

GENERAL NOTES

- The structure is designed in accordance with the Uniform Building Code, 1989 edition.
- The subsurface information and foundation design are based on the report prepared by Southwestern Laboratories, dated May 30, 1990.
- DESIGN LIVE LOADS:**
 - Roof 20 psf
 - Office Areas 50 psf + 20 psf partitions, or as indicated
 - Entry Canopy Disc 100 psf
 - Stairways 100 psf
 - Public Corridors 100 psf
 - Convention Center Assembly Area 100 psf
 - Theatre Floor HS - 20 - 44 truck load or 8' of earth
 - Mechanical Room As required, 125 psf minimum

See Sheet 3.2.7 for theatre roof design loads.

Concrete proportioning, mixing, transporting, placing, and curing shall be per ACI 301.

U.N.O. concrete surfaces shall conform to tolerance limits per ACI 117.

- U.N.O. Concrete in the following areas shall have sand and gravel or crushed stone aggregates per ASTM C-33, Type 1 Portland Cement, and the following designated compressive strength in 28 days:
 - Footings 4000 psi
 - Piers 4000 psi
 - Pier Caps 4000 psi
 - Columns at Disc 5000 psi
 - Basement Walls 4000 psi
 - Slab-on-Grade 4000 psi
 - Structural Slabs 4000 psi
 - Site Cast Panels over Basement Pits, Tunnel Roofs 5000 psi
 - Entry Canopy Disc 6000 psi

Concrete protection for reinforcement shall be as noted below, or per ACI 318 for conditions not noted:

- Concrete placed against soil 3 inches
- Footings or piers 3 inches
- Basement walls 2 inches exterior, 3/4 inches interior
- Grade beams (formed) 3 inch bottom, 2 inch side, 1-1/2 inch top
- Beams, columns 1-1/2 inches
- Slabs 3/4 inches
- Slabs on grade 2 inches top

Joints not shown shall be made and located to least impair strength and appearance of structure, as approved. No horizontal joints shall be permitted in concrete except where they normally occur or where noted. Vertical joints shall occur near centers of spans at locations approved.

Joints between piers and pier caps, footings and walls or columns or walls and columns and beams, or floors they support shall be prepared by roughening the surface of the concrete in an approved manner so that the aggregate shall be exposed uniformly leaving no laitance, loosened particles or damaged concrete.

Conflicts between scheduled and plan or section dimensions for cast-in-place concrete members shall be coordinated with the Structural Engineer.

For slabs on grade, the maximum spacing for contraction and/or isolation joints shall be 15 feet. U.N.O. isolation joints shall be provided at columns.

U.N.O., or as indicated on architectural drawings, provide chamfers at exposed edges of concrete.

Voids under slabs or grade beams shall be provided by an approved method.

All concrete reinforcement shall be of domestic manufacture and shall conform to ASTM A-615, Grade 60, U.N.O.

All welded wire fabric shall conform to ASTM C-185.

Detailing of concrete reinforcement and accessories per ACI 315.

When permitted, welding of reinforcement shall be per AWS D1.4.

Reinforcing bars may be spliced only as shown on the drawings except that reinforcing designated as "continuous" may be lap spliced 36 inch diameters. Lap splices of continuous reinforcement in beams shall be made over the support for bottom bars and at mid-span for top bars.

All sleeves, inserts, anchors, and imbedded items required for adjoining work shall be verified by Contractor and shall be in place prior to concreting.

Post-tensioned structural concrete shall be designed and constructed per ACI 318.

All structural steel rolled shapes and plates shall conform to the following:

- ASTM A-36, U.N.O.
- ASTM A-572, Grade 50, where noted

All structural steel pipe shall conform to ASTM A-501 or A-53.

All structural steel tubing shall conform to ASTM A-500, Grade B.

All connection bolts for structural steel members shall conform to ASTM A-325, U.N.O.

Shear connectors shall be 3/4 inch by 5-3/16 inch headed studs per ASTM A-108.

Welding of structural steel shall be per AWS D1.1.

Fabrication of structural steel shall be per AISC Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings.

U.N.O. beam to beam and beam to column shear connections shall be designed for the shear capacity of the connected beam, or the reaction indicated on the plan, whichever is greater. The shear capacity shall be defined as equal to 1/2 of W_c/C, given in Part 2, Table "Uniform Load Constants for Beams Laterally Supported" of the AISC manual. For all composite beams, the above shear capacity must be multiplied by the following factors:

W8 and W10	Full Capacity of Web
W12 and W14	2.3
W16 and W18	1.9
W21 and W24	1.75
W27 and W30	1.55
W33 and W36	1.45

Splicing of structural steel members where not detailed is prohibited without prior approval.

All steel beams shall be erected with camber as indicated on drawings, and all beams shall be erected with natural camber up.

No shoring of steel beams is permitted unless indicated on the plans, or with prior approval.

Steel floor deck used in composite construction shall be Vulcraft or equal, 2 inch, 18 gauge galvanized. Steel deck used in restrooms, kitchens, janitors closets, mechanical rooms, and other areas where water may be present shall be galvanized. Sheet steel shall be per ASTM A-446.

Erect metal roof deck per manufacturer's recommendations.

Steel roof deck shall be Vulcraft or equal, 1-1/2 inch, 22 gauge, type intermediate rib, galvanized. Sheet steel shall be per ASTM A-446.

Eject metal roof deck per manufacturer's recommendations. Deck and connections shall have design diaphragm capacity of 300 plf.

All open web steel joists shall conform to Steel Joist Institute. Bridging shall be anchored at ends.

Steel joists to receive shop primer, red oxide.

All glulam beams and decking to be 24FV5 SP/SP visually-graded southern pine, per AITC 117. Minimum modulus of elasticity - 1,600,000 psi.

POST-TENSIONED CONCRETE

- Post-tensioning strands shall conform to ASTM A-416, Grade 270.
- Methods of construction of foundation and other portions of project shall comply with report in Note (2).
- Post-tensioning forces shown on plans are required effective forces. Number of tendons shall be determined by the post-tensioning contractor, based on the following criteria and shall be subject to the Architect's approval.
 - Tendons shall be 1/2 inch diameter, 7-wire strands plastic sheathed, grouted and rust protected. Tendons shall have a guaranteed minimum Ultimate Strength of 270,000 psi.
 - Tendons may be temporarily overstressed to a maximum of 0.8 f_u ULT and locked off at a maximum stress of 0.7 f_u ULT.
 - The post-tensioning contractor shall submit calculations, including Friction Loss calculations, tendon mill certificates and anchorage test data for the Architect's review.
 - Provide a minimum of 125 psi axial stress in all P/T slabs U.N.O.

The stressing of slab tendons shall be permitted only after the concrete has attained a compressive strength of 5000 psi. Stress uniform tendons prior to stressing banded tendons.

Dimensions locating tendon profiles on the plans apply to center of gravity of the tendons.

All legs of chairs used for support of tendons shall be securely anchored to formwork so as not to displace them during concreting operation.

Powder actuated inserts shall not penetrate more than 3/4 inch into slab unless special precautions such as a "line transfer" method is used on forms to indicate locations of all tendons.

Coring of P/T slabs shall not be permitted without prior approval of the engineer. All openings and sleeves shall be shown on shop drawings and cast in place.

MASONRY WALLS

- All CMU shall be ASTM Grade "N-1", normal weight units. f_m = 2500 psi.
- Mortar used shall be type "S" (f_m = 1800) except where specified by architect.
- Grout shall have a minimum compressive strength of 2500 psi.
- Lap all vertical bars a minimum of 60 bar diameter.
- Provide at least standard joint reinforcing @ 16" o.c. horizontally U.N.O.

SECTION 03366

POST TENSIONED STRUCTURAL CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- Cast-in-place post tensioned concrete framing members and slabs.
- Tensioned tendons and ducts for unbonded system.

1.02 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

- Section 03310 - Concrete Work: Placement of anchorage and connection devices.

1.03 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

- Section 05500 - Miscellaneous Fabrications: Anchorage devices for Concrete.

1.04 RELATED SECTIONS

- Section 03310 - Concrete Work.

1.05 REFERENCES

- ACI 301 - Specifications for Structural Concrete for Buildings.
- ACI 318 - Building Code Requirements for Reinforced Concrete.
- ANSI/ACI 304 - Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete.
- ANSI/ASTM A421 - Uncoated Stress-Relieved Steel Wire for Prestressed Concrete.
- ANSI/ASTM A722 - Uncoated High-Strength Steel Bar for Prestressing Concrete.
- ASTM A416 - Uncoated Seven-Wire Stress-Relieved Strand for Prestressed Concrete.
- CRSI (Concrete Reinforcing Steel Institute) - Manual of Standard Practice.
- CRSI 63 - Recommended Practices for Placing Reinforcing Bars.
- CRSI 65 - Recommended Practices for Placing Bar Supports, Specifications and Nomenclature.

1.06 SUBMITTALS

- Submit shop drawings under provisions of Section 01300.
- Submit shop drawings indicating layout, tendon sizes, grouping, spacing, placing sequence, supports and locations, tendon supports, accessories, clearances required for jack, and pressure plate stresses.
- Indicate formwork methods, materials, arrangement of joints, ties, shores, location of bracing and temporary supports, and schedule of erection and stripping.
- Describe tensioning sequence, type of jack, pressure monitoring device, anchorage set, tendon elongation and tendon cut-off procedures.
- Submit design data under provisions of Section 01300.
- Submit data indicating calculations for loadings and stresses of designed framing, roof and floor slabs.
- Submit manufacturer's certificate under provisions of Section 01400 that tendon strength characteristics meet or exceed specified requirements.

1.07 PROJECT RECORD DOCUMENTS

- Submit project record documents under provisions of Section 01700.
- Accurately record exact locations of tendons, stressing sequence, and tendon loads established, elongation of tendon.

1.08 QUALIFICATIONS

- Installer: Company specializing in constructing the work of this Section with minimum three years documented experience.
- Design post tensioned members under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State of Texas.

1.09 REGULATORY REQUIREMENTS

- Conform to applicable building code for design load and construction requirements applicable to work of this Section.

1.10 PRE-INSTALLATION CONFERENCE

- Convene a conference one week prior to commencing work of this Section, under provisions of Section 01200.
- Discuss tendon locations, sleeve locations, and cautions regarding cutting or core drilling.

1.11 ENVIRONMENTAL REQUIREMENTS

- Minimum Ambient Temperature for Grouting and Grout Curing: 40 degrees F.
- Maximum Grout Temperature While Curing Under Pressure: 90 degrees F.

1.12 SEQUENCING AND SCHEDULING

- Sequence work under the provisions of Section 01400.
- Schedule work under the provisions of Section 01300.
- Coordinate work under provisions of Section 01400.
- Coordinate the work of framing components not post tensioned but associated with the work of this Section.

PART 2 PRODUCTS

2.01 FORMWORK

- Formwork: In accordance with Section 03310.

2.02 REINFORCEMENT

- Tendons: ASTM A416, Grade 270 stranded steel cable; ultimate tensile stress of 270 ksi; core wire and six outer wire strands coated with grease and plastic sheathing.
- Tendon Anchor: Type compatible with tendon.
- Reinforcing Steel: In accordance with Section 03310.

2.03 CONCRETE MATERIALS

- Concrete Materials: In accordance with Section 03310.

2.04 ACCESSORIES

- Sheathing: Flexible plastic.
- Grease: Noncorrosive, high viscosity.
- Tie Wire: Minimum 16 gauge annealed type.
- Chairs, Bolsters, Bar Supports, Spacers: Size and shape for strength and support of reinforcement during tendon location, installation, and placement of concrete.
- Markers: Colored plastic.

2.05 MIXES

- Proportioning: In accordance with Section 03310.

2.06 TESTS

- Provide testing and analysis of stressing tendons under provisions of Section 01400.
- Test samples in accordance with applicable ASTM standard.

PART 3 EXECUTION

3.01 EXAMINATION

- Verify that site conditions are ready to receive work and field measurements are as indicated on shop drawings.
- Beginning of installation means installer accepts existing conditions.

3.02 FORMWORK ERECTION

- Erect and support formwork in accordance with Section 03310.
- Provide supports and working space for tensioning jacks.
- Provide permanent tendon location markers.

3.03 TENDON PLACEMENT

- Locate and position tendons. Protect from displacement.
- Location Tolerance from Indicated Position: 1/4 inch.
- Grease entire length of tendon.
- Secure jack pressure plates in position perpendicular to line of stressing force.

3.04 PLACING CONCRETE

- Place concrete in accordance with Section 03310.
- Verify tendons, anchors, seats, plates, and other items to be cast into concrete are placed and secure.

3.05 CONCRETE TOLERANCES

- Tolerances: In accordance with Section 03310.
- Provide Class A tolerances for floor, roof slabs. Pitch to drain 1/4 inch per foot nominal.

3.06 TENSIONING

- Begin tensioning operations after concrete has reached 3000 psi compressive strength and ambient temperature is above 40 degrees F.
- Confirm concrete strength with test cylinders prior to tensioning.
- Measure prestressing force. Maintain jacking and tensioning records as work progresses.
- Jack against tendon pressure plate, not against concrete.
- Cut off excess tendon inside face of concrete. Apply corrosion resistive paint to cut end.

3.07 FIELD QUALITY CONTROL

- Field inspection and testing of concrete will be under provisions of Section 03310.

3.08 REMOVAL OF FORMS

- Removal of Forms: In accordance with Section 03310.
- Do not remove forms, shores, and bracing until concrete has been tensioned to strength sufficient to carry its own weight, construction loads, and design loads.

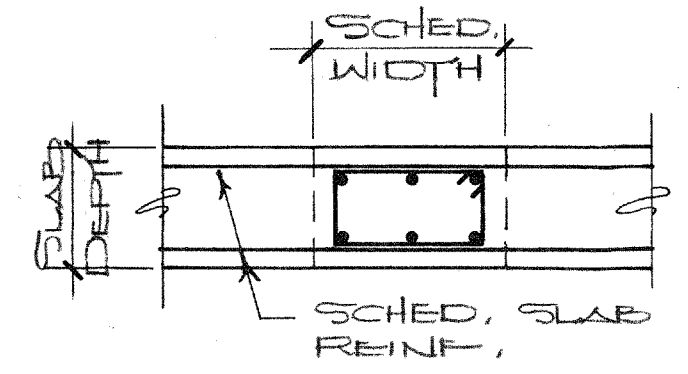
3.09 REPAIR OF SURFACE DEFECTS

- Repair of Surface Defects: In accordance with Section 03310.
- Request examination of concrete surfaces upon removal of forms.
- Modify or replace concrete not conforming to required lines, detail, and elevations.
- Repair or replace concrete not properly placed resulting in honeycombing and other defects.

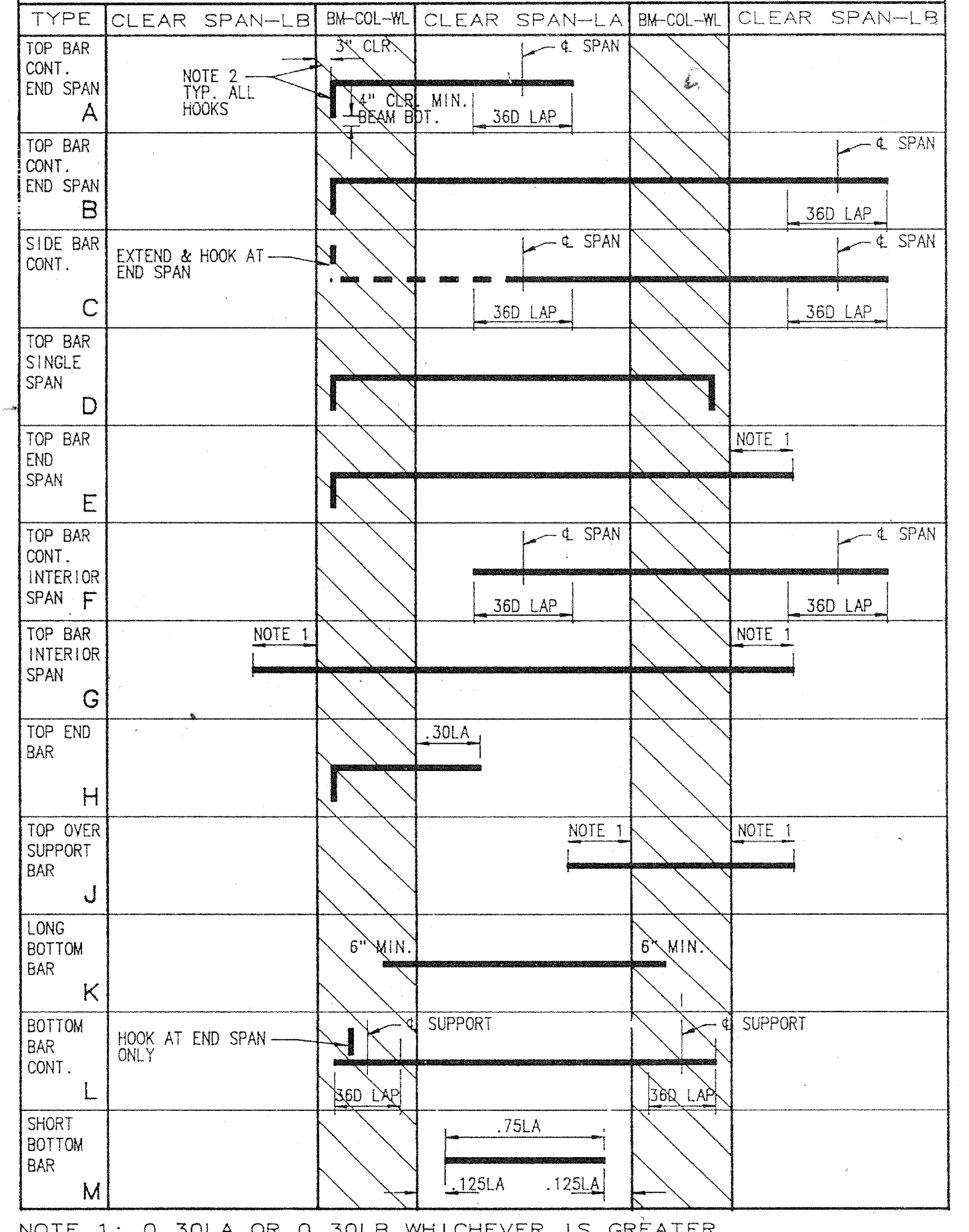
END OF SECTION

SLAB SCHEDULE						
MARK	SLAB DEPTH	REINFORCING			REMARKS	
		SIZE	SPAC.	TYPE		
S1A	VARIES	4	12	H	TEMP.	
		5	12	J		
		5	12	L		
		4	12	CONT.		
S2A	VARIES	4	12	H	TEMP.	
		5	12	L		
		4	12	CONT.		
S3A	VARIES	4	12	H	TEMP.	EACH END
		5	12	L		
		4	12	CONT.		
S4	VARIES	4	12	H	TEMP.	
		4	12	J		
		5	12	L		
		4	12	CONT.		
S5	VARIES	5	12	E	TEMP.	
		5	12	L		
		4	12	CONT.		
		4	12	CONT.		
S6A	VARIES	4	12	D	TEMP.	
		6	12	L		
		4	12	CONT.		
S7A	VARIES	4	12	J	TEMP.	
		6	12	L		
		4	12	E		
		4	12	CONT.		
S8	VARIES	6	10	E	TEMP.	Hk. @ FREE EDGE
		5	12	L		
		4	12	CONT.		
		4	12	CONT.		
S9	VARIES	4	12	E	TEMP.	SUB. TO CONTRACTOR WHERE APPL.
		6	10	L		
		4	12	CONT.		

SLAB-BEAM SCHEDULE									
MARK	SIZE W & D	REINFORCING			STIRRUPS			REMARKS	
		NO.	SIZE	TYPE	SIZE	TYPE	SPACING EA. END		
SB-1	12" SLAB DEPTH	3	5	A	SB-1, SB-3 ONLY	3	S2	S2	
		3	5	F					
		3	5	L					
SB-4	12" SLAB DEPTH	3	5	D	SB-4 ONLY	3	S2	S2	NOT REQ'D.
		3	5	E					
		3	5	L					
SB-6	12" SLAB DEPTH	3	5	D	SB-6 ONLY	3	S2	S2	12 @ 3
		3	5	L					
		3	5	L					
SB-7	12" SLAB DEPTH	4	6	D	SB-7 ONLY	3	S2	S2	12 @ 3
		4	6	L					
SB-8	12" SLAB DEPTH	3	6	D	SB-8 ONLY	3	S2	S2	6
		3	6	L					
SB-9	12" SLAB DEPTH	3	5	G	SB-9 ONLY	3	S2	S2	NOT REQ'D.
		3	5	L					



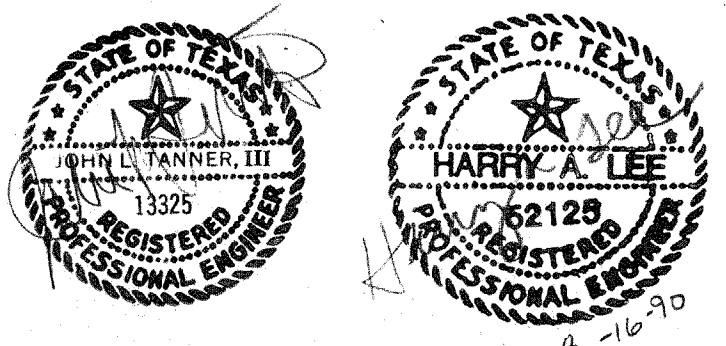
BAR BENDING DETAILS



NOTE 1: 0.30LA OR 0.30LB WHICHEVER IS GREATER.
NOTE 2: STANDARD ACI 90 HOOK OR 180 HOOK AS REQUIRED.

BEAM/JOIST SCHEDULE NOTES:

- STIRRUP TYPES: (Diagrams S1, S2, S3, S4)
- STIRRUPS SHALL BE SPACED FROM FACE OF SUPPORT WITH FIRST STIRRUP AT 1/2 SCHEDULED SPACING.
- ALL BARS ARE TO BE HOOKED AT DISCONTINUOUS AND CANTILEVERED ENDS.
- PROVIDE TWO #4 BARS CONTINUOUS IN TOP OF BEAM WHERE THERE ARE NO SCHEDULED BARS TO SUPPORT STIRRUPS.



ACC ACT

OWNER	LANDSCAPE	STRUCTURAL	HISTORIAN	Issue	Category	Subcategory	Sheet
Town of Addison	The Kellams Group	Elisox Tanner	Alan Mason	ISSUE FOR BID 8-17-90			
ARCHITECT	THEATRE CONSULTANT	M.E.P.	LIGHTING				
Cunningham Architects	Theatre Projects	MEP Systems	Pamela Hull Wilson				
2700 Fairmount	203-431-3943	214-823-6542	214-754-4741				
Dallas, Texas 75201							
214-955-5272							
INTERIORS	CIVIL	GRAPHICS					
CRSS	Kurtz & Associates	Notstetad Design					
713-552-2000	214-890-3322						