Final
Engineering Design Report

Volume 2
(Drawings)

September 9, 2014

Laurel Station
1009 East Smith Rd.
Bellingham, WA

Trans Mountain
Pipeline
(Puget Sound) LLC

URS

URS

FINAL
ENGINEERING DESIGN REPORT
LAUREL STATION
1009 EAST SMITH ROAD
BELLINGHAM, WASHINGTON

For

Trans Mountain Pipeline (Puget Sound) LLC
URS Job No.: 33764321

September 9, 2014

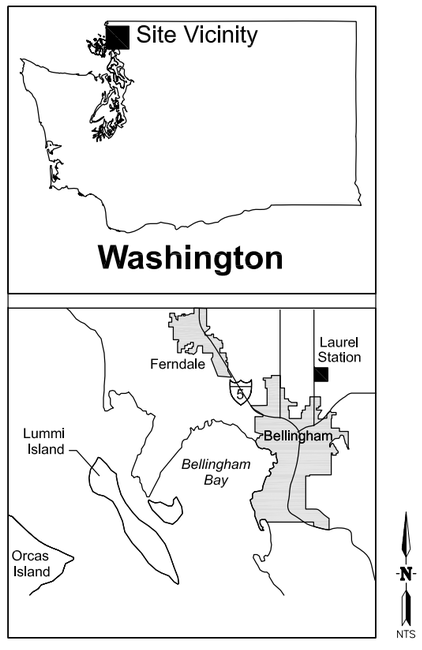
VOLUME 2 - DRAWINGS

TRANSMOUNTAIN

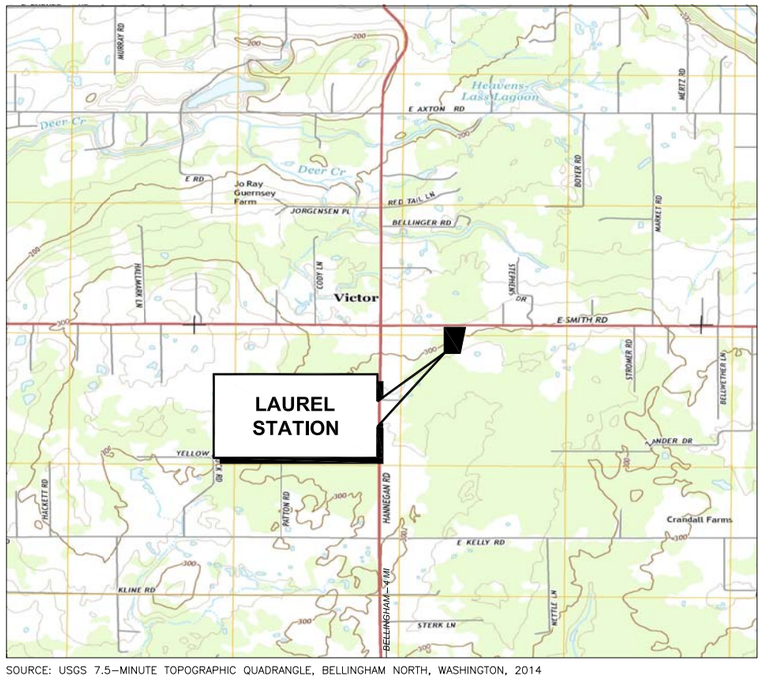
CLEANUP ACTION

LAUREL STATION

TRANSMOUNTAIN PROJECT NUMBER: AFE 05-51041
URS PROJECT NUMBER: 33764321
SEPTEMBER 9, 2014



SITE LOCATION



SOURCE: USGS 7.5–MINUTE TOPOGRAPHIC QUADRANGLE, BELLINGHAM NORTH, WASHINGTON, 2014

SCALE: 1–IN=1,500–FT

SITE VICINITY

DRAWING INDEX		
SHEET NO.	DOCUMENT NO.	TITLE
1	GA1010	TITLE SHEET WITH SITE LOCATION, SITE VICINITY, AND DRAWING INDEX
2	GA1011	ABBREVIATIONS, GENERAL NOTES, AND LEGEND
3	GA1012	FACILITY SITE PLAN WITH AERIAL PHOTO
4	GA1013	EXISTING CONDITIONS SITE PLAN–PUMP STATION AREA
5	GA1014	EXISTING CONDITIONS SECTION–PUMP STATION AREA
6	GA1015	EXISTING CONDITIONS AND INVESTIGATION PLAN AND SECTION–SW PUMP STATION AREA
7	GA1016	EXISTING CONDITIONS SITE PLAN AND SECTION–MATERIAL STORAGE AREA (SU3–B7)
8	GA1017	STAGING, WORK LIMITS, AND TEMPORARY EROSION CONTROL PLAN
9	GA1018	EROSION SEDIMENT CONTROL DETAILS AND NOTES
10	CE1010	DEMOLITION AND PROTECTION PLAN
11	CE1011	EXCAVATION AND TEMPORARY GRADING PLAN–PUMP STATION AREA
12	CE1012	EXCAVATION AND GRADING PLAN–MATERIAL STORAGE AREA (SU3–B7)
13	CE1013	SLOPE AND RETAINING WALL EXCAVATION SECTION
14	CE1014	SSR EXCAVATION SECTION AND DETAIL
15	CE1015	DPE SYSTEM INSTALLATION PLAN
16	CE1016	STORMWATER INSTALLATION AND GRADING PLAN–LOWER RETAINING WALL AND PAVED AREA
17	CE1017	STORMWATER INSTALLATION AND GRADING PLAN–UPPER RETAINING WALL AND HILLSIDE
18	CE1018	RETAINING WALL SECTION AND DETAIL
19	CE1019	WELL ABANDONMENT, PROTECTION, AND INSTALLATION PLAN
20	CS1011	PIPING SHELTER DEMOLITION, PROTECTION, AND FOUNDATION PLANS
21	CC1011	PIPING SHELTER FOOTING DETAILS
22	CE1020	DPE AND PASSIVE VENT WELL DETAILS
23	CE1021	TRENCH, DPE PIPING, CLEANOUT, AND CATCH BASIN DETAILS
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25	CE1023	SITE RESTORATION AND GRADING PLAN
26	CE1024	MONITORING WELLS AND ASPHALT DETAILS
27	GS1010	DPE PROCESS FLOW DIAGRAM
28	GS1008	DPE PIPING AND INSTRUMENTATION DIAGRAM
29	MP1030	DPE SYSTEM LAYOUT–PIPING MANIFOLD SHELTER
30	MP1031	DPE SYSTEM LAYOUT AND PIPING SECTION–PUMP STATION AREA
31	MP1032	PIPING AND MECHANICAL DETAILS
32	EE1005	ELECTRICAL ABBREVIATIONS, GENERAL NOTES, AND LEGEND
33	EE1006	ELECTRICAL SITE PLAN
34	EE1007	ELECTRICAL ONE–LINE DIAGRAMS AND PANEL SCHEDULES
35	EE1008	ELECTRICAL CONTROL DIAGRAM AND CONNECTION DETAILS

DESIGN PREPARED BY:
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SEATTLE, WASHINGTON

PREPARED FOR:
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NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	TITLE SHEET WITH SITE LOCATION, SITE VICINITY, AND DRAWING INDEX	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER

AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05–51041	C1A01	UL00	GA1010	1	A

ABBREVIATIONS AND ACRONYMS

GENERAL

APPROX	APPROXIMATE OR APPROXIMATELY
BGS	BELOW GROUND SURFACE
BIGD	BELOW INLET GRATE DEVICE
CB	CATCH BASIN
CO	CLEANOUT
CONC	CONCRETE
CP	CATHODER PROTECTION
CPE	CORRUGATED POLYETHYLENE
CT	CONTINGENCY TREATMENT OR CONTOUR
CUL	CLEAN UP LEVEL
D	DRAIN
DPE	DUAL-PHASE EXTRACTION
ECT	ET CETERA
E.G.	EXAMPLE GIVEN
ELEC	ELECTRICAL
EL	ELEVATION
EQ	EQUAL
ESC	EROSION SEDIMENT CONTROL
EST	ESTIMATED
EW	EXTRACTION WELL OR EACH WAY
EX	EXAMPLE
(E)	EXISTING
F°	FAHRENHEIT DEGREES
FNPT	FEMALE NATIONAL PIPE THREAD
FT	FEET
FTG	FOOTING
GCL	GEOSYNTHETIC CLAY LINER
GP	GRADING POINT
HAC	HYDRAULIC ASPHALT CONCRETE
HDPE	HIGH DENSITY POLYETHLENE
Hg	MERCURY
ID	INSIDE DIAMETER
IE	THAT IS OR IN OTHER WORDS
IN	INCH
INV	INVERT
LBS	POUNDS
LLC	LIMITED LIABILITY CORPORATION
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MH	MANHOLE
MIL	MILLILITER
MIN	MINIMUM
MW	MONITORING WELL
NAD	NORTH AMERICAN DATUM
NAVD	NORTH AMERICAN VERTICAL DATUM
NO	NUMBER
NOM	NOMINAL
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
OD	OUTSIDE DIAMETER
OPP	OPPOSITE
O/W	OIL/WATER
P	PIPE
PERF	PERFORATED
PL	PLATE
PPE	PERSONAL PROTECTION EQUIPMENT
PSI	POUNDS PER SQUARE INCH
PV	PASSIVE VENT
PVC	POLYVINYL CHLORIDE
R	RADIUS
RW	RECOVERY WELL OR RETAINING WALL
SB	SOIL BORING
SCB	SOIL CEMENT BENTONITE
SCFM	STANDARD CUBIC FEET PER MINUTE
SCH	SCHEDULE
SD	STORM DRAIN
SP	SAMPLE PORT
SS	STAINLESS STEEL OR SANITARY SEWER
SSR	STRATEGIC SOURCE REMOVAL
STD	STANDARD
SU	STUDY UNIT
SW	SURFACE WATER
TESC	TEMPORARY EROSION AND SEDIMENT CONTROL
TM	TRANSMOUNTAIN
TO	TOP OF
TOC	TOP OF CASING, CONCRETE OR COLUMN
TOG	TOP OF GRADE
TOS	TOP OF SLAB
TP	TEST PIT
TYP	TYPICAL
UGP	UNDERGROUND POWER
URS	URS CORPORATION
VERT	VERTICAL
W	WATER
W/	WITH
WA	WASHINGTON
WSDOT	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

DIRECTIONS

N	NORTH/NORTHING
S	SOUTH
E	EAST/EASTING
W	WEST
NW	NORTHWEST
NE	NORTHEAST
SW	SOUTHWEST
SE	SOUTHEAST

TEXT SYMBOLS

%	PERCENT
&	AND
℄	CENTERLINE
#	NUMBER
ℙ	PROPERTY LINE
⌀	DIAMETER
°	DEGREES
@	AT

DOCUMENT NO. DESCRIPTORS

CC	CONCRETE
CE	EARTHWORKS
CS	STRUCTURAL STEEL
EE	EQUIPMENT, SUPPLY, DISTRIBUTION
GA	GENERAL ARRANGEMENT
GS	SYSTEM DRAWINGS
MP	PIPING: PLANS, SECTIONS AND DETAILS

GENERAL LEGEND OF SYMBOLS

EXISTING FEATURES

FOUND IRON PIPE OR REBAR/CAP
FOUND OR SET SPIKE
SANITARY SEWER MANHOLE
SANITARY SEWER CLEANOUT
STORM MANHOLE
STORM CATCH BASIN
YARD DRAIN
WATER METER
WATER VALVE
FIRE HYDRANT
WATER VAULT
UTILITY POLE
GUY WIRE
CP POWER BREAKER BOX
GROUNDING ROD COVER
YARD LIGHT
MONITORING WELL
BOLLARDS
SIGN OR PIPELINE MARKER
MAILBOX OR ELEC PANEL
QUARRY SPALLS
PAVEMENT
CONCRETE
GRAVEL
FILL
APPROX. LOCATION PIPELINE
OHT — AERIAL TELEPHONE LINE
DITCH
X — FENCE LINE
GAS — GAS LINE
SD — STORM CULVERT
SD — STORM DRAIN LINE
UGP — UNDERGROUND POWER LINE (APPROX)
FW — FIRE WATER LINE
CP — CATHODIC PROTECTION (APPROX)
SOIL BORING
TEST PIT
ESTIMATED EXTENT OF SOIL EXCEEDING CLEANUP LEVELS
ESTIMATED EXTENT OF GROUNDWATER EXCEEDING CLEANUP LEVELS
AREA OF INVESTIGATION OF PREVIOUS TPH CONTAMINATION
RETAINING WALL
305 — MAJOR CONTOURS
306 — MINOR CONTOURS

PROPOSED FEATURES

PEA GRAVEL
CRUSHED GRAVEL (3/4-IN MINUS)
CRUSHED GRAVEL (1 1/4-IN MINUS)
STABILIZED BASE COURSE AGGREGATE
TOP SOIL
PIPE BEDDING
CONCRETE
ASPHALT OR CONCRETE
CEMENT BENTONITE
GENERAL FILL
STAGING AREA

PROPOSED FEATURES

BENTONITE CHIPS
SAND FILTER PACK
SLOUGH
TRENCH/EXCAVATION
D — DRAIN LINE (PERFORATED)
SD — STORM DRAIN LINE (SOLID)
CONTROL POINT
AVERAGE GROUNDWATER ELEVATION
HIGHEST GROUNDWATER ELEVATION
LOWEST GROUNDWATER ELEVATION
PROPOSED GROUNDWATER MONITORING WELL
DPE WELL
MONITORING WELL
PASSIVE VENT WELL
SOIL BORING

FOR CONCENTRATION LEVEL INFORMATION, SEE REMEDIAL INVESTIGATION FEASIBILITY STUDY:
SOIL BELOW CLEANUP LEVELS
SOIL EXCEEDS CLEANUP LEVELS
SOIL IS NON DETECT

? — DATA NOT AVAILABLE TO DETERMINE BELLINGHAM DRIFT
WATTLES
TEMPORARY INLET PROTECTION
FEATURE TO BE PROTECTED (BOLLARDS, GROUNDWATER MONITORING WELLS)
ABANDON WELL (HISTORICALLY DRY)
ABANDON WELL (EXCAVATION ACCESS)
CUT AND CAP
1 — SSR SLOT DESIGNATION AND ESTIMATED ORDER OF EXCAVATION
BOLLARD
FLOW DIRECTION
CATCH BASIN
CLEANOUT
QUARRY SPALLS
WELL INSTALLED AT 30° ANGLE
DIRECTION OF SLOPE
LINED DITCH/SWALE
ASPHALT CURB
DPE HEADER PIPE
SEGMENTED CONC. BLOCK (RETAINING WALL)
GLACIAL OUTWASH DEPOSITS
APPROXIMATE LIMITS OF SOIL EXCEEDING PCL
BELLINGHAM DRIFT
STRAW BALE
TEMPORARY MULCH AREA
ACTIVE WORK LIMITS
SCREENED INTERVAL OF WELL
GEOLOGIC UNIT BOUNDARY
BREAK POINT IN PROFILE
EXCAVATION LIMITS
REMOVE
TEMPORARY FIRE WATER LINE REROUTE
315 — CONTOURS
HILL SLOPE EXCAVATION LIMITS

KEY DEFINITIONS

DPE EQUIPMENT
A COMPLETE SYSTEM MANUFACTURED BY A SPECIALTY VENDOR TO EXTRACT SOIL VAPORS AND PERCHED GROUNDWATER FROM THE SUBSURFACE. THE ENTIRE SYSTEM SHALL BE SELF CONTAINED IN A SHIPPING CONTAINER, READY TO BE CONNECTED TO POWER, AND TO THE HEADER PIPE.

PUMP STATION AREA
PUMP STATION AREA CONSISTS OF TWO PLUMES OF SOIL AND PERCHED GROUNDWATER EXCEEDING CLEANUP LEVELS BELOW THE SUBSURFACE. THE NORTHERN PLUME IS BELOW THE PUMP STATION BUILDING AND THE SOUTHERN PLUME IS BELOW AND EAST OF THE PIPING MANIFOLD SHELTER. THE SOIL AND GROUNDWATER ARE TO BE TREATED USING SSR EXCAVATION, TRADITIONAL EXCAVATION, AND PPE METHODS. SEE DOCUMENT NO. CE1011.

MATERIAL STORAGE AREA (SU3-B7)
MATERIAL STORAGE AREA (SU3-B7) CONSISTS OF ONE PLUME OF SOIL EXCEEDING CLEANUP LEVELS BELOW THE SUBSURFACE. THE SOIL IS TO BE EXCAVATED AND TRANSPORTED OFF-SITE FOR DISPOSAL.

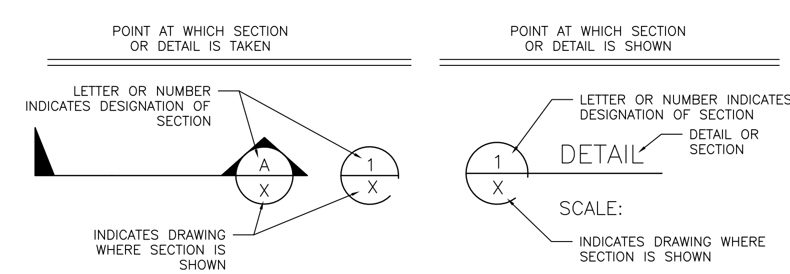
PROPOSED FEATURES

WATER TRANSFER PUMP
LIQUID RING VACUUM PUMP
BLOWER
BALL VALVE
CHECK VALVE
V — VACUUM GAUGE
M — TOTAL FLOW METER
T — TEMPERATURE SENSOR
P — PRESSURE GAUGE
GLOBE VALVE
SP — SAMPLE PORT
SIGHT GLASS
CAPPED LINE
UNION
EXPANSION JOINT

GENERAL NOTES

1. THE HORIZONTAL DATUM IS WASHINGTON STATE PLANE, NORTH ZONE, NAD 83 (US SURVEY FT), AND THE VERTICAL DATUM IS NAVD 88.
2. BEST MANAGEMENT PRACTICES (BMPS) SHALL BE USED TO PREVENT THE RELEASE OF CONTAMINATED MATERIALS TO THE ENVIRONMENT AND MINIMIZE DISTURBANCE TO THE SURROUNDING AREAS.
3. CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES WITH THE OWNER AND INFORM THE MANAGEMENT OF LAUREL STATION WHEN ACTIVITIES WILL INTERFERE WITH THEIR OPERATIONS. CONTRACTOR SHALL PERFORM WORK ACTIVITIES IN A WAY THAT MINIMIZES IMPACTS TO THE FACILITY AND MAINTAINS INGRESS AND EGRESS FROM THE PARKING LOT.
4. CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES AND UTILITIES FROM DAMAGE WHETHER INDICATED ON THE DRAWINGS OR NOT.
5. AIR KNIFING SHALL BE COMPLETED FOR ALL DRILLING OPERATIONS. EACH BORING LOCATION SHALL BE AIR KNIFED TO A MINIMUM OF 8-FT DEEP BEFORE DRILLING OPERATIONS COMMENCE. ALTERNATIVELY, CONTRACTOR MAY PROPOSE ALTERNATIVE METHODS TO IDENTIFY UTILITIES FOR OWNER APPROVAL.
6. ALL MATERIALS AND EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURERS' REQUIREMENTS AND RECOMMENDATIONS.
7. CONTRACTOR SHALL MATCH THE GENERAL ROUTING OF PIPING LAYOUT. ALTERNATE ROUTING SHALL BE APPROVED BY THE OWNER.
8. CONTRACTOR SHALL SIZE AND PROVIDE SUPPORTS NECESSARY TO MEET MANUFACTURES RECOMMENDATIONS FOR ALL PIPE AND EQUIPMENT LOCATED IN DPE EQUIPMENT CONTAINER.
9. THE UTILITY INFORMATION SHOWN ON THE DRAWINGS IS ESTIMATED FOR REFERENCE PURPOSES ONLY AND DO NOT REPRESENT ALL UTILITIES WHICH MAY BE PRESENT AT THE SITE. CONTRACTOR SHALL BE RESPONSIBLE IN LOCATING ALL UTILITIES PRESENT IN CONSTRUCTION AREAS AND PROTECT THEM FROM DAMAGE REGARDLESS IF THEY ARE SHOWN ON THE DRAWINGS OR NOT.
10. STRUCTURAL DRAWINGS REPRESENT THE COMPLETED STRUCTURE AND ARE NOT INTENDED TO INDICATE THE MEANS AND METHODS OF CONSTRUCTION. CONTRACTOR SHALL PROVIDE AND BE RESPONSIBLE FOR ALL SHORING, BRACING, SCAFFOLDING, FORMWORK, GUYS, RIGGING, AND OTHER TEMPORARY SUPPORTS AS NEEDED TO SAFELY RESIST ALL LOADING IMPOSED UPON THE STRUCTURE BOTH DURING THE REMOVAL OF ANY EXISTING STRUCTURE AND DURING THE ERECTION AND CONSTRUCTION.
11. ERECTION AND CONSTRUCTION PROCEDURES SHALL CONFORM TO THE REQUIREMENTS OF APPLICABLE ORDNANCES, AND REGULATIONS.
12. CONTRACTOR SHALL COORDINATE ALL DIMENSIONS, DETAILS, AND OPENINGS BETWEEN THE DRAWINGS PRIOR TO COMMENCING WORK. SHOULD THERE BE ANY CONFLICTS, NOTIFY THE OWNER FOR CLARIFICATION.
13. THESE GENERAL NOTES ARE TO BE READ IN CONCERT WITH THE SPECIFICATIONS. ANY CONFLICTS BETWEEN THE CONTRACT DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER FOR CLARIFICATION.
14. ACTIVE WORK LIMITS IS DEFINED AS THE AREA WHERE ACTIVE CONSTRUCTION ACTIVITIES SHALL OCCUR.
15. CONSTRUCTION LIMITS ARE DEFINED AS THE AREA WHERE CONTRACTOR SHALL HAVE ACCESS TO AND HAVE MOVEMENT IN TO ACCESS THE ACTIVE LIMIT AREAS.
16. SITE STRUCTURES AND SURFACE TOPOGRAPHY ARE BASED ON A LAND SURVEY PERFORMED BY LARRY STEELE AND ASSOCIATES, INC IN FEBRUARY 2014.
17. WA STATE GRID LINES ARE SHOWN ON ALL PLAN VIEW DRAWINGS.

SECTION AND DETAIL DESIGNATION



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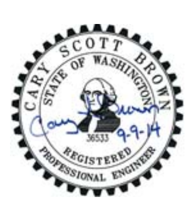


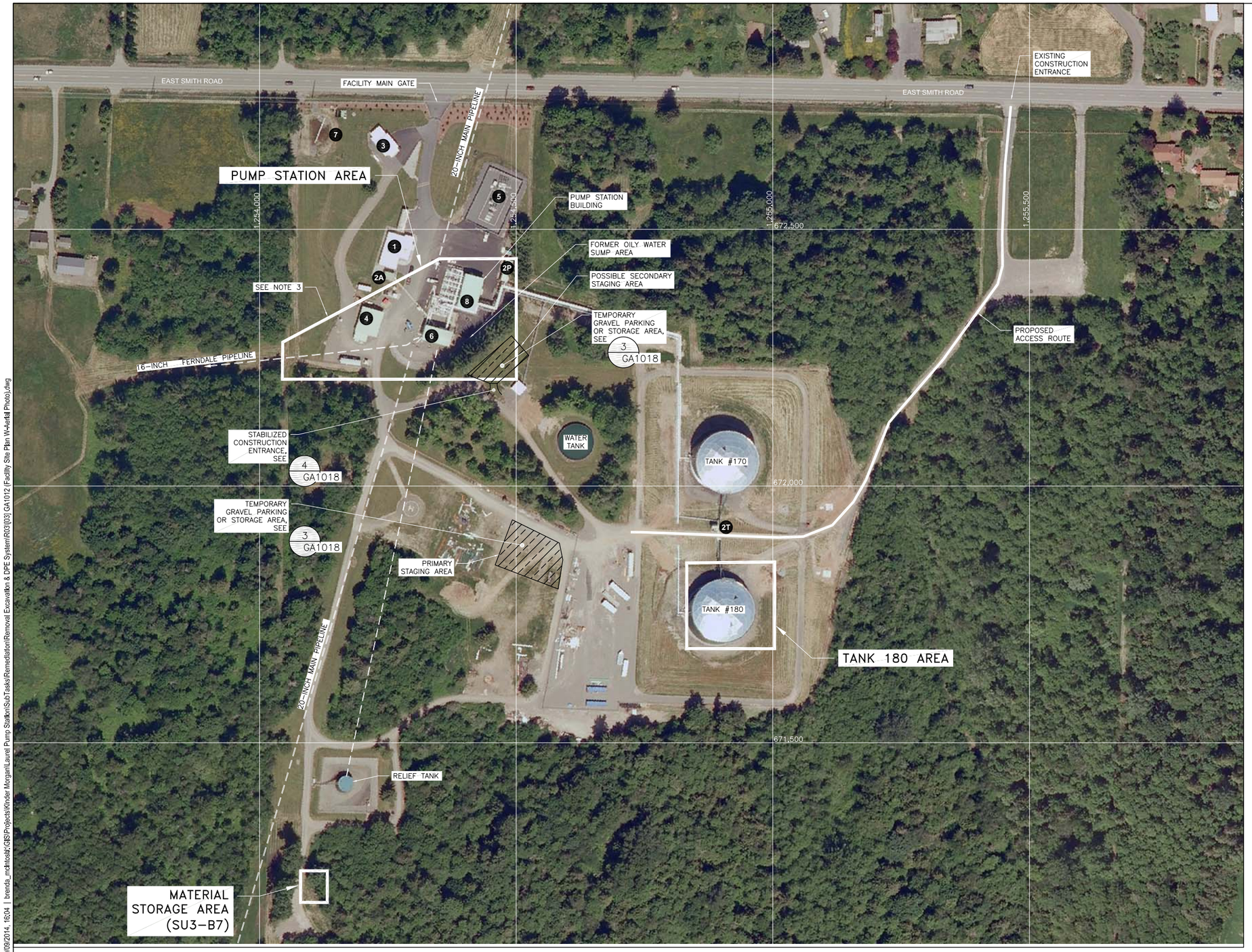
NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	ABBREVIATIONS, GENERAL NOTES, AND LEGEND	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER

AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	GA1011	2	A



NOTES:

1. AERIAL SOURCE: I-CUBED NFORMATION INTEGRATION & IMAGING LLC MAY 15, 2009.
2. COORDINATE GRID BASED ON WASHINGTON STATE PLANE, NORTH ZONE, NAD83.
3. SEE DOCUMENT NUMBERS GA1013, GA1017, AND CE1019 FOR A CLOSE-UP VIEW OF THE PUMP STATION AREA.
4. CONTRACTOR MAY REGRADE STORAGE AREAS WITH OWNER APPROVAL TO SUIT EQUIPMENT NEEDS.

LEGEND

- 1 LAUREL STATION OFFICE
- 2 MOTOR CONTROL CENTER BUILDINGS
- 3 MAINTENANCE SHOP
- 4 COLD STORAGE BUILDING
- 5 PUGET SOUND ENERGY SUBSTATION
- 6 PIPING MANIFOLD
- 7 RETENTION POND
- 8 PUMP STATION
- PIPELINE
- SITE BOUNDARY INDICATING AREAS DESIGNATED FOR REMEDIATION
- STAGING AREA
- STABILIZED CONSTRUCTION ENTRANCE

N

0 100 200

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CARL SCOTT BROWN — STATE OF WASHINGTON — 36033 — 9-9-14 — REGISTERED PROFESSIONAL ENGINEER

NO.	REFERENCE DRAWINGS	DRAWING NO.
4	WELL ABANDONMENT, PROTECTION, AND INSTALLATION PLAN	CE1019
3	EROSION SEDIMENT CONTROL DETAILS AND NOTES	GA1018
2	STAGING, WORK LIMITS, AND TEMPORARY EROSION CONTROL PLAN	GA1017
1	EXISTING CONDITIONS SITE PLAN-PUMP STATION AREA	GA1013

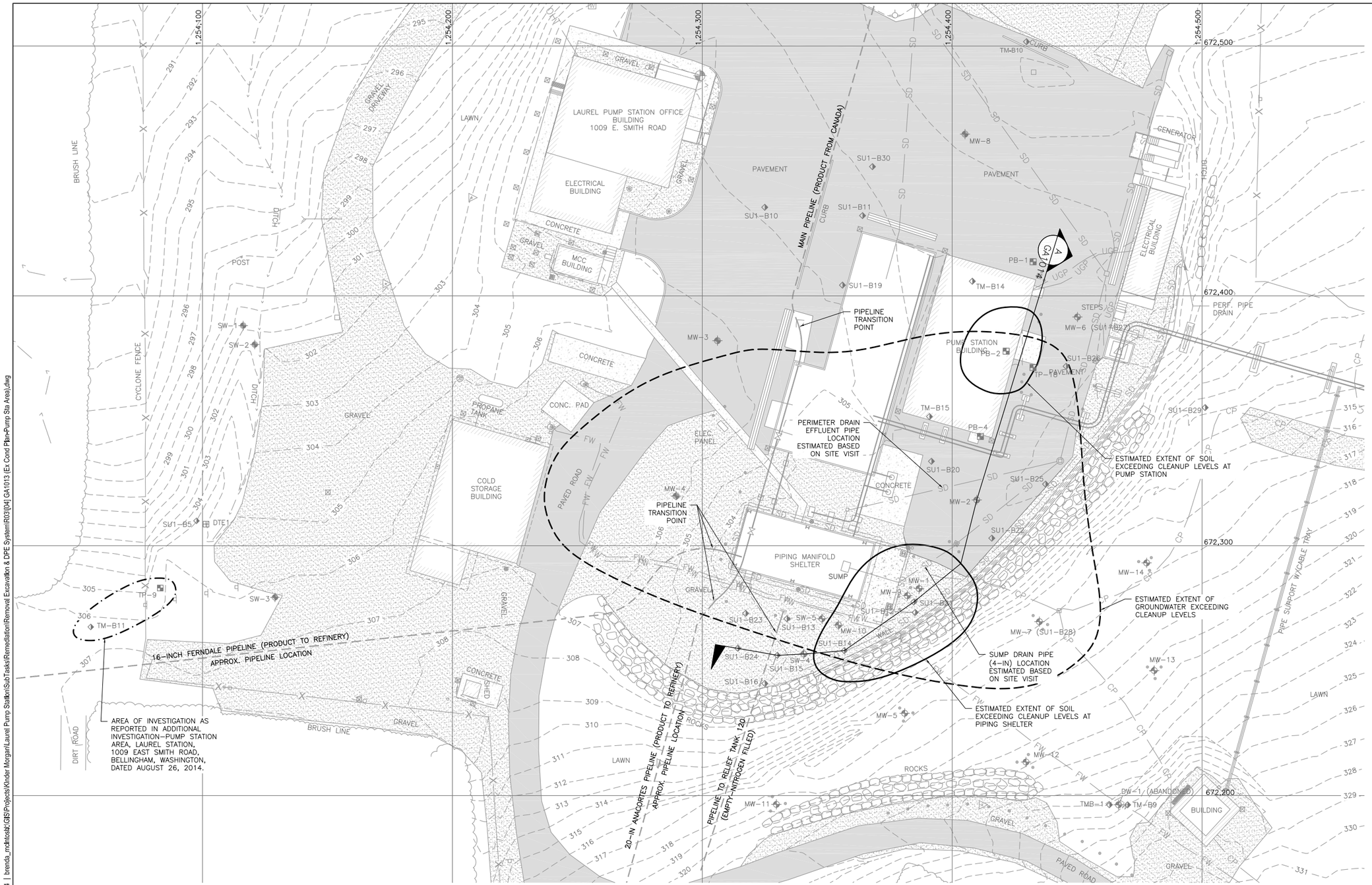
NO.	DATE	REVISION	DR.	CHK.	APPR.

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	FACILITY SITE PLAN WITH AERIAL PHOTO	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER					
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	GA1012	3	A

Mod: 09/09/2014, 08:43 | Plotted: 09/09/2014, 16:04 | brenda_mcintosh#:\GIS\Projects\Kinder Morgan\Laurel Pump Station\SubTasks\RemediationRemoval Excavation & DPE System\R03\[03] GA1012 (Facility Site Plan W-Aerial Photo).dwg



EXISTING FEATURES

- FOUND IRON PIPE OR REBAR/CAP
- FOUND OR SET SPIKE
- SANITARY SEWER MANHOLE
- SANITARY SEWER CLEANOUT
- STORM MANHOLE
- STORM CATCH BASIN
- YARD DRAIN
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- WATER VAULT
- UTILITY POLE
- GUY WIRE
- CP POWER BREAKER BOX
- GROUNDING ROD COVER
- YARD LIGHT
- MONITORING WELL
- BOLLARDS
- SIGN OR PIPELINE MARKER
- MAILBOX OR ELEC PANEL
- QUARRY SPALLS
- PAVEMENT
- CONCRETE
- GRAVEL
- FILL
- APPROX. LOCATION PIPELINE
- AERIAL TELEPHONE LINE
- DITCH
- FENCE LINE
- GAS LINE
- STORM CULVERT
- STORM DRAIN LINE
- UNDERGROUND POWER LINE (APPROX)
- FIRE WATER LINE
- CATHODIC PROTECTION (APPROX)
- AREA OF INVESTIGATION OF PREVIOUS TPH CONTAMINATION
- ESTIMATED EXTENT OF SOIL EXCEEDING CLEANUP LEVELS
- ESTIMATED EXTENT OF GROUNDWATER EXCEEDING CLEANUP LEVELS

N

0 20 40

CARY SCOTT BROWN
STATE OF WASHINGTON
20331
9-9-14
REGISTERED PROFESSIONAL ENGINEER

NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.
1	EXISTING CONDITIONS SECTION-PUMP STATION AREA	GA1014												

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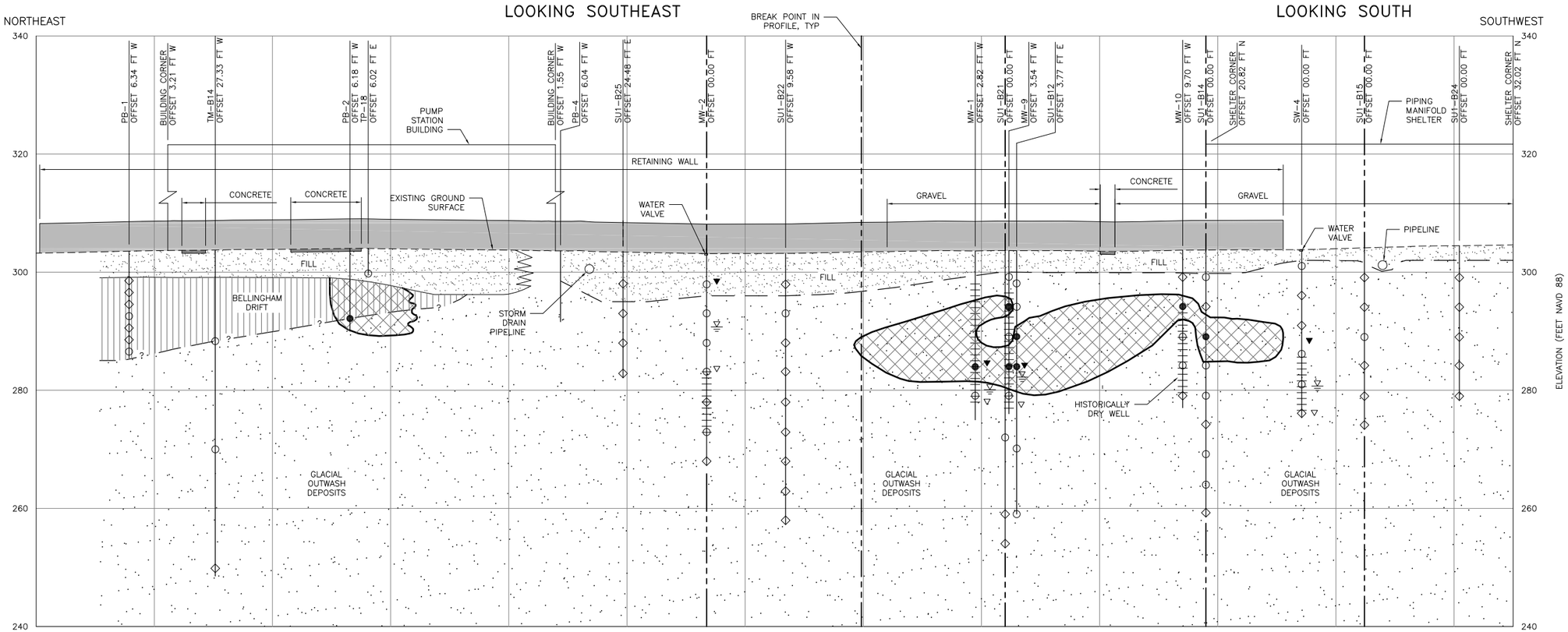
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	EXISTING CONDITIONS SITE PLAN-PUMP STATION AREA	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER					
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	GA1013	4	A



NOTES:

1. THE CROSS SECTION SHOWN IS BASED ON SURFACE TOPOGRAPHY DATA FROM THE JANUARY 2014 LAND SURVEY AND BORING LOGS FROM PREVIOUS INVESTIGATIONS. THE OFFSET DISTANCE FROM EACH BORING TO THE SECTION LINE IS SHOWN IN FEET. E INDICATES THE BORING IS EAST OF THE SECTION LINE; W INDICATES THE BORING IS WEST OF THE SECTION LINE.
2. LIMITS SHOWN FOR SOIL EXCEEDING CUL ARE ESTIMATED.

LEGEND

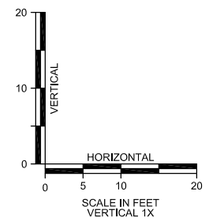
- FILL
- GLACIAL OUTWASH DEPOSITS
- APPROXIMATE LIMITS OF SOIL EXCEEDING CUL
- ASPHALT OR CONCRETE
- RETAINING WALL
- BELLINGHAM DRIFT
- SCREENED INTERVAL OF WELL
- GEOLOGIC UNIT BOUNDARY
- BREAK POINT IN PROFILE

FOR CONCENTRATION LEVEL INFORMATION, SEE REMEDIAL INVESTIGATION/ FEASIBILITY STUDY REPORT (URS 2014)

- ○ SOIL BELOW CLEANUP LEVELS
- ● SOIL EXCEEDS CLEANUP LEVELS
- ◇ SOIL IS NON DETECT
- ▽ AVERAGE GROUNDWATER ELEVATION
- ▼ HIGHEST GROUNDWATER ELEVATION
- ▽ LOWEST GROUNDWATER ELEVATION
- ? DATA NOT AVAILABLE TO DETERMINE BELLINGHAM DRIFT

EXISTING CONDITIONS

A SECTION
GA1013
SCALE: AS SHOWN



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(206) 438-2700

CARL SCOTT BROWN
STATE OF WASHINGTON
20531
9-9-14
REGISTERED PROFESSIONAL ENGINEER

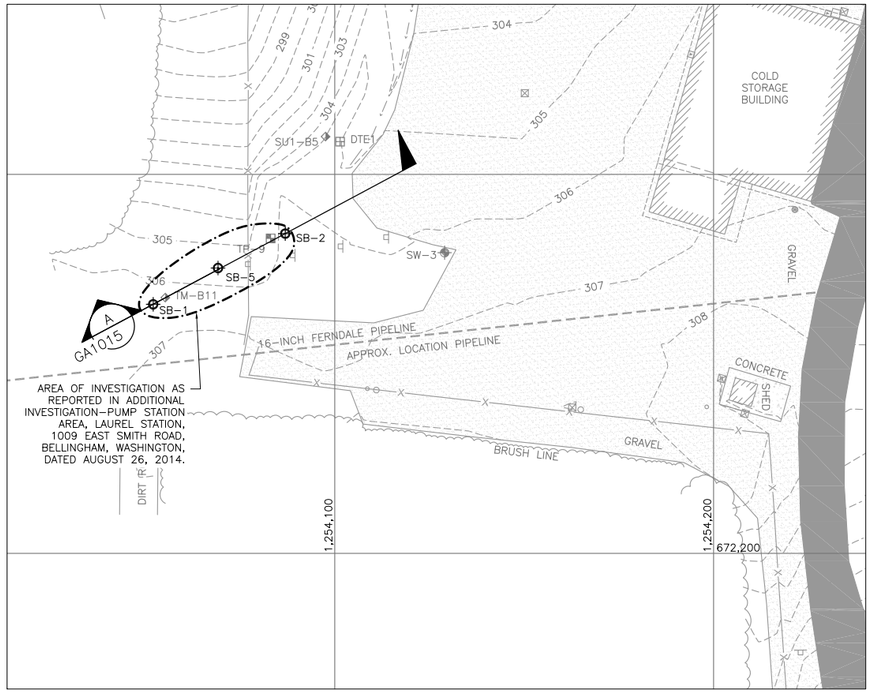
NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.
1	EXISTING CONDITIONS SITE PLAN–PUMP STATION AREA	GA1013												

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	EXISTING CONDITIONS SECTION –PUMP STATION AREA	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER

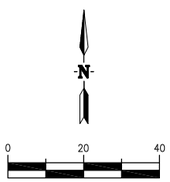
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	GA1014	5	A

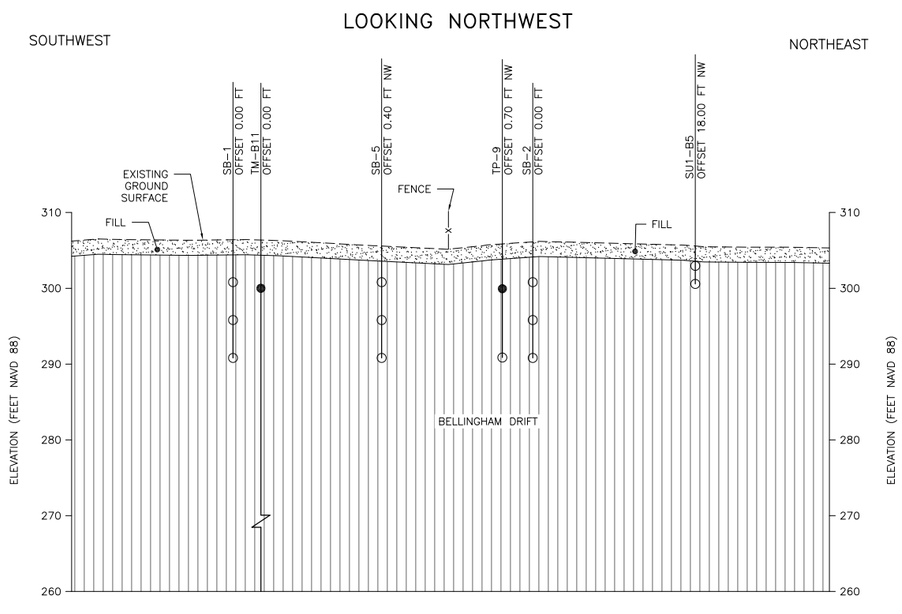


NOTE: SEE GA1013 FOR RELATIVE LOCATION.

EXISTING CONDITIONS AND INVESTIGATION SITE PLAN

SCALE: 1–IN=20–FT

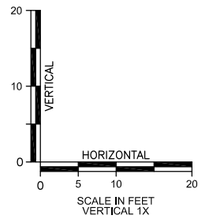




EXISTING CONDITIONS AND INVESTIGATION

A / GA1015 SECTION

SCALE: AS SHOWN



NOTES:

1. THE CROSS SECTION SHOWN IS BASED ON SURFACE TOPOGRAPHY DATA FROM THE JANUARY 2014 LAND SURVEY AND BORING LOGS FROM PREVIOUS INVESTIGATIONS. THE OFFSET DISTANCE FROM EACH BORING TO THE SECTION LINE IS SHOWN IN FEET. S INDICATES THE BORING IS SOUTH OF THE SECTION LINE; N INDICATES THE BORING IS NORTH OF THE SECTION LINE.
2. TP–9 AND TM–B11 WERE COMPLETED AND ASSOCIATED SAMPLES WERE COLLECTED IN 1991 AND 1992.
3. SB–1, SB–2 AND SB–5 WERE DRILLED AND ASSOCIATED SAMPLES WERE COLLECTED IN JULY 2014 TO VERIFY CURRENT CONDITIONS.

LEGEND

- FILL
- BELLINGHAM DRIFT
- AREA OF INVESTIGATION OF PREVIOUS TPH CONTAMINATION
- SOIL BELOW CLEANUP LEVELS
- SOIL EXCEEDS CLEANUP LEVELS
- SB–1 SOIL BORING LOCATIONS

SOIL BORING LOCATIONS

POINT NO.	NORTHING	EASTING
SB–1	672265.7	1254052.1
SB–2	672284.4	1254087.0
SB–5	672275.3	1254069.2

CARL SCOTT BROWN — STATE OF WASHINGTON — 36533 — REGISTERED PROFESSIONAL ENGINEER — 9-9-14

NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.

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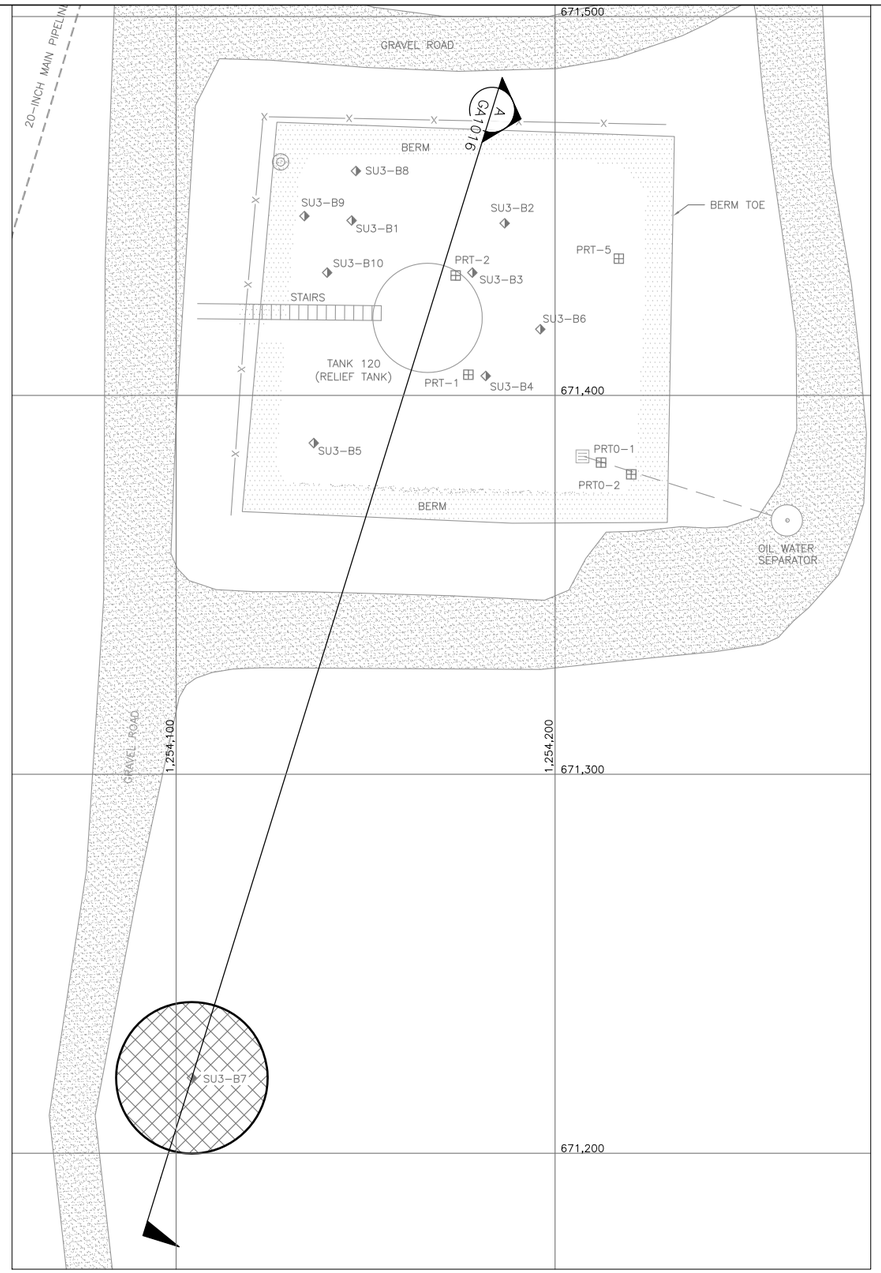
TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN: L. JILES	EXISTING CONDITIONS AND INVESTIGATION PLAN AND SECTION –SW PUMP STATION AREA	SHEET SIZE: D
CHECKED: P. McCULLOUGH		SCALE: AS NOTED
APPROVED: C. BROWN	LAUREL STATION	DATE: 09/09/14

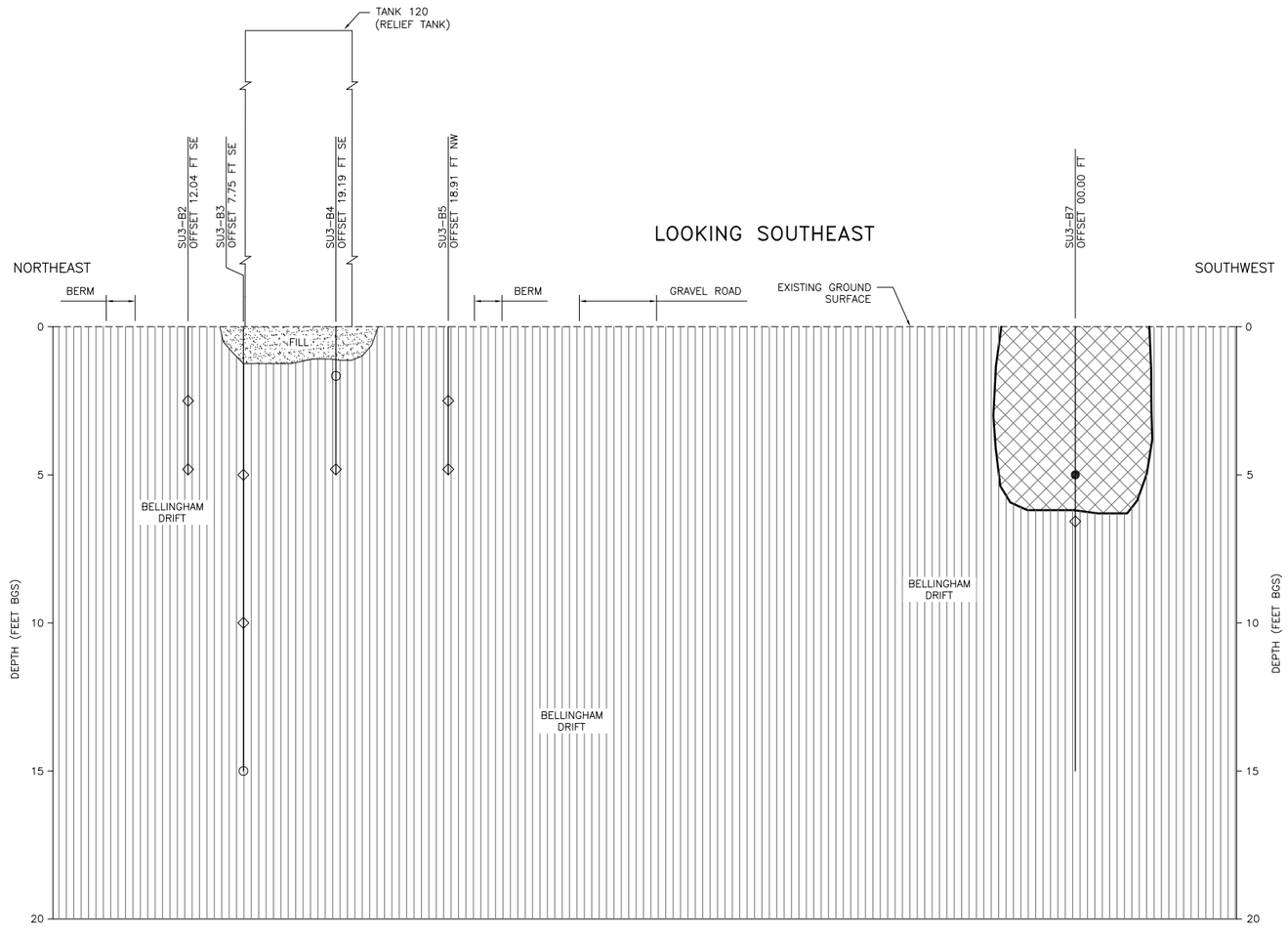
DRAWING NUMBER				
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05–51041	C1A01	UL00	GA1015	6	A



NOTE: SEE GA1012 FOR RELATIVE LOCATION.

EXISTING CONDITIONS SITE PLAN

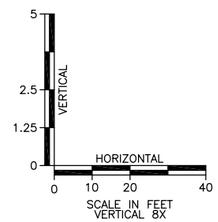
SCALE: 1-IN=20-FT



EXISTING CONDITIONS

A SECTION
GA1016

SCALE: AS SHOWN



LEGEND

- FILL
- APPROXIMATE LIMITS OF SOIL EXCEEDING CUL
- BELLINGHAM DRIFT
- SOIL BORING

FOR CONCENTRATION LEVEL INFORMATION, SEE REMEDIAL INVESTIGATION/ FEASIBILITY STUDY REPORT (URS 2014)

- ○ SOIL BELOW CLEANUP LEVELS
- ● SOIL EXCEEDS CLEANUP LEVELS
- ◇ SOIL IS NON DETECT

NOTES:

1. LIMITS SHOWN FOR SOIL EXCEEDING CUL ARE ESTIMATED.

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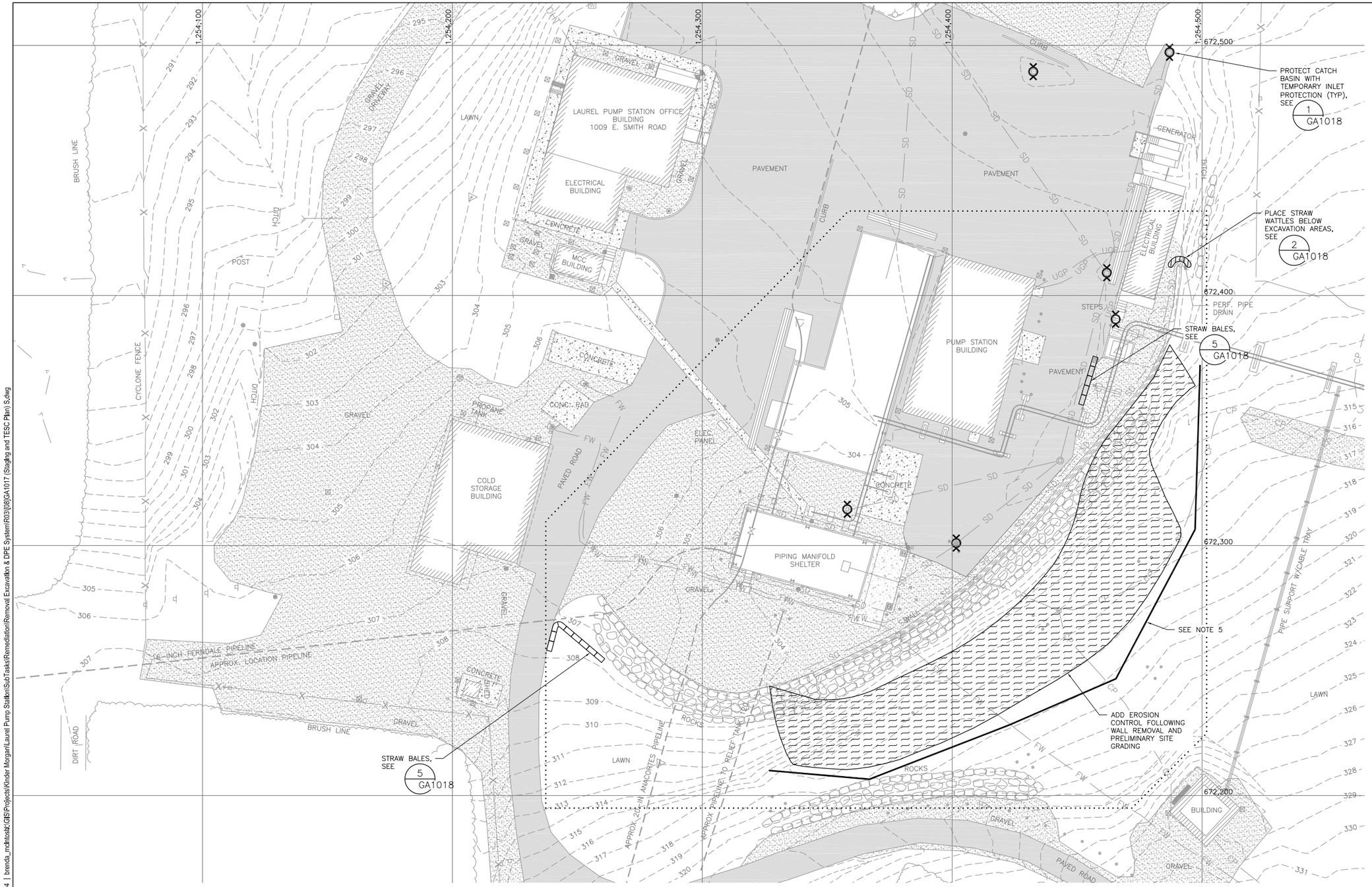
TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	EXISTING CONDITIONS SITE PLAN AND SECTION– MATERIAL STORAGE AREA (SU3–B7) LAUREL STATION	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN		DATE 09/09/14

DRAWING NUMBER

AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	GA1016	7	A



NOTES:

1. CONSTRUCTION LIMITS NOT SURROUNDED BY FENCING SHALL BE KEPT OPEN TO PUBLIC WHILE NO ACTIVE WORK IS BEING CONDUCTED.
2. CONTRACTOR SHALL PUT UP TEMPORARY FENCES IN ACCORDANCE WITH SECTION 01 50 00 TO KEEP PUBLIC OUT OF CONSTRUCTION AREAS WHICH ARE NOT SECURED BY CONSTRUCTION FENCE.
3. TEMPORARY FENCING IS THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED AT THE COMPLETION OF WORK.
4. SEE DOCUMENT NO. GA1012 FOR LOCATIONS OF PRIMARY AND SECONDARY STAGING AREAS.
5. CONTRACTOR SHALL DIVERT SURFACE WATER AWAY FROM WORK AREAS.

LEGEND

- ACTIVE WORK LIMITS
- WATTLES
- TEMPORARY INLET PROTECTION
- STRAW BALE
- TEMPORARY MULCH AREA

GINA MICHELLE FRANCO — STATE OF WASHINGTON — 50444 — REGISTERED PROFESSIONAL ENGINEER — 9-9-14

CARY SCOTT BROWN — STATE OF WASHINGTON — 36533 — REGISTERED PROFESSIONAL ENGINEER — 9-9-14

NO.	REFERENCE DRAWINGS	DRAWING NO.
2	EROSION SEDIMENT CONTROL DETAILS AND NOTES	GA1018
1	FACILITY SITE PLAN WITH AERIAL PHOTO	GA1012

NO.	DATE	REVISION	DR.	CHK.	APPR.

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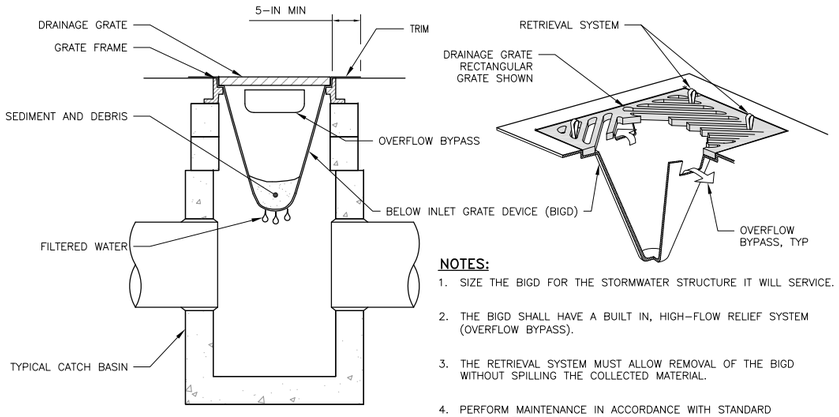
SEATTLE, WA 98101-1616
(206) 438-2700

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	STAGING, WORK LIMITS, AND TEMPORARY EROSION CONTROL PLAN	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER					
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	GA1017	8	A

Mod: 09/09/2014, 12:56 | Plotted: 09/09/2014, 16:04 | brenda_mcintosh#:\GIS\Projects\Kinder Morgan\Laurel Pump Station\SubTasks\Remediation\Removal Excavation & DPE System\R03\[08]GA1017 (Staging and TESC Plan) S.dwg

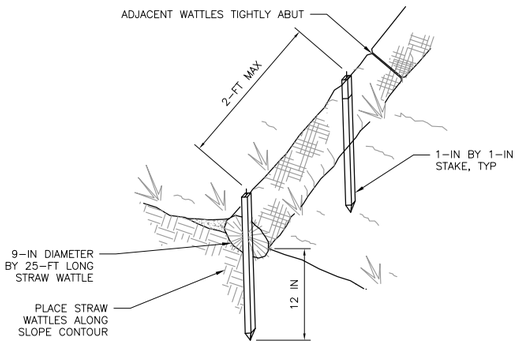


NOTES:

1. SIZE THE BIGD FOR THE STORMWATER STRUCTURE IT WILL SERVICE.
2. THE BIGD SHALL HAVE A BUILT IN, HIGH–FLOW RELIEF SYSTEM (OVERFLOW BYPASS).
3. THE RETRIEVAL SYSTEM MUST ALLOW REMOVAL OF THE BIGD WITHOUT SPILLING THE COLLECTED MATERIAL.
4. PERFORM MAINTENANCE IN ACCORDANCE WITH STANDARD SPECIFICATION WSDOT 8–01.3(15).

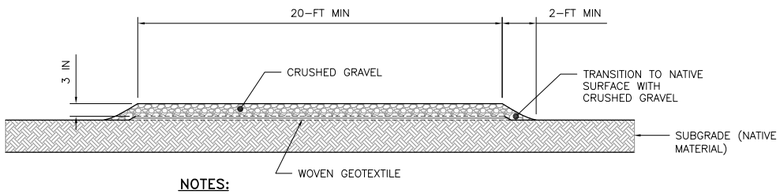
TEMPORARY INLET PROTECTION

1 DETAIL GA1017 NTS



TYPICAL STRAW WATTLE INSTALLATION

2 DETAIL GA1017 NTS

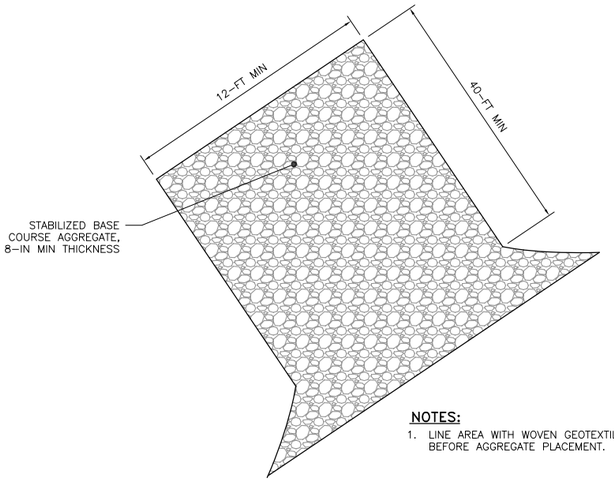


NOTES:

1. PREPARE SUBGRADE AND FINAL SURFACE WITH CROWN SO THAT IT DRAINS FROM CENTERLINE TO EDGES.
2. SIDE SLOPES SHALL BE 3:1 MAX.
3. PLACE STABILIZED BASE COURSE AGGREGATE IN A SINGLE LAYER OVER WOVEN GEOTEXTILE.

TEMPORARY GRAVEL PARKING OR STORAGE AREA

3 DETAIL GA1012 NTS

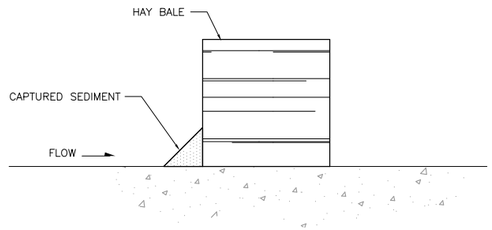


NOTES:

1. LINE AREA WITH WOVEN GEOTEXTILE BEFORE AGGREGATE PLACEMENT.

STABILIZED CONSTRUCTION ENTRANCE

4 DETAIL GA1012 NTS



TYPICAL STRAW BALE INSTALLATION

5 DETAIL GA1017 NTS

NOTES:

1. THROUGHOUT THE DURATION OF THE PROJECT, CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE TO ALL DISTURBED AREAS AND CONTROL THE QUALITY OF THE EFFLUENT RUNOFF.
2. THE IMPLEMENTATION OF ESC MEASURES SHOWN ON THE PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES ARE THE RESPONSIBILITY OF CONTRACTOR UNTIL WORK IS COMPLETED AND APPROVED OR IS DETERMINED TO BE NO LONGER REQUIRED BY THE OWNER.
3. ESC FACILITIES SHOWN ON THE PLANS SHALL BE CONSTRUCTED PRIOR TO ANY EARTH DISTURBING ACTIVITIES SO AS TO ENSURE THAT THE TRANSPORT OF SEDIMENT TO SURFACE WATERS, DRAINAGE SYSTEMS, AND ADJACENT PROPERTIES IS MINIMIZED.
4. ESC FACILITIES SHOWN ON THE PLANS ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR EXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS (E.G., ADDITIONAL TEMPORARY INLET PROTECTION, SILT FENCE, ETC.).
5. THE BOUNDARIES OF THE EXCAVATION LIMITS SHOWN ON THESE PLANS SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
6. TEMPORARY INLET PROTECTION SHALL BE PROVIDED IN ALL EXISTING CATCH BASINS WITHIN 50 FEET OF THE EXCAVATION AND STOCKPILED MATERIALS.
7. ANY AREAS OF EXPOSED SOILS THAT WILL NOT BE DISTURBED FOR 2 DAYS DURING THE WET SEASON OR 7 DAYS DURING THE DRY SEASON SHALL BE IMMEDIATELY STABILIZED WITH THE APPROVED ESC METHODS (E.G., MULCHING, SEEDING, PLASTIC COVERING, ETC.).
8. ANY AREAS NEEDING ESC MEASURES NOT REQUIRING IMMEDIATE ATTENTION SHALL BE ADDRESSED WITHIN 1 WEEK.
9. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTION.
10. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND A MINIMUM OF ONCE A MONTH OR WITHIN 48 HOURS FOLLOWING A STORM EVENT.
11. AT NO TIME SHALL MORE THAN 1 FT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PROJECT COMPLETION. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT–LADEN WATER INTO THE DOWNSTREAM SYSTEM. ALL LIQUIDS AND SEDIMENTS REMOVED FROM CATCH BASINS MUST BE TAKEN OFF SITE FOR DISPOSAL.
12. STRAW MULCH UTILIZATION SHALL BE APPLIED AT A MIN THICKNESS OF 3 IN.
13. THE PAVED SITE ROADS AND PARKING LOT SURFACES SHALL BE CLEANED AT THE END OF EACH DAY'S OPERATION WITH A POWER BROOM OR OTHER APPROVED MEANS WHEN SEDIMENT ACCUMULATES FROM WORK ACTIVITIES.
14. CONTRACTOR MAY IMPLEMENT LINEAR RUN–ON CONTROLS TO PREVENT WATER FROM ENTERING THE CONSTRUCTION AREA. SEE GA1017
15. CONTRACTOR SHALL COVER AND SECURE MATERIAL ON THE TRUCKS DURING OFF–SITE TRAVEL, IF NECESSARY, TO PREVENT SPILLAGE OR LOSS OF MATERIAL.
16. CONTRACTOR SHALL REFER TO "WASHINGTON STATE DEPARTMENT OF ECOLOGY, STORMWATER MANUAL FOR WESTERN WASHINGTON, AUGUST 2012" FOR REFERENCE TO NECESSARY EROSION AND SEDIMENT CONTROLS.
17. ALL STORMWATER RUNOFF FROM THE CONSTRUCTION SITE WHICH COMES IN CONTACT WITH CONTAMINATED SOIL SHALL BE TREATED IN ORDER TO MEET DISCHARGE LIMITS.
18. CLEAN CATCH BASINS PRIOR TO INSTALLING TEMPORARY INLET PROTECTION. UPON COMPLETION OF THE PROJECT, REMOVE TEMPORARY INLET PROTECTION AND CLEAN CATCH BASINS.
19. IF IT IS RAINING DURING CONSTRUCTION, OR A STOCKPILE OF SOIL IS STORED FOR MORE THAN 2 DAYS, COVER THE STOCK PILE WITH 6–MIL MIN PLASTIC AND SECURE.

GINA MICHELLE FRANCO — STATE OF WASHINGTON — 50447 — REGISTERED PROFESSIONAL ENGINEER — 12-4-14

CARY SCOTT BROWN — STATE OF WASHINGTON — 36531 — REGISTERED PROFESSIONAL ENGINEER — 9-9-14

NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.
2	STAGING, WORK LIMITS, AND TEMPORARY EROSION CONTROL PLAN	GA1017												
1	FACILITY SITE PLAN WITH AERIAL PHOTO	GA1012												

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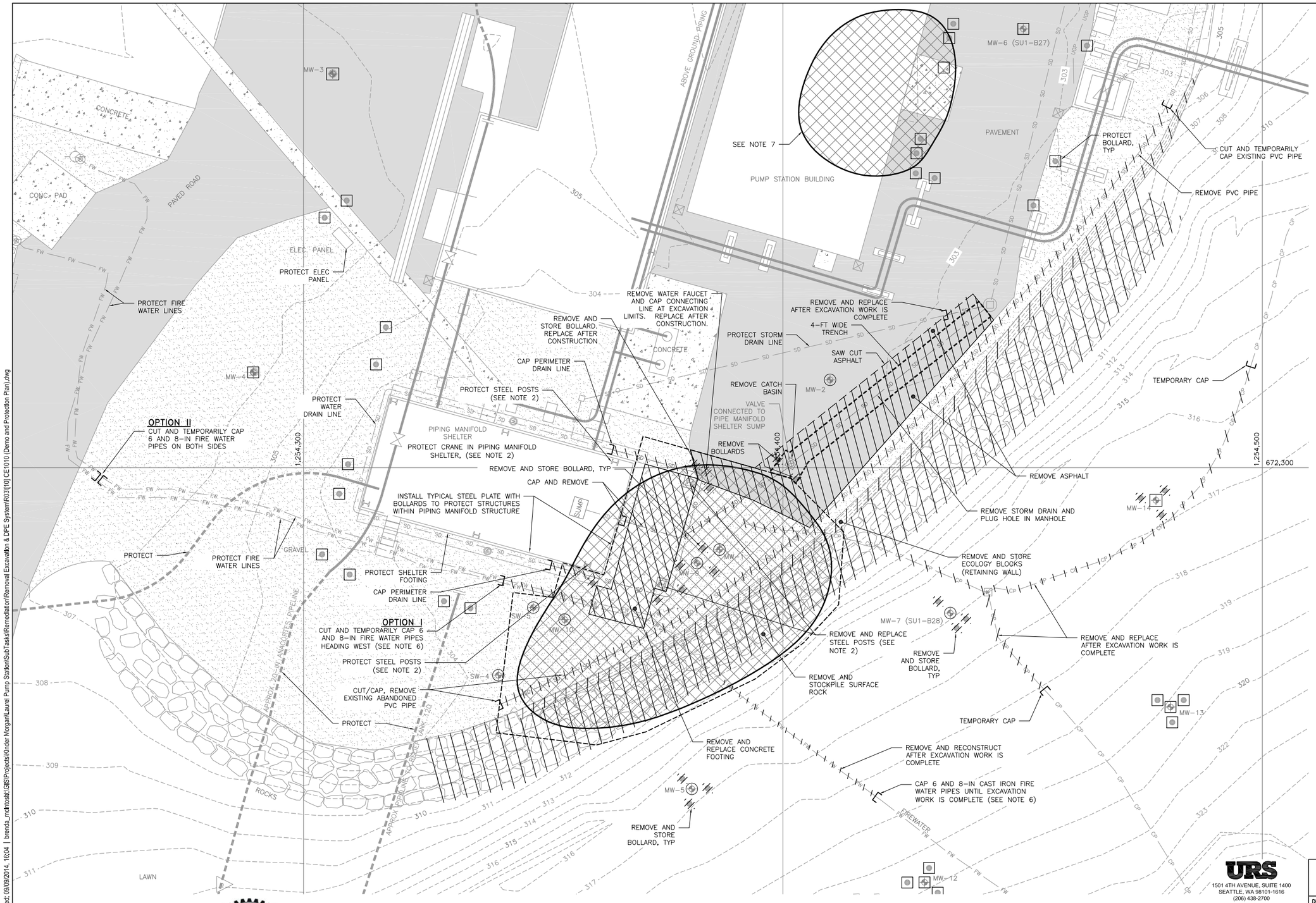
TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	EROSION SEDIMENT CONTROL DETAILS AND NOTES	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER

AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05–51041	C1A01	UL00	GA1018	9	A



NOTES:

1. VERTICAL AND HORIZONTAL EXTENTS OF SOIL EXCEEDING CUL MAY CHANGE BASED ON SITE CONDITIONS AND SOIL CHARACTERIZATION.
2. SEE DOCUMENT NO. CS1011 FOR PIPING SHELTER DEMOLITION, PROTECTION, AND FOUNDATION PLANS.
3. SEE DOCUMENT NO. CE1019 FOR WELL ABANDONMENT, PROTECTION AND INSTALLATION PLAN.
4. PROTECT EXISTING STRUCTURES (PIPELINES, ADJACENT BUILDINGS, ETC.).
5. SEE DOCUMENT NO. GA1013 FOR ESTIMATED UTILITY LOCATIONS.
6. CONTRACTOR SHALL PROPOSE CONNECTION FITTINGS AND HOSE FOR ENGINEER APPROVAL. OPTION I SHALL BE ATTEMPTED FIRST IF EXCAVATION COULD UNDERMINE STRUCTURES THEN USE OPTION II.
7. SOIL ABOVE CUL UNDER PUMP STATION BUILDING SHALL REMAIN IN PLACE FOR CLEANUP USING DPE SYSTEM.

LEGEND

- APPROXIMATE LIMITS OF SOIL EXCEEDING CUL
- EXCAVATION LIMITS
- TRENCH
- REMOVE EXISTING ABANDONED PVC STORMDRAIN PIPE
- REMOVE STORM DRAIN
- REMOVE AND CAP CATHODIC PROTECTION LINE. REPLACE.
- REMOVE FIRE WATER LINE
- REMOVE ECOLOGY BLOCKS (RETAINING WALL)
- REMOVE AND REPLACE CONCRETE FOOTING
- REMOVE AND REPLACE ASPHALT
- REMOVE CATCH BASIN
- REMOVE AND STORE BOLLARD. REPLACE AFTER CONSTRUCTION ACCORDING TO DOCUMENT NO. CE1023
- PROTECT BOLLARD
- REMOVE WATER FAUCET
- REMOVE AND STOCKPILE ROCK
- PROTECT GROUNDWATER MONITORING WELL
- ABANDON WELL (HISTORICALLY DRY)
- ABANDON WELL (EXCAVATION ACCESS), SEE NOTE 3
- CUT AND CAP

N

0 10 20

CARL SCOTT BROWN
STATE OF WASHINGTON
36033
9-9-14
REGISTERED PROFESSIONAL ENGINEER

NO.	REFERENCE DRAWINGS	DRAWING NO.
4	PIPING SHELTER DEMOLITION, PROTECTION, AND FOUNDATION PLANS	CS1011
3	SITE RESTORATION AND GRADING PLAN	CE1023
2	WELL ABANDONMENT, PROTECTION, AND INSTALLATION PLAN	CE1019
1	EXISTING CONDITIONS SITE PLAN–PUMP STATION AREA	GA1013

NO.	DATE	REVISION	DR.	CHK.	APPR.

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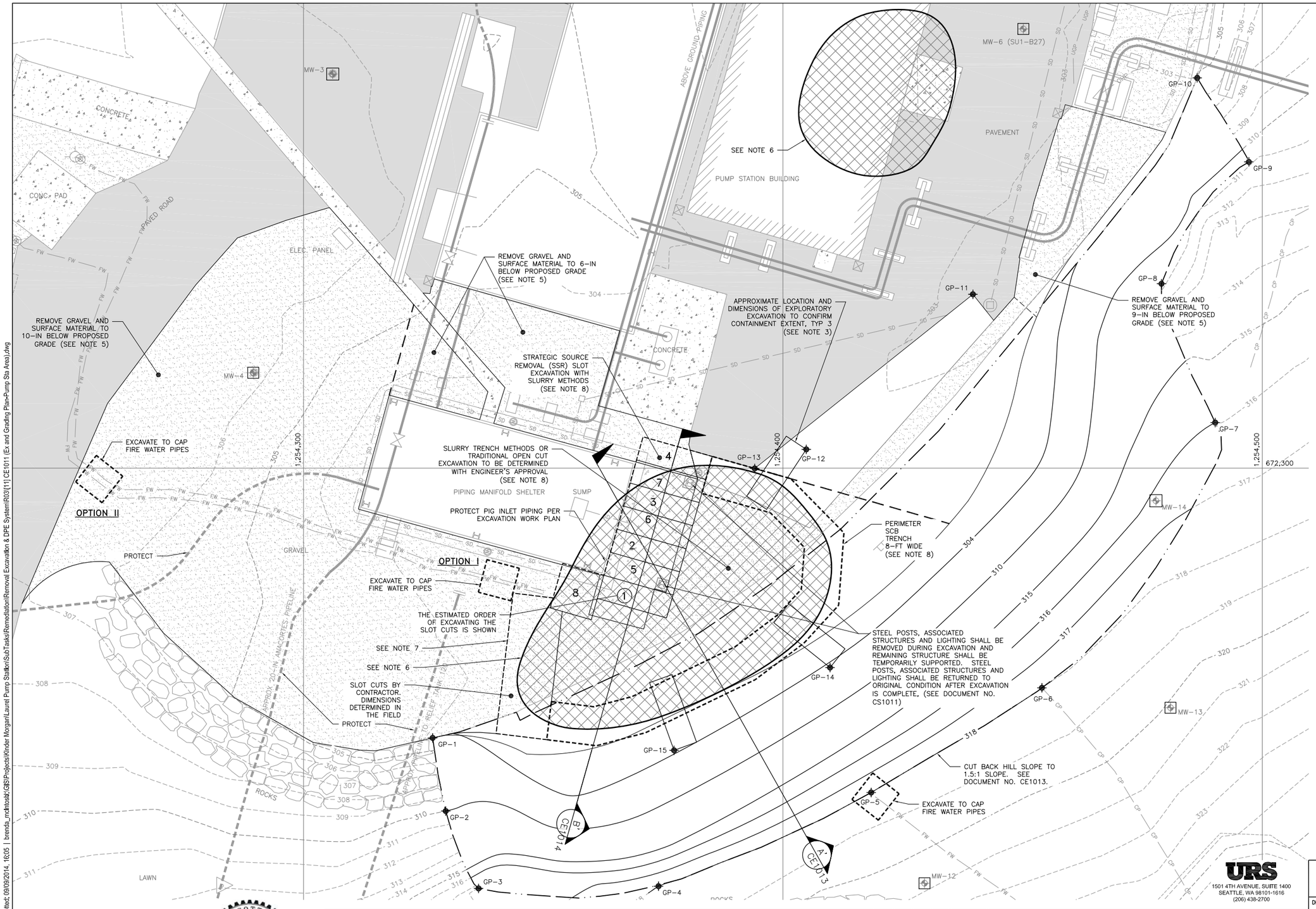
TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	DEMOLITION AND PROTECTION PLAN	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER					
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	CE1010	10	A

Mod: 09/09/2014, 13:44 | Plotted: 09/09/2014, 16:04 | brenda_mcintosh#:\GIS\Projects\Kinder Morgan\Laurel Pump Station\SubTasks\Remediation\Removal Excavation & DPE System\R03\[10] CE1010 (Demo and Protection Plan).dwg



NOTES:

1. SSR EXCAVATION SHALL HAVE A MINIMUM VERTICAL EXTENT OF 20 FEET, BUT HORIZONTAL EXTENTS MAY CHANGE BASED ON SITE CONDITIONS AND SOIL CHARACTERIZATION. CONTRACTOR SHALL USE EQUIPMENT CAPABLE OF REACHING 25 FT BGS.
2. METHOD USED TO REMOVE CONTAMINATED SOIL SHALL PROTECT EXISTING PIPING AND EQUIPMENT FROM DAMAGE.
3. EXPLORATORY TRENCHES SHALL BE EXCAVATED USING CONVENTIONAL EXCAVATION METHODS. IF SIDEWALLS CAVE IN THEN CONTRACTOR SHALL SWITCH TO SLURRY EXCAVATION.
4. EXCAVATION OF CONTAMINATED SOIL SHALL BE PERFORMED USING SLURRY METHODS TO SUPPORT EXCAVATION SIDEWALLS IN AREAS ADJACENT TO SENSITIVE STRUCTURES SUCH AS THE PIPING MANIFOLD SHELTER AND TRANSFER PIPING, ALONG LIMITED ACCESS BOUNDARIES AND IN AREAS THAT ARE DIFFICULT TO REMOVE CONTAMINATED SOIL TO DEPTH WITHOUT SIGNIFICANTLY IMPACTING THE SURROUNDING AREA. CONVENTIONAL EXCAVATION MAY BE USED TO REMOVE CONTAMINATED SOILS IN AREAS THAT ARE MORE READILY ACCESSIBLE IF APPROVED BY ENGINEER.
5. DEPTH MAY VARY BASED ON SITE CONDITIONS.
6. THE SURFACE AREA OF SOIL EXCEEDING CUL IN THE PUMP STATION AREA IS 892 SQUARE FEET AND THE PIPING MANIFOLD AREA IS 2,482 SQUARE FEET.
7. THE SURFACE AREA WHERE CONTAMINATED SOIL REMOVAL IS PLANNED IS 2,888 SQUARE FEET.
8. SSR SLOT CUT EXCAVATION AND THE PERIMETER SCB TRENCH SHALL BE COMPLETELY BACKFILLED WITH SCB. THE CENTRAL PORTION OF THE EXCAVATION AREA SHALL HAVE THE BOTTOM 3 FEET MINIMUM BACKFILLED WITH SCB.

LEGEND

- APPROXIMATE LIMITS OF SOIL EXCEEDING CUL
- EXCAVATION LIMITS
- TRENCH
- NEW ASPHALT THICKNESS CHANGE
- NEW ASPHALT PAVEMENT BOUNDARY LINE
- HILL SLOPE EXCAVATION LIMITS
- PROTECT GROUNDWATER MONITORING WELL
- ABANDON WELL (HISTORICALLY DRY)
- 1 — SSR SLOT DESIGNATION AND ESTIMATED ORDER OF EXCAVATION
- LP-1 — CONTROL POINT
- 315 — NEW CONTOURS
- 305 — EXISTING MAJOR CONTOURS
- 306 — EXISTING MINOR CONTOURS

CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
GP-1	672243.8	1254326.9	304
GP-2	672228.5	1254329.7	310
GP-3	672212.4	1254336.5	317
GP-4	672212.8	1254374.0	318
GP-5	672232.4	1254418.4	318
GP-6	672254.2	1254454.0	318
GP-7	672309.5	1254490.2	316
GP-8	672338.4	1254479.0	311
GP-9	672363.8	1254497.2	311
GP-10	672381.4	1254486.4	305
GP-11	672336.2	1254439.6	303
GP-12	672303.9	1254404.9	303
GP-13	672299.9	1254394.1	303
GP-14	672258.4	1254409.8	304
GP-15	672258.4	1254409.8	304

CARY SCOTT BROWN — STATE OF WASHINGTON — 36533 — REGISTERED PROFESSIONAL ENGINEER — 9/9/14

NO.	REFERENCE DRAWINGS	DRAWING NO.
4	PIPING SHELTER DEMOLITION, PROTECTION, AND FOUNDATION PLANS	CS1011
3	SSR EXCAVATION SECTION	CE1014
2	SLOPE AND RETAINING WALL EXCAVATION SECTION	CE1013
1	EXCAVATION AND GRADING PLAN–PUMP STATION AREA	CE1011

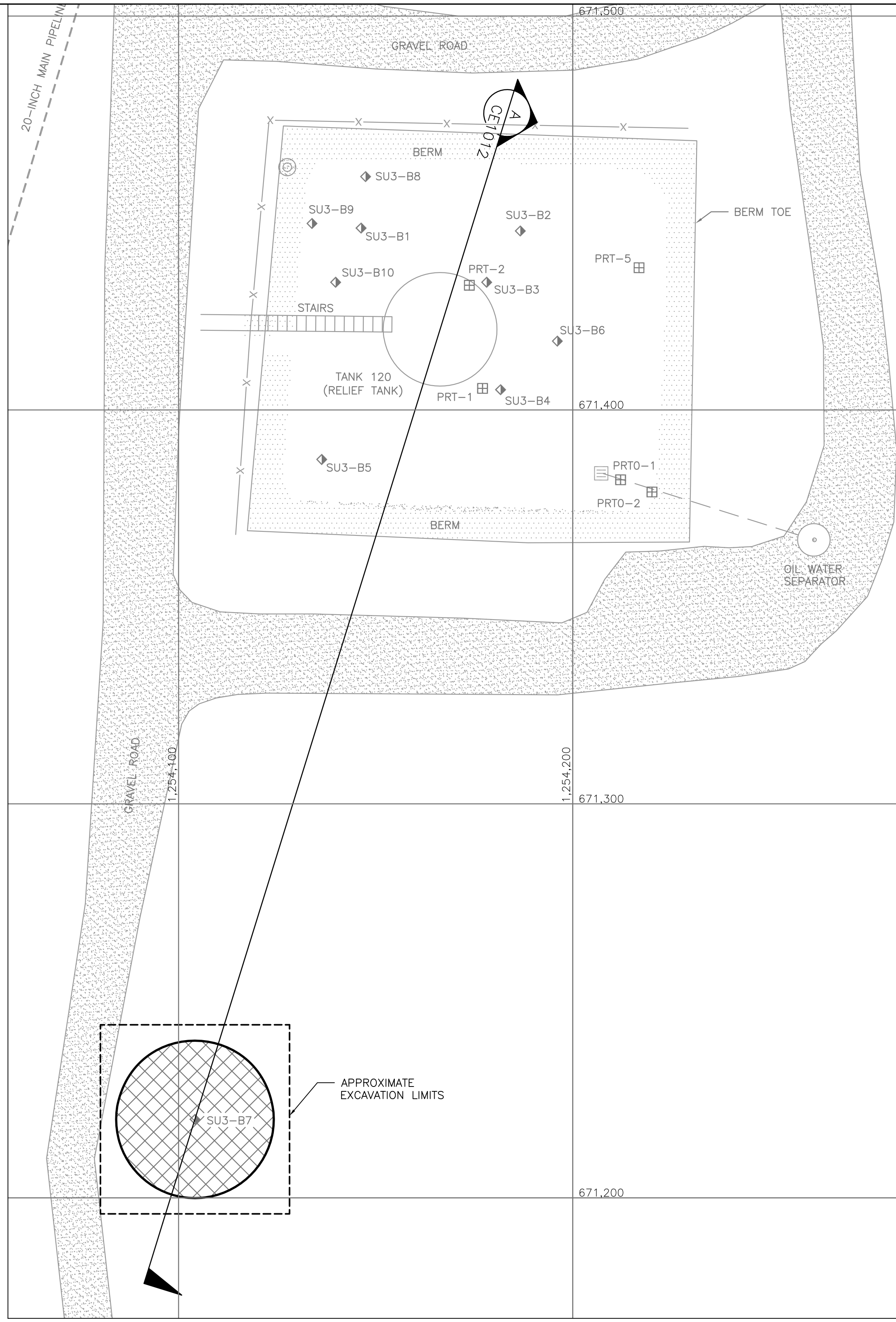
NO.	DATE	REVISION	DR.	CHK.	APPR.

URS
1501 4TH AVENUE, SUITE 1400
SEATTLE, WA 98101-1616
(206) 438-2700

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	EXCAVATION AND TEMPORARY GRADING PLAN– PUMP STATION AREA	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER					
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	CE1011	11	A



EXISTING CONDITIONS AND PROPOSED EXCAVATION SITE PLAN

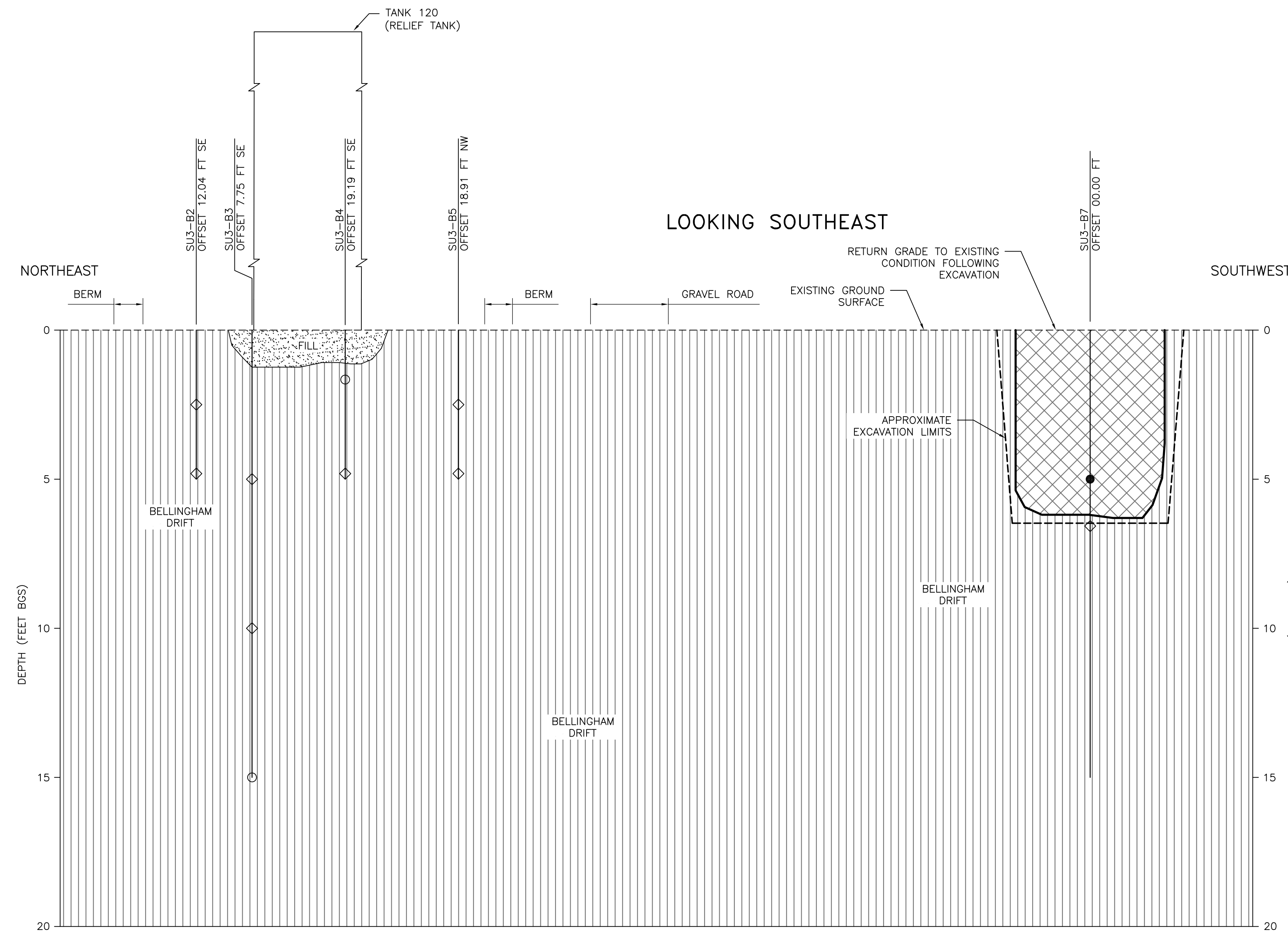
SCALE: 1–IN=20–FT

NOTE:

SEE GA1012 FOR RELATIVE LOCATION.

N

0 20 40



EXISTING CONDITIONS AND PROPOSED EXCAVATION

A SECTION CE1012

SCALE: AS SHOWN

SCALE IN FEET
VERTICAL 8X

VERTICAL: 0, 1.25, 2.5, 5

HORIZONTAL: 0, 10, 20, 40

LEGEND

- FILL
- APPROXIMATE LIMITS OF SOIL EXCEEDING CUL
- BELLINGHAM DRIFT
- APPROXIMATE EXCAVATION LIMITS
- SOIL BORING

FOR CONCENTRATION LEVEL INFORMATION, SEE REMEDIAL INVESTIGATION/ FEASIBILITY STUDY REPORT (URS 2014)

- ○ SOIL BELOW CLEANUP LEVELS
- ● SOIL EXCEEDS CLEANUP LEVELS
- ◇ SOIL IS NON DETECT

NOTES:

1. LIMITS SHOWN FOR SOIL EXCEEDING CUL ARE ESTIMATED.
2. VERTICAL AND HORIZONTAL EXTENTS MAY CHANGE BASED ON SITE CONDITIONS, SOIL CHARACTERISTICS AND CONTAMINANT EXTENT.
3. THE CROSS SECTION SHOWN IS BASED ON SURFACE TOPOGRAPHY DATA FROM THE JANUARY 2014 LAND SURVEY AND BORING LOGS FROM PREVIOUS INVESTIGATIONS. THE OFFSET DISTANCE FROM EACH BORING TO THE SECTION LINE IS SHOWN IN FEET. SE INDICATES THE BORING IS SOUTHEAST OF THE SECTION LINE; NW INDICATES THE BORING IS NORTHWEST OF THE SECTION LINE.

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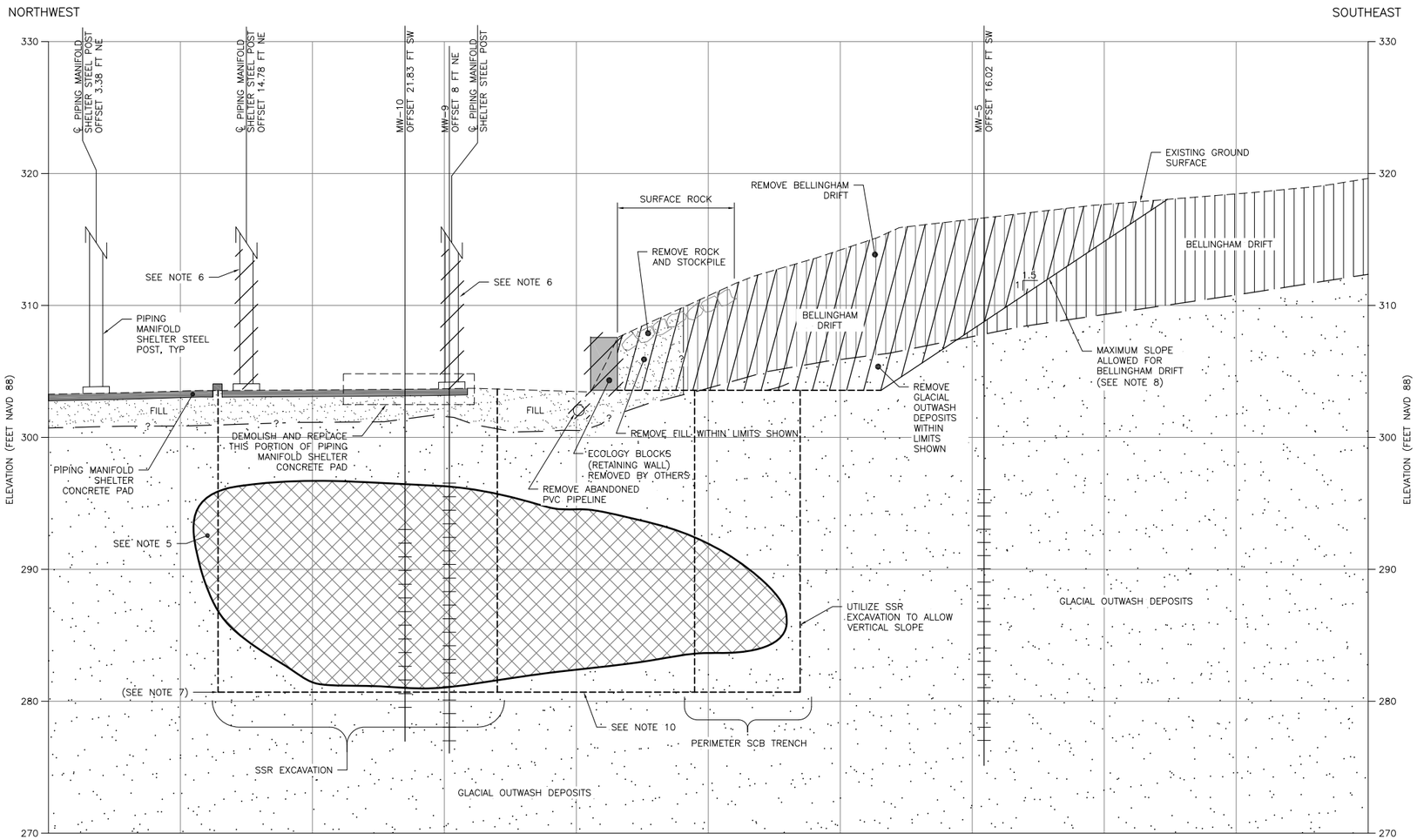
NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN	EXCAVATION AND GRADING PLAN AND SECTION– MATERIAL STORAGE AREA (SU3–B7) LAUREL STATION	SHEET SIZE D
L. JILES		
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN		DATE 09/09/14

AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05–51041	C1A01	UL00	CE1012	12	A

Mod: 09/09/2014, 09:11 | Plotted: 09/09/2014, 16:05 | brenda_mcintosh\GIS\Projects\Kinder Morgan\Laurel Pump Station\SubTasks\Remediation\Removal Excavation & DPE System\R03\[12] CE1012 (Ex and Grading Plan-Matl Stor Area).dwg



TYPICAL EXCAVATION

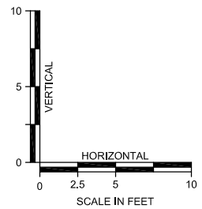
A SECTION
CE1011
SCALE: AS SHOWN

NOTES:

1. THE CROSS SECTION SHOWN IS BASED ON SURFACE TOPOGRAPHY DATA FROM THE JANUARY 2014 LAND SURVEY AND BORING LOGS FROM PREVIOUS INVESTIGATIONS. THE OFFSET DISTANCE FROM EACH BORING TO THE SECTION LINE IS SHOWN IN FEET. NE INDICATES THE BORING IS NORTHEAST OF THE SECTION LINE; SW INDICATES THE BORING IS SOUTHWEST OF THE SECTION LINE.
2. WALL AND SLOPE PLACEMENT MAY CHANGE BASED ON FINAL EXCAVATION LIMITS AS DETERMINED BY SITE CONDITIONS, SOIL CHARACTERISTICS AND CONTAMINANT EXTENT.
3. MINIMUM VERTICAL EXCAVATION EXTENT OF 20 FT SHOWN, HORIZONTAL EXTENTS MAY CHANGE BASED ON SITE CONDITIONS AND SOIL CHARACTERIZATION.
4. CONTRACTOR SHALL USE STOCKPILED BELLINGHAM DRIFT SOIL FROM HILLSIDE EXCAVATION OR IMPORTED FILL AS NEEDED TO BACKFILL THE MAIN EXCAVATION. ALL BACKFILL SOIL SHALL BE SAMPLED TO CONFIRM CLEAN BEFORE USE.
5. SOIL SHOWN TO EXCEED CUL OUTSIDE THE EXCAVATION LIMITS SHOWN IS BELOW PIPNG MANIFOLD SHELTER AND WILL REMAIN IN PLACE.
6. THE 2 EASTERN STEEL POSTS SHALL BE REMOVED PER DOCUMENT NO. CC1011.
7. CONTRACTOR SHALL UTILIZE EQUIPMENT AND METHODS TO ATTEMPT REMOVAL OF SOIL DOWN TO 25 FEET BGS.
8. HILLSIDE SHALL BE BENCHED OR BE TRACKED LATERALLY BY HEAVY EQUIPMENT TO REDUCE SURFACE WATER FLOW VELOCITY DURING RAINFALL EVENTS. IN ADDITION THE AREA SHALL BE COVERED WITH STRAW MULCH.
9. CONTRACTOR SHALL SEGREGATE POTENTIALLY CLEAN MATERIAL OVERLAYING THE SOIL EXCEEDING CUL AND STOCKPILE SEPARATELY FOR TESTING BY ENVIRONMENTAL CONSULTANT. THE UPPER 7 TO 10 FEET IS ASSUMED TO BE BELOW CUL.
10. THE CENTRAL PORTION OF THE EXCAVATION AREA SHALL HAVE THE BOTTOM 3 FEET MINIMUM BACKFILLED WITH SCB.

LEGEND

- ASPHALT OR CONCRETE
- ECOLOGY BLOCKS (RETAINING WALL)
- REMOVE ECOLOGY BLOCKS (RETAINING WALL)
- APPROXIMATE LIMITS OF SOIL EXCEEDING CUL
- FILL
- REMOVE FILL
- GLACIAL OUTWASH DEPOSITS
- REMOVE GLACIAL OUTWASH DEPOSITS
- BELLINGHAM DRIFT
- REMOVE BELLINGHAM DRIFT
- GEOLOGIC UNIT BOUNDARY
- SCREENED INTERVAL OF WELL
- EXCAVATION LIMITS
- REMOVE ROCK
- REMOVE STEEL POST
- REMOVE ABANDONED PVC PIPELINE
- ? ESTIMATED DEPTH BASED ON AVAILABLE DATA



CARY SCOTT BROWN
STATE OF WASHINGTON
30331
9-9-14
REGISTERED PROFESSIONAL ENGINEER

NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.
2	PIPING SHELTER FOOTING DETAILS	CC1011												
1	EXCAVATION AND GRADING PLAN–PUMP STATION AREA	CE1011												

URS
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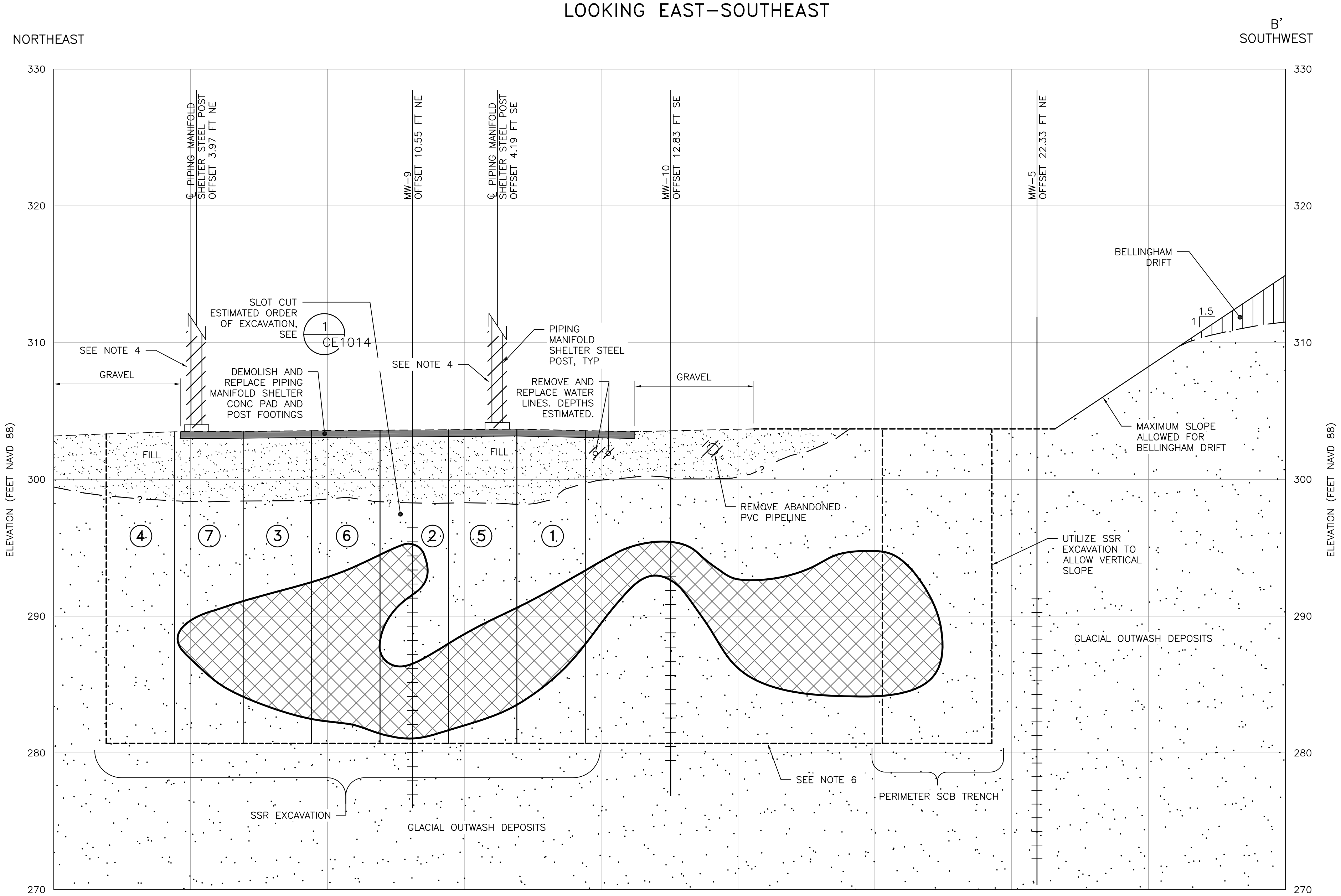
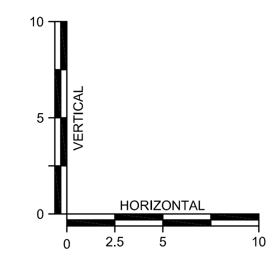
(206) 438-2700

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	SLOPE AND RETAINING WALL EXCAVATION SECTION	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER					
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05–51041	C1A01	UL00	CE1013	13	A





SSR EXCAVATION

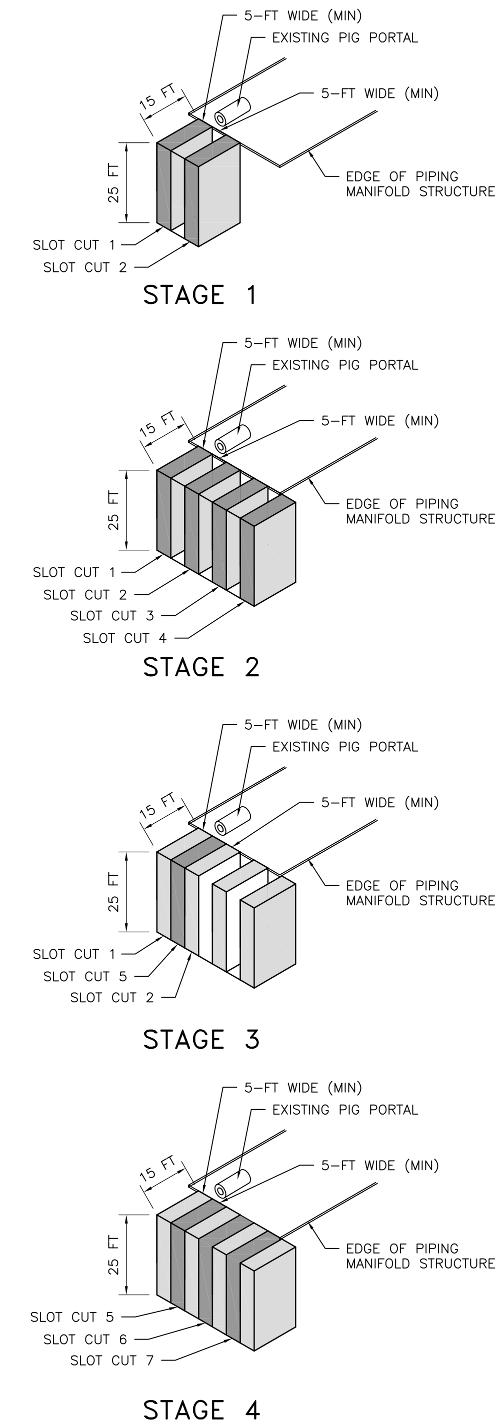
B SECTION
CE1011
SCALE: AS SHOWN

NOTES:

1. THE CROSS SECTION SHOWN IS BASED ON SURFACE TOPOGRAPHY DATA FROM THE JANUARY 2014 LAND SURVEY AND BORING LOGS FROM PREVIOUS INVESTIGATIONS. THE OFFSET DISTANCE FROM EACH BORING TO THE SECTION LINE IS SHOWN IN FEET. NE INDICATES THE BORING IS NORTHEAST OF THE SECTION LINE; SE INDICATES THE BORING IS SOUTHEAST OF THE SECTION LINE.
2. WALL AND SLOPE PLACEMENT MAY CHANGE BASED ON FINAL EXCAVATION LIMITS AS DETERMINED BY SITE CONDITIONS, SOIL CHARACTERISTICS AND CONTAMINANT EXTENT.
3. SSR EXCAVATION SHALL HAVE A MINIMUM VERTICAL EXTENT OF 20 FT HOWEVER, HORIZONTAL EXTENTS MAY CHANGE BASED ON SITE CONDITIONS AND SOIL CHARACTERIZATION. CONTRACTOR SHALL USE EQUIPMENT CAPABLE OF REACHING 25 FT bgs.
4. THE 2 EASTERN STEEL POSTS SHALL BE REMOVED PER DOCUMENT NO. CC1011.
5. CONTRACTOR SHALL SEGREGATE POTENTIALLY CLEAN MATERIAL OVERLAYING THE SOIL EXCEEDING CUL AND STOCKPILE SEPARATELY FOR TESTING BY ENVIRONMENTAL CONSULTANT. THE UPPER 7 TO 10 FEET IS ASSUMED TO BE BELOW CUL.
6. THE CENTRAL PORTION OF THE EXCAVATION AREA SHALL HAVE THE BOTTOM 3 FEET MINIMUM BACKFILLED WITH SCB.

LEGEND

- ASPHALT OR CONCRETE
- APPROXIMATE LIMITS OF SOIL EXCEEDING PCL
- FILL
- GLACIAL OUTWASH DEPOSITS
- BELLINGHAM DRIFT
- GEOLOGIC UNIT BOUNDARY
- SCREENED INTERVAL OF WELL
- EXCAVATION LIMITS
- REMOVE STEEL POSTS
- REMOVE ABANDONED PVC PIPELINE
- REMOVE AND REPLACE WATER LINES
- ? ESTIMATED DEPTH BASED ON AVAILABLE DATA
- (5) SSR SLOT DESIGNATION AND ESTIMATED ORDER OF EXCAVATION



STAGE 1
EXCAVATE SLOT CUTS 1 AND 2. EXCAVATE SLOT CUT 1 USING SLURRY TRENCH METHODS AND BACKFILL WITH SOIL CEMENT BENTONITE (SCB) MATERIAL. REPEAT PROCEDURE WITH SLOT CUT 2.

STAGE 2
EXCAVATE SLOT CUTS 3 AND 4. EXCAVATE SLOT CUT 3 USING SLURRY TRENCH METHODS AND BACKFILL WITH SOIL CEMENT BENTONITE (SCB) MATERIAL. REPEAT PROCEDURE WITH SLOT CUT 4.

STAGE 3
ENSURE THAT SLOT CUTS 1 AND 2 HAVE SET TO A MINIMUM OF 20 PSI. EXCAVATE MATERIAL BETWEEN THESE TWO BACKFILLED SLOT CUTS (SLOT CUT 5) USING SLURRY METHODS. BACKFILL WITH SCB

STAGE 4
REPEAT PROCEDURES FOR STAGE 3 UNTIL EACH OF THE SLOT CUTS (6 AND 7) IS COMPLETED AND BACKFILLED WITH SCB MATERIAL. ALLOW TO SET TO A MINIMUM OF 20 PSI BEFORE EXCAVATING ADJACENT MATERIAL

SLOT CUT ESTIMATED ORDER OF EXCAVATION

1 DETAIL
CE1014
SCALE: NTS

NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.
2	PIPING SHELTER FOOTING DETAILS	CC1011												
1	EXCAVATION AND GRADING PLAN–PUMP STATION AREA	CE1011												

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TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	SSR EXCAVATION SECTION AND DETAIL	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05–51041	C1A01	UL00	CE1014	14	A

Mod: 09/09/2014, 11:15 \| Plotted: 09/09/2014, 16:05 \| brenda_mcintosh\GIS\Projects\Kinder Morgan\Laurel Pump Station\SubTasks\Remediation\Removal Excavation & DPE System\R03\[14] CE1014 (SSR Ex Sect and Detail).dwg

NOTES:

1. TRENCHING FOR DPE WELLS SHALL BE COMPLETED BY EXCAVATION CONTRACTOR BEFORE NEW ASPHALT IS INSTALLED.
2. TREATMENT EQUIPMENT SHALL BE INSTALLED AFTER FINAL ASPHALT SURFACE IS COMPLETE BY DPE CONTRACTOR.
3. DPE CONTRACTOR SHALL USE BLOCKS TO LEVEL DPE EQIUPMENT CONTAINER.
4. EXCAVATION CONTRACTOR SHALL INSTALL BELOWGROUND DPE PIPING AND VAULTS.
5. DPE CONTRACTOR SHALL INSTALL ABOVEGROUND DPE PIPING AND CONNECTIONS INSIDE VAULTS.

LEGEND

- APPROXIMATE LIMITS OF SOIL EXCEEDING PCL
- OPEN CUT TRENCH EXCAVATION
- DPE HEADER PIPE
- BELOWGROUND PIPING
- ABOVEGROUND PIPING
- NEW SEGMENTED CONC. BLOCK (RETAINING WALL)
- INSTALLED AT 30° ANGLE
- NEW DPE WELL
- NEW PASSIVE VENT WELL
- CONTROL POINT
- NEW MONITORING WELL
- CATCH BASIN
- EXPANSION JOINT
- NEW BOLLARD
- EXISTING BOLLARD

DPE PIPE CONTROL POINTS

POINT NO.	NORTHING	EASTING
P-0	672246.4	1254318.6
P-1	672242.7	1254318.6
P-2	672247.1	1254368.7
P-3	672260.2	1254395.7
P-4	672283.6	1254427.1
P-5	672313.7	1254445.4
P-6	672348.5	1254460.5
CB-1	672261.6	1254303.5

CARY SCOTT BROWN, STATE OF WASHINGTON, 36331, 9-9-14, REGISTERED PROFESSIONAL ENGINEER

0 10 20

URS
1501 4TH AVENUE, SUITE 1400
SEATTLE, WA 98101-1616
(206) 438-2700

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN	L. JILES
CHECKED	P. McCULLOUGH
APPROVED	C. BROWN

DPE SYSTEM INSTALLATION PLAN
LAUREL STATION

SHEET SIZE D
SCALE AS NOTED
DATE 09/09/14

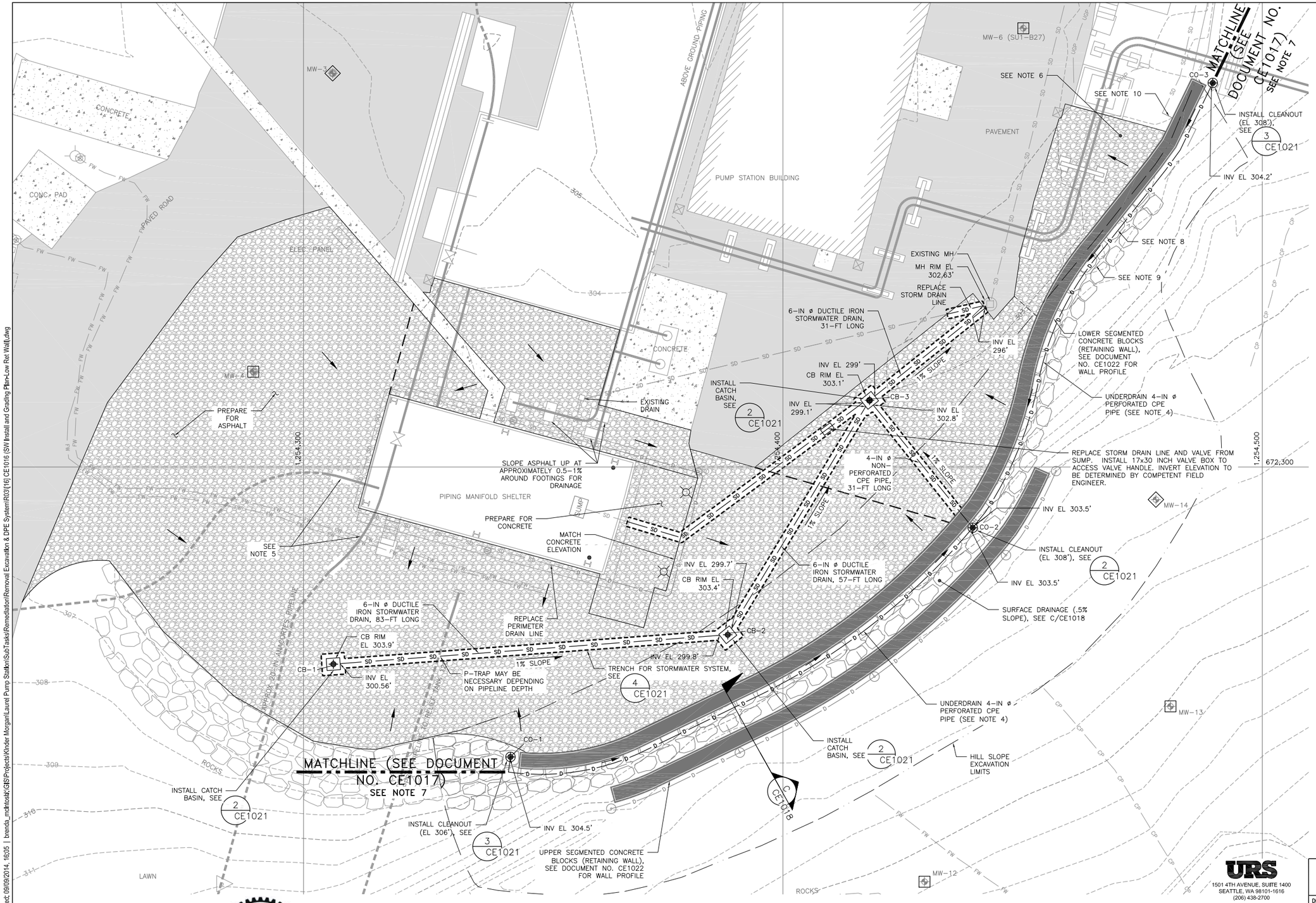
DRAWING NUMBER

AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	CE1015	15	A

NO.	REFERENCE DRAWINGS	
7	SEGMENTED CONCRETE BLOCKS (RETAINING WALLS) PROFILES AND SECTIONS	CE1022

NO.	REFERENCE DRAWINGS	DRAWING NO.
6	DPE SYSTEM LAYOUT AND PIPING SECTION-PUMP STATION AREA	MP1031
5	DPE SYSTEM LAYOUT-PIPING MANIFOLD SHELTER	MP1030
4	PIPING SHELTER FOOTING DETAILS	CC1011
3	MONITORING WELL AND ASPHALT DETAILS	CE1024
2	TRENCH, DPE PIPING, CLEANOUT AND CATCH BASIN DETAILS	CE1021
1	DPE AND PASSIVE VENT WELL DETAILS	CE1020

NO.	DATE	REVISION	DR.	CHK.	APPR.



NOTES:

1. STORM DRAIN TRENCHES SHALL BE OF SUFFICIENT WIDTH AND DEPTH TO INSTALL THE SPECIFIED PIPE AND EQUIPMENT.
2. METHOD USED TO REMOVE CONTAMINATED SOIL MUST PROTECT EXISTING PIPING AND EQUIPMENT FROM DAMAGE.
3. CRUSHED GRAVEL SURFACE SHALL BE COMPACTED TO 95% WHERE 3-INCH AND 4-INCH THICK HAC WILL BE PLACED.
4. CPE PIPE SHALL HAVE SMOOTH INTERIOR WALLS.
5. PLACE GRAVEL APPROXIMATELY 2 FEET AROUND PIPELINE AT GROUND SURFACE. INSTALL ASPHALT BERM 2 FEET FROM PIPELINE. DO NOT INSTALL ASPHALT BERM ANY CLOSER TO THE PIPELINE.
6. CONTRACTOR SHALL DETERMINE FINAL GRADE BASED ON SITE CONDITIONS TO ALLOW DRAINAGE TO THE NORTHWEST.
7. MATCHLINE IS ALONG NEW WEST STORM DRAIN LINE. SEE DOCUMENT NO. CE1017 FOR INFORMATION.
8. SLOPE 1% TOWARD CO-2.
9. SLOPE 0.5% NORTH.
10. CONNECT DITCH PIPE TO EXISTING STORM DRAIN PIPE THROUGH SOLID PIPE UNDER WALL.

LEGEND

- NEW SEGMENTED CONCRETE BLOCK (RETAINING WALL)
- SD — SD — NEW STORMWATER DRAIN (SOLID)
- D — D — NEW DRAIN PIPE (PERFORATED)
- < — < — LINED DITCH WITH DRAIN PIPE
- NEW CRUSHED GRAVEL (1 1/4-IN MINUS)
- STORMWATER SYSTEM TRENCH
- HILL SLOPE EXCAVATION LIMITS
- NEW CATCH BASIN
- NEW CLEANOUT
- QUARRY SPALLS
- PROTECT GROUNDWATER MONITORING WELL
- ABANDON WELL (HISTORICALLY DRY)
- CB-1 CONTROL POINT
- FLOW DIRECTION

CONTROL POINTS & INV EL'S

POINT NO.	NORTHING	EASTING	PIPE INV EL
CB-1	672258.9	1254306.2	E, 300.56'
CB-2	672265.0	1254388.5	W, 299.8'/NE, 299.7'
CB-3	672313.9	1254418.1	(2) SW, 299.1'/SE, 302.8', NE, 299'
CO-1	672239.5	1254343.2	S, 304.5'
CO-2	672287.3	1254439.6	SW & NE, 303.5'
CO-3	672380.2	1254489.7	SW, 304.2'

INV EL

	PIPE INV EL
EXISTING MH	(2) SW, 296'

N

0 10 20

GINA MICHELLE FRANCO — STATE OF WASHINGTON — 50417 — REGISTERED PROFESSIONAL ENGINEER

NO.	REFERENCE DRAWINGS	DRAWING NO.
6	SEGMENTED CONCRETE BLOCKS (RETAINING WALLS) PROFILES AND SECTIONS	CE1022
5	RETAINING WALL SECTION AND DETAIL	CE1018
4	SITE RESTORATION AND GRADING PLAN	CE1023
3	SEGMENTED CONCRETE BLOCKS (RETAINING WALLS) PROFILES AND SECTIONS	CE1022
2	TRENCH, DPE PIPING, CLEANOUT, AND CATCH BASIN DETAILS	CE1021
1	STORMWATER INSTALLATION AND GRADING PLAN-UPPER RETAINING WALL AND HILLSIDE	CE1017

NO.	DATE	REVISION	DR.	CHK.	APPR.

URS
1501 4TH AVENUE, SUITE 1400
SEATTLE, WA 98101-1616
(206) 438-2700

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	STORMWATER INSTALLATION AND GRADING PLAN-LOWER RETAINING WALL AND PAVED AREA	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER

AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	CE1016	16	A

NOTES:

1. DRAIN PIPE SHALL BE INSTALLED CONCURRENTLY WITH WALL CONSTRUCTION.
2. METHOD USED TO REMOVE CONTAMINATED SOIL MUST PROTECT EXISTING PIPING AND EQUIPMENT FROM DAMAGE.
3. CRUSHED GRAVEL SURFACE SHALL BE COMPACTED TO 95% WHERE 3-INCH AND 4-INCH THICK HAC WILL BE PLACED.
4. CPE PIPE SHALL HAVE SMOOTH INTERIOR WALLS.
5. PLACE GRAVEL APPROXIMATELY 2 FEET AROUND PIPELINE AT GROUND SURFACE. INSTALL ASPHALT BERM 2 FEET FROM PIPELINE. DO NOT INSTALL ASPHALT BERM ANY CLOSER TO THE PIPELINE.
6. CONTRACTOR SHALL DETERMINE FINAL GRADE BASED ON SITE CONDITIONS TO ALLOW DRAINAGE TO THE NORTHWEST.
7. MATCHLINE IS ALONG NEW WEST STORM DRAIN LINE. SEE DOCUMENT NO. CE1016 FOR INFORMATION.
8. SLOPE 1% TOWARD CO-2.
9. SLOPE 0.5% NORTH.
10. CONNECT DITCH PIPE TO EXISTING STORM DRAIN PIPE THROUGH SOLID PIPE UNDER WALL. CONTRACTOR SHALL PROPOSE METHOD FOR APPROVAL BY ENGINEER.

LEGEND

- NEW SEGMENTED CONCRETE BLOCK (RETAINING WALL)
- SD — SD — NEW STORMWATER DRAIN (SOLID)
- D — D — NEW DRAIN PIPE (PERFORATED)
- < — < — LINED DITCH WITH DRAIN PIPE
- NEW CRUSHED GRAVEL (1 1/4-IN MINUS)
- STORMWATER SYSTEM TRENCH
- HILL SLOPE EXCAVATION LIMITS
- DIRECTION OF SLOPE
- NEW CATCH BASIN
- NEW CLEANOUT
- QUARRY SPALLS
- GROUNDWATER MONITORING WELL
- DECOMMISSION WELL (HISTORICALLY DRY)
- CO-4 CONTROL POINT
- FLOW DIRECTION

CONTROL POINTS & INV EL'S

POINT NO.	NORTHING	EASTING	PIPE INV EL
CO-4	672228.7	1254364.2	NE, 309.25'
CO-5	672240.4	1254391.0	SW & NE, 309'
CO-6	672256.3	1254419.1	SW & NE, 308.65'
CO-7	672281.6	1254446.5	SW & NE, 309'
CO-8	672299.2	1254457.0	SW, 309.25'

N

0 10 20

GINA MICHELLE FRANCO — STATE OF WASHINGTON — 50444 — REGISTERED PROFESSIONAL ENGINEER — 9-2-14

NO.	REFERENCE DRAWINGS	DRAWING NO.
4	SEGMENTED CONCRETE BLOCKS (RETAINING WALLS) PROFILES AND SECTIONS	CE1022
3	TRENCH, DPE PIPING, CLEANOUT AND CATCH BASIN DETAILS	CE1021
2	RETAINING WALL SECTION AND DETAIL	CE1018
1	STORMWATER INSTALLATION AND GRADING PLAN-LOWER RET. WALL AND PAVED AREA	CE1016

NO.	DATE	REVISION	DR.	CHK.	APPR.

URS
1501 4TH AVENUE, SUITE 1400
SEATTLE, WA 98101-1616
(206) 438-2700

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	STORMWATER INSTALLATION AND GRADING PLAN- UPPER RETAINING WALL AND HILLSIDE	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER

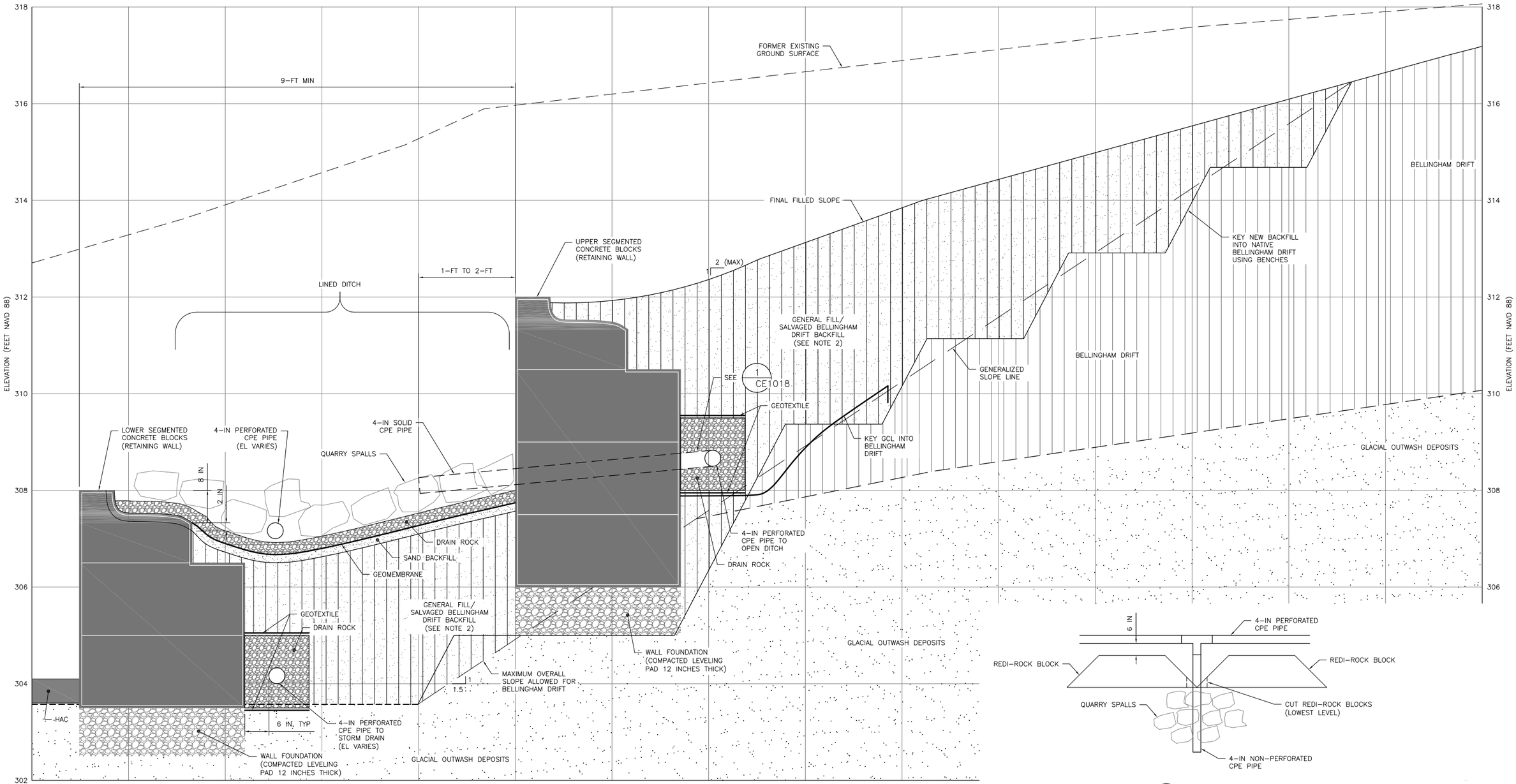
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	CE1017	17	A

Mod: 09/09/2014, 11:18 | Plotted: 09/09/2014, 16:05 | brenda_mcintosh:\GIS\Projects\Kinder Morgan\Laurel Pump Station\SubTasks\Remediation\Removal Excavation & DPE System\R03\[17] CE1017 (SW Install and Grading Plan-Up Ret Wall).dwg

NORTHWEST

LOOKING NORTHEAST

SOUTHEAST



1 CE1018 DETAIL
SCALE: 1-IN=2-FT

C CE1016, CE1017, CE1023 SECTION
SCALE: 1-IN=1-FT

NOTES:

1. SUBGRADE FOR WALL FOUNDATION SHALL BE COMPACTED TO 95%.
2. COMPACT FILL IN 1 FOOT MAXIMUM LIFTS.
3. THIS SECTION EMPHASIZES THE RETAINING WALL DRAINAGE SYSTEM. THE CONCRETE BLOCKS AND FOUNDATIONS ARE CONCEPTUAL. REFER TO DOCUMENT NO. CE1022 FOR SPECIFICS ON BLOCK WALL INSTALLATION.

SCOTT R. WARD — STATE OF WASHINGTON — 31698 — REGISTERED — PROFESSIONAL ENGINEER

NO.	REFERENCE DRAWINGS	DRAWING NO.
3	SITE RESTORATION AND GRADING PLAN	CE1021
2	STORMWATER INSTALLATION AND GRADING PLAN–UPPER RETAINING WALL AND HILLSIDE	CE1017
1	STORMWATER INSTALLATION AND GRADING PLAN–LOWER RET. WALL AND PAVED AREA	CE1016

NO.	DATE	REVISION	DR.	CHK.	APPR.

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(206) 438-2700

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	RETAINING WALL SECTION AND DETAIL	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER

AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	CE1018	18	A

WELLS TO BE INSTALLED

WELL ID	ANGLE DRILLED	NORTHING (NAD83)	EASTING (NAD 83)	TOTAL DEPTH (FT BGS)	SCREENED INTERVAL (FT BGS)
DPE-1	30°	672268.7	1254357.3	25	15-25
DPE-2	30°	672284.0	1254376.2	25	15-25
DPE-3	30°	672367.5	1254425.7	25	15-25
DPE-4	30°	672384.7	1254430.5	25	15-25
MW-15	NA	672266.1	1254377.9	25	5-25
MW-16	NA	672292.6	1254389.6	25	5-25
MW-17	NA	672247.0	1254364.0	35	25-35
MW-18	NA	672274.0	1254412.0	35	25-35
PV-1	30°	672348.5	1254386.6	25	15-25
PV-2	30°	672416.8	1254408.1	25	15-25

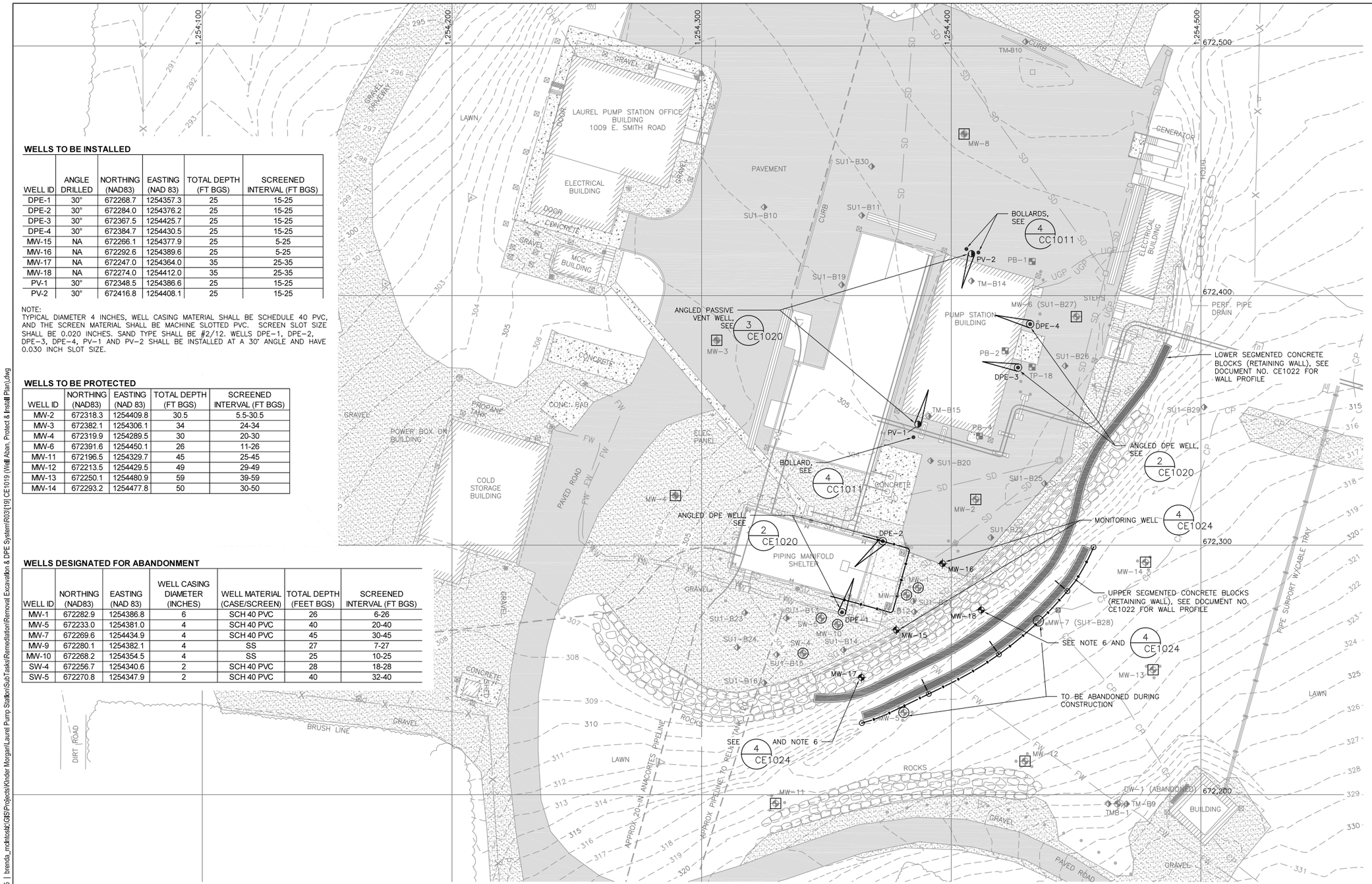
NOTE:
TYPICAL DIAMETER 4 INCHES, WELL CASING MATERIAL SHALL BE SCHEDULE 40 PVC, AND THE SCREEN MATERIAL SHALL BE MACHINE SLOTTED PVC. SCREEN SLOT SIZE SHALL BE 0.020 INCHES. SAND TYPE SHALL BE #2/12. WELLS DPE-1, DPE-2, DPE-3, DPE-4, PV-1 AND PV-2 SHALL BE INSTALLED AT A 30° ANGLE AND HAVE 0.030 INCH SLOT SIZE.

WELLS TO BE PROTECTED

WELL ID	NORTHING (NAD83)	EASTING (NAD 83)	TOTAL DEPTH (FT BGS)	SCREENED INTERVAL (FT BGS)
MW-2	672318.3	1254409.8	30.5	5.5-30.5
MW-3	672382.1	1254306.1	34	24-34
MW-4	672319.9	1254289.5	30	20-30
MW-6	672391.6	1254450.1	26	11-26
MW-11	672196.5	1254329.7	45	25-45
MW-12	672213.5	1254429.5	49	29-49
MW-13	672250.1	1254480.9	59	39-59
MW-14	672293.2	1254477.8	50	30-50

WELLS DESIGNATED FOR ABANDONMENT

WELL ID	NORTHING (NAD83)	EASTING (NAD 83)	WELL CASING DIAMETER (INCHES)	WELL MATERIAL (CASE/SCREEN)	TOTAL DEPTH (FEET BGS)	SCREENED INTERVAL (FT BGS)
MW-1	672282.9	1254386.8	6	SCH 40 PVC	26	6-26
MW-5	672233.0	1254381.0	4	SCH 40 PVC	40	20-40
MW-7	672269.6	1254434.9	4	SCH 40 PVC	45	30-45
MW-9	672280.1	1254382.1	4	SS	27	7-27
MW-10	672268.2	1254354.5	4	SS	25	10-25
SW-4	672256.7	1254340.6	2	SCH 40 PVC	28	18-28
SW-5	672270.8	1254347.9	2	SCH 40 PVC	40	32-40



NOTES:

1. NEW DPE WELLS SHALL BE INSTALLED PER THE SCHEDULE AND DOCUMENT NO. CE1019.
2. WELLS IN OR WITHIN 5 FEET OF EXCAVATION ZONE SHALL BE REMOVED. ALL OTHER WELLS SHALL BE PROTECTED.
3. WELL ABANDONMENT AND PROTECTION SHALL BE IN ACCORDANCE WITH SECTION 33 23 13.
4. IF CONTAMINATION IS FOUND TO BE DEEPER THAN FINAL EXCAVATION DEPTH, THEN MW-15 AND MW-16 SHALL BE CONVERTED TO DPE WELLS.
5. MONITORING WELL PLACEMENT CAN BE CHANGED BY FIELD ENGINEER, DEPENDING ON FINAL EXCAVATION LIMITS.
6. THE LOCATIONS OF NEW WELLS SHALL BE RE-EVALUATED FOLLOWING SOIL REMOVAL ACTIVITIES TO CONFIRM THE POSITIONS ARE SUITABLE FOR THEIR INTENDED PURPOSE.
7. WELL INSTALLED WHERE SCB MATERIAL IS PRESENT SHALL BE SCREENED BELOW THE BOTTOM OF THE SCB.
8. WELLS INSTALLED IN NEW ASPHALT AND CONCRETE AREAS SHALL USE FLUSH MOUNT MONUMENTS OR VAULTS.

LEGEND

- WELL TO BE ABANDONED
- WELL TO BE PROTECTED
- NEW DUAL PHASE EXTRACTION WELL
- NEW PASSIVE VENT WELL
- INSTALLED AT 30° ANGLE
- NEW MONITORING WELL
- NEW SEGMENTED CONCRETE BLOCK (RETAINING WALL)
- NEW BOLLARD

N

0 20 30

GARY SCOTT BROWN
STATE OF WASHINGTON
36335
9-9-14
REGISTERED PROFESSIONAL ENGINEER

NO.	REFERENCE DRAWINGS	DRAWING NO.
4	MONITORING WELL DETAILS AND ASPHALT DETAILS	CE1024
3	SEGMENTED CONCRETE BLOCKS (RETAINING WALLS) PROFILES AND SECTIONS	CE1022
2	DPE AND PASSIVE VENT WELL DETAILS	CE1020
1	PIPING SHELTER FOOTING DETAILS	CC1011

NO.	DATE	REVISION	DR.	CHK.	APPR.

NO.	DATE	REVISION	DR.	CHK.	APPR.

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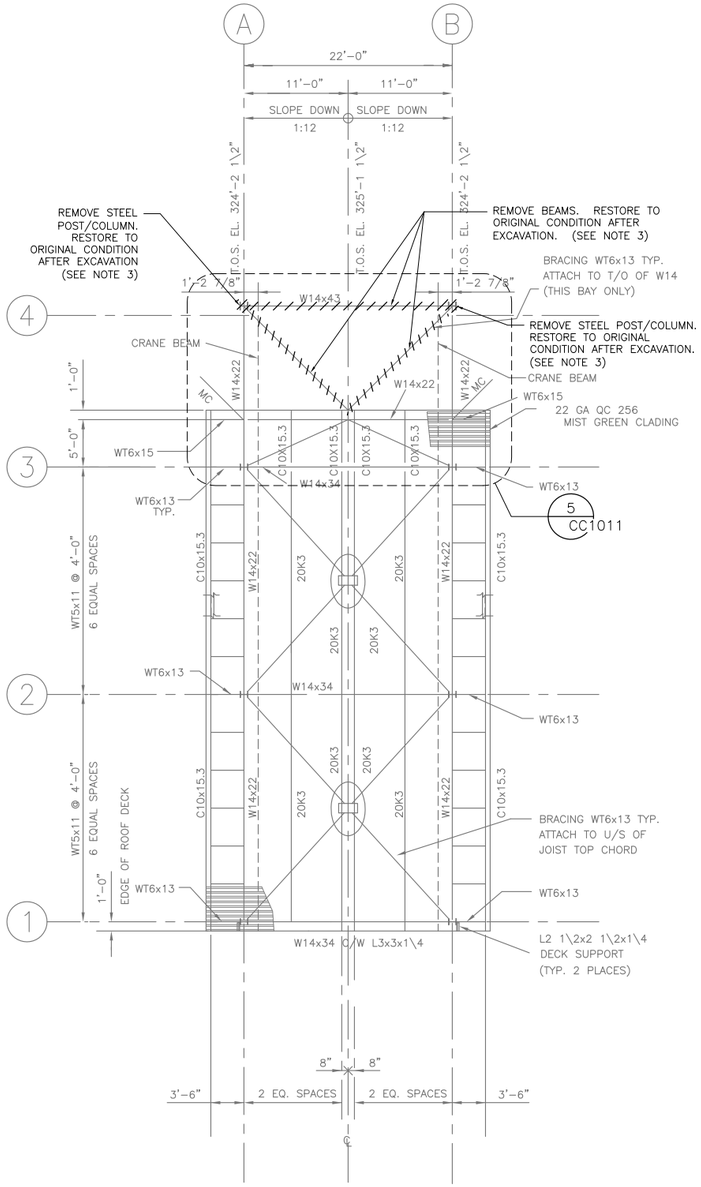
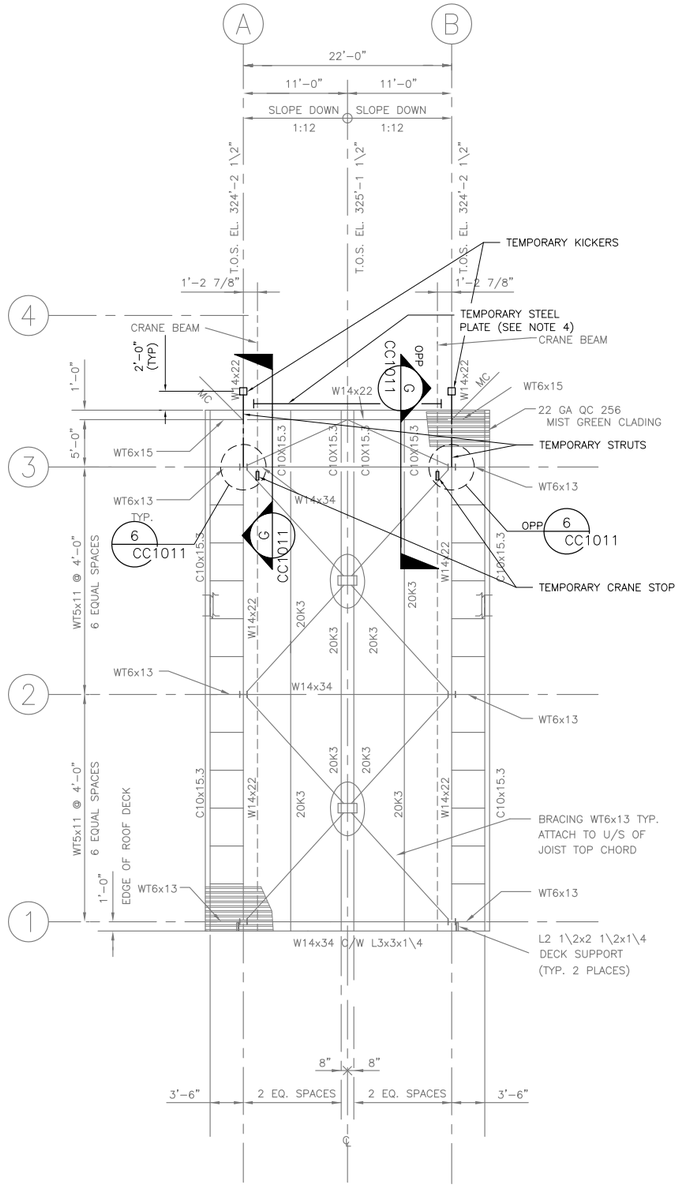
TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

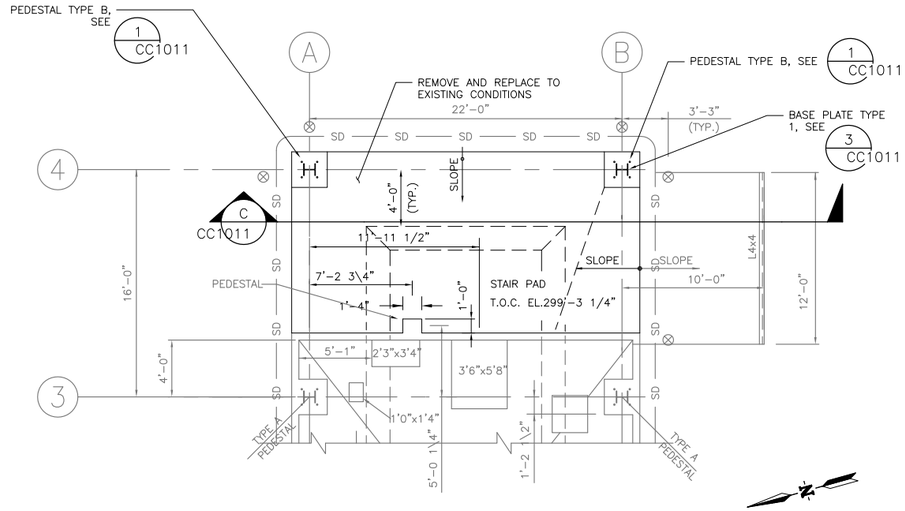
DRAWN L. JILES	WELL ABANDONMENT, PROTECTION, AND INSTALLATION PLAN	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER					
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	CE1019	19	A

Mod: 09/09/2014, 09:44 | Plotted: 09/09/2014, 16:05 | brenda_mcintosh#:\GIS\Projects\Kinder Morgan\Laurel Pump Station\SubTasks\Remediation\Removal Excavation & DPE System\R03\[19] CE1019 (Well Aban, Protect & Install Plan).dwg







PARTIAL FOUNDATION PLAN

SCALE: 3/16"=1'-0"

2 0 2 4 6 8

3/16"=1'-0"

NOTE:

THIS PLAN SHOWS EXISTING CONDITIONS. DARKER AREAS REPRESENT AREAS TO BE REMOVED AND REPLACED.

GENERAL NOTES:

1. INSTALL TEMPORARY KICKERS (TEMPORARY NEW STRUTS).
2. REMOVE COLUMNS/STEEL POSTS, AND BEAMS AS SHOWN ON DRAWING. DO NOT DAMAGE ANY MEMBERS. STORE MEMBERS ON SITE FOR USE LATER IN RECONSTRUCTION.
3. CONTRACTOR TO INSTALL TEMPORARY KICKERS (TEMPORARY NEW STRUTS) PRIOR TO REMOVING THE STEEL FRAMING.
4. CONTRACTOR TO INSTALL TEMPORARY STEEL PLATE TO PROTECT STRUCTURES WITHIN PIPING MANIFOLD STRUCTURE.
5. PIPING SHELTER DEMOLITION AND RECONSTRUCTION WORK SHALL BE REVIEWED WITH ENGINEER AND OWNER PRIOR TO START OF WORK.
6. AFTER DEMOLITION AND COMPLETION OF EXCAVATION WORK, CONTRACTOR SHALL RESTORE STRUCTURE AND FOUNDATION TO ORIGINAL CONDITIONS.

LEGEND

REMOVE COLUMNS/STEEL POSTS

REMOVE BEAM

DEMOLITION PLAN AT EL 324'-2 1\2" (NOM)

SCALE: 1/8"=1'-0"

8 0 4 8

1/8"=1'-0"

PROTECTION PLAN AT EL 324'-2 1\2" (NOM)

SCALE: 1/8"=1'-0"

8 0 4 8

1/8"=1'-0"

KRYSTALL SHENG-YI LEE STATE OF WASHINGTON 45673 REGISTERED PROFESSIONAL ENGINEER 09/09/2014

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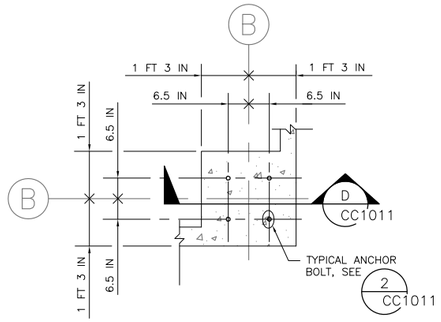
NO.	REFERENCE DRAWINGS	DRAWING NO.
3	FOUNDATION LAYOUT VALVE SHELTER PLAN AND DETAILS	CS1003
2	FRAMING PLAN VALVE SHELTER PLANS, SECTIONS AND DETAILS	CS1000
1	PIPING SHELTER FOOTING DETAILS	CC1011

NO.	DATE	REVISION	DR.	CHK.	APPR.
NO.	DATE	REVISION	DR.	CHK.	APPR.

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

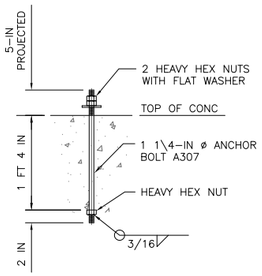
DRAWN L. JILES	PIPING SHELTER DEMOLITION, PROTECTION, AND FOUNDATION PLANS	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER					
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	CS1011	20	A



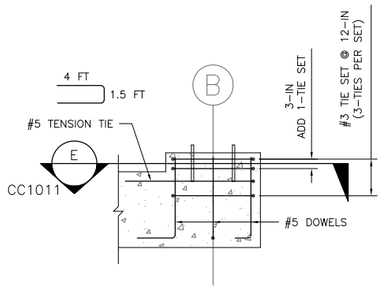
PEDESTAL TYPE B

1 DETAIL CS1011
SCALE: NTS

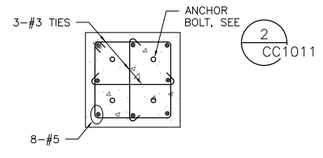


TYPICAL ANCHOR BOLT MK "A"

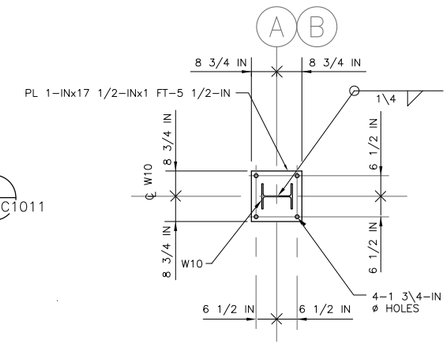
2 DETAIL CC1011
SCALE: NTS



D SECTION CC1011
SCALE: 1/4–IN=1–FT

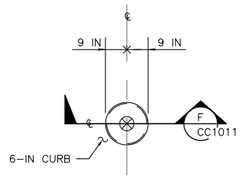


E SECTION CC1011
SCALE: NTS



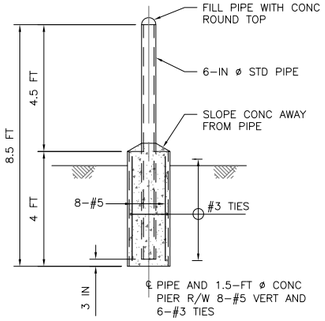
BASE PLATE TYPE 1

3 DETAIL CS1011
SCALE: NTS
(6 REQUIRED)

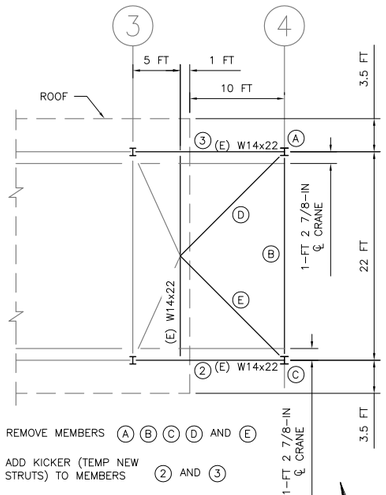


BOLLARD

4 DETAIL CE1015, CE1019, CE1023
SCALE: NTS

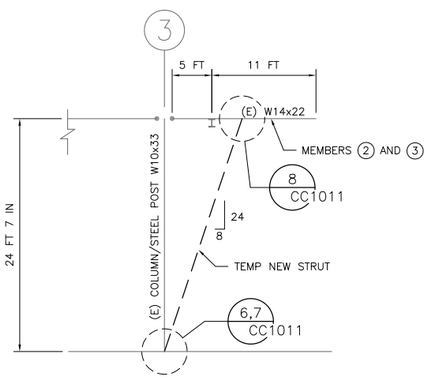


F SECTION CC1011
SCALE: NTS



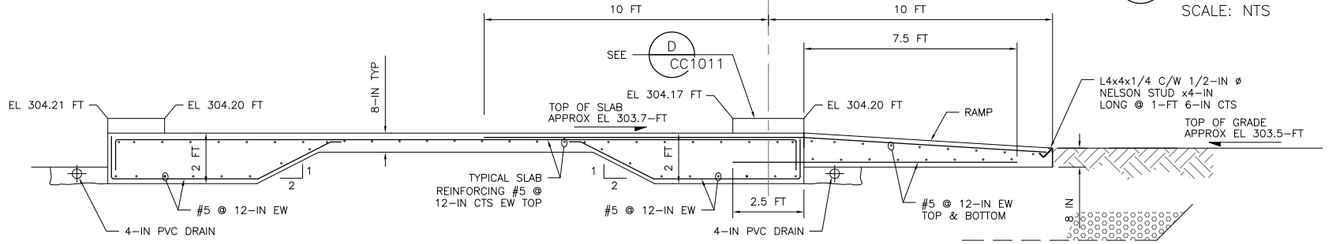
DEMOLITION PLAN

5 DETAIL CS1011
SCALE: 1/8"=1'–0"



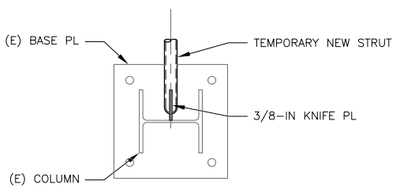
TEMPORARY STRUCTURE SUPPORT

G SECTION CS1011
SCALE: 1/8"=1'–0"

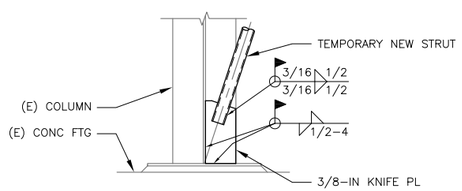


FOUNDATION

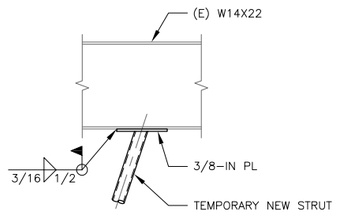
C SECTION CS1011
SCALE: 3/8"=1'–0"



6 DETAIL CS1011, CC1011
SCALE: 1"=1'–0"



7 DETAIL CS1011
SCALE: 1"=1'–0"



CONNECTION DETAIL AT TOP

8 DETAIL CS1011
SCALE: 1"=1'–0"

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NO.	REFERENCE DRAWINGS	DRAWING NO.
8	SITE RESTORATION AND GRADING PLAN	CE1023
7	WELL ABANDONMENT, PROTECTION, AND INSTALLATION PLAN	CE1019

NO.	REFERENCE DRAWINGS	DRAWING NO.
6	DPE SYSTEM INSTALLATION PLAN	CE1015
5	FOUNDATION DETAILS VALVE SHELTER	CC100402
4	FOUNDATION DETAILS VALVE SHELTER	CC100401
3	FOUNDATION LAYOUT VALVE SHELTER PLANS AND DETAILS	CC1003
2	FRAMING PLAN VALVE SHELTER PLANS, SECTIONS AND DETAILS	CS1000
1	PIPING SHELTER DEMOLITION, PROTECTION, AND FOUNDATION PLANS	CS1011

NO.	DATE	REVISION	DR.	CHK.	APPR.

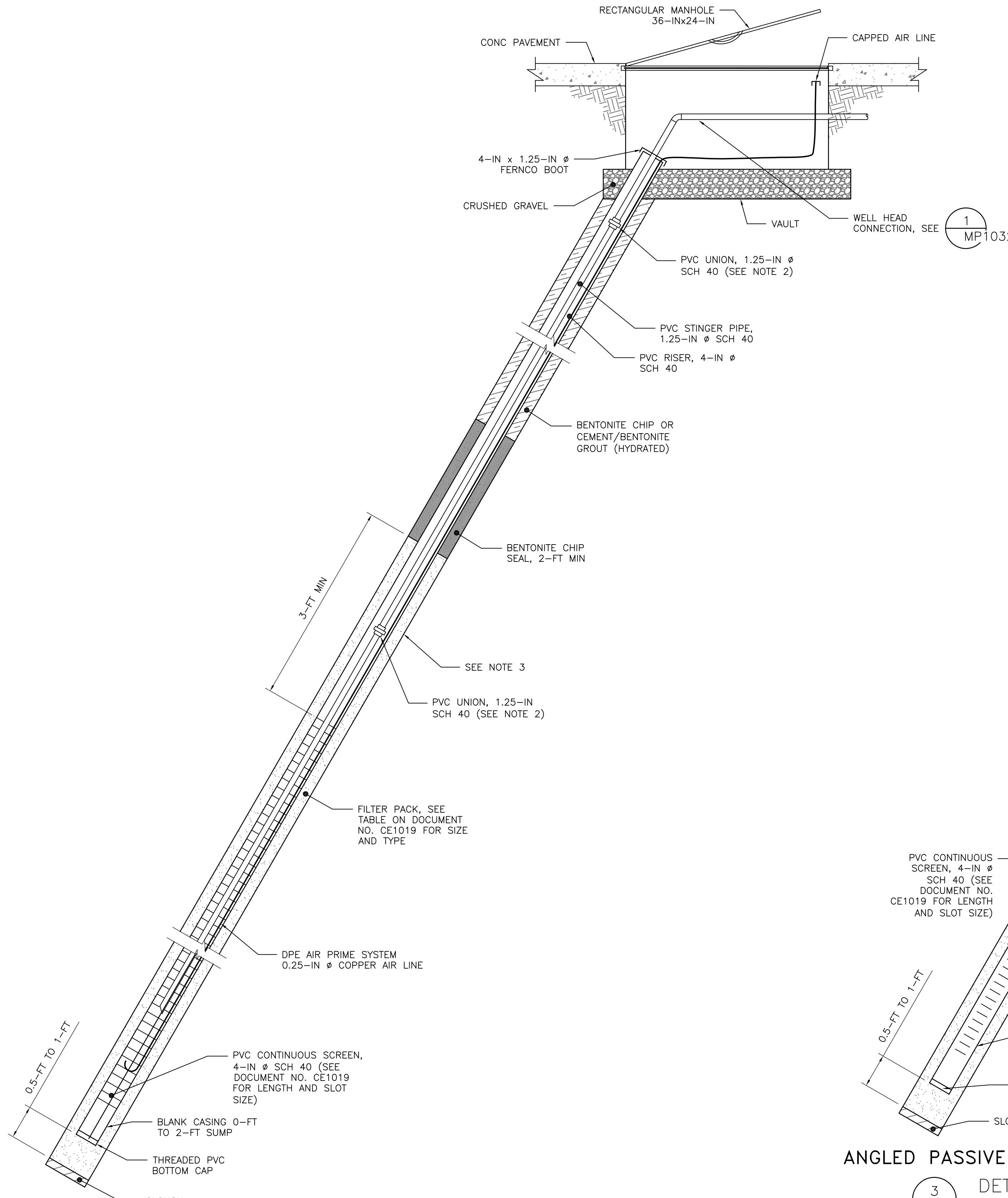
NO.	DATE	REVISION	DR.	CHK.	APPR.

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	PIPING SHELTER FOOTING DETAILS		SHEET SIZE D
CHECKED P. McCULLOUGH			SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION		DATE 09/09/14

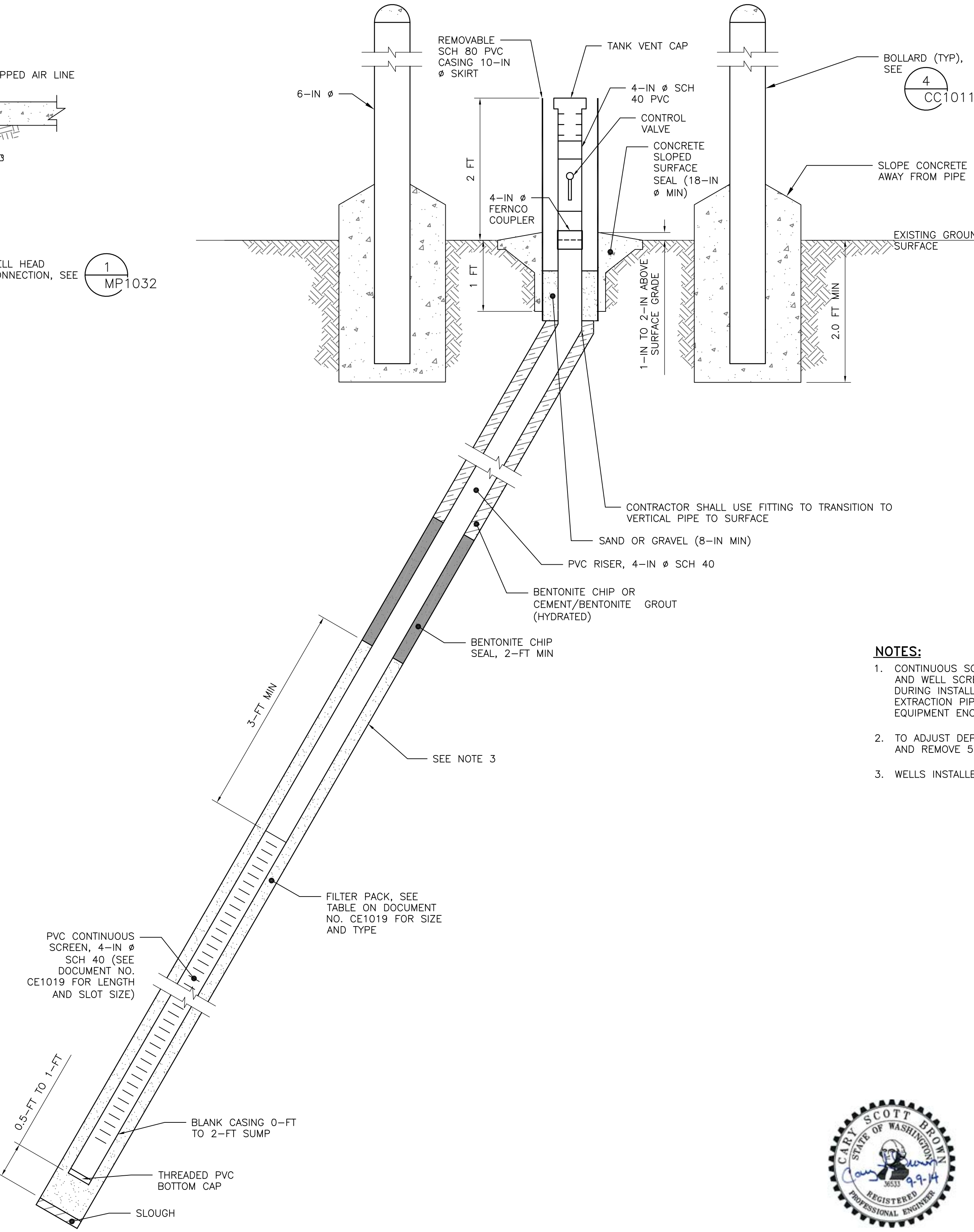
DRAWING NUMBER

AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05–51041	C1A01	UL00	CC1011	21	A



ANGLED DPE WELL

2 DETAIL
CE1015, CE1019
NTS



ANGLED PASSIVE VENT WELL

3 DETAIL
CE1015, CE1019
NTS

NOTES:

1. CONTINUOUS SOIL SAMPLING TO DETERMINE LITHOLOGY AND WELL SCREEN PLACEMENT SHALL BE COMPLETED DURING INSTALLATION OF DPE AND PVC WELLS. EXTRACTION PIPING SHALL BE SLOPED TOWARD THE EQUIPMENT ENCLOSURE AT 0.5% GRADE, MINIMUM.
2. TO ADJUST DEPTH OF STINGER PIPE UNSCREW UNIONS AND REMOVE 5 FOOT SECTIONS.
3. WELLS INSTALLED AT 30°.

CARY SCOTT BROWN — STATE OF WASHINGTON — 36533 — REGISTERED PROFESSIONAL ENGINEER — 9-9-14

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SEATTLE, WA 98101-1616
(206) 438-2700

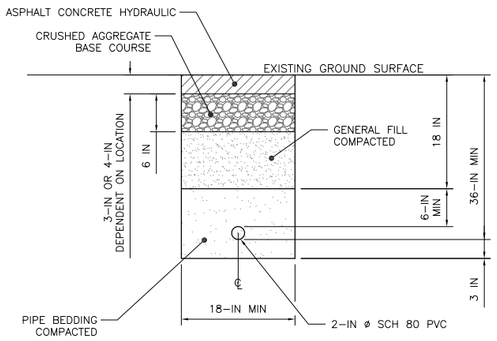
NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.
2	WELL ABANDONMENT, PROTECTION, AND INSTALLATION PLAN	CE1019												
1	DPE SYSTEM INSTALLATION PLAN	CE1015												

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	DPE AND PASSIVE VENT WELL DETAILS	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER

AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	CE1020	22	A

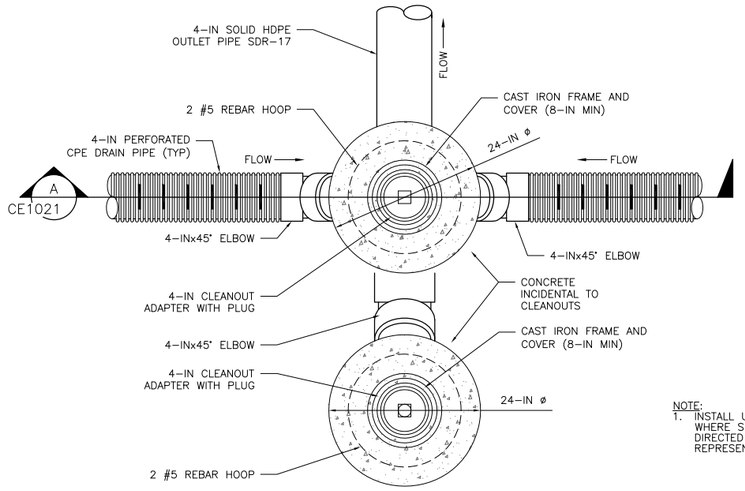


NOTES:

1. PIPE SHALL BE CENTERED HORIZONTALLY IN TRENCH.
2. PIPE SHALL MAINTAIN A MINIMUM 0.5% SLOPE FROM WELL HEAD.
3. UPON COMPLETION OF TRENCH BACKFILL THE SUBGRADE AND FINAL SURFACE SHALL BE COMPLETED.
4. EACH LAYER OF PIPE BEDDING SHALL BE COMPACTED TO APPARENT HIGH DENSITY BASED ON VISUAL INSPECTION.
5. HAC TO BE INSTALLED BY SPECIALTY CONTRACTOR, BASE COURSE SHALL BE INSTALLED BY EXCAVATION CONTRACTOR.

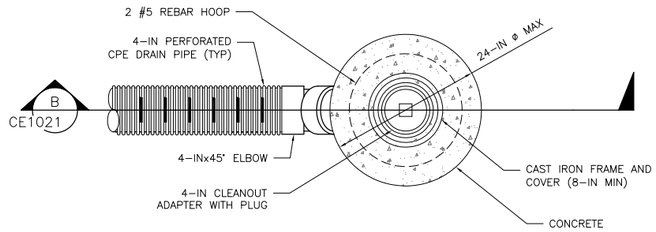
DPE LATERAL PIPE TRENCH

1 DETAIL CE1015
SCALE: NTS



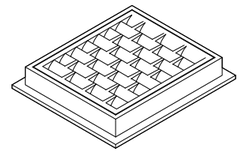
TYPE IV CLEANOUT

2 DETAIL CE1016, CE1017
SCALE: NTS

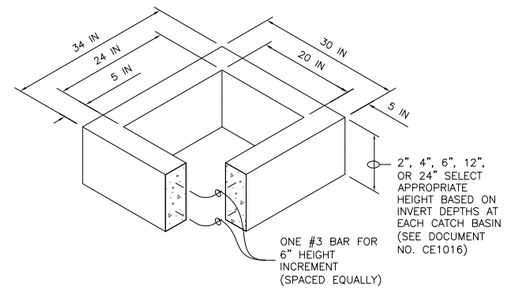


TYPE I END OF LINE CLEANOUT

3 DETAIL CE1016, CE1017
SCALE: NTS

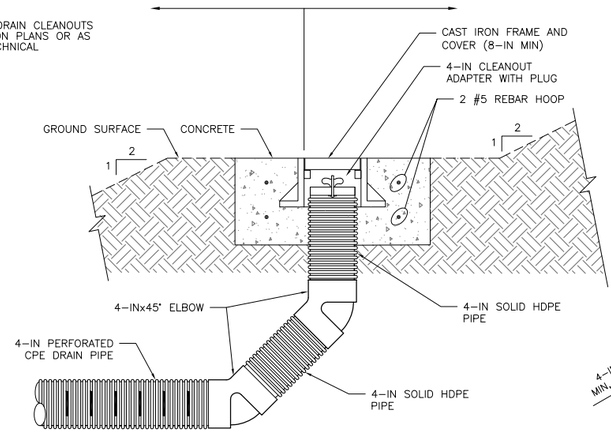


FRAME AND VANED GRATE

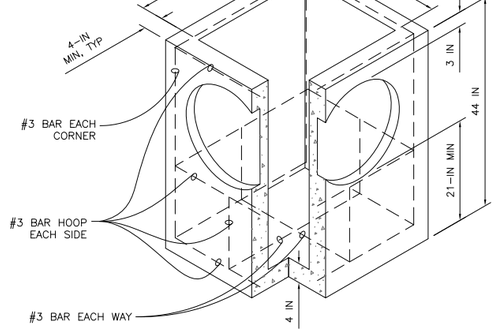


RECTANGULAR ADJUSTMENT SECTION

NOTE:
1. INSTALL UNDER DRAIN CLEANOUTS WHERE SHOWN ON PLANS OR AS DIRECTED BY TECHNICAL REPRESENTATIVE.



B SECTION CE1021
SCALE: NTS



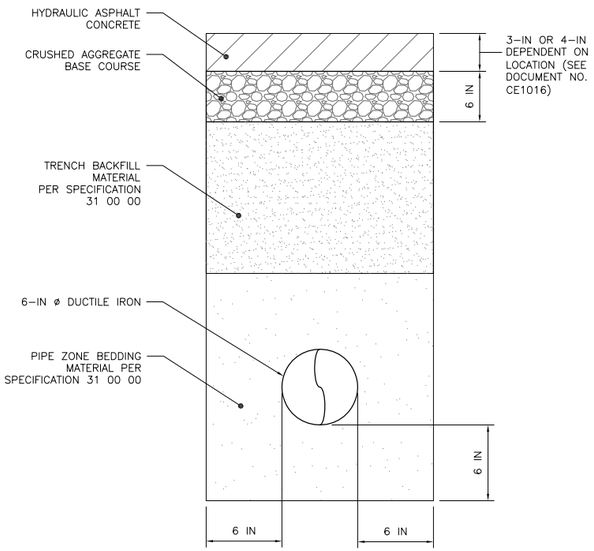
PRECAST BASE SECTION

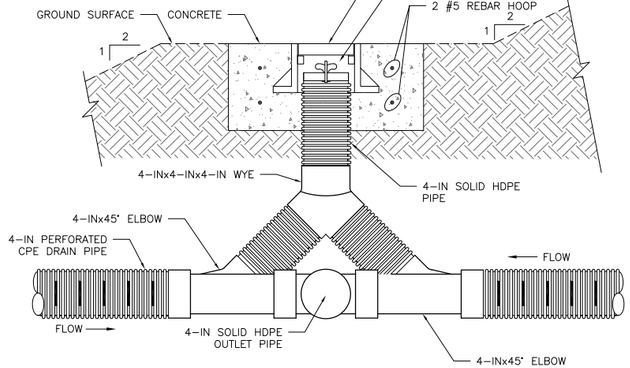
NOTES:

1. CATCH BASINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS SECTION 7X-05 AND WSDOT STANDARD PLAN B-5.20-01.
2. THE OPENING SHALL BE MEASURED AT THE TOP OF THE PRECAST BASE SECTION.

CONCRETE CATCH BASIN TYPE 1

2 DETAIL CE1016
SCALE: 1-IN=2-FT
(3 REQUIRED)





A SECTION CE1021
SCALE: NTS

TYPICAL STORM DRAIN PIPE TRENCH

4 DETAIL CE1016
SCALE: NTS

NOTE:
HAC TO BE INSTALLED BY SPECIALTY CONTRACTOR, BASE COURSE SHALL BE INSTALLED BY EXCAVATION CONTRACTOR.

NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.
3	STORMWATER INSTALLATION AND GRADING PLAN-UPPER RETAINING WALL AND HILLSIDE	CE1017												
2	STORMWATER INSTALLATION AND GRADING PLAN-LOWER RET. WALL AND PAVED AREA	CE1016												
1	DPE SYSTEM INSTALLATION PLAN	CE1015												

GINA MICHELLE FRANCO — STATE OF WASHINGTON — 50428 — REGISTERED PROFESSIONAL ENGINEER — 9-9-14

CARY SCOTT BROWN — STATE OF WASHINGTON — 36533 — REGISTERED PROFESSIONAL ENGINEER — 9-9-14

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TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

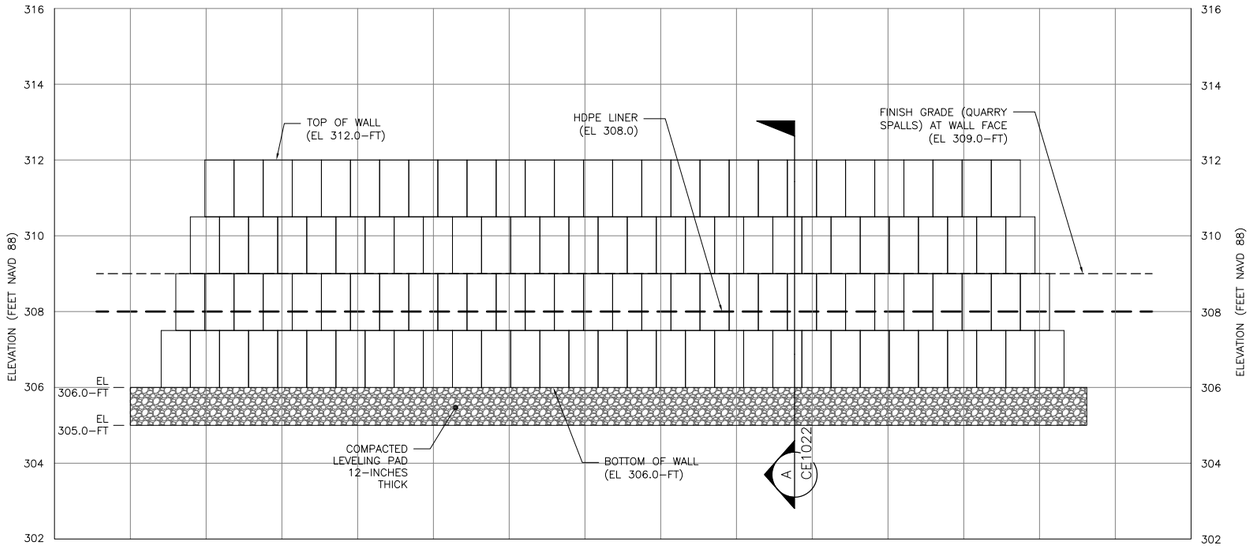
DRAWN L. JILES	TRENCH, DPE PIPING, CLEANOUT, AND CATCH BASIN DETAILS	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER

AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	CE1021	23	A

LOOKING NORTHWEST

SOUTHWEST — NORTHEAST

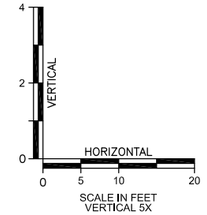


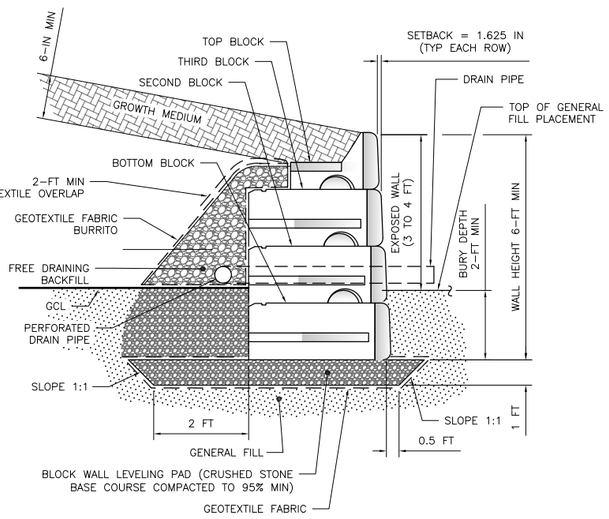
UPPER WALL PROFILE

SCALE: 1–IN=10–FT

NOTES:

1. SEE DOCUMENT NUMBERS CE1015, CE1016, CE1017, CE1019, CE1023, MP1030 AND MP1031 FOR GENERAL WALL LOCATIONS ON PLANS.
2. ALL BLOCKS SHALL BE MANUFACTURED BY REDI–BLOCK, BE 18–IN TALL AND HAVE COBBLESTONE FACE.
3. ALL TOP BLOCKS SHALL BE 28–IN DEEP AND HAVE A TOP SURFACE DEPRESSION WHICH ALLOWS PLACEMENT OF FILL MATERIAL.
4. ALL BLOCKS BELOW THE TOP ROW SHALL BE 41–IN DEEP.
5. EACH ROW OF BLOCKS SHALL BE SET BACK A MINIMUM OF 1.625 INCHES FROM THE ROW BELOW.
6. MOVE BLOCKS FORWARD DURING INSTALLATION TO ENGAGE SHEAR KNOBS.





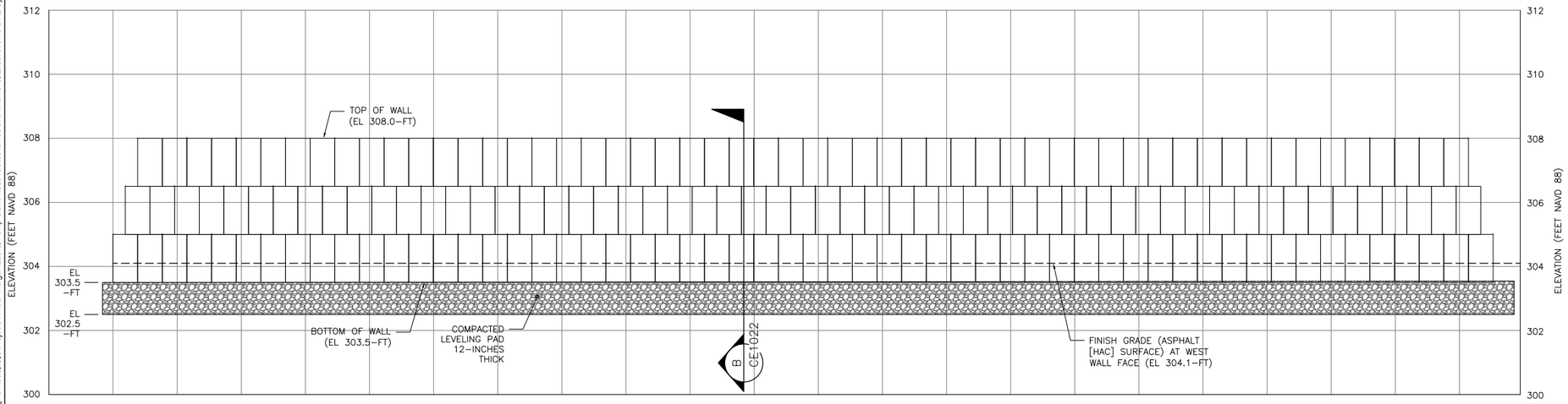
UPPER WALL

A SECTION CE1022

SCALE: NTS

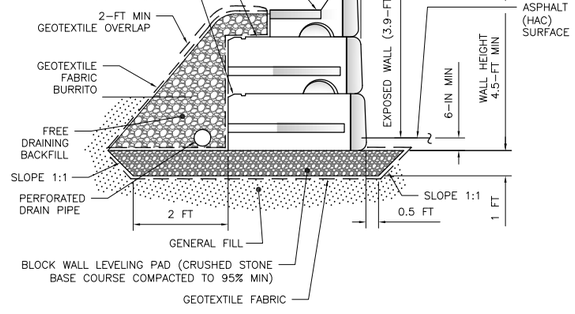
LOOKING NORTHWEST

SOUTHWEST — NORTHEAST



LOWER WALL PROFILE

SCALE: 1–IN=10–FT



LOWER WALL

B SECTION CE1022

SCALE: NTS

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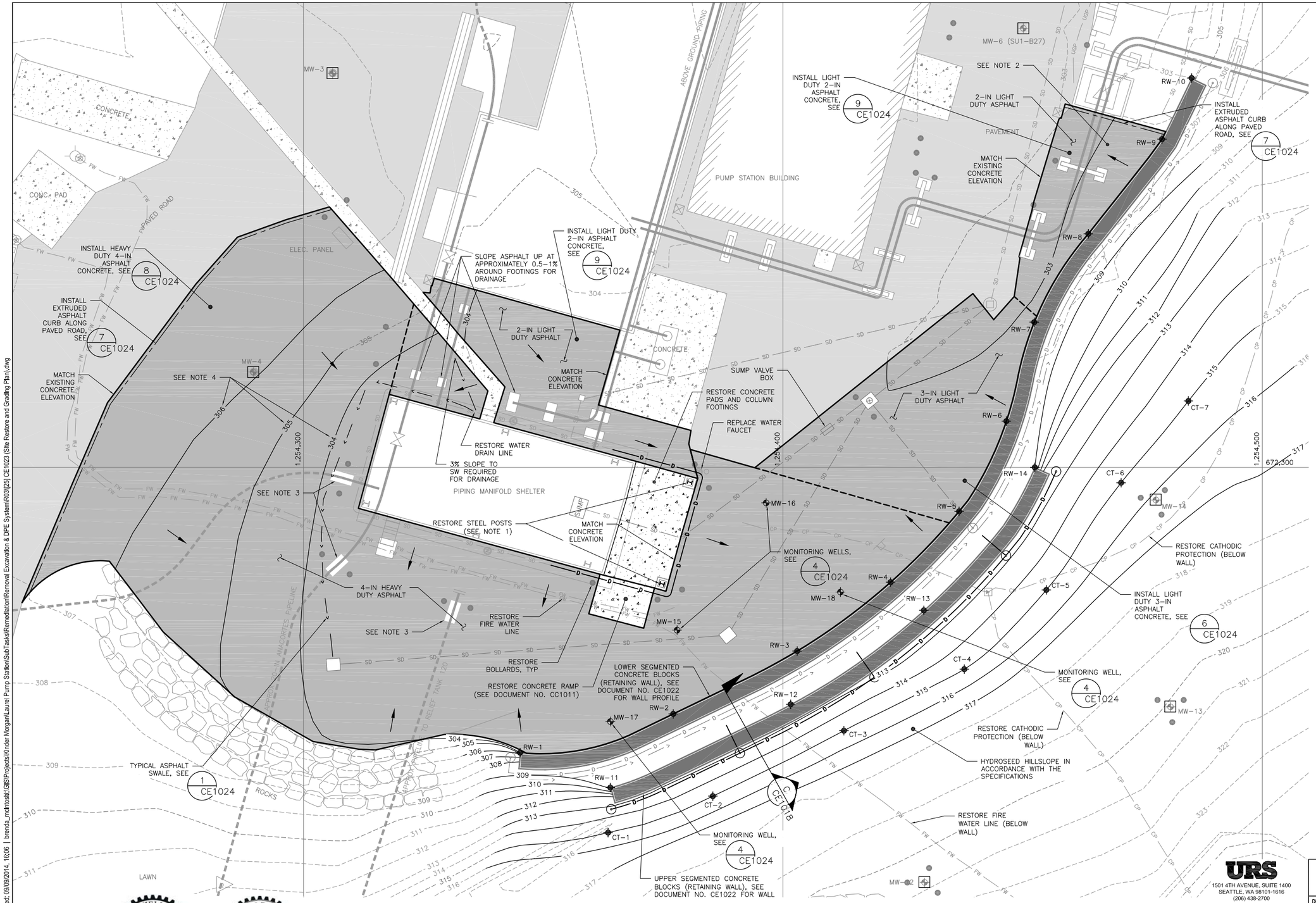
NO.	REFERENCE DRAWINGS		NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.
			6	DPE SYSTEM LAYOUT–PIPING MANIFOLD SHELTER	MP1030												
			5	SITE RESTORATION AND GRADING PLAN	CE1023												
			4	WELL ABANDONMENT, PROTECTION, AND FOUNDATION PLANS	CE1019												
			3	STORMWATER INSTALLATION AND GRADING PLAN–UPPER RETAINING WALL AND HILL SIDE	CE1017												
			2	STORMWATER INSTALLATION AND GRADING PLAN–LOWER RET. WALL AND PAVED AREA	CE1016												
7	DPE SYSTEM LAYOUT AND PIPING SECTION–PUMP STATION AREA	MP1031	1	DPE SYSTEM INSTALLATION PLAN	CE1015												

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	SEGMENTED CONCRETE BLOCKS (RETAINING WALLS) PROFILES AND SECTIONS	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER

AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05–51041	C1A01	UL00	CE1022	24	A



NOTES:

1. SEE DOCUMENT NO. CS1011 FOR PIPING SHELTER PROTECTION DETAILS.
2. CONTRACTOR SHALL DETERMINE FINAL GRADE BASED ON SITE CONDITIONS TO ALLOW DRAINAGE TO THE NORTHWEST.
3. ASPHALT SHALL NOT BE PLACED WITHIN 3 FEET OF PIPELINE.
4. CONTOURS REPRESENT TOP OF ASPHALT SURFACE.
5. AREAS WITH ASPHALT 3-INCHES TO 4-INCHES THICK SHALL HAVE SUBGRADE COMPACTED TO 95%.

LEGEND

- NEW SEGMENTED CONCRETE BLOCK (RETAINING WALL)
- 315 — NEW CONTOURS
- 305 — EXISTING MAJOR CONTOURS
- 306 — EXISTING MINOR CONTOURS
- NEW ASPHALT
- ASPHALT SEPARATION LINE
- SD — SD — NEW STORM DRAIN (SOLID)
- D — D — NEW DRAIN PIPE (PERFORATED)
- < — < — LINED DITCH WITH DRAIN PIPE
- NEW ASPHALT CURB
- NEW CATCH BASIN
- PROTECT GROUNDWATER MONITORING WELL
- DECOMMISSION WELL (HISTORICALLY DRY)
- RW-1 CONTROL POINT
- NEW MONITORING WELL

CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
RW-1	672240.5	1254345.2	304
RW-2	672248.6	1254377.1	304
RW-3	672261.7	1254403.0	304
RW-4	672276.1	1254422.5	304
RW-5	672290.8	1254436.7	304
RW-6	672309.6	1254446.6	304
RW-7	672330.3	1254452.4	304
RW-8	672348.7	1254463.7	304
RW-9	672368.5	1254479.1	304
RW-10	672381.2	1254485.3	304
RW-11	672233.2	1254364.0	309
RW-12	672250.6	1254401.6	309
RW-13	672270.2	1254429.4	309
RW-14	672300.0	1254452.5	309
CT-1	672223.8	1254363.5	315
CT-2	672231.4	1254385.4	315
CT-3	672245.1	1254412.7	315
CT-4	672257.9	1254437.8	315
CT-5	672274.4	1254455.0	315
CT-6	672296.8	1254470.5	315
CT-7	672313.8	1254484.6	315

N

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NO.	REFERENCE DRAWINGS	DRAWING NO.
6	PIPING SHELTER DEMOLITION, PROTECTION, AND FOUNDATIONS PLANS	CS1011
5	PIPING SHELTER FOOTING DETAILS	CC1011
4	MONITORING WELLS AND ASPHALT DETAILS	CE1024
3	SITE RESTORATION AND GRADING PLAN	CE1023
2	SEGMENTED CONCRETE BLOCKS (RETAINING WALLS) PROFILES AND SECTIONS	CE1022
1	RETAINING WALL SECTION AND DETAIL	CE1018

NO.	DATE	REVISION	DR.	CHK.	APPR.

GINA MICHELLE FRANCO — STATE OF WASHINGTON — 50407 — REGISTERED PROFESSIONAL ENGINEER — 9-9-14

CARY SCOTT BROWN — STATE OF WASHINGTON — 36533 — REGISTERED PROFESSIONAL ENGINEER — 9-9-14

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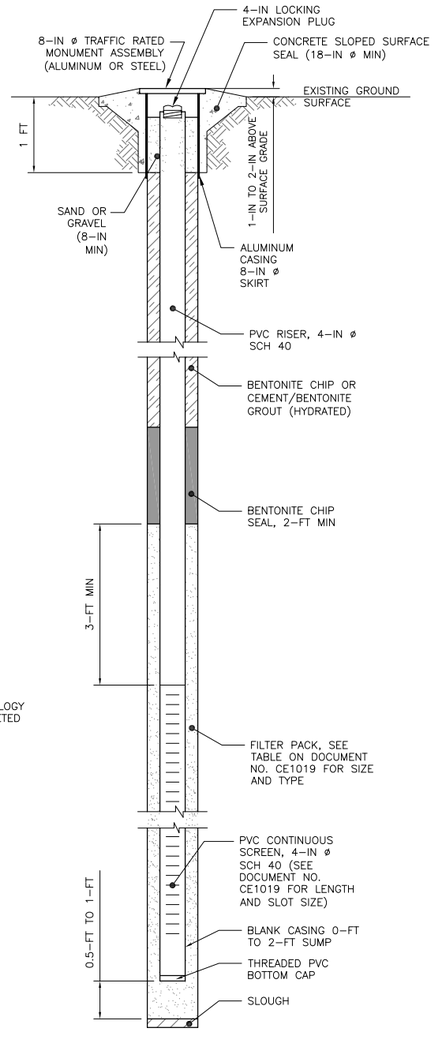
TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	SITE RESTORATION AND GRADING PLAN	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER

AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	CE1023	25	A



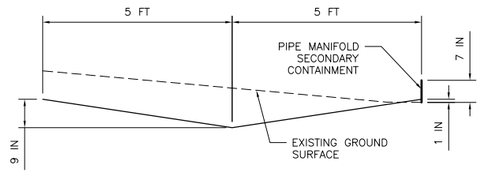
NOTES:

1. CONTINUOUS SOIL SAMPLING TO DETERMINE LITHOLOGY AND WELL SCREEN PLACEMENT SHALL BE COMPLETED DURING INSTALLATION OF MONITORING WELLS.

MONITORING WELL

4 DETAIL / CE1019

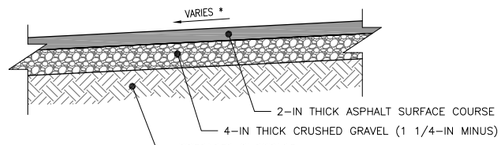
NTS



TYPICAL ASPHALT SWALE

1 DETAIL / CE1023

SCALE: 1–IN=2–FT



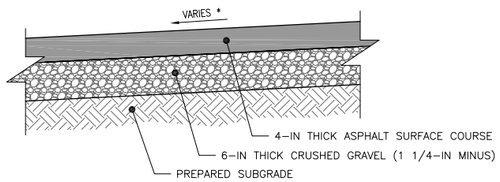
NOTES:

1. * PAVEMENT CROSS SLOPES VARY, SEE GRADING PLANS FOR SPECIFIC CROSS SLOPE INFORMATION.
2. 2–IN HAC SHALL BE INSTALLED BY USING HAND OPERATED EQUIPMENT.

LIGHT DUTY 2–IN HYDRAULIC ASPHALT CONCRETE

9 DETAIL / CE1023

SCALE: 1–IN=1–FT

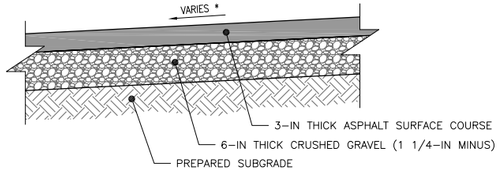


* PAVEMENT CROSS SLOPES VARY, SEE GRADING PLANS FOR SPECIFIC CROSS SLOPE INFORMATION

HEAVY DUTY 4–IN HYDRAULIC ASPHALT CONCRETE

8 DETAIL / CE1023

SCALE: 1–IN=1–FT



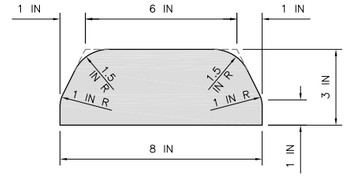
* PAVEMENT CROSS SLOPES VARY, SEE GRADING PLANS FOR SPECIFIC CROSS SLOPE INFORMATION

LIGHT DUTY 3–IN HYDRAULIC ASPHALT CONCRETE

6 DETAIL / CE1023

SCALE: 1–IN=1–FT

NOTE:
EXTRUDED ASPHALT CURB SHALL BE CONSTRUCTED IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS SECTION 8–04.3(2) AND WSDOT STANDARD PLAN F–10.42–00.



TYPICAL EXTRUDED ASPHALT CURB TYPE 1 (HOT MIX)

7 DETAIL / CE1023

SCALE: NTS

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GINA MICHELLE FRANCO — STATE OF WASHINGTON — 30481 — REGISTERED PROFESSIONAL ENGINEER

CARL SCOTT BROWN — STATE OF WASHINGTON — 36023 — REGISTERED PROFESSIONAL ENGINEER — 9-9-14

NO.	REFERENCE DRAWINGS	DRAWING NO.
3	PIPING SHELTER FOOTING DETAILS	CC1011
2	SITE RESTORATION AND GRADING PLAN	CE1023
1	WELL ABANDONMENT, PROTECTION, AND INSTALLATION PLAN	CE1019

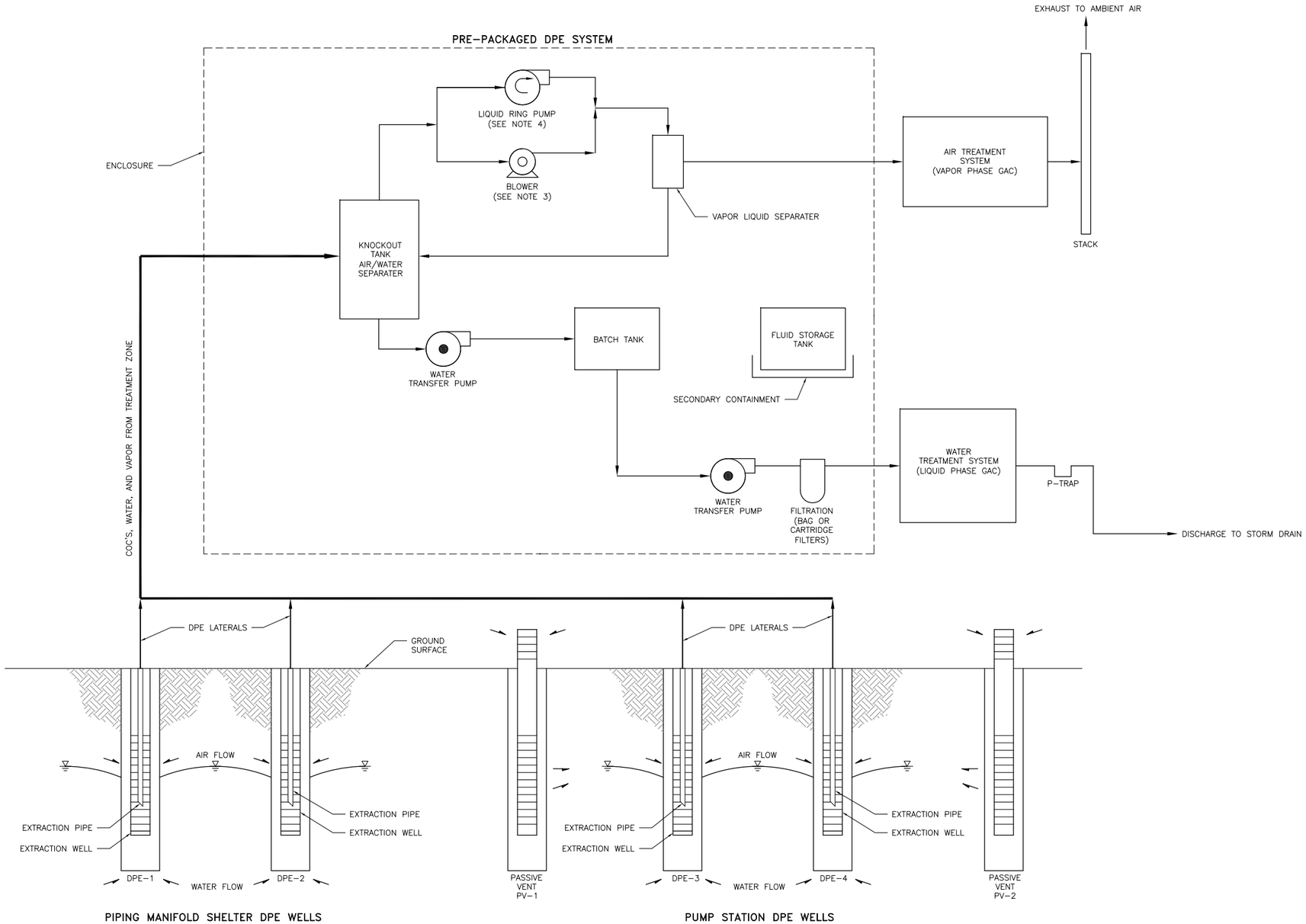
NO.	DATE	REVISION	DR.	CHK.	APPR.

NO.	DATE	REVISION	DR.	CHK.	APPR.

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	MONITORING WELLS AND ASPHALT DETAILS	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER					
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05–51041	C1A01	UL00	CE1024	26	A



PIPING MANIFOLD SHELTER DPE WELLS

PUMP STATION DPE WELLS

NOTES:

1. AIR AND WATER TREATMENT EQUIPMENT SHALL BE DETERMINED BY CONTRACTOR. TECHNOLOGY SHOWN IS ONE POSSIBLE OPTION FOR CONTRACTOR TO USE.
2. THE TWO VACUUM PUMPS (LIQUID RING AND REGENERATIVE BLOWER) ARE NOT INTENDED TO RUN SIMULTANEOUSLY.
3. THE REGENERATIVE BLOWER SHALL OPERATE WHEN GROUNDWATER IS NOT PRESENT.
4. THE LIQUID RING PUMP SHALL OPERATE WHEN GROUNDWATER IS PRESENT.

LEGEND

- GROUNDWATER ELEVATION
- WATER TRANSFER PUMP
- LIQUID RING PUMP
- BLOWER
- DPE HEADER
- DPE LATERAL

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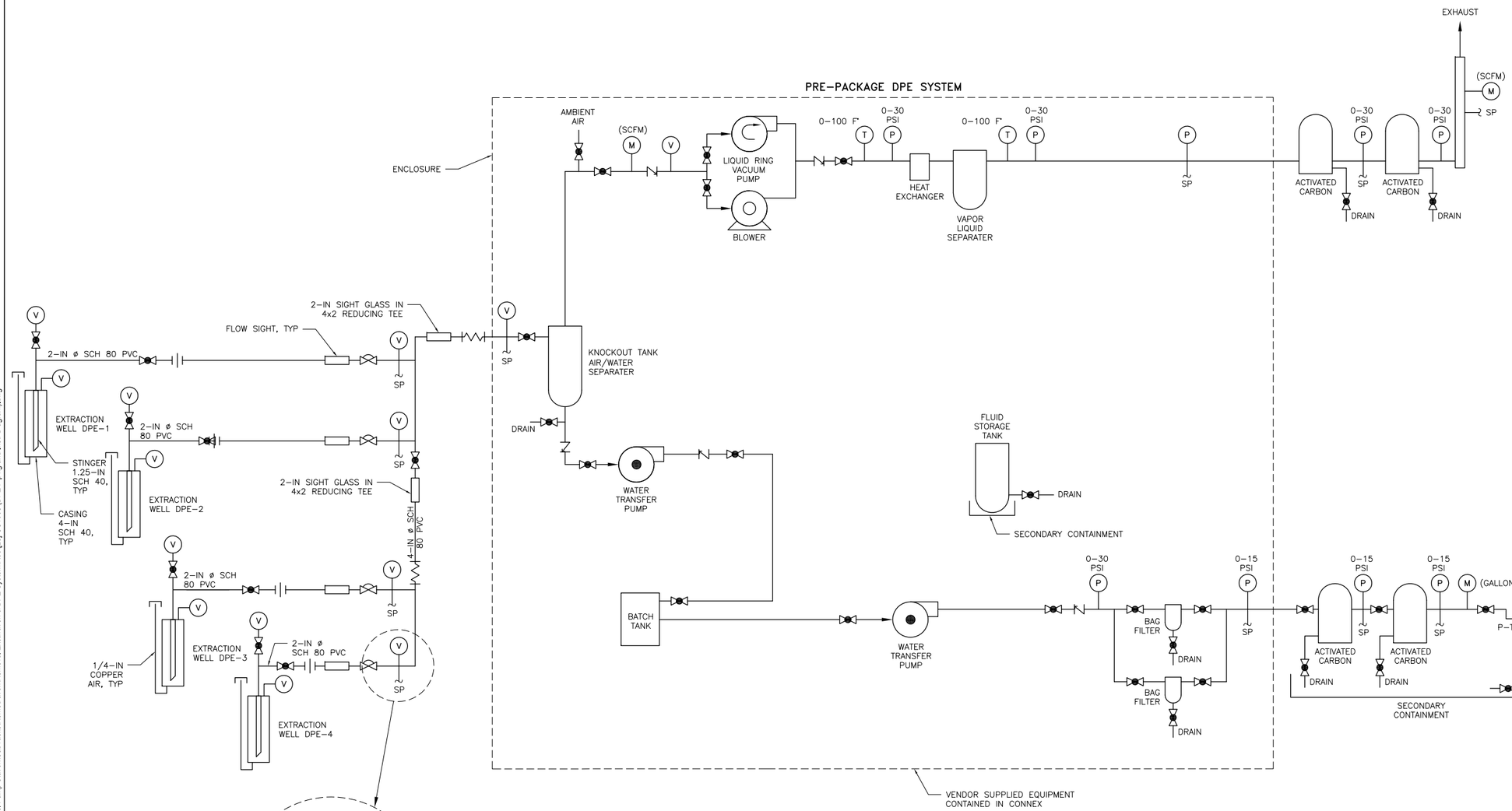
CARY SCOTT BROWN — STATE OF WASHINGTON — 36533 — REGISTERED PROFESSIONAL ENGINEER — 9-9-14

NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.
1	DPE PIPING AND INSTRUMENTATION DIAGRAM	GS1008												

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	DPE PROCESS FLOW DIAGRAM	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER					
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	GS1010	27	A



NOTES:

1. CARBON VESSELS ARE ASSUMED TO HAVE 1,000 LBS OF GRANULAR ACTIVATED CARBON EACH.
2. ALL VACUUM GAUGES SHALL HAVE 0 TO 30-IN HG SCALE.

LEGEND

- WATER TRANSFER PUMP
- LIQUID RING VACUUM PUMP
- BLOWER
- BALL VALVE
- CHECK VALVE
- (V) VACUUM GAUGE
- (M) TOTAL FLOW METER
- (T) TEMPERATURE SENSOR
- (P) PRESSURE GAUGE
- GLOBE VALVE
- SP SAMPLE PORT
- SIGHT GLASS
- CAPPED LINE
- UNION
- EXPANSION JOINT

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CARY SCOTT BROWN — STATE OF WASHINGTON — 36533 — REGISTERED PROFESSIONAL ENGINEER — 9-9-14

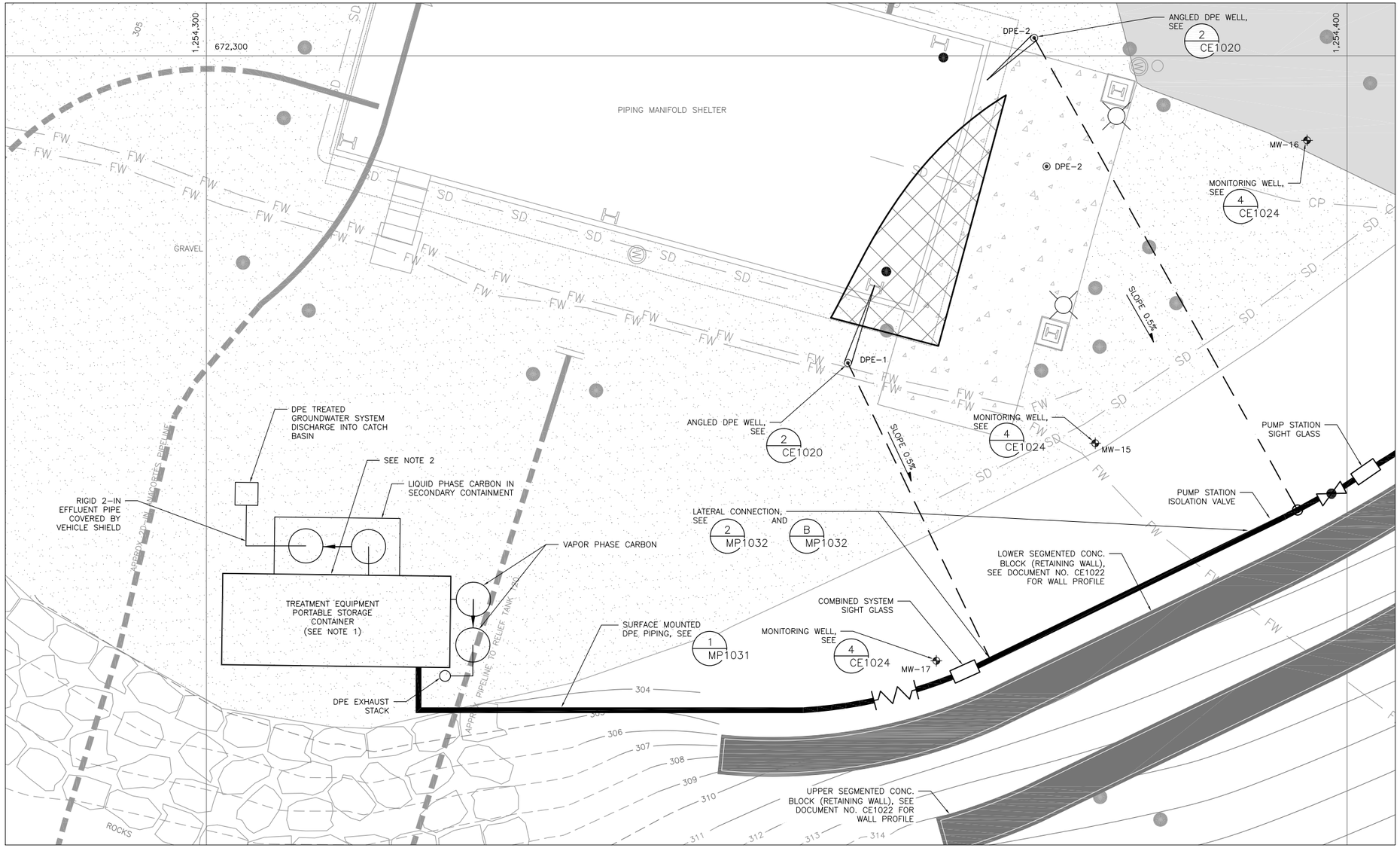
NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.
1	DPE PROCESS FLOW DIAGRAM	GS1010												

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	DPE PIPING AND INSTRUMENTATION DIAGRAM	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER					
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	GS1008	28	A

Mod: 09/09/2014, 10:12 | Plotted: 09/09/2014, 16:06 | brenda_mcintosh@KGS\Projects\Kinder Morgan\Laurel Pump Station\Sub Tasks\Remediation\Removal Excavation & DPE System\R03\[28] GS1008 (DPE Piping and Instr Diagram).dwg



NOTES:

1. CONTRACTOR SHALL USE BLOCKS TO LEVEL DPE EQIUPMENT CONTAINER.

LEGEND

- APPROXIMATE LIMITS OF SOIL EXCEEDING PCL
- DPE HEADER PIPE
- BELOWGROUND PIPING
- ABOVEGROUND PIPING
- NEW SEGMENTED CONC. BLOCK (RETAINING WALL)
- DIRECTION OF SLOPE
- INSTALLED AT 30° ANGLE
- NEW DPE WELL
- NEW MONITORING WELL
- ISOLATION VALVE (BALL VALVE)
- EXPANSION JOINT

N

0 5 10

CARY SCOTT BROWN — STATE OF WASHINGTON — 36533 — REGISTERED PROFESSIONAL ENGINEER — 9-9-14

NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.
6	PIPING AND MECHANICAL DETAILS	MP1032												
5	DPE SYSTEM LAYOUT AND PIPING SECTION–PUMP STATION AREA	MP1031												
4	MONITORING WELLS AND ASPHALT DETAILS	CE1024												
3	SEGMENTED CONCRETE BLOCKS (RETAINING WALLS) PROFILES AND SECTIONS	CE1022												
2	DPE AND PASSIVE VENT WELL DETAILS	CE1020												
1	PIPING SHELTER FOOTING DETAILS	CC1011												

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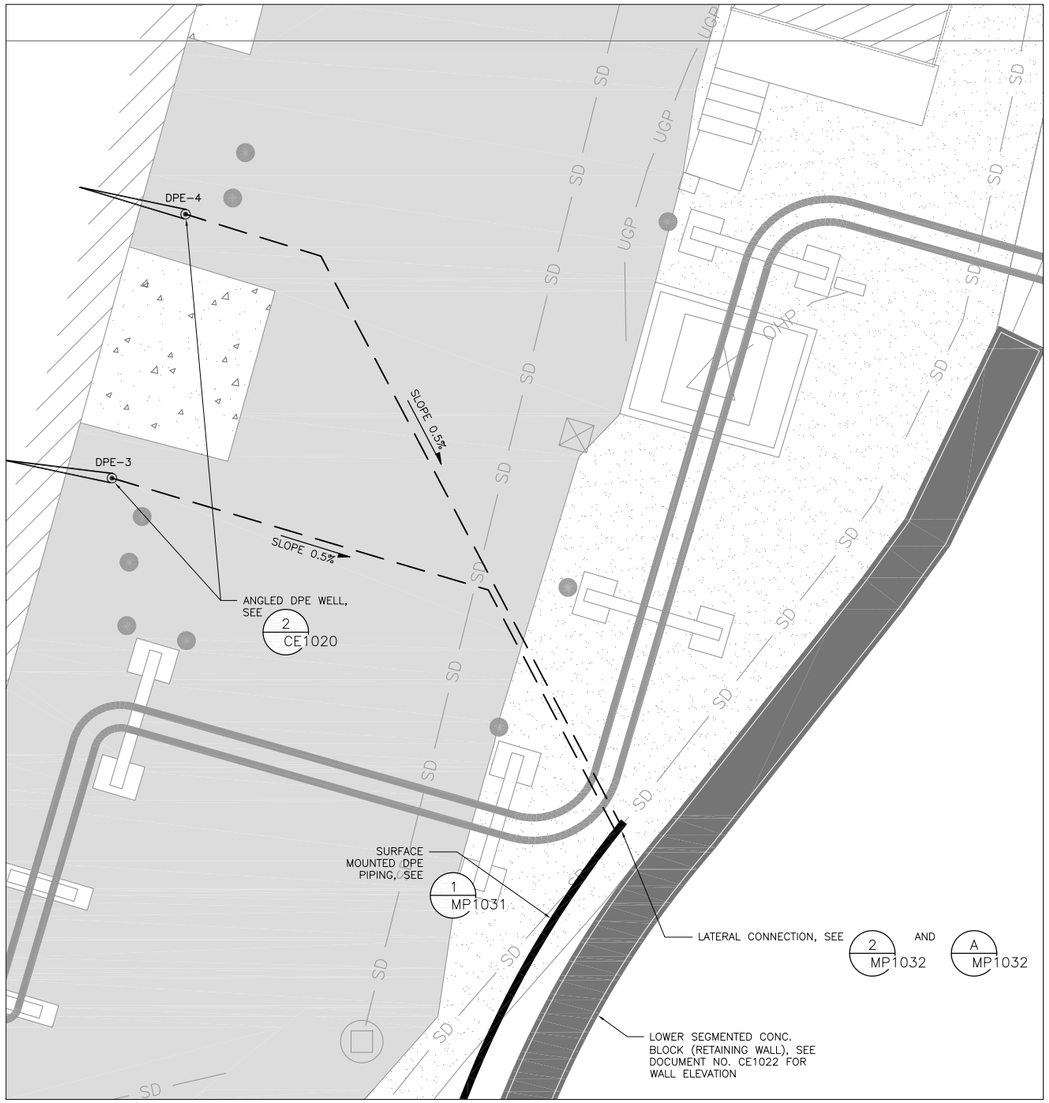
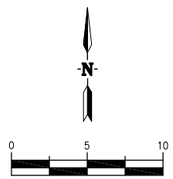
TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

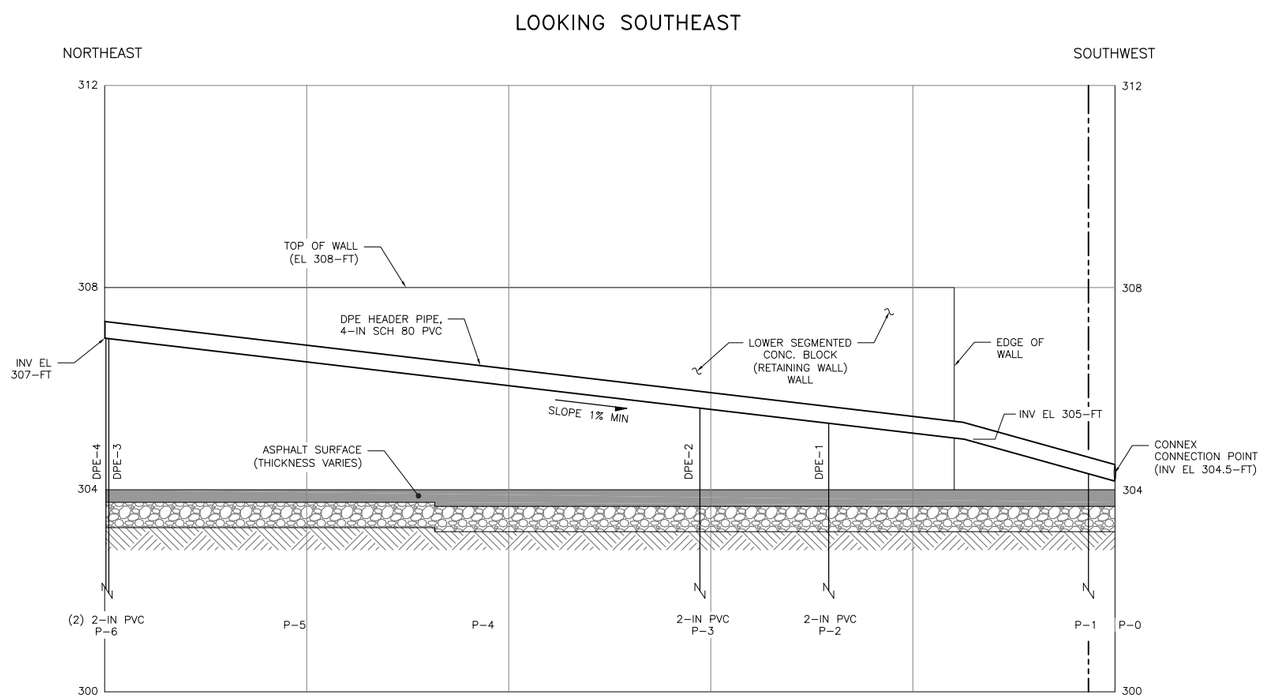
DRAWN L. JILES	DPE SYSTEM LAYOUT– PIPING MANIFOLD SHELTER	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER					
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05–51041	C1A01	UL00	MP1030	29	A

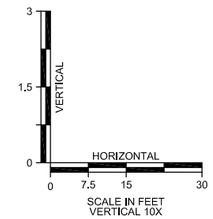


PUMP STATION DPE LAYOUT
SCALE: 1–IN=5–FT





SURFACE MOUNTED DPE PIPING SECTION
1 DETAIL
MP1031, MP1030, CE1015
SCALE: 1–IN=15–FT



LEGEND
- DPE HEADER PIPE
- BELOWGROUND PIPING
- ABOVEGROUND PIPING
- NEW SEGMENTED CONC. BLOCK (RETAINING WALL)
- DIRECTION OF SLOPE
- INSTALLED AT 30° ANGLE
- NEW DPE WELL
- BREAK POINT IN PROFILE

NOTES:
1. DPE HEADER PIPE SLOPE SHALL BE 1% MIN.
2. VERTICAL DPE PIPE SHALL BE INSTALLED IN FRONT OF WALL.
3. ALL PVC PIPE SHALL BE SCHEDULE 80.
4. TEMPORARY PIPE STAND SUPPORT FOR 4–IN PVC PIPE SHALL BE INSTALLED EVERY 8–FT MIN (SEE DETAIL 2/DOCUMENT NO. MP1032).

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(206) 438-2700

CARL SCOTT BROWN — STATE OF WASHINGTON — 20533 — 9-9-14 — REGISTERED PROFESSIONAL ENGINEER

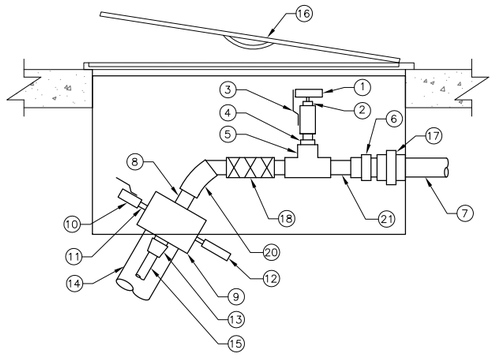
NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.
6	PIPING AND MECHANICAL DETAILS	MP1032												
5	DPE SYSTEM LAYOUT AND PIPING SECTION–PUMP STATION AREA	MP1031												
4	DPE SYSTEM LAYOUT–PIPING MANIFOLD SHELTER	MP1030												
3	SEGMENTED CONCRETE BLOCKS (RETAINING WALLS) PROFILES AND SECTIONS	CE1022												
2	DPE AND PASSIVE VENT WELL DETAILS	CE1020												
1	DPE SYSTEM INSTALLATION PLAN	CE1015												

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	DPE SYSTEM LAYOUT AND PIPING SECTION– PUMP STATION AREA	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER

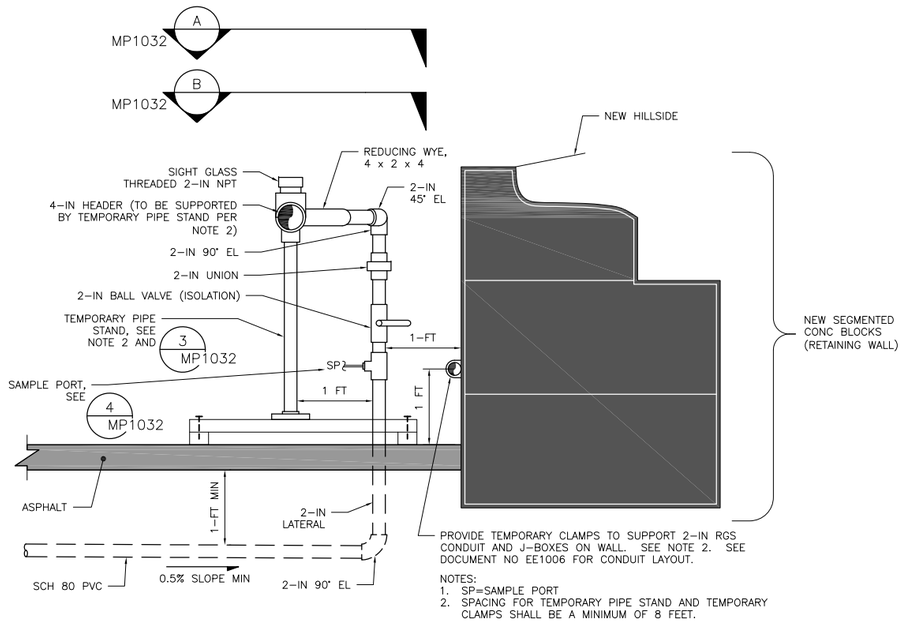
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05–51041	C1A01	UL00	MP1031	30	A



PART DESCRIPTION	PART NAME	MATERIAL
1	VACUUM GAUGE, 0–20 IN HG CENTER BACK MOUNT	–
2	BUSHING, 1–IN X 1/4–IN	BRASS
3	BALL VALVE, 1–IN	BRASS
4	BUSHING, 1 1/2–IN X 1–IN MNPTxNPT	BRASS
5	TEE, 1 1/2–IN SCH 80 (THRDxTHRDxTHRD)	PVC
6	REDUCER, 2–IN X 1 1/2–IN	PVC
7	PIPE, 2–IN SCH 80	PVC
8	NIPPLE, 1 1/2–IN MNPTxMNPT	PVC
9	CUSTOM WELL HEAD	PVC
10	BALL VALVE, 1/2–IN	BRASS
11	PIPE, 1/2–IN	BRASS
12	VACUUM GAUGE, 0–20 IN HG BOTTOM MOUNT	–
13	REDUCER, 1 1/2–IN X 1 1/4–IN	PVC
14	WELL CASING, 4–IN SCH 40	PVC
15	STINGER PIPE, 1 1/4–IN SCH 40	PVC
16	MANHOLE (2x3 FEET)	STEEL
17	UNION, 2–IN	PVC
18	FLEXIBLE HOSE, 1 1/2 MNPTxMNPT	–
20	22.5° EL, 1 1/2–IN SCH 80 (THREADED)	PVC
21	PIPE, 1 1/2–IN SCH 80	PVC

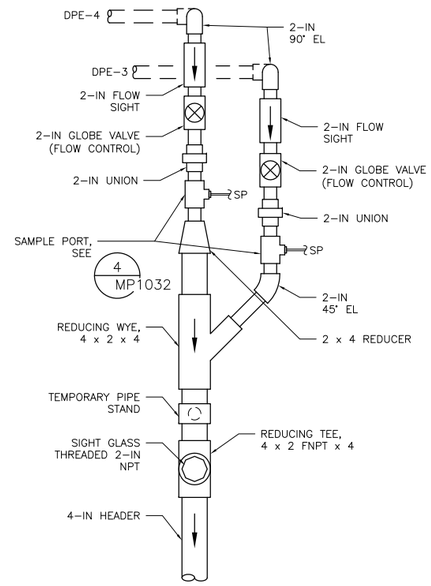
DPE WELL HEAD

1 / CE1020 DETAIL
SCALE: NTS



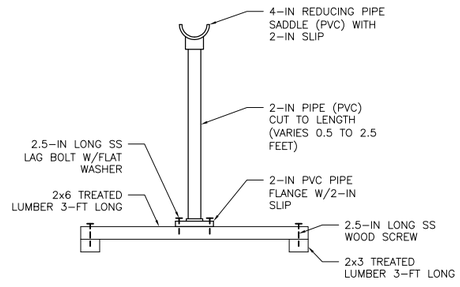
DPE LATERAL CONNECTION

2 / MP1030, MP1031 DETAIL
SCALE: 1–IN=1–FT



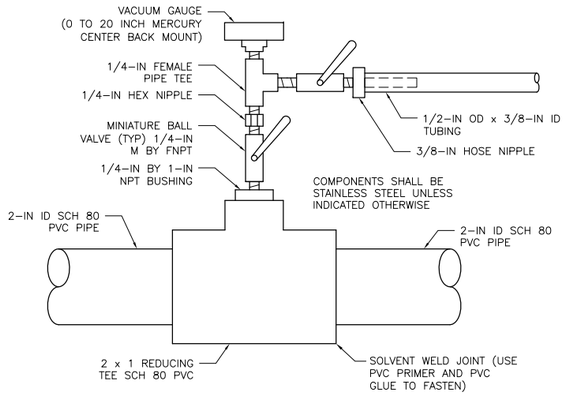
PIPING MANIFOLD LATERAL CONNECTION

A / MP1032 SECTION
SCALE: 1–IN=1–FT



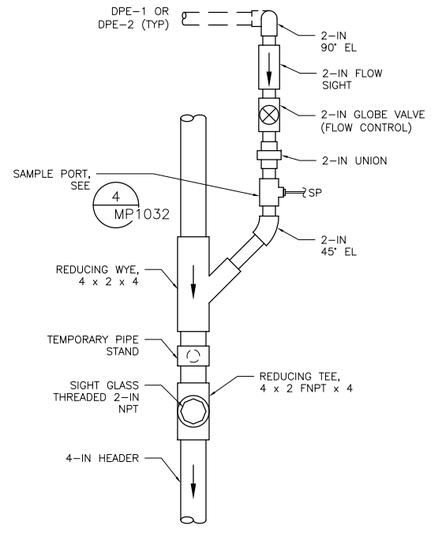
TEMPORARY PIPE STAND

3 / MP1032 DETAIL
SCALE: 1–IN=1–FT



SAMPLE PORT

4 / MP1032 DETAIL
SCALE: NTS



PUMP STATION LATERAL CONNECTION

B / MP1032 SECTION
SCALE: 1–IN=1–FT

GENERAL NOTE:
1. UNLESS OTHERWISE INDICATED ALL PIPING SHALL BE SCH 80 PVC.

CARL SCOTT BROWN — STATE OF WASHINGTON — 36033 — 9-9-14 — REGISTERED PROFESSIONAL ENGINEER

NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.
3	ELECTRICAL SITE PLAN	EE1006												
2	DPE SYSTEM LAYOUT AND PIPING SECTION–PUMP STATION AREA	MP1031												
1	DPE SYSTEM LAYOUT–PIPING MANIFOLD SHELTER	MP1030												

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TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN: L. JILES	PIPING AND MECHANICAL DETAILS	SHEET SIZE: D
CHECKED: P. McCULLOUGH		SCALE: AS NOTED
APPROVED: C. BROWN	LAUREL STATION	DATE: 09/09/14

DRAWING NUMBER					
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05–51041	C1A01	UL00	MP1032	31	A

ABBREVIATIONS AND ACRONYMS

GENERAL

A	AMPS
AF	AMP FRAME
AT	AMP TRIP
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
C	CONDUIT
CCT	CIRCUIT
DPE	DUAL PHASE EXTRACTION
ELEC	ELECTRICAL
FVNR	FULL VOLTAGE NON REVERSING
G	GROUND
HP	HORSE POWER
HVAC	HEATING VENTALLATING AND AIR CONDITIONING
HZ	HERTZ
IN	INCH
J–BOXES	JUNCTION BOXES
KA	KILO AMPS
KVA	KILO VOLT AMPS
KW	KILO WATTS
MC	METAL CLAD
MCC	MOTOR CONTROL CENTER
MCP	MAIN CIRCUIT PROTECTOR
MCM	THOUSAND CIRCULAR MILS
MOV	MOTOR OPERATED VALVE
NLP	NORMAL LOW–VOLTAGE POWER
NP	NAME PLATE
NRTL	NATIONALLY RECOGNIZED TESTING LABORATORY
OCS	OPEN/CLOSE SWITCH
PMP	PUMP
REF	REFERENCE DRAWING
RGS	RIGID GAVALNIZED STEEL
RMS	ROOT MEAN SQUARED
SYM	SYMETRICAL
TX/XFMR	TRANSFORMER
TYP	TYPICAL
UL	UNDERWRITER'S LAB
V	VOLTS

TEXT SYMBOLS

#	NUMBER
ø	PHASE

DOCUMENT NO. DESCRIPTORS

EE	EQUIPMENT, SUPPLY, DISTRIBUTION

GENERAL LEGEND OF SYMBOLS

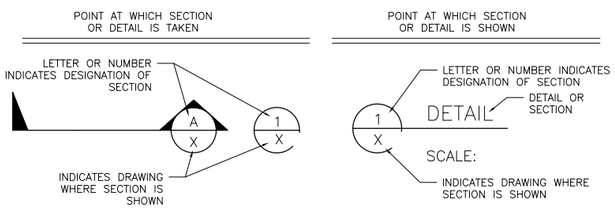
EXISTING

- CIRCUIT BREAKER
- TRANSFER SWITCH
- MCC BUCKET CONNECTION
- CURRENT TRANSFORMER
- GENERATOR
- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- CONTROL POWER TRANSFORMER
- MOTOR OVERLOAD
- MOTOR
- OPEN/CLOSE SWITCH
- DELTA CONNECTION
- WYE CONNECTION
- TRANSFORMER
- SWITCH
- FUSE
- CONNECTION
- HEATER ELEMENT

PROPOSED

- MCC BUCKET CONNECTION
- CIRCUIT BREAKER

SECTION AND DETAIL DESIGNATION



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JEFFREY S. GRESS — STATE OF WASHINGTON — 13080 — REGISTERED PROFESSIONAL ENGINEER — 9/9/14

NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	ELECTRICAL ABBREVIATIONS, GENERAL NOTES, AND LEGEND	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER					
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05–51041	C1A01	UL00	EE1005	32	A

NOTES:

1. SPACING FOR TEMPORARY CLAMPS TO SUPPORT CONDUIT AND J-BOXES SHALL BE A MINIMUM OF 8 FEET.
2. CONTRACTOR SHALL REMOVE EXISTING LIGHT FIXTURES AND ASSOCIATED CONDUIT PRIOR TO POST REMOVAL. STORE ON SITE AND RE-INSTALL TO PRE-CONSTRUCTION CONDITIONS FOLLOWING POST INSTALLATION.
3. DISCONNECT WIRES FROM EAST LIGHT FIXTURES AND REMOVE CONDUIT FROM J-BOX. PLUG OUTLET WITH XP FITTINGS SO LIGHTING SYSTEM IS OPERATIONAL WHILE EASTERN PORTION OF STEEL INFRASTRUCTURE IS REMOVED.

LEGEND

- TRENCH
- DPE HEADER PIPE
- ABOVEGROUND CONDUIT
- BELOWGROUND CONDUIT

JEFFREY S. GIBBS
STATE OF WASHINGTON
33080
REGISTERED PROFESSIONAL ENGINEER
9/9/14

NO.	REFERENCE DRAWINGS	DRAWING NO.	NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.

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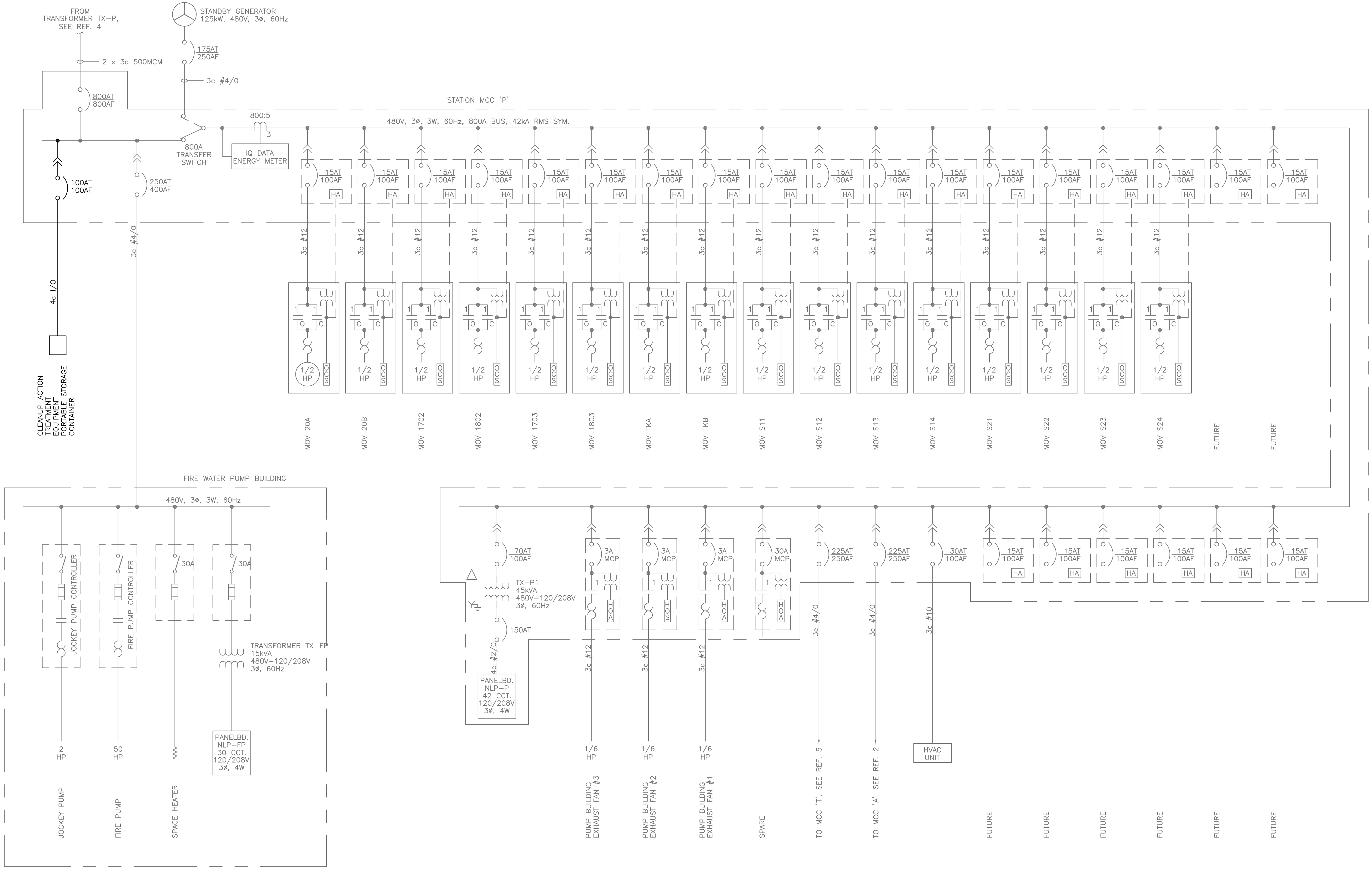
TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	ELECTRICAL SITE PLAN	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER					
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	EE1006	33	A



FROM TRANSFORMER TX-P, SEE REF. 4
2 x 3c 500MCM
800AT 800AF
STANDBY GENERATOR 125kW, 480V, 3ø, 60Hz
175AT 250AF
3c #4/0
STATION MCC 'P'
800:5
480V, 3ø, 3W, 60Hz, 800A BUS, 42kA RMS SYM.
800A TRANSFER SWITCH
IQ DATA ENERGY METER
100AT 100AF
250AT 400AF
15AT 100AF
HA
3c #12
4c 1/0
3c #4/0
1/2 HP
CLEANUP ACTION TREATMENT EQUIPMENT PORTABLE STORAGE CONTAINER
MOV 20A
MOV 20B
MOV 1702
MOV 1802
MOV 1703
MOV 1803
MOV TKA
MOV TKB
MOV S11
MOV S12
MOV S13
MOV S14
MOV S21
MOV S22
MOV S23
MOV S24
FUTURE
FUTURE
FIRE WATER PUMP BUILDING
480V, 3ø, 3W, 60Hz
JOCKEY PUMP CONTROLLER
FIRE PUMP CONTROLLER
30A
30A
TRANSFORMER TX-FP 15kVA 480V-120/208V 3ø, 60Hz
PANELBD. NLP-FP 30 CCT. 120/208V 3ø, 4W
2 HP
50 HP
JOCKEY PUMP
FIRE PUMP
SPACE HEATER
70AT 100AF
TX-P1 45kVA 480V-120/208V 3ø, 60Hz
150AT
4c #2/0
PANELBD. NLP-P 42 CCT. 120/208V 3ø, 4W
3A MCP
30A MCP
225AT 250AF
30AT 100AF
3c #10
1/6 HP
HVAC UNIT
PUMP BUILDING EXHAUST FAN #3
PUMP BUILDING EXHAUST FAN #2
PUMP BUILDING EXHAUST FAN #1
SPARE
TO MCC 'T', SEE REF. 5
TO MCC 'A', SEE REF. 2
FUTURE
FUTURE
FUTURE
FUTURE
FUTURE
FUTURE

NO.	REFERENCE DRAWINGS	DRAWING NO.
6	SINGLE LINE DIAG., 480V MCC 'P'	EE1072
5	SINGLE LINE DIAG., 480V MCC 'T'	EE1073
4	SINGLE LINE, 115kV & 4.16kV	EE1071
3	PANELBOARD SCHEDULES	EE1024
2	SINGLE LINE DIAG., 480V MCC 'A'	EE1011
1	ELECTRICAL PLAN, AREA #1	EE1001

NO.	DATE	REVISION	DR.	CHK.	APPR.	NO.	DATE	REVISION	DR.	CHK.	APPR.

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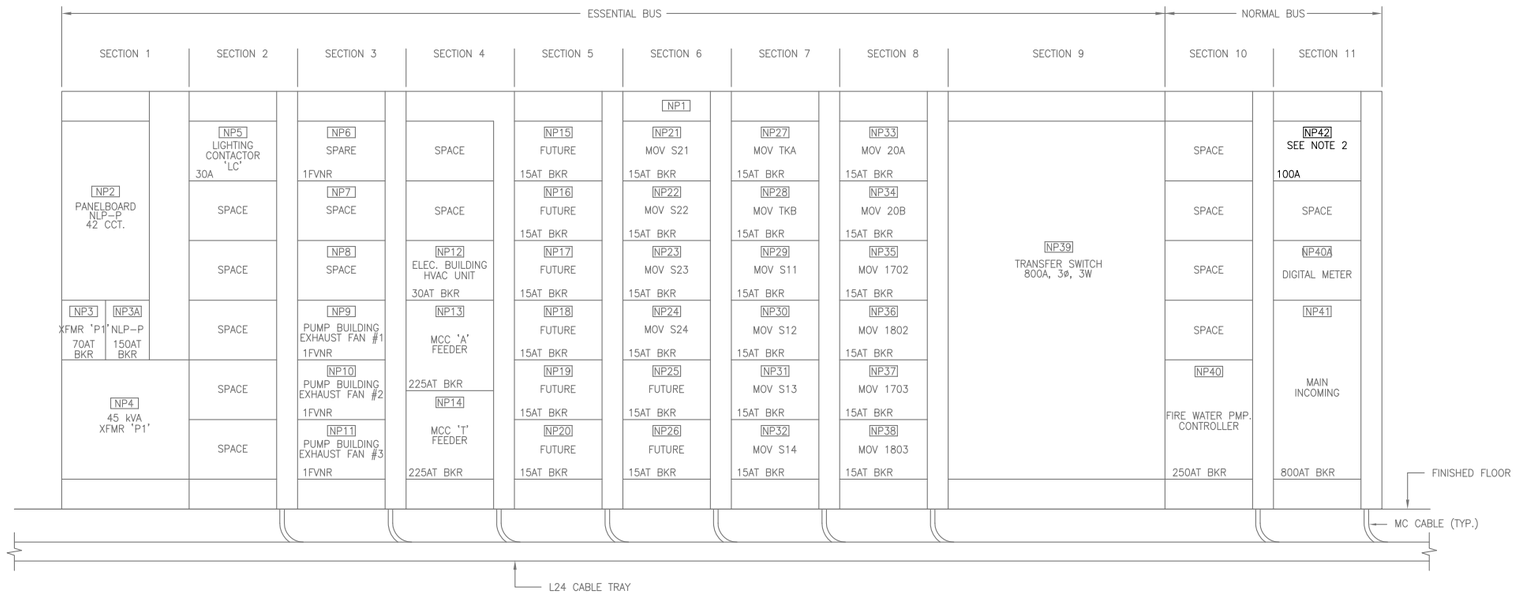
(206) 438-2700

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	ELECTRICAL ONE-LINE DIAGRAMS AND PANEL SCHEDULES	SHEET SIZE D	
CHECKED P. McCULLOUGH		SCALE AS NOTED	
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14	

DRAWING NUMBER

AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05-51041	C1A01	UL00	EE1007	34	A



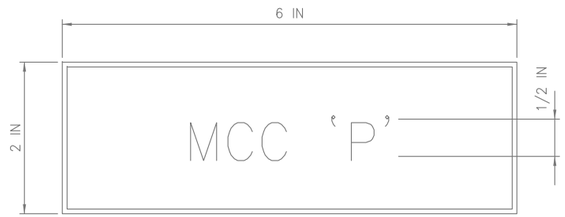
480V MCC 'P' LAYOUT

SCALE: NTS

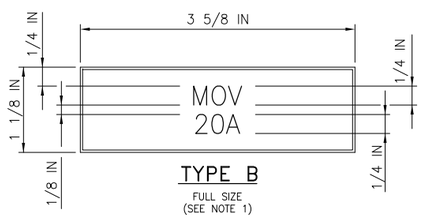
NAMEPLATE SCHEDULE

NO.	TYPE	LINE 1 ENGRAVING	LINE 2 ENGRAVING	NO.	TYPE	LINE 1 ENGRAVING	LINE 2 ENGRAVING
NP1	A	MCC 'P'		NP22	B	MOV	S22
NP2	B	PANELBOARD	NLP–P	NP23	B	MOV	S23
NP3	B	FEEDER	TRANSFORMER 'P1'	NP24	B	MOV	S24
NP3A	B	FEEDER	PANELBOARD NLP–P	NP25	B	FUTURE	
NP4	B	TRANSFORMER 'P1'	45kVA, 480–120/208V	NP26	B	FUTURE	
NP5	B	LIGHTING CONTACTOR	'LC'	NP27	B	MOV	TKA
NP6	B	SPACE		NP28	B	MOV	TKB
NP7	B	SPACE		NP29	B	MOV	S11
NP8	B	SPACE		NP30	B	MOV	S12
NP9	B	PUMP BUILDING	EXHAUST FAN #1	NP31	B	MOV	S13
NP10	B	PUMP BUILDING	EXHAUST FAN #2	NP32	B	MOV	S14
NP11	B	PUMP BUILDING	EXHAUST FAN 33	NP33	B	MOV	20A
NP12	B	ELECTRICAL BUILDING	HVAC UNIT	NP34	B	MOV	20B
NP13	B	MCC 'A'	FEEDER	NP35	B	MOV	1702
NP14	B	MCC 'T'	FEEDER	NP36	B	MOV	1802
NP15	B	FUTURE		NP37	B	MOV	1703
NP16	B	FUTURE		NP38	B	MOV	1803
NP17	B	FUTURE		NP39	B	TRANSFER SWITCH	800A, 3ø, 3W
NP18	B	FUTURE		NP40	B	FIRE WATER PUMP	CONTROLLER
NP19	B	FUTURE		NP40A	B	DIGITAL METER	
NP20	B	FUTURE		NP41	B	MAIN	INCOMING
NP21	B	MOV	S21	NP42	B	FEEDER	CLEANUP ACTION

SEE NOTE 3



TYPE A
FULL SIZE
(SEE NOTE 1)



TYPE B
FULL SIZE
(SEE NOTE 1)

MCC NAMEPLATE DETAILS

MCC SPECIFICATIONS:

VOLTAGE RATING: 480 VOLTS, 3 PHASE, 3 WIRE, 60 HERTZ
NEMA CLASS: 1
NEMA TYPE: B
BUS BRACING: 42kA RMS SYMMETRICAL
NEMA ENCLOSURE: 1 WITH DOOR GASKETS
HORIZONTAL BUS RATING: 800 AMPS
VERTICAL BUS RATING: 300 AMPS
BUS MATERIAL: TIN PLATED COPPER
ALL MCC'S SHALL BE U.L. OR NRTL LABELLED

NOTES:

1. NAMEPLATES SHALL BE 1/16" THICK, 3 PLY LAMICOID. TWO OUTER PLYS TO BE WHITE, INNER PLY TO BE BLACK. FIX WITH STAINLESS STEEL SCREWS.
2. PROVIDE NEW 100A, 3ø CIRCUIT BREAKER.
3. REPLACE EXISTING NAME PLATE WITH NEW NAME PLATE.

JEFFREY S. GIBBS STATE OF WASHINGTON 33080 REGISTERED PROFESSIONAL ENGINEER 9/9/14

NO.	REFERENCE DRAWINGS	DRAWING NO.
5	SINGLE LINE DIAG., 480V MCC 'T'	EE1073
4	SINGLE LINE, 115kV & 4.16kV	EE1071
3	PANELBOARD SCHEDULES	EE1024
2	SINGLE LINE DIAG., 480V MCC 'A'	EE1011
1	ELECTRICAL PLAN, AREA #1	EE1001

NO.	DATE	REVISION	DR.	CHK.	APPR.

NO.	DATE	REVISION	DR.	CHK.	APPR.

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SEATTLE, WA 98101-1616
(206) 438-2700

TRANSMOUNTAIN
TRANSMOUNTAIN PIPELINE (PUGET SOUND)

DRAWN L. JILES	ELECTRICAL CONTROL DIAGRAM AND CONNECTION DETAILS	SHEET SIZE D
CHECKED P. McCULLOUGH		SCALE AS NOTED
APPROVED C. BROWN	LAUREL STATION	DATE 09/09/14

DRAWING NUMBER					
AFE	WBS	FACILITY ID.	DOCUMENT No.	SHT.No.	REV.
05–51041	C1A01	UL00	EE1008	35	A