Appendix C

Olson Engineering Mining Plans

OLSON ENGINEERING INC.

LAND SURVEYORS
ENGINEERS

1111 Broadway
Vancouver, WA 98660
FAX (360) 695-1385
PHONE (360) 695-1385

LETTER OF TRANSMITTAL

DATE 4/9/02 JOB NO.: 6521.00.01
RE: Interstate Rock Corbett Quarry

TO: Winterbrook Planning
310 SW Fourth Ave., Suite 1000
Portland, OR 97204

ATTN.: Tom Armstrong

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items.

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change Order ☒ federal express

COPIES	DATE	NO.	DESCRIPTION
1	4/9/02		Signed Eng plans, sheets 1-8
1	4/4/02		Rock Pit Alternatives

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS: Attached are the plans you requested. Please do not hesitate to call with any questions.

RECEIVED
APR 1 0 2002
BY:_____

COPY TO:

SIGNED Todd Johnson

If enclosures are not as noted, kindly notify us at once.

Corbett Rock Pit Alternatives

	Extraction Per Year (cy)					
	0	5000	35000	50000	75000	200000
A. IMPACT AREA / TRANSPORTATION						
1. Overall Mine Impact Area	-	24AC	24AC	24AC	24AC	24AC
2. Total area impacted at any time	-	5AC	5AC	5AC	5AC	5-10AC
3. Total available cubic yards of rock	-	2M	2M	2M	2M	2M
4. Decorative / Crushed Rock Split		80/20	60/40	40/60	30/70	0/100
5. Total Extraction Period	-	400 Yrs	60 Yrs	40 yrs	30 yrs	10 yrs
6. Amount of Rock to I-84	-	← Up to extr. Amount specified for total yrs. →				
7. Truck Route	-	none defined	Howard Canyon - Littlepage- Hurlburt- Columbia River Hwy I-84			
8. Av. No. Trucks/Day to Pit	-	2	14	20	30	80
B. MINE PROCESS						
1. Blasting Per Year L=Low H=High Yield	-	1H	3L 1H	4L 1H	6L 3H	8L 5H
2. Drilling	-	1 wk	4 wks	5 wks	8 wks	20wks
3. Rock Splitting	-	50 days	75 days	75 days	75 days	-
4. Rock Crushing	-	10 days	30 days	60 days	100 days	200 days
5. Rock Loading	-	0.5 hr/day	2.2 hr/day	2.6 hr/day	3.2 hr/day	5.0 hr/day
6. Rock Hauling	-	0.3 hr/day	0.8 hr/day	1.2 hr/day	1.5 hr/day	3 hr/day
7. Hours of Operation	-	7am - 5pm	7am - 5pm	7am - 5pm	7am - 5pm	7am - 5pm
C. IMPACT MITIGATION						
1. STORMWATER						
a) Buffers	-	No	Yes	Yes	Yes	Yes
b) Sediment Control	-	Yes	Yes	Yes	Yes	Yes
c) Truck Washdown	-	No	Yes	Yes	Yes	Yes
d) Quantity Control	-	No	Yes	Yes	Yes	Yes
e) Maintain Creek Flows	-	No	Yes	Yes	Yes	Yes
f) E. C. Disturbed Area	-	Yes	Yes	Yes	Yes	Yes
2. SOUND						
a) Berms	-	Natural Berms Provide all req. mitigation after "x" years				
b) Sound Walls	-	← Only needed for first "x" years →				
- period of "x" years	-	5	1	1	1	1
3. TRAFFIC						
a) Maint. Fund ($/cy. Extracted)	-	None	(35000 x)$	(50000 x)$	(75000 x)$	(200000 x)$
D. WESTERLY 1000'						
1. Addt'l area to be added to overall impact area	-	7.0 AC	7.0 AC	7.0 AC	7.0 AC	7.0 AC
2. Total extra yds. Available	-	400,000	400,000	400,000	400,000	400,000
3. Total extra years of extraction	-	80	12	8	6	2
4. Extra sound mitigation	-	Minimal natural berms so sound walls would be needed				
5. Watershed impacts	-	Impacts to knieriem creek watershed - req. extra mitigation				
6. Access / Haul roads	-	Probably need haul/access roads external of pit				

z:/6000/6500/6521 Corbett Rock Pit Alternatives.doc 4/9/02
TRJ/nsk

Corbett Rock Pit Alternatives

Equipment:

Excavators - 42,000 - 74,000 Pound Machines / On the average a 48,000 - 54,000 Pound Machine will be used.

Loaders - 16,000 - 105,900 Pound Machines / On the average a 35,000 - 45,000 Pound Machine will be used.

Forklift - 6,000 - 15,000 Pound Machines / Average 6,000 -8,000 Pound Machine will be used.

Dozers - 40,000 - 100,000 Pound Machines / Average 100,000 Pound D8 will be used to clear out mine.

Blasting:

Under .25 (1.4 pound) pounds of powder will be used per yard.

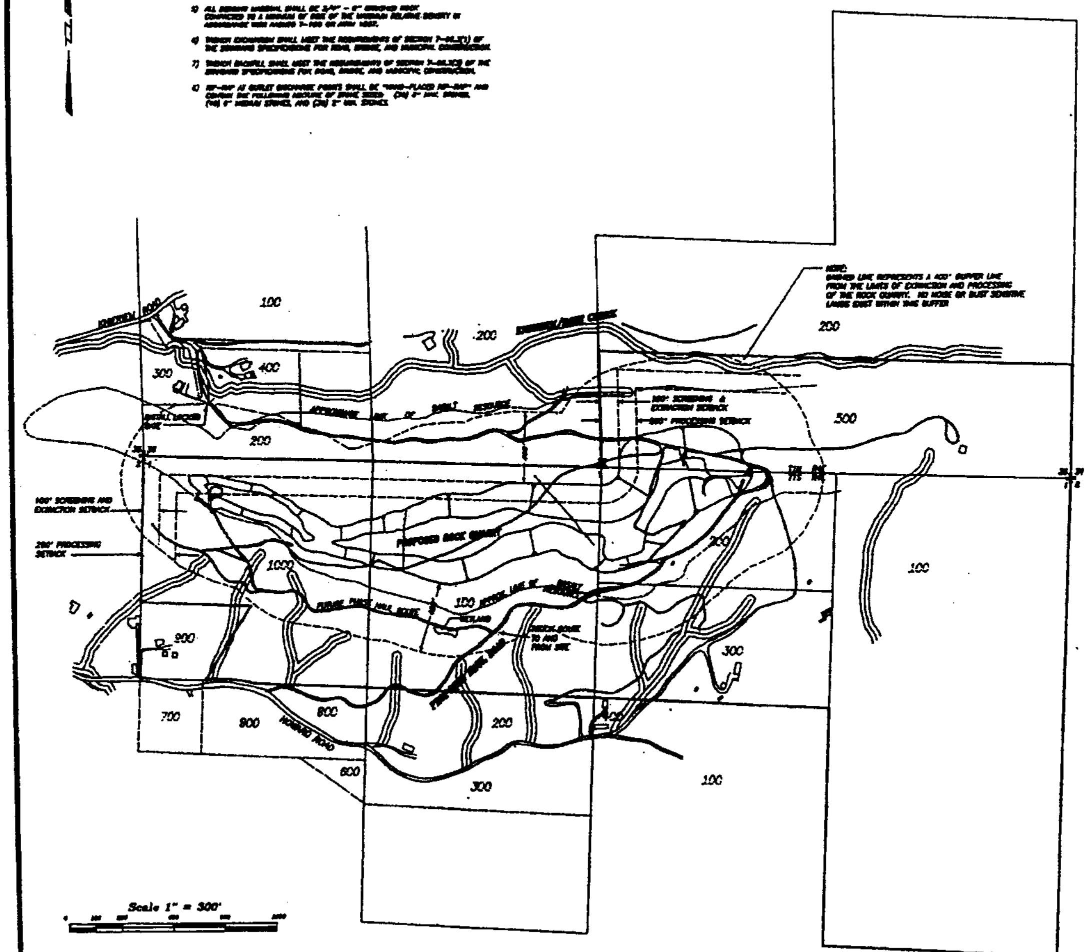
A seismograph will be used.

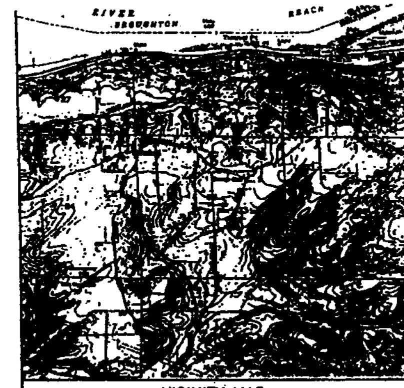
The shot will not exceed 1.2 on the seismograph 100 foot away from the shot.

z:/6000/6500/6521 Corbett Rock Pit Alternatives.doc 4/9/02
TRJ/nsk

SITE MINING PLAN
CORBETT ROCK QUARRY

LOCATED IN SECTION 1 T1S R4EWM, AND SECTION 36 T1N, R4EWM
MULTNOMAH COUNTY, OREGON





VICINITY MAP
NTS

SHEET INDEX:

1) COVER SHEET
2) EXISTING CONDITIONS PLAN
3) ONSITE PHASING PLAN
4) PHASE 1–4 STORM SYSTEM PLAN
5) PHASE 5–6 STORM SYSTEM PLAN
6) PHASE 7 STORM SYSTEM PLAN
7) FINAL RECLAMATION PLANTING PLAN
8) STORMWATER DETAIL SHEET

MULTNOMAH COUNTY

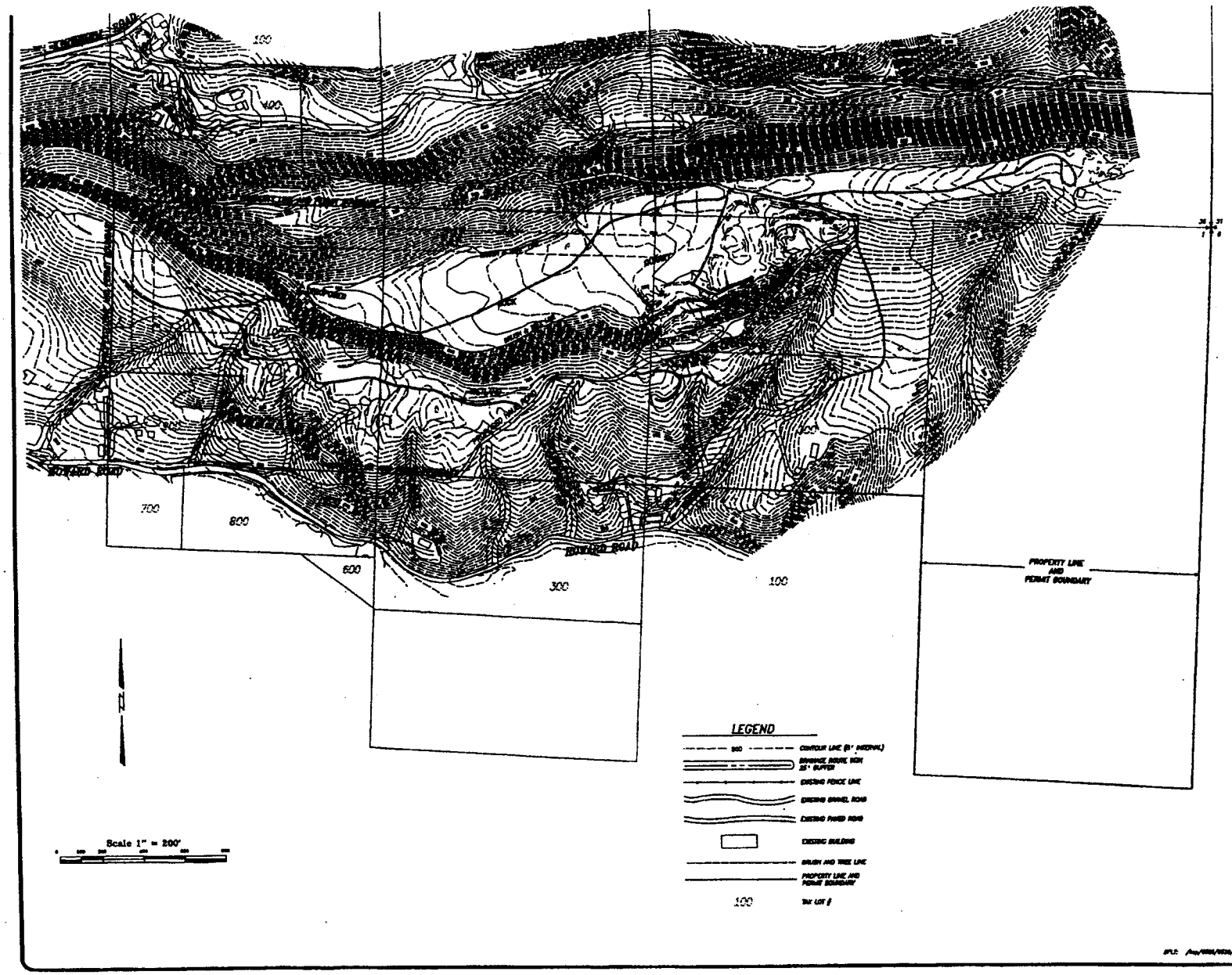
APPROVED: DIRECTOR OF PUBLIC WORKS DATE

INTERSTATE ROCK PRODUCTS, INC.
SECTION 1, T1S, R4E, W.M.,
MULTNOMAH COUNTY, OREGON
PO BOX 3036
VANCOUVER, WA 98662

COVER SHEET FOR:
INTERSTATE ROCK CORBETT QUARRY

OLSON ENGINEERS LAND SURVEYORS
ENGINEERING INC. 1111 BROADWAY, VANCOUVER, WA 98660

SHEET
1 of 8



INTERSTATE ROCK PRODUCTS, INC.
SECTION 1, T1S, R4E, W.M.
MULTNOMAH COUNTY, OREGON
PO BOX 3836
VANCOUVER, WA 98662

EXISTING CONDITIONS PLAN FOR:

INTERSTATE ROCK CORBETT QUARRY

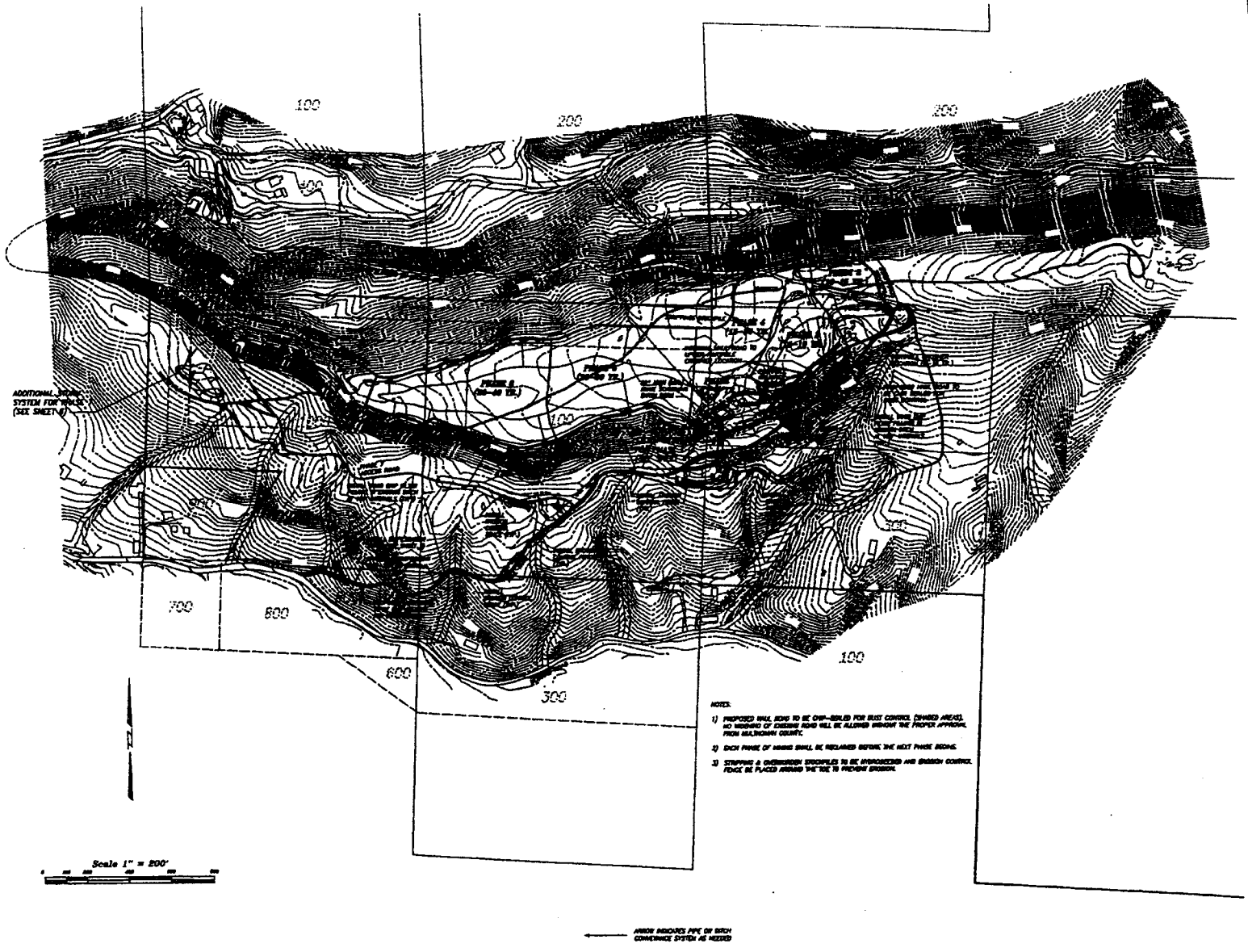
OLSON ENGINEERING INC.
LAND SURVEYORS
ENGINEERS
1111 BROADWAY, VANCOUVER, WA 98660

EXPIRES: 6-30-02

DESIGNED: MDC
DRAWN: DNF
CHECKED: RAT
DATE: FEBRUARY 2002
SCALE: 1" = 200'

INTERSTATE ROCK
CORBETT QUARRY
JOB NO. 6021.01.01

SHEET
2 of 8



CLIENT:
INTERSTATE ROCK PRODUCT, INC.
SECTION 1, T1S, R4E, W.M., MULTNOMAH COUNTY, OREGON
P.O. BOX 3838
VANCOUVER, WA 98662

ONSITE PHASING PLAN:

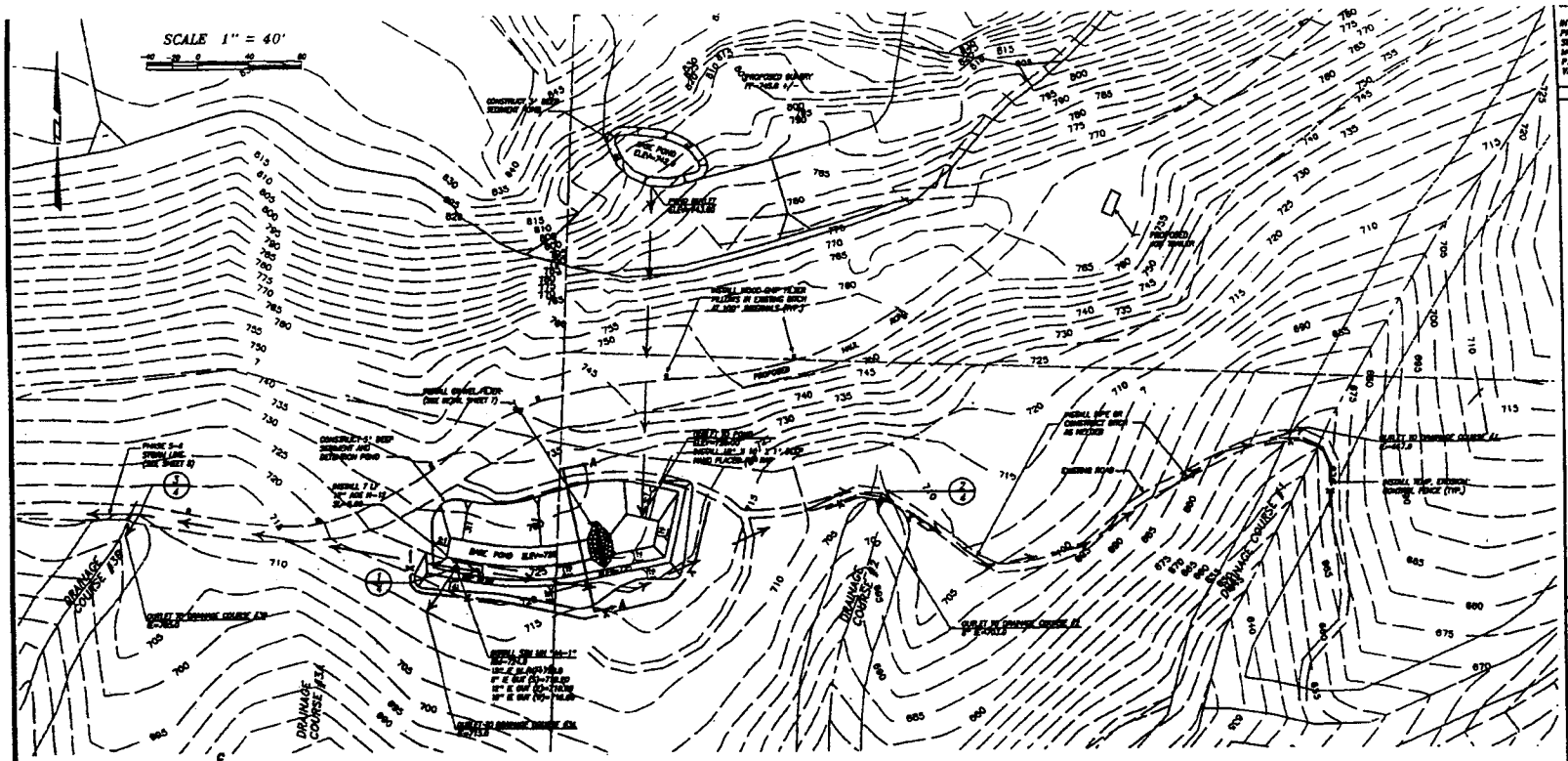
INTERSTATE ROCK CORBETT QUARRY

OLSEN ENGINEERING INC. LAND SURVEYORS ENGINEERS 1111 BROADWAY, VANCOUVER, WA 98660

DRAWN: MIC
DESIGN: BCF
CHECKED: PAT
DATE: FEBRUARY 2005
SCALE: AS 1" = 200'

INTERSTATE ROCK CORBETT QUARRY
JOB NO. 9521.01.01

SHEET
3 of 8



INTERSTATE ROCK PRODUCT, INC.
SECTION 1, T1S, R4E, W.M.,
MULTNOMAH COUNTY, OREGON
P.O. BOX 3858
VANCOUVER, WA 98662

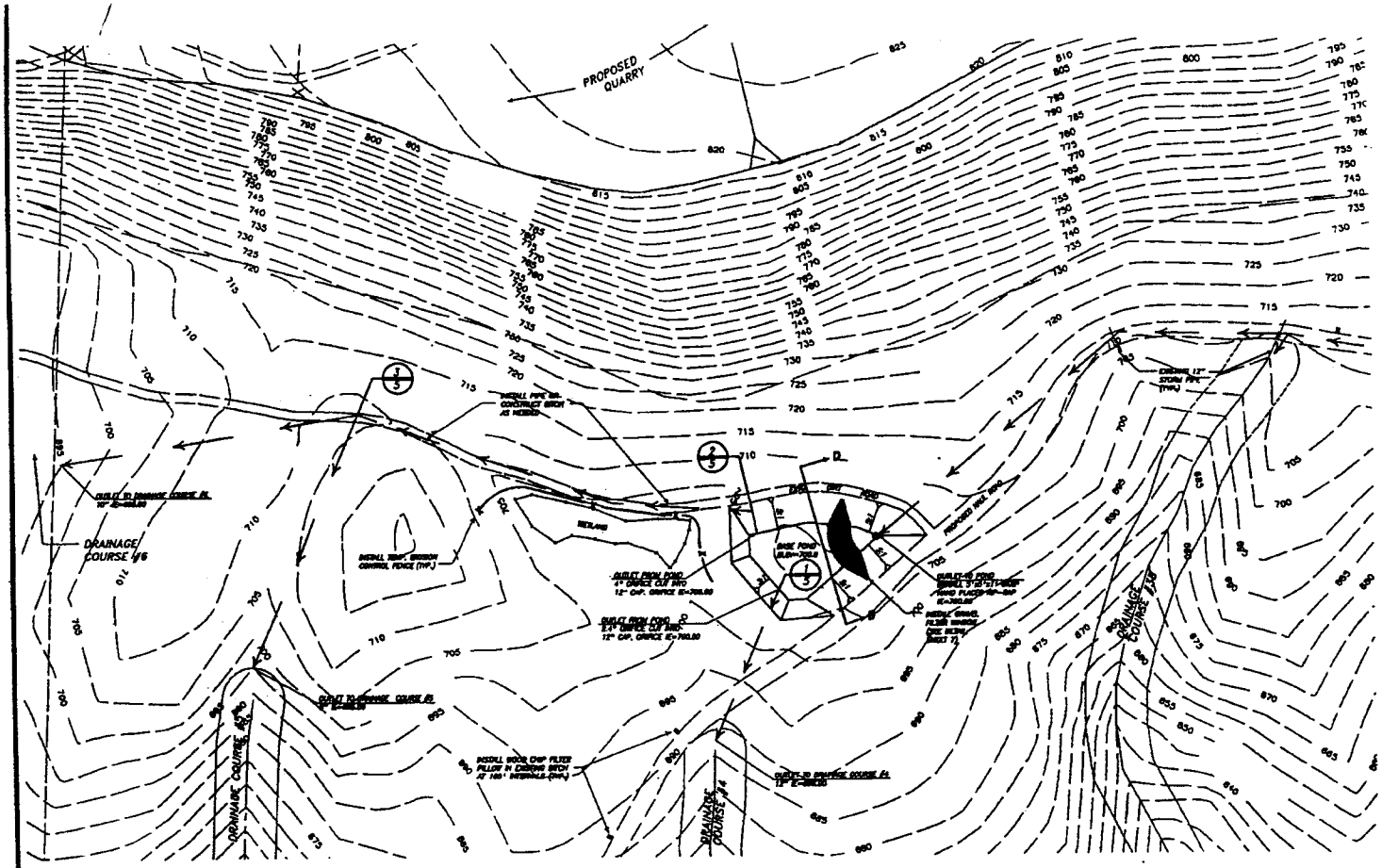
PHASE 1-4 STORM SYSTEM PLAN FOR:

INTERSTATE ROCK CORBETT QUARRY

OLSON ENGINEERING INC.
LAND SURVEYORS
ENGINEERS
1111 BROADWAY, VANCOUVER, WA 98660

DESIGNED: MDC
DRAWN: GHT
CHECKED: PAT
DATE: FEBRUARY 2002
SCALE: AS 1" = 40'
REVISION DWG. KLSN ENGINEERING, INC.
INTERSTATE ROCK CORBETT QUARRY
JOB NO. 4521.01.01

SHEET
4 of 8



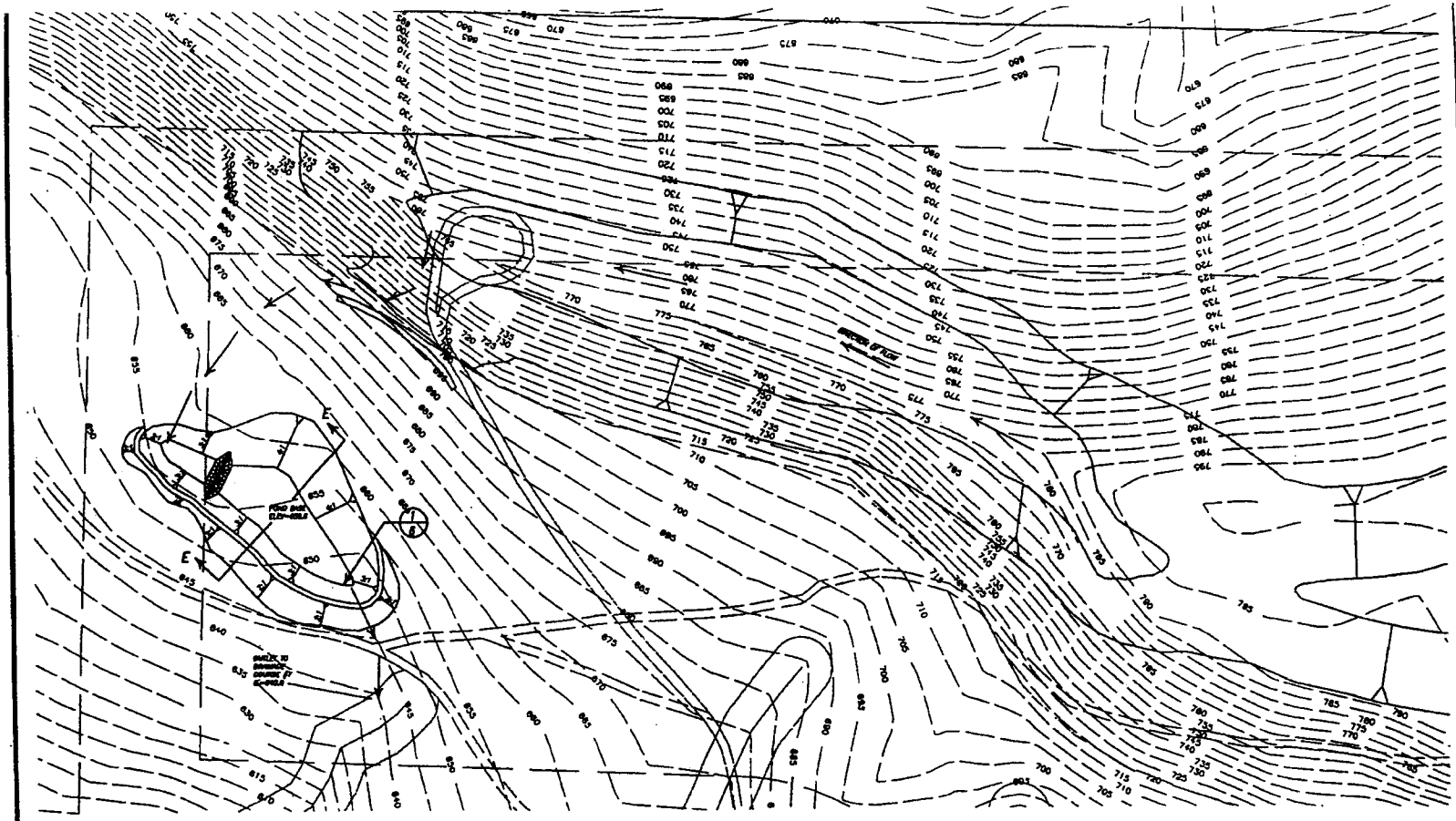
INTERSTATE ROCK PRODUCT, INC.
SECTION 1, T1S, R4E, W.M.,
MULTNOMAH COUNTY, OREGON
P.O. BOX 3616
VANCOUVER, WA 98663

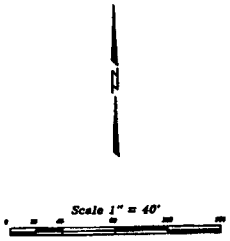
PHASE 5-6 STORM SYSTEM PLAN FOR:

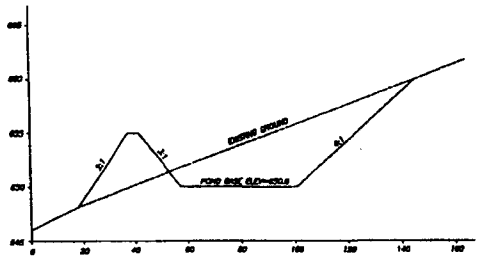
INTERSTATE ROCK CORBETT QUARRY

OLSON ENGINEERING INC.
LAND SURVEYORS
ENGINEERS
1111 BROADWAY, VANCOUVER, WA 98660

SHEET 5 of 8

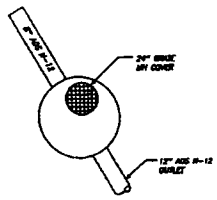






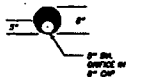
SECTION E - E

SCALE: H. 1"=40'
V. 1"=8'



1/6 POND OUTLET MANHOLE

N.T.S.



2/6 ORIFICE DETAIL

N.T.S.

INTERSTATE ROCK PRODUCT, INC.
SECTION 1, T1S, R4E, W.M.,
MULTNOMAH COUNTY, OREGON
P.O. BOX 3846
VANCOUVER, WA 98663

PHASE 5-6 STORM SYSTEM PLAN FOR:

INTERSTATE ROCK CORBETT QUARRY

OLSON ENGINEERING, INC.
LAND SURVEYORS
ENGINEERS
11111 BROADWAY, VANCOUVER, WA 98660

EXPIRES: 6-30-03

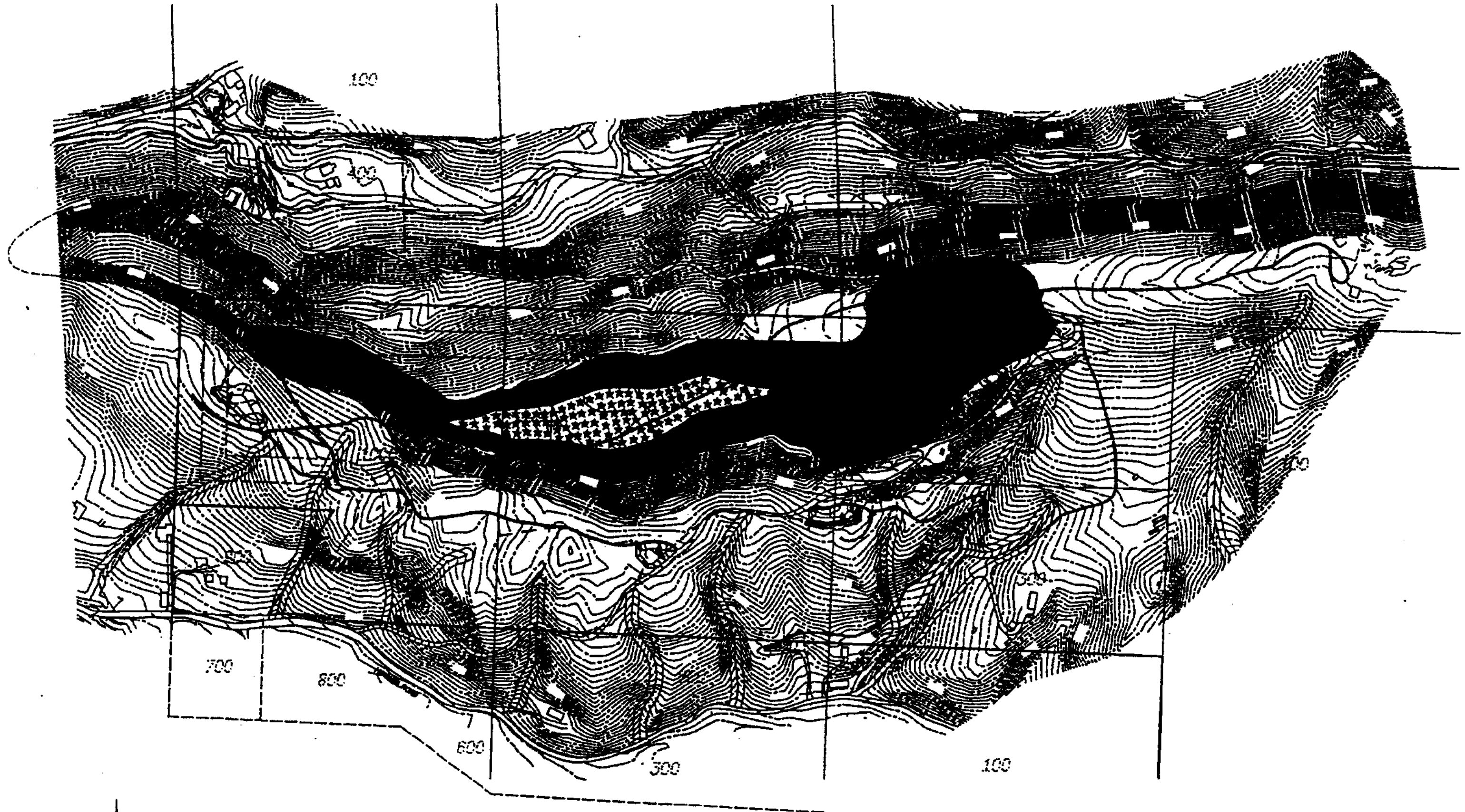
DESCRIPTION	BY

DESIGNED: MDC
DRAWN: BKF
CHECKED: PAT
DATE: FEBRUARY 2002
SCALE: H. 1" = 40'
V.

DEPARTMENT OF ENVIRONMENTAL QUALITY

JOB NO. 6021.04.01

SHEET
6 of 8



Scale 1" = 200'

NOTES

1) STORM PONDS AND CONVEYANCE SYSTEM SHALL REMAIN IN-PLACE AND BE PERIODICALLY MAINTAINED SO THAT THE NATURAL HYDROLOGY OF THE AREA WILL NOT BE ADVERSELY AFFECTED.

2) AREAS TO BE RECLAIMED SHALL FOLLOW THE PHASING SHOWN ON SHEET 3. THE PREVIOUS PHASE SHALL BE RECLAIMED PRIOR TO MINING OF THE NEXT PHASE.

PLANTING LEGEND

- AREAS TO BE PLANTED WITH NATIVE FOREST SPECIES INCLUDING ALDER, FIR, VINE MAPLE, WILLOWS, AND BIG LEAF MAPLE.
- AREA TO BE PLANTED WITH GRASSES FOR PASTURE
- AREA TO BE PLANTED WITH CHRISTMAS TREES

INTERSTATE ROCK PRODUCT, INC.
SECTION 1, T1S, R4E, W.M.
MULTNOMAH COUNTY, OREGON
PO BOX 3934
VANCOUVER, WA 98662

FINAL RECLAMATION MAP FOR:

INTERSTATE ROCK CORBETT QUARRY

OLSON ENGINEERING INC. LAND SURVEYORS ENGINEERS 1111 BROADWAY, VANCOUVER, WA 98660

DESIGNED: HDC
DRAWN: GHF
CHECKED: PAT
DATE: FEBRUARY 2002
SCALE: H: 1" = 200'

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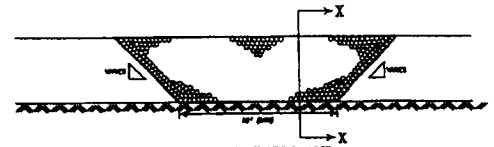
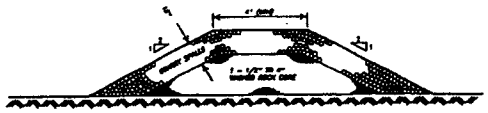
INTERSTATE ROCK CORBETT QUARRY

JOB NO. 4821.01.01

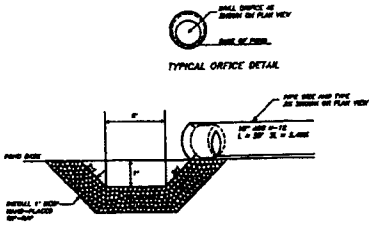
SHEET 7 of 8



QUARRY SPALLS AND
GRAVEL FILTER "WINDOW"

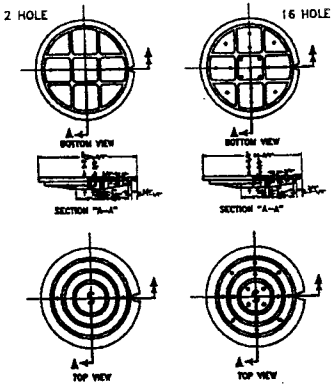


SECTION X-X

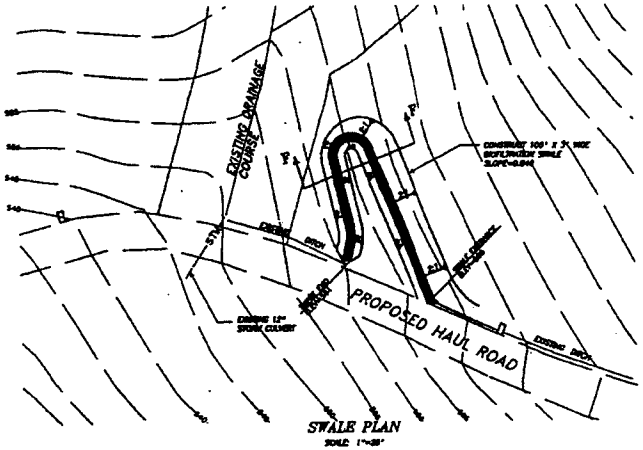


TYPICAL ORIFICE DETAIL

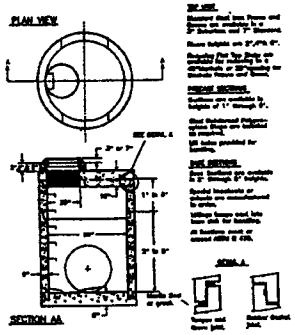
ORIFICE/SEDIMENT TRAP DETAIL
PIPE OUTLET DETAIL



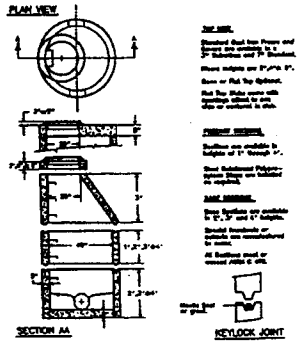
MANHOLE COVERS



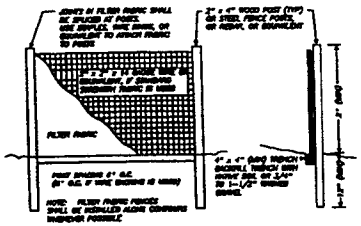
SWALE PLAN



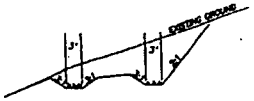
60" MANHOLE



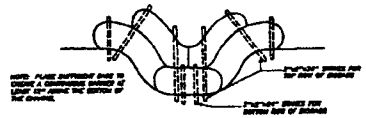
48" KEYLOCK MANHOLE



EROSION CONTROL FENCE



SWALE SECTION F-F



BIOFILTER BAG PLACEMENT DETAIL

INTERSTATE ROCK PRODUCT, INC.
SECTION 1, T1S, R4E, W.M.,
MULTNOMAH COUNTY, OREGON
P.O. BOX 3535
VANCOUVER, WA 98663

SHEET FOR:
INTERSTATE ROCK CORBETT QUARRY

OLSON ENGINEERING INC.
LAND SURVEYORS
ENGINEERS
1111 BROADWAY, VANCOUVER, WA 98660

DRAWN: MDC
CHECKED: PAT
DATE: FEBRUARY 2002
SCALE: AS 1" = 20'

SHEET
8 of 8

OLSON
ENGINEERING INC.
Practical expertise. Exceptional results.

Civil Engineering
Surveying
Planning
Landscape Design
Forestry

February 26, 2002

WBTB

Mr. Timothy V. Ramis
Ramis Crew Corrigan & Bachrach, LLP
1727 N.W. Hoyt Street
Portland, OR 97209

Re: Interstate Rock Corbett Quarry
OE #6521

Dear Mr. Ramis:

As requested, Olson Engineering Inc. (OEI) has prepared the following summaries:

1. Mining process and equipment used to extract rock from the Corbett Quarry.
2. Stormwater and erosion control methods used to protect the environment.

The following information was compiled through discussions with the mine operator, acoustic consultant, various site visits and internal calculations and design.

1. Mining Process and Equipment:

The mining process begins by loosening the raw product from the working face using explosives. The blast is intended to lightly loosen the raw material without damaging or spreading the rock. Once loosened, the rock is sorted by quality into three categories including split rock, wall rock, and decorative landscape boulders.

The split rock is loaded into a quarry truck and transported to an adjacent pad to be broken down by a manual splitting process. Splitting is accomplished by using a 30lb air drill to bore 7/8" holes in a row across the grain of the rock. Steel feathers and wedges are then pounded into the holes using 12 lb sledgehammers until the rock is split into a uniform block. This block is then "trimmed" using a smaller 3 lb hammer to remove any rough edges and create a final product.

Wall rock is processed to size using a hydraulic rock hammer mounted on the arm of an excavator. The wall rock is processed into high quality block wall rock (Louie Rock), standard wall rock, and class 100 riprap. Each product is then transported to its respective stockpile by a front-end loader.

After stockpiling, the material is loaded into dump trucks for transportation offsite. Approximately 1 truck per hour is loaded for transportation offsite, and 1 truck per

1111 Broadway, Vancouver, WA 98660 • 503-289-9936 OR • 360-695-1385 WA • Fax: 360-695-8117 • staff@olsonengr.com • www.olsonengr.com

hour is loaded to move material within the pit boundary. This internal truck transportation is used when material is moved a reasonable distance, however, the majority of internal transportation is moved over a short distance and is accomplished using a dozer and/or a front end loader. Approximately 50% of the trucks are loaded with an excavator that sets delicate rock into the dump trucks. The remaining 50% of the trucks are loaded with a front-end loader.

The equipment used during the mining process includes: dozer, front-end loader, excavator, hydraulic rock hammer, jackhammers, portable crushing and screening plant, diesel generator set, pneumatic rock drill, and haul trucks. All equipment is typical of what would be used for general rock mining.

2. Stormwater and Erosion Control Methods:

As with all land disturbing activity, stormwater runoff and its potentially negative impact to the surrounding environment is paramount importance. As part of the plan to mine rock from this Quarry, OEI has studied each aspect of the stormwater runoff and designed a system to minimize the potential for erosion and overall negative environmental impact.

A. Quantity Control. Impacted areas within the mine will create a concentration and increase in runoff from the site. To mitigate for this, the runoff will be collected and routed to a stormwater detention pond(s), where the flows will be reduced to match the historic levels of the 25-year storm and significantly reduce flows in all other storm events. In addition, the discharges from the pond will be split, and the correct flows routed to the individual watercourses so as to maintain their historic flows. Therefore, there will be no increase in the potential impact to the environment by the mining operation due to storm flow.

B. Erosion Control. A major concern with any land disturbance is the potential it causes for erosion. To reduce this potential, the following mitigation methods and practices have been included in the mining plan.

1. Sedimentation Ponds. All runoff from disturbed areas will be collected and routed to a system of sedimentation ponds. The system has been designed using a combination of ponds and gravel filters to remove any sediment picked up in the stormwater runoff and, therefore, discharge clean water to the streams.

2. Wash Down Areas. Vehicle traffic leaving construction sites is another area with a potential to introduce sediment to the environment. To mitigate this, a dry weather and wet weather wash down is proposed as part of the mining plan. This will consist of a rock exit constructed of 4" quarry spalls to dislodge any material on truck tires for dry weather and a shallow concrete drive-through basin to wash tires during wet weather.

3. Reduction in Disturbed Areas. One of the best and cheapest ways to reduce the potential for erosion is to minimize the total area impacted at any one time. Therefore as part of the mining plan, only 5 acres of area is proposed to be impacted at any time with previously impacted areas being reclaimed as the mining is completed.

4. Disturbed Area Stabilization. Overburden stockpiles and other non rock slopes have a greater potential for producing sediment-laden runoff, therefore, these areas will be stabilized with either geo-textiles mulch, plastic, or vegetation depending on the period of time they are likely to remain disturbed. In addition to stabilizing the ground, silt fence will be used where it is deemed necessary further reducing any erosion potential.

5. Buffers. All sensitive areas will be clearly delineated and protected by vegetated buffers and silt fence.

6. Dust. Dust will be controlled from leaving the site by chip-sealing the access road to the mining area. In addition, a water truck will be used on site during the summer to reduce the development of dust.

7. Existing & Proposed Slopes. As can be seen from the tops, the existing site has a large amount of steep slopes. Runoff from these areas have the potential for high velocities and erosion. However, with the development, the vertical drop will be within the project boundary and the storm and erosion control system located prior to discharge. This reduces velocities and the erosive potential. Therefore, the historic runoff is likely to have a considerably higher erosive potential than in the developed state.

We trust the above summaries meet your requirements. If you should have any questions or comments, please feel free to contact me at 695-1385.

Sincerely,

Peter A. Tuck, P.E.

PAT/kb
Z:\6000\6500\6520\6521.eng.mining process & equipment.doc

Corbett Rock Pit Alternatives
OE Job #6521
January 11, 2002

Descriptions

A2) Total area impacted at any time - *The working area of the operation will cover a 5-acre area. As the operation disturbs new area, completed mine area will be reclaimed resulting in approximately 5 acres of disturned area at any time.*

A4) *The split given is based on the need for 20,000 CY of decorative rock per year. At 5,000 CY, it was assumed that 20% of the rock would be unsuitable for decorative rock and crushed for gravel. For 200,000 CY, only crushed rock will be processed as this is the base amount of removal to make a viable project. The 200,000 CY/YR alternative has been proposed as this is the base amount of crushed rock removal to make a viable project with no decorative rock.*

B1) Blasting - *Blasts per year based on approximately 10,000 CY of material per blast. For decorative rock, a low-yield blast is used resulting in larger fractured rock. Conversely for rock to be crushed, a high-yield blast is used resulting in smaller fractured rock.*

B2) Drilling - *On average, approximately one week of drilling is required per blast.*

B3) Rock Splitting - *Most rock splitting is done by hand, however, large rocks are split using a hydro hammer. This is only done when a sufficient quantity of large rock has been stockpiled. For the 5,000 CY/YR scenario, the small size of the operation creates an inefficiency of scale. Therefore, on the larger scale operations, the use of the hydro hammer only increases by about 50%.*

B4) Rock Crushing - *Crushing time will be related to area available to stock pile rock. This time will reduce as the available area increases. For this purpose, it assumes 2 acres available for crusher operation.*

On average, portable crushers have capacity to crush up to 1500 tons of rock per day. For this analysis, a crusher rate of 1200 tons/day was used. This equates to approximately 500 CY of in-place rock per day based on 2.4 tons per CY in-place rock. For 200,000 CY/YR, a crusher rate of 1000 CY of in-place rock per day is assumed.

B5) Rock Loading - *Loading times for the different types of rock are as follows:*

Decorative Rock - 10 to 25 minutes per truck
Crushed Rock- 5 minutes per truck

B6) Rock Hauling - *Rock hauling from the working face to stockpile areas will be done using front end loaders and dozers. The distance between these 2 areas is small and, therefore, trucks will not generally be used.*

C1a) Buffer - *No impact areas adjacent to streams on site will be determined.*

C1b) Sediment Control - *Multi stage sediment pond system designed to remove all sediment from storm runoff.*

C1c) Truck Washdown - *Wash pond installed to enable truck wheels to be washed prior to leaving site. This would only be used during wet weather.*

C1d) Quantity Control and C1e) Maintain Creek Flows - *Detention pond designed to reduce runoff flows to historic rates. Release from pond routed to existing drainage ways split to match historic flows.*

C1f) Erosion Control - *Erosion control system designed using Best Management Practices (BMPs) to reduce potential of any erosion to acceptable level.*

C2b) Sound Walls - *Designed to reduce sound levels to below required limits.*

C3a) Maintenance Fund - *Propose a monetary donation for road maintenance based on a dollar amount per CY of rock removed.*

D1-3) *Extraction area determined by extending limit of rock based on bore locations from Schlicker report. Depth of rock assumed to be 70 feet. Area currently being evaluated by geologists. Extraction area and volume will be refined after report received from geologists.*

D4) Extra Sound Mitigation - *As the operation extends to the West, the natural berm diminishes until the use of sound walls in addition to the berm will be required to meet sound standards.*

D5) Watershed Impacts - *As the operation extends to the West, runoff will begin to be routed to Knierlem Creek. This runoff will be treated with same mitigation as the flow to Howard Creek.*

D6) Access Haul Roads - *New haul road for westerly end would probably use existing onsite road to this area. Offsite haul route would stay same as for previous phases.*

These alternatives were developed over a short period of time. Due to the short time period available to prepare these documents, we were not able to perform extensive research and had to use existing information to develop some criteria contained in the alternatives. Further research may cause some revisions.

Tom Armstrong

From: Todd Johnson [todd@olsonengr.com]
Sent: Tuesday, April 16, 2002 5:15 PM
To: Tom Armstrong
Subject: Re: Howard Canyon mining methods

Tom:

1. Truck route - Just to clarify, the plan is to use Howard Road for ingress and egress, and not to use Knierem Road for access. Are you going to use the same route (Howard - Littlepage - Hurlburt - Columbia River Hwy) for ingress(empty trucks)? Or, will empty trucks use I-84 to Corbett Hill Road to Columbia River Hwy to Littlepage?

The proposed haul route will be used for ingress and egress. Knierem Road will not be used for access. The same route will be used for empty trucks.

2. Eastern portion of resource site - Are there any plans to mine tax lots 500 or 100 (east of the existing haul road)?

The current proposal includes portions of tax lots 100 and 500. The extent of mining is shown on the plans we sent. Mining is not proposed east of the existing haul road on tax lot 100. mining is proposed north of the existing haul road on tax lot 500.

I hope this helps. Please do not hesitate to call with any further questions.

Todd Johnson
Olson Engineering Inc.

----- Original Message -----
From: Tom Armstrong
To: Todd Johnson
Cc: Kim Peoples ; Greg Winterowd ; Tim Ramis
Sent: Monday, April 15, 2002 10:24 AM
Subject: Howard Canyon mining methods

A couple of follow-up questions:

1. Truck route - Just to clarify, the plan is to use Howard Road for ingress and egress, and not to use Knierem Road for access. Are you going to use the same route (Howard - Littlepage - Hurlburt - Columbia River Hwy) for ingress(empty trucks)? Or, will empty trucks use I-84 to Corbett Hill Road to Columbia River Hwy to Littlepage?

2. Eastern portion of resource site - Are there any plans to mine tax lots 500 or 100 (east of the existing haul road)?

Tom Armstrong, AICP
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Winterbrook Planning
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(503) 827-4350 - fax

-----Original Message-----

From: Todd Johnson [mailto:todd@olsonengr.com]
Sent: Tuesday, April 09, 2002 3:30 PM
To: tom@winterbrookplanning.com
Subject: Re: Howard Canyon mining methods
Importance: High

Tom:

I am sending you copies of revised plans with the added information you requested. Also below is a summary of how the items have been addressed. Please feel free to call with any questions.

1. Please send me the electronic file of your original extraction alternatives table.

Attached is a current copy of the extraction alternatives table in Microsoft Excel format.

2. I have a copy of the site plans for the CUP applications. The aggregate resource area appears to extend east of the existing haul road. Under your alternatives, will you be extracting this area? If so, can you define the quarry area, specifically so we can identify loading and crushing areas and evaluate potential stormwater/stream impacts. Is this eastern area included in your volume estimates?

The existing haul road to the east is not proposed to be utilized as a haul road and will be removed as shown on the mining plans. All mining will be on the south side of the ridge. Stormwater in this area will be routed to the facility as is shown on the mining plans. No stream impacts are proposed for this area. This area was included in our volume estimates.

3. What are your assumptions regarding the westerly 1,000 feet (the narrow ridge) extending from the previously proposed quarry area? What will be the extraction methods?

The western 1000 feet will be mined as shown on the revised mining plans. Extraction methods will be similar to what is proposed for other portions of the quarry.

4. We need more specific information on the blasting. The previous table referred to high and low yield blasts. For the noise analysis, we need information on charge weights. Also, for the higher volumes, do you know how many blasts of each type? For example, under the 35,000cy per year alternative, you indicate 4 blasts. Are blasts 2 high and 2 low? Or, 3 and 1?

The attached Extraction Alternatives Table has been updated to address this question.

5. It would be helpful to have more specific information on the equipment, especially in terms of makes and models. Al Duble has taken actual measurements on the existing hammers and loaders. Without the specific information, we will have to use averages for the other equipment. Our intent is coming out of this process is to create performance standards or thresholds that will become approval criteria for the conditional use permit. So the more information we have, the more accurate we can be.

We have included this additional information on the Extraction Alternatives Table.

6. The stormwater methods still need more detail, especially in terms of operating and maintenance procedures. However, this information can wait until later in our process when we discuss mitigation measures.

This will be provided at a later date. If you could provide specific questions you would like to see addressed, it would aid us in providing this information.