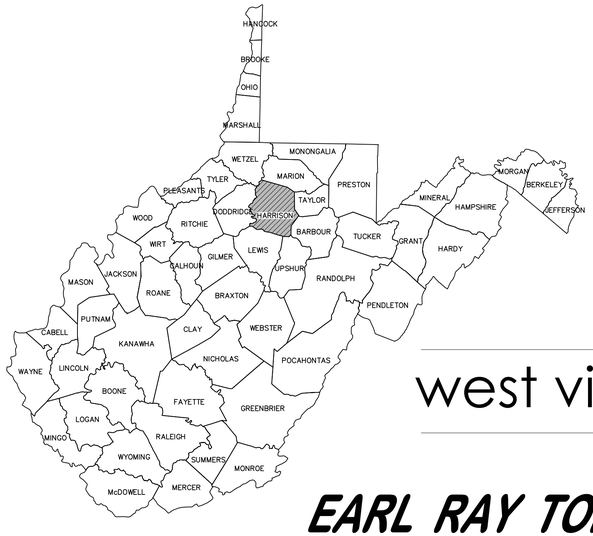
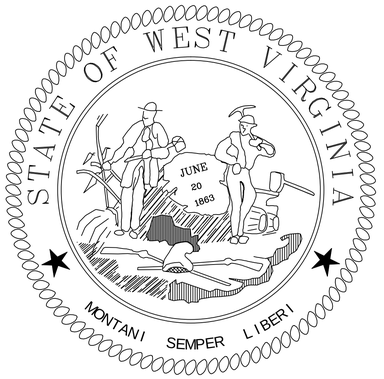




west virginia department of environmental protection

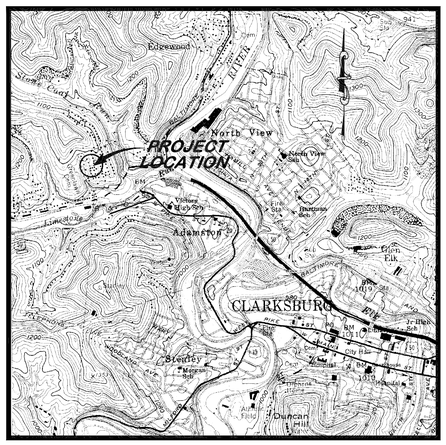
EARL RAY TOMBLIN, GOVERNOR RANDY C. HUFFMAN, CABINET SECRETARY

OFFICE OF ABANDONED MINE LANDS AND RECLAMATION

GLEN AVENUE MINE DRAINAGE

IN CLARKSBURG,
HARRISON COUNTY, WEST VIRGINIA

VICINITY MAP



USGS 7.5' QUAD (CLARKSBURG)

INDEX TO SHEETS

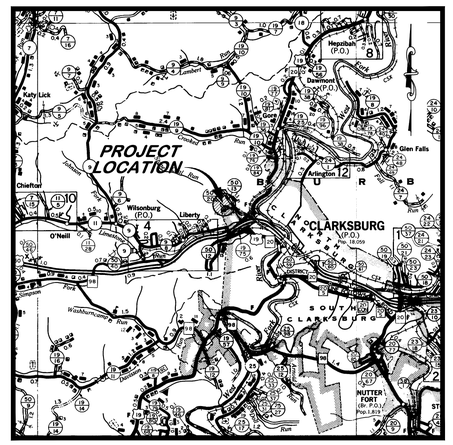
SHEET NO.	DESCRIPTION
2	EXISTING CONDITIONS AND TAX MAP OVERLAY
3	RECLAMATION AND SEDIMENT CONTROL PLAN
4	UNDERDRAIN PROFILE AND TYPICAL DETAILS (1)
5	TYPICAL DETAILS (2)
6	SEDIMENT CONTROL DETAILS

BID SCHEDULE

ITEM NO.	DESCRIPTION	QUANTITY
1.0	MOBILIZATION AND DEMOBILIZATION (LIMITED TO 10% OF TOTAL BID)	LS
2.0	CONSTRUCTION LAYOUT (LIMITED TO 5% OF TOTAL BID)	LS
3.0	QUALITY CONTROL (LIMITED TO 3% OF TOTAL BID)	LS
4.1	SITE PREPARATION (LIMITED TO 10% OF TOTAL BID)	LS
4.2	ACCESS ROAD STONE	50 TONS
5.1	SILT FENCE SEDIMENT CONTROL	250 LF
5.2	STRAW WATTLE EROSION CONTROL	125 LF
5.3	STONE CHECK DAM	1 EA.
6.0	REVEGETATION	LS
7.1	TYPE "A" MANHOLE	2 EA.
7.2	TYPE "G" INLET	1 EA.
7.3	18" HDPE CULVERT PIPE	46 LF
7.4	18" HDPE CONVEYANCE PIPE	194 LF
7.5	500 PSI FLOWABLE FILL PIPE ENCASEMENT	34 CY
11.1	4' X 14' UNDERDRAIN (12" PVC SDR-35) W/40 MIL PVC LINER	140 LF
11.2	UNDERDRAIN CONVEYANCE PIPE (12" PVC SDR-35)	10 LF
11.3	SODA ASH BRIQUETTES (50 LB. BAG)	5 EA.

12/5/2014
DATE

LOCATION MAP



COUNTY HIGHWAY MAP , 1" = 1 MI.

PROPERTY LINE AND ROAD NUMBER INFORMATION REPRESENTS AN APPROXIMATE BEST FIT ESTIMATE OF PROPERTY LINE BOUNDARIES AS OBTAINED FROM COUNTY TAX MAPS ACQUIRED THROUGH THE WEST VIRGINIA STATE TAX DEPARTMENT IN CHARLESTON, WV. PROPERTY LINES SET OUT AND DESIGNATED WITHIN THESE CONSTRUCTION PLANS DO NOT REPRESENT A TRUE AND ACCURATE BOUNDARY SURVEY.

MAGNETIC NORTH

LEGEND

- APPROX. PROPERTY LINE
- EXIST. DRAIN OR WATER COURSE
- O/H — EXISTING UTILITY LINE
- EXISTING WATER LINE
- EXISTING SANITARY SEWER LINE
- DIRECTION OF FLOW
- T.M. 00 P. 00 — TAX MAP AND PARCEL NO.
- EXISTING UTILITY OR LIGHT POLE
- S — EXISTING SANITARY MANHOLE
- W — EXISTING WATER METER
- STA 4 — EXISTING SURVEY CONTROL
- EXISTING CULVERT OR PIPE

BROOKE AVENUE
(PAPER (40') AVE.)

CABELL AVENUE
(50')

GLEN AVENUE
(COMPOSITE)

(15' ALLEY)

1.5" IRON PIPE FOUND

RESIDENCE

GARAGE

T.M. 7 P. 2

T.M. 7 P. 8

T.M. 7 P. 9

T.M. 7 P. 10

T.M. 7 P. 14

T.M. 7 P. 15

T.M. 7 P. 16

T.M. 7 P. 20

T.M. 7 P. 21

T.M. 7 P. 22

T.M. 7 P. 26

T.M. 7 P. 28

T.M. 7 P. 32

T.M. 7 P. 33

T.M. 7 P. 34

T.M. 7 P. 38.1

T.M. 7 P. 39

T.M. 7 P. 44

T.M. 7 P. 46

STUMP HOLE

8" HOLLEY

28" TREE

B-1

B-2

B-3
(PIEZOMETER INSTALLED)

STA 1
ORIGIN OF MINE DRAINAGE

STA 2

STA 3

STA 4

STA 5

(ASPHALT)

(ASPHALT DRIVEWAY)

CONC. CURB

WOODEN STAKES

(LAWN)

CONC. PAD W/ PAVILLION

4" PVC

(LANDSCAPE TIMBERS)

(CONC. DRIVEWAY)

(CONC. COURT)

(COMMUNITY PLAYGROUND)

UTILITY POLE

WATER FOUNTAIN

MINE DRAINAGE COURSE

CHAINLINK FENCE

1' IRON PIPE FOUND

24" PINE

TWIN 12" APPLE

AC UNIT

4" TREE

4" JAP. MAPLE

14" POPLAR

12" SDR-35
DISCHARGE PIPES

18" VCP PIPE

STONE FIRE RING

TWIN 16" SYC.

EXISTING EARTHEN CHANNEL

1994
974.34

(SWING SET)

140'

EXIST. DROP INLET

NOTES:

1.) CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL PERMIT REQUIREMENTS.

2.) CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND VERIFICATION OF ANY AND ALL UTILITIES LOCATED WITHIN THE CONSTRUCTION LIMITS.

3.) ALL AREAS AFFECTED BY ACCESS AND/OR CONSTRUCTION SHALL BE REGRADED, SEEDED AND MULCHED UPON COMPLETION OF PROJECT.

4.) ANY PROPERTY CORNERS (i.e. IRON RODS, REBARS, CONC. MONUMENTS AND SIGNS) DISTURBED SHALL BE RE-ESTABLISHED AND RESET UPON COMPLETION OF PROJECT.

SURVEY CONTROL

NO.	NORTHING	EASTING	ELEV.	DESC.
STA 1	10000.0000	10000.0000	1000.00	NAIL/RIBBON
STA 2	10011.1938	10106.6658	1003.19	NAIL/RIBBON
STA 3	9986.8254	9995.1180	998.47	3/4" FORM PIN
STA 4	9948.7146	9966.0807	993.17	PK NAIL/RIBBON
STA 5	9935.3814	9875.7370	980.61	NAIL/RIBBON

(HORIZONTAL AND VERTICAL SURVEY DATUM IS BASED ON AN ASSUMED GRID SYSTEM)

State of West Virginia
Department of Environmental Protection
Abandoned Mine Lands and Reclamation

GLEN AVENUE MINE DRAINAGE

EXISTING CONDITIONS AND TAXMAP OVERLAY

DRAWN BY: DWH
APPROVED BY: RL
DATE: 11/10/2014

SCALE: 1" = 20'
SHEET NO. 2
OF 5

PROPERTY LINE AND ROAD NUMBER INFORMATION REPRESENTS AN APPROXIMATE BEST FIT ESTIMATE OF PROPERTY LINE BOUNDARIES AS OBTAINED FROM COUNTY TAX MAPS ACQUIRED THROUGH THE WEST VIRGINIA STATE TAX DEPARTMENT IN CHARLESTON, WV. PROPERTY LINES SET OUT AND DESIGNATED WITHIN THESE CONSTRUCTION PLANS DO NOT REPRESENT A TRUE AND ACCURATE BOUNDARY SURVEY.

MAGNETIC NORTH

LEGEND

- APPROX. PROPERTY LINE
- EXIST. DRAIN OR WATER COURSE
- E/U — EXISTING UTILITY LINE
- EXISTING WATER LINE
- EXISTING SANITARY SEWER LINE
- DIRECTION OF FLOW
- T.M. 00 P. 00 — TAX MAP AND PARCEL NO.
- EXISTING UTILITY OR LIGHT POLE
- EXISTING SANITARY MANHOLE
- EXISTING WATER METER
- STA 4 — EXISTING SURVEY CONTROL
- EXISTING CULVERT OR PIPE
- PROPOSED TYPE "C" INLET
- PROPOSED TYPE "A" MANHOLE
- PROPOSED 18" HDPE PIPE
- PROPOSED ROCK CHECK DAM
- PROPOSED 3'W X 4" UNDERDRAIN
- SF — SILT FENCE SEDIMENT CONTROL
- SW — STRAW WATTLE EROSION CONTROL

BROOKE AVENUE
(PAPER (40') AVE.)

CABELL AVENUE
(50')

GLEN AVENUE
(CONCRETE)
(40')

(15' ALLEY)

1.5" IRON PIPE FOUND

RESIDENCE

GARAGE

T.M. 7 P. 2

T.M. 7 P. 8

T.M. 7 P. 9

T.M. 7 P. 10

T.M. 7 P. 14

T.M. 7 P. 15

T.M. 7 P. 16

T.M. 7 P. 20

T.M. 7 P. 21

T.M. 7 P. 22

T.M. 7 P. 26

T.M. 7 P. 28

T.M. 7 P. 32

T.M. 7 P. 33

T.M. 7 P. 34

T.M. 7 P. 38.1

T.M. 7 P. 39

T.M. 7 P. 44

T.M. 7 P. 46

(ASPHALT)

(ASPHALT DRIVEWAY)

(CONC. DRIVEWAY)

(CONC. COURT)

(COMMUNITY PLAYGROUND)

(LAWN)

STUMP HOLE

8" HOLLEY

28" TREE

CONSTRUCT 122 LF 4' X 14" UNDERDRAIN (SEE PROFILE AND TYPICAL DETAILS)

LIMITS (PIEZOMETER INSTALLED) (TO BE REMOVED)

STA 1

STA 2

B-1

B-2

BEGIN 12" PERFORATED UNDERDRAIN PIPE (STA. 0+08.89 INV. EL. 986.0)

CONSTRUCT 18 LF (LATERAL) 4' X 14" UNDERDRAIN (SEE PROFILE AND TYPICAL DETAILS)

CONC. CURB

INSTALL 46 LF 18" HDPE PIPE ENCASED IN 500 PSI FLOWABLE FILL (SEE PROFILE AND TYPICAL DETAILS)

INSTALL TYPE "C" INLET (STA. 1+23.59 INV. EL. 983.73) (SEE PROFILE AND TYPICAL DETAILS)

LAWN AREAS TO BE REGRADED AND HAND RAKED ALONG ENTIRE DRAINAGE INSTALLATION ROUTE

SF

CONC. PAD W/ PAVILLION

LANDSCAPE TIMBERS

WOODEN STAIRS

SILT FENCE SEDIMENT CONTROL (SEE TYPICAL DETAILS)

STA 3

UTILITY POLE

WATER FOUNTAIN

STA 4

MH #1
INSTALL TYPE "A" MANHOLE (STA. 1+72.73 INV. EL. 982.74) (SEE PROFILE AND TYPICAL DETAILS)

CHAINLINK FENCE

EXIST. DROP INLET

1" IRON PIPE FOUND

UTILITY POLE

EXIST. DROP INLET

STRAW WATTLE EROSION CONTROL (SEE TYPICAL DETAILS)

1" IRON PIPE FOUND

24" PINE

MH #2
INSTALL TYPE "A" MANHOLE (STA. 2+55.61 INV. EL. 974.93) (SEE PROFILE AND TYPICAL DETAILS)

TWIN 12" APPLE

4C UNITS

INSTALL 80 LF 18" HDPE PIPE (SEE PROFILE AND TYPICAL DETAILS)

STA 5

LIMITS

SF

LAWN AREAS TO BE REGRADED AND HAND RAKED ALONG ENTIRE DRAINAGE INSTALLATION ROUTE

CONSTRUCTION LIMITS

14" POPLAR

12" SDR-35 DISCHARGE PIPES

(LAWN)

18" VCP PIPE

TWIN 16" S.Y.C.

STONE FIRE-RING

STRAW WATTLE EROSION CONTROL (SEE TYPICAL DETAILS)

REGRADE AREA AS SHOWN TO PROVIDE SUFFICIENT COVER OVER PIPE (SEE PROFILE AND TYPICAL DETAILS)

INSTALL 114 LF 18" HDPE PIPE (SEE PROFILE AND TYPICAL DETAILS)

EXISTING EARTHEN CHANNEL

SILT FENCE SEDIMENT CONTROL (SEE TYPICAL DETAILS)

STA 34

(SWING SET)

DISCHARGE TO EXIST. DRAIN

CONSTRUCT ROCK CHECK DAM (SEE TYPICAL DETAILS)

GARAGE

(ASPHALT DRIVEWAY)

SILT FENCE SEDIMENT CONTROL (SEE TYPICAL DETAILS)

NOTES:

1.) CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL PERMIT REQUIREMENTS.

2.) CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND VERIFICATION OF ANY AND ALL UTILITIES LOCATED WITHIN THE CONSTRUCTION LIMITS.

3.) ALL AREAS AFFECTED BY ACCESS AND/OR CONSTRUCTION SHALL BE REGRADED, SEEDED AND MULCHED UPON COMPLETION OF PROJECT.

4.) ANY PROPERTY CORNERS (i.e. IRON RODS, REBARS, CONC. MONUMENTS AND SIGNS) DISTURBED SHALL BE RE-ESTABLISHED AND RESET UPON COMPLETION OF PROJECT.

SURVEY CONTROL

NO.	NORTHING	EASTING	ELEV.	DESC.
STA 1	10000.0000	10000.0000	1000.00	NAIL/RIBBON
STA 2	10011.1938	10106.6658	1003.19	NAIL/RIBBON
STA 3	9986.8254	9995.1180	998.47	3/4" FORM PIN
STA 4	9948.7146	9966.0807	993.17	PK NAIL/RIBBON
STA 5	9935.3814	9875.7370	980.61	NAIL/RIBBON

(HORIZONTAL AND VERTICAL SURVEY DATUM IS BASED ON AN ASSUMED GRID SYSTEM)

State of West Virginia
Department of Environmental Protection
Abandoned Mine Lands and Reclamation

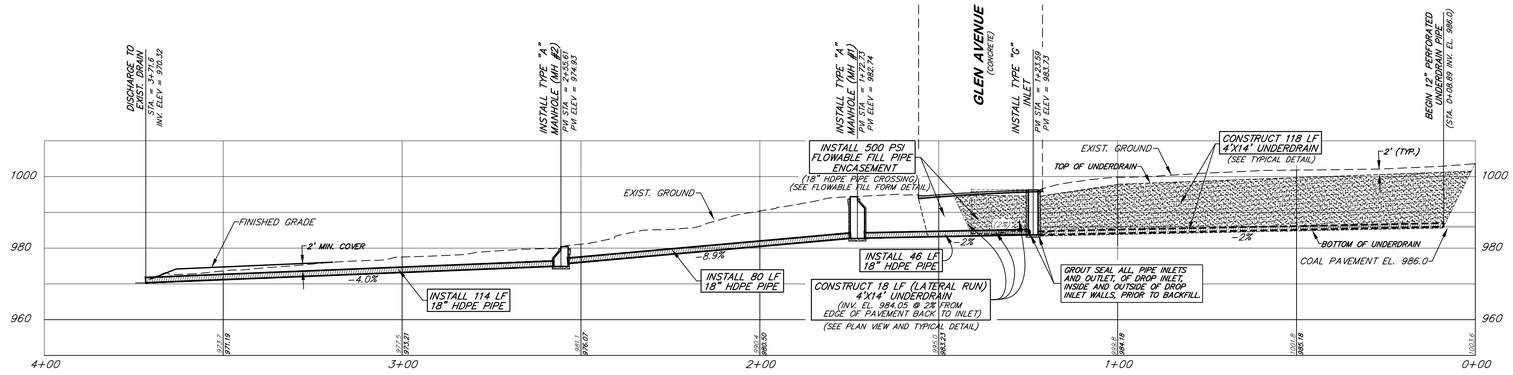
GLEN AVENUE MINE DRAINAGE

RECLAMATION AND SEDIMENT CONTROL PLAN

DRAWN BY:	DWH
APPROVED BY:	RL
DATE:	11/10/2014

SCALE: 1" = 20'

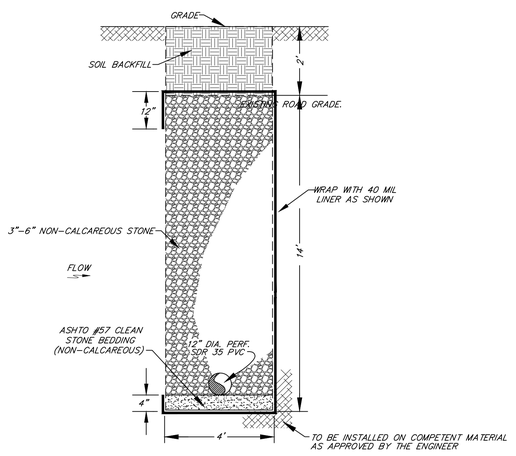
SHEET NO. 3 OF 5



UNDERDRAIN PROFILE

(SCALE: 1" = 20')

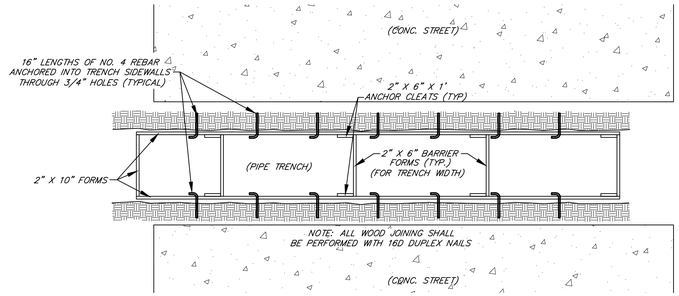
NOTE: ALL INVERTS SHOWN IN REGARD TO UNDERDRAIN CONSTRUCTION, REFER TO THE UNDERDRAIN PIPE INVERT AND NOT THE BOTTOM OF BEDDING STONE.



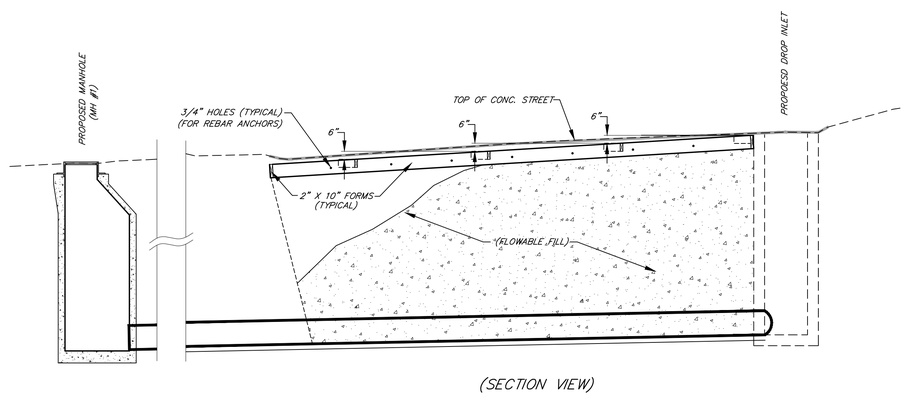
UNDERDRAIN DETAIL

(STA. 0+08.89 TO 1+21.59)

(NOT TO SCALE)



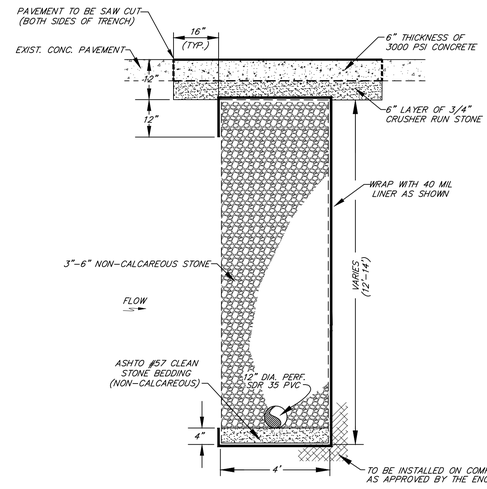
(PLAN VIEW)



(SECTION VIEW)

FLOWABLE FILL FORM DETAIL

(NOT TO SCALE)

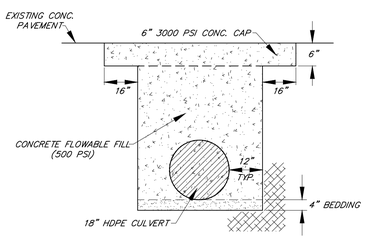


UNDERDRAIN DETAIL

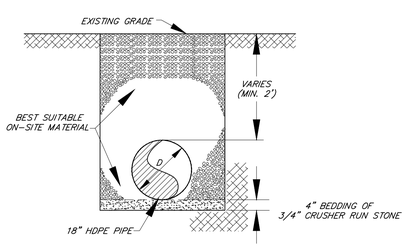
(18 LF LATERAL RUN ACROSS GLEN AVE.)

(NOT TO SCALE)

NOTE: 18 LF LATERAL RUN OF UNDERDRAIN CROSSING GLEN AVENUE SHALL REQUIRE THE 3"-6" NON-CALCAREOUS STONE TO BE PLACED TO WITHIN 1' OF THE CONCRETE PAVEMENT GRADE. THE 3"-6" STONE SHALL BE CAPPED WITH A 6" LAYER OF 3/4" CRUSHER RUN STONE FOLLOWED BY A 6" THICKNESS OF 3000 PSI CONCRETE TO MATCH



ROAD CULVERT / PIPE TRENCH TYPICAL SECTION



PIPE TRENCH TYPICAL SECTION

State of West Virginia
Department of Environmental Protection
Abandoned Mine Lands and Reclamation

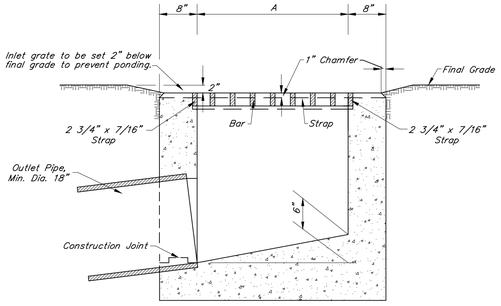
GLEN AVENUE MINE DRAINAGE

UNDERDRAIN PROFILE AND TYPICAL DETAILS (1)

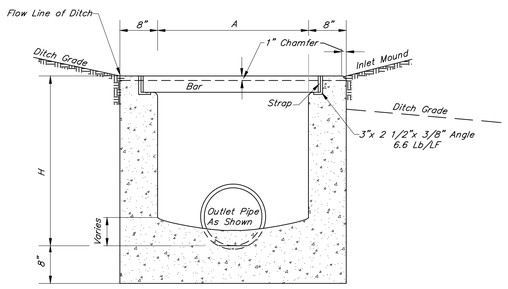
DRAWN BY:	DWH
APPROVED BY:	RL
DATE:	11/10/2014

SCALE:	1" = 20'
SHEET NO.	4 OF 6

** 2 3/4"x 1/2"straps for frame and grate are considered acceptable substitutes.

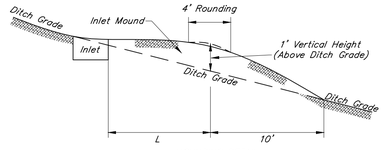


SECTION A–A
(Type 2 Grate Shown)

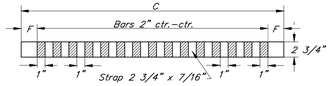


SECTION B–B

INLET MOUNDING TABLE		
DITCH GRADE (%)		L HORIZONTAL LENGTH (FT)
FROM	TO	
0	3	10
3	5	9
5	7.5	8
7.5	UP	SPECIAL DESIGN

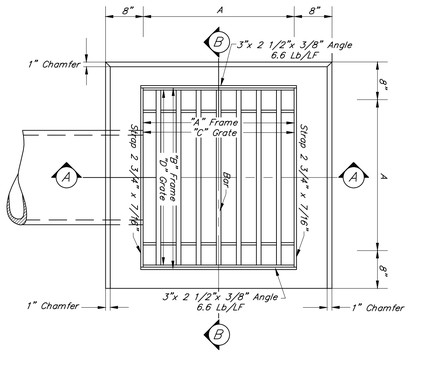


MOUNDING DETAIL



SECTION THRU TYPE 1 GRATE

(NO ALTERNATE GRATE TYPE SHALL BE ALLOWED FOR THIS INSTALLATION)



PLAN
(Type 2 Grate Shown)

TABLE OF DIMENSIONS AND WEIGHTS											
PIPE SIZE	A	B	C	D	H(Min)	F	No. X	Wt. Grate	Wt. Frame	*F	*No. X	*Wt. Grate
18"	2'-8"	3'-2"	2'-7 3/4"	3'-1 3/4"	2'-0"	3 3/8"	7	223	62	1 3/8"	15	453
24"	2'-8"	3'-2"	2'-7 3/4"	3'-1 3/4"	2'-6"	3 3/8"	7	223	62	1 3/8"	15	453

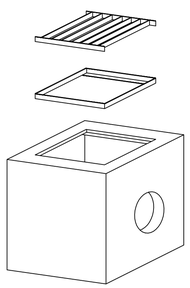
NOTES

Wall and footer thickness is eight (8) inches. Construction between the footer and the top of the pipe may be of brick or precast concrete block. All other construction shall be of Class B concrete. Inlet may be precast, with lifting hooks out of sight after placing. Sufficient reinforcement will be included in precast inlets to resist handling stresses.
Inverts shall be shaped for self–cleaning, and shall be monolithic with footer.
A construction joint, approximately 2" x 4", will be used at the top of the self–cleaning invert. When precast construction is used, this construction joint will be omitted.
When the inlet is used for more than one pipe, the invert shall be shaped to provide smooth transitions for the flow line.

Type 1 Grate is for use in urban areas and Type 2 Grate is for use in rural areas, unless otherwise specified.
Grate to be used, either Type 1 or Type 2, will be as specified on plans.
All concrete is to be Class "B" Concrete.
The type and size of pipe to be used with the inlet is to be the type and size as called for on the plans.
Drawing shows pipe entering one side of the inlet; however, pipes may enter any or all sides of the inlet as called for on the plans.
When the bell end of concrete pipe is placed in the inlet, the inside of the bell shall be filled with concrete up to the flow line.
Omit inlet mound when inlet is placed at the low point in sag of vertical curve.
Typical "keyed" construction joint is shown on Section A–A herein. Other "keyed" or "doweled" type construction joints may be used if acceptable to the Engineer.

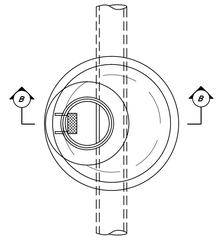
Grate and frame members may be galvanized in accordance with ASTM Specifications A123 in lieu of the painting specified below. Galvanized surfaces which have been abraded so that the base metal is exposed, and all field welded surfaces, shall be protected with zinc rich primer, meeting the requirements of Subsection 711.21 of the Specifications, or by field galvanizing.
All grate and frame members shall meet the requirements for structural steel of Subsection 709.12 of the Standard Specifications. X members shall be joined to the end straps with 3/8" welds on both sides of each end. Frame members shall be joined with 3/8" welds at the outsides of the corners. The upper portion of the inlet shall be cast with frame in place or placed in fresh concrete immediately after casting. The grate and the inside of the frame shall be painted with Type "A" Asphalt–Base Emulsion meeting the requirements of ASTM Specification D 1187, or with Vinyl–Type Paint in accordance with the requirements of Section 615 of the Specifications except that the blast cleaning requirements prior to painting are waived. The color of the top coat for vinyl paint shall meet the requirements of Federal Standard 595, No. 14062.
Members and welds shall be cleaned before painting.

Unit price bid for Type "G" inlet will be for all depths, unless otherwise specified, and shall be paid for per each, also unless otherwise noted or specified.

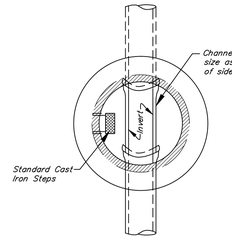


EXPLODED DETAIL

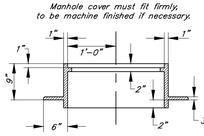
STANDARD DETAIL
TYPE G INLET



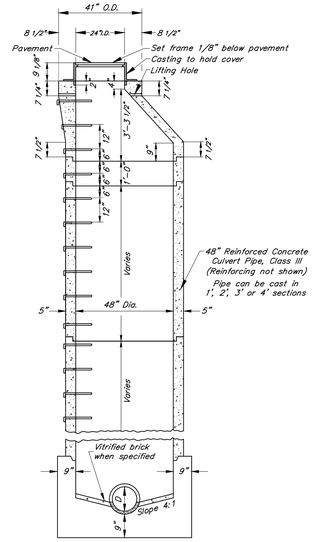
Complete Structure



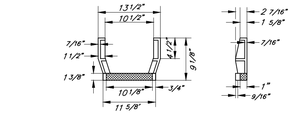
Section Thru Footer



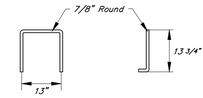
SECTION
Manhole Frame Casting



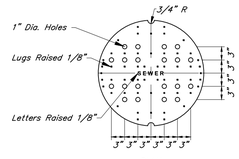
SECTION B–B



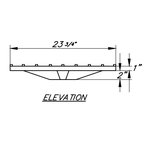
STEP
(Cast Iron)



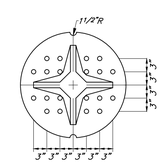
STEP
(Wrought Iron)



PLAN



MANHOLE COVER



INVERTED PLAN

NOTES
All concrete pipe to be used as sidewall for the manhole shall meet the requirements for Class III pipe of Subsection 714.2 of the Standard Specifications.

Concrete pipe sections may be used in any combination to produce a manhole of desired depth, except the tapered top section shall be retained as shown.

The tapered top sections shall be manufactured and meet the same requirements as the concrete pipe.

Lifting hole in the tapered top section and the circumferential notches in the manhole cover are for handling purposes only.

Drawing shows pipe entering and leaving manhole in a straight line. However, the pipes may enter or leave at any angle or place as called for or shown on the plans.

The footer up to the joint shown shall be Class B concrete.

Castings are to be of the design shown and are to be of Gray–Iron meeting the requirements of Subsection 709.10 of the Standard Specifications.

Steps may be either the Cast Iron Step or the Wrought Iron Step as shown and shall conform to the requirements of Subsections 709.10 and 709.11, respectively, of the Standard Specifications.

The precast sections of pipe shall be set in joint mortar.

The forming of the seat in the footing may be by the use of a section of the precast pipe or by means of a jig.

Pipe at elevations of than shown may be joined to the manhole by cutting a hole the size of the connecting pipe in the manhole, inserting the pipe the thickness of the manhole shell and closing all openings around the connecting pipe with joint mortar.

Either this manhole or the cast in place manhole on Standard M.S. 3–A may be furnished when Type A manhole is called for in the contract.

Minimum height of bench wall above flow line of pipe is 25% of the diameter of the pipes.

The bearing area of the frame and cover shall be so fitted and finished as to provide a firm and even seat for the entire cover in the frame. No projections shall exist on bearing areas of wither casting, and the cover shall seat in its frame without rocking.

STANDARD DETAIL
TYPE "A" MANHOLE
(PRECAST)

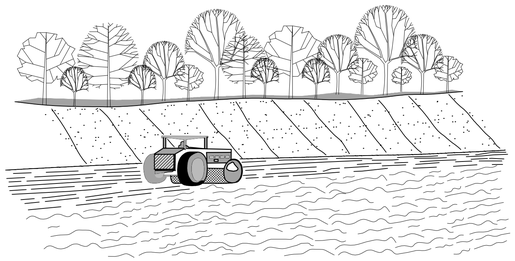
State of West Virginia
Department of Environmental Protection
Abandoned Mine Lands and Reclamation

GLEN AVENUE MINE DRAINAGE

TYPICAL DETAILS (2)

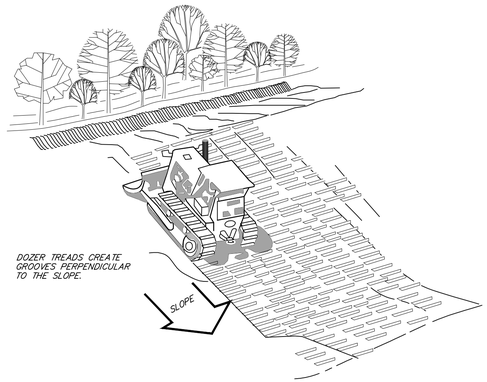
DRAWN BY:	DWH
APPROVED BY:	RL
DATE:	11/10/2014

SCALE:	1" = 20'
SHEET NO.	5
OF	6

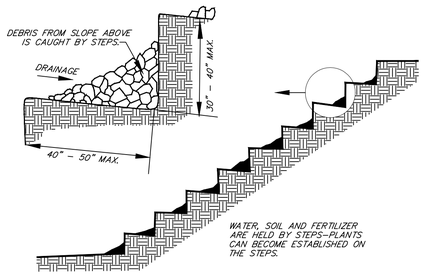


EACH LIFT OF THE FILL IS COMPACTED, BUT THE OUTER FACE OF THE SLOPE IS ALLOWED TO REMAIN LOOSE SO THAT THE ROCKS, CLODS, ETC. REACH THE NATURAL ANGLE OF REPOSE.

FILL SLOPE TREATMENT

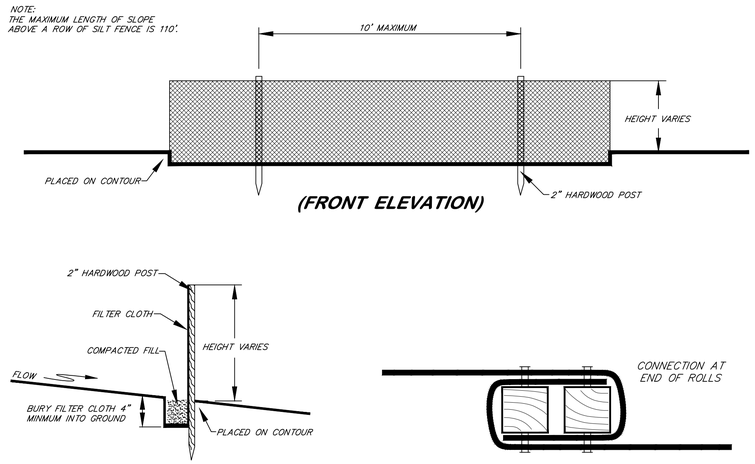


TRACKING



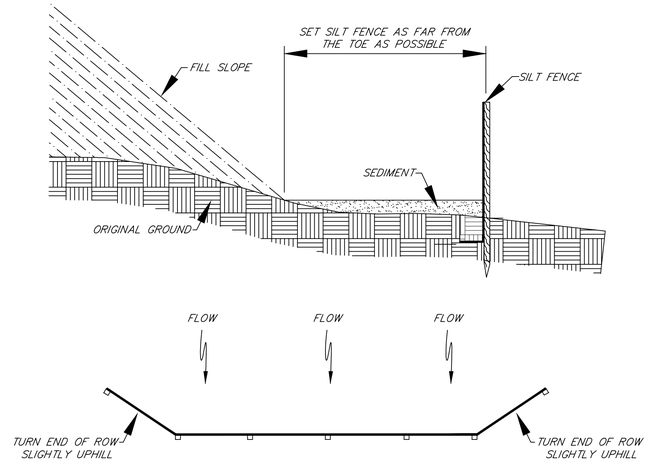
STAIR STEPPING CUT SLOPES

NOTE:
THE MAXIMUM LENGTH OF SLOPE ABOVE A ROW OF SILT FENCE IS 110'.



SILT FENCE

(FIG. 3.27.2)

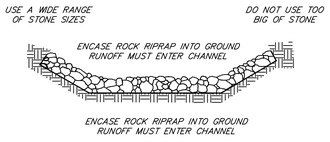


PLACEMENT OF SILT FENCE

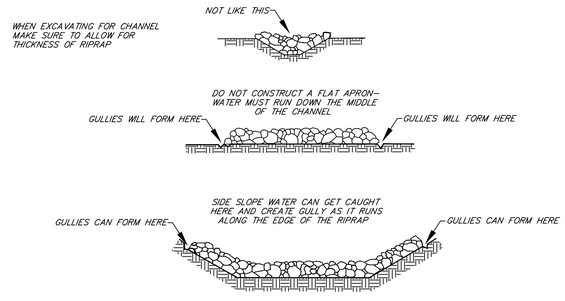
(FIG. 3.27.1)

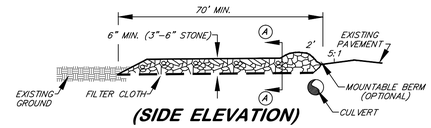
RIPRAP DIVERSION

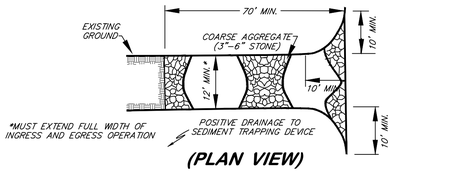
(FIG. 3.15.3)

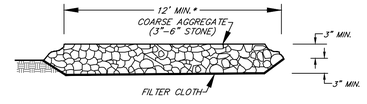


COMMON PROBLEMS



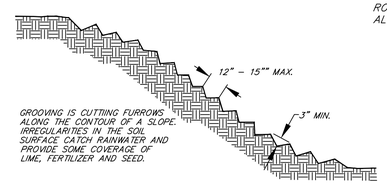






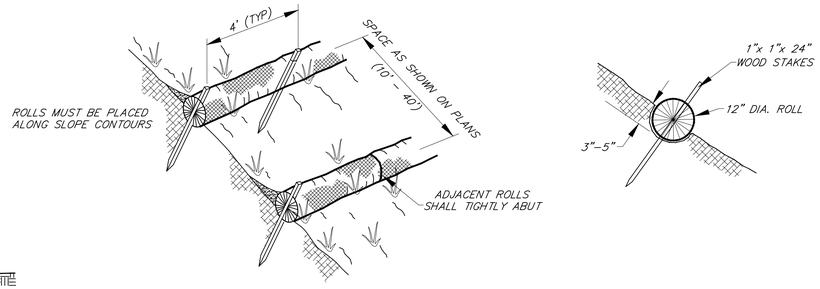
STONE CONSTRUCTION ENTRANCE

(FIG. 3.02.1)

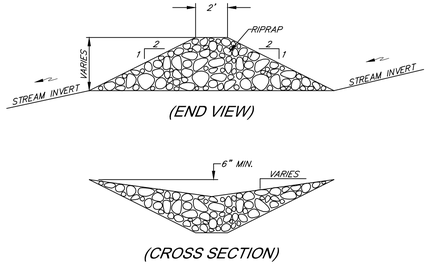


GROOVING SLOPES

NOTE: STRAW ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3"–5" DEEP, DUG ON CONTOURS. RUNOFF MUST NOT BE ALLOWED TO FLOW UNDER OR AROUND THE ROLLS.



12" WATTLE EROSION CONTROL



IN-STREAM ROCK CHECK DAM

State of West Virginia
Department of Environmental Protection
Abandoned Mine Lands and Reclamation

GLEN AVENUE MINE DRAINAGE

SEDIMENT CONTROL TYPICAL DETAILS

DRAWN BY:	DWH
APPROVED BY:	RL
DATE:	11/10/2014
SCALE:	1" = 20'
SHEET NO.	6 OF 6