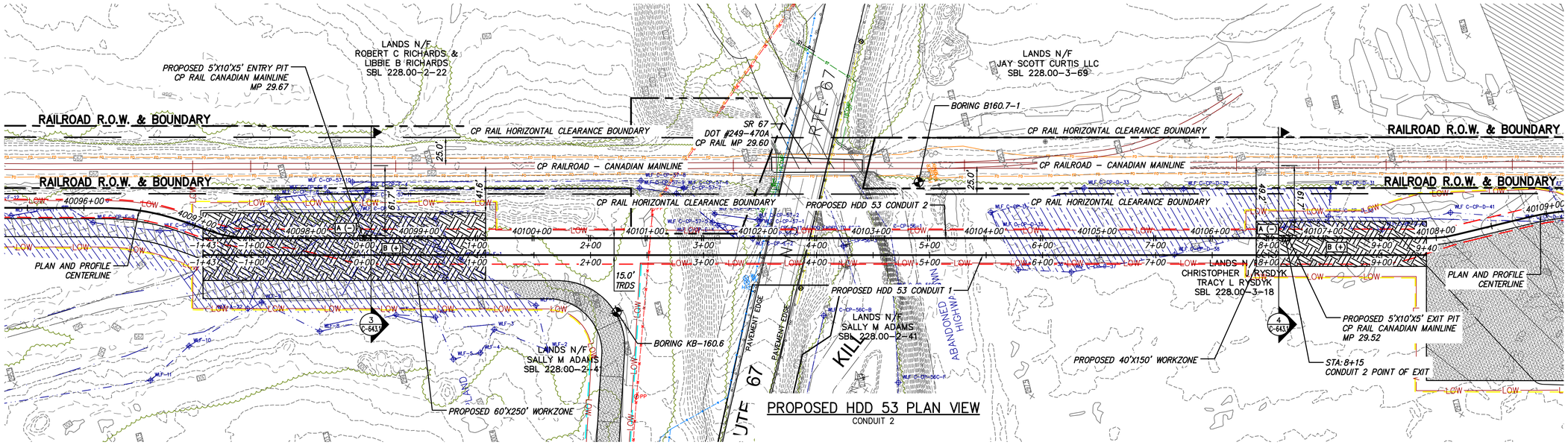
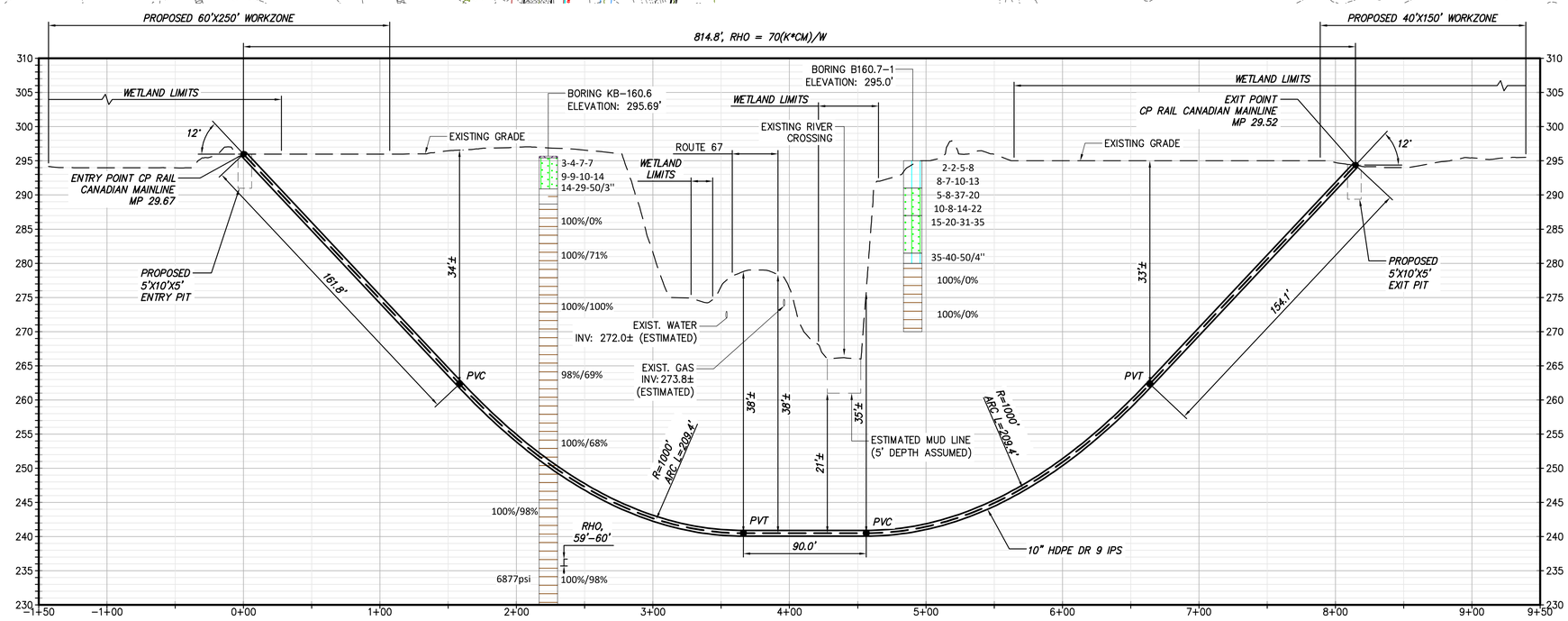


PROPOSED HDD 53 PLAN VIEW

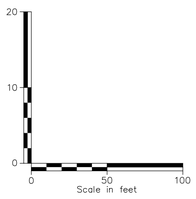
CONDUIT 2

0 50 100
Scale in feet



PROPOSED HDD 53 PROFILE

CONDUIT 2



BORING LOG STRIP LEGEND

B101

Blow Counts per 6" = 10-10-10
Recovery %/RQD % = 95%/90%
11000psi =UCS

2D strip logs shown at 10x exaggeration
3D strip logs have no exaggeration

Legend	
ASPHALT	Asphalt
Bedrock	Bedrock
Boulder	Boulder
CH	Fat CLAY
CH-MH	SILTY Fat CLAY
CL	Lean CLAY
CL-ML	SILTY CLAY
CONCRETE	Concrete
Fill	Fill
GC	CLAYEY GRAVEL
GC-GM	SILTY CLAYEY GRAVEL
GM	SILTY GRAVEL
GP	Poorly Graded GRAVEL
GP-GC	Poorly Graded Gravel with CLAY
GP-GM	Poorly Graded GRAVEL with SILT
GW	Well Graded GRAVEL
GW-GC	Well Graded GRAVEL with CLAY
GW-GM	Well Graded GRAVEL with SILT
Limestone	Limestone
MH	Elastic SILT
ML	SILT
OH	ORGANIC Fat CLAY
OL	ORGANIC Lean CLAY
OL/OH	ORGANIC SOIL
PT	PEAT
Rock	Rock
Sandstone	Sandstone
SC	CLAYEY SAND
SC-SM	SILT, CLAYEY SAND
SHALE	Shale
SILTSTONE	Siltstone
SM	SILTY SAND
SP	Poorly Graded SAND
SP-SC	Poorly Graded SAND with CLAY
SP-SM	Poorly Graded SAND with SILT
SW	Well graded SAND
SW-SC	Well Graded SAND with CLAY
SW-SM	Well Graded SAND with SILT
Topsoil	Topsoil
USGS 601	Gravel or Conglomerate 1
USGS 654	Subgraywacke
USGS 670	Interbedded Sandstone and Shale
USGS 702	Quartzite
USGS 705	Schist
USGS 705	Schist
USGS 708	Gneiss
USGS 708	Gneiss
USGS 718	Granite 1
Void	Void
Water	Water
Weathered Rock	Undefined
Water Table	Water Table during drilling
Delayed Water Table	Water Table after drilling

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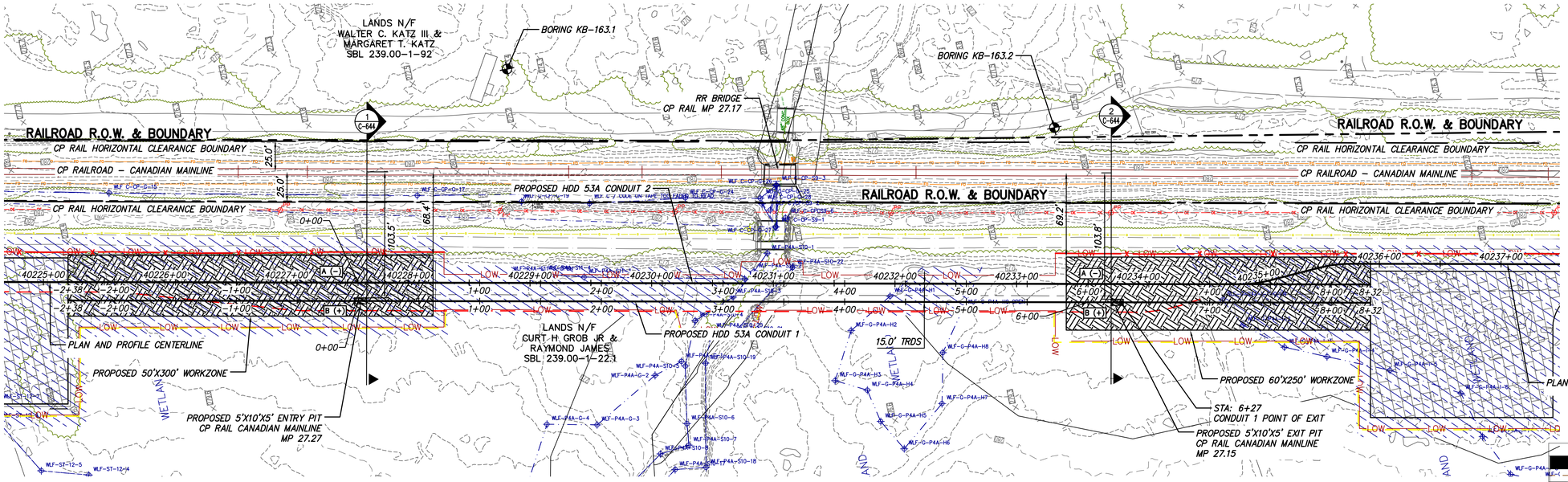
No.	DATE	SUBMITTAL / REVISION DESCRIPTION	DB	APP
0	08/03/2023	ISSUED FOR CONSTRUCTION SUBMISSION	SPB	JEO

CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 53, CONDUIT 2

KIEWIT PROJECT NO. 21162
CHA PROJECT NO. 066076
DRAWING NO. **C-303A**

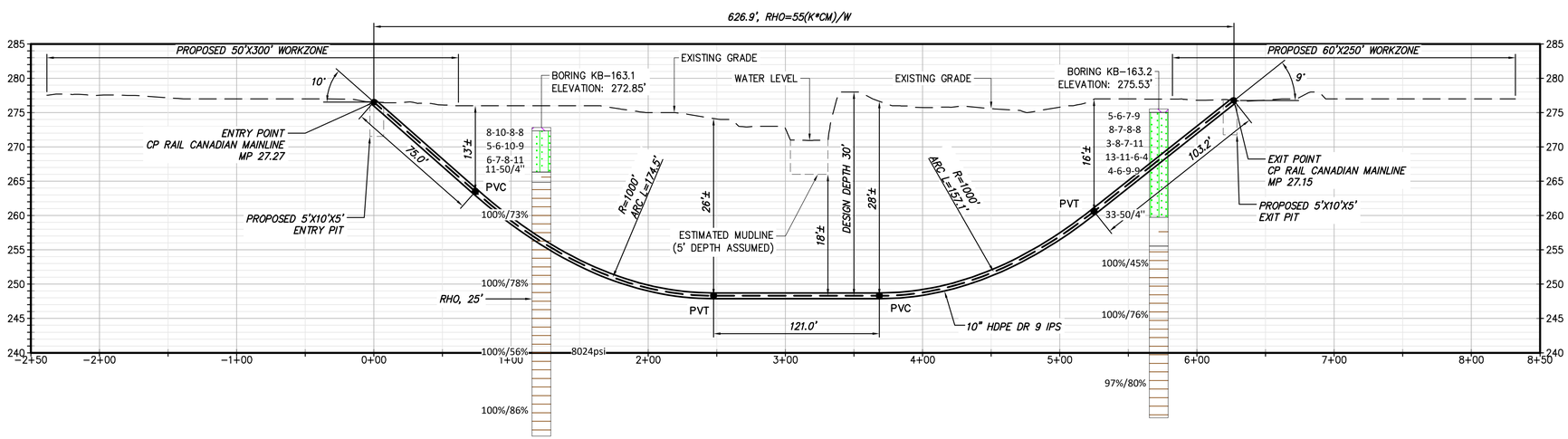
DRAWN BY: CKZ | DESIGNED BY: CKZ | APPROVED BY: JEO | SCALE AS NOTED | REV. NO. X | DATE 8/03/2023 | SH.NO.

File: V:\PROJECTS\ANY\K6\066076.000\09_DESIGN\DRAWINGS\01_SHEETS\DESIGN PACKAGE 4\DESIGN PACKAGE 4A\066076_4A - C-303_C-303A.DWG Saved: 8/1/2023 12:55:55 PM Plotted: 8/1/2023 1:08:17 PM Current User: Snyder, Morgan LastSavedBy: 6043



PROPOSED HDD 53A PLAN VIEW

CONDUIT 1



PROPOSED HDD 53A PROFILE

CONDUIT 1

BORING LOG STRIP LEGEND

B101

Blow Counts per 6" = 10-10-10

Recovery %/RQD % = 95%/90%

11000psi =UCS

2D strip logs shown at 10x exaggeration

3D strip logs have no exaggeration

Legend	
ASPHALT	Asphalt
Bedrock	Bedrock
Boulder	Boulder
CH	Fat CLAY
CH-MH	SILTY Fat CLAY
CL	Lean CLAY
CL-ML	SILTY CLAY
CONCRETE	Concrete
Fill	Fill
GC	CLAYEY GRAVEL
GC-GM	SILTY CLAYEY GRAVEL
GM	SILTY GRAVEL
GP	Poorly Graded GRAVEL
GP-GC	Poorly Graded Gravel with CLAY
GP-GM	Poorly Graded GRAVEL with SILT
GW	Well Graded GRAVEL
GW-GC	Well Graded GRAVEL with CLAY
GW-GM	Well Graded GRAVEL with SILT
Limestone	Limestone
MH	Elastic SILT
ML	SILT
OH	ORGANIC Fat CLAY
OL	ORGANIC Lean CLAY
OL/OH	ORGANIC SOIL
PT	PEAT
Rock	Rock
Sandstone	Sandstone
SC	CLAYEY SAND
SC-SM	SILT, CLAYEY SAND
SHALE	Shale
SILTSTONE	Siltstone
SM	SILTY SAND
SP	Poorly Graded SAND
SP-SC	Poorly Graded SAND with CLAY
SP-SM	Poorly Graded SAND with SILT
SW	Well graded SAND
SW-SC	Well Graded SAND with CLAY
SW-SM	Well Graded SAND with SILT
Topsoil	Topsoil
USGS 601	Gravel or Conglomerate 1
USGS 654	Subgraywacke
USGS 670	Interbedded Sandstone and Shale
USGS 702	Quartzite
USGS 705	Schist
USGS 705	Schist
USGS 708	Gneiss
USGS 708	Gneiss
USGS 718	Granite 1
Void	Void
Water	Water
Weathered Rock	Undefined
Water Table	Water Table during drilling
Delayed Water Table	Water Table after drilling

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No.	DATE	SUBMITTAL / REVISION DESCRIPTION	DB	APP
0	08/03/2023	ISSUED FOR CONSTRUCTION SUBMISSION	SPB	JEO

CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 53A, CONDUIT 1

KIEWIT PROJECT NO. 21162
CHA PROJECT NO. 066076
DRAWING NO. **C-304**

DRAWN BY: ES | DESIGNED BY: ES | APPROVED BY: JEO | SCALE AS NOTED | REV. NO. X | DATE 8/03/2023 | SH.NO. XXX

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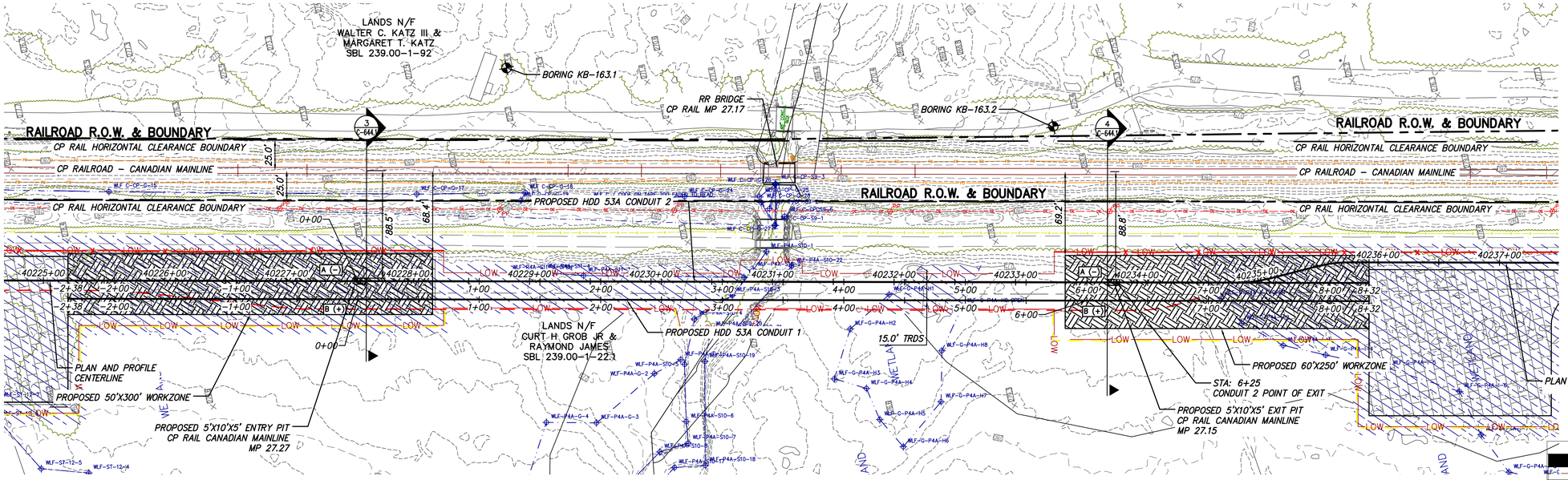
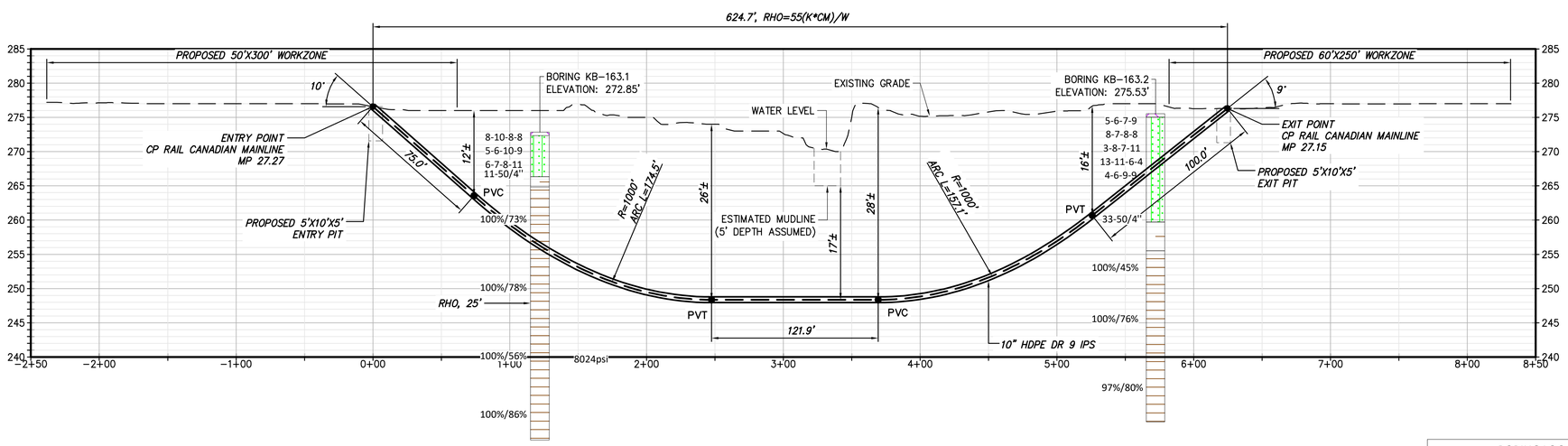


0 50 100
Scale in feet

PROPOSED HDD 53A PLAN VIEW

CONDUIT 2



0 50 100
Scale in feet

PROPOSED HDD 53A PROFILE

CONDUIT 2

BORING LOG STRIP LEGEND

B101

Blow Counts per 6" = 10-10-10
Recovery %/RQD % = 95%/90%
11000psi =UCS

2D strip logs shown at 10x exaggeration
3D strip logs have no exaggeration

Legend

ASPHALT	Asphalt
Bedrock	Bedrock
Boulder	Boulder
CH	Fat CLAY
CH-MH	SILTY Fat CLAY
CL	Lean CLAY
CL-ML	SILTY CLAY
CONCRETE	Concrete
Fill	Fill
GC	CLAYEY GRAVEL
GC-GM	SILTY CLAYEY GRAVEL
GM	SILTY GRAVEL
GP	Poorly Graded GRAVEL
GP-GC	Poorly Graded Gravel with CLAY
GP-GM	Poorly Graded GRAVEL with SILT
GW	Well Graded GRAVEL
GW-GC	Well Graded GRAVEL with CLAY
GW-GM	Well Graded GRAVEL with SILT
Limestone	Limestone
MH	Elastic SILT
ML	SILT
OH	ORGANIC Fat CLAY
OL	ORGANIC Lean CLAY
OL/OH	ORGANIC SOIL
PT	PEAT
Rock	Rock
Sandstone	Sandstone
SC	CLAYEY SAND
SC-SM	SILT, CLAYEY SAND
SHALE	Shale
SILTSTONE	Siltstone
SM	SILTY SAND
SP	Poorly Graded SAND
SP-SC	Poorly Graded SAND with CLAY
SP-SM	Poorly Graded SAND with SILT
SW	Well graded SAND
SW-SC	Well Graded SAND with CLAY
SW-SM	Well Graded SAND with SILT
Topsoil	Topsoil
USGS 601	Gravel or Conglomerate 1
USGS 654	Subgraywacke
USGS 670	Interbedded Sandstone and Shale
USGS 702	Quartzite
USGS 705	Schist
USGS 705	Schist
USGS 708	Gneiss
USGS 708	Gneiss
USGS 718	Granite 1
Void	Void
Water	Water
Weathered Rock	Undefined
Water Table	Water Table during drilling
Delayed Water Table	Water Table after drilling

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0	08/03/2023	ISSUED FOR CONSTRUCTION SUBMISSION	SPB	JEO

CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 53A, CONDUIT 2

KIEWIT PROJECT NO. 21162
CHA PROJECT NO. 066076
DRAWING NO. **C-304A**

DRAWN BY: ES | DESIGNED BY: ES | APPROVED BY: JEO | SCALE AS NOTED | REV. NO. X | DATE 8/03/2023 | SH.NO.

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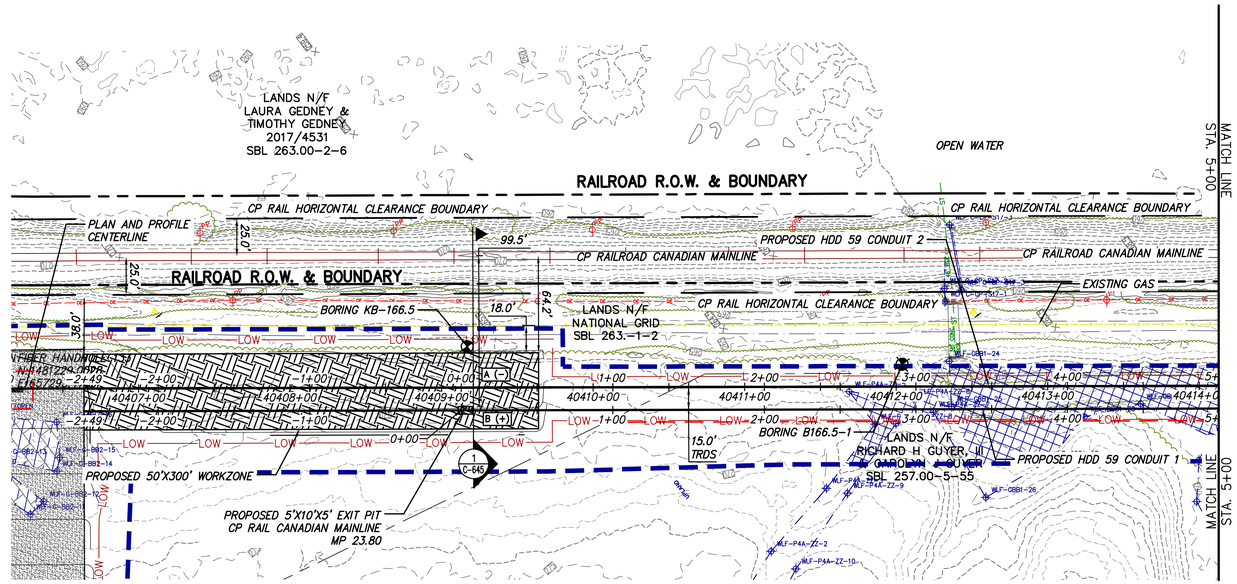
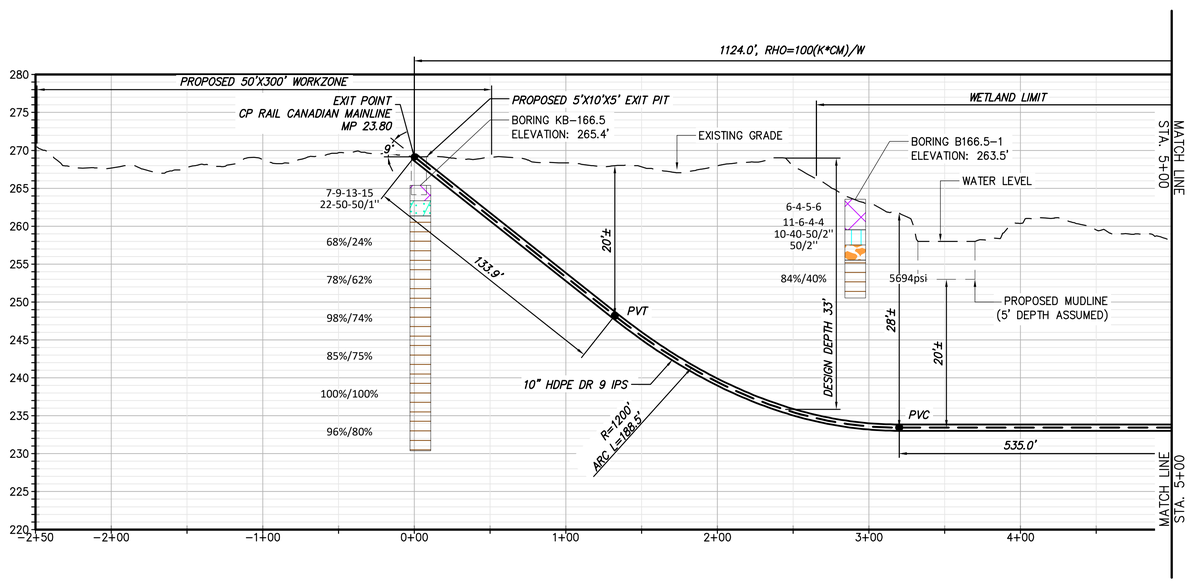


0 50 100
Scale in feet

PROPOSED HDD 59 PLAN VIEW

CONDUIT 1



0 50 100
Scale in feet

PROPOSED HDD 59 PROFILE

CONDUIT 1

BORING LOG STRIP LEGEND

B101

Blow Counts per 6" = 10-10-10
Recovery %/RQD % = 95%/90%
11000psi =UCS

2D strip logs shown at 10x exaggeration
3D strip logs have no exaggeration

Legend

ASPHALT	Asphalt
Bedrock	Bedrock
Boulder	Boulder
CH	Fat CLAY
CH-MH	SILTY Fat CLAY
CL	Lean CLAY
CL-ML	SILTY CLAY
CONCRETE	Concrete
Fill	Fill
GC	CLAYEY GRAVEL
GC-GM	SILTY CLAYEY GRAVEL
GM	SILTY GRAVEL
GP	Poorly Graded GRAVEL
GP-GC	Poorly Graded Gravel with CLAY
GP-GM	Poorly Graded GRAVEL with SILT
GW	Well Graded GRAVEL
GW-GC	Well Graded GRAVEL with CLAY
GW-GM	Well Graded GRAVEL with SILT
Limestone	Limestone
MH	Elastic SILT
ML	SILT
OH	ORGANIC Fat CLAY
OL	ORGANIC Lean CLAY
OL/OH	ORGANIC SOIL
PT	PEAT
Rock	Rock
Sandstone	Sandstone
SC	CLAYEY SAND
SC-SM	SILT, CLAYEY SAND
SHALE	Shale
SILTSTONE	Siltstone
SM	SILTY SAND
SP	Poorly Graded SAND
SP-SC	Poorly Graded SAND with CLAY
SP-SM	Poorly Graded SAND with SILT
SW	Well graded SAND
SW-SC	Well Graded SAND with CLAY
SW-SM	Well Graded SAND with SILT
Topsoil	Topsoil
USGS 601	Gravel or Conglomerate 1
USGS 654	Subgraywacke
USGS 670	Interbedded Sandstone and Shale
USGS 702	Quartzite
USGS 705	Schist
USGS 705	Schist
USGS 708	Gneiss
USGS 708	Gneiss
USGS 718	Granite 1
Void	Void
Water	Water
Weathered Rock	Undefined
Water Table	Water Table during drilling
Delayed Water Table	Water Table after drilling

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CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 59, CONDUIT 1

KIEWIT PROJECT NO. 21162
CHA PROJECT NO. 066076
DRAWING NO. **C-305**

DRAWN BY: CJL | DESIGNED BY: CJL | APPROVED BY: JEO | SCALE AS NOTED | REV. NO. X | DATE 8/03/2023 | SH.NO.

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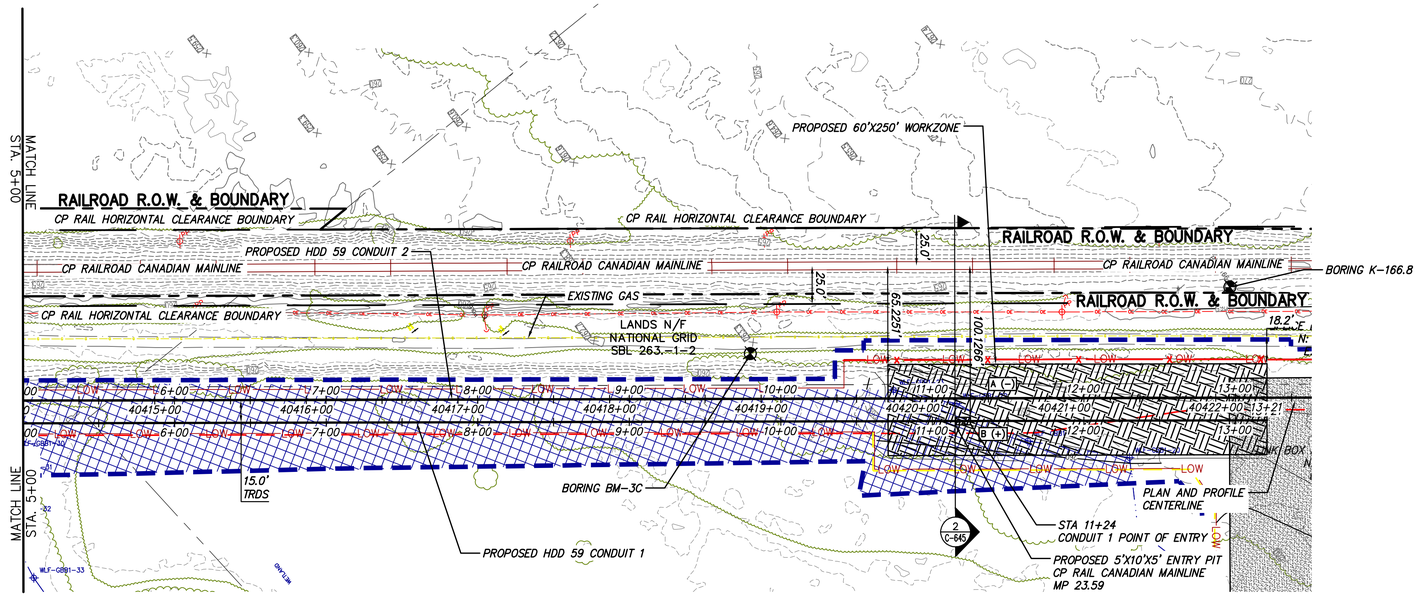
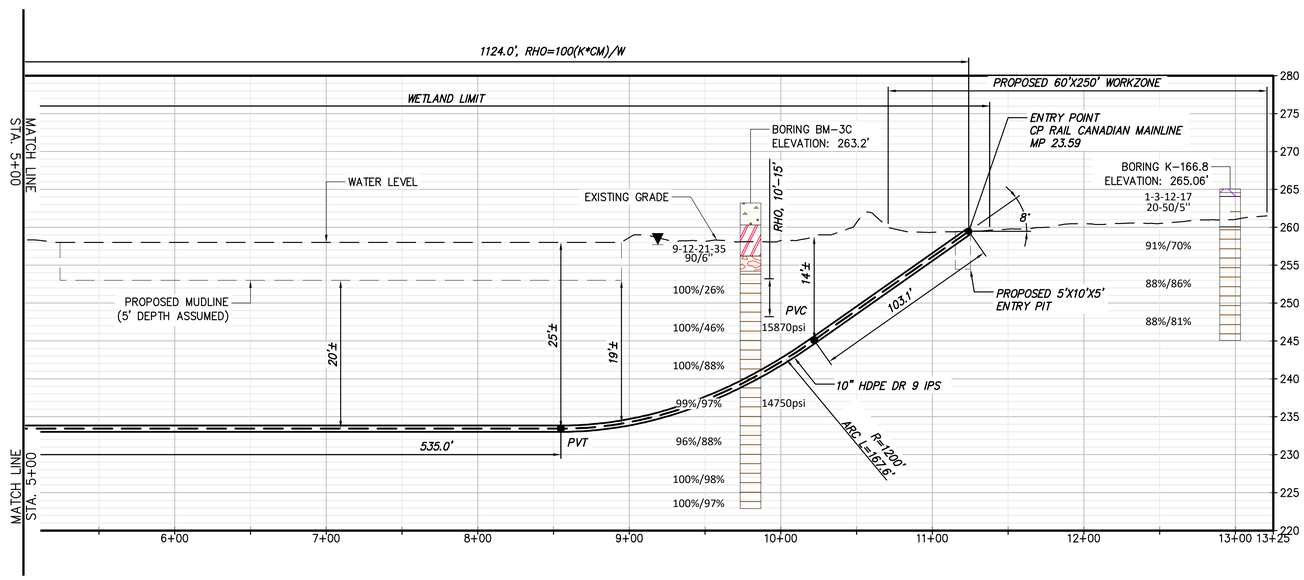


0 50 100
Scale in feet

PROPOSED HDD 59 PLAN VIEW

CONDUIT 1



PROPOSED HDD 59 PROFILE

CONDUIT 1

20
10
0
0 50 100
Scale in feet

BORING LOG STRIP LEGEND

B101

Blow Counts per 6" = 10-10-10
Recovery %/RQD % = 95%/90%
11000psi =UCS

2D strip logs shown at 10x exaggeration
3D strip logs have no exaggeration

Legend		
	ASPHALT	Asphalt
	Bedrock	Bedrock
	Boulder	Boulder
	CH	Fat CLAY
	CH-MH	SILTY Fat CLAY
	CL	Lean CLAY
	CL-ML	SILTY CLAY
	CONCRETE	Concrete
	Fill	Fill
	GC	CLAYEY GRAVEL
	GC-GM	SILTY CLAYEY GRAVEL
	GM	SILTY GRAVEL
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	GP-GC	Poorly Graded Gravel with CLAY
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	GW-GC	Well Graded GRAVEL with CLAY
	GW-GM	Well Graded GRAVEL with SILT
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	ML	SILT
	OH	ORGANIC Fat CLAY
	OL	ORGANIC Lean CLAY
	OL/OH	ORGANIC SOIL
	PT	PEAT
	Rock	Rock
	Sandstone	Sandstone
	SC	CLAYEY SAND
	SC-SM	SILT, CLAYEY SAND
	SHALE	Shale
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	SM	SILTY SAND
	SP	Poorly Graded SAND
	SP-SC	Poorly Graded SAND with CLAY
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	SW	Well graded SAND
	SW-SC	Well Graded SAND with CLAY
	SW-SM	Well Graded SAND with SILT
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	USGS 601	Gravel or Conglomerate 1
	USGS 654	Subgraywacke
	USGS 670	Interbedded Sandstone and Shale
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	USGS 718	Granite 1
	Void	Void
	Water	Water
	Weathered Rock	Undefined
▼	Water Table	Water Table during drilling
▽	Delayed Water Table	Water Table after drilling

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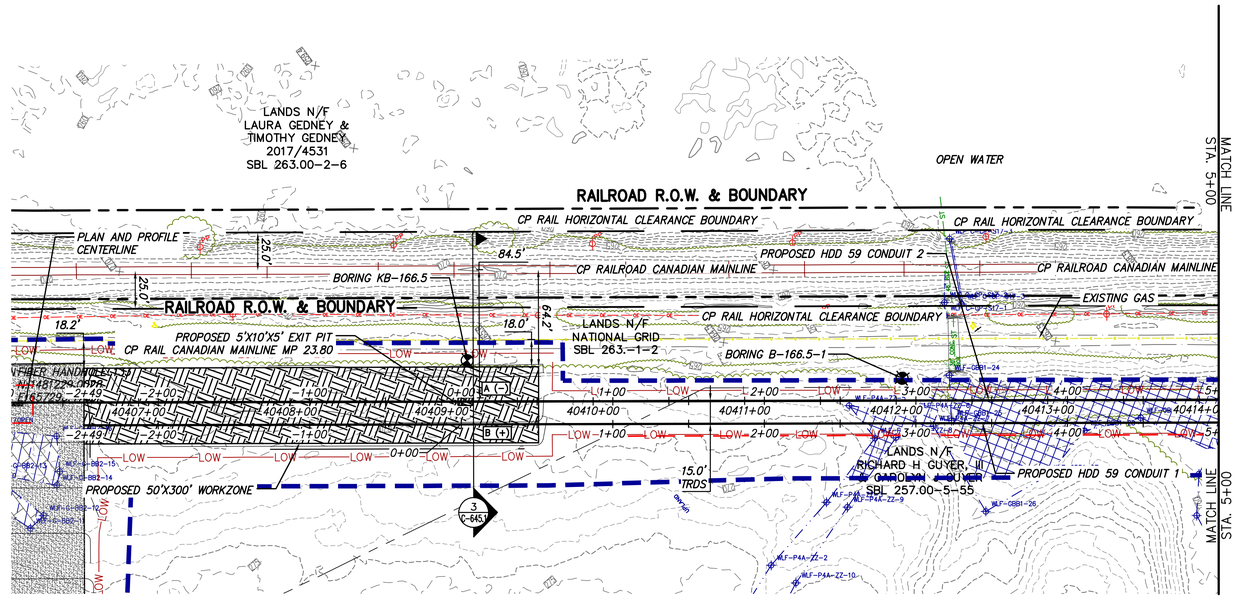
CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 59, CONDUIT 1

KIEWIT PROJECT NO. 21162
CHA PROJECT NO. 066076
DRAWING NO. **C-305.1**

DRAWN BY: CJL | DESIGNED BY: CJL | APPROVED BY: JEO | SCALE AS NOTED | REV. NO. X | DATE 8/03/2023 | SH.NO.

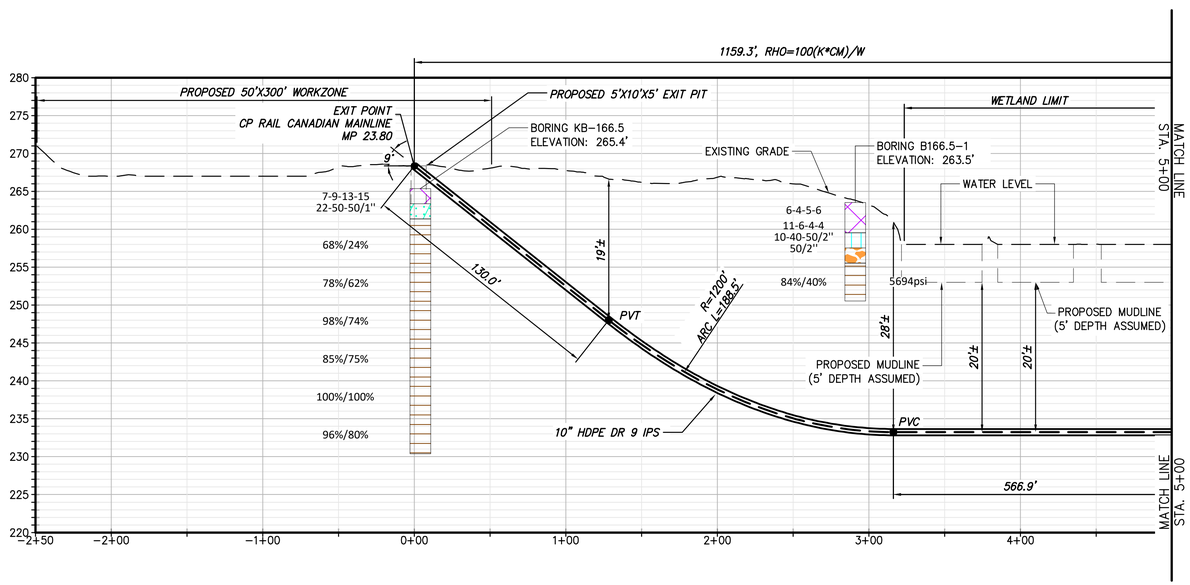
File: V:\PROJECTS\ANY\K6\066076.000\09_DESIGN\DRAWINGS\01_SHEETS\DESIGN PACKAGE 4\DESIGN PACKAGE A\066076_4A - C-305_C-305A1.DWG Saved: 8/1/2023 1:06:28 PM Plotted: 8/1/2023 1:35:18 PM Current User: Snyder, Morgan LastSavedBy: 8275



PROPOSED HDD 59 PLAN VIEW

CONDUIT 2

0 50 100
Scale in feet



PROPOSED HDD 59 PROFILE

CONDUIT 2

0 50 100
Scale in feet

BORING LOG STRIP LEGEND

B101

Blow Counts per 6" = 10-10-10
Recovery %/RQD % = 95%/90%
11000psi =UCS

2D strip logs shown at 10x exaggeration
3D strip logs have no exaggeration

Legend

ASPHALT	Asphalt
Bedrock	Bedrock
Boulder	Boulder
CH	Fat CLAY
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CONCRETE	Concrete
Fill	Fill
GC	CLAYEY GRAVEL
GC-GM	SILTY CLAYEY GRAVEL
GM	SILTY GRAVEL
GP	Poorly Graded GRAVEL
GP-GC	Poorly Graded Gravel with CLAY
GP-GM	Poorly Graded GRAVEL with SILT
GW	Well Graded GRAVEL
GW-GC	Well Graded GRAVEL with CLAY
GW-GM	Well Graded GRAVEL with SILT
Limestone	Limestone
MH	Elastic SILT
ML	SILT
OH	ORGANIC Fat CLAY
OL	ORGANIC Lean CLAY
OL/OH	ORGANIC SOIL
PT	PEAT
Rock	Rock
Sandstone	Sandstone
SC	CLAYEY SAND
SC-SM	SILT, CLAYEY SAND
SHALE	Shale
SILTSTONE	Siltstone
SM	SILTY SAND
SP	Poorly Graded SAND
SP-SC	Poorly Graded SAND with CLAY
SP-SM	Poorly Graded SAND with SILT
SW	Well graded SAND
SW-SC	Well Graded SAND with CLAY
SW-SM	Well Graded SAND with SILT
Topsoil	Topsoil
USGS 601	Gravel or Conglomerate 1
USGS 654	Subgraywacke
USGS 670	Interbedded Sandstone and Shale
USGS 702	Quartzite
USGS 705	Schist
USGS 705	Schist
USGS 708	Gneiss
USGS 708	Gneiss
USGS 718	Granite 1
Void	Void
Water	Water
Weathered Rock	Undefined
Water Table	Water Table during drilling
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No.	DATE	SUBMITTAL / REVISION DESCRIPTION	DB	APP
0	08/03/2023	ISSUED FOR CONSTRUCTION SUBMISSION	SPB	JEO

CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 59, CONDUIT 2

KIEWIT PROJECT NO. 21162
CHA PROJECT NO. 066076
DRAWING NO. **C-305A**

DRAWN BY: CJL | DESIGNED BY: CJL | APPROVED BY: JEO | SCALE AS NOTED | REV. NO. X | DATE 8/03/2023 | SH.NO.

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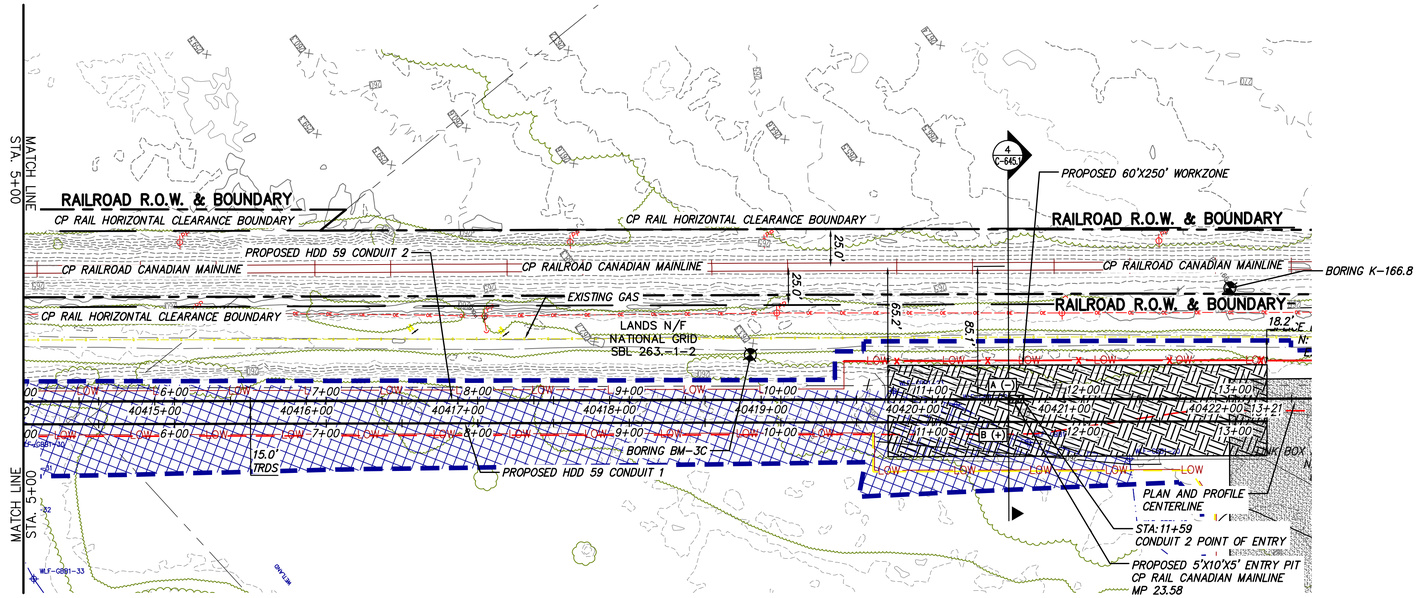
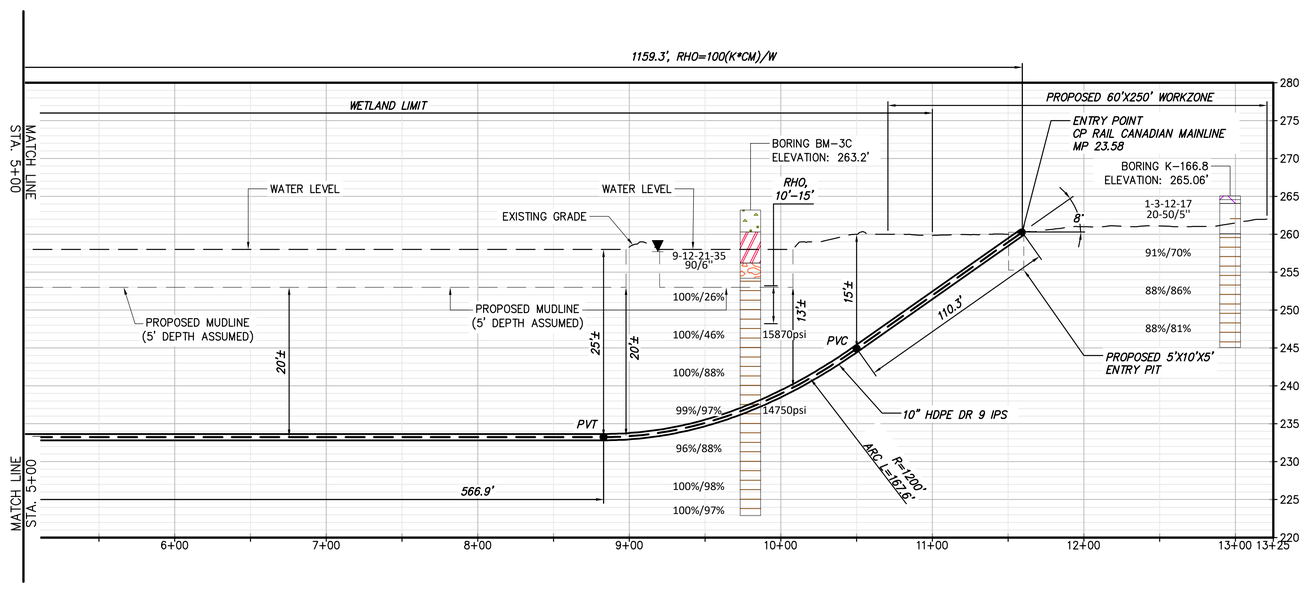


PROPOSED HDD 59 PLAN VIEW

CONDUIT 2



PROPOSED HDD 59 PROFILE

CONDUIT 2

0 50 100
Scale in feet

20 10 0
0 50 100
Scale in feet

BORING LOG STRIP LEGEND

B101

Blow Counts per 6" = 10-10-10

Recovery %/RQD % = 95%/90%

11000psi =UCS

2D strip logs shown at 10x exaggeration

3D strip logs have no exaggeration

Legend	
ASPHALT	Asphalt
Bedrock	Bedrock
Boulder	Boulder
CH	Fat CLAY
CH-MH	SILTY Fat CLAY
CL	Lean CLAY
CL-ML	SILTY CLAY
CONCRETE	Concrete
Fill	Fill
GC	CLAYEY GRAVEL
GC-GM	SILTY CLAYEY GRAVEL
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GP-GC	Poorly Graded Gravel with CLAY
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Limestone	Limestone
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ML	SILT
OH	ORGANIC Fat CLAY
OL	ORGANIC Lean CLAY
OL/OH	ORGANIC SOIL
PT	PEAT
Rock	Rock
Sandstone	Sandstone
SC	CLAYEY SAND
SC-SM	SILT, CLAYEY SAND
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USGS 670	Interbedded Sandstone and Shale
USGS 702	Quartzite
USGS 705	Schist
USGS 705	Schist
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USGS 708	Gneiss
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Weathered Rock	Undefined
Water Table	Water Table during drilling
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CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 59, CONDUIT 2

KIEWIT PROJECT NO. 21162

CHA PROJECT NO. 066076

DRAWING NO. **C-305A.1**

DRAWN BY: CJL | DESIGNED BY: CJL | APPROVED BY: JEO | SCALE AS NOTED | DATE 8/03/2023 | REV. NO. X | SH.NO.

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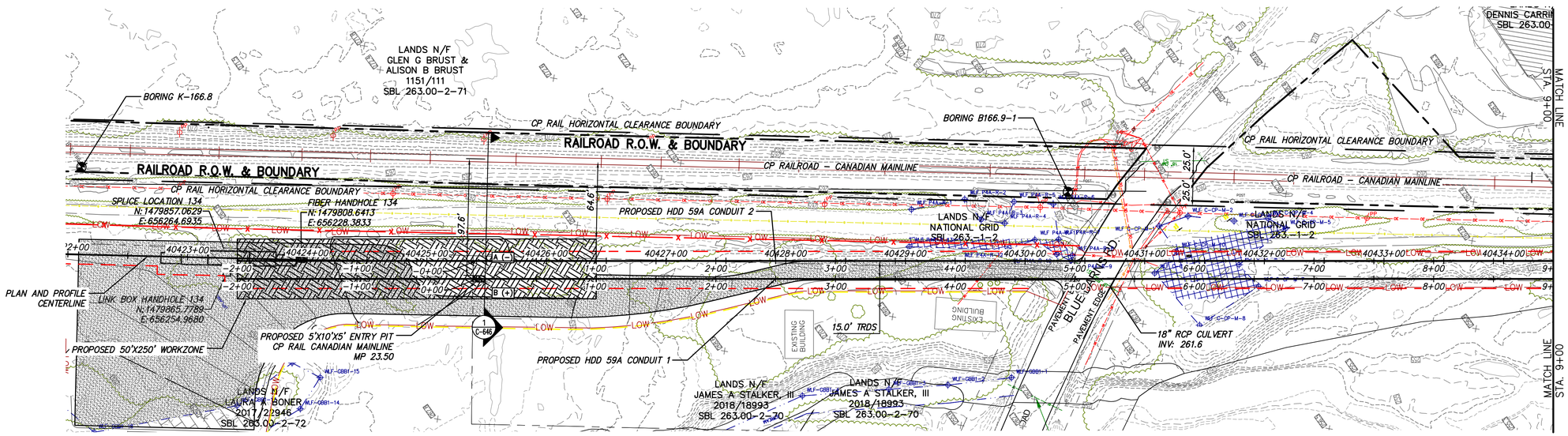
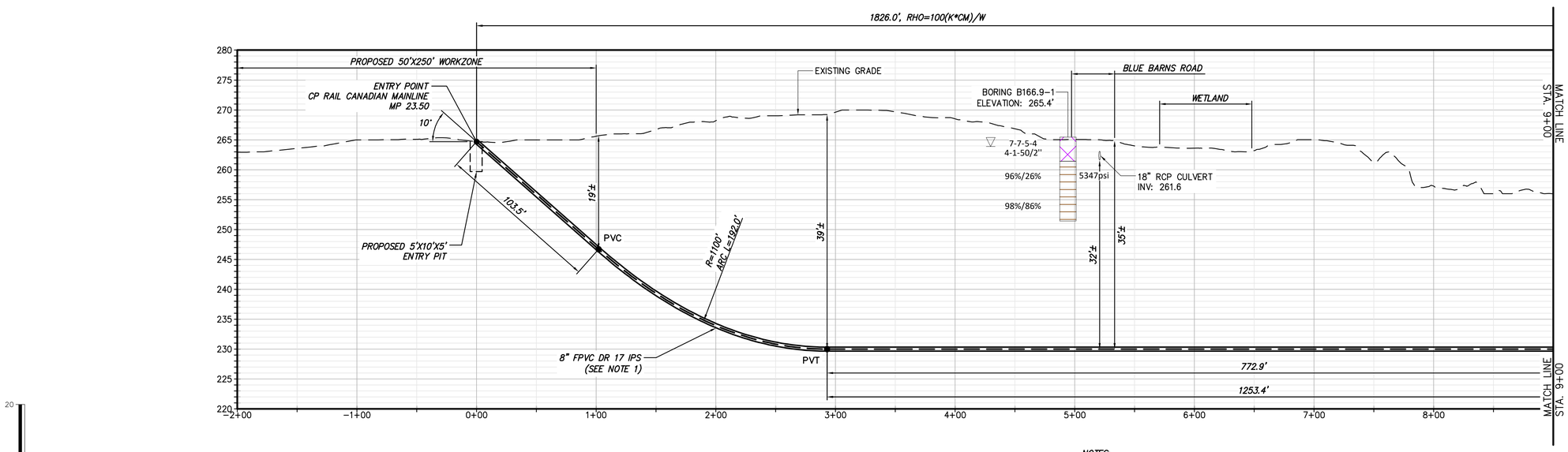


0 50 100
Scale in feet

PROPOSED HDD 59A PLAN VIEW

CONDUIT 1



0 50 100
Scale in feet

PROPOSED HDD 59A PROFILE

CONDUIT 1

NOTES:

1. BORES WILL REQUIRE 8-INCH FPVC, DR 17, IPS, CONDUIT AND 3-INCH HDPE, DR 7, IPS, COMMUNICATION CONDUIT WHEN BUNDLED FOR PULLBACK.
2. BALLASTING WITH WATER WILL LIKELY BE REQUIRED AND IS RECOMMENDED TO MANAGE PULL BACK FORCES AND RESULTANT STRESSES.
3. ROLLER WILL ALSO LIKELY BE REQUIRED AND IS RECOMMENDED TO MANAGE PULL BACK FORCES AND RESULTANT STRESSES IN ADDITION TO BALLAST.
4. THE COMMUNICATION CONDUIT OF HDD #59A NEEDS TO BE SPECIFIED AS PE GRADE 4710 HDPE DUE TO THE ELEVATED STRESSES ENCOUNTERED IN THE BORE AID ANALYSIS IN ADDITION TO BALLASTING AND ROLLER CONSIDERATIONS.

BORING LOG STRIP LEGEND

B101

Blow Counts per 6" = 10-10-10
Recovery %/RQD % = 95%/90%
11000psi =UCS

2D strip logs shown at 10x exaggeration
3D strip logs have no exaggeration

Legend

ASPHALT	Asphalt
Bedrock	Bedrock
Boulder	Boulder
CH	Fat CLAY
CH-MH	SILTY Fat CLAY
CL	Lean CLAY
CL-ML	SILTY CLAY
CONCRETE	Concrete
Fill	Fill
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ML	SILT
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OL	ORGANIC Lean CLAY
OL/OH	ORGANIC SOIL
PT	PEAT
Rock	Rock
Sandstone	Sandstone
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SC-SM	SILT, CLAYEY SAND
SHALE	Shale
SILTSTONE	Siltstone
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USGS 708	Gneiss
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Void	Void
Water	Water
Weathered Rock	Undefined
Water Table	Water Table during drilling
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CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 59A, CONDUIT 1

DRAWN BY: KDL DESIGNED BY: SPB APPROVED BY: JEO

SCALE AS NOTED
REV. NO. 1

KIEWIT PROJECT NO. 21162
CHA PROJECT NO. 066076
DRAWING NO. C-306
DATE 8/03/2023
SH.NO.

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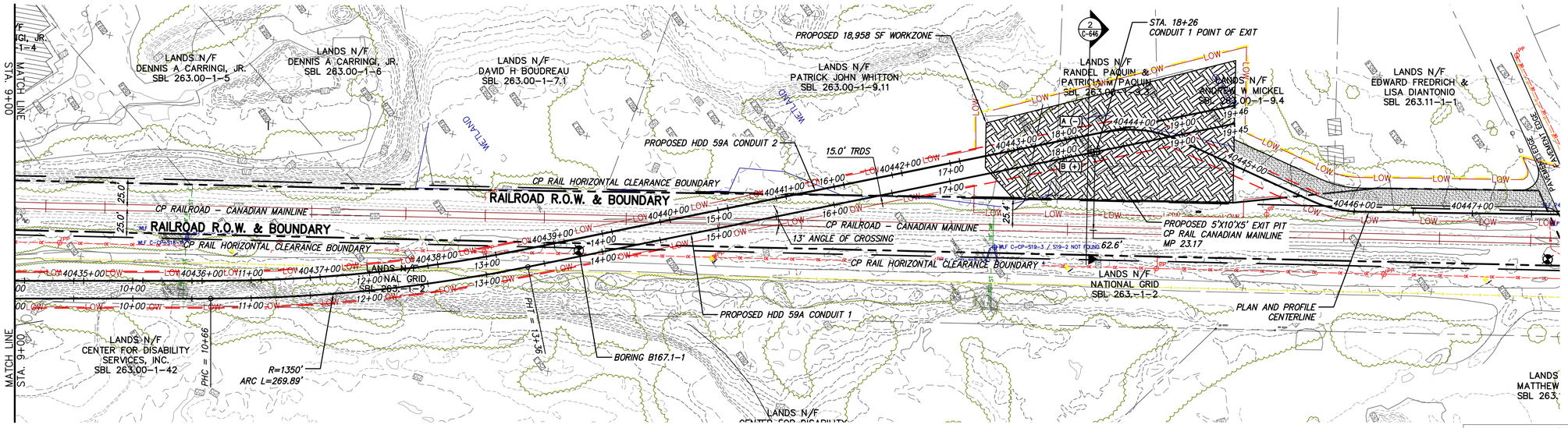
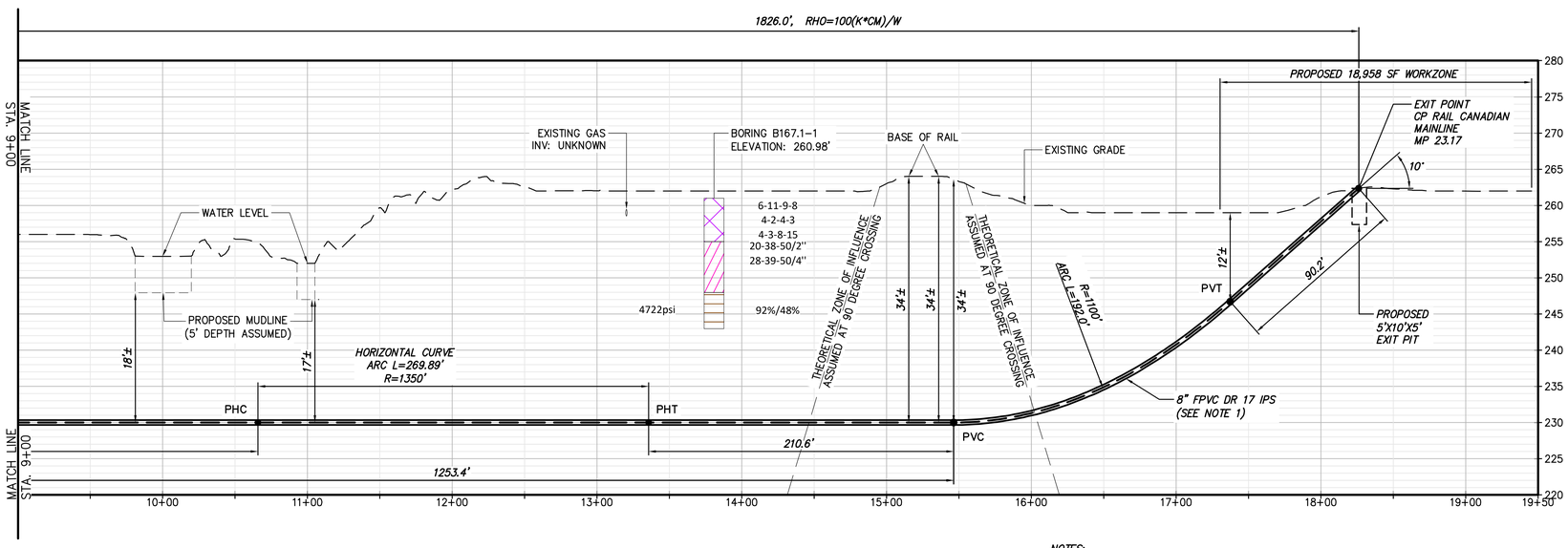


PROPOSED HDD 59A PLAN VIEW

CONDUIT 1

0 50 100
Scale in feet



PROPOSED HDD 59A PROFILE

CONDUIT 1

0 50 100
Scale in feet

NOTES:

1. BORES WILL REQUIRE 8-INCH FPVC, DR 17, IPS, CONDUIT AND 3-INCH HDPE, DR 7, IPS, COMMUNICATION CONDUIT WHEN BUNDLED FOR PULLBACK.
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BORING LOG STRIP LEGEND

B101

Blow Counts per 6" = 10-10-10
Recovery %/RQD % = 95%/90%
11000psi =UCS

2D strip logs shown at 10x exaggeration
3D strip logs have no exaggeration

Legend	
ASPHALT	Asphalt
Bedrock	Bedrock
Boulder	Boulder
CH	Fat CLAY
CH-MH	SILTY Fat CLAY
CL	Lean CLAY
CL-ML	SILTY CLAY
CONCRETE	Concrete
Fill	Fill
GC	CLAYEY GRAVEL
GC-GM	SILTY CLAYEY GRAVEL
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GP	Poorly Graded GRAVEL
GP-GC	Poorly Graded Gravel with CLAY
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Limestone	Limestone
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ML	SILT
OH	ORGANIC Fat CLAY
OL	ORGANIC Lean CLAY
OL/OH	ORGANIC SOIL
PT	PEAT
Rock	Rock
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USGS 702	Quartzite
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USGS 708	Gneiss
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Void	Void
Water	Water
Weathered Rock	Undefined
Water Table	Water Table during drilling
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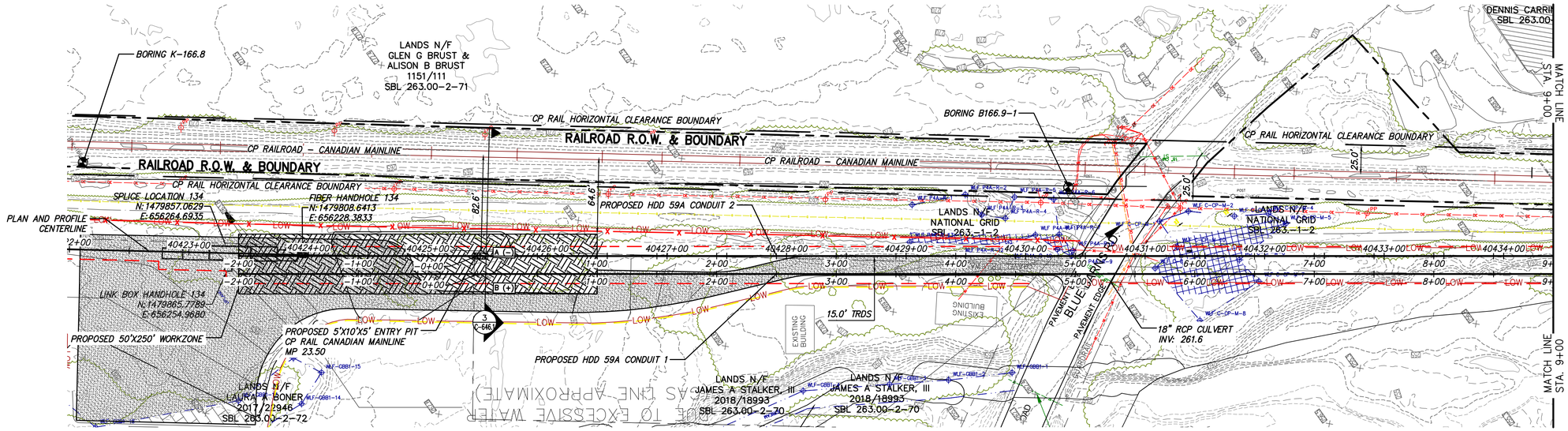
CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 59A, CONDUIT 1

DRAWN BY: KDL DESIGNED BY: SPB APPROVED BY: JEO

SCALE AS NOTED
REV. NO. 1

KIEWIT PROJECT NO. 21162
CHA PROJECT NO. 066076
DRAWING NO. **C-306.1**
DATE 8/03/2023
SH.NO.

File: V:\PROJECTS\ANY\K6\066076.000\09_DESIGN\DRAWINGS\01_SHEETS\DESIGN PACKAGE 4\DESIGN PACKAGE 4A\066076_4A – C-306_C-306A.DWG Saved: 8/1/2023 1:06:38 PM Plotted: 8/1/2023 5:00:44 PM Current User: Snyder, Morgan LastSavedBy: 8275



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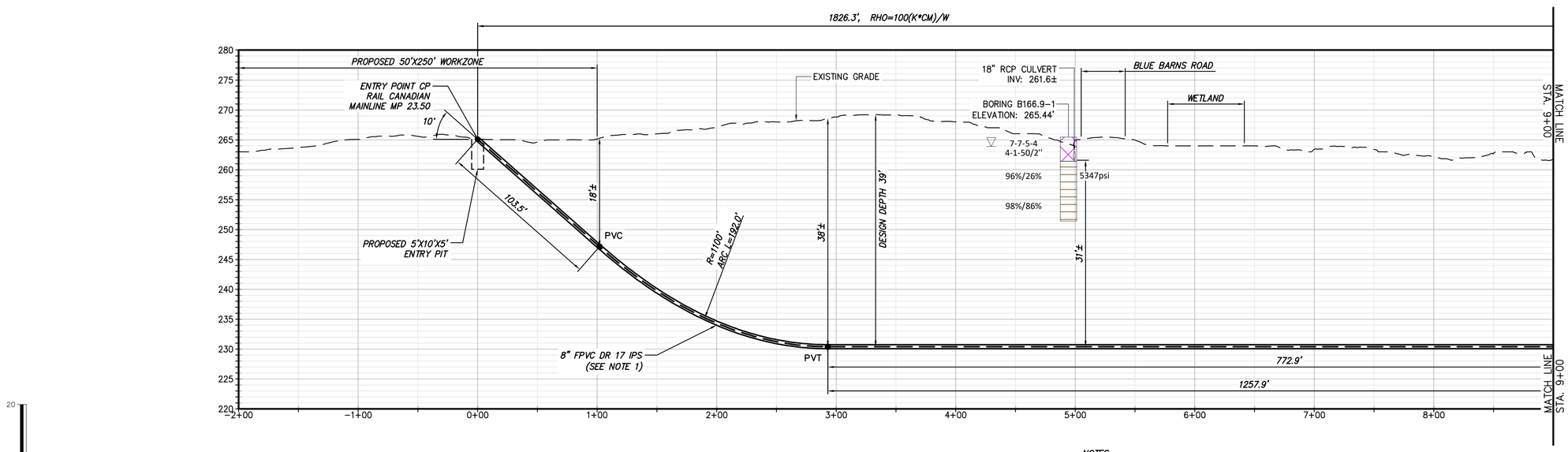
Scale in feet

PROPOSED HDD 59A PLAN VIEW
CONDUIT 2



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Scale in feet

PROPOSED HDD 59A PROFILE
CONDUIT 2

NOTES:
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CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 59A, CONDUIT 2

DRAWN BY: KDL DESIGNED BY: SPB APPROVED BY: JEO
SCALE AS NOTED
REV. NO. 1
SH.NO.

KIEWIT PROJECT NO. 21162
CHA PROJECT NO. 066076
DRAWING NO. **C-306A**
DATE 8/03/2023

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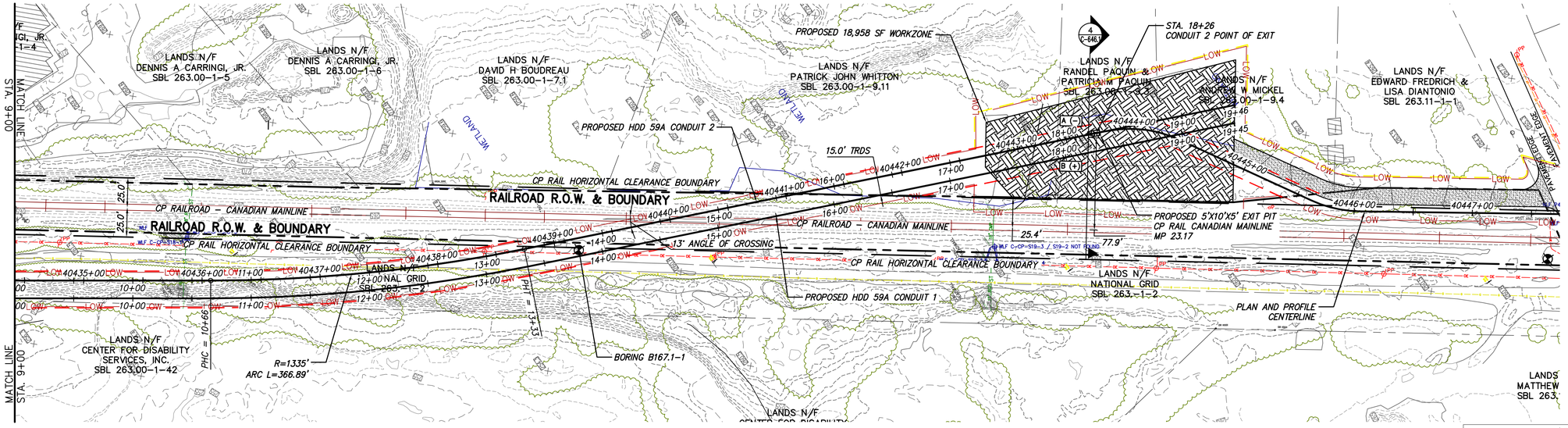
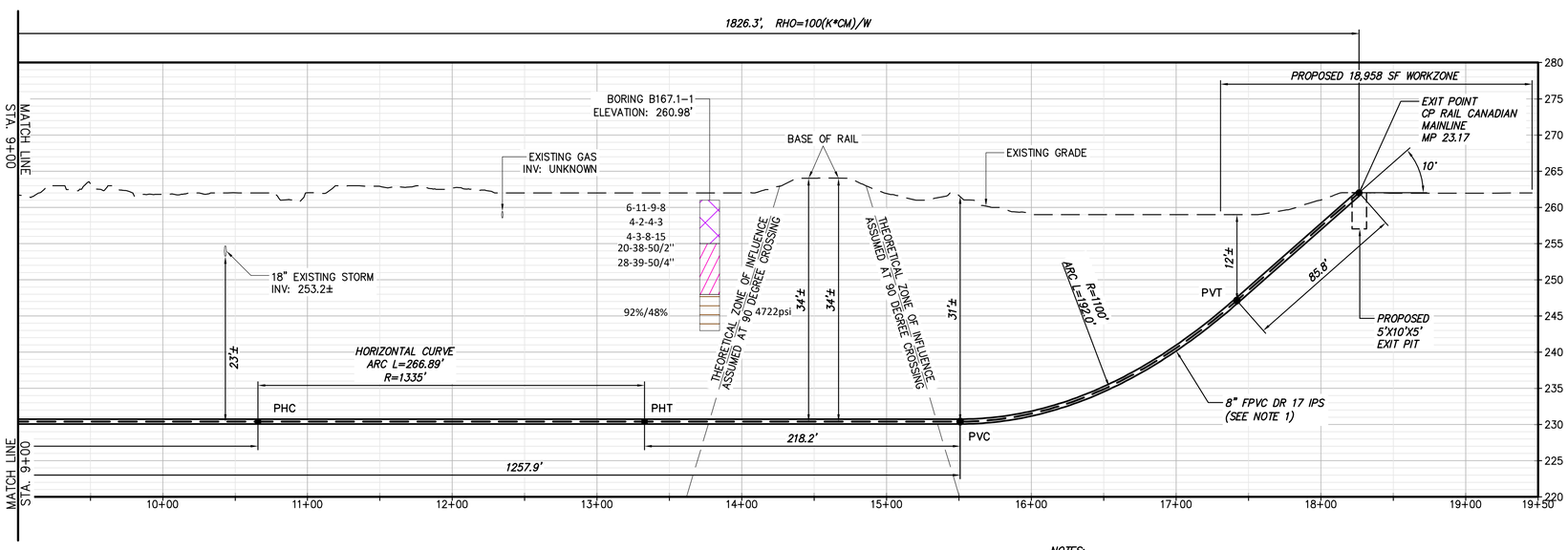


0 50 100
Scale in feet

PROPOSED HDD 59A PLAN VIEW
CONDUIT 2



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PROPOSED HDD 59A PROFILE
CONDUIT 2

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1. BORES WILL REQUIRE 8-INCH FPVC, DR 17, IPS, CONDUIT AND 3-INCH HDPE, DR 7, IPS, COMMUNICATION CONDUIT WHEN BUNDLED FOR PULLBACK.
2. BALLASTING WITH WATER WILL LIKELY BE REQUIRED AND IS RECOMMENDED TO MANAGE PULL BACK FORCES AND RESULTANT STRESSES.
3. ROLLER WILL ALSO LIKELY BE REQUIRED AND IS RECOMMENDED TO MANAGE PULL BACK FORCES AND RESULTANT STRESSES IN ADDITION TO BALLAST.
4. THE COMMUNICATION CONDUIT OF HDD #59A NEEDS TO BE SPECIFIED AS PE GRADE 4710 HDPE DUE TO THE ELEVATED STRESSES ENCOUNTERED IN THE BORE AID ANALYSIS IN ADDITION TO BALLASTING AND ROLLER CONSIDERATIONS.

BORING LOG STRIP LEGEND
B101
Blow Counts per 6" = 10-10-10
Recovery %/RQD % = 95%/90%
11000psi =UCS
2D strip logs shown at 10x exaggeration
3D strip logs have no exaggeration

Legend

ASPHALT	Asphalt
Bedrock	Bedrock
Boulder	Boulder
CH	Fat CLAY
CH-MH	SILTY Fat CLAY
CL	Lean CLAY
CL-ML	SILTY CLAY
CONCRETE	Concrete
Fill	Fill
GC	CLAYEY GRAVEL
GC-GM	SILTY CLAYEY GRAVEL
GM	SILTY GRAVEL
GP	Poorly Graded GRAVEL
GP-GC	Poorly Graded Gravel with CLAY
GP-GM	Poorly Graded GRAVEL with SILT
GW	Well Graded GRAVEL
GW-GC	Well Graded GRAVEL with CLAY
GW-GM	Well Graded GRAVEL with SILT
Limestone	Limestone
MH	Elastic SILT
ML	SILT
OH	ORGANIC Fat CLAY
OL	ORGANIC Lean CLAY
OL/OH	ORGANIC SOIL
PT	PEAT
Rock	Rock
Sandstone	Sandstone
SC	CLAYEY SAND
SC-SM	SILT, CLAYEY SAND
SHALE	Shale
SILTSTONE	Siltstone
SM	SILTY SAND
SP	Poorly Graded SAND
SP-SC	Poorly Graded SAND with CLAY
SP-SM	Poorly Graded SAND with SILT
SW	Well graded SAND
SW-SC	Well Graded SAND with CLAY
SW-SM	Well Graded SAND with SILT
Topsoil	Topsoil
USGS 601	Gravel or Conglomerate 1
USGS 654	Subgraywacke
USGS 670	Interbedded Sandstone and Shale
USGS 702	Quartzite
USGS 705	Schist
USGS 705	Schist
USGS 708	Gneiss
USGS 708	Gneiss
USGS 718	Granite 1
Void	Void
Water	Water
Weathered Rock	Undefined
Water Table	Water Table during drilling
Delayed Water Table	Water Table after drilling

CHPE Champlain Hudson Power Express

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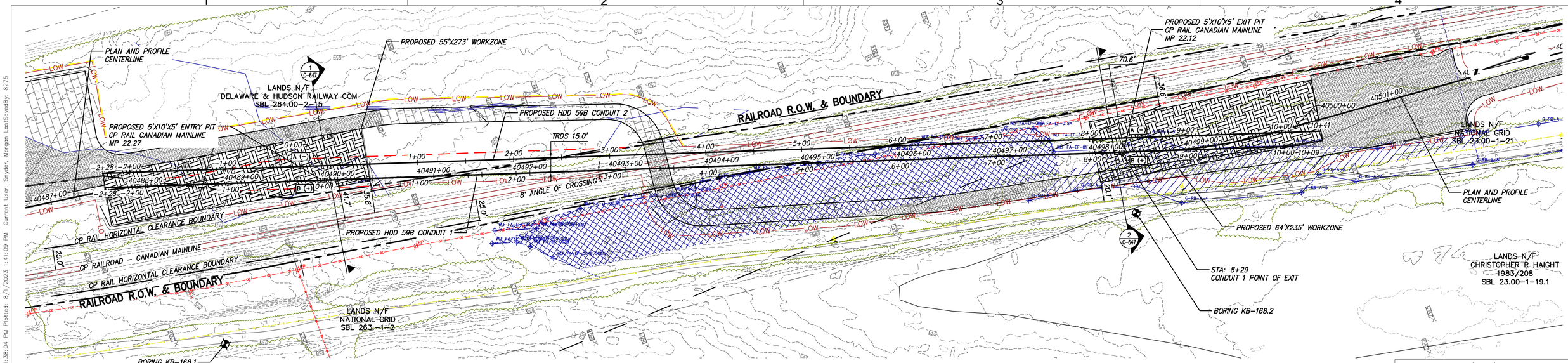
No.	DATE	SUBMITTAL / REVISION DESCRIPTION	DB	APP
0	08/03/2023	ISSUED FOR CONSTRUCTION SUBMISSION	SPB	JEO

CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 59A, CONDUIT 2

KIEWIT PROJECT NO. 21162
CHA PROJECT NO. 066076
DRAWING NO. **C-306A.1**

DRAWN BY: KDL | DESIGNED BY: SPB | APPROVED BY: JEO | SCALE AS NOTED | REV. NO. 1 | DATE 8/03/2023 | SH.NO.

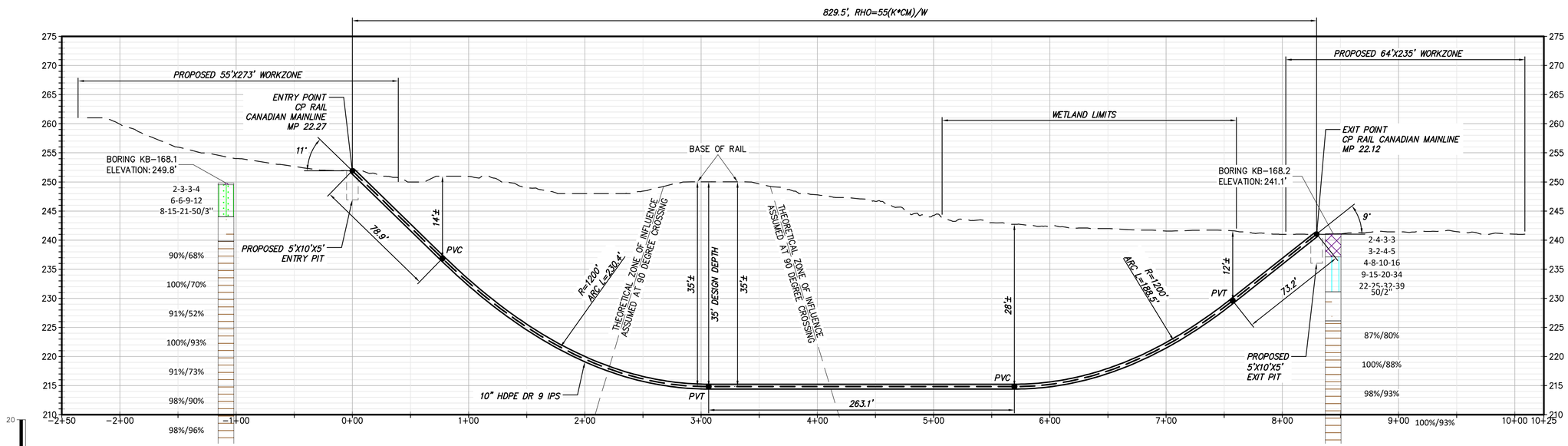
File: V:\PROJECTS\ANY\K6\066076.000\09_DESIGN\DRAWINGS\01_SHEETS\DESIGN PACKAGE 4\DESIGN PACKAGE 4\066076_4A - C-306_C-306A.DWG Saved: 8/1/2023 1:06:38 PM Plotted: 8/1/2023 1:39:47 PM Current User: Snyder, Morgan LastSavedBy: 8275



0 50 100
Scale in feet

PROPOSED HDD 59B PLAN VIEW

CONDUIT 1



0 50 100
Scale in feet

PROPOSED HDD 59B PROFILE

CONDUIT 1

BORING LOG STRIP LEGEND

B101

Blow Counts per 6" = 10-10-10
Recovery %/RQD % = 95%/90%
11000psi =UCS

2D strip logs shown at 10x exaggeration
3D strip logs have no exaggeration

Legend

ASPHALT	Asphalt
Bedrock	Bedrock
Boulder	Boulder
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CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 59B, CONDUIT 1

KIEWIT PROJECT NO. 21162
CHA PROJECT NO. 066076
DRAWING NO. **C-307**

DRAWN BY: ZH | DESIGNED BY: ZH | APPROVED BY: JEO | SCALE AS NOTED | REV. NO. 1 | DATE 8/03/2023 | SH.NO.

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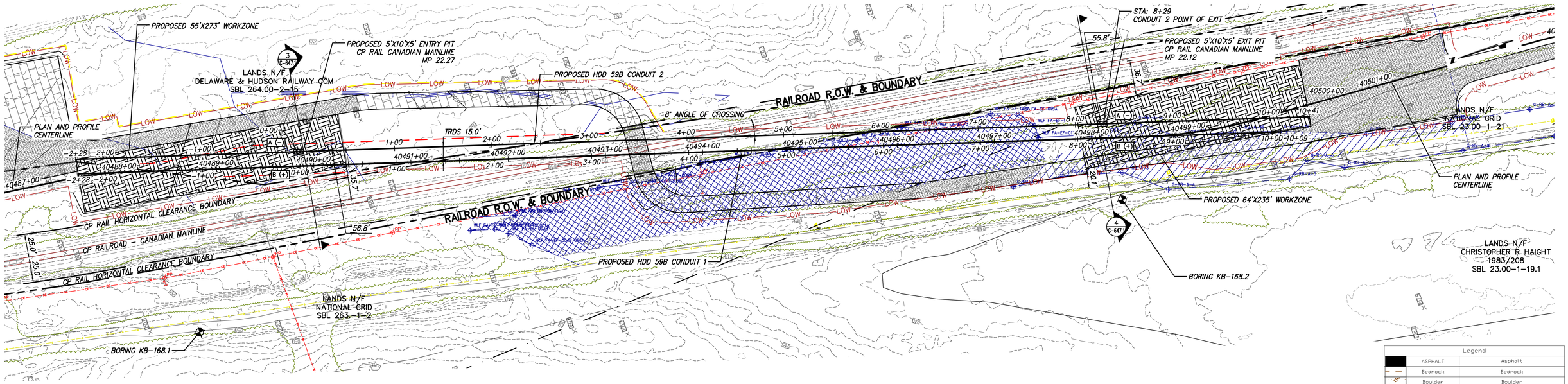
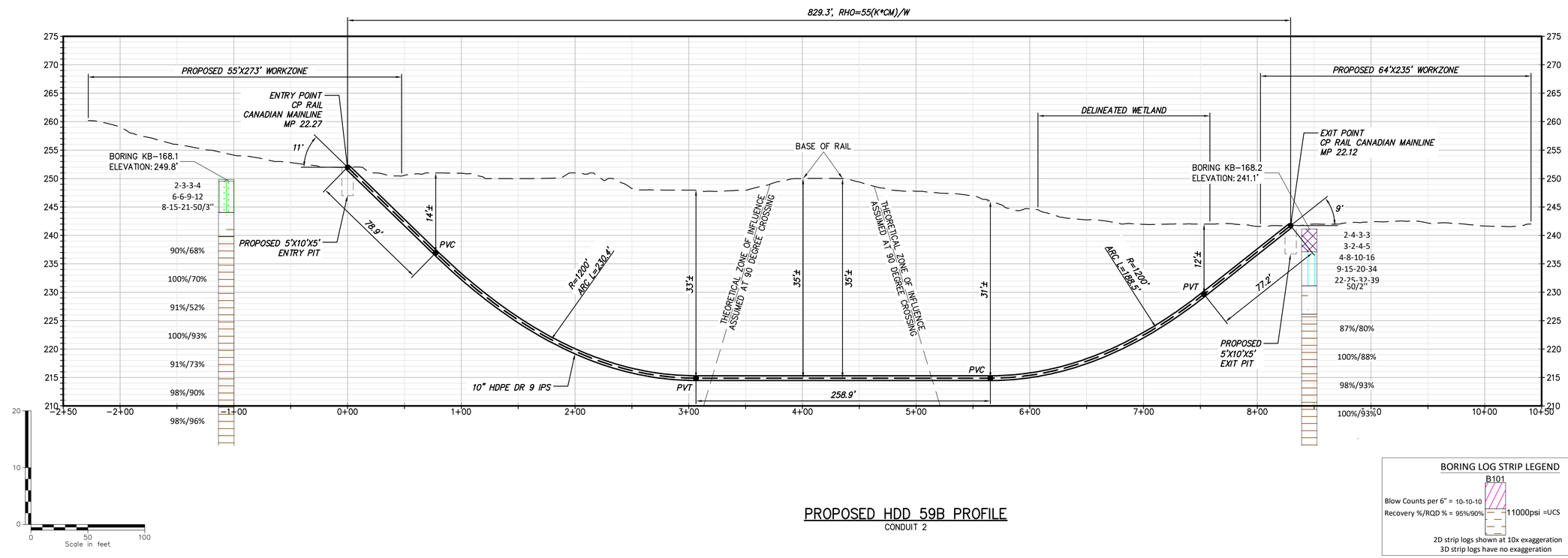


PROPOSED HDD 59B PLAN VIEW

CONDUIT 2



PROPOSED HDD 59B PROFILE

CONDUIT 2

BORING LOG STRIP LEGEND

B101

Blow Counts per 6" = 10-10-10

Recovery %/RQD % = 95%/90%

11000psi =UCS

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3D strip logs have no exaggeration

Legend

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CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 59B, CONDUIT 2

KIEWIT PROJECT NO. 21162

CHA PROJECT NO. 066076

DRAWING NO. **C-307A**

DRAWN BY: ZH | DESIGNED BY: ZH | APPROVED BY: JEO | SCALE AS NOTED | REV. NO. X | DATE 8/03/2023 | SH.NO.

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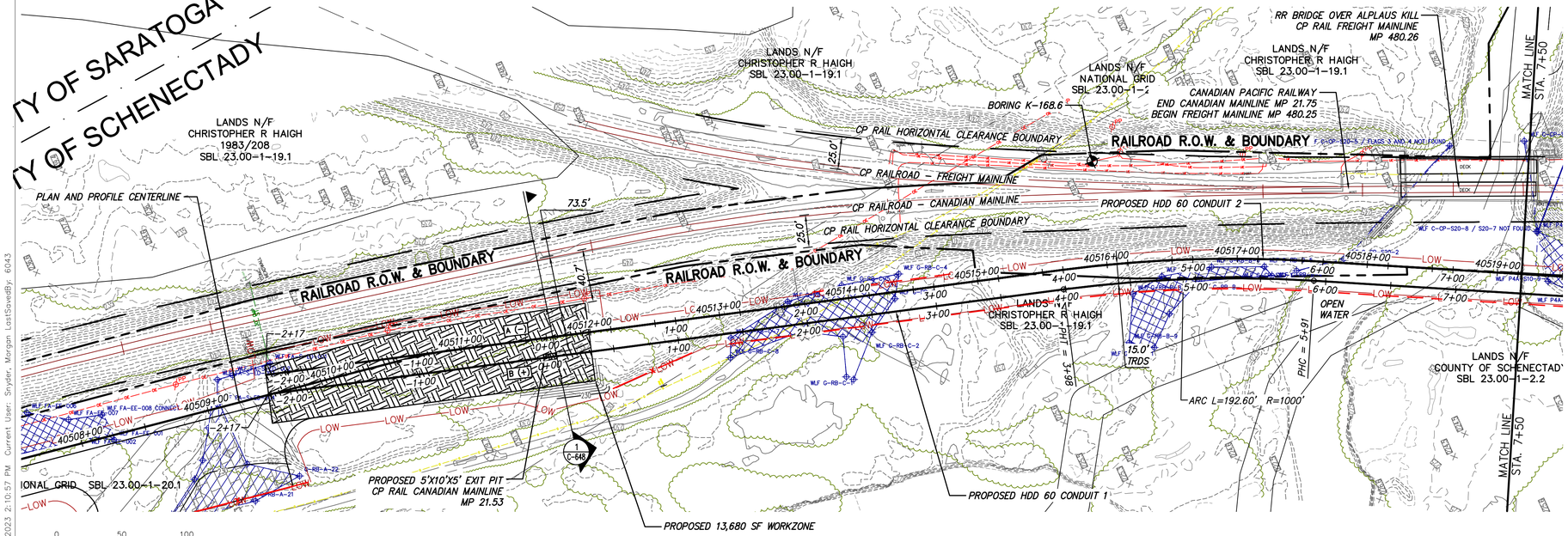
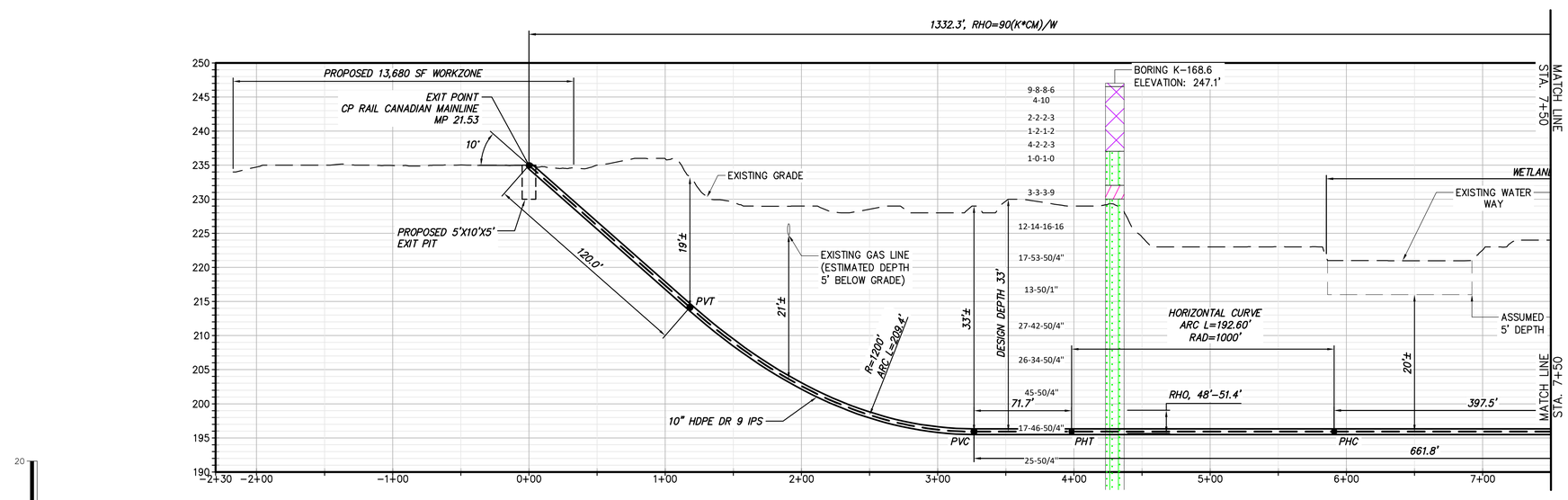


PROPOSED HDD 60 PLAN VIEW

CONDUIT 1



PROPOSED HDD 60 PROFILE

CONDUIT 1

NOTES:

1. BASED ON THE BORING DATA THE CONTRACTOR SHOULD CONSIDER USE OF DRILLING ADDITIVES TO INCREASE THE CARRYING CAPACITY OF THE DRILLING MUD AND, ADDITIVES TO PLUG COARSER GRAVELS AND PREVENT SLURRY LOSS.
2. THE FINAL REAMING PASS SHOULD BE OVERSIZED TO ACCOUNT FOR POTENTIAL FOR GRAVELS TO SETTLE TO THE BOTTOM.
3. CONDUCTOR CASINGS FOR THE ENTRY AND EXIT VERTICAL TANGENT SECTIONS OF THE ALIGNMENTS SHOULD BE CONSIDERED.

BORING LOG STRIP LEGEND

B101

Blow Counts per 6" = 10-10-10

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11000psi =UCS

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Legend

ASPHALT	Asphalt
Bedrock	Bedrock
Boulder	Boulder
CH	Fat CLAY
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CONCRETE	Concrete
Fill	Fill
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CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 60, CONDUIT 1

KIEWIT PROJECT NO. 21162
CHA PROJECT NO. 066076
DRAWING NO. **C-308**

DRAWN BY: CKZ | DESIGNED BY: CKZ | APPROVED BY: JEO | SCALE AS NOTED | DATE 8/03/2023 | REV. NO. X | SH.NO.

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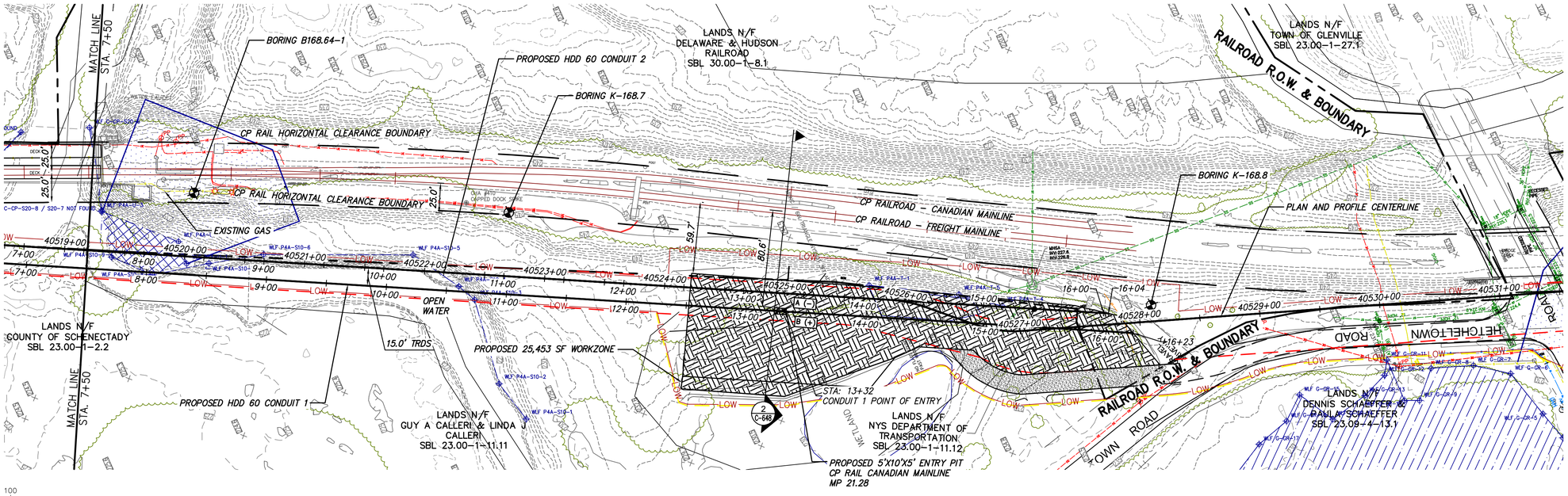
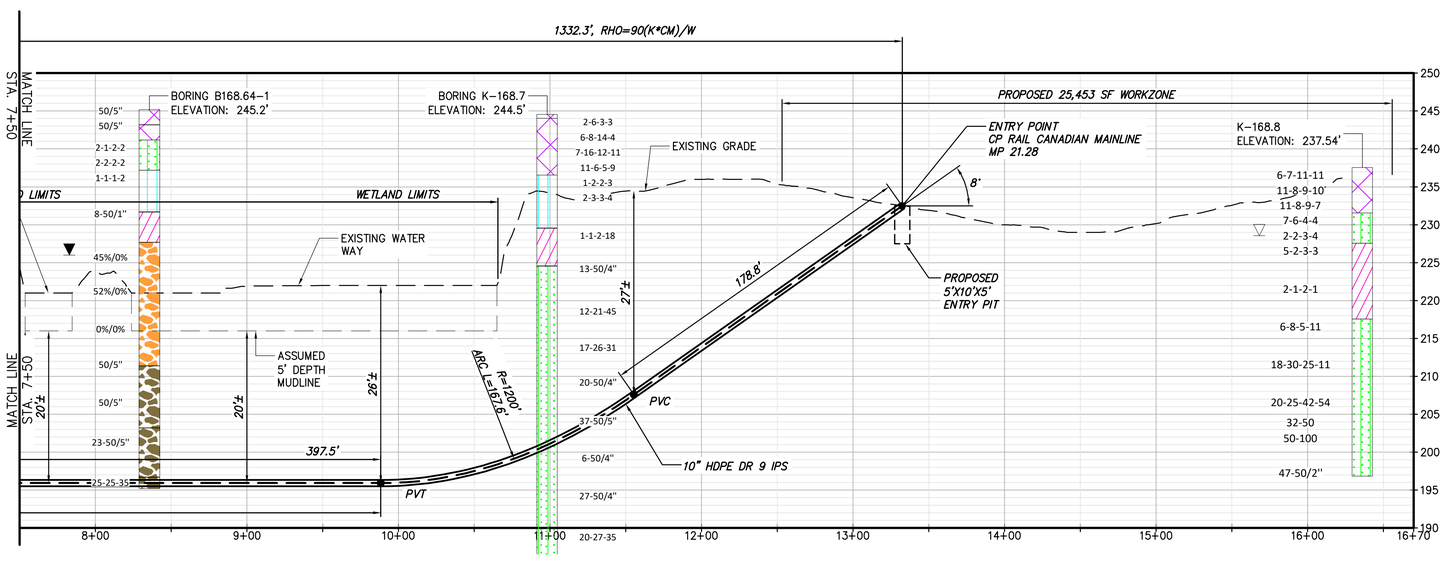


PROPOSED HDD 60 PLAN VIEW

CONDUIT 1



PROPOSED HDD 60 PROFILE

CONDUIT 1

NOTES:

1. *BASED ON THE BORING DATA THE CONTRACTOR SHOULD CONSIDER USE OF DRILLING ADDITIVES TO INCREASE THE CARRYING CAPACITY OF THE DRILLING MUD AND, ADDITIVES TO PLUG COARSER GRAVELS AND PREVENT SLURRY LOSS.*
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CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 60, CONDUIT 1

KIEWIT PROJECT NO. 21162
CHA PROJECT NO. 066076
DRAWING NO. **C-308.1**

DRAWN BY: CKZ DESIGNED BY: CKZ APPROVED BY: JEO SCALE AS NOTED DATE 8/03/2023 REV. NO. X SH.NO.

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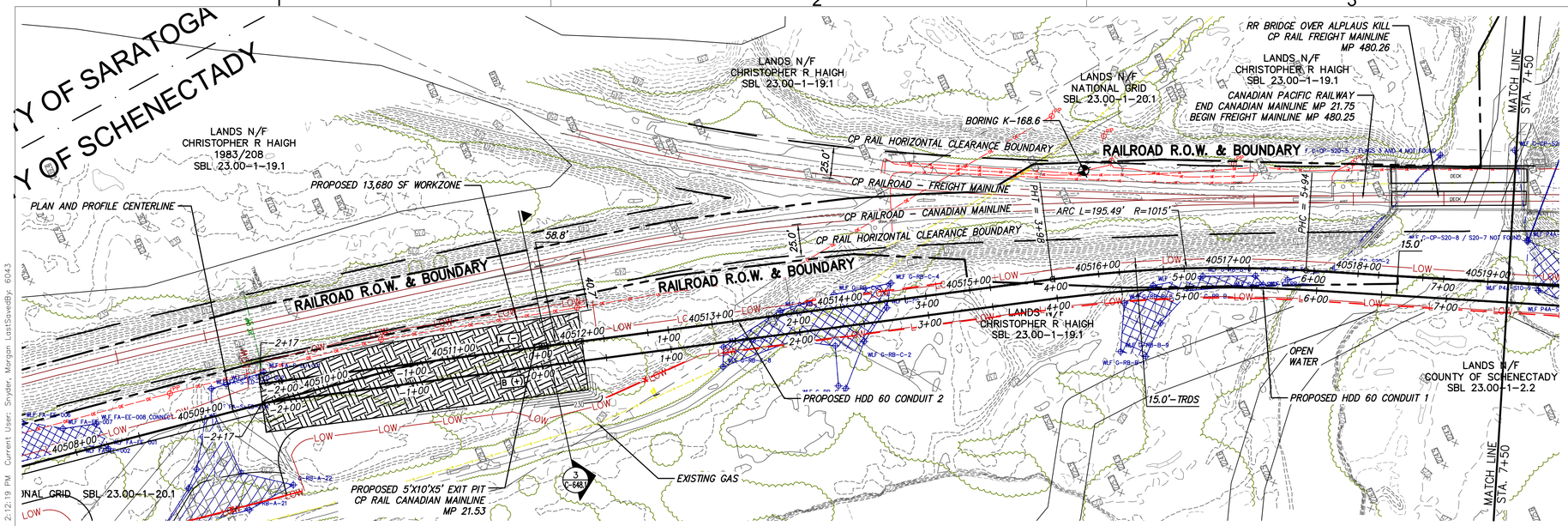
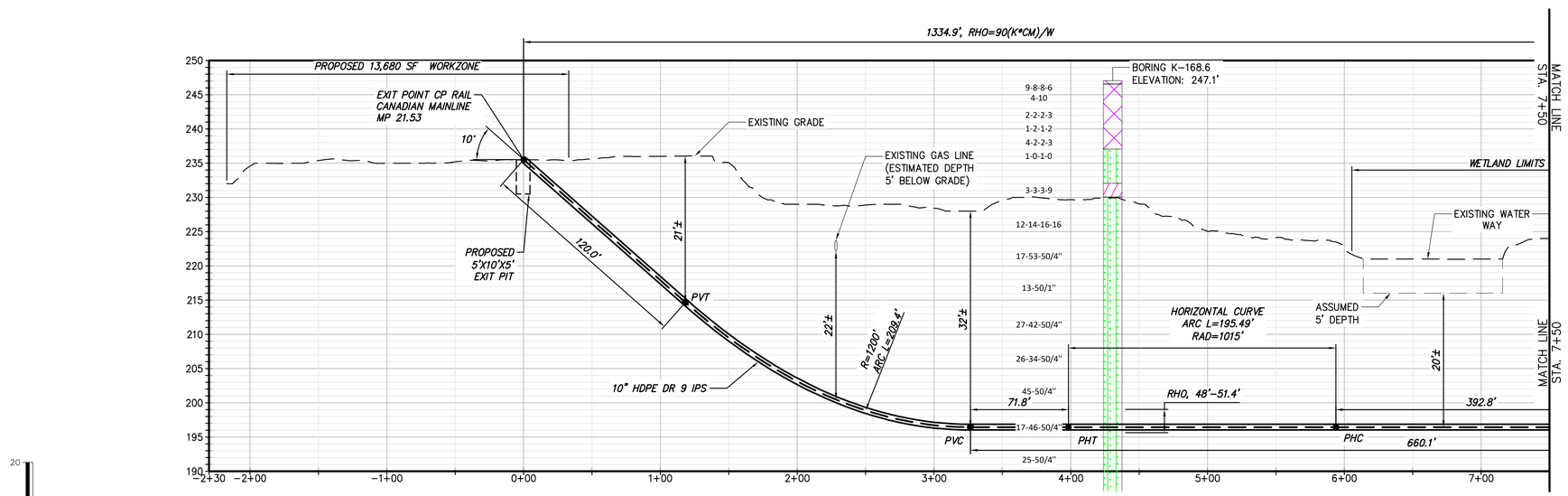


PROPOSED HDD 60 PLAN VIEW

CONDUIT 2



PROPOSED HDD 60 PROFILE

CONDUIT 2

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3D strip logs have no exaggeration

Legend

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ML	SILT
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OL	ORGANIC Lean CLAY
OL/OH	ORGANIC SOIL
PT	PEAT
Rock	Rock
Sandstone	Sandstone
SC	CLAYEY SAND
SC-SM	SILT, CLAYEY SAND
SHALE	Shale
SILTSTONE	Siltstone
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CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 60, CONDUIT 2

KIEWIT PROJECT NO. 21162
CHA PROJECT NO. 066076
DRAWING NO. **C-308A**

DRAWN BY: CKZ DESIGNED BY: CKZ APPROVED BY: JEO SCALE AS NOTED DATE 8/03/2023 REV. NO. X SH.NO.

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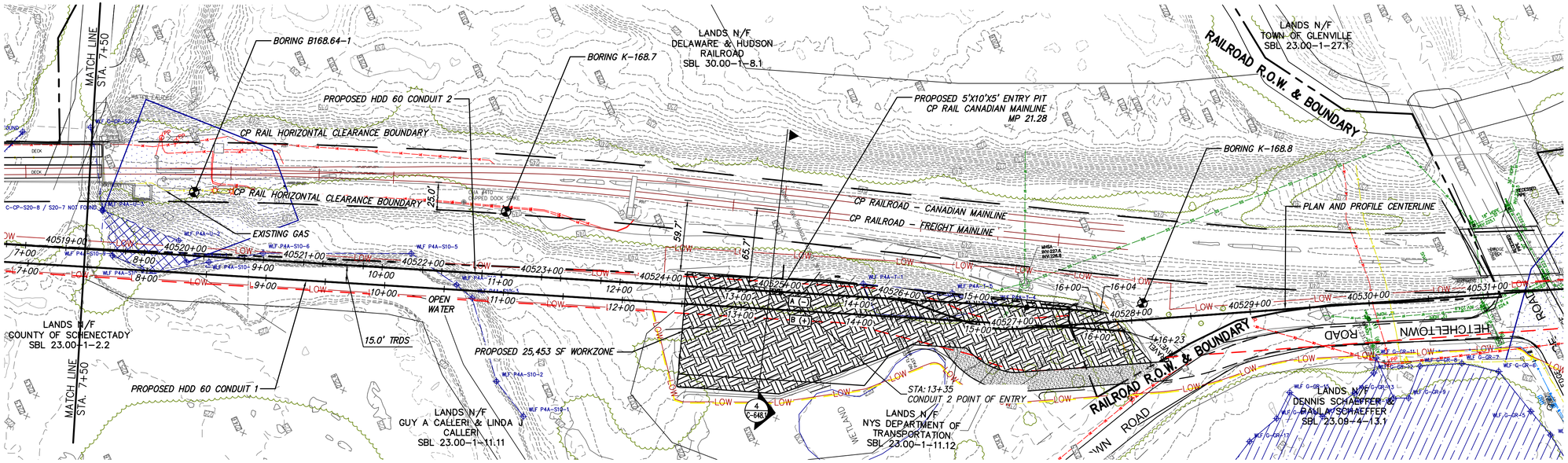
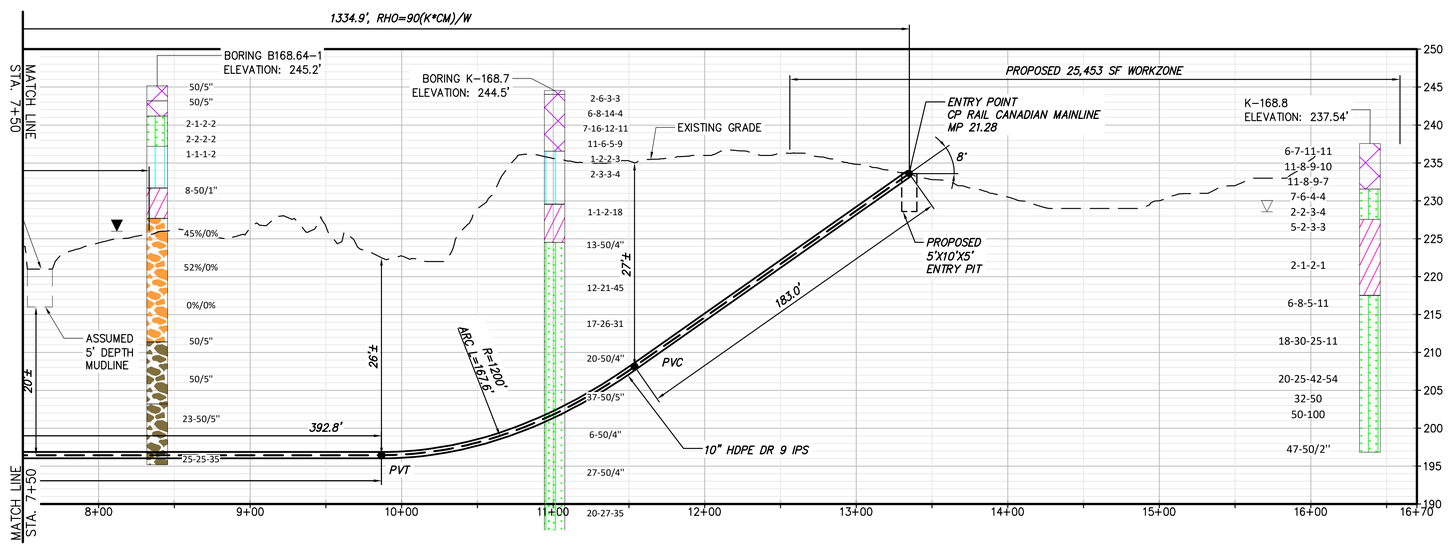


PROPOSED HDD 60 PLAN VIEW

CONDUIT 2



PROPOSED HDD 60 PROFILE

CONDUIT 2

NOTES:

1. *BASED ON THE BORING DATA THE CONTRACTOR SHOULD CONSIDER USE OF DRILLING ADDITIVES TO INCREASE THE CARRYING CAPACITY OF THE DRILLING MUD AND, ADDITIVES TO PLUG COARSER GRAVELS AND PREVENT SLURRY LOSS.*
2. *THE FINAL REAMING PASS SHOULD BE OVERSIZED TO ACCOUNT FOR POTENTIAL FOR GRAVELS TO SETTLE TO THE BOTTOM.*
3. *CONDUCTOR CASINGS FOR THE ENTRY AND EXIT VERTICAL TANGENT SECTIONS OF THE ALIGNMENTS SHOULD BE CONSIDERED.*

BORING LOG STRIP LEGEND

B101

Blow Counts per 6" = 10-10-10

Recovery %/RQD % = 95%/90%

11000psi =UCS

2D strip logs shown at 10x exaggeration

3D strip logs have no exaggeration

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CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 60, CONDUIT 2

KIEWIT PROJECT NO. 21162
CHA PROJECT NO. 066076
DRAWING NO. **C-308A.1**

DRAWN BY: CKZ DESIGNED BY: CKZ APPROVED BY: JEO SCALE AS NOTED DATE 8/03/2023 REV. NO. X SH.NO.

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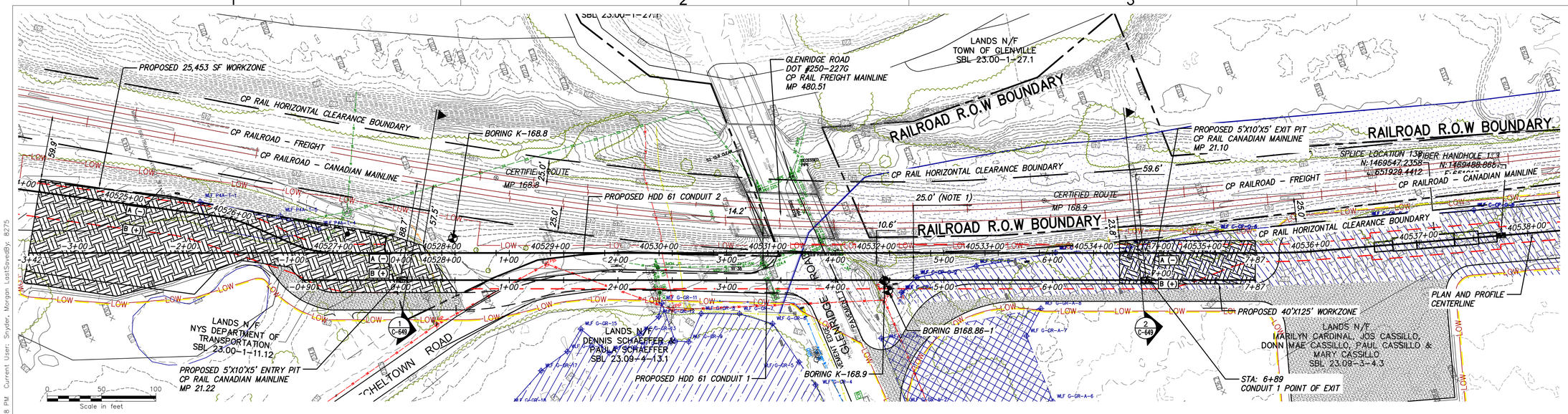
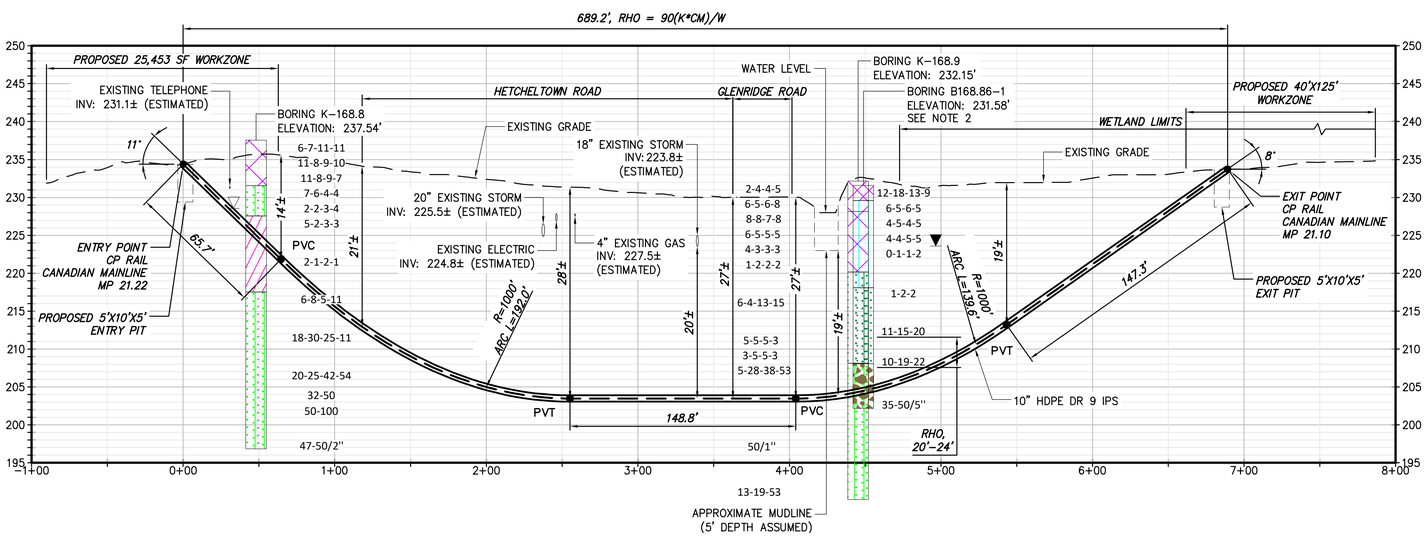


PROPOSED HDD 61 PLAN VIEW

CONDUIT 1



PROPOSED HDD 61 PROFILE

CONDUIT 1

NOTES:

1. CONDUIT SPACING WAS DESIGNED AT 25' PRIOR TO THE TRDS BEING ESTABLISHED AT 14'.
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B101

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CHAMPLAIN HUDSON POWER EXPRESS

SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE

PLAN AND PROFILE - HDD 61, CONDUIT 1

KIEWIT PROJECT NO. 21162

CHA PROJECT NO. 066076

DRAWING NO. **C-309**

DRAWN BY: ES | DESIGNED BY: ES | APPROVED BY: JEO | SCALE AS NOTED | REV. NO. X | DATE 8/03/2023 | SH.NO.

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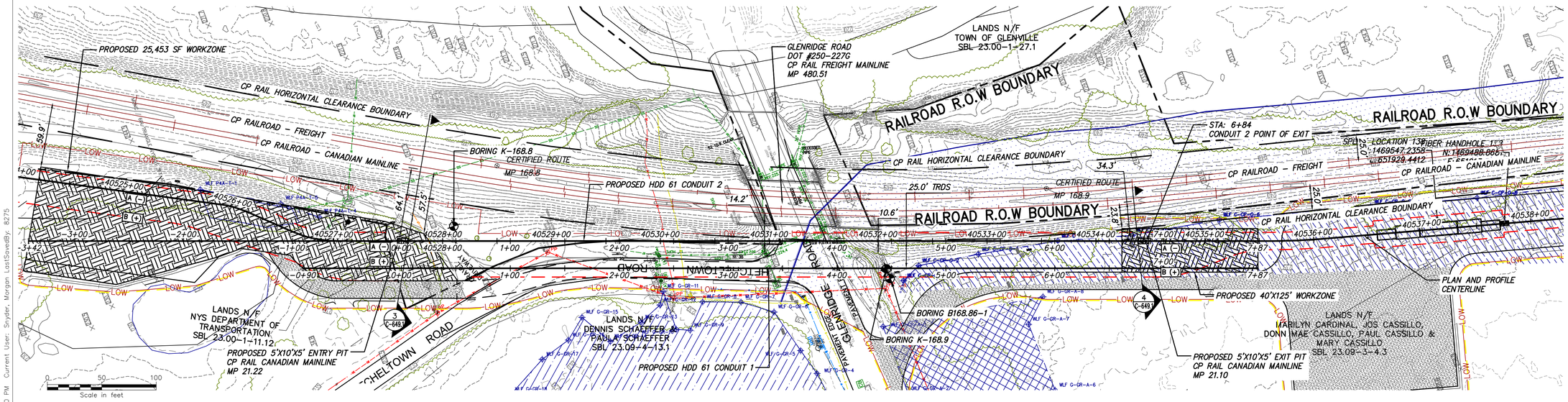
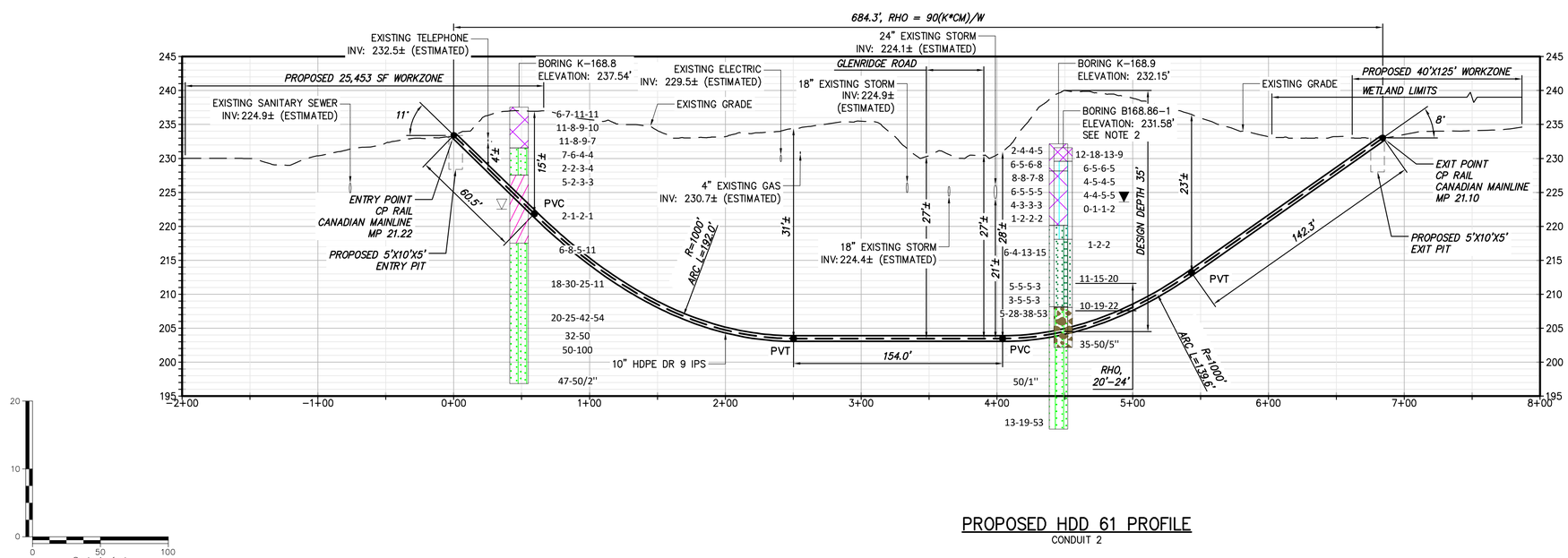


PROPOSED HDD 61 PLAN VIEW

CONDUIT 2



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CHAMPLAIN HUDSON POWER EXPRESS
SEGMENT 6 (PACKAGE 4A) - CP: BALLSTON TO GLENVILLE
PLAN AND PROFILE - HDD 61, CONDUIT 2

KIEWIT PROJECT NO. 21162
CHA PROJECT NO. 066076
DRAWING NO. **C-309A**

DRAWN BY: ES | DESIGNED BY: ES | APPROVED BY: JEO | SCALE AS NOTED | REV. NO. X | DATE 8/03/2023 | SH.NO.

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Appendix F

Proposed Soil Properties for CHPE Segment 6 Package 4A HDDs

Proposed Soil Properties for CHPE Segment 6 – Package 4A

Soil Type	N	Wet unit wgt, pcf	Dry unit wgt, pcf	Bouyant unit wgt, pcf	Φ, °	Undrained Shear strength, su, psf	Maximum Shear Modulus, psi*
Loose Sand	4-10	115	105	53	30	---	200
Med. Dense Sand	10-30	125	110	63	34	---	500
V Soft to Soft clay	0-4	100	70	38	---	450	200
Med Stiff Clay (approx. 40 feet deep)	4-8	110	80	48	---	800	300
Stiff Clay (approx. 80 ft deep)	8-16	120	100	58	---	1200	400
Loose Silt	4-10	100	80	38	28	---	50
Med Dense Silt	10-30	110	90	48	32	---	100
Rock Fill/Highly Weather Rock	>50	140	120	80	37	---	1000
Jointed Rock Mass – Shale	---	170	160	110	37	3000 psi	2000 psi

- where BoreAid default values are less than these shear moduli, can use the default values, but may tend to be overly conservative.