APPENDIX-'E'

SCHEDULE OF REQUIREMENTS, SPECIFICATIONS & SHIPMENT
OUR TENDER ENQUIRY NO. SND-2072/19
COVERING POLYETHYLENE FITTING

The approximate total requirement of Covering "Polyethylene Fitting" and shipments required is as under:-

Item No.	Description/Specification	Qty. (Nos.)	Price Per Unit FOB	Price Per Unit C&F	Total Price C&F
1	PE Cap ¾" Dia, Socket Fusion	5000			
2	PE Cap 4" Dia, Butt Fusion	1000			

Details as per Technical specification Appendix 'F'

Notes:-

1. Shipment is required within 90 Days after receipt of operative L/C. However, you may quote your best shipment.
2. **If the offer is on F.O.R. Basis please mention the rates of material/Taxes and duties separately instead of lump sum. In case of non-compliance quoted prices shall be considered inclusive of applicable taxes in material cost.**
3. Bidders are required to quote their firm unit C&F Karachi prices by sea showing unit FOB cost upto port of shipment and freight separately.
4. If the offer is on F.O.R basis, bidder is required **to furnish a bid security of 2%** of the total bid price Excluding General Sales Tax.
5. **Evaluation will be made on Item wise lowest priced bidder basis.**
6. Bids will be evaluated on C&F basis however, order(s) can be placed on FOB (Port of Shipment) or C&F basis.
7. Unit C&F prices must be quoted for each item separately failing which the C&F charges if quoted on lump sum will be added to the FOB prices on pro rata prices basis. C&F prices calculated in such manner shall be used for comparison evaluation and ordering purposes
8. Conditional bids are liable for rejection. For example but not limited to:
   - Rate of exchange fluctuation,
   - Partial order acceptance,
   - Govt duties & taxes etc
9. Bidder must conform to the specified tender terms.
10. Customer list as required else where in this tender document shall include exactly same type of **Polyethylene Fitting** regarding size, design and material of construction as offered in bid proposal.
11. Brand new and unused **Polyethylene Fitting** should be quoted. Reconditioned and refurbished material will not be acceptable.
12. The bidder shall clearly indicate names, addresses of manufacturers and country of origin instead of showing group of countries or manufacturers.
13. **Reservations/clarifications, if any w.r.t tender terms/specifications should be asked by the bidders 7 days prior to the closing date of the tender.**
14. **As a result of evaluation/scrutiny of bid, if any clarification is sought by SNGPL, bidders are required to adhere to the timeline specified by the SNGPL. In case of non compliance to the timeline, SNGPL reserves the right to proceed further without any recourse.**

Appendix - F
SND - 2072/73

1. Description:

Polyethylene Thermoplastic Fittings for installation on IPS medium density polyethylene Pipe of SDR 10/11 produced from P.E-80 resin. Fitting should be molded from PE-80 resin approved by the Company or resin having USA origin conforming to requirement of PE-80 and should be compatible for heat fusion with any pipe manufacturer from like or similar resin.

2. Design and Dimension:

The Polyethylene fusion fittings shall fully comply with the requirement of **ASTM D-2513 and API 15LE.**

The fusion fittings shall be manufactured in compliance with **ASTM D-2683** (Standard specification for socket type polyethylene fittings) &

ASTM D-3261 (standard specifications for Butt Fusion polyethylene fittings).

The measurement shall be done in accordance with **ASTM D-2122.**

3. Specific Requirements:

The fitting should be molded form Yellow PE-80 resin for Natural Gas Applications and should be **bright yellow in colour** and stabilized against the effects of UV radiation, having following properties.

Melt flow index (190 deg. C/50 N)
0.2-1.3 gm/10 min to ISO-440).

Density: 0.94 to 0.944 gm/cm^3
(For MDPE / PE-80).

Description	Type of Fusion	Size
Polyethylene Elbow	Socket	3/4" x 90 deg.
Polyethylene Elbow	Socket	1-1/4" x 90 deg.
Polyethylene Elbow	Butt	2" x 90 deg.
Polyethylene Elbow	Butt	4" x 90 deg.
Poly Cap	Socket	1-1/4"
Poly Cap	Butt	2"
Poly Cap	Butt	4"
P.E. External Coupling	Socket	3/4"
P.E. External Coupling	Socket	1-1/4"
P.E. External Coupling	Socket	2"
P.E. Red. Coupling	Socket / Socket	2" x 1-1/4"
P.E. Red. Coupling	Butt / Socket	4" x 1-1/4"
P.E. Red. Coupling	Butt / Butt	4" x 2"
P.E. Equal Tee	Socket	1-1/4"
P.E. Equal Tee	Butt	2"
P.E. Equal Tee	Butt	4"
Tapping Tees Reducing	Saddle/Socket	1-1/4" x ¾"
Tapping Tees Reducing	Saddle/Socket	2" x 3/4"
Tapping Tees Reducing	Saddle/Socket	4" x 3/4"
Tapping Tees Reducing	Saddle/Socket	2" x 1-1/4"
Tapping Tees Reducing	Saddle/Socket	4" x 1-1/4"
Tapping Tees Reducing	Saddle/Butt	4" x 2"
Transition Pieces	Steel Threaded End	3/4"
Transition Pieces	Steel Weld End	1-1/4" - 1"
Transition Pieces	Steel Weld End	2"
Transition Pieces	Steel Weld End	4"

4. **Self Tapping Tee:**

Self tapping tee should be provided with suitable punch size . All tapping tees should have rectangular base. The inner side of the punch must have female threads to hold the main Pipe coupon after cutting. Suitable Sealing gasket / o rings etc should be provided in completion Cap or tapping tee body for leak tight connection between cap and body. Sealing material should be durable / high quality and shall not be affected by any constituents of natural gas and any additives normally used in the operation such as odorants. Completion cap should be hand tight only.

Main / Saddle Size	Branch Size	Branch Fusion Type
1-1/4" IPS	¾" IPS	Socket
2" IPS	¾" IPS	Socket
4" IPS	¾" IPS	Socket
2" IPS	1.1/4" IPS	Socket
4" IPS	1.1/4" IPS	Socket

Rubber Gasket / O-Ring

Base Polymer	NBR
Indentation Hardness	Shore Hardness 60A,-5, +5
Specific Gravity	1.00 ± 0.25 g/cm^3
Tensile Strength Min.	1000 PSI
Elongation @ Break Min.	300 %
Compression Set @	
100 Degrees 22 Hrs	20% max.

5. **Transition Fittings**

- The steel pipe of Transition Fittings shall be conforming to the requirements of API 5L Grade B Specifications (Schedule 40) and shall have external epoxy protective coating.

- "O"-Rings to be used for gas tight and tamper-proof should be either: Nitrile (Buna-N) oil-resistant copolymer of butadiene and acrylonitrile; OR Fluorocarbon (FKM) (VITON®) (FLUOREL®).

- At the transition portion the mechanical held arrangement through resistant to the action of Natural Gas under service conditions appropriate copper or steel compression sleeve liner should be made to provide the maximum pull-out resistance as per CSA B137.4/05 or latest edition.

Pipe Size	Length of Steel Pipe (Inches)	Length of PE Pipe (Inches)	Pull Out Resistance / Strength
¾"	18"	18"	3.5 KN
1-1/4" - 1"	12" (1" dia)	12" (1-1/4" dia)	4.15 KN
2"	12"	12"	8.45 KN
4"	12"	12"	30.375 KN

6. **Printed Literature:**

Original printed literature must accompany the bid.