INA/015/002

0001

STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Norman H. Bangerter, Governor
Dee C. Hansen, Executive Director
Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

December 17, 1986

Mr. Mike O'Donnell
Governmental/Environmental Coordinator
Western States Minerals Corporation
4975 Van Gordon Street
Wheat Ridge, Colorado 88003

Dear Mr. O'Donnell:

Re: Review of Maintenance Plan, Western States Minerals Corporation, J. B. King Mine, INA/015/002, Emery County, Utah

Thank you for your maintenance and repair plan submitted November 21, 1986. The Division technical staff have reviewed the plan and have provided several alternatives and additions. Attached are memos from Tom Munson and Kathy Mutz, detailing these items.

After reviewing these items, please submit a revised plan incorporating the items noted in the attached memos, by February 27, 1987.

Given weather constraints, it is acceptable to the Division to complete this work by June 1, 1987. This should allow the work to be completed before the summer convective storms begin.

Sincerely,

John J. Whitehead

John J. Whitehead
Permit Supervisor/
Reclamation Hydrologist

djh
Attachments
0800R/69

December 3, 1986

TO: Files

FROM: Kathryn M. Mutz, Reclamation Biologist KMM

RE: Maintenance Plan for J.B. King Mine Reclamation Project, INA/015/002, Emery County, Utah

The following summarizes Division consensus on treatment of rills, disposal of excavated soil and revegetation as discussed in O'Donnell's letter of November 19, 1986 and staff discussions of December 2.

1. Soil excavated during reconstruction of main and feeder ditches should be placed in the area immediately north of feeder ditch. Placement in this area will minimize disturbance of areas adjacent to the main ditch and below (to the east) the feeder ditch. Since the placement area is currently poorly vegetated and consists of some of the worst soil materials (Mancos shale) at the site, the additional soils may improve the area's chances of successful revegetation.

2. Since an intercept ditch will be required (See Munson memo), discussion of primary versus secondary rills in the O'Donnel letter is no longer applicable. While it is impractical to identify actual locality of rills to be hand backfilled, all rills nine inches deep or greater should be backfilled. Side hill contour furrows should be maintained by repairing breached furrows and hand cleaning those portions filled with sediment (letter enclosure, p. 5 #6).

3. Maintenance areas should be revegetated as planned. It is not essential to reseed this fall since most germination occurs after June/July summer showers. It would probably be more efficient, however, to seed immediately following grading since the equipment and personnel would already be on site.

   Fresh seed should be obtained unless seed left over from the project has been stored in a cool, dry place to maintain viability. Since the areas to be reseeded are small, a modified seed mix could be used. A modified mix should emphasize species which have established rapidly rather than the slower growing species (attached list with asterisked species). Even with a modified mix, diversity will be maintained by invasion from adjacent areas over time.

   The operator should make sure that the seeding rate is based on pounds of pure live seed per acre. Coal System's July 17, 1986 memo indicates that the area was initially seeded with over 22% inert material.

djh
Attachment
cc: T. Munson
P. Ralphs
J. Whitehead
0528R/79

RECEIVED JUL 21 1986

COAL SYSTEMS, Inc.
CONSULTANTS/ENGINEERS

L. G. MANWARING, P.E.
President

P.O. BOX 17117
SALT LAKE CITY, UTAH 84117

Area Code 801
261-4500

July 17, 1986

Ms. Kathy Mutz, Biologist
DIVISION OF OIL, GAS, & MINING
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Re: J. B. King Mine
Seed Mix - Planting Rates

Dear Ms. Mutz:

Per your recent request for information on the seed planting at the J. B. King Mine Site in the fall of 1985, please note the following:

I. MIX

		%
A.	Grasses	
*	Western Wheatgrass	10.1
*	Thickspike Wheatgrass	4.5
*	Streambank Wheatgrass	4.5
	Beardless Wheatgrass	4.5
	Blue Grama	6.8
	Galleta	4.5
*	Indian Ricegrass	9.1
	Needle and Thread	4.5
	Big Bluegrass	2.3
B.	Forbs	
	Gooseberry Globemallow	1.1
	Yellow Sweet Clover	6.8
*	Palmer Penstemon	1.1
C.	Shrubs	
	Fringed Sage	1.1
**	Fourwing Saltbush	4.5
*	Shadscale	4.5
*	Winterfat	4.5
	Rubber Rabbitbrush	1.1
D.	Inert	21.6
E.	Crop	2.2
F.	Weed	0.7
		100.0

Jobse

December 8, 1986

TO: File

FROM: Tom Munson, Reclamation Hydrologist TM

RE: Drainage Channel Calculations for Western States Minerals Corporation, J. B. King Mine, INA/015/002, File #3, Emery County, Utah

Synopsis of Correspondence

September 4, 1986, Phil Ralphs and Tom Munson visited the J.B. King Mine site and observed severe erosion in three areas; the mine refuse pile area, the main ephemeral channel, and the feeder ditch channel. On October 3, 1986, Tom Munson and John Whitehead met with Mike O'Donnell of Western States Minerals to discuss the concerns noted on site in September. October 28, 1986, Tom Munson, Kathy Mutz and Phil Ralphs met at the J. B. King site with Mr. O'Donnell to further discuss the areas of concern. A follow up letter to Mr. O'Donnell dated November 3, 1986 documents the site visit and a telephone conversation with him on October 31, 1986 requested a written submittal to address these concerns by November 21, 1986.

The submittal addressing these concerns was received by the Division on November 24, 1986. Review of the November 24, 1986 submittal reveals it does not provide complete and adequate information necessary to demonstrate channel capacity, riprap sizing, and filter blanket requirements capable of safely passing the 100-year, 24-hour precipitation event. The plan also does not adequately address methods to control erosion in the area between the refuse pile and the ephemeral channel.

Recommendations

The following directives regarding the erosion problems found at the J. B. King reclaimed mine site should be required of Western States Minerals.

Intercept Ditch

An intercept ditch is needed at the base of the highwall to route flows to the main ephemeral channel from the drainage area above the portal bench area to prevent erosion in area between the refuse pile and the ephemeral channel. A triangular channel is suggested, with 2.0:1 sideslopes and 2.0 feet deep. Riprap gradation for this channel is as follows.

D100	8"
D 85	6.5"
D 50	4.0"
D 20	2.0"
D 10	1.3"

This channel would run from the end of the refuse pile to its interception with the main ephemeral channel at a 3 percent slope towards the main ephemeral channel (see attached map). The entire 2.0 foot channel depth will be riprapped. A 9-inch deep, 2-inch minus gravel filter blanket shall be placed under the graded riprap. The depth of the riprap will be 8 inches deep. The channel depth will be in addition to the depth of the riprap or the filter blanket. If a trapezoidal channel configuration is preferred, the Division would calculate the appropriate channel dimensions for the operator at his request.

Main Ephemeral Channel

The following channel parameters are needed for the main ephemeral channel. A trapezoidal ditch with a 6-foot bottom width, 1.7 foot depth and 2:1 sideslopes would be acceptable to the Division. The riprap gradation is as follows:

D100	18.7"
D 85	16.0"
D 50	15.0"
D 20	7.5"
D 10	5.0"

A 15-foot apron at the transition zone between the steep slope section and the mild slope below station 8+00 using the same riprap gradation is necessary. The entire 1.7 foot channel depth will be riprapped and any regraded slope above the height of the

riprapped portion of the channel will be brought back to a 3.0:1 sideslope or less to prevent erosion. A 9-inch deep, 2-inch minus gravel filter blanket will be placed under the graded riprap. The depth of the riprap will be 1.7 feet deep. The channel depth will be in addition to the depth of the riprap or the filter blanket.

Feeder Ditch Channel

The following channel parameters for the feeder ditch channel are required. The channel will consist of a trapezoidal ditch with a 3-foot bottom width, 1.4 foot depth, and 2.0:1 sideslopes. The riprap gradation is as follows:

D100	19.6"
D 85	18.0"
D 50	15.6"
D 20	7.8"
D 10	5.1"

A 15-foot apron at the transition zone between the steep slope section and the mild slope at the base of the feeder ditch using the same riprap gradation is needed. The entire 1.4 foot channel depth shall be riprapped and any slope above the height of the riprapped portion of the channel will be brought back to a 3.0:1 sideslope or less. A 9-inch deep, 2-inch minus gravel filter blanket will be placed under the graded riprap. The depth of the riprap will be 1.63 feet deep. The channel depth will be in addition to the depth of the riprap or the filter blanket. Extra care will be taken placing riprap where the bedrock outcrops to insure stability of the channel downstream of this point.

General Directives

Filter cloth should not be used under riprap unless it is covered by a 9-inch deep, 2-inch minus gravel filter blanket to prevent tearing of the cloth prior to placement of the riprap. The placement of the gravel filter blanket would be considered more than adequate to provide adequate riprap stability.

djh
cc: K. Mutz
P. Ralphs
J. Whitehead
9486R/6

INPUT PARAMETERS TO DEFINE CHANNEL CHARACTERISTICS

I. Intercept Channel for Area D

Assumptions for Proposed Channel

1. 3% Slope
2. Flows along base of highwall to intercept main ephemeral channel.
3. Drainage area = 7.0 acres
4. Hydraulic length = 625.0 feet
5. Permissible velocity for fine sand (U.S. Army Office [1970]) = 2 F.P.S.

Assumptions for Peak Flow

1. Drainage area = 7.0 acres
2. Hydraulic length = 546.0 feet
3. Land slope = 35%
4. 100-year, 24-hour precipitation = 2.3 inches
5. Storm distribution = SCS Type II
6. CN = 90

   Peak flow = 9.62

II. Eroded Area of Main Channel

Assumptions for Proposed Channel

1. 20% slope
2. Area of channel between sections 5+50 and 8+00
3. Drainage area = 41.2 acres
4. Permissible velocity for fine sand (U.S. Army Office [1970]) = 2 F.P.S.

Assumptions for Peak Flow

1. Drainage area = 41.2 acres
2. Hydraulic length = 2530.0 feet
3. Average land slope = 12%
4. 100-year, 24-hour precipitation = 2.3 inches
5. Storm distribution = SCS Type II
6. CN = 90

Peak flow =54.29 cfs

III. Feeder Ditch

Assumptions for Proposed Channel

1. 20% slope
2. Area of channel restoration = A 0 + 00 to A 4 + 00
3. Drainage area = 9.39 ac.
4. Permissable velocity for fine sand (U.S. Army Office [1970]) = 2 F.P.S.

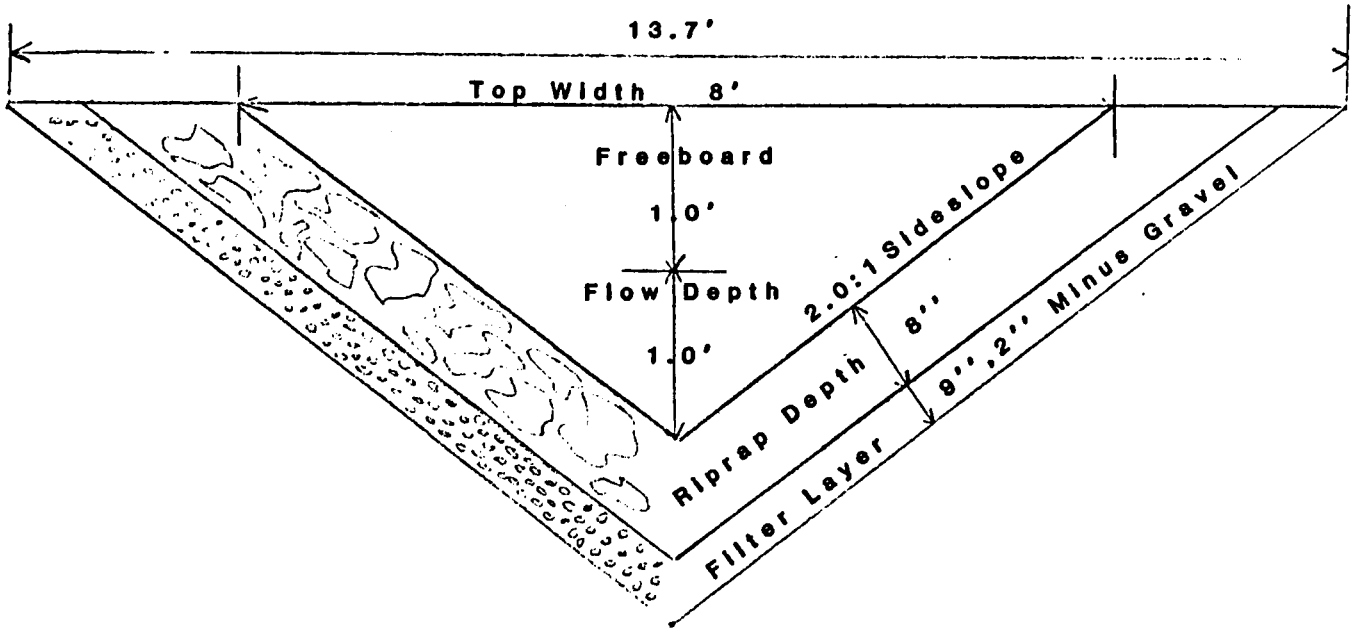
Assumptions for Peak Flow

1. Drainage area = 9.39 ac.
2. Hydraulic length = 1442.0 feet
3. Average land slope = 14%
4. 100-year, 24-hour precipitation = 2.3 inches
5. Storm distribution = SCS Type II
6. CN = 90

Peak flow = 12.47 cfs

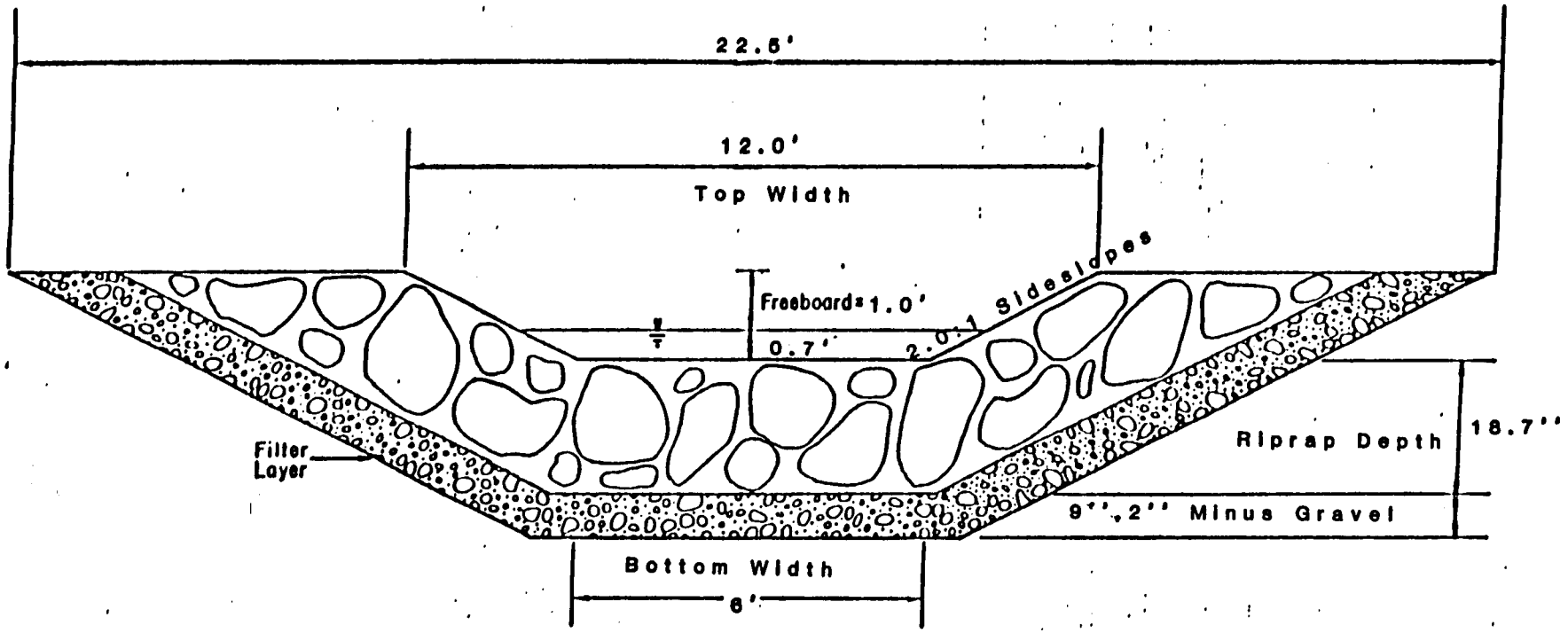
djh

9486R/11



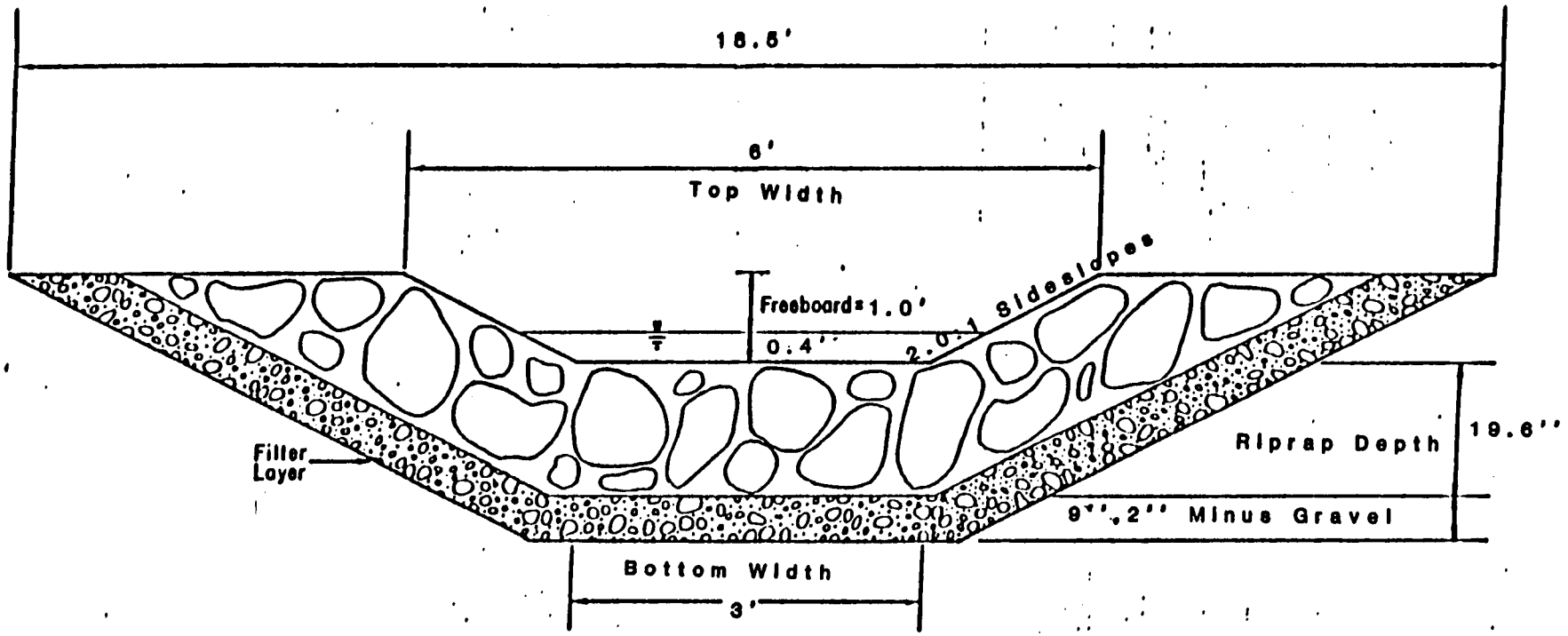
Typical channel dimensions

for intercept ditch



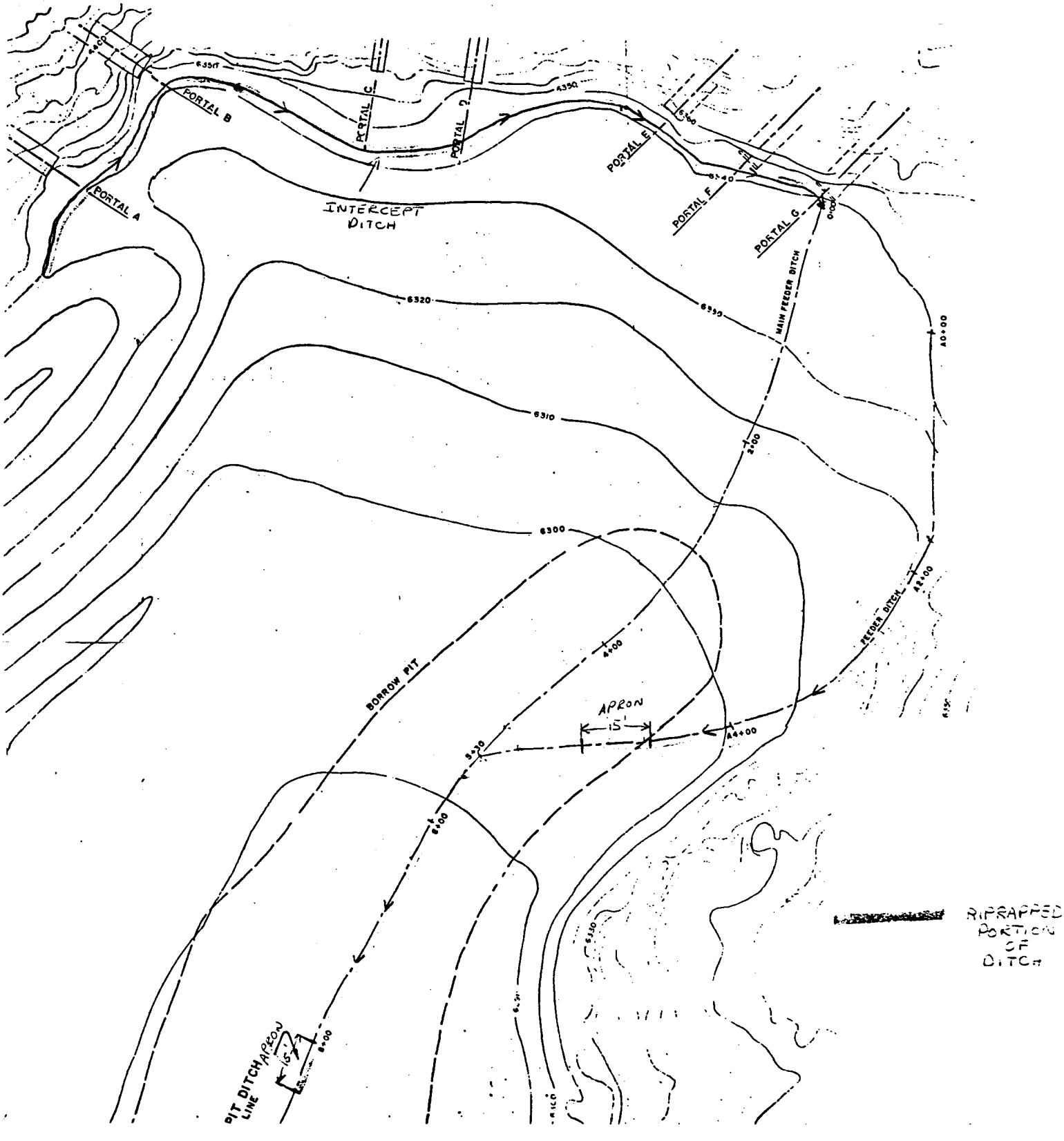
Typical channel dimensions

for main channel



Typical channel dimensions

for feeder ditch



PORTAL A
PORTAL B
PORTAL C
PORTAL D
PORTAL E
PORTAL F
PORTAL G
INTERCEPT DITCH
MAIN FEEDER DITCH
FEEDER DITCH
BORROW PIT
APRON
15'
PIT DITCH
LINE
6350
6340
6320
6310
6300
6330
A0+00
A2+00
A4+00
2+00
4+00
6+00
RIPRAPPED PORTION OF DITCH