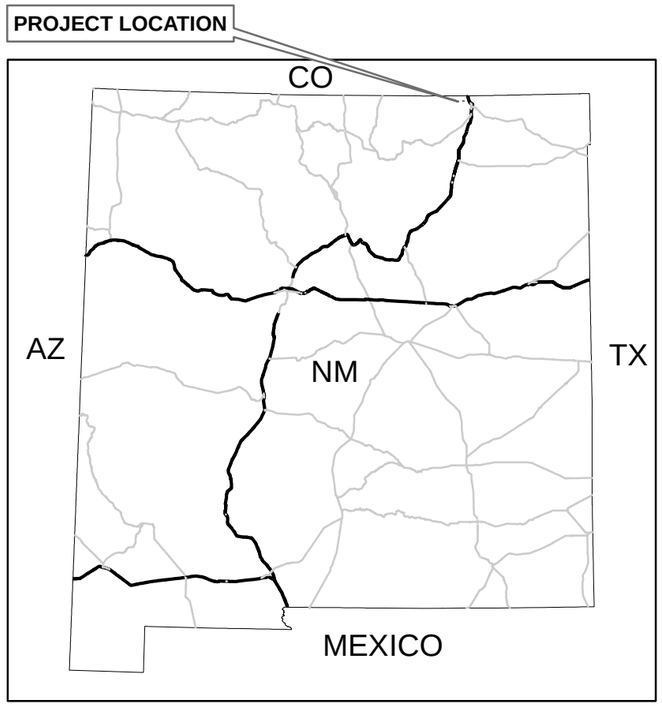
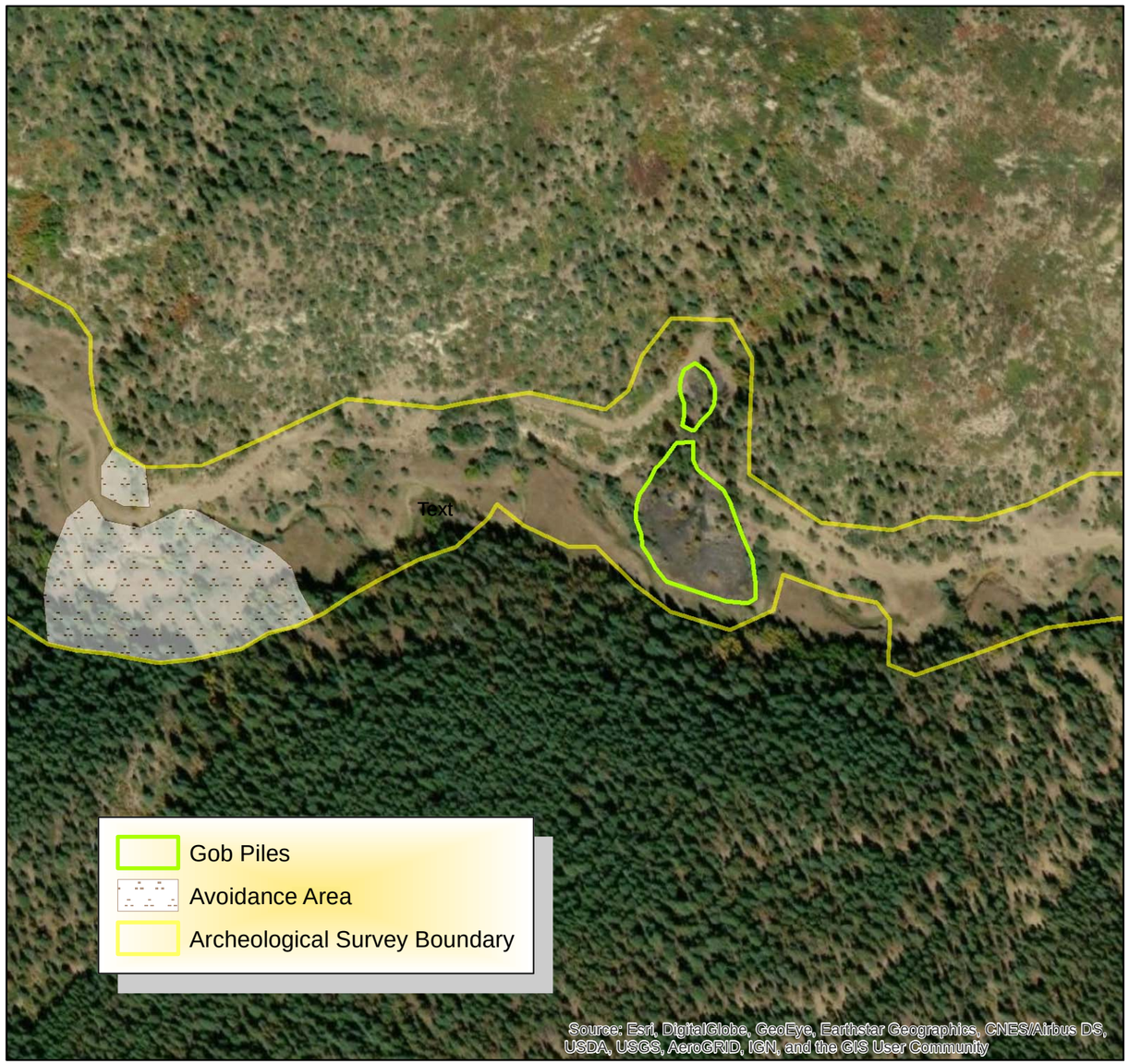
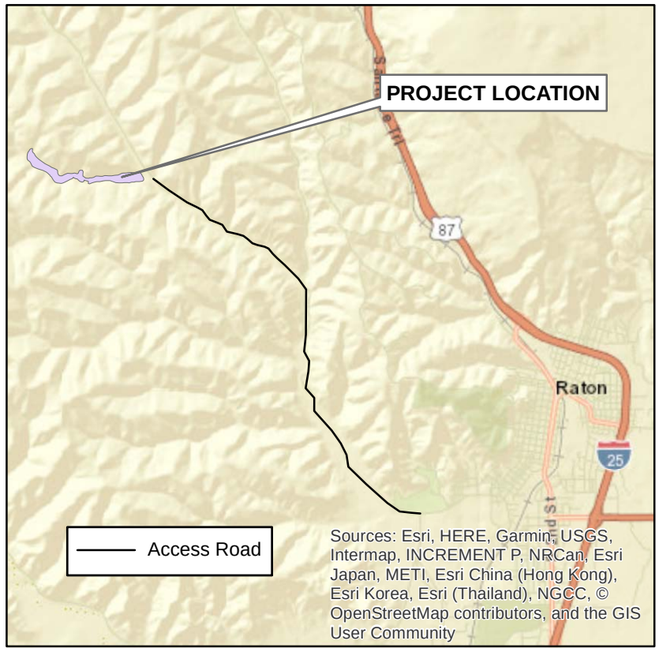
TIN PAN CANYON GOB RECLAMATION PROJECT

RATON, NEW MEXICO

PROJECT LOCATION OVERVIEW







INDEX OF FIGURES:

NEW MEXICO
ABANDONED MINE LAND PROGRAM
MINING & MINERALS DIVISION
ENERGY, MINERALS AND NATURAL RESOURCES DEPT.
SANTA FE, NEW MEXICO

PROJECT NO. EMNRD-MMD-2020-02

E 481500

E 482000

N 2163000

APPROX. EXISTING TREE LINE (TYP.)

AMENDED AND SEEDED AREA GOB OUTWASH AREA

SOUTH GOB PILE

NORTH GOB PILE

ROCK DROP STRUCTURE

APPROX. EXISTING TREE LINE (TYP.)

UNMAINTAINED DIRT ROAD

South Gob Pile

North Gob Pile

7148.3

7147.5

7198.5

7198.0

7140.9

7139.2

7137.9

7197.4

7198.2

7199.2

7196.3

7198.7

7195.4

7197.8

7199.3

7216.6

7213.8

7222.5

7220.7

CONSTRUCTION LEGEND:

- "ECWC" EROSION CONTROL WATTLE TERRACES W/COMPOST
- "SB" STRAW BALE TERRACES
- SEDIMENT LOG DAMS
- GOB PILE AMENDMENT INCORPORATION AREA
- GOB OUTWASH AMENDMENT INCORPORATION AREA
- TREE
- ROCK RUNDOWN

1) THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS BASED ON FIELD SURVEY DATA PROVIDED BY SURVEYING CONTROL, INC., ALBUQUERQUE, NEW MEXICO.

2) AERIAL PHOTOGRAPHY EXPOSED ON APRIL 23, 2002 BY PACIFIC WESTERN TECHNOLOGIES, LTD., ALBUQUERQUE, NEW MEXICO, UTILIZING A ZEISS RMK A 15/23 AERIAL MAPPING CAMERA WITH A CALIBRATED FOCAL LENGTH OF 153.188 mm.

3) CONTOUR/PLANIMETRIC BASE MAPPING AND RELATED DIGITAL FILES PRODUCED BY THOMAS R. MANN & ASSOCIATES, INC., ALBUQUERQUE, NEW MEXICO.

4) 500' GRID BASED ON FIELD SURVEY DATA FURNISHED BY SURVEYING CONTROL, INC., ALBUQUERQUE, NEW MEXICO. THE HORIZONTAL COORDINATES ARE NEW MEXICO STATE PLANE COORDINATES - EAST ZONE, NAD 83 (HARN), AND HAVE BEEN ADJUSTED TO THE USC&GS TRIANGULATION STATION 'R 20'. TO OBTAIN TRUE STATE PLANE GRID COORDINATES, MULTIPLY BY CF = 0.999573209. THE ELEVATIONS ARE REFERRED TO SEA LEVEL, NAVD 88, AND HAVE BEEN ADJUSTED TO 'R 20' AS WELL.

N

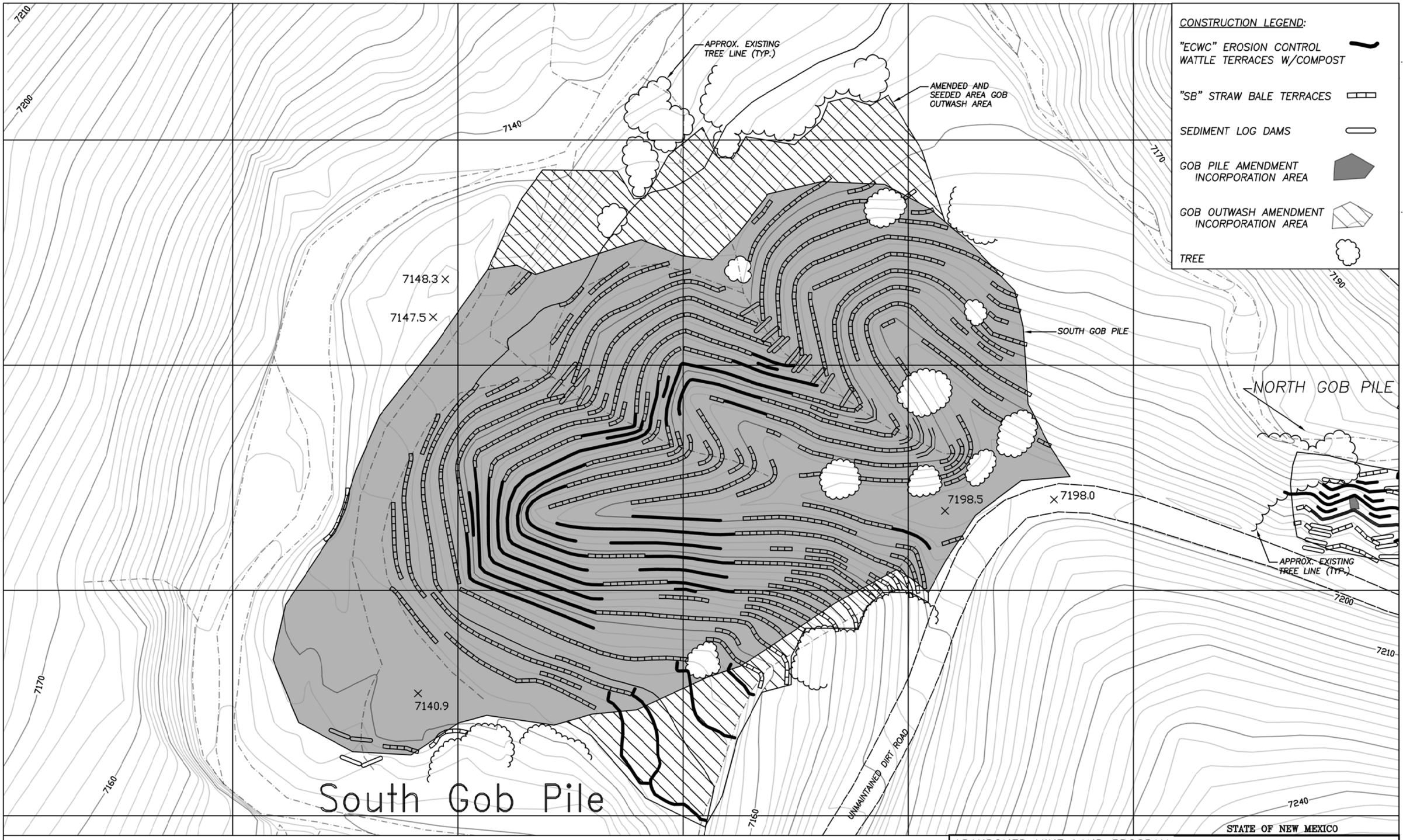
STATE OF NEW MEXICO

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

SCALE: NOT TO SCALE		DRAWN BY: JAK
DATE: 12/18/2019		REVISED BY: YM

TIN PAN CANYON PLAN VIEW

FILE: TIN PAN CANYON GOB RECLAMATION PROJECT | FIGURE: 2



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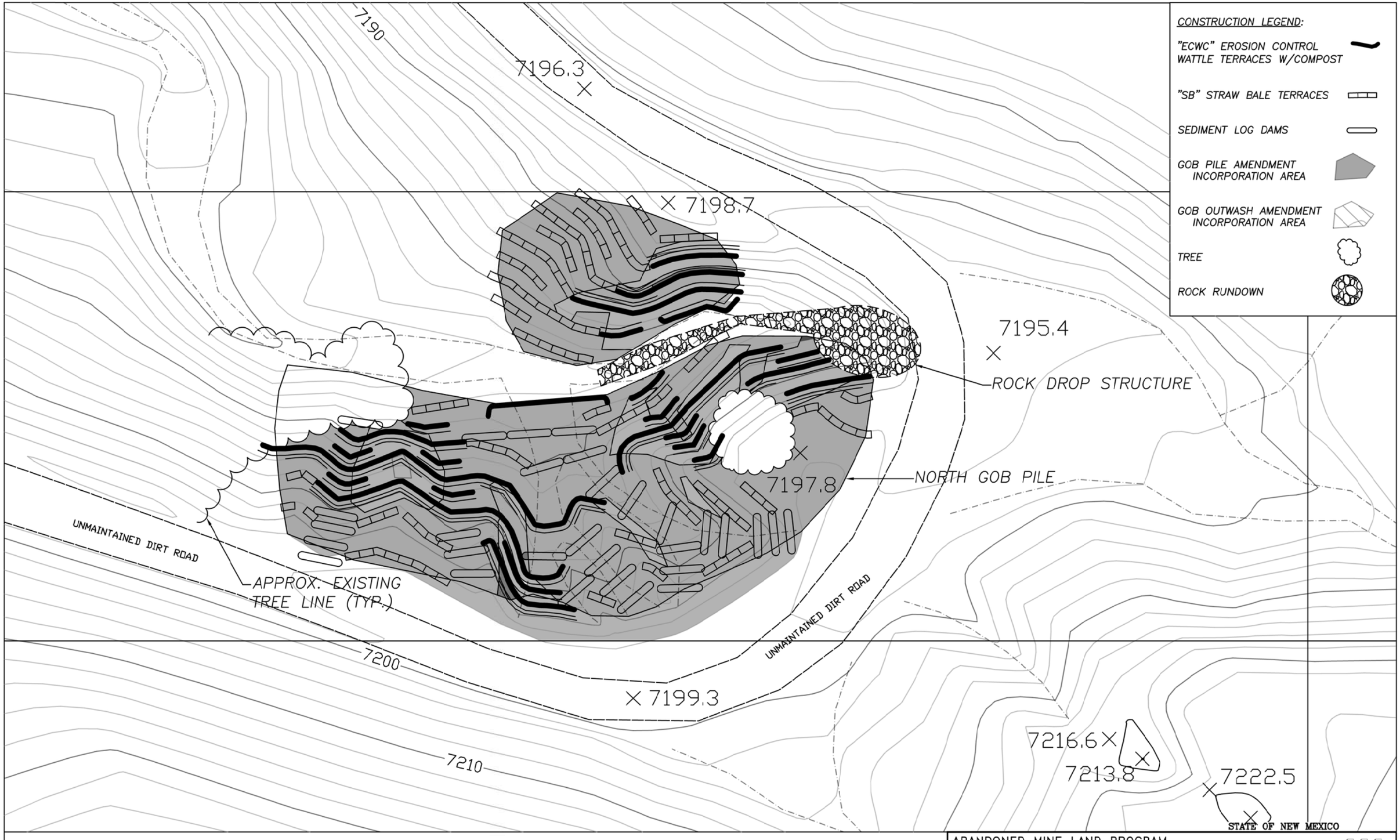
ABANDONED MINE LAND PROGRAM
MINING AND MINERALS DIVISION
NEW MEXICO ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT

SCALE: NOT TO SCALE		DRAWN BY: JAK
DATE: 12/18/2019		REVISED BY: YM

TIN PAN CANYON SOUTH GOB PILE PLAN VIEW

FILE: TIN PAN CANYON GOB RECLAMATION PROJECT | FIGURE: 3

STATE OF NEW MEXICO



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

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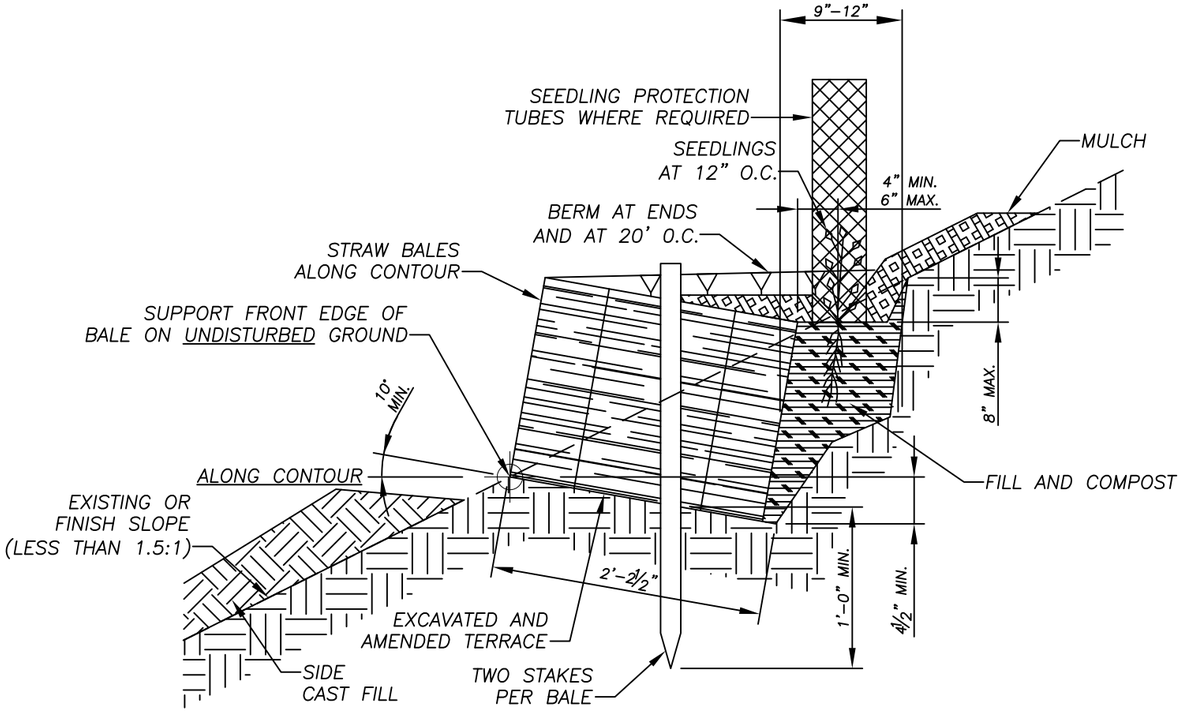
DATE: 12/18/2019		REVISED BY: YM

TIN PAN CANYON NORTH GOB PILE PLAN VIEW

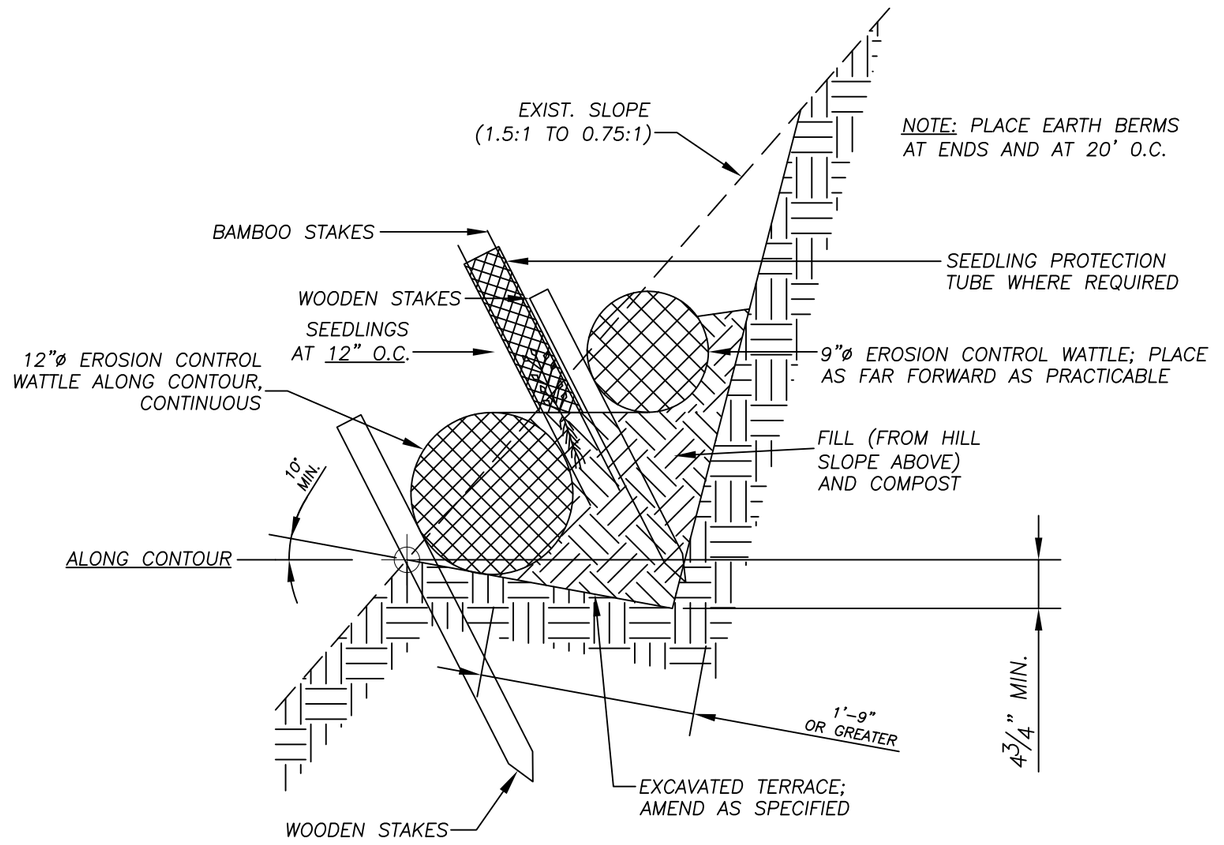
TIN PAN CANYON GOB RECLAMATION PROJECT | FIGURE: 4

TYPICAL



TYPICAL SECTION – TYPE "SB"
STRAW BALE TERRACE

(ON SLOPES LESS STEEP THAN 1.5:1)



TYPICAL SECTION – EROSION CONTROL WATTLE
TERRACE

STRAWBALE_COIRROLL.DWG PLOT SCALE 1 = 16

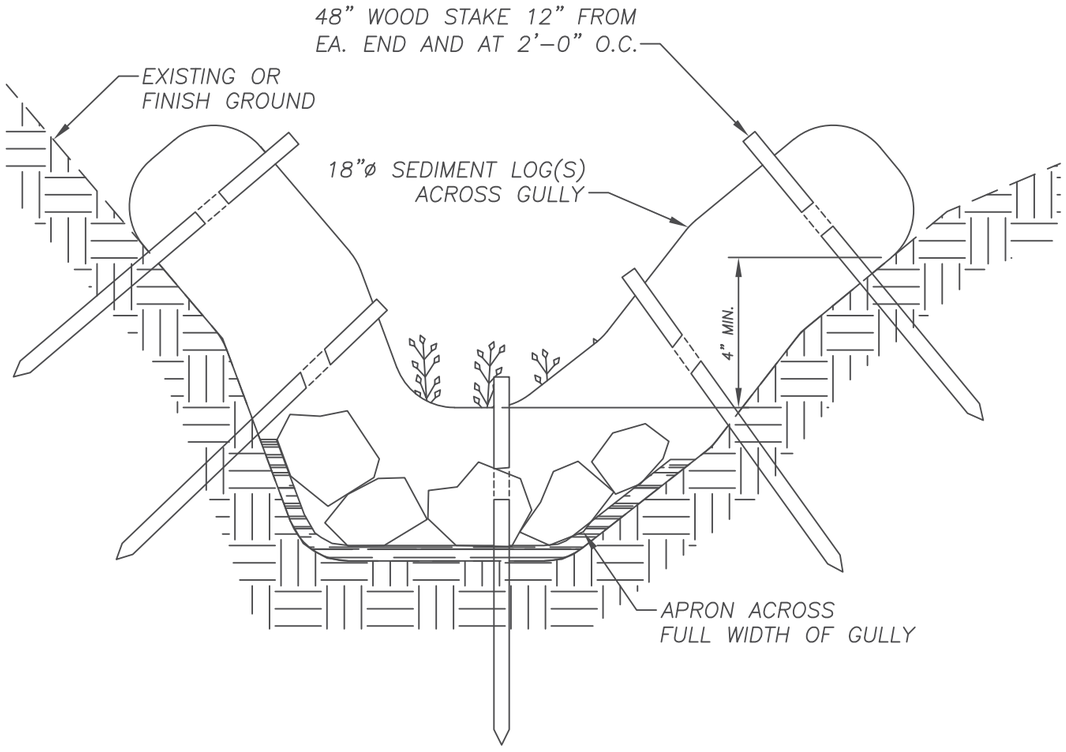
ABANDONED MINE LAND PROGRAM
MINING AND MINERALS DIVISION
NEW MEXICO ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT

SCALE: NOT TO SCALE		DRAWN BY: JAK
DATE: 12/11/2019		REVISED BY: YM

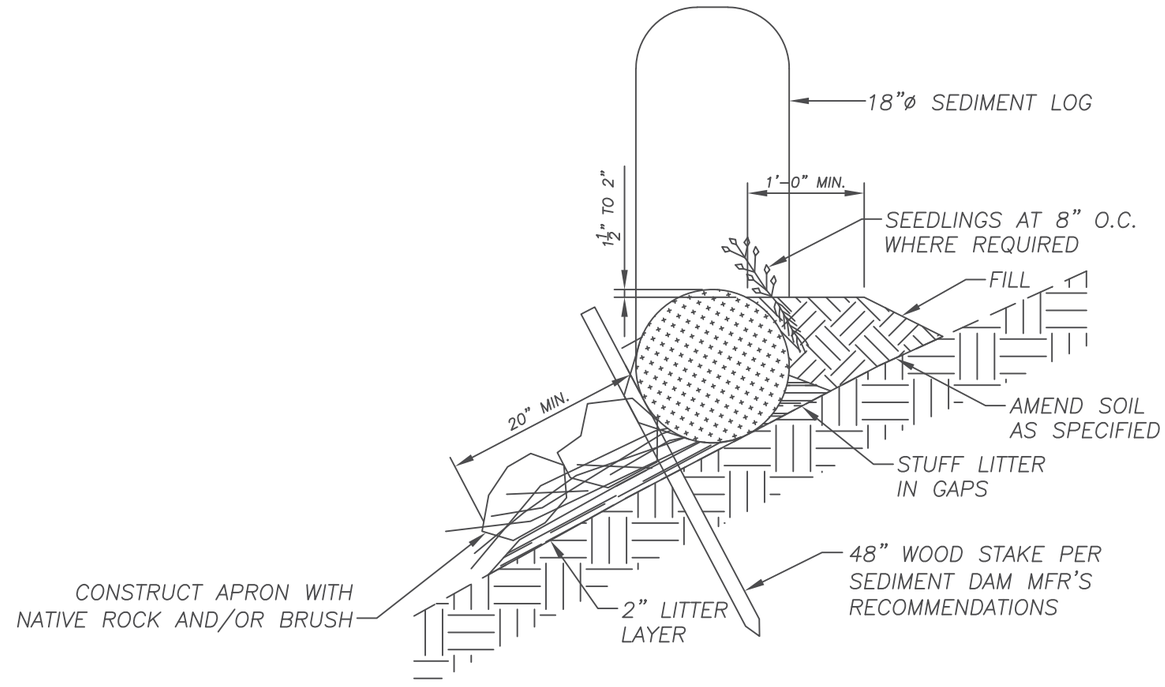
STRAW BALE AND EROSION CONTROL WATTLE TERRACES

TIN PAN CANYON GOB RECLAMATION PROJECT | FIGURE: 5

TYPICAL



ELEVATION



SECTION

TYPICAL DETAILS
SEDIMENT BARRIER DAMS

NOTE ON SEEDLING PLANTING AT SEDIMENT BARRIER DAMS:
SEEDLING PROTECTION TUBES AND MULCH ARE NOT REQUIRED AT SEDIMENT BARRIER DAMS. PLANT SEEDLINGS AT ALL SEDIMENT DAMS, EXCEPT FOR THOSE WHERE EXISTING CHANNEL VEGETATION OR OVERHANGING VEGETATION IS DENSE, AS THE PROJECT MANAGER DIRECTS.

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

SCALE: NOT TO SCALE		DRAWN BY: JAK
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SEDIMENT BARRIER DAM

TIN PAN CANYON GOB RECLAMATION PROJECT | FIGURE: 6

SED_DAM.DWG PLOT SCALE 1 = 32

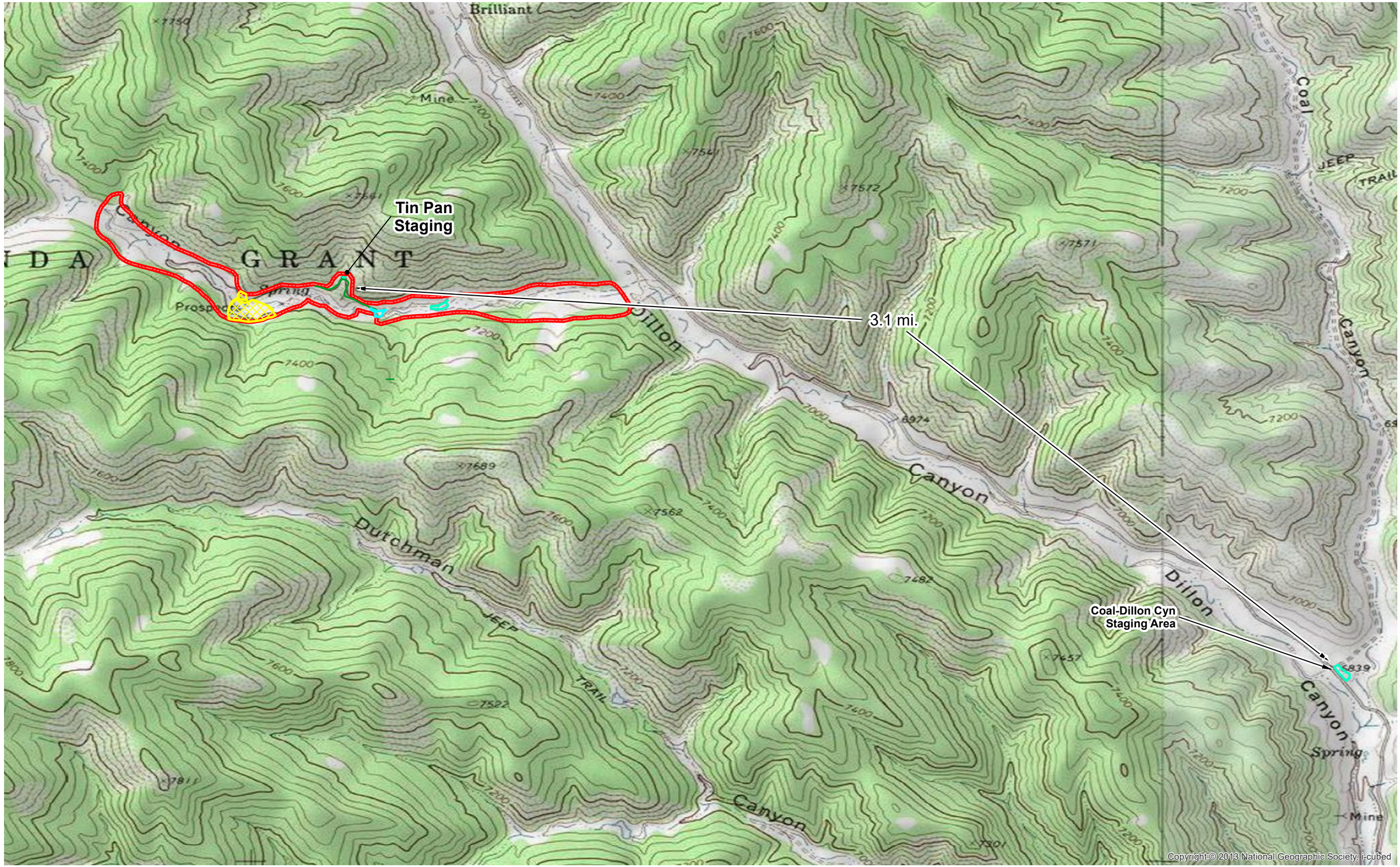
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Meters
0 125 250
0 460 920
Feet

N

Avoidance Area
Project Area
Staging Area

Tin Pan Canyon Gob Reclamation Project
EMNRD-MMD-2020-02
Figure 7: Avoidance and Staging Areas
New Mexico Abandoned Mine Land Program

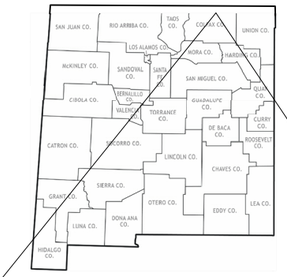


Kilometers
0 0.5 1
0 0.5 1
Miles

N

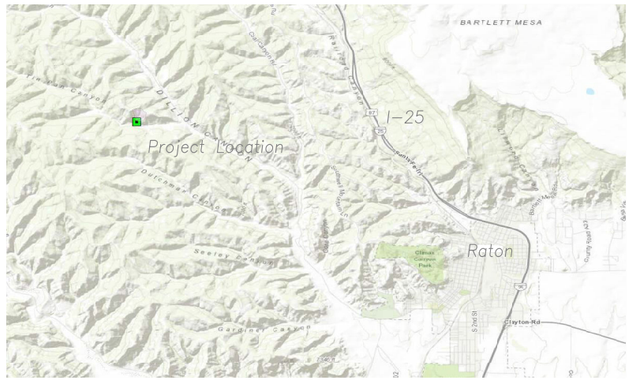
Avoidance Area | Project Area | Staging Area

Tin Pan Canyon Gob Reclamation Project
EMNRD-MD-2020-02
Figure 8: Rock Staging Area
New Mexico Abandoned Mine Land Program



NORTH

LOCATION MAP



Lat: 39.94° Long: 104.54°
Tin Pan Canyon, Colfax County, New Mexico

Project Manager: Joe Vinson
New Mexico Department of Energy, Minerals and Natural Resources
Abandoned Mines Land Program
1220 South St. Francis Drive
(505) 476-3414 (office)
(505) 690-8070 (cell)

Land Owner: Vermejo Park Ranch
40 Miles WEst Hwy 55 Raton, NM 87740

Tin Pan Canyon Headcut Stabilization Project

Prepared for:
New Mexico Department of Energy, Minerals and Resources
Abandoned Mines Land Program

Tin Pan Canyon Drainage
CONTRIBUTING WATERSHED AREA TO PROJECT SITE: 28 ACRES

Attachment A

INDEX OF DRAWINGS

Prepared By:
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Phone: (602) 774-2336

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DRAWN BY: D. HALLORAN & J. FLEISHMAN
DESIGNED BY: M. KEARLY

REV	DATE	BY	REVISION

COVER SHEET: Location and Index

Tin Pan Canyon
Headcut Stablization Project

MICHAEL D. KEARLY NEW MEXICO 23330 1/28/2019 PROFESSIONAL ENGINEER

DIAL 811 BEFORE YOU DIG

FILE NAME: Tin Pan
DATE: 01-28-2019
PROJECT NO: 18-306NM
SHEET: 1A of 7

PROJECT DESCRIPTION

The purpose of this project is to arrest a headcut that is advancing through coal gob mine waste and stabilize an associated ranch road drainage crossing on the Vermejo Ranch in Colfax County, NM. The included plans were developed with an understanding that the site is located in a remote location in an actively evolving setting. Additionally, rock materials that will be supplied by the ranch to form a rock-lined chute have not been specifically tested for gradation or size. Given the dynamics of the pre-existing condition and unknowns relative to availability and quality of materials, it is understood that some field adjustments may be necessary during construction but should only be made with prior approval of the Project Manager and the Engineer.

The Improvement Plan includes:

1. Stabilization of the headcut with rock lined chute.
2. Grade road to eliminate erosion and convey runoff into the rock chute.
3. Stabilize downstream channel with rock check dams.
4. Armor road crossing with rock pad to hold road grade.
5. Cleanup and smoothing of disturbed areas
6. Seeding and other revegetation work will be completed by the New Mexico Abandoned Mines program after site disturbance and prior to monsoon precipitation.

GENERAL NOTES

1. Site topographic survey data was collected by NCD in October 2018.
2. All existing conditions are to be verified in the field prior to construction. If differences in the site have occurred in the time between the intitial survey and construction, the engineer shall be consulted for any necessary modifications to the design and plans.
3. No representation is made as to the existence or nonexistence of any utilities, public or private. Absence of utilities on these drawings IS NOT assurance that no utilities are present. The existence, location and depth of any utility must be determined by the contractor prior to any excavation. Call New Mexico Blue Stake before you dig to be sure – dial 811.
4. No construction shall begin until all necessary permits, easements, and funding authorizations are obtained.
5. Construction activities will be conducted in a manner consistent with all safety regulations, and other permitting required by New Mexico Mining and Minerals Division, and others.
6. Installation shall be constructed to the lines and grades as shown on the drawings or as staked in the field by the ENGINEER or authorized representative, recognizing there is variation in nature.

CONSTRUCTION SPECIFICATIONS

The specifications included herein are provided as a partial list of construction standards and requirements for this project. As a companion to this plan set, a full compilation of applicable technical specifications is provided. The person(s) performing the work shall familiarize themselves with those specifications and contact the engineer prior to starting construction with any questions or for clarification.

EARTHWORK

The earthwork activities shall consist of chute preperation cut and fill, hill slope rehabilitation, chute base construction and spreading of any removed sediment on the slopes adjacent to the chute.

Excavation

Excavation shall be limited to spillway construction and layback of vertical banks at the end of the chute as shown on the drawings and as will be staked in the field. Some excavation will also be required to prepare overly steep existing slopes prior to placing new fill and prior to rock placement. Disturbance of existing native vegetation shall be minimized to the greatest extent possible during excavation.

Excavated material shall be placed in the specified chute subgrade and compacted and hillslope locations as shown on the drawings. All finished surfaces shall be generally smooth and pleasing in appearance and blend into surrounding terrain.

Earthfill

Materials: All fill materials shall be obtained from the required excavations or approved borrow sources. Fill materials shall not contain sod, brush, roots, perishable or frozen materials.

Placement: The placement of fill materials shall follow these guidelines:

- Any vertical bank greater than 30" in height shall be sloped or stepped before placement of fill material.
- The placing and spreading of fill material shall be started at the lowest point and the fill brought up and compacted to obtain a density similar to the surrounding bank material.
- Material, when placed, shall contain sufficient moisture so that a sample taken in the hand and squeezed shall remain intact when released.
- For general fill placement, the placing and spreading of fill material shall be started at the lowest point and the fill brought up in horizontal layers not to exceed: 12"–16" inches of loose fill for compaction with excavator attached compaction wheel. Construction equipment shall be operated over the areas of each layer of fill to insure that the required compaction is obtained.
- Fill shall not be placed on frozen soil, snow or ice or upon vegetation that has not been removed.
- NRCS Specification CS–AZ–23 addresses large scale fill placement and compaction equipment. Smaller equipment and modified methods, as applicable to the equipment used, may be substituted with the approval of the ENGINEER or his representative.
- The ENGINEER or his representative shall be present during all embankment related fill placement. Notify the ENGINEER a minimum of 3 working days prior to such activities.
- All finished surfaces shall be generally smooth and pleasing in appearance and blend into surrounding terrain.
- NRCS Specification CS–AZ–23 references testing requirements. The ENGINEER or his representative will be present during chute subgrade related fill placement to ensure proper compaction procedures are followed and relative densities are achieved. However, no specific compaction testing is anticipated to be required. Compaction of the subgrade materails shall be in lifts compatible with the means and methods of compaction used and acheive densities that approximate those of the adjacent undisturbed native earth.

BMPs & REVEGETATION

It is understood that New Mexico Abandoned Mine Land Program will reseed and revegetate all areas where ground work has occured with this project as part of a second project that will rehabilitate and revegetate the adjacent coal gob pile. No reseeding is required by the contractor of this project. It is also understood that any required BMPs and Stormwater Pollution Prevention will also be installed/provided as part of that project.

ROCK LINED CHUTES

The headcut stabilization work shall consist of headcut excavation and bank sloping; installing loose rock including placement of geotextile filter fabric. See the included plan sheets and associated details.

- The site shall be excavated and backfilled to the grades shown on drawings. Excavation shall be limited to the headcut remediation area as shown on the drawings.
- All fill material shall be compacted to the approximate density of surrounding undisturbed areas.
- Additional spoils shall be spread outside the channel and sloped in such a way as to direct flows toward rock-lined chute.
- Disturbance of existing native vegetation shall be minimized.
- Non-woven geotextile shall be placed behind/below the rock. Fabric shall meet the requirements of NRCS MS–AZ–592 Geotextile material specifications for Class III nonwoven geotextiles. The geotextile shall be joined by overlapping a minimum of 18 inches and secured against the underlying foundation material. Securing pins shall be installed as necessary to prevent undue slippage or movement of the geotextile. Recommend 3/16-inch steel bars pointed on one end and fabricated with a head to retain a steel washer. (1.5-inch diameter). Pin length shall be not less than 18 inches. U-shaped pins are acceptable.
- Rock will be provided by the Vermejo Ranch and delivered to the site by the ranch and staged in the open area on the upstream side of the road, above the rock chute construction area.
- Rock should be angular, dense, sound and free from cracks, seams, or other defects conducive to accelerated weathering. The least dimension of an individual rock should not be less than one-half the greatest dimension. Rock source shall be approved by the ENGINEER or authorized representative and have a bulk specific gravity of not less that 2.5 per ASTM C127.
- Rock placement shall begin at the bottom of prepared slope and progress upslope. Rock shall not be dropped more than 3 feet onto geotextile. Some hand sorting may be required during placement to ensure contact between stones.

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DRAWN BY: D. HALLORAN & J. FLEISHMAN

DESIGNED BY: M. KEARLY

REV	DATE	BY	REVISION

Project Specifications

Tin Pan Canyon Headcut Stablization Project

MICHAEL D. KEARLY NEW MEXICO 23330 1/28/2019 PROFESSIONAL ENGINEER

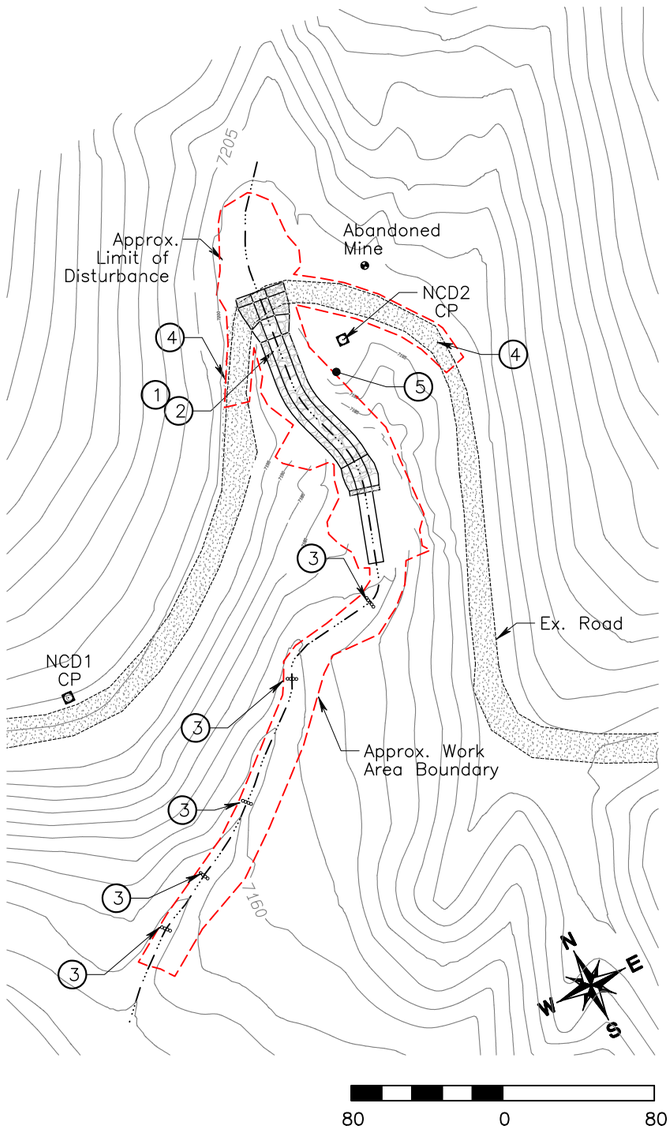
DIAL 811 BEFORE YOU DIG

FILE NAME: Tin Pan

DATE: 01-28-2019

PROJECT NO: 18-306NM

PROJECT OVERVIEW–PLAN VIEW



*See page 6 for control coordinate locations and survey information.

CONSTRUCTION NOTES

(1)	1 ls	Prepare chute subgrade for rock placement. Estimated earthwork: 140 cy cut and 120 cy of compacted fill as per Sheets 4, 5 and 6.
(2)	158 cy	Install rock for chute. Rock to be D50=12 to 18 inch rock and placed 24 inches thick. See rock gradation on this sheet. Underlay all rock with non–woven geotextile fabric meeting NRCS Spec MS–AZ–592. Estimated quantity of 313 sy of geotextile (not including anchor trenches and overlap) See also, details on Sheets 4, 5 and 6.
(3)	5 ea	Install rock sills using 21 – 36 to 48 inch feature rocks and 27 – 18 to 24 inch footer rocks and 16 cy of cut. Place rock as per included details, Sheet 7.
(4)	25 cy	Grade approximately 140 lf of road as per the typical cross section details, Sheets 4 and 6. Ensure road is graded to collect and direct any water from the adjacenet uphill areas to the rock chute. Estimated earthwork to be included: 21 cy compacted fill per Section B, Sheet 6.
(5)	NPI	Protect existing pine tree in place.

QUANTITY/MATERIAL NOTES

- All rock is to be supplied by the land owner and will be delivered to the site and staged in the level area on the upstream side of the road crossing prior to project construction.
- Rock chute construction is paid per cubic yard of placement of supplied rock to create the drainage chute. Unit cost shall include supplying and installing geotextile underlayment and supplying and placing a 4 inch thick layer of sand bedding to protect the fabric below rock and to allow for light equipment traffic. Sand may be concrete sand, cinder sand or 3/8" minus sand bedding per NMDOT Spec. 206.2.3.
- Preparation of the rock chute to subgrade is paid as a separate lump sum item for the necessary excavation and fill placement to achieve subgrade elevations.
- Earthwork has been designed to approximately balance for the project as a whole. Tie slopes are designed to utilize all available excavation spoils within the project site. Fill tie slopes may be altered between 3:1 and 5:1 as necessary to use or conserve material.
- No accounting for shrinkage or swell has been included in the earthwork volumes. Volumes are for in place native or compacted fill volumes.
- Rock sills are paid per each sill placed and shall include all excavation shaping and placement of rocks per the details provided herein. Transport of the rock from the staging area to the individual rock sill locations shall also be included as well as obliteration of any temporary access routes/tracks that are created during construction.
- Access route to the rock check dams shall be from the bottom of the rock chute to the check dams adjacent to the existing channel and shall minimize disturbance into and out of the downstream areas.
- Temporary access routes shall be obliterated at the end of construction.
- Obliteration of tracks/access routes shall include scarification of the tracks to a 4 inch depth and smoothing as necessary to restore pre–existing grades, to disguise (as best as possible) the disturbance and to prepare the ground for reseeding.
- Minor grading of the existing ranch road to the limits indicated herein will be necessary and per the typical cross section provided, Sheet 6. This road grading will be paid per cubic yard of fill placement to achieve the cross section indicated.Excess spoil is expected to be available from the excavation related work on the rest of the project.
- Contractor shall utilize the corridor of the chute construction for access up and down the slope. No disturbance outside of the limits of the chute construction, rock sills (and related temporary access) and road regrading will be allowed.
- Rock staging in the flat area on the upstream side of the road will be on a bed of sand or wood chips supplied by the land owner. As the contractor removes the rocks for placement in the chute, care shall be taken not to disturb the soils beneath the wood chip layer due to archeological concerns.

ESTIMATED MATERIALS SUMMARY

CHUTE ROCK (24" THICK):	158 cy
CHECK DAM ROCK (36"–48"):	21 ea
CHECK DAM FOOTER ROCKS (18"–24"):	27 ea
NON–WOVEN GEOTEXTILE FABRIC:	313 sy
SAND BEDDING [a]:	12 cy
WOOD CHIPS [b]:	15 cy

[a] Sand per quantity/material notes above. Bedding need only cover bottom and not the sloped sides.

[b] Wood chips will be supplied by the Vermejo Ranch and shall be spread to a 4 inch depth in the rock staging area prior to recieving rock.

TARGET ROCK GRADATION

Size	Dia. (in.)
D100	18–24
D85	16–22
D50	12–18
D10	4–15

Some variability of the rock gradation may be expected depending upon what is available and delivered from Vermejo Ranch. Contractor shall ensure that rock placement is in such a manner that voids between the individual rocks are minimized and generally less than 3 inches across in any direction.

PLAN LEGEND:

- Cut
- Fill
- Riprap / Rock Lined Chute
- Existing Road
- Road Grading
- Rock Check Dam
- Limit of Disturbance
- Flow Line
- Major Contour– Existing
- Minor Contour– Existing
- Cut Boundry
- Fill Boundry

Detail Locator

Detail Identifier → B / 6 (Sheet Reference)

A — Detail Identifier Detail on Same Sheet

EARTHWORK SUMMARY

CHUTE

CUT: 140 cy
FILL: 120 cy

ROCK CHECK DAMS

CUT: 16 cy
FILL: 0 cy

ROAD GRADING

CUT: 0 cy
FILL: 25 cy

* "Waste" material will be used to spread as topsoil on finished rock chute to fill voids and provide a medium for grass seed to germinate. Any available topsoil should be set aside and reserved for this purpose. Any remaining waste may be spread adjacent to the chute and smoothed at a 2:1 to 5:1 slope up from edge of rock. See details, Sht 5.

* Earthwork calculations do not include shrinkage due to compaction or swell factor if rock were encountered during excavation.

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DRAWN BY: D. HALLORAN & J. FLEISHMAN

DESIGNED/CHECKED BY: M. KEARLY

REV	DATE	BY	REVISION

Project Overview, Sheet Index, & Quantities

Tin Pan Canyon Headcut Stablization Project

MICHAEL D. KEARLY NEW MEXICO 23330 1/28/2019 PROFESSIONAL ENGINEER

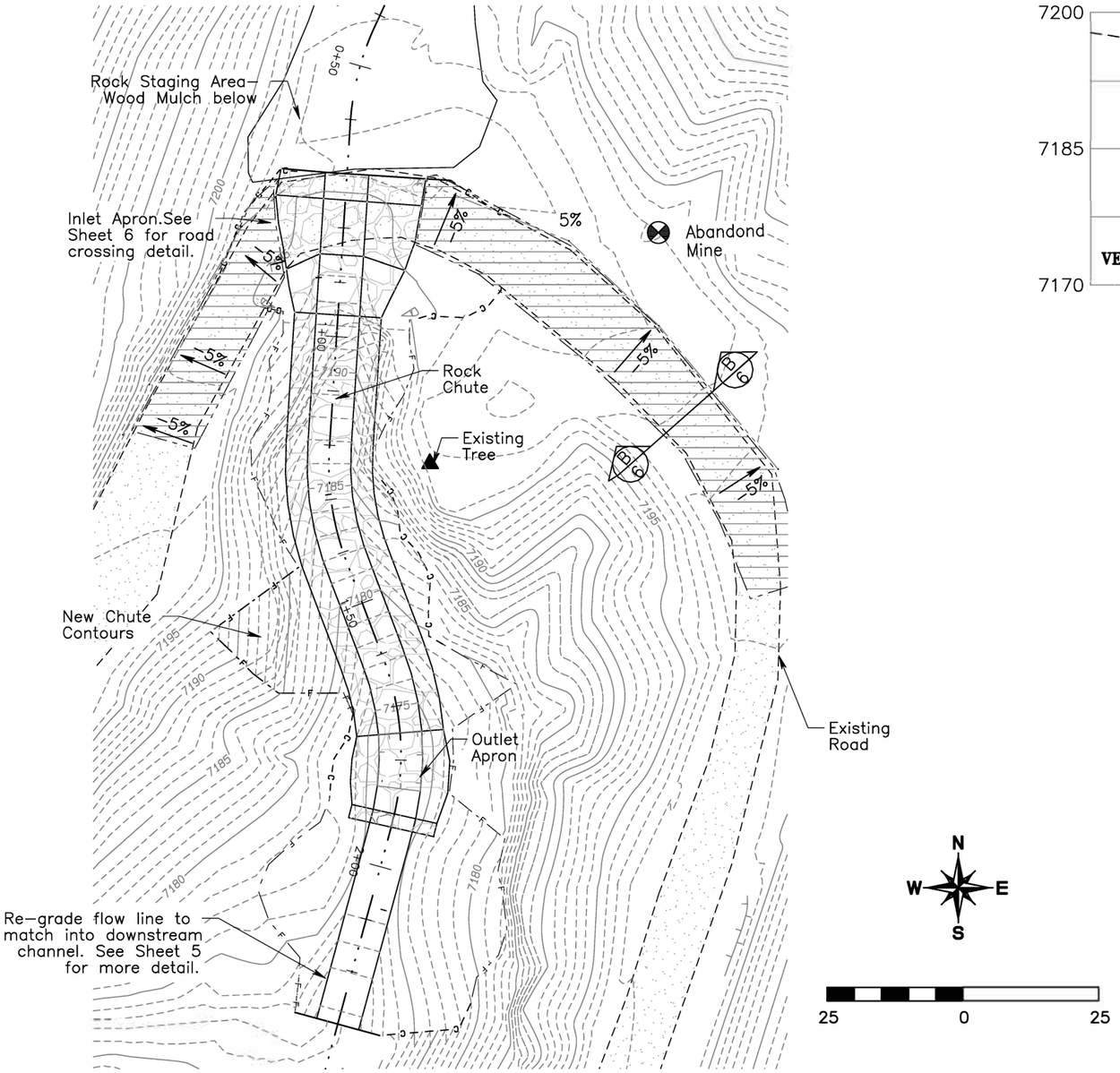
DIAL 811 BEFORE YOU DIG

FILE NAME: Tin Pan

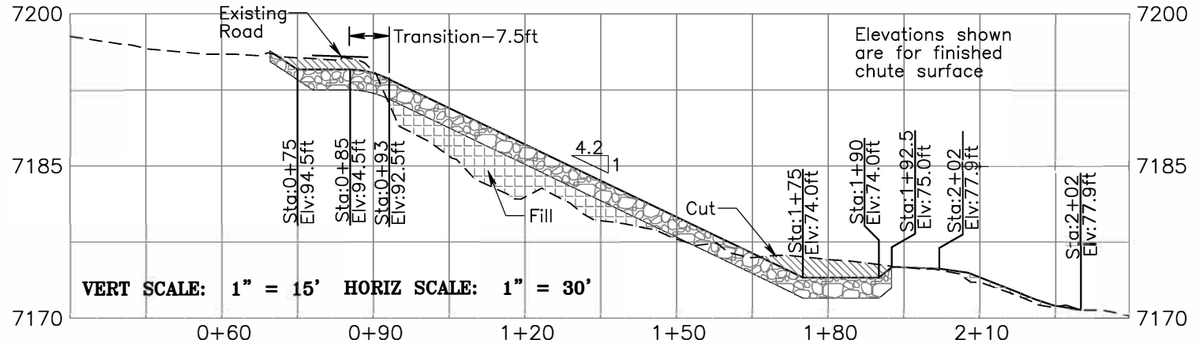
DATE: 01–28–2019

PROJECT NO: 18–306NM

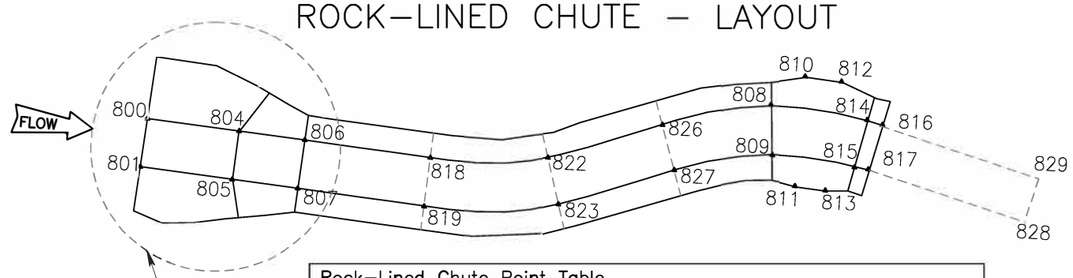
ROCK–LINED CHUTE – PLAN



ROCK–LINED CHUTE – ℄ PROFILE



ROCK–LINED CHUTE – LAYOUT



See Sheet 6 for more detailed road layout.

Rock–Lined Chute Point Table

Pt #	Northing	Easting	Elevation	Descriptor
800	2162702.1	481525.0	7196.2	Start Inlet
801	2162702.6	481517.0	7196.2	Start Inlet
804	2162687.1	481524.0	7194.5	Start Transition
805	2162687.6	481516.1	7194.5	Start Transition
806	2162676.2	481523.3	7192.5	Start 2:1 Side Slopes
807	2162676.7	481515.4	7192.5	Start 2:1 Side Slopes
808	2162599.8	481534.8	7174.0	Begin Outlet Apron
809	2162599.2	481526.8	7174.0	Begin Outlet Apron
810	2162594.3	481539.9	7176.5	Outlet apron top rock
811	2162594.7	481521.9	7176.5	Outlet apron top rock
812	2162588.5	481539.5	7176.5	Outlet apron top rock
813	2162590.6	481521.6	7176.5	Outlet apron top rock
814	2162583.7	481533.6	7174.0	End Outlet Apron
815	2162585.5	481525.8	7174.0	End Outlet Apron
816	2162581.3	481533.0	7175.0	End/Top Chute Anchor
817	2162583.0	481525.2	7175.0	End/Top Chute Anchor
818	2162657.2	481522.1	7188.0	Rock Chute
819	2162657.7	481514.1	7188.0	Rock Chute
822	2162638.5	481522.8	7183.3	Rock Chute
823	2162636.7	481515.0	7183.3	Rock Chute
826	2162620.1	481529.3	7178.6	Rock Chute
827	2162617.3	481521.9	7178.6	Rock Chute
828	2162547.0	481515.4	7175.0	End Grading
829	2162544.9	481523.2	7175.0	End Grading

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Rock Chute Overview & Layout

Tin Pan Canyon Headcut Stablization Project

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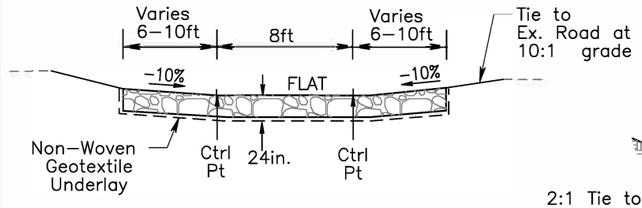
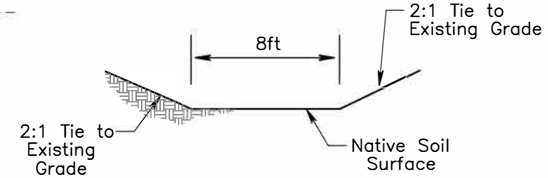
DATE: 01–28–2019

PROJECT NO: 18–306NM

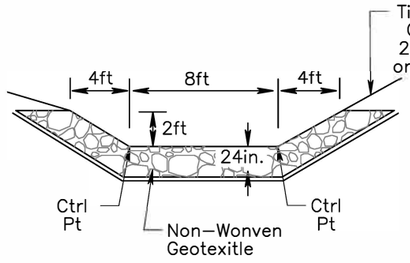
SHEET: 4A of 7



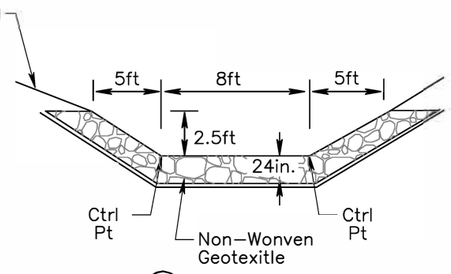
(A) Inlet Apron/Road Section



(D) Re–Graded Downstream Channel



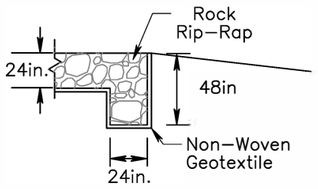
(B) Chute



(C) Outlet Apron

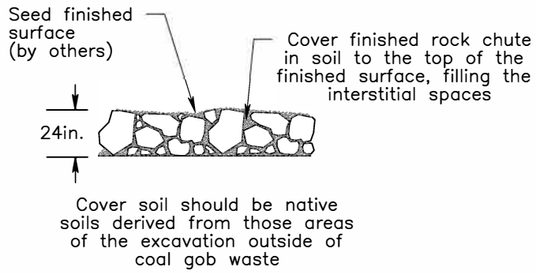
TYPICAL CROSS SECTIONS

(NOT TO SCALE)



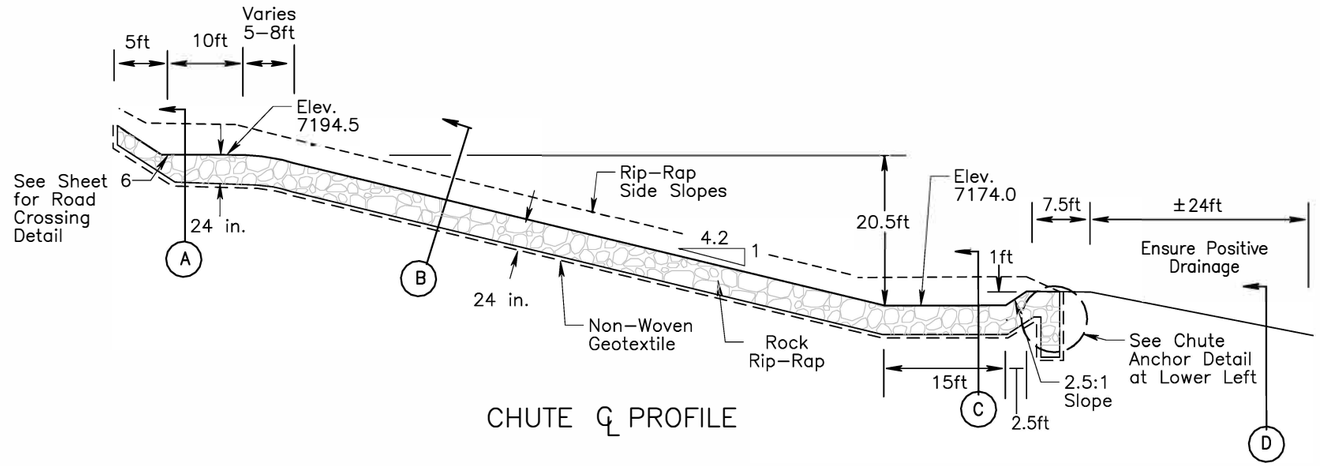
CHUTE ANCHOR DETAIL

(NOT TO SCALE)

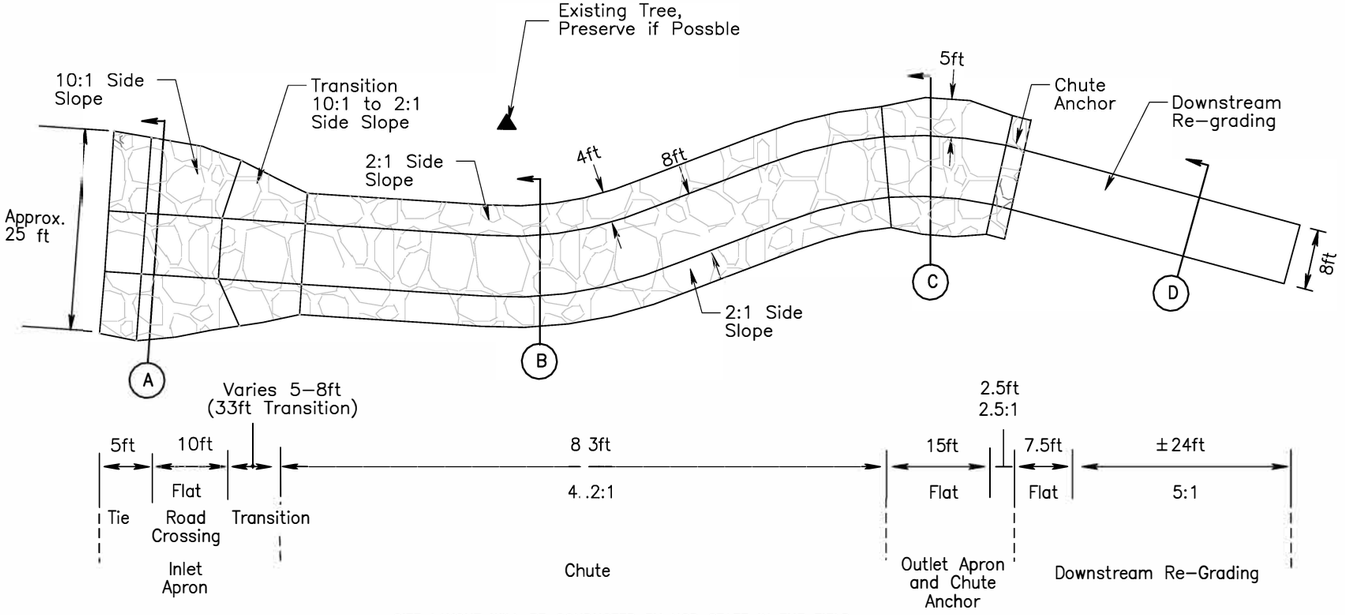


CHUTE FINISH DETAIL

(NOT TO SCALE)



CHUTE ℄ PROFILE



SITE LAYOUT WILL BE CONDUCTED BY NCD STAFF IN THE FIELD.

ROCK–LINED CHUTE
PLAN & PROFILE VIEW

(NOT TO SCALE)

Natural Channel Design, Inc

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DESIGNED BY: M. KEARLY

REV	DATE	BY	REVISION

DETAIL: Rock Chute

Tin Pan Canyon Headcut Stablization Project

MICHAEL D. KEARLY
NEW MEXICO
23330
1/28/2019
PROFESSIONAL ENGINEER

DIAL 811 BEFORE YOU DIG

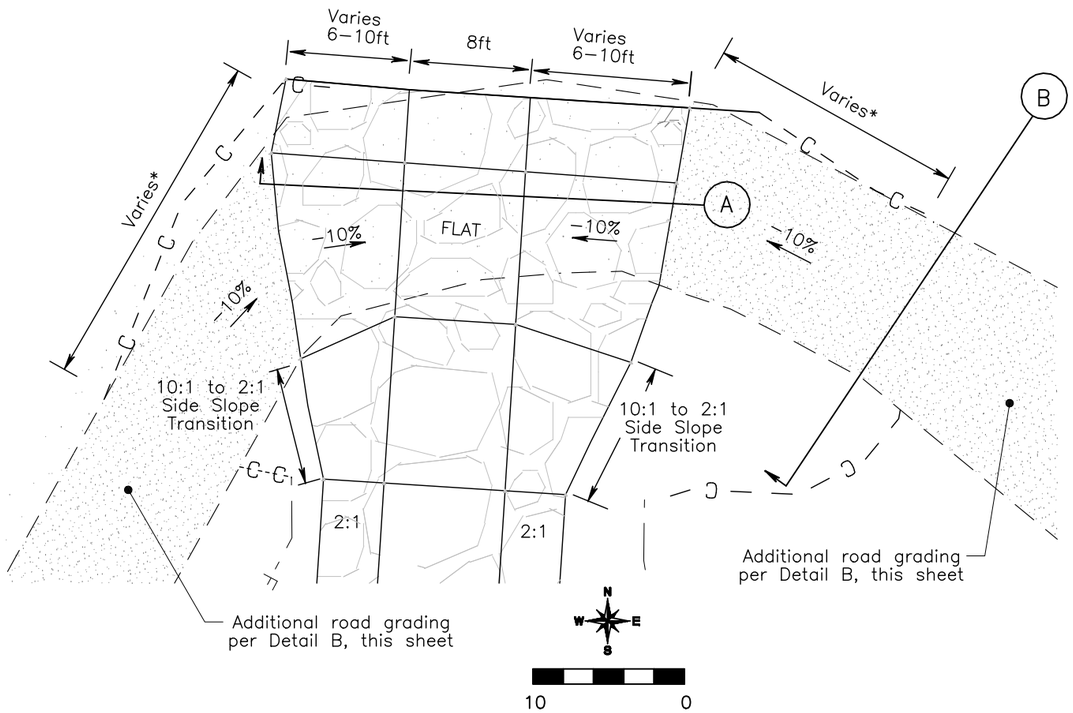
FILE NAME: Tin Pan

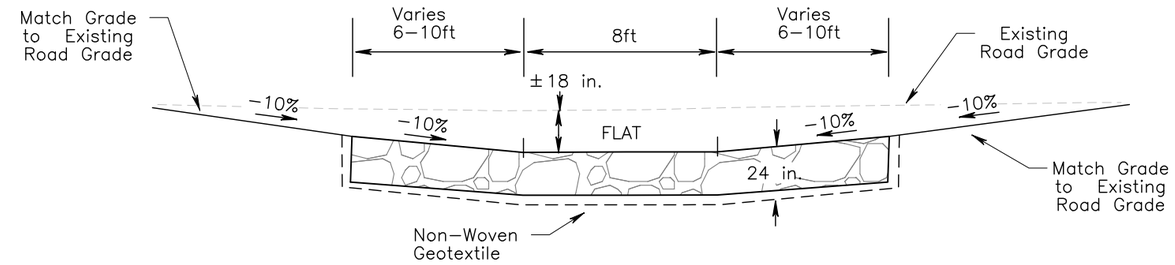
DATE: 01–28–2019

PROJECT NO: 18–306NM

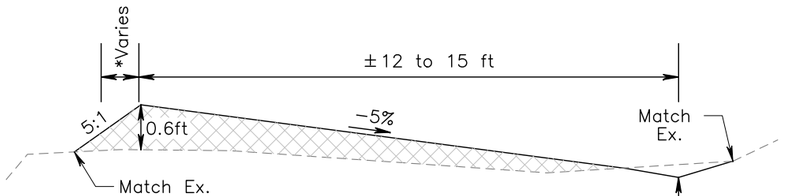
SHEET: 5A of 7

ROAD CROSSING – PLAN VIEW (NOT TO SCALE)





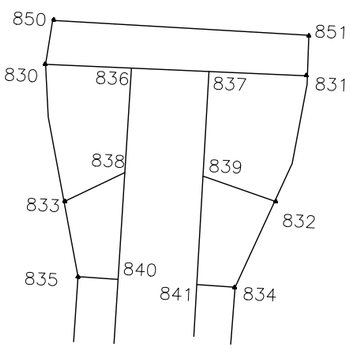
A ROAD CROSSING – CROSS SECTION
(NOT TO SCALE)



B ROAD – CROSS SECTION
(NOT TO SCALE)

Road Grading Point Table				
Pt#	Northing	Easting	Elevation	Descriptor
266	2162648.0	481600.3	7198.9	flow line
272	2162674.4	481578.4	7196.5	flow line
273	2162690.0	481561.8	7195.8	flow line
279	2162700.3	481536.1	7195.0	flow line
280	2162654.3	481479.8	7195.7	flow line
286	2162663.6	481484.6	7195.6	flow line
287	2162692.7	481501.7	7195.2	flow line
293	2162698.0	481507.8	7195.0	flow line

ROAD CROSSING – LAYOUT



Road Crossing Point Table				
Pt#	Northing	Easting	Elev	Descriptor
830	2162698.4	481507.9	7195.5	Edge Riprap
831	2162696.5	481534.7	7195.5	Edge Riprap
832	2162684.6	481531.6	7195.5	Edge Riprap
833	2162684.9	481509.9	7195.5	Edge Riprap
834	2162675.9	481527.3	7194.6	Begin 2:1 Side Slope
835	2162676.9	481511.4	7194.6	Begin 2:1 Side Slope
836	2162697.8	481516.7	7194.5	Bottom of Slope
837	2162697.2	481524.7	7194.5	Bottom of Slope
838	2162687.6	481516.1	7194.5	Bottom of Slope
839	2162687.1	481524.0	7194.5	Bottom of Slope
840	2162676.7	481515.4	7193.6	Bottom of Slope
841	2162676.2	481523.3	7193.6	Bottom of Slope
850	2162703.3	481508.9	7196.7	Top Rip Rap–Tie to Ex Grade
851	2162701.4	481535.5	7196.7	Top Rip Rap–Tie to Ex Grade

SURVEY INFORMATION

DATUM & COORDINATE GRID INFORMATION

Coordinate Projection:	New Mexico State Plane, East 3001 Zone, US Survey Feet
Datum:	North American Datum 1083 (Conus) (Mol)
Geoid Model:	Geoid09 (Conus)

CONTROL POINT LIST

NO.	Northing	Easting	Elevation	Station Name	Description
1	2162547.901	481341.891	7206.860	NCD–1	Re–bar with Blue Plastic Cap
2	2162660.624	481551.618	7198.390	NCD–2	Re–bar with Blue Plastic Cap

Design is based on LIDAR data obtained from Vermejo Park Ranch with supplemental on–site topographic survey preformed by NCD on 10/9/2018. The LIDAR data was adjusted to match local survey control set during the 10/9/18 survey. The location of CP1 and CP2 is shown on Sheet 3 in the Project Overview Plan View. If the control points (rebar with caps) have been disturbed, NCD can assist in adjusting the elevation control provided herein to new control that may need to be set during construction.

NOTES

It is understood that NCD will be on–site during portions of construction to observe construction (per a separate contract with NMAML) and consult as necessary to ensure the intent of this design is met.

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Road Crossing Overview & Layout

Tin Pan Canyon Headcut Stablization Project

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1/28/2019
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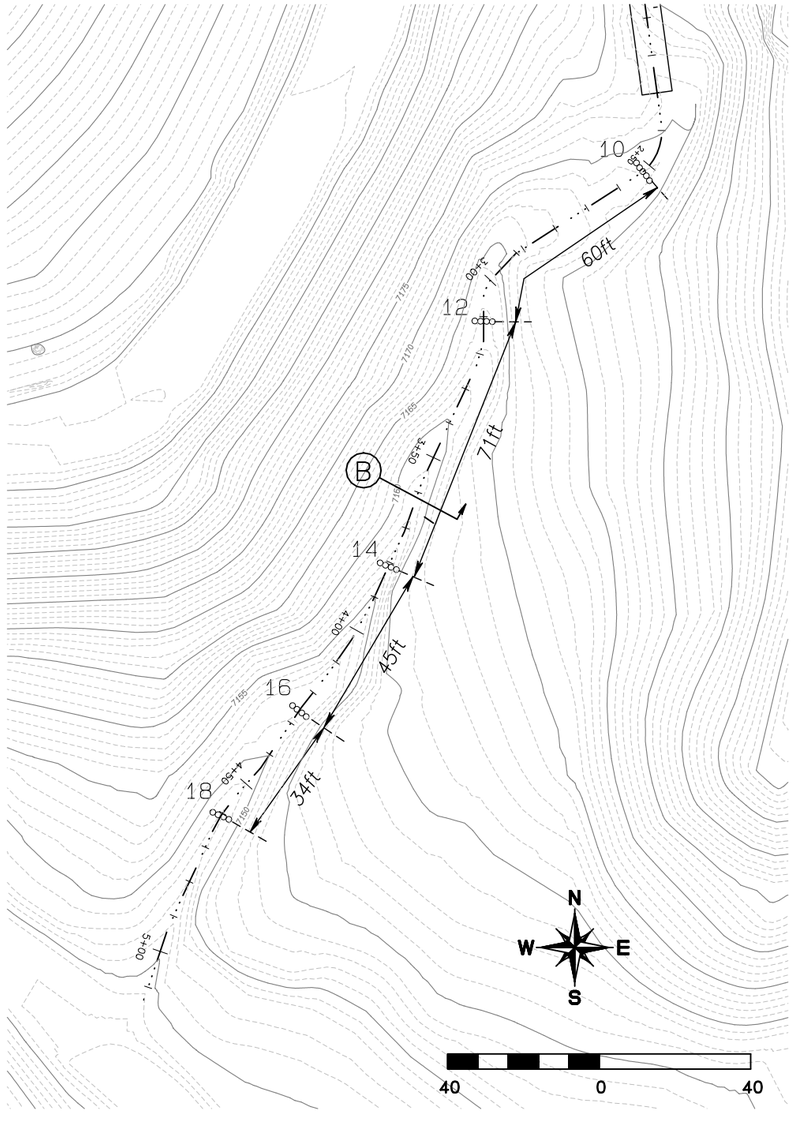
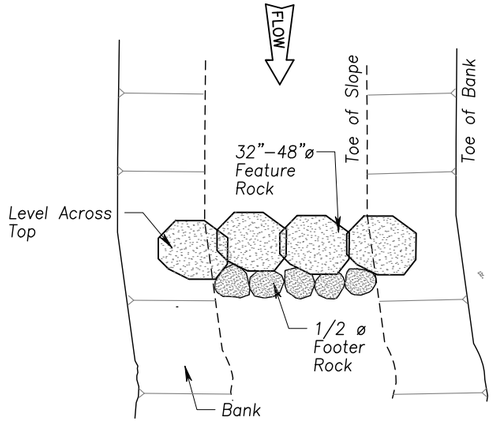
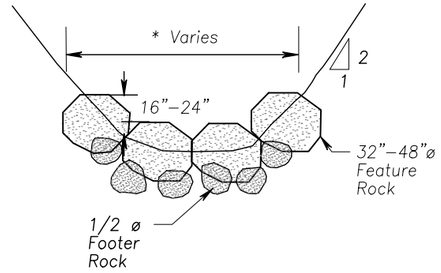
ROCK CHECK DAMS – PLAN VIEW (NOT TO SCALE)

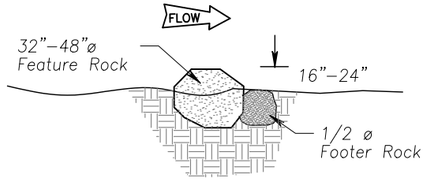




Ⓐ PLAN VIEW: ROCK CHECK DAM, TYPICAL
(NOT TO SCALE)



Ⓑ CROSS SECTION VIEW: ROCK CHECK DAM
(NOT TO SCALE)



Ⓒ PROFILE VIEW: ROCK CHECK DAM, TYPICAL
(NOT TO SCALE)

ROCK CHECK DAM– LAYOUT

Rock Check Dam Point Table

Pt #	Northing	Easting	Elevation	Descriptor
10	2162528.3	481507.8	7169.0	check dam 1
12	2162508.3	481453.5	7162.9	check dam 2
14	2162459.2	481405.4	7158.6	check dam 3
16	2162432.9	481368.9	7152.0	check dam 4
18	2162415.9	481339.3	7148.0	check dam 5

GENERAL NOTES

- Two feature rocks will be placed in the middle of the channel, 16"–24" below grade. Two additional feature rocks will be placed on the banks of the channel and will be burried 16"–24" below grade. See section B above.
- Footer rocks will be placed on the downstream side of the feature rocks to prevent scouring. The footer rocks will be 1/2 the diameter of the feature rocks and will be placed under ground. Five footer rocks will be used for each check dam.
- Check Dam 1 (Pt 10) will need three feature rocks in the middle of the channel and seven footer rocks on the downstream side.
- Some adjustments to the location and configuration of the check dams may be warranted, depending on field conditions at the time of construction and the available rock that is delivered to the site.

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REV	DATE	BY	REVISION

DETAIL: Rock Check Dams

Tin Pan Canyon Headcut Stablization Project

MICHAEL D. KEARLY NEW MEXICO 23330 1/28/2019 PROFESSIONAL ENGINEER

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SHEET: 7A of 7