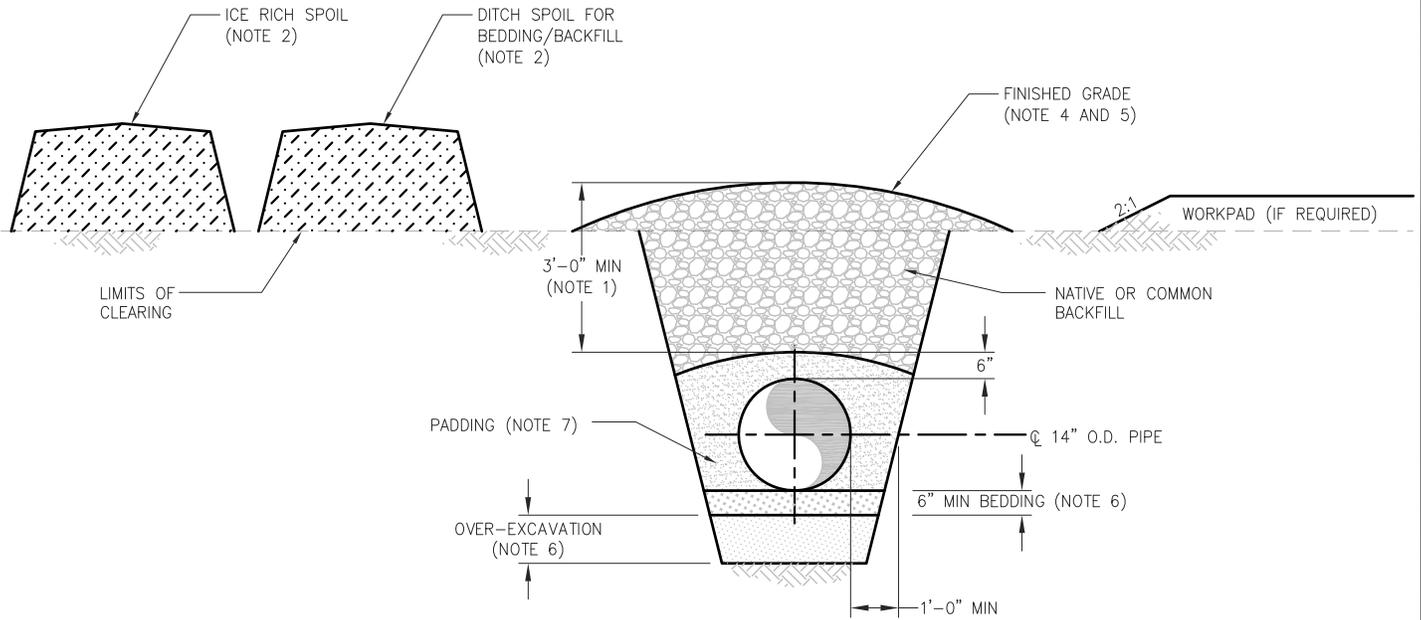


APPENDIX E: ENGINEERING TYPICALS - FIGURES INDEX

Figure	Description
P01C-SCIS-01	Buried Pipe With Over-Excavation In Ice Rich Soils Typical Section
P01C-TYBD-01	Typical Bridge Detail Notes
P01C-TYBD-02	Typical Flex-Float Bridge
P01C-TYBD-03	Typical Rock Flume Bridge
P01C-TYBD-04	Typical Timber Mat Bridge
P01C-TYBD-05	Typical Portable Waterbody Bridge
P01C-TYMK-01	Typical Pipeline Marker
P01C-TYMK-02	Typical Pipeline Warning Marker
P01C-TYMK-03	Typical Pipeline Aerial Marker
P01C-TYTS-01	Typical Cathodic Protection Coupon Test Station
P01C-TYTS-02	Typical Cathodic Protection Coupon Test Station
P01C-TYWC-01	Typical Non-Flowing Waterbody Crossing Open-Cut
P01C-TYWC-02	Typical Flowing Waterbody Crossing Open-Cut
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P01C-TYWC-04	Typical Waterbody Crossing Open-Cut Dam & Pump
P01C-TYWC-05	Typical Waterbody Crossing Open-Cut Dry Flume
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P01M-DTVA-02	Mainline Block Valve Assembly
P01M-TYPL-01	Typical 16" x 14" Pig Launcher
P01M-TYPL-02	Typical 16" x 14" Pig Launcher
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P01W-TYEC-02	Typical Silt Fence Sediment Barrier
P01W-TYEC-03	Typical Geotextile Filter Bags for Dewatering
P01W-TYEC-04	Typical Hydro-Mulch and Tackifier
P01W-TYEC-05	Typical Hydro-Mulch and Tackifier
P01W-TYEC-06	Typical Erosion Control Matting Streambanks
P01W-TYEC-07	Typical Wattle BMP
P01W-TYEC-08	Typical Wattle BMP Entrenched
P01W-TYEC-09	Typical Temporary Soil Containment Berm
P01W-TYEC-10	Typical Slope Breaker With Longitudinal Cross Slopes (Sht. 1 of 3)
P01W-TYEC-11	Typical Slope Breaker With Longitudinal Cross Slopes (Sht. 2 of 3)
P01W-TYEC-12	Typical Slope Breaker With Longitudinal Cross Slopes (Sht. 3 of 3)
P01W-TYRW-01	Typical Side Slope Section - Two Toned Sheet 1 of 2
P01W-TYRW-02	Typical Side Slope Section - Two Toned Sheet 2 of 2
P01W-TYTR-01	Typical Mini-Trench Breaker
P01W-TYTR-02	Typical Trench Breaker Requirements
P01W-TYTR-03	Typical Reclaimed Trench
P01X-TYCT-01	Typical Protective Coating Details
P01X-TYWL-01	Typical Thermite Weld Connector
P04Q-SPHD-01	Typical HDD Entry Site Equipment Layout
P04W-TYPT-01	Typical Pipe Storage Yard
P04W-TYPT-02	Typical Temporary Pipe Stock Piles
P07C-TYSCW-01	Winter Road Typical Stream Crossing Plan
P07C-TYSCW-02	Winter Road Stream Crossing Cross Section Typical Stream With High Banks
P07C-TYSCW-03	Winter Road Typical Section
P07C-TYTOW-01	Winter Road Plan of Typical Turnouts



TYPICAL SECTION
NOT TO SCALE

NOTES:

1. MINIMUM DEPTH OF COVER: 36". ADDITIONAL COVER MAY BE REQUIRED FOR BUOYANCY CONTROL. RIVER AND STREAM SCOUR, AND BENDS.
2. EXCAVATION:
LOG THE TRENCH MATERIAL AS IT IS DUG. SEGREGATE ICE RICH MATERIAL IN A SPOIL PILE SEPARATE FROM DITCH SPOIL WHICH IS ACCEPTABLE FOR BACKFILL. IN EXTREME CASES OF ICE CONTENT, IT MAY BE NECESSARY TO HAUL IN ADDITIONAL SELECT MATERIAL AND/OR TO HAUL THE ICE RICH SPOIL TO AN APPROVED DISPOSAL SITE, SUCH AS AN ABANDONED MATERIAL SITE, COULD BE CONSIDERED.
3. PRIOR TO FINAL DESIGN:
GEOTECHNICAL LOGGING OF BORE HOLES TO DETERMINE ICE CONTENT IN THE DITCH PROFILE AND BELOW THE DITCH BOTTOM FOR AN ADDITIONAL 10' OR WHATEVER DEPTH WAS DETERMINED TO AFFECT PIPELINE SETTLEMENT IN THE EVENT OF THAWING BELOW THE PIPELINE.
4. PLACE AND ROACH THE REMAINING DITCH SPOIL. INCLUDING THE ICE RICH SPOIL, OVER TOP OF THE PADDING AND ALLOW IT TO THAW DURING SUMMER SEASON.
5. PLACE APPROPRIATE EROSION CONTROL DEVICES (ECDs) ALONG THE ROACH DITCH LINE WHERE ICE RICH SPOIL MIGHT FLOW INTO AN EXISTING DRAINAGE WHEN IT MELTS. SEED THE ROACHED SPOIL PILE AND ANY DISTURBED RIGHT OF WAY. INSPECT THE DITCH LINE IN THE SUMMER/FALL FOLLOWING WINTER CONSTRUCTION AND USE LOW GROUND PRESSURE EQUIPMENT TO DRESS UP OR RE-SHAPE THE ROACHED SPOIL OVER THE DITCH AS NEEDED. RE-SEED AND RE-PLACE ECDs IF NECESSARY. REPEAT INSPECTION ANNUALLY FOR THE FIRST THREE SEASONS OR AS NEEDED TO MAINTAIN SOIL STABILITY.
6. PLACEMENT OF SELECT, THAW STABLE FILL FOR PIPE BEDDING IN ANY OVER-EXCAVATED SECTIONS TO PROPERLY SUPPORT AND BED THE PIPE.
7. PLACEMENT OF SELECT, THAW STABLE PADDING AROUND THE PIPE TO 6" ABOVE THE PIPE. ACCEPTABLE DITCH SPOIL WOULD BE PREFERRED. IMPORTED MATERIAL MIGHT BE NEEDED IF DITCH SPOIL IS NOT ACCEPTABLE.
8. OVER-EXCAVATE 3 FEET BELOW TARGET DITCH DEPTH WHERE VISIBLE SEGREGATED ICE (FROZEN GROUND CLASSIFICATION Vx) IS DISCOVERED IN THE DITCH BOTTOM. BACKFILL OVER-EXCAVATION WITH THAW-STABLE BEDDING. PLACE GEOGRID, IF SO DIRECTED BY THE ENGINEER, TO SPAN AREAS OF OVER-EXCAVATION.

**PRELIMINARY
NOT FOR CONSTRUCTION!**

DONLIN GOLD PROJECT APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
BURIED PIPE WITH OVER-EXCAVATION IN ICE RICH SOILS TYPICAL SECTION		
OWNER:		
DATE: OCTOBER 2013	P01C-SCIS-01	REV 1

BRIDGE DETAIL NOTES:

1. DESIGN AND MAINTAIN BRIDGE TO WITHSTAND AND PASS THE HIGHEST ANTICIPATED FLOW THAT MAY OCCUR WHILE THE BRIDGE IS IN PLACE. CULVERTS MUST BE ALIGNED TO PREVENT BANK EROSION OR STREAM BED SCOUR.
2. INSPECT BRIDGE ELEVATION SO BRIDGE REMAINS SUPPORTED ABOVE HIGH BANK, AND DOES NOT SINK INTO BANK. ADDITIONAL SUPPORT MUST BE ADDED ON TOP OF BANK AND UNDER SPAN IF INITIAL SUPPORT STARTS TO SETTLE. ALL BRIDGES MUST BE ANCHORED FOR STABILITY.
3. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED. CONSTRUCT SEDIMENT BARRIERS ACROSS THE ENTIRE CONSTRUCTION R.O.W. TO PREVENT SILT LADEN WATER AND SPOIL FROM FLOWING BACK INTO WATERBODY. SILT FENCE OR SANDBAGS MAY BE USED INTERCHANGEABLY.
4. BRIDGE DECKS WILL BE KEPT FREE OF SOIL.
5. EQUIPMENT BRIDGES WILL CONSIST OF ONE OF THE FOLLOWING: CLEAN ROCK PLACED OVER FLUME PIPES; PREFABRICATED CONSTRUCTION MATS; OR FLEX-FLOAT OR OTHER TEMPORARY BRIDGING, SUCH AS BAILEY BRIDGES.
6. REMOVE EQUIPMENT BRIDGES AND ASSOCIATED MATERIAL AS SOON AS POSSIBLE. RESTORE AND STABILIZE BED AND BANKS TO APPROXIMATE PRE-CONSTRUCTION CONDITIONS.
7. DISPOSE OF ANY ROCK AS DIRECTED.

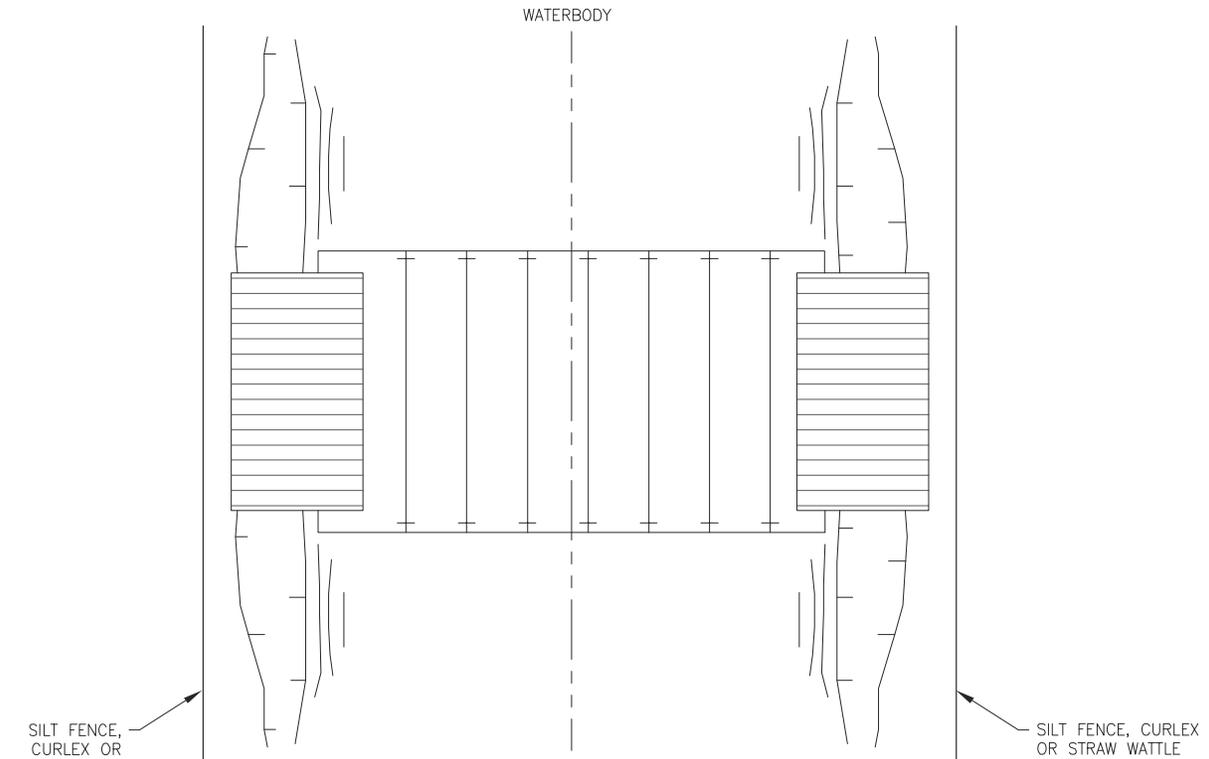
DONLIN GOLD PROJECT

APPLICANT: Donlin Gold, LLC.
4720 Business Park Blvd., Suite G-25
Anchorage, Alaska 99503

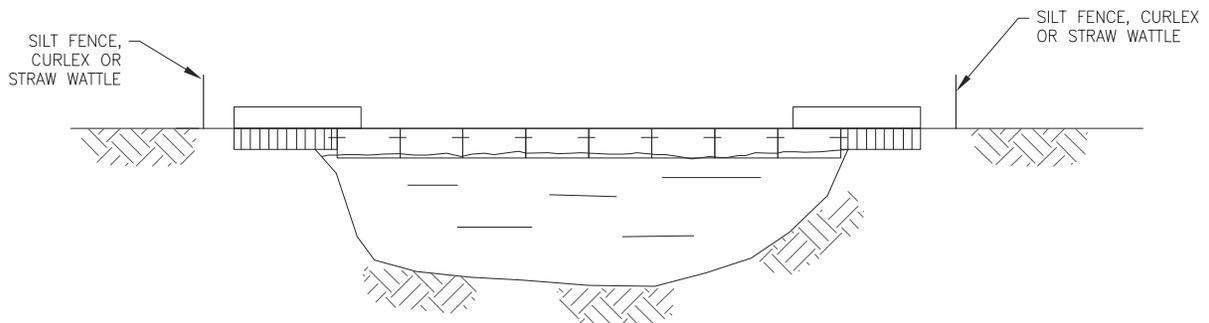
**TYPICAL
BRIDGE DETAIL NOTES**

OWNER:

DATE: OCTOBER 2013	P01C-TYBD-01	REV 1
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PLAN VIEW
NOT TO SCALE



SECTION VIEW
NOT TO SCALE

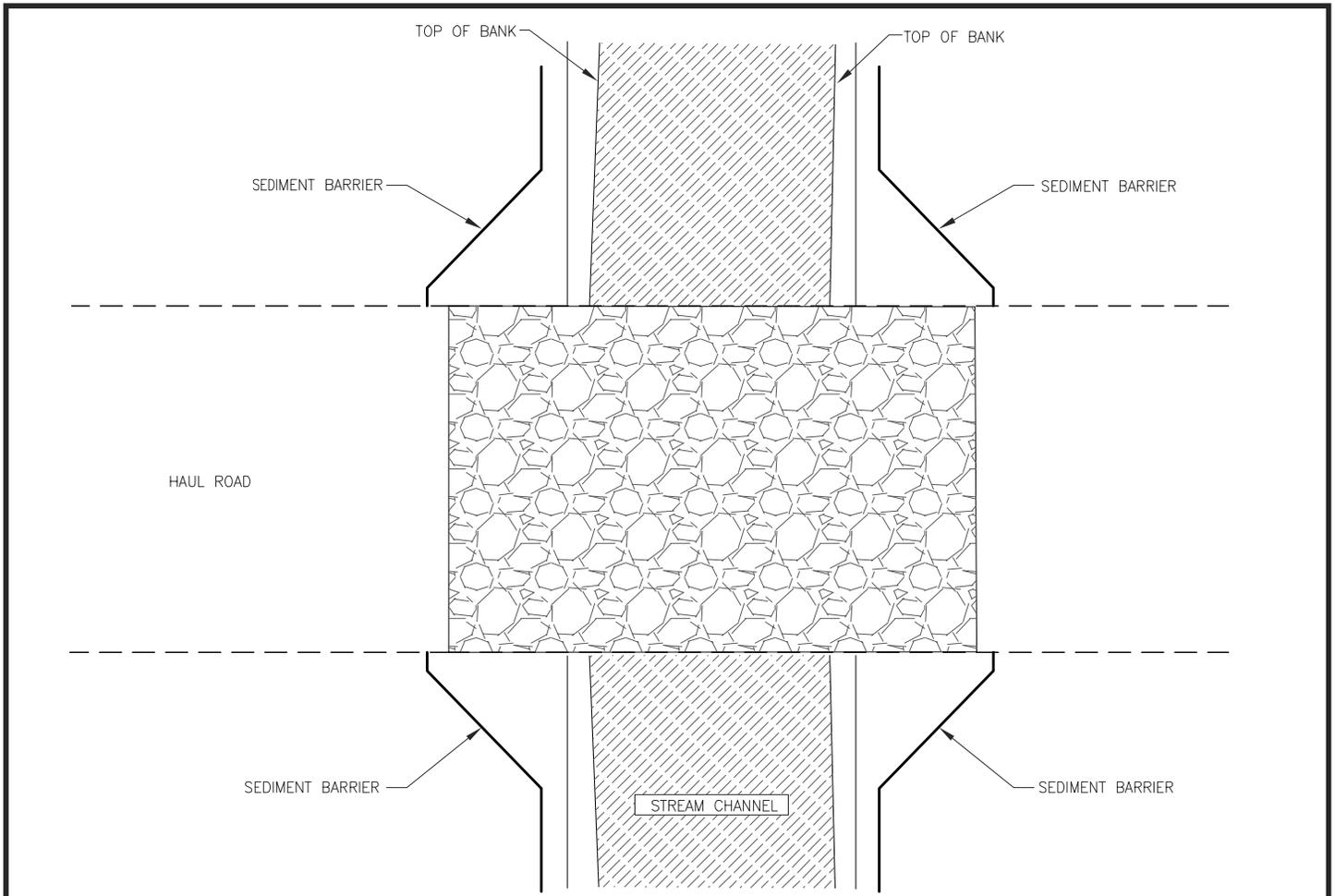
DONLIN GOLD PROJECT

APPLICANT: Donlin Gold, LLC.
4720 Business Park Blvd., Suite G-25
Anchorage, Alaska 99503

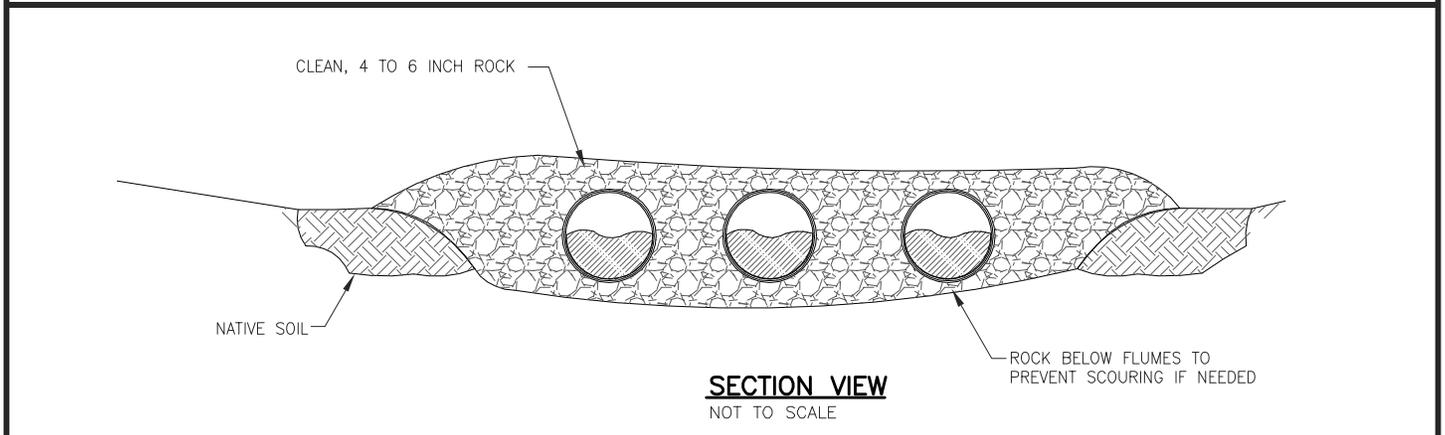
**TYPICAL
FLEX-FLOAT BRIDGE**

OWNER:

DATE: OCTOBER 2013	P01C-TYBD-02	REV 1
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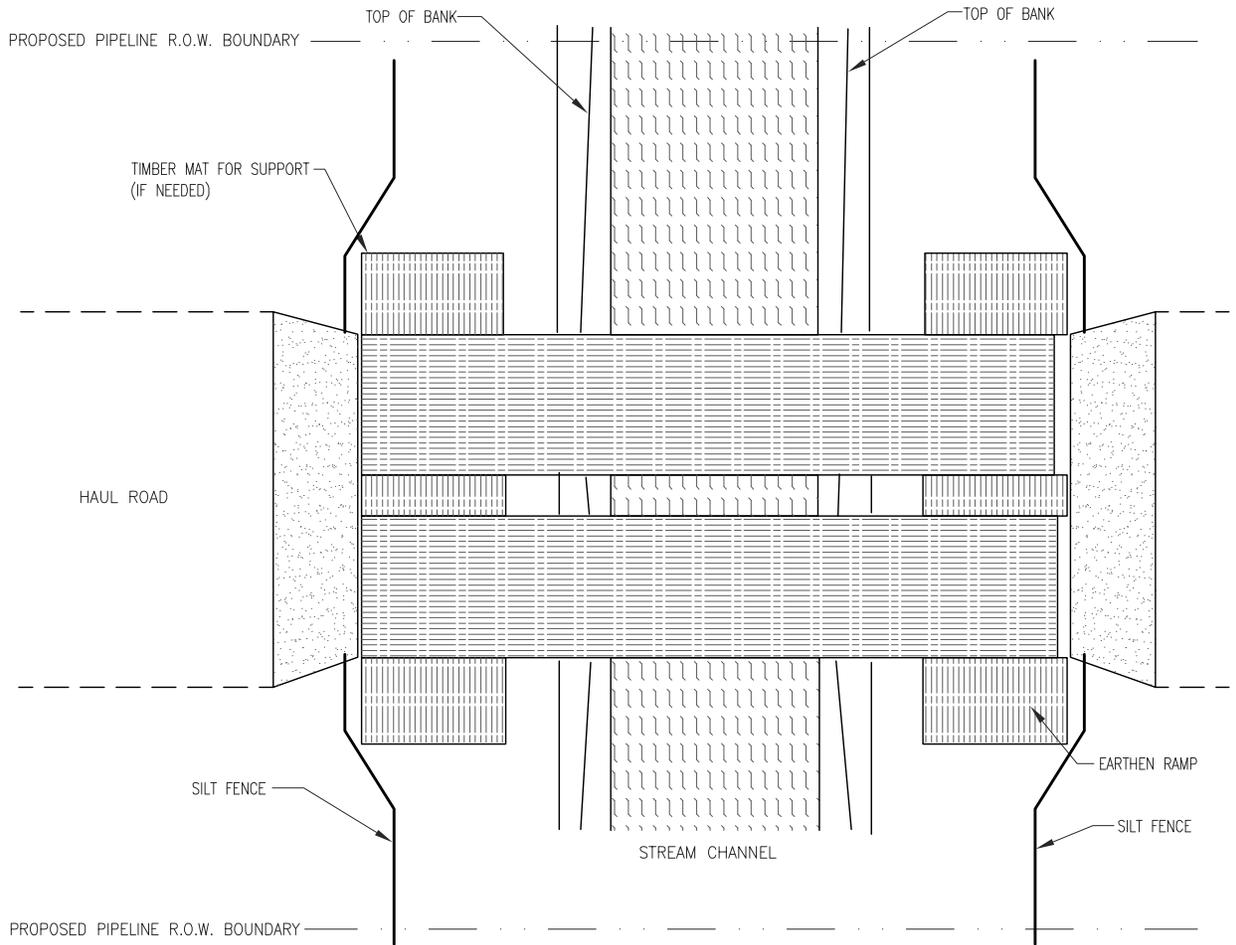


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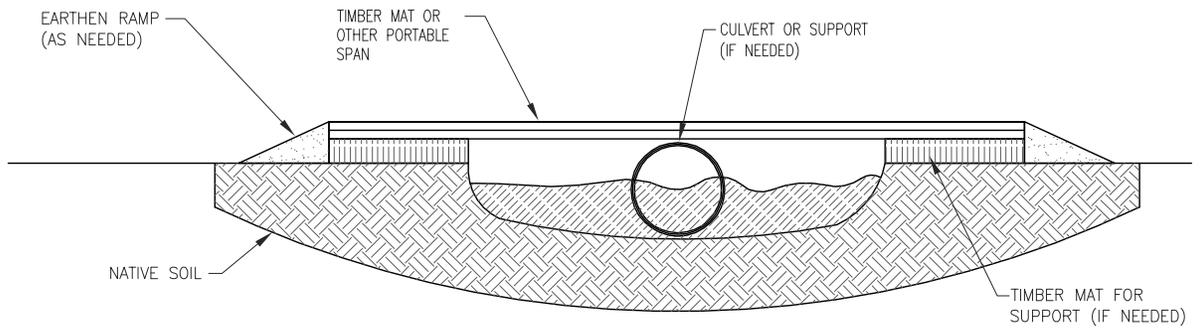


SECTION VIEW
NOT TO SCALE

DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
TYPICAL ROCK FLUME BRIDGE		
OWNER:		
DATE: OCTOBER 2013	P01C-TYBD-03	REV 1

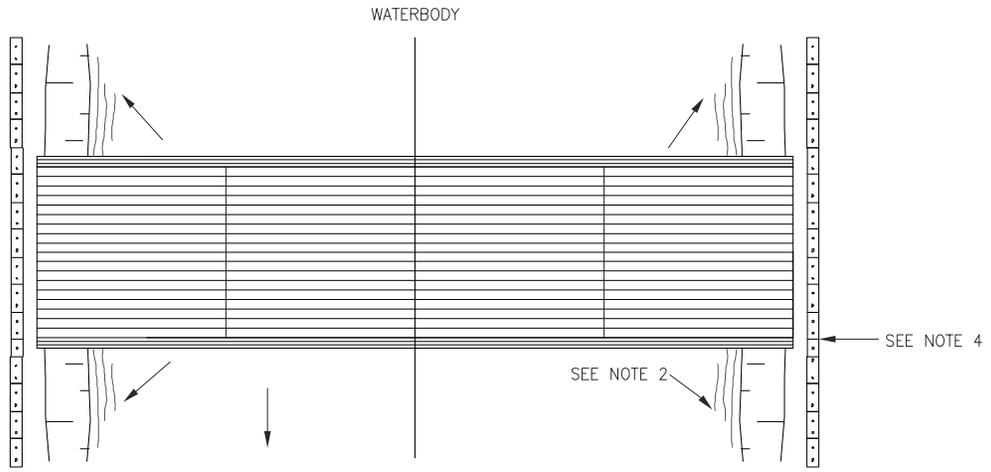


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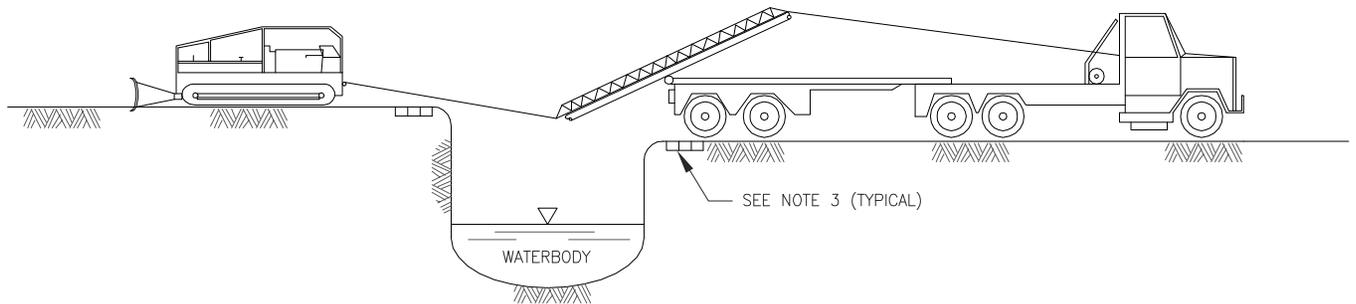


SECTION VIEW
NOT TO SCALE

DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
TYPICAL TIMBER MAT BRIDGE		
OWNER:		
DATE: OCTOBER 2013	P01C-TYBD-04	REV 1



PLAN
NOT TO SCALE

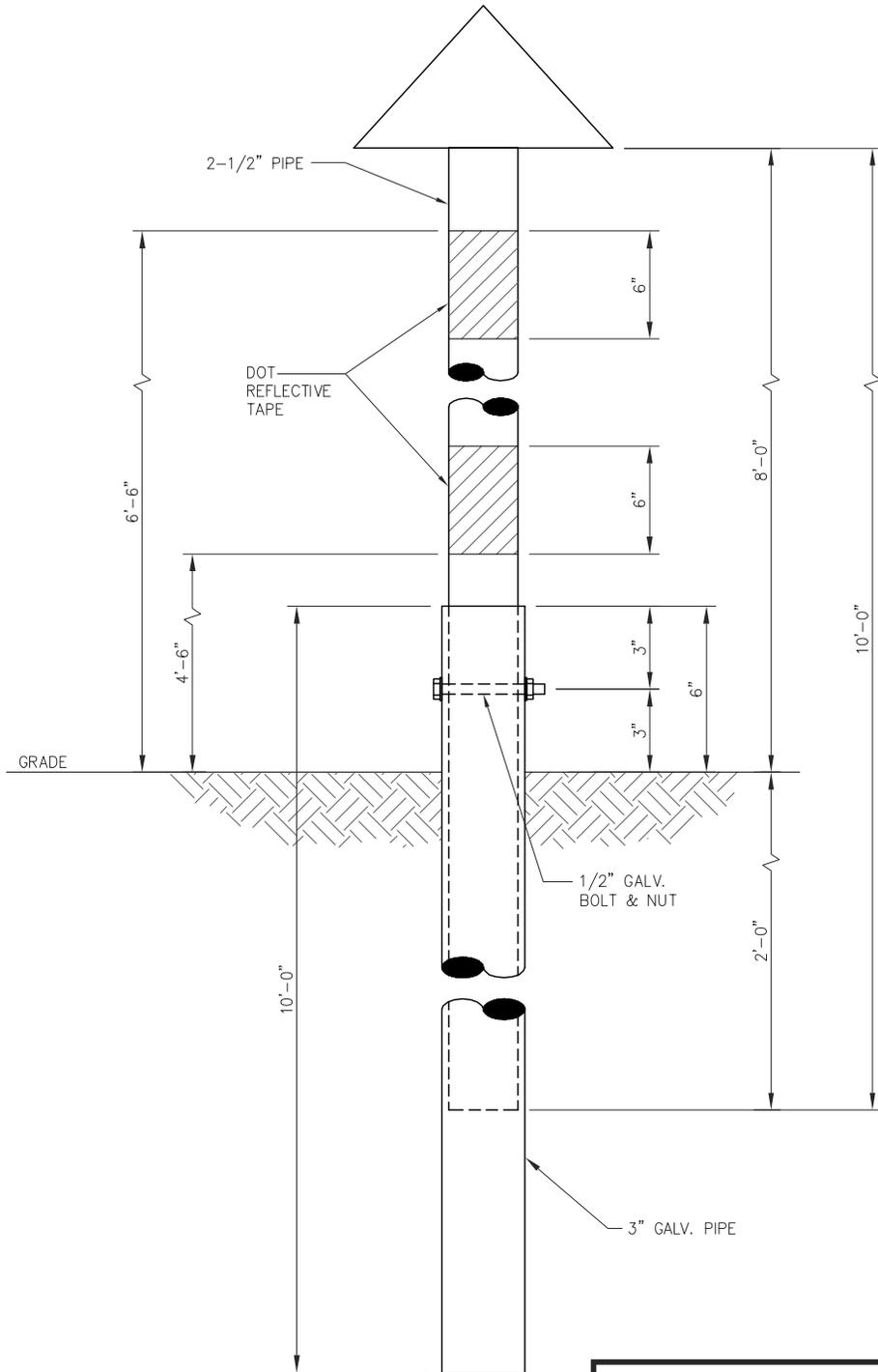


PROFILE
NOT TO SCALE

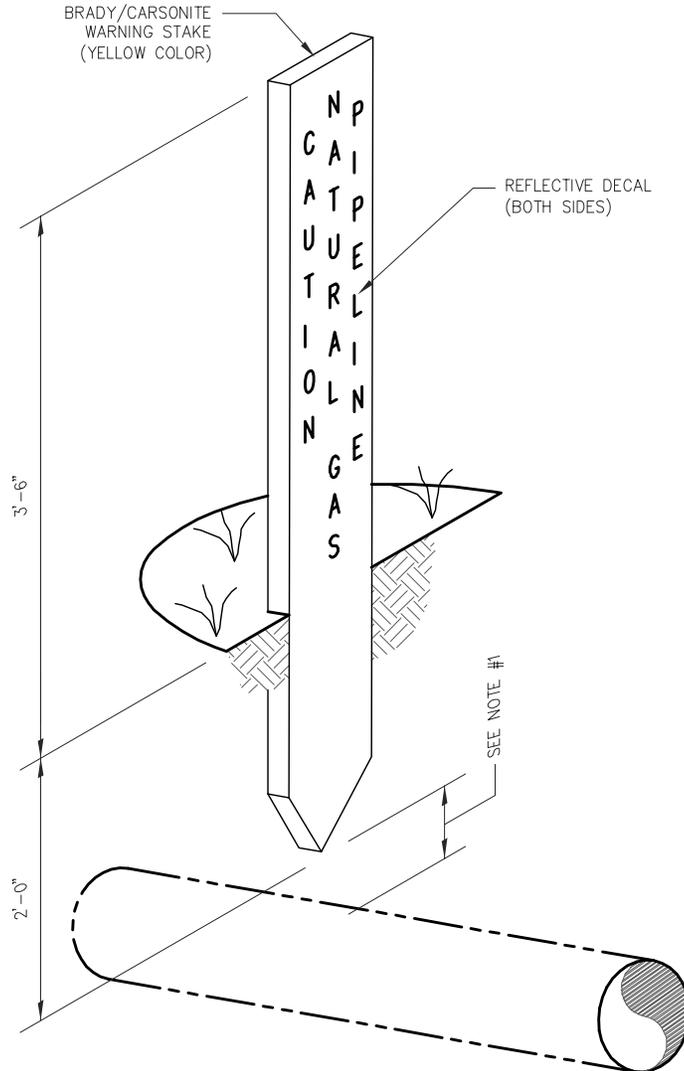
NOTES:

1. THIS TYPE OF BRIDGE IS GENERALLY USED ON NARROW, DEEP CROSSINGS.
2. BRIDGE IS ANCHORED AND/OR TIED OFF TO ANCHOR BLOCKS FOR STABILITY.
3. UTILIZE APPROACH FILLS OF CLEAN GRANULAR MATERIAL, SWAMP MATS, SKIDS OR OTHER SUITABLE MATERIALS TO AVOID CUTTING THE BANKS WHEREVER FEASIBLE. ENSURE ADEQUATE FREEBOARD. AS REQUIRED, ENSURE THAT FILL MATERIAL USED DOES NOT SPILL INTO WATERBODY.
4. CONSTRUCT SEDIMENT BARRIERS ACROSS THE ENTIRE CONSTRUCTION R.O.W. TO PREVENT SILT LADEN WATER AND SPOIL FROM FLOWING BACK INTO WATERBODY. BARRIERS MAY BE TEMPORARILY REMOVED TO ALLOW CONSTRUCTION ACTIVITIES.
5. RESTORE AND STABILIZE BED AND BANKS TO APPROXIMATE PRE-CONSTRUCTION CONDITIONS.

DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
TYPICAL PORTABLE WATERBODY BRIDGE		
OWNER:		
DATE: OCTOBER 2013	P01C-TYBD-05	REV 1



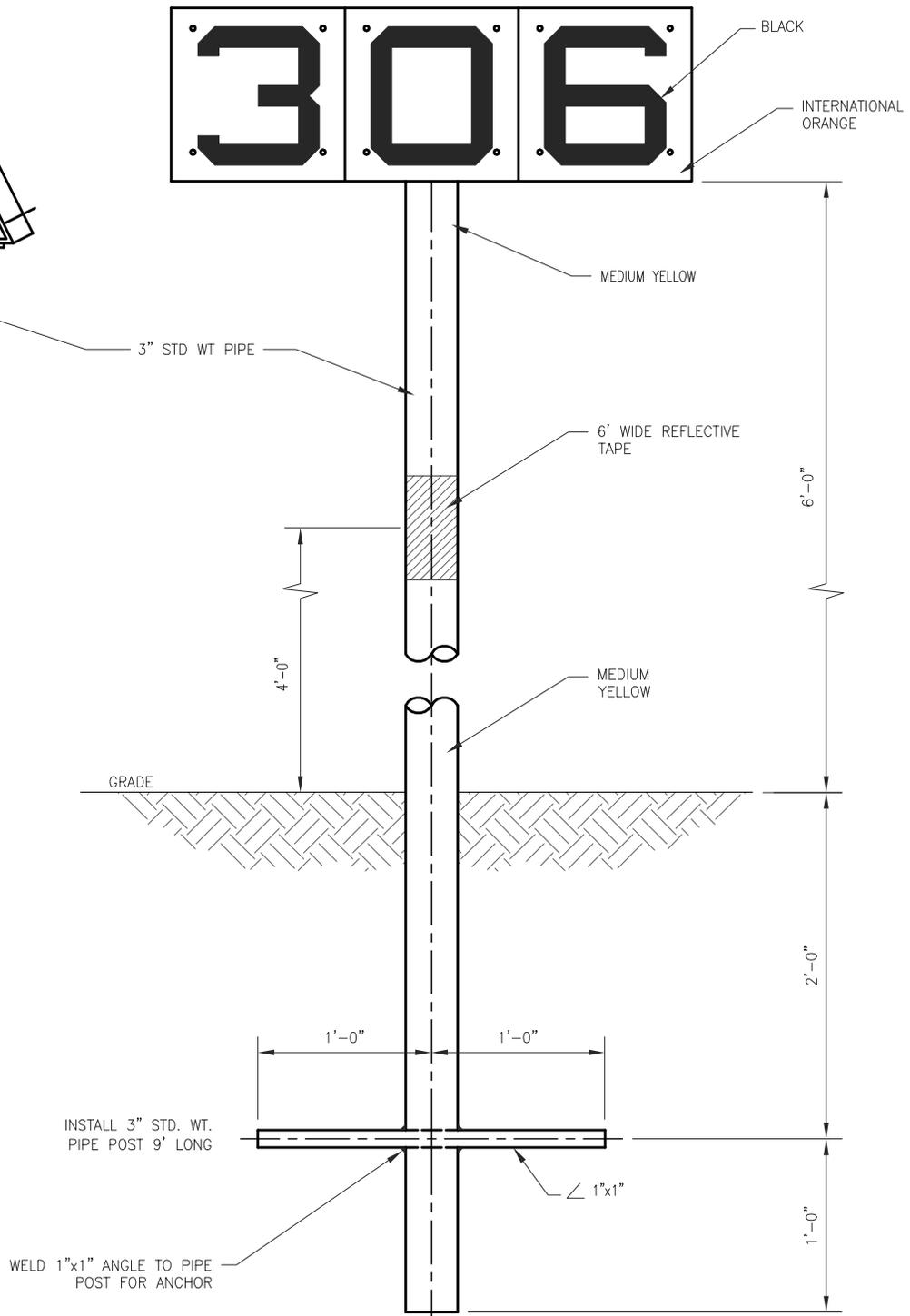
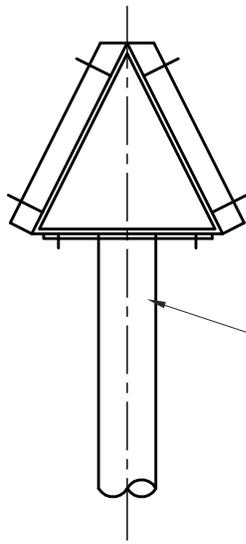
DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
TYPICAL PIPELINE MARKER		
OWNER:		
DATE: OCTOBER 2013	P01C-TYMK-01	REV 1



NOTES:

1. MARKERS SHALL BE PLACED DIRECTLY OVER THE PIPELINE WHEN THERE IS AT LEAST 1'-0" OF CLEARANCE BETWEEN THE TOP OF THE PIPE.
2. PIPE AND THE BOTTOM OF THE MARKER. MARKERS SHALL BE SLIGHTLY OFFSET IF THE CLEARANCE IS LESS THAN 1'-0". MARKERS WILL BE OFFSET IF THE PIPELINE IS IN A ROADWAY.

DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC.		
4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
TYPICAL PIPELINE WARNING MARKER		
OWNER:		
DATE: OCTOBER 2013	P01C-TYMK-02	REV 1



NOTES:

1. CONTRACTOR TO ASSEMBLE SIGN AND MOUNT ON POST.
2. REFLECTIVE STRIPING SHOULD BE ADDED ON ALL SIDES OF POST.

DONLIN GOLD PROJECT

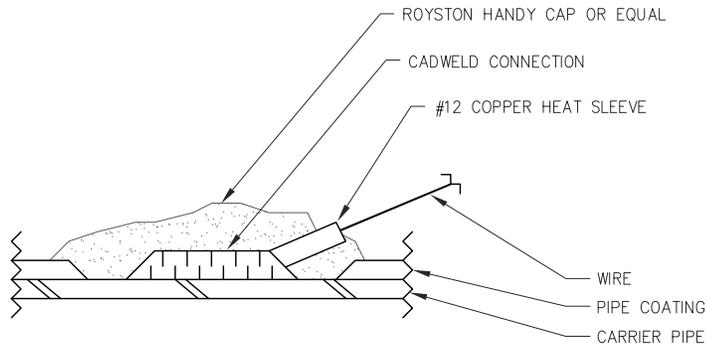
APPLICANT: Donlin Gold, LLC.

4720 Business Park Blvd., Suite G-25
Anchorage, Alaska 99503

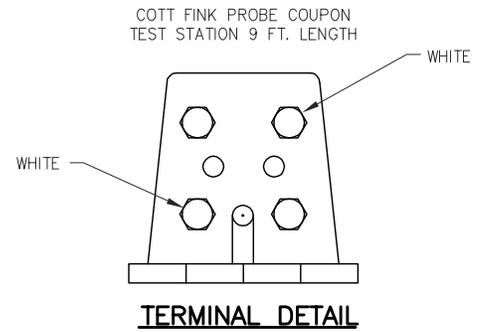
**TYPICAL
PIPELINE AERIAL MARKER**

OWNER:

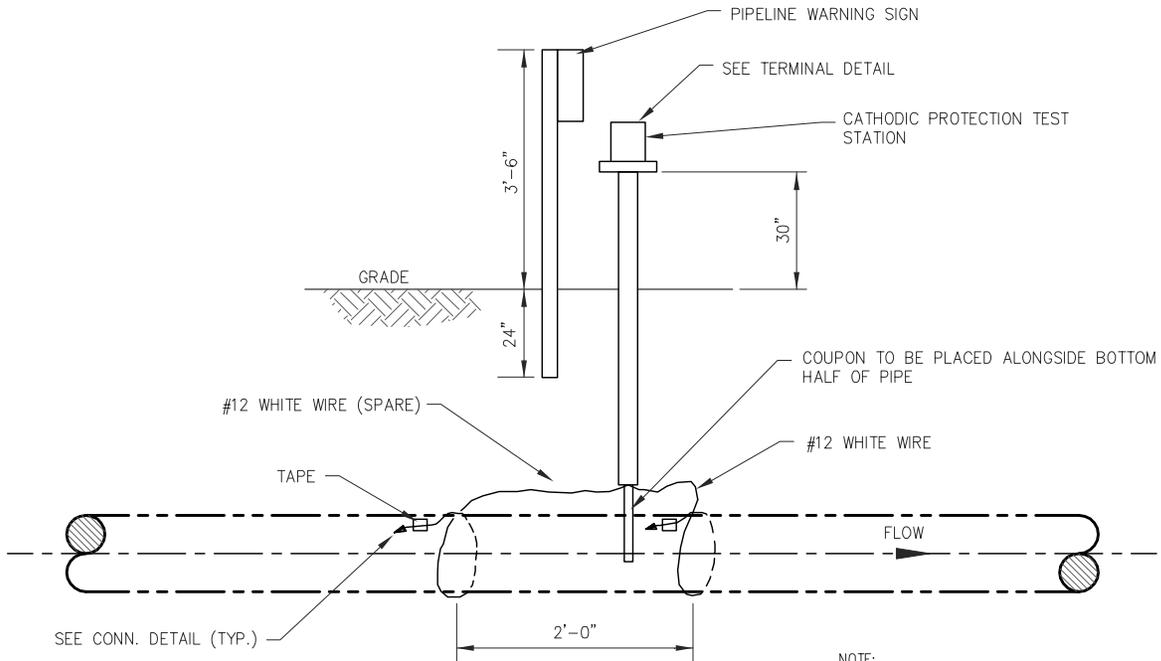
DATE: OCTOBER 2013 | P01C-TYMK-03 | REV 1



PIPE CONNECTION DETAIL
(SEE NOTES 3,4 & 5)



NOTE:
WIRES TO BE TERMINATED WITH RING TERMINALS.

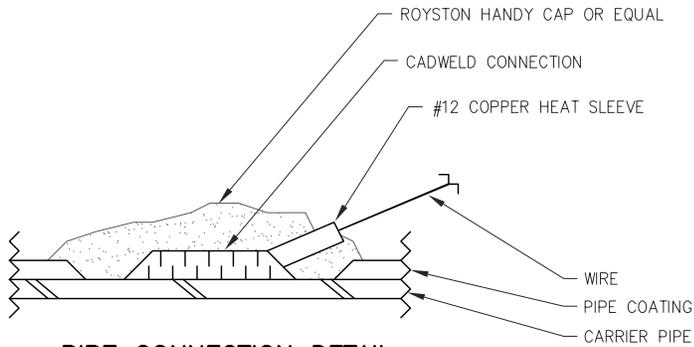


NOTE:
ALL WIRES TO MAKE A COMPLETE LOOP AROUND PIPE.

NOTES:

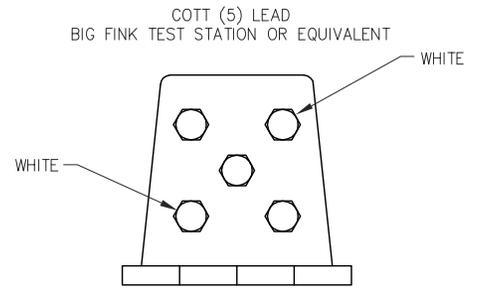
1. ALL WIRE SHALL BE INSULATED STRANDED COPPER #12 THHN AS SHOWN ABOVE.
2. TERMINAL BLOCK SHALL BE WIRED BY CONTRACTOR AS SHOWN IN TERMINAL DETAIL ABOVE.
3. ALL WIRE CONNECTIONS TO CARRIER PIPE SHALL BE MADE AS SHOWN IN DETAIL ABOVE. WIRE SHALL BE CONNECTED TO PIPE BY CADWELD PROCESS WITH COPPER HEAT SLEEVE.
4. CADWELD WIRE CONNECTIONS SHALL BE PRIMED WITH ROYSTON SPRAY PRIMER OR EQUAL AND ALLOWED TO DRY 3 TO 4 MINUTES OR UNTIL TACKY, AND COVERED WITH ROYSTON HANDY CAP OR EQUAL.
5. WIRE INSULATION SHALL BE PROTECTED FROM DAMAGE.
6. LAY WIRES ALONGSIDE PIPE. NOT OVER OR UNDER PIPE.
7. CATHODIC PROTECTION TEST STATION AND ALL OTHER MATERIALS SHALL BE FURNISHED BY CONTRACTOR.
8. INSTALL AT ALL LOCATIONS INDICATED ON ALIGNMENT SHEETS.

DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
TYPICAL CATHODIC PROTECTION COUPON TEST STATION		
OWNER:		
DATE: OCTOBER 2013	P01C-TYTS-01	REV 1



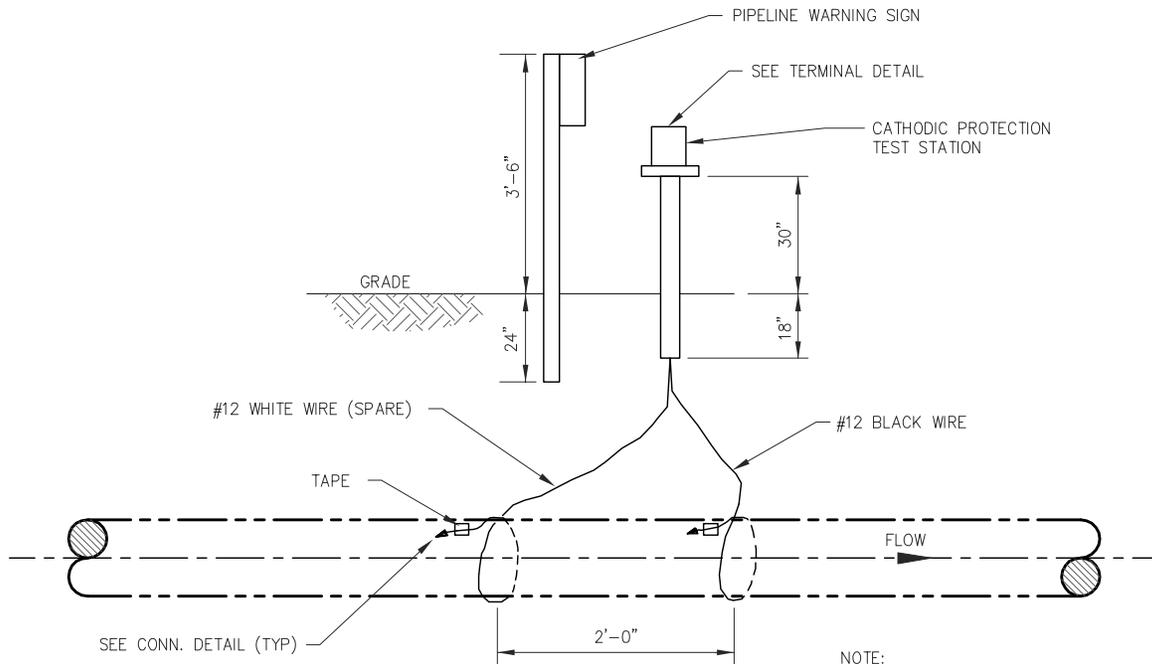
PIPE CONNECTION DETAIL

(SEE NOTES 3,4 & 5)



TERMINAL DETAIL

NOTE:
 WIRES TO BE TERMINATED WITH RING TERMINALS.

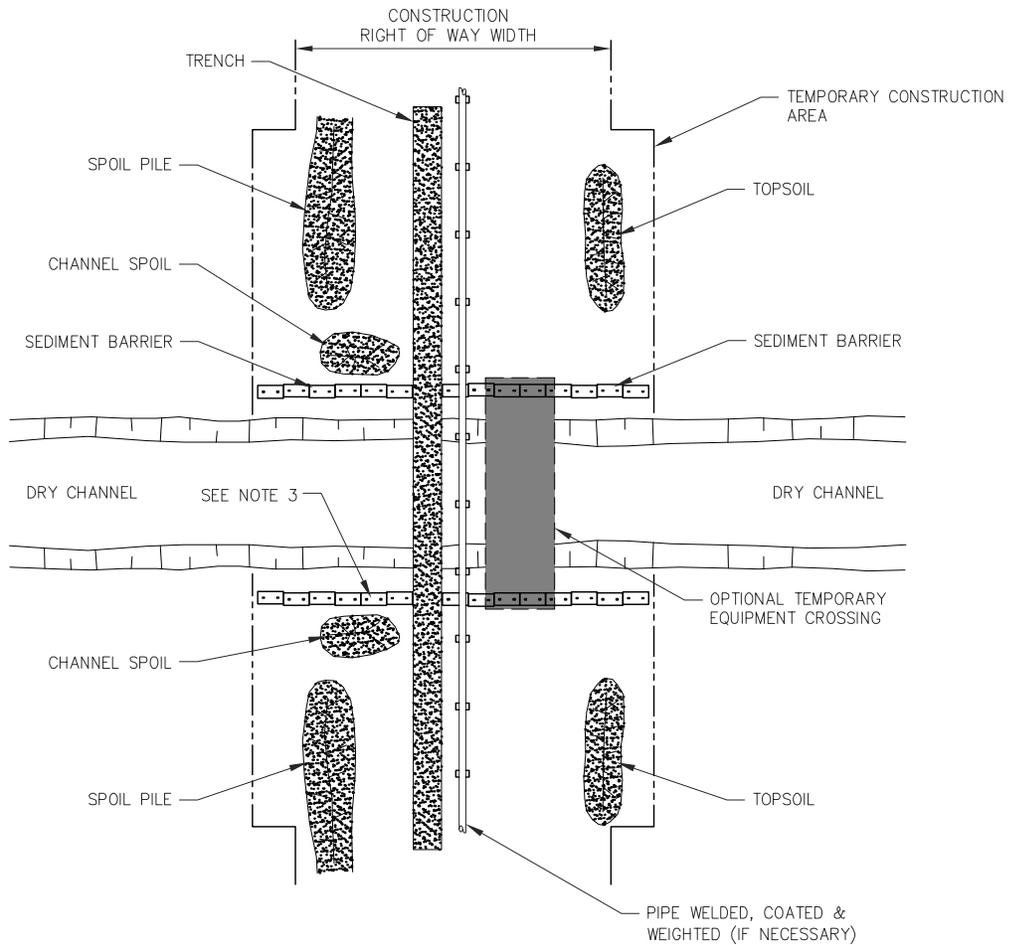


NOTE:
 ALL WIRES TO MAKE A COMPLETE LOOP AROUND PIPE.

NOTES:

1. ALL WIRE SHALL BE INSULATED STRANDED COPPER #12 THHN AS SHOWN ABOVE.
2. TERMINAL BLOCK SHALL BE WIRED BY CONTRACTOR AS SHOWN IN TERMINAL DETAIL ABOVE.
3. ALL WIRE CONNECTIONS TO CARRIER PIPE SHALL BE MADE AS SHOWN IN DETAIL ABOVE. WIRE SHALL BE CONNECTED TO PIPE BY CADWELD PROCESS WITH COPPER HEAT SLEEVE.
4. CADWELD WIRE CONNECTIONS SHALL BE PRIMED WITH ROYSTON SPRAY PRIMER OR EQUAL AND ALLOWED TO DRY 3 TO 4 MINUTES OR UNTIL TACKY, AND COVERED WITH ROYSTON HANDY CAP OR EQUAL.
5. WIRE INSULATION SHALL BE PROTECTED FROM DAMAGE.
6. LAY WIRES ALONGSIDE PIPE. NOT OVER OR UNDER PIPE.
7. CATHODIC PROTECTION TEST STATION AND ALL OTHER MATERIALS SHALL BE FURNISHED BY CONTRACTOR.
8. INSTALL AT ALL LOCATIONS INDICATED ON ALIGNMENT SHEETS.

DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
TYPICAL CATHODIC PROTECTION TEST STATION		
OWNER:		
DATE: OCTOBER 2013	P01C-TYTS-02	REV 1

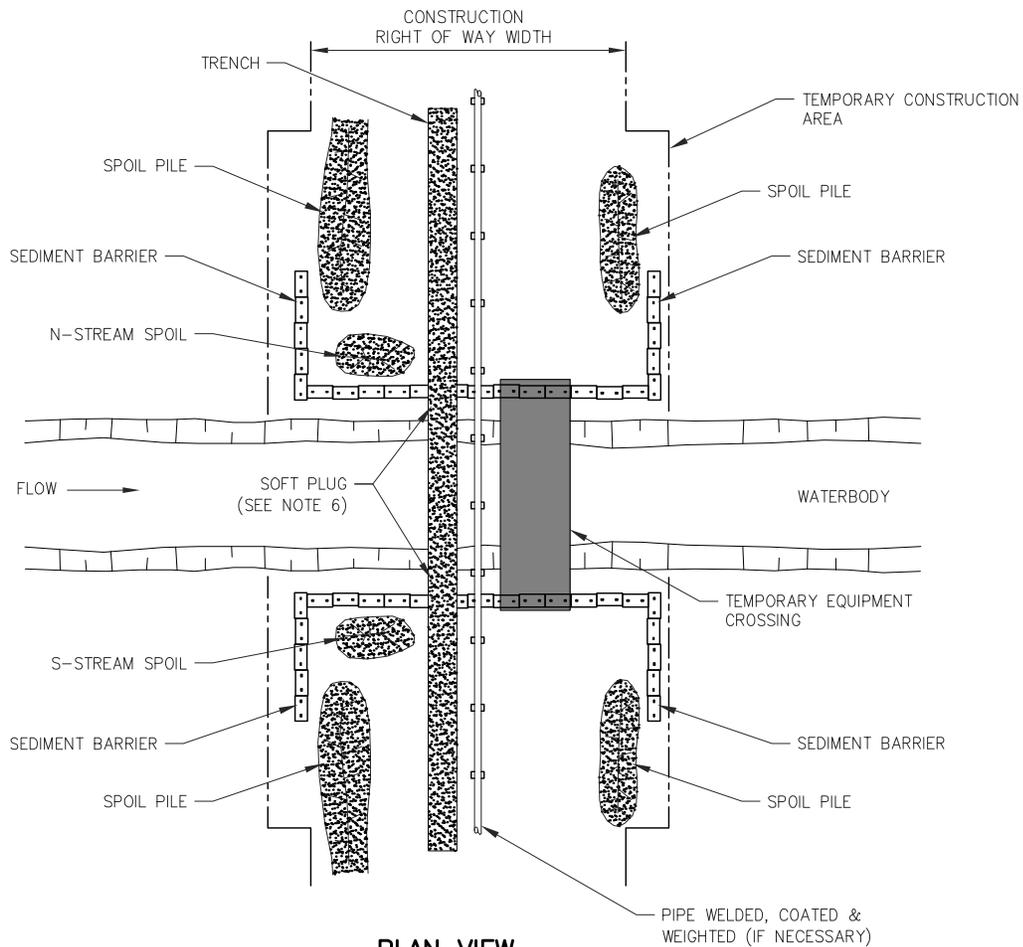


PLAN VIEW
NOT TO SCALE

NOTES:

1. METHOD APPLIES TO CROSSING WHERE NO FLOWING WATER IS PRESENT AT THE TIME OF CROSSING.
2. CONTRACTOR MAY "MAINLINE THROUGH" THE CROSSING OR UP TO BOTH SIDES OF THE CROSSING; STRING, WELD, COAT, AND WEIGHT (IF NECESSARY), USING THE MAINLINE CREW WITH THE PIPE SKIDDED OVER THE CROSSING.
3. CONSTRUCT SEDIMENT BARRIERS ACROSS THE ENTIRE CONSTRUCTION R.O.W. FOLLOWING CLEARING AND GRADING AND MAINTAIN UNTIL CONSTRUCTION OF THE CROSSING. EROSION CONTROL MEASURES SHALL BE REINSTALLED IMMEDIATELY FOLLOWING BACKFILLING OF TRENCH AND STABILIZATION OF BANKS.
4. TOPSOIL AND SPOIL WILL NOT BE STOCKPILED IN THE CROSSING CHANNEL.
5. MAINTAIN STREAM FLOW THROUGHOUT CROSSING CONSTRUCTION.
6. BACKFILL WITH NATIVE MATERIAL.
7. RESTORE CROSSING CHANNEL TO APPROXIMATE PRE-CONSTRUCTION PROFILE AND SUBSTRATE.
8. RESTORE CROSSING BANKS TO APPROXIMATE ORIGINAL CONDITION AND STABILIZE, AS REQUIRED.

DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
TYPICAL NON-FLOWING WATERBODY CROSSING OPEN-CUT		
OWNER:		
DATE: OCTOBER 2013	P01C-TYWC-01	REV 1



PLAN VIEW
NOT TO SCALE

NOTES:

1. SCHEDULE CROSSING DURING LOW FLOW PERIOD IF POSSIBLE.
2. COMPLETE ALL IN-STREAM ACTIVITIES WITHIN 24 HOURS IF FEASIBLE.
3. NO REFUELING OF MOBILE EQUIPMENT WITHIN 200 FEET OF WATERBODY. REFUEL STATIONARY EQUIPMENT AS PER THE HAZARDOUS MATERIALS MANAGEMENT AND SPCC PLAN.
4. CONSTRUCT SEDIMENT BARRIERS ALONG THE SIDES OF STOCKPILES AND ACROSS THE ENTIRE CONSTRUCTION R.O.W. TO PREVENT SILT LADEN WATER AND SPOIL FROM FLOWING BACK INTO WATERBODY. BARRIERS MAY BE TEMPORARILY REMOVED TO ALLOW CONSTRUCTION ACTIVITIES BUT MUST BE REPLACED BY THE END OF EACH WORK DAY.
5. IN-STREAM SPOIL TO BE STORED OUT OF THE STREAM CHANNEL AND WITHIN THE CONSTRUCTION R.O.W.
6. INSTALL SOFT PLUGS AT THE EDGE OF STREAM BANKS UNTIL JUST PRIOR TO PIPE INSTALLATION TO CONTROL WATER FLOW & TRENCH SLOUGHING, IF NEEDED.
7. MAINTAIN STREAM FLOW THROUGHOUT CROSSING CONSTRUCTION.
8. BACKFILL WITH NATIVE MATERIAL.
9. RESTORE WATERBODY CHANNEL TO APPROXIMATE PRE-CONSTRUCTION PROFILE AND SUBSTRATE.
10. RESTORE STREAM BANKS TO APPROXIMATE ORIGINAL CONDITION AND STABILIZE, AS REQUIRED.
11. ALL DIMENSIONS INDICATED SHALL BE DETERMINED BY ACTUAL CONSTRUCTION CONDITIONS.
12. FOLLOW REQUIREMENTS FROM THE ARMY CORPS OF ENGINEERS.
13. DRAWING DEPICTED IS SUPERSEDED BY WRITTEN STANDARD, SCOPE OF WORK OR LINE LIST.

DONLIN GOLD PROJECT

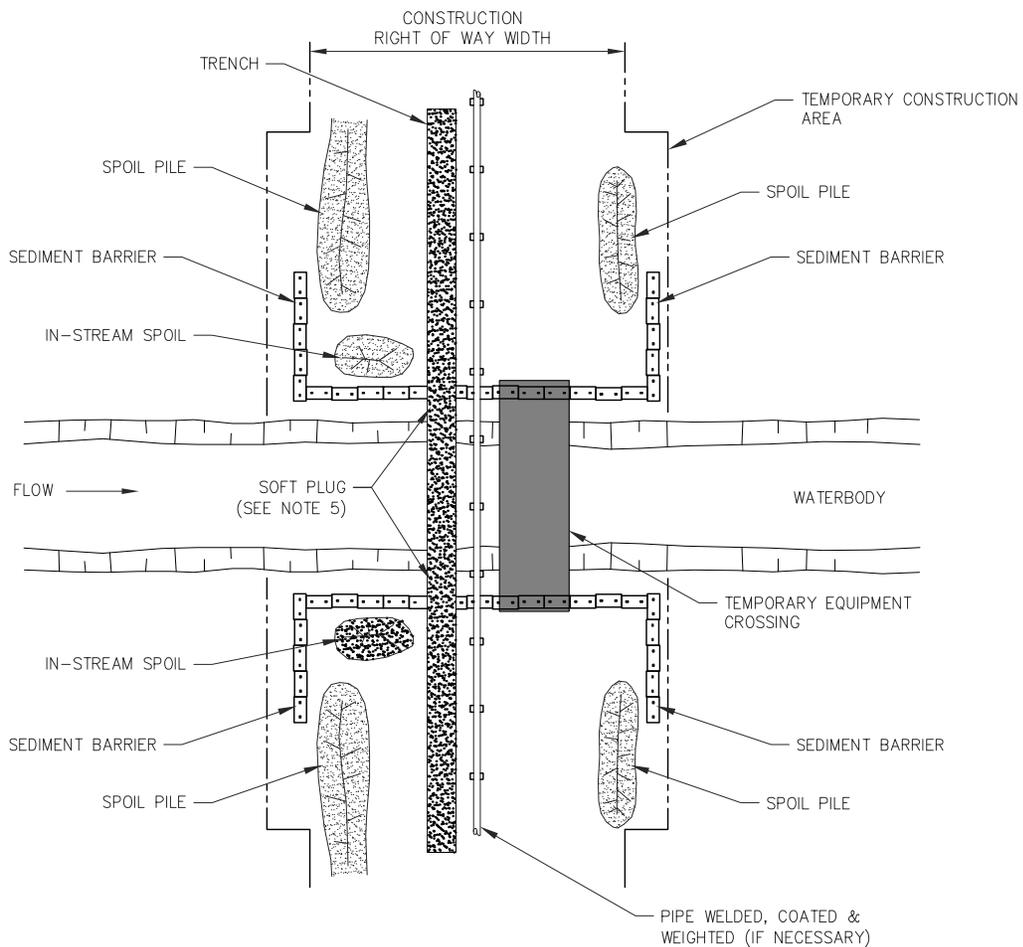
APPLICANT: Donlin Gold, LLC.

4720 Business Park Blvd., Suite G-25
Anchorage, Alaska 99503

**TYPICAL
FLOWING WATERBODY CROSSING OPEN-CUT**

OWNER:

DATE: OCTOBER 2013 | P01C-TYWC-02 | REV 1



PLAN VIEW
NOT TO SCALE

NOTES:

1. METHOD APPLIES TO WATERBODIES THAT ARE NOT STATE DESIGNATED FISHERIES WHERE FLUME CROSSINGS ARE NOT REQUIRED. IF TOPOGRAPHY PERMITS TEMPORARY EQUIPMENT BRIDGE INSTALLATION, THE CONTRACTOR SHALL TRENCH, STRING, WELD, COAT, WEIGHT (IF NECESSARY). LOWER IN AND BACKFILL UTILIZING THE MAIN LINE CREW TRAVELING OVER THE BRIDGE. IF TOPOGRAPHY PROHIBITS INSTALLATION OF A TEMPORARY EQUIPMENT BRIDGE, CONTRACTOR SHALL TRENCH UP TO BOTH SIDES OF CROSSING; STRING, WELD, COAT AND WEIGHT (IF NECESSARY) USING THE MAINLINE CREW. IN STREAM EXCAVATION, LOWER IN, AND BACKFILL WILL UTILIZE A CLAM OR HOES WORKING FROM THE BANKS.
2. SCHEDULE CROSSING DURING LOW FLOW PERIOD IF POSSIBLE.
3. CONSTRUCT SEDIMENT BARRIERS ALONG THE SIDES OF STOCKPILES AND ACROSS THE ENTIRE CONSTRUCTION R.O.W. TO PREVENT SILT LADEN WATER AND SPOIL FROM FLOWING BACK INTO WATERBODY.
4. IN-STREAM SPOIL TO BE STORED OUT OF THE STREAM CHANNEL.
5. INSTALL TEMPORARY (SOFT) PLUGS AT THE EDGE OF STREAM BANKS UNTIL JUST PRIOR TO PIPE INSTALLATION TO CONTROL WATER FLOW & TRENCH SLOUGHING.
6. TRENCH THROUGH WATERBODY USING MAINLINE EXCAVATION EQUIPMENT WHERE PRACTICAL.
7. MAINTAIN STREAM FLOW THROUGHOUT CROSSING CONSTRUCTION.
8. RESTORE WATERBODY CHANNEL TO APPROXIMATE PRE-CONSTRUCTION PROFILE AND SUBSTRATE.
9. RESTORE STREAM BANKS TO APPROPRIATE ORIGINAL CONDITION AND STABILIZE, AS REQUIRED.

DONLIN GOLD PROJECT

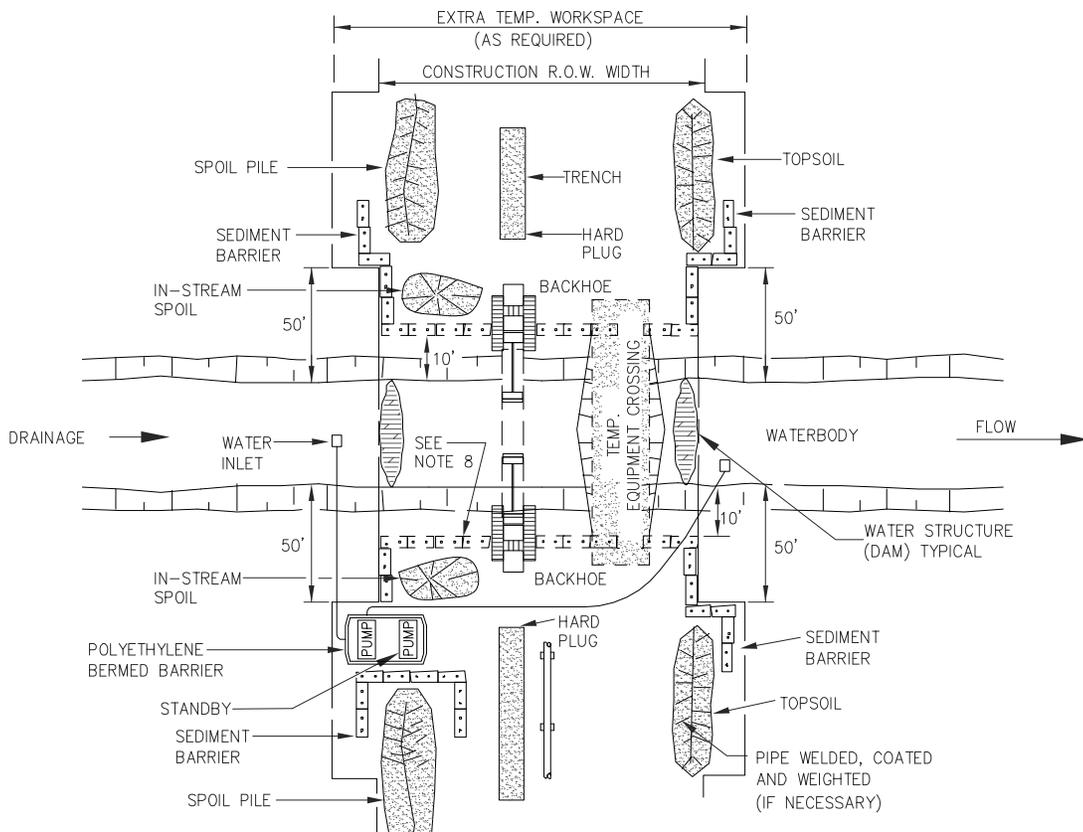
APPLICANT: Donlin Gold, LLC.

4720 Business Park Blvd., Suite G-25
Anchorage, Alaska 99503

**TYPICAL
FLOWING WATERBODY CROSSING OPEN-CUT**

OWNER:

DATE: OCTOBER 2013 | P01C-TYWC-03 | REV 1



PLAN VIEW
NOT TO SCALE

NOTES:

1. THIS METHOD APPLIES TO SWALES, DRAINS, SMALL STREAMS OR CREEKS WITH LIMITED FLOW AT TIME OF CONSTRUCTION WHERE DOWNSTREAM SILTATION MUST BE AVOIDED AND THE CROSSING WIDTH IS NOT PROHIBITIVE.
2. SCHEDULE CROSSING DURING LOW FLOW PERIOD IF POSSIBLE.
3. COMPLETE ALL IN-STREAM ACTIVITIES AS EXPEDIENTLY AS POSSIBLE.
4. INSTALL TEMPORARY VEHICLE CROSSING, IF REQUIRED.
5. IN-STREAM SPOIL TO BE STORED OUT OF THE STREAM CHANNEL AND WITHIN THE CONSTRUCTION R.O.W. UNLESS DEPICTED OTHERWISE IN THE SITE SPECIFIC CROSSING PLANS.
6. CONSTRUCT SEDIMENT BARRIERS TO PREVENT SILT LADEN WATER AND SPOIL FROM FLOWING INTO WATERBODY. CONSTRUCTED SEDIMENT BARRIERS SHALL EXTEND ALONG THE SIDES OF THE SPOIL AND TOPSOIL STOCKPILES AND ACROSS THE ENTIRE CONSTRUCTION R.O.W. BARRIERS MAY BE TEMPORARILY REMOVED TO ALLOW CONSTRUCTION ACTIVITIES BUT MUST BE REPLACED BY THE END OF EACH WORK DAY.
7. CONSTRUCT UPSTREAM STRUCTURE (DAM) FOLLOWED BY DOWNSTREAM STRUCTURE (DAM). WATER STRUCTURES' (AQUA DAM, JERSEY BARRIERS, SAND BAGS, STEEL PLATE, POLYETHYLENE LINER, ETC.) FINAL LOCATION WILL BE APPROVED BY THE COMPANY INSPECTOR.
8. SIZE PUMPS FOR DIVERSION OF ENTIRE STREAM FLOW. CONTRACTOR SHALL MAINTAIN 100% SPARE PUMPING CAPACITY ON SITE. PUMPS SHALL BE INSTALLED ON POLYETHYLENE BARRIERS FOR FUEL/OIL SPILL CONTAINMENT. PUMP INTAKES WILL BE SCREENED TO PREVENT ENTRAPMENT OF FISH. CONTRACTOR SHALL MONITOR PUMPS AND WATER STRUCTURES ON A 24 HOUR BASIS UNTIL THE CROSSING INSTALLATION IS COMPLETE. SHOULD LEAKAGE AT THE DAM STRUCTURES OCCUR, CONTRACTOR SHALL DEWATER BETWEEN THE STRUCTURES THROUGH AN APPROPRIATE FILTER AND ONTO A WELL VEGETATED UPLAND AREA.
9. LEAVE HARD PLUGS AT STREAM BANK EDGE UNTIL JUST PRIOR TO PIPE INSTALLATION.
10. COMPLETE CONSTRUCTION OF IN-STREAM PIPE SECTION. WEIGHT PIPE AS NECESSARY PRIOR TO COMMENCEMENT OF IN-STREAM ACTIVITY.
11. TRENCH THROUGH WATERBODY AS EXPEDIENTLY AS PRACTICAL. INSTALL TEMPORARY (SOFT) PLUGS, IF NECESSARY, TO CONTROL WATER FLOW AND TRENCH SLOUGHING.
12. MAINTAIN STREAM FLOW THROUGHOUT CROSSING CONSTRUCTION.
13. LOWER-IN PIPE, INSTALL TRENCH PLUG AND BACKFILL IMMEDIATELY.
14. RESTORE WATERBODY CHANNEL TO APPROXIMATE PRE-CONSTRUCTION PROFILE AND SUBSTRATE.
15. DISMANTLE DOWNSTREAM WATER STRUCTURE (DAM) AND UPSTREAM WATER STRUCTURE (DAM) AFTER TRENCH BACKFILL.
16. RESTORE STREAM BANKS TO APPROXIMATE ORIGINAL CONDITION. STABILIZE WATERBODY BANKS AND INSTALL TEMPORARY BARRIERS.

DONLIN GOLD PROJECT

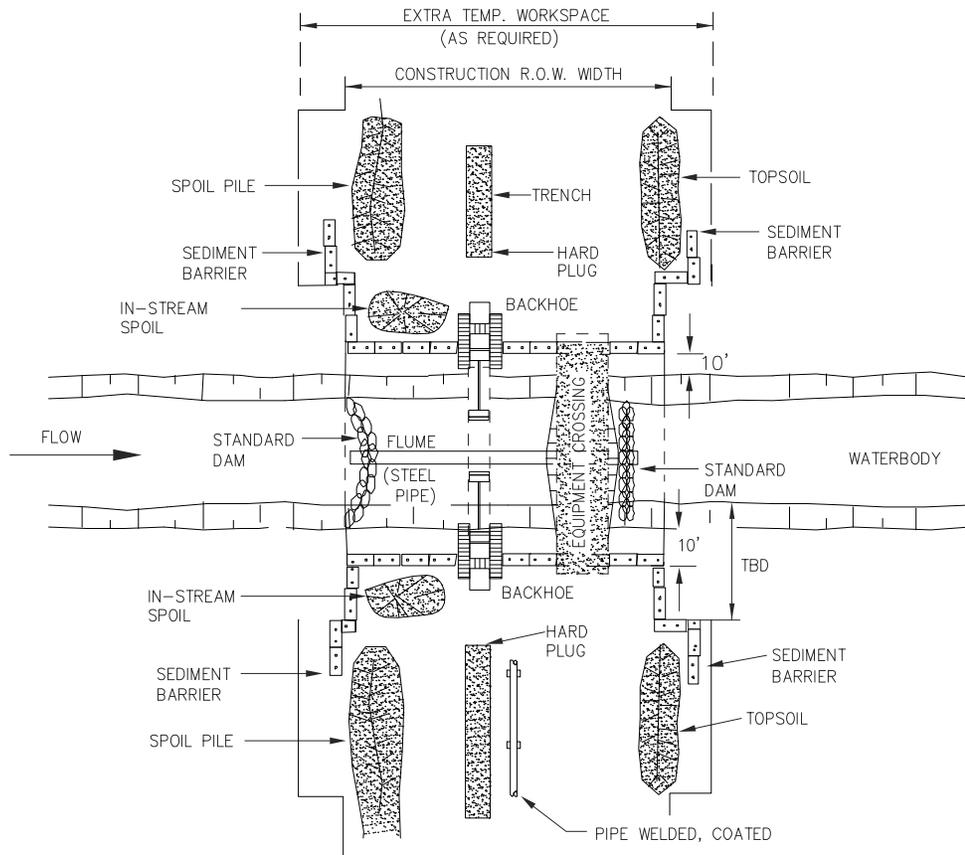
APPLICANT: Donlin Gold, LLC.

4720 Business Park Blvd., Suite G-25
Anchorage, Alaska 99503

**TYPICAL
WATERBODY CROSSING OPEN-CUT DAM & PUMP**

OWNER:

DATE: OCTOBER 2013 | P01C-TYWC-04 | REV 1



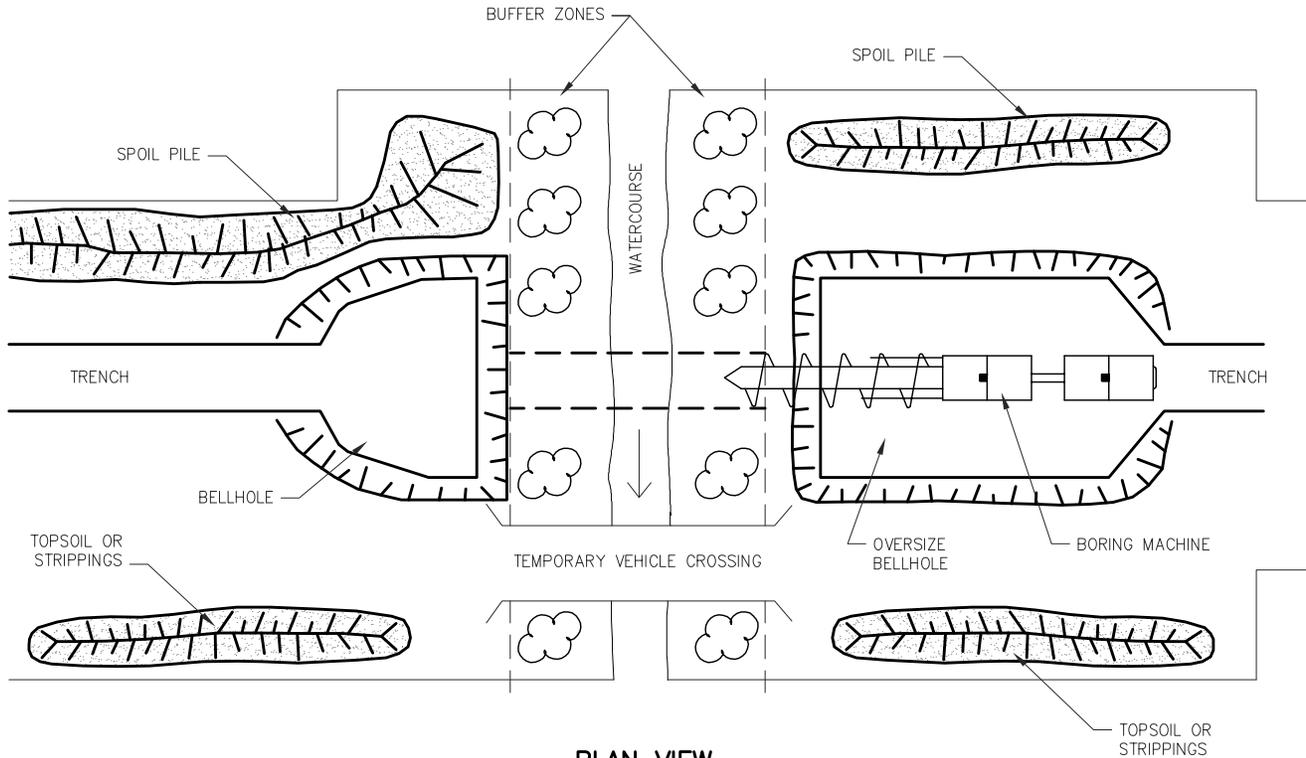
DONLIN GOLD PROJECT

APPLICANT: Donlin Gold, LLC.
 4720 Business Park Blvd., Suite G-25
 Anchorage, Alaska 99503

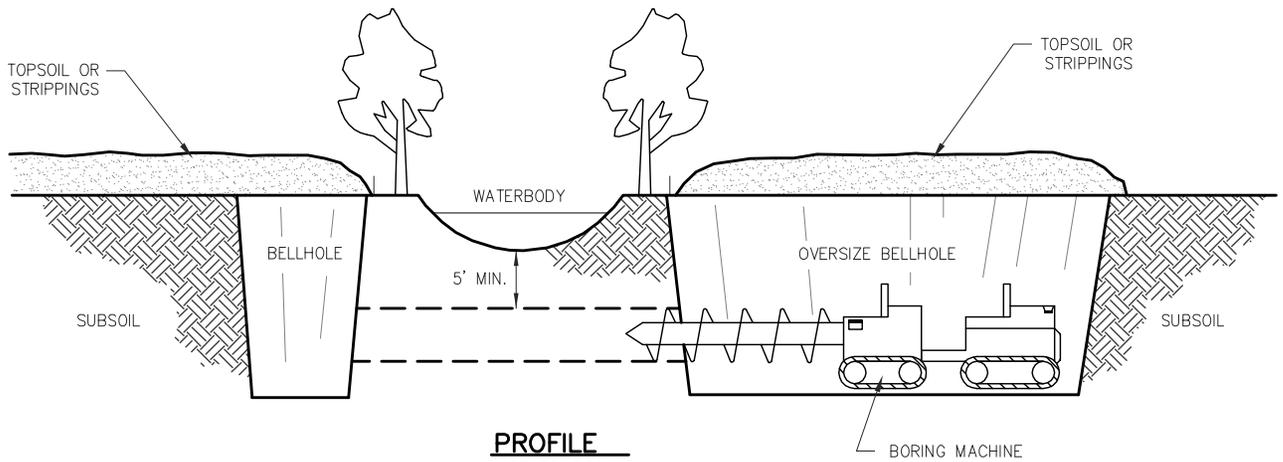
**TYPICAL
 WATERBODY CROSSING OPEN-CUT
 DRY FLUME**

OWNER:

DATE: OCTOBER 2013 | P01C-TYWC-05 | REV 1

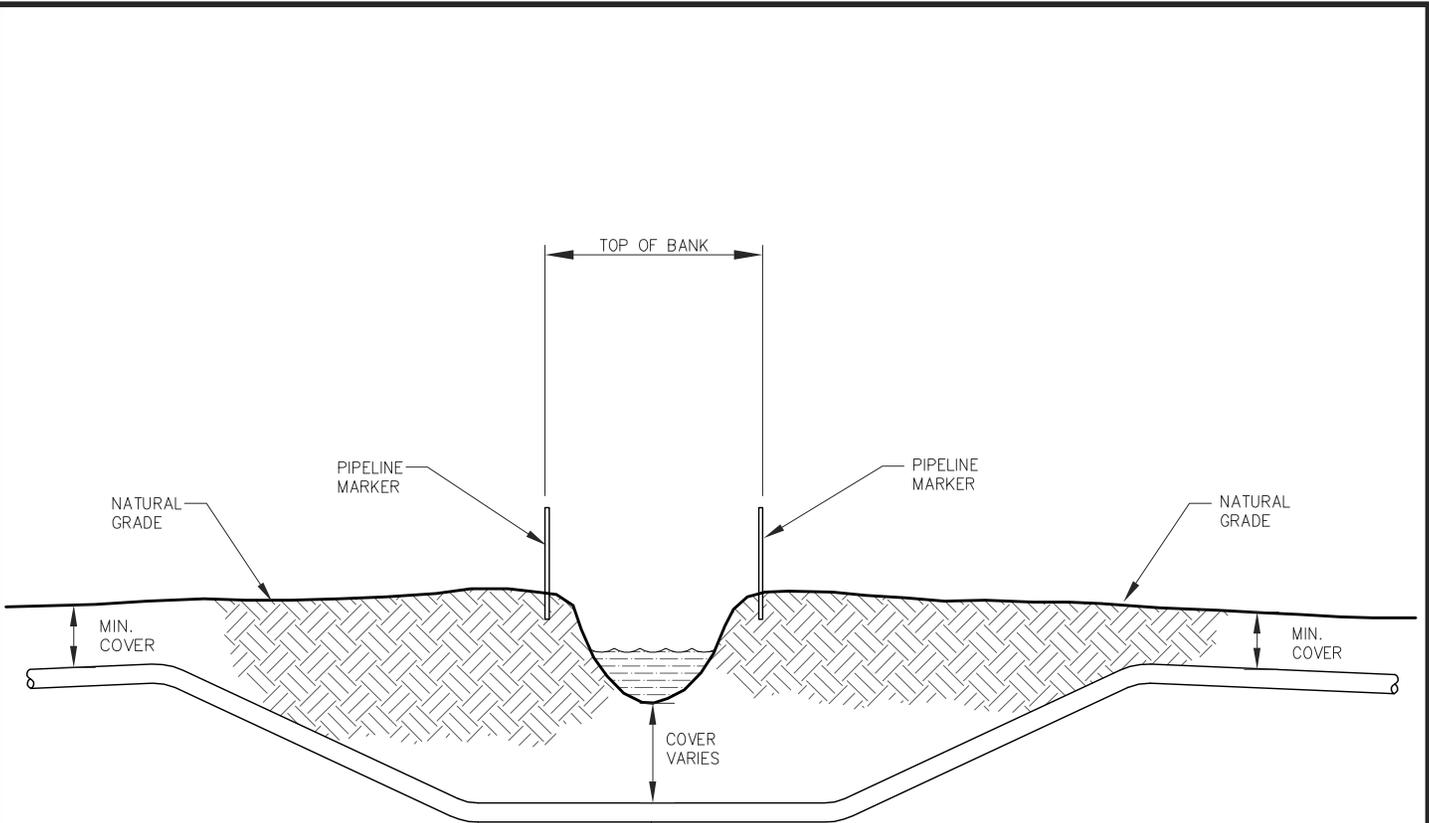


PLAN VIEW
NOT TO SCALE



PROFILE
NOT TO SCALE

<p>DONLIN GOLD PROJECT APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503</p>		
<p>TYPICAL WATERBODY CROSSING HORIZONTAL BORE</p>		
<p>OWNER:</p>		
DATE: OCTOBER 2013	P01C-TYWC-06	REV 1

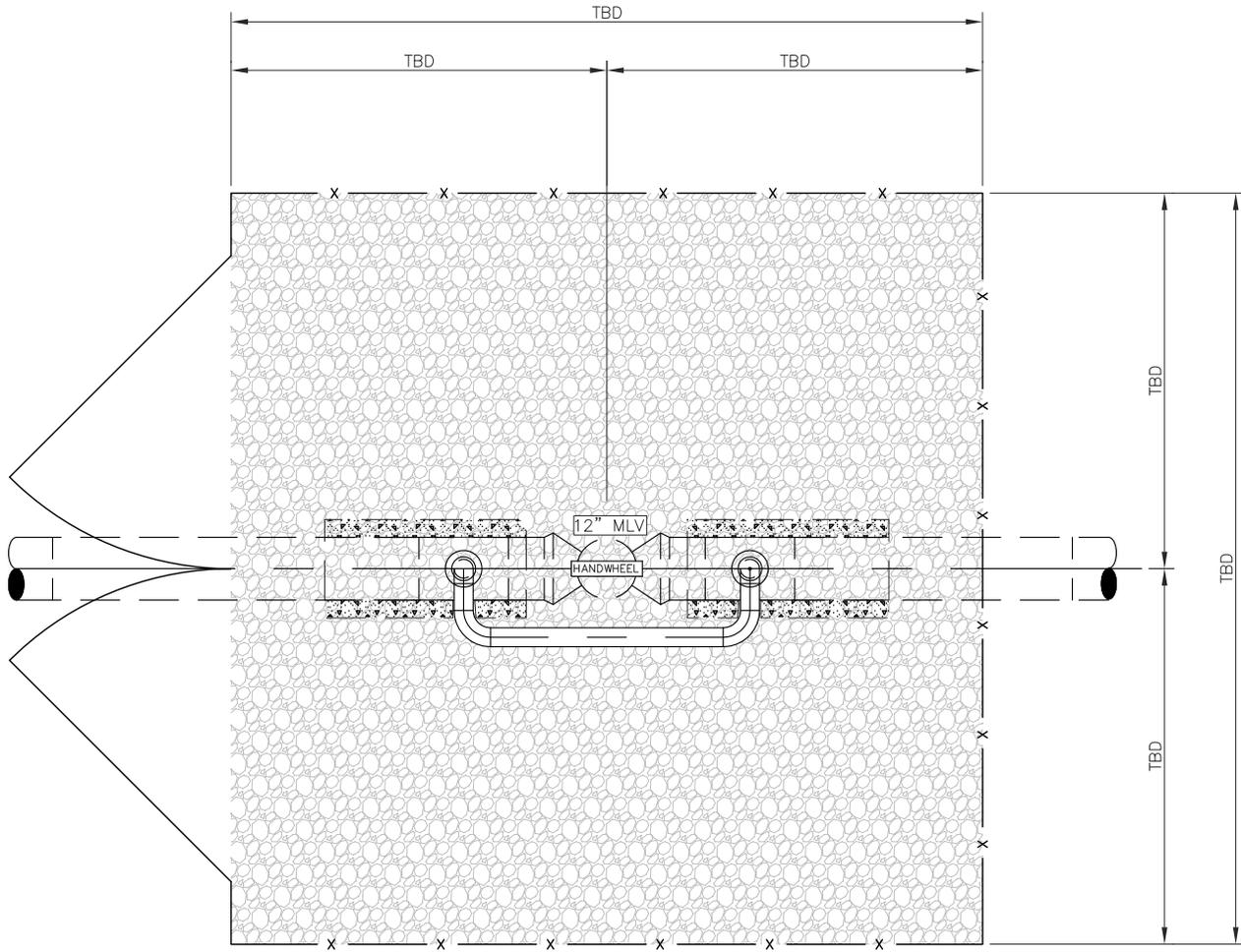


PROFILE
NOT TO SCALE

NOTES:

1. NORMAL FLOW OF DRAINAGE NOT TO BE CHANGED FOLLOWING PIPELINE CONSTRUCTION OPERATIONS.
2. CONSTRUCT ALL CROSSINGS IN ACCORDANCE WITH ENVIRONMENTAL PERMIT REQUIREMENTS AND CONDITIONS.
3. PIPELINE TO BE INSTALLED BY OPEN-CUT METHOD.

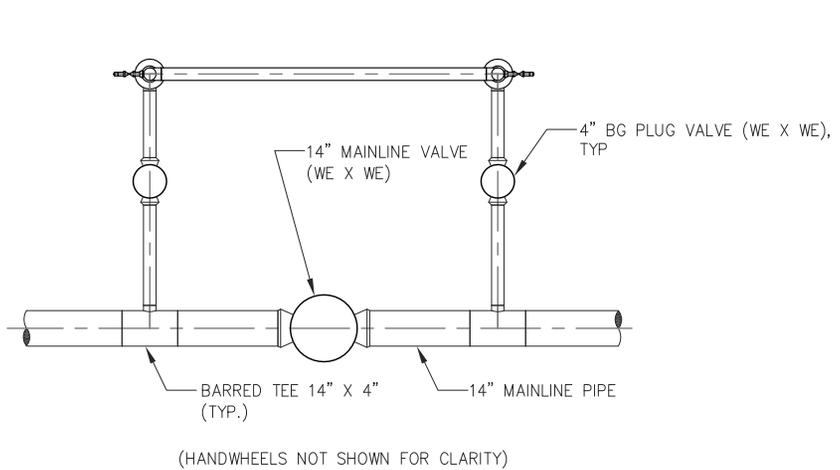
<p>DONLIN GOLD PROJECT APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503</p>		
<p>TYPICAL SMALL CREEK CROSSING</p>		
OWNER:		
DATE: OCTOBER 2013	P01C-TYWC-07	REV 1



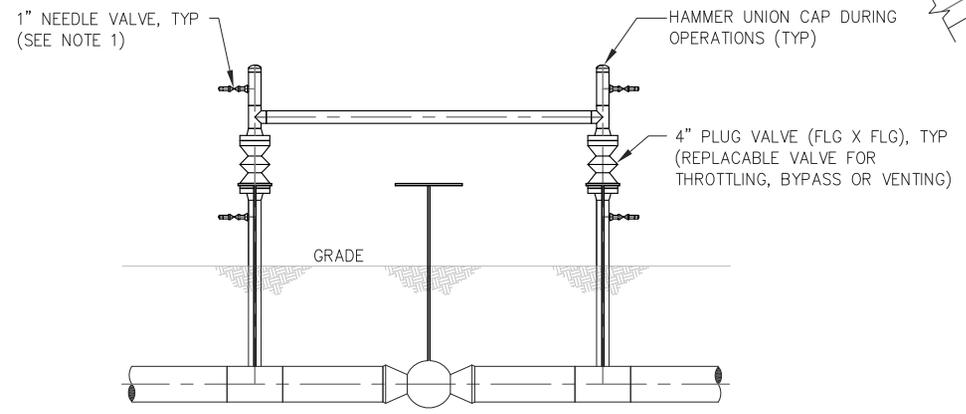
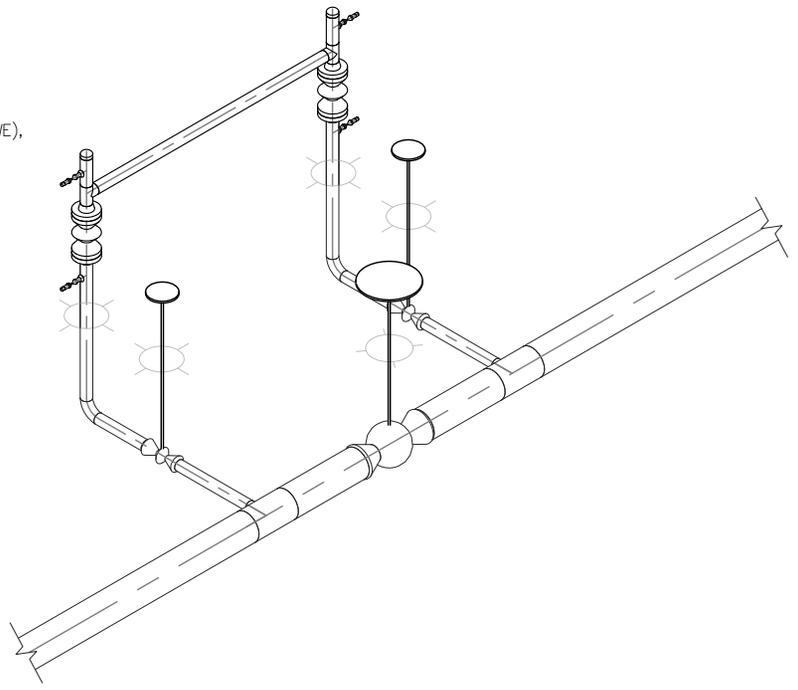
NOTES:

1. REFERENCE DRAWING (DONLIN PIPELINE MLV DWG) AND CONSTRUCTION SPECIFICATIONS FOR DETAILED CONSTRUCTION GUIDELINES.
2. LOCATION OF GATE TO BE FIELD DETERMINED.

<p>DONLIN GOLD PROJECT APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503</p>		
<p>TYPICAL MLV FENCING</p>		
OWNER:		
DATE: OCTOBER 2013	P01M-DTVA-01	REV 1

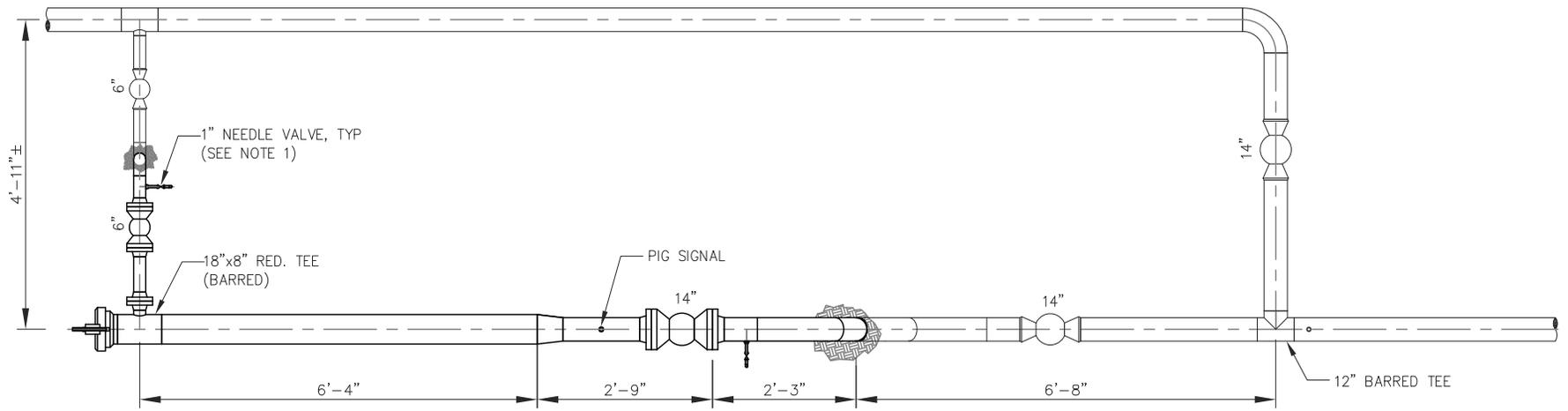


PLAN
SCALE: 1/2"=1'-0"



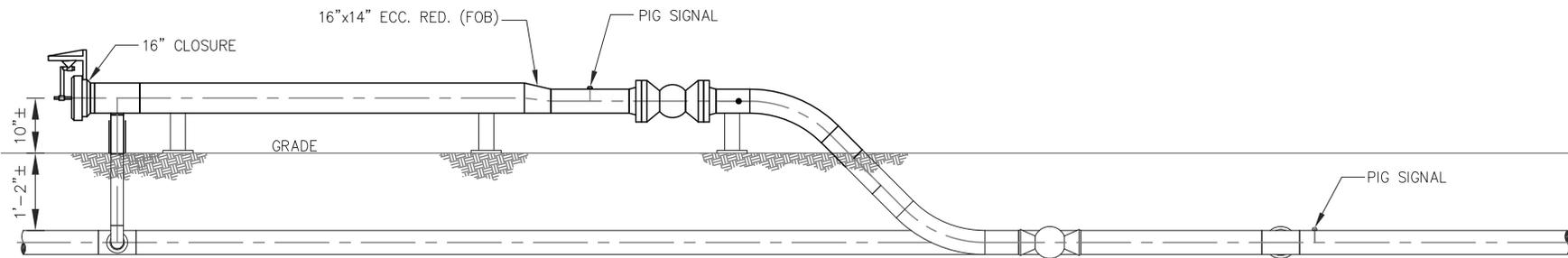
ELEVATION
SCALE: 1/2"=1'-0"

DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
MAINLINE BLOCK VALVE ASSEMBLY		
OWNER:		
DATE: OCTOBER 2013	P01M-DTVA-02	REV 1



PLAN

SCALE: 3/8"=1'-0"



ELEVATION

SCALE: 3/8"=1'-0"

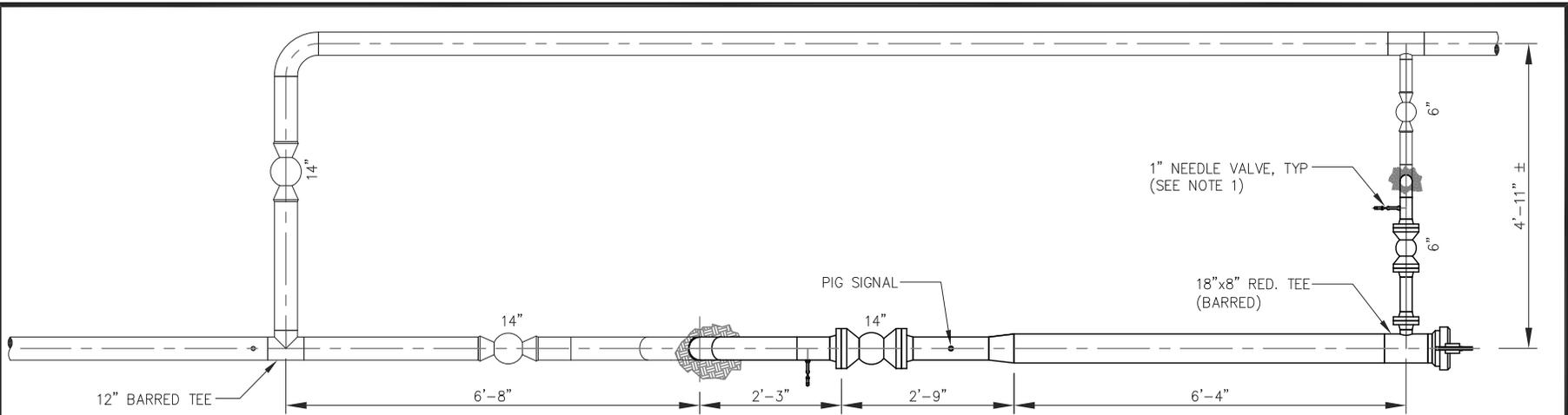
DONLIN GOLD PROJECT

APPLICANT: Donlin Gold, LLC.
4720 Business Park Blvd., Suite G-25
Anchorage, Alaska 99503

**TYPICAL
16" x 14" PIG LAUNCHER**

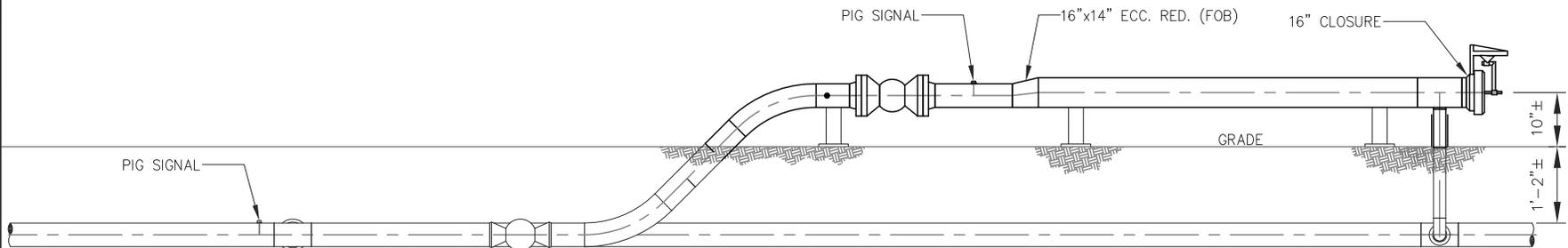
OWNER:

DATE: OCTOBER 2013	P01M-TYPL-01	REV 1
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PLAN

SCALE: 3/8"=1'-0"



ELEVATION

SCALE: 3/8"=1'-0"

DONLIN GOLD PROJECT

APPLICANT: Donlin Gold, LLC.

4720 Business Park Blvd., Suite G-25
Anchorage, Alaska 99503

**TYPICAL
16" x 14" PIG LAUNCHER**

OWNER:

DATE: OCTOBER 2013

P01M-TYPL-02

REV 1

**TYPICAL CONSTRUCTION STAKING
COLOR CODE SYSTEM**

FLUORESCENT COLORS

FEATURES

ORANGE FLAGGING WITH ORANGE PAINT



CENTERLINE STAKES

ORANGE AND BLUE FLAGGING WITH ORANGE PAINT



PI STAKES

PINK FLAGGING



SURVEY CONTROL POINTS

WHITE FLAGGING



STANDARD R.O.W. LIMIT STAKES

WHITE AND RED FLAGGING



T.U.A. LIMIT STAKES

YELLOW FLAGGING ON CROSSED LATH



STAKES AT FOREIGN LINE CROSSING

BLUE FLAGGING



WETLANDS

GREEN FLAGGING



ENVIRONMENTALLY SENSITIVE AREAS &
OTHER RESOURCE SITES

RED FLAGGING

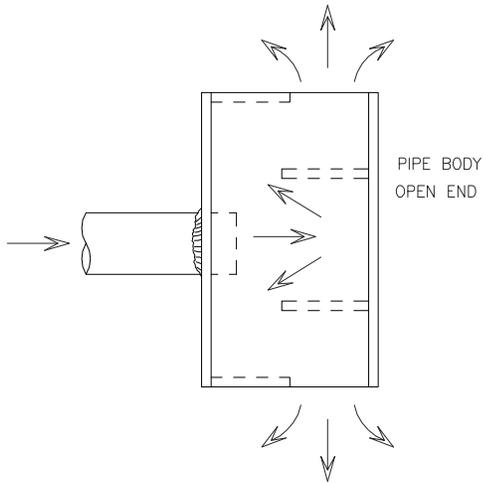


ENVIRONMENTALLY SENSITIVE AREAS &
OTHER RESOURCE SITES
(DO NOT ENTER)

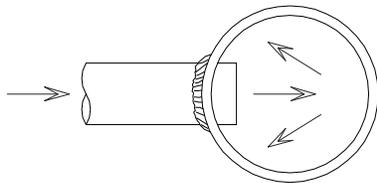
NOTES:

1. STAKES USED TO LOCATE AND IDENTIFY BURIED FACILITIES SHALL BE CLEARLY MARKED WITH THE FOLLOWING INFORMATION:
 - PIPELINE/UTILITY OWNERS NAME, IF KNOWN.
 - PIPELINE/UTILITY IDENTIFICATION AND SIZE IF APPLICABLE AND KNOWN.
 - NOTE WHETHER IT IS THE APPROXIMATE CENTERLINE OF UTILITY.

<p>DONLIN GOLD PROJECT APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503</p>		
<p>TYPICAL CONSTRUCTION STAKING COLOR CODE SYSTEM</p>		
OWNER:		
DATE: OCTOBER 2013	P01V-TYCO-01	REV 1

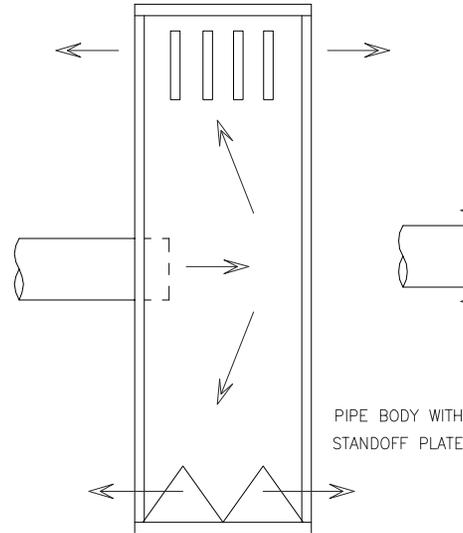


PLAN

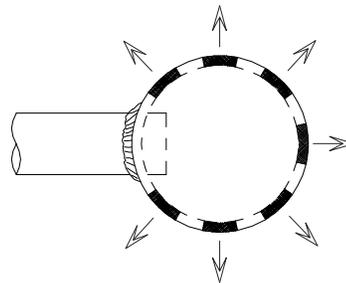


PROFILE

BASIC SPLASH PUP

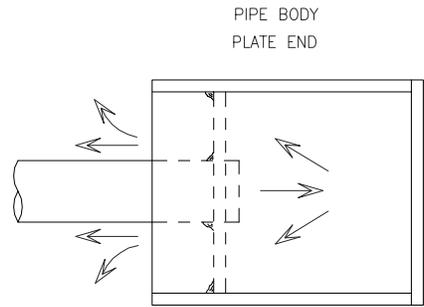


PLAN

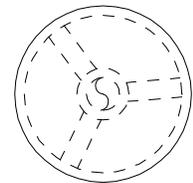


PROFILE

BASIC SPLASH PLATE



PLAN



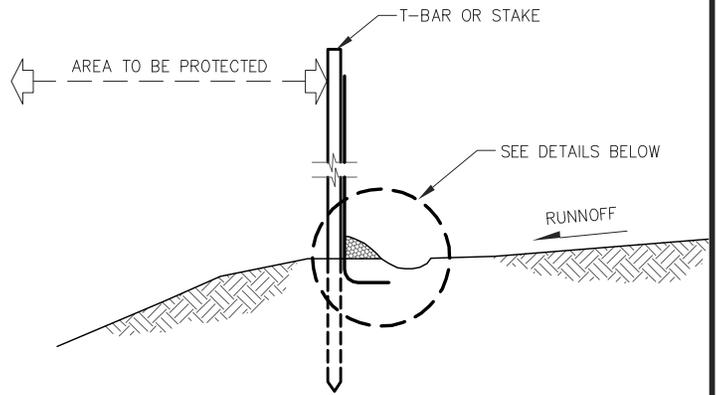
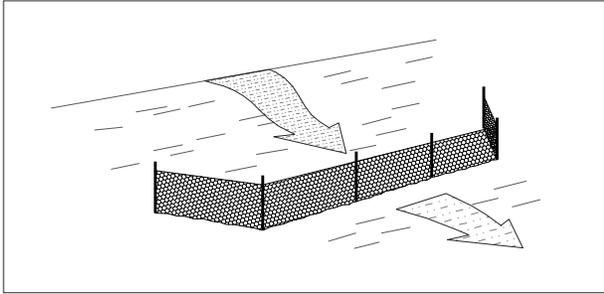
END VIEW

PLATE COMBINATION

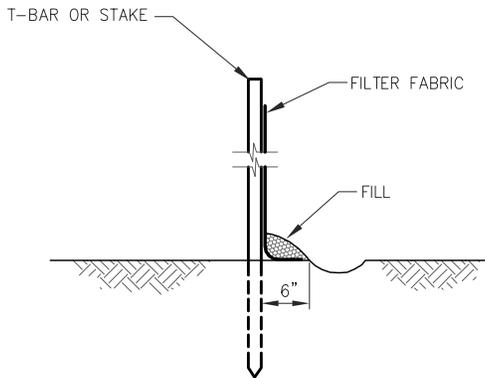
NOTES:

1. AN ENERGY DISSIPATOR SHALL BE UTILIZED WHENEVER WATER DISCHARGE VELOCITIES MAY CAUSE EROSION.
2. THE DESIGN AND EFFECTIVENESS OF THE ENERGY DISSIPATOR IS THE RESPONSIBILITY OF THE CONSTRUCTION CONTRACTOR.
3. ENERGY DISSIPATORS ARE UTILIZED IN CONJUNCTION WITH A DEWATERING STRUCTURE.
4. GEOTEX FABRIC OR EQUIVALENT SHALL BE PLACED UNDERNEATH AND AROUND DISSIPATOR DEVICE TO MINIMIZE EROSION.

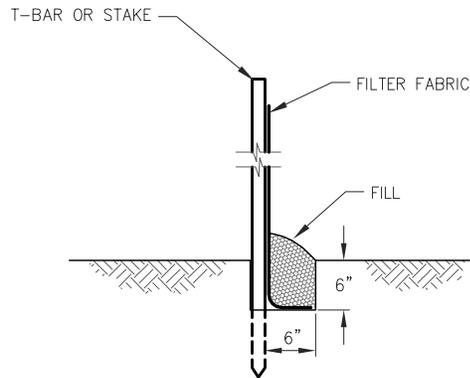
DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
TYPICAL SPLASH PUP FOR TEST WATER DISCHARGE		
OWNER:		
DATE: OCTOBER 2013	P01W-TYEC-01	REV 1



**SIDE VIEW
OF SILT FENCE**



**WITHOUT TRENCH
ROCKY AREAS ONLY**



WITH TRENCH

NOTES:

1. SILT FENCE COULD BE UTILIZED AT:
 - * THE BASE OF ALL SLOPES ABOVE WETLANDS AND WATERBODIES
 - * THE DOWNSLOPE RIGHT-OF-WAY EDGE WHERE ANY OF THE ABOVE-MENTIONED LOCATIONS ARE ADJACENT TO THE RIGHT-OF-WAY.
 - * BETWEEN TOPSOIL/SPOIL STOCKPILES AND WATERBODIES OR WETLANDS AS NEEDED.
 - * ALONG R.O.W. BOUNDARIES IN WETLAND CONSTRUCTION, AS NEEDED.
 - * AS DIRECTED BY THE COMPANY'S REPRESENTATIVE.
2. THE SILT FENCE SHALL BE CONSTRUCTED AS FOLLOWS:
 - * FABRIC USED FOR THE SILT FENCE SHALL BE A "STANDARD STRENGTH" GEOTEXTILE.
 - * THE HEIGHT OF THE FENCE SHALL BE DONE AT POSTS AND OVERLAP WITH BOTH ENDS SECURED TO THE POST.
3. THE SILT FENCE SHALL BE INSTALLED AS SPECIFIED BY THE MANUFACTURER OR AS FOLLOWS:
 - * A TRENCH, 6" WIDE AND 6" DEEP, SHALL BE EXCAVATED ALONG THE CONTOUR. THE POST SHALL BE DRIVEN INTO THE BOTTOM OF THE TRENCH ON THE DOWNSTREAM SIDE OF THE FILTER FABRIC. THE TRENCH SHALL BE BACK FILLED AND COMPACTED, ENSURING 6" OF FENCE IS BURIED WITHIN THE TRENCH.
 - * IN AREAS WHERE THE TERRAIN IS TOO ROCKY FOR TRENCHING, A 6" GROUND FLAP WITH ROCK FILL TO HOLD IT IN PLACE SHALL BE USED.

DONLIN GOLD PROJECT

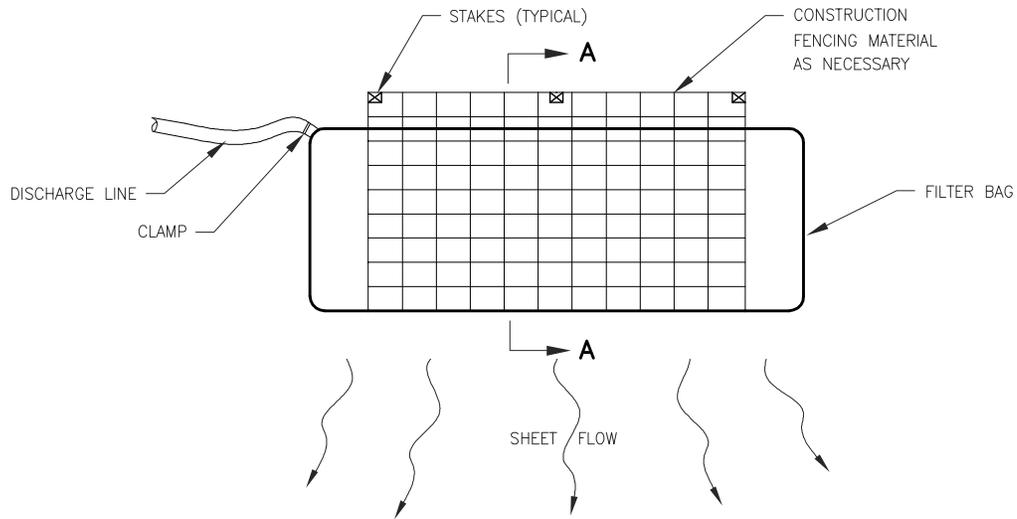
APPLICANT: Donlin Gold, LLC.

4720 Business Park Blvd., Suite G-25
Anchorage, Alaska 99503

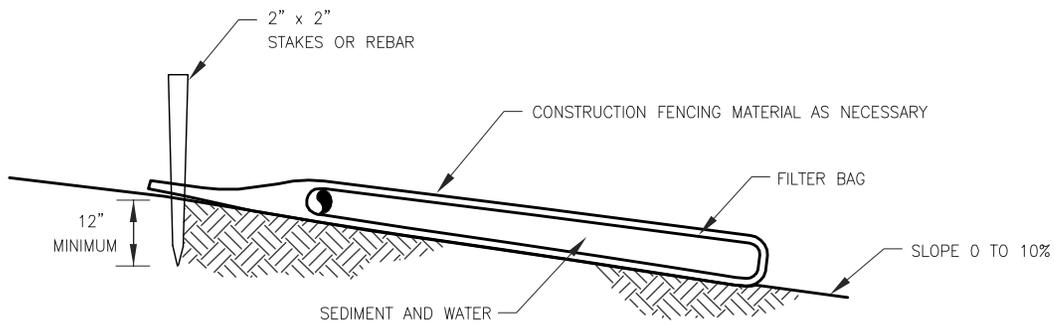
**TYPICAL
SILT FENCE SEDIMENT BARRIER**

OWNER:

DATE: OCTOBER 2013 | P01W-TYEC-02 | REV 1



PLAN VIEW



SECTION A-A

NOTES:

1. INSTALL A DEWATERING GEOTEXTILE FILTER BAG AS DIRECTED BY THE COMPANY TO PREVENT THE FLOW OF HEAVILY SILT LADEN WATER INTO WATERBODIES OR WETLANDS.
2. DISCHARGE SITE SHALL BE WELL VEGETATED AND THE TOPOGRAPHY OF THE SITE SUCH THAT WATER WILL FLOW AWAY FROM ANY WORK AREAS. THE AREA DOWN SLOPE FROM THE DEWATERING SITE MUST BE REASONABLY PLANE OR STABILIZED BY VEGETATION OR OTHER MEANS TO ALLOW THE FILTERED WATER TO CONTINUE AS SHEET FLOW.
3. TO ATTACH THE DISCHARGE HOSE, CUT A CORNER OF THE BAG, INSERT DISCHARGE HOSE, AND SECURE THE HOSE TO THE BAG.
4. A SINGLE FILTER BAG SHOULD NOT BE USED FOR FLOWS GREATER THAN 600 GALLONS PER MINUTE.
5. REPLACE FILTER BAG BEFORE IT IS COMPLETELY FILLED WITH SEDIMENT. MONITOR DISCHARGE TO AVOID OVER PRESSURING DUE TO PLUGGING, WHICH MAY RESULT IN RUPTURE.
6. DISPOSE OF USED FILTER BAG AND SEDIMENT AT A SITE APPROVED BY THE COMPANY.

DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
TYPICAL GEOTEXTILE FILTER BAGS FOR DEWATERING		
OWNER:		
DATE: OCTOBER 2013	P01W-TYEC-03	REV 1

1. HYDRAULICALLY APPLIED MULCH (HYDRO-MULCH) WITH TACKIFIER MAY BE USED IN LIMITED AREAS, IN LIEU OF MECHANICALLY ANCHORED STRAW MULCH, WHERE A MECHANICAL MULCH CRIMPER CANNOT BE SAFELY OR EFFECTIVELY OPERATED, SUCH AS SOME STEEP SLOPES OR ROCKY AREAS. LOCATIONS FOR THE USE OF HYDRO-MULCH AND TACKIFIER MUST BE APPROVED BY THE COMPANY INSPECTOR PRIOR TO APPLICATION.
2. APPLY HYDRO-MULCH AT THE RATE OF APPROXIMATELY 3000 POUNDS OF AIR-DRIED FIBER/ACRE AS NECESSARY TO PROVIDE AT LEAST 75 PERCENT GROUND COVER. APPLY THE TACKIFIER AT THE RATE RECOMMENDED BY THE MANUFACTURER. APPLY THE HYDRO-MULCH AND TACKIFIER TO PRODUCE A UNIFORM, AT-LIKE GROUND COVER.
3. THE HYDRAULICALLY APPLIED MULCH SHALL HAVE THE FOLLOWING PROPERTIES:
 - THE MULCH SHALL CONSIST OF AIR-DRIED, 100 PERCENT VIRGIN-WOOD-FIBERS MANUFACTURED FROM WHOLE WOOD CHIPS;
 - MAXIMUM MOISTURE CONTENT OF 12 PERCENT (PLUS OR MINUS 3 PERCENT);
 - THE MULCH SHALL NOT BE PRODUCED FROM RECYCLED MATERIALS AND SHALL NOT CONTAIN ANY GROWTH OR GERMINATION INHIBITING FACTORS;
 - THE MULCH SHALL BE DYED TO FACILITATE VISUAL METERING AND EVEN APPLICATION;
 - THE MULCH SHALL BE SUPPLIED IN PACKAGES MARKED BY THE MANUFACTURER TO SHOW THE AIR-DRY WEIGHT.
4. THE TACKIFIER SHALL CONSIST OF A BIODEGRADABLE, ORGANIC, WATERSOLUBLE, NATURAL VEGETABLE GUM FORMULATION SUCH AS GUAR GUM. ASPHALT-BASED TACKIFIERS SHALL NOT BE USED.
5. APPLY HYDRO-MULCH AND TACKIFIER IMMEDIATELY FOLLOWING SEEDING.
6. AVOID FURTHER DISTURBANCE OF THE SLOPE SURFACE FOLLOWING APPLICATION OF HYDRO-MULCH AND TACKIFIER. WHERE DISTURBANCE OCCURS, RESEED IF NECESSARY, AND REAPPLY HYDRO-MULCH AND TACKIFIER.
7. DO NOT USE OR APPLY HYDRO-MULCH AND TACKIFIER WITHIN 100 FEET OF WATERBODIES OR WETLANDS.

DONLIN GOLD PROJECT

APPLICANT: Donlin Gold, LLC.
 4720 Business Park Blvd., Suite G-25
 Anchorage, Alaska 99503

**TYPICAL
 HYDRO-MULCH AND TACKIFIER**

OWNER:

DATE: OCTOBER 2013	P01W-TYEC-04	REV 1
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NOTES:

APPLICATIONS AND LOCATIONS

1. HYDRO-MULCH WITH TACKIFIER SHALL BE USED AT LOCATIONS IDENTIFIED IN THE GEOTECHNICAL PLAN, RECLAMATION PLAN, AND/OR AS DIRECTED BY THE COMPANY TO PROTECT SOIL AGAINST EROSION.
2. THE CONTRACTOR SHALL BE REQUIRED TO USE EXTENSION HOSES TO REACH INACCESSIBLE AREAS. WHERE THE USE OF EXTENSION HOSES IS NOT SUFFICIENT TO REACH AREAS, EROSION CONTROL MATTING CAN BE SUBSTITUTED.
3. HYDRO-MULCH AND TACKIFIER SHALL BE APPLIED AT A RATE OF 3000 LBS/ACRE RESPECTIVELY, IN A SINGLE APPLICATION. HYDRO-MULCH AND TACKIFIER SHALL PRODUCE A UNIFORM, MAT-LIKE COVERING ON THE GROUND.
4. WHEN DIRECTED BY THE COMPANY, TOPSOIL STOCKPILES SHALL BE EITHER WET WITH WATER OR TACKIFIER TO PROVIDE AN UNERODABLE CRUST OR TO CONTROL WIND EROSION.

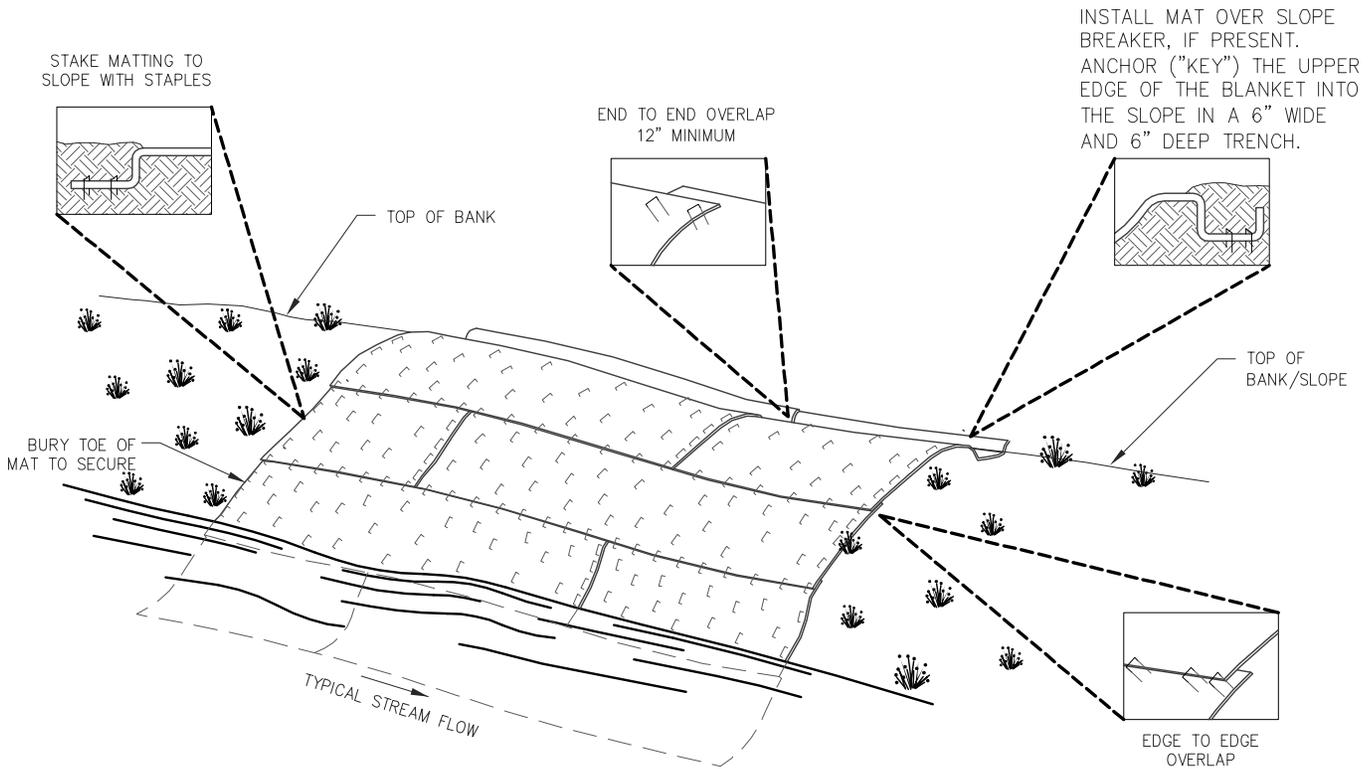
HYDRO-MULCH MATERIAL

5. THE HYDRO-MULCH MATERIAL SHALL CONSIST OF WOOD FIBERS MEETING THE FOLLOWING PHYSICAL AND CHEMICAL PROPERTIES:
 - MOISTURE CONTENT 12% ± 3%
 - ORGANIC MATTER (OVEN-DRIED BASIS) 99.2% ± 0.2%
 - ASH CONTENT 0.7% ± 0.2%
 - WATER HOLDING CAPACITY 100 GRAMS MINIMUM
 NOTE: WATER HOLDING CAPACITY – 1000 GRAMS OF OVEN-DRIED MULCH SATURATED, DRAINED AND WEIGHTED.
6. THE HYDRO-MULCH MATERIAL SHALL MEET THE FOLLOWING ADDITIONAL REQUIREMENTS:
 - THE FIBERS SHALL NOT CONTAIN ANY GROWTH OR GERMINATION INHIBITING FACTORS.
 - THE FIBERS SHALL NOT BE PRODUCED FROM RECYCLED MATERIAL SUCH AS SAWDUST, PAPER, CARDBOARD, OR PULP AND PAPER PLANT RESIDUE.
 - THE FIBERS SHALL BE DYED TO FACILITATE VISUAL METERING DURING APPLICATION.
7. HYDRO-MULCH SHALL BE SUPPLIED IN 50 POUND NET WEIGHT BAGS. EACH PACKAGE SHALL BE MARKED BY THE MANUFACTURE TO SHOW THE AIR-DRY WEIGHT CONTENT.
8. THE HYDRO-MULCH MATERIAL SHALL BE OF SUCH A CONSISTENCY THAT AFTER BEING COMBINED IN A SLURRY TANK WITH WATER AND APPROVED TACKIFIER, THE FIBERS IN THE MATERIAL SHALL BE UNIFORMLY SUSPENDED TO FORM A HOMOGENOUS SLURRY.
9. MULCH WHICH HAS BEEN DAMAGED BY MOISTURE OR OTHER MEANS SHALL NOT BE ACCEPTED.
10. IF REQUESTED, THE CONTRACTOR SHALL SUBMIT A MINIMUM 1-POUND BAG OF THE PRODUCT PROPOSED FOR USE ON THE PROJECT TO THE COMPANY FOR TESTING, OR A SIGNED STATEMENT CERTIFYING THE MATERIAL FURNISHED HAS BEEN LABORATORY AND FIELD-TESTED, AND MEETS REQUIREMENTS FOR ITS INTENDED USE. THE COMPANY MAY ACCEPT THE HYDRO-MULCH MATERIAL FOR USE BASED ON A CERTIFICATE OF COMPLIANCE.

TACKIFIER MATERIAL

11. TACKIFIER SHALL MEET THE FOLLOWING REQUIREMENTS:
 - BE OF A BIODEGRADABLE ORGANIC FORMULATION. CONSIST OF SPECIFICALLY BLENDED COMPATIBLE HYDROCOLLOIDS (SOLUBLE POLYSACCHARIDES, GUR GUM OR PLANGAGE). STARCH-BASED TACKIFIERS ARE UNACCEPTABLE.
 - HAVE AN EQUILIBRIUM AIR-DRY MOISTURE CONTENT AT TIME OF MANUFACTURE OF 8% ± 2% WITH A MINIMUM WATER HOLDING CAPACITY OF 6.5 TIMES BY WEIGHT OF DRY MATERIAL BE ABLE TO HYDRATE AND UNIFORMLY DISPERSING IN CIRCULATING WATER TO FORM A HOMOGENOUS SLURRY AND REMAIN IN SUCH A STATE IN THE HYDRAULIC MIXING UNIT (USUALLY A HYDRO-MULCHER).
12. TACKIFIER SHALL BE SUPPLIED IN PACKAGES MARKED BY THE MANUFACTURE TO SHOW WEIGHT CONTENT. TACKIFIER WHICH HAS BEEN DAMAGED BY MOISTURE OR OTHER MEANS SHALL NOT BE ACCEPTED

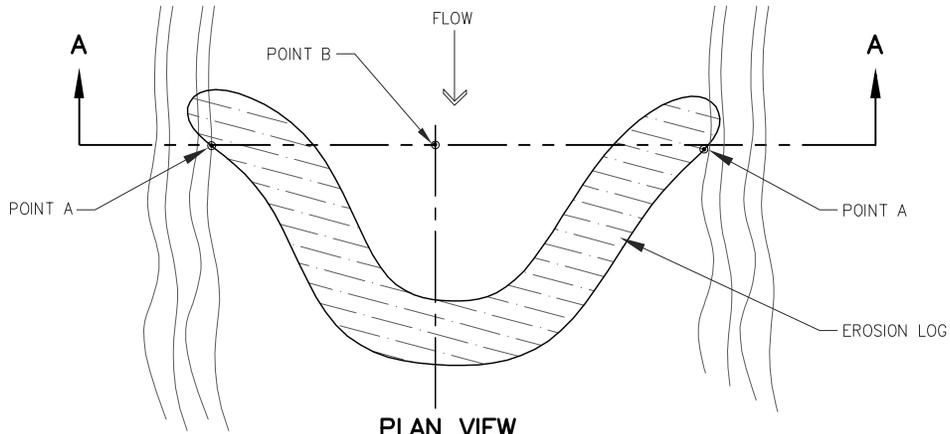
DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
TYPICAL HYDRO-MULCH AND TACKIFIER		
OWNER:		
DATE: OCTOBER 2013	P01W-TYEC-05	REV 1



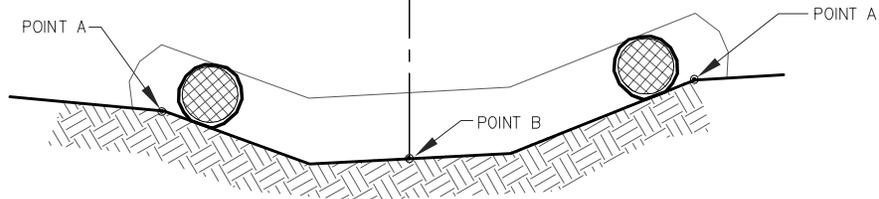
NOTE:

1. EROSION CONTROL MATTING (BLANKETS) COULD BE USED AT THE BANKS OF ALL WATERBODIES AND ON STEEP SLOPES.
2. THE EROSION CONTROL MATTING SHALL MAKE UNIFORM CONTACT WITH THE SOIL UNDERNEATH WITH NO BRIDGING OF RILLS OR GULLIE. JOINING MATS SHOULD OVERLAP.
3. MONITOR FOR WASHOUTS, STAPLE INTEGRITY OR MAT MOVEMENT PRIOR TO COMPLETION OF CONSTRUCTION. REPLACE OR REPAIR AS NECESSARY.

DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
TYPICAL EROSION CONTROL MATTING STREAMBANKS		
OWNER:		
DATE: OCTOBER 2013	P01W-TYEC-06	REV 1

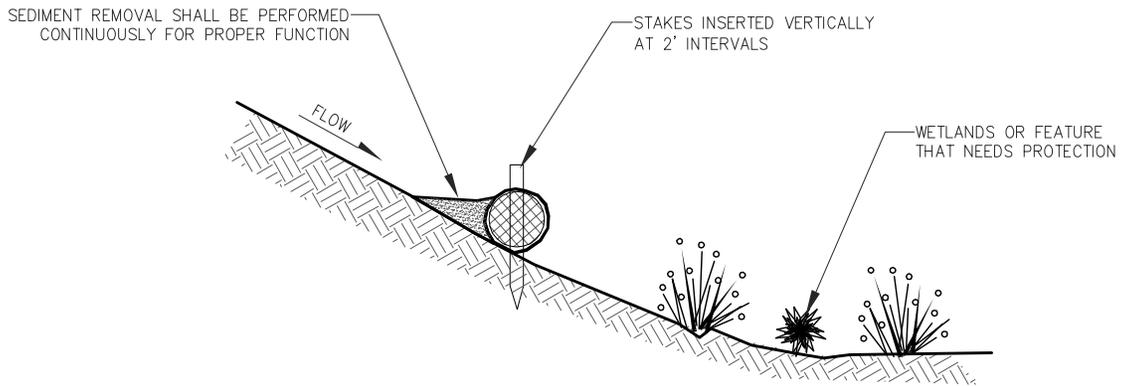


PLAN VIEW



POINTS A MUST BE HIGHER THAN POINT B

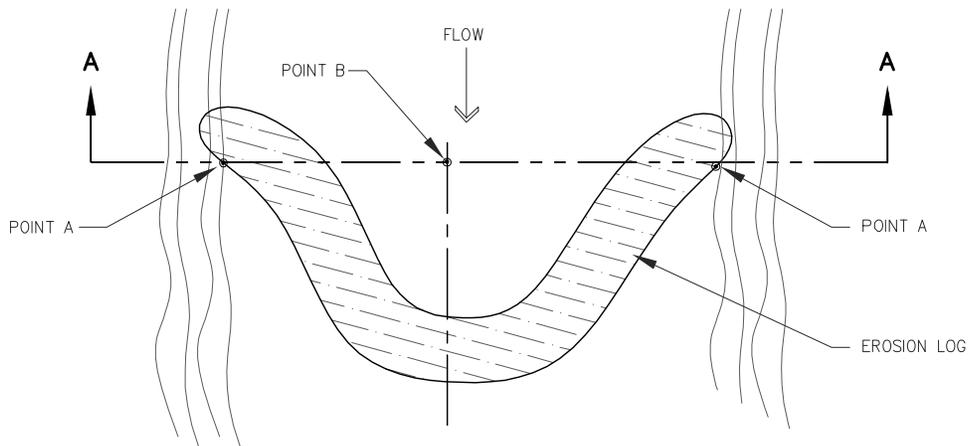
SECTION A-A



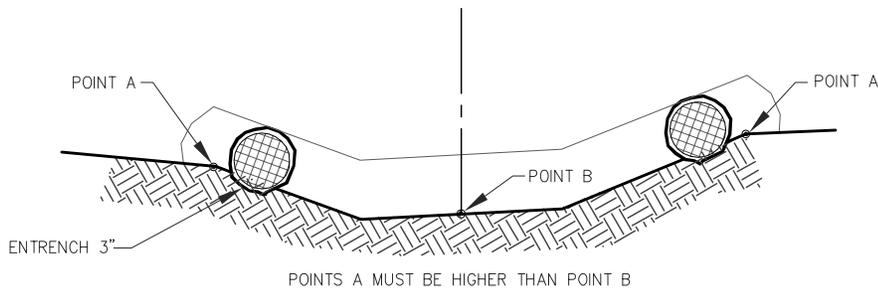
TYPICAL STAKING PATTERN

NOT TO SCALE

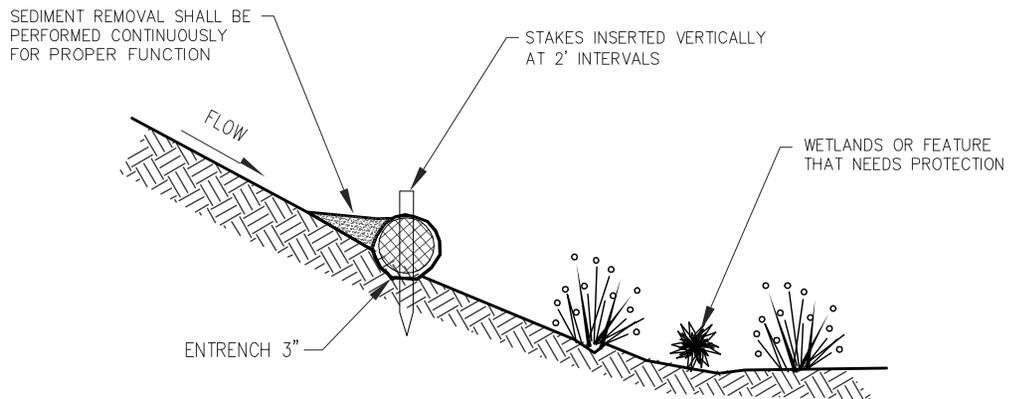
<p>DONLIN GOLD PROJECT APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503</p>		
<p>TYPICAL WATTLE BMP</p>		
OWNER:		
DATE: OCTOBER 2013	P01W-TYEC-07	REV 1



PLAN VIEW



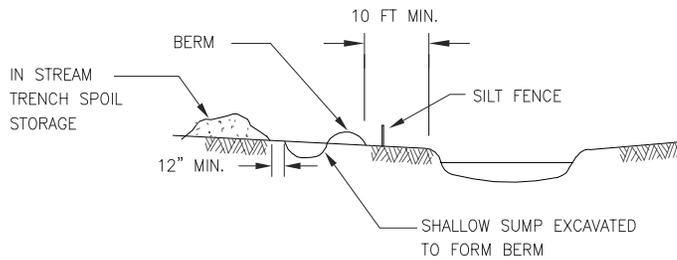
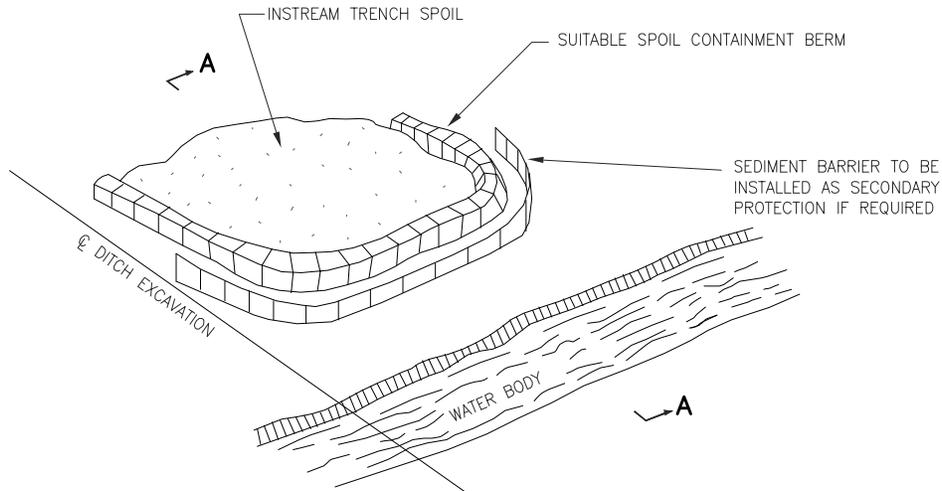
SECTION A-A



TYPICAL STAKING PATTERN

NOT TO SCALE

<p>DONLIN GOLD PROJECT APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503</p>		
<p>TYPICAL WATTLE BMP ENTRENCHED</p>		
OWNER:		
DATE: OCTOBER 2013	P01W-TYEC-08	REV 1

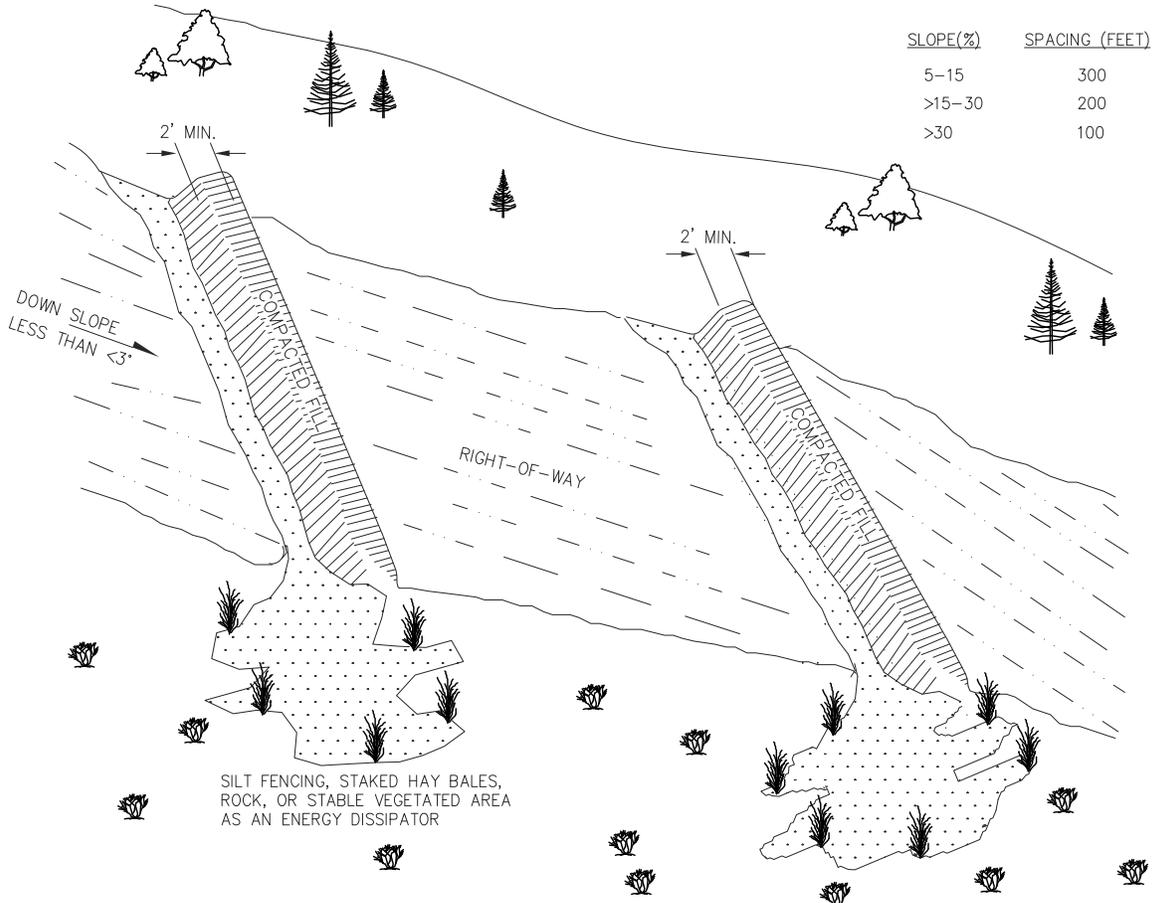


SECTION A-A

NOTES:

1. SOIL CONTAINMENT BERMS ARE TO BE USED WHERE INSTREAM TRENCH SPOIL COULD REENTER THE WATERBODY DIRECTLY OR INDIRECTLY AND WITH SIMULTANEOUS UTILIZATION OF SEDIMENT BARRIERS IF REQUIRED.
2. MATERIAL USED FOR THE CONTAINMENT BERM SHOULD BE KEPT TO A HEIGHT WHICH REMAINS STABLE DURING THE CONSTRUCTION PERIOD.
3. CARE SHOULD BE TAKEN THAT THE SPOIL PILE DOES NOT OVERTOP THE CONTAINMENT BERM.
4. THE CONTAINMENT BERM SHOULD BE DISMANTLED AND THE SITE RESTORED TO THE ORIGINAL CONDITION UPON COMPLETION OF THE WATER CROSSING.
5. CARE AND ATTENTION MUST BE TAKEN TO ENSURE SPOIL CONTAINMENT BERMS ARE MAINTAINED.
6. FULL CONSIDERATION FOR OVERALL SLOPE STABILITY IS REQUIRED WHEN SELECTING A SPOIL CONTAINMENT LOCATION.

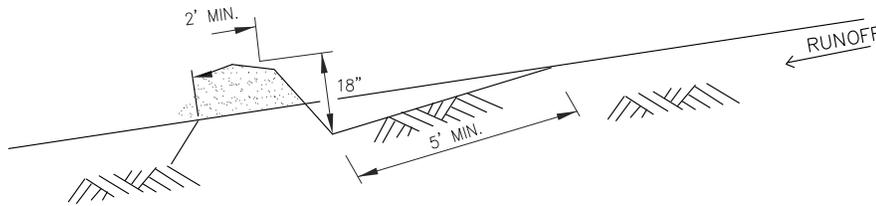
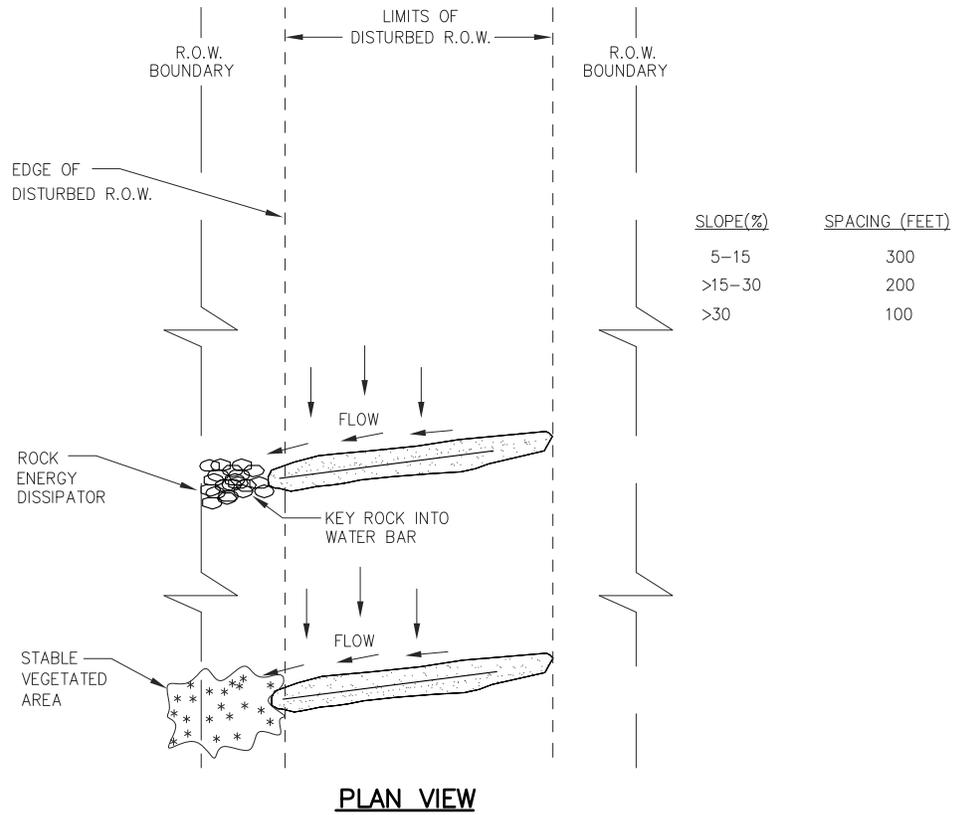
DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
TYPICAL TEMPORARY SOIL CONTAINMENT BERM		
OWNER:		
DATE:	OCTOBER 2013	P01W-TYEC-09
		REV 1



SLOPE BREAKER NOTES:

1. SLOPE BREAKERS SHALL BE CONSTRUCTED OF NATIVE SOIL AND INSTALLED AT LOCATIONS AS SHOWN ON THE CONSTRUCTION DRAWINGS, OR AS REQUIRED.
2. SLOPE BREAKER SHALL BE ORIENTED AS SHOWN OR OTHER PATTERN AS REQUIRED.
3. SLOPE BREAKERS SHALL BE CONSTRUCTED AT A 2-8% GRADIENT ACROSS THE SLOPE.
4. THE SLOPE BREAKERS SHALL BE 18" DEEP (AS MEASURED FROM THE TROUGH TO THE TOP OF THE SLOPE BREAKER). THE TROUGH WILL BE A MINIMUM OF 5' WIDE ACROSS THE WIDTH OF THE RIGHT-OF-WAY.
5. THE OUTLET OF THE SLOPE BREAKER MUST FREELY DISCHARGE ALL RUNOFF OFF THE DISTURBED R.O.W. INTO A STABLE, WELL VEGETATED AREA OR INTO AN ENERGY DISSIPATOR.
6. WHERE SLOPE BREAKERS EXTEND BEYOND THE EDGE OF THE CONSTRUCTION R.O.W. TO DIRECT RUNOFF INTO STABLE, WELL VEGETATED AREAS, THESE LOCATIONS MUST BE APPROVED.

DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC.		
4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
TYPICAL SLOPE BREAKER WITH LONGITUDINAL CROSS SLOPES (SHT. 1 OF 3)		
OWNER:		
DATE: OCTOBER 2013	P01W-TYEC-10	REV 1

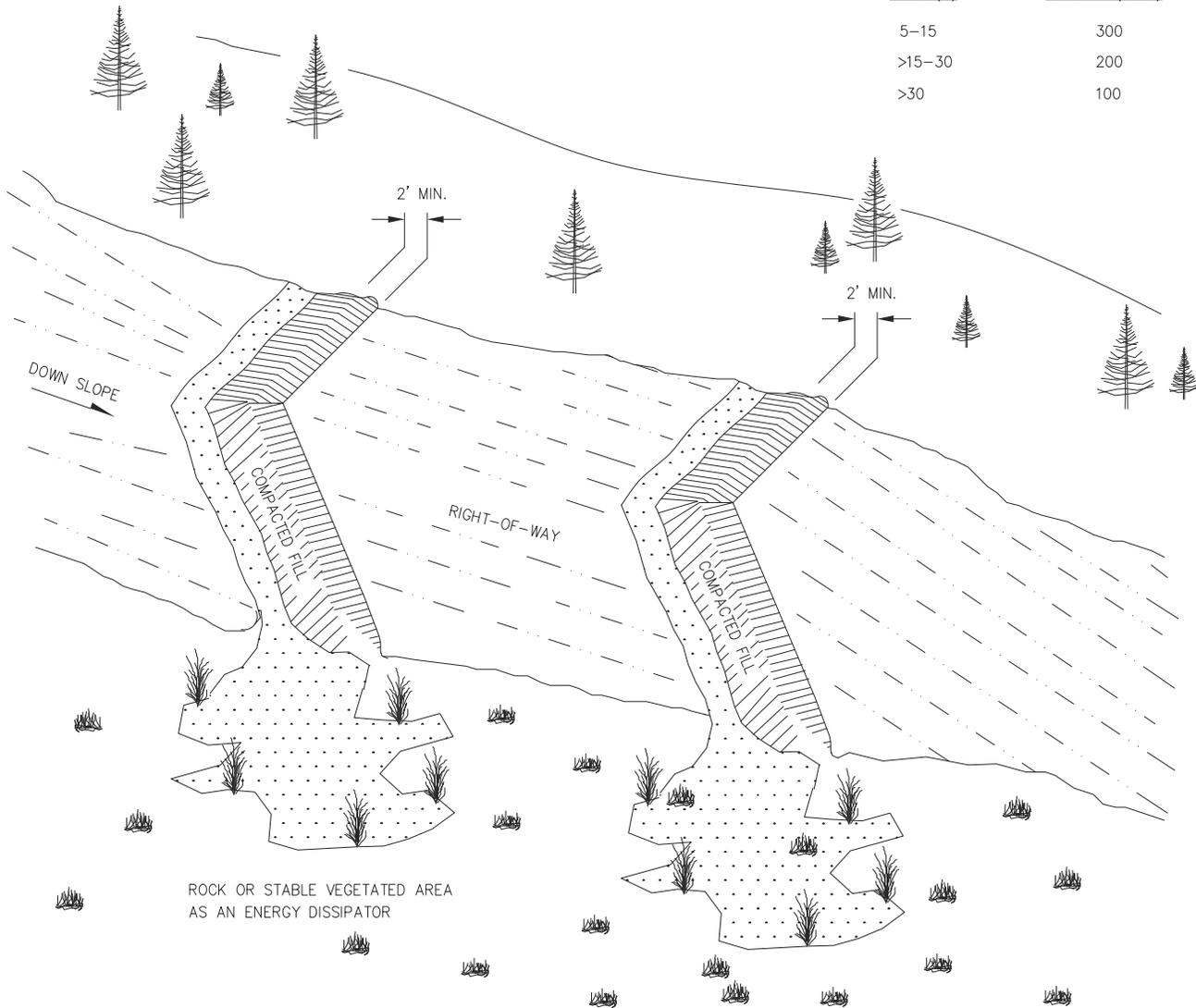


FLOW ENERGY DISSIPATOR NOTES:

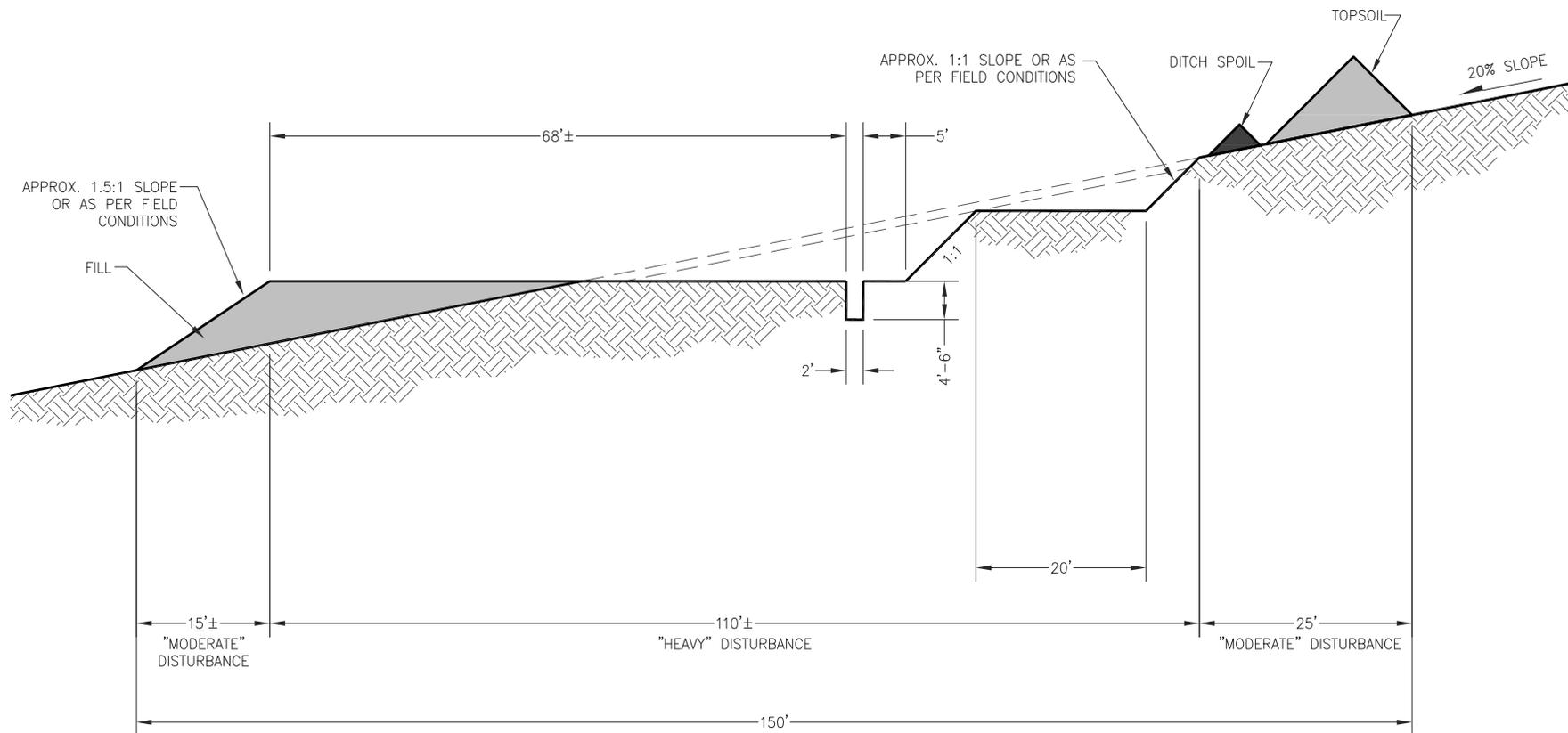
1. THE OUTLET SHALL CONTAIN AN ENERGY DISSIPATOR IF THE COMPANY DETERMINES EXISTING VEGETATION IS NOT SUFFICIENTLY STABLE TO PREVENT EROSION. THE ENERGY DISSIPATOR SHALL BE CONSTRUCTED AS FOLLOWS:
 - OUTFALL END OF DISSIPATOR SHOULD BE LOWER THAN SLOPE BREAKER END.
 - SILT FENCE, STRAW BALE OR ROCK DISSIPATORS SHOULD BE KEYED INTO THE END OF THE SLOPE BREAKER.
 - PROVIDE ENOUGH AREA INSIDE "L" TO CAPTURE AND HOLD SEDIMENT.

DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
TYPICAL SLOPE BREAKER WITH LONGITUDINAL CROSS SLOPES (SHT. 2 OF 3)		
OWNER:		
DATE: OCTOBER 2013	P01W-TYEC-11	REV 1

SLOPE(%)	SPACING (FEET)
5-15	300
>15-30	200
>30	100



<p>DONLIN GOLD PROJECT APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503</p>		
<p>TYPICAL SLOPE BREAKER WITH LONGITUDINAL CROSS SLOPES (SHT. 3 OF 3)</p>		
OWNER:		
DATE: OCTOBER 2013	P01W-TYEC-12	REV 1



ACTIVE CONSTRUCTION RIGHT OF WAY

NOT TO SCALE

DONLIN GOLD PROJECT

APPLICANT: Donlin Gold, LLC.

4720 Business Park Blvd., Suite G-25
Anchorage, Alaska 99503

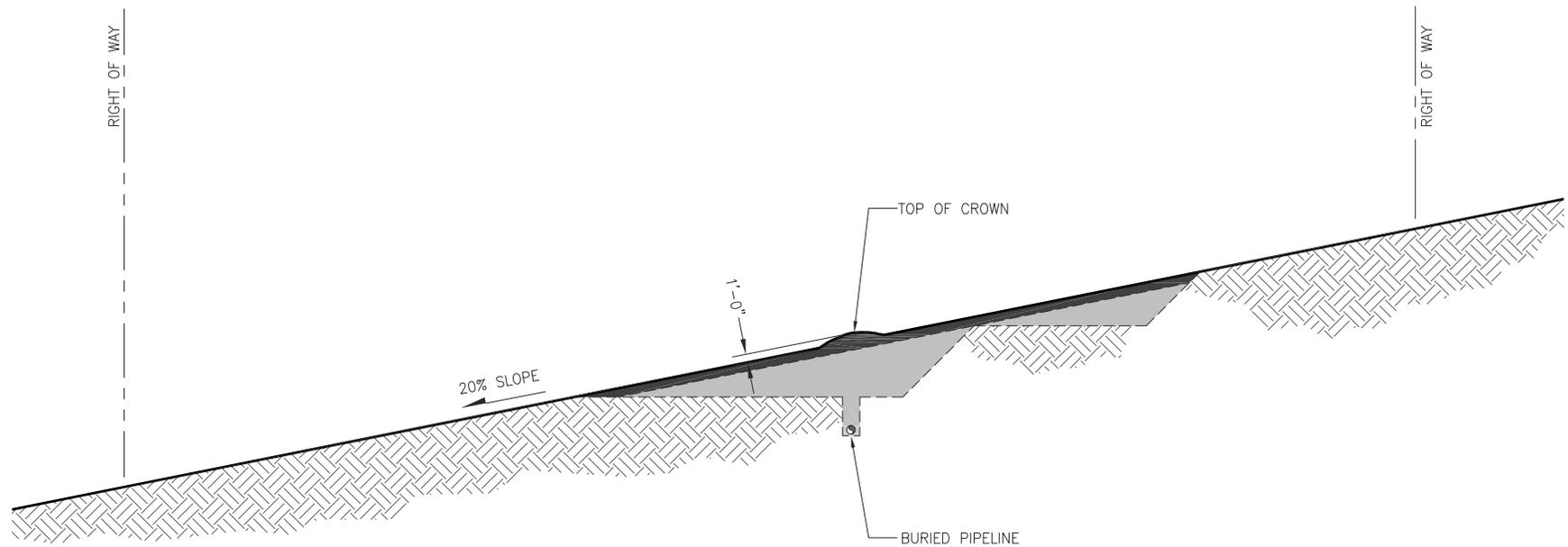
**TYPICAL
SIDE SLOPE SECTION – TWO TONED
SHEET 1 OF 2**

OWNER:

DATE: OCTOBER 2013

P01W-TYRW-01

REV 1



RECLAIMED RIGHT OF WAY
NOT TO SCALE

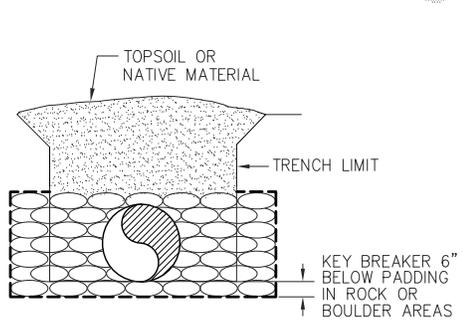
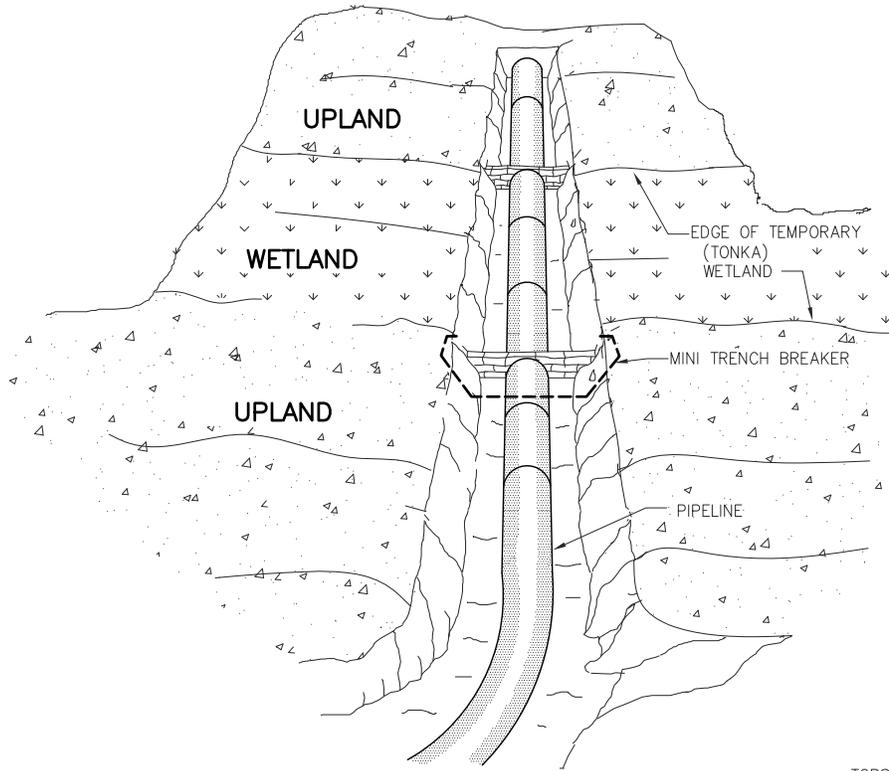
DONLIN GOLD PROJECT

APPLICANT: Donlin Gold, LLC.
4720 Business Park Blvd., Suite G-25
Anchorage, Alaska 99503

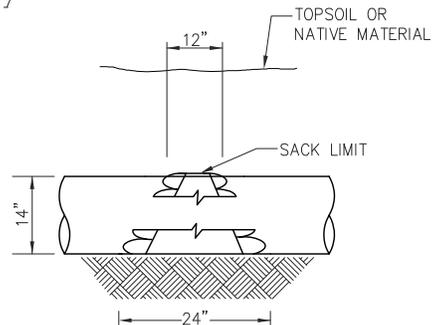
**TYPICAL
SIDE SLOPE SECTION – TWO TONED
SHEET 2 OF 2**

OWNER:

DATE: OCTOBER 2013	P01W-TYRW-02	REV 1
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CROSS SECTION

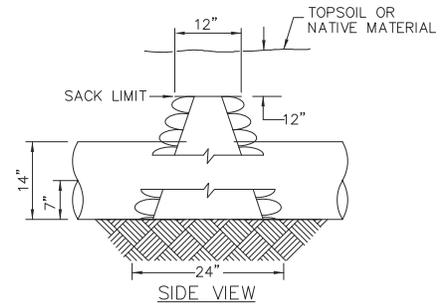
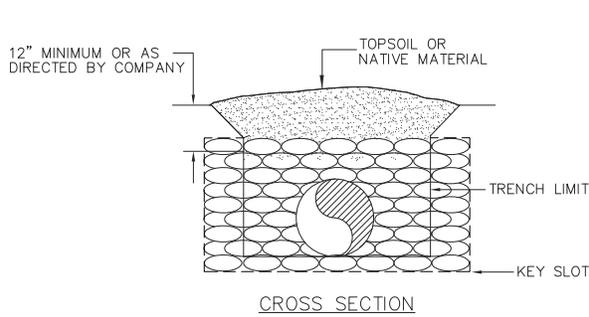
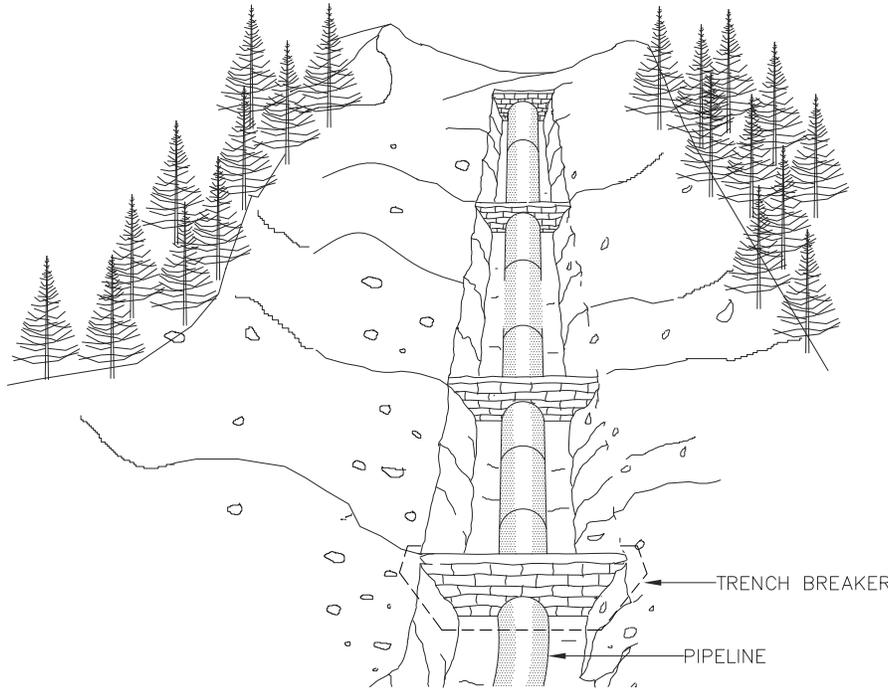


SIDE VIEW

NOTES:

1. MINI-TRENCH BREAKERS SHALL BE INSTALLED AT EDGE OF EACH TEMPORARY (TONKA) WETLAND.
2. OPEN WEAVE HEMP OR JUTE SACKS SHALL BE FILLED WITH A MINIMUM OF 55lbs. OF SAND OR SUBSOIL.
3. BREAKER CONFIGURATION MAY BE CHANGED TO INCLUDE KEYING AS DETERMINED BY COMPANY ENGINEER.

<p>DONLIN GOLD PROJECT APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503</p>		
<p>TYPICAL MINI-TRENCH BREAKER</p>		
OWNER:		
DATE: OCTOBER 2013	P01W-TYTR-01	REV 1



NOTES:

1. TRENCH BREAKERS SHALL BE INSTALLED:
 - ON SLOPES ALONG THE TRENCH LINE WHERE THE NATURAL DRAINAGE PATTERN, PROFILE, AND TYPE OF BACKFILL MATERIAL MAY RESULT IN LOSS OF BACKFILL MATERIAL OR ALTERATION OF THE NATURAL PATTERN
 - AT THE BASE OF SLOPES ADJACENT TO WATERBODIES AND WETLANDS
 - WHERE NEEDED TO AVOID DRAINING A WETLAND
2. OPEN WEAVE HEMP OR JUTE SACKS SHALL BE FILLED WITH A MINIMUM OF 55lbs IN A MIXTURE OF SAND & SUBSOIL.
3. BREAKER SPACING AND CONFIGURATION, INCLUDING THE NEED TO KEY THE BREAKER INTO THE UNDISTURBED SOIL AT THE SIDES AND BOTTOM OF THE TRENCH, MAY CHANGE AS DETERMINED BY COMPANY ENGINEER.

DONLIN GOLD PROJECT

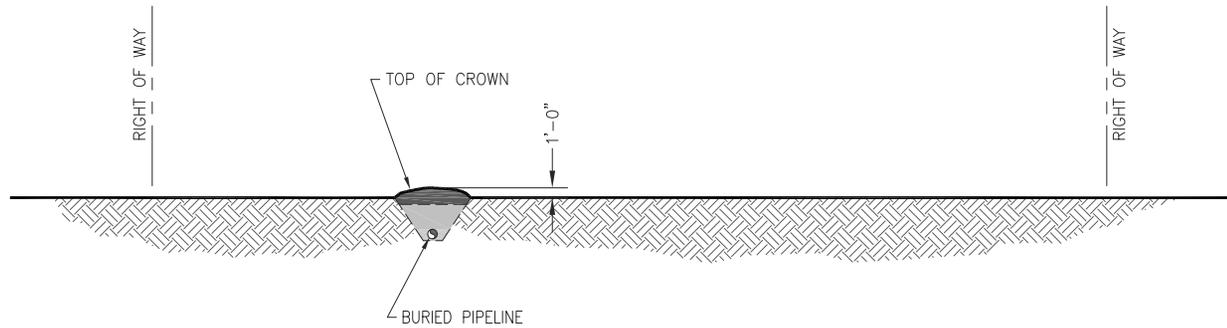
APPLICANT: Donlin Gold, LLC.

4720 Business Park Blvd., Suite G-25
Anchorage, Alaska 99503

**TYPICAL
TRENCH BREAKER REQUIREMENTS**

OWNER:

DATE: OCTOBER 2013 | P01W-TYTR-02 | REV 1



RECLAIMED TRENCH
NOT TO SCALE

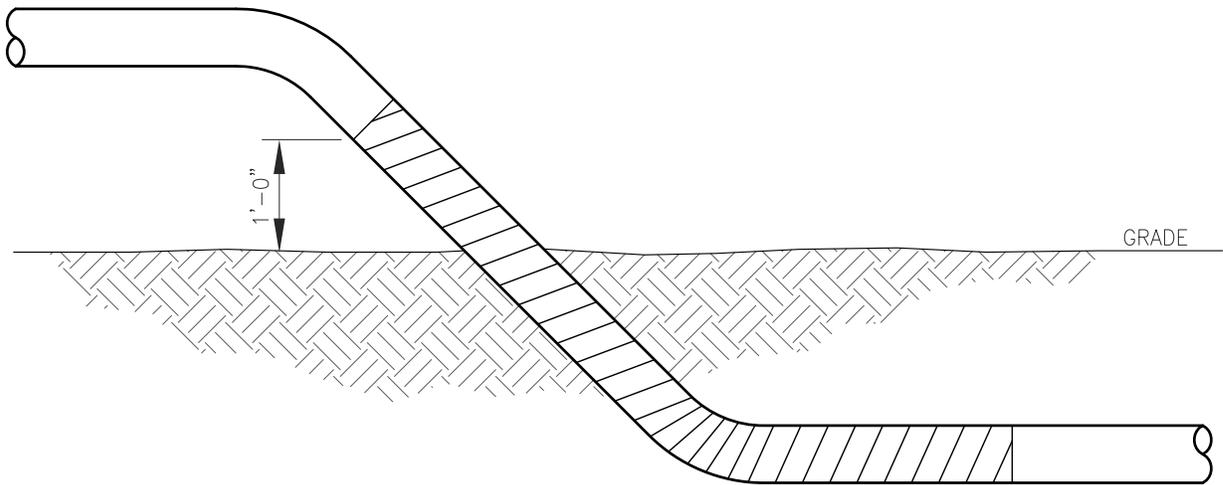
DONLIN GOLD PROJECT

APPLICANT: Donlin Gold, LLC.
4720 Business Park Blvd., Suite G-25
Anchorage, Alaska 99503

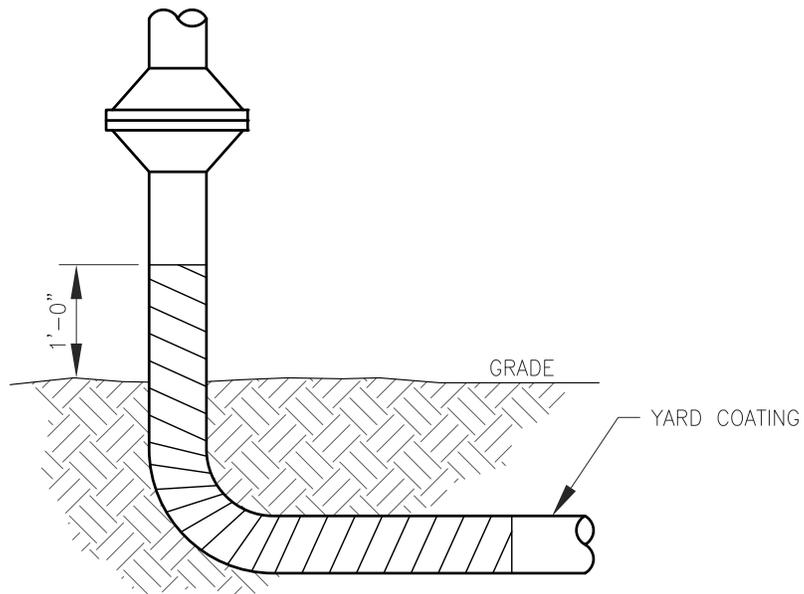
**TYPICAL
RECLAIMED TRENCH**

OWNER:

DATE: OCTOBER 2013	P01W-TYTR-03	REV 1
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DETAIL NO. 1
NOT TO SCALE

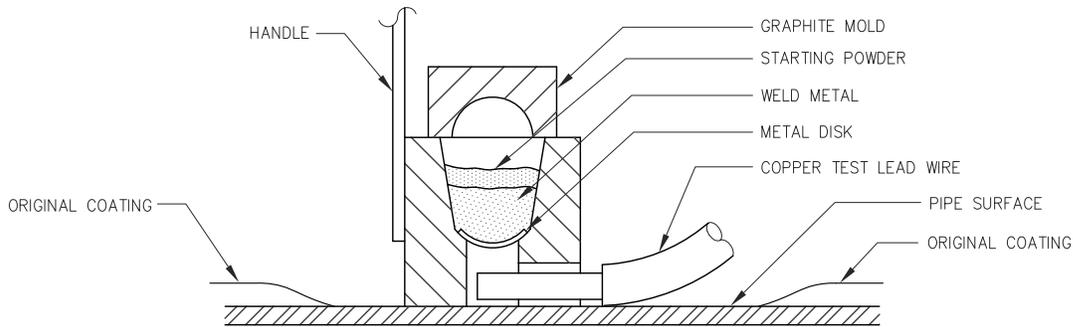


DETAIL NO. 2
NOT TO SCALE

PROTECTIVE COATING APPLICATION

1. COVER ALL BELOW GRADE PIPING WITH TAPE WRAP OR HAND APPLIED 2-3 PART EXTENDING FROM YARD COATING TO A POINT 1 FOOT ABOVE THE GRADE LINE.
2. TAPE WRAP WILL BE APPLIED WITH A 1/2 WIDTH LAP OVER PRIMED SURFACE.
3. ALL COATING TO BE APPLIED AS PER MANUFACTURER'S RECOMMENDATION.
4. ABOVEGROUND PIPING TO BE PAINTED PER COATING SPECIFICATION.

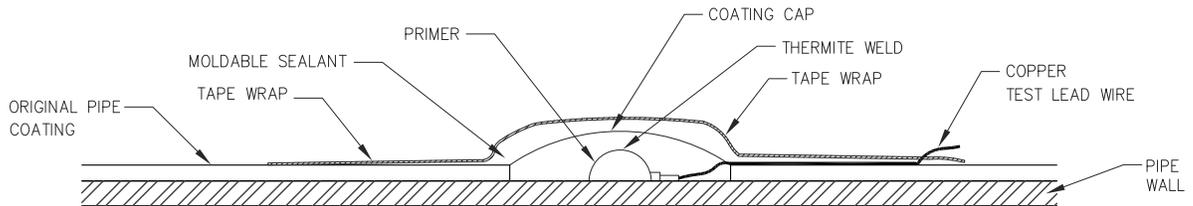
<p>DONLIN GOLD PROJECT APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503</p>		
<p>TYPICAL PROTECTIVE COATING DETAILS</p>		
OWNER:		
DATE: OCTOBER 2013	P01X-TYCT-01	REV 1



DETAIL A – TYPICAL THERMITE WELDING PROCEDURE

NOT TO SCALE

1. REMOVE 4" x 4" AREA OF COATING AT 12 O'CLOCK POSITION ON PIPE. CLEAN SURFACE TO SHINY METAL WITH A FILE, FORM A CROSS HATCHED ANCHOR PATTERN.
2. SECURE WIRE AROUND PIPE. STRIP WIRE INSULATION BACK 2" FOR No. 10 AWG WIRE AND SMALLER, SLIP ON COPPER SLEEVE AND CRIMP.
3. PLACE METAL RETAINER DISK FLAT IN MOLD. DUMP (DO NOT POUR) POWDER ONTO DISK AND CLOSE MOLD LID. MAKE SURE ALL FINE STARTING POWDER IS IN THE MOLD; IF ANY CLINGS TO BOTTOM OF CARTRIDGE, SQUEEZE OUT INTO MOLD AND BREAK UP FINE. CHARGE TO BE RESTRICTED TO THE CONTENTS OF ONE CA.15 CARTRIDGE. CADWELD CONNECTION MOLD #CA HAA-IG SHALL BE USED.
4. REPLACE EMPTY CARTRIDGE IN THE BOX GREEN END UP TO KEEP REMAINING CARTRIDGES UPRIGHT.
5. LAY WIRE ON BRIGHT PIPE SURFACE USING SPRING LOADED CHAIN CLAMP TO HOLD CRUCIBLE TIGHT. REMOVE HAND COMPLETELY AWAY FROM TOOL.
6. USE EYE PROTECTION. STANDING ON OPPOSITE SIDE OF CRUCIBLE FROM TOUCH HOLE, IGNITE POWDER WITH SPARK FROM FLINT GUN. USE CARE, POWDER WILL FLASH.
7. WHEN WELD HAS SET, REMOVE MOLD AND TEST THERMITE WELD CONNECTION BY RAPPING SHARPLY WITH HAMMER. IN THE EVENT THERE IS ANY INDICATION THAT A COMPLETE WELD HAS NOT BEEN ACHIEVED, THE WELD SHALL BE REMOVED AND ATTEMPTED A MINIMUM DISTANCE OF 24" AWAY.
8. REMOVE SLAG FROM WELD AREA WITH SLAG HAMMER AND WIRE BRUSH.
9. COAT CONNECTION AS PER DETAIL B.



DETAIL B – TYPICAL THERMITE WELD COATING

NOT TO SCALE

1. SPECIFIC COATING PRODUCTS SHALL BE AS PER THE CONTRACT DOCUMENT AND APPLIED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. APPLY ROYSTON HANDICAP WITH ROYSTON No. 747 PRIMER TO THE THERMITE WELD AREA.
3. CAP SHALL BE PROPERLY POSITIONED OVER THE THERMITE WELD. WELD AND CAP SHALL BE SECURELY HELD IN PLACE BY TIGHTENING CABLE – TIE AROUND THE PIPE.
4. THE COMPLETED THERMITE WELD AND ANY ASSOCIATED BARE STEEL SHALL BE COATED USING A THREE STEP PROCEDURE: A. ANY BARE STEEL SHALL BE PRIMED. B. MOLDABLE SEALANT SHALL BE APPLIED OVER THE PRIMED AREA AND OVERLAPPING ORIGINAL COATING A MINIMUM OF 3 INCHES. C. FULL CIRCUMFERENTIAL WRAPS OF SHEAR RESISTANT COLD APPLIED POLYETHYLENE TAPE SHALL BE APPLIED TO THE ENTIRE AREA OVERLAPPING THE ORIGINAL COATING A MINIMUM OF 6 INCHES.
5. SPECIFIC COATING PRODUCTS SHALL BE AS PER THE CONTRACT DOCUMENT AND APPLIED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COATING DAMAGE SHALL BE PREPARED USING THE PATCHING PROCEDURE & MATERIAL AS SPECIFIED UNDER COATING SPECIFICATIONS.
6. ALL MATERIAL, EXCEPT TEST LEAD WIRE, TO BE FURNISHED BY CONTRACTOR.

DONLIN GOLD PROJECT

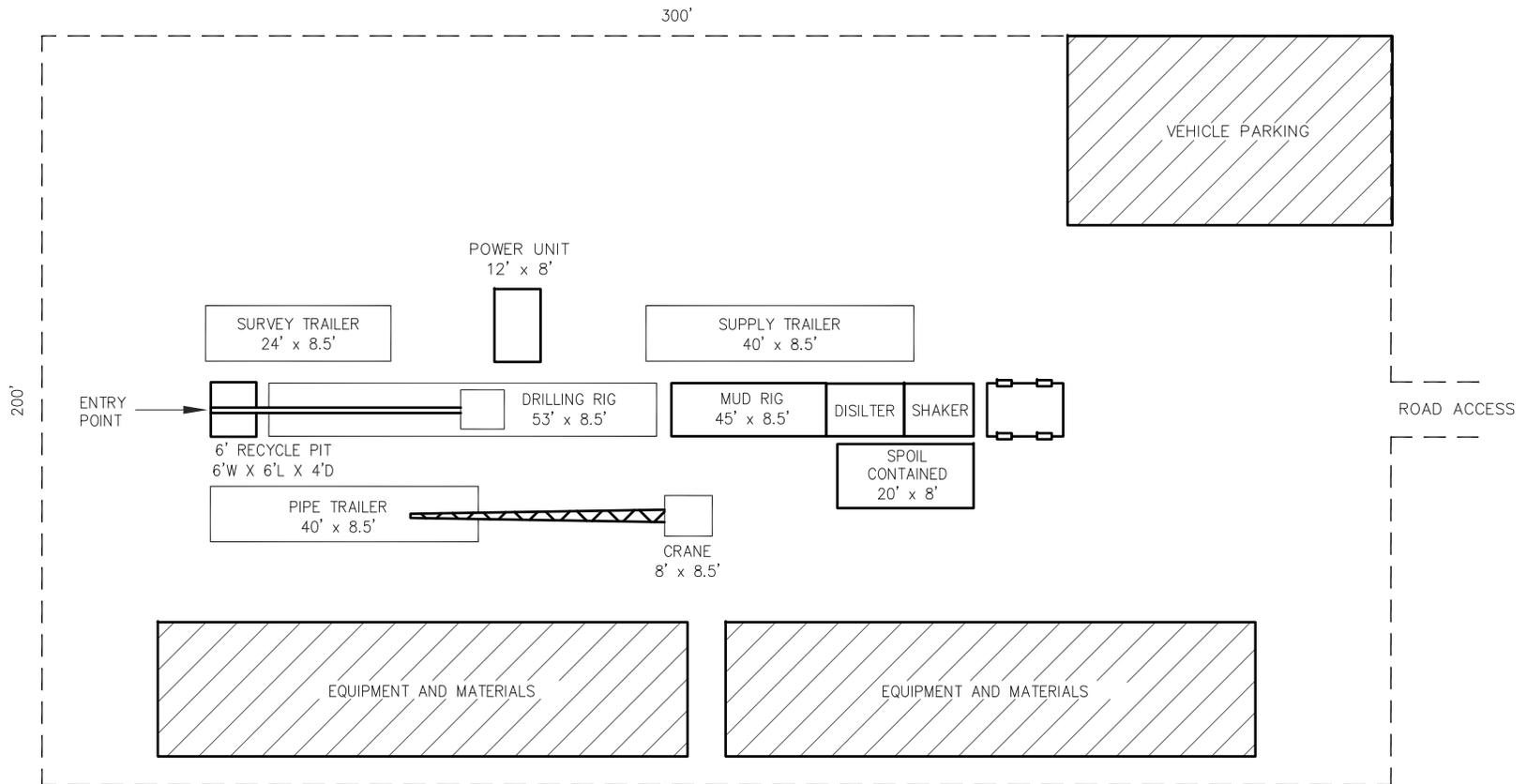
APPLICANT: Donlin Gold, LLC.

4720 Business Park Blvd., Suite G-25
Anchorage, Alaska 99503

**TYPICAL
THERMITE WELD CONNECTOR**

OWNER:

DATE: OCTOBER 2013 | P01X-TYWL-01 | REV 1



NOTE:
 THIS IS A TYPICAL SITE SET-UP. THERE ARE VARIOUS CONFIGURATIONS USED
 DEPENDING UPON SITE RESTRICTIONS. FIELD MODIFICATIONS TO SUIT SITE.

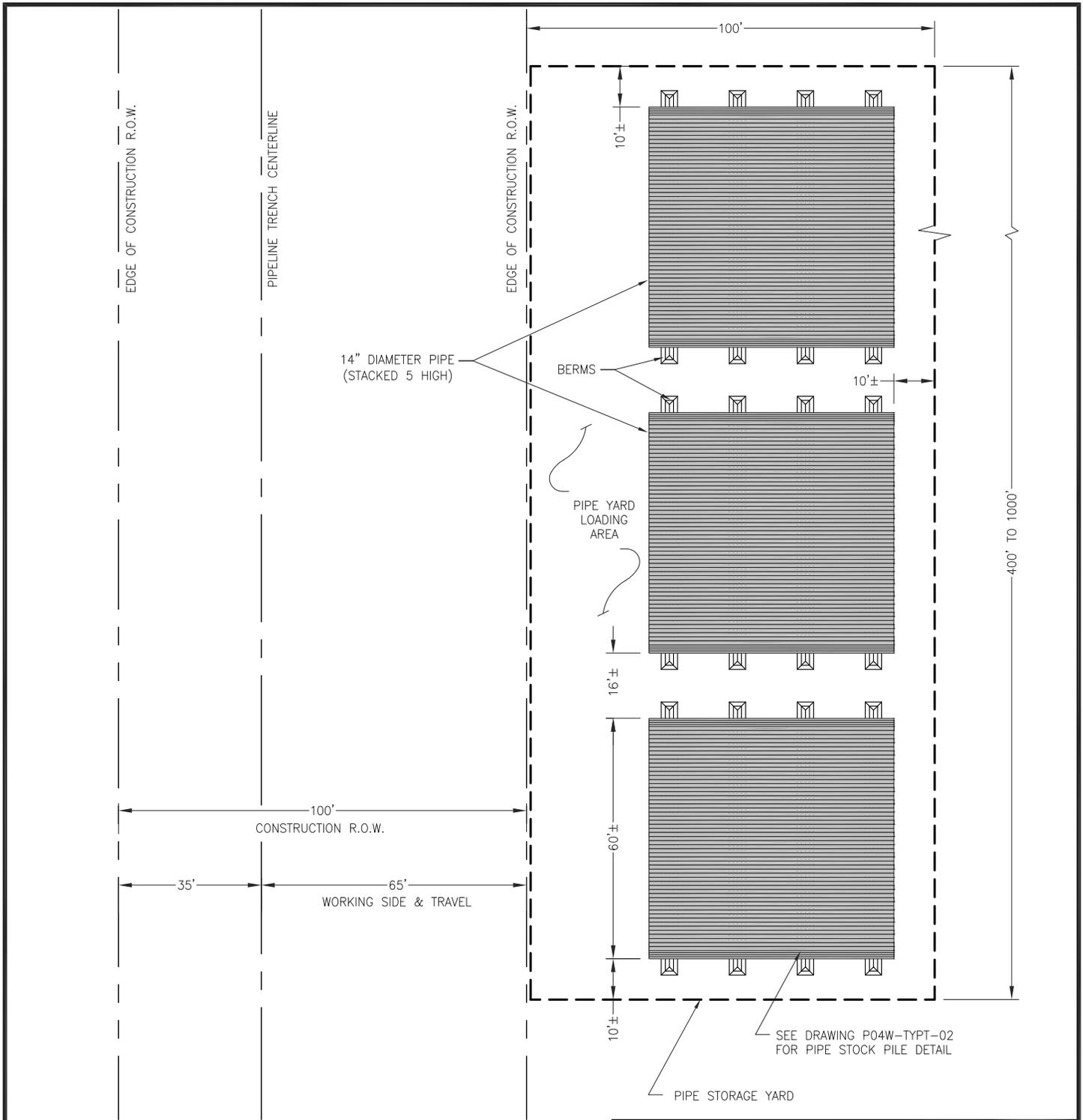
DONLIN GOLD PROJECT

APPLICANT: Donlin Gold, LLC.
 4720 Business Park Blvd., Suite G-25
 Anchorage, Alaska 99503

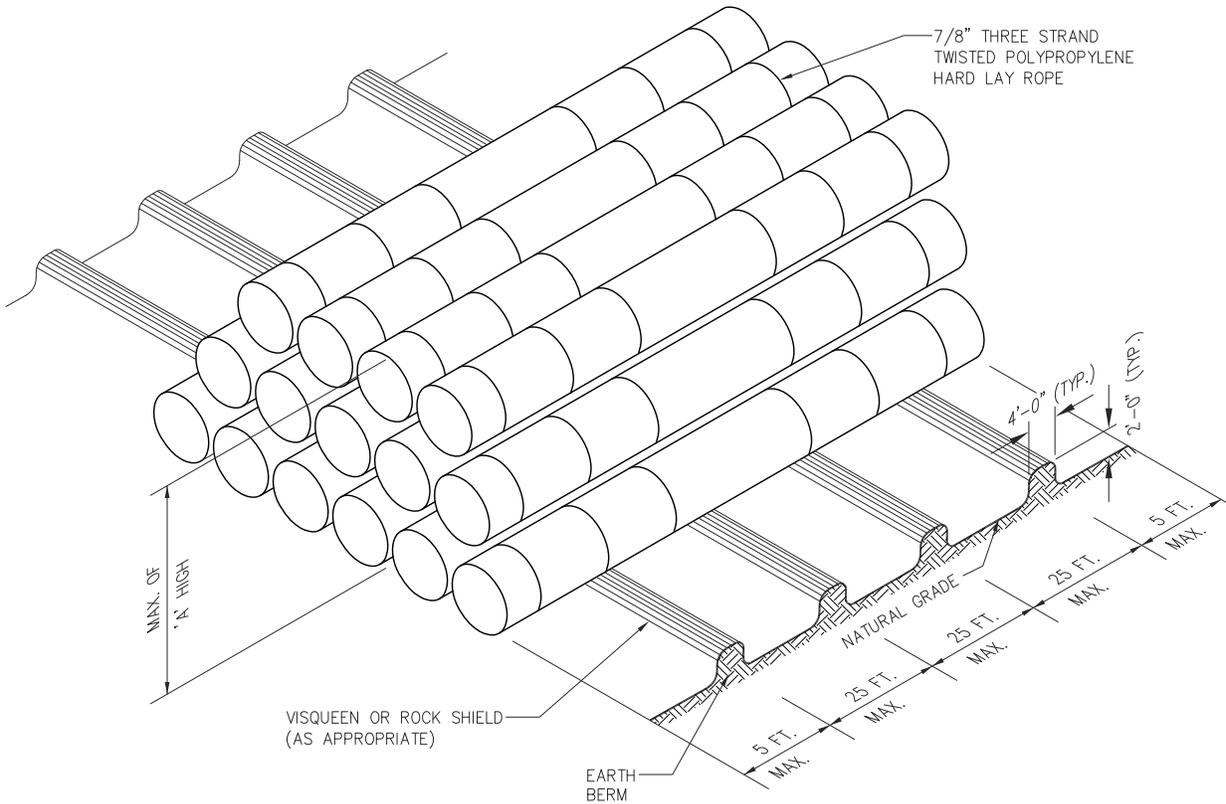
**TYPICAL HDD ENTRY SITE
 EQUIPMENT LAYOUT**

OWNER:

DATE: OCTOBER 2013 | P04Q-SPHD-01 | REV 1



DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC.		
4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
TYPICAL PIPE STORAGE YARD		
OWNER:		
DATE: OCTOBER 2013	P04W-TYPT-01	REV 1



ROPE INSTALLATION

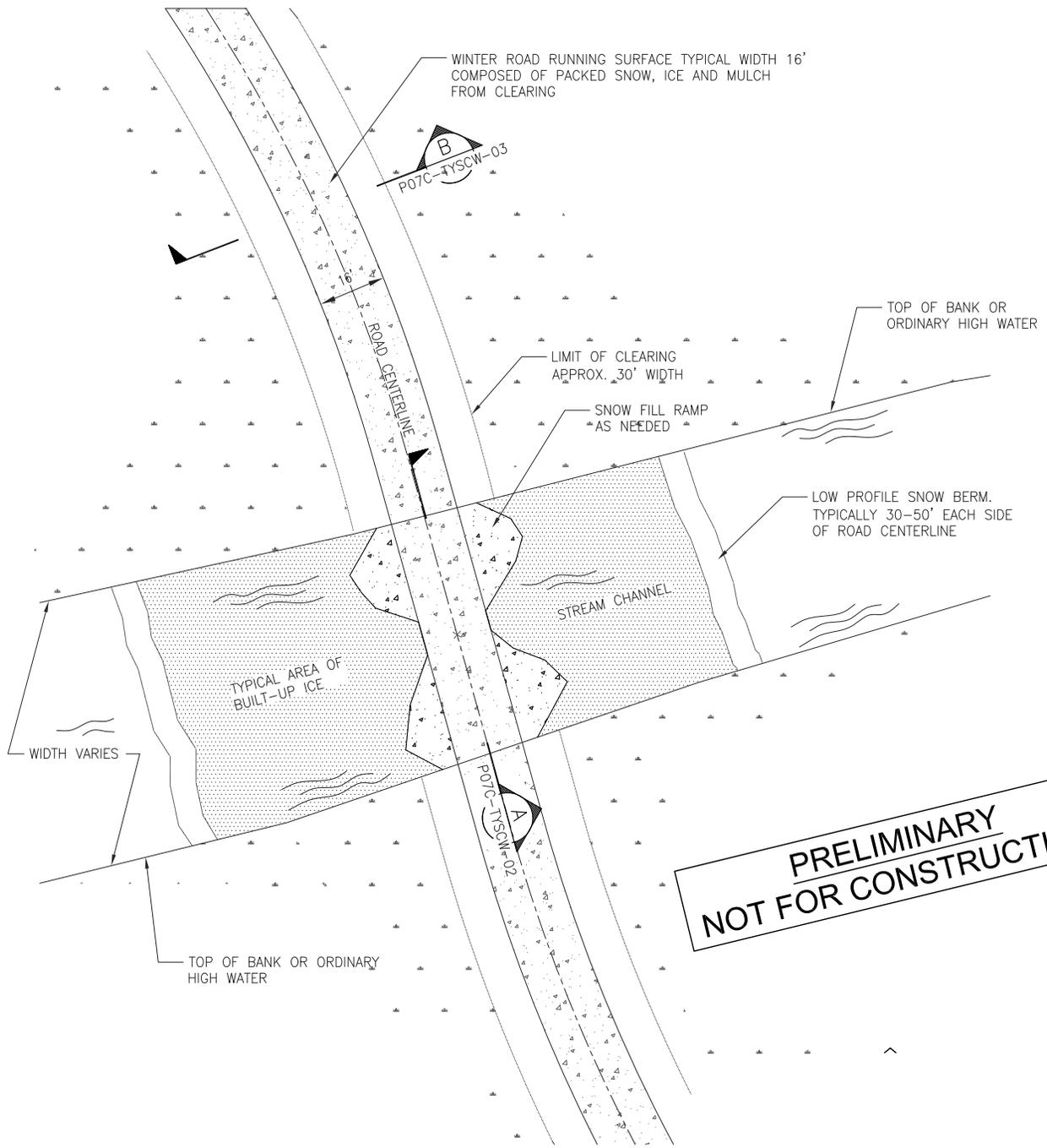
1. ROPE SPACING SHOULD BE A MAXIMUM OF 6.0 FEET FROM THE PIPE ENDS.
2. THE INTERVALS BETWEEN RINGS SHOULD BE BETWEEN 10.0 FEET AND 20.0 FEET WITH A MINIMUM OF SIX LOOPS SPACED OVER A STANDARD TRIPLE RANDOM LENGTH (60 FEET).
3. THE INTERVALS MUST BE ADJUSTED TO INSURE THERE IS NO PIPE TO PIPE CONTACT. ROPE ENDS SHALL BE FUSED WITH A BLOW TORCH PRIOR TO SLIPPING THE LOOP OVER THE PIPE.

NOTES:

1. THE USE OF ALTERNATE METHODS FOR STOCKPILING PIPE AND/OR THE USE OF ALTERNATE MATERIALS FOR PREVENTING PIPE TO PIPE CONTACT SHALL REQUIRE WRITTEN APPROVAL OF THE COMPANY.
2. PIPE SHALL BE STOCKPILED AND SECURED (AS NECESSARY) TO PRECLUDE MOVEMENT OF PIPE.
3. ALL MATERIALS SHALL BE FURNISHED BY THE CONTRACTOR.

PIPE SIZE	'A' (NO. OF ROWS)
4"	10
6"	8
8"	6
10"	6
12"	5
16"	4

DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC.		
4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
TYPICAL TEMPORARY PIPE STOCK PILES		
OWNER:		
DATE: OCTOBER 2013	P04W-TYPT-02	REV 1

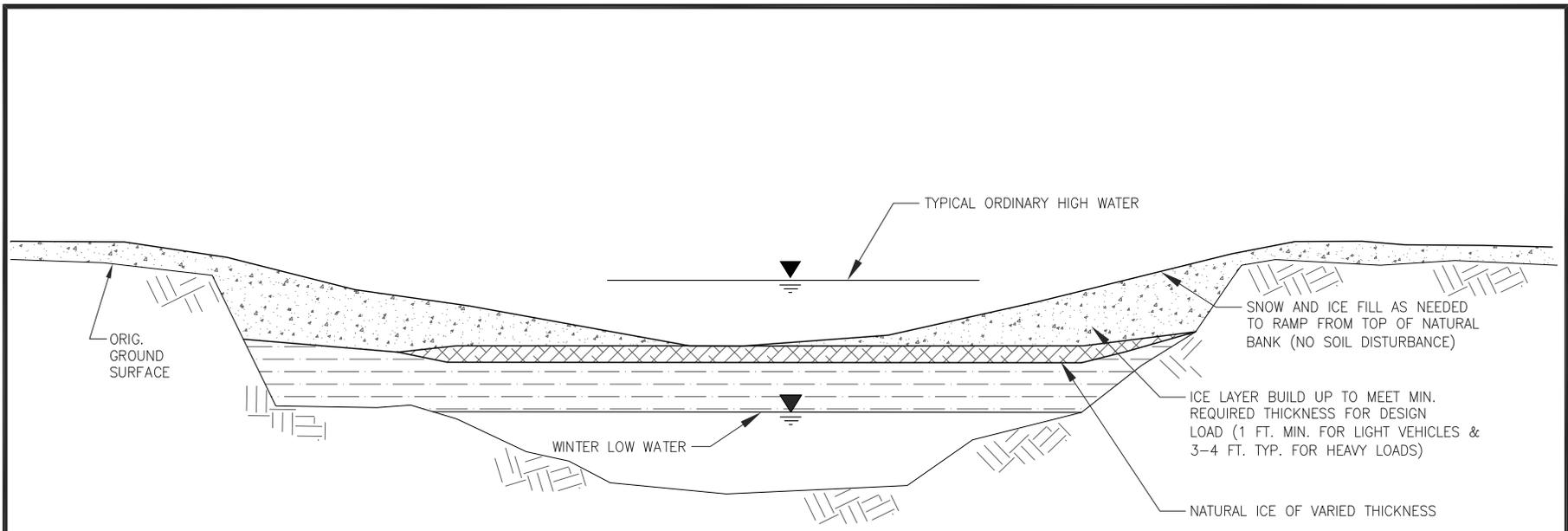


TYPICAL STREAM CROSSING PLAN
NOT TO SCALE

NOTES:

1. REFER TO CROSS SECTION DETAILS (A) & (B).
2. ICE SURFACE TO BE CLEARED OF SNOW 30-50' EACH SIDE OF ROAD CENTERLINE TO AUGMENT ICE THICKENING.
3. CLEAN SNOW FOR FILL MAY BE ACCUMULATED FROM NATURAL OPEN AREAS NEAR CROSSING SITE AND ICE SURFACE.
4. TO THE EXTENT POSSIBLE, CROSSING TO BE ORIENTED PERPENDICULAR TO ACTIVE CHANNEL.
5. WATER FOR BUILDING ICE TO BE TAKEN FROM STREAM AT CROSSING LOCATION.
6. SNOW BERMS TO BE SHAPED FOR PASSAGE OF SNOWMACHINES AND SIGNAGE PLACED WARNING OF CROSSING.
7. SNOW BERMS TO DEFINE CROSSING SITE AND AID IN CONTAINING WATER DURING FLOODING TO BUILD ICE.
8. CROSSINGS SHALL BE DEVELOPED IN ACCORDANCE WITH STATE OF ALASKA FOREST RESOURCES AND PRACTICES REGULATIONS AS THEY ADDRESS WINTER ROADS/TRAILS AND STREAM CROSSINGS.

<p>DONLIN GOLD PROJECT APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503</p>		
<p>WINTER ROAD TYPICAL STREAM CROSSING PLAN</p>		
OWNER:		
DATE: OCTOBER 2013	P07C-TYSCW-01	REV 1



(A) CROSS SECTION

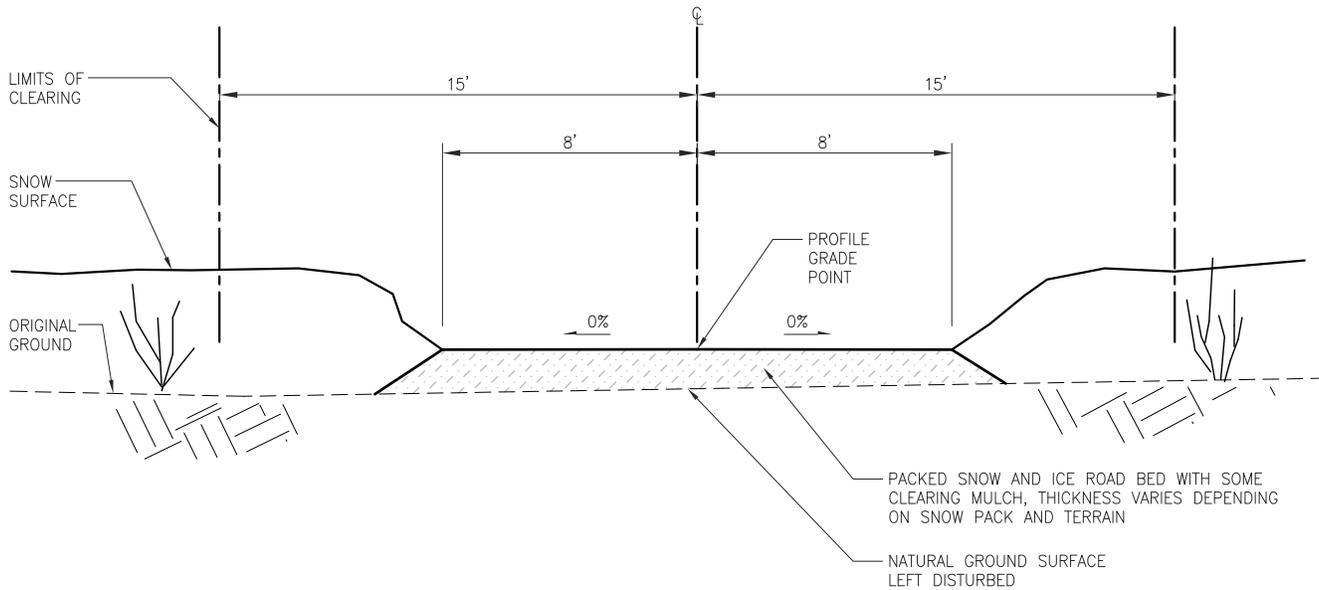
NOTES:

BEFORE DEVELOPMENT, ALL CROSSING LOCATIONS SHALL BE TESTED FOR ICE THICKNESS, WATER DEPTH AND EXTENT OF GROUNDED ICE. CLEAN SNOW FOR RAMP CONSTRUCTION MAY BE GATHERED FROM OPEN AREAS ADJACENT TO THE CROSSING SITE AND TRAIL. CROSSINGS SHALL BE DEVELOPED IN ACCORDANCE WITH STATE OF ALASKA FOREST RESOURCES AND PRACTICES REGULATIONS AS THEY ADDRESS WINTER ROADS/TRAILS AND STREAM CROSSINGS. ALL CROSSINGS SHALL BE ASSESSED BY A QUALIFIED ENGINEER AND APPROVED FOR USE.



**PRELIMINARY
NOT FOR CONSTRUCTION!**

DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
WINTER ROAD STREAM CROSSING CROSS SECTION TYPICAL STREAM WITH HIGH BANKS		
OWNER:		
DATE: OCTOBER 2013	P07C-TYSCW-02	REV 1



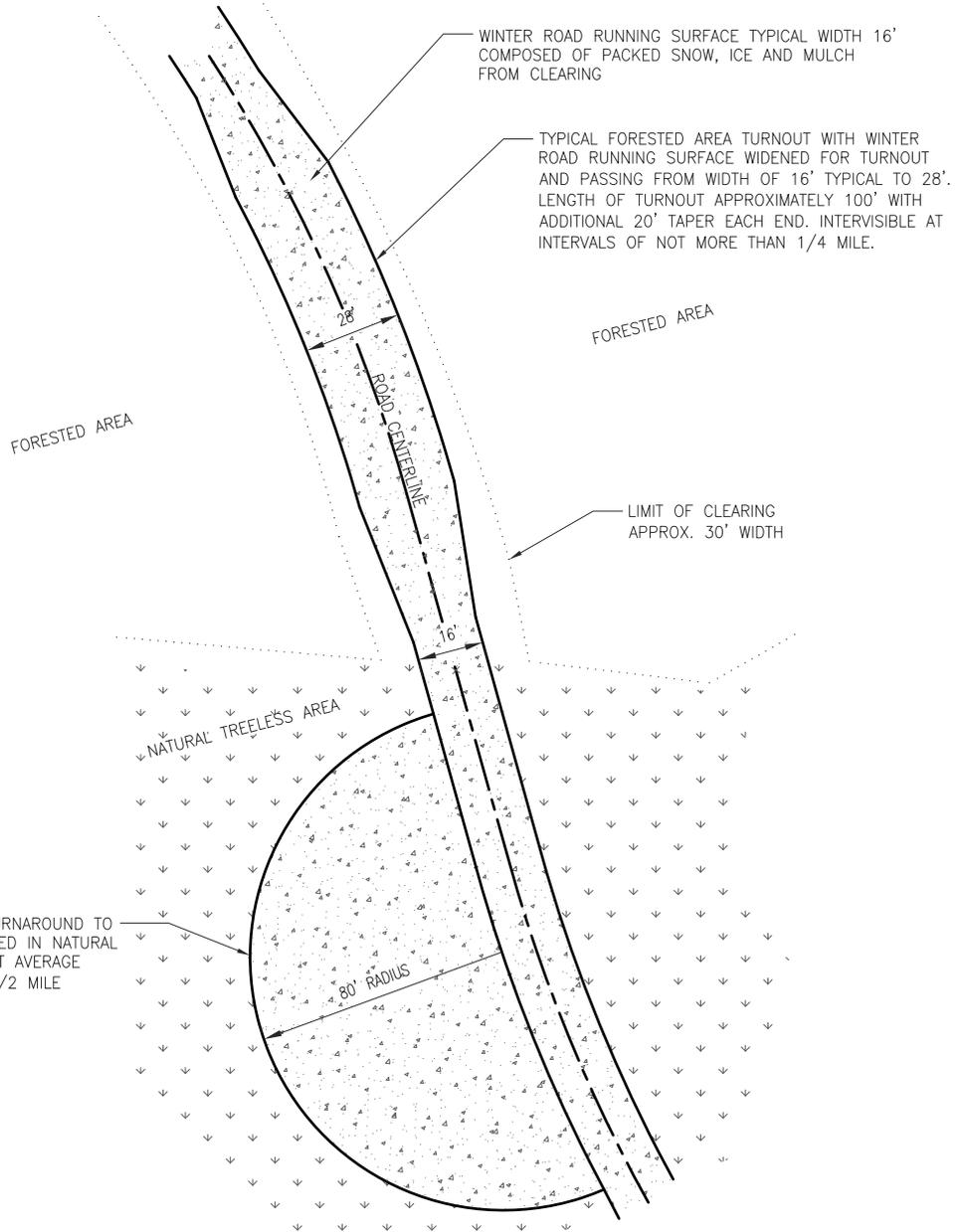
(B) CROSS SECTION
NOT TO SCALE

NOTES:

1. CLEARING LIMITS TO BE MIN. 15' EACH SIDE OF CENTERLINE OR MAX. 30' TOTAL WIDTH.
2. MULCH AND ORGANIC DEBRIS FROM CLEARING TO REMAIN ON GROUND SURFACE.
3. DEPTH OF PACKED SNOW AND ICE FOR RUNNING SURFACE WILL VARY.
4. SOIL NOT TO BE DISTURBED EXCEPT AT SPECIFIC LOCATIONS AS PERMITTED.
5. ADD TURNOUT LANE AT LOCATIONS DETERMINED BY ENGINEER. SURFACE WIDTH INCREASED TO 28' FOR TURNOUT. (APPROX. ONE PER 1/4 MILE).

**PRELIMINARY
NOT FOR CONSTRUCTION!**

DONLIN GOLD PROJECT		
APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503		
WINTER ROAD TYPICAL SECTION		
OWNER:		
DATE: OCTOBER 2013	P07C-TYSCW-03	REV 1



TYPICAL TURNOUT PLAN
NOT TO SCALE

NOTES:

1. TURNOUTS TO BE FIELD LOCATED BY ENGINEER TO BEST FIT TERRAIN CONDITIONS AND MAXIMIZE OPERATIONAL SAFETY.
2. TURNOUTS TO BE CONSTRUCTED SIMILAR TO ROAD RUNNING SURFACE.
3. OPEN AREA TURNOUTS MAY BE SHAPED AND SIZED TO BEST FIT TERRAIN AND NATURAL CLEARINGS. RADIUS IS REPRESENTATIVE ONLY.

**PRELIMINARY
NOT FOR CONSTRUCTION!**

<p>DONLIN GOLD PROJECT APPLICANT: Donlin Gold, LLC. 4720 Business Park Blvd., Suite G-25 Anchorage, Alaska 99503</p>		
<p>WINTER ROAD PLAN OF TYPICAL TURNOUTS</p>		
OWNER:		
DATE: OCTOBER 2013	P07C-TYTOW-01	REV 1