

Construction Plans For WATER SYSTEM IMPROVEMENTS

Village of Beulah - Benzie County - Michigan

Sections 23 & 26, Township 26N, Range 15W



Owner

VILLAGE OF BEULAH
VILLAGE PRESIDENT: DANIEL SMITH
P.O. BOX 326
BEULAH, MICHIGAN 49617-0326



Engineer

GOSLING CZUBAK
ENGINEERING SCIENCES, INC.
1280 BUSINESS PARK DRIVE
TRAVERSE CITY, MICHIGAN 49686-8607
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Fax : (231) 941-4603
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(517) 243-9295

AMERITECH
MR. KEITH NELSON
2700 S. BENZIE HWY.
BENZONIA, MICHIGAN 49616
(231) 882-6002

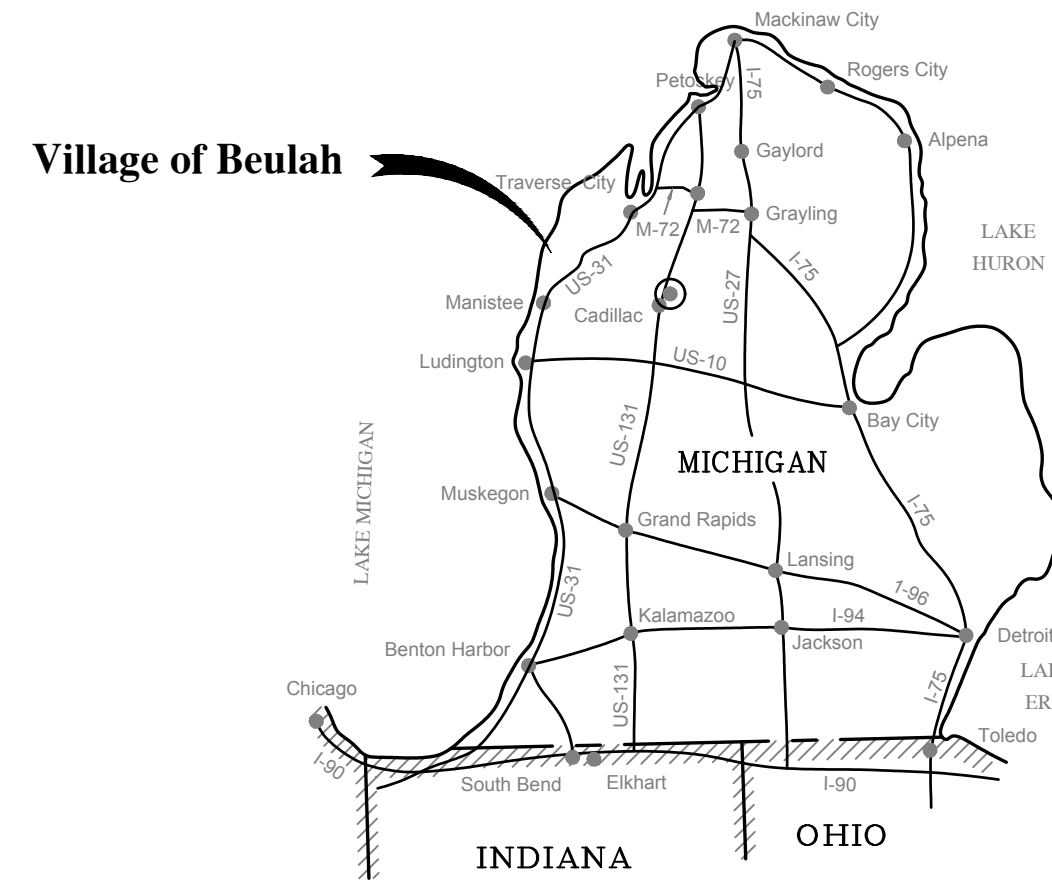
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MS. KATHY DOHM-BEISER
142 E. STATE ST.
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(231) 258-3785

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MR. LEE HITE
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(231) 723-7639

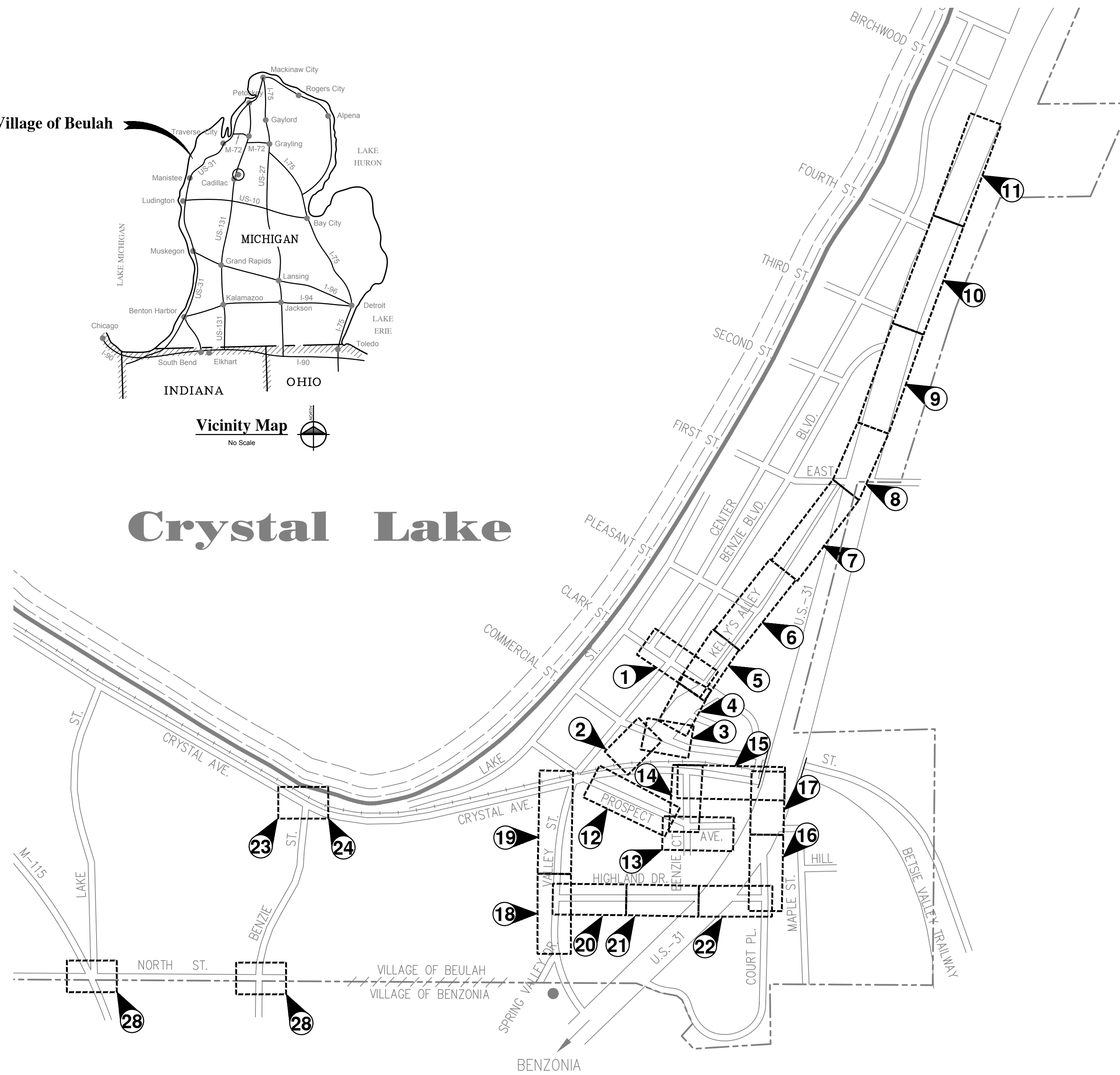
MICHIGAN DEPARTMENT OF TRANSPORTATION
MR. JEREMY WIEST
2084 US-31 SOUTH, SUITE B
TRAVERSE CITY, MICHIGAN 49685
(231) 941-1986

PUBLIC UTILITIES
THE EXISTING UTILITIES LISTED 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 ITS ACCURACY AND THE LOCATION OF EXISTING UTILITIES. THE CONTRACTOR SHALL NOTIFY "MISS DIG" (1-800-482-7171) THREE WORKING DAYS PRIOR TO THE START OF CONSTRUCTION.



Vicinity Map
No Scale

Crystal Lake



Village of Beulah
Site Location Map

SCALE 1" = 400'

LEGEND

<ul style="list-style-type: none"> ◆ BENCHMARK FOUND ◇ BENCHMARK SET ⊖ CHISELED 'X' FOUND ⊖ CHISELED 'X' SET ⊙ GPS MONUMENT ⊙ HUB FOUND ⊙ HUB SET ⊙ IRON FOUND ⊙ IRON SET ⊙ LATH FOUND ⊙ LATH SET ⊙ MONUMENT FOUND ⊙ MONUMENT SET ⊙ PK NAIL FOUND ⊙ PK NAIL SET ◆ SECTION CORNER ⊙ EXISTING CABLE TV PEDESTAL ⊙ EXISTING UTILITY POLE ⊙ EXISTING ELECTRIC HAND HOLE ⊙ EXISTING MANHOLE (AS NOTED) ⊙ EXISTING ELECTRIC METER ⊙ EXISTING ELECTRIC PEDESTAL ⊙ EXISTING GUY ANCHOR ⊙ EXISTING GUY POLE ⊙ EXISTING LIGHT POLE ⊙ EXISTING MONITOR WELL ⊙ EXISTING GAS METER ⊙ EXISTING GAS VALVE ⊙ EXISTING CATCH BASIN - ROUND 	<ul style="list-style-type: none"> ⊙ EXISTING CATCH BASIN - SQUARE < EXISTING FLARED END SECTION ⊙ EXISTING AIR CONDITIONER ⊙ EXISTING ANTENNA ⊙ EXISTING FLAG POLE ⊙ EXISTING IRRIGATION BOX ⊙ EXISTING MAIL BOX ⊙ EXISTING PAPER BOX ⊙ EXISTING POST ⊙ EXISTING ROCK ⊙ EXISTING SATELLITE DISH ⊙ EXISTING SIGN ⊙ EXISTING SPRINKLER HEAD ⊙ EXISTING TRAFFIC LIGHT ⊙ EXISTING UNDERGROUND MARKER ⊙ EXISTING CURB STOP BOX ⊙ EXISTING FIRE HYDRANT ⊙ EXISTING GATE VALVE ⊙ EXISTING GATE WELL (MANHOLE) ⊙ EXISTING WATER WELL ⊙ EXISTING WATER METER PIT ⊙ EXISTING CONIFEROUS SHRUB ⊙ EXISTING CONIFEROUS TREE ⊙ EXISTING DECIDUOUS SHRUB ⊙ EXISTING DECIDUOUS TREE ⊙ EXISTING BUILDING ⊙ EXISTING CONIFEROUS TREE LINE ⊙ EXISTING DECIDUOUS TREE LINE ⊙ EXISTING FENCE ⊙ EXISTING GUARDRAIL ⊙ EXISTING CABLE TV - OVERHEAD ⊙ EXISTING CABLE TV - UNDERGROUND ⊙ EXISTING ELECTRIC - OVERHEAD ⊙ EXISTING ELECTRIC - UNDERGROUND ⊙ EXISTING GAS ⊙ EXISTING STORM SEWER ⊙ EXISTING SANITARY SEWER ⊙ EXISTING SANITARY SEWER FORCE MAIN ⊙ EXISTING TELEPHONE - OVERHEAD ⊙ EXISTING TELEPHONE - UNDERGROUND ⊙ EXISTING WATERMAIN ⊙ EXISTING WATERMAIN ⊙ EXISTING WATERMAIN ⊙ EXISTING ASPHALT REMOVAL/RESTORATION ⊙ EXISTING CONCRETE ⊙ EXISTING CONCRETE REMOVAL/RESTORATION ⊙ EXISTING GRAVEL ⊙ EXISTING GRAVEL REMOVAL/RESTORATION
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3	EASEMENT
4	EASEMENT 2
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6	KELLYS ALLEY - PLEASANT ST
7	KELLYS ALLEY - SOUTH OF EAST ST
8	US 31 - NORTH OF EAST ST
9	US 31 - BENZIE BLVD
10	US 31 - 4TH ST TO 3RD ST
11	US 31 - BIRCHWOOD TO 4TH ST
12	PROSPECT AVE - CRYSTAL AVE TO BENZIE CT
13	PROSPECT AVE - EAST OF BENZIE CT
14	BENZIE CT - PROSPECT AVE TO CRYSTAL AVE
15	CRYSTAL - BENZIE CT TO COURT PLAZA
16	COURT PLAZA - HIGHLAND TO PROSPECT
17	COURT PLAZA - PROSPECT TO CRYSTAL
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19	SPRING VALLEY - HIGHLAND TO CRYSTAL
20	HIGHLAND - STA. 0+00 TO STA. 3+50
21	HIGHLAND - STA. 3+50 TO STA. 6+50
22	HIGHLAND - STA. 6+50 TO STA. 11+13
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24	PUMPING STATION SITE UTILITY PLAN
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27	PUMPING STATION DETAILS
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E1	ELECTRICAL SCHEDULES, DETAILS & RISER DIAGRAM

SEDIMENT CONTROL KEYING SYSTEM

ES31 P PERMANENT - TYP.
SS1 T TEMPORARY - TYP.

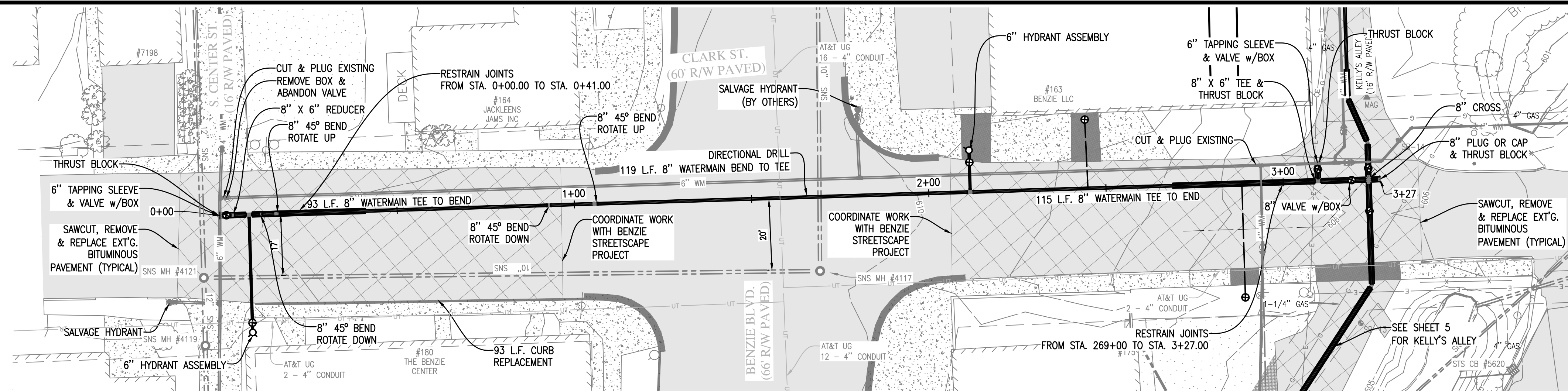
ALL DISTURBED AREAS

E8 P
E6 P

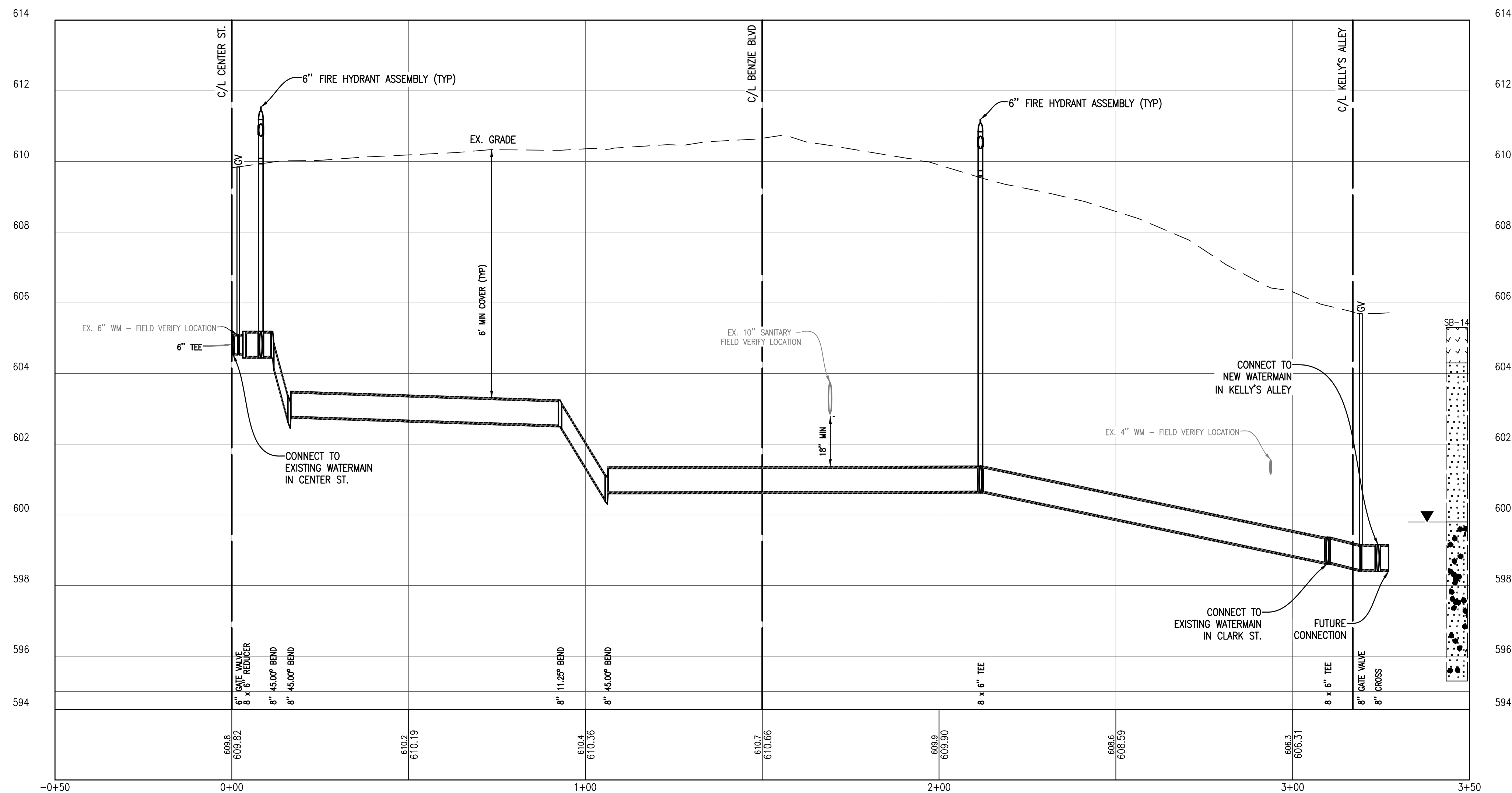
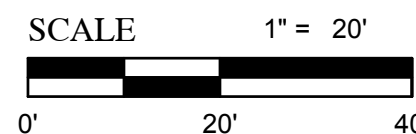
NOTES:
1. NOTATION REFERS TO MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET SESC KEYING SYSTEM.
2. PROVIDED FERTILIZER PER SPECIFICATIONS.

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

THE LOCATION OF THE EXISTING UTILITIES, AS SHOWN ON THIS PLAN, ARE APPROXIMATE ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ACTUAL LOCATION AND DEPTH OF ALL EXISTING UTILITIES. THE OWNER AND THE SURVEYOR SHALL NOT BE RESPONSIBLE FOR ANY OMISSION OR VARIATION FROM THE LOCATION SHOWN. THE CONTRACTOR SHALL NOTIFY "MISS DIG" AT 1 (800) 482-7171 OR 811 THREE (3) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION.



CLARK ST - BENZIE BLVD TO KELLY'S ALLEY PLAN



CLARK ST - BENZIE BLVD TO KELLY'S ALLEY PROFILE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

NOTES:

1. ALL WATER SERVICES TO BE 1" UNLESS OTHERWISE NOTED ON THE PLANS.
2. ALL WATER SERVICES TO BE CONNECTED AT PROPERTY LINES UNLESS OTHERWISE NOTED.
3. REFERENCE DETAIL SHEET FOR CONNECTION OF PROPOSED SERVICE LEADS TO EXISTING SERVICE LEADS.
4. MINIMUM DEPTH OF COVER ON NEW WATER MAIN TO BE 6.0 FT. (MINIMUM). CONTRACTOR TO EXCAVATE AND VERIFY LOCATION OF EXISTING WATER MAINS PRIOR TO CONSTRUCTION. COORDINATE WITH ENGINEER AS TO AREAS NEEDING VERIFICATION.
5. PROPOSED WATER MAIN SHALL MAINTAIN A MINIMUM OF 10 FT. HORIZONTAL AND 18" VERTICAL CLEARANCE FROM ALL SEWER LINES.
6. LOCATE, CUT, PLUG & ABANDON EXISTING WATER SERVICE.
7. ALL EXISTING HYDRANTS SHALL BE SALVAGED FOR OWNER AND PLACED IN LOCATION DESIGNATED BY OWNER.
8. ALL WATER SERVICES INCLUDE NEW SADDLE (FOR SERVICES LARGER THAN 1") AND CORP STOP AND NEW CURB STOP AND BOX, UNLESS OTHERWISE NOTED.



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Strata symbols		Misc. Symbols	
	Paving		Water table during drilling
	Gravel		Water table at boring completion
	Clayey sand		
	Low plasticity clay		
	Poorly graded sand		
	Silty sand		
	Poorly graded clayey silty sand		

SANITARY SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #4117	4'	STANDARD	610.19	10" NE: 602.83 10" NW: 602.61	
SNS MH #4119	4'	STANDARD	609.67	12" NE: 602.26 12" SW: 602.31	
SNS MH #4121	4'	STANDARD	609.45	10" SE: 602.17 12" NE: 602.20	

**CLARK ST - BENZIE BLVD TO KELLY'S ALLEY
WATER SYSTEM IMPROVEMENTS**

Project No. 2017027001.03
Sheet **1**

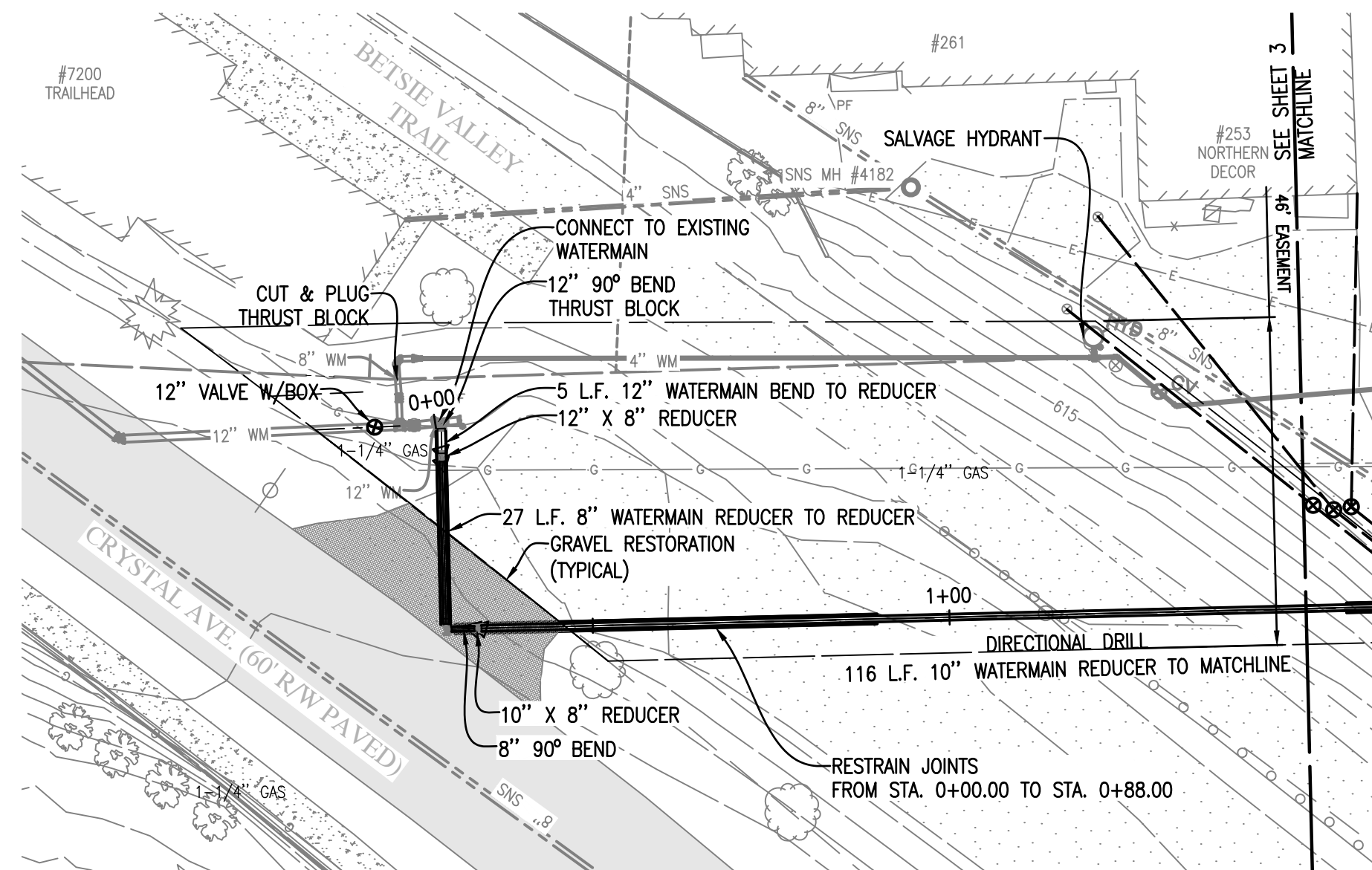
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Date: 10/19/17
Scale: 1" = 20'

Drawn By: ERP
Checked By: MJH

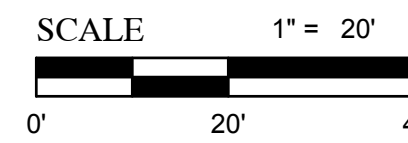
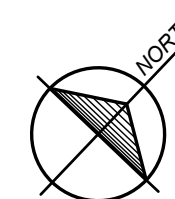
No.:
Date:
Revision:

By:
Gosling Czubak
Engineers
Surveys
Environmental
Services
Architecture
12000
231-949-9101
231-949-9102
Fax: 231-941-6253



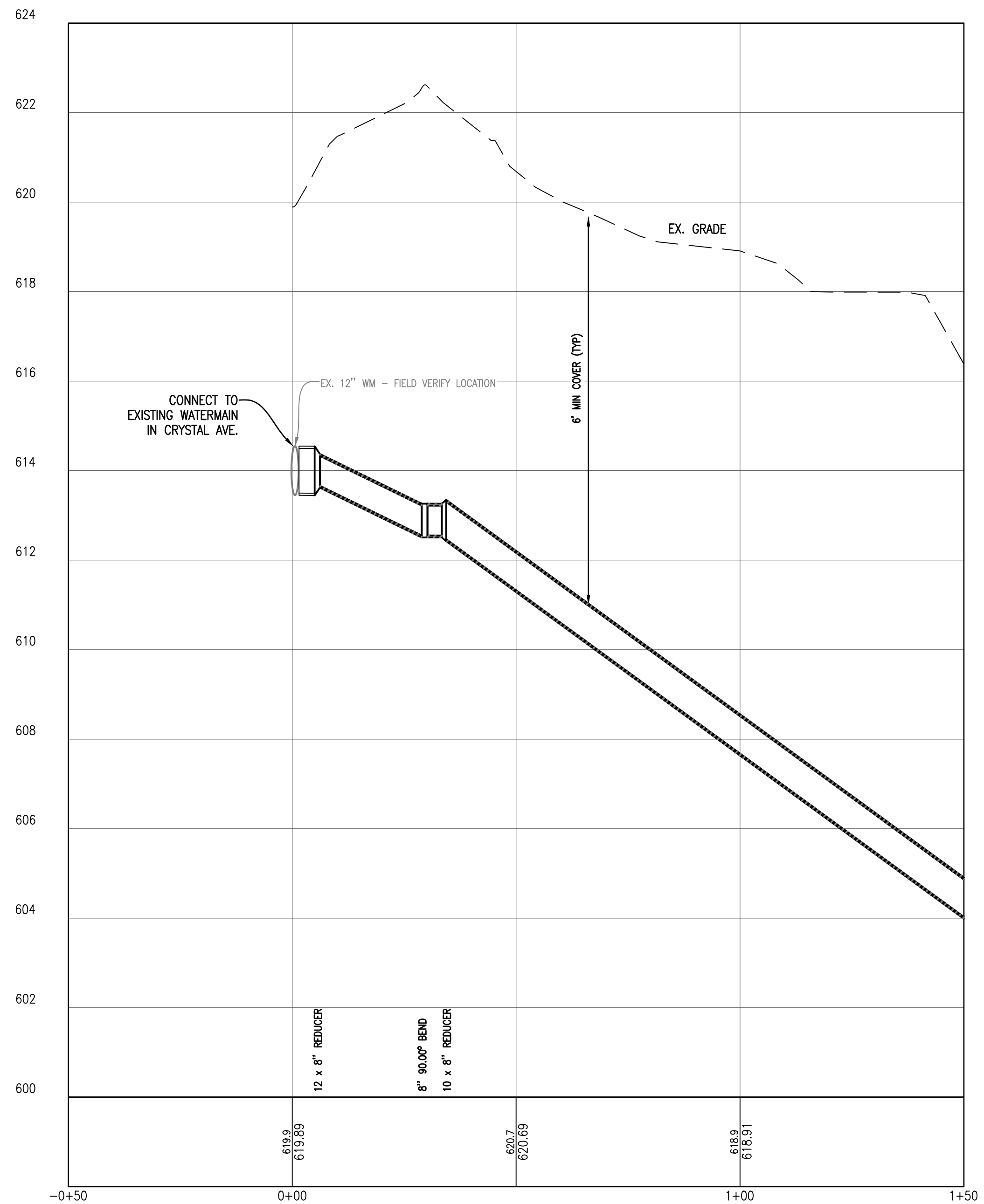
EASEMENT - 5 CORNERS PLAN

1" = 20'



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9. ALL WATER SERVICES INCLUDE NEW SADDLE (FOR SERVICES LARGER THAN 1") AND CORP STOP AND NEW CURB STOP AND BOX, UNLESS OTHERWISE NOTED.
10. CONTRACTOR TO COORDINATE WATERMAIN CROSSING OF THE BETSIE VALLEY TRAIL WITH BENZIE COUNTY AND THE DNR. CONTRACTOR TO MINIMIZE DISRUPTION TO TRAIL ACCESS AND PROVIDE ROUTING FOR TRAIL USERS AROUND DISTURBED AREAS. ACCESS TO PARKING LOT FOR TRAIL USE TO BE MAINTAINED THROUGHOUT CONSTRUCTION. WORK IMPACTING THE TRAIL TO BE PERFORMED BEFORE MAY 20, 2018 OR AFTER SEPTEMBER 3, 2018. RESTORATION OF THE TRAIL AND PARKING AREA TO BE COMPLETED IMMEDIATELY FOLLOWING THE INSTALLATION OF THE WATERMAIN.



EASEMENT - 5 CORNERS PROFILE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

Strata symbols	
	Paving
	Gravel
	Clayey sand
	Low plasticity clay
	Poorly graded sand
	Silty sand
	Poorly graded clayey silty sand

Misc. Symbols	
	Water table during drilling
	Water table at boring completion

SANITARY SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #4182	4'	STANDARD	611.22	8" W: 603.62 4" SW: 603.34	8" E: 603.56



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Gosling Czubak
 Engineers
 Surveyors
 Environmental
 Services
 Architecture

1200
 231-949-9101 800-988-1022
 Fax 231-941-6252

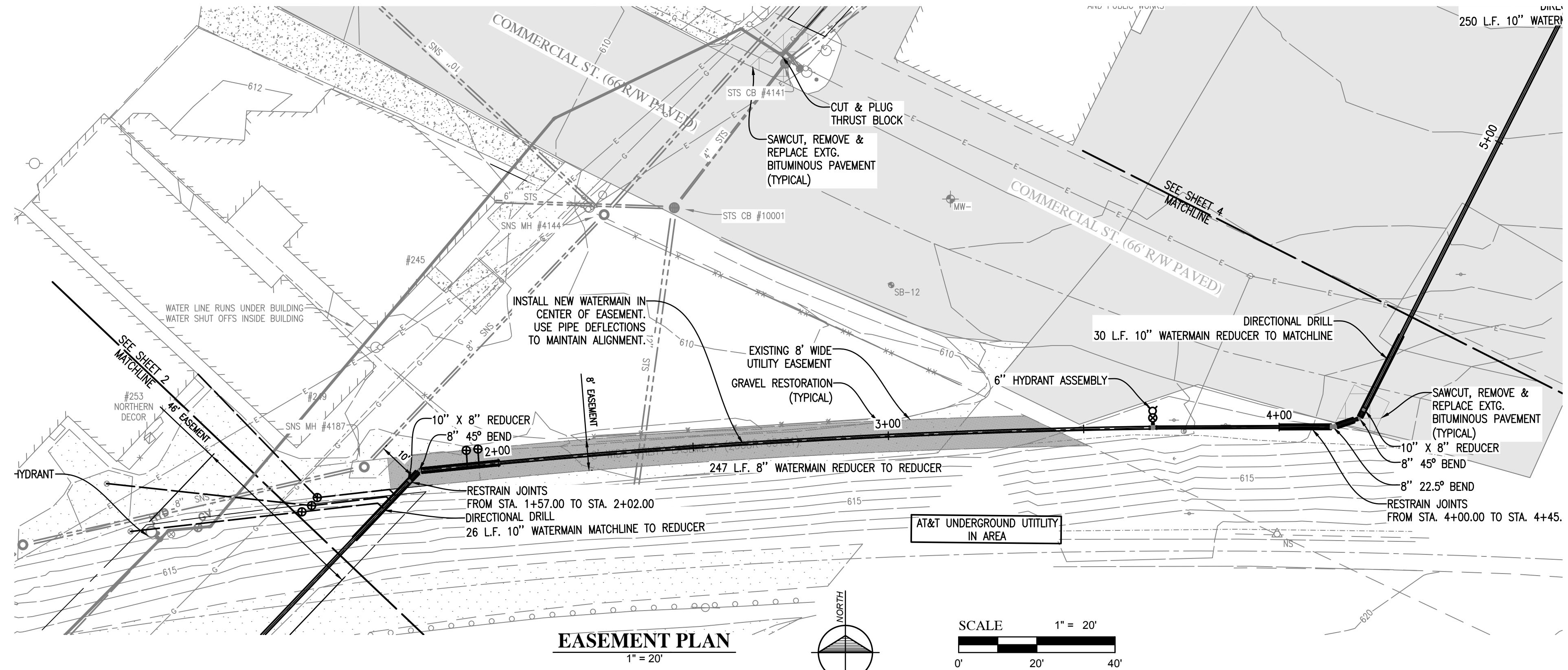
By: TNK
 Revision: EASEMENTS UPDATED
 Date: 08/07/17
 No. 1

Drawn By: ERP
 Checked By: MJH
 Date: 10/19/17
 Scale: 1" = 20'

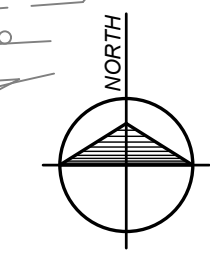
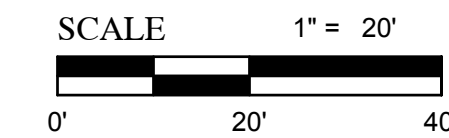
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 SECTION 23 & 26, T 26 N, R 15 W,
 BENZONIA TOWNSHIP,
 BENZIE COUNTY, MICHIGAN

EASEMENT - 5 CORNERS
 WATER SYSTEM IMPROVEMENTS

Project No. 2017027001.03
 Sheet 2

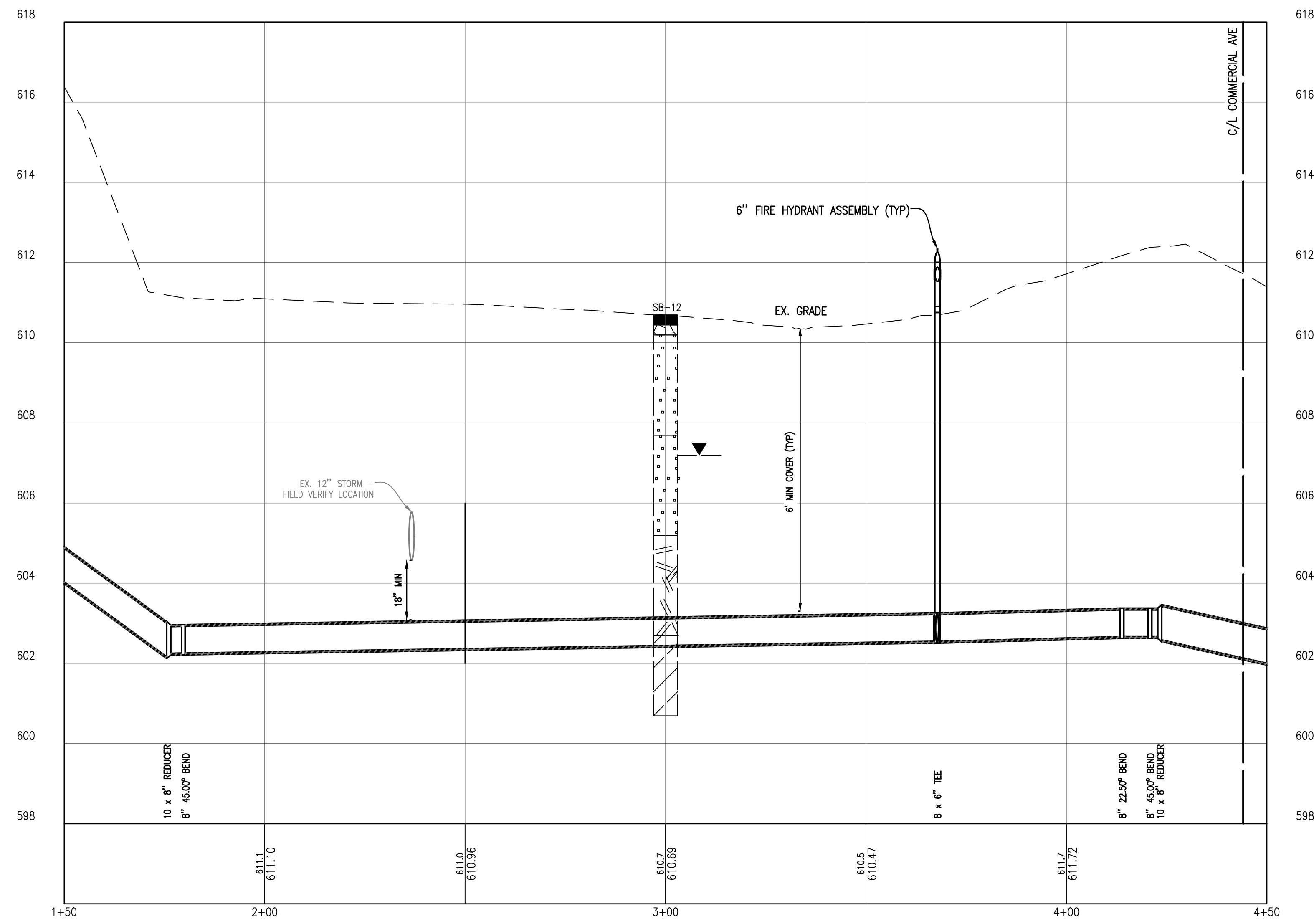


EASEMENT PLAN
1" = 20'



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EASEMENT PROFILE
SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

Strata symbols		Misc. Symbols	
	Paving		Water table during drilling
	Gravel		Water table at boring completion
	Clayey sand		
	Low plasticity clay		
	Poorly graded sand		
	Silty sand		
	Poorly graded clayey silty sand		

STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #4144	4'	STANDARD	609.42	8" SW: 602.35 10" NE: 602.37	10" NW: 602.27
SNS MH #4187	4'	STANDARD	610.83	8" W: 603.42	8" NE: 603.40

STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
STS CB #10001	4'	STANDARD	609.22	6" W: 604.67 4" NE: 604.21	12" S: 604.67



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Gasling Czubak
Engineers
Surveyors
Environmental Services
Architecture

2505 W. BROADWAY
ANN ARBOR, MI 48106-1007
Tel: 734-946-9191 800-988-1022
Fax: 734-946-1025

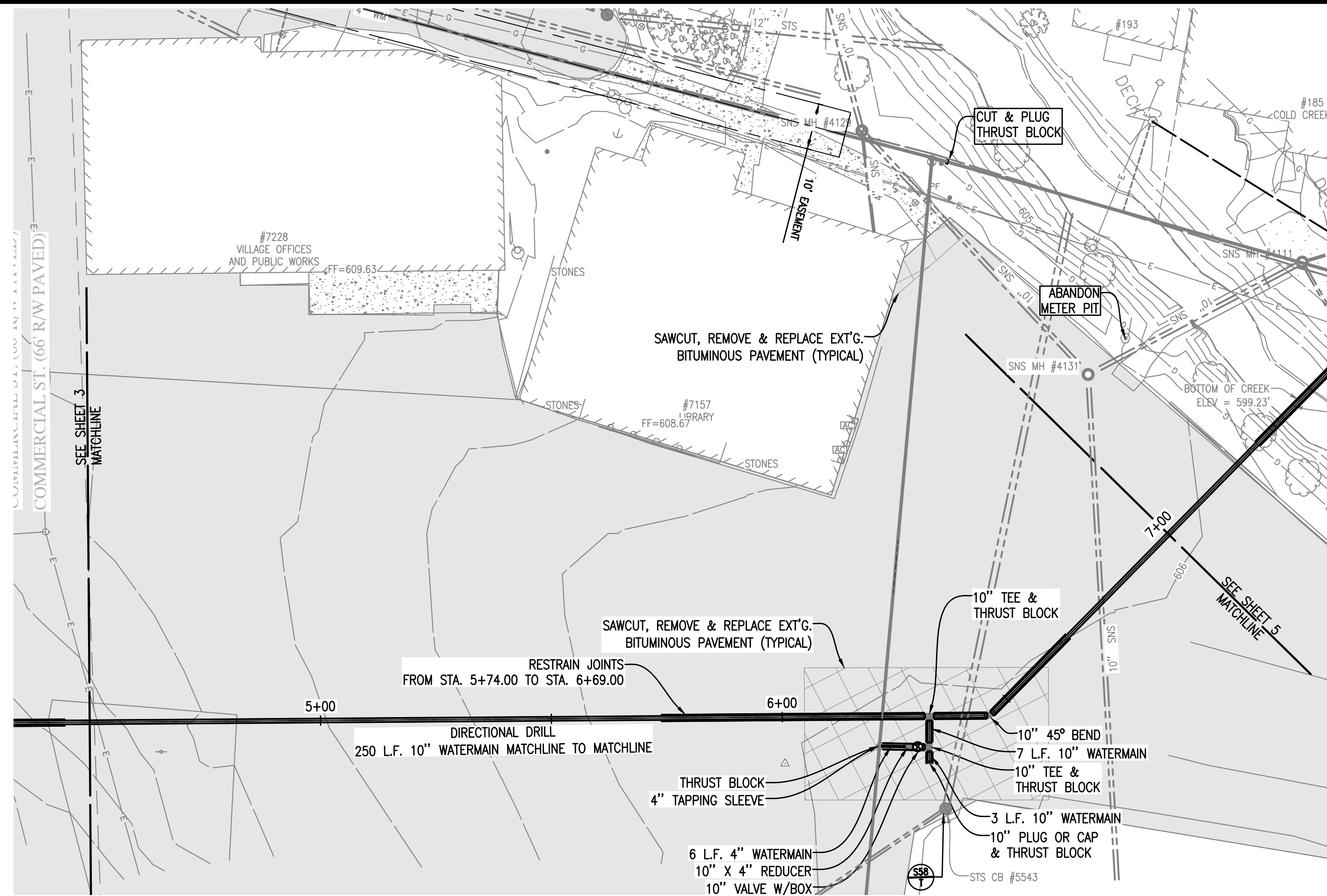
By: TNK
Revision: EASEMENTS UPDATED
Date: 09/07/17
No.: 1

Drawn By: ERP
Date: 10/19/17
Scale: 1" = 20'

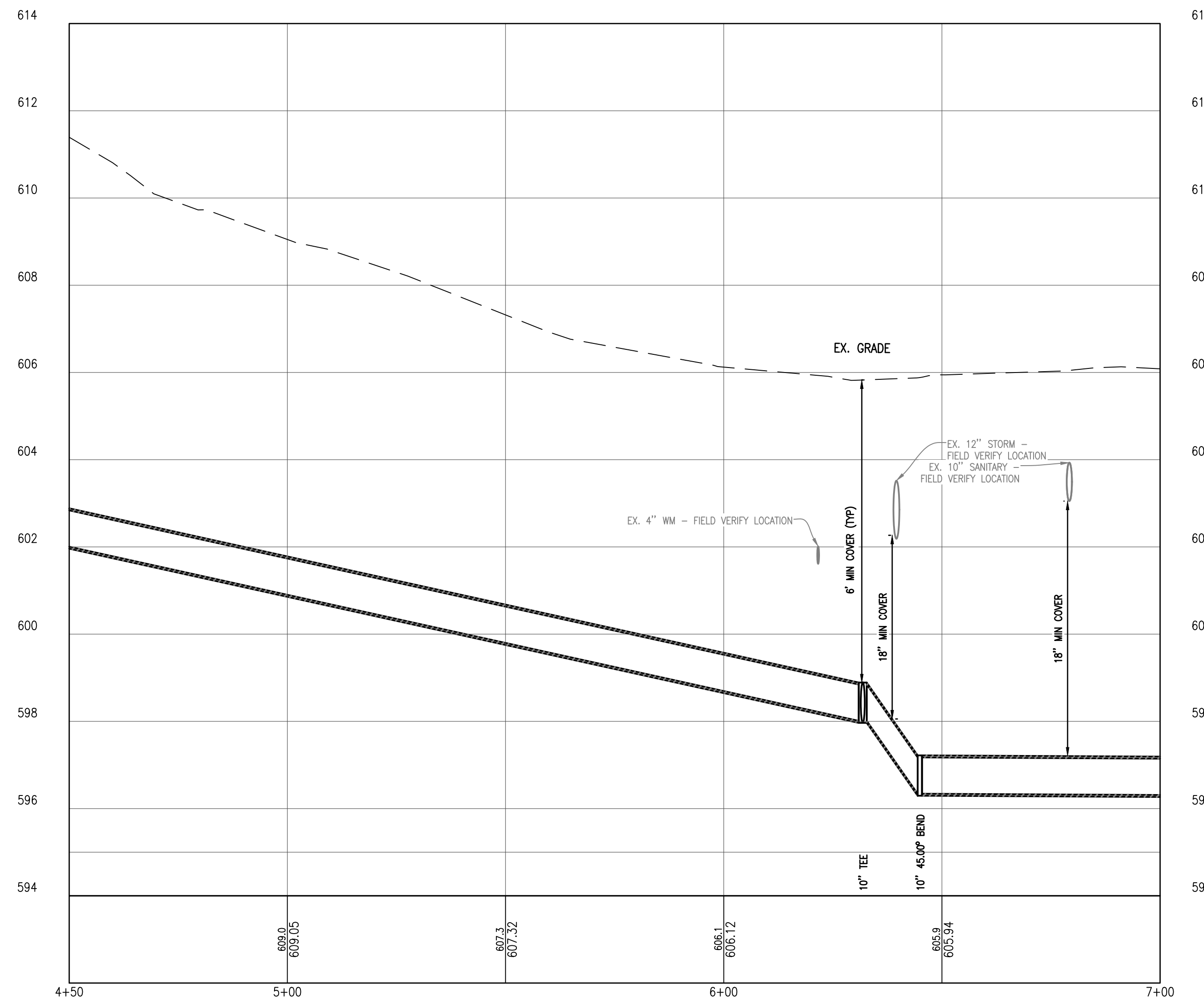
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Location:
SECTION 23 & 26, T 26 N, R 15 W,
BENZONIA TOWNSHIP,
BENZIE COUNTY, MICHIGAN

EASEMENT
WATER SYSTEM IMPROVEMENTS



EASEMENT 2 PLAN
1" = 20'



EASEMENT 2 PROFILE
SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

- NOTES:**
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Strata symbols

- Paving
- Gravel
- Clayey sand
- Low plasticity clay
- Poorly graded sand
- Silty sand
- Poorly graded clayey silty sand

Misc. Symbols

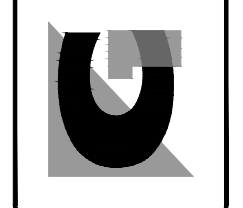
- Water table during drilling
- Water table at boring completion

STORM SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
STS CB #5543	4'	STANDARD	605.17	6" N: 603.68 4" E: 604.21	12" W: 602.51

SANITARY SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #4111	2'	STANDARD	605.42	4" N: 603.17 6" E: 603.16	10" S: 603.01
SNS MH #4129	4'	STANDARD	607.19	10" E: 602.64 4" E: 604.21	10" W: 602.55
SNS MH #4131	2.5'	STANDARD	606.14	10" N: 602.97 10" SE: 602.97	10" W: 602.93

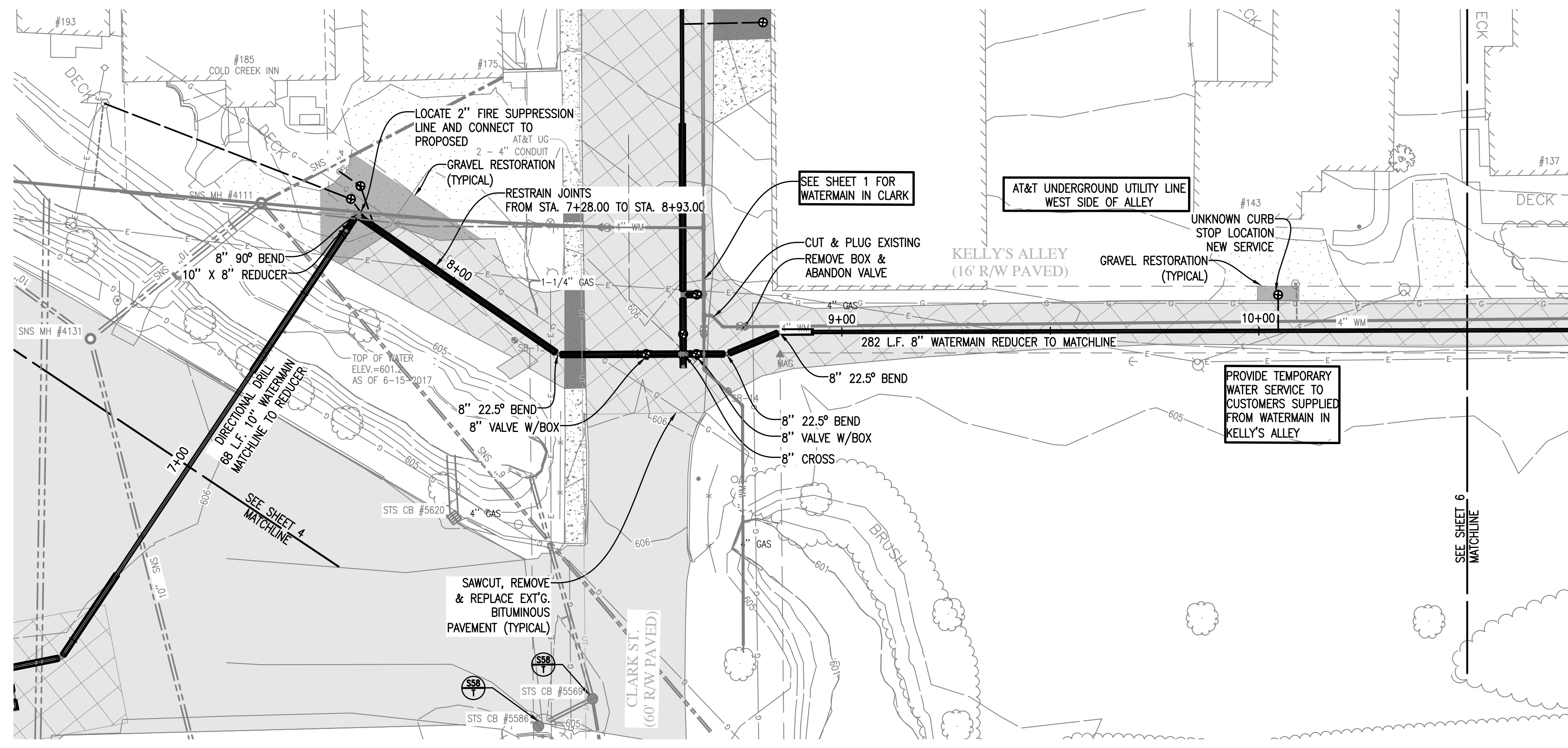


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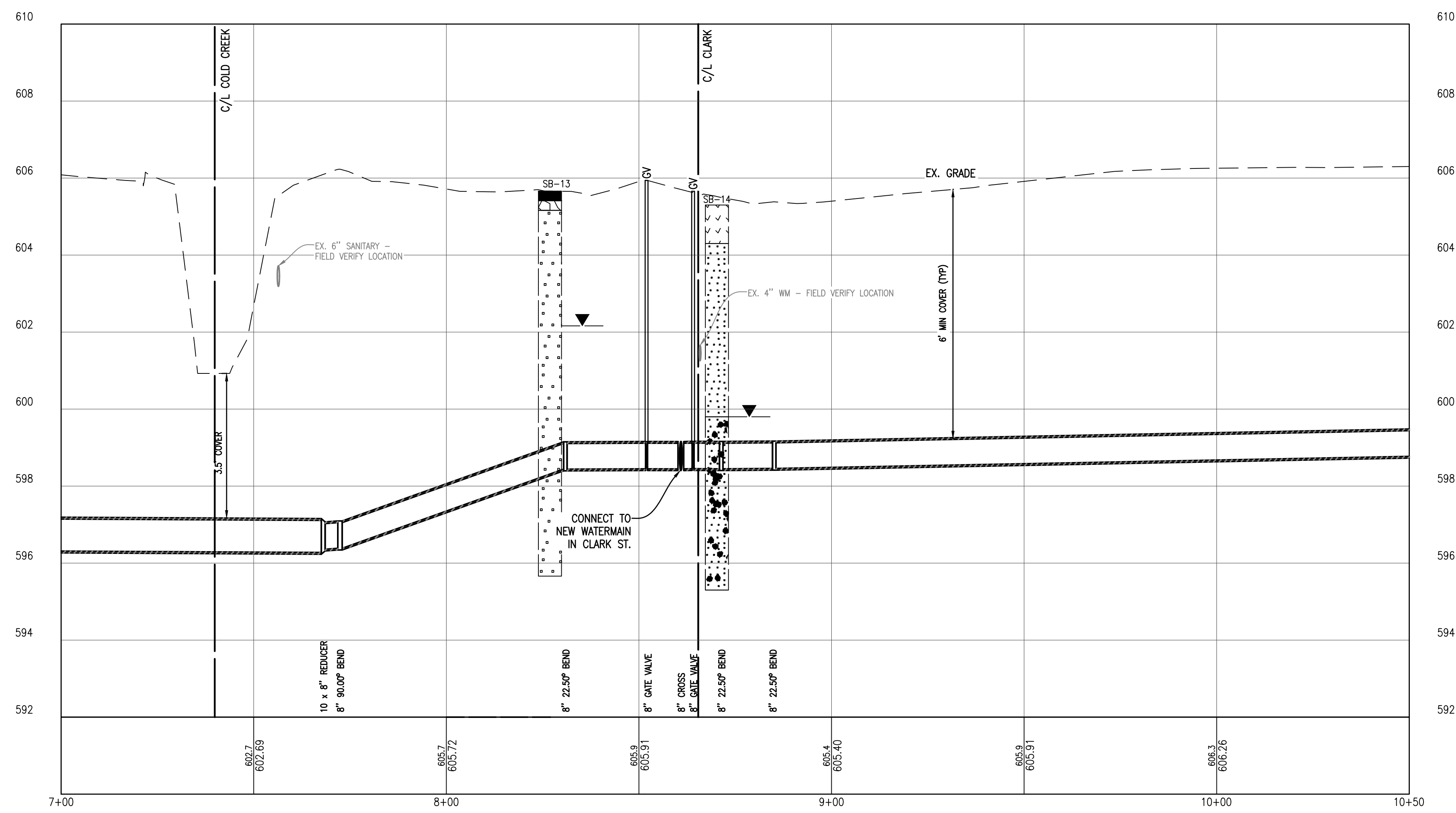
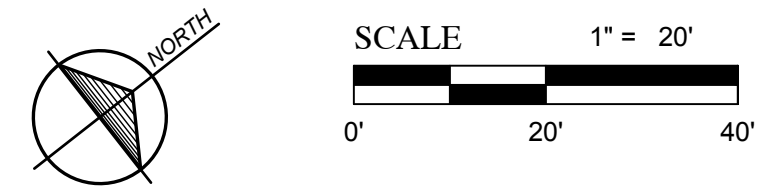


By: TNK
Revision: EASEMENTS UPDATED
Date: 09/07/17
No: 1
Drawn By: ERP
Checked By: MJH
Date: 10/19/17
Scale: 1" = 20'

Location: SECTION 23 & 26, T 26 N, R 15 W, BENZONIA TOWNSHIP, BENZIE COUNTY, MICHIGAN



KELLY'S ALLEY - CLARK ST PLAN
1" = 20'



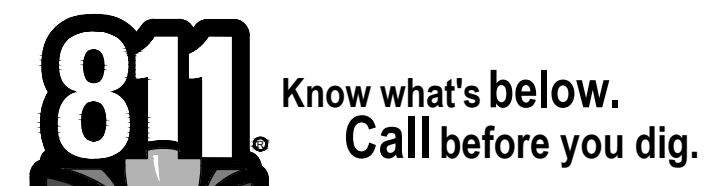
KELLY'S ALLEY - CLARK ST PROFILE
SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

Strata symbols		Misc. Symbols	
[Symbol]	Paving	[Symbol]	Water table during drilling
[Symbol]	Gravel	[Symbol]	Water table at boring completion
[Symbol]	Clayey sand	[Symbol]	
[Symbol]	Poorly graded sand	[Symbol]	
[Symbol]	Silty sand	[Symbol]	
[Symbol]	Poorly graded clayey silty sand	[Symbol]	
[Symbol]	Low plasticity clay	[Symbol]	

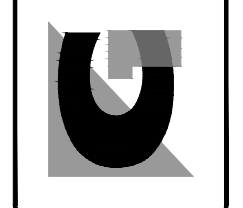
STORM SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
STS CB #5569	4'	STANDARD	604.86	8" S: 602.93 4" SE: 602.96	8" NW: 602.50
STS CB #5586	4'	STANDARD	604.52		8" N: 602.97
STS CB #5620	4'	STANDARD	605.04		18" NW: 603.33

SANITARY SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #4111	4'	STANDARD	605.42	4" N: 603.17 6" E: 603.16	10" S: 603.01
SNS MH #4131	4'	STANDARD	606.14	10" N: 602.97 10" SE: 602.97	10" W: 602.93

- NOTES:**
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 - ALL WATER SERVICES TO BE CONNECTED AT PROPERTY LINES UNLESS OTHERWISE NOTED.
 - REFERENCE DETAIL SHEET FOR CONNECTION OF PROPOSED SERVICE LEADS TO EXISTING SERVICE LEADS.
 - MINIMUM DEPTH OF COVER ON NEW WATER MAIN TO BE 6.0 FT. (MINIMUM).
 - CONTRACTOR TO EXCAVATE AND VERIFY LOCATION OF EXISTING WATER MAINS PRIOR TO CONSTRUCTION. COORDINATE WITH ENGINEER AS TO AREAS NEEDING VERIFICATION.
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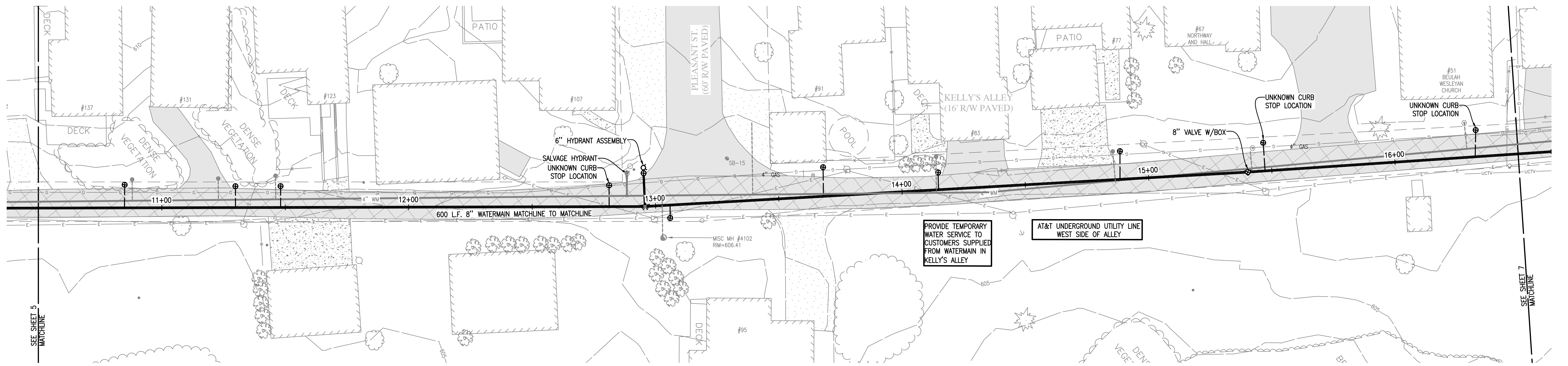


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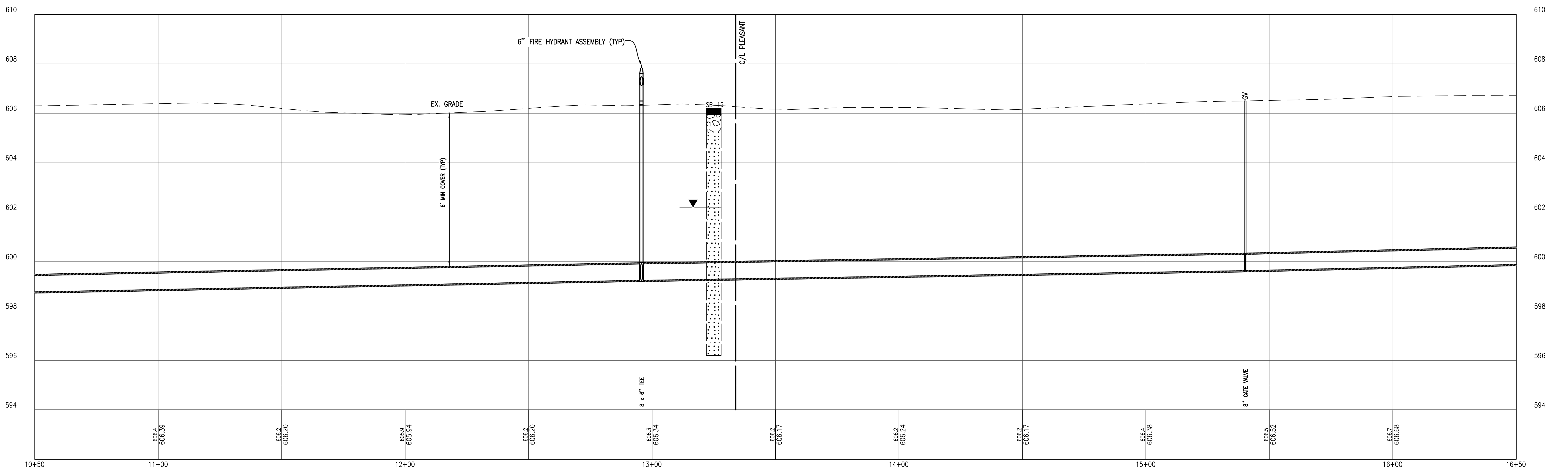


By: _____
Revision: _____
Date: _____
No.: _____
Drawn By: ERP
Checked By: MJH
Date: 10/19/17
Scale: 1" = 20'

Location:
SECTION 23 & 26, T 26 N, R 15 W,
BENZONIA TOWNSHIP,
BENZIE COUNTY, MICHIGAN



KELLY'S ALLEY - PLEASANT ST PLAN
1" = 20'



KELLY'S ALLEY - PLEASANT ST PROFILE
SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

Strata symbols	
	Paving
	Gravel
	Clayey sand
	Low plasticity clay
	Poorly graded sand
	Silty sand
	Poorly graded clayey silty sand
Misc. Symbols	
	Water table during drilling
	Water table at boring completion

NOTES:

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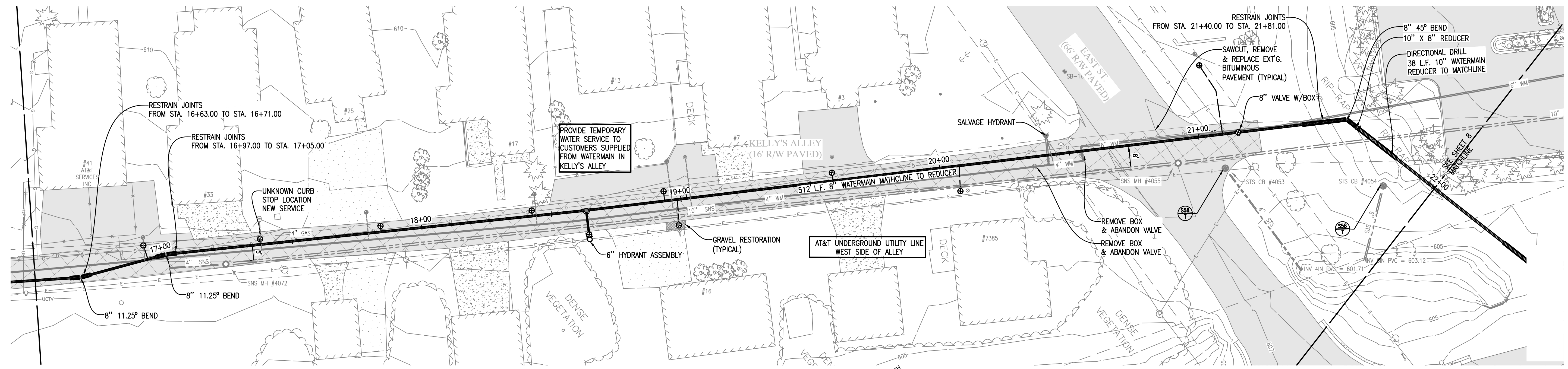
Gosling Czubak
Engineering Sciences, Inc.
12000 E. Grand Ave. Suite 200
Troy, MI 48068-3907
248-688-9991 800-888-1082
Fax: 248-688-9253

No.:
Date:
Revision:
By:

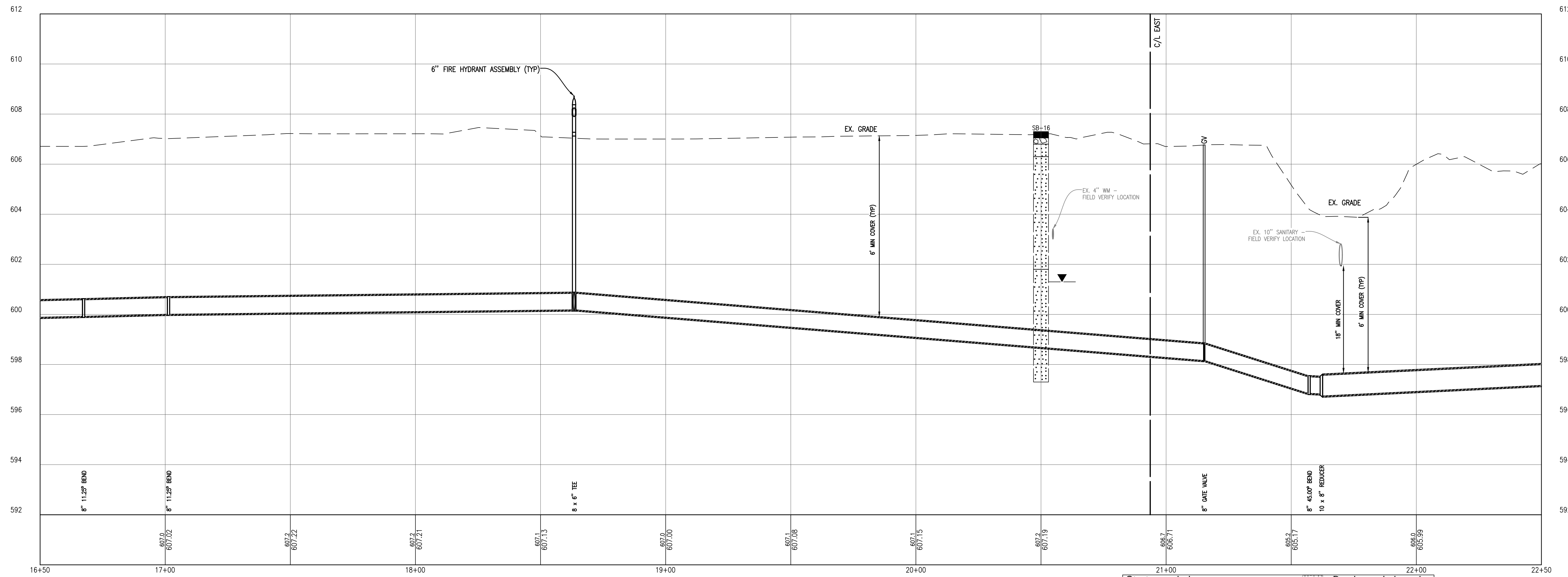
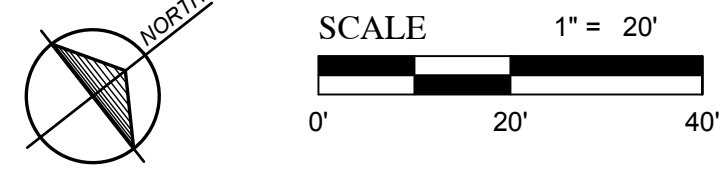
Drawn By: ERP
Checked By: MJH
Date: 10/19/17
Scale: 1" = 20'

Location:
SECTION 23 & 26, T 26 N, R 15 W,
BENZONIA TOWNSHIP,
BENZIE COUNTY, MICHIGAN

KELLY'S ALLEY - PLEASANT ST
WATER SYSTEM IMPROVEMENTS
Project No. 2017027001.03
Sheet **6**



KELLY'S ALLEY - SOUTH OF EAST ST PLAN
1" = 20'



KELLY'S ALLEY - SOUTH OF EAST ST PROFILE
SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

NOTES:

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STORM SEWER SCHEDULE

STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
STS CB #4053	4'	STANDARD	606.38	4" E: 604.88	
STS CB #4054	4'	STANDARD	606.29	6" SE: 603.39	

STORM SEWER SCHEDULE

STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
STS CB #4053	2'	STANDARD	606.38	4" E: 604.88	
STS CB #4054	2'	STANDARD	606.29	6" SE: 603.39	

Strata symbols

- Paving
- Gravel
- Clayey sand
- Low plasticity clay

Soils

- Poorly graded sand
- Silty sand
- Poorly graded clayey silty sand

Misc. Symbols

- Water table during drilling
- Water table at boring completion

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

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Gosling Czubak
Engineering Sciences, Inc.
12000 E. Grand Ave. #200
Troy, MI 48068-9807
248-698-9191 800-988-1082
fax 248-698-6253



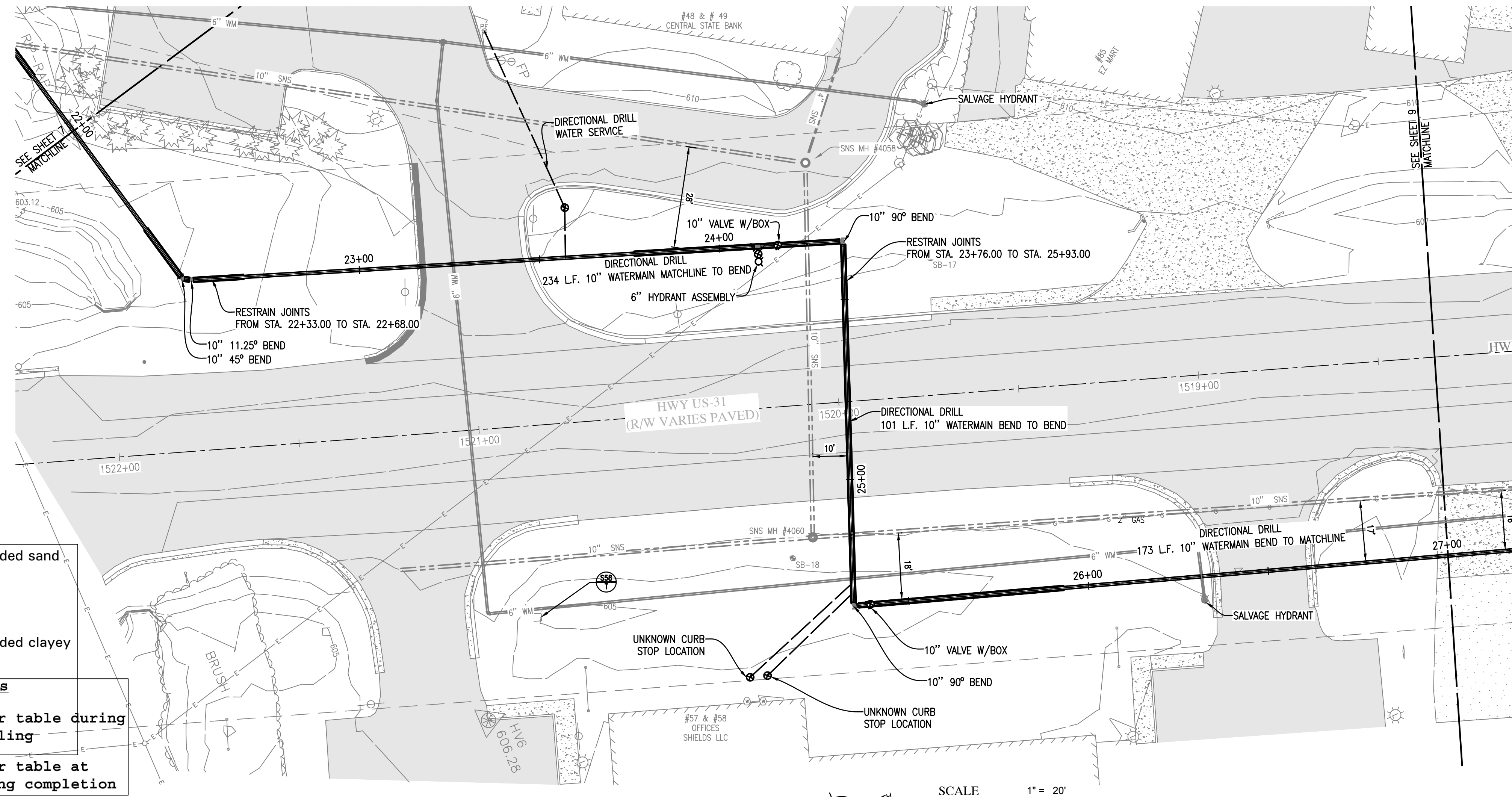
By: _____
Date: _____
Revision: _____
No.: _____

Drawn By: ERP
Checked By: MJH
Date: 10/19/17
Scale: 1" = 20'

Location:
SECTION 23 & 26, T 26 N, R 15 W,
BENZONIA TOWNSHIP,
BENZIE COUNTY, MICHIGAN

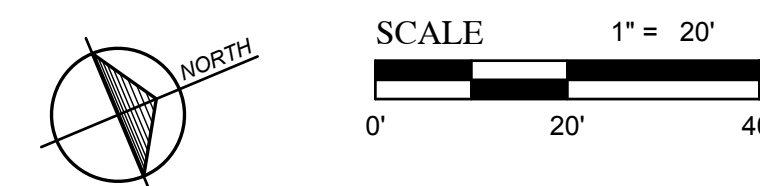
KELLY'S ALLEY - SOUTH OF EAST ST
WATER SYSTEM IMPROVEMENTS

Project No.
2017027001.03
Sheet
7

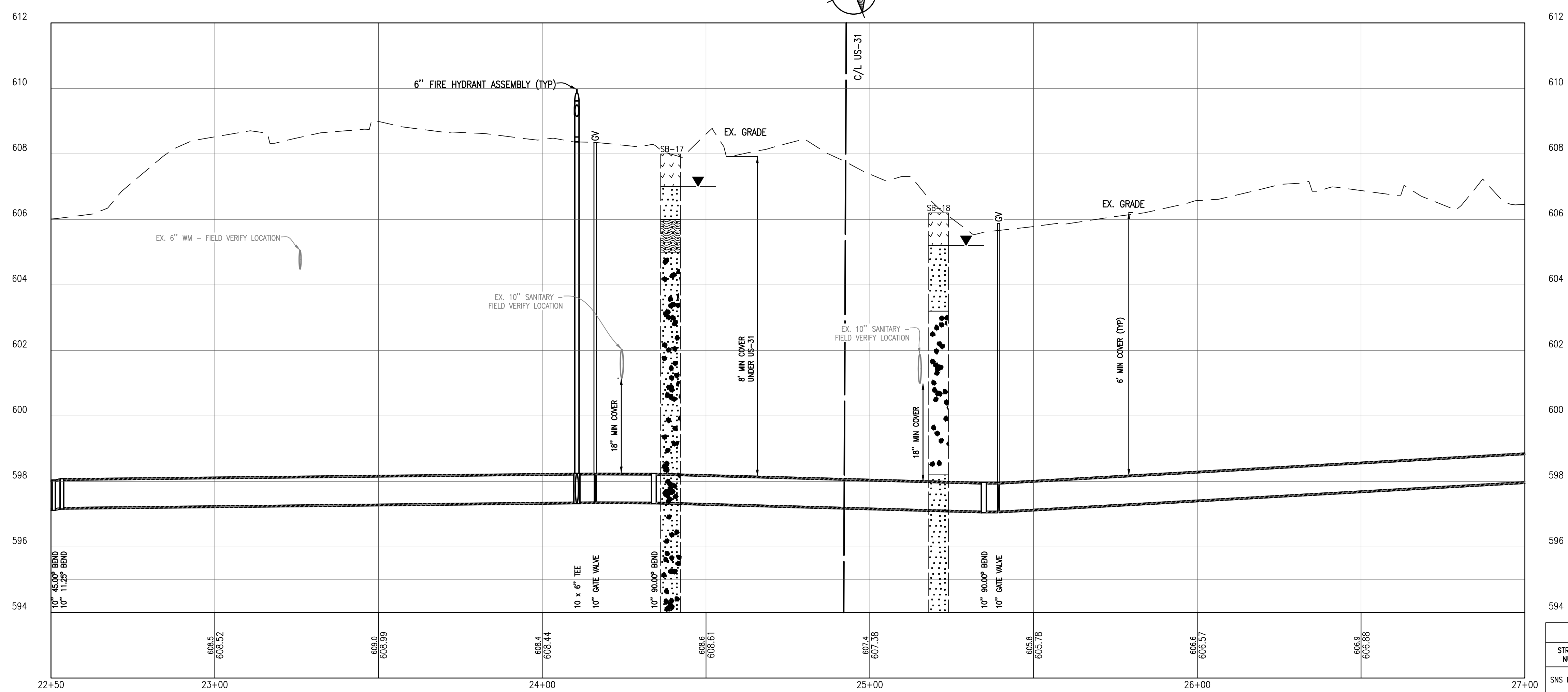


Strata symbols	
	Paving
	Gravel
	Clayey sand
	Low plasticity clay
	Poorly graded sand
	Silty sand
	Poorly graded clayey silty sand
Misc. Symbols	
	Water table during drilling
	Water table at boring completion

US 31 - NORTH OF EAST ST PLAN
1" = 20'

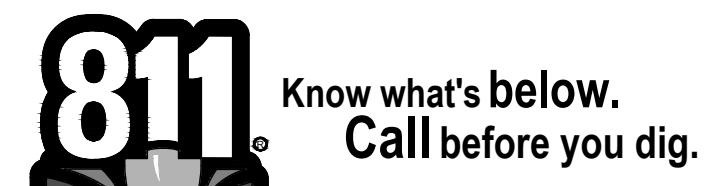


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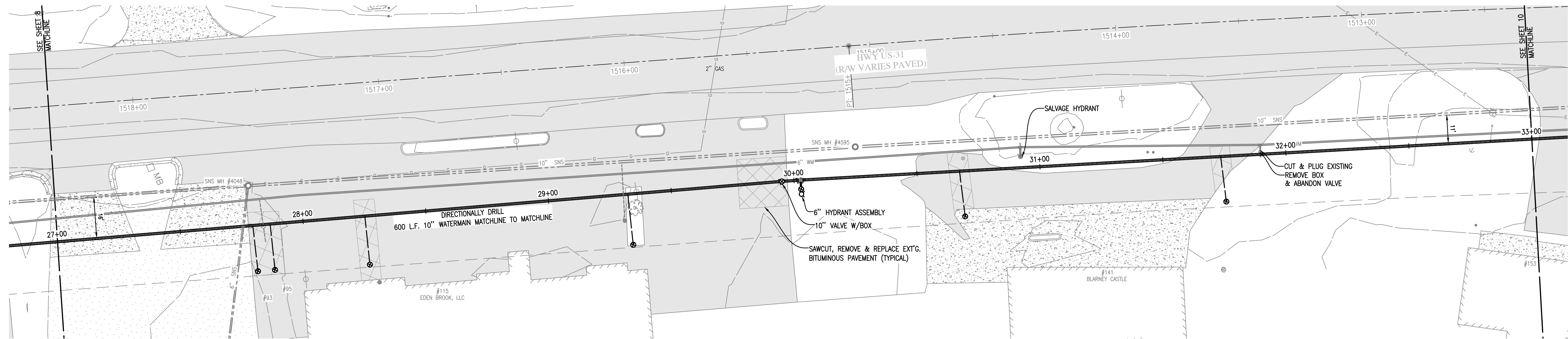


US 31 - NORTH OF EAST ST PROFILE
SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

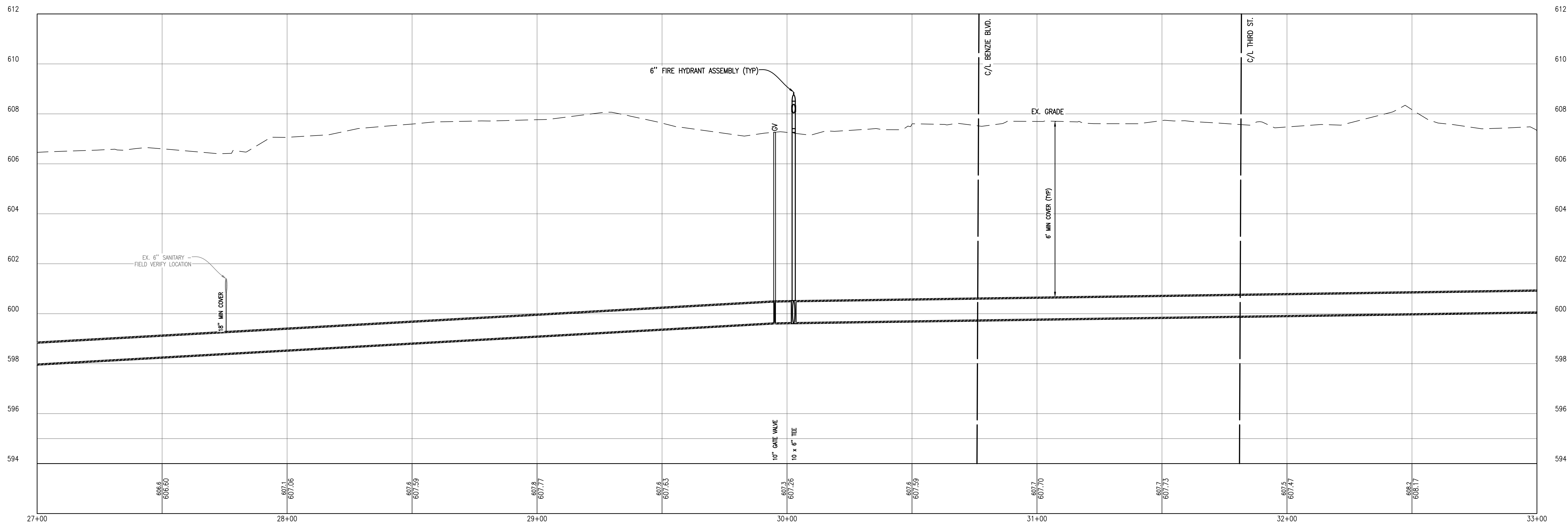
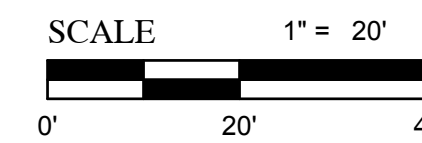
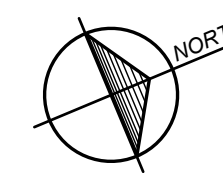
SANITARY SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #4058	2'	STANDARD	609.11	10" SW: 601.16 4" NW: 603.45	10" E: 601.21
SNS MH #4060	2'	STANDARD	606.80	10" W: 601.05 10" S: 600.98	10" N: 601.06



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US 31 - BENZIE BLVD PLAN
1" = 20'



US 31 - BENZIE BLVD PROFILE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

NOTES:

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SANITARY SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #4048	4'	STANDARD	607.17	10" S: 600.22 6" SE: 600.82	10" N: 600.25
SNS MH #4595	4'	STANDARD	607.59	10" S: 599.74	10" N: 599.73

Strata symbols

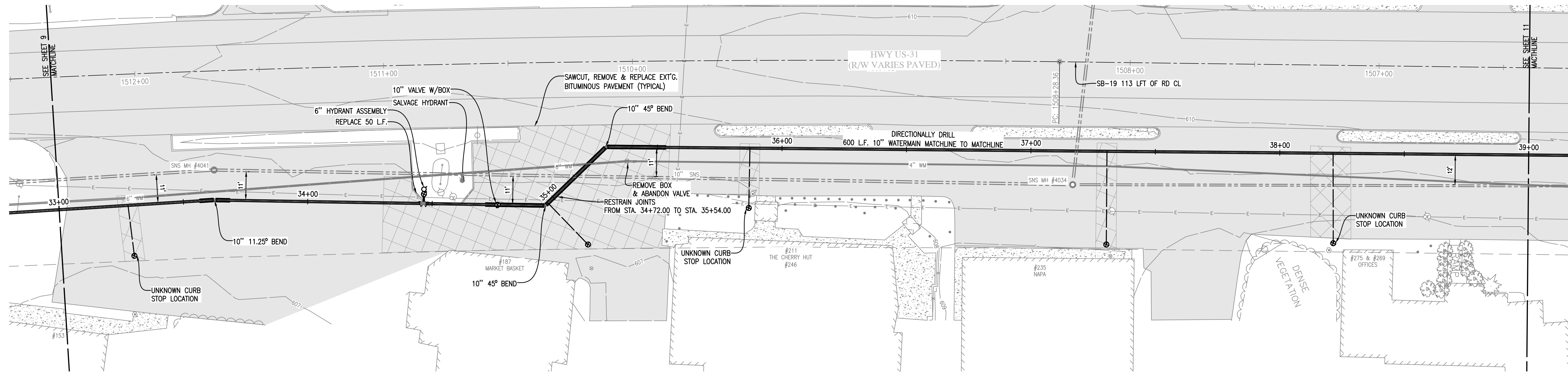
- Paving
- Gravel
- Clayey sand
- Low plasticity clay
- Poorly graded sand
- Silty sand
- Poorly graded clayey silty sand

Misc. Symbols

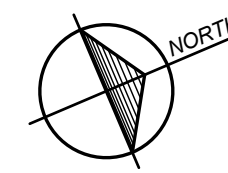
- Water table during drilling
- Water table at boring completion



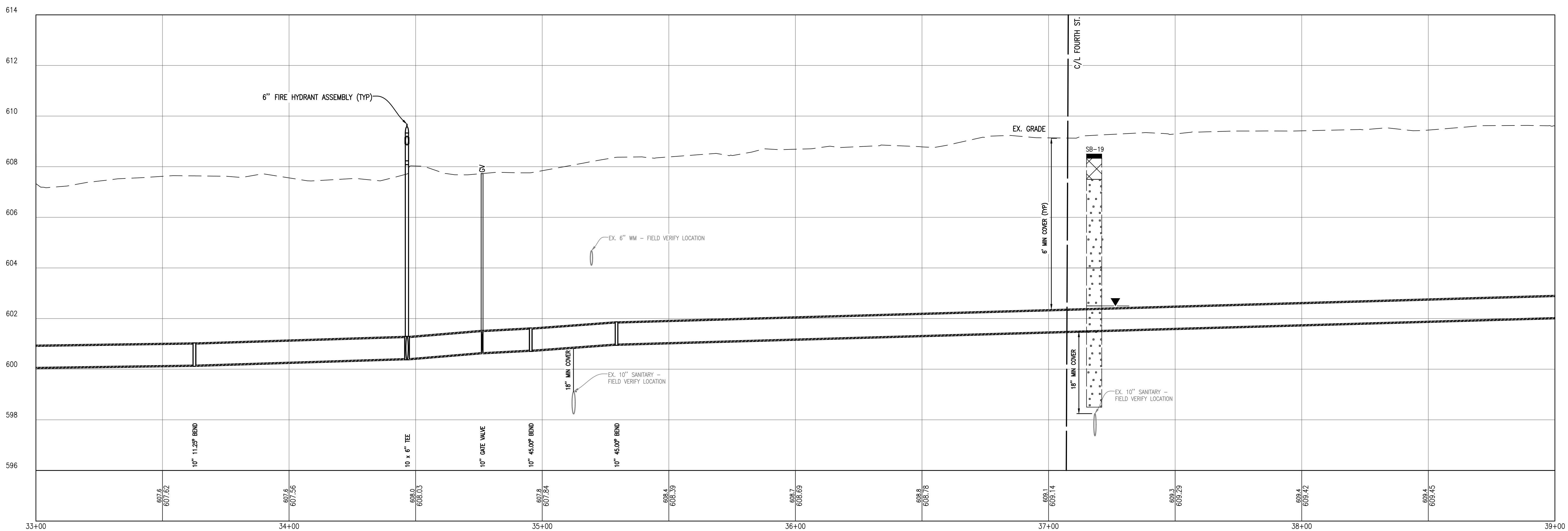
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US 31 - 4TH ST TO 3RD ST PLAN
1" = 20'



SCALE 1" = 20'
0' 20' 40'



US 31 - 4TH ST TO 3RD ST PROFILE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

Misc. Symbols

	Water table during drilling
	Water table at boring completion

Strata symbols

	Paving
	Gravel
	Clayey sand
	Low plasticity clay
	Poorly graded sand
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SANITARY SEWER SCHEDULE

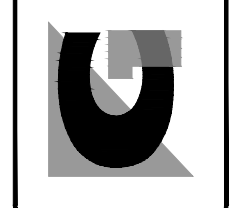
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #4034	4'	STANDARD	608.59	10" SW: 597.71 8" NE: 597.81	10" NW: 597.71
SNS MH #4041	4'	STANDARD	607.84	10" S: 598.63	10" NE: 598.65



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Gosling Czubak
Engineers
• Surveyors
• Environmental
• Sciences, Inc.
Services
• Planning
• Architecture
12000
231-948-9101
231-948-9102
Fax: 231-941-6025



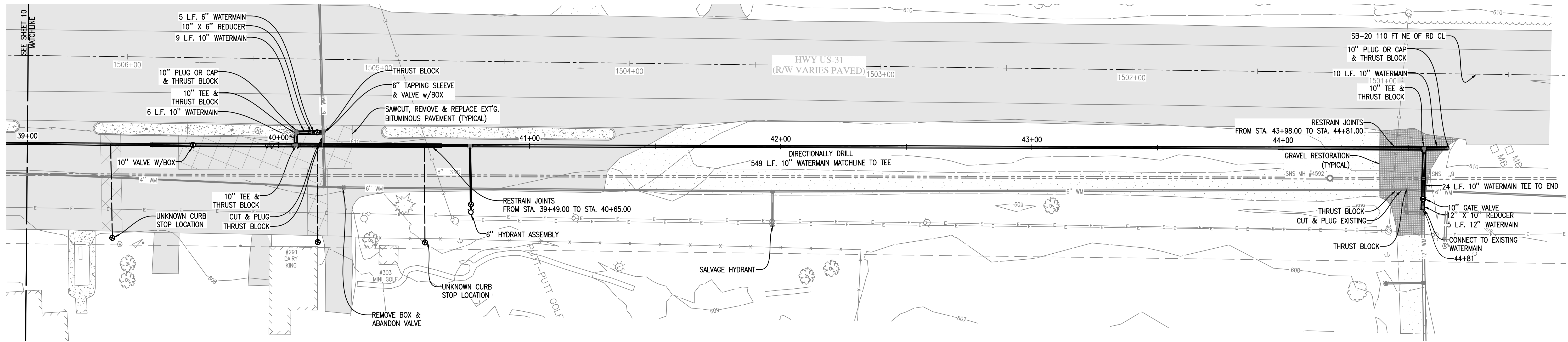
By:
Revision:
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Drawn By: ERP
Checked By: MJH
Date: 10/19/17
Scale: 1" = 20'

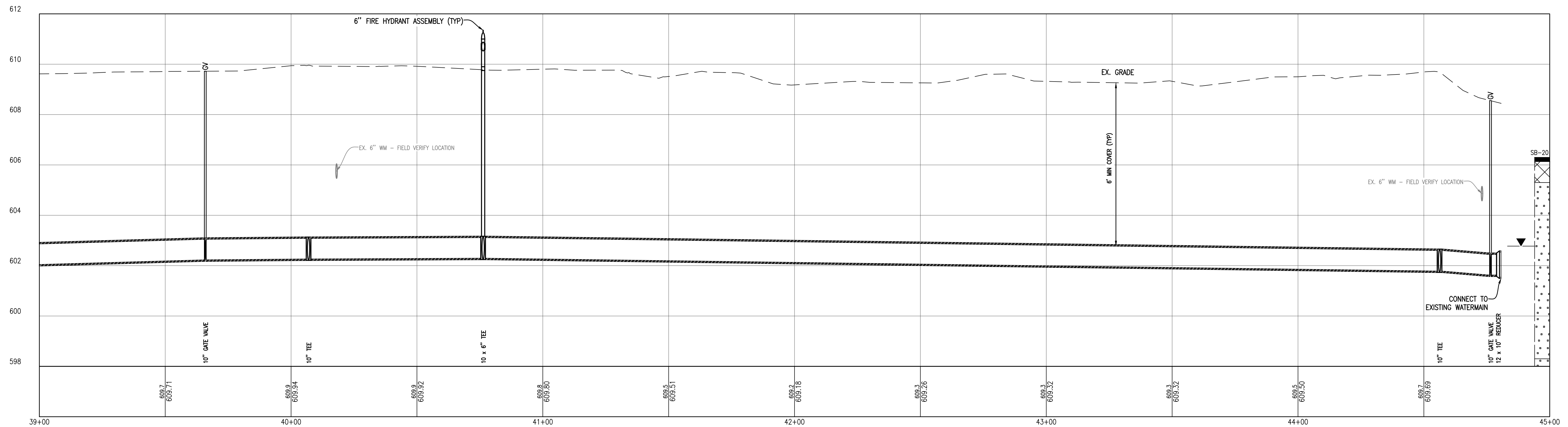
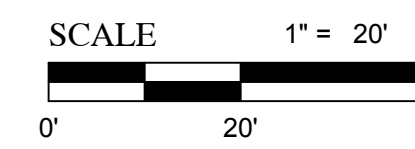
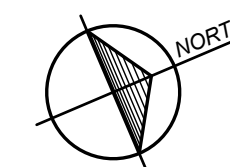
Location:
SECTION 23 & 26, T 26 N, R 15 W,
BENZONIA TOWNSHIP,
BENZIE COUNTY, MICHIGAN

**US 31 - 4TH ST TO 3RD ST
WATER SYSTEM IMPROVEMENTS**

Project No.
2017027001.03
Sheet
10



US 31 - BIRCHWOOD TO 4TH ST PLAN
1" = 20'



US 31 - BIRCHWOOD TO 4TH ST PROFILE
SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

NOTES:

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Strata symbols		Misc. Symbols	
	Paving		Water table during drilling
	Gravel		Water table at boring completion
	Clayey sand		
	Low plasticity clay		
	Poorly graded sand		
	Silty sand		
	Poorly graded clayey silty sand		

SANITARY SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #4592	4'	STANDARD	607.97	8" SW: 600.81	8" NE: 601.00

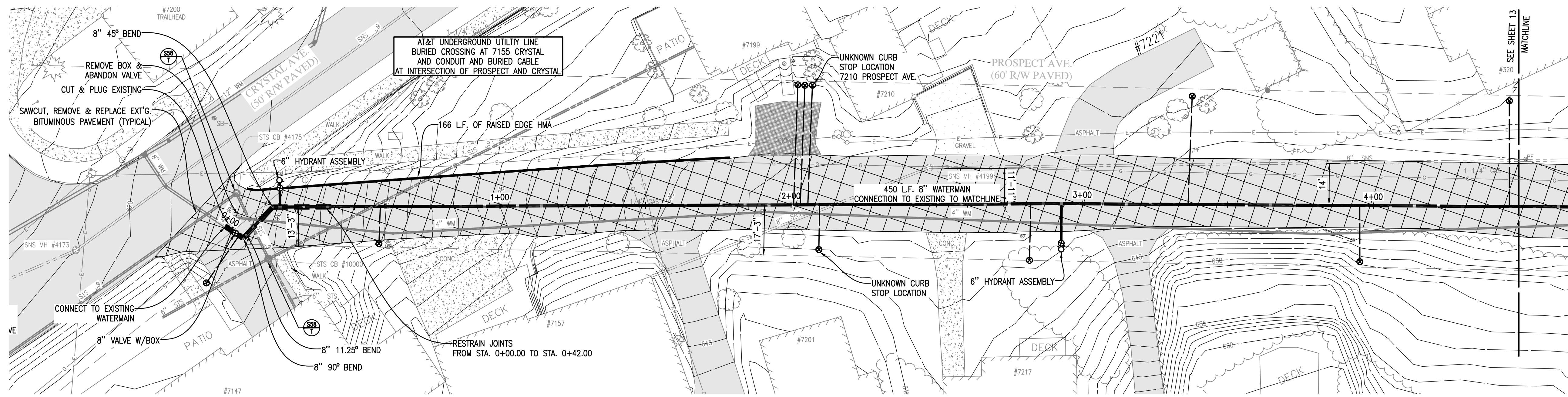
Gosling Czubak
Engineering Sciences, Inc.
12000 E. Grand Ave. Suite 200
Troy, MI 48068-3907
Tel: 248-699-9191 Fax: 248-699-9192
www.goslingczubak.com

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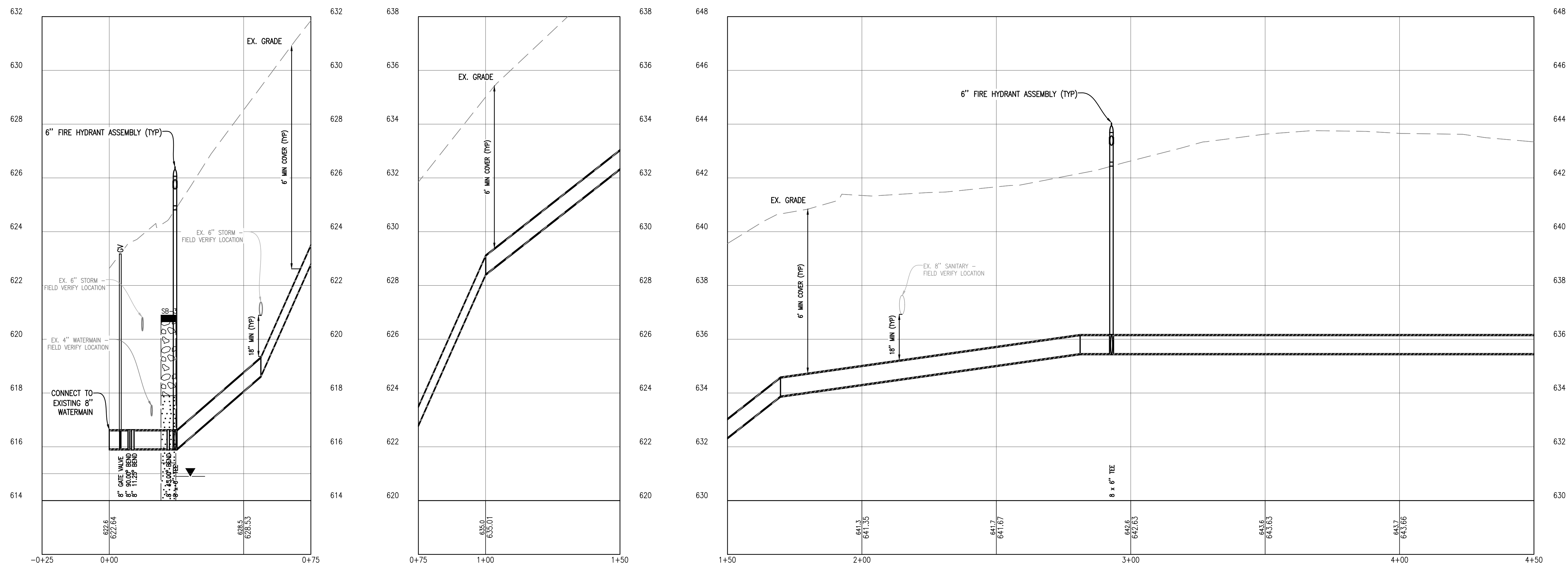
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Checked By: MJH
Date: 10/19/17
Scale: 1" = 20'

Location:
SECTION 23 & 26, T 26 N, R 15 W,
BENZONIA TOWNSHIP,
BENZIE COUNTY, MICHIGAN

US 31 - BIRCHWOOD TO 4TH ST
WATER SYSTEM IMPROVEMENTS
Project No. 2017027001.03
Sheet **11**



PROSPECT AVE - CRYSTAL AVE TO BENZIE CT PLAN
1" = 20'



PROSPECT AVE - CRYSTAL AVE TO BENZIE CT PROFILE
SCALE: HORIZ. 1" = 20'
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4. MINIMUM DEPTH OF COVER ON NEW WATER MAIN TO BE 6.0 FT. (MINIMUM). CONTRACTOR TO EXCAVATE AND VERIFY LOCATION OF EXISTING WATER MAINS PRIOR TO CONSTRUCTION. COORDINATE WITH ENGINEER AS TO AREAS NEEDING VERIFICATION.
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Strata symbols		Misc. Symbols	
	Paving		Water table during drilling
	Gravel		Water table at boring completion
	Clayey sand		
	Low plasticity clay		
	Poorly graded sand		
	Silty sand		
	Poorly graded clayey silty sand		

STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #4199	4'	STANDARD	641.54	8" W: 635.94	8" SE: 634.99

STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
STS CB #4175	4'	STANDARD	622.56	6" S: 619.75	6" W: 618.22
STS CB #10000	4'	STANDARD	624.62	6" S: 622.44	6" N: 620.84

Gosling Czubak
Engineering Sciences, Inc.
12000 E. Grand Ave. #200
Troy, MI 48068-3907
231-948-9191 800-988-1082
fax 231-941-6025

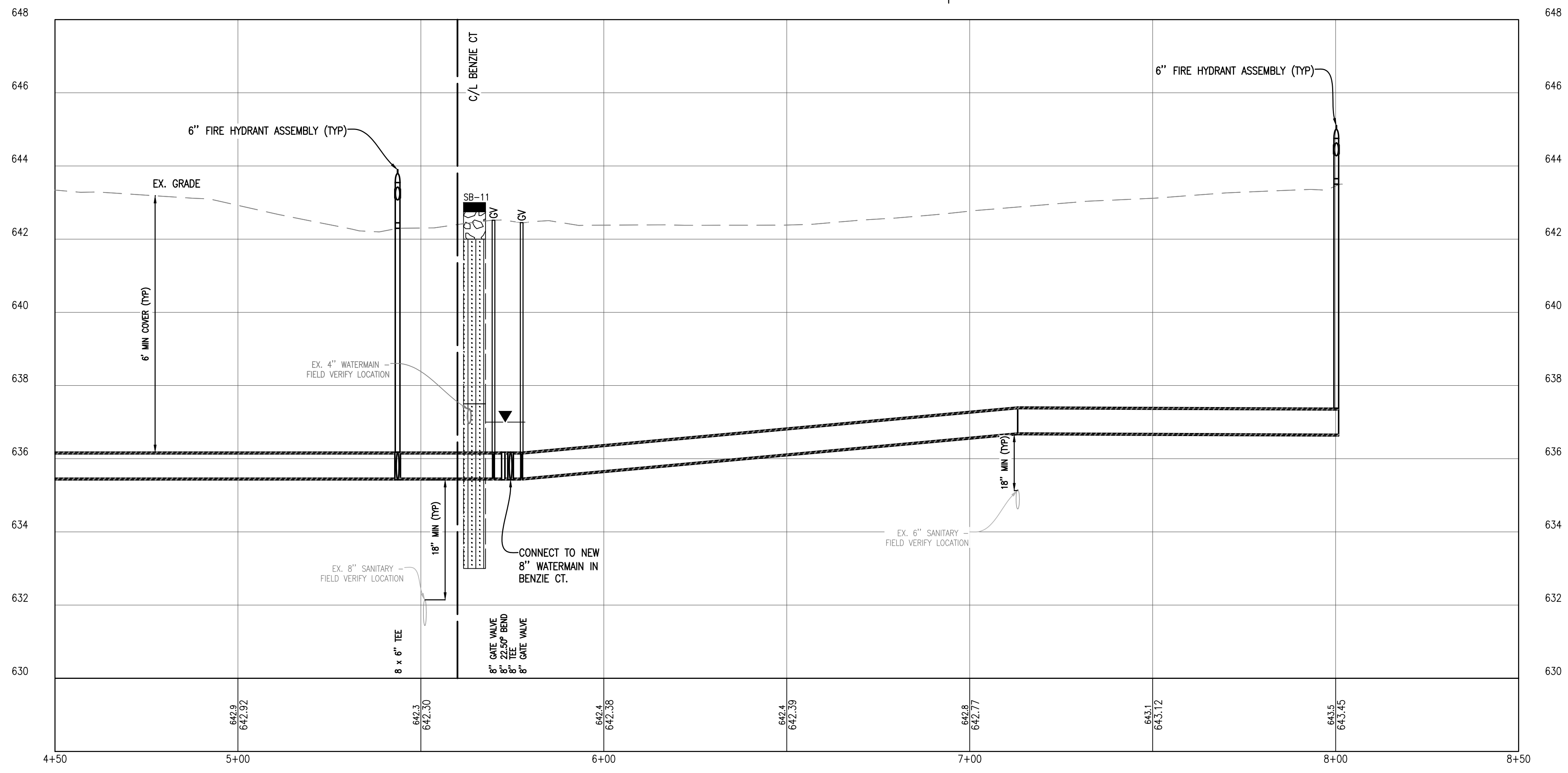
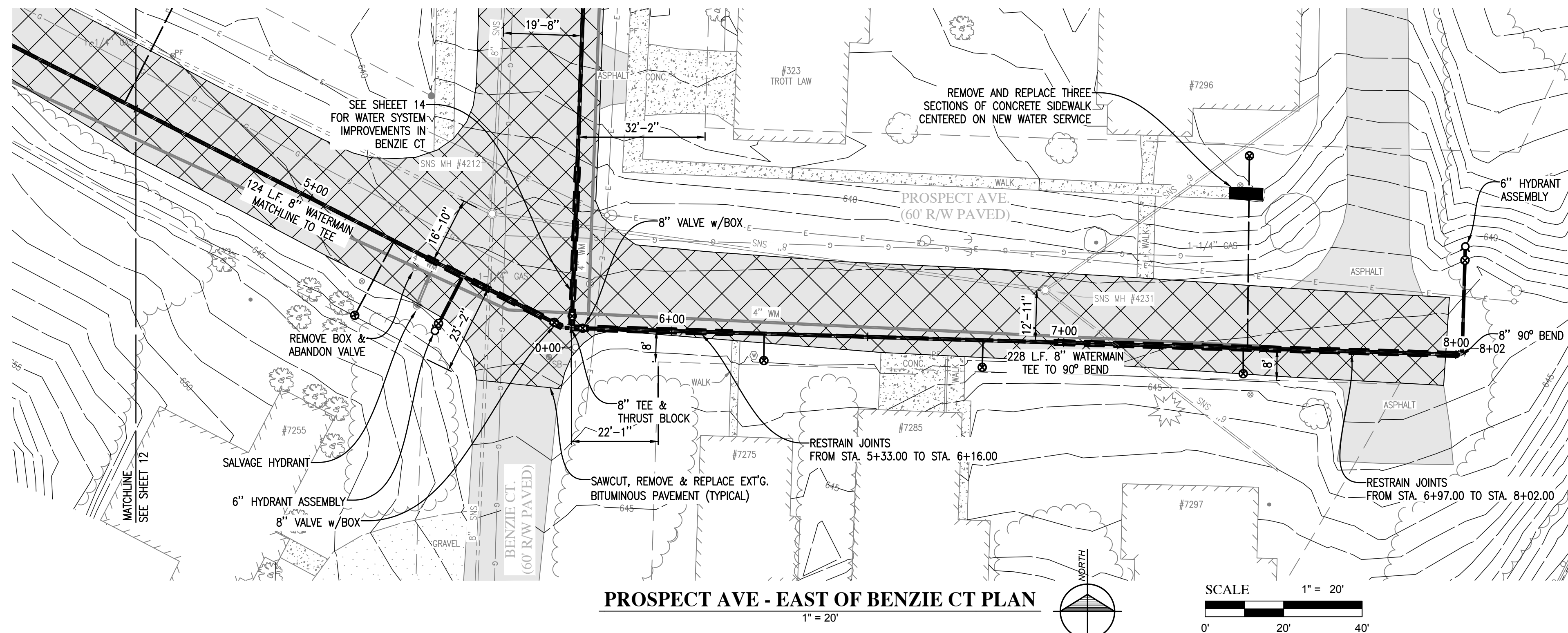
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Revision: _____
Date: _____
No: _____

Drawn By: TMK
Checked By: MJH
Date: 10/19/17
Scale: 1" = 20'

Location: SECTION 23 & 26, T 26 N, R 15 W, BENZONIA TOWNSHIP, MICHIGAN

PROSPECT AVE - CRYSTAL AVE TO BENZIE CT WATER SYSTEM IMPROVEMENTS

Project No. 2017027001.03
Sheet 12



PROSPECT AVE - EAST OF BENZIE CT PROFILE
 SCALE: HORIZ. 1" = 20'
 VERT. 1" = 2'

NOTES:

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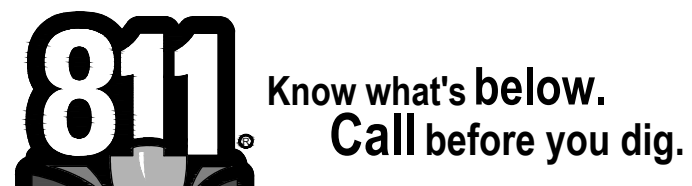
Strata symbols

- Paving
- Gravel
- Clayey sand
- Low plasticity clay
- Poorly graded sand
- Silty sand
- Poorly graded clayey silty sand

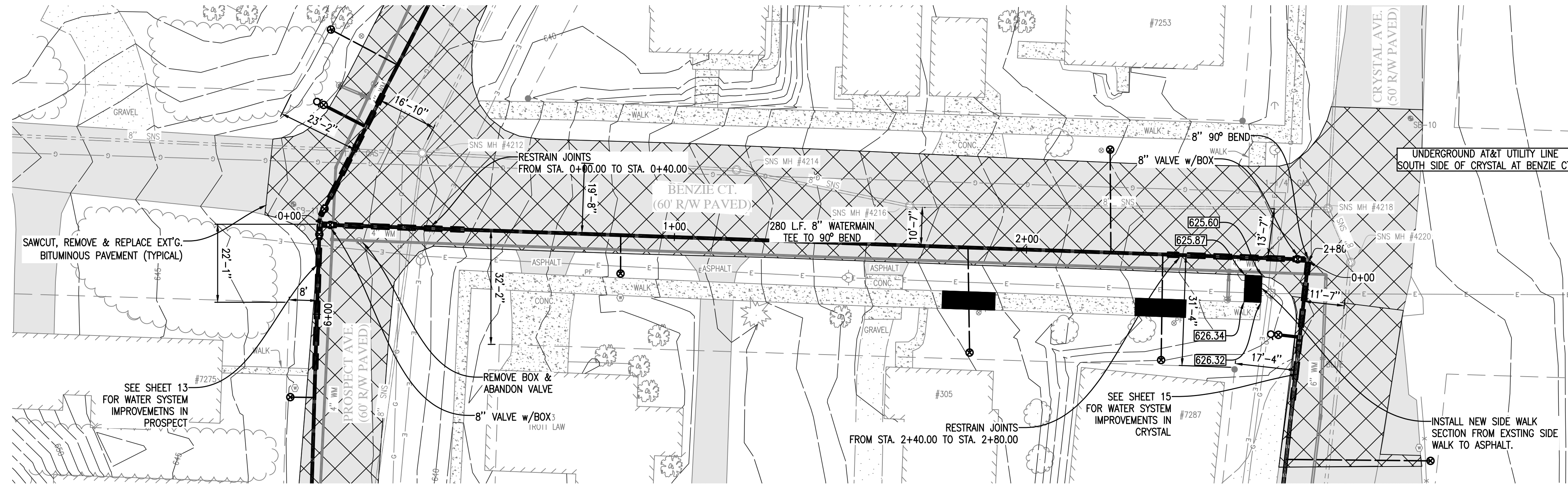
Misc. Symbols

- Water table during drilling
- Water table at boring completion

SANITARY SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #4212	4'	STANDARD	641.05	8" NW: 631.72 8" S: 629.82 8" E: 629.79	8" N: 629.72
SNS MH #4231	4'	STANDARD	642.08	6" NE: 630.52 6" SE: 633.63	8" W: 630.35

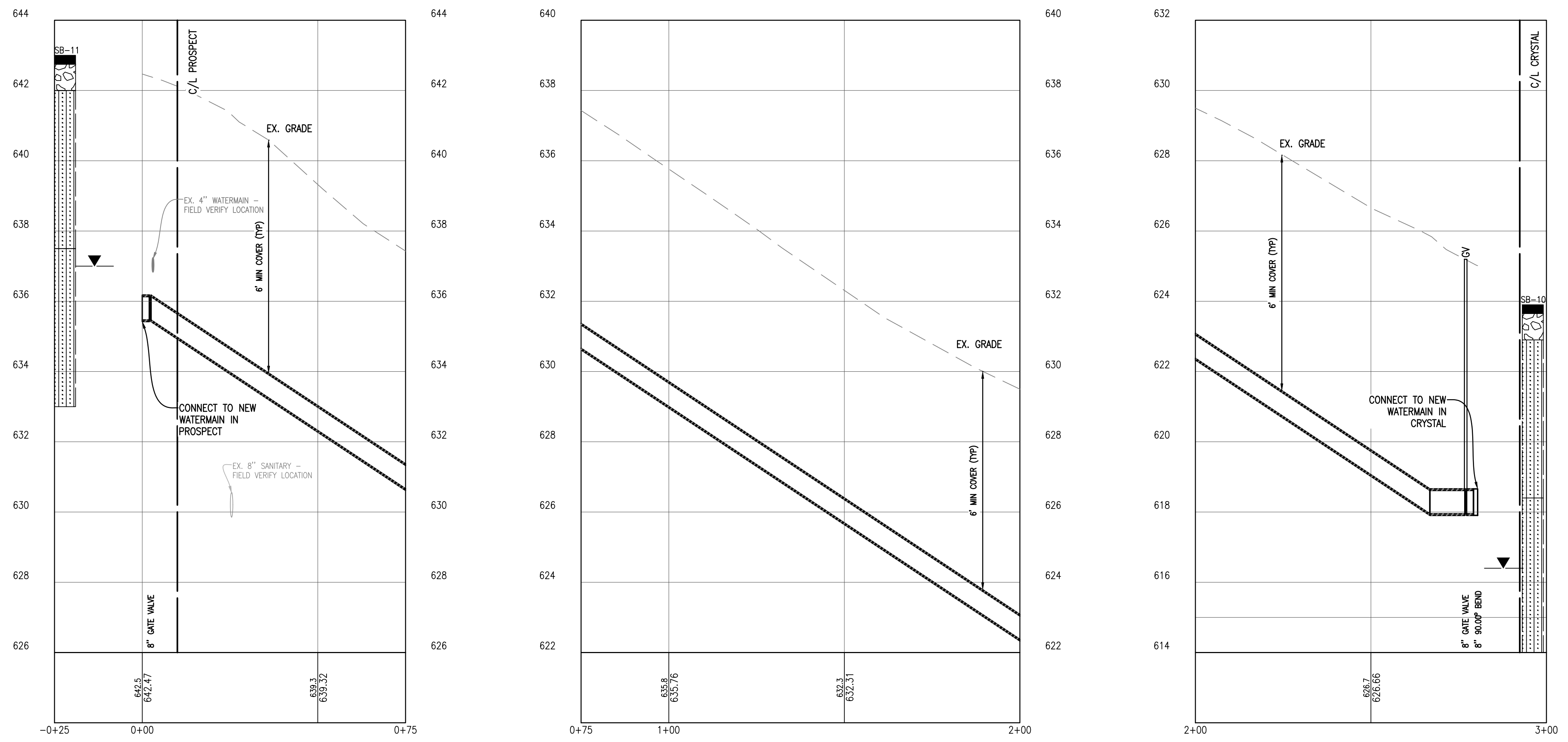
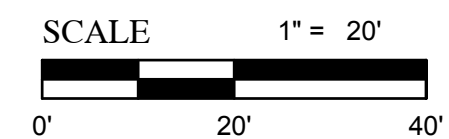
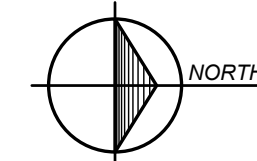


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BENZIE CT - PROSPECT AVE TO CRYSTAL AVE PLAN

1" = 20'



BENZIE CT - PROSPECT AVE TO CRYSTAL AVE PROFILE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

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Strata symbols		Misc. Symbols	
	Paving		Water table during drilling
	Gravel		Water table at boring completion
	Clayey sand		
	Low plasticity clay		
	Poorly graded sand		
	Silty sand		
	Poorly graded clayey silty sand		

SANITARY SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #4212	4'	STANDARD	641.05	8" NW: 631.72 8" S: 629.82 8" E: 629.79	8" N: 629.72
SNS MH #4214	4'	STANDARD	634.29	8" S: 625.18	8" N: 624.28
SNS MH #4216	4'	STANDARD	631.42	8" S: 619.16	8" N: 619.05
SNS MH #4218	4'	STANDARD	624.51	8" S: 612.96 8" NE: 612.99	8" W: 612.65
SNS MH #4220	4'	STANDARD	624.57	10" E: 614.65	8" SW: 614.17

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Engineering Sciences, Inc.
12000 Crystal Ave., Suite 200
Benzonia, MI 49810
231-949-9191 • 800-988-1082
fax 231-941-9253



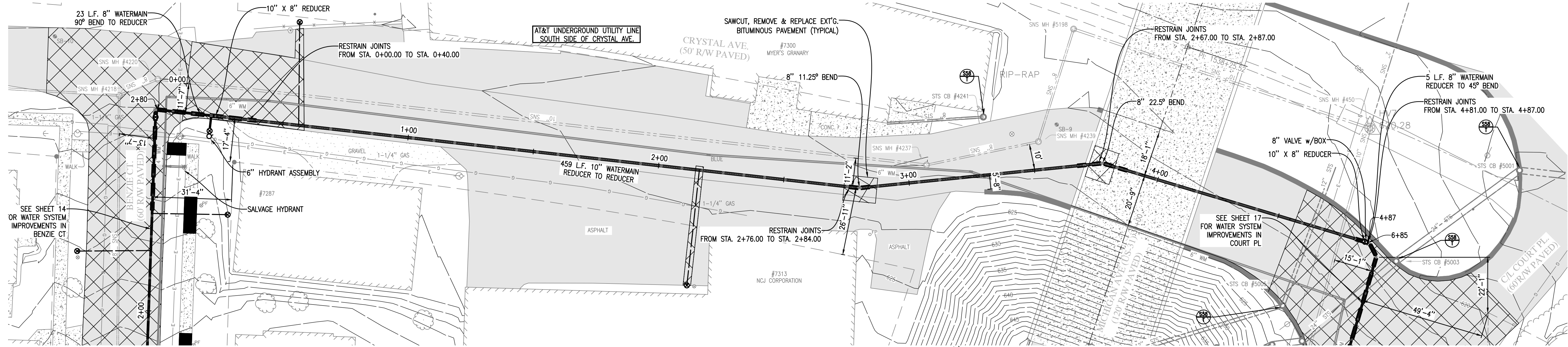
By: _____
Revision: _____
Date: _____
No. _____

Drawn By: **TMK**
Checked By: **MJH**
Date: 10/19/17
Scale: 1" = 20'

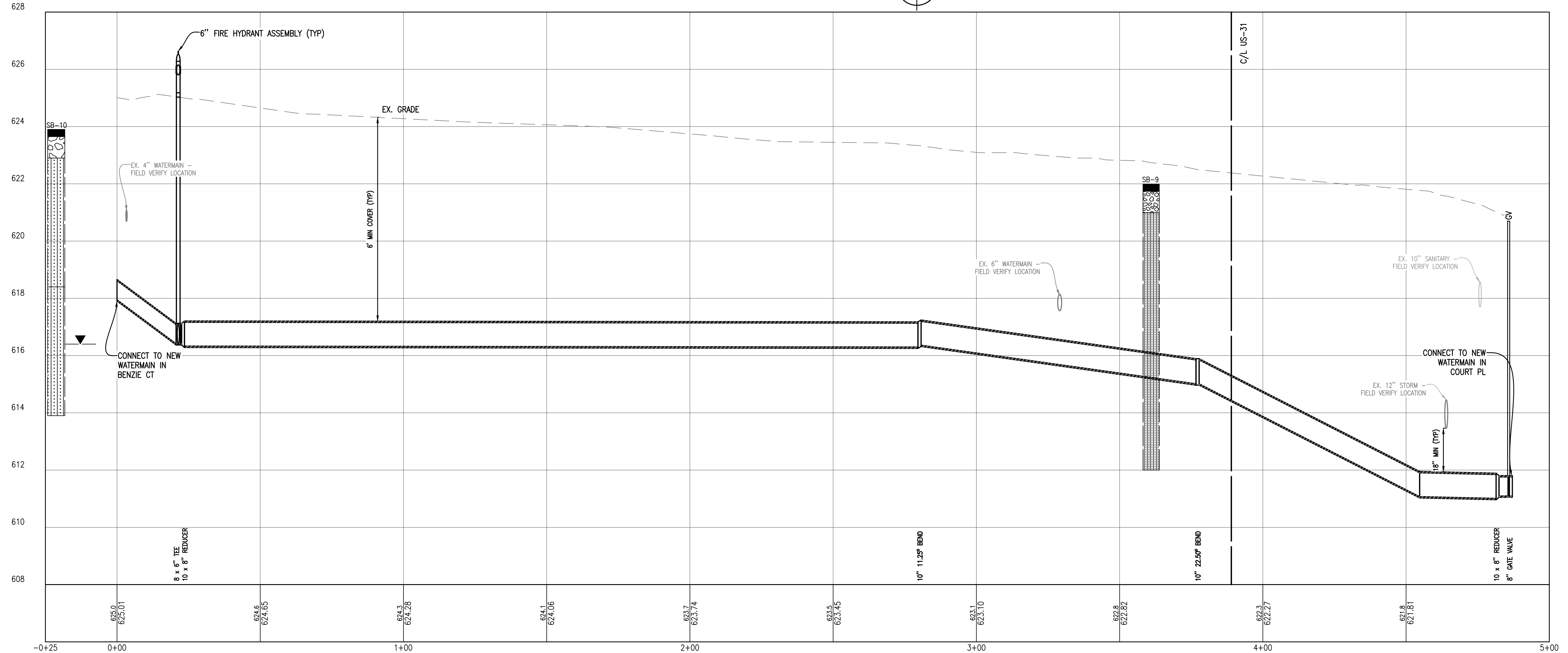
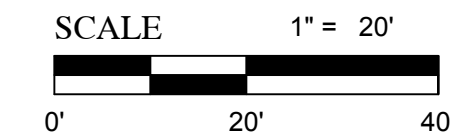
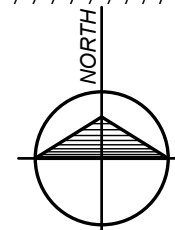
Location:
SECTION 23 & 26, T 26 N, R 15 W,
BENZONIA TOWNSHIP,
BENZONIA COUNTY, MICHIGAN

BENZIE CT - PROSPECT AVE TO CRYSTAL AVE
WATER SYSTEM IMPROVEMENTS

Project No.
2017027001.03
Sheet
14



CRYSTAL - BENZIE CT TO COURT PLAZA PLAN
1" = 20'



CRYSTAL - BENZIE CT TO COURT PLAZA PROFILE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

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Strata symbols

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- Gravel
- Clayey sand
- Low plasticity clay
- Poorly graded sand
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Misc. Symbols

- Water table during drilling
- Water table at boring completion

SANITARY SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #4237	4'	STANDARD	623.16	8" E: 615.45	10" W: 615.42
SNS MH #4239	4'	STANDARD	622.38	8" N: 615.35	8" W: 615.34

STORM SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
STS CB #4241	4'	STANDARD	622.00		8" W: 620.09

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

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Gosling Czubak
Engineering Sciences, Inc.
12000 E. Grand Ave. Suite 200
Troy, MI 48068-1007
Tel: 313-949-9191 Fax: 313-949-1602

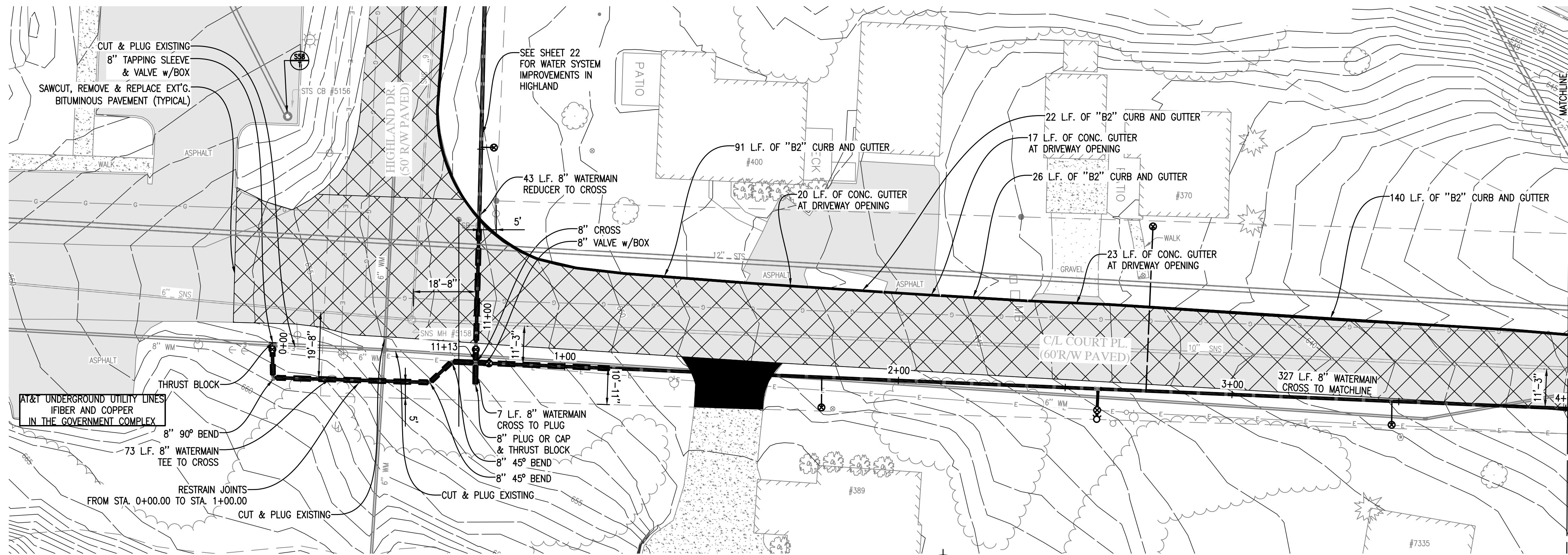
Project No. 2017027001.03
Sheet 15

Location: SECTION 23 & 26, T 26 N, R 15 W, BENZONIA TOWNSHIP, MICHIGAN, BENZIE COUNTY, MICHIGAN

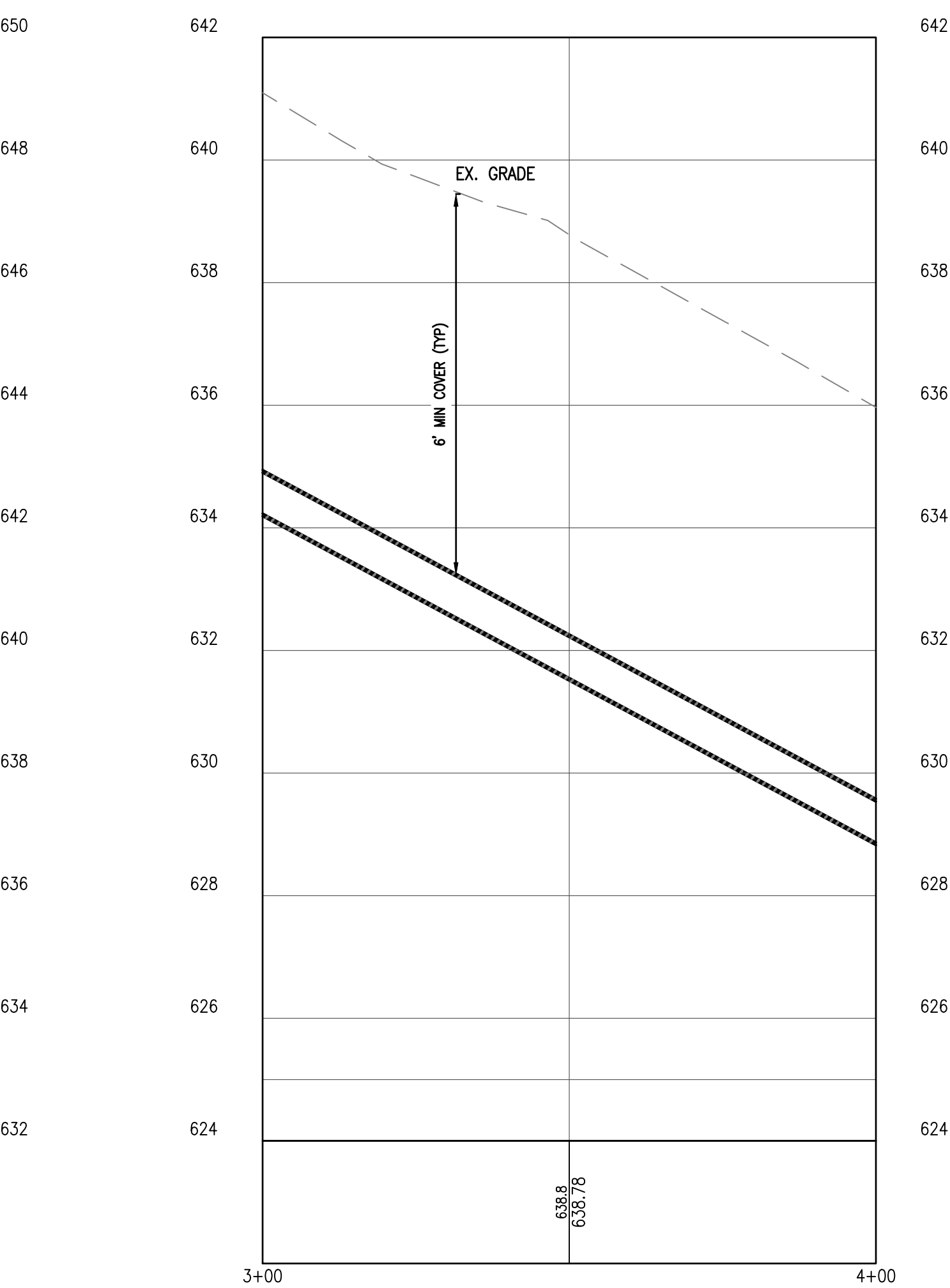
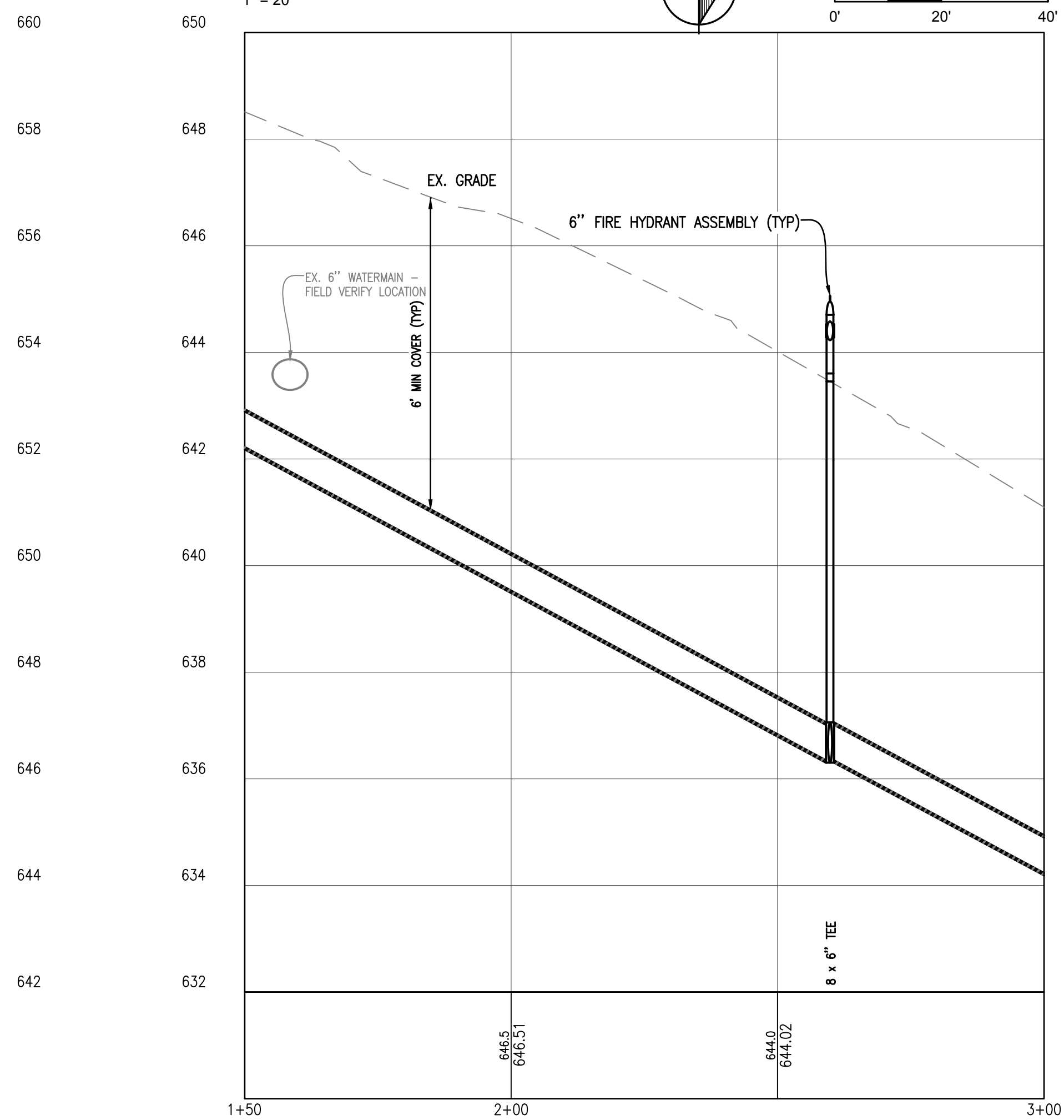
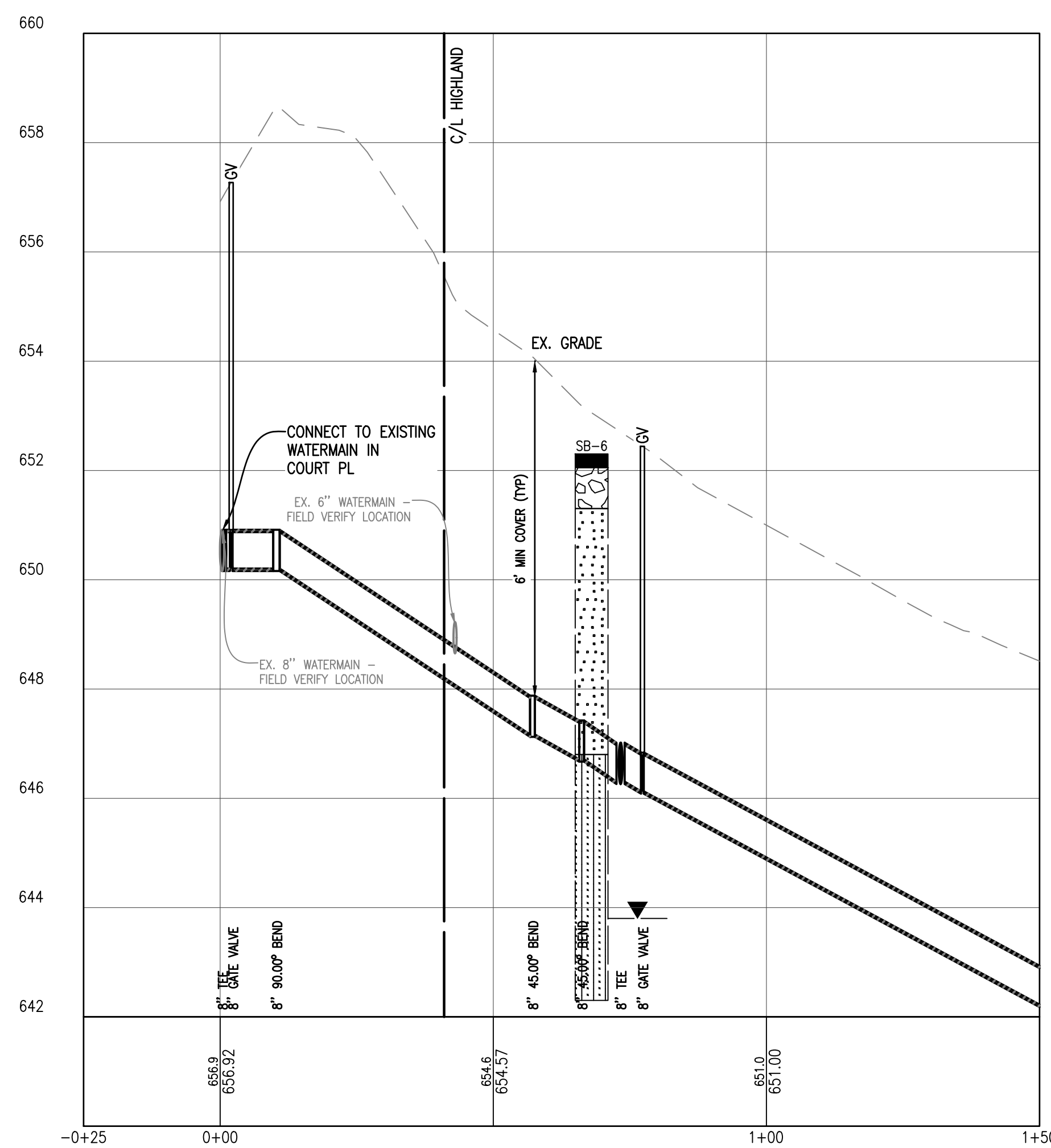
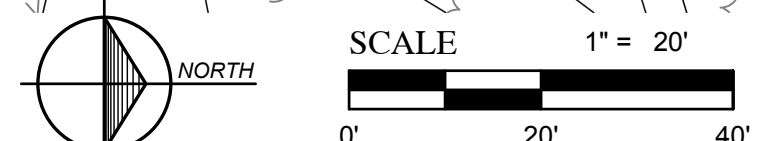
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Scale: 1" = 20'

Drawn By: TMK
Checked By: MJH

Revision: _____
Date: _____
No.: _____



COURT PLAZA - HIGHLAND TO PROSPECT PLAN



COURT PLAZA - HIGHLAND TO PROSPECT PROFILE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

NOTES:

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Strata symbols

- Paving
- Gravel
- Clayey sand
- Low plasticity clay
- Poorly graded sand
- Silty sand
- Poorly graded clayey silty sand

Misc. Symbols

- Water table during drilling
- Water table at boring completion

SANITARY SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #5158	4'	STANDARD	653.28	6" W: 646.53 6" S: 646.41	10" N: 646.30

STORM SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
STS CB #5156	4'	STANDARD	659.02	12" SW: 653.82	

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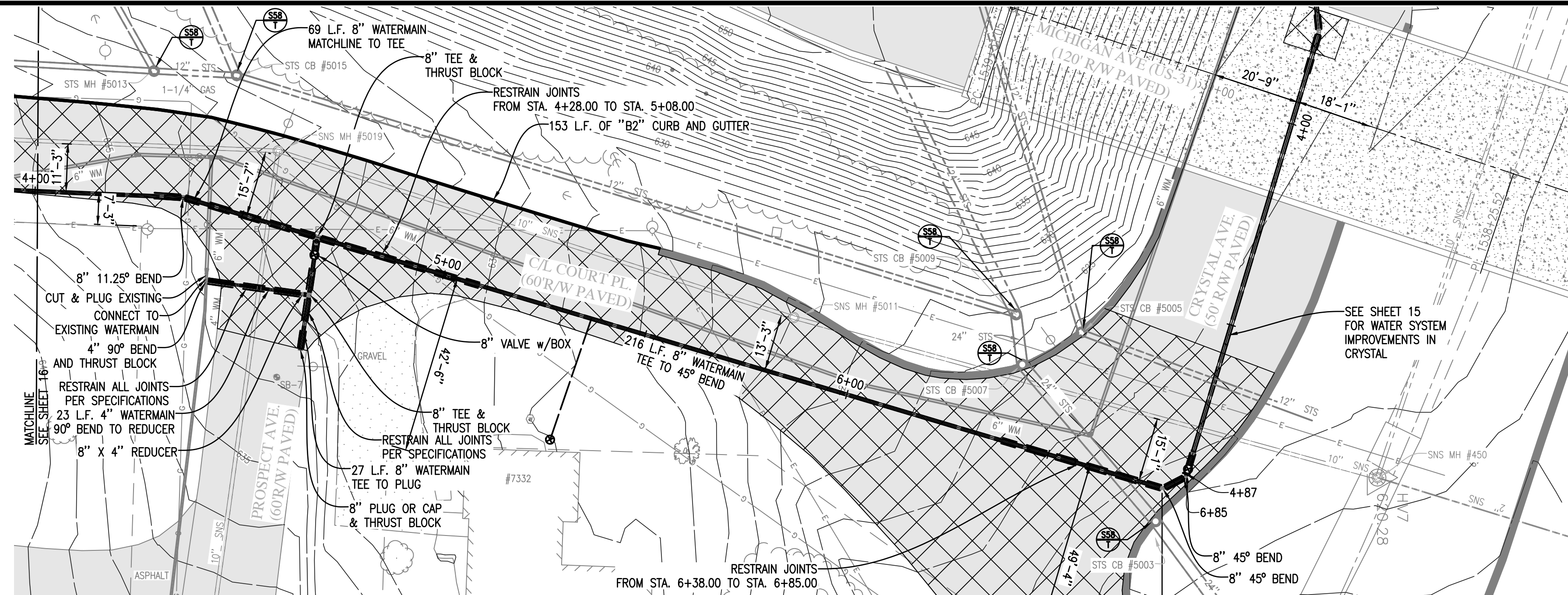
Gosling Czubak
Engineering Sciences, Inc.
12000 E. Grand Ave. Suite 200
Troy, MI 48068-1002
Tel: 248-691-9191 Fax: 248-691-9002

By: _____
Revision: _____
Date: _____
No.: _____
Drawn By: TMK
Checked By: MJH
Date: 10/19/17
Scale: 1" = 20'

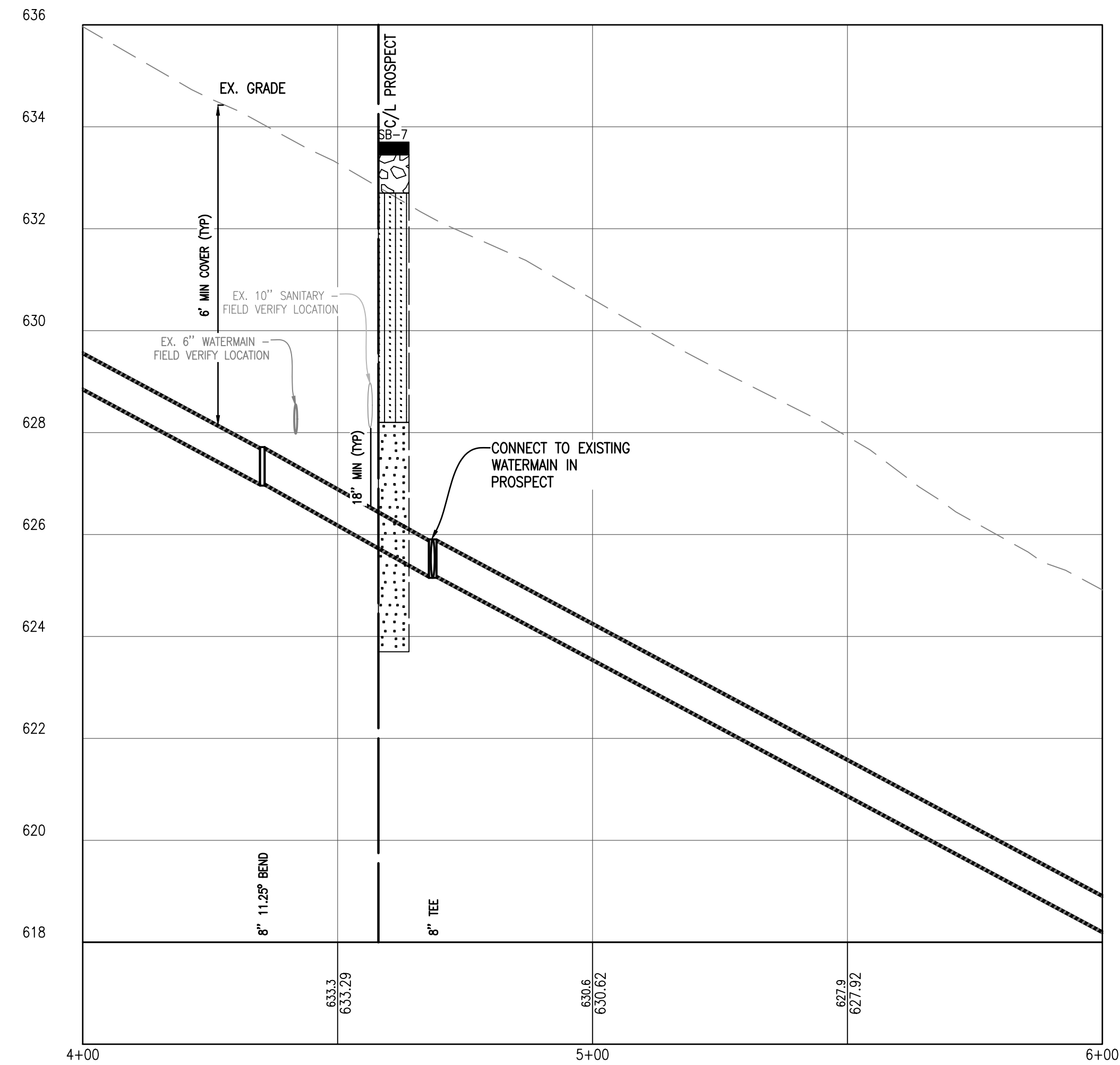
Location: SECTION 23 & 26, T 26 N, R 15 W, BENZONIA TOWNSHIP, BENZIE COUNTY, MICHIGAN

COURT PLAZA - HIGHLAND TO PROSPECT WATER SYSTEM IMPROVEMENTS

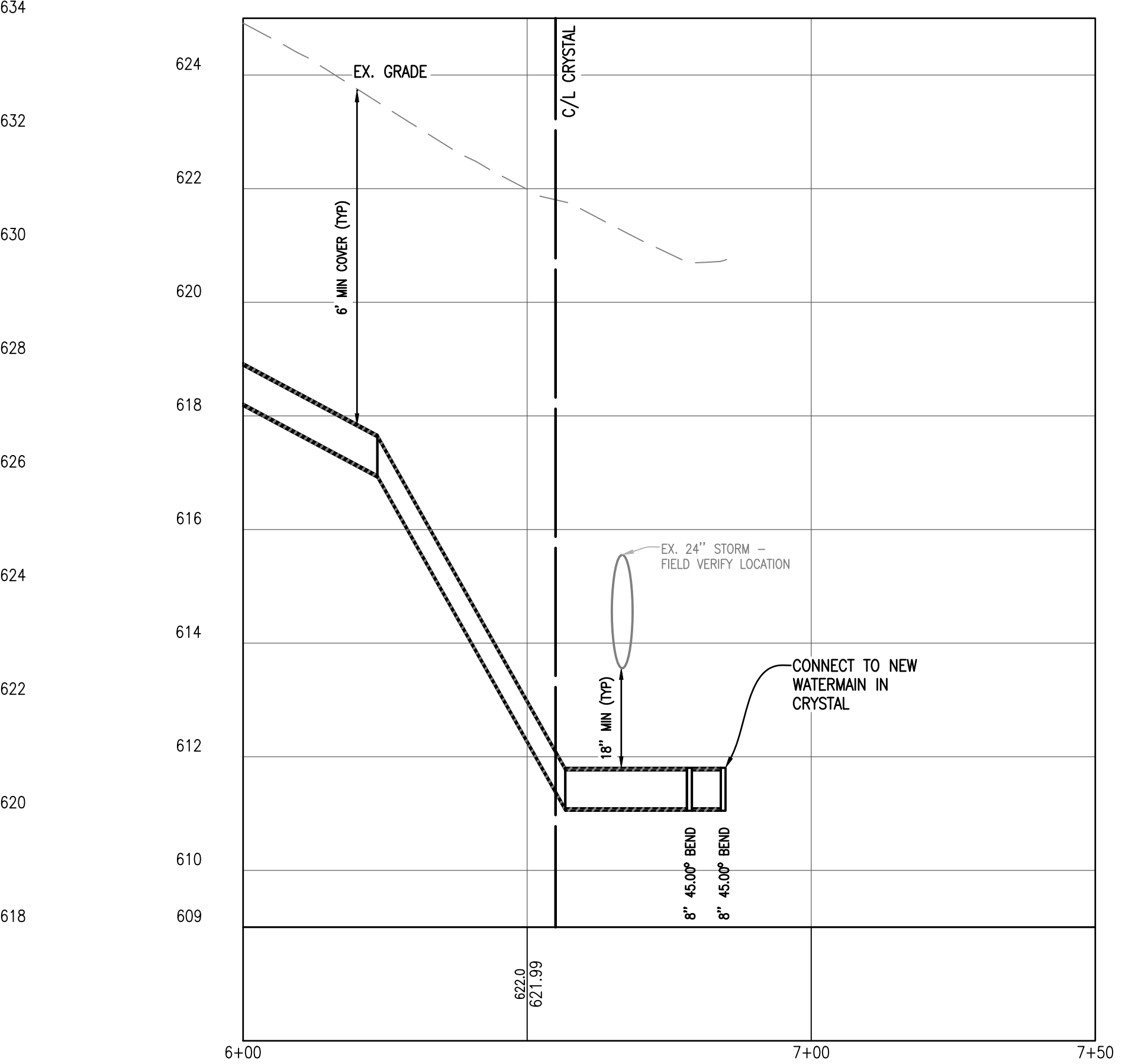
Project No. 2017027001.03
Sheet **16**



COURT PLAZA - PROSPECT TO CRYSTAL PLAN
 SCALE 1" = 20'
 NORTH



COURT PLAZA - PROSPECT TO CRYSTAL PROFILE
 SCALE: HORIZ. 1" = 20'
 VERT. 1" = 2'



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- Poorly graded clayey silty sand

Misc. Symbols

- Water table during drilling
- Water table at boring completion

STORM SEWER SCHEDULE						SANITARY SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION	STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
STS CB #5005	4'	STANDARD	622.52	12" N: 615.20 12" S: 614.08	12" N: 614.08	SNS MH #450	4'	STANDARD	620.28	2" N: 616.63 10" S: 616.32	10" W: 616.28
STS CB #5007	4'	STANDARD	623.10	24" W: 615.83 24" NE: 613.69		SNS MH #5011	4'	STANDARD	625.98	10" S: 620.83 10" N: 620.93	
STS CB #5009	4'	STANDARD	624.60	12" S: 620.63 24" SW: 619.25	24" E: 615.88	SNS MH #5019	4'	STANDARD	632.76	10" S: 627.36 10" E: 627.34	10" N: 627.22
STS CB #5015	4'	STANDARD	632.56	18" SW: 628.58 12" S: 628.76	12" N: 628.58						
STS MH #5013	4'	STANDARD	634.49	12" S: 630.88 12" S: 630.60	12" N: 630.59						

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Gosling Czubak
 engineering sciences, inc.
 12000 W. 26th Ave., Suite 200
 Denver, CO 80231
 Tel: 303-996-9101 Fax: 303-996-9102
 www.goslingczubak.com

By: _____
 No.: _____
 Date: _____
 Revision: _____

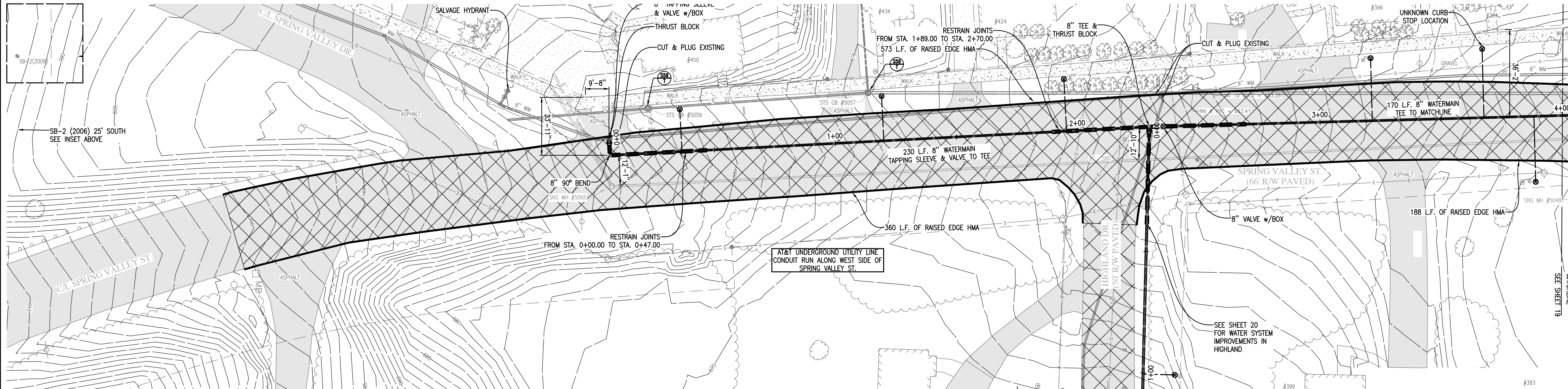
Drawn By: **TMK**
 Checked By: **MJH**

Date: 10/19/17
 Scale: 1" = 20'

Location: SECTION 23 & 26, T 26 N, R 15 W, BENZONIA TOWNSHIP, BENZIE COUNTY, MICHIGAN

COURT PLAZA - PROSPECT TO CRYSTAL WATER SYSTEM IMPROVEMENTS

Project No. 2017027001.03
 Sheet **17**

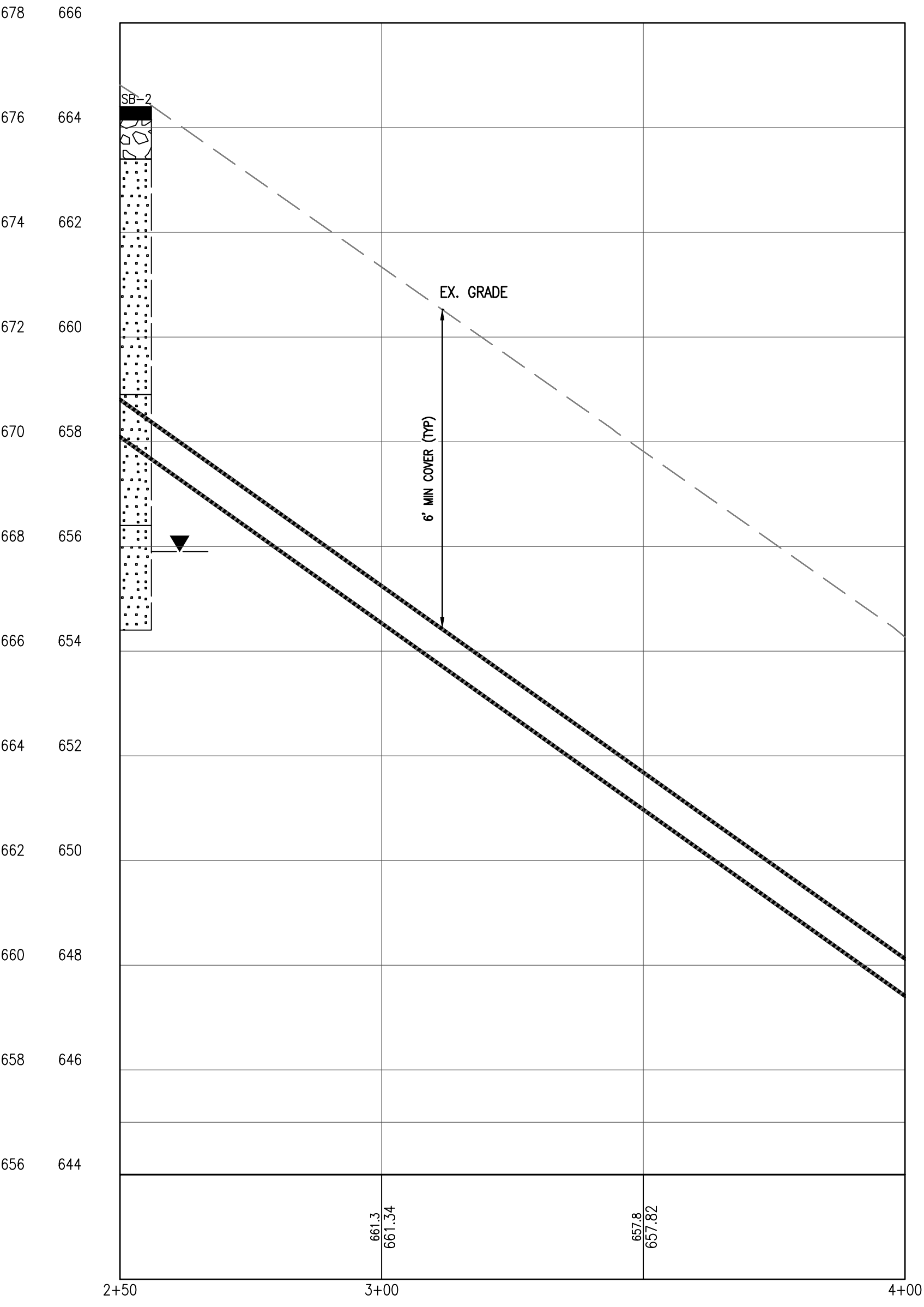
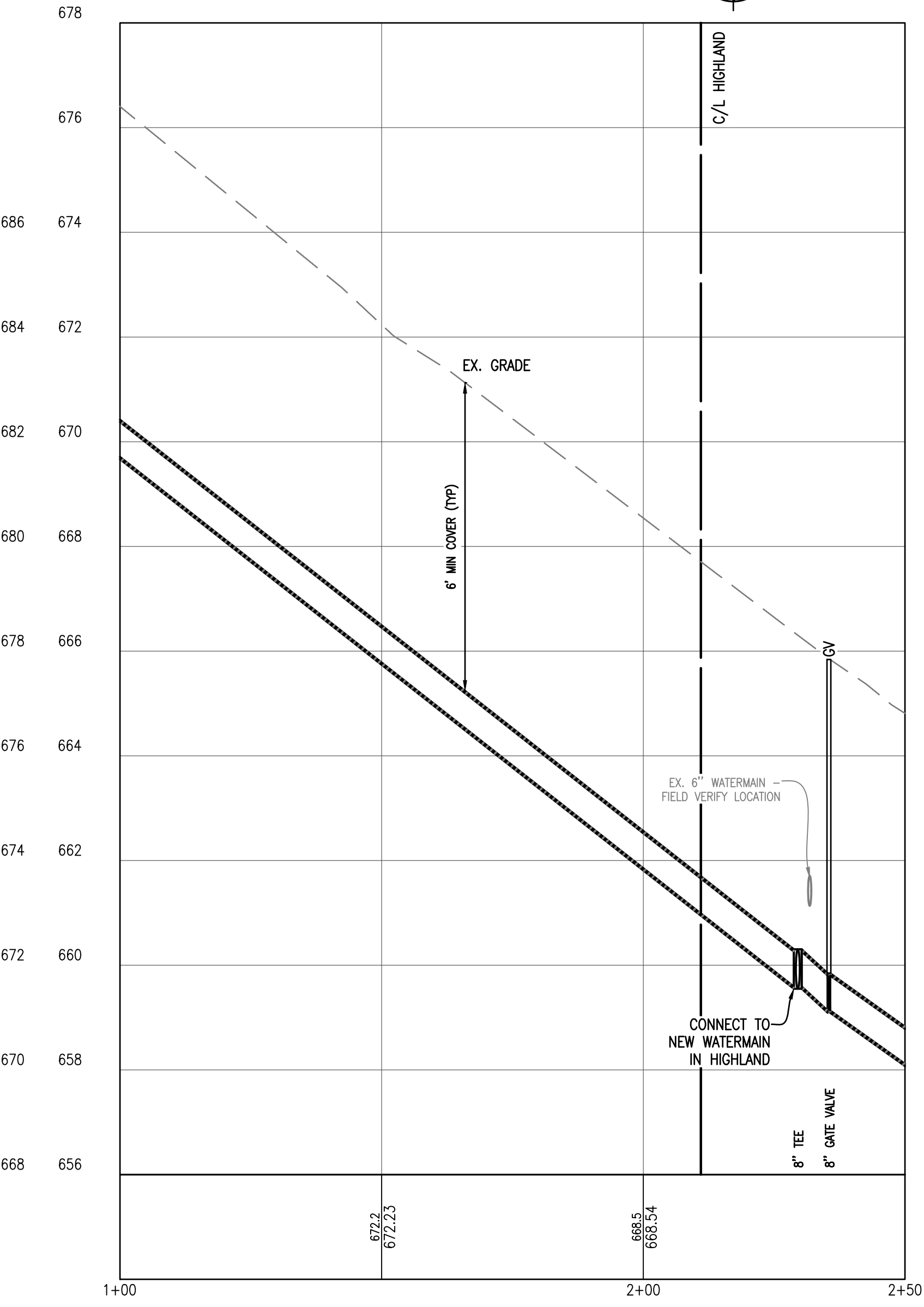
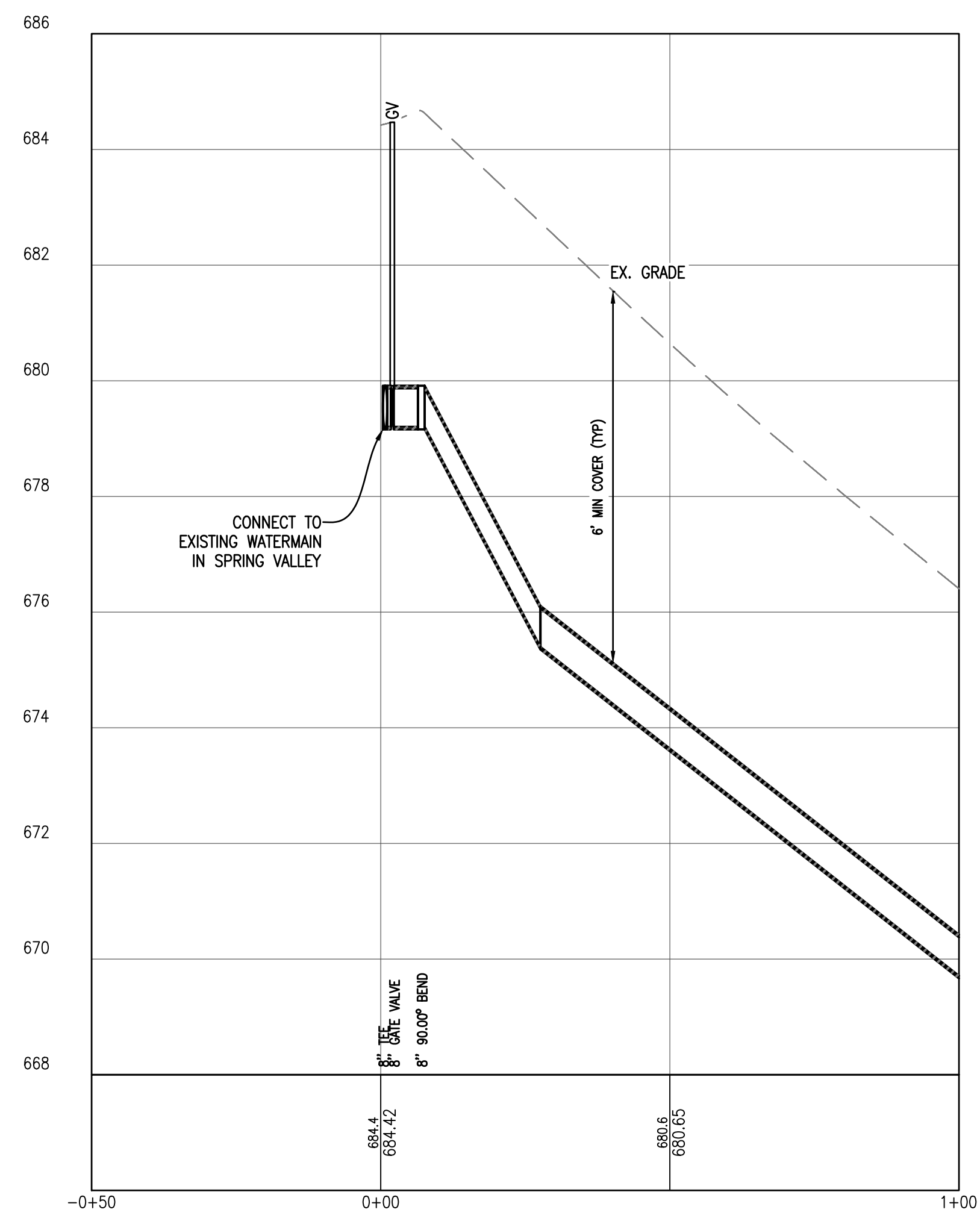


SPRING VALLEY - SPRING VALLEY DR. TO HIGHLAND PLAN
 1" = 20'

SANITARY SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #5048	4'	STANDARD	653.04	8" S: 643.20	8" N: 643.14
SNS MH #5065	4'	STANDARD	684.34	8" SW: 676.18 8" SE: 679.51	8" N: 675.29

STORM SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
STS CB #5057	4'	STANDARD	674.10	6" S: 673.25 4" W: 673.46	10" N: 673.18
STS CB #5059	4'	STANDARD	681.64	6" S: 680.66	6" N: 680.64

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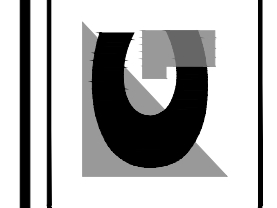


SPRING VALLEY - SPRING VALLEY DR. TO HIGHLAND PROFILE
 SCALE: HORIZ. 1" = 20'
 VERT. 1" = 2'



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Gosling Czubak
 Engineers
 Surveyors
 Environmental
 Services
 Architecture
 12000 Spring Valley Dr.
 Farmington Hills, MI 48334
 Tel: 248-869-9900
 Fax: 248-869-1002



By: _____
 Date: _____
 No.: _____
 Revision: _____

Drawn By: **TMK**
 Checked By: **MJH**
 Date: 10/19/17
 Scale: 1" = 20'

Location: SECTION 23 & 26, T 26 N, R 15 W, BENZONIA TOWNSHIP, BENZIE COUNTY, MICHIGAN

SPRING VALLEY - SPRING VALLEY DR. TO HIGHLAND WATER SYSTEM IMPROVEMENTS

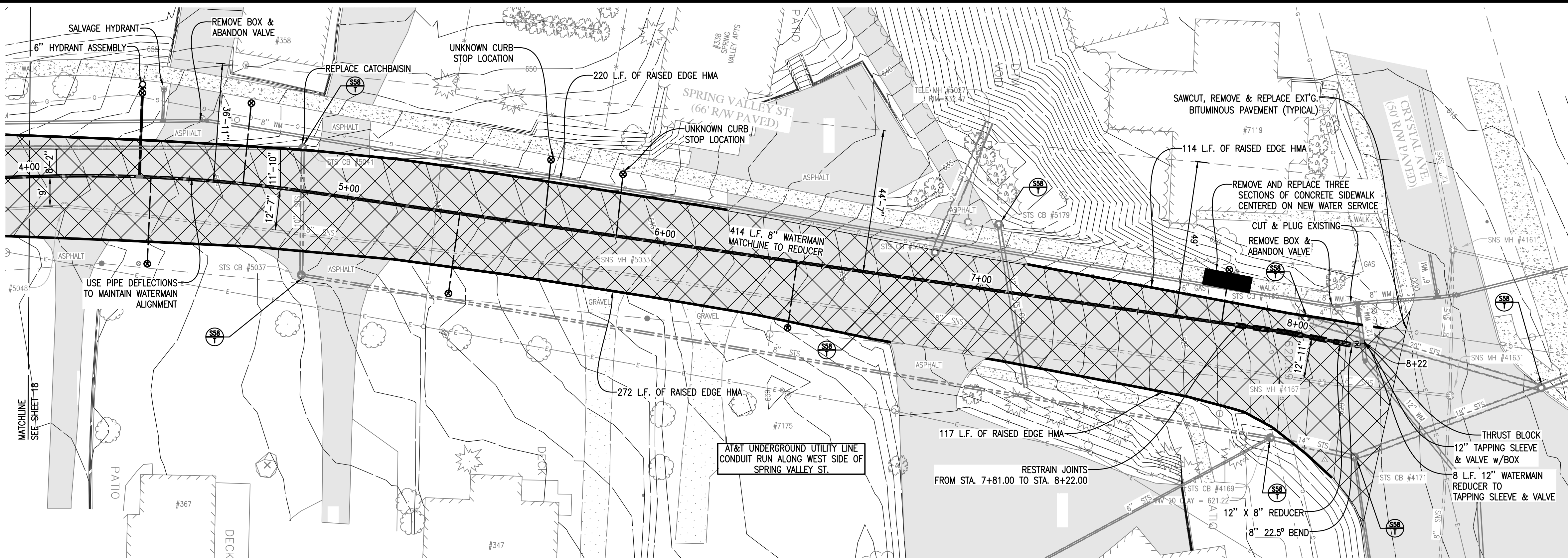
Project No. 2017027001.03
 Sheet **18**

NOTES:

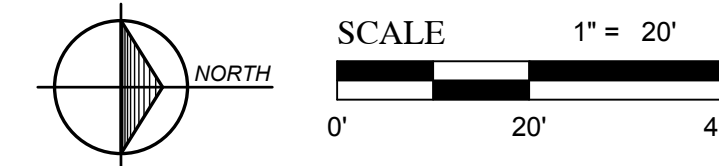
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9. ALL WATER SERVICES INCLUDE NEW SADDLE (FOR SERVICES LARGER THAN 1") AND CORP STOP AND NEW CURB STOP AND BOX, UNLESS OTHERWISE NOTED.

Strata symbols	
	Paving
	Gravel
	Clayey sand
	Low plasticity clay
	Poorly graded sand
	Silty sand
	Poorly graded clayey silty sand

Misc. Symbols	
	Water table during drilling
	Water table at boring completion

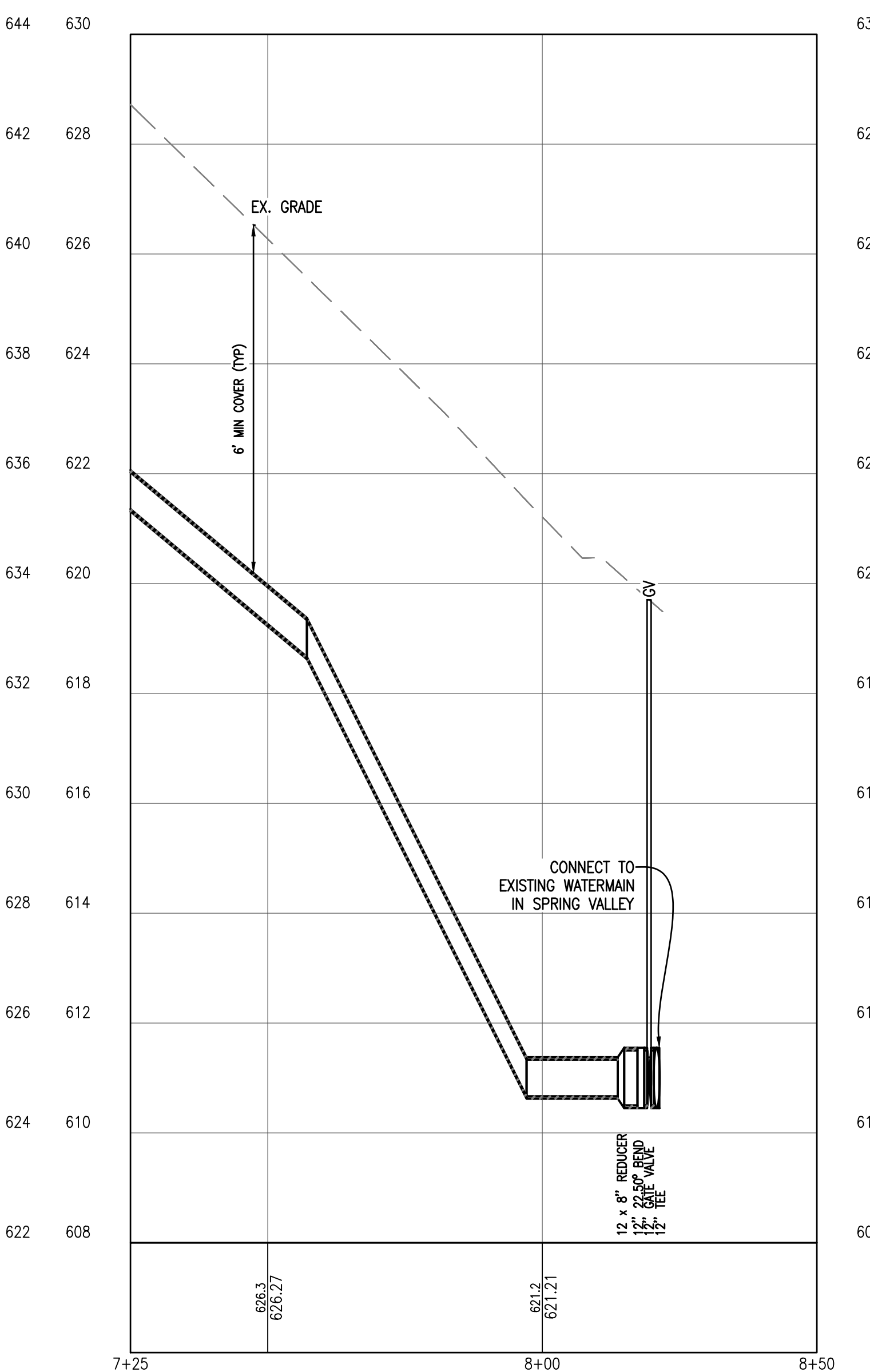
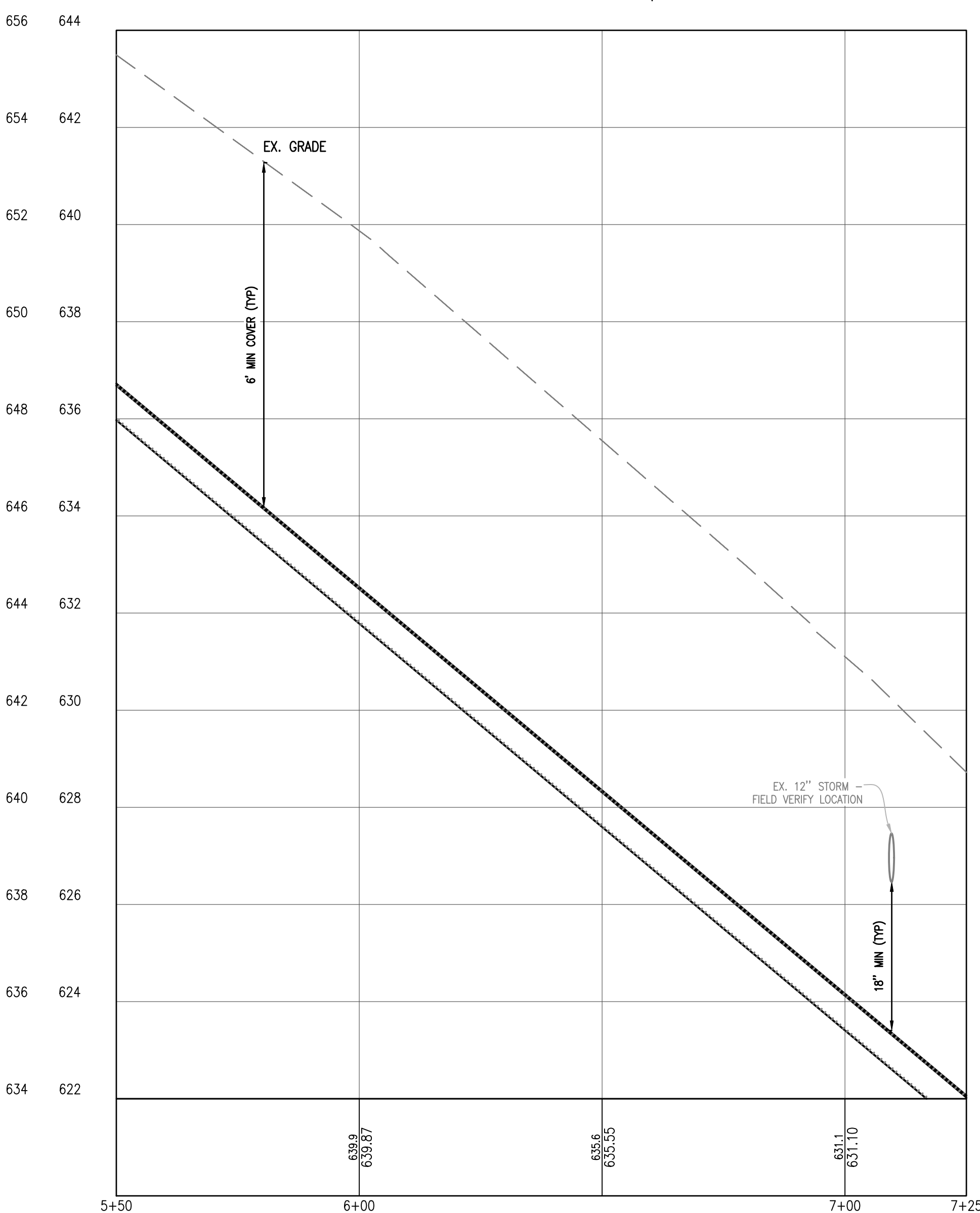
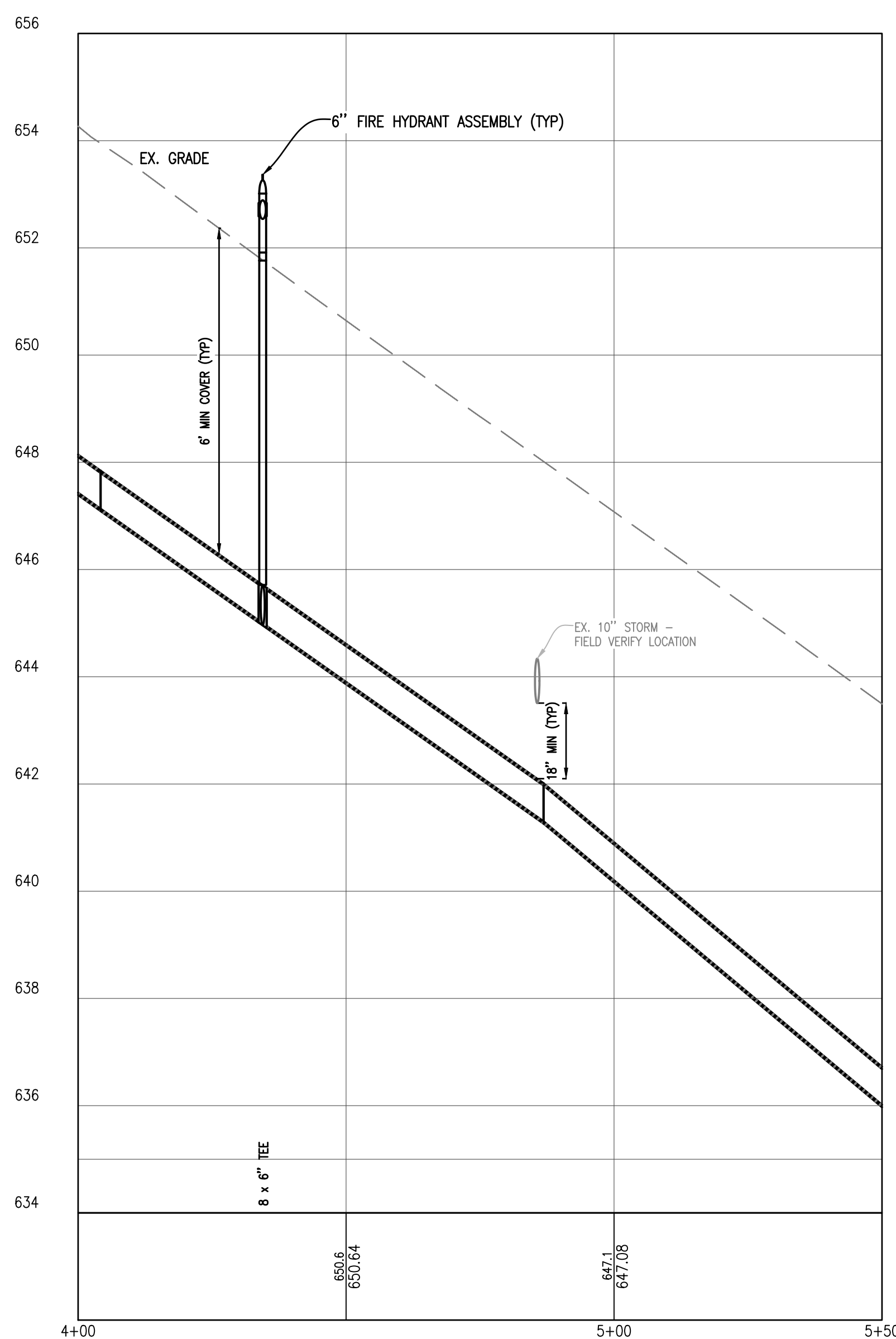


SPRING VALLEY - HIGHLAND TO CRYSTAL PLAN



STORM SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
STS CB #4159	4'	STANDARD	615.31	18" S: 611.81 20" S: 611.36	20" N: 610.79
STS CB #4165	4'	STANDARD	620.75		20" N: 614.44
STS CB #4169	4'	STANDARD	621.19	6" SE: 618.79 8" S: 617.04	14" N: 616.99
STS CB #4171	4'	STANDARD	619.43	6" E: 613.98 14" S: 614.01	18" N: 612.83
STS CB #5025	4'	STANDARD	633.82	4" E: 630.17	6" NW: 629.62
STS CB #5029	4'	STANDARD	632.03		24" NW: 629.00
STS CB #5037	4'	STANDARD	647.00	10" W: 642.41	8" N: 641.48
STS CB #5041	4'	STANDARD	647.67	10" S: 644.07	10" E: 644.07
STS CB #5179	4'	STANDARD	631.75		12" E: 627.52

SANITARY SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #4161	4'	STANDARD	616.59	8" E: 601.85 8" N: 600.62 8" E: 604.29	12" W: 600.59
SNS MH #4163	4'	STANDARD	617.18	8" S: 608.86 8" E: 608.58	8" W: 608.53
SNS MH #4167	4'	STANDARD	620.59	8" S: 611.00	8" N: 609.57
SNS MH #5033	4'	STANDARD	641.18	8" S: 631.69	8" N: 631.55
SNS MH #5048	4'	STANDARD	653.04	8" S: 643.20	8" N: 643.14



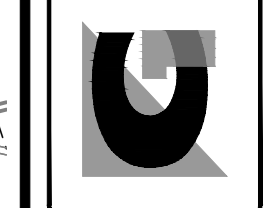
SPRING VALLEY - HIGHLAND TO CRYSTAL PROFILE

SCALE: HORIZ 1" = 20'
VERT. 1" = 2'



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Gosling Czubak
Engineering Sciences, Inc.
12000 W. 15th Street, Suite 200
Tulsa, Oklahoma 74116
Tel: 918-466-9991 Fax: 918-466-9992
www.goslingczubak.com

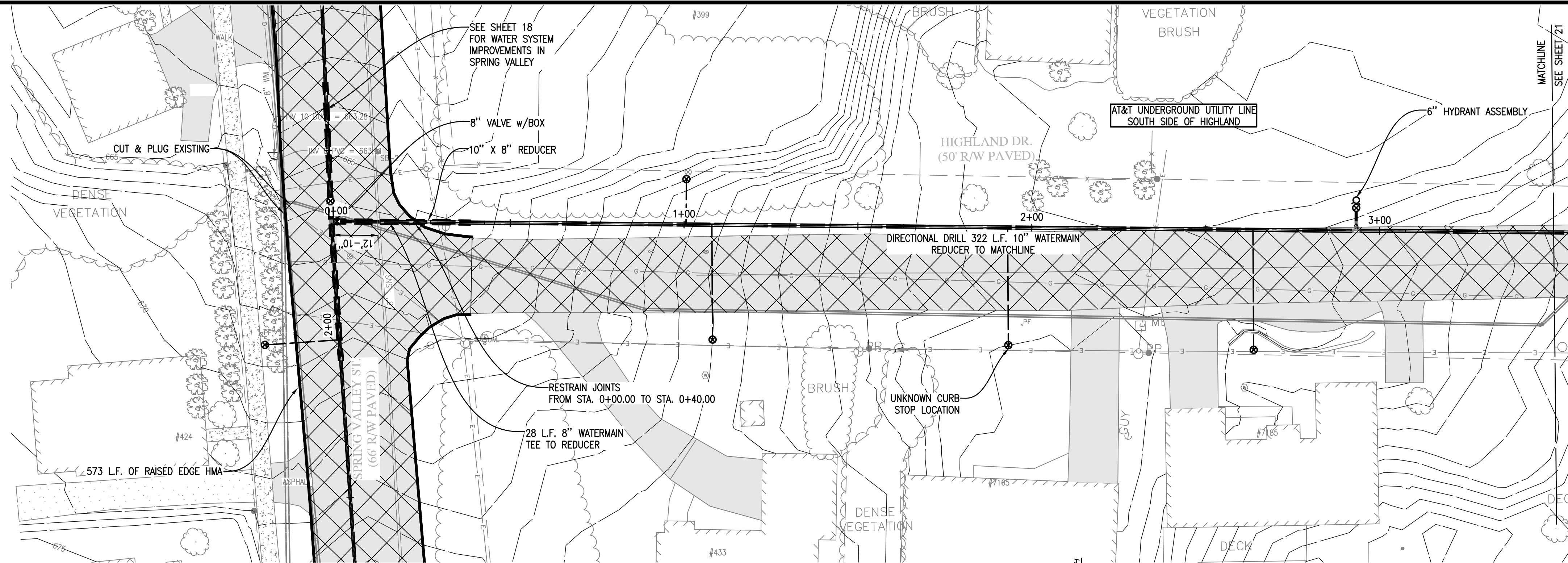


By: _____
Revision: _____
Date: _____

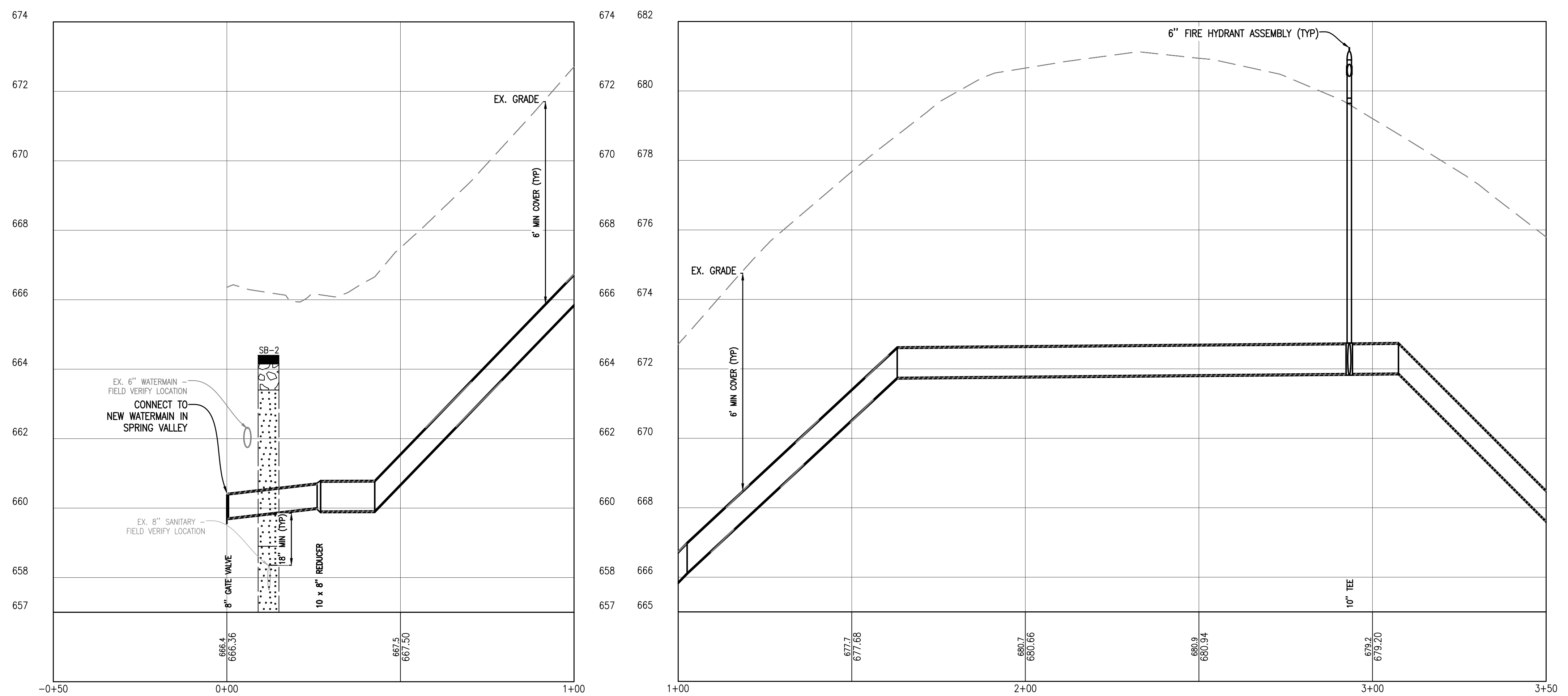
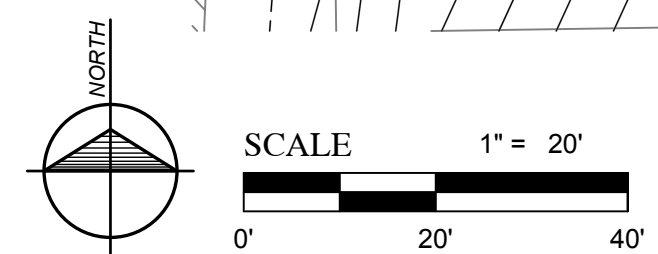
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Checked By: MJH
Date: 10/19/17
Scale: 1" = 20'

Location: SECTION 23 & 26, T 26 N, R 15 W, BENZONIA TOWNSHIP, BENZIE COUNTY, MICHIGAN

SPRING VALLEY - HIGHLAND TO CRYSTAL WATER SYSTEM IMPROVEMENTS
Project No. 2017027001.03
Sheet 19



HIGHLAND - STA. 0+00 TO STA. 3+50 PLAN
1" = 20'



HIGHLAND - STA. 0+00 TO STA. 3+50 PROFILE
SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

Strata symbols	
	Paving
	Gravel
	Clayey sand
	Low plasticity clay
	Poorly graded sand
	Silty sand
	Poorly graded clayey silty sand
Misc. Symbols	
	Water table during drilling
	Water table at boring completion

NOTES:

1. ALL WATER SERVICES TO BE 1" UNLESS OTHERWISE NOTED ON THE PLANS.
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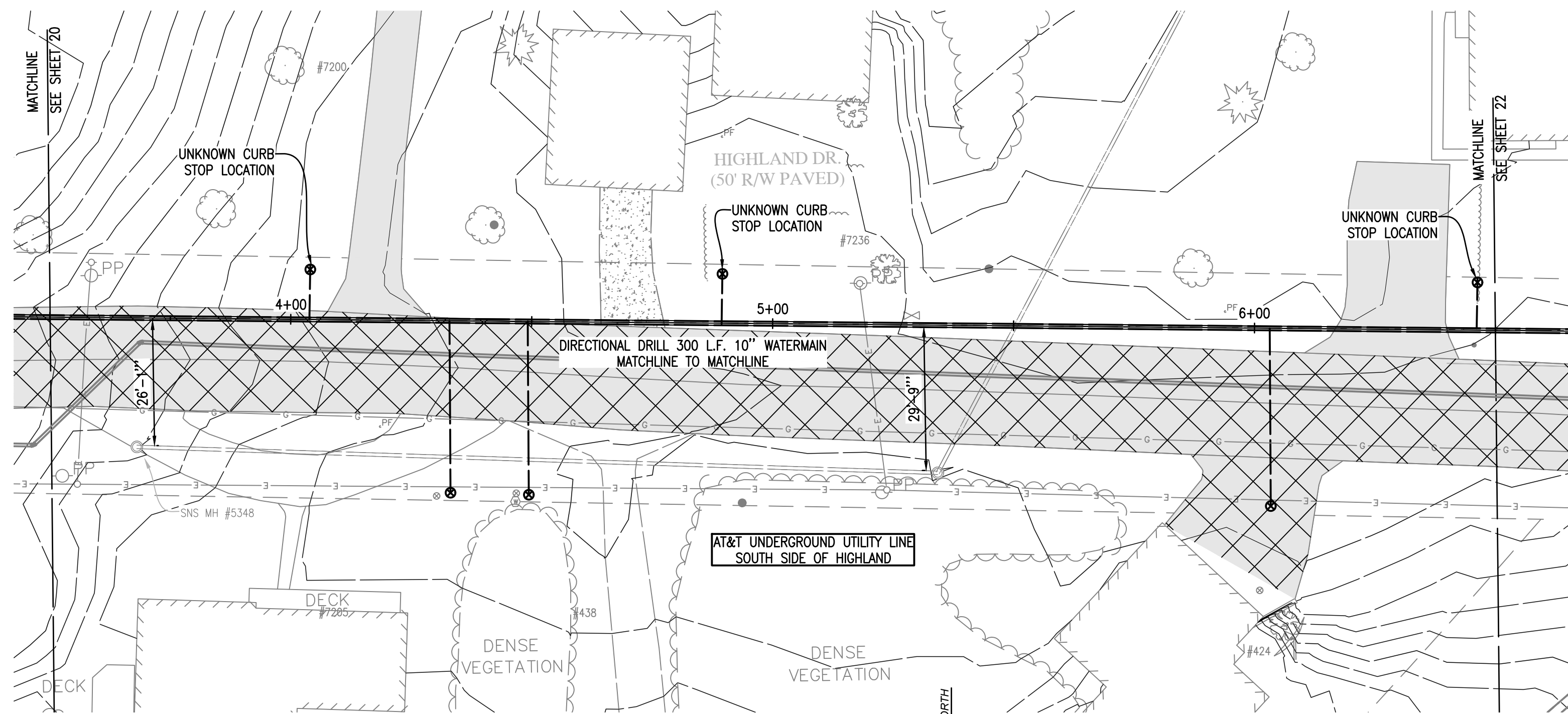
Gosling Czubak
Engineers
• Surveyors
• Environmental
• Services
• Architects
12000
231-948-9101 800-988-1002
Fax 231-941-6003

No.:
Date:
Revision:
By:

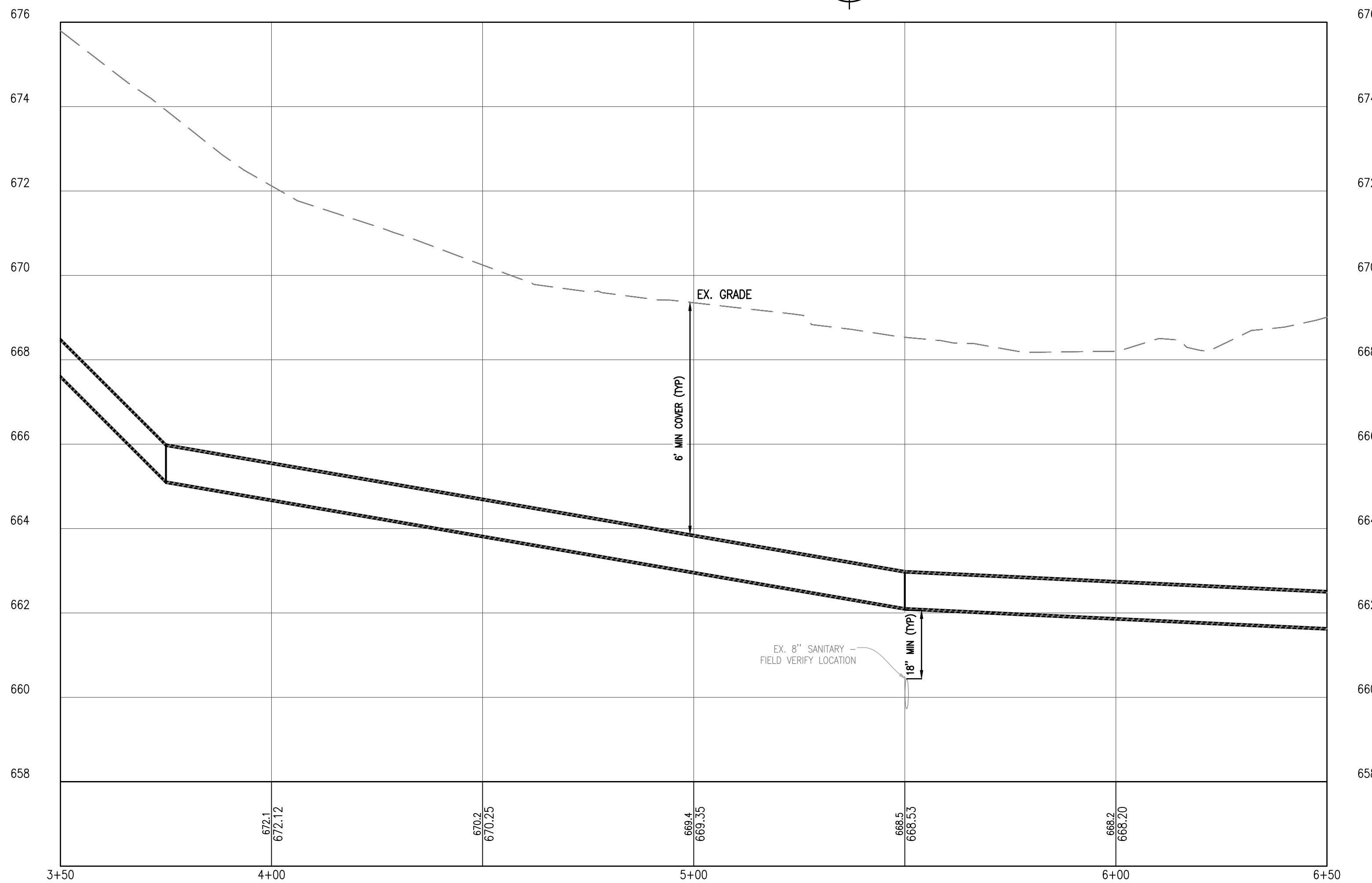
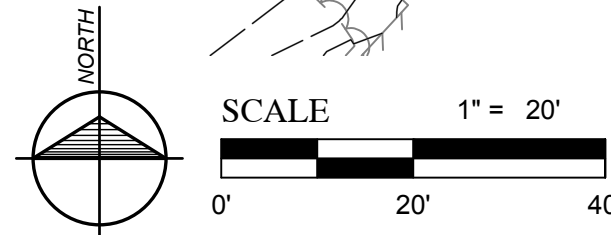
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Checked By: **MJH**
Date: 10/19/17
Scale: 1" = 20'

Location:
SECTION 23 & 26, T 26 N, R 15 W,
BENZONIA TOWNSHIP,
BENZIE COUNTY, MICHIGAN

HIGHLAND - STA. 0+00 TO STA. 3+50
WATER SYSTEM IMPROVEMENTS
Project No. 2017027001.03
Sheet **20**



HIGHLAND - STA. 3+50 TO STA. 6+50 PLAN
SCALE HORIZ. 1" = 20'



HIGHLAND - STA. 3+50 TO STA. 6+50 PROFILE
SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

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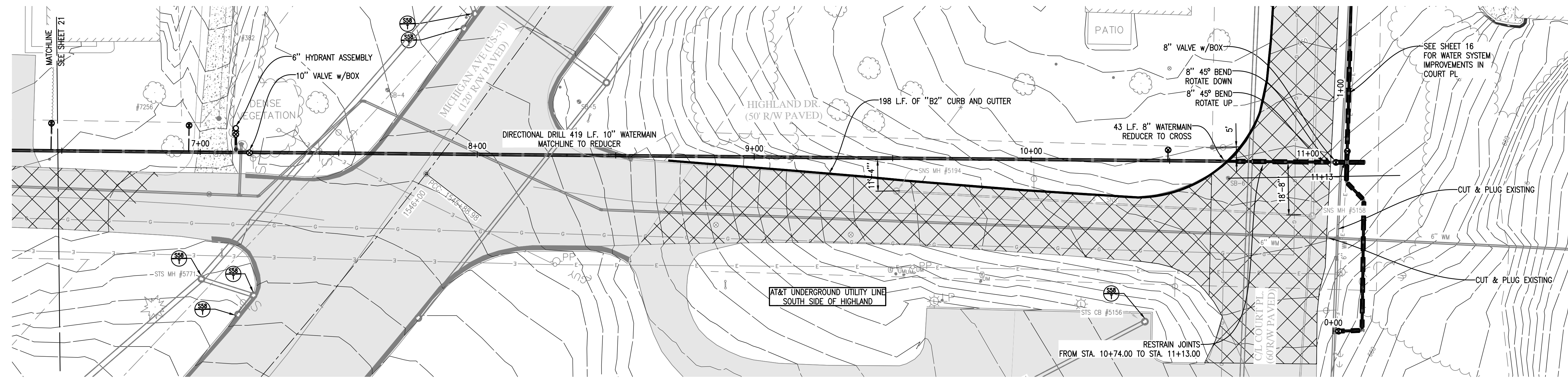


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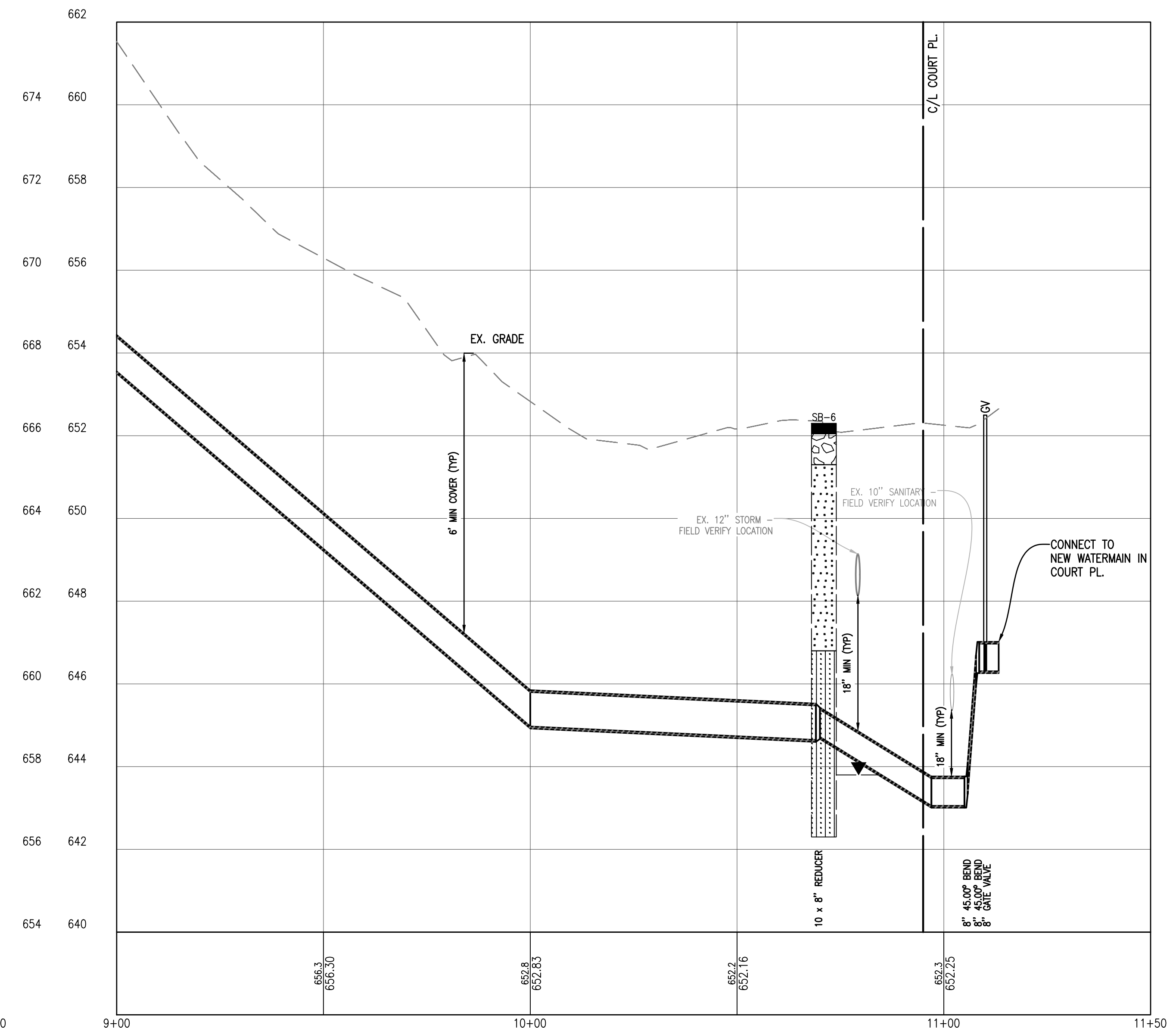
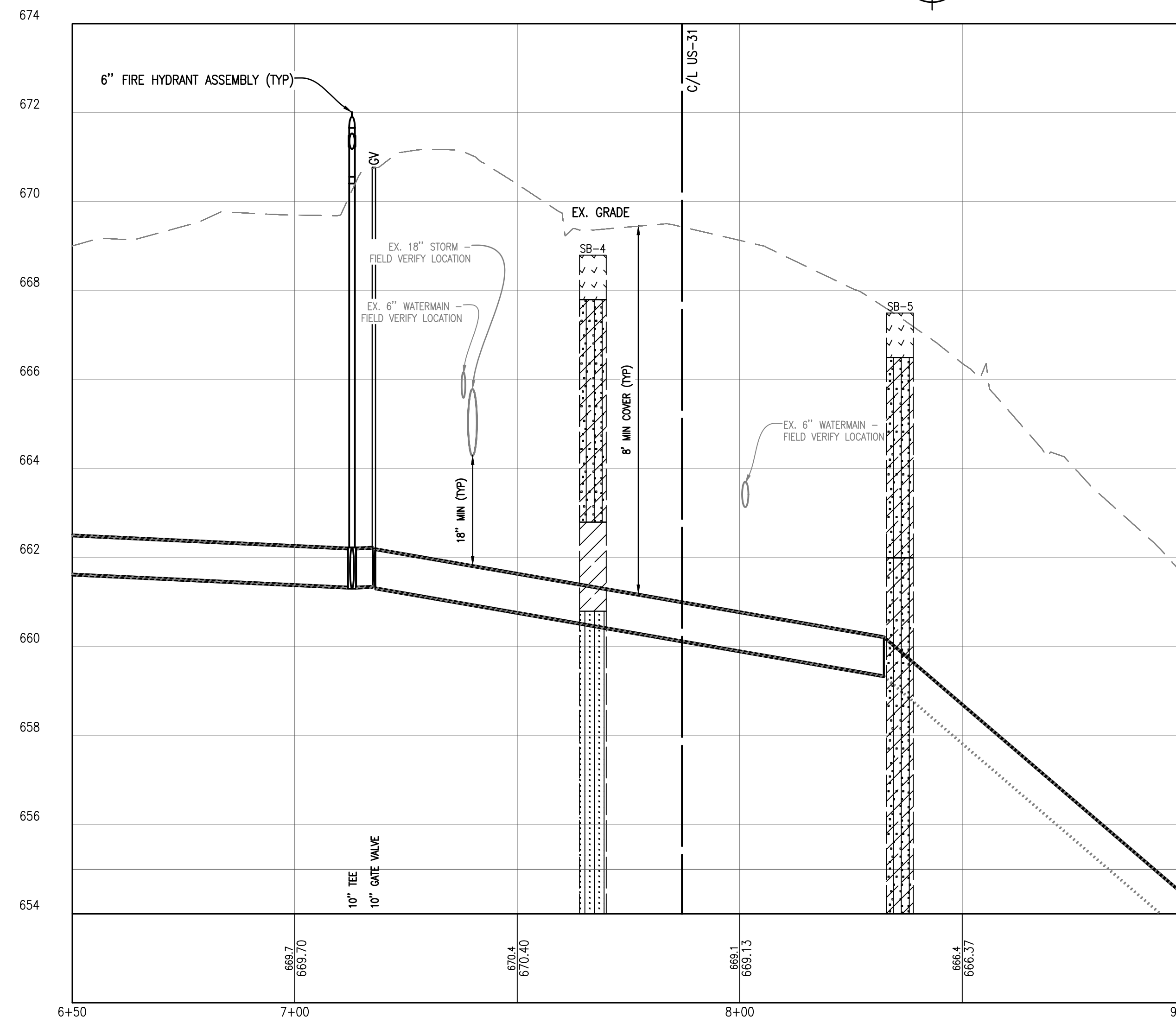
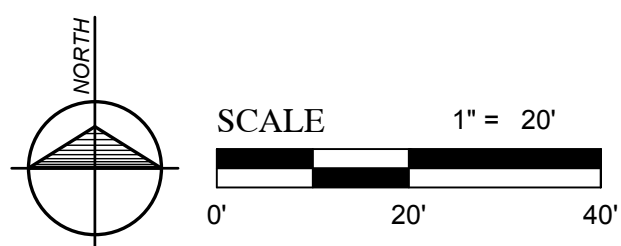
Strata symbols		Misc. Symbols	
	Paving		Water table during drilling
	Gravel		Water table at boring completion
	Clayey sand		
	Low plasticity clay		
	Poorly graded sand		
	Silty sand		
	Poorly graded clayey silty sand		

SANITARY SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #5348	4'	STANDARD	674.10	8" E: 665.40	
SNS MH #5353	4'	STANDARD	668.93	8" W: 662.05	8" NE: 661.85

STORM SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SIS MH #5771	4'	STANDARD	672.06	12" E: 667.30	18" SW: 666.73



HIGHLAND - STA. 6+50 TO STA. 11+13 PLAN
SCALE HORIZ. 1" = 20'



HIGHLAND - STA. 6+50 TO STA. 11+13 PROFILE
SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

Strata symbols		Misc. Symbols	
	Paving		Poorly graded sand
	Gravel		Silty sand
	Clayey sand		Poorly graded clayey silty sand
	Low plasticity clay		Water table during drilling
			Water table at boring completion

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STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #5158	4'	STANDARD	653.28	6" W: 646.53 6" S: 646.41	10" N: 646.30
SNS MH #5194	4'	STANDARD	657.11		6" E: 650.04

STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
STS CB #5156	4'	STANDARD	659.02		12" SW: 653.82
STS MH #5771	4'	STANDARD	672.06	12" E: 667.30 18" NE: 666.73	18" SW: 666.73



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Gosling Czubak
Engineering Sciences, Inc.
12000 Woodward Ave. #200
Troy, MI 48068-1007
248-948-9191 800-988-1082
fax 248-941-6653

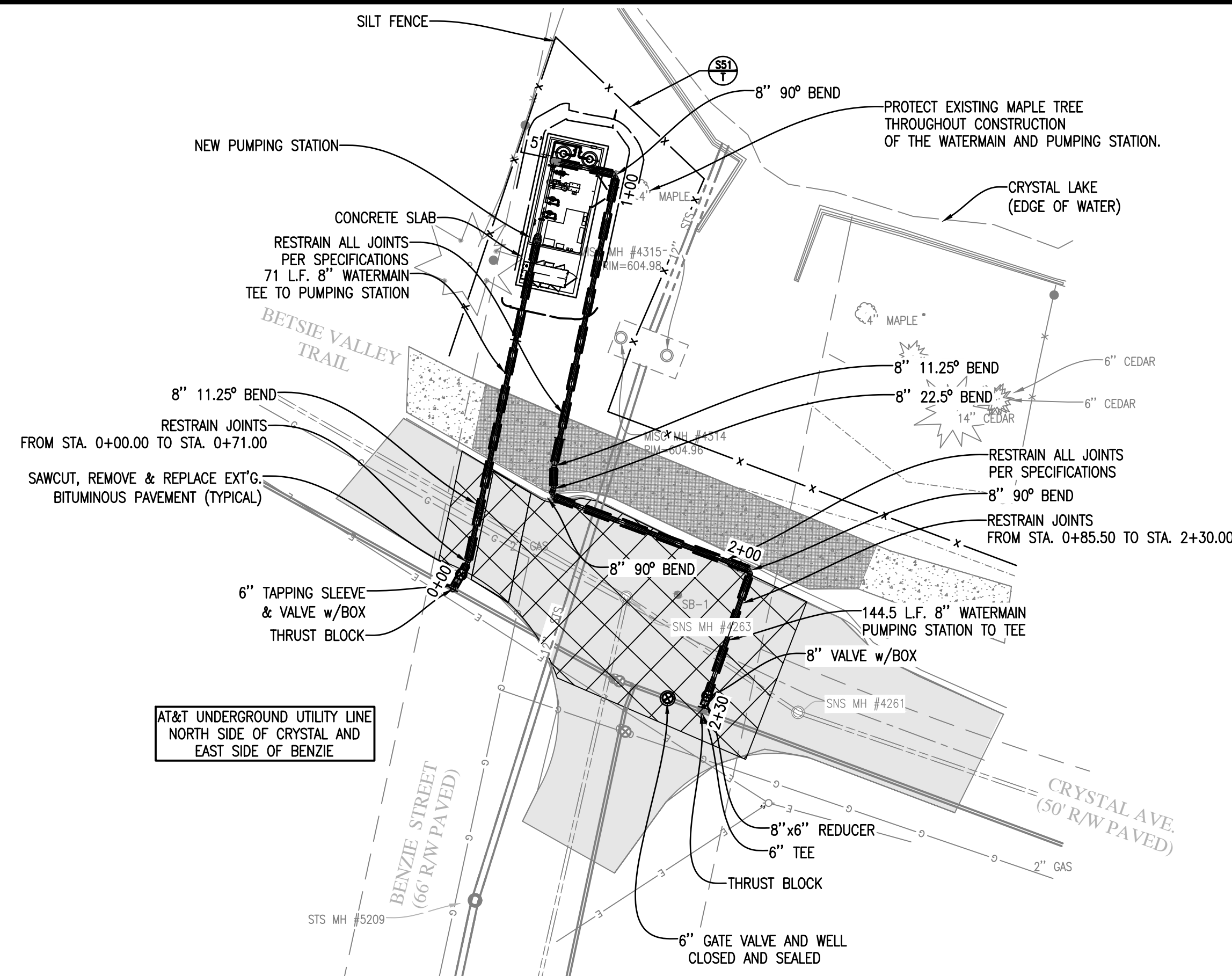
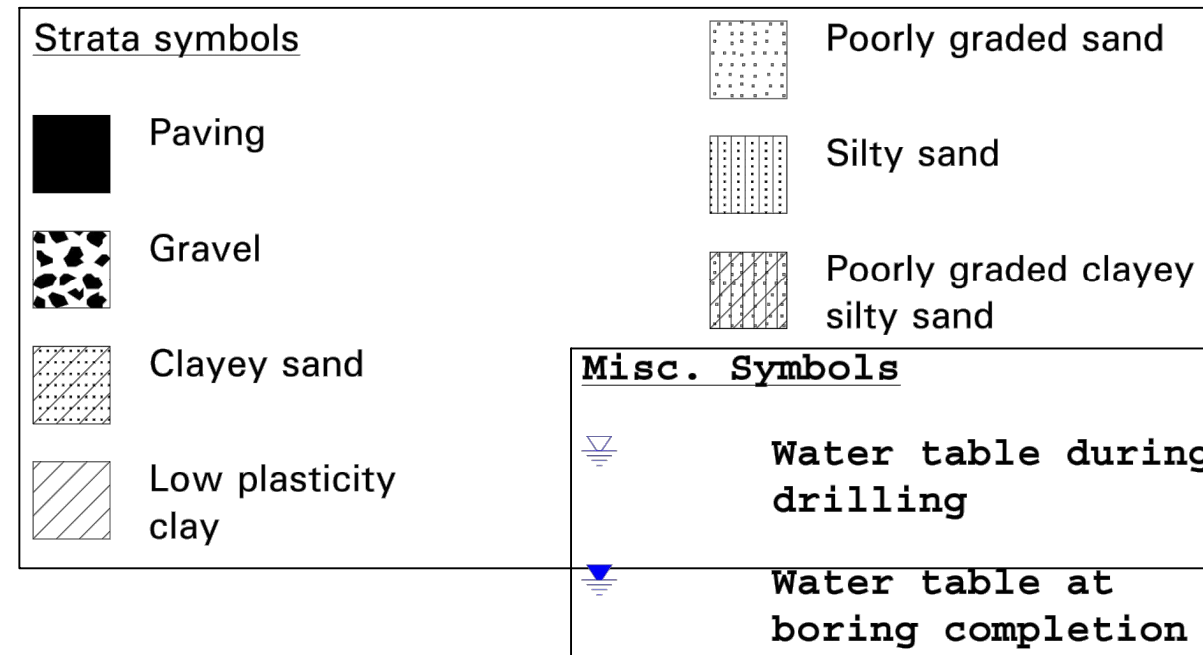
By: _____
No.: _____
Date: 10/19/17
Scale: 1" = 20'
Drawn By: TNK
Checked By: MJH

Location: SECTION 23 & 26, T 26 N, R 15 W, BENZONIA TOWNSHIP, BENZIE COUNTY, MICHIGAN

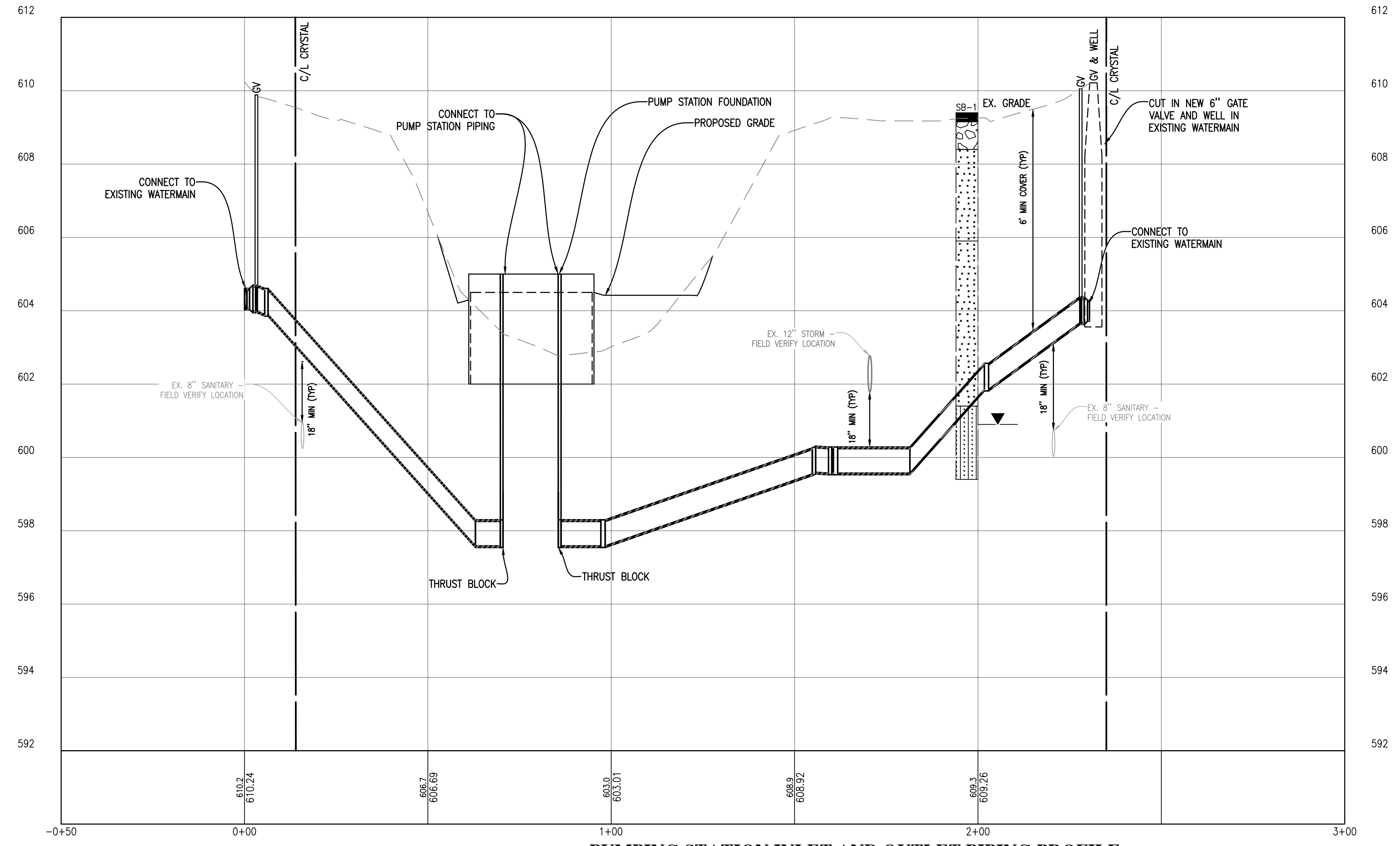
HIGHLAND - STA. 6+50 TO STA. 11+13
WATER SYSTEM IMPROVEMENTS

Project No. 2017027001.03
Sheet **22**

- NOTES:
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 10. CONTRACTOR TO COORDINATE WATERMAIN CROSSING OF THE BETSIE VALLEY TRAIL WITH BENZIE COUNTY AND THE DNR. CONTRACTOR TO MINIMIZE DISRUPTION TO TRAIL ACCESS AND PROVIDE ROUTING FOR TRAIL USERS AROUND DISTURBED AREAS. WORK IMPACTING THE TRAIL TO BE PERFORMED BEFORE MAY 20, 2018 OR AFTER SEPTEMBER 3, 2018. RESTORATION OF THE TRAIL TO BE COMPLETED IMMEDIATELY FOLLOWING THE INSTALLATION OF THE WATERMAIN.



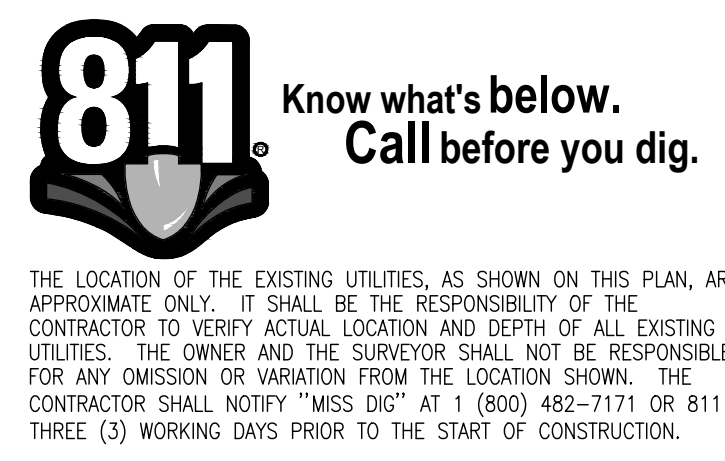
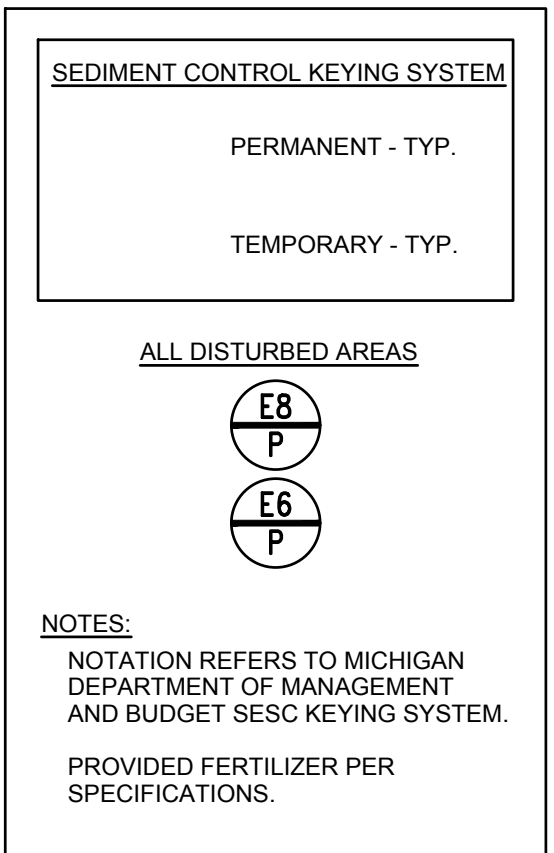
PUMPING STATION INLET AND OUTLET PIPING PLAN
 SCALE 1" = 20'



PUMPING STATION INLET AND OUTLET PIPING PROFILE
 SCALE: HORIZ. 1" = 20'
 VERT. 1" = 2'

SANITARY SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
SNS MH #4261	4'	STANDARD	609.58	8" E: 600.05 8" NW: 600.24	8" E: 600.02
SNS MH #4263	4'	STANDARD	609.50		8" SE: 600.05 8" NW: 600.24 8" S: 604.60

STORM SEWER SCHEDULE					
STRUCTURE NUMBER	STRUCTURE DIAMETER	CASTING	RIM ELEV.	INLET INV. ELEVATION	OUTLET INV. ELEVATION
STS MH #5209	4'	STANDARD	619.30	12" S: 601.78	12" N: 601.78

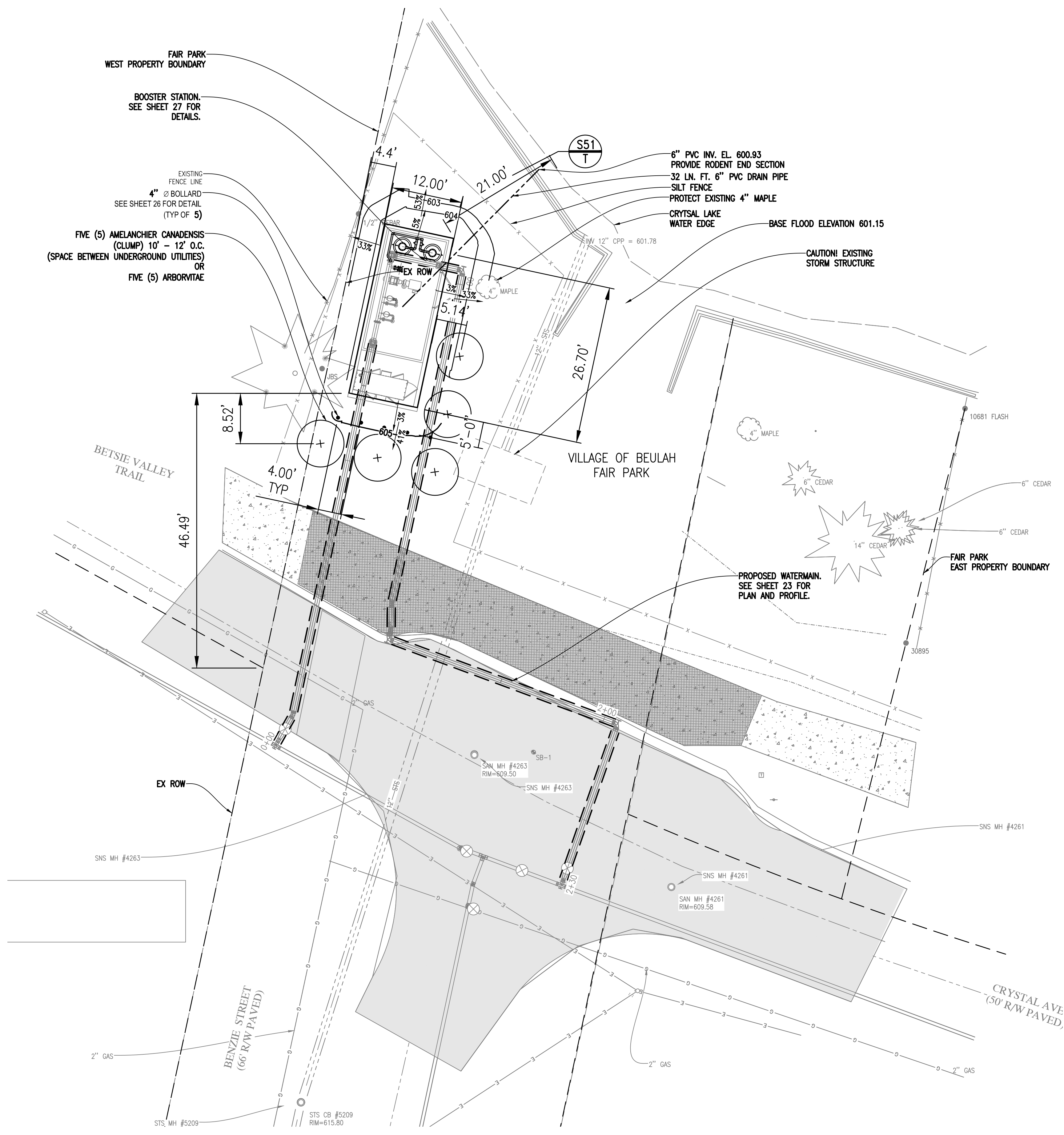


Gosling Czubak
 Engineering Sciences, Inc.
 12000 E. Grand Ave. Suite 200
 Denver, CO 80231
 Tel: 303-751-9900
 Fax: 303-751-9902

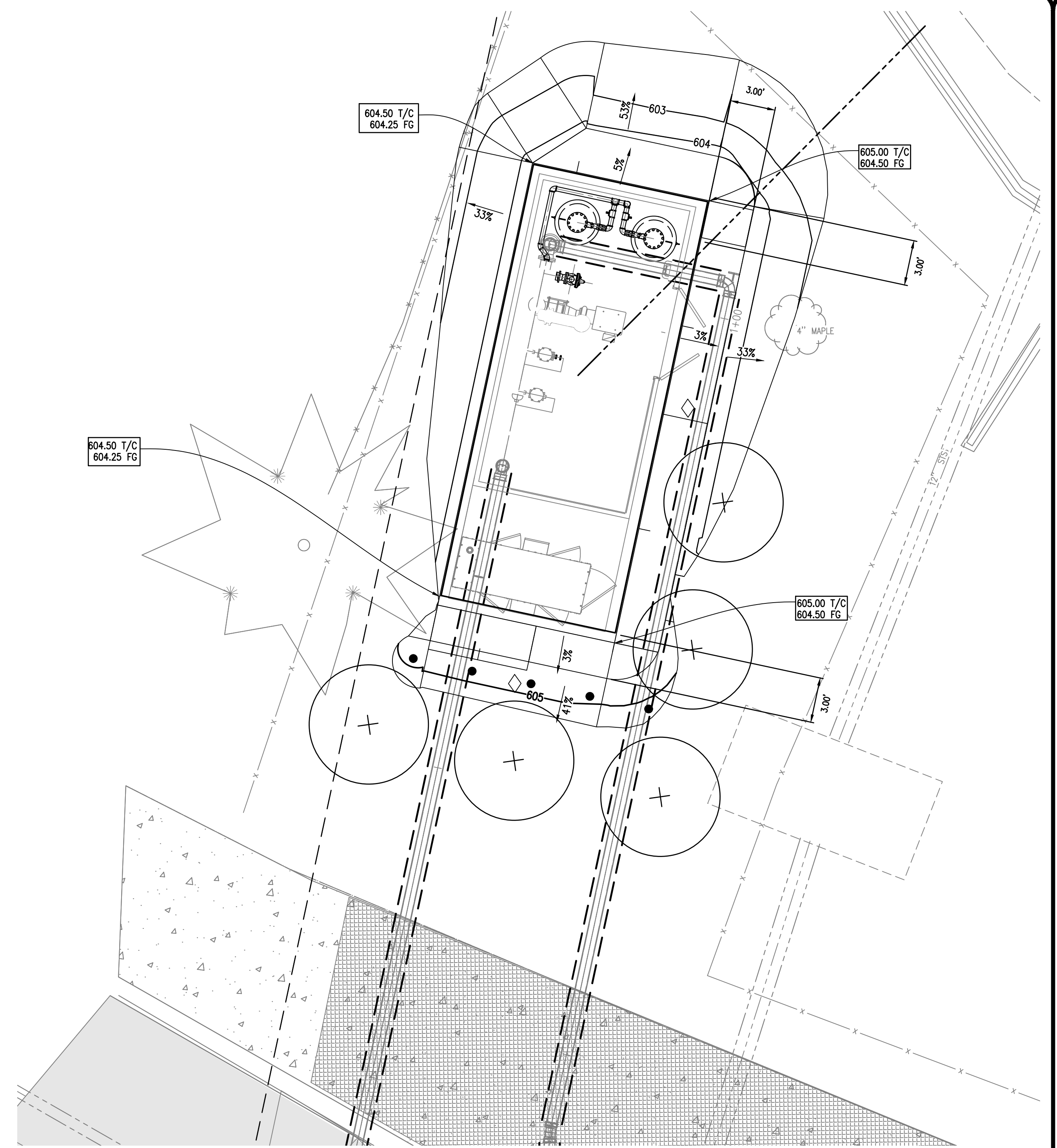
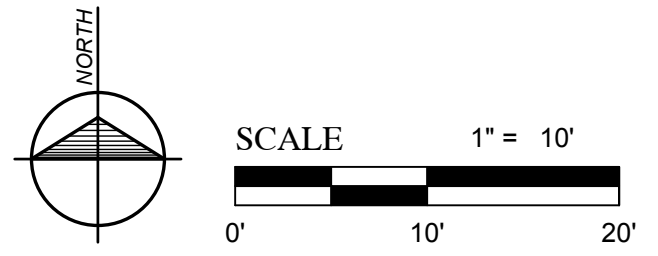
By: TNK
 Revision: REVISED FOR PERMITTING
 Date: 10/17/17
 No. 1
 Drawn By: TNK
 Checked By: MJH
 Date: 10/19/17
 Scale: 1" = 20'

Location:
 SECTION 23 & 26, T 26 N, R 15 W,
 BENZIE COUNTY, MICHIGAN

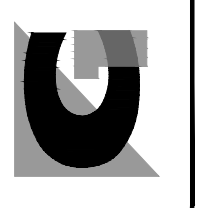
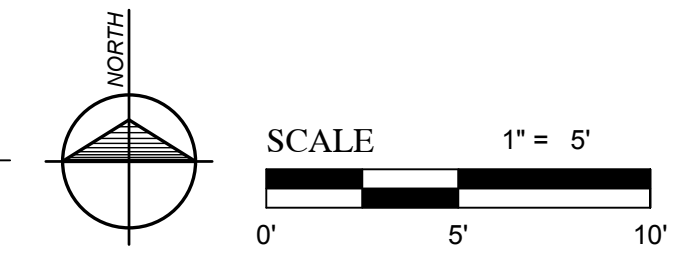
**PUMPING STATION INLET AND OUTLET PIPING
 WATER SYSTEM IMPROVEMENTS**



PUMPING STATION SITE UTILITY PLAN PLAN



PUMP STATION GRADING PLAN

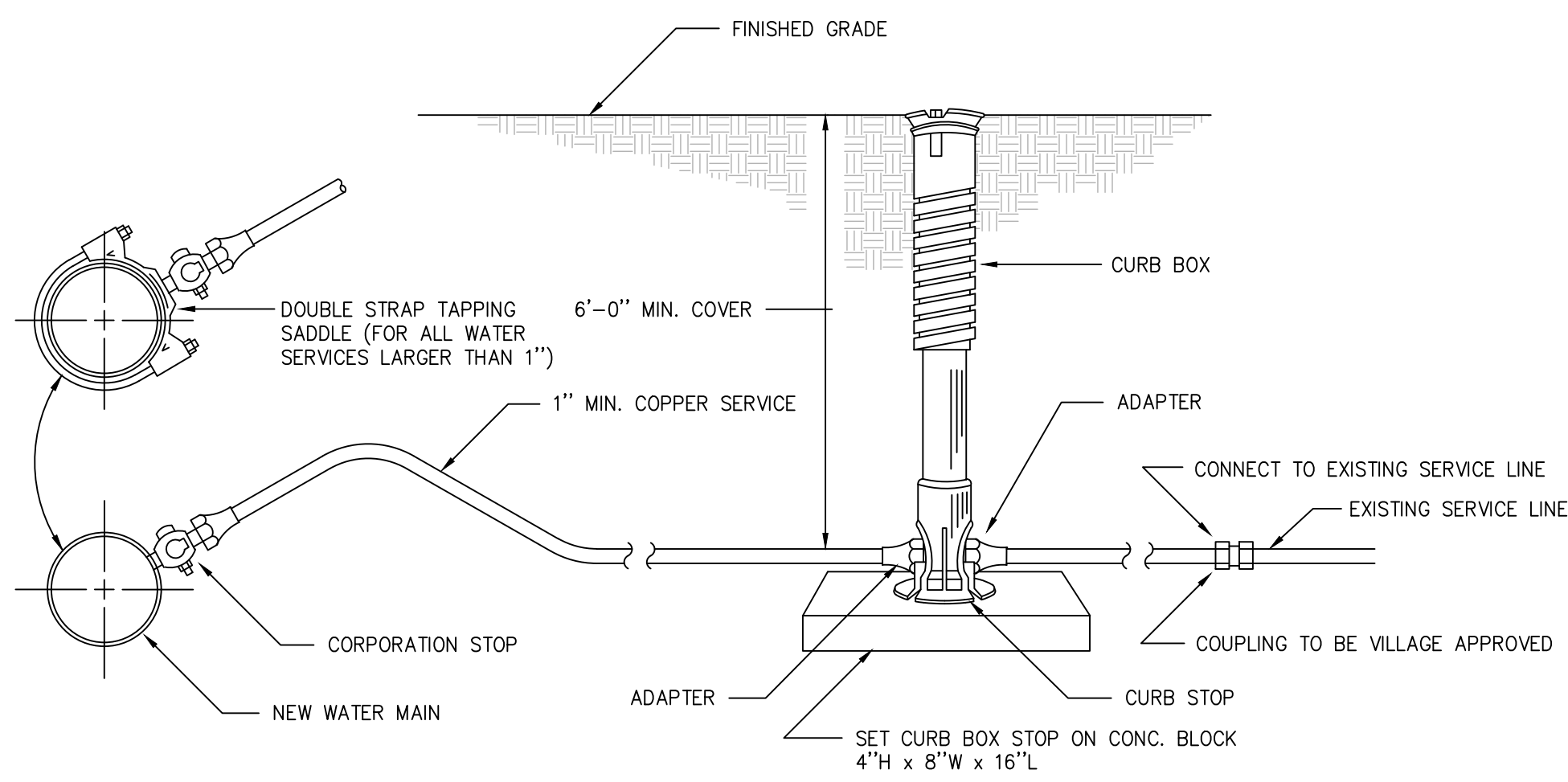


By: TNK
 Revision: REVISED FOR PERMITTING
 Date: 10/17/17
 No: 1

Drawn By: TNK
 Checked By: MJH
 Date: 10/19/17
 Scale: N/A

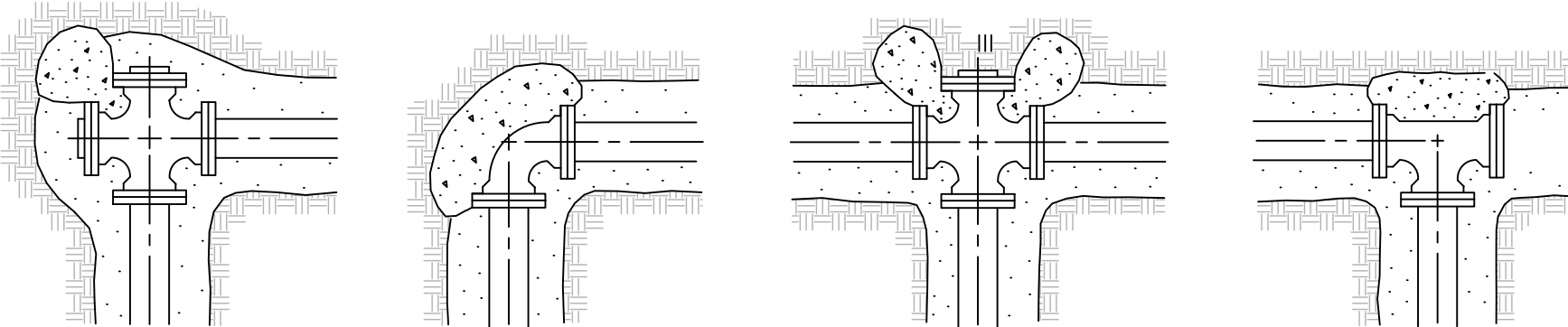
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 SECTION 23 & 26, T 26 N, R 15 W,
 BENZONIA TOWNSHIP,
 BENZIE COUNTY, MICHIGAN

PUMPING STATION SITE UTILITY PLAN
WATER SYSTEM IMPROVEMENTS

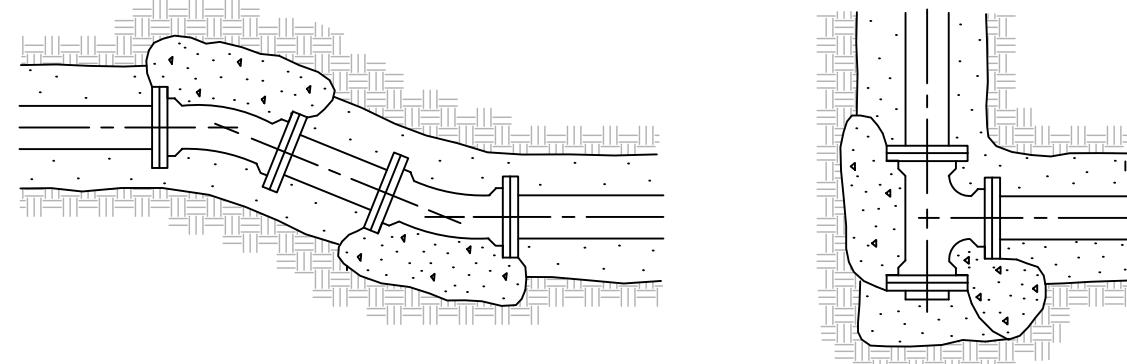


WATER MAIN SERVICE CONNECTIONS

NO SCALE

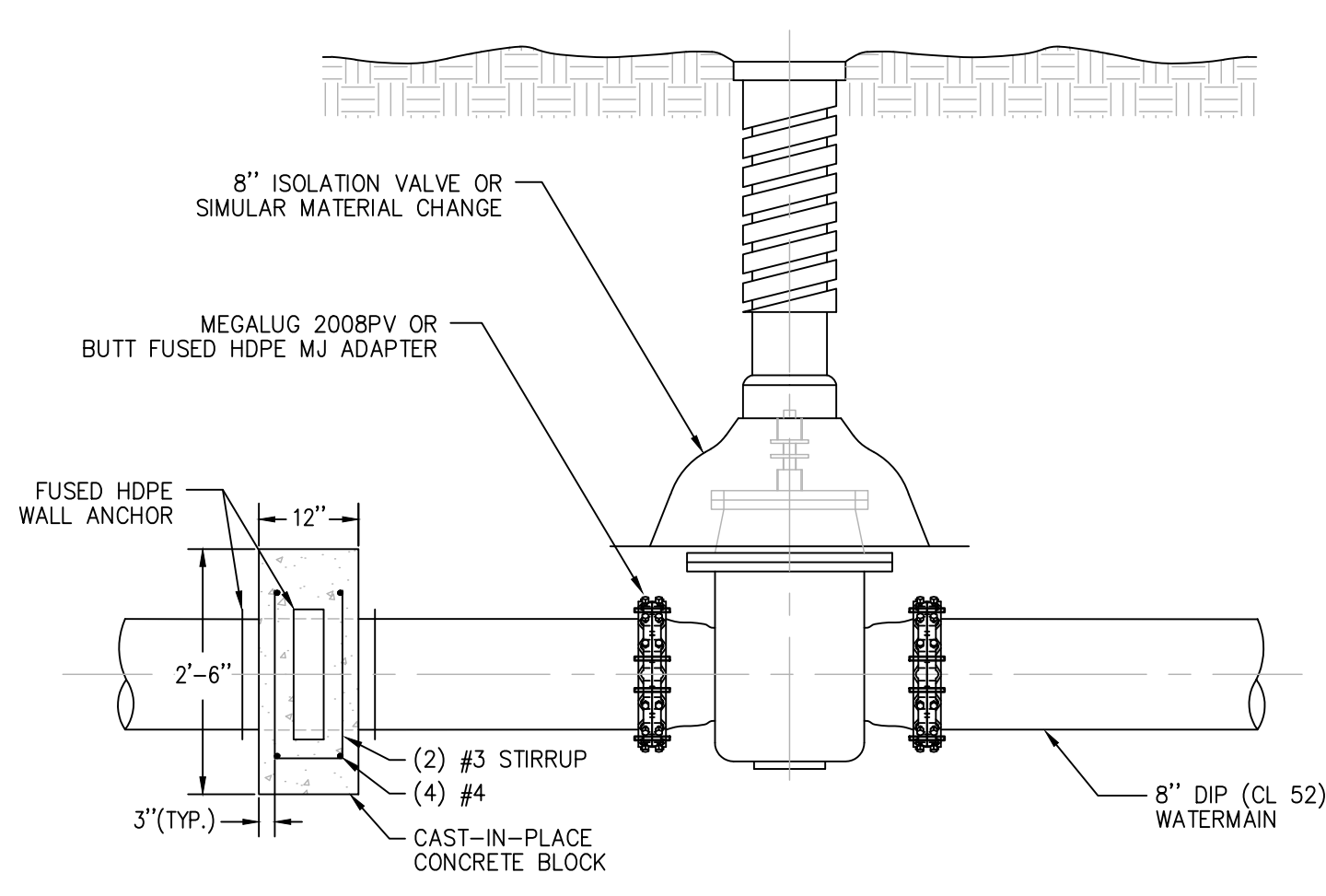


THE MINIMUM BEARING AREA, AGAINST UNDISTURBED EARTH, OF THE VARIOUS THRUST BLOCKS, SHALL BE AS FOLLOWS:
 6" WATER MAIN 2.0 S.F.
 8" WATER MAIN 3.0 S.F.
 10" WATER MAIN 7.0 S.F.
 12" WATER MAIN 8.0 S.F.
 (BASED ON AN ALLOWED BEARING PRESSURE OF 2500 P.S.F.)
 ALL THRUST BLOCKS ARE TO BE 3000 P.S.I. HIGH EARLY STRENGTH CONCRETE POURED AGAINST UNDISTURBED EARTH



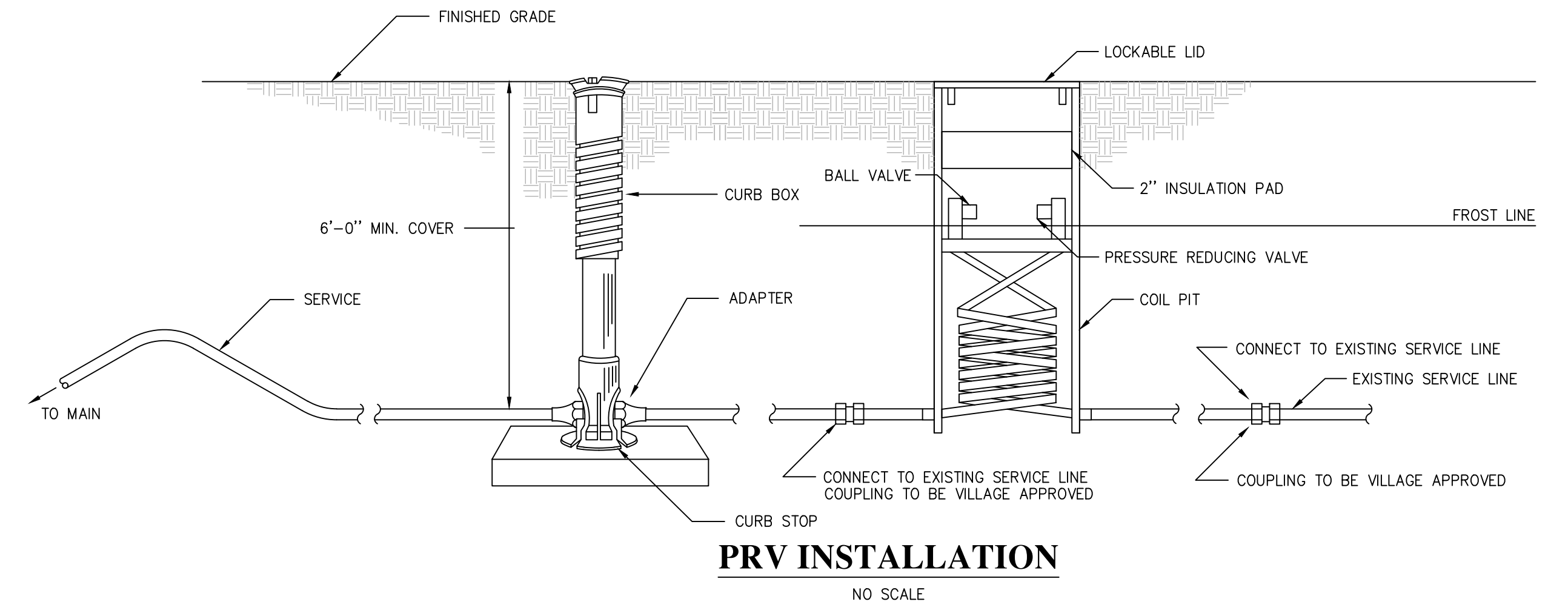
TYPICAL THRUST BLOCK DETAILS

NO SCALE



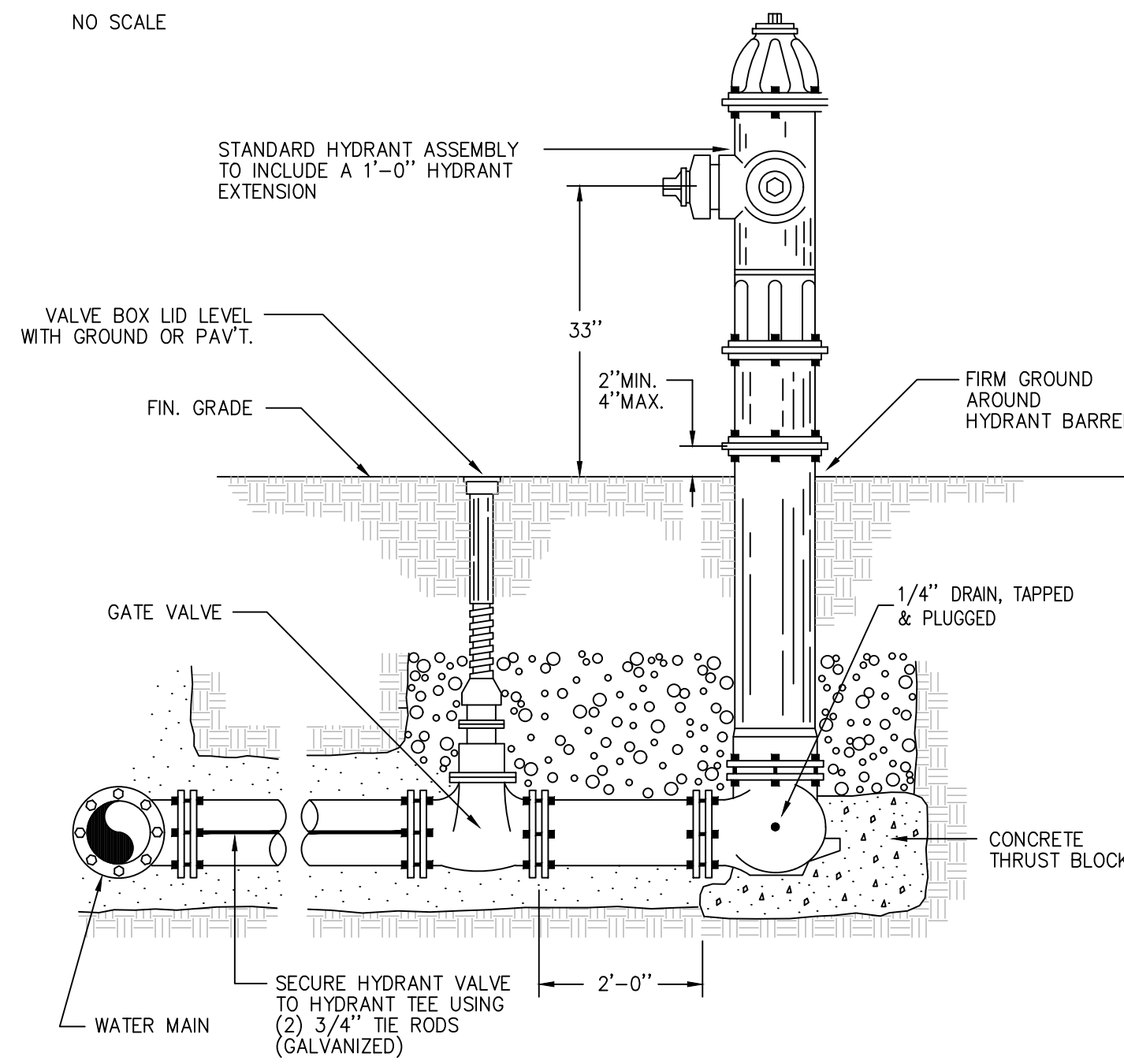
HDPE - GATE VALVE CONNECTION

NO SCALE



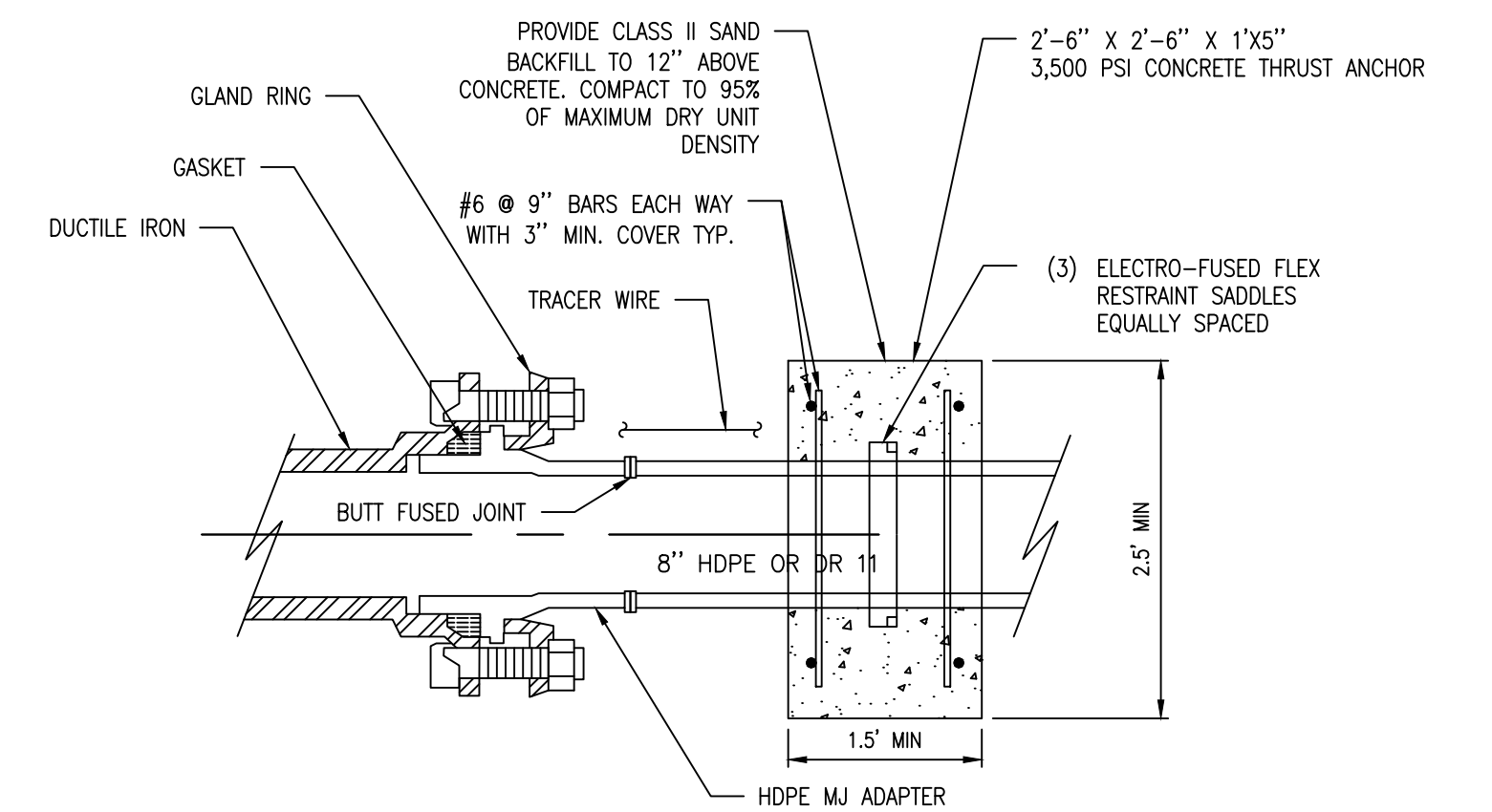
PRV INSTALLATION

NO SCALE



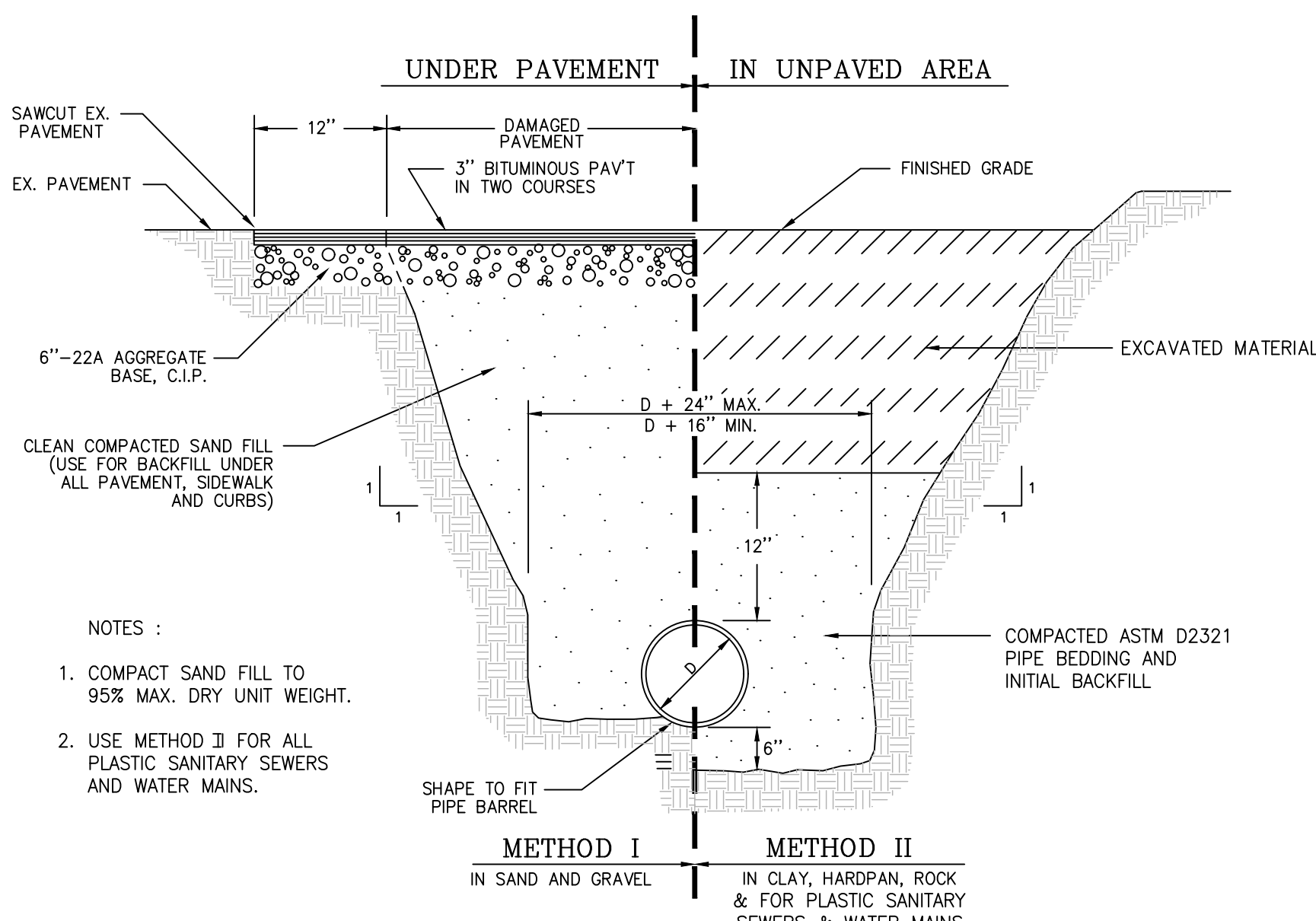
DETAIL-HYDRANT INSTALLATION

NO SCALE



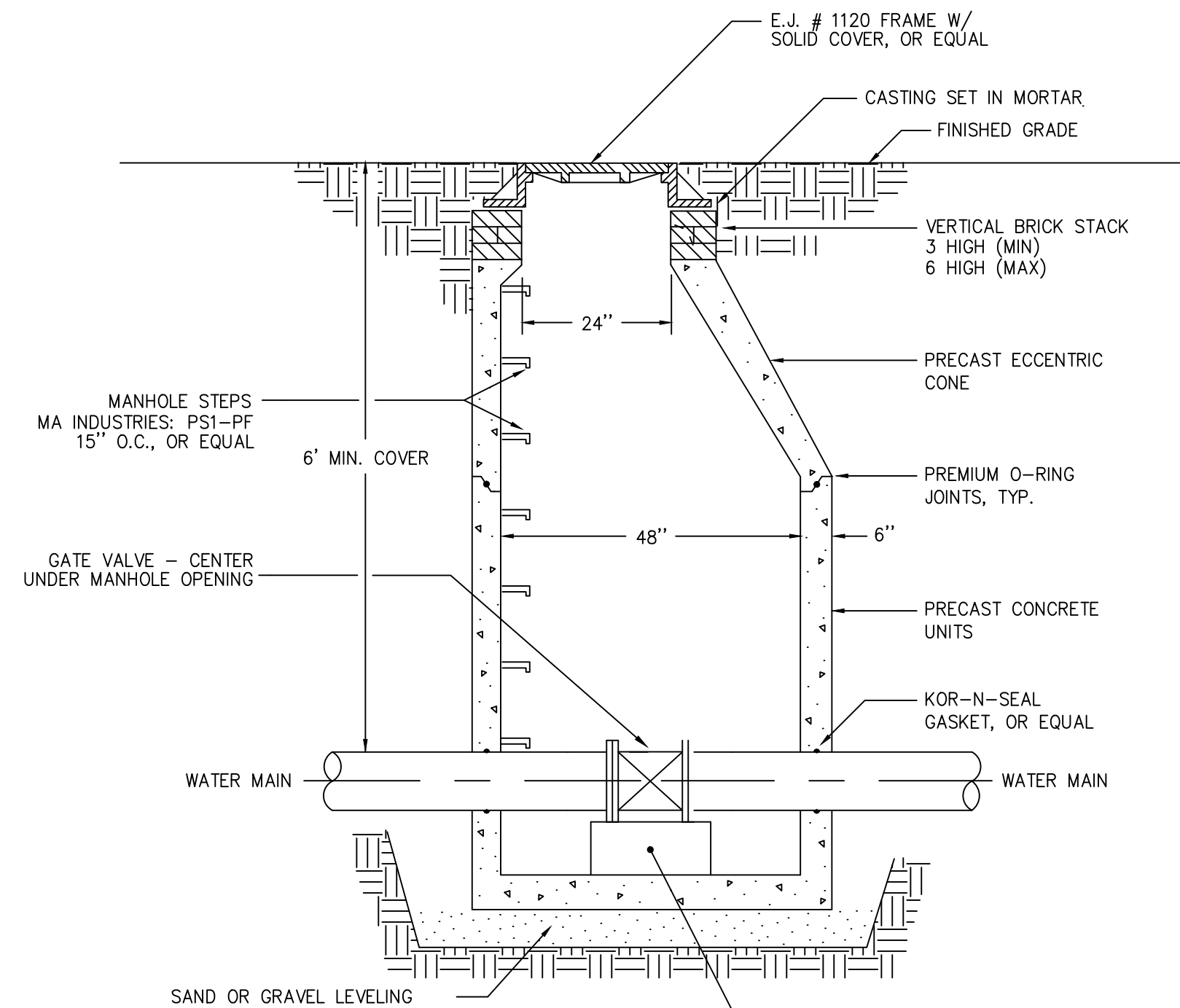
HDPE - DUCTILE IRON MJ CONNECTION

NO SCALE



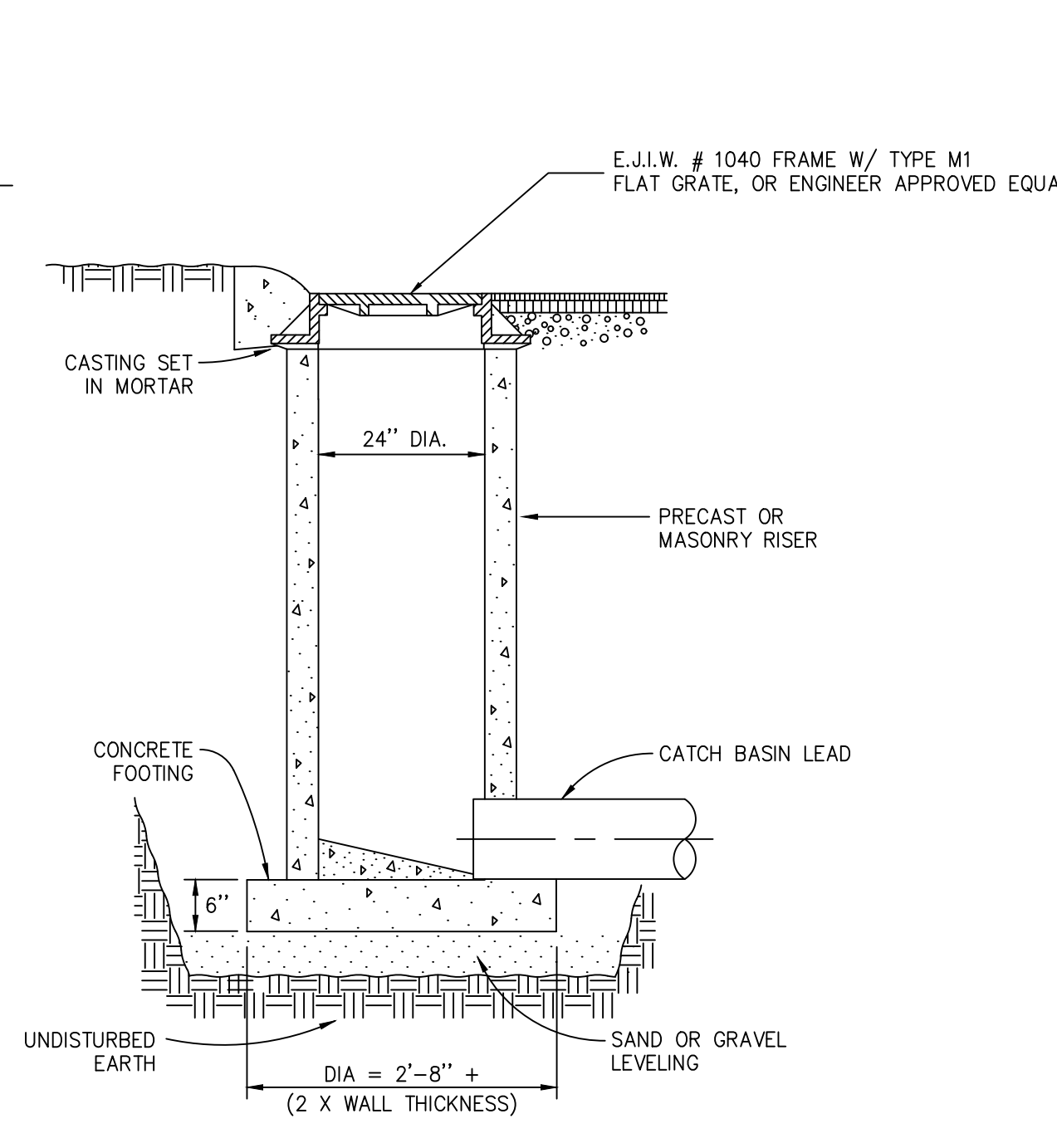
TRENCH DETAIL

NO SCALE



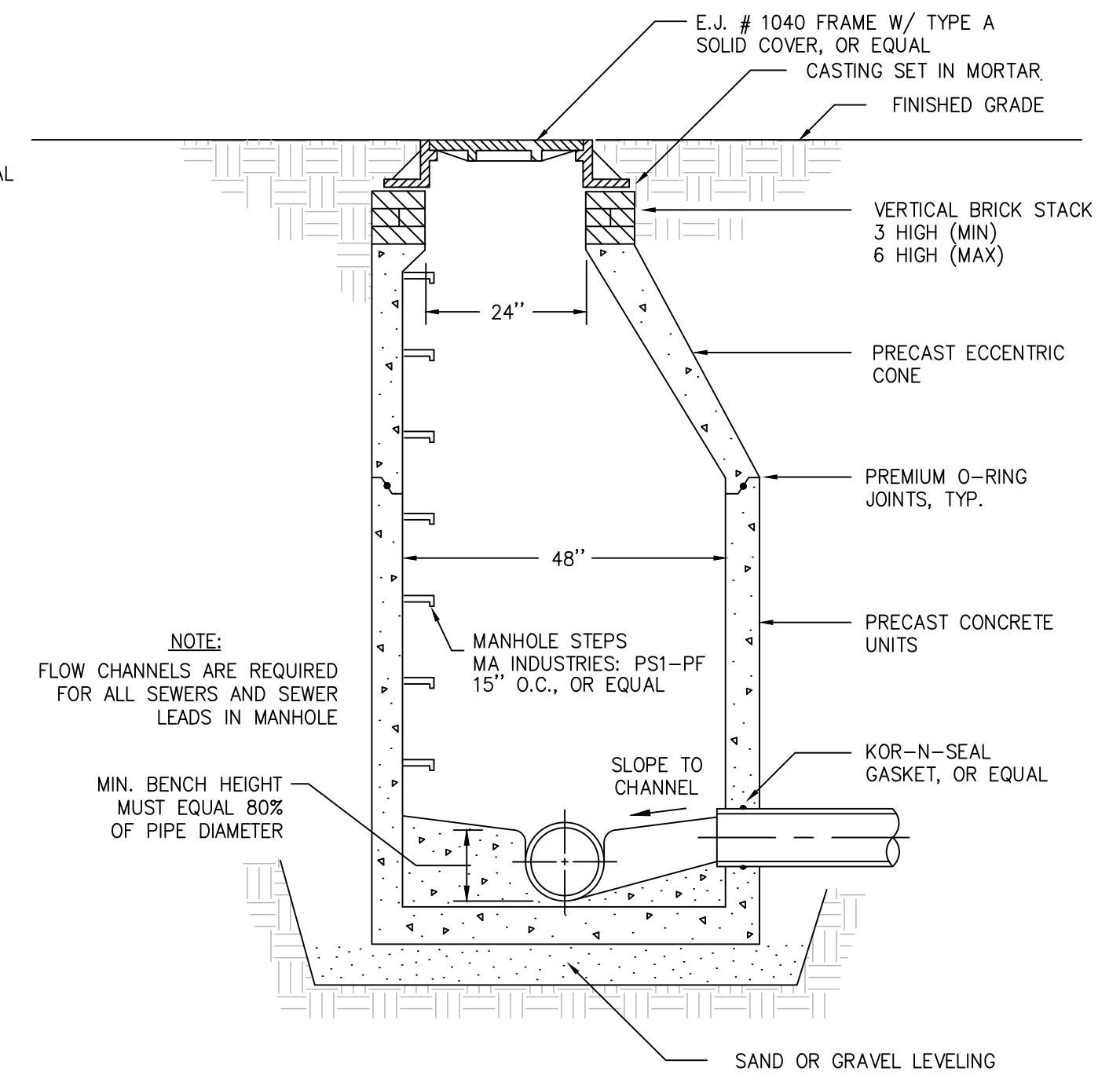
VALVE VAULT DETAIL

NO SCALE



STORM INLET DETAIL

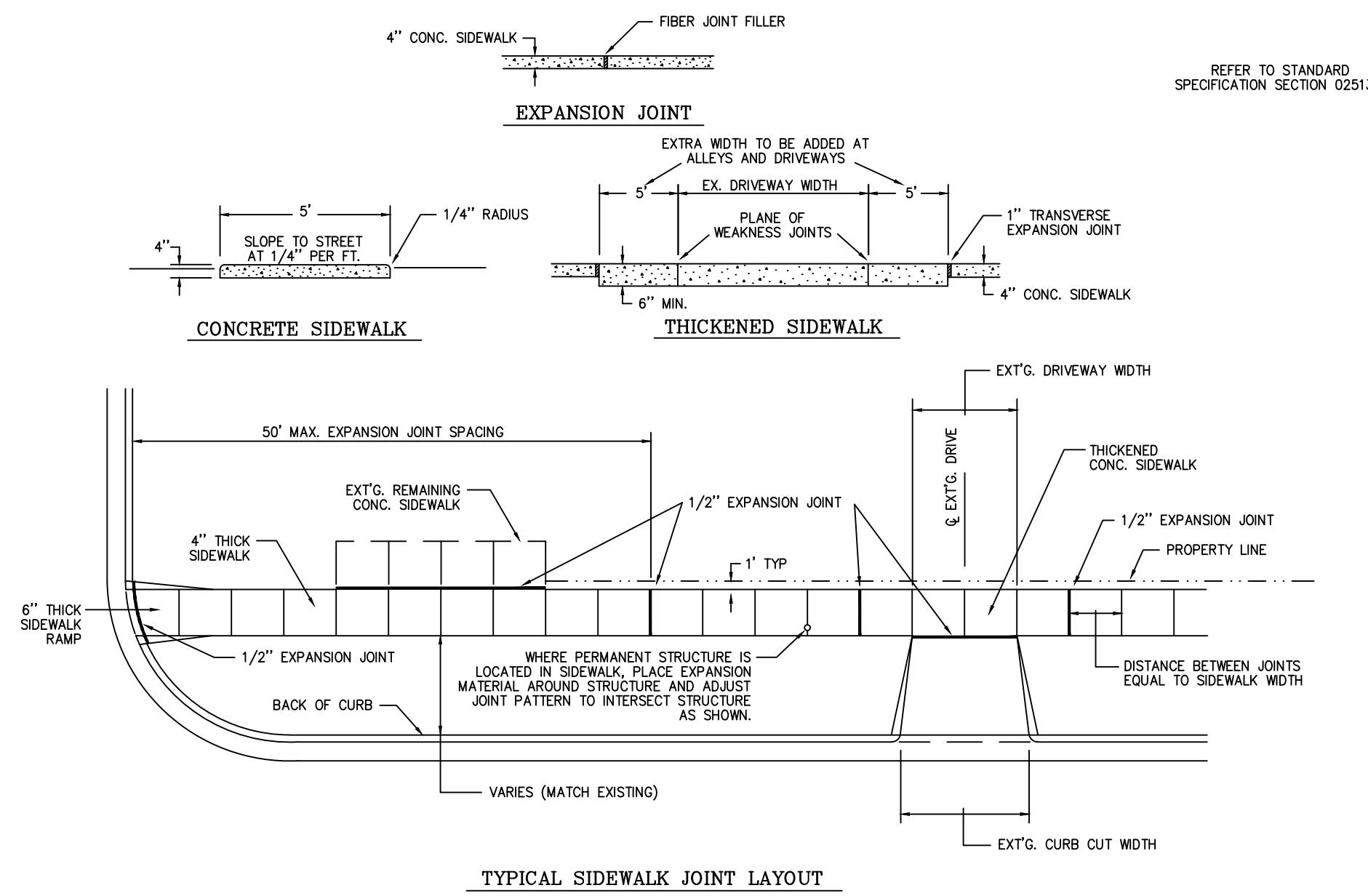
NO SCALE



SANITARY MANHOLE DETAIL

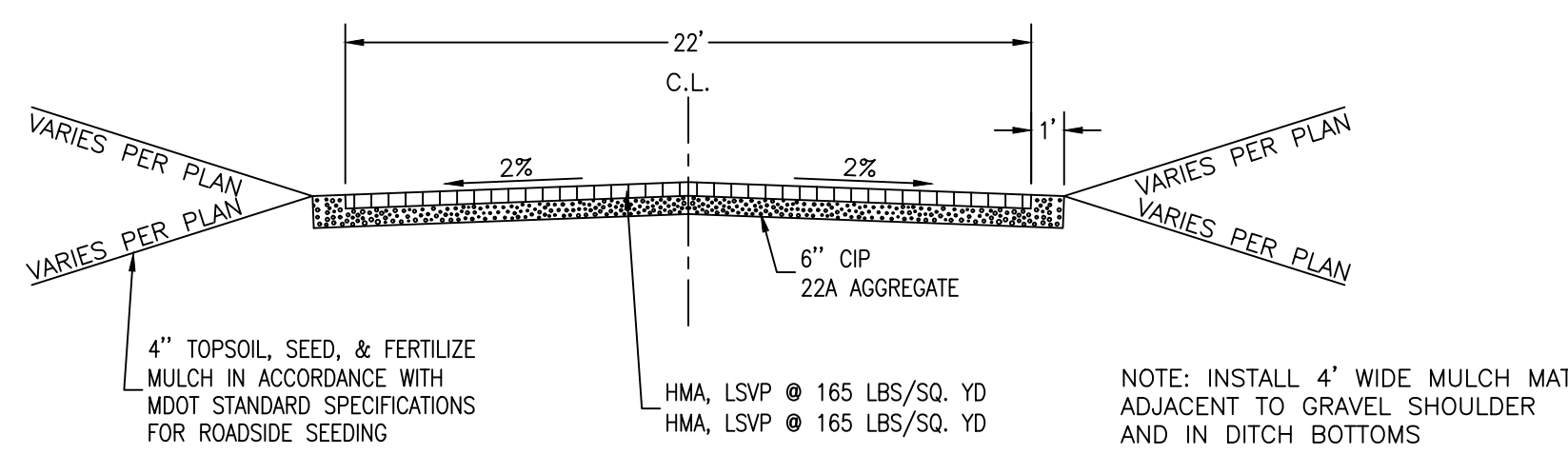
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CONCRETE RESTORATION

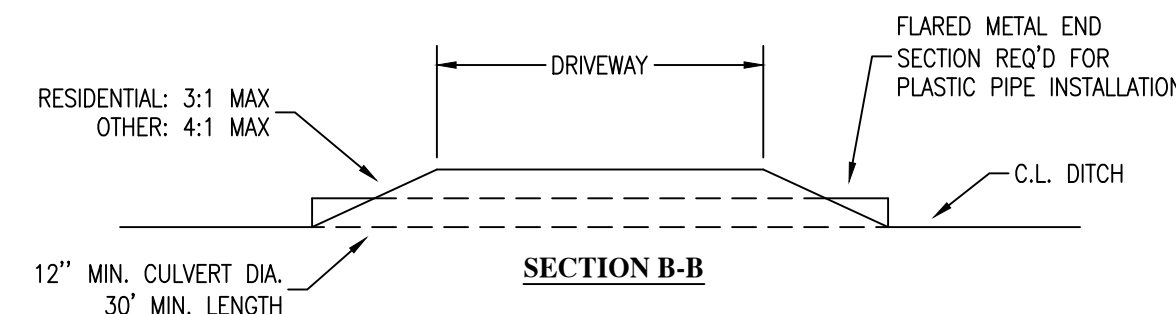
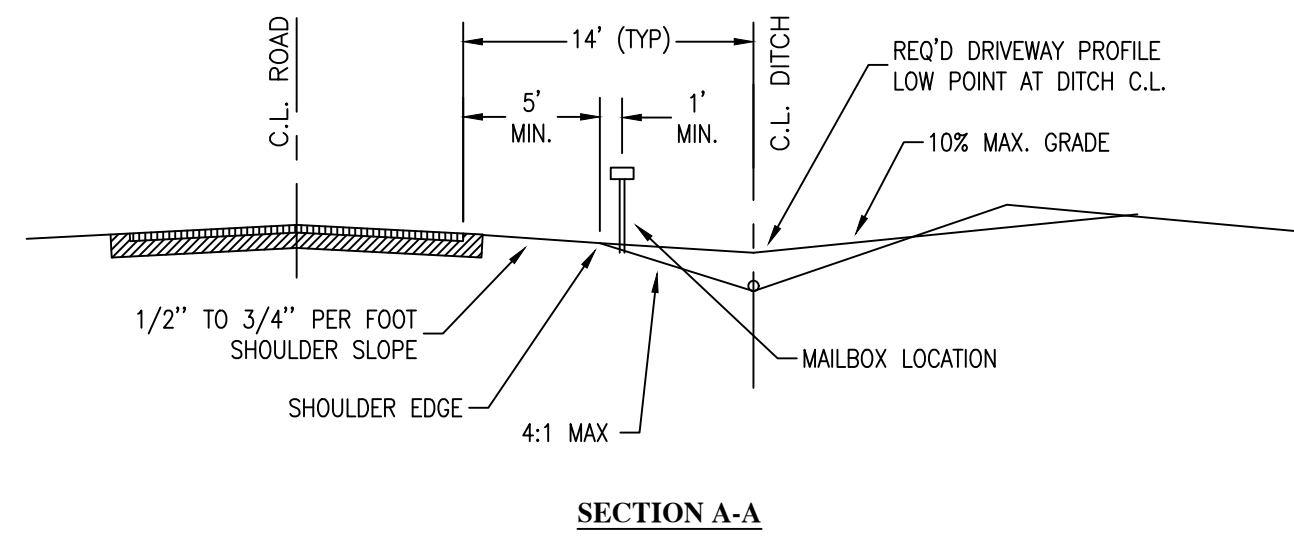
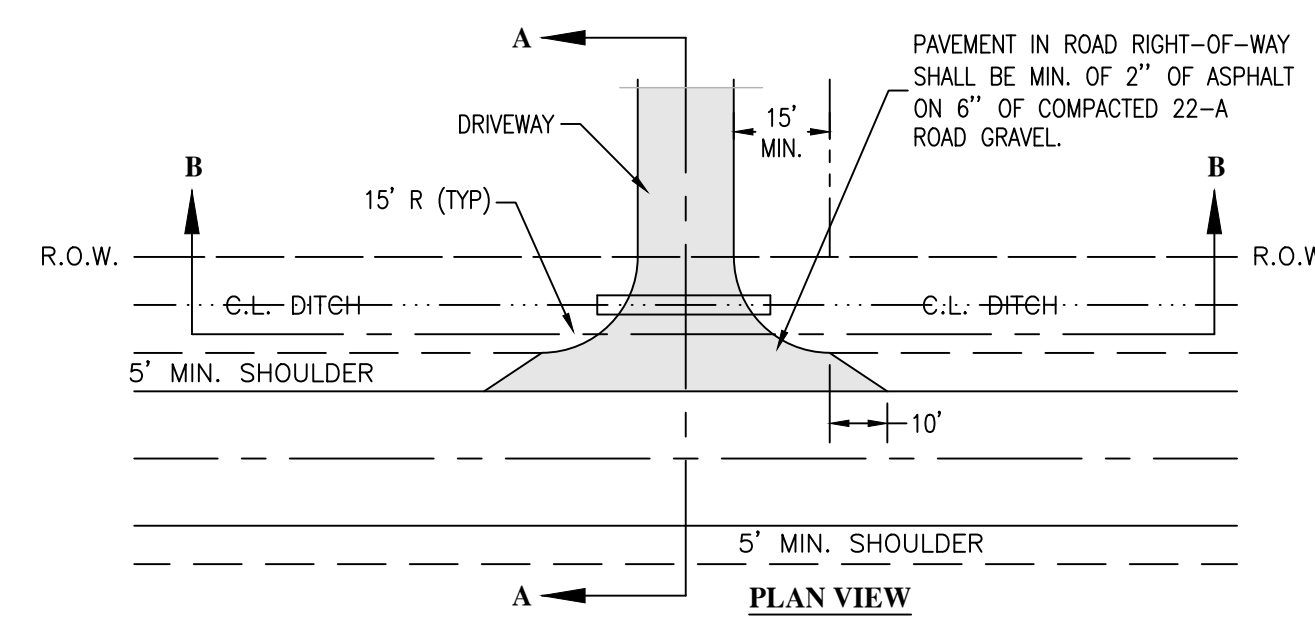


CONCRETE SIDEWALK DETAILS

NO SCALE



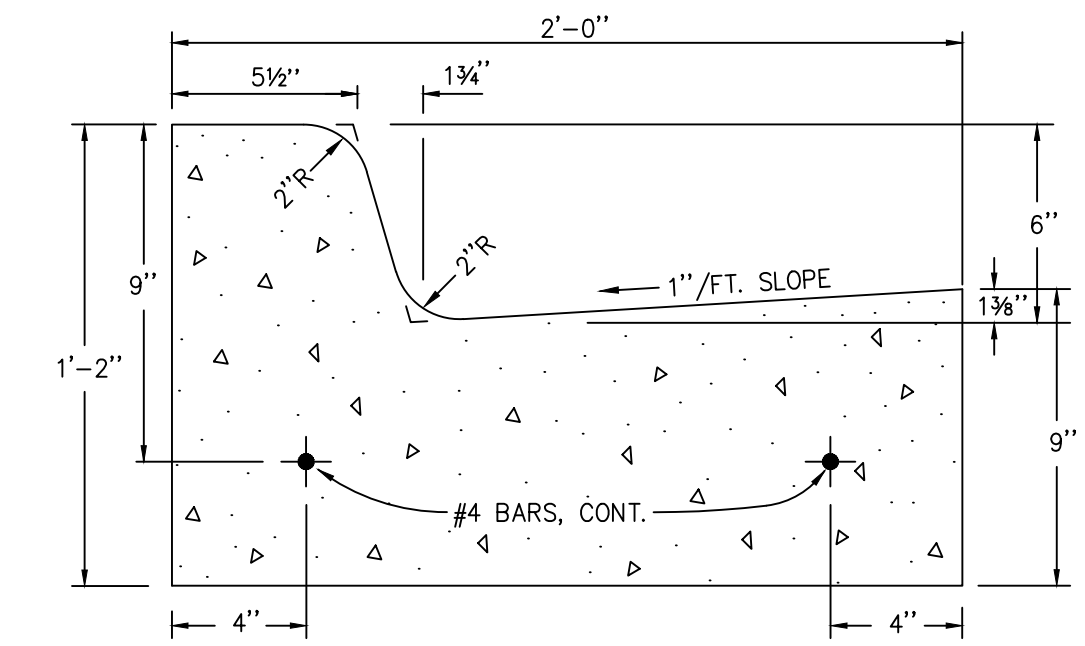
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RESIDENTIAL DRIVEWAY APPROACH DETAIL

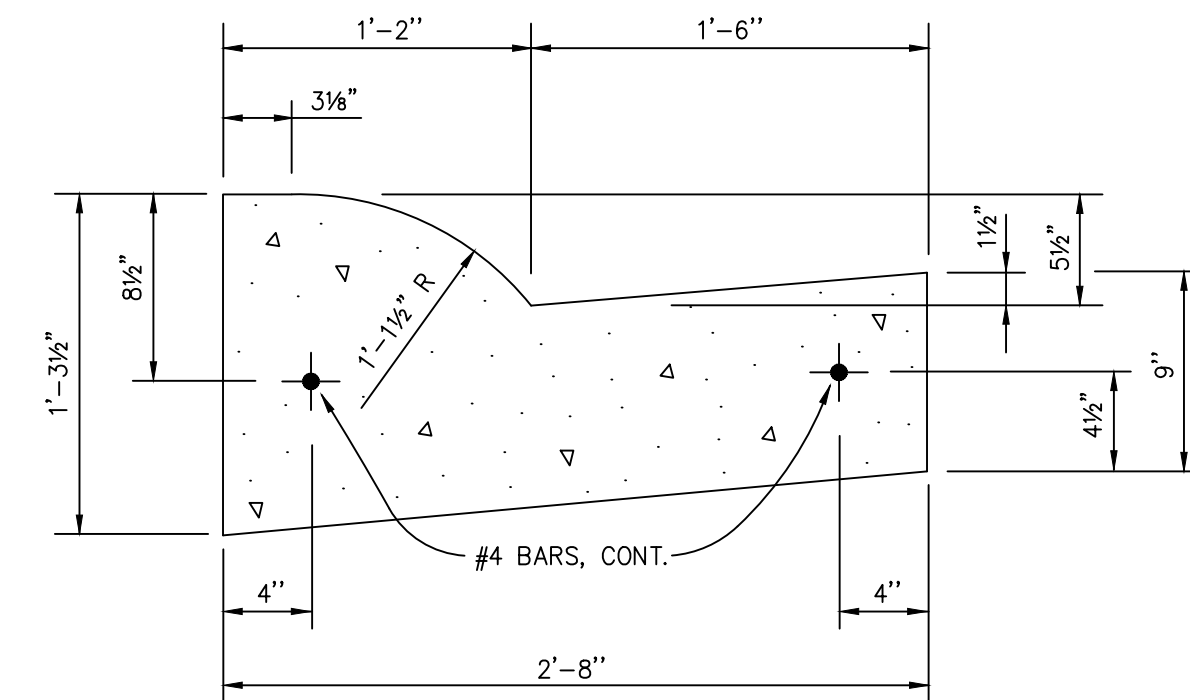
NO SCALE

NOTE: THIS DETAIL APPLIES TO SINGLE FAMILY AND DUPLEX HOMES. ALL COMMERCIAL DRIVEWAYS AND MULTIPLE FAMILY DRIVEWAYS SHALL COMPLY WITH MDOT STANDARDS.



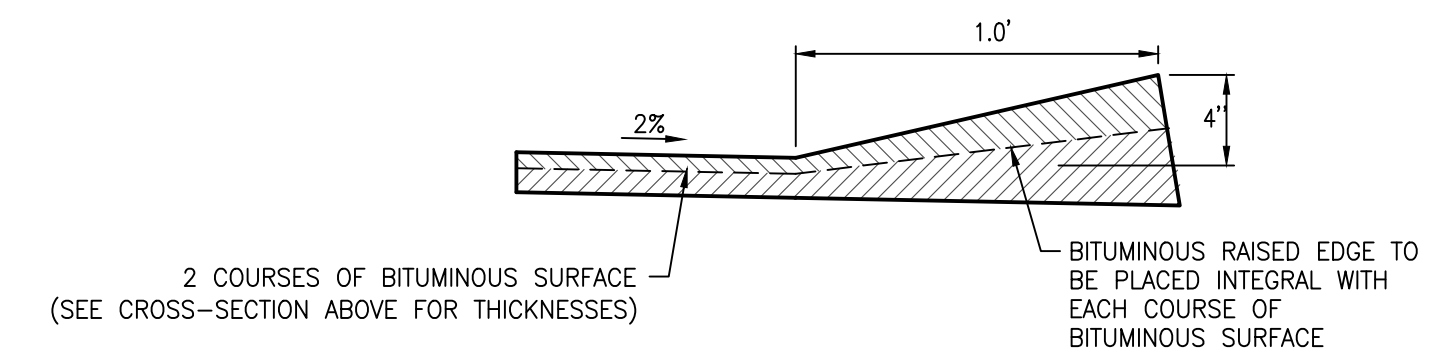
STANDARD M.D.O.T. "F4" CONCRETE CURB & GUTTER DETAIL

NO SCALE



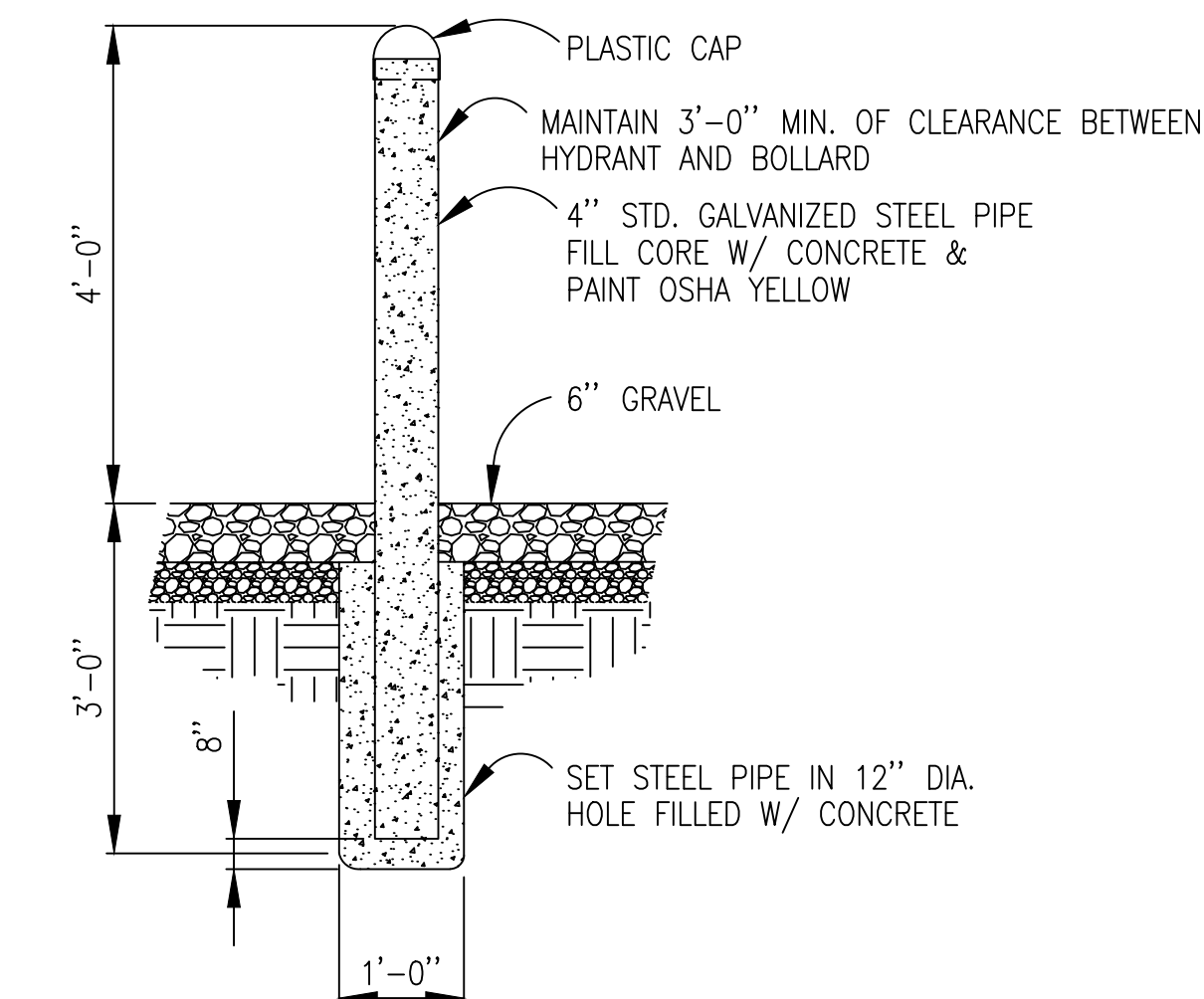
STANDARD M.D.O.T. "B2" CONCRETE CURB & GUTTER DETAIL

NO SCALE



NOT TO SCALE

BITUMINOUS RAISED EDGE DETAIL

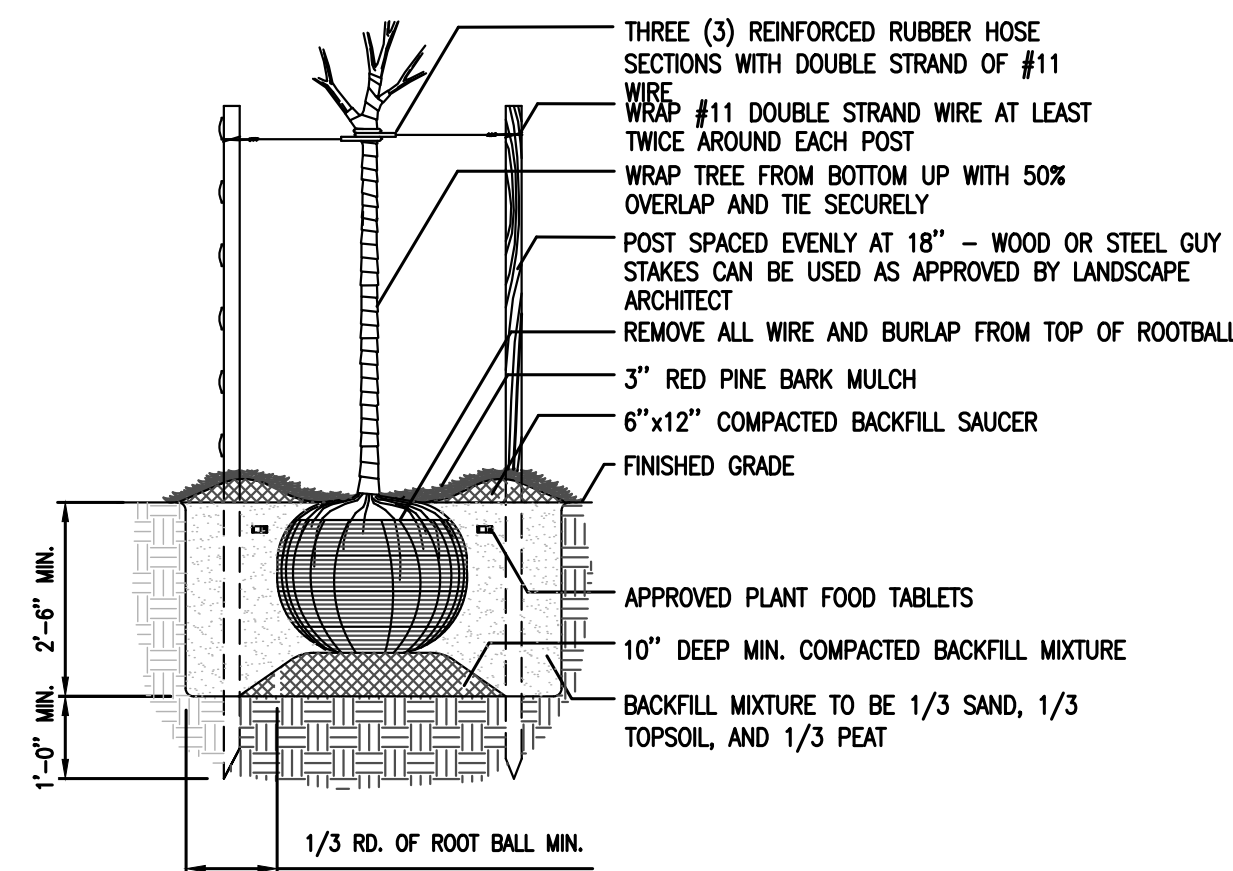


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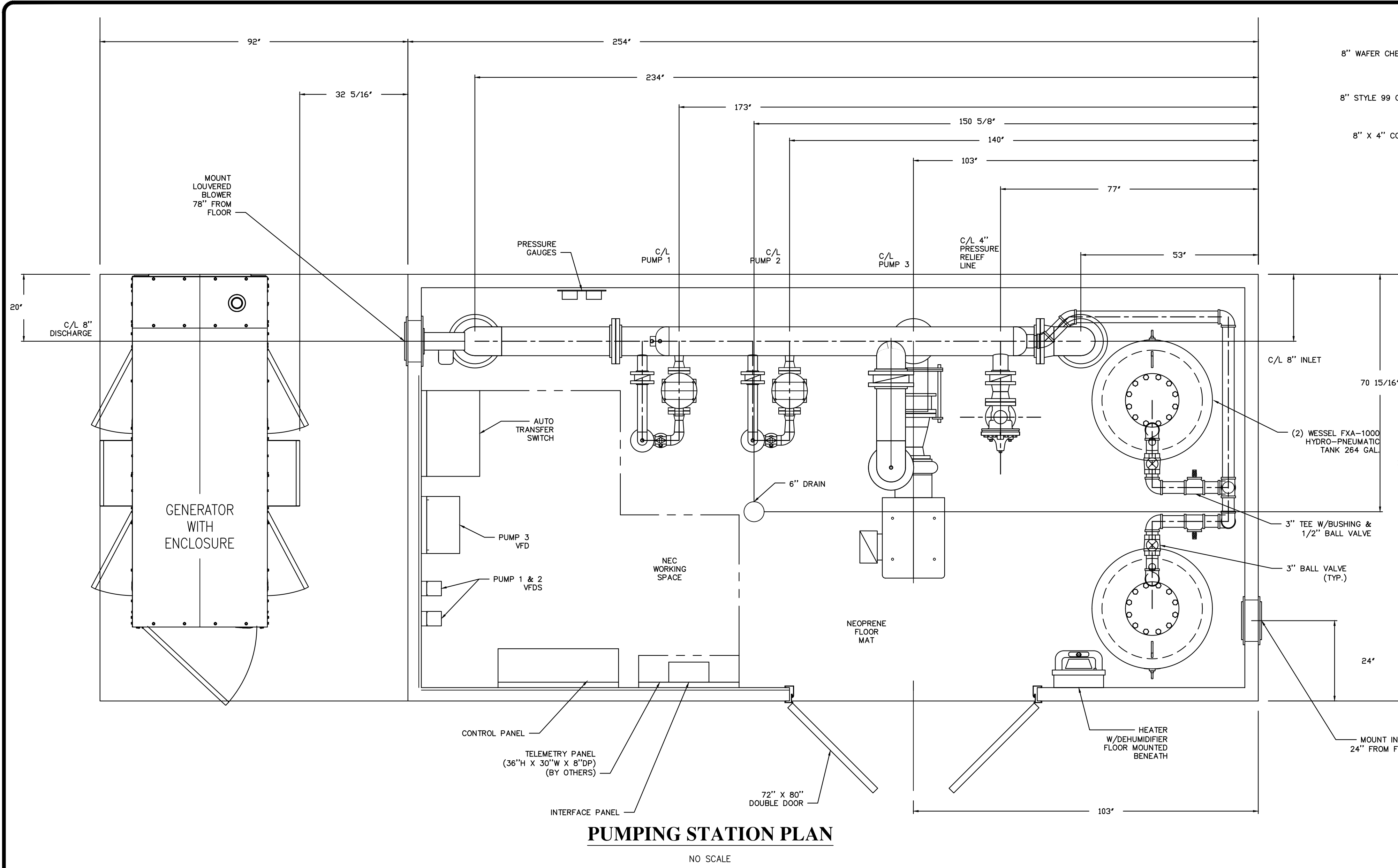
LANDSCAPING NOTES AND DETAILS

GENERAL LANDSCAPING NOTES:

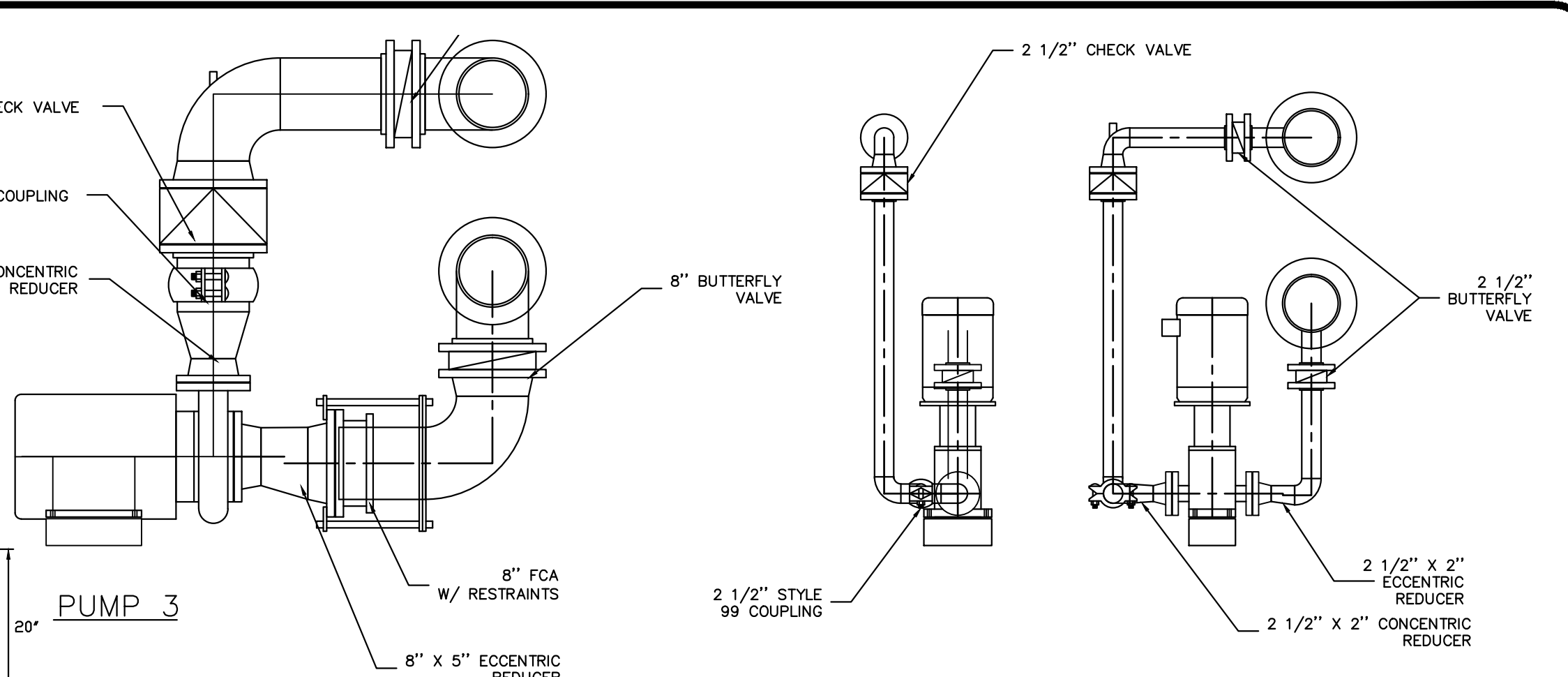
- CONTRACTOR SHALL ADEQUATELY DELINEATE PLANTING AREAS AND SEED TYPE TRANSITIONS WITH MARKING PAINT OR OTHER APPROVED METHOD PRIOR TO INSTALLATION FOR APPROVAL BY LANDSCAPE ARCHITECT.
- PROVIDE LANDSCAPE EDGING BETWEEN MASS PLANTING AREAS AND TURF/SEEDED AREAS AS INDICATED ON PLANS. PROVIDE SMOOTH FREEFORM CURVES FOR EDGE AS APPLICABLE. FINAL LAYOUT TO BE APPROVED BY LANDSCAPE ARCHITECT.
- PROVIDE EDGING EQUAL TO Sure-loc Brand ALUMINUM EDGING 3/8"x4", MILL FINISH. PROVIDE SAMPLE OF ALUMINUM EDGING FOR APPROVAL BY LANDSCAPE ARCHITECT.
- IN CASE OF A DISCREPANCY, THE NUMBER OF TREE/SHRUB SYMBOLS SHOWN ON THE PLANS SHALL TAKE PRECEDENCE OVER QUANTITY ON NUMERICAL LABEL OR PLANT SCHEDULE. IF SUBSTITUTIONS ARE MADE TO THE INTERNAL LANDSCAPING THEY MUST BE NATIVE PLANTS.
- PROVIDE A MINIMUM 3" DEPTH OF RED PINE LANDSCAPE MULCH (EQUAL TO RED PINE MULCH FROM TRAVERSE OUTDOOR, TRAVERSE CITY, MI) IN ALL PLANTING BEDS AS INDICATED ON PLANS. SUBMIT A SAMPLE OF THE MULCH TO THE LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. FINISHED GRADE OF MULCH SHALL BE FLUSH WITH GRADE OF ALL ADJACENT PAVING AND CURBS TO ALLOW FOR SETTLING.
- THE LANDSCAPE CONTRACTOR SHALL PROVIDE PLANTING MIX FOR PLANTING MEDIUM FOR THE TREES AND SHRUBS. PROVIDE PLANTING MIX SAMPLE RATIO FOR APPROVAL BY LANDSCAPE ARCHITECT.
- THE OWNER SHALL PROVIDE A SOURCE OF WATER ON SITE AND WILL PAY ALL WATER COSTS. LANDSCAPE CONTRACTOR WILL FURNISH ALL NECESSARY HOSE EQUIPMENT, ATTACHMENTS AND ACCESSORIES FOR ADEQUATE IRRIGATION AND WATERING IN OF THE INSTALLATION AND TO COMPLETE THE WORK SPECIFIED.
- STAKE THE LOCATIONS OF ALL TREES AND MASS PLANTING AREAS AND OBTAIN APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. TREE LOCATIONS MAY BE ADJUSTED BASED ON THE FINAL CONFIGURATIONS OF BUILDING ENTRANCES, SIGNAGE LOCATIONS AND EXTERIOR LIGHT STANDARD LOCATIONS. DO NOT OBSTRUCT SIGNAGE ON THE BUILDING. MAKE MINOR ADJUSTMENTS IN THE TREE LOCATIONS REQUIRED DUE TO LOCATIONS OF FIRE HYDRANTS OR OTHER UTILITIES.
- TREES SHALL BE SELECTED WITH FORMS ADAPTABLE TO PLACEMENT ADJACENT TO SIDEWALKS AND VEHICULAR USE AREAS. TREES SHALL HAVE FORMS ADAPTABLE TO FUTURE PRUNING FOR PEDESTRIAN AND VEHICULAR CLEARANCE.
- ALL CONTAINER GROWN MATERIAL SHALL BE THOROUGHLY HAND WATERED UPON ARRIVAL, WHILE IN THE CONTAINERS, BEFORE PLANTING. DO NOT BIND OR STRAP THE TRUNKS IN THE REMOVAL FROM THE TRUCKS. PROTECT THE TRUNKS AT ALL TIMES.
- PROVIDE A MINIMUM 3'-0" DIAMETER TREE WELL WITH A 4" SAUCER FOR ALL TREES LOCATED IN TURF AREAS. PROVIDE 3" DEPTH OF MULCH INSIDE SAUCERS. REVIEW SUBSURFACE DRAINAGE CONDITIONS. INSTALL TREES "HIGH" IF NECESSARY, DUE TO SUBSURFACE CONDITIONS.
- ALL MASS PLANTINGS SHALL BE EVENLY SPACED AS SHOWN ON PLANS TO ENSURE EVEN COVERAGE. SET PLANTS OFF CURBS AND WALKS TO MINIMIZE OVERGROWTH INTO ACCESS AREAS.



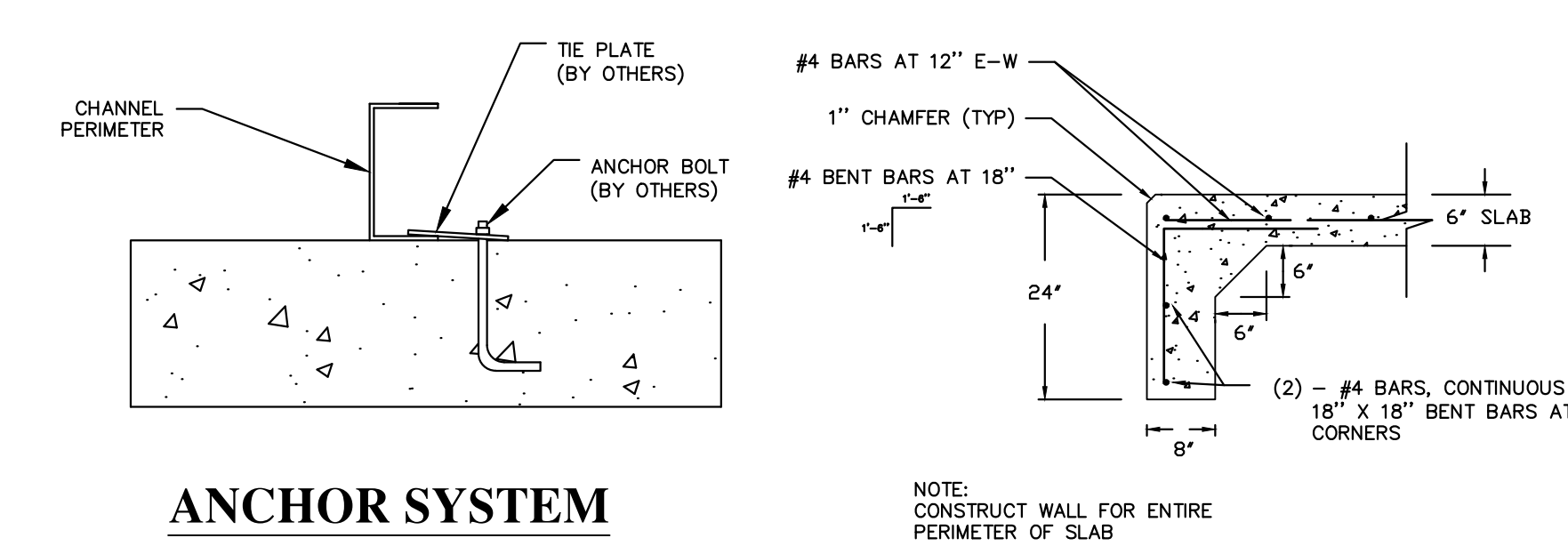
NOT TO SCALE



PUMPING STATION PLAN
NO SCALE

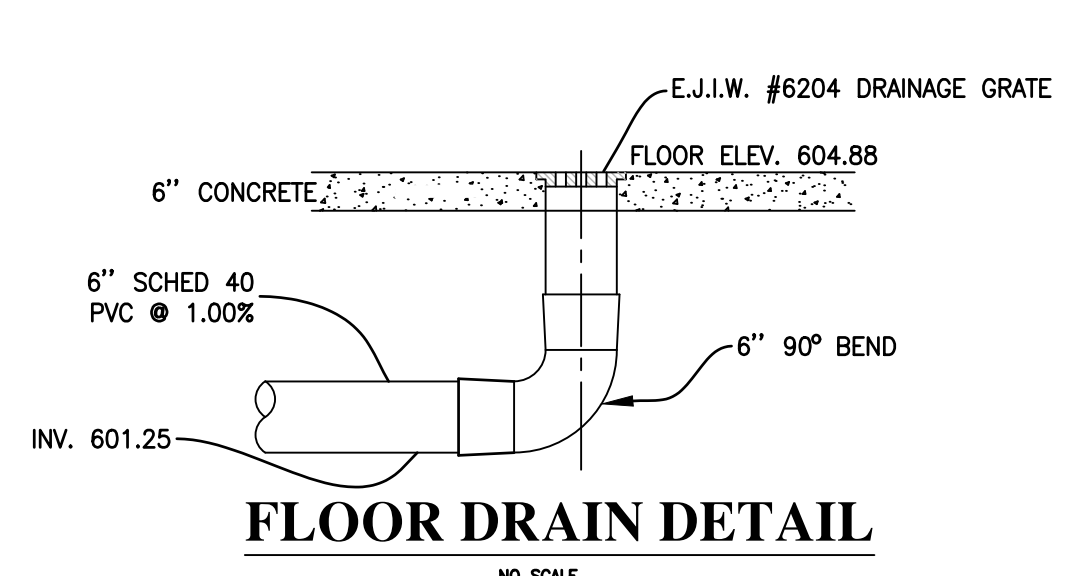


PUMP PIPING
NO SCALE



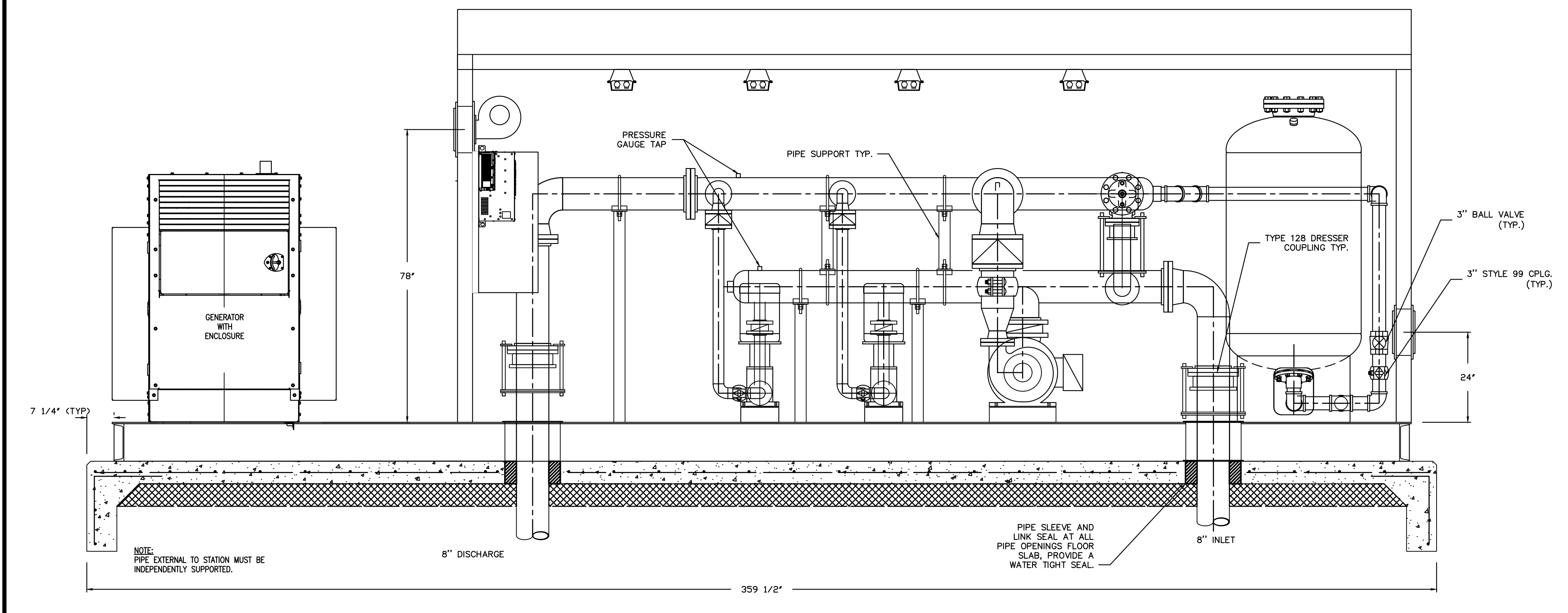
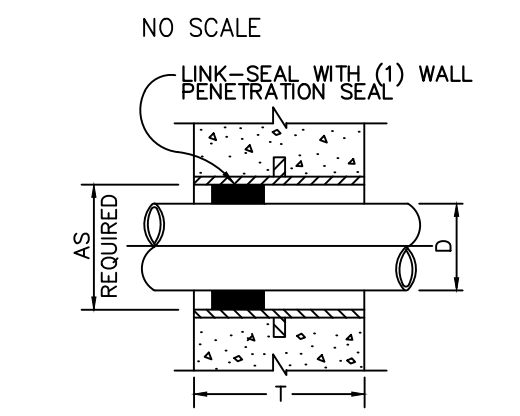
ANCHOR SYSTEM
NO SCALE

RAT WALL DETAIL
NO SCALE

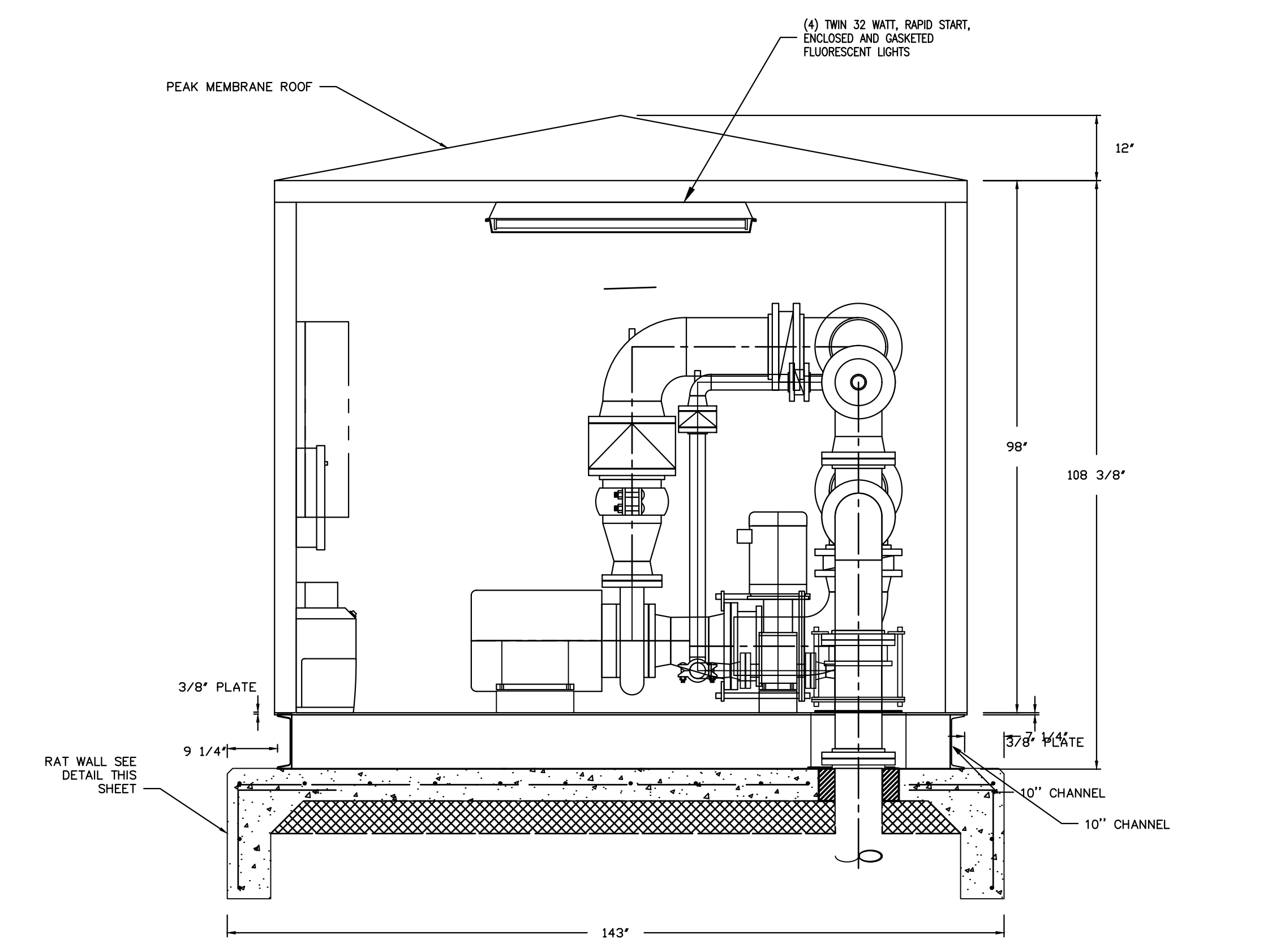


FLOOR DRAIN DETAIL
NO SCALE

FLOOR PENETRATION DETAIL
NO SCALE



PUMPING STATION ELEVATION FRONT
NO SCALE



PUMPING STATION ELEVATION RIGHT
NO SCALE

GENERATOR SPECIFICATIONS

1. GENERATOR SET SHALL BE THE FOLLOWING:

Diesel Genset:

1. U.S. EPA Stationary Emergency Application
2. Genset-Diesel, 60Hz, minimum 125kW must be capable of starting site load with the VFD or in emergency A-T-L mode within acceptable performance guidelines as specified herein.
3. Duty Rating-Standby Power
4. Listing-UL 2200
5. Emissions Certification, EPA, Tier 3, NSPS CI Stationary Emergency
6. Enclosure-Steel, Sound Attenuated, 9-point average under 100% kW load < 73dBA
7. Wind Rating-150 MPH, Steel Housing
8. Voltage-277/480.3 Phase,Wye,4 Wire
9. Alternator-60Hz,12 Lead, oversized 200kW @ 125 rise, subtransient 10%, 791sKVA with 90% voltage recovery or ultimate alternator rating at 30% V-Dip of 900sKVA
10. Control-Programmable microprocessor, with digital and analog display, UL-Listed inherent overcurrent protection, with fully encapsulated control board, sealed against all elements
11. Control shall have inherent battery monitoring and testing function
12. Exciter/Regulator-PMG, Digital, with 3 Phase, Full Wave regulator
13. Engine Governor-Digital, Electronic, Isochronous
14. Minimum engine HP > 320, no derating at < 8000' ASL or up to 122 degrees F ambient
15. Engine shall be heavy duty, with replaceable cylinder sleeves
16. No derating is allowed for enclosure - or package shall be sized to meet above minimum HP with enclosure derate included.
17. Meters-AC Output, Analog: 3-Phase L-L and L-N AC Voltage, 3-Ph Current, Frequency & kVA
18. Relays-Genset Status, User Configured, four inputs and four outputs
19. Stop Switch-Emergency, panel mounted
20. Alarm-Audible, Engine Shutdown
21. Circuit Breaker-200A,3P,600/525V,TM,80% UL/IEC
22. Separator-Fuel/Water
23. Engine Starter - 12 VDC Motor
24. Battery Charging Alternator-Normal Output
25. Engine Cooling-High Air Temperature radiator, minimum 122 degree F ambient
26. Safety shutdowns and pre-alarm senders per NFPA
27. Drain Extensions-Engine Coolant and Engine Oil Drain
28. Engine Coolant-50% Antifreeze, 50% Water Mixture, initial fuel
29. Coolant Heater-120 Volt Ac, Single Phase, minimum 1500W
30. Engine Air Cleaner-Heavy Duty
31. Initial fill of factory approved Engine Oil
32. Warranty: Two year standby, manufacturer's warranty must cover the entire package including the engine, alternator, controls, turbo, the complete system no "assignment" or division allowed
33. Battery, rack and cables
34. NFPA compliant Remote Annunciator Panel
35. Battery Charger, 10amp, 120VAC, Auto-float/equalize with NFPA alarms
36. Two sets of Manuals - Operator, Maintenance and Parts
37. 12VDC Engine Starting Battery - 810CCA
38. Remote Emergency Stop Station in a NEMA 4X Enclosure
39. Subbase tank, MI DEQ w/OPPV, minimum 26 hours @ 100% Nameplate kW Load useable fuel
40. Start up service by local distributor's factory authorized service technician
41. On Site Load Bank Test - 4 Hours
42. Vendors shall substantiate that they are fully authorized for any level system programming updates, as well as handle all parts, service and warranty repair for any portion of the system.
43. Distributor shall substantiate that they have an in house rental fleet with equipment readily available to cover this site should the need arise.
44. Equipment shall not be sized solely per listed kW - all vendors shall quote equipment which meets specified performance and substantiate that their quoted package will start these loads:
 - A. With < 15% Voltage dip and < 5% frequency dip:
 1. Step one loads to be served:
 - a. 1kVA Lighting, 1.5kW Receptacle load, 0.5kW Controls, 3kW Heater, 0.5HP Exhaust fan, 0.33HP Dehumidifier, 1.5kW Misc. Load allowance.
 2. Step two:
 - a. 100HP Pump with 124RLA and 794LRA on a 6-pulse VFD
 - b. Suppliers shall use the above conditions in sizing package - they shall not rely on program default for 100HP Pump motor.
 - B. All suppliers shall also confirm that their quoted generator set package is capable of starting the same 100HP Pump load in "emergency VFD failed mode" with < 25% Volts dip and < 7% Frequency dip
 - C. NOTE to bidders: Site has two conditions which will be served by the same gen set:
 1. All step on loads, plus 2 x 5HP pumps stepped on line on VFD's.
 2. Two 5-HP pumps shed when the 100HP pump is called to operate.
 - D. Due to the above load disparity, all vendors shall include a priced alternate option to include an 80kW load bank package connected to the generator via a separate 150A load bank feeder CB, to also include, all control and power wiring for a fully automatic system which will shed the load bank on application of the 100HP Pump package. Load bank to be NEMA 3R Rated permanent
 1. Mount on site unit tied into the generator package to auto-apply or shed based on site conditions Preference is for a generator set mounted load bank package, "Duct-Mounted" designed to mount on and be cooled by the radiator discharge. NEMA 3R Stand-alone Load Bank is also acceptable.
 2. See separate specifications for minimum load bank features.

ALTERNATE #E1 - GENERATOR SET MOUNTED LOAD BANK

ALTERNATE #E1 - GENERATOR SET MOUNTED LOAD BANK SHALL BE THE FOLLOWING:

PRICED ALTERNATE for 80kW Load Bank
UL LISTED RADIATOR AIRFLOW COOLED LOAD BANK:

Stationary generator load bank, NEMA 3R, designed for permanent installation onto the generator, cooled by radiator airflow - alternate would be for a separate stand-alone NEMA 3R unit.

Operational Ratings and Limitations as follows:

Capacity: 80kW, 1.0 power factor
Voltage: 480VAC, 3-phase, 3-wire
Frequency: 60 Hertz
Load Steps: 80kW Load Step, LB wired to auto-dump on start command for the 100HP Pump
Duty Cycle: Continuous
Temp. Rating: 180°F max. air intake temp.; 60°-100°F nominal air temp. rise
Airflow Req'd: Radiator air outflow cooled package. (NEMA 3R separate site mounted unit also OK)
Altitude: to 5500'
Control Power: Internal, from generator. Fused circuits. Controls operate at 120V via control power transformer circuit.

Principle Systems and Components as follows:

Load Elements: UL listed, totally enclosed, weatherproof, tubular type, individually replaceable
Load Control: Branch circuit magnetic contactors
Element Short Circuit Protection: Branch circuit fuses. Fuses are 200KAIC, 600V, current limiting
Power Wiring: 150°C, insulated, color coded
Power Connection: Barrier type power distribution block with line side compression terminals -or- plated bus bar within a terminal junction box
Control Wiring: 16AWG, 105°C
Overheat Protection: Sensor to detect high exhaust air temp above 300°F. Circuits to disconnect load bank on overtemp. Alarm contacts.
Enclosure: Environmental Type 3R, unpainted galvanized steel construction. Load bank is designed for permanent installation by mounting onto generator engine radiator air outflow duct. Alternate for separate NEMA 3R stand-alone load bank is acceptable.

Load Bank Control:

Overtemperature indicator, normal operation indicator.
Internal control circuit and input terminals to dump load bank off-line on opening of remote control contacts.
Load bank shall be dumped on signal to operate the 100HP Pump package on site.

Installation: Load bank shall be quoted 100% installed with all power, control, and dump signal wiring complete. Duct mount load bank shall be designed to match and mate to the radiator duct. No local (non-factory) enclosure modifications are allowed or acceptable - system shall be designed to be easily integrated. If a separate stand - alone NEMA 3R load bank is proposed, it shall meet the above criteria, plus all control, power and dump signal shall be wired in rigid conduit and a properly sized concrete base shall be constructed to mount the Load Bank on.

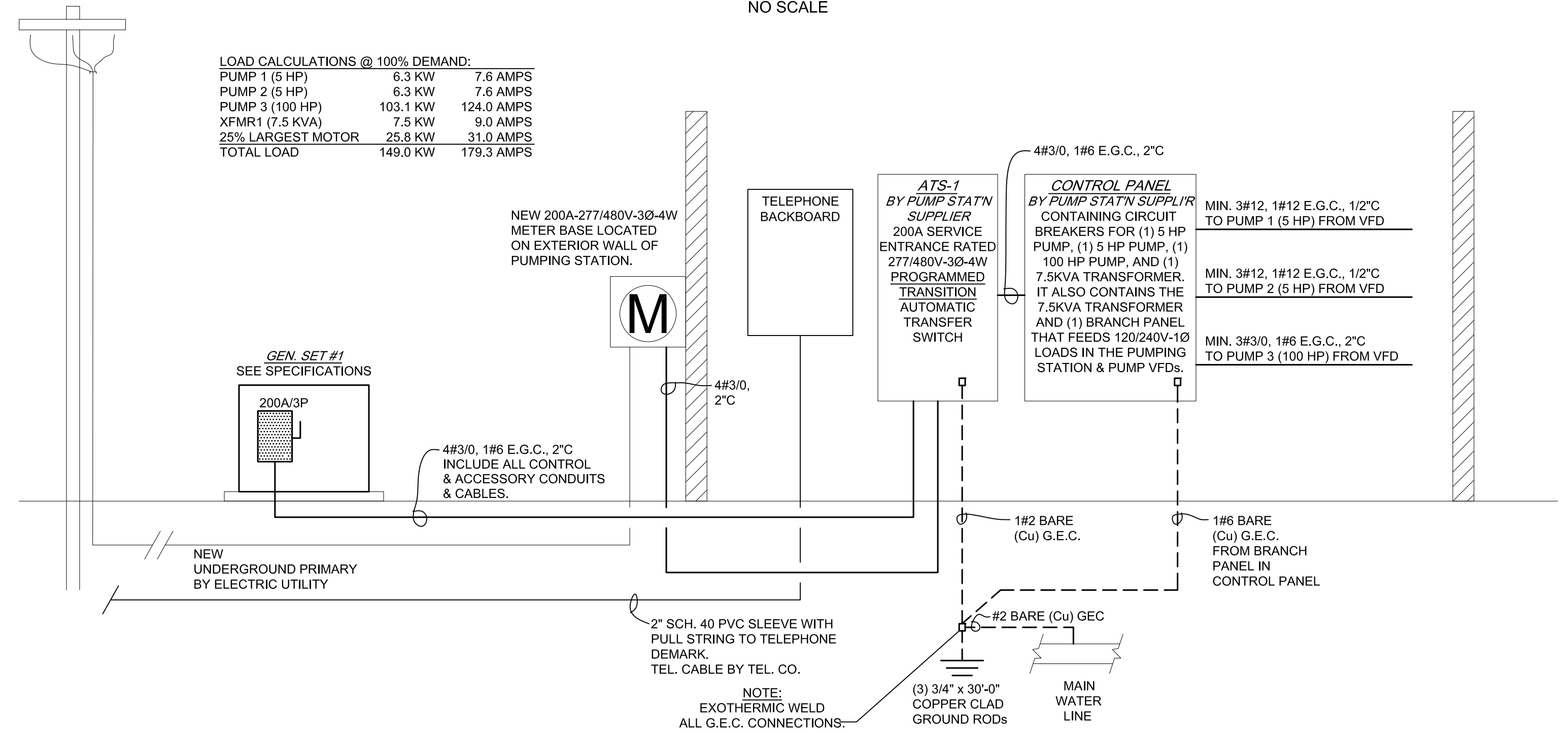
Load bank adder shall include 100% of all required wiring to the generator set unit, plus control wiring, load bank dump wiring, load bank mounting, load bank feeder breaker, power wiring and pad, etc. as required.

GENERAL NOTES

1. WORK SHALL COMPLY WITH THE LATEST EDITION OF N.E.C., LOCAL AND STATE CODES, ORDINANCES, AND REGULATIONS, INCLUDING THE OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA).
2. THE ELECTRICAL CONTRACTOR SHALL OBTAIN ALL PERMITS, PAY ALL FEES, AND ARRANGE FOR ALL INSPECTIONS FOR HIS WORK AT THE COMPLETION OF ELECTRICAL WORK. THE ELECTRICAL CONTRACTOR SHALL FURNISH THE OWNER WITH ALL CERTIFICATES OF FINAL INSPECTION AND APPROVALS. UTILITY COSTS ASSOCIATED WITH BRINGING POWER TO THE SITE SHALL BE PAID FOR BY THE OWNER.
3. COORDINATE ALL NEW ELECTRICAL UNDERGROUND WORK WITH EXISTING AND NEW UTILITIES BEFORE INSTALLATION. SEVENTY-TWO HOURS BEFORE ANY EXCAVATING WORK IS DONE, RELATIVE TO ELECTRICAL WORK, CONTACT "MISS DIG" (TOLL FREE), AT 811.
4. ALL ELECTRICAL MATERIALS SHALL BE NEW AND BEAR THE "UL" LABEL OR LISTING.
5. ALL BRANCH CIRCUIT WIRE SHALL BE COPPER, MINIMUM SIZE #12. A.W.G., INSTALL IN CONDUIT, MINIMUM SIZE 1/2", AND SHALL BE TYPE "THHN", "THWN" OR "THWN-2" UNLESS OTHERWISE NOTED ON PLANS.
6. ALL CONDUIT BELOW GRADE SHALL BE GALVANIZED RIGID CONDUIT. ALL OTHER CONDUIT SHALL BE EMT OR SCH. 40 PVC AS NOTED ON THE PLANS, MINIMUM 1/2" SIZE. GALVANIZED RIGID CONDUIT SHALL BE USED IN ALL CLASS 1, DIV. 1 & 2 LOCATIONS PER N.E.C. ART. 500, 501, & 502.
7. THE ELECTRICAL CONTRACTOR SHALL VISIT THE JOB SITE BEFORE HE SUBMITS HIS BID TO FAMILIARIZE HIMSELF WITH ACTUAL JOB CONDITIONS AND TO CHECK FOR ANY INTERFERENCE BETWEEN HIS WORK AND THAT OF OTHER TRADES, AND/OR ANY APPARENT VIOLATIONS OF LOCAL OR STATE CODES, LAWS, ORDINANCES, AND REGULATIONS.
8. ALL EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH THE N.E.C. AND ALL LOCAL CODES.
9. ALL DISCONNECT SWITCHES SHALL BE 250V., OR 600V HEAVY DUTY TYPE; NEMA 1, FOR INDOOR USE, AND NEMA 3R FOR OUTDOOR USE. G.E., CUTLER-HAMMER, OR SQUARE D.
10. THE ELECTRICAL CONTRACTOR SHALL GUARANTEE ALL WORK INSTALLED UNDER HIS CONTRACT TO BE FREE FROM DEFECTIVE WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR AFTER THE ACCEPTANCE OF THE BUILDING BY THE OWNER, AND SHOULD DEFECTS OCCUR WITHIN THIS PERIOD, REPAIR AND/OR REPLACE DEFECTIVE ITEMS, AT NO EXPENSE TO THE OWNER.
11. ANY CUTTING AND/OR PATCHING, THAT MAY BE REQUIRED FOR THE INSTALLATION OF THE ELECTRICAL SYSTEM, SHALL BE DONE AND/OR REPAIRED BY THE ELECTRICAL CONTRACTOR. NO CUTTING OF THE BUILDING STRUCTURAL SYSTEM SHALL BE DONE WITHOUT THE WRITTEN CONSENT OF THE ENGINEER BEING PREVIOUSLY OBTAINED.
12. ALL WORK WITHIN CLASS I, DIV. 1 & 2 SHALL COMPLY WITH ARTICLES 500, 501, 502, 511, 511, 514 & 515 OF THE N.E.C.
13. ELECTRICAL CONTRACTOR SHALL VERIFY AVAILABLE FAULT CURRENT WITH LOCAL UTILITY COMPANY. FAULT CURRENT WAS NOT AVAILABLE AT TIME OF DESIGN. FOR PURPOSES OF BIDDING ASSUME ALL SWITCH GEAR TO BE 65,000 A.I.C. RATED. ALL SWITCH GEAR SHALL BE U.L.S.E. LABELED FOR INTENDED USE.
14. THE ELECTRICAL CONTRACTOR SHALL VERIFY IN THE FIELD THAT BRANCH CIRCUITS AND/OR FEEDERS DO NOT EXCEED THE FOLLOWING LENGTHS FOR THE GIVEN VOLTAGES, IF THEY DO, THE RESPECTIVE CIRCUITS AND/OR FEEDER CONDUCTORS AND CONDUIT SHALL BE INCREASED AS FOLLOWS:
 - A. 120V BRANCH CIRCUITS AND/OR FEEDERS OVER 100' IN LENGTH SHALL BE INCREASED ONE WIRE GAUGE SIZE. CONDUIT SHALL BE INCREASED IF REQ'D.
 - B. 209/240V BRANCH CIRCUITS AND OR FEEDERS OVER 200' IN LENGTH SHALL BE INCREASED ONE WIRE GAUGE SIZE. CONDUIT SHALL BE INCREASED IF REQ'D.
15. THE ELECTRICAL CONTRACTOR SHALL SIZE ALL OUTLET, AND JUNCTION BOXES PER THE 2014 N.E.C.
16. NO SPLICES SHALL BE PERFORMED ON LOW VOLTAGE WIRING OR MANUFACTURER SUPPLIED CABLING.
17. CONTRACTOR SHALL LEAVE A MINIMUM OF 10 FEET OF WIRING BEYOND TERMINATION POINT WHERE TERMINATION IS PROVIDED BY OTHERS.
18. ALL TWISTED SHIELD PAIR SHALL BE UL LISTED 2 PAIR 18AWG STRANDED CU TWISTED SHIELD WITH DRAIN, WITH A MINIMUM OF 300V INSULATION.

ELECTRICAL RISER DIAGRAM

NO SCALE



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By: _____
 Checked By: _____
 Date: 10/19/17
 Scale: NO SCALE
 No.: _____
 Revision: _____

Drawn By: JAV
 Checked By: JAV
 Date: 10/19/17
 Scale: NO SCALE

Location:
 SECTION 23 & 26, T 26 N, R 15 W,
 BENZONIA TOWNSHIP,
 BENZIE COUNTY, MICHIGAN

**ELECTRICAL SCHEDULES, DETAILS
& RISER DIAGRAM**
 PUMPING STATION
 WATER SYSTEM IMPROVEMENTS

Project No.
 2017027001.03
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E1