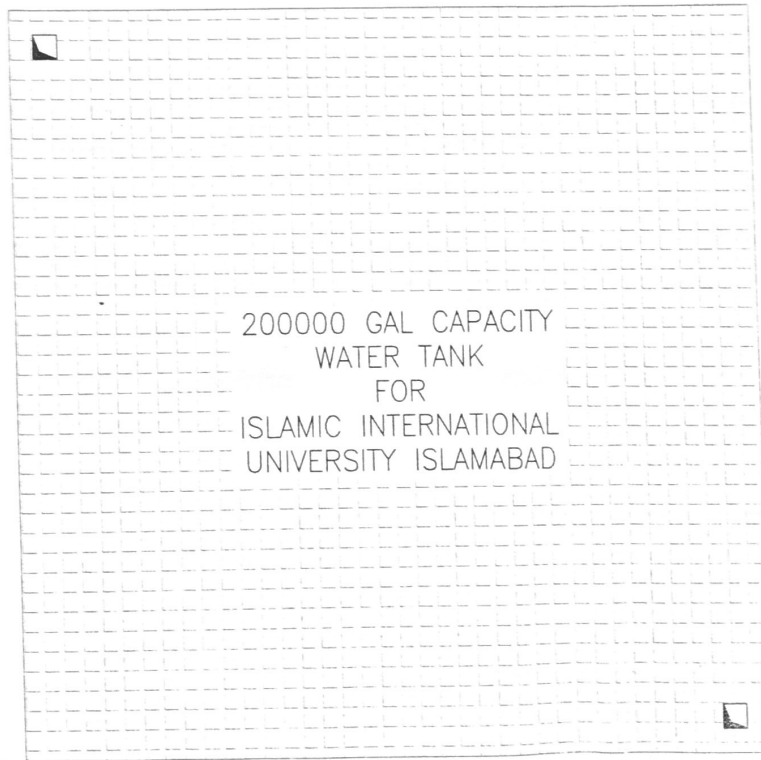


# STRUCTURAL DRAWINGS



**NOTE**

1. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS.  
2. PRIOR TO ERECTION OF ANY WORK, IT SHOULD BE  
DISCREPANCY SHOULD INFORM ENGINEER AND ARCHITECT  
FOR FURTHER INSTRUCTIONS.

3. MAX. FALL OF CONCRETE IS ALLOWED MAXIMUM 100mm.

**STEEL NOTE**

4. ROUNDED END BEAMS, SLAB (GRADE 40)  
5. STANDARD TIE IN TANK (GRADE 40)

**CONCRETE NOTE**

6. ALL RCC COLUMNS CONCRETE (GRADE 40)  
7. ALL OTHER RCC FOOTING, BEAMS, SLAB & WALLS (GRADE 3000 PSI)

ENGINEER

PARAMOUNT  
ENGINEERING  
CONSULTANTS



2nd Floor, Plot # 4, 4/7 West, Feroze Centre Plaza, Durrani Road,  
Islamabad, Islamabad.  
Email: paramount.consultants@gmail.com  
Cell: 99-333-4477888 / 99-333-5555555

REVISION	REASON	CHECKED BY	DATE

CLIENT

International Islamic University  
Islamabad

PROJECT

DESIGN OF UNDER  
GROUND WATER TANK

DRAWING STATUS

STRUCTURAL DRAWING

SHEET TITLE

WATER TANK  
CAPACITY 200000 GAL

Drawn By

Asif

Date

Sheet No

1

Checked By

ENGR. SAAD SHAIKH

Sheet No

1

Title

WATER TANK

2020/11/27 16:28

200000 GAL CAPACITY WATER TANK

[illegible]

**NOTE**

FOR ALL COMPARISONS WITH ANOTHER PERSON, SKILLS  
NEED TO BE IDENTICAL OR VERY CLOSE. IF "COMPETENT  
AND PROFICIENT" SHOULD BE USED, SKILLER AND ASSISTANT +  
FOR FURTHER INSTRUCTION.

IF ANY OF COMPETENCE IS ALLOWED, SKILLER MUST

**STANDARD NOTE**

1. POWER LIFT (BENCH PRESS)	GRADE - 10
2. STRENGTH TEST - 100 LB	GRADE - 10

**COMPARISON NOTE**

ALL ARE CURRENTLY CURRENT	GRADE - 10
ALL OTHERS ARE CURRENT (GRADE - 10)	GRADE - 10

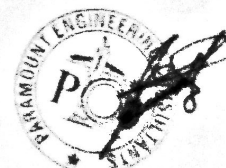
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International Journal of  
Management

# SECTION OF JAMES OSBORN: WATER TANK

11/10/1964

<p>NAME OF THE PARTY</p>	
<p>NAME OF THE PARTY</p>	<p>NAME OF THE PARTY</p>
<p>NAME OF THE PARTY</p>	<p>NAME OF THE PARTY</p>
<p>NAME OF THE PARTY</p>	<p>NAME OF THE PARTY</p>



## GENERAL NOTES:

### GENERAL

1. THESE NOTES ARE APPLICABLE TO ALL DRAWINGS UNLESS MENTIONED OTHERWISE.
2. ALL DIMENSIONS ARE IN FEET - INCH UNLESS NOTED OTHERWISE.
3. CO-ORDINATE STRUCTURAL DRAWINGS WITH ARCHITECTURAL DRAWINGS. IN CASE OF DISCREPANCY REFER TO ARCHITECT/ENGINEER.
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PREPARE SCHEDULING SCHEDULE FROM STRUCTURAL DRAWINGS.
5. IN CASE OF DISCREPANCY BETWEEN S.O.C. AND DRAWINGS, FOLLOW DRAWINGS.
6. FIELD LAYOUT DIMENSIONS MUST BE CHECKED BY THE ARCHITECT BEFORE CONSTRUCTION COMMENCES.
7. THIS AND ALL OTHER DRAWINGS SHOW GENERAL DETAILS, INTENT AND SCOPE FOR THE TENDER.
8. THIS AND ALL THE FOLLOWING DRAWINGS SHALL BE USED FOR CONSTRUCTION IF MARKED AS ISSUED FOR CONSTRUCTION.

### CODES

9. ALL WORK SHALL BE IN ACCORDANCE WITH RELEVANT ACI STANDARDS UNLESS ANY OTHER DETAIL IS MENTIONED.
10. ACI 318-02 SHALL BE FOLLOWED FOR STRUCTURAL DETAILING, PLACING REINFORCEMENT, PROVIDING COVER ETC.
11. ACI 350 SHALL BE FOLLOWED FOR WATER RETAINING STRUCTURES SUCH AS UNDERGROUND WATER TANK AND OVERHEAD WATER TANK ETC.

### MATERIAL (CONCRETE)

12. CONCRETE SHALL HAVE A MINIMUM SPECIFIED STRENGTH MEASURED ON 6 inch DIAMETER 12 inch HIGH STANDARD CYLINDER, AS FOLLOWS:  
SLABS AND BEAMS ... 1:2:4 psi (EQUVALEANTH CUBICAL STRENGTH REQUIRED = 3000 MIN.)  
WALLS ... 1:2:4 psi (EQUVALEANTH CUBICAL STRENGTH REQUIRED = 3000 MIN.)  
✓ COLUMNS ... 1:1.5:3 psi (CUBICAL STRENGTH = 4000 MIN.)  
✓ RETAINING WALLS ... 1:1.5:3 psi (EQUVALEANTH CUBICAL STRENGTH REQUIRED = 4000 MIN.)  
✓ FOUNDATION ... 1:2:4 psi (EQUVALEANTH CUBICAL STRENGTH REQUIRED = 3000 MIN.)

NOTE: RETAINING WALL AND TANKS CONCRETE SHALL BE INTEGRALLY MIXED WITH CRYSTALLINE WATERPROOFING AS APPROVED IN BY WEIGHT OF CEMENT

13. CONCRETE MIX TO BE DESIGNED ON THE BASIS OF ACI 311 OF EQUIVALENT TRIAL STRENGTH RESULTS TO BE SUBMITTED BY THE CONTRACTOR FOR REVIEW AND APPROVAL BEFORE CONCRETING.
  14. CONCRETE MIX FOR ALL MEMBERS SHALL BE DESIGNED PREFERABLY USING RIVER RUN SAND, ROUNDED OR CRUSHED GRAVEL AND PORTLAND CEMENT.
  - 12a. O.P.C. MUST BE USED FOR ALL RCC WORK
- (STEEL)
13. ALL REINFORCING STEEL SHALL BE DEFORMED BARS OF MINIMUM SPECIFIED YIELD STRENGTH OF 60 KSI AND TENSILE STRENGTH OF 90 KSI CONFORMING TO ASTM A615
- (WATER)
14. WATER USED SHALL BE OF DRINKING QUALITY AND FREE FROM SALT, OILY SUBSTANCES, ACIDS, ALKALIES OR ANY OTHER CONTAMINATION.
  15. ALL R.C.C. CONCRETE SHALL BE BATCHING PLANT MIXED.

### PLACEMENT (CONCRETE)

16. CLEAR CONCRETE COVER TO MAIN REINFORCEMENT SHALL BE AS FOLLOWS:

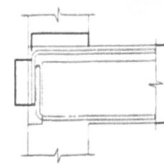
FOUNDATION TOP REINF.	2	inch
FOUNDATION BOTTOM & SIDE REINF.	3	inch
BEAMS AND COLUMNS	1 1/2	inch
SLABS	1	inch
WALLS (INSIDE / OUTSIDE)	2	inch
WALL TOP SLAB (BOT. FACE)	3	inch
WALL TOP SLAB (TOP FACE)	1	inch
CHNT BOTTOM SLAB (BOT. FACE)	1	inch
CHNT BOTTOM SLAB (TOP FACE)	1	inch
CHNT TOP SLAB (BOT. FACE)	1	inch
CHNT TOP SLAB (TOP FACE)	1	inch
RETAINING WALLS (INSIDE)	2	inch
RETAINING WALLS (OUTSIDE)	2	inch

### (STEEL)

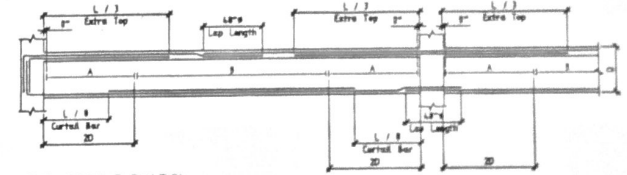
17. ALL HOOKS, BENTS, LAPS IN MAIN REINFORCEMENTS AND TIES SHALL HAVE STANDARD DIMENSIONS AS PER ACI-318-02 IN GENERAL AND SPECIALLY CONFIRMING SEC. 21.6 UNLESS MENTIONED OTHERWISE.
18. LAP LOCATIONS SHALL BE AS FOLLOWS UNLESS MENTIONED OTHERWISE:  
BEAM AND SLAB TOP BAR ... AT SUPPORT  
BEAM AND SLAB BOT. BAR ... BETWEEN SUPPORT  
COLUMNS MAIN BAR ... BOTTOM OF EACH FLOOR  
LAP LENGTH IN MAIN REINFORCEMENT SHALL BE AS FOLLOWS UNLESS MENTIONED OTHERWISE:  
COLUMNS MAIN BARS ... 60 DIA  
BEAM MAIN BARS ... 48 DIA
- (CONDUIT)
20. CONDUITS MADE OF ALUMINIUM SHALL NOT BE EMBEDDED IN R.C.C. THE OUTSIDE DIAMETER OF EMBEDDED CONDUIT OF OTHER MATERIALS (P.V.C. OR STEEL ETC) SHALL BE LESS THAN OR EQUAL TO THE OVERALL THICKNESS OF SLAB, WALL OR BEAM. THE MINIMUM SPACING BETWEEN CONDUIT SHALL BE AT LEAST GREATER THAN OF EQUAL TO THEIR DIAMETER. IN SLABS CONDUIT SHALL BE PLACED OVER BOTTOM REINFORCEMENT AND IN BEAMS AND WALLS, CONDUIT SHALL EITHER BE ENCLOSED BY THE STIRRUPS OR PLACED BEHIND ONE LAYER OF REINFORCEMENT.

### POURING / AFTER POURING

21. ALL R.C.C. WORK SHALL BE INTERNALLY VIBRATED THROUGH ELECTRICAL MECHANICAL VIBRATOR.
22. ALL R.C.C. WORK SHALL BE CONTINUOUSLY MOIST CURED FOR 14 DAYS.
23. UNLESS MENTIONED OR AUTHORIZED OTHERWISE FORM WORK FROM R.C.C. WORK SHALL BE REMOVED ACCORDING TO THE MINIMUM TIME INDICATED BELOW:  
BEAMS AND COLUMNS (SIDES) ... 48 HOURS OF POURING  
SLABS ... 14 DAYS OF POURING  
BEAMS (BOTTOM) ... 21 DAYS OF POURING



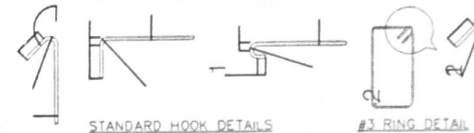
BAR BENDING DETAIL AT  
BEAM END



TYP. BEAM ELEVATION

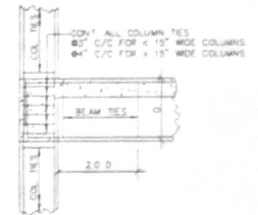
NOTE:

- SEE BEAM SCHEDULE FOR INFO NOT SHOWN.
- BEAM STIRRUPS SHALL BE AS PER ABOVE DETAIL UNLESS NOTED OTHERWISE ON BEAM SCHEDULE.

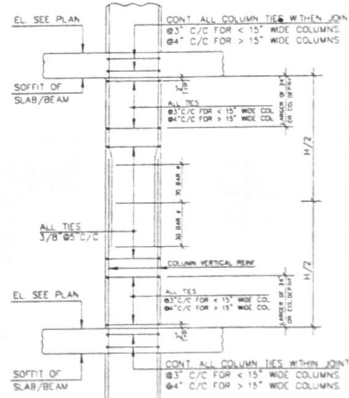


STANDARD HOOK DETAILS

#3 RING DETAIL



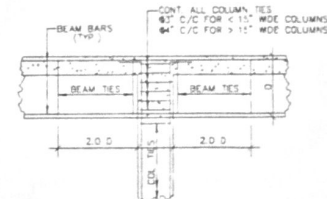
TYP. BEAM/COL. CONNECTION  
INTERMEDIATE CONNECTION AT EDGE



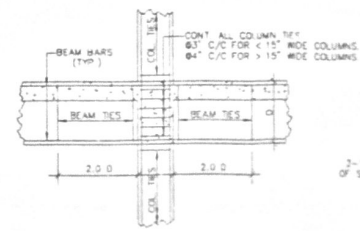
TYP. COLUMN ELEVATION

NOTE:

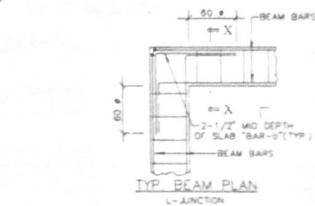
- SEE COLUMN SCHEDULE FOR INFO NOT SHOWN.
- COLUMN TIES SHALL BE AS PER ABOVE DETAIL UNLESS NOTED OTHERWISE ON COLUMN SCHEDULE.



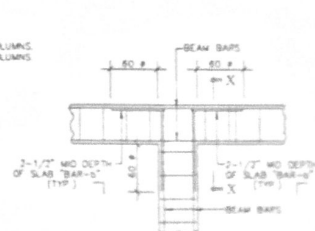
TYP. BEAM/COL. CONNECTION  
INTERMEDIATE CONNECTION AT ROOF LEVEL



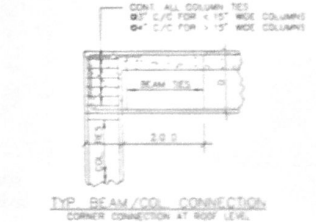
TYP. BEAM/COL. CONNECTION  
INTERMEDIATE CONNECTION



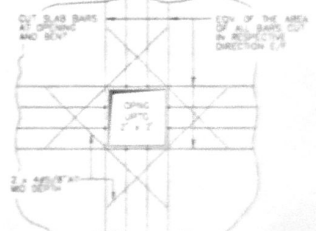
TYP. BEAM PLAN  
L-JUNCTION



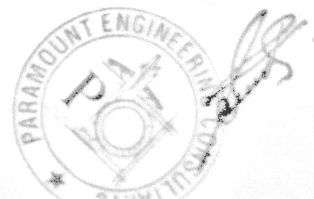
TYP. BEAM PLAN  
T-JUNCTION

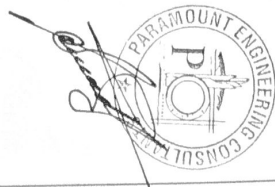


TYP. BEAM/COL. CONNECTION  
CORNER CONNECTION AT ROOF LEVEL



TYP. OPENING IN SLAB







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