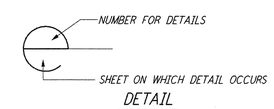
ABBREVIATIONS

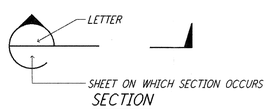
AB	ANCHOR BOLT
ACI	AMERICAN CONCRETE INSTITUTE
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	AMERICAN WELDING SOCIETY
B/B	BACK TO BACK
B/P	BASE PLATE
BM	BEAM
BOF	BOTTOM OF FOOTING
BOS	BOTTOM OF STEEL
BRCG	BRACING
BTE	BEAM TUBE ENCLOSURE
C	CAMBER
CC OR C/C	CENTER TO CENTER
CG	CENTER OF GRAVITY
CJ	CONSTRUCTION JOINT
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
CU	CUBIC
DET	DETAIL
DIAG	DIAGONAL
DIM	DIMENSION
DL	DEAD LOAD
DO	DITTO
DWG	DRAWING
DWL	DOWEL
EA	EACH
EF	EACH FACE
EL	ELEVATION
ENCL	ENCLOSURE
ENGR	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
ETC	ETCETERA
EW	EACH WAY
EXIST	EXISTING
FD	FLOOR DRAIN
FDN	FOUNDATION
FIN	FINISH
FLR	FLOOR
FLSHG	FLASHING
FOC	FACE OF CONCRETE
FRMG	FRAMING
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
LB	POUND
LG	LENGTH
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LWC	LIGHT WEIGHT CONCRETE
MAX	MAXIMUM
MB	MACHINE BOLT
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MPH	MILES PER HOUR
NIC	NOT IN CONTRACT
NS	NEAR SIDE
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
OTO	OUT TO OUT
PCF	POUNDS PER CUBIC FOOT
PL	PLATE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT
R	RADIUS
RD	ROOF DRAIN
REF	REFERENCE
REINF OR BARS	REINFORCING STEEL
REQD	REQUIRED
REV	REVISE OR REVISION
SCHED	SCHEDULE
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SLV	SHORT LEG VERTICAL
SPA	SPACED
ST STL	STAINLESS STEEL
STD	STANDARD
STIF	STIFFENER
SYM	SYMMETRICAL
T&B	TOP AND BOTTOM
THK	THICKNESS
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TOS	TOP OF STEEL
TOW	TOP OF WALL
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VE	VACUUM EQUIPMENT
VERT	VERTICAL
W/	WITH
WP	WATER PROOF
WP	WORKING POINT
WS	WELDED STUD
WT	WEIGHT
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH

SYMBOLS

L	ANGLE
C	CHANNEL
PL	PLATE
℄	CENTER LINE
Ø	DIAMETER or ROUND
⌖	WORK POINT OR ELEV BENCH MARK
△	DELTA
□	SQUARE FEET
#	NUMBER or POUND
&	AND
@	AT



DETAIL



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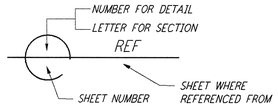
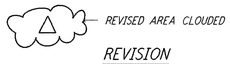


DET/SECT CROSS REF

TYPE A

BEAM TUBE ENCLOSURE DESIGNATION



REVISION

MATERIALS LEGEND

CONCRETE	—X—X—X— WELDED WIRE FABRIC
EARTH	
STRUCTURAL BACKFILL	

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 (NIC).
5. INSTALLATION OF DOORS ARE NOT INCLUDED IN THIS CONTRACT (NIC).

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 DAMES AND MOORE; REPORT NO. 177-004-0016 DATED: FEBRUARY 10, 1993.

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 $\frac{3}{4}$" 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 $\frac{3}{4}$" 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".

STEEL REINFORCEMENT FOR CONCRETE

1. STEEL REINFORCEMENT SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.
2. STEEL REINFOREMENT SHALL HAVE THE FOLLOWING MINIMUM CONCRETE COVER UNLESS OTHERWISE NOTED:
   CONCRETE CAST AGAINST EARTH ---------- 3"
   CONCRETE EXPOSED TO EARTH OR WEATHER: #6 BARS & LARGER ---------- 2"
   (INCLUDING VAPOR BARRIER) #5 BARS & SMALLER ---------- $1\frac{1}{2}$"
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER: SLABS & WALLS ---------- $\frac{3}{4}$"
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
      COEFICIENT Rw 4.0
   B) WIND LOADS: BASIC WIND VELOCITY - 70 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 - $\frac{1}{2}$ INCH OF VERTICAL DISPLACEMENT BETWEEN OPPOSITE DIAGONAL ENDS OF SEGMENT BASE.

D960186-B-D

REFERENCES		REVISIONS							
		B	11-21-95	MCS	RM	FJD	MDW	ISSUED FOR BID	
		A	10-03-95	MCS	RM	FJD	MDW	DRAFT FINAL DESIGN REPORT	
DRAWING NO.	DESCRIPTION	NO.	DATE	BY	CHKD	ENGR	PROJ	DESCRIPTION	

DRAWN	MCS
CHECKED	
ENGINEER	
PROJ	

PARSONS
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PASADENA, CALIFORNIA

LIGO
CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

LASER INTERFEROMETER GRAVITATIONAL-WAVE OBSERVATORY
BTE SITEWORK & FABRICATION - HANFORD, WA

TITLE	SCALE	CONTRACT NUMBER	PROJECT NUMBER
GENERAL NOTES, ABBREVIATIONS & LEGEND	NONE	PP150969	8094
	SHEET NUMBER: BT-S-001	REVISIONS: B	

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