

**UTILITY**

THE EXISTING UTILITIES LISTED BELOW AND SHOWN ON THE PLANS REPRESENT THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARING THESE PLANS. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE REASONABILITY TO BE SATISFIED AS TO ITS ACCURACY AND LOCATION OF EXISTING UTILITIES.

**CONTACTS**

CHARTER COMMUNICATIONS  
ATT: MARK KELLY  
1480 S. VALLEY CENTER DRIVE  
BAY CITY, MI 48706

CABLE TV  
PHONE : 989-233-9404  
mark.kelly@chatercom.com

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ATT: RANDY CHESNEY  
301 W. MAIN STREET  
OWOSSO, MI 48867

ROAD  
989-725-0550

CITY OF OWOSSO  
ATT: GLEN CHINAVARE  
301 W. MAIN STREET  
OWOSSO, MI 48867

SANITARY SEWER & WATER MAIN  
989-725-0555

CONSUMERS ENERGY  
ATT: JACOB CHALUT  
530 W. WILLOW STREET  
P.O. BOX 30162  
LANSING MI 48909

ELECTRIC  
OFFICE: 517-374-2329  
CELL: 517-580-2049

CONSUMERS ENERGY  
ATT: TYLER LAWRENCE  
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P.O. BOX 30162  
LANSING MI 48909

GAS  
OFFICE: 517-374-2375

DAYSTARR COMMUNICATIONS  
ATT: CASEY ROSE  
307 N. BALL STREET  
OWOSSO, MI 48867

FIBER  
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FAX: 989-720-6060

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ATT: MARK V. STEVENS  
1943 W. M-21  
OWOSSO, MI 48867

FIBER  
PHONE: 989-723-0373

SHIAWASSEE COUNTY HEALTH DEPARTMENT  
ENVIRONMENTAL HEALTH DIVISION  
ATT: CASEY ELLIOT, REHS  
201 S. SHIAWASSEE STREET  
CORUNNA, MI 48817

SOIL EROSION AND SEDIMENTATION CONTROL  
PHONE: 989-743-2289  
FAX: 989-743-2413  
Celliot@shiawasseechd.net

CALL MISS DIG THREE DAYS, 1-800-482-7171 or 811  
EXCLUDING SATURDAY, SUNDAY AND HOLIDAYS,  
BEFORE STARTING YOUR PROJECT.

# CITY OF OWOSSO

## 2017 STREET PROGRAM

SHIAWASSEE COUNTY  
SECTIONS 23 & 24, T7N-R2E, CITY OF OWOSSO  
POP: 15,194 (2010 CENSUS)

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	ROAD AND STORM SEWER DETAILS
3 - 4	TYPICAL CROSS SECTIONS
5	NOTES AND MISCELLANEOUS ESTIMATES
6	REMOVAL PLAN - W. STEWART ST
7	REMOVAL PLAN - S. CHIPMAN ST
8 - 10	ROAD PLAN AND PROFILE - W. STEWART ST
11 - 13	ROAD PLAN AND PROFILE - S. CHIPMAN ST
14 - 16	REMOVAL / CONSTRUCTION PLAN - S. CHESTNUT ST
17 - 18	REMOVAL / CONSTRUCTION PLAN - N. CHIPMAN ST
19	BARRICADE PLAN
20	TRAFFIC CONTROL PLAN
21	WATER MAIN NOTES AND DETAILS
22	WATER MAIN STANDARD DETAILS
23 - 25	WATER MAIN PLAN AND PROFILE - W. STEWART ST
26 - 28	WATER MAIN PLAN AND PROFILE - S. CHIPMAN ST
29	SESC STANDARD NOTES AND DETAILS

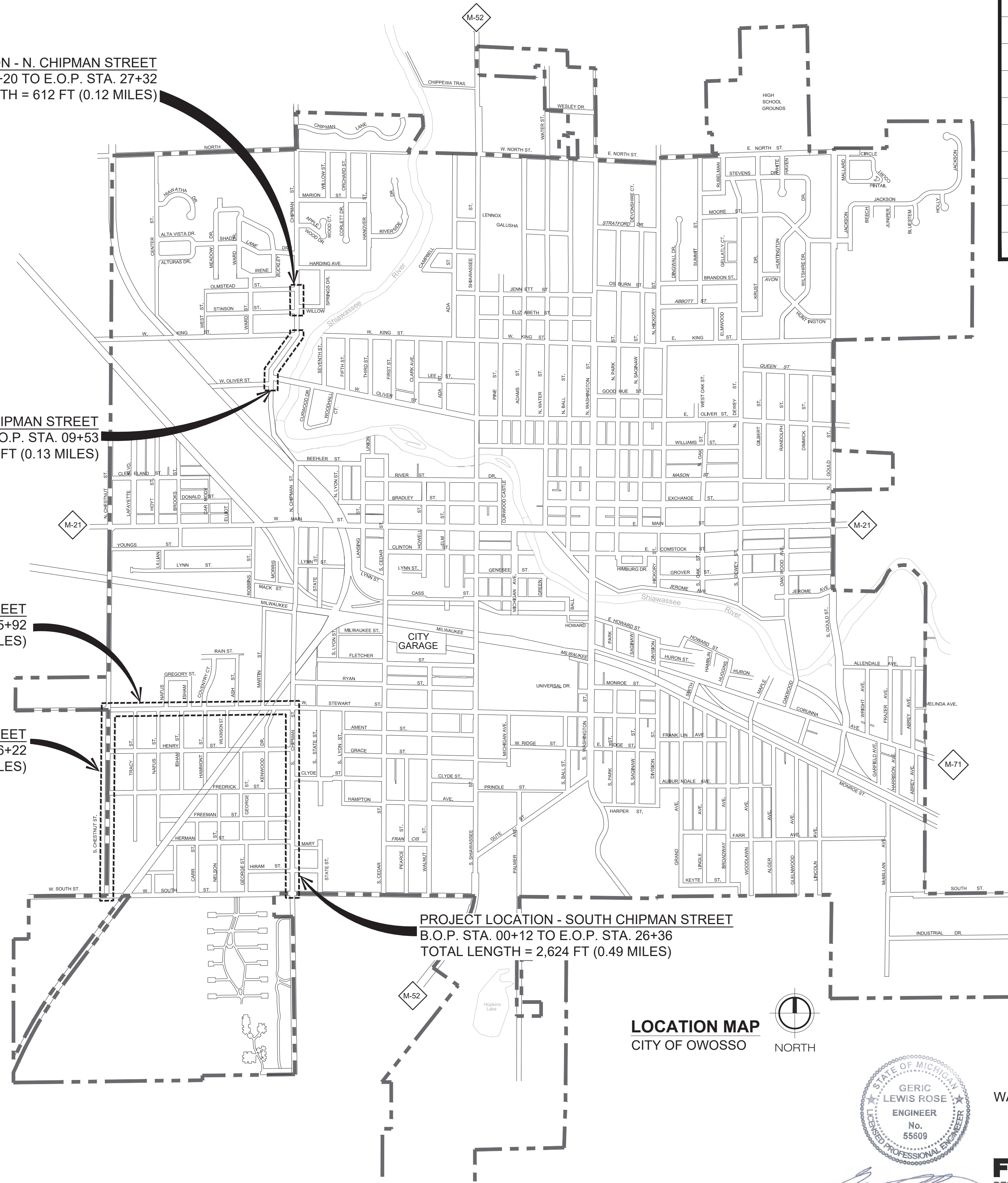
PROJECT LOCATION - N. CHIPMAN STREET  
B.O.P. STA. 21+20 TO E.O.P. STA. 27+32  
TOTAL LENGTH = 612 FT (0.12 MILES)

PROJECT LOCATION - N. CHIPMAN STREET  
B.O.P. STA. 02+50 TO E.O.P. STA. 09+53  
TOTAL LENGTH = 703 FT (0.13 MILES)

PROJECT LOCATION - WEST STEWART STREET  
B.O.P. STA. 0+00 TO E.O.P. STA. 25+92  
TOTAL LENGTH = 2,592 FT (0.49 MILES)

PROJECT LOCATION - SOUTH CHESTNUT STREET  
B.O.P. STA. 00+45 TO E.O.P. STA. 26+22  
TOTAL LENGTH = 2,577 FT (0.49 MILES)

PROJECT LOCATION - SOUTH CHIPMAN STREET  
B.O.P. STA. 00+12 TO E.O.P. STA. 26+36  
TOTAL LENGTH = 2,624 FT (0.49 MILES)



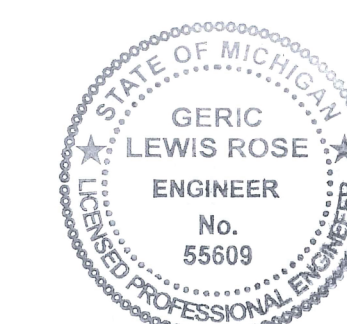
**MDOT ROAD STANDARD PLANS**

WHERE THE FOLLOWING ITEMS ARE CALLED FOR ON PLANS. THEY ARE TO BE CONSTRUCTED ACCORDING TO THE MDOT STANDARD PLAN GIVEN BELOW OPPOSITE EACH ITEM UNLESS OTHERWISE INDICATED.

- DRAINAGE STRUCTURES
  - COVER B
  - MONUMENT BOXES
  - COVER K
  - COVER Q
  - SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
  - DRIVEWAY OPENINGS & APPROACHES AND CONCRETE SIDEWALKS
  - CONCRETE CURB AND CONCRETE CURB GUTTER
  - BUMPER & PARKING RAILS AND MISC. WOOD POSTS
  - GRANULAR BLANKET, UNDERDRAINS, OUTLET ENDINGS
  - FOR UNDERDRAINS, AND SEWER BULKHEADS
  - BEDDING AND FILLING AROUND PIPE CULVERTS
  - UTILITY TRENCHES
  - SOIL EROSION & SEDIMENTATION CONTROL MEASURES
  - SEEDING AND TREE PLANTING
- R-1-G\*
  - R-7-F
  - R-11-E
  - R-15-F
  - R-18-F
  - R-28-J\*
  - R-29-I
  - R-30-G\*
  - R-74-D
  - R-80-E
  - R-82-D
  - R-83-C\*
  - R-96-E
  - R-100-H

\*SPECIAL DETAILS INCLUDED IN PROPOSAL OR MODIFIED IN GENERAL PLANS

LOCATION MAP  
CITY OF OWOSSO



WATER MAIN DESIGN PLANS BY:



Know what's below.  
Call before you dig.

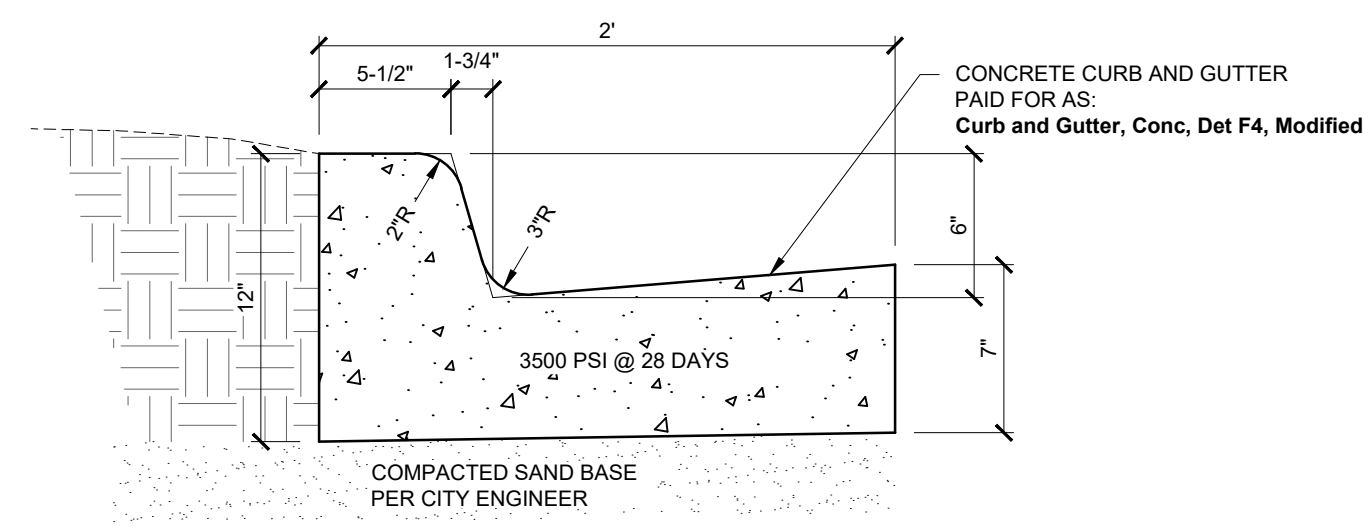
NO.	REVISIONS	DATE	BY

BENCH MARK DATA

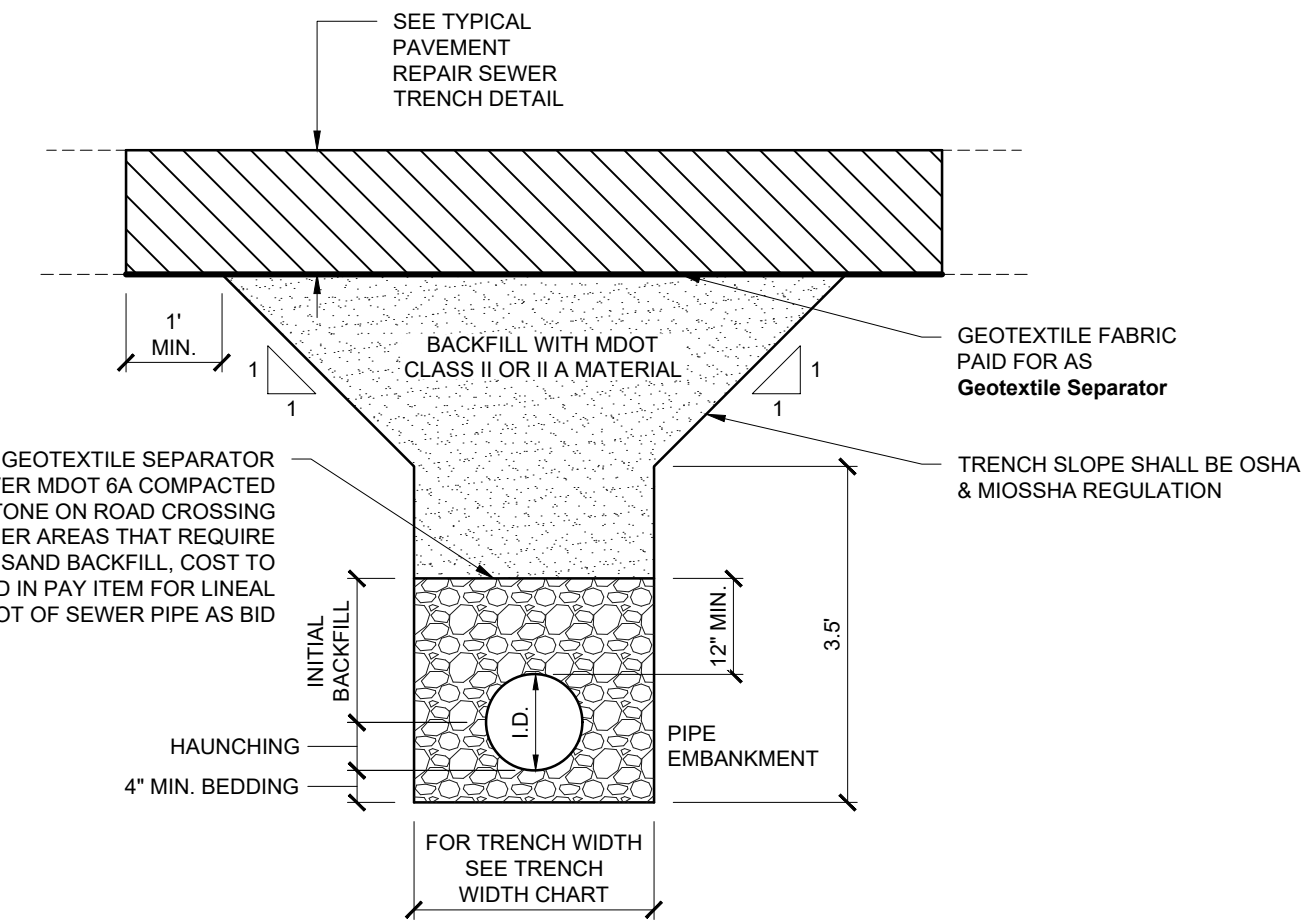
ELEV.	DESCRIPTION

CHECKED BY: \_\_\_\_\_  
APPROVED BY: \_\_\_\_\_  
ORIGINAL PLAN



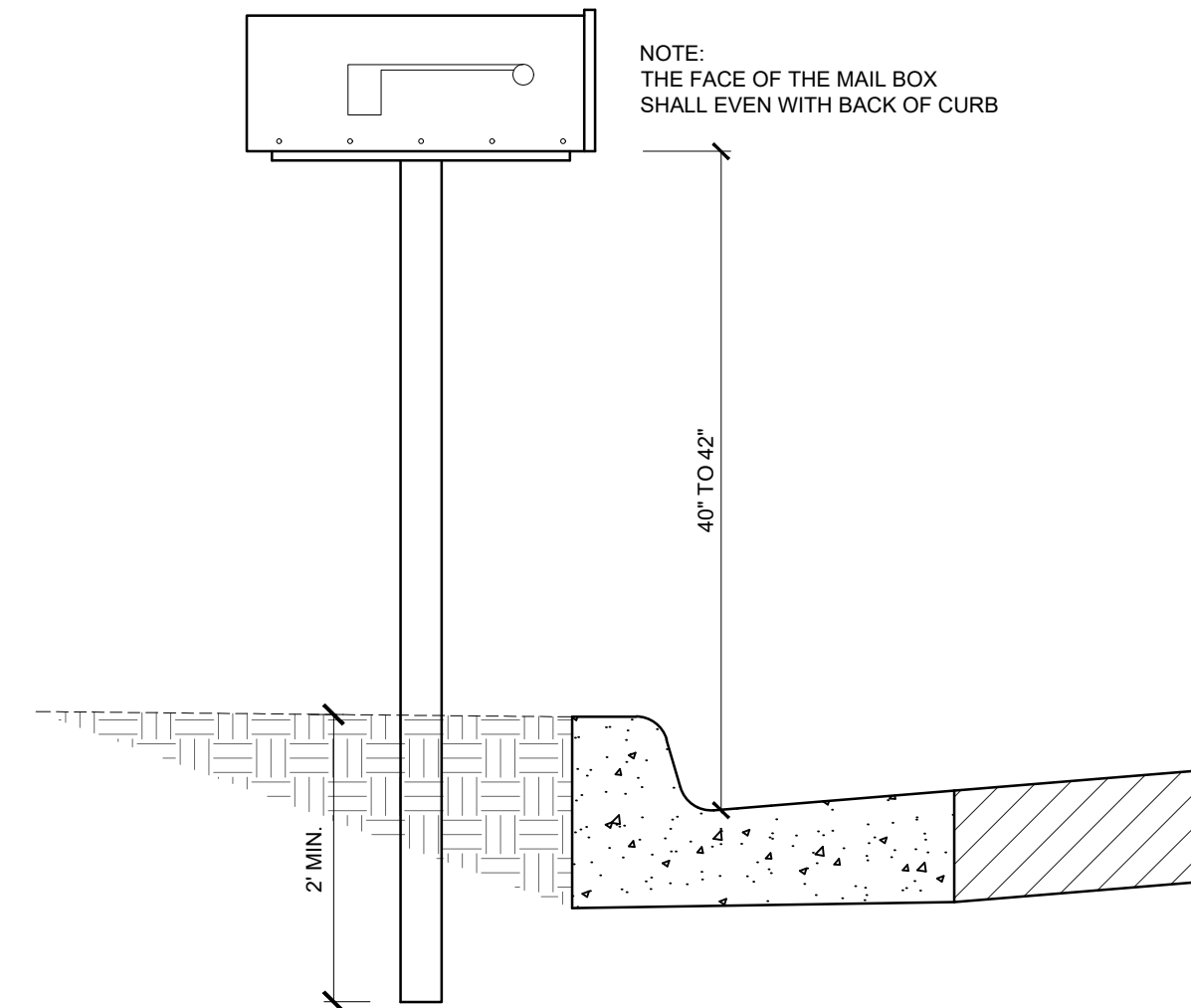


**CONCRETE CURB AND GUTTER  
MDOT F4 - MODIFIED DETAIL**  
NOT TO SCALE

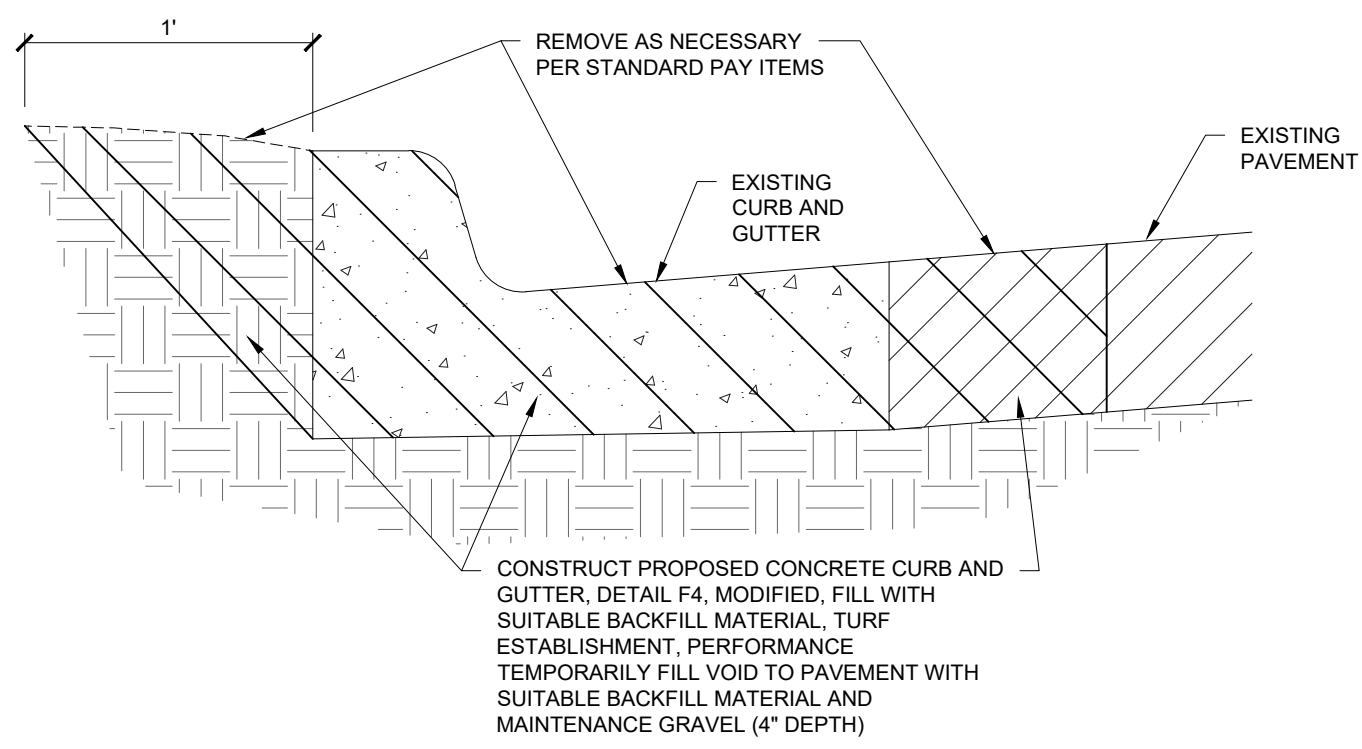


**TRENCH DETAIL B - MODIFIED DETAIL**  
NOT TO SCALE

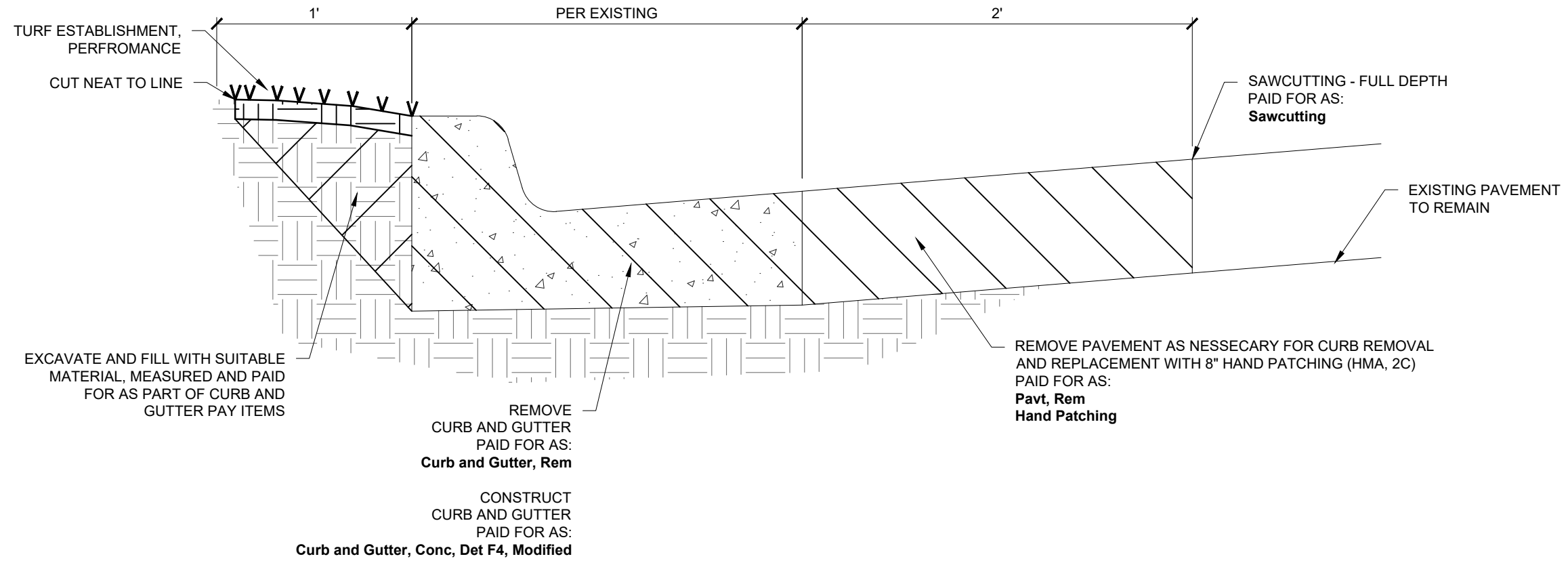
TRENCH WIDTH CHART		
PIPE SIZE	MINIMUM	MAXIMUM
6", 8" & 10"	24"	30"
12" & 15"	30"	36"
18"	34"	40"
21"	38"	42"
24"	42"	46"
27"	45"	49"
30"	49"	53"
36"	56"	60"
LARGER THAN 36"	I.D. +20"	I.D. +24"



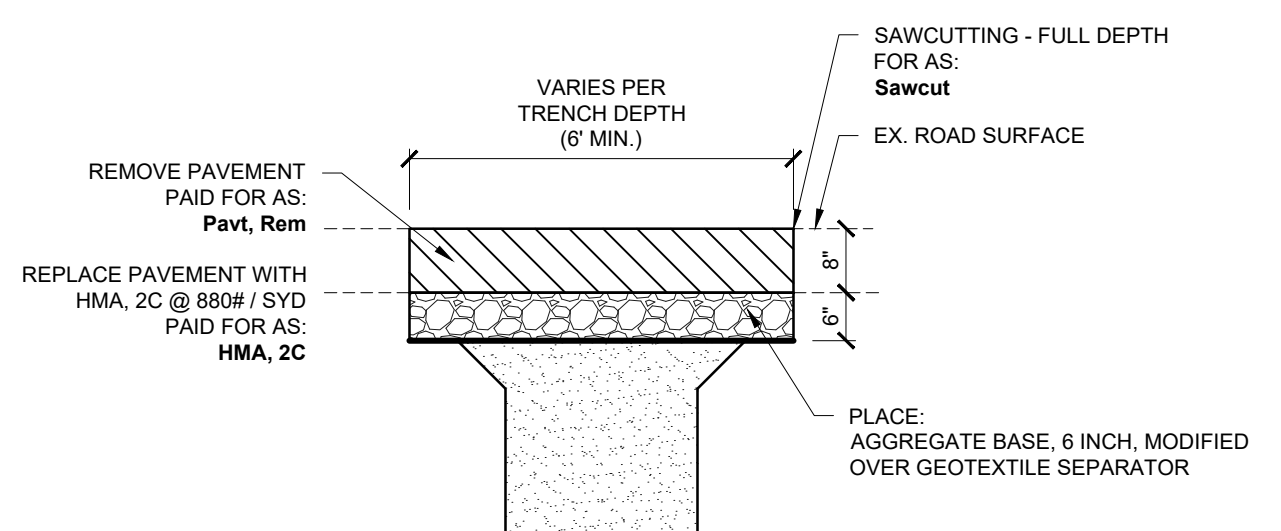
**TYPICAL MAIL BOX CROSS SECTION DETAIL**  
NOT TO SCALE



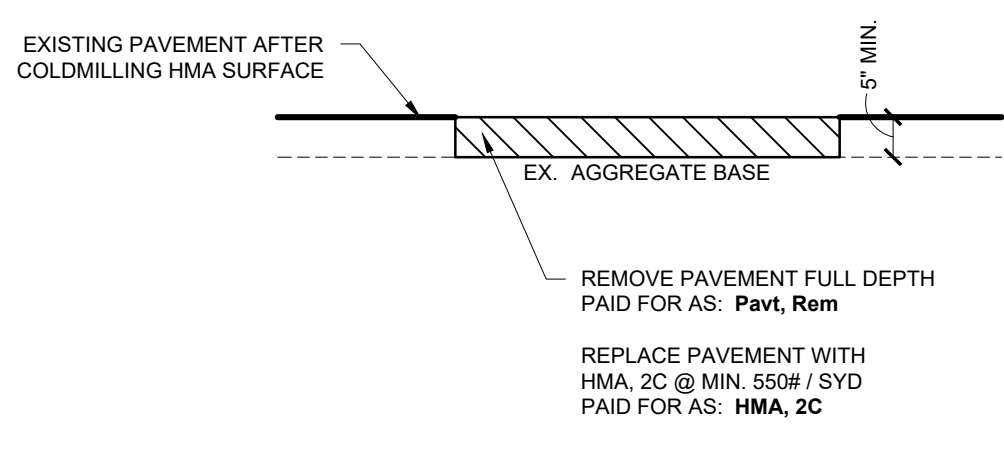
**SOUTH CHIPMAN ST AND WEST STEWART ST  
TYPICAL SELECT CURB AND GUTTER REPAIR DETAIL**  
NOT TO SCALE



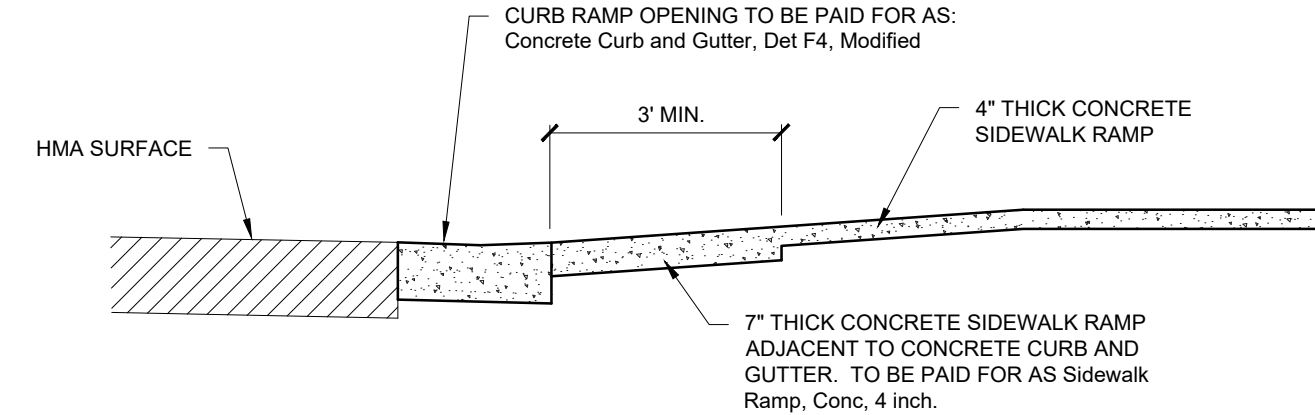
**NORTH CHIPMAN ST  
TYPICAL SELECT CURB AND GUTTER REPAIR DETAIL**  
NOT TO SCALE



**NORTH CHIPMAN ST  
TYPICAL PAVEMENT REPAIR SEWER TRENCH DETAIL**  
NOT TO SCALE



**NORTH CHIPMAN ST  
TYPICAL ISOLATED BASE REPAIR DETAIL**  
(NORTH CHIPMAN ST)  
NOT TO SCALE



**SIDEWALK RAMP THICKNESS DETAIL**  
NOT TO SCALE

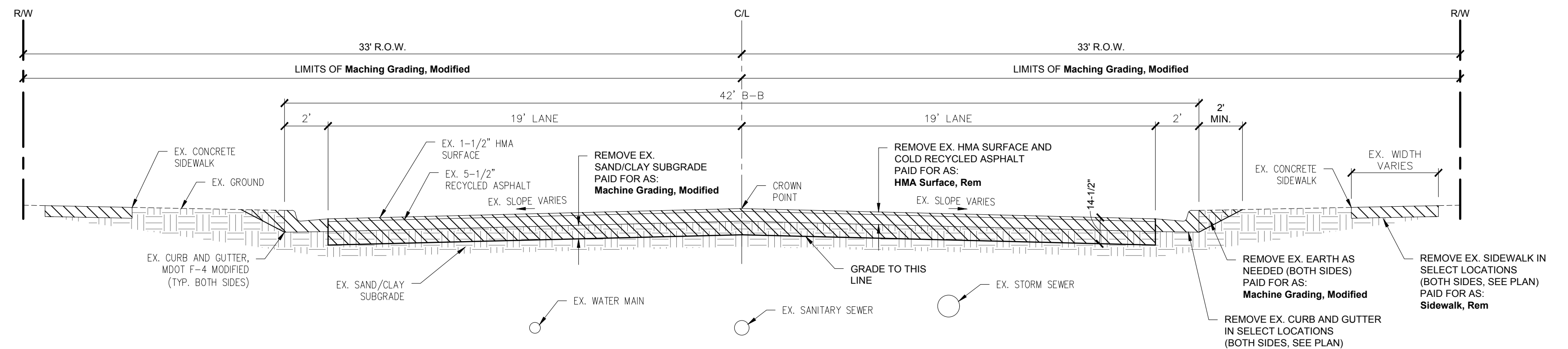
HMA APPLICATION CHART					
ITEM	PAY ITEM	RATE PER SYD	PERFORMANCE GRADE	EST. THICKNESS, INCH	REMARKS
WEST STEWART STREET	HMA, 5E3	220 LBS.	64-28	2.0"	TOP COURSE - AWI = 260 (MIN.)
	HMA, 2C	440 LBS.	64-28	4.0"	BASE COURSE
SOUTH CHIPMAN STREET	HMA, 5E3	165 LBS.	64-28	2.0"	TOP COURSE - AWI = 260 (MIN.)
	HMA, 2C	495 LBS.	64-28	4.5"	BASE COURSE
HAND PATCHING	Hand Patching	110 LBS/SYD/INCH	64-28	VARIES	USE HMA, 2C (PLACED IN EQUAL LIFTS)
COMMERCIAL DRIVE APPROACH	HMA Approach	165 LBS.	58-28	1.5"	TOP COURSE - AWI = 220 (HMA, 13A)
	HMA Approach	935 LBS.	58-28	8.5"	BASE COURSE (HMA, 13A) (PLACED IN 3 EQUAL LIFTS)
RESIDENTIAL DRIVE APPROACH	HMA Approach	220 LBS.	58-28	2"	TOP COURSE - AWI = 220 (HMA, 13A)
	HMA Approach	330 LBS.	58-28	3"	BASE COURSE (HMA, 13A)
HMA BOND COAT		0.10 GAL			SS-1H (FOR INFORMATION ONLY)

NOTE:  
STREET APPROACHES SHALL BE PAID FOR AS PART OF THE MAINLINE PAVING PAY ITEMS.

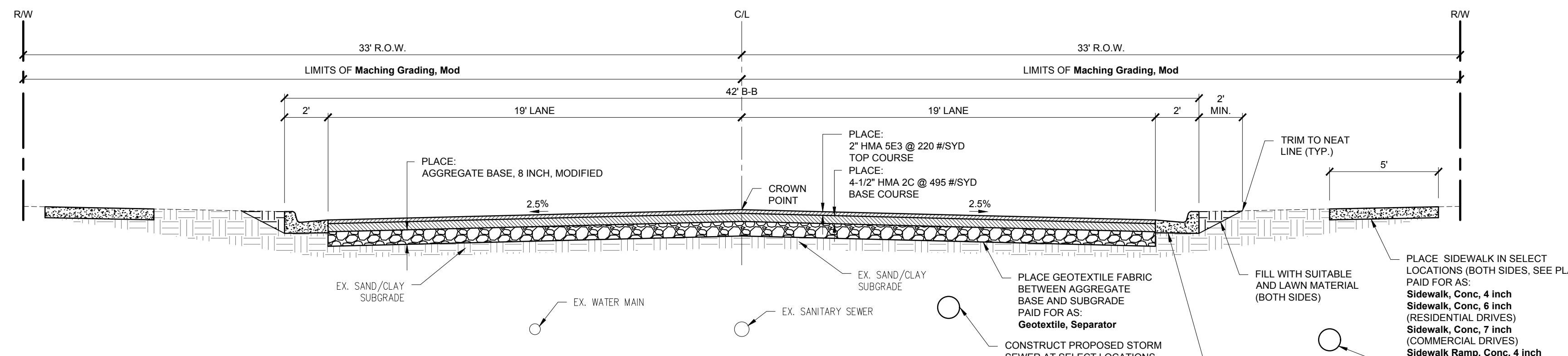
NO.	REVISIONS	BY	DATE

BENCHMARK DATA	DESCRIPTION
ELEV.	

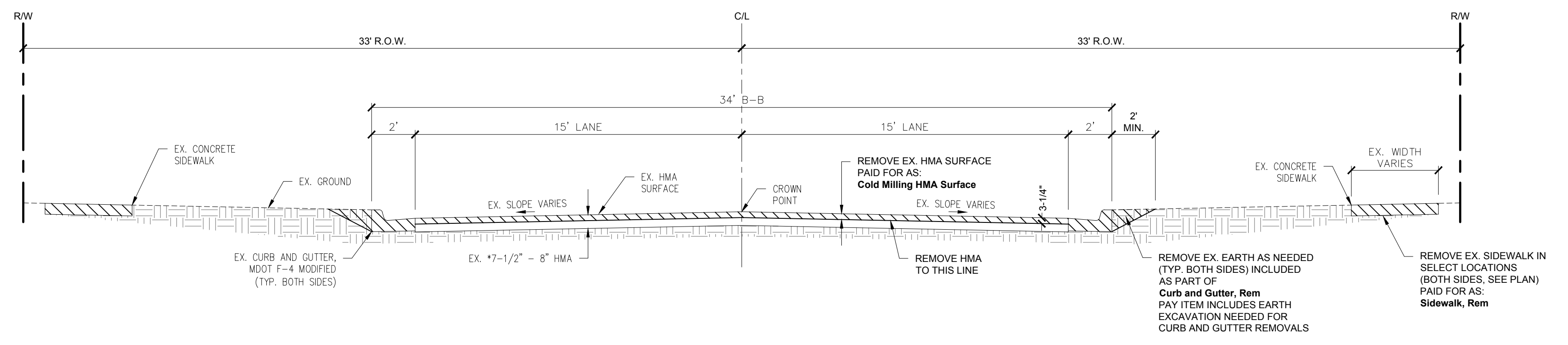




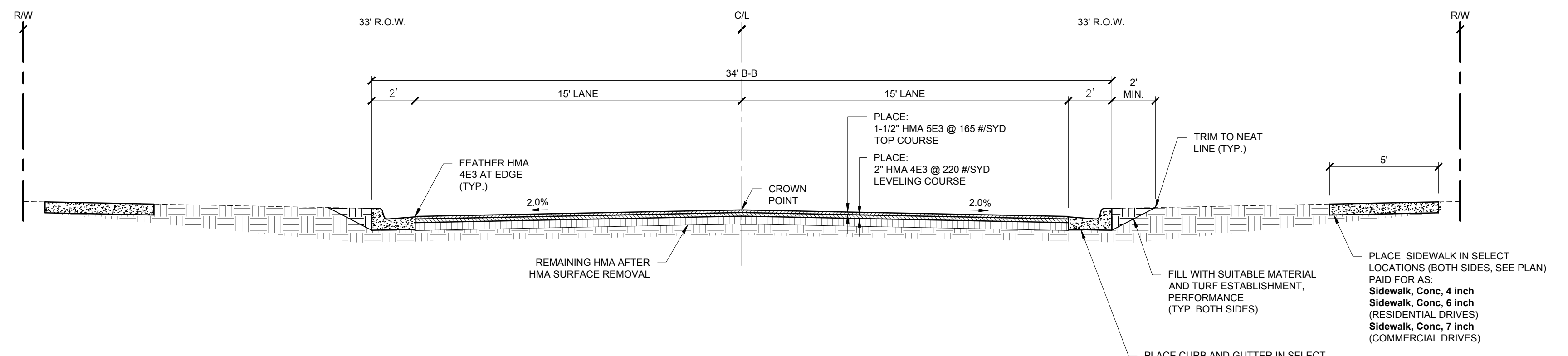
**TYPICAL EXISTING CROSS SECTION - SOUTH CHIPMAN STREET**  
APPLIES TO STATIONS:  
00+12 (B.O.P.) TO 26+36 (E.O.P.)  
SCALE: 1" = 4'



**TYPICAL PROPOSED CROSS SECTION - SOUTH CHIPMAN STREET**  
APPLIES TO STATIONS:  
00+12 (B.O.P.) TO 26+36 (E.O.P.)  
SCALE: 1" = 4'



**TYPICAL EXISTING CROSS SECTION - NORTH CHIPMAN STREET**  
APPLIES TO STATIONS:  
02+50 (B.O.P.) TO 09+53 (E.O.P.)  
21+20 (B.O.P.) TO 27+32 (E.O.P.)  
SCALE: 1" = 4'



**TYPICAL PROPOSED CROSS SECTION - NORTH CHIPMAN STREET**  
APPLIES TO STATIONS:  
02+50 (B.O.P.) TO 09+53 (E.O.P.)  
21+20 (B.O.P.) TO 27+32 (E.O.P.)  
SCALE: 1" = 4'

NO.	REVISIONS	DATE	BY

BENCHMARK DATA	DESCRIPTION
ELEV.	

CHECKED BY: \_\_\_\_\_  
ORIGINAL PLAN  
APPROVED BY: \_\_\_\_\_

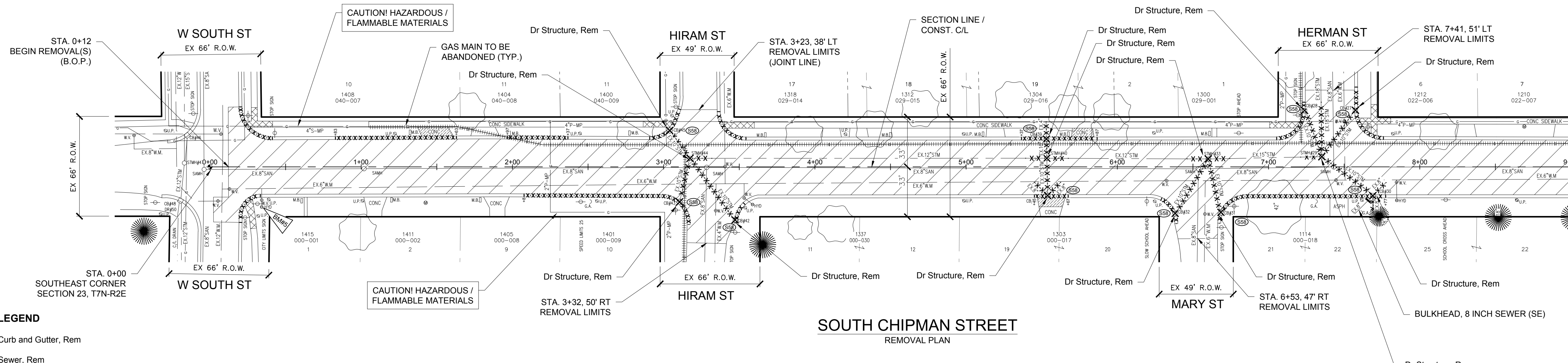
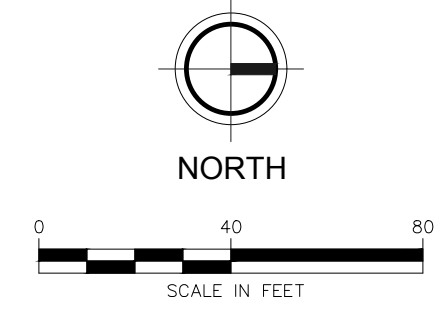






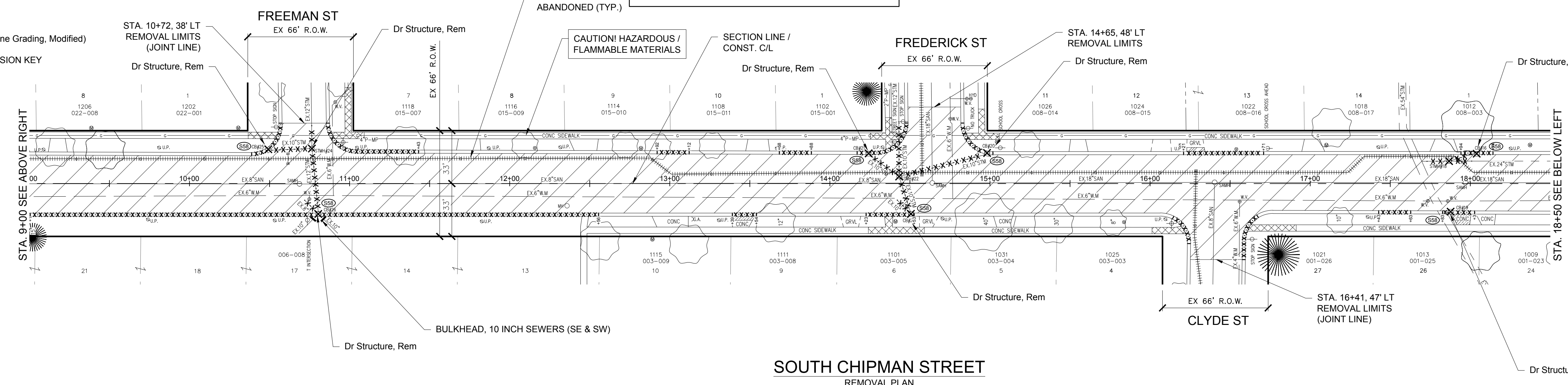


BM #5 EL. 746.99  
NORTHEAST BOLT OF HYDRANT, NORTHEAST CORNER OF  
SOUTH STREET AND SOUTH CHIPMAN STREET  
(LOCAL DATUM)

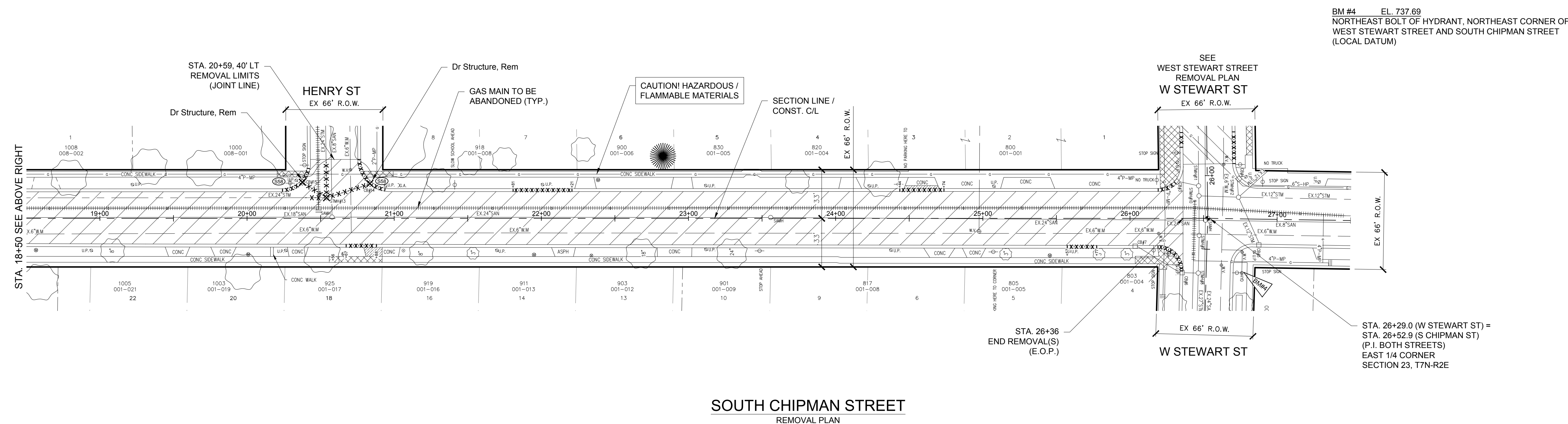


- LEGEND**
- ▬▬▬▬▬▬ Curb and Gutter, Rem
  - XXXXXX- Sewer, Rem
  - XX Dr Structure, Rem
  - ▨ HMA Surface, Rem
  - ▩ Pavt, Rem
  - ▧ Sidewalk, Rem
  - ▨ Excavation Earth (Cost inclusive to Machine Grading, Modified)
  - ⊙ STANDARD SOIL EROSION KEY

NOTE:  
CONTRACTOR SHALL PROVIDED SUFFICIENT PROTECTION FOR BOTH MOTORISTS AND WORKERS THROUGHOUT WORKSITE SO AS TO ALLOW SAFE PASSAGE THROUGHOUT WORK AREAS - AS DIRECTED BY THE ENGINEER



REMOVAL QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
11,462	Syd	HMA Surface, Rem
62	Syd	Pavt, Rem
223	Syd	Sidewalk, Rem
1612	Ft	Curb and Gutter, Rem
24	Ea	Dr Structure, Rem
56	Ft	Sewer, Rem, Less than 24 inch
45	Ft	Sewer, Rem, 24 inch to 48 inch
2,028	Ft	Saw Cutting
20	Ea	Erosion Control, Inlet Protection, Fabric Drop



CITY OF OWOSSO, MICHIGAN  
ENGINEERING DIVISION  
DEPT. OF PUBLIC SERVICE

NO.	REVISIONS	DATE	BY

BENCH MARK DATA	DESCRIPTION
ELEV.	

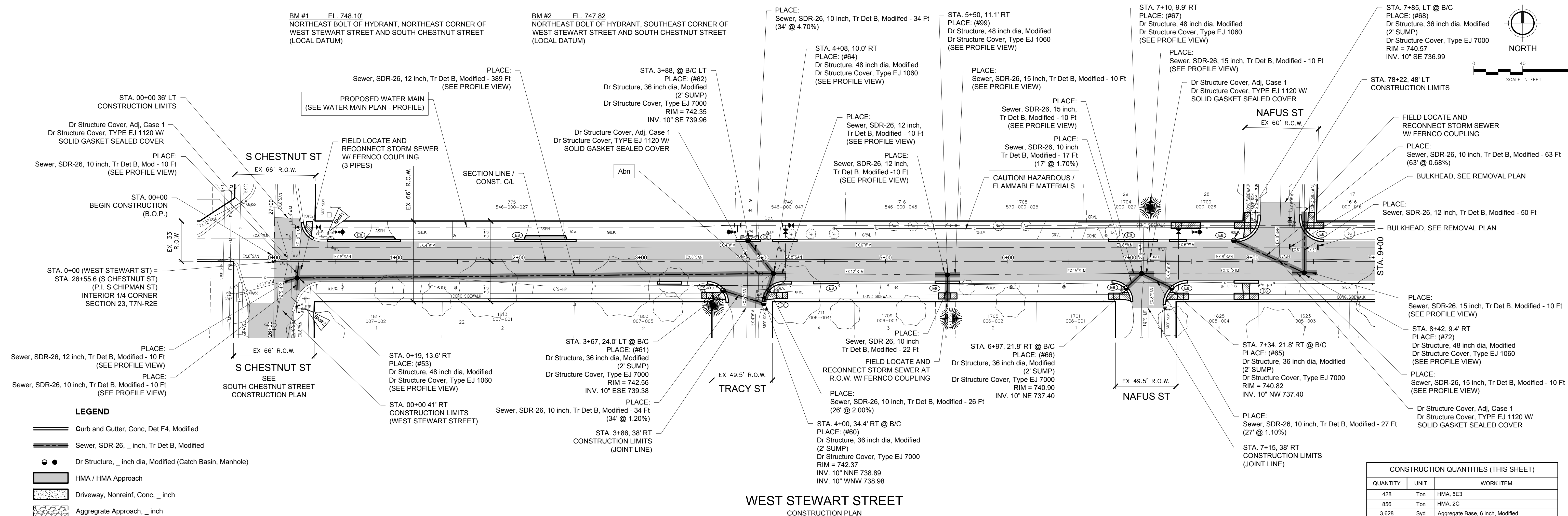
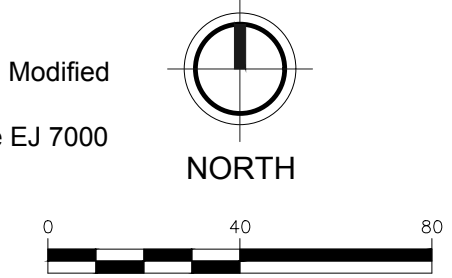
2017 STREET PROGRAM  
REMOVAL PLAN - S. CHIPMAN ST

JUNE 2017  
PROJECT NO. 830300

FIELD BOOK  
PG.





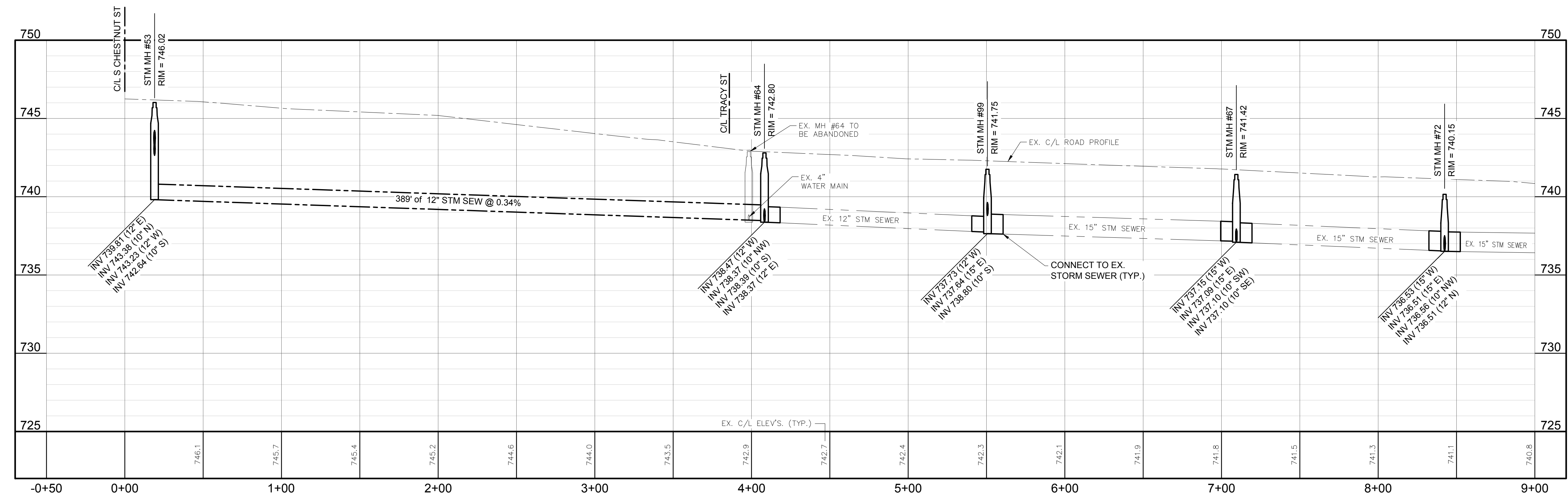


**WEST STEWART STREET  
CONSTRUCTION PLAN**

NOTE:  
CONTRACTOR SHALL PROVIDE SUFFICIENT PROTECTION FOR BOTH MOTORISTS AND WORKERS THROUGHOUT WORKSITE SO AS TO ALLOW SAFE PASSAGE AROUND WORK AREAS - AS DIRECTED BY THE ENGINEER

- LEGEND**
- Curb and Gutter, Conc, Det F4, Modified
  - Sewer, SDR-26, \_ inch, Tr Det B, Modified
  - Dr Structure, \_ inch dia, Modified (Catch Basin, Manhole)
  - HMA / HMA Approach
  - ▨ Driveway, Nonreinf, Conc, \_ inch
  - ▨ Aggregate Approach, \_ inch
  - ▨ Sidewalk, Conc, \_ inch
  - ▨ Sidewalk, Ramp, Conc, \_ inch
  - Abn Dr Structure, Abandon
  - Adj Dr Structure Cover, Adj, Case \_ / Valve Box, Adj
  - ⊖ STANDARD SOIL EROSION KEY

CONSTRUCTION QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
428	Ton	HMA, 5E3
856	Ton	HMA, 2C
3,628	Syd	Aggregate Base, 6 inch, Modified
3,628	Syd	Geotextile, Separator
479	Sft	Sidewalk, Conc, 4 inch
553	Sft	Sidewalk Ramp, Conc, 4 inch
5	Ton	HMA Approach
478	Ft	Curb and Gutter, Conc, Det F4, Modified
6	Ea	Dr Structure, 36 inch dia, Modified
5	Ea	Dr Structure, 48 inch dia, Modified
5	Ea	Dr Structure Cover, Type EJ 1060
6	Ea	Dr Structure Cover, Type EJ 7000
4	Ea	Dr Structure Cover, Adj, Case 1
4	Ea	Dr Structure Cover, Type EJ 1120 W/ SOLID GASKET SEALED COVER
243	Ft	Sewer, SDR-26, 10 inch, Tr Det B, Modified
469	Ft	Sewer, SDR-26, 12 inch, Tr Det B, Modified
50	Ft	Sewer, SDR-26, 15 inch, Tr Det B, Modified



NO.	REVISIONS	DATE	BY

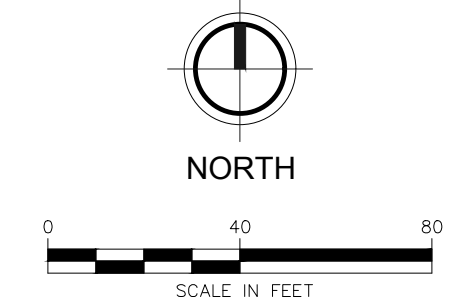
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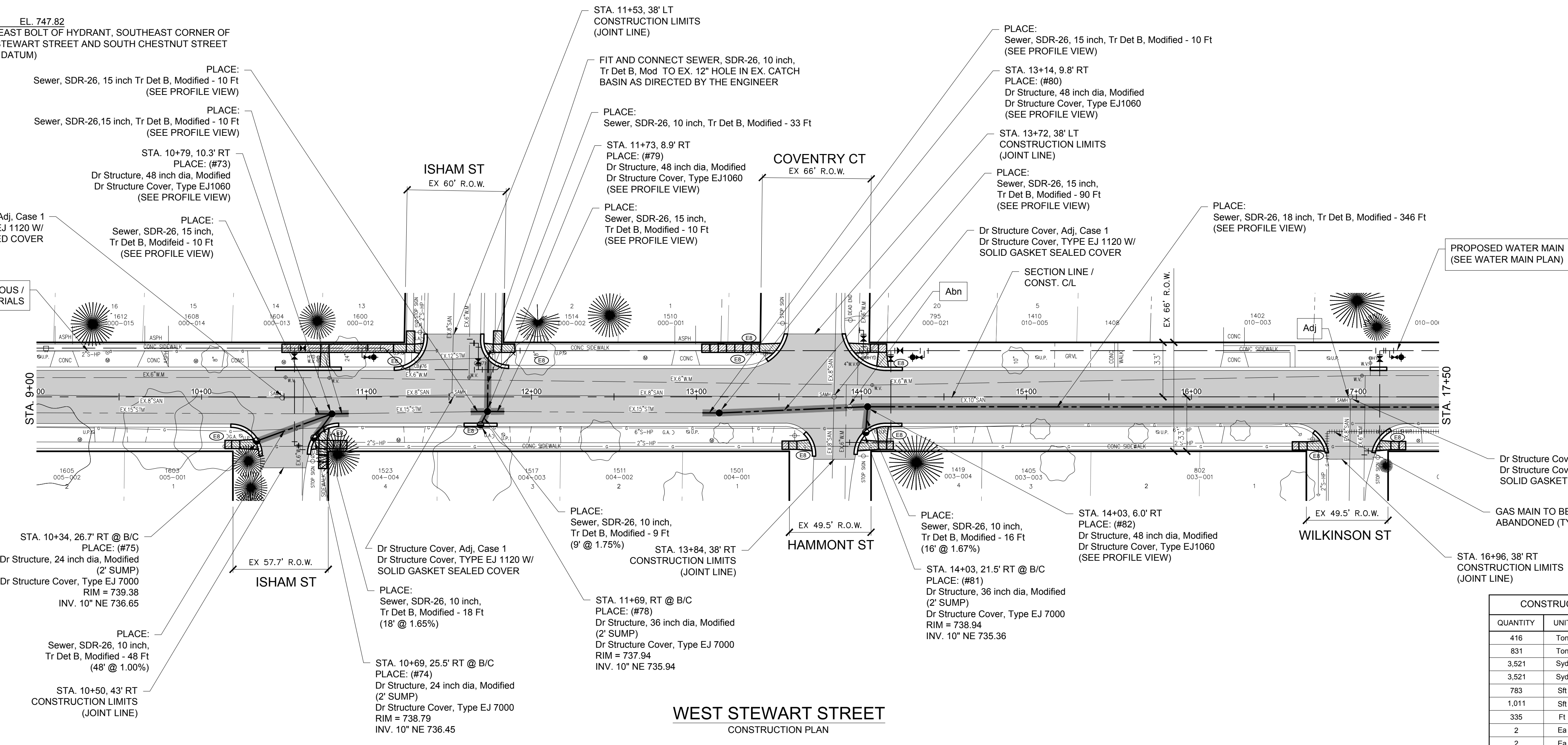
BM #1 EL. 748.10'  
NORTHEAST BOLT OF HYDRANT, NORTHEAST CORNER OF  
WEST STEWART STREET AND SOUTH CHESTNUT STREET  
(LOCAL DATUM)

BM #2 EL. 747.82  
NORTHEAST BOLT OF HYDRANT, SOUTHEAST CORNER OF  
WEST STEWART STREET AND SOUTH CHESTNUT STREET  
(LOCAL DATUM)



- LEGEND**
- Curb and Gutter, Conc, Det F4, Modified
  - Sewer, SDR-26, \_ inch, Tr Det B, Modified
  - Dr Structure, \_ inch dia, Modified (Catch Basin, Manhole)
  - HMA / HMA Approach
  - ▨ Driveway, Nonrein, Conc, \_ inch
  - ▨ Aggregate Approach, \_ inch
  - ▨ Sidewalk, Conc, \_ inch
  - ▨ Sidewalk, Ramp, Conc, \_ inch
  - Abn Dr Structure, Abandon
  - Adj Dr Structure Cover, Adj, Case \_ / Valve Box, Adj
  - ⊖ STANDARD SOIL EROSION KEY

CAUTION! HAZARDOUS / FLAMMABLE MATERIALS

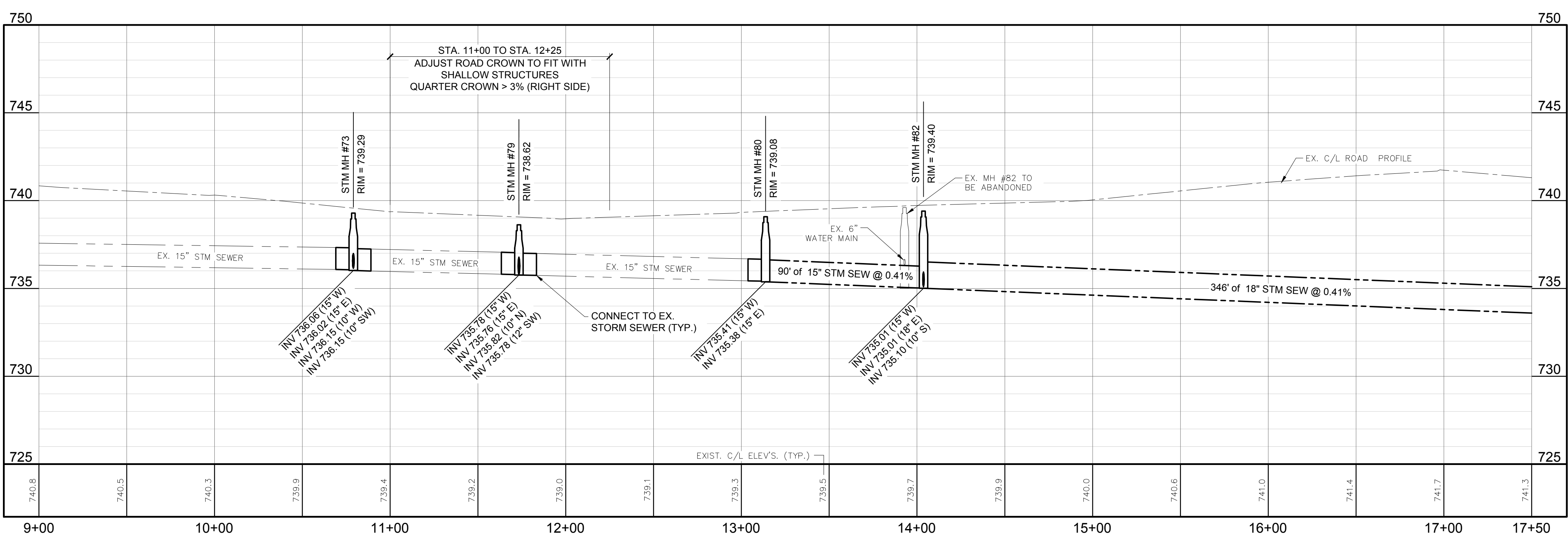


**WEST STEWART STREET**  
CONSTRUCTION PLAN

NOTE:  
CONTRACTOR SHALL PROVIDE SUFFICIENT PROTECTION  
FOR BOTH MOTORISTS AND WORKERS THROUGHOUT  
WORKSITE SO AS TO ALLOW SAFE PASSAGE AROUND  
WORK AREAS - AS DIRECTED BY THE ENGINEER

**CONSTRUCTION QUANTITIES (THIS SHEET)**

QUANTITY	UNIT	WORK ITEM
416	Ton	HMA, 5E3
831	Ton	HMA, 2C
3,521	Syd	Aggregate Base, 6 inch, Modified
3,521	Syd	Geotextile, Separator
783	Sft	Sidewalk, Conc, 4 inch
1,011	Sft	Sidewalk Ramp, Conc, 4 inch
335	Ft	Curb and Gutter, Conc, Det F4, Modified
2	Ea	Dr Structure, 24 inch dia, Modified
2	Ea	Dr Structure, 36 inch dia, Modified
4	Ea	Dr Structure, 48 inch dia, Modified
4	Ea	Dr Structure Cover, Type EJ 1060
4	Ea	Dr Structure Cover, Type EJ 7000
4	Ea	Dr Structure Cover, Adj, Case 1
4	Ea	Dr Structure Cover, Type EJ 1120 W/ SOLID GASKET SEALED COVER
124	Ft	Sewer, SDR-26, 10 inch, Tr Det B, Modified
140	Ft	Sewer, SDR-26, 15 inch, Tr Det B, Modified
346	Ft	Sewer, SDR-26, 18 inch, Tr Det B, Modified



Know what's below.  
Call before you dig.

CITY OF OWOSSO, MICHIGAN  
ENGINEERING DIVISION  
DEPT. OF PUBLIC SERVICE

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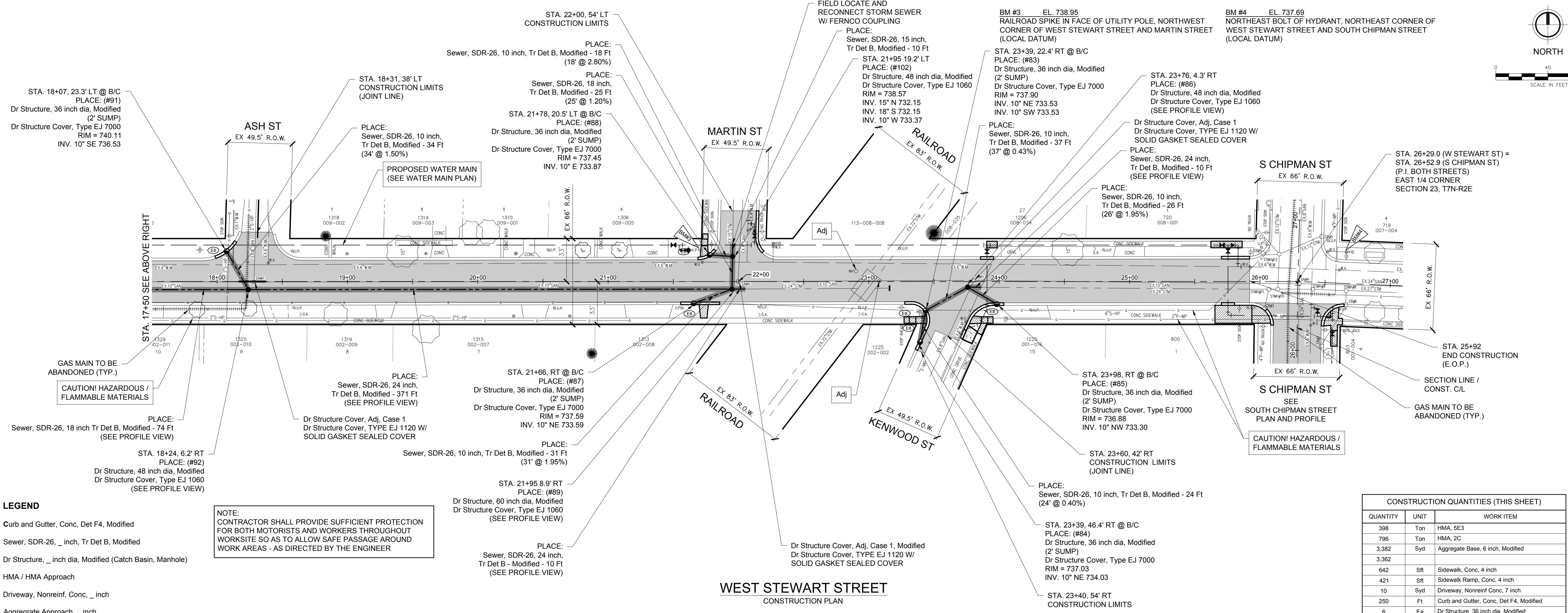
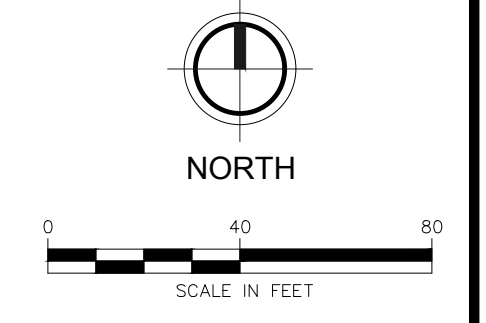
BENCH MARK DATA	DESCRIPTION

2017 STREET PROGRAM  
ROAD PLAN AND PROFILE -  
W. STEWART ST

JUNE 2017  
PROJECT NO. 830300

FIELD BOOK  
PG.

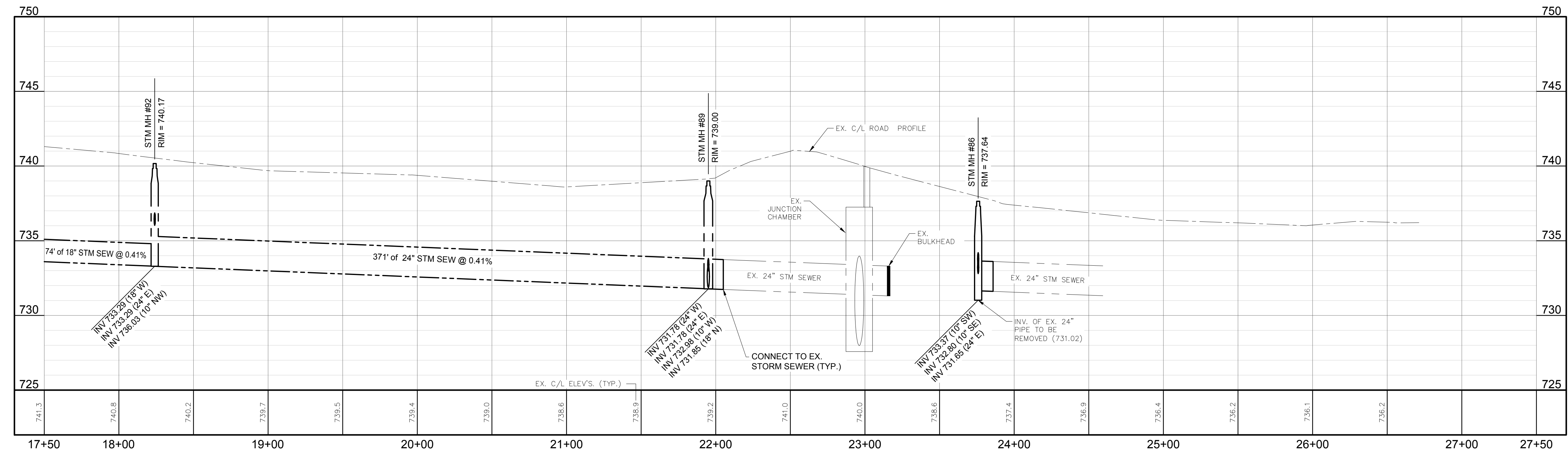
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APPROVED BY: \_\_\_\_\_



- LEGEND**
- Curb and Gutter, Conc. Det F4, Modified
  - Sewer, SDR-26, inch, Tr Det B, Modified
  - Dr Structure, inch dia, Modified (Catch Basin, Manhole)
  - HMA / HMA Approach
  - Driveway, Nonreinf, Conc, inch
  - Aggregate Approach, inch
  - Sidewalk, Conc, inch
  - Sidewalk, Ramp, Conc, inch
  - Dr Structure, Abandon
  - Dr Structure Cover, Adj, Case, Valve Box, Adj
  - STANDARD SOIL EROSION KEY

**NOTE:**  
CONTRACTOR SHALL PROVIDE SUFFICIENT PROTECTION FOR BOTH MOTORISTS AND WORKERS THROUGHOUT WORKSITE SO AS TO ALLOW SAFE PASSAGE AROUND WORK AREAS - AS DIRECTED BY THE ENGINEER

CONSTRUCTION QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
398	Ton	HMA, 5E3
796	Ton	HMA, 2C
3,382	Syd	Aggregate Base, 6 inch, Modified
3,362		
642	SF	Sidewalk, Conc, 4 inch
421	SF	Sidewalk Ramp, Conc, 4 inch
10	Syd	Driveway, Nonreinf Conc, 7 inch
250	Ft	Curb and Gutter, Conc, Det F4, Modified
6	Ea	Dr Structure, 36 inch dia, Modified
3	Ea	Dr Structure, 48 inch dia, Modified
1	Ea	Dr Structure, 60 inch dia, Modified
4	Ea	Dr Structure Cover, Type EJ 1060
6	Ea	Dr Structure Cover, Type EJ 7000
3	Ea	Dr Structure Cover, Adj, Case 1
3	Ea	Dr Structure Cover, Type EJ 1120 W/ SOLID GASKET SEALED COVER
170	Ft	Sewer, SDR-26, 10 inch, Tr Det B, Modified
10	Ft	Sewer, SDR-26, 15 inch, Tr Det B, Modified
99	Ft	Sewer, SDR-26, 18 inch, Tr Det B, Modified
391	Ft	Sewer, SDR-26, 24 inch, Tr Det B, Modified



NO.	REVISIONS	DATE	BY

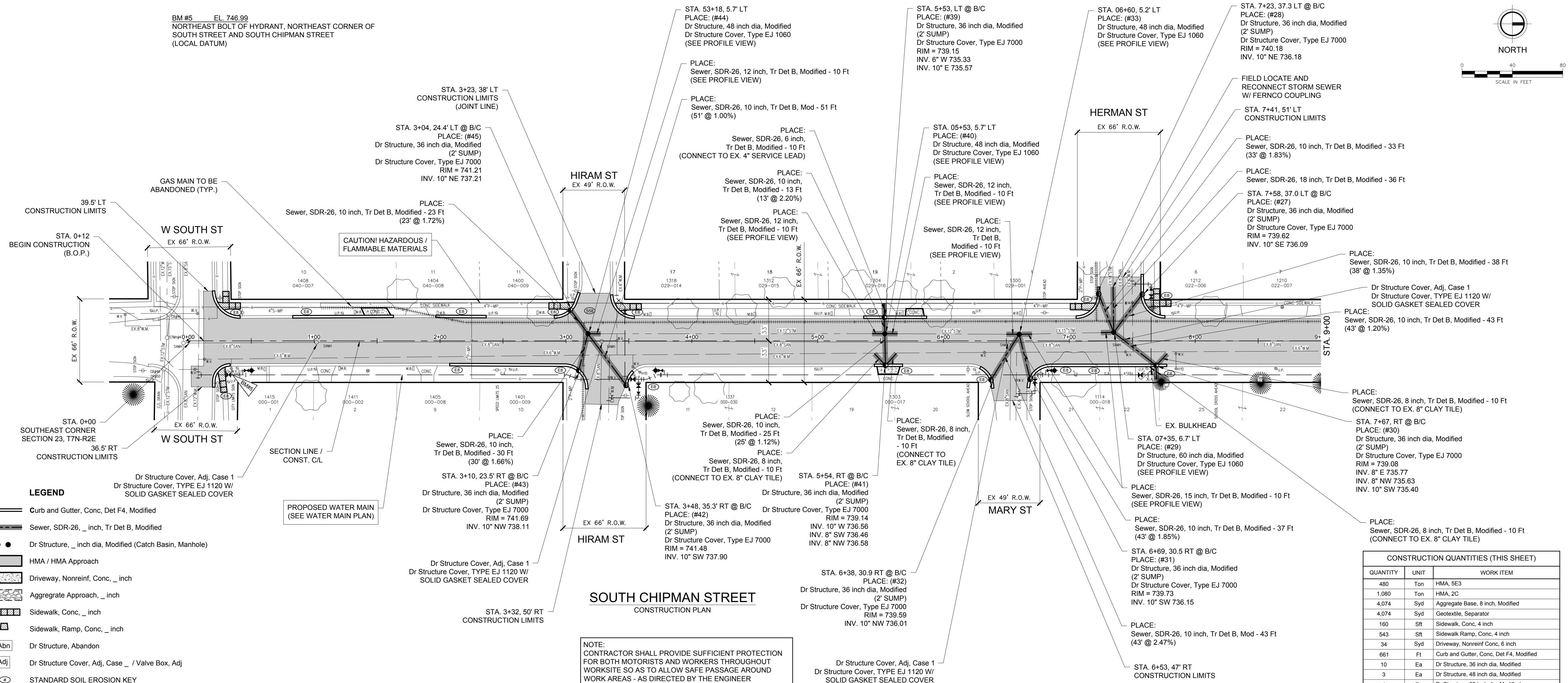
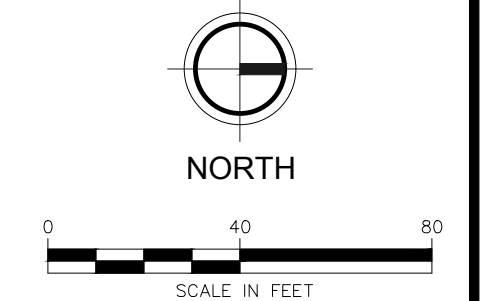
**2017 STREET PROGRAM**  
ROAD PLAN AND PROFILE -  
W. STEWART ST

BENCH MARK DATA  
ELEV.

FIELD BOOK  
PG.

JUNE 2017  
PROJECT NO. 830300

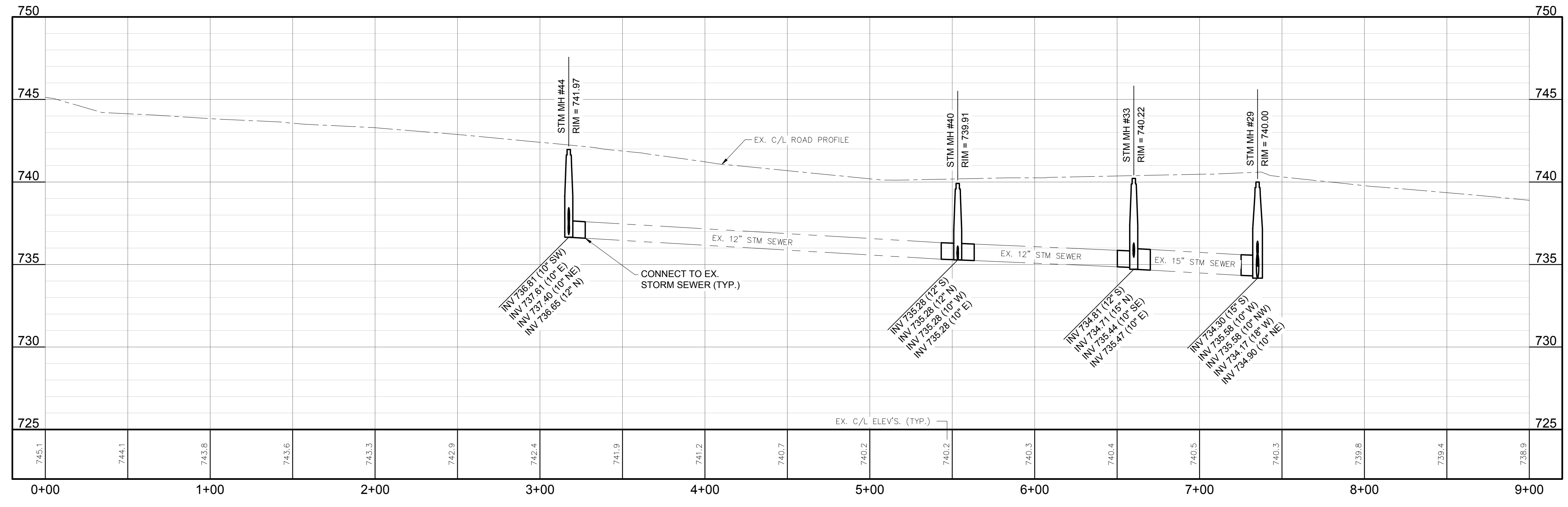




**SOUTH CHIPMAN STREET  
CONSTRUCTION PLAN**

**CONSTRUCTION QUANTITIES (THIS SHEET)**

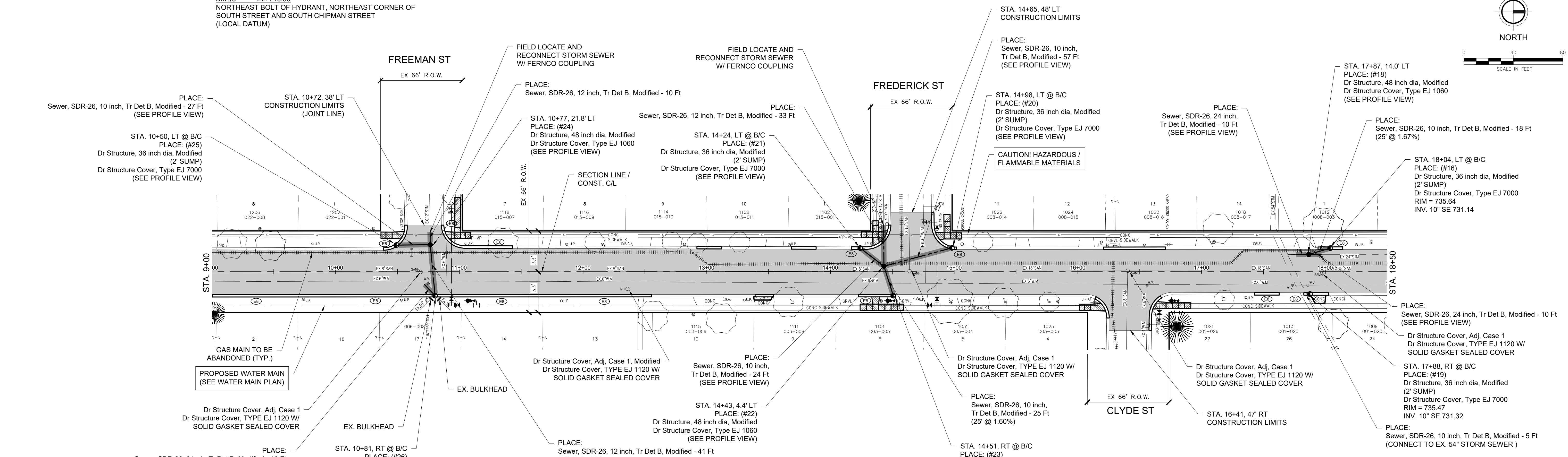
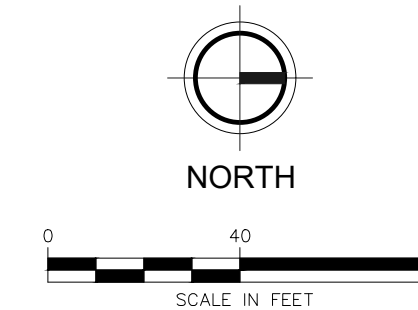
QUANTITY	UNIT	WORK ITEM
480	Ton	HMA, 5E3
1,080	Ton	HMA, 2C
4,074	Syd	Aggregate Base, 8 inch, Modified
4,074	Syd	Geotextile, Separator
160	Sft	Sidewalk, Conc, 4 inch
543	Sft	Sidewalk Ramp, Conc, 4 inch
34	Syd	Driveway, Nonreinf, Conc, 6 inch
661	Ft	Curb and Gutter, Conc, Det F4, Modified
10	Ea	Dr Structure, 36 inch dia, Modified
3	Ea	Dr Structure, 48 inch dia, Modified
1	Ea	Dr Structure, 60 inch dia, Modified
4	Ea	Dr Structure Cover, Type EJ 1060
10	Ea	Dr Structure Cover, Type EJ 7000
4	Ea	Dr Structure Cover, Adj, Case 1, Modified
4	Ea	Dr Structure Cover, Type EJ 1120 W/ SOLID GASKET SEALED COVER
10	Ft	Sewer, SDR-26, 6 inch, Tr Det B, Modified
40	Ft	Sewer, SDR-26, 8 inch, Tr Det B, Modified
336	Ft	Sewer, SDR-26, 10 inch, Tr Det B, Modified
40	Ft	Sewer, SDR-26, 12 inch, Tr Det B, Modified
20	Ft	Sewer, SDR-26, 15 inch, Tr Det B, Modified
36	Ft	Sewer, SDR-26, 18 inch, Tr Det B, Modified



NO.	REVISIONS	DATE	BY

CHECKED BY: ORIGINAL PLAN APPROVED BY:

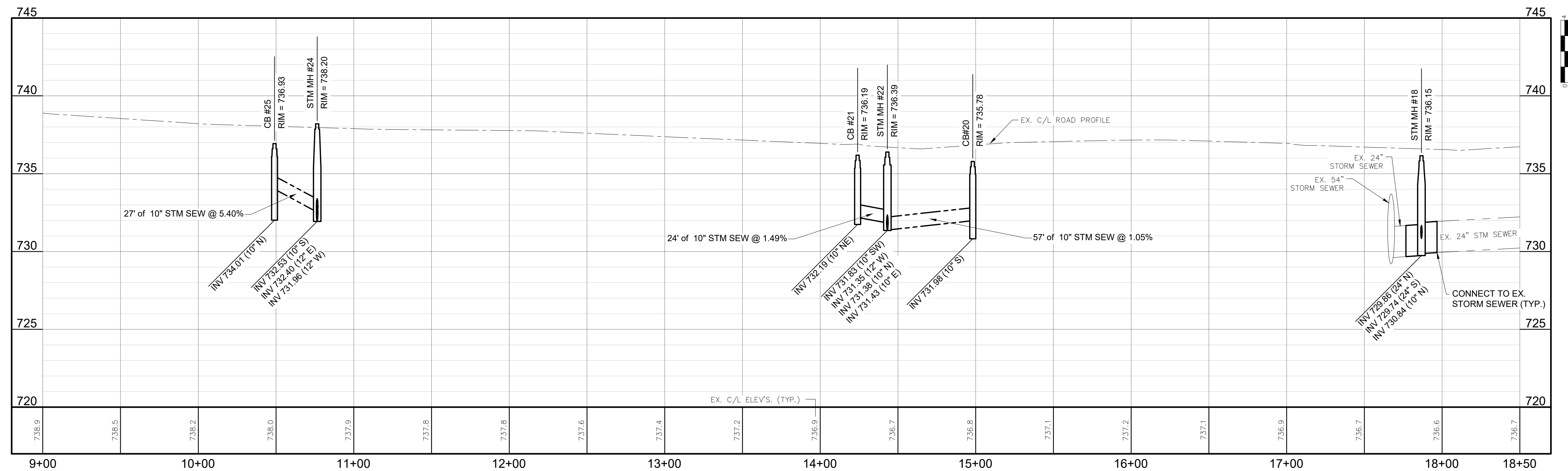
BM #5 EL. 746.99  
 NORTHEAST BOLT OF HYDRANT, NORTHEAST CORNER OF  
 SOUTH STREET AND SOUTH CHIPMAN STREET  
 (LOCAL DATUM)



- LEGEND**
- Curb and Gutter, Conc, Det F4, Modified
  - Sewer, SDR-26, inch, Tr Det B, Modified
  - Dr Structure, inch dia, Modified (Catch Basin, Manhole)
  - HMA / HMA Approach
  - Driveway, Nonreinf, Conc, inch
  - Aggregate Approach, inch
  - Sidewalk, Conc, inch
  - Sidewalk, Ramp, Conc, inch
  - Dr Structure, Abandon
  - Dr Structure Cover, Adj, Case / Valve Box, Adj
  - STANDARD SOIL EROSION KEY

**NOTE:**  
 CONTRACTOR SHALL PROVIDE SUFFICIENT PROTECTION  
 FOR BOTH MOTORISTS AND WORKERS THROUGHOUT  
 WORKSITE SO AS TO ALLOW SAFE PASSAGE AROUND  
 WORK AREAS - AS DIRECTED BY THE ENGINEER

CONSTRUCTION QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
489	Ton	HMA, 5E3
1,100	Ton	HMA, 2C
4,151	Syd	Aggregate Base, 8 inch, Modified
4,151	Syd	Geotextile, Separator
465	Sft	Sidewalk, Conc, 4 inch
680	Sft	Sidewalk Ramp, Conc, 4 inch
12	Syd	Driveway, Nonreinf Conc, 6 inch
761	Ft	Curb and Gutter, Conc, Det F4, Modified
7	Ea	Dr Structure, 36 inch dia, Modified
3	Ea	Dr Structure, 48 inch dia, Modified
3	Ea	Dr Structure Cover, Type EJ 1060
7	Ea	Dr Structure Cover, Type EJ 7000
4	Ea	Dr Structure Cover, Adj, Case 1
4	Ea	Dr Structure Cover, Type EJ 1120 W/ SOLID GASKET SEALED COVER
10	Ft	Sewer, SDR-26, 8 inch, Tr Det B, Modified
129	Ft	Sewer, SDR-26, 10 inch, Tr Det B, Modified
84	Ft	Sewer, SDR-26, 12 inch, Tr Det B, Modified
20	Ft	Sewer, SDR-26, 24 inch, Tr Det B, Modified



CITY OF OWOSSO, MICHIGAN  
 ENGINEERING DIVISION  
 DEPT. OF PUBLIC SERVICE

NO.	REVISIONS	DATE	BY

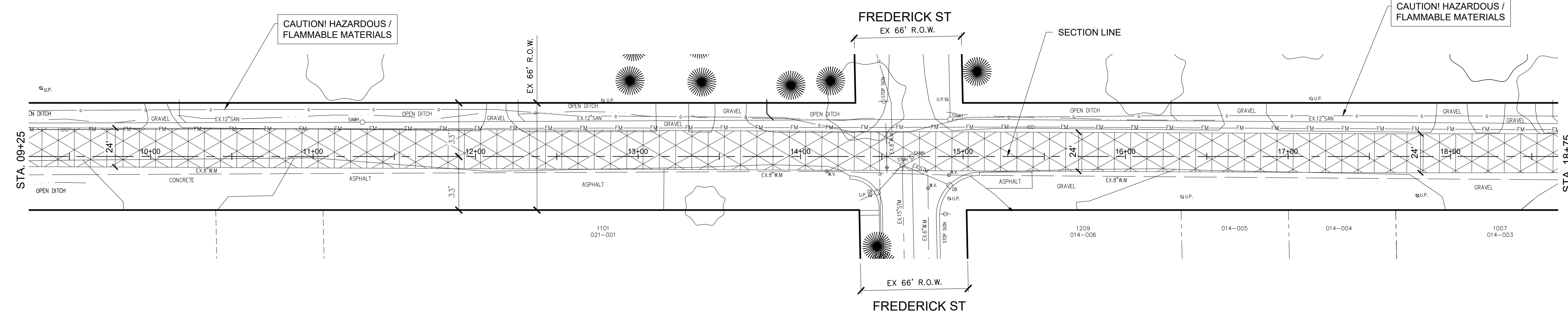
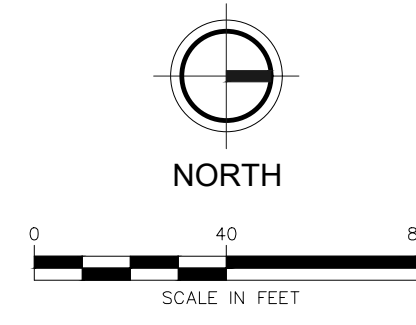
BENCH MARK DATA	DESCRIPTION

2017 STREET PROGRAM  
 ROAD PLAN AND PROFILE -  
 S. CHIPMAN ST  
 JUNE 2017  
 PROJECT NO. 830300  
 FIELD BOOK  
 PG.









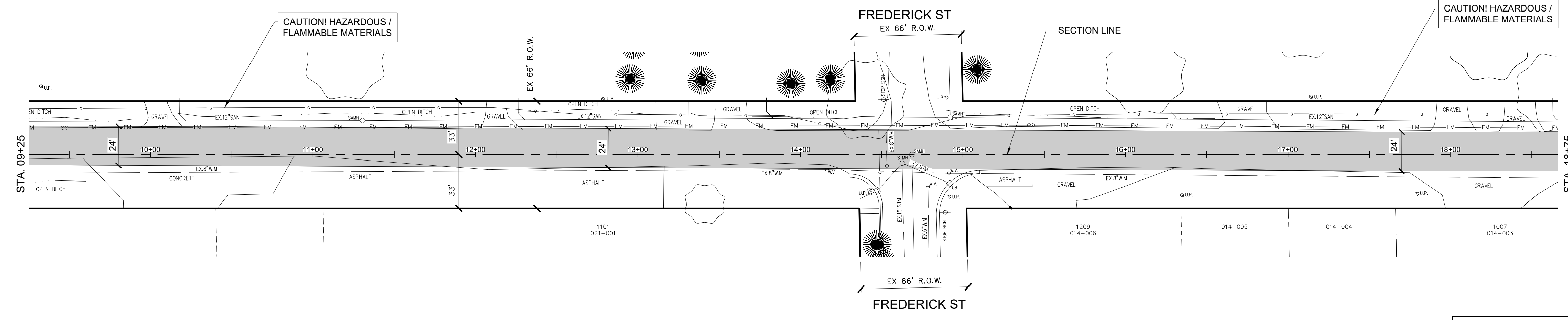
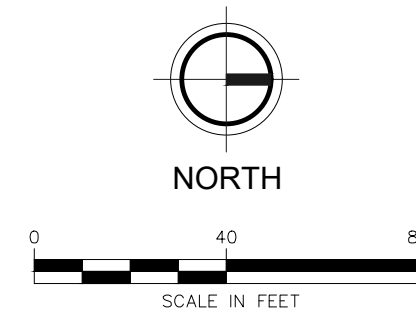
**SOUTH CHESTNUT STREET  
REMOVAL PLAN**

NOTES:  
FOR GRAVEL DRIVE APPROACHES: CONSTRUCT A ONE FOOT FLARE (TYP. ALL LOCATIONS), THEN BLEND WITH APPROACH, CL II, LM.  
  
FOR CONCRETE APPROACHES: SAWCUT AND REMOVE PAVEMENT AS NECESSARY TO ACHIEVE 12 FOOT LANE WIDTH FROM C/L OF STREET.

NOTE:  
CONTRACTOR SHALL PROVIDE SUFFICIENT PROTECTION FOR BOTH MOTORISTS AND WORKERS THROUGHOUT WORKSITE SO AS TO ALLOW SAFE PASSAGE AROUND WORK AREAS - AS DIRECTED BY THE ENGINEER

REMOVAL QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
2,534	Syd	HMA Base Crushing and Shaping, Modified
2,534	Syd	Asphalt Cement Stabilized Base Course
4,054	Gal	Asphalt Cement Binder
400	Ft	Saw Cutting
90	Syd	Pavt, Rem

**LEGEND**  
 HMA Base Crushing and Shaping, Modified  
 STANDARD SOIL EROSION KEY



**SOUTH CHESTNUT STREET  
CONSTRUCTION PLAN**

**LEGEND**  
 HMA  
 STANDARD SOIL EROSION KEY

CONSTRUCTION QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
298	Ton	HMA, 13A
5	Cyd	Approach, CL II, LM
1,770	Ft	Pavt Mtkg, Waterborne, 4 inch, White

NO.	REVISIONS	BY	DATE

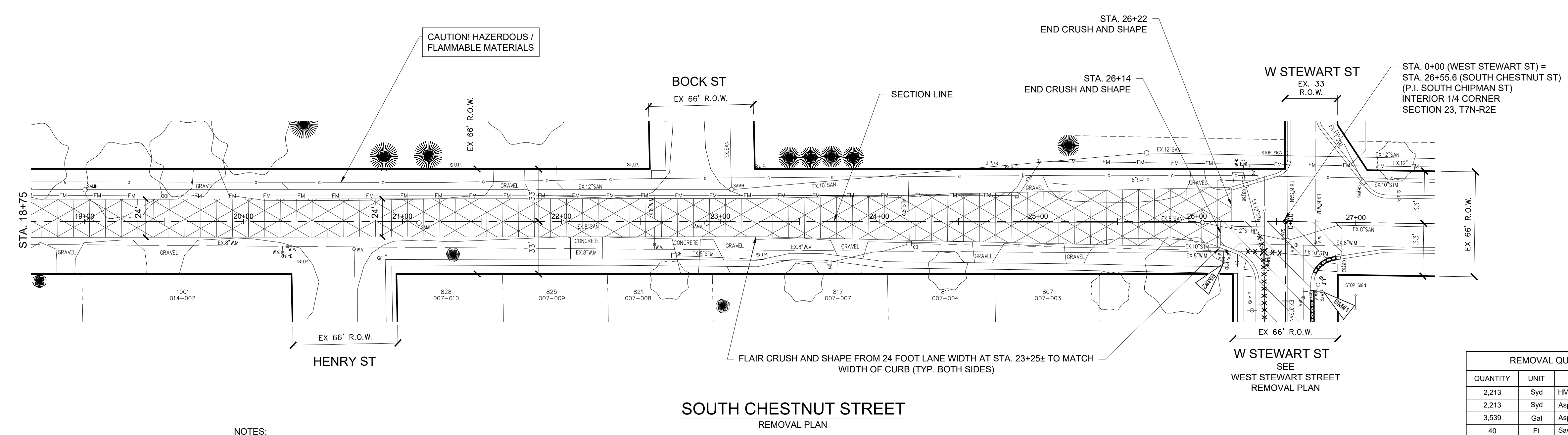
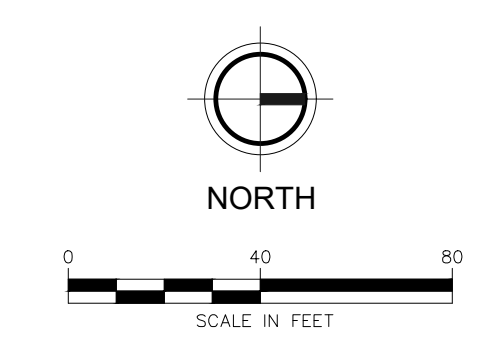
BENCHMARK DATA	DESCRIPTION
ELEV.	

2017 STREET PROGRAM  
REMOVAL / CONSTRUCTION PLAN -  
SOUTH CHESTNUT STREET  
JUNE 2017  
PROJECT NO. 830300  
FIELD BOOK  
PG.



BM #1 EL. 748.10'  
NORTHEAST BOLT OF HYDRANT, NORTHEAST CORNER OF  
WEST STEWART STREET AND SOUTH CHESTNUT STREET  
(LOCAL DATUM)

BM #2 EL. 747.82  
NORTHEAST BOLT OF HYDRANT, SOUTHEAST CORNER OF  
WEST STEWART STREET AND SOUTH CHESTNUT STREET  
(LOCAL DATUM)



REMOVAL QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
2,213	Syd	HMA Base Crushing and Shaping, Modified
2,213	Syd	Asphalt Cement Stabilized Base Course
3,539	Gal	Asphalt Cement Binder
40	Ft	Saw Cutting
9	Syd	Pavt. Rem

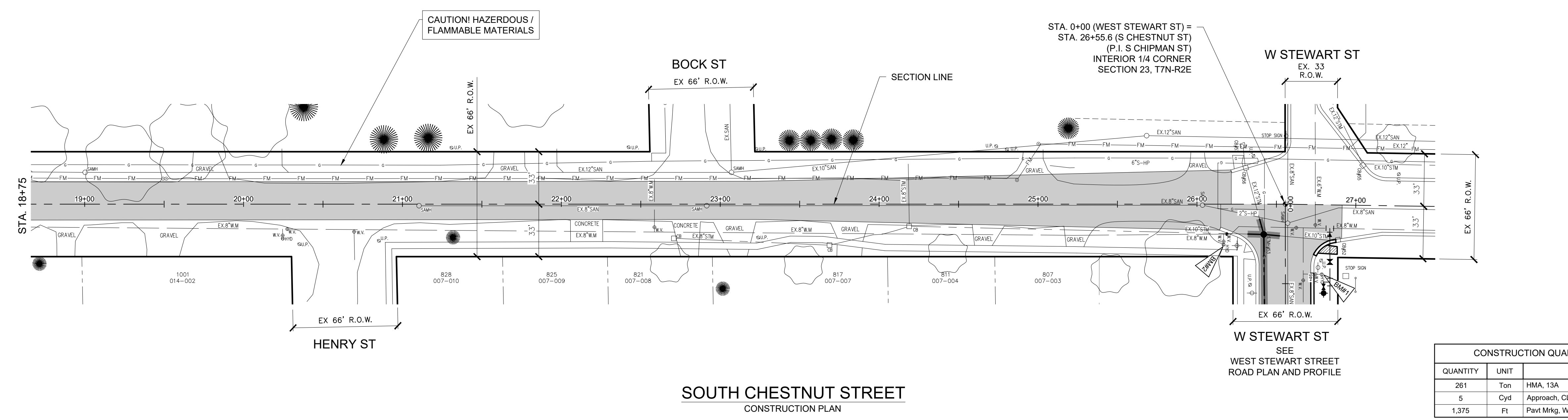
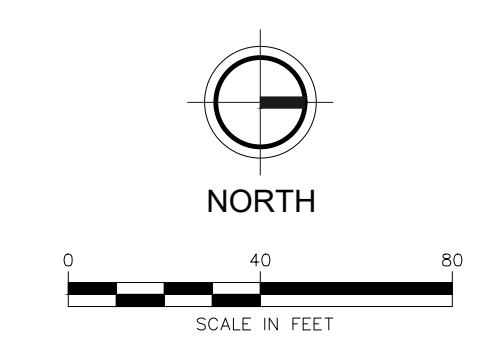
NOTES:  
FOR GRAVEL DRIVE APPROACHES: CONSTRUCT A ONE FOOT FLARE (TYP. ALL LOCATIONS), THEN BLEND WITH APPROACH, CL II, LM.  
FOR CONCRETE APPROACHES: SAWCUT AND REMOVE PAVEMENT AS NECESSARY TO ACHIEVE 12 FOOT LANE WIDTH FROM C/L OF STREET.

NOTE:  
CONTRACTOR SHALL PROVIDE SUFFICIENT PROTECTION FOR BOTH MOTORISTS AND WORKERS THROUGHOUT WORKSITE SO AS TO ALLOW SAFE PASSAGE AROUND WORK AREAS - AS DIRECTED BY THE ENGINEER

**LEGEND**  
 HMA Base Crushing and Shaping, Modified  
 STANDARD SOIL EROSION KEY

BM #1 EL. 748.10'  
NORTHEAST BOLT OF HYDRANT, NORTHEAST CORNER OF  
WEST STEWART STREET AND SOUTH CHESTNUT STREET  
(LOCAL DATUM)

BM #2 EL. 747.82  
NORTHEAST BOLT OF HYDRANT, SOUTHEAST CORNER OF  
WEST STEWART STREET AND SOUTH CHESTNUT STREET  
(LOCAL DATUM)



CONSTRUCTION QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
261	Ton	HMA, 13A
5	Cyd	Approach, CL II, LM
1,375	Ft	Pavt Mkg, Waterborne, 4 inch, White

**LEGEND**  
 HMA  
 STANDARD SOIL EROSION KEY

NO.	REVISIONS	DATE	BY

BENCH MARK DATA	DESCRIPTION	ELEV.





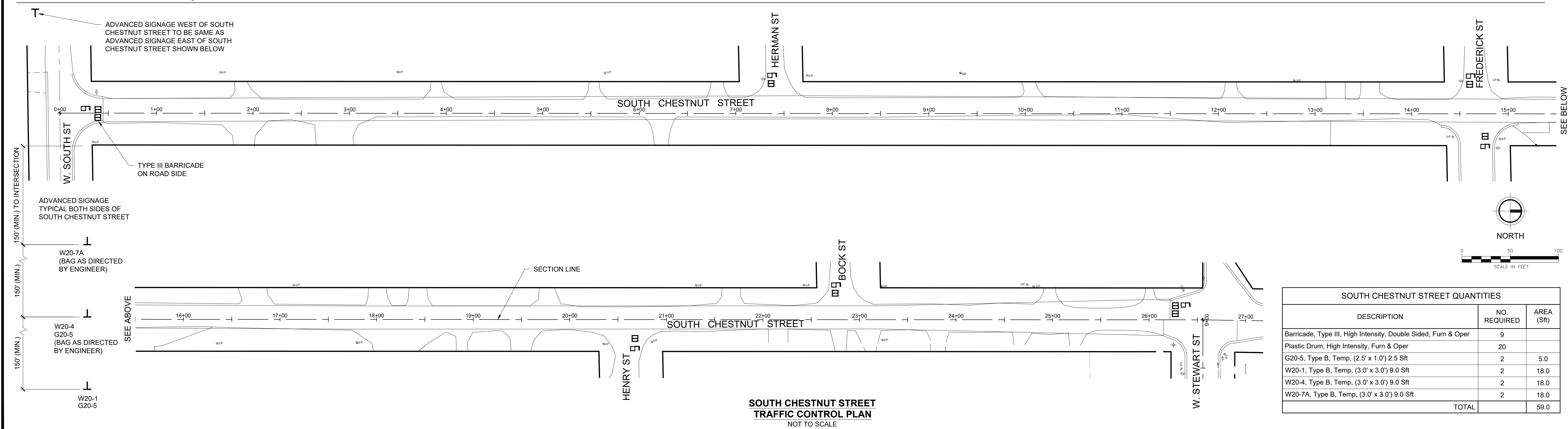
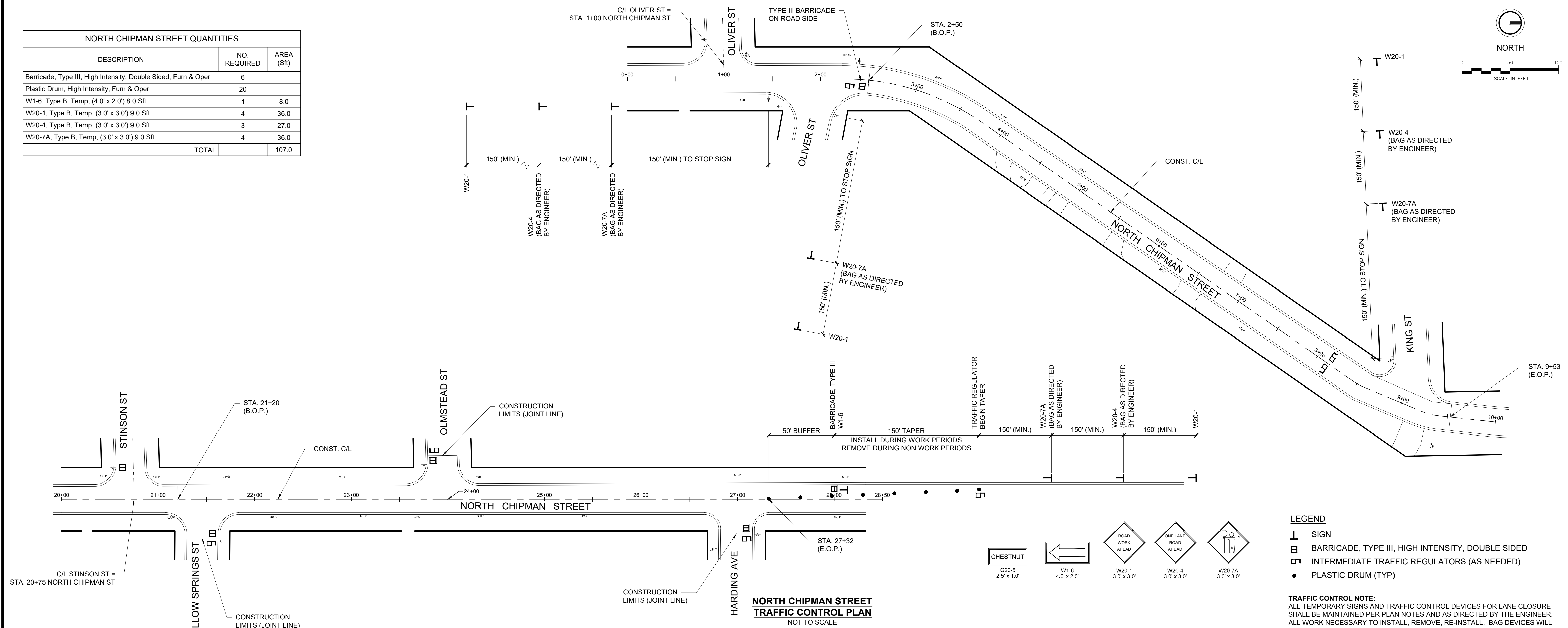








NORTH CHIPMAN STREET QUANTITIES		
DESCRIPTION	NO. REQUIRED	AREA (Sft)
Barricade, Type III, High Intensity, Double Sided, Furn & Oper	6	
Plastic Drum, High Intensity, Furn & Oper	20	
W1-6, Type B, Temp. (4.0' x 2.0') 8.0 Sft	1	8.0
W20-1, Type B, Temp. (3.0' x 3.0') 9.0 Sft	4	36.0
W20-4, Type B, Temp. (3.0' x 3.0') 9.0 Sft	3	27.0
W20-7A, Type B, Temp. (3.0' x 3.0') 9.0 Sft	4	36.0
<b>TOTAL</b>		<b>107.0</b>



SOUTH CHESTNUT STREET QUANTITIES		
DESCRIPTION	NO. REQUIRED	AREA (Sft)
Barricade, Type III, High Intensity, Double Sided, Furn & Oper	9	
Plastic Drum, High Intensity, Furn & Oper	20	
G20-5, Type B, Temp. (2.5' x 1.0') 2.5 Sft	2	5.0
W20-1, Type B, Temp. (3.0' x 3.0') 9.0 Sft	2	18.0
W20-4, Type B, Temp. (3.0' x 3.0') 9.0 Sft	2	18.0
W20-7A, Type B, Temp. (3.0' x 3.0') 9.0 Sft	2	18.0
<b>TOTAL</b>		<b>59.0</b>

**CITY OF OWOSSO, MICHIGAN  
ENGINEERING DIVISION  
DEPT. OF PUBLIC SERVICE**

NO.	REVISIONS	DATE	BY

CHECKED BY: \_\_\_\_\_  
APPROVED BY: \_\_\_\_\_

BENCH MARK DATA: \_\_\_\_\_  
ELEV.: \_\_\_\_\_

**2017 STREET PROGRAM  
TRAFFIC CONTROL PLAN**

FIELD BOOK: \_\_\_\_\_  
PAGE: \_\_\_\_\_  
JUNE 2017  
PROJECT NO. 830300

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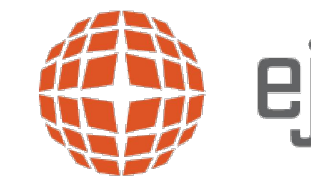


**WATER MAIN CONSTRUCTION NOTES**

1. ALL WATER MAIN MAIN LINE PROPOSED FOR THIS PROJECT HAS BEEN DESIGNED FOR AND SHALL BECOME A PUBLIC SYSTEM.
2. A WATER MAIN CONSTRUCTION PERMIT FROM THE MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY MUST BE ISSUED PRIOR TO BEGINNING THE CONSTRUCTION OF ANY WATER MAIN IN THIS PROJECT.
3. ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF OWOSSO SPECIAL PROVISION FOR WATER MAIN INSTALLATION AND THE STANDARD DETAILS.
4. ALL PUBLIC WATER MAIN SHALL BE OWNED AND MAINTAINED BY THE CITY OF OWOSSO UPON COMPLETION OF THE PROJECT.
5. ALL PUBLIC WATER MAIN SHALL BE PVC AWWA C900/C909. TRACER WIRE AND BOXES SHALL CONFORM TO THE CITY OF OWOSSO SPECIAL PROVISION FOR WATER MAIN INSTALLATION.
6. GATE VALVES SHALL BE EAST JORDAN RESILIENT SEATED GATE VALVES CONFORMING TO AWWA C509. VALVES SHALL BE VERTICAL, NON-RISING STEM AND OPEN CLOCKWISE. SEE CITY OF OWOSSO SPECIAL PROVISION FOR WATER MAIN INSTALLATION AND STANDARD DETAILS.
7. FIRE HYDRANTS SHALL CONFORM TO THE SPECIFICATION SHOWN ON THIS SHEET.
8. WHERE SANITARY SERVICE LEADS OR OTHER UTILITIES ARE ENCOUNTERED DURING THE CONSTRUCTION OF THE WATER MAIN, THE CONTRACTOR SHALL MAKE ADJUSTMENTS TO EITHER THE WATER MAIN OR EXISTING UTILITY TO PROVIDE CONTINUOUS SERVICE TO PROPERTIES ALONG THE ROUTE OF CONSTRUCTION. ALL WORK INCLUDING THE REBORING OF SANITARY SEWER SERVICE LEADS TO ACCOMMODATE CONSTRUCTION OR ADJUSTING WATER MAIN CONSTRUCTION TO CLEAR EXISTING SERVICES SHALL BE CONSIDERED INCLUSIVE TO CONSTRUCTION OF THE WATER MAIN.
9. PRESSURE TAPS TO EXISTING WATER MAINS AND CONNECTIONS TO EXISTING VALVES SHALL BE MADE ONLY UNDER CITY OF OWOSSO OBSERVATION. ALL VALVE OPENING AND CLOSING SHALL BE BY THE CITY OF OWOSSO PERSONNEL. A FULL DIAMETER STAINLESS STEEL TAPPING SLEEVE IS REQUIRED FOR ALL PRESSURE TAPS.
10. ALL WATER MAIN SHALL HAVE A MINIMUM COVER OVER THE TOP OF THE PIPE OF 5.5 FEET FROM FINISHED GRADE. THE STANDARD LAYING CONDITIONS FOR WATER MAIN SHALL BE A 30" TRENCH WIDTH OR PIPE DIAMETER PLUS 12". THE PIPE SHALL BE LAID ON A 4" PREPARED SAND CUSHION WITH RECESSES TO ACCOMMODATE PIPE BELLS.
11. ALL WATER SERVICE LEADS SHALL HAVE A MINIMUM COVER OVER THE TOP OF THE PIPE OF 5 FEET FROM FINISHED GRADE.
12. ALL TRENCH EXCAVATION UNDER OR WITHIN 5' OF EXISTING OR PROPOSED PAVING SHALL BE BACKFILLED WITH CLASS II COMPACTED GRANULAR MATERIALS.
13. MINIMUM HORIZONTAL SEPARATION BETWEEN WATER MAIN AND SEWERS SHALL BE 10 FEET.
14. CONTRACTOR SHALL RESTRAIN ALL THRUST IN THE SYSTEM BY THE USE OF MEGA-LUG RESTRAINED JOINTS. ALL HYDRANTS, TEES, VERTICAL OR HORIZONTAL BENDS AND FUTURE VALVE CONNECTIONS SHALL BE RESTRAINED. RESTRAINTS SHALL HAVE APPROVAL PRIOR TO BEING INCORPORATED INTO PROJECT CONSTRUCTION.
15. WATER MAINS SHALL BE PRESSURE TESTED IN ACCORDANCE WITH AWWA STANDARD C605, AND DISINFECTED IN ACCORDANCE WITH AWWA STANDARD C651. WATER MAINS SHALL BE TESTED TO 150 PSI FOR 2 HOURS. ALLOWABLE LEAKAGE IS 0.092 GPH/1,000 FT./INCH NOMINAL PIPE DIAMETER @ 150 PSI TEST PRESSURE. WATER MAIN CHLORINATION SHALL BE OBSERVED AND MONITORED BY CITY OF OWOSSO REPRESENTATIVE.
16. WATER SERVICE LEADS SHALL BE TYPE "K" COPPER AND SHALL BE A MINIMUM OF ONE-INCH (1") IN DIAMETER. ALL SERVICE LEADS SHALL BE BORED UNDER ROADWAY. CORPORATIONS SHALL BE BRONZE ALLOY OR BRASS AND COMPLY WITH NSF/ANSI-372 OR NSF/ANSI-61G.
17. THE CONTRACTOR SHALL INSTALL TWO INCH CORPORATIONS ON THE WATERLINE FOR PRESSURE TESTING, CHLORINE ADDITION AND FOR BLOW-OFF PURPOSES. THE CORPORATIONS SHALL HAVE COPPER PIPE EXTENDING TO THE GROUND SURFACE. THE CONTRACTOR SHALL REMOVE THE CORPORATION AND COPPER LINE UPON A SATISFACTORY TEST AND INSTALL A PLUG.
18. THE CONTRACTOR SHALL ENCASE THE WATER MAIN IN CONCRETE WHERE VERTICAL SEPARATION BETWEEN STORM SEWER AND WATER MAIN OR SANITARY SEWER AND WATER MAIN IS LESS THAN EIGHTEEN (18) INCHES, AS PER MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY REQUIREMENTS.

**FREEBORE NOTE:**  
CONTRACTOR SHALL FREEBORE PROPOSED WATER MAIN WHERE NECESSARY TO SAVE/PROTECT TREES OR AVOID EXISTING UTILITIES AND POLES. COST OF FREEBORE SHALL BE INCLUDED IN THE WATER MAIN PAY ITEM. REQUIRED FREEBORE LOCATIONS SHALL BE DETERMINED IN THE FIELD AND ARE NOT SHOWN ON THE PLANS.

**CONSUMERS ENERGY NOTE:**  
ALL UTILITY POLES SHALL BE PROTECTED BY THE CONTRACTOR DURING CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE HIS CONSTRUCTION OPERATIONS WITH AFFECTED UTILITIES AND ADEQUATELY SUPPORT THE POLES.



**WaterMaster® Fire Hydrant Specification**

**WaterMaster® Fire Hydrant Specifications for City of Owosso hydrants with Storz**

1. Manufacturers shall provide sufficient documentation to assure that their hydrant will successfully meet the latest revisions of AWWA Standard C502. Fire hydrants shall be rated for 250 psi working pressure and be listed by Underwriters Laboratories Inc.(UL248) and meet the test requirements of Factory Mutual (1510) at this pressure.
2. Hydrants shall be of a true compression type, opening against the pressure and closing with the pressure. Composition of the main valve shall be a molded rubber having a durometer hardness of 91 +/- 5. The rubber seat valve shall fit a 5/16" opening and not be less than 1" thick.
3. Fire hydrants shall be **three-way** in design, having **Harrington 5" Storz C & X Dome** pumper nozzle, and **2 1/2" Nat Std 2 7/8" Base, C Dome** hose nozzle. Nozzles shall "thread" counterclockwise into hydrant barrel utilizing "O" ring pressure seals. A suitable nozzle lock shall be in place to prevent inadvertent nozzle removal. Wedging devices and/or ductile iron retainer rings to secure nozzles shall not be allowed.
4. The lubrication system shall be sealed from the waterway and any external contaminants by use of "O" ring pressure seals. Anti-friction washers shall be in place above and below the thrust collar of the operating nut to further minimize operating torque. The grease reservoir shall be factory filled with an FDA approved food grade lubricant. Oil shall not be used.
5. The operating nut shall be a one piece design, manufactured of ASTM B-584 bronze. It shall be 1 1/8" **Pentagon- point to flat** in size/shape. The operating nut shall be affixed to the bonnet by means of an ASTM B-584 bronze hold down nut. The hold down nut shall be threaded into the bonnet in such a manner as to prevent accidental disengagement during the opening cycle of the hydrant. A resilient weather seal shall be incorporated with the hold down nut, for the purpose of protecting the operating mechanism from the elements.
6. The direction of opening shall be **right**. An arrow shall be cast on the top of the hydrant to indicate the opening direction.
7. The hydrant bonnet shall be attached to the upper barrel by no more than six bolts and nuts. All nuts and bolts below grade shall be 304 stainless steel.
8. The hydrant will have 6' Depth of bury, unless otherwise noted.
9. Hydrants shall be of the "Traffic Model" design, provided with a safety coupling and flange design that will permit a full 360 degree facing of the nozzles. O-rings shall be the Quad-Ring® type and be installed in a groove on the bottom of the joint so that taping or gluing to the upper standpipe or

- extension is not required. The safety coupling shall be a one piece design. Multiple parts and cast iron not allowed.
10. The operating stem shall be a two piece design, not less than 1 1/4" diameter (excluding threaded or machined areas). Threads shall be Acme type with no 60 deg. V threads allowed. Travel stops shall be in the inlet/shoe and are not allowed in the bonnet area. Screws, pins, bolts or fasteners used in conjunction with the stem coupling shall be stainless steel.
  11. The inside diameter of the hydrant barrels shall not be less than 7 1/4 inches and the hydrant shall be painted **Yellow**.
  12. Heavy duty drip shutoff (top plate) and valve seat shall be high strength manganese bronze. Valve seat shall be installed in a bronze seat ring. Drain shall be **tapped and plugged**, bronze lined and 3/8 inch diameter minimum. They shall operate without the use of springs, toggles, tubes, levers or other intricate synchronizing mechanisms. Lower valve plate shall be a one piece ductile iron casting and not require a separate cap nut. Drains shall be open and flushed during the first 4 turns of opening the hydrant before positively closing while operating the hydrant.
  13. The shoe connection shall be **Mechanical Joint** or as specified. The inlet/shoe shall be fusion bonded epoxy coated per ANSI/AWWA C550 and with an NSF61 approved coating having ample blocking pads for sturdy setting. Six stainless steel bolts and nuts are required to fasten the shoe to the lower barrel. The shoe/inlet shall be directly connected to the standpipe flange. Designs using a sandwich piece in between the standpipe and shoe/inlet shall not be allowed.
  14. External parts- the top bonnet, upper standpipe, lower standpipe and shoe shall be ductile iron to ensure strength throughout the exterior of the hydrant- Gray iron hydrant body parts will not be allowed.
- Municipality reserves the right to accept only those materials which are in full compliance with these specifications and deemed most advantageous to its interests.
- Upon request, supplier shall furnish flow data indicating friction loss in psi at a flow of 1,000 gpm from the pumper nozzle. Such friction loss shall not exceed 2.5 psi. Also, the municipality may request the manufacturing "point of origin" for any/or all hydrant parts. All cast components shall be made in the USA.
- Failure to comply with any of these above requirements is sufficient cause for rejection of proposed hydrants.

Hydrant shall be EJ WaterMaster® 5BR250. 55726D

ejco.com

800 626 4653

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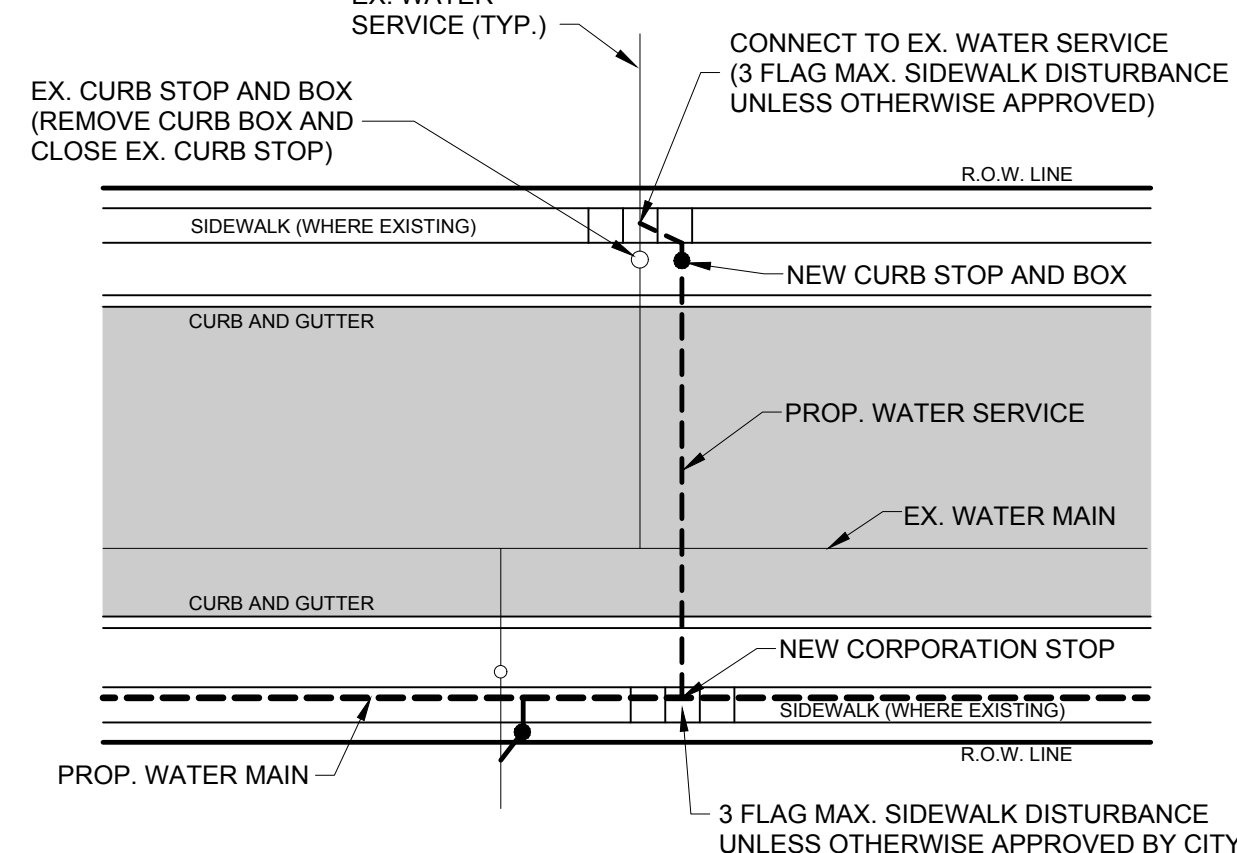
NEW WATER SERVICE, OPEN CUT OR FREEBORE, SHALL INCLUDE ALL LABOR AND MATERIALS REQUIRED TO COMPLETELY INSTALL A NEW WATER SERVICE FROM THE NEW MAIN TO THE EXISTING SERVICE AT THE CURB STOP BOX, INCLUDING CORPORATION, COPPER SERVICE LINE, NEW CURB STOP AND BOX, REMOVING EXISTING CURB BOX AND CLOSING EXISTING CURB STOP, TAPPING THE NEW MAIN, AND MAKING CONNECTION WITH THE EXISTING SERVICE AT THE CURB STOP BOX. LEADS TO OPPOSITE SIDE OF THE ROAD OF THE NEW WATER MAIN WILL BE INSTALLED WITH MORE LENGTH THAN SERVICES INSTALLED ON THE WATER MAIN CONSTRUCTION SIDE.

WATER SERVICES ON THE OPPOSITE SIDE OF THE ROAD OF THE NEW WATER MAIN SHALL BE PAID FOR AS 'NEW WATER SERVICE, FREEBORE' (EA).

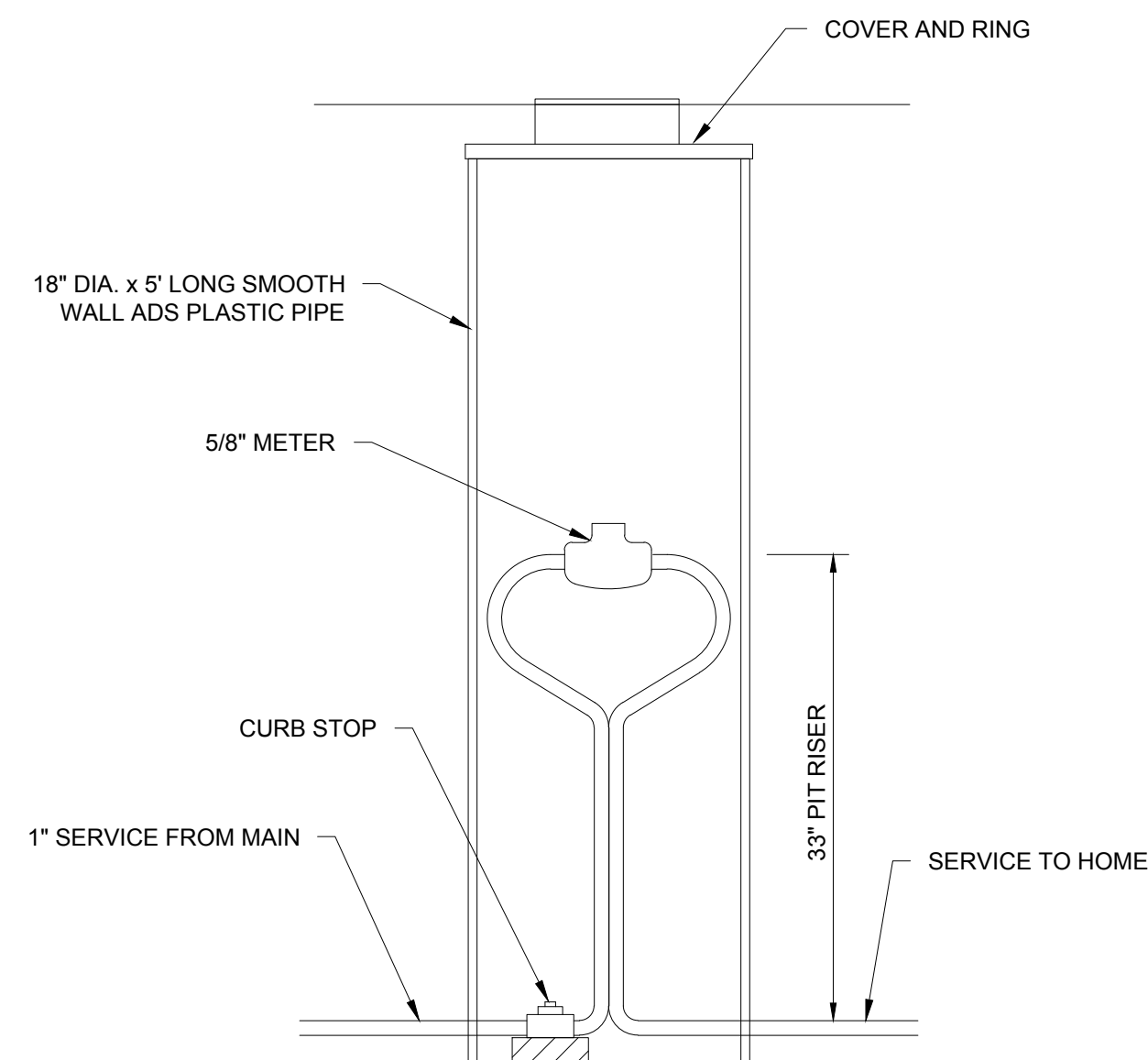
WATER SERVICES ON THE SAME SIDE OF THE ROAD AS THE NEW WATER MAIN SHALL BE PAID FOR AS 'NEW WATER SERVICE, OPEN CUT' (EA).

WHERE THE EXISTING CURB STOP BOX IS LOCATED IN PAVEMENT, PAVEMENT REMOVAL AND DRIVE RESTORATION WILL BE PAID SEPARATELY. CONTRACTOR SHALL MINIMIZE PAVEMENT DISTURBANCE AS DIRECTED BY THE ENGINEER.

NOTE: THE CITY OF OWOSSO RESERVES THE RIGHT TO CLAIM ANY EX. WATER BOXES. ALL UNCLAIMED WATER BOXES BECOME THE PROPERTY OF THE CONTRACTOR.

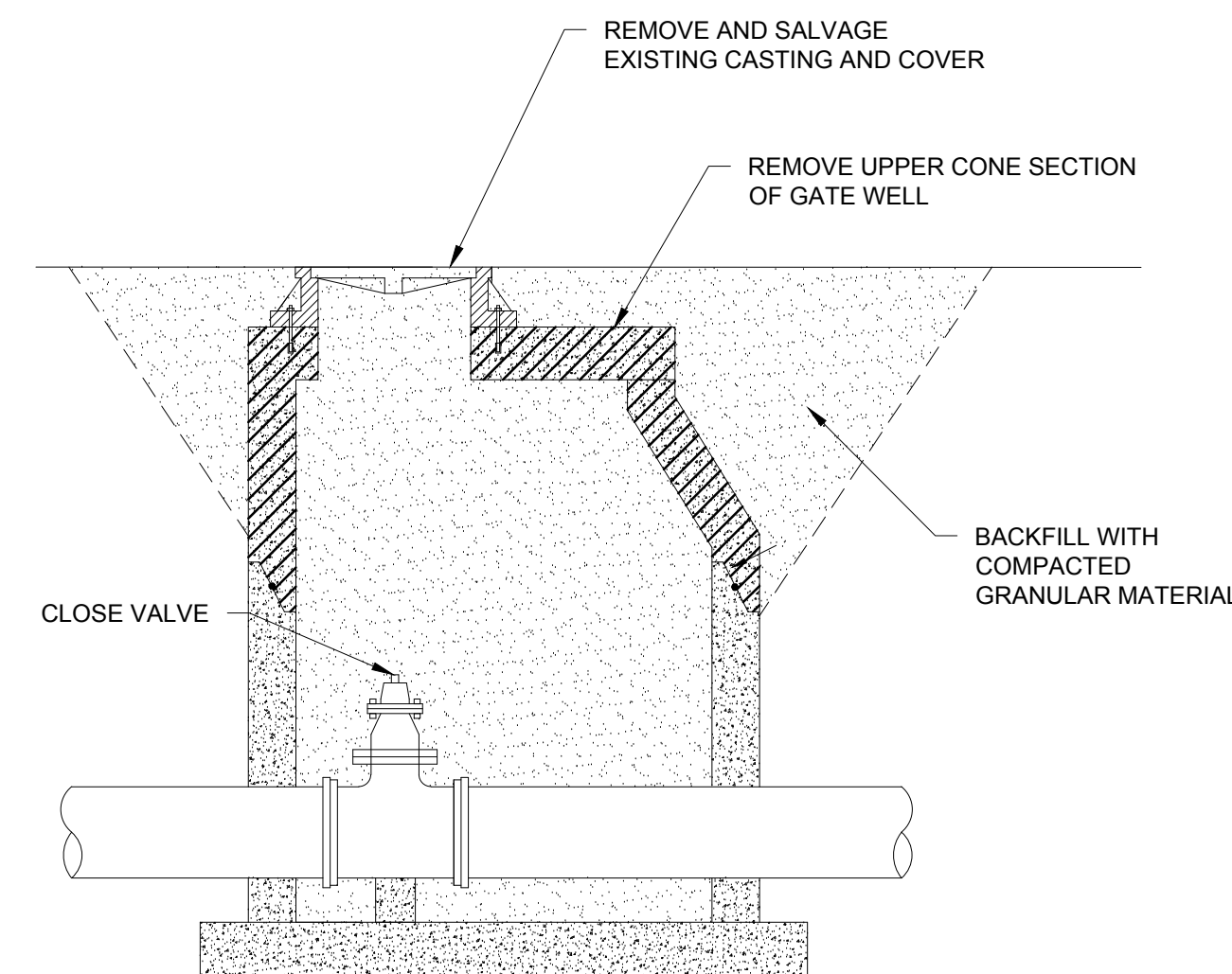


**NEW WATER SERVICE CONNECTION DETAIL**  
NOT TO SCALE



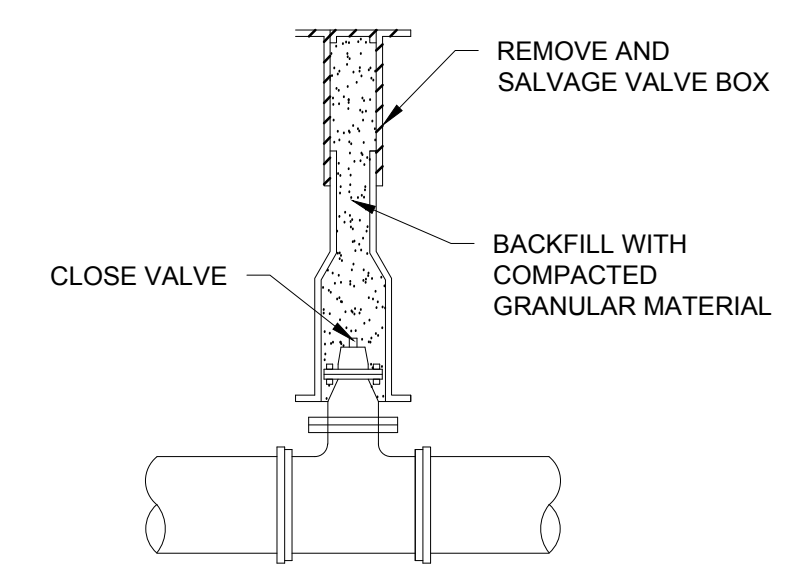
FOR DWELLINGS UTILIZING EXISTING METER PITS, NEW METER PITS WILL BE CONSTRUCTED BY THE CITY OF OWOSSO AS PART OF THIS PROJECT. CONTRACTOR SHALL CONNECT THE NEW SERVICE LEAD TO THE NEW WATER MAIN. RUN THE COPPER SERVICE LEAD TO THE DESIRED LOCATION OF THE METER PIT AS DIRECTED (TYPICALLY NEAR THE R.O.W. LINE), AND CAP.

**METER PIT SCHEMATIC (FOR INFORMATION ONLY)**  
NOT TO SCALE



**EXISTING VALVE WITH MANHOLE ABANDONMENT DETAIL**  
NOT TO SCALE

NOTE: THE CITY RESERVES THE RIGHT TO CLAIM ANY EX. WATER VALVE BOXES AND GATE WELL COVERS AND CASTINGS. ALL UNCLAIMED SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

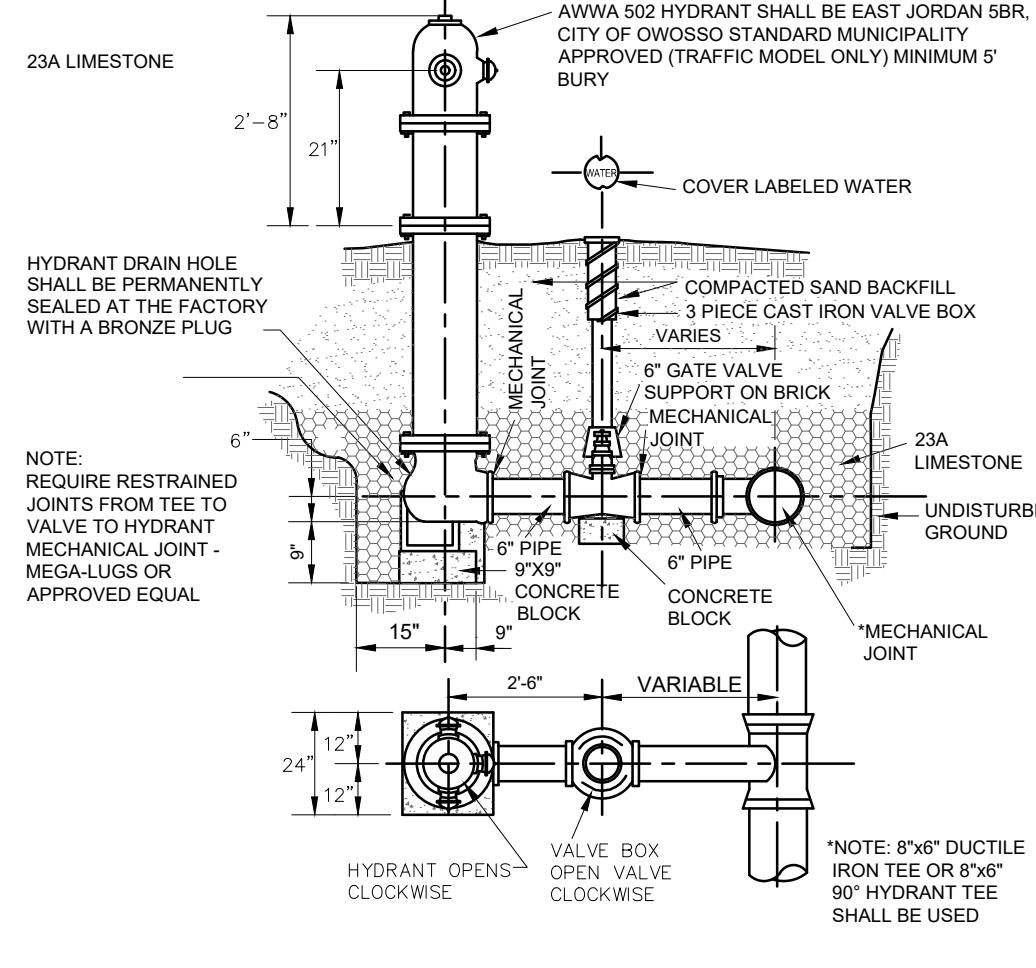


**EXISTING VALVE WITH VALVE BOX ABANDONMENT DETAIL**  
NOT TO SCALE



**NOTES:**

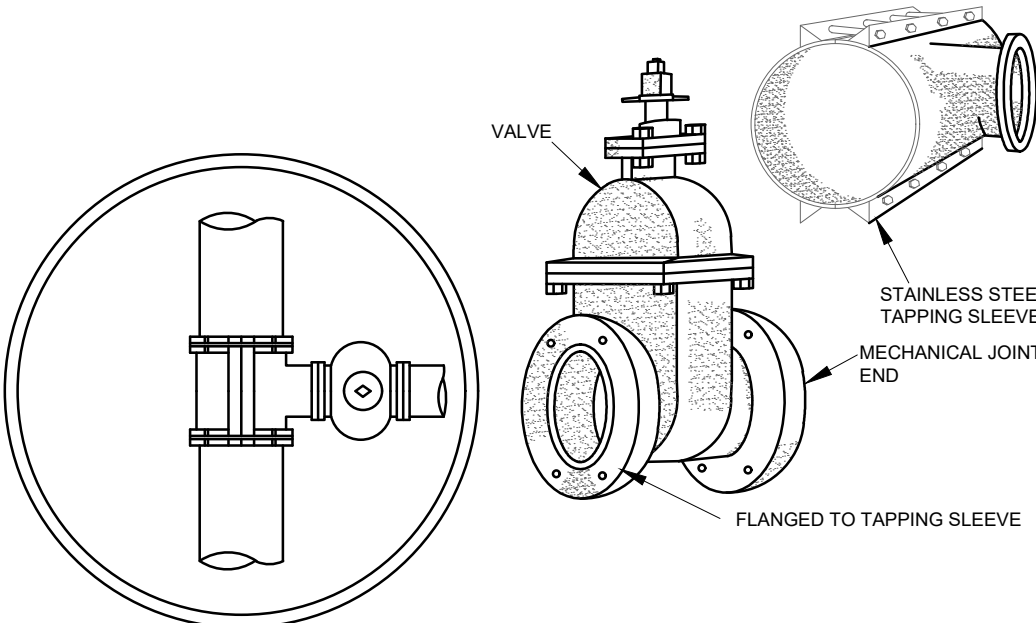
1. THE PUMPER CONNECTION SHALL FACE THE STREET.
2. SET THE HYDRANT FLANGE AT PROPOSED GRADE OR AS FIELD DIRECTED.
3. SET THE VALVE BOX COVER FLUSH WITH THE PROPOSED GRADE.
4. ALL WORK FROM THE CENTER LINE OF THE MAIN TO AND INCLUDING THE HYDRANT SHALL BE PAID FOR BY UNIT PRICE BID ITEM FOR HYDRANTS.
5. ALL MECHANICAL JOINTS SHALL BE RESTRAINED BY MEGA LUGS, OR APPROVED EQUAL.
6. HYDRANT BARRELS SHALL BE PAINTED YELLOW. CAPS SHALL BE COLOR GREEN.
7. 90° HYDRANT TEES ARE APPROVED WHERE SPACE REQUIREMENTS ARE LIMITED.



SD-1W FIRE HYDRANT DETAIL

**NOTES:**

1. ALL TAPPING SLEEVES SHALL BE STAINLESS STEEL WITH FLANGED OUTLET. TAPPING SLEEVES SHALL BE APPROVED BY THE CITY OF OWOSSO PRIOR TO INSTALLATION.
2. THE GASKET FOR MAIN LINE SHALL BE MADE FOR THE PIPE MATERIAL IN PLACE, NORMALLY DUCTILE IRON CLASS 53.
3. OUTLET FLANGE IS CLASS 125 ANSB16.1.
4. TAPPING TEE SHALL HAVE A BUILT-IN TEST PLUG.
5. THE VALVE SHALL BE FLANGED, CONNECTED TO THE SLEEVE BY MECHANICAL JOINT TO THE LINE TO BE CONSTRUCTED.
6. THE VALVE SHALL HAVE OVERSIZE SEAT RINGS TO PERMIT ENTRY OF THE TAPPING MACHINE CUTTERS.
7. THE VALVE SHALL MEET ALL REQUIREMENTS OF AWWA C-500.
8. THE MINIMUM SIZE MANHOLE SHALL BE 5'-0" INTERNAL DIAMETER.
9. THE TOP OPENING SHALL BE CENTERED ON THE VALVE OPERATING NUT.
10. USE FLAT SLAB FOR COVER WITH 24" OPENING.

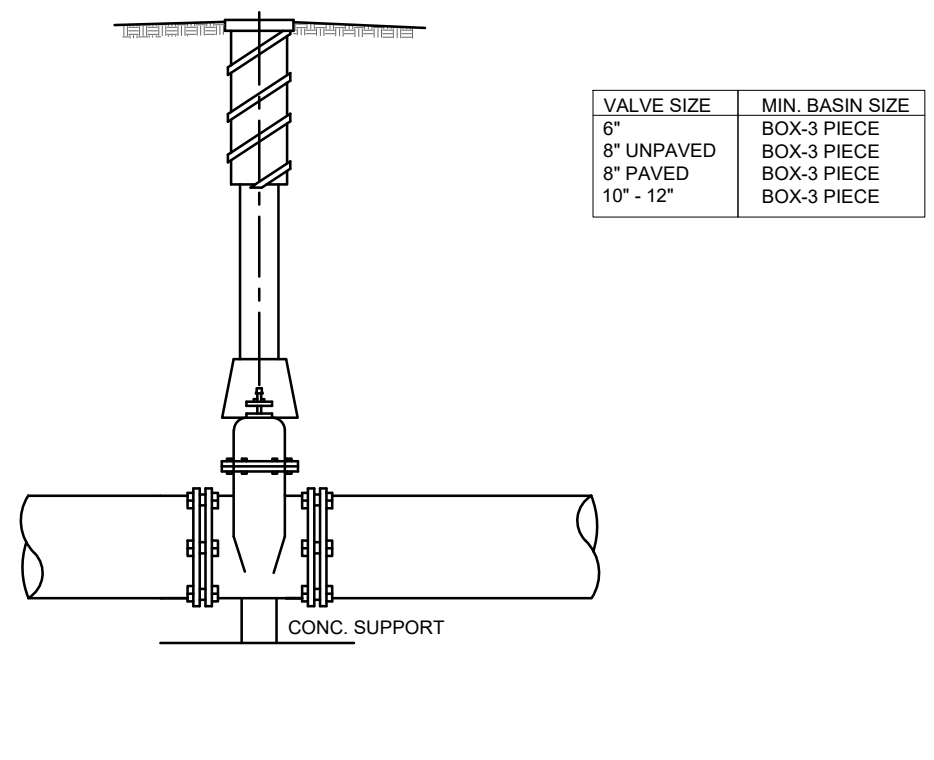


SD-2W PRESSURE TAPPING SLEEVE AND VALVE

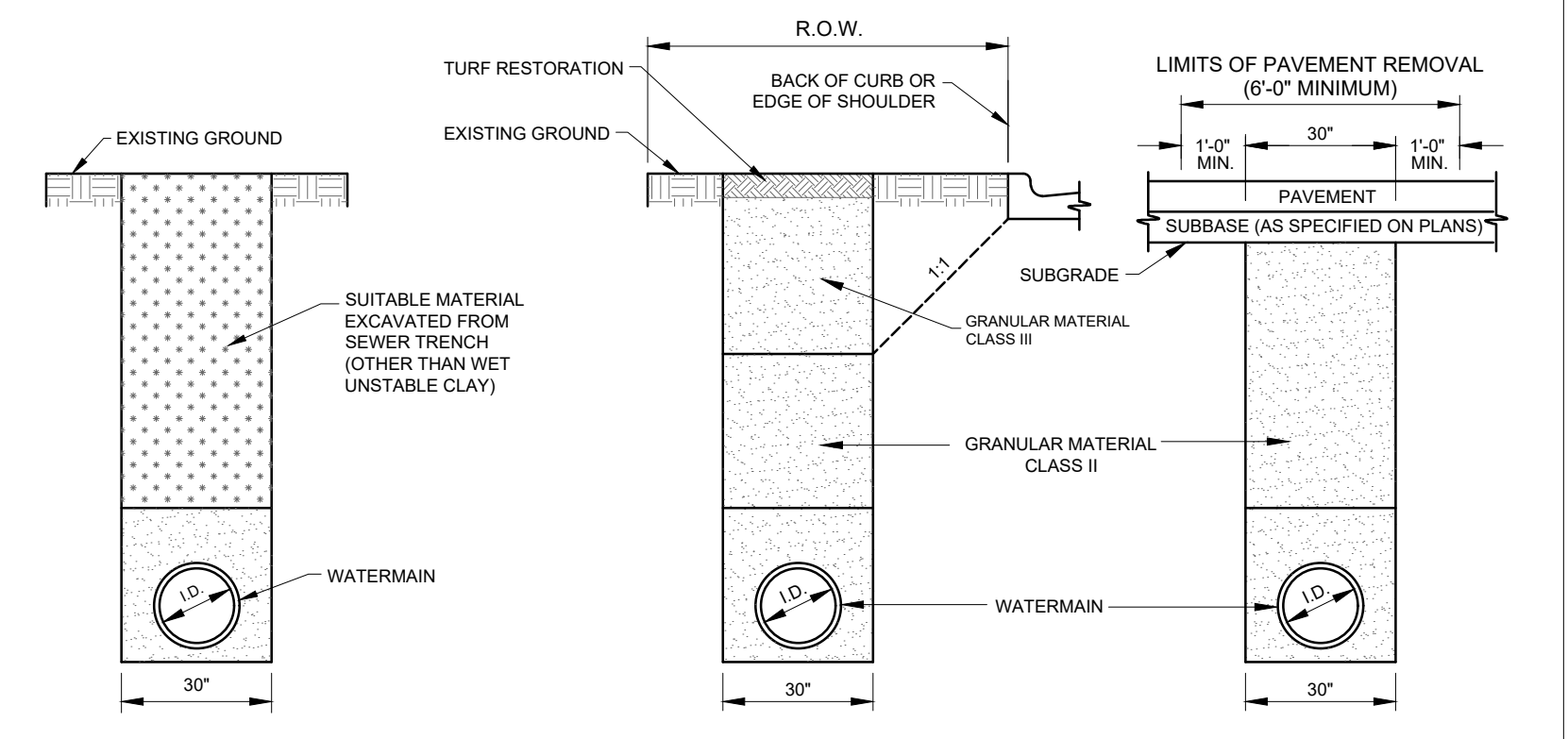
**NOTE:**  
ALL MECHANICAL JOINTS SHALL BE RESTRAINED WITH MEGA LUGS OR APPROVED EQUAL. LENGTH OF RESTRAINT SHALL BE DETERMINED BY MANUFACTURER AND DIPRA, AND APPROVED BY CITY OF OWOSSO. THE MINIMUM REQUIRED RESTRAINT LENGTHS ARE SHOWN IN DETAIL SD-7W. MANUFACTURER RESTRAINT LENGTHS THAT ARE LESS THAN SHOWN IN SD-7W MUST BE APPROVED BY CITY OF OWOSSO.

**NOTES:**

1. RESILIENT SEATED WEDGE GATE VALVES SHALL BE PER PROJECT SPECIFICATIONS.
2. ALL PRESSURE TAPS 4" AND OVER MUST BE ENCLOSED WITH A CONCRETE VALVE MANHOLE.
3. CONCRETE ADJUSTING BRICK OR RINGS ALLOWABLE TO A MAXIMUM ADJUSTMENT OF 12".
4. VALVE BOXES SHALL BE MADE OF GOOD QUALITY CAST IRON AND SHALL BE OF THE SECTIONAL TYPE. THE LOWER SECTION SHALL BE A MINIMUM OF FIVE (5) INCHES IN DIAMETER, ENLARGED AT THE BASE TO FIT AROUND THE BONNET OF THE VALVE. THE UPPER SECTION SHALL BE ARRANGED TO SLIDE OR SCREW DOWN OVER THE ADJOINING LOWER SECTION AND SHALL BE FULL DIAMETER THROUGHOUT. VALVE BOXES SHALL BE PROVIDED WITH CAST IRON LIDS OR COVERS. LIDS OR COVERS SHALL BE MARKED "WATER". THE OVER-ALL LENGTH OF VALVE BOXES SHALL BE SUFFICIENT TO PERMIT THE TOP TO BE SET FLUSH WITH THE FINAL GROUND SURFACE GRADE. VALVE BOXES SHALL BE AS MANUFACTURED BY TRAVERSE CITY IRON WORKS, CLOW CORPORATION OR APPROVED EQUAL.



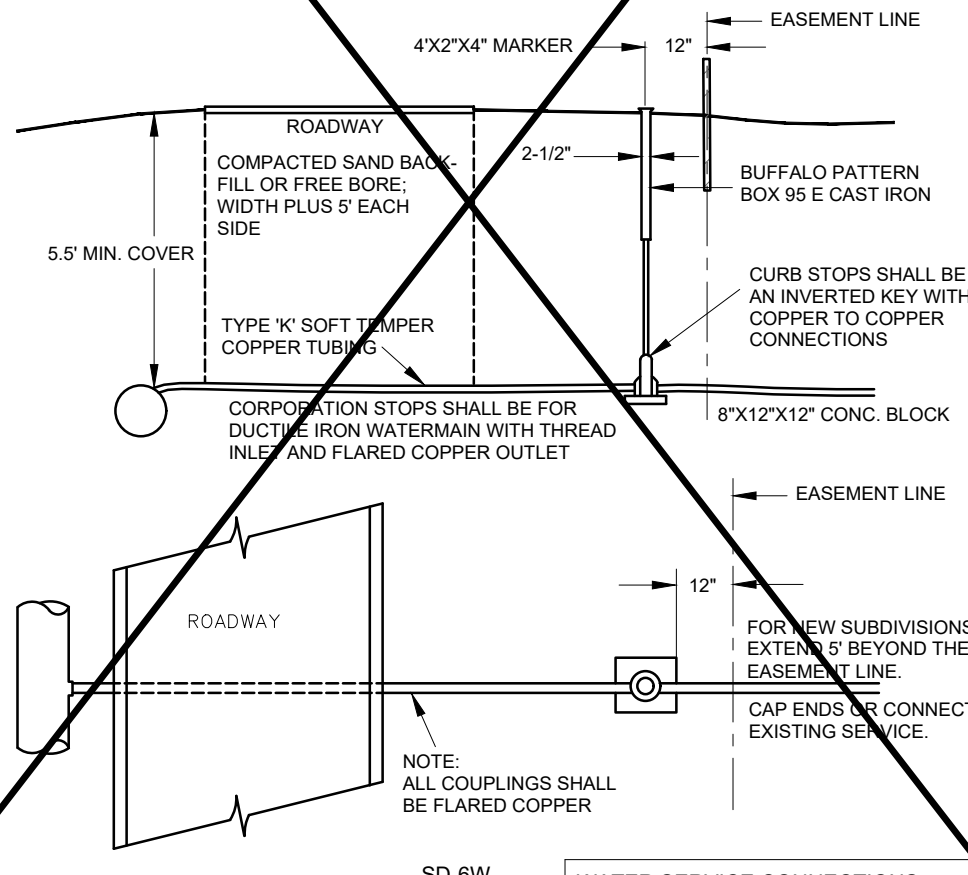
SD-4W WATER VALVE AND VALVE BOX DETAIL



SD-5W WATERMAIN TRENCH BACKFILL DETAILS

**NOTES:**

1. WATER SERVICE SHALL BE DIRECTION DRILLED OR OPEN CUT, AS APPROVED BY CITY OF OWOSSO, UNDER EXISTING PAVEMENTS STARTING A MINIMUM OF 5 FEET BACK OF CURB OR HARD SURFACING EDGE.
2. A 2"x4"x4" WOODEN MARKER PAINTED BLUE IS REQUIRED FOR ALL WATER SERVICE TAPS WHERE THE SERVICE LEAD IS NOT CONNECTED TO THE SHUT OFF VALVE BY THE CONTRACTOR EXTENDING THE LEAD TO THE PROPERTY LINE.
3. THE VALVE BOX SHALL BE CAST IRON AND A MINIMUM OF 6 FEET IN LENGTH.
4. CURB STOPS SHALL BE INVERTED KEY VALVES FOR 3/4" DIAMETER. STOPS SHALL BE FORD 222 OR B22 SERIES OR EQUAL.
5. THE CORPORATION SHALL BE FORD F-600, FB-600 OR EQUAL.



SD-6W WATER SERVICE CONNECTIONS

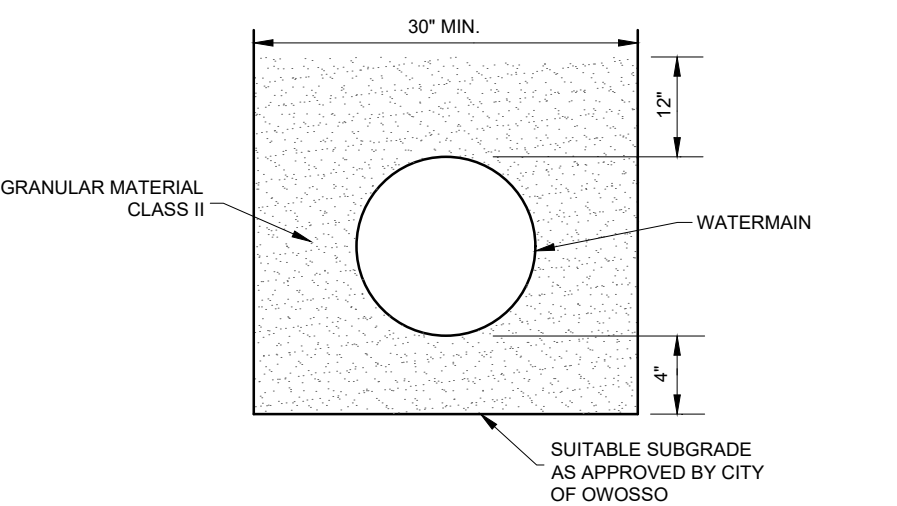
**MINIMUM PIPE RESTRAINT LENGTH SCHEDULE FOR GROUND BURIED PRESSURE PIPES (1)**

DEFLECTION ANGLE	LENGTH (IN FEET) OF RESTRAINT REQUIRED (2)						
	22 1/2'	33 3/4'	45'	56 1/4'	67 1/2'	78 3/4'	90' OR DEAD END
PIPE							
6"	3	6	11	16	23	29	37
8"	4	8	15	22	31	41	50
10"	5	11	18	28	38	49	61

\* WHEN MANUFACTURER SPECIFICATIONS CALL FOR GREATER RESTRAINT LENGTHS THE GREATER LENGTHS SHALL BE INSTALLED. WHEN THE MANUFACTURER SPECIFICATIONS CALL FOR LESSER RESTRAINT LENGTHS THEN THE ABOVE LENGTHS SHALL BE INSTALLED

1. THIS TABLE IS BASED ON A TEST PRESSURE OF 180 PSI (OPERATING PRESSURE + WATER HAMMER). FOR OTHER TEST PROCEDURES, ALL VALUES ARE TO BE INCREASED PROPORTIONALLY.
2. IN EACH DIRECTION FROM POINT OF DEFLECTION OR TERMINATION EXCEPT FOR A TEE AT WHICH ONLY THE BRANCH IN THE DIRECTION OF THE TEE IS TO BE RESTRAINED.
3. IF THE RODS ARE USED, PLACE 2 RODS 5/8 INCH DIAMETER MINIMUM FOR WATERMAIN 6 INCH TO 10 INCH.

SD-7W MINIMUM PIPE RESTRAINT SCHEDULE



SD-10W WATERMAIN BEDDING DETAIL

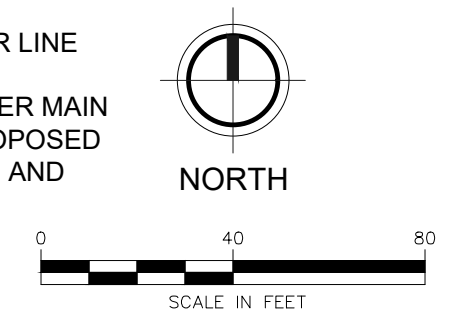
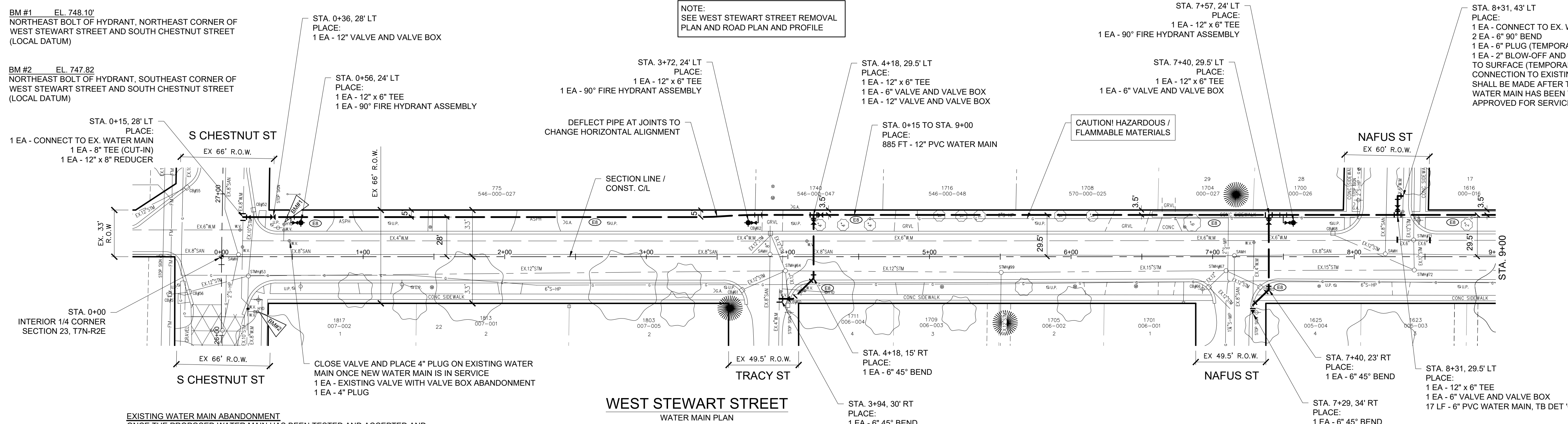
REVISION:



BM #1 EL. 748.10  
NORTHEAST BOLT OF HYDRANT, NORTHEAST CORNER OF WEST STEWART STREET AND SOUTH CHESTNUT STREET (LOCAL DATUM)

BM #2 EL. 747.82  
NORTHEAST BOLT OF HYDRANT, SOUTHEAST CORNER OF WEST STEWART STREET AND SOUTH CHESTNUT STREET (LOCAL DATUM)

NOTE:  
SEE WEST STEWART STREET REMOVAL PLAN AND ROAD PLAN AND PROFILE



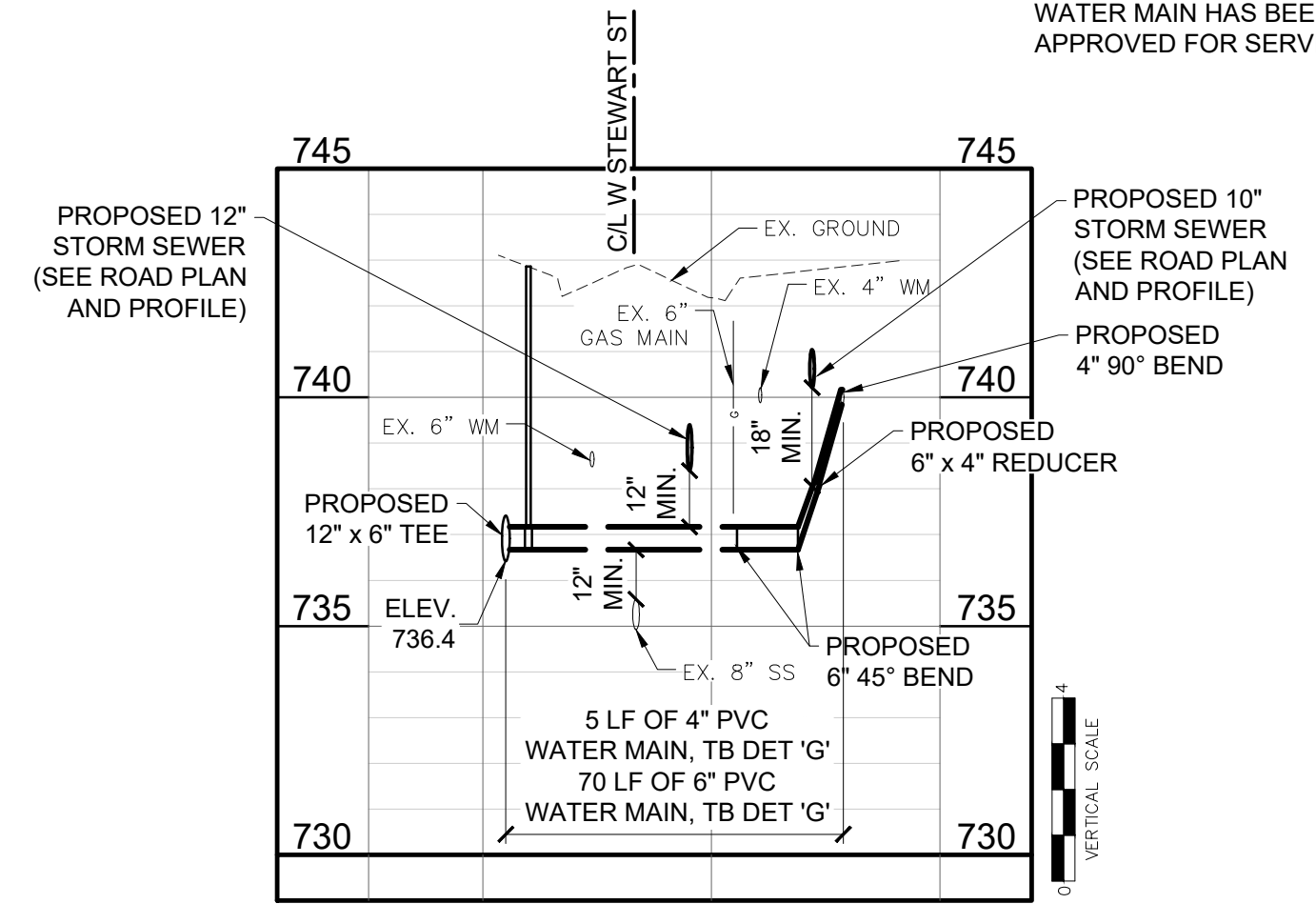
**EXISTING WATER MAIN ABANDONMENT**  
ONCE THE PROPOSED WATER MAIN HAS BEEN TESTED AND ACCEPTED AND ALL SERVICES HAVE BEEN TRANSFERRED, THE EXISTING WATER MAIN AND APPURTENANCES SHALL BE ABANDONED AND/OR REMOVED AS DIRECTED WITH THE FOLLOWING PAY ITEMS:

- EXISTING VALVE WITH VALVE BOX ABANDONMENT - EA
- EXISTING VALVE WITH MANHOLE ABANDONMENT - EA
- EXISTING HYDRANT REMOVAL - EA

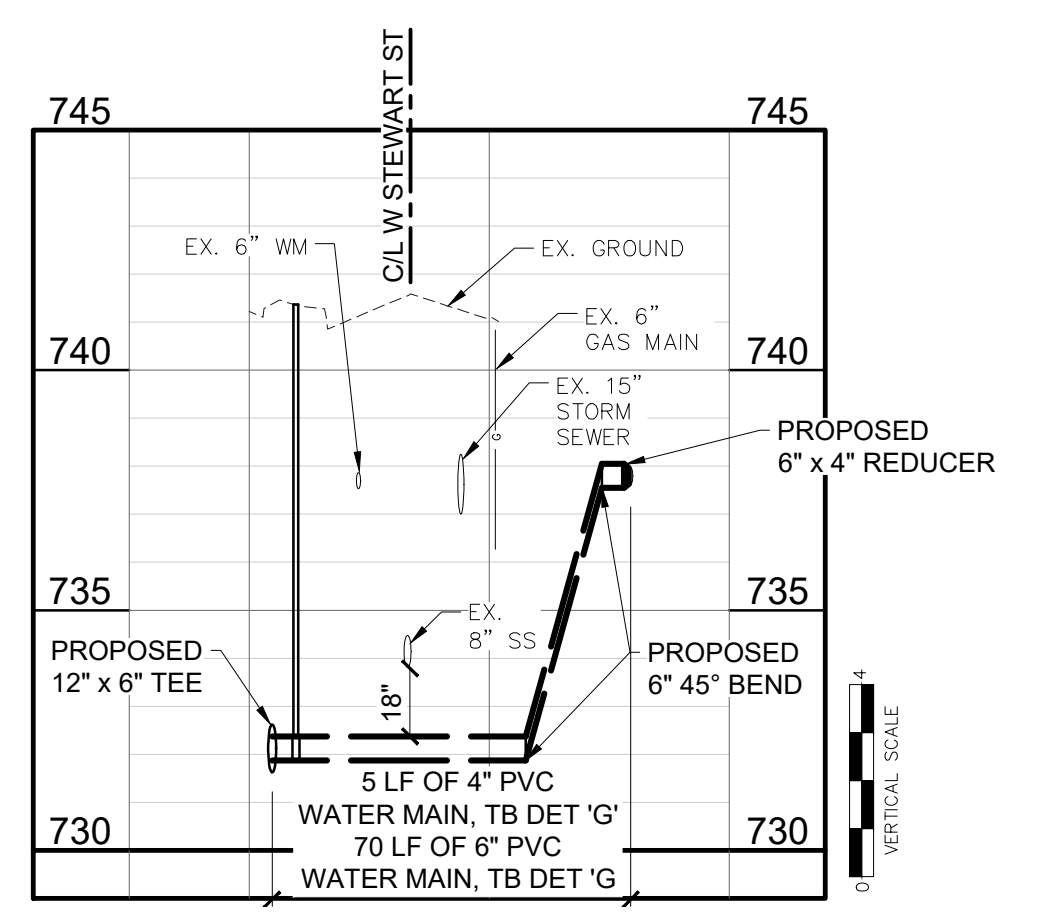
**LEGEND**

- WATER MAIN
- x GATE VALVE AND BOX, INCH
- ◀ REDUCER
- STANDARD SOIL EROSION KEY

**WEST STEWART STREET**  
WATER MAIN PLAN

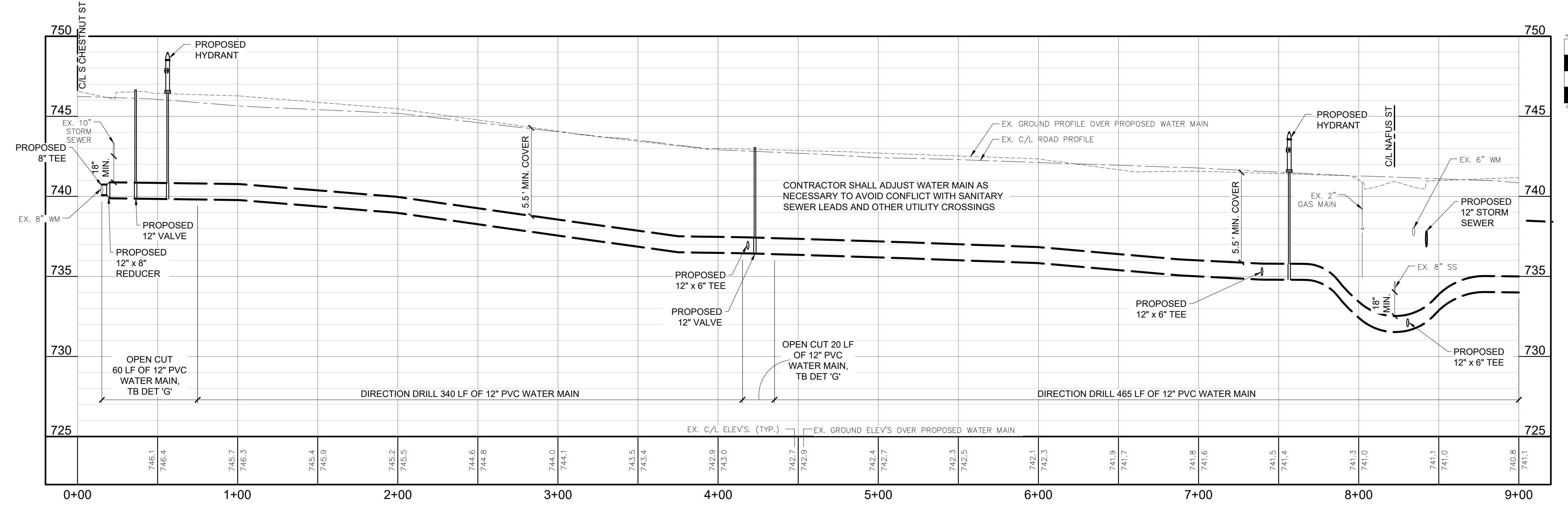


CROSSING AT TRACY STREET



CROSSING AT NAFUS STREET

WATER MAIN QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
4	EA	CONNECT TO EX. WATER MAIN
5	EA	EXISTING VALVE AND VALVE BOX ABANDONMENT
2	EA	EXISTING HYDRANT REMOVAL
10	LF	4" PVC WATER MAIN, TRENCH BACKFILL DETAIL 'G'
157	LF	6" PVC WATER MAIN, TRENCH BACKFILL DETAIL 'G'
80	LF	12" PVC WATER MAIN, TRENCH BACKFILL DETAIL 'G'
805	LF	12" PVC WATER MAIN, DIRECTIONAL DRILL
6	EA	12" x 6" TEE
1	EA	8" TEE
1	EA	12" x 8" REDUCER
2	EA	6" x 4" REDUCER
2	EA	4" PLUG
2	EA	6" PLUG
1	EA	4" 90° BEND
4	EA	6" 45° BEND
2	EA	6" 90° BEND
3	EA	6" VALVE AND VALVE BOX
2	EA	12" VALVE AND VALVE BOX
4	EA	90° FIRE HYDRANT ASSEMBLY
4	EA	NEW WATER SERVICE, OPEN CUT
6	EA	NEW WATER SERVICE, FREEBORE
3	EA	2" BLOW-OFF AND COPPER LINE TO SURFACE



REVISION:

CITY OF OWOSO  
SHAWASSEE COUNTY, MICHIGAN  
2017 STREET PROGRAM

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DESIGN TEAM:  
G.L.R. DPH  
CHECK BY:

DRAWING INFORMATION:  
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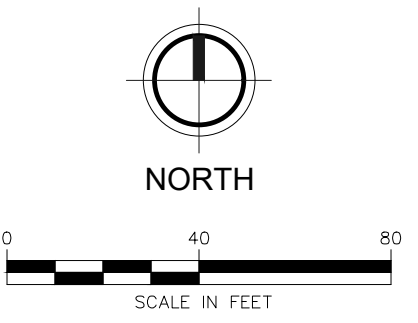
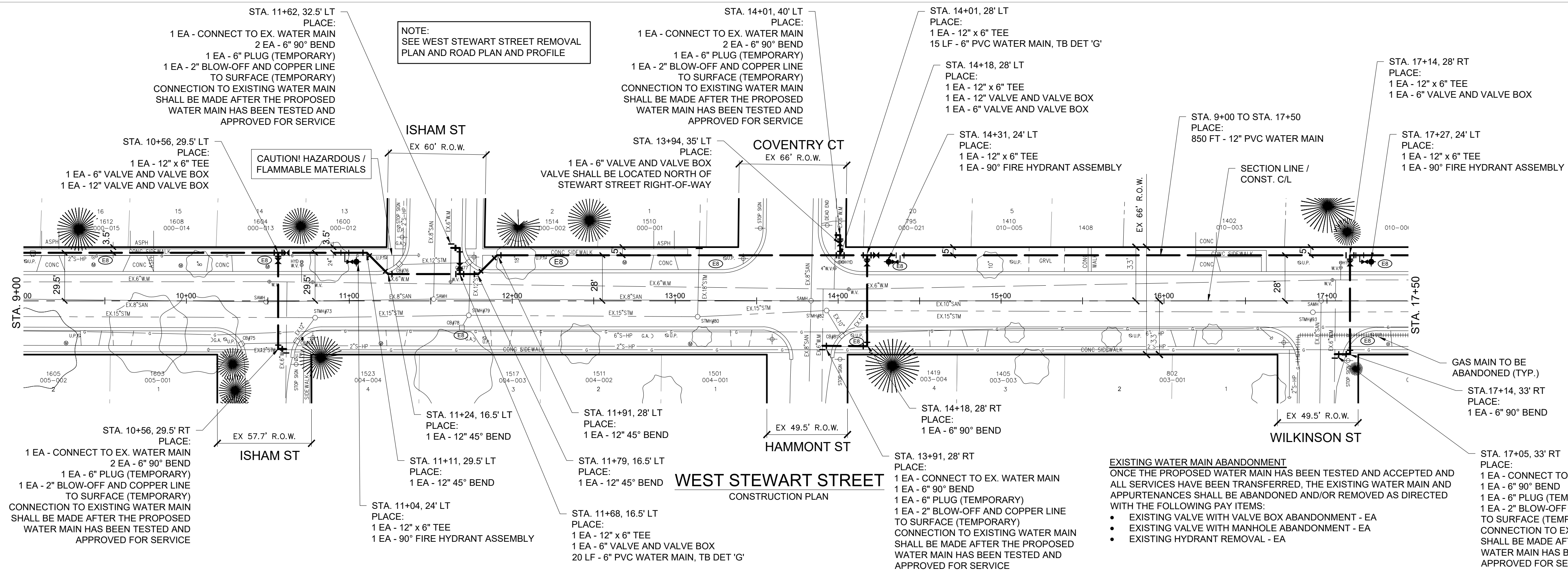
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830300

**23**

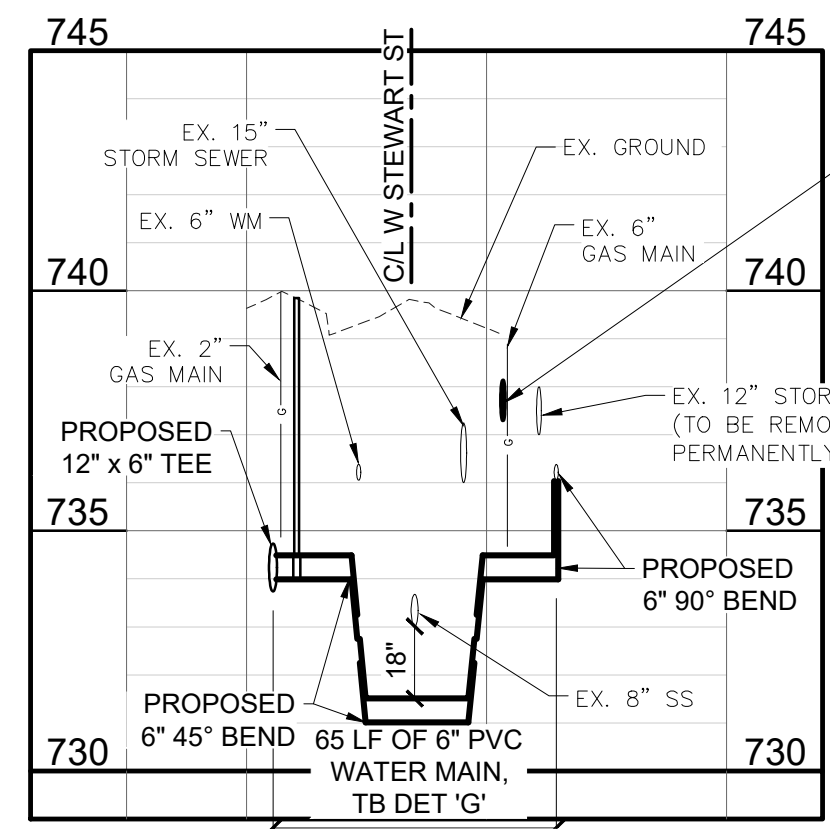
WATER MAIN PLAN AND PROFILE - W. STEWART ST

BM #1 EL. 748.10'  
NORTHEAST BOLT OF HYDRANT, NORTHEAST CORNER OF WEST STEWART STREET AND SOUTH CHESTNUT STREET (LOCAL DATUM)

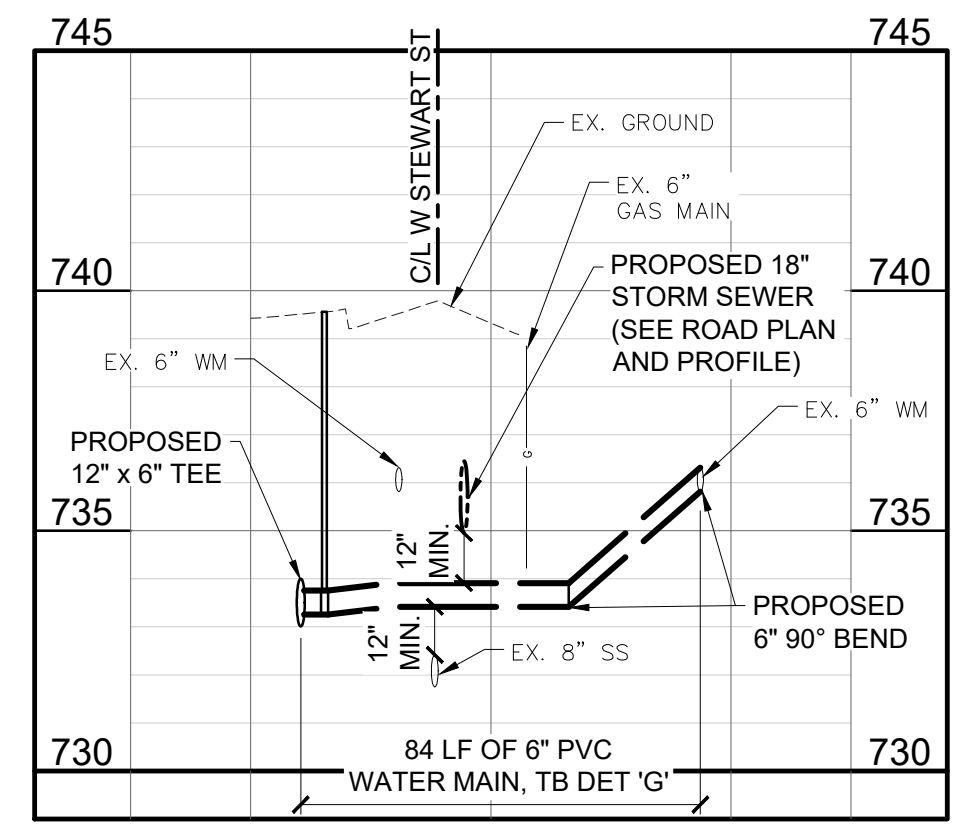
BM #2 EL. 747.82'  
NORTHEAST BOLT OF HYDRANT, SOUTHEAST CORNER OF WEST STEWART STREET AND SOUTH CHESTNUT STREET (LOCAL DATUM)



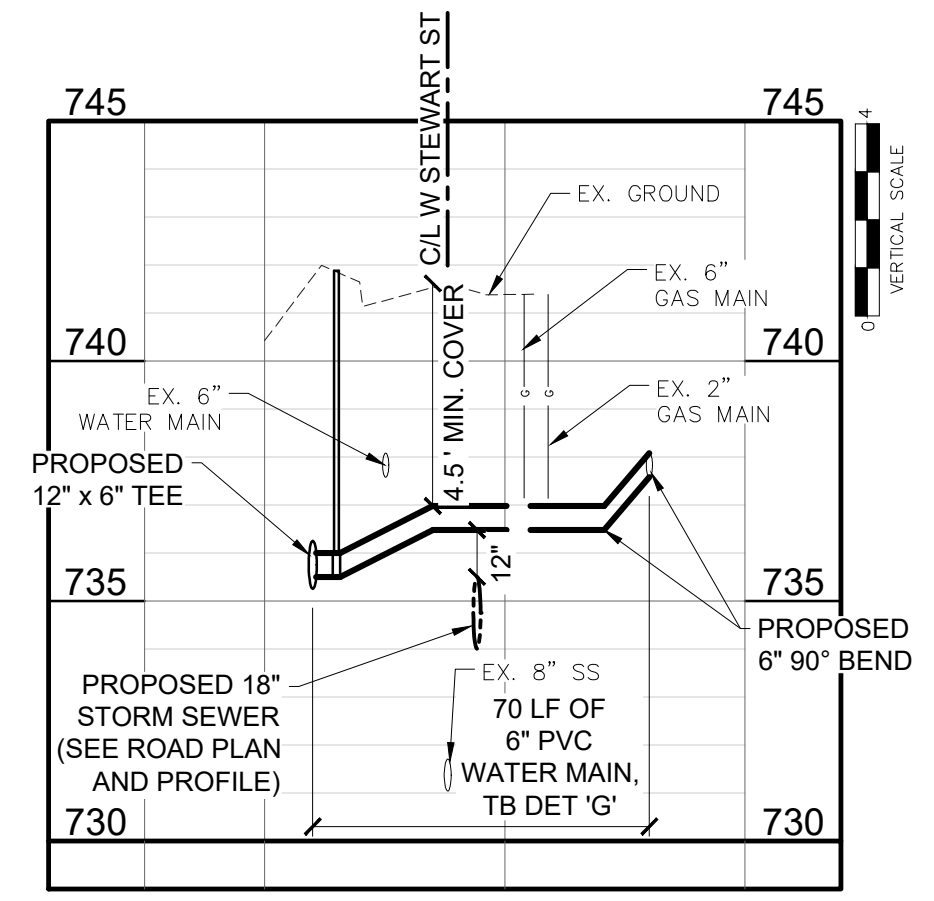
- LEGEND**
- WATER MAIN
  - ✕ GATE VALVE AND BOX, .INCH
  - ◀ REDUCER
  - ⊙ STANDARD SOIL EROSION KEY



CROSSING AT ISHAM STREET

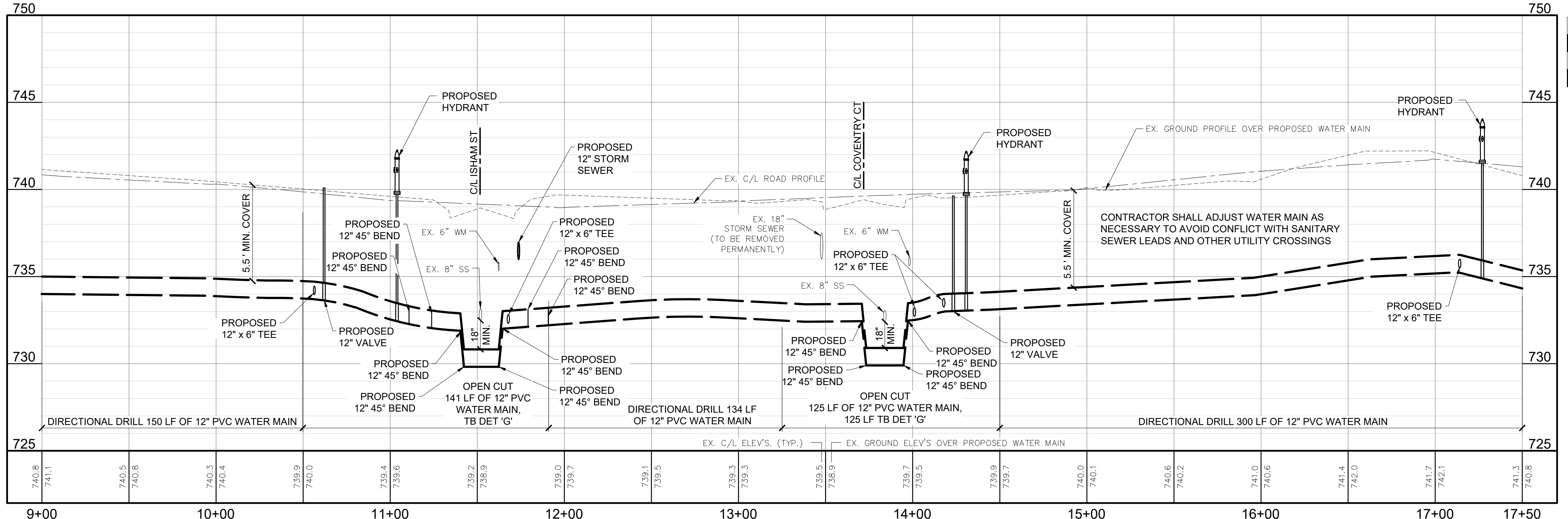


CROSSING AT HAMMONT STREET



CROSSING AT WILKINSON STREET

WATER MAIN QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
5	EA	CONNECT TO EX. WATER MAIN
6	EA	EXISTING VALVE AND VALVE BOX ABANDONMENT
3	EA	EXISTING VALVE REMOVAL
254	LF	6\"/>
266	LF	12\"/>
584	LF	12\"/>
8	EA	12\"/>
5	EA	6\"/>
4	EA	6\"/>
10	EA	6\"/>
12	EA	12\"/>
5	EA	6\"/>
2	EA	12\"/>
3	EA	90\"/>
6	EA	NEW WATER SERVICE, OPEN CUT
9	EA	NEW WATER SERVICE, FREEBORE
5	EA	2\"/>



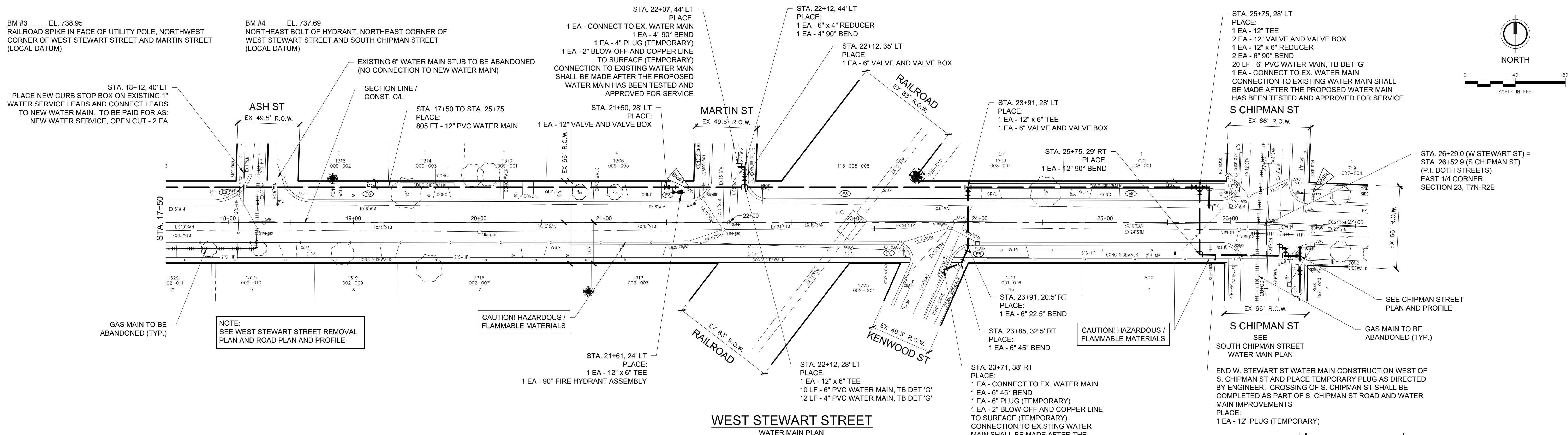
REVISION:



Know what's below.  
Call before you dig.

BM #3 EL. 738.95  
RAILROAD SPIKE IN FACE OF UTILITY POLE, NORTHWEST CORNER OF WEST STEWART STREET AND MARTIN STREET (LOCAL DATUM)

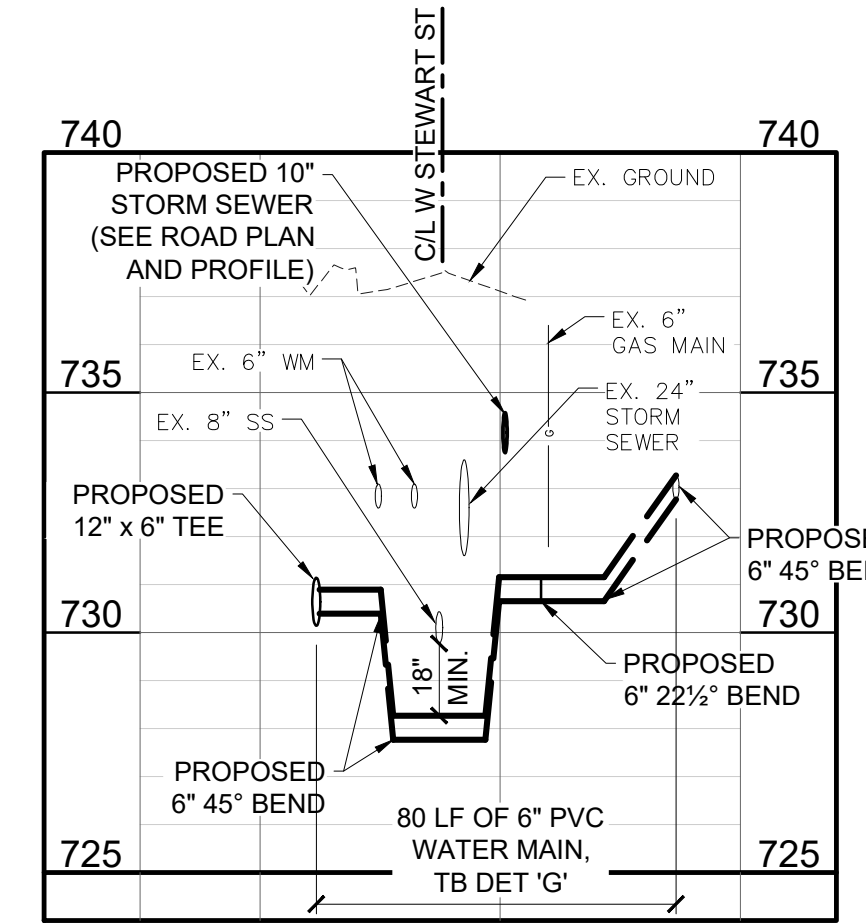
BM #4 EL. 737.69  
NORTHEAST BOLT OF HYDRANT, NORTHEAST CORNER OF WEST STEWART STREET AND SOUTH CHIPMAN STREET (LOCAL DATUM)



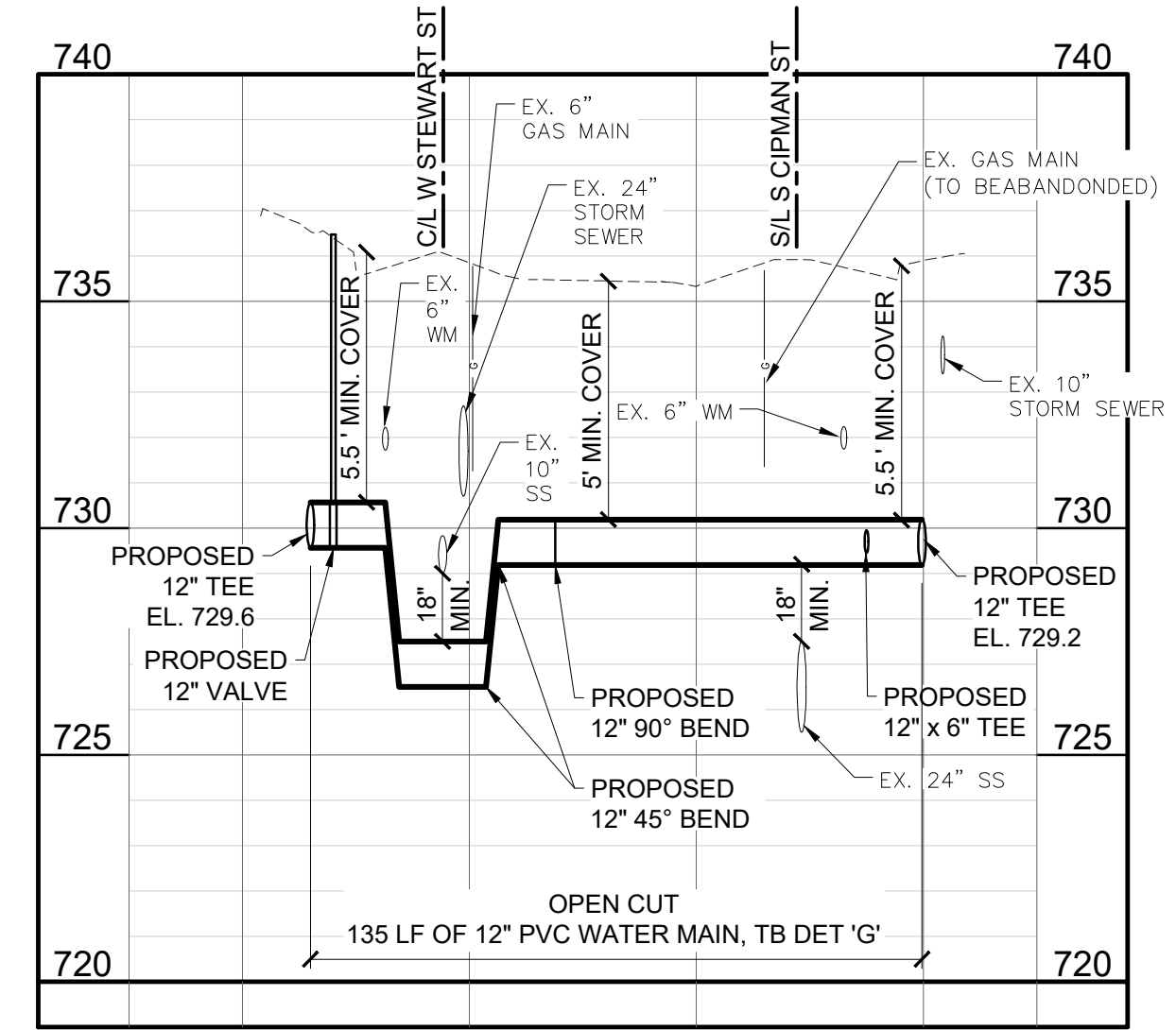
WEST STEWART STREET  
WATER MAIN PLAN

WATER MAIN QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
3	EA	CONNECT TO EX. WATER MAIN
4	EA	EXISTING VALVE AND VALVE BOX ABANDONMENT
1	EA	EXISTING HYDRANT REMOVAL
12	LF	4" PVC WATER MAIN, TRENCH BACKFILL DETAIL 'G'
110	LF	6" PVC WATER MAIN, TRENCH BACKFILL DETAIL 'G'
20	LF	12" PVC WATER MAIN, TRENCH BACKFILL DETAIL 'G'
805	LF	12" PVC WATER MAIN, DIRECTIONAL DRILL
3	EA	12" x 6" TEE
1	EA	12" TEE
1	EA	12" x 6" REDUCER
1	EA	6" x 4" REDUCER
1	EA	4" PLUG
1	EA	6" PLUG
1	EA	12" PLUG
2	EA	4" 90° BEND
1	EA	6" 22.5° BEND
6	EA	6" 45° BEND
2	EA	6" 90° BEND
4	EA	12" 45° BEND
1	EA	12" 90° BEND
2	EA	6" VALVE AND VALVE BOX
3	EA	12" VALVE AND VALVE BOX
1	EA	90° FIRE HYDRANT ASSEMBLY
7	EA	NEW WATER SERVICE, OPEN CUT
5	EA	NEW WATER SERVICE, FREEBORE
2	EA	2" BLOW-OFF AND COPPER LINE TO SURFACE

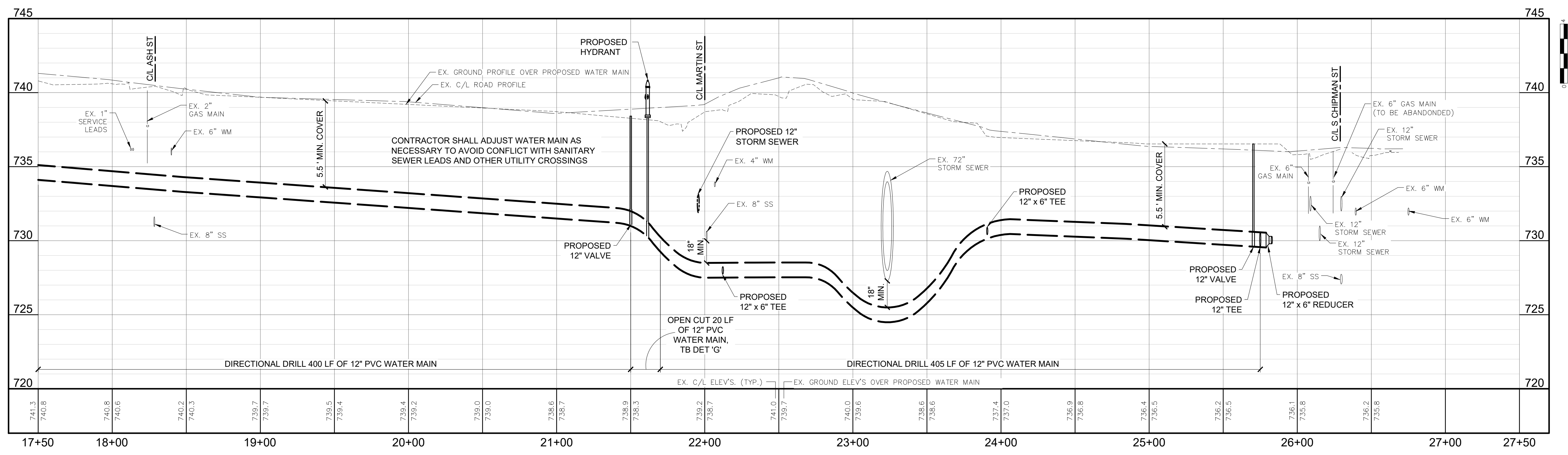
- LEGEND**
- WATER MAIN
  - ✕ GATE VALVE AND BOX, \_INCH
  - ◄ REDUCER
  - ⊙ STANDARD SOIL EROSION KEY



CROSSING AT KENWOOD STREET



CROSSING AT STEWART AND CHIPMAN STREET



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REVISION:

CITY OF OWOSO  
SHAWASSEE COUNTY, MICHIGAN  
2017 STREET PROGRAM

DESIGN TEAM:  
C/LR, DPH  
CHECK BY:

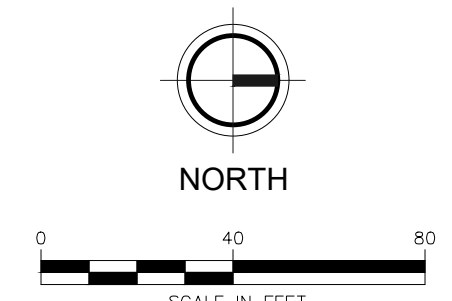
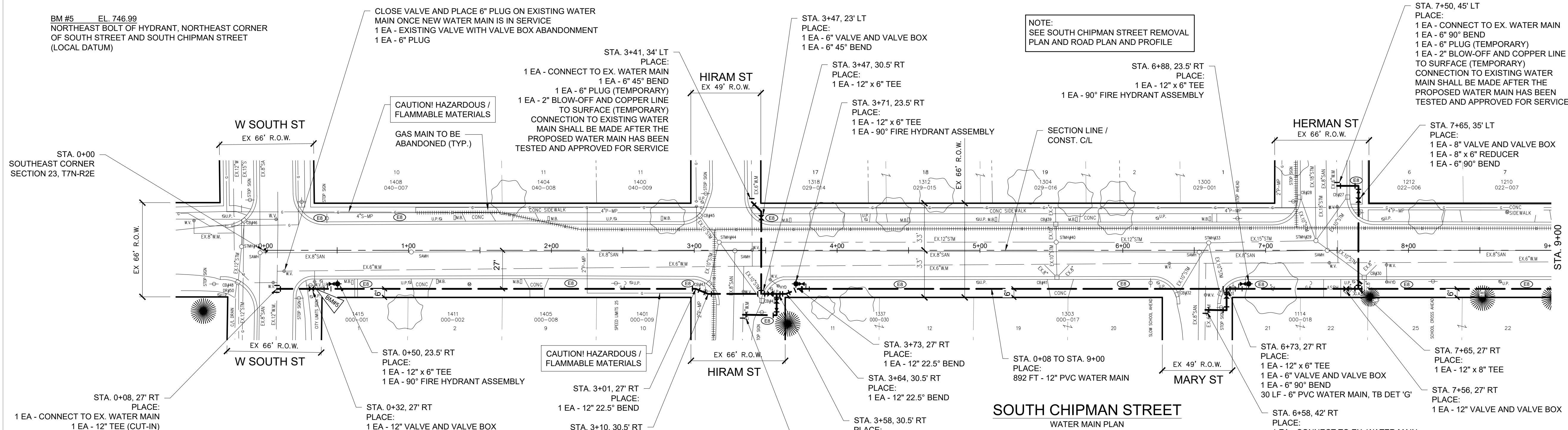
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962317.gnrcf

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F&V PROJECT NO.  
830300

**25**

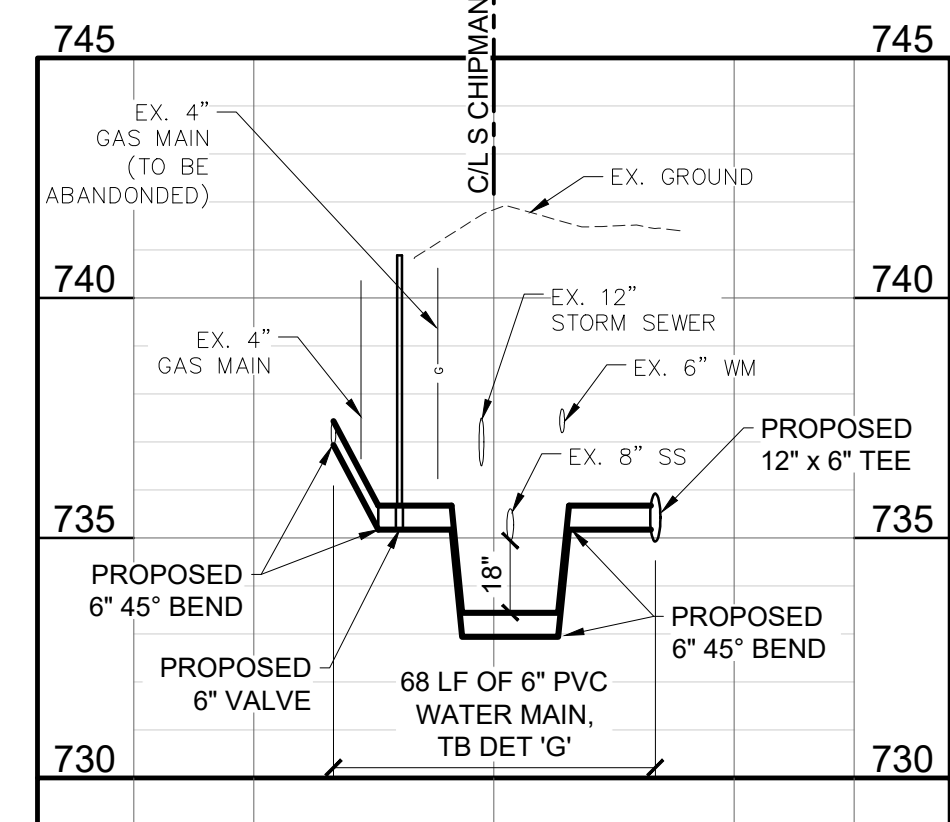


BM #5 EL. 746.99  
NORTHEAST BOLT OF HYDRANT, NORTHEAST CORNER  
OF SOUTH STREET AND SOUTH CHIPMAN STREET  
(LOCAL DATUM)

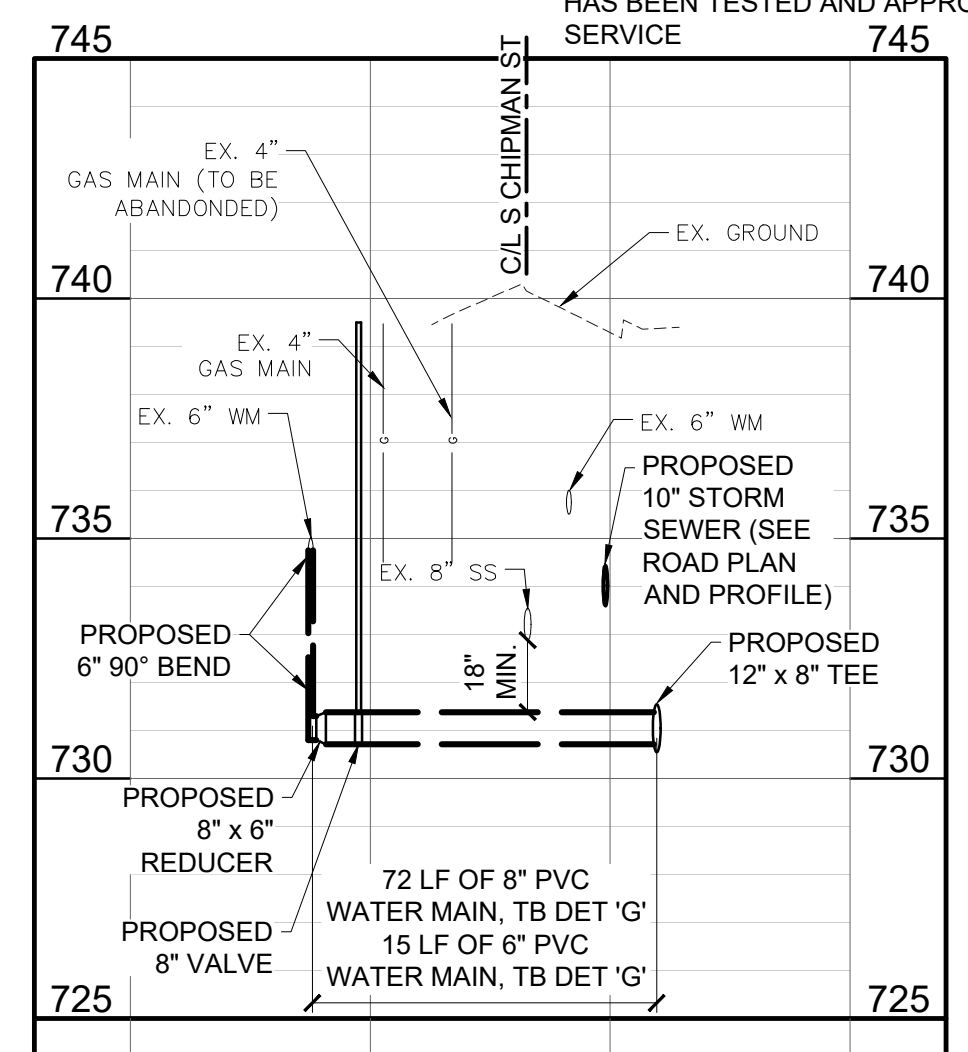


**SOUTH CHIPMAN STREET**  
WATER MAIN PLAN

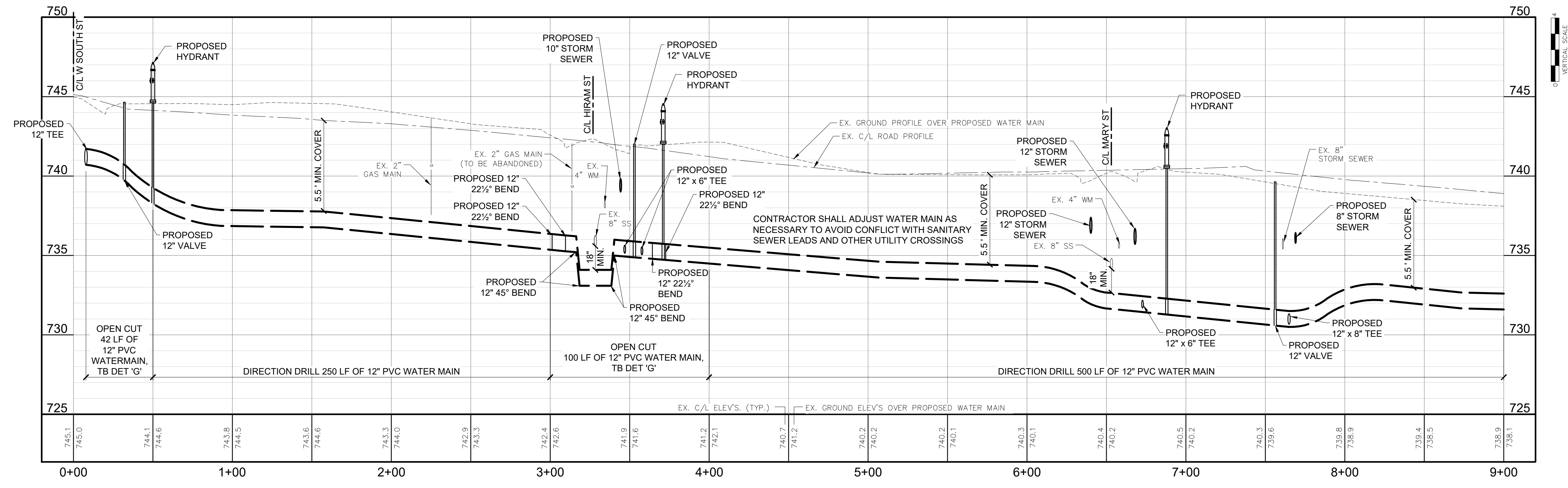
WATER MAIN QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
5	EA	CONNECT TO EX. WATER MAIN
7	EA	EXISTING VALVE AND VALVE BOX ABANDONMENT
3	EA	EXISTING HYDRANT REMOVAL
24	LF	4\"/>



**CROSSING AT HIRAM STREET**



**CROSSING AT HERMAN STREET**



**EXISTING WATER MAIN ABANDONMENT**  
ONCE THE PROPOSED WATER MAIN HAS BEEN TESTED AND ACCEPTED AND ALL SERVICES HAVE BEEN TRANSFERRED, THE EXISTING WATER MAIN AND APPURTENANCES SHALL BE ABANDONED AND/OR REMOVED AS DIRECTED WITH THE FOLLOWING PAY ITEMS:

- EXISTING VALVE WITH VALVE BOX ABANDONMENT - EA
- EXISTING VALVE WITH MANHOLE ABANDONMENT - EA
- EXISTING HYDRANT REMOVAL - EA

- LEGEND**
- WATER MAIN
  - ⊗ GATE VALVE AND BOX, INCH
  - ◀ REDUCER
  - ⊙ STANDARD SOIL EROSION KEY

REVISION:

**CITY OF OWOSSO**  
SHIAWASSEE COUNTY, MICHIGAN  
2017 STREET PROGRAM

DESIGN TEAM:  
CLF, DPH  
CHECK BY:

DRAWING INFORMATION:  
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962317.gnrcf

JUNE, 2017  
F&V PROJECT NO.  
830300



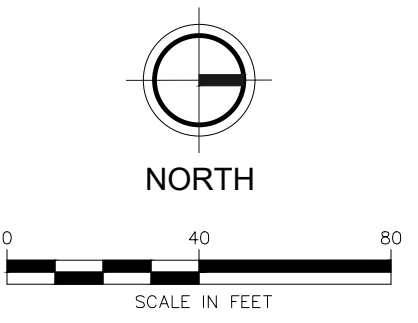
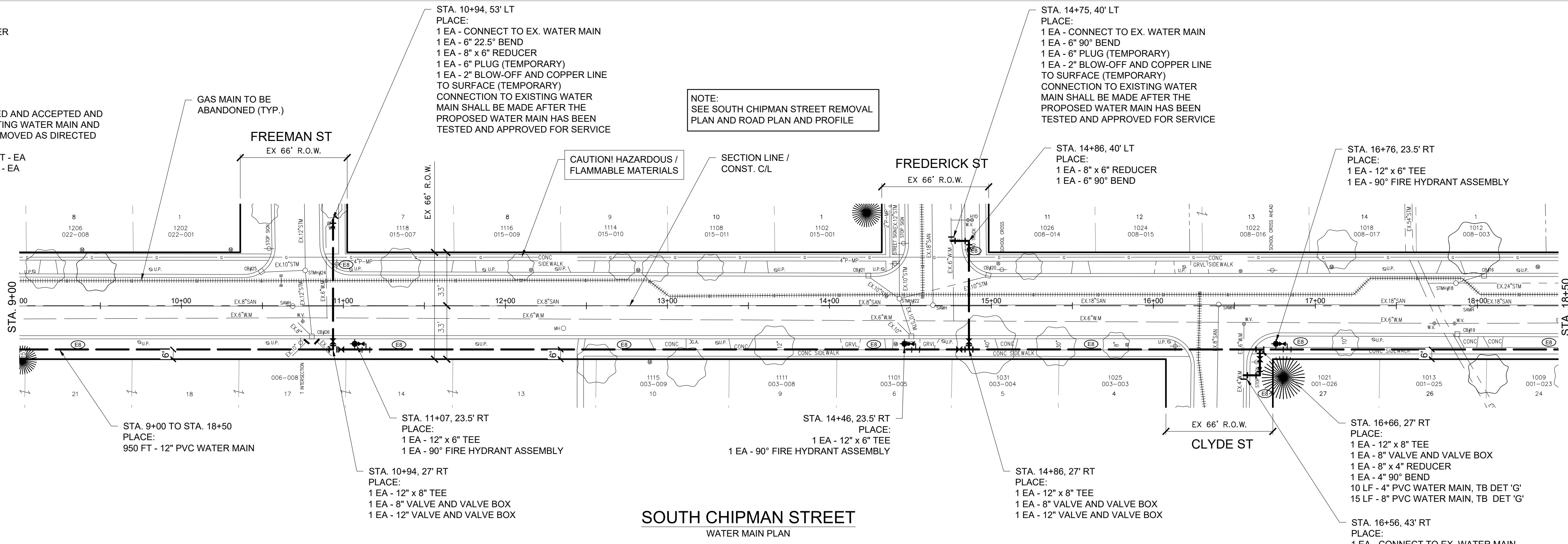
**FLEISCHMANN**  
DESIGN, BUILD, OPERATE

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BM #5 EL. 746.99  
 NORTHEAST BOLT OF HYDRANT, NORTHEAST CORNER  
 OF SOUTH STREET AND SOUTH CHIPMAN STREET  
 (LOCAL DATUM)

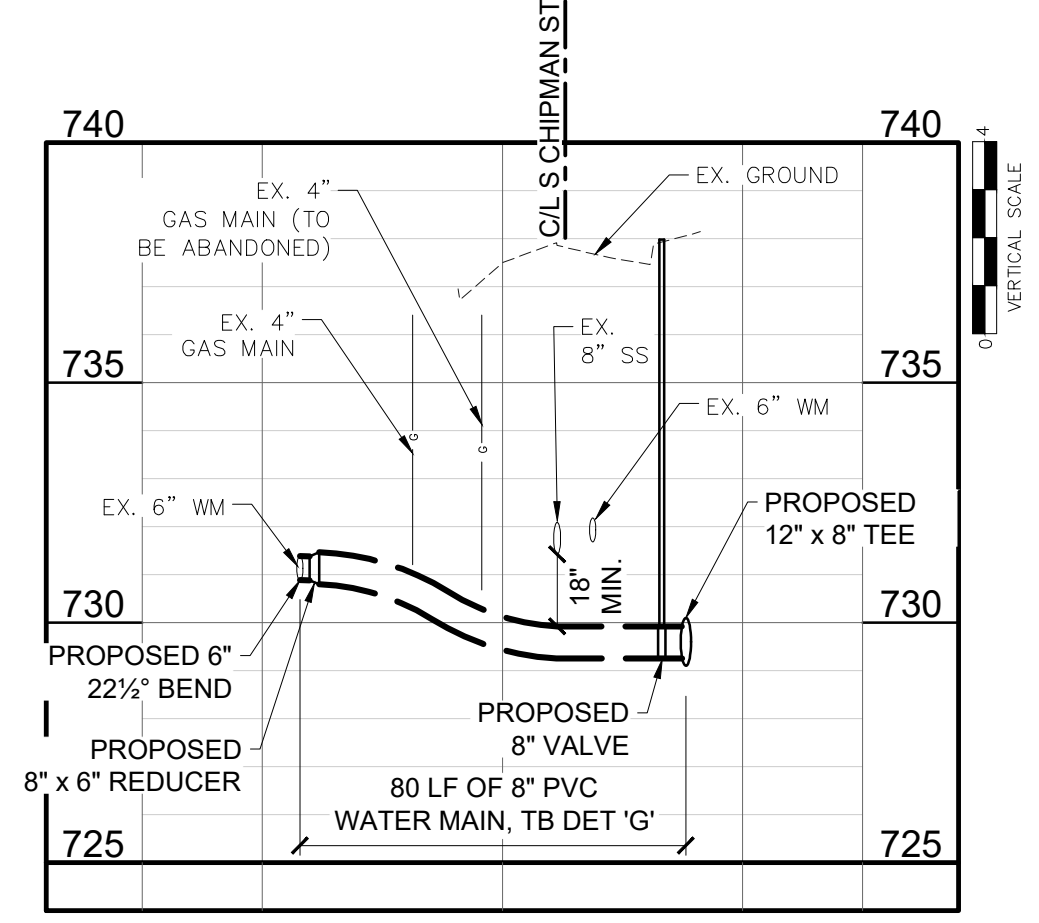
**EXISTING WATER MAIN ABANDONMENT**  
 ONCE THE PROPOSED WATER MAIN HAS BEEN TESTED AND ACCEPTED AND ALL SERVICES HAVE BEEN TRANSFERRED, THE EXISTING WATER MAIN AND APPURTENANCES SHALL BE ABANDONED AND/OR REMOVED AS DIRECTED WITH THE FOLLOWING PAY ITEMS:

- EXISTING VALVE WITH VALVE BOX ABANDONMENT - EA
- EXISTING VALVE WITH MANHOLE ABANDONMENT - EA
- EXISTING HYDRANT REMOVAL - EA

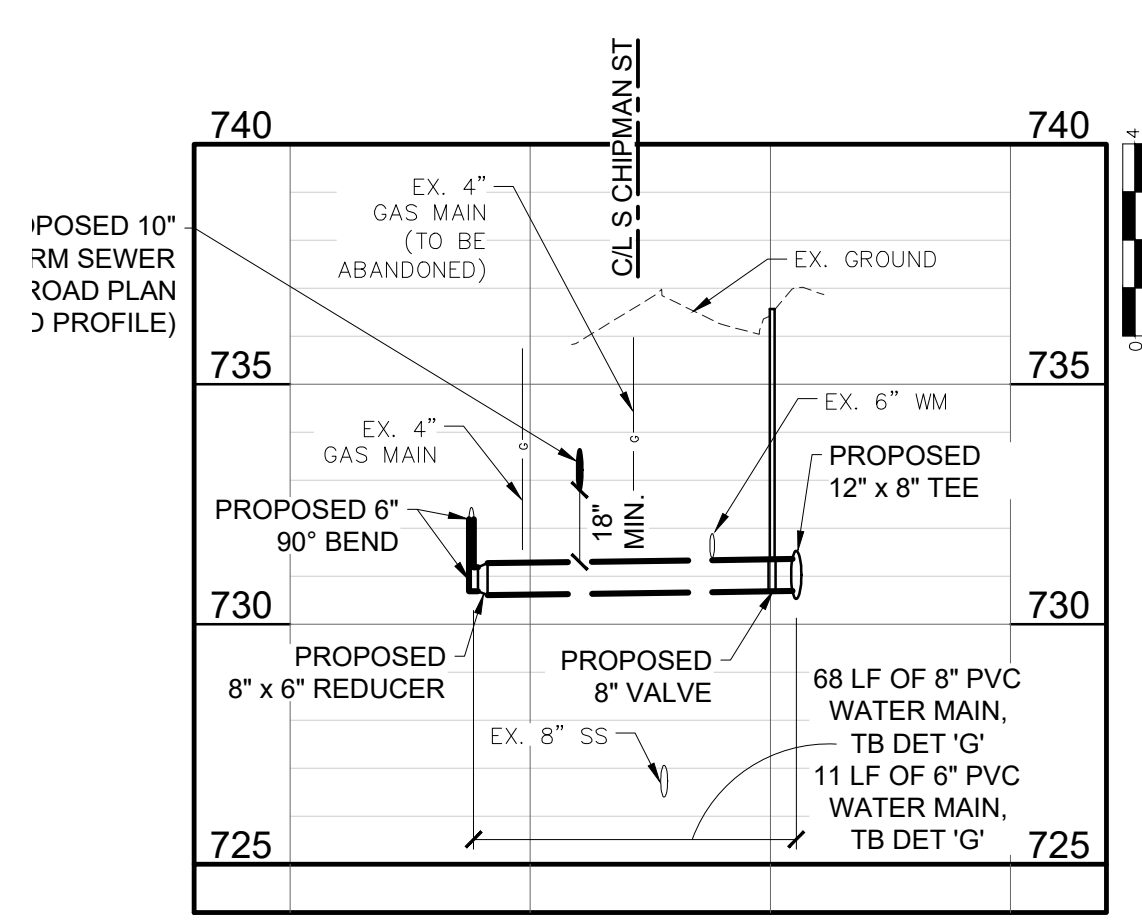


**SOUTH CHIPMAN STREET**  
 WATER MAIN PLAN

- LEGEND**
- WATER MAIN
  - x GATE VALVE AND BOX, .INCH
  - ◄ REDUCER
  - ⊙ STANDARD SOIL EROSION KEY

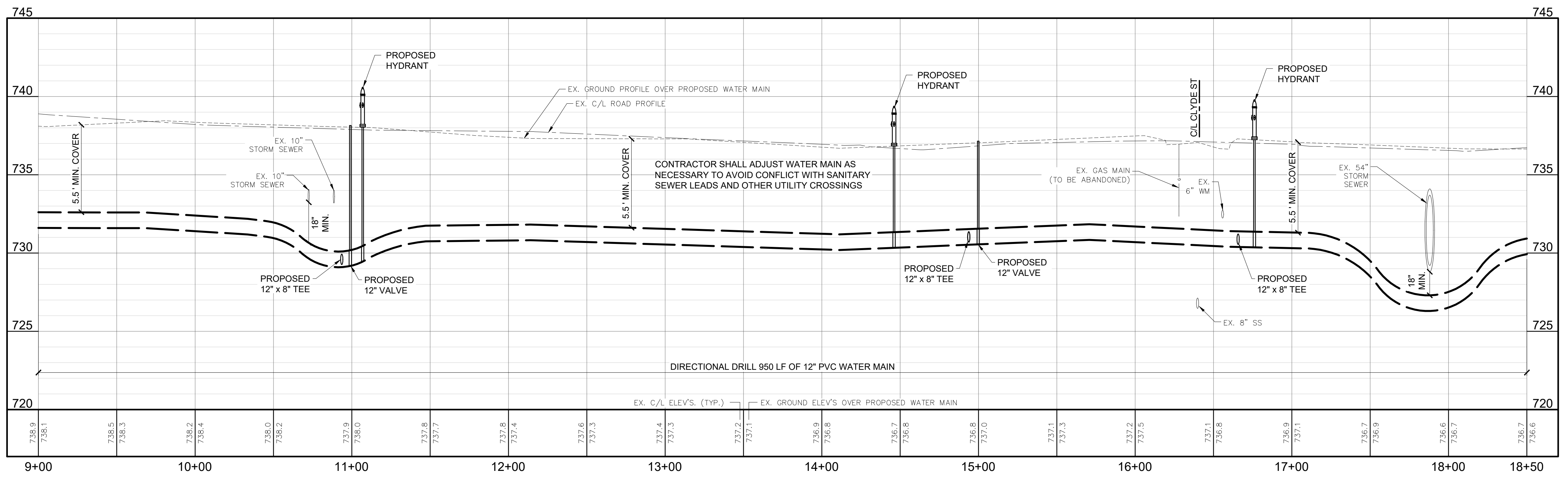


CROSSING AT FREEMAN ST



CROSSING AT FREDERICK ST

WATER MAIN QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
3	EA	CONNECT TO EX. WATER MAIN
6	EA	EXISTING VALVE AND VALVE BOX ABANDONMENT
10	LF	4\"/>



**FLEISCHMANN**  
 DESIGN, BUILD, OPERATE

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REVISION:

**CITY OF OWOSO**  
 SHAWASSEE COUNTY, MICHIGAN  
 2017 STREET PROGRAM

**WATER MAIN PLAN AND PROFILE - S. CHIPMAN ST**

DESIGN TEAM:  
 C.L.R. DPH  
 CHECK BY:

DRAWING INFORMATION:  
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 962317.gnrcf

JUNE, 2017  
 F&V PROJECT NO.  
 830300

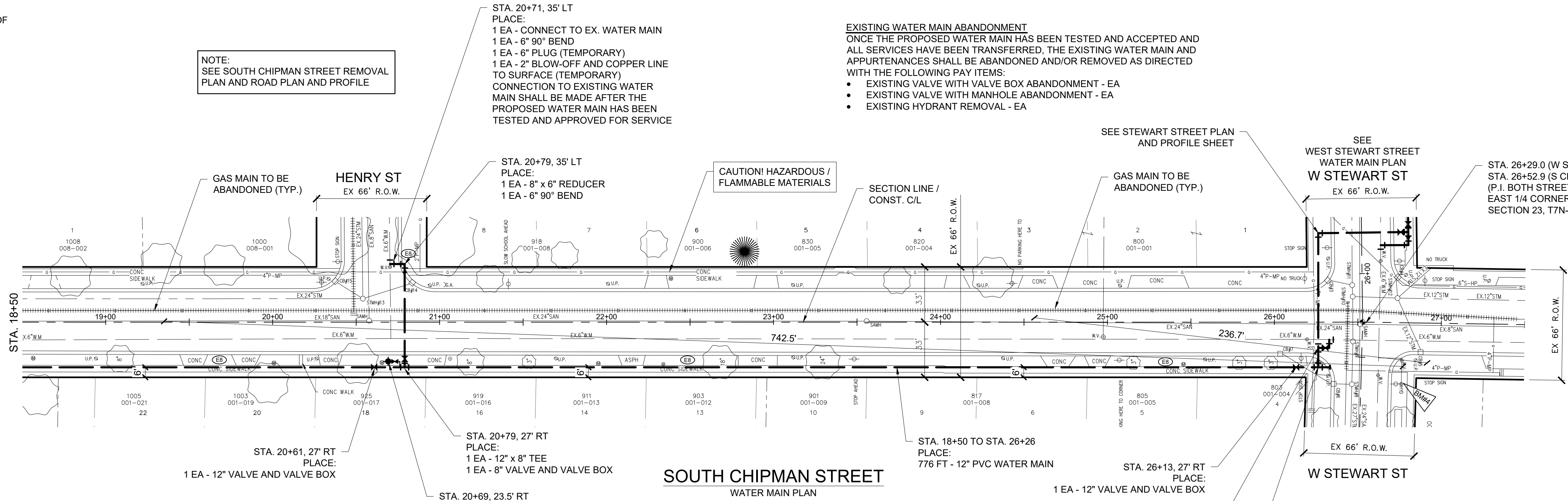
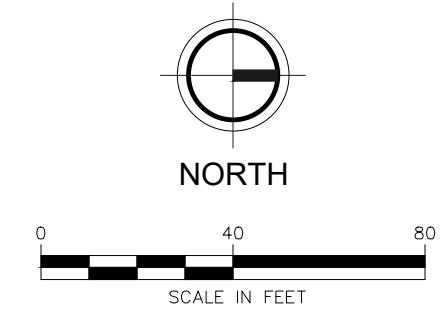
**27**

BM #4 EL. 737.69  
 NORTHEAST BOLT OF HYDRANT, NORTHEAST CORNER OF  
 WEST STEWART STREET AND SOUTH CHIPMAN STREET  
 (LOCAL DATUM)

NOTE:  
 SEE SOUTH CHIPMAN STREET  
 PLAN AND ROAD PLAN AND PROFILE

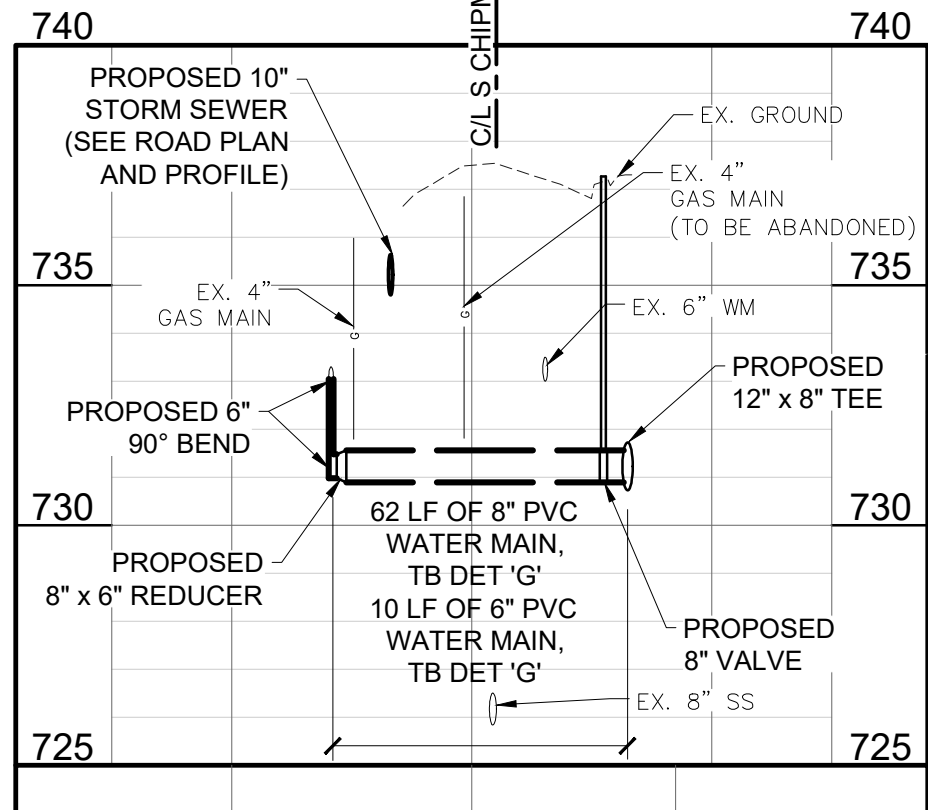
STA. 20+71, 35' LT  
 PLACE:  
 1 EA - CONNECT TO EX. WATER MAIN  
 1 EA - 6" 90° BEND  
 1 EA - 6" PLUG (TEMPORARY)  
 1 EA - 2" BLOW-OFF AND COPPER LINE  
 TO SURFACE (TEMPORARY)  
 CONNECTION TO EXISTING WATER  
 MAIN SHALL BE MADE AFTER THE  
 PROPOSED WATER MAIN HAS BEEN  
 TESTED AND APPROVED FOR SERVICE

EXISTING WATER MAIN ABANDONMENT  
 ONCE THE PROPOSED WATER MAIN HAS BEEN TESTED AND ACCEPTED AND  
 ALL SERVICES HAVE BEEN TRANSFERRED, THE EXISTING WATER MAIN AND  
 APPURTENANCES SHALL BE ABANDONED AND/OR REMOVED AS DIRECTED  
 WITH THE FOLLOWING PAY ITEMS:  
 • EXISTING VALVE WITH VALVE BOX ABANDONMENT - EA  
 • EXISTING VALVE WITH MANHOLE ABANDONMENT - EA  
 • EXISTING HYDRANT REMOVAL - EA



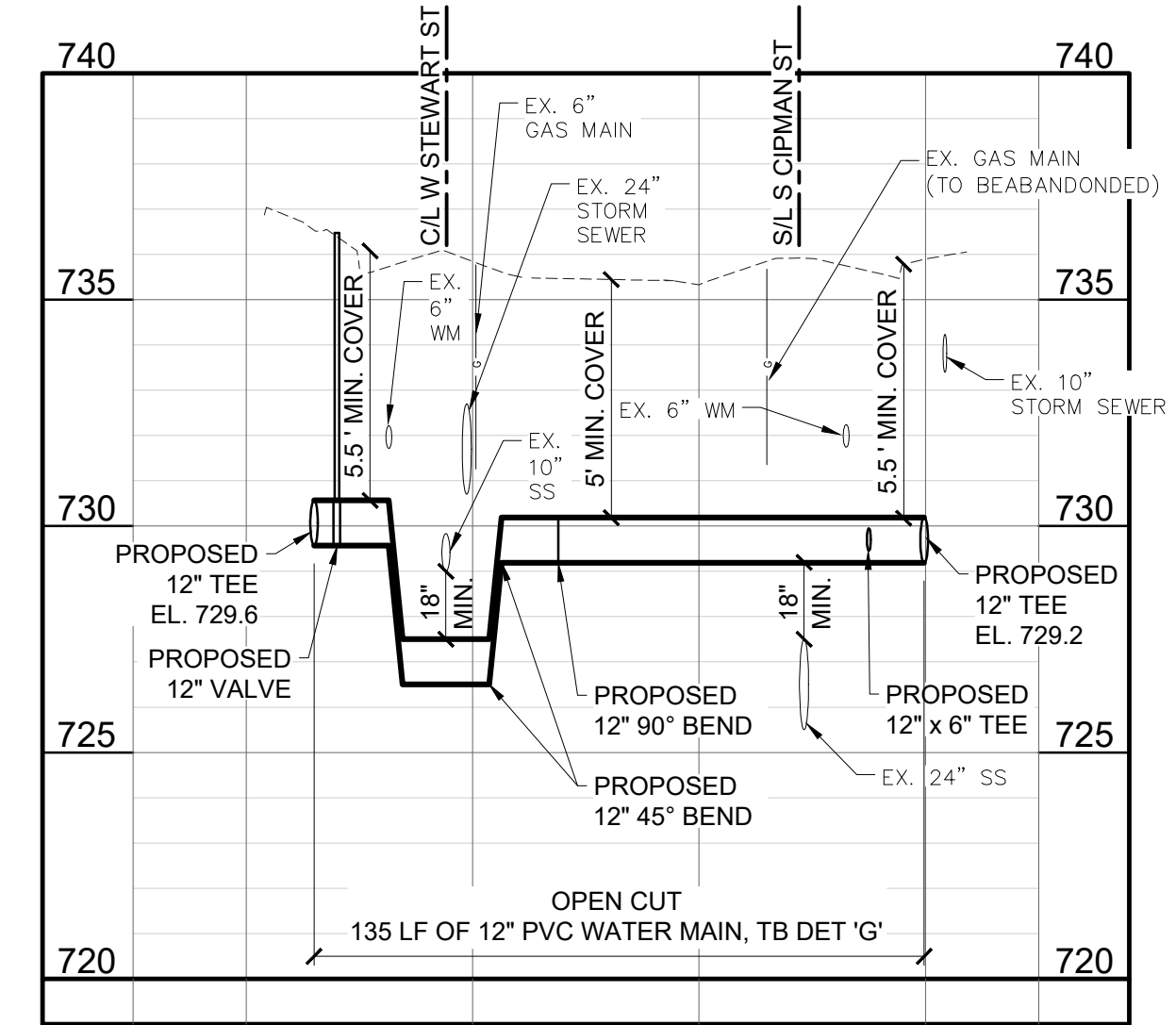
**SOUTH CHIPMAN STREET**  
 WATER MAIN PLAN

- LEGEND**
- WATER MAIN
  - x GATE VALVE AND BOX, .1 INCH
  - ◀ REDUCER
  - ⊙ STANDARD SOIL EROSION KEY

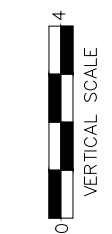
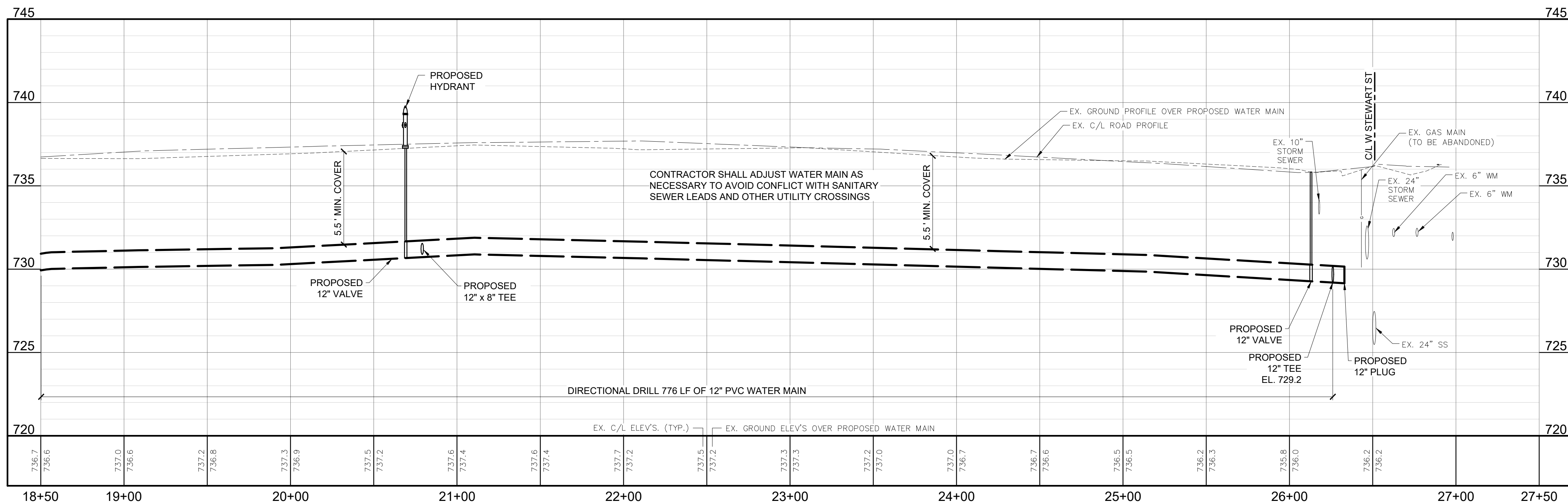


CROSSING AT HENRY STREET

WATER MAIN QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
2	EA	CONNECT TO EX. WATER MAIN
3	EA	EXISTING VALVE AND VALVE BOX ABANDONMENT
22	LF	6" PVC WATER MAIN, TRENCH BACKFILL DETAIL 'G'
62	LF	8" PVC WATER MAIN, TRENCH BACKFILL DETAIL 'G'
142	LF	12" PVC WATER MAIN, TRENCH BACKFILL DETAIL 'G'
776	LF	12" PVC WATER MAIN, DIRECTIONAL DRILL
2	EA	12" x 6" TEE
1	EA	12" x 8" TEE
1	EA	12" TEE
1	EA	8" x 6" REDUCER
1	EA	6" PLUG
1	EA	12" PLUG
4	EA	6" 90° BEND
1	EA	6" VALVE AND VALVE BOX
1	EA	8" VALVE AND VALVE BOX
2	EA	12" VALVE AND VALVE BOX
1	EA	90° FIRE HYDRANT ASSEMBLY
10	EA	NEW WATER SERVICE, OPEN CUT
7	EA	NEW WATER SERVICE, FREEBORE
1	EA	2" BLOW-OFF AND COPPER LINE TO SURFACE



CROSSING AT CHIPMAN AND STEWART STREET



**FLEISCHMANN**  
 DESIGN, BUILD, OPERATE

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REVISION:

CITY OF OWOSO  
 SHAWASSEE COUNTY, MICHIGAN  
 2017 STREET PROGRAM

WATER MAIN PLAN AND PROFILE - S. CHIPMAN ST

DESIGN TEAM:  
 CLR, DPH  
 CHECK BY:

DRAWING INFORMATION:  
 830300\_26\_27\_28  
 9/23/17 gnicf

JUNE, 2017  
 F&V PROJECT NO.  
 830300







MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET  
S-E-S-C KEYING SYSTEM

KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
<b>EROSION CONTROLS</b>			
E1	SELECTIVE GRADING AND SHAPING		To reduce steep slopes and erosive velocities.
E2	GRUBBING OMITTED		For use on steep slopes to prevent rilling, gullying, and reduce sheet flow velocity or where clear vision corridors are necessary.
E3	SLOPE ROUGHENING AND SCARIFICATION		Where created grades cause increased erosive velocities. Promotes infiltration and reduces runoff velocity.
E4	TERRACES		On relatively long slopes up to 8% grades with fairly stable soils.
E5	DUST CONTROL		For use on construction sites, unpaved roads, etc. to reduce dust and sedimentation from wind and construction activities.
E6	MULCH		For use in areas subject to erosive surface flows or severe wind or on newly seeded areas.
E7	TEMPORARY SEEDING		Stabilization method utilized on construction sites where earth change has been initiated but not completed within a 2 week period.
E8	PERMANENT SEEDING		Stabilization method utilized on sites where earth change has been completed (final grading attained).
E9	MULCH BLANKETS		On exposed slopes, newly seeded areas, new ditch bottoms, or areas subject to erosion.
E10	SODDING		On areas and slopes where immediate stabilization is required.
E11	VEGETATED CHANNELS		For use in created stormwater channels. Vegetation is used to slow water velocity and reduce erosion within the channel.
E12	RIPRAP		Use along shorelines, waterways, or where concentrated flows occur. Slows velocity, reduces sediment load, and reduces erosion.
E13	GABION WALLS		On newly created or denuded stream banks to reduce velocity until permanent stabilization is achieved or on existing banks to retard erosive velocities.
E14	ENERGY DISSIPATOR		Where the energy transmitted from a concentrated flow of surface runoff is sufficient to erode receiving area or watercourse.
E15	TEMPORARY SLOPE DRAIN		Where surface runoff temporarily accumulates or sheet flows over the top of a slope and must be conveyed down a slope in order to prevent erosion.
E16	SLOPE DRAIN		Where concentrated flow of surface runoff must be permanently conveyed down a slope in order to prevent erosion.

B = BIOENGINEERING



MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET  
S-E-S-C KEYING SYSTEM

KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
E17	CELLULAR CONFINEMENT SYSTEMS		Used on steep slopes and high velocity channels.
E18	PLASTIC SHEETS		Used on exposed slopes, seeded areas, new ditch bottoms, and areas subject to surface runoff and erosion. Used as a liner in temporary channels and to stabilize stockpiles.
E19	TEMPORARY DRAINAGEWAY/ STREAM CROSSING		Use on construction sites where stream/drainageway crossings are required.
E20	TEMPORARY BYPASS CHANNEL		Use within existing stream corridors when existing flow cannot be interrupted, and at culvert and bridge repair sites.
E21	LIVE STAKING		In areas requiring protection of slopes against surface erosion and shallow mass wasting.
<b>EROSION / SEDIMENT CONTROLS</b>			
ES31	CHECK DAM		Used to reduce surface flow velocities within constructed and existing flow corridors.
ES32	STONE FILTER BERM		Use primarily in areas where sheet or rill flow occurs and to accommodate dewatering flow.
ES33	FILTER ROLLS		In areas requiring immediate protection of slopes against surface erosion and gully formation and for perimeter sediment control.
ES34	SAND FENCE		For use in areas susceptible to wind erosion, especially where the ground has not yet been stabilized by other means.
ES35	DEWATERING		Use where construction activities are limited by the presence of water and dry work is required.
ES36	DIVERSION DIKE/BERM		Within existing flow corridors to address or prevent erosion and sedimentation, or on disturbed or unstable slopes subject to erosive surface water velocities.
ES37	DIVERSION DITCH		In conjunction with a diversion dike, or where diversion of upslope runoff is necessary to prevent damage to unstabilized or disturbed construction areas.
ES38	COFFERDAM/SHEET PILING		Constructed along or within water corridor or waterbody to provide dry construction area.
ES39	STREAMBANK BIOSTABILIZATION		For use along banks where stream and riparian zones may have difficulty recovering from the long-term effects of erosion.
ES40	POLYMERS		To minimize soil erosion and reduce sedimentation in water bodies by increasing soil particle size.
ES41	WATTLES		In areas requiring protection of slopes against surface erosion and gully formation.

B = BIOENGINEERING



MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET  
S-E-S-C KEYING SYSTEM

KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
<b>SEDIMENT CONTROLS</b>			
S51	SILT FENCE		Use adjacent to critical areas, to prevent sediment laden sheet flow from entering these areas.
S52	CATCH BASIN SEDIMENT GUARD		Use in or at stormwater inlets, especially at construction sites.
S53	STABILIZED CONSTRUCTION ACCESS		Used at every point where construction traffic enters or leaves a construction site.
S54	TIRE WASH		For use on construction sites where vehicular traffic requires sediment removed from its tires in highly erosive areas.
S55	SEDIMENT BASIN		At the outlet of disturbed areas and at the location of a permanent detention basin.
S56	SEDIMENT TRAP		In small drainage areas, along construction site perimeters, and above check dams or drain inlets.
S57	VEGETATED BUFFER/FILTER STRIP		Use along shorelines, waterways, or other sensitive areas. Slows velocity, reduces sediment load, and reduces erosion in areas of sheet flow.
S58	INLET PROTECTION FABRIC DROP		Use at stormwater inlets, especially at construction sites.
S59	INLET PROTECTION FABRIC FENCE		Use at stormwater inlets, especially at construction sites.
S60	INLET PROTECTION STONE		Use around urban stormwater inlets.
S61	TURBIDITY CURTAIN		Use during construction adjacent to a water resource, to contain sediment within the work area when other BMP's cannot be used.

B = BIOENGINEERING

CONSTRUCTION SEQUENCE

1. INSTALLATION OF TEMPORARY EROSION CONTROL MEASURES.
2. TRENCH EXCAVATION, WATER MAIN INSTALLATION, AND BACKFILL.
3. PERMANENT MEASURES, FINAL GRADING, SEEDING AND MULCHING.

SOIL EROSION/SEDIMENTATION CONTROL OPERATION TIME SCHEDULE											
CONSTRUCTION SEQUENCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV/DEC
STRIP AND STOCKPILE TOPSOIL											
ROUGH GRADE/ SEDIMENT CONTROL											
TEMP CONTROL MEASURES											
STORM FACILITIES									N/A		
TEMP CONSTRUCTION ROADS									N/A		
FOUNDATION/ BLDG. CONSTRUCTION									N/A		
SITE CONSTRUCTION											
PERM CONTROL MEASURES											
FINISH GRADING											
LANDSCAPING									N/A		

REVISION:

DESIGN TEAM  
INITIALS  
CHECK BY:

DRAWING INFORMATION:  
830300\_29  
061417 danielh

JUNE, 2017  
F&V PROJECT NO.  
830300