

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT) LIMITED

NESPAK HOUSE: 1-C, Block-N, Model Town Extension, Lahore - 54700, Pakistan



Ref: SA-586/024/KY/01/0464

Date: October 07, 2024

DETAILED DESIGN FOR WIDENING AND IMPROVEMENT OF PRIORITY SECTIONS OF N-5 (Package – 1, 2, 3, 4, 5, 6 & 7)

Invitation of Bids for Geotechnical Investigations (Field and Laboratory Works)

Dear Sir,

Sealed bids (Technical and Financial in separate sealed envelopes) are invited in accordance with the attached BOQs (for seven packages i.e. Package-1, Package-2, Package-3, Package-4, Package-5, Package-6 & Package-7, separately) and qualification criteria from drilling Contractors / companies for carrying out the geotechnical investigations for the subject project.

The companies capable of carrying out subject work are requested to provide their Company's Profile and the following documents along with their sealed bids:

1. PEC Registration Certificate
2. FBR & PRA Registration Certificates
3. List of Similar Projects completed during last three years
4. Financial Capability
5. Equipment Capability
6. Personnel Capability
7. Litigation History
8. HSE Policies

The work comprises; execution of boreholes up to 40 m depth below natural surface level (NSL) by using straight rotary drilling / percussion boring method, core drilling in bedrock, excavation of testpits, performance of SPTs in boreholes, performance of field density tests in testpits, collection of disturbed/undisturbed soil samples, collection of rock core samples, collection of water samples and laboratory testing of selected soil/rock/water samples. The field and laboratory work shall have to be completed according to the following time schedule:

Sr No.	Package Number	Minimum No. of Straight Rotary Drilling Rigs/ Percussion Sets Required	Time for Completion of Field Investigations	Time for Completion Laboratory Testing	Total Time
1	Package - 1	02	24 Days	20 Days	44 Days
2	Package - 2	02	33 Days	21 Days	54 Days
3	Package - 3	02	27 Days	20 Days	47 Days
4	Package - 4	02	36 Days	21 Days	57 Days
5	Package - 5	02	26 Days	20 Days	46 Days
6	Package - 6	02	39 Days	21 Days	60 Days
7	Package - 7	01	30 Days	20 Days	50 Days

Your bid shall be valid for a time period of ninety (90) days after the bid opening. If one Contractor happens to be the lowest in more than one packages, than he may be awarded one or more packages (but not more than three packages), depending on his capability to undertake such large work with tight time schedule. The work shall be executed under the instructions and full-time supervision of NESPAK

Telephone : +92-42-99090000
E-mail : info@nespak.com.pk
Website : www.nespak.com.pk

Fax : +92-42-99231950
P.O.Box : 1351, Lahore, Pakistan



engineers/geologists and the successful bidder shall mobilize to the site on three (03) days' notice after issuance of Letter of Award/Acceptance.

The coordinates and ground elevations of all the boreholes and testpits by total station / differential GPS shall have to be provided to NESPAK before completion of investigation at site by the Contractor.

The approved laboratory, where testing is to be carried out, shall be pursued by the successful bidder for timely completion of the assigned laboratory testing. The successful bidder shall be responsible for providing the factual geotechnical investigation report (including borehole and testpit logs, summary of samples recovered, summary of laboratory test results and detailed laboratory test result sheets) to NESPAK, within the contract period. A premium of up to 25 % will be admissible on the official rates of the laboratory, selected for testing of soil / rock / water samples. This premium has been allowed as compensation to the Contractor for making advance payment to the laboratory and later following-up for obtaining test results in time. The name of the laboratory should be provided on page 2 of 2 (Annexure-1).

The bidders shall submit a bid security amounting to Rs. 100,000/- (Rupees one hundred thousand) (for each package, separately) at the time of submission of bids in the form of pay order or bank draft in favor of M/s NESPAK.

Your most competitive sealed bids (inclusive of all taxes) in accordance with the BOQs and qualification criteria, should reach the office of the undersigned by 1100 hours on or before October 25, 2024. Technical bids would be opened on the same day at 1130 hours after their receipt in the presence of those bidders who wish to be present.

Financial bids would be opened after evaluation of Technical bids, at a time, date and venue announced and communicated to the technically responsive bidders in advance. However the final decision to accept/reject any or all the bids as per PPRA rules solely lies with the undersigned. The entire work shall be carried out in accordance with the requirements of the General Bidding Documents for Geotechnical Investigations available at NESPAK website (www.nespak.com.pk).

for National Engineering Services Pakistan (Pvt.) Limited


(KAMRAN YOUSAF)
General Manager / Head
Geotechnical & Geo-Environmental Engineering Division


ALI NA

DETAILED DESIGN FOR WIDENING AND IMPROVEMENT OF PRIORITY SECTIONS OF N-5					
Package - 1: Hyderabad - Hala Section					
GEOTECHNICAL INVESTIGATIONS					
BILL OF QUANTITIES					
Sr. No.	Description	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
A.	FIELD INVESTIGATIONS				
A1	Mobilization and demobilization of at least Two (02) straight rotary drilling rigs / percussion boring equipments alongwith allied accessories at site including setting-up and shifting of equipment from one investigation point to another. The equipment shall be adequate in quantity to meet the time schedule.	L.S.	Job		
A2	Execution of Eleven (11) boreholes of 30 m - 40 m depth below NSL in overburden soils or upto rock strike level, whichever is met earlier, by straight rotary drilling / percussion boring method including backfilling of boreholes to their original position using cement-sand-bentonite mix. Minimum permissible diameter of borehole is 200 mm for percussion method and 100 mm for straight rotary method.	L.M.	290		
A3	Continuous core drilling (NX / NQ size in general) in bedrock up to a minimum depth of 3 m below rock strike level, including preservation of core samples in core boxes, waxing of core samples, photography of rock cores and transportation of core samples to the laboratory.	L.M.	60		
A4	Performance of Standard Penetration Tests (SPTs) in boreholes generally at 1 m depth interval or as necessary along with collection of SPT samples, including their labelling, packing, storage & transportation to an approved testing laboratory.	No.	270		
A5	Collection of relatively undisturbed soil samples from boreholes through Denison/ Pitcher/ Shelby sampler, including their waxing, labelling, packing, storage & transportation to an approved testing laboratory.	No.	20		
A5	Excavation of Thirty Nine (39) testpits upto a maximum depth of 2 m or upto subgrade, whichever is met earlier, along the existing road alignments including exposing existing road / pavement layers and backfilling of pits to original condition including casting of 1 ft thick P.C.C. (1:2:4) pad at top of each pit for level surfacing.	L.M.	78		
A6	Excavation of Thirty Nine (39) testpits upto a maximum depth of 1.5 m below NSL along proposed widening portion including backfilling of pits to original condition.	L.M.	58.5		
A7	Performance of field density tests by sand replacement method in testpits generally @ 1 - 3 tests/pit at selected horizons in existing pavement layers (i.e. in Water Bound Mecadam / Aggregate Base Course, Sub-Base and Sub-grade) including determination of in-situ bulk and dry density and collection of small disturbed samples in moisture tins for moisture content determination in laboratory by oven drying method as well as labelling, packing, storage & transportation to an approved testing laboratory.	No.	136		
A8	Collection of composite bulk samples (from Water Bound Mecadam, Aggregate Base Course, Sub-Base and Subgrade) from testpits including their labeling, packing, storage & transportation to an approved testing laboratory.	No.	136		
A9	Collection of composite bulk samples (minimum weight 50-100 kg.) from Borrow Areas including their labelling, packing, storage & transportation to an approved laboratory.	No.	4		
A10	Collection of water samples (if encountered) from boreholes & testpits including their labelling, packing, storage & transportation to an approved testing laboratory.	No.	10		
	Sub-Total A =				
<p>Establishment of coordinates and ground elevations of all the boreholes and testpits using Total Station / Differential GPS is included in the scope of work. The coordinates should be provided with reference to a permanent bench mark established at site.</p> <p>Straight rotary drilling method will be used for execution of borehole in sandy / clayey soil & bedrock. However, percussion method of boring will be required if gravelly strata encountered</p> <p>Contractor will be responsible for arrangement of Personnel Protective Equipments (PPEs) such as safety helmets and jackets for NESPAK site supervisory / visiting staff.</p> <p>All soil / rock / water samples must be labelled, stored and transported as per ASTM requirements. The area and clearance ratio of thin walled tubes should be in strict compliance with relevant ASTM standard.</p>					



**DETAILED DESIGN FOR WIDENING AND IMPROVEMENT OF PRIORITY SECTIONS OF N-5
Package - 1: Hyderabad - Hala Section**

**GEOTECHNICAL INVESTIGATIONS
BILL OF QUANTITIES**

Sr. No.	Description	Unit	Qty.	Rate	Amount
				(Rs.)	(Rs.)
B.	LABORATORY TESTING				
B1	Sieve Analysis	No.	175		
B2	Hydrometer Analysis	No.	50		
B3	Liquid and Plastic Limits	No.	80		
B4	Natural Moisture Content	No.	40		
B5	Bulk & Dry density	No.	40		
B6	Consolidation with Swell Pressure Measurement	No.	4		
B7	Unconfined Compression	No.	10		
B8	Uniaxial Compression	No.	10		
B9	Point Load Strength Index	No.	10		
B10	Direct Shear	No.	10		
B11	Modified AASHTO Compaction	No.	140		
B12	3-point soaked CBR	No.	140		
B13	Chemical Analysis of Soil Sample i/c sulphate content, chloride content, organic matter	No.	10		
B14	Chemical Analysis of Water Samples i/c TDS, Cl, SO ₄ , pH etc.	No.	10		
	Sub-Total B =				
	Total (A+B)=				
Name of Laboratory: _____					



<p align="center">DETAILED DESIGN FOR WIDENING AND IMPROVEMENT OF PRIORITY SECTIONS OF N-5 Package - 2: Ranipur - Rohri Section GEOTECHNICAL INVESTIGATIONS BILL OF QUANTITIES</p>					
Sr. No.	Description	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
A.	FIELD INVESTIGATIONS				
A1	Mobilization and demobilization of at least Two (02) straight rotary drilling rigs / percussion boring equipments alongwith allied accessories at site including setting-up and shifting of equipment from one investigation point to another. The equipment shall be adequate in quantity to meet the time schedule.	L.S.	Job		
A2	Execution of Fifteen (15) boreholes of 30 m - 40 m depth below NSL in overburden soils or upto rock strike level, whichever is met earlier, by straight rotary drilling / percussion boring method including backfilling of boreholes to their original position using cement-sand-bentonite mix. Minimum permissible diameter of borehole is 200 mm for percussion method and 100 mm for straight rotary method.	L.M.	400		
A3	Continuous core drilling (NX / NQ size in general) in bedrock up to a minimum depth of 3 m below rock strike level, including preservation of core samples in core boxes, waxing of core samples, photography of rock cores and transportation of core samples to the laboratory.	L.M.	80		
A4	Performance of Standard Penetration Tests (SPTs) in boreholes generally at 1 m depth interval or as necessary along with collection of SPT samples, including their labelling, packing, storage & transportation to an approved testing laboratory.	No.	375		
A5	Collection of relatively undisturbed soil samples from boreholes through Denison/ Pitcher/ Shelby sampler, including their waxing, labelling, packing, storage & transportation to an approved testing laboratory.	No.	25		
A5	Excavation of Forty Two (42) testpits upto a maximum depth of 2 m or upto subgrade, whichever is met earlier, along the existing road alignments including exposing existing road / pavement layers and backfilling of pits to original condition including casting of 1 ft thick P.C.C. (1:2:4) pad at top of each pit for level surfacing.	L.M.	84		
A6	Excavation of Forty Two (42) testpits upto a maximum depth of 1.5 m below NSL along proposed widening portion including backfilling of pits to original condition.	L.M.	63		
A7	Performance of field density tests by sand replacement method in testpits generally @ 1 - 3 tests/pit at selected horizons in existing pavement layers (i.e. in Water Bound Mecadam / Aggregate Base Course, Sub-Base and Subgrade) including determination of in-situ bulk and dry density and collection of small disturbed samples in moisture tins for moisture content determination in laboratory by oven drying method as well as labelling, packing, storage & transportation to an approved testing laboratory.	No.	146		
A8	Collection of composite bulk samples (from Water Bound Mecadam, Aggregate Base Course, Sub-Base and Subgrade) from testpits including their labeling, packing, storage & transportation to an approved testing laboratory.	No.	146		
A9	Collection of composite bulk samples (minimum weight 50-100 kg.) from Borrow Areas including their labelling, packing, storage & transportation to an approved laboratory.	No.	5		
A10	Collection of water samples (if encountered) from boreholes & testpits including their labelling, packing, storage & transportation to an approved testing laboratory.	No.	12		
	Sub-Total A =				
<p>Establishment of coordinates and ground elevations of all the boreholes and testpits using Total Station / Differential GPS is included in the scope of work. The coordinates should be provided with reference to a permanent bench mark established at site.</p> <p>Straight rotary drilling method will be used for execution of borehole in sandy / clayey soil & bedrock. However, percussion method of boring will be required if gravelly strata encountered</p> <p>Contractor will be responsible for arrangement of Personnel Protective Equipments (PPEs) such as safety helmets and jackets for NESPAK site supervisory / visiting staff.</p> <p>All soil / rock / water samples must be labelled, stored and transported as per ASTM requirements. The area and clearance ratio of thin walled tubes should be in strict compliance with relevant ASTM standard.</p>					



**DETAILED DESIGN FOR WIDENING AND IMPROVEMENT OF PRIORITY SECTIONS OF N-5
Package - 2: Ranipur - Rohri Section**

**GEOTECHNICAL INVESTIGATIONS
BILL OF QUANTITIES**

Sr. No.	Description	Unit	Qty.	Rate	Amount
				(Rs.)	(Rs.)
B.	LABORATORY TESTING				
B1	Sieve Analysis	No.	200		
B2	Hydrometer Analysis	No.	75		
B3	Liquid and Plastic Limits	No.	100		
B4	Natural Moisture Content	No.	50		
B5	Bulk & Dry density	No.	50		
B6	Consolidation with Swell Pressure Measurement	No.	5		
B7	Unconfined Compression	No.	15		
B8	Uniaxial Compression	No.	20		
B9	Point Load Strength Index	No.	15		
B10	Direct Shear	No.	10		
B11	Modified AASHTO Compaction	No.	146		
B12	3-point soaked CBR	No.	146		
B13	Chemical Analysis of Soil Sample i/c sulphate content, chloride content, organic matter	No.	12		
B14	Chemical Analysis of Water Samples i/c TDS, Cl, SO ₄ , pH etc.	No.	12		
	Sub-Total B =				
	Total (A+B)=				
Name of Laboratory: _____					



<p align="center">DETAILED DESIGN FOR WIDENING AND IMPROVEMENT OF PRIORITY SECTIONS OF N-5 Package - 3: Okara - Manga Section GEOTECHNICAL INVESTIGATIONS BILL OF QUANTITIES</p>					
Sr. No.	Description	Unit	Qty.	Rate	Amount
				(Rs.)	(Rs.)
A.	FIELD INVESTIGATIONS				
A1	Mobilization and demobilization of at least Two (02) straight rotary drilling rigs / percussion boring equipments alongwith allied accessories at site including setting-up and shifting of equipment from one investigation point to another. The equipment shall be adequate in quantity to meet the time schedule.	L.S.	Job		
A2	Execution of Fifteen (15) boreholes of 30 m - 40 m depth below NSL in overburden soils by straight rotary drilling / percussion boring method including backfilling of boreholes to their original position using cement-sand bentonite mix. Minimum permissible diameter of borehole is 200 mm for percussion method and 100 mm for straight rotary method.	L.M.	500		
A3	Performance of Standard Penetration Tests (SPTs) in boreholes generally at 1 m depth interval or as necessary along with collection of SPT samples, including their labelling, packing, storage & transportation to an approved testing laboratory.	No.	460		
A4	Collection of relatively undisturbed soil samples from boreholes through Denison/ Pitcher/ Shelby sampler, including their waxing, labelling, packing, storage & transportation to an approved testing laboratory.	No.	40		
A5	Excavation of Forty (40) testpits upto a maximum depth of 2 m or upto subgrade, whichever is met earlier, along the existing road alignments including exposing existing road / pavement layers and backfilling of pits to original condition including casting of 1 ft thick P.C.C. (1:2:4) pad at top of each pit for level surfacing.	L.M.	80		
A6	Excavation of Forty (40) testpits upto a maximum depth of 1.5 m below NSL along proposed widening portion including backfilling of pits to original condition.	L.M.	60		
A7	Performance of field density tests by sand replacement method in testpits generally @ 1 - 3 tests/pit at selected horizons in existing pavement layers (i.e. in Water Bound Mecadam / Aggregate Base Course, Sub-Base and Sub-grade) including determination of in-situ bulk and dry density and collection of small disturbed samples in moisture tins for moisture content determination in laboratory by oven drying method as well as labelling, packing, storage & transportation to an approved testing laboratory.	No.	140		
A8	Collection of composite bulk samples (from Water Bound Mecadam, Aggregate Base Course, Sub-Base and Subgrade) from testpits including their labeling, packing, storage & transportation to an approved testing laboratory.	No.	140		
A9	Collection of composite bulk samples (minimum weight 50-100 kg.) from Borrow Areas including their labelling, packing, storage & transportation to an approved laboratory.	No.	5		
A10	Collection of water samples (if encountered) from boreholes & testpits including their labelling, packing, storage & transportation to an approved testing laboratory.	No.	12		
	Sub-Total A =				
<p>Establishment of coordinates and ground elevations of all the boreholes and testpits using Total Station / Differential GPS is included in the scope of work. The coordinates should be provided with reference to a permanent bench mark established at site.</p> <p>Straight rotary drilling method will be used for execution of borehole in sandy / clayey soil. However, percussion method of boring will be required if gravelly strata encountered</p> <p>Contractor will be responsible for arrangement of Personnel Protective Equipments (PPEs) such as safety helmets and jackets for NESPAK site supervisory / visiting staff.</p> <p>All soil / water samples must be labelled, stored and transported as per ASTM requirements. The area and clearance ratio of thin walled tubes should be in strict compliance with relevant ASTM standard.</p>					



**DETAILED DESIGN FOR WIDENING AND IMPROVEMENT OF PRIORITY SECTIONS OF N-5
Package - 3: Okara - Manga Section**

**GEOTECHNICAL INVESTIGATIONS
BILL OF QUANTITIES**

Sr. No.	Description	Unit	Qty.	Rate	Amount
				(Rs.)	(Rs.)
B.	LABORATORY TESTING				
B1	Sieve Analysis	No.	210		
B2	Hydrometer Analysis	No.	75		
B3	Liquid and Plastic Limits	No.	100		
B4	Natural Moisture Content	No.	40		
B5	Bulk & Dry density	No.	40		
B6	Consolidation with Swell Pressure Measurement	No.	8		
B7	Unconfined Compression	No.	20		
B8	Direct Shear	No.	20		
B9	Modified AASHTO Compaction	No.	145		
B10	3-point soaked CBR	No.	145		
B11	Chemical Analysis of Soil Sample i/c sulphate content, chloride content, organic matter	No.	12		
B12	Chemical Analysis of Water Samples i/c TDS, Cl, SO ₄ , pH etc.	No.	12		
	Sub-Total B =				
	Total (A+B)=				
Name of Laboratory: _____					



<p align="center">DETAILED DESIGN FOR WIDENING AND IMPROVEMENT OF PRIORITY SECTIONS OF N-5 Package - 4: Lahore - Gujranwala Section GEOTECHNICAL INVESTIGATIONS BILL OF QUANTITIES</p>					
Sr. No.	Description	Unit	Qty.	Rate	Amount
				(Rs.)	(Rs.)
A.	FIELD INVESTIGATIONS				
A1	Mobilization and demobilization of at least Two (02) straight rotary drilling rigs / percussion boring equipments alongwith allied accessories at site including setting-up and shifting of equipment from one investigation point to another. The equipment shall be adequate in quantity to meet the time schedule.	L.S.	Job		
A2	Execution of Twenty Two (22) boreholes of 30 m - 40 m depth below NSL in overburden soils by straight rotary drilling / percussion boring method including backfilling of boreholes to their original position using cement-sand-bentonite mix. Minimum permissible diameter of borehole is 200 mm for percussion method and 100 mm for straight rotary method.	L.M.	680		
A3	Performance of Standard Penetration Tests (SPTs) in boreholes generally at 1 m depth interval or as necessary along with collection of SPT samples, including their labelling, packing, storage & transportation to an approved testing laboratory.	No.	640		
A4	Collection of relatively undisturbed soil samples from boreholes through Denison/ Pitcher/ Shelby sampler, including their waxing, labelling, packing, storage & transportation to an approved testing laboratory.	No.	40		
A5	Excavation of Forty One (41) testpits upto a maximum depth of 2 m or upto subgrade, whichever is met earlier, along the existing road alignments including exposing existing road / pavement layers and backfilling of pits to original condition including casting of 1 ft thick P.C.C. (1:2:4) pad at top of each pit for level surfacing.	L.M.	82		
A6	Excavation of Forty One (41) testpits upto a maximum depth of 1.5 m below NSL along proposed widening portion including backfilling of pits to original condition.	L.M.	61.5		
A7	Performance of field density tests by sand replacement method in testpits generally @ 1 - 3 tests/pit at selected horizons in existing pavement layers (i.e. in Water Bound Mecadam / Aggregate Base Course, Sub-Base and Sub-grade) including determination of in-situ bulk and dry density and collection of small disturbed samples in moisture tins for moisture content determination in laboratory by oven drying method as well as labelling, packing, storage & transportation to an approved testing laboratory.	No.	144		
A8	Collection of composite bulk samples (from Water Bound Mecadam, Aggregate Base Course, Sub-Base and Subgrade) from testpits including their labeling, packing, storage & transportation to an approved testing laboratory.	No.	144		
A9	Collection of composite bulk samples (minimum weight 50-100 kg.) from Borrow Areas including their labelling, packing, storage & transportation to an approved laboratory.	No.	5		
A10	Collection of water samples (if encountered) from boreholes & testpits including their labelling, packing, storage & transportation to an approved testing laboratory.	No.	15		
	Sub-Total A =				
<p>Establishment of coordinates and ground elevations of all the boreholes and testpits using Total Station / Differential GPS is included in the scope of work. The coordinates should be provided with reference to a permanent bench mark established at site.</p> <p>Straight rotary drilling method will be used for execution of borehole in sandy / clayey soil. However, percussion method of boring will be required if gravelly strata encountered</p> <p>Contractor will be responsible for arrangement of Personnel Protective Equipments (PPEs) such as safety helmets and jackets for NESPAK site supervisory / visiting staff.</p> <p>All soil / water samples must be labelled, stored and transported as per ASTM requirements. The area and clearance ratio of thin walled tubes should be in strict compliance with relevant ASTM standard.</p>					



**DETAILED DESIGN FOR WIDENING AND IMPROVEMENT OF PRIORITY SECTIONS OF N-5
Package - 4: Lahore - Gujranwala Section**

**GEOTECHNICAL INVESTIGATIONS
BILL OF QUANTITIES**

Sr. No.	Description	Unit	Qty.	Rate	Amount
				(Rs.)	(Rs.)
B.	LABORATORY TESTING				
B1	Sieve Analysis	No.	230		
B2	Hydrometer Analysis	No.	50		
B3	Liquid and Plastic Limits	No.	80		
B4	Natural Moisture Content	No.	40		
B5	Bulk & Dry density	No.	40		
B6	Consolidation with Swell Pressure Measurement	No.	5		
B7	Unconfined Compression	No.	20		
B8	Direct Shear	No.	20		
B9	Modified AASHTO Compaction	No.	150		
B10	3-point soaked CBR	No.	150		
B11	Chemical Analysis of Soil Sample i/c sulphate content, chloride content, organic matter	No.	15		
B12	Chemical Analysis of Water Samples i/c TDS, Cl, SO ₄ , pH etc.	No.	15		
	Sub-Total B =				
	Total (A+B)=				
Name of Laboratory: _____					



DETAILED DESIGN FOR WIDENING AND IMPROVEMENT OF PRIORITY SECTIONS OF N-5 Package 5: Kharian - Dina Section					
GEOTECHNICAL INVESTIGATIONS					
BILL OF QUANTITIES					
Sr. No.	Description	Unit	Qty.	Rate	Amount
				(Rs.)	(Rs.)
A.	FIELD INVESTIGATIONS				
A1	Mobilization and demobilization of at least Two (02) straight rotary drilling rigs / percussion boring equipments alongwith allied accessories at site including setting-up and shifting of equipment from one investigation point to another. The equipment shall be adequate in quantity to meet the time schedule.	L.S.	Job		
A2	Execution of Ten (10) boreholes of 30 m - 40 m depth below NSL in overburden soils or upto rock strike level, whichever is met earlier, by straight rotary drilling / percussion boring method including backfilling of boreholes to their original position using cement-sand-bentonite mix. Minimum permissible diameter of borehole is 200 mm for percussion method and 100 mm for straight rotary method.	L.M.	300		
A3	Continuous core drilling (NX / NQ size in general) in bedrock up to a minimum depth of 3 m below rock strike level, including preservation of core samples in core boxes, waxing of core samples, photography of rock cores and transportation of core samples to the laboratory.	L.M.	80		
A4	Performance of Standard Penetration Tests (SPTs) in boreholes generally at 1 m depth interval or as necessary along with collection of SPT samples, including their labelling, packing, storage & transportation to an approved testing laboratory.	No.	280		
A5	Collection of relatively undisturbed soil samples from boreholes through Denison/ Pitcher/ Shelby sampler, including their waxing, labelling, packing, storage & transportation to an approved testing laboratory.	No.	20		
A5	Excavation of Twenty Five (25) testpits upto a maximum depth of 2 m or upto subgrade, whichever is met earlier, along the existing road alignments including exposing existing road / pavement layers and backfilling of pits to original condition including casting of 1 ft thick P.C.C. (1:2:4) pad at top of each pit for level surfacing.	L.M.	50		
A6	Excavation of Twenty Five (25) testpits upto a maximum depth of 1.5 m below NSL along proposed widening portion including backfilling of pits to original condition.	L.M.	37.5		
A7	Performance of field density tests by sand replacement method in testpits generally @ 1 - 3 tests/pit at selected horizons in existing pavement layers (i.e. in Water Bound Mecedam / Aggregate Base Course, Sub-Base and Sub-grade) including determination of in-situ bulk and dry density and collection of small disturbed samples in moisture tins for moisture content determination in laboratory by oven drying method as well as labelling, packing, storage & transportation to an approved testing laboratory.	No.	85		
A8	Collection of composite bulk samples (from Water Bound Mecedam, Aggregate Base Course, Sub-Base and Subgrade) from testpits including their labeling, packing, storage & transportation to an approved testing laboratory.	No.	85		
A9	Collection of composite bulk samples (minimum weight 50-100 kg.) from Borrow Areas including their labelling, packing, storage & transportation to an approved laboratory.	No.	4		
A10	Collection of water samples (if encountered) from boreholes & testpits including their labelling, packing, storage & transportation to an approved testing laboratory.	No.	5		
	Sub-Total A =				
<p>Establishment of coordinates and ground elevations of all the boreholes and testpits using Total Station / Differential GPS is included in the scope of work. The coordinates should be provided with reference to a permanent bench mark established at site.</p> <p>Straight rotary drilling method will be used for execution of borehole in sandy / clayey soil & bedrock. However, percussion method of boring will be required if gravelly strata encountered</p> <p>Contractor will be responsible for arrangement of Personnel Protective Equipments (PPEs) such as safety helmets and jackets for NESPAK site supervisory / visiting staff.</p> <p>All soil / rock / water samples must be labelled, stored and transported as per ASTM requirements. The area and clearance ratio of thin walled tubes should be in strict compliance with relevant ASTM standard.</p>					



**DETAILED DESIGN FOR WIDENING AND IMPROVEMENT OF PRIORITY SECTIONS OF N-5
Package 5: Kharian - Dina Section**

**GEOTECHNICAL INVESTIGATIONS
BILL OF QUANTITIES**

Sr. No.	Description	Unit	Qty.	Rate	Amount
				(Rs.)	(Rs.)
B.	LABORATORY TESTING				
B1	Sieve Analysis	No.	120		
B2	Hydrometer Analysis	No.	50		
B3	Liquid and Plastic Limits	No.	50		
B4	Natural Moisture Content	No.	40		
B5	Bulk & Dry density	No.	40		
B6	Consolidation with Swell Pressure Measurement	No.	3		
B7	Unconfined Compression	No.	10		
B8	Uniaxial Compression	No.	10		
B9	Point Load Strength Index	No.	10		
B10	Direct Shear	No.	10		
B11	Modified AASHTO Compaction	No.	89		
B12	3-point soaked CBR	No.	89		
B13	Chemical Analysis of Soil Sample i/c sulphate content, chloride content, organic matter	No.	5		
B14	Chemical Analysis of Water Samples i/c TDS, Cl, SO ₄ , pH etc.	No.	5		
	Sub-Total B =				
	Total (A+B)=				
Name of Laboratory: _____					



DETAILED DESIGN FOR WIDENING AND IMPROVEMENT OF PRIORITY SECTIONS OF N-5 Package - 6: Dina - Rawat Section					
GEOTECHNICAL INVESTIGATIONS					
BILL OF QUANTITIES					
Sr. No.	Description	Unit	Qty.	Rate	Amount
				(Rs.)	(Rs.)
A.	FIELD INVESTIGATIONS				
A1	Mobilization and demobilization of at least Two (02) straight rotary drilling rigs / percussion boring equipments alongwith allied accessories at site including setting-up and shifting of equipment from one investigation point to another. The equipment shall be adequate in quantity to meet the time schedule.	L.S.	Job		
A2	Execution of Fourteen (14) boreholes of 30 m - 40 m depth below NSL in overburden soils or upto rock strike level, whichever is met earlier, by straight rotary drilling / percussion boring method including backfilling of boreholes to their original position using cement-sand-bentonite mix. Minimum permissible diameter of borehole is 200 mm for percussion method and 100 mm for straight rotary method.	L.M.	410		
A3	Continuous core drilling (NX / NQ size in general) in bedrock up to a minimum depth of 3 m below rock strike level, including preservation of core samples in core boxes, waxing of core samples, photography of rock cores and transportation of core samples to the laboratory.	L.M.	100		
A4	Performance of Standard Penetration Tests (SPTs) in boreholes generally at 1 m depth interval or as necessary along with collection of SPT samples, including their labelling, packing, storage & transportation to an approved testing laboratory.	No.	380		
A5	Collection of relatively undisturbed soil samples from boreholes through Denison/ Pitcher/ Shelby sampler, including their waxing, labelling, packing, storage & transportation to an approved testing laboratory.	No.	30		
A5	Excavation of Thirty (30) testpits upto a maximum depth of 2 m or upto subgrade, whichever is met earlier, along the existing road alignment including exposing existing road / pavement layers and backfilling of pits to original condition including casting of 1 ft thick P.C.C. (1:2:4) pad at top of each pit for level surfacing.	L.M.	60		
A6	Excavation of Thirty (30) testpits upto a maximum depth of 1.5 m below NSL along proposed widening portion including backfilling of pits to original condition.	L.M.	45		
A7	Performance of field density tests by sand replacement method in testpits generally @ 1 - 3 tests/pit at selected horizons in existing pavement layers (i.e. in Water Bound Mecadam / Aggregate Base Course, Sub-Base and Sub-grade) including determination of in-situ bulk and dry density and collection of small disturbed samples in moisture tins for moisture content determination in laboratory by oven drying method as well as labelling, packing, storage & transportation to an approved testing laboratory.	No.	105		
A8	Collection of composite bulk samples (from Water Bound Mecadam, Aggregate Base Course, Sub-Base and Subgrade) from testpits including their labeling, packing, storage & transportation to an approved testing laboratory.	No.	105		
A9	Collection of composite bulk samples (minimum weight 50-100 kg.) from Borrow Areas including their labelling, packing, storage & transportation to an approved laboratory.	No.	4		
A10	Collection of water samples (if encountered) from boreholes & testpits including their labelling, packing, storage & transportation to an approved testing laboratory.	No.	10		
	Sub-Total A =				
<p>Establishment of coordinates and ground elevations of all the boreholes and testpits using Total Station / Differential GPS is included in the scope of work. The coordinates should be provided with reference to a permanent bench mark established at site.</p> <p>Straight rotary drilling method will be used for execution of borehole in sandy / clayey soil & bedrock. However, percussion method of boring will be required if gravelly strata encountered</p> <p>Contractor will be responsible for arrangement of Personnel Protective Equipments (PPEs) such as safety helmets and jackets for NESPAK site supervisory / visiting staff.</p> <p>All soil / rock / water samples must be labelled, stored and transported as per ASTM requirements. The area and clearance ratio of thin walled tubes should be in strict compliance with relevant ASTM standard.</p>					



**DETAILED DESIGN FOR WIDENING AND IMPROVEMENT OF PRIORITY SECTIONS OF N-5
Package - 6: Dina - Rawat Section**

**GEOTECHNICAL INVESTIGATIONS
BILL OF QUANTITIES**

Sr. No.	Description	Unit	Qty.	Rate	Amount
				(Rs.)	(Rs.)
B.	LABORATORY TESTING				
B1	Sieve Analysis	No.	175		
B2	Hydrometer Analysis	No.	75		
B3	Liquid and Plastic Limits	No.	75		
B4	Natural Moisture Content	No.	50		
B5	Bulk & Dry density	No.	50		
B6	Consolidation with Swell Pressure Measurement	No.	8		
B7	Unconfined Compression	No.	15		
B8	Uniaxial Compression	No.	15		
B9	Point Load Strength Index	No.	15		
B10	Direct Shear	No.	15		
B11	Modified AASHTO Compaction	No.	109		
B12	3-point soaked CBR	No.	109		
B13	Chemical Analysis of Soil Sample i/c sulphate content, chloride content, organic matter	No.	10		
B14	Chemical Analysis of Water Samples i/c TDS, Cl, SO ₄ , pH etc.	No.	10		
	Sub-Total B =				
	Total (A+B)=				
Name of Laboratory: _____					



DETAILED DESIGN FOR WIDENING AND IMPROVEMENT OF PRIORITY SECTIONS OF N-5 Package - 7: Rawalpindi - Hassanabdal Section					
GEOTECHNICAL INVESTIGATIONS BILL OF QUANTITIES					
Sr. No.	Description	Unit	Qty.	Rate	Amount
				(Rs.)	(Rs.)
A.	FIELD INVESTIGATIONS				
A1	Mobilization and demobilization of at least One (01) straight rotary drilling rig / percussion boring equipment alongwith allied accessories at site including setting-up and shifting of equipment from one investigation point to another. The equipment shall be adequate in quantity to meet the time schedule.	L.S.	Job		
A2	Execution of Seven (07) boreholes of 30 m - 40 m depth below NSL in overburden soils or upto rock strike level, whichever is met earlier, by straight rotary drilling / percussion boring method including backfilling of boreholes to their original position using cement-sand-bentonite mix. Minimum permissible diameter of borehole is 200 mm for percussion method and 100 mm for straight rotary method.	L.M.	200		
A3	Continuous core drilling (NX / NQ size in general) in bedrock up to a minimum depth of 3 m below rock strike level, including preservation of core samples in core boxes, waxing of core samples, photography of rock cores and transportation of core samples to the laboratory.	L.M.	30		
A4	Performance of Standard Penetration Tests (SPTs) in boreholes generally at 1 m depth interval or as necessary along with collection of SPT samples, including their labelling, packing, storage & transportation to an approved testing laboratory.	No.	185		
A5	Collection of relatively undisturbed soil samples from boreholes through Denison/ Pitcher/ Shelby sampler, including their waxing, labelling, packing, storage & transportation to an approved testing laboratory.	No.	15		
A5	Excavation of Twenty Nine (29) testpits upto a maximum depth of 2 m or upto subgrade, whichever is met earlier, along the existing road alignments including exposing existing road / pavement layers and backfilling of pits to original condition including casting of 1 ft thick P.C.C. (1:2:4) pad at top of each pit for level surfacing.	L.M.	58		
A6	Excavation of Twenty Nine (29) testpits upto a maximum depth of 1.5 m below NSL along proposed widening portion including backfilling of pits to original condition.	L.M.	43.5		
A7	Performance of field density tests by sand replacement method in testpits generally @ 1 - 3 tests/pit at selected horizons in existing pavement layers (i.e. in Water Bound Mecedam / Aggregate Base Course, Sub-Base and Sub-grade) including determination of in-situ bulk and dry density and collection of small disturbed samples in moisture tins for moisture content determination in laboratory by oven drying method as well as labelling, packing, storage & transportation to an approved testing laboratory.	No.	102		
A8	Collection of composite bulk samples (from Water Bound Mecedam, Aggregate Base Course, Sub-Base and Subgrade) from testpits including their labeling, packing, storage & transportation to an approved testing laboratory.	No.	102		
A9	Collection of composite bulk samples (minimum weight 50-100 kg.) from Borrow Areas including their labelling, packing, storage & transportation to an approved laboratory.	No.	4		
A10	Collection of water samples (if encountered) from boreholes & testpits including their labelling, packing, storage & transportation to an approved testing laboratory.	No.	4		
	Sub-Total A =				
<p>Establishment of coordinates and ground elevations of all the boreholes and testpits using Total Station / Differential GPS is included in the scope of work. The coordinates should be provided with reference to a permanent bench mark established at site.</p> <p>Straight rotary drilling method will be used for execution of borehole in sandy / clayey soil & bedrock. However, percussion method of boring will be required if gravelly strata encountered</p> <p>Contractor will be responsible for arrangement of Personnel Protective Equipments (PPEs) such as safety helmets and jackets for NESPAK site supervisory / visiting staff.</p> <p>All soil / rock / water samples must be labelled, stored and transported as per ASTM requirements. The area and clearance ratio of thin walled tubes should be in strict compliance with relevant ASTM standard.</p>					



**DETAILED DESIGN FOR WIDENING AND IMPROVEMENT OF PRIORITY SECTIONS OF N-5
Package - 7: Rawalpindi - Hassanabdal Section**

**GEOTECHNICAL INVESTIGATIONS
BILL OF QUANTITIES**

Sr. No.	Description	Unit	Qty.	Rate	Amount
				(Rs.)	(Rs.)
B.	LABORATORY TESTING				
B1	Sieve Analysis	No.	130		
B2	Hydrometer Analysis	No.	30		
B3	Liquid and Plastic Limits	No.	50		
B4	Natural Moisture Content	No.	20		
B5	Bulk & Dry density	No.	20		
B6	Consolidation with Swell Pressure Measurement	No.	2		
B7	Unconfined Compression	No.	5		
B8	Uniaxial Compression	No.	5		
B9	Point Load Strength Index	No.	5		
B10	Direct Shear	No.	5		
B11	Modified AASHTO Compaction	No.	106		
B12	3-point soaked CBR	No.	106		
B13	Chemical Analysis of Soil Sample i/c sulphate content, chloride content, organic matter	No.	4		
B14	Chemical Analysis of Water Samples i/c TDS, Cl, SO ₄ , pH etc.	No.	4		
	Sub-Total B =				
	Total (A+B)=				
Name of Laboratory: _____					



**QUALIFICATION OF BIDDING CONTRACTORS FOR GEOTECHNICAL INVESTIGATIONS FOR DETAILED DESIGN FOR WIDENING AND IMPROVEMENT OF PRIORITY SECTIONS OF N-5
(Package – 1, 2, 3, 4, 5, 6 & 7)**

1. Qualification Criteria

Qualification will be based on the criteria given in the following paras regarding the Applicant's experience, personnel and equipment capabilities, financial position and litigation history, as demonstrated by the Applicant's responses in the Forms attached as Annex-A to this Document. The Employer reserves the right to waive minor deviations, if these do not materially affect the capability of an Applicant to perform the contract by the Applicant.

Experience and resources of the Company intended to be employed as sub-contractor shall not be taken into account in determining the Applicant's compliance with the qualifying criteria. However, for joint venture, collective experience, resources and financial soundness of all partners shall be considered.

1.1 General Information

The Applicant shall provide general information of his firm as per the format specified in the Application Form A-1 attached in Annex-A.

1.2 Experience of the Firm

The Applicant shall meet the following minimum criteria:

- 1) Successful experience as contractor in the execution of at least five (5) projects involving bulk of geotechnical investigations within the last three (03) years. This experience should specifically be of geotechnical investigations of similar nature. The Applicant will supply information as per the format specified in the Application Form A-2 attached in Annex-A.

1.3 Personnel Capabilities

The Applicant must have in his employment, suitably qualified and experience personnel to fulfill the positions tabulated below. The Applicant will supply information as per the format specified in the Application Form A-3 attached in Annex-A.

Sr. No.	Position	Qualification	Minimum No.							Minimum Experience (Years)
			Package - 1	Package - 2	Package - 3	Package - 4	Package - 5	Package - 6	Package - 7	
1	Technical Manager	B.Sc. Civil Engg.	1	1	1	1	1	1	1	5
2	Site Geologist/ Supervisor / Engineer	M. Sc. Geology/ B.Sc. Civil Engg. / B.Sc. Geological Engg.	2	2	2	2	2	2	1	2
3	HSE Supervisor	HSE Certification course	1	1	1	1	1	1	1	1
4	Driller	Literate	2	2	2	2	2	2	1	3



5	Skilled Labor	-	As required	-						
---	---------------	---	-------------	-------------	-------------	-------------	-------------	-------------	-------------	---

1.4 Equipment Capabilities

The Applicant should own, or have assured access to the following key items of equipment in full working order, and must demonstrate that, based on known commitments, these will be available for deployment on the proposed works.

Sr. No.	Equipment Type & Characteristics	Minimum Number Required						
		Package -1	Package -2	Package -3	Package -4	Package -5	Package -6	Package -7
1	Straight Rotary Drilling rigs complete in all respects including drilling rods, bits, mud pumps etc. along with at least one stand-by rig.	2	2	2	2	2	2	1
2	Percussion boring set (≥ 300 mm diameter) complete in all respects including tripod, chiesal/bit etc.	2	2	2	2	2	2	1
3	Casing set having various diameters for all types of boring at least 40 m in length with casing bits.	2	2	2	2	2	2	1
4	Core barrels (single tube & double tube) including coring and casing bits	2 each	2 each	2 each	2 each	2 each	2 each	1 each
5	Standard penetration test (SPT) equipment complete in all respects including all rods, split spoon sampler, hammer, container etc.	2	2	2	2	2	2	1
6	Denison/Pitcher/Shelby samplers and tubes	2 each	2 each	2 each	2 each	2 each	2 each	1 each
7	Hydraulic jacks with all accessories for the extraction of casings	1	1	1	1	1	1	1
8	Electrically operated sounder for groundwater level measurement	1	1	1	1	1	1	1
9	Testpit excavation equipment, complete in all respects	As required	As required	As required	As required	As required	As required	As required



Sr.	Equipment Type &	Minimum Number Required						
		As required	As required	As required	As required	As required	As required	As required
10	Field density test apparatus complete in all respect as per ASTM requirements.	As required	As required	As required	As required	As required	As required	As required
11	Wooden box for the preservation of undisturbed soil samples and rock cores	As required	As required	As required	As required	As required	As required	As required
12	Transport for mobilization of equipment	As required	As required	As required	As required	As required	As required	As required

The Applicant will supply information as per the format specified in the Application Form A-4 attached in Annex-A.

1.5 Financial Capabilities

The Applicant shall meet the following minimum criteria:

- 1) Annual turnover which is also termed as income from contracting for procurement of geotechnical investigations and is defined as billing for works completed during the last three (3) years of at least Rs. 15 million.

The Applicant shall also provide evidence of financial health such as bank account statements, available line of credits, etc., to show the soundness of the Applicant's financial position for procurement of geotechnical investigations works. The Applicant will provide annual turnover of the geotechnical investigation works carried out by him during the last three years. The Applicant will supply annual turnover information as per the format specified in the Application Form A-5 attached in Annex-A.

1.6 Litigation History

The Applicant should provide accurate information on any litigation or arbitration resulting from Contracts completed or under execution over the last three (03) years. The Applicant will supply information as per the format specified in the Application Form A-6 attached in Annex-A. A consistent/ overwhelming history of award against the Applicant may result in rejection of the application. In case an Applicant claims Nil litigation, he shall submit the same statement on the letter head of his company.

1.7 Application of Health, Safety and Environmental Standards

The Applicant should provide the HSE Policies and supporting documentary evidence for the following:

- i) First Aid Box
- ii) Personnel Protective Equipments (PPEs)
- iii) Standard Operating Procedures (SOPs)
- iv) Health, Safety and Environmental (HSE) Policies
- v) HSE staff



Application Form A-1

Page ___ of ___ Pages

General Information

All individual Applicants applying for qualification are requested to complete the information in this form. Nationality information (if applicable) is also to be provided for foreign owners as required under the PEC Bye-Laws as a Partnership.

1.	Name of Firm	
2.	Head Office Address	
3.	Telephone	Contact Person: Name: Title: Cell No.
4.	Fax	E-mail
5.	Place of Incorporation/Registration Certificates of the firm*	Year of incorporation/registration

* Registration certificates must include:

- Valid registration with Pakistan Engineering Council (PEC)
- Valid registration with Federal Board of Revenue (FBR)
- Valid registration with concerned Provincial Revenue Authority (PRA)
- Proof of active taxpayer of FBR & PRA



Financial Capabilities

Name of Applicant: _____

Year	Annual Turnover (in PKR)
2022 - 2023	
2021 - 2022	
2020 - 2021	

Note: Financial soundness certificate from the bank(s) as specified in section 1.5 must be provided by the Applicant



