



MANITOBA

DEPARTMENT OF ENERGY AND MINES  
MINERAL RESOURCES DIVISION

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OPEN FILE REPORT  
OF82-2

AGGREGATE RESOURCE MANAGEMENT PROPOSALS FOR LAND USE PLANNING  
WITHIN THE SOUTH INTERLAKE PLANNING DISTRICT

compiled by  
R.V. Young



MANITOBA

DEPARTMENT OF ENERGY AND MINES

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Winnipeg, 1982

The data presented in this report has been compiled from several sources. The recommendations contained within are intended as an aid for land use planning and are not to be regarded as a final interpretation of the mineral resources of the area.



## TABLE OF CONTENTS

	Page
Summary	1
Introduction	1
Sources of Information	1
Aggregate Resources	3
Introduction	3
Origin of Sand and Gravel	3
Distribution of Sand and Gravel Deposits	5
Near-Surface Bedrock	5
Supply and Demand	7
Supply of Aggregate	7
Demand for Aggregate	13
Supply vs Demand for Aggregate	14
Recommended Planning Status	14
Aggregate Deposits	16
Near-Surface Bedrock	16
Conclusion	19
References	20

## LIST OF TABLES

Table 1. Suitability of Bedrock for Aggregate Production	7
Table 2. Sand and Gravel Resources in the R.M. of Rockwood and Rosser	8
Table 3. Estimated Reserves of Sand and Gravel by Quality	11
Table 4. Estimated Reserves of Potential Aggregate Derived from Crushed Dolomite	11
Table 5. Estimated Demand for Aggregate in the South Interlake Planning District	15
Table 6. Aggregate Supply and Demand Within the South Interlake Planning District	15



## LIST OF FIGURES

	Page
Figure 1. South Interlake Planning District.	2
Figure 2. Potential aggregate sources in the Winnipeg region.	4
Figure 3. Airphoto mosaic (1:31 680) showing mined portions of glaciofluvial deposit 4520 within the Rural Municipality of Rockwood.	6
Figure 4. Ground view of mined portion of deposit 4520 at LS5-5-13-2 E.P.M. Farm buildings on top of the deposit prohibit mineral extraction.	6
Figure 5. Rehabilitated portion of the Little Stony Mountain Quarry currently used as a park.	12
Figure 6. Airphoto (scale 1:5068) showing active quarry (1) at 5-14-2 E.P.M. Notice berm (2) adjacent to section road and inactive quarry (3).	12
Figure 7. Active quarry operation northeast of Stonewall (33-13-2 E.P.M.).	13
Figure 8. Airphoto (scale 1:5068) showing rehabilitated quarry site in Stonewall. The former quarry is used as a recreation site with swimming pool (1), trailer park (2), and baseball field (3). Portion of the quarry (4) unrehabilitated.	17
Figure 9. Airphoto (scale 1:5068) showing inactive quarries within Stonewall. Residential development (1) adjacent to quarries precludes further mining. The inactive quarries are currently being used for residential development (2) and as a lumberyard (3).	18
Figure 10. Secondary land use for former quarry site in Stonewall. The quarry is used as a lumberyard. Kilns in background.	19

## LIST OF APPENDICES

Appendix I Grain Size Analysis and Industrial Usage Assessment	21
Appendix II Provincial Land Use Policy #13, Manitoba Regulation 217/80	39

## LIST OF MAPS

Map 1 Recommended Planning Status for Sand and Gravel	(in pocket)
Map 2 Recommended Planning Status for Near-Surface Bedrock	(in pocket)

## SUMMARY

Aggregate sources within the South Interlake Planning District are derived from glaciofluvial deposits, beach ridges, and near-surface dolomite bedrock. Naturally occurring gravel within the District totals 33.0 million tonnes, and is concentrated primarily within the Rural Municipality of Rockwood.

There are sufficient reserves of sand and gravel, and crushed dolomite for future mining in excess of 25 years. The production of aggregate from crushed dolomite exceeds production from naturally occurring sources.

Detailed recommendations are presented with respect to the proposed planning status for each aggregate deposit and near surface bedrock deposit. It is recommended that no new development take place on deposits designated with a "Stop" status, until the resource has been depleted and the site rehabilitated. Further consultation is required for those deposits allocated a "Caution" status.

## INTRODUCTION

Sand, gravel, and near-surface dolomite are non-renewable resources which are the basic raw materials used by the construction industry. Residential development around expanding urban centres are often in conflict with mineral extraction. As an aid for land use planning, mineral resource recommendations are presented to protect valuable aggregate mineral resources from land uses which would conflict or prohibit mineral extraction within the South Interlake Planning District.

The South Interlake Planning District comprises the Rural Municipality of Rockwood and Rosser (Fig. 1). The planning district is located adjacent to and immediately north of the City of Winnipeg. The recommendations contained within this report were previously presented to the South Interlake Planning District as a technical background study for incorporation into the district development plan.

### Sources of Information

Several sources of information were used to compile this report. James F. McLaren Limited (1980) conducted a mineral resource inventory of the Southern Interlake area which included the Rural Municipality of Rockwood. The sand and gravel data from that report was used for the Rural Municipality of Rockwood, and data from the Aggregate Resources Section, Mineral Resources Division was used for the Rural Municipality of Rosser. Planning recommendations concerning near-surface dolomite resources are based on "Dolomite Resources of the Southern Interlake Region", a series of maps compiled by B. Bannatyne and C. Jones (1979) of the Mineral Resources Division. Computerized sand and gravel data on file with the Aggregate Resources Section, and Mineral Resources Inventory Cards on file with the Mineral Resources Division were also used.



## AGGREGATE RESOURCES

### Introduction

Aggregate resources within the content of this report refer to sand, gravel and near-surface dolomite. Potential sources of aggregate in the Winnipeg area are shown in Figure 2. Although there would appear to be sufficient reserves of aggregate, the deposits are not evenly distributed throughout the area. The quality and remaining reserves of each deposit are variable. The aggregate resources are also finite. When economically viable sources close to the Winnipeg market become depleted or unavailable (due to constraints such as residential buildings) the aggregate industry must acquire alternate sources of raw materials, often farther from the intended markets. Regions which lack an adequate supply of aggregate require a program of planning which will protect deposits for ongoing and future development.

Planning activities must be based on an accurate evaluation of what resources are available and an estimate of what resources will be required. Planning activities should also recognize mineral extraction as an interim land use such that after mineral extraction has ceased, the mine site can be rehabilitated and the land returned to an alternate land use.

### Origin of Sand and Gravel

Glaciofluvial and beach ridge deposits are the dominant surficial geologic features in the study area. The evolution of the surficial geology is relatively simplistic, comprised of till plains overlain by lacustrine deposits formed during the recession of glacial Lake Agassiz. The till plains are gently undulating and composed of reworked till overlying an undisturbed calcareous till.

Overlying the till plains is a thin mantle of lacustrine sediment composed of clay and silt. The overlying mantle is uniformly found within the South Interlake Planning District, except on the near-surface bedrock highs at Stony Mountain and Stonewall.

The sand and gravel deposits within the study area form a pattern of beach ridges and glaciofluvial features relating to the presence of former glacial Lake Agassiz.

During the last glacial episode, the South Interlake Planning District was inundated by ice up to 2000 m in thickness. Till, a stone, sand, silt and clay mixture, was deposited at the base of the glacier. As the ice receded, the glacier impounded the natural drainage of the meltwater forming glacial Lake Agassiz to depths of 200 m. During the late stages of the lake, the water level gradually lowered and the higher land levels emerged.

The action of the lake water, generated by wind and currents, sorted the till, creating sand and gravel beaches with characteristic sand bars and spits along the shoreline, and washing the finer silt and clay into the deeper portions of the lake. Sand and gravel was also deposited along the streambeds which flowed directly into glacial Lake Agassiz.

Based upon relative location and elevation, the shoreline of the various stages of glacial Lake Agassiz have been traced. For example, beach deposits 4530, 4548 and 4549 (refer

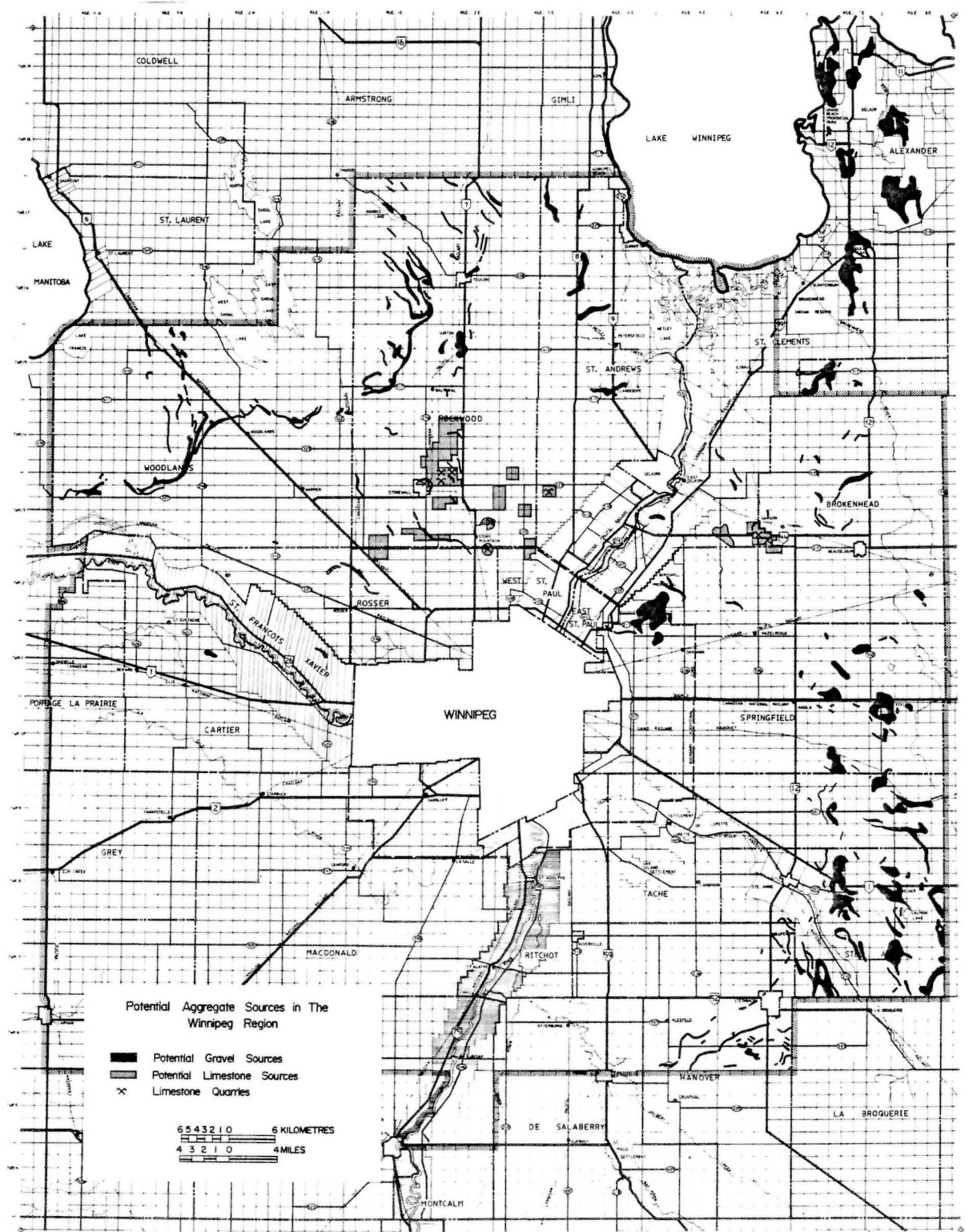


Figure 2. Potential aggregate sources in the Winnipeg region.



to Map 1 - in pocket) represent three successive levels of glacial Lake Agassiz. The western beach ridge (4530) represents the highest level at 267 m a.s.l. (875 ft.). The intermediate ridge (deposits 4548 and 4540) represents a lower level at about 251 m a.s.l. (825 ft.) and the easternmost beaches (deposits 4549 and 4520) are remnants of the latest and lowest level of glacial Lake Agassiz in this area at 244 m a.s.l. (800 ft.).

#### Distribution of Sand and Gravel Deposits

The sand and gravel deposits are confined to beach ridge and glaciofluvial features. The beach ridges trend in a north-south direction corresponding to the levels of glacial Lake Agassiz, with the glaciofluvial features intersecting the beach ridges in a north-west to south-east direction. This trend is well illustrated by the glaciofluvial deposits 4531, 4532, 4537, 4533, 4534, 4535 and 4536, intersecting the linear beach ridge deposit 4530. Several glaciofluvial deposits not intersecting beach ridges are found in the Stonewall area, specifically deposits 4520 (Fig. 3 and 4) 4518, 4527, 4526 as well as deposit 4554 north of Teulon.

Generally, the stratigraphy of the sand and gravel deposits is a shallow sandy pebbly gravel overlying a clayey till. The beach deposits tend to exhibit characteristic horizontal beach bedding, while the glaciofluvial deposits exhibit more variable stratigraphy, ranging from unsorted sand and gravel to graded bedding.

The glaciofluvial deposits are characterized as low relief ridges. The variable sedimentary structure is due to the reduced sorting action resulting from short transport distances and small contributing drainage basins. The beach ridges are perhaps one of the more characteristic geomorphic features within the planning district. The beach ridges appear as narrow, long, low ridges, and closely follow topographic contours.

#### Near-Surface Bedrock

The primary source of aggregate within the South Interlake Planning District is derived from the quarrying and crushing of the near-surface dolomite bedrock. Several active quarries presently produce an average of 996 600 tonnes of aggregate annually.

The regional and near-surface bedrock geology is illustrated on Map 2 (in pocket). A succession of sedimentary formations trend approximately in a north-south direction, ranging in depth below surface from less than 3 m to over 40 m.

The Stony Mountain Formation of Ordovician age is found primarily in the centre of the planning district and overlies the Red River Formation which is found in the eastern portion of the planning district. Dolomite of the Stonewall Formation, of Ordovician and Silurian age, overlies the Stony Mountain Formation. It in turn is overlain by dolomite of the Silurian age Interlake Group found along the western edge of the planning district.

Dependent upon the specific geology of each formation member, the suitability of each member for potential aggregate production has been generalized and presented as Table 1.



Figure 3. Airphoto mosaic (1:31 680) showing mined portions of glaciofluvial deposit 4520 within the Rural Municipality of Rockwood.



Figure 4. Ground view of mined portion of deposit 4520 at LS5-5-13-2 E.P.M. Farm buildings on top of the deposit prohibit mineral extraction.

TABLE 1

## Suitability of Bedrock for Aggregate Production

Formation	Member	Potential Aggregate Quality
Interlake Group		High
Stonewall		High
Stony Mountain -	Williams	Low
	Gunton	High
	Penitentiary	Medium
	Gunn	Low
Red River	Fort Garry (upper)	Medium-High
	Fort Garry (lower)	Medium
	Selkirk	Low

## SUPPLY AND DEMAND

## Supply of Aggregate

Estimated reserves of sand and gravel for each deposit are shown in Table 2. Total reserves within the planning district are 33.0 million tonnes; 32.4 million tonnes within the Rural Municipality of Rockwood and 0.6 million tonnes within the Rural Municipality of Rosser. Potential reserves of near-surface dolomite (overburden less than 3 m) were calculated based on an average quarry depth of 3 m. Potential reserves of dolomite equal 171.2 million tonnes; 126.6 million tonnes within the Rural Municipality of Rockwood and 44.6 million tonnes within the Rural Municipality of Rosser. A summary of potential aggregate reserves is shown in Tables 3 and 4.

Within the Rural Municipality of Rosser, there is only one sand and gravel deposit, 337, which is actively being mined. Deposit 365 has previously been mined to depletion and the pit is rehabilitated. There are two former quarries located within the municipality. The Little Stony Mountain Quarry (27 and 34-11-2 E.P.M.) was formerly operated by the City of Winnipeg until 1905. The quarry site is currently rehabilitated and is part of a park (Fig. 5). The Lilyfield Quarry (28-12-2 E.P.M.) was operated by the Winnipeg Supply and Fuel Company Limited and has been abandoned since 1967.

An estimated 98% of all naturally occurring sand and gravel is located within the Rural Municipality of Rockwood. Existing sand and gravel pits supply regional markets and no sand and gravel is exported to the Winnipeg market. Within the municipality, there are seven active limestone quarries, two within Stony Mountain and five quarries located 4 km northeast of Stonewall (Fig. 6 and 7).



TABLE 2

## SAND AND GRAVEL RESOURCES IN THE R.M. OF ROCKWOOD

DEPOSIT NUMBER (SEE MAP)	MATERIAL CONTENT	DEPOSIT TYPE	QUALITY	(tonnes)		RECOMMENDED PLANNING STATUS	COMMENTS
				RESERVE ESTIMATE			
4518	Sandy fine gravel, some till	Fluvial	Medium-low	1 620 500		Stop	4 pits; 2 active; past Department of Highways use; 2 naturally re- claimed with water
4519	Sand and fine gravel	Beach	Low	16 700		Caution	2 pits; past Highways use
4520	Sandy coarse gravel and stone	Beach	Medium	1 186 700		Stop	16 pits; some commercial, some farm- yard; past Highways use
4521	Unsorted sand and gravel	Beach	Low	44 900		Go	Shallow gravel (0.3 m) over till
4522	Sand and gravel	Beach	Low	85 400		Caution	Commercial pits; adjacent to quarries
4524	Sand and gravel	Beach	Medium	193 600		Caution	Commercial pits; adjacent to quarries
4525	Sand and gravel	Fluvial	Medium	136 600		Caution	No pits; near quarries
4526	Fine sand to coarse pebbles	Fluvial	Medium- high	897 600		Stop	Active pit in western part of deposit; past Highways use
4527	Sandy coarse gravel	Fluvial	Medium- high	535 900		Stop	Deep pit, not presently active; past Highways use
4530	Sandy coarse gravel	Beach	Medium	12 069 600		Caution	Some commercial pits; some farmyard pits; past Highways use
4531	Sand and pebbles	Fluvial	Medium- high	274 900		Caution	1 farmyard pit
4532	Sandy pebble gravel	Fluvial	Medium- high	1 931 100		Caution	Shallow deposit (1.2 m) over till; part Crown
4533	Sandy coarse pebble gravel	Fluvial	Medium- high	2 144 500		Stop	Good quality; 5 active pits; past Highways use
4534	Coarse gravel	Fluvial	Medium- high	752 400		Caution	Shallow, good quality deposit; 1 active pit
4535	Sand and granules	Fluvial	Medium- low	930 200		Go	Very sandy; shallow (0.5 m) over till

DEPOSIT NUMBER (SEE MAP)	MATERIAL CONTENT	DEPOSIT TYPE	QUALITY	RESERVE ESTIMATE	RECOMMENDED PLANNING STATUS	COMMENTS
4536	Sand and gravel	Fluvial	Medium-low	661 800	Go	
4537	Gravelly sand	Fluvial	Low	109 100	Go	
4538	Sand and gravel	Beach	Low	8 200	Go	Garbage dump
4539	Sandy coarse gravel	Beach	Medium	166 400	Caution	
4540	Sandy fine gravel	Beach	Low	2 717 100	Caution	Shallow in east (0.3 m)
4541	Sand and gravel	Beach	Low	49 300	Go	
4542	Sandy fine gravel	Beach	Medium-low	19 800	Caution	Part Crown; past Highways uses; require rehabilitation
4543	Sand and gravel	Beach	Low	78 600	Go	
4544	Sand and gravel	Beach	Medium	15 800	Caution	
4545	Sand and gravel	Beach	Medium	286 900	Caution	
4546	Sand and gravel	Beach	Low	32 200	Go	
4547	Sandy coarse gravel	Beach	Medium	267 500	Caution	
4548	Sand and pebbles	Beach	Medium	1 687 800	Caution	1 deep water-filled pit
4549	Sand and gravel	Beach	Low	264 000	Go	
4550	Sand and gravel	Fluvial	Medium	269 300	Caution	
4551	Sand and gravel	Beach	Low	130 200	Go	
4552	Sand and gravel	Beach	Low	281 600	Go	
4553	Sand and gravel	Beach	Low	193 600	Go	
4554	Fine pebble gravel	Fluvial	Medium- high	510 400	Caution	Good quality; old test pits
4555	Sand and gravel	Beach	Low	114 100	Go	
4556	Sand and gravel	Beach	Low	57 000	Go	
4557	Gravelly sand	Beach	Low	43 700	Go	
4558	Sand and gravel	Fluvial	Low	156 600	Go	
4559	Gravelly sand	Beach	Low	5 300	Go	Part Crown
45560	Sand and gravel	Beach	Low	14 100	Go	

DEPOSIT NUMBER (SEE MAP)	MATERIAL CONTENT	DEPOSIT TYPE	QUALITY	RESERVE ESTIMATE	RECOMMENDED PLANNING STATUS	COMMENTS
4561	Sand and gravel	Beach	Low	7 000	Go	
4562	Sand and gravel	Beach	Medium	118 800	Caution	Komarino
4564	Sand and gravel	Beach	Low	17 600	Go	
4565	Sand and gravel	Beach	Low	202 400	Caution	
4567	Sandy fine gravel	Beach	Medium	1 140 800	Caution	2 active pits
Total Reserves				32 437 600		

SAND AND GRAVEL RESOURCES IN THE R.M. OF ROSSER

(tonnes)

337	Gravelly sand	Beach ridge	Low	633 600	Caution/ Go	Mined to water table in part
365	Gravelly sand	Beach ridge	Low	-	Go	Mined to depletion, partially re- habilitated
Total Reserves				633 600		

TABLE 3

Estimated Reserves of Sand and Gravel by Quality  
(tonnes)

Quality	Rural Municipality	
	Rockwood	Rosser
Low	4 618 700	633 600
Medium-Low	3 232 300	-
Medium	17 539 800	-
Medium-High	7 046 800	-
Total	32 437 600	633 600
Total	33 071 200	

TABLE 4

Estimated Reserves of Potential Aggregate Derived from Crushed Dolomite<sup>\*</sup>  
(tonnes)

Quality	Rural Municipality	
	Rockwood	Rosser
Low	9 592 000	831 600
Medium	4 050 500	-
High	112 997 600	43 797 600
Total	126 640 100	44 629 200
Total	171 269 300	

\* Confined to near-surface dolomite (less than 3 m) and assumed quarry depth of 3 m.



Figure 5. Rehabilitated portion of the Little Stony Mountain Quarry currently used as a park.

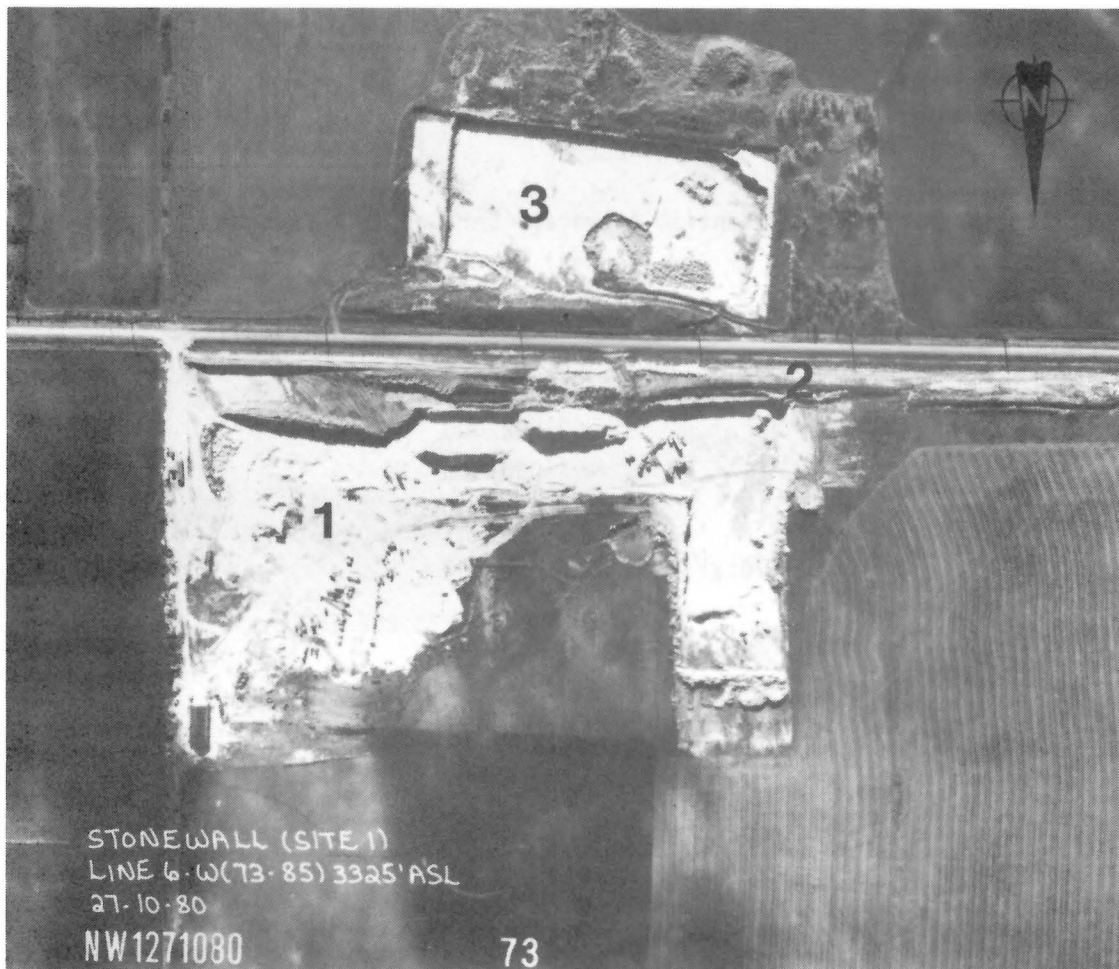


Figure 6. Airphoto (scale 1:5068) showing active quarry (1) at 5-14-2 E.P.M. Notice berm (2) adjacent to section road and inactive quarry (3).



Figure 7. Active quarry operation northeast of Stonewall (33-13-2 E.P.M.).

#### Demand for Aggregate

Estimation of the demand for aggregate was derived from consideration of:

- i) Department of Highways upgrading and improvements,
- ii) requirements of the Rural Municipality of Rockwood and Rosser, and
- iii) construction requirements of private concrete and aggregate suppliers.

Within the Rural Municipality of Rockwood, future highway improvements include the continuation of the upgrading of P.T.H. #7 to a four lane facility between P.T.H. 101 (Perimeter Highway) to P.T.H. 67, as well as the upgrading of P.T.H. 67 through and east of Stonewall. The Department of Highways estimates their annual demand for sand and gravel to be 23 900 tonnes, and the Rural Municipality of Rockwood utilizes 34 000 tonnes annually. Private construction companies and aggregate suppliers purchase the majority of their aggregate from local quarries, but an estimated 9000 tonnes is mined annually from existing gravel deposits.

The beach and glaciofluvial deposits have not all been mined to depletion due to the shallow depth, short lateral extent, and considerable stripping required. However, the greatest production of aggregate is derived from the crushing of the dolomite bedrock in the Stony Mountain and Stonewall area. The Department of Highways utilizes some 22 600 tonnes of crushed dolomite annually. Private consumption for the local construction industry and aggregate suppliers is estimated at 13 600 tonnes annually. The greatest demand for crushed dolomite is the City of Winnipeg market which consumes an estimated 960 300 tonnes annually. Of the annual crushed dolomite production of 996 600 tonnes, approximately 36 200 tonnes or 3% of the total production is consumed within the Rural Municipality of Rockwood.

The demand for aggregate within the Rural Municipality of Rosser is less than the demand within the Rural Municipality of Rockwood. Future highway improvements include the continuation of upgrading of P.T.H. No. 6. With the anticipated upgrading of the Easterville Road, greater importance will be placed upon P.T.H. No. 6 as an alternate route from Winnipeg to The Pas. The Department of Highways last removed aggregate from pits located at N.W. 17-12-1 E.P.M. in 1976 when 367 500 tonnes of "B" base material were mined. An annual estimated removal of 10 000 tonnes is assumed to represent demand for the Department of Highways. The Rural Municipality of Rosser utilizes an estimated 27 300 tonnes annually for road maintenance. There are no private concrete or construction companies within the municipality which consume aggregate. No aggregate from within the municipality is supplied to the City of Winnipeg market.

#### Supply vs Demand for Aggregate

Estimated demand for aggregate for a 1 and 25 year period is shown in Table 5, and a comparison between supply and demand is shown in Table 6. A comparison of supply and demand shows that there are 33.0 million tonnes of naturally occurring sand and gravel of various quality, with a projected annual demand of 104 300 tonnes. Although the supply is sufficient for the next 25 years, (specifically, the supply will equal demand in 317 years), an estimated 98% of all naturally occurring sand and gravel is located within the Rural Municipality of Rockwood.

Demand for crushed dolomite is currently 1 100 900 tonnes annually; with an estimated supply of 204 340 500 tonnes, there are sufficient reserves in excess of 25 years.

At current rate of consumption, the supply of crushed dolomite will last an estimated 185 years. The Rural Municipality of Rockwood presently supplies 100% of all the crushed dolomite, but 35% of known dolomite reserves are located within the Rural Municipality of Rosser.

In summary, the Rural Municipality of Rockwood contains nearly all the available naturally occurring sand and gravel deposits and produces all the crushed dolomite within the planning district. The Rural Municipality of Rosser contains 35% of the near-surface dolomite reserves, but no quarries are presently producing crushed aggregate.

#### RECOMMENDED PLANNING STATUS

The following recommendations for protection of certain aggregate and near-surface bedrock deposits are designed to ensure that adequate reserves of sand, gravel and crushed dolomite are available for municipal use, the construction industry, and various government agencies. Land use planning must recognize the potential for conflict between mineral resource extraction and other land uses. In order to indicate where conflicting land uses should be prohibited, a Stop-Caution-Go development status has been assigned to each aggregate deposit and near-surface bedrock deposit. The recommended development status is presented as Maps 1 and 2.

TABLE 5

Estimated Demand for Aggregate in the South Interlake Planning District  
(tonnes)

User	Material	1 Year	25 Years
Department of Highways	sand and gravel	33 900	847 500
	crushed dolomite	22 600	565 000
Rural Municipality of Rockwood	sand and gravel	34 000	850 000
	crushed dolomite	-	-
Rural Municipality of Rosser	sand and gravel	27 300	682 900
	crushed dolomite	-	-
Private Construction	sand and gravel	9 000	225 000
	crushed dolomite	13 600	340 000
City of Winnipeg	sand and gravel	-	-
	crushed dolomite	960 300	24 000 200
Total	sand and gravel	104 300	2 605 400
	crushed dolomite	996 600	24 905 000

TABLE 6

Aggregate Supply and Demand Within the South Interlake Planning District  
(tonnes)

	Supply	1 Year	Demand	25 Years
Sand and Gravel	33 071 200	104 300		2 605 400
Crushed Dolomite	171 269 300	996 600		24 905 000
Total	204 340 500	1 100 900		27 510 400



## Aggregate Deposits

The recommended development status for each aggregate deposit is based upon:

- i) size and quality of the deposits as defined by grain size analysis and potential industrial uses (Appendix I),
- ii) present and past use of the resource, and
- iii) the economic viability of stripping overburden to gain access to the aggregate.

In a manner consistent with Land Use Policy #13, Manitoba Regulation 217/80 (Appendix II) the Stop status indicates a valuable deposit upon which no conflicting land use should be allowed. Conflicting land uses would include housing (including the subdivision of lots for residential use), or the imposition of highways or utility corridors over the deposit. Such developments should be deferred until the mineral is extracted and the site rehabilitated. In the Rural Municipality of Rockwood, the Stop status is assigned to five deposits, numbers 4518, 4520, 4526, 2527 and 4533, due to their medium-high quality and their number of active pits. The unmined portions of deposit 337 within the Rural Municipality of Rosser has also been assigned a Stop status.

The Caution status denotes a deposit whose full potential is not proven, or whose quality is not high, but has been recognized as valuable to the region. The caution status is assigned to the low to medium quality beach ridge deposits. Those deposits designated as Caution could have a conflicting land use allocated after reviewing the local needs. Go denotes a deposit of no present recognized value as an aggregate source, and consequently conflicting land uses may be permitted. The Go status is confined to the low quality linear beach ridge deposits.

## Near-Surface Bedrock

The development status assigned to the near-surface (less than 3 m) dolomite deposits are based upon the suitability of each bedrock formation for potential aggregate production. The demand for aggregate derived from crushed dolomite exceeds the demand for sand and gravel by a factor of 15 to 1.0. It is anticipated that as sand and gravel reserves in the Birds Hill area near depletion, increased importance will be placed upon the near-surface dolomite deposits to supply the Winnipeg market.

The Stop status is assigned to those geological formations with the highest potential for aggregate production. Since the production of aggregate from dolomite involves the blasting, crushing and transporting of dolomite, there is noise, dust and vibration associated with the mining process. It is recommended that no residential development be permitted in close proximity to existing quarries, and no conflicting land uses be permitted in those areas designated with a Stop status. No conflicting land uses, particularly in those areas designated as Stop in the southern portion of the municipality, should be permitted due to the close proximity of the near-surface bedrock to the City of Winnipeg market and P.T.H. 7, the major transportation corridor. Conflicting land uses may be permitted after the mineral has been

extracted and the quarry site rehabilitated (Fig. 8, 9 and 10).

The Caution and Go status are assigned to those geological formations of lesser potential aggregate quality, and are located on the periphery of the near surface dolomite deposits with the Stop status. Even though they are assigned a Caution and Go status, discretion should be used for the type of development permitted due to their close proximity to potential quarry sites.



Figure 8. Airphoto (scale 1:5068) showing rehabilitated quarry site in Stonewall. The former quarry is used as a recreation site with swimming pool (1), trailer park (2), and baseball field (3). Portion of the quarry (4) unrehabilitated.



Figure 9. Airphoto (scale 1:5068) showing inactive quarries within Stonewall. Residential development (1) adjacent to quarries precludes further mining. The inactive quarries are currently being used for residential development (2) and as a lumber-yard (3).



Figure 10. Secondary land use for former quarry site in Stonewall. The quarry is used as a lumberyard. Kilns in background.

#### CONCLUSION

A comparison of supply and demand within the South Interlake Planning District shows that there are 33.0 million tonnes of naturally occurring sand and gravel of various quality, with a projected annual demand of 104 300 tonnes. Although the supply is sufficient for the next 25 years, (specifically, the supply will equal demand in 317 years), an estimated 98% of all naturally occurring sand and gravel is located within the Rural Municipality of Rockwood.

Demand for crushed dolomite is currently 1 100 900 tonnes annually; with estimated supply of 204 340 500 tonnes, there are sufficient reserves in excess of 25 years.

At the current rate of consumption, the supply of crushed dolomite will last an estimated 185 years. The Rural Municipality of Rockwood presently supplies 100% of all the crushed dolomite, while 35% of all known reserves of dolomite are located within the Rural Municipality of Rosser.

In summary, the Rural Municipality of Rockwood contains nearly all the available naturally occurring sand and gravel deposits and produces all the crushed dolomite within the planning district. The Rural Municipality of Rosser contains 35% of the near-surface dolomite reserves, but no quarries are presently producing crushed aggregate.

Each potential aggregate source within the planning district is assigned a development status. The recommended development status should be used as an aid by land use planners to ensure that an adequate supply of aggregate is available to meet construction requirements.

## REFERENCES

Bannatyne, B., and Jones, C.W.

1979: Dolomite Resources of the Southern Interlake Region. Mineral Resources Division, Preliminary Map Series.

James F. MacLaren Limited

1980: Mineral Aggregate Study of the Southern Interlake Region, v. 1 and 2. Mineral Resources Division, Open File Report 80-2, 51 p.

# APPENDIX I

SAMPLE IDENTIFICATION 004518 01301E31SE00045A

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND 2605.36 GMS. WASHED SAMPLE - WEIGHT BEFORE 355.16 AFTER 302.03 % LOSS 14.96

SIEVE SIZE	FINE FRACTION (GMS.)	SIEVE WEIGHTS (GMS.)	PERCENT	PERCENT PASSING	PERCENT RETAINED
1/2 IN		0.0	0.0	100.00	0.0
3/4 IN		0.0	0.0	100.00	0.0
1 IN		0.0	0.0	100.00	0.0
1 1/2 IN		0.0	0.0	100.00	0.0
2 IN		197.03	55.47	44.53	55.47
2 1/2 IN		11.14	3.14	41.39	58.61
3 IN		1.14	0.32	39.25	60.75
3 1/2 IN		0.0	0.0	37.11	62.89
4 IN		0.0	0.0	34.97	65.03
4 1/2 IN		0.0	0.0	32.83	67.17
5 IN		0.0	0.0	30.69	69.31
5 1/2 IN		0.0	0.0	28.55	71.45
6 IN		0.0	0.0	26.41	73.59
6 1/2 IN		0.0	0.0	24.27	75.73
7 IN		0.0	0.0	22.13	77.87
7 1/2 IN		0.0	0.0	19.99	80.01
8 IN		0.0	0.0	17.85	82.15
8 1/2 IN		0.0	0.0	15.71	84.29
9 IN		0.0	0.0	13.57	86.43
9 1/2 IN		0.0	0.0	11.43	88.57
10 IN		0.0	0.0	9.29	90.71
10 1/2 IN		0.0	0.0	7.15	92.85
11 IN		0.0	0.0	5.01	94.99
11 1/2 IN		0.0	0.0	2.87	97.13
12 IN		0.0	0.0	0.73	99.27
12 1/2 IN		0.0	0.0	0.0	100.00

TOTALS 355.16 2903.17

SPLITTING FACTOR 7.34

FINENESS MODULUS 3.30

% COBBLES 0.0 % PERBBLES 27.65 % GRANULES 14.87 % SAND 42.61 % SILT/CLAY 14.87

## INDUSTRIAL USAGE ASSESSMENT

004518 01301E31SE00045A

\*\*\*\*\*  
\* NOTE - SUITABILITY OF SAMPLE IS BASED ONLY ON GRADING SPECIFICATIONS \*  
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INDUSTRIAL USE	TOTAL RESIDUAL	RATING	SCREENING REQUIRED	REMOVAL OF <#200 MATERIAL	CRUSHING REQUIRED MATERIAL ON SITE	REQUIRED MATERIAL NOT ON SITE	ADDITION OF FINES (MATERIAL <#4)
ASPHALT A (P. OF H.)	49.56	NOT SUIT					
ASPHALT B (P. OF H.)	40.66	NOT SUIT					
ASPHALT C (P. OF H.)	7.16	MARGINAL	YES				YES
ASPHALT C (P. OF H.)	10.69	NOT SUIT					
ASPHALT C (P. OF H.)	10.69	MARGINAL	YES		YES		YES
ASPHALT C (P. OF H.)	10.69	SUITABLE					
ASPHALT C (P. OF H.)	83.52	NOT SUIT					
ASPHALT C (P. OF H.)	46.65	NOT SUIT					
ASPHALT C (P. OF H.)	53.02	NOT SUIT					
ASPHALT C (P. OF H.)	3.02	MARGINAL	YES				YES
ASPHALT C (P. OF H.)	1.1	MARGINAL	YES				YES
ASPHALT C (P. OF H.)	1.1	MARGINAL	YES				YES
ASPHALT C (P. OF H.)	6	NOT SUIT					
ASPHALT C (P. OF H.)	3.99	NOT SUIT					
ASPHALT C (P. OF H.)	3.99	NOT SUIT					
ASPHALT C (P. OF H.)	3.99	NOT SUIT					
ASPHALT C (P. OF H.)	3.99	NOT SUIT					
ASPHALT C (P. OF H.)	3.99	NOT SUIT					
ASPHALT C (P. OF H.)	3.99	NOT SUIT					
ASPHALT C (P. OF H.)	3.99	NOT SUIT					
ASPHALT C (P. OF H.)	3.99	NOT SUIT					
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ASPHALT C (P. OF H.)	3.99	NOT SUIT					
ASPHALT C (P. OF H.)	3.99	NOT SUIT					
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ASPHALT C (P. OF H.)	3.99	NOT SUIT					
ASPHALT C (P. OF H.)	3.99	NOT SUIT					
ASPHALT C (P. OF H.)	3.99	NOT SUIT					



SAMPLE IDENTIFICATION 004526 01402E21SW00052A

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND	1107.48	GMS.	WASHED SAMPLE - WEIGHT BEFORE	1101.89	AFTER	1048.12	% LOSS	4.88
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[illegible]

TOTALS	1098.74	2323.55
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SPLITTING FACTOR      1.01

FINENESS MODULUS 6.69

% COBBLES	0.0	% PEBBLES	72.27	% GRANULES	5.53	% SAND	19.59	% SILT/CLAY	2.61
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## INDUSTRIAL USAGE ASSESSMENT

004526 01402E21SW00052A

\*\*\*\*\* NOTE - SUITABILITY OF SAMPLE IS BASED ONLY ON GRADING SPECIFICATIONS \*\*\*\*\*

INDUSTRIAL USE

TOTAL  
RESIDUAL

RATING

SCREENING  
REQUIRED

REMOVAL OF  
LESS THAN 200 MATERIAL

CRUSHING  
MATERIAL  
ON SITE

REQUIRED  
MATERIAL  
NOT ON SITE

ADDITION  
OF FINES  
(MATERIAL <#4)

[illegible]

OVERALL SAMPLE RATING (SCALE 1 - 9) IS 4

SAMPLE IDENTIFICATION 004520 01301E12NW00513

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND	98.30	GMS.	WASHED SAMPLE - WEIGHT BEFORE	98.30	AFTER	98.30	% LOSS	0.0
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[illegible]

TOTALS	98.30	100.00
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SPLITTING FACTOR 1.00

FINENESS MODULUS 3.51

% COBBLES	0.0	% PEBBLES	9.30	% GRANULES	14.40	% SAND	74.60	% SILT/CLAY	1.70
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## INDUSTRIAL USAGE ASSESSMENT

004520 01301E12NW00513

\* NOTE - SUITABILITY OF SAMPLE IS BASED ONLY ON GRADING SPECIFICATIONS \*

[illegible]

OVERALL SAMPLE RATING (SCALE 1 - 9) IS 5



SAMPLE IDENTIFICATION 004520 01302E06NH00514

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND 91.90 GMS. WASHED SAMPLE - WEIGHT BEFORE 91.90 AFTER 91.90 % LOSS 0.0

SIEVE SIZE	FINE FRACTION (GMS.)	SIEVE WEIGHTS (GMS.)	PERCENT	PERCENT PASSING	PERCENT RETAINED
4		0.0	0.0	100.00	0.0
1/2		0.0	0.0	100.00	0.0
1/2		0.0	0.0	100.00	0.0
1/2		0.0	0.0	100.00	0.0
1/2		1.90	1.90	98.10	1.90
1/2		2.40	2.40	97.60	2.40
1/2		2.60	2.60	97.40	2.60
1/2		2.80	2.80	96.20	3.80
1/2		3.00	3.00	97.00	3.00
1/2		3.20	3.20	93.80	6.20
1/2		3.40	3.40	87.80	12.20
1/2		3.60	3.60	85.50	14.50
1/2		3.80	3.80	73.60	26.40
1/2		4.00	4.00	74.30	25.70
1/2		4.20	4.20	49.90	50.10
1/2		4.40	4.40	10.10	89.90
1/2		4.60	4.60	4.60	95.40
1/2		4.80	4.80	2.30	97.70
1/2		5.00	5.00	1.50	98.50
1/2		5.20	5.20	0.0	100.00
1/2		5.40	5.40	0.0	100.00
1/2		5.60	5.60	0.0	100.00
1/2		5.80	5.80	0.0	100.00
1/2		6.00	6.00	0.0	100.00
1/2		6.20	6.20	0.0	100.00
1/2		6.40	6.40	0.0	100.00
1/2		6.60	6.60	0.0	100.00
1/2		6.80	6.80	0.0	100.00
1/2		7.00	7.00	0.0	100.00
1/2		7.20	7.20	0.0	100.00
1/2		7.40	7.40	0.0	100.00
1/2		7.60	7.60	0.0	100.00
1/2		7.80	7.80	0.0	100.00
1/2		8.00	8.00	0.0	100.00
1/2		8.20	8.20	0.0	100.00
1/2		8.40	8.40	0.0	100.00
1/2		8.60	8.60	0.0	100.00
1/2		8.80	8.80	0.0	100.00
1/2		9.00	9.00	0.0	100.00
1/2		9.20	9.20	0.0	100.00
1/2		9.40	9.40	0.0	100.00
1/2		9.60	9.60	0.0	100.00
1/2		9.80	9.80	0.0	100.00
1/2		10.00	10.00	0.0	100.00
1/2		10.20	10.20	0.0	100.00
1/2		10.40	10.40	0.0	100.00
1/2		10.60	10.60	0.0	100.00
1/2		10.80	10.80	0.0	100.00
1/2		11.00	11.00	0.0	100.00
1/2		11.20	11.20	0.0	100.00
1/2		11.40	11.40	0.0	100.00
1/2		11.60	11.60	0.0	100.00
1/2		11.80	11.80	0.0	100.00
1/2		12.00	12.00	0.0	100.00
1/2		12.20	12.20	0.0	100.00
1/2		12.40	12.40	0.0	100.00
1/2		12.60	12.60	0.0	100.00
1/2		12.80	12.80	0.0	100.00
1/2		13.00	13.00	0.0	100.00
1/2		13.20	13.20	0.0	100.00
1/2		13.40	13.40	0.0	100.00
1/2		13.60	13.60	0.0	100.00
1/2		13.80	13.80	0.0	100.00
1/2		14.00	14.00	0.0	100.00
1/2		14.20	14.20	0.0	100.00
1/2		14.40	14.40	0.0	100.00
1/2		14.60	14.60	0.0	100.00
1/2		14.80	14.80	0.0	100.00
1/2		15.00	15.00	0.0	100.00
1/2		15.20	15.20	0.0	100.00
1/2		15.40	15.40	0.0	100.00
1/2		15.60	15.60	0.0	100.00
1/2		15.80	15.80	0.0	100.00
1/2		16.00	16.00	0.0	100.00
1/2		16.20	16.20	0.0	100.00
1/2		16.40	16.40	0.0	100.00
1/2		16.60	16.60	0.0	100.00
1/2		16.80	16.80	0.0	100.00
1/2		17.00	17.00	0.0	100.00
1/2		17.20	17.20	0.0	100.00
1/2		17.40	17.40	0.0	100.00
1/2		17.60	17.60	0.0	100.00
1/2		17.80	17.80	0.0	100.00
1/2		18.00	18.00	0.0	100.00
1/2		18.20	18.20	0.0	100.00
1/2		18.40	18.40	0.0	100.00
1/2		18.60	18.60	0.0	100.00
1/2		18.80	18.80	0.0	100.00
1/2		19.00	19.00	0.0	100.00
1/2		19.20	19.20	0.0	100.00
1/2		19.40	19.40	0.0	100.00
1/2		19.60	19.60	0.0	100.00
1/2		19.80	19.80	0.0	100.00
1/2		20.00	20.00	0.0	100.00
1/2		20.20	20.20	0.0	100.00
1/2		20.40	20.40	0.0	100.00
1/2		20.60	20.60	0.0	100.00
1/2		20.80	20.80	0.0	100.00
1/2		21.00	21.00	0.0	100.00
1/2		21.20	21.20	0.0	100.00
1/2		21.40	21.40	0.0	100.00
1/2		21.60	21.60	0.0	100.00
1/2		21.80	21.80	0.0	100.00
1/2		22.00	22.00	0.0	100.00
1/2		22.20	22.20	0.0	100.00
1/2		22.40	22.40	0.0	100.00
1/2		22.60	22.60	0.0	100.00
1/2		22.80	22.80	0.0	100.00
1/2		23.00	23.00	0.0	100.00
1/2		23.20	23.20	0.0	100.00
1/2		23.40	23.40	0.0	100.00
1/2		23.60	23.60	0.0	100.00
1/2		23.80	23.80	0.0	100.00
1/2		24.00	24.00	0.0	100.00
1/2		24.20	24.20	0.0	100.00
1/2		24.40	24.40	0.0	100.00
1/2		24.60	24.60	0.0	100.00
1/2		24.80	24.80	0.0	100.00
1/2		25.00	25.00	0.0	100.00
1/2		25.20	25.20	0.0	100.00
1/2		25.40	25.40	0.0	100.00
1/2		25.60	25.60	0.0	100.00
1/2		25.80	25.80	0.0	100.00
1/2		26.00	26.00	0.0	100.00
1/2		26.20	26.20	0.0	100.00
1/2		26.40	26.40	0.0	100.00
1/2		26.60	26.60	0.0	100.00
1/2		26.80	26.80	0.0	100.00
1/2		27.00	27.00	0.0	100.00
1/2		27.20	27.20	0.0	100.00
1/2		27.40	27.40	0.0	100.00
1/2		27.60	27.60	0.0	100.00
1/2		27.80	27.80	0.0	100.00
1/2		28.00	28.00	0.0	100.00
1/2		28.20	28.20	0.0	100.00
1/2		28.40	28.40	0.0	100.00
1/2		28.60	28.60	0.0	100.00
1/2		28.80	28.80	0.0	100.00
1/2		29.00	29.00	0.0	100.00
1/2		29.20	29.20	0.0	100.00
1/2		29.40	29.40	0.0	100.00
1/2		29.60	29.60	0.0	100.00
1/2		29.80	29.80	0.0	100.00
1/2		30.00	30.00	0.0	100.00
1/2		30.20	30.20	0.0	100.00
1/2		30.40	30.40	0.0	100.00
1/2		30.60	30.60	0.0	100.00
1/2		30.80	30.80	0.0	100.00
1/2		31.00	31.00	0.0	100.00
1/2		31.20	31.20	0.0	100.00
1/2		31.40	31.40	0.0	100.00
1/2		31.60	31.60	0.0	100.00
1/2		31.80	31.80	0.0	100.00
1/2		32.00	32.00	0.0	100.00
1/2		32.20	32.20	0.0	100.00
1/2		32.40	32.40	0.0	100.00
1/2		32.60	32.60	0.0	100.00
1/2		32.80	32.80	0.0	100.00
1/2		33.00	33.00	0.0	100.00
1/2		33.20	33.20	0.0	100.00
1/2		33.40	33.40	0.0	100.00
1/2		33.60	33.60	0.0	100.00
1/2		33.80	33.80	0.0	100.00
1/2		34.00	34.00	0.0	100.00
1/2		34.20	34.20	0.0	100.00
1/2		34.40	34.40	0.0	100.00
1/2		34.60	34.60	0.0	100.00
1/2		34.80	34.80	0.0	100.00
1/2		35.00	35.00	0.0	100.00
1/2		35.20	35.20	0.0	100.00
1/2		35.40	35.40	0.0	100.00
1/2		35.60	35.60	0.0	100.00
1/2		35.80	35.80	0.0	100.00
1/2		36.00	36.00	0.0	100.00
1/2		36.20	36.20	0.0	100.00
1/2		36.40	36.40	0.0	100.00
1/2		36.60	36.60	0.0	100.00
1/2		36.80	36.80	0.0	100.00
1/2		37.00	37.00	0.0	100.00
1/2		37.20	37.20	0.0	100.00
1/2		37.40	37.40	0.0	100.00
1/2		37.60	37.60	0.0	100.00
1/2		37.80	37.80	0.0	100.00
1/2		38.00	38.00	0.0	100.00
1/2		38.20	38.20	0.0	100.00
1/2		38.40	38.40	0.0	100.00
1/2		38.60	38.60	0.0	100.00
1/2		38.80	38.80	0.0	100.00
1/2		39.00	39.00	0.0	100.00
1/2		39.20	39.20	0.0	100.00
1/2		39.40	39.40	0.0	100.00
1/2		39.60	39.60	0.0	100.00
1/2		39.80	39.80	0.0	100.00
1/2		40.00	40.00	0.0	100.00
1/2		40.20	40.20	0.0	100.00
1/2		40.40	40.40	0.0	100.00
1/2		40.60	40.60	0.0	100.00
1/2		40.80	40.80	0.0	100.00
1/2		41.00	41.00	0.0	100.00
1/2		41.20	41.20	0.0	100.00
1/2		41.40	41.40	0.0	100.00
1/2		41.60	41.60	0.0	100.00
1/2		41.80	41.80	0.0	100.00
1/2		42.00	42.00	0.0	100.00
1/2		42.20	42.20	0.0	100.00
1/2		42.40	42.40	0.0	100.00
1/2		42.60	42.60	0.0	100.00
1/2		42.80	42.80	0.0	100.00
1/2		43.00	43.00	0.0	100.00
1/2		43.20	43.20	0.0	100.00
1/2		43.40	43.40	0.0	100.00
1/2		43.60	43.60	0.0	100.00
1/2		43.80	43.80	0.0	100.00
1/2		44.00	44.00	0.0	

SAMPLE IDENTIFICATION 004535 01601E25SE00089A

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND	449.16	GMS.	WASHED SAMPLE - WEIGHT BEFORE	447.56	AFTER	447.56	% LOSS	0.0
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[illegible]

TOTALS	447.56	449.16
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SPLITTING FACTOR 1.00

FINENESS MODULUS 3.33

% COBBLES	0.0	% PEBBLES	10.14	% GRANULES	19.45	% SAND	68.00	% SILT/CLAY	2.42
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## INDUSTRIAL USAGE ASSESSMENT

004535 01601E25SE00089A

\* NOTE - SUITABILITY OF SAMPLE IS BASED ONLY ON GRADING SPECIFICATIONS \*

INDUSTRIAL USE	TOTAL RESIDUAL	RATING	SCREENING REQUIRED	REMOVAL OF MATERIAL <#200 MATERIAL	CRUSHING MATERIAL ON SITE	REQUIRED MATERIAL NOT ON SITE	ADDITION OF FINES (MATERIAL <#4)
ASPHALT A (P. OF M.H.)	44.25	NOT SUIT					
ASPHALT A (P. OF M.H.)	34.25	NOT SUIT					
ASPHALT A (P. OF M.H.)	50.18	NOT SUIT					
COUG (P. OF M.H.)	40.86	NOT SUIT					
COUG (P. OF M.H.)	71.11	MARGINAL					
COUG (P. OF M.H.)	99.25	NOT SUIT		YES		YES	YES
COUG (P. OF M.H.)	86.44	NOT SUIT		YES			
COUG (P. OF M.H.)	61.94	NOT SUIT					
COUG (P. OF M.H.)	200.9	MARGINAL	YES	YES		YES	YES
COUG (P. OF M.H.)	200.11	MARGINAL	YES	YES			
COUG (P. OF M.H.)	200.11	MARGINAL	YES	YES			
COUG (P. OF M.H.)	50.18	NOT SUIT					
COUG (P. OF M.H.)	50.18	NOT SUIT					
COUG (P. OF M.H.)	44.60	NOT SUIT					
COUG (P. OF M.H.)	34.18	MARGINAL				YES	
COAT A (P. OF M.H.)	101.94	NOT SUIT					
COAT A (P. OF M.H.)	21.06	MARGINAL	YES		YES		YES
COAT A (P. OF M.H.)	0.0	SUITABLE	YES				
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
COAT A (P. OF M.H.)	221.42	NOT SUIT					
CONCRETE AGGREGATE (P. OF M.H.)	5.63	MARGINAL	YES				YES
CONCRETE AGGREGATE (P. OF M.H.)	0.0	SUITABLE	YES				
CONCRETE AGGREGATE (P. OF M.H.)	14.21	MARGINAL	YES				
CONCRETE AGGREGATE (P. OF M.H.)	13.12	MARGINAL	YES				
CONCRETE AGGREGATE (P. OF M.H.)	5.02	MARGINAL	YES				
PORTLAND CEMENT (P. OF M.H.)	5.02	SUITABLE	YES				
PORTLAND CEMENT (P. OF M.H.)	18.50	NOT SUIT					
PORTLAND CEMENT (P. OF M.H.)	14.86	NOT SUIT					
PORTLAND CEMENT (P. OF M.H.)	14.86	MARGINAL				YES	
SEPTIC FIELDS (U.M.A.)	30.00	MARGINAL				YES	
SHOULDERS (P. OF M.H.)	19.86	MARGINAL				YES	

OVERALL SAMPLE RATING (SCALE 1 - 9) IS 5

SAMPLE IDENTIFICATION 004527 01401E21SW00515

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND	88.00	GMS.	WASHED SAMPLE - WEIGHT BEFORE	88.00	AFTER	88.00	% LOSS	0.0
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[illegible]

TOTALS	88.00	100.00
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SPLITTING FACTOR 1.00

FINENESS MODULUS 4.61

% COBBLES	0.0	% PEBBLES	37.20	% GRANULES	13.80	% SAND	45.70	% SILT/CLAY	3.30
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## INDUSTRIAL USAGE ASSESSMENT

004527 01401E21SW00515

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\* NOTE - SUITABILITY OF SAMPLE IS BASED ONLY ON GRADING SPECIFICATIONS \*  
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[illegible]

OVERALL SAMPLE RATING (SCALE 1 - 9) IS 4

SAMPLE IDENTIFICATION 004530 01501E05NE00059A

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND 1613.54 GMS. WASHED SAMPLE - WEIGHT BEFORE 375.32 AFTER 371.34 % LOSS 1.06

SIEVE SIZE	FINE FRACTION (GMS.)	SIEVE WEIGHTS (GMS.)	PERCENT	PERCENT PASSING	PERCENT RETAINED
4		0.0	0.0	100.00	0.0
1/2		53.61	17.16	82.84	17.16
1/2		133.61	17.16	65.69	34.31
1/2		139.16	4.43	61.26	38.74
1/2		139.16	0.0	61.26	38.74
1/2		117.42	1.68	59.58	40.42
3/4	16.84	72.40	1.68	57.90	42.10
3/4	16.84	72.40	1.68	56.22	43.78
3/4	16.84	72.40	1.68	54.54	45.46
3/4	16.84	72.40	1.68	52.86	47.14
3/4	16.84	72.40	1.68	51.18	48.82
3/4	16.84	72.40	1.68	49.50	50.50
3/4	16.84	72.40	1.68	47.82	52.18
3/4	16.84	72.40	1.68	46.14	53.86
3/4	16.84	72.40	1.68	44.46	55.54
3/4	16.84	72.40	1.68	42.78	57.22
3/4	16.84	72.40	1.68	41.10	58.90
3/4	16.84	72.40	1.68	39.42	60.58
3/4	16.84	72.40	1.68	37.74	62.26
3/4	16.84	72.40	1.68	36.06	63.94
3/4	16.84	72.40	1.68	34.38	65.62
3/4	16.84	72.40	1.68	32.70	67.30
3/4	16.84	72.40	1.68	31.02	68.98
3/4	16.84	72.40	1.68	29.34	70.66
3/4	16.84	72.40	1.68	27.66	72.34
3/4	16.84	72.40	1.68	25.98	74.02
3/4	16.84	72.40	1.68	24.30	75.70
3/4	16.84	72.40	1.68	22.62	77.38
3/4	16.84	72.40	1.68	20.94	79.06
3/4	16.84	72.40	1.68	19.26	80.74
3/4	16.84	72.40	1.68	17.58	82.42
3/4	16.84	72.40	1.68	15.90	84.10
3/4	16.84	72.40	1.68	14.22	85.78
3/4	16.84	72.40	1.68	12.54	87.46
3/4	16.84	72.40	1.68	10.86	89.14
3/4	16.84	72.40	1.68	9.18	90.82
3/4	16.84	72.40	1.68	7.50	92.50
3/4	16.84	72.40	1.68	5.82	94.18
3/4	16.84	72.40	1.68	4.14	95.86
3/4	16.84	72.40	1.68	2.46	97.54
3/4	16.84	72.40	1.68	0.78	99.22
3/4	16.84	72.40	1.68	0.0	100.00
200 + W	5.47	23.52	0.75	0.0	100.00

TOTALS 375.32 3139.35

SPLITTING FACTOR 4.30

FINENESS MODULUS 6.74

% COBBLES 38.75 % PEBBLES 23.07 % GRANULES 11.21 % SAND 26.23 % SILT/CLAY 0.75

## INDUSTRIAL USAGE ASSESSMENT

004530 01501E05NE00059A

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 \* NOTE - SUITABILITY OF SAMPLE IS BASED ONLY ON GRADING SPECIFICATIONS \*  
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INDUSTRIAL USE	TOTAL RESIDUAL	RATING	SCREENING REQUIRED	REMOVAL OF <#200 MATERIAL	CRUSHING REQUIRED MATERIAL ON SITE	ADDITION OF FINE (MATERIAL <#4)
ASPHALT A (P. OF M.)	6.08	MARGINAL	YES	YES	YES	
ASPHALT B (P. OF M.)	0.54	MARGINAL	YES	YES		
ASPHALT C (P. OF M.)	57.34	NOT SUIT				
ASPHALT D (P. OF M.)	17.00	MARGINAL	YES	YES	YES	
ASPHALT E (P. OF M.)	17.00	MARGINAL	YES	YES		
ASPHALT F (P. OF M.)	17.00	NOT SUIT	YES	YES		
ASPHALT G (P. OF M.)	3.00	MARGINAL	YES	YES	YES	
ASPHALT H (P. OF M.)	13.00	MARGINAL	YES	YES	YES	YES
ASPHALT I (P. OF M.)	13.00	MARGINAL	YES	YES	YES	YES
ASPHALT J (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT K (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT L (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT M (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT N (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT O (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT P (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT Q (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT R (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT S (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT T (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT U (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT V (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT W (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT X (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT Y (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT Z (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AA (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AB (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AC (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AD (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AE (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AF (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AG (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AH (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AI (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AJ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AK (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AL (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AM (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AN (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AO (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AP (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AQ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AR (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AS (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AT (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AU (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AV (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AW (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AX (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AY (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT AZ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BA (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BB (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BC (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BD (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BE (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BF (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BG (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BH (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BI (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BJ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BK (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BL (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BM (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BN (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BO (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BP (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BQ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BR (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BS (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BT (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BU (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BV (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BW (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BX (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BY (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT BZ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CA (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CB (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CC (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CD (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CE (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CF (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CG (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CH (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CI (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CJ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CK (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CL (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CM (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CN (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CO (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CP (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CQ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CR (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CS (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CT (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CU (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CV (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CW (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CX (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CY (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT CZ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DA (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DB (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DC (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DD (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DE (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DF (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DG (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DH (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DI (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DJ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DK (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DL (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DM (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DN (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DO (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DP (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DQ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DR (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DS (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DT (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DU (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DV (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DW (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DX (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DY (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT DZ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EA (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EB (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EC (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT ED (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EE (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EF (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EG (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EH (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EI (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EJ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EK (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EL (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EM (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EN (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EO (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EP (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EQ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT ER (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT ES (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT ET (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EU (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EV (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EW (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EX (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EY (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT EZ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FA (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FB (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FC (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FD (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FE (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FF (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FG (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FH (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FI (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FJ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FK (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FL (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FM (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FN (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FO (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FP (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FQ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FR (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FS (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FT (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FU (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FV (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FW (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FX (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FY (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT FZ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GA (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GB (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GC (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GD (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GE (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GF (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GG (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GH (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GI (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GJ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GK (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GL (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GM (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GN (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GO (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GP (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GQ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GR (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GS (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GT (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GU (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GV (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GW (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GX (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GY (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT GZ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT HA (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT HB (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT HC (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT HD (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT HE (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT HF (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT HG (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT HH (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT HI (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT HJ (P. OF M.)	11.26	MARGINAL	YES	YES		
ASPHALT HK (P. OF M.)	11.26	MARGINAL	YES	YES		

SAMPLE IDENTIFICATION 004530 01601E01SW00062A

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND	663.71	GMS.	WASHED SAMPLE - WEIGHT BEFORE	76.65	AFTER	73.06	% LOSS	4.68
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SIEVE SIZE	FINE FRACTION (GMS.)	SIEVE WEIGHTS (GMS.)	PERCENT	PERCENT PASSING	PERCENT RETAINED
1/2		0.0	0.0	100.0	0.0
1/2		0.0	0.0	100.0	0.0
1/2		0.0	0.0	100.0	0.0
4		0.0	0.0	100.0	0.0
10		0.0	0.0	100.0	0.0
20		0.0	0.0	100.0	0.0
40		0.0	0.0	100.0	0.0
60		0.0	0.0	100.0	0.0
80		0.0	0.0	100.0	0.0
100		0.0	0.0	100.0	0.0
120		0.0	0.0	100.0	0.0
140		0.0	0.0	100.0	0.0
160		0.0	0.0	100.0	0.0
180		0.0	0.0	100.0	0.0
200		0.0	0.0	100.0	0.0
250		0.0	0.0	100.0	0.0
300		0.0	0.0	100.0	0.0
350		0.0	0.0	100.0	0.0
400		0.0	0.0	100.0	0.0
450		0.0	0.0	100.0	0.0
500		0.0	0.0	100.0	0.0
560		0.0	0.0	100.0	0.0
630		0.0	0.0	100.0	0.0
710		0.0	0.0	100.0	0.0
800		0.0	0.0	100.0	0.0
900		0.0	0.0	100.0	0.0
1000		0.0	0.0	100.0	0.0
1100		0.0	0.0	100.0	0.0
1250		0.0	0.0	100.0	0.0
1400		0.0	0.0	100.0	0.0
1600		0.0	0.0	100.0	0.0
1800		0.0	0.0	100.0	0.0
2000		0.0	0.0	100.0	0.0
2200		0.0	0.0	100.0	0.0
2500		0.0	0.0	100.0	0.0
2800		0.0	0.0	100.0	0.0
3150		0.0	0.0	100.0	0.0
3550		0.0	0.0	100.0	0.0
4000		0.0	0.0	100.0	0.0
4500		0.0	0.0	100.0	0.0
5000		0.0	0.0	100.0	0.0
5600		0.0	0.0	100.0	0.0
6300		0.0	0.0	100.0	0.0
7100		0.0	0.0	100.0	0.0
8000		0.0	0.0	100.0	0.0
9000		0.0	0.0	100.0	0.0
10000		0.0	0.0	100.0	0.0
11000		0.0	0.0	100.0	0.0
12500		0.0	0.0	100.0	0.0
14000		0.0	0.0	100.0	0.0
16000		0.0	0.0	100.0	0.0
18000		0.0	0.0	100.0	0.0
20000		0.0	0.0	100.0	0.0
22000		0.0	0.0	100.0	0.0
25000		0.0	0.0	100.0	0.0
28000		0.0	0.0	100.0	0.0
31500		0.0	0.0	100.0	0.0
35500		0.0	0.0	100.0	0.0
40000		0.0	0.0	100.0	0.0
45000		0.0	0.0	100.0	0.0
50000		0.0	0.0	100.0	0.0
56000		0.0	0.0	100.0	0.0
63000		0.0	0.0	100.0	0.0
71000		0.0	0.0	100.0	0.0
80000		0.0	0.0	100.0	0.0
90000		0.0	0.0	100.0	0.0
100000		0.0	0.0	100.0	0.0
110000		0.0	0.0	100.0	0.0
125000		0.0	0.0	100.0	0.0
140000		0.0	0.0	100.0	0.0
160000		0.0	0.0	100.0	0.0
180000		0.0	0.0	100.0	0.0
200000		0.0	0.0	100.0	0.0
220000		0.0	0.0	100.0	0.0
250000		0.0	0.0	100.0	0.0
280000		0.0</			

TOTALS	76.65	702.27
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SPLITTING FACTOR 8.66

FINENESS MODULUS 1.56

% COBBLES	0.0	% PEBBLES	9.18	% GRANULES	2.68	% SAND	81.11	% SILT/CLAY	7.04
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## INDUSTRIAL USAGE ASSESSMENT

004530 01601E01SW00062A

\*\*\*\*\* NOTE - SUITABILITY OF SAMPLE IS BASED ONLY ON GRADING SPECIFICATIONS \*\*\*\*\*

[illegible]

OVERALL SAMPLE RATING (SCALE 1 - 9) IS 7

SAMPLE IDENTIFICATION 004530 01601E25SE00066A

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND	505.90	GMS.	WASHED SAMPLE - WEIGHT BEFORE	504.40	AFTER	504.40	% LOSS	0.0
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SIEVE SIZE	FINE FRACTION (GMS.)	SIEVE WEIGHTS (GMS.)	PERCENT	PERCENT PASSING	PERCENT RETAINED
6	0.0	0.0	0.0	100.0	0.0
8	0.0	0.0	0.0	100.0	0.0
10	0.0	0.0	0.0	100.0	0.0
12	0.0	0.0	0.0	100.0	0.0
14	0.0	0.0	0.0	100.0	0.0
16	0.0	0.0	0.0	100.0	0.0
18	0.0	0.0	0.0	100.0	0.0
20	0.0	0.0	0.0	100.0	0.0
22	0.0	0.0	0.0	100.0	0.0
24	0.0	0.0	0.0	100.0	0.0
28	0.0	0.0	0.0	100.0	0.0
30	0.0	0.0	0.0	100.0	0.0
35	0.0	0.0	0.0	100.0	0.0
40	0.0	0.0	0.0	100.0	0.0
45	0.0	0.0	0.0	100.0	0.0
50	0.0	0.0	0.0	100.0	0.0
55	0.0	0.0	0.0	100.0	0.0
60	0.0	0.0	0.0	100.0	0.0
65	0.0	0.0	0.0	100.0	0.0
70	0.0	0.0	0.0	100.0	0.0
75	0.0	0.0	0.0	100.0	0.0
80	0.0	0.0	0.0	100.0	0.0
85	0.0	0.0	0.0	100.0	0.0
90	0.0	0.0	0.0	100.0	0.0
95	0.0	0.0	0.0	100.0	0.0
100	0.0	0.0	0.0	100.0	0.0
105	0.0	0.0	0.0	100.0	0.0
110	0.0	0.0	0.0	100.0	0.0
115	0.0	0.0	0.0	100.0	0.0
120	0.0	0.0	0.0	100.0	0.0
125	0.0	0.0	0.0	100.0	0.0
130	0.0	0.0	0.0	100.0	0.0
135	0.0	0.0	0.0	100.0	0.0
140	0.0	0.0	0.0	100.0	0.0
145	0.0	0.0	0.0	100.0	0.0
150	0.0	0.0	0.0	100.0	0.0
155	0.0	0.0	0.0	100.0	0.0
160	0.0	0.0	0.0	100.0	0.0
165	0.0	0.0	0.0	100.0	0.0
170	0.0	0.0	0.0	100.0	0.0
175	0.0	0.0	0.0	100.0	0.0
180	0.0	0.0	0.0	100.0	0.0
185	0.0	0.0	0.0	100.0	0.0
190	0.0	0.0	0.0	100.0	0.0
195	0.0	0.0	0.0	100.0	0.0
200	0.0	0.0	0.0	100.0	0.0
205	0.0	0.0	0.0	100.0	0.0
210	0.0	0.0	0.0	100.0	0.0
215	0.0	0.0	0.0	100.0	0.0
220	0.0	0.0	0.0	100.0	0.0
225	0.0	0.0	0.0	100.0	0.0
230	0.0	0.0	0.0	100.0	0.0
235	0.0	0.0	0.0	100.0	0.0
240	0.0	0.0	0.0	100.0	0.0
245	0.0	0.0	0.0	100.0	0.0
250	0.0	0.0	0.0	100.0	0.0
255	0.0	0.0	0.0	100.0	0.0
260	0.0	0.0	0.0	100.0	0.0
265	0.0	0.0	0.0	100.0	0.0
270	0.0	0.0	0.0	100.0	0.0
275	0.0	0.0	0.0	100.0	0.0
280	0.0	0.0	0.0	100.0	0.0
285	0.0	0.0	0.0	100.0	0.0
290	0.0	0.0	0.0	100.0	0.0
295	0.0	0.0	0.0	100.0	0.0
300	0.0	0.0	0.0	100.0	0.0
305	0.0	0.0	0.0	100.0	0.0
310	0.0	0.0	0.0	100.0	0.0
315	0.0	0.0	0.0	100.0	0.0
320	0.0	0.0	0.0	100.0	0.0
325	0.0	0.0	0.0	100.0	0.0
330	0.0	0.0	0.0	100.0	0.0

TOTALS	504.40	505.90
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SPLITTING FACTOR 1.00

FINENESS MODULUS 2.83

% COBBLES	0.0	% PEBBLES	10.63	% GRANULES	13.49	% SAND	73.56	% SILT/CLAY	2.31
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## INDUSTRIAL USAGE ASSESSMENT

004530 01601E25SE00066A

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 \* NOTE - SUITABILITY OF SAMPLE IS BASED ONLY ON GRADING SPECIFICATIONS \*  
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INDUSTRIAL USE	TOTAL RESIDUAL	RATING	SCREENING REQUIRED	REMOVAL OF <#200 MATERIAL	CRUSHING REQUIRED MATERIAL ON SITE	CRUSHING REQUIRED MATERIAL NOT ON SITE	ADDITION OF FINES (MATERIAL <#4)
ASPHALT A (P. OF M.H.)	59.25	NOT SUIT					
ASPHALT B (P. OF M.H.)	49.25	NOT SUIT					
ASPHALT C (P. OF M.H.)	39.25	MARGINAL	YES	YES			
ASPHALT D (P. OF M.H.)	29.25	NOT SUIT					
ASPHALT E (P. OF M.H.)	19.25	NOT SUIT					
ASPHALT F (P. OF M.H.)	9.25	MARGINAL		YES		YES	
ASPHALT G (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT H (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT I (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT J (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT K (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT L (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT M (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT N (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT O (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT P (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT Q (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT R (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT S (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT T (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT U (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT V (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT W (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT X (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT Y (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT Z (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AA (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AB (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AC (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AD (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AE (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AF (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AG (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AH (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AI (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AJ (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AK (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AL (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AM (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AN (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AO (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AP (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AQ (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AR (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AS (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AT (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AU (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AV (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AW (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AX (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AY (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT AZ (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT BA (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT BB (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT BC (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT BD (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT BE (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT BF (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT BG (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT BH (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT BI (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT BJ (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT BK (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT BL (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT BM (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT BN (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT BO (P. OF M.H.)	0.25	NOT SUIT					
ASPHALT BP (P. OF M.H.)	0.25	NOT SUIT					
ASPH							

OVERALL SAMPLE RATING (SCALE 1 - 9) IS 5

SAMPLE IDENTIFICATION 004531 01501E27SW00069A

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND	2167.71	GMS.	WASHED SAMPLE - WEIGHT BEFORE	526.04	AFTER	526.04	% LOSS	0.0
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SIEVE SIZE	FINE FRACTION (GMS.)	SIEVE WEIGHTS (GMS.)	PERCENT	PERCENT PASSING	PERCENT RETAINED
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[illegible]

TOTALS	526.04	2536.34
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SPLITTING FACTOR 4.12

FINENESS MODULUS 4.59

% COBBLES	0.0	% PEBBLES	40.53	% GRANULES	16.23	% SAND	42.52	% SILT/CLAY	0.72
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## INDUSTRIAL USAGE ASSESSMENT

004531 01501E27SW00069A

\*\*\*\*\*  
 \* NOTE - SUITABILITY OF SAMPLE IS BASED ONLY ON GRADING SPECIFICATIONS \*  
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## INDUSTRIAL USE

TOTAL  
RESIDUAL

### RATING

SCREENING  
REQUIRED

REMOVAL OF  
#200 MATERIAL

CRUSH:  
MATERIAL  
ON SITE

G REQUIRED  
MATERIAL  
NOT ON S

ADDITION  
OF FINES  
(MATERIAL <#4)

ITEM	QTY	UNIT	DESCRIPTION	STATUS	REMARKS
1	1.16		MARSHAL	YES	
2	1.16		MARSHAL	YES	
3	4.79		MARSHAL	YES	
4	3.28		MARSHAL	YES	
5	3.28		MARSHAL	YES	
6	16.64		MARSHAL	YES	
7	4.28		MARSHAL	YES	
8	1.44		MARSHAL	YES	
9	1.44		MARSHAL	YES	
10	3.28		MARSHAL	YES	
11	3.28		MARSHAL	YES	
12	3.28		MARSHAL	YES	
13	3.28		MARSHAL	YES	
14	3.28		MARSHAL	YES	
15	3.28		MARSHAL	YES	
16	3.28		MARSHAL	YES	
17	3.28		MARSHAL	YES	
18	3.28		MARSHAL	YES	
19	3.28		MARSHAL	YES	
20	3.28		MARSHAL	YES	
21	3.28		MARSHAL	YES	
22	3.28		MARSHAL	YES	
23	3.28		MARSHAL	YES	
24	3.28		MARSHAL	YES	
25	3.28		MARSHAL	YES	
26	3.28		MARSHAL	YES	
27	3.28		MARSHAL	YES	
28	3.28		MARSHAL	YES	
29	3.28		MARSHAL	YES	
30	3.28		MARSHAL	YES	
31	3.28		MARSHAL	YES	
32	3.28		MARSHAL	YES	
33	3.28		MARSHAL	YES	
34	3.28		MARSHAL	YES	
35	3.28		MARSHAL	YES	
36	3.28		MARSHAL	YES	
37	3.28		MARSHAL	YES	
38	3.28		MARSHAL	YES	
39	3.28		MARSHAL	YES	
40	3.28		MARSHAL	YES	
41	3.28		MARSHAL	YES	
42	3.28		MARSHAL	YES	
43	3.28		MARSHAL	YES	
44	3.28		MARSHAL	YES	
45	3.28		MARSHAL	YES	
46	3.28		MARSHAL	YES	
47	3.28		MARSHAL	YES	
48	3.28		MARSHAL	YES	
49	3.28		MARSHAL	YES	
50	3.28		MARSHAL	YES	
51	3.28		MARSHAL	YES	
52	3.28		MARSHAL	YES	
53	3.28		MARSHAL	YES	
54	3.28		MARSHAL	YES	
55	3.28		MARSHAL	YES	
56	3.28		MARSHAL	YES	
57	3.28		MARSHAL	YES	
58	3.28		MARSHAL	YES	
59	3.28		MARSHAL	YES	
60	3.28		MARSHAL	YES	
61	3.28		MARSHAL	YES	
62	3.28		MARSHAL	YES	
63	3.28		MARSHAL	YES	
64	3.28		MARSHAL	YES	
65	3.28		MARSHAL	YES	
66	3.28		MARSHAL	YES	
67	3.28		MARSHAL	YES	
68	3.28		MARSHAL	YES	
69	3.28		MARSHAL	YES	
70	3.28		MARSHAL	YES	
71	3.28		MARSHAL	YES	
72	3.28		MARSHAL	YES	
73	3.28		MARSHAL	YES	
74	3.28		MARSHAL	YES	
75	3.28		MARSHAL	YES	
76	3.28		MARSHAL	YES	
77	3.28		MARSHAL	YES	
78	3.28		MARSHAL	YES	
79	3.28		MARSHAL	YES	
80					

OVERALL SAMPLE RATING (SCALE 1 - 9) IS 4



SAMPLE IDENTIFICATION 004532 01601E15SE00071A

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND 583.21 GMS. WASHED SAMPLE - WEIGHT BEFORE 566.98 AFTER 566.98 % LOSS 0.0

SIEVE SIZE	FINE FRACTION (GMS.)	SIEVE WEIGHTS (GMS.)	PERCENT	PERCENT PASSING	PERCENT RETAINED
4	IN	0.0	0.0	100.00	0.0
10	IN	0.0	0.0	100.00	0.0
20	IN	0.0	0.0	100.00	0.0
40	IN	0.0	0.0	100.00	0.0
60	IN	0.0	0.0	100.00	0.0
80	IN	0.0	0.0	100.00	0.0
100	IN	0.0	0.0	100.00	0.0
150	IN	0.0	0.0	100.00	0.0
200	IN	0.0	0.0	100.00	0.0
250	IN	0.0	0.0	100.00	0.0
300	IN	0.0	0.0	100.00	0.0
350	IN	0.0	0.0	100.00	0.0
400	IN	0.0	0.0	100.00	0.0
450	IN	0.0	0.0	100.00	0.0
500	IN	0.0	0.0	100.00	0.0
550	IN	0.0	0.0	100.00	0.0
600	IN	0.0	0.0	100.00	0.0
650	IN	0.0	0.0	100.00	0.0
700	IN	0.0	0.0	100.00	0.0
750	IN	0.0	0.0	100.00	0.0
800	IN	0.0	0.0	100.00	0.0
850	IN	0.0	0.0	100.00	0.0
900	IN	0.0	0.0	100.00	0.0
950	IN	0.0	0.0	100.00	0.0
1000	IN	0.0	0.0	100.00	0.0
1050	IN	0.0	0.0	100.00	0.0
1100	IN	0.0	0.0	100.00	0.0
1150	IN	0.0	0.0	100.00	0.0
1200	IN	0.0	0.0	100.00	0.0
1250	IN	0.0	0.0	100.00	0.0
1300	IN	0.0	0.0	100.00	0.0
1350	IN	0.0	0.0	100.00	0.0
1400	IN	0.0	0.0	100.00	0.0
1450	IN	0.0	0.0	100.00	0.0
1500	IN	0.0	0.0	100.00	0.0
1550	IN	0.0	0.0	100.00	0.0
1600	IN	0.0	0.0	100.00	0.0
1650	IN	0.0	0.0	100.00	0.0
1700	IN	0.0	0.0	100.00	0.0
1750	IN	0.0	0.0	100.00	0.0
1800	IN	0.0	0.0	100.00	0.0
1850	IN	0.0	0.0	100.00	0.0
1900	IN	0.0	0.0	100.00	0.0
1950	IN	0.0	0.0	100.00	0.0
2000	IN	0.0	0.0	100.00	0.0
2050	IN	0.0	0.0	100.00	0.0
2100	IN	0.0	0.0	100.00	0.0
2150	IN	0.0	0.0	100.00	0.0
2200	IN	0.0	0.0	100.00	0.0
2250	IN	0.0	0.0	100.00	0.0
2300	IN	0.0	0.0	100.00	0.0
2350	IN	0.0	0.0	100.00	0.0
2400	IN	0.0	0.0	100.00	0.0
2450	IN	0.0	0.0	100.00	0.0
2500	IN	0.0	0.0	100.00	0.0
2550	IN	0.0	0.0	100.00	0.0
2600	IN	0.0	0.0	100.00	0.0
2650	IN	0.0	0.0	100.00	0.0
2700	IN	0.0	0.0	100.00	0.0
2750	IN	0.0	0.0	100.00	0.0
2800	IN	0.0	0.0	100.00	0.0
2850	IN	0.0	0.0	100.00	0.0
2900	IN	0.0	0.0	100.00	0.0
2950	IN	0.0	0.0	100.00	0.0
3000	IN	0.0	0.0	100.00	0.0
3050	IN	0.0	0.0	100.00	0.0
3100	IN	0.0	0.0	100.00	0.0
3150	IN	0.0	0.0	100.00	0.0
3200	IN	0.0	0.0	100.00	0.0
3250	IN	0.0	0.0	100.00	0.0
3300	IN	0.0	0.0	100.00	0.0
3350	IN	0.0	0.0	100.00	0.0
3400	IN	0.0	0.0	100.00	0.0
3450	IN	0.0	0.0	100.00	0.0
3500	IN	0.0	0.0	100.00	0.0
3550	IN	0.0	0.0	100.00	0.0
3600	IN	0.0	0.0	100.00	0.0
3650	IN	0.0	0.0	100.00	0.0
3700	IN	0.0	0.0	100.00	0.0
3750	IN	0.0	0.0	100.00	0.0
3800	IN	0.0	0.0	100.00	0.0
3850	IN	0.0	0.0	100.00	0.0
3900	IN	0.0	0.0	100.00	0.0
3950	IN	0.0	0.0	100.00	0.0
4000	IN	0.0	0.0	100.00	0.0
4050	IN	0.0	0.0	100.00	0.0
4100	IN	0.0	0.0	100.00	0.0
4150	IN	0.0	0.0	100.00	0.0
4200	IN	0.0	0.0	100.00	0.0
4250	IN	0.0	0.0	100.00	0.0
4300	IN	0.0	0.0	100.00	0.0
4350	IN	0.0	0.0	100.00	0.0
4400	IN	0.0	0.0	100.00	0.0
4450	IN	0.0	0.0	100.00	0.0
4500	IN	0.0	0.0	100.00	0.0
4550	IN	0.0	0.0	100.00	0.0
4600	IN	0.0	0.0	100.00	0.0
4650	IN	0.0	0.0	100.00	0.0
4700	IN	0.0	0.0	100.00	0.0
4750	IN	0.0	0.0	100.00	0.0
4800	IN	0.0	0.0	100.00	0.0
4850	IN	0.0	0.0	100.00	0.0
4900	IN	0.0	0.0	100.00	0.0
4950	IN	0.0	0.0	100.00	0.0
5000	IN	0.0	0.0	100.00	0.0
5050	IN	0.0	0.0	100.00	0.0
5100	IN	0.0	0.0	100.00	0.0
5150	IN	0.0	0.0	100.00	0.0
5200	IN	0.0	0.0	100.00	0.0
5250	IN	0.0	0.0	100.00	0.0
5300	IN	0.0	0.0	100.00	0.0
5350	IN	0.0	0.0	100.00	0.0
5400	IN	0.0	0.0	100.00	0.0
5450	IN	0.0	0.0	100.00	0.0
5500	IN	0.0	0.0	100.00	0.0
5550	IN	0.0	0.0	100.00	0.0
5600	IN	0.0	0.0	100.00	0.0
5650	IN	0.0	0.0	100.00	0.0
5700	IN	0.0	0.0	100.00	0.0
5750	IN	0.0	0.0	100.00	0.0
5800	IN	0.0	0.0	100.00	0.0
5850	IN	0.0	0.0	100.00	0.0
5900	IN	0.0	0.0	100.00	0.0
5950	IN	0.0	0.0	100.00	0.0
6000	IN	0.0	0.0	100.00	0.0
6050	IN	0.0	0.0	100.00	0.0
6100	IN	0.0	0.0	100.00	0.0
6150	IN	0.0	0.0	100.00	0.0
6200	IN	0.0	0.0	100.00	0.0
6250	IN	0.0	0.0	100.00	0.0
6300	IN	0.0	0.0	100.00	0.0
6350	IN	0.0	0.0	100.00	0.0
6400	IN	0.0	0.0	100.00	0.0
6450	IN	0.0	0.0	100.00	0.0
6500	IN	0.0	0.0	100.00	0.0
6550	IN	0.0	0.0	100.00	0.0
6600	IN	0.0	0.0	100.00	0.0
6650	IN	0.0	0.0	100.00	0.0
6700	IN	0.0	0.0	100.00	0.0
6750	IN	0.0	0.0	100.00	0.0
6800	IN	0.0	0.0	100.00	0.0
6850	IN	0.0	0.0	100.00	0.0
6900	IN	0.0	0.0	100.00	0.0
6950	IN	0.0	0.0	100.00	0.0
7000	IN	0.0	0.0	100.00	0.0
7050	IN	0.0	0.0	100.00	0.0
7100	IN	0.0	0.0	100.00	0.0
7150	IN	0.0	0.0	100.00	0.0
7200	IN	0.0	0.0	100.00	0.0
7250	IN	0.0	0.0	100.00	0.0
7300	IN	0.0	0.0	100.00	0.0
7350	IN	0.0	0.0	100.00	0.0
7400	IN	0.0	0.0	100.00	0.0
7450	IN	0.0	0.0	100.00	0.0
7500	IN	0.0	0.0	100.00	0.0
7550	IN	0.0	0.0	100.00	0.0
7600	IN	0.0	0.0	100.00	0.0
7650	IN	0.0	0.0	100.00	0.0
7700	IN	0.0	0.0	100.00	0.0
7750	IN	0.0	0.0	100.00	0.0
7800	IN	0.0	0.0	100.00	0.0
7850	IN	0.0	0.0	100.00	0.0
7900	IN	0.0	0.0	100.00	0.0
7950	IN	0.0	0.0	100.00	0.0
8000	IN	0.0	0.0	100.00	0.0
8050	IN	0.0	0.0	100.00	0.0
8100	IN	0.0	0.0	100.00	0.0
8150	IN	0.0	0.0	100.00	0.0
8200	IN	0.0	0.0	100.00	0.0
8250	IN	0.0	0.0	100.00	0.0
8300	IN	0.0	0.0	100.00	0.0
8350	IN	0.0	0.0	100.00	0.0
8400	IN	0.0	0.0	100.00	0.0
8450	IN	0.0	0.0	100.00	0.0
8500	IN	0.0	0.0	100.00	0.0
8550	IN	0.0	0.0	100.00	0.0
8600	IN	0.0	0.0	100.00	0.0
8650	IN	0.0	0.0	100.00	0.0
8700	IN	0.0	0.0	100.00	0.0
8750	IN	0.0	0.0	100.00	0.0
8800	IN	0.0	0.0	100.00	0.0
8850	IN	0.0	0.0	100.00	0.0
8900	IN	0.0	0.0	100.00	0.0
8950	IN	0.0	0.0	100.00	0.0
9000	IN	0.0	0.0	100.00	0.0
9050	IN	0.0	0.0	100.00	0.0
9100	IN	0.0	0.0	100.00	0.0
9150	IN	0.0	0.0	100.00	0.0
9200	IN	0.0	0.0	100.00	0.0
9250	IN	0.0	0.0	100.00	0.0
9300	IN	0.0	0.0	100.00	0.0
9350	IN	0.0	0.0	100.00	0.0
9400	IN	0.0	0.0	100.00	0.0
9450	IN	0.0	0.0	100.00	0.0
9500	IN	0.0	0.0	100.00	0.0
9550	IN	0.0	0.0	100.00	0.0
9600	IN	0.0	0.0	100.00	0.0
9650	IN	0.0	0.0	100.00	0.0
9700	IN	0.0	0.0	100.00	0.0
9750	IN	0.0	0.0	100.00	0.0
9800	IN	0.0	0.0	100.00	0.0
9850	IN	0.0	0.0	100.00	0.0
9900	IN	0.0	0.0	100.00	0.0
9950	IN	0.0	0.0	100.00	0.0
10000	IN	0.0	0.0	100.00	0.0

TOTALS 566.98

698.12

SPLITTING FACTOR 1.03

FINENESS MODULUS 4.30

% COBBLES 0.0 % PEBBLES 33.61 % GRANULES 13.39 % SAND 52.17 % SILT/CLAY 0.83

## INDUSTRIAL USAGE ASSESSMENT

004532 01601E15SE00071A

\*\*\*\*\*  
 \* NOTE - SUITABILITY OF SAMPLE IS BASED ONLY ON GRADING SPECIFICATIONS \*  
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INDUSTRIAL USE	TOTAL RESIDUAL	RATING	SCREENING REQUIRED	REMOVAL OF <#200 MATERIAL	CRUSHING MATERIAL ON SITE	REQUIRED MATERIAL NOT ON SITE	ADDITION OF FINES (MATERIAL <#4)
ASPHALT A (P. OF M.)	20.70	MARGINAL	YES	YES	YES		YES
ASPHALT B (P. OF M.)	13.92	MARGINAL	YES	YES	YES		YES
ASPHALT C (P. OF M.)	48.14	NOT SUIT					
COARSE AGGREGATE (P. OF M.)	24.92	MARGINAL	YES	YES	YES		YES
COARSE AGGREGATE (P. OF M.)	9.17	MARGINAL	YES	YES	YES		YES</



SAMPLE IDENTIFICATION 004533 01601E14SE00077A

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND	1095.35	GMS.	WASHED SAMPLE - WEIGHT BEFORE	555.73	AFTER	548.06	% LOSS	1.38
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[illegible]

TOTALS	555.73	1198.53
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SPLITTING FACTOR      1.97

FINENESS MODULUS 3.71

% COBBLES	0.0	% PEBBLES	27.40	% GRANULES	13.07	% SAND	58.14	% SILT/CLAY	1.39
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## INDUSTRIAL USAGE ASSESSMENT

004533 01601E14SE00077A

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\* NOTE - SUITABILITY OF SAMPLE IS BASED ONLY ON GRADING SPECIFICATIONS \*  
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[illegible]

OVERALL SAMPLE RATING (SCALE 1 - 9) IS 4

SAMPLE IDENTIFICATION 004533 01601E27SE00083A

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND 1214.58 GMS. WASHED SAMPLE - WEIGHT BEFORE 613.79 AFTER 613.79 % LOSS 0.0

SIEVE SIZE	FINE FRACTION (GMS.)	SIEVE WEIGHTS (GMS.)	PERCENT	PERCENT PASSING	PERCENT RETAINED
4	IN	0.0	0.0	100.00	0.0
1/2	IN	0.0	0.0	100.00	0.0
1/2	IN	0.0	0.0	100.00	0.0
1/2	IN	0.0	0.0	100.00	0.0
1/2	IN	28.18	15.95	84.05	15.95
1/2	IN	117.07	6.55	77.50	22.50
1/2	IN	139.08	6.55	71.00	29.00
1/2	IN	137.80	6.55	64.45	35.55
1/2	IN	74.70	4.45	60.00	40.00
1/2	IN	74.70	4.45	55.55	44.45
1/2	IN	102.09	5.69	50.00	50.00
1/2	IN	102.09	5.69	43.91	56.09
1/2	IN	99.67	5.69	38.00	62.00
1/2	IN	99.67	5.69	32.00	68.00
1/2	IN	101.77	5.69	26.00	74.00
1/2	IN	69.70	4.00	21.37	78.63
1/2	IN	60.97	3.40	17.97	82.03
1/2	IN	63.16	3.40	14.51	85.49
1/2	IN	27.17	1.51	13.00	87.00
1/2	IN	12.78	0.71	11.29	88.71
1/2	IN	7.55	0.43	10.86	89.14
1/2	IN	14.94	0.83	10.03	89.97
TOTALS	613.79	1794.71			
SPLITTING FACTOR	1.98				
FINENESS MODULUS	5.65				
% COBBLES	0.0	% PEBBLES	56.19	% GRANULES	11.11
		% SAND	31.87	% SILT/CLAY	0.83

TOTALS 613.79 1794.71

SPLITTING FACTOR 1.98

FINENESS MODULUS 5.65

% COBBLES 0.0 % PEBBLES 56.19 % GRANULES 11.11 % SAND 31.87 % SILT/CLAY 0.83

## INDUSTRIAL USAGE ASSESSMENT

004533 01601E27SE00083A

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 \* NOTE - SUITABILITY OF SAMPLE IS BASED ONLY ON GRADING SPECIFICATIONS \*  
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INDUSTRIAL USE	TOTAL RESIDUAL	RATING	SCREENING REQUIRED	REMOVAL OF <#200 MATERIAL	CRUSHING REQUIRED MATERIAL ON SITE	ADDITION OF FINES (MATERIAL <#4)
ASPHALT A (P. OF M.)	1.92	MARGINAL	YES	YES		
ASPHALT B (P. OF M.)	10.77	MARGINAL	YES	YES		
ASPHALT C (P. OF M.)	52.45	NOT SUIT				
COARSE A (P. OF M.)	3.01	MARGINAL	YES	YES		
COARSE B (P. OF M.)	3.01	MARGINAL	YES	YES		
COARSE C (P. OF M.)	1.67	MARGINAL	YES	YES		
SUBBASE A (ASTM D1241)	5.49	MARGINAL	YES	YES	YES	
SUBBASE B (ASTM D1241)	5.49	MARGINAL	YES	YES		
SUBBASE C (ASTM D1241)	10.81	MARGINAL	YES	YES		
SUBBASE D (ASTM D1241)	10.81	MARGINAL	YES	YES		
SUBBASE E (ASTM D1241)	45.87	NOT SUIT				
TRAFFIC GRAVEL A (P. OF M.)	14.83	MARGINAL	YES	YES	YES	YES
TRAFFIC GRAVEL B (P. OF M.)	6.77	MARGINAL	YES	YES		
TRAFFIC GRAVEL C (P. OF M.)	5.19	MARGINAL	YES	YES		
TRAFFIC GRAVEL D (P. OF M.)	10.00	SUITABLE	YES			
GENERAL COAT A (P. OF M.)	79.65	NOT SUIT				
GENERAL COAT B (P. OF M.)	7.97	MARGINAL	YES		YES	YES
GENERAL COAT C (P. OF M.)	0.0	SUITABLE	YES			
AGGREGATE 1 (ASTM C33, D448)	165.21	NOT SUIT				
AGGREGATE 2 (ASTM C33, D448)	139.26	NOT SUIT				
AGGREGATE 3 (ASTM C33, D448)	129.56	NOT SUIT				
AGGREGATE 4 (ASTM C33, D448)	129.19	NOT SUIT				
AGGREGATE 5 (ASTM C33, D448)	160.83	NOT SUIT				
AGGREGATE 6 (ASTM C33, D448)	160.83	NOT SUIT				
AGGREGATE 7 (ASTM C33, D448)	165.10	NOT SUIT				
AGGREGATE 8 (ASTM C33, D448)	161.60	NOT SUIT				
AGGREGATE 9 (ASTM C33, D448)	107.48	NOT SUIT				
AGGREGATE 10 (ASTM C33, D448)	139.44	NOT SUIT				
AGGREGATE 11 (ASTM C33, D448)	115.33	NOT SUIT				
AGGREGATE 12 (ASTM C33, D448)	115.33	NOT SUIT				
AGGREGATE 13 (ASTM C33, D448)	130.30	NOT SUIT				
AGGREGATE 14 (ASTM C33, D448)	139.23	NOT SUIT				
AGGREGATE 15 (ASTM C33, D448)	97.69	NOT SUIT				
AGGREGATE 16 (ASTM C33, D448)	83.87	NOT SUIT				
AGGREGATE 17 (ASTM C33, D448)	111.63	MARGINAL	YES			YES
CONCRETE AGGREGATE I (ASTM C33, C404)	27.31	MARGINAL	YES			
CONCRETE AGGREGATE II (ASTM C33, C404)	7.68	MARGINAL	YES			
MORTAR (ASTM C144)	7.68	MARGINAL	YES			
PORTLAND CEMENT (P. C. A.)	10.61	MARGINAL	YES			
BITUMEN (ASTM D1863)	119.05	NOT SUIT				
BITUMEN (P. OF H.)	0.0	SUITABLE	YES			
SEPTIC FIELDS (U.H.A.)	17.29	MARGINAL	YES		YES	
SHOULDERS (P. OF H.)	0.0	SUITABLE	YES			

OVERALL SAMPLE RATING (SCALE 1 - 9) IS 3

SAMPLE IDENTIFICATION 004534 01601E23NE00086A

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND 877.95 GMS. WASHED SAMPLE - WEIGHT BEFORE 875.76 AFTER 875.76 % LOSS 0.0

SIEVE SIZE	FINE FRACTION (GMS.)	SIEVE WEIGHTS (GMS.)	PERCENT	PERCENT PASSING	PERCENT RETAINED
4		0.0	0.0	100.00	0.0
10		0.0	0.0	100.00	0.0
20		0.0	0.0	100.00	0.0
40		0.0	0.0	100.00	0.0
60		0.0	0.0	100.00	0.0
80		0.0	0.0	100.00	0.0
100		0.0	0.0	100.00	0.0
150		0.0	0.0	100.00	0.0
200		0.0	0.0	100.00	0.0
250		0.0	0.0	100.00	0.0
300		0.0	0.0	100.00	0.0
350		0.0	0.0	100.00	0.0
400		0.0	0.0	100.00	0.0
450		0.0	0.0	100.00	0.0
500		0.0	0.0	100.00	0.0
550		0.0	0.0	100.00	0.0
600		0.0	0.0	100.00	0.0
650		0.0	0.0	100.00	0.0
700		0.0	0.0	100.00	0.0
750		0.0	0.0	100.00	0.0
800		0.0	0.0	100.00	0.0
850		0.0	0.0	100.00	0.0
900		0.0	0.0	100.00	0.0
950		0.0	0.0	100.00	0.0
1000		0.0	0.0	100.00	0.0
1500		0.0	0.0	100.00	0.0
2000		0.0	0.0	100.00	0.0
2500		0.0	0.0	100.00	0.0
3000		0.0	0.0	100.00	0.0
3500		0.0	0.0	100.00	0.0
4000		0.0	0.0	100.00	0.0
4500		0.0	0.0	100.00	0.0
5000		0.0	0.0	100.00	0.0
5500		0.0	0.0	100.00	0.0
6000		0.0	0.0	100.00	0.0
6500		0.0	0.0	100.00	0.0
7000		0.0	0.0	100.00	0.0
7500		0.0	0.0	100.00	0.0
8000		0.0	0.0	100.00	0.0
8500		0.0	0.0	100.00	0.0
9000		0.0	0.0	100.00	0.0
9500		0.0	0.0	100.00	0.0
10000		0.0	0.0	100.00	0.0
15000		0.0	0.0	100.00	0.0
20000		0.0	0.0	100.00	0.0
25000		0.0	0.0	100.00	0.0
30000		0.0	0.0	100.00	0.0
35000		0.0	0.0	100.00	0.0
40000		0.0	0.0	100.00	0.0
45000		0.0	0.0	100.00	0.0
50000		0.0	0.0	100.00	0.0
55000		0.0	0.0	100.00	0.0
60000		0.0	0.0	100.00	0.0
65000		0.0	0.0	100.00	0.0
70000		0.0	0.0	100.00	0.0
75000		0.0	0.0	100.00	0.0
80000		0.0	0.0	100.00	0.0
85000		0.0	0.0	100.00	0.0
90000		0.0	0.0	100.00	0.0
95000		0.0	0.0	100.00	0.0
100000		0.0	0.0	100.00	0.0
150000		0.0	0.0	100.00	0.0
200000		0.0	0.0	100.00	0.0
250000		0.0	0.0	100.00	0.0
300000		0.0	0.0	100.00	0.0
350000		0.0	0.0	100.00	0.0
400000		0.0	0.0	100.00	0.0
450000		0.0	0.0	100.00	0.0
500000		0.0	0.0	100.00	0.0
550000		0.0	0.0	100.00	0.0
600000		0.0	0.0	100.00	0.0
650000		0.0	0.0	100.00	0.0
700000		0.0	0.0	100.00	0.0
750000		0.0	0.0	100.00	0.0
800000		0.0	0.0	100.00	0.0
850000		0.0	0.0	100.00	0.0
900000		0.0	0.0	100.00	0.0
950000		0.0	0.0	100.00	0.0
1000000		0.0	0.0	100.00	0.0
1500000		0.0	0.0	100.00	0.0
2000000		0.0	0.0	100.00	0.0
2500000		0.0	0.0	100.00	0.0
3000000		0.0	0.0	100.00	0.0
3500000		0.0	0.0	100.00	0.0
4000000		0.0	0.0	100.00	0.0
4500000		0.0	0.0	100.00	0.0
5000000		0.0	0.0	100.00	0.0
5500000		0.0	0.0	100.00	0.0
6000000		0.0	0.0	100.00	0.0
6500000		0.0	0.0	100.00	0.0
7000000		0.0	0.0	100.00	0.0
7500000		0.0	0.0	100.00	0.0
8000000		0.0	0.0	100.00	0.0
8500000		0.0	0.0	100.00	0.0
9000000		0.0	0.0	100.00	0.0
9500000		0.0	0.0	100.00	0.0
10000000		0.0	0.0	100.00	0.0
15000000		0.0	0.0	100.00	0.0
20000000		0.0	0.0	100.00	0.0
25000000		0.0	0.0	100.00	0.0
30000000		0.0	0.0	100.00	0.0
35000000		0.0	0.0	100.00	0.0
40000000		0.0	0.0	100.00	0.0
45000000		0.0	0.0	100.00	0.0
50000000		0.0	0.0	100.00	0.0
55000000		0.0	0.0	100.00	0.0
60000000		0.0	0.0	100.00	0.0
65000000		0.0	0.0	100.00	0.0
70000000		0.0	0.0	100.00	0.0
75000000		0.0	0.0	100.00	0.0
80000000		0.0	0.0	100.00	0.0
85000000		0.0	0.0	100.00	0.0
90000000		0.0	0.0	100.00	0.0
95000000		0.0	0.0	100.00	0.0
100000000		0.0	0.0	100.00	0.0
150000000		0.0	0.0	100.00	0.0
200000000		0.0	0.0	100.00	0.0
250000000		0.0	0.0	100.00	0.0
300000000		0.0	0.0	100.00	0.0
350000000		0.0	0.0	100.00	0.0
400000000		0.0	0.0	100.00	0.0
450000000		0.0	0.0	100.00	0.0
500000000		0.0	0.0	100.00	0.0
550000000		0.0	0.0	100.00	0.0
600000000		0.0	0.0	100.00	0.0
650000000		0.0	0.0	100.00	0.0
700000000		0.0	0.0	100.00	0.0
750000000		0.0	0.0	100.00	0.0
800000000		0.0	0.0	100.00	0.0
850000000		0.0	0.0	100.00	0.0
900000000		0.0	0.0	100.00	0.0
950000000		0.0	0.0	100.00	0.0
1000000000		0.0	0.0	100.00	0.0
1500000000		0.0	0.0	100.00	0.0
2000000000		0.0	0.0	100.00	0.0
2500000000		0.0	0.0	100.00	0.0
3000000000		0.0	0.0	100.00	0.0
3500000000		0.0	0.0	100.00	0.0
4000000000		0.0	0.0	100.00	0.0
4500000000		0.0	0.0	100.00	0.0
5000000000		0.0	0.0	100.00	0.0
5500000000		0.0	0.0	100.00	0.0
6000000000		0.0	0.0	100.00	0.0
6500000000		0.0	0.0	100.00	0.0
7000000000		0.0	0.0	100.00	0.0
7500000000		0.0	0.0	100.00	0.0
8000000000		0.0	0.0	100.00	0.0
8500000000		0.0	0.0	100.00	0.0
9000000000		0.0	0.0	100.00	0.0
9500000000		0.0	0.0	100.00	0.0
10000000000		0.0	0.0	100.00	0.0
15000000000		0.0	0.0	100.00	0.0
20000000000		0.0	0.0	100.00	0.0
25000000000		0.0	0.0	100.00	0.0
30000000000		0.0	0.0	100.00	0.0
35000000000		0.0	0.0	100.00	0.0
40000000000		0.0	0.0	100.00	0.0
45000000000		0.0	0.0	100.00	0.0
50000000000		0.0	0.0	100.00	0.0
55000000000		0.0	0.0	100.00	0.0
60000000000		0.0	0.0	100.00	0.0
65000000000		0.0	0.0	100.00	0.0
70000000000		0.0	0.0	100.00	0.0
75000000000		0.0	0.0	100.00	0.0
80000000000		0.0	0.0	100.00	0.0
85000000000		0.0	0.0	100.00	0.0
90000000000		0.0	0.0	100.00	0.0
95000000000		0.0	0.0	100.00	0.0
100000000000		0.0	0.0	100.00	0.0
150000000000		0.0	0.0	100.00	0.0
200000000000		0.0	0.0	100.00	0.0
250000000000		0.0	0.0	100.00	0.0
300000000000		0.0	0.0	100.00	0.0
350000000000		0.0	0.0	100.00	0.0
400000000000		0.0	0.0	100.00	0.0
450000000000		0.0	0.0	100.00	0.0
500000000000		0.0	0.0	100.00	0.0
550000000000		0.0	0.0	100.00	0.0
600000000000		0.0	0.0	100.00	0.0
650000000000		0.0	0.0	100.00	0.0
700000000000		0.0	0.0	100.00	0.0
750000000000		0.0	0.0	100.00	0.0
800000000000		0.0	0.0	100.00	0.0
850000000000		0.0	0.0	100.00	0.0
900000000000		0.0	0.0	100.00	0.0
950000000000		0.0	0.0	100.00	0.0
1000000000000		0.0	0.0	100.00	0.0
1500000000000		0.0	0.0	100.00	0.0
2000000000000		0.0	0.0	100.00	0.0
2500000000000		0.0	0.0	100.00	0.0
3000000000000		0.0	0.0	100.00	0.0
3500000000000		0.0	0.0	100.00	0.0
4000000000000		0.0	0.0	100.00	0.0
4500000000000		0.0	0.0	100.00	0.0
5000000000000		0.0	0.0	100.00	0.0
5500000000000		0.0	0.0	100.00	0.0
6000000000000		0.0	0.0	100.00	0.0
6500000000000		0.0	0.0	100.00	0.0
7000000000000		0.0	0.0	100.00	0.0
7500000000000		0.0	0.0	100.00	0.0
8000000000000		0.0	0.0	100.00	0.0
8500000000000		0.0	0.0	100.00	0.0
9000000000000		0.0	0.0	100.00	0.0
9500000000000		0.0	0.0	100.00	0.0
10000000000000		0.0	0.0	100.00	0.0
15000000000000		0.0	0.0	100.00	0.0
20000000000000		0.0	0.0	100.00	0.0
25000000000000		0.0	0.0	100.00	0.0
30000000000000		0.0	0.0	100.00	0.0
35000000000000		0.0	0.0	100.00	0.0
40000000000000		0.0	0.0	100.00	0.0
45000000000000		0.0	0.0</		

SAMPLE IDENTIFICATION 004542 01602E32SE00536

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND	99.50	GMS.	WASHED SAMPLE - WEIGHT BEFORE	99.50	AFTER	99.50	% LOSS	0.0
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SIEVE SIZE	FINE FRACTION (GMS.)	SIEVE HEIGHTS (GMS.)	PERCENT	PERCENT PASSING	PERCENT RETAINED
1/2	0.00	0.00	0.00	100.00	0.00
1/2	0.00	0.00	0.00	100.00	0.00
1/2	0.00	0.00	0.00	100.00	0.00
4	0.00	0.00	0.00	100.00	0.00
10	0.00	0.00	0.00	100.00	0.00
20	0.00	0.00	0.00	100.00	0.00
40	0.00	0.00	0.00	100.00	0.00
60	0.00	0.00	0.00	100.00	0.00
80	0.00	0.00	0.00	100.00	0.00
100	0.00	0.00	0.00	100.00	0.00
120	0.00	0.00	0.00	100.00	0.00
140	0.00	0.00	0.00	100.00	0.00
160	0.00	0.00	0.00	100.00	0.00
180	0.00	0.00	0.00	100.00	0.00
200	0.00	0.00	0.00	100.00	0.00
250	0.00	0.00	0.00	100.00	0.00
300	0.00	0.00	0.00	100.00	0.00
350	0.00	0.00	0.00	100.00	0.00
400	0.00	0.00	0.00	100.00	0.00
450	0.00	0.00	0.00	100.00	0.00
500	0.00	0.00	0.00	100.00	0.00
560	0.00	0.00	0.00	100.00	0.00
630	0.00	0.00	0.00	100.00	0.00
710	0.00	0.00	0.00	100.00	0.00
800	0.00	0.00	0.00	100.00	0.00
900	0.00	0.00	0.00	100.00	0.00
1000	0.00	0.00	0.00	100.00	0.00
1120	0.00	0.00	0.00	100.00	0.00
1250	0.00	0.00	0.00	100.00	0.00
1400	0.00	0.00	0.00	100.00	0.00
1600	0.00	0.00	0.00	100.00	0.00
1800	0.00	0.00	0.00	100.00	0.00
2000	0.00	0.00	0.00	100.00	0.00
2240	0.00	0.00	0.00	100.00	0.00
2500	0.00	0.00	0.00	100.00	0.00
2800	0.00	0.00	0.00	100.00	0.00
3150	0.00	0.00	0.00	100.00	0.00
3550	0.00	0.00	0.00	100.00	0.00
4000	0.00	0.00	0.00	100.00	0.00
4500	0.00	0.00	0.00	100.00	0.00
5000	0.00	0.00	0.00	100.00	0.00
5600	0.00	0.00	0.00	100.00	0.00
6300	0.00	0.00	0.00	100.00	0.00
7100	0.00	0.00	0.00	100.00	0.00
8000	0.00	0.00	0.00	100.00	0.00
9000	0.00	0.00	0.00	100.00	0.00
10000	0.00	0.00	0.00	100.00	0.00
11200	0.00	0.00	0.00	100.00	0.00
12500	0.00	0.00	0.00	100.00	0.00
14000	0.00	0.00	0.00	100.00	0.00
16000	0.00	0.00	0.00	100.00	0.00
18000	0.00	0.00	0.00	100.00	0.00
20000	0.00	0.00	0.00	100.00	0.00
22400	0.00	0.00	0.00	100.00	0.00
25000	0.00	0.00	0.00	100.00	0.00
28000	0.00	0.00	0.00	100.00	0.00
31500	0.00	0.00	0.00	100.00	0.00
35500	0.00	0.00	0.00	100.00	0.00
40000	0.00	0.00	0.00	100.00	0.00
45000	0.00	0.00	0.00	100.00	0.00
50000	0.00	0.00	0.00	100.00	0.00
56000	0.00	0.00	0.00	100.00	0.00
63000	0.00	0.00	0.00	100.00	0.00
71000	0.00	0.00	0.00	100.00	0.00
80000	0.00	0.00	0.00	100.00	

TOTALS	99.50	100.00
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SPLITTING FACTOR 1.00

FINENESS MODULUS 4.07

% COBBLES	0.0	% PEBBLES	13.50	% GRANULES	24.90	% SAND	59.30	% SILT/CLAY	2.30
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## INDUSTRIAL USAGE ASSESSMENT

004542 01602E32SE00536

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 \* NOTE - SUITABILITY OF SAMPLE IS BASED ONLY ON GRADING SPECIFICATIONS \*  
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INDUSTRIAL USE		TOTAL RESIDUAL	RATING	SCREENING REQUIRED	REMOVAL OF #200 MATERIAL	CRUSHING MATERIAL ON SITE	REQUIRED MATERIAL NOT ON SITE	ADDITION OF FINES (MATERIAL <#4)
ASPHALT A (P. OF M.)		39.20	NOT SUIT					
ASPHALT B (P. OF M.)		24.20	MARGINAL	YES		YES		YES
ASPHALT C (P. OF M.)		22.44	NOT SUIT					
BASE COURSE A (P. OF M.)		27.40	NOT SUIT					
BASE COURSE B (P. OF M.)		37.10	MARGINAL	YES	YES		YES	
BASE COURSE C (P. OF M.)		8.10	MARGINAL		YES		YES	
BASE COURSE D (P. OF M.)		8.00	NOT SUIT					
BASE COURSE E (P. OF M.)	(ASTM D1241)	8.70	NOT SUIT					
BASE COURSE F (P. OF M.)	(ASTM D1241)	8.00	NOT SUIT					
BASE COURSE G (P. OF M.)	(ASTM D1241)	5.70	NOT SUIT					
BASE COURSE H (P. OF M.)	(ASTM D1241)	5.10	MARGINAL	YES	YES		YES	
BASE COURSE I (P. OF M.)	(ASTM D1241)	16.60	MARGINAL	YES	YES			
BASE COURSE J (P. OF M.)	(ASTM D1241)	6.60	MARGINAL	YES	YES			
BASE COURSE K (P. OF M.)	(P. OF M.)	6.40	NOT SUIT					
BASE COURSE L (P. OF M.)	(P. OF M.)	11.50	NOT SUIT					
BASE COURSE M (P. OF M.)	(P. OF M.)	11.00	MARGINAL				YES	
SEAL COAT A (P. OF M.)		2.63	NOT SUIT					
SEAL COAT B (P. OF M.)		16.93	MARGINAL	YES		YES		
SEAL COAT C (P. OF M.)		0.00	SUITABLE	YES				
COARSE AGGREGATE A (ASTM C33, D448)		20.00	NOT SUIT					
COARSE AGGREGATE B (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE C (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE D (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE E (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE F (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE G (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE H (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE I (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE J (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE K (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE L (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE M (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE N (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE O (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE P (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE Q (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE R (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE S (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE T (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE U (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE V (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE W (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE X (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE Y (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE Z (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE AA (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE AB (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE AC (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE AD (ASTM C33, D448)		19.00	NOT SUIT					
COARSE AGGREGATE AE (ASTM C33, D448)		19.00	NOT SUIT					

OVERALL SAMPLE RATING (SCALE 1 - 9) IS 6

SAMPLE IDENTIFICATION 004547 01702E02NW00100

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND	887.60	GMS.	WASHED SAMPLE - WEIGHT BEFORE	887.60	AFTER	875.60	% LOSS	1.35
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[illegible]

TOTALS	887.60	1337.00
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SPLITTING FACTOR 1.00

FINENESS MODULUS 5.09

% COBBLES	0.0	% PEBBLES	44.15	% GRANULES	8.81	% SAND	46.14	% SILT/CLAY	0.90
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## INDUSTRIAL USAGE ASSESSMENT

004547 01702E02NW00100

\*\*\*\*\*  
\* NOTE - SUITABILITY OF SAMPLE IS BASED ONLY ON GRADING SPECIFICATIONS \*  
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INDUSTRIAL USE	TOTAL RESIDUAL	RATING	SCREENING REQUIRED	REMOVAL OF #200 MATERIAL	CRUSHING MATERIAL ON SITE	REQUIRED MATERIAL NOT ON SITE	ADDITION OF FINES (MATERIAL <#4)
ASPHALT A (P. OF M.H.)	39.31	NOT SUIT					
ASPHALT B (P. OF M.H.)	33.26	NOT SUIT					
ASPHALT C (P. OF M.H.)	27.33	MARGINAL	YES	YES			
BASIS COURSE (P. OF M.H.)	44.26	NOT SUIT	YES	YES			
BASIS COURSE (P. OF M.H.)	20.29	MARGINAL	YES	YES	YES		YES
BASIS COURSE (P. OF M.H.)	10.77	NOT SUIT					
BASIS COURSE (P. OF M.H.)	82.31	NOT SUIT					
BASIS COURSE (P. OF M.H.)	57.31	NOT SUIT					
BASIS COURSE (P. OF M.H.)	7.50	MARGINAL	YES	YES			YES
BASIS COURSE (P. OF M.H.)	4.65	MARGINAL	YES	YES			
BASIS COURSE (P. OF M.H.)	6.65	MARGINAL	YES	YES			
BASIS COURSE (P. OF M.H.)	68.06	NOT SUIT					
BASIS COURSE (P. OF M.H.)	43.09	NOT SUIT					
BASIS COURSE (P. OF M.H.)	31.26	MARGINAL	YES		YES		YES
BASIS COURSE (P. OF M.H.)	110.21	NOT SUIT					
BASIS COURSE (P. OF M.H.)	44.80	NOT SUIT					
BASIS COURSE (P. OF M.H.)	15.12	MARGINAL	YES				YES
BASIS COURSE (P. OF M.H.)	152.77	NOT SUIT					
BASIS COURSE (P. OF M.H.)	112.77	NOT SUIT					
BASIS COURSE (P. OF M.H.)	152.09	NOT SUIT					
BASIS COURSE (P. OF M.H.)	111.24	NOT SUIT					
BASIS COURSE (P. OF M.H.)	216.41	NOT SUIT					
BASIS COURSE (P. OF M.H.)	170.53	NOT SUIT					
BASIS COURSE (P. OF M.H.)	215.21	NOT SUIT					
BASIS COURSE (P. OF M.H.)	239.54	NOT SUIT					
BASIS COURSE (P. OF M.H.)	194.82	NOT SUIT					
BASIS COURSE (P. OF M.H.)	180.14	NOT SUIT					
BASIS COURSE (P. OF M.H.)	206.25	NOT SUIT					
BASIS COURSE (P. OF M.H.)	160.14	NOT SUIT					
BASIS COURSE (P. OF M.H.)	195.35	NOT SUIT					
BASIS COURSE (P. OF M.H.)	189.91	NOT SUIT					
BASIS COURSE (P. OF M.H.)	164.77	NOT SUIT					
BASIS COURSE (P. OF M.H.)	125.40	NOT SUIT					
BASIS COURSE (P. OF M.H.)	39.21	MARGINAL	YES				YES
BASIS COURSE (P. OF M.H.)	35.76	MARGINAL	YES				YES
BASIS COURSE (P. OF M.H.)	35.37	MARGINAL	YES				YES
BASIS COURSE (P. OF M.H.)	6.32	MARGINAL	YES				
BASIS COURSE (P. OF M.H.)	6.32	MARGINAL	YES				
BASIS COURSE (P. OF M.H.)	15.92	MARGINAL	YES				YES
BASIS COURSE (P. OF M.H.)	160.64	NOT SUIT					
BASIS COURSE (P. OF M.H.)	32.69	NOT SUIT					
BASIS COURSE (P. OF M.H.)	30.00	MARGINAL	YES		YES		
BASIS COURSE (P. OF M.H.)	16.13	MARGINAL	YES		YES		

OVERALL SAMPLE RATING (SCALE 1 - 9) IS 5

SAMPLE IDENTIFICATION 004548 01702E02NE00104A

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND	1006.03 GMS.	WASHED SAMPLE - WEIGHT BEFORE	251.56	AFTER	251.56	% LOSS	0.0
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SIEVE SIZE	FINE FRACTION (GMS.)	SIEVE WEIGHTS (GMS.)	PERCENT	PERCENT PASSING	PERCENT RETAINED
1/2	0.00	0.00	0.00	100.00	0.00
1/2	0.00	0.00	0.00	100.00	0.00
1/2	0.00	0.00	0.00	100.00	0.00
4	0.00	0.00	0.00	100.00	0.00
10	0.00	0.00	0.00	100.00	0.00
20	0.00	0.00	0.00	100.00	0.00
40	0.00	0.00	0.00	100.00	0.00
60	0.00	0.00	0.00	100.00	0.00
80	0.00	0.00	0.00	100.00	0.00
100	0.00	0.00	0.00	100.00	0.00
120	0.00	0.00	0.00	100.00	0.00
140	0.00	0.00	0.00	100.00	0.00
160	0.00	0.00	0.00	100.00	0.00
180	0.00	0.00	0.00	100.00	0.00
200	0.00	0.00	0.00	100.00	0.00
250	0.00	0.00	0.00	100.00	0.00
300	0.00	0.00	0.00	100.00	0.00
350	0.00	0.00	0.00	100.00	0.00
400	0.00	0.00	0.00	100.00	0.00
450	0.00	0.00	0.00	100.00	0.00
500	0.00	0.00	0.00	100.00	0.00
560	0.00	0.00	0.00	100.00	0.00
630	0.00	0.00	0.00	100.00	0.00
710	0.00	0.00	0.00	100.00	0.00
800	0.00	0.00	0.00	100.00	0.00
900	0.00	0.00	0.00	100.00	0.00
1000	0.00	0.00	0.00	100.00	0.00
1120	0.00	0.00	0.00	100.00	0.00
1250	0.00	0.00	0.00	100.00	0.00
1400	0.00	0.00	0.00	100.00	0.00
1600	0.00	0.00	0.00	100.00	0.00
1800	0.00	0.00	0.00	100.00	0.00
2000	0.00	0.00	0.00	100.00	0.00
2240	0.00	0.00	0.00	100.00	0.00
2500	0.00	0.00	0.00	100.00	0.00
2800	0.00	0.00	0.00	100.00	0.00
3150	0.00	0.00	0.00	100.00	0.00
3550	0.00	0.00	0.00	100.00	0.00
4000	0.00	0.00	0.00	100.00	0.00
4500	0.00	0.00	0.00	100.00	0.00
5000	0.00	0.00	0.00	100.00	0.00
5600	0.00	0.00	0.00	100.00	0.00
6300	0.00	0.00	0.00	100.00	0.00
7100	0.00	0.00	0.00	100.00	0.00
8000	0.00	0.00	0.00	100.00	0.00
9000	0.00	0.00	0.00	100.00	0.00
10000	0.00	0.00	0.00	100.00	0.00
11200	0.00	0.00	0.00	100.00	0.00
12500	0.00	0.00	0.00	100.00	0.00
14000	0.00	0.00	0.00	100.00	0.00
16000	0.00	0.00	0.00	100.00	0.00
18000	0.00	0.00	0.00	100.00	0.00
20000	0.00	0.00	0.00	100.00	0.00
22400	0.00	0.00	0.00	100.00	0.00
25000	0.00	0.00	0.00	100.00	0.00
28000	0.00	0.00	0.00	100.00	0.00
31500	0.00	0.00	0.00	100.00	0.00
35500	0.00	0.00	0.00	100.00	0.00
40000	0.00	0.00	0.00	100.00	0.00
45000	0.00	0.00	0.00	100.00	0.00
50000	0.00	0.00	0.00	100.00	0.00
56000	0.00	0.00	0.00	100.00	0.00
63000	0.00	0.00	0.00	100.00	0.00
71000	0.00	0.00	0.00	100.00	0.00
80000	0.00	0.00	0.00	100.00	

TOTALS	251.56	1076.63
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SPLITTING FACTOR 4.00

FINENESS MODULUS 3.62

% COBBLES	0.0	% PEBBLES	28.69	% GRANULES	16.11	% SAND	53.73	% SILT/CLAY	1.47
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## INDUSTRIAL USAGE ASSESSMENT

004548 01702E02NE00104A

\*\*\*\*\* NOTE - SUITABILITY OF SAMPLE IS BASED ONLY ON GRADING SPECIFICATIONS \*\*\*\*\*

[illegible]

OVERALL SAMPLE RATING (SCALE 1 - 9) IS 4

SAMPLE IDENTIFICATION 004554 01702E17SE00094

AVAILABILITY OF CRUSHABLE MATERIAL ON SITE - NONE

WEIGHT OF SAND	1240.50	GMS.	WASHED SAMPLE - WEIGHT BEFORE	1240.50	AFTER	1198.50	% LOSS	3.39
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SIEVE SIZE	FINE FRACTION (GMS.)	SIEVE HEIGHTS (GMS.)	PERCENT	PERCENT PASSING	PERCENT RETAINED
1/2	0.00	0.00	0.00	100.00	0.00
1/2	0.00	0.00	0.00	100.00	0.00
1/2	0.00	0.00	0.00	100.00	0.00
4	0.00	0.00	0.00	100.00	0.00
10	0.00	0.00	0.00	100.00	0.00
20	0.00	0.00	0.00	100.00	0.00
40	0.00	0.00	0.00	100.00	0.00
60	0.00	0.00	0.00	100.00	0.00
80	0.00	0.00	0.00	100.00	0.00
100	0.00	0.00	0.00	100.00	0.00
120	0.00	0.00	0.00	100.00	0.00
140	0.00	0.00	0.00	100.00	0.00
160	0.00	0.00	0.00	100.00	0.00
180	0.00	0.00	0.00	100.00	0.00
200	0.00	0.00	0.00	100.00	0.00
250	0.00	0.00	0.00	100.00	0.00
300	0.00	0.00	0.00	100.00	0.00
350	0.00	0.00	0.00	100.00	0.00
400	0.00	0.00	0.00	100.00	0.00
450	0.00	0.00	0.00	100.00	0.00
500	0.00	0.00	0.00	100.00	0.00
560	0.00	0.00	0.00	100.00	0.00
630	0.00	0.00	0.00	100.00	0.00
710	0.00	0.00	0.00	100.00	0.00
800	0.00	0.00	0.00	100.00	0.00
900	0.00	0.00	0.00	100.00	0.00
1000	0.00	0.00	0.00	100.00	0.00
1120	0.00	0.00	0.00	100.00	0.00
1250	0.00	0.00	0.00	100.00	0.00
1400	0.00	0.00	0.00	100.00	0.00
1600	0.00	0.00	0.00	100.00	0.00
1800	0.00	0.00	0.00	100.00	0.00
2000	0.00	0.00	0.00	100.00	0.00
2240	0.00	0.00	0.00	100.00	0.00
2500	0.00	0.00	0.00	100.00	0.00
2800	0.00	0.00	0.00	100.00	0.00
3150	0.00	0.00	0.00	100.00	0.00
3550	0.00	0.00	0.00	100.00	0.00
4000	0.00	0.00	0.00	100.00	0.00
4500	0.00	0.00	0.00	100.00	0.00
5000	0.00	0.00	0.00	100.00	0.00
5600	0.00	0.00	0.00	100.00	0.00
6300	0.00	0.00	0.00	100.00	0.00
7100	0.00	0.00	0.00	100.00	0.00
8000	0.00	0.00	0.00	100.00	0.00
9000	0.00	0.00	0.00	100.00	0.00
10000	0.00	0.00	0.00	100.00	0.00
11200	0.00	0.00	0.00	100.00	0.00
12500	0.00	0.00	0.00	100.00	0.00
14000	0.00	0.00	0.00	100.00	0.00
16000	0.00	0.00	0.00	100.00	0.00
18000	0.00	0.00	0.00	100.00	0.00
20000	0.00	0.00	0.00	100.00	0.00
22400	0.00	0.00	0.00	100.00	0.00
25000	0.00	0.00	0.00	100.00	0.00
28000	0.00	0.00	0.00	100.00	0.00
31500	0.00	0.00	0.00	100.00	0.00
35500	0.00	0.00	0.00	100.00	0.00
40000	0.00	0.00	0.00	100.00	0.00
45000	0.00	0.00	0.00	100.00	0.00
50000	0.00	0.00	0.00	100.00	0.00
56000	0.00	0.00	0.00	100.00	0.00
63000	0.00	0.00	0.00	100.00	0.00
71000	0.00	0.00	0.00	100.00	0.00
80000	0.00	0.00	0.00	100.00	

TOTALS	1240.50	1264.00
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SPLITTING FACTOR 1.00

FINENESS MODULUS 4.30

% COBBLES	0.0	% PEBBLES	29.44	% GRANULES	22.81	% SAND	44.43	% SILT/CLAY	3.32
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## INDUSTRIAL USAGE ASSESSMENT

004554 01702E17SE00094

\*\*\*\*\* NOTE - SUITABILITY OF SAMPLE IS BASED ONLY ON GRADING SPECIFICATIONS \*\*\*\*\*

INDUSTRIAL USE			TOTAL RESIDUAL	RATING	SCREENING REQUIRED	REMOVAL OF <#200 MATERIAL	CRUSHING MATERIAL ON SITE	REQUIRED MATERIAL NOT ON SITE	ADDITION OF FINES (MATERIAL <#4)
ASPHALT	A	(P. OF M.)	8.97	MARGINAL	YES		YES		
ASPHALT	B	(P. OF M.)	0.52	MARGINAL	YES				
ASPHALT	C	(P. OF M.)	54.42	NOT SUIT					
ASPHALT	D	(P. OF M.)	12.03	MARGINAL	YES	YES	YES		
ASPHALT	E	(P. OF M.)	06.37	MARGINAL	YES	YES			
ASPHALT	F	(P. OF M.)	48.68	NOT SUIT					
ASPHALT	G	(P. OF M.)	40.54	NOT SUIT					
ASPHALT	H	(P. OF M.)	17.78	MARGINAL	YES	YES		YES	
ASPHALT	I	(P. OF M.)	20.37	MARGINAL	YES	YES			
ASPHALT	J	(P. OF M.)	13.37	MARGINAL	YES	YES			
ASPHALT	K	(P. OF M.)	23.62	NOT SUIT					
ASPHALT	L	(P. OF M.)	13.37	MARGINAL	YES	YES	YES		YES
ASPHALT	M	(P. OF M.)	13.37	MARGINAL	YES	YES	YES		
ASPHALT	N	(P. OF M.)	00.00	MARGINAL	YES	YES		YES	
ASPHALT	O	(P. OF M.)	72.33	NOT SUIT					
ASPHALT	P	(P. OF M.)	42.88	MARGINAL	YES		YES		
ASPHALT	Q	(P. OF M.)	0.00	SUITABLE	YES				
ASPHALT	R	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	S	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	T	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	U	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	V	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	W	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	X	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	Y	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	Z	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AA	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AB	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AC	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AD	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AE	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AF	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AG	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AH	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AI	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AJ	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AK	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AL	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AM	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AN	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AO	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AP	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AQ	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AR	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AS	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AT	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AU	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AV	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AW	(P. OF M.)	20.46	NOT SUIT					
ASPHALT	AX	(P. OF M.)	20.46	NOT SUIT					

OVERALL SAMPLE RATING (SCALE 1 - 9) IS 4



**POLICY #13**

**ECONOMICALLY VALUABLE AGGREGATE AND QUARRY MINERAL DEPOSITS SHOULD BE PROTECTED FROM SURFACE LAND USES THAT WOULD INTERFERE WITH THEIR ONGOING AND FUTURE EXPLOITATION.**

**A. Policy Objectives**

The objectives of this Policy are:

- (a) To protect aggregate and quarry mineral resources for future construction and development in the Province.
- (b) To ensure that materials are available to support local and provincial construction needs and industrial minerals production at a reasonable cost.
- (c) To ensure that pit and quarry operations are reasonably compatible with adjacent land uses.
- (d) To integrate aggregate and quarry mineral extraction into the overall land use planning process by allocating areas specifically for extraction and by assuming that as the economic climate changes so areas allocated to resource extraction will also change.
- (e) To pursue sequential land use practices such that on a known deposit (i) a non-conflicting land use is applied to the surface of the deposit prior to mineral extraction, and (ii) the land is returned to a practical and compatible use once extraction has ceased.

**B. Policy Application**

Deposits of sand and gravel and near-surface limestone which are in demand as construction materials by industry, local communities or government departments and agencies, should be protected. In certain parts of the Province such minerals as bentonite, shale, gypsum, high calcium limestone, silica sand and other quarry minerals should also be protected to ensure a supply of these materials to industrial mineral related industries. These include both surface deposits and shallow subsurface deposits overlain by till or clay.

For the purpose of this Policy:

- (a) Conflicting land uses include residential subdivision lots, highways or utility corridors. Such development should be deferred until the mineral is extracted and the site rehabilitated.
- (b) Marginally conflicting land uses include the incorporation of aggregate and quarry mineral deposits into a Provincial or National Park, a Wildlife Management Area, a Community Pasture or a Provincial Forest or the establishment of a garbage dump on part of a deposit. In these cases, mineral extraction can take place alongside the alternative land use, provided that agreement is reached between the two concerns, to ensure optimal utilization of all resources involved.
- (c) Non-conflicting land uses include recreation outside of Provincial Parks, low value timber stands, general agricultural practices and temporary occupation, such as trailer parks or parking lots. Pit and quarry operations can develop in these areas whenever such activities become economically feasible.

In some areas aggregate or quarry mineral extraction should be recognized as a primary land use. In other areas a marginal or non-conflicting land use may be permitted providing that it could later be converted to a gravel or mineral extraction operation.

In order to indicate areas where conflicting land uses should be disallowed, the Mineral Resources Division is in the process of producing aggregate and quarry mineral resource maps for certain regions of the Province. These will take the form of "Stop – Caution – Go" maps. "Stop" indicates valuable deposits upon which no conflicting land use should be allowed. "Caution" denotes a deposit whose full potential is not proven or whose quality is not high but which has been recognized as of value to the region. Deposits with a status of "Caution" may be designated for a conflicting land use, after local needs have been scrutinized. "Go" denotes a deposit of no present recognized value as an aggregate or quarry mineral source. Periodic revision to the "Stop – Caution – Go" status of deposits will reflect continuing exploration and changing economic

conditions. It is understood that the maps will be subject to approval by the Provincial Land Use Committee.

The rehabilitation of pits and quarries on both Crown and private land is governed by Regulation under The Mines Act. The rehabilitation takes place in accordance with an approved plan. Consensus for the plan is derived from concerned Municipal and Provincial agencies. The Mineral Resources Division requires such plans from all commercial operators.

Following mineral exploitation and rehabilitation, the land can be restored to some compatible use.

### **C. Definitions**

For the purpose of this Policy:

- (a) "Aggregate" means sand, gravel, or both, or crushed rock.
- (b) "Economically Valuable Aggregate and Quarry Mineral Deposits" means those areas of aggregate and quarry mineral resource which have a high potential for extraction based on supply and demand projected over 25 years.
- (c) "Quarry Minerals" means those minerals obtained by quarrying, including shale, kaolin, bentonite, gypsum, clay, silica-rich sand, peat, salt, coal, and rock or stone used for any purpose other than as a source of metal, asbestos, potash, oil and natural gas.