

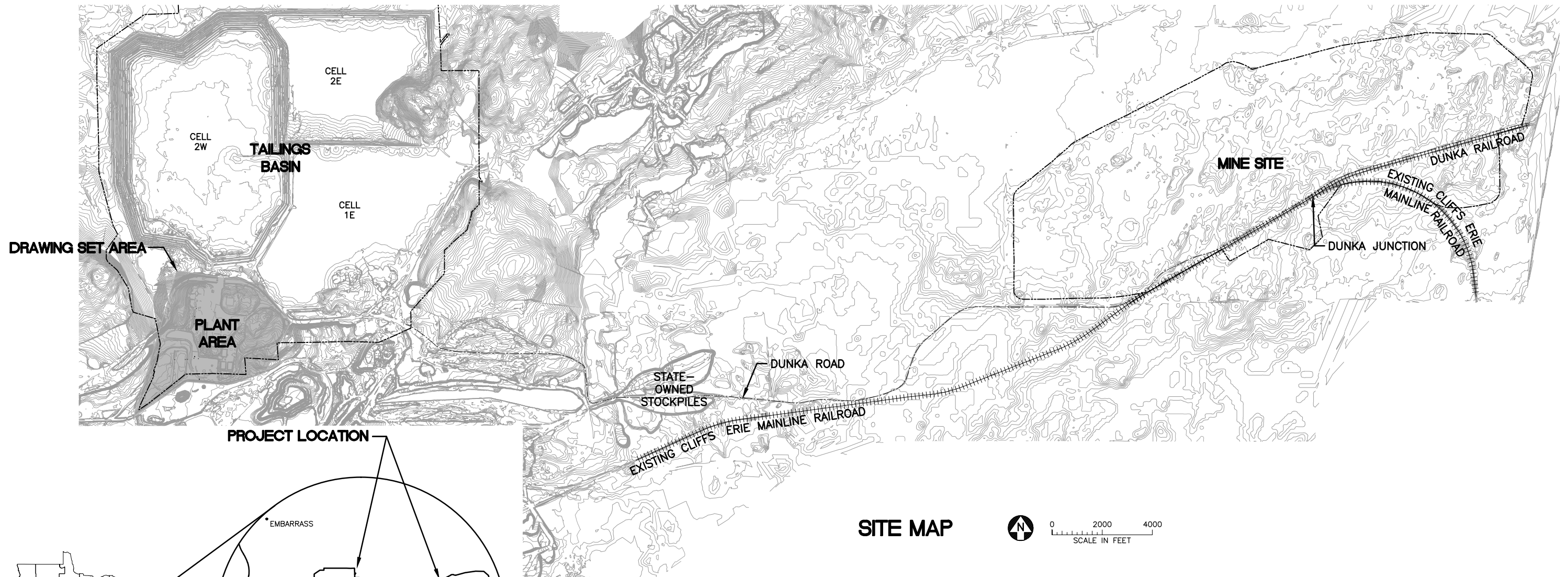
Appendix 10 Plant Site Stormwater Permit Application Support Drawings

POLY MET MINING, INC. NORTHMET PROJECT

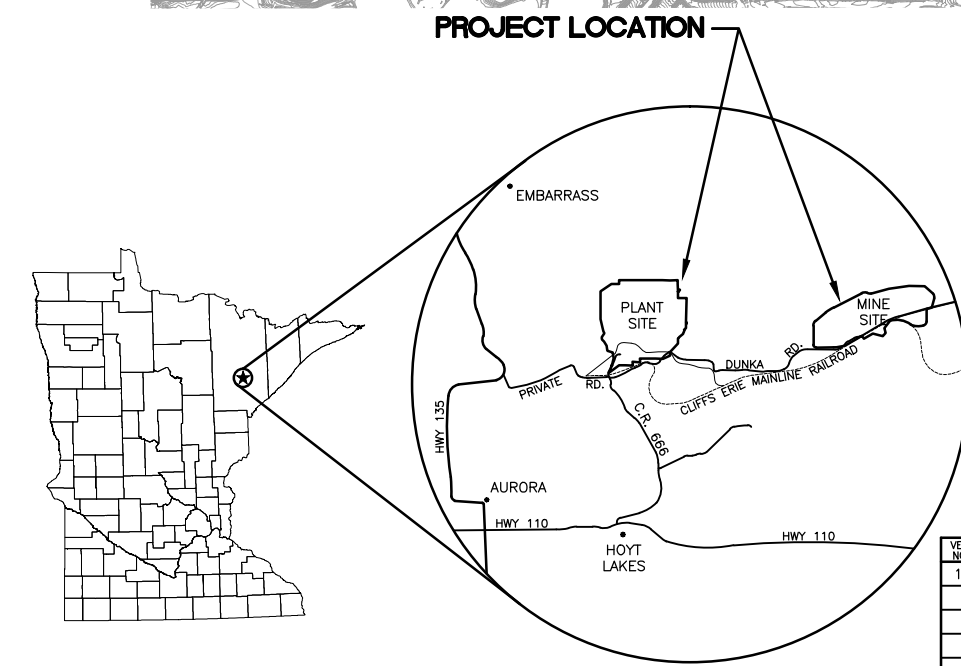
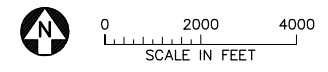
PERMIT APPLICATION SUPPORT DRAWINGS

PLANT SITE STORMWATER

HOYT LAKES, MINNESOTA



SITE MAP



LOCATION MAP
NOT TO SCALE

VICINITY MAP
NOT TO SCALE

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
			ISSUED	VERSION	DATE
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			NOT APPROVED FOR CONSTRUCTION		

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PRINTED NAME: CRISTIAN A. DIAZ
SIGNATURE: [Signature]
DATE: 5/15/15 LICENSE# 46593

DRAWN: VJS
CHECKED: CMK2
BARR PROJECT NO.: 23/69-0C29
SCALE: AS SHOWN

Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:

**PLANT SITE STORMWATER GENERAL DWGS
LOCATION MAP AND SITE MAP**

POLYMET
MINING

POLY MET MINING, INC.
NORTHMET PROJECT
HOYT LAKES, MINNESOTA

BARR

BARR ENGINEERING COMPANY
4700 WEST 77TH STREET
MINNEAPOLIS, MN.
Ph: 1-800-632-2277

DWG. NO. **PSSW-001** REV

CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29\10\PERMIT_NMP-63-CS-01.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 9:36 AM

PLANT SITE STORMWATER LEGEND

<u>EXISTING</u>		<u>PROPOSED</u>	
—1000—	EXISTING CONTOUR – MAJOR 10'	—1000—	PROPOSED CONTOUR – MAJOR 5'
—	EXISTING CONTOUR – MINOR 2'	—	PROPOSED CONTOUR – MINOR 1'
+++++	EXISTING RAILROAD	1+00X	PROPOSED CENTERLINE STATIONING
----	WATER EDGE/CREEK CENTER LINE	— —	PROPOSED CULVERT (STORMWATER)
====	EXISTING ROAD	— —	PROPOSED PIPE
▭	EXISTING STRUCTURES	○	PROPOSED MANHOLE/CATCH BASIN
~~~~	TREE LINE	▒	PROPOSED RIPRAP
○	EXISTING MANHOLE/CATCH BASIN	- - - - -	PROJECT AREA BOUNDARY
— —	EXISTING CULVERT	→	FLOW PATH
—X—	EXISTING FENCE	▭	<u>PROPOSED OTHER FACILITY</u>
▭	WETLAND BOUNDARY	▭	PROPOSED STRUCTURES
		+++++	PROPOSED RAILROAD

**NOTES**

- COORDINATE SYSTEM IS MINNESOTA STATE PLANE NORTH ZONE, NAD83.
- ELEVATIONS ARE MEAN SEA LEVEL (MSL), NAVD88.
- EXISTING TOPOGRAPHIC INFORMATION SHOWN ON THE DRAWINGS WAS PREPARED BY AEROMETRIC, INC. FROM LIDAR DATA COLLECTED ON MARCH 17, 2010.

**SHEET INDEX**

**SHEET NO. TITLE**

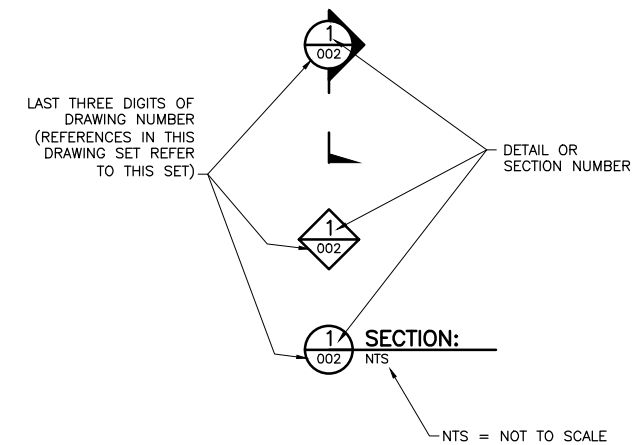
**PLANT SITE STORMWATER DRAWINGS**

PSSW-001	LOCATION MAP & SITE MAP
PSSW-002	LEGEND & SHEET INDEX
PSSW-003	GENERAL LAYOUT & SHEET INDEX MAP
PSSW-004 TO PSSW-015	GRADING PLANS
PSSW-016 TO PSSW-030	GRADING PROFILES
PSSW-031 TO PSSW-033	SECTIONS & DETAILS

**ABBREVIATIONS**

AC-FT	-	ACRE-FEET
AVE	-	AVERAGE
CB	-	CATCH BASIN
C	-	CENTERLINE
CMP	-	CORRUGATED METAL PIPE
DS	-	DOWNSTREAM
DV	-	DRAIN VALVE
DWG	-	DRAWING
EL.	-	ELEVATION
FTB	-	FLOTATION TAILINGS BASIN
GAL	-	GALLONS
GPM	-	GALLONS PER MINUTE
HDPE	-	HIGH-DENSITY POLYETHYLENE
INV	-	INVERT
LF	-	LINEAR FEET
MH	-	MANHOLE
MIN	-	MINIMUM
NWL	-	NORMAL WATER LEVEL
PSSW	-	PLANT SITE STORMWATER
SDR	-	STANDARD DIMENSION RATIO
STA	-	STATION
TYP	-	TYPICAL
US	-	UPSTREAM

**DRAWING NUMBERING**



Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:
PLANT SITE STORMWATER GENERAL DWGS LEGEND AND SHEET INDEX

**POLYMET MINING** POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

**BARR** BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

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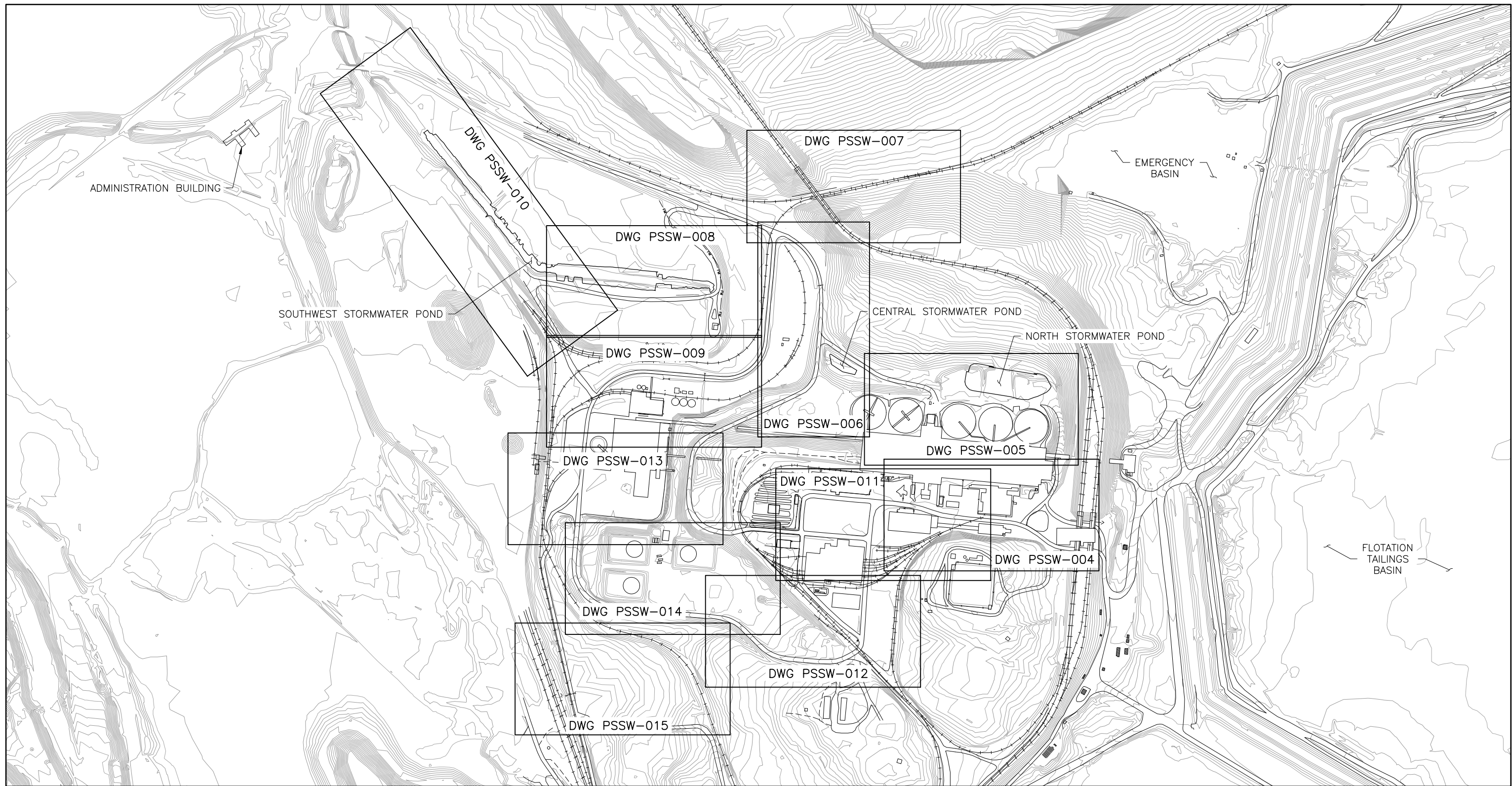
PRINTED NAME: CRISTIAN A. DIAZ  
SIGNATURE: [Signature]  
DATE: 5/15/15 LICENSE# 46593

DRAWN:	VJS
CHECKED:	CMK2
BARR PROJECT NO.:	23/69-0C29
SCALE:	AS SHOWN

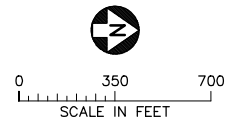
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1 PLAN: SHEET INDEX



Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:  
**PLANT SITE STORMWATER  
 GENERAL LAYOUT AND SHEET INDEX MAP**

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
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DRAWN: VJS  
 CHECKED: CMK2  
 BARR PROJECT NO.: 23/69-0C29  
 SCALE: AS SHOWN

**POLYMET MINING**

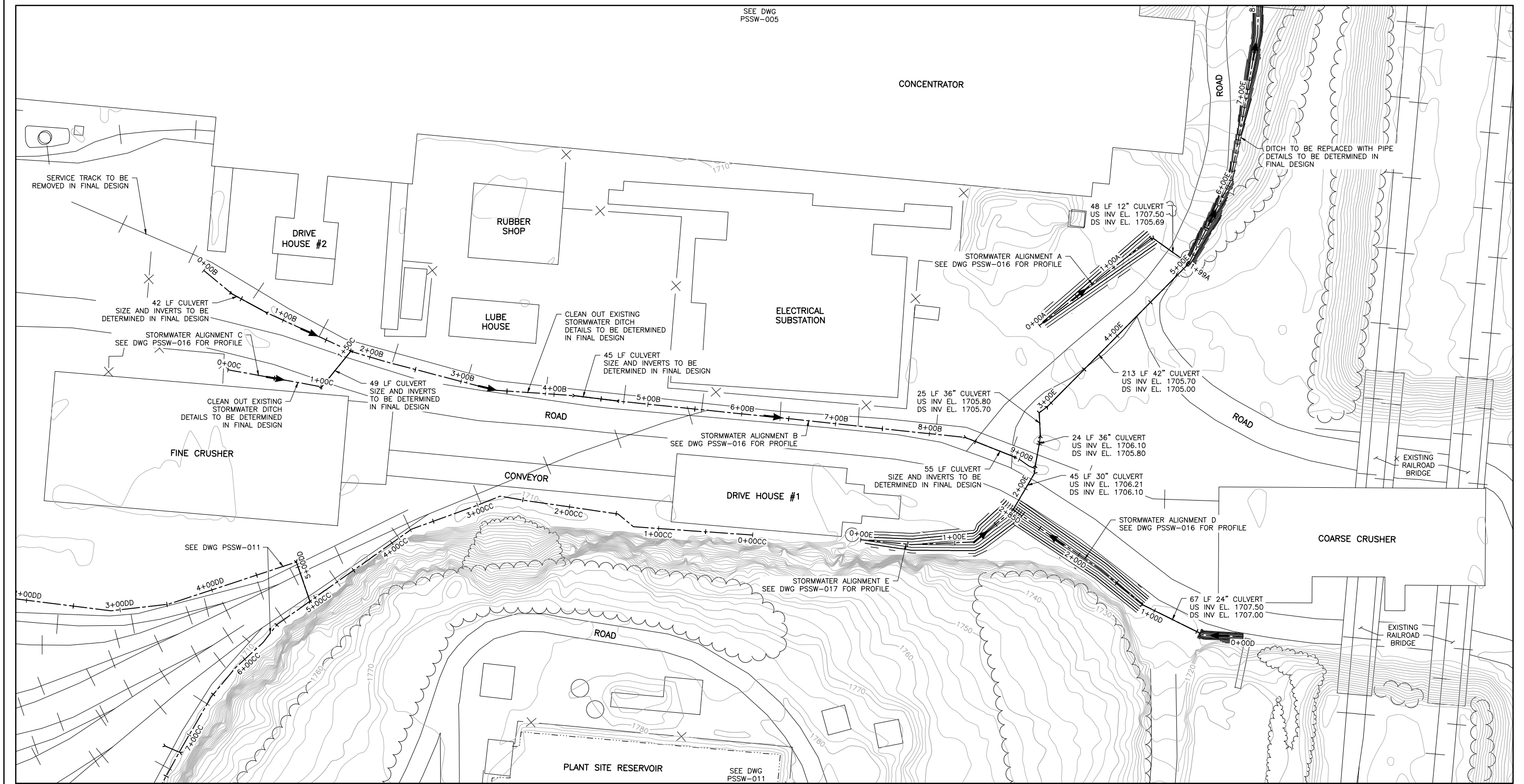
**POLY MET MINING, INC.  
 NORTHMET PROJECT  
 HOYT LAKES, MINNESOTA**

**BARR**  
 BARR ENGINEERING COMPANY  
 4700 WEST 77TH STREET  
 MINNEAPOLIS, MN.  
 Ph: 1-800-632-2277

DWG. NO. **PSSW-003** REV

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1 PLAN: STORMWATER ALIGNMENTS A-E

NOTE:  
ALL PIPES AND CULVERTS ARE PROPOSED UNLESS INDICATED.

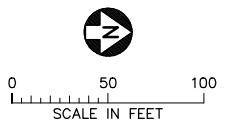
Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:

PLANT SITE STORMWATER  
GRADING PLAN

**POLYMET** MINING  
POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

**BARR**  
BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277



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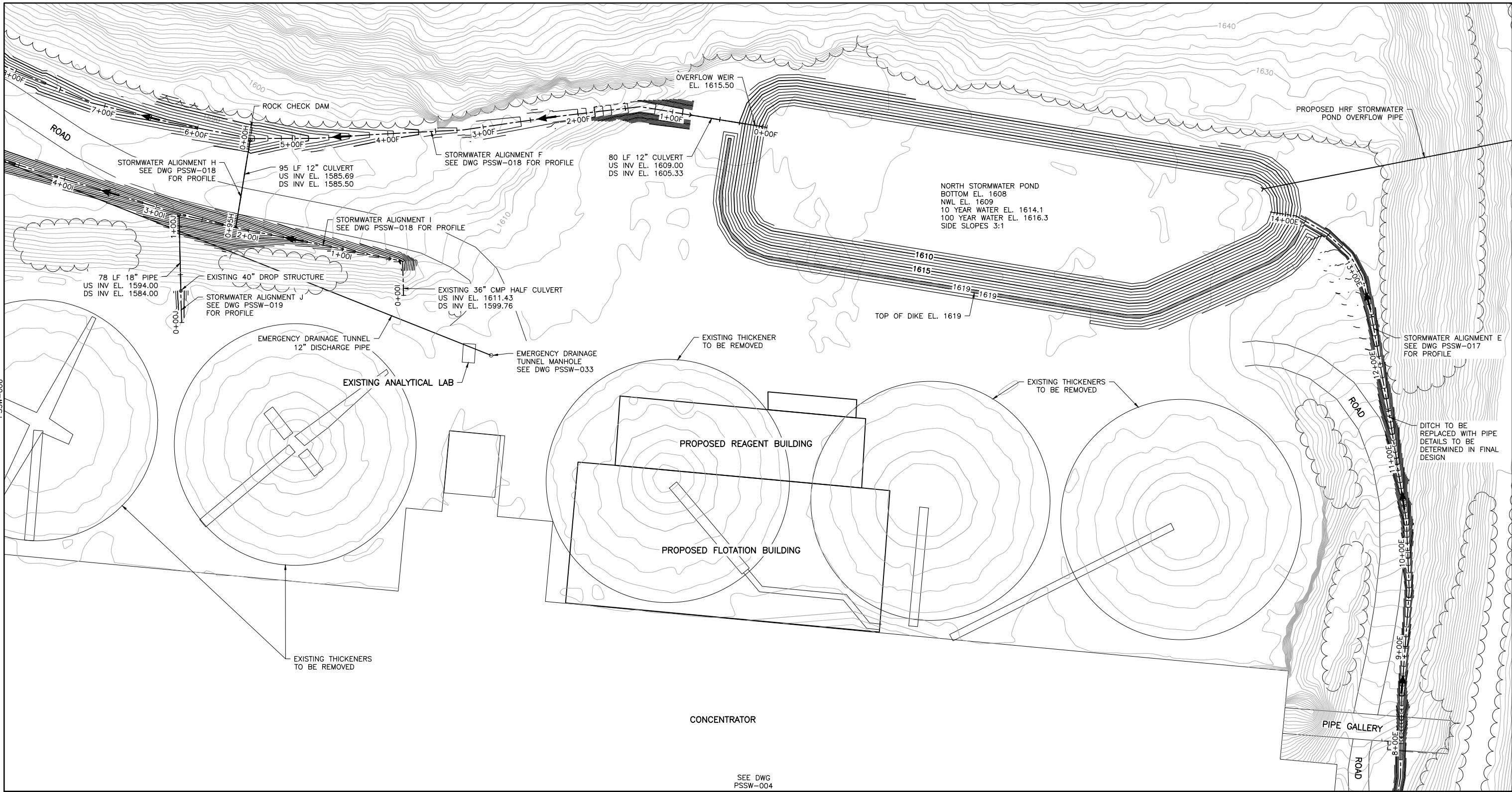
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SIGNATURE: [Signature]  
DATE: 5/15/15 LICENSE# 46593

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CHECKED: CMK2  
BARR PROJECT NO.: 23/69-0C29  
SCALE: AS SHOWN

DWG. NO. PSSW-004  
REV

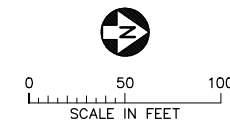
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1 PLAN: STORMWATER ALIGNMENTS E, F, H-J

NOTE:  
ALL PIPES AND CULVERTS ARE PROPOSED UNLESS INDICATED.



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SIGNATURE: [Signature]  
DATE: 5/15/15 LICENSE# 46593

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CHECKED: CMK2  
BARR PROJECT NO.: 23/69-0C29  
SCALE: AS SHOWN

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PLANT DRAWING NUMBER:

**PLANT SITE STORMWATER GRADING PLAN**

**POLYMET MINING**

**POLY MET MINING, INC.**  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

**BARR**

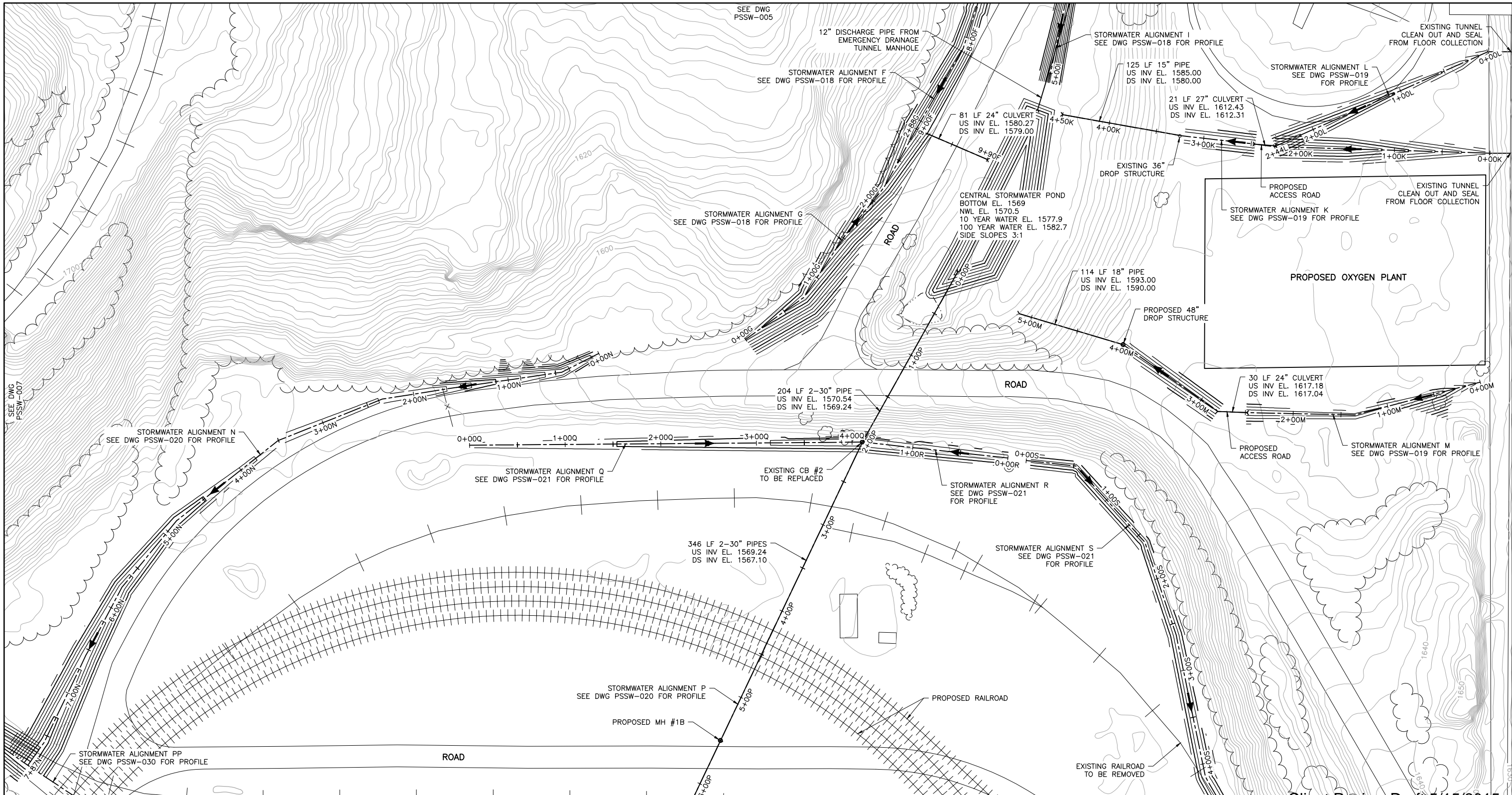
BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

DWG. NO. **PSSW-005**

REV

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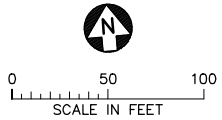
SEE DWG PSSW-008

SEE DWG PSSW-009

Client Review Draft 5/15/2015

**1 PLAN: STORMWATER ALIGNMENTS F, G, I, K-N, P-S**

NOTE:  
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PRINTED NAME: CRISTIAN A. DIAZ  
SIGNATURE: [Signature]  
DATE: 5/15/15 LICENSE# 46593

DRAWN: VJS  
CHECKED: CMK2  
BARR PROJECT NO.: 23/69-0C29  
SCALE: AS SHOWN

PLANT DRAWING NUMBER:

**PLANT SITE STORMWATER GRADING PLAN**

**POLYMET MINING** POLY MET MINING, INC. NORTHMET PROJECT HOYT LAKES, MINNESOTA

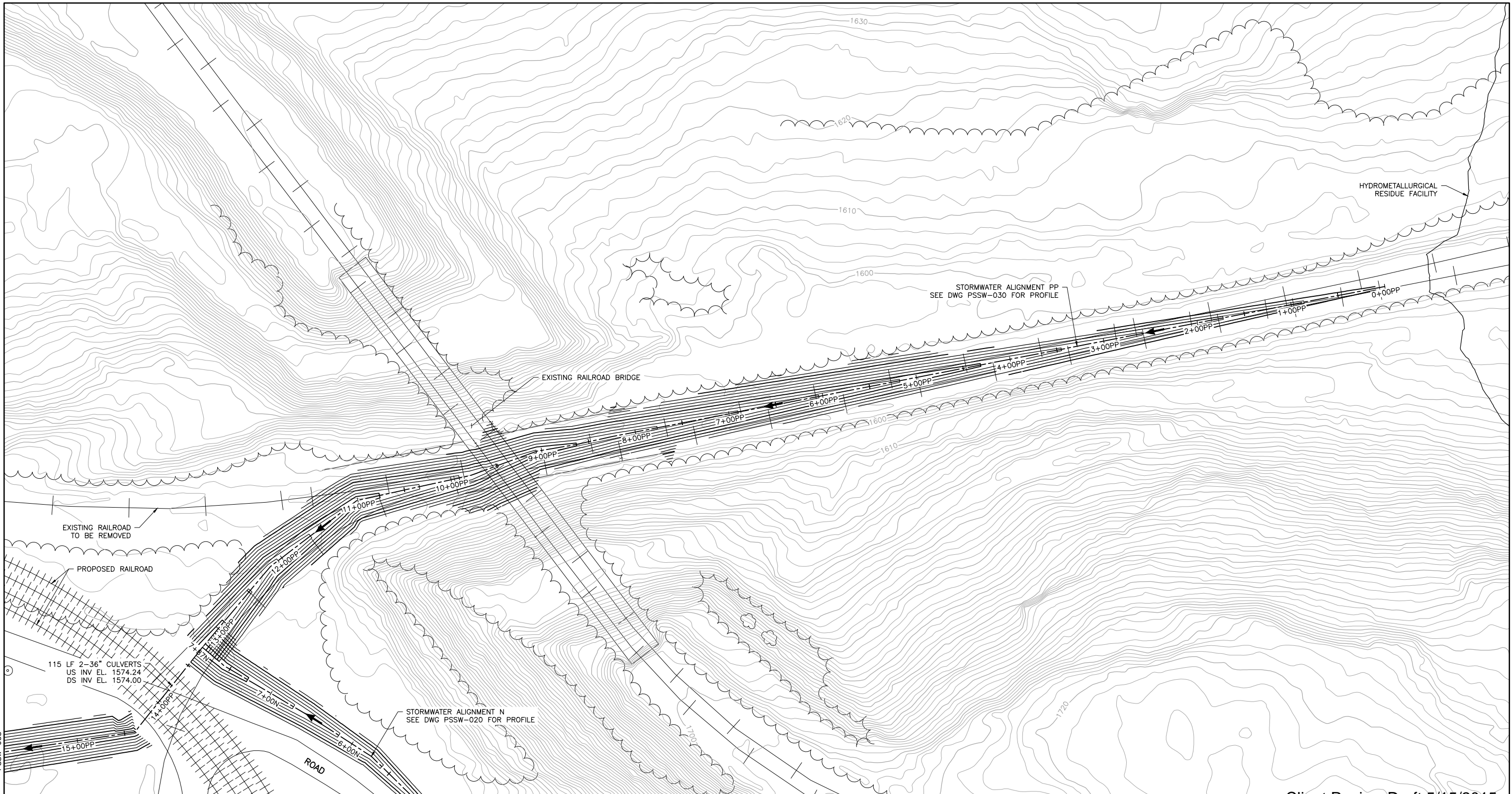
**BARR** BARR ENGINEERING COMPANY 4700 WEST 77TH STREET MINNEAPOLIS, MN. Ph: 1-800-632-2277

DWG. NO. **PSSW-006** REV

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SEE DWG PSSW-006

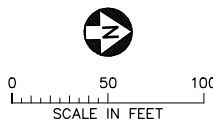
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**1 PLAN: STORMWATER ALIGNMENTS N AND PP**

NOTE:  
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PLANT DRAWING NUMBER:

**PLANT SITE STORMWATER GRADING PLAN**



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DRAWN: VJS  
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BARR PROJECT NO.: 23/69-0C29  
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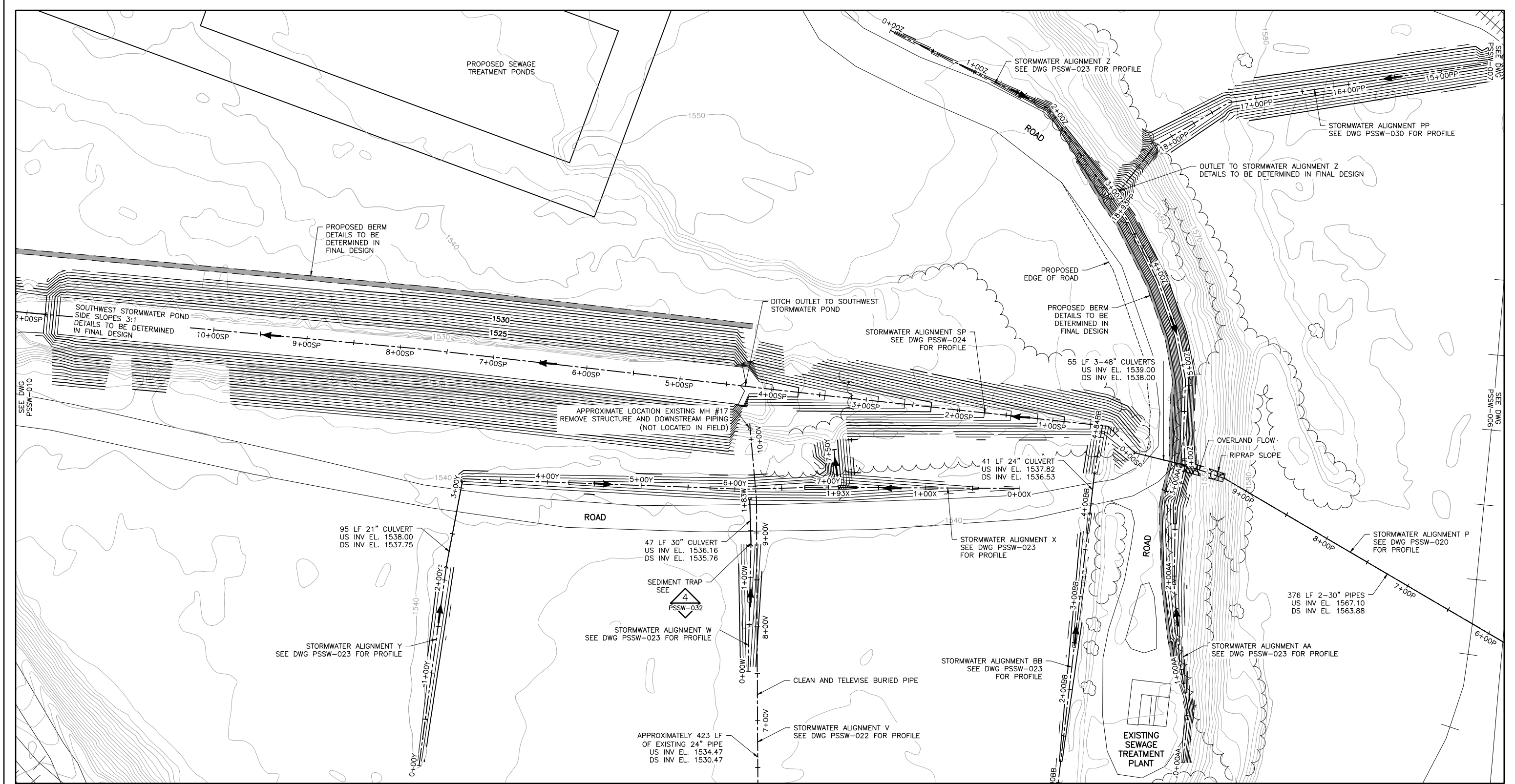
**POLYMET MINING** POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

**BARR** BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

DWG. NO. **PSSW-007** REV

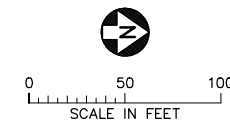
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CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29.10\PERMIT_NMP-63-CS-008.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 10:13 AM



**1 PLAN: STORMWATER ALIGNMENTS V-Z, AA, BB, SP**

NOTE:  
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DRAWN: VJS  
CHECKED: CMK2  
BARR PROJECT NO.: 23/69-0C29  
SCALE: AS SHOWN

Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:  
**PSSW-008**

**PLANT SITE STORMWATER GRADING PLAN**

**POLYMET MINING**

**POLY MET MINING, INC.**  
**NORTHMET PROJECT**  
**HOYT LAKES, MINNESOTA**

**BARR**

BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

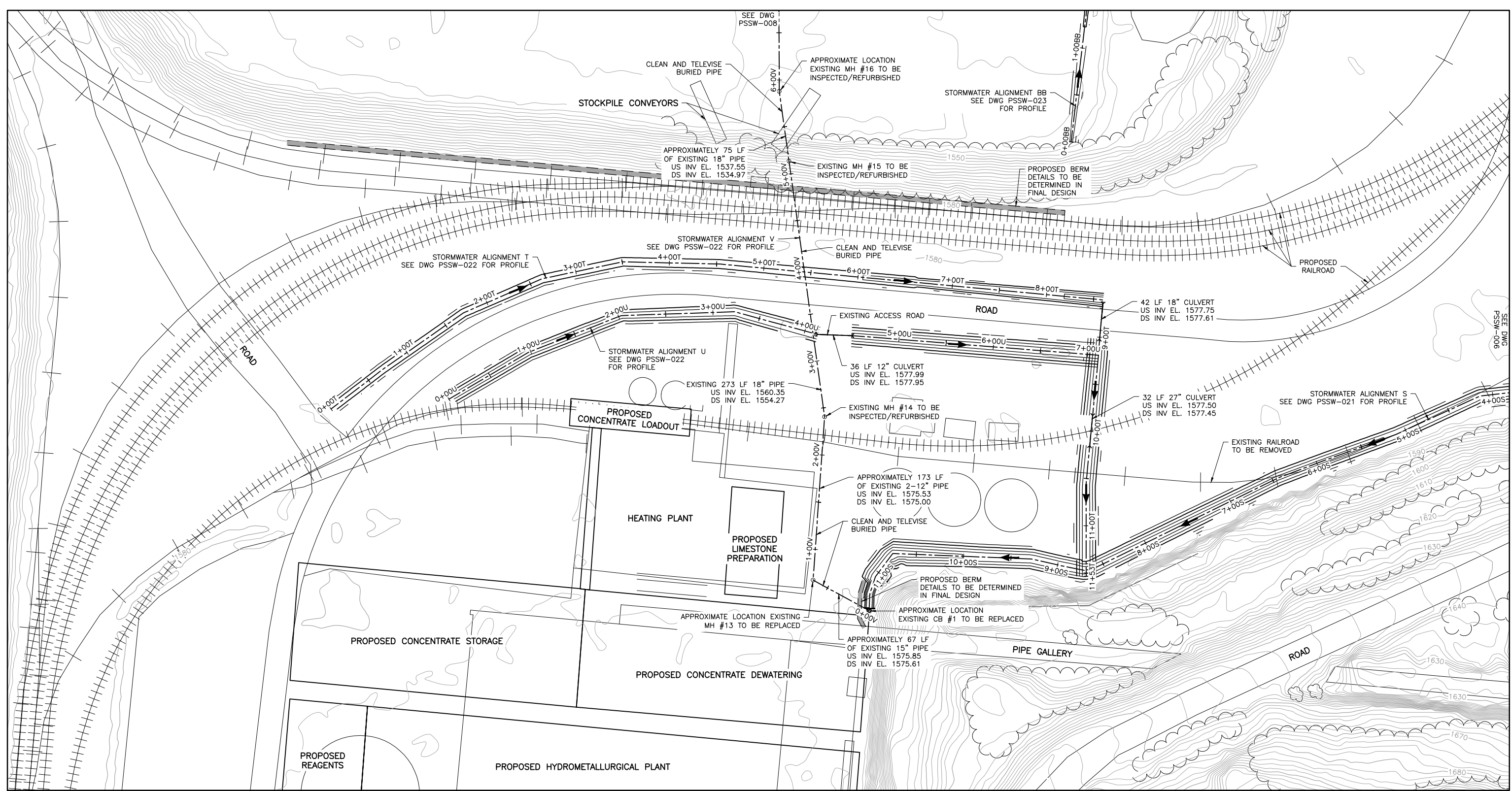
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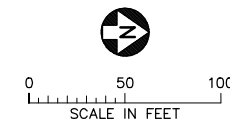
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INCHES  
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2



**1 PLAN: STORMWATER ALIGNMENTS S-V, BB**

NOTE:  
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BARR PROJECT NO.: 23/69-0C29  
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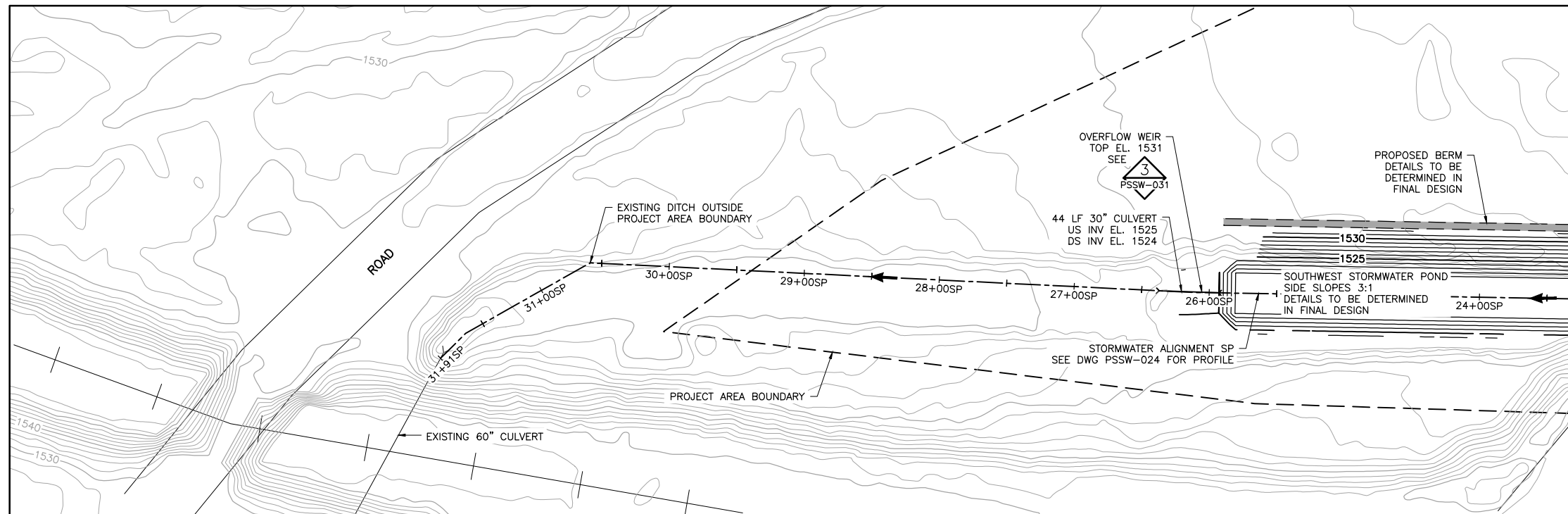
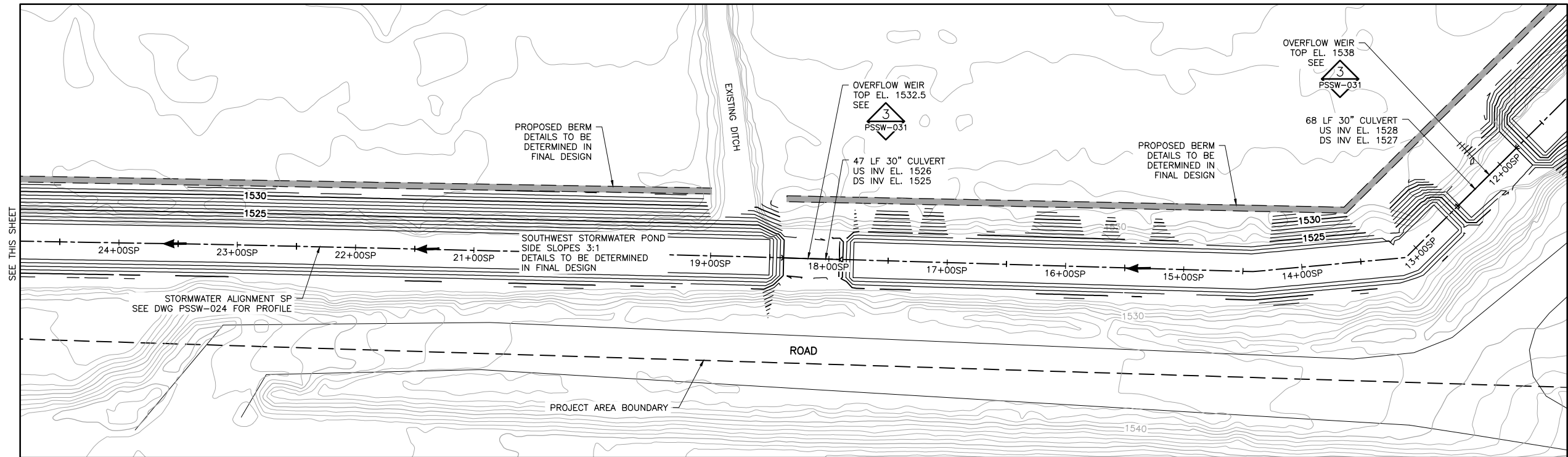
Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:  
**PLANT SITE STORMWATER GRADING PLAN**

**POLYMET MINING**  
POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

**BARR**  
BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

DWG. NO. **PSSW-009** REV



1 PLAN: STORMWATER ALIGNMENT SP

NOTE:  
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Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:

PLANT SITE STORMWATER  
GRADING PLAN

**POLYMET** MINING  
POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

**BARR**  
BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

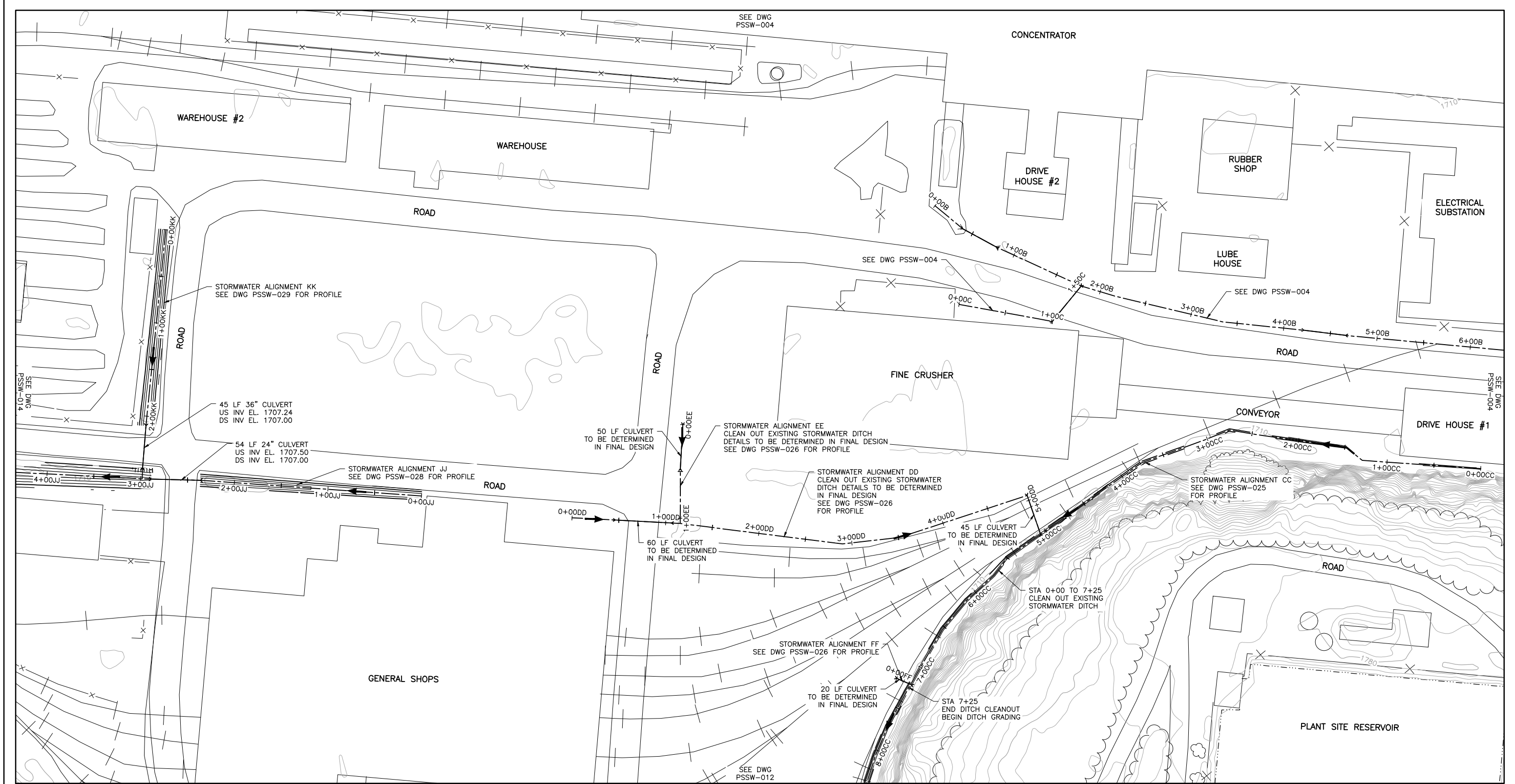
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REV

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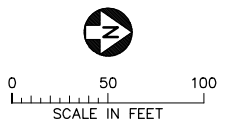


CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29\10\PERMIT_NMP-63-CS-011.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 10:20 AM



1 PLAN: STORMWATER ALIGNMENTS CC, DD, EE, FF, JJ, AND KK

NOTE:  
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PLANT DRAWING NUMBER:

PLANT SITE STORMWATER GRADING PLAN

**POLYMET MINING** POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

**BARR** BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

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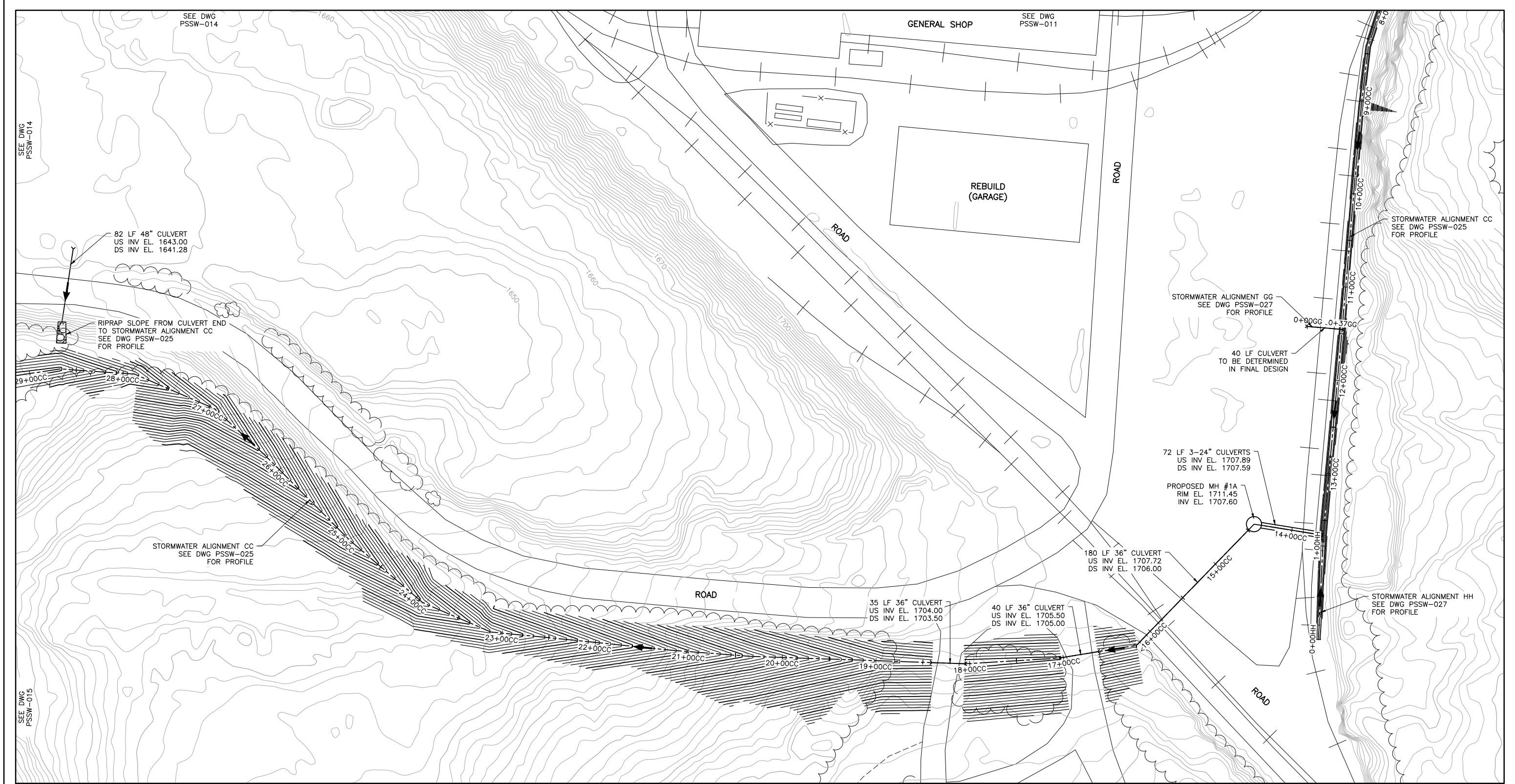
PRINTED NAME: CRISTIAN A. DIAZ  
SIGNATURE: [Signature]  
DATE: 5/15/15 LICENSE# 46593

DRAWN: PRT  
CHECKED: CMK2  
BARR PROJECT NO.: 23/69-0C29  
SCALE: AS SHOWN

DWG. NO. PSSW-011 REV

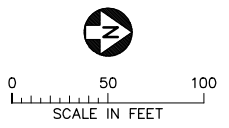
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CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29\10\PERMIT_NMP-63-CS-012.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 10:22 AM



**1 PLAN: STORMWATER ALIGNMENTS CC AND HH**

NOTE:  
ALL PIPES AND CULVERTS ARE PROPOSED UNLESS INDICATED.



Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:

**PLANT SITE STORMWATER GRADING PLAN**

**POLYMET MINING** POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

**BARR** BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
			ISSUED	VERSION	DATE
1	5/15/15	ISSUED FOR INCLUSION IN PERMIT APPLICATIONS	ISSUED	1	5/15/15
			FOR PERMITTING		
			FOR CONSTRUCTION		
			NOT APPROVED FOR CONSTRUCTION		

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME: CRISTIAN A. DIAZ  
SIGNATURE: [Signature]  
DATE: 5/15/15 LICENSE# 46593

DRAWN: PRT  
CHECKED: CMK2  
BARR PROJECT NO.: 23/69-0C29  
SCALE: AS SHOWN

DWG. NO. PSSW-012 REV

INCHES

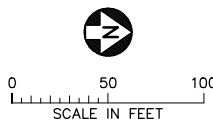


CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29\10\PERMIT_NMP-63-CS-013.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 10:24 AM



**1 PLAN: STORMWATER ALIGNMENTS JJ, MM, AND NN**

NOTE:  
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			ISSUED	VERSION	DATE
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PRINTED NAME: CRISTIAN A. DIAZ  
SIGNATURE: [Signature]  
DATE: 5/15/15 LICENSE# 46593

DRAWN: PRT  
CHECKED: CMK2  
BARR PROJECT NO.: 23/69-0C29  
SCALE: AS SHOWN

Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:  
**PLANT SITE STORMWATER GRADING PLAN**

**POLYMET MINING**  
POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

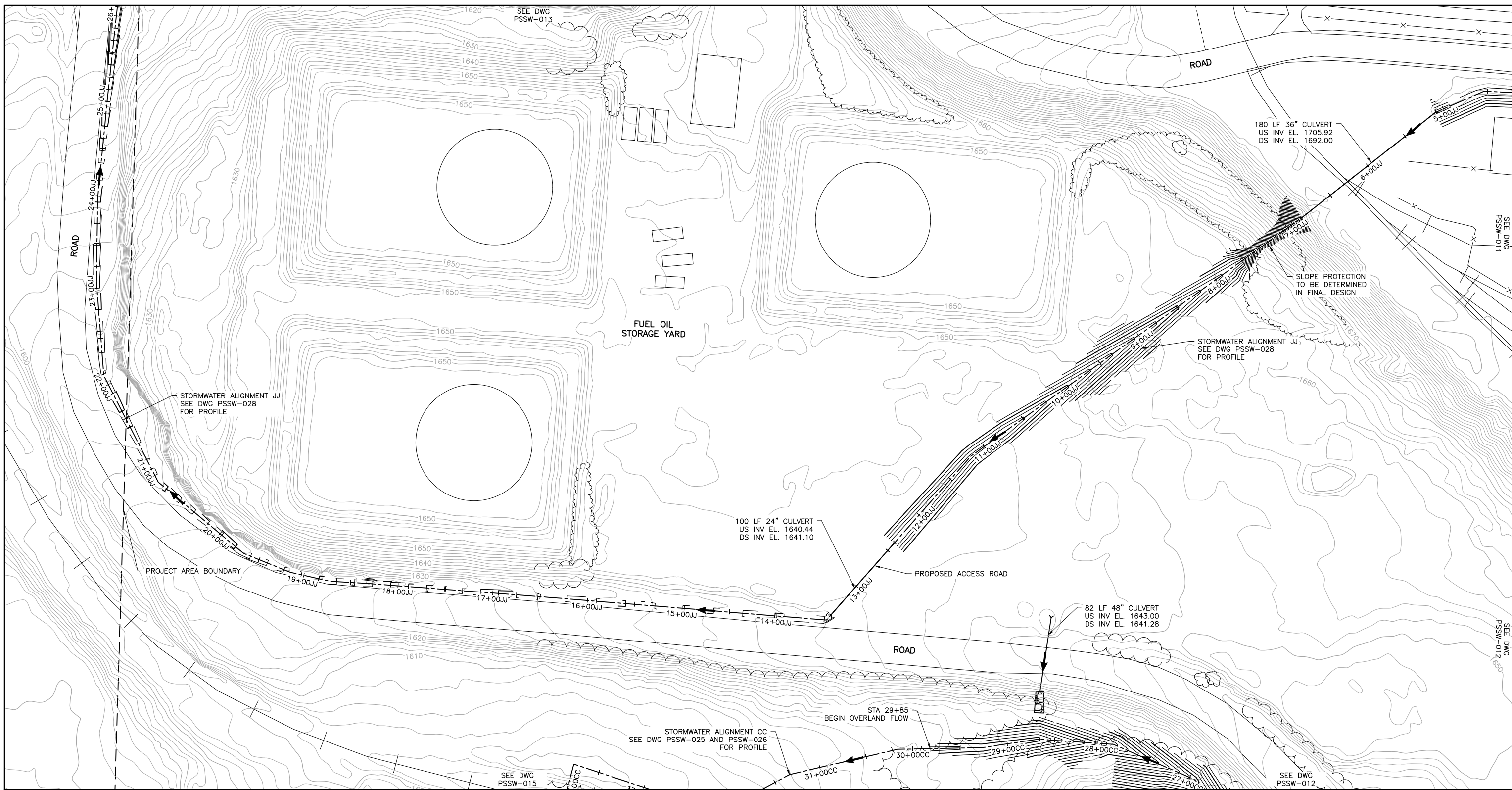
**BARR**  
BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

DWG. NO. **PSSW-013**

INCHES 1 2

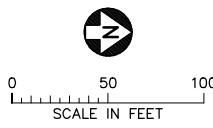


CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29.10\PERMIT_NMP-63-CS-014.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 10:26 AM



**1 PLAN: STORMWATER ALIGNMENTS CC AND JJ**

NOTE:  
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VER NO	DATE	DESCRIPTION	ISSUE STATUS		
			ISSUED	VERSION	DATE
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			FOR PERMITTING	1	5/15/15
			FOR CONSTRUCTION		
			NOT APPROVED FOR CONSTRUCTION		

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PRINTED NAME: CRISTIAN A. DIAZ  
SIGNATURE: [Signature]  
DATE: 5/15/15 LICENSE # 46593

DRAWN: PRT  
CHECKED: CMK2  
BARR PROJECT NO.: 23/69-0C29  
SCALE: AS SHOWN

Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:  
**PLANT SITE STORMWATER GRADING PLAN**

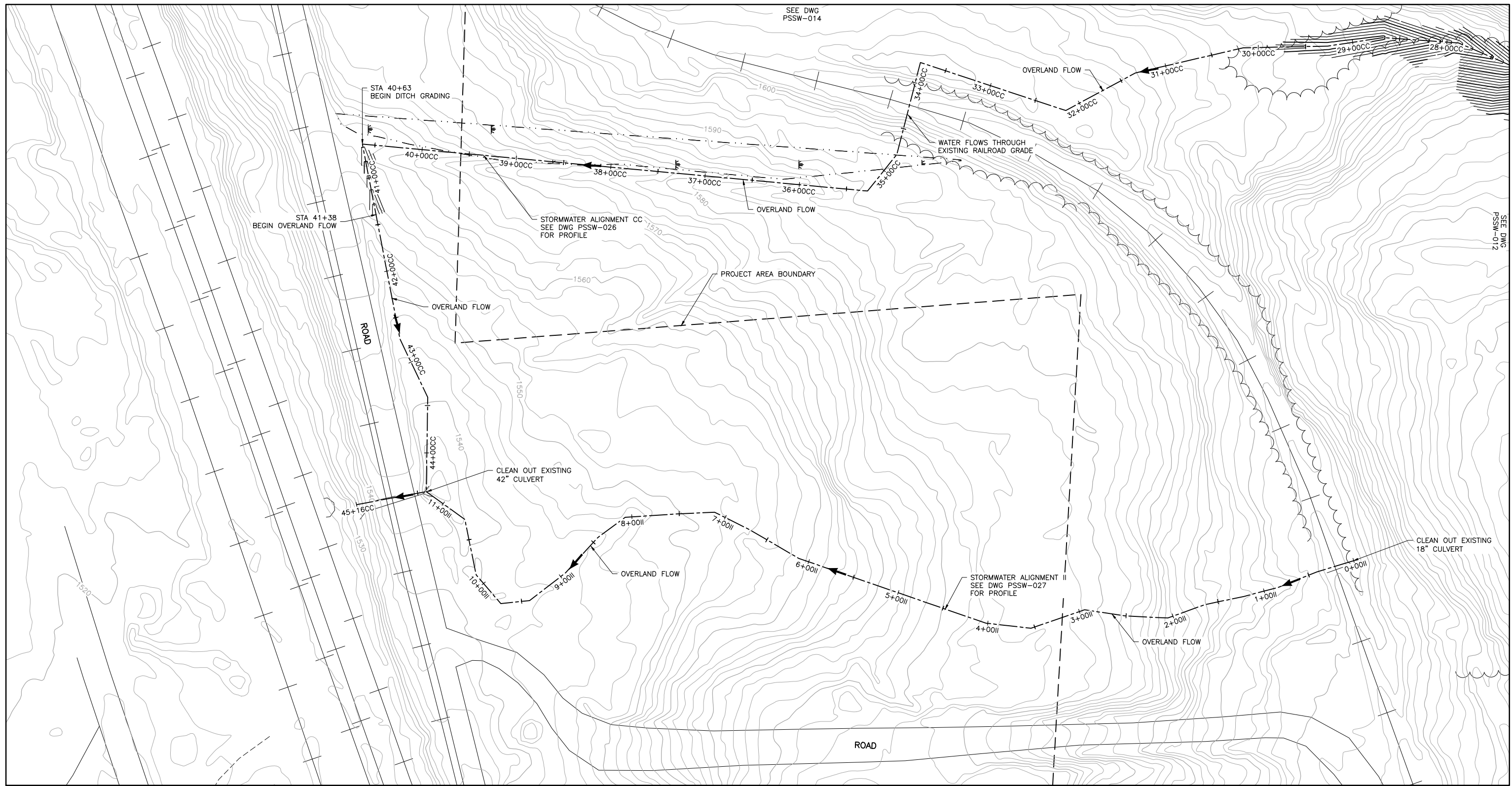
**POLYMET MINING** POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

**BARR** BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

DWG. NO. **PSSW-014** REV

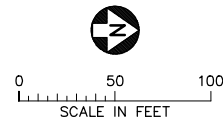
INCHES 1 2

CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29.10\PERMIT_NMP-63-CS-015.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 10:45 AM



1 PLAN: STORMWATER ALIGNMENTS CC AND II

NOTE:  
ALL PIPES AND CULVERTS ARE PROPOSED UNLESS INDICATED.



VER NO	DATE	DESCRIPTION	ISSUE STATUS		
			ISSUED	VERSION	DATE
1	5/15/15	ISSUED FOR INCLUSION IN PERMIT APPLICATIONS	ISSUED		
			FOR PERMITTING	1	5/15/15
			FOR CONSTRUCTION		
			NOT APPROVED FOR CONSTRUCTION		

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PRINTED NAME: CRISTIAN A. DIAZ  
SIGNATURE: [Signature]  
DATE: 5/15/15 LICENSE# 46593

DRAWN: PRT  
CHECKED: CMK2  
BARR PROJECT NO.: 23/69-0C29  
SCALE: AS SHOWN

Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:  
**PLANT SITE STORMWATER GRADING PLAN**

**POLYMET MINING** POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

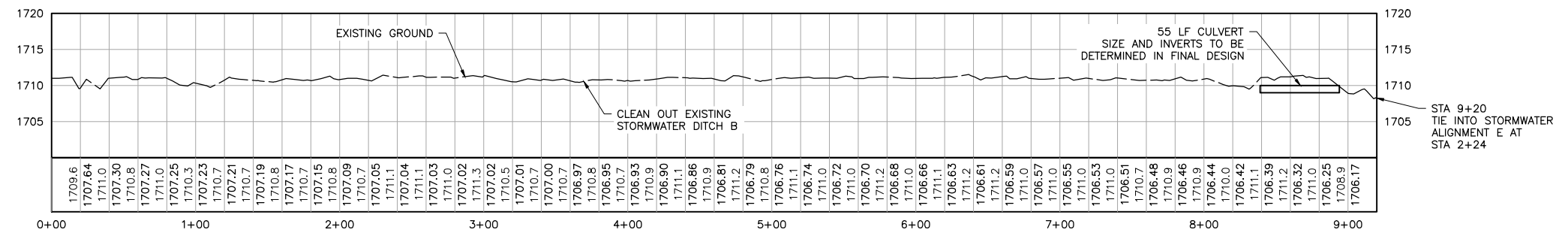
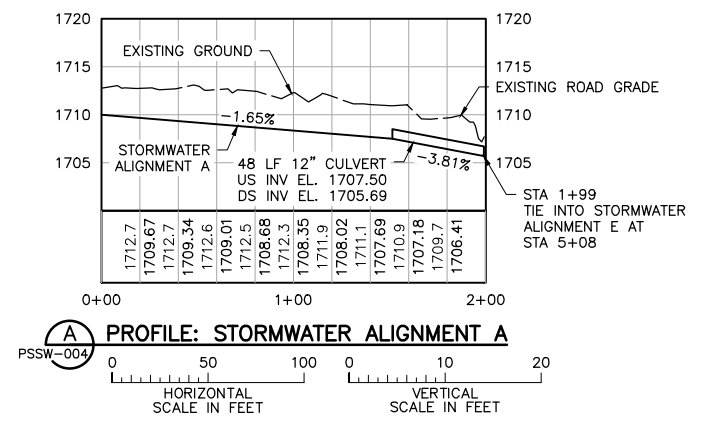
**BARR** BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

DWG. NO. **PSSW-015** REV

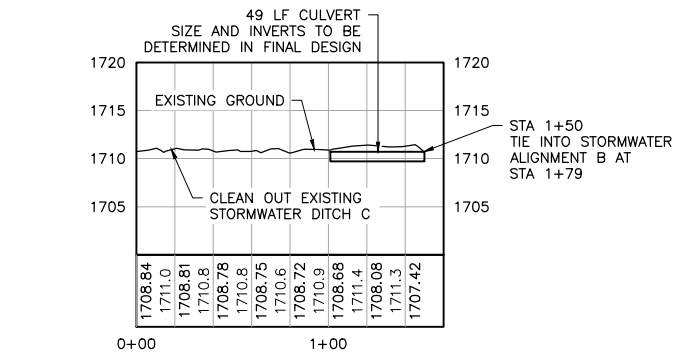
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INCHES

CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29.10\PERMIT\MNP-63-CS-016.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 10:49 AM

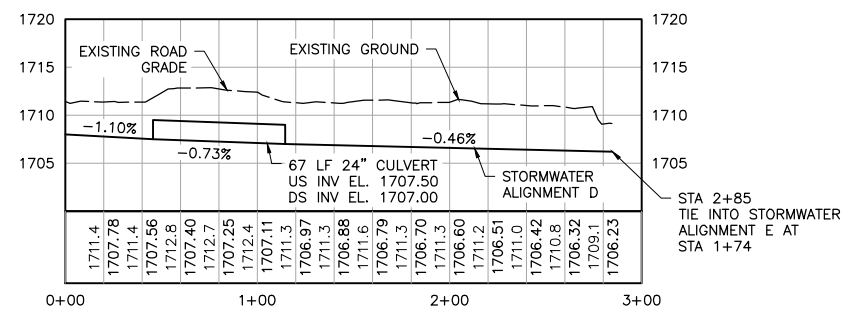
2  
1  
INCHES



**NOTE:**  
STORMWATER DITCH HAS CONSTRAINTS RESTRICTING CONSTRUCTION. DESIGN OPTIONS HAVE BEEN IDENTIFIED. THIS PROFILE SHOWS CLEAN-OUT OF THE EXISTING DITCH, WHICH DOES NOT HAVE THE CAPACITY AS REQUIRED TO RESTRICT FLOODING.



**NOTE:**  
STORMWATER DITCH HAS CONSTRAINTS RESTRICTING CONSTRUCTION. DESIGN OPTIONS HAVE BEEN IDENTIFIED. THIS PROFILE SHOWS CLEAN-OUT OF THE EXISTING DITCH, WHICH DOES NOT HAVE THE CAPACITY AS REQUIRED TO RESTRICT FLOODING.



**NOTE:**  
ALL PIPES AND CULVERTS ARE PROPOSED UNLESS INDICATED.

**Client Review Draft 5/15/2015**

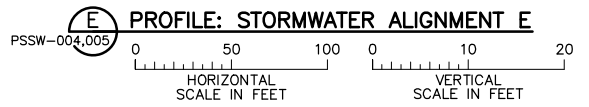
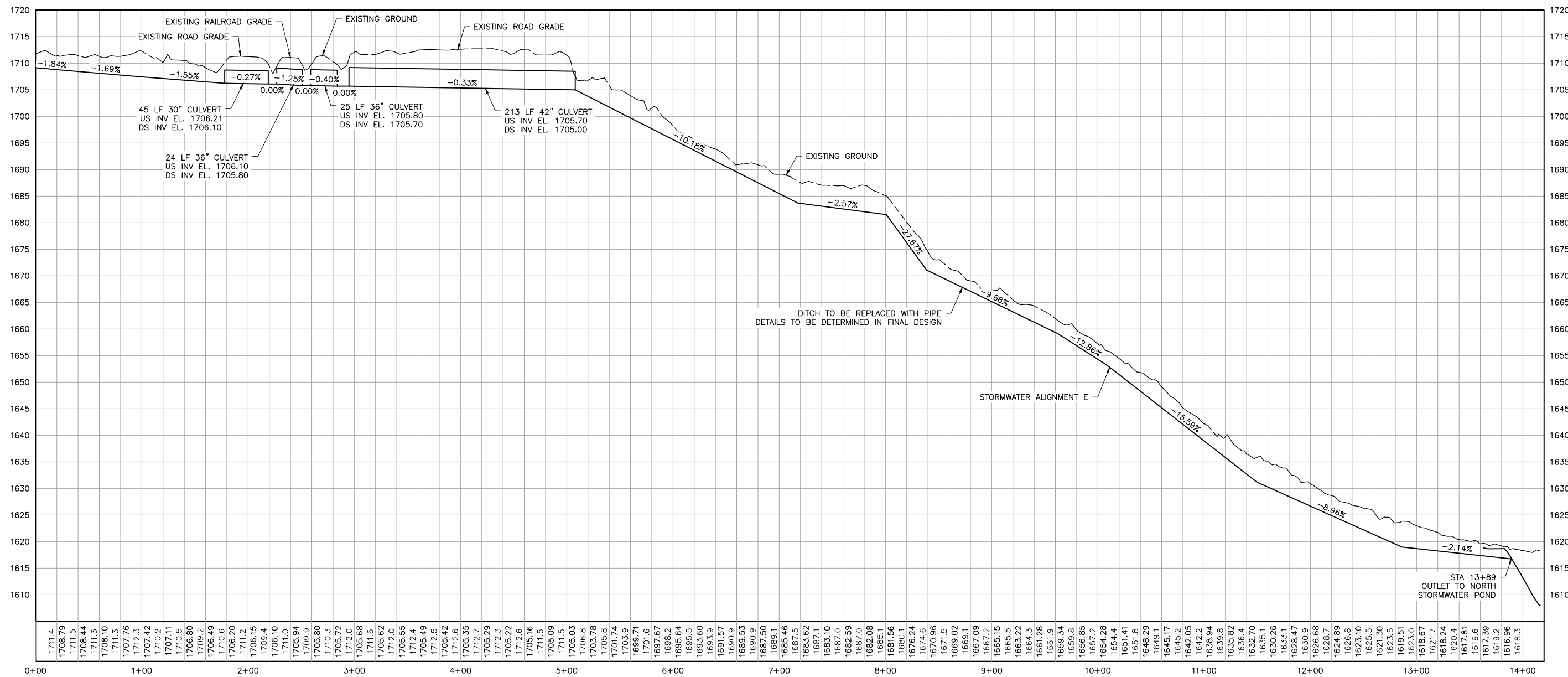
PLANT DRAWING NUMBER:	
<b>PLANT SITE STORMWATER GRADING PROFILES</b>	
<b>POLY MET MINING, INC.</b> NORTHMET PROJECT HOYT LAKES, MINNESOTA	
DRAWN: VJS CHECKED: CMK2 BARR PROJECT NO.: 23/69-0C29 SCALE: AS SHOWN	<b>BARR ENGINEERING COMPANY</b> 4700 WEST 77TH STREET MINNEAPOLIS, MN. Ph: 1-800-632-2277
DWG. NO. <b>PSSW-016</b>	REV

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
			ISSUED	VERSION	DATE
1	5/15/15	ISSUED FOR INCLUSION IN PERMIT APPLICATIONS	ISSUED	1	5/15/15
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PRINTED NAME: **CRISTIAN A. DIAZ**  
 SIGNATURE:   
 DATE: 5/15/15 LICENSE# 46593

CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29.10\PERMIT_NMP-63-CS-017.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 10:58 AM



NOTE:  
ALL PIPES AND CULVERTS ARE PROPOSED UNLESS INDICATED.

**Client Review Draft 5/15/2015**

PLANT DRAWING NUMBER:  
**PLANT SITE STORMWATER GRADING PROFILES**

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
1	5/15/15	ISSUED FOR INCLUSION IN PERMIT APPLICATIONS	ISSUED	VERSION	DATE
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PRINTED NAME: **CRISTIAN A. DIAZ**  
 SIGNATURE:   
 DATE: 5/15/15 LICENSE# 46593

DRAWN: VJS  
 CHECKED: CMK2  
 BARR PROJECT NO.: 23/69-0C29  
 SCALE: AS SHOWN

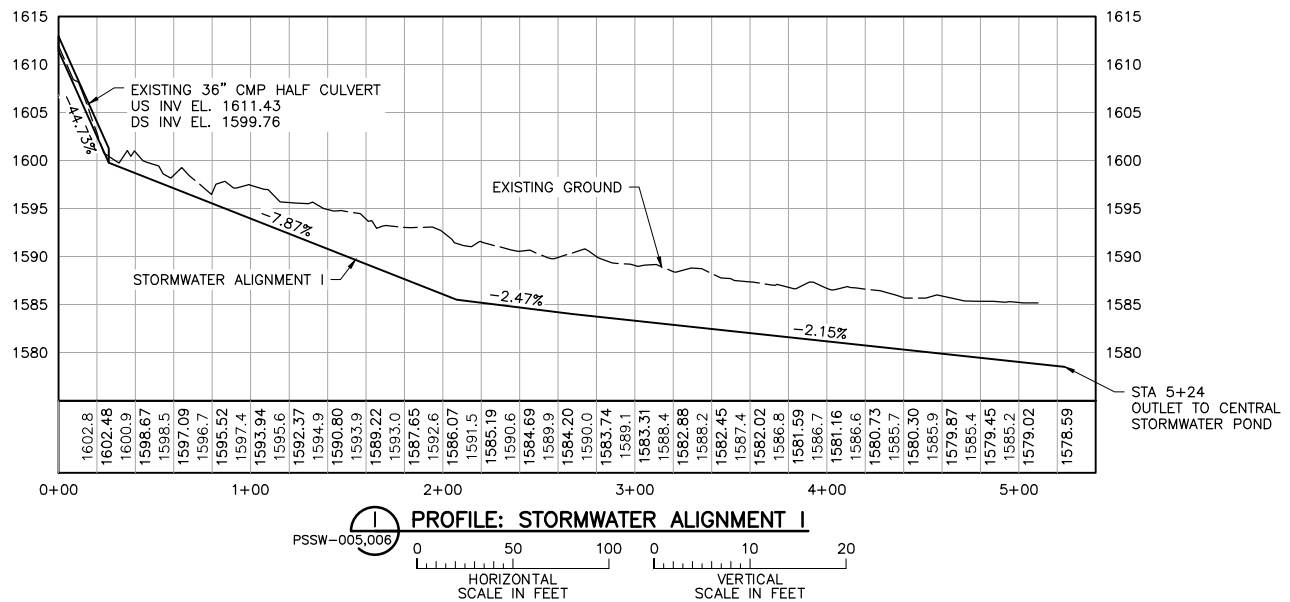
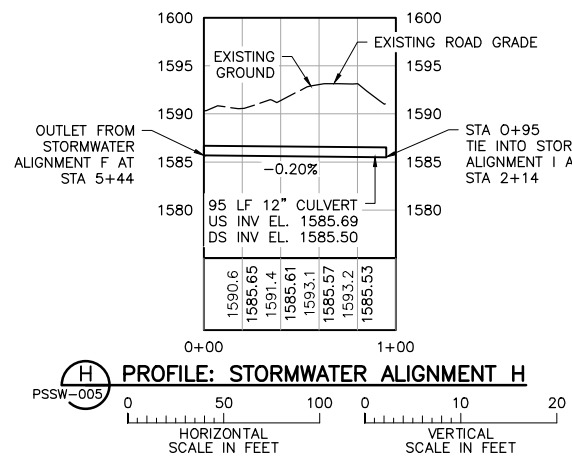
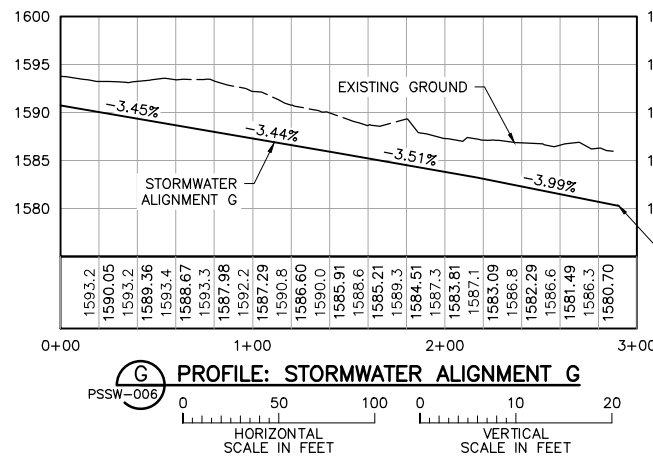
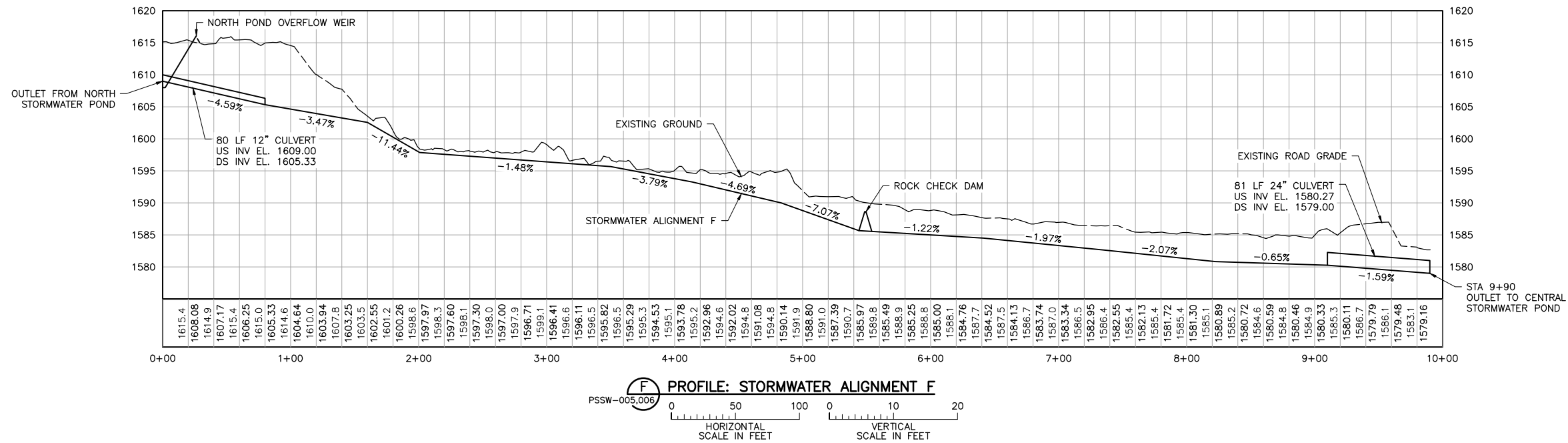
**POLYMET MINING**

**POLY MET MINING, INC.**  
 NORTHMET PROJECT  
 HOYT LAKES, MINNESOTA

**BARR** ENGINEERING COMPANY  
 4700 WEST 77TH STREET  
 MINNEAPOLIS, MN.  
 Ph: 1-800-632-2277

DWG. NO. **PSSW-017**

INCHES



NOTE:  
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Client Review Draft 5/15/2015  
PLANT DRAWING NUMBER:  
**PLANT SITE STORMWATER GRADING PROFILES**

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PRINTED NAME: CRISTIAN A. DIAZ  
SIGNATURE: [Signature]  
DATE: 5/15/15 LICENSE# 46593

DRAWN: VJS  
CHECKED: CMK2  
BARR PROJECT NO.: 23/69-0C29  
SCALE: AS SHOWN

**POLYMET MINING**  
POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

**BARR**  
BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

DWG. NO. **PSSW-018** REV

CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29\10\PERMIT_NMP-63-CS-018.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 11:12 AM

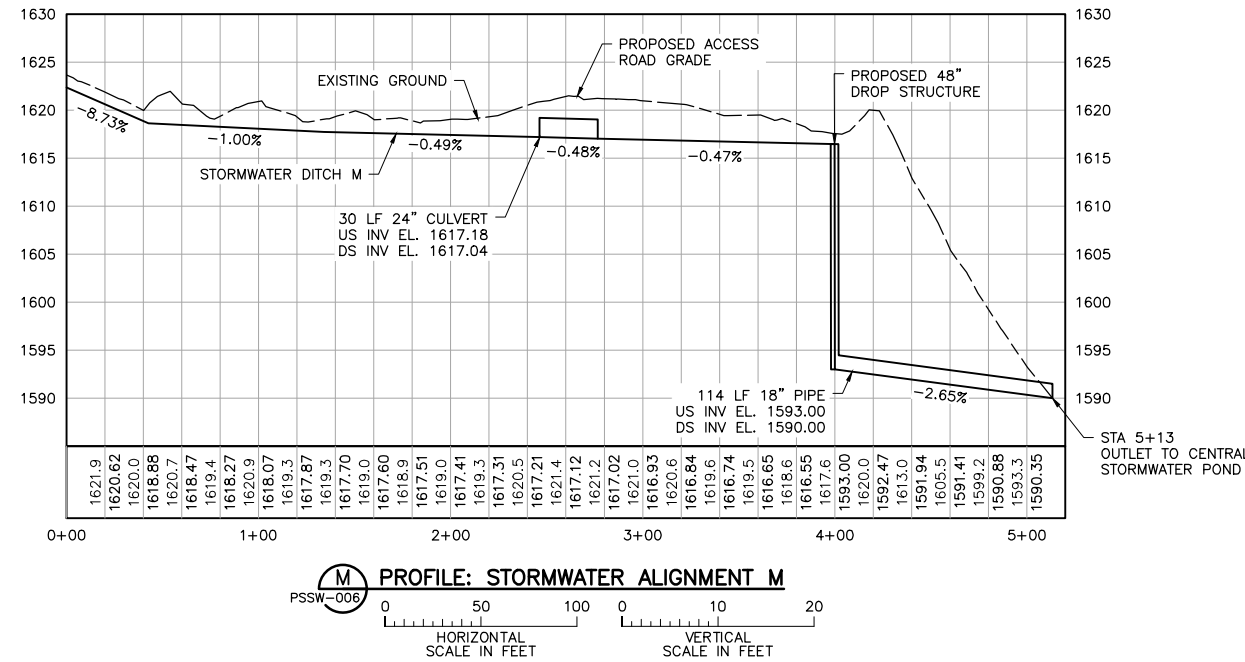
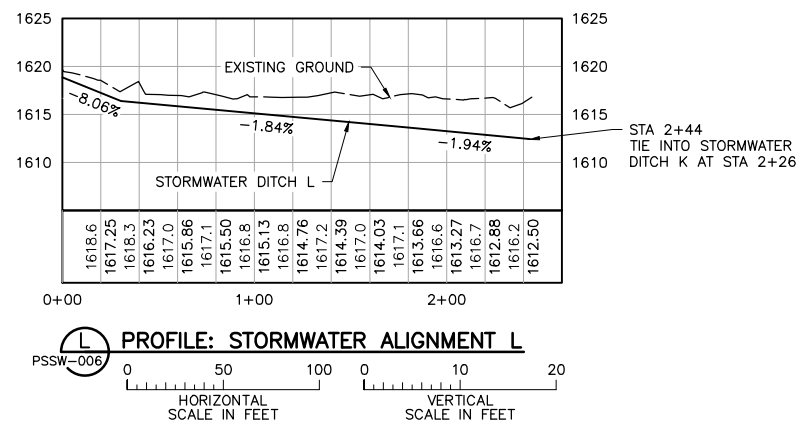
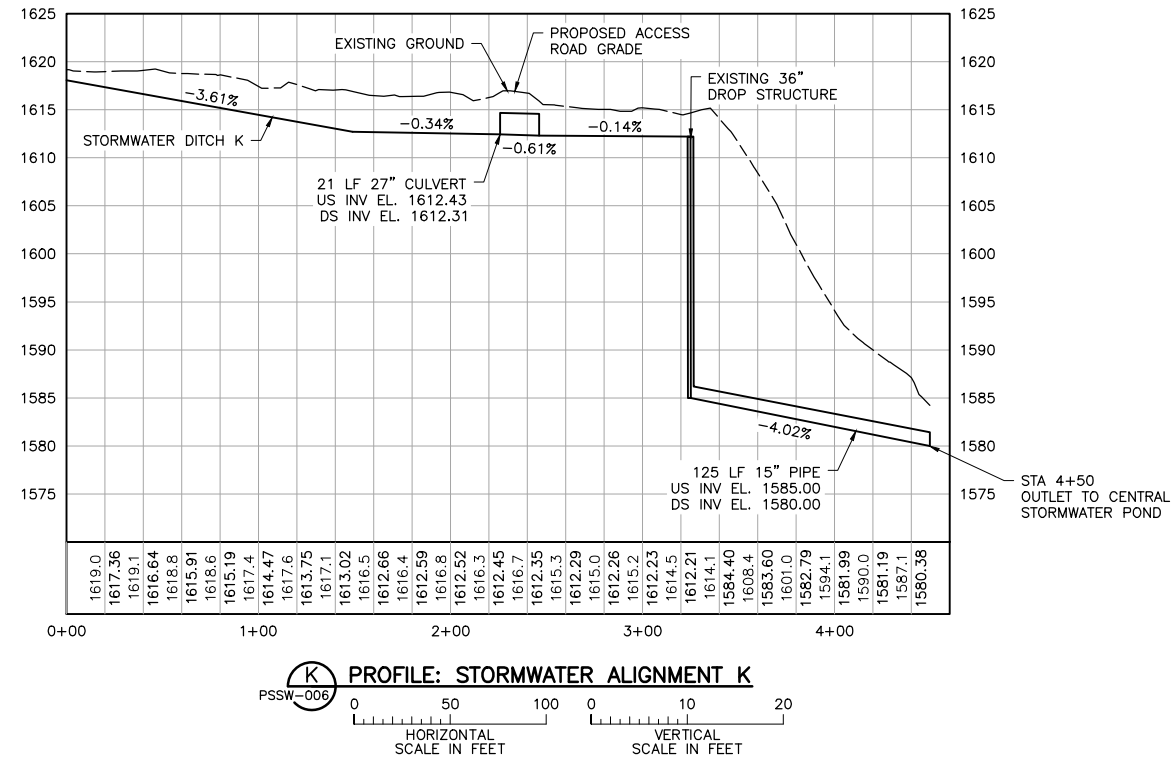
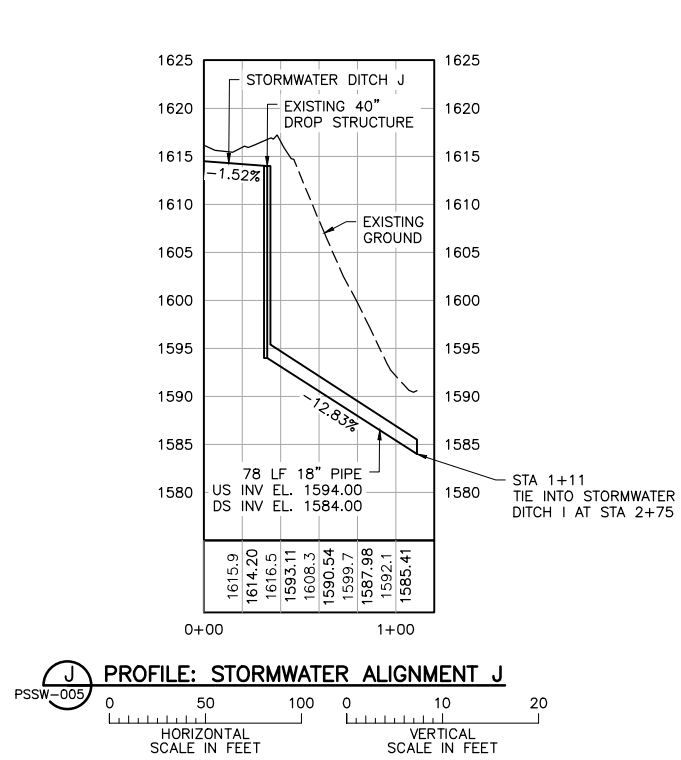


CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29\10\PERMIT_NMP-63-CS-019.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 11:14 AM

INCHES

2

1



NOTE:  
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Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:  
**PLANT SITE STORMWATER GRADING PROFILES**

**POLYMET MINING** POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

**BARR** BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

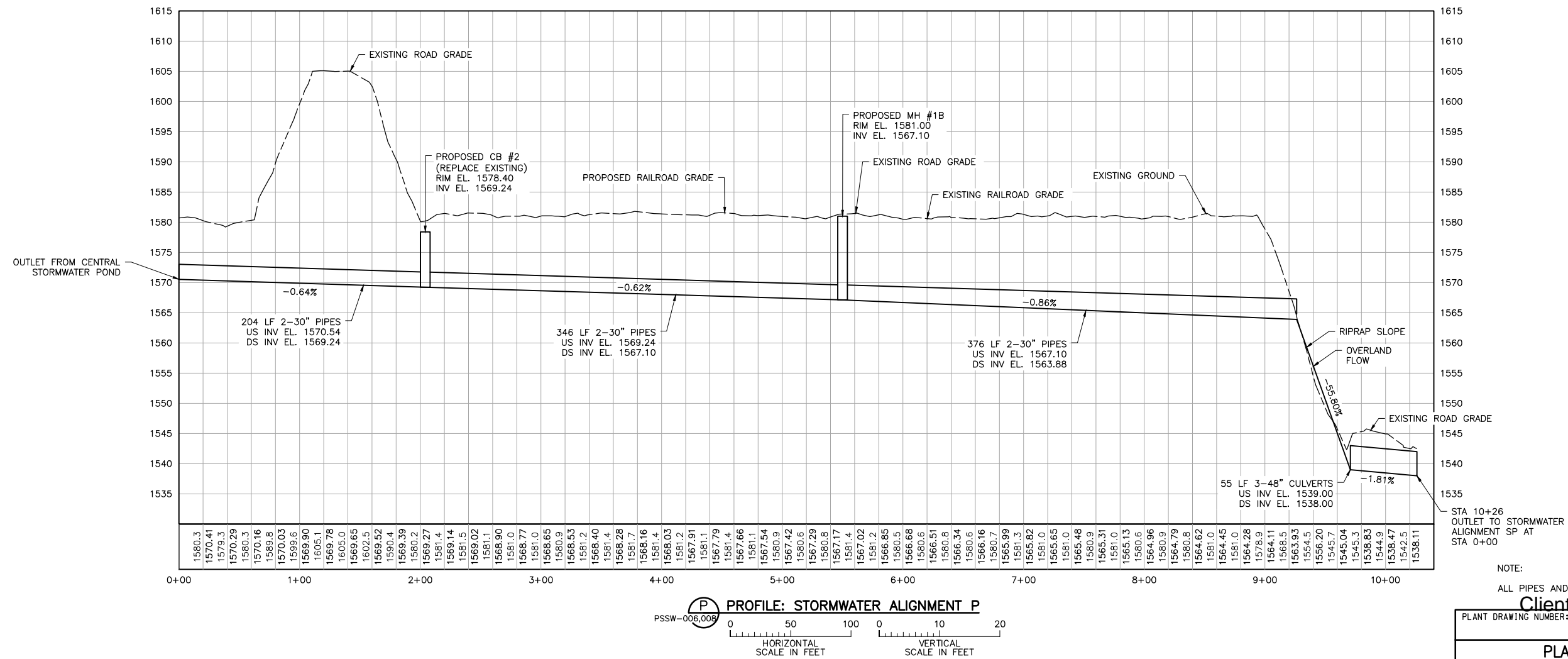
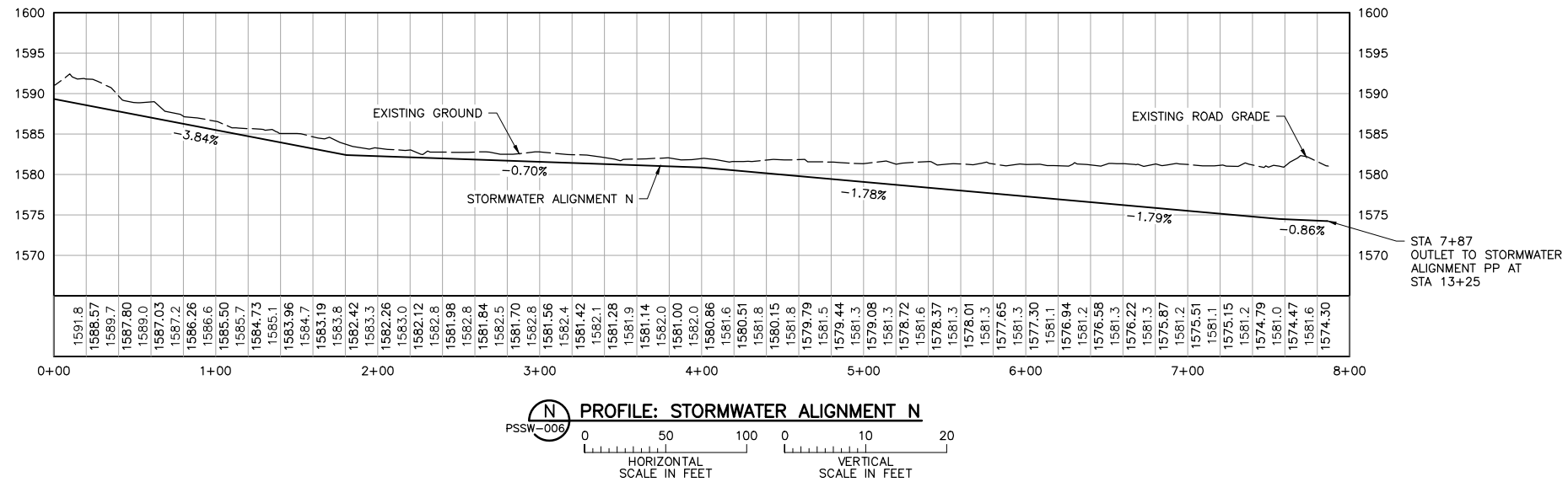
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BARR PROJECT NO.: 23/69-0C29  
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VER NO	DATE	DESCRIPTION	ISSUE STATUS		
			ISSUED	VERSION	DATE
1	5/15/15	ISSUED FOR INCLUSION IN PERMIT APPLICATIONS	ISSUED	1	5/15/15
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			NOT APPROVED FOR CONSTRUCTION		

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PRINTED NAME: CRISTIAN A. DIAZ  
SIGNATURE: [Signature]  
DATE: 5/15/15 LICENSE # 46593

CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29\10\PERMIT\MNP-63-CS-020.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 11:18 AM



NOTE:  
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**Client Review Draft 5/15/2015**

PLANT DRAWING NUMBER:

**PLANT SITE STORMWATER GRADING PROFILES**

**POLY MET MINING, INC.**  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

**BARR** ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

SCALE: AS SHOWN      DWG. NO. **PSSW-020**      REV

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
			ISSUED	VERSION	DATE
1	5/15/15	ISSUED FOR INCLUSION IN PERMIT APPLICATIONS	ISSUED	1	5/15/15
			FOR PERMITTING		
			FOR CONSTRUCTION		
			NOT APPROVED FOR CONSTRUCTION		

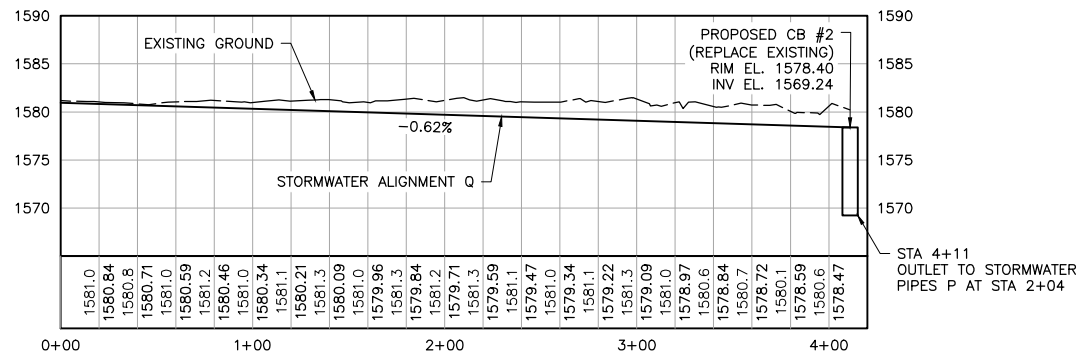
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SIGNATURE:   
DATE: 5/15/15      LICENSE# 46593

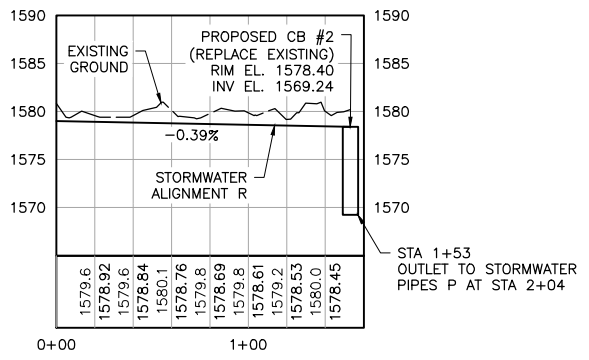
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CHECKED: CMK2  
BARR PROJECT NO.: 23/69-0C29

INCHES

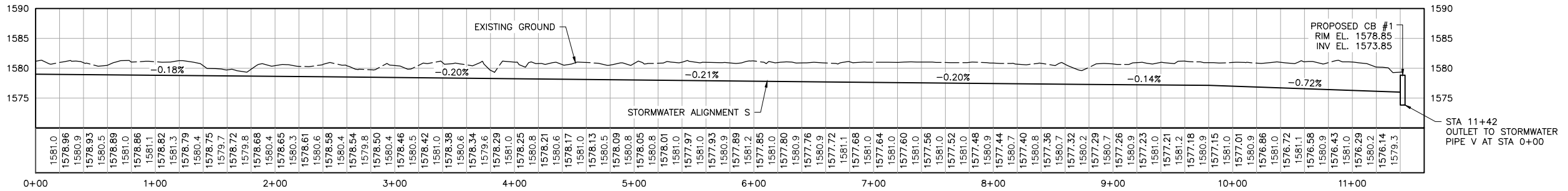
CADD USER: Cristian A. Diaz FILE: K:\DESIGN\2369029.10\PERMIT\MNP-63-CS-021.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 11:21 AM



**Q PROFILE: STORMWATER ALIGNMENT Q**  
PSSW-006  
HORIZONTAL SCALE IN FEET: 0, 50, 100  
VERTICAL SCALE IN FEET: 0, 10, 20



**R PROFILE: STORMWATER ALIGNMENT R**  
PSSW-006  
HORIZONTAL SCALE IN FEET: 0, 50, 100  
VERTICAL SCALE IN FEET: 0, 10, 20



**S PROFILE: STORMWATER ALIGNMENT S**  
PSSW-006,009  
HORIZONTAL SCALE IN FEET: 0, 50, 100  
VERTICAL SCALE IN FEET: 0, 10, 20

NOTE:  
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**Client Review Draft 5/15/2015**

PLANT DRAWING NUMBER:  
**PLANT SITE STORMWATER GRADING PROFILES**

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PRINTED NAME: **CRISTIAN A. DIAZ**  
SIGNATURE:   
DATE: 5/15/15 LICENSE # 46593

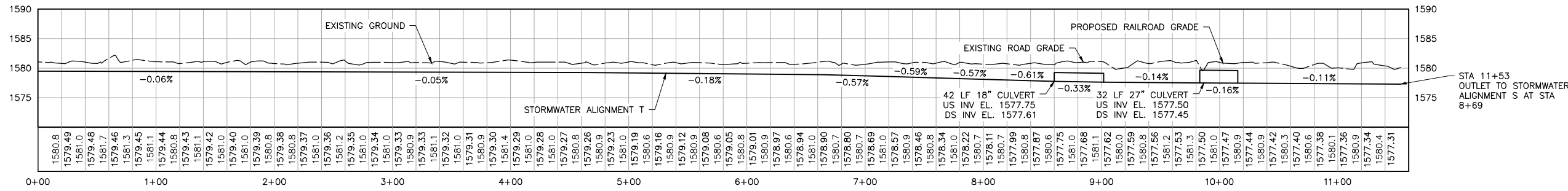
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BARR PROJECT NO.: 23/69-0C29  
SCALE: AS SHOWN

**POLYMET MINING**  
POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

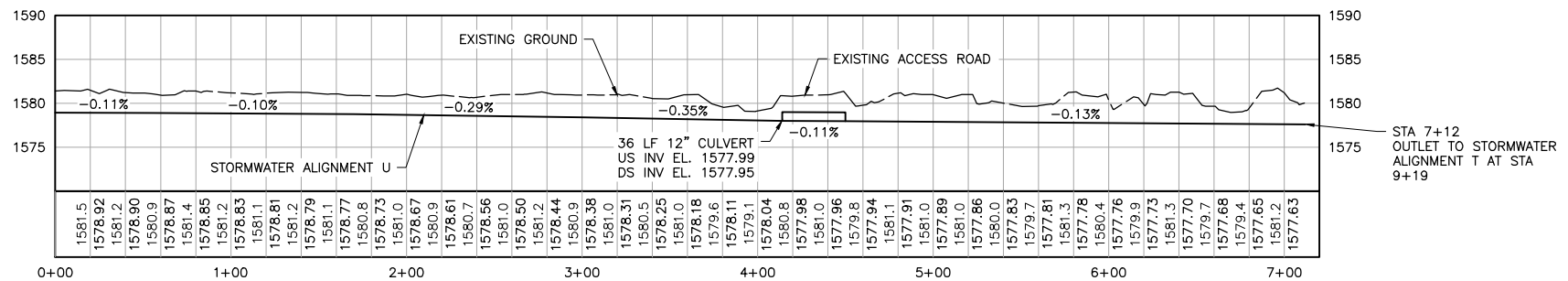
**BARR**  
BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

DWG. NO. **PSSW-021** REV

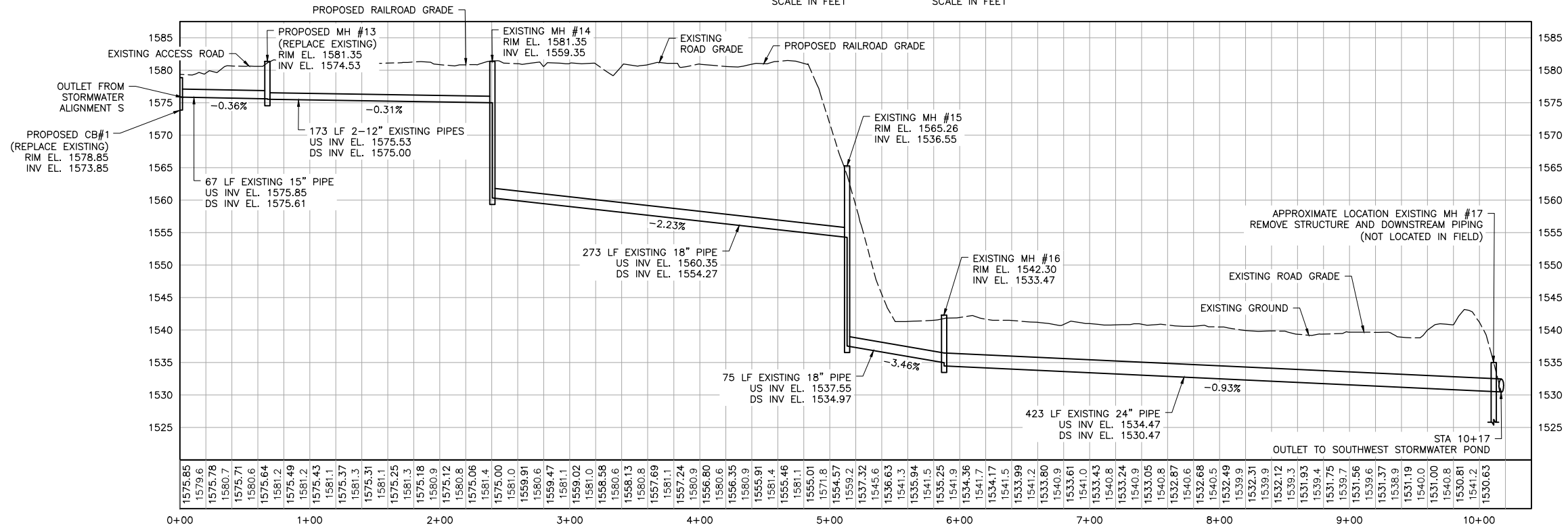
INCHES  
2  
1



**PROFILE: STORMWATER ALIGNMENT T**  
 PSSW-009  
 HORIZONTAL SCALE IN FEET: 0, 50, 100  
 VERTICAL SCALE IN FEET: 0, 10, 20



**PROFILE: STORMWATER ALIGNMENT U**  
 PSSW-009  
 HORIZONTAL SCALE IN FEET: 0, 50, 100  
 VERTICAL SCALE IN FEET: 0, 10, 20



**PROFILE: STORMWATER ALIGNMENT V**  
 PSSW-008,009  
 HORIZONTAL SCALE IN FEET: 0, 50, 100  
 VERTICAL SCALE IN FEET: 0, 10, 20

NOTE:  
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Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:  
**PLANT SITE STORMWATER GRADING PROFILES**

**POLY MET MINING**  
 POLY MET MINING, INC.  
 NORTHMET PROJECT  
 HOYT LAKES, MINNESOTA

**BARR**  
 BARR ENGINEERING COMPANY  
 4700 WEST 77TH STREET  
 MINNEAPOLIS, MN.  
 Ph: 1-800-632-2277

DRAWN: VJS  
 CHECKED: CMK2  
 BARR PROJECT NO.: 23/69-0C29  
 SCALE: AS SHOWN  
 DWG. NO. PSSW-022  
 REV

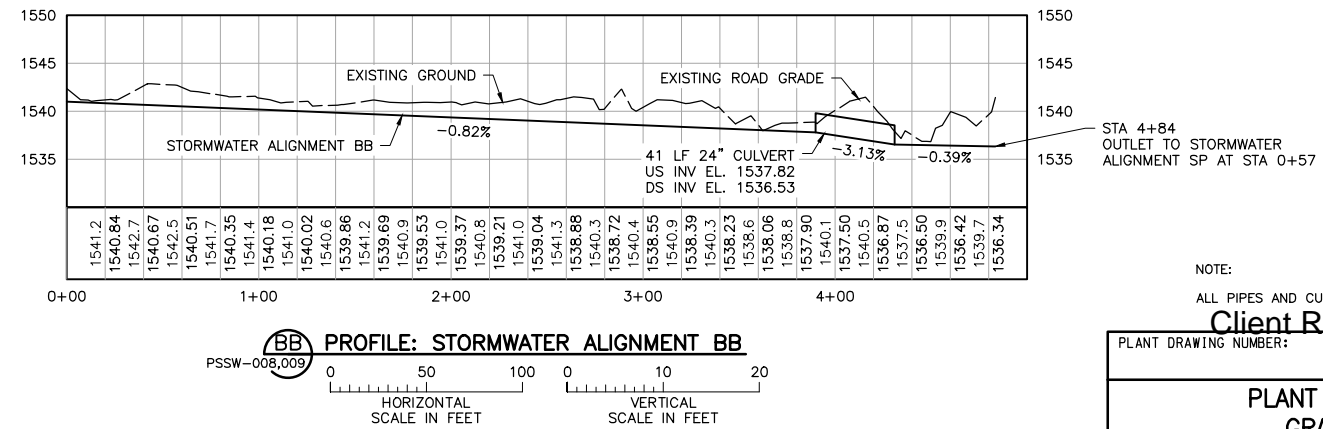
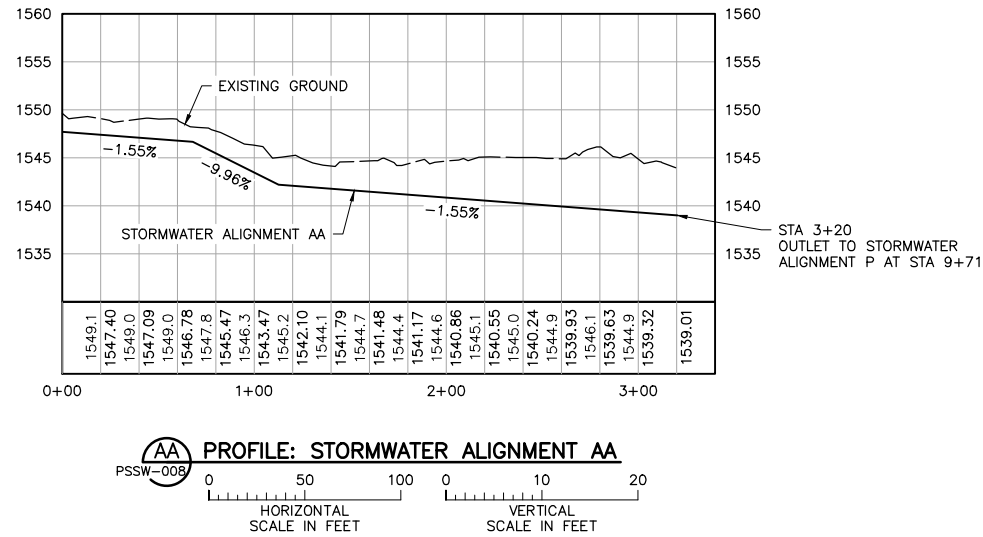
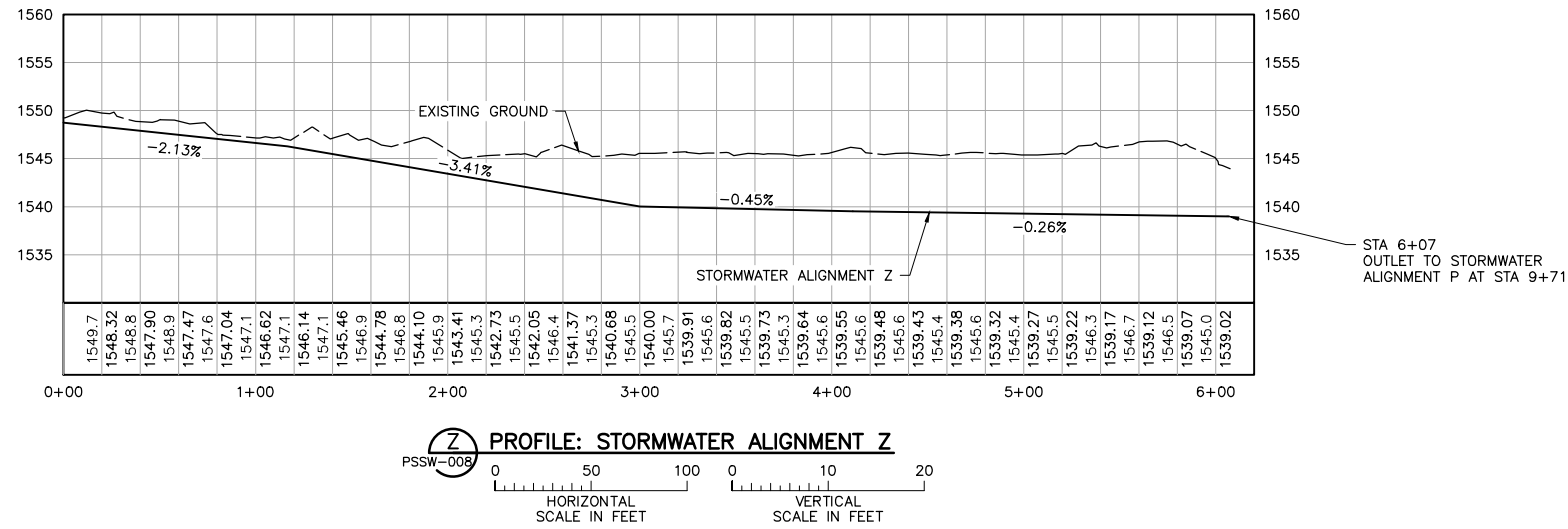
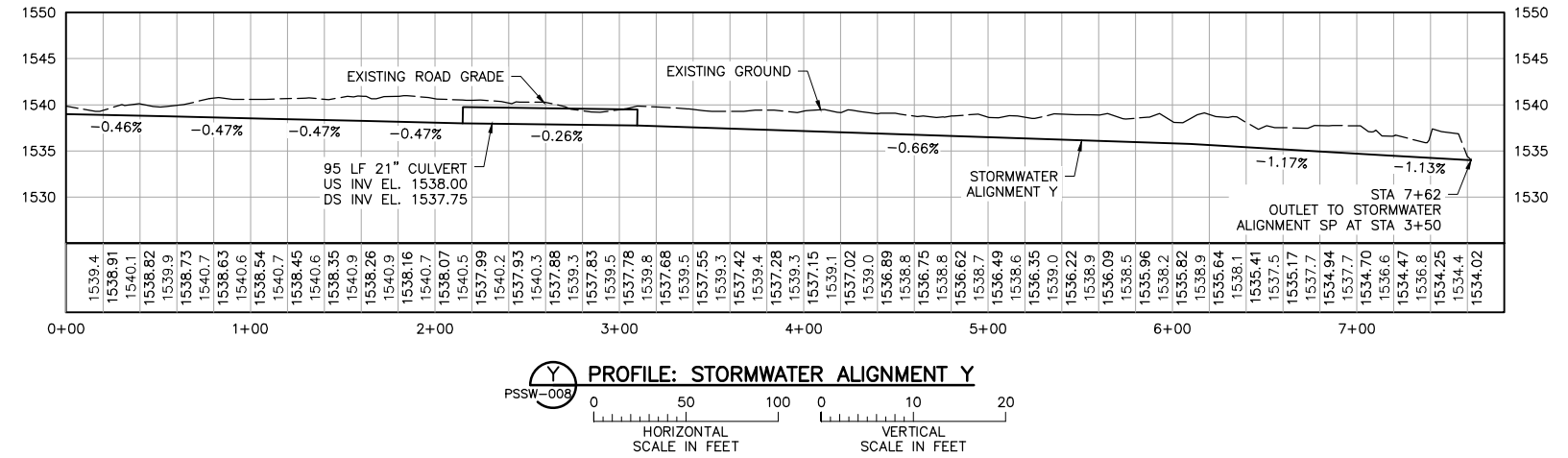
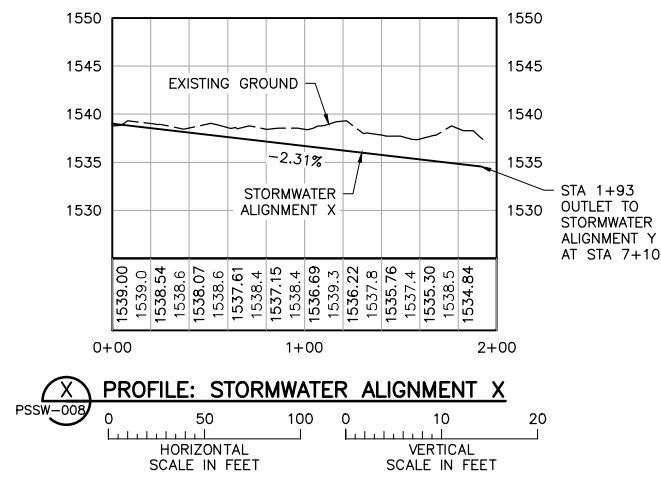
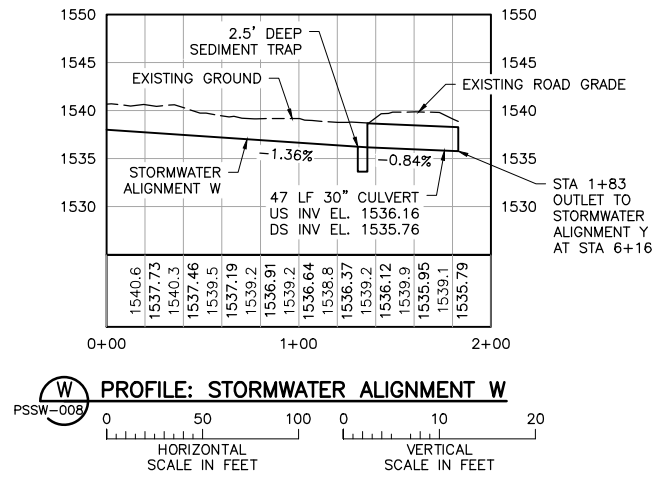
VER NO	DATE	DESCRIPTION	ISSUE STATUS		
			ISSUED	VERSION	DATE
1	5/15/15	ISSUED FOR INCLUSION IN PERMIT APPLICATIONS	ISSUED		
			FOR PERMITTING	1	5/15/15
			FOR CONSTRUCTION		
			NOT APPROVED FOR CONSTRUCTION		

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME: CRISTIAN A. DIAZ  
 SIGNATURE: [Signature]  
 DATE: 5/15/15 LICENSE# 46593

CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29\10\PERMIT_NMP-63-CS-022.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 11:24 AM

2  
1  
INCHES



NOTE: ALL PIPES AND CULVERTS ARE PROPOSED UNLESS INDICATED.

Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:

PLANT SITE STORMWATER GRADING PROFILES

POLY MET MINING

POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

BARR

SCALE: AS SHOWN

DWG. NO. PSSW-023

REV

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
			ISSUED	VERSION	DATE
1	5/15/15	ISSUED FOR INCLUSION IN PERMIT APPLICATIONS			
			FOR PERMITTING	1	5/15/15
			FOR CONSTRUCTION		
			NOT APPROVED FOR CONSTRUCTION		

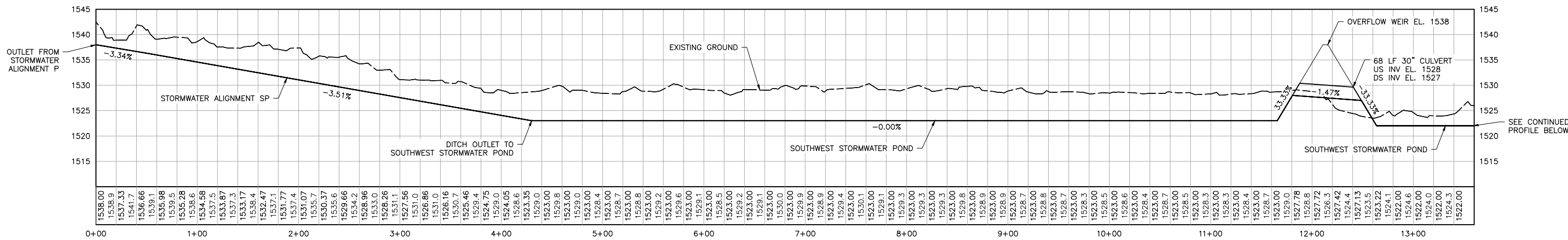
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME: CRISTIAN A. DIAZ  
SIGNATURE: [Signature]  
DATE: 5/15/15 LICENSE # 46593

DRAWN: VJS  
CHECKED: CMK2  
BARR PROJECT NO.: 23/69-0C29  
SCALE: AS SHOWN

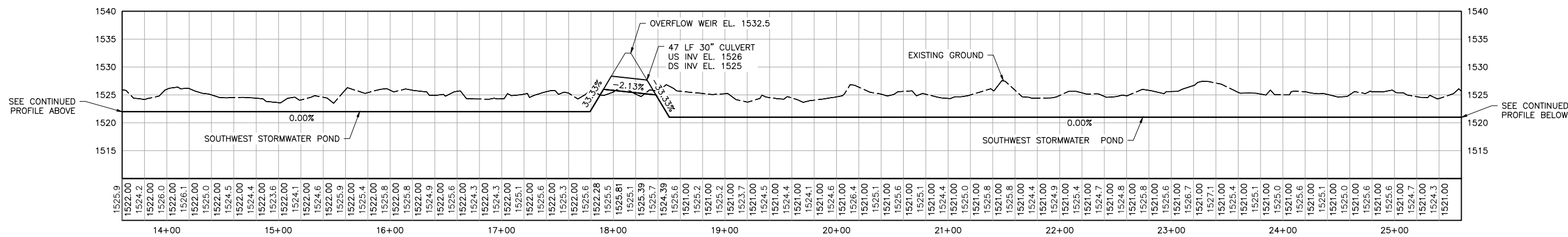


CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29.10\PERMIT_NMP-63-CS-024.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 11:37 AM



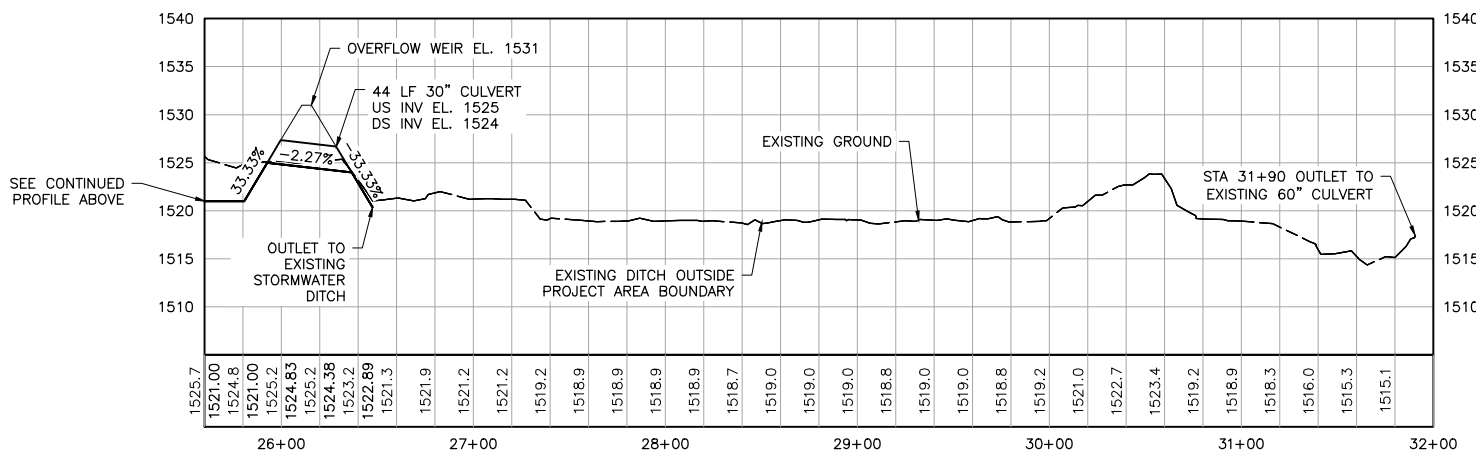
**SP PROFILE: STORMWATER ALIGNMENT SP**  
 PSSW-008,010  
 HORIZONTAL SCALE IN FEET: 0, 50, 100  
 VERTICAL SCALE IN FEET: 0, 10, 20

NOTE:  
 SOUTHWEST STORMWATER POND TO BE OPTIMIZED IN FINAL DESIGN.



**SP PROFILE: STORMWATER ALIGNMENT SP**  
 PSSW-008,010  
 HORIZONTAL SCALE IN FEET: 0, 50, 100  
 VERTICAL SCALE IN FEET: 0, 10, 20

NOTE:  
 SOUTHWEST STORMWATER POND TO BE OPTIMIZED IN FINAL DESIGN.





**SP PROFILE: STORMWATER ALIGNMENT SP**  
 PSSW-008,010  
 HORIZONTAL SCALE IN FEET: 0, 50, 100  
 VERTICAL SCALE IN FEET: 0, 10, 20


NOTE:  
 SOUTHWEST STORMWATER POND TO BE OPTIMIZED IN FINAL DESIGN.

NOTE:  
 ALL PIPES AND CULVERTS ARE PROPOSED UNLESS INDICATED.

Client Review Draft 5/15/2015

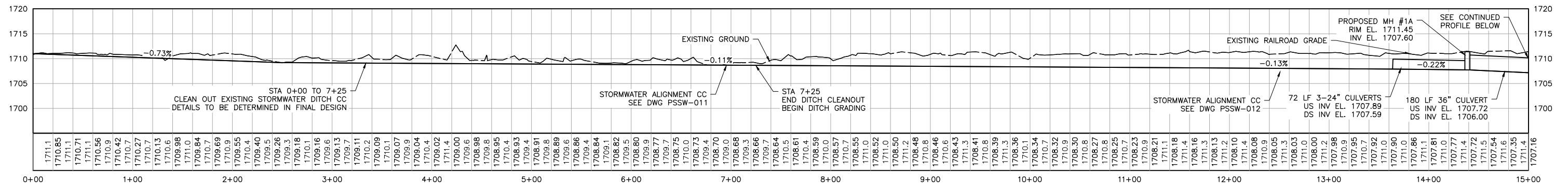
PLANT DRAWING NUMBER:	
<b>PLANT SITE STORMWATER GRADING PROFILES</b>	
 <b>POLY MET MINING, INC.</b> NORTHMET PROJECT HOYT LAKES, MINNESOTA	
DRAWN: VJS CHECKED: CMK2 BARR PROJECT NO.: 23/69-0C29 SCALE: AS SHOWN	 <b>BARR ENGINEERING COMPANY</b> 4700 WEST 77TH STREET MINNEAPOLIS, MN. Ph: 1-800-632-2277
DWG. NO. <b>PSSW-024</b>	REV

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
			ISSUED	VERSION	DATE
1	5/15/15	ISSUED FOR INCLUSION IN PERMIT APPLICATIONS	ISSUED	1	5/15/15
			FOR PERMITTING		
			FOR CONSTRUCTION		
			NOT APPROVED FOR CONSTRUCTION		

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 PRINTED NAME: CRISTIAN A. DIAZ  
 SIGNATURE:   
 DATE: 5/15/15 LICENSE # 46593

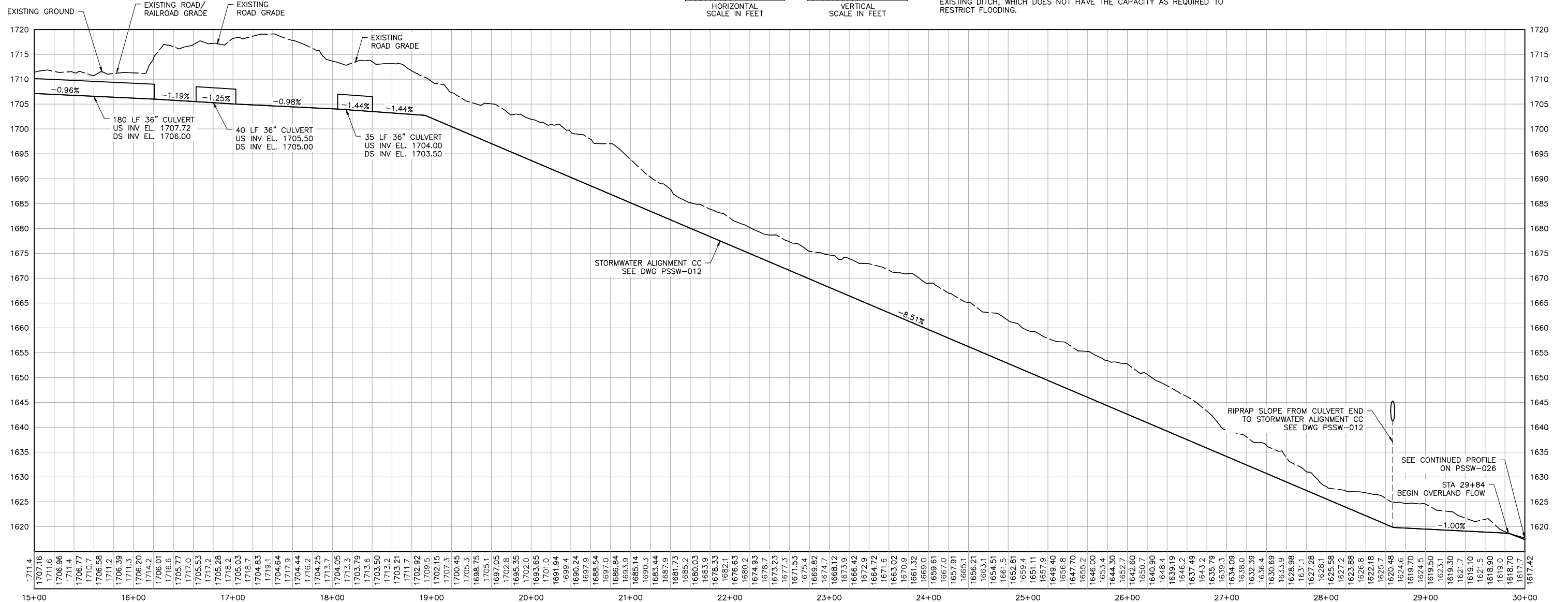
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CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29.10\PERMIT_NMP-63-CS-025-DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 11:33 AM



**CC PROFILE: STORMWATER ALIGNMENT CC**  
 PSSW-011  
 PSSW-012  
 HORIZONTAL SCALE IN FEET: 0, 50, 100  
 VERTICAL SCALE IN FEET: 0, 10, 20

NOTE:  
 STORMWATER DITCH HAS CONSTRAINTS RESTRICTING CONSTRUCTION. DESIGN OPTIONS HAVE BEEN IDENTIFIED. THIS PROFILE SHOWS CLEAN-OUT OF THE EXISTING DITCH, WHICH DOES NOT HAVE THE CAPACITY AS REQUIRED TO RESTRICT FLOODING.



**CC PROFILE: STORMWATER ALIGNMENT CC**  
 PSSW-012  
 HORIZONTAL SCALE IN FEET: 0, 50, 100  
 VERTICAL SCALE IN FEET: 0, 10, 20

NOTE:  
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Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:  
**PLANT SITE STORMWATER GRADING PROFILES**

**POLYMET MINING**  
 POLY MET MINING, INC.  
 NORTHMET PROJECT  
 HOYT LAKES, MINNESOTA

**BARR**  
 BARR ENGINEERING COMPANY  
 4700 WEST 77TH STREET  
 MINNEAPOLIS, MN.  
 Ph: 1-800-632-2277

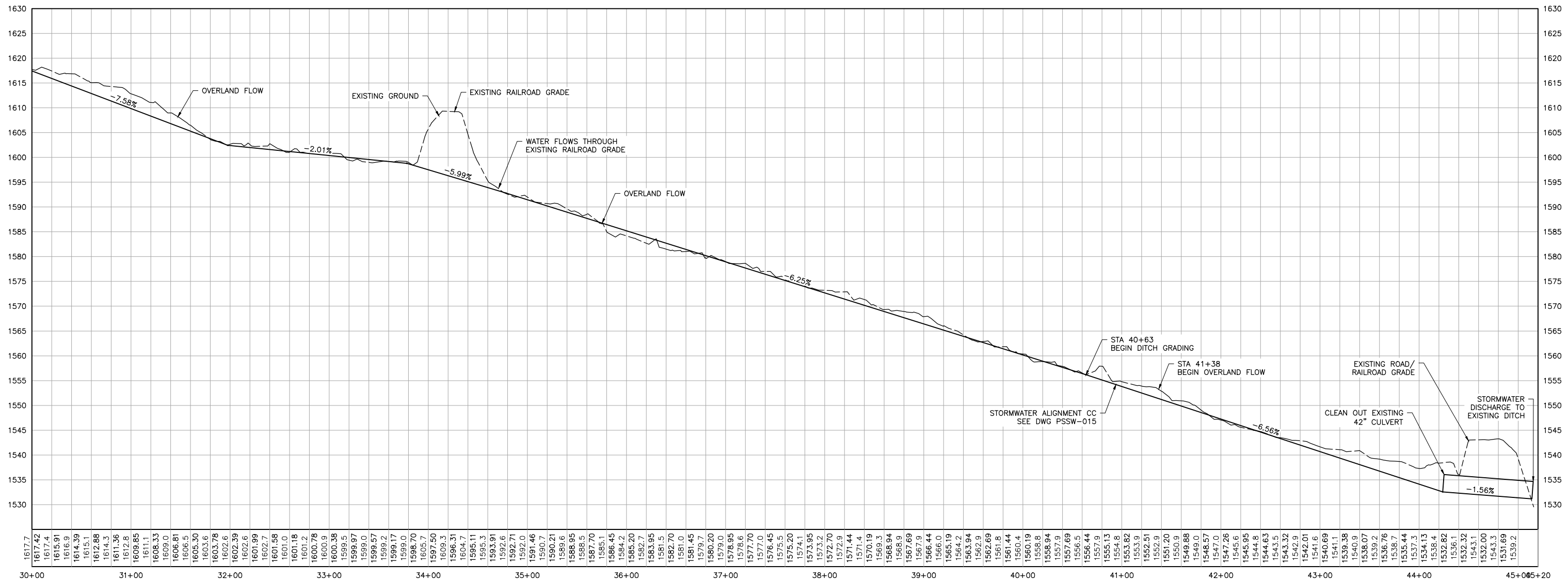
DRAWN: PRT  
 CHECKED: CMK2  
 BARR PROJECT NO.: 23/69-0C29  
 SCALE: AS SHOWN  
 DWG. NO. **PSSW-025**  
 REV

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
1	5/15/15	ISSUED FOR INCLUSION IN PERMIT APPLICATIONS	ISSUED	VERSION	DATE
			FOR PERMITTING	1	5/15/15
			FOR CONSTRUCTION		
			NOT APPROVED FOR CONSTRUCTION		

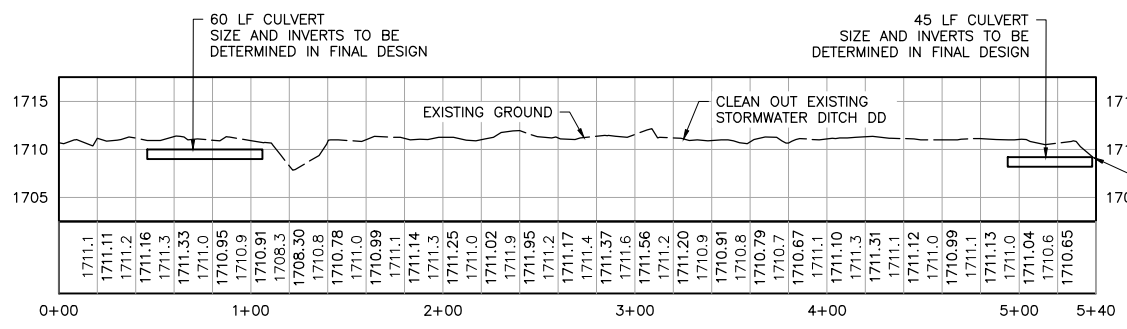
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 PRINTED NAME: **CRISTIAN A. DIAZ**  
 SIGNATURE: *[Signature]*  
 DATE: 5/15/15 LICENSE# 46593

2  
 1  
 INCHES

CADD USER: Cristian A. Diaz FILE: K:\DESIGN\2369026\10\PERMIT_NMP-63-CS-026.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 11:36 AM

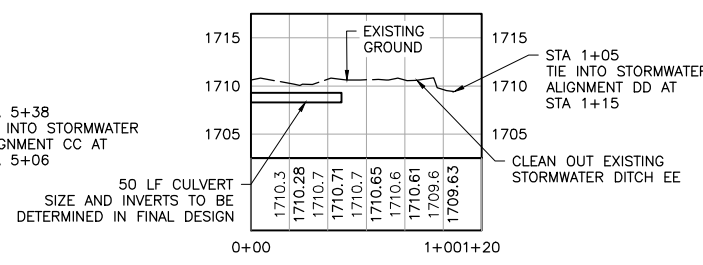


**CC PROFILE: STORMWATER ALIGNMENT CC**  
 PSSW-015  
 HORIZONTAL SCALE IN FEET: 0, 50, 100  
 VERTICAL SCALE IN FEET: 0, 10, 20



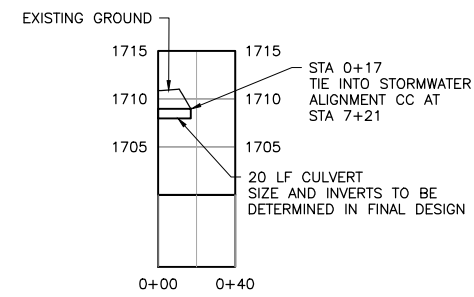
**DD PROFILE: STORMWATER ALIGNMENT DD**  
 PSSW-011  
 HORIZONTAL SCALE IN FEET: 0, 50, 100  
 VERTICAL SCALE IN FEET: 0, 10, 20

NOTE:  
 STORMWATER DITCH HAS CONSTRAINTS RESTRICTING CONSTRUCTION. DESIGN OPTIONS HAVE BEEN IDENTIFIED. THIS PROFILE SHOWS CLEAN-OUT OF THE EXISTING DITCH, WHICH DOES NOT HAVE THE CAPACITY AS REQUIRED TO RESTRICT FLOODING.



**EE PROFILE: STORMWATER ALIGNMENT EE**  
 PSSW-011  
 HORIZONTAL SCALE IN FEET: 0, 50, 100  
 VERTICAL SCALE IN FEET: 0, 10, 20

NOTE:  
 STORMWATER DITCH HAS CONSTRAINTS RESTRICTING CONSTRUCTION. DESIGN OPTIONS HAVE BEEN IDENTIFIED. THIS PROFILE SHOWS CLEAN-OUT OF THE EXISTING DITCH, WHICH DOES NOT HAVE THE CAPACITY AS REQUIRED TO RESTRICT FLOODING.



**FF PROFILE: STORMWATER ALIGNMENT FF**  
 PSSW-011  
 HORIZONTAL SCALE IN FEET: 0, 50, 100  
 VERTICAL SCALE IN FEET: 0, 10, 20

NOTE:  
 STORMWATER DITCH HAS CONSTRAINTS RESTRICTING CONSTRUCTION. DESIGN OPTIONS HAVE BEEN IDENTIFIED. THIS PROFILE SHOWS CLEAN-OUT OF THE EXISTING DITCH, WHICH DOES NOT HAVE THE CAPACITY AS REQUIRED TO RESTRICT FLOODING.

NOTE:  
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Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:  
**PLANT SITE STORMWATER GRADING PROFILES**

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
1	5/15/15	ISSUED FOR INCLUSION IN PERMIT APPLICATIONS	ISSUED	VERSION	DATE
			FOR PERMITTING	1	5/15/15
			FOR CONSTRUCTION		
			NOT APPROVED FOR CONSTRUCTION		

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 PRINTED NAME: CRISTIAN A. DIAZ  
 SIGNATURE: [Signature]  
 DATE: 5/15/15 LICENSE # 46593

DRAWN: PRT  
 CHECKED: CMK2  
 BARR PROJECT NO.: 23/69-0C29  
 SCALE: AS SHOWN

**POLY MET MINING, INC.**  
 NORTHMET PROJECT  
 HOYT LAKES, MINNESOTA

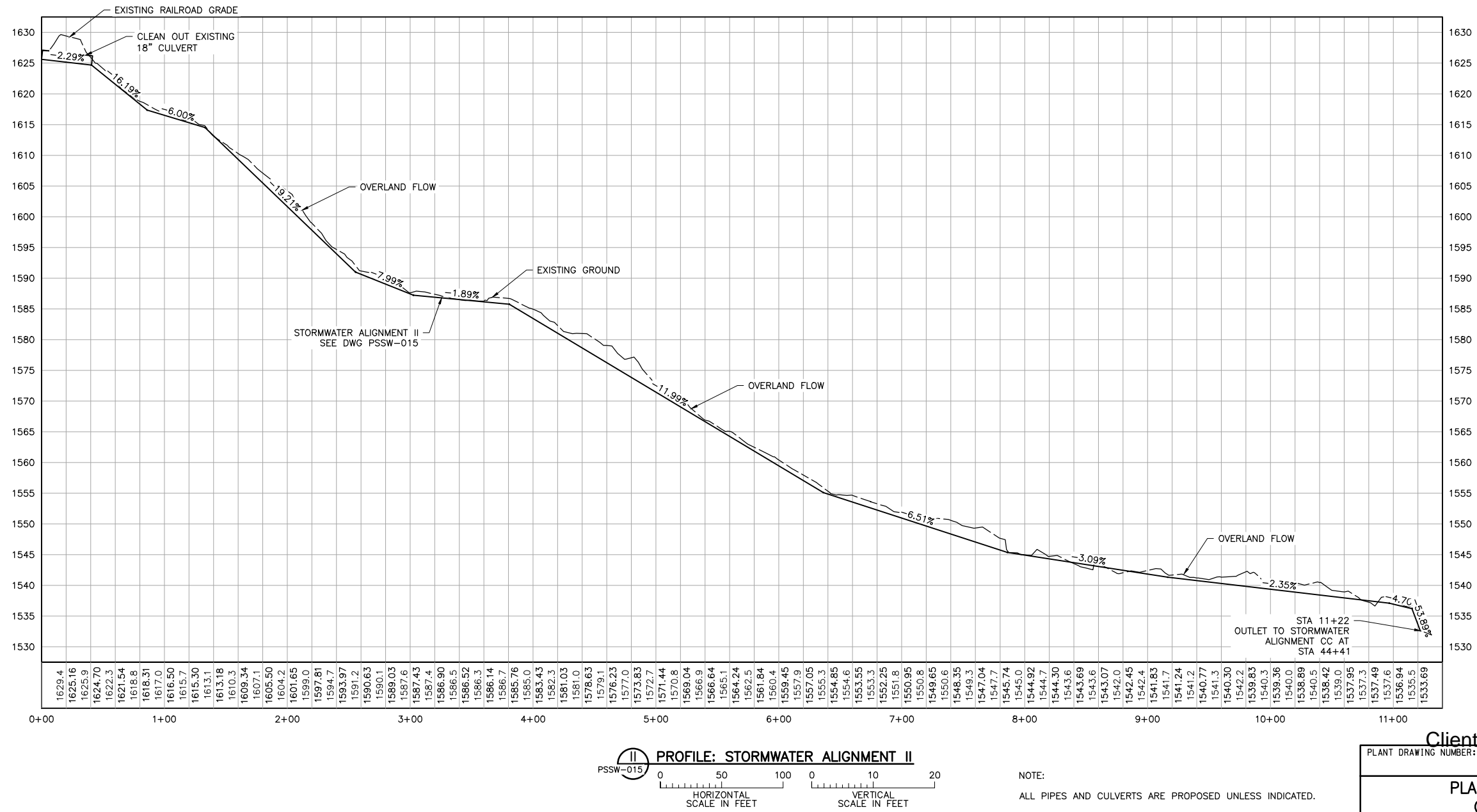
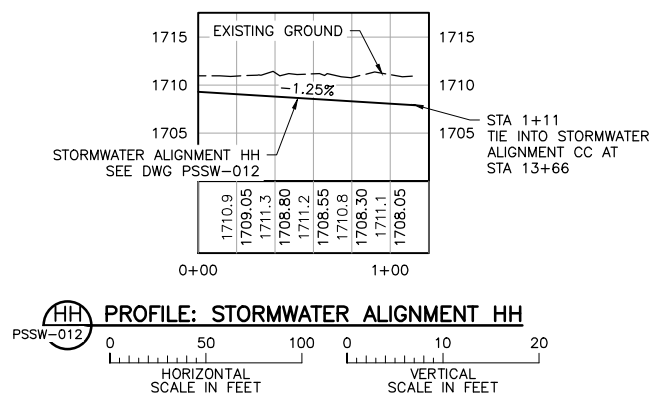
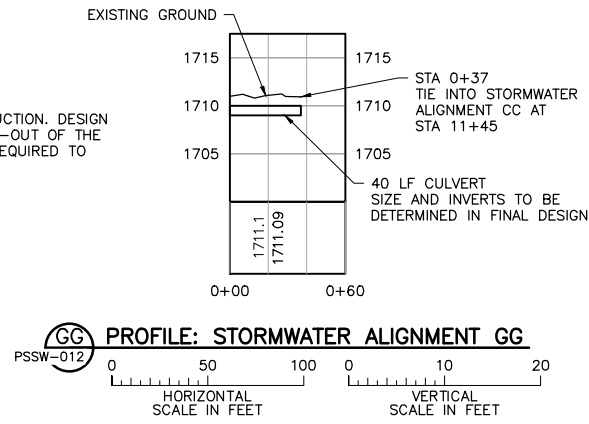
**BARR**  
 BARR ENGINEERING COMPANY  
 4700 WEST 77TH STREET  
 MINNEAPOLIS, MN.  
 Ph: 1-800-632-2277

DWG. NO. **PSSW-026** REV

INCHES

**NOTE:**

STORMWATER DITCH HAS CONSTRAINTS RESTRICTING CONSTRUCTION. DESIGN OPTIONS HAVE BEEN IDENTIFIED. THIS PROFILE SHOWS CLEAN-OUT OF THE EXISTING DITCH, WHICH DOES NOT HAVE THE CAPACITY AS REQUIRED TO RESTRICT FLOODING.



**NOTE:**  
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Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:  
**PLANT SITE STORMWATER GRADING PROFILES**

**POLYMET MINING**  
POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

**BARR**  
BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

DRAWN: PRT  
CHECKED: CMK2  
BARR PROJECT NO.: 23/69-0C29  
SCALE: AS SHOWN  
DWG. NO. **PSSW-027**  
REV

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
1	5/15/15	ISSUED FOR INCLUSION IN PERMIT APPLICATIONS	ISSUED	VERSION	DATE
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			FOR CONSTRUCTION		
			NOT APPROVED FOR CONSTRUCTION		

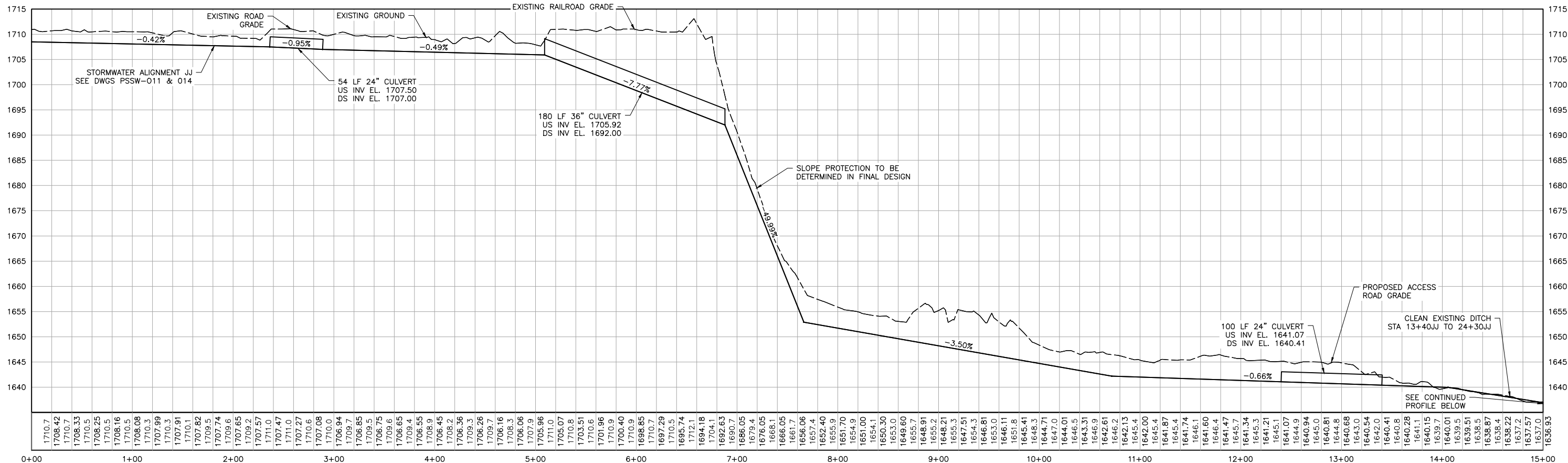
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PRINTED NAME **CRISTIAN A. DIAZ**  
SIGNATURE  
DATE 5/15/15 LICENSE# 46593

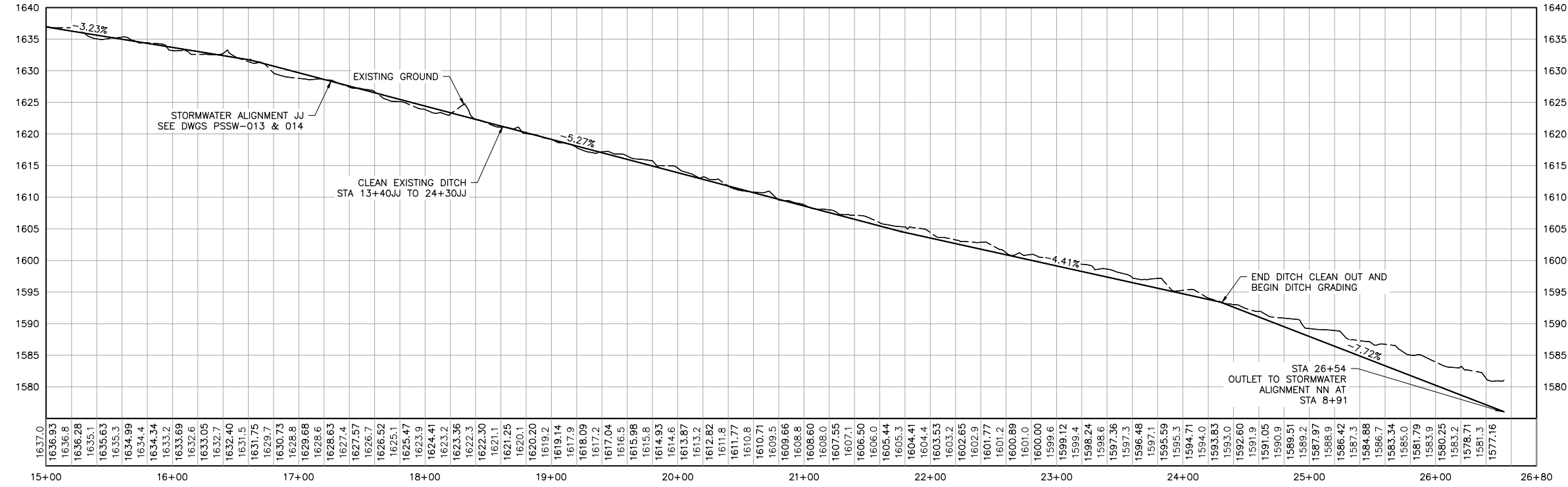
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1  
INCHES

CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29.10\PERMIT_NMP-63-CS-028.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 11:43 AM



**PROFILE: STORMWATER ALIGNMENT JJ**  
 PSSW-011  
 PSSW-014  
 HORIZONTAL SCALE IN FEET: 0, 50, 100  
 VERTICAL SCALE IN FEET: 0, 10, 20



**PROFILE: STORMWATER ALIGNMENT JJ**  
 PSSW-013  
 PSSW-014  
 HORIZONTAL SCALE IN FEET: 0, 50, 100  
 VERTICAL SCALE IN FEET: 0, 10, 20

NOTE:  
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Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:

**PLANT SITE STORMWATER GRADING PROFILES**

**POLYMET MINING**  
 POLY MET MINING, INC.  
 NORTHMET PROJECT  
 HOYT LAKES, MINNESOTA

**BARR**  
 BARR ENGINEERING COMPANY  
 4700 WEST 77TH STREET  
 MINNEAPOLIS, MN.  
 Ph: 1-800-632-2277

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
1	5/15/15	ISSUED FOR INCLUSION IN PERMIT APPLICATIONS	ISSUED	VERSION	DATE
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 PRINTED NAME: CRISTIAN A. DIAZ  
 SIGNATURE: [Signature]  
 DATE: 5/15/15 LICENSE # 46593

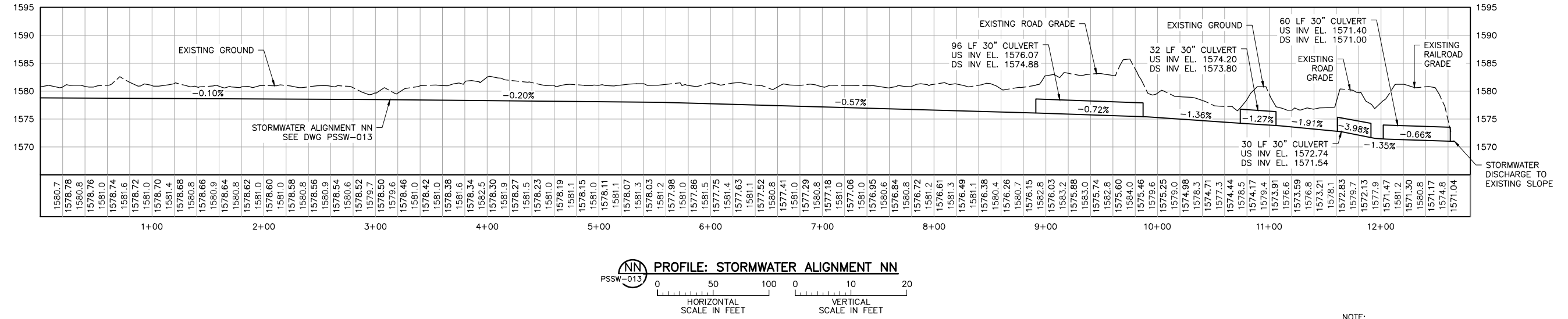
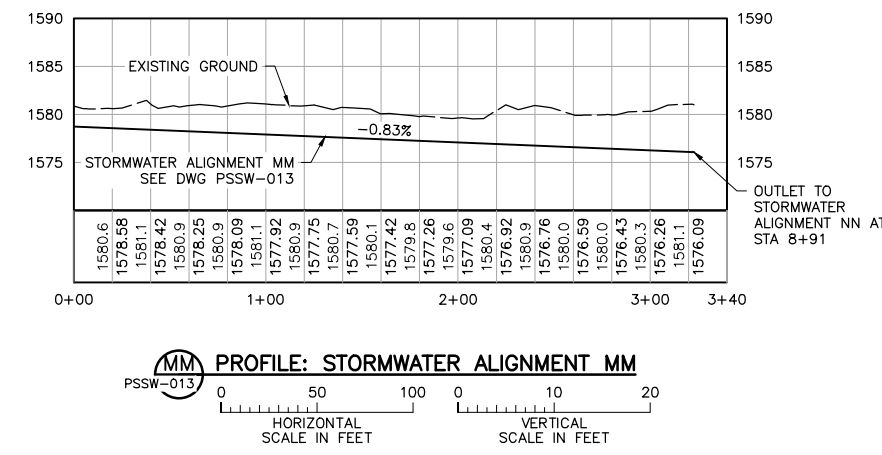
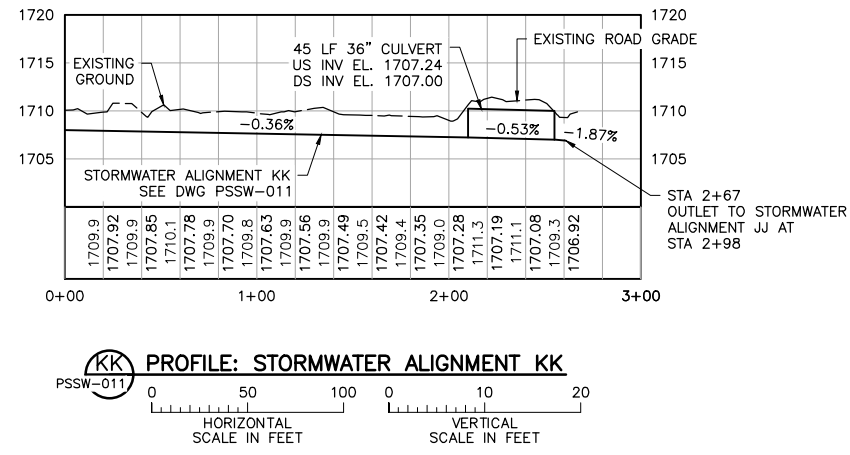
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 CHECKED: CMK2  
 BARR PROJECT NO.: 23/69-0C29  
 SCALE: AS SHOWN

DWG. NO. **PSSW-028** REV

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 INCHES

CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29\10\PERMIT_MMP-63-CS-029.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 11:45 AM

2  
1  
INCHES



NOTE:  
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Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:

**PLANT SITE STORMWATER GRADING PROFILES**

**POLYMET MINING** POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

**BARR** BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

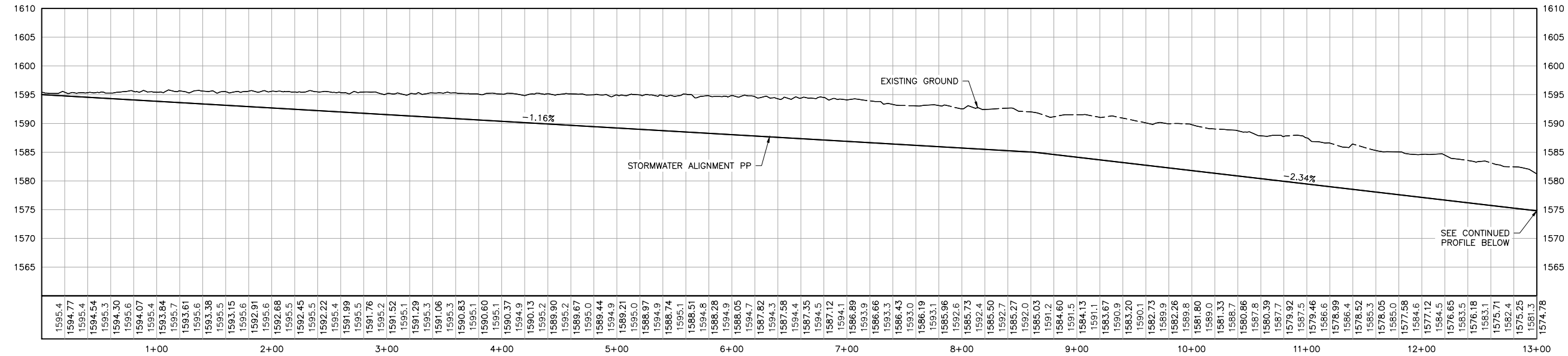
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			FOR PERMITTING	1	5/15/15
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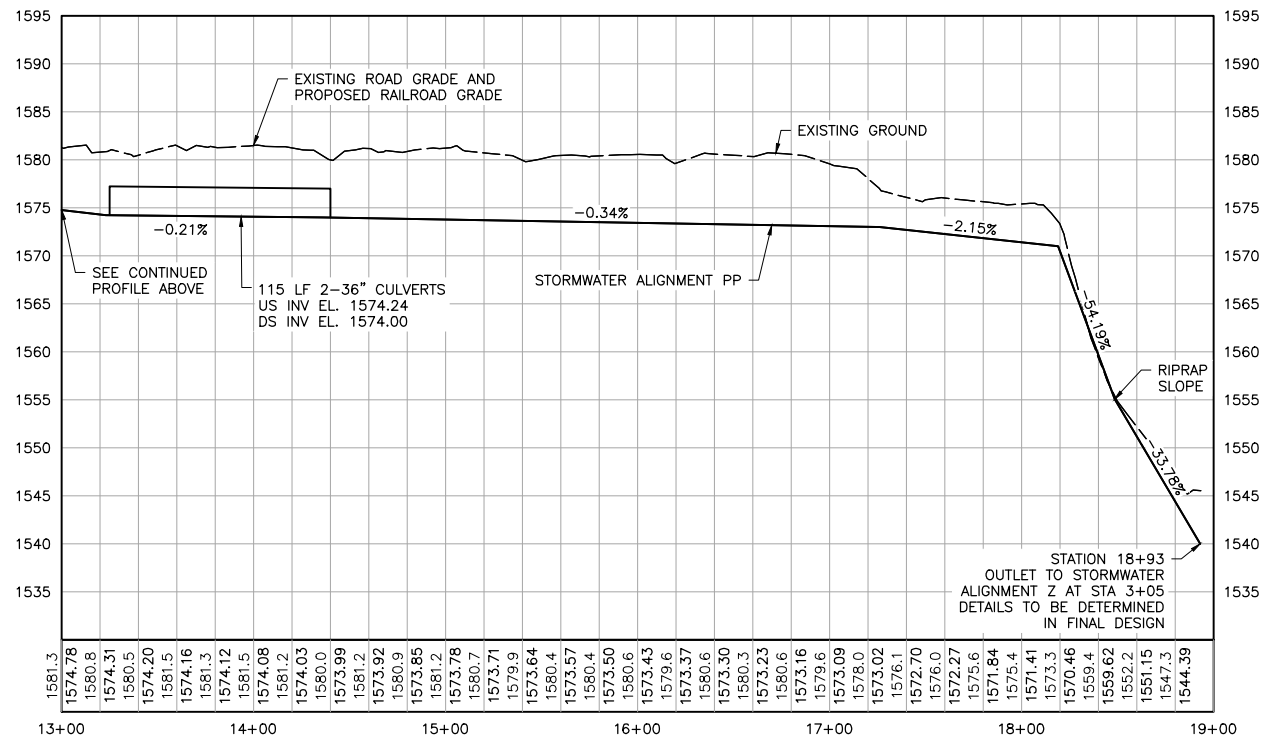
PRINTED NAME: CRISTIAN A. DIAZ  
SIGNATURE: [Signature]  
DATE: 5/15/15 LICENSE # 46593

DRAWN: PRT  
CHECKED: CMK2  
BARR PROJECT NO.: 23/69-0C29  
SCALE: AS SHOWN

DWG. NO. PSSW-029 REV



**PP PROFILE: STORMWATER ALIGNMENT PP**  
 PSSW-007  
 HORIZONTAL SCALE IN FEET: 0, 50, 100  
 VERTICAL SCALE IN FEET: 0, 10, 20



**PP PROFILE: STORMWATER ALIGNMENT PP**  
 PSSW-008  
 HORIZONTAL SCALE IN FEET: 0, 50, 100  
 VERTICAL SCALE IN FEET: 0, 10, 20

NOTE:  
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Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:

PLANT SITE STORMWATER  
 GRADING PROFILES



POLY MET MINING, INC.  
 NORTHMET PROJECT  
 HOYT LAKES, MINNESOTA



BARR ENGINEERING COMPANY  
 4700 WEST 77TH STREET  
 MINNEAPOLIS, MN.  
 Ph: 1-800-632-2277

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 PRINTED NAME CRISTIAN A. DIAZ  
 SIGNATURE  
 DATE 5/15/15 LICENSE# 46593

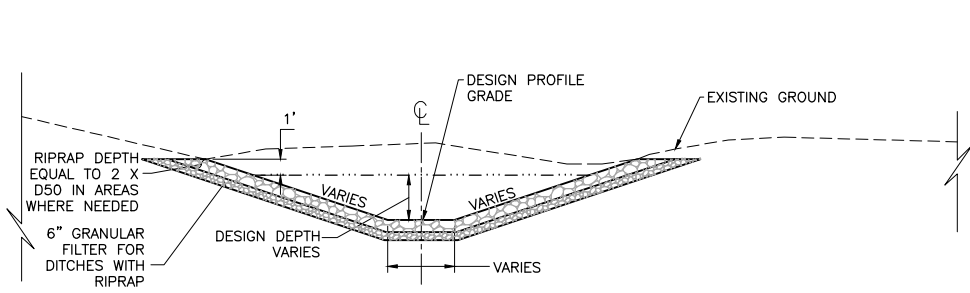
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 SCALE: AS SHOWN

DWG. NO. PSSW-030  
 REV

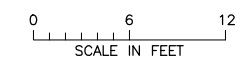
VER NO	DATE	DESCRIPTION	ISSUE STATUS		
			ISSUED	VERSION	DATE
1	5/15/15	ISSUED FOR INCLUSION IN PERMIT APPLICATIONS	ISSUED	1	5/15/15
			FOR PERMITTING		
			FOR CONSTRUCTION		
			NOT APPROVED FOR CONSTRUCTION		



CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690229.10\PERMIT_NMP-63-CS-031.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 11:50 AM

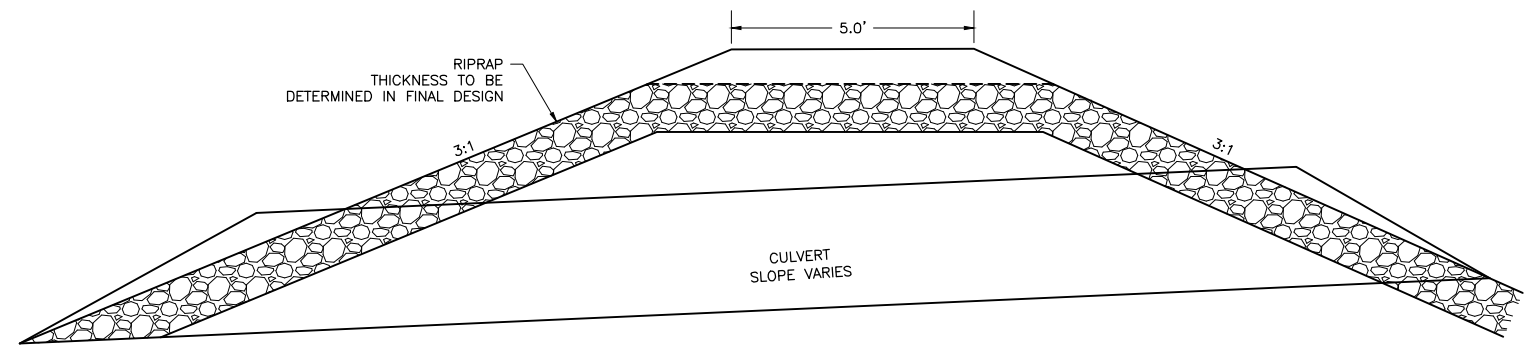


**1 SECTION: TYPICAL DITCH**



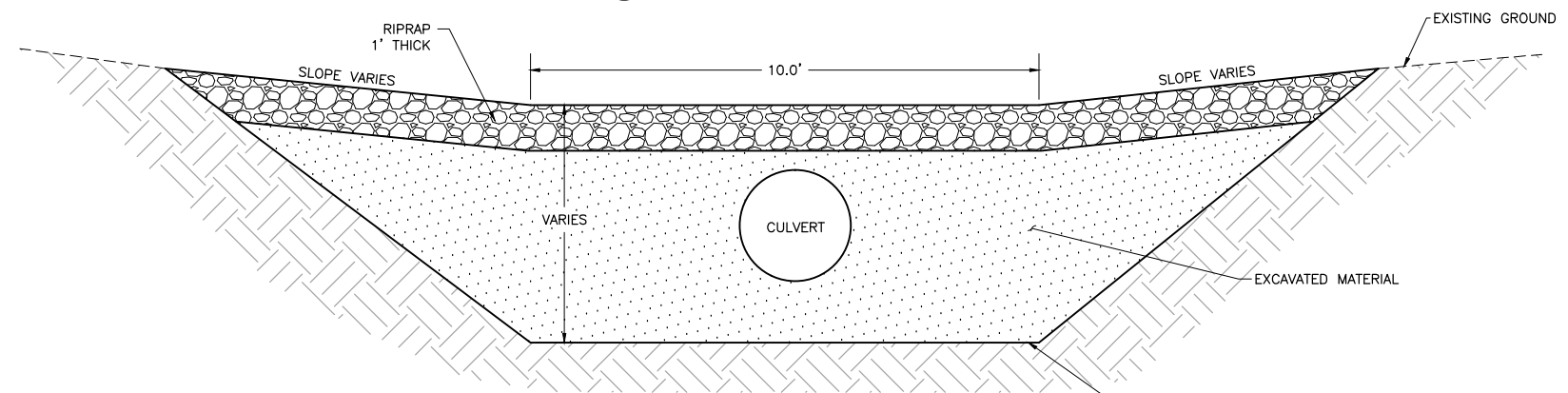
**NOTES**

1. DITCHES NOT REQUIRING RIPRAP WILL BE CONSTRUCTED WITH NATIVE SOILS AND 4" TOPSOIL TO DESIGN PROFILE GRADE.
2. DITCHES CONSTRUCTED IN BEDROCK WILL NOT REQUIRE RIPRAP OR TOPSOIL.
3. RESTORE ALL DISTURBED AREAS NOT STABILIZED WITH RIPRAP.
4. DITCH CROSS SECTIONS VARY. DETAILS WILL BE TABULATED IN FINAL DESIGN.
5. DITCHES THAT REQUIRE LARGE DIAMETER RIPRAP MAY REQUIRE AN ADDITIONAL LAYER BETWEEN THE RIPRAP AND THE GRANULAR FILTER, TO BE DETERMINED IN FINAL DESIGN.



**A SECTION: OVERFLOW WEIR SIDE VIEW**

NOT TO SCALE



**NOTES**

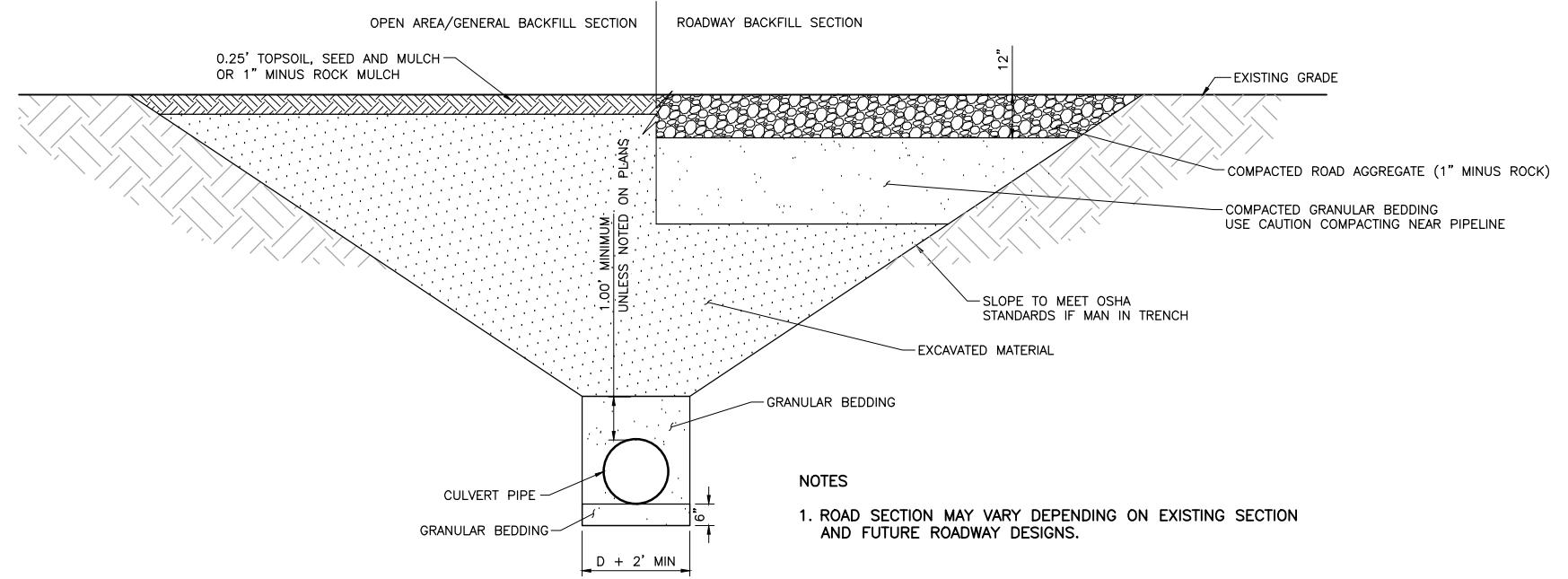
1. WEIR CROSS SECTIONS VARY. DETAILS WILL BE TABULATED IN FINAL DESIGN.

**B SECTION: OVERFLOW WEIR CROSS SECTION**

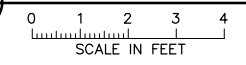
NOT TO SCALE

**3 DETAIL: SOUTH POND OVERFLOW WEIRS**

PSSW-010.024 NOT TO SCALE



**2 SECTION: PIPELINE AND CULVERT TRENCH CONSTRUCTION**



**NOTES**

1. ROAD SECTION MAY VARY DEPENDING ON EXISTING SECTION AND FUTURE ROADWAY DESIGNS.

Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:  
**PLANT SITE STORMWATER SECTIONS AND DETAILS**

**POLYMET MINING** POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA

**BARR** BARR ENGINEERING COMPANY  
4700 WEST 77TH STREET  
MINNEAPOLIS, MN.  
Ph: 1-800-632-2277

VER NO	DATE	DESCRIPTION	ISSUE STATUS		
			ISSUED	VERSION	DATE
1	5/15/15	ISSUED FOR INCLUSION IN PERMIT APPLICATIONS	ISSUED	1	5/15/15
			FOR PERMITTING		
			FOR CONSTRUCTION		
			NOT APPROVED FOR CONSTRUCTION		

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

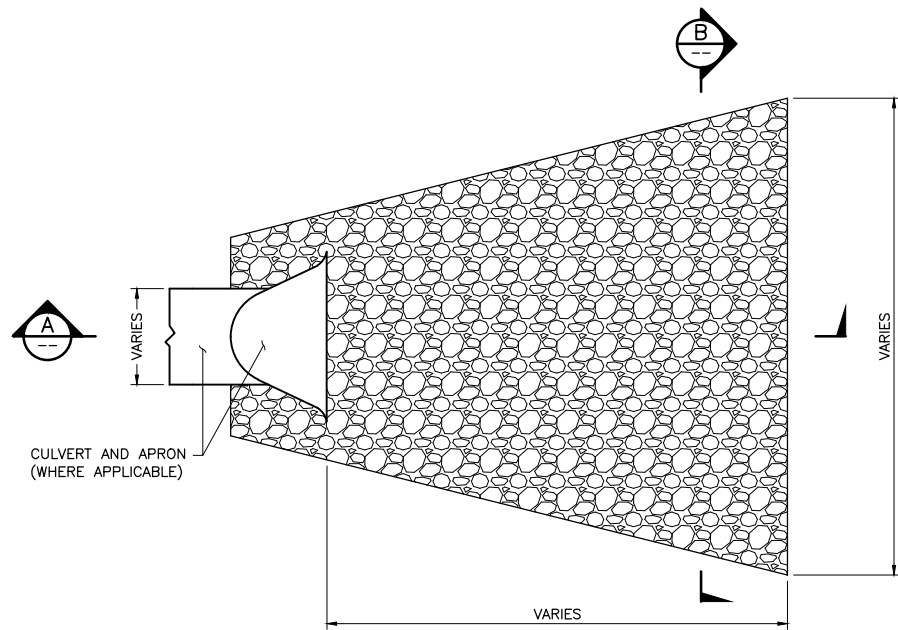
PRINTED NAME: CRISTIAN A. DIAZ  
SIGNATURE: [Signature]  
DATE: 5/15/15 LICENSE# 46593

DRAWN: VJS  
CHECKED: CMK2  
BARR PROJECT NO.: 23/69-0C29  
SCALE: AS SHOWN

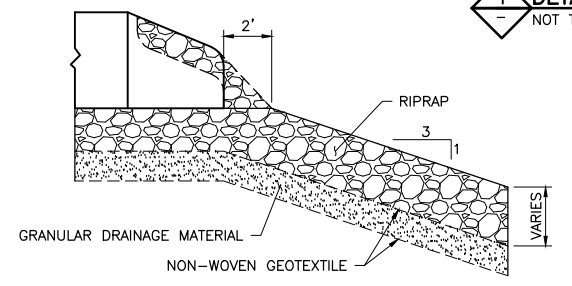
DWG. NO. **PSSW-031** REV

INCHES 1 2

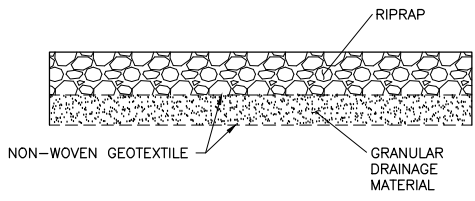
CADD USER: Cristian A. Diaz FILE: K:\DESIGN\23690C29.10\PERMIT_NMP-63-CS-032.DWG PLOT SCALE: 1:2 PLOT DATE: 5/15/2015 11:51 AM



**1 DETAIL: RIPRAP SLOPE**  
NOT TO SCALE



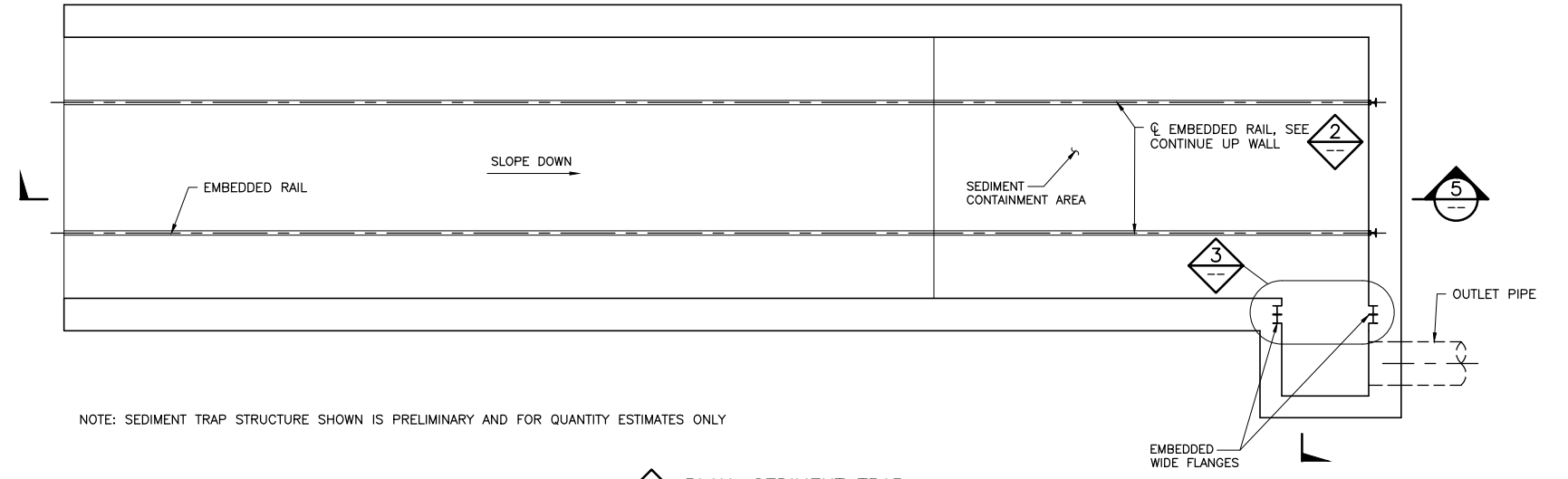
**A SECTION: RIPRAP SLOPE**  
NOT TO SCALE



**B SECTION: RIPRAP SLOPE**  
NOT TO SCALE

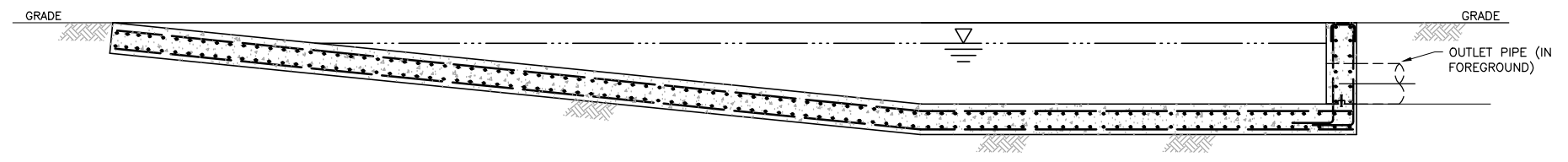
**NOTES:**

1. RIPRAP GRADATION BASED ON EXPECTED VELOCITIES FROM 10 YEAR 24-HOUR STORM EVENT.
2. RIPRAP DIMENSIONS AND CLASSES VARY. DETAILS WILL BE TABULATED IN FINAL DESIGN.
3. ALL CULVERT UPSTREAM AND DOWNSTREAM ENDS SHALL HAVE FLARED END SECTIONS.

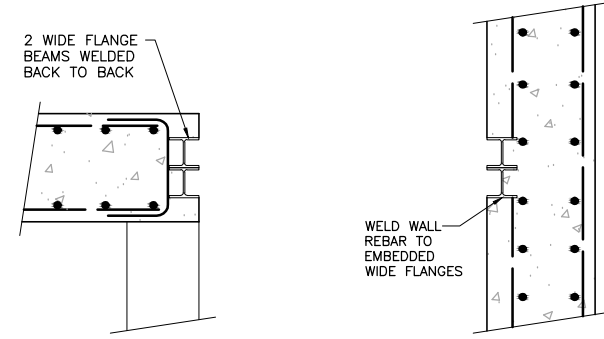


NOTE: SEDIMENT TRAP STRUCTURE SHOWN IS PRELIMINARY AND FOR QUANTITY ESTIMATES ONLY

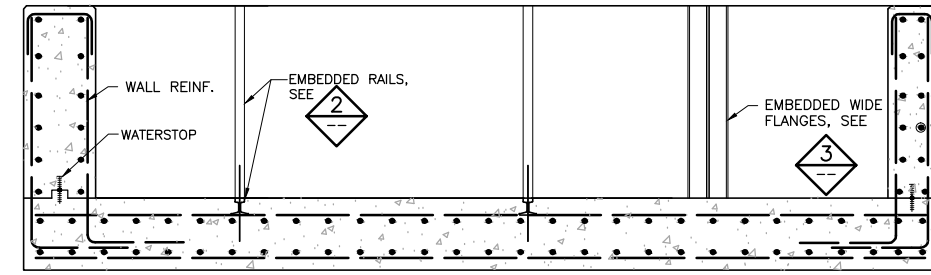
**4 PLAN: SEDIMENT TRAP**  
PSSW-007 NOT TO SCALE



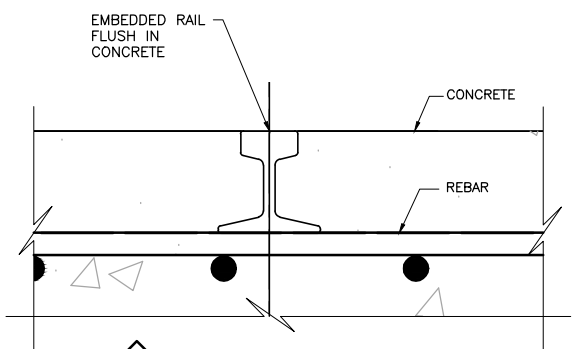
**5 SECTION: SEDIMENT TRAP**  
NOT TO SCALE



**3 DETAIL: EMBEDDED WIDE FLANGES**  
NOT TO SCALE



**6 SECTION: SEDIMENT TRAP**  
NOT TO SCALE



**2 DETAIL: EMBEDDED RAIL**  
NOT TO SCALE

Client Review Draft 5/15/2015  
PLANT DRAWING NUMBER:

**PLANT SITE STORMWATER SECTIONS AND DETAILS**

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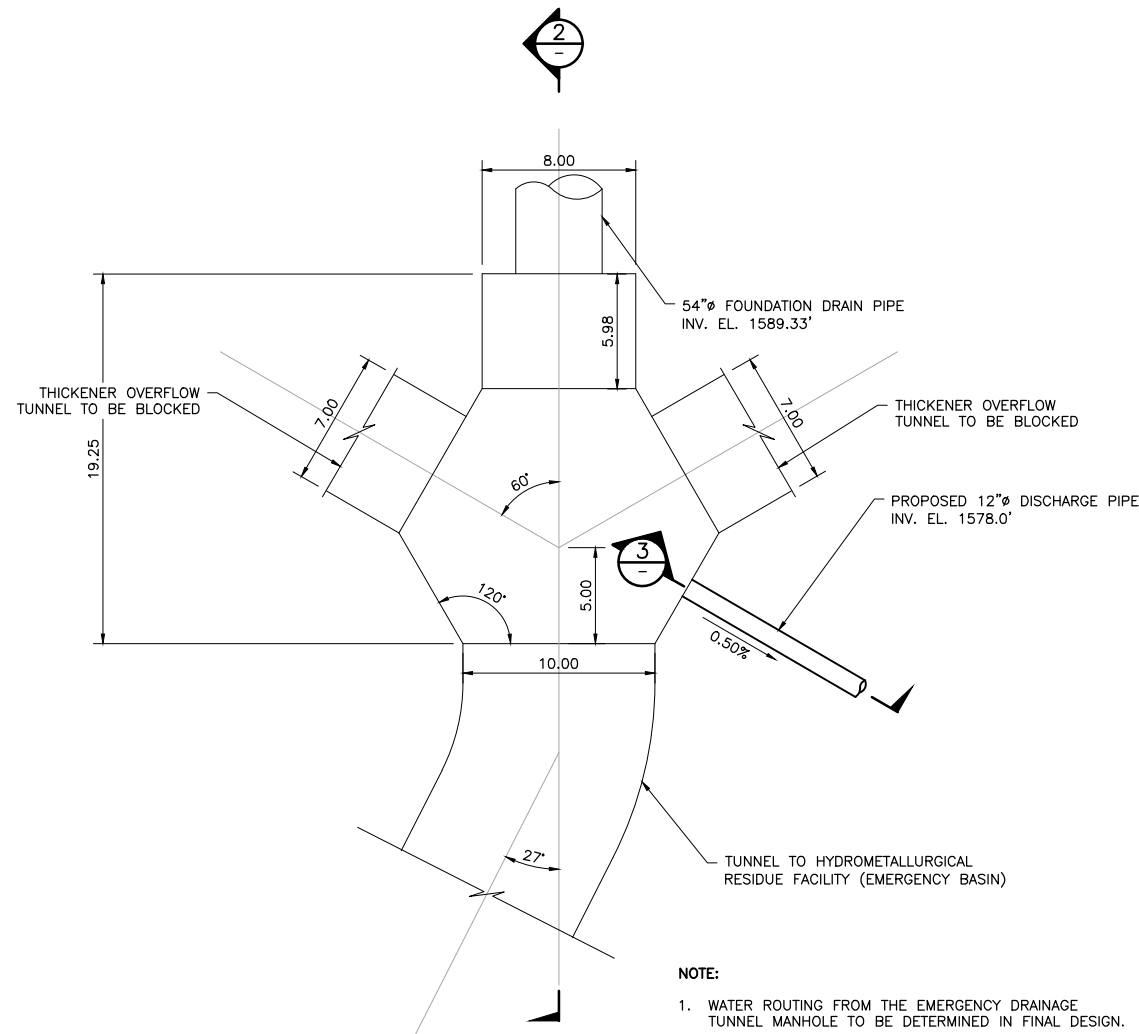
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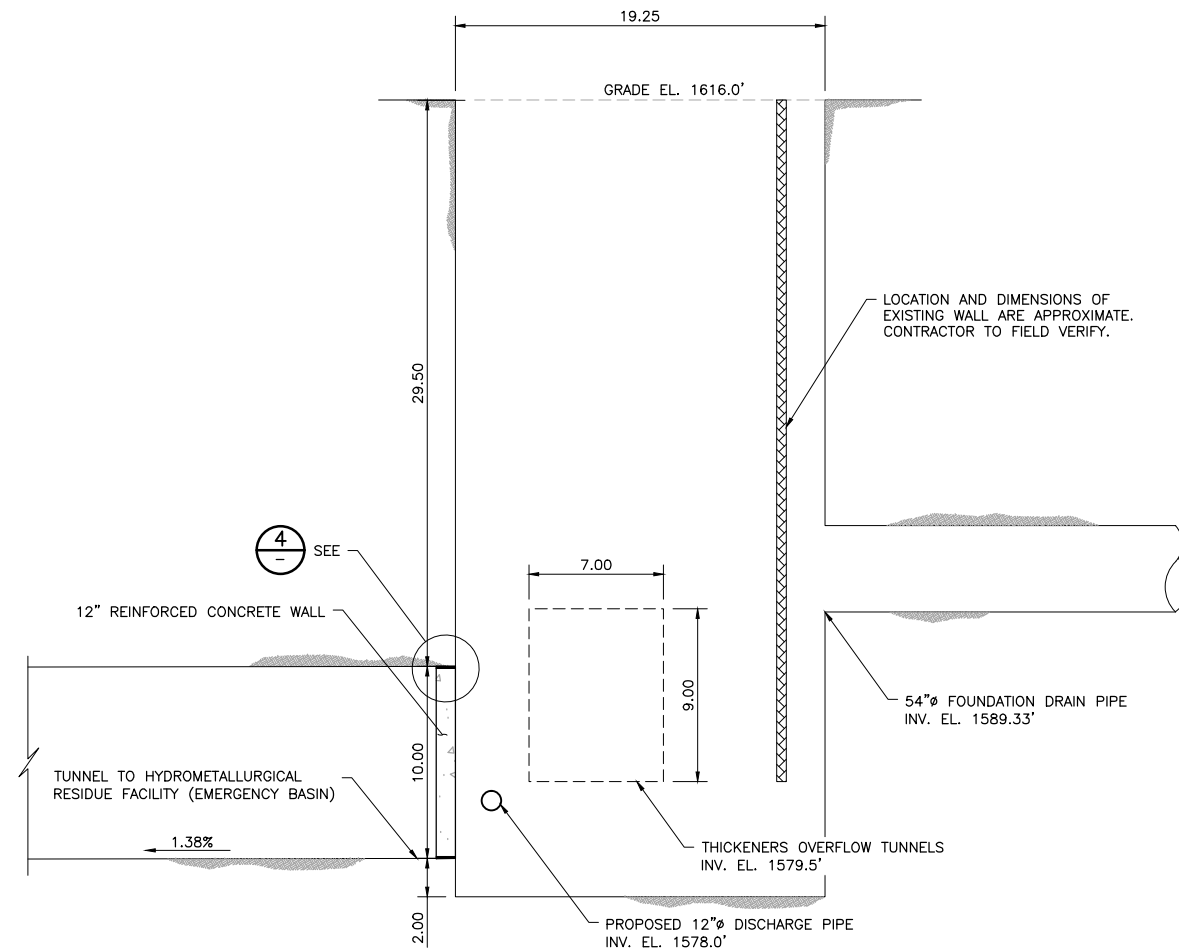
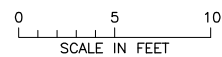
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CHECKED: CMK2  
BARR PROJECT NO.: 23/69-0C29  
SCALE: AS SHOWN

DWG. NO. PSSW-032 REV

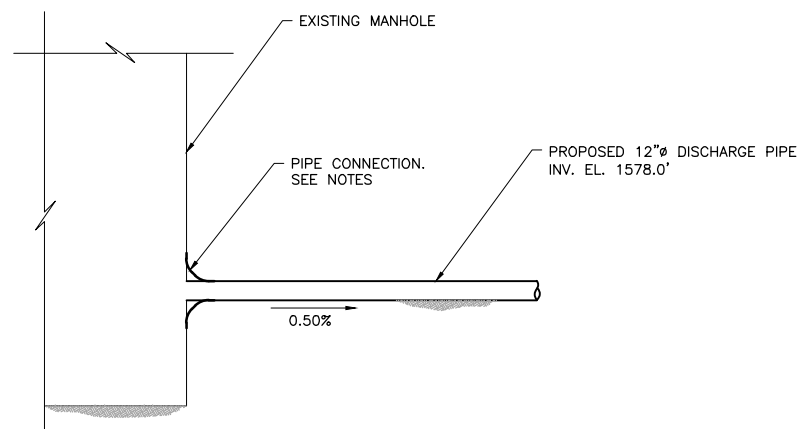
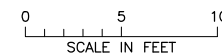
INCHES 2 1



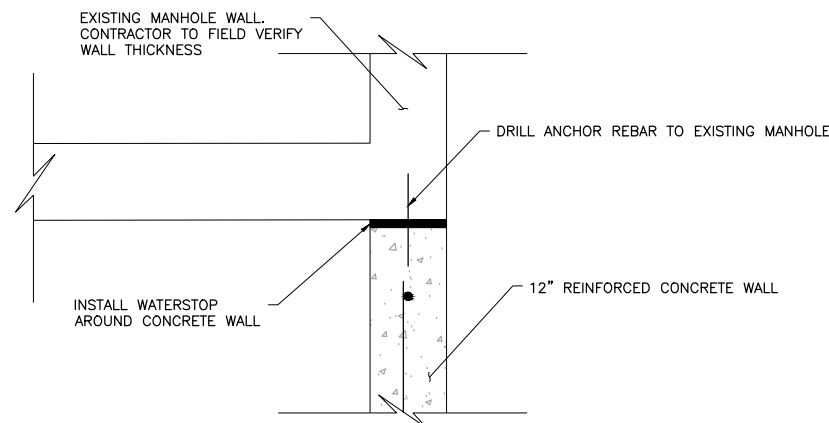
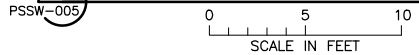
1 PLAN: EXISTING EMERGENCY DRAINAGE TUNNELS AND MANHOLE



2 SECTION: EXISTING EMERGENCY DRAINAGE TUNNELS AND MANHOLE



3 SECTION: PROPOSED PIPE CONNECTION



4 SECTION: ANCHOR AND WATER STOP DETAIL (TYP.)

NOT TO SCALE

NOTES:

- DIMENSIONS SHOWN ARE BASED ON DRAWINGS TB-651, TB-679 AND TJ-63, APPROVED ON 08/06/54. ACTUAL DIMENSIONS MAY VARY.
- CORE THROUGH EXISTING MANHOLE TO PROVIDE SPACE FOR PLACEMENT OF NEW PIPE.
- CONTRACTOR TO PLACE WATERTIGHT CONNECTION BOOT.
- BACKFILL SHALL BE PLACED WITH CARE OVER PIPE TO AVOID SETTLEMENT AND DISRUPTION TO THE CONNECTION WITH MANHOLE.

Client Review Draft 5/15/2015

PLANT DRAWING NUMBER:

PLANT SITE STORMWATER GENERAL DWGS  
EMERGENCY DRAINAGE TUNNEL MANHOLE  
CONNECTION AND BLOCKAGE DETAILS



POLY MET MINING, INC.  
NORTHMET PROJECT  
HOYT LAKES, MINNESOTA



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PRINTED NAME CRISTIAN A. DIAZ  
SIGNATURE  
DATE 5/15/15 LICENSE# 46593

DRAWN: CMB2  
CHECKED: CAD  
BARR PROJECT NO.: 23/69-0C29  
SCALE: AS SHOWN

DWG. NO. PSSW-033

REV

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