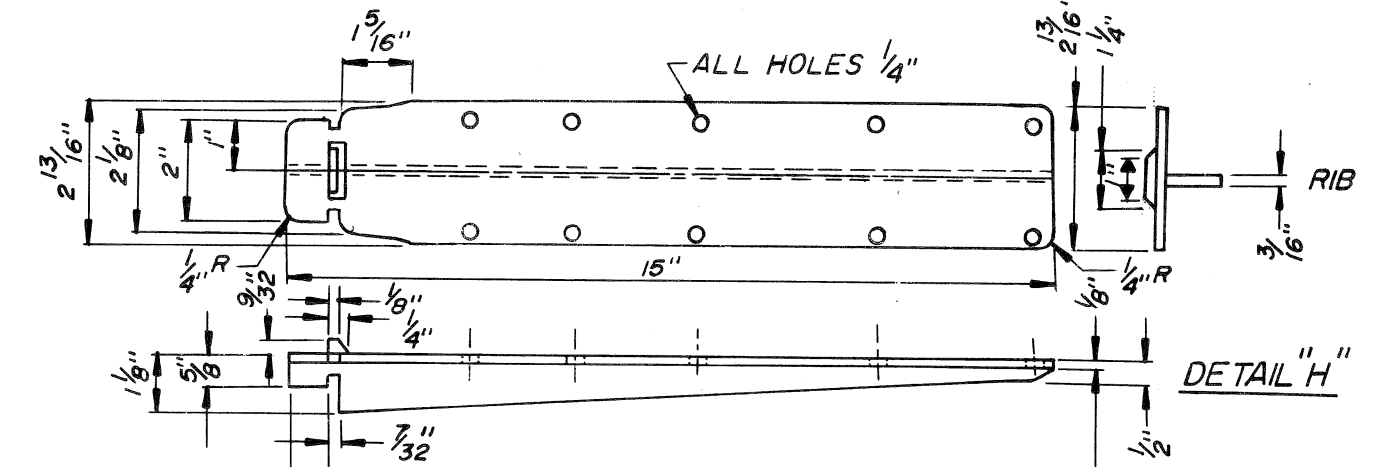
TABLE FOR #7 BARS

MARK	NO.	LENGTH
7/38	12	3'-6"
7/50	4	5'-0"
7/80	4	8'-0"
7/99	20	9'-9"

NOTE:
CABLE RACKS SHALL BE GALV. AFTER FAB. IN ACCORDANCE WITH ASTM A-123.
CABLE ARMS SHALL BE GALV. AFTER IN ACCORDANCE WITH ASTM A-153 53.
ARMS MUST FIT ON INSIDE & OUTSIDE OF RACKS & MUST ALLOW INSULATOR TO FIT LOOSELY.
USE 1/2" GALV. SUPPORTING BOLTS AND EXPANSION ANCHORS.



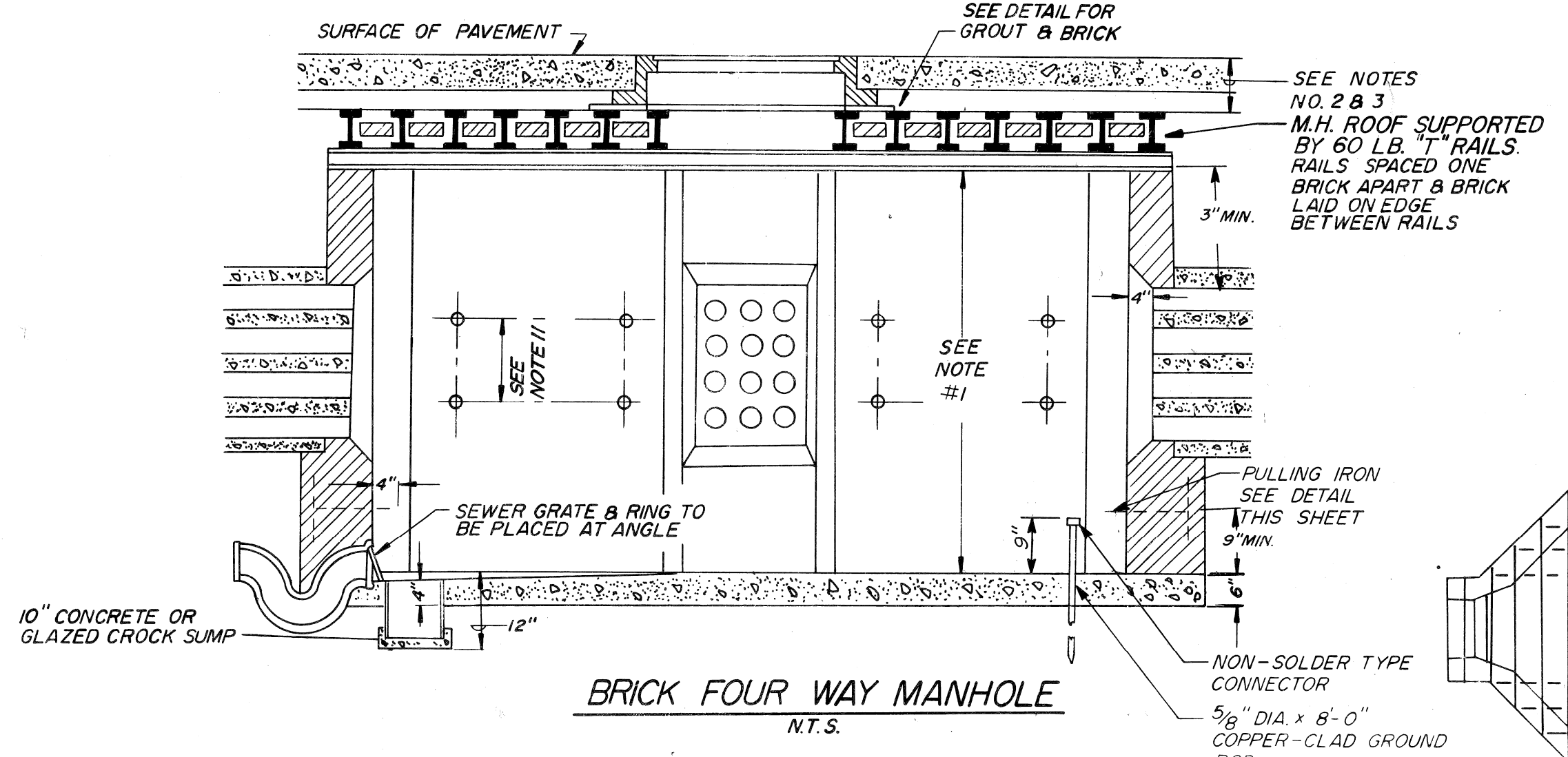
CABLE ARM INSULATORS
WHITE GLAZED PORCELAIN DRY PROCESS
N.T.S.



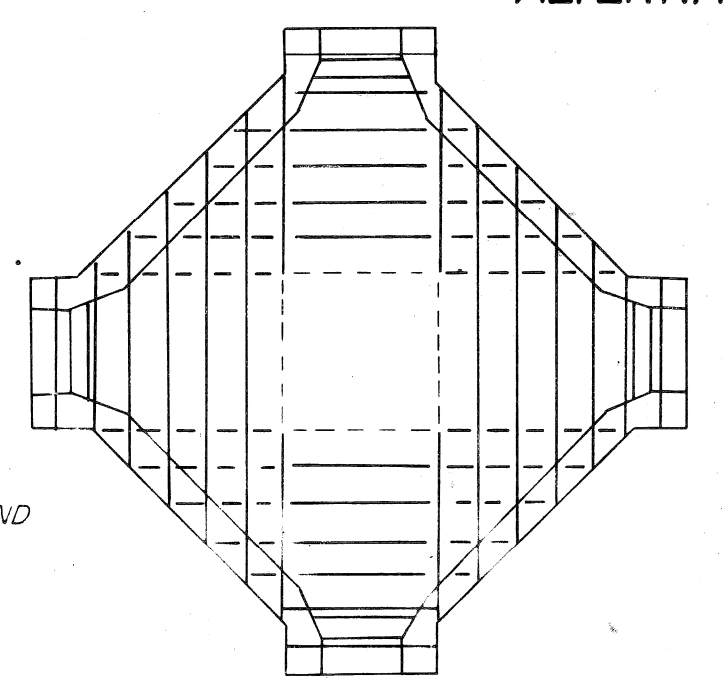
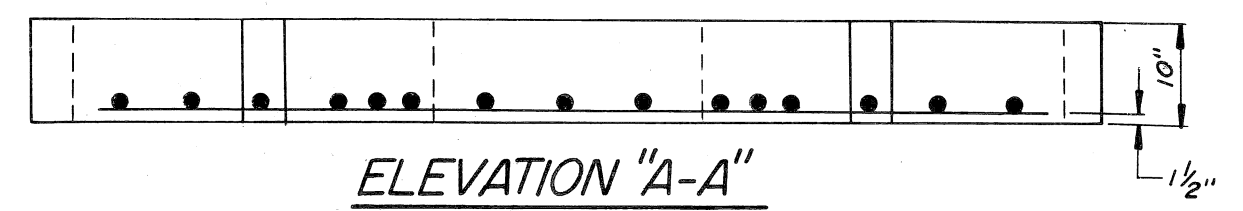
CABLE RACKS
3" STD. 41# CHANNEL
N.T.S.

CABLE ARMS
MALLEABLE CAST IRON
N.T.S.

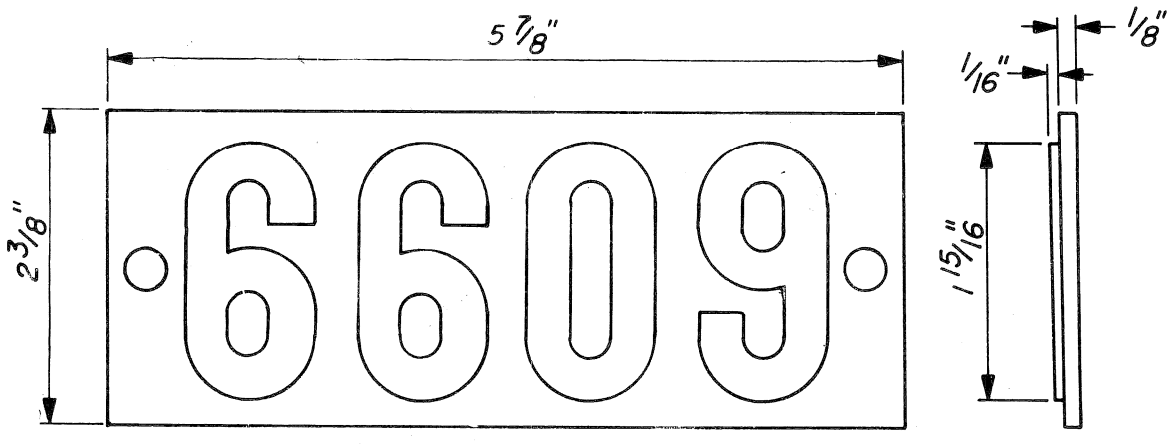
CABLE RACKS, CABLE ARMS, AND CABLE ARM INSULATORS
N.T.S.



BRICK FOUR WAY MANHOLE
N.T.S.

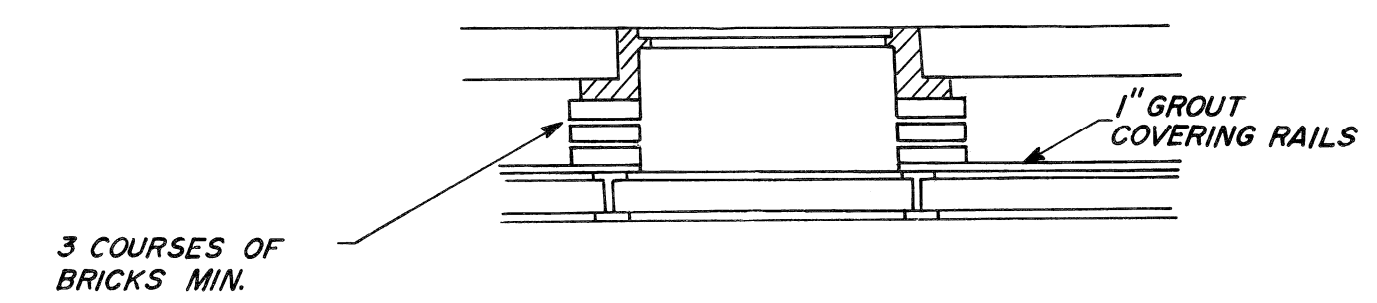


"T" RAIL SPECIFICATIONS
60 LBS. PER YD. OR HEAVIER
N.T.S.

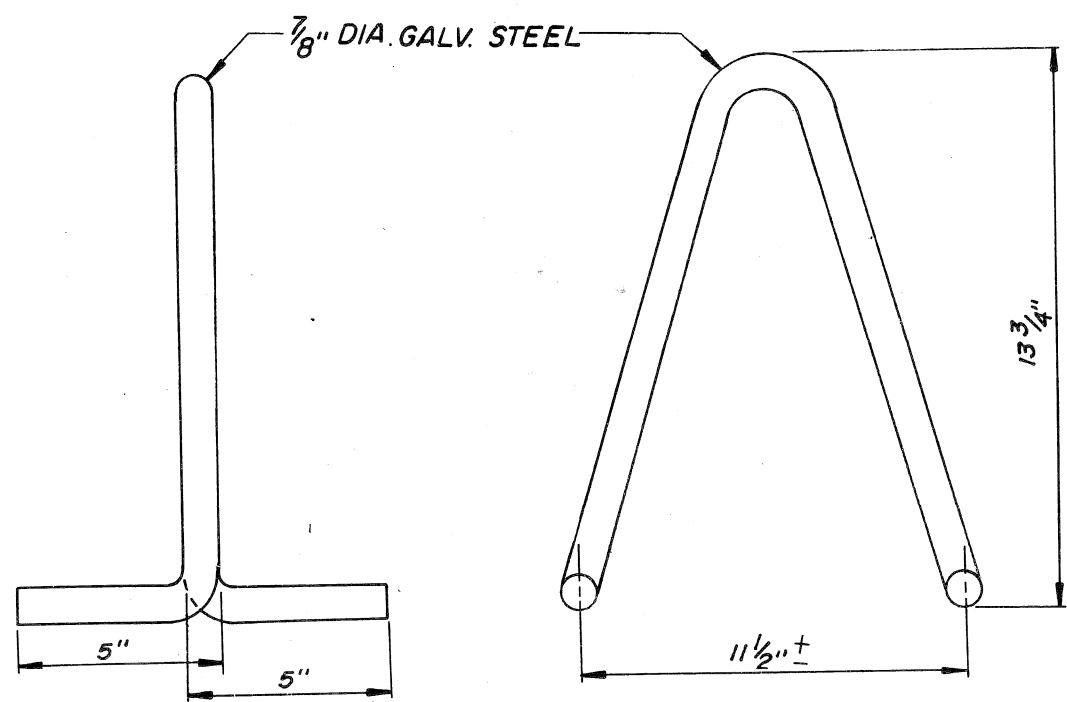


NOTES:

1. THIS DIMENSION NORMALLY 6'-0" SEE SPECIFICATIONS FOR UNUSUAL CONDITIONS.
2. WHERE M.H.'S ARE LOCATED BACK OF CURBS, TOP OF M.H. MUST BE BUILT 26" BELOW CURB GRADE TO PROVIDE FOR FUTURE PAVEMENT.
3. IN EXISTING PAVEMENT, PROVIDE AT LEAST 8" BETWEEN TOP OF ROOF AND BASE OF PAVEMENT.
4. BOLT, RACKS, & PULLING IRON TO BE HOT-DIP GALV.
5. C OF RAILS UNDER M.H. FRAME FLANGE TO BE APPROX. 18" FROM C'S OF FRAME.
6. M.H. NUMBER TO BE INSTALLED ON MANHOLE WALL IN A CONSPICUOUS PLACE.
7. MOUNTING HEIGHT FOR LOWER BOLTS OF CABLE RACK SHALL BE THE AVERAGE HEIGHT OF THE BOTTOM OF LOWEST DUCTS IN MAIN CONDUITS, INSTALLED RACKS ON ALL WALLS.
8. 8" THICK BRICK CHIMNEYS WHERE SPECIFIED SHALL BE INCIDENTAL TO APPLICABLE M.H. ITEM.
9. EXCAVATION LIMITS FOR PUBLIC LIGHTING DEPARTMENT MANHOLES SHALL BE ON VERTICAL PLANES ON THE FOOTING OUTLINE.
10. 1/2" PLASTER OUTSIDE WALLS OF BRICK MANHOLES.
11. SPACING OF INSERTS AS REQUIRED TO ACCOMMODATE CABLE RACK.



GROUT & BRICK DETAIL



PULLING IRON (BRICK MH'S)
N.T.S.
DETAIL "J"

P.L.D. DETAILS

NO.	DESCRIPTION	DATE
17		

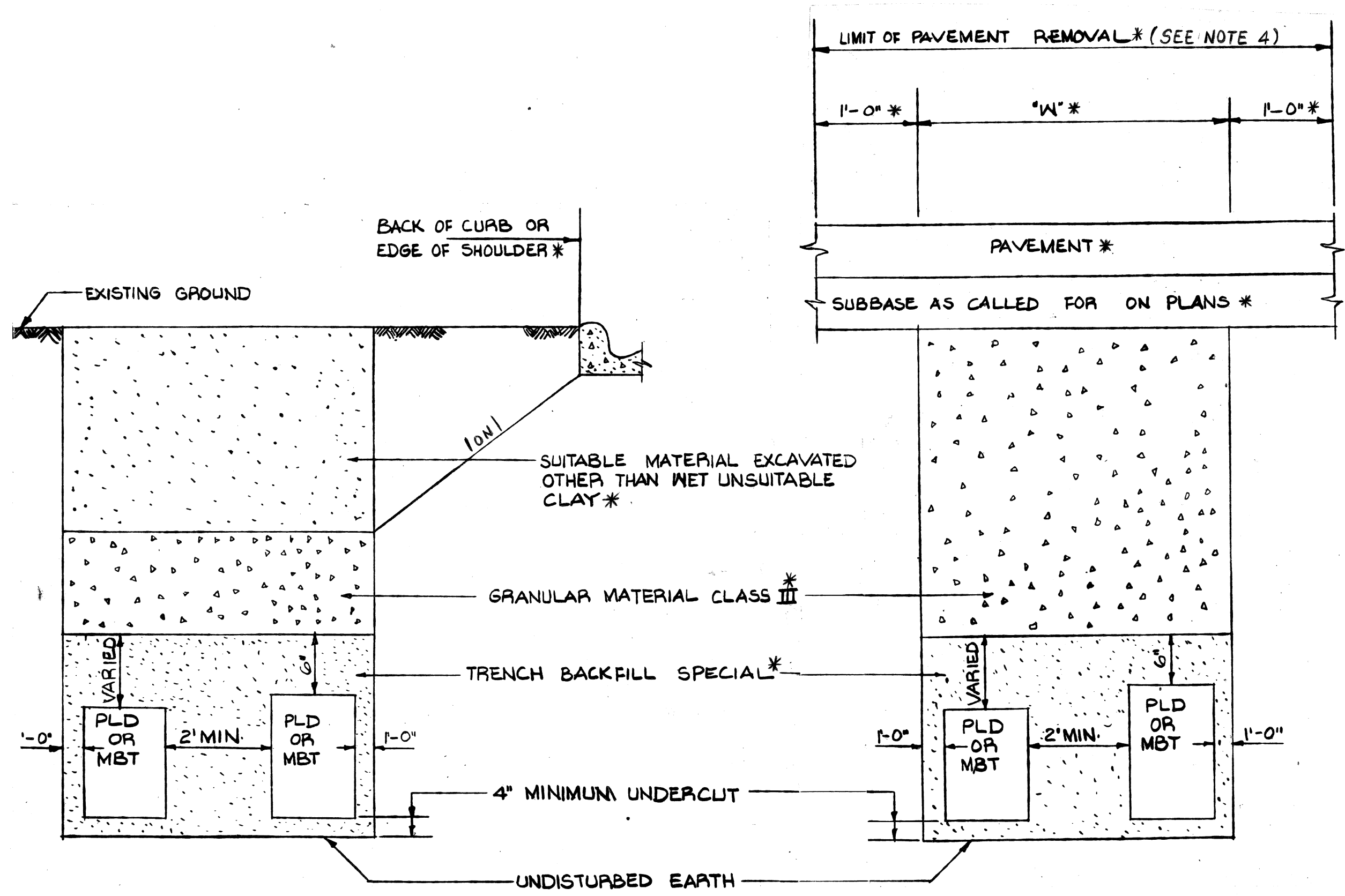
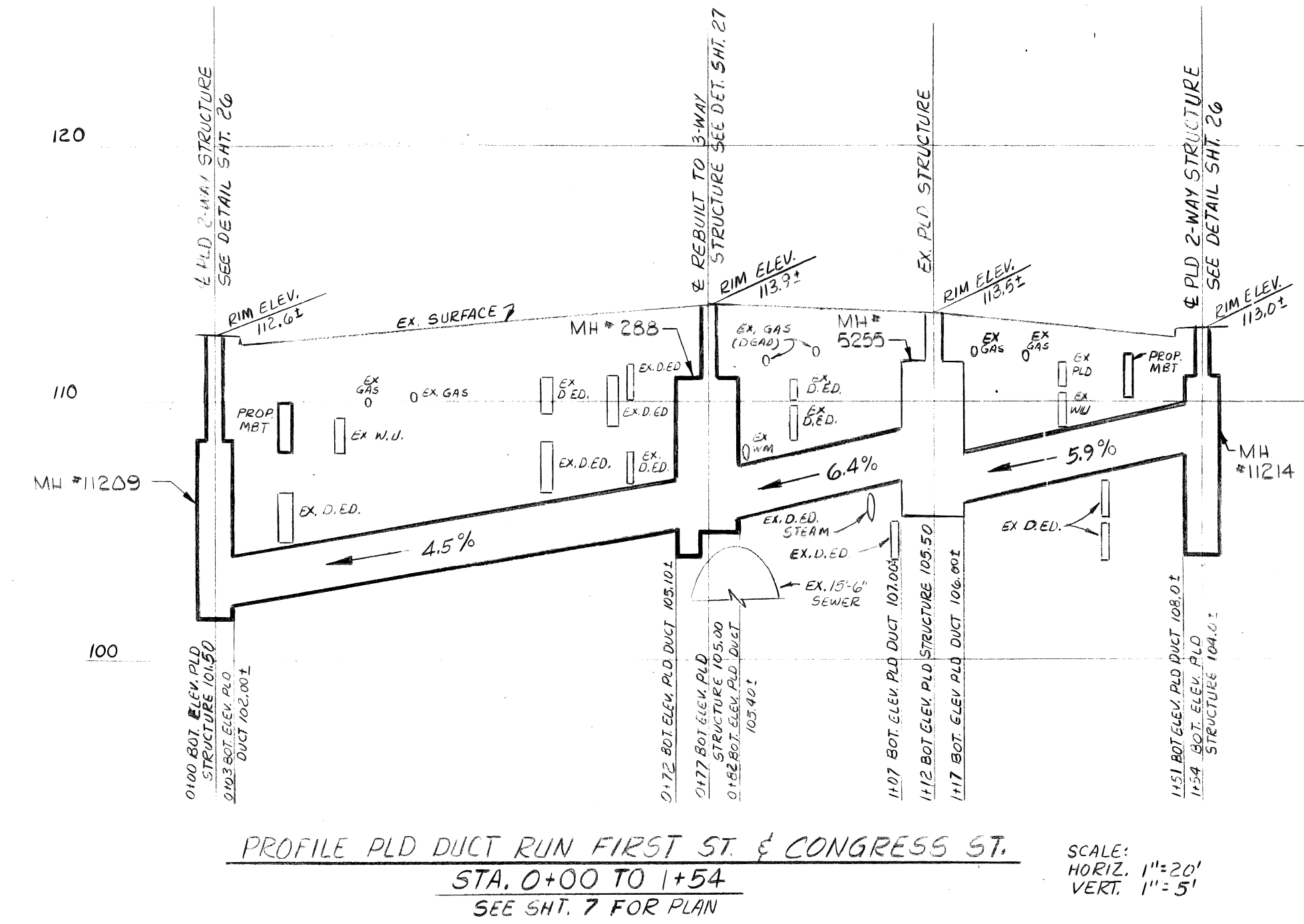
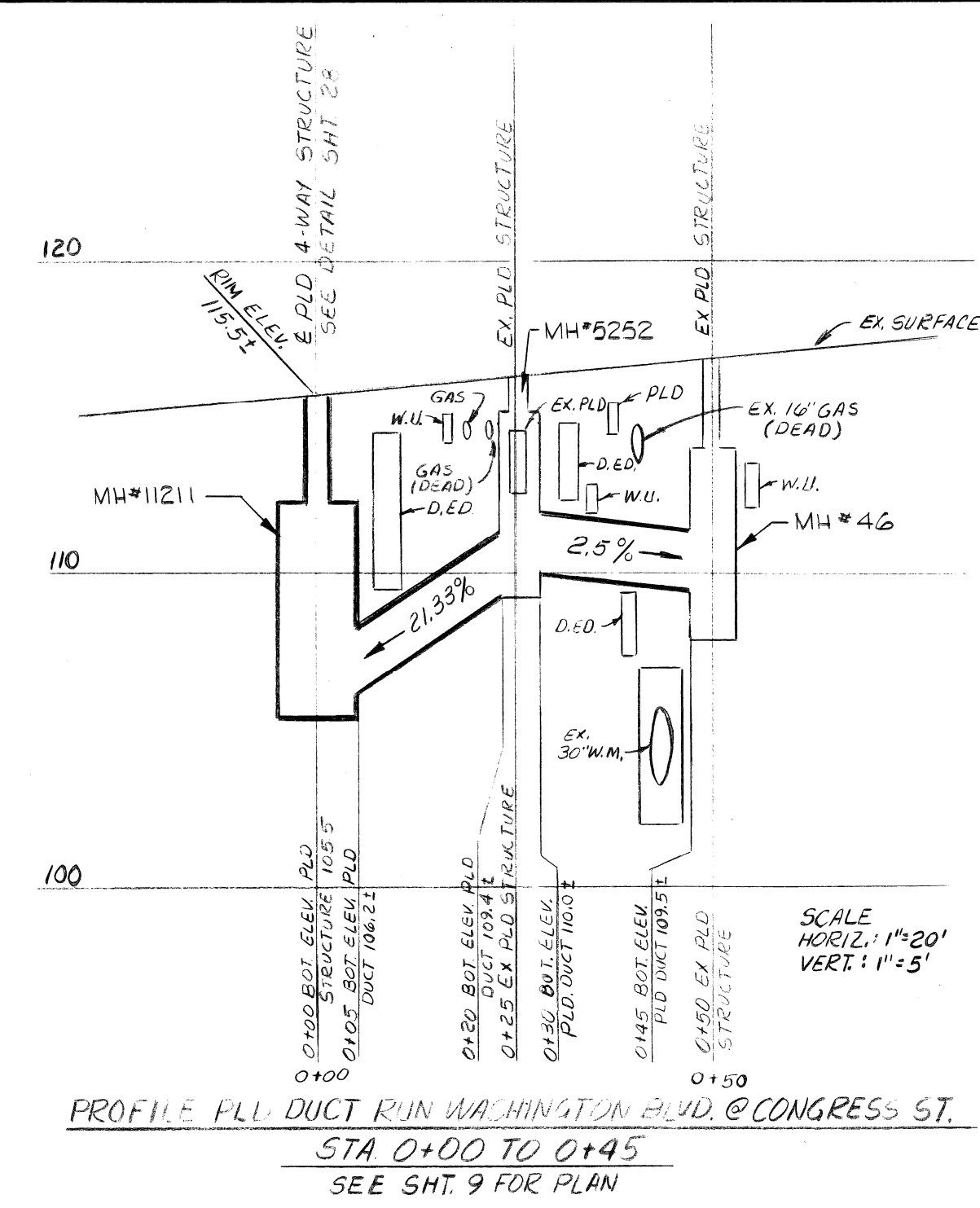
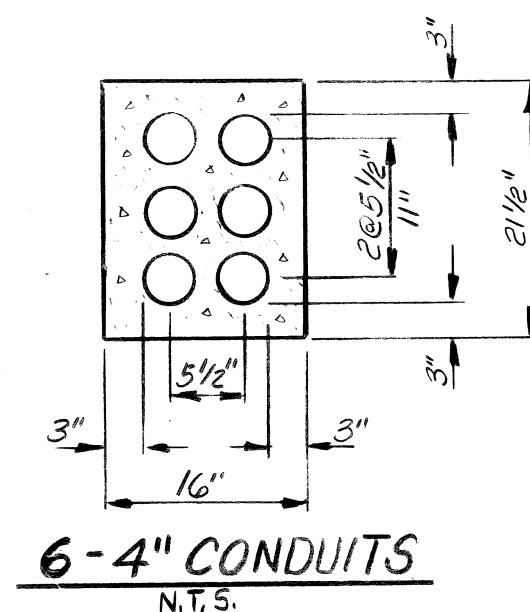
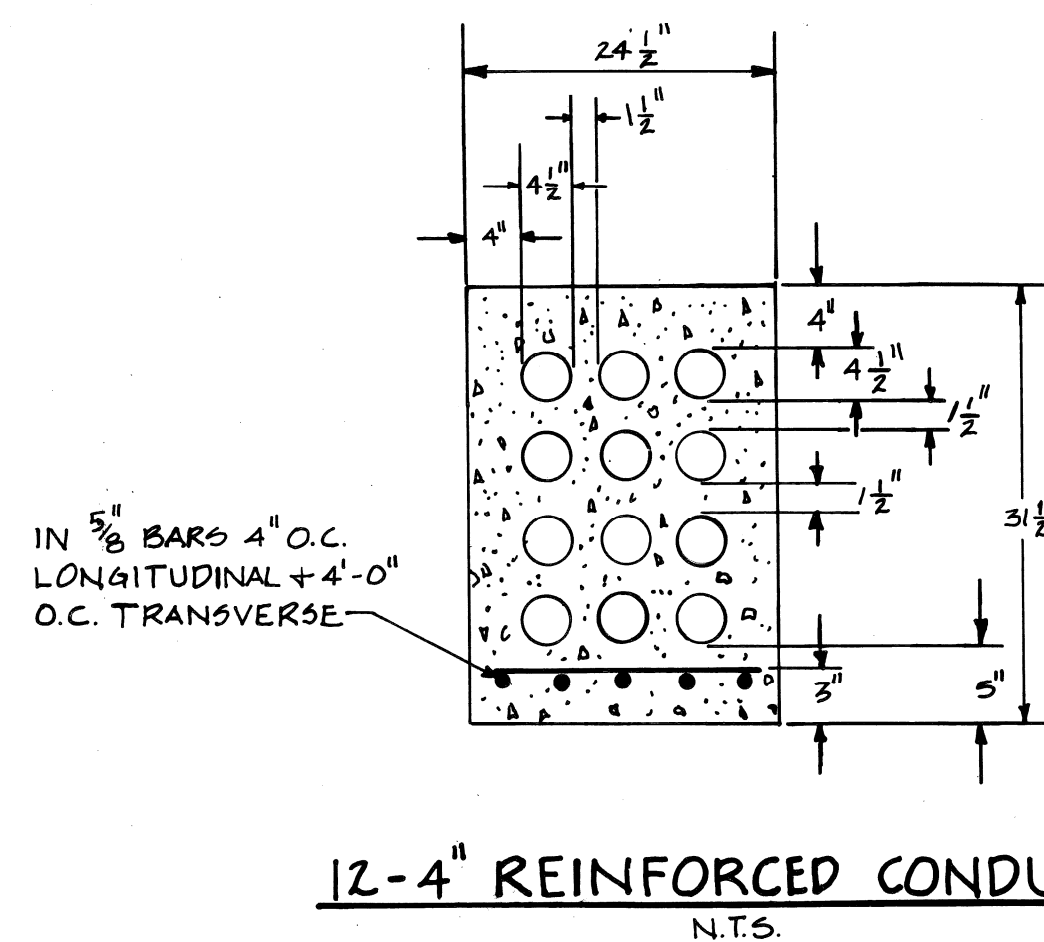
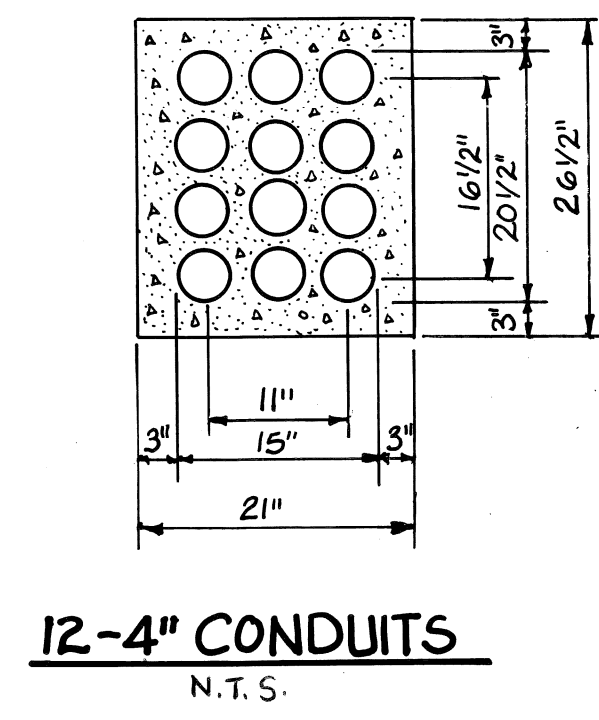
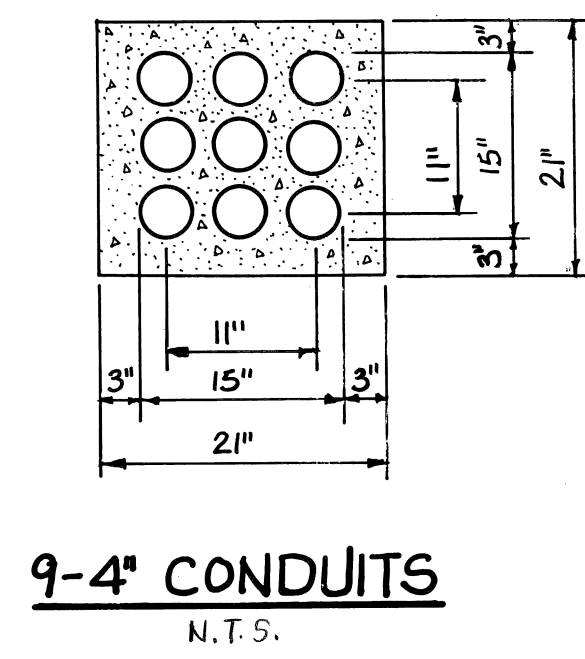
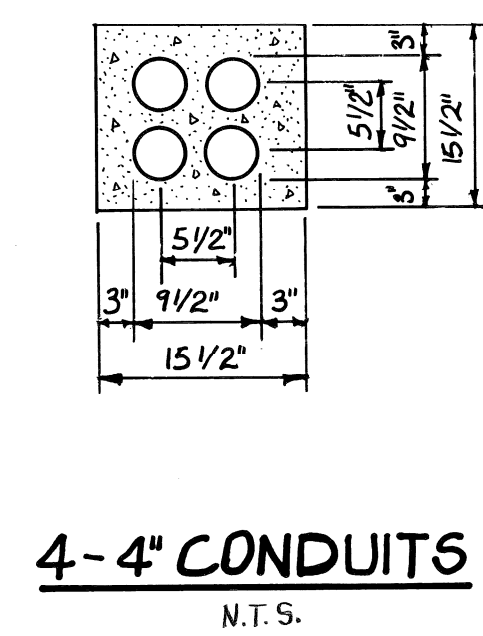
FOUR-WAY MANHOLE

UTILITY RELOCATIONS

DRAWN BY CEA	PLAN PREPARED BY CONSULTING ENGINEERING ASSOCIATES INC. ENGINEERING CONSULTANTS	CHECKED BY
APPROVED BY	16580 WYOMING DETROIT, MICH. 48221	CHECKED BY
DATE FEB. 4, 1986	CGNT. SEC. BM 82111	JOB NO. 25199A

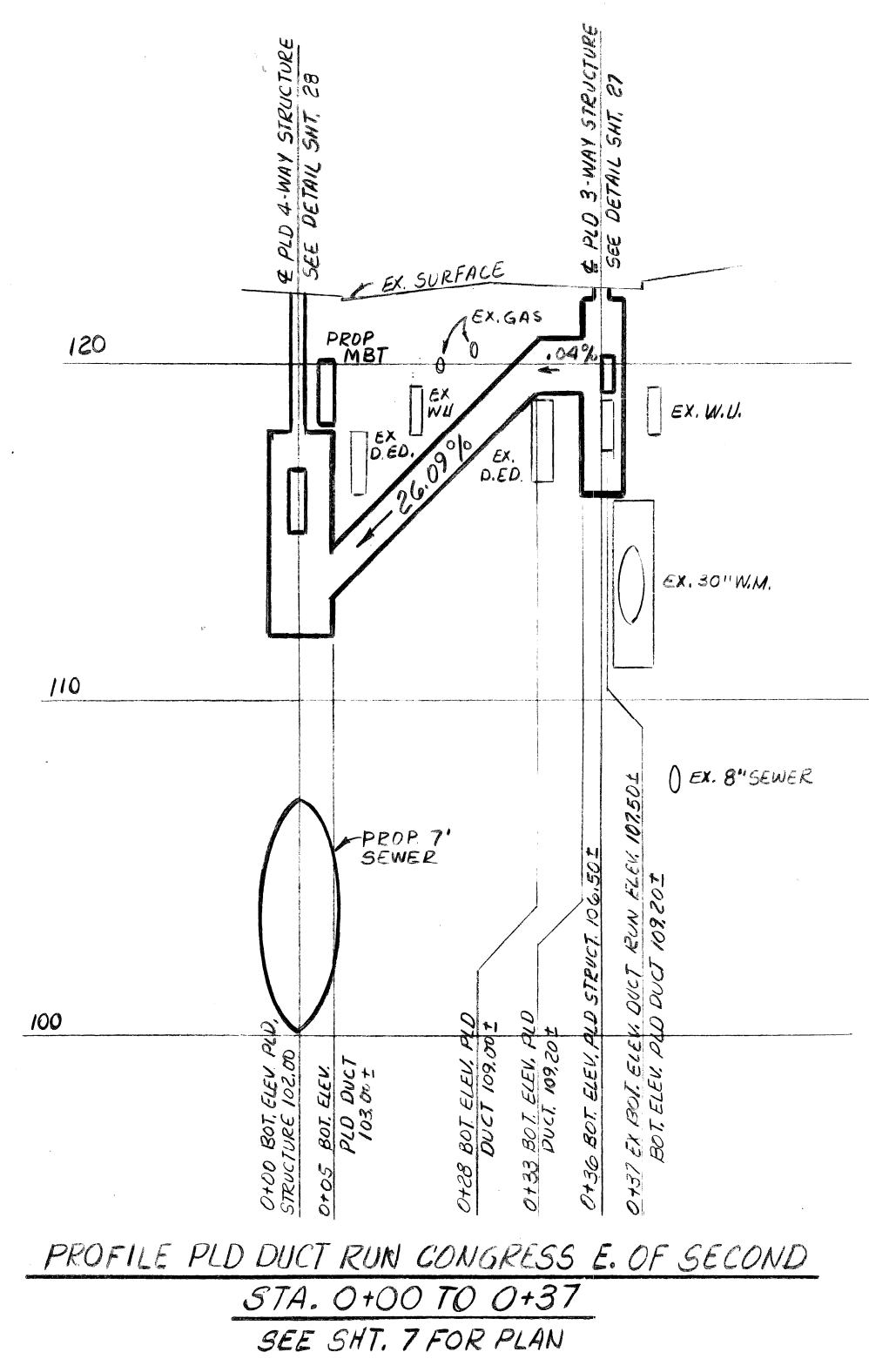
PUBLIC LIGHTING
COMMISSION
CITY OF DETROIT

FINAL R.O.W.			
AUTH.	DATE	NO.	REVISION



COMMON TRENCH DETAIL FOR PLD & MBT (TRENCH DET. 9)
UNDER ROADBED OR WITHIN INFLUENCE OF ROADBED *

- NOTES:
1. GRANULAR MATERIAL CLASS III SHALL BE USED TO BACKFILL UTILITY TRENCHES UNDER ROADBED
 2. GRANULAR MATERIAL CLASS III SHALL BE USED TO BACKFILL UTILITY TRENCHES OUTSIDE THE ROADBED BUT WITHIN THE 1 ON 1 ZONE OF INFLUENCE SHOWN AND COMPACTED TO NOT LESS THAN 95% OF MAXIMUM UNIT WEIGHT
 3. SUFFICIENT TRENCH WIDTH SHALL BE PROVIDED TO ALLOW FREE WORKING SPACE AND TO PERMIT COMPACTING THE BACKFILL AROUND THE PIPE
 - * 4. REFER TO "SPECIAL PROVISIONS FOR PAVEMENT CURB AND SIDEWALK REPLACEMENT-ISOLATED AND CONTINUOUS UTILITY CUTS IN DETROIT STREETS" CONTAINED IN THE PROPOSAL.



P.L.D. DETAILS COMMON TRENCH DETAIL & PROFILES

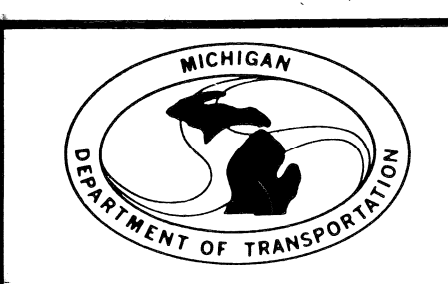
MICHIGAN DEPARTMENT OF TRANSPORTATION

U.S. 10-LODGE FREEWAY AT COBO HALL EXPANSION

Prepared By

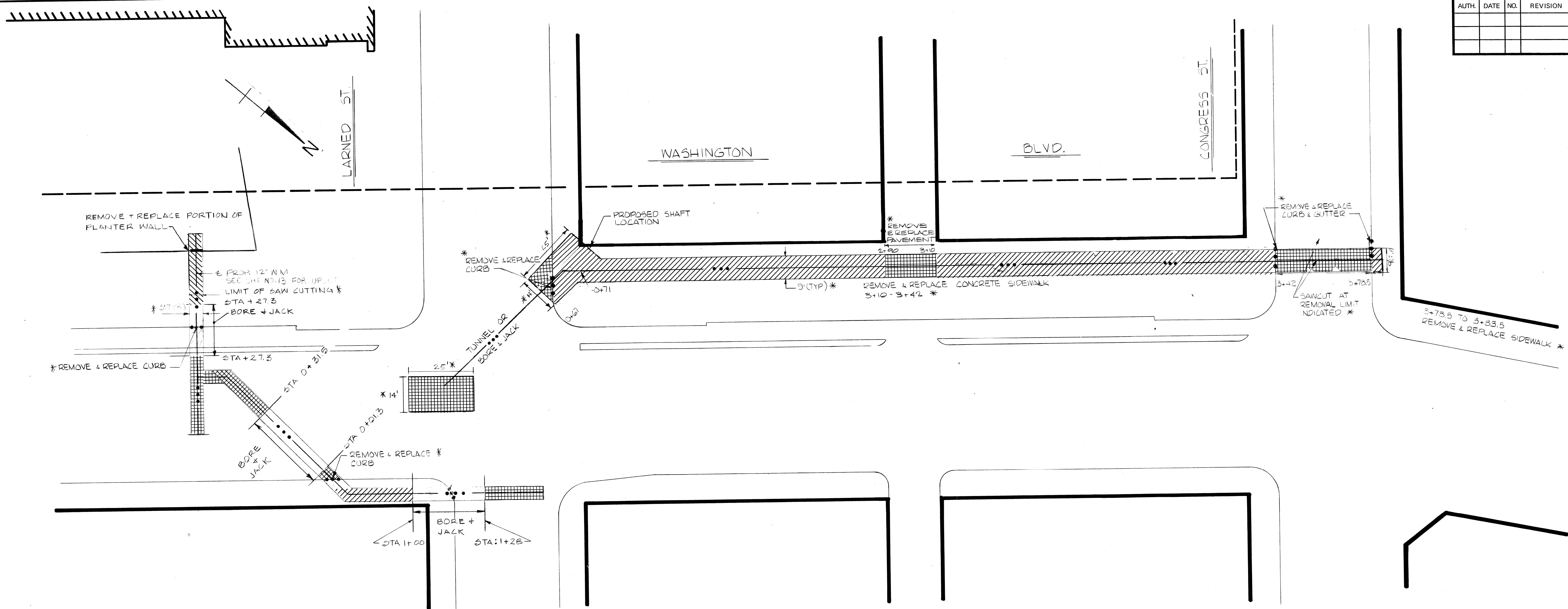
MADISON / MADISON INTERNATIONAL OF MICHIGAN
Engineers Architects Planners, 313-963-6110

HNTB
HOWARD NEEDLES TAMMEN & BERGENDOFF
in association with
MADISON MADISON INTERNATIONAL OF MICHIGAN
ZIMMER-HOWELL ENGINEERING, LTD.



UTILITY RELOCATIONS					
DATE: FEB. 4, 1986	DRAWN: L.S. M.C.	CONT. SEC.	JOB NO.	CHECKED: B.P.	SHEET NO.
SCALE: NOTED	DESIGNED: M.L. E.B.	BM 82111	25199A	APPROVED: J.C.M.	28A OF 65

AUTH.			DATE			NO.			FINAL R.O.W.		
									REVISION		



NOTE:

1. SAWCUTTING OF PAVEMENT IS A PART OF AND INCIDENTAL TO THE BID ITEM "REMOVING PAVEMENT (SPECIAL)";
2. REMOVING BITUMINOUS SURFACE REGARDLESS OF DEPTH, WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "REMOVING PAVEMENT (SPECIAL)";
3. THE CUTTING OF PAVEMENT SHALL BE DONE ONLY IN SUCH AREAS AND BY SUCH METHODS AS APPROVED BY THE ENGINEER. STREET PAVEMENT IS TO BE REPLACED WITH GRADE "A" CONCRETE OR EQUIVALENT AS PER CURRENT MDOT STANDARD SPECIFICATION AS DETERMINED BY THE ENGINEER. IF REQUIRED TO CONFORM TO EXISTING PAVEMENT, A TOP COURSE OF BITUMINOUS IS TO BE ADDED.
4. WHEN THE DISTANCE TO THE NEAR EDGE OF TRENCH IS LESS THAN 3 FEET, THE PAVEMENT SHALL BE REMOVED TO THE FACE OF THE CURB FOR PAVEMENT WITH SEPARATE TYPE CURB, OR TO THE BACK OF THE CURB FOR PAVEMENT WITH INTEGRAL CURB.
5. THE CONTRACTOR SHALL MAINTAIN TWO-LANE TRAFFIC AT ALL TIMES THROUGHOUT THE PROJECT. DRIVE APPROACHES TO COMMERCIAL PROPERTIES SHALL NOT BE COMPLETELY CLOSED TO TRAFFIC WITHOUT THE EXPRESS APPROVAL OF THE ENGINEER. GAPPING, PART-WIDTH CONSTRUCTION AND OTHER METHODS AS DIRECTED BY THE ENGINEER SHALL BE UTILIZED TO FULFILL THE INTENT OF THESE PROVISIONS. MAINTAINING TRAFFIC AND CONSTRUCTION SIGNING AS DEFINED IN THE SPECIAL PROVISIONS INDICATES THE SCOPE OF MAINTAINING TRAFFIC AND CONTROLLING ACCESS TO THE CONSTRUCTION AREA. GAPPING & PART WIDTH CONSTRUCTION ARE INCIDENTAL TO THIS PROJECT.
6. EXCAVATIONS AND BACKFILL REQUIRED FOR THE WATER MAIN TRENCH, CURB, SIDEWALK AND PAVEMENT. COMPACTIONS OF THE BACKFILL TO 95% OF MAXIMUM UNIT WEIGHT, AND DISPOSAL OF ANY SURPLUS MATERIAL SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCIDENTAL TO "REMOVING PAVEMENT (SPECIAL)"; "REMOVING SIDEWALK (SPECIAL)"; AND "REMOVING CURB (SPECIAL)";
7. THE CONTRACTOR SHALL SUBMIT DESIGN CALCULATIONS BY A REGISTERED ENGINEER WITH THE STATE OF MICHIGAN FOR PORTIONS OF THE WORK INVOLVING ENGINEERING JUDGMENT AND EXPERTISE ALONG WITH THE NECESSARY DRAWING DETAILS (SUCH AS FOR REINFORCEMENT, SHAFT AND TRENCH BRACING, GROUND WATER CONTROL, VENTILATION, PRIMARY TUNNEL LINING AND THE LIKE) REQUIRED TO CONSTRUCT THE CONTRACT WORK.

8. BEFORE EXCAVATION BEGINS, THE CONTRACTOR SHALL CALL AT LEAST 48 HRS. IN ADVANCE OF CONSTRUCTION "MISS DIG" TO VERIFY UTILITY LOCATIONS. THE CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATION AT LOCATIONS SHOWN AND DESIGNATED AS "EXPLORATORY TRENCH WORK" TO MAKE ITSELF OF THE INFORMATION PROVIDED ABOUT UNDERGROUND UTILITIES ALONG THE PROPOSED LINE OF WORK. HE SHALL TAKE WHATEVER PRECAUTIONS NECESSARY TO PRESERVE THE INTEGRITY OF THE UNDERLYING AND ADJACENT UTILITIES AND TO REPAIR ANY DAMAGE TO ANY EXISTING UTILITIES CAUSED BY TRENCHING AND BACKFILLING THE TRENCH.
- *9. THE CONTRACTOR SHALL REFER TO THE "SPECIAL PROVISIONS FOR PAVEMENT, CURB, AND SIDEWALK REPLACEMENT - ISOLATED AND CONTINUOUS UTILITY CUTS IN DETROIT STREETS" FOR PAVEMENT, SIDEWALK, AND CURB REMOVAL AND REPLACEMENT AS APPLIED TO UTILITY TRENCH CONSTRUCTION.

LEGEND

- SIDEWALK REMOVAL & REPLACEMENT *
- PAVEMENT REMOVAL & REPLACEMENT INCLUDING BITUMINOUS SURFACE REGARDLESS OF DEPTH *
- CURB REMOVAL & REPLACEMENT *

PAVEMENT REMOVAL & REPLACEMENT PLAN

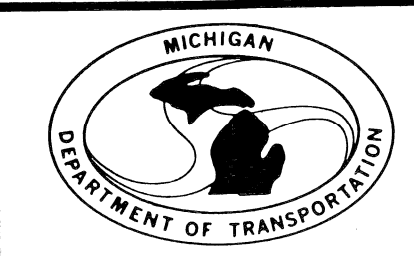
MICHIGAN DEPARTMENT OF TRANSPORTATION

U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION

Prepared By

MADISON/MADISON INTERNATIONAL OF MICHIGAN
Engineers Architects Planners, 313-963-6110

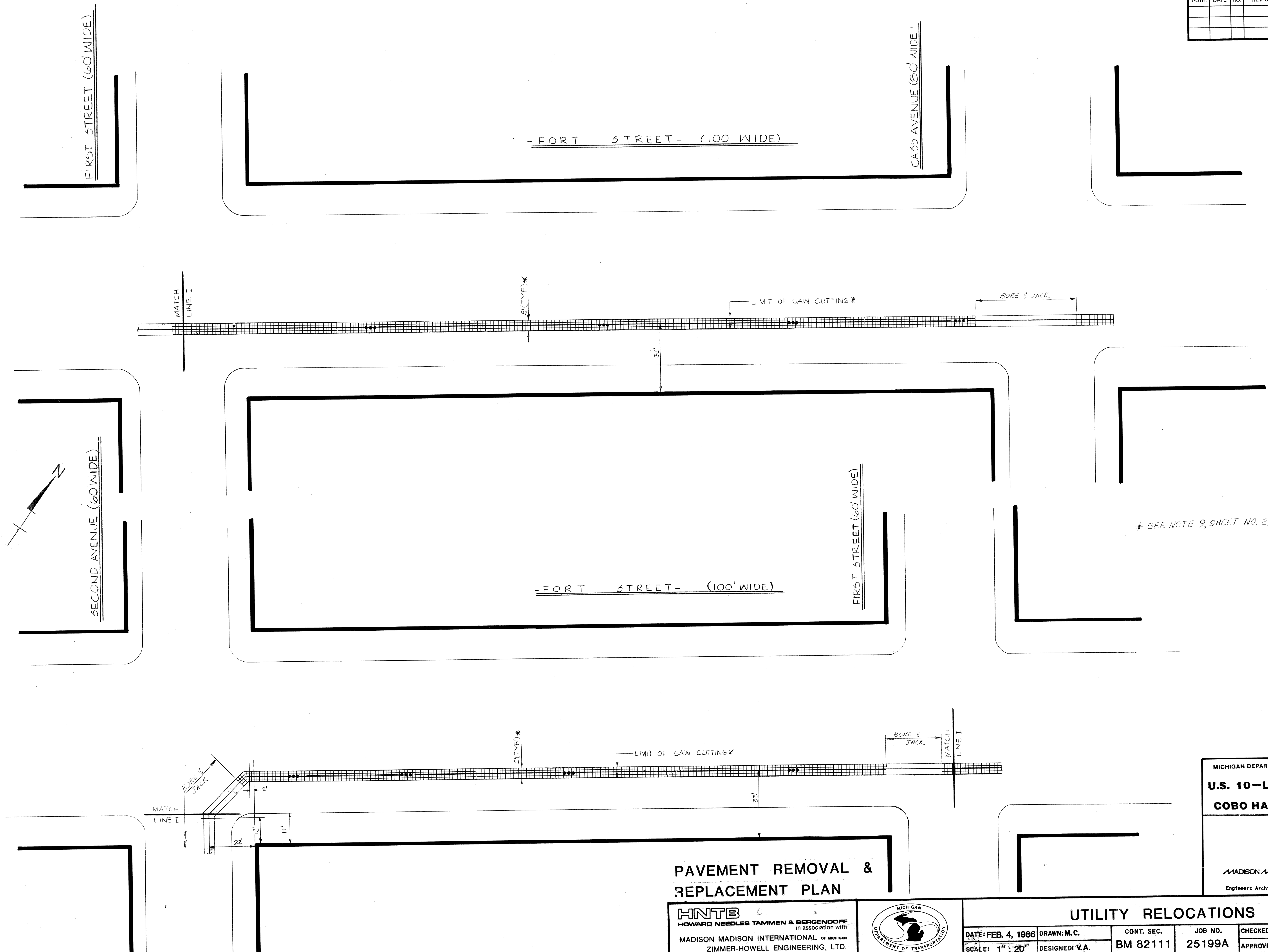
HNTB
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ZIMMER-HOWELL ENGINEERING, LTD.



DATE: FEB. 4, 1986		DRAWN: F. G.		CONT. SEC.		JOB NO.		CHECKED: B. P.		SHEET NO.	
SCALE: 1" = 20'		DESIGNED: V. A.		BM 82111		25199A		APPROVED: J. C. M.		29 OF 65	

UTILITY RELOCATIONS

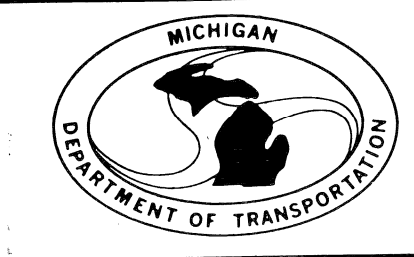
AUTH.			DATE			NO.			FINAL R.O.W.		
REVISION											



* SEE NOTE 9, SHEET NO. 29

PAVEMENT REMOVAL & REPLACEMENT PLAN

HNTB
 HOWARD NEEDLES TAMMEN & BERGENDOFF
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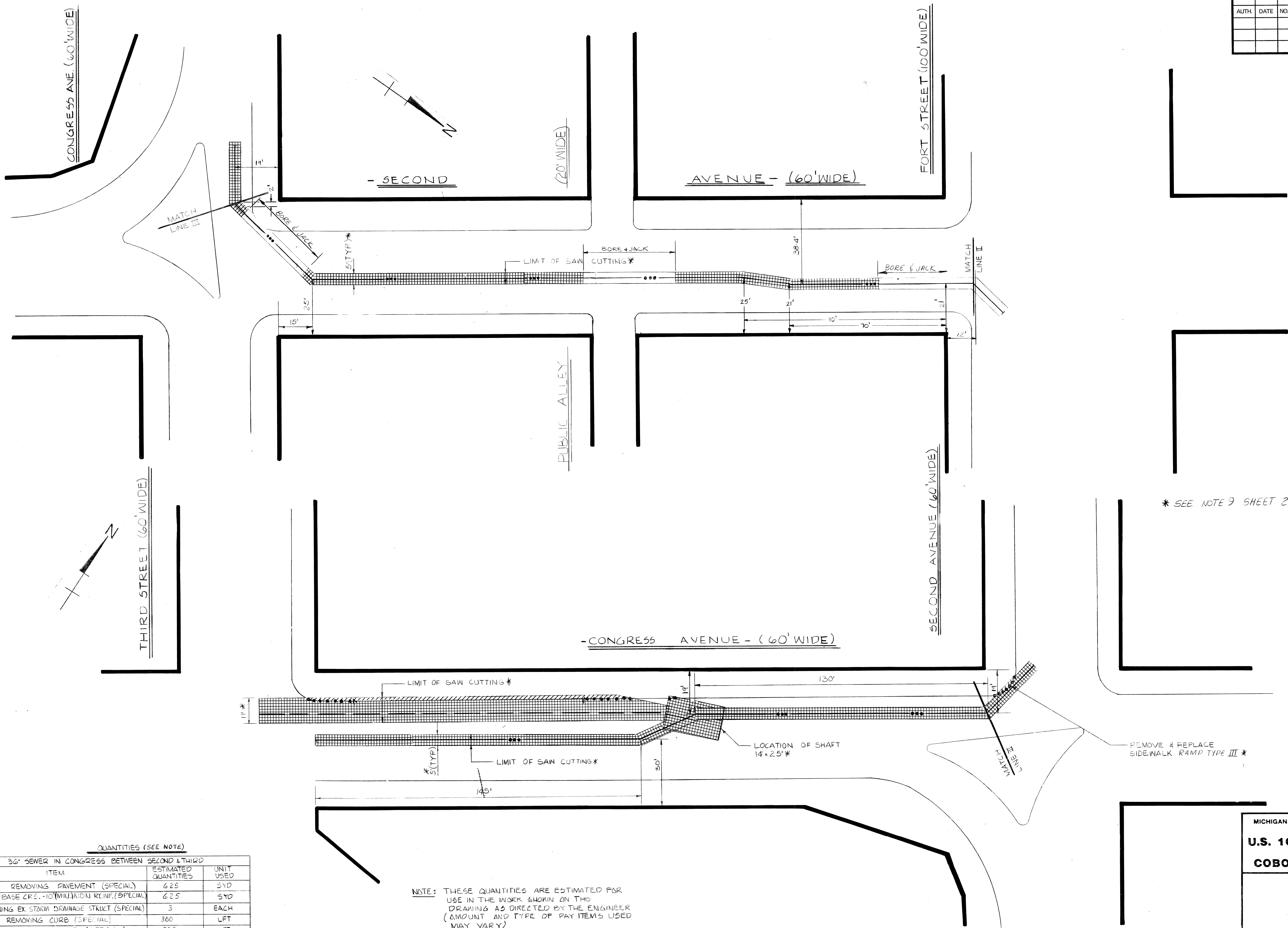
UTILITY RELOCATIONS

DATE: FEB. 4, 1986	DRAWN: M.C.	CONT. SEC.	JOB NO.	CHECKED: B. R.	SHEET NO.
SCALE: 1" = 20'	DESIGNED: V.A.	BM 82111	25199A	APPROVED: J.C.M.	30 OF 65

MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION
 Prepared By

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AUTH.	DATE	NO.	REVISION



* SEE NOTE 9 SHEET 29


REMOVE & REPLACE SIDEWALK RAMP TYPE III *

QUANTITIES (SEE NOTE)

ITEM	ESTIMATED QUANTITIES	UNIT USED
36" SEWER IN CONGRESS BETWEEN SECOND & THIRD		
REMOVING PAVEMENT (SPECIAL)	625	SYD
ZONIC BASE CR. - 10" (MILL) REIN. (SPECIAL)	625	SYD
CLEANING EX. STORM DRAINAGE STRUCT. (SPECIAL)	3	EACH
REMOVING CURB (SPECIAL)	300	LFT
CONC. CURB DETAIL 20 (SPECIAL)	300	LFT
ZONIC BASE COURSE - 10" MIN. REIN. (SPECIAL)	625	SYD
BITUMINOUS MIXTURE NO. 1500 T, 20AAA	60	TON
BITUMINOUS MIXTURE NO. 1500 L, 20AAA	60	TON

NOTE: THESE QUANTITIES ARE ESTIMATED FOR USE IN THE WORK SHOWN ON THIS DRAWING AS DIRECTED BY THE ENGINEER (AMOUNT AND TYPE OF PAY ITEMS USED MAY VARY)

MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10-LODGE FREEWAY AT COBO HALL EXPANSION

Prepared By

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PAVEMENT REMOVAL & REPLACEMENT PLAN

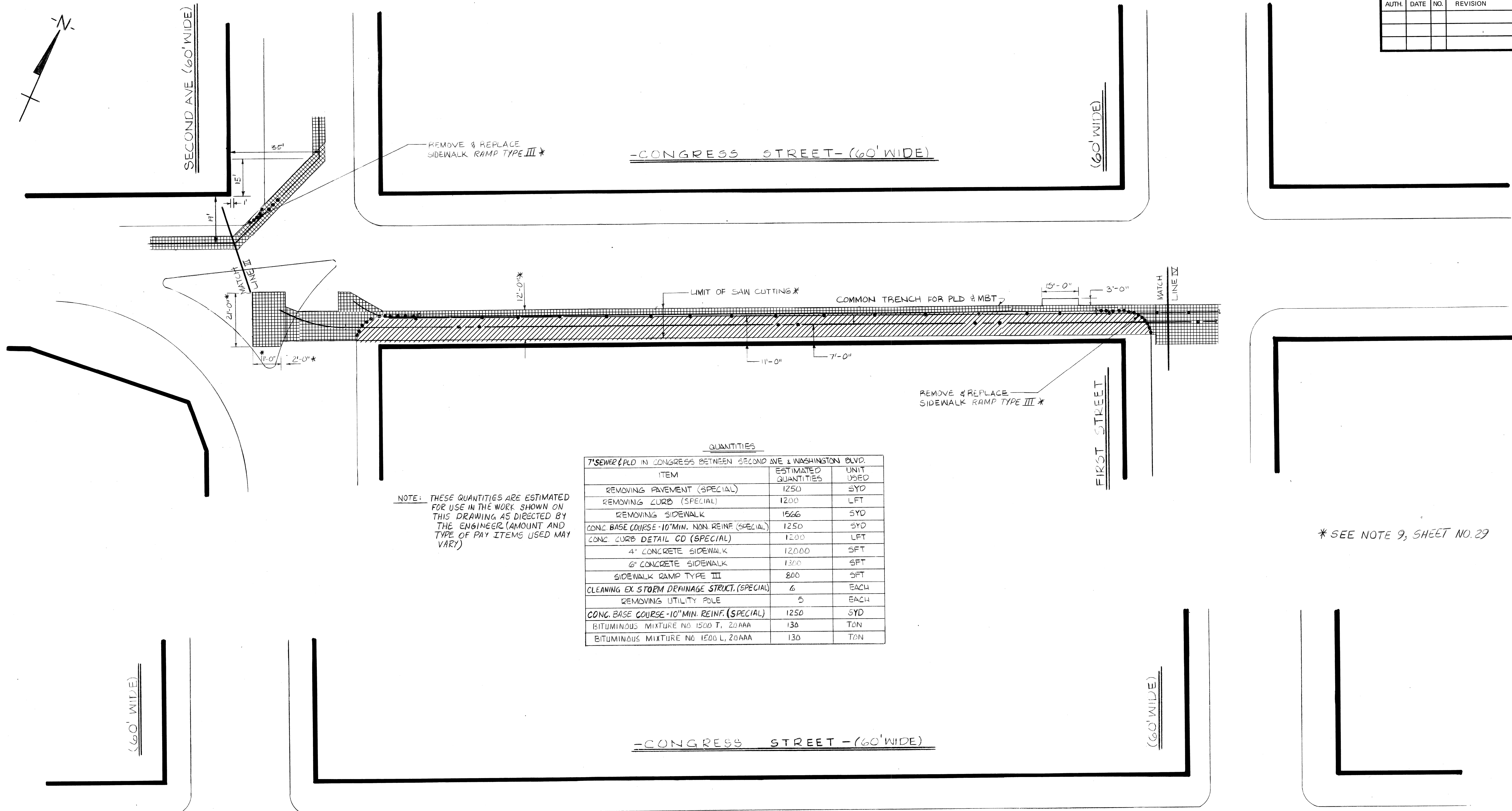
UTILITY RELOCATIONS

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DATE: FEB. 4, 1986	DRAWN: M.C. F.G.	CONT. SEC.	JOB NO.	CHECKED: B.P.	SHEET NO.
SCALE: 1" = 20'	DESIGNED: V.A.	BM 82111	25199A	APPROVED: J.C.M.	31 OF 65

FINAL R.O.W.			
AUTH.	DATE	NO.	REVISION



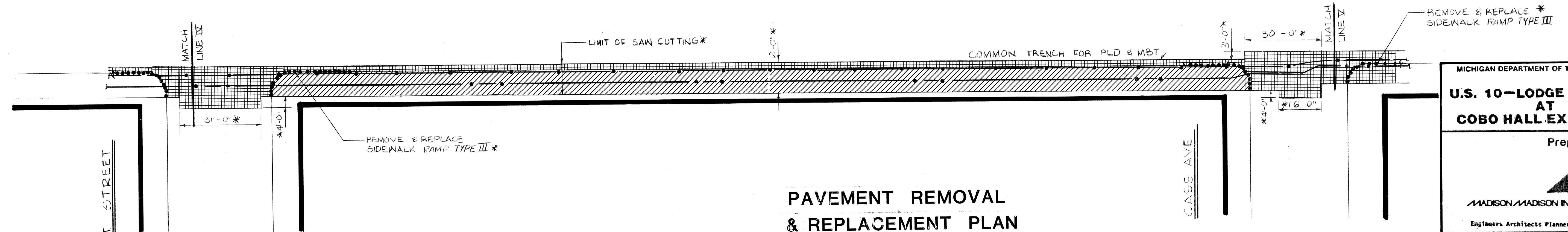
QUANTITIES

7" SEWER & PLD IN CONGRESS BETWEEN SECOND AVE & WASHINGTON BLVD.

ITEM	ESTIMATED QUANTITIES	UNIT USED
REMOVING PAVEMENT (SPECIAL)	1250	SYD
REMOVING CURB (SPECIAL)	1200	LFT
REMOVING SIDEWALK	1566	SYD
CONC. BASE COURSE - 10" MIN. NON REINF. (SPECIAL)	1250	SYD
CONC. CURB DETAIL CD (SPECIAL)	1200	LFT
4" CONCRETE SIDEWALK	12000	SFT
6" CONCRETE SIDEWALK	1300	SFT
SIDEWALK RAMP TYPE III	800	SFT
CLEANING EX. STORM DRAINAGE STRUCT. (SPECIAL)	6	EACH
REMOVING UTILITY POLE	5	EACH
CONC. BASE COURSE - 10" MIN. REINF. (SPECIAL)	1250	SYD
BITUMINOUS MIXTURE NO 1500 T, 20AAA	130	TON
BITUMINOUS MIXTURE NO 1200 L, 20AAA	130	TON

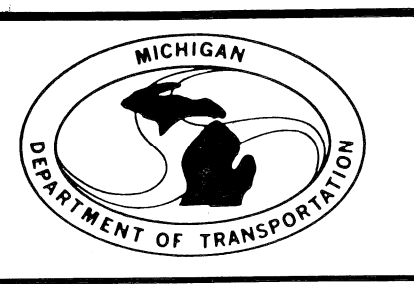
NOTE: THESE QUANTITIES ARE ESTIMATED FOR USE IN THE WORK SHOWN ON THIS DRAWING AS DIRECTED BY THE ENGINEER (AMOUNT AND TYPE OF PAY ITEMS USED MAY VARY)

* SEE NOTE 9, SHEET NO. 29



PAVEMENT REMOVAL & REPLACEMENT PLAN

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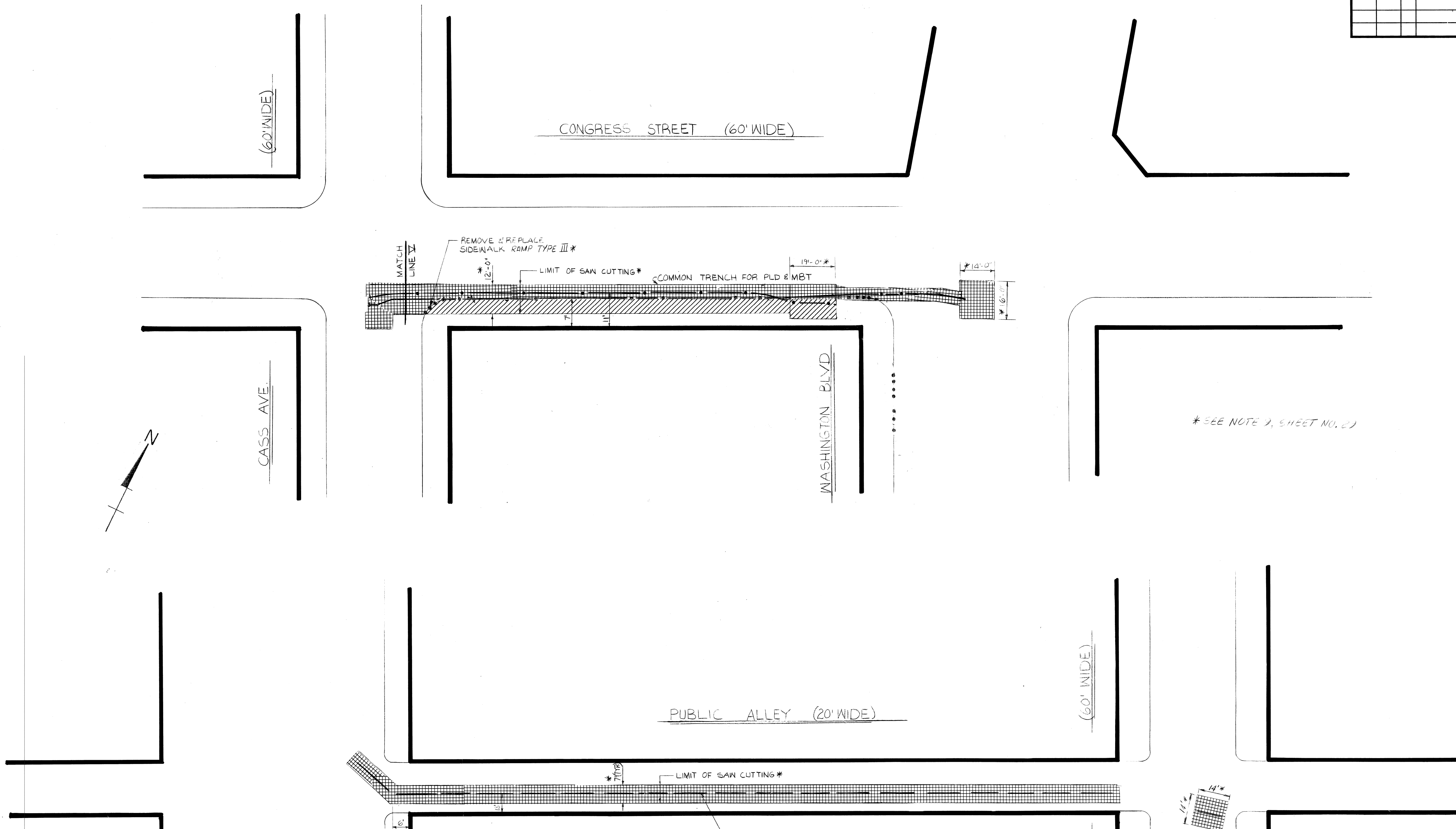
UTILITY RELOCATIONS

DATE: FEB. 4, 1986	DRAWN: M.C.F.G.	CONT. SEC. BM 82111	JOB NO. 25199A	CHECKED: B.P.	SHEET NO. 32 OF 65
SCALE: 1" = 20'	DESIGNED: V.A.			APPROVED: J.C.M.	

MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10-LODGE FREEWAY AT COBO HALL EXPANSION
 Prepared By

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			FINAL R.O.W.
AUTH.	DATE	NO.	REVISION



* SEE NOTE 2, SHEET NO. 2

QUANTITIES

36" SEWER - ALLEY NORTH OF LARNED		
ITEM	ESTIMATED QUANTITIES	UNIT USED
REMOVING PAVEMENT (SPECIAL)	625	SYD
CONC. BASE COURSE-10"(MIN) NON REINF. (SPECIAL)	625	SYD
CLEANING EX. STORM DRAINAGE STRUCT. (SPECIAL)	3	EACH
CONC. BASE COURSE-10"(MIN) REINF. (SPECIAL)	625	SYD.
BITUMINOUS MIXTURE NO. 1500 T, 20AAA	60	TON
BITUMINOUS MIXTURE NO. 1500 L, 20AAA	60	TON

NOTE: THESE QUANTITIES ARE ESTIMATED FOR USE IN THE WORK SHOWN ON THIS DRAWING AS DIRECTED BY THE ENGINEER (AMOUNT AND TYPE OF PAY ITEMS USED MAY VARY).

PAVEMENT REMOVAL & REPLACEMENT PLAN

MICHIGAN DEPARTMENT OF TRANSPORTATION

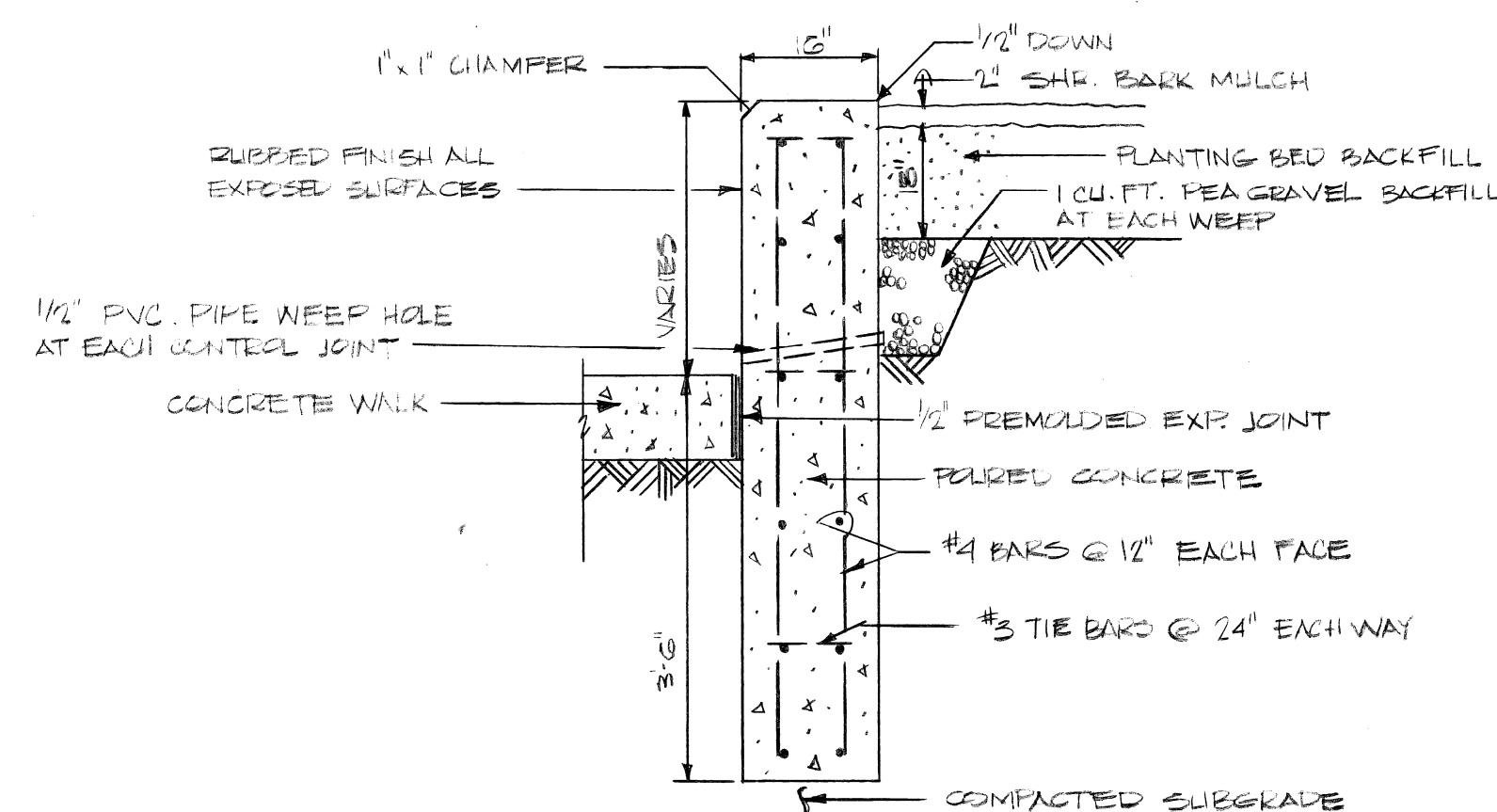
U.S. 10-LODGE FREEWAY AT COBO HALL EXPANSION

Prepared By

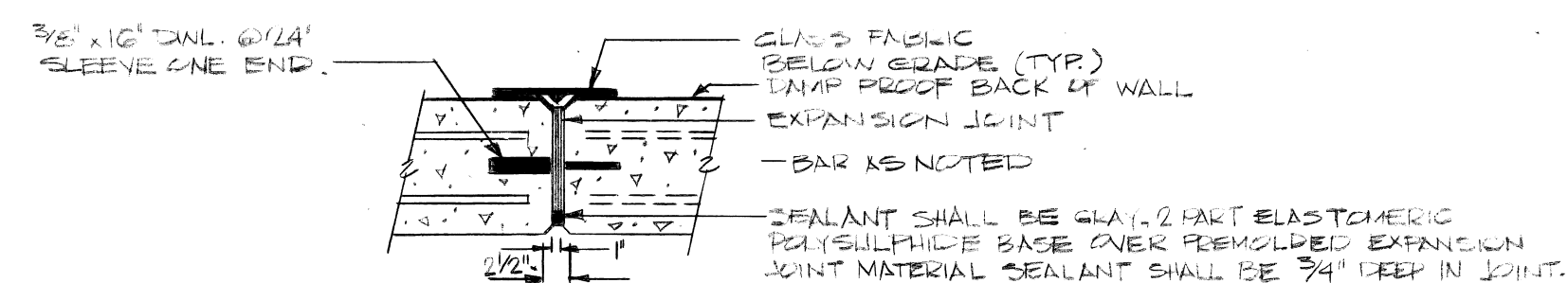
MADISON/MADISON INTERNATIONAL OF MICHIGAN
Engineers Architects Planners, 313-963-6110

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF in association with MADISON MADISON INTERNATIONAL OF MICHIGAN ZIMMER-HOWELL ENGINEERING, LTD.		UTILITY RELOCATIONS		DATE: FEB. 4, 1986	DRAWN: M.C.F.G.	CONT. SEC. BM 82111	JOB NO. 25199A	CHECKED: B.P.	SHEET NO. 33 OF 65
		SCALE: 1" = 20'	DESIGNED: V.A.	APPROVED: J.C.M.					

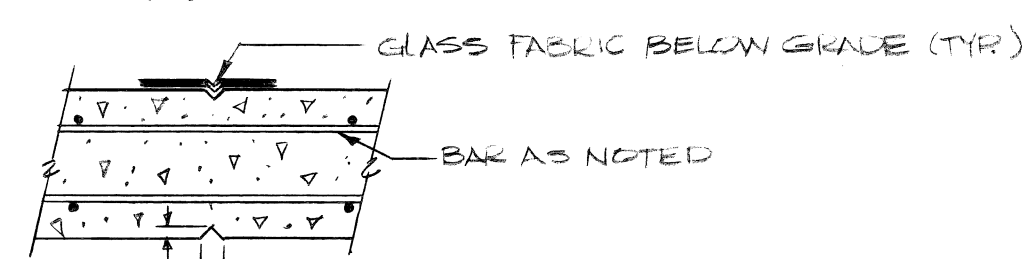
FINAL R.O.W.			
AUTH.	DATE	NO.	REVISION



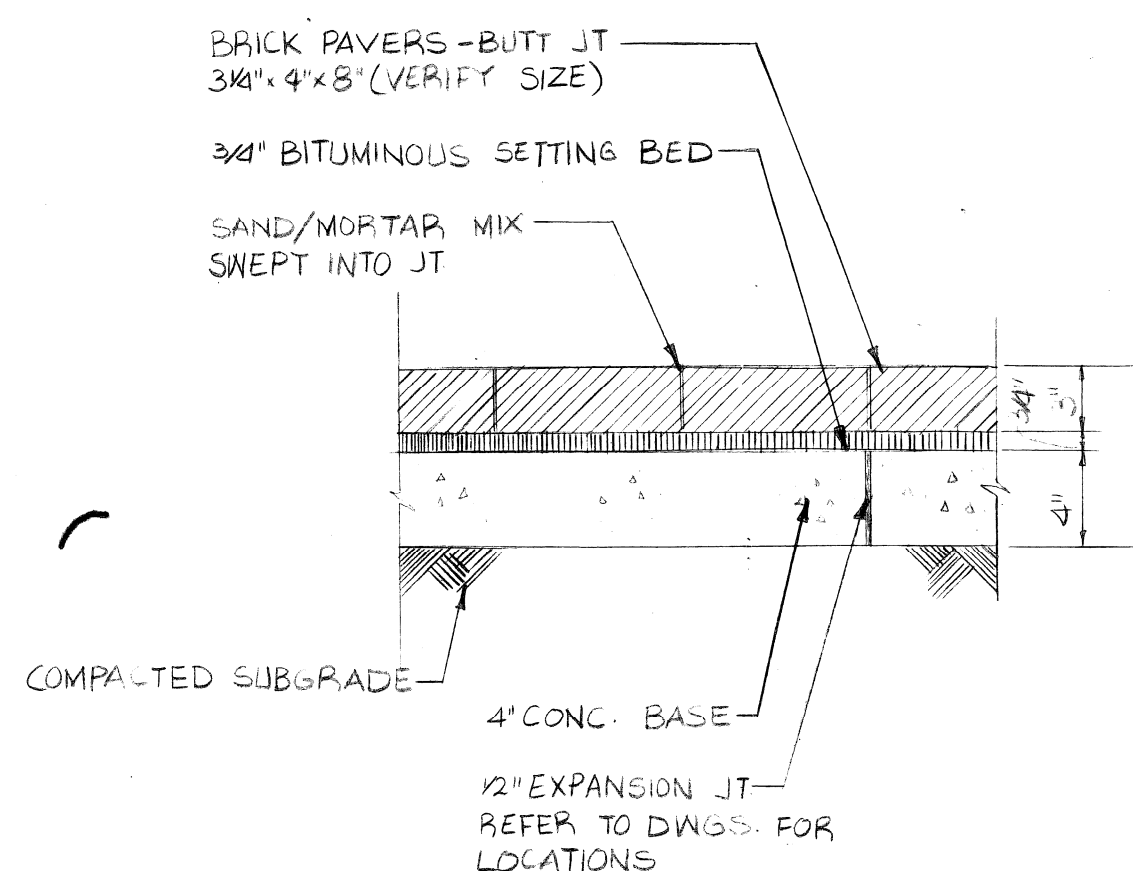
CONCRETE PLANTER WALL
SCALE: 1/2" = 1'-0"



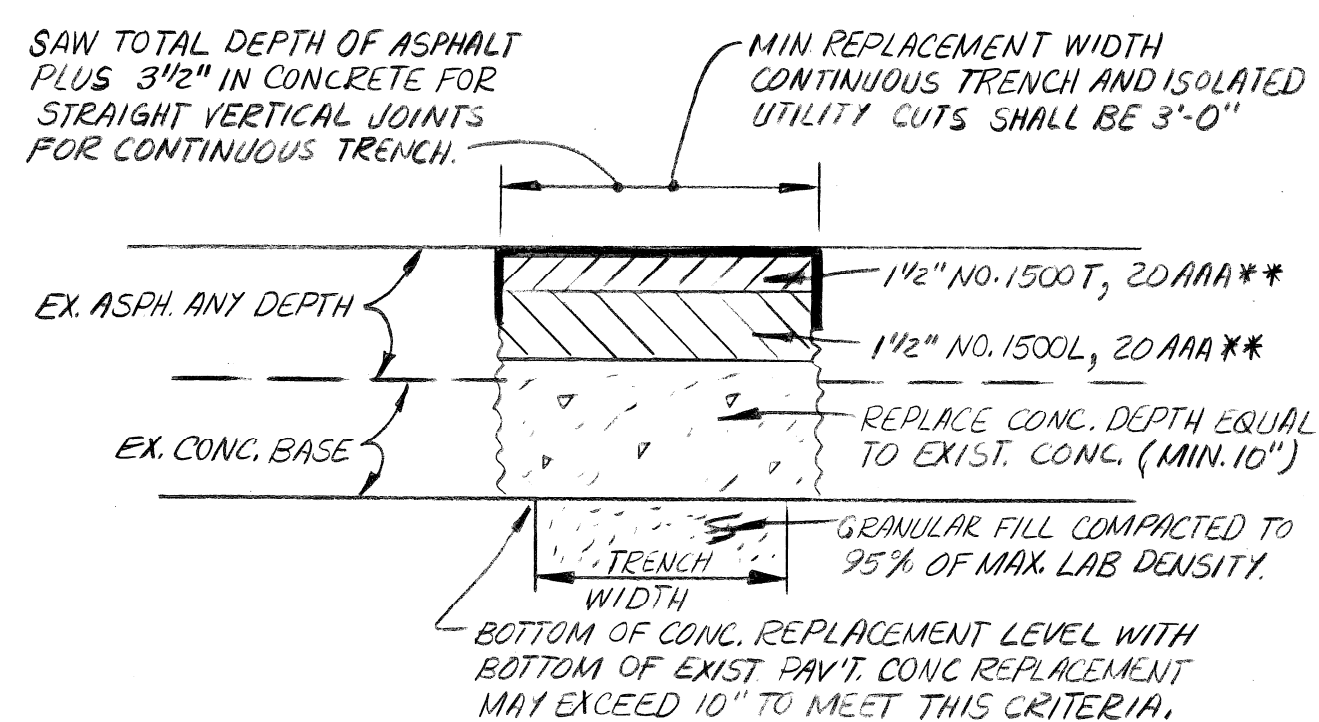
WALL EXPANSION JOINT
SCALE: 1/2" = 1'-0"



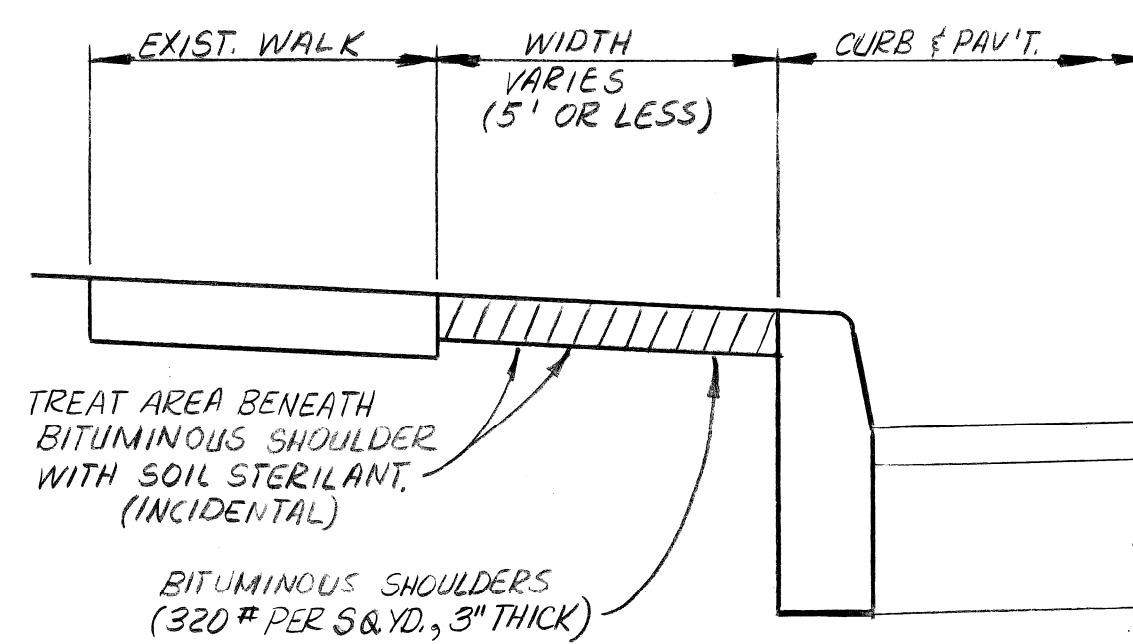
WALL CONTROL JOINT
SCALE: 1/2" = 1'-0"



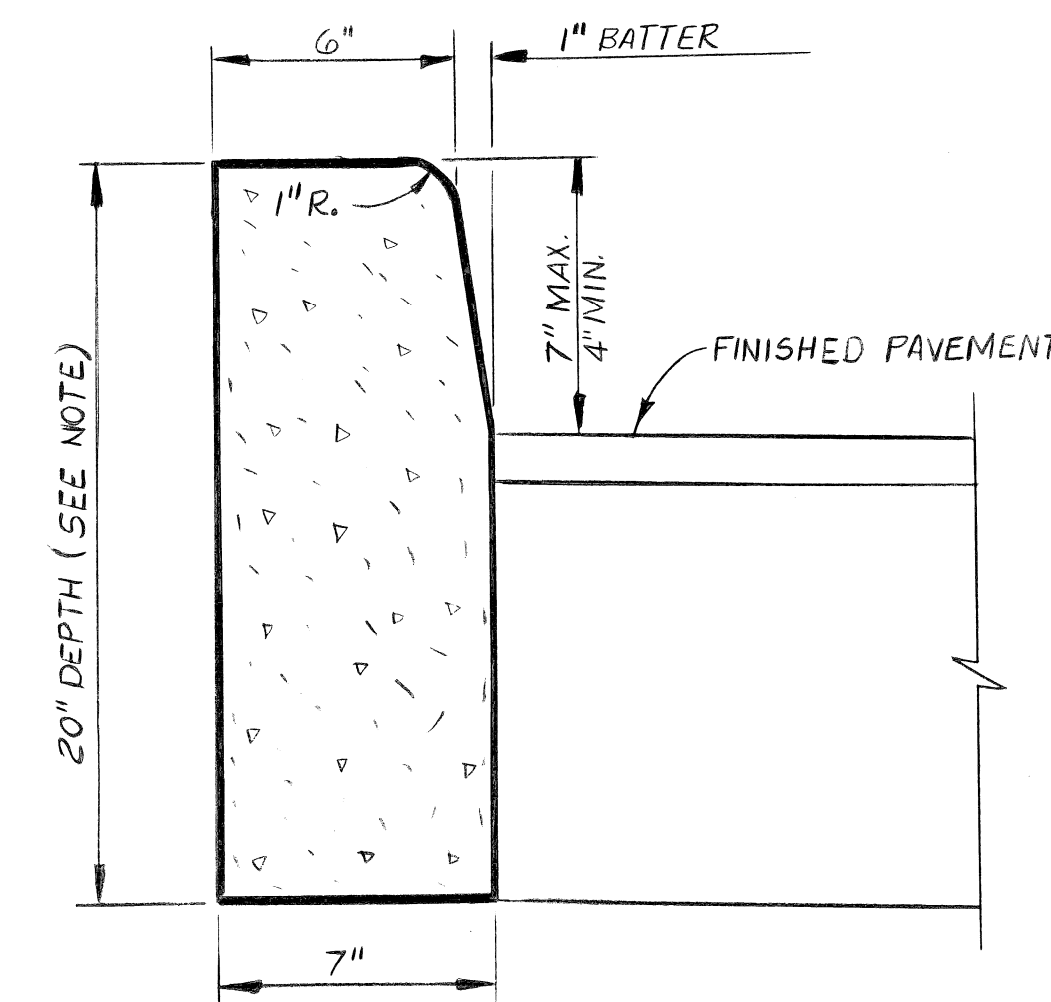
BRICK PAVING *
SCALE: 3" = 1'-0"



EXCEPTION: TO ABOVE 3" ASPHALTIC REPLACEMENT, WHEN PAVT. REPLACEMENT IS 100 FEET FROM EITHER SIDE OF UNDERPASS REPLACE 10" MIN. CONC. BASE WITH TOP OF CONC. LEVEL WITH TOP OF EXISTING CONC. AND REPLACE ASPHALT SECTION AS EXISTING.
ASPHALT SURFACE ON CONCRETE BASE - UTILITY TRENCH CONSTRUCTION PAVEMENT REPLACEMENT
NO SCALE

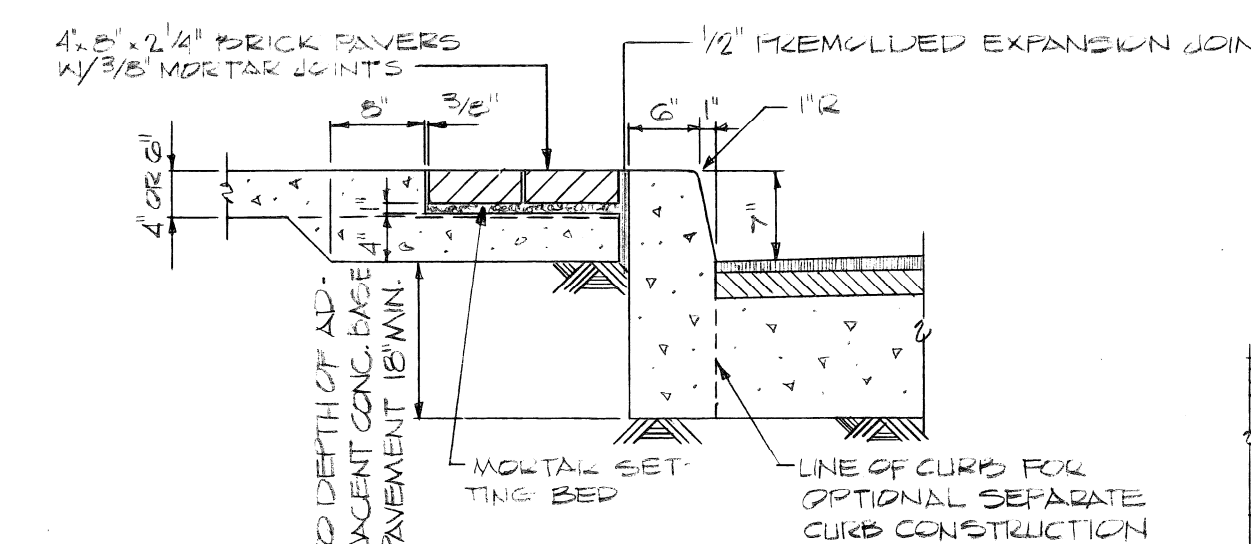


NOTE: THE MATERIAL FOR BITUMINOUS SHOULDERS SHALL BE BITUMINOUS MIXTURE NO. 1500T, 20AAA OR BITUMINOUS MIXTURE NO. 1500L, 20AAA.
BITUMINOUS SHOULDERS (3" THICK) (SPECIAL) DETAIL
NO SCALE

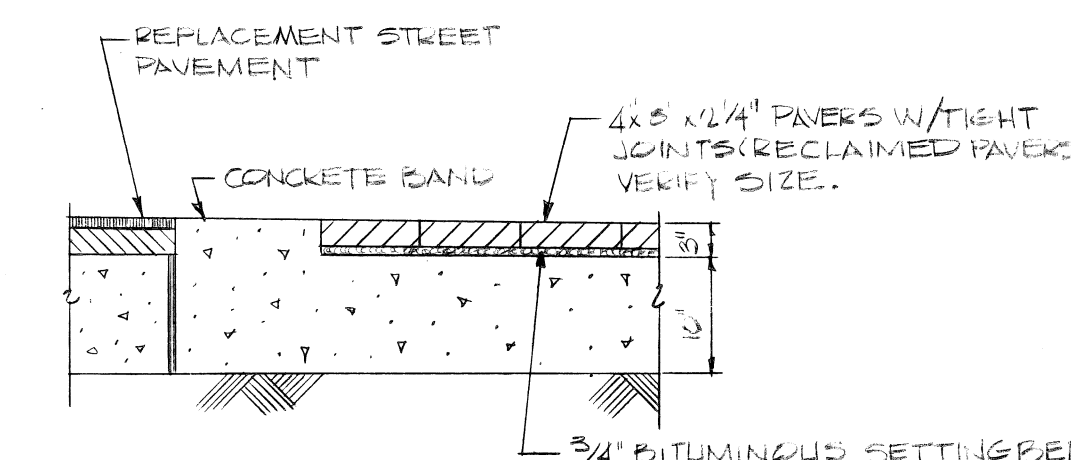


NOTE: DEPTH OF CURB SHALL BE 20" UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
CONTOUR OF CURB REPLACEMENT SHALL MATCH ADJACENT CURB. IN MOST INSTANCES, INTEGRAL CURB CAN REPLACE SEPARATE TYPE CURB; HOWEVER, THE UPPER CONTOUR MUST MATCH THE UPPER CONTOUR OF THE EXISTING CURB.

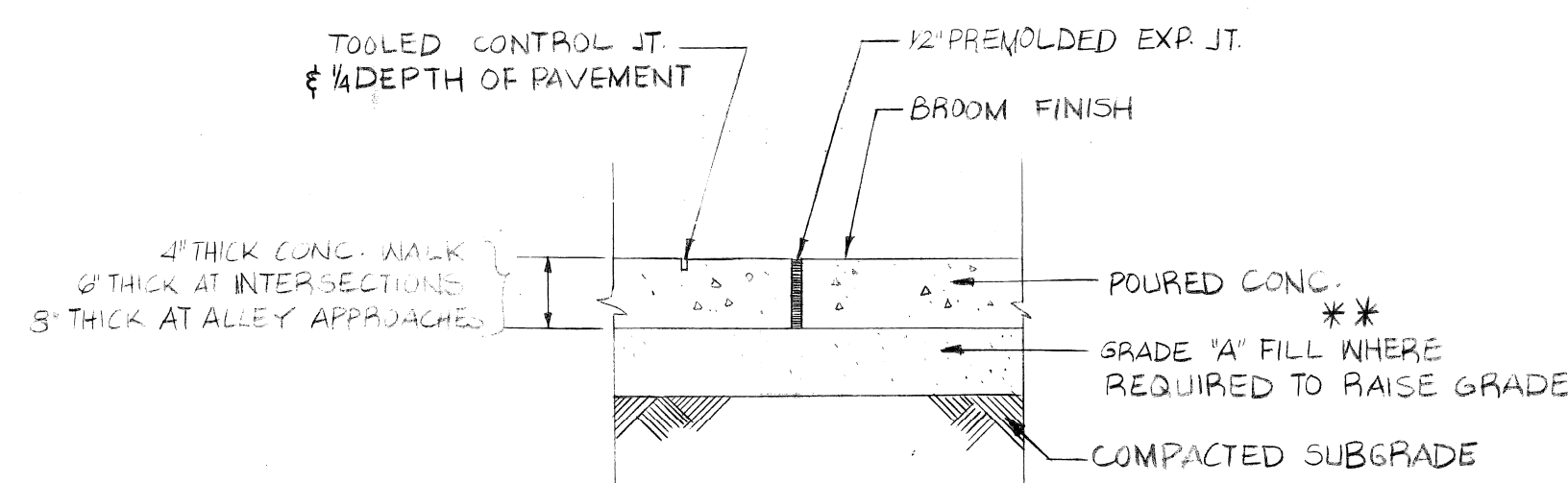
CONCRETE CURB DETAIL CD (SPECIAL)
NO SCALE



6" CONC. CURB *
SCALE: 1/2" = 1'-0"



CONC./BRICK CROSSWALK *
SCALE: 1/2" = 1'-0"



CONC. WALK & APPROACH PAVMT *
SCALE: 1/2" = 1'-0"

* SEE NOTE 9, SHEET NO. 29
** OR EQUIVALENT AS PER CURRENT M.D.O.T. STANDARD SPECIFICATIONS AS DETERMINED BY THE ENGINEER.

PAVEMENT REMOVAL & REPLACEMENT DETAILS

HNTB
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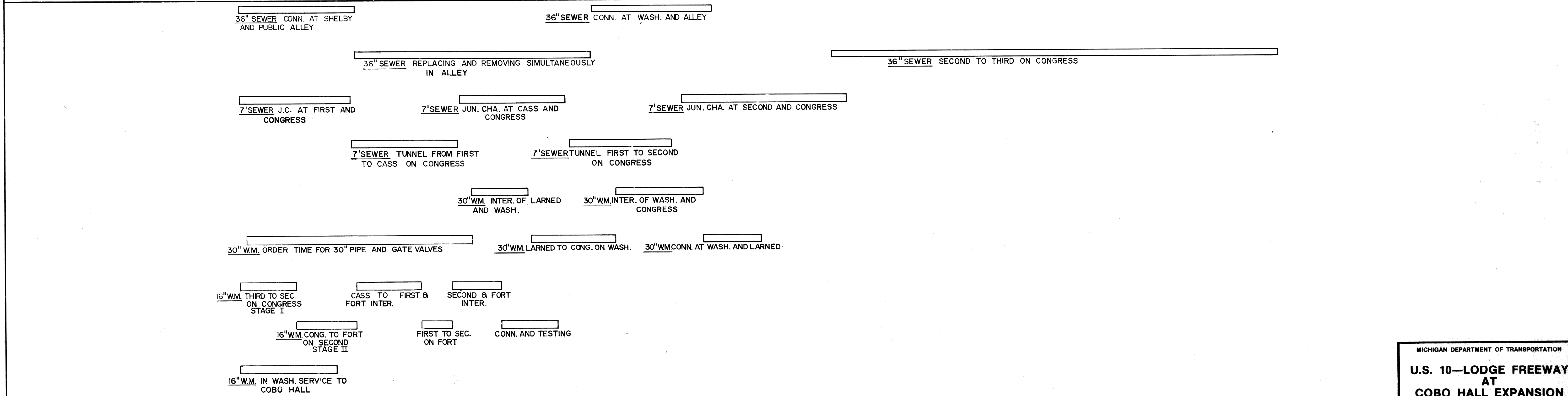
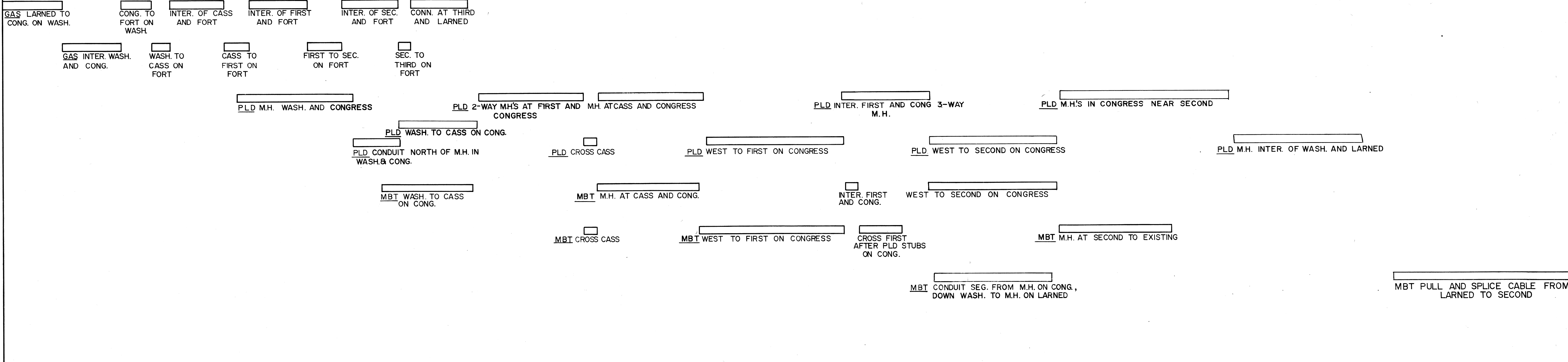
UTILITY RELOCATIONS


DATE: FEB. 4, 1986	DRAWN: J.E.	CONT. SEC.	JOB NO.	CHECKED: B.P.	SHEET NO.
SCALE: NOTED	DESIGNED: V.A.	BM 82111	25199A	APPROVED: J.C.M.	34 OF 65


MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION
Prepared By
MADISON MADISON INTERNATIONAL OF MICHIGAN
Engineers Architects Planners, 313-963-6110

			FINAL ROW
AUTH.	DATE	NO.	REVISION

MONTH	MONTH	MONTH 1	MONTH 2	MONTH 3	MONTH 4	MONTH 5	MONTH 6	MONTH 7	MONTH 8	MONTH 9	MONTH 10	MONTH 11	MONTH 12
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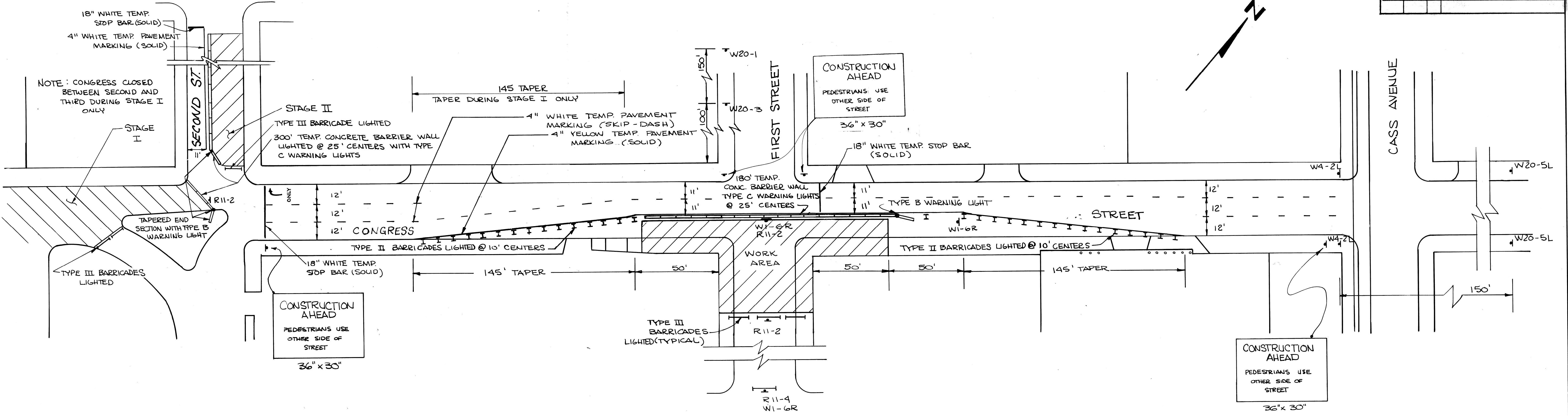


MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION
 Prepared By

 ZIMMER-HOWELL ENGINEERING, LTD.

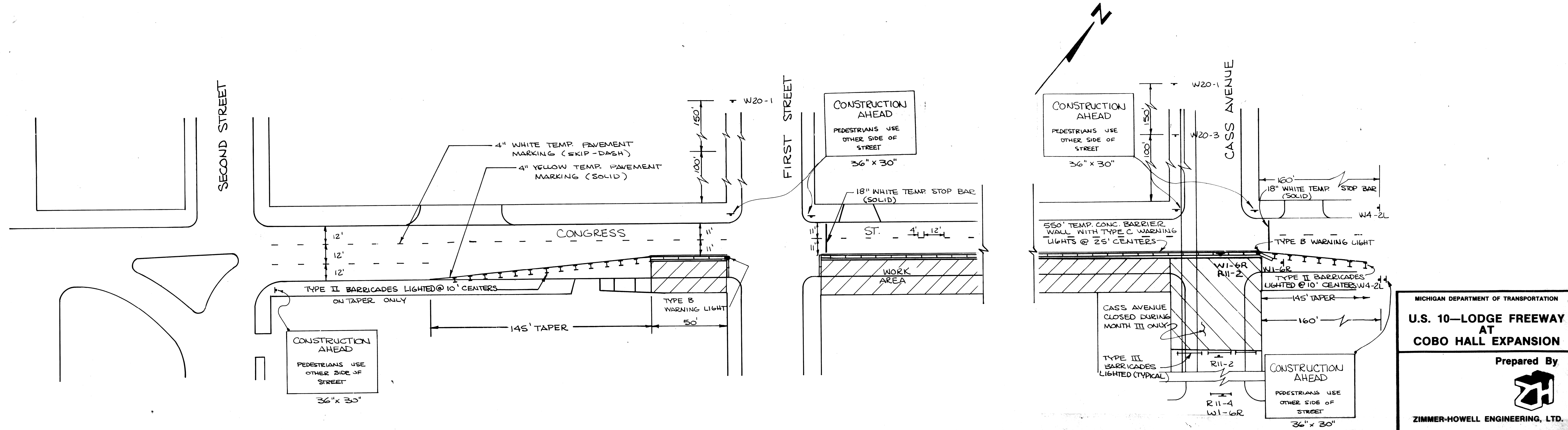
HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF <small>in association with</small> MADISON MADISON INTERNATIONAL OF MICHIGAN ZIMMER-HOWELL ENGINEERING, LTD.		CONSTRUCTION SCHEDULE			
		DATE: FEB. 4, 1986	DRAWN: DLV	CONT. SEC. BM 82111	JOB NO. 25199A

FINAL R.O.W			
AUTH	DATE	NO.	REVISION
	1-16	#1	EJL

NOTE: FOR SUGGESTED CONSTRUCTION SCHEDULE SEE SHEET # 35.



CONGRESS STREET-CONSTRUCTION MONTH I & II



CONGRESS STREET
CONSTRUCTION MONTHS II & III

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF <small>in association with</small> MADISON MADISON INTERNATIONAL OF MICHIGAN ZIMMER-HOWELL ENGINEERING, LTD.		MAINTENANCE OF TRAFFIC CONGRESS STREET - CONSTRUCTION MONTHS I, II, III			
		DATE: FEB. 4, 1986 SCALE: 1" = 30'	DRAWN: DLV DESIGNED: E.J.L.	CONT. SEC. BM 82111	JOB NO. 25199A

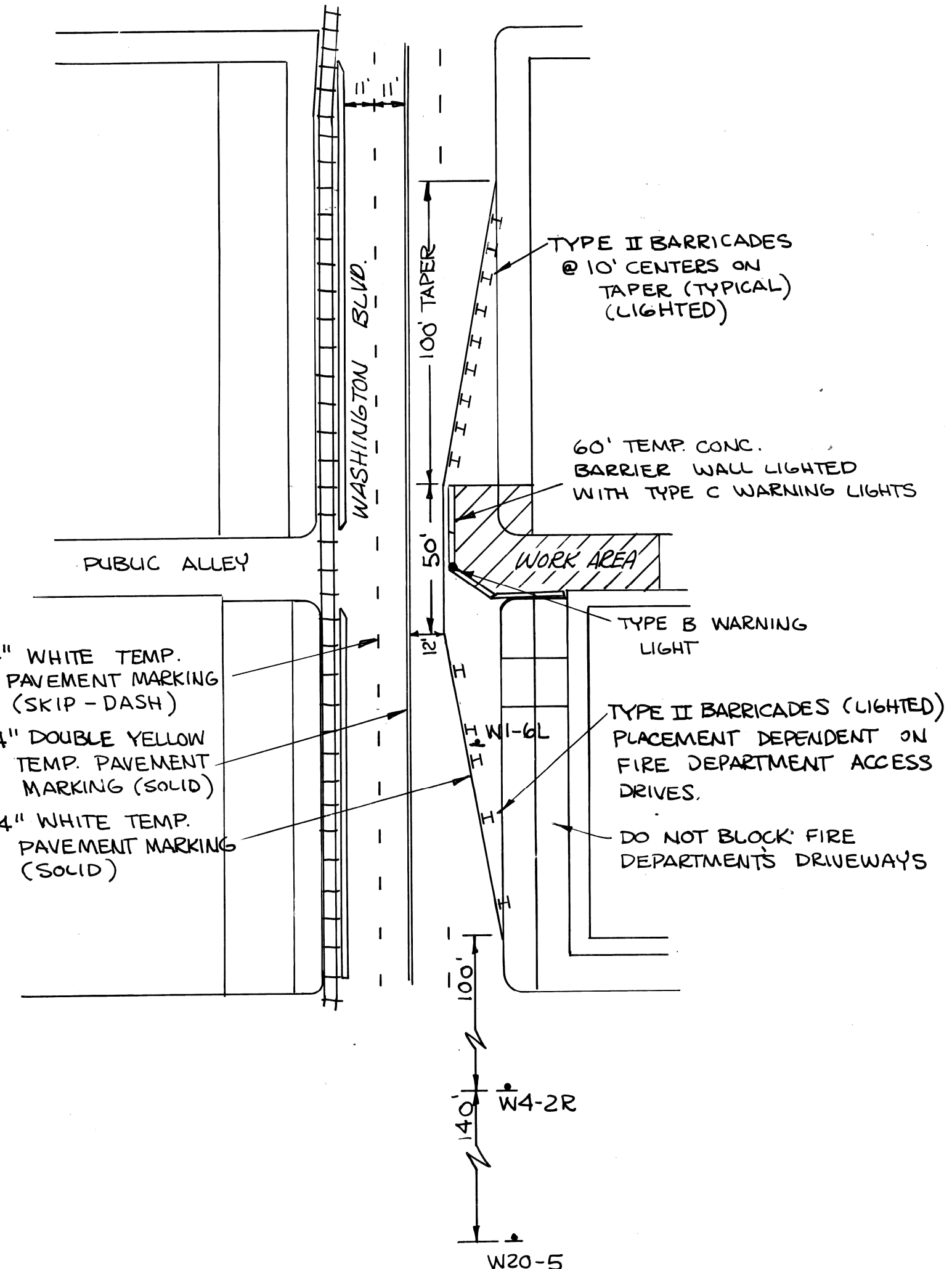
MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10-LODGE FREEWAY AT COBO HALL EXPANSION
 Prepared By

 ZIMMER-HOWELL ENGINEERING, LTD.

FINAL R.O.W.			
AUTH.	DATE	NO.	REVISION

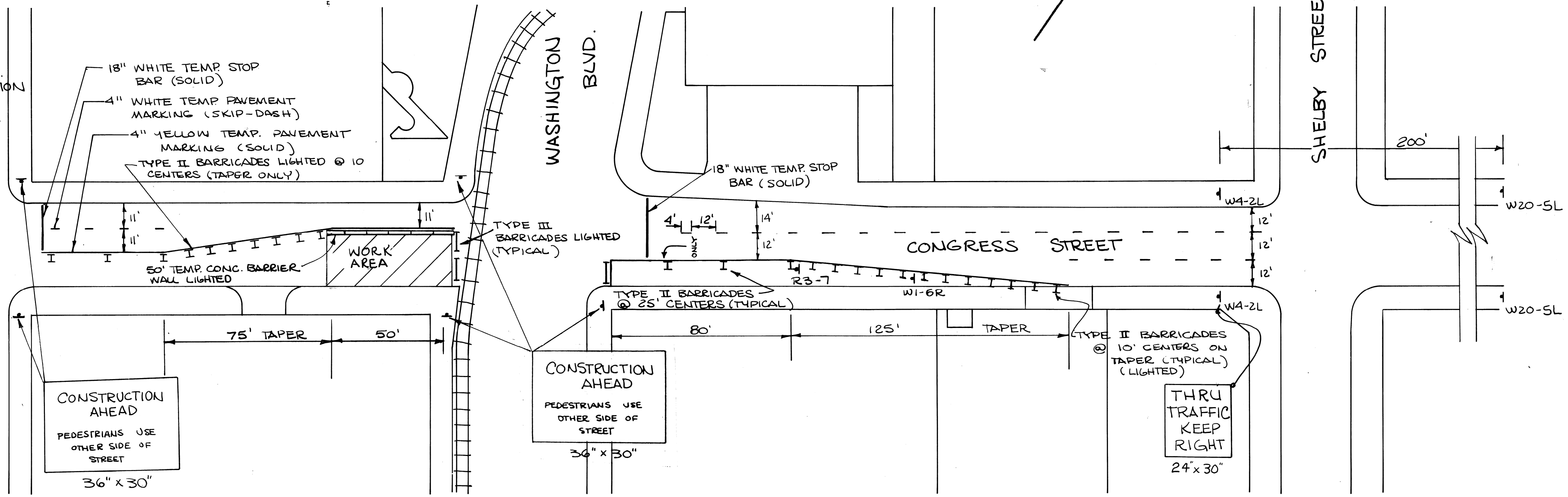
NOTE: FOR SUGGESTED CONSTRUCTION SCHEDULE SEE SHEET #35.

NOTE:
FOR DETAIL ON CASS AVE.
AND CONGRESS INTERSECTION
SEE SHEET 33
MONTH III CONSTRUCTION



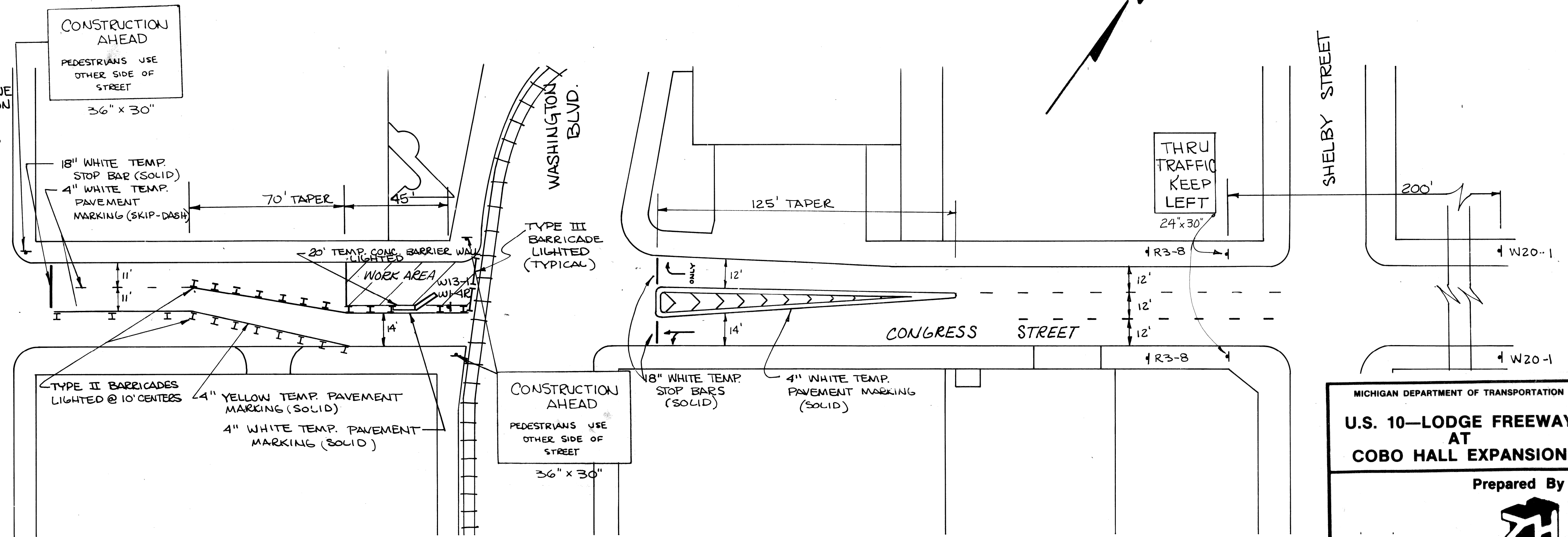
**WASHINGTON BOULEVARD-
CONSTRUCTION MONTH IV**

SCALE: 1" = 40'



CONGRESS STREET - CONSTRUCTION MONTH IV - STAGE I

NOTE:
FOR DETAIL ON CASS AVE.
AND CONGRESS INTERSECTION
SEE SHEET 33
MONTH III CONSTRUCTION



CONGRESS STREET-CONSTRUCTION MONTH IV - STAGE II

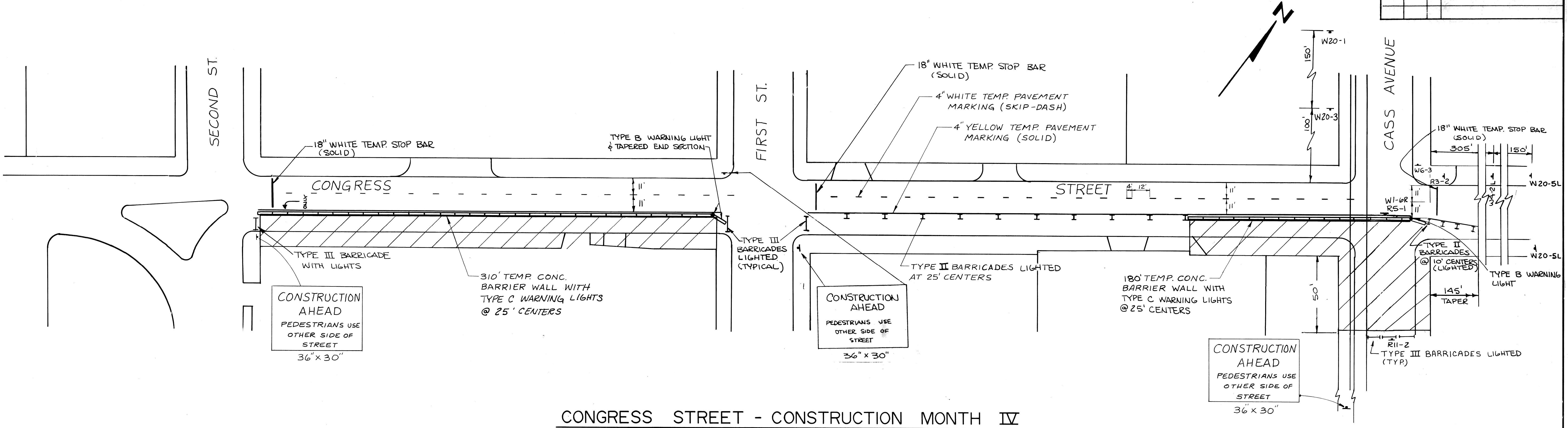
MICHIGAN DEPARTMENT OF TRANSPORTATION
**U.S. 10—LODGE FREEWAY
AT
COBO HALL EXPANSION**
Prepared By

ZIMMER-HOWELL ENGINEERING, LTD.

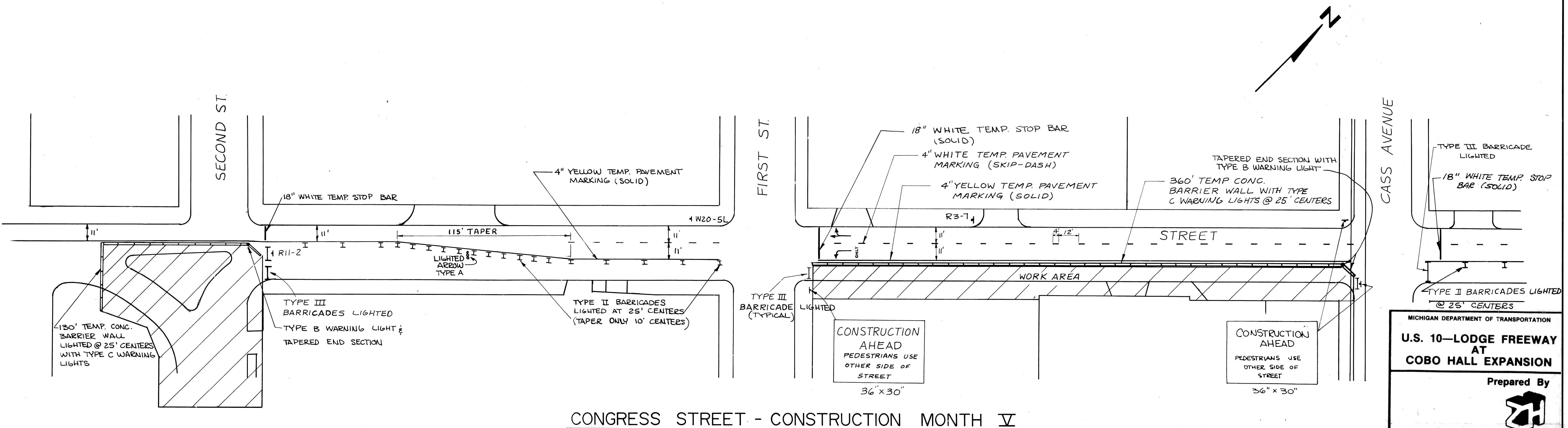
HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF In association with MADISON MADISON INTERNATIONAL OF MICHIGAN ZIMMER-HOWELL ENGINEERING, LTD.		MAINTENANCE OF TRAFFIC CONGRESS STREET - MONTH IV, WASHINGTON BLVD. - MONTH IV			
		DATE: FEB. 4, 1986 SCALE: 1" = 30'	DRAWN: DLV DESIGNED: JEJ	CONT. SEC. BM 82111	JOB NO. 25199A

NOTE: FOR SUGGESTED CONSTRUCTION SCHEDULE SEE SHEET # 35.

FINAL R.O.W.			
AUTH.	DATE	NO.	REVISION



CONGRESS STREET - CONSTRUCTION MONTH IV

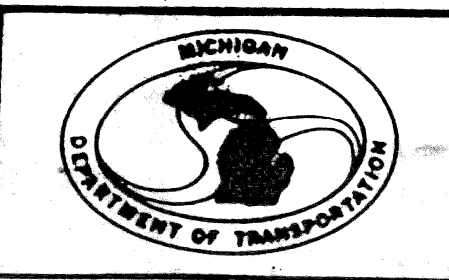


CONGRESS STREET - CONSTRUCTION MONTH V

MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION
 Prepared By

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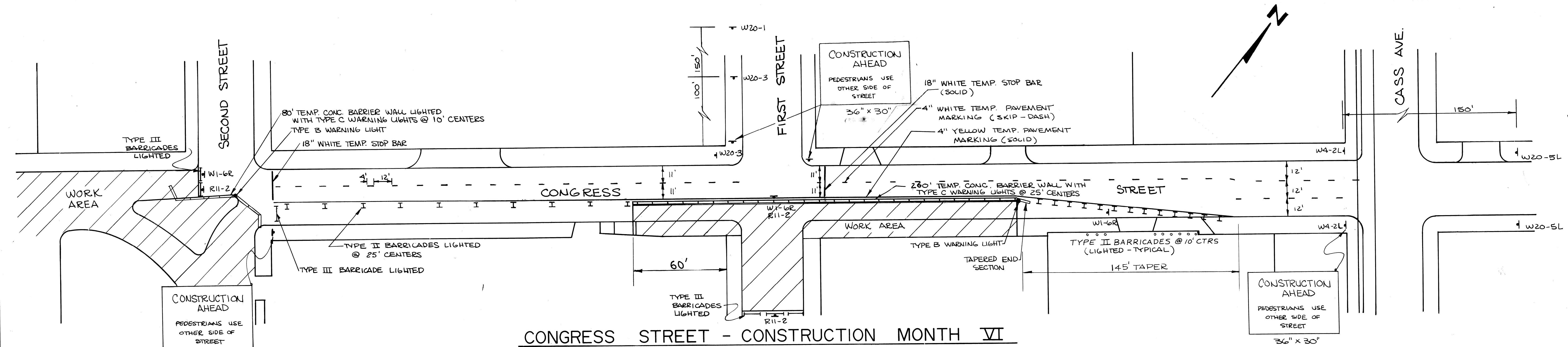
HNTB
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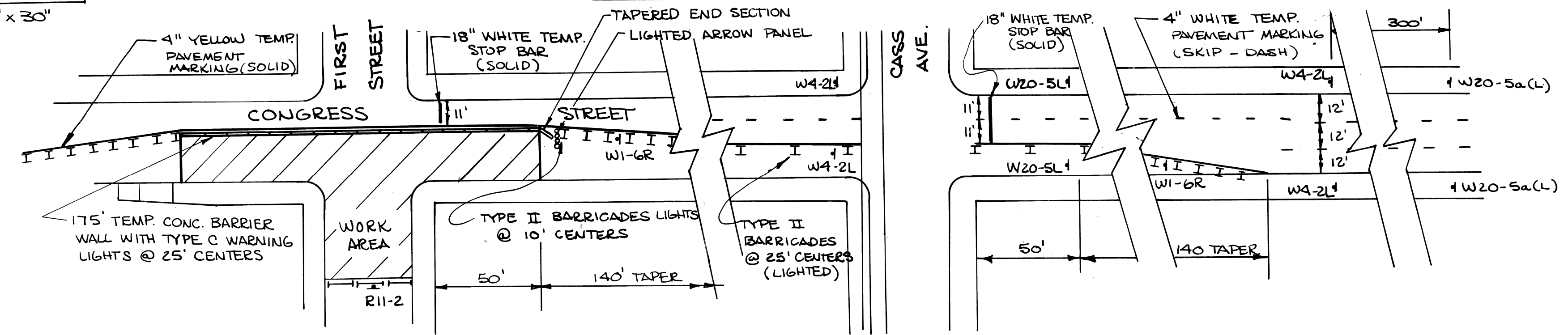
MAINTENANCE OF TRAFFIC				
CONGRESS STREET - CONSTRUCTION MONTHS IV & V				
DATE: FEB. 4, 1986	DRAWN: DLV	CONT. SEC.	JOB NO.	CHECKED:
SCALE: 1" = 30'	DESIGNED: E.J.L.	BM 82111	25199A	APPROVED:
				SHEET NO.
				38 OF 65

FINAL R.O.W			
AUTH.	DATE	NO.	REVISION

NOTE: FOR SUGGESTED CONSTRUCTION SCHEDULE SEE SHEET #35.

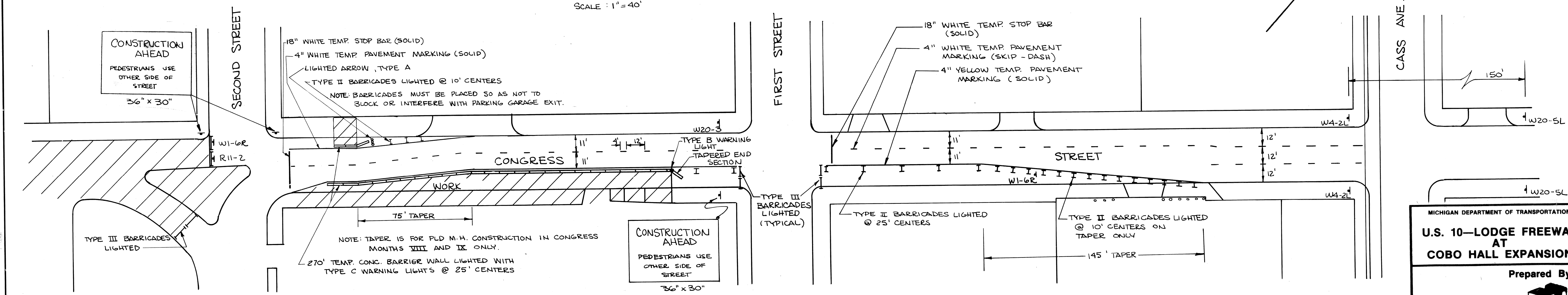


CONGRESS STREET - CONSTRUCTION MONTH VI



CONGRESS STREET - CONSTRUCTION MONTH VI (SUBSTAGE I)

SCALE: 1" = 40'



CONGRESS STREET - CONSTRUCTION MONTHS VII & VIII IX

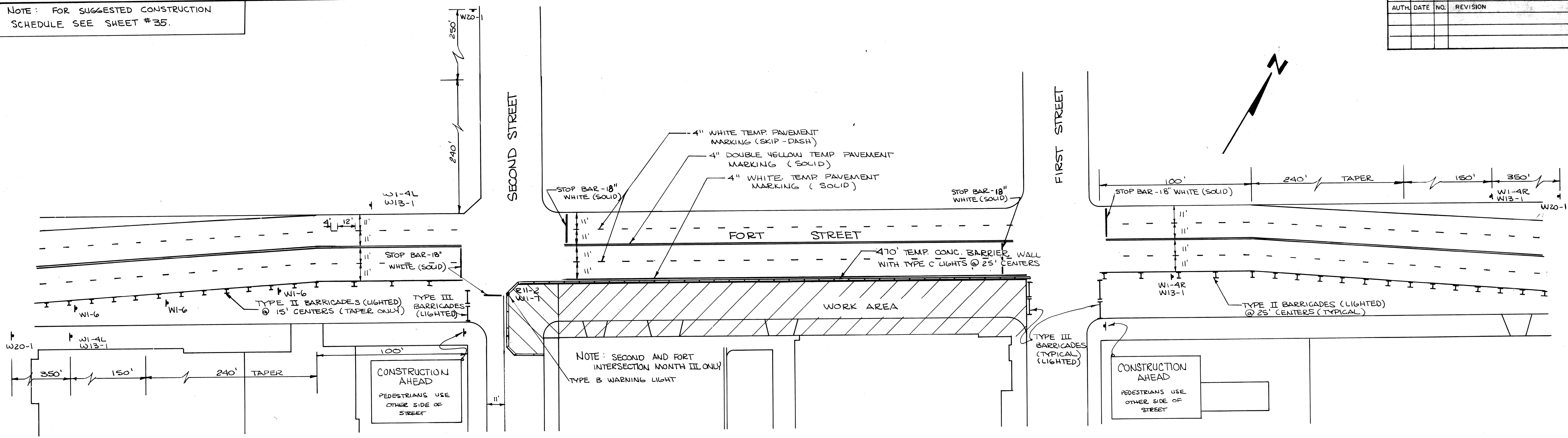
MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION
 Prepared By

 ZIMMER-HOWELL ENGINEERING, LTD.

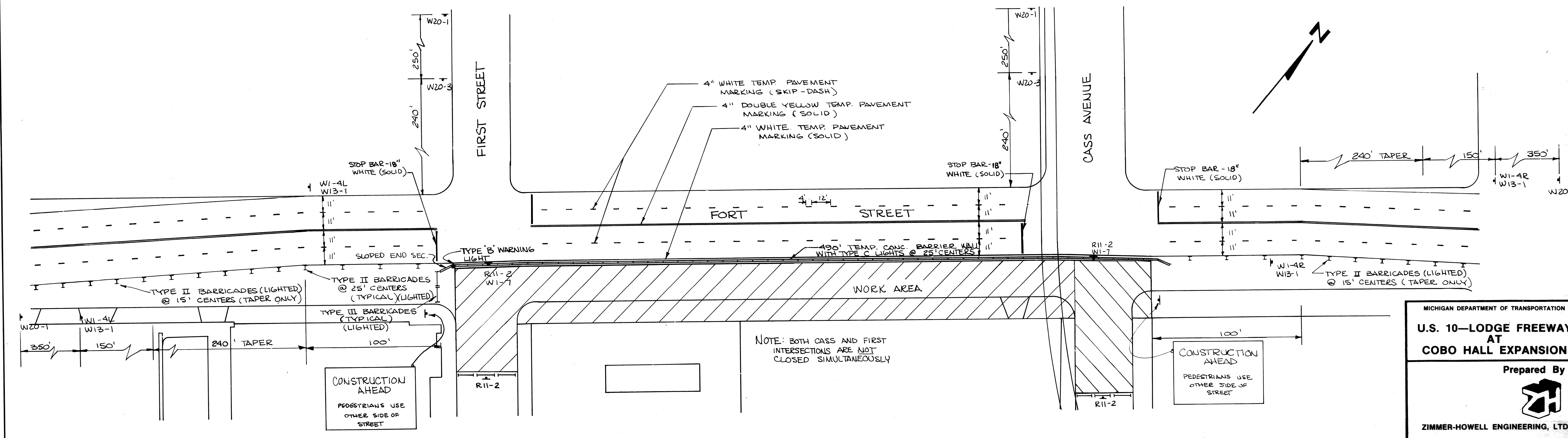
HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF <small>in association with</small> MADISON MADISON INTERNATIONAL OF MICHIGAN ZIMMER-HOWELL ENGINEERING, LTD.		MAINTENANCE OF TRAFFIC CONGRESS STREET - CONSTRUCTION MONTHS VI, VII & VIII			
		DATE: FEB. 4, 1986	DRAWN: DLV	CONT. SEC.	JOB NO.
		SCALE: 1" = 30'	DESIGNED: J.E.J.	BM 82111	25199A
		CHECKED:		SHEET NO.	
APPROVED:		39 OF 65			

FINAL R.O.W			
AUTH.	DATE	NO.	REVISION

NOTE: FOR SUGGESTED CONSTRUCTION SCHEDULE SEE SHEET #35.



FORT STREET - CONSTRUCTION MONTH II & III



FORT STREET
CONSTRUCTION MONTH II

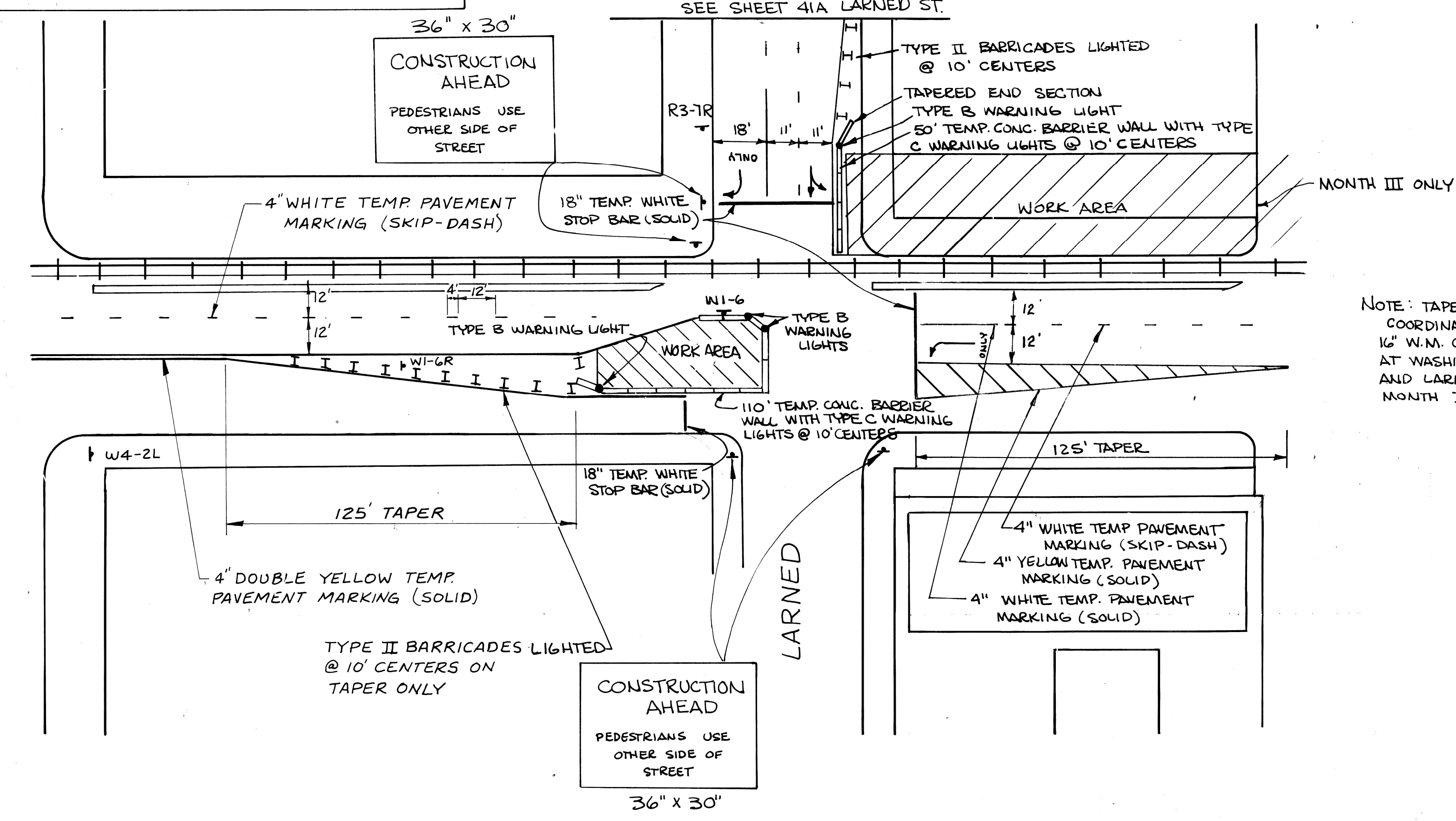
MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION
 Prepared By

 ZIMMER-HOWELL ENGINEERING, LTD.

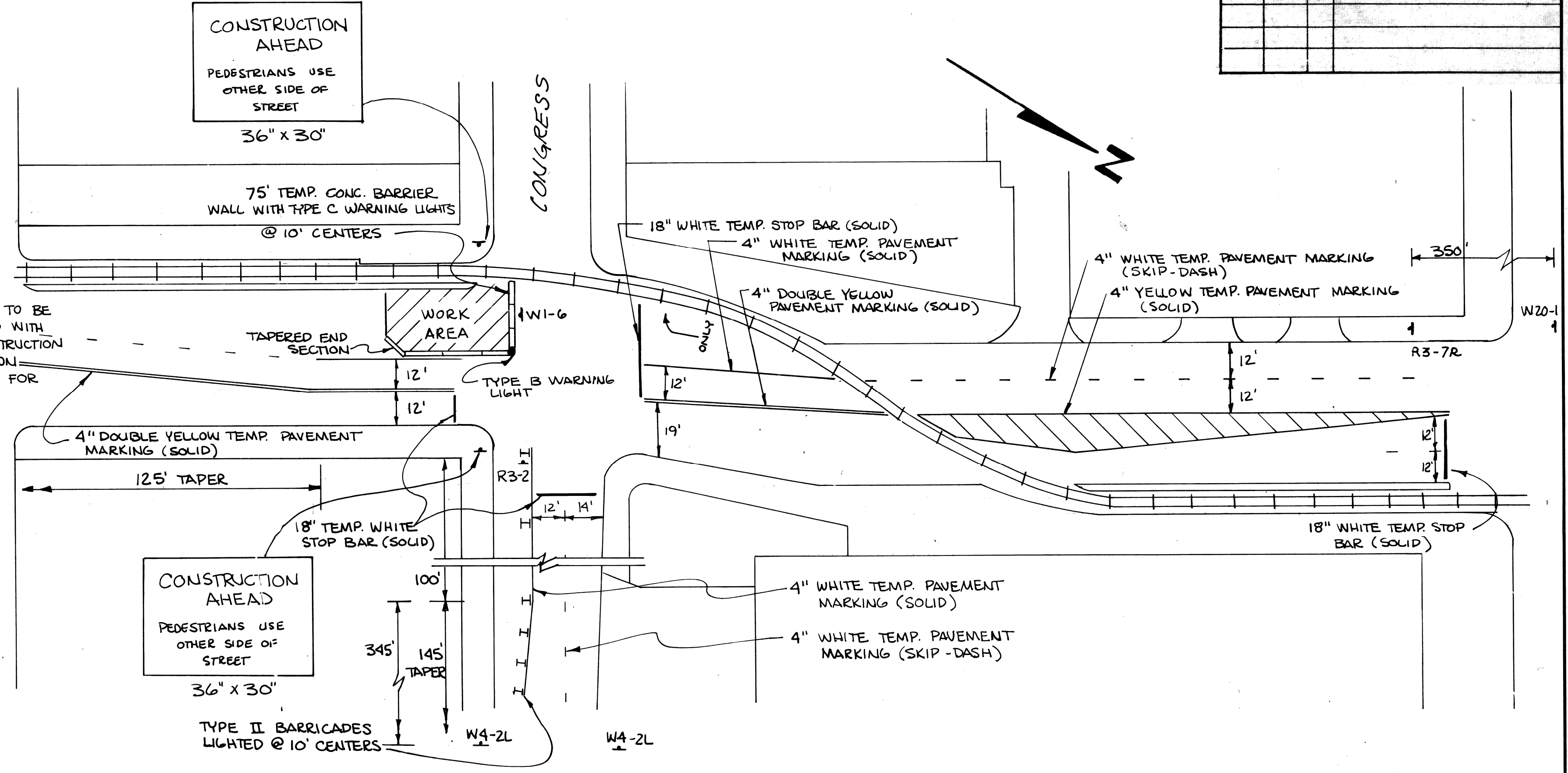
HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF <small>in association with</small> MADISON MADISON INTERNATIONAL OF MICHIGAN ZIMMER-HOWELL ENGINEERING, LTD.		MAINTENANCE OF TRAFFIC FORT STREET - CONSTRUCTION MONTHS II & III			
		DATE: FEB. 4, 1988 SCALE: 1" = 30'	DRAWN: DLV DESIGNED: E.J.L.	CONT. SEC. BM 82111	JOB NO. 25199A

NOTE: FOR SUGGESTED CONSTRUCTION SCHEDULE SEE SHEET #35.

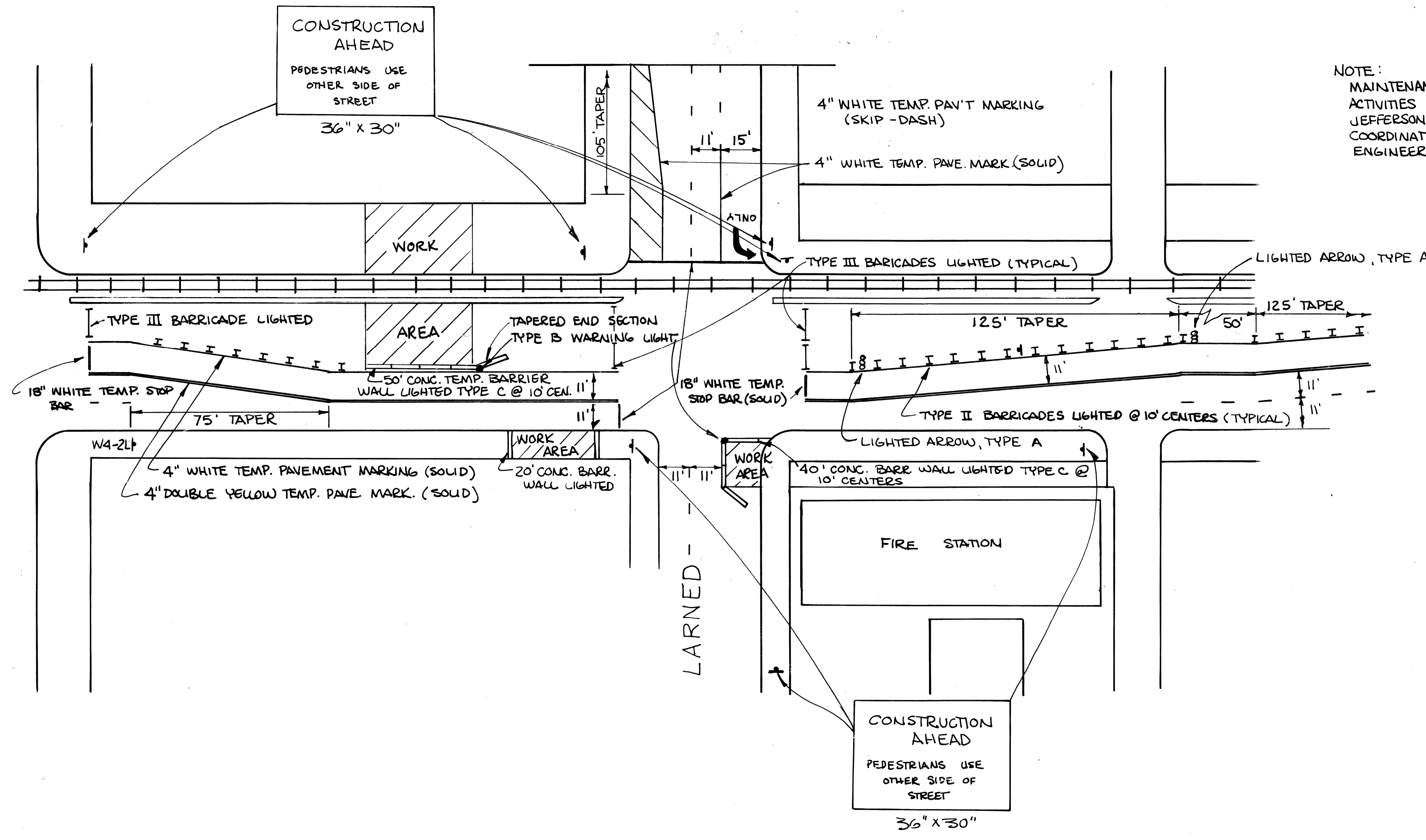
FINAL R.O.W		
AUTH.	DATE	REVISION



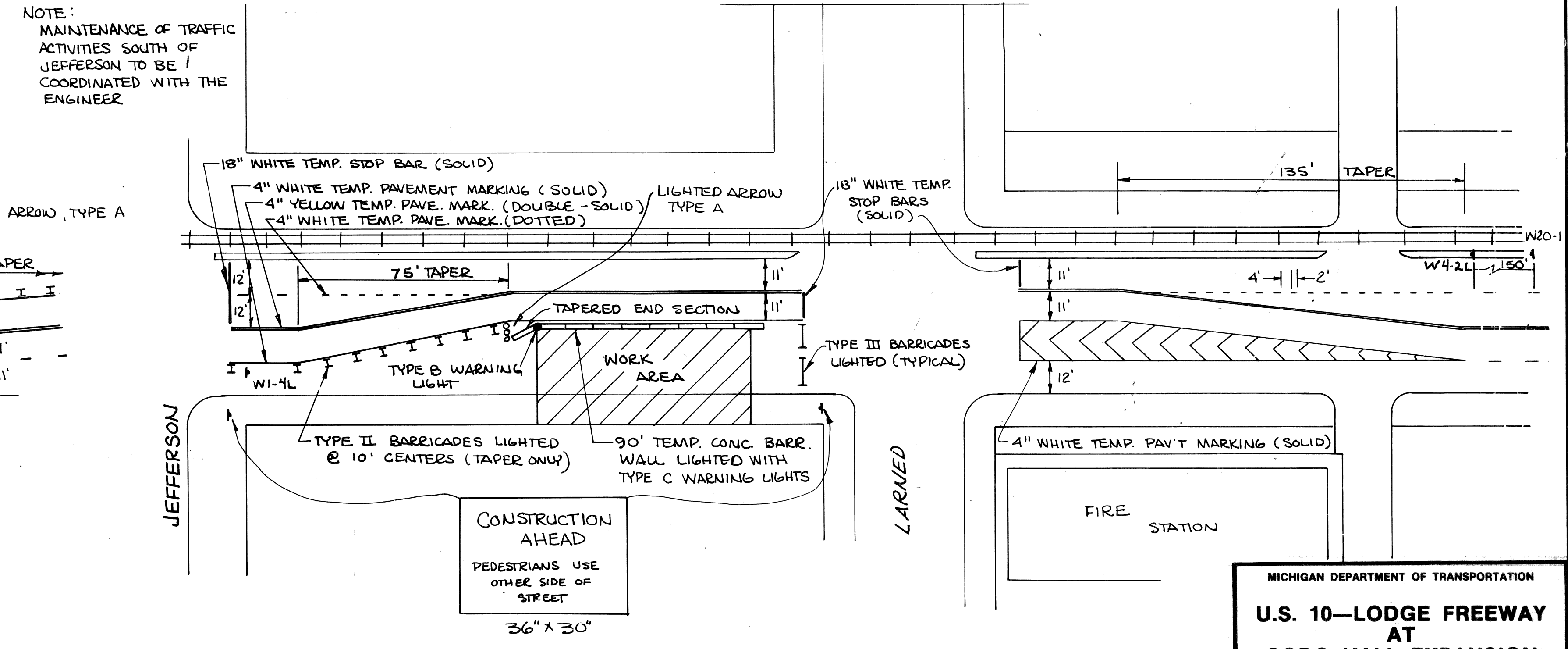
WASHINGTON BLVD.-CONSTRUCTION MONTH III & V



WASHINGTON BLVD.-CONSTRUCTION MONTH I



WASHINGTON BLVD.-CONSTRUCTION MONTH I, STAGE I



WASHINGTON BLVD.-CONSTRUCTION MONTH I, STAGE II

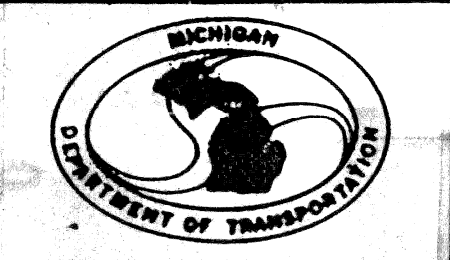
MICHIGAN DEPARTMENT OF TRANSPORTATION

U.S. 10-LODGE FREEWAY AT COBO HALL EXPANSION

Prepared By

ZIMMER-HOWELL ENGINEERING, LTD.

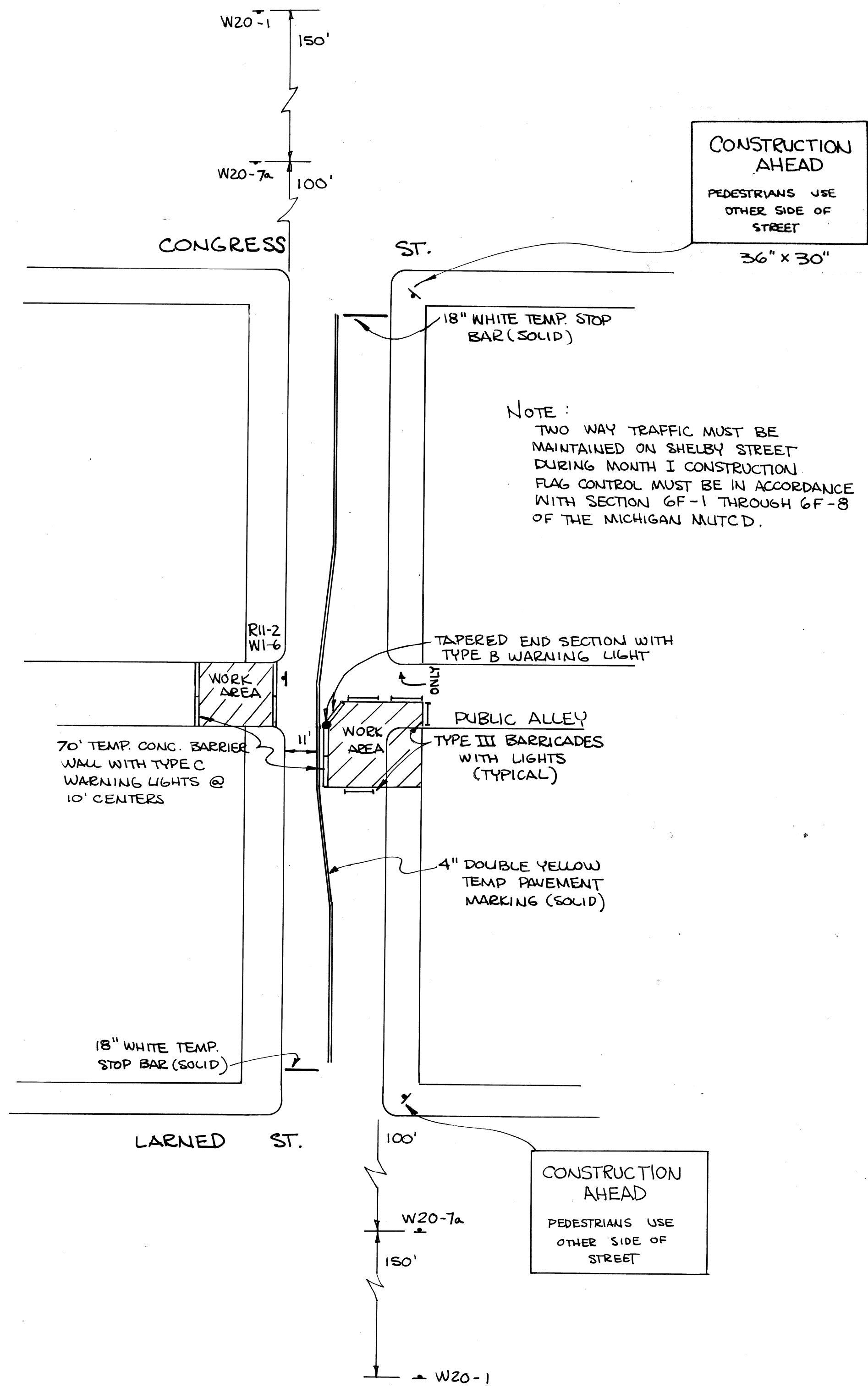
HNTB
HOWARD NEEDLES TAMMEN & BERGENDOFF
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MADISON MADISON INTERNATIONAL OF MICHIGAN
ZIMMER-HOWELL ENGINEERING, LTD.



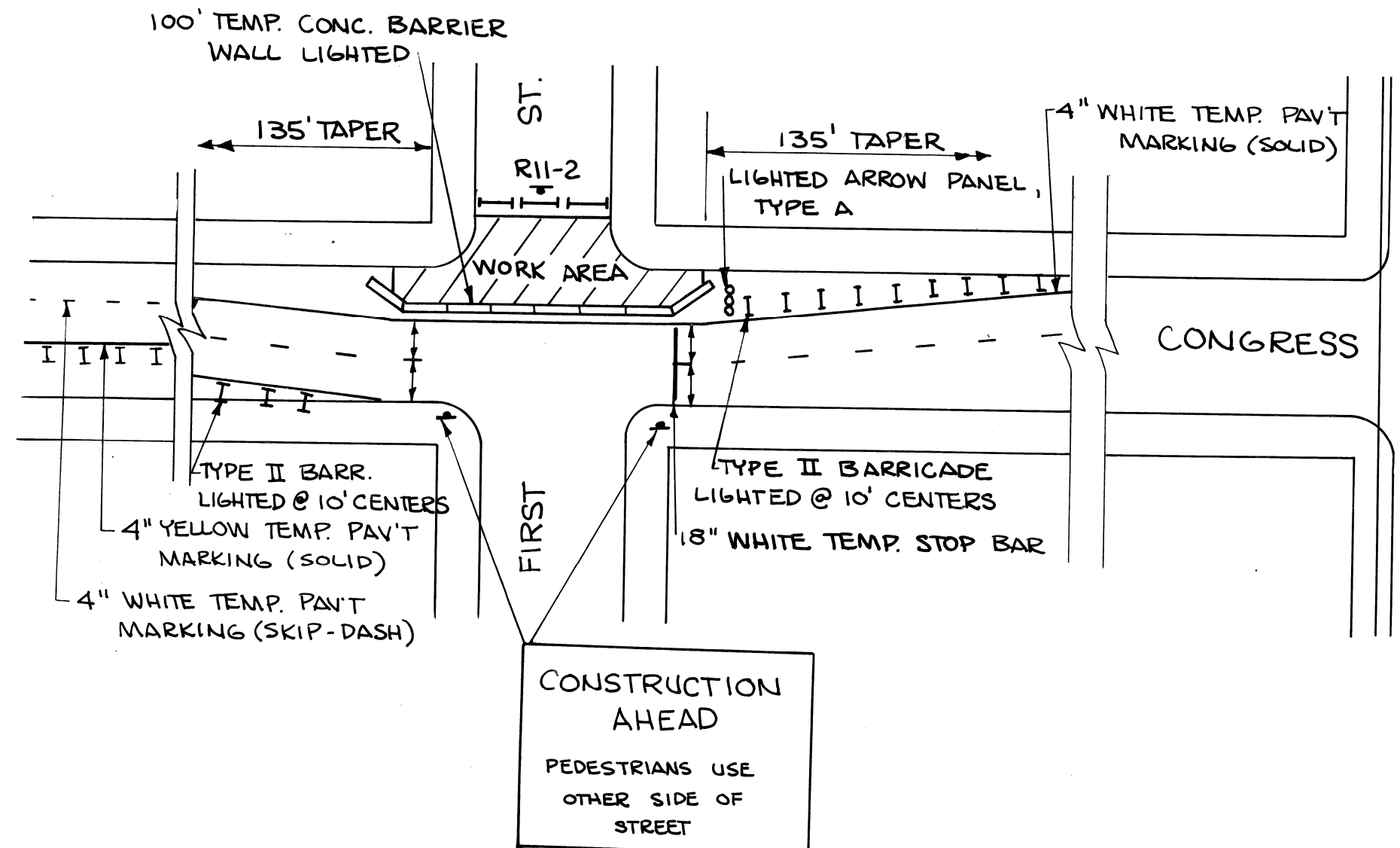
MAINTENANCE OF TRAFFIC				
WASHINGTON BLVD. - CONSTRUCTION MONTHS I II & III				
DATE: FEB. 4, 1986	DRAWN: DLV	CONT. SEC.	JOB NO.	CHECKED:
SCALE: 1" = 30'	DESIGNED: JEJ	BM 82111	25199A	APPROVED:
				SHEET NO.
				41 OF 65

NOTE: FOR SUGGESTED CONSTRUCTION SCHEDULE SEE SHEET # 35.

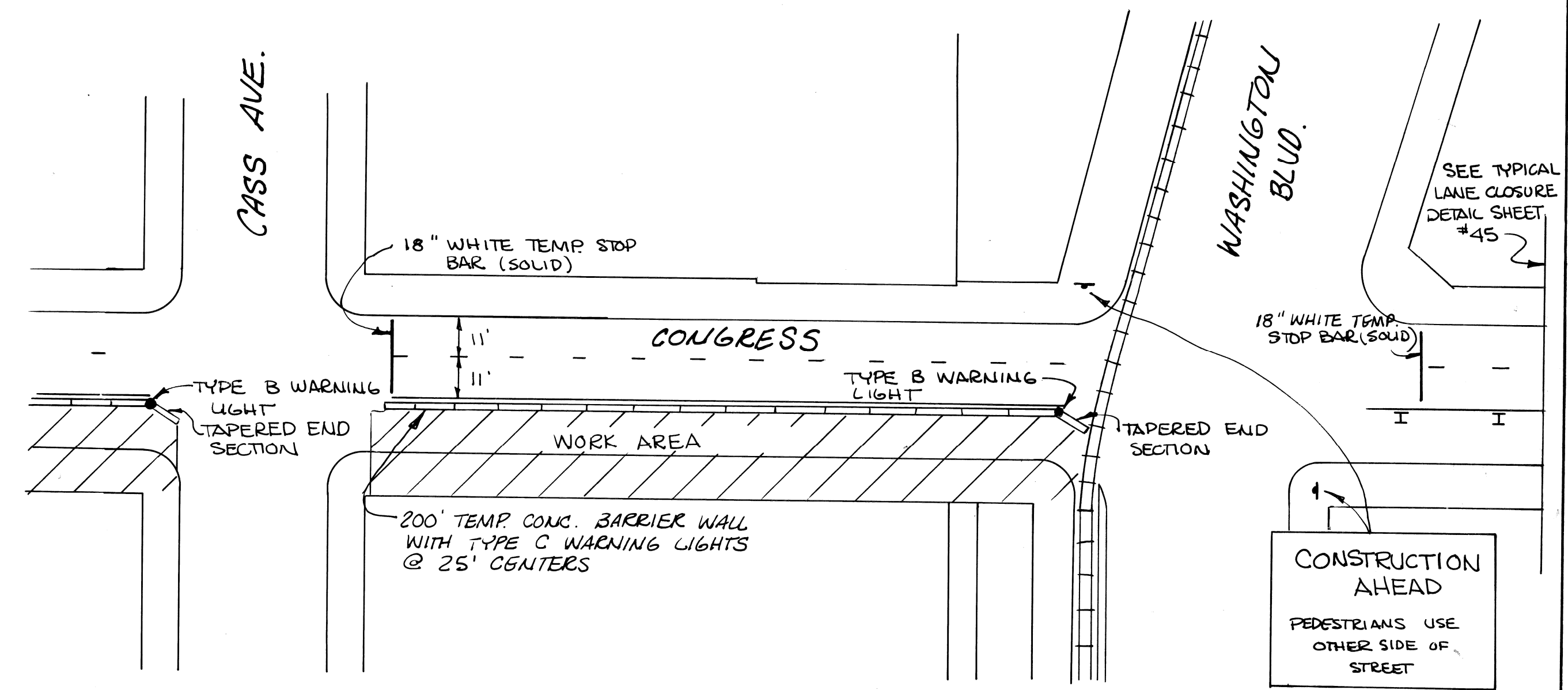
FINAL R.O.W		
AUTH.	DATE	REVISION



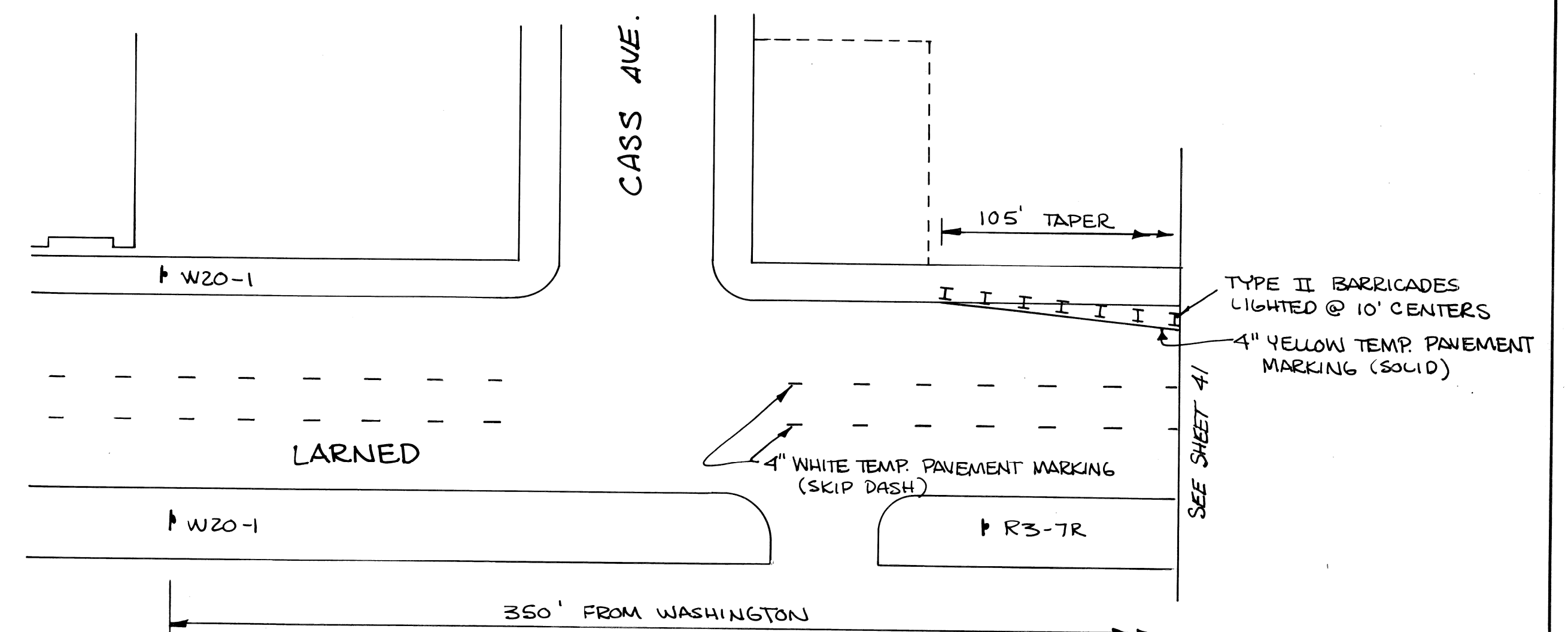
SHELBY ST.-CONSTRUCTION MONTH I



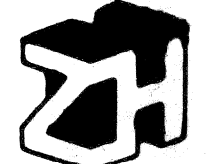
CONGRESS ST. - CONSTRUCTION MONTH VI
(PLD CROSSING - SUBSTAGE II)
SCALE: 1" = 40'



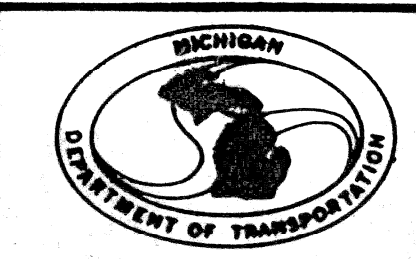
CONGRESS ST.- CONSTRUCTION MONTH II



LARNED ST.- CONSTRUCTION MONTH III

MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10-LODGE FREEWAY AT COBO HALL EXPANSION
Prepared By

ZIMMER-HOWELL ENGINEERING, LTD.

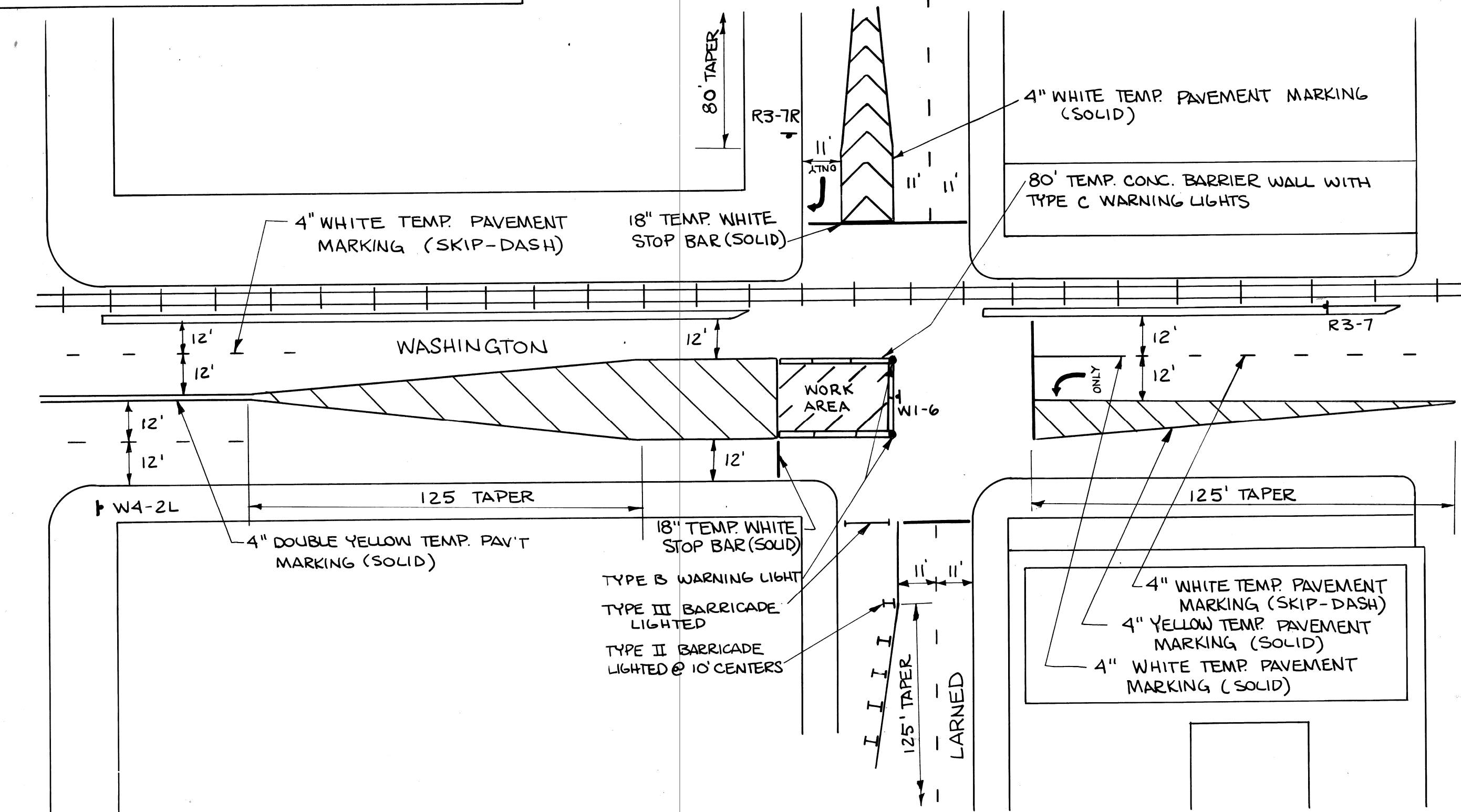
HNTB
HOWARD NEEDLES TAMMEN & BERGENDOFF
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ZIMMER-HOWELL ENGINEERING, LTD.



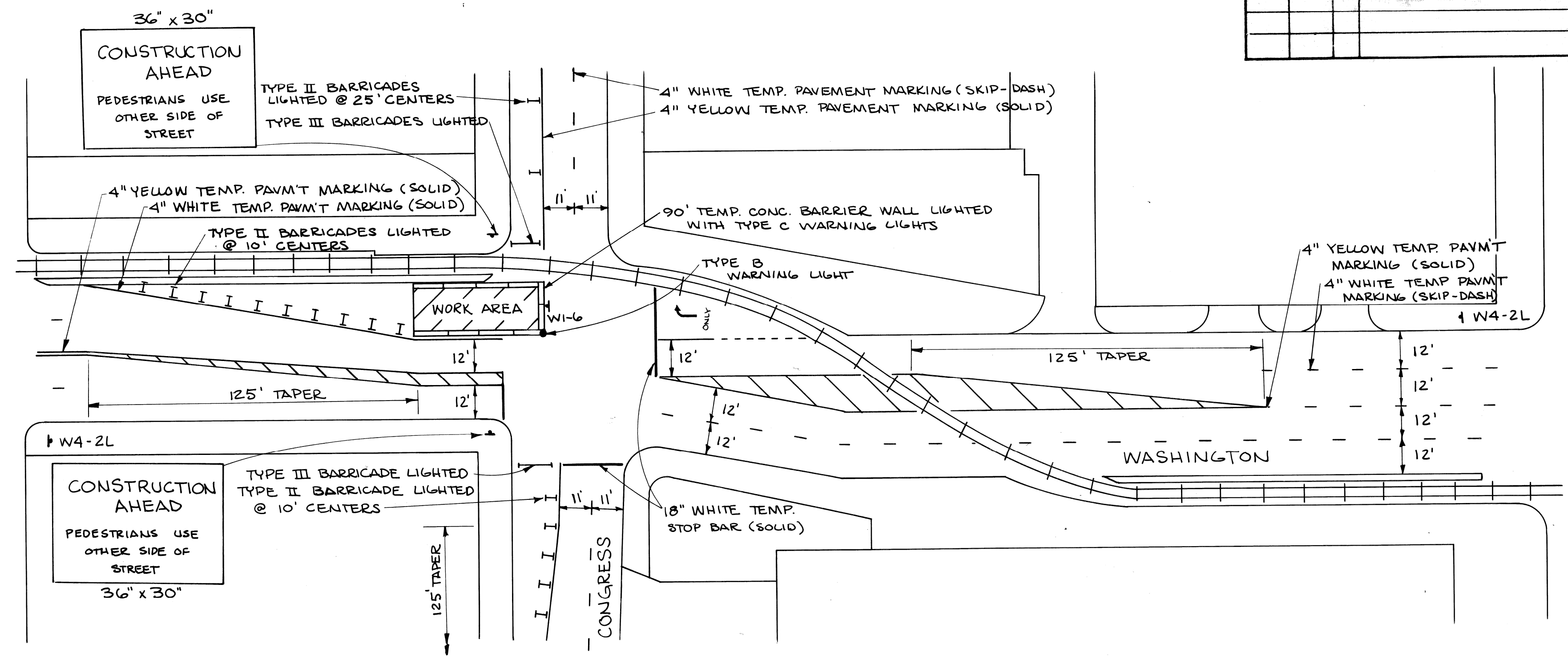
MAINTENANCE OF TRAFFIC					
SHELBY ST.-MONTH I, CONGRESS ST.-MONTH II, LARNED ST.-MONTH III					
DATE: FEB. 4, 1986	DRAWN: DLV	CONT. SEC.	JOB NO.	CHECKED:	SHEET NO.
SCALE: 1" = 30'	DESIGNED: E.J.L.	BM 82111	25199A	APPROVED:	41A OF 65

NOTE: FOR SUGGESTED CONSTRUCTION SCHEDULE SEE SHEET #35.

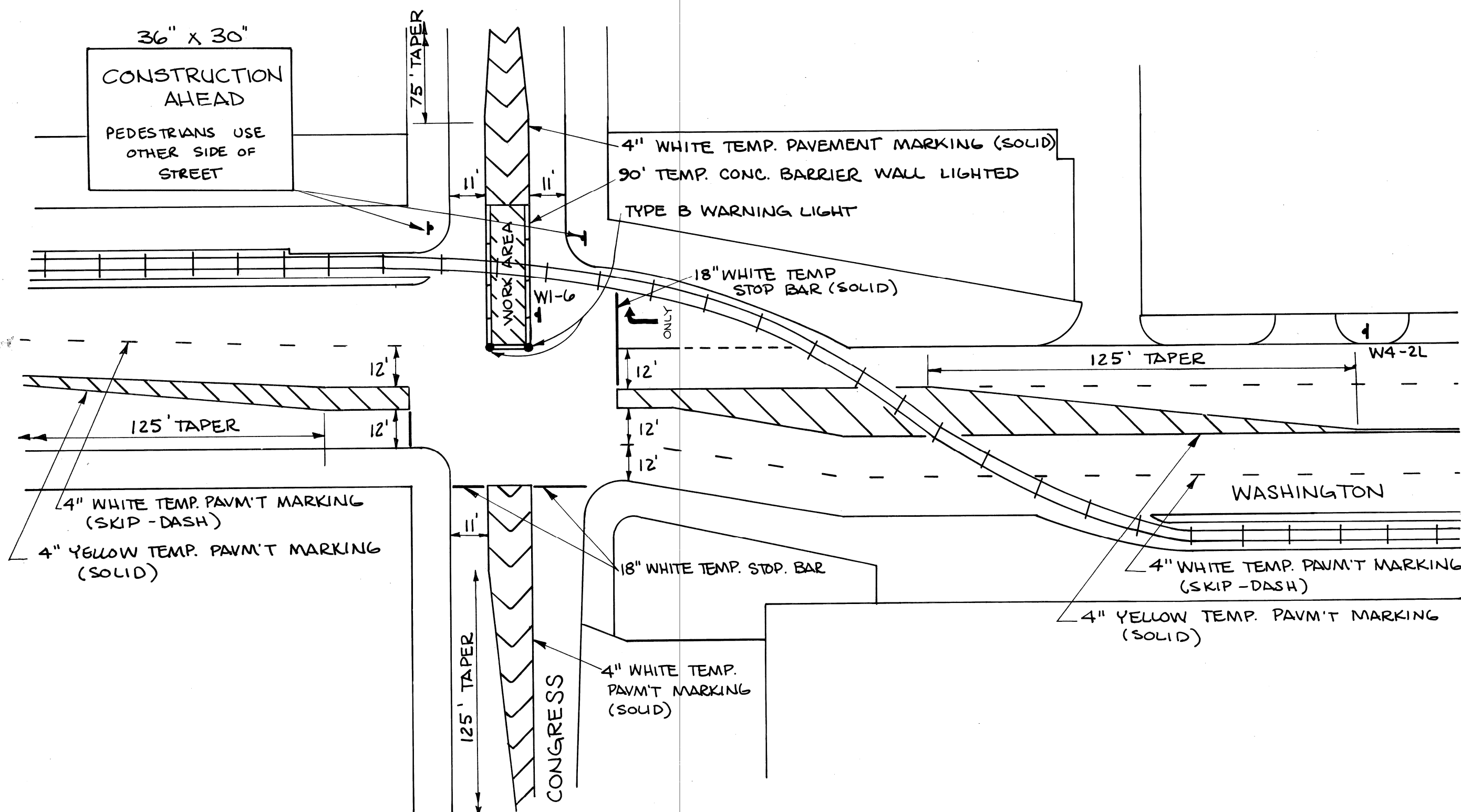
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AUTH.	DATE	NO.	REVISION



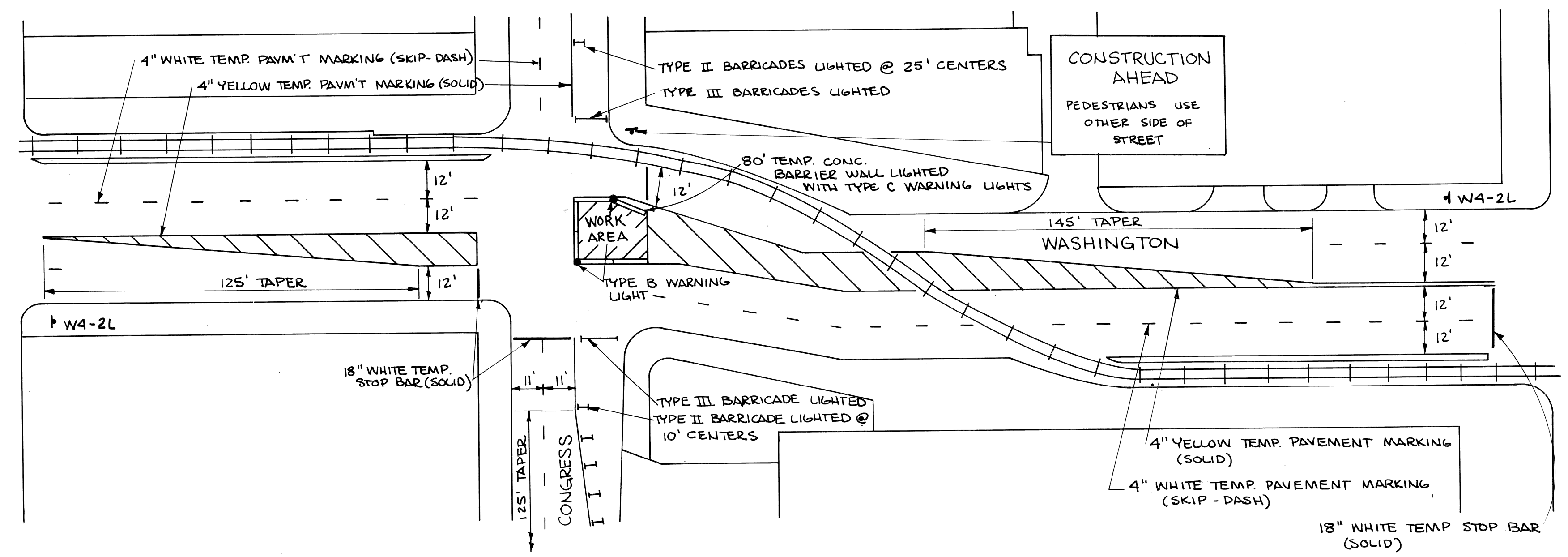
WASHINGTON BLVD.-CONSTRUCTION MONTH IX & X



WASHINGTON BLVD.- CONGRESS ST. INT. - PLD CONSTRUCTION MONTH II (STAGE I)



WASHINGTON BLVD.-CONGRESS ST. INT.-PLD CONSTRUCTION MONTH II (STAGE II)



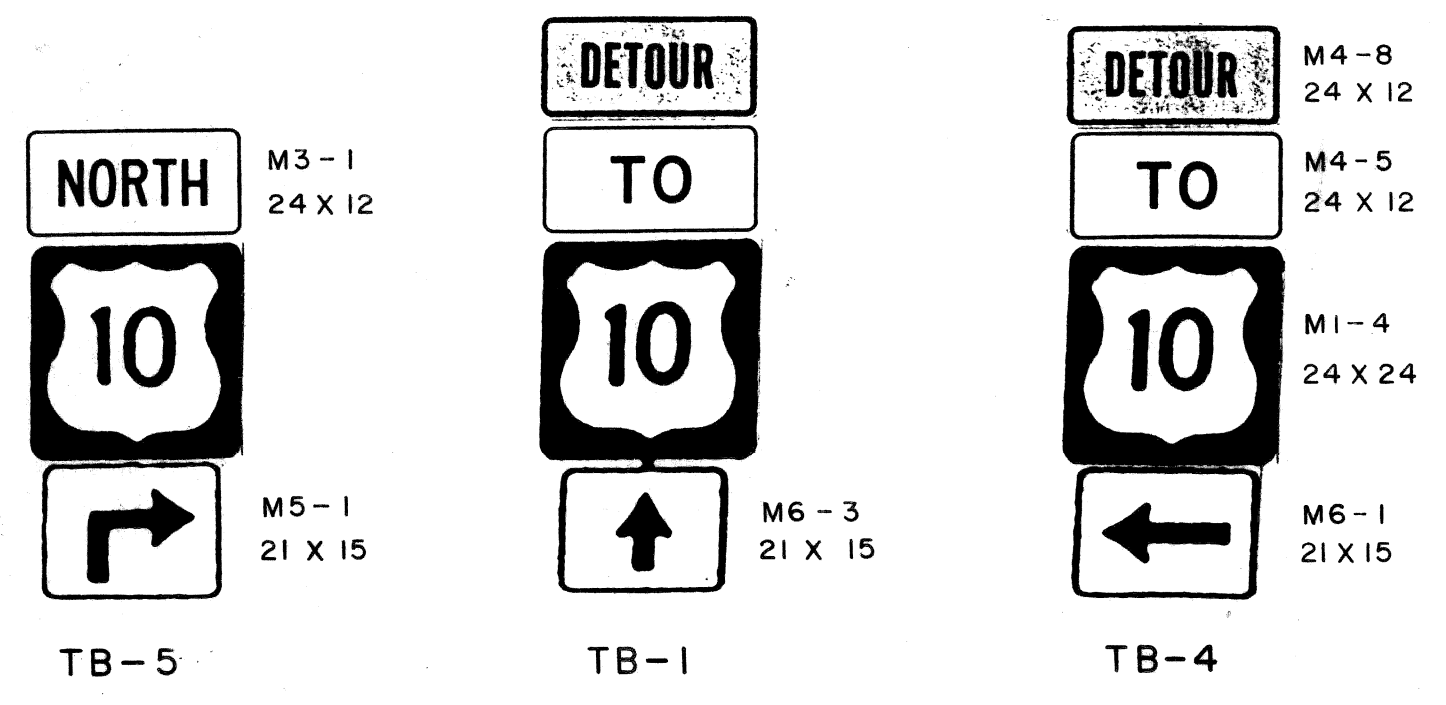
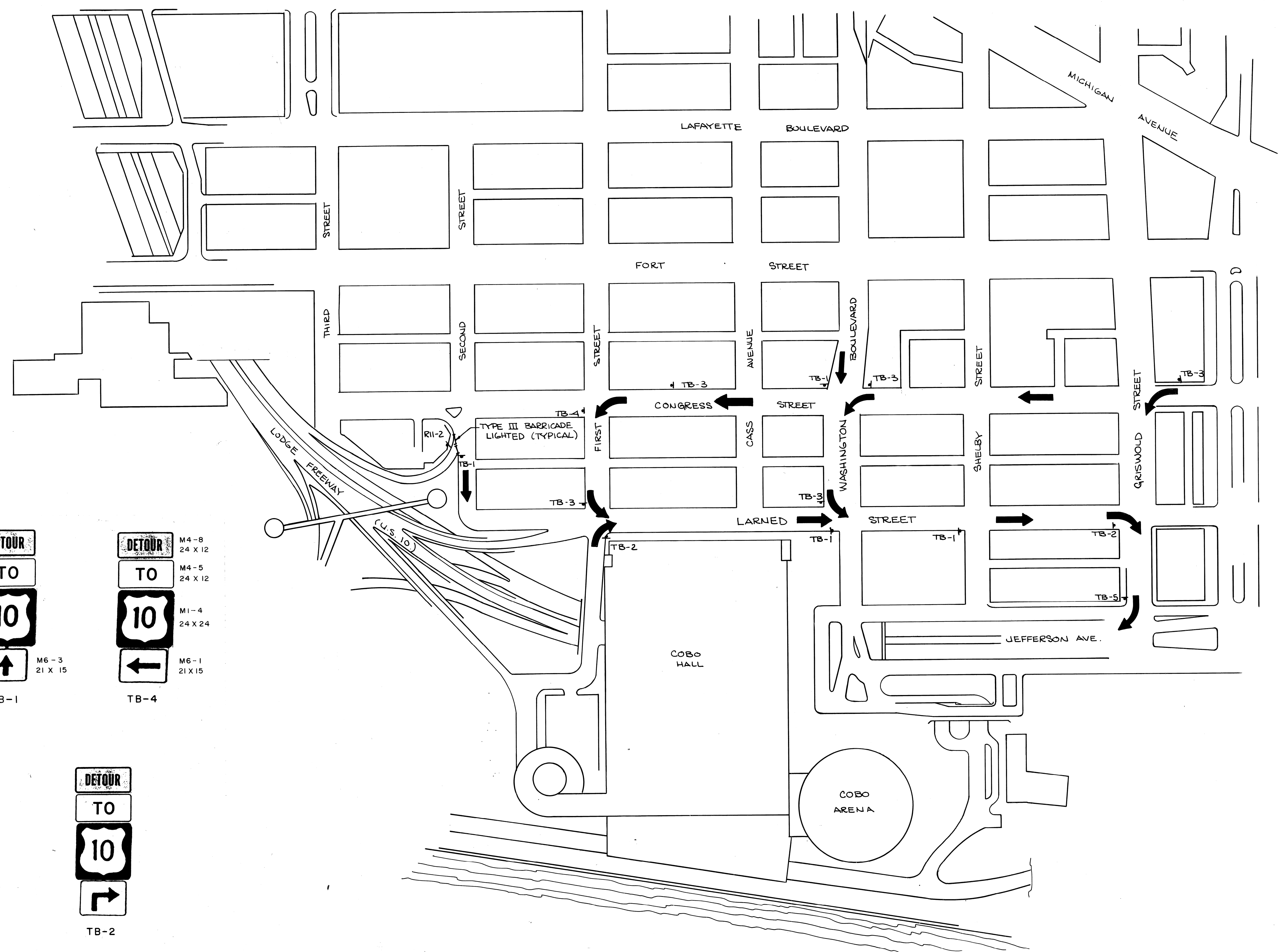
WASHINGTON BLVD.- CONGRESS ST. INT. - PLD CONSTRUCTION MONTH II (STAGE III)

MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION
 Prepared By

 ZIMMER-HOWELL ENGINEERING, LTD.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF in association with MADISON MADISON INTERNATIONAL OF MICHIGAN ZIMMER-HOWELL ENGINEERING, LTD.		MAINTENANCE OF TRAFFIC WASHINGTON BLVD.- LARNED ST.-MONTHS IX & X / WASH. BLVD.- CONG. ST.- MONTH II			
		DATE: FEB. 4, 1986 SCALE: 1" = 30'	DRAWN: DLV DESIGNED: JEJ	CONT. SEC. BM 82111	JOB NO. 25199A

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U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION
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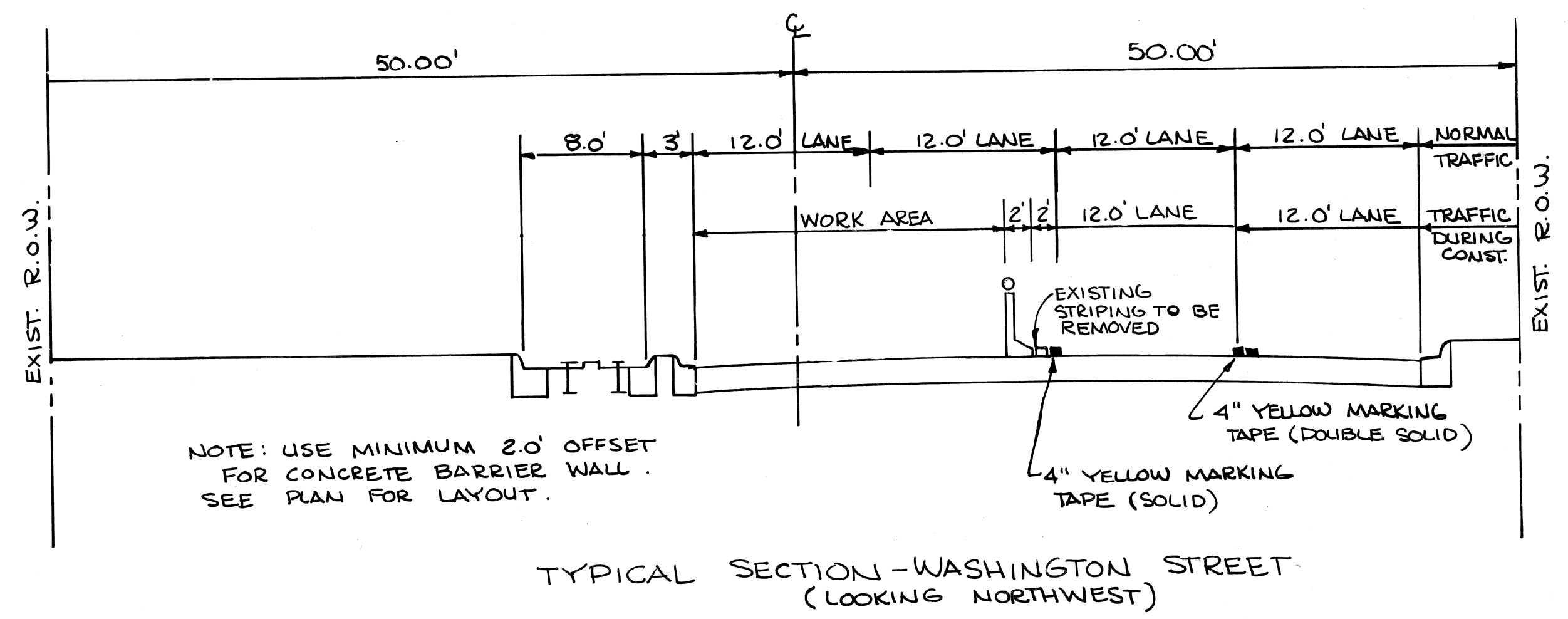
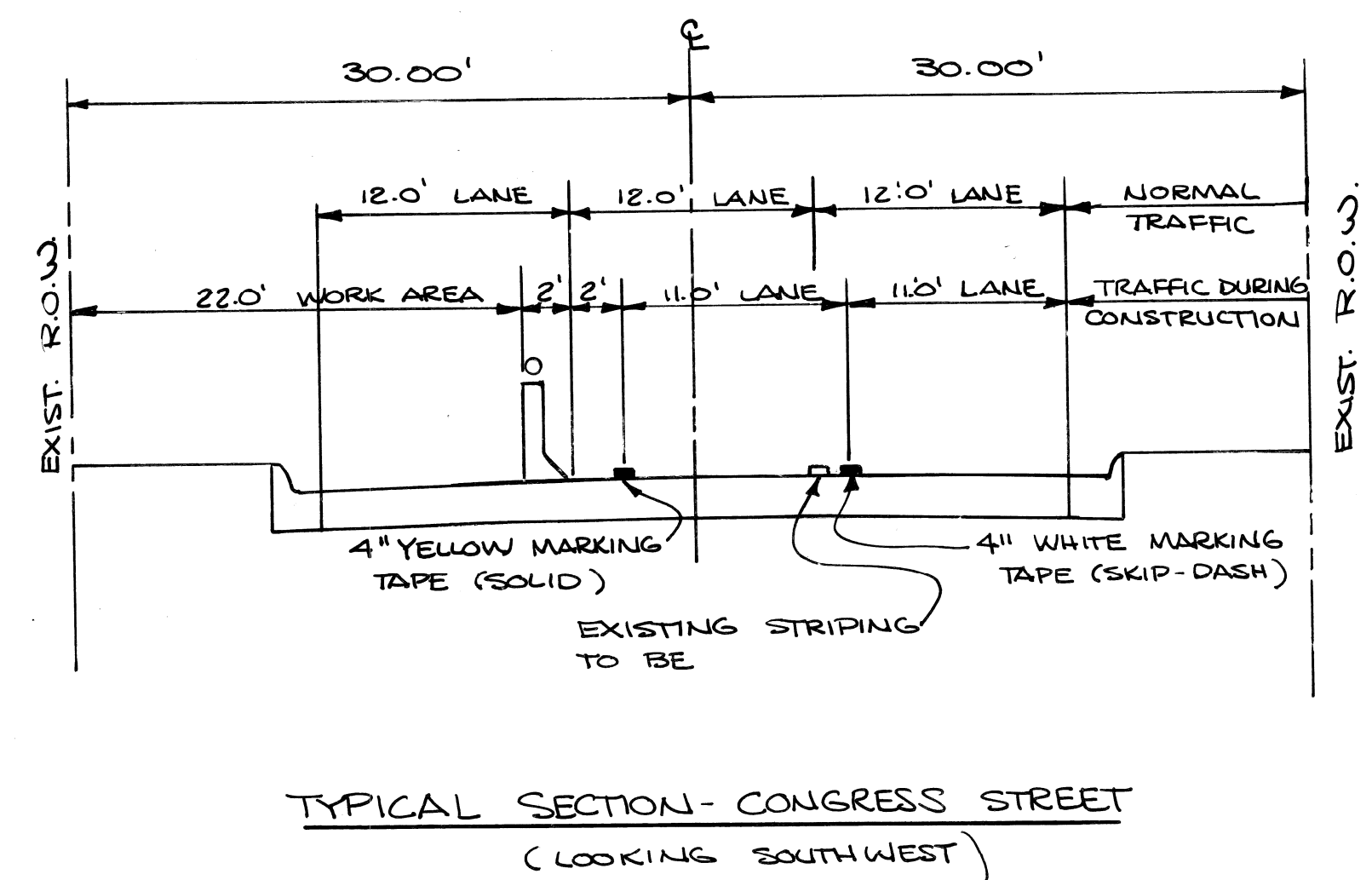
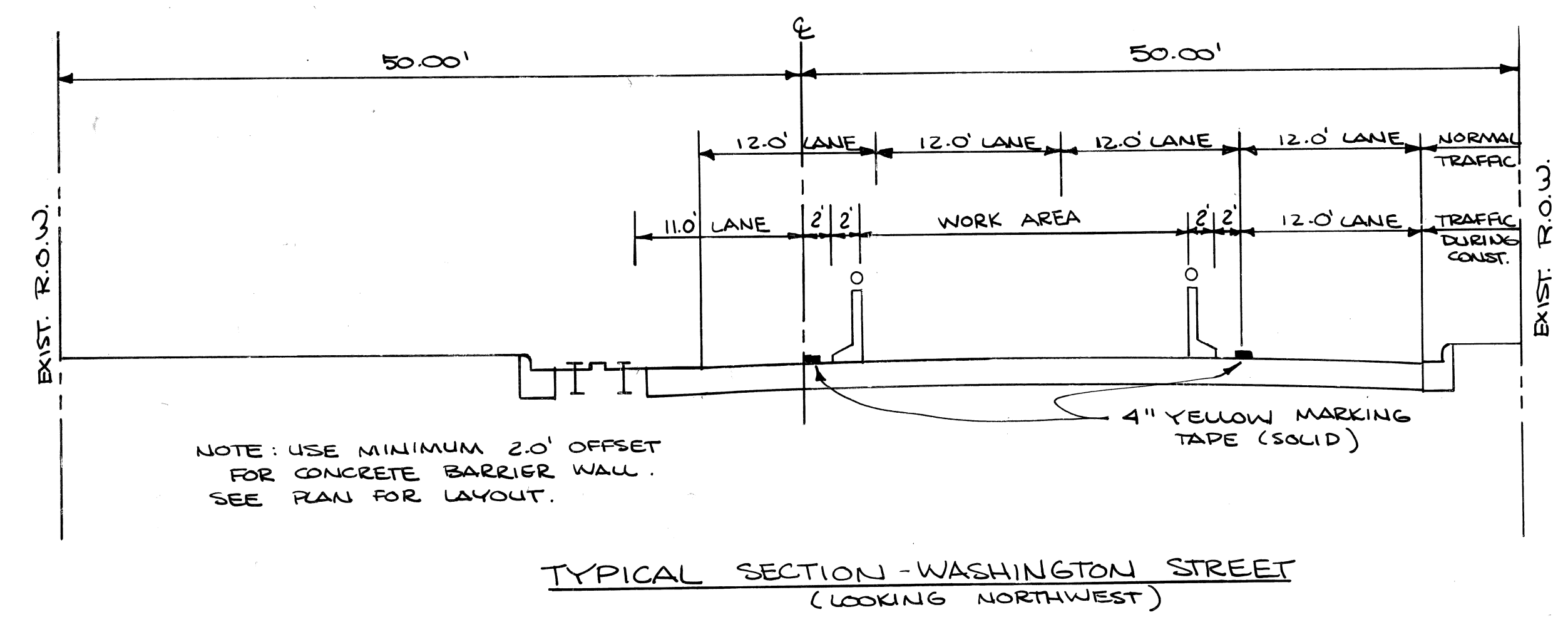
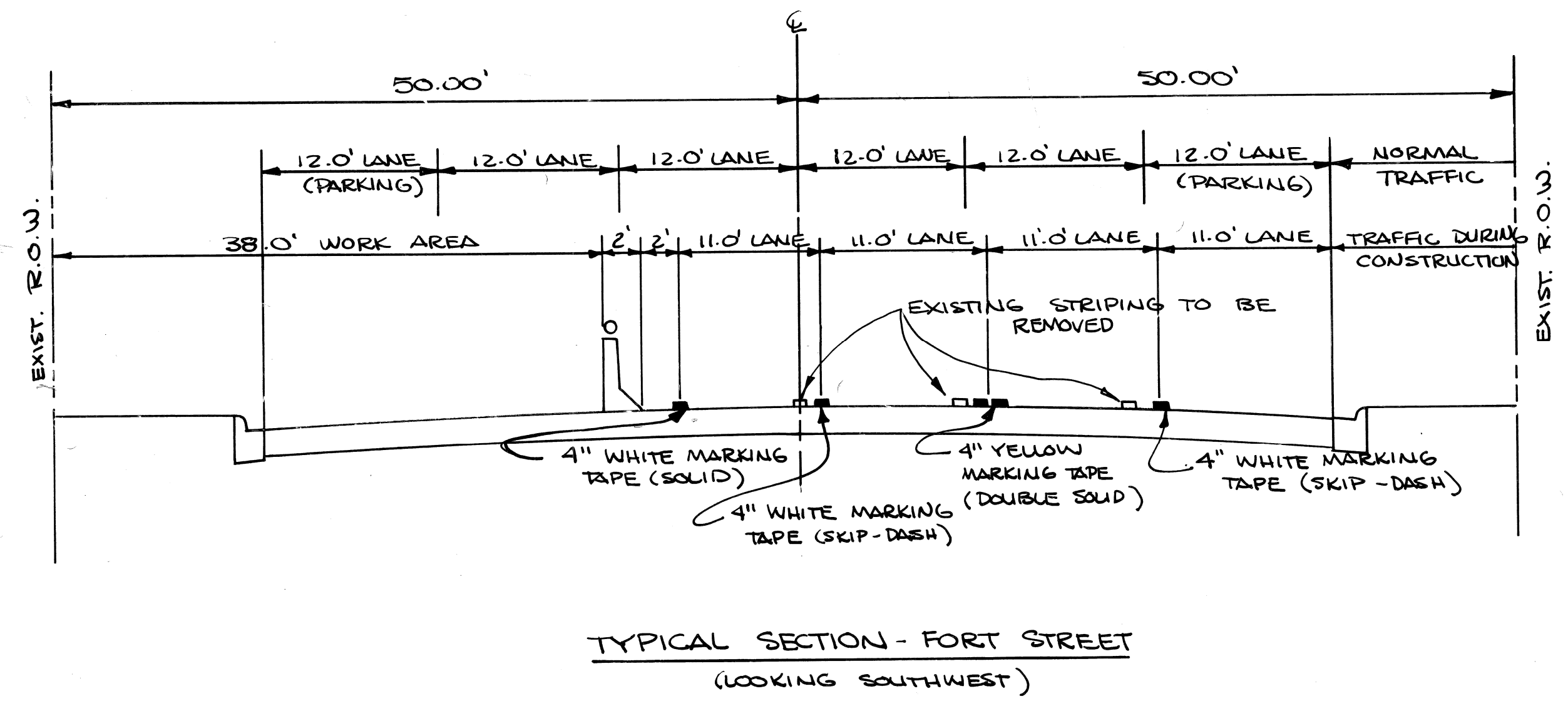
HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF <small>in association with</small> MADISON MADISON INTERNATIONAL OF MICHIGAN ZIMMER-HOWELL ENGINEERING, LTD.	MAINTENANCE OF TRAFFIC CONGRESS RAMP DETOUR - MONTHS V, VII & VIII			
	DATE: FEB. 4, 1986 SCALE: NO SCALE	DRAWN: DLV DESIGNED: JEJ	CONT. SEC. BM 82111	JOB NO. 25199A
				SHEET NO. 42 OF 65

FINAL R.O.W.		
AUTH.	DATE	NO. REVISION

CODE	DESCRIPTION	UNIT	QTY.
6310027	BARRICADE, TYPE II, LIGHTED, OPERATED	EACH	115
6310026	BARRICADE, TYPE II, LIGHTED, FURNISHED	EACH	150
6310234	PREFORMED THERMOPLASTIC PVMT. MKG. SYMBOL (THRU & LEFT TURN ARROW)	EACH	2
6310036	BARRICADE, TYPE III, LIGHTED, FURNISHED	EACH	25
6310037	BARRICADE, TYPE III, LIGHTED, OPERATED	EACH	17
6310056	SIGN, TYPE A, TEMPORARY	SF	585
6310054	MINOR TRAFFIC DEVICES	LS	—
6310049	TEMPORARY CONCRETE BARRIER	LF	4350
6310055	FLAG CONTROL	LS	—
6310080	TEMPORARY PAVEMENT MARKING, TYPE R	LF	17,000
6310003	REMOVING PAVEMENT MARKING	LF	16,000
6310225	PREFORMED THERMOPLASTIC PVMT. MKG. (ONLY)	EACH	11
6310215	18" THERMOPLASTIC STOP BAR	LFT	1070
6310231	PREFORMED THERMOPLASTIC PVMT. MKG. SYMBOL (L. ARROW)	EACH	5
6310235	PREFORMED THERMOPLASTIC PVMT. MKG. SYMBOL (THRU & RIGHT TURN ARROW)	EACH	1
6310232	PREFORMED THERMOPLASTIC PVMT. MKG. SYMBOL (R. ARROW)	EACH	7
6310011	LIGHTED ARROW, TYPE A - FURNISHED	EACH	2
6310012	LIGHTED ARROW, TYPE A - OPERATED	EACH	2
6310045	TYPE B HIGH INTENSITY LIGHT - FURNISHED	EACH	8
6310046	TYPE B HIGH INTENSITY LIGHT - OPERATED	EACH	8

GENERAL NOTES

- All barricades used for channelization shall be Type II.
- Type III barricades are intended for road and lane closures, and shall not be used for channelization or delineation.
- For nighttime channelization of traffic, barricades shall be lighted with Type C warning lights mounted to the side on which traffic passes.
- Type III barricades used for road closure shall be lighted with three Type C warning lights.
- The reflective sheeting used for signs and barricades shall meet the requirements of Article 8.26.02-c of the Standard Specifications for Construction.
- All construction warning signs shall have a black legend and an orange background.
- Construction warning signs in use during hours of darkness shall be lighted with at least two Type A warning flashers.
- Banding of signs to existing poles shall follow the special provisions for banding signs to poles.
- All warning signs shall be banded to existing poles where practical, or as specified on plans.
- Longitudinal dimensions of sign locations may be adjusted slightly to fit field conditions.
- All Street parking signs within the CIA shall be covered where and when in conflict with maintenance of traffic, and as directed by the Engineer in accordance with Article 6.26.13 of Standard Specifications for Construction.
- All temporary pavement markings shall be Type R in accordance with Section 6.31.02-f of the Standard Specifications for Construction.
- All temporary barrier walls shall be lighted with Type C warning lights @ 25' centers. These lights will be incidental to the cost of the temporary concrete barrier wall.
- Existing pavement marking in conflict with the Maintenance of Traffic Plans shall be removed by grinding or sandblasting, in accordance with Section 6.31.09-f of the Standard Specifications for Construction.
- All temporary concrete barrier walls which face oncoming traffic shall have tapered end section treatment.
- All temporary concrete barrier wall tapered end sections facing oncoming traffic shall be lighted with Type B warning lights.



- LEGEND
- I - Type II barricade with Type C warning light.
 - II - Type III barricade with three Type C warning light.
 - ▬ - Single face temporary concrete barrier wall.
 - ⊕ - Sign on portable or permanent supports.
 - ▨ - Work area.

MICHIGAN DEPARTMENT OF TRANSPORTATION

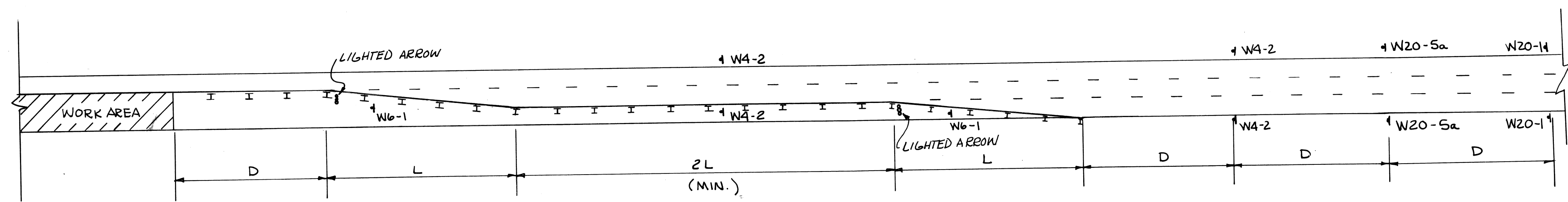
U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION

Prepared By

ZIMMER-HOWELL ENGINEERING, LTD.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF in association with MADISON MADISON INTERNATIONAL OF MICHIGAN ZIMMER-HOWELL ENGINEERING, LTD.		MAINTENANCE OF TRAFFIC			
		TYPICAL SECTIONS & SUMMARY OF QUANTITIES			
DATE: FEB. 4, 1986	DRAWN: DLV	CONT. SEC.	JOB NO.	CHECKED:	SHEET NO.
SCALE: NO SCALE	DESIGNED: EJL	BM 82111	25199A	APPROVED:	43 OF 65

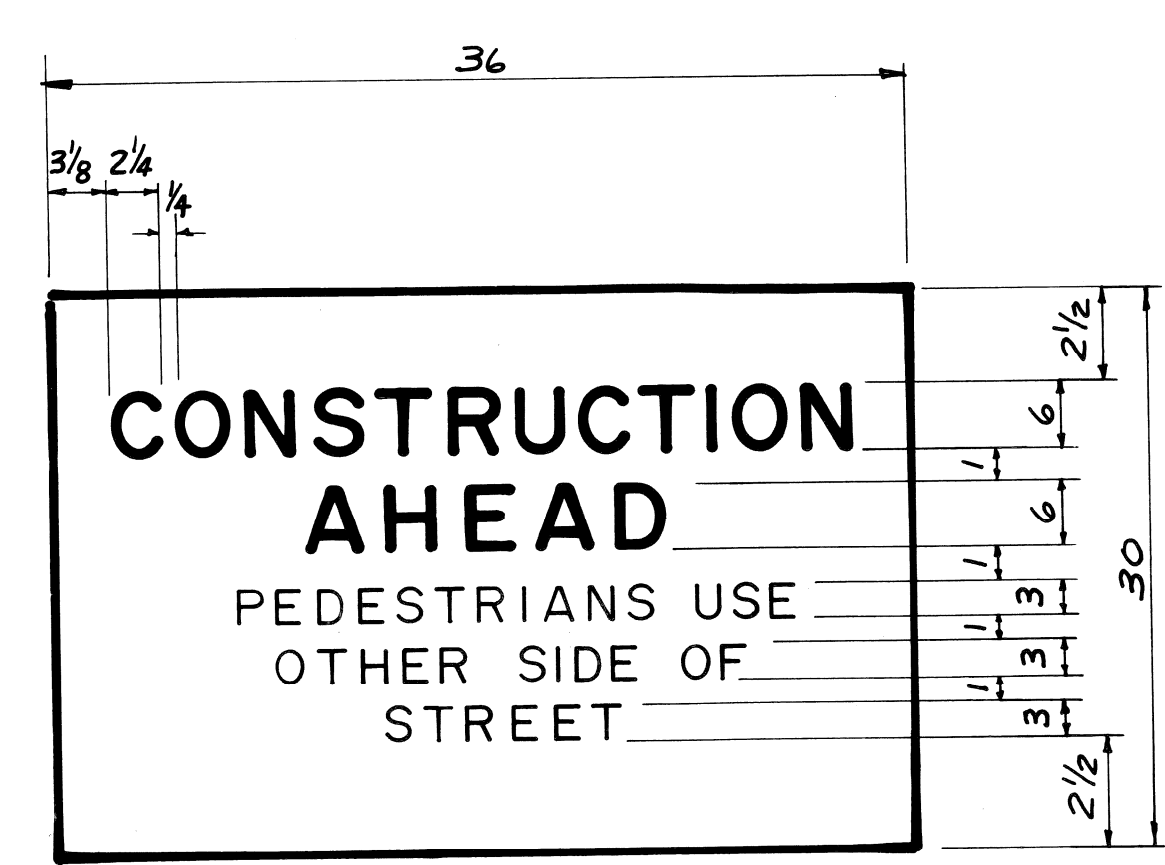
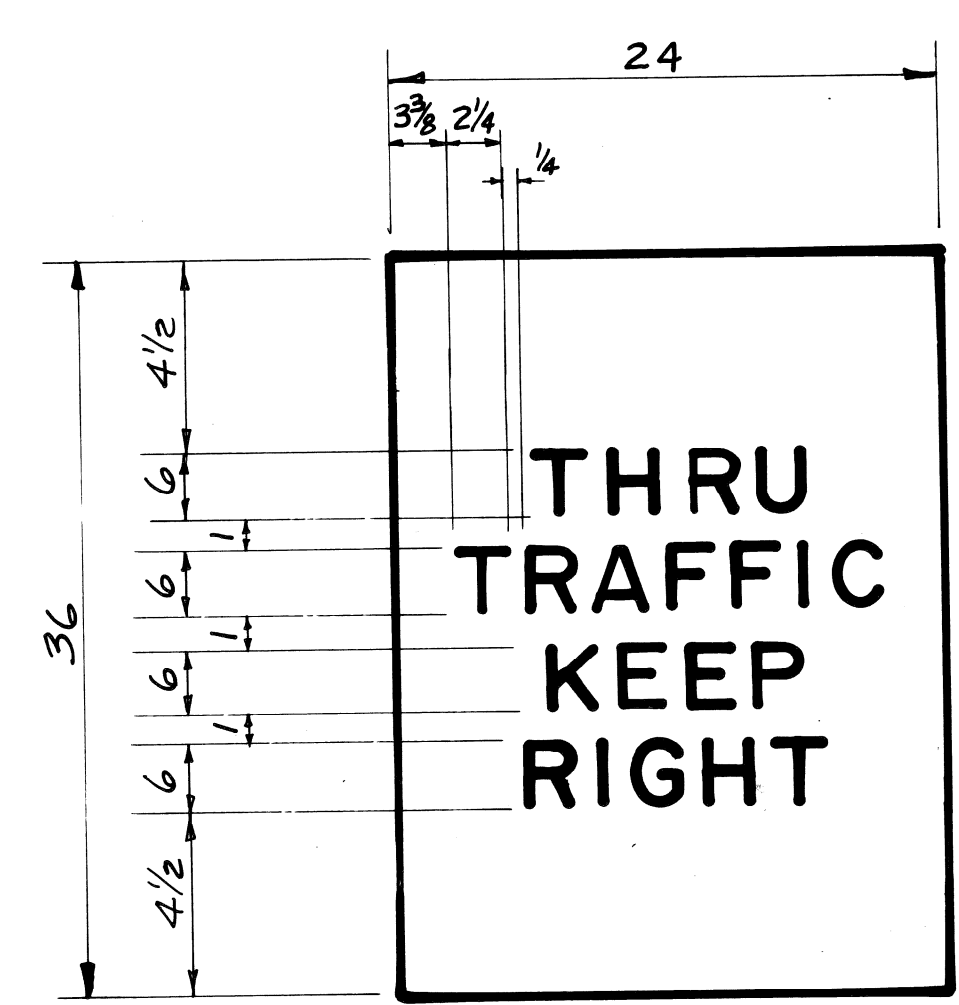
AUTH.			FINAL R.O.W.		
DATE	NO.	REVISION	DATE	NO.	REVISION



TYPICAL LANE CLOSURE DETAIL

NOTES:

1. $L = SW$ FOR SPEED ≥ 45
 $L = WS^2/60$ FOR SPEED ≤ 40
2. D = DISTANCE SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER
3. W20-5a SHALL BE REPLACED BY W20-5 WHERE ONLY ONE LANE IS CLOSED



SPECIAL SIGNS

SIGN LEGEND

	R3-1a 24 x 30 (2B-15)		W20-5 48 x 48 (6B-15)		W1-7 48 x 24 (2C-9)
	R3-2 24 x 24 (2B-15)		W20-5a 48 x 48 (6B-3)		W4-2 36 x 36
	R5-1 30 x 30 (2B-24)		W20-7a (or W20-7)		W6-3 30 x 30 (2C-25)
	R11-2 48 x 30 (2B-38)		W20-1 48 x 48 (6B-15)		W9-1 30 x 30 (6B-22)
	R11-4 60 x 30 (2B-40)		W20-3 48 x 48 (6B-17)		
	W1-4 30 x 30 (2C-7)				
	W1-5 30 x 30 (2C-8)				
	W1-6 48 x 24 (2C-9)				

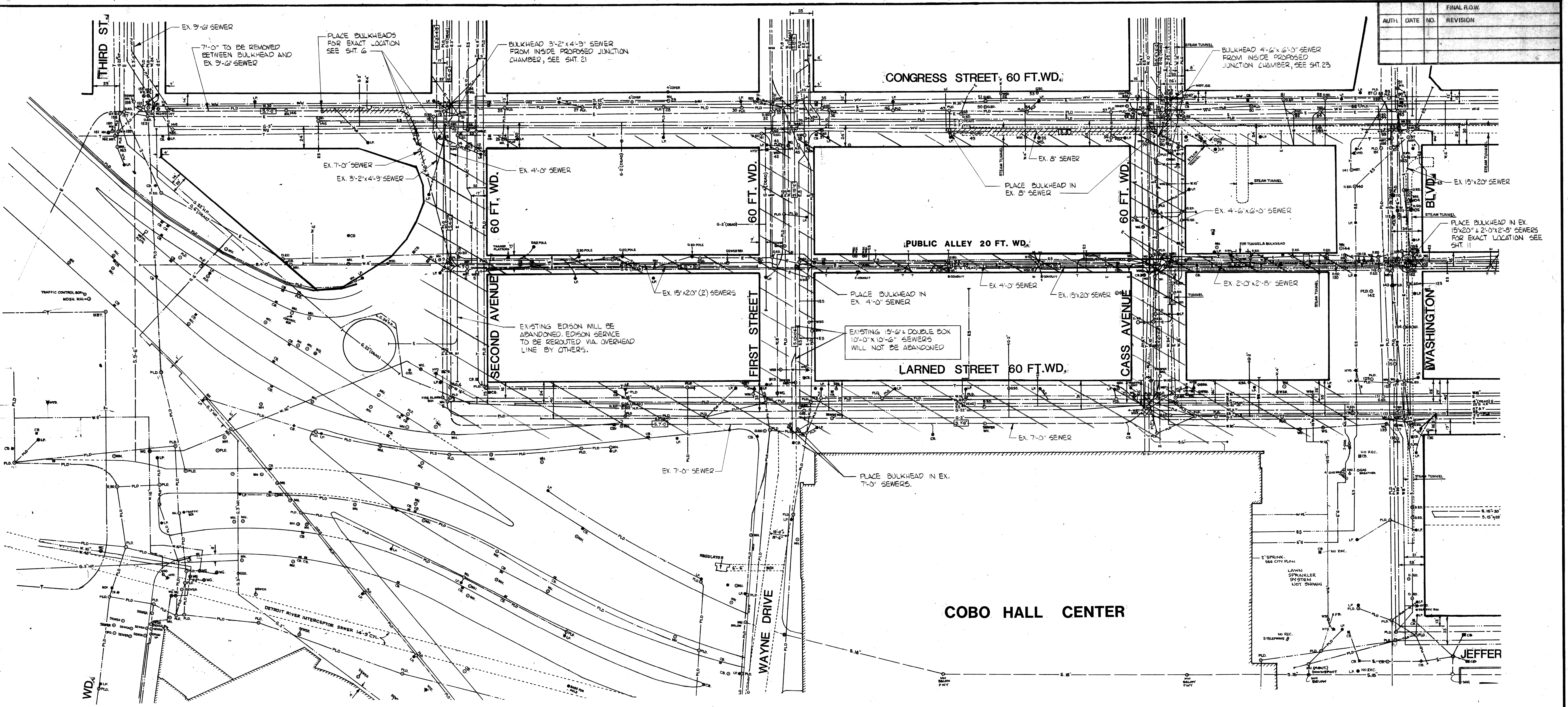
MICHIGAN DEPARTMENT OF TRANSPORTATION

U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION

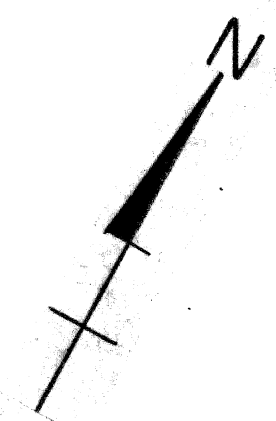
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AUTH.	DATE	NO.	REVISION



▨ — INDICATES EX. SEWERS AND MANHOLES TO BE ABANDONED & FILLED



- NOTES:**
- SEWERS TO BE ABANDONED OR REMOVED SHALL REMAIN IN SERVICE UNTIL ALL CONNECTIONS, INCLUDING BUT NOT LIMITED TO BUILDING SERVICES AND CATCH BASINS, ARE REMOVED FROM THE SEWER AND UPON APPROVAL FROM THE ENGINEER.
 - SEWERS TO BE ABANDONED WILL BE BULKHEADED WHEREVER THEY ARE CUT DURING CONSTRUCTION.
 - DROP-PIPE HOLES USED FOR PLACING FILL MATERIAL INTO THE ABANDONED SEWER SHALL BE SPACED AT INTERVALS THAT WILL INSURE THE PROPER AND COMPLETE FILLING OF THE SEWER. LOCATIONS OF DROP-PIPE HOLES WILL BE APPROVED BY THE ENGINEER.
 - CONTRACTOR SHALL SUBMIT A SHOP DRAWING SHOWING THE SEQUENCE OF SEWER ABANDONMENT.

QUANTITIES

SEWER ABANDONMENT		
ITEM	ESTIMATED QUANTITIES	UNIT USED
84" SEWER ABANDONMENT (SPECIAL)	1300	LFT
48" SEWER ABANDONMENT (SPECIAL)	535	LFT
36" x 57" SEWER ABANDONMENT (SPECIAL)	25	LFT
54" x 72" SEWER ABANDONMENT (SPECIAL)	260	LFT
ABANDONING DRAINAGE STRUCTURES	23	EACH
84" SEWER BULKHEAD	5	EACH
48" SEWER BULKHEAD	2	EACH
24" x 32" SEWER ABANDONMENT (SPECIAL)	280	LFT
15" x 20" SEWER ABANDONMENT (SPECIAL)	845	LFT
36" x 57" SEWER BULKHEAD (SPECIAL)	1	EACH
54" x 72" SEWER BULKHEAD (SPECIAL)	1	EACH
15" x 20" SEWER BULKHEAD (SPECIAL)	1	EACH
24" x 32" SEWER BULKHEAD (SPECIAL)	1	EACH
8" SEWER ABANDONMENT (SPECIAL)	235	LFT
12" x 24" SEWER ABANDONMENT (SPECIAL)	360	LFT
12" x 24" SEWER BULKHEAD (SPECIAL)	2	EACH

MICHIGAN DEPARTMENT OF TRANSPORTATION

U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION

Prepared By

MADISON/MADISON INTERNATIONAL OF MICHIGAN
Engineers Architects Planners, 313-963-6110

SEWER ABANDONMENT

UTILITY RELOCATIONS

<p>HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF in association with MADISON MADISON INTERNATIONAL OF MICHIGAN ZIMMER-HOWELL ENGINEERING, LTD.</p>		DATE: FEB. 4, 1986	DRAWN: F.G.	CONT. SEC.	JOB NO.	CHECKED: B.P.	SHEET NO.
		SCALE: 1" = 50'	DESIGNED: M.L.	BM 82111	25199A	APPROVED: J.C.M.	45 OF 65

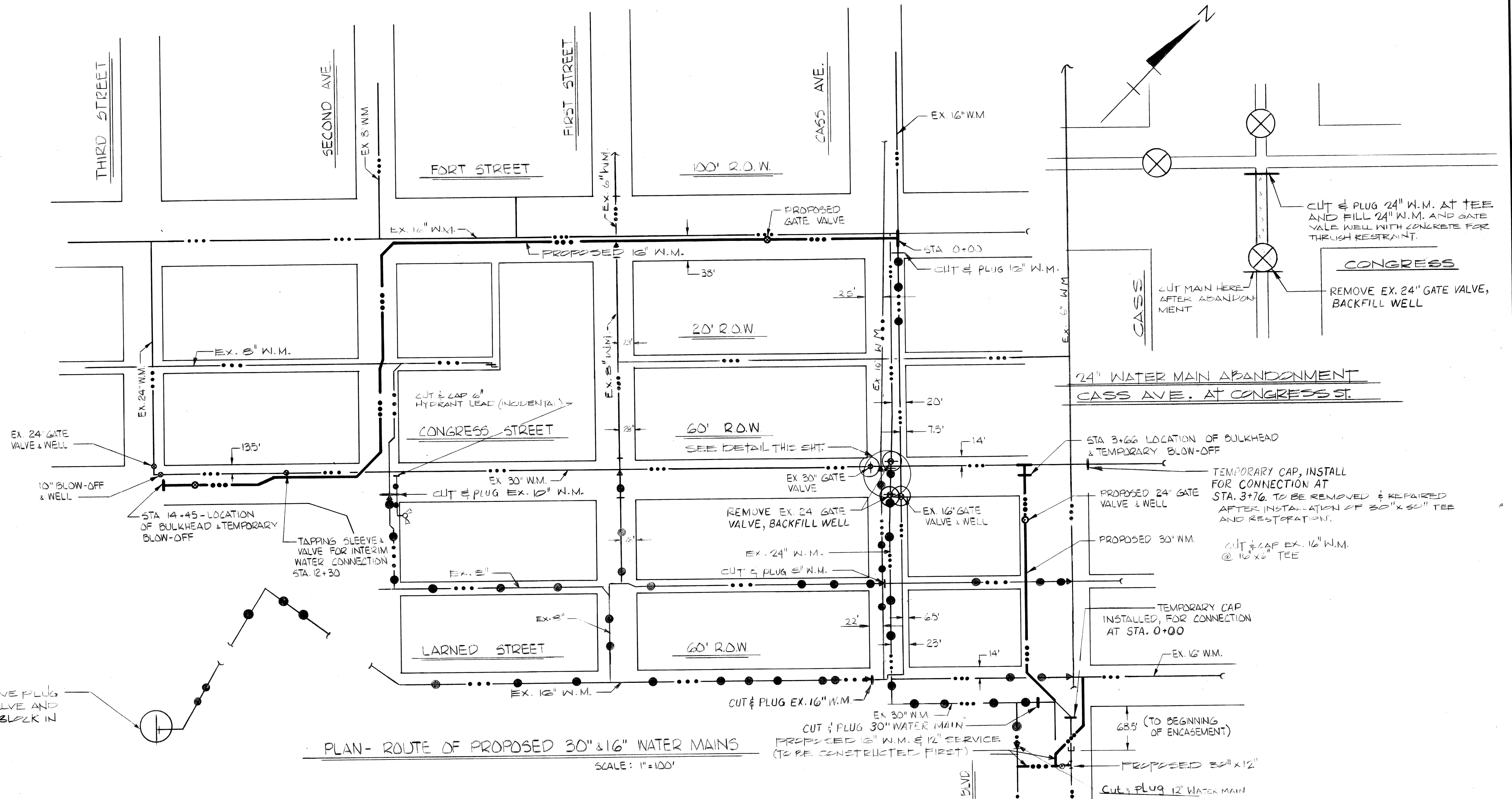
FINAL R.O.W.		
AUTH.	DATE	REVISION

SCHEDULE OF CONSTRUCTION AND DISCONNECTION
30" WATER MAIN ALONG WASHINGTON BLVD.

1. THE 16" LARNED W.M. EAST OF CASS THE 30" CONGRESS W.M. AND THE 30" WASHINGTON BLVD - LARNED - CASS W.M. CAN BE SHUT DOWN ONLY 2NE W.M. AT A TIME.
2. CONSTRUCT THE 30" WASHINGTON BLVD. W.M. BETWEEN 150 PSI TEST LIMIT.
3. CONSTRUCT THE 16" W.M. 12" SERVICE AT WASHINGTON BLVD AND LARNED BETWEEN 150 PSI. LIMITS. PRESSURE TEST CHLORINATE MAKE CONNECTIONS, PUT IN SERVICE.
4. PRESSURE TEST 30" W.M. IN WASHINGTON BLVD. CHLORINATE. MAKE TEMPORARY CUT & LAP ON 30" W.M. AT CONGRESS AND WASHINGTON BLVD. MAKE NEW CONNECTIONS. REMOVE TEMPORARY CUT AND LAP AND PUT NEW MAIN IN SERVICE.

SCHEDULE OF CONSTRUCTION AND DISCONNECTION
16" WATER MAIN

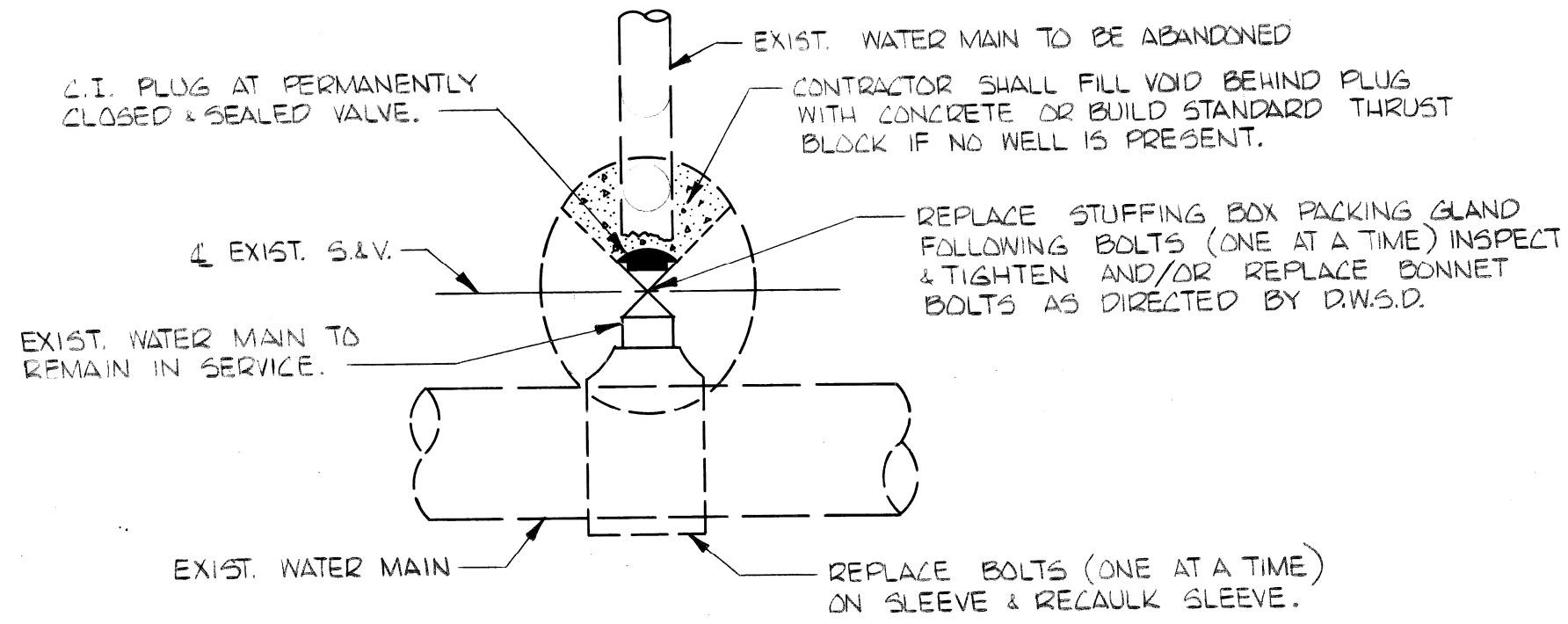
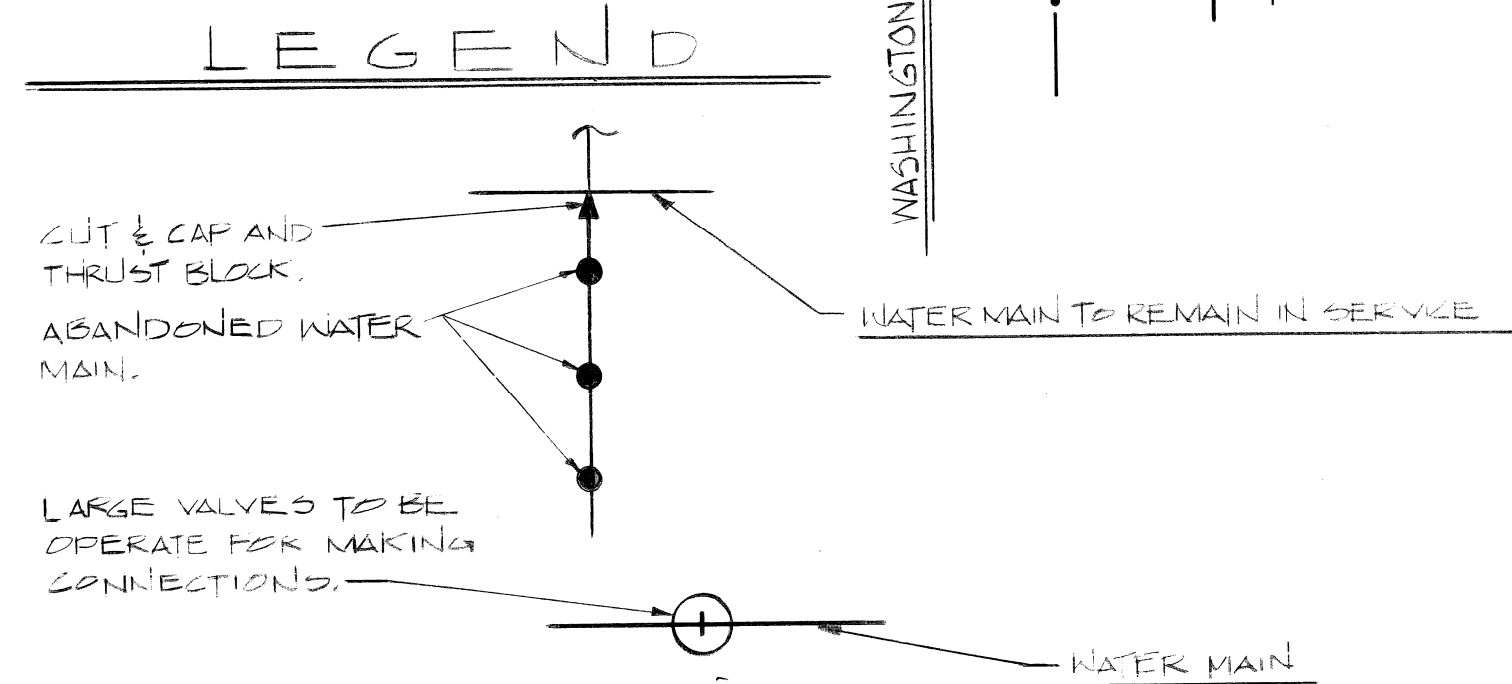
1. CONSTRUCT 16" W.M. IN CONGRESS (AT THIRD) SECOND - FORT (TO CASS).
2. TEST AT 150 PSI. W.M. ITEM 1.
3. CHLORINATE W.M. ITEM 1.
4. MAKE CONNECTIONS IN ITEM NO 1 & PUT IN SERVICE.
5. CUT & LAP MAIN AS SHOWN FOR THE ABANDONMENTS AS REQUIRED.



NOTES:
LARGE VALVES TO BE OPERATED FOR MAKING CONNECTION NOT SHOWN.
LOCATION: JEFFERSON 130' ± E OF E 1/2 OF S 1/2 LOT
W. CONGRESS/WOODWARD 130' ± W OF E 1/2 OF WOODWARD

CLOSE & SEAL VALVE PLUG EAST SIDE OF VALVE AND CONSTRUCT THRUST BLOCK IN WELL.

PLAN - ROUTE OF PROPOSED 30" & 16" WATER MAINS
SCALE: 1" = 100'



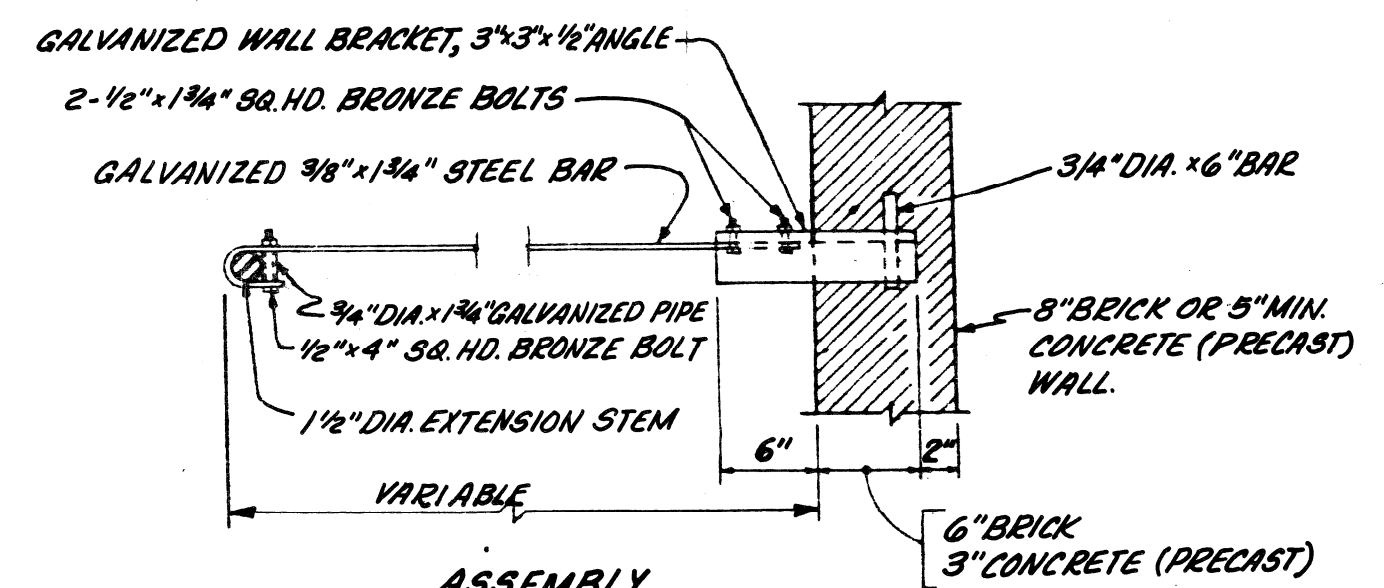
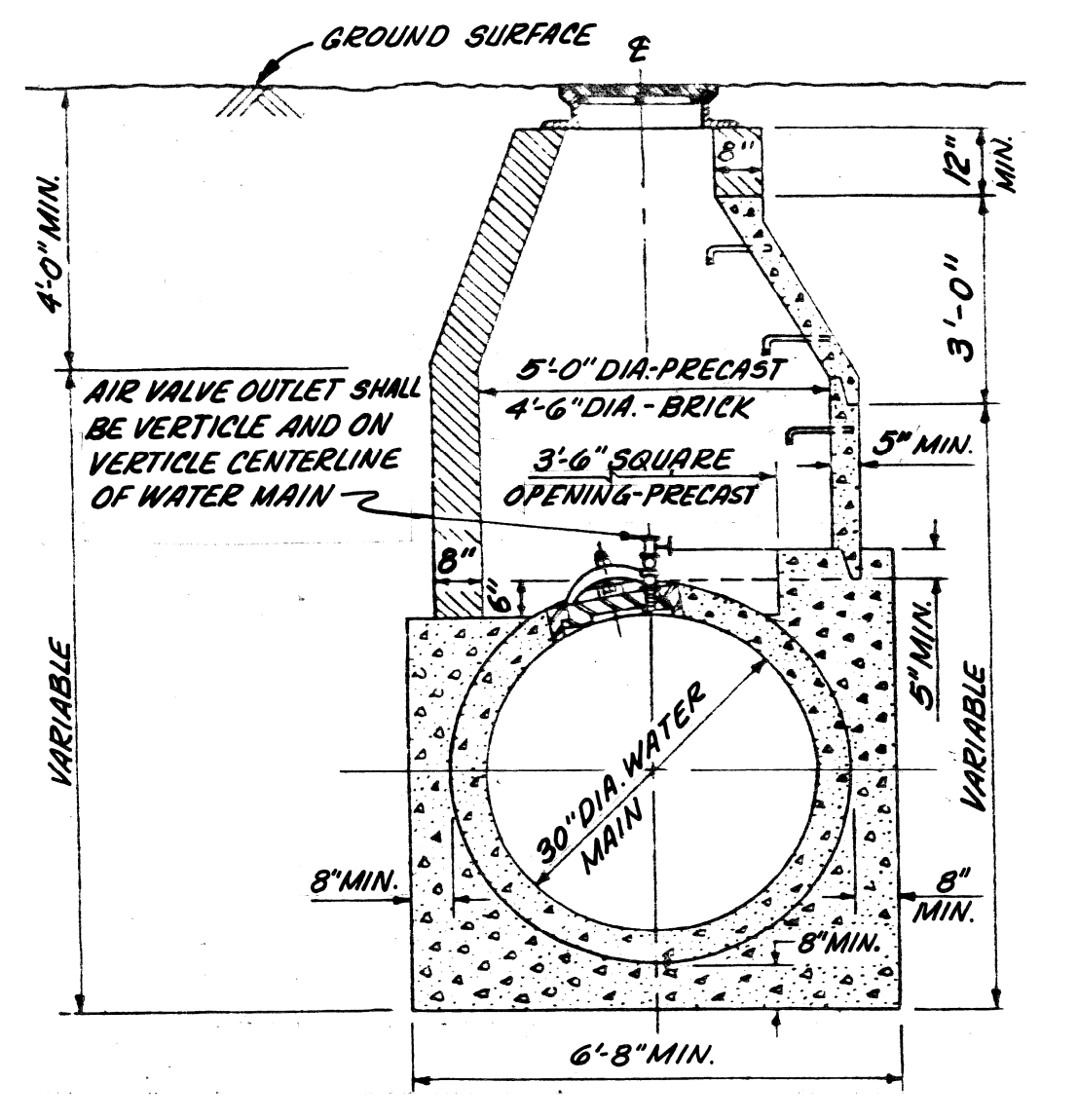
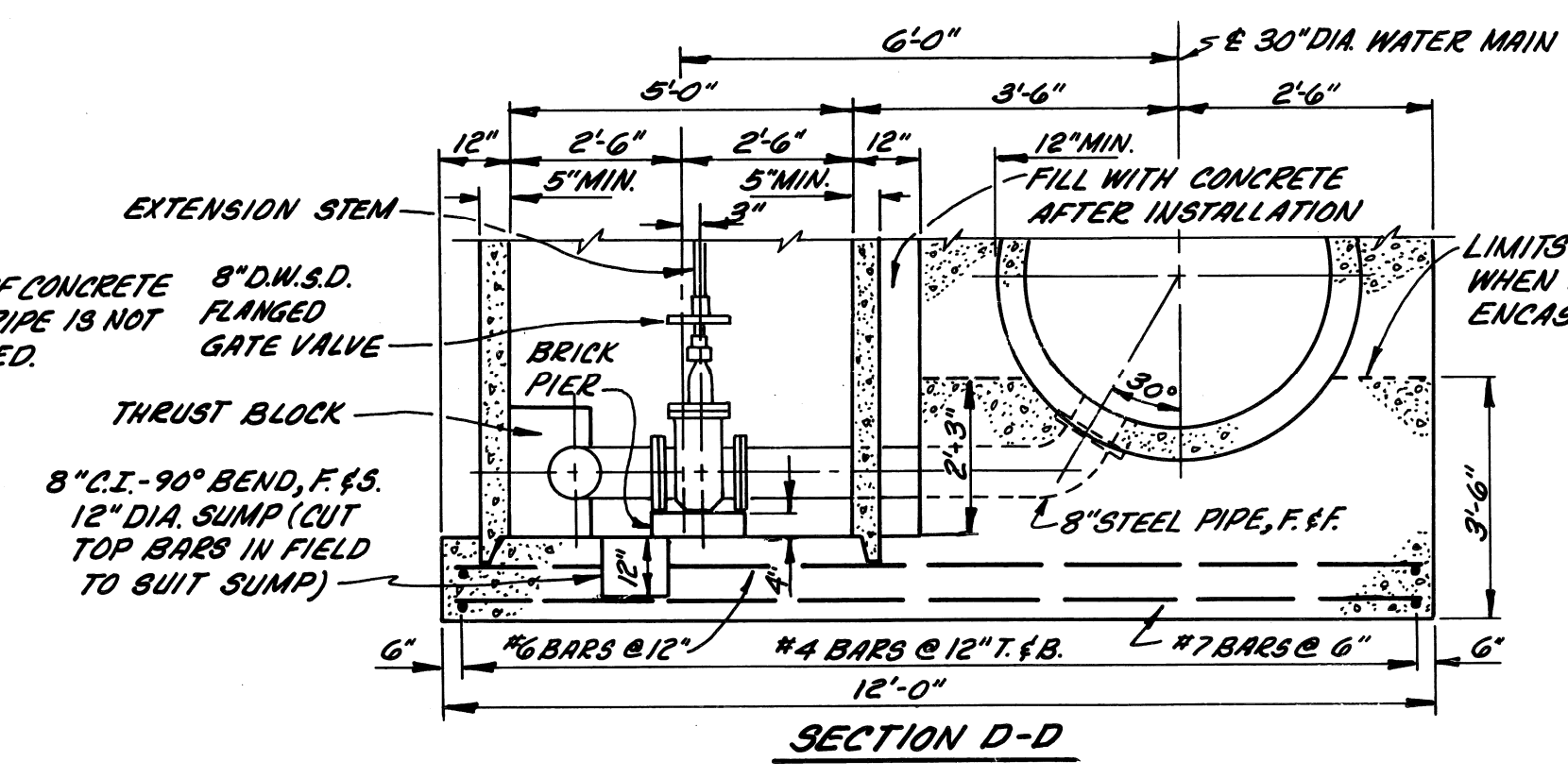
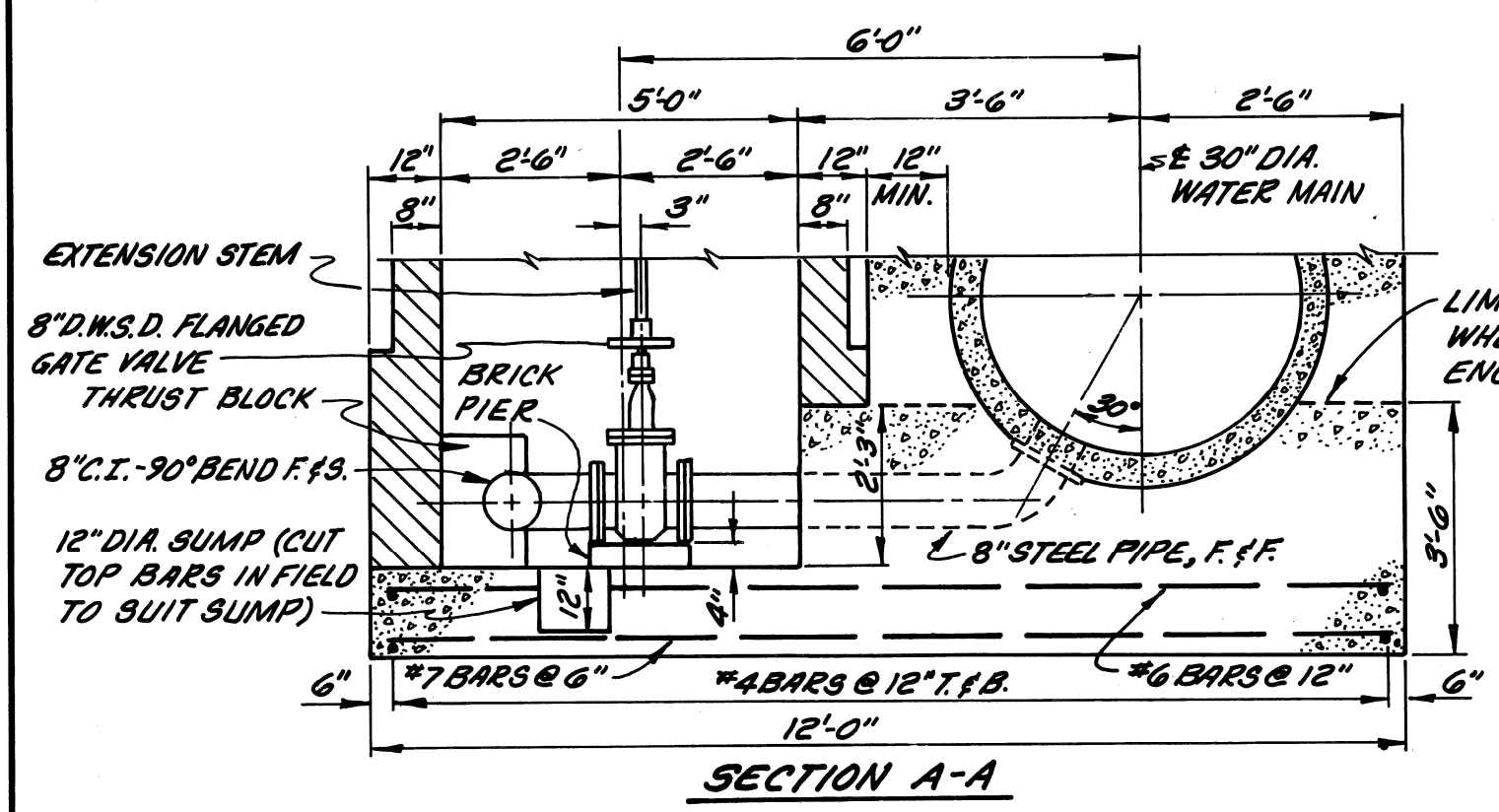
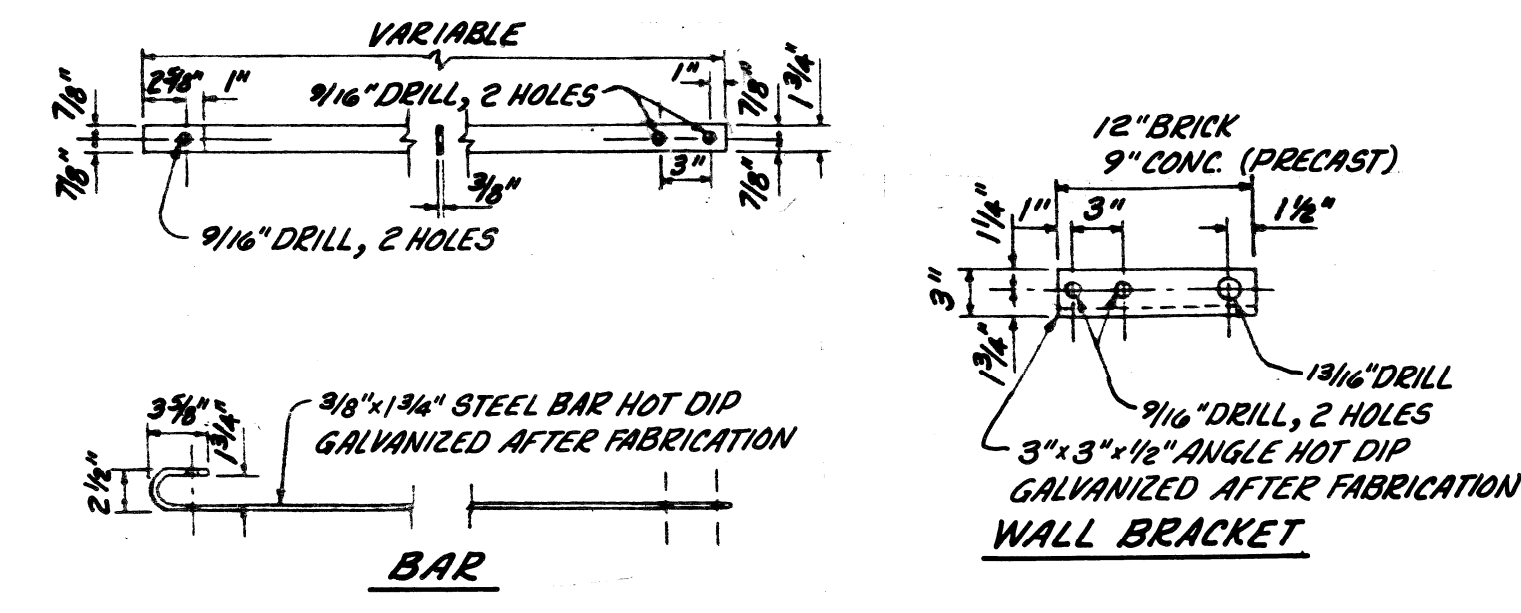
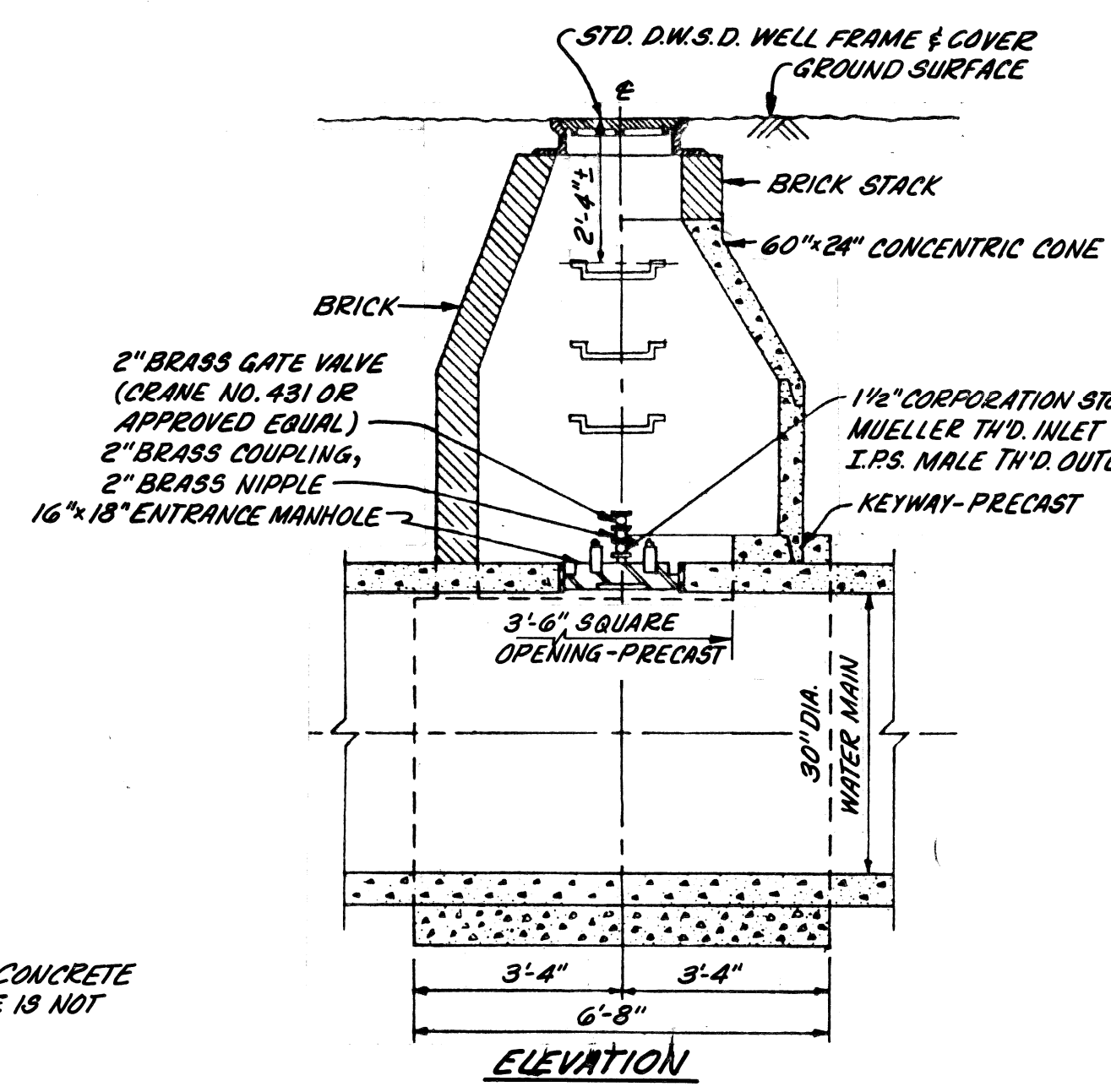
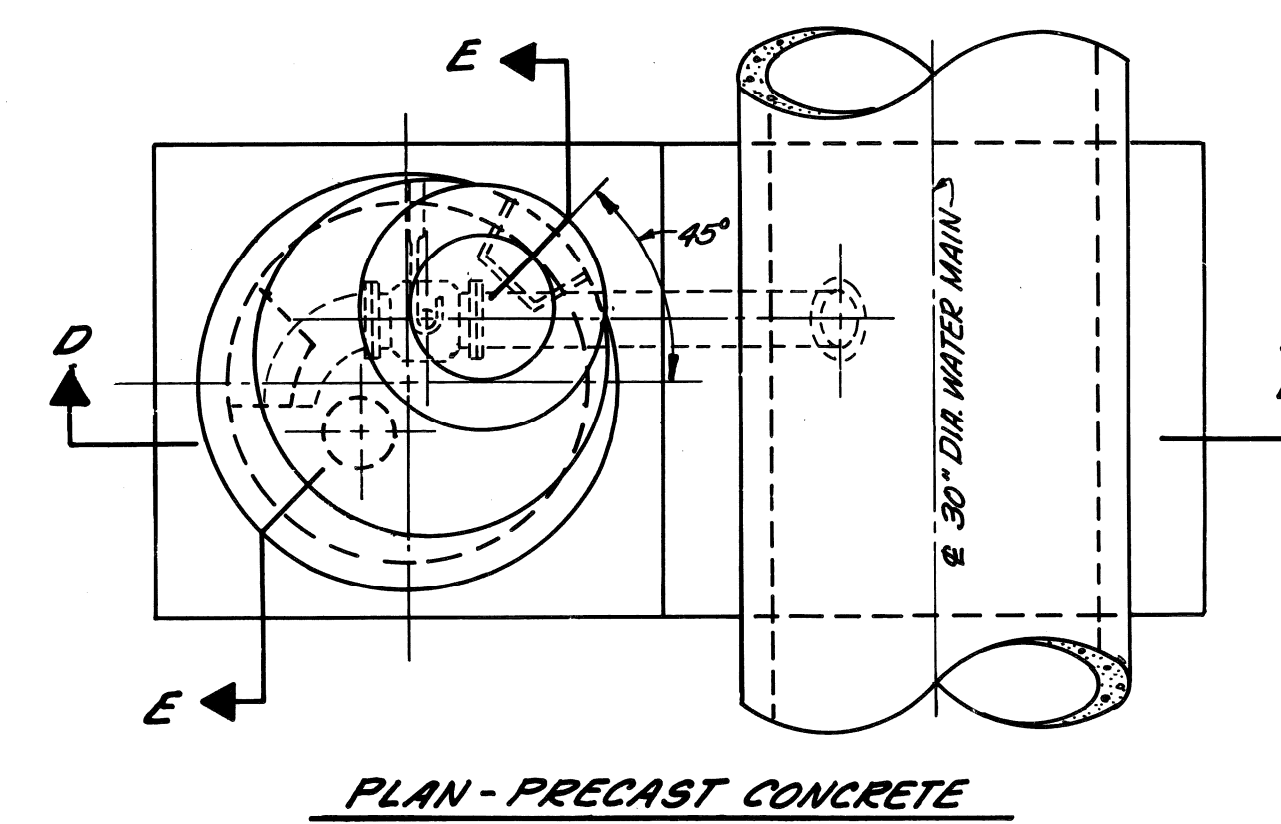
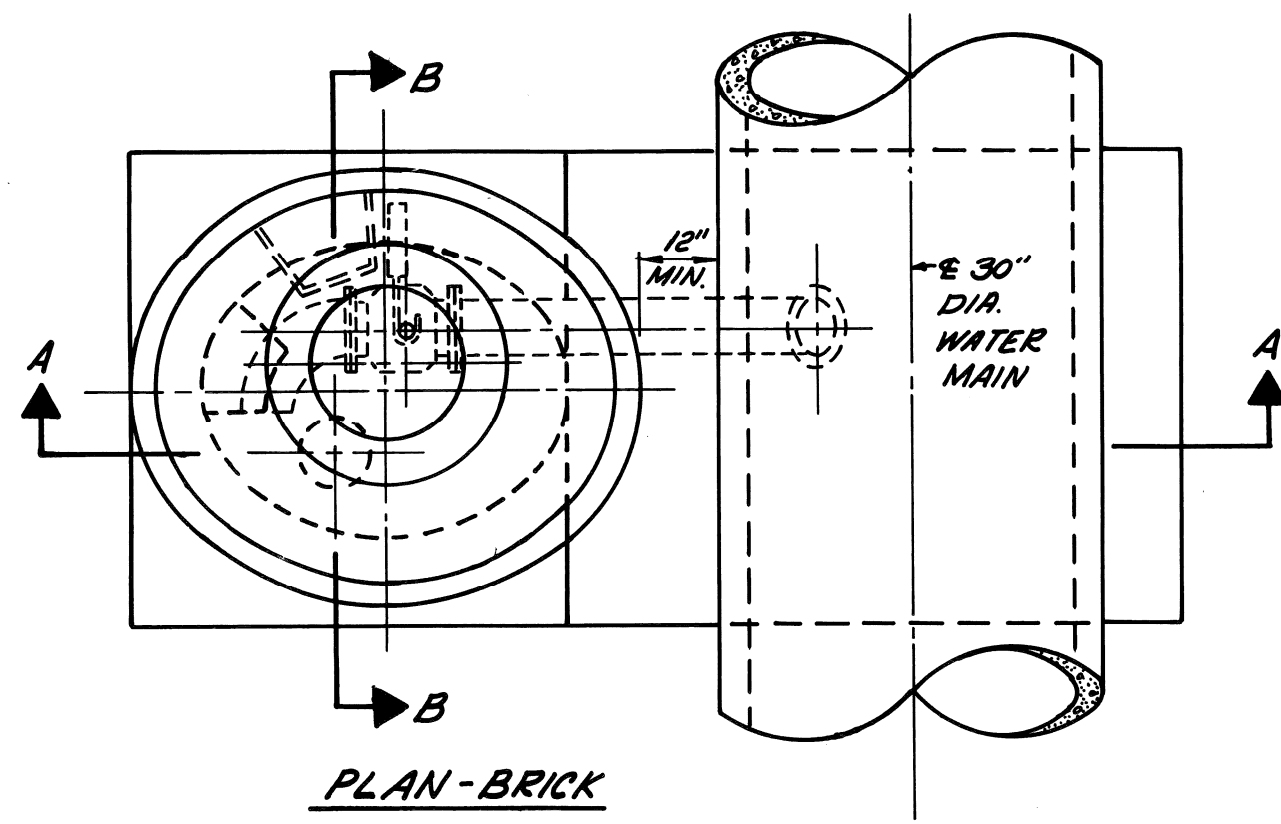
ABANDONMENT OF TAPPING SLEEVE & VALVE OR GATE VALVE IN WELL

MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10—LODGE FREEWAY AT COBO HALL EXPANSION
Prepared By
MADISON/MADISON INTERNATIONAL OF MICHIGAN
Engineers Architects Planners, 313-963-6110

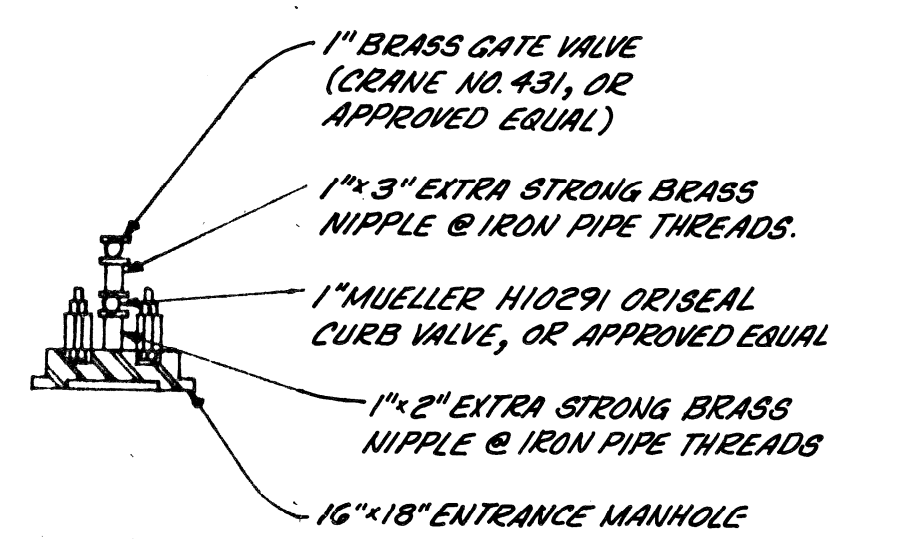
WATER MAIN CONNECTION SCHEDULE

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF in association with MADISON/MADISON INTERNATIONAL OF MICHIGAN ZIMMER-HOWELL ENGINEERING, LTD.		UTILITY RELOCATIONS		DATE: FEB. 4, 1986	DRAWN: J. E. F.G.	CONT. SEC.	JOB NO.	CHECKED: B.R.	SHEET NO.
		SCALE: NOTED	DESIGNED: V.A.	BM 82111	25199A	APPROVED: J.C.M.	45A OF 65		

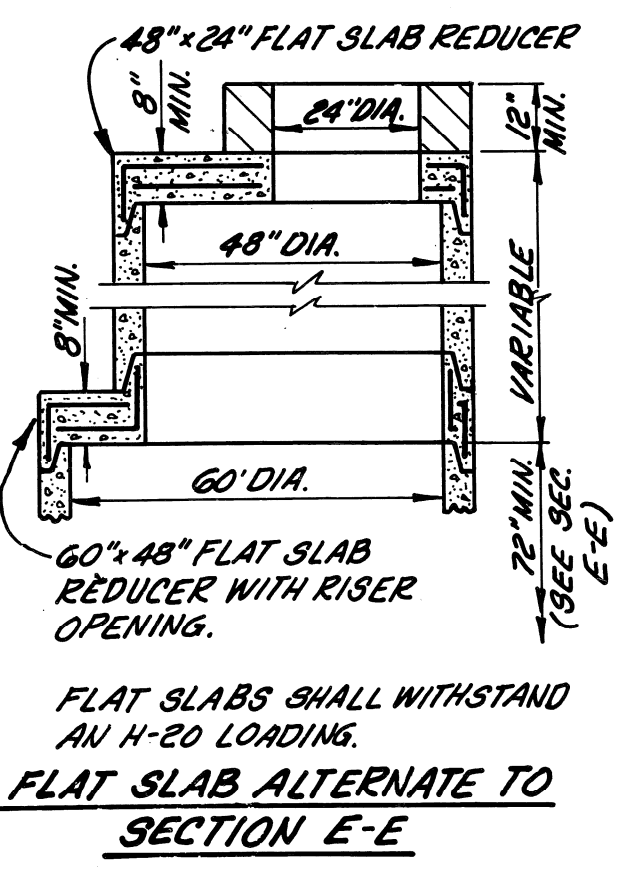
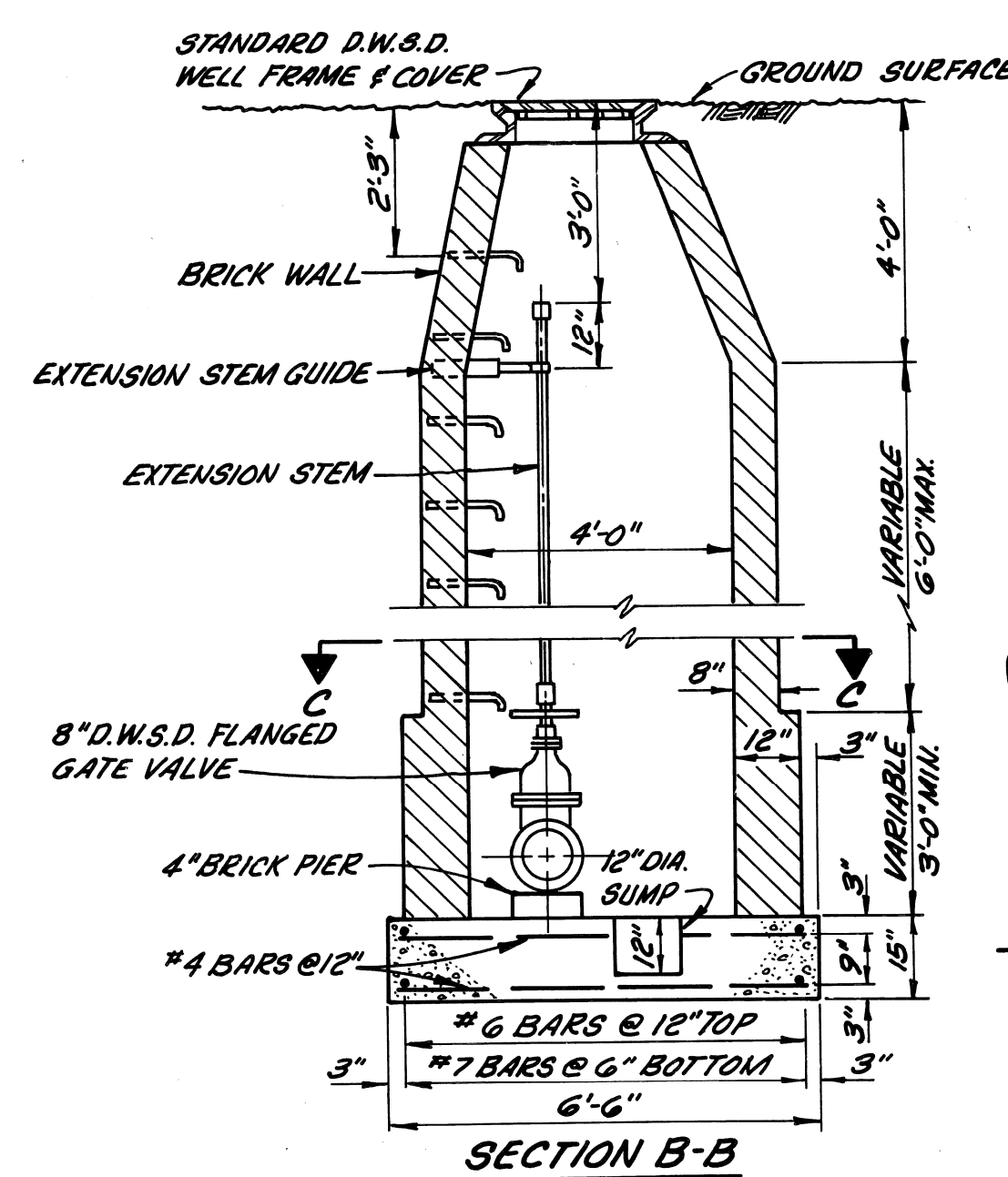
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AUTH.	DATE	NO.	REVISION



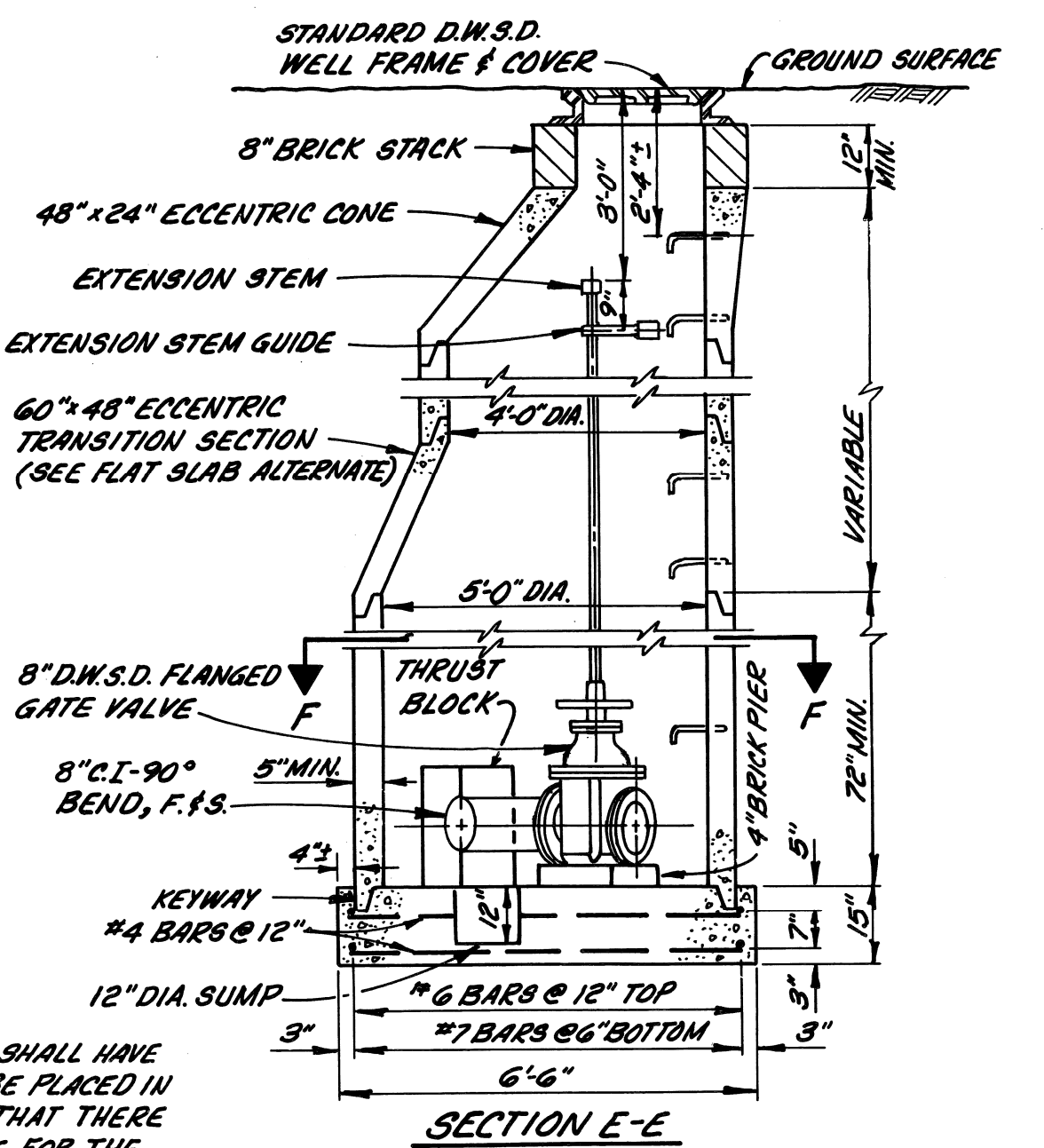
DETAIL OF EXTENSION STEM GUIDE FOR BLOW-OFF WELL



DETAIL OF AIR VALVE FOR PIPE TO BE TESTED AT 200 P.S.I. OR GREATER

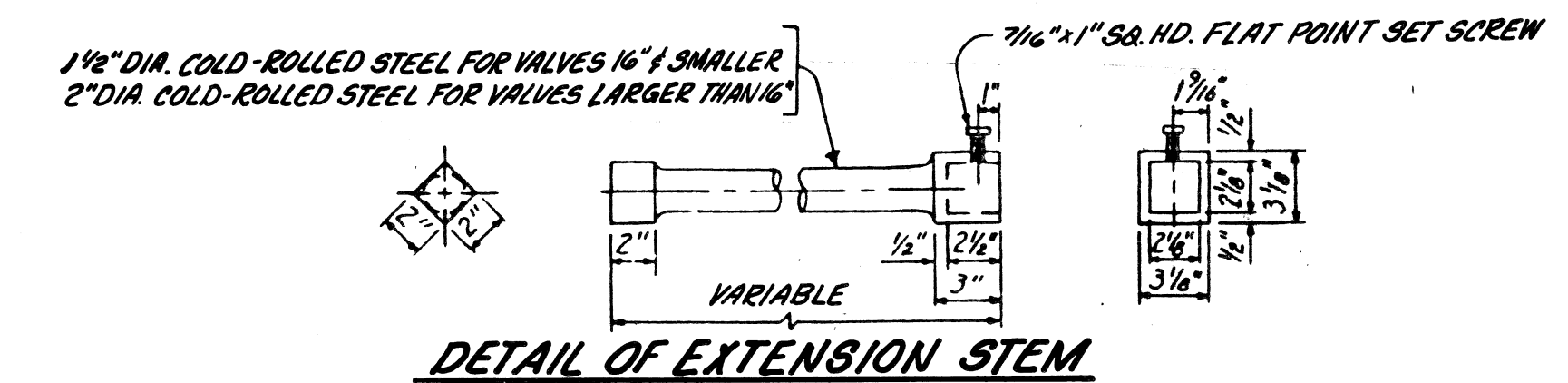


FLAT SLAB ALTERNATE TO SECTION E-E

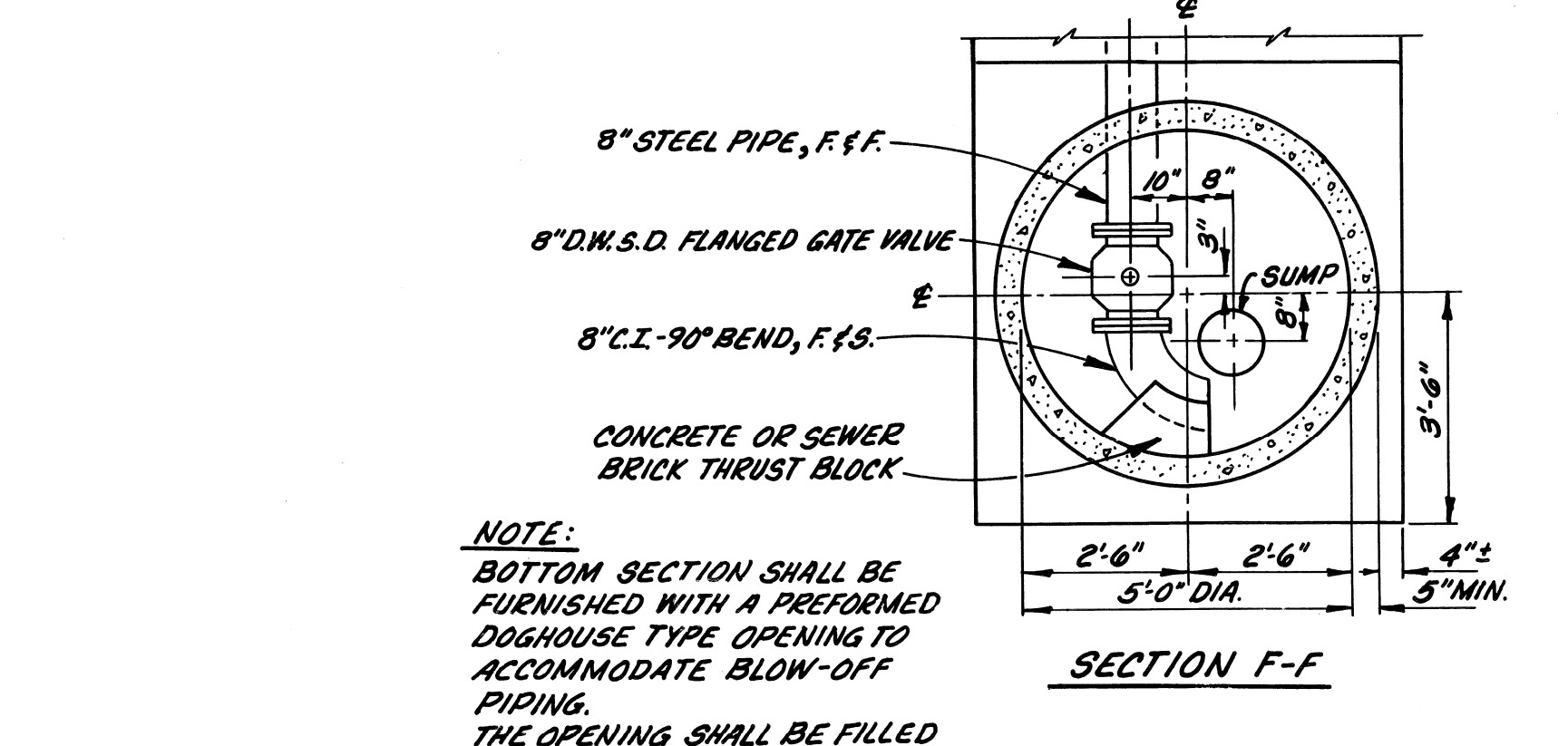
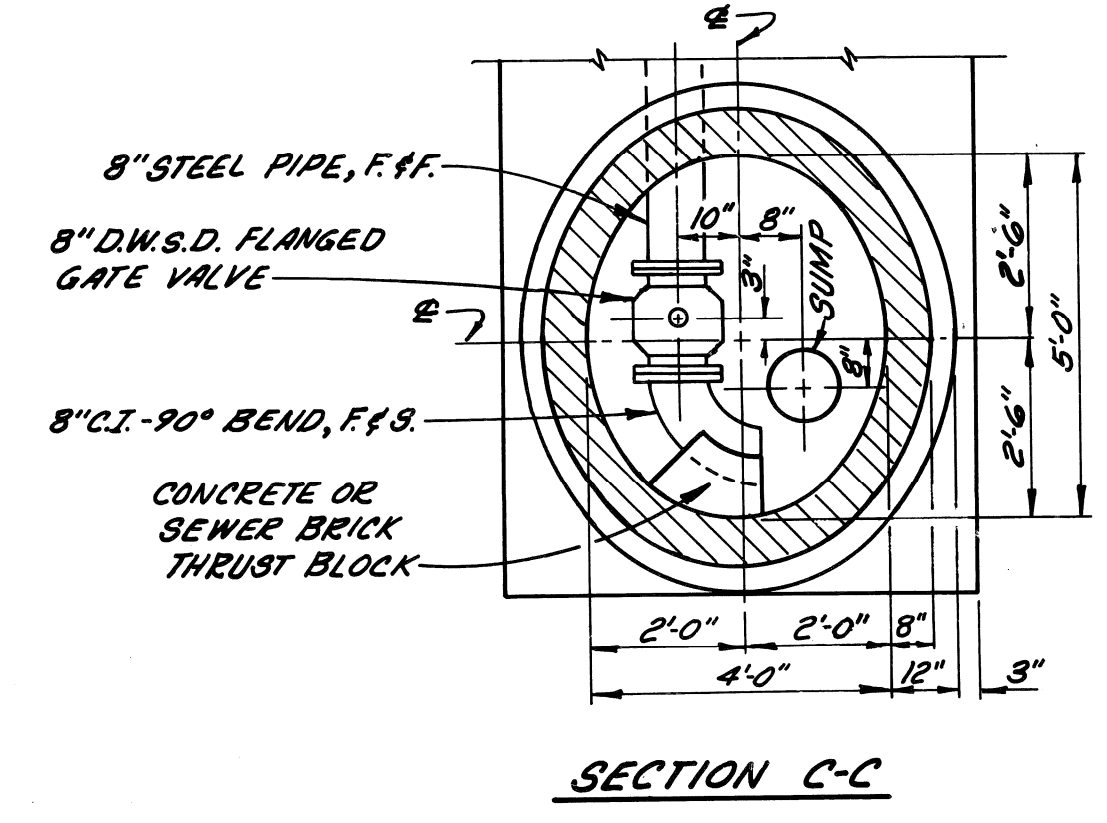


NOTE: BOTTOM SECTION SHALL HAVE BELL ENDS AND BE PLACED IN SUCH A MANNER THAT THERE WILL BE BEARING FOR THE FULL WALL THICKNESS (5" MIN.)

DETAIL OF ENTRANCE MANHOLE AND AIR VALVE IN WELL

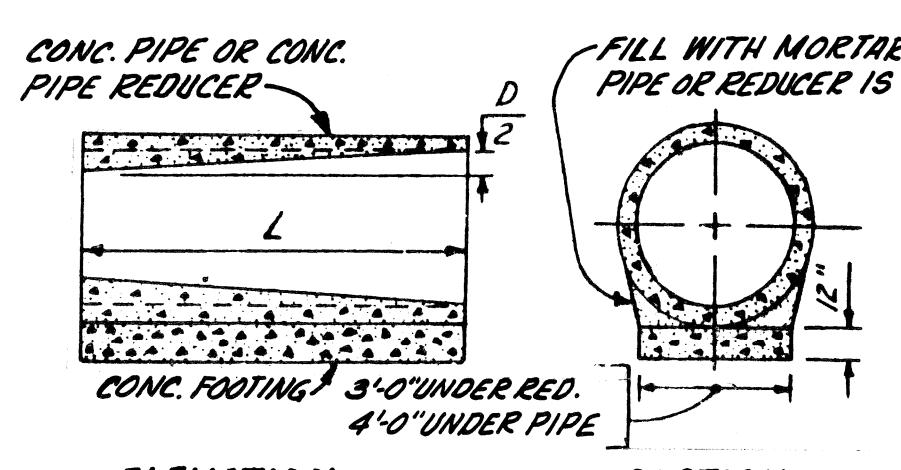


DETAIL OF EXTENSION STEM



NOTE: BOTTOM SECTION SHALL BE FURNISHED WITH A PREFORMED DOGHOUSE TYPE OPENING TO ACCOMMODATE BLOW-OFF PIPING. THE OPENING SHALL BE FILLED WITH BRICK AND MORTAR AFTER INSTALLATION.

NOTE: FOR CONC. PIPE - L - LAID LENGTH FOR REDUCER: WHERE D=12" OR LESS, L=6'-6" MIN. WHERE D=18", L=10'-0" MIN.



FOOTING UNDER EACH LENGTH OF CONCRETE PIPE OR REDUCER ADJACENT TO VALVE WELL WALLS

GENERAL NOTES

- ALL WELL FRAMES SHALL BE SET IN A FULL MORTAR BED.
- PLASTER OUTSIDE OF ALL BRICK WALLS WITH MORTAR TO A THICKNESS OF NOT LESS THAN 1/2 INCH.
- SEE CONTRACT SPECIFICATIONS FOR MATERIAL REQUIREMENTS COVERING SUCH ITEMS AS CAST IRON, CONCRETE, MORTAR, ETC.
- STEEL PIPE TO BE 3/8" THICK AND SHALL CONFORM TO THE CURRENT A.N.W.A. C-202 GRADE B AND INTERIOR SURFACE SHALL BE CEMENT MORTAR LINED, AND SHALL BE FURNISHED BY THE TRANSMISSION MAIN PIPE SUPPLIER.
- EXTERNAL PROTECTION FOR STEEL PIPE SHALL CONFORM TO SECTION A1.3 OF A.N.W.A. STANDARD C-203, OR ENCASED IN CONCRETE.
- EXTERNAL PROTECTION FOR FLANGES, BOLTS AND ALL OTHER EXPOSED BARE MATERIAL SURFACES SHALL BE KOPPER'S BITUMASTIC #50, OR APPROVED EQUAL.
- PIPE FLANGES SHALL CONFORM TO A.N.W.A. C-207 CLASS E AND SHALL BE FACED, AFTER WELDING, PERPENDICULAR TO STEEL PLATE PIPE. MATERIAL SHALL BE A.S.T.M. A-181 GRADE I. FLANGE FINISH 125 RMS.
- THE FLANGE GASKET IS TO BE FULL FACED SINGLE PIECE 1/16" THICK SHEET ASBESTOS FIBER GRAPHITED ON BOTH SIDES OR AN APPROVED ANTI-STICK COMPOUND. (SEE SPECIFICATIONS)
- PRECAST CONCRETE MANHOLE SECTIONS SHALL CONFORM TO ALL THE REQUIREMENTS OF "SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE MANHOLE RISERS AND TOPS" A.S.T.M. C-478 WITH MODIFIED GROOVED TONGUE JOINTS AND RUBBER GASKETS.
- EACH SECTION SHALL HAVE NOT MORE THAN TWO HOLES FOR HANDLING PURPOSES. THESE HOLES SHALL BE SATISFACTORILY PLUGGED AFTER INSTALLATION.
- UPON REQUEST, THE DETROIT WATER AND SEWERAGE DEPARTMENT WILL FURNISH DRAWING #A-120-234 SHOWING DETAILS OF THE D.W.S.D. FRAME AND COVER.

DETAIL OF 8" BLOW-OFF AND WELL

WATER MAIN DETAILS

UTILITY RELOCATIONS

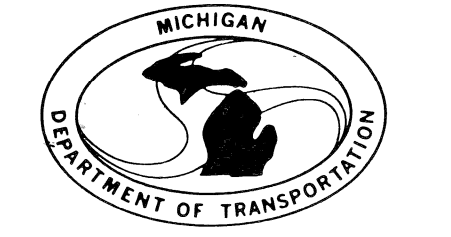
MICHIGAN DEPARTMENT OF TRANSPORTATION

U.S. 10-LODGE FREEWAY AT COBO HALL EXPANSION

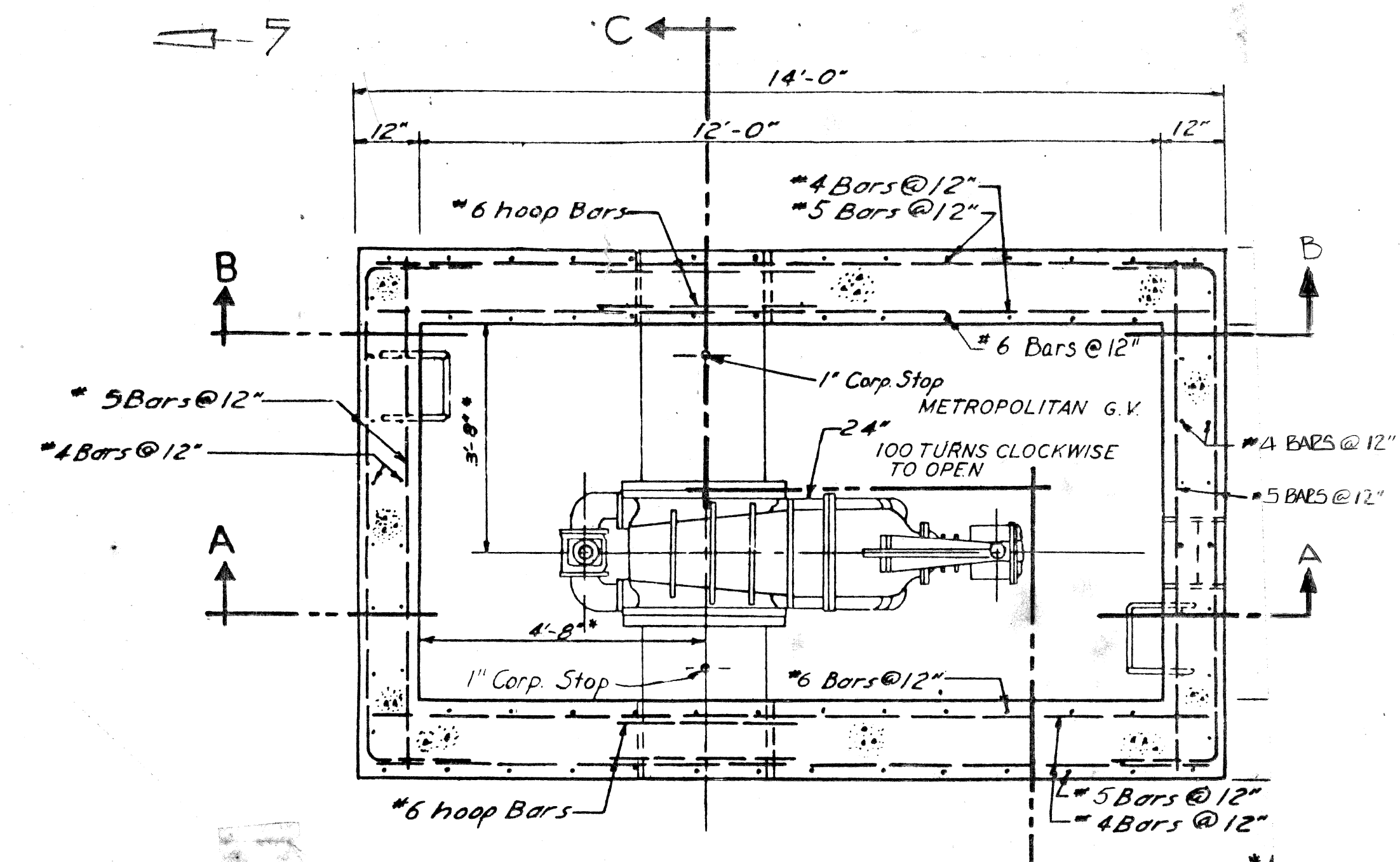
Prepared By

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Engineers Architects Planners, 313-963-6110

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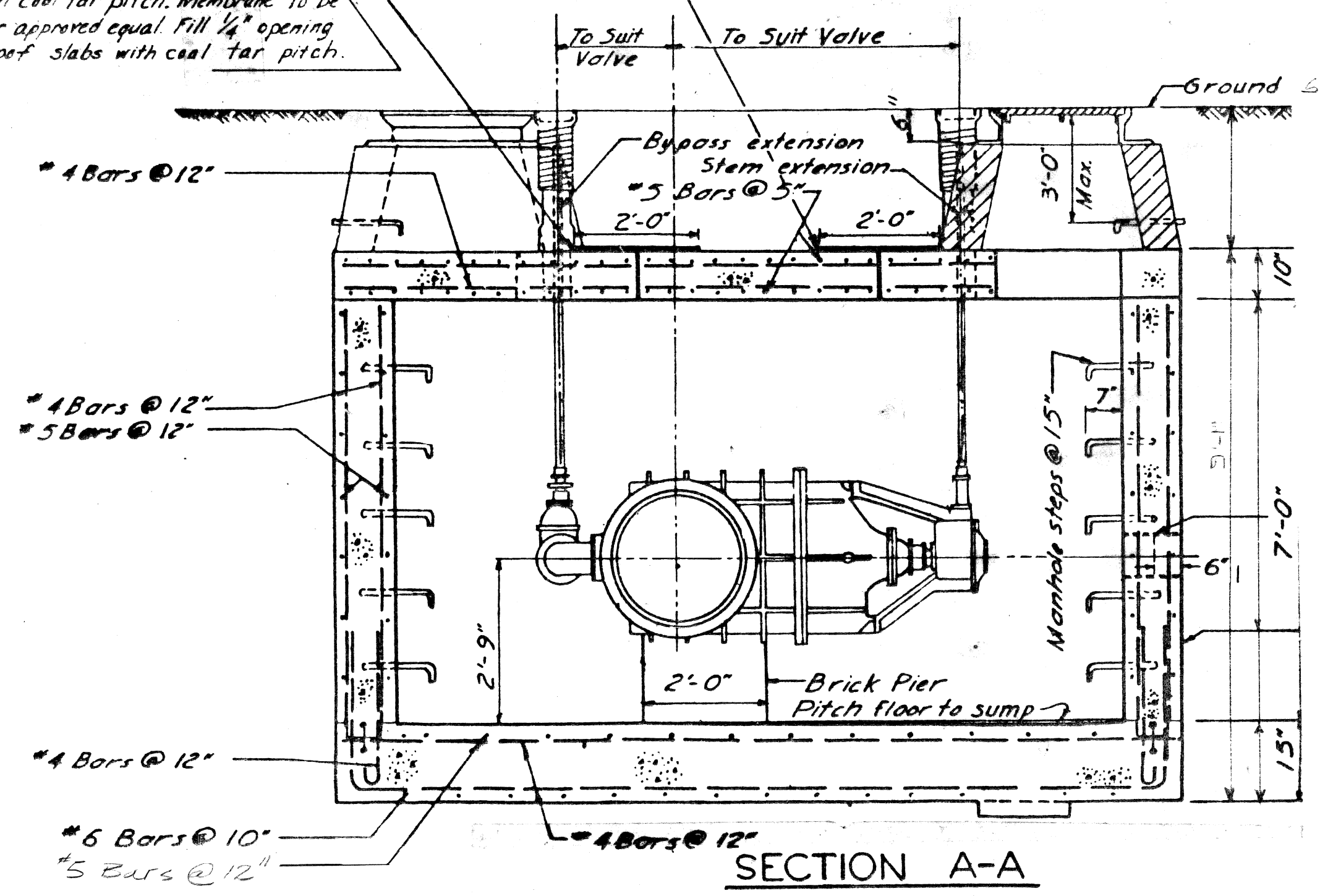


DATE: FEB. 4, 1986	DRAWN: L. S.	CONT. SEC.	JOB NO.	CHECKED: B.P.	SHEET NO.
SCALE: NONE	DESIGNED: V.A. \ M.L.	BM 82111	25199A	APPROVED: J.C.M.	46 OF 65

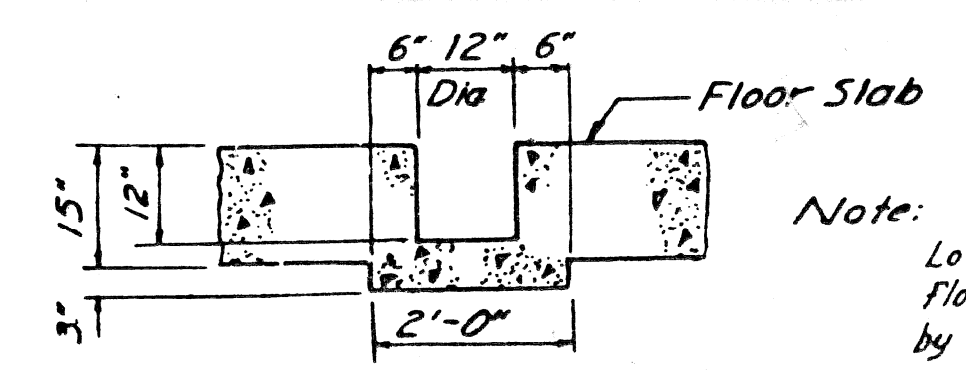


PLAN BELOW ROOF SLABS

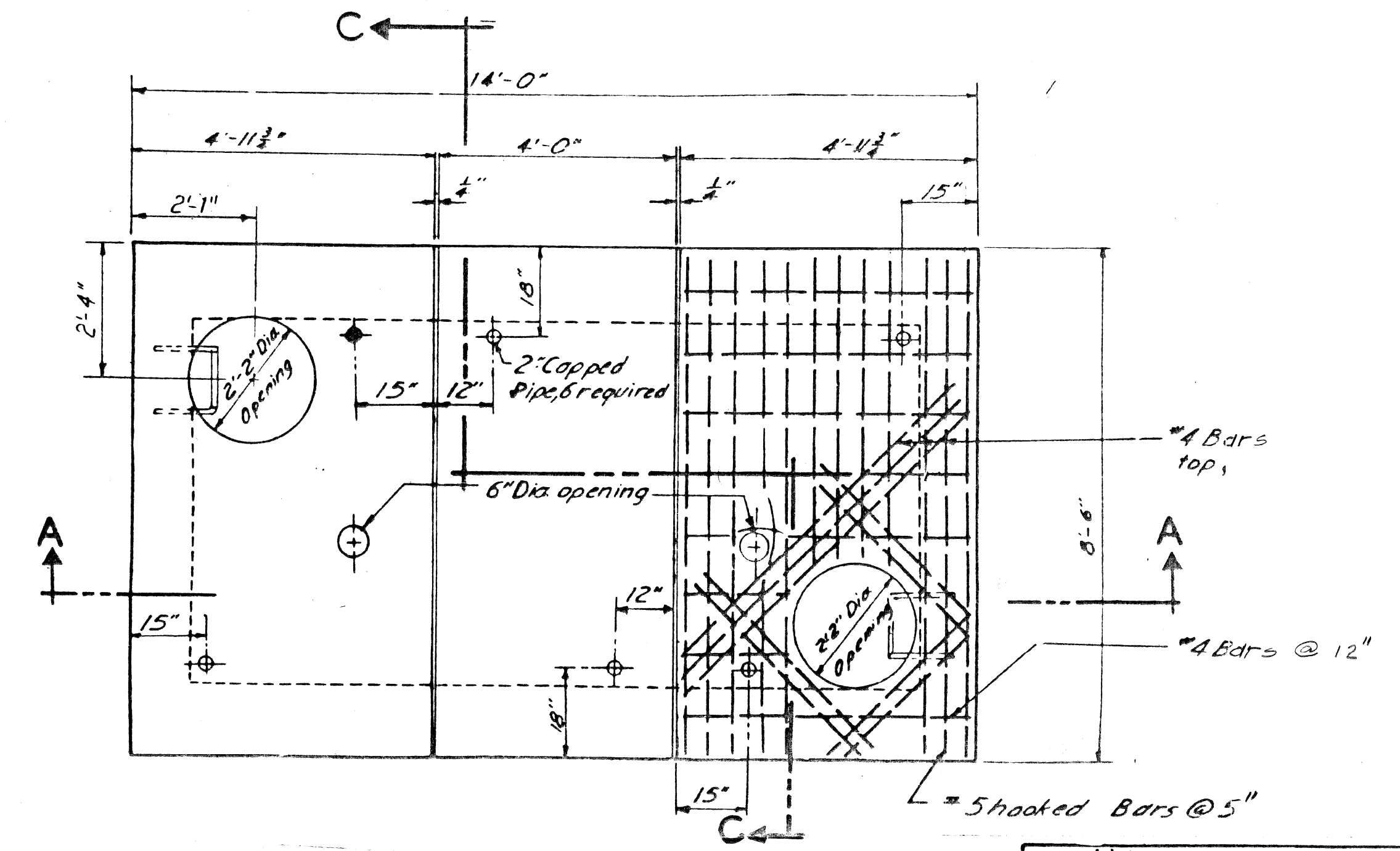
Prime bare concrete with creosote prior to application of coal tar pitch. Water proof joint with 2 ply membrane applied with coal tar pitch. Membrane to be Glasfab, or approved equal. Fill 1/4" opening between roof slabs with coal tar pitch.



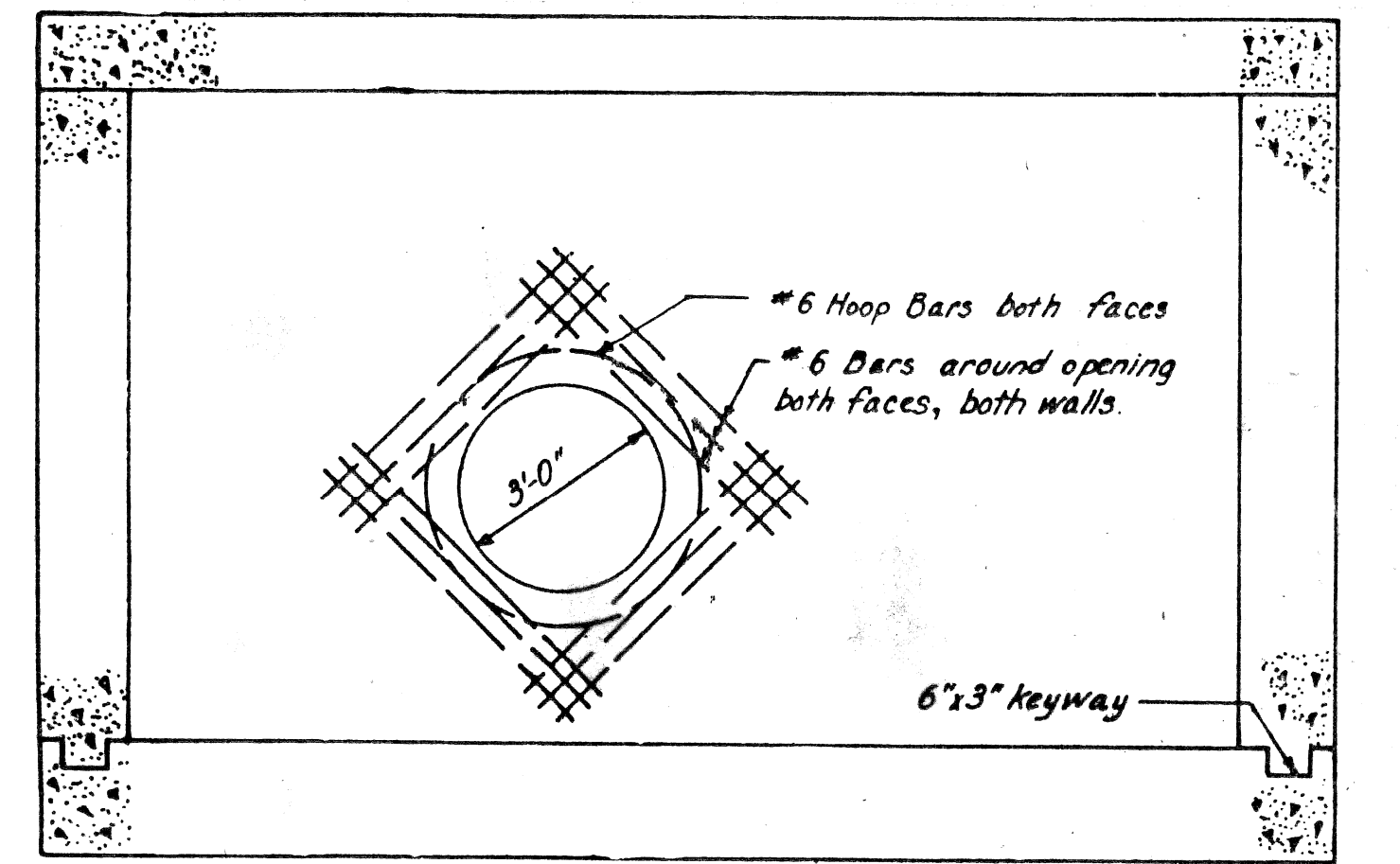
SECTION A-A



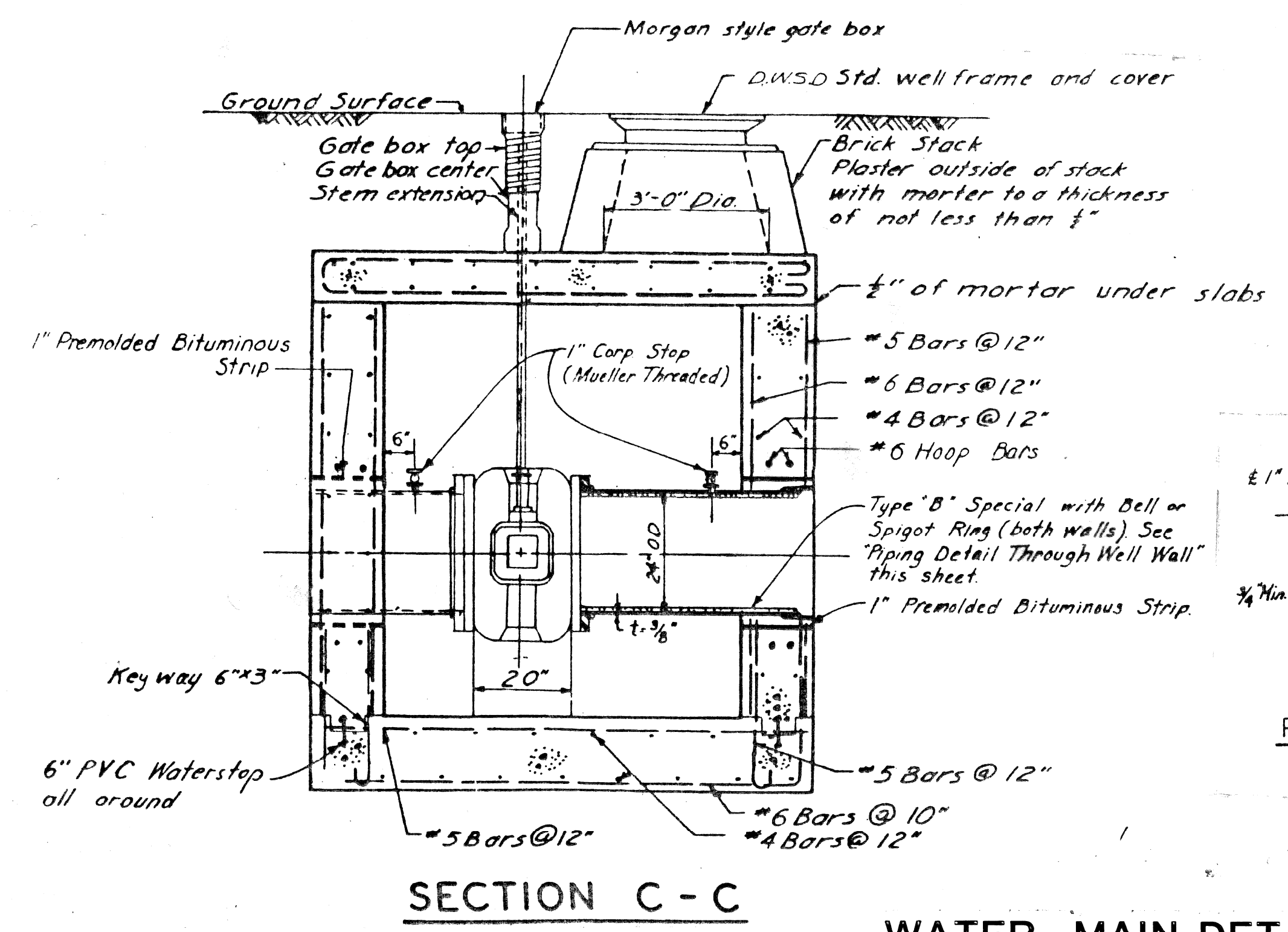
DETAIL OF FLOOR SUMP
REINFORCED CONCRETE WALL FOR 24" FLANGED GATE WELL



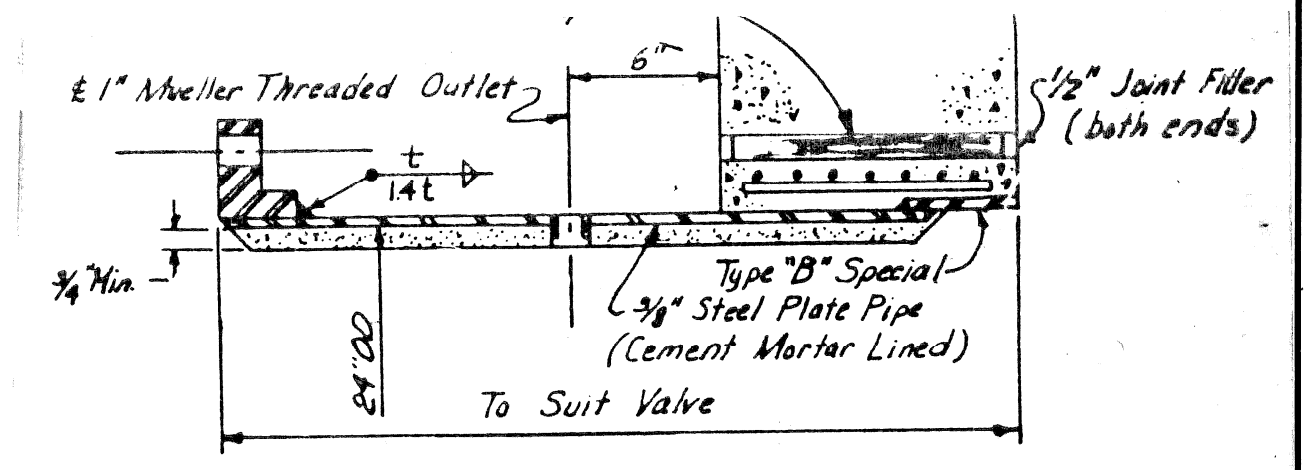
PLAN OF ROOF SLABS



SECTION B-B Showing reinforcing steel around opening in well walls



SECTION C-C

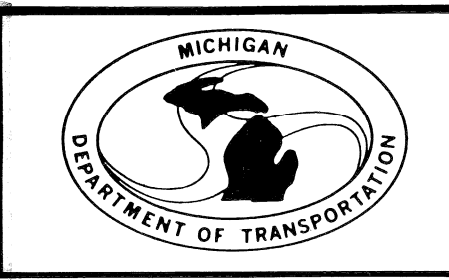


PIPING DETAIL THROUGH WELL WALL

- Steel Pipe Notes:**
1. Pipe flanges shall conform to AWWA C-207 Class E and shall be faced, after welding, perpendicular to the Steel Plate Pipe. Material shall be ASTM A-181 Grade I. Flange Finish 125-RMS.
 2. External protection for flanges and bolts shall be Koppers Bitumastic #50, or approved equal.
 3. External protection for Steel Plate Pipe shall conform to Section A1.3 of AWWA Standard C-203, or encased in concrete.
 4. Internal protection for Steel Plate Pipe shall conform to AWWA C-205.
 5. Steel Plate Pipe to conform to A.S.T.M. A-283 Grade C.
 6. Contractor shall furnish and install all bolts, nuts, and gaskets required to complete the installation.

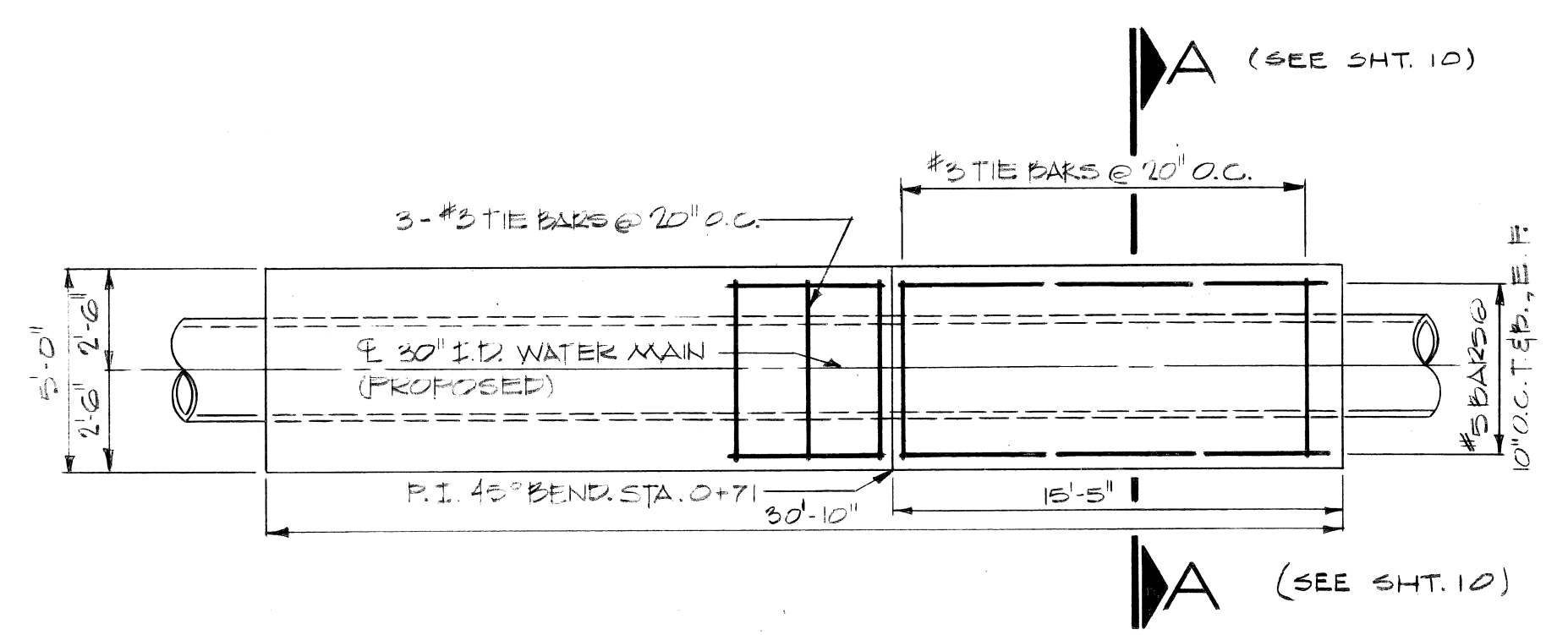
WATER MAIN DETAILS

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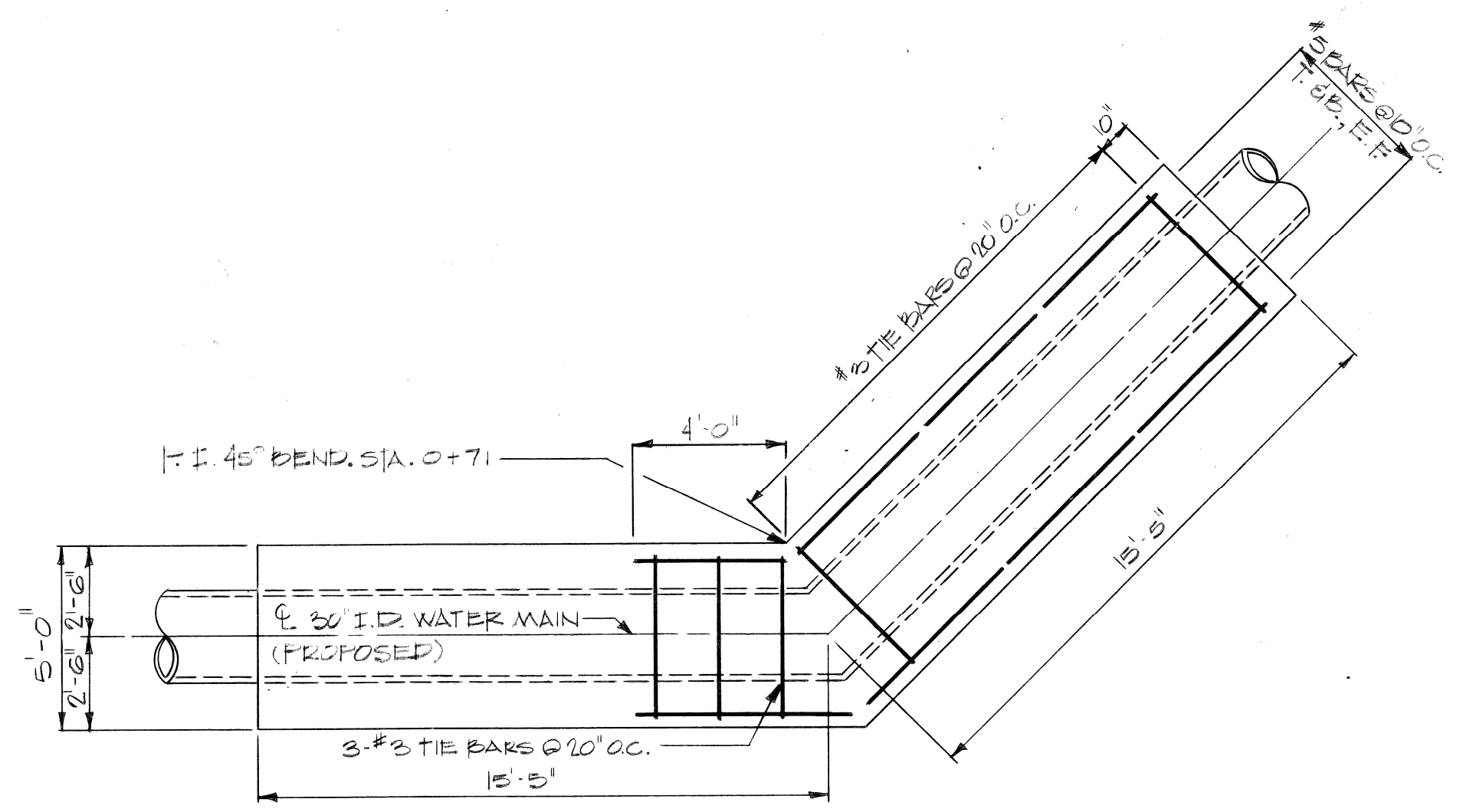


UTILITY RELOCATIONS		DATE: FEB. 4, 1986	DRAWN: M.C./E.G.	CONT. SEC.	JOB NO.	CHECKED: B.P.	SHEET NO.
SCALE: NONE	DESIGNED: V.A.	BM 82111	25199A	APPROVED: J.C.M.	47 OF 65		

FINAL R.O.W.			
AUTH.	DATE	NO.	REVISION

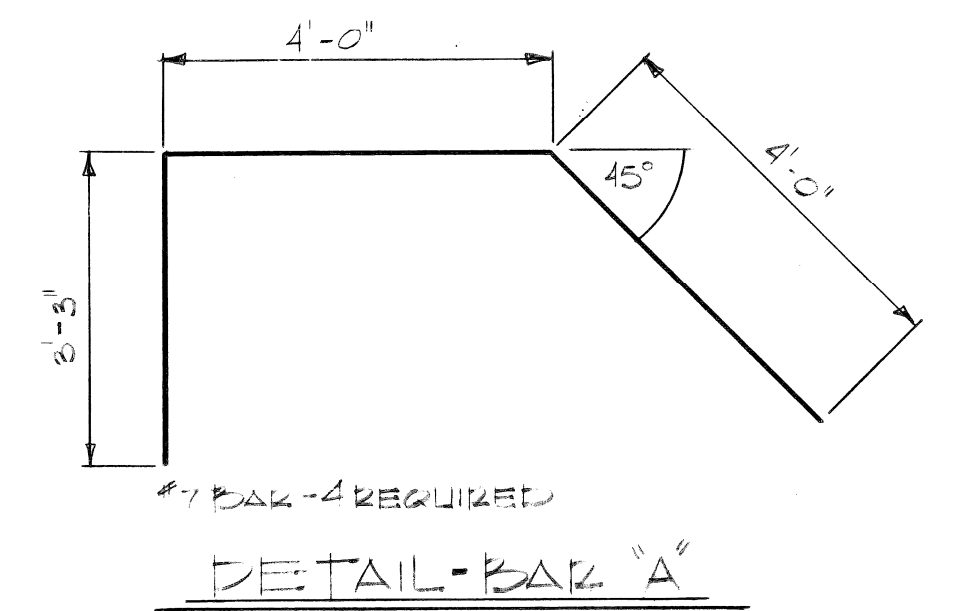


PLAN

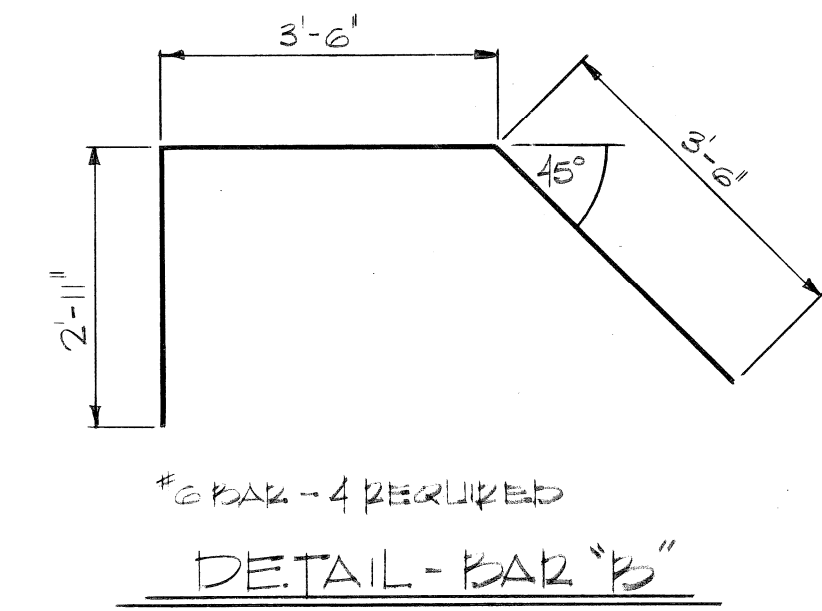


ELEVATION

STA. 0+71-P.I. 45° BEND
SCALE: 1/4"=1'-0"

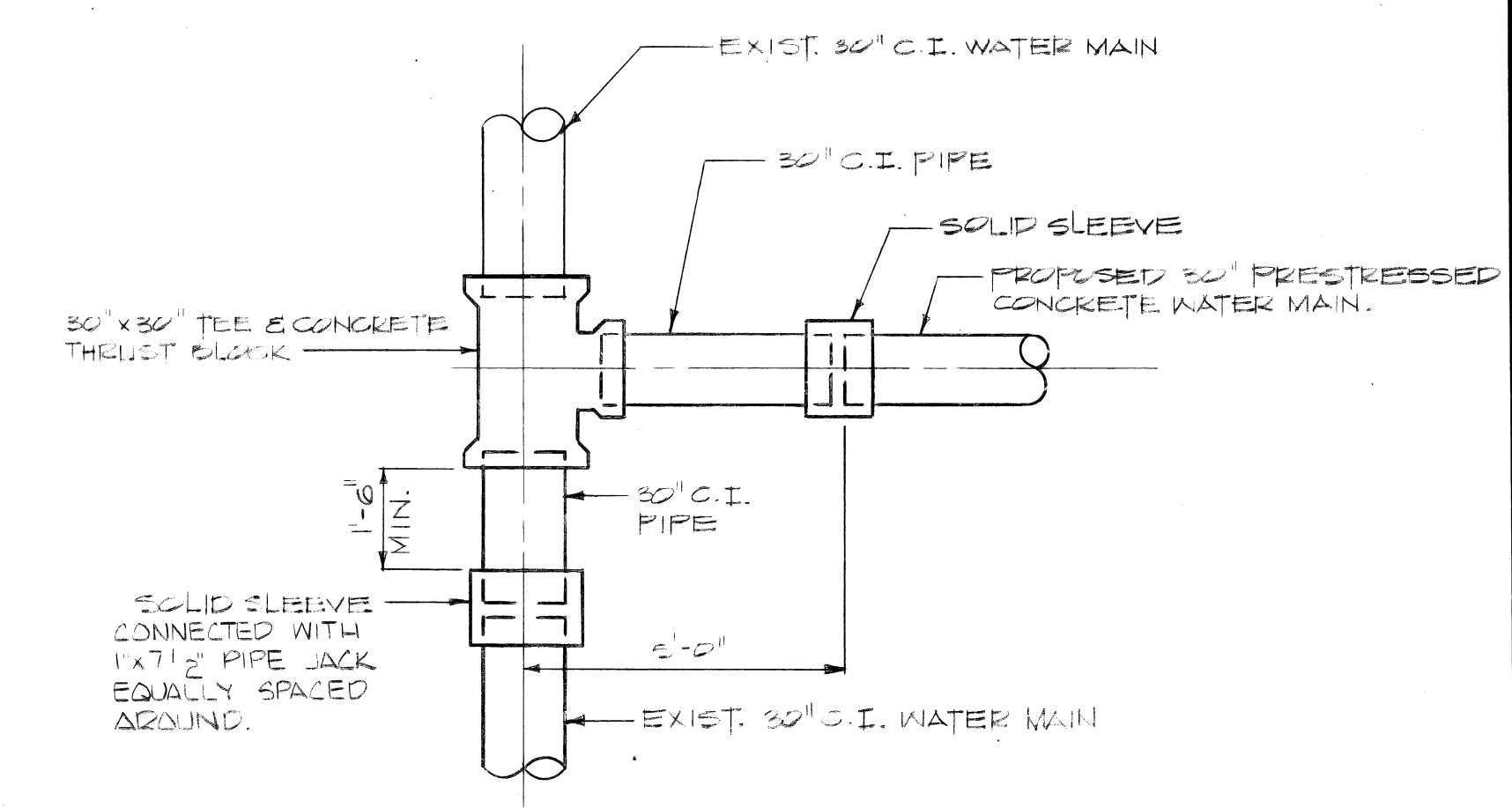


DETAIL - BAR "A"

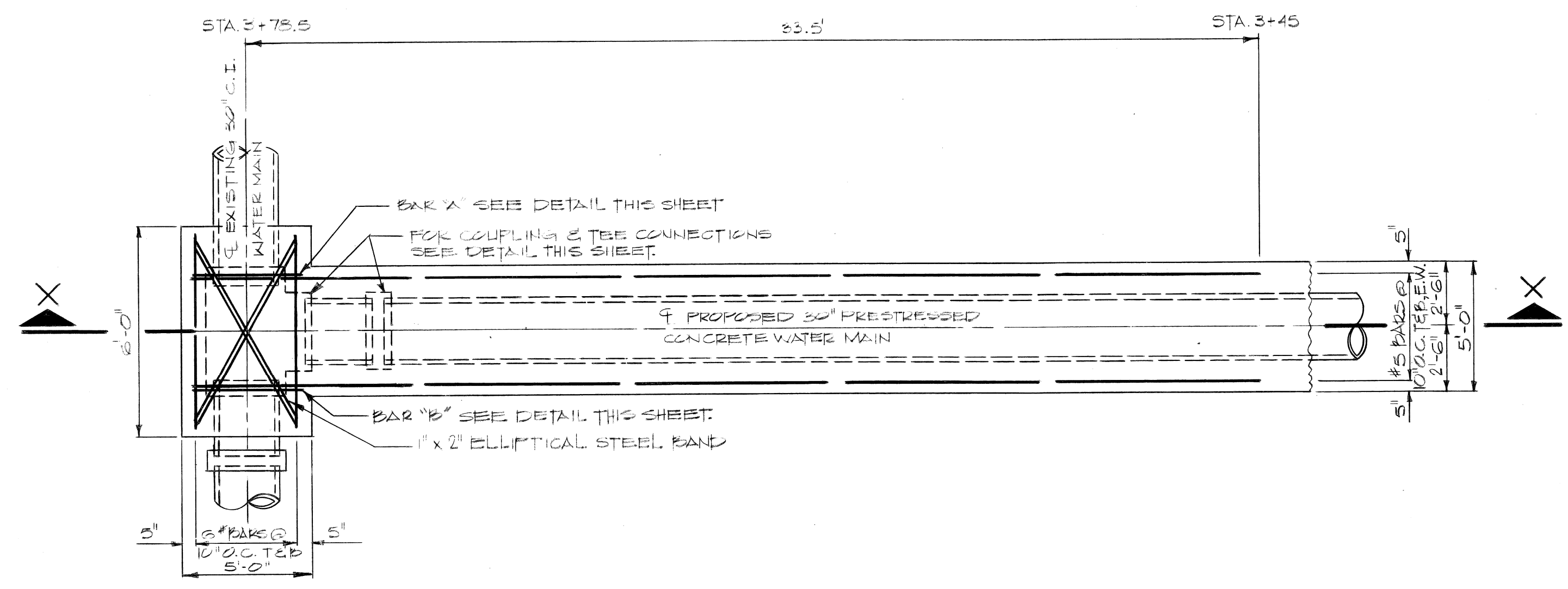


DETAIL - BAR "B"

NOTE:
FOR 45° VERT. BEND REINFORCEMENT
SHOULD BE CARRIED 5'-0" ALONG EACH LEG.

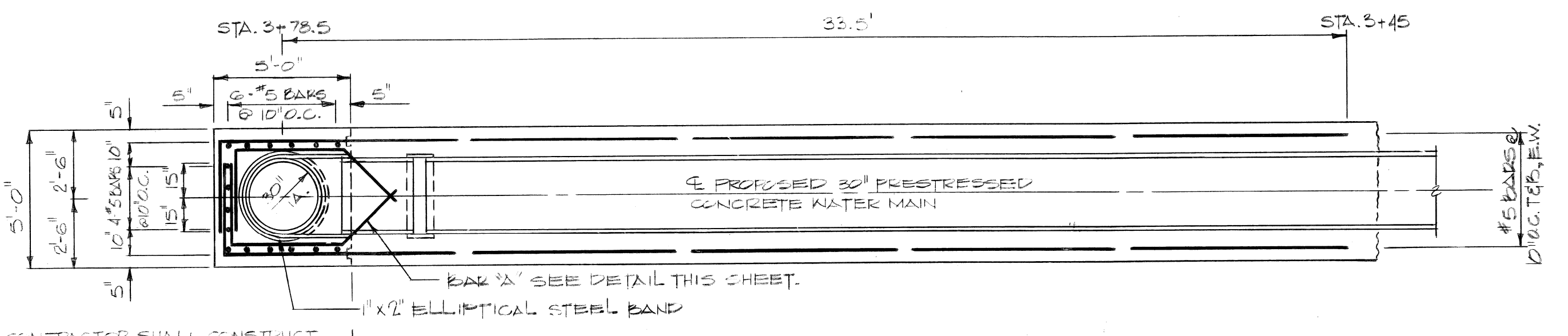


DETAIL - TEE CONNECTION
SCALE: 1/2"=1'-0"



PLAN-STA. 3+78.5

NOTE:
EXISTING WATER MAIN TO BE CUT WITH APPROVED TOOLS.
CONNECTION UPON APPROVAL TO BE MADE WITH SOLID
SLEEVES OR APPROVED EQUAL.

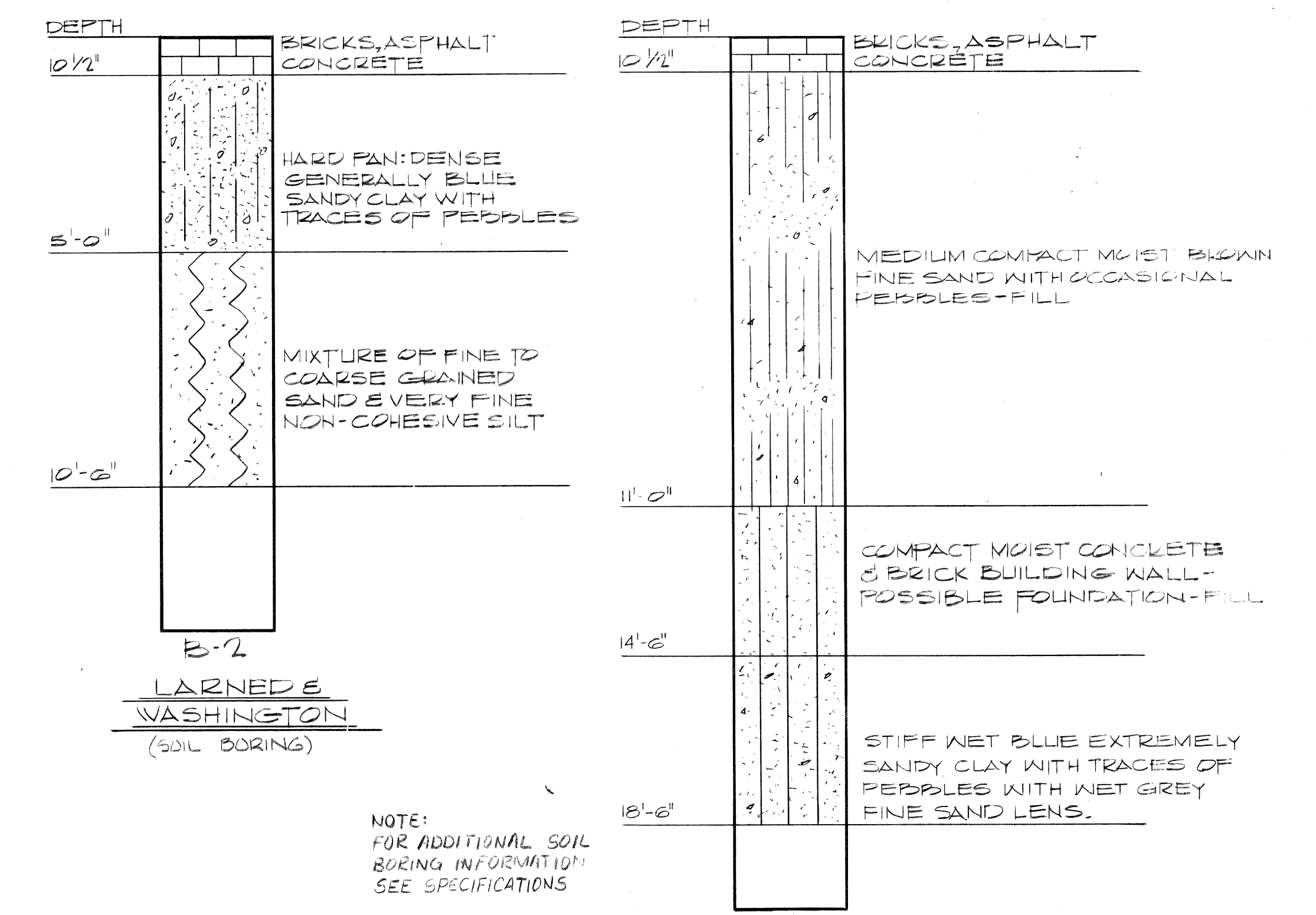


ELEVATION X-X

PLAN & ELEVATION-ANCHORAGE DETAILS-STA 3+78.5
SCALE: 1/4"=1'-0"

CONTRACTOR SHALL CONSTRUCT
ANCHORAGE TO THIS POINT BEFORE
HYDROSTATIC TEST. LONGITUDINAL
BARS SHALL EXTEND BEYOND
CONSTRUCTION JOINT TO PROVIDE
FULL LAP.

CONSTRUCTION JOINT-AFTER SUCCESSFUL
HYDROSTATIC TEST THE CONTRACTOR SHALL COMPLETE
NICHIC RISE AND MAKE FINAL CONNECTION.



NOTE:
FOR ADDITIONAL SOIL
BORING INFORMATION!!
SEE SPECIFICATIONS

- NOTES:
1. THE SOIL BORING LOG SHOWN ABOVE IS FURNISHED SOLELY FOR INFORMATION. IT IS PRESENTED TO THE CONTRACTOR AS SUPPLEMENTARY INFORMATION SO THAT HE MAY FORM HIS OWN JUDGEMENT THEREON AND WITHOUT ANY GUARANTEE ON THE PART OF CONSULTANT NOR THE ENGINEER AS TO THEIR COMPLETENESS OR CORRECTNESS.
 2. IT IS EXPRESSLY UNDERSTOOD THAT NEITHER THE CONSULTANT NOR THE ENGINEER WILL BE HELD RESPONSIBLE FOR ANY INTERPRETATION OR CONCLUSIONS DRAWN FROM THE ABOVE INFORMATION BY THE CONTRACTOR.

**WATER MAIN
DETAILS**

MICHIGAN DEPARTMENT OF TRANSPORTATION
**U.S. 10-LODGE FREEWAY
AT
COBO HALL EXPANSION**

Prepared By



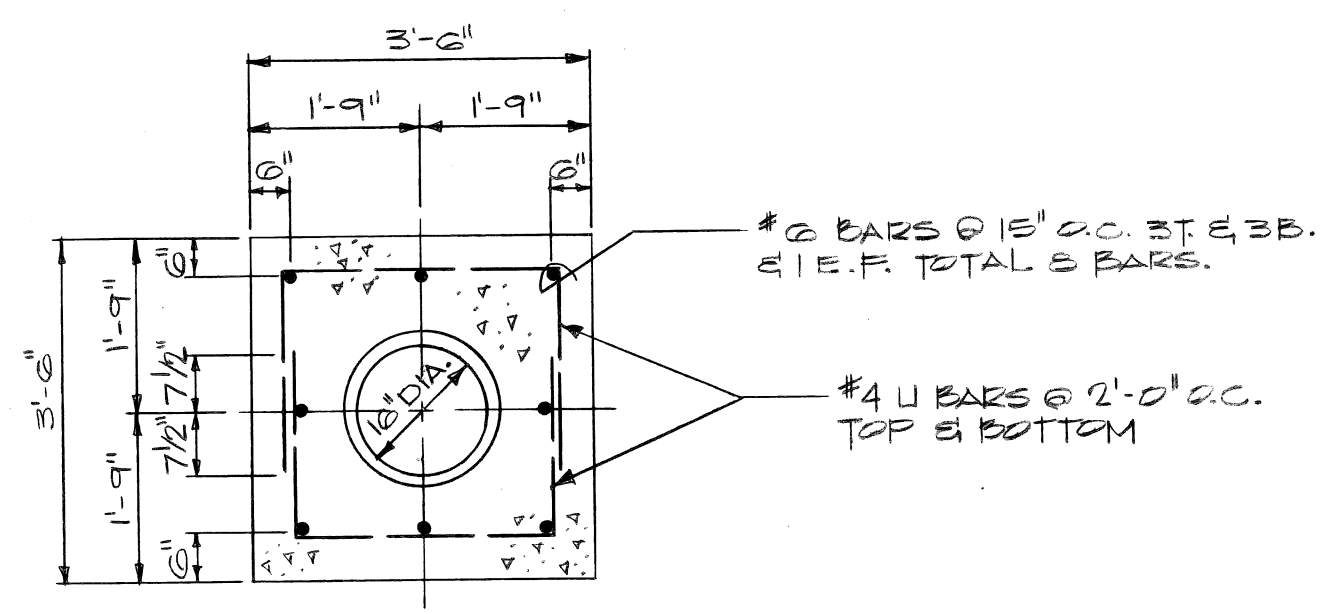
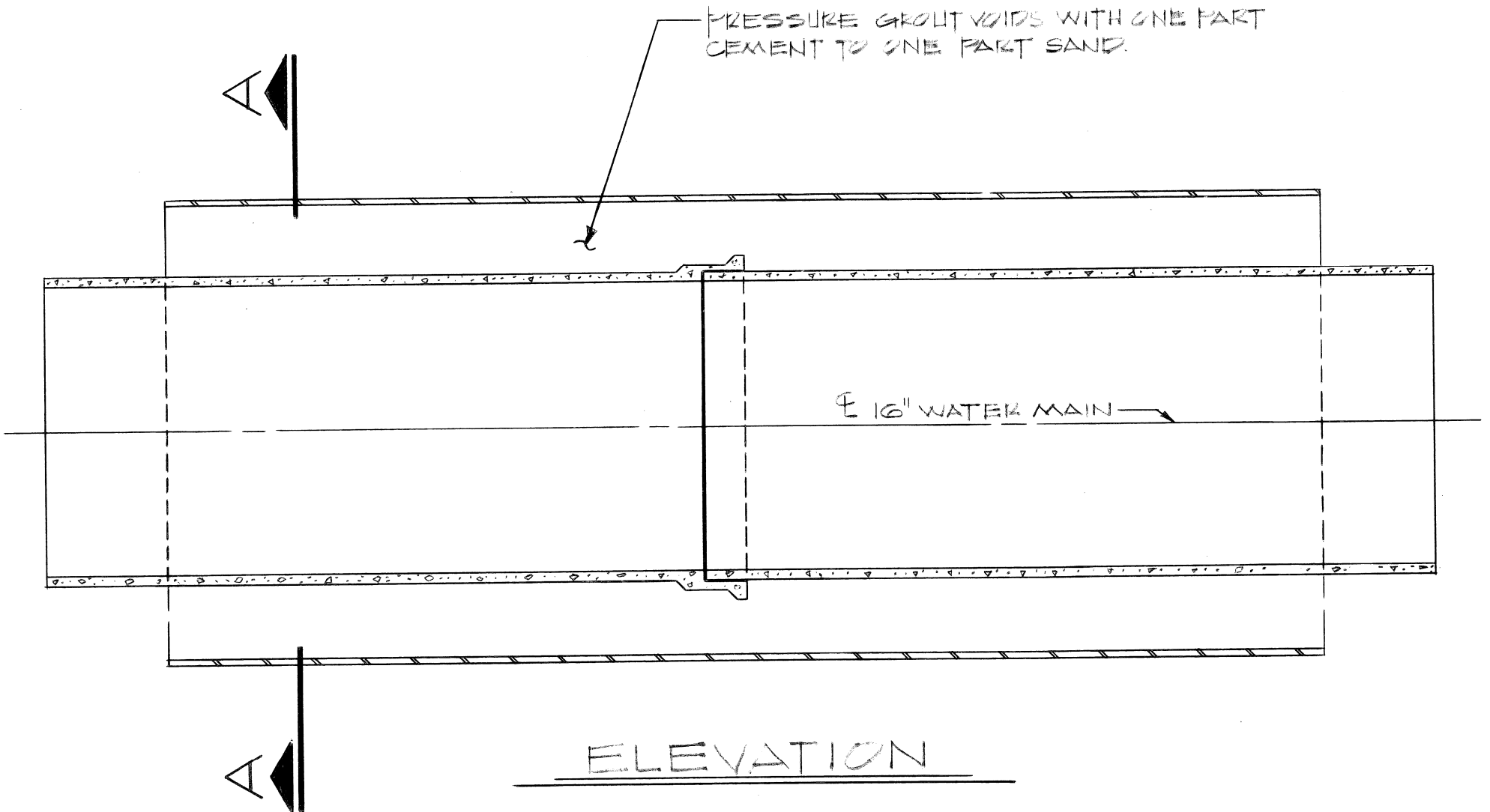
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UTILITY RELOCATIONS

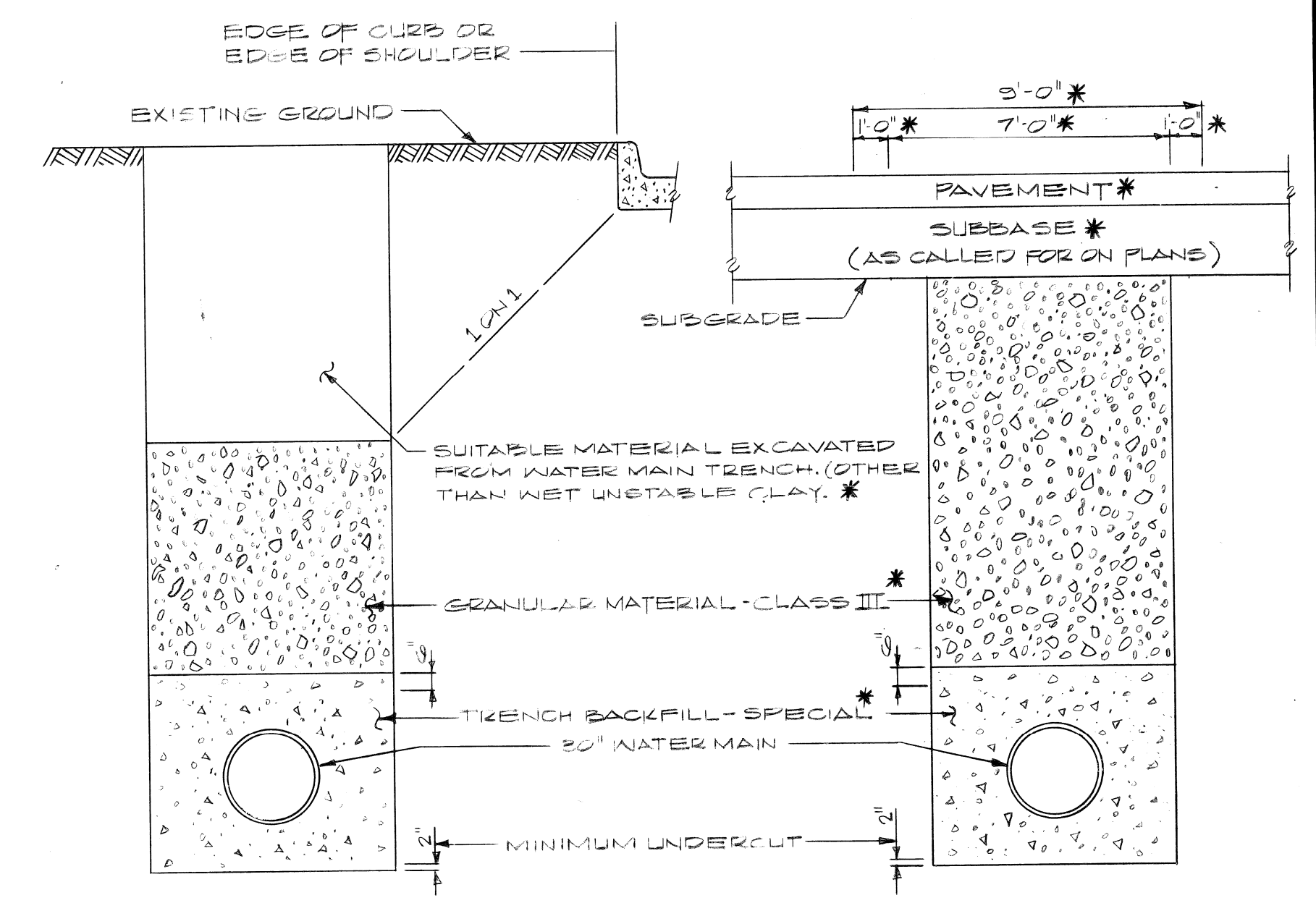
DATE: FEB. 4, 1986	DRAWN: J.E. F.G.	CONT. SEC.	JOB NO.	CHECKED: B.P.	SHEET NO.
SCALE: NOTED	DESIGNED: V.A.	BM 82111	25199A	APPROVED: J.C.M.	48 OF 65

			FINAL R.O.W.
AUTH.	DATE	NO.	REVISION



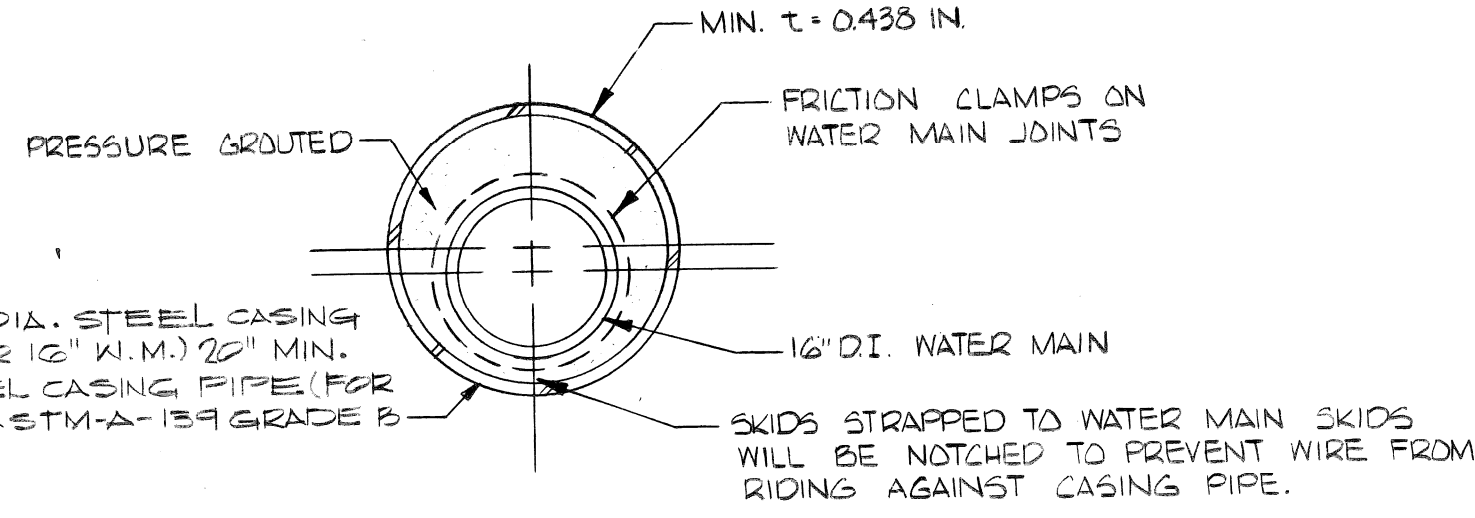
TYPICAL SECTION OF 16" PRESTRESSED CONCRETE & DUCTILE IRON WATER MAIN IN 3'-0" X 3'-0" REINFORCED CONCRETE ENCASUREMENT
SCALE: 1/2" = 1'-0"

(HOOP) BAR NOT REQUIRED FOR DUCTILE IRON PIPE FOR CAST IRON MAIN ADD #2 (HOOP) BARS @ 2'-0" O.C.



WATER MAINS UNDER ROADBED OR WITHIN INFLUENCE OF ROADBED *
SCALE: NONE
* SEE NOTE 9, SHEET NO. 29

NOTES:
1. THE ENDS OF THE CASING SHALL BE BULKHEADED AND THE ENTIRE ANNULAR SPACE BETWEEN THE CASING & CASING PIPE SHALL BE PRESSURE GROUTED.
2. A PIPE SHALL BE LOCATED APPROXIMATELY 18" OUTSIDE EACH END OF THE CASING PIPE.
WATER MAIN IN CASING PIPE AT ALL VERTICAL & HORIZONTAL BENDS

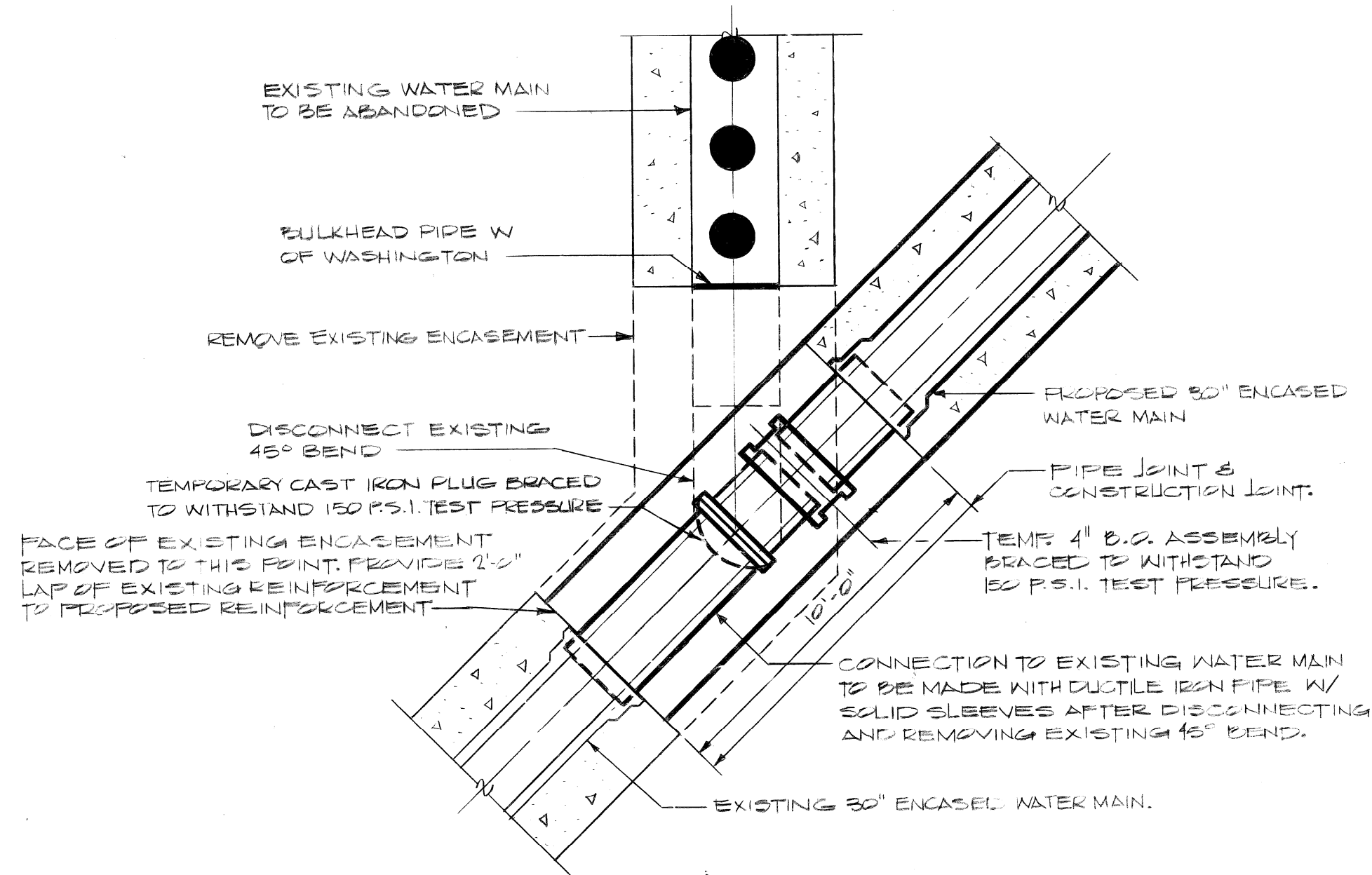


SECTION A-A (BORE & JACK)
SCALE: NONE

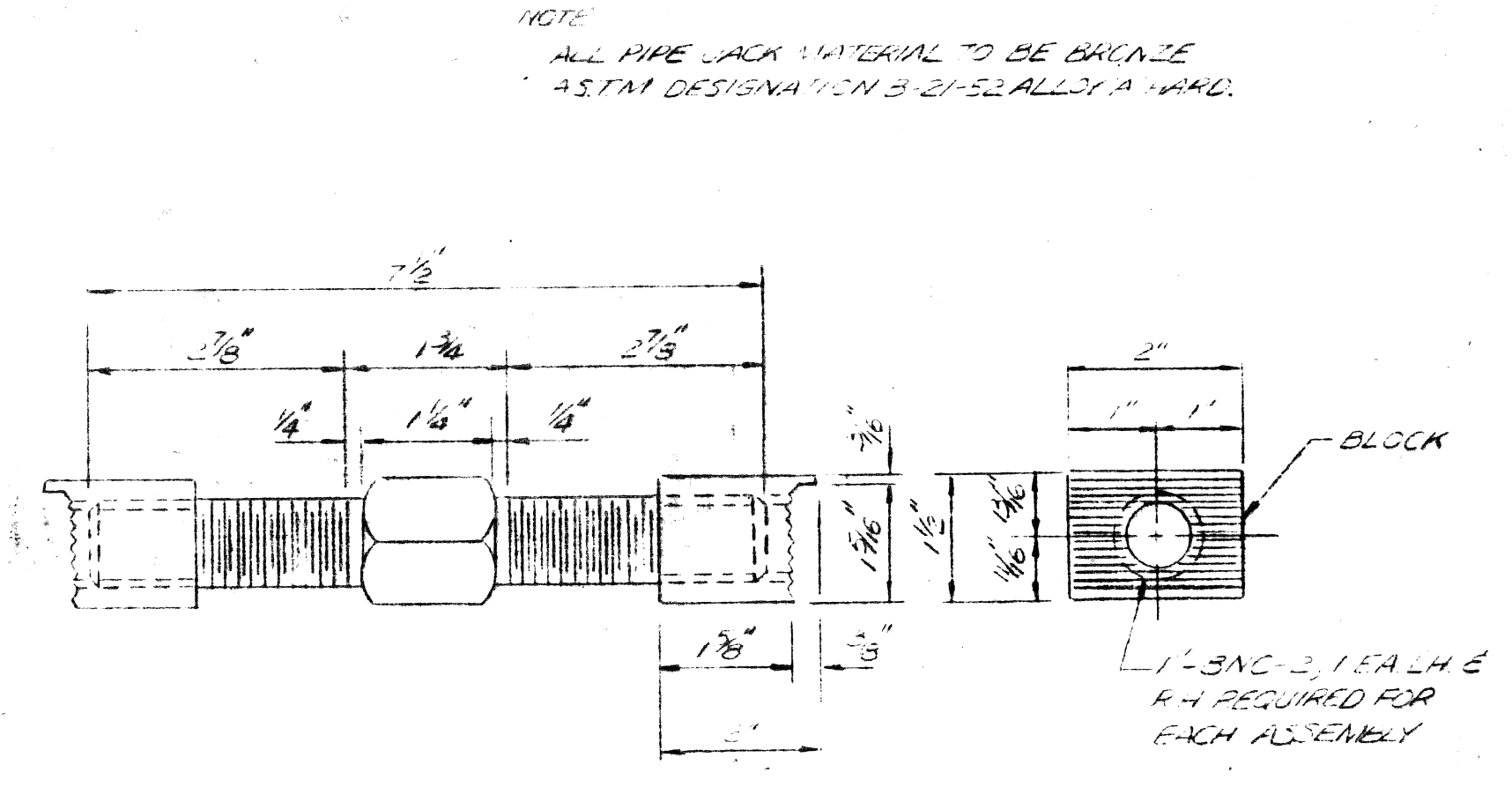
MATERIALS	TOTAL PERCENT PASSING (SEIVE SIZE - U.S. STANDARD SEIVE SERIES)							LOSSES BY WASHING
	2"	3"	4"	5"	10"	20"	40"	
CLASS I			100		45-85	10-85	5-30	10-5
CLASS II				80-100			0-30	0-7*
CLASS III	100	95-100						0-1*

TABLE OF GRADING REQUIREMENTS FOR GRANULAR MATERIALS
* TO BE DETERMINED ON THAT PORTION OF SAMPLE WHICH PASSES THE 1" SEIVE.

		ESTIMATED QUANTITIES	UNIT PRICE
2077000	EXPLORATORY TRENCH WORK		
2077001	REMOVING PAVEMENT		
1070000	REMOVING CURB & GUTTER		
1007000	REMOVING SIDEWALK		
4510012	CONCRETE PAVEMENT REPAIR 10" NON. REINFORCED		
4510013	LANE TIES PAVEMENT REPAIR		
5030034	STEEL REINFORCEMENT WATER MAIN STRUCTURES		
5090016	CONCRETE CURB & GUTTER DETAIL C4 AND		
6100002	4" CONCRETE SIDEWALK		
6510112	30" PRESTRESSED CONCRETE - ENCASED CYL. PIPE TRENCH DETAIL 12" MODIFY		
6500315	AIR RELEASE VALVE		
6500332	8" BLOW OFF VALVE		
6500349	ENTRANCE MANHOLE		
6507000	30" PRESTRESSED CONCRETE ENCASED CYL. PIPE IN TUNNEL		
6507001	30" X 30" C.I.P. TEE INCLUDING SOLID SLEEVES		
6507002	24" GATE VALVE & WELL		
6507003	TEMPORARY BLOW-OFF		
6507000	ABANDON EXISTING MANHOLE - MET		
6507000	MINOR TRAFFIC DEVICES & CONSTRUCTION SIGNING		
6507000	BLINDS, REDUCERS, PLUGS & OTHER SPECIAL FITTINGS		



DETAIL "X"
SCALE: NONE

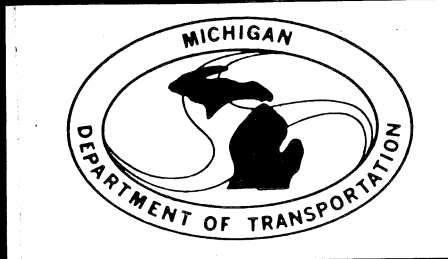


DETAIL OF 1' X 7 1/2" PIPE JACK FOR 30" SLEEVE

WATER MAIN DETAILS

UTILITY RELOCATIONS

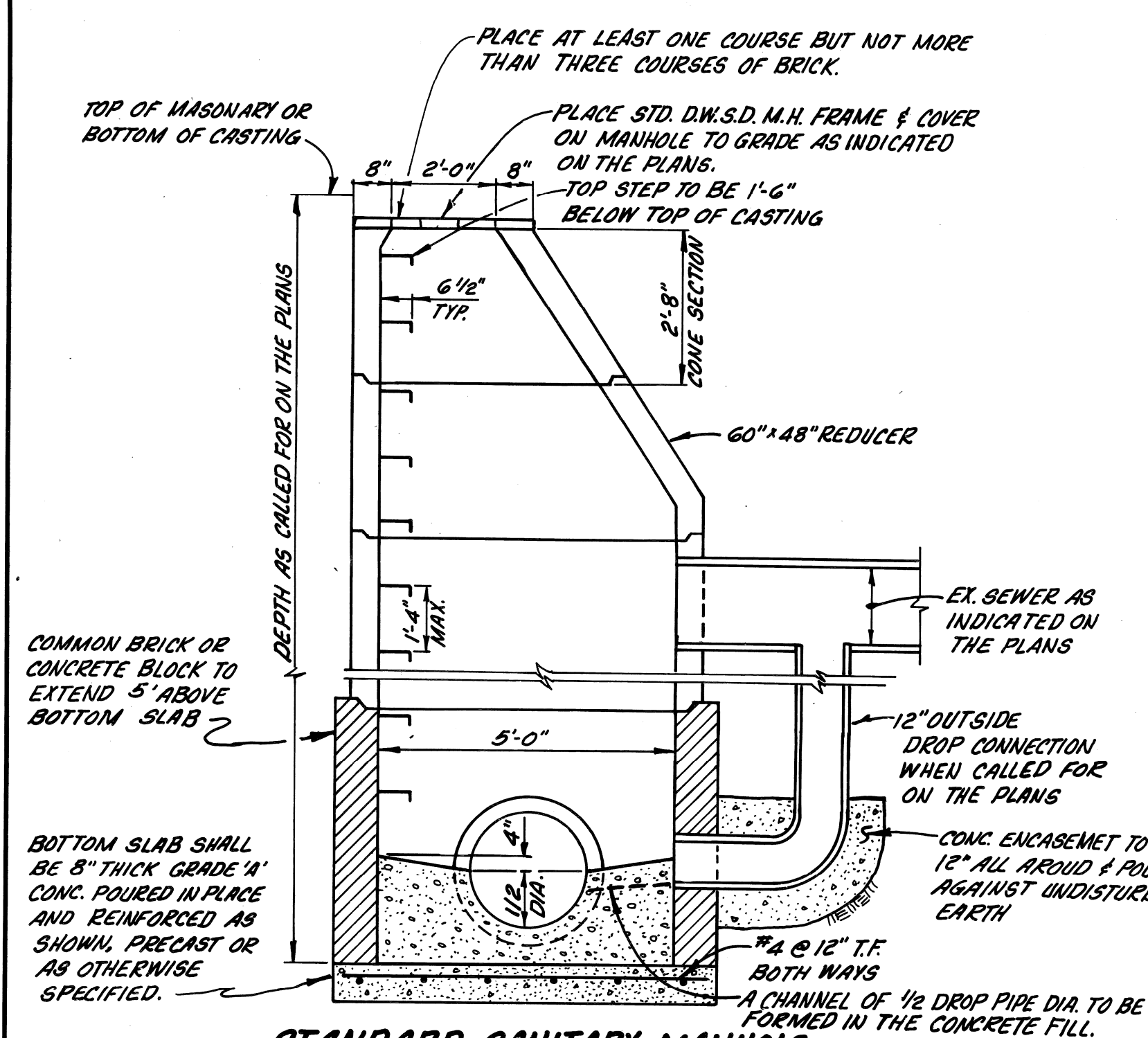
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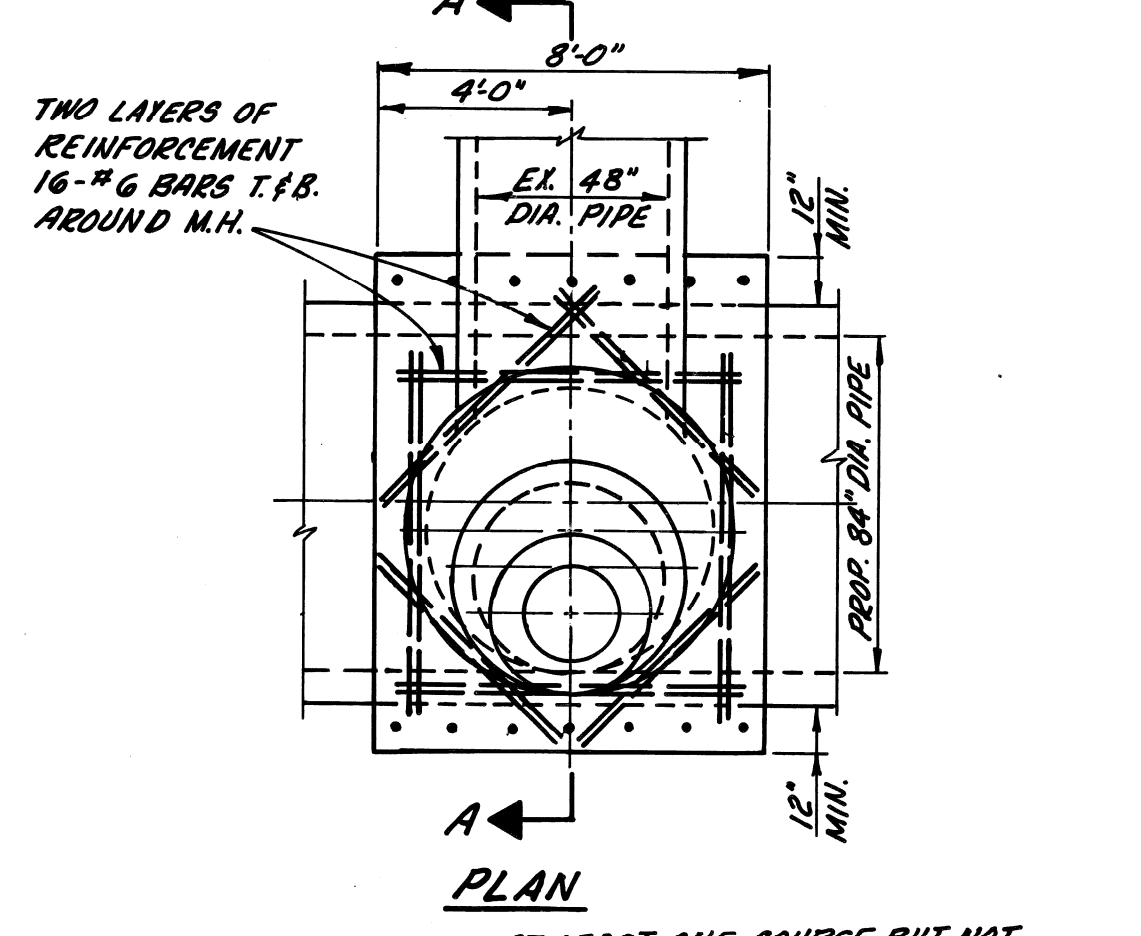
DATE: FEB. 4, 1986	DRAWN: J.E. F.G.	CONT. SEC.	JOB NO.	CHECKED: B.R.	SHEET NO.
SCALE: NONE	DESIGNED: V.A.	BM 82111	25199A	APPROVED: J.C.M.	49 OF 65

MICHIGAN DEPARTMENT OF TRANSPORTATION
U.S. 10-LODGE FREEWAY AT COBO HALL EXPANSION
Prepared By
MADISON/MADISON INTERNATIONAL OF MICHIGAN
Engineers Architects Planners, 313-963-6110

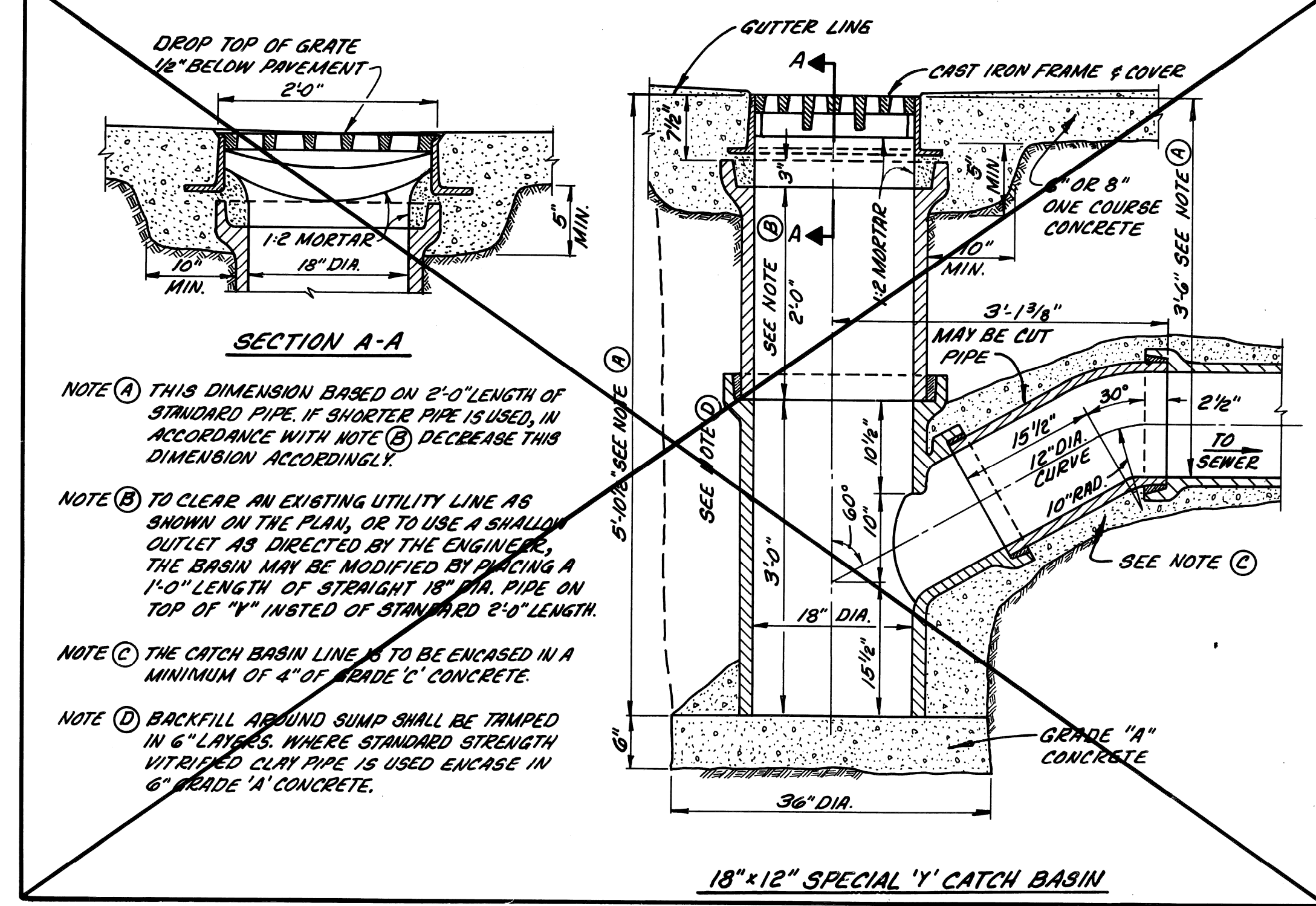
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AUTH.	DATE	NO.
		REVISION



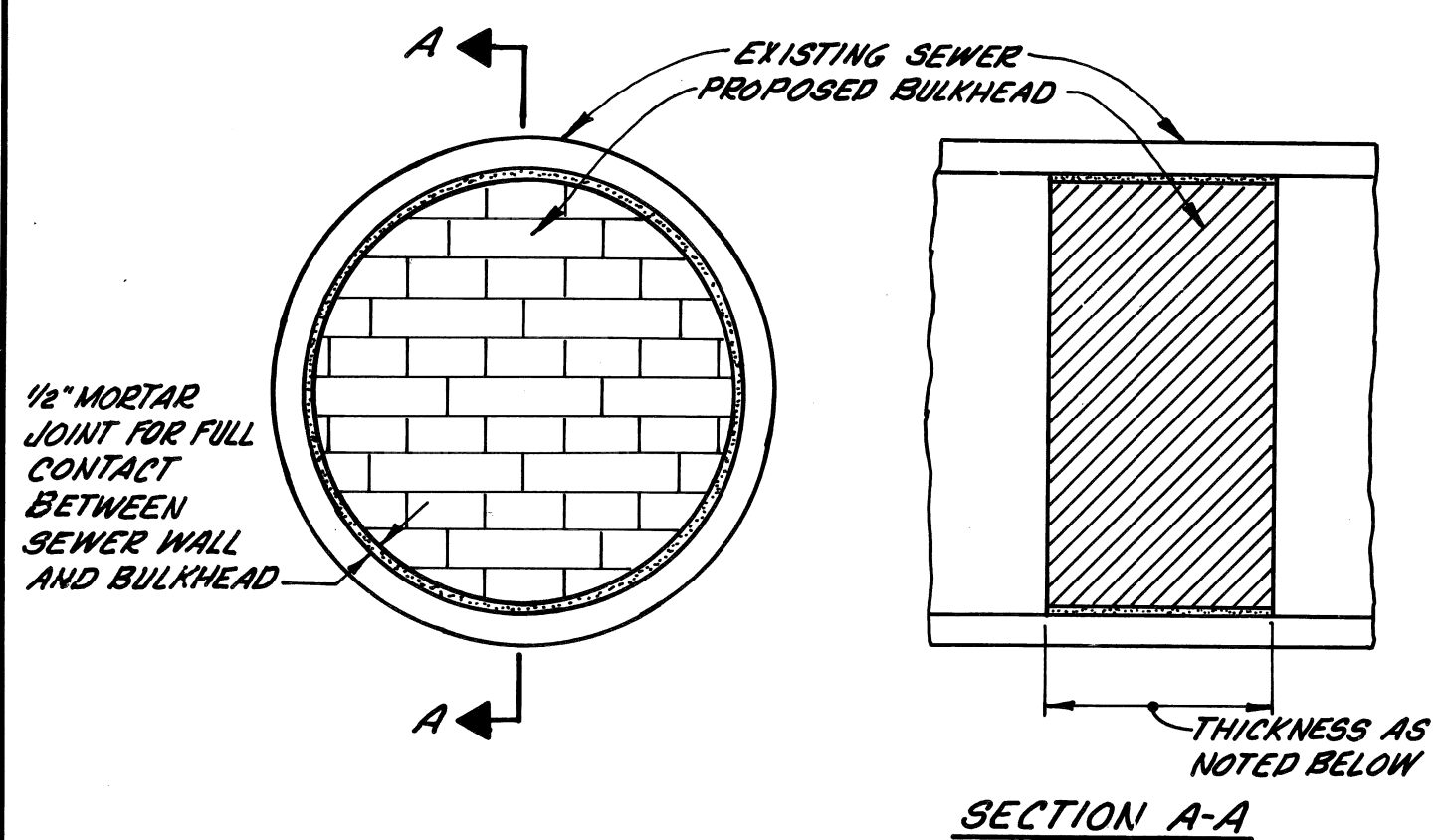
STANDARD SANITARY MANHOLE TYPE B



STANDARD SANITARY MANHOLE TYPE C



18"x12" SPECIAL 'Y' CATCH BASIN



SECTION A-A

BULKHEAD NOTES:
SEWER BULKHEADS SHALL BE CONSTRUCTED OF BRICK OR CONCRETE TO THE MINIMUM THICKNESS AS INDICATED BELOW.

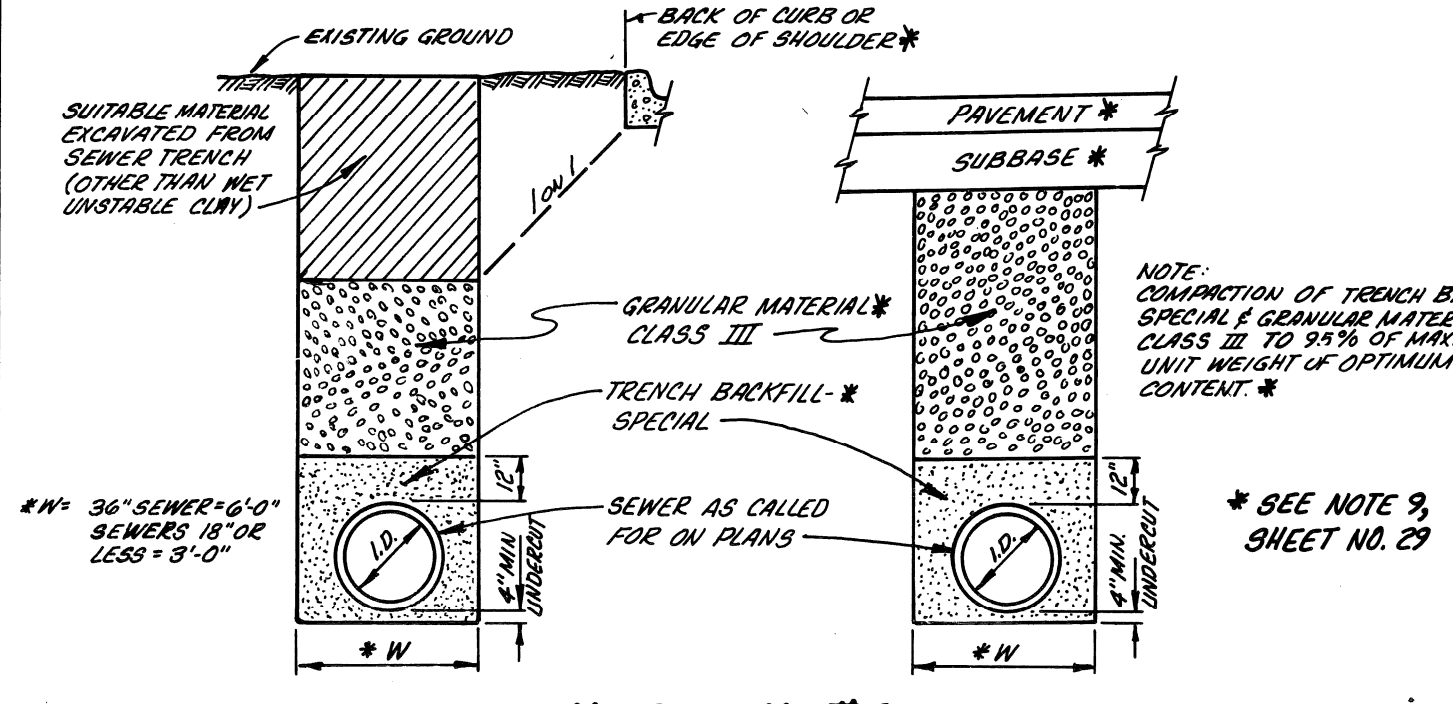
BRICK BULKHEAD

1. THE THICKNESS OF EACH BRICK BULKHEAD SHALL EQUAL 1/3 THE DIAMETER OF THE EXISTING SEWER BUT NOT LESS THAN 12".
2. SURFACE OF CONTACT BETWEEN EXISTING SEWER AND NEW BULKHEAD SHALL BE THOROUGHLY WIRE BRUSHED, CLEANED, AND WETTED BEFORE BUILDING BULKHEAD.
3. CARE SHALL BE EXERCISED IN PLACING BULKHEADS TO INSURE A TIGHT SEAL.
4. NO BRICK OR BRICK FRAGMENT SHALL BE IN CONTACT WITH THE WALL OF THE SEWER TO BE BULKHEADED.

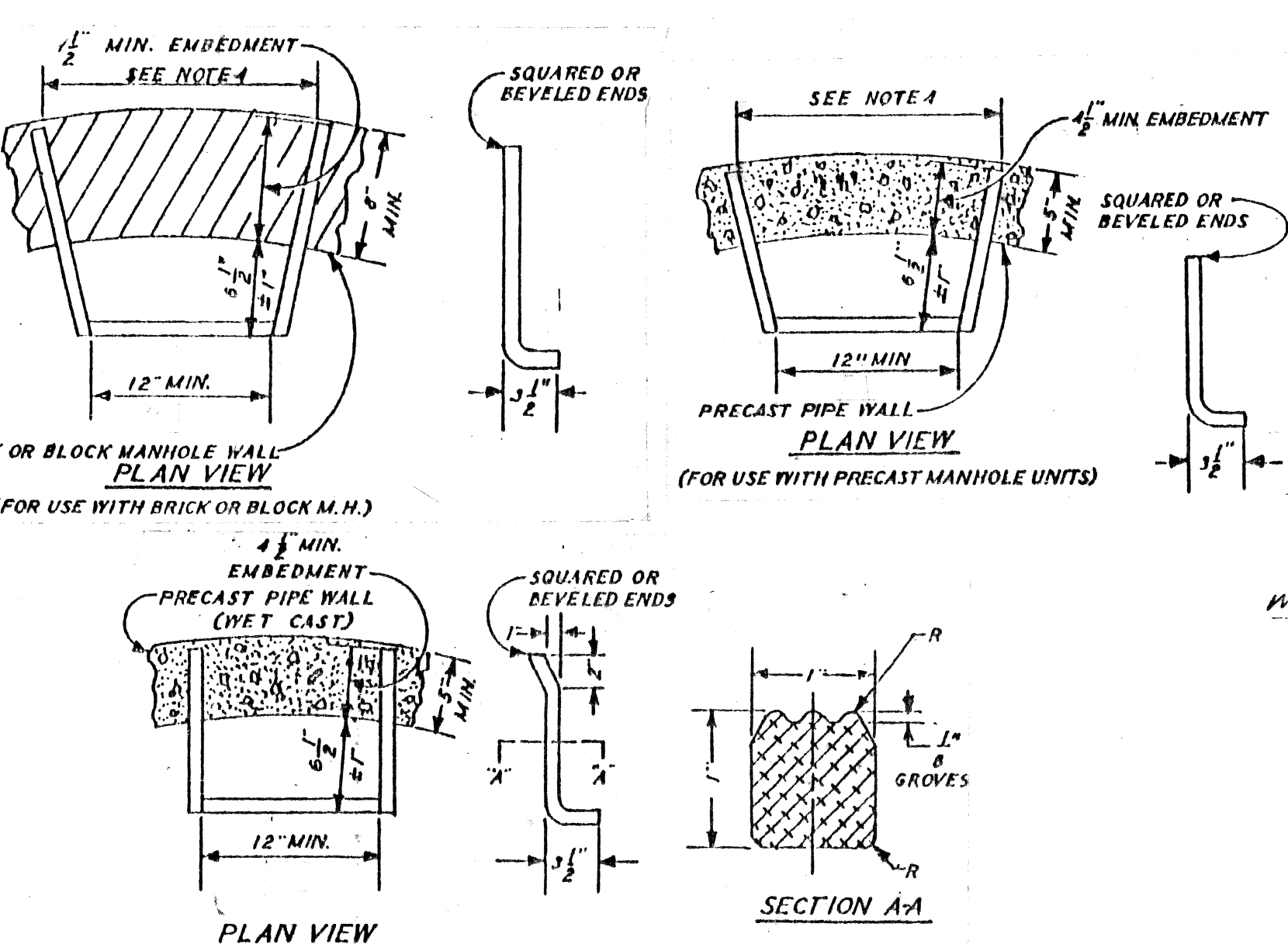
CONCRETE BULKHEAD

ALL BULKHEADS SHALL BE CONSTRUCTED WITH 3500 CONCRETE TO A THICKNESS OF AT LEAST 1/3 THE DIAMETER OF THE PIPE BUT IN NO CASE LESS THAN 12". SEWER WALLS SHOULD BE BRUSH CLEANED BEFORE CONCRETE BULKHEADS ARE POURED. (THAT IS ALL THE SLUDGE AND DEBRIS SHOULD BE OUT OF THE WAY).

TYPICAL BULKHEAD DETAIL



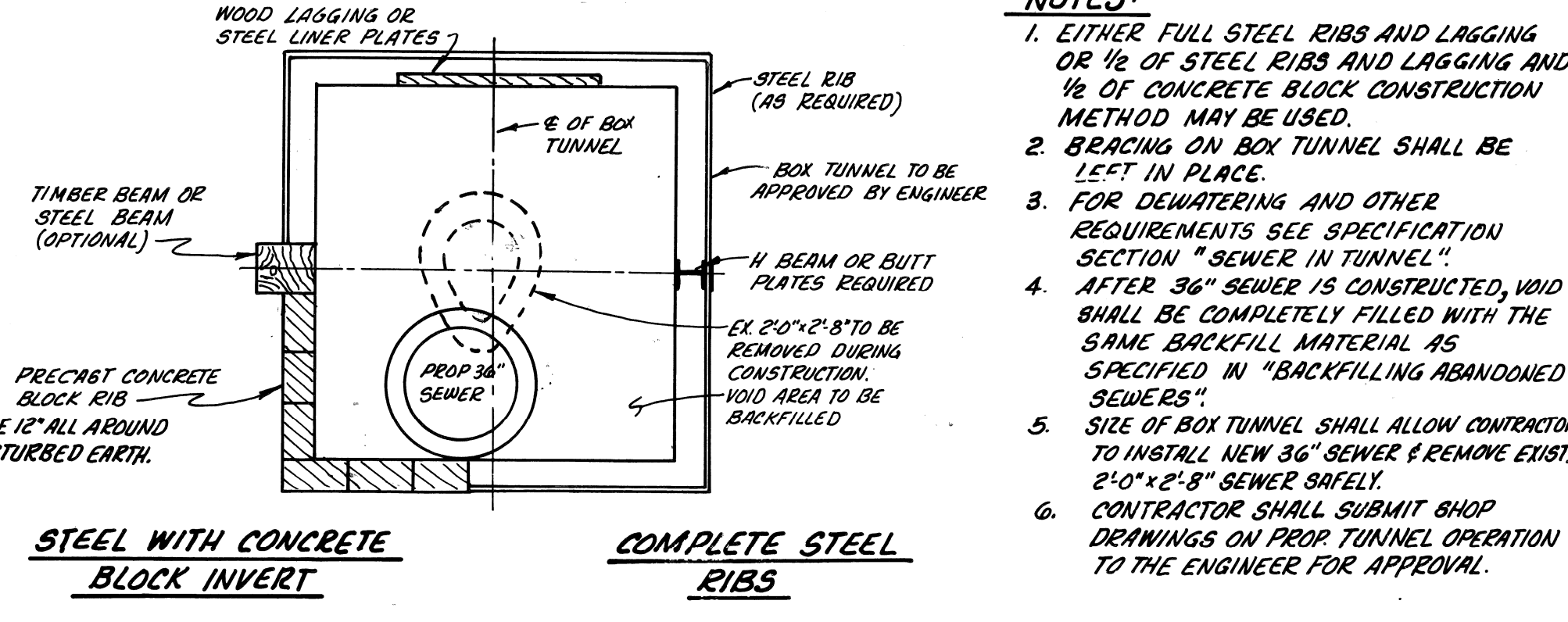
TRENCH DETAIL #9



STANDARD ALUMINUM MANHOLE STEP DETAILS

NOTE:

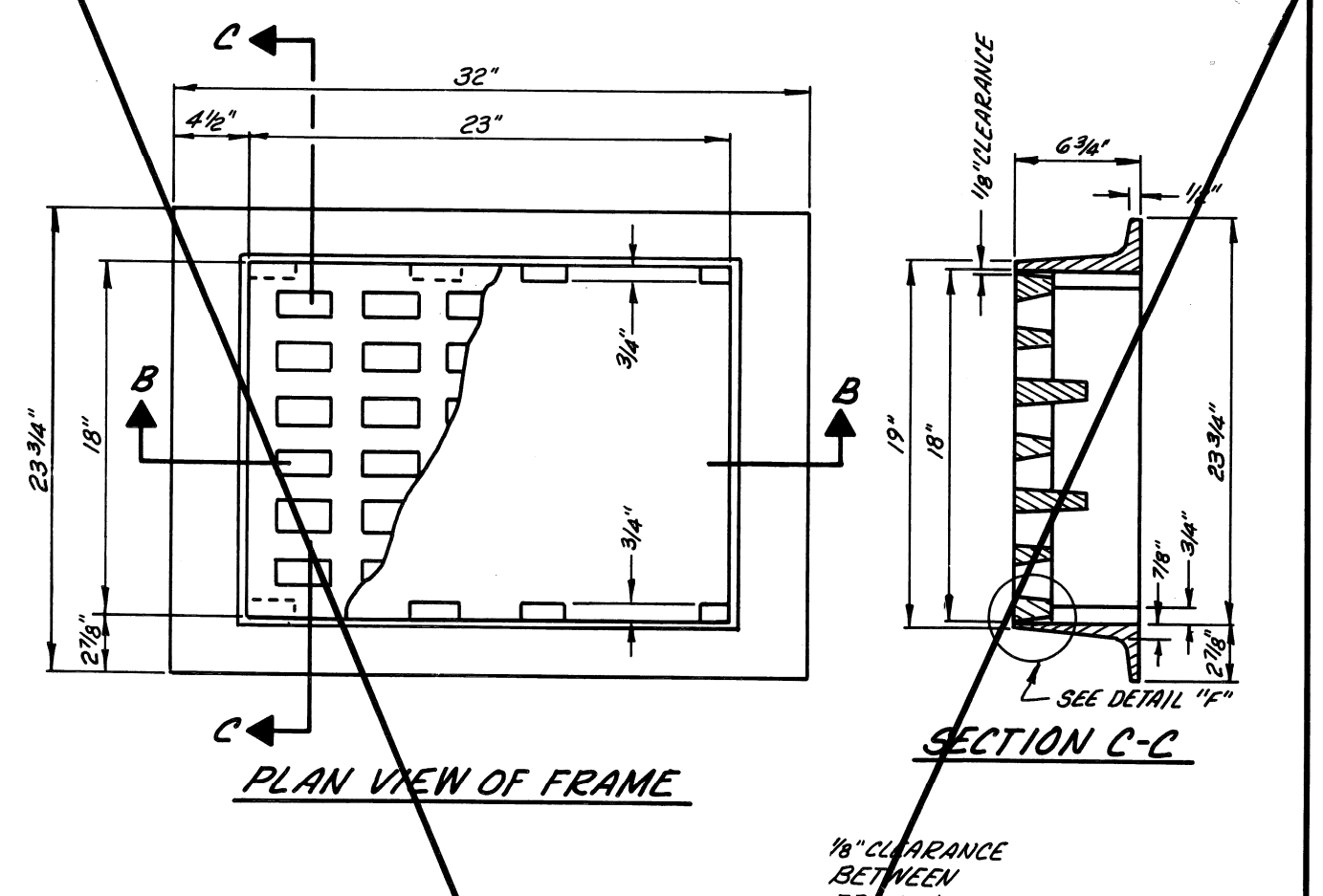
1. MANHOLE STEPS SHALL CONFORM TO THE REQUIREMENTS FOR "ALUMINUM ALLOY EXTRUDED BARS, RODS, SHAPES AND TUBES", A.S.T.M. B221 (CURRENT), ALLOY 6061 TEMPER T-6, OR APPROVED EQUAL.
2. EITHER THE FLANGLER OR PARALLEL LEG STEP MAY BE USED FOR POURED IN PLACE CONCRETE CONSTRUCTION OR IN WET CAST MANHOLE UNITS.
3. THE PARALLEL LEG STEP SHALL BE USED IN EXISTING STRUCTURES BY PLACING IN DRILLED HOLES AND GROUTING WITH NON SHRINKING GROUT.
4. PLACED LEGS SHALL BE RADIAL TO THE MANHOLE WALL.
5. THE VERTICAL SPACING BETWEEN INSTALLED STEPS SHALL BE NOT MORE THAN SIXTEEN INCHES.
6. ALL MANHOLE STEPS SHALL COMPLY WITH THE SAFETY STANDARDS (PART 3, FIXED LADDERS) AS ESTABLISHED BY THE OCCUPATIONAL SAFETY STANDARDS COMMISSION OF THE MICHIGAN DEPARTMENT OF LABOR.



SPECIAL BOX TUNNEL SECTION FOR 36" SEWER IN ALLEY NORTH OF LARNED

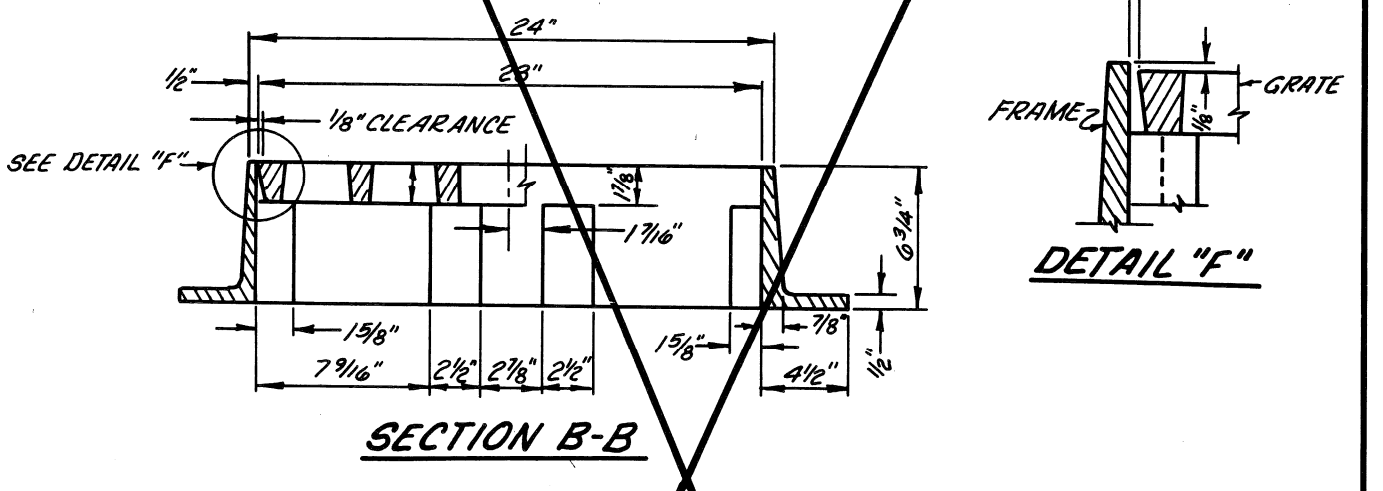
NOTES:

1. EITHER FULL STEEL RIBS AND LAGGING OR 1/2 OF STEEL RIBS AND LAGGING AND 1/2 OF CONCRETE BLOCK CONSTRUCTION METHOD MAY BE USED.
2. BRACING ON BOX TUNNEL SHALL BE LEFT IN PLACE.
3. FOR DEWATERING AND OTHER REQUIREMENTS SEE SPECIFICATION SECTION "SEWER IN TUNNEL".
4. AFTER 36" SEWER IS CONSTRUCTED, VOID SHALL BE COMPLETELY FILLED WITH THE SAME BACKFILL MATERIAL AS SPECIFIED IN "BACKFILLING ABANDONED SEWERS".
5. SIZE OF BOX TUNNEL SHALL ALLOW CONTRACTOR TO INSTALL NEW 36" SEWER & REMOVE EXIST. 24" x 24" SEWER SAFELY.
6. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS ON PROP. TUNNEL OPERATION TO THE ENGINEER FOR APPROVAL.



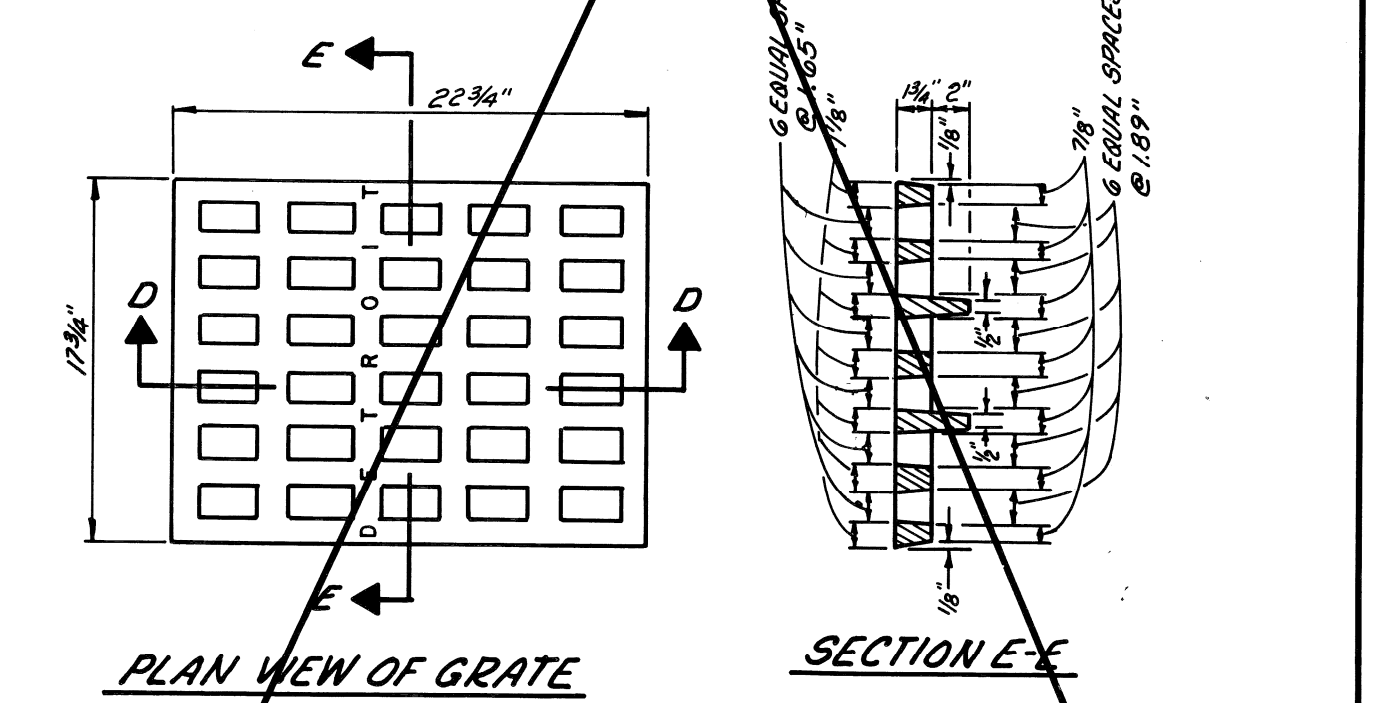
PLAN VIEW OF FRAME

SECTION C-C



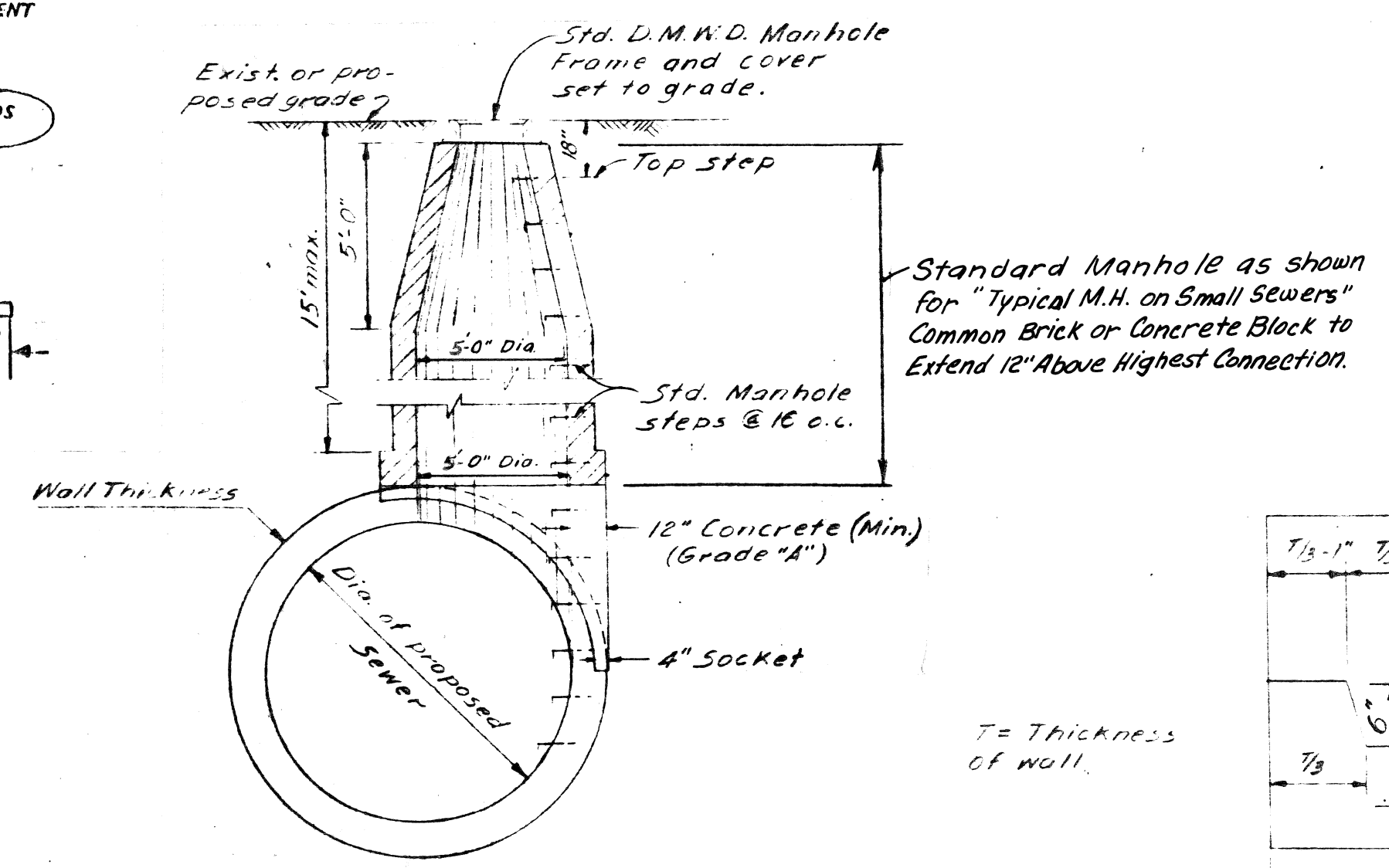
SECTION B-B

DETAIL 'F'



PLAN VIEW OF GRATE

SECTION E-E



TYPICAL MANHOLE ON CIRCULAR SECTION

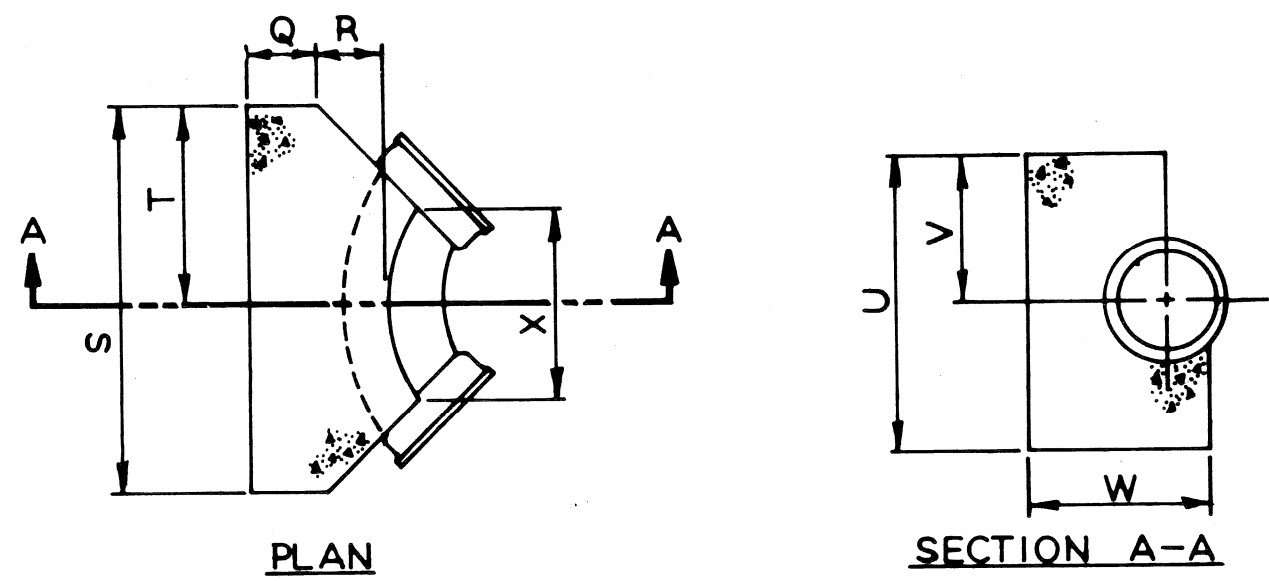
CONSTRUCTION JOINT AND WATERSTOP DETAIL

Note: Waterstops shall be placed in all construction joints except where they are deleted by order of the Engineer.

SEWER DETAILS

UTILITY RELOCATIONS

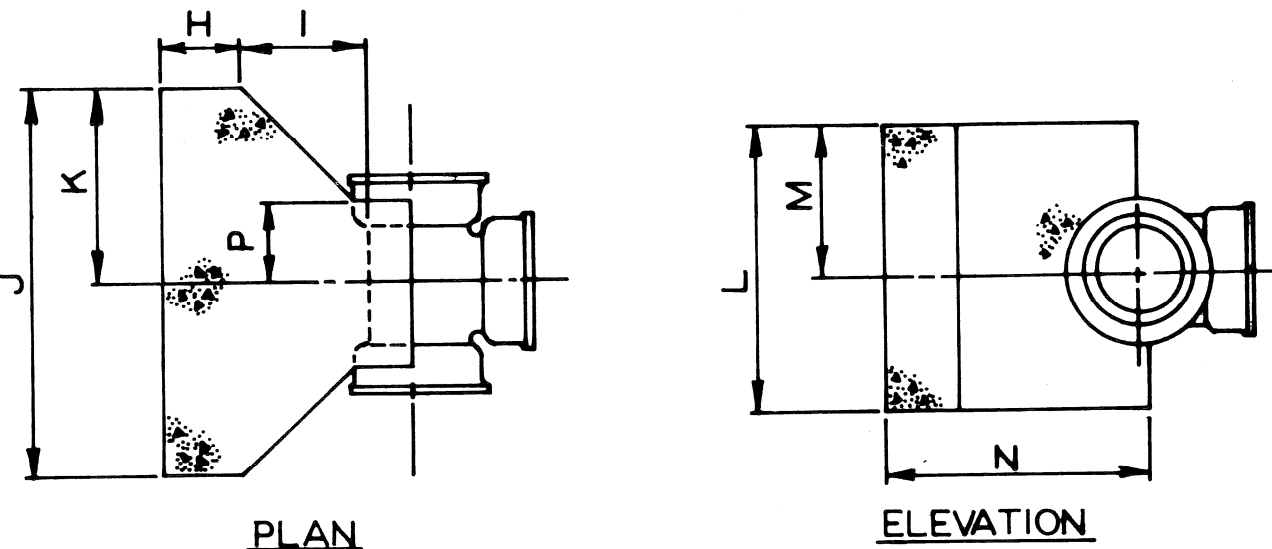
HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF in association with MADISON MADISON INTERNATIONAL ZIMMER-HOWELL ENGINEERING, LTD.		MICHIGAN DEPARTMENT OF TRANSPORTATION U.S. 10- LODGE FREEWAY AT COBO HALL EXPANSION		Prepared By MADISON MADISON INTERNATIONAL ENGINEERS ARCHITECTS PLANNERS, 313-963-6110	
		DATE: FEB. 4, 1986 SCALE: NONE	DRAWN: L.S. DESIGNED: M.L.	CONT. SEC. BM 82111	JOB NO. 25199A



SCHEDULE OF THRUST BLOCK DIMENSIONS								
BEND SIZE	Q	R	S	T	U	V	W	X
6"-22½" 45°	0'-9"	1'-0"	2'-0"	1'-0"	1'-6"	0'-9"	1'-11"	1'-4"
6"-90°	0'-9"	1'-0"	3'-0"	1'-6"	2'-0"	1'-0"	1'-11"	1'-2"
8"-22½" 45°	0'-9"	1'-0"	2'-4"	1'-2"	2'-0"	1'-0"	1'-11"	1'-4"
8"-90°	0'-9"	1'-0"	3'-4"	1'-8"	2'-0"	1'-3"	1'-11"	1'-2"
12"-22½"	0'-9"	1'-0"	2'-6"	1'-3"	2'-0"	1'-0"	2'-0"	1'-4"
12"-45°	0'-9"	1'-4"	3'-6"	1'-9"	2'-6"	1'-3"	2'-4"	1'-4"
12"-90°	0'-9"	1'-4"	5'-6"	2'-9"	3'-0"	1'-6"	2'-4"	1'-8"
16"-22½"	1'-0"	1'-8"	3'-4"	1'-8"	2'-6"	1'-3"	3'-0"	1'-2"
16"-45°	1'-0"	1'-8"	5'-4"	2'-8"	3'-0"	1'-6"	3'-0"	2'-6"
16"-90°	1'-0"	1'-8"	6'-0"	3'-0"	5'-0"	2'-6"	3'-0"	2'-8"

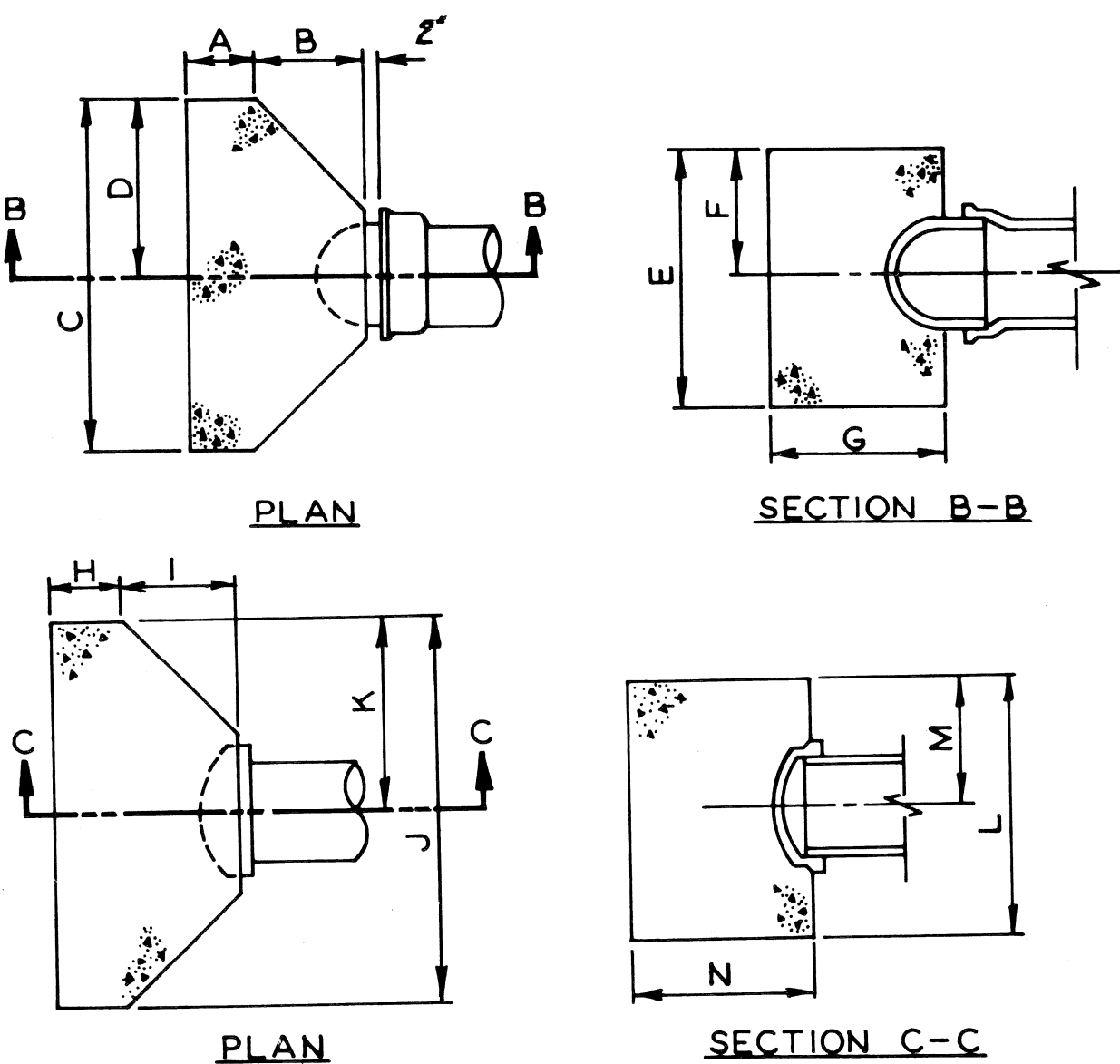
DETAIL OF STANDARD THRUST BLOCKS FOR BENDS
Not to Scale

NOTES
The bearing face of all Thrust Blocks shall be poured against undisturbed earth.
Thrust Blocks when required for vertical bends are shown by special details.



SCHEDULE OF THRUST BLOCK DIMENSIONS								
TEE SIZE	H	I	J	K	L	M	N	P
6"x6"	0'-9"	1'-0"	2'-6"	1'-3"	1'-6"	0'-9"	2'-3"	0'-6"
8"x8"	0'-9"	1'-0"	3'-0"	1'-6"	2'-0"	1'-0"	2'-3"	0'-6"
10"x10"	0'-9"	1'-2"	3'-6"	1'-9"	2'-6"	1'-3"	2'-7"	0'-7"
12"x8"	0'-9"	1'-0"	3'-0"	1'-6"	2'-0"	1'-0"	2'-5"	0'-6"
12"x12"	0'-9"	1'-4"	4'-0"	2'-0"	3'-0"	1'-6"	2'-9"	0'-8"
16"x8"	0'-9"	1'-0"	3'-0"	1'-6"	2'-0"	1'-0"	2'-9"	0'-6"
16"x12"	0'-9"	1'-4"	4'-0"	2'-0"	3'-0"	1'-6"	3'-1"	0'-8"
16"x16"	1'-0"	1'-8"	5'-0"	2'-6"	4'-0"	2'-0"	3'-8"	0'-11"

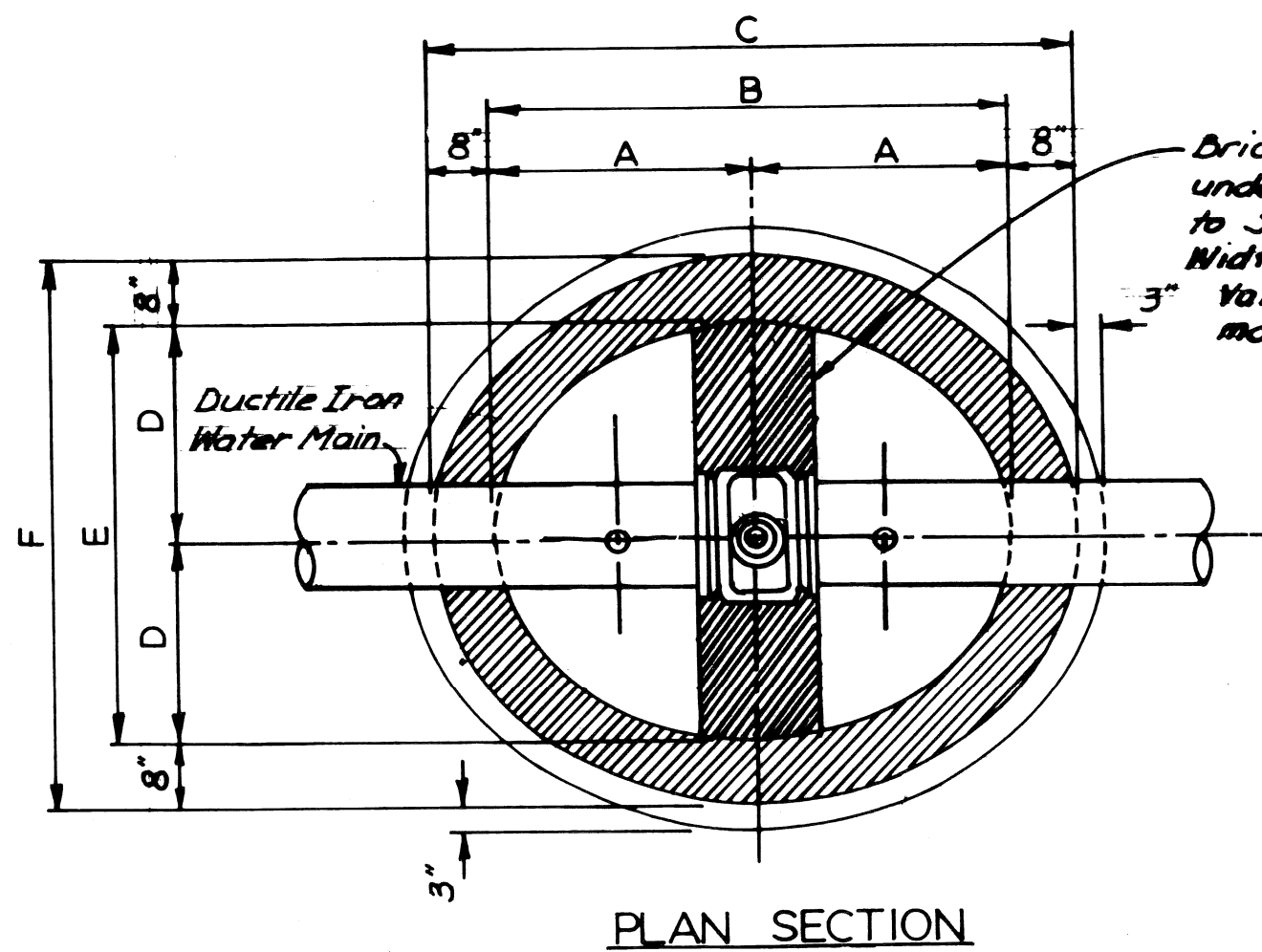
DETAIL OF STANDARD THRUST BLOCKS FOR TEES
Not to Scale



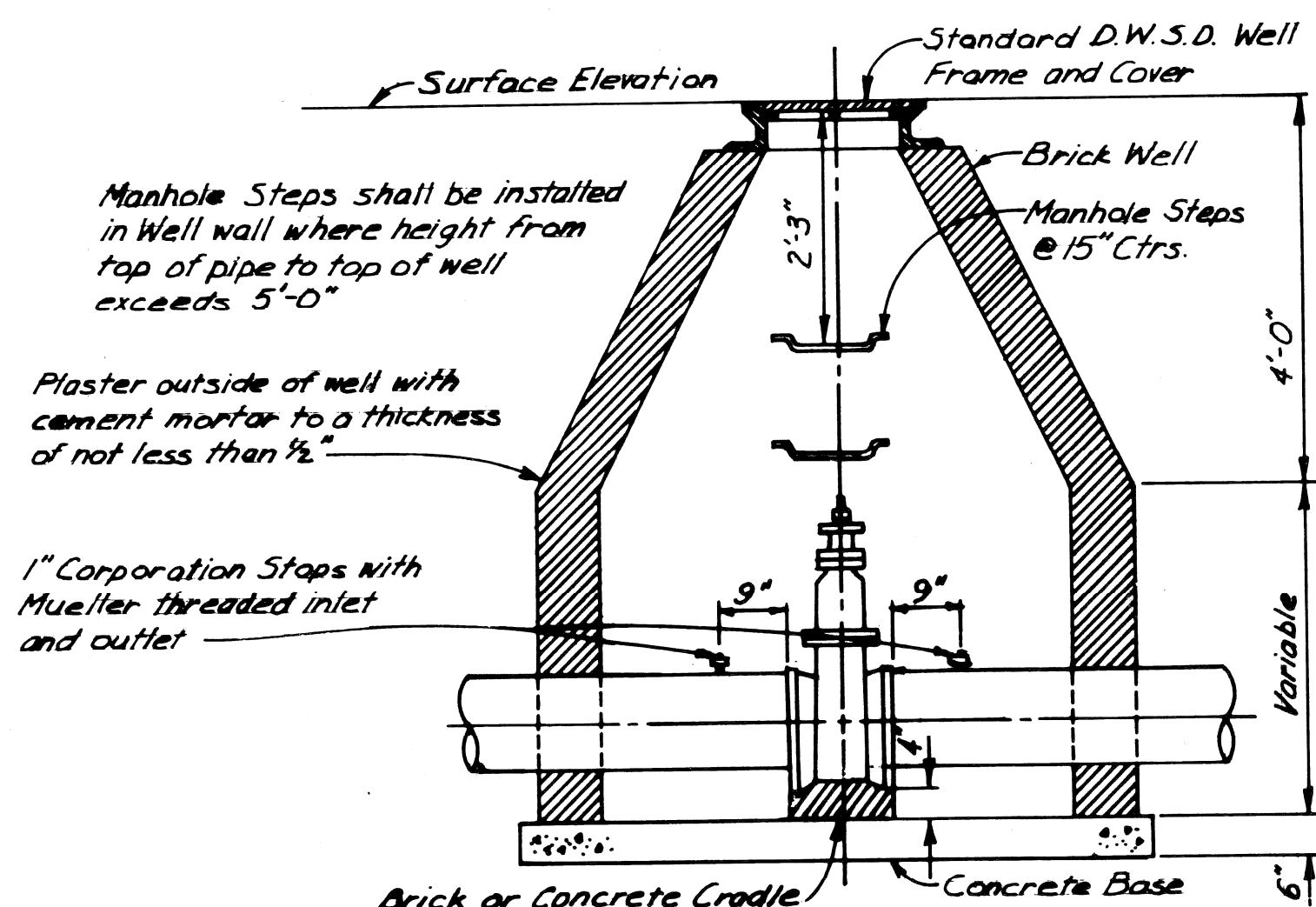
SCHEDULE OF THRUST BLOCK DIMENSIONS							
PLUG SIZE	A	B	C	D	E	F	G
6"	0'-9"	1'-2"	3'-0"	1'-6"	2'-0"	1'-0"	1'-11"
8"	0'-9"	1'-2"	3'-0"	1'-6"	2'-0"	1'-0"	1'-11"
12"	0'-9"	1'-4"	4'-0"	2'-0"	3'-0"	1'-6"	2'-1"
16"	1'-0"	1'-8"	5'-0"	2'-6"	4'-0"	2'-0"	2'-8"

CAP SIZE	H	I	J	K	L	M	N
6"	0'-9"	1'-2"	3'-0"	1'-6"	2'-0"	1'-0"	1'-11"
8"	0'-9"	1'-2"	3'-0"	1'-6"	2'-0"	1'-0"	1'-11"
12"	0'-9"	1'-4"	4'-0"	2'-0"	3'-0"	1'-6"	2'-1"
16"	1'-0"	1'-8"	5'-0"	2'-6"	4'-0"	2'-0"	2'-8"

DETAIL OF STANDARD THRUST BLOCKS FOR PLUGS AND CAPS
Not to Scale



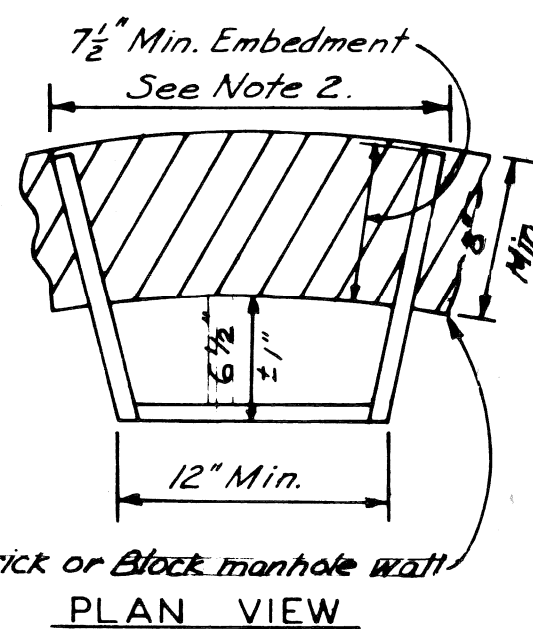
PLAN SECTION



SECTION THROUGH GATE WELL

SCHEDULE OF GATE WELL DIMENSIONS						
SIZE	A	B	C	D	E	F
6"	2'-6"	5'-0"	6'-4"	2'-0"	4'-0"	5'-4"
8"	2'-6"	5'-0"	6'-4"	2'-0"	4'-0"	5'-4"
12"	2'-9"	5'-6"	6'-10"	2'-3"	4'-6"	5'-10"
16"	3'-0"	6'-0"	7'-4"	2'-9"	5'-6"	6'-10"

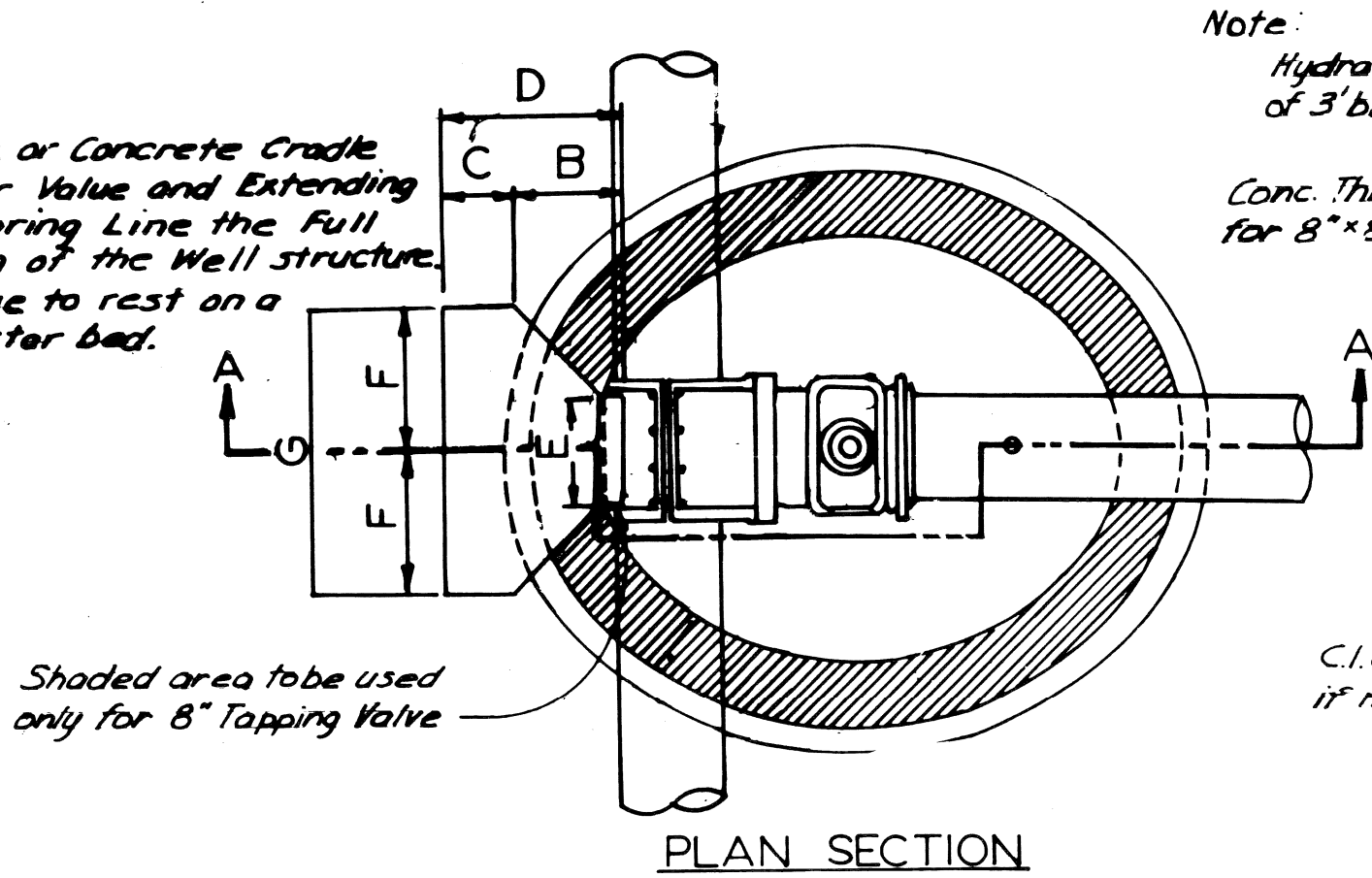
DETAIL OF STANDARD GATE WELLS
Not to Scale



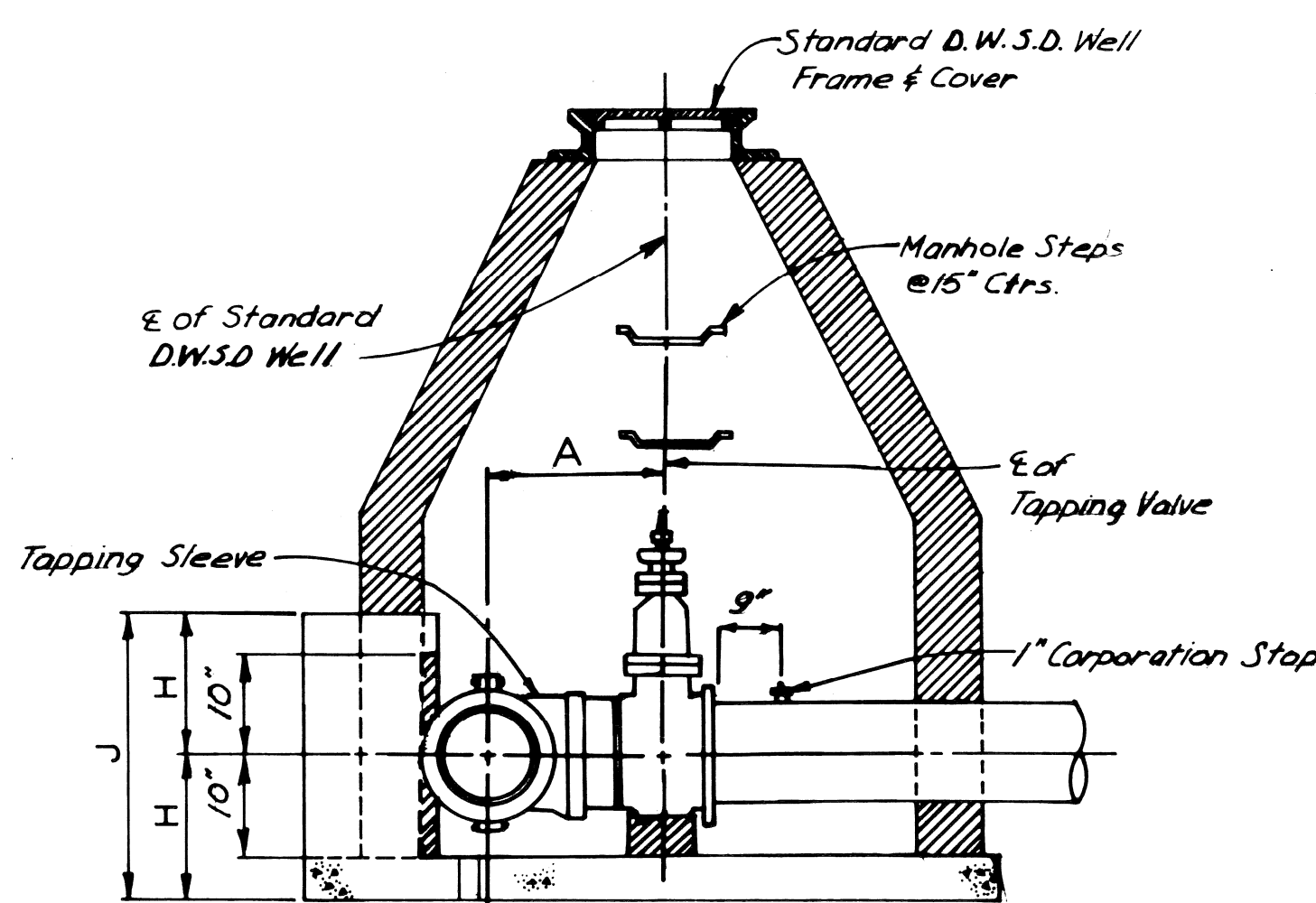
ALUMINUM MANHOLE STEP
Not to Scale

Note:
Manhole steps shall conform to the requirements for "Aluminum Alloy Extruded Bars, Rods, Shapes and Tubes", A.S.T.M. B 221 (current), Alloy 6061, Temper T-6, or approved equal.

UTILITY RELOCATIONS
MISCELLANEOUS DETAILS



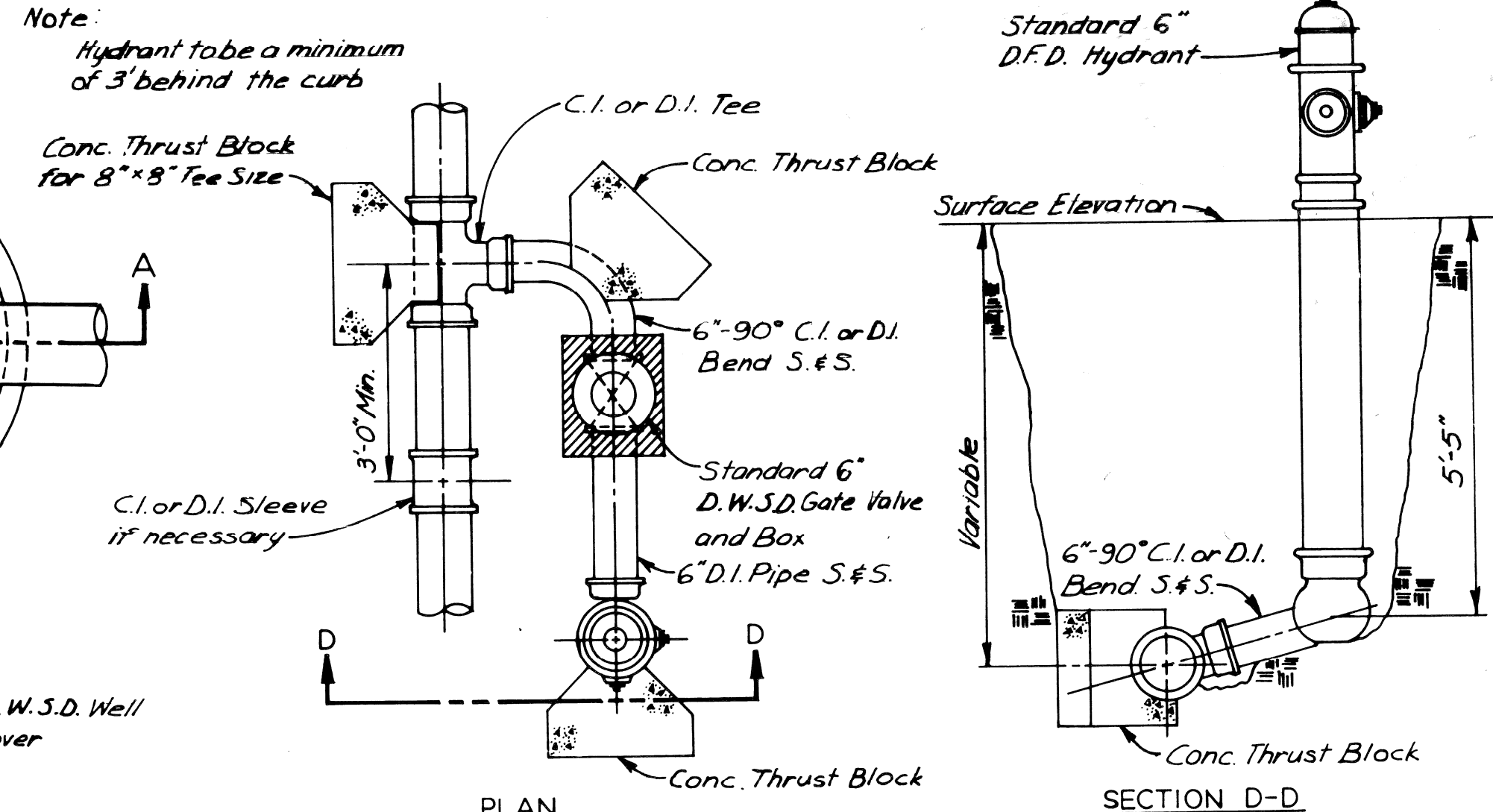
PLAN SECTION



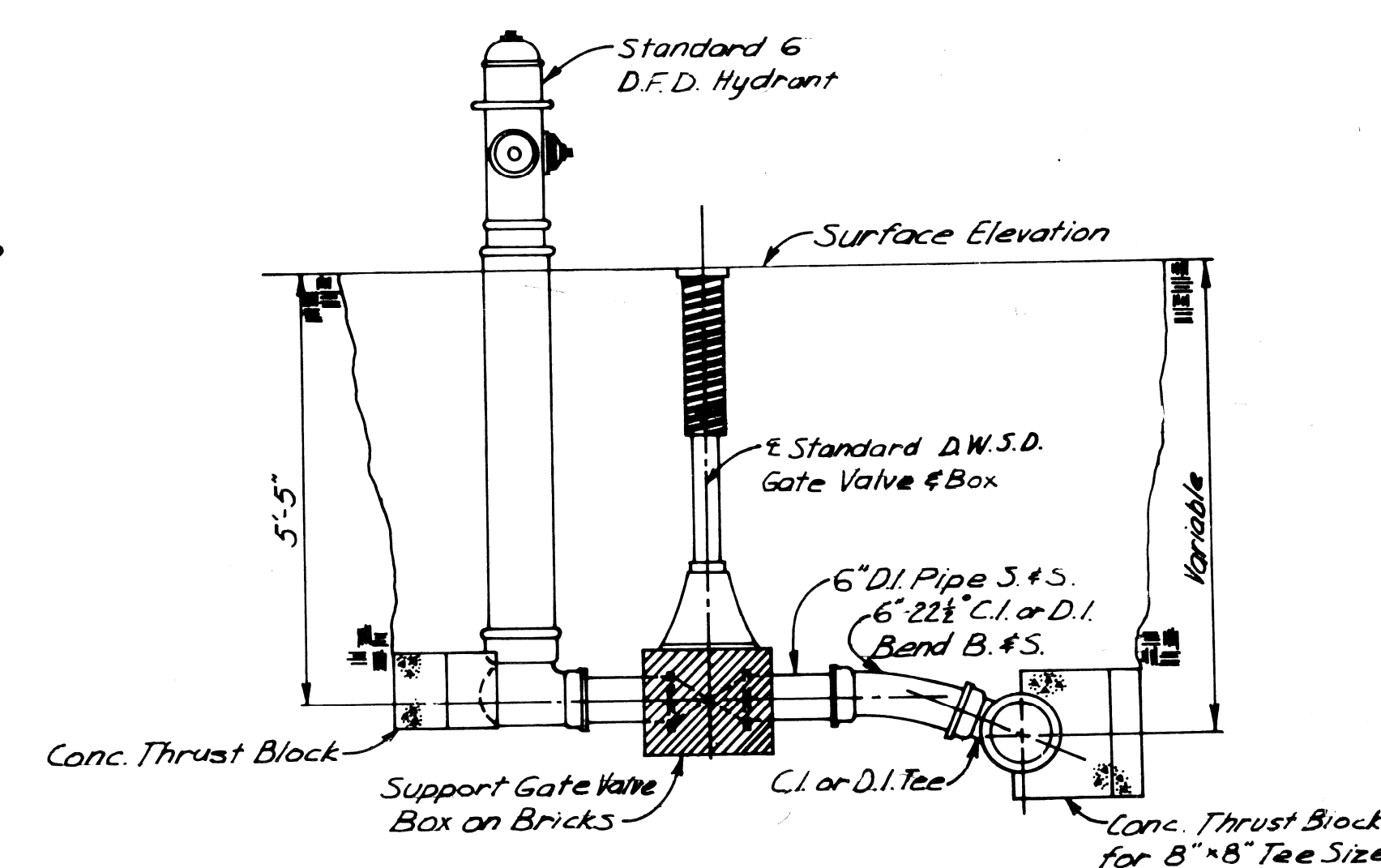
SECTION A-A

SCHEDULE OF STANDARD THRUST BLOCK DIMENSIONS FOR TAPPING VALVES									
SIZE	A	B	C	E	F	G	H	J	
8"x8"	1'-6"			0'-7"					
12"x8"	1'-9"			0'-7"					
16"x8"	1'-11½"			0'-7½"					
12"x12"	1'-8½"	1'-6"	0'-9"	2'-3"	0'-7"	1'-9"	3'-6"	1'-6"	3'-0"
16"x12"	1'-11½"	1'-6"	0'-9"	2'-3"	0'-10½"	1'-9"	3'-6"	1'-6"	3'-0"
16"x16"	2'-2"	2'-7"	1'-0"	3'-7"	0'-10½"	2'-11"	5'-10"	1'-8"	3'-4"

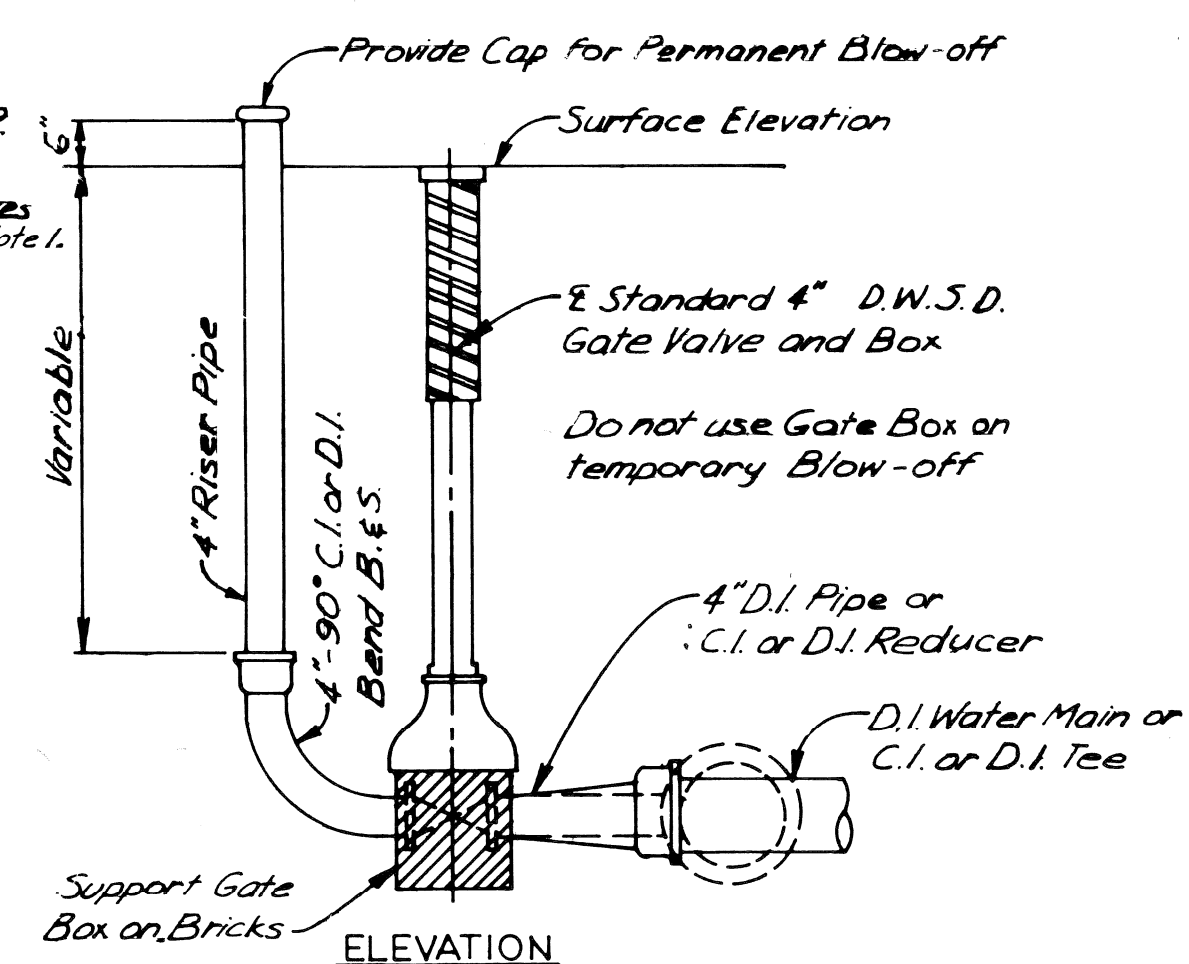
DETAIL OF STANDARD THRUST BLOCKS FOR TAPPING VALVES
Not to Scale



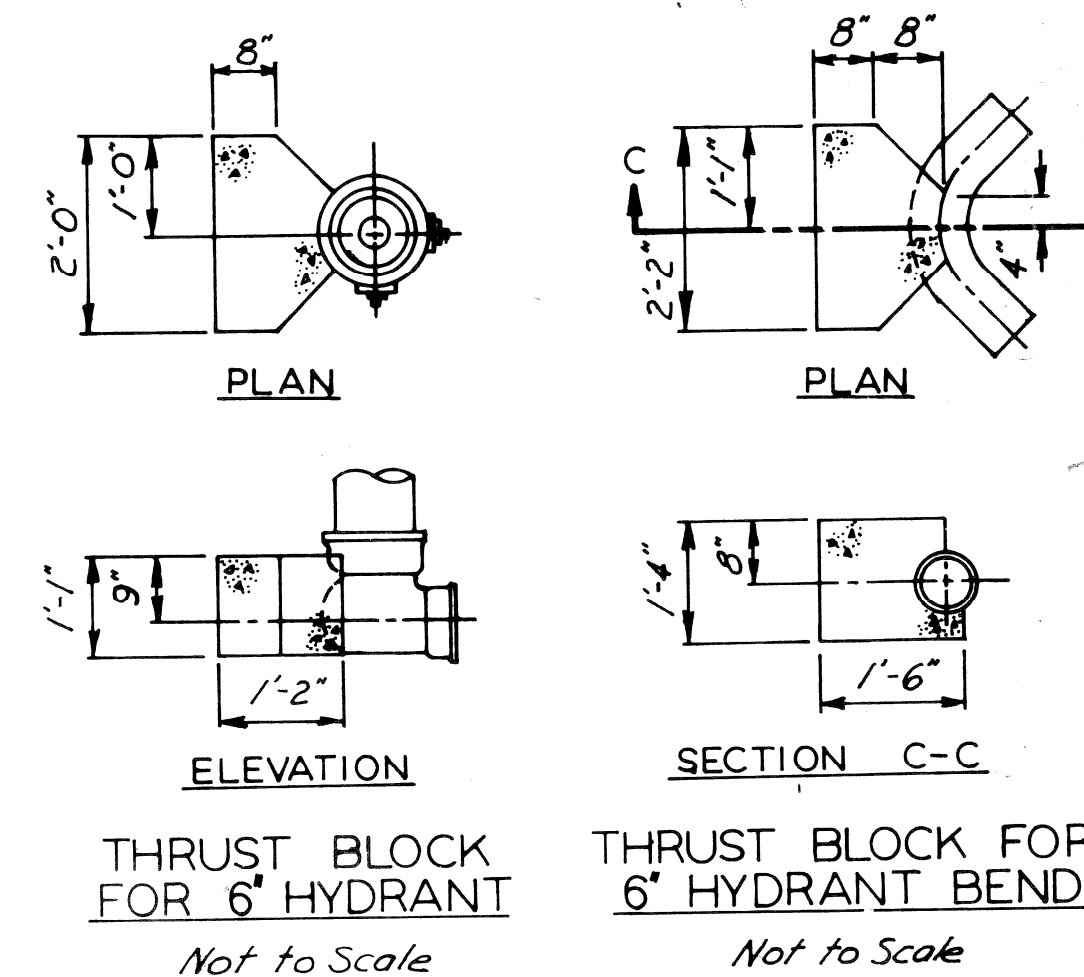
DETAIL OF 6" HYDRANT INSTALLATION OFF SET
Not to Scale



DETAIL OF 6" HYDRANT INSTALLATION STRAIGHT AWAY
Not to Scale



DETAIL OF 4" BLOW-OFF
Not to Scale

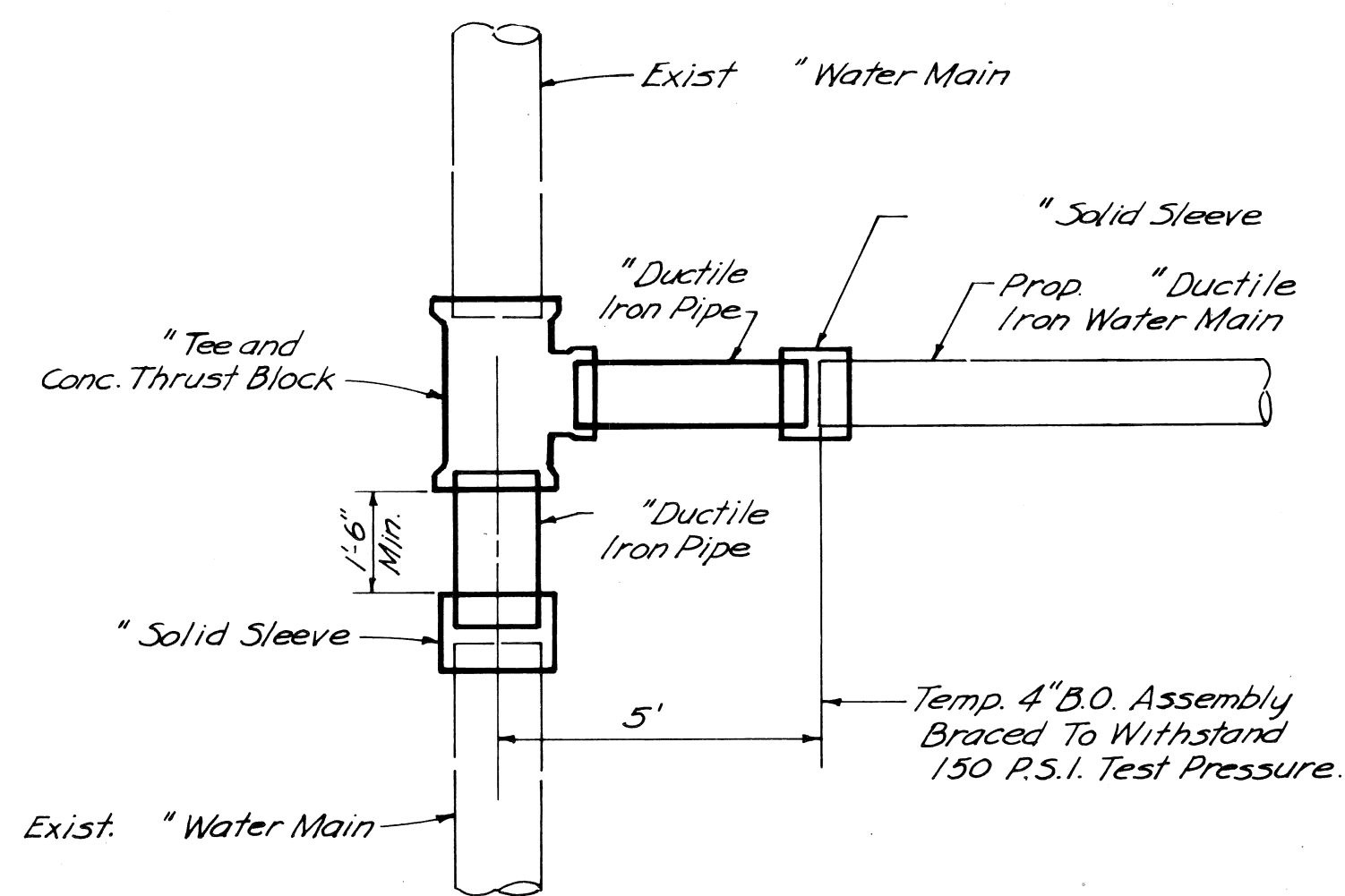


THRUST BLOCK FOR 6" HYDRANT
Not to Scale

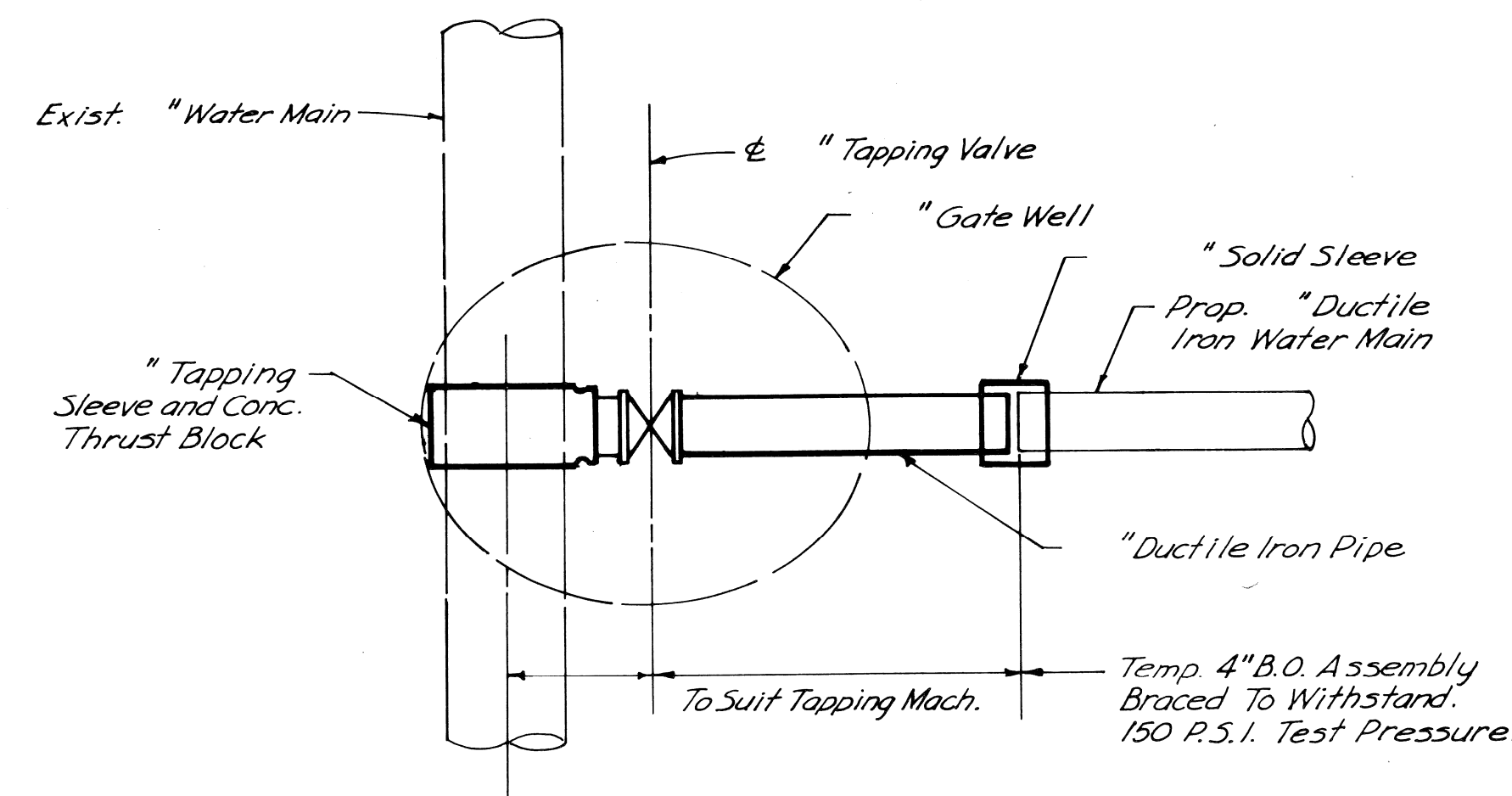
THRUST BLOCK FOR 6" HYDRANT BEND
Not to Scale

Note:
The bearing face of Thrust Blocks shall be poured against undisturbed earth.

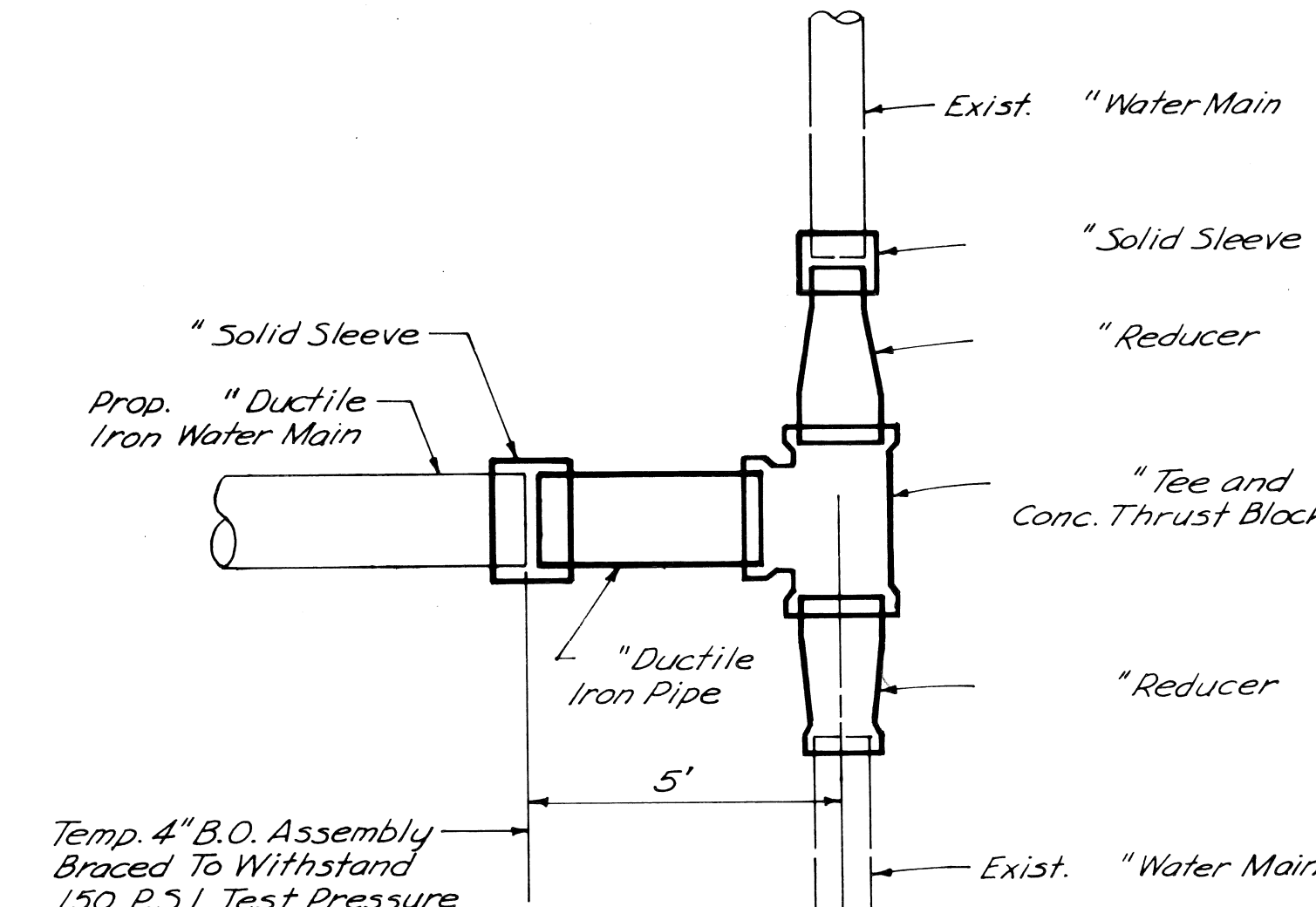
DESIGNED BY		APPROVED		CITY OF DETROIT		CONT. SEC. BM 82111	
DRAWN BY R.A.C.				WATER AND SEWERAGE DEPARTMENT		JOB NO. 25199A	
CHECKED BY R.T.D.		DIRECTOR OF ENGINEERING		MISCELLANEOUS DETAILS		DATE FEB. 4, 1986	
CO-OR.		DIRECTOR		SCALE AS SHOWN		DRAWING NO. SHEET 51 OF 65	
DESCRIPTION		DATE		SECTION MAP		TOWN RANGE SECTION PORTION CODE WORK ORDER NO.	
REVISIONS				DATE			



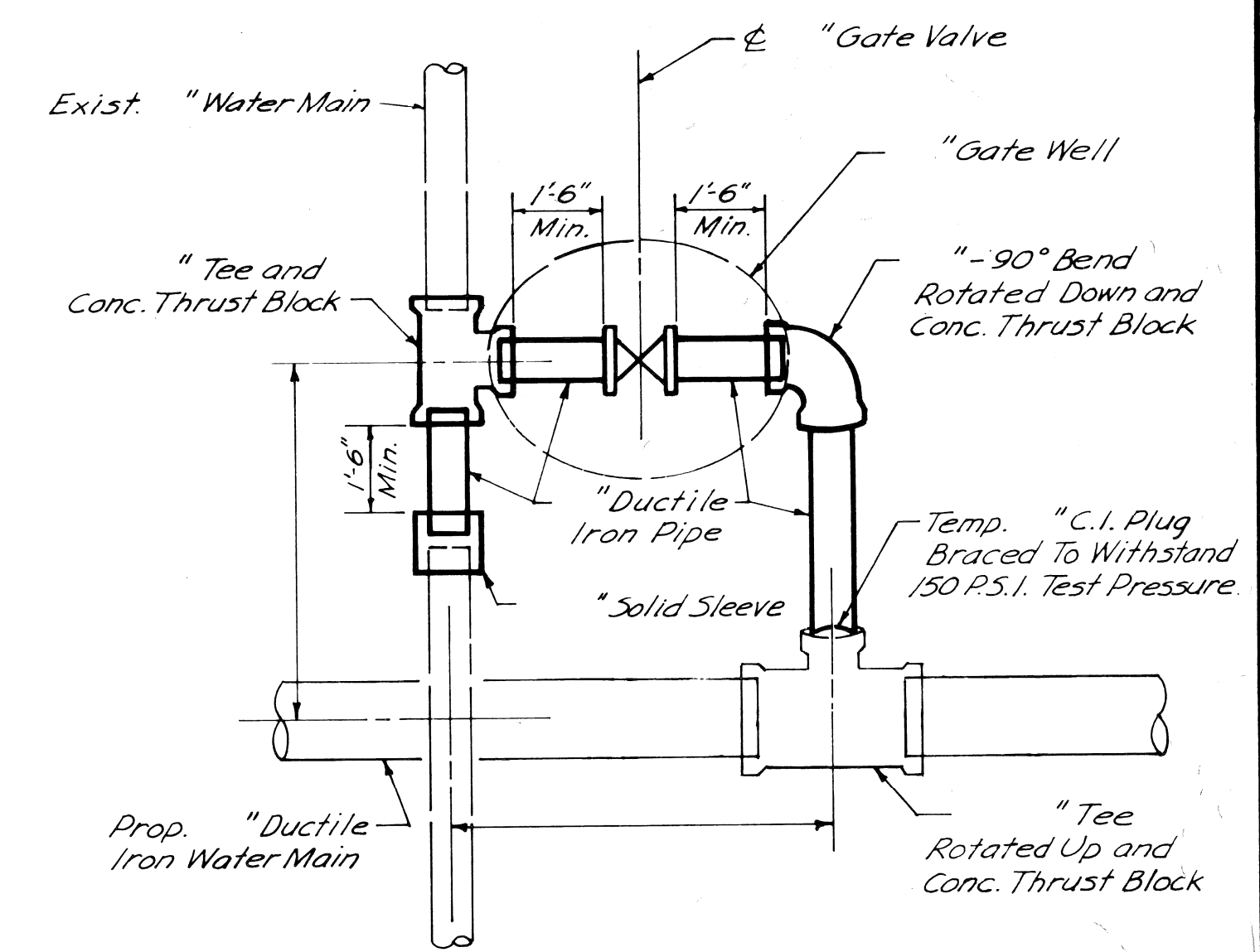
PLAN
DETAIL 'A'



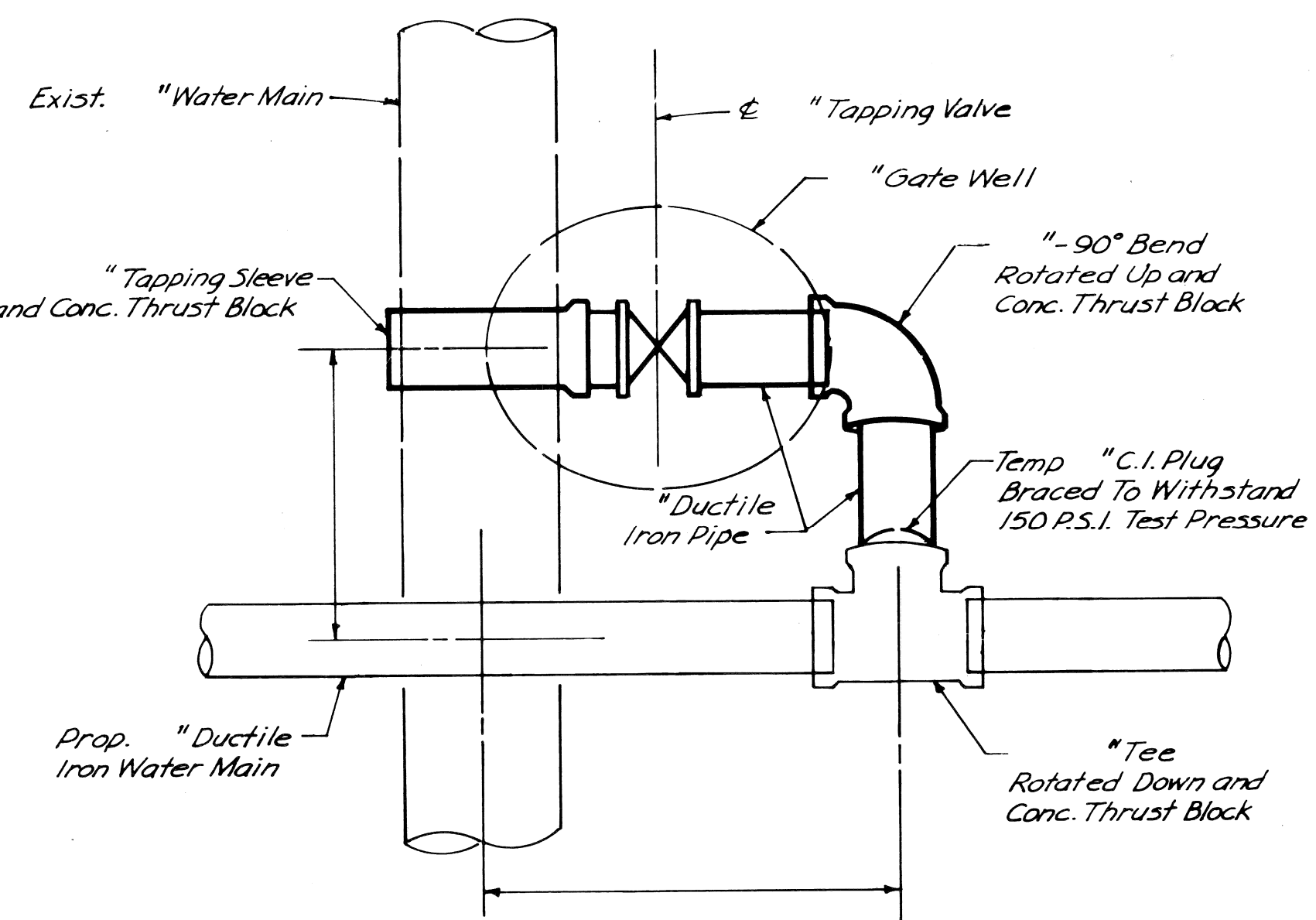
PLAN
DETAIL 'B'



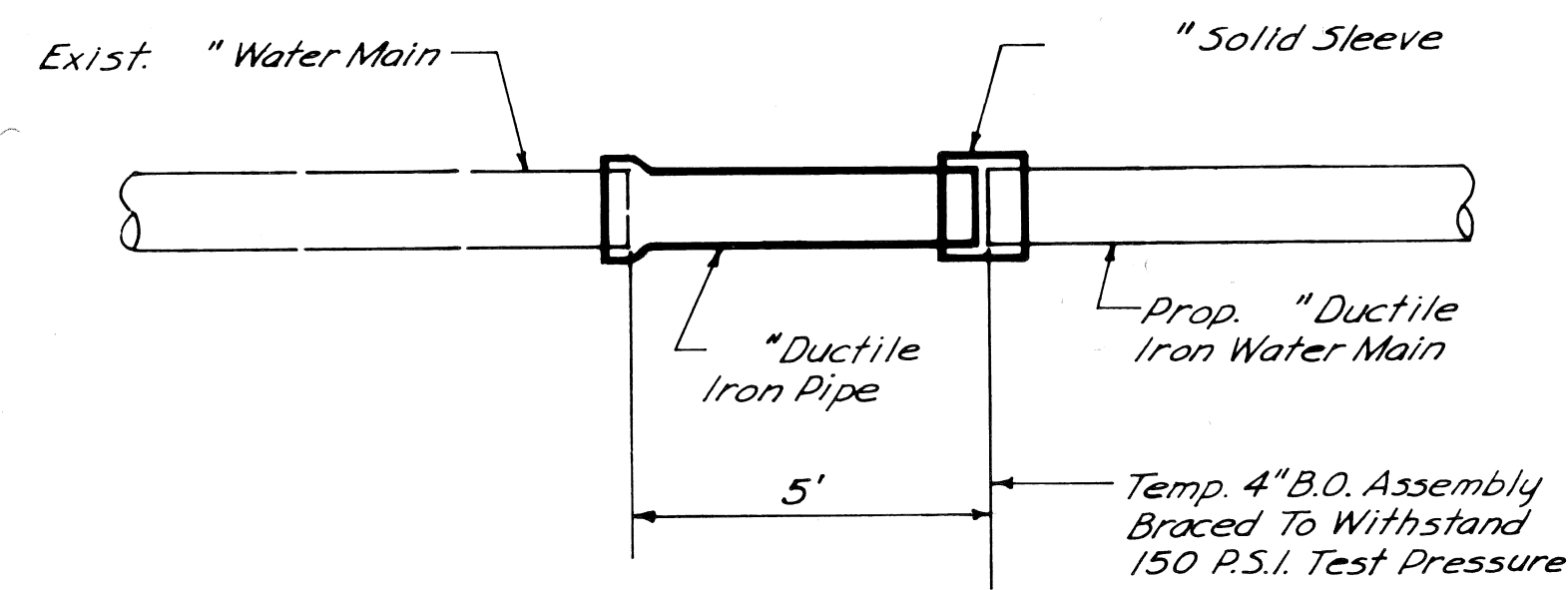
PLAN
DETAIL 'C'



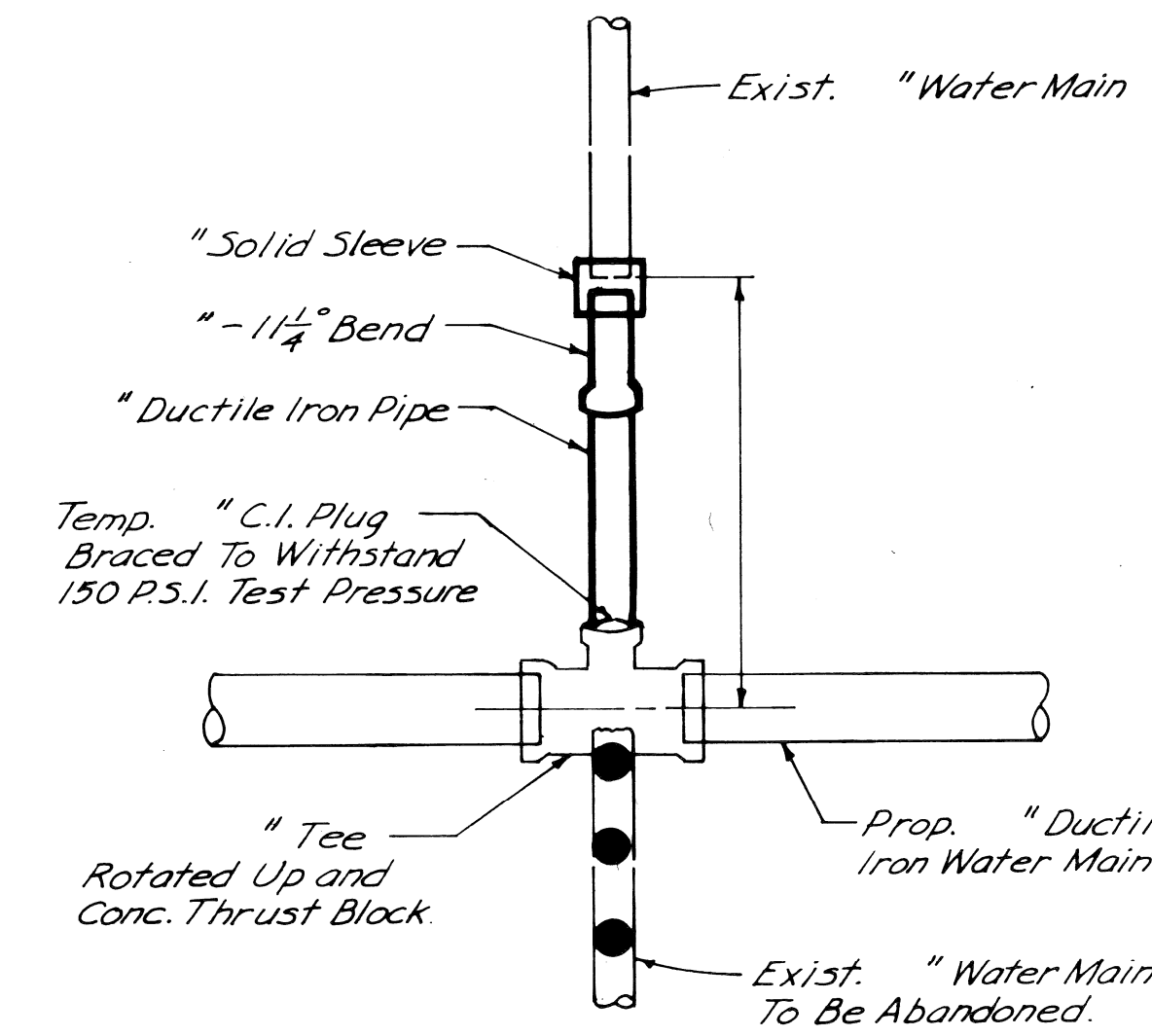
PLAN
DETAIL 'D'



PLAN
DETAIL 'E'



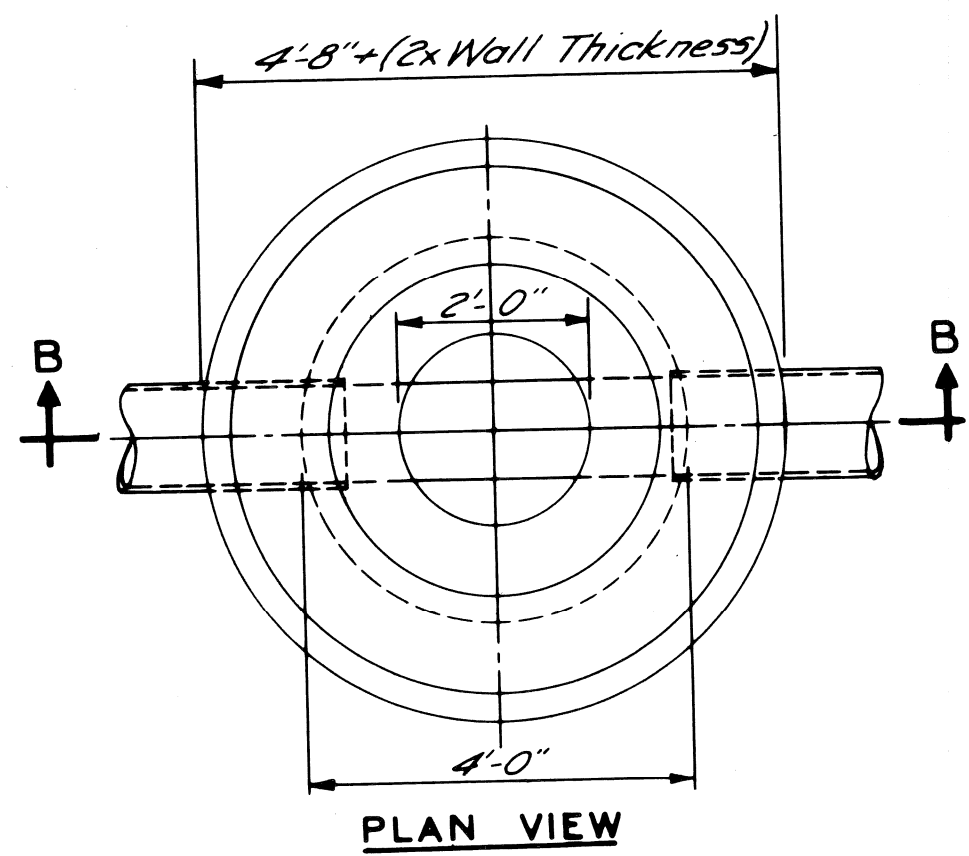
PLAN
DETAIL 'F'



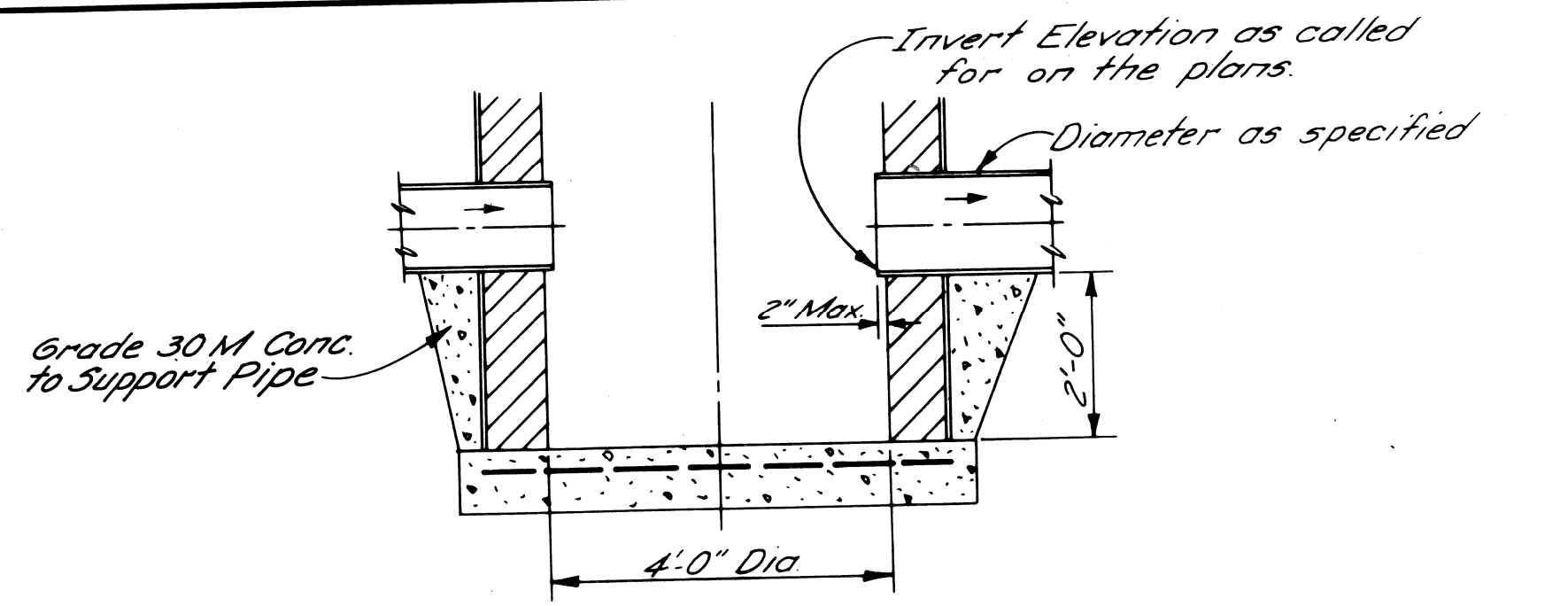
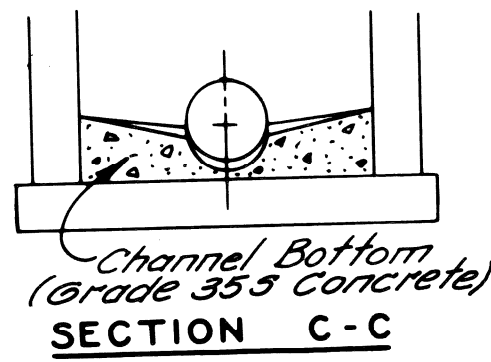
PLAN
DETAIL 'G'

NOTE
Connection Details are typical and may require adaption to fit a particular connection

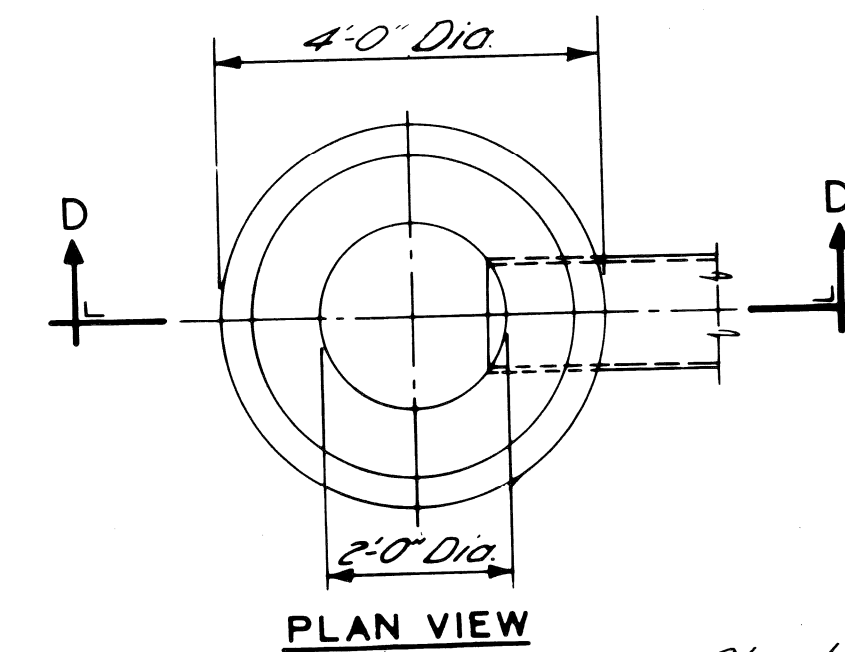
F E D C B A	DESIGNER	DESIGNED BY	APPROVED				SCALE NONE	DATE	CITY OF DETROIT WATER AND SEWERAGE DEPARTMENT ENGINEERING DIVISION						CONT. SEC. BM 82111
		DRAWN BY R.T.D.													JOB NO. 25199A
		CHECKED BY	DATE FEB. 4, 1986												
		DIRECTOR OF ENGINEERING	DRAWING NO. SHEET 52 OF 65												
CO-OR.	DESCRIPTION	APRD.	DATE	DIRECTOR	SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE	WORK ORDER NO.					



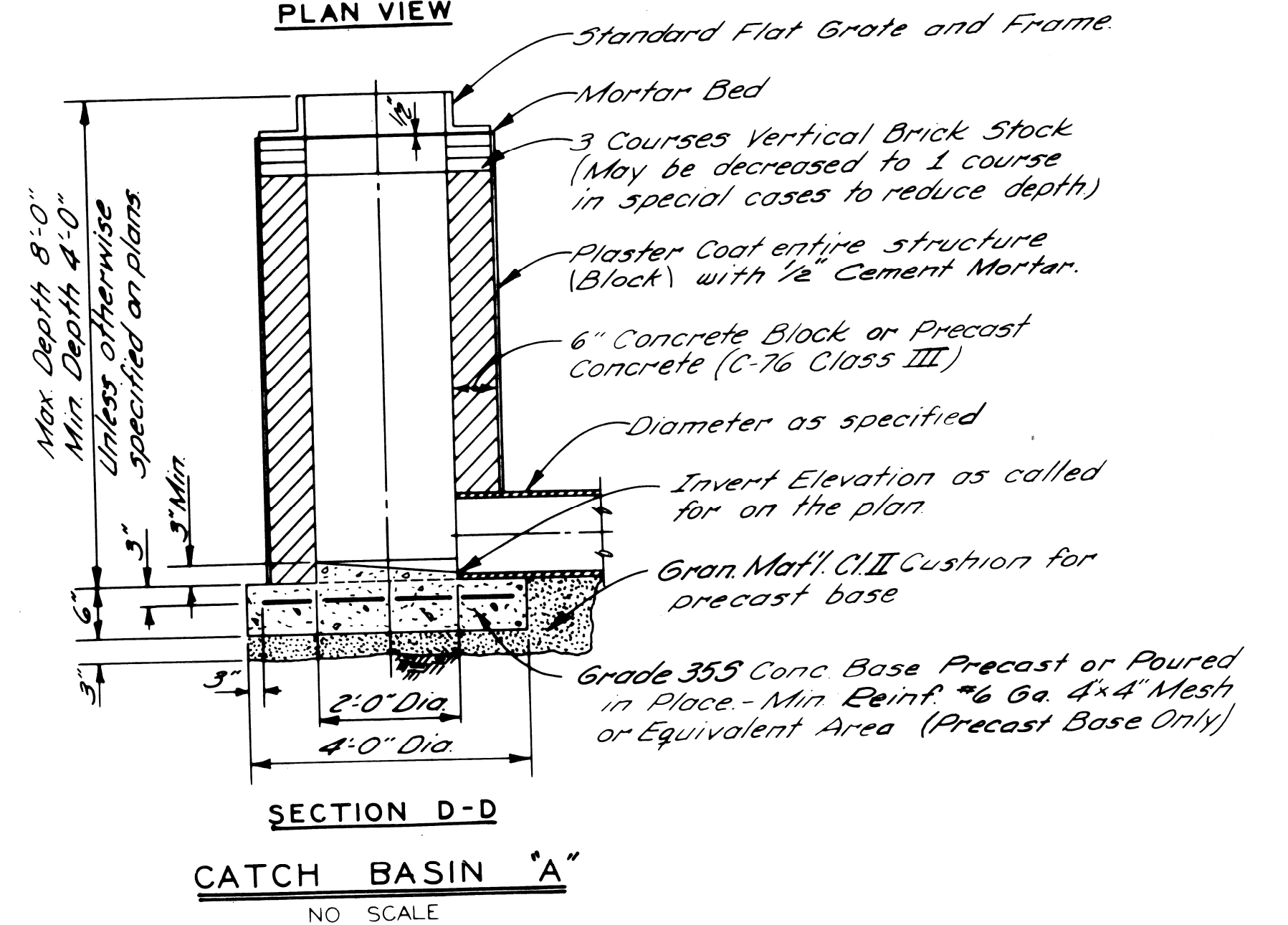
NOTE "A"
Wall thickness below a depth of 15 feet shall be 12 inches.



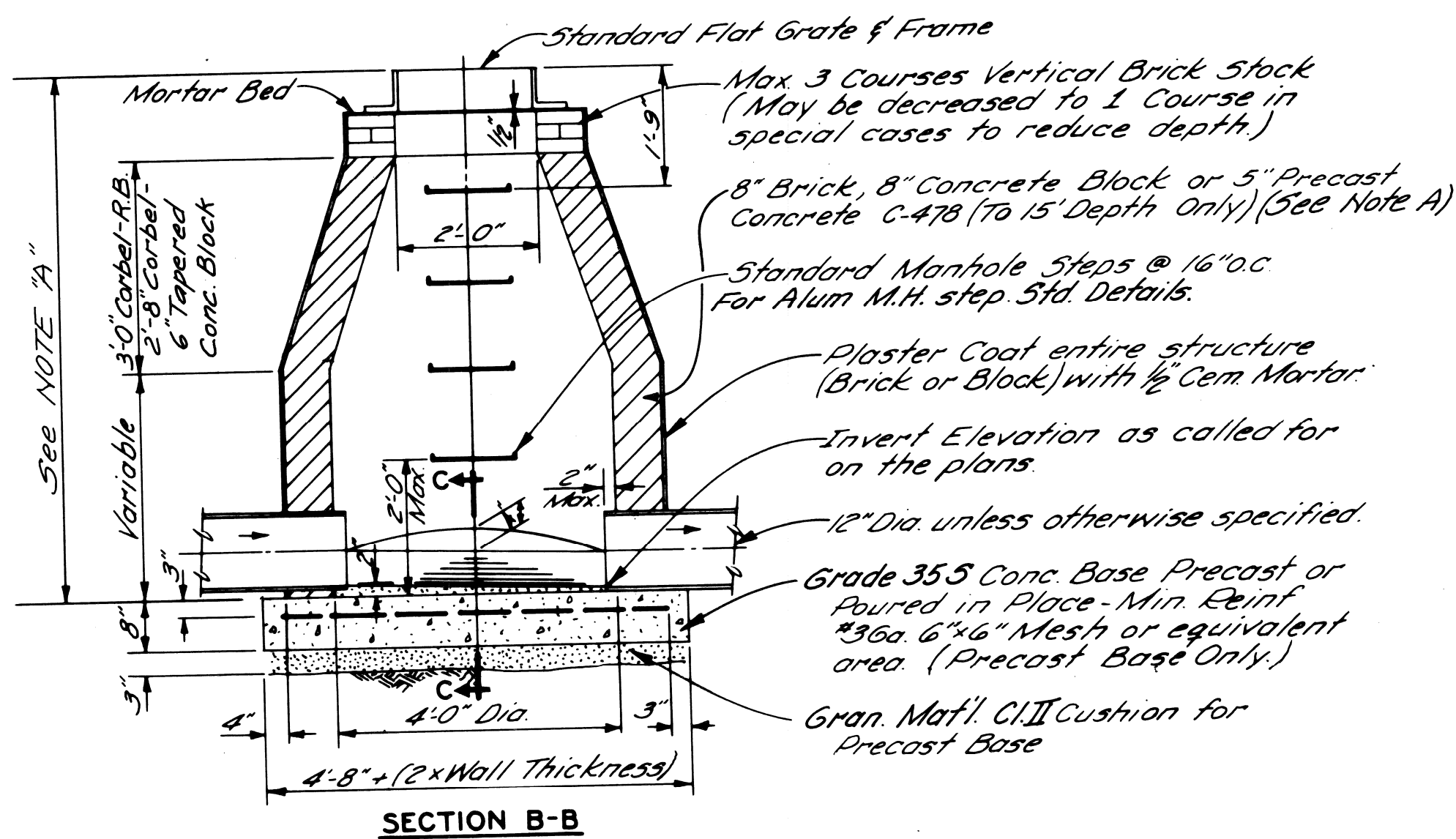
DETAIL OF SUMP FOR CATCH BASIN "B"
NO SCALE



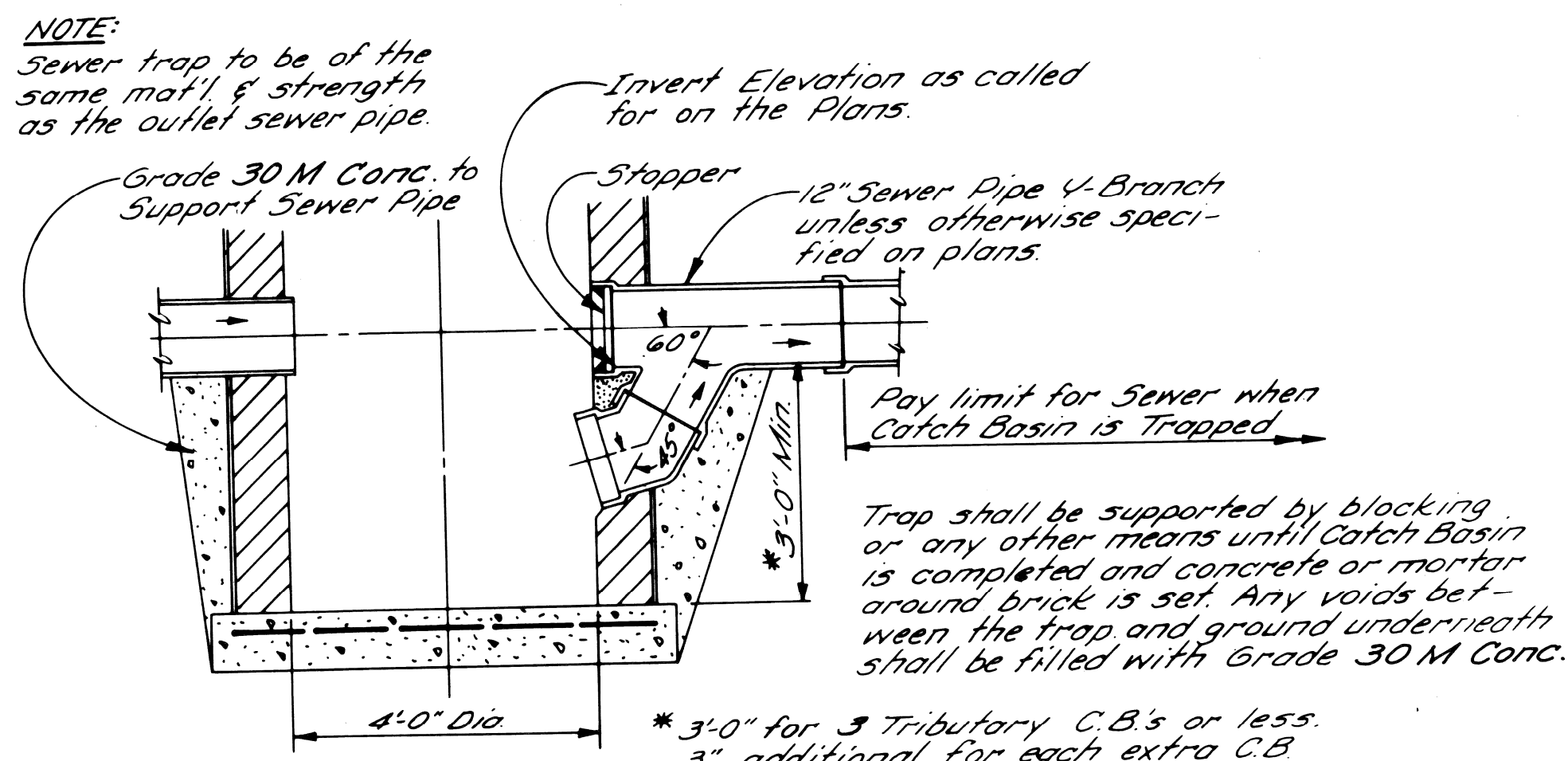
NOTE:
Catch Basin "A" will be used only when outletting to a Catch Basin "B"



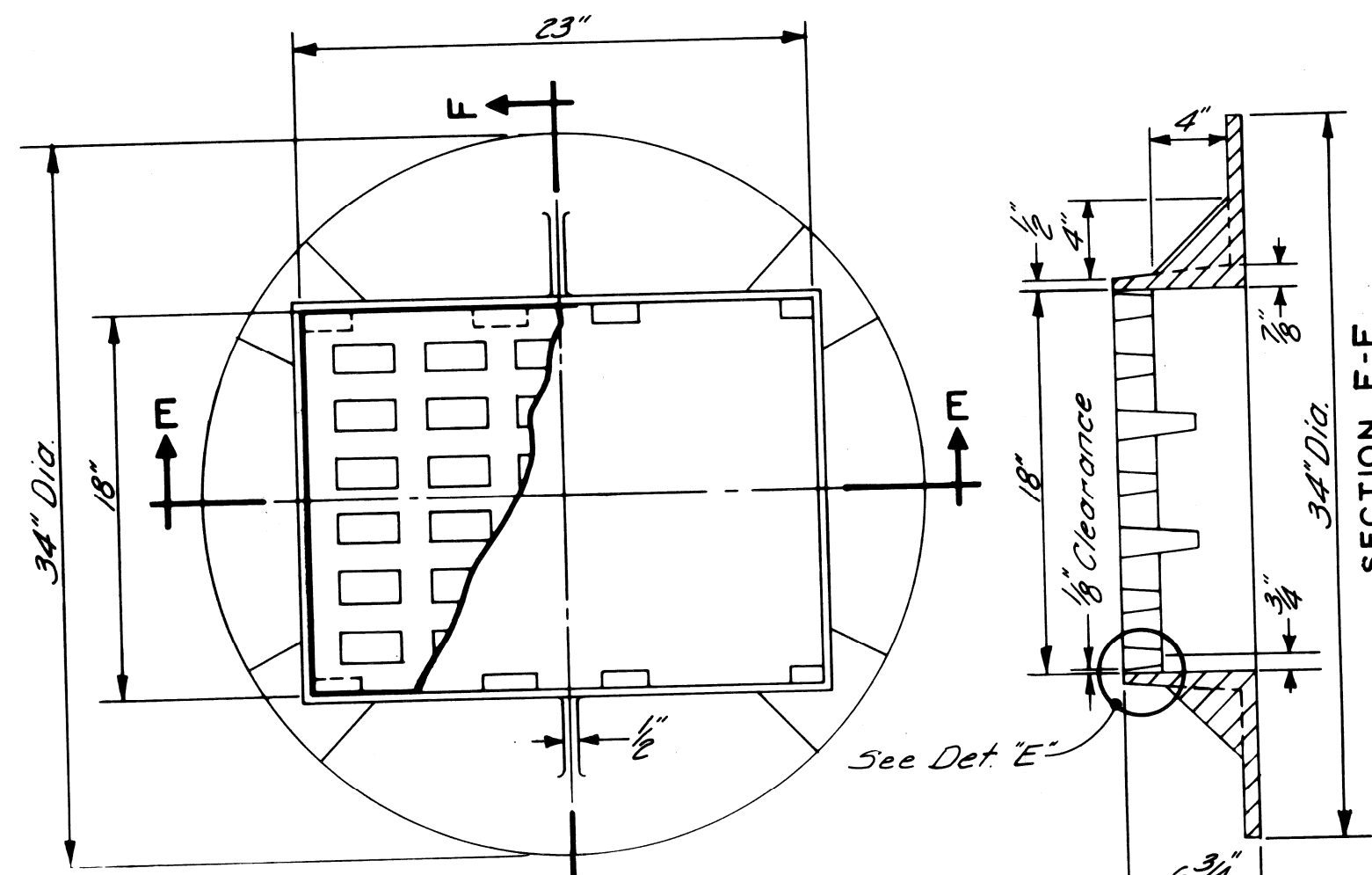
CATCH BASIN "A"
NO SCALE



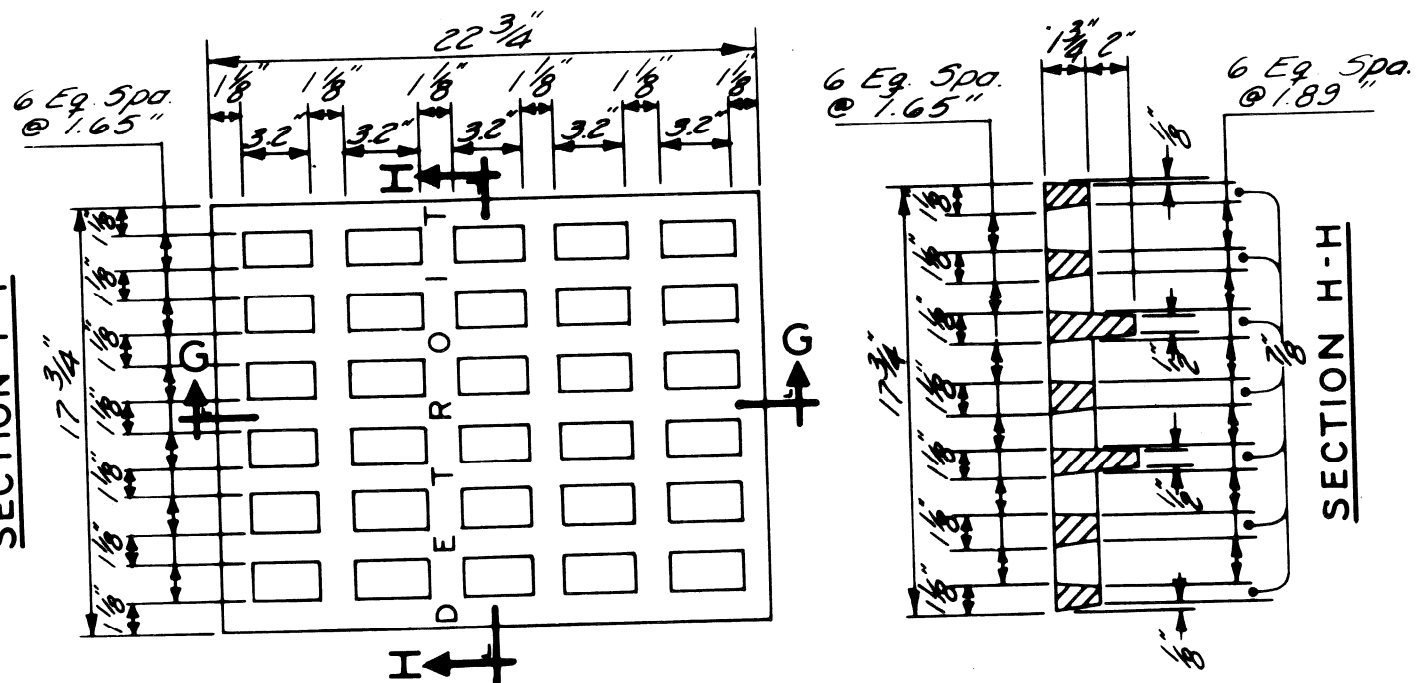
CATCH BASIN "B"
NO SCALE



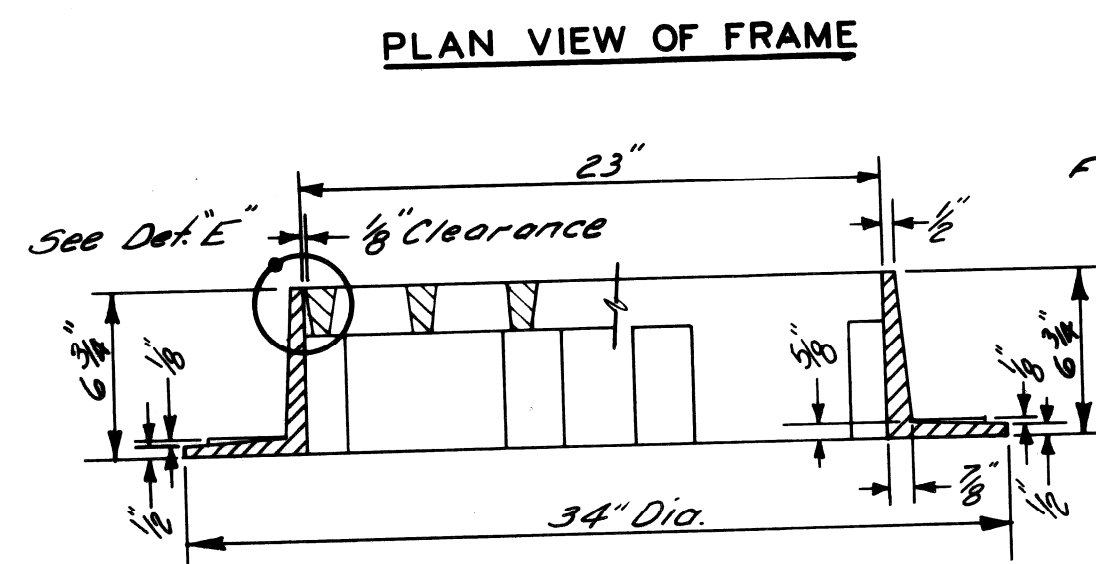
DETAIL OF TRAP FOR CATCH BASIN "B"
NO SCALE



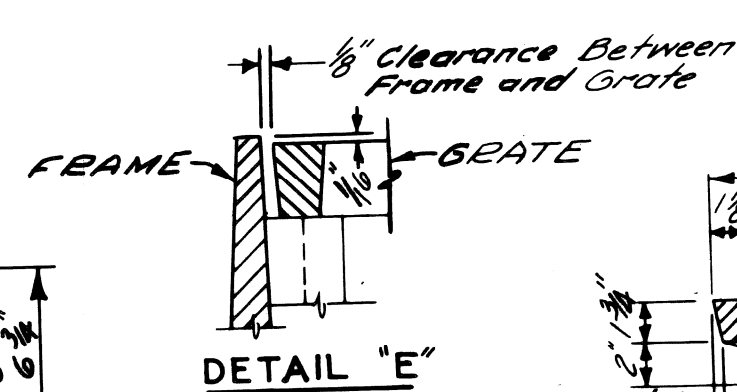
PLAN VIEW OF FRAME



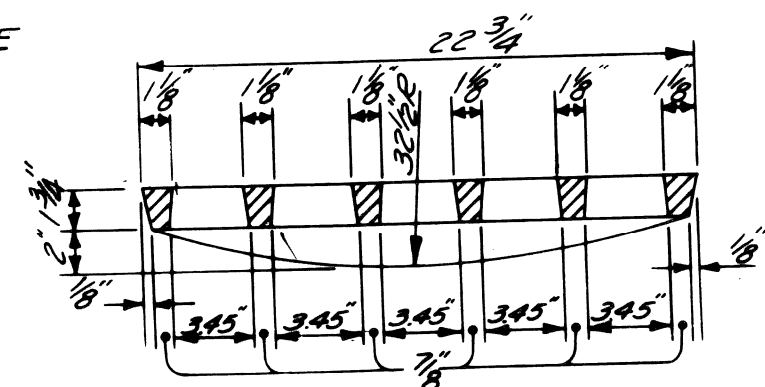
PLAN VIEW OF GRATE



SECTION E-E



DETAIL "E"



SECTION G-G

STANDARD FLAT GRATE AND FRAME
NO SCALE

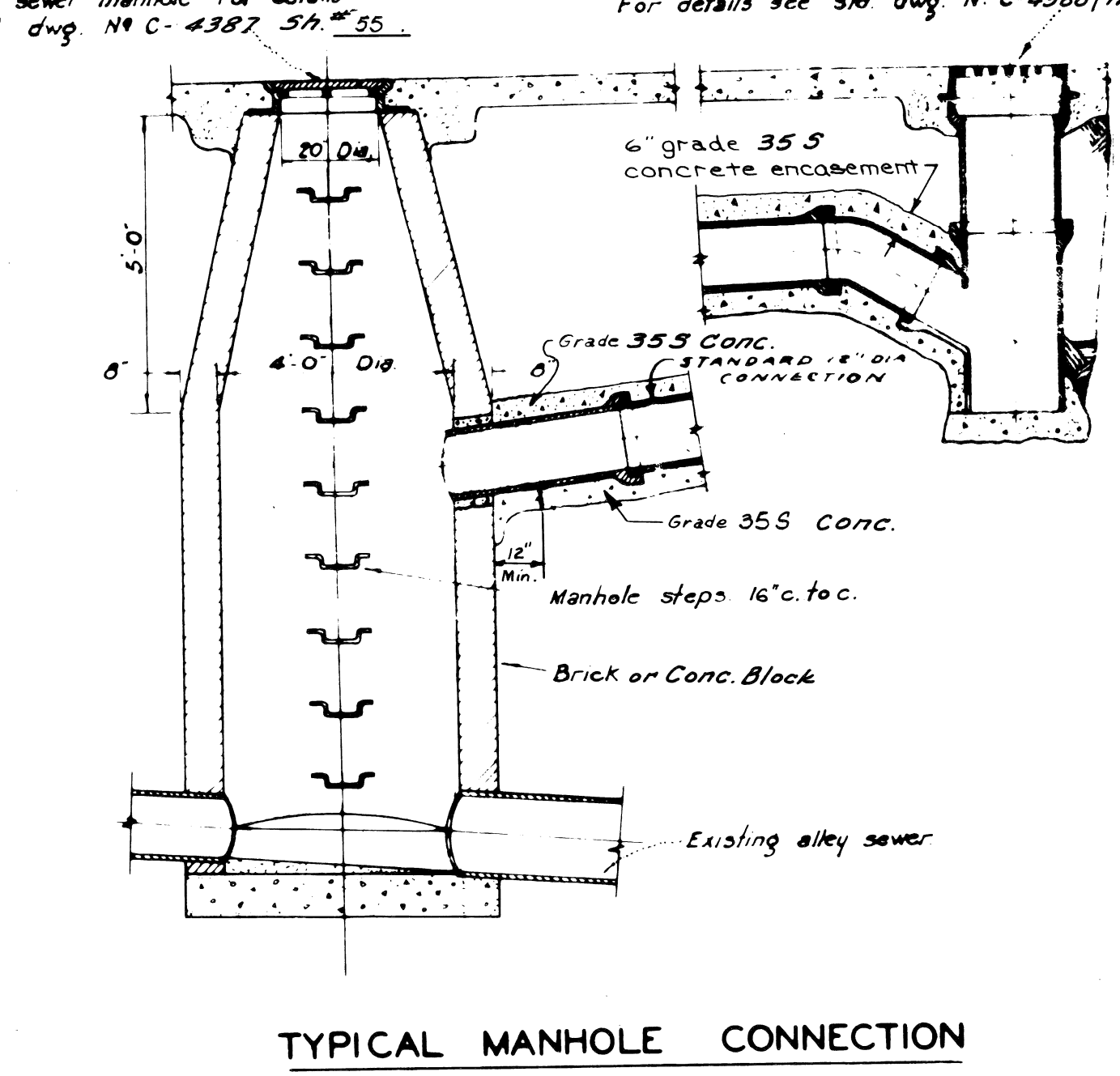
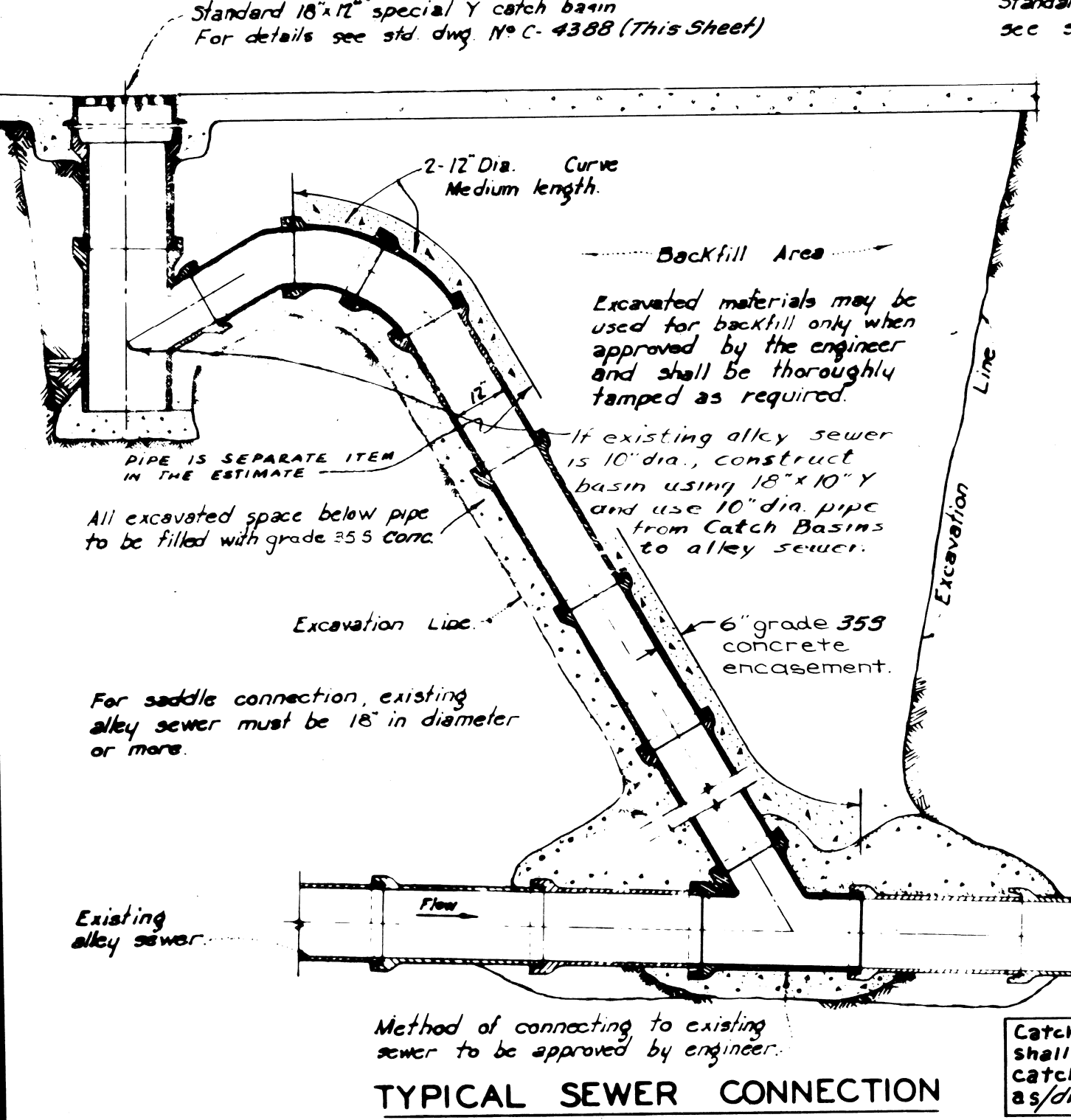
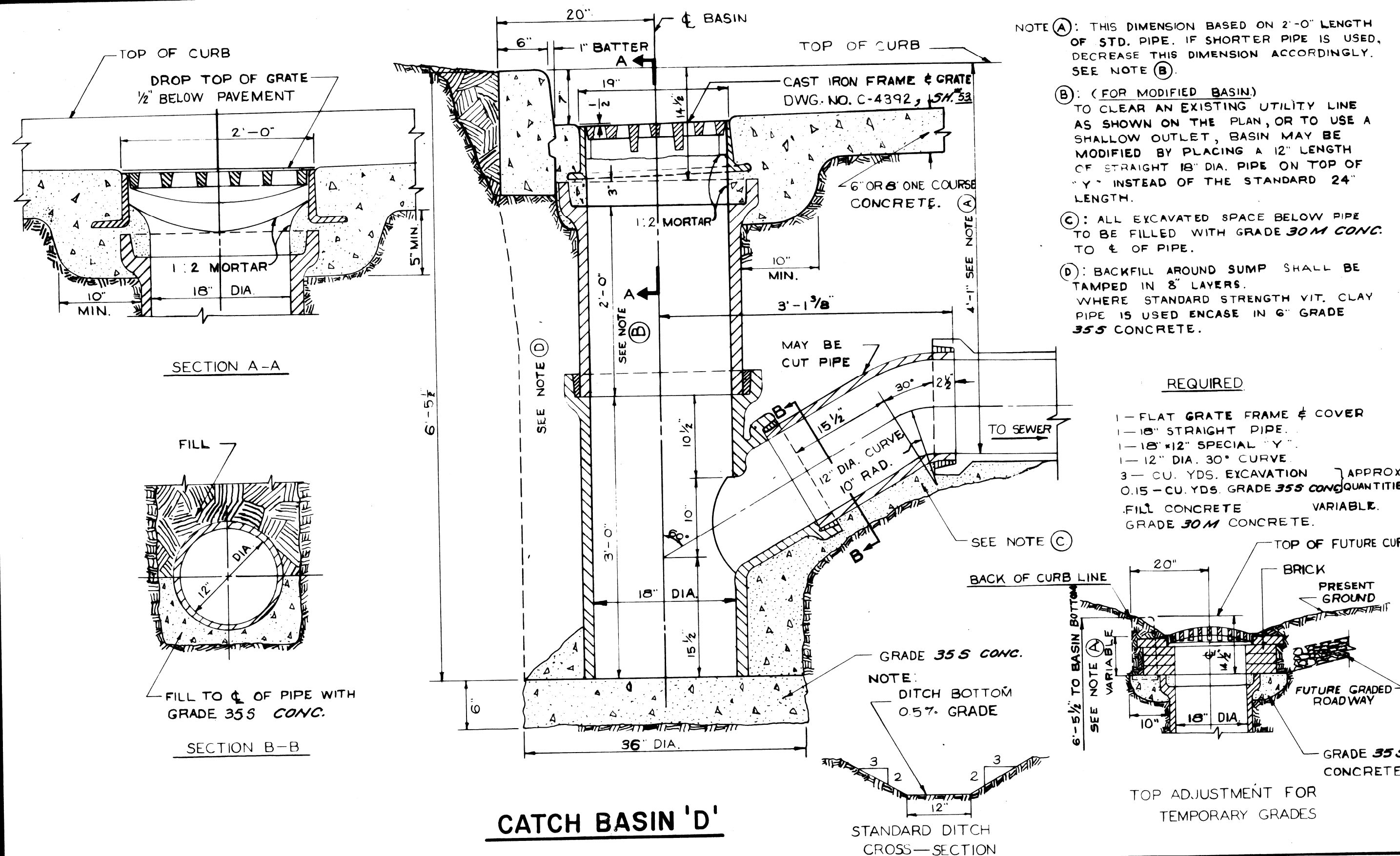
- GENERAL NOTES**
- The materials & workmanship shall be in accordance with the current standard specifications.
 - Center of Catch Basin shall be 20 inches from back of curb.
 - All sizes & flow lines of pipe, and elevations for top & bottom of structures shall be determined from the plans or construction requirements.
The bell shall be removed from the first length of outlet pipe projecting through the wall of the structures.
When any structure is constructed of precast concrete or concrete block, the top of the masonry shall be left sufficiently low to permit proper adjustment of cover to grade by the use of mortar or bricks as directed by the Engineer.
 - A Trap, as detailed on this sheet, shall be placed where called for in the outlet sewer line of Catch Basins "B".
This trap shall be set into the masonry wall as shown on the detail. The space between the faces of the wall & the trap shall be completely filled with cement, mortar or concrete, so as to hold Trap securely in place.
Trap will be paid for separately at the Contract Unit Price each, which price shall include the extra catch basin construction required and for furnishing and installing the trap.
 - A plaster coat of mortar 1/2 inch in thickness shall be applied to the outer surface of the structure as shown. A 1/2 inch cement plaster coat shall be placed on the inside of all sumps.
 - Contractor shall verify elevations of existing utilities to enable construction to indicated elevations shown on drawings. If necessary, invert elevations shown on the drawings may be altered in the field to clear existing utilities. Such alterations, upward or downward, shall be at no change in contract price.
 - When precast concrete pipe sections are used for catch basins, either a section of the inlet and outlet pipes or an opening or eye for the inlet & outlet pipes shall be cast into the wall of the catch basin pipe when it is being manufactured. Eyes in precast pipe sections shall be furnished to accommodate a flexible joint connection such as Press-Wedge by Press-Seal Gasket Corp or Res-Seal by Seales Mfg. Corp.
 - Pay limit for sewers shall be inside faces of structures unless otherwise noted.

DESIGNED BY	M. POLITO
DRAWN BY	
TRACED BY	
CHECKED BY	D. MILZ
APPROVED:	John Erickson ENGINEER OF STREETS
	Allen E. Prosen ENGINEER OF EXPRESSWAYS
	W. B. ... HEAD CIVIL ENGINEER

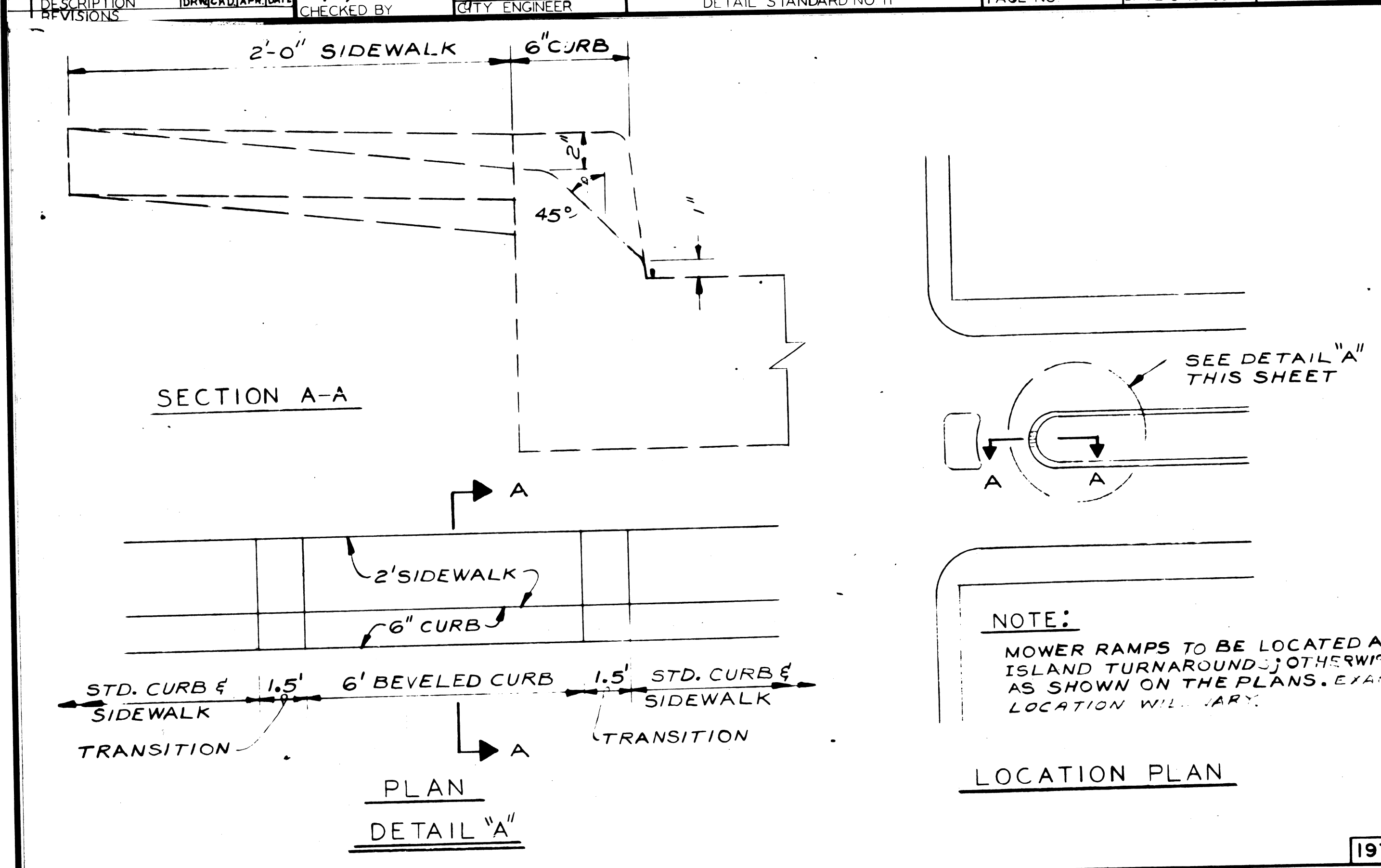
CITY OF DETROIT
DEPARTMENT OF PUBLIC WORKS
CITY ENGINEERS OFFICE
UTILITY RELOCATIONS

DETAILS OF STANDARD
CATCH BASINS "A" & "B"
AND FLAT GRATE & FRAME

SHEET	53 OF 65 SHEETS
CONT. SEC.	BM 82111
JOB NO.	25199A
DATE	FEB. 4, 1986

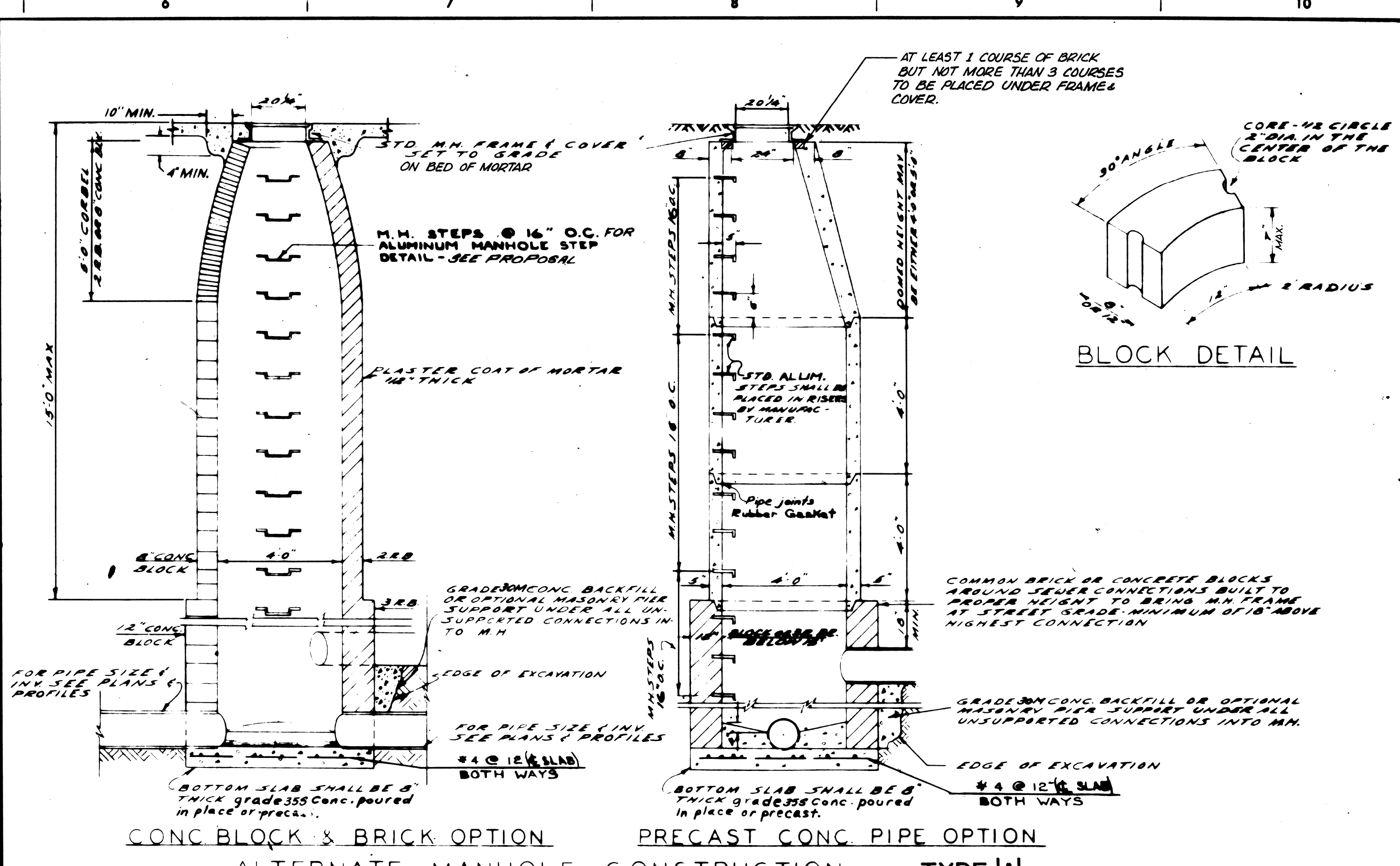
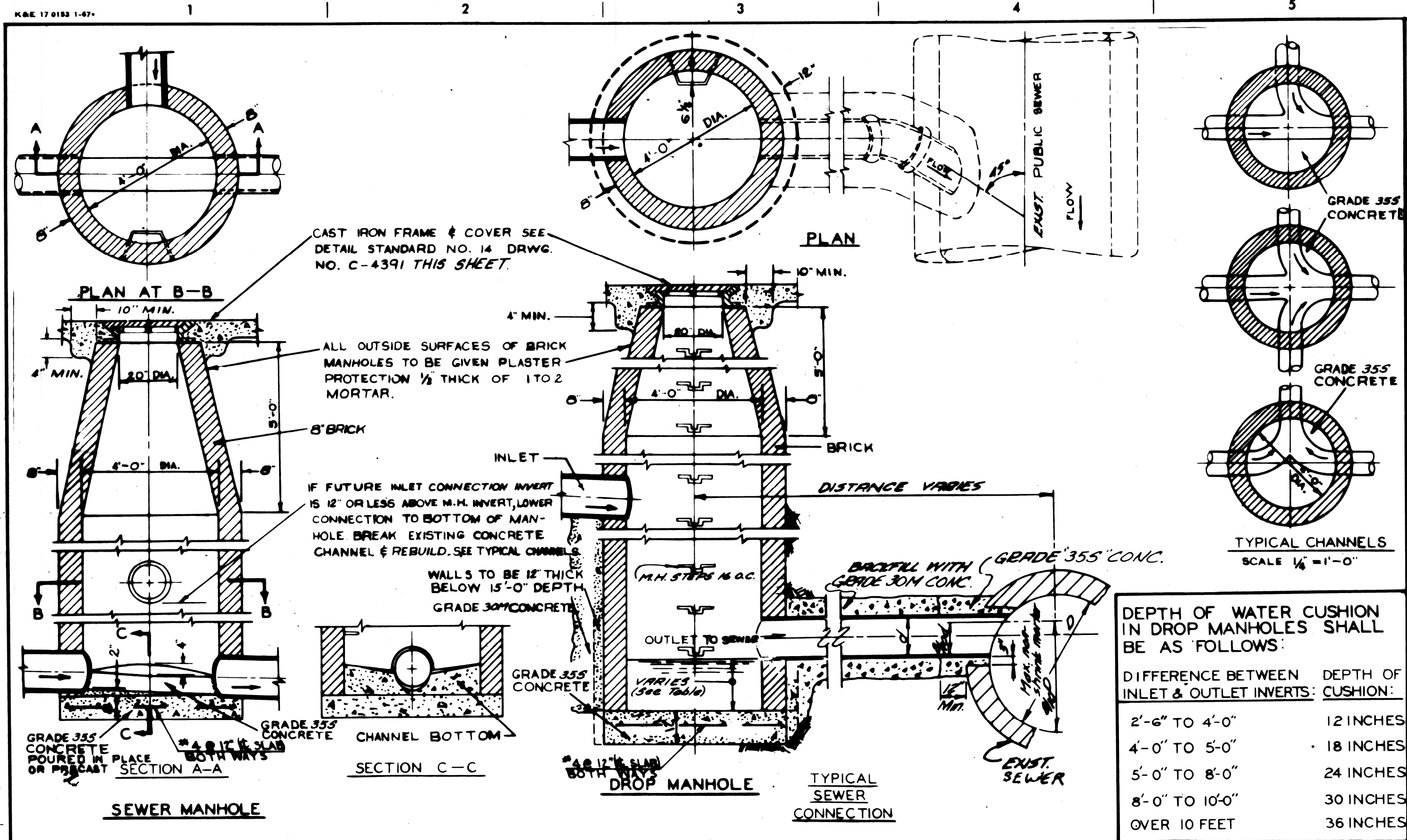


DESIGNED BY	APPROVED	CITY OF DETROIT	STANDARD DESIGN	APPROVED	CITY OF DETROIT	ALLEY INSTALLATION
DRAWN BY	ENGINEER OF STREETS	DEPARTMENT OF PUBLIC WORKS	18" x 12" SPECIAL "Y" CATCH BASIN TO BE USED UNLESS DIRECTED OTHERWISE BY FIELD ENGINEER	ENGINEER OF STREETS	DEPARTMENT OF PUBLIC WORKS	STANDARD 18" x 12" SPECIAL "Y" CATCH BASIN.
TRACED BY	ASST. CITY ENGINEER	CITY ENGINEER'S OFFICE	BOOK NO.	ASST. CITY ENGINEER	CITY ENGINEER'S OFFICE	BOOK NO.
CHECKED BY	CITY ENGINEER	BUREAU OF DESIGN	SCALE 1"=1'-0"	CITY ENGINEER	BUREAU OF DESIGN	SCALE 3/8"=1'-0"
		DETAIL STANDARD NO. 11	DATE 8-19-66		DETAIL STANDARD NO. 22	DATE 1-16-59
			DWG. NO. C-4388			DWG. NO. C-4399



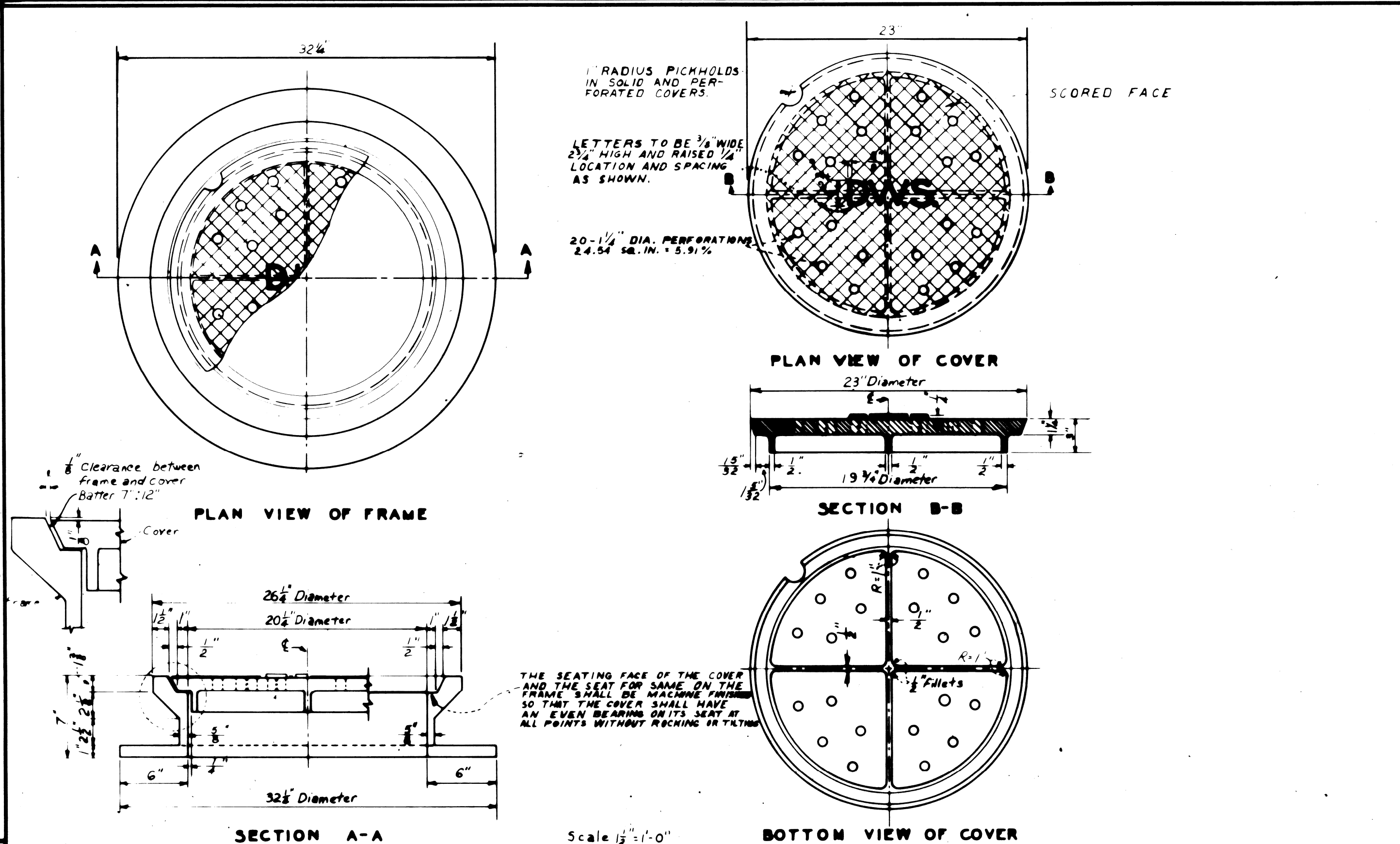
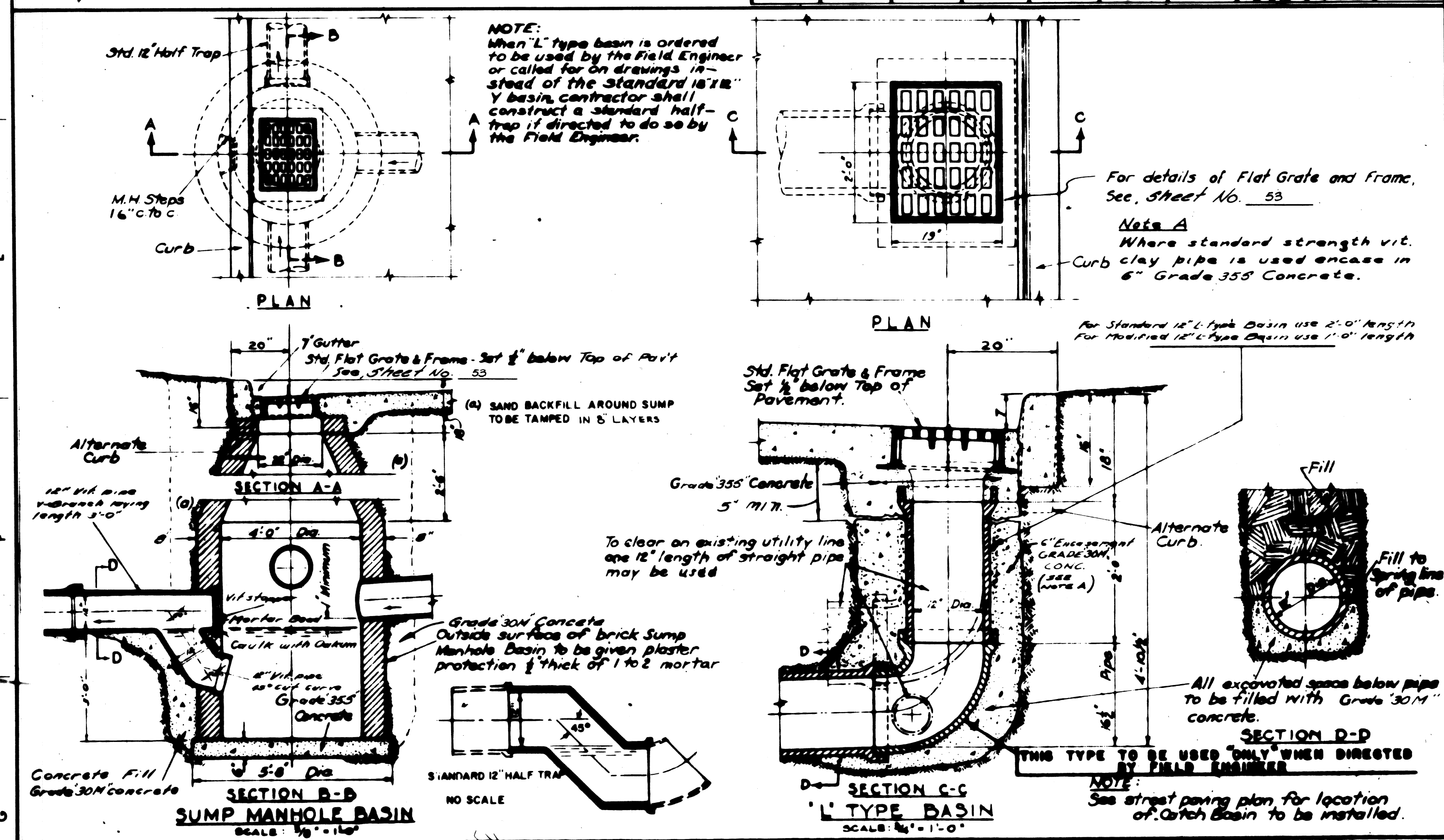
DESIGNED BY	APPROVED	CITY OF DETROIT	SPECIAL MOWER RAMP
DRAWN BY JONES	ENGINEER OF STREETS	CITY ENGINEERING DEPARTMENT	BOOK NO.
TRACED BY	DEPUTY DIRECTOR	SCALE NONE	DATE JULY 22, 1974
CHECKED BY	DIRECTOR	DWG. NO. C-5239	

CITY OF DETROIT		UTILITY RELOCATIONS	
FOR		SPECIAL DETAILS	
SHEET 54 OF 65 SHEETS		CONT. SEC. BM 82111	
JOB NO. 25199A		DATE FEB. 4, 1986	



DESIGNED BY	APPROVED BY	CITY OF DETROIT
DRAWN BY	ENGINEER OF STREETS	DEPARTMENT OF PUBLIC WORKS
TRACED BY	ASST. CITY ENGINEER	CITY ENGINEER'S OFFICE
CHECKED BY	CITY ENGINEER	BUREAU OF DESIGN
DETAILS OF STANDARD SEWER & DROP MANHOLES		BOOK NO. PG. SCALE 3/8"=1'-0" DATE: 8-27-66
1971 1970 1969 1968 1967		DETAIL STANDARD NO. 10 DWG. NO. C-4387

DESIGNED BY	APPROVED BY	CITY OF DETROIT
DRAWN BY	ENGINEER OF STREETS	DEPARTMENT OF PUBLIC WORKS
TRACED BY	ASST. CITY ENGINEER	CITY ENGINEER'S OFFICE
CHECKED BY	CITY ENGINEER	BUREAU OF DESIGN
STD SEWER MANHOLES CONSTRUCTION ALTERNATES		BOOK NO. SCALE NONE
1971 1970 1969 1968 1967		DATE: 8-27-66



DESIGNED BY	APPROVED BY	CITY OF DETROIT
DRAWN BY	ENGINEER OF STREETS	DEPARTMENT OF PUBLIC WORKS
TRACED BY	ASST. CITY ENGINEER	CITY ENGINEER'S OFFICE
CHECKED BY	CITY ENGINEER	BUREAU OF DESIGN
TYPICAL SUMP MANHOLE & 'L' TYPE CATCH BASINS		BOOK NO. PG. SCALE 3/8"=1'-0" DATE: MAR. 1968
1971 1970 1969 1968 1967 1966 1965 1964 1963 1962 1961 1960		DETAIL STANDARD NO. 12 DWG. NO. C-4388

DESIGNED BY	APPROVED BY	CITY OF DETROIT
DRAWN BY	ENGINEER OF STREETS	DEPARTMENT OF PUBLIC WORKS
TRACED BY	ASST. CITY ENGINEER	CITY ENGINEER'S OFFICE
CHECKED BY	CITY ENGINEER	BUREAU OF DESIGN
MANHOLE FRAME AND COVER		BOOK NO. PG. SCALE AS SHOWN DATE: FEB. 4, 1966
1971 1970 1969 1968 1967 1966 1965 1964 1963 1962 1961 1960		DETAIL STANDARD NO. 14 DWG. NO. C-43

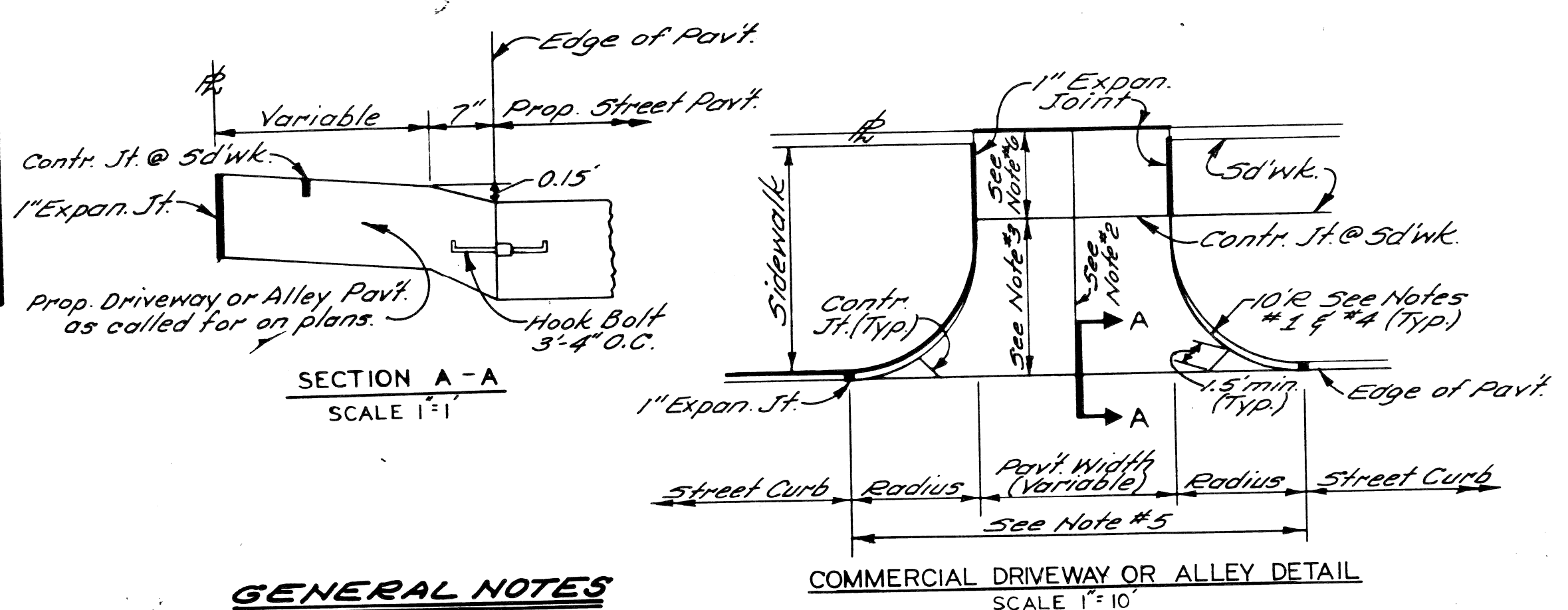
DESIGNED BY	APPROVED BY
DRAWN BY	
TRACED BY	
CHECKED BY	

DESIGNED BY	APPROVED BY
DRAWN BY	
TRACED BY	
CHECKED BY	

COLOR	SYMBOL	DESCRIPTION
BLACK	—	PROPERTY AND LOT LINES
—	—	PROPOSED CURB LINES AND HEADERS AT RETURNS
—	—	EXISTING CURB LINES OR EDGE OF PAVEMENT
—	—	PROPOSED CURB OR PAVING ON INTERSECTING STREET
—	—	PROPOSED SEWER TO CATCH BASINS
—	—	EXISTING LATERAL SEWERS
—	—	EXISTING PUBLIC SEWERS
—	—	EXISTING GAS LINES
—	—	EXISTING WATER LINES
BLACK	—	ELEV OF SEWER INVERT
BLACK	—	PROPOSED C.B. M.H. & INLET SEWER
—	—	ELEV
—	—	EXISTING C.B. M.H. & INLET SEWERS
—	—	PROPOSED C.B. M.H. & INLET SEWERS ON INTERSECTING STREETS

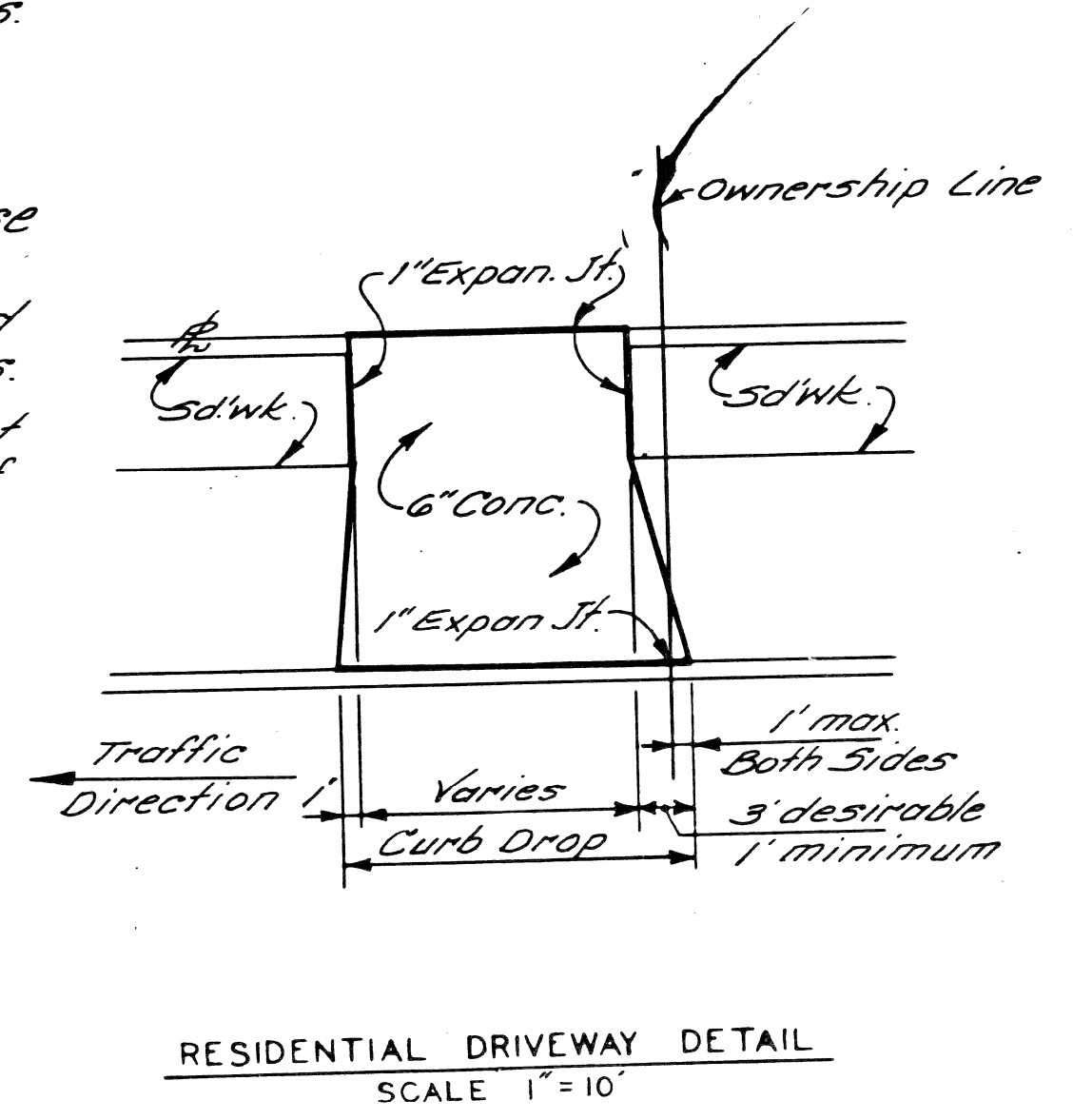
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
—	GUARD RAIL FENCE	—	STREET SIGN POST
○	SEWER MANHOLE	□	CATCH BASIN
○	PLC HANDHOLE	(W)	WATER METER
⊕	WATER MANHOLE OR GRATE	(-)	WATER SHUT OFF
⊕	GAS MANHOLE OR GRATE	(+)	GAS SHUT OFF
⊕	WESTERN UNION MANHOLE	□	GAS DRIP
⊕	MICHIGAN BELL MANHOLE	□	DRAIN OR VENT
⊕	EDISON STEAM MANHOLE	(H)	GUY POLE
⊕	EDISON ELECTRIC MANHOLE	□	MAIL BOX
⊕	FIRE DEPT MANHOLE	MB	AREAWAY OR COAL CHUTE
⊕	POLICE DEPT MANHOLE	□	FLAG POLE
⊕	D.S.R. MANHOLE	□	SPRINKLER BOX
⊕	FIRE DEPT STANDARD HYDRANT	⊕	DEAD MANHOLE
⊕	FIRE DEPT HIGH PRESSURE HYDRANT	⊕	TREE
⊕	FIRE DEPT CALL BOX	⊕	PLC & FD MANHOLE FILLED WITH SAND
⊕	FIRE DEPT HIGH PRESSURE MANHOLE	—	TRACK DRAIN
⊕	POLICE DEPT CALL BOX	—	TRAFFIC SIGN POST
⊕	P.L.C. LIGHT POLE	(S)	TRAFFIC SIGNAL LIGHT
⊕	P.L.C. POLE	□	TRAFFIC SIGNAL CONTROL BOX
⊕	TELEPHONE POLE	II	D.S.R. DANGER PLATE
⊕	EDISON POLE	TC	TRASH CONTAINER
□	TREE PLANTER		

CITY OF DETROIT		DEPARTMENT OF PUBLIC WORKS		STANDARD SYMBOLS FOR UTILITIES	
CITY ENGINEER'S OFFICE		BUREAU OF DESIGN		SCALE: AS SHOWN	
PAVING		DETAIL NO 25		DWG NO. C-902-A	
DESIGNED BY	J.R.D.	CHECKED BY	N.B.I.	DATE	11-7-64

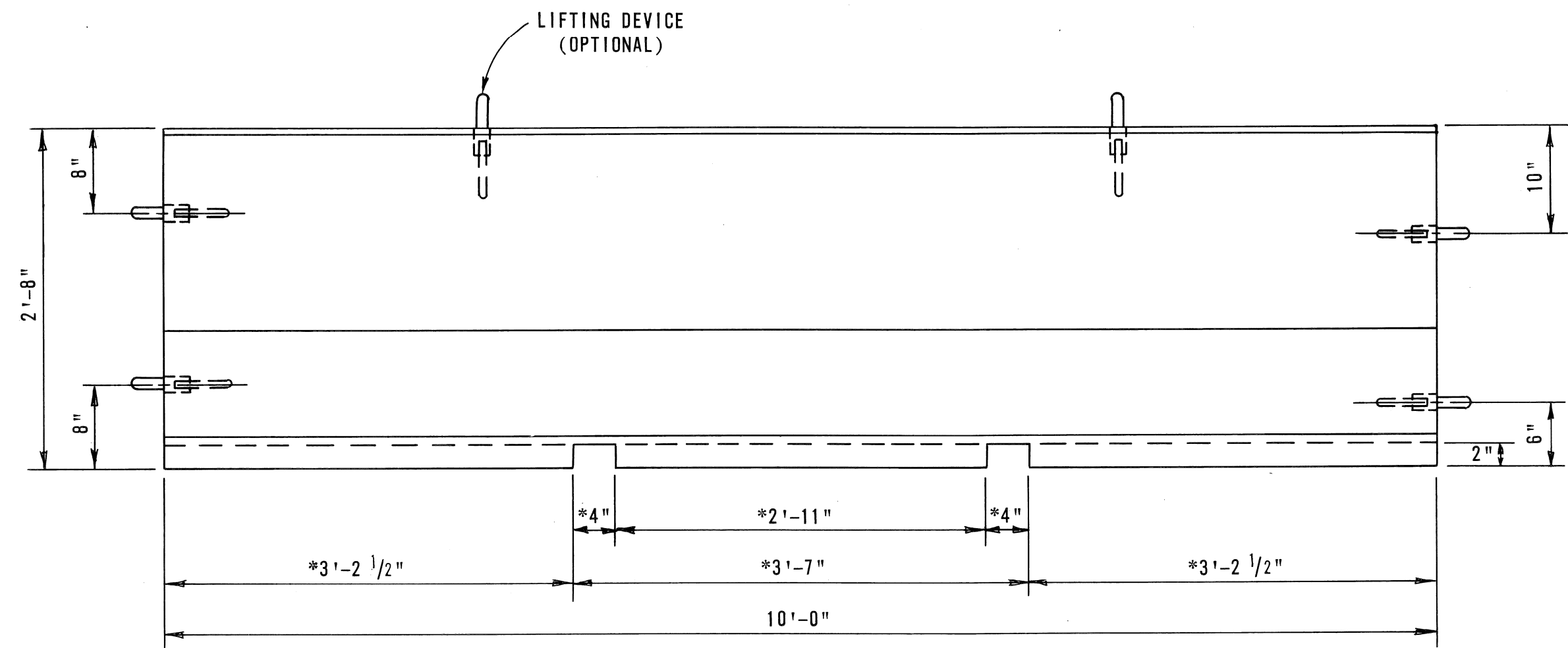


GENERAL NOTES
COMMERCIAL DRIVEWAYS & ALLEYS

1. Transition edge of driveway or alley from curb at the street to no curb at the end of the driveway or alley radius.
2. Where driveway or alley exceeds 15' in width a contraction joint shall be placed longitudinally along it.
3. When distance exceeds 15', a transverse contraction joint will be required.
4. Radius 10' unless otherwise directed by the Engineer, or as shown on plans.
5. All work & materials req'd to construct the driveway or alley between the end of returns will be paid for as "Concrete Pavement" of the specified thickness.
6. Minimum & Maximum Slopes of 1/4" / ft. & 3/4" / ft. shall be used in the sidewalk area.

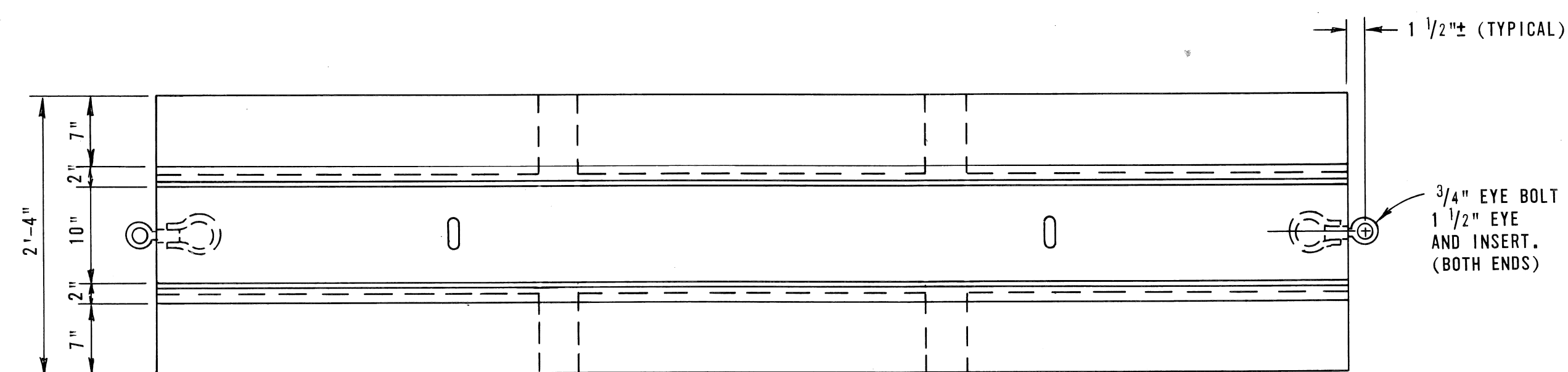


CITY OF DETROIT			UTILITY RELOCATIONS		
CITY ENGINEERING DEPARTMENT			SPECIAL STANDARDS & SPECIAL DETAILS		
DESIGNED BY	J.R.D.	APPROVED	[Signature]		
DRAWN BY	J.R.D.	ENGINEER OF EXPRESSWAYS			
CHECKED BY	N.B.I.				
SHEET 56 OF 65 SHEETS			CONT. SEC. BM 82111		
			JOB NO. 25199A		
			DATE FEB. 4, 1966		

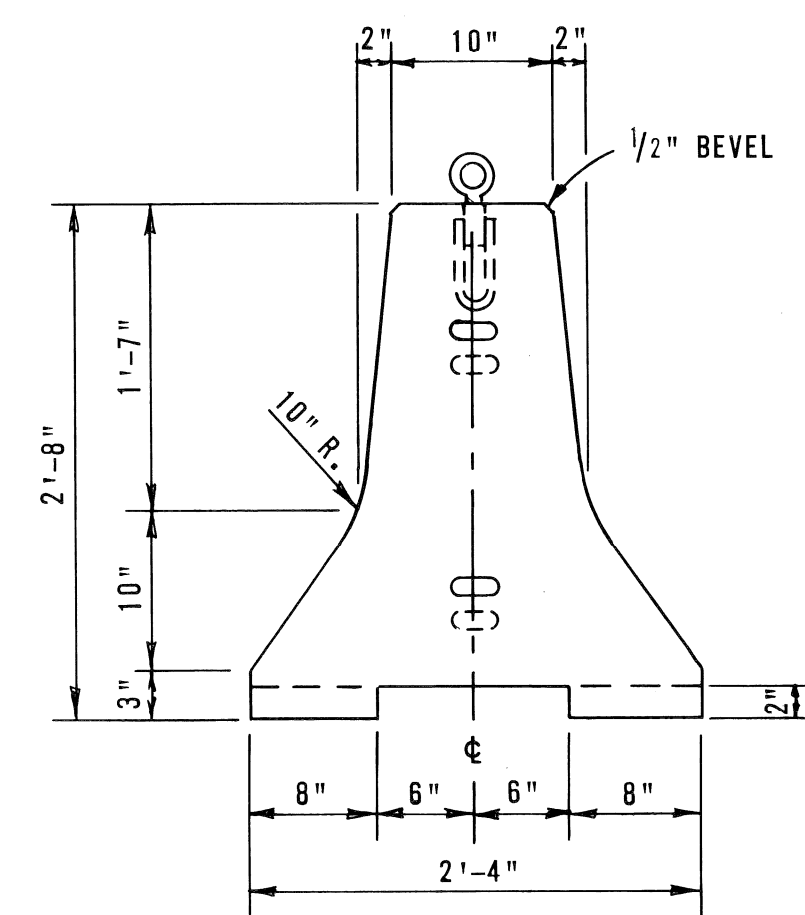


*NOTE: THESE DIMENSIONS MAY BE ADJUSTED TO ACCOMMODATE HANDLING EQUIPMENT.

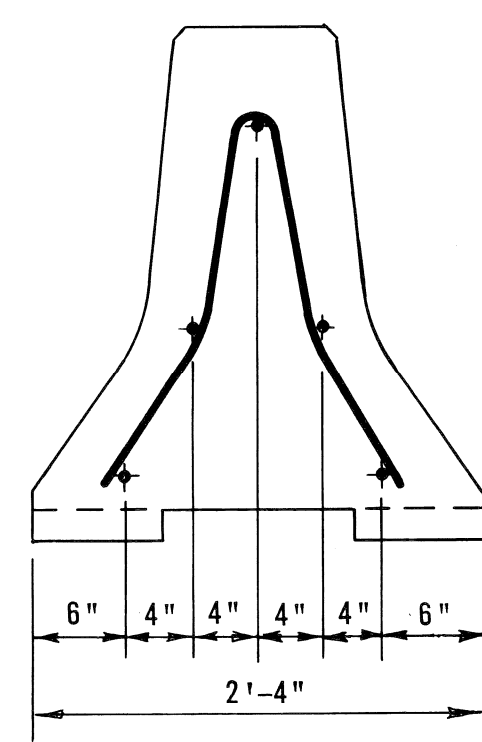
ELEVATION VIEW



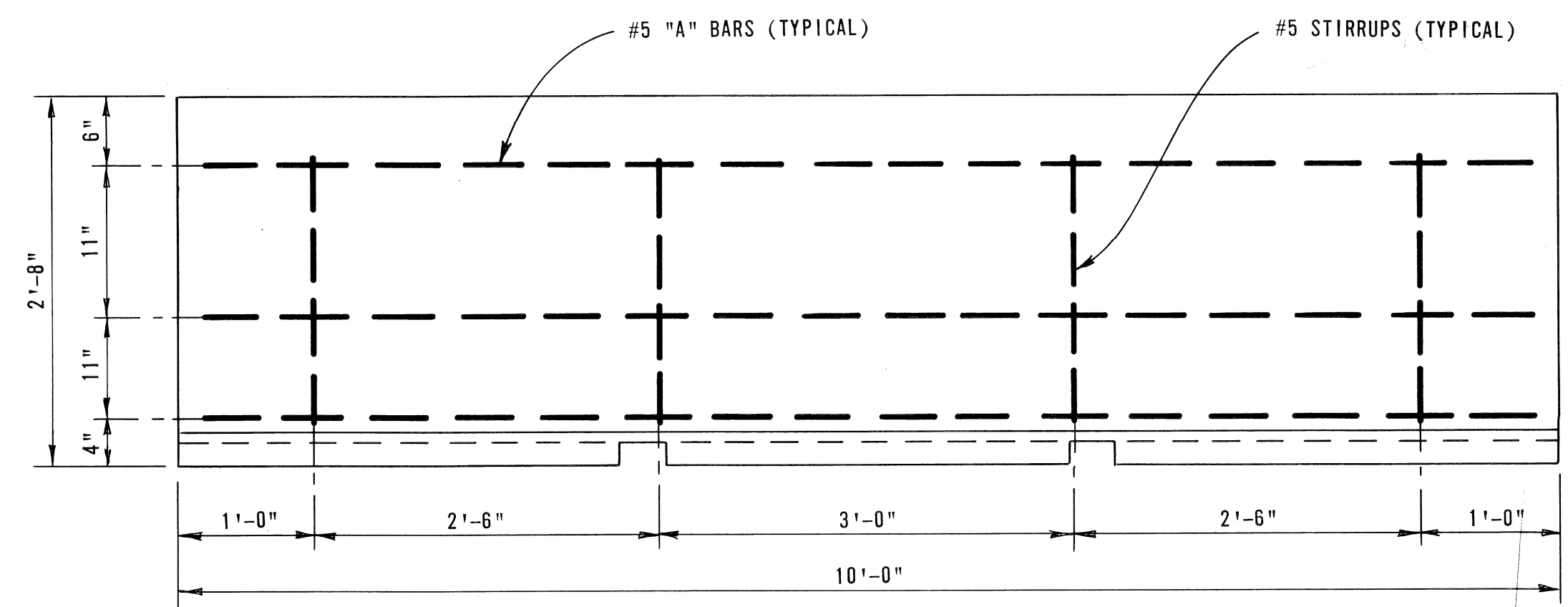
TOP VIEW



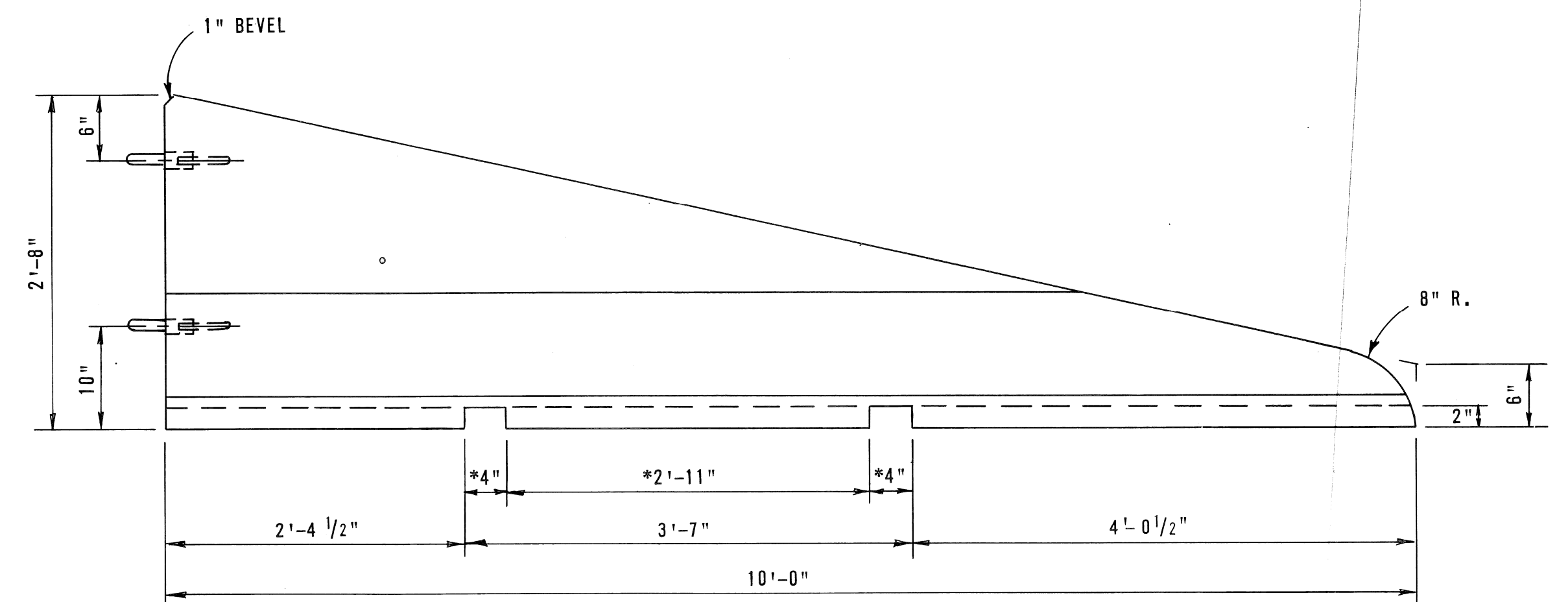
END VIEW



END VIEW
STEEL PLACEMENT DETAILS

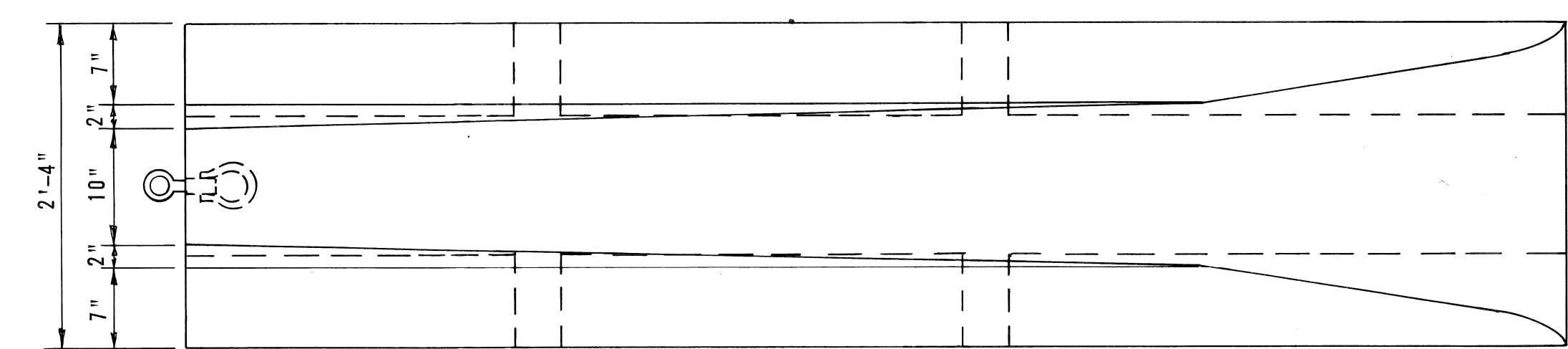


ELEVATION VIEW
STEEL PLACEMENT DETAILS



*NOTE: THESE DIMENSIONS MAY BE ADJUSTED TO ACCOMMODATE HANDLING EQUIPMENT.

ELEVATION VIEW OF END SECTION



TOP VIEW OF END SECTION

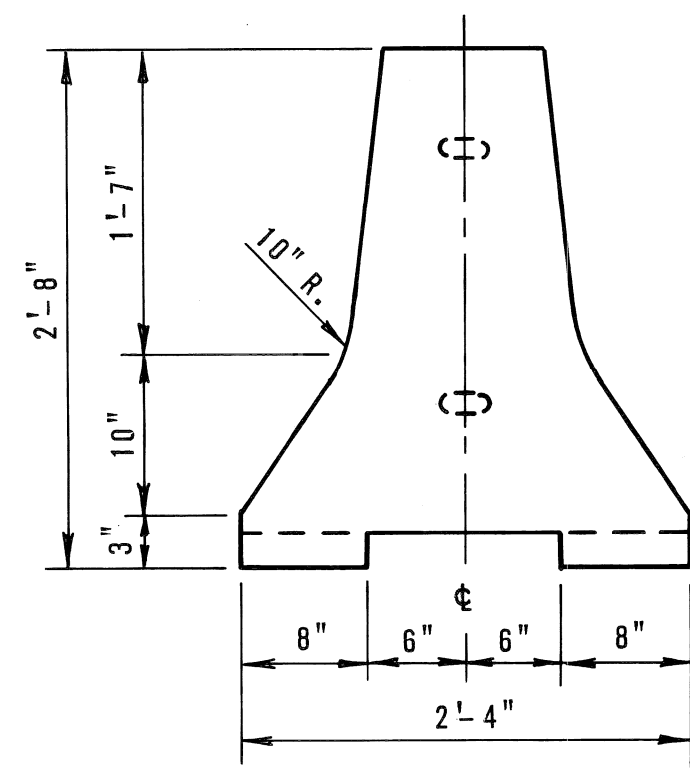
<p>PREPARED BY DESIGN DIVISION</p> <p>DRAWN BY: J.L.R.</p> <p>CHECKED BY: V.R.</p>	ENGINEER OF CONSTRUCTION	ENGINEER - ROAD DESIGN	<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS STANDARD PLAN FOR</p> <p>TEMPORARY CONCRETE BARRIER</p>	<p>1 - 29 - 86 PLAN DATE</p> <p>II-52E</p> <p>SHEET 1 OF 6</p>
	ENGINEER OF MAINTENANCE	ENGINEER OF DESIGN		
	ENGINEER OF MATERIALS & TECHNOLOGY	DEPARTMENT DIRECTOR JAMES P. PITZ		
	ENGINEER OF TRAFFIC AND SAFETY	DEPUTY DIRECTOR - HIGHWAYS		
	F.H.W.A. APPROVAL			

<p>PREPARED BY DESIGN DIVISION</p> <p>DRAWN BY: J.L.R.</p> <p>CHECKED BY: V.R.</p>	ENGINEER OF CONSTRUCTION	ENGINEER - ROAD DESIGN	<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS STANDARD PLAN FOR</p> <p>TEMPORARY CONCRETE BARRIER</p>	<p>1 - 29 - 86 PLAN DATE</p> <p>II-52E</p> <p>SHEET 2 OF 6</p>
	ENGINEER OF MAINTENANCE	ENGINEER OF DESIGN		
	ENGINEER OF MATERIALS & TECHNOLOGY	DEPARTMENT DIRECTOR JAMES P. PITZ		
	ENGINEER OF TRAFFIC AND SAFETY	DEPUTY DIRECTOR - HIGHWAYS		
	F.H.W.A. APPROVAL			

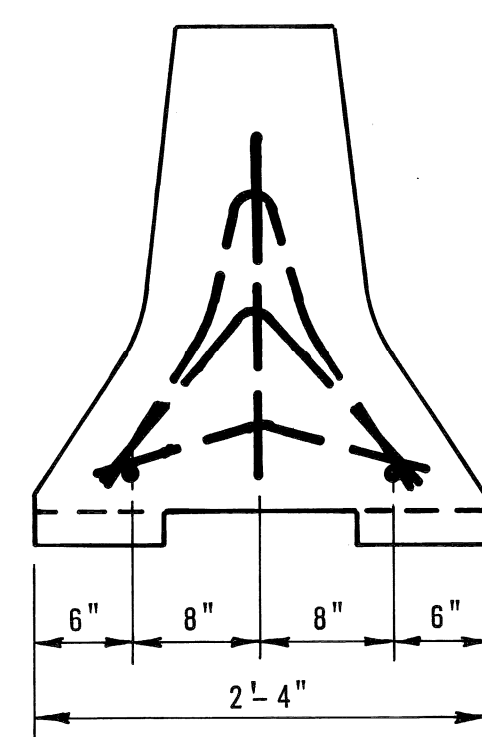
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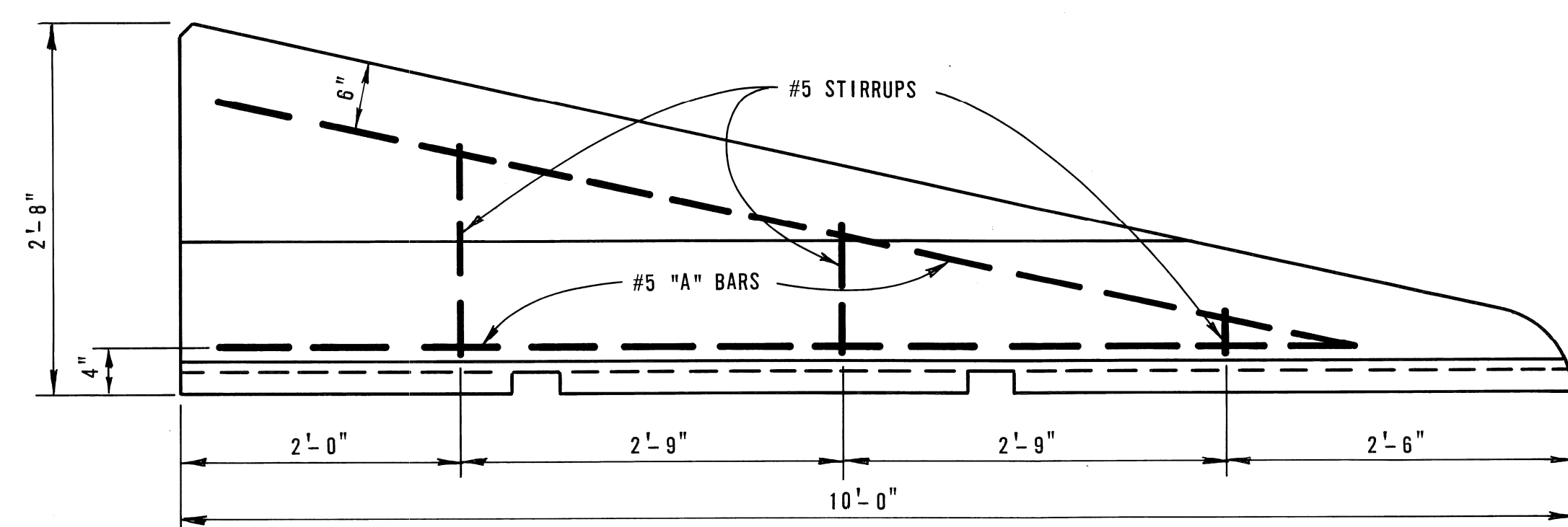
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OF 65



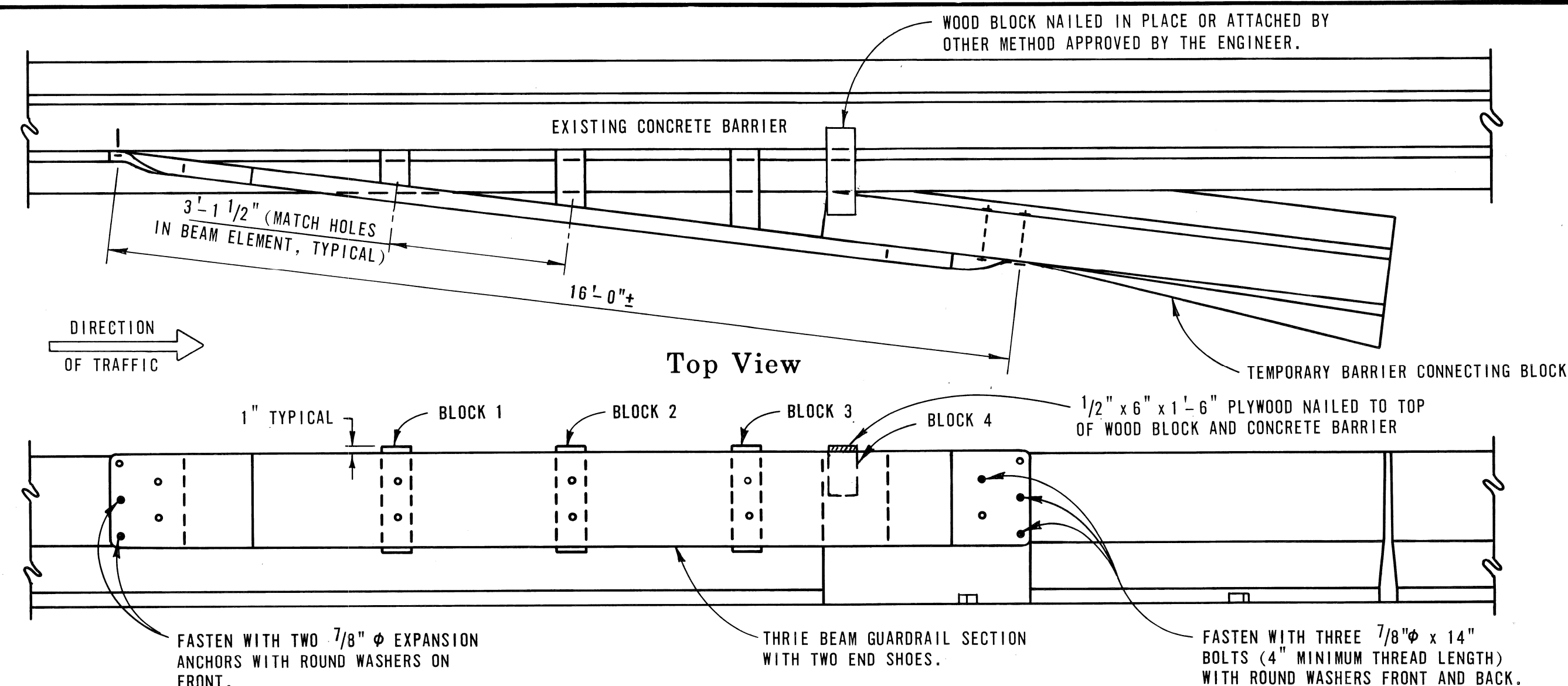
END VIEW OF END SECTION



END VIEW OF END SECTION
STEEL PLACEMENT DETAILS



ELEVATION VIEW OF END SECTION
STEEL PLACEMENT DETAILS

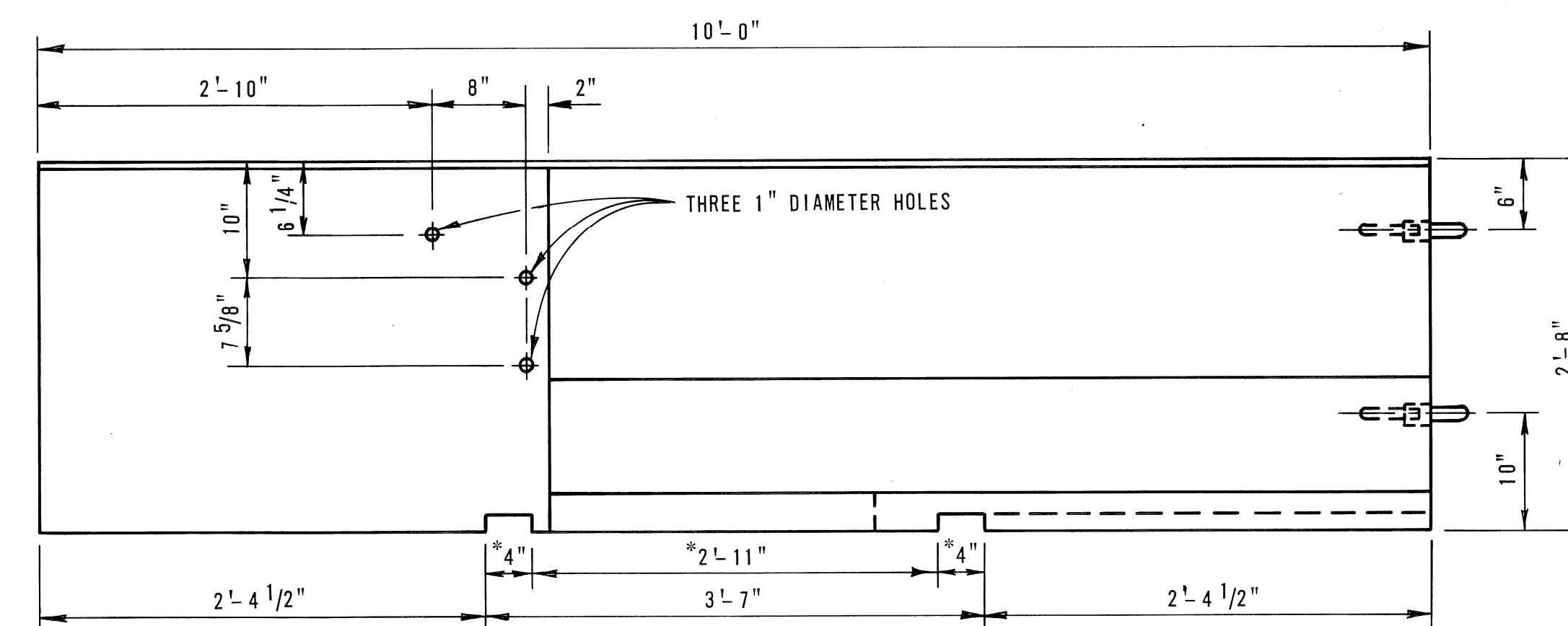


Elevation View

NOTE: WOOD BLOCKS FASTENED TO THREE BEAM ELEMENT WITH 5/8" x 4" LAG SCREWS (TWO PER WOOD BLOCK). FASTEN WOOD BLOCK TO CONNECTING BLOCK WITH NAILS THRU RANDOMLY DRILLED HOLES IN STEEL PLATE.

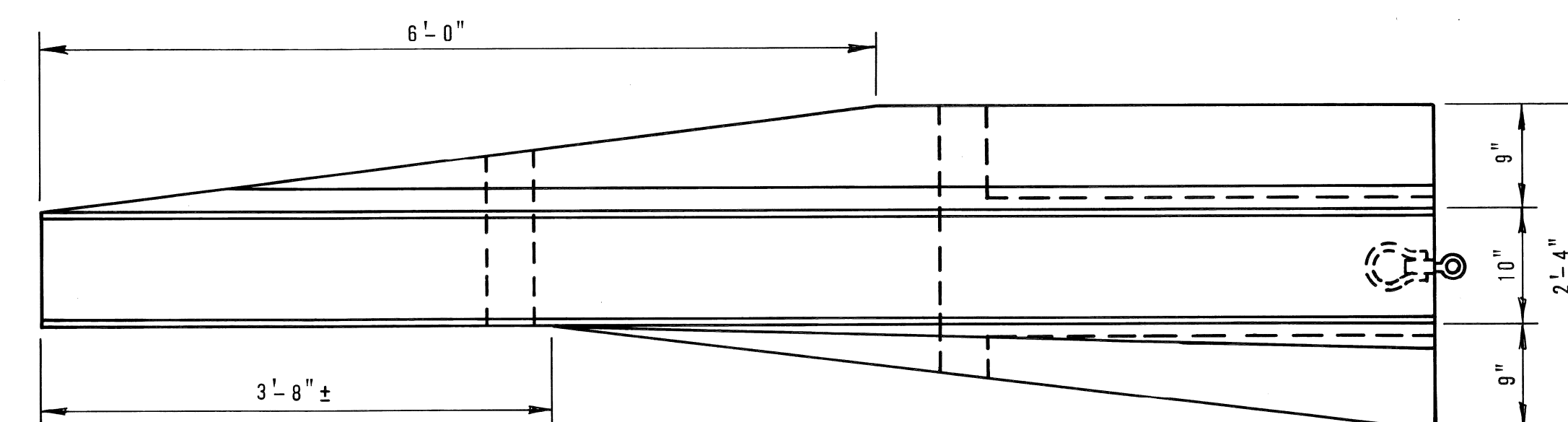
INSTALLATION DETAILS FOR CONNECTING
TEMPORARY BARRIER TO CONCRETE BARRIER

	ENGINEER OF CONSTRUCTION	ENGINEER - ROAD DESIGN	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS STANDARD PLAN FOR TEMPORARY CONCRETE BARRIER			
	ENGINEER OF MAINTENANCE	ENGINEER OF DESIGN				
	ENGINEER OF MATERIALS & TECHNOLOGY	DEPARTMENT DIRECTOR JAMES P. PITZ				
	BY:	DEPUTY DIRECTOR - HIGHWAYS				
PREPARED BY DESIGN DIVISION DRAWN BY: J.L.R. CHECKED BY: V.R.	ENGINEER OF TRAFFIC AND SAFETY		F.H.W.A. APPROVAL	1 - 29 - 86 PLAN DATE	II-52E	SHEET 3 OF 6

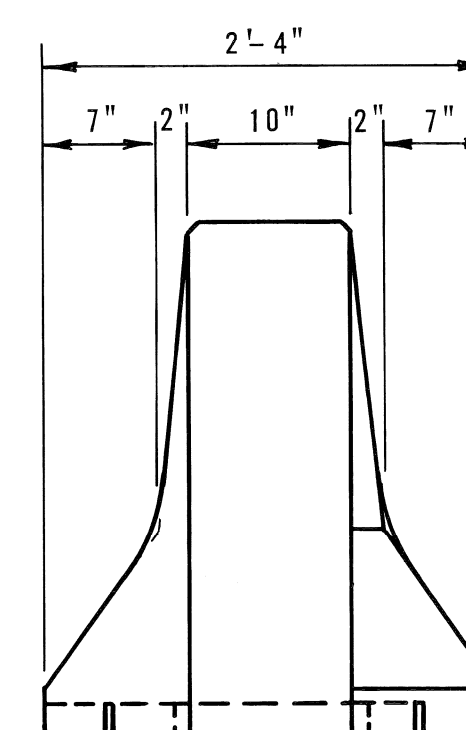


*NOTE: THESE DIMENSIONS MAY BE ADJUSTED TO ACCOMMODATE HANDLING EQUIPMENT.

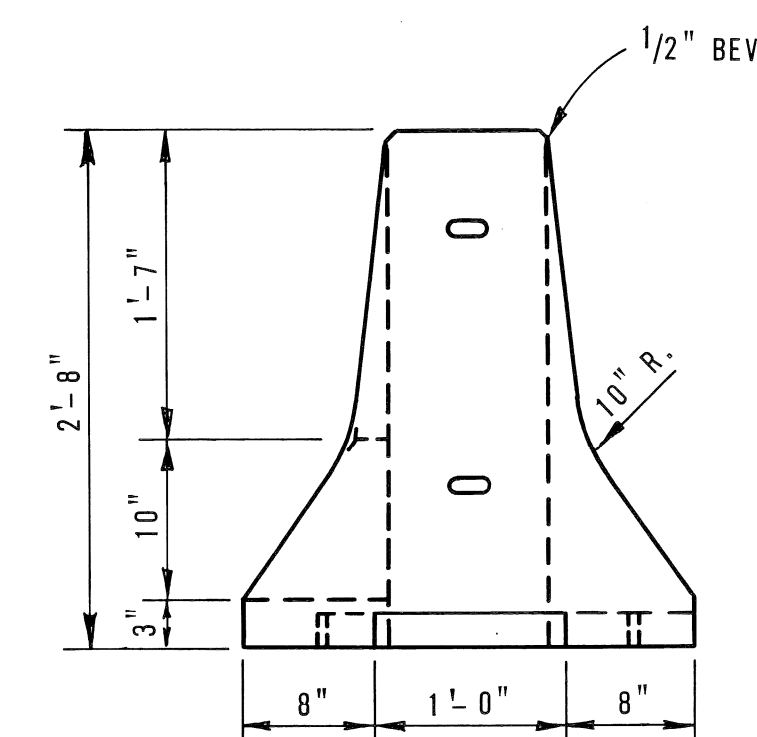
ELEVATION VIEW OF CONNECTING BLOCK



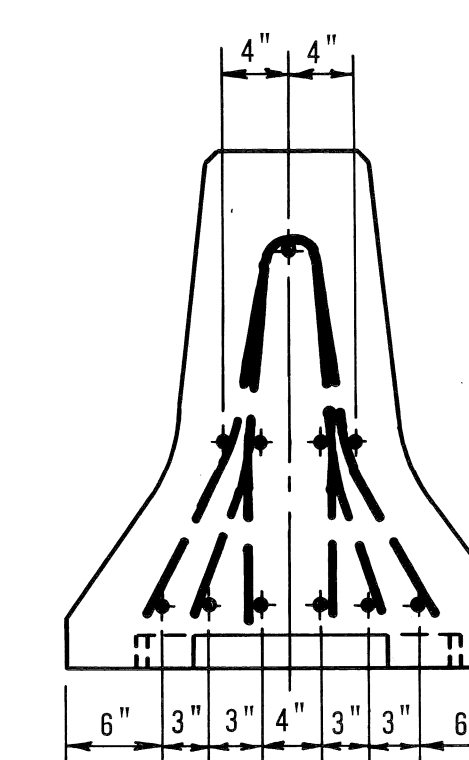
TOP VIEW OF CONNECTING BLOCK



LEFT END VIEW OF
CONNECTING BLOCK



RIGHT END VIEW OF
CONNECTING BLOCK



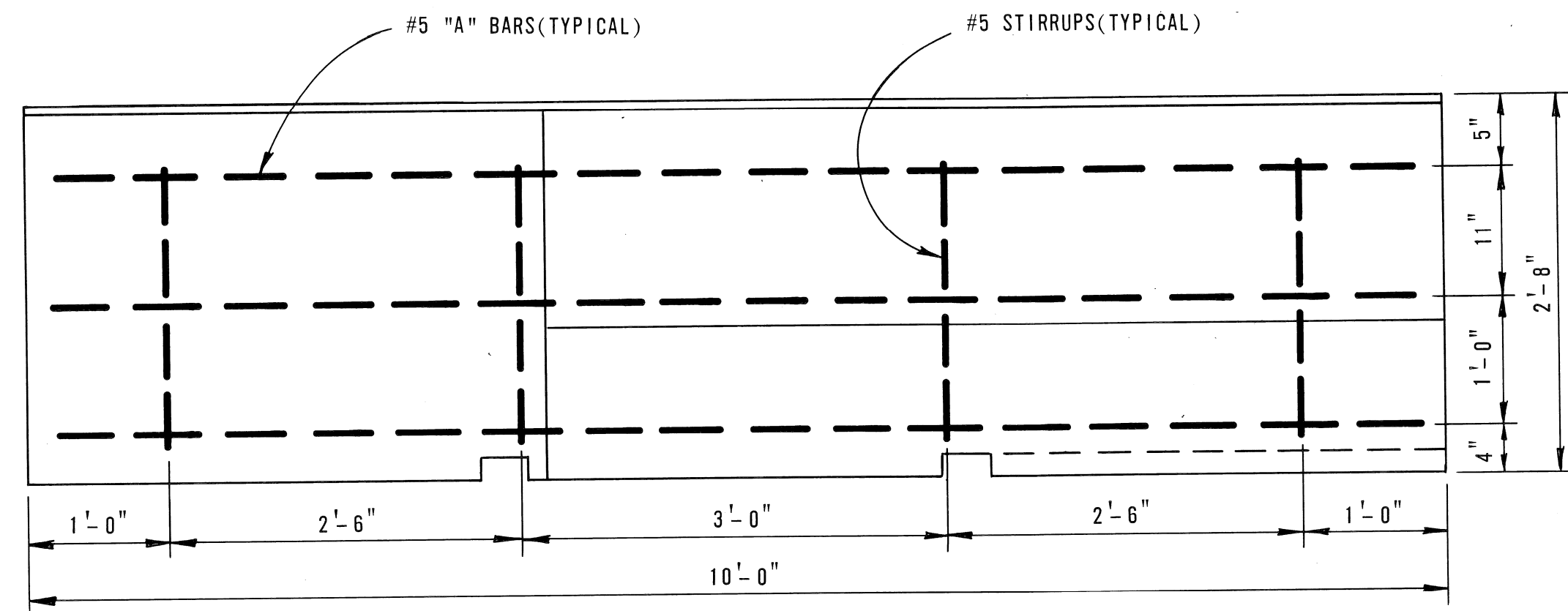
END VIEW OF
CONNECTING BLOCK
STEEL PLACEMENT DETAILS

	ENGINEER OF CONSTRUCTION	ENGINEER - ROAD DESIGN	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS STANDARD PLAN FOR TEMPORARY CONCRETE BARRIER			
	ENGINEER OF MAINTENANCE	ENGINEER OF DESIGN				
	ENGINEER OF MATERIALS & TECHNOLOGY	DEPARTMENT DIRECTOR JAMES P. PITZ				
	BY:	DEPUTY DIRECTOR - HIGHWAYS				
PREPARED BY DESIGN DIVISION DRAWN BY: J.L.R. CHECKED BY: V.R.	ENGINEER OF TRAFFIC AND SAFETY		F.H.W.A. APPROVAL	1 - 29 - 86 PLAN DATE	II-52E	SHEET 4 OF 6

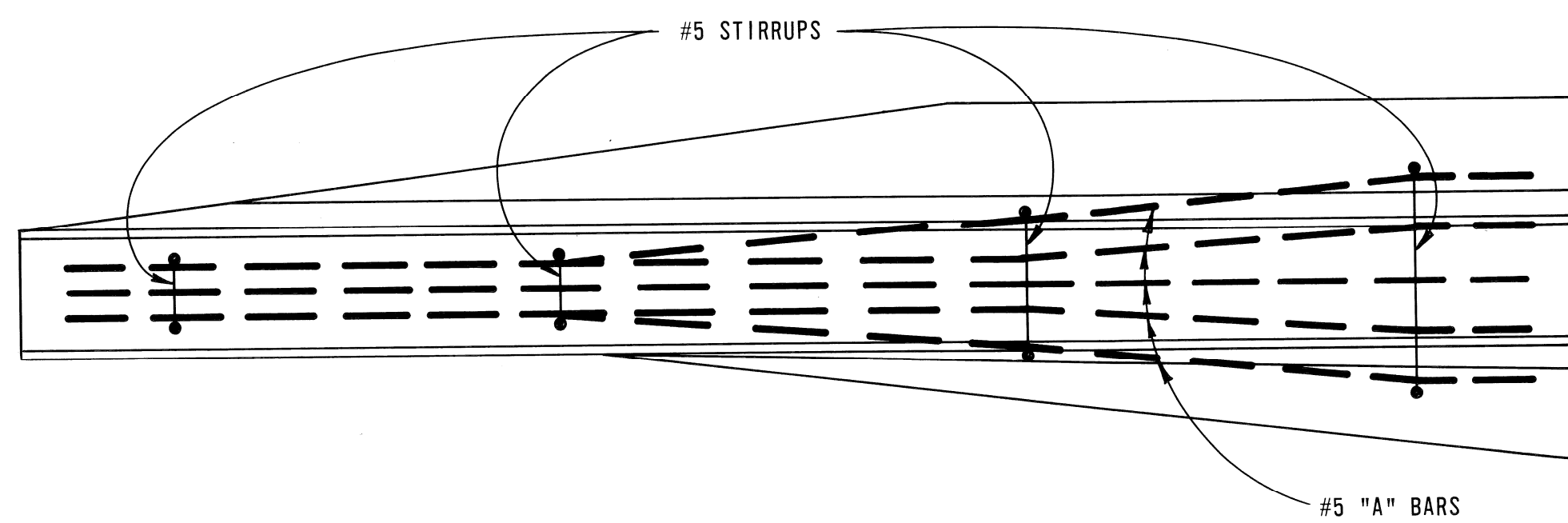
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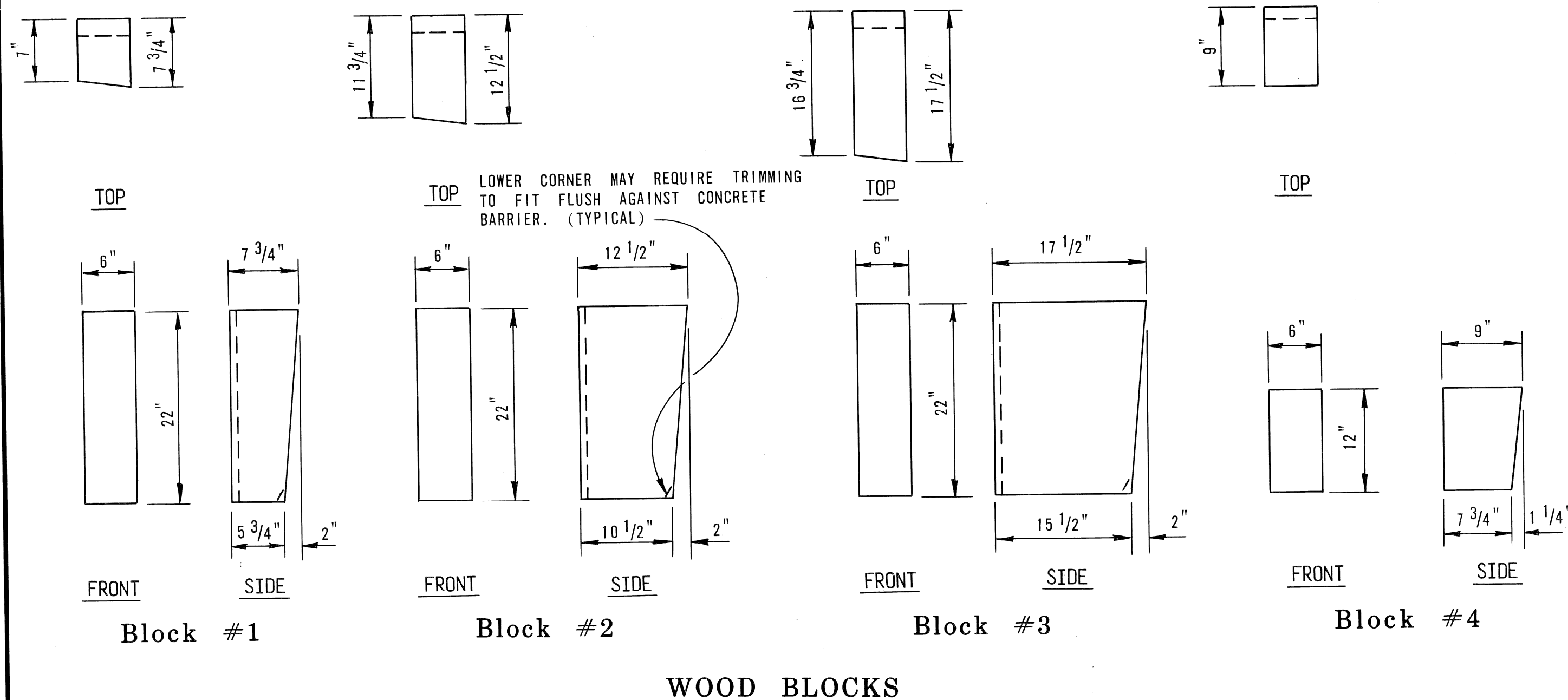
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OF 65



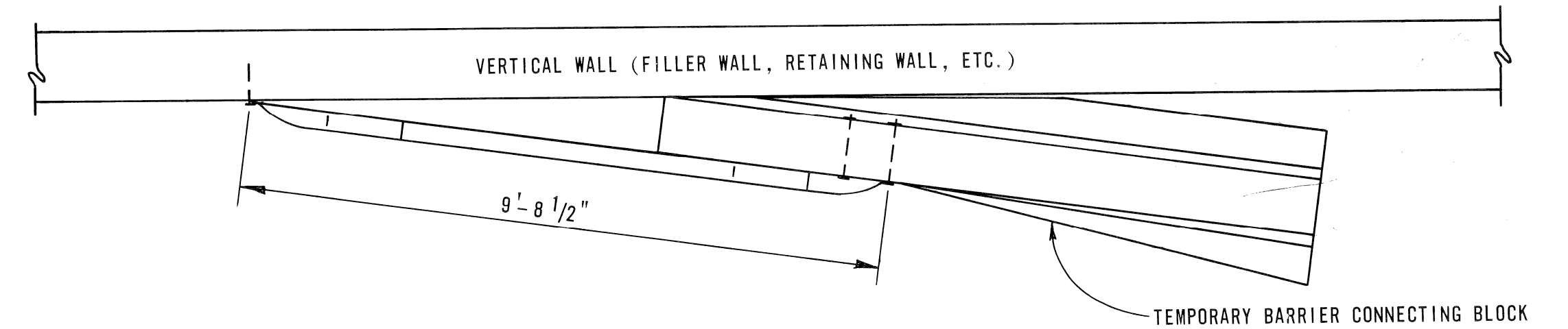
ELEVATION VIEW OF CONNECTING BLOCK
STEEL PLACEMENT DETAILS



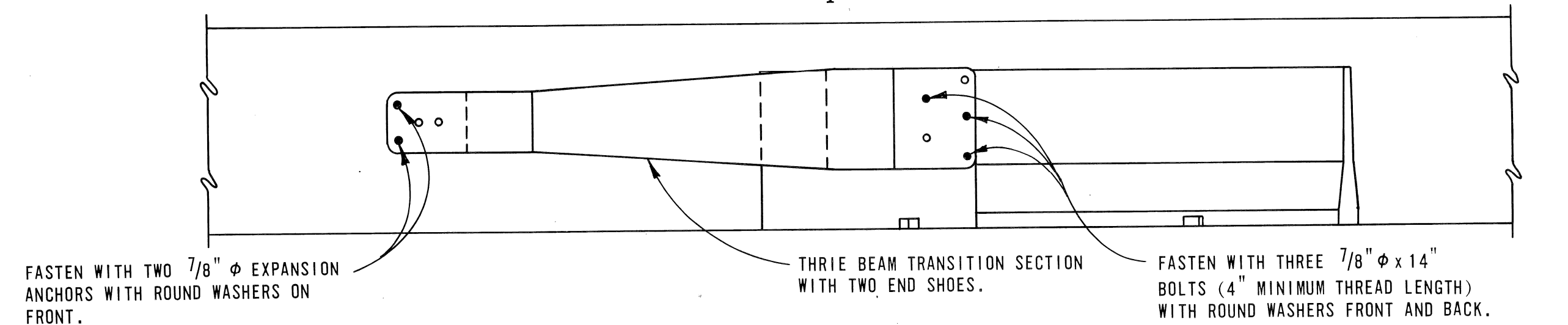
TOP VIEW OF CONNECTING BLOCK
STEEL PLACEMENT DETAILS



WOOD BLOCKS



Top View



Elevation View

INSTALLATION DETAILS FOR CONNECTING
TEMPORARY BARRIER TO VERTICAL WALL

NOTES:

THREADED INSERTS IN TOP ARE TO BE EMBEDDED TO DEVELOP SUFFICIENT CAPACITY FOR USE IN SAFELY LIFTING THE SECTIONS, AND SHALL BE PLACED DURING FABRICATION OF THE UNIT. DETAILS OF THIS DEVICE AND ITS METHOD OF ANCHORAGE ARE SUBJECT TO APPROVAL.

OTHER DESIGNS FOR END ATTACHMENT OF BARRIERS MAY BE USED WITH PRIOR APPROVAL.

THE STEEL RETAINING PIN TO LINK PORTABLE CONCRETE BARRIERS UNITS SHALL BE 3/4" DIAMETER AND A MINIMUM LENGTH OF 2'-8".

WHEN PLACING PORTABLE BARRIER ON A SHORT-RADIUS CURVE, IT IS PERMISSIBLE TO USE 3/4" WIRE CABLE IN LIEU OF THE 3/4" DIAMETER STEEL PIN FOR JOINING ADJACENT SECTIONS. CARE SHALL BE TAKEN THAT THE CABLE IS TAUT AND SECURELY CLAMPED. USE OF THE WIRE CABLE WILL BE LIMITED TO THOSE CONNECTIONS NECESSARY TO COMPLETE THE CURVE.

DIMENSIONS FOR LOCATION OF STEEL REINFORCEMENT ARE APPROXIMATE AND MAY BE ADJUSTED WITHIN REASONABLE LIMITS. REINFORCEMENT BARS SHALL BE OF GRADE 40 STEEL. ALTERNATE METHODS OF REINFORCING MAY BE USED BUT MUST BE ADEQUATE TO ALLOW HANDLING OF THE PRECAST UNITS AND TO HOLD THE PIECES TOGETHER IF THE UNIT IS FRACTURED.

CAST-IN-PLACE BARRIERS MAY BE USED IN LIEU OF PRECAST UNITS. TO FACILITATE SLIP-FORMING, STIRRUPS MAY BE OMITTED FROM THE REINFORCEMENT IF THE LONGITUDINAL REINFORCING STEEL CAN BE HELD IN RELATIVE ALIGNMENT. THE UNITS MAY BE CUT FOR MOVING TO ANOTHER LOCATION PROVIDED THEY ARE SECURELY TIED TOGETHER BEFORE BEING USED AGAIN. THE UNIT LENGTH IN THIS CASE SHALL BE 10'; UNIT LENGTHS LONGER THAN THIS ARE THE FABRICATOR'S OPTION IF THE UNITS CAN BE SAFELY HANDLED.

THE TOP OR TAPERED PORTION OF THE END SECTION IS NOT DETAILED WITH A BEVELED EDGE. THE EDGE MAY BE BEVELED OR ROUNDED 1/2 INCH AT THE FABRICATOR'S OPTION.

FOR DETAILS OF THRIE BEAM ELEMENT, THRIE BEAM TRANSITION ELEMENT, END SHOES, ETC., SEE STANDARD PLAN III-60 SERIES AND STANDARD PLAN III-67 SERIES. GUARDRAIL ELEMENTS, BOLTS, WASHERS, ETC., SHALL BE GALVANIZED.

THE TEMPORARY CONCRETE BARRIER SHOWN ON THIS PLAN CONFORMS TO THE NEW JERSEY SHAPE.

THE DESIGN OF THE CONCRETE CONNECTING BLOCK AND WOOD BLOCKS ARE FOR CONNECTING TO CONCRETE MEDIAN BARRIER WITH THE NEW JERSEY SHAPE. THE SHAPE OF THE CONCRETE CONNECTING BLOCK AND THE BEVELS ON THE WOOD BLOCKS MUST BE REVERSED TO FIT AGAINST BARRIER WALLS ON THE RIGHT. THE DESIGN OF THE WOOD BLOCKS MUST BE ALTERED WHEN CONNECTING TEMPORARY CONCRETE BARRIER TO EXISTING CONCRETE BARRIER WITH OTHER SHAPES.

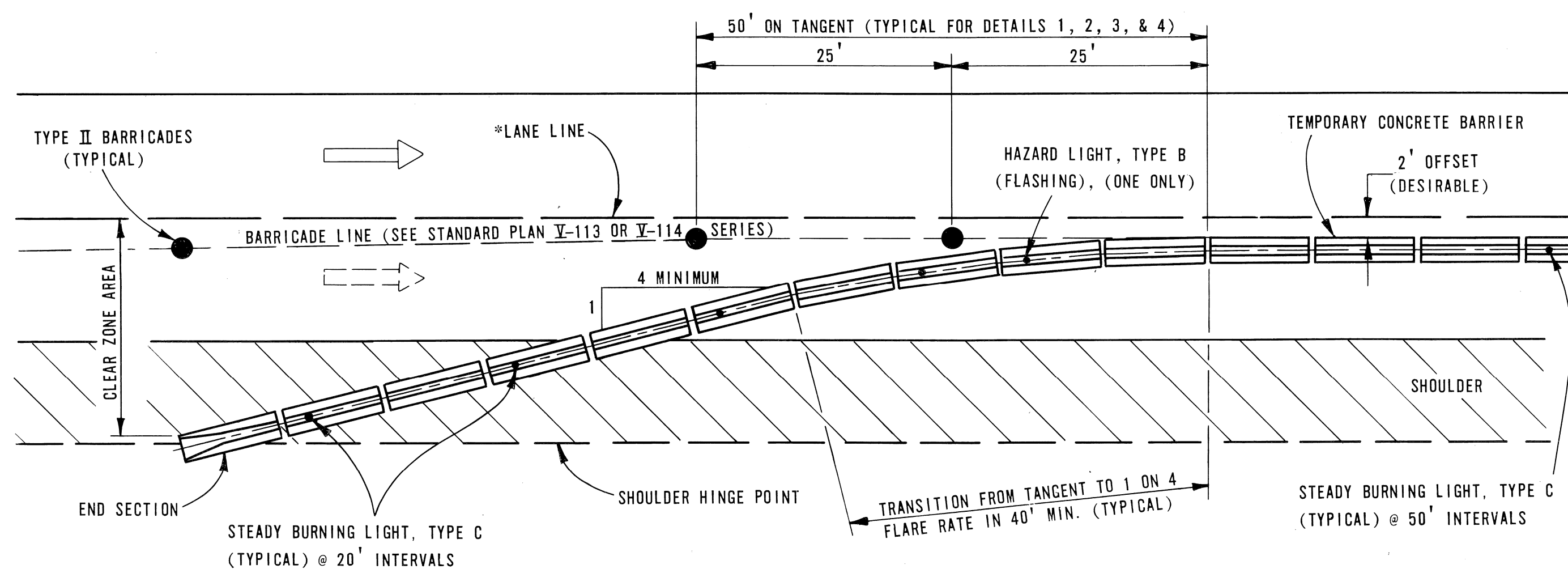
ANY ALTERATIONS TO THE DESIGN OF THE UNITS NOT SPECIFICALLY CALLED FOR ON THE PLANS ARE SUBJECT TO THE FINAL APPROVAL OF THE ENGINEER OF CONSTRUCTION.

 PREPARED BY DESIGN DIVISION DRAWN BY: J.L.R. CHECKED BY: V.R.	ENGINEER OF CONSTRUCTION	ENGINEER - ROAD DESIGN
	ENGINEER OF MAINTENANCE	ENGINEER OF DESIGN
	ENGINEER OF MATERIALS & TECHNOLOGY	DEPARTMENT DIRECTOR JAMES P. PITZ
	ENGINEER OF TRAFFIC AND SAFETY	BY: DEPUTY DIRECTOR - HIGHWAYS
		F.H.W.A. APPROVAL

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS STANDARD PLAN FOR TEMPORARY CONCRETE BARRIER	
1 - 29 - 86	II-52E
PLAN DATE	SHEET 5 OF 6

 PREPARED BY DESIGN DIVISION DRAWN BY: J.L.R. CHECKED BY: V.R.	ENGINEER OF CONSTRUCTION	ENGINEER - ROAD DESIGN
	ENGINEER OF MAINTENANCE	ENGINEER OF DESIGN
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	ENGINEER OF TRAFFIC AND SAFETY	BY: DEPUTY DIRECTOR - HIGHWAYS
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MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS STANDARD PLAN FOR TEMPORARY CONCRETE BARRIER	
1 - 29 - 86	II-52E
PLAN DATE	SHEET 6 OF 6

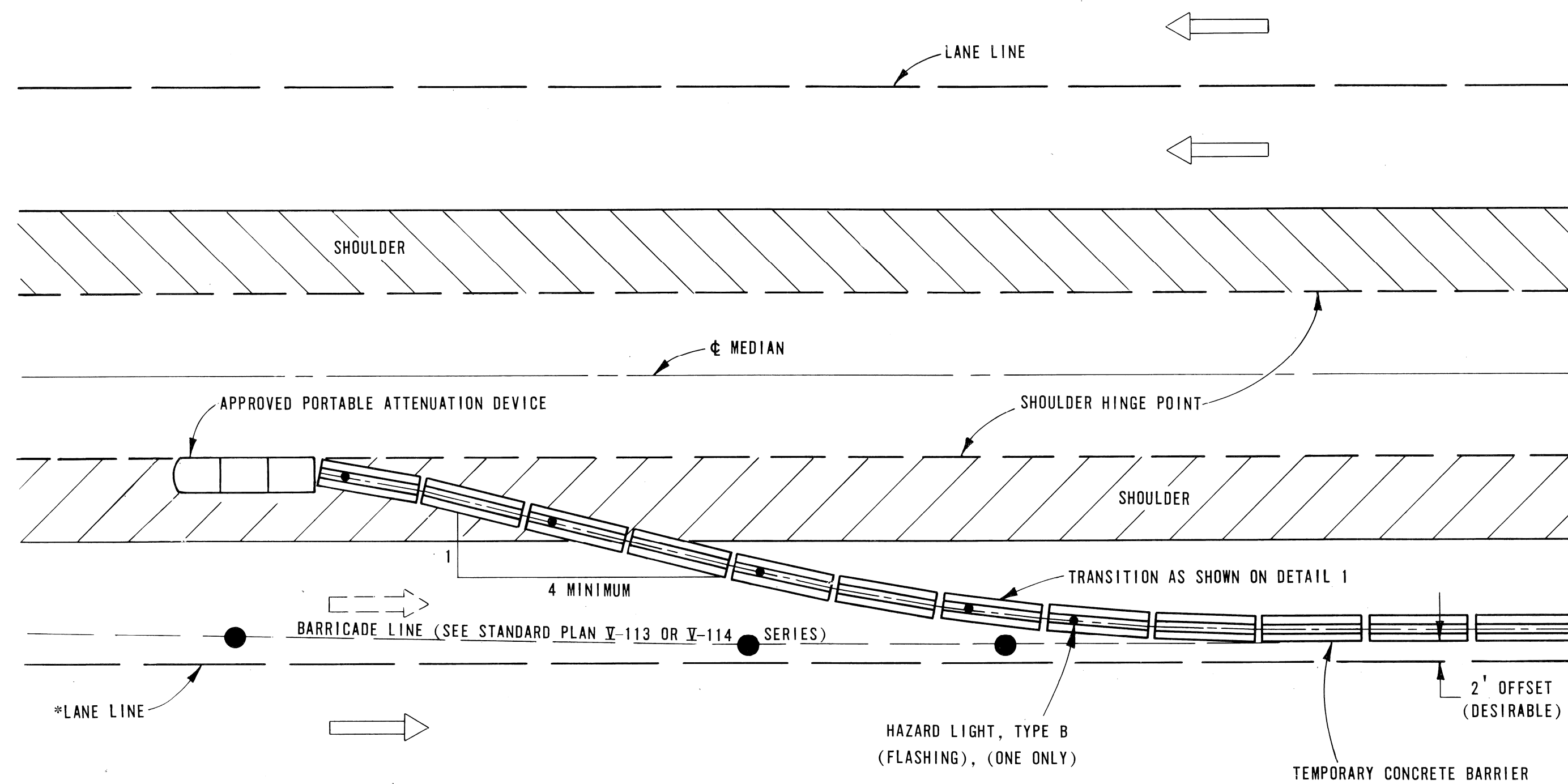


DETAIL 1

*LANE LINE SHALL BE REMOVED A MINIMUM LENGTH EQUAL TO THE LENGTH OF THE BARRICADE TAPER.

APPLIES TO DETAILS 1 & 2

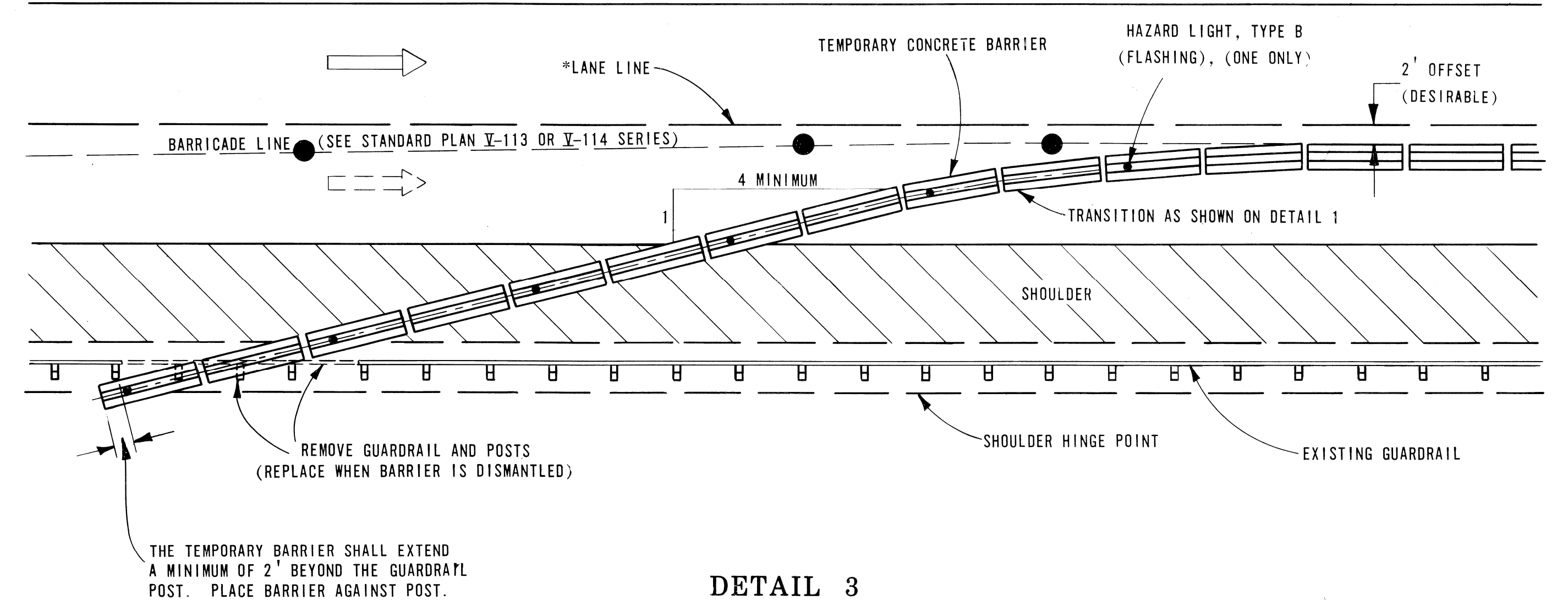
CLEAR ZONE AREA (MINIMUM DISTANCE) (MEASURED FROM LANE LINE TO STANDARD END SECTION)	
POSTED SPEED (MPH)	DISTANCE (FT.)
≤ 35	15
40	18
45	20



DETAIL 2

*LANE LINE SHALL BE REMOVED A MINIMUM LENGTH EQUAL TO THE LENGTH OF THE BARRICADE TAPER.

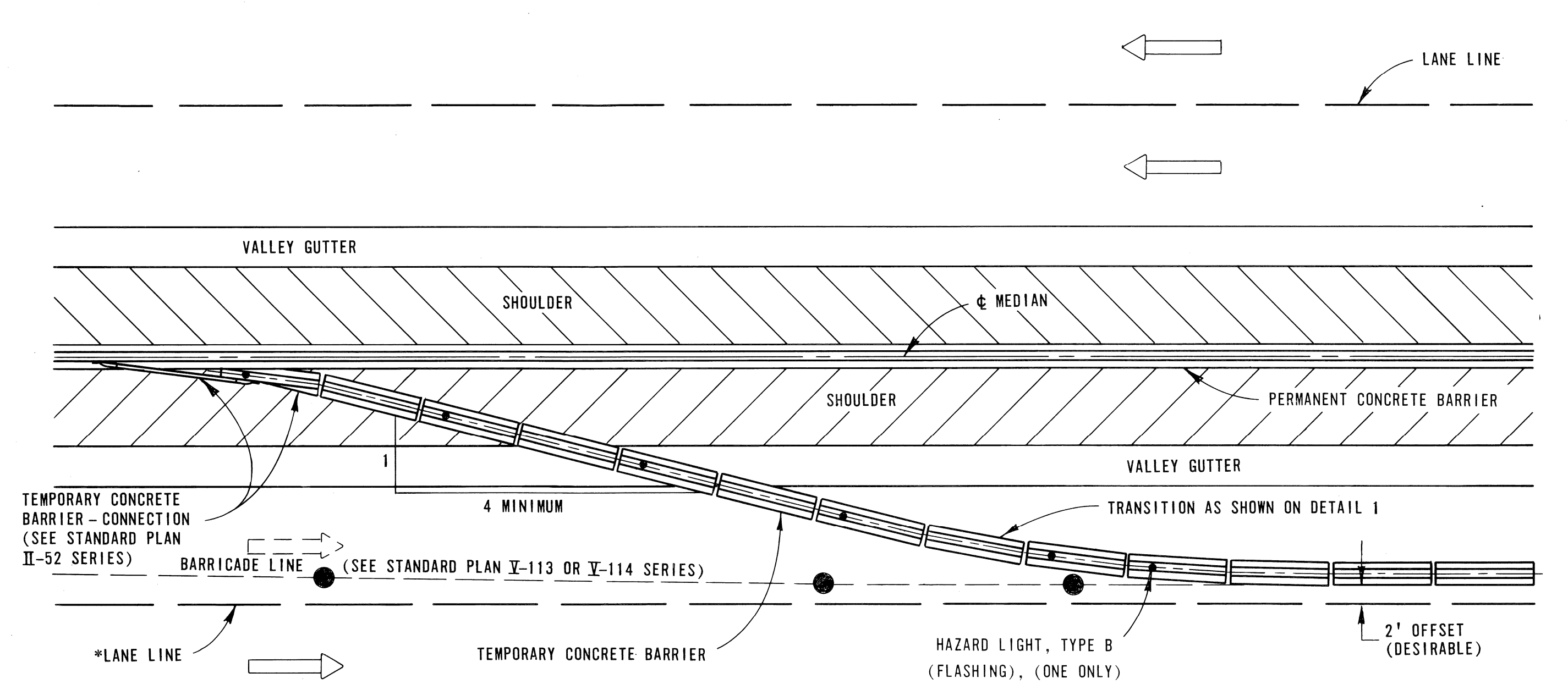
WHEN DETAIL 1 CANNOT BE OBTAINED BECAUSE OF RESTRICTED CLEAR ZONE



DETAIL 3

(TEMPORARY CONCRETE BARRIER IN GUARDRAIL AREA)

*LANE LINE SHALL BE REMOVED A MINIMUM LENGTH EQUAL TO THE LENGTH OF THE BARRICADE TAPER.



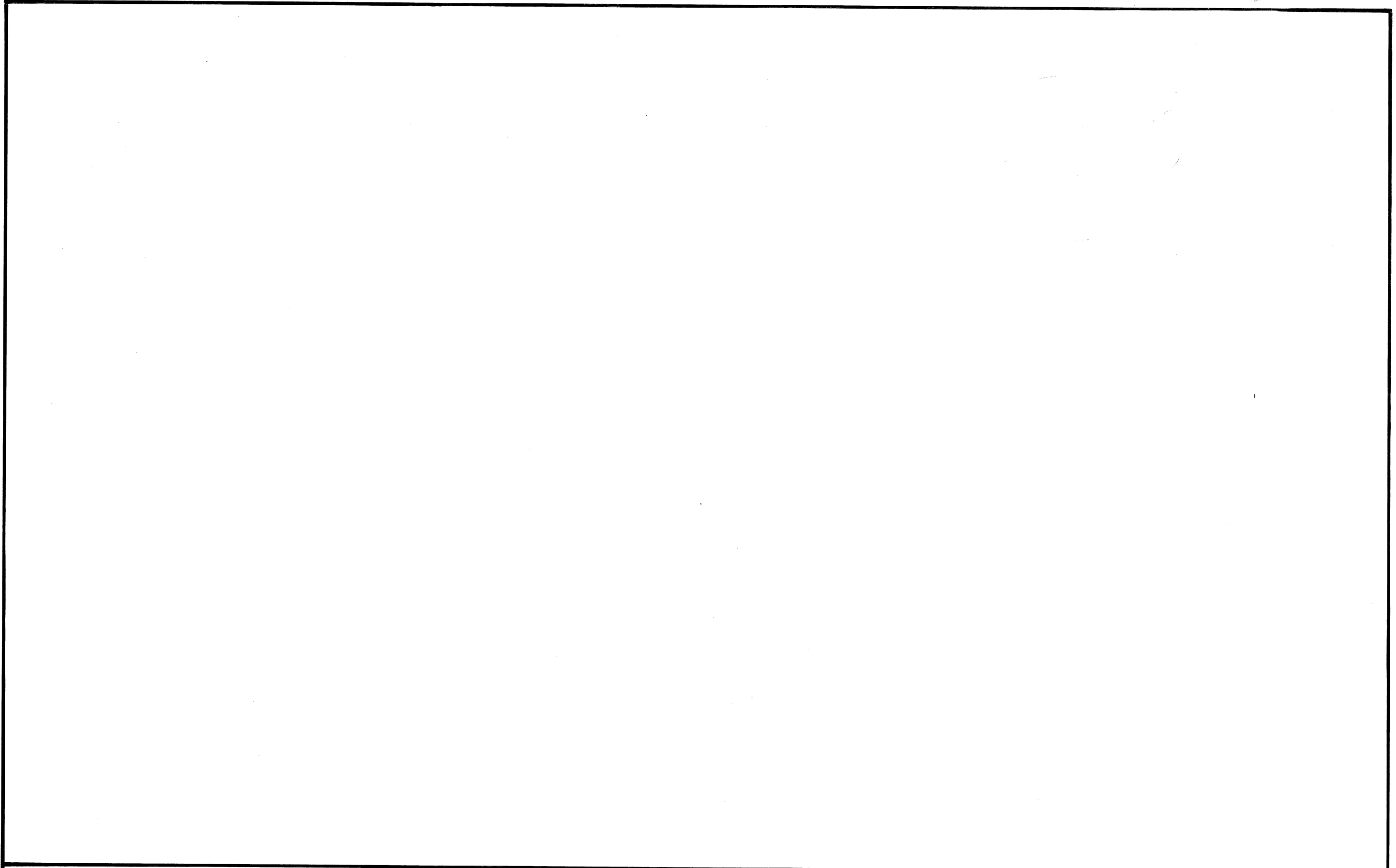
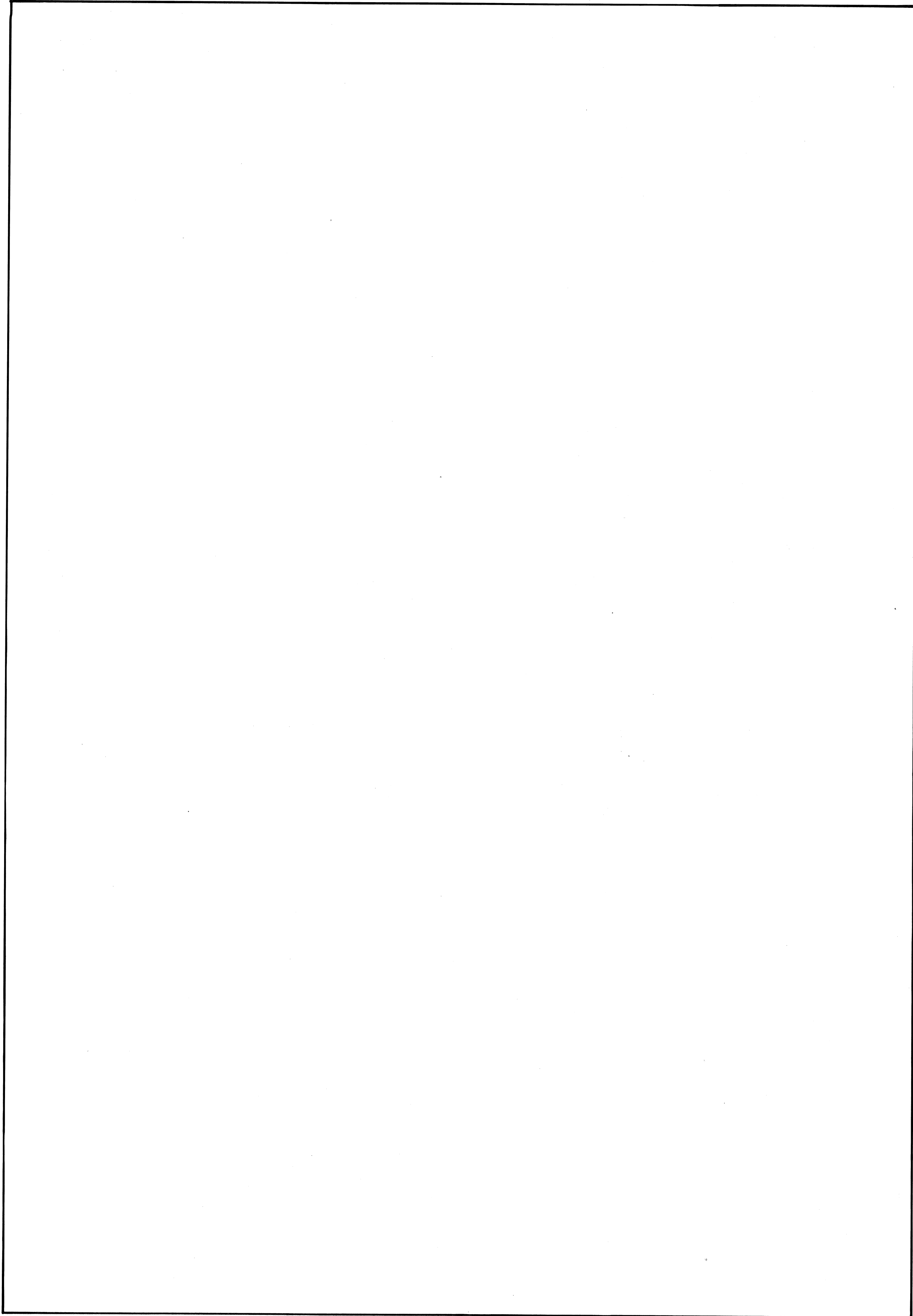
DETAIL 4

(TEMPORARY CONCRETE BARRIER IN CONCRETE BARRIER AREA)

*LANE LINE SHALL BE REMOVED A MINIMUM LENGTH EQUAL TO THE LENGTH OF THE BARRICADE TAPER.

<p>PREPARED BY DESIGN DIVISION</p> <p>DRAWN BY: J.L.R.</p> <p>CHECKED BY: V.R.</p>	ENGINEER OF CONSTRUCTION	ENGINEER - ROAD DESIGN	<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS STANDARD PLAN FOR</p> <p>END TREATMENT FOR TEMPORARY CONCRETE BARRIER</p>	<p>1 - 15 - 86</p> <p>VI-126D</p> <p>SHEET 1 OF 3</p>
	ENGINEER OF MAINTENANCE	ENGINEER OF DESIGN		
	ENGINEER OF MATERIALS & TECHNOLOGY	DEPARTMENT DIRECTOR JAMES P. PITZ		
	ENGINEER OF TRAFFIC AND SAFETY	DEPUTY DIRECTOR - HIGHWAYS		

<p>PREPARED BY DESIGN DIVISION</p> <p>DRAWN BY: J.L.R.</p> <p>CHECKED BY: V.R.</p>	ENGINEER OF CONSTRUCTION	ENGINEER - ROAD DESIGN	<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS STANDARD PLAN FOR</p> <p>END TREATMENT FOR TEMPORARY CONCRETE BARRIER</p>	<p>1 - 15 - 86</p> <p>VI-126D</p> <p>SHEET 2 OF 3</p>
	ENGINEER OF MAINTENANCE	ENGINEER OF DESIGN		
	ENGINEER OF MATERIALS & TECHNOLOGY	DEPARTMENT DIRECTOR JAMES P. PITZ		
	ENGINEER OF TRAFFIC AND SAFETY	DEPUTY DIRECTOR - HIGHWAYS		



NOTES:

THE SEQUENCE OF BARRIER PLACEMENT SHALL BE IN THE DIRECTION OF TRAFFIC FLOW. BARRIER REMOVAL SHALL BE IN THE DIRECTION OPPOSITE TO TRAFFIC FLOW. ALL ADJACENT BARRIER SECTIONS SHALL BE CONNECTED AS DESCRIBED IN STANDARD PLAN II-52 SERIES.

FOR TEMPORARY CONCRETE BARRIER, END SECTION, AND TEMPORARY CONCRETE BARRIER - CONNECTION DETAILS, SEE STANDARD PLAN II-52 SERIES.

THIS STANDARD PLAN IS INTENDED TO BE USED IN CONJUNCTION WITH STANDARD PLANS V-113 AND X-114 SERIES.

THE CLEAR ZONE AREA REFERS TO THE DISTANCE FROM THE LANE TO THE TEMPORARY BARRIER. THE BARRIER IS TO BE EXTENDED TO THE EDGE OF THE SHOULDER EVEN IF THIS DISTANCE IS BEYOND THE CLEAR ZONE AREA. THE FIRST SECTION IS TO BE AN END SECTION AS SHOWN ON STANDARD PLAN II-52 SERIES, UNLESS AN ATTENUATION DEVICE IS USED.

ANY BARRIER ENDING WITHIN THE CLEAR ZONE AREA MUST BE ADEQUATELY PROTECTED. DETAIL 2 WILL BE USED WHEN THERE IS NO EXISTING GUARDRAIL OR CONCRETE BARRIER - MEDIAN AVAILABLE AS SHOWN IN DETAIL 3 OR 4.

THE OFFSET DISTANCE OF TWO FEET IS A DESIRABLE DISTANCE BETWEEN THE LANE LINE AND THE PARALLELING EDGE OF BARRIER AND IS INTENDED TO BE USED AS A GUIDE. THE APPROPRIATE DISTANCE TO BE USED WILL BE DETERMINED IN THE FIELD.

THE LOCATION OF THE HAZARD LIGHT, TYPE B (FLASHING) AND SPACINGS FOR STEADY BURNING LIGHTS, TYPE C SHALL BE AS SHOWN IN DETAIL 1, AND ALSO SHALL APPLY TO DETAILS 2, 3, AND 4. THE HAZARD AND STEADY BURNING LIGHTS SHALL BE FASTENED ON THE TOP OF THE BARRIER.

THE BARRIER DEPARTURE ANGLE SHALL BE A 1 ON 4 MINIMUM FLARE. A 1 ON 5 OR 1 ON 6 FLARE IS MORE DESIRABLE IF FIELD CONDITIONS PERMIT.

IN DETAIL 3, EXISTING GUARDRAIL POSTS ARE REMOVED TO FACILITATE PLACING OF CONCRETE BARRIER BEHIND THE GUARDRAIL. THE DEGREE OF THE BARRIER DEPARTURE ANGLE WILL DETERMINE THE AMOUNT OF BEAM GUARDRAIL AND NUMBER OF POSTS TO BE REMOVED.

DETAIL 2 SHOWS A PORTABLE ATTENUATION DEVICE THAT USES THREE - BEAM GUARDRAIL IN CONJUNCTION WITH BAYS FILLED WITH VERMICULITE CARTRIDGES. ANY PORTABLE ATTENUATION DEVICE THAT CAN BE SHOWN TO BE EQUAL TO OR SAFER THAN THE DEVICE SHOWN MAY BE USED WITH THE APPROVAL OF THE ENGINEER.

THE HAZARD LIGHT SHALL BE EXCLUDED WHERE TWO - WAY TRAFFIC IS MAINTAINED ON ONE LANE AND IS CONTROLLED BY TRAFFIC SIGNALS.



PREPARED BY DESIGN DIVISION

DRAWN BY: J.L.R.
CHECKED BY: V.R.

ENGINEER OF CONSTRUCTION
ENGINEER OF MAINTENANCE
ENGINEER OF MATERIALS & TECHNOLOGY
ENGINEER OF TRAFFIC AND SAFETY

ENGINEER - ROAD DESIGN
ENGINEER OF DESIGN
DEPARTMENT DIRECTOR
JAMES P. PITZ
BY: DEPUTY DIRECTOR - HIGHWAYS

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS STANDARD PLAN FOR
**END TREATMENT FOR
TEMPORARY CONCRETE BARRIER**
1 - 15 - 86
VI-126D
SHEET 3 OF 3

