

ABBREVIATIONS

AB	ANCHOR BOLT	MAX	MAXIMUM
ACI	AMERICAN CONCRETE INSTITUTE	MB	MACHINE BOLT
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	MECH	MECHANICAL
APPROX	APPROXIMATE	MEZZ	MEZZANINE
ARCH	ARCHITECTURAL	MFR	MANUFACTURER
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	MIN	MINIMUM
AWG	AMERICAN WELDING SOCIETY	MISC	MISCELLANEOUS
		MPH	MILES PER HOUR
B/B	BACK TO BACK	NIC	NOT IN CONTRACT
B/P	BASE PLATE	NS	NEAR SIDE
BM	BEAM	NTS	NOT TO SCALE
BOF	BOTTOM OF FOOTING		
BOS	BOTTOM OF STEEL		
BRCC	BRACING	OC	ON CENTER
BTE	BEAM TUBE ENCLOSURE	OD	OUTSIDE DIAMETER
		OH	OPPOSITE HAND
		OPNG	OPENING
		OPP	OPPOSITE
		OTO	OUT TO OUT
C	CAMBER	PCF	POUNDS PER CUBIC FOOT
CC OR C/C	CENTER TO CENTER	PL	PLATE
CG	CENTER OF GRAVITY	PSF	POUNDS PER SQUARE FOOT
CJ	CONSTRUCTION JOINT	PST	POUNDS PER SQUARE INCH
CLG	CLEAR	PT	POINT
CLR	CONCRETE MASONRY UNIT		
CMU	COLUMN	R	RADIUS
CCL	CONCRETE	RD	ROOF DRAIN
CONC	CONTINUOUS	REF	REFERENCE
CONT	CUBIC	REIN	REINFORCING STEEL
		REQD.	REQUIRED
		REV	REVISE OR REVISION
DET	DETAIL	SCHED	SCHEDULE
DIAG	DIAGONAL	SECT	SECTION
DIM	DIMENSION	SHT	SHEET
DL	DEAD LOAD	SIM	SIMILAR
DO	DITTO	SIV	SHORT LEG VERTICAL
DWG	DRAWING	SPA	SPACED
DWE	DOWEL	STL	STAINLESS STEEL
		STL	STANDARD
		STIF	STIFFENER
		SYM	SYMMETRICAL
EA	EACH	T&B	TOP AND BOTTOM
EF	EACH FACE	THK	THICKNESS
EL	ELEVATION	TOC	TOP OF CONCRETE
ENCL	ENCLOSURE	TOF	TOP OF FOOTING
ENGR	ENGINEER	TOS	TOP OF STEEL
EQ	EQUAL	TOW	TOP OF WALL
EQUIP	EQUIPMENT	TYP	TYPICAL
ETC	ETCETERA		
EW	EACH WAY	UN	UNLESS OTHERWISE NOTED
EXIST	EXISTING	VE	VACUUM EQUIPMENT
		VERT	VERTICAL
FD	FLOOR DRAIN	W/	WITH
FDN	FOUNDATION	WP	WATER PROOF
FIN	FINISH	WP	WORKING POINT
FLR	FLOOR	WS	WELDED STUD
FLSHG	FLASHING	WT	WEIGHT
FOC	FACE OF CONCRETE	WWF	WELDED WIRE FABRIC
FRMG	FRAMING	WWM	WELDED WIRE MESH
FS	FAR SIDE		
FT	FOOT, FEET		
FTG	FOOTING		
GA	GAUGE		
GALV	GALVANIZED		
GR	GRADE		
HORIZ	HORIZONTAL		
HP	HIGH POINT		
HR	HANDRAIL		
HSB	HIGH STRENGTH BOLT		
ID	INSIDE DIAMETER		
IN	INCH		
INFO	INFORMATION		
INSUL	INSULATION		
JST	JOIST		
JT	JOINT		

SYMBOLS

L	ANGLE	△	DELTA
C	CHANNEL	⊕	SQUARE FOOT
PL	PLATE	#	NUMBER OF POUND
⊕	CENTER LINE	&	AND
∅	DIAMETER OF ROUND	@	AT
⊕	WORK POINT OR ELEV BENCH MARK		

	NUMBER FOR DETAILS		LETTER
	SHEET ON WHICH DETAIL OCCURS		SHEET ON WHICH SECTION OCCURS
	DETAIL		SECTION
	NUMBER FOR DETAIL		ROOM NUMBER
	LETTER FOR SECTION		
	REF		REVISED AREA CLOUDED
	SHEET NUMBER		REVISION
	REFERENCED FROM		
	DET/SECT CROSS REF		

GENERAL NOTES

GENERAL

1. ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE PROJECT SPECIFICATIONS.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AFFECTING THE WORK AND SHALL NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCY WITH THE INFORMATION SHOWN ON THE DRAWINGS PRIOR TO PROCEEDING WITH THE WORK.
3. FOR TOP OF CONCRETE SLAB FOR BEAM TUBE ENCLOSURE SEE CIVIL DRAWINGS.
4. INSTALLATION AND SEALING OF BEAM TUBE ENCLOSURE SEGMENTS ARE NOT INCLUDED IN THIS CONTRACT (INC).
5. INSTALLATION OF DOORS ARE NOT INCLUDED IN THIS CONTRACT (INC).

FOUNDATIONS AND SOILS

1. ALLOWABLE SOIL BEARING PRESSURE IS 2000 PSF ON FOOTINGS WITH A MINIMUM OF 2'-0" DEPTH. 1/3 INCREASE IN ALLOWABLE BEARING VALUES ARE PERMITTED FOR SHORT DURATION LOADINGS RESULTING FROM WIND OR SEISMIC.
2. FOUNDATION AND SOIL REQUIREMENTS ARE BASED ON SOIL REPORT BY WOODWARD CLYDE; REPORT NO. 938107C DATED JANUARY, 1995.
3. REFER TO CIVIL DRAWINGS FOR BASE COURSE FOR SLABS AND FOUNDATIONS.

CONCRETE

1. PORTLAND CEMENT SHALL BE TYPE I OR II CONFORMING TO ASTM C150.
2. CONCRETE SHALL BE NORMAL WEIGHT AND SHALL HAVE A COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
3. ALL STEEL REINFORCEMENT, ANCHOR BOLTS AND OTHER EMBEDDED ITEMS SHALL BE SECURED IN PLACE. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER PRIOR TO CONCRETE PLACEMENT.
4. ALL CONCRETE MIX DESIGNS SHALL BE SUBMITTED TO THE CONSTRUCTION MANAGER FOR REVIEW 3 WEEKS PRIOR TO SCHEDULED CONCRETE PLACEMENT.
5. ALL EXPOSED EDGES SHALL BE CHAMFERED TO 3/8" UNLESS OTHERWISE NOTED ON THE DESIGN DRAWINGS.
6. CONTACT SURFACE AT CONSTRUCTION JOINTS WITHOUT A SHEAR KEY SHALL BE ROUGHENED TO A FULL AMPLITUDE OF 1/4" THROUGHOUT.
7. NO SAWCUTTING OF CONCRETE WALLS OR SLABS SHALL BE PERFORMED WITHOUT PRIOR WRITTEN APPROVAL FROM THE CONSTRUCTION MANAGER.
8. ANCHOR FOUNDATIONS AT VACUUM EQUIPMENT INTERFACES AT CORNER, MID AND END STATIONS SHALL BE CURED WITH MOISTURE CURING METHOD. SEE SPECIFICATION SECTION 03300, "CAST-IN PLACE CONCRETE".
9. SEE SPECIFICATION SECTION 7110 FOR UNDERSLAB WATERPROOFING OCCURRING AT BEAM TUBE TERMINATION SLABS.

STEEL REINFORCEMENT FOR CONCRETE

1. STEEL REINFORCEMENT SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.
2. STEEL REINFORCEMENT SHALL HAVE THE FOLLOWING MINIMUM CONCRETE COVER UNLESS OTHERWISE NOTED:
 CONCRETE CAST AGAINST EARTH ----- 3"
 CONCRETE EXPOSED TO EARTH OR WEATHER: #6 BARS & LARGER ----- 1 1/2"
 (INCLUDING VAPOR BARRIER) #5 BARS & SMALLER ----- 1 1/2"
 CONCRETE NOT EXPOSED TO EARTH OR WEATHER: SLABS & WALLS ----- 3/4"
3. ALL CONCRETE STEEL REINFORCEMENT SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH ACI 318-89 AND ACI 315-80.
4. MINIMUM SPLICE LENGTH SHALL BE 2'-0".

STRUCTURAL AND MISC METAL WORKS

1. STRUCTURAL AND MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36.
2. ALL WELDING AND ELECTRODES SHALL CONFORM TO THE REQUIREMENTS OF AWS D1.1 STRUCTURAL WELDING CODE.
3. FIELD WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS AND CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER PRIOR TO WELDING.
4. ALL STRUCTURAL STEEL SHALL BE FABRICATED BY AN APPROVED FABRICATION SHOP.
5. CONTRACTOR SHALL SUBMIT STRUCTURAL AND MISCELLANEOUS METAL WORK SHOP DRAWINGS TO THE CONSTRUCTION MANAGER FOR REVIEW AND APPROVAL PRIOR TO START OF FABRICATION.
6. HEADED ANCHORS SHALL BE "NELSON" TYPE H4L OR S3L, FLUX FILLED, MADE FROM COLD DRAWN STEEL GRADES C-1010 THROUGH C-1020 PER ASTM A108 OR APPROVED EQUAL. ANCHORS SHALL BE WELDED PER THE MANUFACTURER'S SPECIFICATIONS.

DESIGN LOADS - FOR THE BEAM TUBE ENCLOSURE

1. DEAD LOADS: ACTUAL LOAD
2. LIVE LOADS: SNOW LOADS --- 20 PSF
3. LATERAL LOADS: PER UBC 1994
 A) SEISMIC LOADS: ZONE 2B
 IMPORTANCE FACTOR 1.0
 COEFFICIENT R_w 4.0
 B) WIND LOADS: BASIC WIND VELOCITY - 100 MPH
 WIND EXPOSURE C
 IMPORTANCE FACTOR 1.0
4. CONSTRUCTION LOADS:
 A) HANDLING AND TRANSPORTATION LOADS INCLUDING IMPACT.
 B) LOADS DUE TO FOUNDATION SLAB ALLOWABLE TOLERANCES - 3/8" INCH OF VERTICAL DISPLACEMENT BETWEEN OPPOSITE DIAGONAL ENDS OF SEGMENT BASE.
5. BEAM TUBE ENCLOSURE AND ACCESS DOORS SHALL BE CAPABLE OF STOPPING THE PENETRATION OF A STRAY BULLET WITH THE FOLLOWING PROPERTIES:
 A) CALIBER ----- 308
 B) WEIGHT ----- 180 GRAINS
 C) VELOCITY AT IMPACT --- 2900 FEET PER SECOND
 D) ENERGY AT IMPACT --- 2800 FEET-POUNDS
 E) MATERIAL ----- LEAD CORE, FULLY JACKETED WITH COOPER

DRAWING INDEX

LA-S-501	GENERAL NOTES, ABBREVIATIONS & LEGEND
LA-S-502	KEY PLAN OF BEAM TUBE ENCLOSURE & PARTIAL ENLARGED PLAN
LA-S-502A	SOUTHEAST ARM BEAM TUBE ENCLOSURE PARTIAL ENLARGED PLAN
LA-S-503	BEAM TUBE ENCLOSURE PLANS, SECTIONS & DETAILS
LA-S-504	KEY PLAN OF BEAM TUBE ENCLOSURE FOUNDATION & PARTIAL ENLARGED PLANS
LA-S-504	BEAM TUBE ENCLOSURE SECTIONS & DETAILS SHEET 1
LA-S-505	BEAM TUBE ENCLOSURE SECTIONS & DETAILS SHEET 2

MATERIALS LEGEND

	CONCRETE		WELDED WIRE FABRIC
	GRAVEL		EARTH
			STRUCTURAL BACKFILL

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NO.	DATE	BY	CHKD	ENGR	PROJ	DESCRIPTION
B	6-14-96	MCS				FINAL DESIGN REVIEW
A	10-31-95	MCS				PRELIMINARY DESIGN REVIEW

DRAWN	MCS
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LASER INTERFEROMETER
 GRAVITATIONAL-WAVE OBSERVATORY
 BTE SITework & FABRICATION - LIVINGSTON, LA

TITLE	SCALE	CONTRACT NUMBER	PROJECT NUMBER
STRUCTURAL BEAM TUBE ENCLOSURE GENERAL NOTES, ABBREVIATIONS & LEGEND	NONE	PP150969	8094
	SHEET NUMBER		REVISION
	LA-S-501		