PROPOSED BUILDING PLANS OF COMMERCIAL COLONY AREA MEASURING 2.15 ACRES IN (LICENSE NO. 09 OF 2021 DATED-05.03-2021) IN THE REVENUE ESTATE OF VILLAGE-DHUNELA, TEHSIL-SOHNA, SECTOR-36, SOHNA DISTRICT, GURUGRAM BEING DEVELOPED BY STERNAL BUILDCON PVT. LTD.

SERVICE COST ESTIMATE FOR EXTERNAL DEVELOPMENT WORKS

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Proposed 2.15 Acres Commercial Complex In The Revenue Estate of Village-Dhunela, Sector-36, Sohna, Gurugram Being Developed by Sternal Buildcon PVT. LTD.

Report:

Estimate for providing water supply sewerage, storm water drainage, road, street lighting and horticulture in respect of 2.15 Acres Commercial Colony in sector-36, Sohna, Gurugram.

Sohna District of Haryana State is situated approx. 65 kms from Delhi. Being the national Capital Region the town has fast developing tendency and potential. Further, it has also started sharing the growing residential / industrial load of Delhi and Gurugram. In order to relieve the growing pressure of population in National Capital of Delhi, it has been decided by Haryana Govt. to establish various residential, industrial and other infrastructure sectors in Sohna. This Commercial project is being developed by M/s. STERNAL BUILDCON PVT. LTD. This report and estimate is for plot area measuring 2.15 Acres.

Water Supply

The source of water supply shall be HSVP water supply connection. It has been proposed to construct underground tanks of capacity as per attached details for domestic purpose. The underground tanks will be filled up from the HSVP riser and then pumped to the tanks of tower proposed on the terrace of the building. Water supply system has been designed as per Hazen William's formula.

Design

The scheme has been designed and the total water supply requirements calculated for population as given in attached sheets.

Pumping Equipment

It has been proposed to install pumping set as described with standby of equal capacity. The provision for standby generating set has been provided in case of any electricity failure Generator will be provided separately or added to the capacity of main generator.

Sewerage Scheme

This scheme is designed for sewer connecting to STP and overflow of STP connected to Municipal sewer manhole.

The sewerage system has been marked on the respective plans. The sewer lines have been designed for three times average D.W.F. in relation to water supply demand. It has been assumed that about 80% of the Domestic & Flushing water supply shall find its way into the proposed sewer.

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Sewer lines shall be laid to a gradient maintaining minimum 2.46 ft/sec self-cleaning velocity. Necessary design statement for entire sewerage system has been prepared and attached with estimate.

Storm Water Drainage

We propose to construct underground pipe drain which will be connecting to the HSVP drain along the service road outside the site. Necessary rainwater harvesting structure shall also be constructed to assist the underground aquifer recharge.

Specifications

The work will be carried out in accordance with the standard specifications of P.H as laid down by the Haryana Govt. / HSVP

Roads:

Cost of road has been taken in the estimate.

Street Lighting

Provision for lighting on surrounding area has been made.

Horticulture:

Estimates and details of plantation, landscaping signage, etc., has been included.

Rates

The estimate has been based on the present market rates.

Cost

The total cost of the scheme, including cost of all services works out to be Rs. 147.67 Lacs/acre including 3% contingencies & 49% department charges.

For_____

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Water Requirement

DESCRIPTION	COVERED AREA IN SQ MTR	POPULATION BASIS	POPULATION	BASIS OF TOTAL WATER REQUIREMENT		TOTAL WATER REQUIREMENT	BASIS OF WATER USAGE AS PER NBC 2016		WATER REQUIREMENT	
							DOMESTIC	FLUSHING	DOMESTIC	FLUSHING
A) DAILY WATER REQUIREMENT										
4th BASEMENT										
a) PARKING	4233.865	1person/30sqm	141	45	lts/person	6345.00	25 lts/person	20 lts/person	3525.00	2,820.00
3rd BASEMENT										
a) PARKING	4233.865	1person/30sqm	141	45	lts/person	6345.00	25 lts/person	20 lts/person	3525.00	2,820.00
2nd BASEMENT										
a) PARKING	4233.865	1person/30sqm	141	45	lts/person	6345.00	25 lts/person	20 lts/person	3525.00	2,820.00
1st BASEMENT										
a) SHOPS & KIOSKS	2901.852	1person/3 sqm	967							
(i) STAFF		@ 10%	97	45	lts/person	4,365.00	25 lts/person	20 lts/person	2425.00	1,940.00
(ii) VISITORS		@ 90%	870	15	lts/person	13,050.00	5 lts/person	10 lts/person	4350.00	8,700.00
UPPER GROUND FLOOR										
a) SHOPS & KIOSKS	2504.217	1person/3 sqm	835							
(i) STAFF		@ 10%	84	45	lts/person	3,780.00	25 lts/person	20 lts/person	2100.00	1,680.00
(ii) VISITORS		@ 90%	752	15	lts/person	11,280.00	5 lts/person	10 lts/person	3760.00	7,520.00
1ST FLOOR										
a) SHOPS & KIOSKS	2350.008	1person/6 sqm	392							
(i) STAFF		@ 10%	39	45	lts/person	1,755.00	25 lts/person	20 lts/person	975.00	780.00
(ii) VISITORS		@ 90%	353	15	lts/person	5,295.00	5 lts/person	10 lts/person	1765.00	3,530.00
2ND FLOOR										
a) SHOPS & KIOSKS	2350.008	1person/6 sqm	392							
(i) STAFF		@ 10%	39	45	lts/person	1,755.00	25 lts/person	20 lts/person	975.00	780.00
(ii) VISITORS		@ 90%	353	15	lts/person	5,295.00	5 lts/person	10 lts/person	1765.00	3,530.00
3RD FLOOR										
a) FOOD COURT	427.154	1person/1.8 sqm	237	35	lts/person	8,305.78	25 lts/person	10 lts/person	5932.70	2,373.08
b) SHOPS & KIOSKS	1560.351	1person/6 sqm	260							
(i) STAFF		@ 10%	26	45	lts/person	1170.00	25 lts/person	20 lts/person	650.00	520.00
(ii) VISITORS		@ 90%	234	15	lts/person	3510.00	5 lts/person	10 lts/person	1170.00	2,340.00
4TH FLOOR										
b) SHOPS & KIOSKS	713.391	1person/6 sqm	119							
(i) STAFF		@ 10%	12	45	lts/person	540.00	25 lts/person	20 lts/person	300.00	240.00
(ii) VISITORS		@ 90%	107	15	lts/person	1605.00	5 lts/person	10 lts/person	535.00	1,070.00
b) CINEMA SEATS (456)		1person/ Seat	456	15	lts/person	6,840.00	5 lts/person	10 lts/person	2280.00	4,560.00
5TH FLOOR										
a) SHOPS & KIOSKS	384.369	1person/6 sqm	64							
(i) STAFF		@ 10%	6	45	lts/person	270.00	25 lts/person	20 lts/person	150.00	120.00
(ii) VISITORS		@ 90%	58	15	lts/person	870.00	5 lts/person	10 lts/person	290.00	580.00
TOTAL						**88,720.78**			**39,997.70**	**48,723.08**
SAY IN KLD						**89**			**40**	**49**

Total Water Demand in m^3/day

(a) For Domestic Purpose - 40 m^3/day

(b) For Flushing Purpose - 49 m^3/day

(c) Filter Back wash - 5 m^3/day

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I. Sewage Treatment Plant :

Domestic water demand	=	40 KLD
Sewage flow @ 80 %	=	32 KLD
Flushing water demand	=	49 KLD
Sewage flow @ 80 %	=	39.20 KLD
Filter back wash	=	5 KLD
Sewage flow @ 100 %	=	5 KLD
Total Sewage Flow	=	76.20 KLD
Add 20% for future as / MOEF	=	15.24 KLD
Gross Sewage Flow	=	91.44 KLD
Capacity of Sewage Treatment Plant	=	**95 KLD**

II. Under Ground Water Tanks:

(a)	Total daily water demand (for domestic purposes)	-	40 m^3/day
(b)	Proposed underground tank for Raw Water	-	30 m^3
(c)	Proposed underground tank for Domestic use	-	30 m^3
(d)	Minimum Separate Static Storage for Fire Fighting purpose provided.	-	370 m^3

III. Boosting Machinery (Domestic Water Supply Pumps) from UGT :

(a)	Daily Domestic Water Demand	-	40 m3/day
(b)	Discharge per hour @ 4 hr. pumping / day	-	10.0 m3/Hour
	Say	-	170 LPM
(c)	Proposed pump discharge for total 1 No. Pump (1Working+1stand by)	-	170 LPM
	Say	-	170 LPM (Each pump)

Gross Working Head

(d)	Suction lift - positive suction	-	0 meters
(e)	Frictional loss in mains & specials	-	4.725 meter
(f)	Max clear head required		60 meters
(g)	H.P. of each pump required = (170x60) / (4500x0.60)	-	3.77 HP
	Say	-	4.5 HP

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It is proposed to provide 2 No. of pumps (1 working + 1 standby) of 4.5 HP Each

IV. Boosting Machinery For (Recycled Water Supply Pumps) :

(a)	Daily Recycled Water Demand	-	49 m^3/day
(b)	Discharge per hour @ 4 hr. pumping / day	-	12.25 m3/Hour
	Say	-	205 LPM
(c)	Proposed pump discharge for total 1 No. Pump (1Working+1Stand by)	-	205 LPM
	Say	-	205 LPM (Each pump)

Gross Working Head

(d)	Suction lift - positive suction	-	0 meters
(e)	Frictional loss in mains & specials	-	3.91 meters
(f)	Max clear head required		60 meters
(g)	H.P. of each pump required =(205x60) / (4500x0.60)	-	4.5 HP
	Say	-	4.50 HP

It is proposed to provide 2 No. of pumps (1 working + 1 standby) of 4.50 HP Each

V. Boosting Machinery For (Garden Irrigation Supply Pumps) :

(a)	Daily Recycled Water Demand	-	5 m^3/day
(b)	Discharge per hour @ 2 hr. pumping / day	-	2.5 m3/Hour
	Say	-	45 LPM
(c)	Proposed pump discharge for total 1 No. Pump (1Working+1Stand by)	-	45 LPM
	Say	-	45 LPM (Each pump)

Gross Working Head

(d)	Suction lift - positive suction	-	0 meters
(e)	Frictional loss in mains & specials	-	2.50 meters
(f)	Max clear head required		30 meters
(g)	H.P. of each pump required =(45x30) / (4500x0.60)	-	0.5 HP
	Say	-	0.50 HP

It is proposed to provide 2 No. of pumps (1 working + 1 standby) of 0.50 HP Each

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VI. Pumps for Fire protection For the UGT :

S. No.	Parameters	Location		Pump Sets				
			Jockey (Hyd)	Jockey (Spr.)	Main	Sprinkler	Diesel	Curtain
(a)	Discharge in lpm	Pump Room	180 lpm	180 lpm	2850 lpm	2850 lpm	2850 lpm	1800 lpm
(b)	Head in meters		90	90	90	90	90	65
©	HP		10	10	100	100	100	60
(d)	Quantity in Nos.		1	1	1	1	1	1

VII. Generating Sets:

HP of domestic pump	= 4.5x 1	=	4.5
HP of recycled pump	= 4.5 x 1	=	4.5
HP of recycled pump	= 0.5 x 1	=	0.5
HP of Jockey	= 10 x 2	=	20.0
	Total	=	29.50 HP
		29.5 X 1.50 X 0.746	33.0 KVA
	Lighting		5 KVA
		Total	**38.0 KVA**
		Say	**40 KVA**

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FINAL ABSTRACT OF COST

		Amount in Lakhs
SUB WORK No. I	WATER SUPPLY & FIRE FIGHTING SCHEME	**126.00**
SUB WORK No. II	SEWERAGE SCHEME	**52.40**
SUB WORK No. III	STORM WATER DRINAGE	**26.30**
SUB WORK No. IV	ROADS WORK	**48.95**
SUB WORK No. V	STREET LIGHTING	**4.95**
SUB WORK No. VI	HORTICULTURE	**1.32**
SUB WORK No. VII	MTC CHARGES INCL for 10 yrs. RESURFACING OF ROADS AFTER 1st 5 YEARS AND 2nd YEAR OF MTC (AS/ HUDA NORMS)	**57.50**
	TOTAL	**317.42**
	SAY	**317.50**

Hence, Total Cost per Gross Acre, 317.50 / 2.15 = 147.67 Lakhs Per Acre

AUTHORISED SIGNATORY

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SUB WORK No. 1 (Abstarct of Cost)

		Amount in Lakhs
1	SUB HEAD No. 1 (HEAD WORKS)	25.55
2	SUB HEAD No. 2 (Pumping Machinery)	32.00
3	SUB HEAD No. 3 (RISING MAIN)	3.96
4	SUB HEAD No. 4 (DISTRIBUTION SYSTEM)	3.26
5	SUB HEAD No. 5 (FLUSHING SYSTEM)	7.07
6	SUB HEAD No. 6 (FIRE RISING MAIN)	10.25
	TOTAL	**82.09**
	Add 3 % Contingencies & PH Charges	2.46
	TOTAL	**84.55**
	Add 49 % Departmental Charges, Price escalation, unforseen, Admin.	41.43
	TOTAL	**125.98**
	SAY	**126.0 Lakhs**

(c/o to final abstract of cost)

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SUB WORK No. 1 — **Water Supply**

SUB HEAD No. 1 — **HEAD WORKS**

	Amount in Lakhs
1. Construction of boosting machinery of suitable size in all respect.	
i) Const. of boosting chamber as standard design/appd.design(18'X36') (L.S.)	2.00
ii) Providing & installing of Centrifugal pumping set capable of delivering 170 LPM,Head 60 m (4.5 HP), 2 Nos.(1 working + 1Stand by) @ Rs 125000/- each.(For Domestic Water Supply)	2.50
iii) Providing & installing of Centrifugal pumping set capable of delivering 205 LPM,Head 60 m (4.5 HP), 2 Nos.(1 working + 1 Stand by) @ Rs 135000/- each.(For Recycled Water Supply)	2.70
iv) Providing & installing of Centrifugal pumping set capable of delivering 45 LPM,Head 30 m (0.5 HP), 2 Nos.(1 working + 1 Stand by) @ Rs 40000/- each.(For Recycled Water Supply)	0.80
v) Providing & installing of Transformer & direct connection of suitable capacity.(L.S.)	1.50
2. Provision for carriage for materials and other forseen items L.S	1.00
3. Constrcution of U.G. tanks 430 KL @ Rs. 3500/- (30 Raw + 30 Domestic + 370 Fire)	15.05
TOTAL	**25.55**
(C/O To abstract of cost for Subwork No. 1) say,	**Rs. 25.55 Lakhs**

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SUB WORK No. I
Sub Head No. 02

Fire Fighting Pumping Machinery
Amount in Lakhs

1	Provision for diesel engine genset each for standby arrange-ments. For pumps complete with gear head arrangemnts of followings capacities		
	1 No. 40 KVA (Lumpsum)	Rs.	6.50
2	Providing and installing pumping set of following capacities for Fire protections :		
	180 lpm at 90 M head 2 Nos. @ Rs. 1,25,000 each	Rs.	2.50
	2850 lpm at 90 M head 1 No. DG pump @ Rs. 7,50,000/- each	Rs.	7.50
	2850 lpm at 90 M head 2 Nos. @ Rs. 4,50,000/- each	Rs.	9.00
	1800 lpm at 65 M head 1 No. @ Rs. 2,00,000/- each	Rs.	2.00
3	Provision for making foundations and erection of Pumping Machinery (Lump sum)	Rs.	0.50
4	Provision for pipes, valves and specials inside boosting chamber (Lumpsum)	Rs.	2.00
5	Provision for electric service connection including electrical fittings for boosting chamber including cost of Transformer. (Lumpsum)	Rs.	1.00
6	Provision for carriage of material and other unforseen items etc (Lumpsum)	Rs.	1.00
	TOTAL (C/O to Abstract of cost for Sub work No. I)	Rs.	32.00
	say	**Rs.**	**32.0 Lakhs**

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Sub - work No. 1 Water Supply

Sub Head No - 03 **Rising main**

Amount in Lakhs

1	Providing, Laying, Jointing, and testing pipe lines including cost of excavation etc complete in all respect 65 mm dia G.I pipe 65 m @ 1250/-	Rs.	0.81
2	Providing & Fixing sluice valve including cost of surface box and masonary chamber etc. complete in all respect 65 mm i/d 1 .No. @ 7500/-	Rs.	0.08
3	Providing and fixing indicating plates for sluice valve and air valves - 1 no @ Rs. 1000/- each	Rs.	0.01
4	Providing and fixing air release valve & scour valve 1 No @ Rs. 6000 /- Each	Rs.	0.06
5	Provision for carriage for materials and other unforseen items (Lump Sum)	Rs.	1.00
6	Making Water supply connection with HSVP main	Rs.	1.00
7	Provision for cutting of roads and making good to its original condition	Rs.	1.00
	Total	**Rs.**	**3.96**
	(C/O to Abstract of cost for subwork No. I)	**Rs.**	**3.96 Lakhs**

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Sub - work No. 1 Water Supply

Sub Head No - 04 **Distribution System**

Amount in Lakhs

1	Providing, Laying, Jointing, and testing C.I/GI pipe lines including Fittings ,Valves, Cost of supports etc complete in all respect GI Pipe 65 mm, 175 m @ Rs. 1250/-	Rs.	2.19
2	Provision for carriage of materials and other unforseen items	Rs.	1.00
3	Providing and fixing valves 65 mm dia 1 No. @ Rs. 7500/- each	Rs.	0.08
	Total	**Rs.**	**3.26**
	(C/o To Abstract of cost for subwork no.I)	**Rs.**	**3.26 Lakhs**

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Sub - work No. 1 Water Supply

Sub Head No - 05 **Distribution For Flushing & Irrigation System**

Amount in Lakhs

1	Providing, Laying, Jointing, and testing C.I/GI pipe lines including Fittings ,Valves, Cost of excavation etc complete in all respect		
	i) GI Pipe 65 mm, 100 m @ Rs. 1250/-	Rs.	1.25
2	Providing, laying, jointing and testing uPVC pipe line confirming to I.S. 4985, including cost of excavation etc. complete in all respects.		
	i) 32 mm OD Pipe 16 M @ 300 /-	Rs.	0.05
	ii) 90 OD Pipe - 415 M @ Rs. 750/- per mtr	Rs.	3.11
3	Providing and fixing 20 mm dia. Irrigation hydrant valve complete in all respect 16 Nos. @ Rs. 1000/- each		0.16
4	Provision for carriage of materials and other unforseen items (Lump sum)	Rs.	1.00
5	Providing and fixing valves		
	i) 25 mm dia 16 Nos. @ Rs. 1500/- each	Rs.	0.24
	ii) 80 mm dia 4 Nos. @ Rs. 6500/- each	Rs.	0.26
6	Provision for carriage of materials and other unforseen items (Lump sum)	Rs.	1.00
	Total	**Rs.**	**7.07**
	(C/o To Abstract of cost for subwork no.I)	**Rs.**	**7.07 Lakhs**

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Sub - work No. I Water Supply

Sub Head No - 06 **FIRE FIGHTING MAINS**

S. No.	Description	Amount (in Lakhs)
1	Providing, Laying, Jointing and testing M.S. Pipes lines for fire using main including cost of fittings, valves, connection etc. Complete in all respect.	
	(i) 150 mm m.s. pipe line 490 m @ Rs. 1500 per mtr	7.35
	(ii) 80 mm id/d 22 m @ Rs. 700 per mtr.	0.15
2	Providing & fixing sluice valve 150 mm dia 4 Nos. @ Rs. 10000 each	0.40
3	Providing and fixing fire hydrant 11 Nos. @ Rs. 7500 each	1.18
4	Providing for carriage of a material (L.S.)	0.50
5	Providing & fixing Indicating Plates For sluice valves & Fire Hydrants 15 Nos. @ Rs.1000 each	0.15
6	Provision for cutting of roads and making good to its in original condition (L.S.)	0.50
	Total	10.23
	C/O To Abstract of Cost of Subwork No. 1)	**Rs. 10.25 Lakhs**

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Sub - work No.II — SEWERAGE

S. No.	Description	Amount (in Lakhs)
1	Providing, jointing, cutting & testing S.W. pipe Class 'A' and lowering into trenches including cost of excavation, bed concrete cost of manholes, erecting / fixing vent shafts as per norms etc. complete in all respects.	
	a) 200 mm dia i/d S.W. Pipes Avg. depth up to 2 M, 10 M@ Rs. 1250 / M	0.13
	b) 200 mm dia i/d S.W. Pipes Avg. depth up to 4 M, 0 M @ Rs. 1500/M	-
2	Provision for cartage of material(L.S.)	1.00
3	Provision for making HSVP Connection(L.S.)	1.00
4	Provision for temporary Timbering (L.S.)	1.00
5	Provision for oblique junction (L.S.)	1.00
6	Provision for Sewage Treatment Plant of capacity 95 KLD (L.S.)	30.00
	Total	34.13
	Add 3% contigencies & PH charges	1.02
		35.15
	Add 49% departmental charges, price escalation unforseen, admn. Charges	17.22
	Total	**52.37**
	say,	**Rs. 52.40 Lakhs**

(C/O to FINALAbstract of cost)

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Sub - work No.III

STORM WATER DRAINAGE

S. No.	Description	Amount (in Lakhs)
1	Providing and laying RCC Pipe drain class NP-3 with cement joint manholes, excavation etc. complete in all respect.	
a	300 mm dia 23 m @ Rs. 2000/-	0.46
b	400 mm dia 245 m @ Rs. 2500/-	6.13
2	Provision for Road gullies with 250mm dia pipe connections L.S.	1.50
3	Providing Rain Harvesting arrangements 3 nos. @ Rs. 200000 (L.S.)	6.00
4	Provision for shoring & Timbering (L.S.)	1.00
5	Provision for Lighting, Watching	1.00
6	Provision for carriage of Material (L.S.)	1.00
7	Provision for making connection to HSVP Line (L.S.)	0.50
	Total	17.59
	Add 3% for contigencies and PH charges	0.53
	Total	18.11
	Add 49% Departmental Charges, Price Escalation unforseen, admn. Charges	8.88
	Total	**26.99**
	Say	**Rs. 26.30 Lakhs**
	Cost to final abstract of cost)	

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ROAD AREA CALCULATION				
ROADS No.	**LENGTH**	**WIDTH**	**METAL**	**AREA (SQM.)**
	(M)	**(M)**	**PORTION IN (M)**	
R1	78	6	6	468
R2	12.5	6	6	75
R3	35	6	6	210
R4	13	6	6	78
R5	78	6	6	468
R6	46	6	6	276
R7	9.5	6	6	57
R8	44	6	6	264
TOTAL	316			1896
				Sqm
Add 10% extra for curves				2085.6
Open surface area near ESS				140
Total Road Area in sqmtr.				**2226**
Total length of Road				**316 M**

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SUB WORK - IV

ROAD WORK

Amount in Lakhs

1	Provision for levelling & earth filling as per site conditions 2.15 acres @ Rs. 150,000	Rs.	3.23
2. (i)	Const. of roads by providing granular sub-base 300mm as per MORT& H Specifications conforming to clause 401 grading - II 400.1.		
(ii)	Poviding,laying,spreading & compacting stone aggregate to wet mix macadum conforming to physical requirement laid in 400 0f MORT & H Specification in two layers compacted to 150mm(0.75+0.75mm)by taking material 1.32 times of the (thickness of the layer)including premixing of material with water in mechanical mixer.		
(iii)	50mm thick B.M.		
(iv)	20 mm thick pre-mix seal Surfacing.		
	FOR 2226 sqm@ Rs. 1000 PER SQM	Rs.	22.26
3	Provision for kerbs & Channels of CC 1:1, 2:3 {316 RMT @ Rs. 600/mm}	Rs.	1.90
4	Provision for making approach and pavement to building	Rs.	2.00
5	Provision of guide maps and other unforseen and indicating board etc. (L.S.)	Rs.	1.00
6	Provision of Traffic Lights arrangement (L.S.)	Rs.	1.00
7	Provision for carriage of material & Othert unforseen items	Rs.	0.50
	Total	Rs.	31.88
	Add 3% contingency & PE Charges	Rs.	0.96
	Total		32.84
	Add 49% deptt. charges, Price Escalation, Unforseen Admin. Charges	Rs.	16.09
		Rs.	**48.93**
	say,	**Rs.**	**48.95 Lakhs**

(C/O TO FINAL ABSTRACT OF COST)

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SUB - WORK -VI

HORTICULTURE

Amount in Rupees

1	Development of Lawn Areas:		
a)	Trenching of ordinary soil upto depth of 60 cm i/c removal & stacking of serviceable material & disposing by spreading and levelling within a lead of 50 M and making up the trench area for proper levels by filling with earth or earth mixed with manure before and after flooding trench with water i/c cost of imported earth and manure		
b)	Rough dressing of turfed area.		
c)	Grassing with "DOOB GRASS" i/c watering and maintenance of lawns for 30 days till the grass forms a thick lawan, free from weeds and fit for moving in row 7.5 cm part in either direction.		
	0.1697 acres organised green @ 150000/- acres	Rs.	25,455
2	Providing and planting trees along boundary @ 6 m interval		
	Total peripheri of Green = 476 m		
	No, of trees 476/6		79.33
		SAY	**80 Nos.**
	Cost Details		
	Excavation	Rs.	30/-
	Manure	Rs.	60/-
	Tree Plant	Rs.	60/-
	Tree Guard	Rs.	600/-
	Total	Rs.	750/-
	80 Trees @ Rs. 750/- Each	Rs.	60,000
	Total	Rs.	85,455
	Add 3 % Contingencies & PH Charges	Rs.	2,564
			88,019
	Add 49% departmental Charges	Rs.	43,129
	TOTAL	Rs.	**1,31,148**
		say Rs.	**1.32 LAKHS**

(C/O TO FINAL ABSTRACT OF COST)

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SUB WORK -VII- SERVICES & RESURFACING OF ROADS

			Amount in Lakhs
1	Providing of MTC charges for W/s, SWD Sewarage, Roads, Street Lighting, Horticulture etc. complete in all aspects, including operational and establishment charges as per HUDA norms for 10 years completion 2.15 acres @ 5 lacs per acre	Rs.	10.75
2	Provision of resurfacing of roads after 5 years of MTC one layer of 100 mm thick BUSG compacted to 75 mm thick premix carpet with seal coat 2226 sq. mt. @ Rs. 700/- per sq.mt.	Rs.	15.58
	Resurfacing of road after 10 years of MTC 2226 sq.mt. @ Rs. 500 per sq.mt.	Rs.	11.13
	Total	Rs.	37.46
	Add 3% contigencies & PE charges	Rs.	1.12
	Total	Rs.	**38.59**
	Add 49% Departmental charges	Rs.	18.91
	Total	Rs.	**57.49**
	Say ,	**Rs.**	**57.50 Lakhs**

(C/O TO FINAL ABSTRACT OF COST)

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TITLE : DAILY WATER REQUIREMENT AND STORAGE.

DESCRIPTION	COVERED AREA IN SQ MTR	POPULATION BASIS	POPULATION	BASIS OF TOTAL WATER REQUIREMENT		TOTAL WATER REQUIREMENT	BASIS OF WATER USAGE AS PER NBC 2016				WATER REQUIREMENT	
							DOMESTIC		FLUSHING		DOMESTIC	FLUSHING
A) DAILY WATER REQUIREMENT												
4th BASEMENT												
a) PARKING	4233.865	1person/30sqm	141	45	lts/person	6345.00	25	lts/person	20	lts/person	3525.00	2,820.00
3rd BASEMENT												
a) PARKING	4233.865	1person/30sqm	141	45	lts/person	6345.00	25	lts/person	20	lts/person	3525.00	2,820.00
2nd BASEMENT												
a) PARKING	4233.865	1person/30sqm	141	45	lts/person	6345.00	25	lts/person	20	lts/person	3525.00	2,820.00
1st BASEMENT												
a) SHOPS & KIOSKS	2901.852	1person/3 sqm	967									
(i) STAFF		@ 10%	97	45	lts/person	4,365.00	25	lts/person	20	lts/person	2425.00	1,940.00
(ii) VISITORS		@ 90%	870	15	lts/person	13,050.00	5	lts/person	10	lts/person	4350.00	8,700.00
UPPER GROUND FLOOR												
a) SHOPS & KIOSKS	2504.217	1person/3 sqm	835									
(i) STAFF		@ 10%	84	45	lts/person	3,780.00	25	lts/person	20	lts/person	2100.00	1,680.00
(ii) VISITORS		@ 90%	752	15	lts/person	11,280.00	5	lts/person	10	lts/person	3760.00	7,520.00
1ST FLOOR												
a) SHOPS & KIOSKS	2350.008	1person/6 sqm	392									
(i) STAFF		@ 10%	39	45	lts/person	1,755.00	25	lts/person	20	lts/person	975.00	780.00
(ii) VISITORS		@ 90%	353	15	lts/person	5,295.00	5	lts/person	10	lts/person	1765.00	3,530.00
2ND FLOOR												
a) SHOPS & KIOSKS	2350.008	1person/6 sqm	392									
(i) STAFF		@ 10%	39	45	lts/person	1,755.00	25	lts/person	20	lts/person	975.00	780.00
(ii) VISITORS		@ 90%	353	15	lts/person	5,295.00	5	lts/person	10	lts/person	1765.00	3,530.00
3RD FLOOR												

a) FOOD COURT	427.154	1person/1.8 sqm	237	35	lts/person	8,305.78	25	lts/person	10	lts/person	5932.70	2,373.08
b) SHOPS & KIOSKS	1560.351	1person/6 sqm	260									
(i) STAFF		@ 10%	26	45	lts/person	1170.00	25	lts/person	20	lts/person	650.00	520.00
(ii) VISITORS		@ 90%	234	15	lts/person	3510.00	5	lts/person	10	lts/person	1170.00	2,340.00
4TH FLOOR												
b) SHOPS & KIOSKS	713.391	1person/6 sqm	119									
(i) STAFF		@ 10%	12	45	lts/person	540.00	25	lts/person	20	lts/person	300.00	240.00
(ii) VISITORS		@ 90%	107	15	lts/person	1605.00	5	lts/person	10	lts/person	535.00	1,070.00
b) CINEMA SEATS (456)		1person/ Seat	456	15	lts/person	6,840.00	5	lts/person	10	lts/person	2280.00	4,560.00
5TH FLOOR												
a) SHOPS & KIOSKS	384.369	1person/6 sqm	64									
(i) STAFF		@ 10%	6	45	lts/person	270.00	25	lts/person	20	lts/person	150.00	120.00
(ii) VISITORS		@ 90%	58	15	lts/person	870.00	5	lts/person	10	lts/person	290.00	580.00
TOTAL						**88,720.78**					**39,997.70**	**48,723.08**
SAY IN KLD						**89**					**40**	**49**

TOTAL DAILY WATER REQUIREMENT		
a) DOMESTIC USE	40	KLD
b) FLUSHING USE	49	KLD
c) FILTER BACKWASH	5	KLD
d) GARDENING	4	KLD
TOTAL WATER REQUIREMENT	**98**	KLD

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Design of Domestic Water Riser

a)	Total daily domestic water requirement		=	40 m^3/day
b)	Pumping hours		=	4 hrs.
c)	Flow rate per hr.		=	10.0 m^3/hr
d)	Dia of Riser		=	65 mm
e)	Velocity in line		=	0.84 m/s
f)	Losses mtr / mtr		=	0.024 mtr/mtr
g)	Total length of riser		=	175 mtr.
h)	Add 15% extra for fittings		=	201 mtr.
i)	Total head loss		=	4.725 mtr.
j)	Level of Pump Room		=	(-) 16.20 M
k)	Level of Inlet to O.H.T.		=	(+) 32.50 M
l)	Clear Head required		=	48.70 mtr.
m)	Head Required at Inlet		=	5.0 mtr.
n)	Gross head required		=	48.70+5.0+4.725 mtr.
			=	58.425 m
		Say	=	**60.0 M**

Design of Flushing Water Riser

a)	Total daily domestic water requirement		=	49 m^3/day
b)	Pumping hours		=	4 hrs.
c)	Flow rate per hr.		=	12.25 m^3/hr
d)	Dia of Riser		=	65 mm
e)	Velocity in line		=	1.02 m/s
f)	Losses mtr / mtr		=	0.034 mtr/mtr
g)	Total length of riser		=	100 mtr.
h)	Add 15% extra for fittings		=	115 mtr.
i)	Total head loss		=	3.91 mtr.
j)	Level of Pump Room		=	(-) 18.50 M
k)	Level of Inlet to O.H.T.		=	(+) 32.50 M
l)	Clear Head required		=	51.0 mtr.
m)	Head Required at Inlet		=	5.0 mtr.
n)	Gross head required		=	51.0+5.0+3.91 mtr.
			=	59.91 M
				Say 60 M

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TITLE :- DESIGN OF HSVP RISING MAIN									
S.N0	LINE NO	AVERAGE DEMAND	PEAK DEMAND @ 1.5 TIMES	FLOW RATE	LENGTH OF PIPE	HEAD LOSS MTR/ MTR	TOTAL HEAD LOSS	VELOCITY	DIA OF PIPE
		KLD	KLD	LPM	MTR.	MTR.	MTR.	M/SEC	MM
1	HSVP MAIN- UGT	40.00	60.00	41.67	65	0.00181	0.12	0.21	65

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Title :- Water Supply Risers from Pump Room (Material Statement).

S.N0	LINE FROM	LINE TO	LENGTH OF PIPE IN MTR			DIA OF RISER	PIPE DIA IN MM				VALVES ON LINES			
			HORIZONTAL	VERTICAL	TOTAL	MM	100	80	65	50	100	80	65	50
Domestic Water Riser														
1	Plumbing Pump Room	O.H.T.	127	48	175	65	0	0	175	0	0	0	1	0
Flushing Water Riser														
2	S.T.P. Pump Room	O.H.T.	52	48	100	65	0	0	100	0	0	0	1	0
TOTAL							**0**	**0**	**275**	**0**	**0**	**0**	**2**	**0**
HSVP RISING MAIN														
3	HSVP MAIN- UGT		60	5	65	65	0	0	65	0	0	0	1	

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Proposed 2.15 Acres Commercial Complex In The Revenue Estate of Village-Dhunela, Sector-36, Sohna, Gurugram Being Developed by Sternal Buildcon PVT. LTD.

DESIGN OF SEWER LINES.

DESCRIPTION	DOMESTIC	FLUSHING	FILTER BACK WASH	UNITS
TOTAL DAILY WATER REQUIREMENT	40	49	5	KLD
SEWAGE FLOW @	80	80	100	% OF DWR
DAILY AVERAGE SEWAGE FLOW	32	39.2	5	KLD
PEAK FLOW FACTOR	3	3	3	KLD
PEAK FLOW	96	117.6	15	KLD
INFILTRATION @ 25 % 0F AV FLOW	8	9.8	1.25	KLD
TOTAL SEWAGE FLOW	104	127.4	16.25	KLD
SEWAGE FLOW IN LPS	1.204	1.475	0.188	LPS
TOTAL SEWAGE FLOW IN LPS	2.866			LPS
PROVIDED 200 MM DIA MAIN LINE @ 1: 190 SLOPE				
CARRYING CAPACITY OF PIPE FLOWING HALF FULL	**11.902**			LPS
VELOCITY FLOWING HALF FULL	**0.757**			M/SEC

CAPACITIES OF PIPES AS PER MANNING'S FORMULA					
DIA OF PIPE	**200**	**250**	**300**	**400**	MM
SLOPE IN LINE (S) 1 IN	190	250	300	450	
MANNING'S COEFFICIENT (n)	0.013	0.013	0.013	0.013	
$V= 3.968 \times 1/N \times 10^{-3} \times D^{2/3} \times S^{1/2}$	0.757	0.766	0.790	0.781	M/SEC
$Q=3.118 \times 1/N \times 10^{-6} \times D^{8/3} \times S^{1/2}$	23.803	37.624	55.851	98.209	LPS
VELOCITY FLOWING HALF FULL	0.757	0.766	0.790	0.781	M/SEC
DISCHARGE CAPACITY FLOWING HALF FULL	11.902	18.812	27.925	49.105	LPS

WHERE :-

V = VELOCITY IN M/SEC.
D = DIA OF PIPE IN MM
S = SLOPE OF HYDRAULIC GRADIENT MTR/MTR.
Q = DISCHARGE IN LPS

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Title: Storm Water Drainage Hydraulic Design.

S.No	Line No.	Length in mtr.	Self Area in Sq. mtr.	Previous Area in (Sq. mtr.)	Total Area in (Sq. mtr.)	Total Area (Hec.)	Rain Fall inches /hr	Total Discharge (Cusecs)	Pipe dia	Slope 1 in	Velocity f/sec.	Cap of pipe in cusecs	Fall in line mtr.	Road level at Start	H.F.L at Start	Invert Level at Start	Road level at End	H.F.L at End	Invert Level at End	Depth at Start (M)	Depth at End (M)
1	D1 - D2	23	454	0	454	0.045	1/4"	0.03	300	350	2.1	1.58	0.07	0.00	-0.60	-0.90	0.00	-0.67	-0.97	0.90	0.97
2	D2 - D4	74	2933	454	3387	0.339	1/4"	0.21	400	550	2.0	2.72	0.13	0.00	-1.10	-1.50	0.00	-1.23	-1.63	1.50	1.63
3	D3 - D4	52	525	0	525	0.053	1/4"	0.03	400	550	2.0	2.72	0.09	0.00	-0.60	-1.00	0.00	-0.69	-1.09	1.00	1.09
4	D4 - R.PIT 3	5	870	3912	4782	0.478	1/4"	0.30	400	550	2.0	2.72	0.01	0.00	-1.23	-1.63	0.00	-1.24	-1.64	1.63	1.64
5	D5 - D6	53	1300	0	1300	0.130	1/4"	0.08	400	550	2.0	2.72	0.10	0.00	-1.10	-1.50	0.00	-1.20	-1.60	1.50	1.60
6	D6 - R.PIT 3	56	375	1300	1675	0.168	1/4"	0.10	400	550	2.0	2.72	0.10	0.00	-1.20	-1.60	0.00	-1.30	-1.70	1.60	1.70
7	R.PIT 3 - OUTFALL	5	10	6457	6467	0.647	1/4"	0.40	400	550	2.0	2.72	0.01	0.00	-1.30	-1.70	0.00	-1.31	-1.71	1.70	1.71

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Title : Storm Water Drainage Qty Sheet

S.No	Line No.	Length in mtr.	Pipe dia	Depth at Start	Depth at End	Average Depth	Pipe Upto 2mtr Depth			Pipe from 2 to 4 mtr Depth		
							250 Dia	300 Dia	400 Dia	250 Dia	300 Dia	400 Dia
1	D1 - D2	23	300	0.90	0.97	0.93	0	23	0	0	0	0
2	D2 - D4	74	400	1.50	1.63	1.56	0	0	74	0	0	0
3	D3 - D4	52	400	1.00	1.09	1.05	0	0	52	0	0	0
4	D4 - R.PIT 3	5	400	1.63	1.64	1.63	0	0	5	0	0	0
5	D5 - D6	53	400	1.50	1.60	1.55	0	0	53	0	0	0
6	D6 - R.PIT 3	56	400	1.60	1.70	1.65	0	0	56	0	0	0
7	R.PIT 3 - OUTFALL	5	400	1.70	1.71	1.70	0	0	5	0	0	0
TOTAL		**268**					**0**	**23**	**245**	**0**	**0**	**0**

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