Submittal Form APPROVAL REQUEST

Submittal Number**: ST-B-MS-01** Revision no.**04**

Project Name: **Construction of Tulip luxury residential towers**.

To be Completed by KURK Company:

Name of Submittal: **Method statement to locate construction joint at D block foundation**
Type of Work: **Civil & Architecture** Mechanical Electrical Other

We are Sending: Hard Copy Catalogues **Technical Data** **Drawings** Certificates Samples

Submittal Contents: **Method statement to locate construction joint at D block foundation**

Specification Section Number**:** BOQ item no.: Drawing Sheet Number:

Submitted for: **Approval** for Information Review & comment

We certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawing and specifications except as otherwise stated.

Date Submitted**: 21/12/2022** Submitted By: Sami UYAN Signature:

To be completed by Engineer (Responsible Engineer) – Premier

Date received: 21.12.2022 Received by: Adnan Ahmed

Submittal is: Reviewed **Reviewed with comments** Not Reviewed

We hereby confirm that the submittal is in accordance with the specifications and drawings.

Comments:

1- All Works must be inspected prior pouring concrete.
2- Considerations in Concrete Placement Layers: In order to comply with this requirement, a layer be started before completion of the preceding layer. The thickness of each layer should be such that it can be deposited before the previous layer has stiffened. Before placing the next concrete layer, it is necessary to properly compact the below layer (vibrations).

3- Concrete placement has to be done rapidly as practicable to prevent the formation of cold joints or planes of weakness between each succeeding layer within the pour. Cold joints are prominent in large pouring sessions. These types of pouring will require proper planning. The bucket loads or other units of deposit should be spotted progressively along the face of the layer with such overlap as will facilitate spreading the layer to uniform depth and texture with a minimum of shoveling.

Date: 22.12.2022 Checked By: Adnan Ahmed Signature: 

Date: Approved by: AUSAMA MAJEED Signature: 

To be completed by TULIP LEAF Company – Projects Manager

A - Approved as submitted.

B - Approved, except as noted in comments

C - Revision and Resubmission required according with closing the mentioned notes in the comments.

D - Will be returned by separate correspondence.

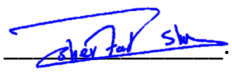
E - Disapproved (See attached).

F - Other (Specify).

Permission to proceed does not constitute acceptance or approval of design details, calculations, analyses, test method or materials developed by the supplier/subcontractor and do not relieve supplier/subcontractor from full compliance with contractual obligations.

Responsible Reviewer: _____. Date: _____.

Comments: _____

Date Approved: December 28, 2022. Approved by: Eng. Sherzad Qadir. Signature:  .

METHOD STATEMENT
OF
Construction Joint at D Block Foundation

Prepared by:

Sami UYAN

Project Manager

Table of Contents

1. Scope / Objectives

This method statement details are to locate and make cold joint at foundation.

2. References

2.1. References to Contract Documents

- Contract Drawings

2.2. References to Internal Documents

- Consultant engineer report
- Method Statement
- Material Submittal

3. Responsibilities

3.1. Project Manager has the overall responsibility for the implementation of this method statement and will well ensure that the sub-contractors as well other team members are aware of the requirements of the Method Statement.

3.2. The Site Engineer(s) will ensure that the resources are available to carry out the works as scheduled.

3.3. The Site Engineer(s) are responsible for carrying out the works per the approved method statement.

3.4. The Site Engineer/Supervisor is responsible to ensure that the work has been carried out as per the approved method statement.

3.5. The Surveyor/Site Engineer/Supervisor is responsible for Setting out the area and measuring, monitoring, and controlling the levels.

3.6. The Safety Officer is responsible to ensure that all safety precautions are in place and that the personnel on-site possess the necessary PPE.

3.7. The Safety Officer is also responsible to ensure that the Materials, Machineries and Equipment's Mobilized for the job by the company and the approved subcontractors comply with relevant safety requirements.

3.8. The Safety Officer is responsible to ensure that essential work permits are available before the commencement of the work.

4. Objective

4.1 This method statement covers & establishes a procedure to pour foundation and stop the concrete at calculated specified location as a construction joint for both joints by using the right tools and procedures.

4.2 This method statement describes the practices and methods to be used with regards to steel reinforcement & concrete (placing, and defect rectification) works.

4.3 Before the placing of any concrete all quality checks are to be completed and the “approval to concrete” instruction issued by PREMİER BUREAU TEAM.

4.4 The method to be used for laying concrete must be according to cast-in-place concrete Specifications as mentioned below and consultant engineer recommendation.

5. Steel Reinforcement Work

The sequence for the steel reinforcement of the foundation will be as Follows:

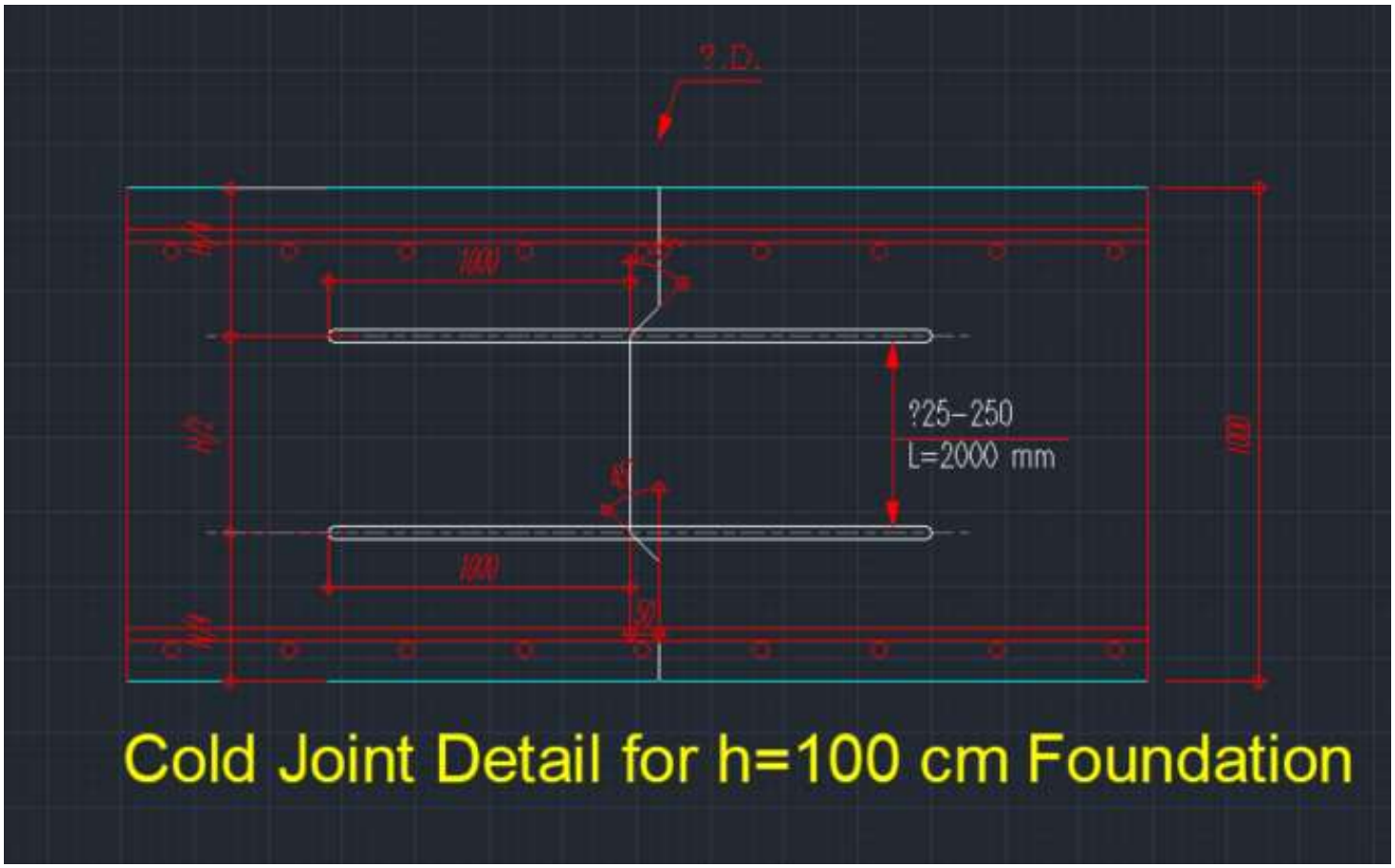
5.1 Reinforcement will be supplied to the site, from the approved supplier.

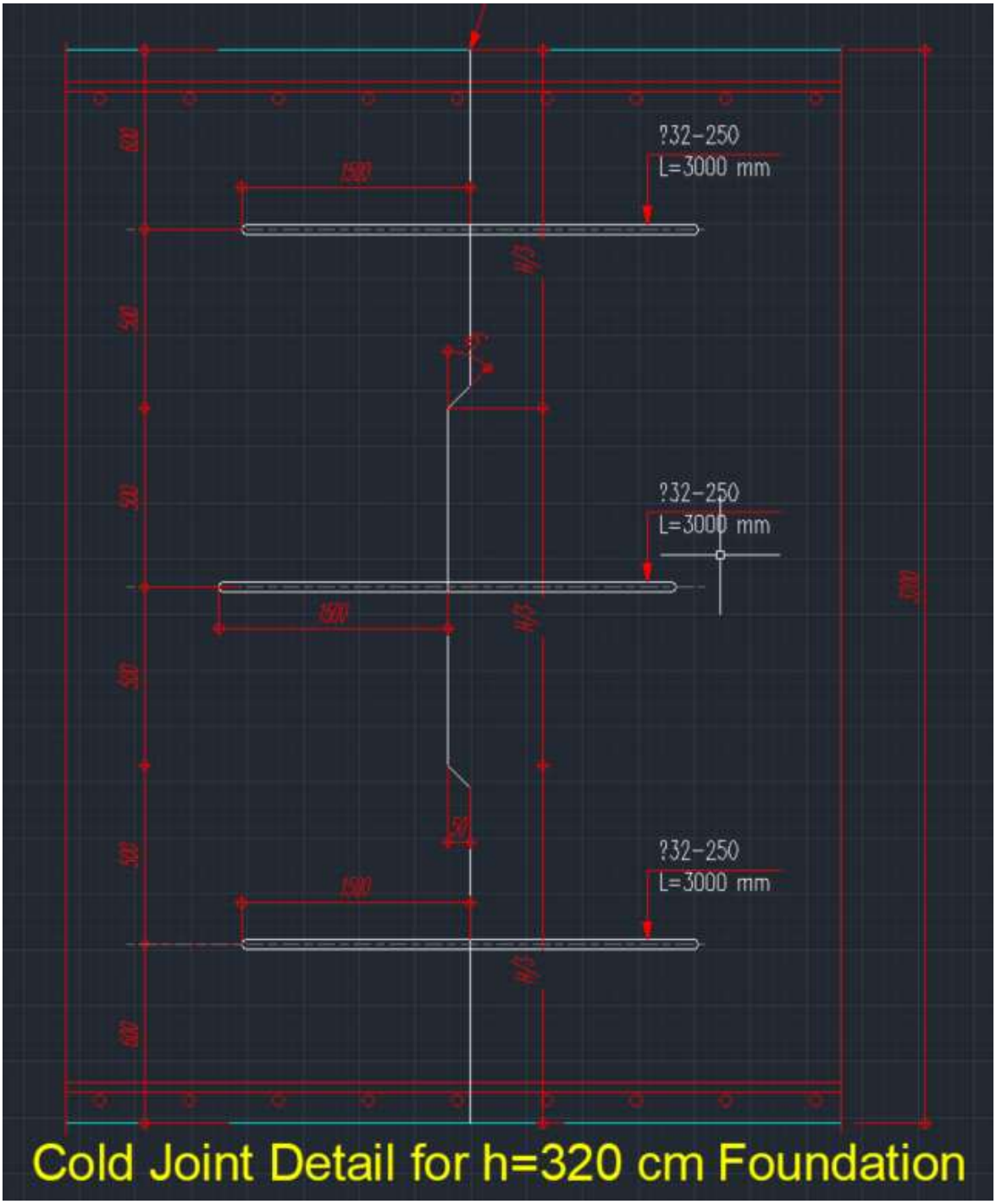
5.2 The reinforcement from the supplier will be supplied in bundles and will be Labelled. Foreman steel fixer who will check the bundles of reinforcement as They are unloaded before use.

5.3 The bundles of reinforcement will be stored close to the slab area using Suitable slings and chains, to lift reinforcement onto the sleepers or timber in the allocated areas.

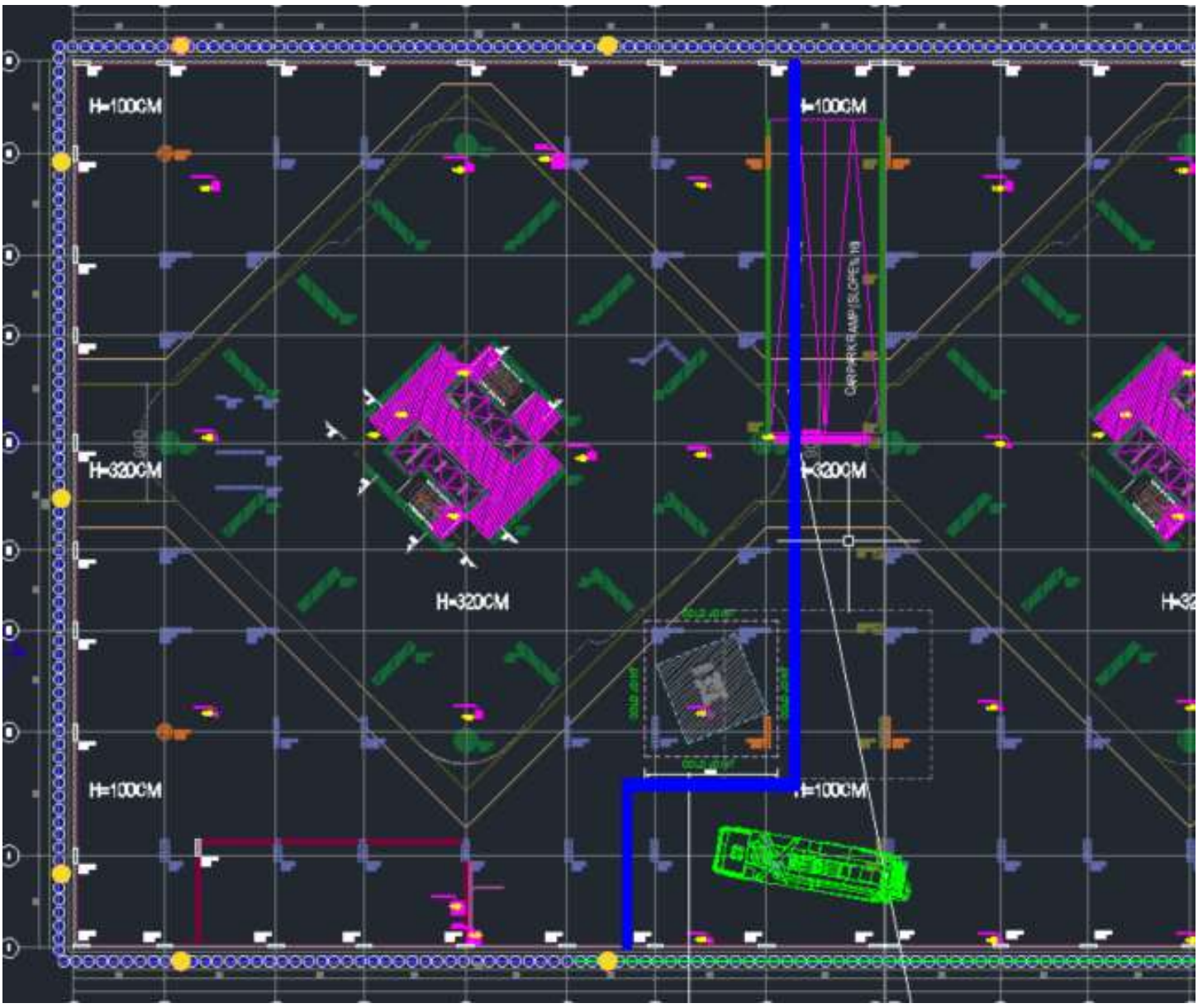
5.4 Fixation of the steel reinforcement of the D block foundation as per approved drawings and the additional reinforcement as per drawings provided by consultant engineer in the attached drawings.

6. Cold Joint





Cold Joint Detail for h=320 cm Foundation


H=100CM
H=100CM
H=320CM
H=320CM
H=320CM
H=100CM
H=100CM

7. Concrete placement for the foundation Block D at construction joint

RCC WORKS FOR FOUNDATION

7.1) Concrete quality shall be according to the approved mix design (C 50 Mpa) OPC cement for the foundation.

7.2) Foundation concrete will be supplied by Iberia Company

7.3) Iberia Company will supply concrete from 3 plants and 1 plant will be on standby.

7.4) Approximately 6500 m^3 concrete will be casted.

7.5) Concrete batching plant for 1 pump It will provide an average of 50-60 m3 of concrete in 1 hour.

7.2) Concrete casting will be completed in 22 - 26 hours

7.3) Concrete pumps with 1 pc 55 m, 1 pc 52 m, 2 pc 47 m and 1 pc 45 m boom height will be used and 2 pumps will be on standby. If permission is obtained, the 6th pump will be installed on the Dream City side.

7.4) Concrete pumps with a boom height of 42 m will be given as spares.

7.5) 45 trans mixers will work.

7.6) IBERIA company will assign 3 quality engineers for concrete quality control

7.7) 6 employees will be assigned for the concrete sample

7.8) Expected concrete casting start time is at 02.00 a.m. on Friday

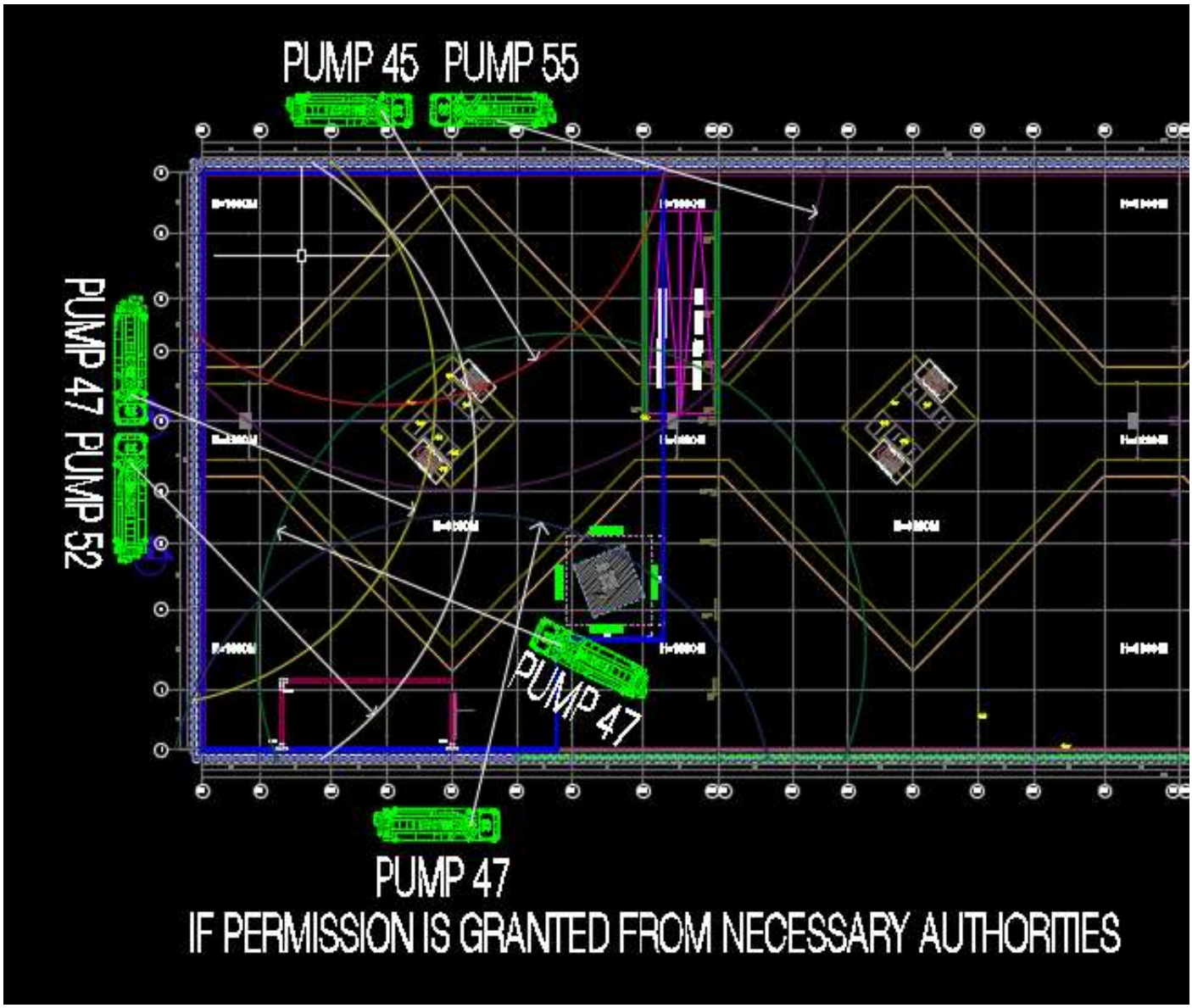
7.9) Concrete with 1 meter height will have a waterproof admixture

7.10)2 workers will work for each vibrator.

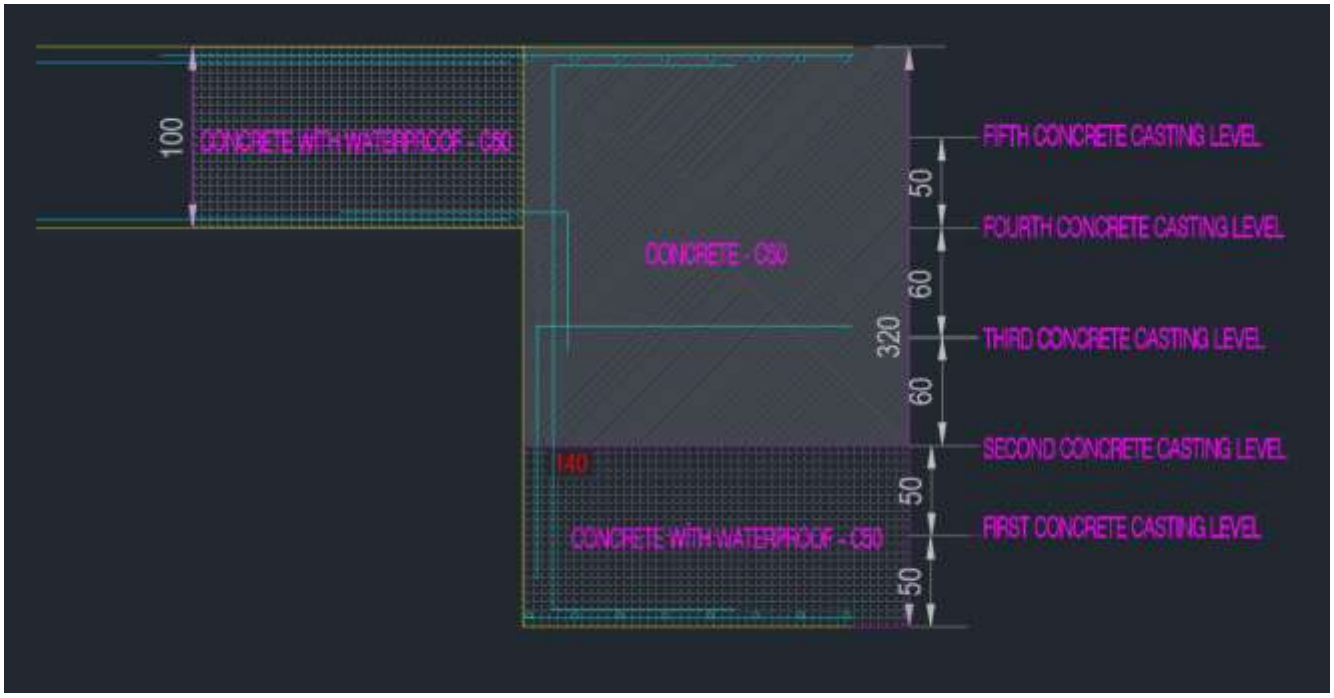
7.11) A number of cube samples will be taken in accordance with the standards.

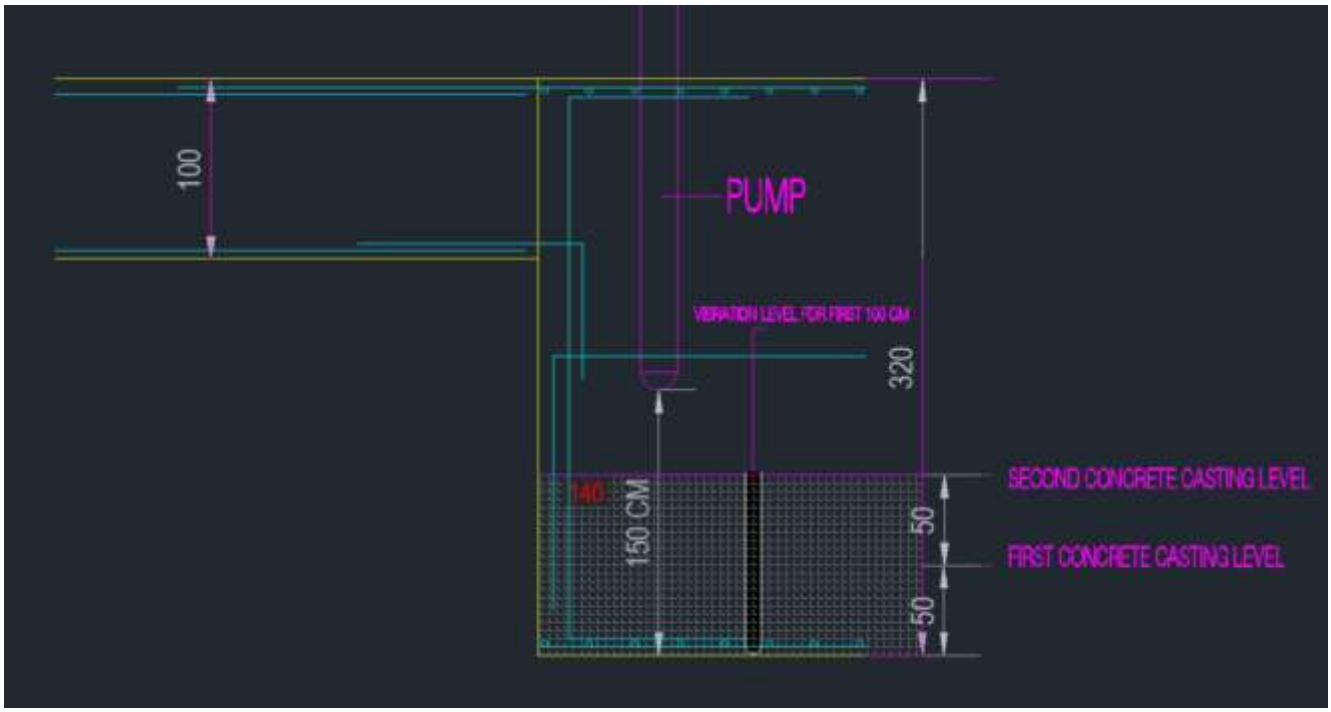
7.12) Concrete pouring elevation points will be marked

CONCRETE CASTING FIELD PLAN OF PUMPS



CONCRETE CASTING STAGE (layers)





8.) Manpower for concreting

Manpower	Day Shift	Night Shift
Civil Site Engineer	3	2
Surveyor	2	3
Foreman	2	2
Supervisor	4	3
Steel Fixer	2	2
Concrete casting team	12	12
Electrical technicians	1	1
Plumber	1	1
HSE Officer	1	1

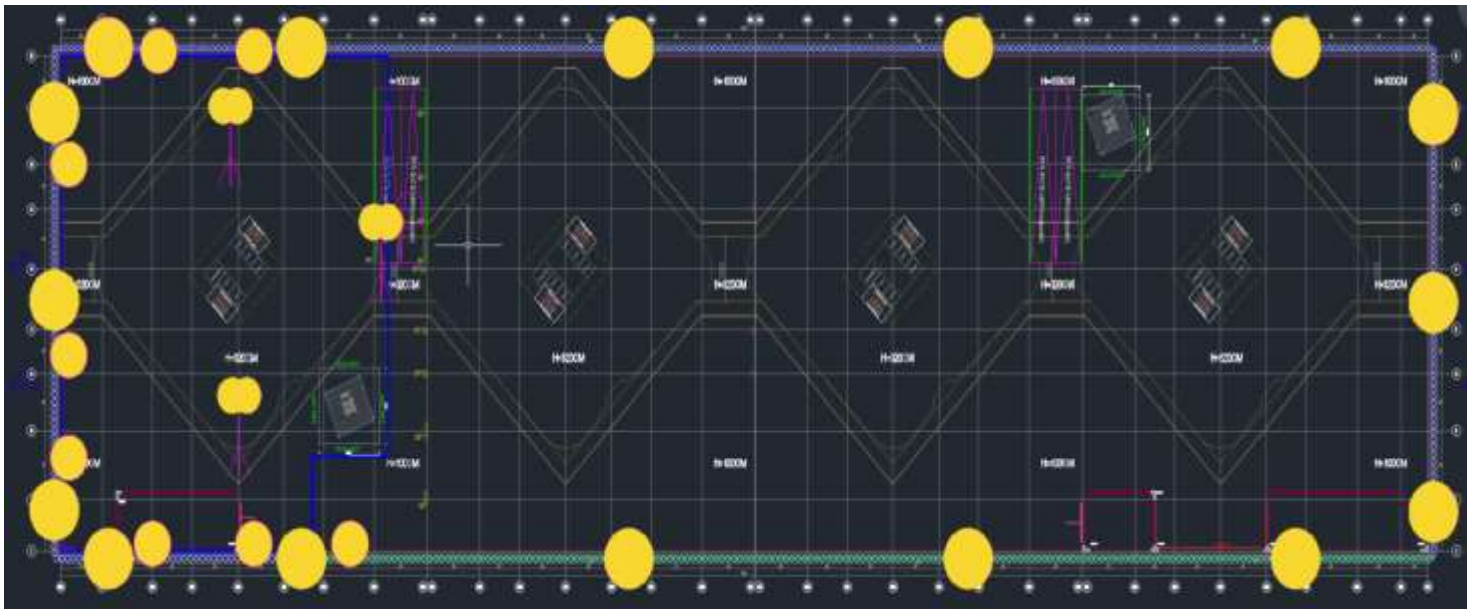
9.) Equipment & Tools for concreting

Equipment & Tools	No.
Total station	1
Level instrument	1
Vibrators	5+2
Emergency electrical generator	1
Concrete – finishing trowel	5
Helicopter Concrete Finishing	7 + 2
Concrete mixer truck	45
Concrete pump truck	5 + 2 Spare pump

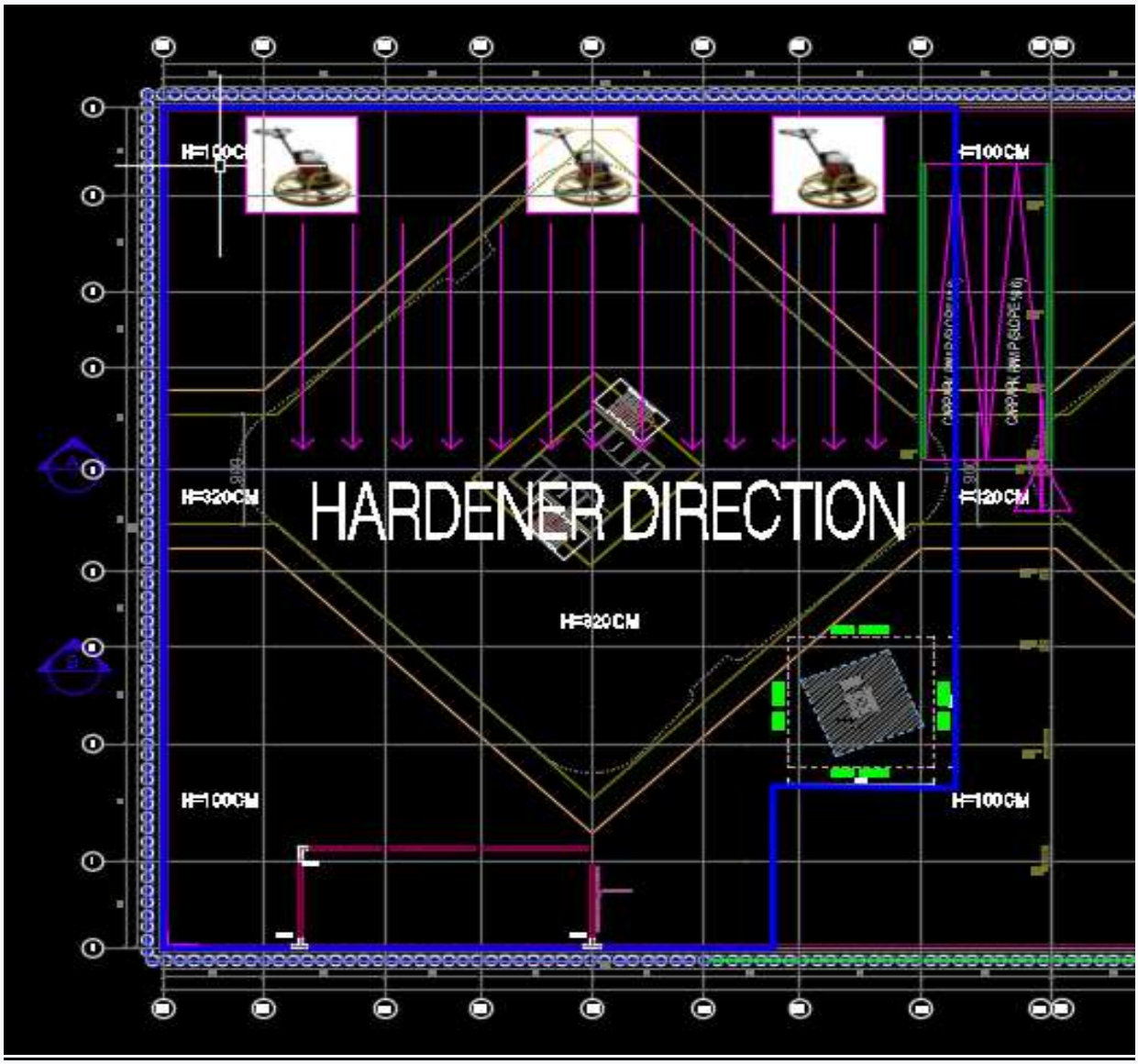
10. Tower lights used during concrete pouring for foundation

Lights used when casting foundation concrete during the night shift

SITE LIGHTING ORDER



11. HELICOPTER CONCRETE FINISHING



12.CURING

1.) Concrete hardener will start from the parking lot at School side.

2.) While filling the foundation surface, the concrete surface will be covered with a curing blanket cover.

3.) After the foundation concrete is poured, the entire concrete surface will be covered with an impermeable cover layer.

4.) The curing blanket cover layer will be removed 12 hours after the concrete casting is completed.

5.) The foundation surface will be watered twice a day, after that curing blanket will be laid on it again in the evenings.

6.) Foundation concrete curing will continue for 7 days.

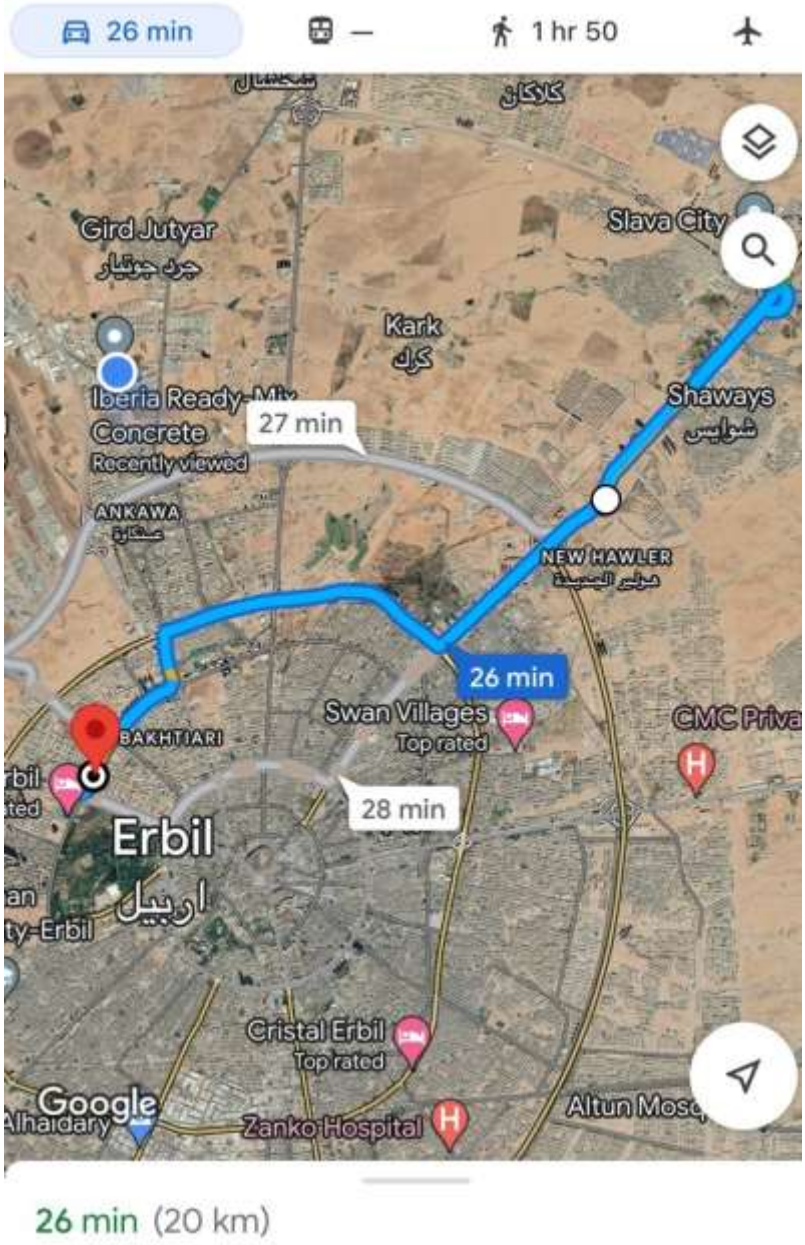
13. ABOUT CONCRETE BATCHING PLANTS

1.) Iberia Company Authorized Person: ORHAN ER – + 964 751 501 82 01

2.) Location of Concrete Batching Plants and Distance to Construction Site

2.1) Iberia – Gazna Concrete Plants

2.2) Iberia – Mass Concrete Plants



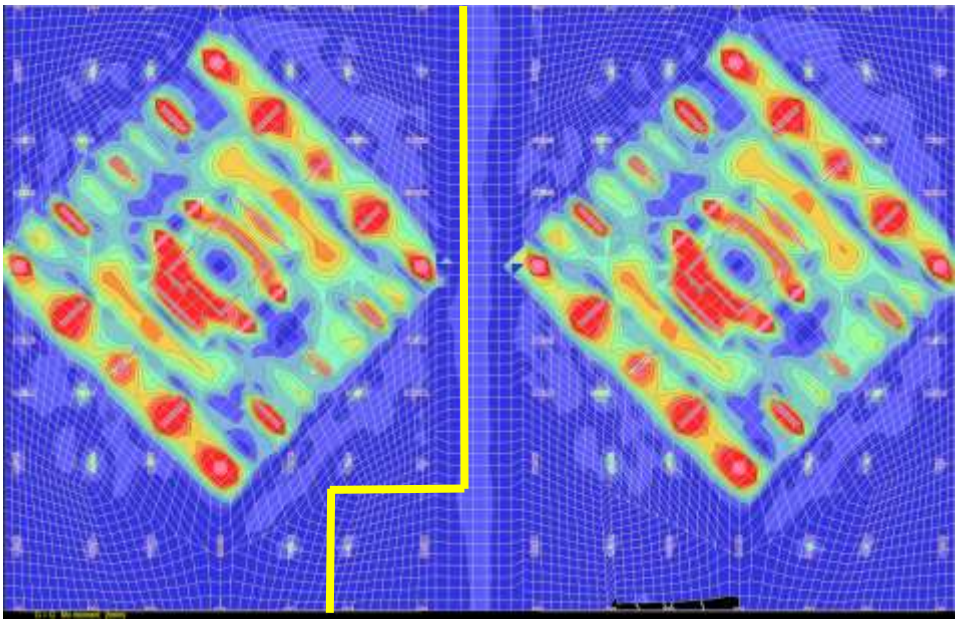
2.3) Iberia – Bahırka Concrete Plants

14.Health, Safety, Environment (HSE)

1. The entire work will be carried out as per the guidelines established in theApproved Project Specific HSE Plan.
2. Toolbox Meetings will be conducted before starting the works.
3. All personnel will be provided with suitable Personal Protective Equipment.
4. Proper and safe access will be provided for workers to reach the work spot in addition, carry out their work safely.
5. Necessary lighting will be provided.
6. Use all required personnel protective equipment.
7. Appropriate cleaning will be provided at regular intervals.
8. It will be ensured that operators take breaks at regular intervals.
9. Warning tapes of red/white strips shall be used to cordon off the area of the operation toprevent the entry of unauthorized persons and vehicles, as necessary.

Mx Moment Diagram

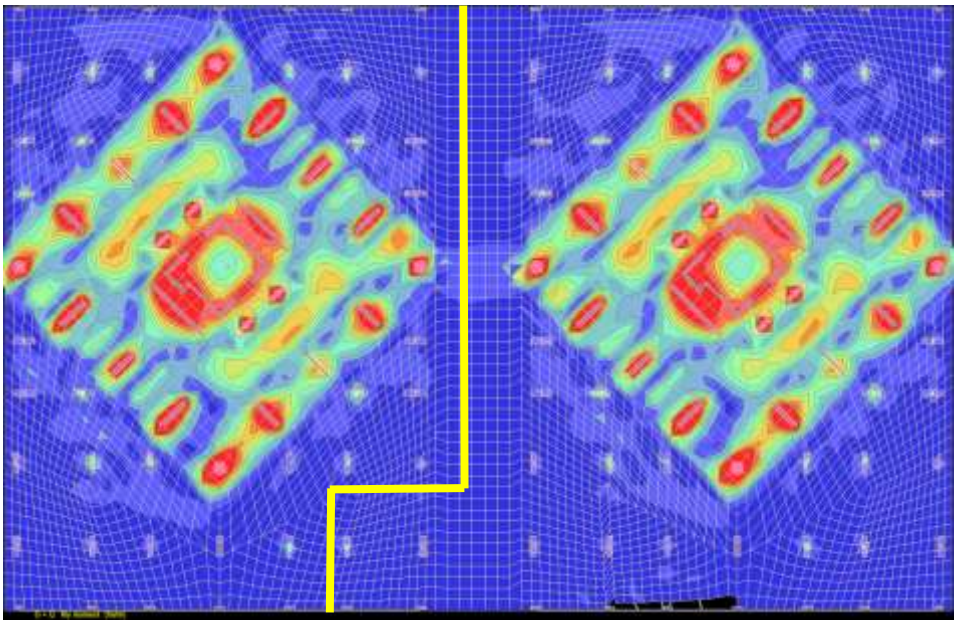
C.J.



C.J.

My Moment Diagram

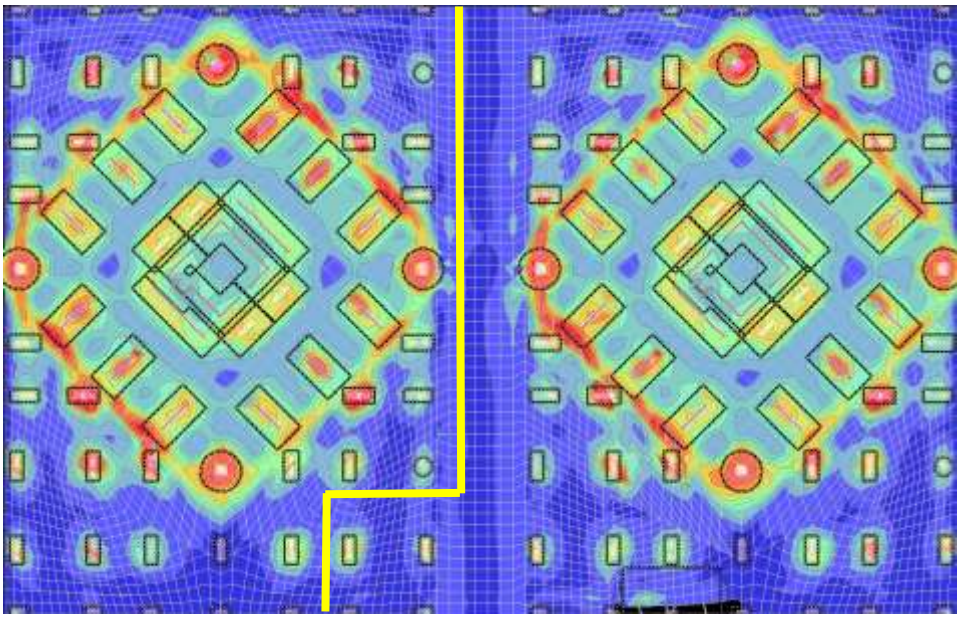
C.J.



C.J.

SmaxV Shear Diagram

C.J.



C.J.

According to ACI 318-19 / 26.5.6.2.b “except for prestressed concrete, construction joints in floor and roof systems shall be located **within the middle third of spans** of slabs, beams, and girders unless otherwise approved by the licensed design professional.”

The construction joint placement were arranged **between to towers that away from the towers** moment and shear effects. The maximum Mx and My moment values are **650 kNm/m** and Mx and My moment values are **40 kNm/m** at the place of the construction joint line.

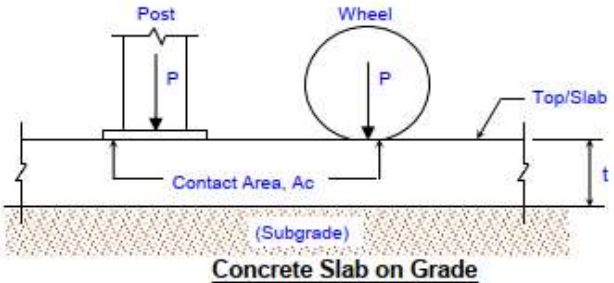
For the foundations of **100cm** the dowel bars selected as **2Ø25/25 L=200**,

For the foundations of **320cm** the dowel bars selected as **3Ø32/25 L=300,**

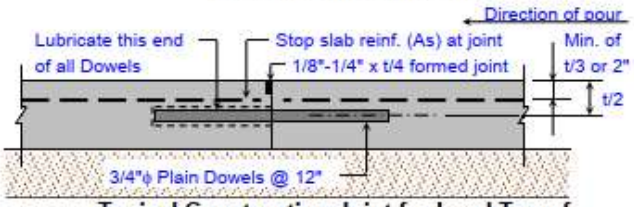
Cause of using the **carpark function** of the 4.Basement, the dowels are checked **according to vehicle loads** on the foundation blocks as seen at the spreadsheet below .

Input Data:

Slab Thickness, t =	40,000	in.
Concrete Strength, f 'c =	4000	psi
Conc. Unit Weight, wc =	150	pcf
Reinforcing Yield, fy =	60000	psi
Subgrade Modulus, k =	100	pci
Concentrated Load, P =	12500,00	lbs.
Contact Area, Ac =	114,00	in.^2
Factor of Safety, FS =	2,00	
Dowel Bar Dia., db =	1,250	in.
Dowel Bar Spacing, s =	10,000	in.
Const. Joint Width, z =	0,2500	in.
Joint Spacing, L =	150,000	ft.
Temperature Range, ΔT =	20,00	deg.
Increase for 2nd Wheel, i =	15	%



Concrete Slab on Grade



Typical Construction Joint for Load Transfer

Results:

Check Slab Flexural Stress: (assuming unreinforced slab with interior load condition)

Effective Load Radius, a =	6,024	in.	a = SQRT(Ac/π)
Modulus of Elasticity, Ec =	3834254	psi	Ec = 33*wc^1.5*SQRT(f 'c)
Modulus of Rupture, MR =	569,21	psi	MR = 9*SQRT(f 'c)
Cracking Moment, Mr =	151,79	ft-k/ft.	Mr = MR*(12*t^2/6)/12000 (per 1' = 12" width)
Poisson's Ratio, μ =	0,15		μ = 0.15 (assumed for concrete)
Radius of Stiffness, Lr =	120,265	in.	Lr = (Ec*t^3/(12*(1-μ^2)*k))^0.25
Equivalent Radius, b =	13,719	in.	b = SQRT(1.6*a^2+t^2)-0.675*t , for a < 1.724*t
1 Load: fb1(actual) =	11,95	psi	fb1(actual) = 3*P*(1+μ)/(2*π*t^2)*(LN(Lr/b)+0.6159) (Ref. 1)
2 Loads: fb2(actual) =	13,75	psi	fb2(actual) = fb1(actual)*(1+i/100)
Fb(allow) =	284,60	psi	Fb(allow) = MR/FS **Fb(allow) >= fb(actual), O.K.**

Check Slab Bearing Stress: (assuming working stress) (Ref. 4)

fp(actual) =	109,65	psi	fp(actual) = P/Ac
Fp(allow) =	2390,68	psi	Fp(allow) = 4.2*MR **Fp(allow) >= fp(actual), O.K.**

Check Slab Punching Shear Stress: (assuming working stress) (Ref. 4)

bo =	42,708	in.	bo = 4*SQRT(Ac) (assumed shear perimeter)
fv(actual) =	1,54	psi	fv(actual) = P/(t*(bo+4*t))
Fv(allow) =	153,69	psi	Fv(allow) = 0.27*MR **Fv(allow) >= fv(actual), O.K.**

Shrinkage and Temperature Reinf.: (assuming subgrade drag method) (Ref. 3)

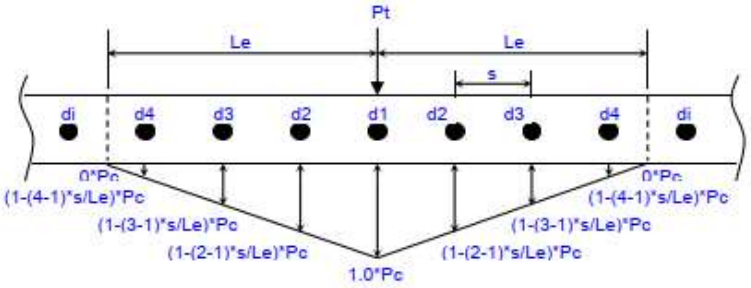
Friction Factor, F =	1,50		F = 1.5 (assumed friction factor between subgrade and slab)
Slab Weight, W =	500,00	psf	W = wc*(t/12)
Reinf. Allow. Stress, fs =	45000	psi	fs = 0.75*fy
As =	1,250	in.^2/ft.	As = F*L*W/(2*fs)

(continued)

Determine Estimated Crack Width: (assuming no use of stabilized or granular subbase)

Slab-base Frict. Adjust., C =	1,00		C = 1.0 (assumed value for no subbase)
Thermal Expansion, α =	0,0000055	in./in./deg	α = 5.5x10^(-6) (assumed thermal expansion coefficient)
Shrinkage Coefficient, ε =	0,00035	in./in.	ε = 3.5x10^(-4) (assumed coefficient of shrinkage)
Est. Crack Width, ΔL =	0,8280	in.	$\Delta L = C*L*12*(\alpha*\Delta T+\varepsilon)$

Check Bearing Stress on Dowels at Construction Joints with Load Transfer: (Ref. 2)



Assumed Load Transfer Distribution for Dowels at Construction Joint

L_e =	120,265	in.	$L_e = 1.0*L_r$ = applicable dist. each side of critical dowel
Effective Dowels, N_e =	11,52	bars	$N_e = 1.0+2*\Sigma(1-d(n-1)*s/L_e)$ (where: n = dowel #)
Joint Load, P_t =	6250,00	lbs.	$P_t = 0.50*P$ (assumed load transferred across joint)
Critical Dowel Load, P_c =	542,70	lbs.	$P_c = P_t/N_e$
Mod. of Dowel Suppt., k_c =	1500000	psi	k_c = 1.5x10^6 (assumed for concrete)
Mod. of Elasticity, E_b =	29000000	psi	E_b = 29x10^6 (assumed for steel dowels)
Inertia/Dowel Bar, I_b =	0,1198	in.^4	$I_b = \pi*d_b^4/64$
Relative Bar Stiffness, β =	0,606		$\beta = (k_c*d_b/(4*E_b*I_b))^(1/4)$
$f_{d(actual)}$ =	566,07	psi	$f_{d(actual)} = k_c*(P_c*(2+\beta*z)/(4*\beta^3*E_b*I_b))$
$F_{d(allow)}$ =	3666,67	psi	$F_{d(allow)} = (4-d_b)/3*f'_c$ **Fd(allow) >= fd(actual), O.K.**

References:

1. "Load Testing of Instumented Pavement Sections - Improved Techniques for Appling the Finite Element Method to Strain Predition in PCC Pavement Structures" - by University of Minnesota, Department of Civil Engineering (submitted to MN/DOT, March 24, 2002)
2. "Dowel Bar Opimization: Phases I and II - Final Report" - by Max L. Porter (Iowa State University, 2001)
3. "Design of Slabs on Grade" - ACI 360R-92 - by American Concrete Institute (from ACI Manual of Concrete Practice, 1999)
4. "Slab Thickness Design for Industrial Concrete Floors on Grade" (IS195.01D) - by Robert G. Packard (Portland Cement Association, 1976)

Comments: