HNR

STRUCTURAL CALCULATION COVER SHEET

Date: 8-23-02

PAGE 1

Calculation No:3442.053.SCAL.010
Calculation Title: LDCC MEZZANINE LEVEL PIPE SUPPORTS / STANDS
Project ID # 100256
Project Title: CCN CHILLED WATER SYSTEM OPTIMIZATION MASTER PLAN

ORIGINAL AND REVISED CALCULATION/ANALYSIS APPROVAL

	Rev. A Name/Signature/Date	Rev. 0 Name/Signature/Date	Rev._ Name/Signature/Date
Originator: DAVID APPLE	08/23/02	8-29-02	
Checked By: JEFFREY FREELAND	8/27/02	8/29/02	
Approved By: JIM WEEKS	/ /02	8/29/02	
Other:			

AFFECTED DOCUMENTS

Document Number	Document Title	Rev. Number
Drawing No. C52952	CCF/LDCC COOLING PLANT MODIFICATIONS	REV. 0
Drawing No. C53116	LDCC EC-1 Modifications	Rev. 0

Record of Revision

Rev.	Reason for Revision
REV. A	FIRST SUBMITTAL OF CALCULATIONS
Rev. 0	All pages of this calculation 3442.053.SCAL.010 Rev. A are considered approved and released based upon no technical changes to the calculation during/after formal review.

Rev. 0,

TOTAL PAGES 14

Holmes & Narver | Raytheon

CALCULATION CHECKLIST

Project #: 100256
Task Order # 053
CCN CHILLED WATER SYSTEM OPTIMIZATION MASTER PLAN

Calculation Number: 3442.053.SCAL.010 PAGE 2 Revision A

Reviewer/Checker :
Reviewer performed or supervised subject calculation.
_X_ NO _____ YES Justification Attachment _____, _____ pages
Alternate Verification method approved _____ Method _____

Date 8/27/02

ITEM(S) CHECKED	Accept Y/N	OBJECTIVE EVIDENCE Sheets		INITIAL/ DATE
1. Cover forms properly completed.	Y	NONE		8/27/02
2. Calculation Sheet headers complete with calc. no., rev., etc.	Y			8/27/02
3. Calculation Sheet contents complete per format.	Y			8/27/02
4. Listed attachments included.	Y			8/27/02
5. Calculation Objective clearly described.	Y			8/27/02
6. Criteria are suitable and properly referenced to task-specific documents.	Y			8/27/02
7. Assumptions and data described and attached or referenced to task documents.	Y			8/27/02
8. Calculation method identified and appropriate for the design activity.	Y			8/27/02
9. Calculation results reasonable and correctly described in Results and Conclusions.	Y	NONE		8/27/02
10. Computer Program identified with version and revision.	N/A			
11. Computer Program references method used, etc.	N/A			
12. Computer input/output provided.	N/A			
13. Computer run traceable to calculation.	N/A			
14. Computer input data within permissible design input range.	N/A			
15. Computer Program validation/verification addressed.				

REMARKS

Checker Print Name & Sign
JEFFREY H. FREELAND

Date 8/27/02

Preparer Print Name & Sign
DAVID APPLE

Date 8-23-02

Holmes & Narver | Raytheon **STRUCTURAL DESIGN CALCULATION SHEET**	Project Title: CCN CHILLED WATER SYSTEM OPTIMIZATION MASTER PLAN Project ID #100256 Task Order #053 Page 3

Calculation No. 3442.053.SCAL.010	PERFORMED BY : 08/23/02 DAVID APPLE
Rev. No. A	CHECKED BY: 8/27/02 Jeffrey H. Frederick
Calculation Title: LDCC MEZZANINE LEVEL PIPE SUPPORTS / STANDS	

INTRODUCTION Purpose	Perform an analysis to determine if the second level framing system has adequate capacity to carry the additional loads imposed by this project, and design pipe supports / stands for the additional piping into and out of the air separator tank.
Scope	Determine if the second and third level framing systems can support the additional loads imposed by the piping from the air separator and tank.
DESIGN BASIS Design Inputs	The LDCC facility is considered a Performance Category (PC) 1 facility. Equipment and component weights provided by Mechanical Engineer and from manufacturers printed information. Second floor loading hung from below was observed and verified as part of the site visit (07/02/02) per 3442.053.SCAL.009.
Criteria	LANL Facility Engineering Manual, Chapter 5 (Ref. 1).
Assumptions	It is conservative to assume non-composite action between the reinforced concrete floor slab and steel framing members for both the second and third floors. The concrete deck continuously braces the compression flanges of the steel beams.
REFERENCES	(1) LANL Facility Engineering Manual, Chapter 5 (2) ASCE 7-98 (3) AISC Manual of Steel Construction, 9th Edition (4) UBC 1997 (5) 3442.053.SCAL.009 (6) LDCC Building Plans, Lab Job 7050-3
METHODS	Hand calculations were used to prepare these calculations.
RESULTS AND CONCLUSIONS	The second and third floor framing systems have adequate capacity to carry the equipment loads imposed by the present project.

Calculation No.3442.053.SCAL.010 Rev. A	Performed By: DAVID APPLE Date: 08-23-02
Calculation Title: LDCC MEZZANINE LEVEL PIPE SUPPORTS / STANDS PROJECT: 100256 CCN CHILLED WATER SYSTEM OPTIMIZATION MASTER PLAN	Checked By: JEFFREY FREELAND Date: 8/27/02

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Appendix – Lab Drawing – S16 – Floor Deck Identified 12

Appendix – Lab Drawing – S6 – 2nd Level Floor Slab Identified 13

Appendix – Lab Drawing – S4 – 2nd Level Framing Plan Identified 14

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JOB NO. 3442.053.SCAL.010 Rev. A

SHEET 5 OF _____

TITLE LDCC MEZZANINE LEVEL PIPE SUPPORTS/STANDS BY DAA DATE 8/1/02

#100256 CCN CHILLED WATER SYSTEM OPTIMIZATION MASTER PLAN

LDCC 2nd Floor Mezzanine Platform -
Pipe floor stands for piping into/out of eqpt.

1. AIR SEPARATOR

a. 12" Ø to CWR Valve on 2nd Floor

b. 12" Ø to CWR overhead pipe

Consider 1a.

18 ft horizontal run after a 2½ ft run w/90° bend.
The 18 ft horizontal run includes a 12" Ø BF valve.

12" Ø wt_{12} = 115 plf — incl. pipe, wtr, 3" insul.
Ref. 03410 3442.0053-SCAL-002
Sheet 4 of 44

12" Ø 90° elbow	74 lbs	03410 3442.0053.SCAL-002	
Flange adapters	100 lbs	(46.3 lbs each)	Sheet 20, 21
Water	100 lbs	48.4 lbs/ft for pipe.	
12" Ø BF valve	125 lbs	Crane (See attached, Appendix, Page 11)	
Flange adapters	100 lbs		
12" Ø Tee	165 lbs		

Place Floor Supports:

C-2.5 : ≈ 8 LF PIPE + 12" "T"

C-2.75 : ≈ 10 LF + 12" Ø BF Valve

@ edge of eqpt. stand - between eqpt & 90° or after 90°

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SHEET 6 OF _____

TITLE LDCC MEZZANINE LEVEL PIPE SUPPORT STANDS

BY DAK DATE 8/1/02

#100258 CHILLED WATER SYSTEM OPTIMIZATION MASTER PLAN

Design/check for max. condition

C-2.5 : 8 LF (115 plf) = 920 lbs
12" Tee = 165 lbs
1085 lbs

C-2.75 : 10 LF (115 plf) = 1150 lbs
12" BF Valve 225 lbs
1375 lbs. ← controls.

@ edge of stand - by inspection, will not control.

∴ For 1a) : SAY 1400 lbs @ = 5 ft. to ℄ PIPE

Consider 1b.

Use overhead trapeze w/roller for 12" Ø pipe.

Use U/M-5000 to support horiz. pipe section

This will include
5 1/2 ft horiz. 12" Ø
90° Bend
90° BEND
12" Ø BF Valve
4 FT 12" Ø vertical.

WT hanger = 5(115) + 2(175) + 225 + 4(115) = 1610 lbs.

USE HANGER - DESIGNED FOR WP = 2300 lbs > 1610 lbs ∴ OK.

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JOB NO. 3442.053.SCAL.010 Rev. A

SHEET 7 OF _____

TITLE LOCL Mezzanine Level Pipe Support/Stands

BY [illegible] DATE 8/1/02

#100256 CCN CHILLED WATER SYSTEM OPTIMIZATION MASTER PLAN

For 1a): $Pa_{max} = 1400$ lbs. $ht \approx 5$ ft.

Detail 1/M-5000 designed for up to 12 k.

For constructability reasons, use this detail for this location - modify mounting for 2nd floor slab conditions.

1) Mount within 6" pan deck area

2) Mount on a { W24x55 C-2.5 / W24x94 C-2.75 } (Ref. p-14 Appendix)

NOTE (1) on M-1007 calls out the base plate + 4ea 3/4" Ø A307 bolts required to modify the existing detail for these locations.

→ By inspection (Ref. 3442.053-SCAL.007) this pipe stand is adequate for the seismic loads imposed on the stand and thru-bolt anchors.

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JOB NO. 3442.053-SCAL-810 Rev. A

SHEET 8 OF _____

TITLE LDCC Mezzanine Level Pipe Support/Stands BY [illegible] DATE 8/23/02

#100256 CCN CHILLED WATER SYSTEM OPTIMIZATION MASTER PLAN

• PIPE STAND OVER 6" SLAB – NOT OVER FLOOR BEAM:

Top of Steel @ 117.50
+ 1.5
119.00

2nd Level Framing Plan
AS NOTED
S-4 LAB JOB 7050-3
LA-RDT-AM-S4
(P-14 Appendix)

Top of Slab @ 119.50

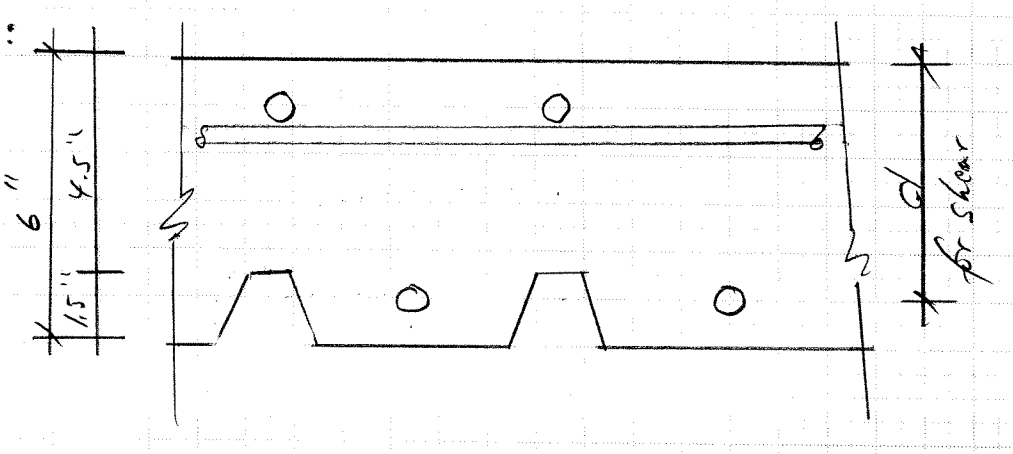
2nd Level Slab Plan
S-6 LAB JOB 7050-3
LA-RDT-AM-S6
(P-13 Appendix)

∴ t_{slab} = 6" ; on 1½" deep deck - 20 gage

S-16 LAB JOB 7050-3
LA-RDT-AM-S16
(P-12 Appendix)

For S-6 (SEE ABOVE)
#6 @ 12" O.C. TOP AND BOTTOM ∥ ribs in deck
#4 @ 12" O.C. TOP ⊥ to ribs in deck.

ASSUME:



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SHEET 9 OF _____

TITLE LOCC Mezzanine Level Pipe Support / Stand BY DMA DATE 8/23/02

#100256 CCN CHILLED WATER SYSTEM OPTIMIZATION MASTER PLAN

Per drawing M-5000:

Base plate for pipe stand: 16" x 16"

Assume: $f'c = 3000$ psi

: $t = 6''$ for shear calculation

Check Punching Shear:

$\phi V_c = \phi 4 \sqrt{f'c}\, b_o d$

b_o = perimeter along critical section

SAY $b_o = 16'' + 16'' + 16'' + 16'' = 64$ in

$d = 4''$

$\phi = 0.85$

$\phi V_c = (0.85)(4)(3000\text{ psi})^{1/2}(64\text{ inch})(4\text{ inch})$

$\phi V_c = 47.6^k \gg P_{\text{pipe stand}} \Rightarrow$ OK.

Check Beam Shear:

$\phi V_c = \phi 2 \sqrt{f'c}\, b d$

$\phi = 0.85$

$f'c = 3000$ psi

$b = 16$ inch

$d = 4$ inch

$\phi V_c = (0.85)(2)(3000\text{ psi})^{1/2}(16\text{ in})(4\text{ in})$

$\phi V_c = 5.9^k \gg P_{\text{pipe stand}} \Rightarrow$ OK.

∴ FLOOR IS ADEQUATE TO SUPPORT PIPE STAND

$P_{max} = 1.4^k \ll$ Floor Capacity

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JOB NO. 3442.053.SCAL.010 Rev. A

SHEET 10 OF _____

TITLE LDCC Mezzanine Level Pipe Support/Stand

BY [illegible] DATE 8/23/02

#100256 CCN CHILLED WATER SYSTEM OPTIMIZATION MASTER PLAN

Pmax pipe stand = 1.4k

Per 3442.053.SCAL.001

3rd floor W24x55 adequate to support hanger load = 5000 lbs.

∴ By inspection 2nd floor W24x55 is ok. (@ C-2.5)

Also, W24x94 OK, by inspection (@ C-2.25).

Summary:

Pipe stand Pmax = 1.4k

Stand location @ C-2.5 ok —

@ C-2.25 ok ✓

@ floor not over floor beams ok. ✓

∴ 2nd floor is adequate to support loads imposed by this project.

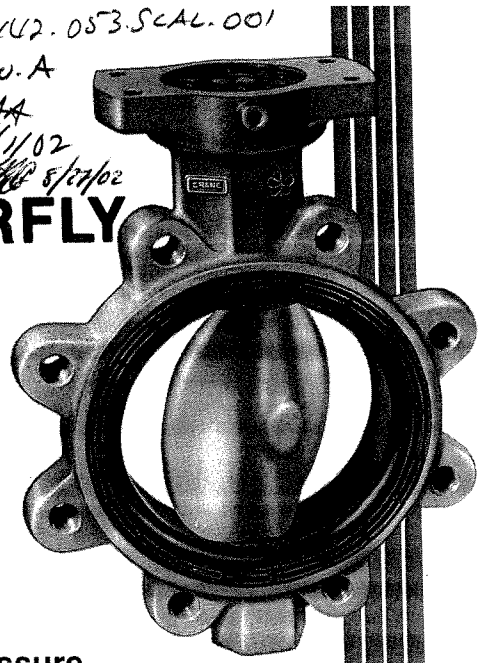
CRANE

3442.053.SCAL.001
Rev. A
DAA
8/1/02
8/27/02

AWWA BUTTERFLY VALVES 2 to 12"

Lug Wafer Body with Phenolic Cartridge Seat

200 psi max. differential pressure



Model 23

TEMPERATURE LIMITS

Seat	Temp.
Buna N	-20 to 180 F

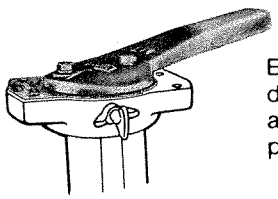
Air tested bubble-tight under water.

- Especially designed for AWWA applications. Also suitable for vacuum services up to 29.9 inches of mercury.
- Ductile cast iron body offers strength approximating that of cast steel and corrosion-resistance equal to cast iron.
- Valves are ideal for "dead end" service. Threaded lug holes permit securing valve to the upstream piping flange independently of the downstream piping flange.
- Multiple sealing points around stem provide maximum protection against leakage.
- Stem is ground and polished. Full AWWA diameter for entire length assures high safety factor.
- Fiberglass-reinforced TFE bearings around top and bottom portions of stem contribute to proper stem alignment, low torque operation, and long valve life.
- Cartridge type seat (liner) is bonded to a rigid phenolic back-up ring. Easily replaced in field if ever necessary. The back-up ring prohibits the seat from shifting when disc is operated.
- Disc is designed for low flow resistance and has a straight-thru bore for accurate stem alignment.
- Disc edge is ground and polished. Assures smooth, low torque operation and bubble-tight shutoff with minimum wear on seat.
- Stem coupling accommodates all Crane operators.
- Extended neck design provides ample clearance for operating mechanism of valves installed in insulated pipelines.
- Can be installed between ANSI Class 125 iron or Class 150 Steel (raised or flat face) flanges. No gasket is needed.
- Valves comply (except for end-to-end) with AWWA C504 for Class 150B Valves. This Standard does not include 2, 2½, or 5-inch valves. LDCC Mezzanine Level Pipe Supports/Stands

#100256 CCN Chilled Water System Optimization Master Plan

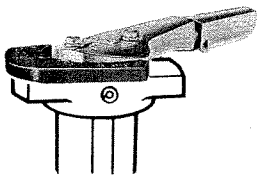
CHOICE OF OPERATORS

Valves on this page are regularly available with operators shown below . . . as well as with buried, cylinder, or motor operators illustrated on the facing page. Proper selection depends on operator type preferred, pressure differential, media, and flow rate. Refer to operator page for details.



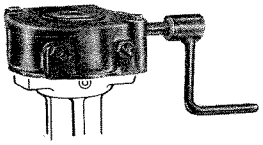
LOCK LEVER

Economical and dependable. Can be locked in any of ten positions. See page 32.



TWIST-LOCK LEVER

Rugged construction. Can be padlocked in any of seven positions. See page 32.



GEAR OPERATOR

Heavy duty, weather-proofed. Infinite choice of control positions. See page 33.

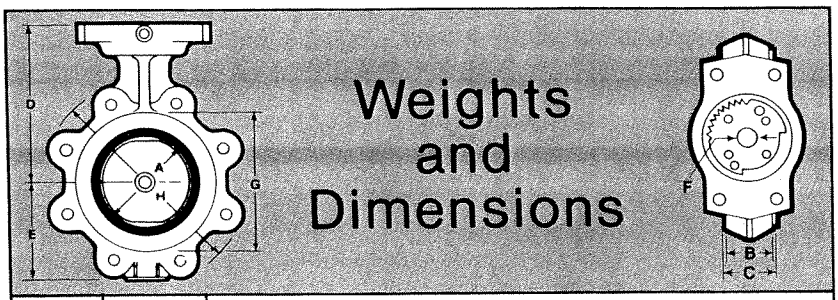
General description . . . . . pages 24 and 25
Operator pad dimensions . . . . . page 38
Valve sizing . . . . . pages 40 and 41
Installation; flange bolting data . . . . . pages 46 and 47

USED FOR ± VALVE WT. I ADDED FLANGE WTS FOR METALLIC FITTINGS.

VALVE SELECTION TABLE

Valve Catalog No.	Seat Material	Disc Material	Stem Material
23-BRB	Buna N	Bronze	Type 304 SS
23-FRB	Buna N	Ductile Iron	Type 304 SS
23-GRB	Buna N	Ni-Resist II Iron	Type 304 SS
23-SSB	Buna N	CF8M (18-8 SMo)	Type 316 SS

For valve with operator, specify Valve No. above with Operator Catalog No. (see operator page) as a suffix. For example, for No. 23-BRB valve with No. G94 Gear Operator, specify No. 23-BRB-G94. (Also, indicate "AWWA Service").



Weights and Dimensions

Valve N.P.S.	Weight Valve Only	Dimensions, Inches							
		A	B	C	D	E	F	G	H
inches	pounds	port diam.	end to end	laying length	center to top†	center to bottom	stem diam.	stop ring diam.	body diam.
2	10	2.00	1.62	1.75	5.50	2.50	0.38	3.75	6.00
2½	11	2.50	1.75	1.88	6.00	2.75	0.38	4.25	7.00
3	12	3.00	1.75	1.88	6.25	3.50	0.50	5.00	7.50
4	20	4.00	2.00	2.12	7.00	4.25	0.62	6.25	9.00
5	25	5.00	2.12	2.25	7.50	5.00	0.75	7.25	10.00
6	28	6.00	2.12	2.25	8.00	5.75	1.00	8.25	11.00
8	43	8.00	2.38	2.50	9.25	7.50	1.12	10.50	13.50
10	67	10.00	2.56	2.69	10.50	9.00	1.38	12.75	16.00
12	114	12.00	3.06	3.19	12.00	10.50	1.50	15.00	19.00

†For clearance dimensions "with operator", see operator page.

BP-1	BP-1	BP-1	BP-1	BP-1	BP-1	BP-1	BP-1
3/S16	1/S16	1/S16	1/S16	1/S16	3/S16	3/S16	1/S16
AB-1	AB-1	AB-1	AB-1	AB-1	AB-1	AB-1	AB-1

WITH CONTINUOUS
DETAIL 3/S16

3442.053.SCAL.010
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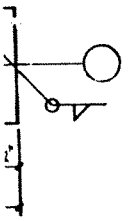
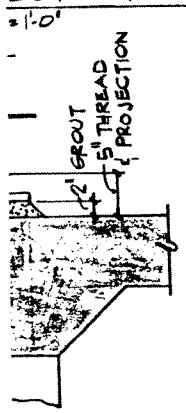
:OLUMN, SEE PLAN



ECTION
= 1'-0"



ION
" = 1'-0"

STRUCTURAL DESIGN LOADS

ROOF LOADS:

DEAD LOAD.....ACTUAL WEIGHT OF BLDG.MATERIALS
LIVE LOAD.....30 PSF
SNOW DRIFT LOADS.....AS REQUIRED
WIND LOAD.....29 PSF

ELEVATED FLOOR LOADS:

DEAD LOADS.....ACTUAL WEIGHT OF BLDG.MATERIALS

LIVE LOADS:

A. COMMUNICATIONS LEVEL..... 250 PSF
B. NETWORKING LEVEL..... 250 PSF
C. SUPER COMPUTER LEVEL..... 300 PSF

METAL ROOF DECK

1. DECK SHALL BE 1 1/2" DEEP - 20 GAUGE
2. DECK SHALL BE FASTENED PER S.D.I. REQUIREMENTS UNLESS OTHERWISE NOTED.
3. ROOF DECK DETAILS AND FASTENING PATTERN SHALL BE SUBMITTED TO THE ENGINEER FOR HIS APPROVAL BEFORE PROCEEDING WITH FABRICATION AND INSTALLATION.
4. DECK SPECIFIED HAS BEEN DETERMINED ON BASIS OF 3 SPAN CONDITION; DECK SUPPLIER SHALL USE HEAVIER GAUGE IF REQUIRED FOR ONE AND TWO SPAN CONDITIONS.
5. DECK FASTENING PATTERN SHALL DEVELOP AN ALLOWABLE DIAPHRAM SHEAR STRENGTH REQUIRED TO RESIST LATERAL DESIGN LOADS OF 430 lb/ft FOR HIGH ROOF AREA AND 1100 lb/ft FOR LOW ROOF AREA.
6. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, ALL ROOF DECK PENETRATIONS GREATER THAN 12" DIAMETER SHALL BE FRAMED ON 4 SIDES WITH ANGLE 4 X 4 X 3/8 AND SUPPORTED BY THE PRIMARY SUPPORTING STRUCTURE.
2. STUDS SHALL BE INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS OF THE AMERICAN WELDING SOCIETY.
3. THE MINIMUM CENTER-TO-CENTER SPACING OF STUD CONNECTORS SHALL BE 6 DIAMETERS ALONG THE LONGITUDINAL AXIS OF THE SUPPORTING COMPOSITE BEAM AND 4 DIAMETERS TRANSVERSE TO THE LONGITUDINAL AXIS OF THE SUPPORTING COMPOSITE BEAM. THE MAXIMUM CENTER-TO-CENTER SPACING OF STUD CONNECTORS SHALL NOT EXCEED 8 TIMES THE TOTAL SLAB THICKNESS.
4. MINIMUM CONCRETE COVER AROUND STUDS SHALL BE 1".
5. ( ) INDICATES THE TOTAL NUMBER OF STUDS PER BEAM, EQUALLY SPACED ALONG THE CENTER LINE OF BEAM, UNLESS NOTED OTHERWISE.
6. NO OPENINGS, OTHER THAN THOSE SHOWN ON THE CONTRACT DRAWINGS, MAY BE MADE IN THE FLOOR SLAB. IF ADDITIONAL OPENINGS ARE REQUIRED, THE INVESTIGATION OF THE WORK SHALL BE PERFORMED BY THE ENGINEER.
7. ALL 2ND AND 3RD LEVEL FLOOR OPENINGS ON PLAN LARGER THAN 12" SHALL BE FRAMED WITH 6" X 6" X 5/16" ANGLES UNLESS OTHERWISE NOTED ON PLAN, SEE GENERAL NOTE #6 ON CONCRETE GENERAL NOTE FOR REINFORCEMENT DETAILS WHERE APPLICABLE.
8. TOP SURFACE OF TOP FLANGE OF BEAM SHALL NOT BE PAINTED.
9. STUDS SHALL BE LOCATED BY ESTABLISHING THE CENTER OF THE BEAM WEB. STUD INSULATORS SHALL BE REMOVED BEFORE ANY PLACEMENT OF CONCRETE.
10. FLOOR DECK SHALL BE 1 1/2" DEEP - 20 GAUGE DECK.
11. THE DECK SUPPLIER SHALL FURNISH CLOSURE STRIPS AND OTHER NECESSARY HARDWARE FOR A CONCRETE-TIGHT DECK INSTALLATION.

STRUCTURAL STEEL TRUSSES

1. ALL TRUSSES SHALL BE ALL SHOP WELDED CONSTRUCTION, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
2. ALL TRUSS CONNECTIONS SHALL DEVELOP EITHER THE MAXIMUM FORCE INDICATED ON THE DRAWINGS OR ONE-HALF THE ALLOWABLE TENSION FORCE IN THE MEMBER, WHICHEVER IS GREATER. (+) INDICATES TENSION; (-) INDICATES COMPRESSION.
3. WORKING LINES FOR TRUSSES SHALL BE THE NEUTRAL AXIS OF THE MEMBERS.
4. WORK POINTS FOR TRUSS END CONNECTIONS SHALL BE THE CENTER LINE OF THE COLUMN.
5. NO FIELD SPLICES OF TRUSSES SHALL BE PERMITTED, EXCEPT AS SHOWN ON THE DRAWINGS.

12

THESE RECORD DRAWINGS HAVE BEEN PREPARED FROM INFORMATION SUPPLIED BY THE CONTRACTOR AND SHALL NOT BE CONSTRUED AS A CERTIFICATION OF ACTUAL CONDITIONS BY THE ARCHITECT.

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10. ALL BRACING CONNECTIONS SHALL DEVELOP EITHER THE FORCE INDICATED ON THE DRAWINGS OR ONE-HALF THE ALLOWABLE TENSION FORCE IN THE MEMBER, WHICHEVER IS LARGER. BRACING CONNECTIONS SHALL BE DESIGNED AND DETAILED SO THAT ALL FORCE COMPONENTS WILL BE TRANSMITTED DIRECTLY TO THE CENTERLINE OF THE INTERSECTING MEMBERS. WHERE THIS IS NOT POSSIBLE CONNECTIONS SHALL BE DESIGNED FOR ALL RESULTING ECCENTRICITIES. A MINIMUM OF TWO BOLTS SHALL BE USED PER CONNECTION.
11. ANCHOR BOLTS SHALL BE A.S.T.M. A-36, UNLESS OTHERWISE NOTED.
12. ANCHOR BOLT HOLES IN BASE PLATES AND DETAIL MATERIAL SHALL BE SIZED IN ACCORDANCE WITH A.I.S.C. "STRUCTURAL STEEL DETAILING".
13. GUSSET PLATES SHALL BE 3/8" MINIMUM THICKNESS.
14. FORCES INDICATED THUS ( ) ON BEAMS ARE AXIAL TENSION (+) OR COMPRESSION FORCES (-). CONNECTIONS ARE TO BE DESIGNED FOR THESE FORCES IN ADDITION TO THE FORCES FROM VERTICAL LOAD.
15. THE FABRICATOR SHALL PROVIDE FOR FUTURE BEAM CONNECTIONS AS SHOWN ON THE PLANS. THESE CONNECTIONS SHALL BE DETAILED SO THAT FUTURE BEAMS MAY BE ERECTED WITHOUT REMOVING LOADED BOLTS OR SHORING EXISTING BEAMS FRAMING OPPOSITE.
16. STEEL FRAME IS NON-SELF-SUPPORTING. STEEL ROOF DECK, CONCRETE FLOOR SLABS ARE REQUIRED TO PROVIDE LATERAL STABILITY FOR THE FRAME AND RESISTANCE TO WIND AND SEISMIC FORCES. CONTRACTOR SHALL PROVIDE ALL TEMPORARY BRACING REQUIRED TO MAINTAIN STABILITY OF STRUCTURAL SYSTEM DURING CONSTRUCTION OF THE PROJECT.
17. SHOP DRAWINGS SHALL BE SUBMITTED PRIOR TO THE FABRICATION OF ANY STRUCTURAL STEEL.

MF / Hand | RECORD SET

NO	DATE	CLASS REVIEW	REVIEWER	REVISIONS

FMBSM
Flynn Mann Bryan Shaffer McCabe
Architects Planners Engineers

BERNARD JOHNSON INCORPORATED

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COLUMN SCHEDULE, DETAILS, & NOTES

BLDG 941-1498 TA-3

UNITED STATES
Department of Energy
LOS ALAMOS AREA OFFICE - LOS ALAMOS, NEW MEXICO

DE-AC32-00AL33173

CLASSIFICATION REVIEWER

LAB JOB	LAB DWG NO	
7050-3	ENG-C-45225	LA-RDT-AM-S16

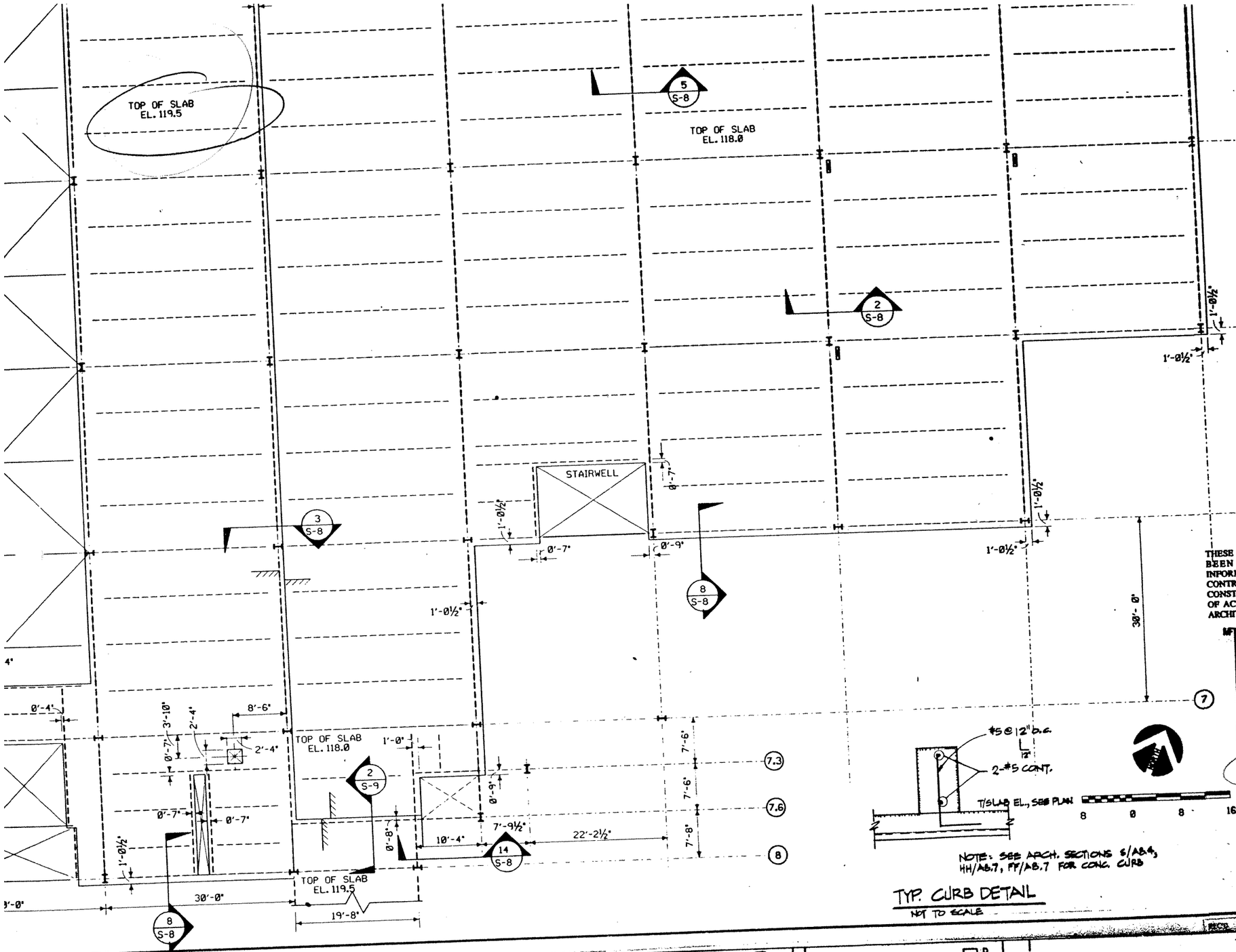
REC'D ___ LOGGED ✓ TO VAULT

B 17 18 LDCC Mezzanine Level Pipe Supports/Stands
#100236 CCN Chilled Water System Optimization
Master Plan

3442.053.SCAL.010
Rev. A
DAA 8/23/02

13

LDCL MEZZANINE
LEVEL PIPE
SUPPORTS/STANDS
#100258 CCN Chilled Water
System Optimization
Master Plan



NOTE: SEE ARCH. SECTIONS 6/A8.4, HH/A8.7, FF/A8.7 FOR CONC. CURB

TYP. CURB DETAIL
NOT TO SCALE

PLAN NOTES

1. 6" CONCRETE FLOOR SLAB ON FORM DECK IS REINFORCED WITH #6 @ 12" O.C. TOP AND BOTTOM; PARALLEL TO RIBS IN DECK. #4 @ 12" O.C. REINFORCING WILL SPAN PERPENDICULAR TO RIBS IN TOP OF SLAB. ADDITIONAL REINFORCING WILL BE REQUIRED OVER GIRDERS, #4 x 24'-0" @ 12" O.C. CENTERED OVER GIRDER AND STAGGERED SPACING WITH #4 TEMP. REINF. SEE TYPICAL ON PLAN.
2. SLAB ELEVATIONS BASED ON NOTE 20 IN GENERAL NOTES SHEET S16.

THESE RECORD DRAWINGS HAVE BEEN PREPARED FROM INFORMATION SUPPLIED BY THE CONTRACTOR AND SHALL NOT BE CONSTRUED AS A CERTIFICATION OF ACTUAL CONDITIONS BY THE ARCHITECT.

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2nd LEVEL SLAB PLAN

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CLASSIFICATION UNCL

LAB JOB	LAB DWG NO	
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RECD LOGGED VAULT

LDCC MEZZANINE LEVEL
PIPE SUPPORTS/STANDS

3442.053.SCAL.010
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8/27/02

#100256 CCN Chilled Water System Optimization Master Plan

PLAN NOTES

1. TOP OF STEEL @ ELEVATION 117.50 UNLESS NOTED OTHERWISE. +( )ABOVE OR -( )BELOW.
2. DASHED LINE INDICATES BOTTOM CHORD BRACING MEMBER SEE DETAIL 4/S-8. ALL BT TYPE TRUSSES REQUIRE BOTTOM CHORD BRACING AT EACH PANEL PT. SIMILAR TO 12/S-8 OR 4/S-8 WITH THE EXCEPTION OF BT 4 @ GRID LINE 6 E-F WHICH WILL BE BRACED AGAINST PRE-CAST PANEL.
3. ALL W24X55 BEAMS SHALL HAVE 45K END REACTIONS UNLESS OTHERWISE NOTED.

THESE RECORD DRAWINGS HAVE BEEN PREPARED FROM INFORMATION SUPPLIED BY THE CONTRACTOR AND SHALL NOT BE CONSTRUED AS A CERTIFICATION OF ACTUAL CONDITIONS BY THE ARCHITECT.

RECORD SET

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2nd LEVEL FRAMING PLAN

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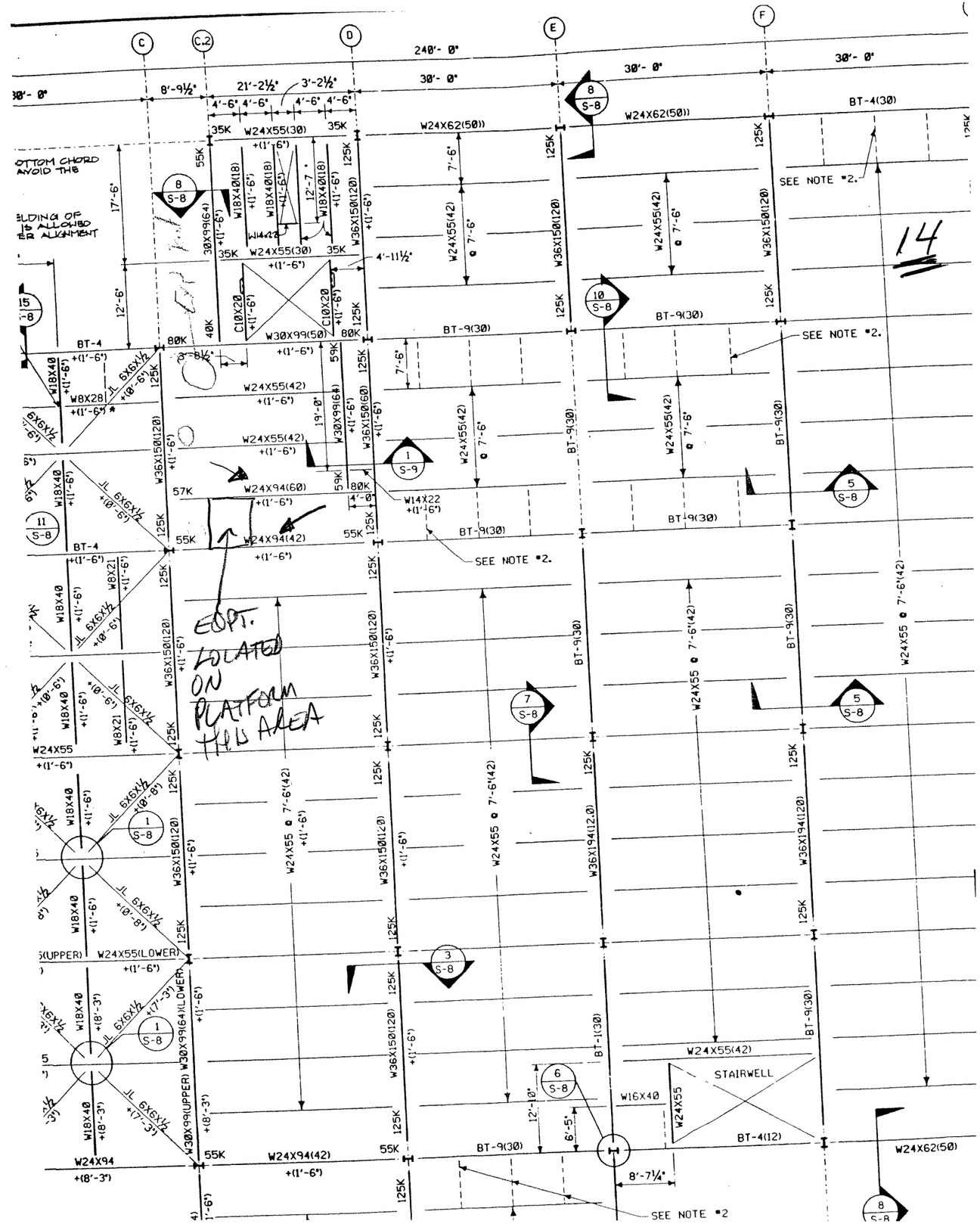
LAB JOB	LAB DWG NO	
7050-3	ENG-C-45225	LA-ROT-AM-54

RECD. LOGGED & TO VAULT