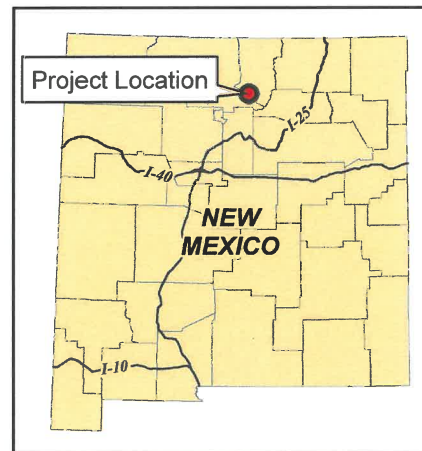


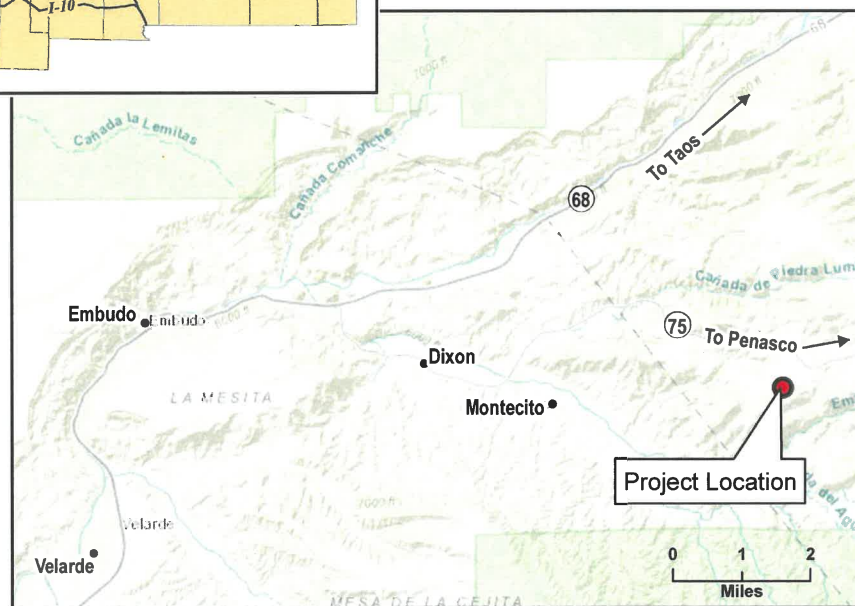


# HARDING PEGMATITE MINE SAFEGUARD PROJECT - PHASE II DIXON, NEW MEXICO

PROJECT NO. EMNRD-MMD-2022-02



PROJECT LOCATION



SHEET INDEX:

<u>SHEET NO.</u>	<u>TITLE</u>
01	COVER SHEET
02	GENERAL NOTES AND MARKER DETAIL
03	SITE PLAN
04	GATE 1 STABILIZATION
05	FENCING DETAILS – ICEBERG PIT AND FEATURE SUB-1
06	FEATURES SUB-1 AND F9 PLAN AND PROFILE – EXISTING CONDITIONS
07	FEATURE F9, REOPENED DECLINE ADIT DETAILS
08	FEATURE SUB-1, OPEN STOPE – SCHEMATICS OF EXISTING CONDITIONS
09	FEATURE SUB-1, OPEN STOPE – SCHEMATICS OF TOROID TIRE PLUGS
10	FEATURE SUB-1, OPEN STOPE FILL DETAIL
11	FEATURE SUB-2, EXISTING CONDITIONS AND MINE VENT DETAIL
12	FEATURE SUB-2, MINE VENT DETAILS AND NOTES



SUBMITTED TO

NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
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SANTA FE, NM 87505  
PROJECT ENGINEER: MEGHAN McDONALD P.E.  
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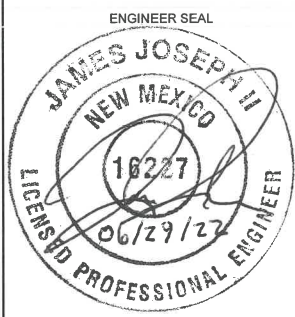
PROJECT PARTNERS

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CAUTION - THIS PROJECT REQUIRES CONSTRUCTION WORK IN, AROUND, AND OVER HAZARDOUS AND UNPROTECTED MINE SHAFTS, STOPES, ADITS, AND OTHER OPENINGS WHICH MAY BE OPEN TO THE SURFACE OR HIDDEN FROM VIEW BY TRASH, DEBRIS, OR THIN AND UNSTABLE LAYERS OF SURFACE MATERIALS OR ROCK. THE CONSTRUCTOR SHALL BE RESPONSIBLE FOR THOROUGHLY INVESTIGATING THE SITE CONDITIONS AND SCHEDULING EQUIPMENT, EQUIPMENT OPERATIONS, PERSONNEL AND SAFETY PROCEDURES TO PREVENT ACCIDENTS AND INJURIES.

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**ABANDONED MINE LAND PROGRAM**  
MINING AND MINERALS DIVISION  
NEW MEXICO ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT



COVER SHEET

HARDING PEGMATITE MINE  
SAFEGUARD PROJECT - PHASE II  
DIXON, NEW MEXICO  
PROJECT NO. EMNRD-MMD-2022-02

SHEET NO:  
01

**GENERAL NOTES:**

1. THE PROPERTY IS OWNED BY THE UNIVERSITY OF NEW MEXICO AND IS OPEN TO PUBLIC VISITATION. THE SAFEGUARDING MEASURES BEING CONSTRUCTED ARE BEING CONTRACTED BY THE NEW MEXICO ABANDONED MINE LAND (AML) PROGRAM OF THE ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT. THE CONTRACTOR'S POINT OF CONTACT SHALL BE THE AML PROJECT MANAGER; HOWEVER SITE ACCESS AND VISITATION MAY BE COORDINATED THROUGH THE CARETAKER. CONTACT INFORMATION AND SCHEDULING SHALL BE ARRANGED PRIOR TO MOBILIZATION TO THE SITE.
2. THE HARDING MINE SITE HAS HIGH VISITATION (APPROVED AND TRESSPASS). ALTHOUGH THERE ARE GATES AT THE ENTRANCES, THEY DO NOT GUARANTEE SECURITY OF MATERIALS, EQUIPMENT, OR WORK AREAS. THE CONTRACTOR SHALL SECURE WORK AREAS AT THE END OF EACH WORK DAY AND WHEN NO ACTIVE SAFEGUARD WORK IS BEING PERFORMED. THE PROPERTY OWNER, MINE CARETAKER, AML, OR THE ENGINEER WILL NOT BE HELD RESPONSIBLE FOR STOLEN OR VANDALIZED MATERIALS, EQUIPMENT, AND/OR WORK.
3. CONTRACTOR PERSONNEL SHALL ANTICIPATE INTERACTION WITH THE PUBLIC DURING THE WORK AND SHOULD BE PREPARED TO STOP HEAVY EQUIPMENT OPERATION IN AREAS BEING VISITED. PLEASE DEFER QUESTIONS REGARDING THE WORK TO THE CARETAKER OR AML PROJECT MANAGER.
4. EXCESS IMPORTED SOIL FILL MAY BE PLACED ON ROADWAYS OR OTHER AREAS DIRECTED BY THE AML PROJECT MANAGER.
5. THIS PROJECT REQUIRES CONSTRUCTION WORK AROUND, OVER, AND (POTENTIALLY) IN MINE FEATURES AND AT THE BASE AND TOP OF AN EXPOSED VERTICAL HIGHWALL. THE CONTRACTOR IS RESPONSIBLE FOR INSPECTING THE SITE FOR HAZARDS, TRAINING THEIR PERSONNEL IN SAFE WORK PRACTICES, AND PROVIDING ADEQUATE PERSONAL PROTECTIVE EQUIPMENT TO PREVENT ACCIDENTS AND INJURIES.
6. ROCK FALL FROM THE HIGHWALL HAS BEEN IDENTIFIED AS A SITE HAZARD. WORKER PROTECTION MEASURES SHALL BE TAKEN WHEN WORKING AT THE BASE OF THE HIGHWALL.
7. HOURS FOR PERFORMING SITE WORK ARE RESTRICTED ON MONDAYS AND FRIDAYS TO ACCOMMODATE TRAVEL BY AML PERSONNEL. NO SITE WORK SHALL BE PERFORMED BEFORE 1000 ON MONDAYS OR AFTER 1500 ON FRIDAYS.

**SUMMARY OF WORK**

SAFEGUARD MEASURES ARE BEING CONSTRUCTED TO ADDRESS AREAS OF SUBSIDENCE AND COLLAPSE INTO EXISTING MINE FEATURES AND TO ADD FENCING ABOVE AREAS THAT POSE A FALL RISK.

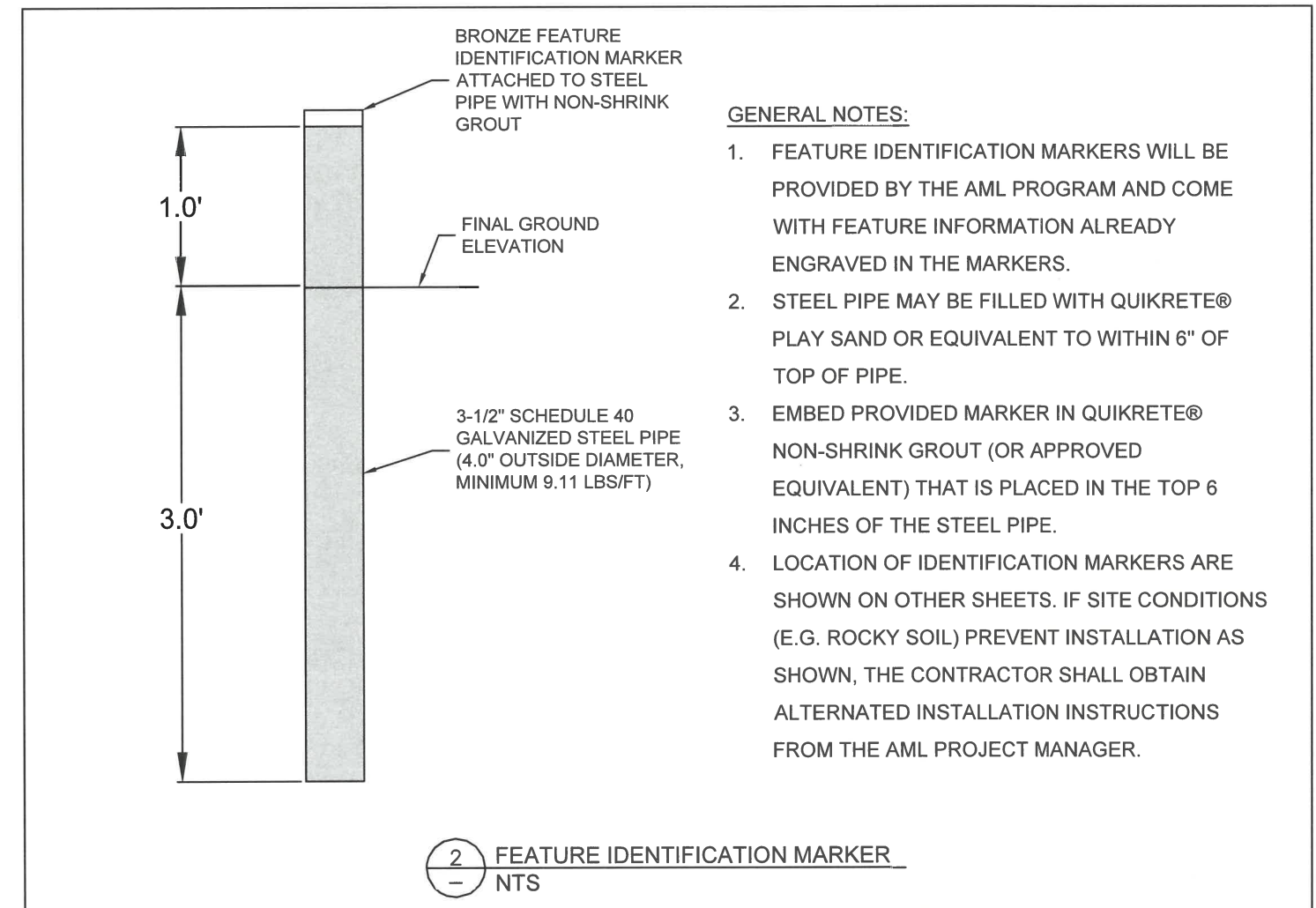
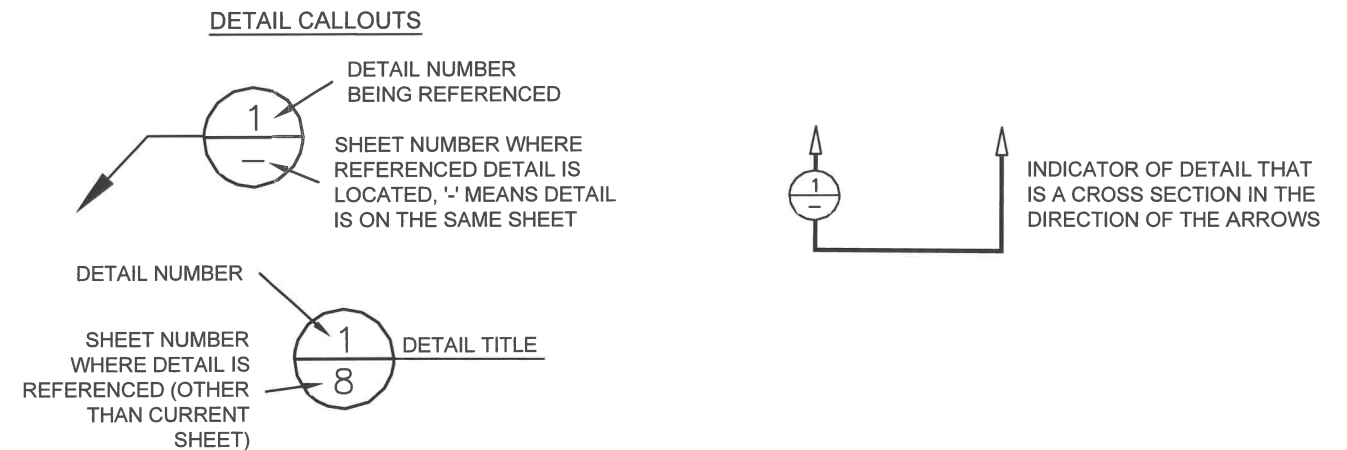
NEW FENCING WILL BE INSTALLED AT THE FEATURE IDENTIFIED AS THE ICEBERG PIT, WHICH WAS AN EXPLORATORY FEATURE WITH NO EXISTING CONNECTION TO UNDERGROUND MINE WORKINGS.

THREE SUBSIDENCE AREAS WILL BE REPAIRED INCLUDING:

1. SUBSIDENCE INTO A REOPENED DECLINE ADIT AT FEATURE F9. THE DECLINE ADIT WILL BE EXPOSED AND THE SAFEGUARD MEASURE WILL INCLUDE FILLING THE DECLINE ADIT OPENING WITH A POLYURETHANE FOAM (PUF) PLUG.
2. SOIL PIPING HAS CREATED AN OPENING INTO THE MINE NEAR THE MOST VISITED PORTION OF THE MINE SITE. THE OPENING HAS BEEN IDENTIFIED AS BENEFITING BAT HABITAT IN THE MINE, AND A VENT PIPE WILL BE INSTALLED CONCURRENT WITH INSTALLING A PUF PLUG. THIS FEATURE IS IDENTIFIED AS "SUB-2".
3. A LARGE COLLAPSE HAS CREATED AN OPEN STOPE AT FEATURE SUB-1. THE FEATURE HAS CREATED OPENINGS INTO THE MINE WORKINGS THAT MAY RESULT IN UNAUTHORIZED ENTRANCE INTO THE MINE. SAFEGUARD MEASURES WILL INCLUDE EXCAVATING TOP SOIL FROM THE SUBSIDENCE FEATURE, BLOCKING OFF THE OPENING WITH TOROID TIRE PLUGS, AND FILLING THE FEATURE WITH PUF AND A SOIL CAP. THE DISTURBED AREA AND TRAVEL ROUTE TO FEATURE SUB-1 SHALL BE REVEGETATED BY APPLYING A SEED MIXTURE

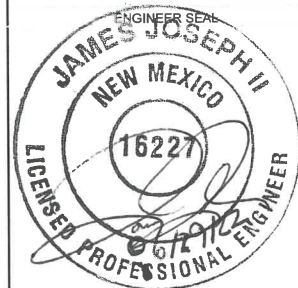
SITE CONTROLS WILL BE ENHANCED BY SECURING A GATE POST AT THE FIRST PRIMARY ACCESS GATE TO THE MINE (GATE 1).

**LEGEND**



**GENERAL NOTES:**

1. FEATURE IDENTIFICATION MARKERS WILL BE PROVIDED BY THE AML PROGRAM AND COME WITH FEATURE INFORMATION ALREADY ENGRAVED IN THE MARKERS.
2. STEEL PIPE MAY BE FILLED WITH QUIKRETE® PLAY SAND OR EQUIVALENT TO WITHIN 6" OF TOP OF PIPE.
3. EMBED PROVIDED MARKER IN QUIKRETE® NON-SHRINK GROUT (OR APPROVED EQUIVALENT) THAT IS PLACED IN THE TOP 6 INCHES OF THE STEEL PIPE.
4. LOCATION OF IDENTIFICATION MARKERS ARE SHOWN ON OTHER SHEETS. IF SITE CONDITIONS (E.G. ROCKY SOIL) PREVENT INSTALLATION AS SHOWN, THE CONTRACTOR SHALL OBTAIN ALTERNATED INSTALLATION INSTRUCTIONS FROM THE AML PROJECT MANAGER.



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NEW MEXICO ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT

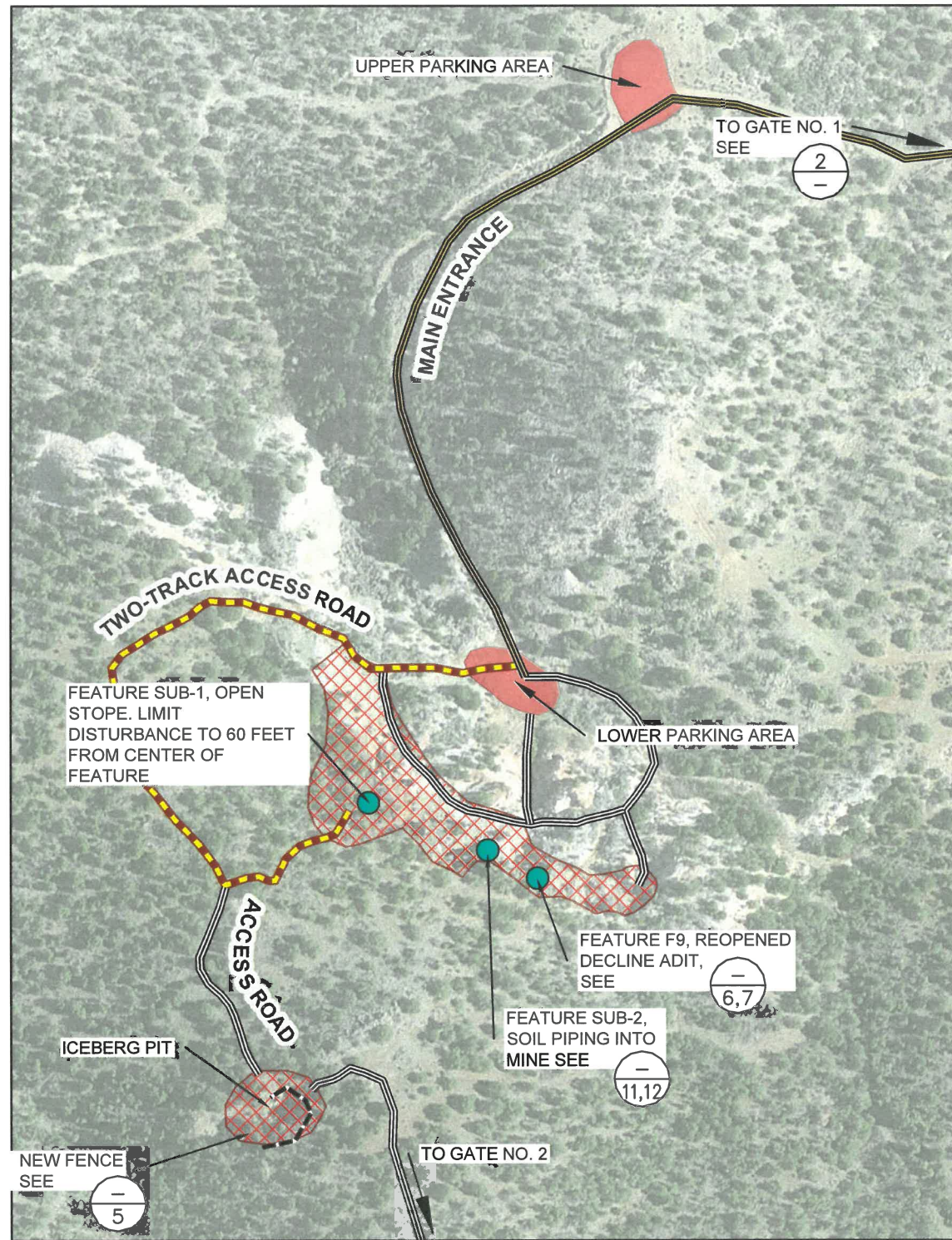


**GENERAL NOTES AND MARKER DETAIL**

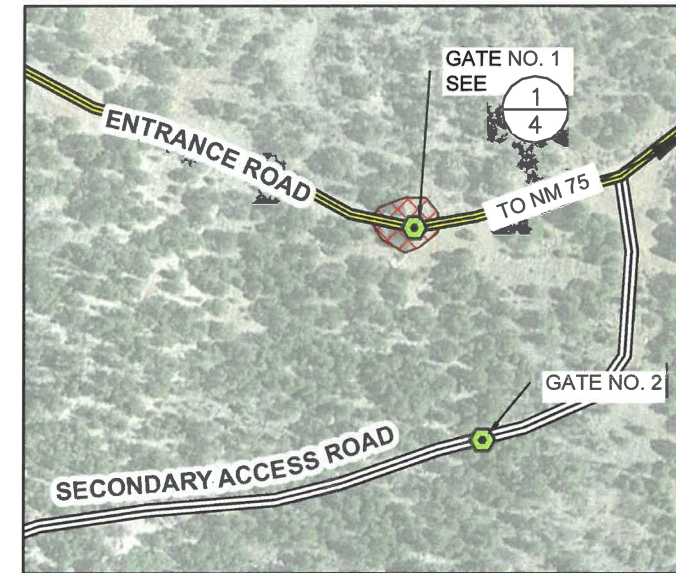
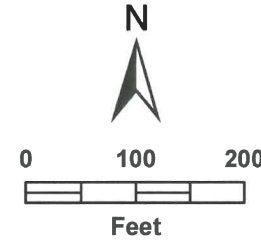
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SAFEGUARD PROJECT - PHASE II  
DIXON, NEW MEXICO  
PROJECT NO. EMNRD-MMD-2022-02

SHEET NO:  
02





1 SITE PLAN – MAIN AREA



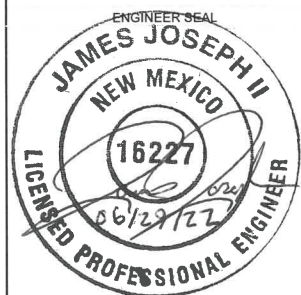
2 SITE PLAN – GATES 1 AND 2

LEGEND

- PARKING AREA
- AREA OF POTENTIAL DISTURBANCE
- NEW FENCE ALIGNMENT
- TWO-TRACK ACCESS ROUTE
- ACCESS ROUTE TO FEATURE S1 FROM LOWER PARKING AREA
- ACCESS ROUTE TO MINE FEATURES

GENERAL NOTES:

1. EQUIPMENT ACCESS TO FEATURE SUB-1 OPEN STOPE SHALL FOLLOW A PATH FROM THE LOWER PARKING AREA, ASCENDING THE HILL, AND APPROACHING FROM THE WEST, AS DIRECTED BY THE AML PROGRAM. ALTERNATE ROUTES SHALL BE APPROVED BY THE AML PROJECT MANAGER BUT ONLY IF IT IS WITHIN THE SHOWN "AREA OF POTENTIAL DISTURBANCE" AND AFFORDS LESS IMPACT ON VEGETATION AND/OR IMPROVED WORKER SAFETY CONDITIONS.
2. DISTURBANCE TO THE AREA SHALL BE KEPT TO A MINIMUM. TREES SHALL BE TRIMMED WHERE NECESSARY TO ALLOW ACCESS FOR LARGER EQUIPMENT. TREE CUTTING SHALL BE AVOIDED AS MUCH AS PRACTICABLE AND SHALL BE GUIDED BY THE AML PROJECT MANAGER.
3. UPPER AND LOWER PARKING AREAS SHALL BE USED FOR LAYDOWN AND STORAGE.
4. AREAS OF POTENTIAL DISTURBANCE HAVE BEEN SURVEYED FOR CULTURAL RESOURCES. EQUIPMENT OPERATION, MATERIAL STORAGE/STAGING, OFFROAD TRAVEL, AND/OR OTHER PROJECT IMPACTS OUTSIDE OF CLEARED AREAS IS PROHIBITED.



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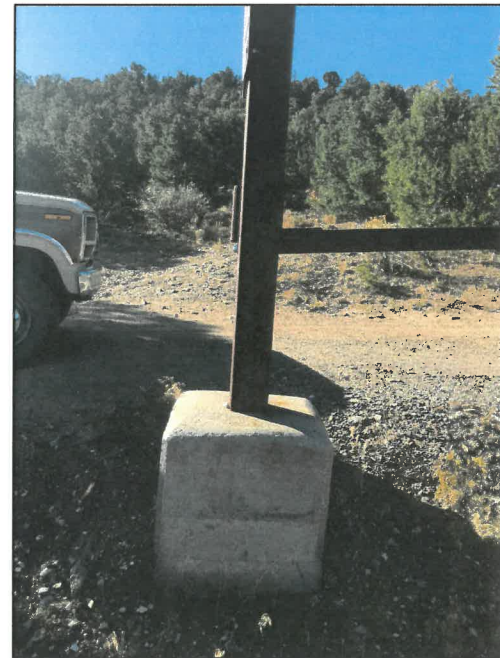


SITE PLAN

HARDING PEGMATITE MINE  
SAFEGUARD PROJECT - PHASE II  
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SHEET NO:  
03

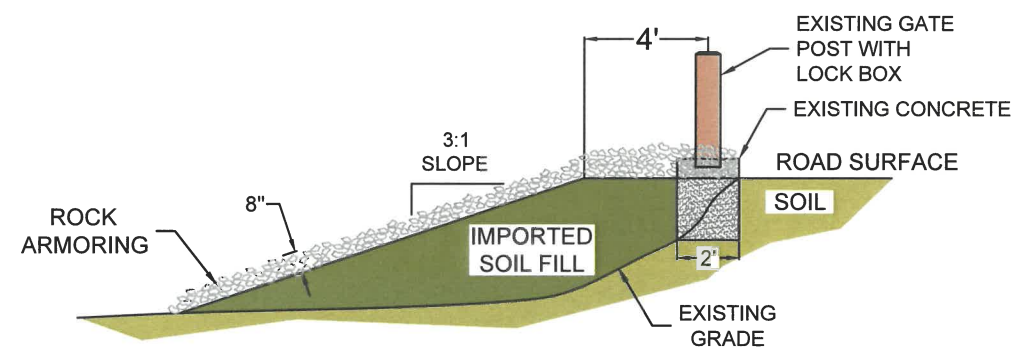




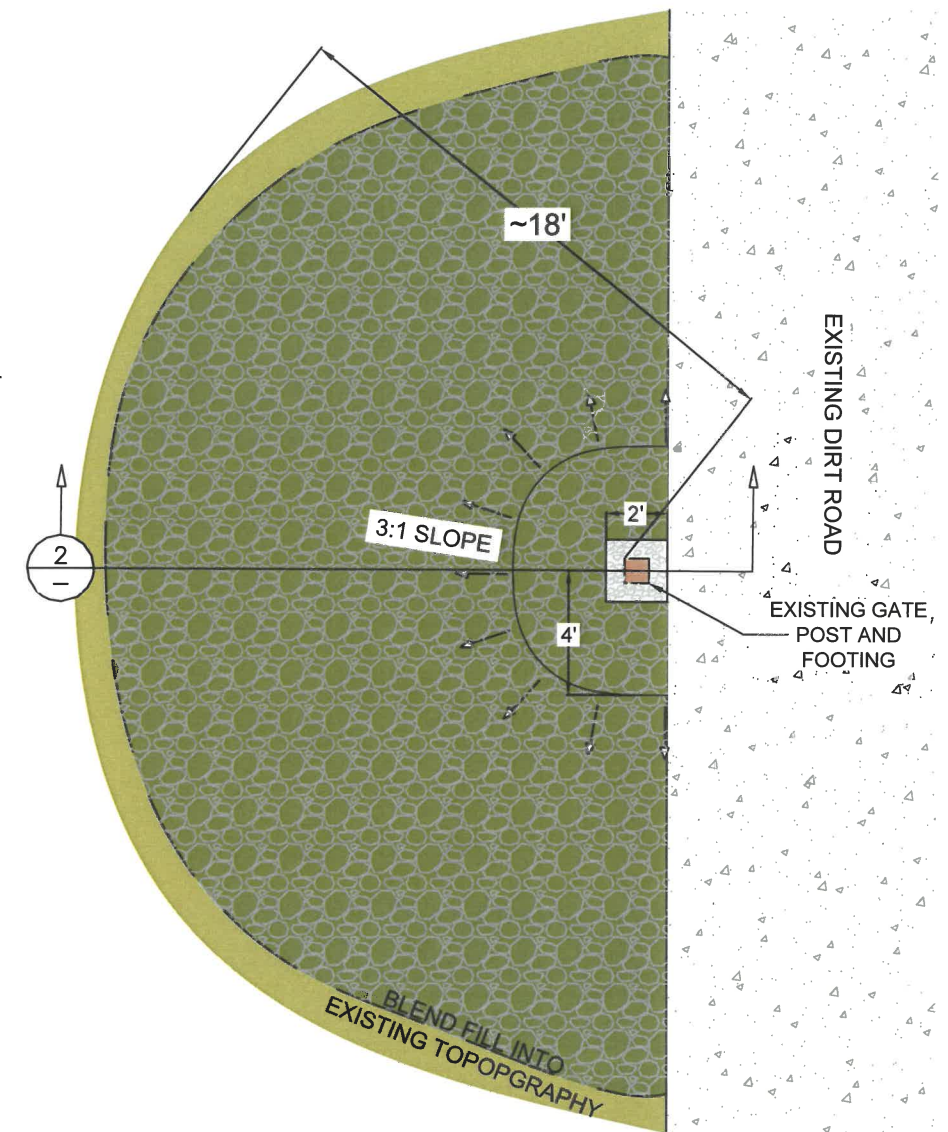
1  
3 — GATE 1 RECEIVING POST (EXISTING CONDITION)

**GENERAL NOTES:**

1. IMPORTED SOIL FILL SHALL MEET REQUIREMENTS PROVIDED IN THE CONSTRUCTION SPECIFICATIONS.
2. ROCK ARMORING SHALL BE ANGULAR TO SUB-ROUNDED RIPRAP SIZED IN ACCORDANCE WITH CONSTRUCTION SPECIFICATIONS.
3. CLEAR EXISTING GROUND SURFACE OF LARGE ROCKS AND ORGANIC MATERIAL IN AREAS WHERE FILL WILL BE PLACED.
4. SCARIFY AND COMPACT EXISTING GROUND SURFACE BEFORE PLACING IMPORTED FILL.
5. PLACE AND COMPACT FILL MATERIAL IN MAXIMUM OF 12-INCH LOOSE LIFTS. COMPACTION SHALL BE OBTAINED USING A RAMMER/JUMPING JACK COMPACTOR.
6. CONDITION FILL MATERIAL WITH WATER FOR OPTIMUM COMPACTION. COMPACTION TESTING IS NOT REQUIRED; BUT LIFT COMPACTION AND FINAL COMPACTION MUST BE TO PROJECT MANAGER'S SATISFACTION.
7. ENSURE THAT THE GATE LATCH AND LOCKBOX ON THE POST ALIGN AND INTERLOCK WITHOUT RUBBING OR STRAINING BEFORE PLACING FILL AROUND EXPOSED FOOTING OF THE POST. ROUTINELY CHECK ALIGNMENT DURING FILL PLACEMENT AND COMPACTION ACTIVITIES. IF ALIGNMENT IS LOST DURING STABILIZATION ACTIVITIES, PLACED SOIL SHALL BE REMOVED AND THE POST REALIGNED AT CONTRACTOR'S EXPENSE.
8. MATERIAL VOLUME ESTIMATES: SOIL FILL = 5 CUBIC YARDS; RIP RAP = 2 CUBIC YARDS.



2  
— GATE 1 POST STABILIZATION SCHEMATIC PROFILE VIEW  
1" ≈ 6'



3  
— GATE 1 POST STABILIZATION SCHEMATIC PLAN VIEW  
1" ≈ 6'



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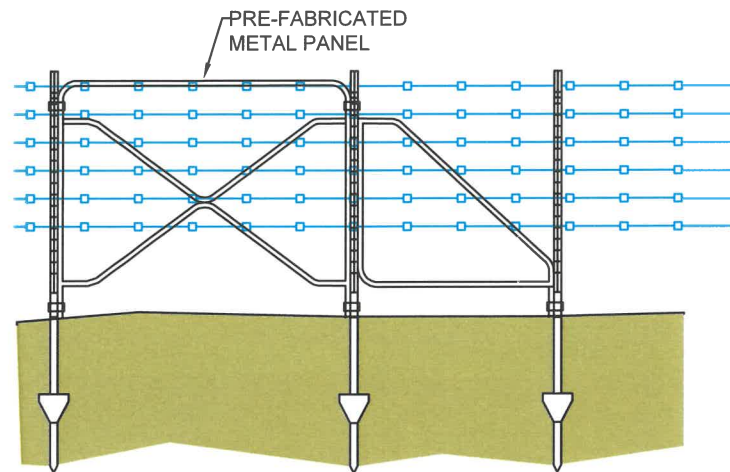
GATE 1 STABILIZATION



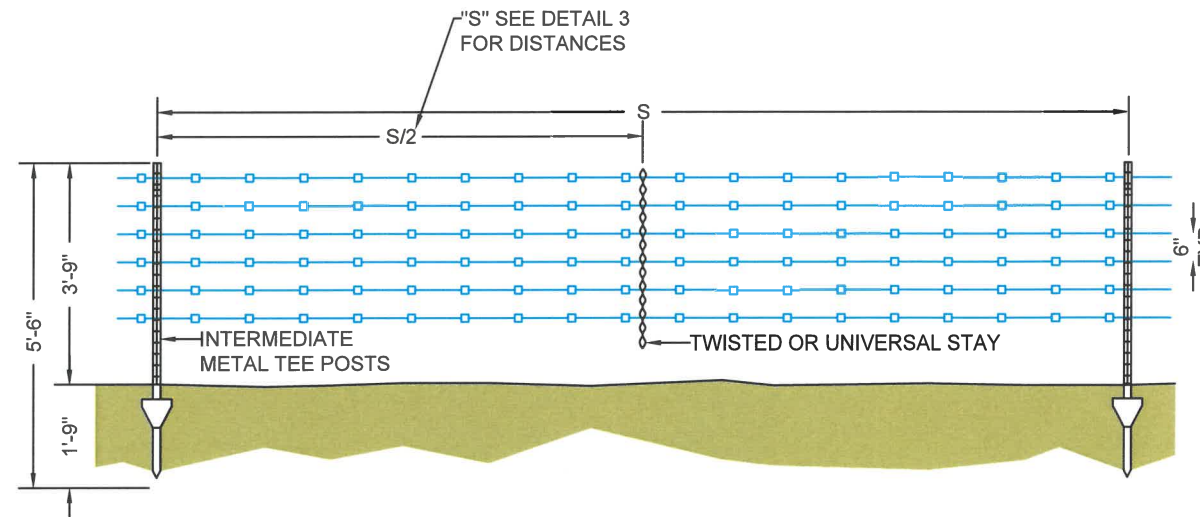
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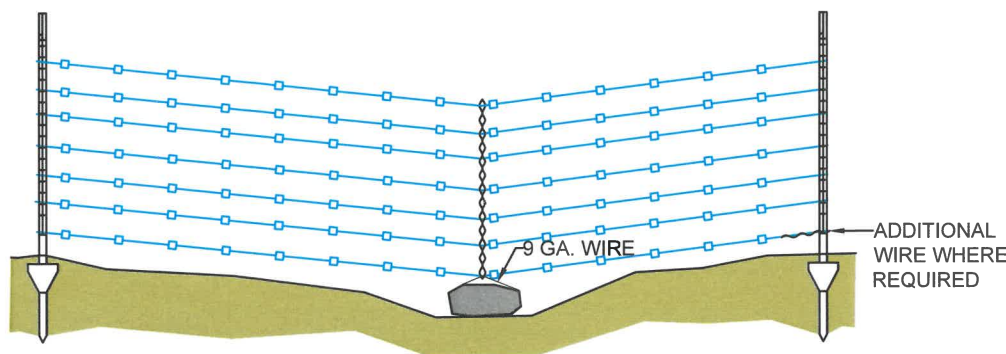




1 CORNER AND END BRACE DETAIL  
- NTS

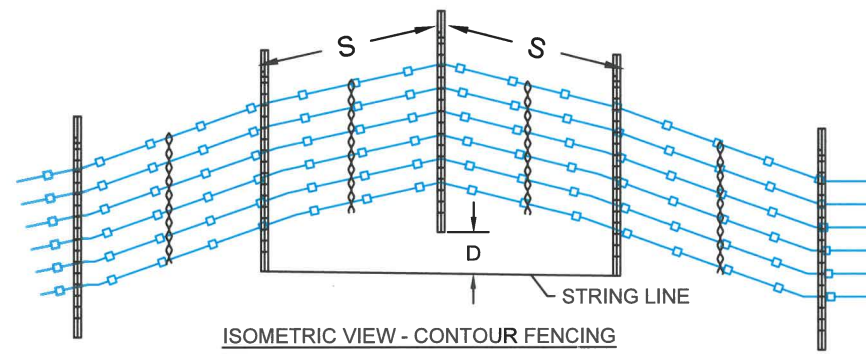


2 LINE PANELS DETAIL  
- NTS



NOTE: ADD ADDITIONAL WIRE AND A ROCK DEADMAN (MINIMUM WEIGH 50 LBS.) WHEN SPACE BETWEEN BOTTOM WIRE AND GROUND EXCEEDS 18 INCHES.

3 PANEL AT MINOR DEPRESSION DETAIL  
- NTS



4 ISOMETRIC VIEW - CONTOUR FENCING DETAIL  
- NTS

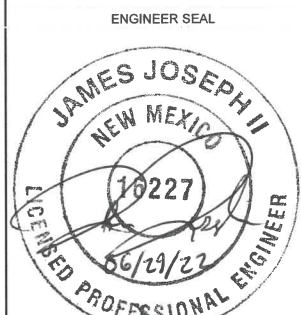
DISTANCE 'D'	POST SPACING 'S'
4" OR LESS	16.5
4" TO 6"	14'
6" TO 14"	10'

**GENERAL NOTES:**

1. AT FEATURE SUB-1, TEMPORARILY REMOVE EXISTING HANGING SECTION OF BARBED WIRE FENCE ACROSS THE COLLAPSE FEATURE. REPLACE REMOVED SECTION OF FENCE AFTER COMPLETION OF SAFEGUARD CONSTRUCTION ACTIVITIES. ASSUME REMOVAL AND REPLACEMENT OF 60 LINEAR FEET OF FENCE IN BOTH DIRECTIONS FROM THE CENTER OF THE COLLAPSE FEATURE (TOTAL OF 120 FEET). REMOVED FENCING SHALL BE DISPOSED OF OR SALVAGED, AS DIRECTED BY THE AML PROJECT MANAGER.
2. INSTALL APPROXIMATELY 150' OF SIX STRAND BARBED WIRE FENCE AT THE ICEBERG PIT AND REPAIR THE FENCE AT THE OPEN STOPE. THE BARBED WIRE SHALL BE NEW, DOUBLE-STRAND STEEL, 12 1/2 GAUGE OR 15 1/2 GAUGE HIGH TENSILE BARBED WIRE.
3. CONTOUR FENCING MAY BE USED WHERE A CURVED FENCE LINE AS DIRECTED. PLACE WIRES ON THE OUTSIDE OF THE POSTS SO THAT WHEN THE WIRE IS TIGHTENED IT WILL PULL AGAINST THE POSTS AND NOT THE TIES.
4. SET POSTS FOR CONTOUR FENCING LEANING OUT SEVERAL INCHES SO THAT POSTS WILL STRAIGHTEN TO A PLUMB POSITION WHEN WIRE IS TAUGHT. TIGHTEN WIRE TO A MODERATE TENSION FOR A CURVED FENCE. A SHARPER CURVE WILL RESULT IN LESS REQUIRED TENSION.
5. RUN FENCE IN STRAIGHT LINES BETWEEN END AND CORNER POSTS, EXCEPT WHERE CONTOUR FENCING IS USED.
6. AVOID ANGLES LESS THAN 90 DEGREES AT FENCE CORNERS.
7. CORNER AND END BRACE PANELS SHALL BE PREFABRICATED "EASY FENCE" PANELS MADE BY D-C INDUSTRIES OR ENGINEER-APPROVED ALTERNATIVE.
8. ALL POST LENGTHS AND DRIVEN DEPTHS SHALL BE CONSISTENT WITH THAT SHOWN ON DETAIL 2.
9. ICEBERG FENCE LOCATION SHOWN ON SHEET 3 AND SUB-1 FENCE LOCATION SHOWN ON SHEET 6. MAINTAIN A MINIMUM SETBACK DISTANCE OF 5 FEET FROM ANY HIGHWALL. ADJUST ALIGNMENT TO MINIMIZE REMOVAL OF VEGETATION, AND PRUNE RATHER THAN REMOVE WHEN PRACTICAL.
10. CONTRACTOR SHALL STAKE THE FENCE ALIGNMENT AT THE ICEBERG PIT AND RECEIVE PROJECT MANAGER APPROVAL BEFORE DRIVING POSTS.

ICEBERG PIT  
APPROXIMATE LOCATION OF END  
POSTS AND FENCE ALIGNMENT

Latitude	Longitude
36.19166	-105.79581
36.19168	-105.79569
36.19176	-105.79563
36.1918	-105.79565
36.19184	-105.79572
36.19181	-105.79578



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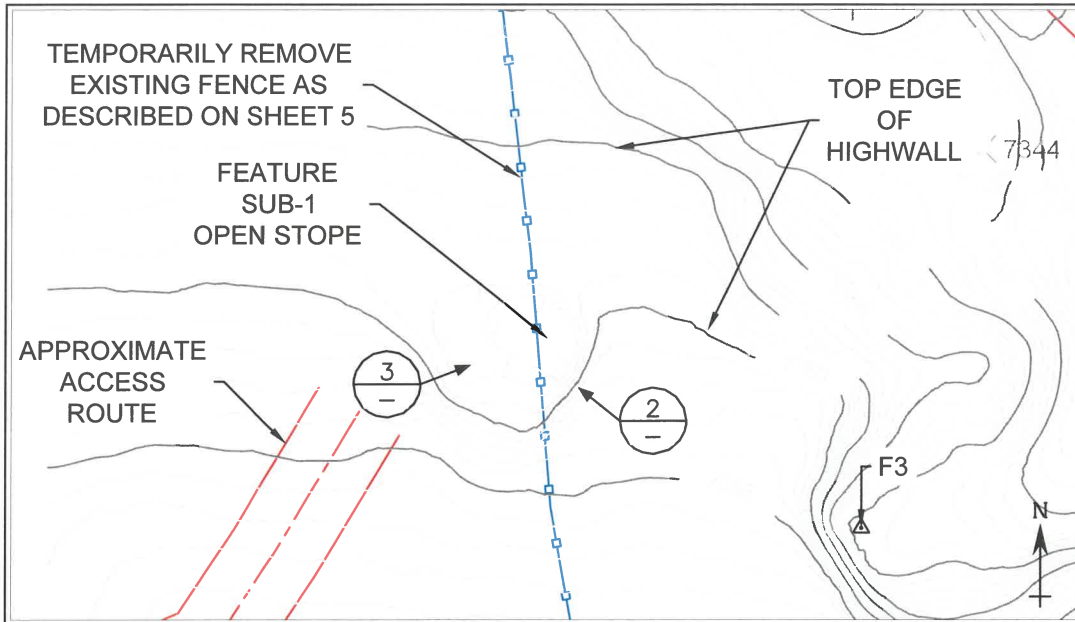


FENCING DETAILS – ICEBERG PIT  
AND FEATURE SUB-1

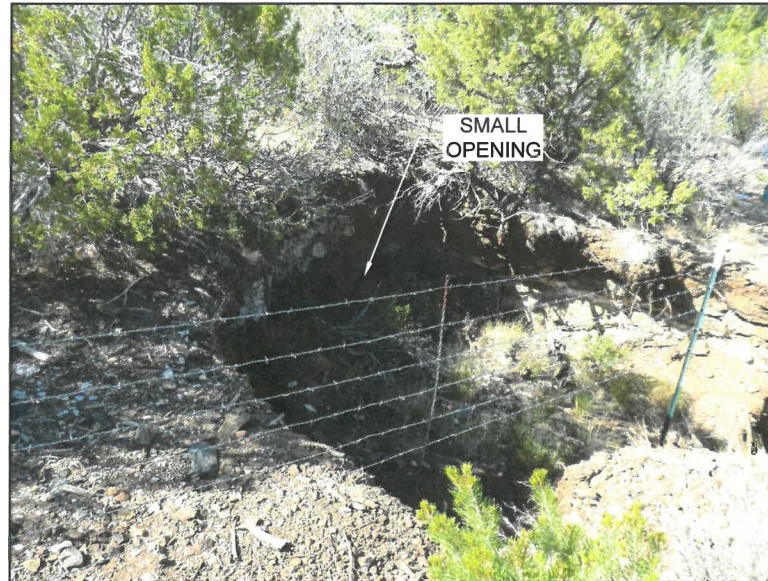
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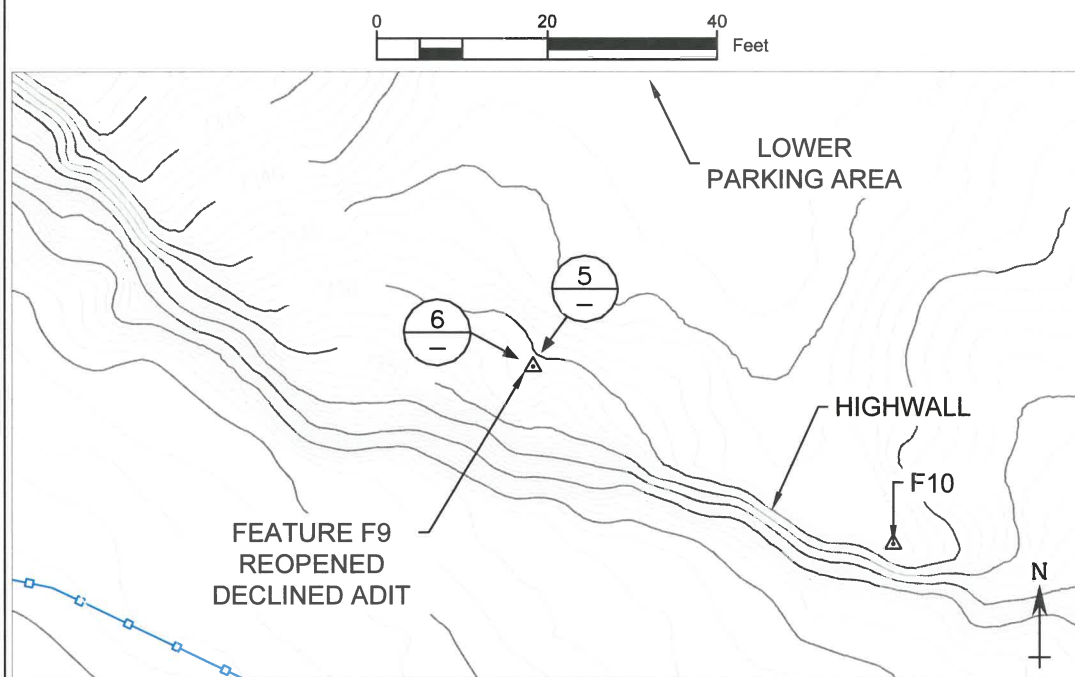
1 SUB-1 OPEN STOPE AND FENCE LOCATION – PLAN VIEW



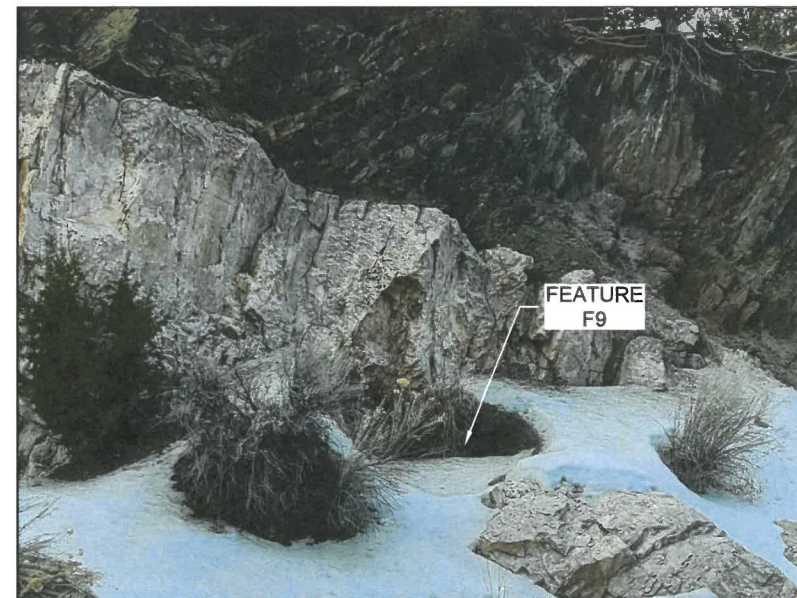
2 SUB-1 OPEN STOPE - EXISTING CONDITIONS  
8 LOOKING NORTHEAST TOWARDS SMALL OPENING



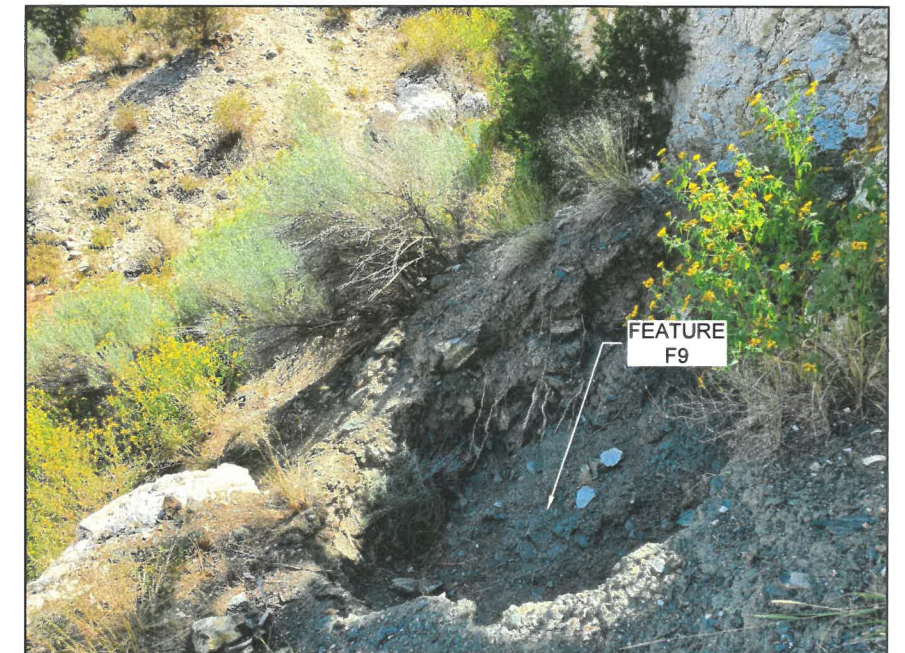
3 SUB-1 OPEN STOPE - EXISTING CONDITIONS  
8 LOOKING EAST TOWARDS LARGE OPENING AND HIGHWALL



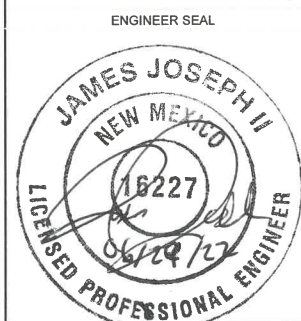
4 F9 REOPENED DECLINE ADIT – PLAN VIEW



5 FEATURE F9 - EXISTING CONDITION  
8 LOOKING SOUTHWEST TOWARDS HIGHWALL



6 FEATURE F9 - EXISTING CONDITIONS  
8 LOOKING SOUTHEAST PERPENDICULAR TO HIGHWALL



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MINING AND MINERALS DIVISION  
NEW MEXICO ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT



**FEATURES SUB-1 AND F9 PLAN AND PROFILE – EXISTING CONDITIONS**

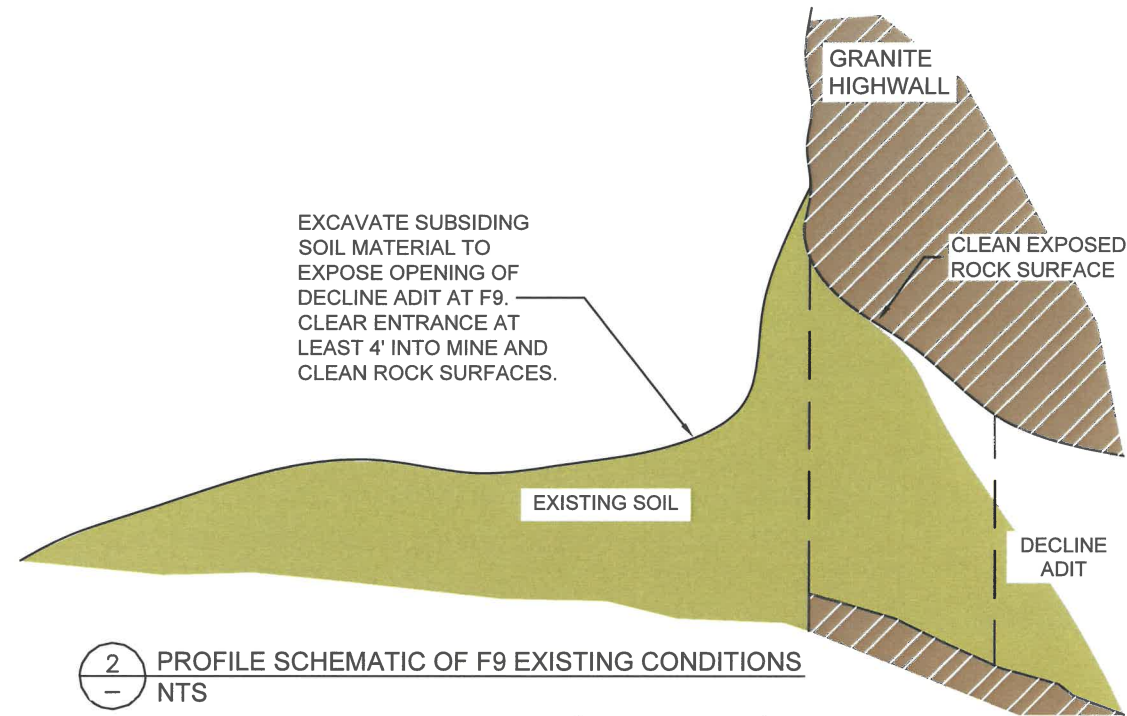
HARDING PEGMATITE MINE  
SAFEGUARD PROJECT - PHASE II  
DIXON, NEW MEXICO  
PROJECT NO. EMNRD-MMD-2022-02

SHEET NO:  
06

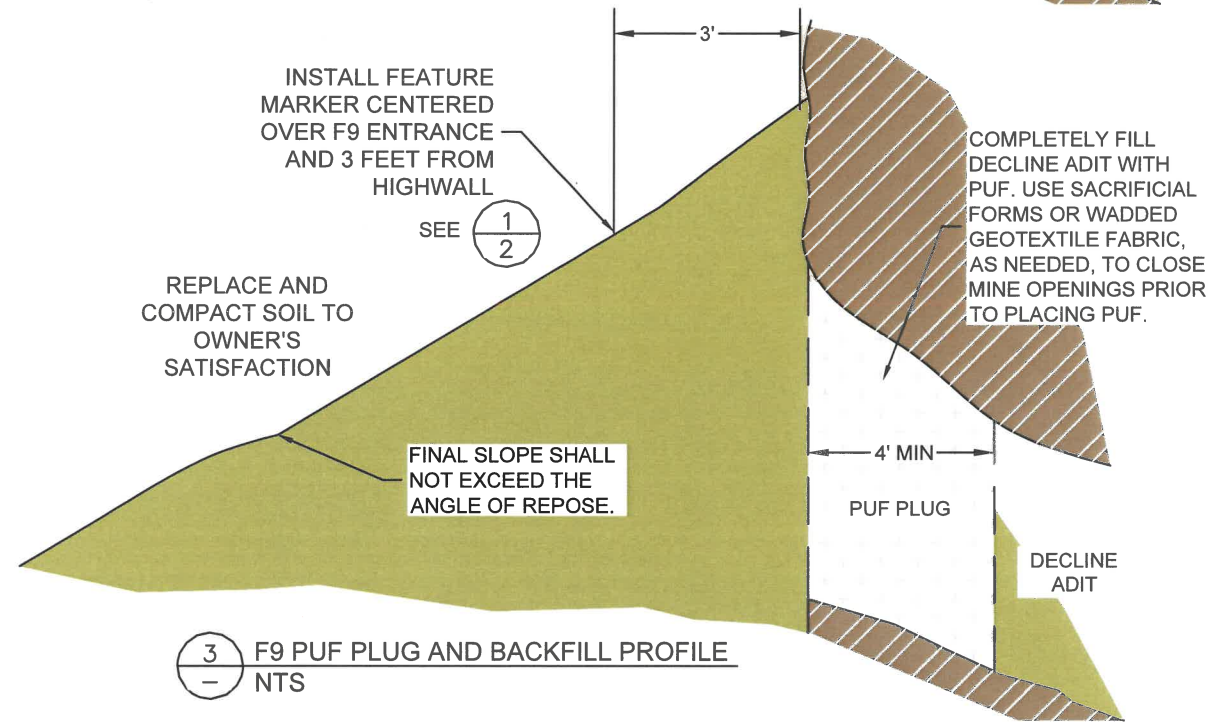




1 FEATURE F9 – PHOTO OF EXISTING CONDITIONS



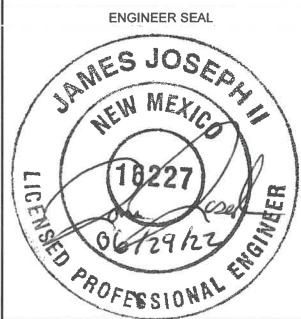
2 PROFILE SCHEMATIC OF F9 EXISTING CONDITIONS  
NTS



3 F9 PUF PLUG AND BACKFILL PROFILE  
NTS

**GENERAL NOTES**

1. EXISTING SOIL SHALL BE EXCAVATED TO EXPOSE THE ENTRANCE TO THE DECLINE ADIT. MATERIAL FROM INSIDE THE ADIT SHALL BE REMOVED TO 4 FEET FROM THE ENTRANCE (AS DEFINED BY PROJECTION OF VERTICAL SECTION OF THE HIGHWALL IN THAT LOCATION).
2. CLEAN ALL ROCK SURFACES INSIDE THE ADIT ENTRANCE TO ENSURE CONTACT WITH PUF AND PREVENT FUTURE PIPING AROUND PUF PLUG.
3. PROTECTION MEASURES FOR WORKERS OPERATING AT THE BASE OF THE HIGHWALL AND DECLINE ADIT OPENING SHALL BE IMPLEMENTED TO PREVENT INJURY FROM ROCK FALL AND/OR MINE COLLAPSE.
4. THE FLOOR OF THE DECLINE ADIT MAY BE OVER OTHER MINE OPENINGS. REPORT EVIDENCE OF FLOOR COLLAPSE TO THE PROJECT MANAGER BEFORE PLACEMENT OF PUF PLUG.
5. APPLY PUF IN ACCORDANCE WITH CONSTRUCTION SPECIFICATIONS.
6. EXISTING SOIL CONSISTS OF UNCONSOLIDATED COLLUVIUM INCLUDING ROCK FRAGMENTS FROM THE HIGHWALL.
7. BACKFILL WITH EXISTING SOIL THAT IS EXCAVATED FROM THE DECLINE ADIT. BLEND SURFACE WITH SURROUNDING GRADE AND LAND. FORM TO SIMULATE NATURAL CONDITIONS.
8. THE GEOMETRY AND SIZE OF DECLINE ADIT ARE NOT WELL-DOCUMENTED. EXCAVATION SHALL BE OVERSEEN BY A COMPETENT PERSON, AS DEFINED BY OSHA. AS NEEDED, EXCAVATION SHALL EMPLOY PROTECTIVE SYSTEM AS REQUIRED BY 29 CFR PART 126, SUBPART P.
9. APPROXIMATELY 7.5 CUBIC YARDS OF CURED-IN-PLACE PUF WILL BE NEEDED. THE CONTRACTOR SHALL CONFIRM VOLUME AFTER OPENING THE DECLINE ADIT FOR INSPECTION.



CAUTION - THIS PROJECT REQUIRES CONSTRUCTION WORK IN, AROUND, AND OVER HAZARDOUS AND UNPROTECTED MINE SHAFTS, STOPES, ADITS, AND OTHER OPENINGS WHICH MAY BE OPEN TO THE SURFACE OR HIDDEN FROM VIEW BY TRASH, DEBRIS, OR THIN AND UNSTABLE LAYERS OF SURFACE MATERIALS OR ROCK. THE CONSTRUCTOR SHALL BE RESPONSIBLE FOR THOROUGHLY INVESTIGATING THE SITE CONDITIONS AND SCHEDULING EQUIPMENT, EQUIPMENT OPERATIONS, PERSONNEL AND SAFETY PROCEDURES TO PREVENT ACCIDENTS AND INJURIES.

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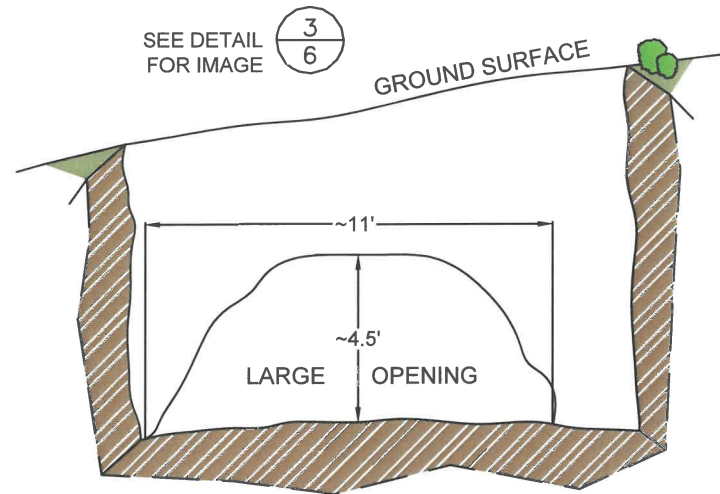


**FEATURE F9, REOPENED DECLINE ADIT DETAILS**

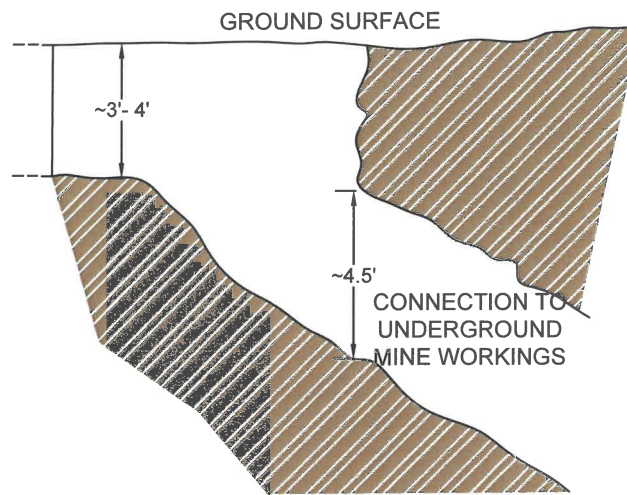
HARDING PEGMATITE MINE  
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PROJECT NO. EMNRD-MMD-2022-02

SHEET NO:  
07

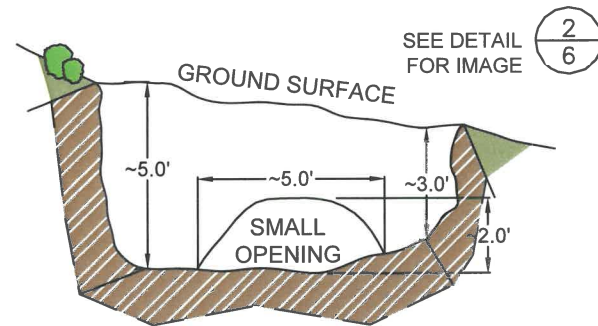




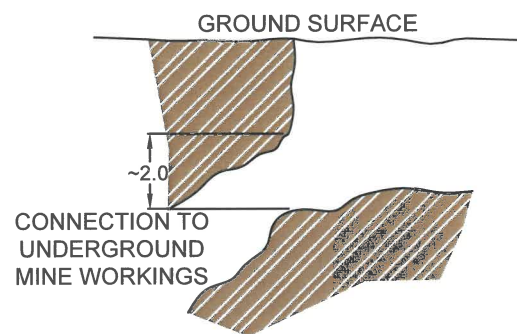
2 SECTION LARGE OPENING - NORTHEAST  
1" ≈ 5'



3 SECTION LARGE OPENING - NORTHWEST  
1" ≈ 5'



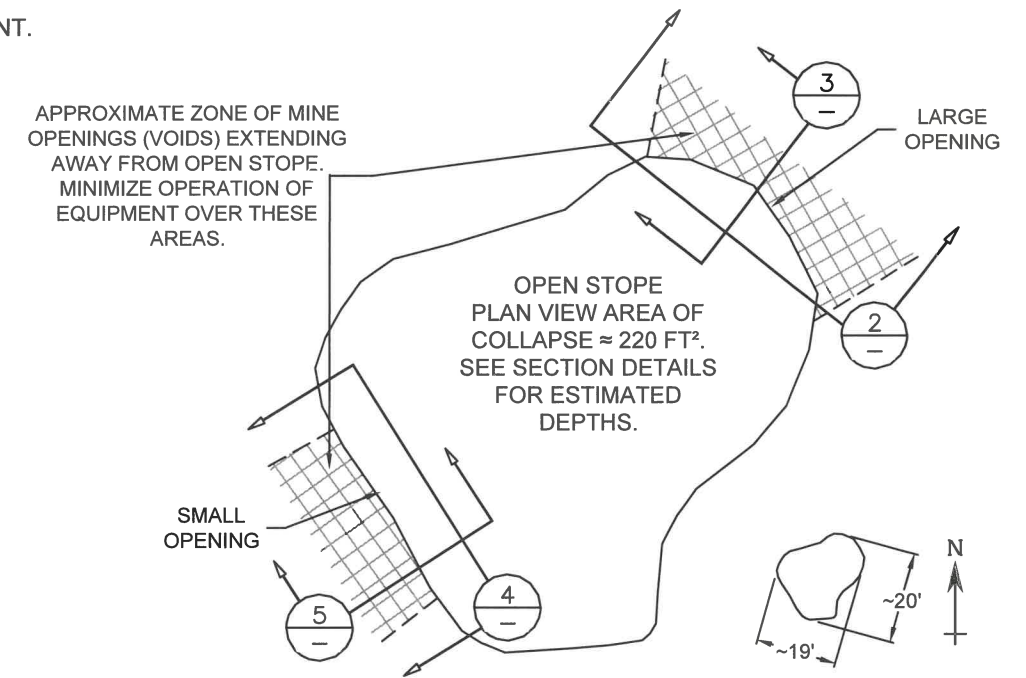
4 SECTION SMALL OPENING - SOUTHWEST  
1" ≈ 5'



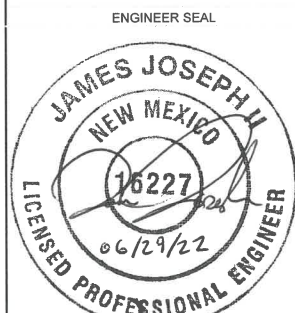
5 SECTION SMALL OPENING - WEST  
1" ≈ 5'

**GENERAL NOTES**

1. FEATURE IS A COLLAPSED OPEN STOPE. UNDERGROUND MINE WORKINGS (VOIDS) ARE PRESENT AROUND THE FEATURE. THIN BEDROCK MAY BE PRESENT AROUND THE FEATURE. CONTRACTOR SHALL SIZE EQUIPMENT AND PLAN EQUIPMENT APPROACH ACCORDINGLY.
2. SHAPE AND DIMENSIONS ON SCHEMATICS ARE APPROXIMATED BASED ON OBSERVATIONS FROM OUTSIDE THE COLLAPSE FEATURE AND DATA FROM LIDAR SURVEY. CONTRACTOR SHALL VERIFY DIMENSIONS.
3. FEATURE SUB-1 IS SECURED BY TEMPORARY CHAIN LINK FENCE PANELS ERECTED AROUND THE FEATURE. THE CONTRACTOR SHALL REMOVE THE TEMPORARY FENCE AND TRANSPORT IT TO THE LAYDOWN AREA IN THE LOWER PARKING AREA FOR REMOVAL FROM THE SITE BY THE AML PROGRAM.
4. TEMPORARILY REMOVE SECTION OF BARBED WIRE FENCE OVER THE STOPE WHILE CONSTRUCTING SAFEGUARD MEASURES. REPLACE REMOVED FENCING AFTER FILLING OPEN STOPE IN ACCORDANCE WITH DETAILS ON SHEET 5.
5. FINAL DEPTHS OF OPEN STOPE PRIOR TO FILLING WILL BE DEPENDENT ON AMOUNT OF SOIL AND WEATHERED ROCK THAT IS EXCAVATED DURING PREPARATION FOR PLUG INSTALLS AND PUF PLACEMENT.



1 PLAN VIEW OF OPEN STOPE  
NTS



CAUTION - THIS PROJECT REQUIRES CONSTRUCTION WORK IN, AROUND, AND OVER HAZARDOUS AND UNPROTECTED MINE SHAFTS, STOPES, ADITS, AND OTHER OPENINGS WHICH MAY BE OPEN TO THE SURFACE OR HIDDEN FROM VIEW BY TRASH, DEBRIS, OR THIN AND UNSTABLE LAYERS OF SURFACE MATERIALS OR ROCK. THE CONSTRUCTOR SHALL BE RESPONSIBLE FOR THOROUGHLY INVESTIGATING THE SITE CONDITIONS AND SCHEDULING EQUIPMENT, EQUIPMENT OPERATIONS, PERSONNEL AND SAFETY PROCEDURES TO PREVENT ACCIDENTS AND INJURIES.

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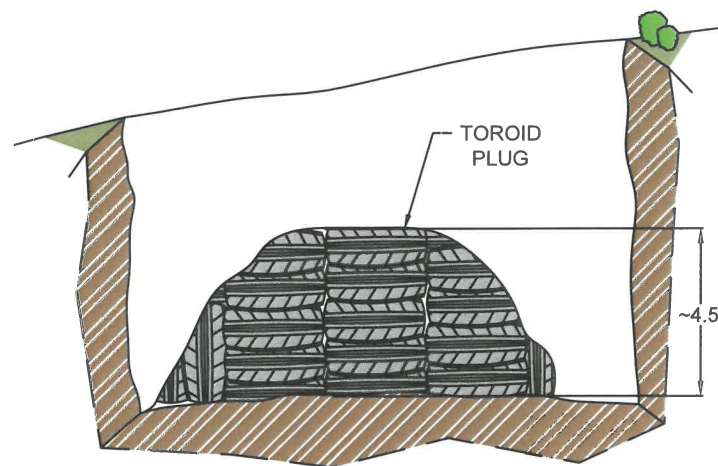


**FEATURE SUB-1, OPEN STOPE – SCHEMATICS OF EXISTING CONDITIONS**

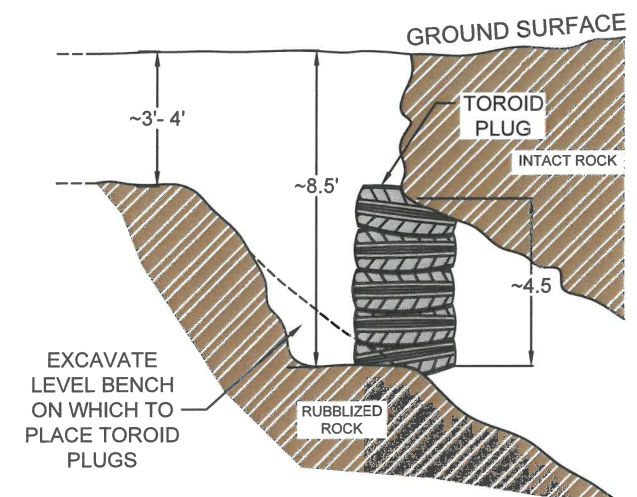
HARDING PEGMATITE MINE  
SAFEGUARD PROJECT - PHASE II  
DIXON, NEW MEXICO  
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SHEET NO:  
08

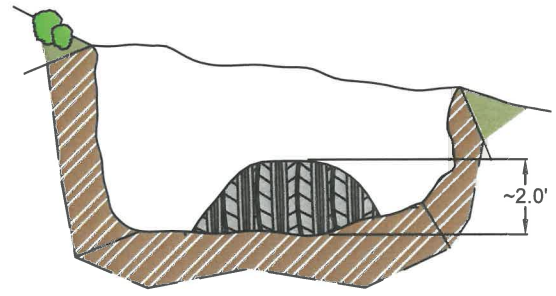




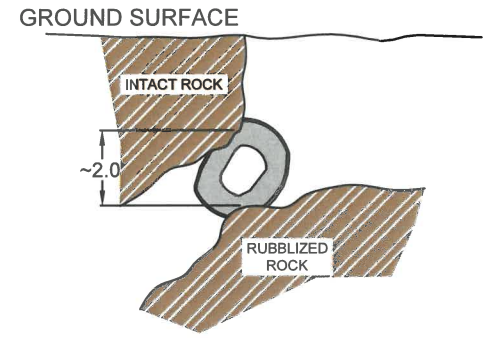
2 SECTION LARGE OPENING - NORTHEAST  
10 1" ≈ 5'



3 SECTION LARGE OPENING - NORTHWEST  
10 1" ≈ 5'



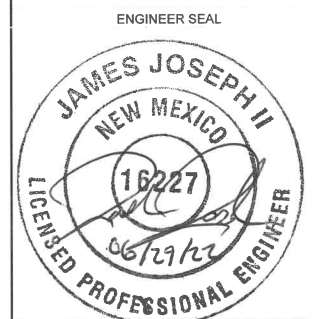
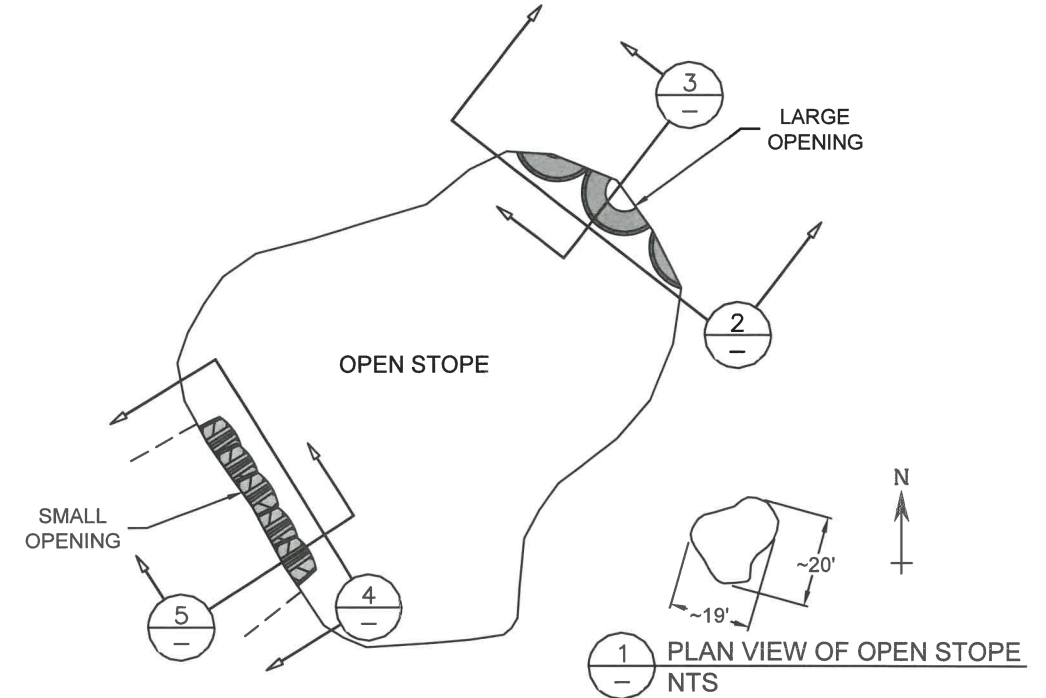
4 SECTION SMALL OPENING PROFILE - SOUTHWEST  
- 1" ≈ 5'



5 SECTION SMALL OPENING - NORTHWEST  
- 1" ≈ 5'

**GENERAL NOTES**

- ENTRANCE INTO THE OPEN STOPE BY EQUIPMENT AND/OR PERSONNEL SHALL BE LIMITED, AS MUCH AS POSSIBLE. ALL INDIVIDUALS WORKING IN, OR AT THE EDGE OF, THE OPEN STOPE OR THE EDGE OF THE NEARBY HIGHWALL SHALL BE EQUIPPED WITH FALL RESTRAINT AND RECOVERY EQUIPMENT IN ACCORDANCE WITH THE CONTRACTOR'S HEALTH AND SAFETY PLAN. AN ATTENDANT MUST BE PLACED OUTSIDE OF THE OPEN STOPE AT ALL TIMES WHEN WORKERS ARE IN THE COLLAPSE FEATURE.
- CONTRACTOR SHALL USE FIELD JUDGEMENT IN SELECTION OF NUMBER OF TIRES AND CONFIGURATION TO BEST CLOSE OFF OPENINGS INTO THE MINE.
- ASSUME APPROXIMATE QUANTITY OF 65 TIRES NEEDED FOR TOROID PLUGS. USED PASSENGER VEHICLE TIRES OF CONSISTENT SIZE SHALL BE USED FOR TOROID TIRE PLUGS BASED ON COMMON TIRE SIZE (225/65R 17).
- PERMITS MUST BE OBTAINED FROM THE SOLID WASTE BUREAU (SWB) OF THE NEW MEXICO ENVIRONMENT DEPARTMENT FOR USE OF SCRAP TIRES IN THIS CONSTRUCTION. NO TIRES SHALL BE PROCURED OR DELIVERED TO THE SITE UNTIL THE PERMIT IS IN PLACE. CONTRACTOR MUST BE REGISTERED WITH THE STATE OF NEW MEXICO TO HAUL SCRAP TIRES OR HAVE THE TIRES DELIVERED BY A REGISTERED SCRAP TIRE HAULER. THE CONDITIONS OF THE TIRE USE PERMIT MAY REQUIRE THAT THE SWB BE ALLOWED TO INSPECT THE TIRE PLUGS BEFORE BURYING. COORDINATION OF THE INSPECTION SHOULD BE MADE AS SOON AS POSSIBLE TO AVOID CONSTRUCTION DELAYS.
- STACKED TIRES SHALL BE COMPRESSED WITH EXCAVATION EQUIPMENT AND TEMPORARILY BANDED BEFORE PLACING IN THE OPEN STOPE. ONCE THE TIRES ARE SATISFACTORILY PLACED, THE BANDS SHALL BE REMOVED TO ALLOW TIRES TO FILL IN AND CONTACT THE TOP OF THE OPENING (AS SHOWN IN SECTION 3). TIRES PLACED VERTICALLY (RESTING ON THE TREAD INSTEAD OF THE SIDEWALL OF THE TIRE) SHALL BE WEDGED INTO THE TARGETED VOID BY USING A THUMB ATTACHMENT ON THE EXCAVATION EQUIPMENT TO WEDGE THE TIRE INTO PLACE.
- ONCE TOROID TIRE PLUGS ARE PLACED, COVER THE EXPOSED TIRE SURFACES WITH NONWOVEN GEOTEXTILE FABRIC TO PREVENT PUF FROM ENTERING THE MINE OPENING BEHIND THE TIRES. THE FABRIC SHALL BE PLACED IN A MANNER TO OPTIMIZE THE CONTACT SURFACE AREA OF THE PUF TO THE ROCK WALL. ANY OPENINGS IN THE TIRE PLUGS GREATER THAN 1 FOOT IN ANY DIMENSION SHALL BE SUPPORTED USING WIRE MESH BEFORE APPLICATION OF THE GEOTEXTILE FABRIC. SEE SHEET 10 FOR FABRIC PLACEMENT.
- LOOSE SOIL, VEGETATION, AND WEATHERED ROCK SHALL BE EXCAVATED FROM THE OPEN STOPE PRIOR TO INSTALLING PLUGS OVER OPENINGS.



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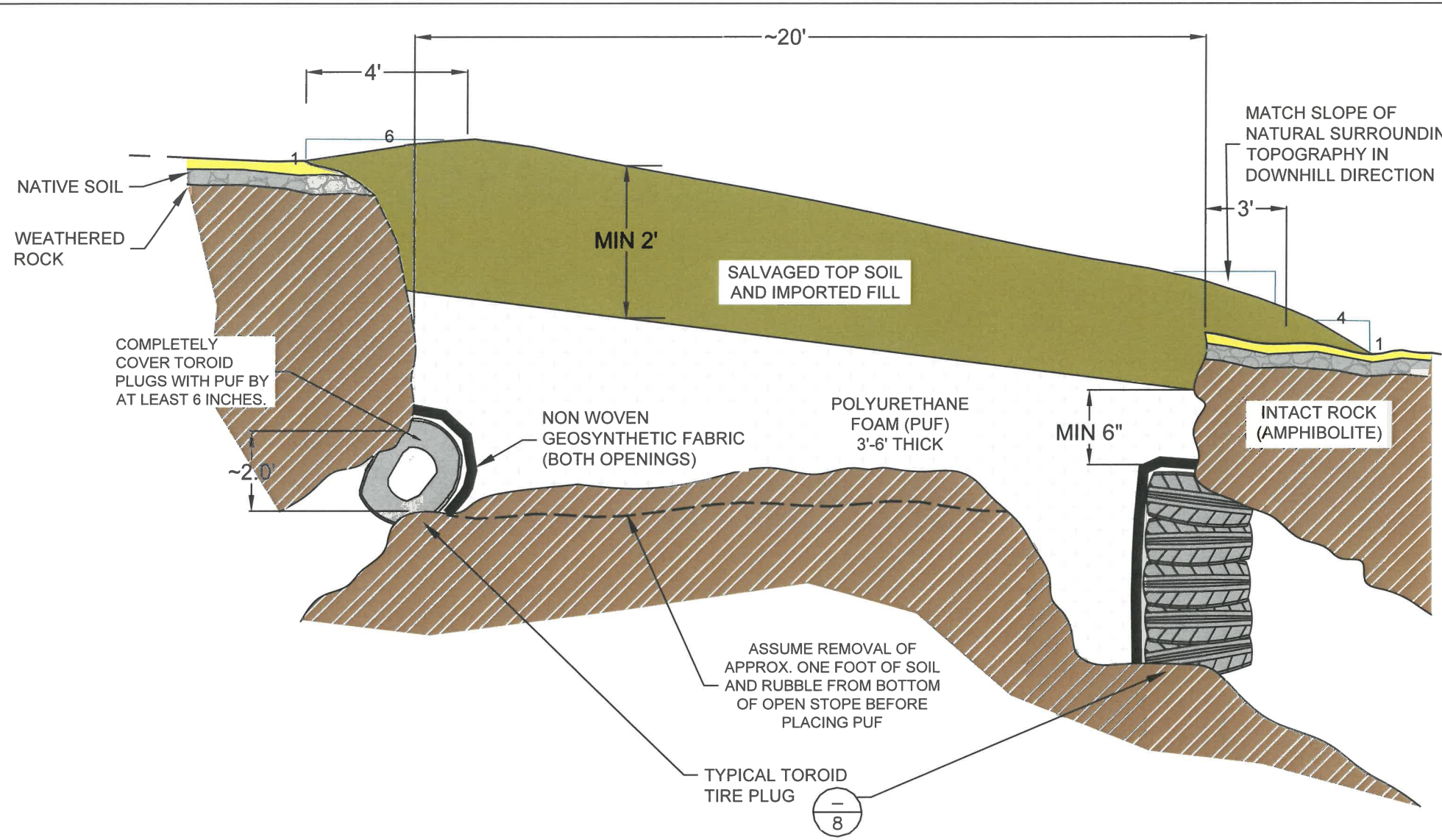
**ABANDONED MINE LAND PROGRAM**  
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**FEATURE SUB-1, OPEN STOPE – SCHEMATICS OF TOROID TIRE PLUGS**

HARDING PEGMATITE MINE  
SAFEGUARD PROJECT - PHASE II  
DIXON, NEW MEXICO  
PROJECT NO. EMNRD-MMD-2022-02

SHEET NO: 09



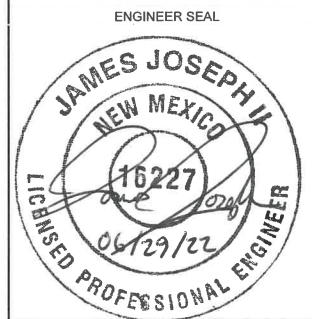


1 SUB-1 – OPEN STOPE FILL SCHEMATIC – PROFILE  
NTS

**APPROXIMATE FILL VOLUMES**  
 SALVAGED TOP SOIL ≈ 4 CUBIC YARDS  
 IMPORTED SOIL FILL ≈ 25 CUBIC YARDS  
 PUF (CURED-IN-PLACE) ≈ 54 CUBIC YARDS

**GENERAL NOTES**

1. PRIOR TO PLACING THE POLYURETHANE FOAM (PUF) PLUG MATERIAL, SOIL AND WEATHERED ROCK WILL BE EXCAVATED FROM INSIDE OF OPEN STOPE TO EVIDENCE OF AMPHIBOLITE RUBBLE. REMOVED MATERIAL SHALL BE STOCKPILED FOR LATER USE IN CAP MATERIAL.
2. THE NEW MEXICO ENVIRONMENT DEPARTMENT SHALL BE GIVEN THE OPPORTUNITY TO INSPECT TOROID TIRE PLUGS PRIOR TO APPLYING GEOSYNTHETIC FABRIC AND COVERING WITH PUF.
3. APPLY PUF IN ACCORDANCE WITH CONSTRUCTION SPECIFICATIONS.
4. PLACE PUF AGAINST CLEAN, DRY VERTICAL SURFACES.
5. LARGE VOIDS WILL BE BRIDGED WITH TOROID TIRE PLUGS, GEOSYNTHETIC FABRIC, AND/OR WIRE MESH SECURED TO TIRES.
6. USE METAL STAPLES TO SECURE GEOSYNTHETIC FABRIC TO TIRES.
7. EXCAVATED MATERIAL AND IMPORTED SOIL FILL WILL BE USED TO COVER PUF IN A 2 FOOT LAYER (MINIMUM) AND MOUNDED TO PROMOTE DRAINAGE AWAY FROM SINKHOLE.
8. USE WATER TO TREAT SOIL FILL FOR COMPACTION. COMPACT SOIL WITH MECHANICAL TAMPER. DO NOT USE WHEELED OR TRACKED EQUIPMENT FOR SOIL COMPACTION. OPERATION AND TURNING OF HEAVY EQUIPMENT OVER THE RECLAIMED OPEN STOPE COULD CAUSE SURFACE COLLAPSE OF OTHER SECTIONS OF THE MINE.
9. REPAIR FENCING AS DESCRIBED IN SHEET 05.
10. INSTALL FEATURE IDENTIFICATION MARKER IN CENTER OF OPEN STOPE, OR IN A LOCATION DIRECTED BY THE AML PROJECT MANAGER. SEE SHEET 2 FOR SPECIFICATIONS.
11. ONLY TOP SOIL REMOVED FROM INSIDE THE COLLAPSED FEATURE SHALL BE USED FROM ANYWHERE ELSE ON SITE, INCLUDING AREAS AROUND THE EDGES OF FEATURE SUB-1.
12. MAXIMUM SLOPE OF SOIL CAP SHALL BE 6:1 AT UPHILL EDGE AND ON CROSS SLOPE EDGES (FROM CENTER). LAND FORM SURFACE OF CAP TO SAME DOWNHILL SLOPE AS NATURAL GRADE. THE MAXIMUM SLOPE AT DOWNHILL EDGE OF FILL MAY BE 4:1.
13. THE SURFACE OF FEATURE SUB-1, ANY SURROUNDING DISTURBED AREA, AND THE DISTURBED GROUND OF THE OVER-LAND ACCESS ROUTE SHALL BE STABILIZED BY APPLICATION OF A SEED MIXTURE AND MULCH. THE RESEEDING SHALL BE EXECUTED AS THE LAST STEP IN THE SAFEGUARD PROCESS, AND MINIMAL FOOT TRAFFIC AND NO EQUIPMENT TRAFFIC SHALL BE ALLOWED AFTER APPLICATION OF THE SEED AND MULCH. RESEEDING DETAILS, INCLUDING SEED MIXTURE, ARE PROVIDED IN THE CONSTRUCTION SPECIFICATIONS.



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**FEATURE SUB-1, OPEN STOPE FILL DETAIL**

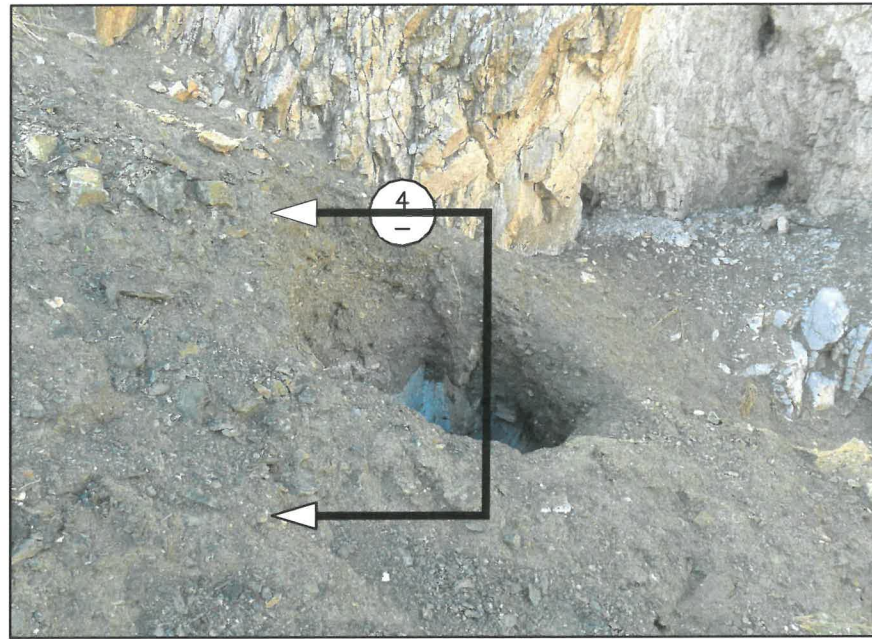
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SHEET NO:  
10





1 PHOTO OF SUB-2 LOCATION EXISTING CONDITIONS  
- LOOKING SOUTHEAST

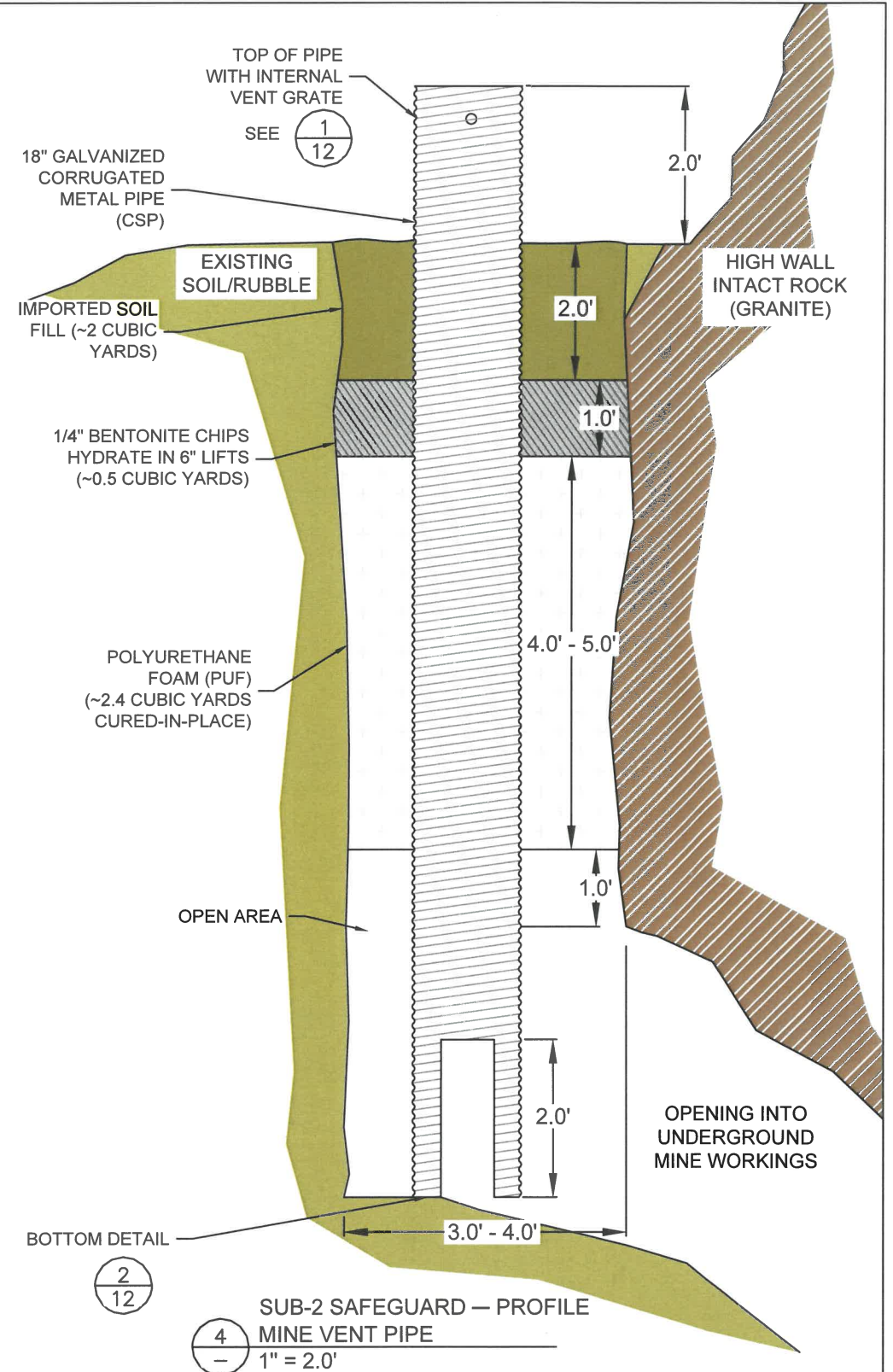


2 PHOTO OF SUB-2 LOCATION EXISTING CONDITIONS  
- LOOKING SOUTHWEST

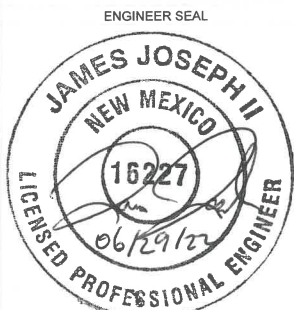


3 PHOTO OF SUB-2 LOCATION EXISTING CONDITIONS  
- LOOKING DOWN INTO OPENING

SAFEGUARD MEASURES AT FEATURE SUB-2  
INCLUDE THE INSTALLATION OF A MINE  
VENT TO ENHANCE BAT HABITAT IN THE  
MINE WORKINGS. GENERAL CONSTRUCTION  
NOTES FOR SUB-2 SAFEGUARD MEASURES  
ARE PROVIDED ON SHEET 12.



2  
- SUB-2 SAFEGUARD — PROFILE  
4  
- MINE VENT PIPE  
1" = 2.0'



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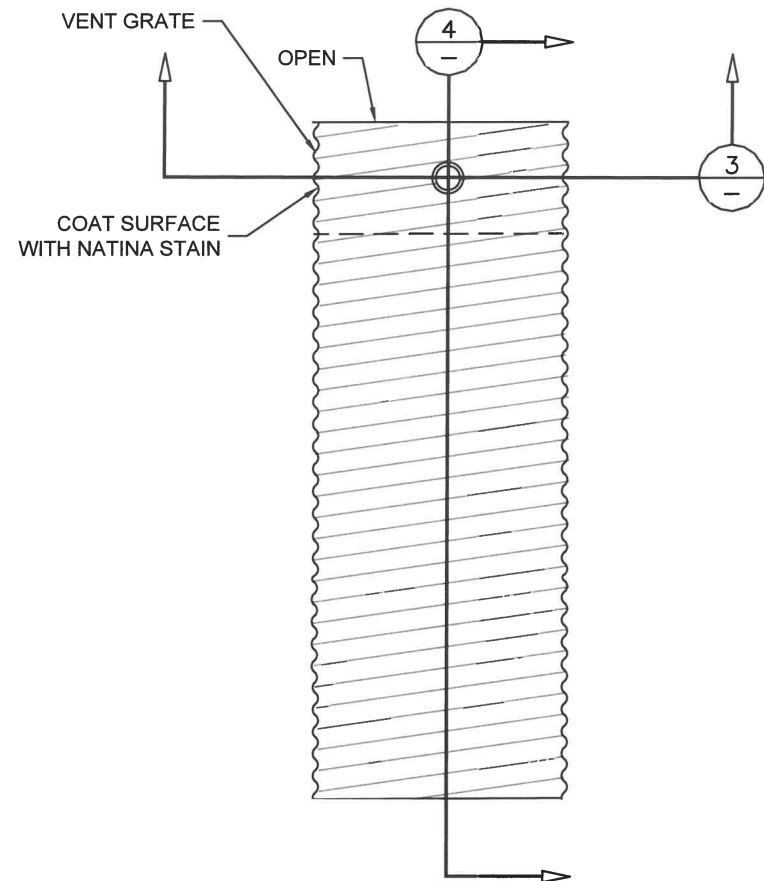


**FEATURE SUB-2, EXISTING CONDITIONS AND MINE VENT DETAIL**

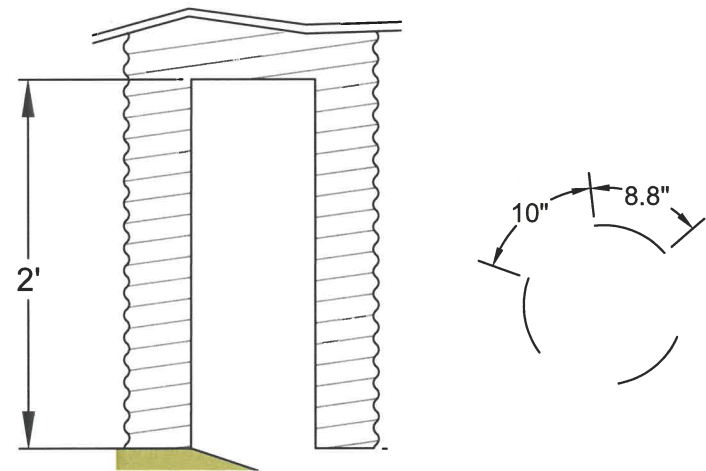
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PROJECT NO. EMNRD-MMD-2022-02

SHEET NO:  
11

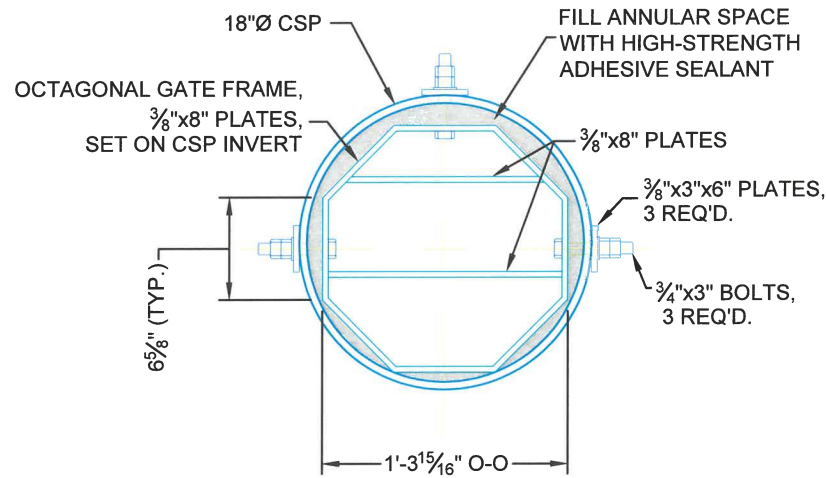




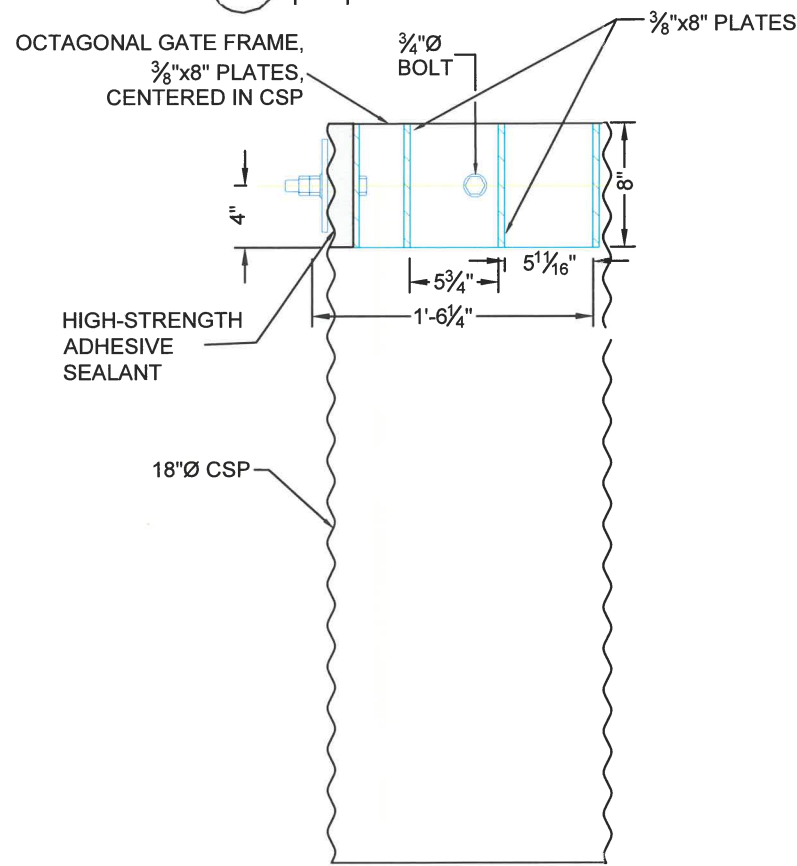
1 TOP OF PIPE WITH INTERNAL VENT GRATE – PROFILE  
1" = 1'



2 BOTTOM DETAIL– PROFILE AND SECTION  
11 1" = 1'



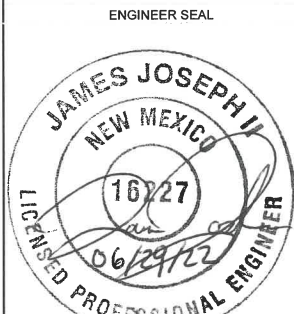
3 VENT GRATE INTERIOR SECTION  
1" = 1'



4 VENT GRATE SECTION  
1" = 1'

**GENERAL NOTES**

1. CONTRACTOR SHALL VERIFY DEPTHS AND MATERIALS NEEDED PRIOR TO PROCUREMENT OF MATERIALS.
2. CENTER THE CORRUGATED STEEL PIPE (CSP) IN THE VERTICAL OPENING, AND PLACE BOTTOM OF THE CSP AGAINST MATERIAL AT THE BASE OF THE OPENING.
3. THE TOP CSP PIECE SHALL BE 4 FEET LONG WITH 2 FEET ABOVE THE EXISTING GROUND SURFACE.
4. REMOVE BURRS FROM TOP RIM AND NOTCHES CUT IN THE BASE OF THE OF CSP VENT PIPE.
5. BRUSH SOIL FROM GRANITE SURFACES IN THE VERTICAL OPENING PRIOR TO PLACING PUF.
6. THE CONTRACTOR SHALL SUPPORT THE BOTTOM OF THE PUF PLUG TO PREVENT PUF FROM ENTERING THE MINE OPENING.
7. MIX AND PLACE PUF IN ACCORDANCE WITH CONSTRUCTION SPECIFICATIONS. AN ESTIMATE OF 2.4 CUBIC YARDS OF PUF (CURED-IN-PLACE) WILL BE NEEDED.
8. PLACE BENTONITE CHIPS AFTER PUF HAS FULLY CURED. AVOID PLACEMENT OF EXCESS PUF. USE BENTONITE PLUG MATERIAL TO MAKE UP SHORTAGES OF PUF RATHER THAN REDUCING BENTONITE PLUG THICKNESS. AN ESTIMATED 6.5 CUBIC FEET OF 1/4-INCH BENTONITE CHIPS IS ANTICIPATED TO BE NEEDED FOR THE BENTONITE PLUG.
9. HYDRATE THE BENTONITE WITH CLEAN WATER (NOT AVAILABLE ON SITE) IN 6-INCH LIFTS IN ACCORDANCE WITH RECOMMENDATIONS BY THE BENTONITE VENDOR.
10. STEEL PLATES AND SHAPES FOR THE VENT GRATE ASSEMBLY SHALL BE MILD STEEL PLATE. WELD ALL JOINTS. STEEL PLATES, BOLTS, AND NUTS SHALL BE MILD OR STAINLESS STEEL. DOUBLE-NUT ALL BOLTS. ROUND OR CHAMFER ALL EXPOSED EDGES AND CORNERS TO THE VENT GRATE.
11. SEALANT USED AROUND THE VENT GRATE SHALL BE SB-190 EVERSEAL HIGH-STRENGTH ADHESIVE SEALANT, OR APPROVED EQUIVALENT. SEALANT SHALL BE GRAY IN COLOR.
12. INSTALL FEATURE IDENTIFICATION MARKER ON EAST SIDE OF VENT PIPE, APPROXIMATELY 6-INCHES FROM THE CSP. SEE DETAIL 1 ON SHEET 2.
13. PAINT VISIBLE PORTIONS OF CSP WITH NATINA STAIN OR APPROVED EQUIVALENT FOR CAMOUFLAGE. COLOR SHOULD BLEND IN WITH SURROUNDING GEOLOGY AS DIRECTED BY THE AML PROJECT MANAGER.
14. PLACE TACK WELD ACROSS BOTH DOUBLE NUTS AND ONTO EXTERNAL BOLT THREADS WHERE VENT GRATE IS BOLTED TO CSP.



CAUTION - THIS PROJECT REQUIRES CONSTRUCTION WORK IN, AROUND, AND OVER HAZARDOUS AND UNPROTECTED MINE SHAFTS, STOPES, ADITS, AND OTHER OPENINGS WHICH MAY BE OPEN TO THE SURFACE OR HIDDEN FROM VIEW BY TRASH, DEBRIS, OR THIN AND UNSTABLE LAYERS OF SURFACE MATERIALS OR ROCK. THE CONSTRUCTOR SHALL BE RESPONSIBLE FOR THOROUGHLY INVESTIGATING THE SITE CONDITIONS AND SCHEDULING EQUIPMENT, EQUIPMENT OPERATIONS, PERSONNEL AND SAFETY PROCEDURES TO PREVENT ACCIDENTS AND INJURIES.

NO.	DATE	REVISIONS/REMARKS	BY
001	3/2022	2020 SAFEGUARD MEASURES	JPJ
DESIGNED BY:	JPJ	DATE:	3/2022
DRAWN BY:	LEB	DATE:	3/2022
CHECKED BY:	JPJ	DATE:	3/2022

**ABANDONED MINE LAND PROGRAM**  
MINING AND MINERALS DIVISION  
NEW MEXICO ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT

**FEATURE SUB-2 MINE VENT  
DETAILS AND NOTES**



HARDING PEGMATITE MINE  
SAFEGUARD PROJECT - PHASE II  
DIXON, NEW MEXICO  
PROJECT NO. EMNRD-MMD-2022-02

SHEET NO:  
12