CONTROL SECTION STU | JOB NO. - | SH. NO. 1

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MUSKEGON

West Michigan's Shoreline City
www.shorelinecity.com

CITY OF MUSKEGON
IN COOPERATION WITH
MICHIGAN DEPARTMENT OF ENVIRONMENT GREAT LAKES, AND ENERGY
PLANS OF PROPOSED
MICHIGAN EGLE SRF PROJECT #5675-01
MICHIGAN EGLE DWRF PROJECT #7449-01

SPRING STREET SEWER REROUTE
CITY OF MUSKEGON #S-91851

BOURDON STREET ALLEY SEWER
CITY OF MUSKEGON PROJECT #S-91850

CITY OF MUSKEGON, MICHIGAN
MUSKEGON COUNTY

CITY OF MUSKEGON NO. S-91850 S-91851

ROAD PLANS	SHEET NUMBERS
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PINE STREET & WESTERN AVENUE CROSS SECTIONS	3
YUBA STREET REMOVAL PLAN	4
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YUBA STREET PLAN AND PROFILE STA 11+00 TO STA 15+28	8
SPRING STREET PLAN AND PROFILE STA 1+00 TO STA 11+00	9
SPRING STREET PLAN AND PROFILE STA 11+00 TO STA 16+00	10
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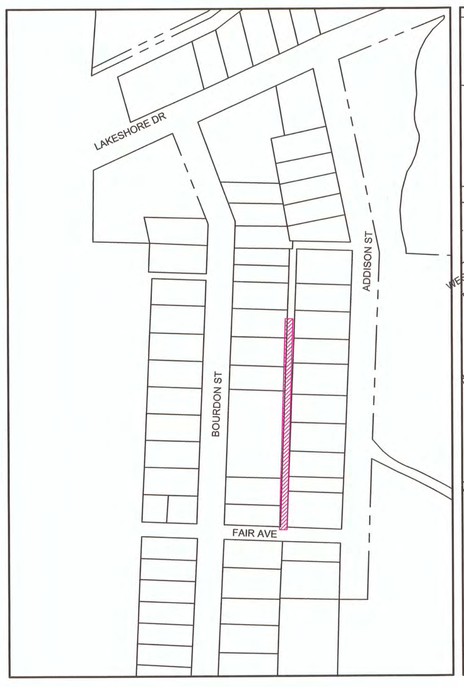
REMOVAL LEGEND

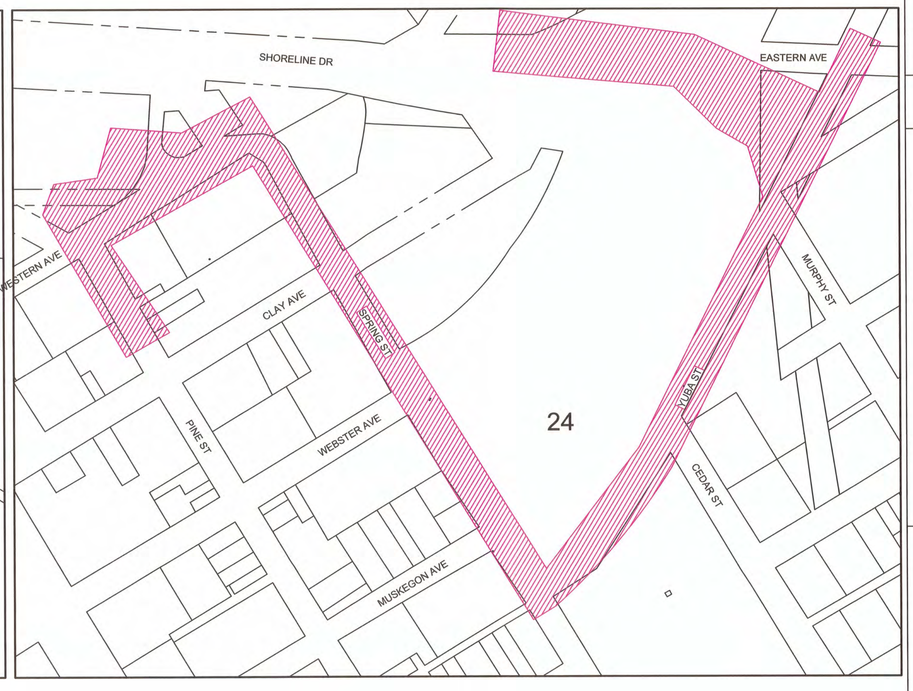
REMOVE	R
SAVE	S
ADJUSTMENT DRAINAGE STRUCTURE	ADJ
ADJUSTMENT DRAINAGE STRUCTURE WITH NEW CASTING	ADJ-B
RELOCATE	REL
RELOCATE BY OTHERS	REL B/O
PAVT, REM, MODIFIED	
COLD MILLING HMA SURFACE	
SIDEWALK, REMOVE	
CURB AND GUTTER, REM	
ABANDON	A
BULKHEAD	B
RECONSTRUCT DRAINAGE STRUCTURE	REC
PAVING LIMITS	

LEGEND

- UTILITY POLE
- GUY ANCHOR
- PEDESTAL
- SIGN
- DECIDUOUS TREE
- CONIFEROUS TREE
- MAILBOX
- SECTION CORNER
- BM BENCH MARK
- 12 SECTION NUMBER
- EXIST CATCH BASIN
- PROP CATCH BASIN
- EXIST MANHOLE
- PROP MANHOLE
- CULVERT END SECTION
- GATE VALVE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- HMA
- HMA APPROACH
- CONCRETE DRIVEWAY AND SIDEWALK

- PARCEL LINE
- EX ELEC — EX. ELECTRIC LINE
- GAS — EX. GAS LINE
- EX TELE — EX. TELEPHONE LINE
- EX. 12"WTR — EX. WATER LINE
- PROP. WATER MAIN
- PROP. SANITARY SEWER
- PROP. STORM SEWER
- DITCH LINE





N

THE PROJECT CONSISTS OF THE FOLLOWING MAJOR ITEMS OF WORK: 0.53 MILES OF HMA ROADWAY RECONSTRUCTION INCLUDING SAND SUBBASE, AGGREGATE BASE, ROADWAY SURCHARGING, CURB AND GUTTER, SIDEWALK AND ADA RAMPS, 2,173 LINEAL FEET OF SANITARY SEWER RANGING IN SIZE FROM 8-INCH TO 30-INCH, INCLUDING TWO (2) BORE AND JACK OPERATIONS, 20 HELICAL PILE INSTALLATIONS, FLOW METER UPGRADE, AND ASSOCIATED APPURTENANCES, AND ALSO 1,508 LINEAL FEET OF DI WATER MAIN RANGING IN SIZE FROM 6-INCH TO 16-INCH WITH ASSOCIATED APPURTENANCES FOR THE SPRING STREET AND YUBA STREET PROJECT
AND ALSO:
365 LINEAL FEET OF 8-INCH SANITARY SEWER REPLACEMENT WITH ASSOCIATED APPURTENANCES AND GRAVEL ALLEY RESTORATION FOR THE BOURDON AND ADDISON ALLEY PROJECT.

THESE PLANS WERE PREPARED FOR THE
CITY OF MUSKEGON
BY

Eng. TM Engineering & Surveying
4063 Grand Oak Drive Suite A109
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16930 Robbins Road Suite 105
Grand Haven, MI 49417
616.743.7070
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STATE OF MICHIGAN — RYAN C. McENHILL — ENGINEER NO. 56096 — LICENSED PROFESSIONAL ENGINEER

RYAN C. MCENHILL ENGINEER

5/10/19
DATE

MUSKEGON
West Michigan's Shoreline City
www.shorelinecity.com

CITY OF MUSKEGON APPROVAL

LEO EVANS, PE - DIRECTOR OF PUBLIC WORKS — DATE

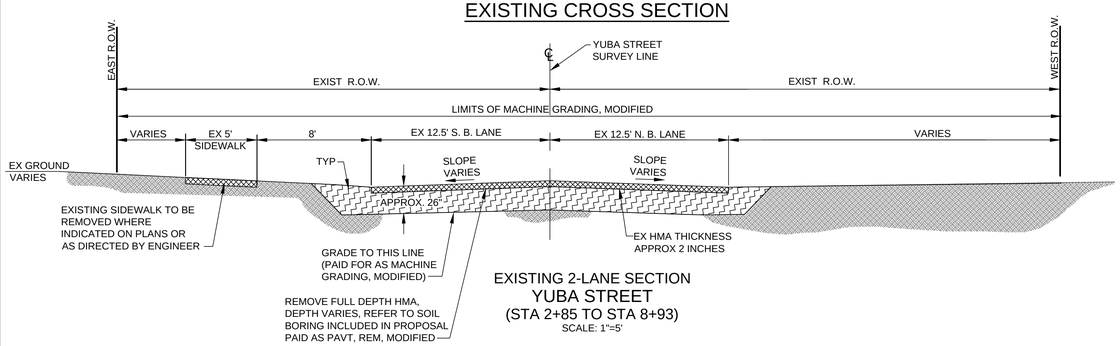
LEIGHANN MIKESELL, PE - DIRECTOR OF MUNICIPAL SERVICES — DATE

3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG. 1-800-482-7171 (TOLL FREE)

SHEET NO. 1

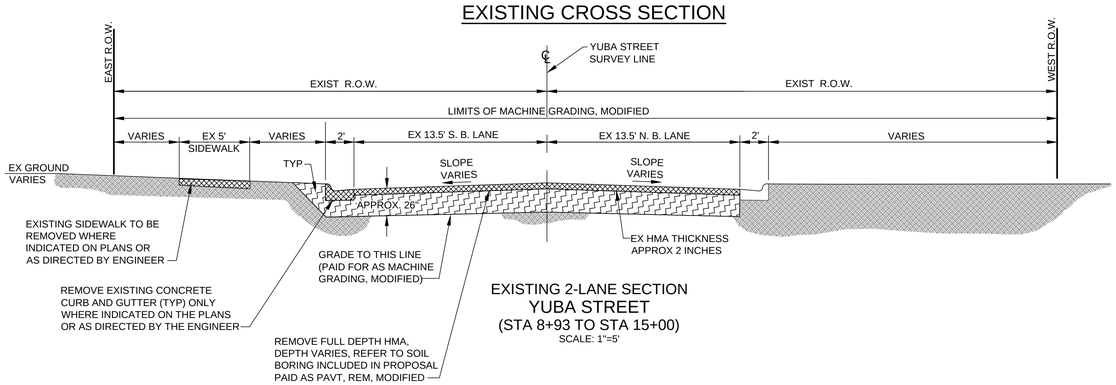
I:\Autocad Drawings\18R051\18R051cover.dwg, 5/10/2019 1:17:14 PM, DWG To PDF.pc3

EXISTING CROSS SECTION



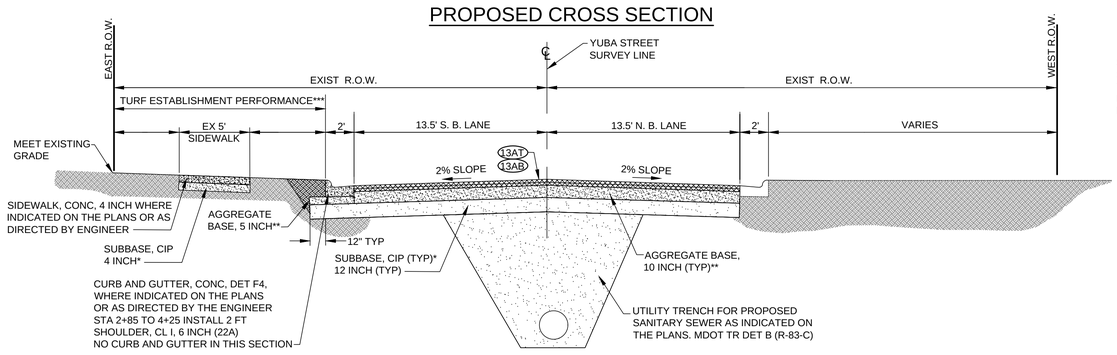
EXISTING 2-LANE SECTION
YUBA STREET
(STA 2+85 TO STA 8+93)
SCALE: 1"=5'

EXISTING CROSS SECTION



EXISTING 2-LANE SECTION
YUBA STREET
(STA 8+93 TO STA 15+00)
SCALE: 1"=5'

PROPOSED CROSS SECTION

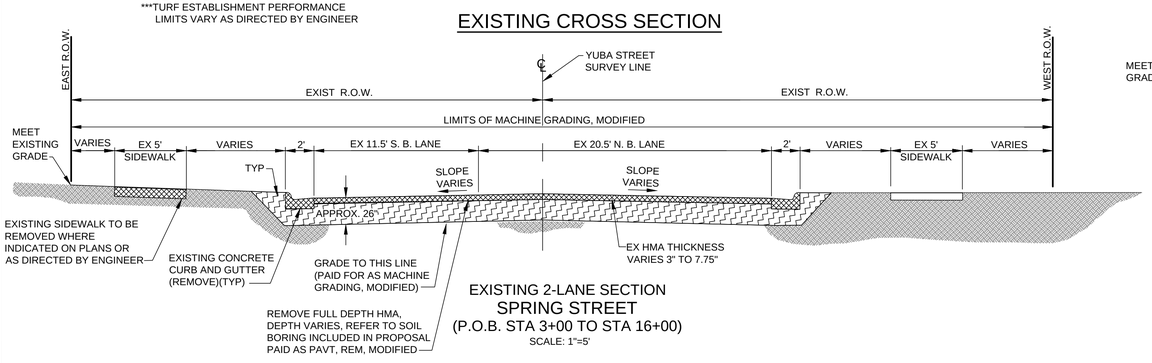


* SUBBASE, CIP SHALL BE GRANULAR MDOT CLASS II MATERIAL
**AGGREGATE BASE, 10 INCH AND AGGREGATE BASE, 5 INCH SHALL BE MDOT 22A MATERIAL
***TURF ESTABLISHMENT PERFORMANCE LIMITS VARY AS DIRECTED BY ENGINEER

YUBA STREET
PROPOSED 2-LANE SECTION
(STA 2+85 TO STA 15+00)
SCALE: 1"=5'

NOTE: FOR STORM SEWER USE TR DET B (MDOT R-83-C)
FOR WATER MAIN USE TR DET G (MDOT R-83-C)

EXISTING CROSS SECTION

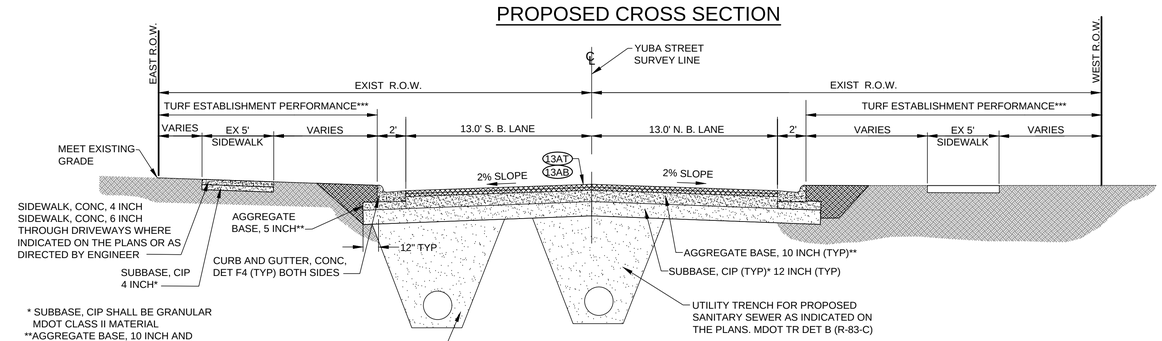


EXISTING 2-LANE SECTION
SPRING STREET
(P.O.B. STA 3+00 TO STA 16+00)
SCALE: 1"=5'

HMA APPLICATION ESTIMATE

IDENT NO.	ITEM	RATE PER SYD	PERFORMANCE GRADE	REMARKS
13AT	HMA, 13A	220 LB	64-28	TOP COURSE
13AB	HMA, 13A	220 LB	64-28	BASE COURSE
HMA A	HMA APPROACH	440 LB	64-28	HMA APPROACH-SIDE STREETS 13AT TOP COURSE @ 220LB/SYD 13AB BASE COURSE @ 220LB/SYD

PROPOSED CROSS SECTION



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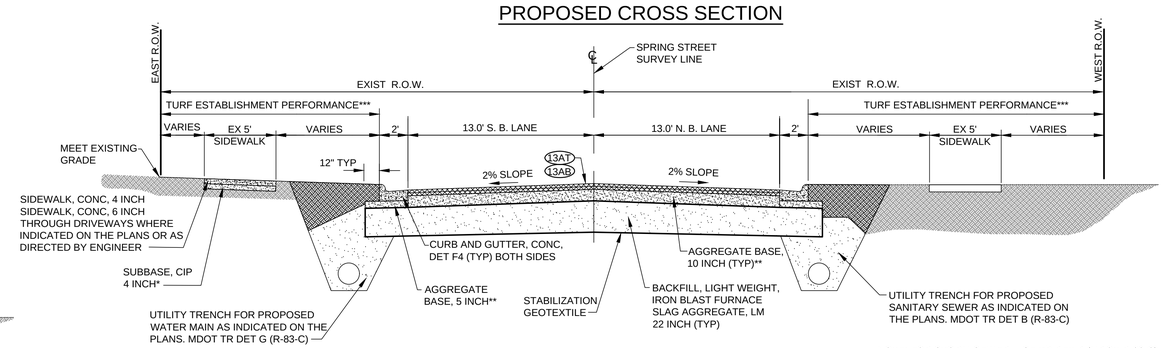
**AGGREGATE BASE, 10 INCH AND AGGREGATE BASE, 5 INCH SHALL BE MDOT 22A MATERIAL
***TURF ESTABLISHMENT PERFORMANCE LIMITS VARY AS DIRECTED BY ENGINEER

SPRING STREET
PROPOSED 2-LANE SECTION
(STA 3+00 TO STA 6+50)
(STA 10+60 TO STA 13+83)
SCALE: 1"=5'

NOTE: FOR STORM SEWER, USE TR DET B (MDOT R-83-C)

PROPOSED CROSS SECTION



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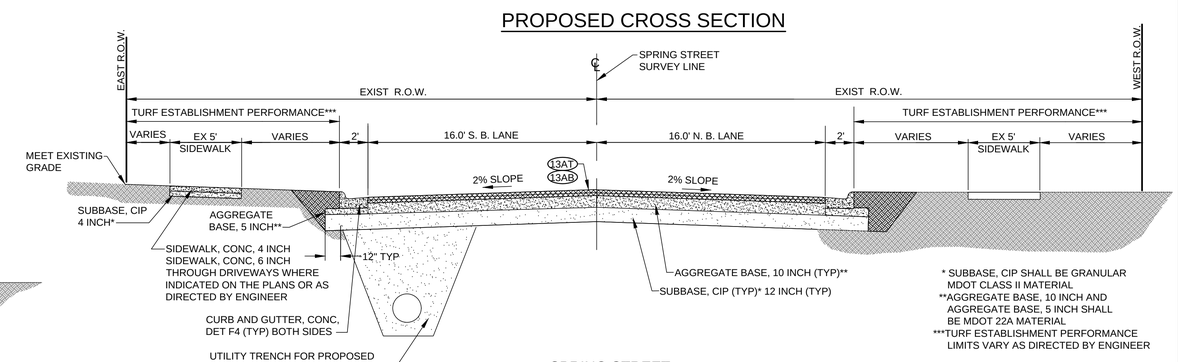
SPRING STREET
PROPOSED 2-LANE SECTION
(STA 6+50 TO STA 10+60)
SCALE: 1"=5'

NOTE: FOR STORM SEWER, USE TR DET B (MDOT R-83-C)

PROPOSED CROSS SECTION



NOTE: FOR STORM SEWER, USE TR DET B (MDOT R-83-C)

SPRING STREET
PROPOSED 2-LANE SECTION
(STA 13+83 TO STA 16+00)
SCALE: 1"=5'

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***TURF ESTABLISHMENT PERFORMANCE LIMITS VARY AS DIRECTED BY ENGINEER

YUBA STREET & SPRING STREET CROSS SECTIONS

NO.	REVISIONS	BY	DATE

Drawn By: SPM
Date: 5/10/19
Approved By:
Date

4063 Grand Oak Drive Suite A109
Lansing, MI 48911
517.887.1100

16930 Robbins Road Suite 105
Grand Haven, MI 49417
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Engineering & Surveying

CITY OF MUSKEGON
SPRING STREET SEWER REROUTE AND BOURDON STREET ALLEY SEWER
MICHIGAN EGLE SRF PROJECT NO. 5675-01
MICHIGAN EGLE DWRF PROJECT NO. 7449-01

PROJECT NO.
18051

SHEET NO.
2 OF 18

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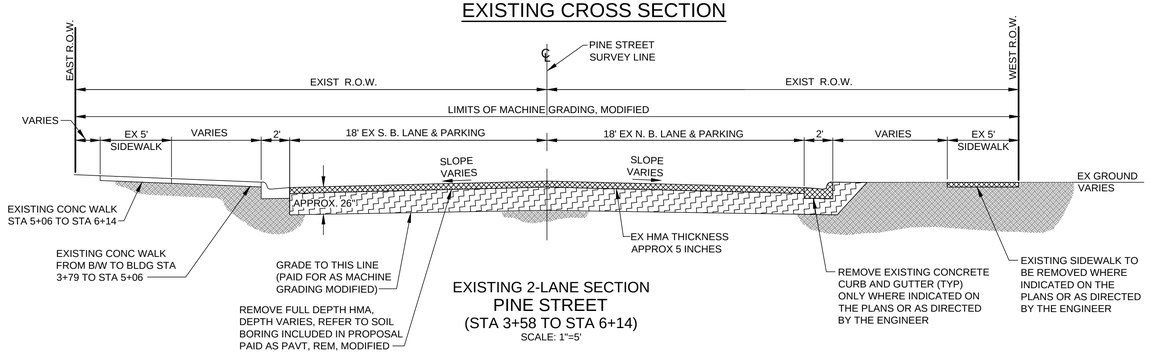
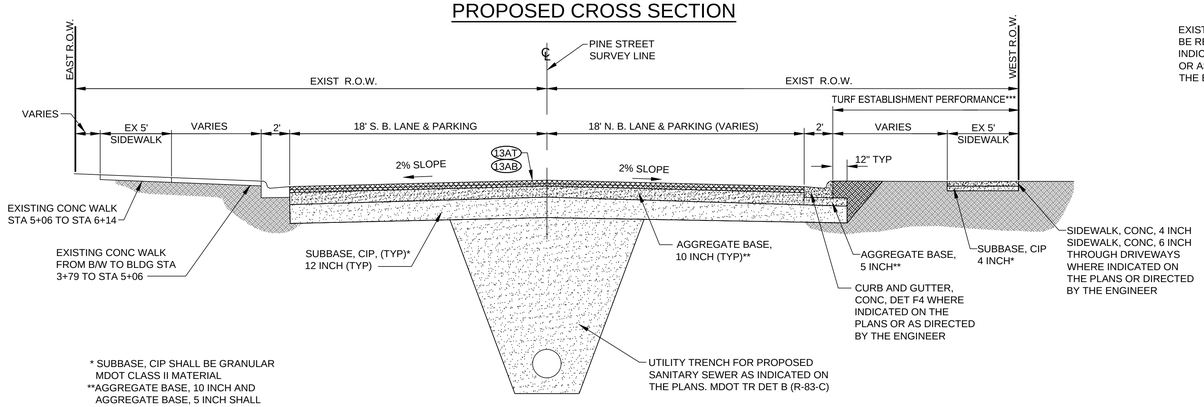


EXISTING 2-LANE SECTION
PINE STREET
(STA 3+58 TO STA 6+14)
SCALE: 1"=5'

PROPOSED CROSS SECTION



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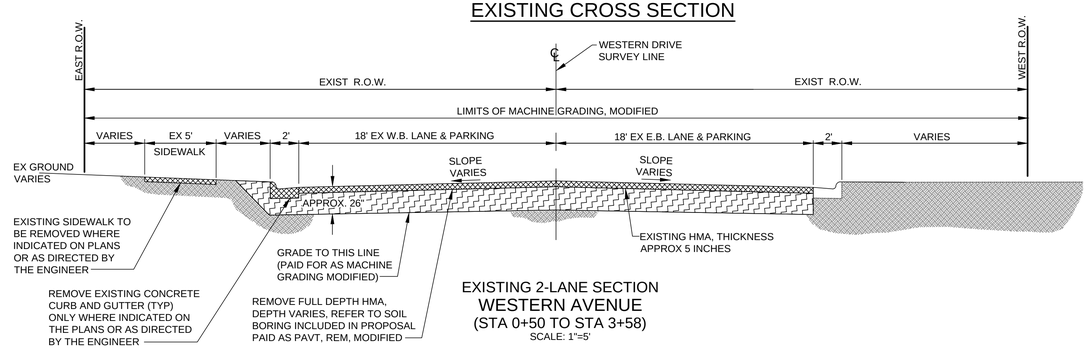
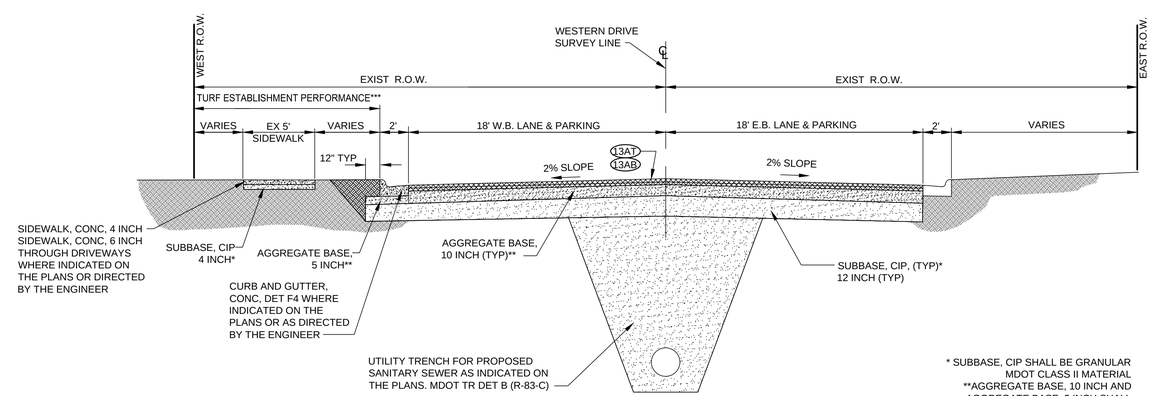
PINE STREET
PROPOSED 2-LANE SECTION
(STA 3+58 TO STA 6+14)
SCALE: 1"=5'

EXISTING CROSS SECTION



EXISTING 2-LANE SECTION
WESTERN AVENUE
(STA 0+50 TO STA 3+58)
SCALE: 1"=5'

PROPOSED CROSS SECTION



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***TURF ESTABLISHMENT PERFORMANCE LIMITS VARY AS DIRECTED BY ENGINEER

WESTERN AVENUE
PROPOSED 2-LANE SECTION
(STA 0+50 TO STA 3+58)
SCALE: 1"=5'

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THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NO.	REVISIONS	BY	DATE

Drawn By SPM
Date 5/10/19
Approved By
Date

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Lansing, MI 48911
517.887.1100

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Grand Haven, MI 49417
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CITY OF MUSKEGON

SPRING STREET SEWER REROUTE AND
BOURDON STREET ALLEY SEWER
MICHIGAN EGLE SRF PROJECT NO. 5675-01
MICHIGAN EGLE DWRF PROJECT NO. 7449-01

PROJECT NO.
18051

SHEET NO.
3 OF 18

PINE STREET & WESTERN AVENUE CROSS SECTIONS

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BM #4 ELEV = 599.67
FOUND BENT SPIKE IN N SIDE UTILITY POLE SW CORNER OF CEDAR ST AND YUBA ST

BM #8 ELEV = 591.84
SET SPIKE IN NW SIDE UTILITY POLE SE SIDE OF YUBA ST 80' NNE OF MURPHY ST

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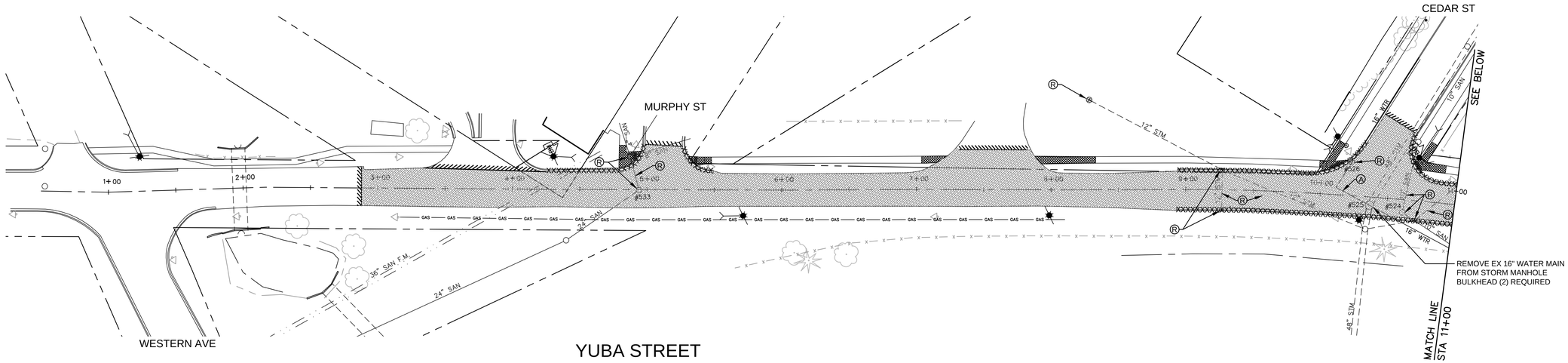
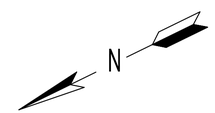
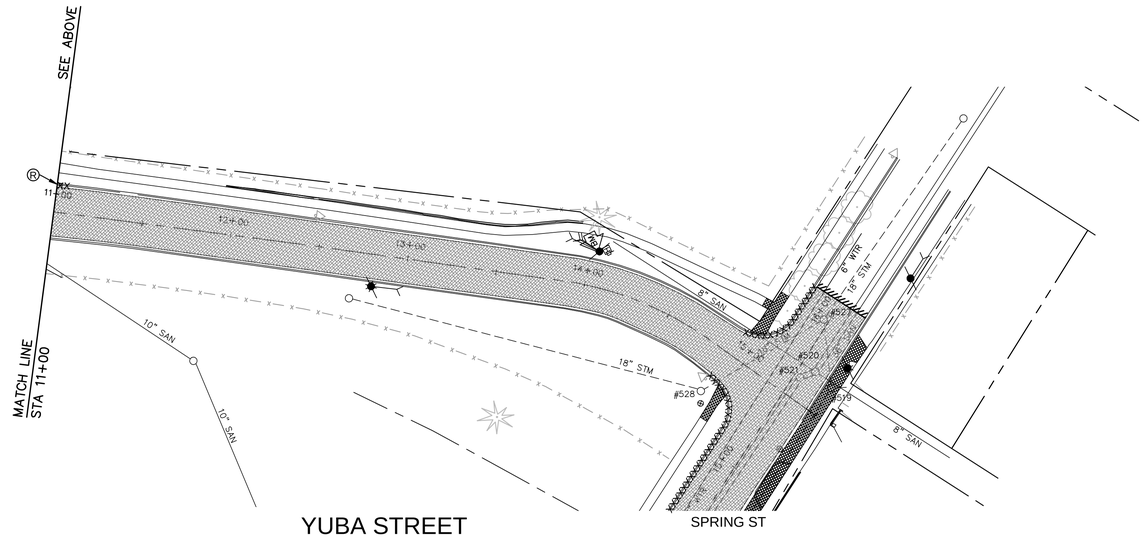




SCALE:
1"=40' HORIZONTAL
1"=4' VERTICAL



YUBA STREET REMOVAL PLAN

NO.	REVISIONS	BY	DATE

Drawn By SPM
Date 5/10/19
Approved By
Date

4063 Grand Oak Drive Suite A109
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CITY OF MUSKEGON

SPRING STREET SEWER REROUTE AND
BOURDON STREET ALLEY SEWER
MICHIGAN EGLE SRF PROJECT NO. 5675-01
MICHIGAN EGLE DWRF PROJECT NO. 7449-01

PROJECT NO.
18051

SHEET NO.
4 OF 18

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BM #5 ELEV = 587.34
SPIKE IN NE SIDE UTILITY POLE S SIDE OF SPRING ST AT 90° CURVE IN FRONT OF WITT BUICK

BM #6 ELEV = 592.70
SET SPIKE IN NW SIDE LIGHT POLE SE CORNER OF WESTERN AVE AND SPRING ST

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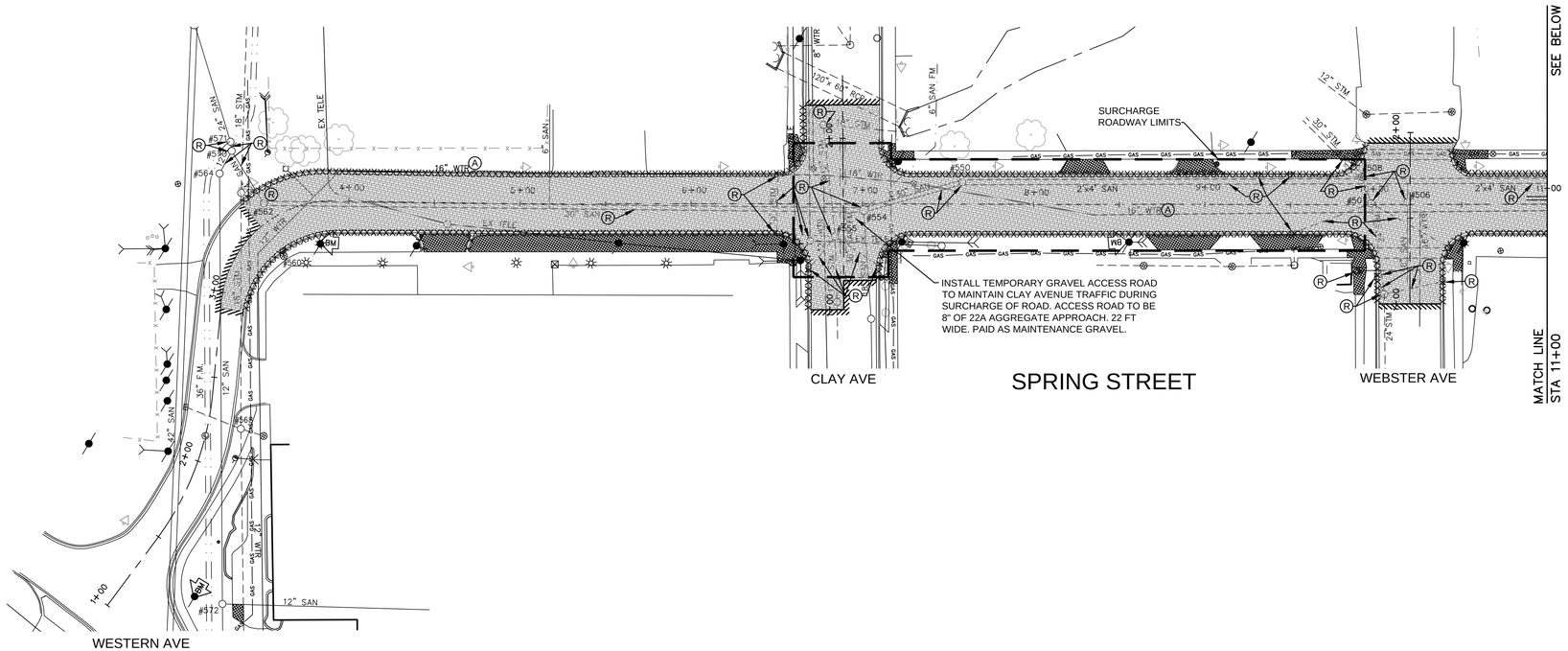

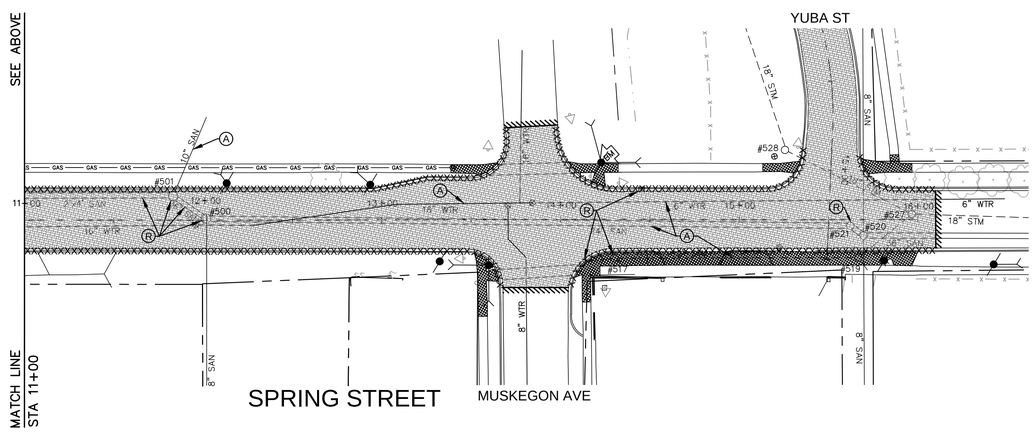

N

SCALE:
1"=40' HORIZONTAL
1"=4' VERTICAL

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Drawn By	Date	Approved By	Date
SPM	5/10/19		

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PROJECT NO.
18051

SHEET NO.
5 OF 18

SPRING STREET
REMOVAL PLAN

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BM #4 ELEV = 599.67
FOUND BENT SPIKE IN N SIDE UTILITY POLE SW CORNER OF CEDAR ST AND YUBA ST

BM #8 ELEV = 591.84
SET SPIKE IN NW SIDE UTILITY POLE SE SIDE OF YUBA ST 80' NNE OF MURPHY ST

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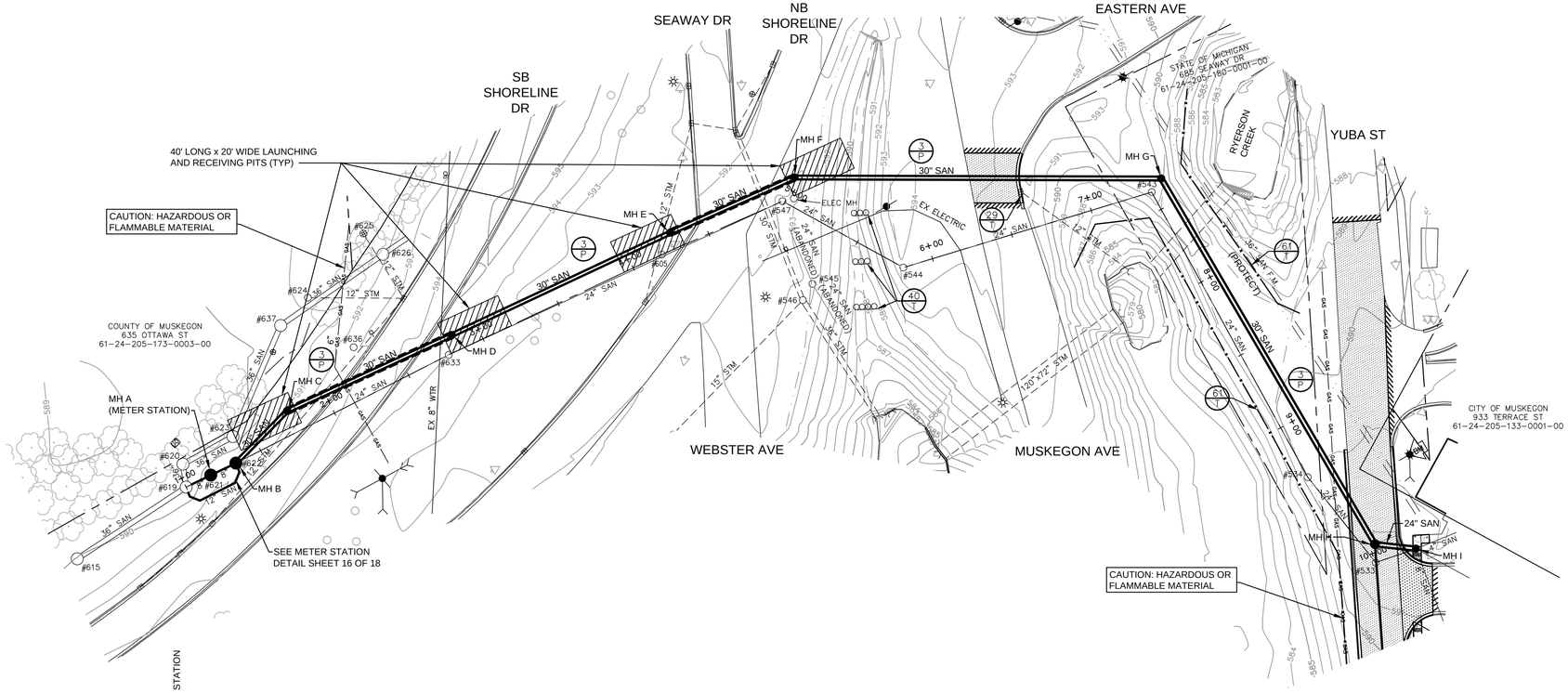

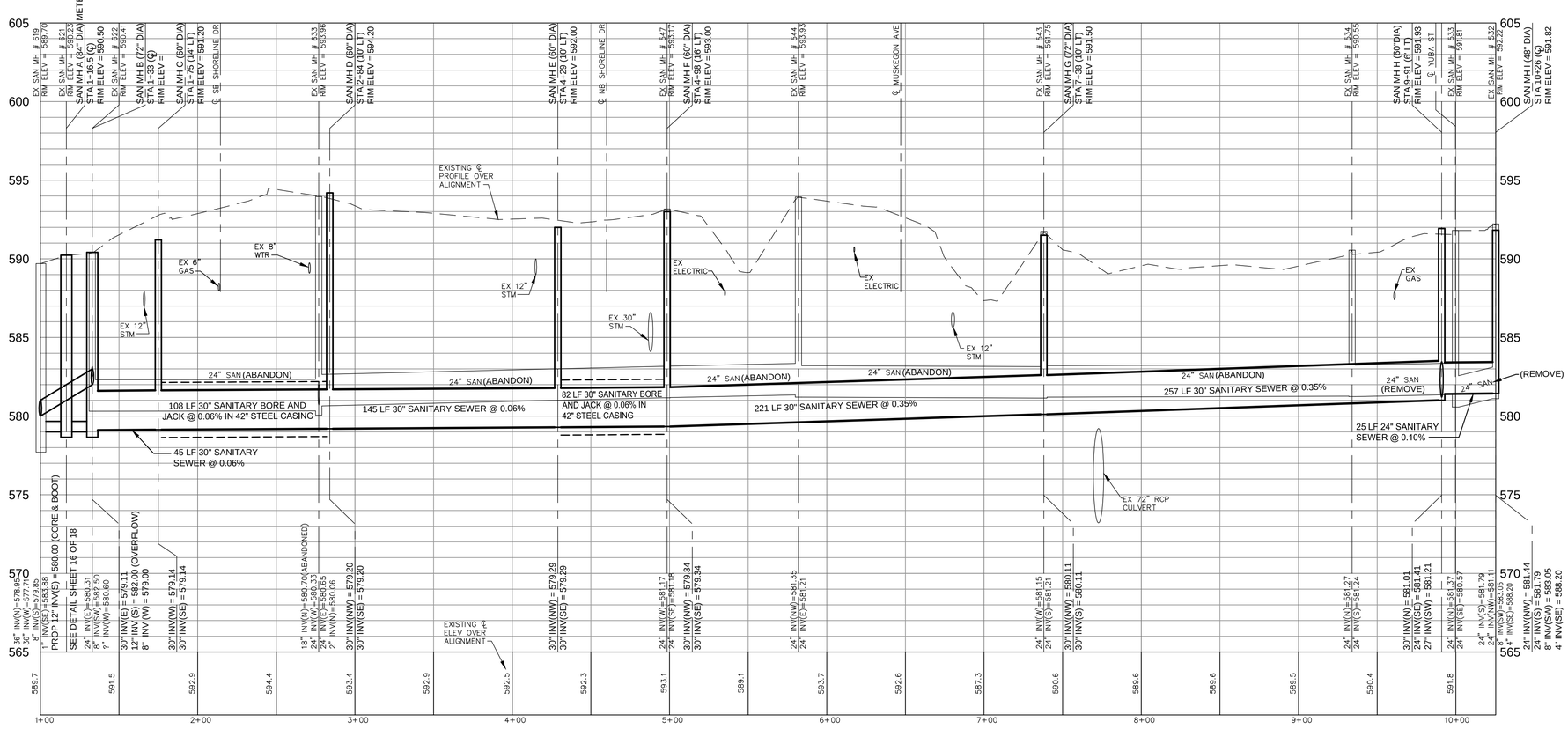

NORTHERN OUTLET
PLAN & PROFILE
STA 1+00 TO STA 10+26

NO.	REVISIONS	BY	DATE

Drawn By: SPM
Date: 5/10/19
Approved By:
Date:

4063 Grand Oak Drive Suite A109
Lansing, MI 48911
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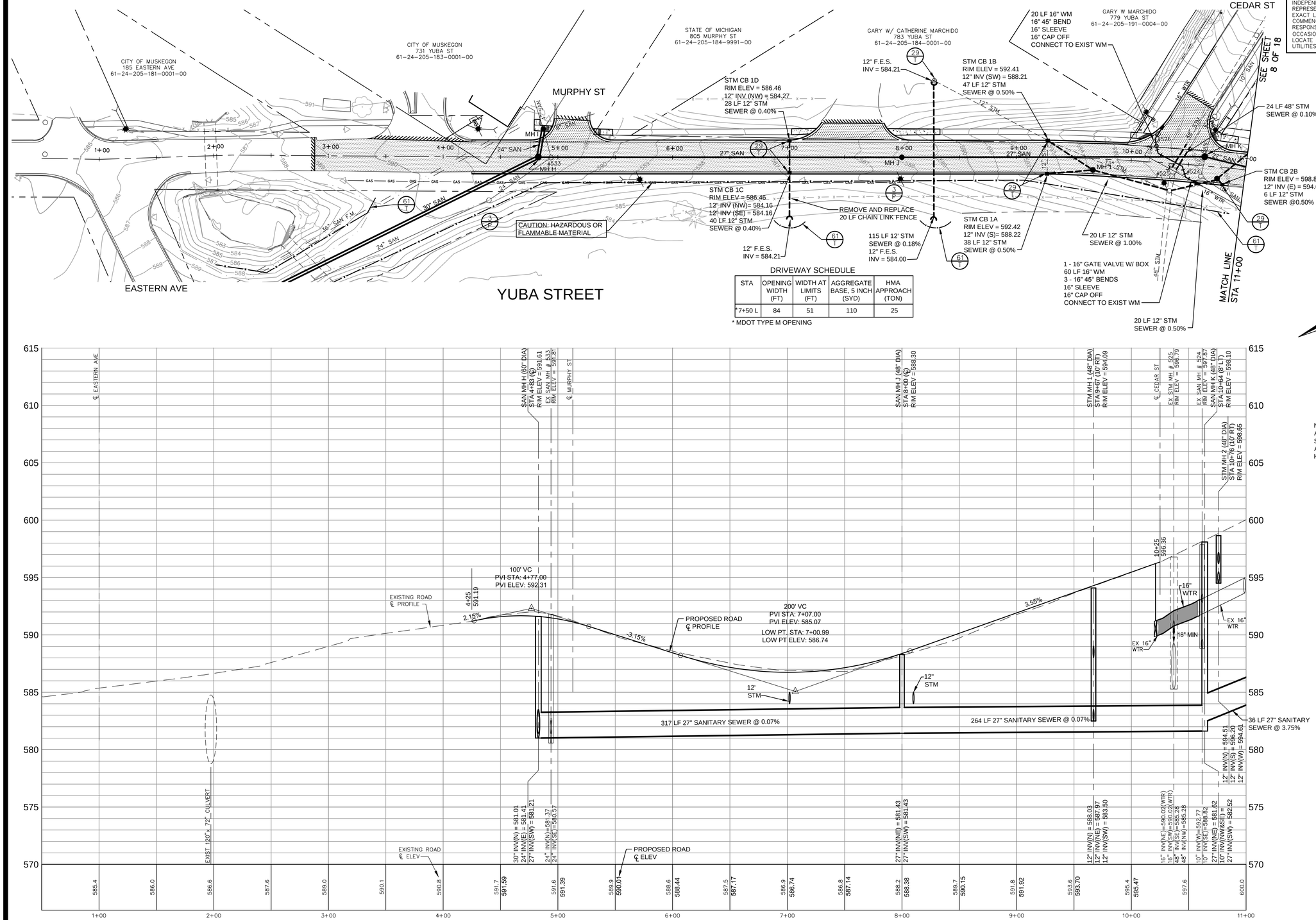
6 OF 18

BM #4 ELEV = 599.67
FOUND BENT SPIKE IN N SIDE UTILITY POLE SW CORNER OF CEDAR ST AND YUBA ST

BM #8 ELEV = 591.84
SET SPIKE IN NW SIDE UTILITY POLE SE SIDE OF YUBA ST 80' NNE OF MURPHY ST

811 Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.



DRIVEWAY SCHEDULE

STA	OPENING WIDTH (FT)	WIDTH AT LIMITS (FT)	AGGREGATE BASE, 5 INCH (SYD)	HMA APPROACH (TON)
*7+50 L	84	51	110	25

* MDOT TYPE M OPENING

NOTES:
ALL STM CB'S TO BE 48" DIA WITH 2' SUMP UNLESS OTHERWISE NOTED
ALL SUMP BASES TO HAVE FOUR 1 INCH HOLES DRILLED.

YUBA STREET
PLAN & PROFILE
STA 1+00 TO STA 11+00

NO.	REVISIONS	BY	DATE

Drawn By	SPM
Date	5/10/19
Approved By	
Date	

4063 Grand Oak Drive Suite A109
Lansing, MI 48911
517.887.1100

16930 Robbins Road Suite 105
Grand Haven, MI 49417
616.743.7070

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Eng TM Engineering & Surveying

CITY OF MUSKEGON
SPRING STREET SEWER REROUTE AND
BOURDON STREET ALLEY SEWER
MICHIGAN EGLE SRF PROJECT NO. 5675-01
MICHIGAN EGLE DWRF PROJECT NO. 7449-01

PROJECT NO.
18051

SHEET NO.
7 OF 18

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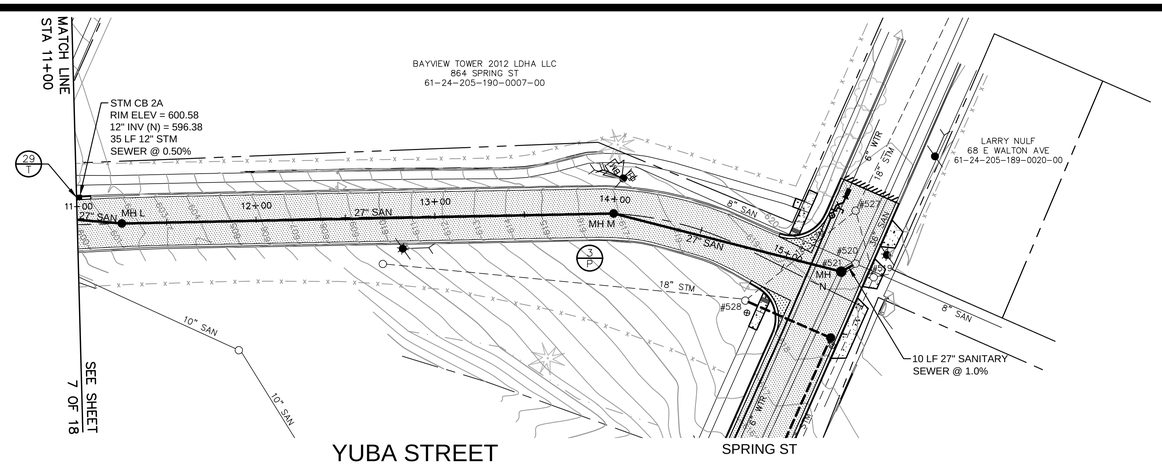

BM #3 ELEV = 618.65
SET SPIKE IN N SIDE UTILITY POLE S SIDE OF YUBA ST 135' NE OF SPRING ST

BM #4 ELEV = 599.65
FOUND BENT SPIKE IN N SIDE UTILITY POLE SW CORNER OF CEDAR ST AND YUBA ST

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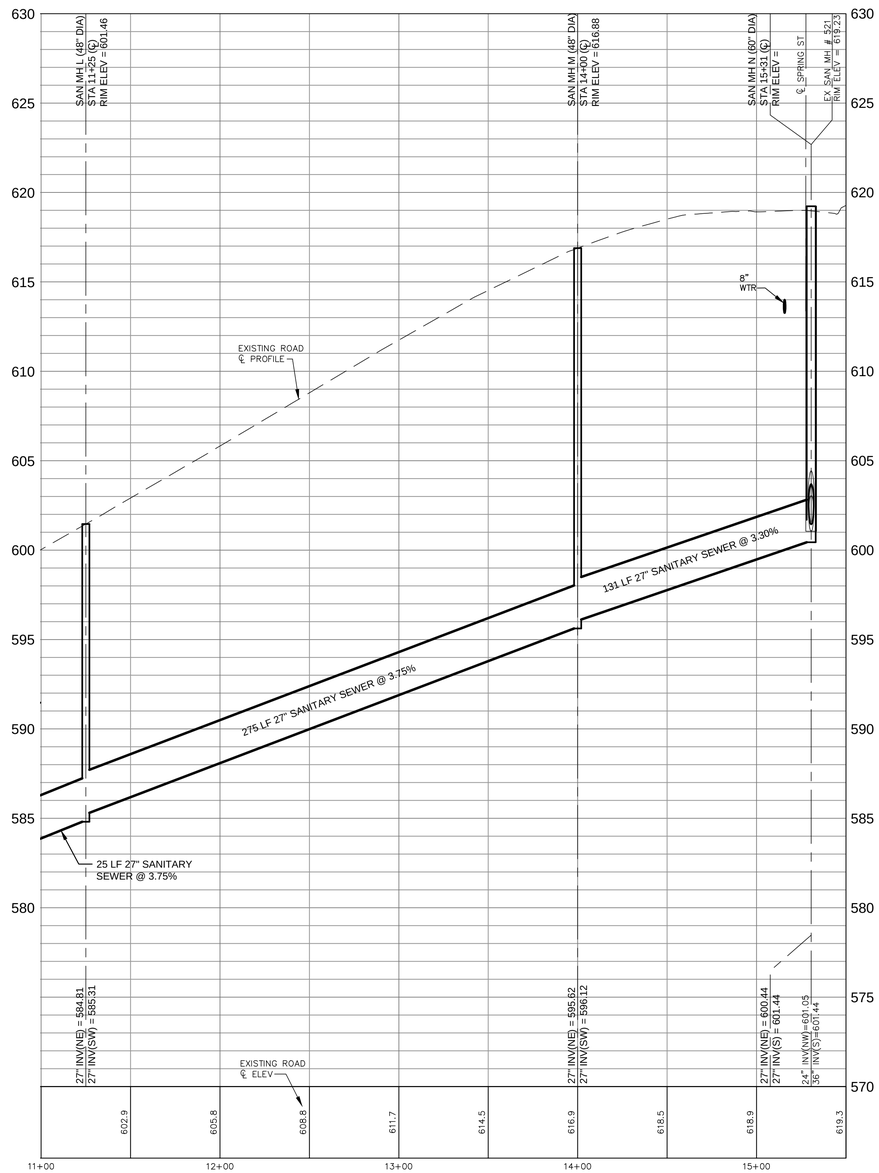

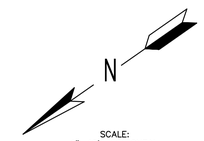

SCALE:
1"=40' HORIZONTAL
1"=4' VERTICAL

NOTES:
ALL STM CB'S TO BE 48" DIA WITH 2' SUMP UNLESS OTHERWISE NOTED
ALL SUMP BASES TO HAVE FOUR 1 INCH HOLES DRILLED.

YUBA STREET
PLAN & PROFILE
STA 11+00 TO STA 15+50

NO.	REVISIONS	BY	DATE

Drawn By SPM
Date 5/10/19
Approved By
Date

4063 Grand Oak Drive Suite A109
Lansing, MI 48911
517.887.1100

16930 Robbins Road Suite 105
Grand Haven, MI 49417
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Engineering & Surveying

CITY OF MUSKEGON
SPRING STREET SEWER REROUTE AND
BOURDON STREET ALLEY SEWER
MICHIGAN EGLE SRF PROJECT NO. 5675-01
MICHIGAN EGLE DWRF PROJECT NO. 7449-01

PROJECT NO.
18051

SHEET NO.
8 OF 18

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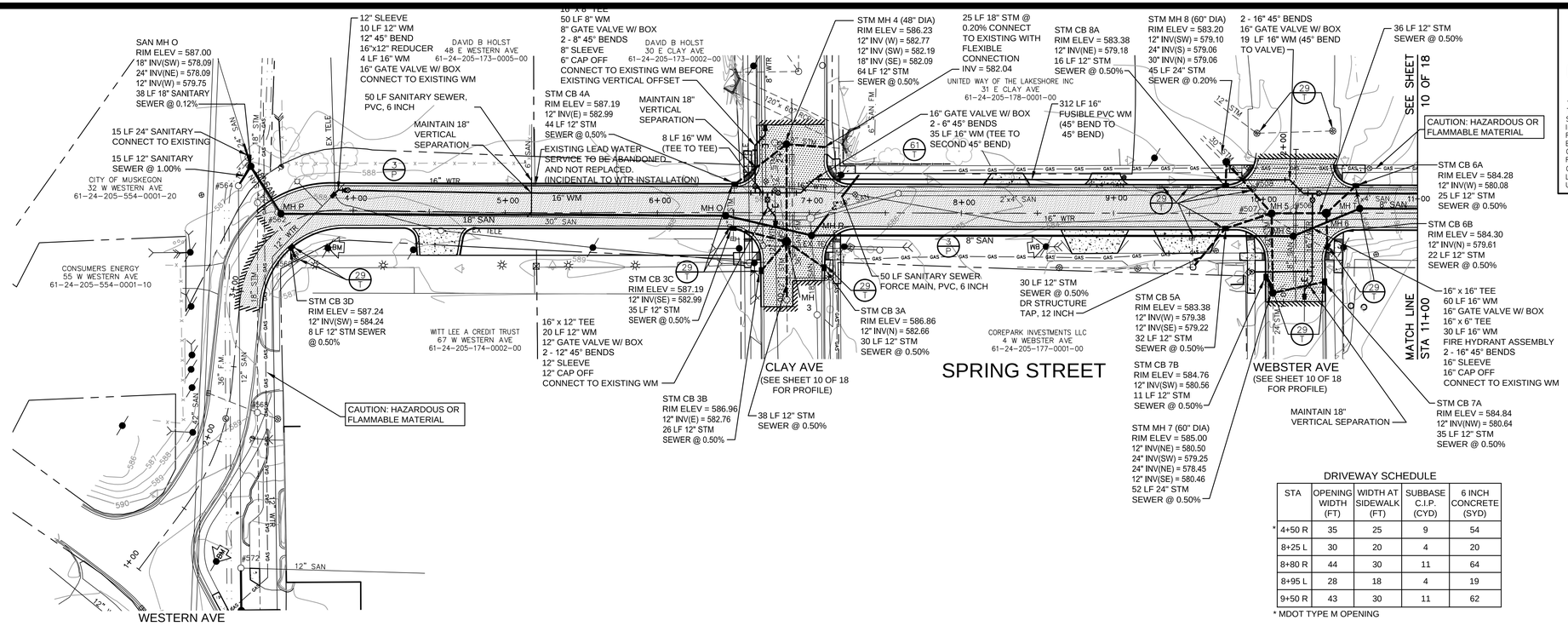

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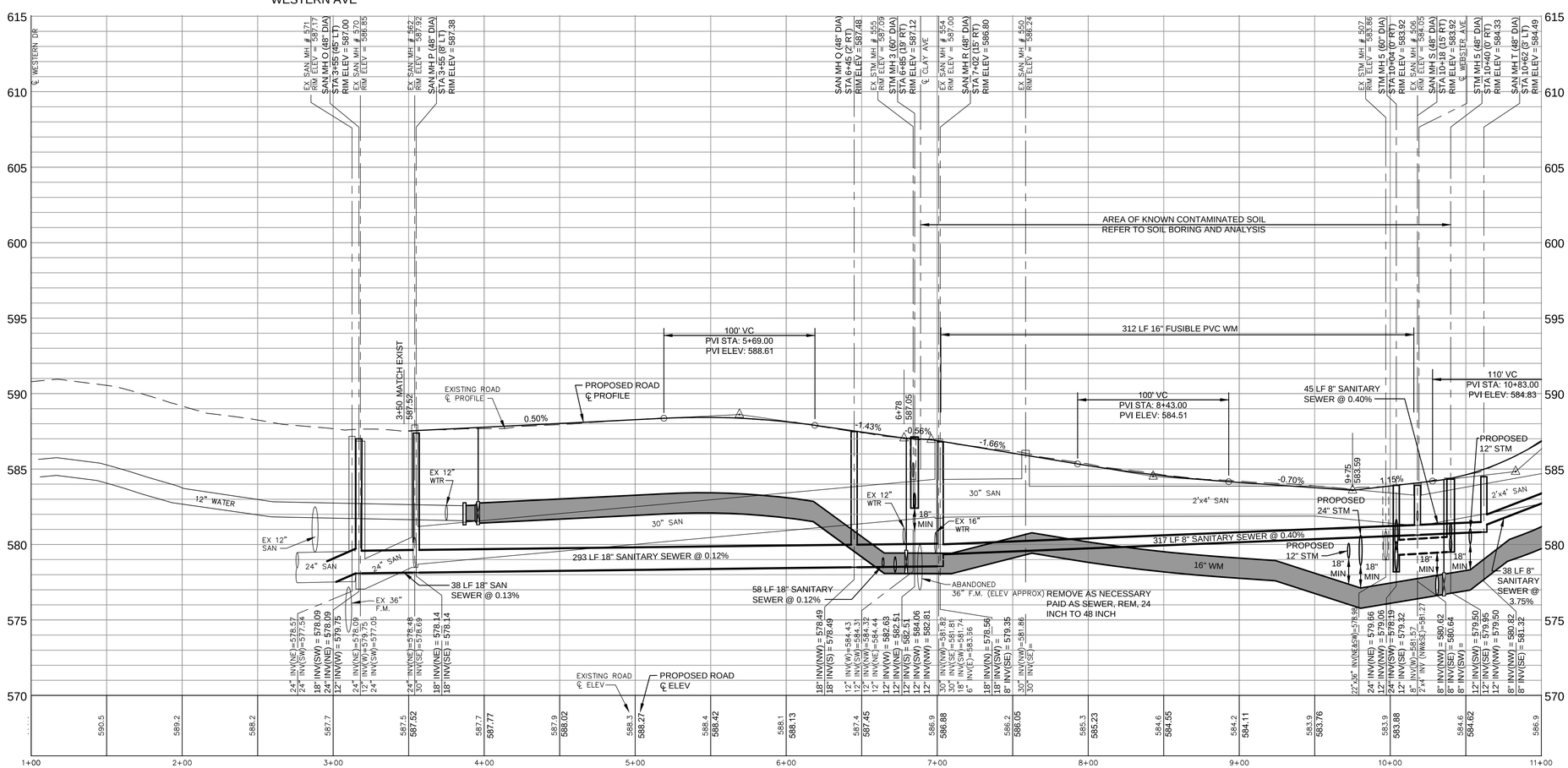
DRIVEWAY SCHEDULE

STA	OPENING WIDTH (FT)	WIDTH AT SIDEWALK (FT)	SUBBASE C.I.P. (CYD)	6 INCH CONCRETE (SYD)
* 4+50 R	35	25	9	54
8+25 L	30	20	4	20
8+80 R	44	30	11	64
8+95 L	28	18	4	19
9+50 R	43	30	11	62

* MDOT TYPE M OPENING



NOTES:

- ALL STM CB'S TO BE 48" DIA WITH 2' SUMP UNLESS OTHERWISE NOTED. ALL SUMP BASES TO HAVE FOUR 1 INCH HOLE DRILLED.
- CONTAMINATED SOILS CONTAIN NON HAZARDOUS LEVELS OF PETROLEUM BY PRODUCTS AND MERCURY. ALL SOILS AND DEWATERING IN THIS AREA MUST BE CAPTURED AND PROPERLY DISPOSED OF OFF SITE.
- 48 E WESTERN AVE IS SUSPECTED TO HAVE A LEAD WATER SERVICE. REMOVE AND ABANDON ANY LEAD SERVICE. THIS SERVICE WILL NOT BE REPLACED. (INCIDENTAL TO WTR INSTALLATION)

SPRING STREET
PLAN & PROFILE
STA 1+00 TO STA 11+00

NO.	REVISIONS	BY	DATE

Drawn By	SPM
Date	5/10/19
Approved By	
Date	

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Lansing, MI 48911
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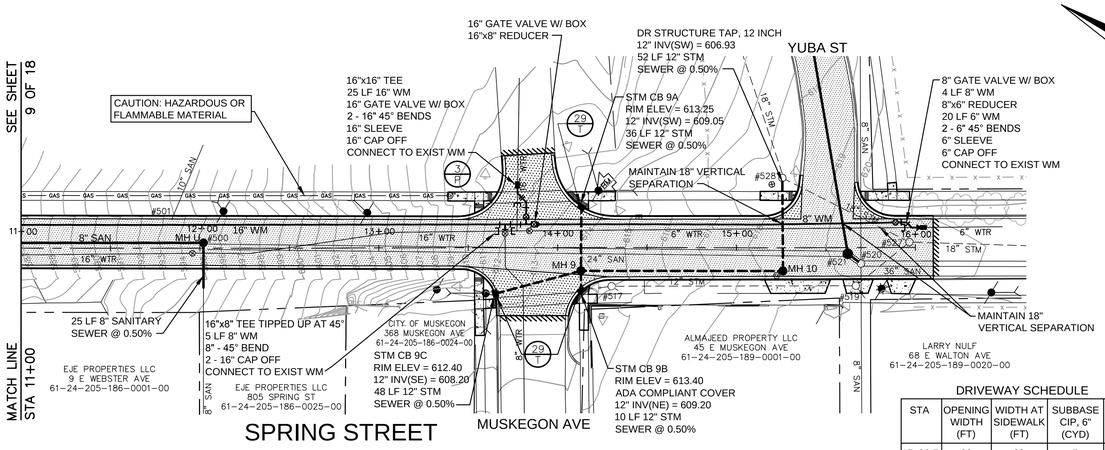
CITY OF MUSKEGON

SPRING STREET SEWER REROUTE AND
BOURDON STREET ALLEY SEWER
MICHIGAN EGLE SRF PROJECT NO. 5675-01
MICHIGAN EGLE DWRF PROJECT NO. 7449-01

PROJECT NO.
18051

SHEET NO.
9 OF 18



BM #1 ELEV = 614.37
SET SPIKE IN W SIDE UTILITY POLE SE CORNER OF MUSKEGON AVE AND SPRING STREET

BM #2 ELEV = 584.51
SPIKE IN E SIDE UTILITY POLE W SIDE OF SPRING ST 125' N OF WEBSTER AVE

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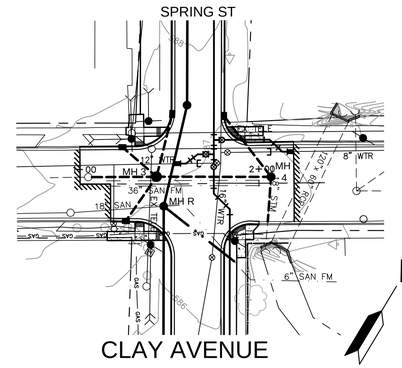
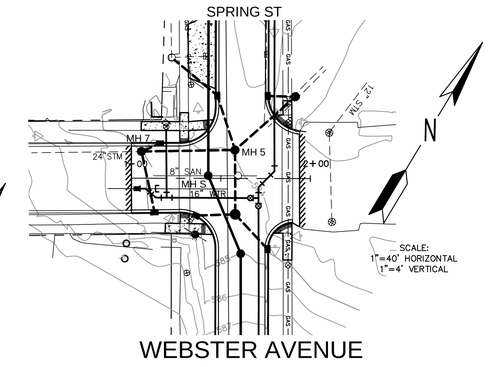
DRIVEWAY SCHEDULE

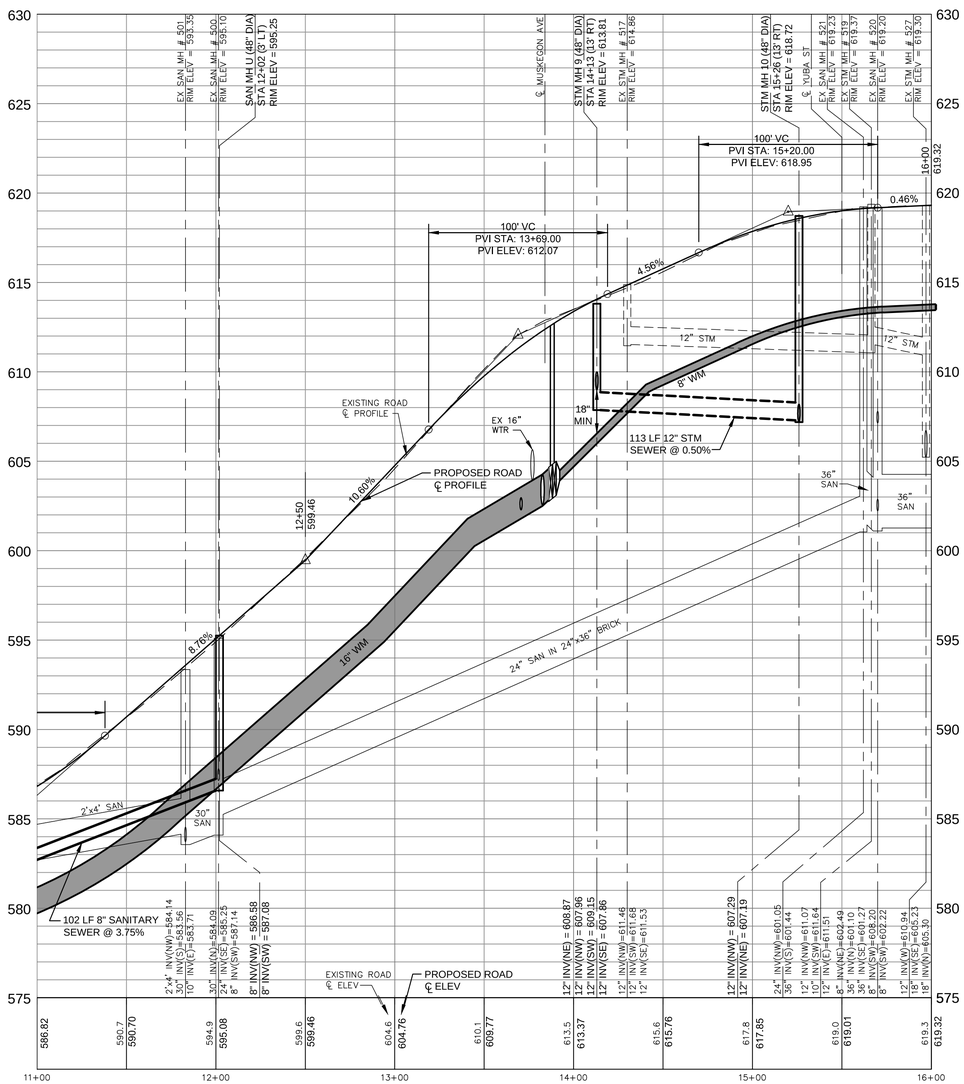
STA	OPENING WIDTH (FT)	WIDTH AT SIDEWALK (FT)	SUBBASE CIP, 6" (CYD)	6 INCH CONCRETE (SYD)
15+36 R	38	30	5	31
15+65 R	18	12	3	14
15+90 R	16	10	2	12

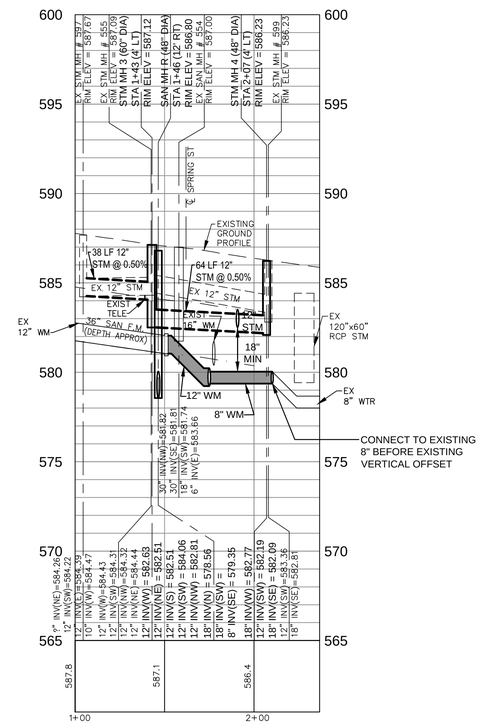




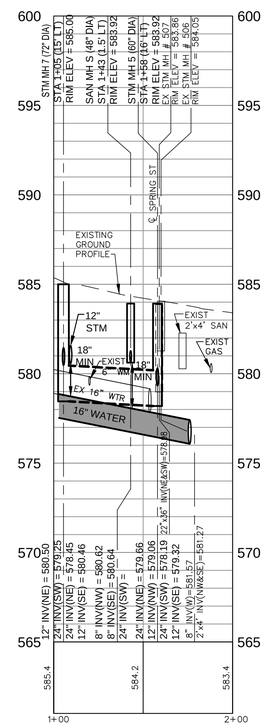
SCALE:
1"=40' HORIZONTAL
1"=4' VERTICAL

NOTES:
ALL STM CB'S TO BE 48" DIA WITH 2' SUMP UNLESS OTHERWISE NOTED.
ALL SUMP BASES TO HAVE FOUR 1 INCH HOLES DRILLED





CLAY AVE PROFILE



WEBSTER AVE PROFILE

SPRING STREET
PLAN & PROFILE
STA 11+00 TO STA 16+00

NO.	REVISIONS	BY	DATE

Drawn By: SPM
Date: 5/10/19
Approved By:
Date:

4063 Grand Oak Drive Suite A109
Lansing, MI 48911
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Grand Haven, MI 49417
616.743.7070

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CITY OF MUSKEGON
SPRING STREET SEWER REROUTE AND BOURDON STREET ALLEY SEWER
MICHIGAN EGLE SRF PROJECT NO. 5675-01
MICHIGAN EGLE DWRF PROJECT NO. 7449-01

PROJECT NO.
18051

SHEET NO.
10 OF 18

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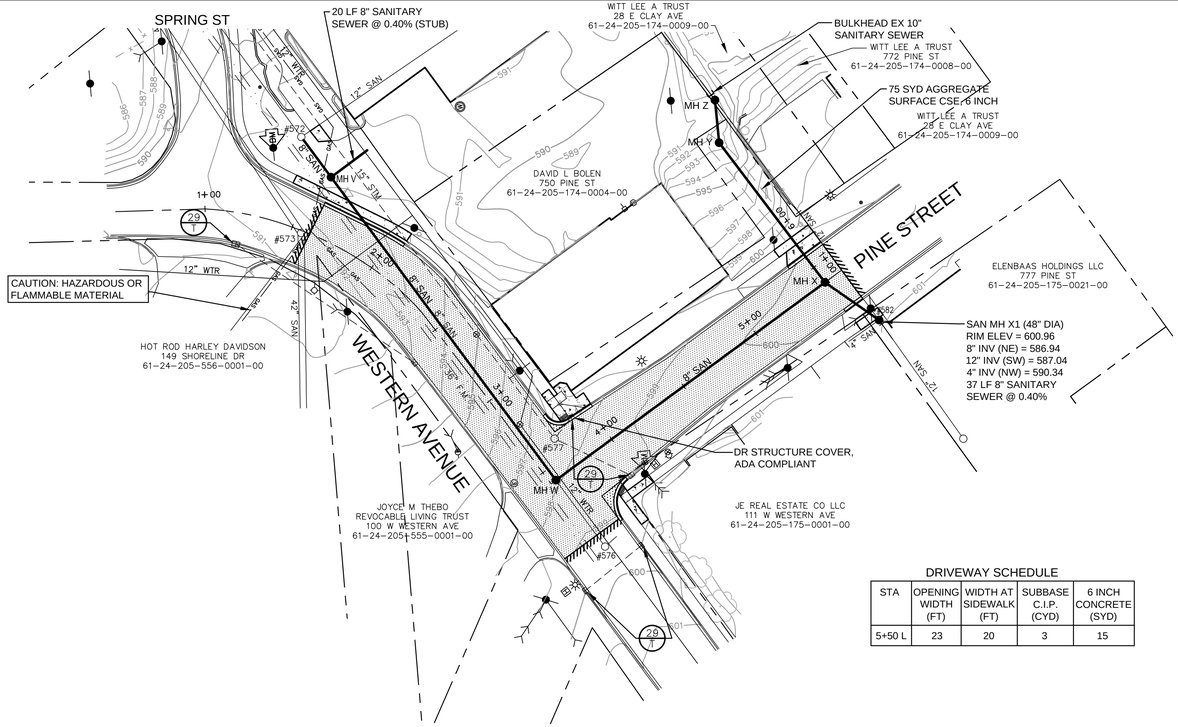
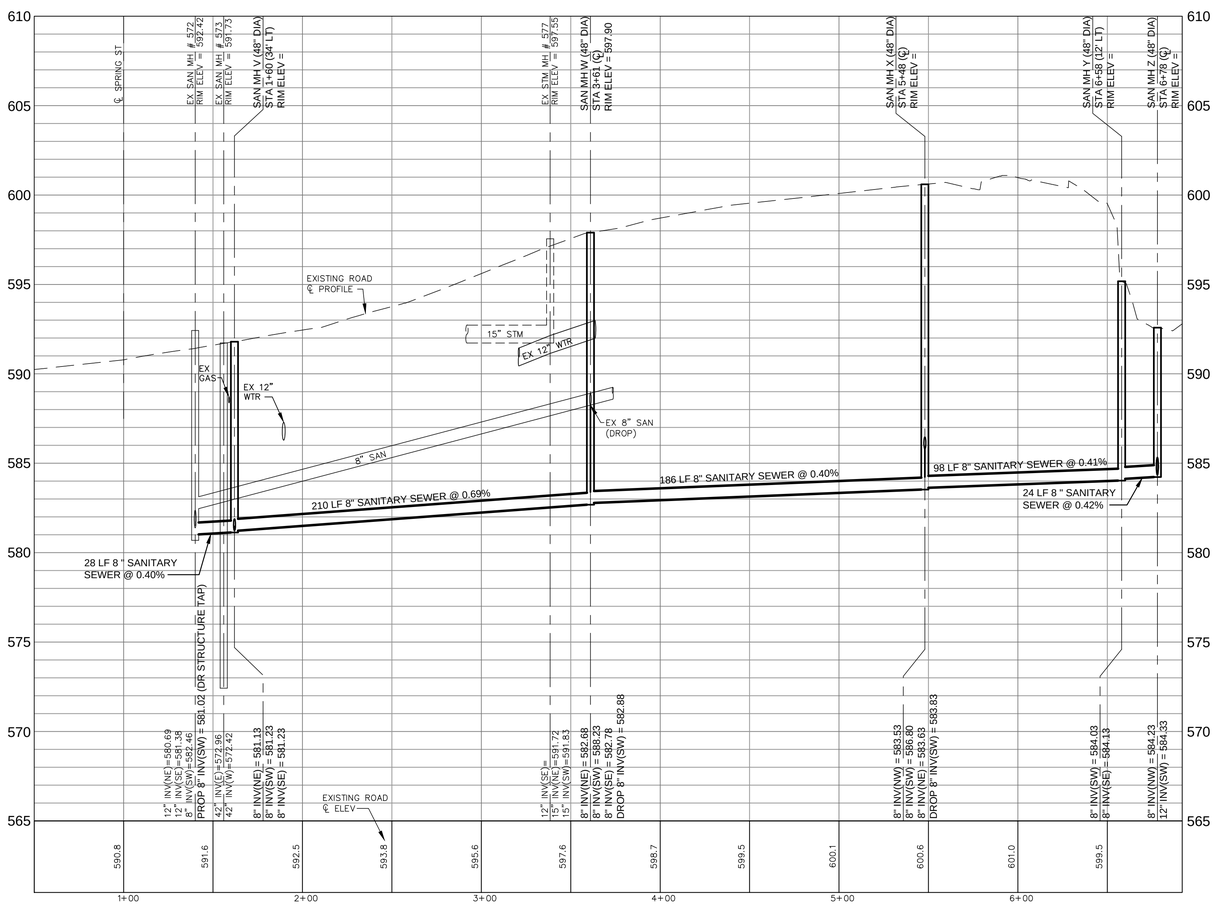
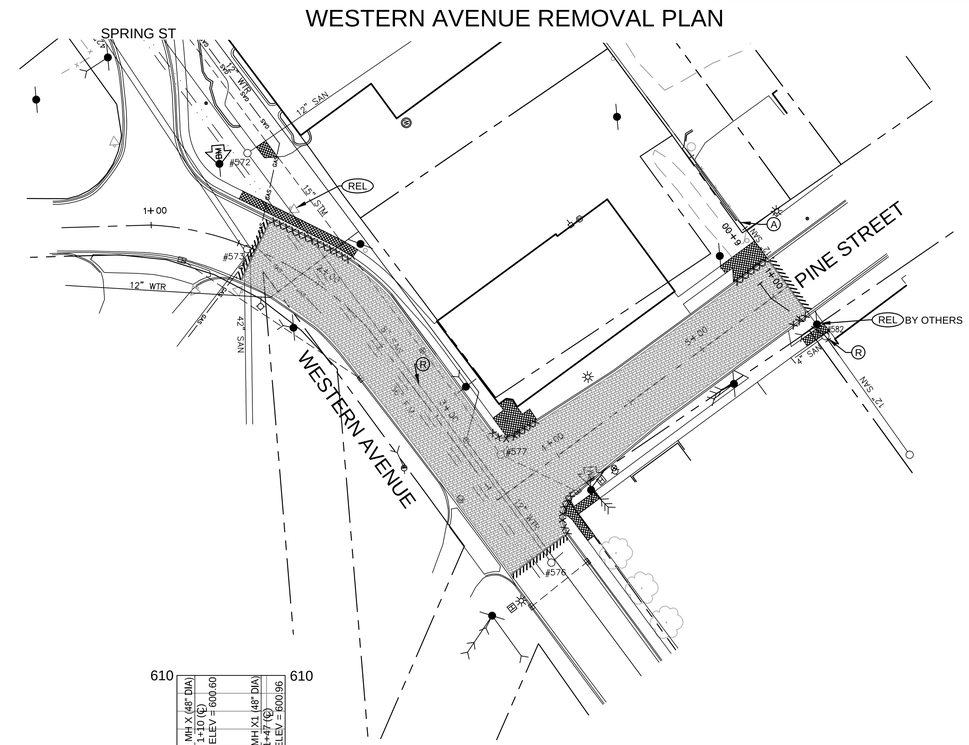
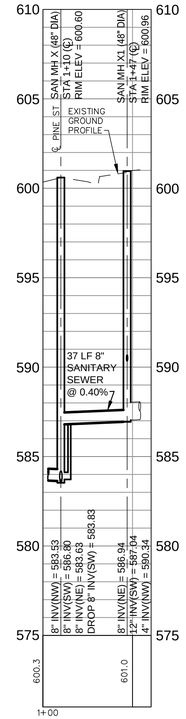


DRIVEWAY SCHEDULE

STA	OPENING WIDTH (FT)	WIDTH AT SIDEWALK (FT)	SUBBASE C.I.P. (CYD)	6 INCH CONCRETE (SYD)
5+50 L	23	20	3	15







MH X TO MH X1 PROFILE

SCALE:
1"=40' HORIZONTAL
1"=4' VERTICAL

BM #6 ELEV = 592.70
SET SPIKE IN NW SIDE LIGHT POLE SE CORNER OF WESTERN AVE AND SPRING ST

BM #9 ELEV = 599.94
SET SPIKE IN N SIDE OF UTILITY POLE AT SE CORNER OF WESTERN AVE AND PINE ST

811. Know what's below. Call before you dig.

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NO.	REVISIONS	BY	DATE

Drawn By	Approved By
SPM	
Date 5/10/19	Date

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16930 Robbins Road Suite 105
Grand Haven, MI 49417
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CITY OF MUSKEGON
SPRING STREET SEWER REROUTE AND BOURDON STREET ALLEY SEWER
MICHIGAN EGLE SRF PROJECT NO. 5675-01
MICHIGAN EGLE DWRF PROJECT NO. 7449-01

WESTERN AVENUE PLAN & PROFILE STA 1+00 TO STA 6+14 & WESTERN AVENUE REMOVAL PLAN

PROJECT NO. 18051

SHEET NO. 11 OF 18

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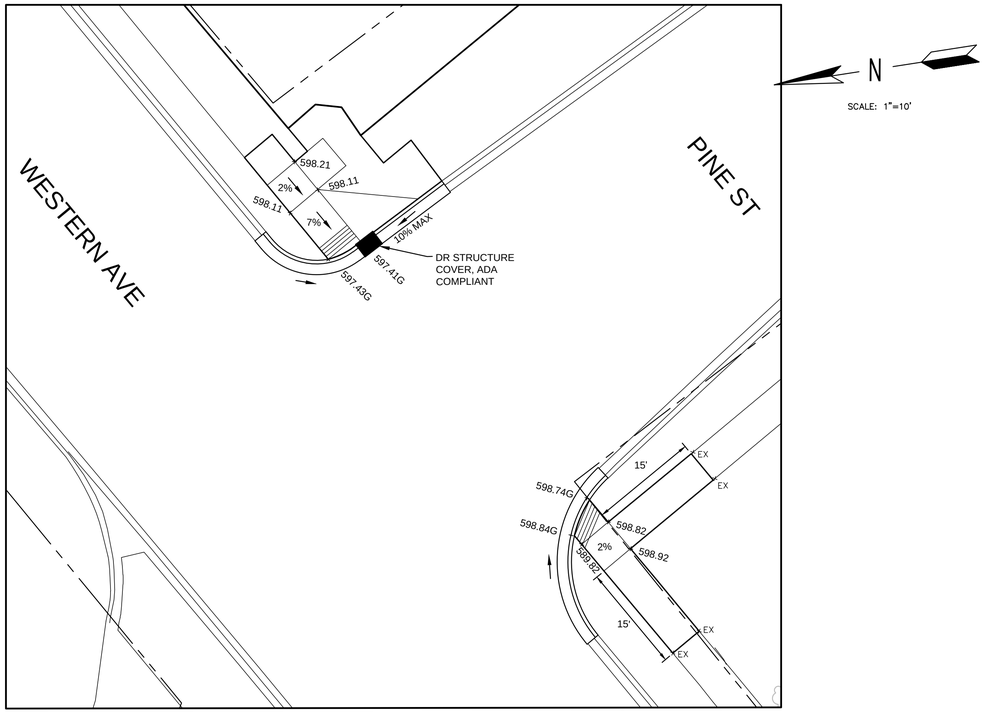
WESTERN AVENUE & PINE STREET



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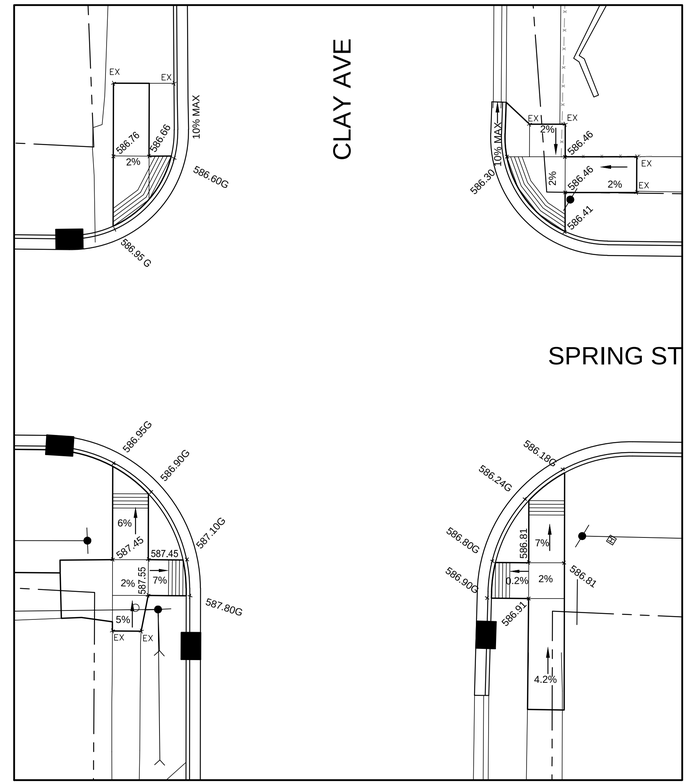
SCALE: 1"=10'

SPRING STREET & CLAY AVENUE



N

SCALE: 1"=10'

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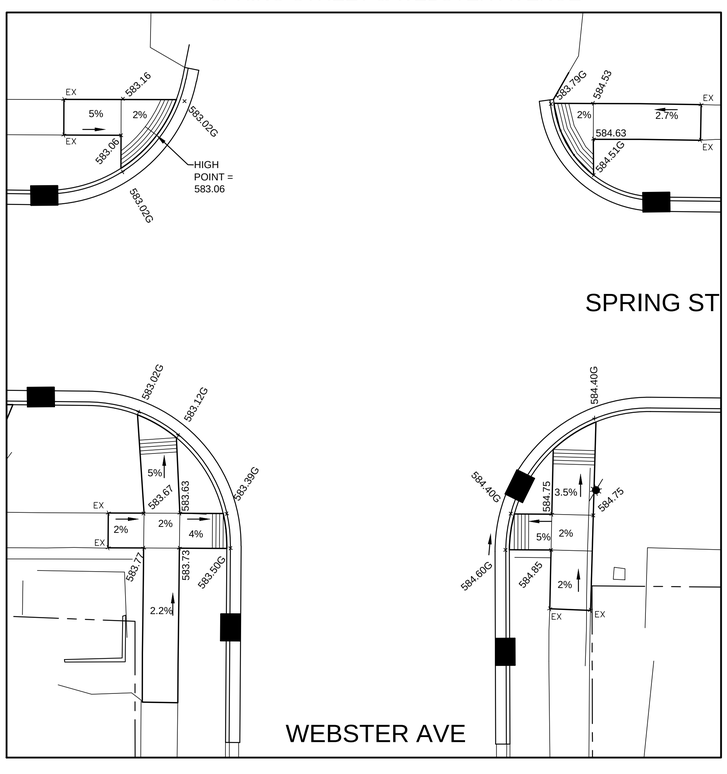
SPRING STREET & WEBSTER AVENUE



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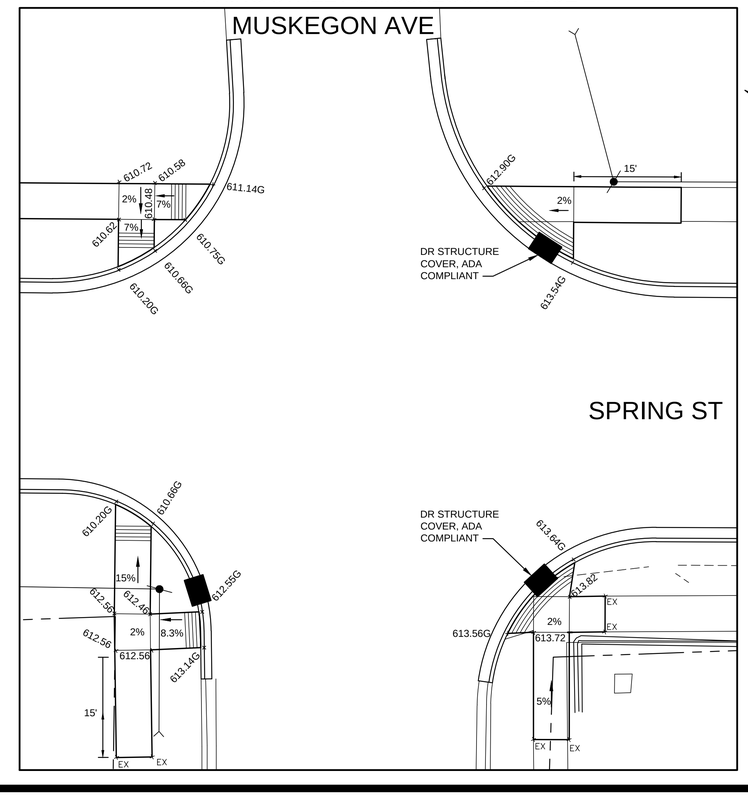
SCALE: 1"=10'

SPRING STREET & MUSKEGON AVENUE



N

SCALE: 1"=10'

INTERSECTION DETAILS

NO.	REVISIONS	BY	DATE

Drawn By	SPM
Date	5/10/19
Approved By	
Date	

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CITY OF MUSKEGON

SPRING STREET SEWER REROUTE AND
BOURDON STREET ALLEY SEWER
MICHIGAN EGLE SRF PROJECT NO. 5675-01
MICHIGAN EGLE DWRF PROJECT NO. 7449-01

PROJECT NO.
18051

SHEET NO.
12 OF 18

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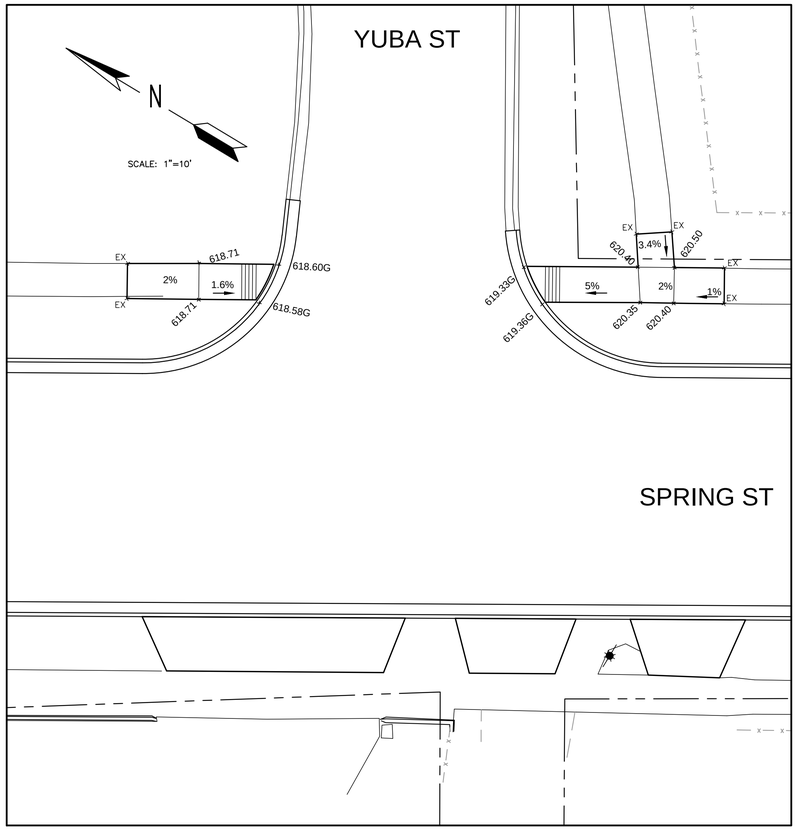
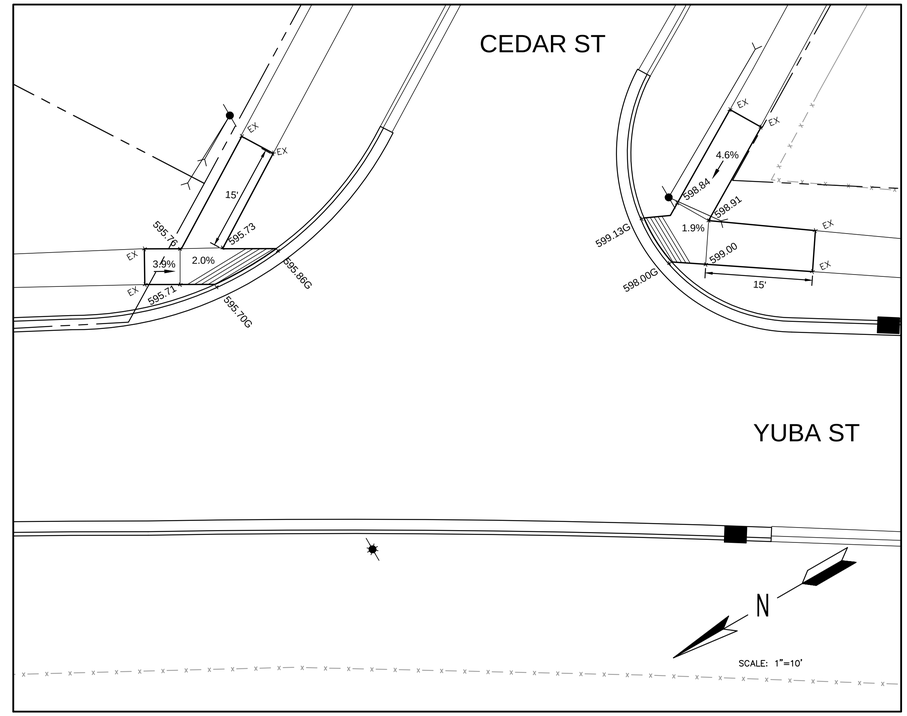
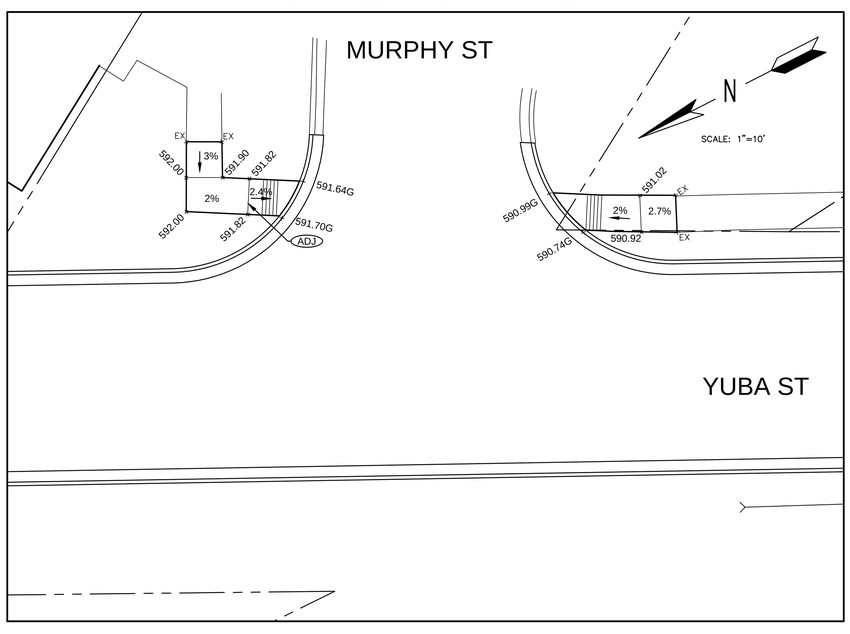
SPRING STREET & YUBA STREET



YUBA STREET & CEDAR STREET



YUBA STREET & MURPHY STREET



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NO.	REVISIONS	BY	DATE

Drawn By: SPM
Date: 5/10/19
Approved By:
Date:

4063 Grand Oak Drive Suite A109
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CITY OF MUSKEGON

SPRING STREET SEWER REROUTE AND
BOURDON STREET ALLEY SEWER
MICHIGAN EGLE SRF PROJECT NO. 5675-01
MICHIGAN EGLE DWRF PROJECT NO. 7449-01

PROJECT NO.
18051

SHEET NO.
13 OF 18

INTERSECTION DETAILS

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BM #5 ELEV = 587.34
SPIKE IN NE SIDE UTILITY POLE S SIDE OF SPRING ST AT 90° CURVE IN FRONT OF WITT BUICK

BM #6 ELEV = 592.70
SET SPIKE IN NW SIDE LIGHT POLE SE CORNER OF WESTERN AVE AND SPRING ST

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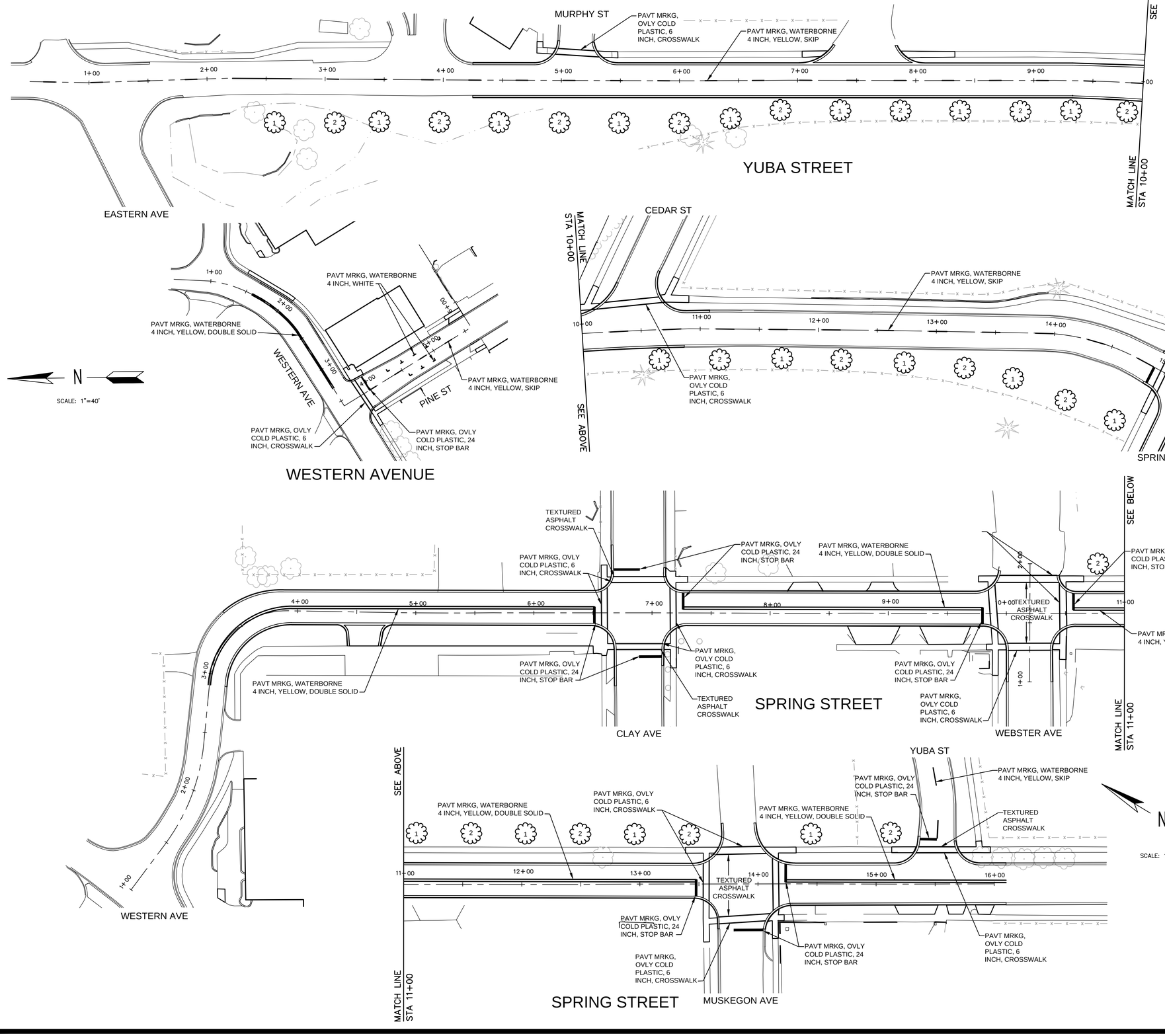

POLLINATOR TREE KEY

NUMBER	SPECIES
1	CORAL BURST CRABAPPLE
2	KWANZAN CHERRY

PAVEMENT MARKING PLAN & POLLINATOR TREE PLAN

NO.	REVISIONS	BY	DATE

Drawn By: SPM
Date: 5/10/19
Approved By:
Date:

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PROJECT NO. 18051

SHEET NO. 14 OF 18

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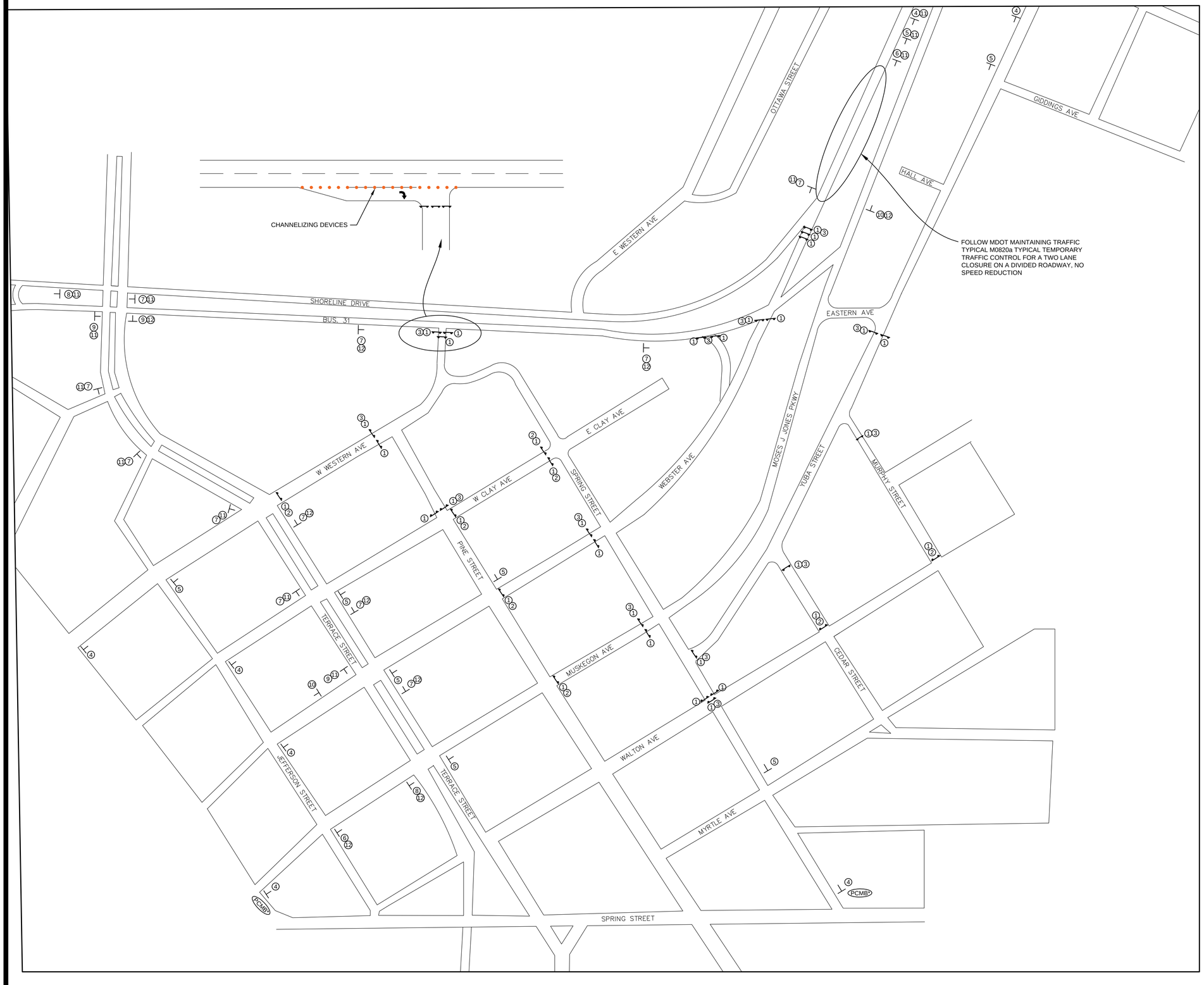
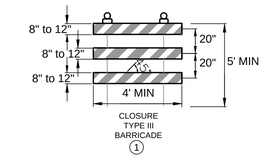


811 Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

SIGN LEGEND



ROAD CLOSED TO THRU TRAFFIC
R11-4
60" x 30"
(12.5 SFT)
2

ROAD CLOSED
R11-2
60" x 30"
(12.5 SFT)
3

ROAD WORK AHEAD
W20-1
36" x 36"
(9 SFT)
TYPE II B
4

ROAD CLOSED AHEAD
W20-3
36" x 36"
(9 SFT)
TYPE II B
5

DETOUR AHEAD
W20-2
36" x 36"
(9 SFT)
TYPE II B
6

DETOUR
M4-9S
30" x 24"
(5 SFT)
7

DETOUR
M4-9L
30" x 24"
(5 SFT)
8

DETOUR
M4-9R
30" x 24"
(5 SFT)
9

END DETOUR
M4-8a
24" x 18"
(3 SFT)
10

8" WEBSTER AVE 4"
8" x 36"
(2 SFT)
11

8" SHORELINE DR 4"
8" x 36"
(2 SFT)
12

* PORTABLE CHANGEABLE MESSAGE BOARD TO BE DETERMINED AT PRE-CON MEETING

SYMBOL LEGEND

TYPE III BARRICADE

TEMPORARY SIGN

1 SIGN LEGEND REFERENCE NUMBER

N

MAINTAINING TRAFFIC

NO.	REVISIONS	BY	DATE

Drawn By: SPM
Date: 5/10/19
Approved By:
Date:

4063 Grand Oak Drive Suite A109
Lansing, MI 48911
517.887.1100

16930 Robbins Road Suite 105
Grand Haven, MI 49417
616.743.7070

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Eng TM Engineering & Surveying

CITY OF MUSKEGON

SPRING STREET SEWER REROUTE AND
BOURDON STREET ALLEY SEWER
MICHIGAN EGLE SRF PROJECT NO. 5675-01
MICHIGAN EGLE DWRF PROJECT NO. 7449-01

PROJECT NO.
18051

SHEET NO.
15 OF 18

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GENERAL PLAN NOTES

UNDERGROUND UTILITIES
FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174, 2013, THE CONTRACTOR SHALL CONTACT MISS DIG AT 1–800–482–7171 OR 811 OR VIA THE WEB AT EITHER ELOCATE.MISSDIG.ORG FOR SINGLE ADDRESS OR RTE.MISSDIG.ORG, A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE PART OF THE "MISS DIG" ALERT SYSTEM.

THE EXISTING UTILITIES ON THESE DRAWINGS HAVE BEEN SHOWN ACCORDING TO THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL FIELD LOCATE ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION AND SHALL NOTIFY THE ENGINEER AS TO WHERE POSSIBLE CONFLICTS EXIST.

EXISTING WATER MAINS AND SEWERS
THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGE TO PROPERLY IDENTIFIED EXISTING WATER MAINS AND/OR EXISTING SEWERS DURING THE CONSTRUCTION OF THE PROJECT.

ADJUSTING MONUMENT BOXES
ALL GOVERNMENT CORNERS ON THIS PROJECT SHALL BE PRESERVED, WHETHER SHOWN OR NOT. IT MAY BE NECESSARY TO PLACE OR ADJUST MONUMENT BOXES, AS REQUIRED.

PAVEMENT MARKINGS AND SIGNS
ALL PERMANENT PAVEMENT MARKINGS, SHAPES, AND DIMENSIONS SHALL CONFORM WITH MDOT PAVEMENT MARKING TYPICALS PAVE – 900 SERIES.

SOIL EROSION AND SEDIMENTATION CONTROL MEASURES
APPROPRIATE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO EARTH–DISTURBING ACTIVITIES. PLACE TURF ESTABLISHMENT ITEMS AS SOON AS POSSIBLE ON POTENTIAL ERODABLE SLOPES AS DIRECTED BY THE ENGINEER. CRITICAL DITCH GRADES SHALL BE PROTECTED WITH EITHER SOD OR SEED/MULCH OR MULCH BLANKET AS DIRECTED BY THE ENGINEER.
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT SOIL EROSION AND SEDIMENTATION CONTROL MEASURES ARE IN PLACE AND MAINTAINED UNTIL THE CONTRACT HAS BEEN COMPLETED AND ACCEPTED. MEASURES SHALL ONLY BE PAID FOR ONCE.

SEED MIXTURE
THE DESIGNATION FOR THE PERMANENT TURF SEED MIXTURE ON THIS PROJECT SHALL BE THM.

DRAINAGE STRUCTURE OFFSETS AND ELEVATIONS
DRAINAGE STRUCTURE IN PROPOSED CURB – OFFSET AND ELEVATIONS SHOWN ARE TO THE BACK AND TOP OF CURB. ALIGN THE STRUCTURE WITH THE BACK OF THE CASTING AND THE TOP OF THE CASTING FLUSH WITH THE PROPOSED BACK AND TOP OF CURB.
DRAINAGE STRUCTURES IN OUTLAWN AREA AND PAVED AREA – OFFSET SHOWN IS TO CENTER OF STRUCTURE. RIM ELEVATIONS FOR DOME COVERS AND FLAT COVERS ARE TO THE TOP OF THE CASTING FRAME.

LAWN SPRINKLERS/LANDSCAPING
OWNERS OF EXISTING LAWN SPRINKLER SYSTEMS AND/OR LANDSCAPING SHALL BE NOTIFIED (IN WRITING WITH A COPY SENT TO THE ENGINEER) BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF ANY WORK TO BE DONE THAT WILL AFFECT THOSE SYSTEMS AND/OR LANDSCAPING. IF THE PROPERTY OWNER FAILS TO RELOCATE THE LAWN SPRINKLER SYSTEM PRIOR TO THE CONTRACTOR BEGINNING WORK, AND IF THE CONTRACTOR CUTS THE SYSTEM DURING CONSTRUCTION, THE CONTRACTOR SHALL CAP THE SYSTEM PIPE AND WITNESS THE LOCATION OF THE CAP WITH A WOODEN STAKE FOR THE PROPERTY OWNERS USE. THE CONTRACTOR SHALL PLACE THE SALVAGED SPRINKLER HEADS ON THE BACK OF THE RIGHT OF WAY. IF THE PROPERTY OWNER FAILS TO RELOCATE THE LANDSCAPING PRIOR TO THE CONTRACTOR BEGINNING WORK, THE CONTRACTOR SHALL CAREFULLY SALVAGE THE LANDSCAPING ITEMS AND STOCKPILE THEM ON THE BACK OF THE RIGHT OF WAY OR AT A LOCATION DESIGNATED BY THE ENGINEER FOR THE PROPERTY OWNER. ANY OTHER MODIFICATION TO THE LAWN SPRINKLER SYSTEM AND/OR LANDSCAPING, IS THE RESPONSIBILITY OF THE PROPERTY OWNER AND IS NOT PART OF THE CONTRACT.

CONNECTIONS TO EXISTING CULVERTS/SEWERS
THE EXTENSIONS/CONNECTIONS TO EXISTING CULVERTS/SEWERS ON THIS PROJECT MAY REQUIRE EXTRA WORK TO OBTAIN A TIGHT SEAL AT THE JOINT CONNECTING NEW PIPE TO EXISTING PIPE. THE JOINT BETWEEN THE EXISTING AND NEW PIPES SHALL BE CONSTRUCTED ACCORDING TO THE 2012 MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, AND AS DIRECTED BY THE ENGINEER. ANY EXTRA WORK REQUIRED TO OBTAIN TIGHT JOINTS WILL NOT BE PAID FOR SEPARATELY BUT WILL BE INCLUDED IN COMPENSATION FOR NEW PIPE.

SIGNS
SIGNS REQUIRING RELOCATION DUE TO CONTRACTOR OPERATIONS SHALL BE SALVAGED AND RESET BY THE CONTRACTOR AT LOCATIONS DESIGNATED BY THE ENGINEER. THIS WORK WILL BE CONSIDERED AS INCLUDED WITH MINOR TRAF DEVICES.

PUBLIC UTILITIES

THE EXISTING UTILITIES LISTED BELOW AND SHOWN ON THESE PLANS REPRESENT THE BEST INFORMATION AVAILABLE. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO BE SATISFIED AS TO IT'S ACCURACY AND THE LOCATION OF THE EXISTING UTILITIES.

NAME OF OWNER	KIND OF UTILITY	CONTACT
DTE ENERGY 2359 OLTHOFF MUSKEGON, MI 49444	GAS	VINCE DUCA 231–777–4034
FRONTIER COMMUNICATIONS 860 TERRACE STREET MUSKEGON, MI 49444	TELEPHONE	DAVID FLERMOEN 231–727–1319
CONSUMERS ENERGY 700 E STERNBERG ROAD NORTON SHORES, MI 49444	ELECTRIC	MICHELE ANDREE 231–332–2621
CITY OF MUSKEGON 1350 E KEATING AVENUE MUSKEGON, MI 49442	SEWER AND WATER	DAVE BAKER 231–724–4184 LEO EVANS, P.E. 231–724–6920
CITY OF MUSKEGON 1350 E KEATING AVENUE MUSKEGON, MI 49442	STREETS AND STORM WATER	DAVE BAKER 231–724–4184 LEO EVANS, P.E. 231–724–6920
COMCAST 3500 PATTERSON AVE SE GRAND RAPIDS, MI 49512	CABLE TV	JIM STITZEL 810–217–8773
MUSKEGON COUNTY DRAIN COMMISSIONER CENTRAL SERVICES BUILDING 141 E. APPLE AVENUE MUSKEGON, MI 49442	COUNTY DRAINS	BRENDA MOORE 231–724–6219
ACD.NET 1800 GRAND RIVER AVENUE LANSING, MI 48906	FIBER OPTIC	GLENN DEUTSCHER 517–999–3267

NOTES APPLYING TO STANDARD PLANS

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

COVER Q	R–18–F
COVER B	R–7–F
COVER K	R–15–F
DRIVEWAY OPENINGS AND APPROACHES, AND CONCRETE SIDEWALK	R–29–I
CONCRETE CURB AND CONCRETE CURB & GUTTER	R–30–G
UTILITY TRENCHES	R–83–C
SOIL EROSION & SEDIMENTATION CONTROL MEASURES	R–96–E
SEEDING AND TREE PLANTING	R–100–H
LONGITUDINAL LINE TYPES AND PLACEMENT	PAVE–905–D
PAVEMENT MARKINGS FOR NON–SIGNALIZED INTERSECTIONS	PAVE–930–C
INTERSECTION, STOP BAR AND CROSSWALK MARKINGS	PAVE–945–C
ROADSIDE SIGN LOCATIONS AND SUPPORT SPACING	SIGN–120–E
STEEL POSTS	SIGN–200–D

NOTES APPLYING TO SPECIAL DETAILS

WHERE THE FOLLOWING ITEMS ARE CALLED FOR ON THE PLANS, THEY ARE TO BE CONSTRUCTED ACCORDING TO THE MDOT SPECIAL DETAILS GIVEN BELOW OPPOSITE EACH ITEM UNLESS OTHERWISE INDICATED. SPECIAL DETAILS ARE INCLUDED IN THE PROPOSAL.

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS	R–28–J
DRAINAGE STRUCTURES	R–1–G
GROUND DRIVEN SIGN SUPPORTS FOR TEMP SIGNS	WZD–100–A
TEMPORARY TRAFFIC CONTROL DEVICES	WZD–125–E

MISCELLANEOUS ESTIMATES

THE FOLLOWING ITEMS OF WORK SHALL BE DONE AS THEY APPLY THROUGHOUT THE PROJECT. THESE ITEMS ARE NOT DETAILED OR INCLUDED ON THE PLAN AND PROFILE SHEETS:

ITEM DESCRIPTION	PROJECT NO. 4 QUANTITY
AUDIO VISUAL FILMING	1.0 LSUM
MOBILIZATION, MAX	1.0 LSUM
CURB AND GUTTER, REM	200 FT
SIDEWALK, REM	55 SYD
PAVT, REM, MODIFIED	200 SYD
MACHINE GRADING, MODIFIED	32 STA
PROJECT CLEANUP	1.0 LSUM
VIDEO TAPING SEWER AND CULV PIPE	826 FT
DR STRUCTURE COVER, MODIFIED	44 EA
DR STRUCTURE COVER, ADA COMPLIANT	3 EA
HAND PATCHING	30 TON
CURB AND GUTTER, CONC, DET F4	200 FT
SIDEWALK, CONC, 4 INCH	500 SFT
FENCE, PROTECTIVE	200 FT
MINOR TRAF DEVICES	1 LSUM
PLASTIC DRUM, HIGH INTENSITY, FURN	200 EA
PLASTIC DRUM, HIGH INTENSITY, OPER	200 EA
TRAFFIC REGULATOR CONTROL	1.0 LSUM

THE FOLLOWING ITEMS OF WORK ARE ESTIMATED FOR THE ENTIRE PROJECT TO CORRECT POSSIBLE UNSTABLE SUB GRADE CONDITIONS WHERE DESIGNATED BY THE ENGINEER.

SUBGRADE UNDERCUTTING, TYPE II	150 CYD
SUBGRADE UNDERCUTTING, SPECIAL	125 SYD

THE FOLLOWING ITEMS OF WORK ARE ESTIMATED FOR THE ENTIRE PROJECT FOR EROSION AND SEDIMENTATION CONTROL WHERE DESIGNATED BY THE ENGINEER.

EROSION CONTROL, INLET PROTECTION, FABRIC DROP	30 EA
EROSION CONTROL, SILT FENCE	800 PT

THE FOLLOWING ITEMS OF WORK ARE ESTIMATED FOR THE ENTIRE PROJECT FOR SLOPE RESTORATION WHERE DESIGNATED BY THE ENGINEER.

TURF ESTABLISHMENT, PERFORMANCE	3932 SYD

SOIL EROSION CONTROL

SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE CITY OF OWOSSO STANDARDS. REFER TO MDOT STANDARD PLAN R–96–E SERIES.

ALL DISTURBED AREAS WILL RECEIVE PERMANENT EROSION CONTROL WITHIN 5 DAYS OF FINAL GRADING.

ALL AREAS OUTSIDE THE SLOPE STAKE LINE MUST REMAIN UNDISTURBED TO ACT AS A NATURAL SEDIMENT FILTER.

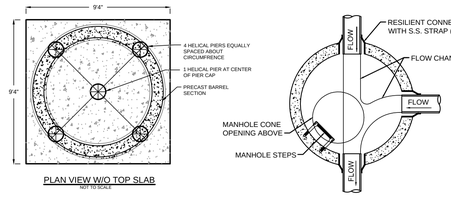
ALL STOCKPILES OF STRIPPED TOPSOIL SHALL BE SURROUNDED BY SILT FENCE AND NOT PLACED ADJACENT TO WET AREAS OR OPEN DRAINS.

SEDIMENT TRACKED ONTO ADJACENT ROADS AND PAVED AREAS DUE TO CONSTRUCTION ACTIVITIES SHALL BE SWEPT AND KEPT CLEAN ON A DAILY BASIS.

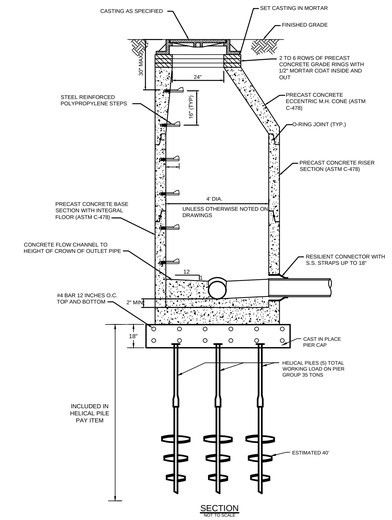
1	SEEDING		When bare soil is exposed, temporarily or permanently, to erosive forces from wind and or water on flat areas, mild slopes, grassed waterways and spillways, diversion ditches and dikes, borrow and stockpile areas, and spoil piles.
26	DUST CONTROL		As a temporary measure on exposed and unstabilized areas that must be protected from wind or water erosion.
29	STORM DRAIN INLET PROTECTION		Around the entrance to a newly constructed catch basin or an inlet that will capture runoff from an earth change activity.
40	CHECK DAM		In constructed and existing flow corridors to reduce flow velocities.
61	SILT FENCE		As a temporary measure used to capture sediment from sheet flow. May also divert small volumes of sheet flow to protected outlets.

SAW CUTTING HMA AND CONCRETE SURFACES

SAW CUTTING THE EXISTING HMA AND CONCRETE SURFACES TO THE LIMITS OF CONSTRUCTION OR AS DIRECTED BY THE ENGINEER SHALL BE CONSIDERED INCLUDED IN OTHER RELATED CONTRACT ITEMS. THIS ALSO INCLUDES SAW CUTTING DRIVES AT THE REPLACEMENT LIMITS. IF AN EDGE IS DAMAGED SUBSEQUENT TO SAW CUTTING, THE EDGE SHALL BE RECUT AS DIRECTED BY THE ENGINEER, SAW CUTTING & ADDITIONAL PAVEMENT REMOVAL SHALL BE CONSIDERED INCLUDED IN OTHER RELATED CONTRACT ITEMS. SAW CUTTING SHALL BE FULL DEPTH OF THE PAVEMENT BEING SAWED. MAINTAIN 1 FT MINIMUM DISTANCE FROM PROPOSED LANE LINE FOR FULL DEPTH SAW CUT.

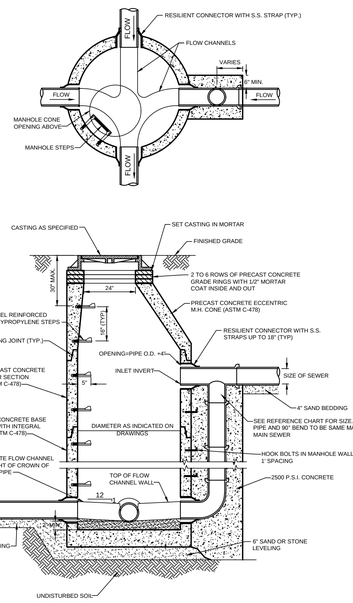


PLAN VIEW W/O TOP SLAB
NOT TO SCALE



SECTION
NOT TO SCALE

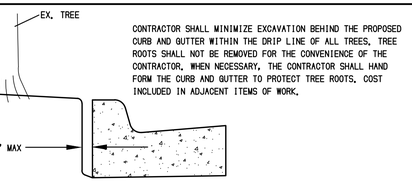
HELICAL PILE AND CAP DETAIL FOR MANHOLES
STM MH 3, 5, AND 6
SAN MH R AND S



REFERENCE CHART

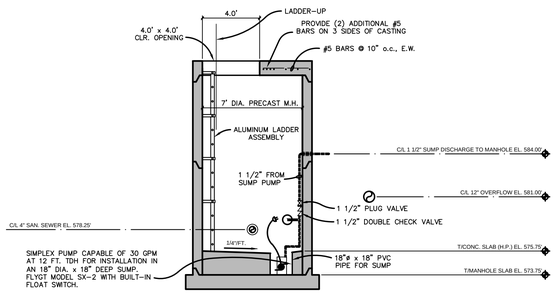
SIZE OF SEWER	DROP CONNECTION
8"	8"
10"	8"
12"	8"
15"	10"
18"	10"
21"	12"
24"	12"
27"	12"
30"	15"
36"	15"

STANDARD DROP MANHOLE
SCALE: 1" = 2'

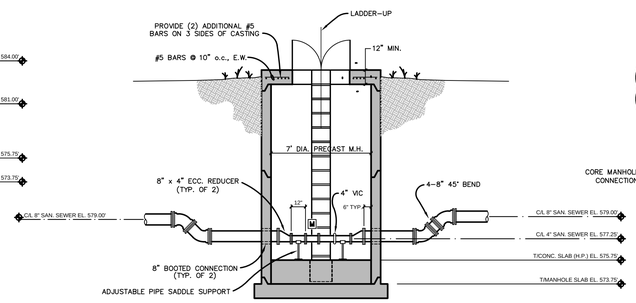


CONTRACTOR SHALL MINIMIZE EXCAVATION BEHIND THE PROPOSED CURB AND GUTTER WITHIN THE DRIP LINE OF ALL TREES. TREE ROOTS SHALL NOT BE REMOVED FOR THE CONVENIENCE OF THE CONTRACTOR, WHEN NECESSARY, THE CONTRACTOR SHALL HAND FORM THE CURB AND GUTTER TO PROTECT TREE ROOTS. COST INCLUDED IN ADJACENT ITEMS OF WORK.

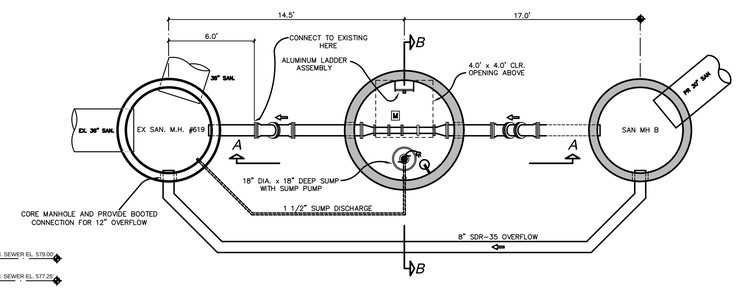
CONCRETE CURB AND GUTTER CONSTRUCTION AT TREES DETAIL
SCALE: 1" = 1'



SECTION B-B
SCALE : 1/4" = 1'–0"



SECTION A-A
SCALE : 1/4" = 1'–0"



SANITARY MANHOLE A, METER STATION-PLAN
SCALE : 1/4" = 1'–0"

North

NOTE AND MISCELLANEOUS DETAILS

NO.	REVISIONS	BY	DATE

Drawn By: SPM
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4063 Grand Oak Drive Suite A109
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16 OF 18

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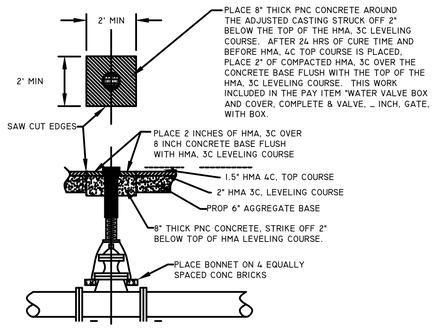
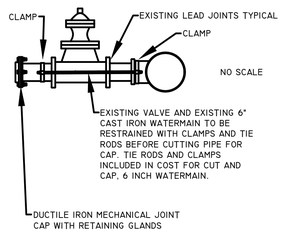
WATER MAIN DETAIL SHEET

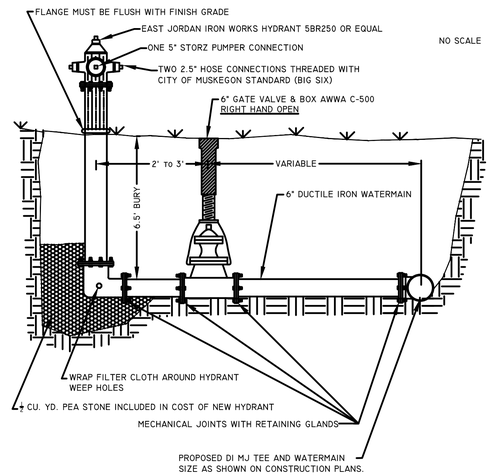
DETAIL FOR: WATER VALVE BOX AND COVER, COMPLETE



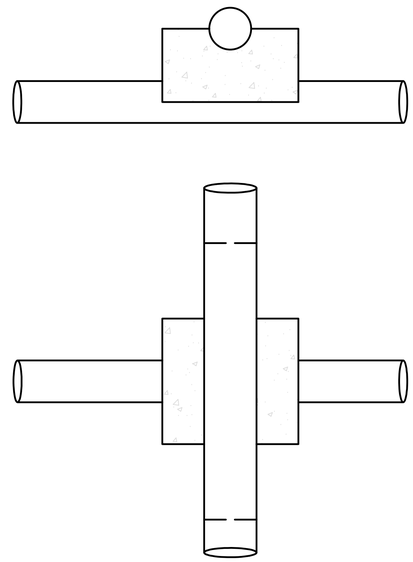
DETAIL FOR: CUT AND CAP, _ INCH WATERMAIN



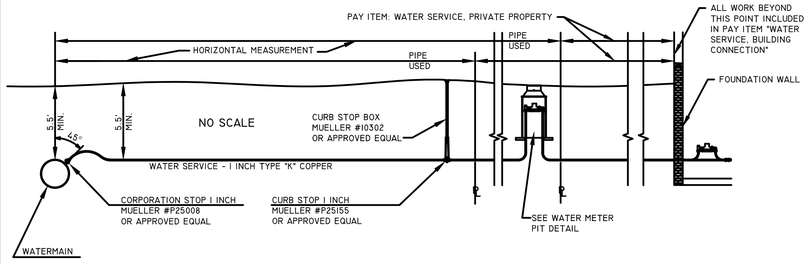
DETAIL FOR: HYDRANT



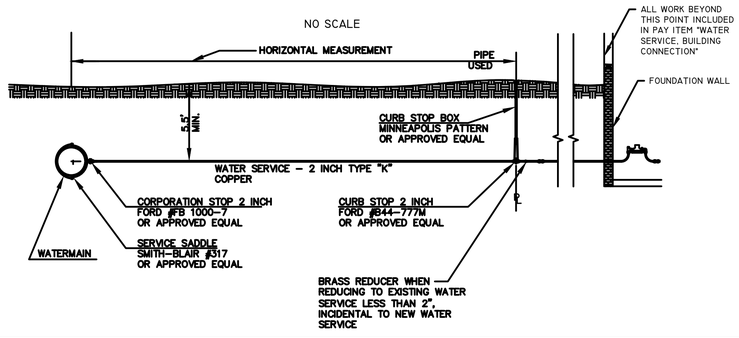
DETAIL FOR: CONCRETE CRADLE



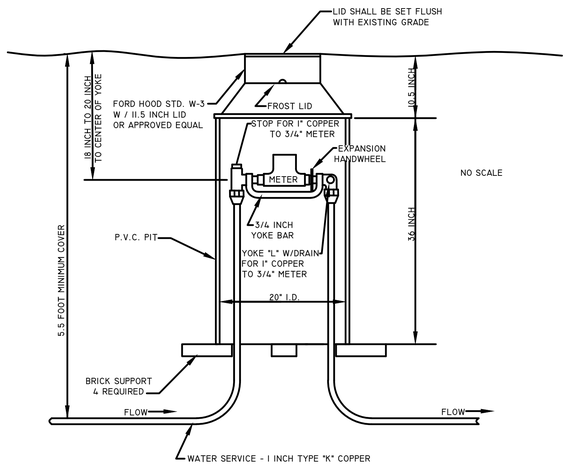
DETAIL FOR: WATER SERVICE, 1 INCH



DETAIL FOR: WATER SERVICE, 2 INCH



DETAIL FOR: METER PIT COMPLETE



WHERE POSSIBLE, EXISTING OUT SIDE METERS SHALL BE RELOCATED, BY THE CITY, INSIDE THE RESIDENCE OR PLACE OF BUSINESS. IF METERS HAVE TO REMAIN OUTSIDE, NEW METER PITS SHALL BE INSTALLED ON THE PROPERTY LINE. ALL ABANDONED METER PITS SHALL BE REMOVED BY THE CONTRACTOR, THE REMOVAL TO BE INCLUDED IN THE NEW WATER SERVICE.

PIPE RESTRAINT SCHEDULE

PIPE SIZE \ DEFLECTION ANGLE	LENGTH OF RESTRAINT REQUIRED * (FEET)							DESIGN STRENGTH OF RESTRAINT REQ'D (KIPS)**	
	22 ½°	33 ¾°	45°	56 ¼°	67 ½°	78 ¾°	90° & TEE	45°	90° & TEE
6"	4'	8'	14'	20'	30'	37'	47'	3.0	6.0
8"	5'	10'	19'	28'	40'	52'	64'	4.0	12.0
10"	6'	14'	23'	36'	49'	63'	78'	5.0	18.0
12"	8'	17'	28'	42'	58'	75'	93'	8.0	26.0
14"	9'	18'	32'	47'	66'	87'	107'	10.0	36.0
16"	10'	20'	34'	51'	72'	94'	116'	14.0	46.0
18"	10'	22'	38'	58'	81'	105'	131'	18.0	59.0
20"	10'	22'	39'	59'	81'	106'	131'	22.0	73.0
24"	12'	26'	44'	68'	95'	123'	153'	31.0	103.0
30"	14'	31'	53'	79'	111'	143'	180'	47.0	162.0
36"	16'	36'	62'	93'	130'	169'	210'	69.0	234.0
42"	17'	39'	67'	101'	141'	184'	228'	93.0	319.0
48"	19'	43'	75'	113'	157'	206'	255'	123.0	417.0

* IN EACH DIRECTION FROM POINT OF DEFLECTION EXCEPT FOR TEE, AT WHICH ONLY THE BRANCH WHERE FLOW CHANGES DIRECTION.
** IF TIE RODS ARE USED, ADD 1/8" TO BAR DIA. AS CORROSION ALLOWANCE.

BASIS OF DESIGN FOR ABOVE TABLE:

1. COVER OVER PIPE = 5.0 FEET MINIMUM
2. EARTH FRICTION COEFFICIENT = 0.4/1.5 SAFETY FACTOR = 0.26

NOTE
THE ABOVE LENGTH OF RESTRAINT REQUIRED IS MINIMUM. FOR LESS COVER OR POOR SOIL CONDITIONS, THE RESTRAINT LENGTH SHALL INCREASE AS SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER.

WATERMAIN DETAILS

NO.	REVISIONS	BY	DATE

Drawn By SPM
Date 5/8/19
Approved By
Date

4063 Grand Oak Drive Suite A109
Lansing, MI 48911
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CITY OF MUSKEGON
SPRING STREET SEWER REROUTE AND BOURDON STREET ALLEY SEWER
MICHIGAN EGLE SRF PROJECT NO. 5675-01
MICHIGAN EGLE DWRF PROJECT NO. 7449-01

PROJECT NO.
18051

SHEET NO.
17 OF 18

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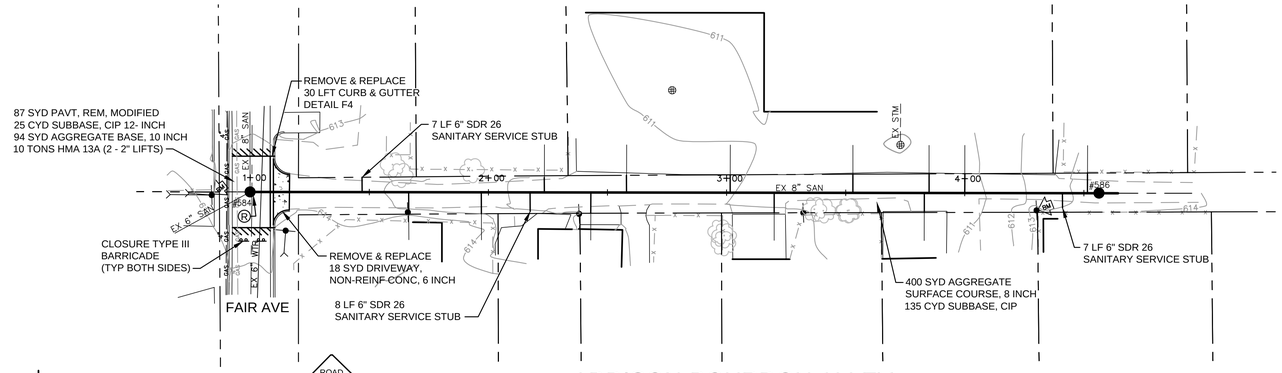
BM #9 ELEV = 614.84
SET SPIKE IN N SIDE UTILITY POLE S SIDE FAIR AVE AT S END OF ALLEY BETWEEN ADDISON ST & BOURDON ST

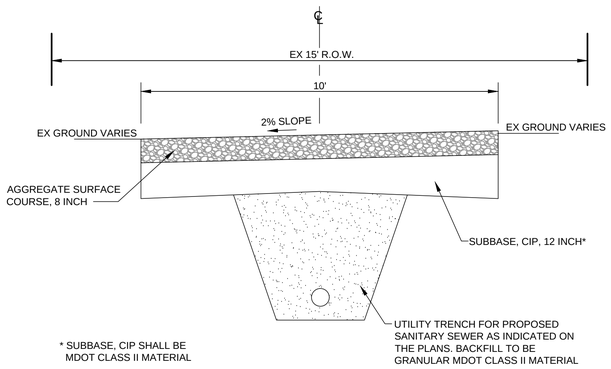
BM #10 ELEV = 614.23
SET SPIKE IN W SIDE UTILITY POLE E SIDE OF ALLEY ACROSS FROM N CHURCH ℄

811 Know what's below. Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

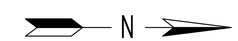


ADDISON-BOURDON ALLEY

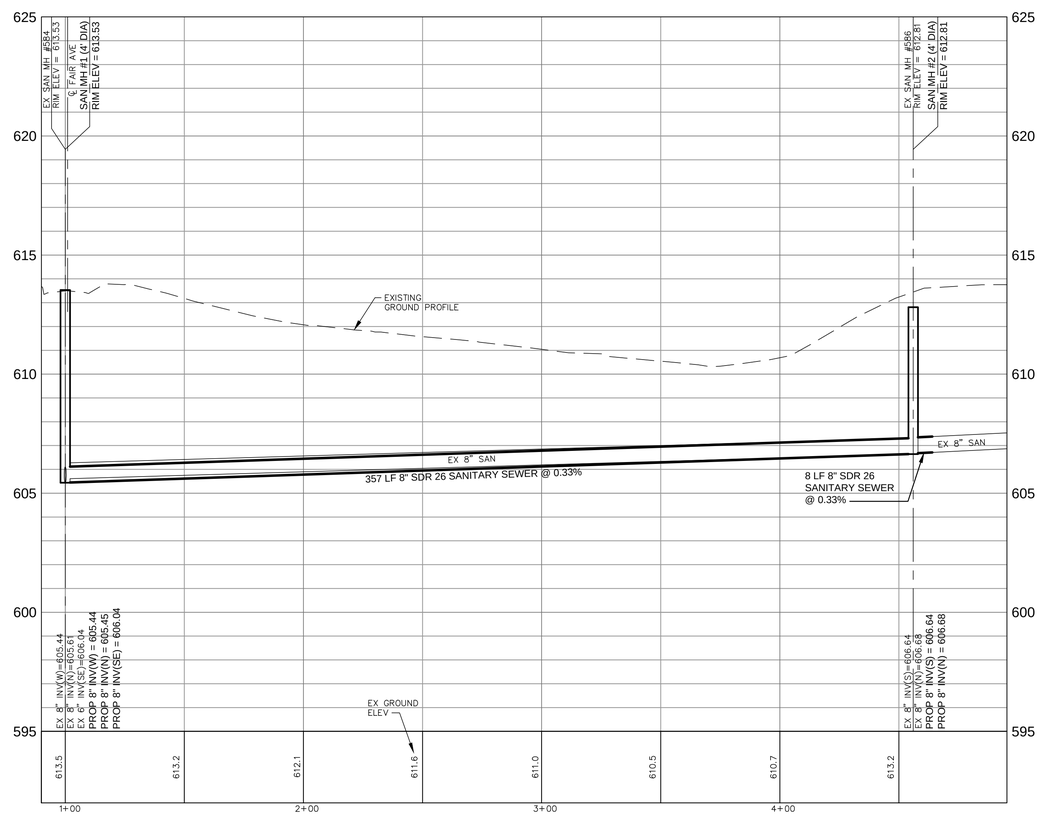


* SUBBASE, CIP SHALL BE
MDOT CLASS II MATERIAL

PROPOSED GRAVEL ALLEY ROAD
STA 1+17 TO STA 4+70
SCALE: 1"= 2'



SCALE:
1"=30' HORIZONTAL
1"=3' VERTICAL



ADDISON-BOURDON ALLEY
PLAN & PROFILE
STA 1+00 TO STA 4+95

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PROJECT NO.
18051

SHEET NO.
18 OF 18

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