



Recommended Construction Material Sources for District Kotli

Sr.No	District	Sand Sources		Coarse Aggregate Source		Stone for masonry		Clay deposits for Brick masonry	Stone soling of roads		Coarse aggregate for Asphalt/premix used in roads			
		Local sources have marginal use (<2000psi strength)	out of District	Local sources have marginal use (<3000psi strength)	out of district	Local	out of district		Local	out of district	Local	Out of District		
1	Kotli	Chinab sand	Kotli Nakial Anticline	out of district	Local	Study of clay deposit is in progress	Kotli Nakial Anticline	out of district	Local	Kamroti Dolomite	Margalla Hill limestone	
2		.....	.....	Khoi Ratta Anticline	out of district	Local	.....	.....	Khoi Ratta Anticline	out of district	Local	Goi Dandli Dolomite
3		.....	.....	Murree Formation sandstone	out of district	Local	.....	.....	Murree Formation sandstone	out of district	Local	.....	
4		Lawrencepur / Qliba bandi sand deposit	Poonch River Gravel	Margalla Hill limestone	out of district	Local	Poonch River Gravel	out of district	Local	
5		Poonch Terraces	out of district	Local	Poonch Terraces	out of district	Local	
			Khorban Nullah Gravel						Khorban Nullah Gravel					

Note:

1. Recommended sources coarse aggregate from kamroti dolomite quarry and Goi Dandli dolomite quarry qualify the bitumen adhesion test.
2. Ordinary Portland Cement (OPC) available in local market consist of 0.5 to 0.8% alkalis.
3. To avoid the Alkali Silica Reaction (OPC) can be replaced with Pozolona, slag or low alkali cement which should meet the 10000psi strength (BS-12, ASTM C150).
4. (i) Steel testing on each consignment is required to meet the ASTM 615A where for grade 40 steel required yield strength is 40,000psi and for grade 60 required yield strength is 60,000psi.
(ii) Chemical tests of the steel should meet the ASTM 706A.
5. Other local quarries material should be evaluated as per ranges provided in Table 4.1
6. Material of fine & coarse aggregate not fulfill the evaluation criteria mentioned in Table 4.1 should be treated as rejected.
7. For more detail visit our website www.pndajk.gov.pk

Geologist
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 22-7-2011

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 22.7.2011

STUDY OF CONSTRUCTION MATERIAL SOURCES IN AJK

Table 4.1

Criteria Used for Evaluating the Material Sources

PHYSICAL ENGINEERING PARAMETERS	ASTM C-33 SPECIFICATION LIMITS	*Tentative Limits									AASHTO	TRL	ASTM LIMITS	BS			
		Heavy Traffic Roadst			Medium Traffic Roadst			Light Traffic Roadst						Masonry Mortar	Floor Screed	External Rendering	Gypsum Plastering
		All Unbound	Wearing Course	Bituminous Base/Sub-base	All Unbound	Wearing Course	Bituminous Base/Sub-base	All Unbound	Wearing Course	Bituminous Base/Sub-base							
Specific Gravity (not less than)	2.5																
Water Absorption (not more than %)	1										12						
Sodium Sulfate Soundness (max. %)	12																
Los Angeles Abrasion Value (max. %)	50	25	25	35	30	30	35	35	30	35	30	35					
Materials Passing (No.200 sieve) (% by wt.)	3												3				
Shale (% by wt.)	1																
Clay Lumps and Friable Particles (% by wt.)	2												3				
Other Deleterious Substances (% by wt.)	1																
Impact Value (max.)		23	23	30	27	27	30	30	27	30	25						
Crushing Value (max.)		23	23	30	27	30	30	30	27	30	25						
10% Fine Value KN (min.) Dry		130	130	100	115	100	100	100	115	100	150						
10% Fine Value KN (min.) Soaked		80	65	50	65	65	50	50	65	50							
Fleakness (max.)											45	35					
Sand Grading													ASTM C-33	BS-1200	BS-112	BS-1199	BS-1198
Fineness Modulus													ASTM C-33				
Mortar Bar Expansion % (max.) at 14 days (ASTM 1260)	0.1												0.1				
Bitumen Adhesion (Not less than)											95	75					

CONCRETE
COARSE
AGGREGATES

ROAD AGGREGATE

FINE AGGREGATES



Minimum Required Parameters for Brick Selection

S.No.	Class Of Brick	Weight Of Brick (lbs) (Bone Dry)	Size Of Brick (inch X inch X inch)	Water Absorption Ratio	Strength Of Brick (psi)
1	1 st Class	7	9 X 4-1/2 X 3	1/6 th of its dry Weight	1200 to 1500
2	2 nd Class	7	9 X 4-1/2 X 3	1/4 th of its dry Weight	900 to 1200
3	3 rd Class	6.75	9 X 4-1/2 X 3	1/3 rd of its dry Weight	500 to 900
4	4 th Class	7.2	9 X 4-1/2 X 3	1/2.5 of its dry Weight	Less than 500

AK *AK* *omul.*

Chief Rate Analysis 22/7/2011

Planning And Dev. Deptt

Govt. Of AJK M.abad