



Waukesha Water Utility

SERVING WAUKESHA SINCE 1886

115 DELAFIELD STREET
WAUKESHA, WI 53188-3615

Telephone: (262) 521-5272 • Fax: (262) 521-5265 • E-mail: contactus@waukesha-water.com

MEMORANDUM

Date: January 13, 2022

To: Dan Duchniak, P.E.

From: Chris Walter, P.E.

Re: CP6 Change Order

For the past several months, the Utility has been working with several different entities as part of a collaborative effort to establish a regional interconnected fiber optic system. Installation of a fiber optic line was discussed prior to the project, but at that time it was not cost effective because the Utility would have been responsible for the entire length from Waukesha to the outfall station in Franklin.

City IT Director, Chris Pofahl, has worked extensively with other municipalities and school districts to utilize existing fiber optic in other cities in conjunction with the proposed 25,000 feet of 2-inch HDPE fiber optic conduit. The majority of this will be in the City of Franklin along our pipeline route, however the following entities all comprise of this consortium to fill in the gaps and create a connected system to benefit everyone involved:

- City of Muskego
- City of New Berlin
- City of Franklin
- City of Waukesha
- School District of Muskego
- School District of Franklin
- School District of Waukesha

These other entities are participating primarily to create redundancy in a connection to the world wide web and are trading capacity in their system to complete the loop and generate a robust communication system linking together the Waukesha County and Milwaukee County connections. Chris Pofahl and City Attorney Brian Running are in the process of securing a memo of understanding (MOU) with each respective entity.

The installation of this fiber optic conduit will directly benefit the GWA program. The project will provide live monitoring at our outfall discharge station at the Root River in Franklin and deliver real-time data. The Utility is required to provide monitoring data for 10 years regardless, so having remote real time data will allow us to save on long term monitoring costs incurred over the life cycle of the system.

This Change Order request is based on the enclosed Work Change Directive and supporting documents.

Recommended Motion: Approve the CP6 Change Order for installation of 2-inch Fiber Optic Conduit in the amount of \$325,000.00.

Waukesha Water Utility
115 Delafield Street P.O. Box 1648
Waukesha, WI 53187-1648 USA
P: (262) 521-5272 F: (262) 521-5399

Great Water Alliance
Great Lakes Water Supply Program
CP6 - Return Flow Pipeline, 18-in Sanitary Sewer and
Outfall Facilities

Project No.: 199990-CP6
File No.: 80.1730

S.J. Louis Construction, Inc.
1351 Broadway Street W PO Box 459
Rockville, MN 56369 USA

WORK CHANGE DIRECTIVE

Work Change Directive No.:	0013 Rev.: 0.00
Issue Date:	Monday, December 06, 2021
Subject:	Fiber Optic Conduit - City of Franklin
Reference Drawing / Specification:	C145 through C186
Workflow Status:	Submitted

WORK CHANGE DIRECTIVE TO ACKNOWLEDGE CHANGE TO THE TERMS OF THE CONTRACT:

Work Change Directive Category: **1 - Owner Initiated**

Work Change Directive Sub-Category: **I - Owner Initiated Change**

Purpose for this Work Change Directive:

The purpose of Work Change Directive No. 013 is to authorize work to proceed on the installation of fiber optic conduit in the City of Franklin.

Description of Change:

Modifications to the Contract include all labor, material, and equipment cost to: Add 25,000 LF of 2-inch SDR11 HDPE fiber optic conduit, color-coded orange; 5 EA 30x48x36 handholes; 15 EA 24x36x36 handholes, as specified in Request for Proposal No. 004.

The attached Drawings show the proposed route for fiber optic conduit along with approximate handhole locations and sizes. Contractor to coordinate final handhole locations in the field. The proposed route runs from approximately STA 3350+00 to the Reaeration Building. The attachment Section 26 05 33 specifies the products and installation requirements of the Work.

The acceptance of these changes results in a net increase of \$325,000.00 to the Contract Price.

There is no anticipated change in Contract Time.

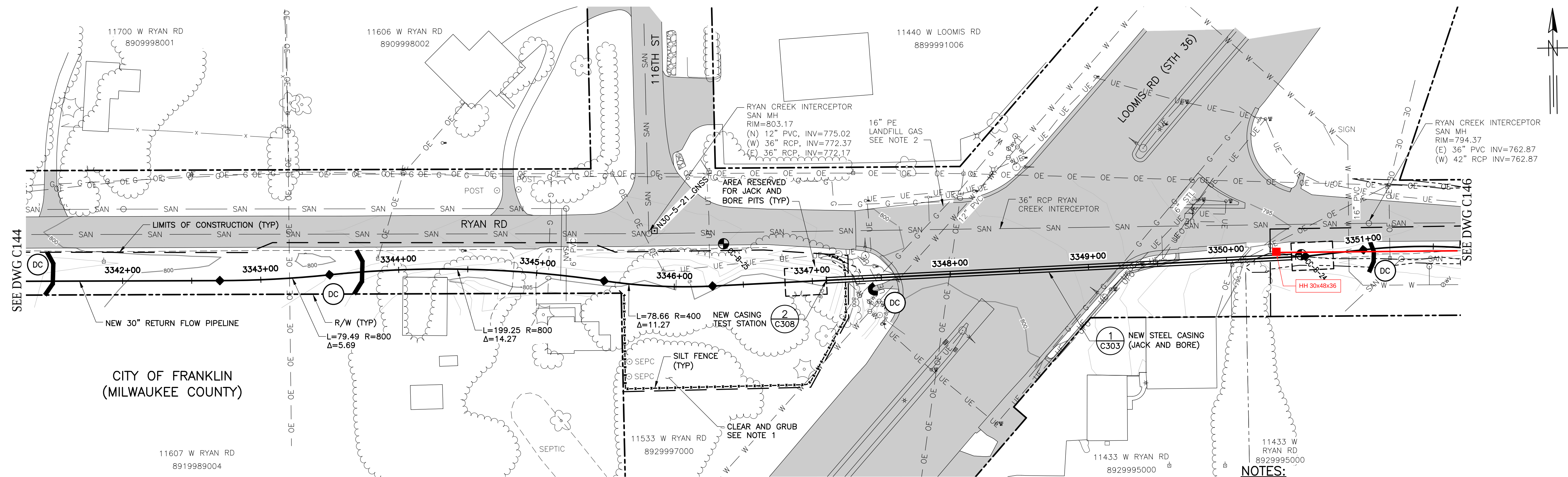
Item No.	Description	Proposed Qty.	Unit Price	Total	Days
1	2-Inch SDR11 HDPE Fiber Optic Conduit with Handholes	25,000.00 LF	\$13.00	\$325,000.00	0.00
				TOTAL: \$325,000.00	

Method of determining change in Contract Price	Original Contract Price:	\$59,209,250.00
	Previous Approved Changes to Contract Price:	\$-9,018,245.98
Unit Price	Proposed Change to Contract Price:	\$325,000.00

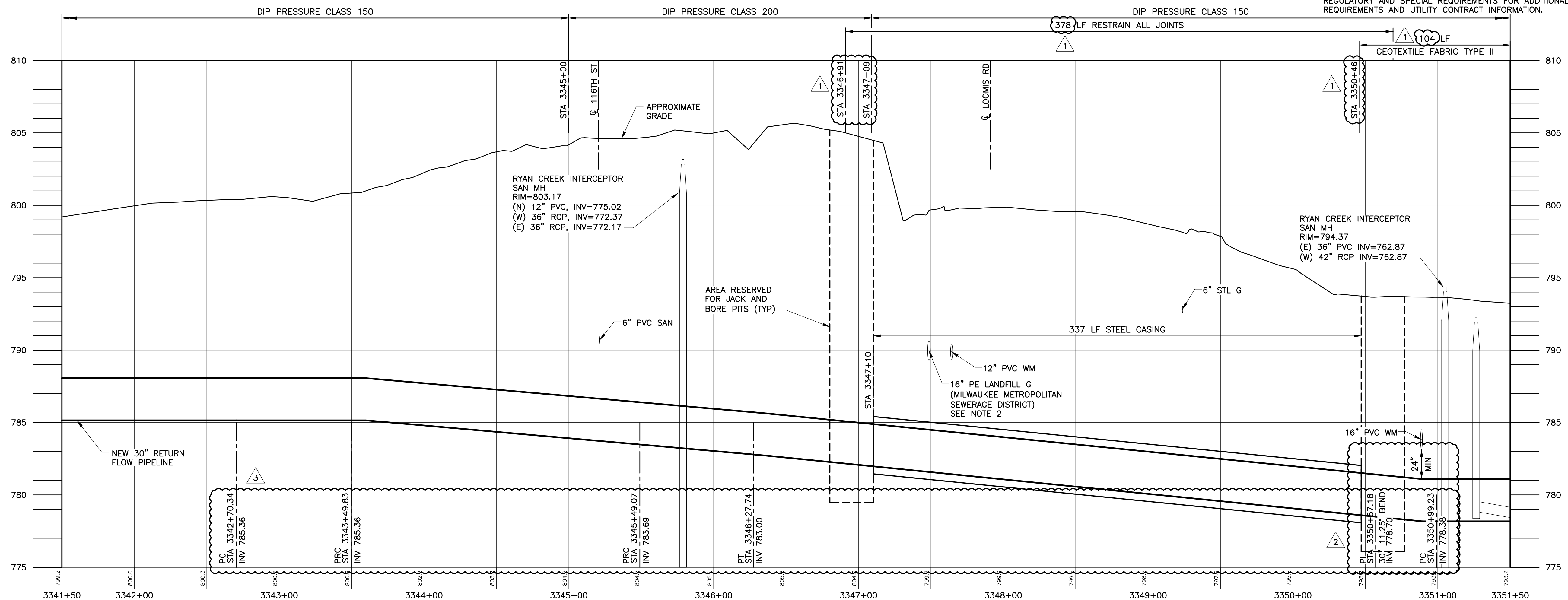
Per the Standard General Conditions of the Construction Contract, this Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by this Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding Change of Contract Price.

Workflow Approvals:

Submit	Jeff Champion	Tuesday, December 14, 2021
1 Prepared By:	Jeff Champion	Thursday, December 16, 2021
2 Recommended By:	Catharine (Katie) Richardson	Thursday, December 16, 2021

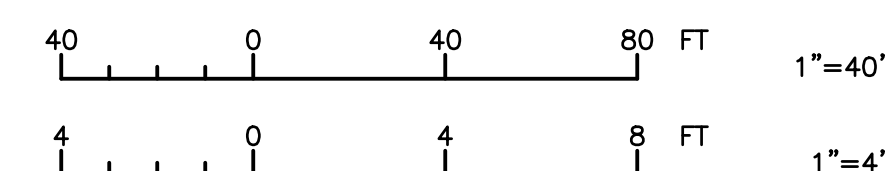


PLAN
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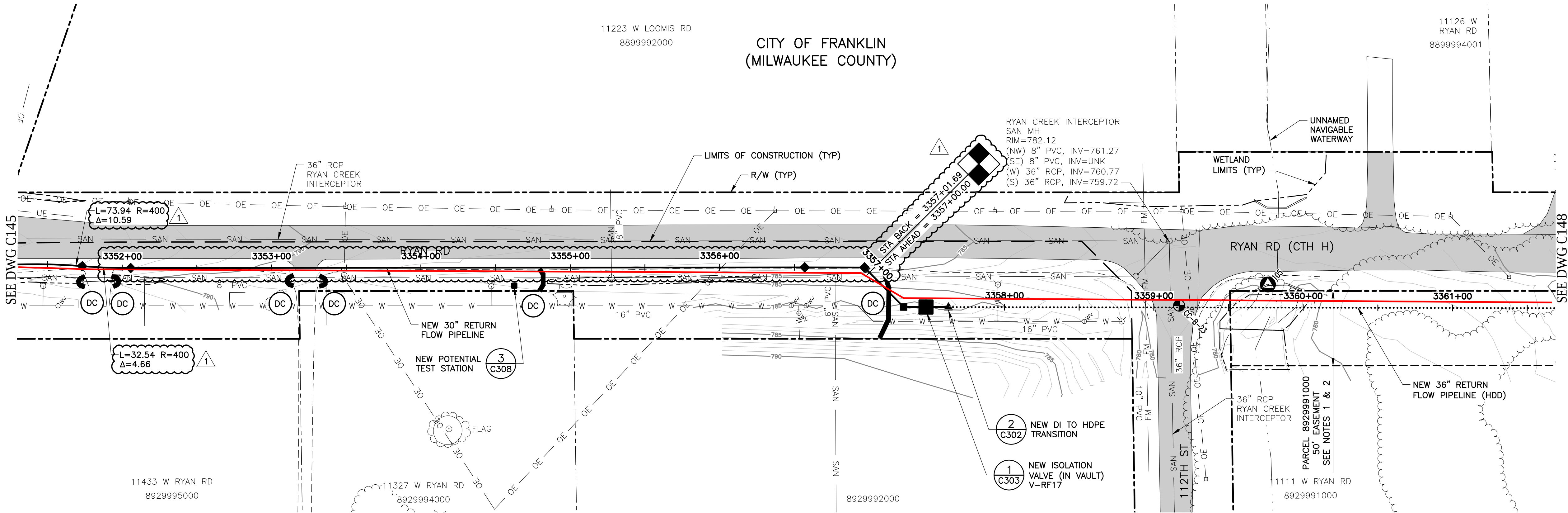


PROFILE

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



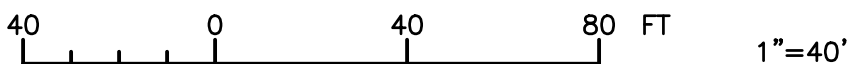
GREAT WATER ALLIANCE™ CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN AND PROFILE STA 3341+50 TO STA 3351+50				Waukesha Water Utility SERVING WAUKESHA SINCE 1886 GREELEY AND HANSEN 741 N. GRAND AVE., SUITE 308 WAUKESHA, WI 53186				1	05/20	AJM	ADDENDUM 3				
								2	12/20	AJM	CITY OF FRANKLIN PERMIT COMMENTS				
								3	02/21	AJM	CITY OF FRANKLIN ODOR SCRUBBER				
APPROVED SEAL AFFIXED MONTH / DAY / YEAR MARCH 2020 JOB NO.: 15310 <table><tr><td>DESIGN</td><td>RMC</td><td>CHK</td><td>CRV</td></tr><tr><td>APPRV</td><td>AJM</td><td>DRWN</td><td>TSM</td></tr></table> SCALE: AS SHOWN DRAWING NUMBER C145 SHEET 60 OF 273 REV 1				DESIGN	RMC	CHK	CRV	APPRV	AJM	DRWN	TSM	NO.	DATE	APPD	REVISION
				DESIGN	RMC	CHK	CRV								
				APPRV	AJM	DRWN	TSM								



PLAN
SCALE: 1"=40'

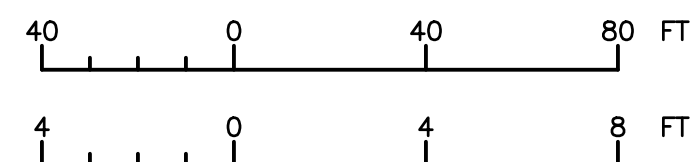
- NOTES:
- CONSTRUCTION FOOT TRAFFIC ONLY WITHIN RIGHT-OF-WAY AND 50' EASEMENT EAST OF 112TH ST. TO LIMIT OF CONSTRUCTION LINE ON DRAWING C148.
 - SEE EASEMENT DOCUMENTS INCLUDED IN THE CONTRACT DOCUMENTS FOR THE EASEMENT LEGAL DESCRIPTION AND OTHER EASEMENT INFORMATION.

SEE DWG C147 FOR PROFILE



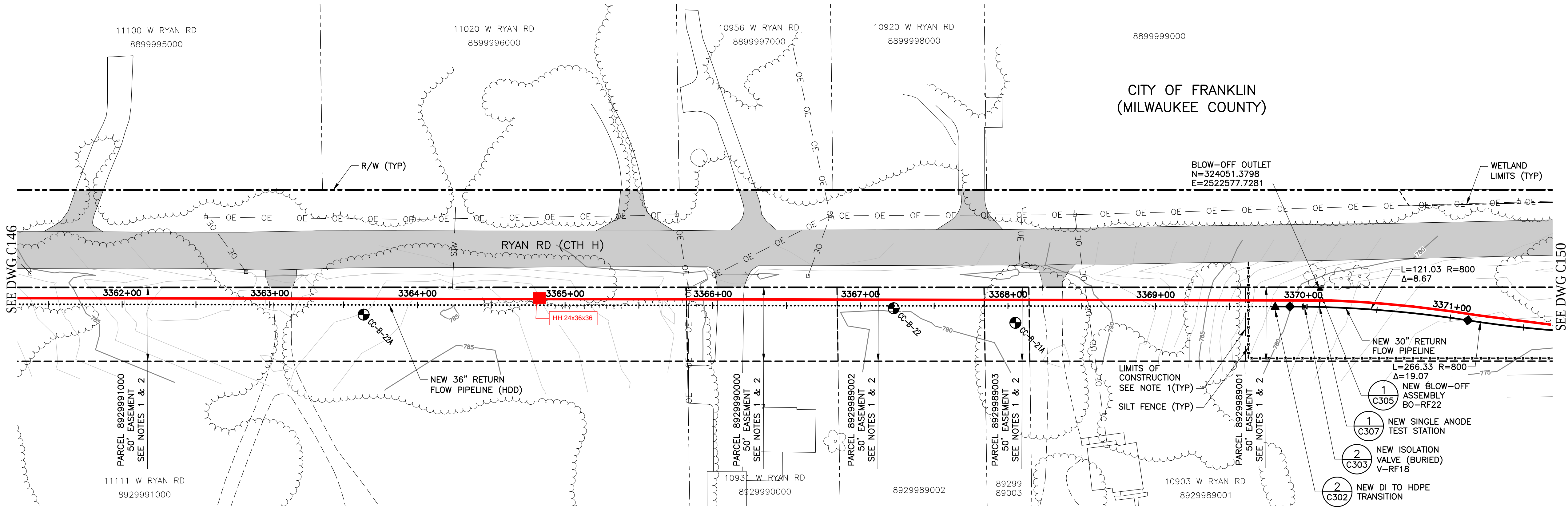
1		02/21	AJM	CITY OF FRANKLIN ODOR CONTROL	

DR 11 HDPE



APPROVED			
SEAL AFFIXED			
MONTH / DAY / YEAR			
MARCH 2010			
JOB NO.: 15310			
DESIGN	RMC	CHK	CRV
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C147			
SHEET 62 OF 273		REV 0	

FILE: G:\15310-WAUKESHA GREAT LAKES WATER SUPPLY PM-CM121 CADD\21.05 WORKING DWGS\CONTRACT PACKAGE 6 - RFP\XREF\GLWSP-P6-RFPL-TLBK.DWG 06/01/2020 2:52:24 PM BAR MEASURE 1"=40' CONFORMED PLANS



PLAN

SCALE: 1"=40'

NOTES:

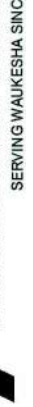
- CONSTRUCTION FOOT TRAFFIC ONLY WITHIN RIGHT-OF-WAY AND 50' EASEMENT WEST OF LIMITS OF CONSTRUCTION LINE TO 112TH STREET.
- SEE EASEMENT DOCUMENTS INCLUDED IN THE CONTRACT DOCUMENTS FOR THE EASEMENT LEGAL DESCRIPTION AND OTHER EASEMENT INFORMATION.

SEE DWG C149 FOR PROFILE

CONFORMED PLANS
SEE COVER SHEET FOR
"CONFORMED PLANS NOTE"

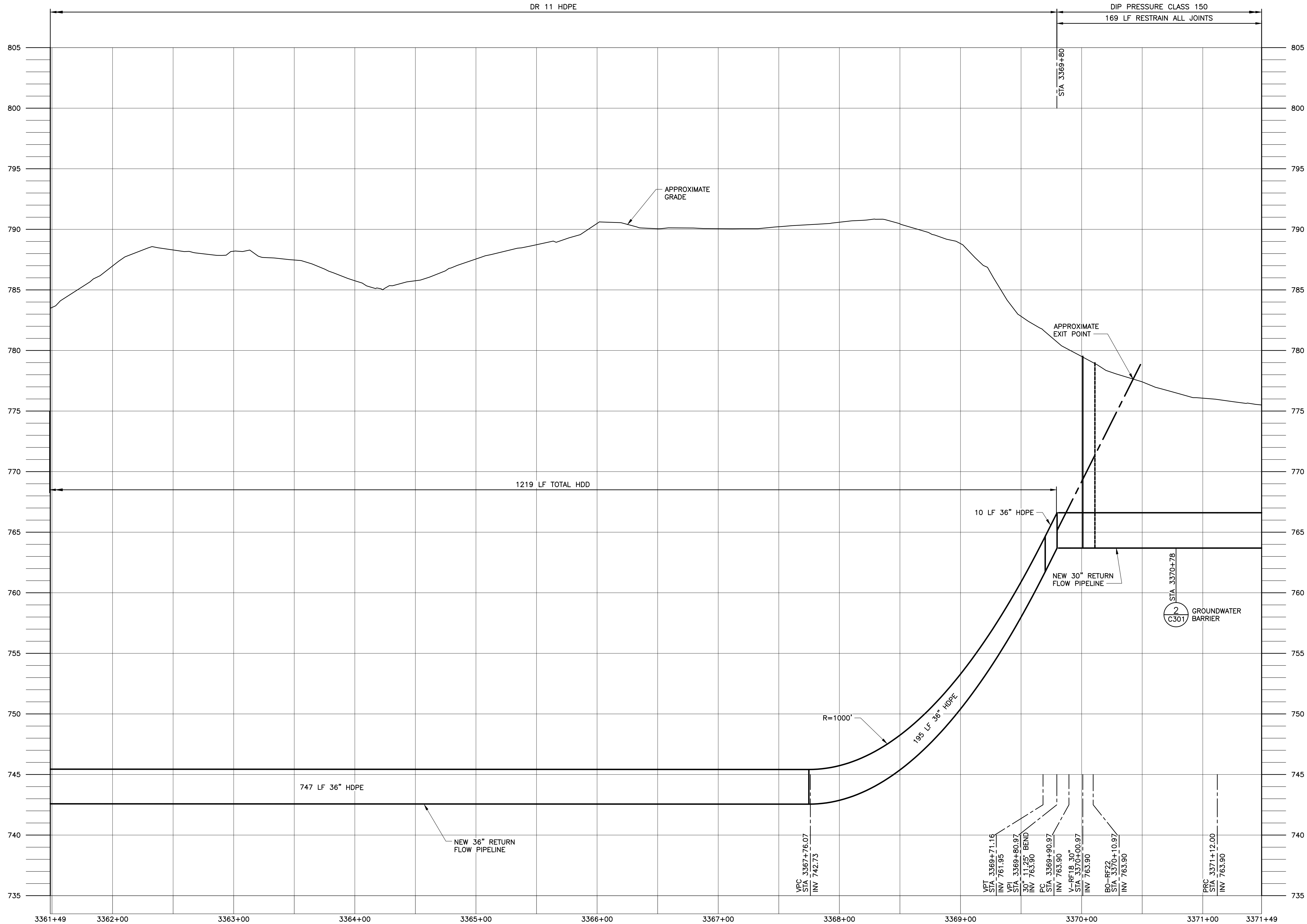
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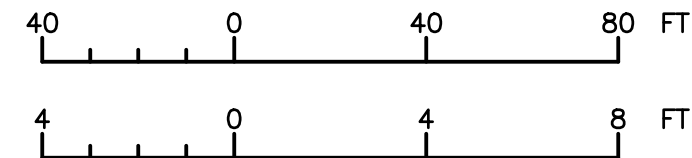
 Waukesha Water Utility SERVING WAUKESHA SINCE 1886				 GREELEY AND HANSEN 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186			
 GREAT WATER ALLIANCE™				CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN STA 3361+50 TO STA 3371+50			
APPROVED							
SEAL AFFIXED MONTH / DAY / YEAR							
MARCH 2020							
JOB NO.: 15310							
DESIGN		RMC		CHCK		CRV	
APPRV		AJM		DRWN		TSM	
SCALE: AS SHOWN							
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C148							
SHEET 63 OF 273		REV 0		NO.		DATE	
				APPD		REVISION	

FILE: G:\15310-WAUKESHA GREAT LAKES WATER SUPPLY PM-CM121 CADD\21.05 WORKING DWGS\CONTRACT PACKAGE 6 - RFPL\XREF\GLWSP-PG-RFPL-TLBK.DWG 06/01/2020 2:52:24 PM 06/01/2020 2:52:24 PM BAR MEASURE 1" CONFORMED PLANS

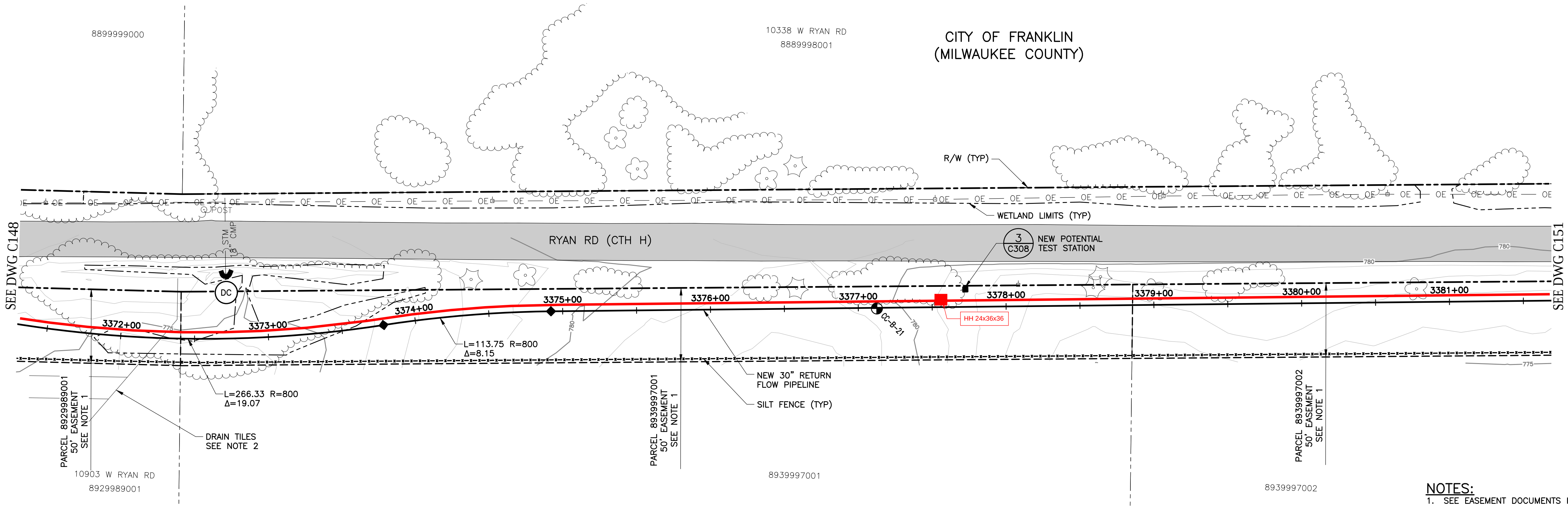
CONFORMED PLANS
SEE COVER SHEET FOR
"CONFORMED PLANS NOTE"



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



Waukesha Water Utility SERVING WAUKESHA SINCE 1886		Greeley and Hansen 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186	
GREAT WATER ALLIANCE™		CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PROFILE STA 3361+50 TO STA 3371+50	
APPROVED			
SEAL AFFIXED MONTH / DAY / YEAR			
MARCH 2020			
JOB NO.: 15310			
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APPRV	AJM	DRWN	TSM
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SHEET 64 OF 273		REV 0	



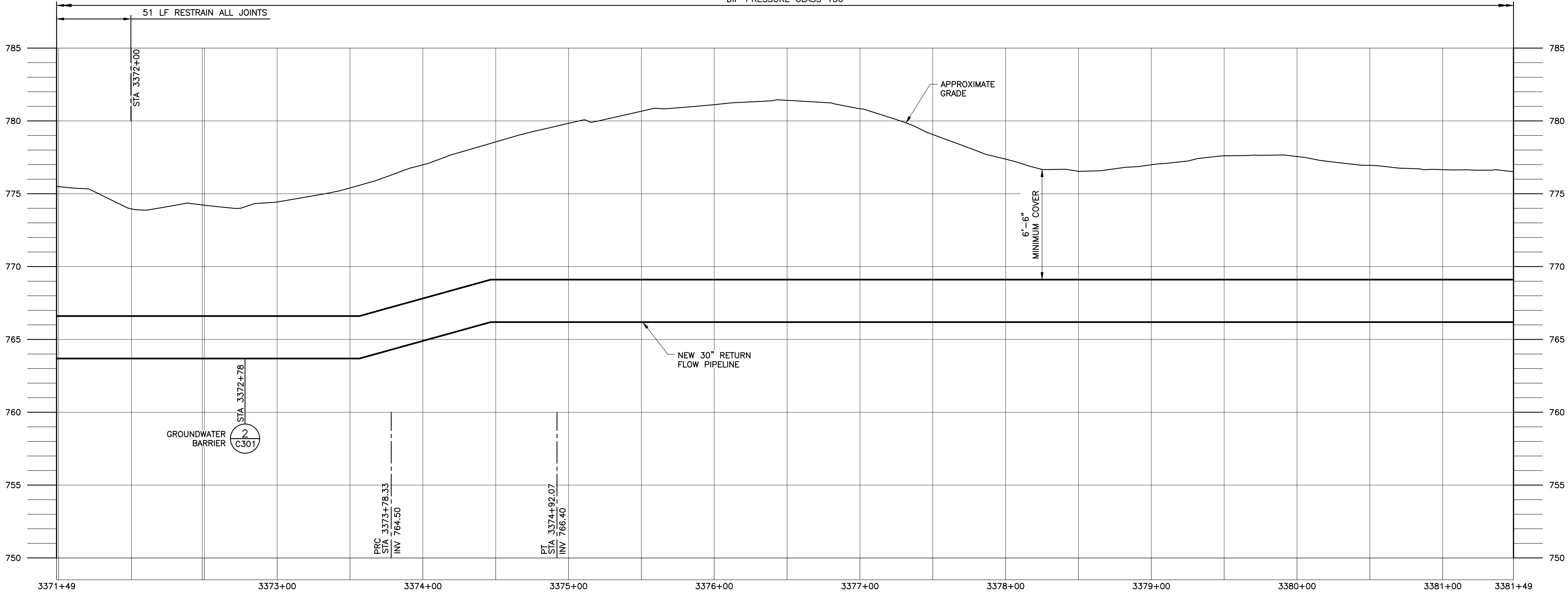
PLAN

SCALE: 1"=40'

DIP PRESSURE CLASS 150

NOTES:

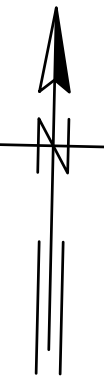
- SEE EASEMENT DOCUMENTS INCLUDED IN THE CONTRACT DOCUMENTS FOR THE EASEMENT LEGAL DESCRIPTION AND OTHER EASEMENT INFORMATION.
- DRAIN TILE LOCATIONS ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY LOCATION.



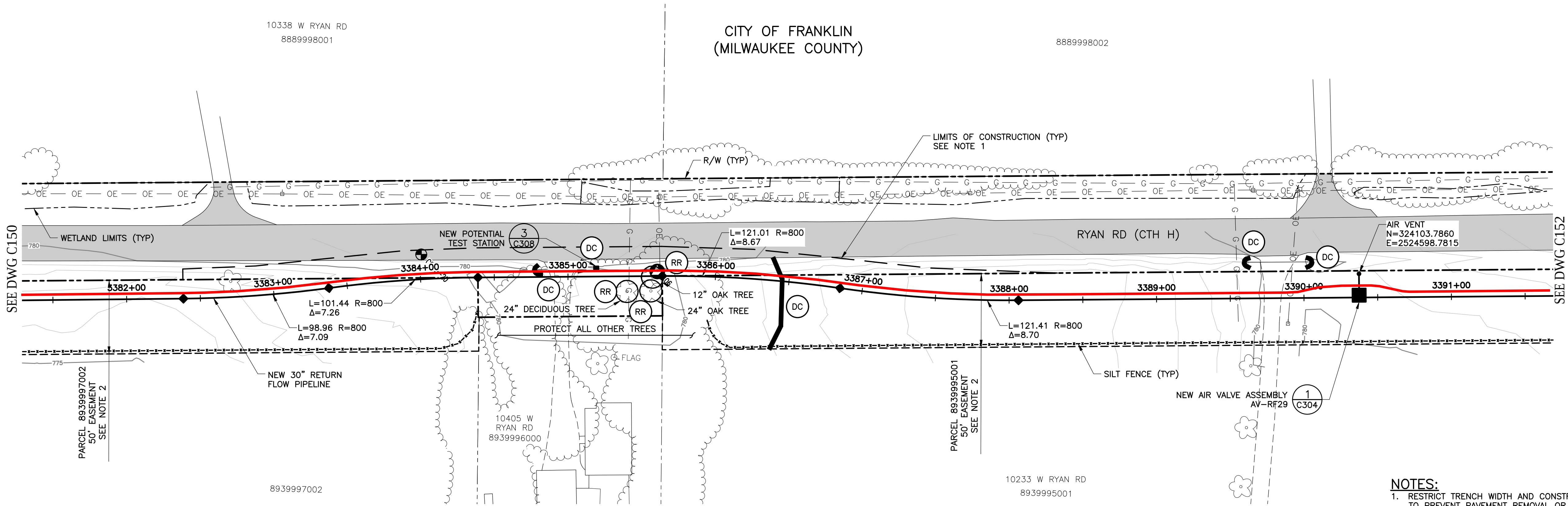
PROFILE

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

CONFORMED PLANS
SEE COVER SHEET FOR
"CONFORMED PLANS NOTE"



Waukesha Water Utility SERVING WAUKESHA SINCE 1886		Greeley and Hansen 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186	
GREAT WATER ALLIANCE™		CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN AND PROFILE STA 3371+50 TO STA 3381+50	
APPROVED			
SEAL AFFIXED MONTH / DAY / YEAR			
MARCH 2020			
JOB NO.: 15310			
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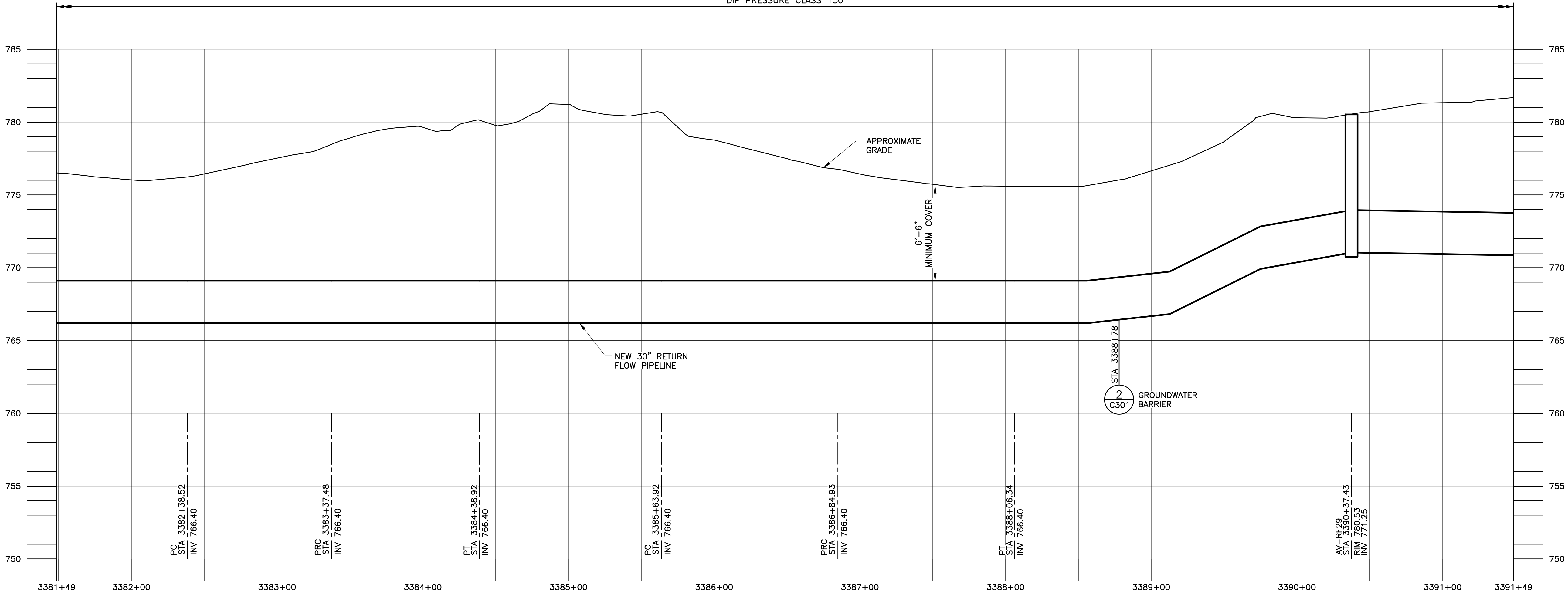
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SCALE: 1"=40'

DIP PRESSURE CLASS 150

NOTES:

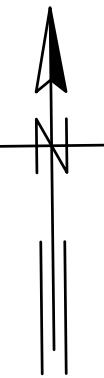
1. RESTRICT TRENCH WIDTH AND CONSTRUCTION ACTIVITIES TO PREVENT PAVEMENT REMOVAL OR DAMAGE.
2. SEE EASEMENT DOCUMENTS INCLUDED IN THE CONTRACT DOCUMENTS FOR THE EASEMENT LEGAL DESCRIPTION AND OTHER EASEMENT INFORMATION.



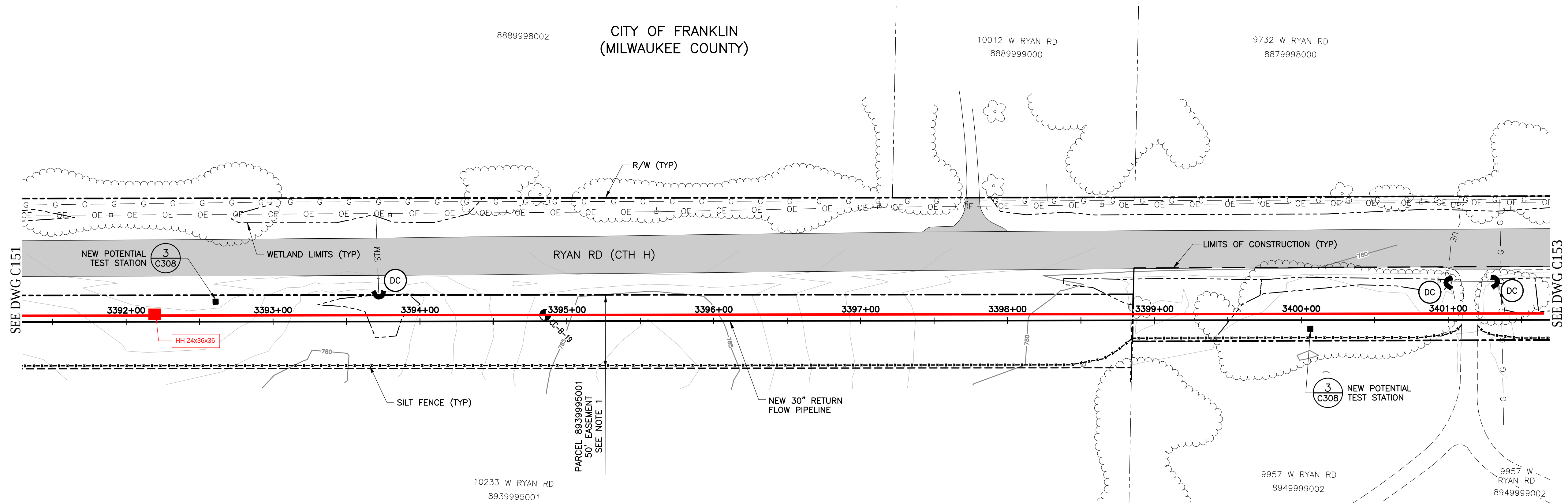
PROFILE

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SCALE: 1"=4' VERTICAL

CONFORMED PLANS
SEE COVER SHEET FOR
"CONFORMED PLANS NOTE"

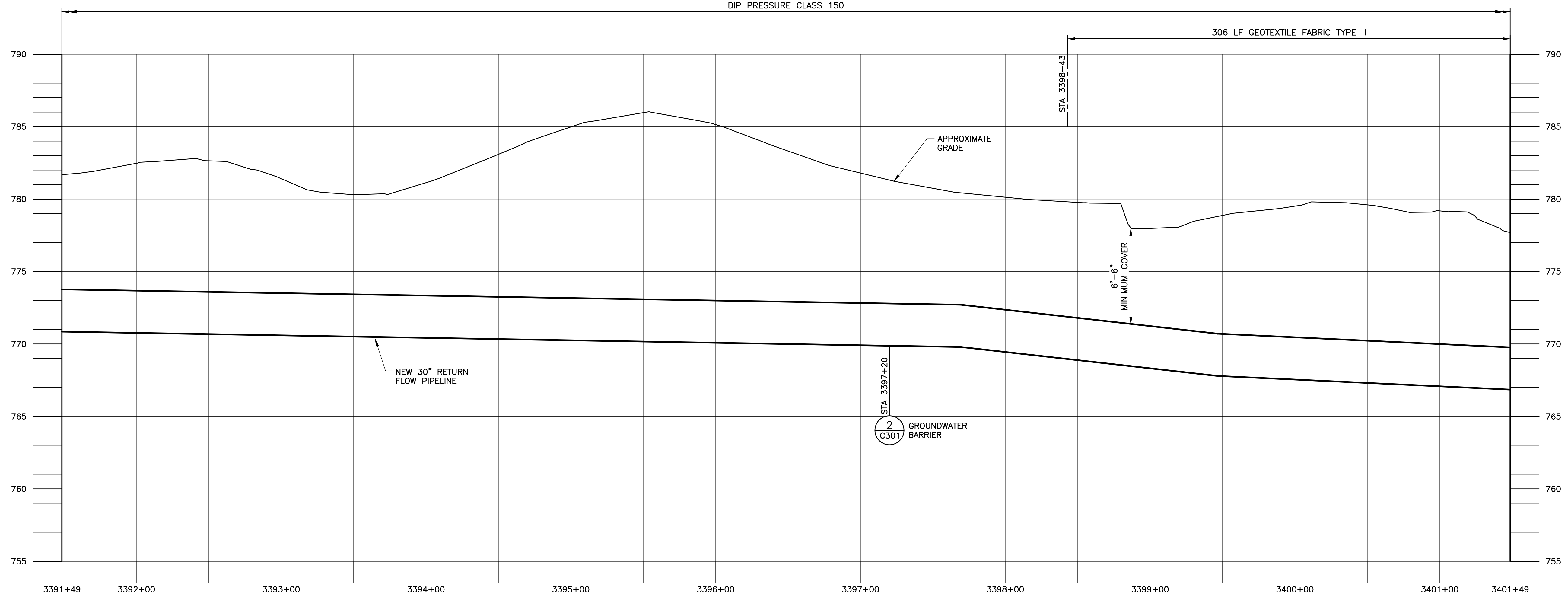


Waukesha Water Utility SERVING WAUKESHA SINCE 1886		Greeley and Hansen 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186	
GREAT WATER ALLIANCE™		CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN AND PROFILE STA 3381+50 TO STA 3391+50	
APPROVED			
SEAL AFFIXED MONTH / DAY / YEAR			
MARCH 2020			
JOB NO.: 15310			
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APPRV	AJM	DRWN	TSM
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C151			
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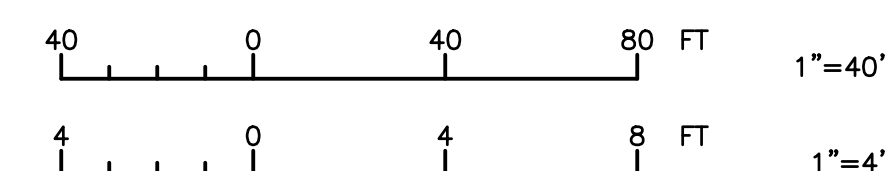
1. SEE EASEMENT DOCUMENTS INCLUDED IN THE CONTRACT DOCUMENTS FOR THE EASEMENT LEGAL DESCRIPTION AND OTHER EASEMENT INFORMATION.



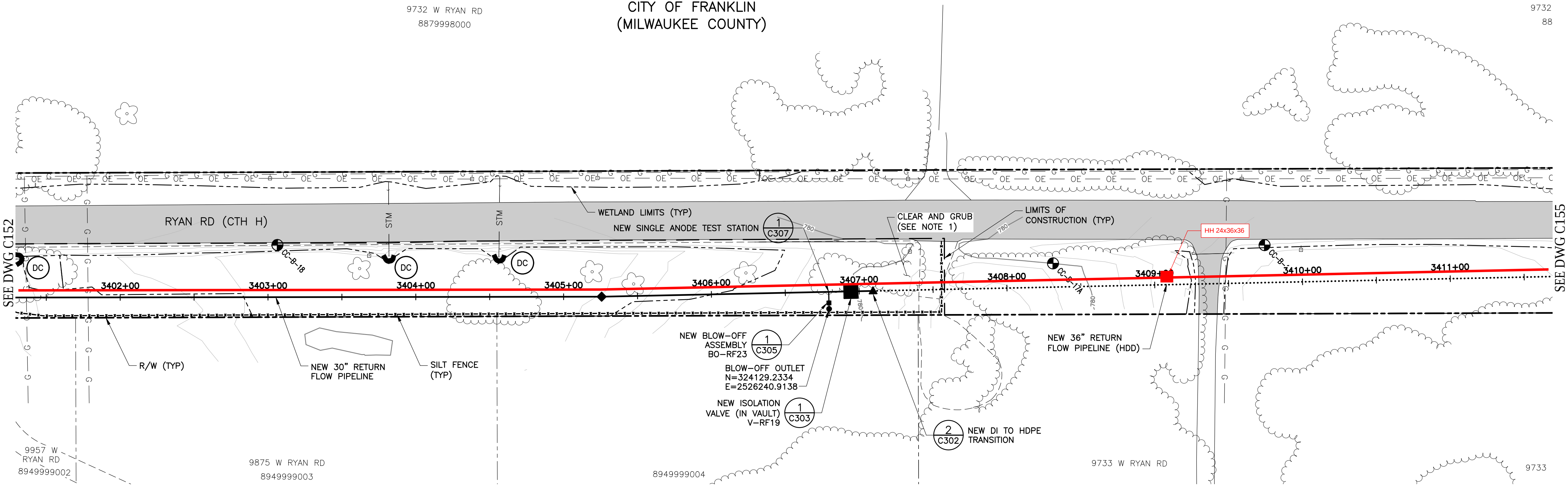
CONFORMED PLANS
SEE COVER SHEET FOR
"CONFORMED PLANS NOTE"

PROFILE

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

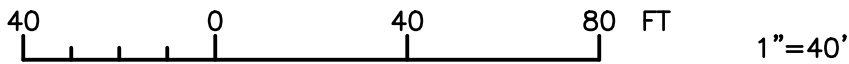
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CONFORMED PLANS
SEE COVER SHEET FOR
"CONFORMED PLANS NOTE"



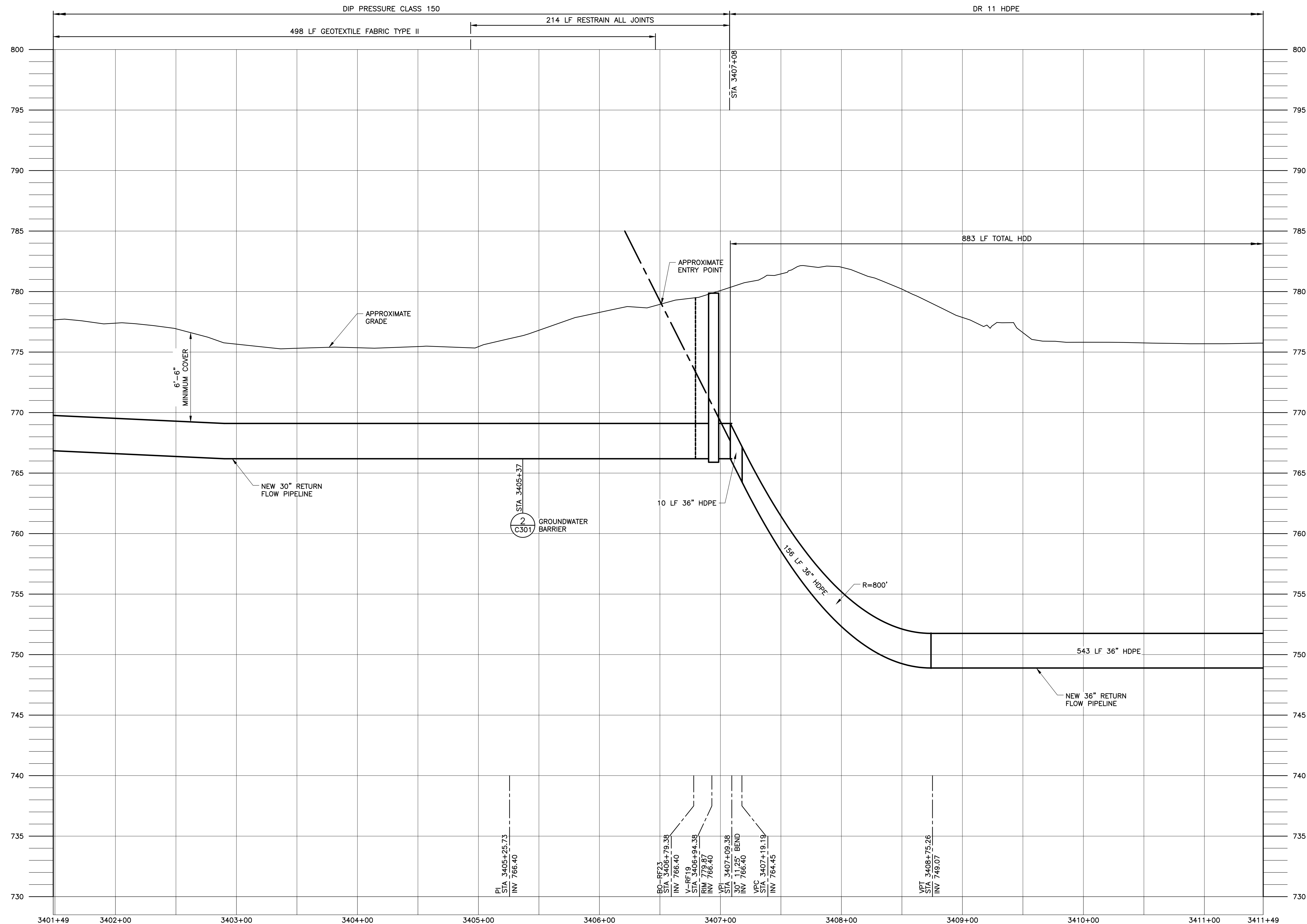
PLAN
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SEE DWG C154 FOR PROFILE



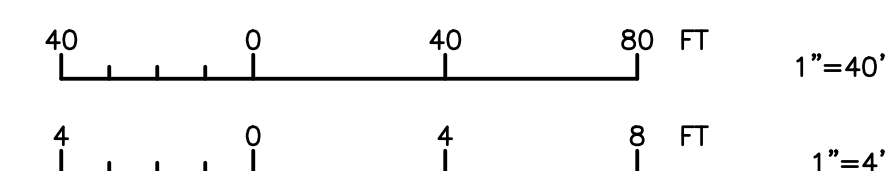
 SERVING WAUKESHA SINCE 1886		 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186	
		CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN STA 3401+50 TO STA 3411+50	
APPROVED			
SEAL AFFIXED MONTH / DAY / YEAR			
MARCH 2020			
JOB NO.: 15310			
DESIGN	RMC	CHCK	CRV
APPRV	AJM	DRWN	TSM
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C153			
SHEET 68 OF 273		REV 0	

SEE DWG C153 FOR PLAN



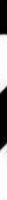
CONFORMED PLANS
SEE COVER SHEET FOR
"CONFORMED PLANS NOTE"

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



Waukesha Water Utility
SERVING WAUKESHA SINCE 1856

GREELEY AND HANSEN
741 N. GRAND AVE. SUITE 308
WAUKESHA, WI 53186



**GREAT WATER
ALLIANCE™**

CONTRACT PACKAGE 6: RETURN FLOW PIPELINE,
18-INCH SANITARY SEWER, AND OUTFALL FACILITIES
PROFILE
STA 2401+50 TO STA 2411+50

APPROVED

SEAL AFFIXED
MONTH / DAY / YEAR

MARCH 2020

JOB NO.: 15310			
DESGN	RMC	CHCK	CRW
APPRV	AJM	DRWN	TSM

SCALE: AS SHOWN

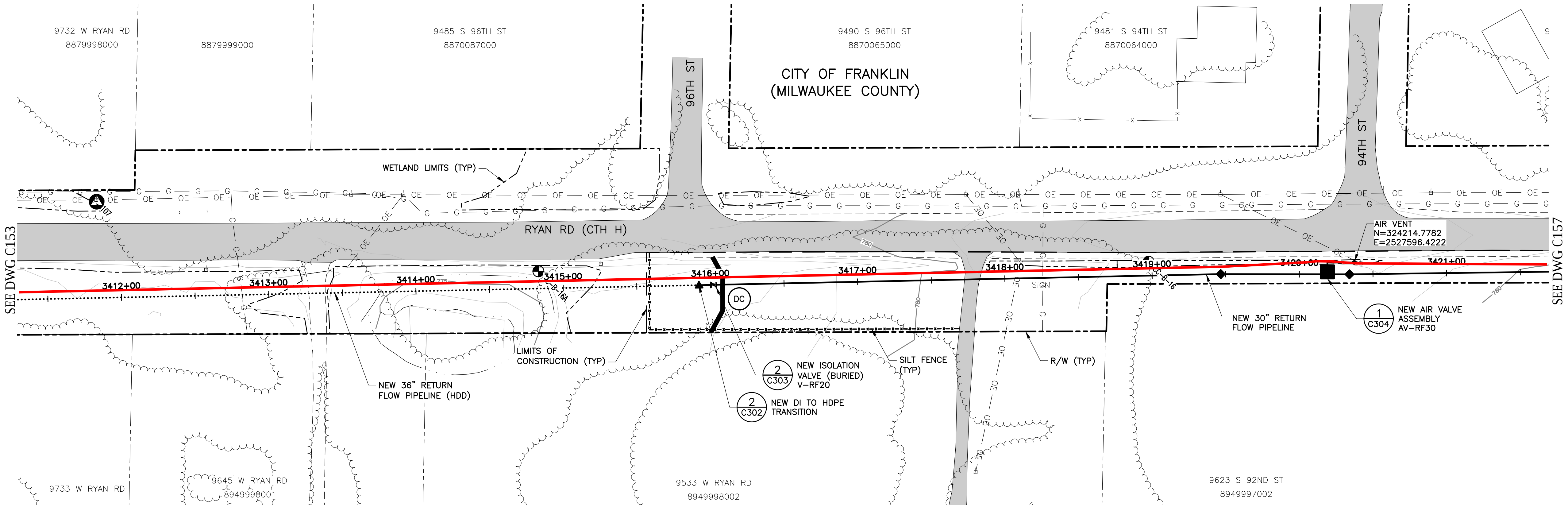
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C154

SHEET 69 OF 273	REV 0
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CONFIRMED PLANS

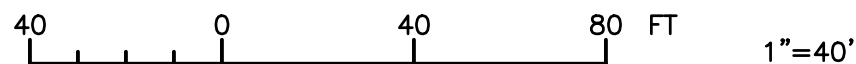
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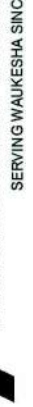


PLAN
SCALE: 1"=40'

SEE DWG C156 FOR PROFILE

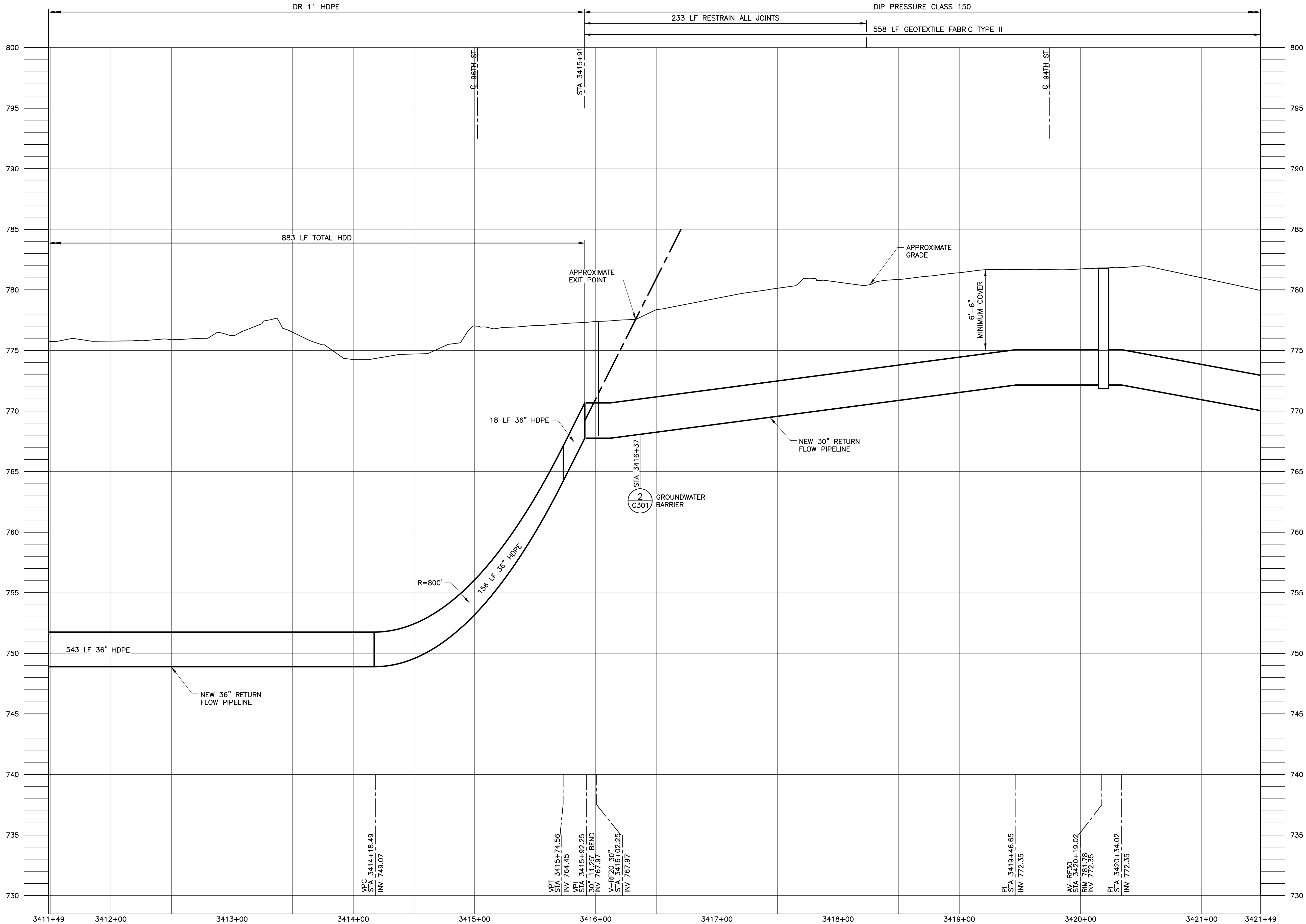
CONFORMED PLANS
SEE COVER SHEET FOR
"CONFORMED PLANS NOTE"



 Waukesha Water Utility SERVING WAUKESHA SINCE 1886		 GREELEY AND HANSEN 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186	
 GREAT ALLIANCE™		CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN STA 3411+50 TO STA 3421+50	
APPROVED			
SEAL AFFIXED MONTH / DAY / YEAR			
MARCH 2020			
JOB NO.: 15310			
DESIGN	RMC	CHCK	CRV
APPRV	AJM	DRWN	TSM
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DRAWING NUMBER			
C155			
SHEET 70 OF 273	REV 0	NO.	REVISION

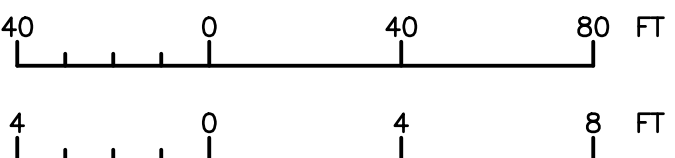
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SEE DWG C155 FOR PLAN

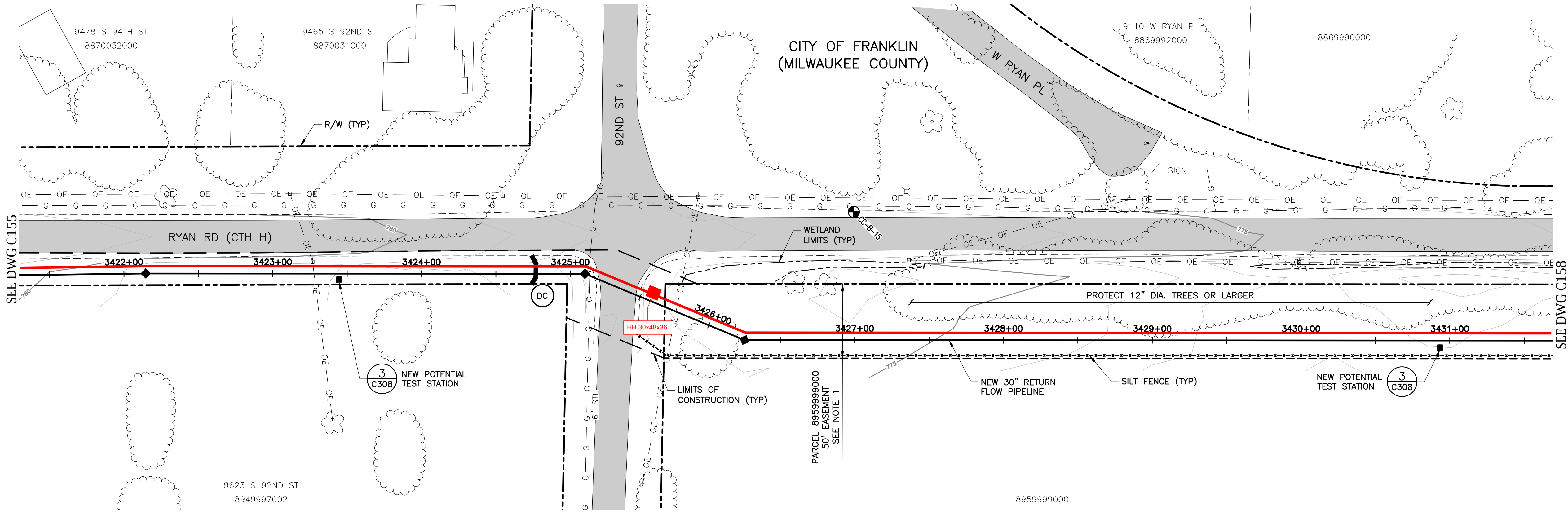


CONFORMED PLANS
SEE COVER SHEET FOR
"CONFORMED PLANS NOTE"

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



Waukesha Water Utility SERVING WAUKESHA SINCE 1886		Greeley and Hansen 741 N. GRAND AVE SUITE 308 WAUKESHA, WI 53186	
GREAT WATER ALLIANCE™		CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PROFILE STA 3411+50 TO STA 3421+50	
APPROVED			
SEAL AFFIXED MONTH / DAY / YEAR			
MARCH 2020			
JOB NO.: 15310			
DESIGN	APPROV	REVISION	DATE
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C156			
SHEET 71 OF 273		REV 0	



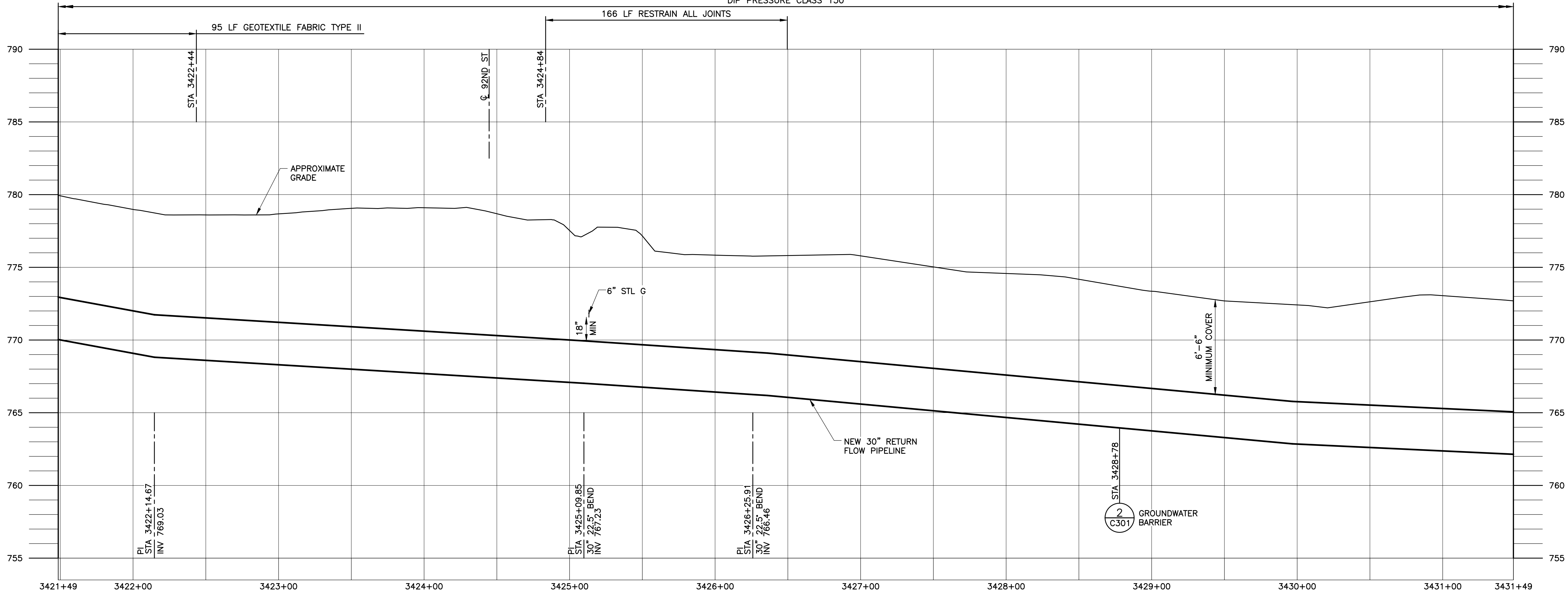
PLAN

SCALE: 1"=40'

DIP PRESSURE CLASS 150

NOTES:

1. SEE EASEMENT DOCUMENTS INCLUDED IN THE CONTRACT DOCUMENTS FOR THE EASEMENT LEGAL DESCRIPTION AND OTHER EASEMENT INFORMATION.



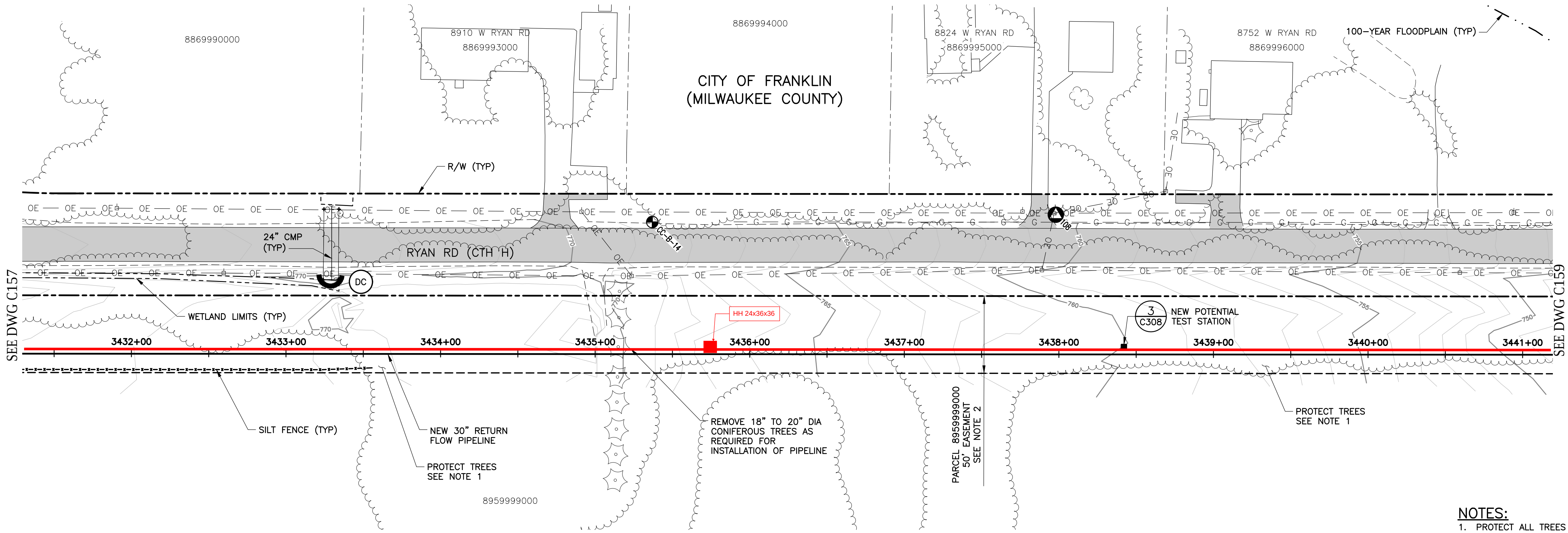
PROFILE

SCALE: 1"=40' HORIZONTAL

SCALE: 1"=4' VERTICAL

CONFORMED PLANS
SEE COVER SHEET FOR
"CONFORMED PLANS NOTE"

Waukesha Water Utility SERVING WAUKESHA SINCE 1886		Greeley and Hansen 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186	
GREAT WATER ALLIANCE™		CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN AND PROFILE STA 3421+50 TO STA 3431+50	
APPROVED			
SEAL AFFIXED MONTH / DAY / YEAR			
MARCH 2020			
JOB NO.: 15310			
DESIGN	RMC	CHK	CRV
APPRV	AJM	DRWN	TSM
SCALE: AS SHOWN			
DRAWING NUMBER			
C157			
SHEET 72 OF 273		REV 0	



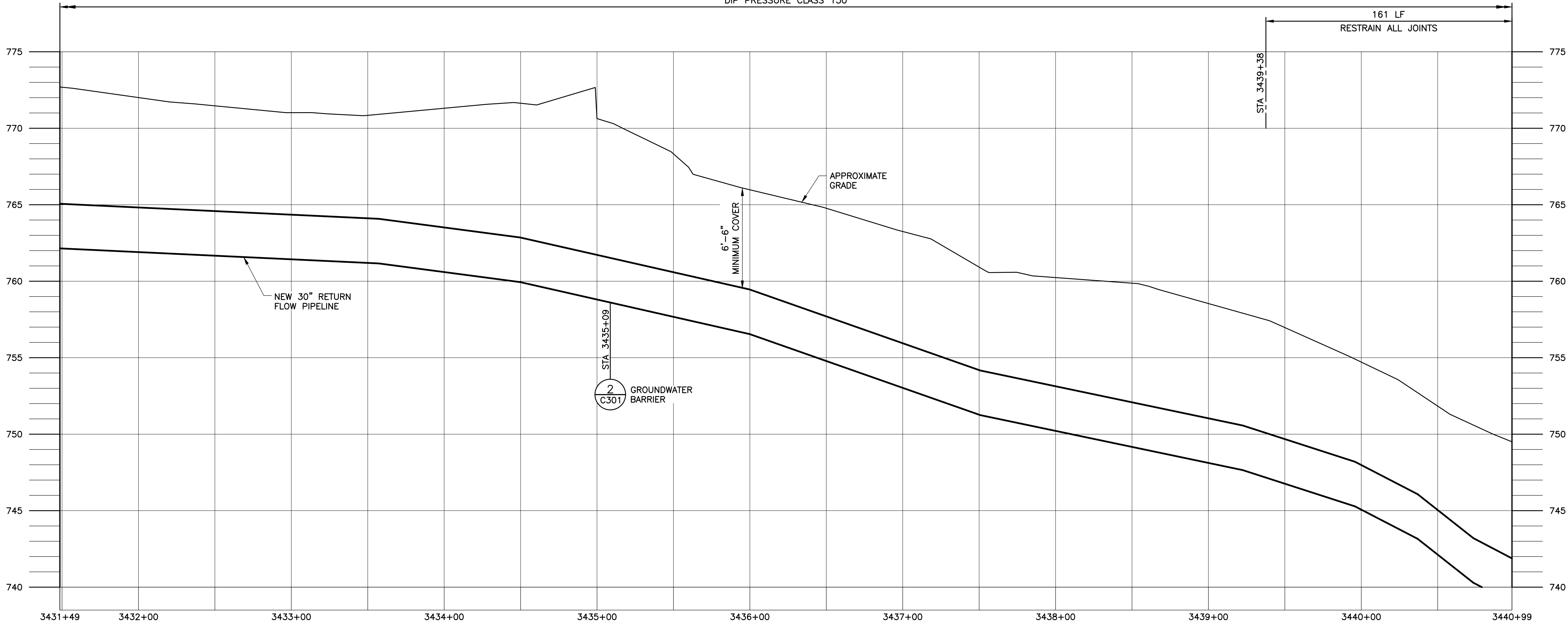
PLAN

SCALE: 1"=40'

DIP PRESSURE CLASS 150

NOTES:

1. PROTECT ALL TREES 12" DIA OR LARGER UNLESS OTHERWISE NOTED.
2. SEE EASEMENT DOCUMENTS INCLUDED IN THE CONTRACT DOCUMENTS FOR THE EASEMENT LEGAL DESCRIPTION AND OTHER EASEMENT INFORMATION.

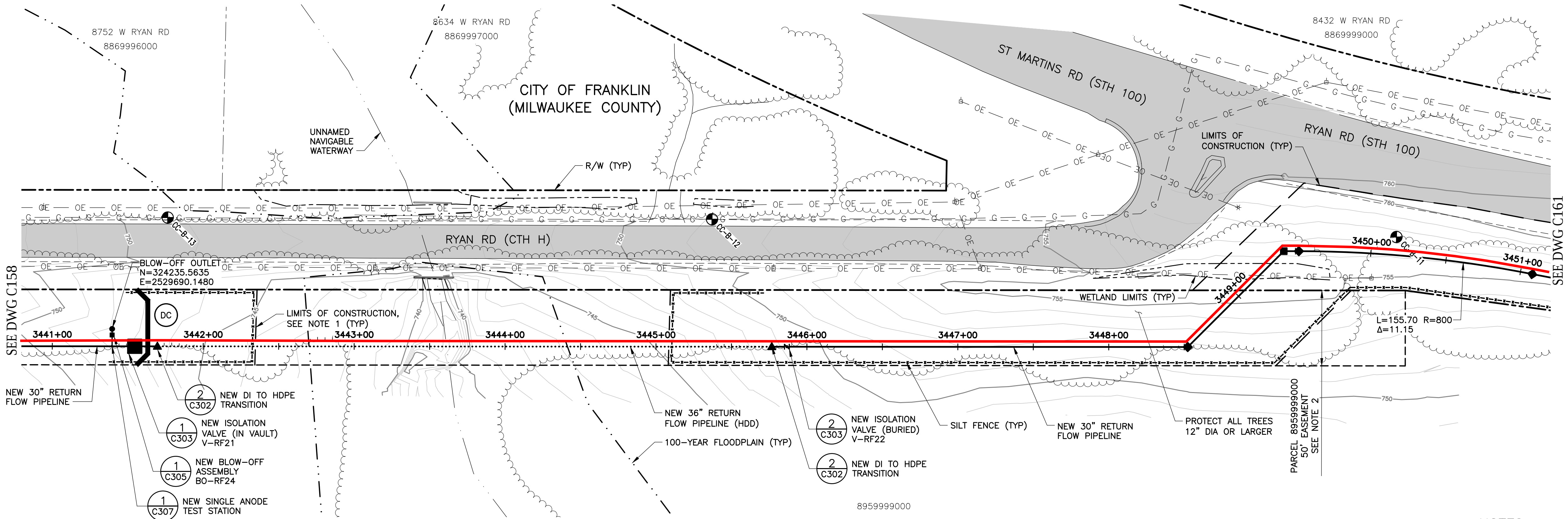


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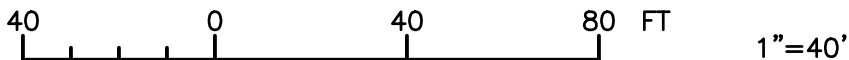


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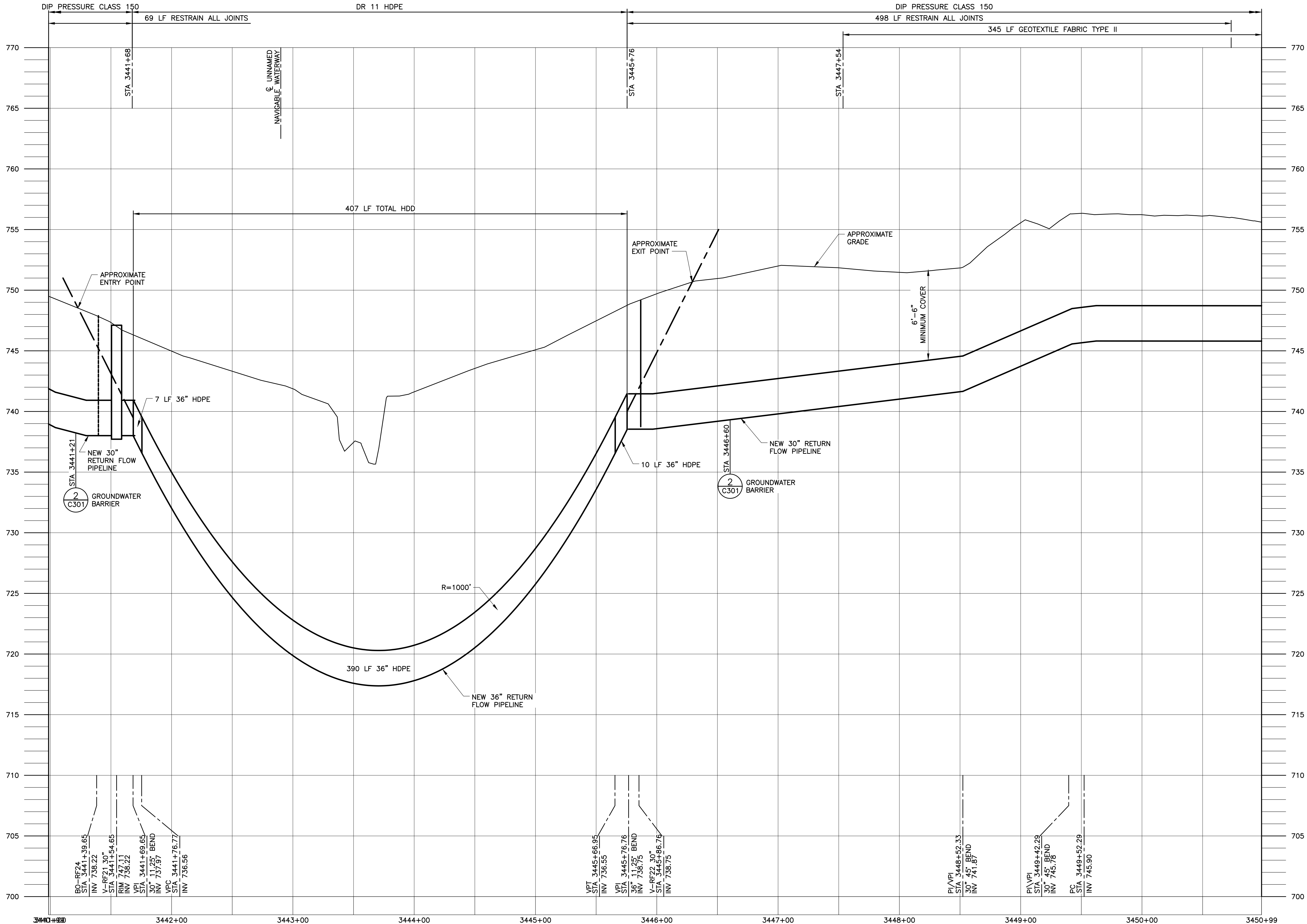
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"CONFORMED PLANS NOTE"



 Waukesha Water Utility SERVING WAUKESHA SINCE 1886				 GREELEY AND HANSEN 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186	
 GREAT WATER ALLIANCE™				CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN STA 3441+00 TO STA 3451+00	
APPROVED					
SEAL AFFIXED MONTH / DAY / YEAR					
MARCH 2020					
JOB NO.: 15310					
DESIGN: RMC CHECK: CRV					
APPROVED: AJM DRAWN: TSM					
SCALE: AS SHOWN					
DRAWING NUMBER					
C159					
SHEET 74 OF 273 REV 0					

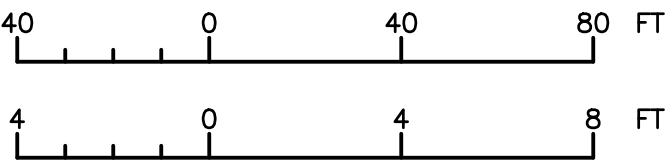
FILE: G:\15310-WAUKESHA GREAT LAKES WATER SUPPLY PM-CM121 CADD\21.05 WORKING DWGS\CONTRACT PACKAGE 6 - RFP\XREF\GLWSP-P6-RFP-L-TLBK.DWG 06/01/2020 2:52:24 PM BAR MEASURE 1" CONFORMANCE SHEETS

SEE DWG C159 FOR PLAN

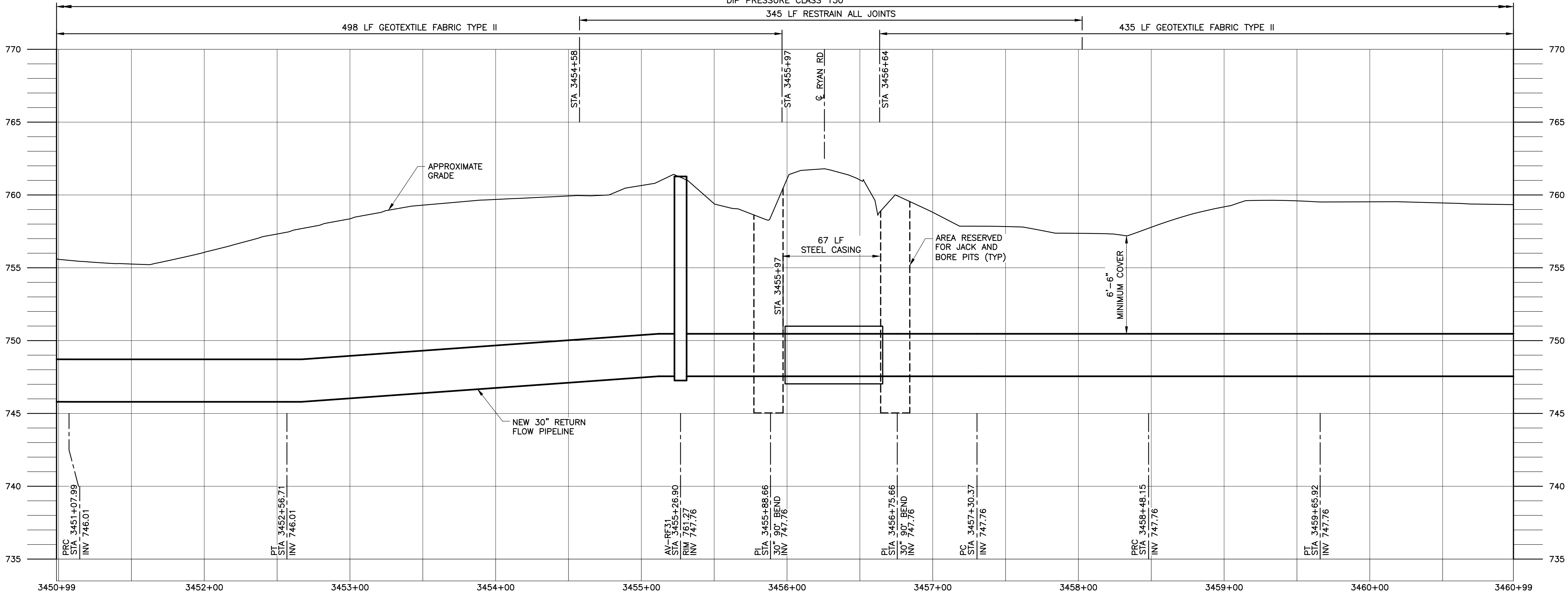
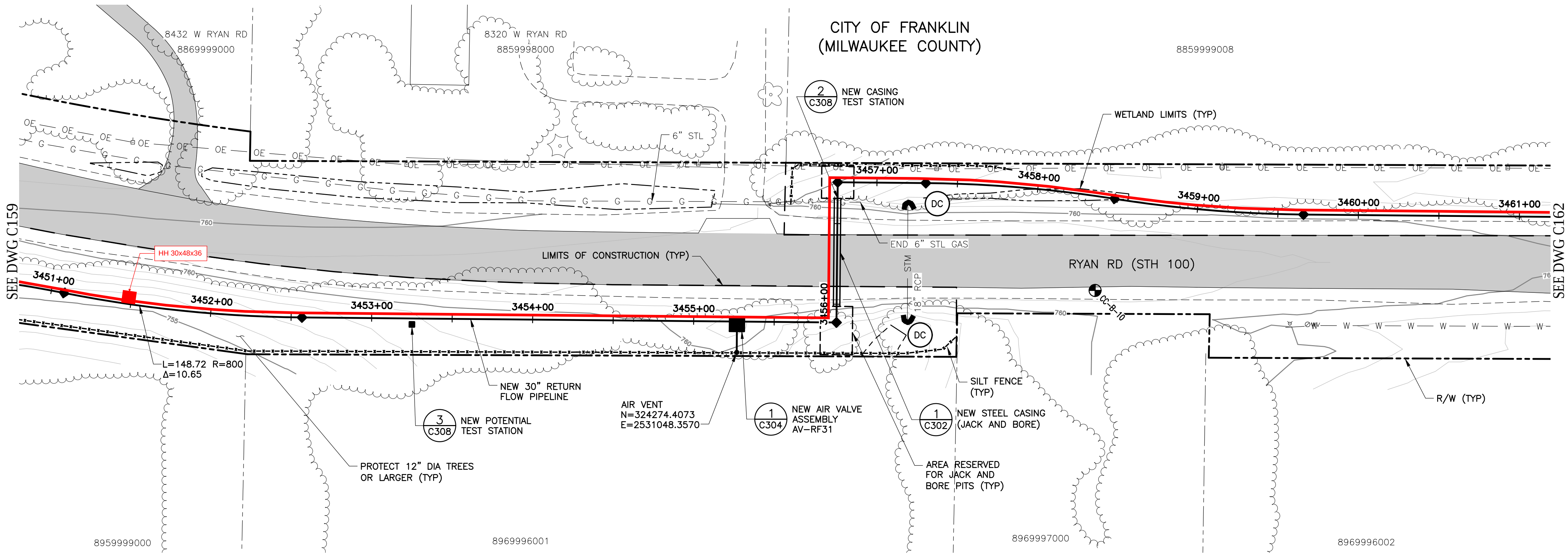


CONFORMED PLANS
SEE COVER SHEET FOR
"CONFORMED PLANS NOTE"

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

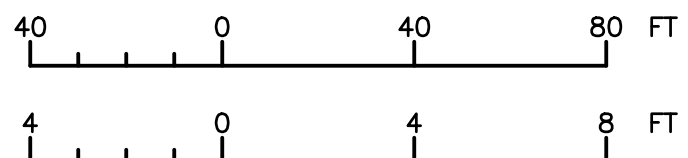


Waukesha Water Utility SERVING WAUKESHA SINCE 1886		Greeley and Hansen 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186	
GREAT WATER ALLIANCE™ CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PROFILE STA 3441+00 TO STA 3451+00		APPROVED SEAL AFFIXED MONTH / DAY / YEAR MARCH 2020 JOB NO.: 15310 DESIGN: RMC, CHECK: CRV, APPROVAL: AJM, DRAWING: TSM SCALE: AS SHOWN DRAWING NUMBER C160 SHEET 75 OF 273 REV 0	
NO.		DATE	
APPD.		REVISION	

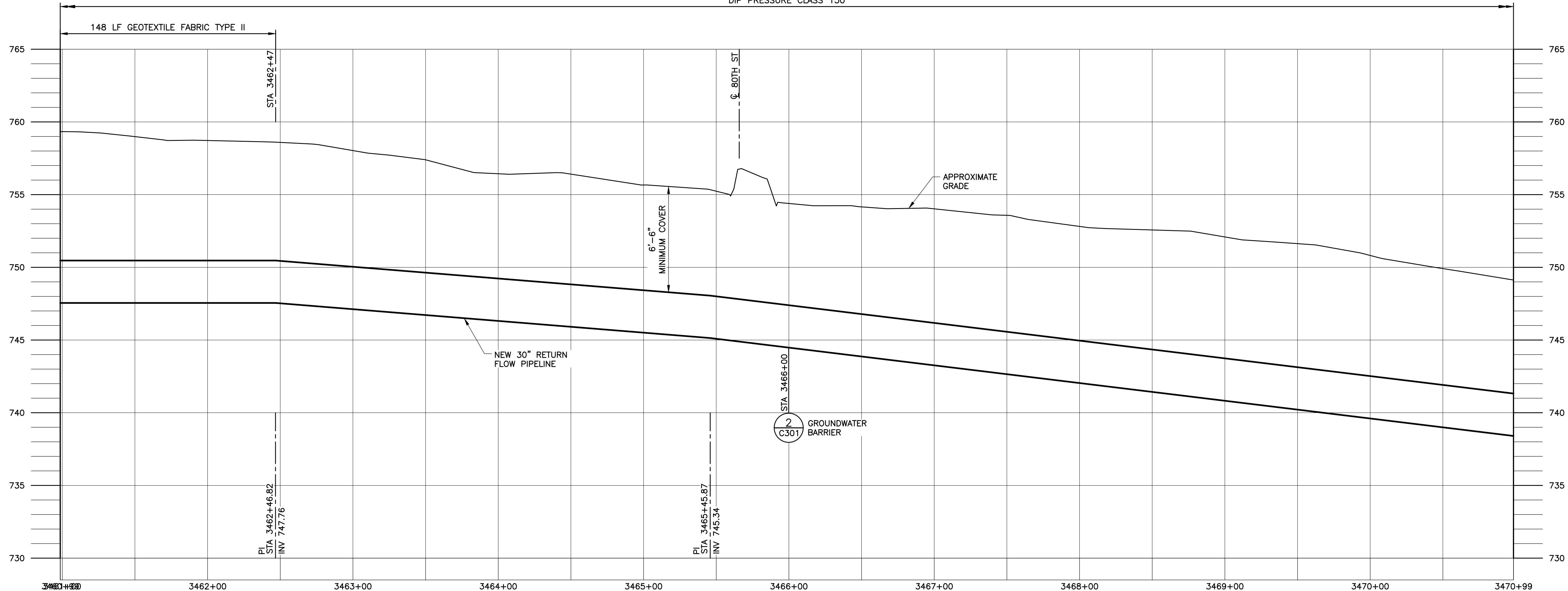
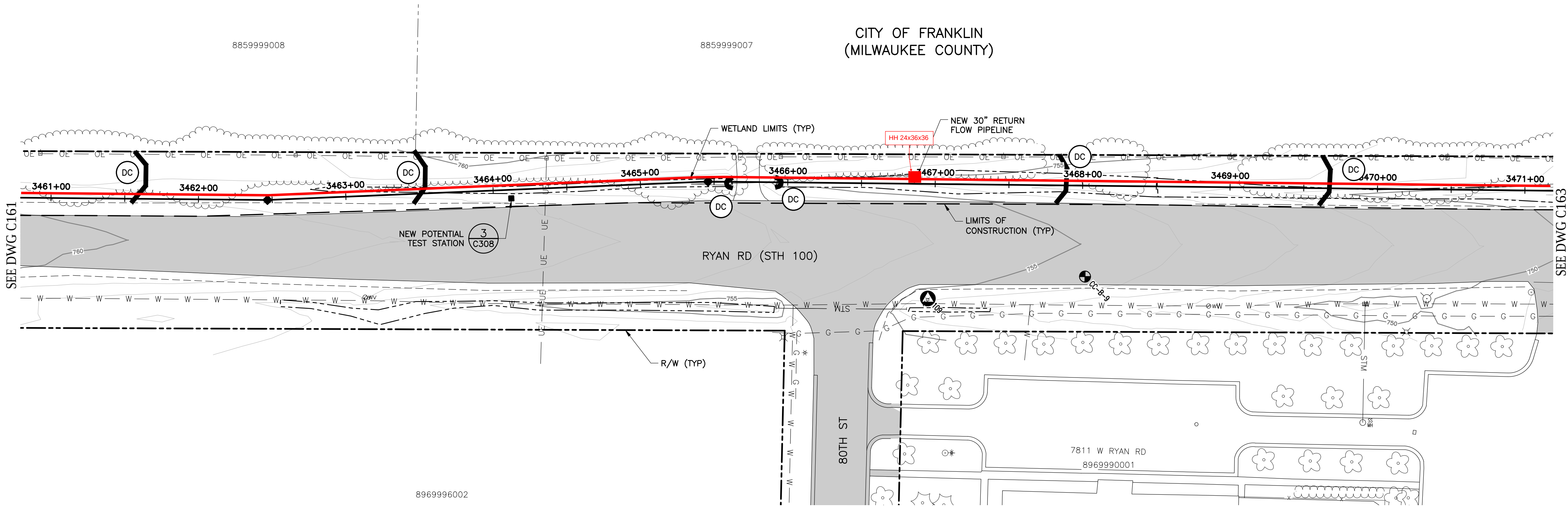


CONFORMED PLANS
SEE COVER SHEET FOR
"CONFORMED PLANS NOTE"

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



Waukesha Water Utility SERVING WAUKESHA SINCE 1886		Greeley and Hansen 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186	
GREAT WATER ALLIANCE™		CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN AND PROFILE STA 3451+00 TO STA 3461+00	
APPROVED			
SEAL AFFIXED MONTH / DAY / YEAR			
MARCH 2020			
JOB NO.: 15310			
DESIGN	RMC	CHK	CRV
APPRV	AJM	DRWN	TSM
SCALE: AS SHOWN			
DRAWING NUMBER			
C161			
SHEET 76 OF 273		REV 0	



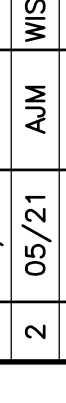
CONFORMED PLANS
SEE COVER SHEET FOR
"CONFORMED PLANS NOTE"



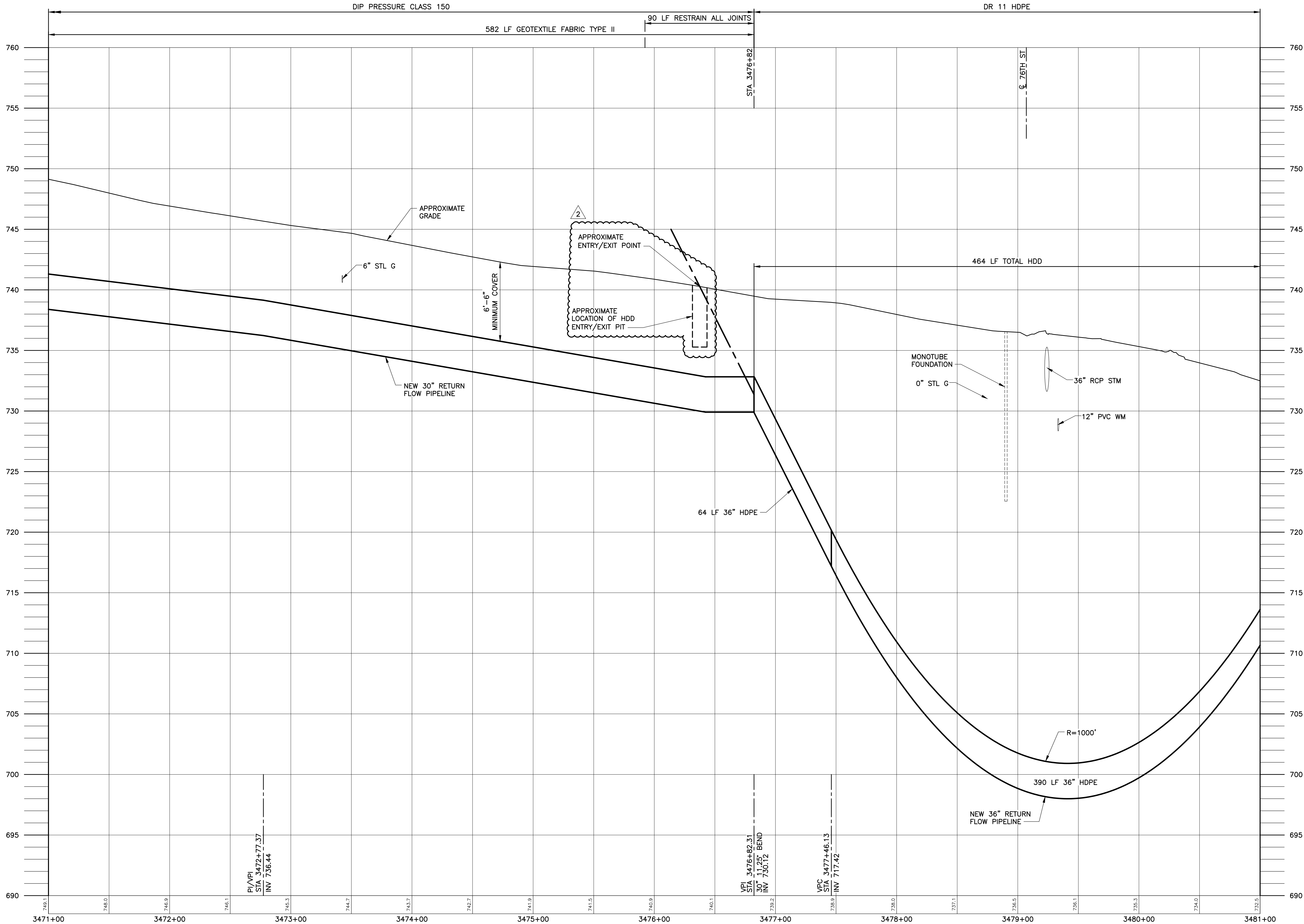
 Waukesha Water Utility SERVING WAUKESHA SINCE 1886		 GREELEY AND HANSEN 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186	
 GREAT WATER ALLIANCE™ CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN AND PROFILE STA 3461+00 TO STA 3471+00		APPROVED	
SEAL AFFIXED MONTH / DAY / YEAR		MARCH 2020	
JOB NO.: 15310		DESIGN RMC CHECK CRV	
APPROV AJM		DRAWN TSM	
SCALE: AS SHOWN		DRAWING NUMBER	
C162		SHEET 77 OF 273 REV 0	



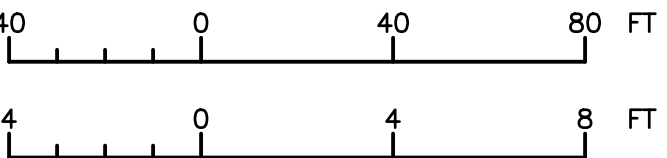
40 0 40 80 FT 1"=40'

 GREAT WATER ALLIANCE™		 Waukesha Water Utility SERVING WAUKESHA SINCE 1886		 GREELEY AND HANSEN 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186	
APPROVED		CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN STA 3471+00 TO STA 3481+00		1 12/20 A.J.M. CITY OF FRANKLIN PERMIT COMMENTS 2 05/21 A.J.M. WISDOT PERMIT COMMENTS	
SEAL AFFIXED MONTH / DAY / YEAR		MARCH 2020		NO. DATE APPD REVISION	
JOB NO.: 15310		DESGN RMC CHCK CRV APPRV AJM DRWN TSM			
SCALE: AS SHOWN		DRAWING NUMBER			
C163					
SHEET 78 OF 273		REV 0			

SEE DWG C163 FOR PLAN



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



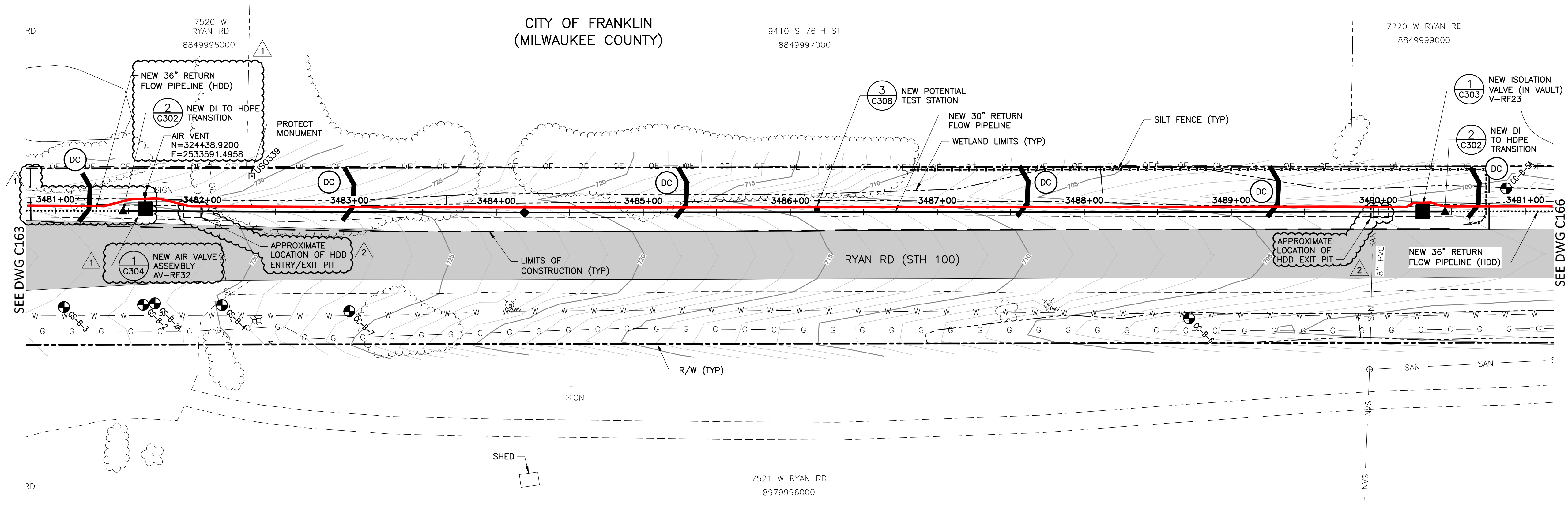
CITY OF FRANKLIN PERMIT COMMENTS		CITY OF FRANKLIN PERMIT COMMENTS		CITY OF FRANKLIN PERMIT COMMENTS	
A/JM		A/JM		A/JM	
12/20		05/21		DATE	
1		2		NO	
APPROVED		APPROVED		APPROVED	
MARCH 2020		MARCH 2020		MARCH 2020	
JOB NO.: 15310		JOB NO.: 15310		JOB NO.: 15310	
DESIGN RMC		CHKD CRV		CHKD CRV	
APPRV AJM		DRWN TSM		DRWN TSM	
SCALE: AS SHOWN		SCALE: AS SHOWN		SCALE: AS SHOWN	
DRAWING NUMBER		DRAWING NUMBER		DRAWING NUMBER	
C163A		C163A		C163A	
SHEET 78A OF 273		SHEET 78A OF 273		SHEET 78A OF 273	
REV 0		REV 0		REV 0	

Waukesha Water Utility
SERVING WAUKESHA SINCE 1886

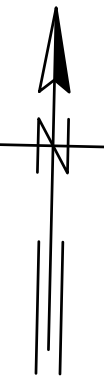
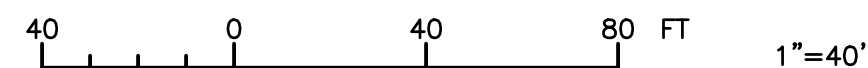
Greeley and Hansen
741 N. GRAND AVE. SUITE 308
WAUKESHA, WI 53186

GREAT WATER ALLIANCE™
CONTRACT PACKAGE 6: RETURN FLOW PIPELINE,
18-INCH SANITARY SEWER, AND OUTFALL FACILITIES
PROFILE
STA 3471+00 TO STA 3481+00

FILE: G:\15310-WAUKESHA GREAT LAKES WATER SUPPLY PM-CM121 CADD\21.05 WORKING DWGS\CONTRACT PACKAGE 6 - RPPL\XREF\GLWSP-P6-RFPL-TLBK.DWG 12/02/2020 3:00:29 PM BAR MEASURE 1"=40' SHEET 79 OF 273



SEE DWG C165 FOR PROFILE

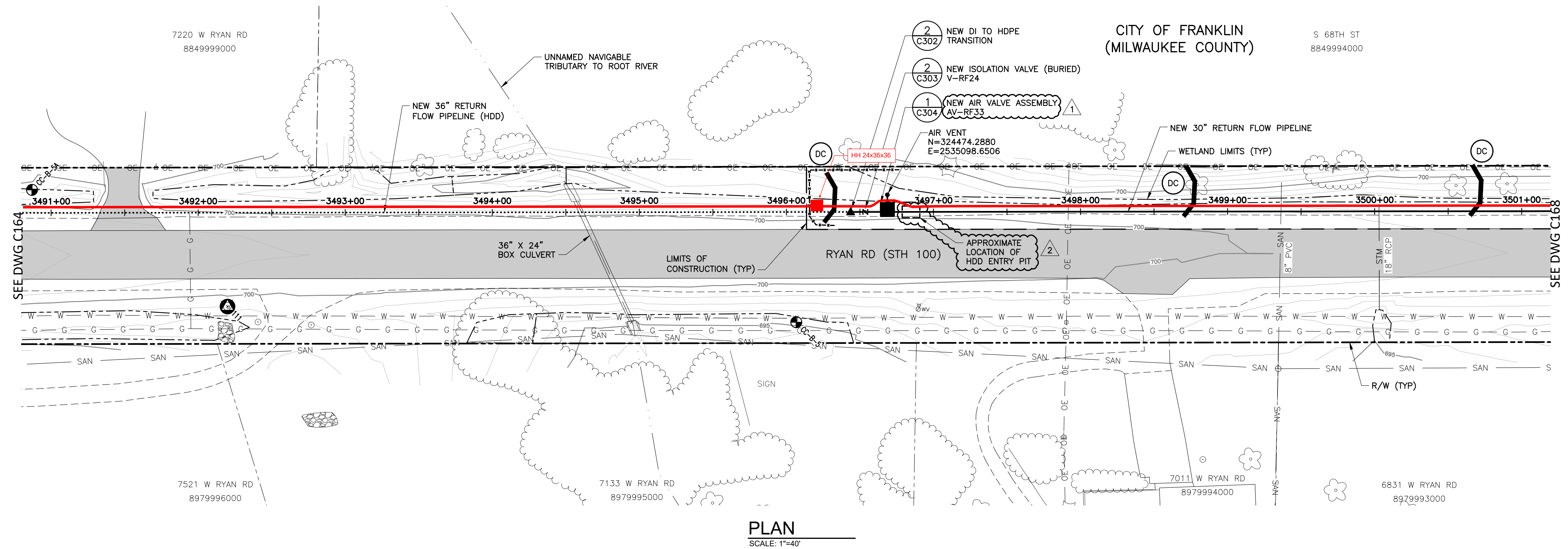


GREAT WATER ALLIANCE™		Waukesha Water Utility SERVING WAUKESHA SINCE 1886		Greeley and Hansen 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186	
CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN STA 3481+00 TO STA 3491+00		APPROVED		REVISION	
SEAL AFFIXED MONTH / DAY / YEAR		MARCH 2020		NO.	
JOB NO.: 15310		DATE		APPROVED	
DESIGN RMC		CHECK CRV		CITY OF FRANKLIN PERMIT COMMENTS	
APPROV AJM		DRAWN TSM		WISDOT PERMIT COMMENTS	
SCALE: AS SHOWN		DRAWING NUMBER		12/20	
DRAWING NUMBER		C164		05/21	
SHEET 79 OF 273		REV 0		1	

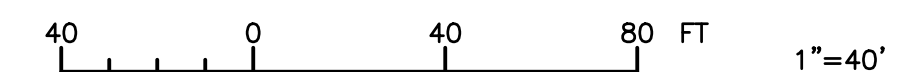
DIP PRESSURE CLASS 200



 GREAT WATER ALLIANCE™				 Waukesha Water Utility SERVING WAUKESHA SINCE 1886				1	12/20	AJM	CITY OF FRANKLIN PERMIT COMMENTS
CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PROFILE STA 3481+00 TO STA 3491+00				 GREELEY AND HANSEN 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186				2	05/21	AJM	WSDOT PERMIT COMMENTS
APPROVED											
SEAL AFFIXED MONTH / DAY / YEAR											
MARCH 2020											
JOB NO.: 15310											
DESIGN		RMC		CHECK		CRV					
APPROV		AJM		DRAWN		TSM					
SCALE: AS SHOWN											
DRAWING NUMBER											
C165											
SHEET 80 OF 273						REV 0					

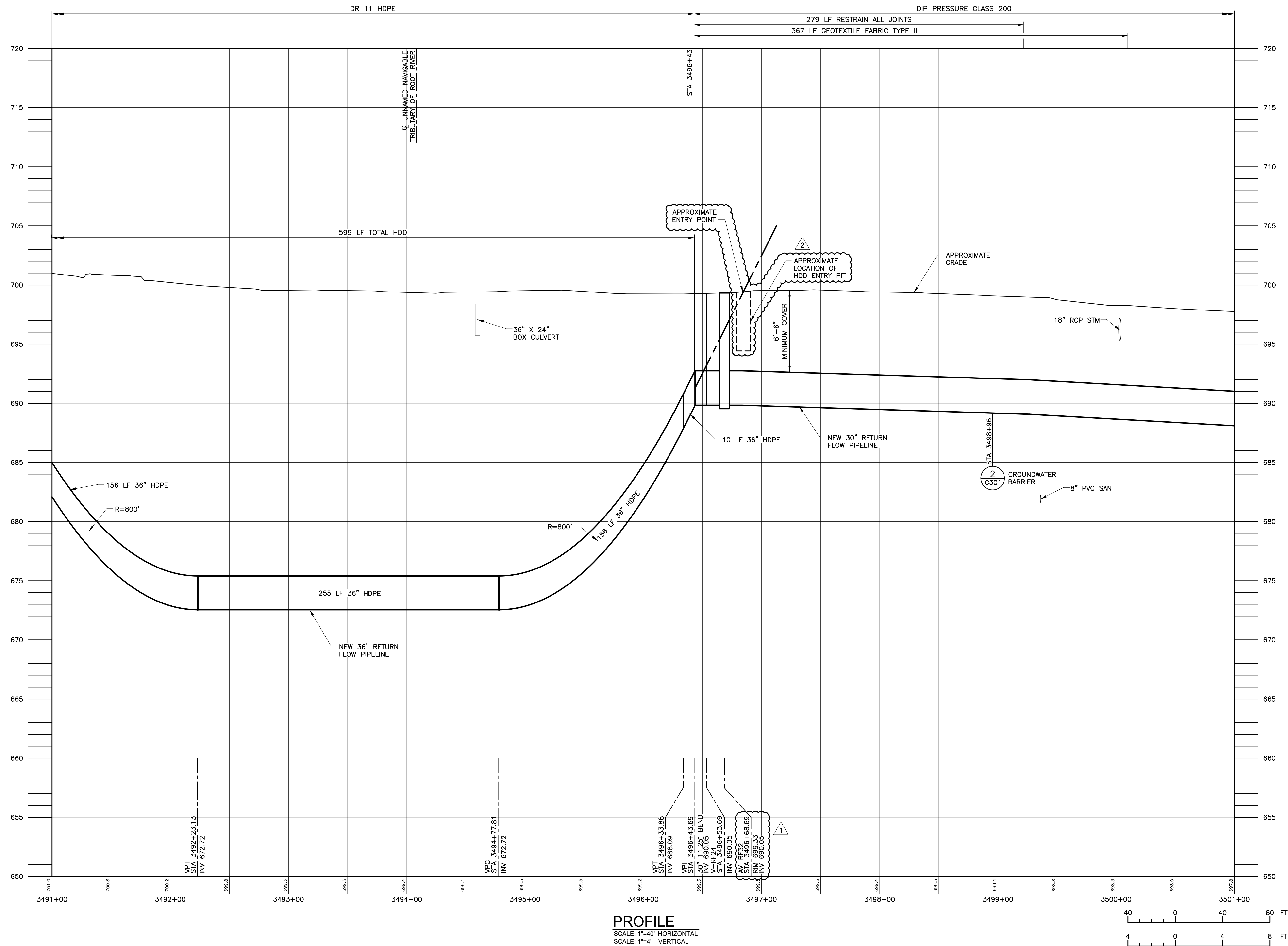


SEE DWG C167 FOR PROFILE

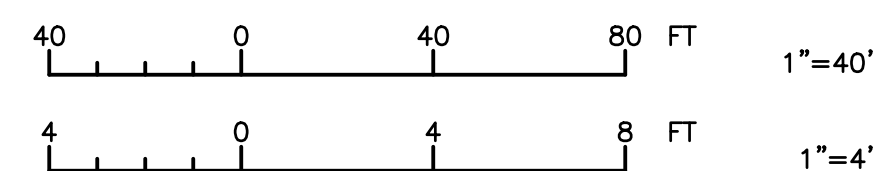


GREAT WATER ALLIANCE™ CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN STA 349+1.00 TO STA 350+1.00										Waukesha Water Utility SERVING WAUKESHA SINCE 1886 GREELEY AND HANSEN 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186										1		12/20	AJM	CITY OF FRANKLIN PERMIT COMMENTS	
2		05/21	AJM	WISDOT PERMIT COMMENTS																					
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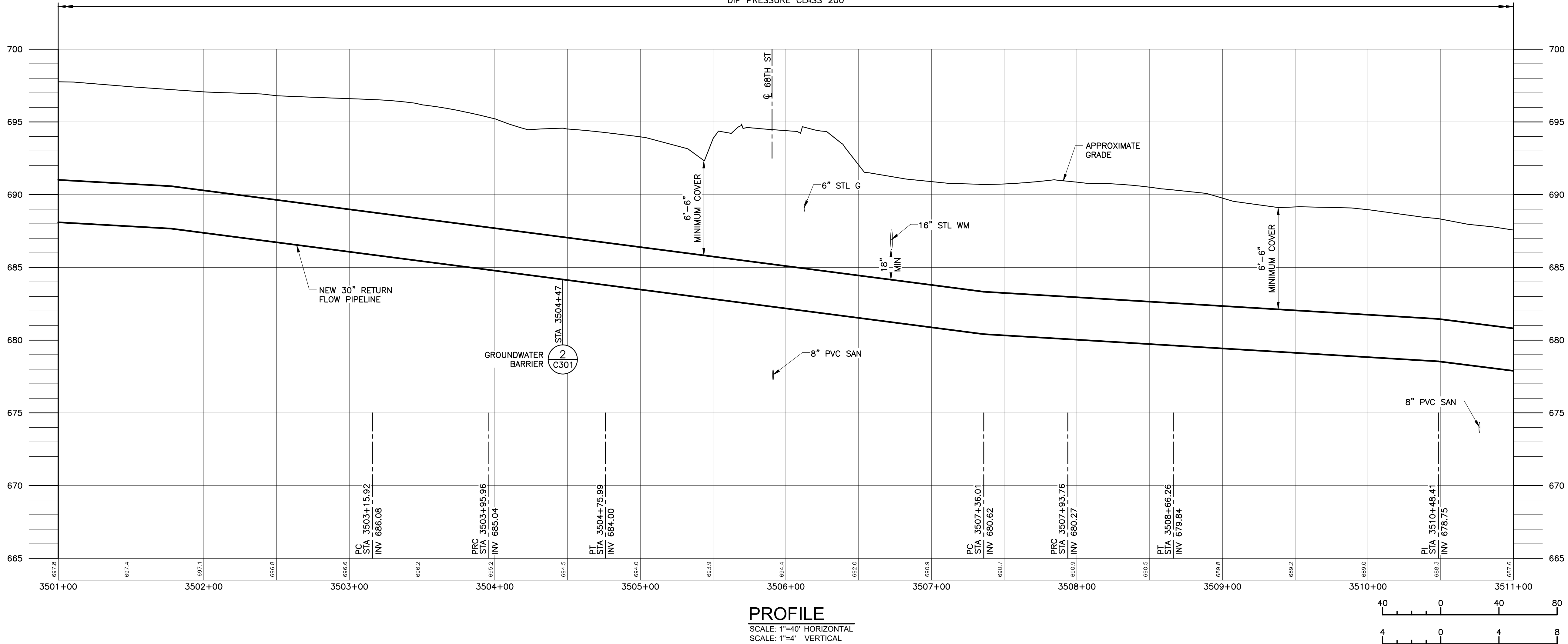
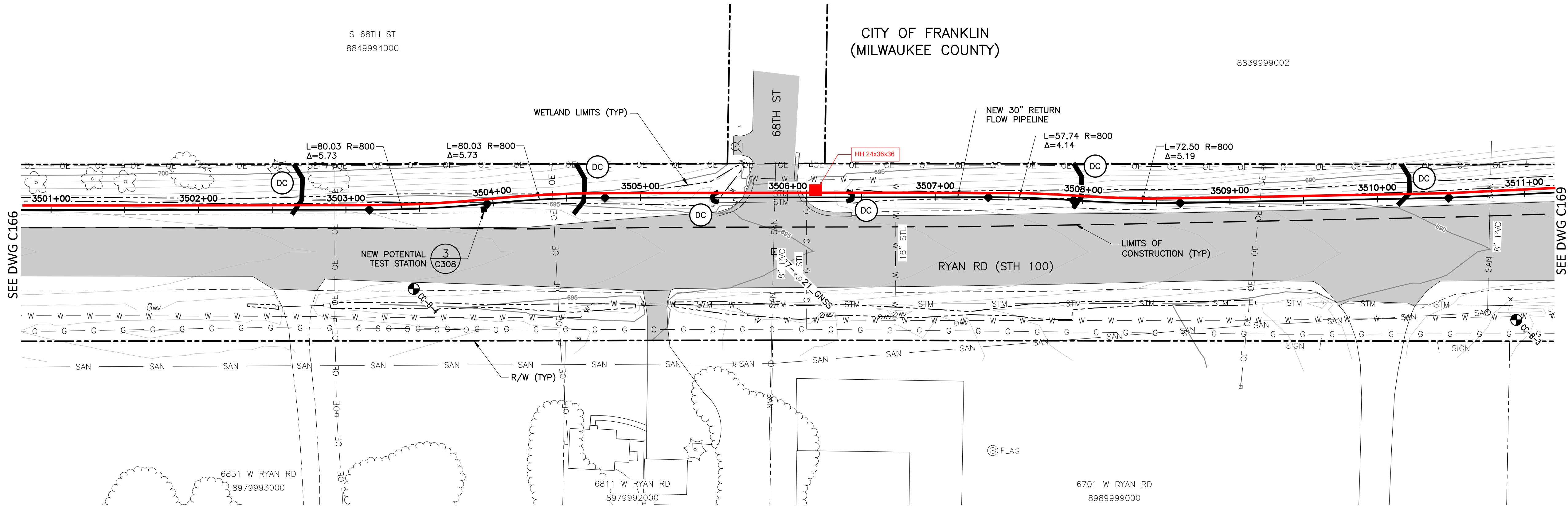
SEE DWG C166 FOR PLAN



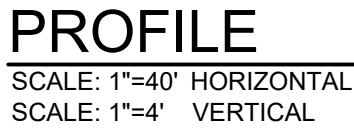
PROFILE
SCALE: 1"=40' HORIZONTAL
SCALE: 1"=4' VERTICAL



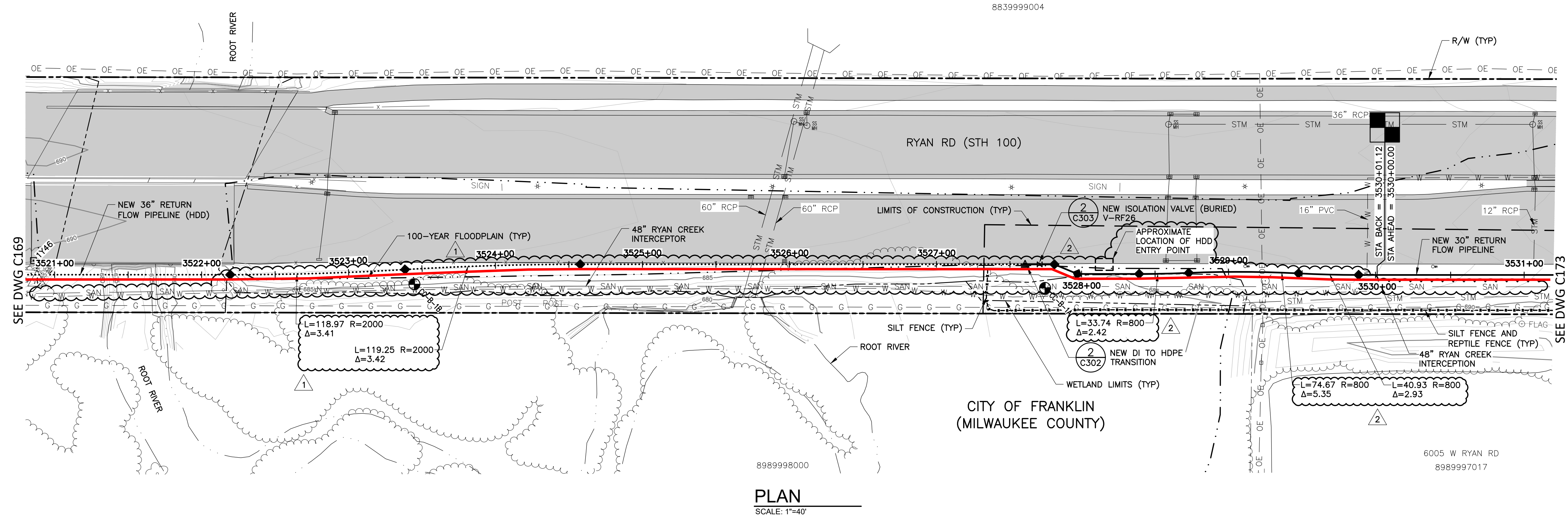
 GREAT WATER ALLIANCE™		 Waukesha Water Utility SERVING WAUKESHA SINCE 1896		1		12/20	AJM	CITY OF FRANKLIN	PERMIT COMMENTS				
				2		05/21	AJM	WISDOT	PERMIT COMMENTS				
APPROVED		 CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PROFILE STA 3491+00 TO STA 3501+00		 GREELEY AND HANSEN 741 N. GRAND AVE, SUITE 308 WAUKESHA, WI 53186		1		12/20	AJM	CITY OF FRANKLIN	PERMIT COMMENTS		
						2		05/21	AJM	WISDOT	PERMIT COMMENTS		
						3							
						4							
SEAL AFFIXED MONTH / DAY / YEAR		MARCH 2020		NO.		DATE	APPD	REVISION					
JOB NO.: 15310		DESIGN RMC CHCK CRV APPRV AJM DRWN TSM		SCALE: AS SHOWN		DRAWING NUMBER		C167					
SHEET 82 OF 273		REV 0											



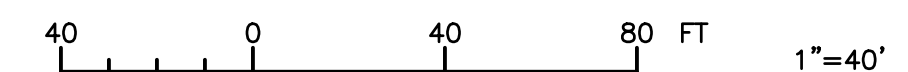
Waukesha Water Utility SERVING WAUKESHA SINCE 1886	
Greeley and Hansen 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186	
GREAT WATER ALLIANCE™	
CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN AND PROFILE STA 3501+00 TO STA 3511+00	
APPROVED	
SEAL AFFIXED MONTH / DAY / YEAR	
MARCH 2020	
JOB NO.: 15310	
DESIGN	RMC
APPROV	CRV
AJM	DRWN
TSM	TSM
SCALE: AS SHOWN	
DRAWING NUMBER	
C168	
SHEET 83 OF 273	REV 0



APPROVED			
SEAL AFFIXED MONTH / DAY / YEAR			
MARCH 2020			
JOB NO.: 15310			
DESIGN	RMC	CHCK	CRV
APPRV	AJM	DRWN	TSM
SCALE:		AS SHOWN	
DRAWING NUMBER			
C170			
SHEET 85 OF 273		REV 0	

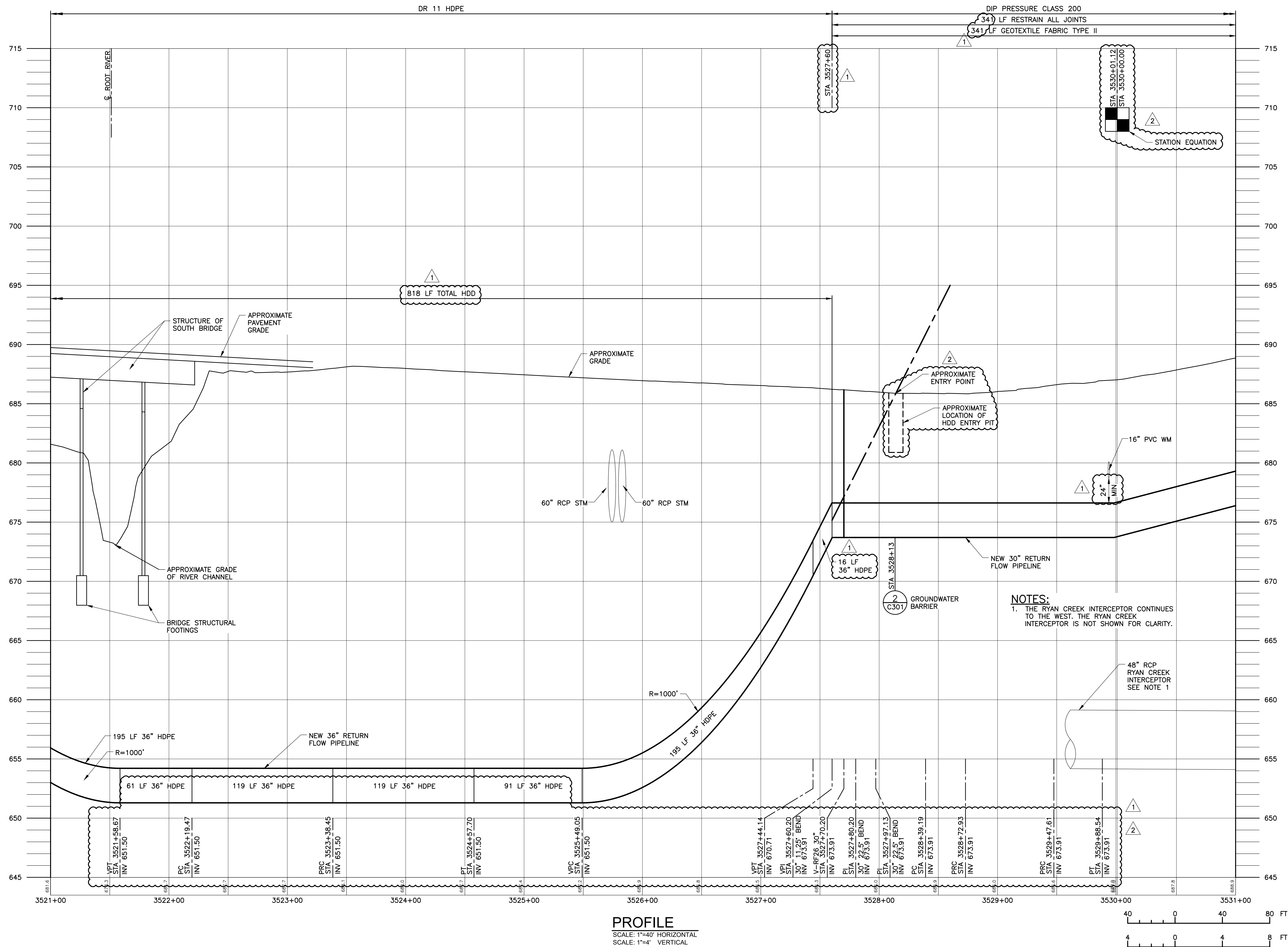


SEE DWG C172 FOR PROFILE

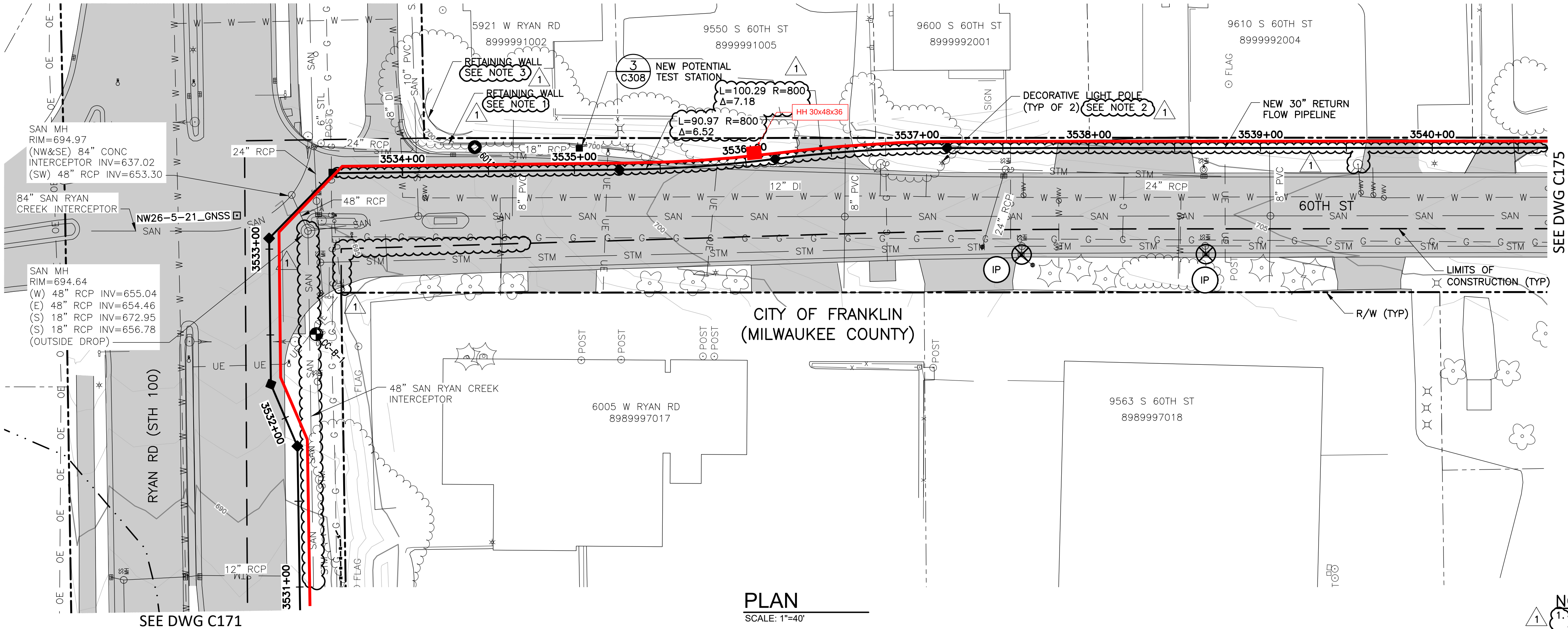


 GREAT WATER ALLIANCE™		 Waukesha Water Utility SERVING WAUKESHA SINCE 1886		1	12/20	AJM	CITY OF FRANKLIN	PERMIT	COMMENTS
				2	05/21	AJM	WISDOT	PERMIT	COMMENTS
CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN STA 3521+00 TO STA 3531+00		 GREELEY AND HANSEN 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186							
APPROVED				NO.	DATE	APPD	REVISION		
SEAL AFFIXED MONTH / DAY / YEAR MARCH 2020									
JOB NO.: 15310									
DESIGN	RMC	CHCK	CRV						
APPRV	AJM	DRWN	TSM						
SCALE: AS SHOWN									
DRAWING NUMBER									
C171									
SHEET 86 OF 273				REV 0					

SEE DWG C171 FOR PLAN



 GREAT WATER ALLIANCE™		 Waukesha Water Utility SERVING WAUKESHA SINCE 1886		1	12/20	AJM	CITY OF FRANKLIN PERMIT COMMENTS
				2	05/21	AJM	WSDOT PERMIT COMMENTS
APPROVED		 CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PROFILE		 GREELEY AND HANSEN 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186			
SEAL AFFIXED MONTH / DAY / YEAR							
MARCH 2020							
JOB NO.: 15310							
DESGN	RMC	CHCK	CRV				
APPRV	AJM	DRWN	TSM				
SCALE: AS SHOWN							
DRAWING NUMBER							
C172							
SHEET 87 OF 273		REV 0					
				NO.	DATE	APPD	REVISION

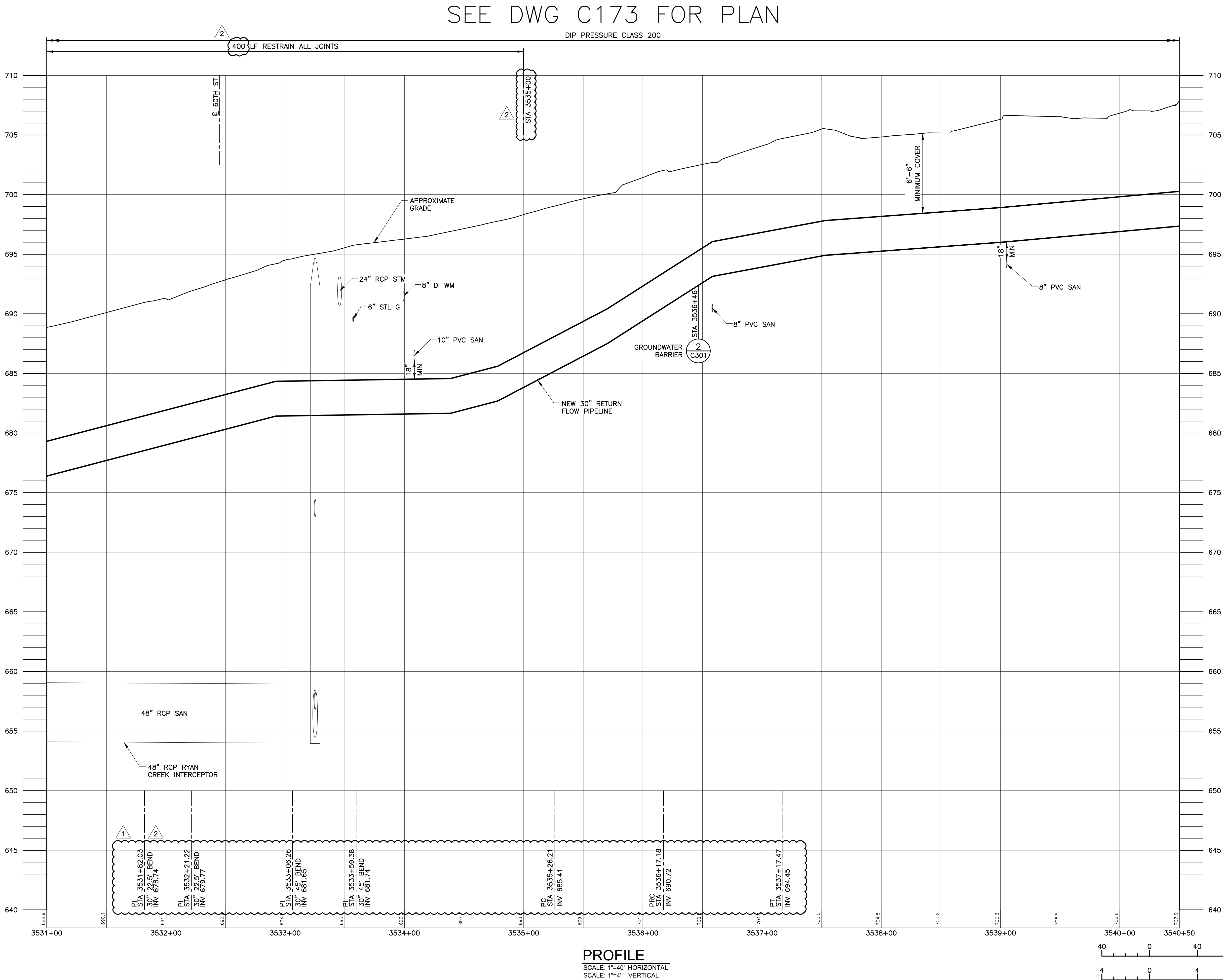


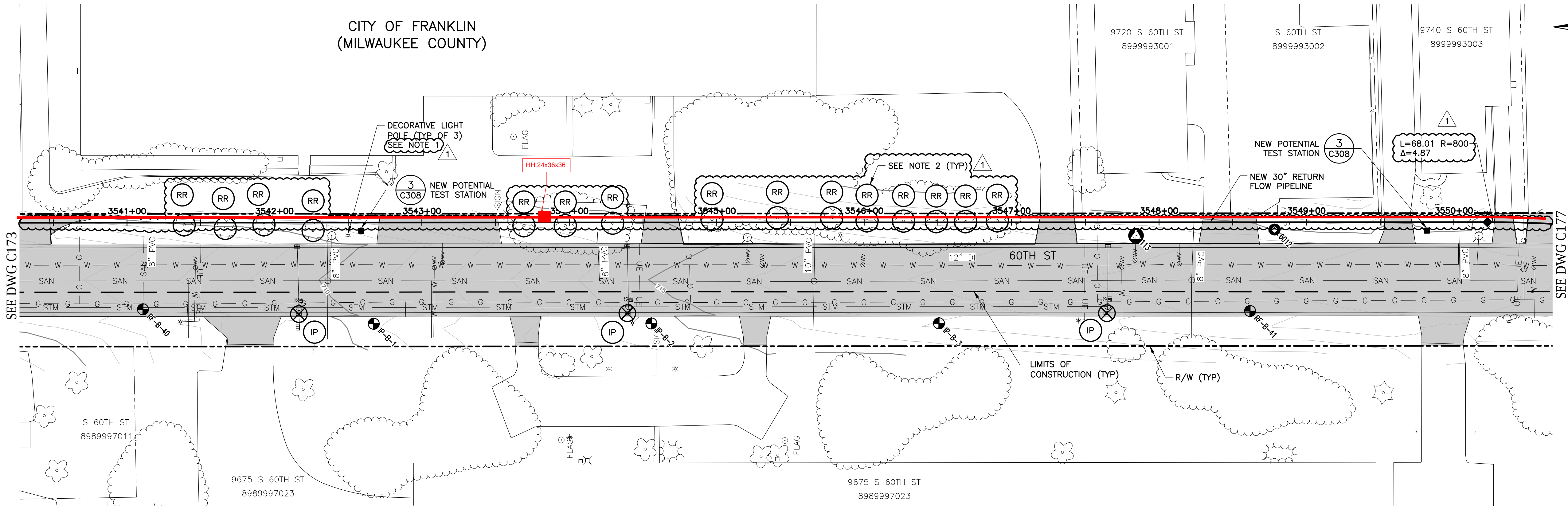
PLAN
SCALE: 1"=40'

SEE DWG C174 FOR PROFILE

- NOTES:
1. REMOVE AND REPLACE EXISTING RETAINING WALL IN KIND, SIZE, LENGTH AND HEIGHTS, AS REQUIRED FOR PIPELINE INSTALLATION.
 2. REMOVE EXISTING DECORATIVE LIGHT POLE DURING CONSTRUCTION ACTIVITIES AS NECESSARY. INSTALL NEW LIGHT POLE PER DETAIL ON C464.
 3. PROTECT RETAINING WALL IN PLACE.

GREAT WATER ALLIANCE™		Waukesha Water Utility SERVING WAUKESHA SINCE 1886		Greeley and Hansen 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186	
CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN STA 3531+00 TO STA 3540+50		CITY OF FRANKLIN PERMIT COMMENTS		REVISION	
APPROVED		12/20		DATE	
SEAL AFFIXED MONTH / DAY / YEAR		APPROVED		NO.	
MARCH 2020		JOB NO.: 15310		DESIGN RMC	
DESIGN RMC		CHECK CRV		APPROV AJM	
SCALE: AS SHOWN		DRAWING NUMBER		C173	
SHEET 88 OF 273		REV 0			

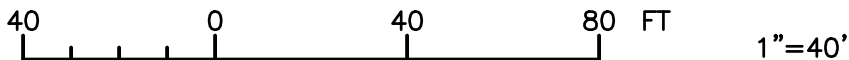




PLAN
SCALE: 1"=40'

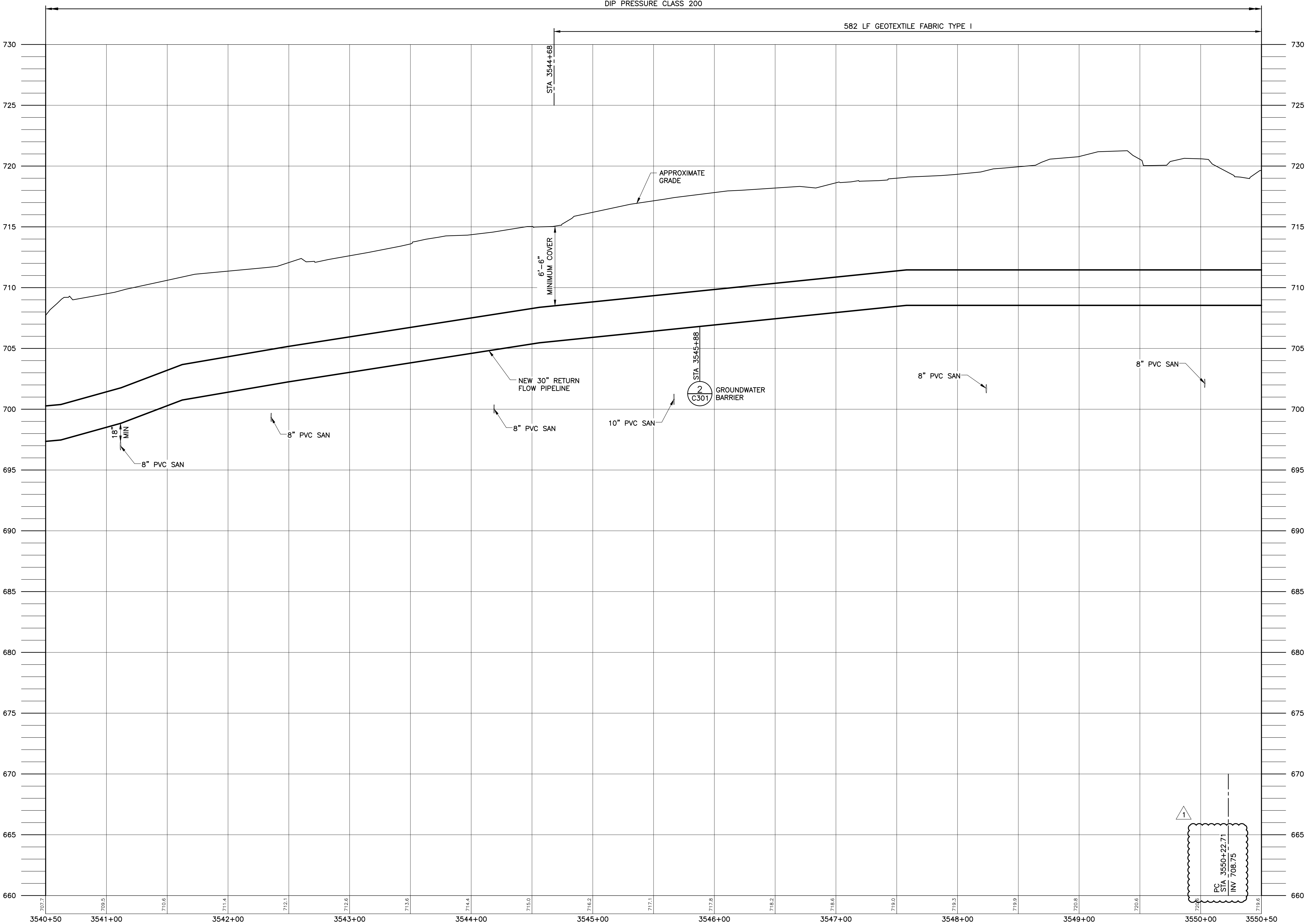
- NOTES:
1. REMOVE EXISTING DECORATIVE LIGHT POLE DURING CONSTRUCTION ACTIVITIES AS NECESSARY. INSTALL NEW LIGHT POLE PER DETAIL ON C464.
 2. REMOVE AND REPLACE TREES AS SHOWN. REPLACEMENT TREES TO BE LOCATED 6 FEET OFF BACK OF CURB.

SEE DWG C176 FOR PROFILE

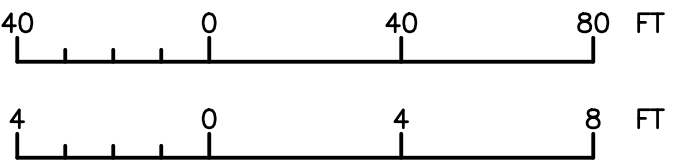


CITY OF FRANKLIN PERMIT COMMENTS				REVISION			
1	12/20	AJM		NO.	DATE	APPD	
 Waukesha Water Utility SERVING WAUKESHA SINCE 1886			 GREELEY AND HANSEN 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186				
 GREAT WATER ALLIANCE™			CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN STA 3540+50 TO STA 3550+50				
APPROVED			SEAL AFFIXED MONTH / DAY / YEAR				
MARCH 2020			JOB NO.: 15310				
DESGN	RMC	CHCK	CRV				
APPRV	AJM	DRWN	TSM				
SCALE: AS SHOWN			DRAWING NUMBER				
C175							
SHEET 90 OF 273			REV 0				

SEE DWG C175 FOR PLAN



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



CITY OF FRANKLIN PERMIT COMMENTS	
1	12/20
AJM	
NO.	DATE
APPD	REVISION

Waukesha Water Utility
SERVING WAUKESHA SINCE 1886

GREELEY AND HANSEN
741 N. GRAND AVE. SUITE 308
WAUKESHA, WI 53186

GREAT WATER ALLIANCE™

CONTRACT PACKAGE 6: RETURN FLOW PIPELINE,
18-INCH SANITARY SEWER, AND OUTFALL FACILITIES
PROFILE
STA 3540+50 TO STA 3550+50

APPROVED

SEAL AFFIXED
MONTH / DAY / YEAR

MARCH 2020

JOB NO.: 15310

DESIGN: RMC, CHECK: CRV

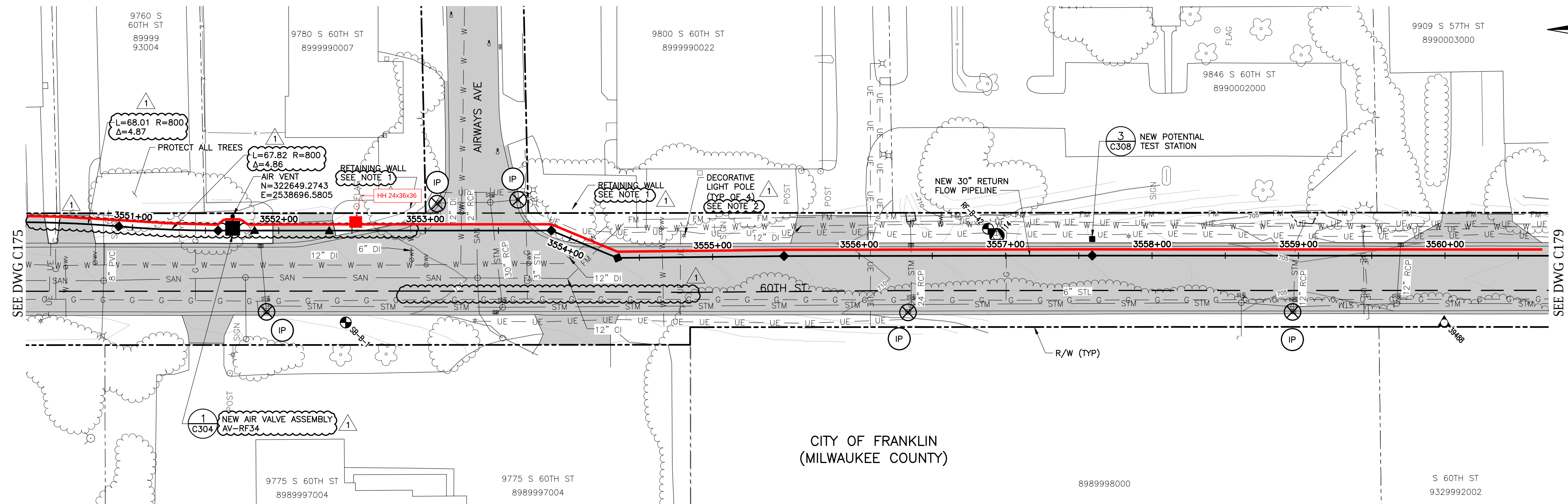
APPROV: AJM, DRAWN: TSM

SCALE: AS SHOWN

DRAWING NUMBER

C176

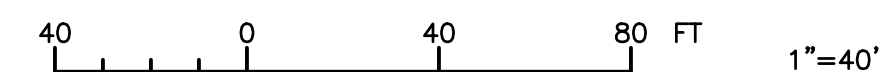
SHEET 91 OF 273 | REV 0



PLAN
SCALE: 1"=40'

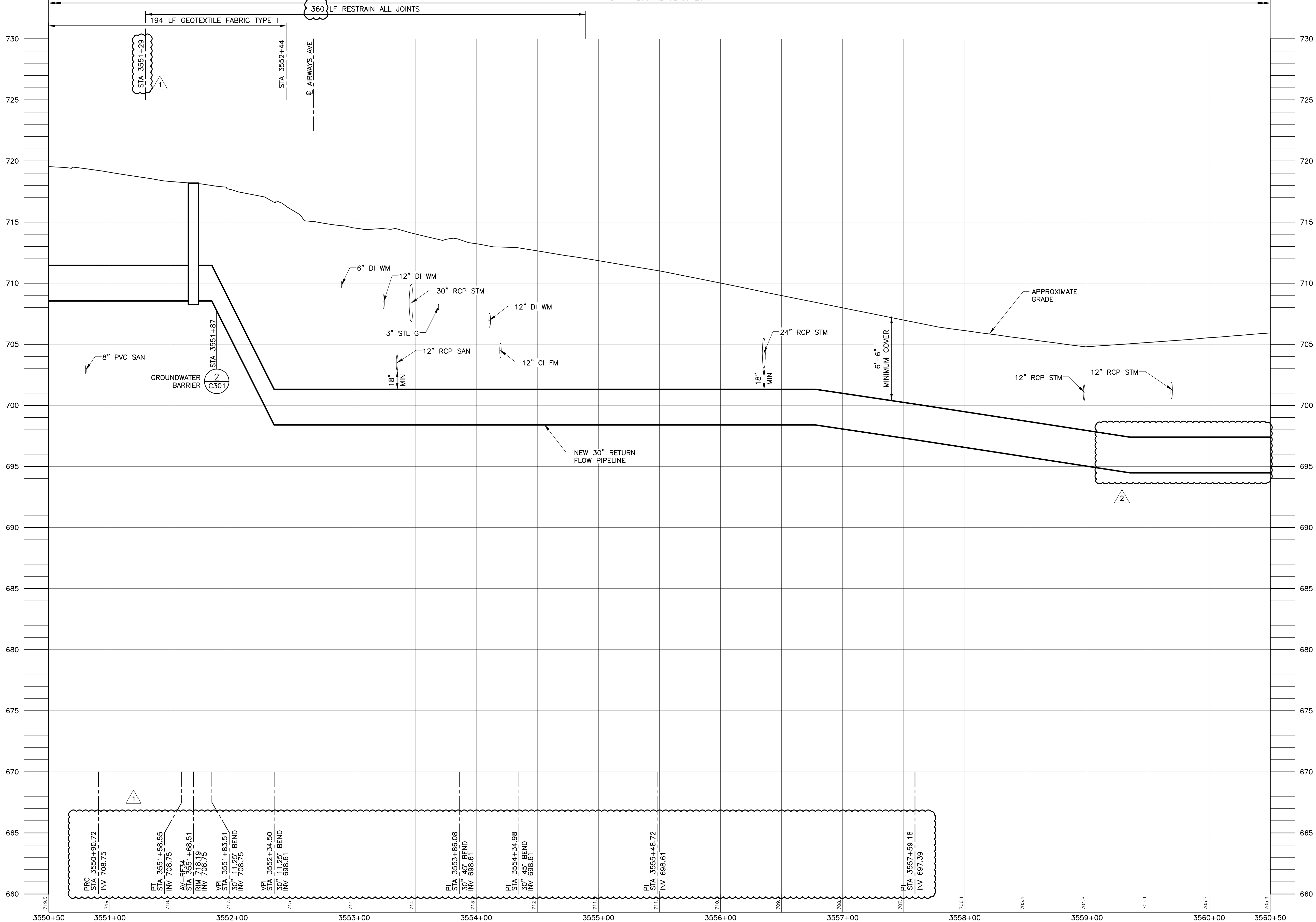
SEE DWG C178 FOR PROFILE

- NOTES:**
1. REMOVE AND REPLACE EXISTING RETAINING WALL IN KIND, SIZE, LENGTH AND HEIGHTS, AS REQUIRED FOR PIPELINE INSTALLATION.
 2. REMOVE EXISTING DECORATIVE LIGHT POLE DURING CONSTRUCTION ACTIVITIES AS NECESSARY. INSTALL NEW LIGHT POLE PER DETAIL ON C464.

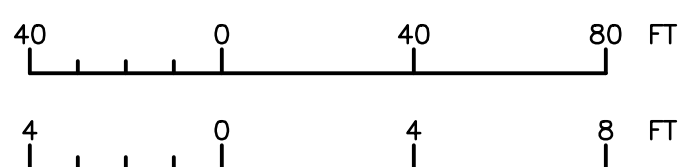


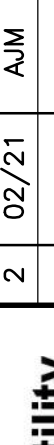
 GREAT WATER ALLIANCE™		 Waukesha Water Utility SERVING WAUKESHA SINCE 1886		1 12/20 A/M CITY OF FRANKLIN PERMIT COMMENTS	
APPROVED		GREELEY AND HANSEN  741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186		NO. DATE APPD REVISION	
SEAL AFFIXED MONTH / DAY / YEAR		CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN STA 3550+50 TO STA 3560+50			
MARCH 2020					
JOB NO.: 15310					
DESIGN	RMC	CHCK	CRV		
APPRV	AJM	DRWN	TSM		
SCALE: AS SHOWN					
DRAWING NUMBER					
C177					
SHEET 92 OF 273		REV 0			

DIP PRESSURE CLASS 200

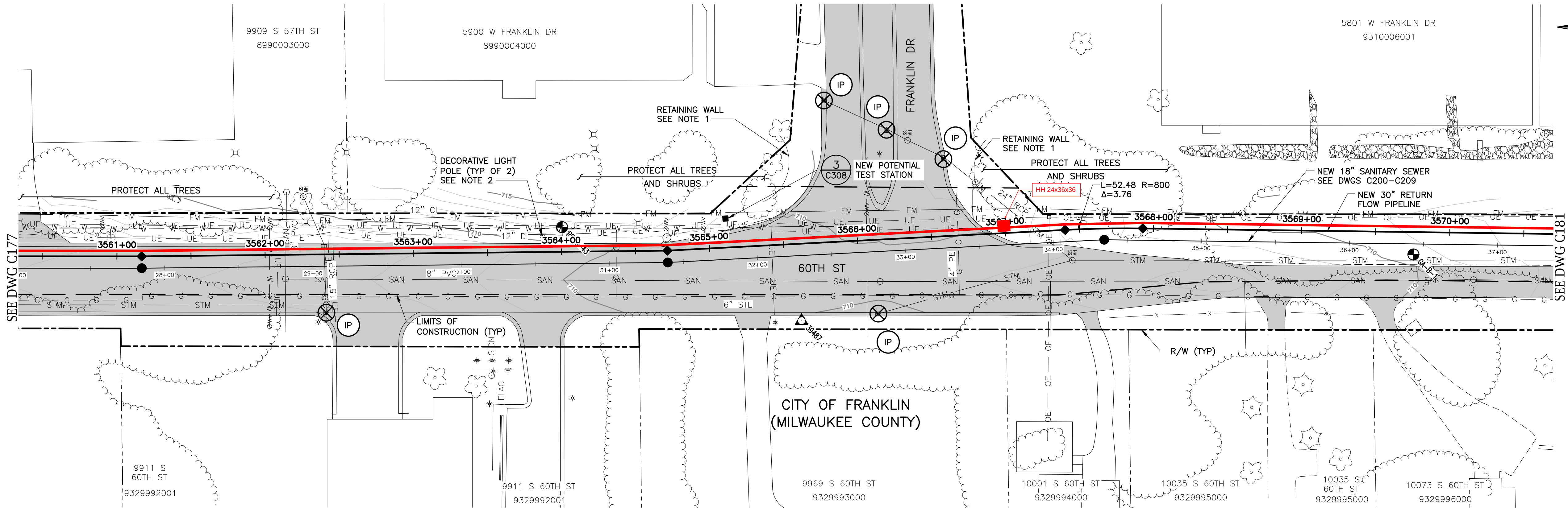


SCALE: 1"=40' HORIZONTAL
SCALE: 1"=4' VERTICAL



 GREAT WATER ALLIANCE™		 Waukesha Water Utility SERVING WAUKESHA SINCE 1886		 GREELEY AND HANSEN 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186	
APPROVED		CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PROFILE STA 3550+50 TO STA 3560+50		1 12/20 A/M 2 02/21 A/M	
SEAL AFFIXED MONTH / DAY / YEAR		MARCH 2020		CITY OF FRANKLIN PERMIT COMMENTS CITY OF FRANKLIN ODOR SCRUBBER	
JOB NO.: 15310		DESGN RMC CHCK CRV APPRV AJM DRWN TSM		NO. DATE APPD	
SCALE: AS SHOWN		DRAWING NUMBER		REVISION	
C178					
SHEET 93 OF 273		REV 2			

CONFORMED PLANS
SEE COVER SHEET FOR
"CONFORMED PLANS NOTE"



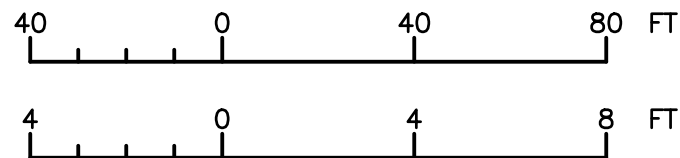
PLAN
SCALE: 1"=40'

SEE DWG C180 FOR PROFILE

- NOTES:
1. REMOVE AND REPLACE EXISTING RETAINING WALL IN KIND, SIZE, LENGTH AND HEIGHTS, AS REQUIRED FOR PIPELINE INSTALLATION.
 2. REMOVE EXISTING DECORATIVE LIGHT POLE DURING CONSTRUCTION ACTIVITIES AS NECESSARY. INSTALL NEW LIGHT POLE PER DETAIL ON C464.

			
Waukesha Water Utility SERVING WAUKESHA SINCE 1886		GREELEY AND HANSEN 741 N. GRAND AVE SUITE 308 WAUKESHA, WI 53186	
		CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN STA 3560+50 TO STA 3570+50	
APPROVED			
SEAL AFFIXED MONTH / DAY / YEAR			
MARCH 2020			
JOB NO.: 15310			
DESIGN	RMC	CHK	CRV
APPRV	AJM	DRWN	TSM
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C179			
SHEET 94 OF 273		REV 0	

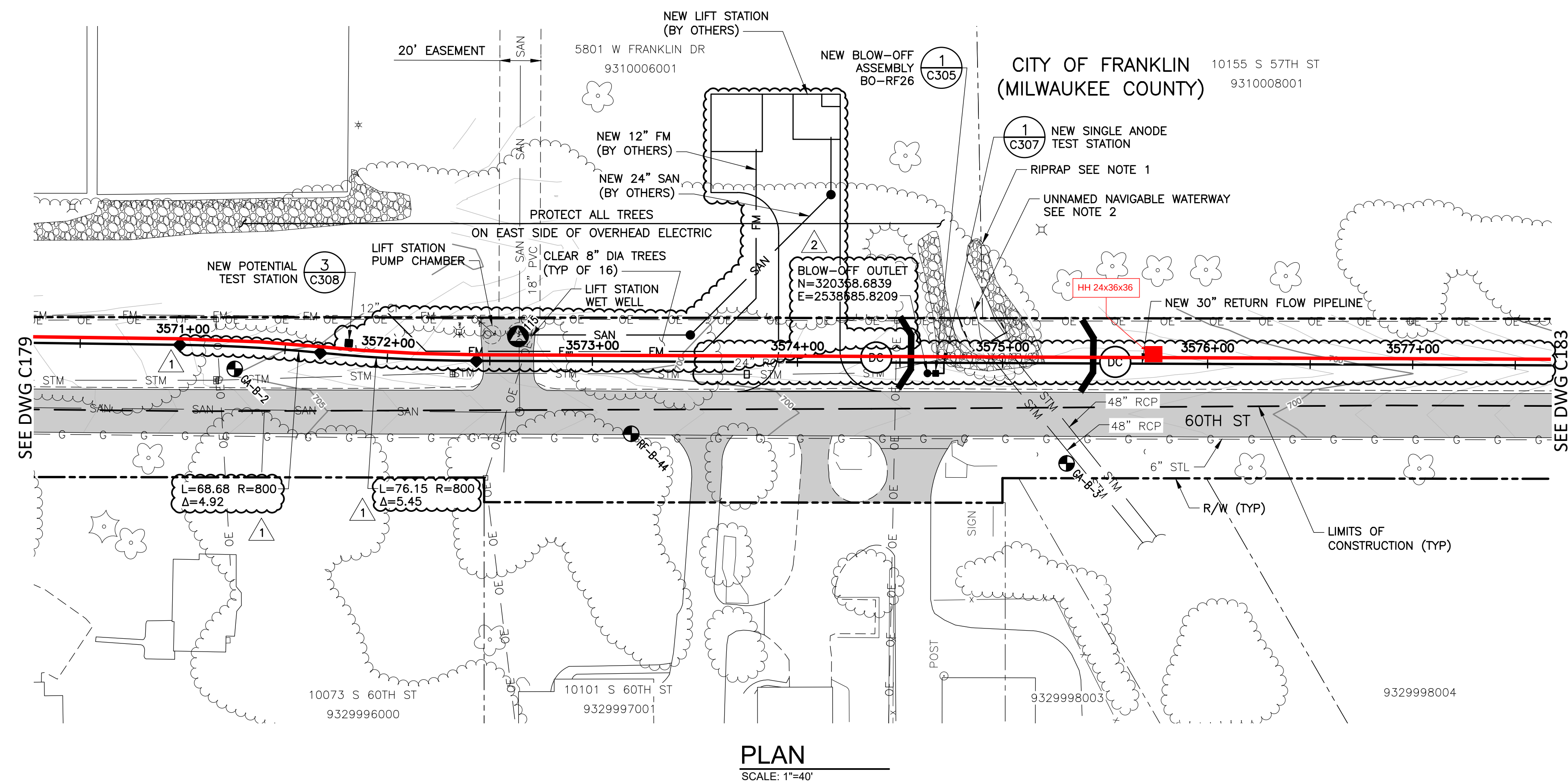
DIP PRESSURE CLASS 200



PROFILE

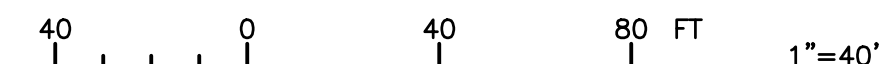
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SCALE: 1"=4' VERTICAL

APPROVED			
SEAL AFFIXED MONTH / DAY / YEAR			
MARCH 2020			
JOB NO.: 15310			
DESIGN	RMC	CHCK	CRV
APPRV	AJM	DRWN	TSM
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C180			
SHEET 95 OF 273		REV 0	



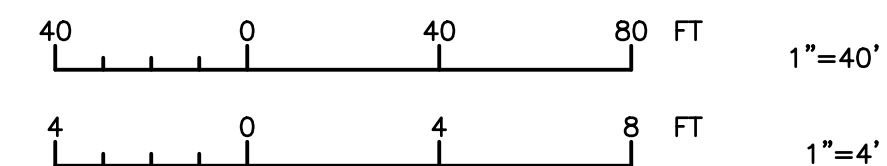
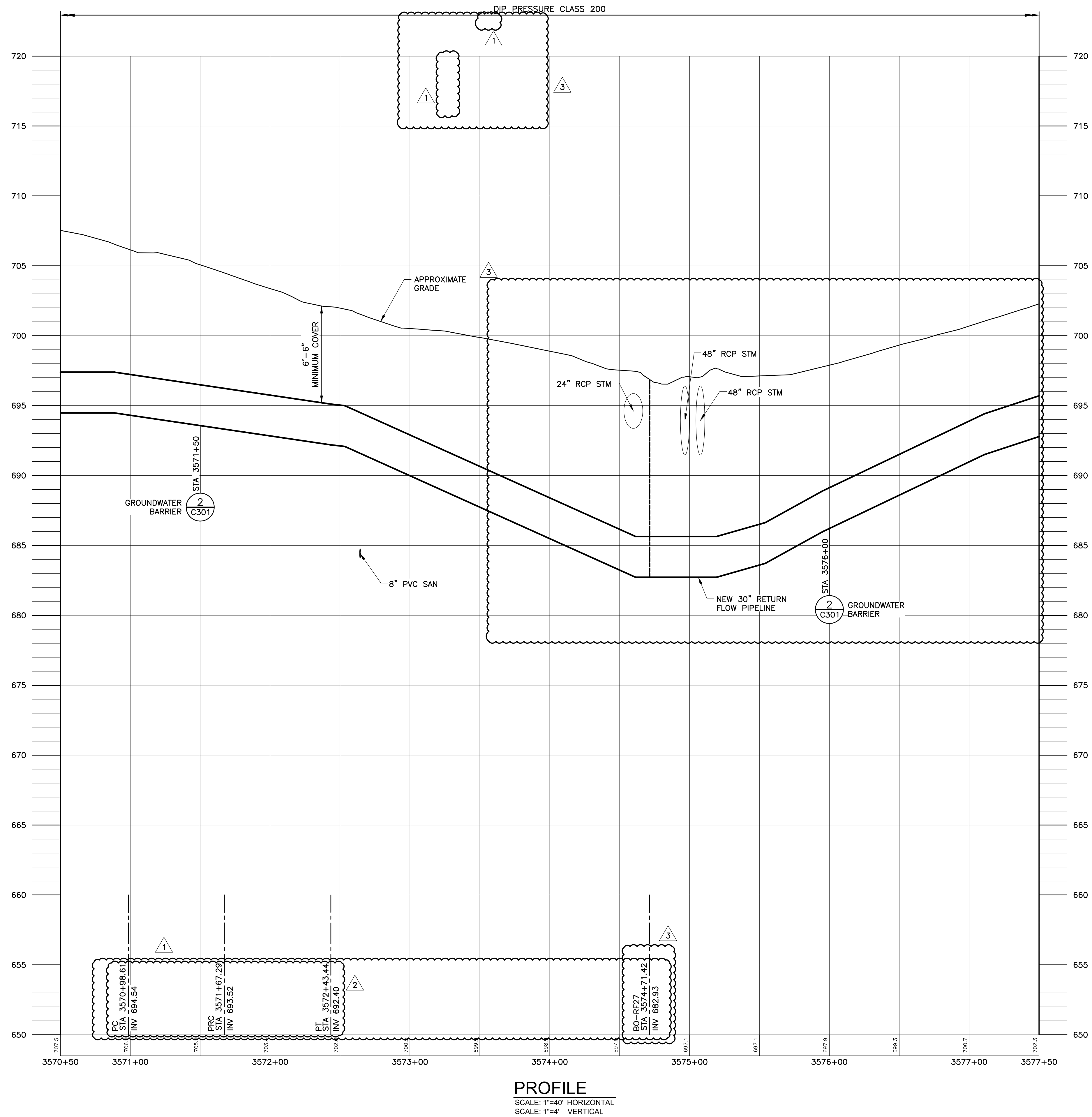
SEE DWG C182 FOR PROFILE

- NOTES:**
1. 24" TO 36" DIA RIPRAP USED FOR EROSION CONTROL. REMOVE RIPRAP, AS REQUIRED, PRIOR TO PIPELINE INSTALLATION AND MAINTAIN SEPARATION OF RIPRAP AND OTHER SOILS. REPLACE CLEAN RIPRAP TO THE ORIGINAL WIDTH AND DEPTH, INCLUDING A NEW LAYER OF GEOTEXTILE FABRIC UNDER THE RIPRAP.
 2. SEE SPECIFICATION 01 41 00 REGULATORY AND SPECIAL REQUIREMENTS FOR NAVIGABLE WATERWAY OPEN-CUT REQUIREMENTS.



 GREAT WATER ALLIANCE™		 Waukesha Water Utility SERVING WAUKESHA SINCE 1886		1		12/20	AJM	CITY OF FRANKLIN PERMIT COMMENTS
				2		09/21	AJM	60TH STREET ALIGNMENT MODIFICATION
CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN STA 3570+50 TO STA 3577+50		 GREELEY AND HANSEN 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186						
APPROVED								
SEAL AFFIXED								
MONTH / DAY / YEAR								
MARCH 2020								
JOB NO.: 15310								
DESIGN	RMC	CHCK	CRV					
APPRV	AJM	DRWN	TSM					
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DRAWING NUMBER								
C181								
SHEET 96 OF 273		REV 0						

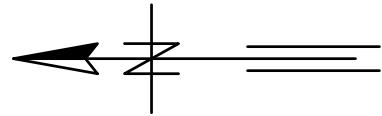
SEE DWG C181 FOR PLAN



 GREAT WATER ALLIANCE™		 Waukesha Water Utility SERVING WAUKESHA SINCE 1886		1		12/20	A/JM	CITY OF FRANKLIN PERMIT COMMENTS
				2		02/21	A/JM	CITY OF FRANKLIN ODOR CONTROL
CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PROFILE STA 3570+50 TO STA 3577+50		 GREELEY AND HANSEN 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186		3		09/21	A/JM	60TH STREET ALIGNMENT MODIFICATION
APPROVED		SEAL AFFIXED MONTH / DAY / YEAR						
		MARCH 2020						
		JOB NO.: 15310						
DESGN		RMC		CHCK		CRV		
APPRV		A/JM		DRWN		TSM		
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C182								
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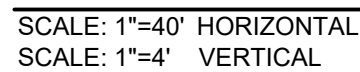


PLAN
SCALE: 1"=40'

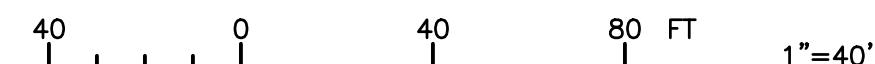
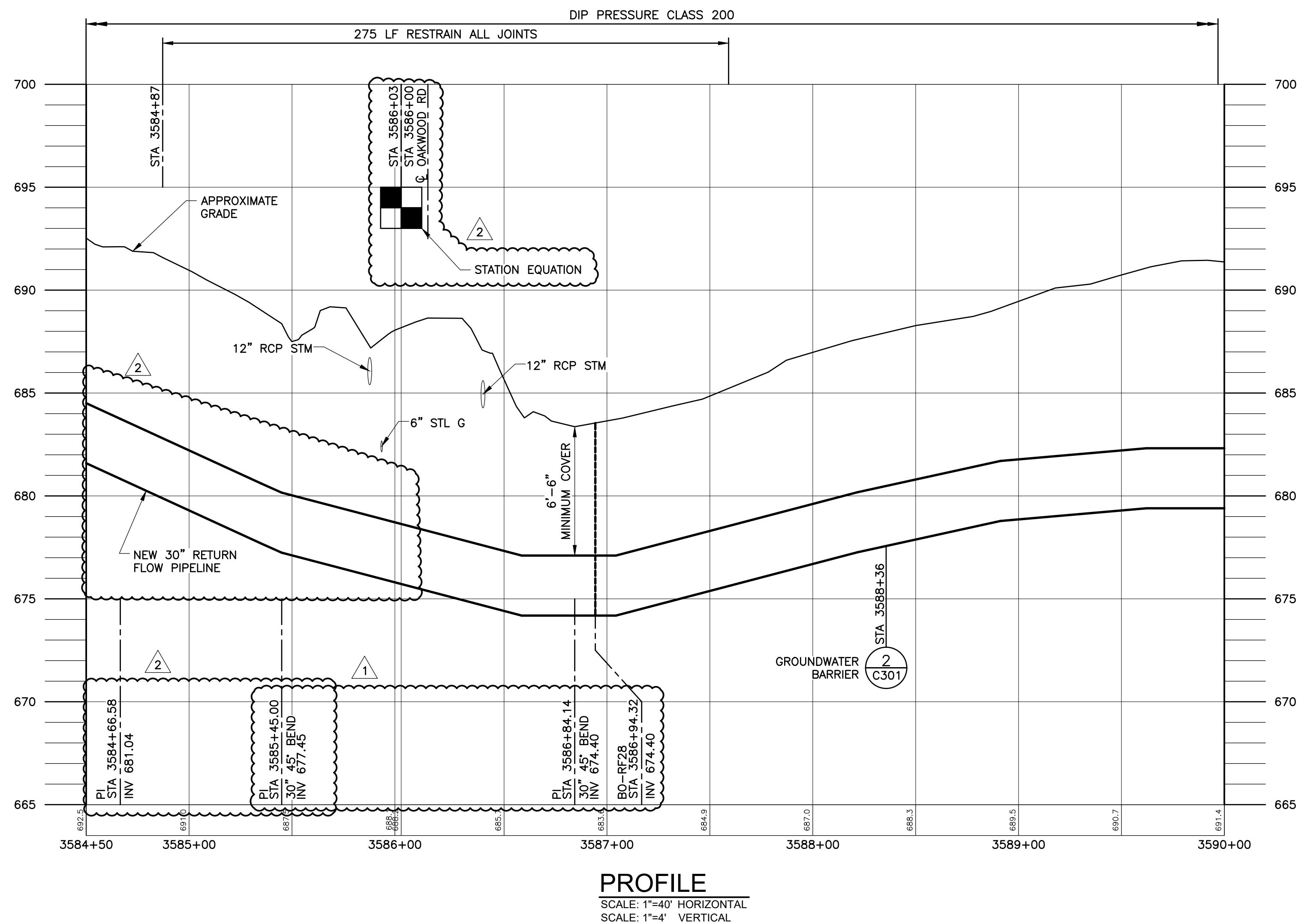
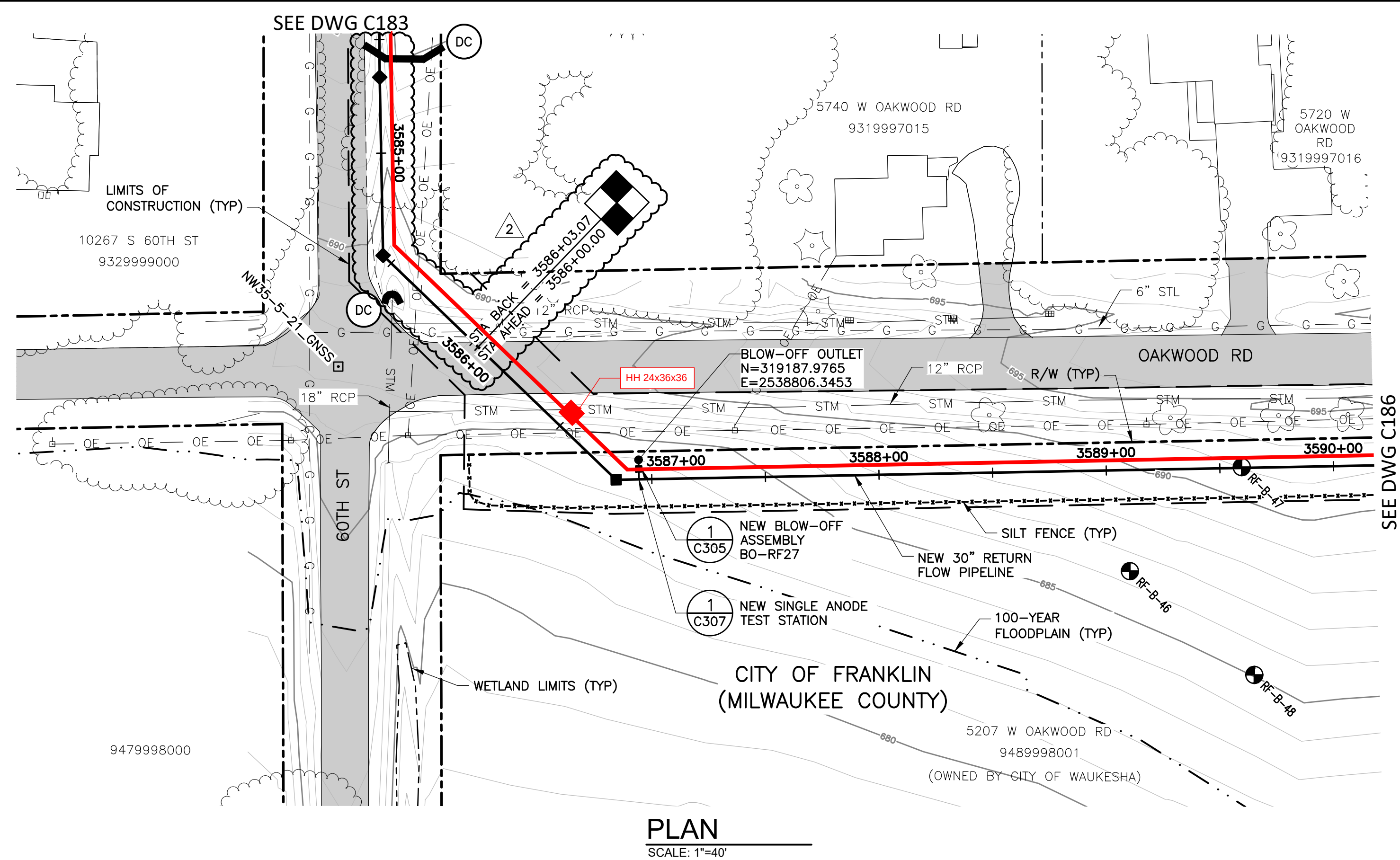


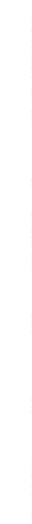
 GREAT WATER ALLIANCE™				 Waukesha Water Utility SERVING WAUKESHA SINCE 1886				CITY OF FRANKLIN PERMIT COMMENTS 60TH STREET ALIGNMENT MODIFICATION			
APPROVED				CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN				12/20 09/21 A/JM A/JM			
SEAL AFFIXED MONTH / DAY / YEAR				GREENEY AND HANSEN 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186				NO. DATE APPD REVISION			
MARCH 2020				JOB NO.: 15310				1 2			
DESGN		RMC		CHCK		CRV		12/20		09/21	
APPRV		A/JM		DRWN		TSM		A/JM		A/JM	
SCALE: AS SHOWN				DRAWING NUMBER				1 2			
C183				12/20 09/21 A/JM A/JM				1 2			
SHEET		98 OF 273		REV		0		12/20 09/21 A/JM A/JM		1 2	

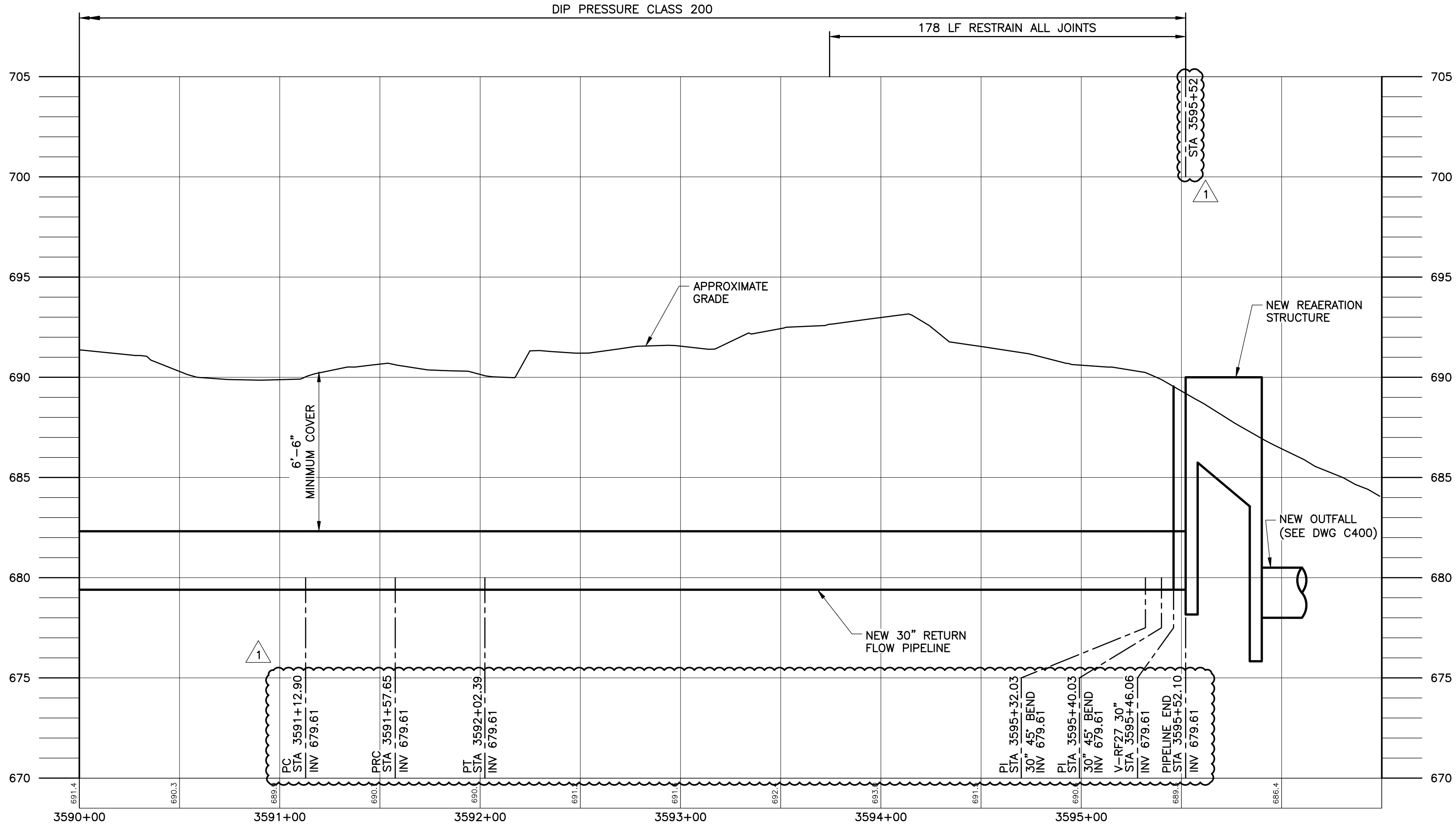
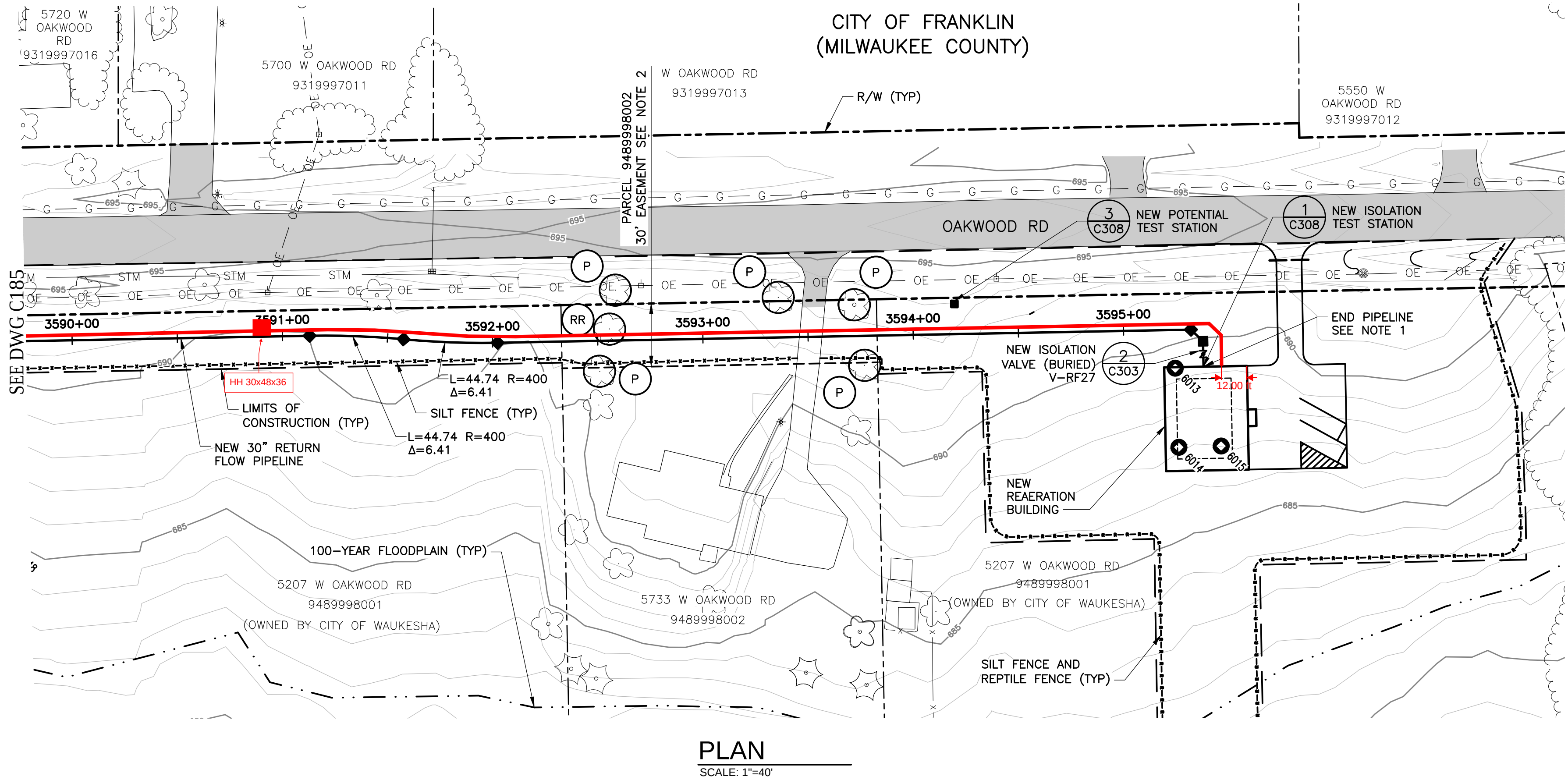
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MARCH 2020			
JOB NO.: 15310			
DESGN	RMC	CHCK	CRV
APPRV	AJM	DRWN	TSM
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C184			
SHEET 99 OF 273		REV 0	

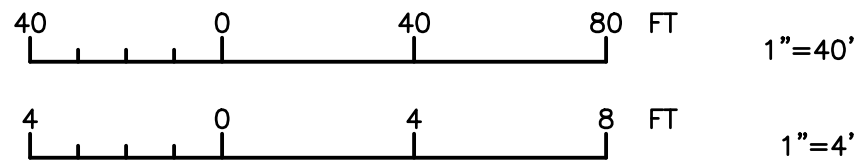


 GREAT WATER ALLIANCE™		 Waukesha Water Utility SERVING WAUKESHA SINCE 1886		1 12/20		CITY OF FRANKLIN PERMIT COMMENTS	
				2 09/21		60TH STREET ALIGNMENT MODIFICATION	
APPROVED		CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN AND PROFILE STA 3584+50 TO STA 3590+00		3			
				4			
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SEAL AFFIXED MONTH / DAY / YEAR		MARCH 2020		NO.		DATE	
JOB NO.: 15310		DESGN RMC		CHCK CRV		APPRVD AJM	
SCALE:		AS SHOWN		TSM		APPD	
DRAWING NUMBER		C185		REV		REVISION	
SHEET 100 OF 273		REV 0		0		0	



NOTES:

1. END OF RETURN FLOW PIPELINE AND CONNECTION TO NEW REAERATION STRUCTURE. SEE DWGS C800-C807.
2. SEE EASEMENT DOCUMENTS INCLUDED IN THE CONTRACT DOCUMENTS FOR THE EASEMENT LEGAL DESCRIPTION AND OTHER EASEMENT INFORMATION.



CITY OF FRANKLIN PERMIT COMMENTS		CITY OF FRANKLIN PERMIT COMMENTS	
AJM		AJM	
12/20		12/20	
NO.		NO.	
DATE		DATE	
APPD		APPD	
REVISION		REVISION	

Waukesha Water Utility SERVING WAUKESHA SINCE 1886		Greeley and Hansen 741 N. GRAND AVE. SUITE 308 WAUKESHA, WI 53186	
GREAT WATER ALLIANCE™ CONTRACT PACKAGE 6: RETURN FLOW PIPELINE, 18-INCH SANITARY SEWER, AND OUTFALL FACILITIES PLAN AND PROFILE STA 3590+00 TO STA 3595+53		APPROVED	
SEAL AFFIXED MONTH / DAY / YEAR		MARCH 2020	
JOB NO.: 15310		DESIGN RMC CHECK CRV	
APPROV AJM		DRAWN TSM	
SCALE: AS SHOWN		DRAWING NUMBER	
C186		SHEET 101 OF 273 REV 0	

SECTION 26 05 33

ELECTRICAL RACEWAY SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Requirements for providing electrical raceway systems as indicated, in accordance with the Contract Documents.
- B. Related Work Specified in Other Sections Includes, But is Not Limited to, the Following:
 - 1. Section 26 05 00 - Basic Electrical Materials and Methods
 - 2. Section 31 23 16 - Excavation
 - 3. Section 31 23 23 - Backfilling
- C. Comply with the “American Iron and Steel (AIS)” requirements as contained in Section 436 of the Consolidated Appropriations Act, 2014, further described in the Bid Form.

1.2 REFERENCES

- A. Codes and standards referred to in this Section are:
 - 1. ANSI 77 - Specifications for Underground Enclosure Integrity
 - 2. ANSI C80.5 - Specifications for Aluminum Rigid Conduit
 - 3. ANSI/NFPA 70 - National Electrical Code
 - 4. NEMA TC2 - Electrical Polyvinyl Chloride (PVC) Conduit
 - 5. UL 360 - Standard for Liquid-Tight Flexible Steel Conduit
 - 6. UL 651 - Standard for Schedule 40 and 80 Rigid PVC Conduit
 - 7. ASTM F2160 - Standard Specification for Solid Wall High Density Polyethylene (HDPE) Conduit Based on Controlled Outside Diameter (OD)
 - 8. NEMA TC 7 - Smooth Wall Coilable Electrical Polyethylene Conduit

9. UL 651A - Schedule 40 and 80 High Density Polyethylene (HDPE) Conduit
10. NEMA TCB 4 - Guidelines for the Selection and Installation of Smooth-Wall Coilable High-Density Polyethylene (HDPE) Conduit
11. Federal Specification WW-C-540C - Conduits, Metal, Rigid (Electrical, Aluminum)
12. Chapter PSC 114.002 -Wisconsin State Electrical Code, Volume 1

1.3 SUBMITTALS

- A. General: Furnish all submittals, including the following, as specified in Division 01 and Section 26 05 00.

1.4 QUALITY ASSURANCE

- A. Codes: Provide all materials and workmanship in accordance with the requirements of the National Electrical Code and local codes having jurisdiction.
- B. Regulatory Requirements: Provide UL listed components.

1.5 DELIVERY, STORAGE AND HANDLING

- A. General: Deliver, store and handle all products and materials as specified in Division 01.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Acceptable manufacturers are listed below. Other manufacturers of equivalent products may be submitted for review.
 1. Rigid PVC conduits:
 - a. Carlon – Thomas & Betts /ABB Group
 - b. Cantex Inc.
 - c. National Pipe & Plastics, Inc.

2. Aluminum Conduits:
 - a. Allied Tube and Conduit
 - b. Wheatland Tube Company/JMC Steel Group
 - c. Sapa Extrusions North America
3. Liquidtight and flexible steel conduit:
 - a. Electri-Flex Company
 - b. The International Metal Hose Co.
 - c. Southwire
 - d. Anamet Electrical, Inc.
 - e. Thomas & Betts /ABB Group
4. Conduit Fitting and Connectors
 - a. Appleton /Emerson Industrial Automation
 - b. Thomas & Betts/ABB Group
 - c. Eaton's Cooper Crouse-Hinds
 - d. O-Z Gedney/Emerson Industrial Automation
 - e. Hubbell - Killark
 - f. AdaletPLM/Scott Fetzer Company
5. Boxes and Enclosures:
 - a. Appleton /Emerson Industrial Automation
 - b. Raco/A Hubbell Company
 - c. Eaton's Cooper Crouse-Hinds
 - d. Thomas & Betts/ABB Group
 - e. Hoffman
 - f. Hope Electrical Products Company
 - g. O-Z Gedney/Emerson Industrial Automation
6. Strut Channel and Fittings
 - a. Allied Tube and Conduit
 - b. Eaton's Cooper B-Line Systems, Inc.
 - c. Thomas & Betts /ABB Group-SuperstrutEnduro Composites Inc.
 - d. Strut Tech Systems
 - e. Unistrut
7. Terminal Blocks
 - a. Phoenix Contact
 - b. ABB - Entrelec
 - c. Weidmuller

8. High Density Polyethylene (HDPE) Conduit

- a. Carlon
- b. Duraline
- c. Southwire
- d. Centennial Plastics

9. Handholes

- a. Quazite, a Hubbell Brand

10. Detectable Pulling Line

- a. Dura-Line

2.2 RACEWAYS

A. General: Provide 2-inch raceways.

B. Raceway Requirements: Provide raceways meeting the following requirements:

- 1. Provide rigid heavy wall aluminum alloy 6063T-1 conduit in accordance with the requirements of UL 6, Federal Specification WW-C-540C and ANSI C80.5.
- 2. Provide rigid nonmetallic Schedule 80 PVC electrical conduit in accordance with the requirements of UL Standard 651 and NEMA Standard TC2 with solvent cement joints.
- 3. Provide liquidtight flexible single strip steel, hot-dip galvanized conduit with PVC jacket in accordance with requirements of UL 1. Provide a continuous copper bonding conductor wound spirally between convolutions on the inside of the conduit meeting requirements of UL 360 for conduit sizes 1-1/4-inch and smaller.
- 4. Provide SDR11 wall coilable HDPE conduit, color-coded orange, meeting the requirements of ASTM F2160 and NEMA TC7 and listed to UL 651A.

2.3 FITTINGS

A. General: Provide fittings of similar material as raceways.

B. Fittings Requirements: Provide fittings meeting the following requirements:

- 1. Set screw or indenter type fittings are not acceptable. Provide threaded connectors for all rigid or intermediate metal conduits.
- 2. Provide solvent cement connections for all rigid nonmetallic conduits.

3. Provide insulated connectors for liquidtight flexible conduit.
4. Bushings
 - a. Provide fittings of similar material as raceways.
 - b. Provide insulated nonmetallic bushing rated 105 degrees C for all installations where bonding is not required.
 - c. Provide insulated metallic grounding and bonding bushing rated 150 degrees C where bonding is required.
 - d. Provide insulated nonmetallic bell end bushing for raceway termination at splice closure pedestals.

2.4 BOXES AND CABINETS

A. Outlet Box Requirements:

1. Provide cast aluminum boxes for aluminum conduit systems.
2. Provide nonmetallic boxes and covers in PVC conduit systems.
3. Provide watertight gasketed covers held with nonferrous screws for all cast metal boxes.

B. Junction and Pull Box Requirements:

1. Provide cast aluminum boxes with mounting lugs, threaded hubs and gasket covers for surface mounted boxes
2. Provide cast steel or fabricated 10-gauge Type 316 stainless steel for boxes either partially or fully encased in concrete. For partially encased boxes provide sides return channel flanged around cover opening. For fully encased boxes provide flush covers. Provide continuously welded and ground smooth seams. Provide mounting lugs and threaded conduit hubs.
3. Provide watertight gasketed covers held with stainless-steel captive screw slot bolts.
4. Provide steel barriers in all boxes to isolate instrumentation wiring from all other wiring systems
5. Provide all boxes located outdoors meeting NEMA 4X, 316 stainless steel requirements.

C. Terminal Box Requirements:

1. Provide minimum 12 gauge stainless steel fabricated box with mounting lugs, floor stand, and hinged doors.
2. Provide the door with continuous piano hinge and 3 point lockable latch. Provide print pocket on inside of door.
3. Provide back plate fabricated from 12 gauge minimum steel with white enamel finish for mounting terminals and wire troughs.
4. Provide wire troughs consisting of plastic ducts with snap slot design and removable covers. Run all wiring within wire troughs.
5. Furnish a schedule of terminals with the following information
 - a. Source
 - b. Type of Signal
 - c. Function
6. Provide removable jumpers to allow operation of the equipment.
7. Separate analog terminals from all other terminals.
8. Provide sufficient quantity of terminals for each wire entering the terminal box plus 20 percent but not less than 10 spare terminals.
9. Terminals: All catalog numbers refer to Phoenix Contact Type for the purpose of establishing the standard of quality and general configuration desired.
 - a. Provide symmetrical type steel mounting rails, NS-35.
 - b. Analog Signals: Provide terminals in enclosed housing suitable for wires from 22 to 12 AWG rated 600 volts with gray body, knife disconnect and test connection socket on both sides of disconnect, Phoenix Contact Type UK 5-MTK-P/P.
 - c. Control and Alarm Signals: Provide terminals suitable for wires from 24 to 10 AWG rated 18 amperes at 600 volts, blue body, Phoenix Contact Type UK5N BU.
 - d. 120-Volt Power Wiring: Provide terminals suitable for wires from 18 to 10 AWG rated 30 amperes at 600 volts, hot (black body), neutral (white body), ground (green body) , Phoenix Contact Type UK5N BK, UK5N WH & UK5N GN, respectively.
10. Enclosures: Provide enclosures meeting the same NEMA criteria for the various areas as specified under Junction and Pullboxes.

D. Handholes

1. Provide polymer concrete handholes with Tier 22 load rating in accordance with ANSI 77
2. Provide handholes with straight walls, open bottom and mouseholes at bottom edge for raceway entry.
3. Provide each handhole with a matching one-piece lid, attached with two tamper-resistant bolts, and molded legend reading "FIBER OPTICS".
4. Provide handholes in dimensions indicated on the Drawings.
5. Quazite style "PG" or approved equal.

2.5 SUPPORTING DEVICES

A. Raceway Supports: Provide raceway supports meeting the following requirements:

1. Do not use perforated straps or plumbers tape for conduit supports.
2. Provide expansion bolts or inserts for fasteners in concrete, toggle bolts for hollow masonry or frame construction, and preset inserts for prestressed concrete.
3. Conduit Straps and Backs:
 - a. For metallic conduits, provide steel or malleable iron.
 - b. For nonmetallic and PVC coated conduits, provide PVC coated malleable iron with stainless steel anchors and bolts.
4. Conduit Hangers
 - a. For metallic conduits, provide steel adjustable conduit hangers or clevis hangers.
 - b. For nonmetallic and PVC coated conduits, provide PVC coated adjustable conduit hangers with stainless steel hardware.

2.6 DETECTABLE PULLING LINE

- A. Provide polyester pulling line integral tracer wire for signal locating.
- B. Provide nominal 5/8" width pulling line with minimum tensile strength of 1,800 pounds.

- C. Provide line with sequential foot markings.
- D. Dura-line Part number WP18LC or approved equal.

PART 3 EXECUTION

3.1 PREPARATION

- A. General: Install electrical equipment and material of the size, type and general routing as shown or required.
- B. Coordination with Reinforcing: Install raceway, fittings, boxes and cabinets free from direct contact with reinforcing steel.
- C. Alignment: Provide fasteners, anchor bolts, anchorage items and supports as required to insure proper and rigid alignment. Attach equipment with fasteners sized according to size and weight of the equipment and the thickness of the supporting surface.
- D. Aluminum Coating: Where aluminum is placed in contact with dissimilar metal or concrete, separate contact surfaces with gasket, nonabsorptive tape or coating to prevent corrosion.
- E. Grounding: Make metallic raceways electrically and mechanically continuous and ground as required. Install conduits continuous between outlets, boxes, cabinets and panels.

3.2 INSTALLATION

- A. General: Cut conduits square and deburr the cuts to the same degree as the conduit manufacturer. Fasten conduit securely to outlets, junction, pull and terminal boxes. Provide caps and seals to prevent the entrance of foreign material and moisture during installation and before pulling wire.
- B. Where conduit size is not shown, provide conduits one size larger than indicated in Table 4, Chapter 9 of the NEC.
- C. Saw cut aluminum conduit to prevent reduction in internal area.
- D. For mounting on concrete and masonry surfaces provide a minimum of 1/4 inch air space between conduit and mounting surface. Support and fasten conduit to structural members spaced in accordance with electrical codes. Support conduit at least every eight feet or less in accordance with NEC requirements.
- E. When two or more exposed conduits are in the same general routing, provide parallel installation with symmetrical bends.

- F. Make changes in direction with bends or fittings. Use factory-made bends or elbows wherever possible. Make field bends and offsets with a hand bender or conduit-bending machine.
- G. Run conduit in buildings with no more than the equivalent of three 90 degree bends between pull points. Provide no more than 125 feet of conduit runs between pull points. Provide pull boxes where shown, specified or wherever required to install conductors and to meet the above requirement.
- H. Install pull and junction boxes in accessible locations with working space in front of and around the installation. Obtain approval to locate boxes in finished areas.
- I. Where approved for encased installation, install conduits in slabs as close to the middle of concrete slabs as practicable without disturbing reinforcement. Do not use conduit with an outside diameter exceeding one-third of the slab thickness. Do not place conduits closer than three diameters on centers, except at cabinet locations where the slab thickness is increased.
- J. Pitch conduits to outlet boxes to avoid trapping moisture. Where dips are unavoidable in exposed conduit runs, install drain fitting at low point.
- K. Conduit Material Types: Provide conduit as follows:
 - 1. Provide aluminum conduit in all exposed outdoor installations, except as described below.
 - 2. Provide rigid nonmetallic Schedule 80 conduits underground, concrete encased or direct buried, unless specifically detailed otherwise.
 - 3. Provide HDPE conduit for future installation of outside-plant fiber optic cables where shown on the Drawings.
 - 4. Provide watertight hub fittings for all boxes, enclosures and cabinets located below grade or in wet, damp or corrosive areas.
 - 5. Provide rigid conduit connection where equipment is fixed and not subject to adjustment, mechanical movement or vibration. Provide union fittings to permit removal of equipment without cutting or breaking conduit.
 - 6. Provide liquidtight flexible conduit connection where equipment is subject to adjustment, mechanical movement or vibration.
 - 7. Coat all threads in aluminum conduit runs with graphite or other corrosion preventive compound.
 - 8. Penetrations: Make concealed penetrations for single conduits not more than 1/4-inch larger than the diameter of the conduit. Make penetrations through walls, ceilings and floors other than concrete for exposed conduits not more than 1/4-inch larger than the diameter of the conduit. Fill the voids

around conduit with caulking compound and finish the surface the same as the wall, ceiling or floor. Where a conduit enters through a concrete non-waterproofed wall, floor or ceiling, provide a Schedule 40 sleeve and fill the space between the conduit and sleeve with a plastic expandable compound. If the sleeve is not placed with the concrete, drill the hole not less than 1/2-inch and not more than one inch larger than the sleeve, center the sleeve and grout the sleeve for the total depth of penetrated concrete with non-shrink grout, polyurethane or silicone sealant.

- L. Boxes: Provide boxes of the proper dimensions for the size and quantity of conductors enclosed.
 - 1. For boxes mounted on steel, concrete and masonry surface, provide a minimum 1/4-inch non-metallic spacer to hold the box away from the surface.
 - 2. Remove debris including dust, dirt, wire clippings and insulation from the interior of boxes. Replace boxes with open conduit holes. Repair or replace damaged boxes as directed.
- M. HDPE Conduit: Install direct-buried HDPE conduit according to NEMA TCB 4, and National Electrical Code, Article 353.
 - 1. Conduit Route: Establish and mark exactly conduit or cable routing. Resolve routing near existing obstacles and coordinate with other site work. Maintain a 6-inch minimum horizontal clearance from the direct buried conduit to adjacent utility lines. Maintain a 6-inch minimum vertical clearance from the direct buried conduit to utility lines at crossovers. Adhere to lines, grades, elevations and dimensions as shown.
 - 2. Installation Method: Installation method for raceway shall be determined by method used for water pipeline installed in common alignment:
 - a. Where pipeline is installed in open trench, conduit shall be installed in trench, as shown on the Drawings.
 - b. Where pipeline is installed by horizontal directional drilling or jack-and-bore, conduit shall be installed by horizontal directional drilling in a separate run.
 - 3. Trench Excavation: Perform excavation work in accordance with the requirements of Section 31 23 16.
 - 4. Conduit: Place conduit in straight lines and with a minimum slope of 0.25 percent (3 inches per 100 feet). Slope conduit down to manholes, handholes and structures. Secure conduits in place to prevent floating and movement.
 - 5. Bends: Install 12-foot minimum radius bends in horizontal turns and vertical deflections. For bends used at ends of conduit runs, provide a

bending radius exceeding the minimum value indicated in National Electrical Code, Table 354.24 and the conduit manufacturer's recommended minimum radius.

6. Bedding and Backfilling:
 - a. Where conduit is installed in a common trench with other work, provide backfill as shown and meeting the requirements of Section 31 23 23.
 - b. Where conduit is installed in a dedicated trench, provide bedding and backfill for direct buried conduits or cables in accordance with Section 31 23 23.
7. Underground Warning Tape: Provide one detectable underground warning tape for each direct buried duct.
8. Install detectable pulling line in all HDPE conduit.

N. Handholes:

1. Establish and mark handhole locations exactly. Resolve locations near existing obstacles and coordinate with other sitework. Adhere to orientation, elevations and dimensions as indicated.
2. Hole Excavation: Install hole excavations meeting the requirements of Section 31 23 16.
3. Precast Handhole Installation: Place a 6-inch thick compacted crushed stone base on the bottom of the hole under the entire handhole enclosure.
4. Backfilling: Backfill meeting the requirements of Section 31 23 23.

END OF SECTION

November 22, 2021

Jeff Champion
Construction Manager
Black & Veatch
2010 E. Broadway Avenue
Waukesha, WI 53186
ChampionJA@bv.com



Re: Waukesha Water Utility – Great Lakes Water Supply Program
Project 199990-CP6 – Return Flow Pipeline
Request for Proposal – Fiber Optic Conduit

Jeff,

SJ Louis was asked to provide pricing on the installation of Fiber Optic Conduit through the City of Franklin. The following is the description of the work provided by Black & Veatch.

The proposed route runs from approximately STA 3350+00 to the Reaeration Building. The provided alignment is general and Contractor may follow alignment for Return Flow Pipeline. The attachment Section 26 05 33 specifies the products and installation requirements of the Work. The Work includes installation of 24,000 LF of 2-inch SDR11 HDPE fiber optic conduit, color-coded orange; 5 EA 30x48x36 handholes; 15 EA 24x36x36 handholes. Provide unit prices for installation of length of conduit where Return Flow Pipeline has already been installed, length of conduit where Return Flow Pipeline has yet to be installed, and for both sizes of handholes at time of response to this request for proposal.

Pricing is as follows:

For installation of length of conduit where Return Flow Pipeline has already been installed: **\$13/LF**

For length of conduit where Return Flow Pipeline has yet to be installed: **\$13/LF**

5 EA 30x48x36 handholes: **Included in LF price**

15 EA 24x36x36 handholes: **Included in LF price**

Any additional handholes will be tracked via T&M.

Attached is the detail drawing for the handhole installation.

Waukesha Water Utility
115 Delafield Street P.O. Box 1648
Waukesha, WI 53187-1648 USA
P: (262) 521-5272 F: (262) 521-5399

Great Water Alliance
Great Lakes Water Supply Program
CP6 - Return Flow Pipeline, 18-in Sanitary Sewer and
Outfall Facilities

Project No.: 199990-CP6
File No.: 80.1720

S.J. Louis Construction, Inc.
1351 Broadway Street W PO Box 459
Rockville, MN 56369 USA

REQUEST FOR PROPOSAL

Request for Proposal No.:	4 Rev.: 0.00
Issue Date:	Thursday, September 09, 2021
Subject:	Fiber Optic Conduit - City of Franklin
Reference Drawing / Specification:	
Workflow Status:	Approved

REQUEST FOR PROPOSAL TO CHANGE TO THE TERMS OF THE CONTRACT:

Work Change Directive Category: **1 - Owner Initiated**

Work Change Directive Sub-Category: **C - Design Improvements and Additions**

Purpose for this Request for Proposal:

Request for Proposal No. 004 is provided to S.J. Louis Construction, Inc. so a proposal can be developed to install fiber optic conduit along a portion of the Return Flow Pipeline route.

Description of Change:

The attached files show the proposed route for fiber optic conduit along with approximate handhole locations and sizes. The proposed route runs from approximately STA 3350+00 to the Reaeration Building. The provided alignment is general and Contractor may follow alignment for Return Flow Pipeline. The attachment Section 26 05 33 specifies the the products and installation requirements of the Work. The Work includes installation of 24,000 LF of 2-inch SDR11 HDPE fiber optic conduit, color-coded orange; 5 EA 30x48x36 handholes; 15 EA 24x36x36 handholes. Provide unit prices for installation of length of conduit where Return Flow Pipeline has already been installed, length of conduit where Return Flow Pipeline has yet to be installed, and for both sizes of handholes at time of response to this request for proposal.

Provide a proposal to complete the Work for installing fiber optic conduit as described above and shown in the attachments.

The Contractor shall prepare and submit a detailed cost and schedule analysis for the proposed change as detailed above. This proposal should include sufficient detail and support documentation to allow a thorough review. It is intended that an agreed upon **Unit Price** shall be the basis for payment of the proposed changes. Any proposed variations in this basis should be documented and thoroughly justified in your proposal. If acceptable, the indicated change may be made a part of your Contract via Work Change Directive, Change Order or other mutually agreeable terms. The Contractor shall respond to this Request for Proposal by submitting a Change Order Request within 14 days following receipt of the request.

Workflow Approvals:

Submit

Friday, October 01, 2021

Submit

Collin Kruse

1	Friday, October 01, 2021	Approve	Jeff Champion
1	Friday, October 01, 2021	Approve	Jeff Champion
2	Monday, October 04, 2021	Approve	Catharine (Katie) Richardson
3	Monday, November 22, 2021	Final Approve	Frank Wizner