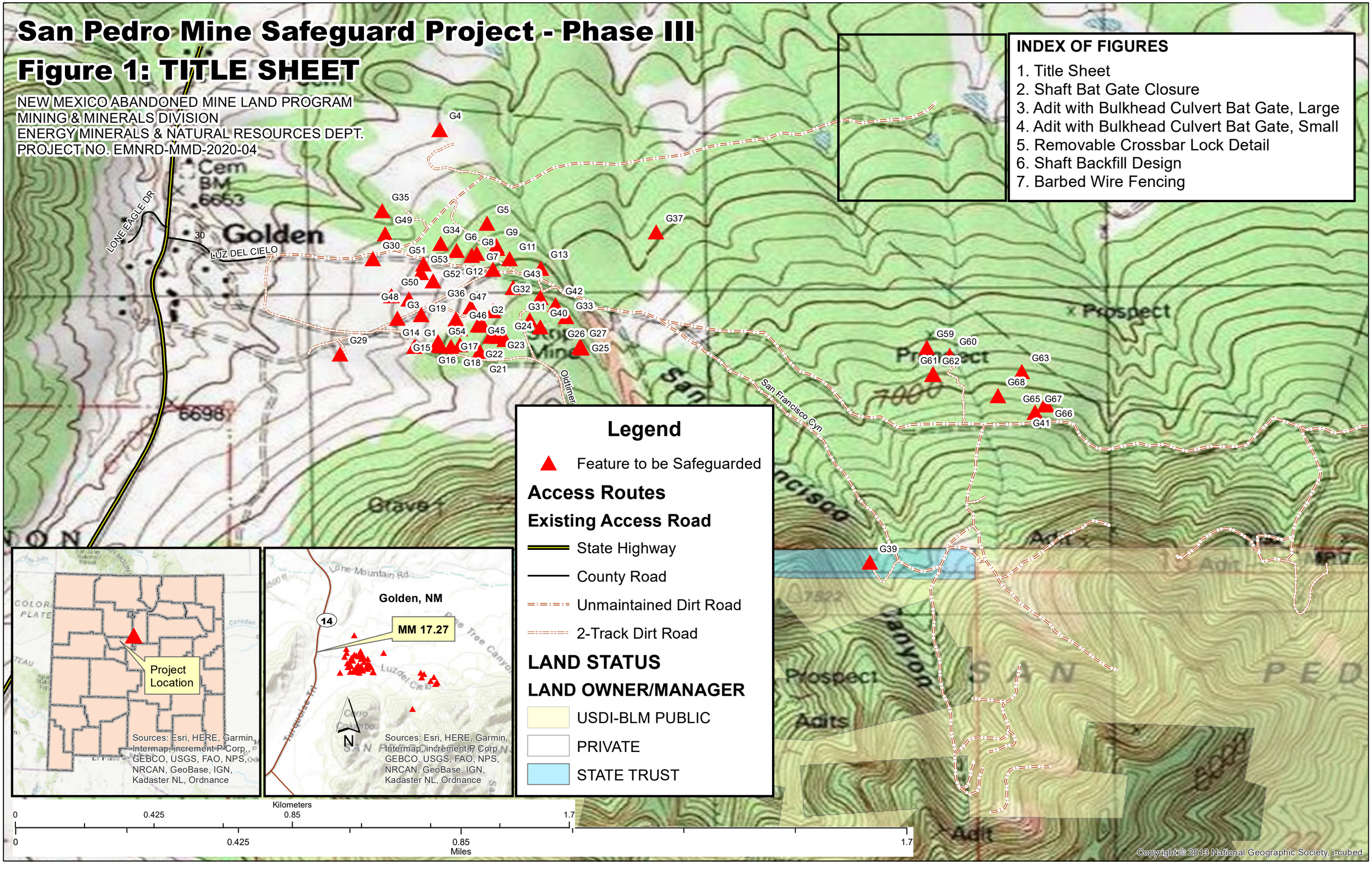
San Pedro Mine Safeguard Project - Phase III

Figure 1: TITLE SHEET

NEW MEXICO ABANDONED MINE LAND PROGRAM
MINING & MINERALS DIVISION
ENERGY MINERALS & NATURAL RESOURCES DEPT.
PROJECT NO. EMNRD-MMD-2020-04

INDEX OF FIGURES



Legend

Feature to be Safeguarded

Access Routes

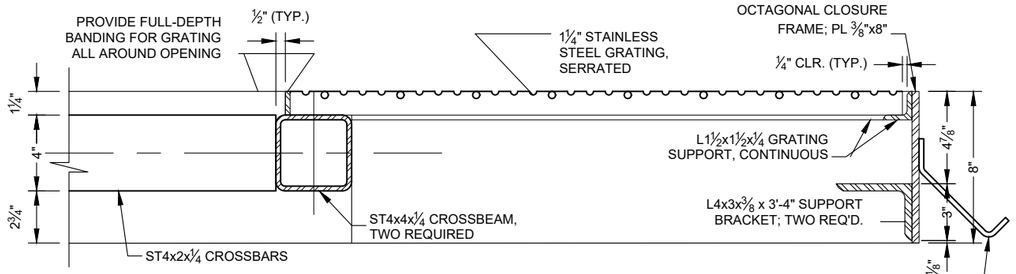
Existing Access Road

- State Highway
- County Road
- Unmaintained Dirt Road
- 2-Track Dirt Road

LAND STATUS

LAND OWNER/MANAGER

- USDI-BLM PUBLIC
- PRIVATE
- STATE TRUST

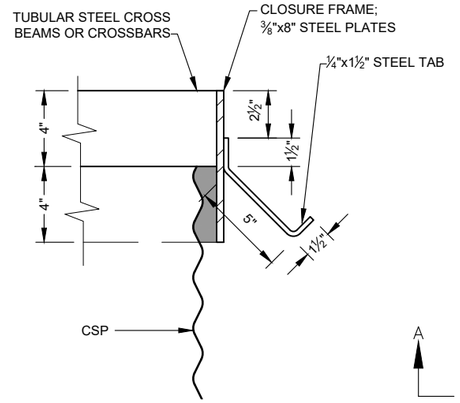


NOTE: ORIENT GRATING BEARING BARS TO SPAN THE SHORTER DISTANCE BETWEEN SUPPORTS AS SHOWN.

GRATED AIRFLOW CLOSURE
SECTION B-B
(RISER & COLLAR NOT SHOWN; SYMMETRICAL AROUND CENTERLINES OF CLOSURE FRAME)
SCALE: 1½" = 1'-0"

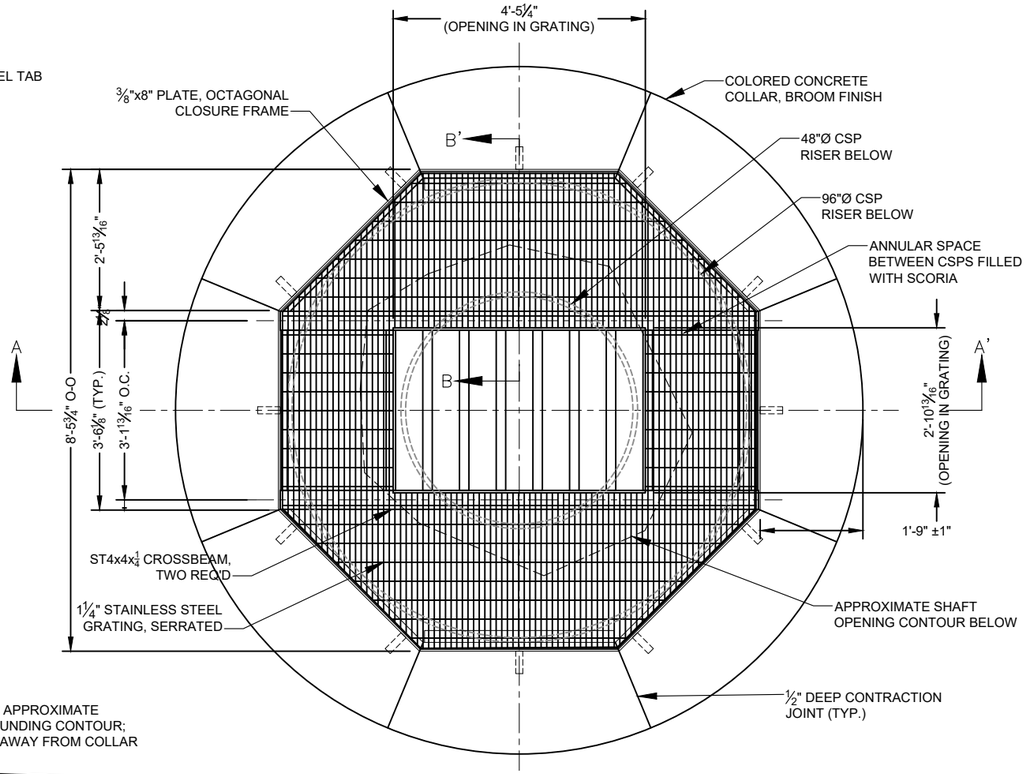
SECTION B-B'

SCALE: 1½" = 1'-0"



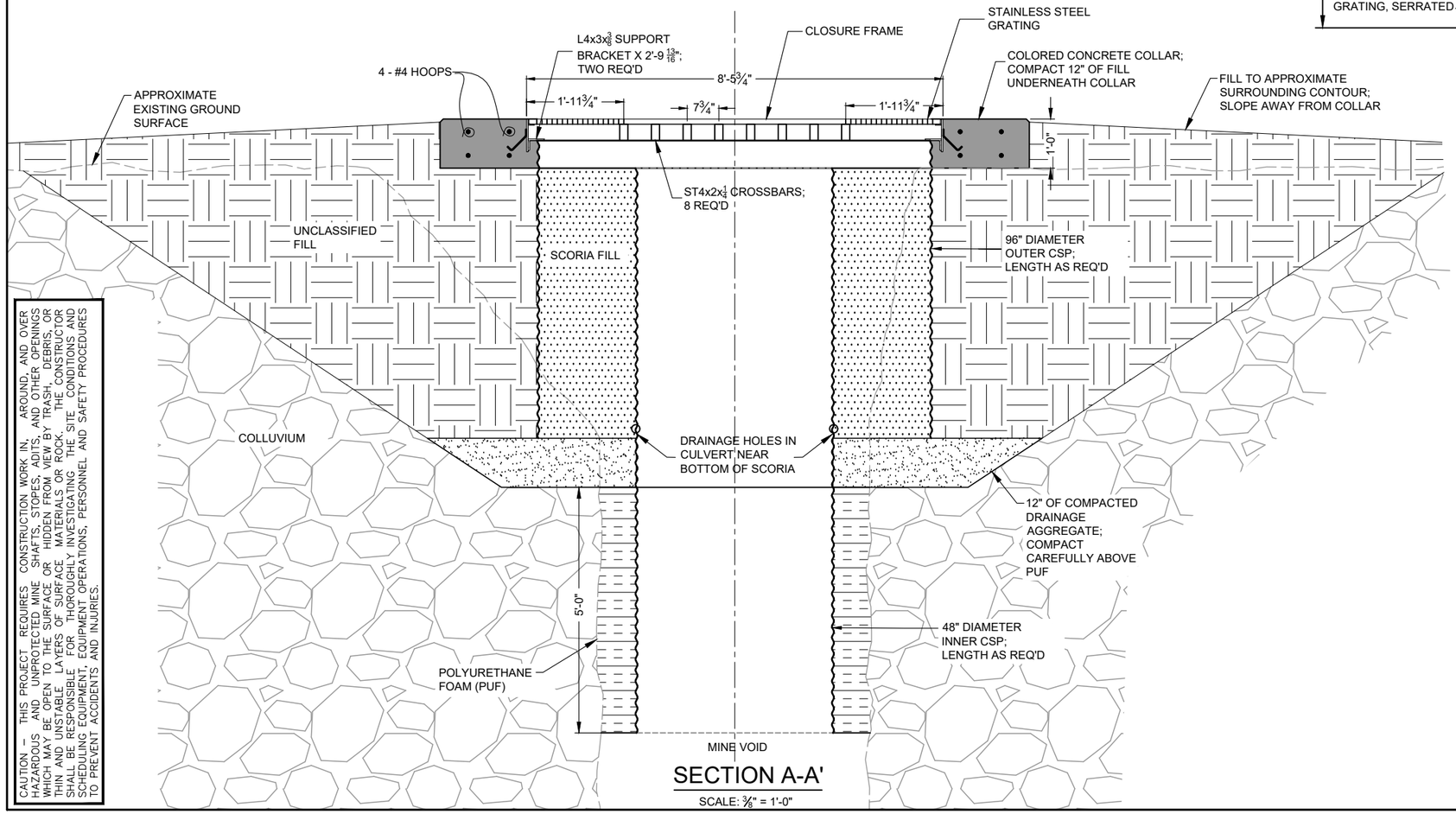
STEEL TAB DETAIL

SCALE: 1½" = 1'-0"



PLAN

SCALE: ⅜" = 1'-0"



SECTION A-A'

SCALE: ⅜" = 1'-0"

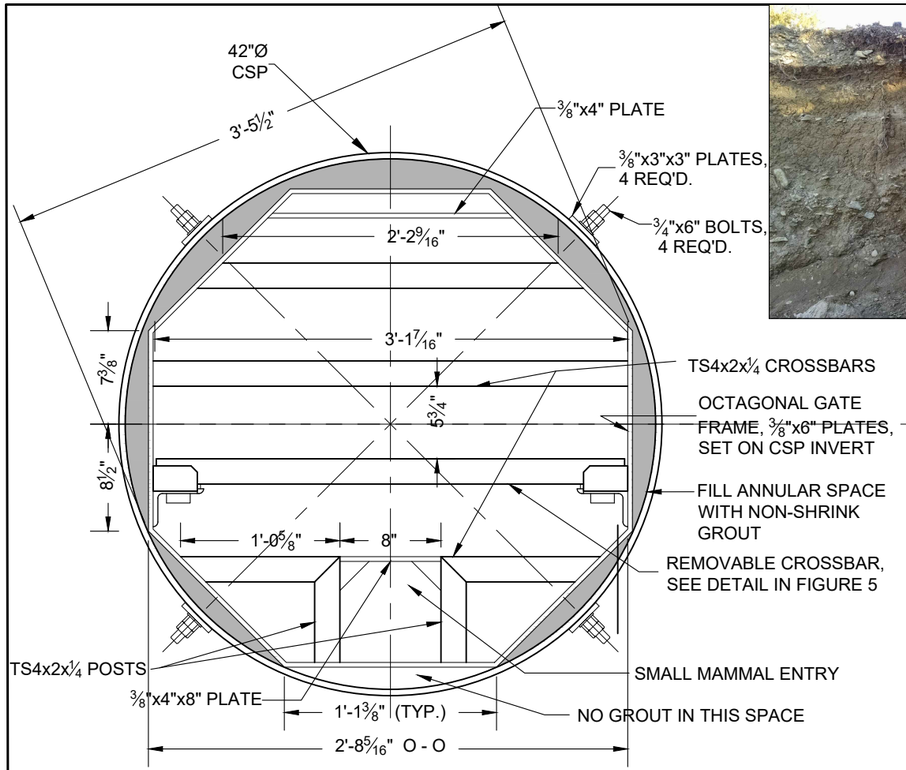
CAUTION – THIS PROJECT REQUIRES CONSTRUCTION WORK IN, AROUND, AND OVER HAZARDOUS AND UNPROTECTED MINE SHAFTS, STOPES, ADITS, AND OTHER OPENINGS WHICH MAY BE OPEN TO THE SURFACE OR HIDDEN FROM VIEW BY TRASH, DEBRIS, OR THIN AND UNSTABLE LAYERS OF SURFACE MATERIALS OR ROCK. THE CONSTRUCTOR SHALL BE RESPONSIBLE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

GENERAL NOTES:

1. THIS DRAWING SHOWS THE GENERAL SHAPES AND APPROXIMATE SIZES OF THE MINE OPENINGS AND THE CORRESPONDING LAYOUTS OF THE FRAME AND CORRUGATED STEEL PIPE (CSP). THE DRAWING SHALL BE USED AS A GUIDE FOR FIELD LAYOUT. DETERMINE THE ACTUAL LAYOUTS AND DIMENSIONS OF THE CLOSURES IN THE FIELD PRIOR TO FABRICATION. APPROXIMATE DIMENSIONS ARE:
   - **SHAFT G14:** 5.5' DIAMETER SHAFT IN INTERIOR OF FEATURE WIDENING TO 10.5' WIDE x 11' LONG PIT. FEATURE IS 35' DEEP FROM TOP OF PIT.
   - **SHAFT G23:** 4.5' WIDE BY 5' LONG SHAFT IN INTERIOR OF FEATURE WIDENING TO 10.5 WIDE BY 11' LONG PIT. FEATURE IS 14' DEEP FROM TOP OF PIT.
2. MINIMIZE THE AMOUNT OF ROCK AND OTHER DEBRIS THAT FALL INTO THE MINE OPENING DURING CONSTRUCTION
3. TRIM AND REMOVE VEGETATION AROUND MINE FEATURE AS REQUIRED TO CONSTRUCTION CLOSURE..
4. INSTALL THE INNER CSP AGAINST THE SHAFT'S COLLIVUM SIDE WALLS WITH POLYURETHANE FOAM (PUF). ALLOW PUF TO CURE AND COVER ALL PUF SURFACES COMPLETELY WITHIN ONE HOUR OF INSTALLATION TO PREVENT UV DEGRADATION.
5. AFTER INSTALLATION OF INNER CSP, EXCAVATE WASTE PILE TO UNDISTURBED COLLUVIUM AS DIRECTED BY THE AML PROGRAM. INSTALL 12" THICK LAYER OF COMPACTED DRAINAGE AGGREGATE ON A LEVEL BASE AROUND THE SHAFT.
6. INSTALL OUTER CSP ON TOP OF DRAINAGE AGGREGATE. FILL VOID SPACE BETWEEN CULVERTS WITH SCORIA.
7. BACKFILL OUTSIDE OF OUTER CSP USING UNCLASSIFIED FILL. COMPACT AS DIRECTED BY AML PROGRAM.
8. THOROUGHLY COMPACT ALL FILL UNDERNEATH THE CONCRETE COLLAR.
9. SLOPE THE FINISH GRADE TO DRAIN STORM WATER DOWNHILL AND AWAY FROM THE COLLAR.
10. PUT ¾" CHAMFER ON CONCRETE EDGE.
11. FOR DRAINAGE, DRILL TWO ¼" DIAMETER HOLES IN CSP JUST ABOVE PUF PLUG. TREAT CUT/DRILLED AREAS IN CMP WITH ZINC-RICH PAINT AS PER ASTM A780.

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

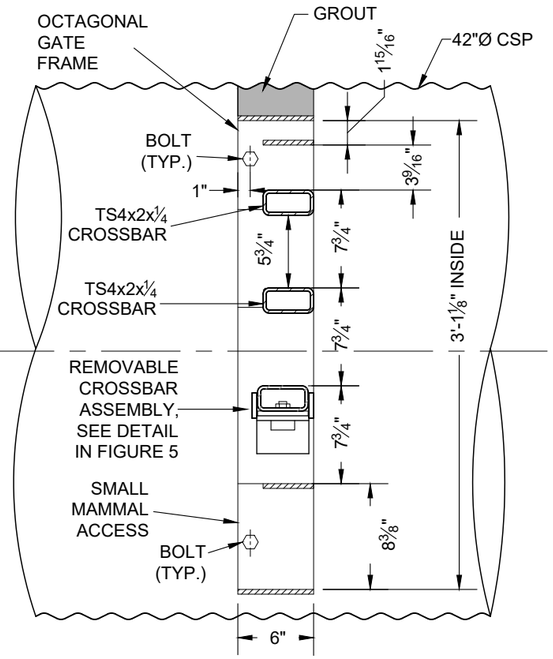
SCALE: AS SHOWN	SHAFTS G14 & G23	DRAWN BY: MJM
DATE: 8/4/2020		REVISED BY: –
SHAFT BAT GATE CLOSURE		
FILE: G14&G23.dwg	SAN PEDRO MINE SAFEGUARD PROJECT, PH. III	FIGURE: 2



BAT GATE ELEVATION

SCALE: 1" = 1'-0"

Feature G25 Adit

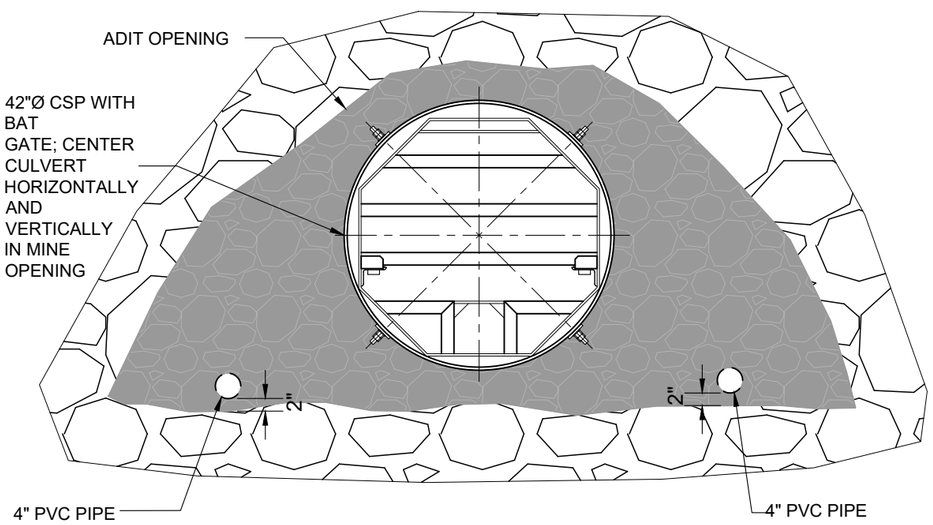


BAT GATE SECTION

SCALE: 1" = 1'-0"

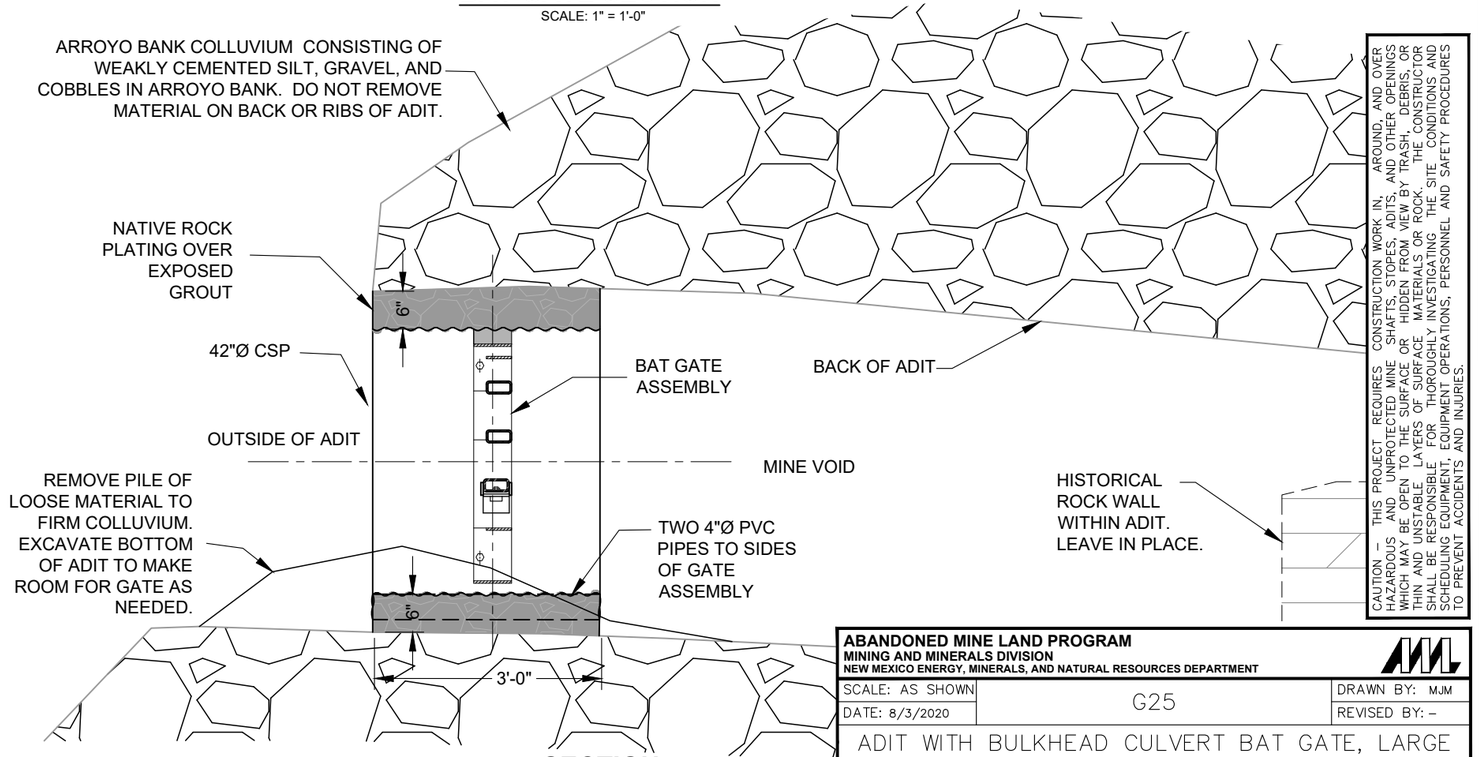
GENERAL NOTES:

1. THE SHAPE AND DIMENSIONS SHOWN FOR THE ADIT OPENING ARE APPROXIMATE, AND ARE SHOWN FOR FEATURE G25 SPECIFICALLY. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS BEFORE FABRICATION. APPROXIMATE DIMENSIONS OF THE ADIT ARE 10' WIDE X 4.5 ' TALL. CULVERT SHALL BE CENTERED IN OPENING.
2. THE ADIT IS LOCATED WITHIN AN ARROYO BANK. WEAKLY CEMENTED COLLUVIUM CONSISTING OF SILT, GRAVEL, AND COBBLES FORMS THE BACK AND RIBS OF THE ADIT. USE CAUTION TO NOT DISTURB THE BACK OR RIBS OF THE ADIT. DO NOT REMOVE ROCK FROM THE GROUND SURFACE ABOVE THE ADIT OR FROM THE BACK OR RIBS INSIDE OF THE ADIT UNLESS APPROVED BY THE PROJECT MANAGER OR PROJECT ENGINEER.
3. AN HISTORIC ROCK WALL IS LOCATED APPROXIMATELY 12' WITHIN THE ADIT. DO NOT DISTURB THIS FEATURE.
4. STEEL PLATES AND SHAPES FOR THE BAT GATE ASSEMBLY SHALL BE WEATHERING STEEL AS SPECIFIED. WELD ALL JOINTS. PLATES FOR BOLTS, BOLTS AND NUTS SHALL BE WEATHERING OR STAINLESS STEEL. DOUBLE-NUT ALL BOLTS. ROUND OR CHAMFER ALL EXPOSED EDGES AND CORNERS. CONSTRUCT THE BAT GATE TO ELIMINATE SURFACES ON WHICH MOISTURE OR DEBRIS CAN BE TRAPPED.
5. GROUTED ROCK BULKHEAD SHALL BE CONSTRUCTED FROM NON-SHRINK GROUT AND SOUND, DURABLE NATIVE ROCK FROM THE VICINITY OF THE FEATURE AS LARGE AS PRACTICABLE AND NO SMALLER THAN 6" IN LEAST DIMENSION. PLACE ROCK BULKHEAD AS SHOWN AND ACROSS FULL HEIGHT AND WIDTH OF ADIT OPENING. DO NOT BLOCK THE CSP OPENING.
6. GROUT SHALL BE QUIKRETE NON-SHRINK GROUT, OR APPROVED EQUIVALENT. GROUT SHALL BE MIXED TO FLOWABLE CONSISTENCY FOR FILLING IN OUTER GAPS OF BAT GATE, AND TO PLASTIC CONSISTENCY FOR CONSTRUCTION OF BULKHEAD. GROUT SHALL BE MIXED ACCORDING TO MANUFACTURER'S INSTRUCTIONS.
7. PAINT VISIBLE PORTIONS OF CSP (INSIDE AND OUTSIDE) WITH NATINA STAIN OR APPROVED EQUIVALENT FOR CAMOUFLAGE. COLOR SHOULD BLEND IN WITH THE BULKHEAD AS DIRECTED BY THE PROJECT MANAGER.
8. INSTALL SURVEY MARKER INTO GROUT OR ADJACENT COMPETENT ROCK AS DIRECTED BY THE PROJECT MANAGER.



FRONT VIEW

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



SECTION

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

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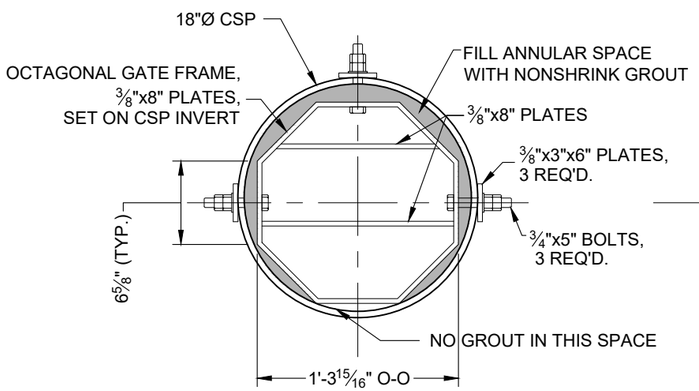
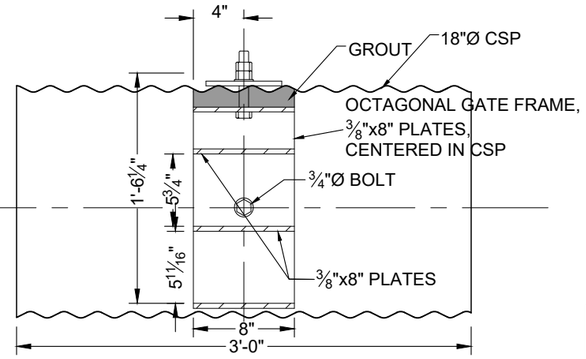
ABANDONED MINE LAND PROGRAM
MINING AND MINERALS DIVISION
NEW MEXICO ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT

SCALE: AS SHOWN	G25	DRAWN BY: MJM
DATE: 8/3/2020		REVISED BY: –
ADIT WITH BULKHEAD CULVERT BAT GATE, LARGE		
FILE: CulvBulkG25.dwg	SAN PEDRO MINE SAFEGUARD PROJECT, PH. III	FIGURE: 3



BAT GATE ELEVATION

SCALE: 1" = 1'-0"



BAT GATE SECTION

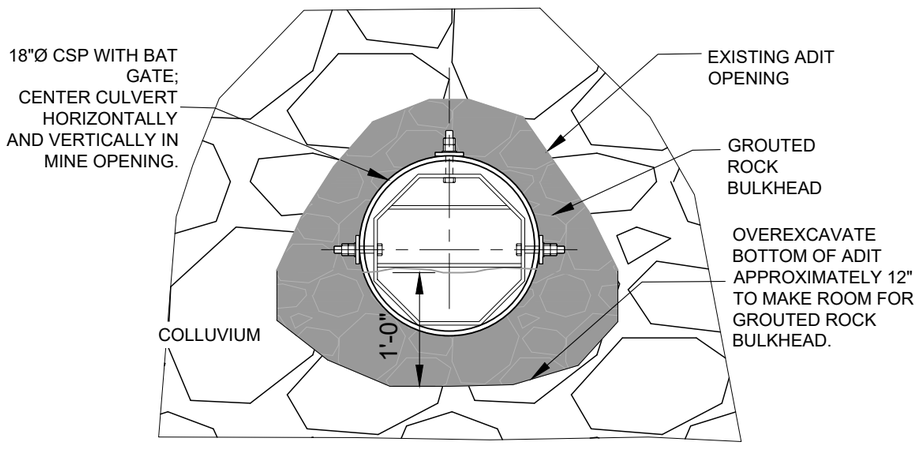
SCALE: 1" = 1'-0"

Feature G27 Adit

Feature G26 Adit

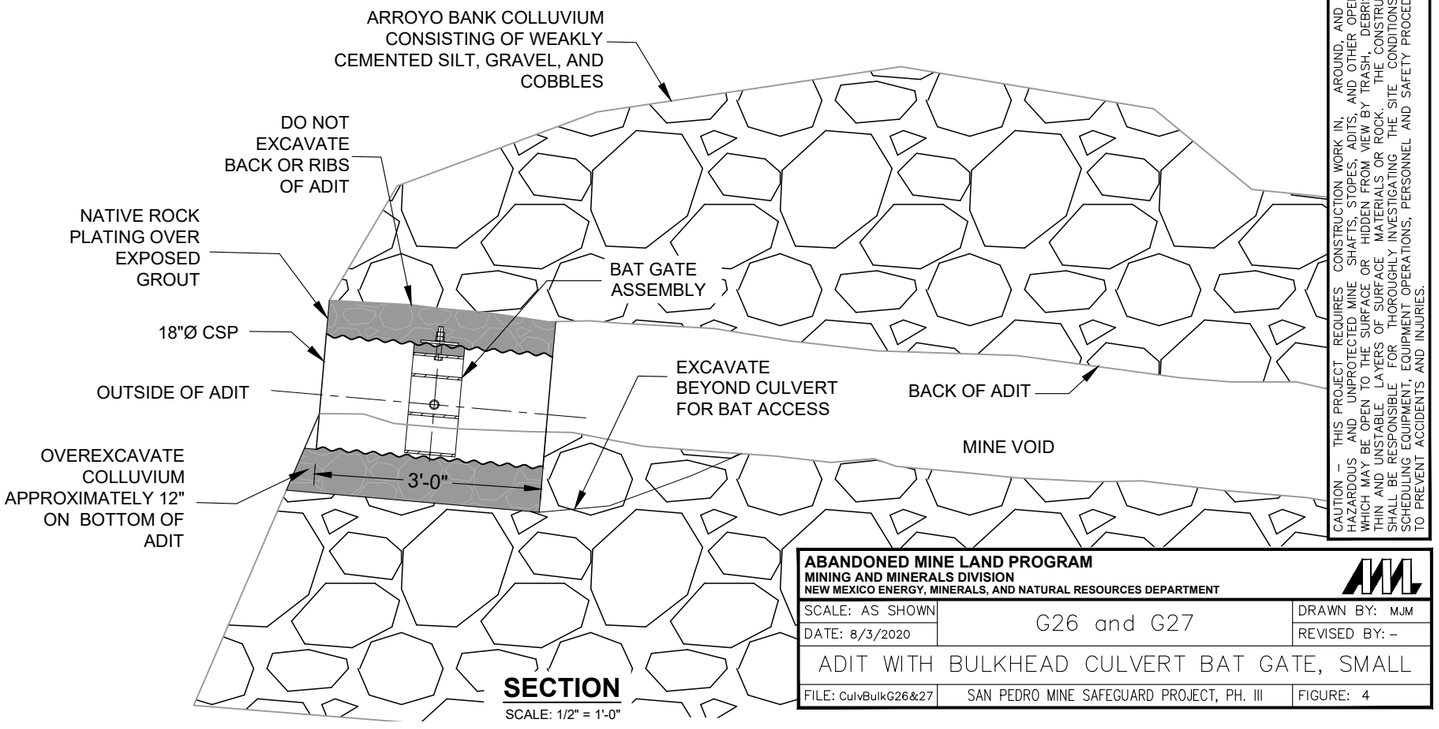
GENERAL NOTES:

1. THE SHAPE AND DIMENSIONS SHOWN FOR THE ADIT OPENING ARE APPROXIMATE, AND ARE SHOWN FOR FEATURE G26 SPECIFICALLY. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS BEFORE FABRICATION. APPROXIMATE DIMENSIONS OF THE ADITS G26 AND G27 ARE 3' WIDE X 1.5' TALL X 15-27' DEEP.
2. THE ADIT IS LOCATED WITHIN AN ARROYO BANK. WEAKLY CEMENTED COLLUVIUM CONSISTING OF SILT, GRAVEL, AND COBBLES FORMS THE BACK AND RIBS OF THE ADIT. USE CAUTION TO NOT DISTURB THE BACK OR RIBS OF THE ADIT. DO NOT REMOVE ROCK FROM THE GROUND SURFACE ABOVE THE ADIT OR FROM THE BACK OR RIBS INSIDE OF THE ADIT UNLESS APPROVED BY THE PROJECT MANAGER OR PROJECT ENGINEER.
3. OVEREXCAVATE BOTTOM OF ADIT APPROXIMATELY 12 INCHES TO MAKE ROOM FOR BULKHEAD. EXCAVATE BEYOND END OF CULVERT TO MAKE ROOM FOR BAT FLIGHT. CULVERT SHALL BE CENTERED IN EXCAVATED OPENING.
4. STEEL PLATES AND SHAPES FOR THE BAT GATE ASSEMBLY SHALL BE WEATHERING STEEL AS SPECIFIED. WELD ALL JOINTS. PLATES FOR BOLTS, BOLTS AND NUTS SHALL BE WEATHERING OR STAINLESS STEEL. DOUBLE-NUT ALL BOLTS. ROUND OR CHAMFER ALL EXPOSED EDGES AND CORNERS. CONSTRUCT THE BAT GATE TO ELIMINATE SURFACES ON WHICH MOISTURE OR DEBRIS CAN BE TRAPPED.
5. GROUTED ROCK BULKHEAD SHALL BE CONSTRUCTED FROM NON-SHRINK GROUT AND SOUND, DURABLE NATIVE ROCK FROM THE VICINITY OF THE FEATURE AS LARGE AS PRACTICABLE AND NO SMALLER THAN 6" IN LEAST DIMENSION; HOWEVER, ROCK APPROXIMATELY 2" IN SIZE MAY BE USED ON BULKHEAD ON TOP OF ADIT DUE TO SPACE RESTRICTIONS. PLACE ROCK BULKHEAD AS SHOWN AND ACROSS FULL HEIGHT AND WIDTH OF ADIT OPENING. DO NOT BLOCK THE CSP OPENING.
6. GROUT SHALL BE QUIKRETE NON-SHRINK GROUT, OR APPROVED EQUIVALENT. GROUT SHALL BE MIXED TO FLOWABLE CONSISTENCY FOR FILLING IN OUTER GAPS OF BAT GATE, AND TO PLASTIC CONSISTENCY FOR CONSTRUCTION OF BULKHEAD. GROUT SHALL BE MIXED ACCORDING TO MANUFACTURER'S INSTRUCTIONS.
7. PAINT VISIBLE PORTIONS OF CSP (INSIDE AND OUTSIDE) WITH NATINA STAIN OR APPROVED EQUIVALENT FOR CAMOUFLAGE. COLOR SHOULD BLEND IN WITH THE BULKHEAD AS DIRECTED BY THE PROJECT MANAGER.
8. INSTALL SURVEY MARKER INTO GROUT OR ADJACENT COMPETENT ROCK AS DIRECTED BY THE PROJECT MANAGER.



FRONT VIEW

SCALE: 3/4" = 1'-0"



SECTION

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

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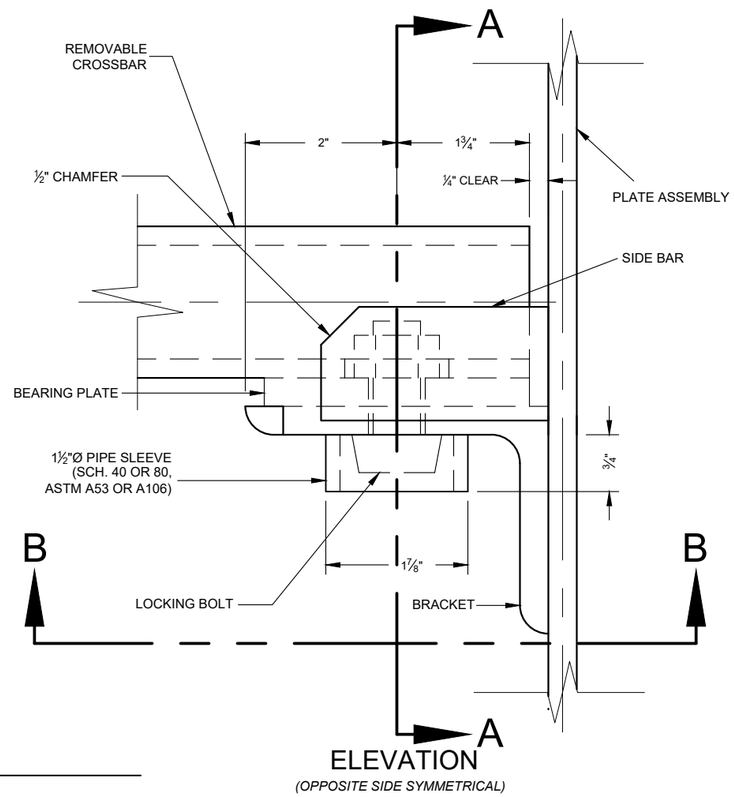
ABANDONED MINE LAND PROGRAM
MINING AND MINERALS DIVISION
NEW MEXICO ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT

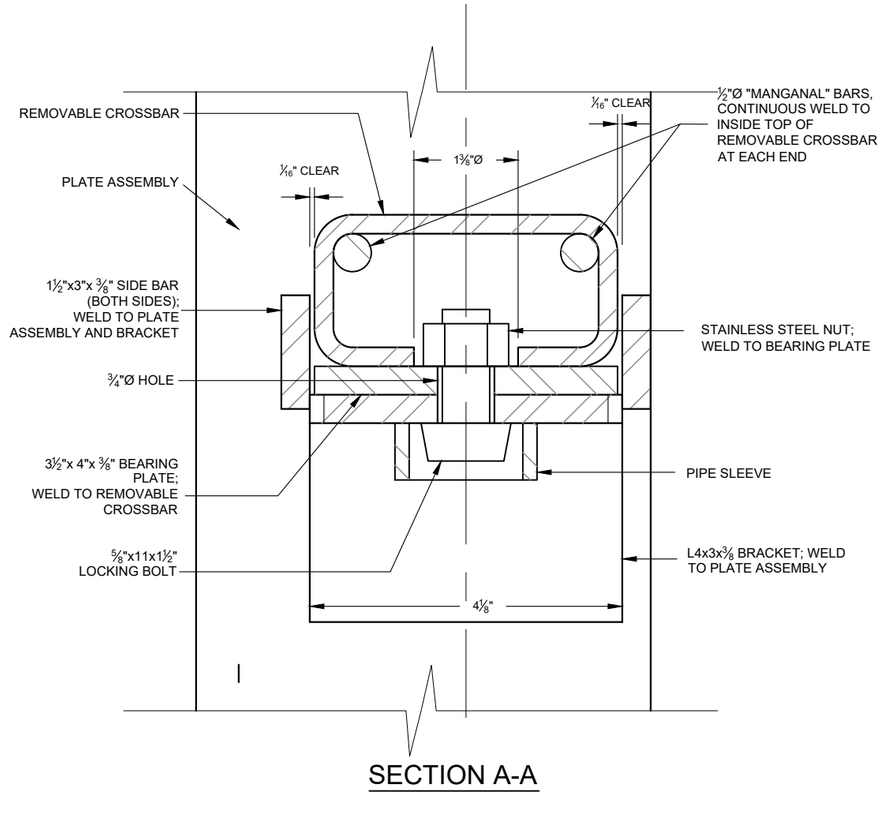
SCALE: AS SHOWN	G26 and G27	DRAWN BY: MJM
DATE: 8/3/2020		REVISED BY: –
ADIT WITH BULKHEAD CULVERT BAT GATE, SMALL		
FILE: CulvBulkG26&27	SAN PEDRO MINE SAFEGUARD PROJECT, PH. III	FIGURE: 4

REMOVABLE BAR DETAIL FOR CULVERT BAT GATE

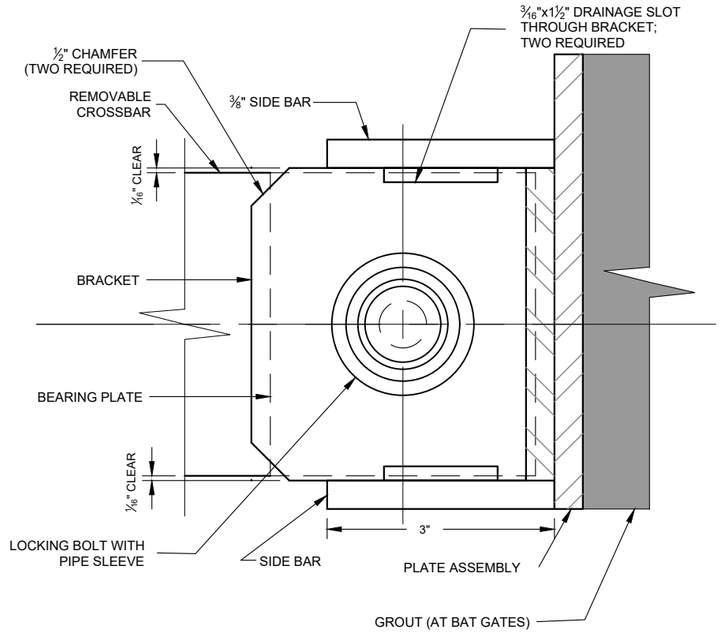


ELEVATION

(OPPOSITE SIDE SYMMETRICAL)



SECTION A-A



SECTION B-B

(BOTTOM VIEW)

GENERAL NOTES:

1. STEEL PLATES AND SHAPES SHALL BE WEATHERING STEEL. WELD ALL JOINTS, EXCEPT AS OTHERWISE INDICATED. CONSTRUCT THE LOCK TO ELIMINATE SURFACES ON WHICH MOISTURE OR DEBRIS CAN BE TRAPPED. JOINTS SHALL BE TIGHT SO THAT MOISTURE CANNOT ENTER BETWEEN THE PLIES OF MATERIAL. ROUND OR CHAMFER ALL EXPOSED SHARP CORNERS AND EDGES.

2. "MANGANAL" BARS SHALL BE HIGH MANGANESE STEEL WITH 12% TO 14% MANGANESE. EACH BAR SHALL EXTEND THE FULL LENGTH OF EACH REMOVABLE CROSSBAR.

3. ALONG THE BOTTOM OF EACH REMOVABLE CROSSBAR, DRILL ½" DIAMETER HOLES AT 1'-0" O.C.

4. THE CONTRACTOR SHALL PROVIDE THE NUTS (⅝"Ø - 11 UNC CLASS 2A THREAD). THE PROJECT MANAGER WILL SUPPLY THE LOCKING BOLTS.

5. COAT THE THREADS OF THE LOCKING BOLTS WITH LPS1 LUBRICANT AND INSTALL FIRMLY WITH 50 TO 75 POUNDS OF TORQUE.

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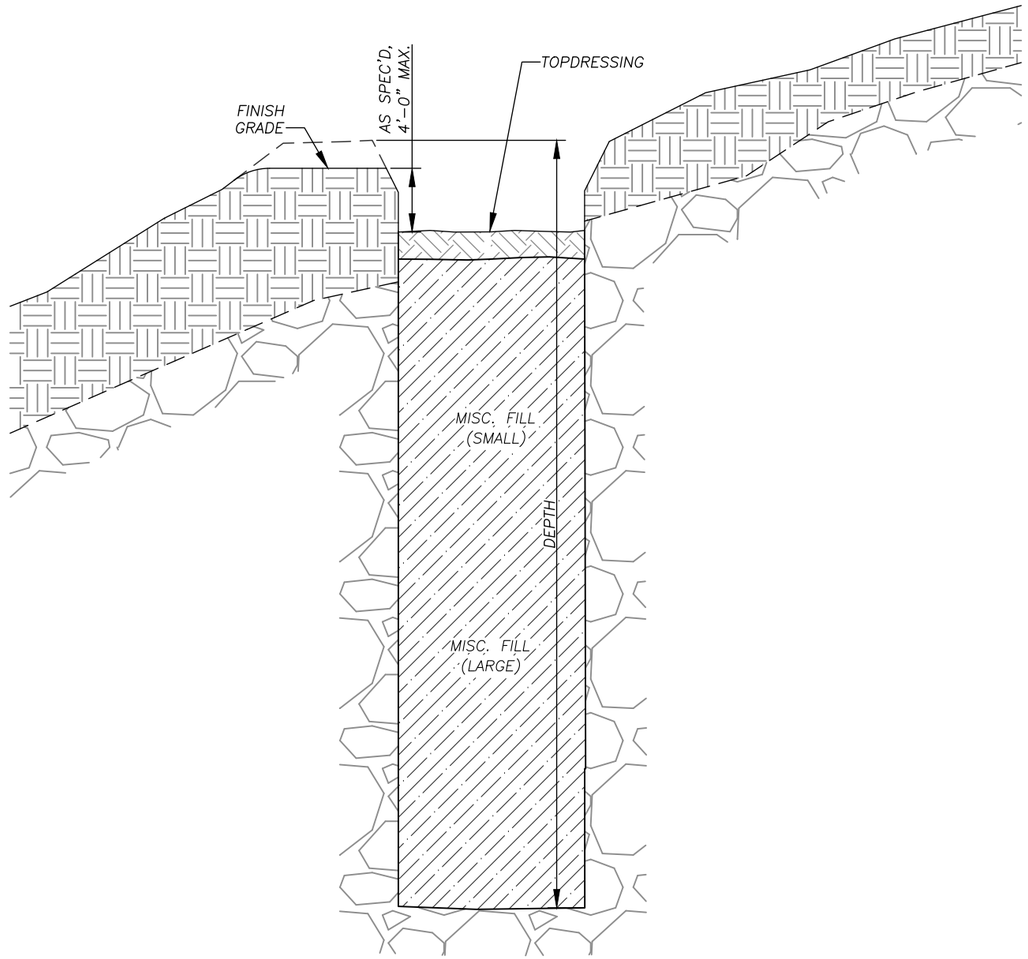
ABANDONED MINE LAND PROGRAM
MINING AND MINERALS DIVISION
NEW MEXICO ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT

SCALE: 6"=1'–0"	VARIOUS LOCATIONS	DRAWN BY: MWT
DATE: 7/2/2020		REVISED BY: MJM
REMOVABLE CROSSBAR LOCK DETAIL		
FILE: RemovCross.dwg	SAN PEDRO MINE SAFEGUARD PROJECT, PH. III	FIGURE: 5



DEPRESSED BACKFILL DESIGN
(TYPICAL SECTION)

GENERAL NOTES:

1. THE FILL AT AND ABOVE DRIFT LEVELS SHALL CONSIST OF THE COARSEST MATERIAL AVAILABLE. SMALLER MATERIAL MAY BE USED ELSEWHERE. SEE THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

2. AS PRACTICABLE, SHAPE THE REMAINING MINE WASTE MATERIAL TO RESEMBLE AN UNDISTURBED MINE WASTE PILE.

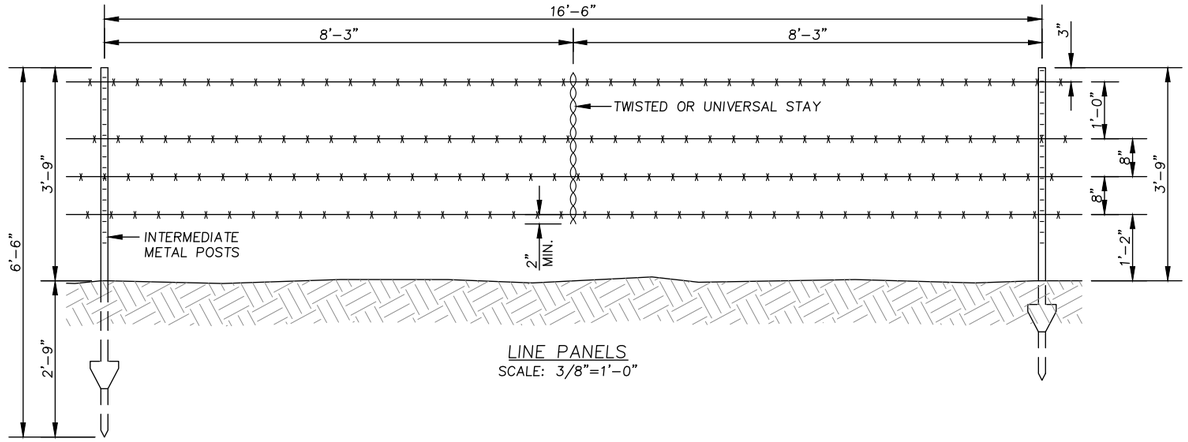
3. THE LENGTH AND WIDTH OF THE TOP OF THE MOUND SHALL BE EQUAL TO OR GREATER THAN THE INTERNAL SHAFT LENGTH AND WIDTH RESPECTIVELY.

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.

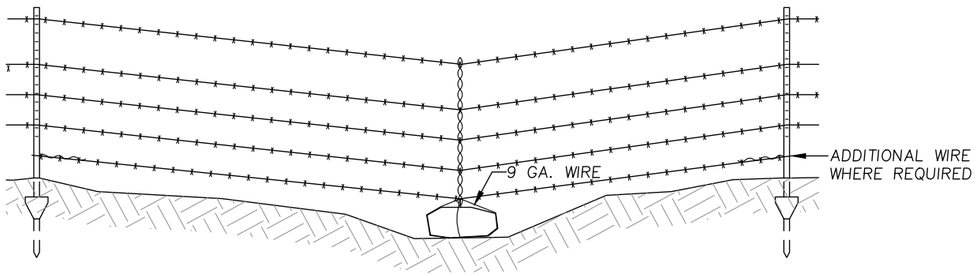
ABANDONED MINE LAND PROGRAM
MINING AND MINERALS DIVISION
NEW MEXICO ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT

SCALE: NOT TO SCALE	VARIOUS LOCATIONS	DRAWN BY: JAK
DATE: 8/3/2020		REVISED BY: MJM
SHAFT BACKFILL DESIGN		
FILE: ShaftBackfill.dwg	SAN PEDRO SAFEGUARDING PROJECT, PH. III	FIGURE: 6

TYPICAL



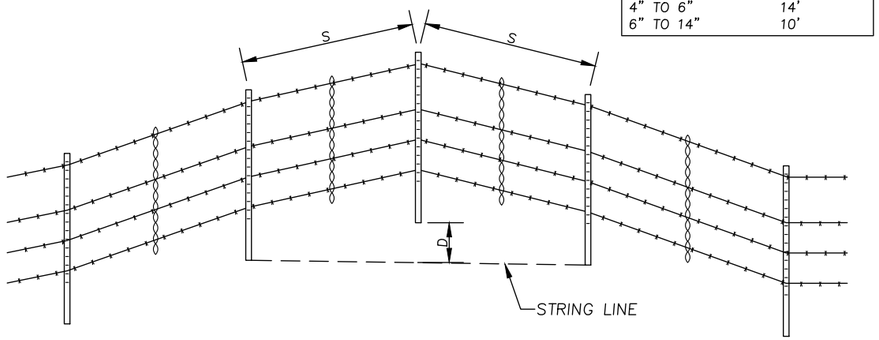
LINE PANELS
SCALE: 3/8"=1'–0"



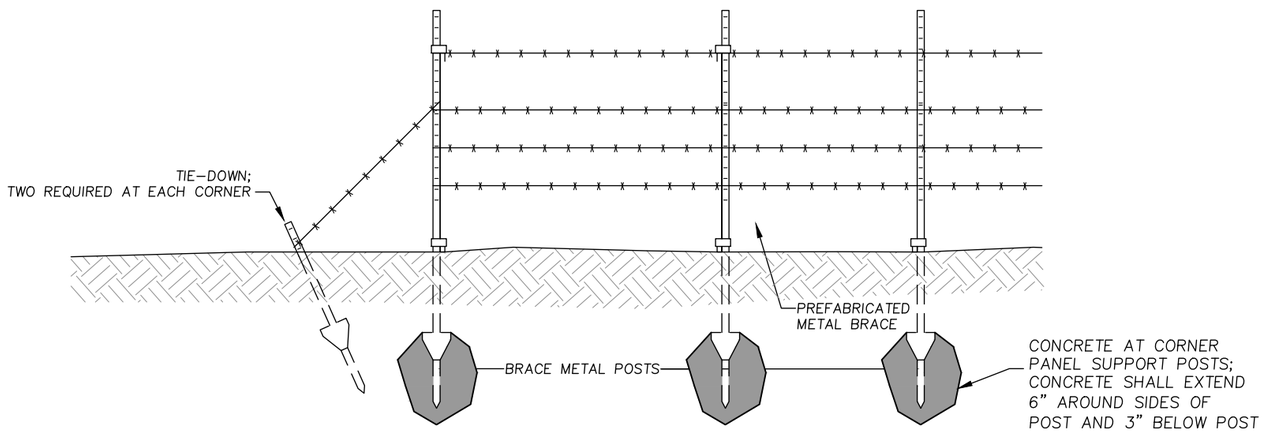
PANEL AT MINOR DEPRESSION
NOT TO SCALE

NOTE: ADD ADDITIONAL WIRE AND A ROCK DEADMAN (MINIMUM WEIGHT 50 LBS.) WHEN SPACE BETWEEN BOTTOM WIRE AND GROUND EXCEEDS 20 INCHES.

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



ISOMETRIC VIEW –– CONTOUR FENCING
NOT TO SCALE



END OR CORNER PANEL
SCALE: 3/8"=1'–0"

NOTES ON CONTOUR FENCING:

1. CONTOUR FENCING MAY BE USED WHERE A CURVED FENCE LINE IS DESIRABLE, WITH THE CONCURRENCE OF THE PROJECT MANAGER. PLACE THE WIRES ON THE OUTSIDE OF THE POSTS ON CURVE SO THAT, WHEN THE WIRE IS STRETCHED, IT WILL PULL AGAINST THE POSTS AND NOT AGAINST THE TIES.

2. SET POSTS FOR CONTOUR FENCING LEANING OUT A FEW INCHES; POSTS SHALL STRAIGHTEN TO A PLUMB POSITION WHEN WIRE IS STRETCHED. STRETCH TO MODERATE TENSION FOR A CURVED FENCE; THE SHARPER THE CURVE, THE LESS TENSION IS NEEDED.

3. USE CLAMPS PROVIDED BY THE MANUFACTURER TO ATTACH METAL POSTS TO PANELS AND BRACES. INSTALL BRACE PANELS ACCORDING TO MANUFACTURER'S INSTRUCTIONS. PREFABRICATED PANELS AND BRACES SHALL BE 'EASY FENCE' BY D–C INDUSTRIES OR EQUIVALENT.

4. RUN FENCE IN STRAIGHT LINES BETWEEN END AND CORNER POSTS, EXCEPT WHERE CONTOUR FENCING IS USED.

5. AVOID ACUTE ANGLES (LESS THAN 90°) AT FENCE CORNERS.

ABANDONED MINE LAND PROGRAM
MINING AND MINERALS DIVISION
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SCALE: AS SHOWN	VARIOUS LOCATIONS	DRAWN BY: JAK
DATE: 8/3/2020		REVISED BY: MJM
BARBED WIRE FENCE		
FILE: BarbedWire.dwg	SAN PEDRO MINE SAFEGUARD PROJECT, PH. III	FIGURE: 7