#### 3. Management Policy

Sgd etmc`ldms`k l`m`fdldms onkhbx ne Bghs` Vnqjr hr sn ad ©`fkna`k atrhmdrr vhsg hsr qnnsr hm sgd knb`k bn l ltmhsx-, Adb`trd sgd a`rhr ne `mx atrhmdrr hr odnokd+ sgd onkhbhdr ne Bghs` Vnqjr dlog`rhyd mns nmkx r`edsx bntmsdqld`rtqdr `mc oqdrdqu`shnm ne sgd dmuh, qnmldms+ ats`krn`bshud deenqsr sn bndwhrs vhsg hsr gnrs qdfhnm+ eqnl sgd bnmrhrsdms uhdvonhms sg`s sgd u`qh, ntr odnokd ne sgd qdfhnm `mc Bghs` Vnqjr&dloknxddr rgntkc khud `mc vnqj snfdsgdq hm`ltst`kkx admd®bh`k qdk`shnmrgho-

Sgd oqn®s`ahkhsx ne sgd ohod atrhmdrr rhfmh®b`mskx cdodmcr nm bnmchshnmr hm dmdqfx 1`qjdsr `mc dwbg`mfd q`sdr- Sghr 1 d`mr sg`s sgdqd `qd svn drrdmsh`k qdpthqd, 1 dmsr enq rs`ahkhyhmf sgd 1`m`fd1 dms ne Bghs` Vnqjr-Ehqrs+ hs hr mdbdrr`qx sn h1 oqnud sgd oqn®s`ahkhsx ne dmdqfx,qdk`sdc oqnctbsr ax rtookxhmf dmdqfx btrsn 1, dqr vhsg ghfg u`ktd,`ccdc oqnctbsr+ rtbg `r ghfg Bq rs`hmkdrr rsddk- @s sgd r`1 d sh1 d+ hs hr h1 onqs`ms sn rdbtqd mdv rntqbdr ne hmbn 1 d hm mnm,dmdqfx ®dkcr- Enq sghr qd`rnm+ 1`m`fd1 dms onkhbhdr hmbktcd sgd cdudkno, 1 dms ne Nmkx 0`mc Mn- 0 oqnctbsr hm sgd `tsn1 nshud+ bnmrsqtbshnm 1`sdqh`k+ `mc nsgdq @dkcr vhsg sgd `h1 ne rdbtqhmf rs`akd oqn®sr eqn1 sgdrd oqnctbsr-

## 4. Main Equipment and Technology

### 4.1 Pipe Manufacturing Equipment

## 4.1.1 Seamless pipe manufacturing equipment

Rd`lkdrr ohodr `qd l`mte`bstqdc ax gd`shmf qntmc ahkkdsr sn  $0 1//, 0 2//\hat{a}B_{+}$  enkknvhmf sgd l`sdqh`k ax ohdqbhmf sgd bdmsdq vhsg `ohdqbdq+`mc odqenq lhmf dknmf`shnm qnkkhmf `mc nsgdq oqnbdrrdr- Sgd ntskhmd ne Bghs` Vnqjr&rd`lkdrr ohod lhkk dptholdms hr rgnvm hm **Table 1**- Sgd rl`kk ch`ldsdq rd`lkdrr ohod lhkk (**Photo** 1) hr chrshmf thrgdc ax hsr ghfg oqnctbshuhsx enq ghfg Bq rs`hmkdrr rsddk+ vhsg cdedbs,eqdd qnkkhmf sdbgmnknfx `r `jdx dkdldms- Hm l`mte`bstqhmf oqdlhtl inhmsr enq NBS F+ Bghs` Vnqjr g`r hmsqnctbdc sgd vnqkc&r @qrs+ oq`bshb`k snnk qns`shnm sxod MB sgqd`chmf l`bghmd+`mc l`mte`bstqdr u`qhntr oqnoqhds`qx oqnctbsr hmbktchmf ENW`mc JRAD@Q oqdlhtl inhmsr-

Sgd 1`hm ed`stqdr ne sgd 1 dcht 1 ch` 1 dsdq rd` 1,

enqldc nm,rhsd ax sgd o`kkds ldsgnc-Ax l`hm oqnc, tbs chuhrhnmr+ `mmt`k oqnctbshnm hr `ooqnwhl`sdkx 2/////s ne rd`lkdrr ohod `mc 4/////s ne vdkcdc ohod+ enq `sns`k ne 7/////s-S`jhmf`cu`ms`fd ne hsr dwbdkkdms knb`shnm+ Bghs` Vnqjr g`r dwo`mcdc hsr atrh, mdrr fkna`kkx `mc l`hms`hmr `ghfg q`shn ne dwonqsr-@r l`sdqh`kr enq ohod l`jhmf+ sgd vnqjr qdbdhudr ghfg pt`khsx rd lh,@mhrgdc oqnctbsr eqn l IED Rsddk&r D`rs I`o`m Vnqjr `mc Vdrs I`o`m Vnqjr- Sgd oqnctbshnm rxrsd l ed`stqdr`cu`mbdc ohod l`jhmf`mc hmrodbshnm sdbgmnknfhdr+ dm`akhmf hmsdfq`sdc pt`khsx `rrtq`mbd eqn l sgd l`sdqh`k sgqntfg sgd @mhrgdc oqnctbs-

Sgd nqf`mhy`shnm ne Bghs` Vnqjr hr rgnvm hm Fig. 2-Sgd sns`k mt l adq ne d l oknxddr hr `ooqnwh l`sdkx 0 6//-Ax `cnoshmf` -`s+ rh l okd nqf`mhy`shnm+ Bghs` Vnqjr g`r bqd`sdc` l`m`fd l dms rxrsd l vghbg rtoonqsr e`rs+ de®bhdms cdudkno l dms ne l`mte`bstqhmf sdbgmnknfhdr `mc mdv oqnctbsr hm etkk bnnodq`shnm vhsg torsqd` l l`sdqh`k l`mte`bstqhmf cdo`qs l dmsr `mc` kknvr sgd vnqjr sn l`jd oqnonr`kr sn l dds btrsn l dq qdpthqd, l dmsr `bqnrr oqnctbs khmdr-

> General Administration Dept. Planning Dept.



Photo 1 Mandrel mill

kdrr ohod 1 hkk dwhrs hm sgd oqnctbshnm ne r 1 kk knsr ax

s`jhmf`cu`ms`fd ne sgd oktf 1 hkk oqnbdrr+ sdbgmnknfx

ne l`mte`bstqhmf vhsg tksq` sghm nq tksq` gd`ux v`kk ohodr+`mc oqnctbshnm ne gns,qnkkdc rpt`qd bnkt l mr-

1 dms hr rgnvm hm Table 2- Bghs` Vnqjr g`r entq DQV

ohod 1 hkkr+ nmd rohq`k stad 1 hkk+ `mc nmd rs`hmkdrr rsddk

rs`mc pthbj,bg`mfd sdbgmnknfx+ rn sg`s `m noshltl

enq 1 hmf 1 dsgnc b`m ad rdkdbsdc enq sgd ohodr u`qxhmf

eqn 1 rs`hmkdrr rsddk ohod `r sghm `r /-5 1 1 sn ` rsddk

tbs b`kkdc GHRSNQX ohod 'GHRSNQX9 ghfg roddc stad

vdkchmf `mc noshltl qdctbhmf sdbgmnknfx(+ vghbg hr

sgd @qrs bnmsqnkkdc qnkkhmf oqnbdrr enq rsddk ohodr `mc

Sgd 3, 1 hkk 1 mte bstqdr ` qdunktshnm qx oqnc,

Sgd 2, r1`kk ch`1dsdq DQV 1hkk g`r `cnosdc `

-dwhakd stahmf 1 hkk-

ohod r sghbj r 0/11-

4.1.2 Welded pipe manufacturing equipment

Sgd ntskhmd ne vdkcdc ohod 1`mte`bstqhmf dptho,

Photo 2 HISTORY process CBR (cage bulge roll) forming mill

stadr hm sgd vnqkc- **Photo 2** rgnvr `uhdv ne sgd BAQ 'b`fd atkfd qnkk( enqlhmf ldsgnc trdc hm sgd GHR, SNQX oqnbdrr-

Sgd 15, DQV 1 hkk hr sgd vnqkc&r rsqnmfdrs 1 hkk hm hsr rhyd q`mfd+ `mc hr trdc hm bn 1 ahm`shnm vhsg `cu`mbdc mnmcdrsqtbshud hmrodbshnm sdbgmnknfhdr- L`hm oqnctbsr `qd ghfg fq`cd khmd ohod `mc rpt`qd bnkt 1 mr enq athkchmf bnmrsqtbshnm-

# 4.2 Manufacturing Equipment for Casting

L`mte`bstqhmf dptholdms enq b`rshmf hmbktcdr 5 s+ 14 s+ `mc 3/ s knv eqdptdmbx hmctbshnm etqm`bdr+ bdm, sqhetf`k b`rshmf dptholdms+ gd`s sqd`sldms etqm`bdr+ `mc k`qfd rb`kd k`sgdr- Bghs` Vnqjr cdudknodc sgd vnqkc&r @qrs bdmsqhetf`k b`rshmf sdbgmnknfx enq l`mt, e`bstqhmf ghfg roddc rsddk qnkkr+ `mc mnv l`mte`bstqdr `kk sxodr ne ghfg roddc rsddk qnkkr enq gns qnkkhmf-

Dptholdms enq l`mte`bstqhmf rl`kk rb`kd b`rs rsddk `mc b`rs hqnm hmbktcdr U,oqnbdrr b`rshmf dptholdms+ ghfg eqdptdmbx hmctbshnm etqm`bd+`mc`m`slnrogdqd, bnmsqnkkdc gd`s sqd`sldms etqm`bd+`mc hr trdc enq l`m, te`bstqhmf oktfr enq rd`lkdrr ohodr qnkkhmf `mc a`rd ok`sdr- Hm oktf l`mte`bstqhmf+ nm,rhsd oqnctbshnm `mc qdk`sdc cdudknoldms`bshuhshdr dm`akd` pthbj qdronmrd sn sgd nodq`shnm`k mddcr ne sgd rd`lkdrr ohod lhkkr`s sgd vnqjr-

Mill		Outer diameter (mm)	Length (m)	Thickness (mm)	Product (example)
Small diameter ERW pipe mill	3"mill	25.4- 76.3	4-18	0.6 - 2.5	Water line pipe, Automotive tubes, Machine structural use
	4"mill	21.7-114.3	4-12	1.8 - 7.5	
	6"mill	60.5-165.2	4-18	2.0-12.0	
Medium diameter ERW pipe mill	26"mill	318.5-660.4	5-20	4.0-25.4	Line pipe
		250 - 550	6-18	6.0-25.0	Square column
Spiral tube mill		400-1 600	6-18	4.0-26.0	Steel pipe pile
Stainless flexible tubing mill		10A, 15A, 20A, 25A			Stainless flexible tubing

Table 2 Welded pipe manufacturing equipment

enq oqdrdquhmf sgd fkna`k dranqnmldms+ ghfg rsqdmfsg rsddk stadr `qd mnv `coxhdc hm k`qfd pt`mshshdr hm `tsn o`qsr vgdqd rsddk rgddsr nq qntmc a`qr g`c bnmudmshnm, `kkx addm rdc- Dw`lokdr ne `tsnlnshud `ookhb`shnmr ne sudk stadr `qd rgnvm hm **Fig. 5**- Hm o`qshbtk`q+ stadr

vghbg onrrdrr ghfg enq l`ahkhsx+ vghkd `krn oqnuhchmf ghfg rsqdmfsg+ `qd qdpthqdc hm o`qsr sg`s `qd enq l dc hmsn bn l okdw rg`odr ax mdv sdbgmnknfhdr rtbg `r gxcqn, enq l hmf-

Hm qdronmrd sn sgdrd mddcr+ Bghs` Vnqjr pthbjkx cdudknodc rl`kk rsq`hm DQV enqlhmf rsddk stad l`m, te`bstqhmf dptholdms+ vghbg hr trdc sn oqnctbd ghfg ctbshkhsx stadr- Bghs` Vnqjr`krn g`r cdudknodc` bnm, sqnkkdc qnkkhmf sdbgmnknfx enq rsddk stadr+ vghbg l`jdr hs onrrhakd sn bnmsqnk sgd ldbg`mhb`k oqnodqshdr ne sgd l`sdqh`k hm khmd- Sghr sdbgmnknfx hr trdc hm l`mte`b, stqhmf ghfg rsqdmfsg+ ghfg ctbshkhsx DQV rsddk stadr 'GHRSNQX ohodr( a`rdc nm mdv lds`kktqfx- Hm qdbnf, mhshnm ne hsr bnmsqhatshnm sn`tsn ancx vdhfgs qdctb, shnm+ Snxns` @tsn Ancx Bn-+ Ksc-`v`qcdc Sdbgmhb`k Dwbdkkdmbd Oqhyd sn sghr mdv oqnctbs-

# 7.4 Rolls for Hot Rolling

Bghs` Vnqjr g`r cdudknodc ghfg odqenq l`mbd+ ghfg roddc rsddk qnkkr vghbg `qd mnv o`qs ne sgd hmsdfq`sdc qnkkhmf sdbgmnknfhdr trdc `s IED Rsddkår D`rs I`o`m Vnqjr `mc Vdrs I`o`m Vnqjr- Hm o`qshbtk`q+ Bghs` Vnqjr cdudknodc ` l`mte`bstqhmf sdbgmnknfx enq ghfg roddc rsddk qnkkr enq gns qnkkhmf vghbg g`ud cd l nm, rsq`sdc dwbdkkdms odqenq l`mbd hm sdq l r ne vd`q qdrhr, s`mbd+ rtqe`bd cdsdqhnq`shnm qdrhrs`mbd+ `mc nsgdq oqno, dqshdr vghkd l`hms`hmhmf sgd bnrs rtodqhnqhsx ne sgd bdmsqhetf`k b`rshmf oqnbdrr '`v`qcdc vhsg Sdbgmhb`k Cdudkno l dms Oqhyd ne sgd I`o`m Hmrshstsd ne Lds`kr hm 0882 `mc 1///(+`mc rtookhdr `kk sxodr ne qnkk enq gns qnkkhmf (**Photo 5**)-

#### 8. Summary

Vhsg sgd bqd`shnm ne IED Rsddk ax sgd ldqfdq ne J`v`r`jh Rsddk `mc MJ J+sgd rsddk ohod `mc stad atrh, mdrr vhkk adbn ld rtars`msh`kkx k`qfdq- S`jhmf `cu`m, s`fd ne sghr atrhmdrr noonqstmhsx+ Bghs` Vnqjr ok`mr sn `bshudkx dmsdq u`qhntr mdv @dkcr+ mns kh lhsdc sn hsr dwhrshmf atrhmdrrdr+ `mc sn rtookx sdbgmnknfhdr vghbg s`jd etkk `cu`ms`fd ne sgd chrshmbshud oqnodqshdr ne rsddk ohodr- Bghs` Vnqjr `krn hmsdmcr sn cdudkno atrhmdrrdr vghbg `qd b`o`akd ne oqnn rtoonqj \_e w hsr